

PCTEST ENGINEERING LABORATORY, INC.

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## **MEASUREMENT REPORT**

FCC Part 22, 24, & 27

#### Applicant Name:

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

#### Date of Testing: 1/20-2/18/2016 Test Site/Location: PCTEST Lab., Columbia, MD, USA Test Report Serial No.: 0Y1601180117-R2.ZNF

## FCC ID:

## ZNFVS987

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-VS987, LG-US992, LG-RS988, LG-VS987T, LG-VS987G, LG-VS987P, LGVS987, VS987, LGUS992, US992, LGRS988, RS988, LG-RS988L, LGRS988L, RS988L Portable Handset PCS Licensed Transmitter Held to Ear (PCE) §2 §22(H) §24(E) §27(L) ANSI/TIA-603-C-2004, KDB 971168 v02r02 *identical prototype* [S/N: 03738, 03746, 03720]

|           |                       |                        | ERP/                 | EIRP                   |
|-----------|-----------------------|------------------------|----------------------|------------------------|
| Mode      | Tx Frequency<br>(MHz) | Emission<br>Designator | Max.<br>Power<br>(W) | Max.<br>Power<br>(dBm) |
| GSM850    | 824.2 - 848.8         | 240KGXW                | 2.453                | 33.90                  |
| EDGE850   | 824.2 - 848.8         | 243KG7W                | 0.624                | 27.95                  |
| GSM1900   | 1850.2 - 1909.8       | 246KGXW                | 0.773                | 28.88                  |
| EDGE1900  | 1850.2 - 1909.8       | 244KG7W                | 0.235                | 23.71                  |
| CDMA850   | 824.70 - 848.31       | 1M27F9W                | 0.204                | 23.10                  |
| CDMA1900  | 1851.25 - 1908.75     | 1M27F9W                | 0.068                | 18.31                  |
| WCDMA850  | 826.4 - 846.6         | 4M14F9W                | 0.311                | 24.93                  |
| WCDMA1700 | 1712.4 - 1752.6       | 4M13F9W                | 0.179                | 22.53                  |
| WCDMA1900 | 1852.4 - 1907.6       | 4M16F9W                | 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.

This revised Test Report (S/N: 0Y1601180117-R2.ZNF) supersedes and replaces the previously issued test report (S/N: 0Y1601180117-R1.ZNF) on the same subject device for the same type of testing as indicated. Please discard or destroy the previously issued test report(s) and dispose accordingly.

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.





| FCC ID: ZNFVS987                         | PCTEST         | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | 💽 LG | Reviewed by:<br>Quality Manager |  |
|------------------------------------------|----------------|------------------------------------------------------------------------------|------|---------------------------------|--|
| Test Report S/N:                         | Test Dates:    | EUT Type:                                                                    |      | Dega 1 of 104                   |  |
| 0Y1601180117-R2.ZNF                      | 1/20-2/18/2016 | Portable Handset                                                             |      | Page 1 of 104                   |  |
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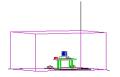


## TABLE OF CONTENTS

| FCC F | PART 2 | 22, 24, & 27 MEASUREMENT REPORT                     | 3   |
|-------|--------|-----------------------------------------------------|-----|
| 1.0   | INTF   | RODUCTION                                           | 4   |
|       | 1.1    | Scope                                               | 4   |
|       | 1.2    | Testing Facility                                    | 4   |
| 2.0   | PRC    | 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   | DES    | CRIPTION 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   | MEA    | ASUREMENT UNCERTAINTY                               | 9   |
| 5.0   | TES    | T EQUIPMENT CALIBRATION DATA                        | 10  |
| 6.0   | SAM    | IPLE CALCULATIONS                                   | 11  |
| 7.0   | TES    | T RESULTS                                           | 12  |
|       | 7.1    | Summary                                             |     |
|       | 7.2    | Occupied Bandwidth                                  |     |
|       | 7.3    | Spurious and Harmonic Emissions at Antenna Terminal |     |
|       | 7.4    | Band Edge Emissions at Antenna Terminal             |     |
|       | 7.5    | Peak-Average Ratio                                  | 65  |
|       | 7.6    | Radiated Power (ERP/EIRP)                           |     |
|       | 7.7    | Radiated Spurious Emissions Measurements            | 73  |
|       | 7.8    | Frequency Stability / Temperature Variation         |     |
| 8.0   | CON    | ICLUSION                                            | 104 |

| FCC ID: ZNFVS987                         |                | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | Reviewed by:<br>Quality Manager |  |  |
|------------------------------------------|----------------|------------------------------------------------------------------------------|---------------------------------|--|--|
| Test Report S/N:                         | Test Dates:    | EUT Type:                                                                    | Page 2 of 104                   |  |  |
| 0Y1601180117-R2.ZNF                      | 1/20-2/18/2016 | Portable Handset                                                             | Page 2 01 104                   |  |  |
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## 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-VS987                                        |  |  |  |
| FCC ID:                 | ZNFVS987                                        |  |  |  |
| FCC CLASSIFICATION:     | PCS Licensed Transmitter Held to Ear (PCE)      |  |  |  |
| MODE:                   | GSM/ CDMA / WCDMA                               |  |  |  |
| FREQUENCY TOLERANCE:    | ±0.00025 % (2.5 ppm)                            |  |  |  |
| Test Device Serial No.: | 03738, 03746, 03720                             |  |  |  |
| DATE(S) OF TEST:        | 1/20-2/18/2016                                  |  |  |  |
| TEST REPORT S/N:        | 0Y1601180117-R2.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.
  - PCTEST Lab is a recognized U.S. Conformity Assessment Body (CAB) in EMC and R&TTE (n.b. 0982) under the U.S.-EU Mutual Recognition Agreement (MRA).
  - PCTEST TCB is a Telecommunication Certification Body (TCB) accredited to ISO/IEC Guide 65 by the American National Standards Institute (ANSI) in all scopes of FCC Rules and Industry Canada Standards (RSS).
  - PCTEST facility is an IC registered (2451B-1) test laboratory with the site description on file at Industry Canada.
  - PCTEST is a CTIA Authorized Test Laboratory (CATL) for AMPS, CDMA, and EvDO wireless devices and for Over-the-Air (OTA) Antenna Performance testing for AMPS, CDMA, GSM, GPRS, EGPRS, UMTS (W-CDMA), CDMA 1xEVDO, and CDMA 1xRTT.

| FCC ID: ZNFVS987                           | PCTEST         | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | 💽 LG | Reviewed by:<br>Quality Manager |  |  |
|--------------------------------------------|----------------|------------------------------------------------------------------------------|------|---------------------------------|--|--|
| Test Report S/N:                           | Test Dates:    | EUT Type:                                                                    |      | Dage 2 of 104                   |  |  |
| 0Y1601180117-R2.ZNF                        | 1/20-2/18/2016 | Portable Handset                                                             |      | Page 3 of 104                   |  |  |
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12/01/2015



## 1.0 INTRODUCTION

## 1.1 Scope

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

## 1.2 Testing Facility

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

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

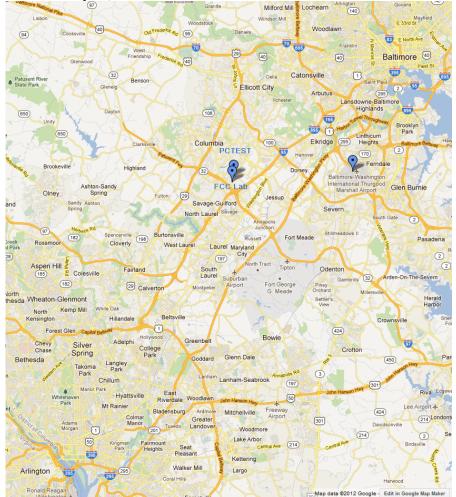


Figure 1-1. Map of the Greater Baltimore and Metropolitan Washington, D.C. area

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|--------------------------------------------|----------------|------------------------------------------------------------------------------|------|---------------------------------|--|
| Test Report S/N:                           | Test Dates:    | EUT Type:                                                                    |      | Dage 4 of 104                   |  |
| 0Y1601180117-R2.ZNF                        | 1/20-2/18/2016 | Portable Handset                                                             |      | Page 4 of 104                   |  |
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12/01/2015



## 2.0 PRODUCT INFORMATION

## 2.1 Equipment Description

The Equipment Under Test (EUT) is the **LG Portable Handset FCC ID: ZNFVS987**. The test data contained in this report pertains only to the emissions due to the EUT's 2G/3G licensed transmitters.

For PCS Band CDMA, this device employs an antenna switching mechanism that allows the EUT's uplink transmission to switch entirely from the main antenna to the diversity antenna. Both antennas cannot transmit simultaneously so dual transmission conditions were not investigated. The diversity transmit antenna transmits at a lower power level than the main antenna. Test data for the diversity antenna's EIRP are reported herein.

This EUT supports a Camera Module accessory (Model: CBG-700) that can be installed on the EUT. Additional ERP/EIRP and spurious emission measurements were performed with a Camera Module accessory installed on the EUT to ensure compliance. The worst case radiated emissions data is reported herein.

## 2.2 Device Capabilities

This device contains the following capabilities:

850/1900 CDMA/EvDO Rev0/A, 1x Advanced (BC0, BC1), 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: ZNFVS987 was tested per the guidance of ANSI/TIA-603-C-2004 and KDB 971168 v02r02. See Section 7.0 of this test report for a description of the radiated and antenna port conducted emissions tests.

## 2.4 EMI Suppression Device(s)/Modifications

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

| FCC ID: ZNFVS987                           | PCTEST         | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | 💽 LG | Reviewed by:<br>Quality Manager |  |
|--------------------------------------------|----------------|------------------------------------------------------------------------------|------|---------------------------------|--|
| Test Report S/N:                           | Test Dates:    | EUT Type:                                                                    |      | Daga E of 104                   |  |
| 0Y1601180117-R2.ZNF                        | 1/20-2/18/2016 | Portable Handset                                                             |      | Page 5 of 104                   |  |
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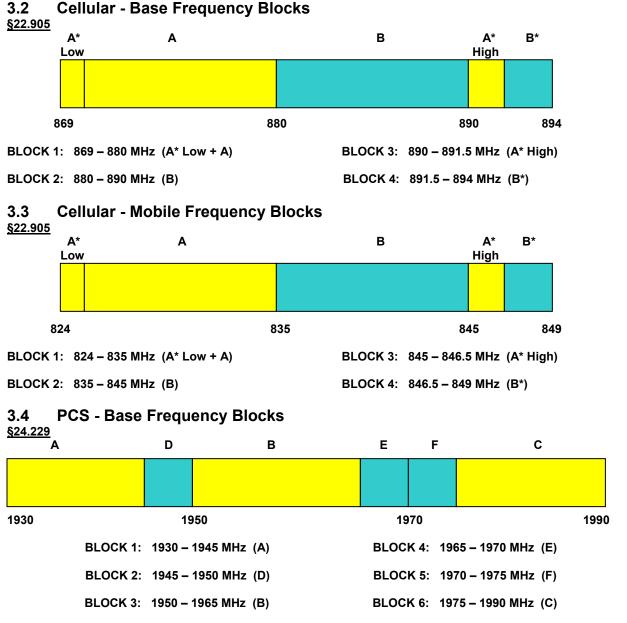


#### 3.0 **DESCRIPTION OF TESTS**

#### **Evaluation Procedure** 3.1

The measurement procedures described in the "Land Mobile FM or PM - Communications Equipment -Measurements and Performance Standards" (ANSI/TIA-603-C-2004) and "Measurement Guidance for Certification of Licensed Digital Transmitters" (KDB 971168 v02r02) were used in the measurement of the LG Portable Handset FCC ID: ZNFVS987.





## 3.2

| FCC ID: ZNFVS987                         | <u>«NPCTEST</u> | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | Reviewed by:<br>Quality Manager |  |
|------------------------------------------|-----------------|------------------------------------------------------------------------------|---------------------------------|--|
| Test Report S/N:                         | Test Dates:     | EUT Type:                                                                    | Page 6 of 104                   |  |
| 0Y1601180117-R2.ZNF                      | 1/20-2/18/2016  | Portable Handset                                                             | Page 6 01 104                   |  |
| 2016 PCTEST Engineering Laboratory, Inc. |                 |                                                                              |                                 |  |

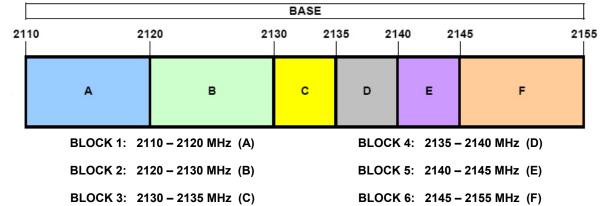


## 3.5 PCS - Mobile Frequency Blocks

| <u>§24.229</u> | Α        | D      | В            | Е    | F       | С                 |      |
|----------------|----------|--------|--------------|------|---------|-------------------|------|
|                |          |        |              |      |         |                   |      |
| 1850           |          | 18     | 70           | 189  | 90      |                   | 1910 |
|                | BLOCK 1: | 1850 — | 1865 MHz (A) | BLOC | K4: 18  | 85 – 1890 MHz (E) |      |
|                | BLOCK 2: | 1865 – | 1870 MHz (D) | BLOC | K 5: 18 | 90 – 1895 MHz (F) |      |
|                | BLOCK 3: | 1870 — | 1885 MHz (B) | BLOC | K6: 189 | 95 – 1910 MHz (C) |      |

## 3.6 AWS - Base Frequency Blocks

<u>§27.5(h)</u>



## 3.7 AWS - Mobile Frequency Blocks

<u>§27.5(h)</u>

|    | MOBILE |            |                     |            |       |           |              |      |
|----|--------|------------|---------------------|------------|-------|-----------|--------------|------|
| 17 | 10     | 1          | 720 17<br>          | '30 17<br> | 35 17 | 40 17     | 45           | 1755 |
|    |        | А          | в                   | с          | D     | E         | F            |      |
|    | B      | LOCK 1: 17 | 10 – 1720 MHz (A)   |            | BLOCK | 4: 1735 – | 1740 MHz (D) |      |
|    | В      | LOCK 2: 17 | ′20 – 1730 MHz (B)  |            | BLOCK | 5: 1740 – | 1745 MHz (E) |      |
|    | В      | LOCK 3: 17 | ′30 – 1735 MHz  (C) |            | BLOCK | 6: 1745 – | 1755 MHz (F) |      |

| FCC ID: ZNFVS987                           |                | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | Reviewed by:<br>Quality Manager |  |  |
|--------------------------------------------|----------------|------------------------------------------------------------------------------|---------------------------------|--|--|
| Test Report S/N:                           | Test Dates:    | EUT Type:                                                                    | Dego 7 of 104                   |  |  |
| 0Y1601180117-R2.ZNF                        | 1/20-2/18/2016 | Portable Handset                                                             | Page 7 of 104                   |  |  |
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#### 3.8 Radiated Measurements

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

The radiated test facilities consisted of an indoor 3 meter semi-anechoic chamber used for final measurements and exploratory measurements, when necessary. The measurement area is contained within the semi-anechoic chamber which is shielded from any ambient interference. The test site inside the chamber is a 6m x 5.2m elliptical, obstruction-free area in accordance with Clause 5, Figure 5.7 of ANSI C63.4-2009. For measurements above 1GHz absorbers are arranged on the floor between the turn table and the antenna mast in such a way so as to maximize the reduction of reflections. For measurements below 1GHz, the absorbers are removed. An ETS Lindgren Model 2188 raised turntable is used for radiated measurement. It is a continuously rotatable, remote-controlled, metallic turntable and 2 meters (6.56 ft.) in diameter. The turn table is flush with the raised floor of the chamber in order to maintain its function as a ground plane. A 78cm high PVC support structure is placed on top of the turntable. A  $\frac{3}{4}$ " (~1.9cm) sheet of high density polyethylene is used as the table top and is placed on top of the PVC supports to bring the total height of the table to 80cm.

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

Per the guidance of ANSI/TIA-603-C-2004, a half-wave dipole is then substituted in place of the EUT. For emissions above 1GHz, a horn antenna is substituted in place of the EUT. The substitute antenna is driven by a signal generator with the level of the signal generator being adjusted to obtain the same receive spectrum analyzer level previously recorded from the spurious emission from the EUT. The power of the emission is calculated using the following formula:

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

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: ZNFVS987             |                                          | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT | Reviewed by:<br>Quality Manager |
|------------------------------|------------------------------------------|-----------------------------------------------------------|---------------------------------|
| Test Report S/N:             | Test Dates:                              | EUT Type:                                                 | Dage 9 of 104                   |
| 0Y1601180117-R2.ZNF          | 1/20-2/18/2016                           | Portable Handset                                          | Page 8 of 104                   |
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## 4.0 MEASUREMENT UNCERTAINTY

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

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

| FCC ID: ZNFVS987             |                                          | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT | Reviewed by:<br>Quality Manager |
|------------------------------|------------------------------------------|-----------------------------------------------------------|---------------------------------|
| Test Report S/N:             | Test Dates:                              | EUT Type:                                                 | Dage 0 of 104                   |
| 0Y1601180117-R2.ZNF          | 1/20-2/18/2016                           | Portable Handset                                          | Page 9 of 104                   |
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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        |
|-----------------|--------------------|----------------------------------------|------------|--------------|------------|----------------------|
| -               | LTx3               | Licensed Transmitter Cable Set         | 6/12/2015  | Annual       | 6/12/2016  | LTx3                 |
| -               | RE1                | Radiated Emissions Cable Set (UHF/EHF) | 4/28/2015  | Annual       | 4/28/2016  | RE1                  |
| Agilent         | 8447D              | Broadband Amplifier                    | 6/12/2015  | Annual       | 6/12/2016  | 2443A01900           |
| Agilent         | N9020A             | MXA Signal Analyzer                    | 11/5/2015  | Annual       | 11/5/2016  | US46470561           |
| Agilent         | N9030A             | PXA Signal Analyzer (44GHz)            | 3/24/2015  | Annual       | 3/24/2016  | MY52350166           |
| Com-Power       | AL-130             | 9kHz - 30MHz Loop Antenna              | 7/30/2015  | Biennial     | 7/30/2017  | 121034               |
| Com-Power       | PAM-118A           | Pre-Amplifier                          | 4/10/2015  | Annual       | 4/10/2016  | 551042               |
| 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    | 3164-08            | Quad Ridge Horn Antenna                | 10/22/2014 | Biennial     | 10/22/2016 | 128338               |
| K & L           | 11SH10-3075/U18000 | High Pass Filter                       | 7/18/2015  | Annual       | 7/18/2016  | 11SH10-3075/U18000-2 |
| K & L           | 13SH10-1000/U1000  | N Type High Pass Filter                | 7/18/2015  | Annual       | 7/18/2016  | 13SH10-1000/U1000-2  |
| Mini-Circuits   | PWR-SENS-4RMS      | USB Power Sensor                       | 3/11/2015  | Annual       | 3/11/2016  | 11210140001          |
| Mini-Circuits   | SSG-4000HP         | Synthesized Signal Generator           |            | N/A          |            | 11208010032          |
| Mini-Circuits   | TVA-11-422         | RF Power Amp                           |            | N/A          |            | QA1303002            |
| Rohde & Schwarz | CMU200             | Base Station Simulator                 |            | N/A          |            | 107826               |
| Rohde & Schwarz | ESU26              | EMI Test Receiver (26.5GHz)            | 3/12/2015  | Annual       | 3/12/2016  | 100342               |
| Rohde & Schwarz | TS-PR18            | 1-18 GHz Pre-Amplifier                 | 3/5/2015   | Annual       | 3/5/2016   | 100071               |
| Schwarzbeck     | UHA 9105           | Dipole Antenna (400 - 1GHz) Rx         | 2/21/2014  | Biennial     | 2/21/2016  | 9105-2404            |
| Sunol           | JB5                | Bi-Log Antenna (30M - 5GHz)            | 3/28/2014  | Biennial     | 3/28/2016  | A051107              |

 Table 5-1. Test Equipment

## Note:

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

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|------------------------------|------------------------------------------|------------------------------------------------------------------------------|------|---------------------------------|
| Test Report S/N:             | Test Dates:                              | EUT Type:                                                                    |      | Dego 10 of 104                  |
| 0Y1601180117-R2.ZNF          | 1/20-2/18/2016                           | Portable Handset                                                             |      | Page 10 of 104                  |
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## 6.0 SAMPLE CALCULATIONS

## **GSM Emission Designator**

#### Emission Designator = 250KGXW

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

## **EDGE Emission Designator**

#### Emission Designator = 250KG7W

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

## **CDMA Emission Designator**

#### Emission Designator = 1M25F9W

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

## WCDMA Emission Designator

#### Emission Designator = 4M16F9W

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

## **Spurious Radiated Emission**

#### Example: Spurious emission at 3700.40 MHz

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

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| Test Report S/N:                           | Test Dates:    | EUT Type:                                                                    |      | Dego 11 of 104                  |
| 0Y1601180117-R2.ZNF                        | 1/20-2/18/2016 | Portable Handset                                                             |      | Page 11 of 104                  |
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## 7.0 TEST RESULTS

## 7.1 Summary

| Company Name:       | LG Electronics MobileComm U.S.A.           |
|---------------------|--------------------------------------------|
| FCC ID:             | ZNFVS987                                   |
| FCC Classification: | PCS Licensed Transmitter Held to Ear (PCE) |
| Mode(s):            | <u>GSM/ CDMA / WCDMA</u>                   |

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

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

#### Notes:

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

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|------------------------------|----------------|------------------------------------------------------------------------------|------|---------------------------------|
| Test Report S/N:             | Test Dates:    | EUT Type:                                                                    |      | Page 12 of 104                  |
| 0Y1601180117-R2.ZNF          | 1/20-2/18/2016 | Portable Handset                                                             |      | Page 12 01 104                  |
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# 7.2 Occupied Bandwidth §2.1049

## Test Overview

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

#### Test Procedure Used

KDB 971168 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.

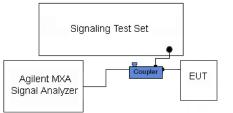


Figure 7-1. Test Instrument & Measurement Setup

## <u>Test Notes</u>

None.

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|------------------------------|------------------------------------------|------------------------------------------------------------------------------|------|---------------------------------|
| Test Report S/N:             | Test Dates:                              | EUT Type:                                                                    |      | Page 13 of 104                  |
| 0Y1601180117-R2.ZNF          | 1/20-2/18/2016                           | Portable Handset                                                             |      | Page 13 01 104                  |
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Plot 7-2. Occupied Bandwidth Plot (EDGE850 Mode - Ch. 190)

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|------------------------------------------|----------------|------------------------------------------------------------------------------|------|---------------------------------|--|
| Test Report S/N:                         | Test Dates:    | EUT Type:                                                                    |      | Dego 14 of 104                  |  |
| 0Y1601180117-R2.ZNF                      | 1/20-2/18/2016 | Portable Handset                                                             |      | Page 14 of 104                  |  |
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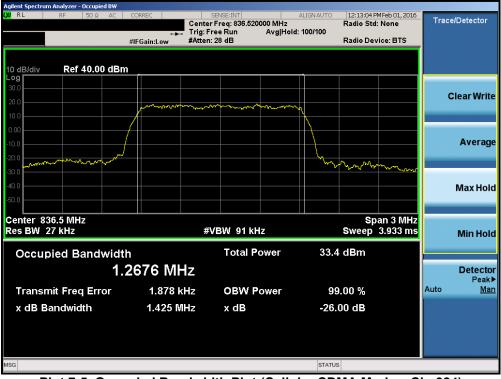




Plot 7-4. Occupied Bandwidth Plot (EDGE1900 Mode – Ch. 661)

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| Test Report S/N:             | Test Dates:    | EUT Type:                                                                    |      | Dogo 15 of 104                  |
| 0Y1601180117-R2.ZNF          | 1/20-2/18/2016 | Portable Handset                                                             |      | Page 15 of 104                  |
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Plot 7-5. Occupied Bandwidth Plot (Cellular CDMA Mode – Ch. 384)

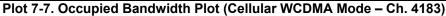


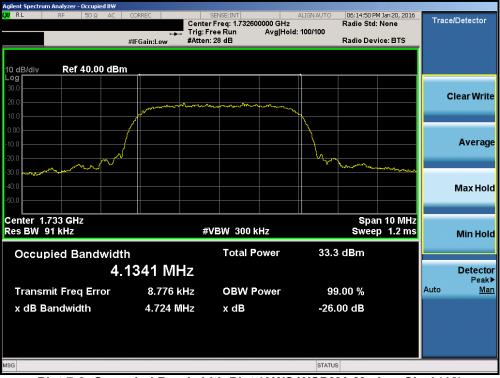
Plot 7-6. Occupied Bandwidth Plot (PCS CDMA Mode – Ch. 600)

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|------------------------------|-----------------|------------------------------------------------------------------------------|------|---------------------------------|--|--|--|--|--|--|
| Test Report S/N:             | Test Dates:     | EUT Type:                                                                    |      | Dega 16 of 104                  |  |  |  |  |  |  |
| 0Y1601180117-R2.ZNF          | 1/20-2/18/2016  | Portable Handset                                                             |      | Page 16 of 104                  |  |  |  |  |  |  |
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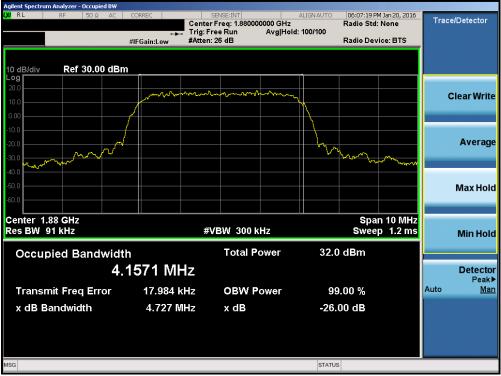




Plot 7-8. Occupied Bandwidth Plot (AWS WCDMA Mode – Ch. 1412)

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|------------------------------|----------------|------------------------------------------------------------------------------|------|---------------------------------|
| Test Report S/N:             | Test Dates:    | EUT Type:                                                                    |      | Dego 17 of 104                  |
| 0Y1601180117-R2.ZNF          | 1/20-2/18/2016 | Portable Handset                                                             |      | Page 17 of 104                  |
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Plot 7-9. Occupied Bandwidth Plot (PCS WCDMA Mode - Ch. 9400)

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| Test Report S/N:             | Test Dates:    | EUT Type:                                                                    |      | Dega 19 of 104                  |
| 0Y1601180117-R2.ZNF          | 1/20-2/18/2016 | Portable Handset                                                             |      | Page 18 of 104                  |
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## 7.3 Spurious and Harmonic Emissions at Antenna Terminal §2.1051 §22.917(a) §24.238(a) §27.53(h)

#### Test Overview

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

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

#### Test Procedure Used

KDB 971168 v02r02 – Section 6.0

#### Test Settings

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

## Test Setup

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

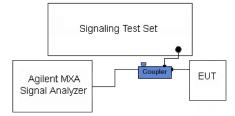


Figure 7-2. Test Instrument & Measurement Setup

#### Test Notes

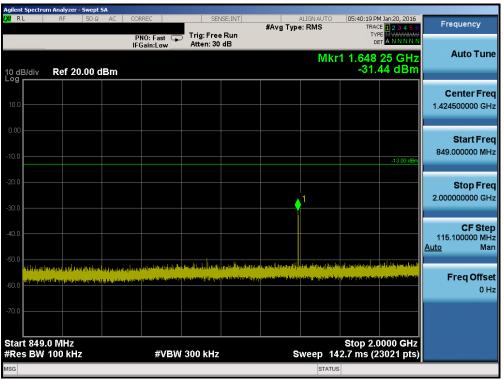
Compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater for Part 22 and 1 MHz or greater for Part 24, Part 27. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth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

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| Test Report S/N:             | Test Dates:    | EUT Type:                                                                    |      | Dega 10 of 104                  |
| 0Y1601180117-R2.ZNF          | 1/20-2/18/2016 | Portable Handset                                                             |      | Page 19 of 104                  |
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| Agilent<br>LXI R     |                                 | n Analyzer - Swe                                                                |                                                                               |                                                                  |                                                             |                          |                                           |                                                                        |                                             |                                                                   |                                                    |
|----------------------|---------------------------------|---------------------------------------------------------------------------------|-------------------------------------------------------------------------------|------------------------------------------------------------------|-------------------------------------------------------------|--------------------------|-------------------------------------------|------------------------------------------------------------------------|---------------------------------------------|-------------------------------------------------------------------|----------------------------------------------------|
| L <mark>XO</mark> RI |                                 | RF 50                                                                           | Ω AC                                                                          | CORREC                                                           |                                                             | ISE:INT                  | #Avg Typ                                  | ALIGNAUTO<br>e: RMS                                                    | TRAC                                        | 4 Jan 20, 2016<br>E <mark>1 2 3 4 5 6</mark>                      | Frequency                                          |
|                      |                                 |                                                                                 |                                                                               | PNO: Fast 🖵<br>IFGain:Low                                        | Trig: Free<br>Atten: 30                                     |                          |                                           | MI                                                                     | DE<br>k <b>r1 822.</b>                      |                                                                   | Auto Tune                                          |
| 10 dE<br>Log         | 3/div                           | Ref 20.00                                                                       | dBm                                                                           |                                                                  |                                                             |                          |                                           |                                                                        | -43.                                        | 02 dBm                                                            |                                                    |
| 10.0                 |                                 |                                                                                 |                                                                               |                                                                  |                                                             |                          |                                           |                                                                        |                                             |                                                                   | Center Freq<br>426.500000 MHz                      |
| 0.00<br>-10.0        |                                 |                                                                                 |                                                                               |                                                                  |                                                             |                          |                                           |                                                                        |                                             | -13.00 dBm                                                        | Start Freq<br>30.000000 MHz                        |
| -20.0<br>-30.0       |                                 |                                                                                 |                                                                               |                                                                  |                                                             |                          |                                           |                                                                        |                                             |                                                                   | Stop Freq<br>823.000000 MHz                        |
| -40.0<br>-50.0       |                                 |                                                                                 |                                                                               |                                                                  |                                                             |                          |                                           |                                                                        |                                             | 1                                                                 | <b>CF Step</b><br>79.300000 MHz<br><u>Auto</u> Man |
| -60.0                | (1991) (genze<br>szaszáki keste | ۲۹۱۹ (۲۹۱۹ (۲۹۱۹ میرید) <mark>ور امی</mark> ر<br>(۱۹۹۹ هوری ور اور این ماه مقطر | n <mark>a konstruktion o</mark> ksio<br>Kina aktiv <sup>in kandan oksio</sup> | 4) og Uporgeren og gan hans.<br>Ginde som gefinder av andere for | gaar fan sy alf jit in taalay<br>geste kelegien staffen geb | adalar atar<br>Manangana | ng mangpakkapilinga<br>an antikakka akang | n ddalaw y ywy america a tygor<br>Y galego y dalara a tygor a dalara a | n parting an ang dal<br>Mananaka ka pitanak | <mark>versika Del bask pri</mark> tten<br>Morela Artika bishkoler | Freq Offset<br>0 Hz                                |
| -70.0                |                                 |                                                                                 |                                                                               |                                                                  |                                                             |                          |                                           |                                                                        |                                             |                                                                   |                                                    |
|                      | t 30.0                          | MHz<br>100 kHz                                                                  |                                                                               | #\/D1A                                                           | 300 kHz                                                     |                          | _                                         | ween 09                                                                | Stop 8                                      | 23.0 MHz<br>5861 pts)                                             |                                                    |
| MSG                  | 5 8 9 9                         |                                                                                 |                                                                               | #VDV                                                             | 500 KHZ                                                     |                          |                                           | status                                                                 |                                             | 580 F pts)                                                        |                                                    |
| MSG                  |                                 | 1 - 4 - 7 - 44                                                                  |                                                                               | -1414                                                            |                                                             |                          |                                           |                                                                        |                                             |                                                                   | 400                                                |

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



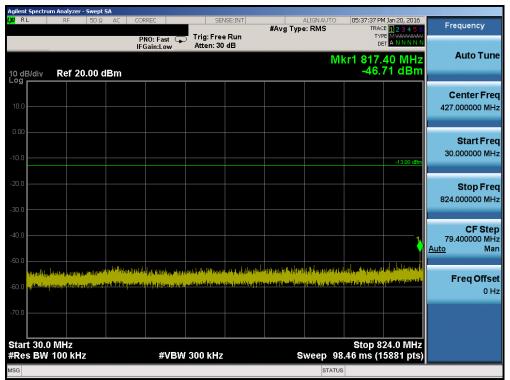
Plot 7-11. Conducted Spurious Plot (Cellular GSM Mode – Ch. 128)

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|------------------------------|----------------|------------------------------------------------------------------------------|------|---------------------------------|
| Test Report S/N:             | Test Dates:    | EUT Type:                                                                    |      | Dage 20 of 104                  |
| 0Y1601180117-R2.ZNF          | 1/20-2/18/2016 | Portable Handset                                                             |      | Page 20 of 104                  |
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|                      |              |          | yzer - Swept :      |      |                       |                                                                                                                  |                        |                                                                                                                |                    |                                 |                                                                                                                |              |      |
|----------------------|--------------|----------|---------------------|------|-----------------------|------------------------------------------------------------------------------------------------------------------|------------------------|----------------------------------------------------------------------------------------------------------------|--------------------|---------------------------------|----------------------------------------------------------------------------------------------------------------|--------------|------|
| l <mark>xi</mark> Rl | -            | RF       | - 50 Ω              | AC ( | ORREC                 | SE                                                                                                               | NSE:INT                | #Avg Typ                                                                                                       | ALIGNAUTO          |                                 | 4 Jan 20, 2016<br>E <mark>1 2 3 4 5 6</mark>                                                                   | Frequency    | ,    |
|                      |              |          |                     |      | PNO: Fast 🕞           | Trig: Fre                                                                                                        |                        | and give                                                                                                       | 0.14110            | TY                              |                                                                                                                |              |      |
|                      |              |          |                     |      | IFGain:Low            | Atten: 20                                                                                                        | dB                     |                                                                                                                |                    |                                 |                                                                                                                | Auto T       | une  |
|                      |              |          |                     |      |                       |                                                                                                                  |                        |                                                                                                                | IVI                | (r1 2.47)                       | 2 5 GHz<br>08 dBm                                                                                              | Auton        | unc  |
| 10 dE<br>Log         | 3/div        | Re       | f 10.00 d           | IBm  |                       |                                                                                                                  |                        |                                                                                                                |                    | -20.                            |                                                                                                                |              |      |
| Ĩ                    |              |          |                     |      |                       |                                                                                                                  |                        |                                                                                                                |                    |                                 |                                                                                                                | Center F     | rea  |
| 0.00                 |              |          |                     |      |                       |                                                                                                                  |                        |                                                                                                                |                    |                                 |                                                                                                                | 6.000000000  |      |
|                      |              |          |                     |      |                       |                                                                                                                  |                        |                                                                                                                |                    |                                 |                                                                                                                |              |      |
| -10.0                |              |          |                     |      |                       |                                                                                                                  |                        |                                                                                                                |                    |                                 | -13.00 dBm                                                                                                     |              |      |
|                      |              | 1        |                     |      |                       |                                                                                                                  |                        |                                                                                                                |                    |                                 | -10.00 0.011                                                                                                   | Start F      |      |
| -20.0                | <b></b>      | <u> </u> |                     |      |                       |                                                                                                                  |                        |                                                                                                                |                    |                                 |                                                                                                                | 2.00000000   | GHz  |
|                      |              |          |                     |      |                       |                                                                                                                  |                        |                                                                                                                |                    |                                 |                                                                                                                |              |      |
| -30.0                |              |          |                     |      |                       |                                                                                                                  |                        |                                                                                                                |                    |                                 |                                                                                                                | Stop F       | rea  |
|                      |              |          |                     |      |                       |                                                                                                                  |                        |                                                                                                                |                    |                                 |                                                                                                                | 10.000000000 |      |
| -40.0                |              |          |                     |      |                       |                                                                                                                  |                        |                                                                                                                |                    |                                 |                                                                                                                |              |      |
|                      |              |          |                     |      |                       |                                                                                                                  |                        |                                                                                                                |                    |                                 |                                                                                                                | CF S         |      |
| -50.0                | pholio San I | Р, ЧЦ    | ARC IN STREET       |      | المحالة الترجيعا فلله | and the second states of the | and the development of | upped to the second | والداميدي كالالساب | - to and the state of the state | alle a segulter t                                                                                              | 800.000000   |      |
|                      | ألاما فسليدو | الأألد   | ت بلغ أفاتأ فاسترعك | -    | and the second state  | and the second second second                                                                                     | s an Craite (Colorina) | م رود المعرور (1965) و .<br>ا                                                                                  | وياليطني ومعادات   | a sharifilitin to see           | a de la constantia de la constante de la const |              | Man  |
| -60.0                |              |          |                     |      |                       |                                                                                                                  |                        |                                                                                                                |                    |                                 |                                                                                                                |              |      |
|                      |              |          |                     |      |                       |                                                                                                                  |                        |                                                                                                                |                    |                                 |                                                                                                                | Freq Off     | fset |
| -70.0                |              |          |                     |      |                       |                                                                                                                  |                        |                                                                                                                |                    |                                 |                                                                                                                |              | 0 Hz |
|                      |              |          |                     |      |                       |                                                                                                                  |                        |                                                                                                                |                    |                                 |                                                                                                                |              |      |
| -80.0                |              |          |                     |      |                       |                                                                                                                  |                        |                                                                                                                |                    |                                 |                                                                                                                |              |      |
|                      |              |          |                     |      |                       |                                                                                                                  |                        |                                                                                                                |                    |                                 |                                                                                                                |              |      |
| Star                 | t 2.00       | 0 GI     | z                   |      |                       |                                                                                                                  |                        |                                                                                                                |                    | Stop 10                         | .000 GHz                                                                                                       |              |      |
|                      | s BW         |          |                     |      | #VBW                  | / 3.0 MHz                                                                                                        |                        | s                                                                                                              | weep 13            | 1.87 ms (1                      | 6001 pts)                                                                                                      |              |      |
| MSG                  |              |          |                     |      |                       |                                                                                                                  |                        |                                                                                                                | STATUS             |                                 |                                                                                                                |              |      |
|                      | _            | -        |                     |      |                       |                                                                                                                  |                        |                                                                                                                |                    |                                 |                                                                                                                |              | -    |





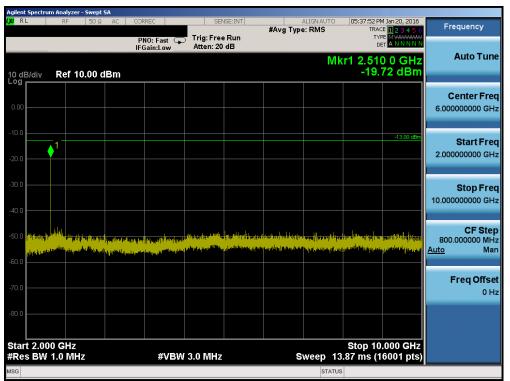
Plot 7-13. Conducted Spurious Plot (Cellular GSM Mode – Ch. 190)

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|------------------------------|----------------|------------------------------------------------------------------------------|------|---------------------------------|
| Test Report S/N:             | Test Dates:    | EUT Type:                                                                    |      | Page 21 of 104                  |
| 0Y1601180117-R2.ZNF          | 1/20-2/18/2016 | Portable Handset                                                             |      | Page 21 01 104                  |
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|                      | m Analyzer - Swept 9                                        |        |                        |                         |         |           |                       |                 |                                               |                                              |
|----------------------|-------------------------------------------------------------|--------|------------------------|-------------------------|---------|-----------|-----------------------|-----------------|-----------------------------------------------|----------------------------------------------|
| L <mark>XI</mark> RL | RF 50 Ω                                                     | AC COF | RREC                   | SEM                     | ISE:INT | #Avg Type | ALIGN AUTO            |                 | M Jan 20, 2016<br>CE <mark>1 2 3 4 5 6</mark> | Frequency                                    |
|                      |                                                             |        | NO: Fast 🖵<br>Gain:Low | Trig: Free<br>Atten: 30 |         | ming typ. |                       | TY              |                                               |                                              |
| 10 dB/div            | Ref 20.00 d                                                 | Bm     |                        |                         |         |           | Mkr                   | 1 1.673<br>-32. | 30 GHz<br>36 dBm                              | Auto Tune                                    |
| 10.0                 |                                                             |        |                        |                         |         |           |                       |                 |                                               | Center Freq<br>1.424500000 GHz               |
| -10.0                |                                                             |        |                        |                         |         |           |                       |                 | -13.00 dBm                                    | Start Freq<br>849.000000 MHz                 |
| -20.0                |                                                             |        |                        |                         |         |           | <b>♦</b> <sup>1</sup> |                 |                                               | <b>Stop Freq</b><br>2.000000000 GHz          |
| -40.0                |                                                             |        |                        |                         |         |           |                       |                 |                                               | CF Step<br>115.100000 MHz<br><u>Auto</u> Man |
| (all treaty)         | n Mar <sup>t</sup> le ( ( ( ( ( ( ( ( ( ( ( ( ( ( ( ( ( ( ( |        |                        |                         |         |           |                       |                 |                                               | Freq Offset<br>0 Hz                          |
| -70.0 Start 849.     | 0 MHz                                                       |        |                        |                         |         |           |                       | Stop 2.0        | 0000 GHz                                      |                                              |
| #Res BW              | 100 kHz                                                     |        | #VBW                   | 300 kHz                 |         | S         |                       | 2.7 ms (2       | 3021 pts)                                     |                                              |
| MSG                  |                                                             |        |                        |                         |         |           | STATUS                |                 |                                               |                                              |





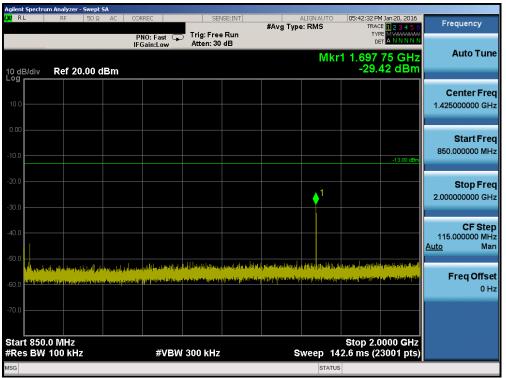
Plot 7-15. Conducted Spurious Plot (Cellular GSM Mode – Ch. 190)

| FCC ID: ZNFVS987             | PCTEST         | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | 💽 LG | Reviewed by:<br>Quality Manager |
|------------------------------|----------------|------------------------------------------------------------------------------|------|---------------------------------|
| Test Report S/N:             | Test Dates:    | EUT Type:                                                                    |      | Page 22 of 104                  |
| 0Y1601180117-R2.ZNF          | 1/20-2/18/2016 | Portable Handset                                                             |      | Page 22 01 104                  |
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|                |               | n Analyzer ·                                                 |                                     |                           |                                                        |                                                                           |                    |                                                    |                                                                                                                                                             |                                                                          |                                              |                                             |
|----------------|---------------|--------------------------------------------------------------|-------------------------------------|---------------------------|--------------------------------------------------------|---------------------------------------------------------------------------|--------------------|----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|----------------------------------------------|---------------------------------------------|
| l <b>XI</b> R  | L             | RF                                                           | 50 Ω                                | AC O                      | ORREC                                                  | SE                                                                        | NSE:INT            |                                                    | ALIGNAUTO<br>Type: RMS                                                                                                                                      |                                                                          | 4 Jan 20, 2016<br>E <mark>1 2 3 4 5 6</mark> | Frequency                                   |
|                |               |                                                              |                                     |                           | PNO: Fast ⊂<br>FGain:Low                               | Trig: Fre<br>Atten: 30                                                    |                    | #Avg                                               | туре: км5                                                                                                                                                   | TYP                                                                      |                                              |                                             |
| 10 dl<br>Log   | B/div         | Ref 20                                                       | 0.00 d                              | Bm                        |                                                        |                                                                           |                    |                                                    | M                                                                                                                                                           | kr1 808.<br>-49.0                                                        | 65 MHz<br>69 dBm                             | Auto Tune                                   |
| 10.0           |               |                                                              |                                     |                           |                                                        |                                                                           |                    |                                                    |                                                                                                                                                             |                                                                          |                                              | Center Freq<br>427.000000 MHz               |
| 0.00<br>-10.0  |               |                                                              |                                     |                           |                                                        |                                                                           |                    |                                                    |                                                                                                                                                             |                                                                          | -13.00 dBm                                   | Start Freq<br>30.000000 MHz                 |
| -20.0<br>-30.0 |               |                                                              |                                     |                           |                                                        |                                                                           |                    |                                                    |                                                                                                                                                             |                                                                          |                                              | Stop Freq<br>824.000000 MHz                 |
| -40.0<br>-50.0 |               |                                                              |                                     |                           |                                                        |                                                                           |                    |                                                    |                                                                                                                                                             |                                                                          | 4                                            | CF Step<br>79.400000 MHz<br><u>Auto</u> Man |
|                | 19-10 percent | randes der ander ander<br>Renders en gesetet <sup>kand</sup> | nggy (ng lipit) in<br>a nama dinika | a filosofia a secondadore | h Balanta ya shekiri ya ku<br>Malanta ya shekiri ya ku | <mark>la andra sa sa angana sa sa</mark> | aland Jonesian (Sa | lipus sessi (DP) <sub>pp</sub><br>nong sekalapinak | telletigen) et e <mark>n post (heren bitten).</mark><br>Et el esta post des post de post de post de la const<br>Et el esta post de post de post de la const | and free program the political star<br>in we glow and have of the second | n jeret (nikeri inda)<br>derekseden indaal   | <b>Freq Offset</b><br>0 Hz                  |
| -70.0<br>Star  | t 30.0        | MHz                                                          |                                     |                           |                                                        |                                                                           |                    |                                                    |                                                                                                                                                             | Stop 8                                                                   | 24.0 MHz                                     |                                             |
| #Re            |               | 100 kHz                                                      | z                                   |                           | #VB                                                    | N 300 kHz                                                                 | 4                  |                                                    | Sweep 98                                                                                                                                                    | .46 ms (1                                                                |                                              |                                             |
| MSG            |               |                                                              |                                     |                           |                                                        |                                                                           |                    |                                                    | STATUS                                                                                                                                                      | 6                                                                        |                                              |                                             |





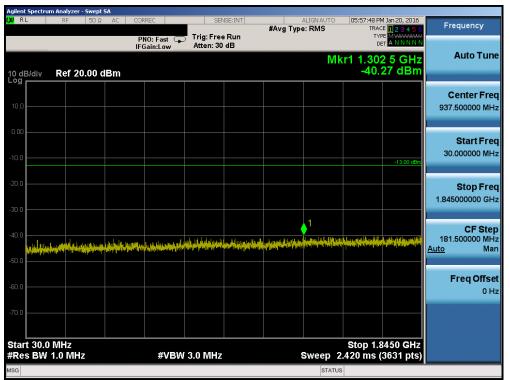
Plot 7-17. Conducted Spurious Plot (Cellular GSM Mode – Ch. 251)

| FCC ID: ZNFVS987             |                | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | 💽 LG | Reviewed by:<br>Quality Manager |
|------------------------------|----------------|------------------------------------------------------------------------------|------|---------------------------------|
| Test Report S/N:             | Test Dates:    | EUT Type:                                                                    |      | Page 23 of 104                  |
| 0Y1601180117-R2.ZNF          | 1/20-2/18/2016 | Portable Handset                                                             |      | Page 23 01 104                  |
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|                | ectrum Analyzer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                        |                                                       |                             |                        |                                                                                                                                                      |                                      |                                                     |                                       |                                                          |                                   |                     |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|-------------------------------------------------------|-----------------------------|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|-----------------------------------------------------|---------------------------------------|----------------------------------------------------------|-----------------------------------|---------------------|
| IXI RL         | RF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 50 Ω                                   | AC COF                                                | RREC                        | SEI                    | VSE:INT                                                                                                                                              | #Avg Typ                             | ALIGNAUTO                                           |                                       | 4 Jan 20, 2016<br>E <mark>1 2 3 4 5 6</mark>             | Frequency                         | /                   |
|                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                        |                                                       | NO: Fast 🔾<br>Gain:Low      | Trig: Fre<br>Atten: 20 |                                                                                                                                                      | worg ryp                             |                                                     | TYF                                   |                                                          |                                   |                     |
| 10 dB/d<br>Log | liv Ref 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 0.00 dl                                | Зm                                                    |                             |                        |                                                                                                                                                      |                                      | Mk                                                  | (r1 2.54)<br>-17.                     | 6 5 GHz<br>76 dBm                                        | Auto T                            | une                 |
| 0.00           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                        |                                                       |                             |                        |                                                                                                                                                      |                                      |                                                     |                                       |                                                          | Center F<br>6.000000000           | -                   |
| -10.0          | ¢ <sup>1</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                        |                                                       |                             |                        |                                                                                                                                                      |                                      |                                                     |                                       | -13.00 dBm                                               | Start F<br>2.000000000            |                     |
| -30.0          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                        |                                                       |                             |                        |                                                                                                                                                      |                                      |                                                     |                                       |                                                          | Stop F<br>10.000000000            |                     |
| -50.0 TT       | The state of the s | n n n la na a na a na a na a na a na a | n fall fallen som | lesterny to the first state |                        | a dia dia kaominina dia kaominina<br>Jeografia dia kaominina dia | liteliteren felgete<br>Gerleteren er | n ang mang mang ang ang ang ang ang ang ang ang ang | r nord a <sup>la</sup> ndra seriela a | uleya <sup>lije</sup> (i t <sup>e</sup> yî ne layey<br>( | CF S<br>800.000000<br><u>Auto</u> |                     |
| -60.0          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                        |                                                       |                             |                        |                                                                                                                                                      |                                      |                                                     |                                       |                                                          | Freq Of                           | <b>fset</b><br>0 Hz |
| -80.0          | 2.000 GHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                        |                                                       |                             |                        |                                                                                                                                                      |                                      |                                                     | Stop 40                               |                                                          |                                   |                     |
|                | 2.000 GHZ<br>BW 1.0 MH                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | z                                      |                                                       | #VBV                        | / 3.0 MHz              |                                                                                                                                                      | s                                    | Sweep 13                                            | 5.0p 10<br>8.87 ms (1                 | .000 GHz<br>6001 pts)                                    |                                   |                     |
| MSG            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                        |                                                       |                             |                        |                                                                                                                                                      |                                      | STATUS                                              | 6                                     |                                                          |                                   |                     |





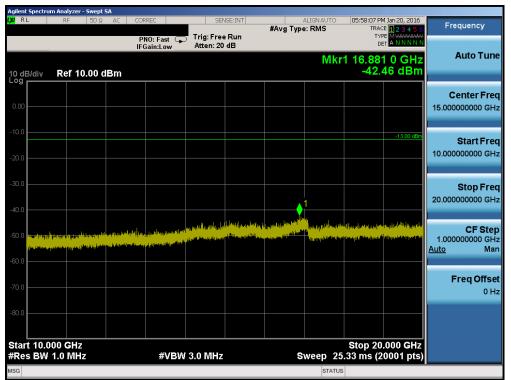
Plot 7-19. Conducted Spurious Plot (PCS GSM Mode – Ch. 512)

| FCC ID: ZNFVS987             | PCTEST         | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | 💽 LG | Reviewed by:<br>Quality Manager |
|------------------------------|----------------|------------------------------------------------------------------------------|------|---------------------------------|
| Test Report S/N:             | Test Dates:    | EUT Type:                                                                    |      | Daga 24 of 104                  |
| 0Y1601180117-R2.ZNF          | 1/20-2/18/2016 | Portable Handset                                                             |      | Page 24 of 104                  |
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| Agilent Spectru<br><mark>X/</mark> R L | m Analyzer - Swe                                         |                                        | CORDEC                                  | 051                     | 05 11 17                          |                            |                       | 05 53 54 0                                                                 |                                                                                                                  |                     |
|----------------------------------------|----------------------------------------------------------|----------------------------------------|-----------------------------------------|-------------------------|-----------------------------------|----------------------------|-----------------------|----------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|---------------------|
| AU RL                                  | RF 50                                                    | Ω AC                                   | CORREC                                  |                         | SE:INT                            | #Avg Typ                   | ALIGNAUTO<br>e: RMS   | TRAC                                                                       | M Jan 20, 2016<br>DE <mark>1 2 3 4 5 6</mark>                                                                    | Frequency           |
|                                        |                                                          |                                        | PNO: Fast 🕞<br>IFGain:Low               | Trig: Free<br>Atten: 30 |                                   |                            |                       |                                                                            |                                                                                                                  |                     |
|                                        |                                                          |                                        |                                         |                         |                                   |                            | M                     | (r1 7.47                                                                   | 8 5 GHz                                                                                                          | Auto Tune           |
| 10 dB/div<br>Log                       | Ref 20.00                                                | ) dBm                                  |                                         |                         |                                   |                            |                       | -37.                                                                       | 80 dBm                                                                                                           |                     |
|                                        |                                                          |                                        |                                         |                         |                                   |                            |                       |                                                                            |                                                                                                                  | Center Freq         |
| 10.0                                   |                                                          |                                        |                                         |                         |                                   |                            |                       |                                                                            |                                                                                                                  | 5.955000000 GHz     |
|                                        |                                                          |                                        |                                         |                         |                                   |                            |                       |                                                                            |                                                                                                                  |                     |
| 0.00                                   |                                                          |                                        |                                         |                         |                                   |                            |                       |                                                                            |                                                                                                                  | Start Freq          |
|                                        |                                                          |                                        |                                         |                         |                                   |                            |                       |                                                                            |                                                                                                                  | 1.910000000 GHz     |
| -10.0                                  |                                                          |                                        |                                         |                         |                                   |                            |                       |                                                                            | -13.00 dBm                                                                                                       |                     |
| -20.0                                  |                                                          |                                        |                                         |                         |                                   |                            |                       |                                                                            |                                                                                                                  | Stop Freq           |
|                                        |                                                          |                                        |                                         |                         |                                   |                            |                       |                                                                            |                                                                                                                  | 10.000000000 GHz    |
| -30.0                                  |                                                          |                                        |                                         |                         |                                   |                            | 1                     |                                                                            |                                                                                                                  |                     |
|                                        |                                                          |                                        |                                         |                         |                                   | •                          |                       |                                                                            |                                                                                                                  | CF Step             |
| -40.0 American                         | a tan a sangaran a sa s | a van <u>Bahilli</u> n an <sup>D</sup> | a an a an | Character Street St.    | المحمد المعرفة.<br>المحمد المعرفة | a station and a state of a | A LANSING MALES       | مر میں میں اور اور اور میں اور میں اور | r in the second secon | 809.000000 MHz      |
| -50.0 Watershit                        | gaan. Alangah pilati                                     | alling the condition with a            | Second protocol and the large           |                         | entre colla                       | and a free field.          | and the second second | d for a line of the                                                        |                                                                                                                  | <u>Auto</u> Man     |
|                                        |                                                          |                                        |                                         |                         |                                   |                            |                       |                                                                            |                                                                                                                  | Ener Offerst        |
| -60.0                                  |                                                          |                                        |                                         |                         |                                   |                            |                       |                                                                            |                                                                                                                  | Freq Offset<br>0 Hz |
|                                        |                                                          |                                        |                                         |                         |                                   |                            |                       |                                                                            |                                                                                                                  |                     |
| -70.0                                  |                                                          |                                        |                                         |                         |                                   |                            |                       |                                                                            |                                                                                                                  |                     |
|                                        |                                                          |                                        |                                         |                         |                                   |                            |                       |                                                                            |                                                                                                                  |                     |
| Start 1.91                             |                                                          |                                        |                                         |                         |                                   |                            |                       |                                                                            | .000 GHz                                                                                                         |                     |
| ≇Res BW                                | 1.0 ⊮IHz                                                 |                                        | #VBW                                    | / 3.0 MHz               |                                   | s                          |                       |                                                                            | 6181 pts)                                                                                                        |                     |
| ISG                                    |                                                          |                                        |                                         |                         |                                   |                            | STATUS                | 3                                                                          |                                                                                                                  |                     |





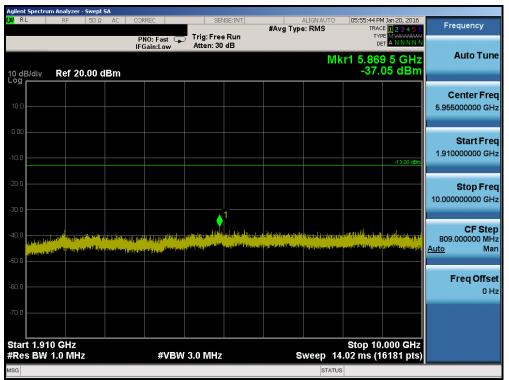
Plot 7-21. Conducted Spurious Plot (PCS GSM Mode - Ch. 512)

| FCC ID: ZNFVS987             |                | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | 🕑 LG | Reviewed by:<br>Quality Manager |
|------------------------------|----------------|------------------------------------------------------------------------------|------|---------------------------------|
| Test Report S/N:             | Test Dates:    | EUT Type:                                                                    |      | Page 25 of 104                  |
| 0Y1601180117-R2.ZNF          | 1/20-2/18/2016 | Portable Handset                                                             |      | Page 25 01 104                  |
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|                       | m Analyzer - Swept |                    |                                                                                                                 |                         |                     |                  |                                    |                      |                                              |                                                     |
|-----------------------|--------------------|--------------------|-----------------------------------------------------------------------------------------------------------------|-------------------------|---------------------|------------------|------------------------------------|----------------------|----------------------------------------------|-----------------------------------------------------|
| LXI RL                | RF 50 Ω            | AC COI             | RREC                                                                                                            | SEN                     | ISE:INT             | #Avg Typ         | ALIGNAUTO                          |                      | 4 Jan 20, 2016<br>E <mark>1 2 3 4 5 6</mark> | Frequency                                           |
|                       |                    |                    | NO: Fast 🔾<br>Gain:Low                                                                                          | Trig: Free<br>Atten: 30 |                     |                  |                                    | TYF<br>DE            |                                              | Auto Turo                                           |
| 10 dB/div             | Ref 20.00 c        | IBm                |                                                                                                                 |                         |                     |                  | Mł                                 | (r1 1.64)<br>-39.    | 7 5 GHz<br>72 dBm                            | Auto Tune                                           |
| 10.0                  |                    |                    |                                                                                                                 |                         |                     |                  |                                    |                      |                                              | Center Freq<br>940.000000 MHz                       |
| -10.0                 |                    |                    |                                                                                                                 |                         |                     |                  |                                    |                      | -13.00 dBm                                   | Start Freq<br>30.000000 MHz                         |
| -20.0                 |                    |                    |                                                                                                                 |                         |                     |                  |                                    |                      |                                              | <b>Stop Freq</b><br>1.85000000 GHz                  |
| -40.0                 |                    | alahan dikana dika | a kanala katala kata | diday                   | Marijski skilitisty | uluundu din kani | a fan ski jar ji ji ji ji ji ka fa |                      | 1<br>An Ala Malanda                          | <b>CF Step</b><br>182.000000 MHz<br><u>Auto</u> Man |
| -60.0                 |                    |                    |                                                                                                                 |                         |                     |                  |                                    |                      |                                              | Freq Offset<br>0 Hz                                 |
| -70.0                 |                    |                    |                                                                                                                 |                         |                     |                  |                                    |                      |                                              |                                                     |
| Start 30.0<br>#Res BW |                    |                    | #VBW                                                                                                            | 3.0 MHz                 |                     |                  | Sweep 2                            | Stop 1.8<br>427 ms ( | 3500 GHz<br>3641 pts)                        |                                                     |
| MSG                   |                    |                    |                                                                                                                 |                         |                     |                  | STATUS                             | -                    |                                              |                                                     |
|                       |                    |                    |                                                                                                                 |                         |                     |                  |                                    |                      |                                              |                                                     |





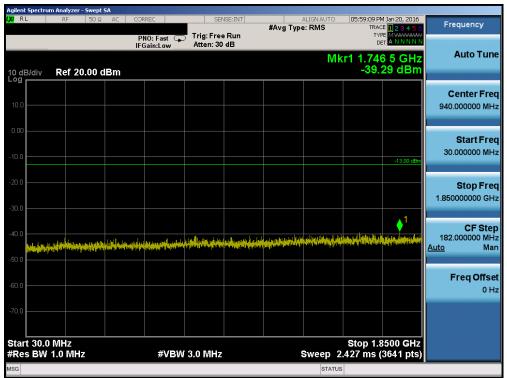
Plot 7-23. Conducted Spurious Plot (PCS GSM Mode – Ch. 661)

| FCC ID: ZNFVS987             | PCTEST         | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | 💽 LG | Reviewed by:<br>Quality Manager |
|------------------------------|----------------|------------------------------------------------------------------------------|------|---------------------------------|
| Test Report S/N:             | Test Dates:    | EUT Type:                                                                    |      | Page 26 of 104                  |
| 0Y1601180117-R2.ZNF          | 1/20-2/18/2016 | Portable Handset                                                             |      | Page 20 01 104                  |
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|                    | ım Analyzer - Swept Sı                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                 |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |           |                                                               |                                                                                                                 |                            |
|--------------------|----------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|---------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|----------------------------|
| LXI RL             | RF 50 Ω                                                                                                        | AC CORREC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                 | NSE:INT                  | #Avg Type                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | ALIGNAUTO | TRAC                                                          | 4 Jan 20, 2016<br>E <b>1 2 3 4 5 6</b>                                                                          | Frequency                  |
|                    |                                                                                                                | PNO: Fast<br>IFGain:Lov                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | t 🕞 Trig: Free<br>Atten: 20                                                                                     |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |           | TYP                                                           |                                                                                                                 |                            |
|                    |                                                                                                                | IF Galli.200                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                 |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Mkr       | 1 16 000                                                      | 5 GHz                                                                                                           | Auto Tune                  |
| 10 dB/div          | Ref 10.00 dl                                                                                                   | Rm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                 |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | IVITAI    | -42.0                                                         | 61 dBm                                                                                                          |                            |
|                    | Kei 10.00 di                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                 |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |           |                                                               |                                                                                                                 |                            |
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| 0.00               |                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                 |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |           |                                                               |                                                                                                                 | 15.00000000 GHz            |
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|                    |                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                 |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |           |                                                               |                                                                                                                 | 10.000000000 GHz           |
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| -50.0              |                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                 |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |           |                                                               |                                                                                                                 | Stop Freq                  |
| -40.0              |                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                 |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 1         |                                                               |                                                                                                                 | 20.00000000 GHz            |
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|                    | والمتلاف والمتلك المتعاد والتكري                                                                               | and a state of the second s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | A STREET                                                                                                        |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |           |                                                               |                                                                                                                 | 1.00000000 GHz<br>Auto Man |
| -60.0              |                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                 |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |           |                                                               |                                                                                                                 |                            |
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| -70.0              |                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                 |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |           |                                                               |                                                                                                                 | 0 Hz                       |
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| -80.0              |                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                 |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |           |                                                               |                                                                                                                 |                            |
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| Start 10.0         | 000 GHz                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                 |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |           | Stop 20                                                       | .000 GHz                                                                                                        |                            |
| #Res BW            |                                                                                                                | #\                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | /BW 3.0 MHz                                                                                                     |                          | S                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | weep 25   | .33 ms (2                                                     | 0001 pts)                                                                                                       |                            |
| MSG                |                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                 |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | STATUS    |                                                               |                                                                                                                 |                            |
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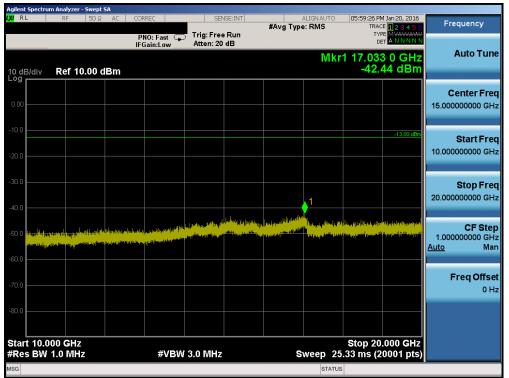
Plot 7-25. Conducted Spurious Plot (PCS GSM Mode - Ch. 810)

| FCC ID: ZNFVS987             | PCTEST         | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | 💽 LG | Reviewed by:<br>Quality Manager |
|------------------------------|----------------|------------------------------------------------------------------------------|------|---------------------------------|
| Test Report S/N:             | Test Dates:    | EUT Type:                                                                    |      | Dega 27 of 104                  |
| 0Y1601180117-R2.ZNF          | 1/20-2/18/2016 | Portable Handset                                                             |      | Page 27 of 104                  |
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|                          | ım Analyzer - Swep                                                                                              |                                       |                                |                                                     |                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                    |                                                                                                                                                                                                                                     |                                                  |                                              |
|--------------------------|-----------------------------------------------------------------------------------------------------------------|---------------------------------------|--------------------------------|-----------------------------------------------------|----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|----------------------------------------------|
| LXI RL                   | RF 50 \$                                                                                                        | 2 AC                                  | CORREC                         | SEr                                                 | ISE:INT                                      | #Avg Typ                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | ALIGN AUTO                                                                                                         |                                                                                                                                                                                                                                     | 4 Jan 20, 2016<br>E <mark>1 2 3 4 5 6</mark>     | Frequency                                    |
|                          |                                                                                                                 |                                       | PNO: Fast 🕞<br>IFGain:Low      | Trig: Free<br>Atten: 30                             |                                              | and give                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | e. 1400                                                                                                            | TYF                                                                                                                                                                                                                                 |                                                  |                                              |
| 10 dB/div                | Ref 20.00                                                                                                       | dBm                                   |                                |                                                     |                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Mk                                                                                                                 | (r1 7.20)<br>-37.                                                                                                                                                                                                                   | 9 5 GHz<br>39 dBm                                | Auto Tune                                    |
| 10.0                     |                                                                                                                 |                                       |                                |                                                     |                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                    |                                                                                                                                                                                                                                     |                                                  | Center Freq<br>5.957500000 GHz               |
| -10.0                    |                                                                                                                 |                                       |                                |                                                     |                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                    |                                                                                                                                                                                                                                     | -13.00 dBm                                       | <b>Start Freq</b><br>1.915000000 GHz         |
| -20.0                    |                                                                                                                 |                                       |                                |                                                     |                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                    |                                                                                                                                                                                                                                     |                                                  | <b>Stop Freq</b><br>10.000000000 GHz         |
| -40.0<br><mark>  </mark> | ten da anticipation de la composition d | er versterster av<br>Alsteineralister | anan sana yang dan sala dan sa | al haraya ka sa | an la sa | n for france of the former of the former<br>The former of the | a di di kamangan di palanca di<br>Nga kalangan di kamangan di kamangan di kamangan di kamangan di kamangan di kama | n de la constant de l<br>La constant de la cons | an a sura na ang ang ang ang ang ang ang ang ang | CF Step<br>808.500000 MHz<br><u>Auto</u> Man |
| -50.0                    |                                                                                                                 |                                       |                                |                                                     |                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                    |                                                                                                                                                                                                                                     |                                                  | <b>Freq Offset</b><br>0 Hz                   |
| -70.0                    | 15 GHz                                                                                                          |                                       |                                |                                                     |                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                    | Ston 10                                                                                                                                                                                                                             | .000 GHz                                         |                                              |
| #Res BW                  |                                                                                                                 |                                       | #VBW                           | / 3.0 MHz                                           |                                              | s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | weep 14                                                                                                            | .01 ms (1                                                                                                                                                                                                                           | 6171 pts)                                        |                                              |
| MSG                      |                                                                                                                 |                                       |                                |                                                     |                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | STATUS                                                                                                             | 6                                                                                                                                                                                                                                   |                                                  |                                              |



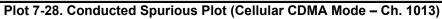


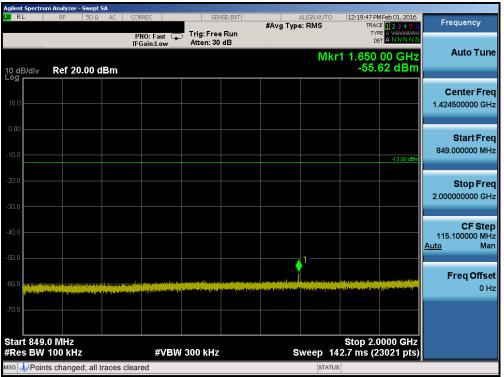
Plot 7-27. Conducted Spurious Plot (PCS GSM Mode - Ch. 810)

| FCC ID: ZNFVS987             | PCTEST         | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | 💽 LG | Reviewed by:<br>Quality Manager |
|------------------------------|----------------|------------------------------------------------------------------------------|------|---------------------------------|
| Test Report S/N:             | Test Dates:    | EUT Type:                                                                    |      | Page 28 of 104                  |
| 0Y1601180117-R2.ZNF          | 1/20-2/18/2016 | Portable Handset                                                             |      | Page 26 01 104                  |
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|                |               | n Analyzer             |                    |    |                     |                     |                      |          |     |         |                                          |                                                              |                  |                   |                                       |
|----------------|---------------|------------------------|--------------------|----|---------------------|---------------------|----------------------|----------|-----|---------|------------------------------------------|--------------------------------------------------------------|------------------|-------------------|---------------------------------------|
| l <b>XI</b> RI | L             | RF                     | 50 Ω               | AC | CORREC              |                     | S                    | ENSE:INT | #Av |         | ALIGNAUTO                                |                                                              | MFeb 01, 2016    | Fr                | equency                               |
|                |               |                        |                    |    | PNO:<br>IFGain      | Fast 🖵<br>:Low      | Trig: Fr<br>Atten: 3 |          |     | 3 . ) . |                                          | TY                                                           |                  |                   |                                       |
| 10 dE<br>Log I | 3/div         | Ref 2                  | 0.00 d             | Bm |                     |                     |                      |          |     |         | MI                                       | (r1 823.<br>-33.                                             | 00 MHz<br>96 dBm |                   | Auto Tune                             |
| 10.0           |               |                        |                    |    |                     |                     |                      |          |     |         |                                          |                                                              |                  |                   | <b>Center Freq</b><br>5500000 MHz     |
| 0.00<br>-10.0  |               |                        |                    |    |                     |                     |                      |          |     |         |                                          |                                                              | -13.00 dBm       | 30                | Start Freq<br>0.000000 MHz            |
| -20.0<br>-30.0 |               |                        |                    |    |                     |                     |                      |          |     |         |                                          |                                                              | 1                | 823               | Stop Freq<br>0000000 MHz              |
| -40.0<br>-50.0 |               |                        |                    |    |                     |                     |                      |          |     |         |                                          |                                                              |                  | 79<br><u>Auto</u> | <b>CF Step</b><br>0.300000 MHz<br>Man |
| -60.0          | ante produced | and all a subscription | an far an far an i |    | ter til for a bring | i nanan amerika a s |                      |          |     |         | an a | an gana gang bagan daga sa sa<br>Santa daga sa sa galan sa d |                  |                   | Freq Offset<br>0 Hz                   |
| -70.0<br>Star  | t 30.0        | MHz                    |                    |    |                     |                     |                      |          |     |         |                                          | Stop 9                                                       | 23.0 MHz         |                   |                                       |
|                |               | 100 kH                 | z                  |    |                     | #VBW                | 300 kH               | z        |     | S       | weep 98                                  | .33 ms (1                                                    | 5861 pts)        |                   |                                       |
| MSG            |               |                        |                    |    |                     |                     |                      |          |     |         | STATUS                                   |                                                              |                  |                   |                                       |





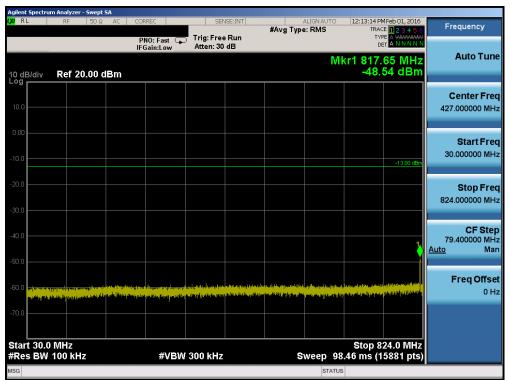
Plot 7-29. Conducted Spurious Plot (Cellular CDMA Mode – Ch. 1013)

| FCC ID: ZNFVS987                           | PCTEST         | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | 💽 LG | Reviewed by:<br>Quality Manager |  |  |  |  |
|--------------------------------------------|----------------|------------------------------------------------------------------------------|------|---------------------------------|--|--|--|--|
| Test Report S/N:                           | Test Dates:    | EUT Type:                                                                    |      | Page 29 of 104                  |  |  |  |  |
| 0Y1601180117-R2.ZNF                        | 1/20-2/18/2016 | Portable Handset                                                             |      | Page 29 01 104                  |  |  |  |  |
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|                      | ım Analyzer - Swe |                    |                           |                                                   |        |                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                        |                                                                                                                                                                                                                                   |                                       |
|----------------------|-------------------|--------------------|---------------------------|---------------------------------------------------|--------|---------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|
| L <mark>XI</mark> RL | RF 50             | ΩAC                | CORREC                    | SEN                                               | SE:INT | #Avg Typ                                                                                                                        | ALIGNAUTO                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                        | IFeb 01, 2016                                                                                                                                                                                                                     | Frequency                             |
|                      |                   |                    | PNO: Fast 🖵<br>IFGain:Low | Trig: Free<br>Atten: 20                           |        | word the                                                                                                                        | e. NW5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | TYP                                    | E A WARMAN<br>T A N N N N N                                                                                                                                                                                                       |                                       |
| 10 dB/div<br>Log     | Ref 10.00         | dBm                |                           |                                                   |        |                                                                                                                                 | Mk                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | r1 2.474<br>-47.5                      | 0 GHz<br>24 dBm                                                                                                                                                                                                                   | Auto Tune                             |
| 0.00                 |                   |                    |                           |                                                   |        |                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                        |                                                                                                                                                                                                                                   | Center Freq<br>6.000000000 GHz        |
| -10.0                |                   |                    |                           |                                                   |        |                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                        | -13.00 dBm                                                                                                                                                                                                                        | <b>Start Freq</b><br>2.000000000 GHz  |
| -30.0                | .1                |                    |                           |                                                   |        |                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                        |                                                                                                                                                                                                                                   | <b>Stop Freq</b><br>10.000000000 GHz  |
| -50.0                |                   | lante este print a |                           | Jana Kana Jasi Indonesi<br>Maning Kanada Indonesi |        | (et in your your terrer and terrer you)<br>(et in you (terrer and terrer you)<br>(terrer you (terrer and terrer and terrer you) | a for failed and the state of t | and faith and the second processing of | ر بر المراجع (مراجع المراجع ال<br>المراجع المراجع | CF Step<br>800.000000 MHz<br>Auto Man |
| -70.0                |                   |                    |                           |                                                   |        |                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                        |                                                                                                                                                                                                                                   | Freq Offset<br>0 Hz                   |
| -80.0                | 10 GHz            |                    |                           |                                                   |        |                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Stop 10                                | 000 GHz                                                                                                                                                                                                                           |                                       |
| #Res BW              |                   |                    | #VBW                      | 3.0 MHz                                           |        | S                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | .87 ms (1                              |                                                                                                                                                                                                                                   |                                       |
| MSG                  |                   |                    |                           |                                                   |        |                                                                                                                                 | STATUS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                        |                                                                                                                                                                                                                                   |                                       |





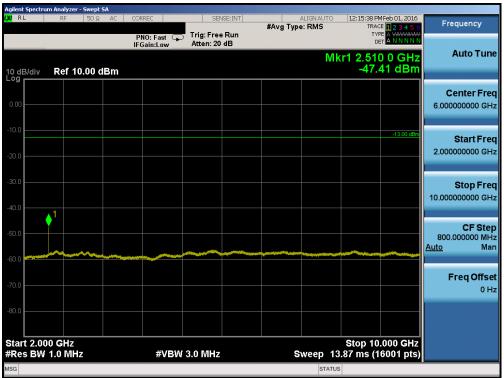
Plot 7-31. Conducted Spurious Plot (Cellular CDMA Mode – Ch. 384)

| FCC ID: ZNFVS987                           | PCTEST         | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | 🕐 LG | Reviewed by:<br>Quality Manager |  |  |  |  |
|--------------------------------------------|----------------|------------------------------------------------------------------------------|------|---------------------------------|--|--|--|--|
| Test Report S/N:                           | Test Dates:    | EUT Type:                                                                    |      | Dage 20 of 104                  |  |  |  |  |
| 0Y1601180117-R2.ZNF                        | 1/20-2/18/2016 | Portable Handset                                                             |      | Page 30 of 104                  |  |  |  |  |
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|                     |              | n Analyzer ·     |                                |      |                                       |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               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----------------|-----------------------------------------------------|
| l <mark>XI</mark> R | L            | RF               | 50 Ω                           | AC C | ORREC                                 |                | SENSE:INT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | #Δ0                                             | ALIGNAUTO<br>g Type: RMS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                   | 4Feb 01, 2016<br>E <b>1 2 3 4 5 6</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Frequency                                           |
|                     |              |                  |                                |      | PNO: Fast<br>FGain:Low                |                | : Free Run<br>en: 30 dB                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                 | g Type. Tune                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | TYP                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                     |
| 10 dl<br>Log        | B/div        | Ref 20           | ).00 dE                        | 3m   |                                       |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Auto Tune                                           |
|                     |              |                  |                                |      |                                       |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               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           | Center Freq<br>1.424500000 GHz                      |
|                     |              |                  |                                |      |                                       |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Start Freq<br>849.000000 MHz                        |
|                     |              |                  |                                |      |                                       |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               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           | <b>Stop Freq</b><br>2.000000000 GHz                 |
| -40.0               |              |                  |                                |      |                                       |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               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           | <b>CF Step</b><br>115.100000 MHz<br><u>Auto</u> Man |
|                     | lan in state |                  | uran (i e da<br>Digikin ili je |      | e e e e e e e e e e e e e e e e e e e | Des Operations | and been and the state of the s | energi bereri antal dal<br>mini ju denerali dar | at a strategy of the second according to the second s | lannaga sila da ta ta ta ta ta ta | terging terminal and a start of the start of | Freq Offset<br>0 Hz                                 |
|                     |              |                  |                                |      |                                       |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               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           |                                                     |
|                     |              | 0 MHz<br>100 kHz | z                              |      | #VB                                   | W 300          | kHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                 | Sweep 14                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Stop 2.(<br>2.7 ms (2             | 0000 GHz<br>3021 pts)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                     |
| MSG                 |              |                  |                                |      |                                       |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               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Plot 7-33. Conducted Spurious Plot (Cellular CDMA Mode – Ch. 384)

| FCC ID: ZNFVS987                           | PCTEST         | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | 💽 LG | Reviewed by:<br>Quality Manager |  |  |  |  |
|--------------------------------------------|----------------|------------------------------------------------------------------------------|------|---------------------------------|--|--|--|--|
| Test Report S/N:                           | Test Dates:    | EUT Type:                                                                    |      | Page 31 of 104                  |  |  |  |  |
| 0Y1601180117-R2.ZNF                        | 1/20-2/18/2016 | Portable Handset                                                             |      | Page 31 01 104                  |  |  |  |  |
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|                   |                              | n Analyzer                                        |        |                  |                |                              |                      |          |              |                                      |                                                    |                             |                        |                   |                                  |
|-------------------|------------------------------|---------------------------------------------------|--------|------------------|----------------|------------------------------|----------------------|----------|--------------|--------------------------------------|----------------------------------------------------|-----------------------------|------------------------|-------------------|----------------------------------|
| IXI RL            | -                            | RF                                                | 50 Ω   | AC               | CORREC         |                              | 9                    | ENSE:INT | # <b>A</b> u | ∕<br>g Tγpe                          | ALIGN AUTO                                         |                             | MFeb 01, 2016          | Fr                | equency                          |
|                   |                              |                                                   |        |                  | PNO:<br>IFGair | Fast 🖵                       | Trig: Fr<br>Atten: 3 |          |              | 3.1160                               |                                                    | TY                          |                        |                   |                                  |
| 10 dE<br>Log      | 3/div                        | Ref 20                                            | 0.00 d | Bm               |                |                              |                      |          |              |                                      | MI                                                 | (r1 809<br>-57.             | .90 MHz<br>98 dBm      |                   | Auto Tune                        |
| 10.0              |                              |                                                   |        |                  |                |                              |                      |          |              |                                      |                                                    |                             |                        |                   | <b>Center Freq</b><br>000000 MHz |
| 0.00 -<br>-10.0 - |                              |                                                   |        |                  |                |                              |                      |          |              |                                      |                                                    |                             | -13.00 dBm             | 30                | Start Freq<br>.000000 MHz        |
| -20.0<br>-30.0    |                              |                                                   |        |                  |                |                              |                      |          |              |                                      |                                                    |                             |                        | 824               | Stop Freq<br>.000000 MHz         |
| -40.0             |                              |                                                   |        |                  |                |                              |                      |          |              |                                      |                                                    |                             |                        | 79<br><u>Auto</u> | CF Step<br>.400000 MHz<br>Man    |
| -60.0             | and any second second second | antiputera (electronia)<br>Interneti (electronia) |        | for the standard |                | a Maria da Barda da Barda da |                      |          |              | an a stalla ang an<br>Ng Balakang Sa | attanente attatatul) ja<br>eta mingeles (tegelesen | legeneri festeri etter i De |                        | •                 | F <b>req Offset</b><br>0 Hz      |
| -70.0             |                              |                                                   |        |                  |                |                              |                      |          |              |                                      |                                                    |                             |                        |                   |                                  |
|                   | t 30.0<br>s BW               | MHz<br>100 kH                                     | z      |                  |                | #VBW                         | 300 kH               | z        |              | S                                    | weep 98                                            | Stop 8<br>46 ms (1          | 24.0 MHz<br>15881 pts) |                   |                                  |
| MSG               |                              |                                                   |        |                  |                |                              |                      |          |              |                                      | STATUS                                             |                             |                        |                   |                                  |





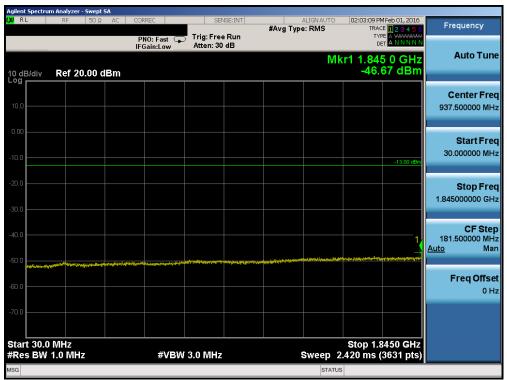
Plot 7-35. Conducted Spurious Plot (Cellular CDMA Mode – Ch. 777)

| FCC ID: ZNFVS987                           |                | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | 💽 LG | Reviewed by:<br>Quality Manager |  |  |  |
|--------------------------------------------|----------------|------------------------------------------------------------------------------|------|---------------------------------|--|--|--|
| Test Report S/N:                           | Test Dates:    | EUT Type:                                                                    |      | Page 32 of 104                  |  |  |  |
| 0Y1601180117-R2.ZNF                        | 1/20-2/18/2016 | Portable Handset                                                             |      | Page 32 01 104                  |  |  |  |
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|                  | m Analyzer - Swept    |                    |                           |                         |         |                    |                        |         |                                              |                              |
|------------------|-----------------------|--------------------|---------------------------|-------------------------|---------|--------------------|------------------------|---------|----------------------------------------------|------------------------------|
| LXI RL           | RF 50 Ω               | AC AC              | CORREC                    | SEM                     | ISE:INT | #444               | ALIGNAUTO<br>Type: RMS |         | MFeb 01, 2016<br>CE <mark>1 2 3 4 5 6</mark> | Frequency                    |
|                  |                       |                    | PNO: Fast 🕞<br>IFGain:Low | Trig: Free<br>Atten: 20 | Run     | mining.            | Type. Tano             | TY      | PE A WATAWAY<br>ET A N N N N N               |                              |
|                  |                       |                    | IFGain:Low                | Atten. 20               | 40      |                    | ML                     | r1 2 54 | 5 5 GHz                                      | Auto Tune                    |
| 10 dB/div<br>Log | Ref 10.00             | dBm                |                           |                         |         |                    | IVID                   | -46.    | 63 dBm                                       |                              |
|                  |                       |                    |                           |                         |         |                    |                        |         |                                              | Center Freq                  |
| 0.00             |                       |                    |                           |                         |         |                    |                        |         |                                              | 6.000000000 GHz              |
|                  |                       |                    |                           |                         |         |                    |                        |         |                                              |                              |
| -10.0            |                       |                    |                           |                         |         |                    |                        |         | -13.00 dBm                                   | Start Freq                   |
|                  |                       |                    |                           |                         |         |                    |                        |         |                                              | 2.000000000 GHz              |
| -20.0            |                       |                    |                           |                         |         |                    |                        |         |                                              |                              |
| -30.0            |                       |                    |                           |                         |         |                    |                        |         |                                              | Oton From                    |
|                  |                       |                    |                           |                         |         |                    |                        |         |                                              | Stop Freq<br>10.00000000 GHz |
| -40.0            | 1                     |                    |                           |                         |         |                    |                        |         |                                              |                              |
|                  | •                     |                    |                           |                         |         |                    |                        |         |                                              | CF Step                      |
| -50.0            |                       |                    |                           |                         |         |                    |                        |         |                                              | 800.000000 MHz               |
| -60.0            | and the second second | Constant Provident |                           |                         |         | and participations |                        |         |                                              | <u>Auto</u> Man              |
| -00.0            |                       |                    |                           |                         |         |                    |                        |         |                                              |                              |
| -70.0            |                       |                    |                           |                         |         |                    |                        |         |                                              | Freq Offset<br>0 Hz          |
|                  |                       |                    |                           |                         |         |                    |                        |         |                                              | 0112                         |
| -80.0            |                       |                    |                           |                         |         |                    |                        |         |                                              |                              |
|                  |                       |                    |                           |                         |         |                    |                        |         |                                              |                              |
| Start 2.00       |                       |                    |                           |                         |         |                    |                        | Stop 10 | .000 GHz                                     |                              |
| #Res BW          |                       |                    |                           | 3.0 MHz                 |         |                    | Sweep 13               |         | 6001 pts)                                    |                              |
| мsg 🗼 Poin       | ts changed; all       | traces cl          | eared                     |                         |         |                    | STATUS                 | ;       |                                              |                              |

Plot 7-36. Conducted Spurious Plot (Cellular CDMA Mode – Ch. 777)



Plot 7-37. Conducted Spurious Plot (PCS CDMA Mode - Ch. 25)

| FCC ID: ZNFVS987                           | PCTEST         | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | 💽 LG | Reviewed by:<br>Quality Manager |  |  |  |  |
|--------------------------------------------|----------------|------------------------------------------------------------------------------|------|---------------------------------|--|--|--|--|
| Test Report S/N:                           | Test Dates:    | EUT Type:                                                                    |      | Page 33 of 104                  |  |  |  |  |
| 0Y1601180117-R2.ZNF                        | 1/20-2/18/2016 | Portable Handset                                                             |      | Page 33 01 104                  |  |  |  |  |
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| URL      | RF       | 50 Ω AC | CORREC  |                                                 | SEM                     | ISE:INT     |                                                                           | ALIGN AUTO                                                                                                      |                  | MFeb 01, 2016                               | En anten anten                                   |
|----------|----------|---------|---------|-------------------------------------------------|-------------------------|-------------|---------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|------------------|---------------------------------------------|--------------------------------------------------|
|          |          |         | PNO: Fa |                                                 | Trig: Free<br>Atten: 30 | e Run<br>dB | #Avg Typ                                                                  | e: RMS                                                                                                          | TY               | CE 123456<br>PE A WATAWAY<br>ET A N N N N N | Frequency                                        |
| 0 dB/div | Ref 20.0 | 00 dBm  |         |                                                 |                         |             |                                                                           | M                                                                                                               | (r1 9.51<br>-45. | 1 0 GHz<br>00 dBm                           | Auto Tun                                         |
| 10.0     |          |         |         |                                                 |                         |             |                                                                           |                                                                                                                 |                  |                                             | <b>Center Fre</b><br>5.955000000 GH              |
|          |          |         |         |                                                 |                         |             |                                                                           |                                                                                                                 |                  | -13.00 dBm                                  | <b>Start Fre</b><br>1.910000000 G⊦               |
| 20.0     |          |         |         |                                                 |                         |             |                                                                           |                                                                                                                 |                  |                                             | <b>Stop Fre</b><br>10.000000000 GH               |
| 40.0     |          |         |         | ىلى بەر يەر بەلەردى.<br>ئەر بەر بەر بەر بەلەردى |                         |             | n fan sjoner i sjoner i serene<br>19 det is soner ferste in billes te ged | tile for her group and group and the group of the second and the second and the second and the second and the s |                  |                                             | <b>CF Ste</b><br>809.000000 MH<br><u>Auto</u> Ma |
| 60.0     |          |         |         |                                                 |                         |             |                                                                           |                                                                                                                 |                  |                                             | Freq Offs<br>0 ⊦                                 |
| 70.0     | 0 GHz    |         |         |                                                 |                         |             |                                                                           |                                                                                                                 |                  | .000 GHz                                    |                                                  |
| Res BW   | 1.0 MHz  |         | #       | VBW 3                                           | 3.0 MHz                 |             | \$                                                                        | Sweep 14                                                                                                        | .02 ms (1        | 6181 pts)                                   |                                                  |





Plot 7-39. Conducted Spurious Plot (PCS CDMA Mode - Ch. 25)

| FCC ID: ZNFVS987                           | PCTEST         | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | 🕕 LG | Reviewed by:<br>Quality Manager |  |  |  |  |
|--------------------------------------------|----------------|------------------------------------------------------------------------------|------|---------------------------------|--|--|--|--|
| Test Report S/N:                           | Test Dates:    | EUT Type:                                                                    |      | Daga 24 of 104                  |  |  |  |  |
| 0Y1601180117-R2.ZNF                        | 1/20-2/18/2016 | Portable Handset                                                             |      | Page 34 of 104                  |  |  |  |  |
| © 2016 PCTEST Engineering Laboratory, Inc. |                |                                                                              |      |                                 |  |  |  |  |



|                      |                       | n Analyzer - S |         |                                         |                   |                         |         |        |                                                                                                                 |                    |                      |                                             |
|----------------------|-----------------------|----------------|---------|-----------------------------------------|-------------------|-------------------------|---------|--------|-----------------------------------------------------------------------------------------------------------------|--------------------|----------------------|---------------------------------------------|
| l <mark>XI</mark> RL |                       | RF             | 50 Ω AC | CORRE                                   | C                 | SEN                     | ISE:INT | #49.47 | ALIGNAUTO                                                                                                       |                    | AFeb 01, 2016        | Frequency                                   |
|                      |                       |                |         |                                         | :Fast 🖵<br>in:Low | Trig: Free<br>Atten: 30 |         | #019 I |                                                                                                                 | TYP                |                      |                                             |
| 10 dE<br>Log r       | 3/div                 | Ref 20.        | 00 dBm  |                                         |                   |                         |         |        | MI                                                                                                              | (r1 1.614<br>-48.4 | 4 5 GHz<br>41 dBm    | Auto Tune                                   |
| 10.0 -               |                       |                |         |                                         |                   |                         |         |        |                                                                                                                 |                    |                      | Center Freq<br>940.000000 MHz               |
| 0.00 :<br>-10.0 :    |                       |                |         |                                         |                   |                         |         |        |                                                                                                                 |                    | -13.00 dBm           | Start Freq<br>30.000000 MHz                 |
| -20.0 -<br>-30.0 -   |                       |                |         |                                         |                   |                         |         |        |                                                                                                                 |                    |                      | <b>Stop Freq</b><br>1.85000000 GHz          |
| -40.0                |                       |                |         |                                         |                   |                         |         |        | and the state of the | ↓<br>1             |                      | CF Step<br>182.00000 MHz<br><u>Auto</u> Man |
| -60.0                | a fisiona si si si si |                |         | /4, /////////////////////////////////// |                   |                         |         |        |                                                                                                                 |                    |                      | <b>Freq Offset</b><br>0 Hz                  |
| -70.0                | t 30.0                |                |         |                                         |                   |                         |         |        |                                                                                                                 | Stop 1             |                      |                                             |
|                      |                       | MHZ<br>1.0 MHZ |         |                                         | #VBW              | 3.0 MHz                 |         |        | Sweep 2                                                                                                         |                    | 500 GHz<br>3641 pts) |                                             |
| MSG                  |                       |                |         |                                         |                   |                         |         |        | STATUS                                                                                                          | 3                  |                      |                                             |





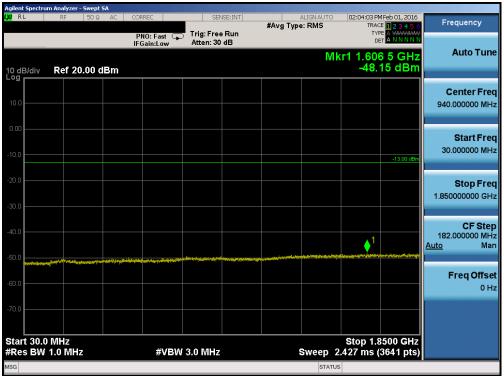
Plot 7-41. Conducted Spurious Plot (PCS CDMA Mode - Ch. 600)

| FCC ID: ZNFVS987                           | PCTEST         | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) |  | Reviewed by:<br>Quality Manager |  |
|--------------------------------------------|----------------|------------------------------------------------------------------------------|--|---------------------------------|--|
| Test Report S/N:                           | Test Dates:    | EUT Type:                                                                    |  | Dega 25 of 104                  |  |
| 0Y1601180117-R2.ZNF                        | 1/20-2/18/2016 | Portable Handset                                                             |  | Page 35 of 104                  |  |
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| Agilent Spectru       | m Analyzer - Swept S                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                    |          |                                   |                                  |                          |                      |                                            |                              |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|----------|-----------------------------------|----------------------------------|--------------------------|----------------------|--------------------------------------------|------------------------------|
| XI RL                 | RF 50 Ω                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | AC CORREC                          |          | SENSE:INT                         | #Avg Type                        | ERMS                     | TRAC                 | 4Feb 01, 2016<br><sup>3E</sup> 1 2 3 4 5 6 | Frequency                    |
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | PNO:<br>IFGain                     |          | ig: Free Run<br>ten: 20 dB        |                                  |                          | TYF<br>DE            | A MARAAAAA<br>A N N N N N                  |                              |
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | ii ouii                            |          |                                   |                                  | Mkr                      | 1 16 93              | 4 0 GHz                                    | Auto Tune                    |
| 10 dB/div             | Ref 10.00 dl                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Bm                                 |          |                                   |                                  |                          | -49.                 | 11 dBm                                     |                              |
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                    |          |                                   |                                  |                          |                      |                                            | Center Freq                  |
| 0.00                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                    |          |                                   |                                  |                          |                      |                                            | 15.000000000 GHz             |
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                    |          |                                   |                                  |                          |                      |                                            |                              |
| -10.0                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                    |          |                                   |                                  |                          |                      | -13.00 dBm                                 | Start Freq                   |
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                    |          |                                   |                                  |                          |                      |                                            | 10.000000000 GHz             |
| -20.0                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                    |          |                                   |                                  |                          |                      |                                            | 10.000000000000              |
| -30.0                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                    |          |                                   |                                  |                          |                      |                                            |                              |
| -30.0                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                    |          |                                   |                                  |                          |                      |                                            | Stop Freq<br>20.00000000 GHz |
| -40.0                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                    |          |                                   |                                  |                          |                      |                                            | 20.00000000 GHz              |
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                    |          |                                   |                                  | 1                        |                      |                                            |                              |
| -50.0                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                    |          | antitian antitan                  |                                  |                          | فلار والمعالية الم   | والاسترب بالطويب وريطا                     | CF Step<br>1.000000000 GHz   |
| apped the office      | Constitution of the second second second                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                    |          | and the state of the second state | No. of the August And Man Public | a hora a positivita a di | Stand Andrew Stand   | Margarit Benefits                          | <u>Auto</u> Man              |
| -60.0 -60.0           | and the local difference of th | فللبلغ بغائبة فالتقاط فتتكل المحرر |          |                                   |                                  |                          |                      |                                            |                              |
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                    |          |                                   |                                  |                          |                      |                                            | Freq Offset                  |
| -70.0                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                    |          |                                   |                                  |                          |                      |                                            | 0 Hz                         |
| -80.0                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                    |          |                                   |                                  |                          |                      |                                            |                              |
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                    |          |                                   |                                  |                          |                      |                                            |                              |
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                    |          |                                   |                                  |                          | <b>O</b> ton 99      |                                            |                              |
| Start 10.0<br>#Res BW |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                    | #VBW 3.0 | MHz                               | S                                | weep 25                  | Stop 20<br>.33 ms (2 | .000 GHz<br>0001 pts)                      |                              |
| ISG                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                    |          |                                   |                                  | STATUS                   |                      | ooo i pis)                                 |                              |
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                    |          |                                   |                                  | 0                        |                      |                                            |                              |





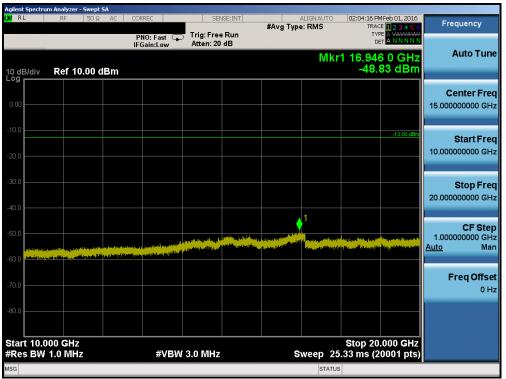
Plot 7-43. Conducted Spurious Plot (PCS CDMA Mode – Ch. 1175)

| FCC ID: ZNFVS987                           | PCTEST         | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | 🕐 LG | Reviewed by:<br>Quality Manager |  |
|--------------------------------------------|----------------|------------------------------------------------------------------------------|------|---------------------------------|--|
| Test Report S/N:                           | Test Dates:    | EUT Type:                                                                    |      | Dega 26 of 104                  |  |
| 0Y1601180117-R2.ZNF                        | 1/20-2/18/2016 | Portable Handset                                                             |      | Page 36 of 104                  |  |
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| RL       | RF !     | 50 Ω AC | CORREC                   |                                                      | SE                     | NSE:INT                  |          | ALIGN AUTO                                                                  |                                                                                                                  | MFeb 01, 2016                              | Ereguener                                       |
|----------|----------|---------|--------------------------|------------------------------------------------------|------------------------|--------------------------|----------|-----------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|--------------------------------------------|-------------------------------------------------|
|          |          |         | PNO:<br>IFGai            | Fast 🖵<br>n:Low                                      | Trig: Fre<br>Atten: 30 | e Run<br>) dB            | #Avg Typ | e: RMS                                                                      | TY                                                                                                               | CE 123456<br>PE A WARAWA<br>ET A N N N N N | Frequency                                       |
| 0 dB/div | Ref 20.0 | )0 dBm  |                          |                                                      |                        |                          |          | M                                                                           | (r1 7.06<br>-44.                                                                                                 | 6 5 GHz<br>99 dBm                          | Auto Tuno                                       |
| 10.0     |          |         |                          |                                                      |                        |                          |          |                                                                             |                                                                                                                  |                                            | <b>Center Fre</b><br>5.957500000 GH             |
| 10.0     |          |         |                          |                                                      |                        |                          |          |                                                                             |                                                                                                                  | -13.00 dBm                                 | <b>Start Fre</b><br>1.915000000 GH              |
| 20.0     |          |         |                          |                                                      |                        |                          |          |                                                                             |                                                                                                                  |                                            | <b>Stop Fre</b><br>10.000000000 GH              |
|          |          |         | land to the state of the | a provinsi kata para para para para para para para p |                        | Ng sadat balan di kang s |          | C <sup>1</sup> P <sup>art</sup> Property parts Compt <sup>1</sup> Decay (se | E seel for the second |                                            | <b>CF Ste</b><br>808.50000 MH<br><u>Auto</u> Ma |
| 60.0     |          |         |                          |                                                      |                        |                          |          |                                                                             |                                                                                                                  |                                            | Freq Offse<br>0 H                               |
| 70.0     | 5 GHz    |         |                          |                                                      |                        |                          |          |                                                                             | Stop 11                                                                                                          | .000 GHz                                   |                                                 |
| Res BW   |          |         |                          | #VBW                                                 | 3.0 MHz                |                          |          | Sweep 14                                                                    | .01 ms (1                                                                                                        | 6171 pts)                                  |                                                 |





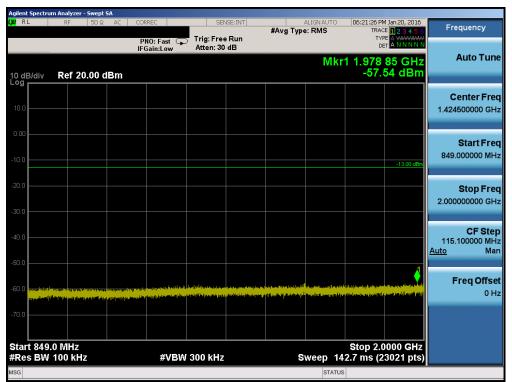
Plot 7-45. Conducted Spurious Plot (PCS CDMA Mode - Ch. 1175)

| FCC ID: ZNFVS987             | PCTEST                                   | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | 💽 LG           | Reviewed by:<br>Quality Manager |  |  |  |  |
|------------------------------|------------------------------------------|------------------------------------------------------------------------------|----------------|---------------------------------|--|--|--|--|
| Test Report S/N:             | Test Dates:                              | EUT Type:                                                                    |                | Dega 27 of 104                  |  |  |  |  |
| 0Y1601180117-R2.ZNF          | 1/20-2/18/2016                           | Portable Handset                                                             | Page 37 of 104 |                                 |  |  |  |  |
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|                       | ım Analyzer - Swept SA |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                          |                                                                                                                                                                                                                                   |                                               |                             |
|-----------------------|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|-----------------------------|
| L <mark>XI</mark> RL  | RF 50 Ω                | AC CORREC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | SENSE:INT                                | ALIGNAUTO<br>#Avg Type: RMS                                                                                                                                                                                                       | 06:21:19 PM Jan 20, 2016<br>TRACE 1 2 3 4 5 6 | Frequency                   |
|                       |                        | PNO: Fast 😱<br>IFGain:Low                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Trig: Free Run<br>Atten: 30 dB           | •                                                                                                                                                                                                                                 | TYPE A WWWWW<br>DET A N N N N N               | Auto Tune                   |
| 10 dB/div<br>Log      | Ref 20.00 dB           | m                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                          | M                                                                                                                                                                                                                                 | kr1 822.80 MHz<br>-35.95 dBm                  | Auto Tune                   |
|                       |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                          |                                                                                                                                                                                                                                   |                                               | Center Freq                 |
| 10.0                  |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                          |                                                                                                                                                                                                                                   |                                               | 426.500000 MHz              |
| 0.00                  |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                          |                                                                                                                                                                                                                                   |                                               | Start Freq                  |
| -10.0                 |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                          |                                                                                                                                                                                                                                   | -13.00 dBm                                    | 30.000000 MHz               |
|                       |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                          |                                                                                                                                                                                                                                   | -15.00 (15)                                   |                             |
| -20.0                 |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                          |                                                                                                                                                                                                                                   |                                               | Stop Freq<br>823.000000 MHz |
| -30.0                 |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                          |                                                                                                                                                                                                                                   |                                               |                             |
| -40.0                 |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                          |                                                                                                                                                                                                                                   |                                               | CF Step<br>79.300000 MHz    |
| 50.0                  |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                          |                                                                                                                                                                                                                                   |                                               | <u>Auto</u> Man             |
| -50.0                 |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                          |                                                                                                                                                                                                                                   |                                               | Freq Offset                 |
| -60.0                 |                        | والمراجع والم | an a | a de la companya de<br>La companya de la comp |                                               | 0 Hz                        |
| -70.0                 |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                          |                                                                                                                                                                                                                                   |                                               |                             |
|                       |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                          |                                                                                                                                                                                                                                   |                                               |                             |
| Start 30.0<br>#Res BW |                        | #\/B\/                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 300 kHz                                  | Sween 05                                                                                                                                                                                                                          | Stop 823.0 MHz<br>3.33 ms (15861 pts)         |                             |
| MSG                   | TOURNZ                 | #0000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 500 MH2                                  | Sweep 98                                                                                                                                                                                                                          |                                               |                             |
|                       |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                          | on not                                                                                                                                                                                                                            |                                               |                             |

Plot 7-46. Conducted Spurious Plot (Cellular WCDMA Mode – Ch. 4132)



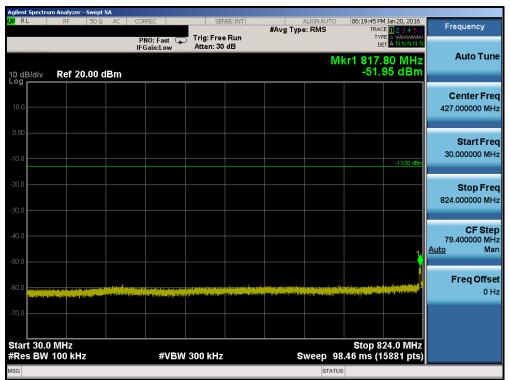
Plot 7-47. Conducted Spurious Plot (Cellular WCDMA Mode – Ch. 4132)

| FCC ID: ZNFVS987             | PCTEST                                     | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) |           | Reviewed by:<br>Quality Manager |  |  |  |  |
|------------------------------|--------------------------------------------|------------------------------------------------------------------------------|-----------|---------------------------------|--|--|--|--|
| Test Report S/N:             | Test Dates:                                | EUT Type:                                                                    |           | Page 38 of 104                  |  |  |  |  |
| 0Y1601180117-R2.ZNF          | 1/20-2/18/2016                             | Portable Handset                                                             | Page 38 0 |                                 |  |  |  |  |
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|           | m Analyzer - Swept S |                                                                                                                     |                        |                         |         |                                                                              |                                                            |                                                      |                                  |                                              |
|-----------|----------------------|---------------------------------------------------------------------------------------------------------------------|------------------------|-------------------------|---------|------------------------------------------------------------------------------|------------------------------------------------------------|------------------------------------------------------|----------------------------------|----------------------------------------------|
| X/RL      | RF 50 Ω              | AC COR                                                                                                              | REC                    | SEM                     | ISE:INT | #Avg Typ                                                                     | ALIGNAUTO<br>e: RMS                                        | TRAG                                                 | M Jan 20, 2016<br>CE 1 2 3 4 5 6 | Frequency                                    |
|           |                      |                                                                                                                     | IO: Fast 🖵<br>iain:Low | Trig: Free<br>Atten: 20 |         |                                                                              |                                                            | TY<br>D                                              | PE A WARAAAA<br>ET A N N N N N   |                                              |
| 10 dB/div | Ref 10.00 d          | Bm                                                                                                                  |                        |                         |         |                                                                              | Mk                                                         | r1 2.47<br>-50.                                      | 6 5 GHz<br>59 dBm                | Auto Tune                                    |
| 0.00      |                      |                                                                                                                     |                        |                         |         |                                                                              |                                                            |                                                      |                                  | Center Freq<br>6.000000000 GHz               |
| -10.0     |                      |                                                                                                                     |                        |                         |         |                                                                              |                                                            |                                                      | -13.00 dBm                       | <b>Start Freq</b><br>2.000000000 GHz         |
| -30.0     |                      |                                                                                                                     |                        |                         |         |                                                                              |                                                            |                                                      |                                  | <b>Stop Freq</b><br>10.000000000 GHz         |
| -50.0     |                      | a je na fili na sveti stala sveti stala s<br>Na je na sveti stala sveti sveti stala sveti sveti stala sveti sveti s |                        |                         |         | n le su provinció de la constan<br>provinció de la constantina for provinció | Vera ligastargatarilarian la<br>Part musicari ya di mayari | () A Develo <sup>nd</sup> Construction of the second |                                  | CF Step<br>800.000000 MHz<br><u>Auto</u> Man |
| -70.0     |                      |                                                                                                                     |                        |                         |         |                                                                              |                                                            |                                                      |                                  | <b>Freq Offset</b><br>0 Hz                   |
| -80.0     | 0 GHz                |                                                                                                                     |                        |                         |         |                                                                              |                                                            | Stop 10                                              | .000 GHz                         |                                              |
| #Res BW   | 1.0 MHz              |                                                                                                                     | #VBW                   | 3.0 MHz                 |         | s                                                                            |                                                            | .87 ms (1                                            | 6001 pts)                        |                                              |
| MSG       |                      |                                                                                                                     |                        |                         |         |                                                                              | STATUS                                                     |                                                      |                                  |                                              |

Plot 7-48. Conducted Spurious Plot (Cellular WCDMA Mode – Ch. 4132)



Plot 7-49. Conducted Spurious Plot (Cellular WCDMA Mode – Ch. 4183)

| FCC ID: ZNFVS987             | PCTEST                                     | FCC PL 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) |  | Reviewed by:<br>Quality Manager |  |  |  |  |
|------------------------------|--------------------------------------------|-----------------------------------------------------------------------------|--|---------------------------------|--|--|--|--|
| Test Report S/N:             | Test Dates:                                | EUT Type:                                                                   |  | Page 39 of 104                  |  |  |  |  |
| 0Y1601180117-R2.ZNF          | 1/20-2/18/2016                             | Portable Handset                                                            |  | Page 39 01 104                  |  |  |  |  |
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| Agilent Spectri<br><mark>LXI</mark> RL | um Analyzer - Swept SA<br>RF 50 Ω A | C CORREC                                 | SENSE:INT                      | ALIGNAUTO                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 06:19:52 PM Jan 20, 2016                        | -                                            |
|----------------------------------------|-------------------------------------|------------------------------------------|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|----------------------------------------------|
|                                        |                                     | PNO: Fast 🖵<br>IFGain:Low                | Trig: Free Run<br>Atten: 30 dB | #Avg Type: RMS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | TRACE 123456<br>TYPE A WWWWW<br>DET A N N N N N | Frequency                                    |
| 10 dB/div<br>Log                       | Ref 20.00 dBr                       | n                                        |                                | Mkr                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 1 1.671 55 GHz<br>-57.37 dBm                    | Auto Tune                                    |
| 10.0                                   |                                     |                                          |                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                 | Center Freq<br>1.424500000 GHz               |
| -10.0                                  |                                     |                                          |                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | -13.00 dBm                                      | Start Freq<br>849.000000 MHz                 |
| -20.0                                  |                                     |                                          |                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                 | <b>Stop Freq</b><br>2.000000000 GHz          |
| -40.0                                  |                                     |                                          |                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                 | CF Step<br>115.100000 MHz<br><u>Auto</u> Man |
|                                        |                                     | an a |                                | grander protoch a probability for the second s | in Lopergr Developed by the state of the State  | Freq Offset<br>0 Hz                          |
| -70.0                                  |                                     |                                          |                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                 |                                              |
| Start 849<br>#Res BW                   | .0 MHz<br>100 kHz                   | #VBW                                     | 300 kHz                        | Sweep 14                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Stop 2.0000 GHz<br>2.7 ms (23021 pts)           |                                              |
| MSG                                    |                                     |                                          |                                | STATUS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | ;                                               |                                              |

Plot 7-50. Conducted Spurious Plot (Cellular WCDMA Mode – Ch. 4183)



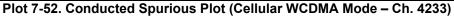
Plot 7-51. Conducted Spurious Plot (Cellular WCDMA Mode - Ch. 4183)

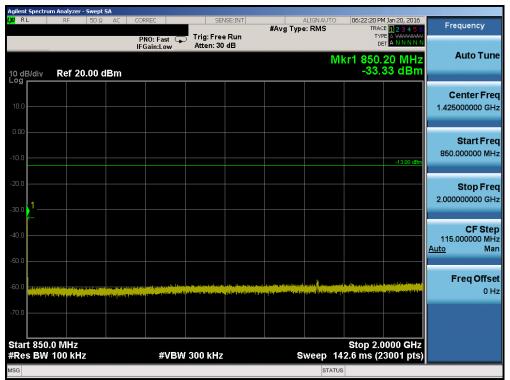
| FCC ID: ZNFVS987             | PCTEST                                     | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | 💽 LG | Reviewed by:<br>Quality Manager |  |  |  |  |
|------------------------------|--------------------------------------------|------------------------------------------------------------------------------|------|---------------------------------|--|--|--|--|
| Test Report S/N:             | Test Dates:                                | EUT Type:                                                                    |      | Page 40 of 104                  |  |  |  |  |
| 0Y1601180117-R2.ZNF          | 1/20-2/18/2016                             | Portable Handset                                                             |      | Page 40 01 104                  |  |  |  |  |
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12/01/2015



| 02 RL RF 50Ω AC                   | CORREC<br>PNO: Fast | SENSE:INT<br>Trig: Free Run<br>Atten: 30 dB | ALIGNAUTO<br>#Avg Type: RMS | 06:22:12 PM Jan 20, 2016<br>TRACE 1 2 3 4 5 6<br>TYPE A WWWW<br>DET A NIN NIN<br>kr1 823, 70 MHz | Frequency<br>Auto Tune         |
|-----------------------------------|---------------------|---------------------------------------------|-----------------------------|--------------------------------------------------------------------------------------------------|--------------------------------|
|                                   | IFGain:Low          |                                             | M                           | DET A NNNN                                                                                       |                                |
| to JERRIN Dof 20.00 dBm           |                     |                                             |                             |                                                                                                  | Auto Tune                      |
| Log                               |                     |                                             |                             | kr1 823.70 MHz<br>-58.54 dBm                                                                     |                                |
| 10.0                              |                     |                                             |                             |                                                                                                  | Center Freq<br>427.000000 MHz  |
| -10.0                             |                     |                                             |                             |                                                                                                  | Start Freq<br>30.000000 MHz    |
| -20.0                             |                     |                                             |                             | 43.00 dBm                                                                                        | Stop Freq<br>824.000000 MHz    |
| -30.0                             |                     |                                             |                             |                                                                                                  | CF Step<br>79.400000 MHz       |
| -50.0                             |                     |                                             |                             | 1,                                                                                               | <u>Auto</u> Man<br>Freq Offset |
| -60.0                             |                     |                                             |                             |                                                                                                  | 0 Hz                           |
| -70.0                             |                     |                                             |                             |                                                                                                  |                                |
| Start 30.0 MHz<br>#Res BW 100 kHz | #VBW                | 300 kHz                                     | Sweep 98                    | Stop 824.0 MHz<br>8.46 ms (15881 pts)                                                            |                                |
| MSG                               |                     |                                             | STATUS                      |                                                                                                  |                                |





Plot 7-53. Conducted Spurious Plot (Cellular WCDMA Mode – Ch. 4233)

| FCC ID: ZNFVS987             | PCTEST                                   | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | 💽 LG | Reviewed by:<br>Quality Manager |  |  |  |  |
|------------------------------|------------------------------------------|------------------------------------------------------------------------------|------|---------------------------------|--|--|--|--|
| Test Report S/N:             | Test Dates:                              | EUT Type:                                                                    |      | Page 41 of 104                  |  |  |  |  |
| 0Y1601180117-R2.ZNF          | 1/20-2/18/2016                           | Portable Handset                                                             |      | Page 41 01 104                  |  |  |  |  |
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|                  | m Analyzer - Swept S                                                                                            |                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                         |        |           |                                  |           |                                                          |                              |
|------------------|-----------------------------------------------------------------------------------------------------------------|------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|--------|-----------|----------------------------------|-----------|----------------------------------------------------------|------------------------------|
| LXVI RL          | RF 50 Ω                                                                                                         | AC CORRE                                       | :C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                         | SE:INT | #Avg Type | ALIGN AUTO<br>e: RMS             | TRAG      | 4 Jan 20, 2016<br><sup>CE</sup> <mark>1 2 3 4 5 6</mark> | Frequency                    |
|                  |                                                                                                                 |                                                | :Fast 🖵                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Trig: Free<br>Atten: 20 |        |           |                                  | TY<br>D   | ET A NNNNN                                               |                              |
|                  |                                                                                                                 | IFGa                                           | 111.2.0W                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 1111011120              |        |           | Mk                               | r1 2 53   | 7 0 GHz                                                  | Auto Tune                    |
| 10 dB/div<br>Log | Ref 10.00 dl                                                                                                    | Bm                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                         |        |           |                                  | -48.      | 69 dBm                                                   |                              |
| -09              |                                                                                                                 |                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                         |        |           |                                  |           |                                                          | Center Freq                  |
| 0.00             |                                                                                                                 |                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                         |        |           |                                  |           |                                                          | 6.000000000 GHz              |
|                  |                                                                                                                 |                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                         |        |           |                                  |           |                                                          |                              |
| -10.0            |                                                                                                                 |                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                         |        |           |                                  |           | -13.00 dBm                                               | Start Freq                   |
|                  |                                                                                                                 |                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                         |        |           |                                  |           |                                                          | 2.000000000 GHz              |
| -20.0            |                                                                                                                 |                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                         |        |           |                                  |           |                                                          |                              |
| -30.0            |                                                                                                                 |                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                         |        |           |                                  |           |                                                          |                              |
| 55.5             |                                                                                                                 |                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                         |        |           |                                  |           |                                                          | Stop Freq<br>10.00000000 GHz |
| -40.0            |                                                                                                                 |                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                         |        |           |                                  |           |                                                          | 10.00000000 GHz              |
|                  | ▲1                                                                                                              |                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                         |        |           |                                  |           |                                                          | OF Otom                      |
| -50.0            |                                                                                                                 |                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                         |        |           |                                  |           |                                                          | CF Step<br>800.000000 MHz    |
| . specificate    |                                                                                                                 | ala dina manana ana ana ana ana ana ana ana an | and the second                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                         |        |           | Name and Statistics (Statistics) |           |                                                          | <u>Auto</u> Man              |
| -60.0            | A DESCRIPTION OF THE OWNER OF THE | A STREET                                       | A distant and a second distant |                         |        |           | h <u>Bailin Baile an</u> Ai      |           | <u>ىنە ئەينا ئار كان كەتلەرم</u> ار را                   |                              |
| -70.0            |                                                                                                                 |                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                         |        |           |                                  |           |                                                          | Freq Offset                  |
| -70.0            |                                                                                                                 |                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                         |        |           |                                  |           |                                                          | 0 Hz                         |
| -80.0            |                                                                                                                 |                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                         |        |           |                                  |           |                                                          |                              |
|                  |                                                                                                                 |                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                         |        |           |                                  |           |                                                          |                              |
| Start 2.00       | 0.6Hz                                                                                                           |                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                         |        |           |                                  | Stop 10   | .000 GHz                                                 |                              |
| #Res BW          |                                                                                                                 |                                                | #VBW                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 3.0 MHz                 |        | s         | weep 13                          | .87 ms (1 | 6001 pts)                                                |                              |
| MSG              |                                                                                                                 |                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                         |        |           | STATUS                           |           |                                                          |                              |
|                  |                                                                                                                 |                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                         |        |           |                                  |           |                                                          |                              |

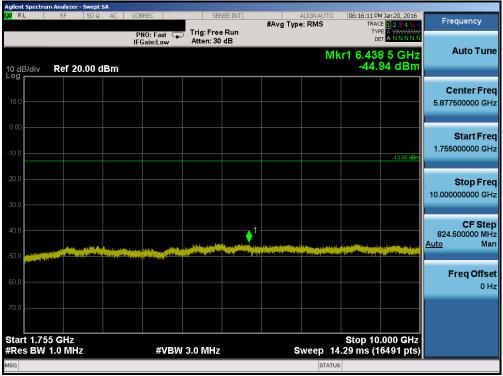
Plot 7-54. Conducted Spurious Plot (Cellular WCDMA Mode – Ch. 4233)

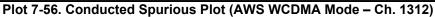


Plot 7-55. Conducted Spurious Plot (AWS WCDMA Mode - Ch. 1312)

| FCC ID: ZNFVS987             | PCTEST         | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | 💽 LG | Reviewed by:<br>Quality Manager |
|------------------------------|----------------|------------------------------------------------------------------------------|------|---------------------------------|
| Test Report S/N:             | Test Dates:    | EUT Type:                                                                    |      | Page 42 of 104                  |
| 0Y1601180117-R2.ZNF          | 1/20-2/18/2016 | Portable Handset                                                             |      | Page 42 01 104                  |
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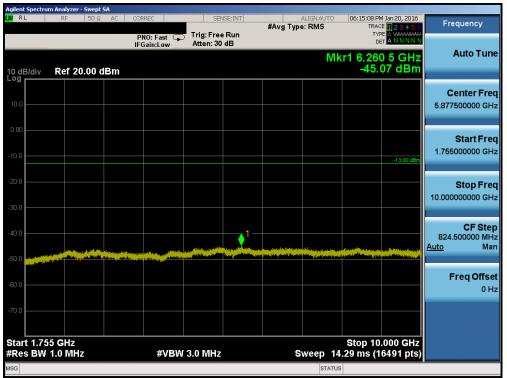
Plot 7-57. Conducted Spurious Plot (AWS WCDMA Mode – Ch. 1312)

| FCC ID: ZNFVS987             | PCTEST         | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | 🕧 LG | Reviewed by:<br>Quality Manager |
|------------------------------|----------------|------------------------------------------------------------------------------|------|---------------------------------|
| Test Report S/N:             | Test Dates:    | EUT Type:                                                                    |      | Dage 42 of 104                  |
| 0Y1601180117-R2.ZNF          | 1/20-2/18/2016 | Portable Handset                                                             |      | Page 43 of 104                  |
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|                      |                | n Analyzer    |               | A               |               |                      |                        |          |     |           |         |                |                        |                             |
|----------------------|----------------|---------------|---------------|-----------------|---------------|----------------------|------------------------|----------|-----|-----------|---------|----------------|------------------------|-----------------------------|
| l <mark>XI</mark> RI | L              | RF            | 50 Ω          | AC              | CORREC        | -                    | 9                      | ENSE:INT | #Au | g Type: F | GN AUTO |                | M Jan 20, 2016         | Frequency                   |
|                      |                |               |               |                 | PNO:<br>IFGai | Fast 🖵<br>n:Low      | ) Trig: Fr<br>Atten: 3 |          | #O¥ | g type.r  |         | T\<br>[        | ET A WATAWAY           | Auto Tune                   |
| 10 dE<br>Log i       | 3/div          | Ref 2         | ).00 d        | Bm              |               |                      |                        |          |     |           | Mk      | r1 1.60<br>-48 | 0 0 GHz<br>32 dBm      | Auto Tune                   |
|                      |                |               |               |                 |               |                      |                        |          |     |           |         |                |                        | Center Freq                 |
| 10.0                 |                |               |               |                 |               |                      |                        |          |     |           |         |                |                        | 870.000000 MHz              |
| 0.00                 |                |               |               |                 |               |                      |                        |          |     |           |         |                |                        | Start Freq                  |
| -10.0                |                |               |               |                 |               |                      |                        |          |     |           |         |                | -13.00 dBm             | 30.00000 MHz                |
| -20.0                |                |               |               |                 |               |                      |                        |          |     |           |         |                |                        |                             |
| 20.0                 |                |               |               |                 |               |                      |                        |          |     |           |         |                |                        | Stop Freq<br>1.71000000 GHz |
| -30.0                |                |               |               |                 |               |                      |                        |          |     |           |         |                |                        |                             |
| -40.0                |                |               |               |                 |               |                      |                        |          |     |           |         |                |                        | CF Step<br>168.000000 MHz   |
| -50.0                |                |               |               |                 |               |                      |                        |          |     |           |         |                |                        | <u>Auto</u> Man             |
| -30.0                |                |               | ismugen Artae | ylernet Tilleri | ig            | heingen (Begleren /B |                        |          |     |           |         |                |                        | Freq Offset                 |
| -60.0                |                |               |               |                 |               |                      |                        |          |     |           |         |                |                        | 0 Hz                        |
| -70.0                |                |               |               |                 |               |                      |                        |          |     |           |         |                |                        |                             |
|                      |                |               |               |                 |               |                      |                        |          |     |           |         |                |                        |                             |
|                      | t 30.0<br>s BM | MHz<br>1.0 MH | ,             |                 |               | #VBM                 | 3.0 MH                 | 7        |     | Qu        | veen 2  |                | 7100 GHz<br>(3361 pts) |                             |
| MSG                  | 5 0 1 1        | 1.0 1011      | _             |                 |               | # V D V V            | 5.0 1011               | 2        |     | 30        | STATUS  |                | (oour pts)             |                             |
|                      |                |               |               |                 |               |                      |                        |          |     |           | 014103  |                |                        |                             |





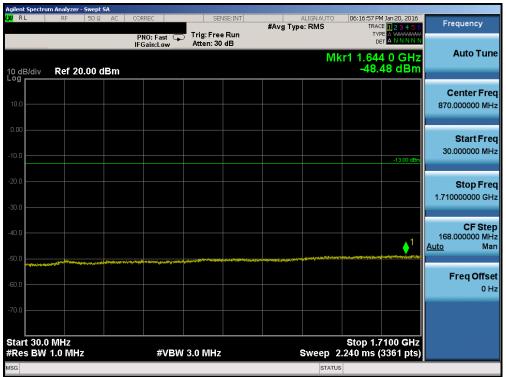
Plot 7-59. Conducted Spurious Plot (AWS WCDMA Mode – Ch. 1412)

| FCC ID: ZNFVS987             |                | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | 💽 LG | Reviewed by:<br>Quality Manager |
|------------------------------|----------------|------------------------------------------------------------------------------|------|---------------------------------|
| Test Report S/N:             | Test Dates:    | EUT Type:                                                                    |      | Page 44 of 104                  |
| 0Y1601180117-R2.ZNF          | 1/20-2/18/2016 | Portable Handset                                                             |      | Page 44 01 104                  |
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|                       | m Analyzer - Swep |      |                                                                                                                |                         |             |        |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                |                                                     |
|-----------------------|-------------------|------|----------------------------------------------------------------------------------------------------------------|-------------------------|-------------|--------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|
| XVIRL                 | RF 50 \$          | 2 AC | CORREC                                                                                                         | SEN                     | ISE:INT     | #440   | ALIGNAUTO<br>Type: RMS |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 4 Jan 20, 2016<br>E <mark>1 2 3 4 5 6</mark>                                                                                                                                                                                                   | Frequency                                           |
|                       |                   |      | PNO: Fast 🔾<br>IFGain:Low                                                                                      | Trig: Free<br>Atten: 20 | e Run<br>dB | , na s | Type. Tuno             | TYP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                |                                                     |
| 10 dB/div<br>Log      | Ref 10.00         | dBm  |                                                                                                                |                         |             |        | Mkr                    | 1 17.029<br>-48.9                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 9 5 GHz<br>94 dBm                                                                                                                                                                                                                              | Auto Tune                                           |
| 0.00                  |                   |      |                                                                                                                |                         |             |        |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                | Center Freq<br>15.000000000 GHz                     |
| -10.0                 |                   |      |                                                                                                                |                         |             |        |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | -13.00 dBm                                                                                                                                                                                                                                     | <b>Start Freq</b><br>10.000000000 GHz               |
| -30.0                 |                   |      |                                                                                                                |                         |             |        |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                | <b>Stop Freq</b><br>20.000000000 GHz                |
| -50.0                 |                   |      | Truck of the second |                         |             |        |                        | fores and the first and the first of the fir | ala <sub>n ya</sub> ng pangan karang p<br>Pangang pangan karang pangang pa | <b>CF Step</b><br>1.00000000 GHz<br><u>Auto</u> Man |
| -70.0                 |                   |      |                                                                                                                |                         |             |        |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                | <b>Freq Offset</b><br>0 Hz                          |
| -80.0                 |                   |      |                                                                                                                |                         |             |        |                        | Ston 20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                |                                                     |
| Start 10.0<br>#Res BW |                   |      | #VBW                                                                                                           | / 3.0 MHz               |             |        | Sweep 25               | 33 ms (2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | .000 GHz<br>0001 pts)                                                                                                                                                                                                                          |                                                     |
| MSG                   |                   |      |                                                                                                                |                         |             |        | STATUS                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                |                                                     |





Plot 7-61. Conducted Spurious Plot (AWS WCDMA Mode - Ch. 1862)

| FCC ID: ZNFVS987             | PCTEST         | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | 💽 LG | Reviewed by:<br>Quality Manager |
|------------------------------|----------------|------------------------------------------------------------------------------|------|---------------------------------|
| Test Report S/N:             | Test Dates:    | EUT Type:                                                                    |      | Dega 45 of 104                  |
| 0Y1601180117-R2.ZNF          | 1/20-2/18/2016 | Portable Handset                                                             |      | Page 45 of 104                  |
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|                                 | m Analyzer - Swept S |           |                        | -                       | 1       |          |                                | -               |                   |                                              |
|---------------------------------|----------------------|-----------|------------------------|-------------------------|---------|----------|--------------------------------|-----------------|-------------------|----------------------------------------------|
| L <mark>XI</mark> RL            | RF 50 Ω              | AC COR    | REC                    | SEM                     | ISE:INT | #Avg Typ | ALIGNAUTO<br>e: RMS            |                 | M Jan 20, 2016    | Frequency                                    |
|                                 |                      | P1<br>IF6 | NO: Fast 🖵<br>Gain:Low | Trig: Free<br>Atten: 30 |         |          |                                | TY              |                   |                                              |
| 10 dB/div<br>Log                | Ref 20.00 di         | Bm        |                        |                         |         |          | Mk                             | r1 1.76<br>-34. | 0 0 GHz<br>16 dBm | Auto Tune                                    |
| 10.0                            |                      |           |                        |                         |         |          |                                |                 |                   | Center Freq<br>5.880000000 GHz               |
| -10.0                           |                      |           |                        |                         |         |          |                                |                 | -13.00 dBm        | <b>Start Freq</b><br>1.760000000 GHz         |
| -20.0<br>-30.0 <mark>1</mark> — |                      |           |                        |                         |         |          |                                |                 |                   | <b>Stop Freq</b><br>10.000000000 GHz         |
| -40.0                           |                      |           |                        |                         |         |          | (a) Marine prime (basileters); |                 |                   | CF Step<br>824.000000 MHz<br><u>Auto</u> Man |
| -60.0                           |                      |           |                        |                         |         |          |                                |                 |                   | <b>Freq Offset</b><br>0 Hz                   |
| -70.0                           | 60 GHz               |           |                        |                         |         |          |                                | Stop 10         | .000 GHz          |                                              |
| #Res BW                         |                      |           | #VBW                   | 3.0 MHz                 |         | S        | weep 14                        | .28 ms (1       | 6481 pts)         |                                              |
| MSG                             |                      |           |                        |                         |         |          | STATUS                         |                 |                   |                                              |





Plot 7-63. Conducted Spurious Plot (AWS WCDMA Mode - Ch. 1862)

| FCC ID: ZNFVS987             |                | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | 🕑 LG | Reviewed by:<br>Quality Manager |
|------------------------------|----------------|------------------------------------------------------------------------------|------|---------------------------------|
| Test Report S/N:             | Test Dates:    | EUT Type:                                                                    |      | Page 46 of 104                  |
| 0Y1601180117-R2.ZNF          | 1/20-2/18/2016 | Portable Handset                                                             |      | Page 46 01 104                  |
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| Agilent Spectrum Analyzer - Swept SA |           |                                                        |                           | 1                                                                                                               |                          |                           |
|--------------------------------------|-----------|--------------------------------------------------------|---------------------------|-----------------------------------------------------------------------------------------------------------------|--------------------------|---------------------------|
| LXU RL RF 50Ω AC                     | CORREC    | SENSE:INT                                              | ALIGNAU<br>#Avg Type: RMS | TRACE                                                                                                           | 123456                   | Frequency                 |
|                                      |           | Trig: Free Run<br>Atten: 30 dB                         |                           | TYPE<br>DE1                                                                                                     | A WATAWAY<br>A N N N N N |                           |
|                                      | IFGam:Luw | Atten. 00 dB                                           |                           | Mkr1 1 945                                                                                                      |                          | Auto Tune                 |
| 10 dB/div Ref 20.00 dBm              |           |                                                        |                           | Mkr1 1.845<br>-35.7                                                                                             | 0 dBm                    |                           |
|                                      |           |                                                        |                           |                                                                                                                 |                          |                           |
|                                      |           |                                                        |                           |                                                                                                                 |                          | Center Freq               |
| 10.0                                 |           |                                                        |                           |                                                                                                                 |                          | 937.500000 MHz            |
|                                      |           |                                                        |                           |                                                                                                                 |                          |                           |
| 0.00                                 |           |                                                        |                           |                                                                                                                 |                          | Start Freq                |
|                                      |           |                                                        |                           |                                                                                                                 |                          | 30.000000 MHz             |
| -10.0                                |           |                                                        |                           |                                                                                                                 | -13.00 dBm               |                           |
| -20.0                                |           |                                                        |                           |                                                                                                                 |                          |                           |
| -20.0                                |           |                                                        |                           |                                                                                                                 |                          | Stop Freq                 |
| -30.0                                |           |                                                        |                           |                                                                                                                 |                          | 1.845000000 GHz           |
|                                      |           |                                                        |                           |                                                                                                                 | <u> </u>                 |                           |
| -40.0                                |           |                                                        |                           |                                                                                                                 |                          | CF Step<br>181.500000 MHz |
|                                      |           |                                                        |                           |                                                                                                                 |                          | Auto Man                  |
| -50.0                                |           | ananang kang pang bang bang bang bang bang bang bang b |                           | and the second secon | <del>a set miner</del>   |                           |
|                                      |           |                                                        |                           |                                                                                                                 |                          | Freq Offset               |
| -60.0                                |           |                                                        |                           |                                                                                                                 |                          | 0 Hz                      |
|                                      |           |                                                        |                           |                                                                                                                 |                          |                           |
| -70.0                                |           |                                                        |                           |                                                                                                                 |                          |                           |
|                                      |           |                                                        |                           |                                                                                                                 |                          |                           |
| Start 30.0 MHz                       |           |                                                        |                           | Stop 1.8                                                                                                        | 450 GHz                  |                           |
| #Res BW 1.0 MHz                      | #VBW 3    | .0 MHz                                                 | Swee                      | p 2.420 ms (3                                                                                                   | 631 pts)                 |                           |
| MSG                                  |           |                                                        | s                         | TATUS                                                                                                           |                          |                           |

Plot 7-64. Conducted Spurious Plot (PCS WCDMA Mode – Ch. 9262)



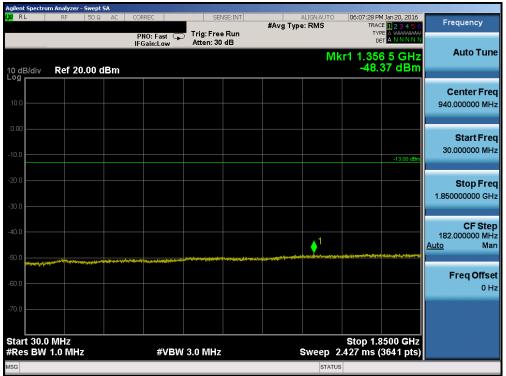
Plot 7-65. Conducted Spurious Plot (PCS WCDMA Mode – Ch. 9262)

| FCC ID: ZNFVS987             | PCTEST         | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | 💽 LG | Reviewed by:<br>Quality Manager |
|------------------------------|----------------|------------------------------------------------------------------------------|------|---------------------------------|
| Test Report S/N:             | Test Dates:    | EUT Type:                                                                    |      | Dage 47 of 104                  |
| 0Y1601180117-R2.ZNF          | 1/20-2/18/2016 | Portable Handset                                                             |      | Page 47 of 104                  |
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|                  | ım Analyzer - Swept                                                                                                                                                                                                                |       |                         |                         |         |          |                       |                 |                                        |                                    |
|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-------------------------|-------------------------|---------|----------|-----------------------|-----------------|----------------------------------------|------------------------------------|
| LXI RL           | RF 50 Ω                                                                                                                                                                                                                            | AC CC | RREC                    | SEM                     | ISE:INT | #Avg Typ | ALIGNAUTO             |                 | 4 Jan 20, 2016<br>E <b>1 2 3 4 5 6</b> | Frequency                          |
|                  |                                                                                                                                                                                                                                    |       | PNO: Fast 🕞<br>Gain:Low | Trig: Free<br>Atten: 20 |         |          |                       | TYI<br>Di       | ET A NNNNN                             |                                    |
| 10 dB/div<br>Log | Ref 10.00 c                                                                                                                                                                                                                        | 1Bm   |                         |                         |         |          | Mkr                   | 1 17.00<br>-49. | 9 5 GHz<br>22 dBm                      | Auto Tune                          |
| 0.00             |                                                                                                                                                                                                                                    |       |                         |                         |         |          |                       |                 |                                        | Center Freq<br>15.00000000 GHz     |
|                  |                                                                                                                                                                                                                                    |       |                         |                         |         |          |                       |                 |                                        | 15.00000000 GHZ                    |
| -10.0            |                                                                                                                                                                                                                                    |       |                         |                         |         |          |                       |                 | -13.00 dBm                             | Start Freq                         |
| -20.0            |                                                                                                                                                                                                                                    |       |                         |                         |         |          |                       |                 |                                        | 10.00000000 GHz                    |
| -30.0            |                                                                                                                                                                                                                                    |       |                         |                         |         |          |                       |                 |                                        | Stop Freq                          |
| -40.0            |                                                                                                                                                                                                                                    |       |                         |                         |         |          |                       |                 |                                        | 20.000000000 GHz                   |
| -50.0            |                                                                                                                                                                                                                                    |       |                         |                         |         |          | <b>↓</b> <sup>1</sup> |                 |                                        | CF Step                            |
|                  | مراجع المراجع المراجع<br>مستقدم من المراجع |       |                         |                         |         |          |                       |                 |                                        | 1.000000000 GHz<br><u>Auto</u> Man |
|                  |                                                                                                                                                                                                                                    |       |                         |                         |         |          |                       |                 |                                        | Freq Offset                        |
| -70.0            |                                                                                                                                                                                                                                    |       |                         |                         |         |          |                       |                 |                                        | 0 Hz                               |
| -80.0            |                                                                                                                                                                                                                                    |       |                         |                         |         |          |                       |                 |                                        |                                    |
| Start 10.0       |                                                                                                                                                                                                                                    |       |                         |                         |         |          |                       | Stop 20         | .000 GHz                               |                                    |
| #Res BW          |                                                                                                                                                                                                                                    |       | #VBW                    | / 3.0 MHz               |         |          | weep 25               | .33 ms (2       | 0000 GH2                               |                                    |
| MSG              |                                                                                                                                                                                                                                    |       |                         |                         |         |          | STATUS                |                 |                                        |                                    |





Plot 7-67. Conducted Spurious Plot (PCS WCDMA Mode – Ch. 9400)

| FCC ID: ZNFVS987             | PCTEST         | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | 🕑 LG | Reviewed by:<br>Quality Manager |
|------------------------------|----------------|------------------------------------------------------------------------------|------|---------------------------------|
| Test Report S/N:             | Test Dates:    | EUT Type:                                                                    |      | Dega 49 of 104                  |
| 0Y1601180117-R2.ZNF          | 1/20-2/18/2016 | Portable Handset                                                             |      | Page 48 of 104                  |
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| Agilent Spectru<br><mark>LXI</mark> RL | m Analyzer - Swept SA<br>RF 50 Ω | AC CORREC                                                | SENSE:INT                      | ALIGNAUTO      | 06:07:38 PM Jan 20, 2016                                                                                                                                                                                                          | English                                      |
|----------------------------------------|----------------------------------|----------------------------------------------------------|--------------------------------|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|
|                                        |                                  | PNO: Fast 🖵<br>IFGain:Low                                | Trig: Free Run<br>Atten: 30 dB | #Avg Type: RMS | TRACE 123456<br>TYPE A WWWW<br>DET A N N N N N                                                                                                                                                                                    | Frequency                                    |
| 10 dB/div                              | Ref 20.00 dB                     |                                                          | Atten. 30 db                   | Mł             | r1 7.624 5 GHz<br>-44.98 dBm                                                                                                                                                                                                      | Auto Tune                                    |
| 10.0                                   |                                  |                                                          |                                |                |                                                                                                                                                                                                                                   | Center Freq<br>5.955000000 GHz               |
| -10.0                                  |                                  |                                                          |                                |                | -13.00 dBm                                                                                                                                                                                                                        | <b>Start Freq</b><br>1.910000000 GHz         |
| -20.0                                  |                                  |                                                          |                                |                |                                                                                                                                                                                                                                   | <b>Stop Freq</b><br>10.000000000 GHz         |
| -40.0                                  |                                  | المتحديثة المربي معاملة المربي معاملة المحدية إلى أستعمل |                                |                | a la terreta de la constante d<br>La constante de la constante de | CF Step<br>809.000000 MHz<br><u>Auto</u> Man |
| -60.0                                  |                                  |                                                          |                                |                |                                                                                                                                                                                                                                   | Freq Offset<br>0 Hz                          |
| -70.0 Start 1.91                       |                                  |                                                          |                                |                | Stop 10.000 GHz                                                                                                                                                                                                                   |                                              |
| #Res BW                                | 1.0 MHz                          | #VBW                                                     | 3.0 MHz                        | -              | .02 ms (16181 pts)                                                                                                                                                                                                                |                                              |
| MSG                                    |                                  |                                                          |                                | STATUS         |                                                                                                                                                                                                                                   |                                              |





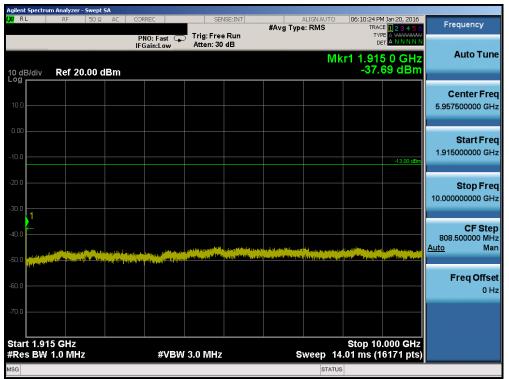
Plot 7-69. Conducted Spurious Plot (PCS WCDMA Mode – Ch. 9400)

| FCC ID: ZNFVS987             |                                          | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | 🕞 LG | Reviewed by:<br>Quality Manager |  |  |
|------------------------------|------------------------------------------|------------------------------------------------------------------------------|------|---------------------------------|--|--|
| Test Report S/N:             | Test Dates:                              | EUT Type:                                                                    |      | Page 49 of 104                  |  |  |
| 0Y1601180117-R2.ZNF          | 1/20-2/18/2016                           | Portable Handset                                                             |      | Page 49 01 104                  |  |  |
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|                       | ım Analyzer - Swept S                    |                                              |                     |                         |         |      |                                            |                       |                                              |                                                     |
|-----------------------|------------------------------------------|----------------------------------------------|---------------------|-------------------------|---------|------|--------------------------------------------|-----------------------|----------------------------------------------|-----------------------------------------------------|
| L <mark>XI</mark> RL  | RF 50 Ω                                  | AC CORRE                                     | EC                  | SEN                     | ISE:INT |      | ALIGNAUTO<br>Type: RMS                     | 06:10:17 PM           | 4 Jan 20, 2016<br>E <mark>1 2 3 4 5 6</mark> | Frequency                                           |
|                       |                                          |                                              | ): Fast 😱<br>in:Low | Trig: Free<br>Atten: 30 |         | #Avg | Туре: КМБ                                  | TYP                   | ETANNNNN                                     |                                                     |
| 10 dB/div<br>Log      | Ref 20.00 d                              | IBm                                          |                     |                         |         |      | Mk                                         | r1 1.763<br>-48.      | 3 5 GHz<br>17 dBm                            | Auto Tune                                           |
| 10.0                  |                                          |                                              |                     |                         |         |      |                                            |                       |                                              | Center Freq<br>940.000000 MHz                       |
| -10.0                 |                                          |                                              |                     |                         |         |      |                                            |                       | -13.00 dBm                                   | Start Freq<br>30.000000 MHz                         |
| -20.0                 |                                          |                                              |                     |                         |         |      |                                            |                       |                                              | <b>Stop Freq</b><br>1.850000000 GHz                 |
| -40.0                 |                                          |                                              |                     |                         |         |      | u., u. aala (episat viidal maanina, 1965). | andra i Merendi de    | 1                                            | <b>CF Step</b><br>182.000000 MHz<br><u>Auto</u> Man |
| -50.0                 | an a | ng Alahat Annihit an Indonesia (Alahat angin | **********          |                         |         |      |                                            |                       |                                              | Freq Offset<br>0 Hz                                 |
| -70.0                 |                                          |                                              |                     |                         |         |      |                                            |                       |                                              |                                                     |
| Start 30.0<br>#Res BW |                                          |                                              | #VBW                | 3.0 MHz                 |         |      | Sweep 2                                    | Stop 1.8<br>.427 ms ( | 3500 GHz<br>3641 pts)                        |                                                     |
| MSG                   |                                          |                                              |                     |                         |         |      | STATUS                                     |                       |                                              |                                                     |





Plot 7-71. Conducted Spurious Plot (PCS WCDMA Mode – Ch. 9538)

| FCC ID: ZNFVS987             | PCTEST                                     | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | 💽 LG | Reviewed by:<br>Quality Manager |  |  |
|------------------------------|--------------------------------------------|------------------------------------------------------------------------------|------|---------------------------------|--|--|
| Test Report S/N:             | Test Dates:                                | EUT Type:                                                                    |      | Dege 50 of 104                  |  |  |
| 0Y1601180117-R2.ZNF          | 1/20-2/18/2016                             | Portable Handset                                                             |      | Page 50 of 104                  |  |  |
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|                      | ectrum Analyzer - S                                                                       |                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                 |         | 1                  |                   | -                 |                                                                                                                  |              |      |
|----------------------|-------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|---------|--------------------|-------------------|-------------------|------------------------------------------------------------------------------------------------------------------|--------------|------|
| L <mark>XI</mark> RL | RF                                                                                        | 50 Ω AC                                                                                                                                          | CORREC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | SEN                                                                                                             | ISE:INT | #Avg Typ           | ALIGNAUTO         |                   | 4 Jan 20, 2016<br>E <b>1 2 3 4 5 6</b>                                                                           | Frequency    |      |
|                      |                                                                                           |                                                                                                                                                  | PNO: Fast 🕞                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Trig: Free                                                                                                      |         |                    |                   | TY                |                                                                                                                  |              |      |
|                      |                                                                                           |                                                                                                                                                  | IFGain:Low                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Atten: 20                                                                                                       | dB      |                    |                   |                   |                                                                                                                  | Auto T       | une  |
|                      |                                                                                           |                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                 |         |                    | Mkr               | 1 17.04           | 7 0 GHz                                                                                                          | Auton        | une  |
| 10 dB/d              | iv Ref 10.                                                                                | 00 dBm                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                 |         |                    |                   | -48.              | 95 dBm                                                                                                           |              |      |
|                      |                                                                                           |                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                 |         |                    |                   |                   |                                                                                                                  | Center F     | iroa |
| 0.00                 |                                                                                           |                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                 |         |                    |                   |                   |                                                                                                                  | 15.000000000 |      |
|                      |                                                                                           |                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                 |         |                    |                   |                   |                                                                                                                  | 13.000000000 | GHZ  |
| -10.0                |                                                                                           |                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                 |         |                    |                   |                   |                                                                                                                  |              |      |
|                      |                                                                                           |                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                 |         |                    |                   |                   | -13.00 dBm                                                                                                       | Start F      | req  |
| -20.0                |                                                                                           |                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                 |         |                    |                   |                   |                                                                                                                  | 10.00000000  | GHz  |
| -20.0                |                                                                                           |                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                 |         |                    |                   |                   |                                                                                                                  |              |      |
| -30.0                |                                                                                           |                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                 |         |                    |                   |                   |                                                                                                                  |              |      |
| -30.0                |                                                                                           |                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                 |         |                    |                   |                   |                                                                                                                  | Stop F       | -    |
|                      |                                                                                           |                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                 |         |                    |                   |                   |                                                                                                                  | 20.00000000  | GHz  |
| -40.0                |                                                                                           |                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                 |         |                    | . 1               |                   |                                                                                                                  |              |      |
|                      |                                                                                           |                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                 |         |                    | <u>ا</u>          |                   |                                                                                                                  | CF S         |      |
| -50.0                |                                                                                           |                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | سي بيناك د بي تأسي                                                                                              |         | and a stand of the |                   |                   | Report Press Mer                                                                                                 | 1.00000000   |      |
|                      | a na sang sa taon ng sa sa taon<br>Ng sang sa sang sa | and provide the provide state<br>and provide the provide state and the provide state and the provide state and the provide state and the provide | and the part of th | and a statistical data and a second state of the second state of the second state of the second state of the se |         | Auto Marine        | Beljise Hitteliek | lenne på det skil | and the second | Auto         | Man  |
| -60.0                |                                                                                           |                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                 |         |                    |                   |                   |                                                                                                                  |              |      |
|                      |                                                                                           |                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                 |         |                    |                   |                   |                                                                                                                  | Freq Of      | fset |
| -70.0                |                                                                                           |                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                 |         |                    |                   |                   |                                                                                                                  | (            | 0 Hz |
|                      |                                                                                           |                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                 |         |                    |                   |                   |                                                                                                                  |              |      |
| -80.0                |                                                                                           |                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                 |         |                    |                   |                   |                                                                                                                  |              |      |
|                      |                                                                                           |                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                 |         |                    |                   |                   |                                                                                                                  |              |      |
| Start_1              | 0.000 GHz                                                                                 |                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                 |         |                    |                   | Stop 20           | .000 GHz                                                                                                         |              |      |
|                      | 3W 1.0 MHz                                                                                |                                                                                                                                                  | #VBW                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | / 3.0 MHz                                                                                                       |         | s                  | weep 25           | .33 ms (2         | 0001 pts)                                                                                                        |              |      |
| MSG                  |                                                                                           |                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                 |         |                    | STATUS            |                   |                                                                                                                  |              |      |
|                      |                                                                                           |                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                 |         |                    | 0.1100            |                   |                                                                                                                  |              |      |

Plot 7-72. Conducted Spurious Plot (PCS WCDMA Mode – Ch. 9538)

| FCC ID: ZNFVS987             |                                          | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | Reviewed by:<br>Quality Manager |  |  |  |
|------------------------------|------------------------------------------|------------------------------------------------------------------------------|---------------------------------|--|--|--|
| Test Report S/N:             | Test Dates:                              | EUT Type:                                                                    | Dogo 51 of 104                  |  |  |  |
| 0Y1601180117-R2.ZNF          | 1/20-2/18/2016                           | Portable Handset                                                             | Page 51 of 104                  |  |  |  |
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# 7.4 Band Edge Emissions at Antenna Terminal §2.1051 §22.917(a) §24.238(a) §27.53(h)

#### Test Overview

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

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

#### Test Procedure Used

KDB 971168 v02r02 – Section 6.0

#### Test Settings

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

#### Test Setup

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

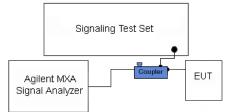


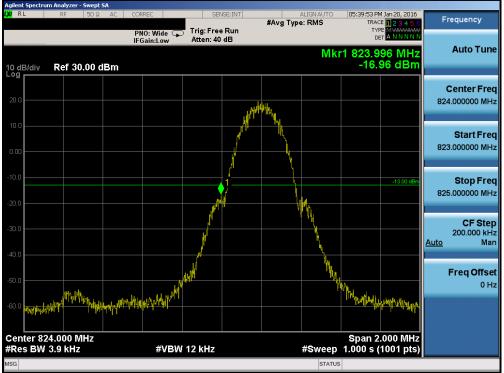
Figure 7-3. Test Instrument & Measurement Setup

#### **Test Notes**

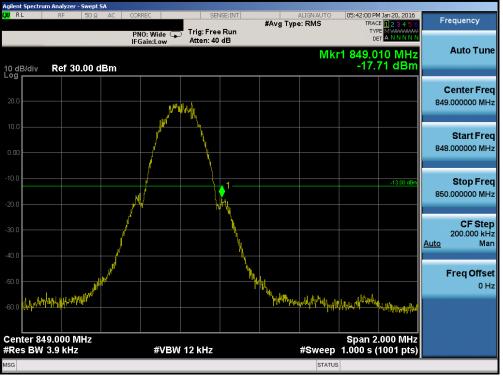
Per 22.917(b), 24.238(b), 27.53(h)(3), in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to demonstrate compliance with the out-of-band emissions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

| FCC ID: ZNFVS987             | <u> PCTEST</u>                           | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | 💽 LG | Reviewed by:<br>Quality Manager |  |  |
|------------------------------|------------------------------------------|------------------------------------------------------------------------------|------|---------------------------------|--|--|
| Test Report S/N:             | Test Dates:                              | EUT Type:                                                                    |      | Daga 52 of 104                  |  |  |
| 0Y1601180117-R2.ZNF          | 1/20-2/18/2016                           | Portable Handset                                                             |      | Page 52 of 104                  |  |  |
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Plot 7-73. Band Edge Plot (Cellular GSM Mode – Ch. 128)



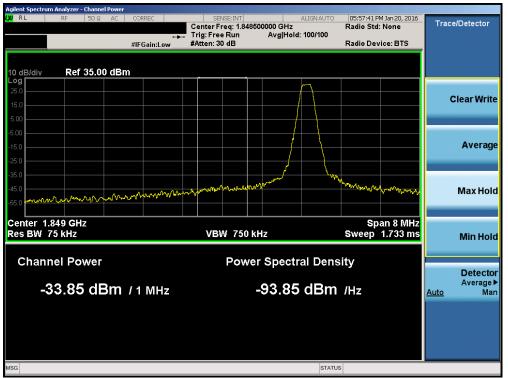
Plot 7-74. Band Edge Plot (Cellular GSM Mode – Ch. 251)

| FCC ID: ZNFVS987             | PCTEST                                     | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | 🕒 LG | Reviewed by:<br>Quality Manager |  |  |  |
|------------------------------|--------------------------------------------|------------------------------------------------------------------------------|------|---------------------------------|--|--|--|
| Test Report S/N:             | Test Dates:                                | EUT Type:                                                                    |      | Dega 52 of 104                  |  |  |  |
| 0Y1601180117-R2.ZNF          | 1/20-2/18/2016                             | Portable Handset                                                             |      | Page 53 of 104                  |  |  |  |
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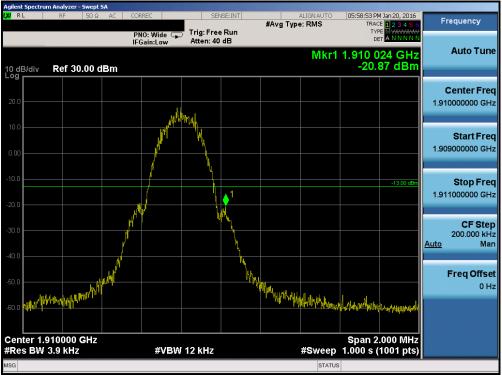
Plot 7-75. Band Edge Plot (PCS GSM Mode - Ch. 512)

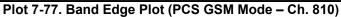


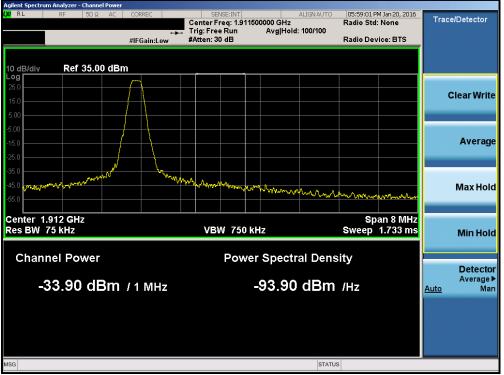
Plot 7-76. 4MHz Span Plot (PCS GSM Mode – Ch. 512)

| FCC ID: ZNFVS987             |                 | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | 💽 LG | Reviewed by:<br>Quality Manager |  |
|------------------------------|-----------------|------------------------------------------------------------------------------|------|---------------------------------|--|
| Test Report S/N:             | Test Dates:     | EUT Type:                                                                    |      | Daga 54 of 104                  |  |
| 0Y1601180117-R2.ZNF          | 1/20-2/18/2016  | Portable Handset                                                             |      | Page 54 of 104                  |  |
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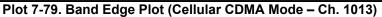


Plot 7-78. 4MHz Span Plot (PCS GSM Mode - Ch. 810)

| FCC ID: ZNFVS987             |                 | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT | Reviewed by:<br>Quality Manager |
|------------------------------|-----------------|-----------------------------------------------------------|---------------------------------|
| Test Report S/N:             | Test Dates:     | EUT Type:                                                 | Daga EE of 104                  |
| 0Y1601180117-R2.ZNF          | 1/20-2/18/2016  | Portable Handset                                          | Page 55 of 104                  |
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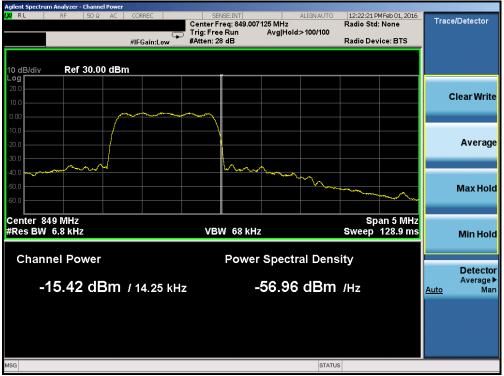


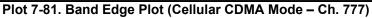


Plot 7-80. 4MHz Span Plot (Cellular CDMA Mode – Ch. 1013)

| FCC ID: ZNFVS987                           | PCTEST         | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | 🕑 LG | Reviewed by:<br>Quality Manager |  |
|--------------------------------------------|----------------|------------------------------------------------------------------------------|------|---------------------------------|--|
| Test Report S/N:                           | Test Dates:    | EUT Type:                                                                    |      | Dage EC of 104                  |  |
| 0Y1601180117-R2.ZNF                        | 1/20-2/18/2016 | Portable Handset                                                             |      | Page 56 of 104                  |  |
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Plot 7-82. 4MHz Span Plot (Cellular CDMA Mode – Ch. 777)

| FCC ID: ZNFVS987             | PCTEST                                     | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | 💽 LG | Reviewed by:<br>Quality Manager |  |  |
|------------------------------|--------------------------------------------|------------------------------------------------------------------------------|------|---------------------------------|--|--|
| Test Report S/N:             | Test Dates:                                | EUT Type:                                                                    |      | Dega 57 of 104                  |  |  |
| 0Y1601180117-R2.ZNF          | 1/20-2/18/2016                             | Portable Handset                                                             |      | Page 57 of 104                  |  |  |
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|                  | n Analyzer - Swept SA |                           |                                |                             |                                          |                                           |
|------------------|-----------------------|---------------------------|--------------------------------|-----------------------------|------------------------------------------|-------------------------------------------|
| LXI RL           | RF 50 Ω               | AC CORREC                 | SENSE:INT                      | ALIGNAUTO<br>#Avg Type: RMS | 02:02:52 PM Feb 01, 2016<br>TRACE 123456 | Frequency                                 |
|                  |                       | PNO: Wide 🌩<br>IFGain:Low | Trig: Free Run<br>Atten: 40 dB |                             | TYPE A WWWWW<br>DET A N N N N N          |                                           |
| 10 dB/div<br>Log | Ref 30.00 dE          | 3m                        |                                | Mkr                         | 1.849 995 GHz<br>-32.40 dBm              | Auto Tune                                 |
| 20.0             |                       |                           |                                |                             |                                          | Center Freq<br>1.85000000 GHz             |
| 0.00             |                       |                           |                                |                             | ~~~                                      | <b>Start Freq</b><br>1.847500000 GHz      |
| -10.0            |                       |                           |                                |                             | -13.00 dBm                               | <b>Stop Freq</b><br>1.852500000 GHz       |
| -30.0            |                       |                           | 1                              |                             |                                          | CF Step<br>500.000 kHz<br><u>Auto</u> Man |
| -50.0            |                       | m                         |                                |                             |                                          | Freq Offset<br>0 Hz                       |
|                  | 350000 GHz            |                           |                                |                             | Span 5.000 MHz                           |                                           |
| #Res BW          | 15 kHz                | #VBW                      | 47 kHz                         |                             | 27.33 ms (1001 pts)                      |                                           |
| MSG              |                       |                           |                                | STATU                       | 5                                        |                                           |

Plot 7-83. Band Edge Plot (PCS CDMA Mode - Ch. 25)



Plot 7-84. 4MHz Span Plot (PCS CDMA Mode - Ch. 25)

| FCC ID: ZNFVS987                           | PCTEST         | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | 🕐 LG | Reviewed by:<br>Quality Manager |
|--------------------------------------------|----------------|------------------------------------------------------------------------------|------|---------------------------------|
| Test Report S/N:                           | Test Dates:    | EUT Type:                                                                    |      | Dega 59 of 104                  |
| 0Y1601180117-R2.ZNF                        | 1/20-2/18/2016 | Portable Handset                                                             |      | Page 58 of 104                  |
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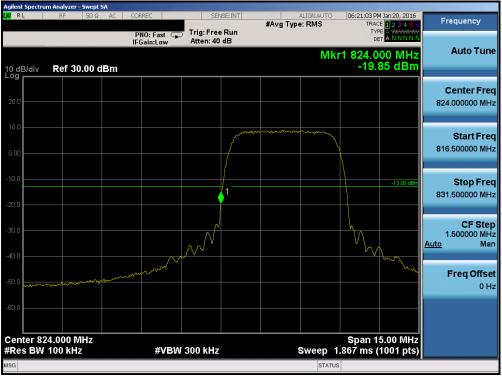




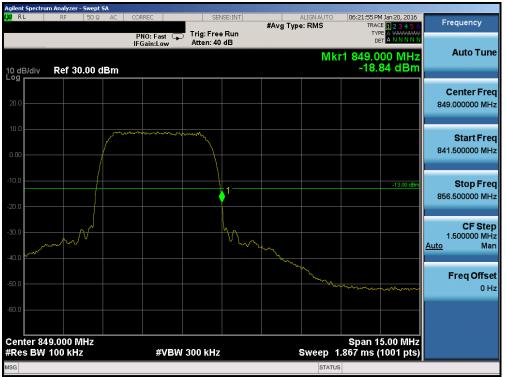
Plot 7-86. 4MHz Span Plot (PCS CDMA Mode – Ch. 1175)

| FCC ID: ZNFVS987                         | PCTEST         | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | 💽 LG | Reviewed by:<br>Quality Manager |
|------------------------------------------|----------------|------------------------------------------------------------------------------|------|---------------------------------|
| Test Report S/N:                         | Test Dates:    | EUT Type:                                                                    |      | Dage E0 of 104                  |
| 0Y1601180117-R2.ZNF                      | 1/20-2/18/2016 | Portable Handset                                                             |      | Page 59 of 104                  |
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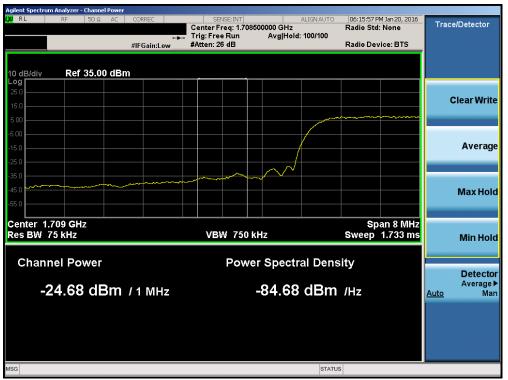
Plot 7-88. Band Edge Plot (Cellular WCDMA Mode - Ch. 4233)

| FCC ID: ZNFVS987                           |                | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | 💽 LG | Reviewed by:<br>Quality Manager |
|--------------------------------------------|----------------|------------------------------------------------------------------------------|------|---------------------------------|
| Test Report S/N:                           | Test Dates:    | EUT Type:                                                                    |      | Dogo 60 of 104                  |
| 0Y1601180117-R2.ZNF                        | 1/20-2/18/2016 | Portable Handset                                                             |      | Page 60 of 104                  |
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Plot 7-89. Band Edge Plot (AWS WCDMA Mode – Ch. 1312)



Plot 7-90. 4MHz Span Plot (AWS WCDMA Mode – Ch. 1312)

| FCC ID: ZNFVS987                         |                | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | Reviewed by:<br>Quality Manager |  |
|------------------------------------------|----------------|------------------------------------------------------------------------------|---------------------------------|--|
| Test Report S/N:                         | Test Dates:    | EUT Type:                                                                    | Dega 61 of 104                  |  |
| 0Y1601180117-R2.ZNF                      | 1/20-2/18/2016 | Portable Handset                                                             | Page 61 of 104                  |  |
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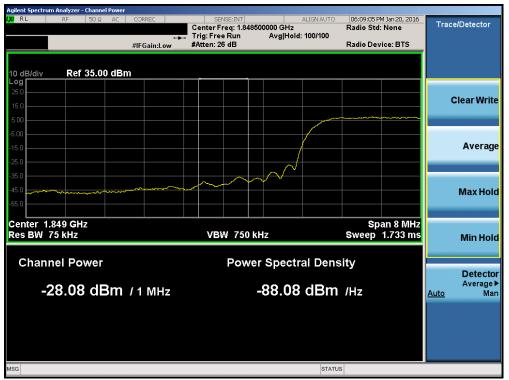
Plot 7-92. 4MHz Span Plot (AWS WCDMA Mode - Ch. 1862)

| FCC ID: ZNFVS987                         | PCTEST         | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | 💽 LG | Reviewed by:<br>Quality Manager |
|------------------------------------------|----------------|------------------------------------------------------------------------------|------|---------------------------------|
| Test Report S/N:                         | Test Dates:    | EUT Type:                                                                    |      | Page 62 of 104                  |
| 0Y1601180117-R2.ZNF                      | 1/20-2/18/2016 | Portable Handset                                                             |      | Page 62 01 104                  |
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Plot 7-93. Band Edge Plot (PCS WCDMA Mode – Ch. 9262)



Plot 7-94. 4MHz Span Plot (PCS WCDMA Mode – Ch. 9262)

| FCC ID: ZNFVS987                         | PCTEST         | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | 🕕 LG | Reviewed by:<br>Quality Manager |
|------------------------------------------|----------------|------------------------------------------------------------------------------|------|---------------------------------|
| Test Report S/N:                         | Test Dates:    | EUT Type:                                                                    |      | Page 63 of 104                  |
| 0Y1601180117-R2.ZNF                      | 1/20-2/18/2016 | Portable Handset                                                             |      | Page 63 01 104                  |
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|                      | m Analyzer - Swepl |       |                                        |                                |        |                       |                       |                       |                                            |
|----------------------|--------------------|-------|----------------------------------------|--------------------------------|--------|-----------------------|-----------------------|-----------------------|--------------------------------------------|
| L <mark>XI</mark> RL | RF 50 S            | AC AC | CORREC                                 | SENSE:INT                      | #Ava T | ALIGNAUTO<br>vpe: RMS |                       | Jan 20, 2016          | Frequency                                  |
|                      |                    |       | PNO: Fast 😱<br>IFGain:Low              | Trig: Free Run<br>Atten: 40 dB |        |                       | TYP<br>DE             |                       |                                            |
| 10 dB/div<br>Log     | Ref 30.00          | dBm   |                                        |                                |        | Mkr1                  | 1.910 0<br>-18.90     | 00 GHz<br>02 dBm      | Auto Tune                                  |
| 20.0                 |                    |       |                                        |                                |        |                       |                       |                       | Center Freq<br>1.910000000 GHz             |
| 0.00                 |                    | / mm  | ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ |                                |        |                       |                       |                       | Start Freq<br>1.902500000 GHz              |
| -10.0                |                    |       |                                        | 1                              |        |                       |                       | -13.00 dBm            | <b>Stop Freq</b><br>1.917500000 GHz        |
| -30.0                | ~~~~^              |       |                                        | - W                            | n      |                       |                       |                       | CF Step<br>1.500000 MHz<br><u>Auto</u> Man |
| -50.0                |                    |       |                                        |                                |        | un want               | and the second second | and the second second | <b>Freq Offset</b><br>0 Hz                 |
|                      | 910000 GHz         |       | #\/DW                                  | 300 kHz                        |        | Swaap-4               | Span 14<br>.867 ms (* | 5.00 MHz              |                                            |
| #Res BW              | TOU KHZ            |       | #vBW                                   | JUU KHZ                        |        | Sweep 1               |                       | roon pis)             |                                            |
|                      |                    |       |                                        |                                |        | STATUS                | <u></u>               |                       |                                            |





Plot 7-96. 4MHz Span Plot (PCS WCDMA Mode - Ch. 9538)

| FCC ID: ZNFVS987                         | PCTEST         | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | 💽 LG | Reviewed by:<br>Quality Manager |
|------------------------------------------|----------------|------------------------------------------------------------------------------|------|---------------------------------|
| Test Report S/N:                         | Test Dates:    | EUT Type:                                                                    |      | Dega 64 of 104                  |
| 0Y1601180117-R2.ZNF                      | 1/20-2/18/2016 | Portable Handset                                                             |      | Page 64 of 104                  |
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# 7.5 Peak-Average Ratio

#### Test Overview

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

## Test Procedure Used

KDB 971168 v02r02 - Section 5.7.1

## Test Settings

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

#### Test Setup

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

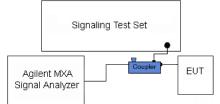


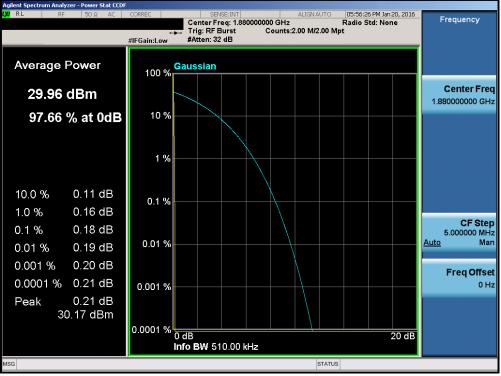
Figure 7-4. Test Instrument & Measurement Setup

# <u>Test Notes</u>

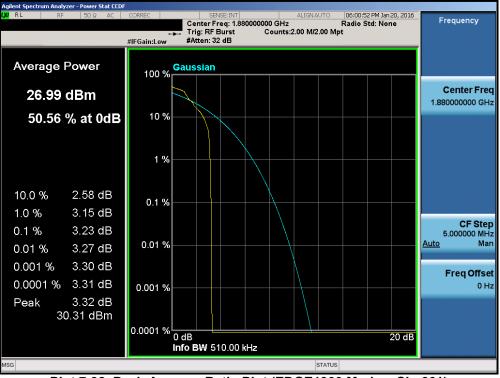
None

| FCC ID: ZNFVS987             |                                          | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT | Reviewed by:<br>Quality Manager |  |  |
|------------------------------|------------------------------------------|-----------------------------------------------------------|---------------------------------|--|--|
| Test Report S/N:             | Test Dates:                              | EUT Type:                                                 | Page 65 of 104                  |  |  |
| 0Y1601180117-R2.ZNF          | 1/20-2/18/2016                           | Portable Handset                                          | Fage 05 01 104                  |  |  |
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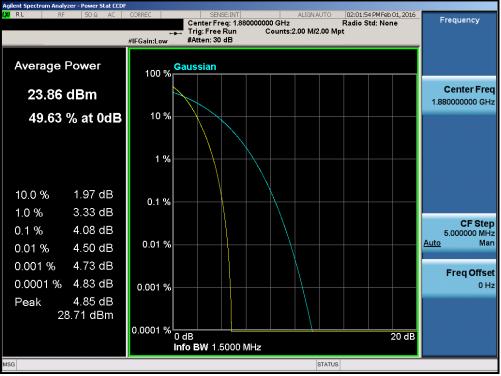




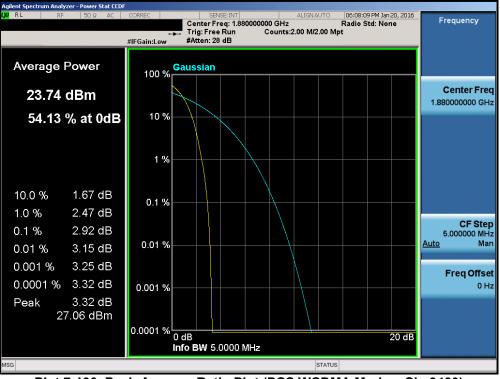
Plot 7-98. Peak-Average Ratio Plot (EDGE1900 Mode – Ch. 661)

| FCC ID: ZNFVS987                           | <u>PCTEST</u>  | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | 🕑 LG | Reviewed by:<br>Quality Manager |
|--------------------------------------------|----------------|------------------------------------------------------------------------------|------|---------------------------------|
| Test Report S/N:                           | Test Dates:    | EUT Type:                                                                    |      | Page 66 of 104                  |
| 0Y1601180117-R2.ZNF                        | 1/20-2/18/2016 | Portable Handset                                                             |      | Page 66 01 104                  |
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Plot 7-100. Peak-Average Ratio Plot (PCS WCDMA Mode – Ch. 9400)

| FCC ID: ZNFVS987                           | PCTEST         | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | 💽 LG | Reviewed by:<br>Quality Manager |
|--------------------------------------------|----------------|------------------------------------------------------------------------------|------|---------------------------------|
| Test Report S/N:                           | Test Dates:    | EUT Type:                                                                    |      | Dage 67 of 104                  |
| 0Y1601180117-R2.ZNF                        | 1/20-2/18/2016 | Portable Handset                                                             |      | Page 67 of 104                  |
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## 7.6 Radiated Power (ERP/EIRP) §22.913(a)(2) 24.232(c) 27.50(d.4)

#### Test Overview

Effective Radiated Power (ERP) and Equivalent Isotropic Radiated Power (EIRP) measurements are performed using the substitution method described in ANSI/TIA-603-C-2004 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using vertically polarized tuned dipole antennas. Measurements on signals operating above 1GHz are performed using 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 v02r02 - Section 5.2.1

ANSI/TIA-603-C-2004 – Section 2.2.17

#### Test Settings

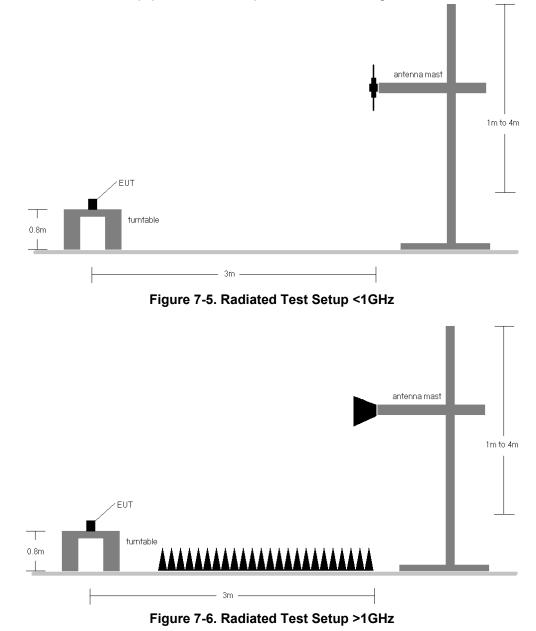
- Radiated power measurements are performed using the signal analyzer's "channel power" measurement capability for signals with continuous operation. For signals with burst transmission, the signal analyzer's "time domain power" measurement capability is used
- 2. RBW = 1 5% of the expected OBW, not to exceed 1MHz
- 3. VBW  $\ge$  3 x RBW
- 4. Span = 1.5 times the OBW
- 5. No. of sweep points  $\geq 2 \times \text{span} / \text{RBW}$
- 6. Detector = RMS
- 7. Trigger is set to "free run" for signals with continuous operation with the sweep times set to "auto". Trigger is set to enable triggering only on full power bursts with the sweep time set less than or equal to the transmission burst duration
- 8. The integration bandwidth was roughly set equal to the measured OBW of the signal for signals with continuous operation. For signals with burst transmission, the "gating" function was enabled to ensure that measurements are performed during times in which the transmitter is operating at its maximum power
- 9. Trace mode = trace averaging (RMS) over 100 sweeps
- 10. The trace was allowed to stabilize

| FCC ID: ZNFVS987                         |                | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | 🕐 LG | Reviewed by:<br>Quality Manager |
|------------------------------------------|----------------|------------------------------------------------------------------------------|------|---------------------------------|
| Test Report S/N:                         | Test Dates:    | EUT Type:                                                                    |      | Dega 69 of 104                  |
| 0Y1601180117-R2.ZNF                      | 1/20-2/18/2016 | Portable Handset                                                             |      | Page 68 of 104                  |
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# Test Setup

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



| FCC ID: ZNFVS987             | PCTEST         | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | Reviewed by:<br>Quality Manager |
|------------------------------|----------------|------------------------------------------------------------------------------|---------------------------------|
| Test Report S/N:             | Test Dates:    | EUT Type:                                                                    | Dege 60 of 104                  |
| 0Y1601180117-R2.ZNF          | 1/20-2/18/2016 | Portable Handset                                                             | Page 69 of 104                  |
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- 1) This device employs GSM, GPRS, and EDGE capabilities. The EUT was tested under all configurations and the highest power is reported in GPRS mode while transmitting with one slot active.
- 2) This device employs UMTS technology with WCDMA (AMR/RMC), HSDPA, and HSUPA capabilities. For WCDMA and HSUPA transmission, all configurations were investigated and the worst case UMTS emissions were found in RMC WCDMA mode at 12.2kbps with HSDPA inactive and TPC bits all set to "1."
- 3) This device was tested under all RC and SO combinations and the worst case is reported with RC3/SO55 with "All Up" power control bits.
- 4) This unit was tested with its standard battery.
- 5) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case setup is reported in the tables below.

| Frequency<br>[MHz] | Mode    | Module   | Ant.<br>Pol.<br>[H/V] | Antenna<br>Height<br>[m] | Turntable<br>Azimuth<br>[degree] | Substitute<br>Level<br>[dBm] | Ant.<br>Gain<br>[dBd] | ERP<br>[dBm] | ERP<br>[Watts] | ERP<br>Limit<br>[dBm] | Margin<br>[dB] |
|--------------------|---------|----------|-----------------------|--------------------------|----------------------------------|------------------------------|-----------------------|--------------|----------------|-----------------------|----------------|
| 824.20             | GSM850  | Standard | Н                     | 1.81                     | 76                               | 29.02                        | 4.27                  | 33.29        | 2.131          | 38.45                 | -5.17          |
| 836.60             | GSM850  | Standard | Н                     | 1.69                     | 65                               | 29.41                        | 4.46                  | 33.87        | 2.440          | 38.45                 | -4.58          |
| 848.80             | GSM850  | Standard | н                     | 1.71                     | 75                               | 29.24                        | 4.66                  | 33.90        | 2.453          | 38.45                 | -4.55          |
| 848.80             | EDGE850 | Standard | Н                     | 1.71                     | 75                               | 23.29                        | 4.66                  | 27.95        | 0.624          | 38.45                 | -10.50         |
| 848.80             | GSM850  | Camera   | Н                     | 2.70                     | 29                               | 26.33                        | 5.03                  | 30.99        | 1.255          | 38.45                 | -7.46          |

Table 7-2. ERP (Cellular GSM)

| FCC ID: ZNFVS987                           |                | FCC PL 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | G Reviewed by:<br>Quality Manage | ər |  |  |
|--------------------------------------------|----------------|-----------------------------------------------------------------------------|----------------------------------|----|--|--|
| Test Report S/N:                           | Test Dates:    | EUT Type:                                                                   | Page 70 of 104                   |    |  |  |
| 0Y1601180117-R2.ZNF                        | 1/20-2/18/2016 | Portable Handset                                                            | Page 70 01 104                   |    |  |  |
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| Frequency<br>[MHz] | Mode    | Module   | Ant.<br>Pol.<br>[H/V] | Antenna<br>Height<br>[m] | Turntable<br>Azimuth<br>[degree] | Substitute<br>Level<br>[dBm] | Ant.<br>Gain<br>[dBd] | ERP<br>[dBm] | ERP<br>[Watts] | ERP<br>Limit<br>[dBm] | Margin<br>[dB] |
|--------------------|---------|----------|-----------------------|--------------------------|----------------------------------|------------------------------|-----------------------|--------------|----------------|-----------------------|----------------|
| 824.70             | CDMA850 | Standard | Н                     | 1.94                     | 72                               | 18.05                        | 4.27                  | 22.32        | 0.171          | 38.45                 | -16.13         |
| 836.52             | CDMA850 | Standard | Н                     | 1.93                     | 75                               | 18.31                        | 4.46                  | 22.77        | 0.189          | 38.45                 | -15.68         |
| 848.31             | CDMA850 | Standard | Н                     | 1.94                     | 72                               | 18.45                        | 4.65                  | 23.10        | 0.204          | 38.45                 | -15.35         |
| 848.31             | CDMA850 | Camera   | Н                     | 2.67                     | 43                               | 17.71                        | 5.02                  | 22.36        | 0.172          | 38.45                 | -16.09         |

Table 7-3. ERP (Cellular CDMA)

| Frequency<br>[MHz] | Mode     | Module   | Ant.<br>Pol.<br>[H/V] | Antenna<br>Height<br>[m] | Turntable<br>Azimuth<br>[degree] | Substitute<br>Level<br>[dBm] | Ant.<br>Gain<br>[dBd] | ERP<br>[dBm] | ERP<br>[Watts] | ERP<br>Limit<br>[dBm] | Margin<br>[dB] |
|--------------------|----------|----------|-----------------------|--------------------------|----------------------------------|------------------------------|-----------------------|--------------|----------------|-----------------------|----------------|
| 826.40             | WCDMA850 | Standard | Н                     | 1.74                     | 72                               | 18.77                        | 4.30                  | 23.07        | 0.203          | 38.45                 | -15.38         |
| 836.60             | WCDMA850 | Standard | Н                     | 1.69                     | 67                               | 19.47                        | 4.46                  | 23.93        | 0.247          | 38.45                 | -14.52         |
| 846.60             | WCDMA850 | Standard | Н                     | 1.74                     | 71                               | 19.28                        | 4.62                  | 23.90        | 0.246          | 38.45                 | -14.55         |
| 836.60             | WCDMA850 | Camera   | V                     | 1.37                     | 176                              | 20.47                        | 4.46                  | 24.93        | 0.311          | 38.45                 | -13.52         |

Table 7-4. ERP (Cellular WCDMA)

| Frequency<br>[MHz] | Mode      | Module   | Ant.<br>Pol.<br>[H/V] | Antenna<br>Height<br>[m] | Turntable<br>Azimuth<br>[degree] | Substitute<br>Level<br>[dBm] | Ant.<br>Gain<br>[dBi] | EIRP<br>[dBm] | EIRP<br>[Watts] | EIRP<br>Limit<br>[dBm] | Margin<br>[dB] |
|--------------------|-----------|----------|-----------------------|--------------------------|----------------------------------|------------------------------|-----------------------|---------------|-----------------|------------------------|----------------|
| 1712.40            | WCDMA1700 | Standard | н                     | 1.12                     | 313                              | 12.72                        | 9.45                  | 22.17         | 0.165           | 30.00                  | -7.83          |
| 1732.60            | WCDMA1700 | Standard | н                     | 1.12                     | 313                              | 12.28                        | 9.41                  | 21.69         | 0.148           | 30.00                  | -8.31          |
| 1752.60            | WCDMA1700 | Standard | н                     | 1.12                     | 313                              | 12.46                        | 9.38                  | 21.84         | 0.153           | 30.00                  | -8.16          |
| 1712.40            | WCDMA1700 | Camera   | Н                     | 1.22                     | 338                              | 13.08                        | 9.65                  | 22.53         | 0.179           | 30.00                  | -7.47          |

Table 7-5. EIRP (AWS WCDMA)

| Frequency<br>[MHz] | Mode     | Module   | Ant.<br>Pol.<br>[H/V] | Antenna<br>Height<br>[m] | Turntable<br>Azimuth<br>[degree] | Substitute<br>Level<br>[dBm] | Ant.<br>Gain<br>[dBi] | EIRP<br>[dBm] | EIRP<br>[Watts] | EIRP<br>Limit<br>[dBm] | Margin<br>[dB] |
|--------------------|----------|----------|-----------------------|--------------------------|----------------------------------|------------------------------|-----------------------|---------------|-----------------|------------------------|----------------|
| 1850.20            | GSM1900  | Standard | Н                     | 1.55                     | 327                              | 18.19                        | 9.24                  | 27.43         | 0.554           | 33.01                  | -5.58          |
| 1880.00            | GSM1900  | Standard | Н                     | 1.72                     | 323                              | 15.71                        | 9.21                  | 24.92         | 0.311           | 33.01                  | -8.09          |
| 1909.80            | GSM1900  | Standard | н                     | 1.72                     | 329                              | 14.64                        | 9.25                  | 23.89         | 0.245           | 33.01                  | -9.12          |
| 1850.20            | EDGE1900 | Standard | Н                     | 1.55                     | 327                              | 14.47                        | 9.24                  | 23.71         | 0.235           | 33.01                  | -9.30          |
| 1850.20            | GSM1900  | Camera   | V                     | 1.78                     | 94                               | 19.67                        | 9.21                  | 28.88         | 0.773           | 33.01                  | -4.13          |

Table 7-6. EIRP (PCS GSM)

| FCC ID: ZNFVS987                           |                | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | 💽 LG | <b>Reviewed by:</b><br>Quality Manager |  |  |  |
|--------------------------------------------|----------------|------------------------------------------------------------------------------|------|----------------------------------------|--|--|--|
| Test Report S/N:                           | Test Dates:    | EUT Type:                                                                    |      | Dego 71 of 104                         |  |  |  |
| 0Y1601180117-R2.ZNF                        | 1/20-2/18/2016 | Portable Handset                                                             |      | Page 71 of 104                         |  |  |  |
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| Frequency<br>[MHz] | Mode     | Module   | Antenna   | Ant.<br>Pol.<br>[H/V] | Antenna<br>Height<br>[m] | Turntable<br>Azimuth<br>[degree] | Substitute<br>Level<br>[dBm] | Ant.<br>Gain<br>[dBi] | EIRP<br>[dBm] | EIRP<br>[Watts] | EIRP<br>Limit<br>[dBm] | Margin<br>[dB] |
|--------------------|----------|----------|-----------|-----------------------|--------------------------|----------------------------------|------------------------------|-----------------------|---------------|-----------------|------------------------|----------------|
| 1851.25            | CDMA1900 | Standard | Main      | Н                     | 1.12                     | 326                              | 8.86                         | 9.24                  | 18.10         | 0.065           | 33.01                  | -14.91         |
| 1880.00            | CDMA1900 | Standard | Main      | н                     | 1.12                     | 326                              | 6.99                         | 9.21                  | 16.20         | 0.042           | 33.01                  | -16.81         |
| 1908.75            | CDMA1900 | Standard | Main      | н                     | 1.12                     | 326                              | 6.62                         | 9.24                  | 15.86         | 0.039           | 33.01                  | -17.15         |
| 1851.25            | CDMA1900 | Standard | Diversity | н                     | 1.34                     | 84                               | 7.69                         | 9.24                  | 16.93         | 0.049           | 33.01                  | -16.08         |
| 1851.25            | CDMA1900 | Camera   | Main      | Н                     | 1.12                     | 326                              | 13.60                        | 9.54                  | 18.31         | 0.068           | 33.01                  | -14.70         |

Table 7-7. EIRP (PCS CDMA)

| Frequency<br>[MHz] | Mode      | Module   | Ant.<br>Pol.<br>[H/V] | Antenna<br>Height<br>[m] | Turntable<br>Azimuth<br>[degree] | Substitute<br>Level<br>[dBm] | Ant.<br>Gain<br>[dBi] | EIRP<br>[dBm] | EIRP<br>[Watts] | EIRP<br>Limit<br>[dBm] | Margin<br>[dB] |
|--------------------|-----------|----------|-----------------------|--------------------------|----------------------------------|------------------------------|-----------------------|---------------|-----------------|------------------------|----------------|
| 1852.40            | WCDMA1900 | Standard | н                     | 1.16                     | 329                              | 14.38                        | 9.24                  | 23.62         | 0.230           | 33.01                  | -9.39          |
| 1880.00            | WCDMA1900 | Standard | н                     | 1.12                     | 320                              | 14.84                        | 9.21                  | 24.05         | 0.254           | 33.01                  | -8.96          |
| 1907.60            | WCDMA1900 | Standard | н                     | 1.08                     | 329                              | 14.19                        | 9.23                  | 23.42         | 0.220           | 33.01                  | -9.59          |
| 1880.00            | WCDMA1900 | Camera   | н                     | 2.44                     | 336                              | 15.83                        | 9.27                  | 25.04         | 0.319           | 33.01                  | -7.97          |

Table 7-8. EIRP (PCS WCDMA)

| FCC ID: ZNFVS987             |                | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | 💽 LG | Reviewed by:<br>Quality Manager |
|------------------------------|----------------|------------------------------------------------------------------------------|------|---------------------------------|
| Test Report S/N:             | Test Dates:    | EUT Type:                                                                    |      | Dega 72 of 104                  |
| 0Y1601180117-R2.ZNF          | 1/20-2/18/2016 | Portable Handset                                                             |      | Page 72 of 104                  |
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### 7.7 Radiated Spurious Emissions Measurements §2.1053 §22.917(a) 24.238(a) 27.53(h)

### **Test Overview**

Radiated spurious emissions measurements are performed using the substitution method described in ANSI/TIA-603-C-2004 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using horizontally and vertically polarized tuned dipole antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally polarized broadband horn antennas. All measurements are performed as peak measurements while the EUT is operating at maximum power, and at the appropriate frequencies.

### Test Procedures Used

KDB 971168 v02r02 - Section 5.8

ANSI/TIA-603-C-2004 – Section 2.2.12

#### Test Settings

- 1. RBW = 100kHz for emissions below 1GHz and 1MHz for emissions above 1GHz
- 2. VBW  $\geq$  3 x RBW
- 3. Span = 1.5 times the OBW
- 4. No. of sweep points  $\geq 2 \times \text{span} / \text{RBW}$
- 5. Detector = Peak
- 6. Trace mode = max hold
- 7. The trace was allowed to stabilize

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|------------------------------|------------------------------------------|------------------------------------------------------------------------------|----|---------------------------------|--|--|
| Test Report S/N:             | Test Dates:                              | EUT Type:                                                                    |    | Page 73 of 104                  |  |  |
| 0Y1601180117-R2.ZNF          | 1/20-2/18/2016                           | Portable Handset                                                             |    | Page 73 01 104                  |  |  |
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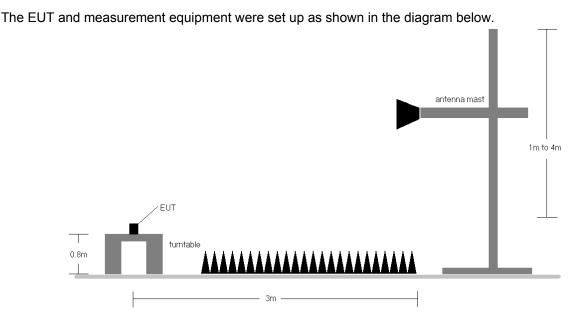


Figure 7-7. Test Instrument & Measurement Setup

### Test Notes

- 1) This device employs GSM, GPRS, and EDGE capabilities. The EUT was tested under all configurations and the highest power is reported in GPRS mode while transmitting with one slot active.
- 2) This device employs UMTS technology with WCDMA (AMR/RMC), HSDPA, and HSUPA capabilities. For WCDMA and HSUPA transmission, all configurations were investigated and the worst case UMTS emissions were found in RMC WCDMA mode at 12.2kbps with HSDPA inactive and TPC bits all set to "1."
- This device was tested under all RC and SO combinations and the worst case is reported with RC3/SO55 with "All Up" power control bits.
- 4) This unit was tested with its standard battery.
- 5) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case setup is reported in the tables below.
- 6) The spectrum is measured from 9kHz to the 10th harmonic of the fundamental frequency of the transmitter. The worst-case emissions are reported.
- 7) Emissions below 18GHz were measured at a 3 meter test distance while emissions above 18GHz were measured at a 1 meter test distance with the application of a distance correction factor.

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|------------------------------|----------------|------------------------------------------------------------------------------|------|---------------------------------|
| Test Report S/N:             | Test Dates:    | EUT Type:                                                                    |      | Daga 74 of 104                  |
| 0Y1601180117-R2.ZNF          | 1/20-2/18/2016 | Portable Handset                                                             |      | Page 74 of 104                  |
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| OPERATING FREQUENCY:   | 824                             | MHz    |         |  |
|------------------------|---------------------------------|--------|---------|--|
| CHANNEL:               | 1:                              |        |         |  |
| MEASURED OUTPUT POWER: | 33.29                           | dBm =  | 2.131 W |  |
| MODULATION SIGNAL:     | GPRS (GMSK)                     |        |         |  |
| DISTANCE:              | 3                               | meters |         |  |
| LIMIT:                 | 43 + 10 log <sub>10</sub> (W) : | 46.29  | dBc     |  |

| Frequency<br>[MHz] | Ant.<br>Pol.<br>[H/V] | Antenna<br>Height<br>[m] | Turntable<br>Azimuth<br>[degree] | Level at<br>Antenna<br>Terminals [dBm] | Substitute<br>Antenna Gain<br>[dBd] | Spurious<br>Emission Level<br>[dBm] | [dBc] |
|--------------------|-----------------------|--------------------------|----------------------------------|----------------------------------------|-------------------------------------|-------------------------------------|-------|
| 1648.40            | Н                     | 1.29                     | 247                              | -56.59                                 | 6.56                                | -50.03                              | 83.3  |
| 2472.60            | Н                     | 1.17                     | 224                              | -48.42                                 | 7.29                                | -41.12                              | 74.4  |
| 3296.80            | Н                     | 1.19                     | 211                              | -57.62                                 | 7.37                                | -50.26                              | 83.5  |
| 4121.00            | Н                     | -                        | -                                | -57.79                                 | 8.02                                | -49.77                              | 83.1  |

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

| OPERATING FREQUENCY:   | 836                           | 6.60   | MHz     |
|------------------------|-------------------------------|--------|---------|
| CHANNEL:               | 1                             | 90     |         |
| MEASURED OUTPUT POWER: | 33.87                         | dBm =  | 2.440 W |
| MODULATION SIGNAL:     | GPRS (GMSK)                   |        |         |
| DISTANCE:              | 3                             | meters |         |
| LIMIT:                 | 43 + 10 log <sub>10</sub> (W) | 46.87  | dBc     |

| Frequency<br>[MHz] | Ant.<br>Pol.<br>[H/V] | Antenna<br>Height<br>[m] | Turntable<br>Azimuth<br>[degree] | Level at<br>Antenna<br>Terminals [dBm] | Substitute<br>Antenna Gain<br>[dBd] | Spurious<br>Emission Level<br>[dBm] | [dBc] |
|--------------------|-----------------------|--------------------------|----------------------------------|----------------------------------------|-------------------------------------|-------------------------------------|-------|
| 1673.20            | Н                     | 1.01                     | 242                              | -48.01                                 | 6.55                                | -41.45                              | 75.3  |
| 2509.80            | Н                     | 1.12                     | 222                              | -49.53                                 | 7.34                                | -42.19                              | 76.1  |
| 3346.40            | Н                     | 1.02                     | 215                              | -58.79                                 | 7.44                                | -51.35                              | 85.2  |
| 4183.00            | Н                     | -                        | -                                | -57.71                                 | 8.20                                | -49.51                              | 83.4  |

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

| FCC ID: ZNFVS987              |                                          | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | Reviewed by:<br>Quality Manager |  |  |
|-------------------------------|------------------------------------------|------------------------------------------------------------------------------|---------------------------------|--|--|
| Test Report S/N:              | Test Dates:                              | EUT Type:                                                                    | Dage 75 of 104                  |  |  |
| 0Y1601180117-R2.ZNF           | 1/20-2/18/2016                           | Portable Handset                                                             | Page 75 of 104                  |  |  |
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| OPERATING FREQUENCY:   | 848                             | 8.80   | MHz     |  |
|------------------------|---------------------------------|--------|---------|--|
| CHANNEL:               | 25                              | 51     | -       |  |
| MEASURED OUTPUT POWER: | 33.90                           | dBm =  | 2.453 W |  |
| MODULATION SIGNAL:     | GPRS (GMSK)                     |        |         |  |
| DISTANCE:              | 3                               | meters |         |  |
| LIMIT:                 | 43 + 10 log <sub>10</sub> (W) = | 46.90  | dBc     |  |

| Frequency<br>[MHz] | Ant.<br>Pol.<br>[H/V] | Antenna<br>Height<br>[m] | Turntable<br>Azimuth<br>[degree] | Level at<br>Antenna<br>Terminals [dBm] | Substitute<br>Antenna Gain<br>[dBd] | Spurious<br>Emission Level<br>[dBm] | [dBc] |
|--------------------|-----------------------|--------------------------|----------------------------------|----------------------------------------|-------------------------------------|-------------------------------------|-------|
| 1697.60            | Н                     | 1.04                     | 250                              | -46.20                                 | 6.55                                | -39.65                              | 73.6  |
| 2546.40            | Н                     | 1.02                     | 250                              | -49.37                                 | 7.36                                | -42.00                              | 75.9  |
| 3395.20            | Н                     | 1.01                     | 260                              | -58.30                                 | 7.51                                | -50.79                              | 84.7  |
| 4244.00            | Н                     | -                        | -                                | -57.48                                 | 8.40                                | -49.08                              | 83.0  |

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

| OPERATING FREQUENCY:   | 848.                            | 80     | MHz   |   |
|------------------------|---------------------------------|--------|-------|---|
| CHANNEL:               | 25                              | 1      |       |   |
| MEASURED OUTPUT POWER: | 33.90                           | dBm =  | 2.453 | W |
| MODULATION SIGNAL:     | GSM (GMSK)                      |        |       |   |
| DISTANCE:              | 3                               | meters |       |   |
| LIMIT:                 | 43 + 10 log <sub>10</sub> (W) = | 46.90  | dBc   |   |

| Frequency<br>[MHz] | Ant.<br>Pol.<br>[H/V] | Antenna<br>Height<br>[m] | Turntable<br>Azimuth<br>[degree] | Level at<br>Antenna<br>Terminals [dBm] | Substitute<br>Antenna Gain<br>[dBd] | Spurious<br>Emission Level<br>[dBm] | [dBc] |
|--------------------|-----------------------|--------------------------|----------------------------------|----------------------------------------|-------------------------------------|-------------------------------------|-------|
| 1697.60            | Н                     | 1.65                     | 16                               | -45.82                                 | 6.55                                | -39.28                              | 73.2  |
| 2546.40            | Н                     | 1.71                     | 332                              | -43.22                                 | 7.36                                | -35.86                              | 69.8  |
| 3395.20            | Н                     | 1.78                     | 5                                | -58.42                                 | 7.51                                | -50.91                              | 84.8  |
| 4244.00            | Н                     | -                        | -                                | -57.83                                 | 8.40                                | -49.43                              | 83.3  |

Table 7-12. Radiated Spurious Data with Camera Module (Cellular GSM Mode – Ch. 251)

| FCC ID: ZNFVS987             | PCTEST                                   | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | 💽 LG | Reviewed by:<br>Quality Manager |  |
|------------------------------|------------------------------------------|------------------------------------------------------------------------------|------|---------------------------------|--|
| Test Report S/N:             | Test Dates:                              | EUT Type:                                                                    |      | Dega 76 of 104                  |  |
| 0Y1601180117-R2.ZNF          | 1/20-2/18/2016                           | Portable Handset                                                             |      | Page 76 of 104                  |  |
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12/01/2015



| OPERATING FREQUENCY:   | 824                             | .70    | MHz     |
|------------------------|---------------------------------|--------|---------|
| CHANNEL:               | 10                              |        |         |
| MEASURED OUTPUT POWER: | 22.32                           | dBm =  | 0.171 W |
| MODULATION SIGNAL:     | CDMA                            |        |         |
| DISTANCE:              | 3                               | meters |         |
| LIMIT:                 | 43 + 10 log <sub>10</sub> (W) = | 35.32  | dBc     |

| Frequency<br>[MHz] | Ant.<br>Pol.<br>[H/V] | Height | Turntable<br>Azimuth<br>[degree] | Level at<br>Antenna<br>Terminals [dBm] | Substitute<br>Antenna Gain<br>[dBd] | Spurious<br>Emission Level<br>[dBm] | [dBc] |
|--------------------|-----------------------|--------|----------------------------------|----------------------------------------|-------------------------------------|-------------------------------------|-------|
| 1649.40            | Н                     | 1.06   | 350                              | -56.66                                 | 6.56                                | -50.10                              | 72.4  |
| 2474.10            | Н                     | 2.25   | 0                                | -54.21                                 | 7.30                                | -46.91                              | 69.2  |
| 3298.80            | Н                     | -      | -                                | -59.50                                 | 7.37                                | -52.13                              | 74.5  |

 Table 7-13. Radiated Spurious Data (Cellular CDMA Mode – Ch. 1013)

| OPERATING FREQUENCY:   | 836                             | MHz    |         |
|------------------------|---------------------------------|--------|---------|
| CHANNEL:               | 38                              | -      |         |
| MEASURED OUTPUT POWER: | 22.77                           | dBm =  | 0.189 W |
| MODULATION SIGNAL:     | CDMA                            |        |         |
| DISTANCE:              | 3                               | meters |         |
| LIMIT:                 | 43 + 10 log <sub>10</sub> (W) = | 35.77  | dBc     |

| Frequency<br>[MHz] | Ant.<br>Pol.<br>[H/V] | Height | Turntable<br>Azimuth<br>[degree] | Level at<br>Antenna<br>Terminals [dBm] | Substitute<br>Antenna Gain<br>[dBd] | Spurious<br>Emission Level<br>[dBm] | [dBc] |
|--------------------|-----------------------|--------|----------------------------------|----------------------------------------|-------------------------------------|-------------------------------------|-------|
| 1673.04            | Н                     | 1.09   | 340                              | -52.74                                 | 6.55                                | -46.19                              | 69.0  |
| 2509.56            | Н                     | 2.53   | 10                               | -54.50                                 | 7.34                                | -47.15                              | 69.9  |
| 3346.08            | Н                     | -      | -                                | -60.47                                 | 7.44                                | -53.03                              | 75.8  |

Table 7-14. Radiated Spurious Data (Cellular CDMA Mode – Ch. 384)

| FCC ID: ZNFVS987             | PCTEST                                   | FCC PL 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | LG | Reviewed by:<br>Quality Manager |  |  |
|------------------------------|------------------------------------------|-----------------------------------------------------------------------------|----|---------------------------------|--|--|
| Test Report S/N:             | Test Dates:                              | EUT Type:                                                                   |    | Page 77 of 104                  |  |  |
| 0Y1601180117-R2.ZNF          | 1/20-2/18/2016                           | Portable Handset                                                            |    | Page 77 01 104                  |  |  |
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| OPERATING FREQUENCY:   | 848                             | 9.31   | MHz     |   |
|------------------------|---------------------------------|--------|---------|---|
| CHANNEL:               | 77                              | 77     |         |   |
| MEASURED OUTPUT POWER: | 23.10                           | dBm =  | 0.204 V | V |
| MODULATION SIGNAL:     | CDMA                            | · ·    |         |   |
| DISTANCE:              | 3                               | meters |         |   |
| LIMIT:                 | 43 + 10 log <sub>10</sub> (W) = | 36.10  | dBc     |   |

| Frequency<br>[MHz] | Ant.<br>Pol.<br>[H/V] | Antenna<br>Height<br>[m] | Turntable<br>Azimuth<br>[degree] | Level at<br>Antenna<br>Terminals [dBm] | Substitute<br>Antenna Gain<br>[dBd] | Spurious<br>Emission Level<br>[dBm] | [dBc] |
|--------------------|-----------------------|--------------------------|----------------------------------|----------------------------------------|-------------------------------------|-------------------------------------|-------|
| 1696.62            | Н                     | 1.10                     | 341                              | -50.60                                 | 6.55                                | -44.05                              | 67.1  |
| 2544.93            | Н                     | 2.18                     | 331                              | -56.63                                 | 7.36                                | -49.27                              | 72.4  |
| 3393.24            | Н                     | -                        | -                                | -59.48                                 | 7.51                                | -51.97                              | 75.1  |

 Table 7-15. Radiated Spurious Data (Cellular CDMA Mode – Ch. 777)

| OPERATING FREQUENCY:   | 848                             | MHz    |       |   |
|------------------------|---------------------------------|--------|-------|---|
| CHANNEL:               | 7                               |        |       |   |
| MEASURED OUTPUT POWER: | 23.10                           | dBm =  | 0.204 | W |
| MODULATION SIGNAL:     | CDMA                            |        |       |   |
| DISTANCE:              | 3                               | meters |       |   |
| LIMIT:                 | 43 + 10 log <sub>10</sub> (W) = | 36.10  | dBc   |   |

| Frequency<br>[MHz] | Ant.<br>Pol.<br>[H/V] | Antenna<br>Height<br>[m] | Turntable<br>Azimuth<br>[degree] | Level at<br>Antenna<br>Terminals [dBm] | Substitute<br>Antenna Gain<br>[dBd] | Spurious<br>Emission Level<br>[dBm] | [dBc] |
|--------------------|-----------------------|--------------------------|----------------------------------|----------------------------------------|-------------------------------------|-------------------------------------|-------|
| 1696.62            | Н                     | 1.75                     | 7                                | -53.52                                 | 6.55                                | -46.97                              | 70.1  |
| 2544.93            | Н                     | 1.68                     | 131                              | -42.13                                 | 7.36                                | -34.77                              | 57.9  |
| 3393.24            | Н                     | -                        | -                                | -60.36                                 | 7.51                                | -52.85                              | 75.9  |

Table 7-16. Radiated Spurious Data with Camera Module (Cellular CDMA Mode – Ch. 777)

| FCC ID: ZNFVS987             |                | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | 💽 LG | Reviewed by:<br>Quality Manager |
|------------------------------|----------------|------------------------------------------------------------------------------|------|---------------------------------|
| Test Report S/N:             | Test Dates:    | EUT Type:                                                                    |      | Dego 79 of 104                  |
| 0Y1601180117-R2.ZNF          | 1/20-2/18/2016 | Portable Handset                                                             |      | Page 78 of 104                  |
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| OPERATING FREQUENCY:   | 826                             | 826.40 |       |   |
|------------------------|---------------------------------|--------|-------|---|
| CHANNEL:               | 41                              |        |       |   |
| MEASURED OUTPUT POWER: | 23.07                           | dBm =  | 0.203 | W |
| MODULATION SIGNAL:     | WCDMA                           |        |       |   |
| DISTANCE:              | 3                               | meters |       |   |
| LIMIT:                 | 43 + 10 log <sub>10</sub> (W) = | 36.07  | dBc   |   |

| Frequency<br>[MHz] | Ant.<br>Pol.<br>[H/V] | Height | Turntable<br>Azimuth<br>[degree] | Level at<br>Antenna<br>Terminals [dBm] | Substitute<br>Antenna Gain<br>[dBd] | Spurious<br>Emission Level<br>[dBm] | [dBc] |
|--------------------|-----------------------|--------|----------------------------------|----------------------------------------|-------------------------------------|-------------------------------------|-------|
| 1652.80            | Н                     | 2.84   | 180                              | -59.94                                 | 6.56                                | -53.38                              | 76.5  |
| 2479.20            | Н                     | -      | -                                | -63.67                                 | 7.30                                | -56.37                              | 79.4  |

Table 7-17. Radiated Spurious Data (Cellular WCDMA Mode – Ch. 4132)

| OPERATING FREQUENCY:   | 836                             | MHz    |       |   |
|------------------------|---------------------------------|--------|-------|---|
| CHANNEL:               | 41                              |        |       |   |
| MEASURED OUTPUT POWER: | 23.93                           | dBm =  | 0.247 | W |
| MODULATION SIGNAL:     | WCDMA                           |        |       |   |
| DISTANCE:              | 3                               | meters |       |   |
| LIMIT:                 | 43 + 10 log <sub>10</sub> (W) = | 36.93  | dBc   |   |

| Frequency<br>[MHz] | Ant.<br>Pol.<br>[H/V] | Height | Turntable<br>Azimuth<br>[degree] | Level at<br>Antenna<br>Terminals [dBm] | Substitute<br>Antenna Gain<br>[dBd] | Spurious<br>Emission Level<br>[dBm] | [dBc] |
|--------------------|-----------------------|--------|----------------------------------|----------------------------------------|-------------------------------------|-------------------------------------|-------|
| 1673.20            | Н                     | 2.67   | 180                              | -57.24                                 | 6.55                                | -50.68                              | 74.6  |
| 2509.80            | Н                     | -      | -                                | -62.99                                 | 7.34                                | -55.65                              | 79.6  |

 Table 7-18. Radiated Spurious Data (Cellular WCDMA Mode – Ch. 4183)

| FCC ID: ZNFVS987             | PCTEST         | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | 🕑 LG | Reviewed by:<br>Quality Manager |
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| Test Report S/N:             | Test Dates:    | EUT Type:                                                                    |      | Dage 70 of 104                  |
| 0Y1601180117-R2.ZNF          | 1/20-2/18/2016 | Portable Handset                                                             |      | Page 79 of 104                  |
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| OPERATING FREQUENCY:   | 846                             | MHz    |       |   |
|------------------------|---------------------------------|--------|-------|---|
| CHANNEL:               | 42                              | •      |       |   |
| MEASURED OUTPUT POWER: | 23.90                           | dBm =  | 0.246 | N |
| MODULATION SIGNAL:     | WCDMA                           |        |       |   |
| DISTANCE:              | 3                               | meters |       |   |
| LIMIT:                 | 43 + 10 log <sub>10</sub> (W) = | 36.90  | dBc   |   |

| Frequency<br>[MHz] | Ant.<br>Pol.<br>[H/V] | Height | Turntable<br>Azimuth<br>[degree] | Level at<br>Antenna<br>Terminals [dBm] | Substitute<br>Antenna Gain<br>[dBd] | Spurious<br>Emission Level<br>[dBm] | [dBc] |
|--------------------|-----------------------|--------|----------------------------------|----------------------------------------|-------------------------------------|-------------------------------------|-------|
| 1693.20            | Н                     | 2.56   | 179                              | -56.49                                 | 6.55                                | -49.95                              | 73.8  |
| 2539.80            | Н                     | -      | -                                | -63.34                                 | 7.36                                | -55.98                              | 79.9  |

 Table 7-19. Radiated Spurious Data (Cellular WCDMA Mode – Ch. 4233)

| 846                             | MHz                       |                                          |                                                |
|---------------------------------|---------------------------|------------------------------------------|------------------------------------------------|
| 42                              | -                         |                                          |                                                |
| 23.90                           | dBm =                     | 0.246                                    | W                                              |
| WCDMA                           | •                         |                                          | -                                              |
| 3                               | meters                    |                                          |                                                |
| 43 + 10 log <sub>10</sub> (W) = | 36.91                     | dBc                                      |                                                |
|                                 | 42<br>23.90<br>WCDMA<br>3 | 4233<br>23.90 dBm =<br>WCDMA<br>3 meters | 4233<br>23.90 dBm = 0.246<br>WCDMA<br>3 meters |

| Frequency<br>[MHz] | Ant.<br>Pol.<br>[H/V] | Height | Turntable<br>Azimuth<br>[degree] | Level at<br>Antenna<br>Terminals [dBm] | Substitute<br>Antenna Gain<br>[dBd] | Spurious<br>Emission Level<br>[dBm] | [dBc] |
|--------------------|-----------------------|--------|----------------------------------|----------------------------------------|-------------------------------------|-------------------------------------|-------|
| 1693.20            | V                     | 2.11   | 203                              | -54.62                                 | 6.58                                | -48.03                              | 71.9  |
| 2539.80            | V                     | -      | -                                | -53.63                                 | 7.37                                | -46.26                              | 70.2  |

Table 7-20. Radiated Spurious Data with Camera Module (Cellular WCDMA Mode – Ch. 4233)

| FCC ID: ZNFVS987             | PCTEST         | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | Reviewed by:<br>Quality Manager |
|------------------------------|----------------|------------------------------------------------------------------------------|---------------------------------|
| Test Report S/N:             | Test Dates:    | EUT Type:                                                                    | Dege 90 of 104                  |
| 0Y1601180117-R2.ZNF          | 1/20-2/18/2016 | Portable Handset                                                             | Page 80 of 104                  |
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| OPERATING FREQUENCY:   | 171                             | 2.40   | MHz     |
|------------------------|---------------------------------|--------|---------|
| CHANNEL:               | 13                              | •<br>- |         |
| MEASURED OUTPUT POWER: | 22.17                           | dBm =  | 0.165 W |
| MODULATION SIGNAL:     | WCDMA                           |        |         |
| DISTANCE:              | 3                               | meters |         |
| LIMIT:                 | 43 + 10 log <sub>10</sub> (W) = | 35.17  | dBc     |

| Frequency<br>[MHz] | Ant.<br>Pol.<br>[H/V] | Height | Turntable<br>Azimuth<br>[degree] | Level at<br>Antenna<br>Terminals [dBm] | Substitute<br>Antenna Gain<br>[dBi] | Spurious<br>Emission Level<br>[dBm] | [dBc] |
|--------------------|-----------------------|--------|----------------------------------|----------------------------------------|-------------------------------------|-------------------------------------|-------|
| 3424.80            | Н                     | 2.08   | 123                              | -53.91                                 | 9.68                                | -44.23                              | 66.4  |
| 5137.20            | Н                     | -      | -                                | -56.23                                 | 10.68                               | -45.55                              | 67.7  |

Table 7-21. Radiated Spurious Data (AWS WCDMA Mode – Ch. 1312)

| OPERATING FREQUENCY:   | 173                             | MHz    |       |   |
|------------------------|---------------------------------|--------|-------|---|
| CHANNEL:               | 14                              |        |       |   |
| MEASURED OUTPUT POWER: | 21.69                           | dBm =  | 0.148 | W |
| MODULATION SIGNAL:     | WCDMA                           |        |       |   |
| DISTANCE:              | 3                               | meters |       |   |
| LIMIT:                 | 43 + 10 log <sub>10</sub> (W) = | 34.69  | dBc   |   |

| Frequency<br>[MHz] | Ant.<br>Pol.<br>[H/V] | Antenna<br>Height<br>[m] | Turntable<br>Azimuth<br>[degree] | Level at<br>Antenna<br>Terminals [dBm] | Substitute<br>Antenna Gain<br>[dBi] | Spurious<br>Emission Level<br>[dBm] | [dBc] |
|--------------------|-----------------------|--------------------------|----------------------------------|----------------------------------------|-------------------------------------|-------------------------------------|-------|
| 3465.20            | Н                     | 2.01                     | 138                              | -51.66                                 | 9.71                                | -41.95                              | 64.1  |
| 5197.80            | Н                     | -                        | -                                | -55.71                                 | 10.59                               | -45.12                              | 67.3  |

Table 7-22. Radiated Spurious Data (AWS WCDMA Mode – Ch. 1413)

| FCC ID: ZNFVS987             | PCTEST         | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | 🕑 LG | Reviewed by:<br>Quality Manager |
|------------------------------|----------------|------------------------------------------------------------------------------|------|---------------------------------|
| Test Report S/N:             | Test Dates:    | EUT Type:                                                                    |      | Dage 91 of 104                  |
| 0Y1601180117-R2.ZNF          | 1/20-2/18/2016 | Portable Handset                                                             |      | Page 81 of 104                  |
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| OPERATING FREQUENCY:   | OPERATING FREQUENCY: 1752       |        |       |   |
|------------------------|---------------------------------|--------|-------|---|
| CHANNEL:               | 15                              |        |       |   |
| MEASURED OUTPUT POWER: | 21.84                           | dBm =  | 0.153 | W |
| MODULATION SIGNAL:     | WCDMA                           |        |       | _ |
| DISTANCE:              | 3                               | meters |       |   |
| LIMIT:                 | 43 + 10 log <sub>10</sub> (W) = | 34.84  | dBc   |   |

| Frequency<br>[MHz] | Ant.<br>Pol.<br>[H/V] | Height | Turntable<br>Azimuth<br>[degree] | Level at<br>Antenna<br>Terminals [dBm] | Substitute<br>Antenna Gain<br>[dBi] | Spurious<br>Emission Level<br>[dBm] | [dBc] |
|--------------------|-----------------------|--------|----------------------------------|----------------------------------------|-------------------------------------|-------------------------------------|-------|
| 3505.20            | Н                     | 2.00   | 128                              | -49.48                                 | 9.73                                | -39.75                              | 61.9  |
| 5257.80            | Н                     | -      | -                                | -55.87                                 | 10.64                               | -45.23                              | 67.4  |

Table 7-23. Radiated Spurious Data (AWS WCDMA Mode – Ch. 1513)

| OPERATING FREQUENCY:   | 175                             | 2.60   | MHz     |
|------------------------|---------------------------------|--------|---------|
| CHANNEL:               | 15                              |        |         |
| MEASURED OUTPUT POWER: | 21.84                           | dBm =  | 0.153 W |
| MODULATION SIGNAL:     | WCDMA                           | -      |         |
| DISTANCE:              | 3                               | meters |         |
| LIMIT:                 | 43 + 10 log <sub>10</sub> (W) = | 34.85  | dBc     |

| Frequency<br>[MHz] | Ant.<br>Pol.<br>[H/V] | Height | Turntable<br>Azimuth<br>[degree] | Level at<br>Antenna<br>Terminals [dBm] | Substitute<br>Antenna Gain<br>[dBi] | Spurious<br>Emission Level<br>[dBm] | [dBc] |
|--------------------|-----------------------|--------|----------------------------------|----------------------------------------|-------------------------------------|-------------------------------------|-------|
| 3505.20            | Н                     | 2.52   | 234                              | -57.16                                 | 8.40                                | -48.75                              | 70.9  |
| 5257.80            | Н                     | -      | -                                | -57.50                                 | 10.36                               | -47.14                              | 69.3  |

Table 7-24. Radiated Spurious Data with Camera Module (AWS WCDMA Mode – Ch. 1513)

| FCC ID: ZNFVS987              |                                          | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | 💽 LG | Reviewed by:<br>Quality Manager |  |  |
|-------------------------------|------------------------------------------|------------------------------------------------------------------------------|------|---------------------------------|--|--|
| Test Report S/N:              | Test Dates:                              | EUT Type:                                                                    |      | Page 82 of 104                  |  |  |
| 0Y1601180117-R2.ZNF           | 1/20-2/18/2016                           | Portable Handset                                                             |      | Fage 62 01 104                  |  |  |
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| OPERATING FREQUENCY:   | 185                             | MHz    |       |   |
|------------------------|---------------------------------|--------|-------|---|
| CHANNEL:               | 5                               |        |       |   |
| MEASURED OUTPUT POWER: | 27.43                           | dBm =  | 0.554 | W |
| MODULATION SIGNAL:     | GPRS (GMSK)                     |        |       |   |
| DISTANCE:              | 3                               | meters |       |   |
| LIMIT:                 | 43 + 10 log <sub>10</sub> (W) = | 40.43  | dBc   |   |

| Frequency<br>[MHz] | Ant.<br>Pol.<br>[H/V] | Antenna<br>Height<br>[m] | Turntable<br>Azimuth<br>[degree] | Level at<br>Antenna<br>Terminals [dBm] | Substitute<br>Antenna Gain<br>[dBi] | Spurious<br>Emission Level<br>[dBm] | [dBc] |
|--------------------|-----------------------|--------------------------|----------------------------------|----------------------------------------|-------------------------------------|-------------------------------------|-------|
| 3700.40            | Н                     | 1.33                     | 19                               | -43.59                                 | 9.44                                | -34.15                              | 61.6  |
| 5550.60            | Н                     | 1.64                     | 10                               | -49.59                                 | 10.78                               | -38.80                              | 66.2  |
| 7400.80            | Н                     | -                        | -                                | -52.00                                 | 10.69                               | -41.32                              | 68.7  |

 Table 7-25. Radiated Spurious Data (PCS GSM Mode – Ch. 512)

| OPERATING FREQUENCY:   | 188                             | MHz    |       |   |
|------------------------|---------------------------------|--------|-------|---|
| CHANNEL:               | 66                              |        |       |   |
| MEASURED OUTPUT POWER: | 24.92                           | dBm =  | 0.311 | W |
| MODULATION SIGNAL:     | GPRS (GMSK)                     |        |       |   |
| DISTANCE:              | 3                               | meters |       |   |
| LIMIT:                 | 43 + 10 log <sub>10</sub> (W) = | 37.92  | dBc   |   |

| Frequency<br>[MHz] | Ant.<br>Pol.<br>[H/V] | Height | Turntable<br>Azimuth<br>[degree] | Level at<br>Antenna<br>Terminals [dBm] | Substitute<br>Antenna Gain<br>[dBi] | Spurious<br>Emission Level<br>[dBm] | [dBc] |
|--------------------|-----------------------|--------|----------------------------------|----------------------------------------|-------------------------------------|-------------------------------------|-------|
| 3760.00            | Н                     | 1.31   | 10                               | -46.43                                 | 9.28                                | -37.15                              | 64.6  |
| 5640.00            | Н                     | 1.34   | 343                              | -51.67                                 | 11.03                               | -40.64                              | 68.1  |
| 7520.00            | Н                     | -      | -                                | -52.73                                 | 10.97                               | -41.76                              | 69.2  |

Table 7-26. Radiated Spurious Data (PCS GSM Mode - Ch. 661)

| FCC ID: ZNFVS987             | PCTEST                                     | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | G Reviewed by:<br>Quality Manager |  |  |
|------------------------------|--------------------------------------------|------------------------------------------------------------------------------|-----------------------------------|--|--|
| Test Report S/N:             | Test Dates:                                | EUT Type:                                                                    | Dego 82 of 104                    |  |  |
| 0Y1601180117-R2.ZNF          | 1/20-2/18/2016                             | Portable Handset                                                             | Page 83 of 104                    |  |  |
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| OPERATING FREQUENCY:   | 190                             | 9.80   | MHz   |   |
|------------------------|---------------------------------|--------|-------|---|
| CHANNEL:               | 8                               | •      |       |   |
| MEASURED OUTPUT POWER: | 23.89                           | dBm =  | 0.245 | W |
| MODULATION SIGNAL:     | GPRS (GMSK)                     | -      |       | - |
| DISTANCE:              | 3                               | meters |       |   |
| LIMIT:                 | 43 + 10 log <sub>10</sub> (W) : | 36.89  | dBc   |   |

| Ant.<br>Pol.<br>[H/V] | Height             | Azimuth                                                                     | Antenna                                       | Substitute<br>Antenna Gain<br>[dBi]                                                         | Spurious<br>Emission Level<br>[dBm]                                                                            | [dBc]                                                                                                                                                        |
|-----------------------|--------------------|-----------------------------------------------------------------------------|-----------------------------------------------|---------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Н                     | 1.43               | 342                                                                         | -46.46                                        | 9.19                                                                                        | -37.27                                                                                                         | 64.7                                                                                                                                                         |
| Н                     | -                  | -                                                                           | -54.72                                        | 11.28                                                                                       | -43.43                                                                                                         | 70.9                                                                                                                                                         |
|                       | Pol.<br>[H/V]<br>H | Pol.         Height<br>[M/V]           H         1.43           H         - | Pol.Height<br>[m]Azimuth<br>[degree]H1.43342H | Pol.<br>[H/V]Height<br>[m]Azimuth<br>[degree]Antenna<br>Terminals [dBm]H1.43342-46.46H54.72 | Pol.<br>[H/V]Height<br>[m]Azimuth<br>[degree]Antenna<br>Terminals [dBm]Antenna Gain<br>[dBi]H1.43342-46.469.19 | Pol.<br>[H/V]Height<br>[m]Azimuth<br>[degree]Antenna<br>Terminals [dBm]Antenna Gain<br>[dBi]Emission Level<br>[dBm]H1.43342-46.469.19-37.27H54.7211.28-43.43 |

Table 7-27. Radiated Spurious Data (PCS GSM Mode – Ch. 810)

| 185                             | 0.20                           | MHz                    |                                                                                            |
|---------------------------------|--------------------------------|------------------------|--------------------------------------------------------------------------------------------|
| 5                               | 12                             |                        |                                                                                            |
| 28.88                           | dBm =                          | 0.773                  | W                                                                                          |
| GSM (GMSK)                      |                                |                        |                                                                                            |
| 3                               | meters                         |                        |                                                                                            |
| 43 + 10 log <sub>10</sub> (W) = | 41.88                          | dBc                    |                                                                                            |
|                                 | 51<br>28.88<br>GSM (GMSK)<br>3 | GSM (GMSK)<br>3 meters | $\frac{512}{28.88} \text{ dBm} = 0.773$ $\frac{\text{GSM}(\text{GMSK})}{3} \text{ meters}$ |

| Frequency<br>[MHz] | Ant.<br>Pol.<br>[H/V] | Antenna<br>Height<br>[m] | Turntable<br>Azimuth<br>[degree] | Level at<br>Antenna<br>Terminals [dBm] | Substitute<br>Antenna Gain<br>[dBi] | Spurious<br>Emission Level<br>[dBm] | [dBc] |
|--------------------|-----------------------|--------------------------|----------------------------------|----------------------------------------|-------------------------------------|-------------------------------------|-------|
| 3700.40            | V                     | 1.20                     | 0                                | -56.55                                 | 8.39                                | -48.16                              | 75.6  |
| 5550.60            | V                     | -                        | -                                | -57.06                                 | 10.54                               | -46.52                              | 74.0  |

Table 7-28. Radiated Spurious Data with Camera Module (PCS GSM Mode – Ch. 512)

| FCC ID: ZNFVS987             |                                            | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | 💽 LG | Reviewed by:<br>Quality Manager |  |
|------------------------------|--------------------------------------------|------------------------------------------------------------------------------|------|---------------------------------|--|
| Test Report S/N:             | Test Dates:                                | EUT Type:                                                                    |      | Page 84 of 104                  |  |
| 0Y1601180117-R2.ZNF          | 1/20-2/18/2016                             | Portable Handset                                                             |      | Page 64 01 104                  |  |
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| OPERATING FREQUENCY:   | 185                             | MHz    |         |
|------------------------|---------------------------------|--------|---------|
| CHANNEL:               | 2                               |        |         |
| MEASURED OUTPUT POWER: | 20.74                           | dBm =  | 0.119 W |
| MODULATION SIGNAL:     | CDMA                            |        |         |
| DISTANCE:              | 3                               | meters |         |
| LIMIT:                 | 43 + 10 log <sub>10</sub> (W) = | 33.74  | dBc     |

| Frequency<br>[MHz] | Ant.<br>Pol.<br>[H/V] | Height | Turntable<br>Azimuth<br>[degree] | Level at<br>Antenna<br>Terminals [dBm] | Substitute<br>Antenna Gain<br>[dBi] | Spurious<br>Emission Level<br>[dBm] | [dBc] |
|--------------------|-----------------------|--------|----------------------------------|----------------------------------------|-------------------------------------|-------------------------------------|-------|
| 3702.50            | Н                     | 1.72   | 41                               | -45.28                                 | 9.43                                | -35.85                              | 56.6  |
| 5553.75            | Н                     | 1.85   | 350                              | -52.25                                 | 10.79                               | -41.46                              | 62.2  |
| 7405.00            | Н                     | -      | -                                | -51.92                                 | 10.70                               | -41.22                              | 62.0  |

Table 7-29. Radiated Spurious Data (PCS CDMA Mode – Ch. 25)

| OPERATING FREQUENCY:   | 188                             | 0.00   | MHz     |
|------------------------|---------------------------------|--------|---------|
| CHANNEL:               | 60                              |        |         |
| MEASURED OUTPUT POWER: | 18.84                           | dBm =  | 0.077 W |
| MODULATION SIGNAL:     | CDMA                            |        |         |
| DISTANCE:              | 3                               | meters |         |
| LIMIT:                 | 43 + 10 log <sub>10</sub> (W) = | 31.84  | dBc     |

| Frequency<br>[MHz] | Ant.<br>Pol.<br>[H/V] | Height | Turntable<br>Azimuth<br>[degree] | Level at<br>Antenna<br>Terminals [dBm] | Substitute<br>Antenna Gain<br>[dBi] | Spurious<br>Emission Level<br>[dBm] | [dBc] |
|--------------------|-----------------------|--------|----------------------------------|----------------------------------------|-------------------------------------|-------------------------------------|-------|
| 3760.00            | Н                     | 1.66   | 7                                | -45.37                                 | 9.28                                | -36.09                              | 56.8  |
| 5640.00            | Н                     | -      | -                                | -54.54                                 | 11.03                               | -43.51                              | 64.2  |

Table 7-30. Radiated Spurious Data (PCS CDMA Mode – Ch. 600)

| FCC ID: ZNFVS987             |                 | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | 💽 LG | Reviewed by:<br>Quality Manager |
|------------------------------|-----------------|------------------------------------------------------------------------------|------|---------------------------------|
| Test Report S/N:             | Test Dates:     | EUT Type:                                                                    |      | Dego 95 of 104                  |
| 0Y1601180117-R2.ZNF          | 1/20-2/18/2016  | Portable Handset                                                             |      | Page 85 of 104                  |
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| OPERATING FREQUENCY:   | 190                             | 8.75   | MHz   |   |
|------------------------|---------------------------------|--------|-------|---|
| CHANNEL:               | 11                              | 75     |       |   |
| MEASURED OUTPUT POWER: | 18.50                           | dBm =  | 0.071 | W |
| MODULATION SIGNAL:     | CDMA                            |        |       | _ |
| DISTANCE:              | 3                               | meters |       |   |
| LIMIT:                 | 43 + 10 log <sub>10</sub> (W) = | 31.50  | dBc   |   |

| Frequency<br>[MHz] | Ant.<br>Pol.<br>[H/V] | Antenna<br>Height<br>[m] | Turntable<br>Azimuth<br>[degree] | Level at<br>Antenna<br>Terminals [dBm] | Substitute<br>Antenna Gain<br>[dBi] | Spurious<br>Emission Level<br>[dBm] | [dBc] |
|--------------------|-----------------------|--------------------------|----------------------------------|----------------------------------------|-------------------------------------|-------------------------------------|-------|
| 3817.50            | Н                     | 1.66                     | 7                                | -50.97                                 | 9.19                                | -41.78                              | 62.5  |
| 5726.25            | Н                     | 1.65                     | 8                                | -53.82                                 | 11.28                               | -42.54                              | 63.3  |
| 7635.00            | Н                     | -                        | -                                | -51.98                                 | 11.17                               | -40.81                              | 61.6  |

 Table 7-31. Radiated Spurious Data (PCS CDMA Mode – Ch. 1175)

| OPERATING FREQUENCY:   | 185                             | 1.25   | MHz     |
|------------------------|---------------------------------|--------|---------|
| CHANNEL:               | 2                               |        |         |
| MEASURED OUTPUT POWER: | 20.74                           | dBm =  | 0.119 W |
| MODULATION SIGNAL:     | CDMA                            |        |         |
| DISTANCE:              | 3                               | meters |         |
| LIMIT:                 | 43 + 10 log <sub>10</sub> (W) = | 33.76  | dBc     |

| Frequency<br>[MHz] | Ant.<br>Pol.<br>[H/V] | Antenna<br>Height<br>[m] | Turntable<br>Azimuth<br>[degree] | Level at<br>Antenna<br>Terminals [dBm] | Substitute<br>Antenna Gain<br>[dBi] | Spurious<br>Emission Level<br>[dBm] | [dBc] |
|--------------------|-----------------------|--------------------------|----------------------------------|----------------------------------------|-------------------------------------|-------------------------------------|-------|
| 3702.50            | Н                     | 1.91                     | 336                              | -55.30                                 | 9.43                                | -45.87                              | 64.0  |
| 5553.75            | Н                     | 1.58                     | 65                               | -46.54                                 | 10.79                               | -35.75                              | 53.9  |
| 7405.00            | Н                     | -                        | -                                | -52.02                                 | 10.70                               | -41.32                              | 59.4  |

Table 7-32. Radiated Spurious Data with Camera Module (PCS CDMA Mode – Ch. 25)

| FCC ID: ZNFVS987                         |                | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | 💽 LG | Reviewed by:<br>Quality Manager |  |
|------------------------------------------|----------------|------------------------------------------------------------------------------|------|---------------------------------|--|
| Test Report S/N:                         | Test Dates:    | EUT Type:                                                                    |      | Dego 96 of 104                  |  |
| 0Y1601180117-R2.ZNF                      | 1/20-2/18/2016 | Portable Handset                                                             |      | Page 86 of 104                  |  |
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| OPERATING FREQUENCY:   | 185                             | MHz    |         |
|------------------------|---------------------------------|--------|---------|
| CHANNEL:               | 92                              | -<br>- |         |
| MEASURED OUTPUT POWER: | 23.62                           | dBm =  | 0.230 W |
| MODULATION SIGNAL:     | WCDMA                           | _      |         |
| DISTANCE:              | 3                               | meters |         |
| LIMIT:                 | 43 + 10 log <sub>10</sub> (W) = | 36.62  | dBc     |

| Frequency<br>[MHz] | Ant.<br>Pol.<br>[H/V] | Height | Turntable<br>Azimuth<br>[degree] | Level at<br>Antenna<br>Terminals [dBm] | Substitute<br>Antenna Gain<br>[dBi] | Spurious<br>Emission Level<br>[dBm] | [dBc] |
|--------------------|-----------------------|--------|----------------------------------|----------------------------------------|-------------------------------------|-------------------------------------|-------|
| 3704.80            | Н                     | 1.97   | 348                              | -51.80                                 | 9.43                                | -42.38                              | 66.0  |
| 5557.20            | Н                     | -      | -                                | -52.92                                 | 10.80                               | -42.12                              | 65.7  |

Table 7-33. Radiated Spurious Data (PCS WCDMA Mode – Ch. 9262)

| OPERATING FREQUENCY:   | 188                             | 0.00   | MHz   |   |
|------------------------|---------------------------------|--------|-------|---|
| CHANNEL:               | 94                              | 00     |       |   |
| MEASURED OUTPUT POWER: | 24.05                           | dBm =  | 0.254 | W |
| MODULATION SIGNAL:     | WCDMA                           |        |       | - |
| DISTANCE:              | 3                               | meters |       |   |
| LIMIT:                 | 43 + 10 log <sub>10</sub> (W) = | 37.05  | dBc   |   |

| Frequency<br>[MHz] | Ant.<br>Pol.<br>[H/V] | Antenna<br>Height<br>[m] | Turntable<br>Azimuth<br>[degree] | Level at<br>Antenna<br>Terminals [dBm] | Substitute<br>Antenna Gain<br>[dBi] | Spurious<br>Emission Level<br>[dBm] | [dBc] |
|--------------------|-----------------------|--------------------------|----------------------------------|----------------------------------------|-------------------------------------|-------------------------------------|-------|
| 3760.00            | Н                     | 1.94                     | 357                              | -54.31                                 | 9.28                                | -45.03                              | 68.6  |
| 5640.00            | Н                     | -                        | -                                | -54.07                                 | 11.03                               | -43.04                              | 66.7  |

 Table 7-34. Radiated Spurious Data (PCS WCDMA Mode – Ch. 9400)

| FCC ID: ZNFVS987                           |                | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | G Reviewed by:<br>Quality Manager |  |  |
|--------------------------------------------|----------------|------------------------------------------------------------------------------|-----------------------------------|--|--|
| Test Report S/N:                           | Test Dates:    | EUT Type:                                                                    | Degs 97 of 104                    |  |  |
| 0Y1601180117-R2.ZNF                        | 1/20-2/18/2016 | Portable Handset                                                             | Page 87 of 104                    |  |  |
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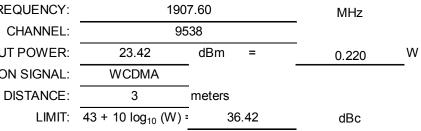
| OPERATING FREQUENCY:   | 190                             | 7.60   | MHz   |   |
|------------------------|---------------------------------|--------|-------|---|
| CHANNEL:               | 95                              | 38     |       |   |
| MEASURED OUTPUT POWER: | 23.42                           | dBm =  | 0.220 | W |
| MODULATION SIGNAL:     | WCDMA                           |        |       |   |
| DISTANCE:              | 3                               | meters |       |   |
| LIMIT:                 | 43 + 10 log <sub>10</sub> (W) = | 36.42  | dBc   |   |

| Frequency<br>[MHz] | Ant.<br>Pol.<br>[H/V] | Height | Turntable<br>Azimuth<br>[degree] | Level at<br>Antenna<br>Terminals [dBm] | Substitute<br>Antenna Gain<br>[dBi] | Spurious<br>Emission Level<br>[dBm] | [dBc] |
|--------------------|-----------------------|--------|----------------------------------|----------------------------------------|-------------------------------------|-------------------------------------|-------|
| 3815.20            | Н                     | 1.71   | 325                              | -50.25                                 | 9.19                                | -41.06                              | 64.7  |
| 5722.80            | Н                     | -      | -                                | -54.72                                 | 11.27                               | -43.45                              | 67.1  |

Table 7-35. Radiated Spurious Data (PCS WCDMA Mode – Ch. 9538)

| OPERATING FREQUENCY: |  |
|----------------------|--|
| CHANNEL:             |  |

| MEASURED OUTPUT POWER | R |
|-----------------------|---|
| MODULATION SIGNA      | L |



| Frequency<br>[MHz] | Ant.<br>Pol.<br>[H/V] | Height | Turntable<br>Azimuth<br>[degree] | Level at<br>Antenna<br>Terminals [dBm] | Substitute<br>Antenna Gain<br>[dBi] | Spurious<br>Emission Level<br>[dBm] | [dBc] |
|--------------------|-----------------------|--------|----------------------------------|----------------------------------------|-------------------------------------|-------------------------------------|-------|
| 3815.20            | Н                     | 2.21   | 358                              | -53.53                                 | 8.40                                | -45.14                              | 68.8  |
| 5722.80            | Н                     | -      | -                                | -56.21                                 | 10.76                               | -45.45                              | 69.1  |

Table 7-36. Radiated Spurious Data with Camera Module (PCS WCDMA Mode – Ch. 9538)

| FCC ID: ZNFVS987             |                 | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | 💽 LG | Reviewed by:<br>Quality Manager |
|------------------------------|-----------------|------------------------------------------------------------------------------|------|---------------------------------|
| Test Report S/N:             | Test Dates:     | EUT Type:                                                                    |      | Dogo 99 of 104                  |
| 0Y1601180117-R2.ZNF          | 1/20-2/18/2016  | Portable Handset                                                             |      | Page 88 of 104                  |
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### 7.8 Frequency Stability / Temperature Variation §2.1055 §22.355 §24.235 §27.54

#### Test Overview and Limit

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

#### Test Procedure Used

ANSI/TIA-603-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: ZNFVS987                           | <u>«APCTEST</u> | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | 🕒 LG  | Reviewed by:<br>Quality Manager |
|--------------------------------------------|-----------------|------------------------------------------------------------------------------|-------|---------------------------------|
| Test Report S/N:                           | Test Dates:     | EUT Type:                                                                    |       | Page 89 of 104                  |
| 0Y1601180117-R2.ZNF                        | 1/20-2/18/2016  | Portable Handset                                                             |       | Page 69 01 104                  |
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## Frequency Stability / Temperature Variation

OPERATING FREQUENCY: 836,600,000 Hz

CHANNEL:

190

VDC

REFERENCE VOLTAGE: 3.85

DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

| VOLTAGE<br>(%) | POWER<br>(VDC) | TEMP<br>(°C) | FREQUENCY<br>(Hz) | Freq. Dev.<br>(Hz) | Deviation<br>(%) |
|----------------|----------------|--------------|-------------------|--------------------|------------------|
| 100 %          | 3.85           | + 20 (Ref)   | 836,600,308       | 308                | 0.0000368        |
| 100 %          |                | - 30         | 836,600,131       | 131                | 0.0000157        |
| 100 %          |                | - 20         | 836,599,771       | -229               | -0.0000274       |
| 100 %          |                | - 10         | 836,599,912       | -88                | -0.0000105       |
| 100 %          |                | 0            | 836,600,022       | 22                 | 0.0000026        |
| 100 %          |                | + 10         | 836,599,897       | -103               | -0.0000123       |
| 100 %          |                | + 20         | 836,600,011       | 11                 | 0.0000013        |
| 100 %          |                | + 30         | 836,599,680       | -320               | -0.0000383       |
| 100 %          |                | + 40         | 836,600,179       | 179                | 0.0000214        |
| 100 %          |                | + 50         | 836,600,072       | 72                 | 0.000086         |
| BATT. ENDPOINT | 3.45           | + 20         | 836,599,878       | -122               | -0.0000146       |

Table 7-37. Frequency Stability Data (Cellular GSM Mode – Ch. 190)

| FCC ID: ZNFVS987                           | PCTEST         | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | 💽 LG | Reviewed by:<br>Quality Manager |
|--------------------------------------------|----------------|------------------------------------------------------------------------------|------|---------------------------------|
| Test Report S/N:                           | Test Dates:    | EUT Type:                                                                    |      | Dega 00 of 104                  |
| 0Y1601180117-R2.ZNF                        | 1/20-2/18/2016 | Portable Handset                                                             |      | Page 90 of 104                  |
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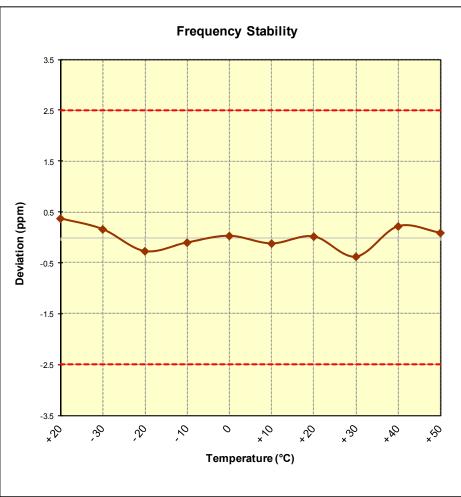


Figure 7-8. Frequency Stability Graph (Cellular GSM Mode – Ch. 190)

| FCC ID: ZNFVS987             | PCTEST         | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | Reviewed by:<br>Quality Manager |
|------------------------------|----------------|------------------------------------------------------------------------------|---------------------------------|
| Test Report S/N:             | Test Dates:    | EUT Type:                                                                    | Dogo 01 of 104                  |
| 0Y1601180117-R2.ZNF          | 1/20-2/18/2016 | Portable Handset                                                             | Page 91 of 104                  |
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OPERATING FREQUENCY: 836,520,000 Hz

CHANNEL:

VDC

384

REFERENCE VOLTAGE: 3.85

DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

| VOLTAGE<br>(%) | POWER<br>(VDC) | TEMP<br>(°C) | FREQUENCY<br>(Hz) | Freq. Dev.<br>(Hz) | Deviation<br>(%) |
|----------------|----------------|--------------|-------------------|--------------------|------------------|
| 100 %          | 3.85           | + 20 (Ref)   | 836,519,956       | -44                | -0.0000053       |
| 100 %          |                | - 30         | 836,519,719       | -281               | -0.0000336       |
| 100 %          |                | - 20         | 836,519,770       | -230               | -0.0000275       |
| 100 %          |                | - 10         | 836,520,018       | 18                 | 0.0000022        |
| 100 %          |                | 0            | 836,520,186       | 186                | 0.0000222        |
| 100 %          |                | + 10         | 836,520,060       | 60                 | 0.0000072        |
| 100 %          |                | + 20         | 836,519,973       | -27                | -0.0000032       |
| 100 %          |                | + 30         | 836,520,304       | 304                | 0.0000363        |
| 100 %          |                | + 40         | 836,520,449       | 449                | 0.0000537        |
| 100 %          |                | + 50         | 836,520,009       | 9                  | 0.0000011        |
| BATT. ENDPOINT | 3.45           | + 20         | 836,520,173       | 173                | 0.0000207        |

Table 7-38. Frequency Stability Data (Cellular CDMA Mode – Ch. 384)

| FCC ID: ZNFVS987                           | PCTEST         | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | 💽 LG | Reviewed by:<br>Quality Manager |
|--------------------------------------------|----------------|------------------------------------------------------------------------------|------|---------------------------------|
| Test Report S/N:                           | Test Dates:    | EUT Type:                                                                    |      | Dega 02 of 104                  |
| 0Y1601180117-R2.ZNF                        | 1/20-2/18/2016 | Portable Handset                                                             |      | Page 92 of 104                  |
| © 2016 PCTEST Engineering Laboratory, Inc. |                |                                                                              |      | V 3.3                           |



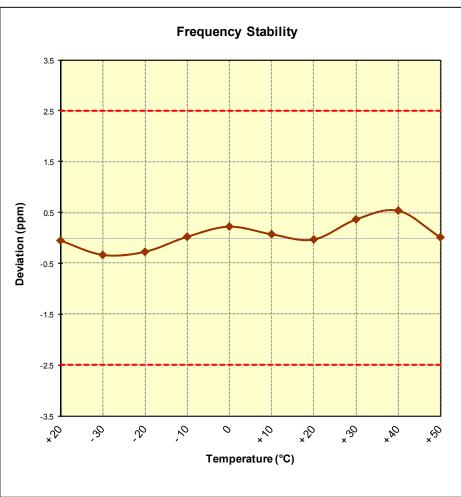


Figure 7-9. Frequency Stability Graph (Cellular CDMA Mode – Ch. 384)

| FCC ID: ZNFVS987             |                | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | Reviewed by:<br>Quality Manager |
|------------------------------|----------------|------------------------------------------------------------------------------|---------------------------------|
| Test Report S/N:             | Test Dates:    | EUT Type:                                                                    | Dogo 02 of 104                  |
| 0Y1601180117-R2.ZNF          | 1/20-2/18/2016 | Portable Handset                                                             | Page 93 of 104                  |
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**OPERATING FREQUENCY:** 836,600,000 Ηz CHANNEL: 4183 REFERENCE VOLTAGE: VDC 3.85

DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

| VOLTAGE<br>(%) | POWER<br>(VDC) | TEMP<br>(°C) | FREQUENCY<br>(Hz) | Freq. Dev.<br>(Hz) | Deviation<br>(%) |
|----------------|----------------|--------------|-------------------|--------------------|------------------|
| 100 %          | 3.85           | + 20 (Ref)   | 836,600,066       | 66                 | 0.0000079        |
| 100 %          |                | - 30         | 836,600,069       | 69                 | 0.0000082        |
| 100 %          |                | - 20         | 836,599,941       | -59                | -0.0000071       |
| 100 %          |                | - 10         | 836,599,841       | -159               | -0.0000190       |
| 100 %          |                | 0            | 836,600,204       | 204                | 0.0000244        |
| 100 %          |                | + 10         | 836,599,665       | -335               | -0.0000400       |
| 100 %          |                | + 20         | 836,599,778       | -222               | -0.0000265       |
| 100 %          |                | + 30         | 836,599,822       | -178               | -0.0000213       |
| 100 %          |                | + 40         | 836,600,103       | 103                | 0.0000123        |
| 100 %          |                | + 50         | 836,600,074       | 74                 | 0.000088         |
| BATT. ENDPOINT | 3.45           | + 20         | 836,600,139       | 139                | 0.0000166        |

 Table 7-39. Frequency Stability Data (Cellular WCDMA Mode – Ch. 4183)

| FCC ID: ZNFVS987                           | <u>«NPCTEST</u> | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | Reviewed by:<br>Quality Manager |
|--------------------------------------------|-----------------|------------------------------------------------------------------------------|---------------------------------|
| Test Report S/N:                           | Test Dates:     | EUT Type:                                                                    | Page 94 of 104                  |
| 0Y1601180117-R2.ZNF                        | 1/20-2/18/2016  | Portable Handset                                                             | Page 94 01 104                  |
| © 2016 PCTEST Engineering Laboratory, Inc. |                 |                                                                              | V 3.3                           |



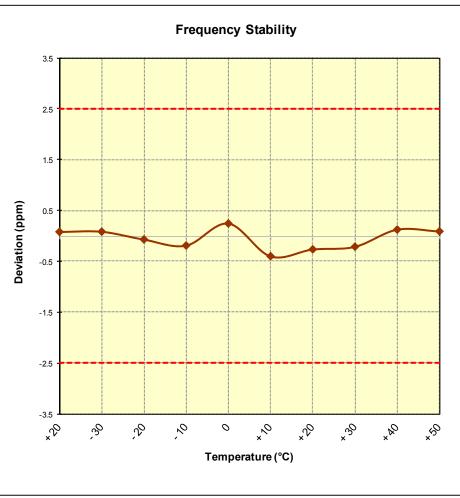


Figure 7-10. Frequency Stability Graph (Cellular WCDMA Mode – Ch. 4183)

| FCC ID: ZNFVS987             | PCTEST         | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | Reviewed by:<br>Quality Manager |
|------------------------------|----------------|------------------------------------------------------------------------------|---------------------------------|
| Test Report S/N:             | Test Dates:    | EUT Type:                                                                    | Dogo 05 of 104                  |
| 0Y1601180117-R2.ZNF          | 1/20-2/18/2016 | Portable Handset                                                             | Page 95 of 104                  |
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# Frequency Stability / Temperature Variation

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

| VOLTAGE<br>(%) | POWER<br>(VDC) | TEMP<br>(°C) | FREQUENCY<br>(Hz) | Freq. Dev.<br>(Hz) | Deviation<br>(%) |
|----------------|----------------|--------------|-------------------|--------------------|------------------|
| 100 %          | 3.85           | + 20 (Ref)   | 1,732,599,810     | -190               | -0.0000110       |
| 100 %          |                | - 30         | 1,732,600,133     | 133                | 0.0000077        |
| 100 %          |                | - 20         | 1,732,600,017     | 17                 | 0.0000010        |
| 100 %          |                | - 10         | 1,732,599,982     | -18                | -0.0000010       |
| 100 %          |                | 0            | 1,732,599,753     | -247               | -0.0000143       |
| 100 %          |                | + 10         | 1,732,599,961     | -39                | -0.0000023       |
| 100 %          |                | + 20         | 1,732,600,100     | 100                | 0.0000058        |
| 100 %          |                | + 30         | 1,732,599,962     | -38                | -0.0000022       |
| 100 %          |                | + 40         | 1,732,600,078     | 78                 | 0.0000045        |
| 100 %          |                | + 50         | 1,732,599,922     | -78                | -0.0000045       |
| BATT. ENDPOINT | 3.45           | + 20         | 1,732,599,923     | -77                | -0.0000044       |

Table 7-40. Frequency Stability Data (AWS WCDMA Mode – Ch. 1412)

### Note:

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

| FCC ID: ZNFVS987             |                | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | Reviewed by:<br>Quality Manager |
|------------------------------|----------------|------------------------------------------------------------------------------|---------------------------------|
| Test Report S/N:             | Test Dates:    | EUT Type:                                                                    | Dego 06 of 101                  |
| 0Y1601180117-R2.ZNF          | 1/20-2/18/2016 | Portable Handset                                                             | Page 96 of 104                  |
| © 2016 PCTEST Engineering La | boratory, Inc. |                                                                              | V 3.3<br>12/01/2015             |



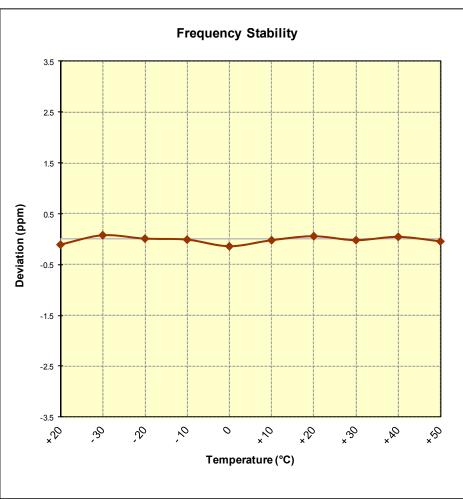


Figure 7-11. Frequency Stability Graph (AWS WCDMA Mode – Ch. 1412)

| FCC ID: ZNFVS987             |                | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | Reviewed by:<br>Quality Manager |
|------------------------------|----------------|------------------------------------------------------------------------------|---------------------------------|
| Test Report S/N:             | Test Dates:    | EUT Type:                                                                    | Page 97 of 104                  |
| 0Y1601180117-R2.ZNF          | 1/20-2/18/2016 | Portable Handset                                                             | Page 97 01 104                  |
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| OPERATING FREQUENCY: | 1,880,000,000 | Hz  |
|----------------------|---------------|-----|
| CHANNEL:             | 661           | -   |
| REFERENCE VOLTAGE:   | 3.85          | VDC |

| VOLTAGE<br>(%) | POWER<br>(VDC) | TEMP<br>(°C) | FREQUENCY<br>(Hz) | Freq. Dev.<br>(Hz) | Deviation<br>(%) |
|----------------|----------------|--------------|-------------------|--------------------|------------------|
| 100 %          | 3.85           | + 20 (Ref)   | 1,879,999,767     | -233               | -0.0000124       |
| 100 %          |                | - 30         | 1,880,000,041     | 41                 | 0.0000022        |
| 100 %          |                | - 20         | 1,879,999,758     | -242               | -0.0000129       |
| 100 %          |                | - 10         | 1,879,999,869     | -131               | -0.0000070       |
| 100 %          |                | 0            | 1,880,000,035     | 35                 | 0.0000019        |
| 100 %          |                | + 10         | 1,879,999,679     | -321               | -0.0000171       |
| 100 %          |                | + 20         | 1,879,999,916     | -84                | -0.0000045       |
| 100 %          |                | + 30         | 1,879,999,823     | -177               | -0.0000094       |
| 100 %          |                | + 40         | 1,879,999,814     | -186               | -0.0000099       |
| 100 %          |                | + 50         | 1,880,000,037     | 37                 | 0.0000020        |
| BATT. ENDPOINT | 3.45           | + 20         | 1,879,999,701     | -299               | -0.0000159       |

Table 7-41. Frequency Stability Data (PCS GSM 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: ZNFVS987             | PCTEST         | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | 💽 LG | Reviewed by:<br>Quality Manager |
|------------------------------|----------------|------------------------------------------------------------------------------|------|---------------------------------|
| Test Report S/N:             | Test Dates:    | EUT Type:                                                                    |      | Dega 09 of 101                  |
| 0Y1601180117-R2.ZNF          | 1/20-2/18/2016 | Portable Handset                                                             |      | Page 98 of 104                  |
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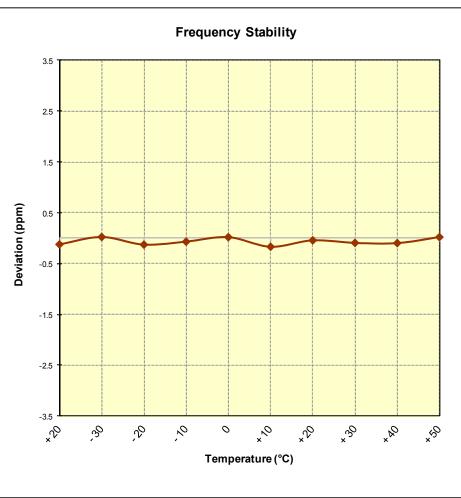


Figure 7-12. Frequency Stability Graph (PCS GSM Mode – Ch. 661)

| FCC ID: ZNFVS987             |                | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | Reviewed by:<br>Quality Manager |
|------------------------------|----------------|------------------------------------------------------------------------------|---------------------------------|
| Test Report S/N:             | Test Dates:    | EUT Type:                                                                    | Dega 00 of 104                  |
| 0Y1601180117-R2.ZNF          | 1/20-2/18/2016 | Portable Handset                                                             | Page 99 of 104                  |
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# Frequency Stability / Temperature Variation

| OPERATING FREQUENCY: | 1,880,000,000 | Hz  |
|----------------------|---------------|-----|
| CHANNEL:             | 600           |     |
| REFERENCE VOLTAGE:   | 3.85          | VDC |

| VOLTAGE<br>(%) | POWER<br>(VDC) | TEMP<br>(°C) | FREQUENCY<br>(Hz) | Freq. Dev.<br>(Hz) | Deviation<br>(%) |
|----------------|----------------|--------------|-------------------|--------------------|------------------|
| 100 %          | 3.85           | + 20 (Ref)   | 1,879,999,777     | -223               | -0.0000119       |
| 100 %          |                | - 30         | 1,880,000,028     | 28                 | 0.0000015        |
| 100 %          |                | - 20         | 1,880,000,051     | 51                 | 0.0000027        |
| 100 %          |                | - 10         | 1,879,999,898     | -102               | -0.0000054       |
| 100 %          |                | 0            | 1,879,999,791     | -209               | -0.0000111       |
| 100 %          |                | + 10         | 1,880,000,199     | 199                | 0.0000106        |
| 100 %          |                | + 20         | 1,879,999,930     | -70                | -0.0000037       |
| 100 %          |                | + 30         | 1,879,999,936     | -64                | -0.0000034       |
| 100 %          |                | + 40         | 1,880,000,091     | 91                 | 0.0000048        |
| 100 %          |                | + 50         | 1,879,999,966     | -34                | -0.0000018       |
| BATT. ENDPOINT | 3.45           | + 20         | 1,879,999,920     | -80                | -0.0000043       |

Table 7-42. Frequency Stability Data (PCS CDMA Mode – Ch. 600)

### 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: ZNFVS987             |                | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | Reviewed by:<br>Quality Manager |
|------------------------------|----------------|------------------------------------------------------------------------------|---------------------------------|
| Test Report S/N:             | Test Dates:    | EUT Type:                                                                    | Dage 100 of 104                 |
| 0Y1601180117-R2.ZNF          | 1/20-2/18/2016 | Portable Handset                                                             | Page 100 of 104                 |
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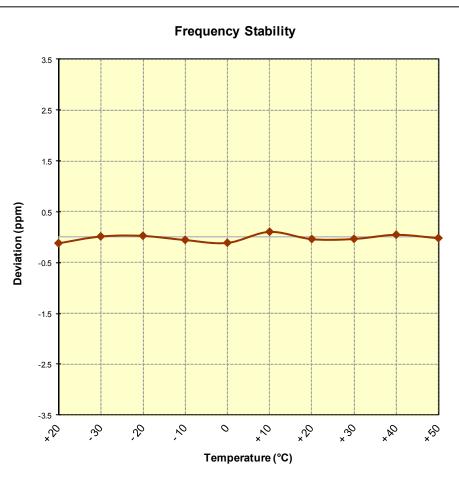


Figure 7-13. Frequency Stability Graph (PCS CDMA Mode – Ch. 600)

| FCC ID: ZNFVS987             |                | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | Reviewed by:<br>Quality Manager |
|------------------------------|----------------|------------------------------------------------------------------------------|---------------------------------|
| Test Report S/N:             | Test Dates:    | EUT Type:                                                                    | Dego 101 of 104                 |
| 0Y1601180117-R2.ZNF          | 1/20-2/18/2016 | Portable Handset                                                             | Page 101 of 104                 |
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# Frequency Stability / Temperature Variation

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

| VOLTAGE<br>(%) | POWER<br>(VDC) | TEMP<br>(°C) | FREQUENCY<br>(Hz) | Freq. Dev.<br>(Hz) | Deviation<br>(%) |
|----------------|----------------|--------------|-------------------|--------------------|------------------|
| 100 %          | 3.85           | + 20 (Ref)   | 1,880,000,014     | 14                 | 0.0000007        |
| 100 %          |                | - 30         | 1,880,000,070     | 70                 | 0.0000037        |
| 100 %          |                | - 20         | 1,879,999,904     | -96                | -0.0000051       |
| 100 %          |                | - 10         | 1,879,999,916     | -84                | -0.0000045       |
| 100 %          |                | 0            | 1,879,999,999     | -1                 | -0.0000001       |
| 100 %          |                | + 10         | 1,880,000,103     | 103                | 0.0000055        |
| 100 %          |                | + 20         | 1,880,000,171     | 171                | 0.0000091        |
| 100 %          |                | + 30         | 1,880,000,184     | 184                | 0.000098         |
| 100 %          |                | + 40         | 1,880,000,194     | 194                | 0.0000103        |
| 100 %          |                | + 50         | 1,880,000,383     | 383                | 0.0000204        |
| BATT. ENDPOINT | 3.45           | + 20         | 1,879,999,788     | -212               | -0.0000113       |

Table 7-43. 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: ZNFVS987                           |                | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | Reviewed by:<br>Quality Manager |
|--------------------------------------------|----------------|------------------------------------------------------------------------------|---------------------------------|
| Test Report S/N:                           | Test Dates:    | EUT Type:                                                                    | Dega 102 of 104                 |
| 0Y1601180117-R2.ZNF                        | 1/20-2/18/2016 | Portable Handset                                                             | Page 102 of 104                 |
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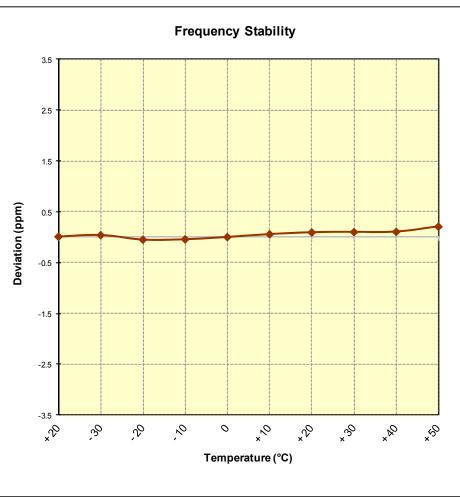


Figure 7-14. Frequency Stability Graph (PCS WCDMA Mode – Ch. 9400)

| FCC ID: ZNFVS987             |                | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | Reviewed by:<br>Quality Manager |
|------------------------------|----------------|------------------------------------------------------------------------------|---------------------------------|
| Test Report S/N:             | Test Dates:    | EUT Type:                                                                    | Dogo 102 of 104                 |
| 0Y1601180117-R2.ZNF          | 1/20-2/18/2016 | Portable Handset                                                             | Page 103 of 104                 |
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### 8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **LG Portable Handset FCC ID: ZNFVS987** complies with all the requirements of Parts 22, 24, & 27 of the FCC rules.

| FCC ID: ZNFVS987                           |                | FCC Pt. 22, 24, & 27 GSM/ CDMA / WCDMA MEASUREMENT REPORT<br>(CERTIFICATION) | Reviewed by:<br>Quality Manager |
|--------------------------------------------|----------------|------------------------------------------------------------------------------|---------------------------------|
| Test Report S/N:                           | Test Dates:    | EUT Type:                                                                    | Dego 104 of 104                 |
| 0Y1601180117-R2.ZNF                        | 1/20-2/18/2016 | Portable Handset                                                             | Page 104 of 104                 |
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