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

# MEASUREMENT REPORT
## FCC Part 24 LTE

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

**Date of Testing:**
June 8-27, 2012
**Test Site/Location:**
PCTEST Lab., Columbia, MD, USA
**Test Report Serial No.:**
0Y1205290746.ZNF

| | |
|---|---|
| **FCC ID:** | **ZNFLS860** |
| **APPLICANT:** | **LG ELECTRONICS MOBILECOMM U.S.A** |

| | |
|---|---|
| **Application Type:** | Certification |
| **FCC Classification:** | PCS Licensed Transmitter Held to Ear (PCE) |
| **FCC Rule Part(s):** | §2; §24 |
| **EUT Type:** | Portable Handset |
| **Model(s):** | LS860, LG-LS860, LGLS860 |
| **Test Device Serial No.:** | *identical prototype* [S/N: LS860_RF_R] |

| Mode | Tx Frequency (MHz) | Emission Designator | Modulation | ERP/EIRP | |
|---|---|---|---|---|---|
| | | | | Max. Power (W) | Max. Power (dBm) |
| LTE Band 25 | 1852.5 - 1912.5 | 4M51G7D | QPSK | 0.173 | 22.375 |
| LTE Band 25 | 1852.5 - 1912.5 | 4M51W7D | 16QAM | 0.130 | 21.135 |
| LTE Band 25 | 1855 - 1910 | 8M95G7D | QPSK | 0.131 | 21.184 |
| LTE Band 25 | 1855 - 1910 | 8M94W7D | 16QAM | 0.100 | 19.984 |

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

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

*PCTEST certifies that no party to this application has been subject to a denial of Federal benefits that includes FCC benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C. 862.*

Randy Ortanez
President

ACCREDITED
TESTING LABORATORY
CERTIFICATE #2041.01

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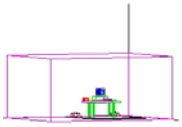
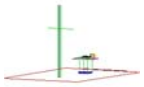


# MEASUREMENT REPORT
## FCC Part 24



## §2.1033 General Information

| | |
|---|---|
| **APPLICANT:** | LG Electronics MobileComm U.S.A |
| **APPLICANT ADDRESS:** | 1000 Sylvan Avenue |
| | Englewood Cliffs, NJ 07632 |
| **TEST SITE:** | PCTEST ENGINEERING LABORATORY, INC. |
| **TEST SITE ADDRESS:** | 7185 Oakland Mills Road, Columbia, MD 21046 USA |
| **FCC RULE PART(S):** | §2; §24 |
| **FCC ID:** | ZNFLS860 |
| **FCC CLASSIFICATION:** | PCS Licensed Transmitter Held to Ear (PCE) |
| **MODULATIONS:** | QPSK, 16-QAM (Uplink) |
| **FREQUENCY TOLERANCE:** | Emission must remain in band |
| **Test Device Serial No.:** | LS860_RF_R ☐ Production ☒ Pre-Production ☐ Engineering |
| **DATE(S) OF TEST:** | June 8-27, 2012 |
| **TEST REPORT S/N:** | 0Y1205290746.ZNF |

## Test Facility / Accreditations

**Measurements were performed at PCTEST Engineering Lab. located in Columbia, MD 21045, U.S.A.**

- PCTEST facility is an FCC registered (PCTEST Reg. No. 90864) test facility with the site description report on file and has met all the requirements specified in Section 2.948 of the FCC Rules.
- 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.


- 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.
- 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.

# 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.

## 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'l (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 39o 10'23" N latitude and 76o 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 C63.4-2003 on February 15, 2012.

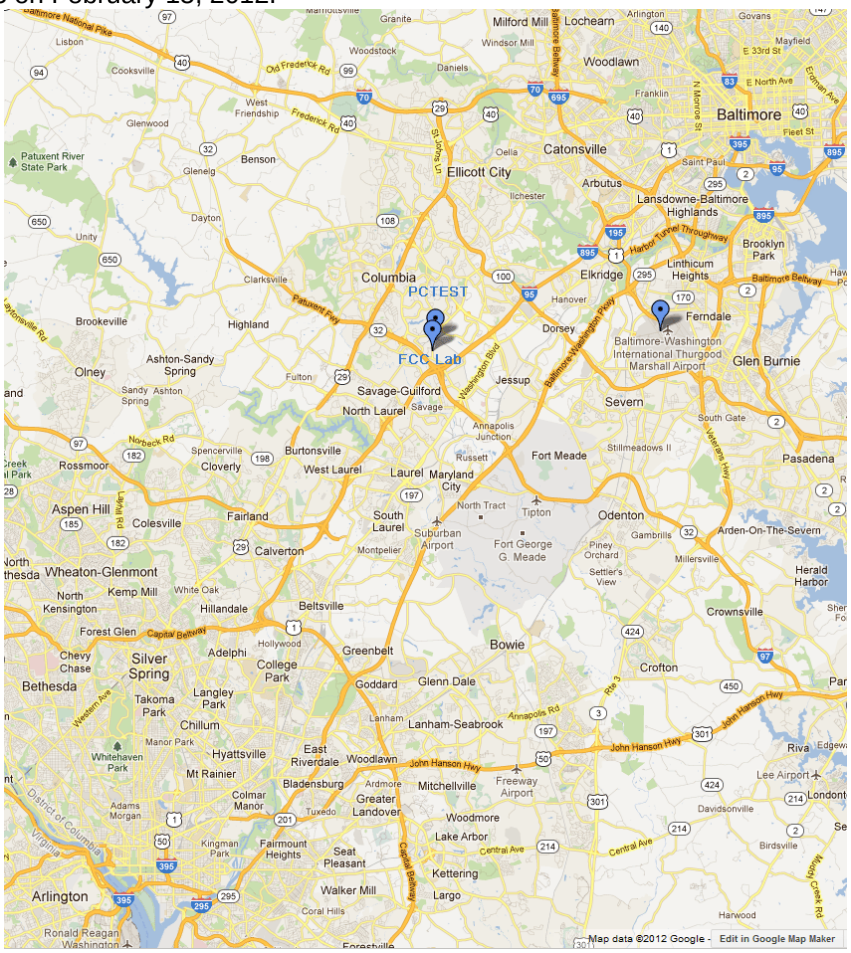



**Figure 1-1. Map of the Greater Baltimore and Metropolitan Washington, D.C. area**

# 2.0 PRODUCT INFORMATION

## 2.1 Equipment Description

The Equipment Under Test (EUT) is the **LGE Portable Handset FCC ID: ZNFLS860**. The test data contained in this report pertains to the emissions from the EUT's LTE operation. When testing in SVLTE mode, test data reported herein pertains to emissions from both LTE and CDMA operations. The CMW500 call box was used to set the EUT to transmit at full power. Each available modulation type (i.e. QPSK, 16-QAM) and RB size/RB offset combination was tested to determine the configuration producing the highest power and the worst case emissions.

## 2.2 EUT Capabilities

850/1900 CDMA/EvDO Rev 0/A (BC0, BC1, BC10), Band 25 (5/10 MHz BW) LTE (SVLTE), 802.11b/g/n WLAN, Bluetooth (1x,EDR, LE), NFC

This device allows for simultaneous transmission of 1x CDMA with LTE (5/10MHz BW).

## 2.3 EMI Suppression Device(s)/Modifications

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

## 2.4 Labeling Requirements

Per 2.925

The FCC identifier shall be permanently affixed to the equipment and shall be readily visible to the purchaser at the time of purchase.

Per 15.19; Docket 95-19

In addition to this requirement, a device subject to certification shall be labeled as follows:

*This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.*

The label shall be permanently affixed at a conspicuous location on the device; instruction manual or pamphlet supplied to the user and be readily visible to the purchaser at the time of purchase. However, when the device is so small wherein placement of the label with specified statement is not practical, only the trade name and FCC ID must be displayed on the device per Section 15.19(b)(2).

Please see attachment for FCC ID label and label location.

# 3.0 DESCRIPTION OF TESTS

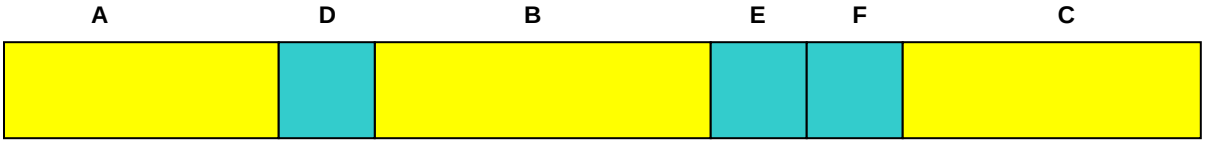
## 3.1 Evaluation Procedure

The measurement procedures described in the document titled "Land Mobile FM or PM – Communications Equipment – Measurements and Performance Standards" (ANSI/TIA-603-C-2004) was used in the measurement of **LGE Portable Handset FCC ID: ZNFLS860**.

**Deviation from Measurement Procedure……None**

## 3.2 PCS - Base Frequency Blocks

**§24.229 (a)(b)(c)**




**BLOCK 1: 1930 – 1945 MHz (A)**

**BLOCK 2: 1945 – 1950 MHz (D)**

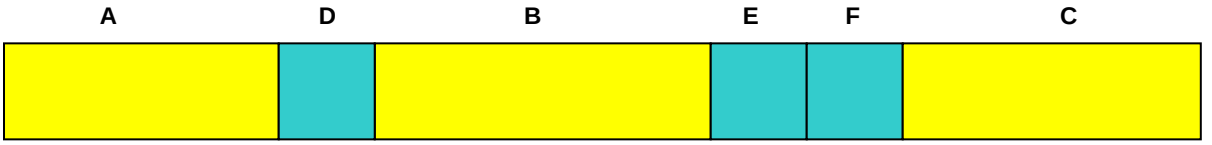
**BLOCK 3: 1950 – 1965 MHz (B)**

**BLOCK 4: 1965 – 1970 MHz (E)**

**BLOCK 5: 1970 – 1975 MHz (F)**

**BLOCK 6: 1975 – 1990 MHz (C)**

## PCS - Mobile Frequency Blocks




**BLOCK 1: 1850 – 1865 MHz (A)**

**BLOCK 2: 1865 – 1870 MHz (D)**

**BLOCK 3: 1870 – 1885 MHz (B)**

**BLOCK 4: 1885 – 1890 MHz (E)**

**BLOCK 5: 1890 – 1895 MHz (F)**

**BLOCK 6: 1895 – 1910 MHz (C)**

The paired frequency blocks 1910–1915 MHz and 1990–1995 MHz are available for assignment in the 175 Economic Areas defined in §90.7 of this chapter. The 1910–1915 MHz block shall be used for mobile/portable station transmissions while the 1990–1995 MHz block shall be used for base station transmissions.

## 3.3 Occupied Bandwidth Emission

**§2.1049, RSS-Gen (4.6.1)**

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. The spectrum analyzers' "occupied bandwidth" measurement function was used to record the occupied bandwidth in accordance with KDB 971168.

## 3.4 Spurious and Harmonic Emissions at Antenna Terminal

**§2.1051, 24.238(a)(b); RSS-133 (6.5.1)**

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$^{th}$ harmonic. On any frequency outside a licensee's frequency block, the power of any emission shall be attenuated below the transmitter power (P) by at least 43 + 10 log(P) dB. Compliance with these provisions is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. 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.

## 3.5 Radiated Power and Radiated Spurious Emissions

**§24.232(c), 24.238(a); RSS-133 (6.5.1)**

Radiated spurious emissions are investigated indoors in a semi-anechoic chamber to determine the frequencies producing the worst case emissions. Final measurements for radiated power and radiated spurious emissions are performed on the 3 meter OATS per the guidelines of ANSI/TIA-603-C-2004. The measurement area is situated on an 18 meter x 20 meter galvanized 1/2" hardware cloth as the conducting ground plane. This material is sewn together in sections 4 feet wide and 60 feet long. A total of eighteen sections are required to cover the entire measurement area. Sections are laid across the width of the pad, overlapped 1" and sewn and soldered together at intervals of 3" (7.6 cm.) The terrain of the test site is reasonably flat and level. Power and cable to the test site are buried 18" deep into the ground outside the perimeter of the site. An all-weather non-metallic housing is situated on a 2 x 3 meter area adjacent to the measurement area to house the test equipment. The equipment under test was transmitting while connected to its integral antenna and is placed on a wooden turntable 80cm above the ground plane and 3 meters from the receive antenna. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its $10^{th}$ harmonic. 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. Emissions are also investigated with the receive antenna horizontally and vertically polarized. The level of the maximized emission is recorded with the spectrum analyzer using a peak detector with RBW = 1MHz, VBW = 3MHz for emissions greater than 1GHz. For emissions below 1GHz, the spectrum analyzer is set to RBW = 100kHz and VBW = 300kHz.

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:

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

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

The calculated $P_d$ levels are then compared to the absolute spurious emission limit of -13dBm which is equivalent to the required minimum attenuation of 43 + $10\log_{10}$(Power $_{[Watts]}$) specified in 22.917(a) and 24.238(a).

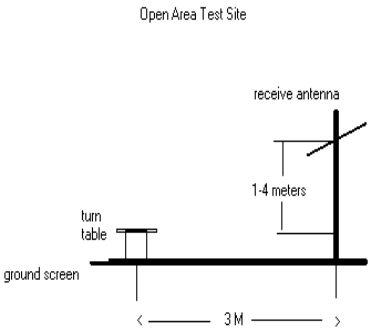



**Figure 3-1. Diagram of 3-meter outdoor test range**

## 3.6 Peak-Average Ratio

**§24.232(d); RSS-133 (6.4)**

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.

## 3.7 Frequency Stability / Temperature Variation

**§2.1055, §24.235; RSS-133 (6.3)**

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.

*Specification – The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.*

**Time Period and Procedure:**

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 one minute 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 sufficient stabilization period at each temperature shall be used prior to each frequency requirement.

# 4.0 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 |
|---|---|---|---|---|---|---|
| - | RE2 | Radiated Emissions Cable Set (VHF/UHF) | 2/13/2012 | Annual | 2/13/2013 | N/A |
| - | LTx2 | Licensed Transmitter Cable Set | 2/17/2012 | Annual | 2/17/2013 | N/A |
| Agilent | 8447D | Broadband Amplifier | 5/8/2012 | Annual | 5/8/2013 | 1937A03348 |
| Agilent | 8648D | (9kHz-4GHz) Signal Generator | 10/10/2011 | Annual | 10/10/2012 | 3613A00315 |
| Agilent | E4448A | PSA (3Hz-50GHz) Spectrum Analyzer | 2/15/2012 | Annual | 2/15/2013 | US42510244 |
| Agilent | E8267C | Vector Signal Generator | 10/10/2011 | Biennial | 10/10/2013 | US42340152 |
| Agilent | N9020A | MXA Signal Analyzer | 10/10/2011 | Annual | 10/10/2012 | US46470561 |
| Agilent | N9030A | PXA Signal Analyzer | 2/23/2012 | Annual | 2/23/2013 | MY49432391 |
| Anritsu | MA2411B | Power Sensor | 3/5/2012 | Annual | 3/5/2013 | 846215 |
| Anritsu | ML2495A | Power Meter | 10/13/2011 | Annual | 10/13/2012 | 1039008 |
| Espec | ESX-2CA | Environmental Chamber | 4/4/2012 | Annual | 4/4/2013 | 17620 |
| ETS Lindgren | 3117 | 1-18 GHz DRG Horn (Medium) | 7/22/2011 | Annual | 7/22/2012 | 125518 |
| ETS Lindgren | 3160-09 | 18-26.5 GHz Standard Gain Horn | 5/30/2012 | Annual | 5/30/2013 | 135427 |
| ETS Lindgren | 3164-08 | Quad Ridge Horn Antenna | 10/1/2010 | Biennial | 10/1/2012 | 128337 |
| Mini-Circuits | VHF-1200+ | High Pass Filter | 1/15/2012 | Annual | 1/15/2013 | 30923 |
| Mini-Circuits | VHF-3100+ | High Pass Filter | 1/15/2012 | Annual | 1/15/2013 | 30841 |
| Rohde & Schwarz | CMW500 | LTE Radio Communication Tester | N/A | | N/A | 100976 |
| Rohde & Schwarz | RS-PR18 | 1-18 GHz Pre-Amplifier | 7/9/2011 | Annual | 7/9/2012 | 100071 |
| Rohde & Schwarz | RS-PR26 | 18-26.5 GHz Pre-Amplifier | 5/30/2012 | Annual | 5/30/2013 | 100040 |
| Rohde & Schwarz | ESU26 | EMI Test Receiver | 12/15/2011 | Annual | 12/15/2012 | 100342 |
| Schwarzbeck | UHA 9105 | Dipole Antenna (400 - 1GHz) Rx | 11/14/2011 | Biennial | 11/14/2013 | 9105-2404 |
| Schwarzbeck | UHA 9105 | Dipole Antenna (400 - 1GHz) Tx | 11/14/2011 | Biennial | 11/14/2013 | 9105-2403 |
| Seekonk | NC-100 | Torque Wrench (8" lb) | 3/5/2012 | Triennial | 3/5/2015 | N/A |
| Sunol | JB5 | Bi-Log Antenna (30M - 5GHz) | 1/26/2012 | Biennial | 1/26/2014 | A051107 |

**Table 4-1. Test Equipment**

**Note: Equipment with 'N/A' Calibration dates were used for signaling purposes only and not for calibrated measurements. Care was taken to ensure testing was performed while equipment was in calibration.**

# 5.0 SAMPLE CALCULATIONS

**Note:** Bandwidth and EIRP values listed below in this section are not representative of actual measurements. They are listed as examples only.

## Emission Designator

### QPSK Modulation

**Emission Designator = 8M62G7D**

LTE BW = 8.62 MHz
G = Phase Modulation
7 = Quantized/Digital Info
D = Amplitude/Angle Modulated

### 16QAM Modulation

**Emission Designator = 8M45W7D**

LTE BW = 8.45 MHz
W = Amplitude/Angle Modulated
7 = Quantized/Digital Info
D = Combination (Audio/Data)

## Spurious Radiated Emission – LTE Band

**Example: Middle Channel LTE Mode 2nd Harmonic (1564 MHz)**

The 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 1564 MHz. So 6.1 dB is added to the signal generator reading of –30.9 dBm yielding –24.80 dBm. The fundamental EIRP was 25.501 dBm so this harmonic was 25.501 dBm – (-24.80).

# 6.0 TEST RESULTS

## 6.1 Summary

Company Name: LG Electronics MobileComm U.S.A

FCC ID: ZNFLS860

FCC Classification: PCS Licensed Transmitter Held to Ear (PCE)

Mode(s): LTE

| FCC Part Section(s) | RSS Sections(s) | Test Description | Test Limit | Test Condition | Test Result | Reference |
|---|---|---|---|---|---|---|
| **TRANSMITTER MODE (Tx)** | | | | | | |
| 2.1049 | RSS-Gen (4.6.1) | Occupied Bandwidth | N/A | CONDUCTED | PASS | Section 7.0 |
| 2.1051, 24.238(a) | RSS-133 (6.5.1) | Band Edge / Conducted Spurious Emissions **(*)** | < 43 + 10log$_{10}$ (P[Watts]) < 65 + 10log$_{10}$ (P[Watts]) in a 6.25kHz bandwidth for emissions in the 763 – 775MHz and 793 – 805MHz bands | | PASS | Section 7.0 |
| 24.232(d) | RSS-133 (6.4) | Peak-Average Ratio | < 13 dB | | PASS | Section 7.0 |
| 2.1046 | RSS-133 (4.1) | Transmitter Conducted Output Power Measurements | N/A | | N/A | SAR Report |
| 2.1055, 24.235 | RSS-133 (6.3) | Frequency Stability | Fundamental emissions must stay within the allotted band | | PASS | Section 6.5 |
| 24.232(c) | RSS-133 (6.4) [SRSP-510(5.1.2)] | Equivalent Isotropic Radiated Power | < 2 Watts max. EIRP | RADIATED | PASS | Section 6.2 |
| 2.1053, 24.238(a) | RSS-133 (6.5.1) | Single Transmit Undesirable Out-of-Band Emissions | < 43 + 10log$_{10}$ (P[Watts]) for all out-of-band emissions | | PASS | Section 6.3 |
| 2.1053, 24.238(a) | RSS-133 (6.5.1) | Simultaneous Transmission Undesirable Out-of-Band Emissions | < -13dBm for all out-of-band emissions | | PASS | Section 6.4 |

**Table 6-1. 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 shown in Section 7.0 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 out of band conducted spurious emissions (including those at the band edges), the emissions of both QPSK and 16-QAM modulations were investigated. The worst case transmitter emissions are shown in Section 7.0.

## 6.2 Equivalent Isotropic Radiated Power

**§24.232(c); RSS-133 (6.4) [SRSP-510(5.1.2)]**

| Frequency [MHz] | Channel Bandwidth [MHz] | Mod. | Battery | RB Size/Offset | Measured Level [dBm] | Substitute Level [dBm] | Antenna Gain [dBi] | Pol [H/V] | EIRP [dBm] | EIRP [Watts] | Margin [dB] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1852.50 | 5 | QPSK | Standard | 1 / 0 | -21.16 | 11.91 | 8.56 | H | 20.47 | 0.111 | -12.54 |
| 1882.50 | 5 | QPSK | Standard | 1 / 0 | -19.24 | 13.83 | 8.55 | H | 22.38 | 0.173 | -10.63 |
| 1912.50 | 5 | QPSK | Standard | 1 / 24 | -20.75 | 12.32 | 8.53 | H | 20.85 | 0.122 | -12.16 |
| 1852.50 | 5 | 16-QAM | Standard | 1 / 0 | -22.27 | 10.80 | 8.56 | H | 19.36 | 0.086 | -13.65 |
| 1882.50 | 5 | 16-QAM | Standard | 1 / 0 | -20.48 | 12.59 | 8.55 | H | 21.14 | 0.130 | -11.87 |
| 1912.50 | 5 | 16-QAM | Standard | 1 / 24 | -21.89 | 11.18 | 8.53 | H | 19.71 | 0.094 | -13.30 |
| 1855.00 | 10 | QPSK | Standard | 1 / 49 | -20.54 | 12.53 | 8.56 | H | 21.09 | 0.128 | -11.92 |
| 1882.50 | 10 | QPSK | Standard | 1 / 0 | -20.84 | 12.23 | 8.55 | H | 20.78 | 0.120 | -12.23 |
| 1910.00 | 10 | QPSK | Standard | 1 / 49 | -20.42 | 12.65 | 8.53 | H | 21.18 | 0.131 | -11.83 |
| 1855.00 | 10 | 16-QAM | Standard | 1 / 49 | -21.85 | 11.22 | 8.56 | H | 19.78 | 0.095 | -13.23 |
| 1882.50 | 10 | 16-QAM | Standard | 1 / 0 | -22.14 | 10.93 | 8.55 | H | 19.48 | 0.089 | -13.53 |
| 1910.00 | 10 | 16-QAM | Standard | 1 / 49 | -21.62 | 11.45 | 8.53 | H | 19.98 | 0.100 | -13.03 |

**Table 6-2. Band 25 LTE - Equivalent Isotropic Radiated Power Output Data**

**Notes:**

1. This device was tested under all modulations and channel bandwidth configurations and the worst case emissions are reported with BW = 5MHz, RB Size = 1 and Offset = 0 in QPSK modulation.

2. This unit was tested with its standard battery. All spurious emissions were investigated and the worst case emissions were found with the EUT powered by this battery.

3. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found in the horizontal setup. The data reported in the table above was measured in this test setup.

## 6.3 LTE Radiated Measurements

**§2.1053, §24.238(a)**

### Field Strength of SPURIOUS Radiation

| | | | | |
|---|---|---|---|---|
| OPERATING FREQUENCY: | 1852.50 | MHz | | |
| CHANNEL: | 26065 | | | |
| MEASURED OUTPUT POWER: | 20.47 | dBm | = | 0.111 W |
| MODULATION SIGNAL: | QPSK | | | |
| BANDWIDTH: | 5 MHz | | | |
| DISTANCE: | 3 | meters | | |
| LIMIT: | $43 + 10 \log_{10} (W) =$ | 33.47 | dBc | |

| FREQUENCY (MHz) | LEVEL @ ANTENNA TERMINALS (dBm) | SUBSTITUTE ANTENNA GAIN (dBi) | SPURIOUS EMISSION LEVEL (dBm) | POL (H/V) | (dBc) |
|---|---|---|---|---|---|
| 3705.00 | -42.60 | 8.40 | -34.20 | H | 54.67 |
| 5557.50 | -53.61 | 10.63 | -42.98 | H | 63.45 |
| 7410.00 | -64.28 | 11.84 | -52.44 | H | 72.91 |
| 9262.50 | -56.54 | 13.29 | -43.25 | H | 63.72 |
| 11115.00 | -63.06 | 13.50 | -49.56 | H | 70.03 |
| 12967.50 | -85.59 | 13.68 | -71.92 | H | 92.38 |

**Table 6-3. Radiated Spurious Data (Band 25 LTE - Ch 26065)**

**Notes:**

1. This device was tested under all modulations and channel bandwidth configurations and the worst case emissions are reported with BW = 5MHz, RB Size = 1 and Offset = 0 in QPSK modulation.

2. This unit was tested with its standard battery. All spurious emissions were investigated and the worst case emissions were found with the EUT powered by this battery.

3. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found in the horizontal setup. The data reported in the table above was measured in this test setup.

## Field Strength of SPURIOUS Radiation

| | | | | |
|---|---|---|---|---|
| OPERATING FREQUENCY: | 1882.50 | MHz | | |
| CHANNEL: | 26365 | | | |
| MEASURED OUTPUT POWER: | 22.38 | dBm | = | 0.173 W |
| MODULATION SIGNAL: | QPSK | | | |
| BANDWIDTH: | 5 MHz | | | |
| DISTANCE: | 3 | meters | | |
| LIMIT: | 43 + 10 $\log_{10}$ (W) = | 35.38 | dBc | |

| FREQUENCY (MHz) | LEVEL @ ANTENNA TERMINALS (dBm) | SUBSTITUTE ANTENNA GAIN (dBi) | SPURIOUS EMISSION LEVEL (dBm) | POL (H/V) | (dBc) |
|---|---|---|---|---|---|
| 3765.00 | -45.33 | 8.44 | -36.89 | H | 59.26 |
| 5647.50 | -55.71 | 10.66 | -45.05 | H | 67.42 |
| 7530.00 | -63.08 | 11.94 | -51.14 | H | 73.52 |
| 9412.50 | -52.96 | 13.23 | -39.72 | H | 62.10 |
| 11295.00 | -88.53 | 13.48 | -75.05 | H | 97.43 |
| 13177.50 | -85.41 | 13.84 | -71.57 | H | 93.94 |

**Table 6-4. Radiated Spurious Data (Band 25 LTE - Ch 26365)**

**Notes:**

4. This device was tested under all modulations and channel bandwidth configurations and the worst case emissions are reported with BW = 5MHz, RB Size = 1 and Offset = 0 in QPSK modulation.

5. This unit was tested with its standard battery. All spurious emissions were investigated and the worst case emissions were found with the EUT powered by this battery.

6. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found in the horizontal setup. The data reported in the table above was measured in this test setup.

## Field Strength of SPURIOUS Radiation

| | | | | |
|---|---|---|---|---|
| OPERATING FREQUENCY: | 1912.50 | MHz | | |
| CHANNEL: | 26665 | | | |
| MEASURED OUTPUT POWER: | 20.85 | dBm | = | 0.122 W |
| MODULATION SIGNAL: | QPSK | | | |
| BANDWIDTH: | 5 MHz | | | |
| DISTANCE: | 3 | meters | | |
| LIMIT: | 43 + 10 $\log_{10}$ (W) = | 33.85 | dBc | |

| FREQUENCY (MHz) | LEVEL @ ANTENNA TERMINALS (dBm) | SUBSTITUTE ANTENNA GAIN (dBi) | SPURIOUS EMISSION LEVEL (dBm) | POL (H/V) | (dBc) |
|---|---|---|---|---|---|
| 3825.00 | -44.11 | 8.57 | -35.53 | H | 56.39 |
| 5737.50 | -52.07 | 10.69 | -41.37 | H | 62.23 |
| 7650.00 | -60.74 | 12.07 | -48.68 | H | 69.53 |
| 9562.50 | -51.39 | 13.20 | -38.19 | H | 59.05 |
| 11475.00 | -63.62 | 13.42 | -50.20 | H | 71.06 |
| 13387.50 | -85.30 | 14.04 | -71.25 | H | 92.11 |

**Table 6-5. Radiated Spurious Data (Band 25 LTE - Ch 26665)**

**Notes:**

7. This device was tested under all modulations and channel bandwidth configurations and the worst case emissions are reported with BW = 5MHz, RB Size = 1 and Offset = 0 in QPSK modulation.

8. This unit was tested with its standard battery. All spurious emissions were investigated and the worst case emissions were found with the EUT powered by this battery.

9. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found in the horizontal setup. The data reported in the table above was measured in this test setup.

## 6.4 SVLTE Radiated Spurious Measurements

**§2.1053, §27.53(c)(2)**

Intermodulation distortion (IMD) was investigated while both LTE and CDMA were operating simultaneously. Both LTE and CDMA were set to maximum power during testing. The 2nd and 3rd order IMD produce the highest radiated spurious emissions. Both QPSK and 16-QAM modulation were investigated for LTE and the worst case emissions were found in QPSK modulation. Only the worst case out-of-band emissions within 20dB of the limit are reported below.

**Note:** The tables below show test results for low, middle, and high channel for Cellular and PCS CDMA and Ch 476 or Ch 684 for BC10 CDMA while LTE was set to transmit with 1RB, offset 0 in QPSK modulation at Band 25 LTE low, mid and high channels. The following tables represent the worst case emissions.

| | | |
|---|---|---|
| Tx1 Freq. (f1): | 836.52 | MHz |
| Tx2 Freq. (f2): | 1882.50 | MHz |
| Tx1 / Tx2 Modulation: | CDMA / QPSK | |
| LTE Bandwidth: | 5 | MHz |
| LTE RB Size / Offset: | 1 / 0 | |
| Distance: | 3 | meters |
| Limit: | -13 | dBm |

| Intermod Order | Intermod formula | FREQ (MHz) | LEVEL @ ANTENNA TERMINALS (dBm) | SUBSTITUTE ANTENNA GAIN (dBi) | SPURIOUS EMISSION LEVEL (dBm) | POL (H/V) | Margin [dB] |
|---|---|---|---|---|---|---|---|
| 2nd | f1+f2 | 2719.02 | -51.15 | 6.84 | -44.31 | H | -31.3 |
| 3rd | 2f2-f1 | 2928.48 | -50.67 | 7.24 | -43.43 | H | -30.4 |
| 3rd | 2f1+f2 | 3555.54 | -65.91 | 8.40 | -57.51 | H | -44.5 |
| 3rd | 2f2+f1 | 4601.52 | -52.62 | 9.52 | -43.10 | H | -30.1 |

**Table 6-6. Radiated Spurious Data (SVLTE)**

**Notes:**

1. This device was tested under all configurations and the worst case radiated spurious emission is reported while transmitting with 1 resource block with an offset of 0 using QPSK modulation for LTE, and for CDMA with RC3/SO55 with "All Up" power control bits.

2. This unit was tested with its standard battery.

3. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found with the EUT in the horizontally flat setup. The data reported in the table above was measured in this test setup.

## SVLTE Radiated Spurious Measurements (Continued)

**§2.1053, §27.53(c)(2)**

| | | |
|---|---|---|
| Tx1 Freq. (f1): | 824.70 | MHz |
| Tx2 Freq. (f2): | 1882.50 | MHz |
| Tx1 / Tx2 Modulation: | CDMA / QPSK | |
| LTE Bandwidth: | 5 | MHz |
| LTE RB Size / Offset: | 1 / 0 | |
| Distance: | 3 | meters |
| Limit: | -13 | dBm |

| Intermod Order | Intermod formula | FREQ (MHz) | LEVEL @ ANTENNA TERMINALS (dBm) | SUBSTITUTE ANTENNA GAIN (dBi) | SPURIOUS EMISSION LEVEL (dBm) | POL (H/V) | Margin [dB] |
|---|---|---|---|---|---|---|---|
| 2nd | f1+f2 | 2707.20 | -45.92 | 6.74 | -39.18 | H | -26.2 |
| 3rd | 2f2-f1 | 2940.30 | -41.87 | 7.25 | -34.62 | H | -21.6 |
| 3rd | 2f2+f1 | 4589.70 | -45.48 | 9.51 | -35.97 | H | -23.0 |

**Table 6-7. Radiated Spurious Data (SVLTE)**

**Notes:**

1. This device was tested under all configurations and the worst case radiated spurious emission is reported while transmitting with 1 resource block with an offset of 0 using QPSK modulation for LTE, and for CDMA with RC3/SO55 with "All Up" power control bits.

2. This unit was tested with its standard battery.

3. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found with the EUT in the horizontally flat setup. The data reported in the table above was measured in this test setup.

## SVLTE Radiated Spurious Measurements (Continued)

**§2.1053, §27.53(c)(2)**

| | | |
|---|---|---|
| Tx1 Freq. (f1): | 848.31 | MHz |
| Tx2 Freq. (f2): | 1882.50 | MHz |
| Tx1 / Tx2 Modulation: | CDMA / QPSK | |
| LTE Bandwidth: | 5 | MHz |
| LTE RB Size / Offset: | 1 / 0 | |
| Distance: | 3 | meters |
| Limit: | -13 | dBm |

| Intermod Order | Intermod formula | FREQ (MHz) | LEVEL @ ANTENNA TERMINALS (dBm) | SUBSTITUTE ANTENNA GAIN (dBi) | SPURIOUS EMISSION LEVEL (dBm) | POL (H/V) | Margin [dB] |
|---|---|---|---|---|---|---|---|
| 3rd | 2f2-f1 | 2916.69 | -58.58 | 7.24 | -51.34 | H | -38.3 |

**Table 6-8. Radiated Spurious Data (SVLTE)**

**Notes:**

1. This device was tested under all configurations and the worst case radiated spurious emission is reported while transmitting with 1 resource block with an offset of 0 using QPSK modulation for LTE, and for CDMA with RC3/SO55 with "All Up" power control bits.

2. This unit was tested with its standard battery.

3. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found with the EUT in the horizontally flat setup. The data reported in the table above was measured in this test setup.

## SVLTE Radiated Spurious Measurements (Continued)

**§2.1053, §27.53(c)(2)**

| | | |
|---|---|---|
| Tx1 Freq. (f1): | 836.52 | MHz |
| Tx2 Freq. (f2): | 1852.50 | MHz |
| Tx1 / Tx2 Modulation: | CDMA / QPSK | |
| LTE Bandwidth: | 5 | MHz |
| LTE RB Size / Offset: | 1 / 0 | |
| Distance: | 3 | meters |
| Limit: | -13 | dBm |

| Intermod Order | Intermod formula | FREQ (MHz) | LEVEL @ ANTENNA TERMINALS (dBm) | SUBSTITUTE ANTENNA GAIN (dBi) | SPURIOUS EMISSION LEVEL (dBm) | POL (H/V) | Margin [dB] |
|---|---|---|---|---|---|---|---|
| 2nd | f1+f2 | 2689.02 | -53.78 | 6.58 | -47.20 | H | -34.2 |
| 3rd | 2f2-f1 | 2868.48 | -51.02 | 7.20 | -43.82 | H | -30.8 |
| 3rd | 2f2+f1 | 4541.52 | -53.09 | 9.45 | -43.64 | H | -30.6 |

**Table 6-9. Radiated Spurious Data (SVLTE)**

**Notes:**

1. This device was tested under all configurations and the worst case radiated spurious emission is reported while transmitting with 1 resource block with an offset of 0 using QPSK modulation for LTE, and for CDMA with RC3/SO55 with "All Up" power control bits.

2. This unit was tested with its standard battery.

3. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found with the EUT in the horizontally flat setup. The data reported in the table above was measured in this test setup.

## SVLTE Radiated Spurious Measurements (Continued)

**§2.1053, §27.53(c)(2)**

| | | |
|---|---|---|
| Tx1 Freq. (f1): | 824.70 | MHz |
| Tx2 Freq. (f2): | 1852.50 | MHz |
| Tx1 / Tx2 Modulation: | CDMA / QPSK | |
| LTE Bandwidth: | 5 | MHz |
| LTE RB Size / Offset: | 1 / 0 | |
| Distance: | 3 | meters |
| Limit: | -13 | dBm |

| Intermod Order | Intermod formula | FREQ (MHz) | LEVEL @ ANTENNA TERMINALS (dBm) | SUBSTITUTE ANTENNA GAIN (dBi) | SPURIOUS EMISSION LEVEL (dBm) | POL (H/V) | Margin [dB] |
|---|---|---|---|---|---|---|---|
| 2nd | f1+f2 | 2677.20 | -46.48 | 6.48 | -40.00 | H | -27.0 |
| 3rd | 2f2-f1 | 2880.30 | -45.74 | 7.21 | -38.53 | H | -25.5 |
| 3rd | 2f2+f1 | 4529.70 | -45.60 | 9.44 | -36.16 | H | -23.2 |

**Table 6-10. Radiated Spurious Data (SVLTE)**

**Notes:**

1. This device was tested under all configurations and the worst case radiated spurious emission is reported while transmitting with 1 resource block with an offset of 0 using QPSK modulation for LTE, and for CDMA with RC3/SO55 with "All Up" power control bits.

2. This unit was tested with its standard battery.

3. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found with the EUT in the horizontally flat setup. The data reported in the table above was measured in this test setup.

## SVLTE Radiated Spurious Measurements (Continued)

**§2.1053, §27.53(c)(2)**

| | | |
|---|---|---|
| Tx1 Freq. (f1): | 848.31 | MHz |
| Tx2 Freq. (f2): | 1852.50 | MHz |
| Tx1 / Tx2 Modulation: | CDMA / QPSK | |
| LTE Bandwidth: | 5 | MHz |
| LTE RB Size / Offset: | 1 / 0 | |
| Distance: | 3 | meters |
| Limit: | -13 | dBm |

| Intermod Order | Intermod formula | FREQ (MHz) | LEVEL @ ANTENNA TERMINALS (dBm) | SUBSTITUTE ANTENNA GAIN (dBi) | SPURIOUS EMISSION LEVEL (dBm) | POL (H/V) | Margin [dB] |
|---|---|---|---|---|---|---|---|
| 2nd | f1+f2 | 2700.81 | -58.20 | 6.68 | -51.52 | H | -38.5 |
| 3rd | 2f2-f1 | 2856.69 | -56.15 | 7.19 | -48.96 | H | -36.0 |

**Table 6-11. Radiated Spurious Data (SVLTE)**

**Notes:**

1. This device was tested under all configurations and the worst case radiated spurious emission is reported while transmitting with 1 resource block with an offset of 0 using QPSK modulation for LTE, and for CDMA with RC3/SO55 with "All Up" power control bits.

2. This unit was tested with its standard battery.

3. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found with the EUT in the horizontally flat setup. The data reported in the table above was measured in this test setup.

## SVLTE Radiated Spurious Measurements (Continued)

**§2.1053, §27.53(c)(2)**

| | | |
|---|---|---|
| Tx1 Freq. (f1): | 824.70 | MHz |
| Tx2 Freq. (f2): | 1912.50 | MHz |
| Tx1 / Tx2 Modulation: | CDMA / QPSK | |
| LTE Bandwidth: | 5 | MHz |
| LTE RB Size / Offset: | 1 / 0 | |
| Distance: | 3 | meters |
| Limit: | -13 | dBm |

| Intermod Order | Intermod formula | FREQ (MHz) | LEVEL @ ANTENNA TERMINALS (dBm) | SUBSTITUTE ANTENNA GAIN (dBi) | SPURIOUS EMISSION LEVEL (dBm) | POL (H/V) | Margin [dB] |
|---|---|---|---|---|---|---|---|
| 2nd | f1+f2 | 2737.20 | -47.77 | 6.99 | -40.78 | H | -27.8 |
| 3rd | 2f2-f1 | 3000.30 | -44.16 | 7.30 | -36.86 | H | -23.9 |
| 3rd | 2f2+f1 | 4649.70 | -46.18 | 9.58 | -36.60 | H | -23.6 |

**Table 6-12. Radiated Spurious Data (SVLTE)**

**Notes:**

4. This device was tested under all configurations and the worst case radiated spurious emission is reported while transmitting with 1 resource block with an offset of 0 using QPSK modulation for LTE, and for CDMA with RC3/SO55 with "All Up" power control bits.

5. This unit was tested with its standard battery.

6. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found with the EUT in the horizontally flat setup. The data reported in the table above was measured in this test setup.

## SVLTE Radiated Spurious Measurements (Continued)

**§2.1053, §27.53(c)(2)**

| | | |
|---|---|---|
| Tx1 Freq. (f1): | 817.90 | MHz |
| Tx2 Freq. (f2): | 1852.50 | MHz |
| Tx1 / Tx2 Modulation: | CDMA / QPSK | |
| LTE Bandwidth: | 5 | MHz |
| LTE RB Size / Offset: | 1 / 0 | |
| Distance: | 3 | meters |
| Limit: | -13 | dBm |

| Intermod Order | Intermod formula | FREQ (MHz) | LEVEL @ ANTENNA TERMINALS (dBm) | SUBSTITUTE ANTENNA GAIN (dBi) | SPURIOUS EMISSION LEVEL (dBm) | POL (H/V) | Margin [dB] |
|---|---|---|---|---|---|---|---|
| 2nd | f1+f2 | 2670.40 | -46.86 | 6.42 | -40.44 | H | -27.4 |
| 3rd | 2f2-f1 | 2887.10 | -45.26 | 7.21 | -38.05 | H | -25.0 |
| 3rd | 2f2+f1 | 4522.90 | -45.30 | 9.43 | -35.87 | H | -22.9 |

**Table 6-13. Radiated Spurious Data (SVLTE)**

**Notes:**

7. This device was tested under all configurations and the worst case radiated spurious emission is reported while transmitting with 1 resource block with an offset of 0 using QPSK modulation for LTE, and for CDMA with RC3/SO55 with "All Up" power control bits.

8. This unit was tested with its standard battery.

9. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found with the EUT in the horizontally flat setup. The data reported in the table above was measured in this test setup.

## SVLTE Radiated Spurious Measurements (Continued)

**§2.1053, §27.53(c)(2)**

| | | |
|---|---|---|
| Tx1 Freq. (f1): | 823.10 | MHz |
| Tx2 Freq. (f2): | 1852.50 | MHz |
| Tx1 / Tx2 Modulation: | CDMA / QPSK | |
| LTE Bandwidth: | 5 | MHz |
| LTE RB Size / Offset: | 1 / 0 | |
| Distance: | 3 | meters |
| Limit: | -13 | dBm |

| Intermod Order | Intermod formula | FREQ (MHz) | LEVEL @ ANTENNA TERMINALS (dBm) | SUBSTITUTE ANTENNA GAIN (dBi) | SPURIOUS EMISSION LEVEL (dBm) | POL (H/V) | Margin [dB] |
|---|---|---|---|---|---|---|---|
| 3rd | 2f2-f1 | 2881.90 | -44.15 | 7.21 | -36.94 | H | -23.9 |

**Table 6-14. Radiated Spurious Data (SVLTE)**

**Notes:**

10. This device was tested under all configurations and the worst case radiated spurious emission is reported while transmitting with 1 resource block with an offset of 0 using QPSK modulation for LTE, and for CDMA with RC3/SO55 with "All Up" power control bits.

11. This unit was tested with its standard battery.

12. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found with the EUT in the horizontally flat setup. The data reported in the table above was measured in this test setup.

## 6.5 LTE Frequency Stability Measurements

**§2.1055, §27.54**

OPERATING FREQUENCY: 1,882,500,000 Hz

CHANNEL: 26365

REFERENCE VOLTAGE: 3.8 VDC

| VOLTAGE (%) | POWER (VDC) | TEMP (°C) | FREQUENCY (Hz) | Freq. Dev. (Hz) | Deviation (%) |
|---|---|---|---|---|---|
| 100 % | 3.80 | + 20 (Ref) | 1,882,499,980 | -20 | -0.000001 |
| 100 % | | - 30 | 1,882,500,022 | 22 | 0.000001 |
| 100 % | | - 20 | 1,882,499,979 | -21 | -0.000001 |
| 100 % | | - 10 | 1,882,500,019 | 19 | 0.000001 |
| 100 % | | 0 | 1,882,499,980 | -20 | -0.000001 |
| 100 % | | + 10 | 1,882,500,022 | 22 | 0.000001 |
| 100 % | | + 20 | 1,882,499,977 | -23 | -0.000001 |
| 100 % | | + 30 | 1,882,499,979 | -21 | -0.000001 |
| 100 % | | + 40 | 1,882,499,976 | -24 | -0.000001 |
| 100 % | | + 50 | 1,882,500,019 | 19 | 0.000001 |
| 115 % | 4.37 | + 20 | 1,882,500,021 | 21 | 0.000001 |
| 85 % | 3.23 | + 20 | 1,882,500,022 | 22 | 0.000001 |

**Table 6-15. Frequency Stability Data**

## LTE Frequency Stability Measurements (Cont'd)

**§2.1055, §27.54**

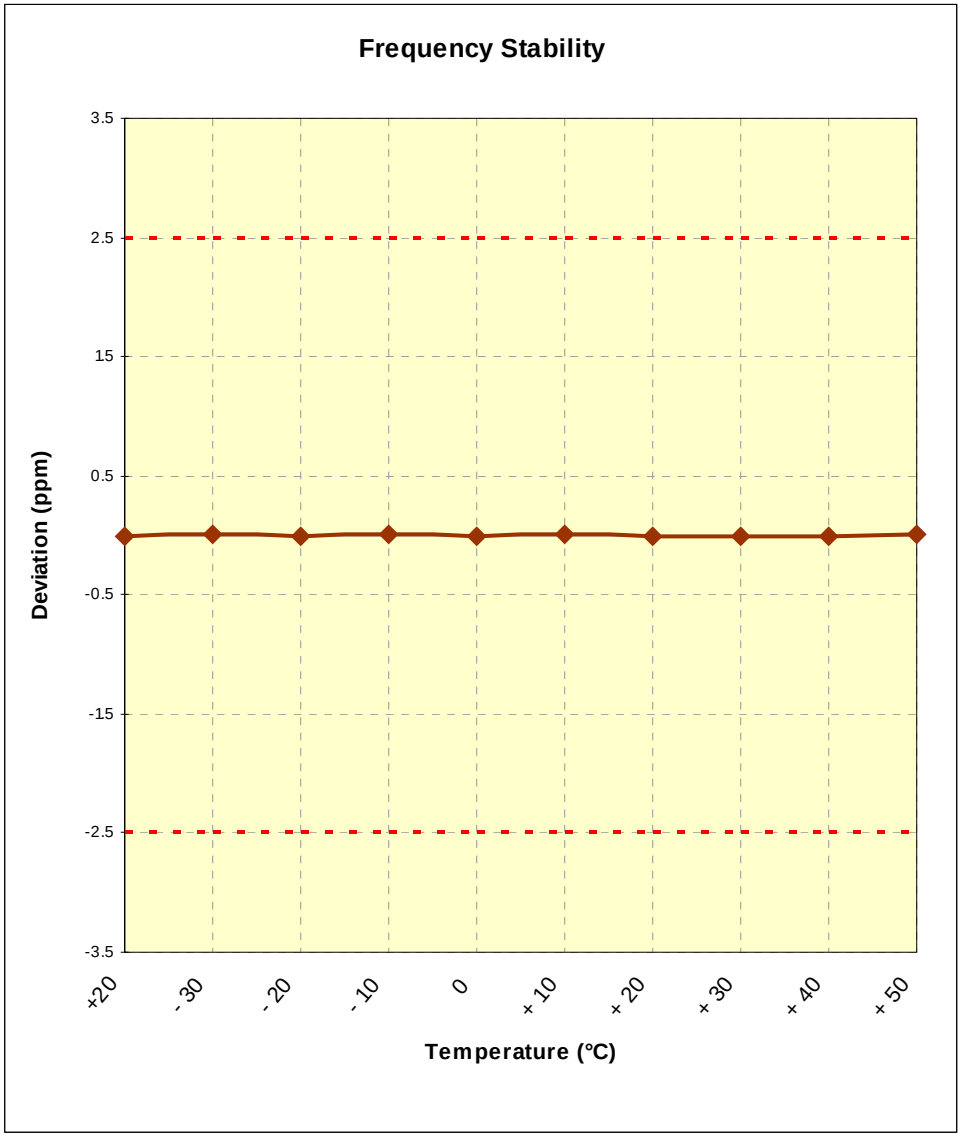
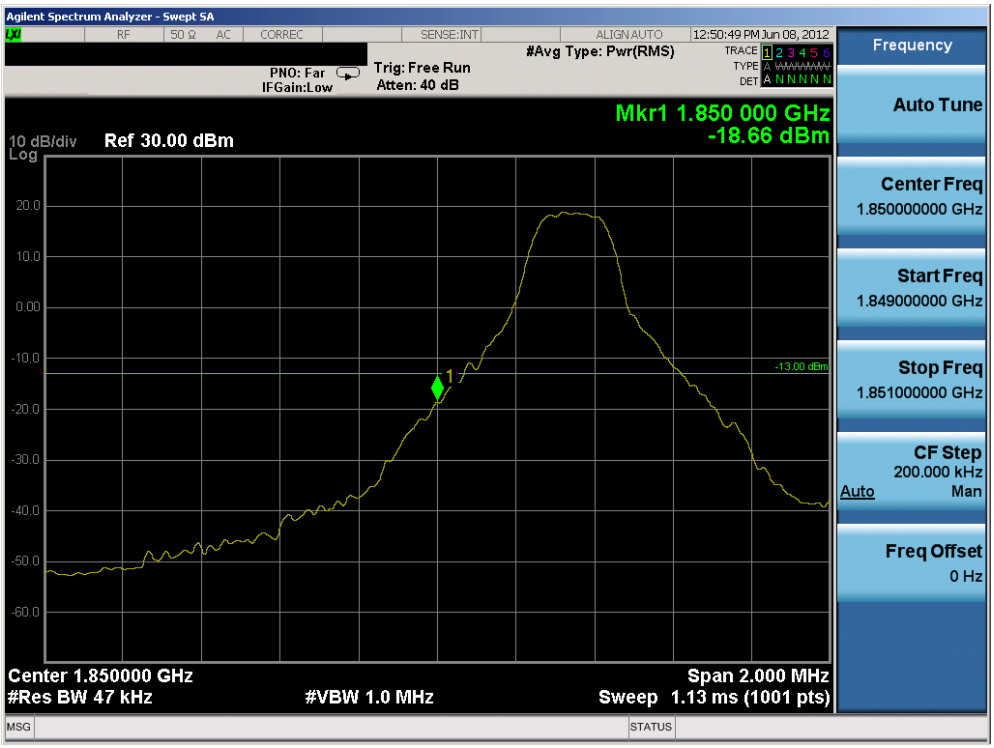



**Figure 6-1. Frequency Stability Graph**

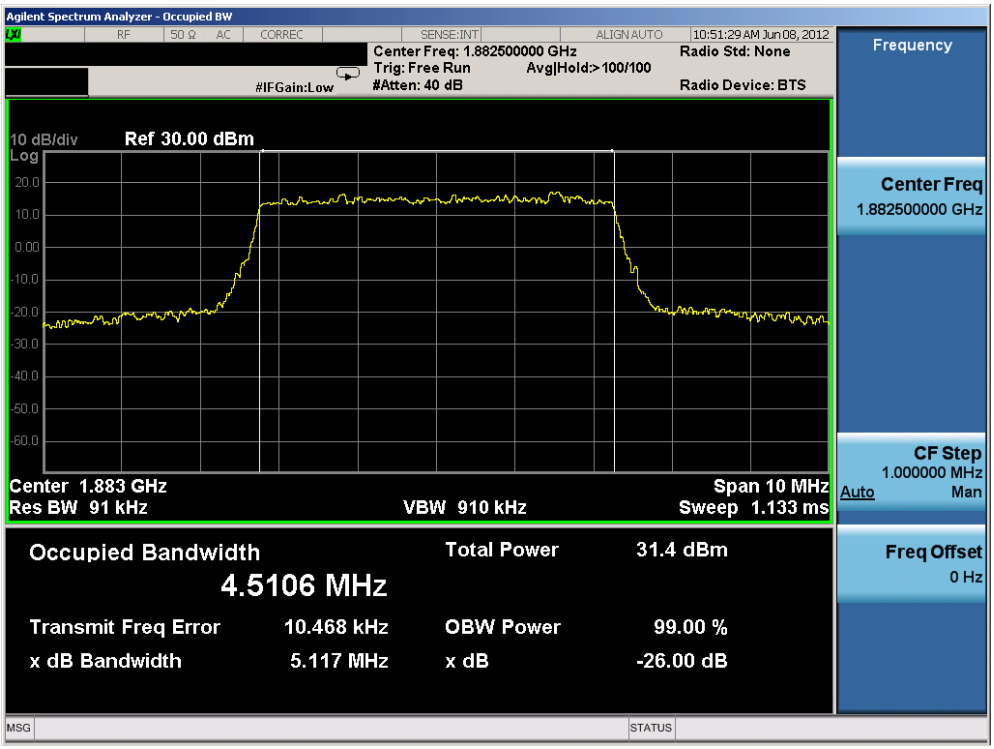
# 7.0 PLOT(S) OF EMISSIONS

**Note: All modulations (QPSK/16QAM), channel bandwidth configurations (5/10MHz), RB sizes and offsets were investigated and the worst case emissions are reported as indicated in the figure captions.**

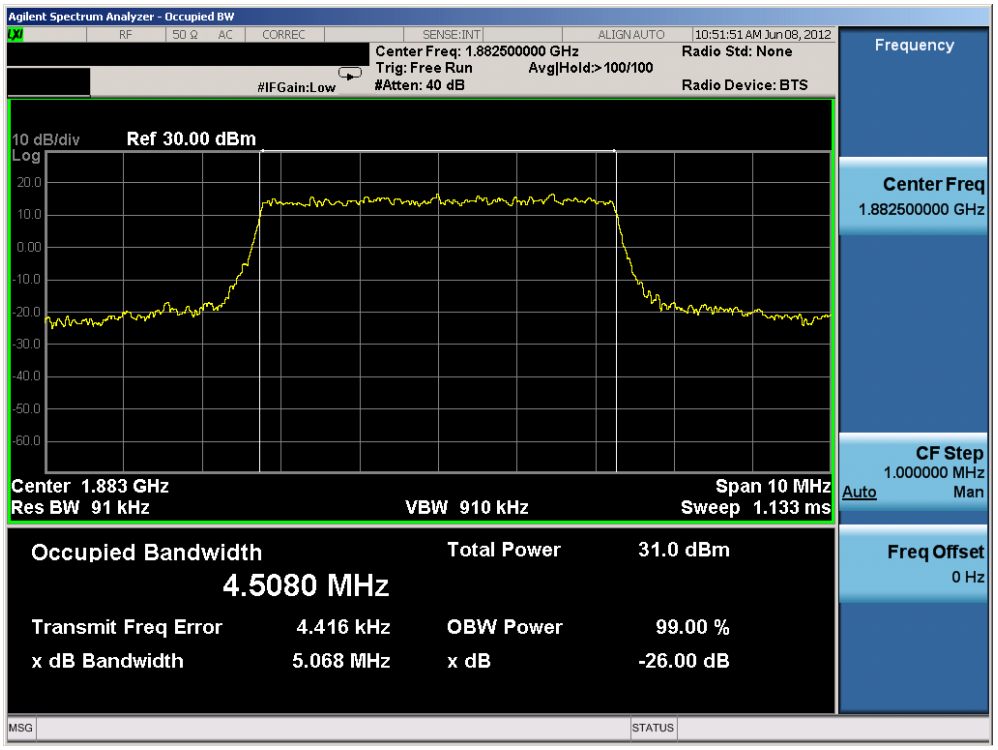

**Plot 7-1. Lower Band Edge Plot (QPSK – 5MHz BW - RB Size 25)**



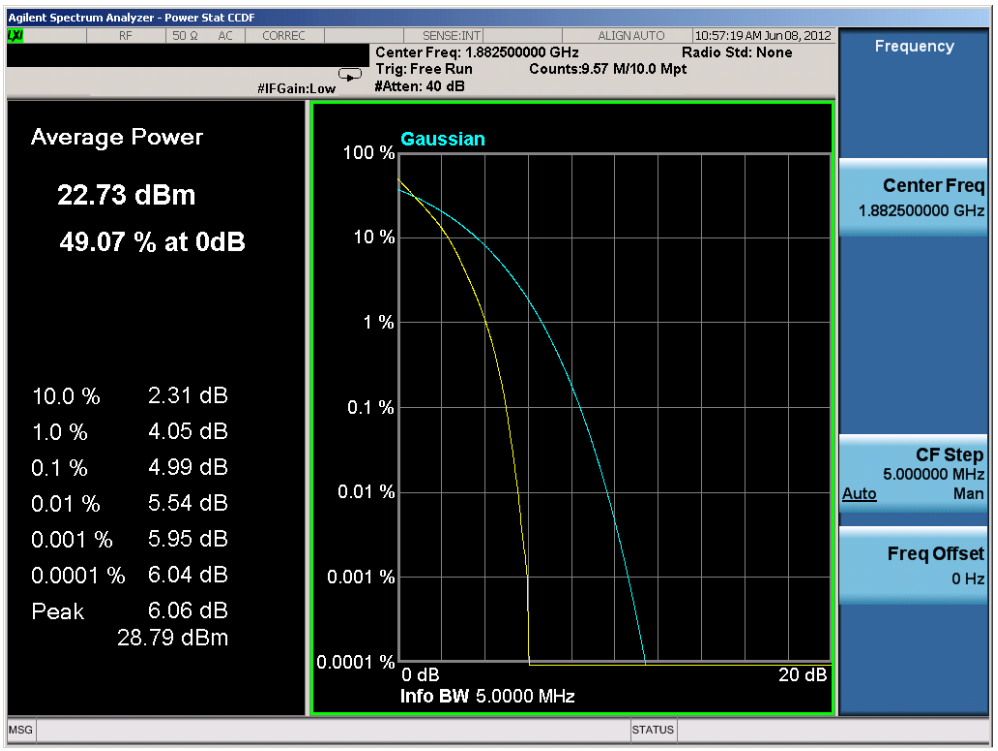

**Plot 7-2. Lower Band Edge Plot (QPSK – 5MHz BW – RB Size 1, Offset 0)**



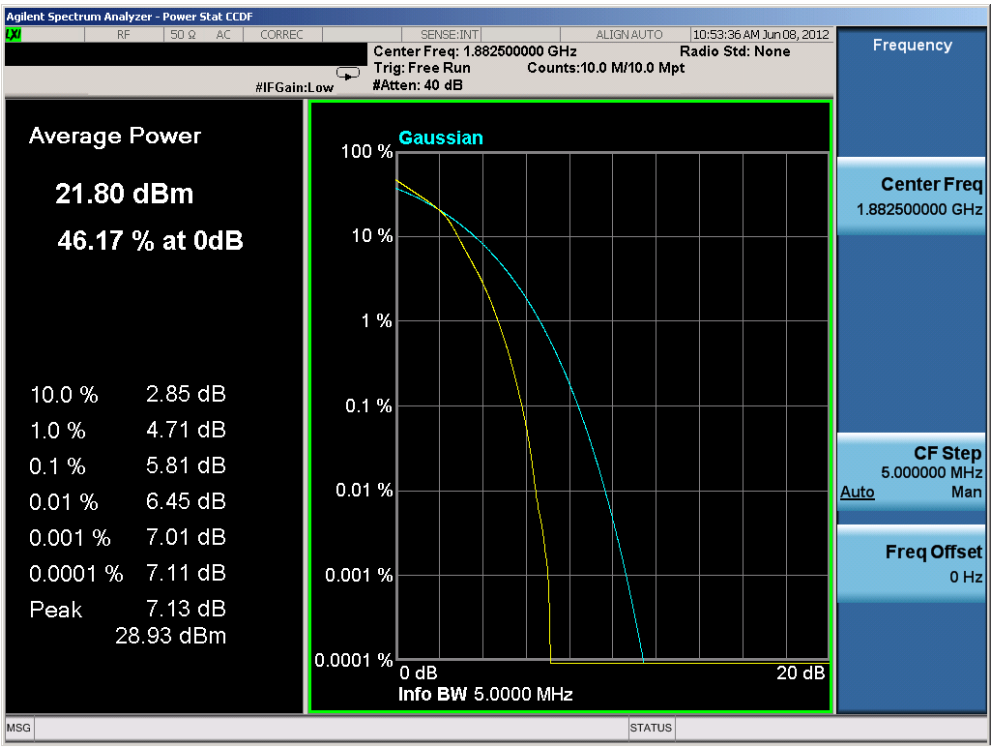

**Plot 7-3. Occupied Bandwidth Plot (QPSK – 5MHz BW – RB Size 25)**



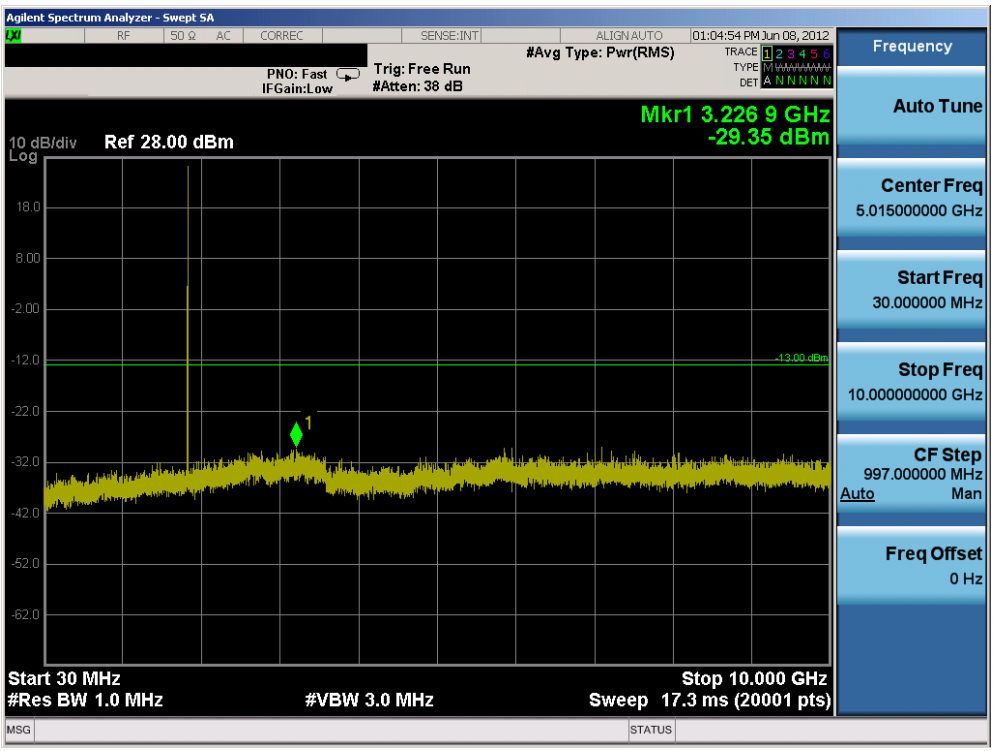

**Plot 7-4. Occupied Bandwidth Plot (16-QAM – 5MHz BW – RB Size 25)**



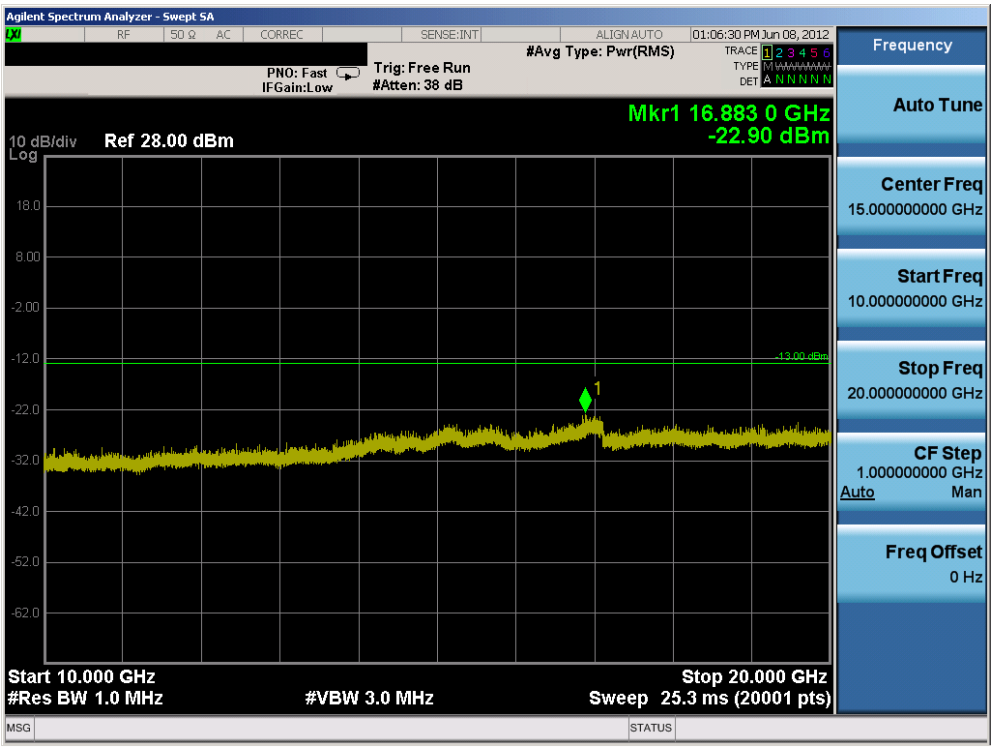

**Plot 7-5. Peak-Average Ratio Plot (QPSK – 5MHz BW – RB Size 25)**



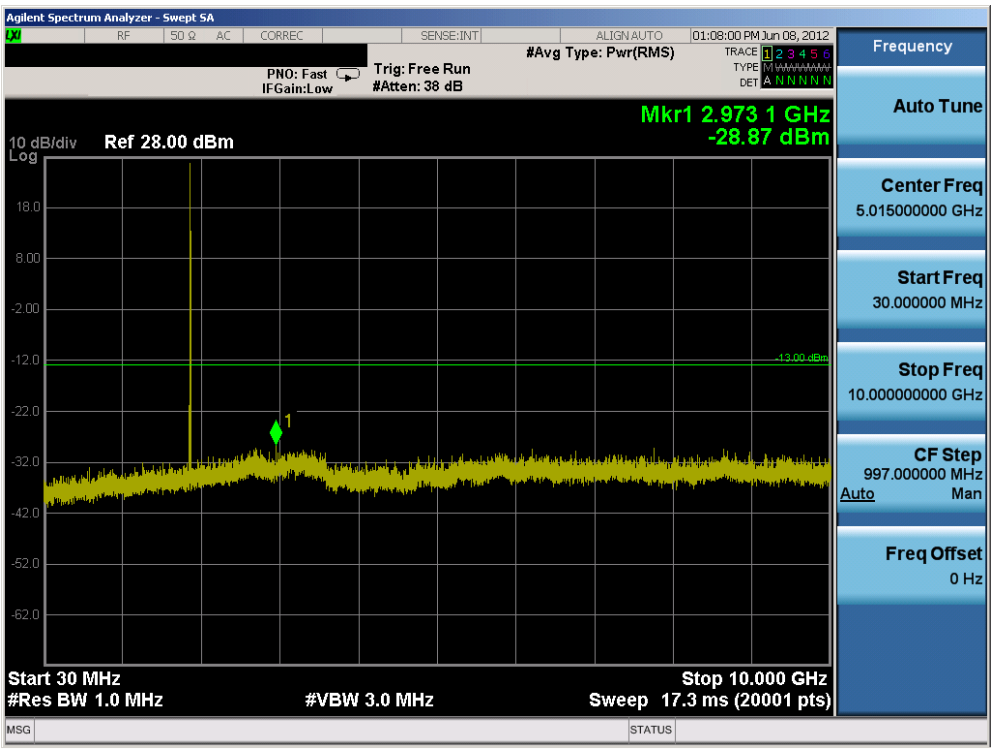

**Plot 7-6. Peak-Average Ratio Plot (16-QAM – 5MHz BW – RB Size 25)**



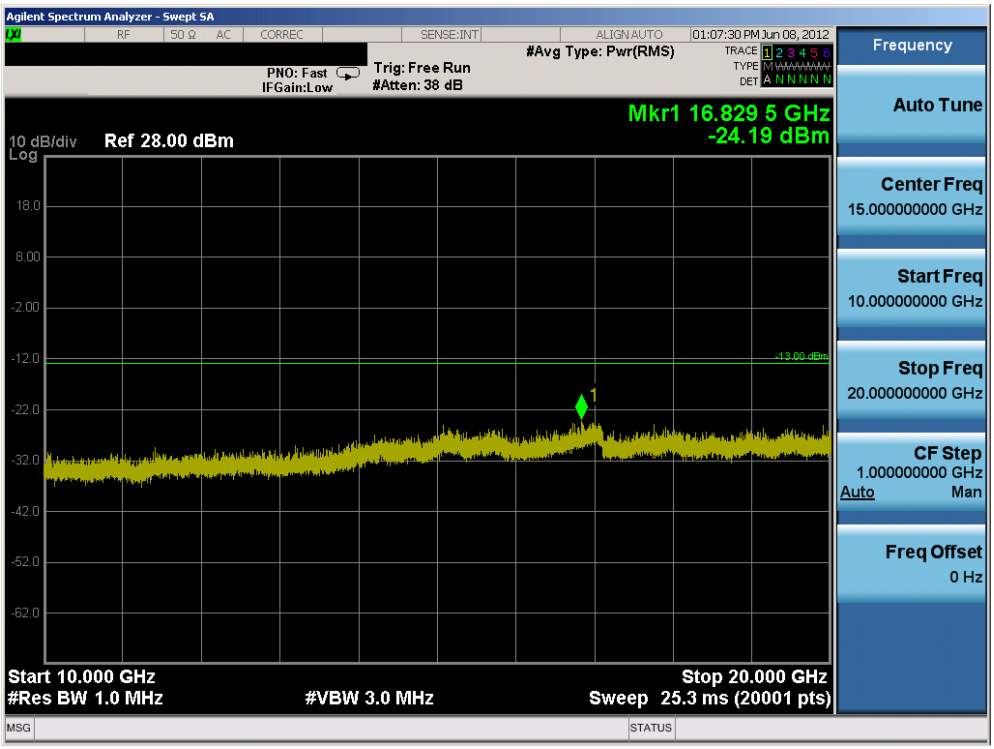

**Plot 7-7. Conducted Spurious Plot (Low Channel - QPSK – 5MHz BW - RB Size 1, RB Offset 0)**



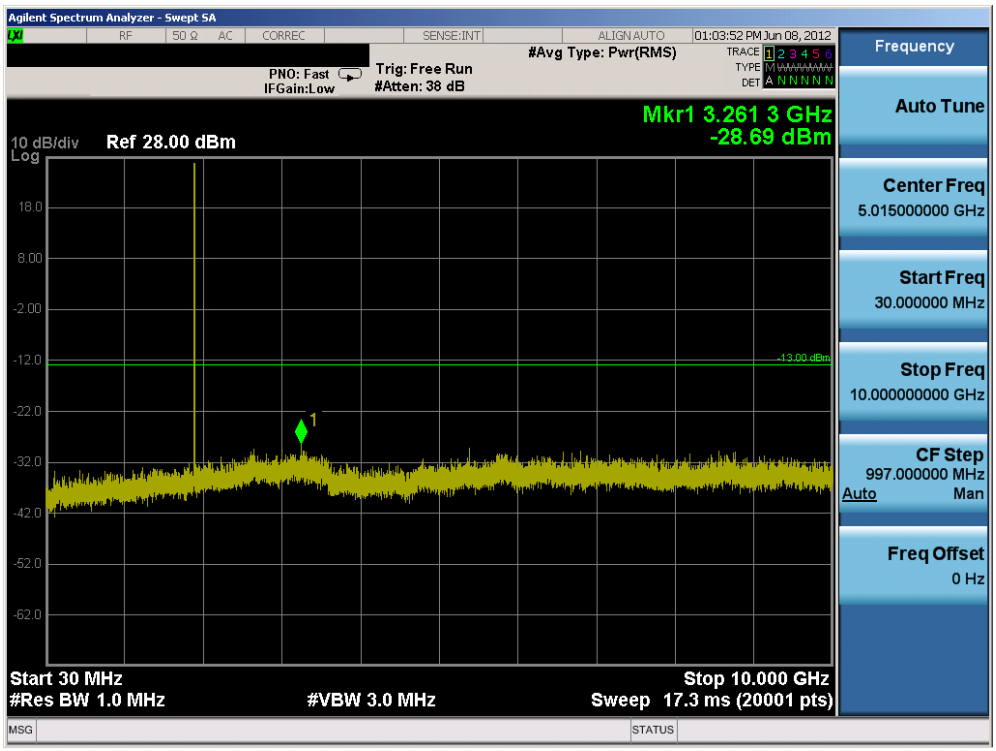

**Plot 7-8. Conducted Spurious Plot (Low Channel – QPSK – 5MHz BW – RB Size 1, RB Offset 0)**



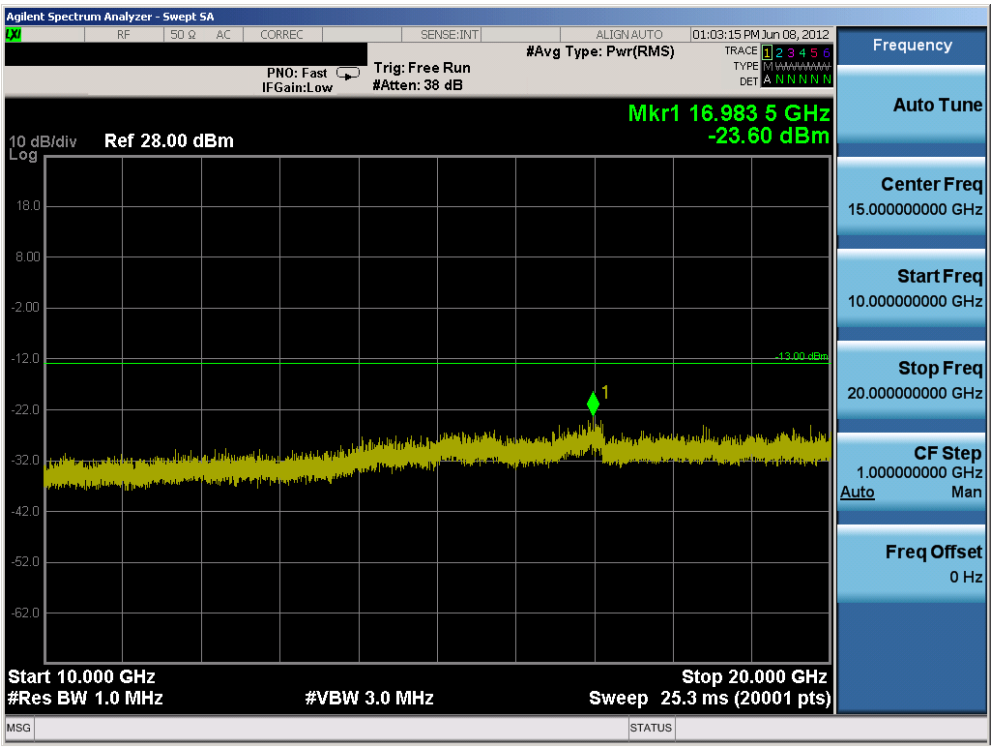

**Plot 7-9. Conducted Spurious Plot (Mid Channel - QPSK – 5MHz BW - RB Size 1, Offset 0)**



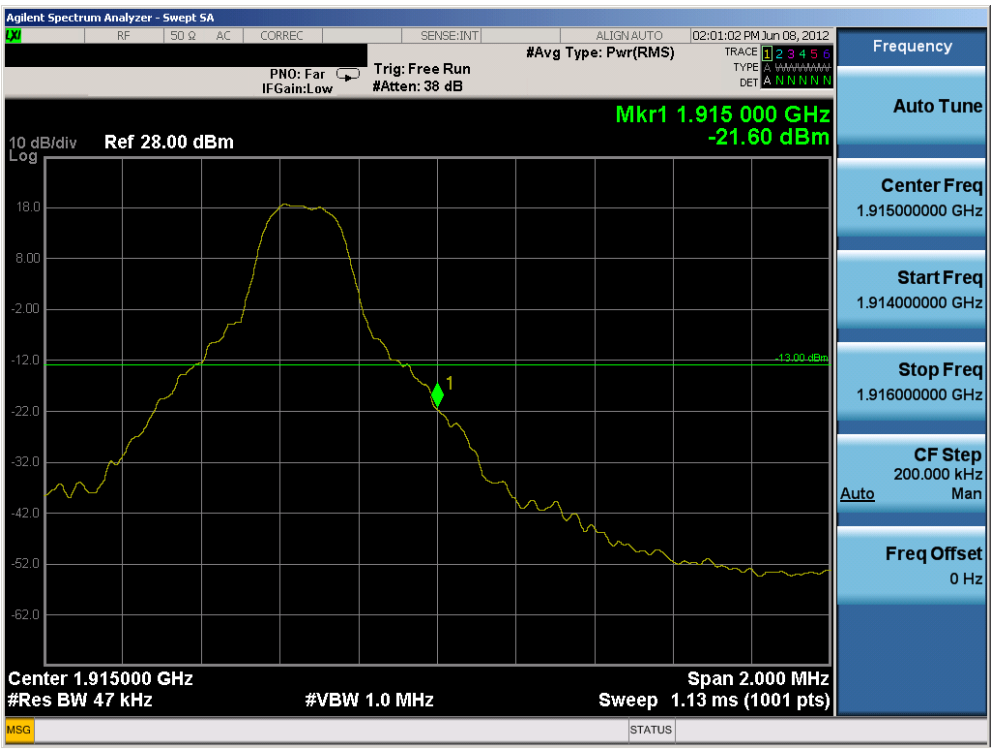

**Plot 7-10. Conducted Spurious Plot (Mid Channel - QPSK – 5MHz BW – RB Size 1, Offset 0)**



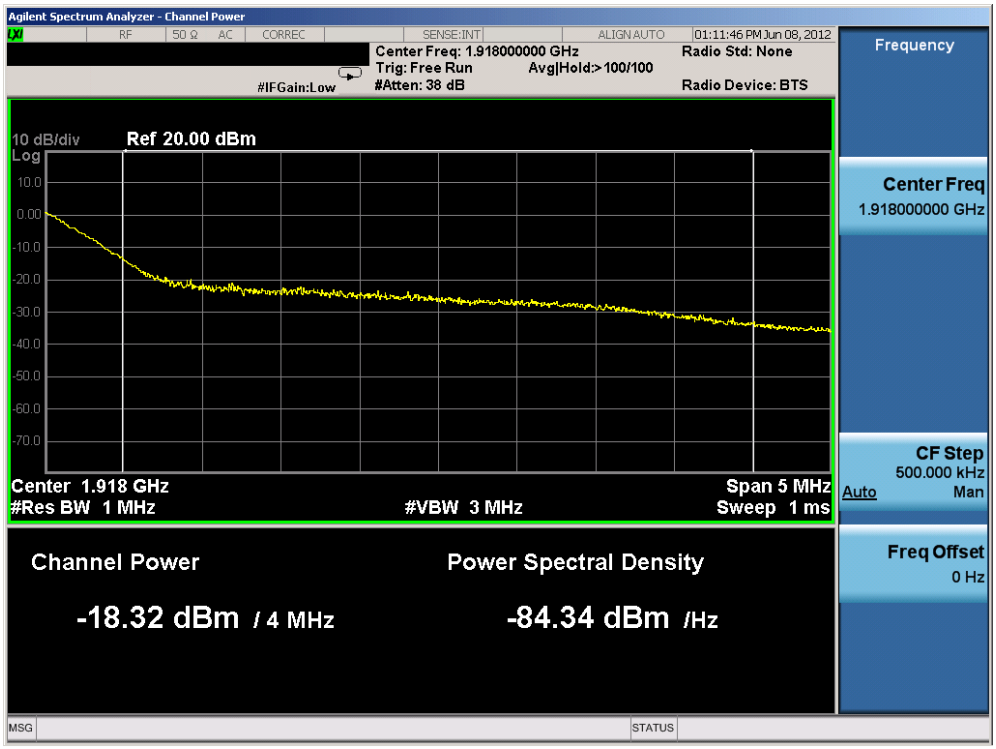

**Plot 7-11. Conducted Spurious Plot (High Channel - QPSK – 5MHz BW – RB Size 1, Offset 0)**



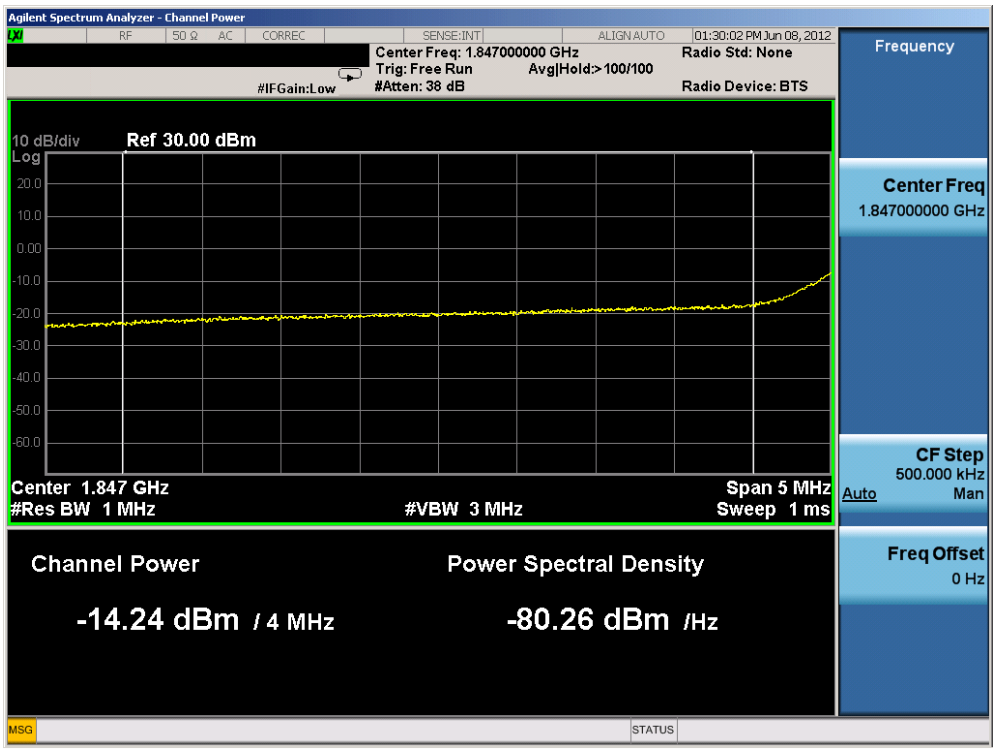

**Plot 7-12. Conducted Spurious Plot (High Channel – QPSK – 5MHz BW – RB Size 1, Offset 0)**



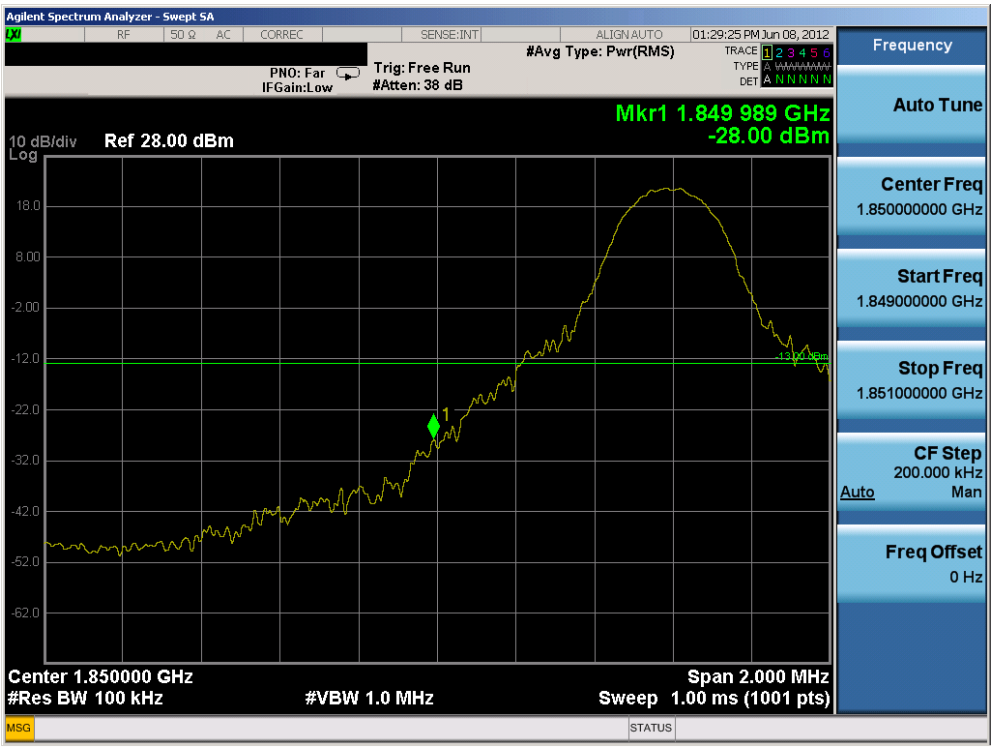

**Plot 7-13. Upper Band Edge Plot (QPSK – 5MHz BW – RB Size 1, Offset 24)**



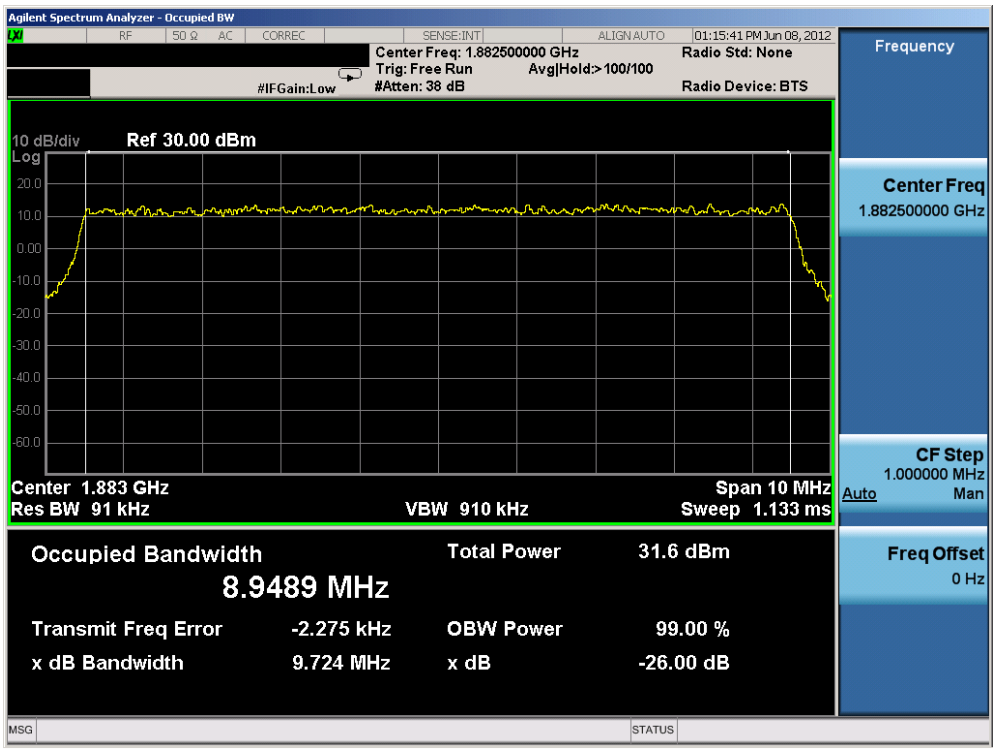

**Plot 7-14. Upper Band Edge Plot (QPSK – 5MHz BW – RB Size 25)**



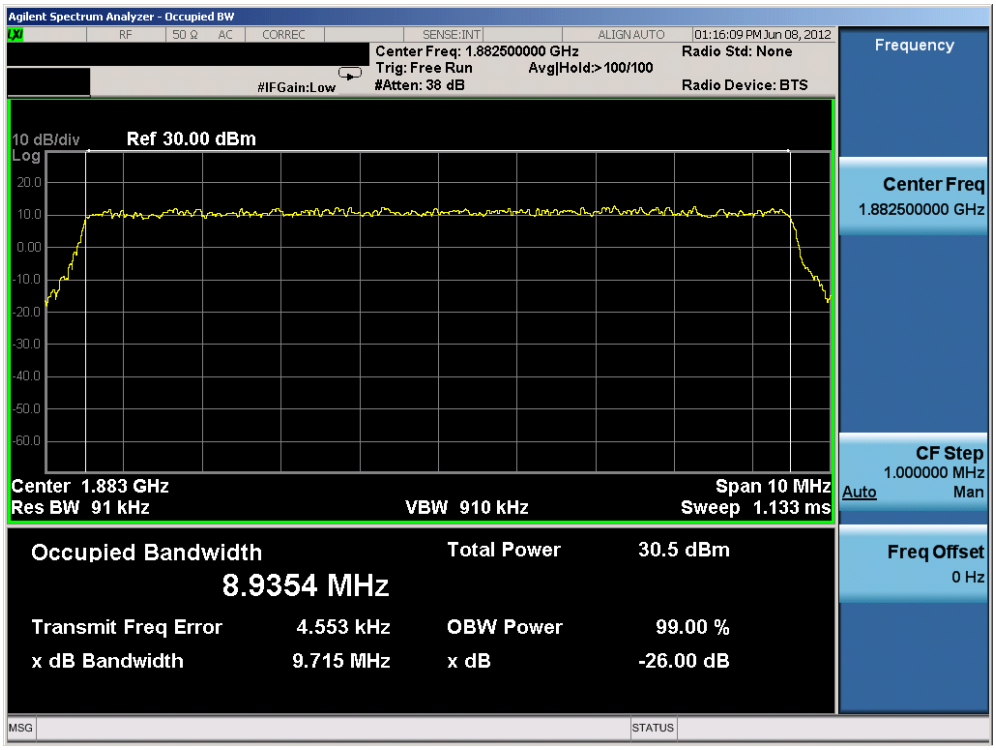

**Plot 7-15. Lower Band Edge Plot (QPSK – 10MHz BW – RB Size 50)**



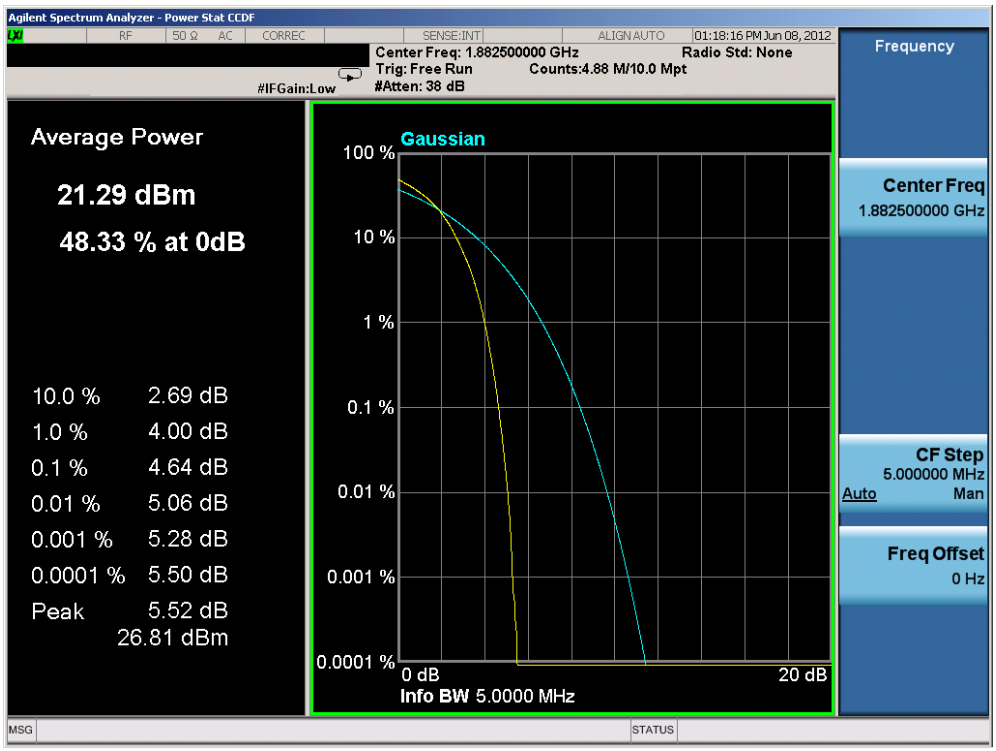

**Plot 7-16. Lower Band Edge Plot (QPSK – 10MHz BW – RB Size 1, Offset 0)**



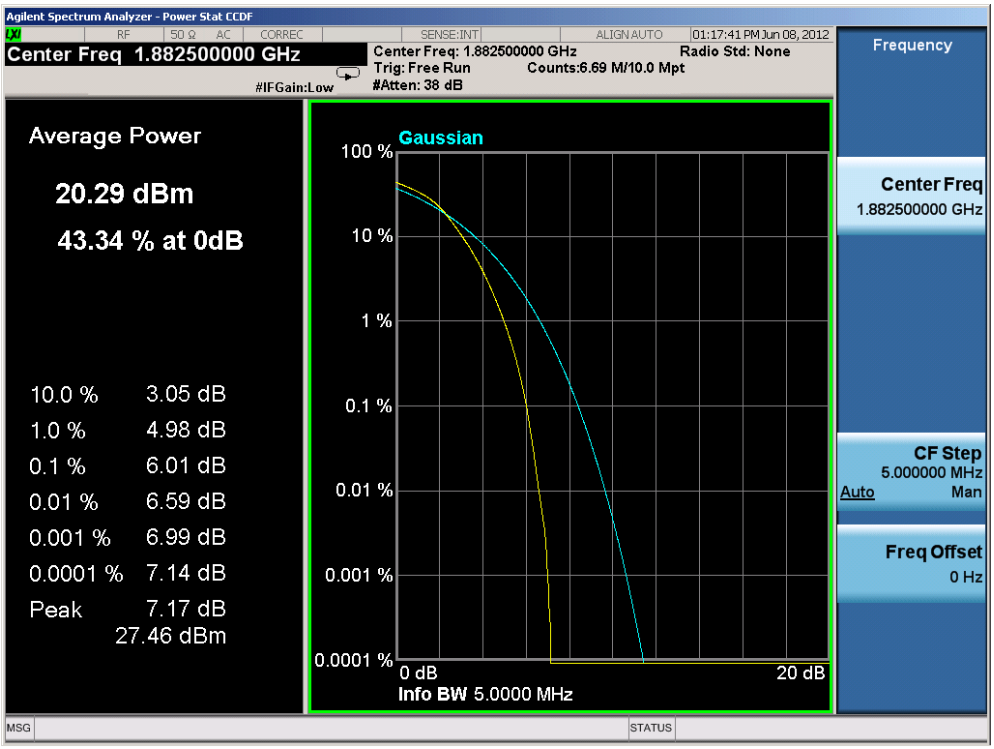

**Plot 7-17. Occupied Bandwidth Plot (QPSK – 10MHz BW – RB Size 50)**



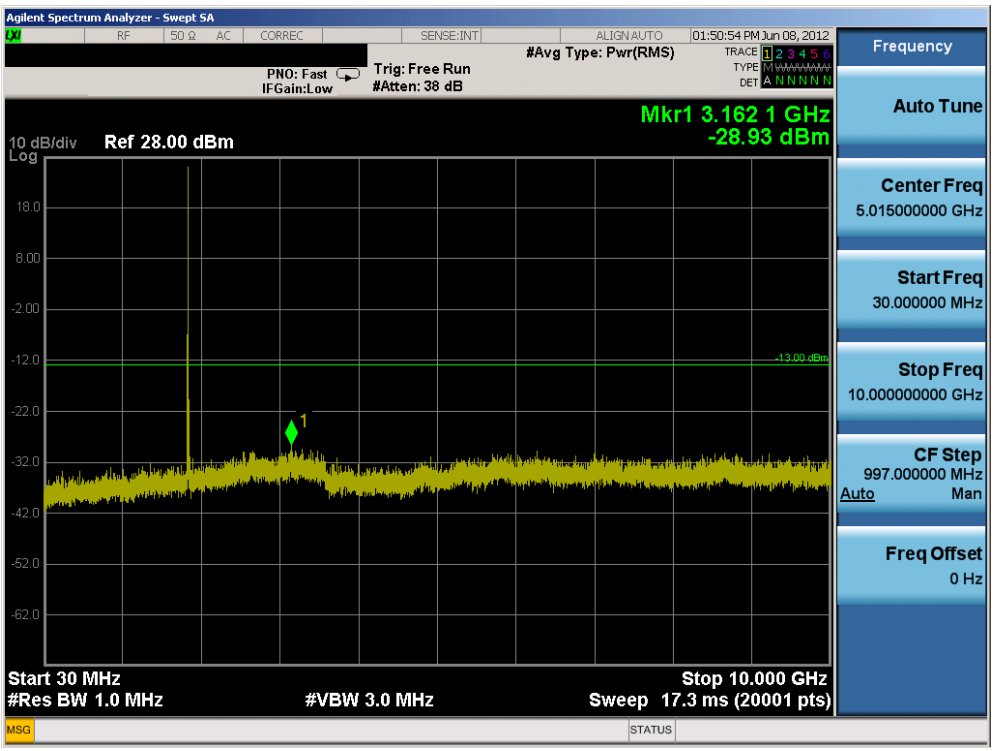

**Plot 7-18. Occupied Bandwidth Plot (16-QAM – 10MHz BW – RB Size 50)**



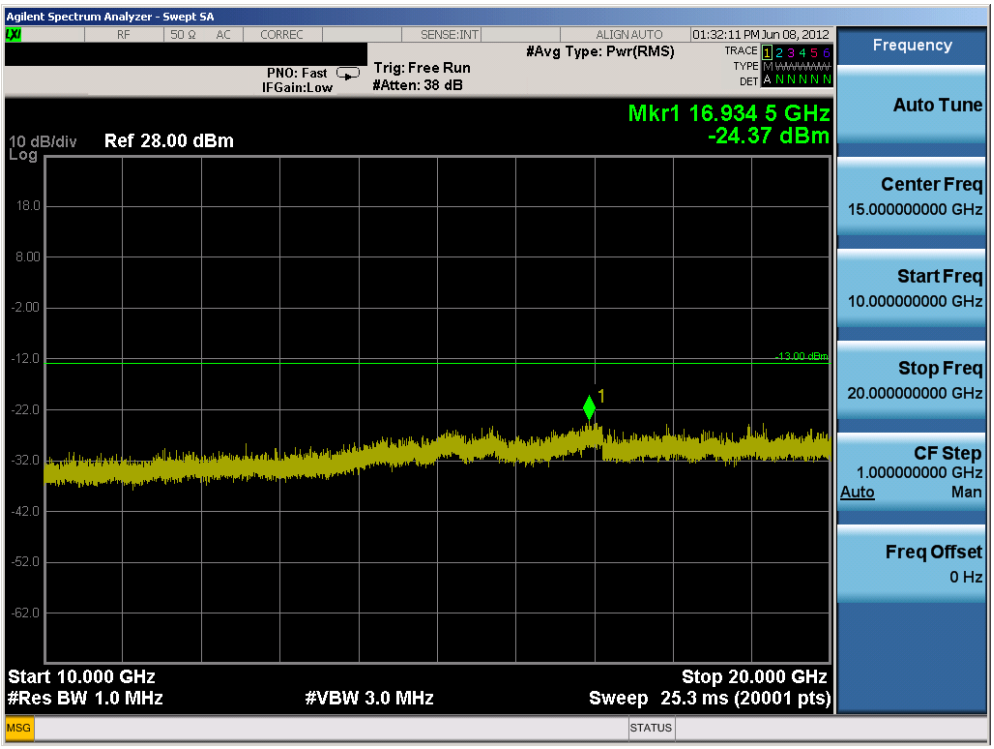

**Plot 7-19. Peak-to-Average Ratio Plot (QPSK – 10MHz BW – RB Size 50)**



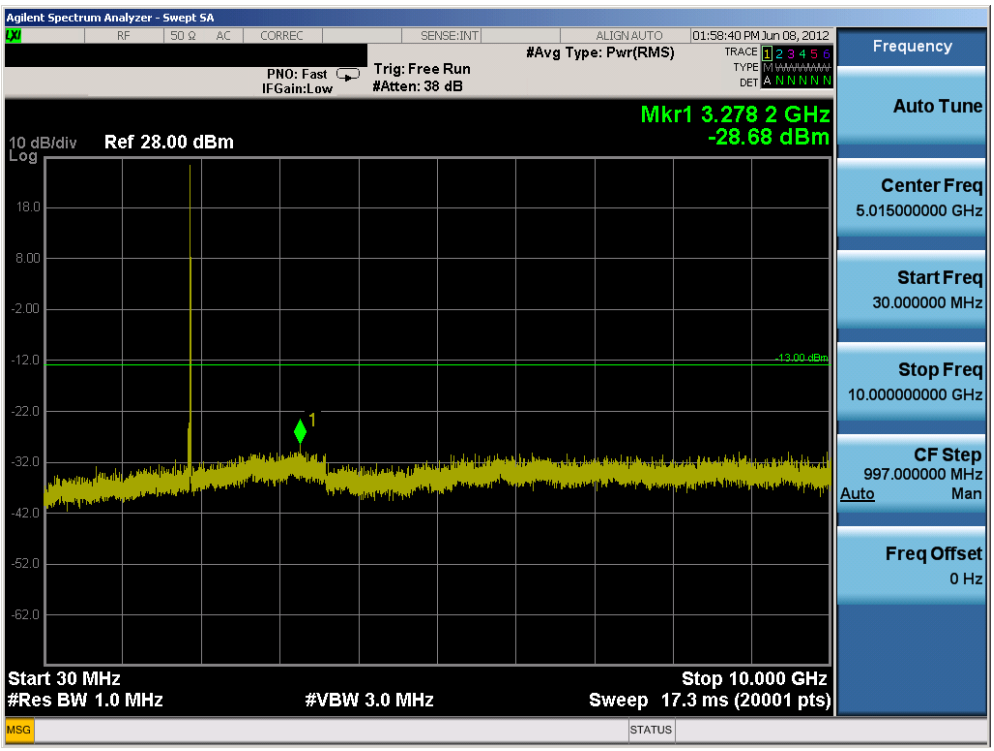

**Plot 7-20. Peak-to-Average Ratio Plot (16-QAM – 10MHz BW – RB Size 50)**



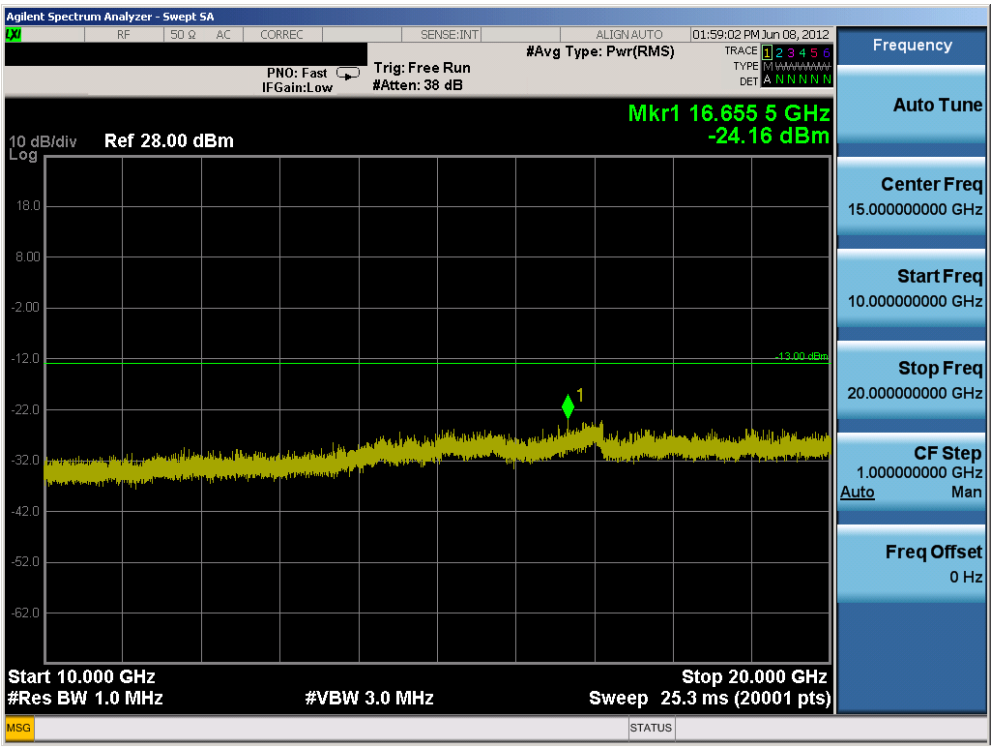

**Plot 7-21. Conducted Spurious Plot (Low Channel – QPSK – 10MHz BW – - RB Size 1, Offset 0)**



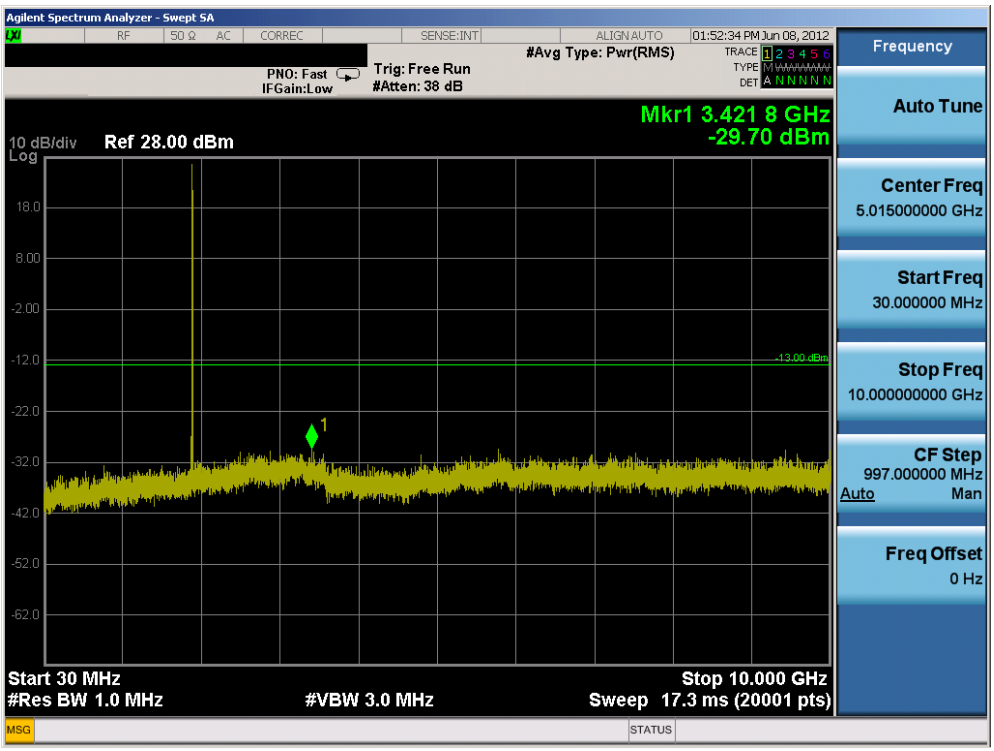

**Plot 7-22. Conducted Spurious Plot (Low Channel – QPSK – 10MHz BW – RB Size 1, Offset 0)**



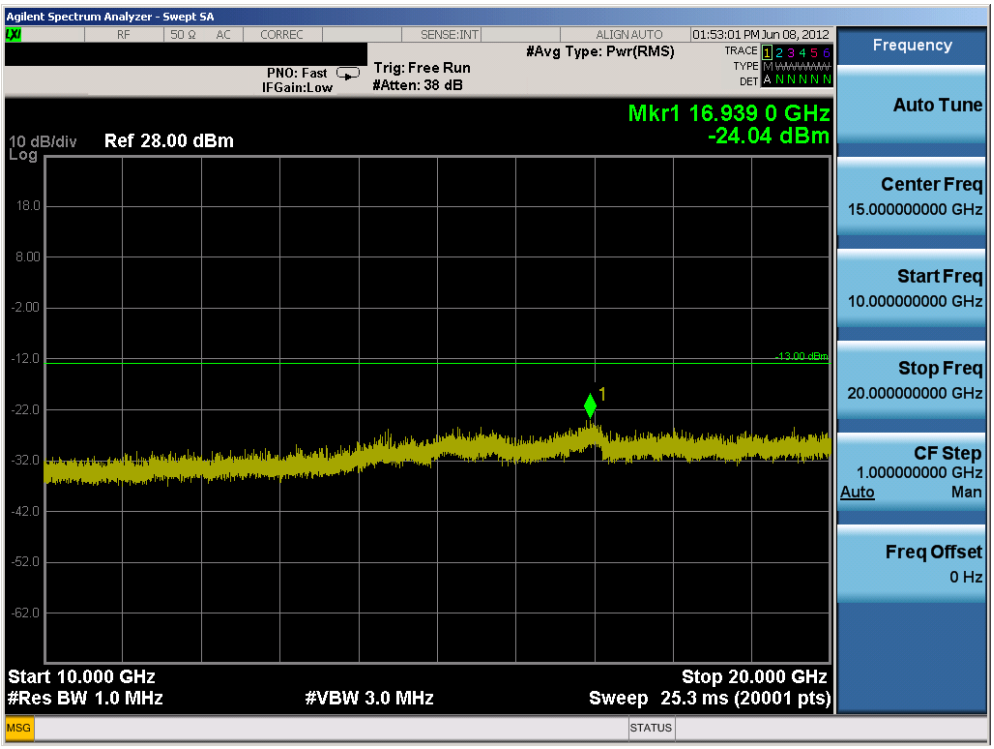

**Plot 7-23. Conducted Spurious Plot (Mid Channel – QPSK – 10MHz BW - RB Size 1, Offset 0)**



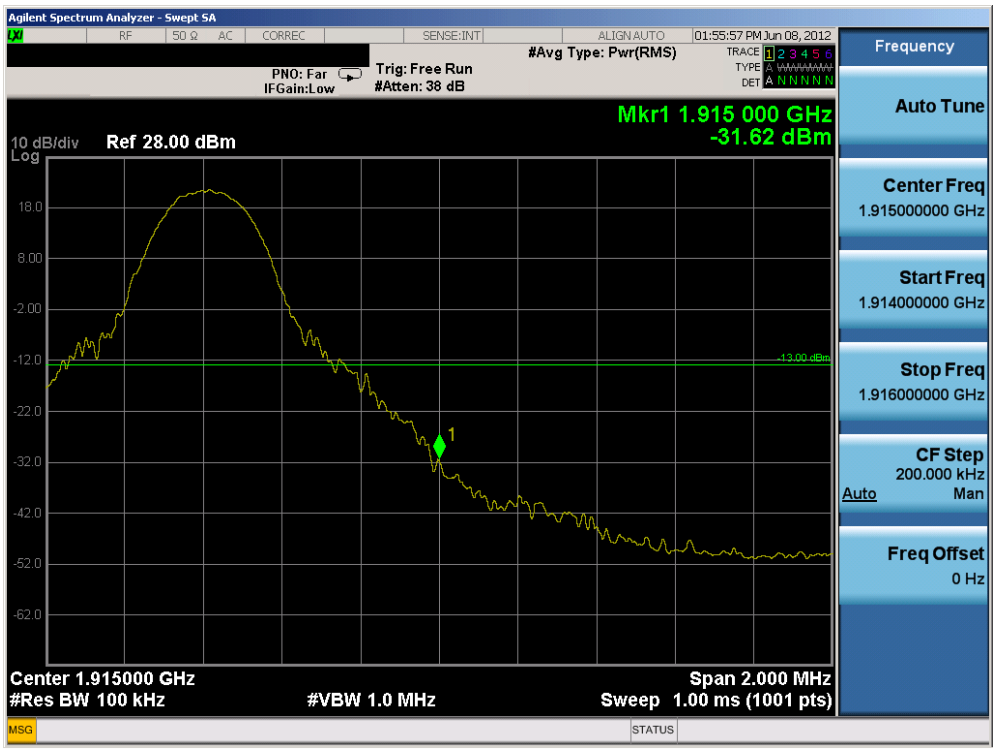

**Plot 7-24. Conducted Spurious Plot (Mid Channel – QPSK – 10MHz BW - RB Size 1, Offset 0)**



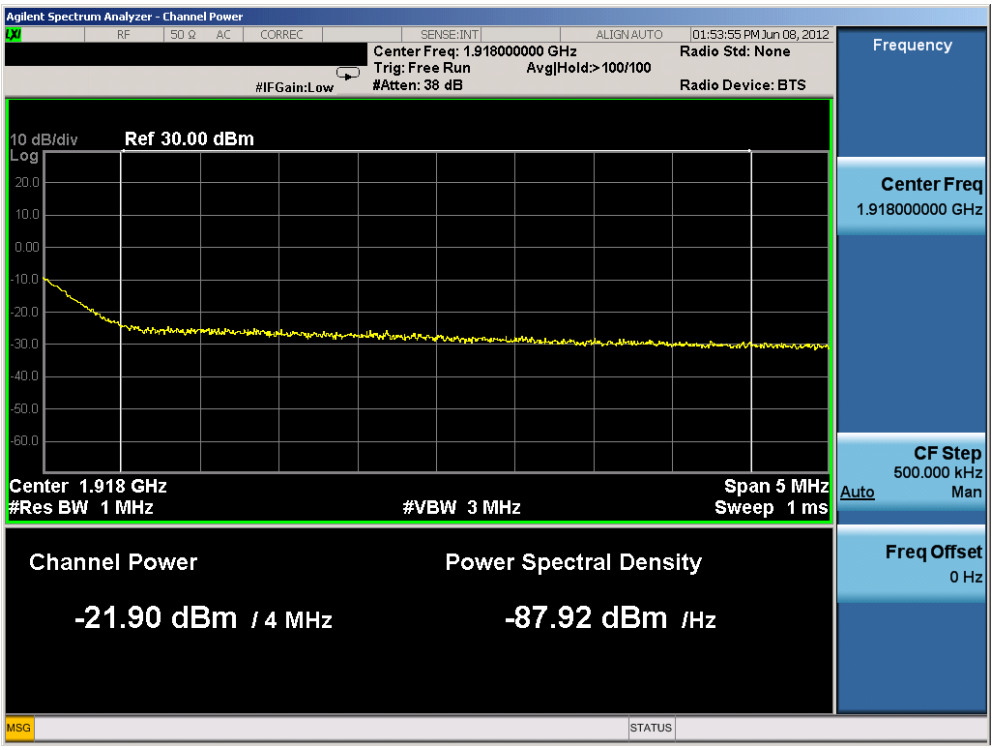

**Plot 7-25. Conducted Spurious Plot (High Channel – QPSK – 10MHz BW - RB Size 1, Offset 0)**




**Plot 7-26. Conducted Spurious Plot (High Channel – QPSK – 10MHz BW - RB Size 1, Offset 0)**




**Plot 7-27. Upper Band Edge Plot (QPSK – 10MHz BW – RB Size 1, Offset 49)**




**Plot 7-28. Upper Band Edge Plot (QPSK – 10MHz BW – RB Size 50)**

# 8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **LGE Portable Handset FCC ID: ZNFLS860** complies with all the requirements of Parts 2 and 27 of the FCC rules.