



# PCTEST ENGINEERING LABORATORY, INC.

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http://www.pctestlab.com



## MEASUREMENT REPORT

### FCC Part 22, 24, 27 LTE

**Applicant Name:**

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

**Date of Testing:**

09/24 - 10/08/2013

**Test Site/Location:**

PCTEST Lab., Columbia, MD, USA

**Test Report Serial No.:**

0Y1309161874.ZNF

**FCC ID :****ZNFD950****APPLICANT:****LG ELECTRONICS MOBILECOMM U.S.A****FCC Classification:**

PCS Licensed Transmitter Held to Ear (PCE)

**FCC Rule Part(s):**

§2; §22; §24; §27

**EUT Type:**

Portable Handset

**Model(s):**

LG-D950, D950, LGD950

**Test Device Serial No.:**

identical prototype [S/N: RF#1 Cond.; RF#2 Rad.]

Mode	Tx Frequency (MHz)	Emission Designator	Modulation	ERP/EIRP	
				Max. Power (W)	Max. Power (dBm)
LTE Band 17	706.5 - 713.5	4M50G7D	QPSK	0.079	18.96
LTE Band 17	706.5 - 713.5	4M50W7D	16QAM	0.064	18.06
LTE Band 17	709 - 711	8M98G7D	QPSK	0.075	18.75
LTE Band 17	709 - 711	8M95W7D	16QAM	0.057	17.59
LTE Band 5	826.5 - 846.5	4M49G7D	QPSK	0.091	19.58
LTE Band 5	826.5 - 846.5	4M49W7D	16QAM	0.071	18.53
LTE Band 5	829 - 844	8M97G7D	QPSK	0.088	19.45
LTE Band 5	829 - 844	8M95W7D	16QAM	0.071	18.49
LTE Band 4	1712.5 - 1752.5	4M49G7D	QPSK	0.299	24.76
LTE Band 4	1712.5 - 1752.5	4M50W7D	16QAM	0.242	23.83
LTE Band 4	1715 - 1750	8M98G7D	QPSK	0.309	24.90
LTE Band 4	1715 - 1750	8M95W7D	16QAM	0.242	23.84
LTE Band 2	1852.5 - 1907.5	4M50G7D	QPSK	0.267	24.26
LTE Band 2	1852.5 - 1907.5	4M50W7D	16QAM	0.196	22.92
LTE Band 2	1855 - 1905	9M00G7D	QPSK	0.328	25.16
LTE Band 2	1855 - 1905	8M96W7D	16QAM	0.253	24.03
LTE Band 7	2502.5 - 2565.5	4M49G7D	QPSK	0.097	19.87
LTE Band 7	2502.5 - 2565.6	4M49W7D	16QAM	0.075	18.78
LTE Band 7	2505 - 2565	8M98G7D	QPSK	0.103	20.15
LTE Band 7	2506 - 2565	8M96W7D	16QAM	0.081	19.10
LTE Band 7	2507.5 - 2562.5	13M5G7D	QPSK	0.101	20.03
LTE Band 7	2507.5 - 2562.6	13M4W7D	16QAM	0.081	19.07
LTE Band 7	2510 - 2650	17M9G7D	QPSK	0.108	20.34
LTE Band 7	2510 - 2650	17M9W7D	16QAM	0.085	19.30

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in §2.947. Test results reported herein relate only to the item(s) tested. I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.



  
Randy Orlan  
President



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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 21045 USA  
**FCC RULE PART(S):** §2; §22; §24; §27  
**BASE MODEL:** LG-D950  
**FCC ID:** ZNFD950  
**FCC CLASSIFICATION:** PCS Licensed Transmitter Held to Ear (PCE)  
**FREQUENCY TOLERANCE:**  $\pm 0.00025\%$  (2.5 ppm)  
**Test Device Serial No.:** RF#1 Cond.; RF#2 ☐ Production ☒ Pre-Production ☐ Engineering  
**DATE(S) OF TEST:** 09/24 - 10/08/2013  
**TEST REPORT S/N:** 0Y1309161874.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.

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## 1.0 INTRODUCTION

### 1.1 Scope

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

### 1.2 Testing Facility

The map below shows the location of the PCTEST LABORATORY, its proximity to the FCC Laboratory, the Columbia vicinity, the Baltimore-Washington Internt'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 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 C63.4-2003 on February 15, 2012.

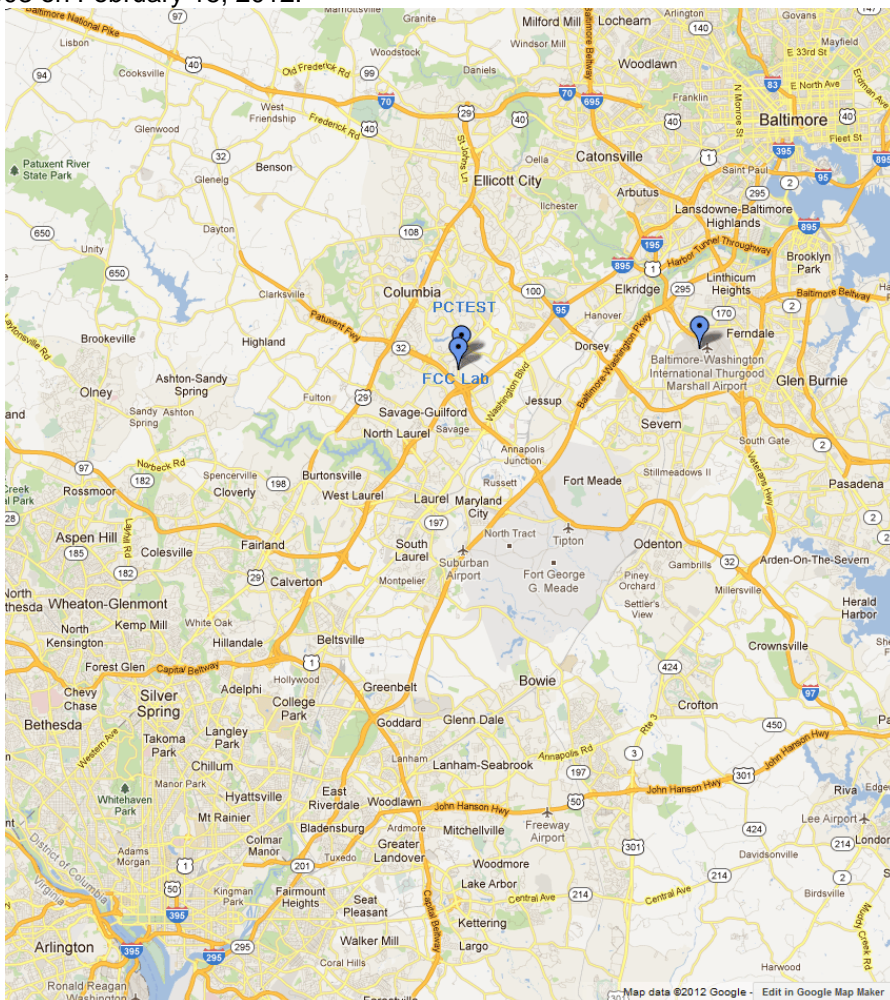




Figure 1-1. Map of the Greater Baltimore and Metropolitan Washington, D.C. area

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## 2.0 PRODUCT INFORMATION

### 2.1 Equipment Description

The Equipment Under Test (EUT) is the **LG Portable Handset FCC ID: ZNFD950**. The test data contained in this report pertains only to the emissions due to the EUT's LTE function.

### 2.2 Device Capabilities

This device contains the following capabilities:

850/1900 GSM/GPRS/EDGE, 850/1900 WCDMA/HSPA, Band 2, 4, 5, 17 (5/10MHz BW), 7 (5/10/15/20MHz BW) LTE, 802.11a/b/g/n/ac WLAN (DTS/NII), Bluetooth (1x,EDR, LE), NFC



### 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.

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## 3.0 DESCRIPTION OF TESTS

### 3.1 Measurement 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) and “Procedures for Compliance Measurement of the Fundamental Emission Power of Licensed Wideband (> 1 MHz) Digital Transmission Systems” (KDB 971168) were used in the measurement of the **LG Portable Handset FCC ID: ZNFD950**.

### 3.2 Block A Frequency Range

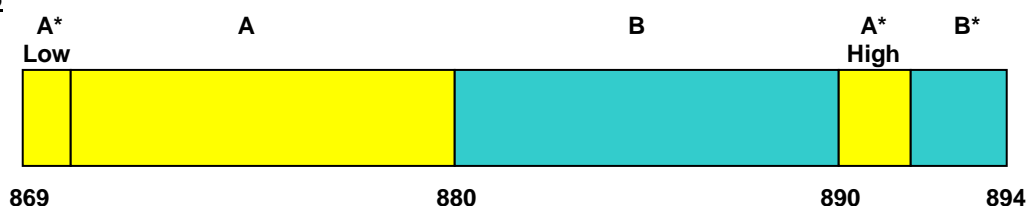
#### §27.5(c)

698-746 MHz band. The following frequencies are available for licensing pursuant to this part in the 698-746 MHz band: (1) Three paired channel blocks of 12 megahertz each are available for assignment as follows:

Block A: 698-704 MHz and 728-734 MHz;  
Block B: 704-710 MHz and 734-740 MHz; and  
Block C: 710-716 MHz and 740-746 MHz.

### 3.3 Cellular - Base Frequency Blocks

#### §24.905

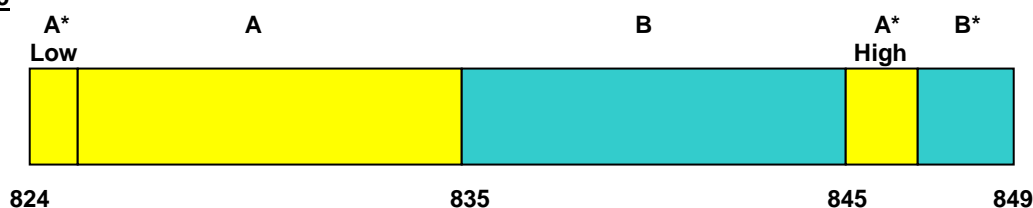


BLOCK 1: 869 – 880 MHz (A\* Low + A)  
BLOCK 2: 880 – 890 MHz (B)

BLOCK 3: 890 – 891.5 MHz (A\* High)  
BLOCK 4: 891.5 – 894 MHz (B\*)



### 3.4 Cellular - Mobile Frequency Blocks

#### §24.905



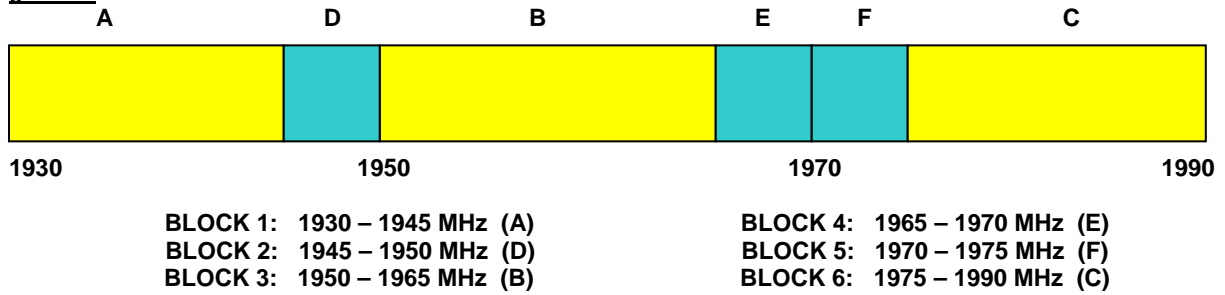
BLOCK 1: 824 – 835 MHz (A\* Low + A)  
BLOCK 2: 835 – 845 MHz (B)

BLOCK 3: 845 – 846.5 MHz (A\* High)  
BLOCK 4: 846.5 – 849 MHz (B\*)

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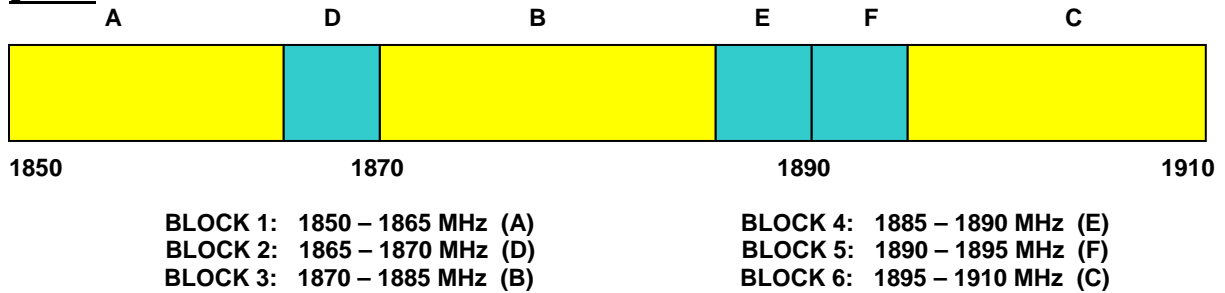
### 3.5 PCS - Base Frequency Blocks

§24.229



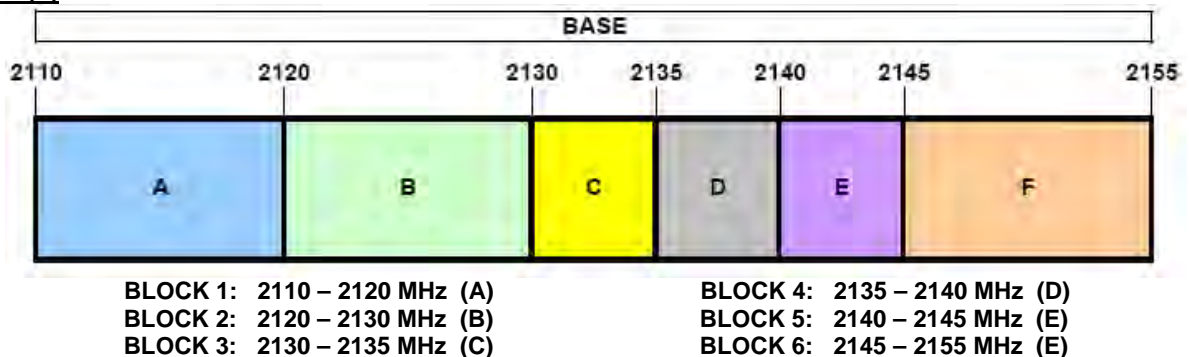
### 3.6 PCS - Mobile Frequency Blocks

§24.229



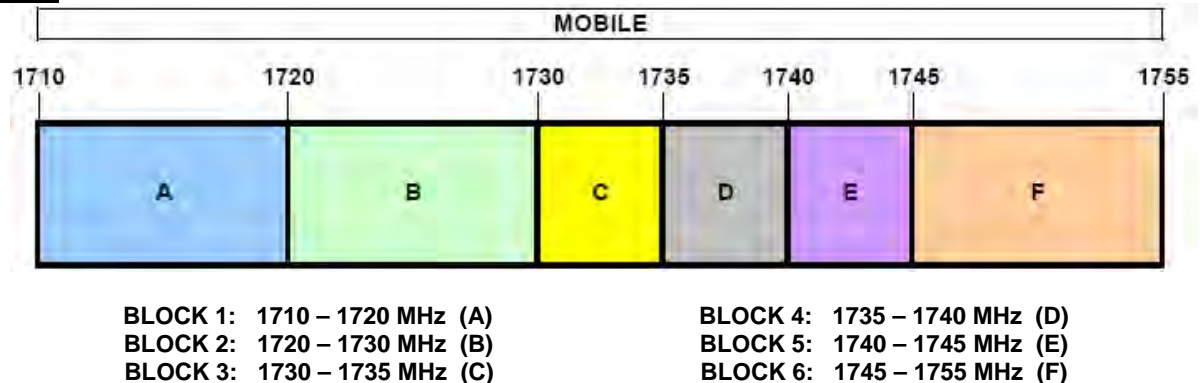
### 3.7 AWS - Base Frequency Blocks


§27.5(h)



### 3.8 AWS - Mobile Frequency Blocks

§27.5(h)



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### 3.9 Occupied Bandwidth

§2.1049 RSS-Gen(4.6.1) RSS-133(2.3) RSS-139(2.3)

The implementation of this test is performed by the spectrum analyzer's occupied bandwidth function. 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.

### 3.10 Spurious and Harmonic Emissions at Antenna Terminal


§2.1051 §22.917(a)(b) §24.238(a)(b) §27.53(g) §27.53(h) §27.53(m) RSS-132(4.5.1) RSS-133(6.5.1) RSS-139(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<sup>th</sup> 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 100 kHz or greater for Cell band, 698–746 MHz band, or 1 MHz or greater for PCS band, AWS band, BRS and EBS stations. 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 for PCS band, AWS band, BRS and EBS stations. 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.

### 3.11 Peak-Average Ratio

§24.232(d) §27.50(d.5) RSS-132(5.4) RSS-133(6.4) RSS-139(6.4)

A peak to average ratio measurement is performed at the conducted port of the EUT. For LTE signals, 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.

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### 3.12 Radiated Power and Radiated Spurious Emissions

§2.1053 §22.913(a.2) §22.917(a) §24.232(c) §24.238(a) §27.50(c.10) §27.50(d.4) §27.53(g) §27.53(h) RSS-132(4.4) RSS-132(4.5.1) RSS-133(6.4) RSS-133(6.5.1) RSS-139(6.5.1)

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. 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 ¾" (~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 wooden turntable 80cm above the ground plane and 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. Radiated power levels are also investigated with the receive antenna horizontally and vertically polarized. The maximized power level is recorded using the spectrum analyzer "Channel Power" function with the integration band set to the emissions' occupied bandwidth, a RMS detector, RBW = 100kHz, VBW = 300kHz, and a 1 second sweep time over a minimum of 10 sweeps, per the guidelines of KDB 971168.

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:

$$P_d \text{ [dBm]} = P_g \text{ [dBm]} - \text{cable loss [dB]} + \text{antenna gain [dBd/dBi]}$$

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  $P_g \text{ [dBm]} - \text{cable loss [dB]}$ .

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  $43 + 10\log_{10}(\text{Power}_{\text{[Watts]}})$  specified in 22.917(a) and 24.238(a).

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### 3.13 Frequency Stability / Temperature Variation

§2.1055 §22.863 §22.905 §24.229 §24.235 §27.5(c) §27.5(h) §27.5(i) §27.54 RSS-132(4.3) RSS-133(6.3) RSS-139(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 for Part 24 and 27. The frequency stability of the transmitter shall be maintained within  $\pm 0.00025\%$  ( $\pm 2.5$  ppm) of the center frequency for Part 22.*

#### 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.

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## 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
-	LTx1	Licensed Transmitter Cable Set	1/17/2013	Annual	1/17/2014	N/A
-	RE1	Radiated Emissions Cable Set (UHF/EHF)	3/29/2013	Annual	3/29/2014	N/A
Agilent	8447D	Broadband Amplifier	5/31/2013	Annual	5/31/2014	2443A01900
Agilent	N9020A	MXA Signal Analyzer	10/9/2012	Annual	10/9/2013	US46470561
Espec	ESX-2CA	Environmental Chamber	4/16/2013	Annual	4/16/2014	17620
ETS Lindgren	3117	1-18 GHz DRG Horn (Medium)	7/24/2013	Biennial	7/24/2015	125518
ETS Lindgren	3160-09	18-26.5 GHz Standard Gain Horn	5/30/2012	Biennial	5/30/2014	135427
ETS Lindgren	3164-08	Quad Ridge Horn Antenna	11/7/2012	Biennial	11/7/2014	128338
Mini-Circuits	VHF-1300+	High Pass Filter	1/21/2013	Annual	1/21/2014	30716
Mini-Circuits	VHF-3100+	High Pass Filter	1/17/2013	Annual	1/17/2014	30841
Rohde & Schwarz	CMW500	LTE Radio Communication Tester	10/7/2011	Biennial	10/7/2013	103962
Rohde & Schwarz	TS-PR18	1-18 GHz Pre-Amplifier	5/31/2013	Annual	5/31/2014	100071
Rohde & Schwarz	TS-PR26	18-26.5 GHz Pre-Amplifier	5/31/2013	Annual	5/31/2014	100040
Rohde & Schwarz	ESU26	EMI Test Receiver	2/25/2013	Annual	2/25/2014	100342
Schwarzbeck	UHA 9105	Dipole Antenna (400 - 1GHz) Rx	10/3/2011	Biennial	10/3/2013	91052523RX
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:**

For equipment listed above that has a calibration due date that falls within the test date range, care was taken to ensure that this equipment was utilized prior to the calibration due date.

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## 5.0 SAMPLE CALCULATIONS

### 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 2<sup>nd</sup> Harmonic (1564 MHz)**

The average 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).

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## 6.0 TEST RESULTS

### 6.1 Summary



Company Name: LG Electronics MobileComm U.S.A  
 FCC ID: ZNFD950  
 FCC Classification: PCS Licensed Transmitter Held to Ear (PCE)  
 Mode(s): LTE

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Result	Reference
<b>TRANSMITTER MODE (TX)</b>					
2.1049	Occupied Bandwidth	N/A	CONDUCTED	PASS	Section 7.0, 8.0, 9.0, 10.0, 11.0
2.1051 22.917(a) 24.238(a) 27.53(g) 27.53(h) 27.53(m)	Band Edge / Conducted Spurious Emissions	$> 43 + 10\log_{10} (P[\text{Watts}])$ at Band Edge and for all out-of-band emissions		PASS	Section 7.0, 8.0, 9.0, 10.0, 11.0
24.232(d) 27.50(d.5)	Peak-Average Ratio	$< 13 \text{ dB}$		PASS	Section 9.0, 10.0
2.1046	Transmitter Conducted Output Power	N/A		PASS	See RF Exposure Report
22.913(a.2)	Effective Radiated Power (Band 5)	$< 7 \text{ Watts max. ERP}$	RADIATED	PASS	Section 6.2
27.50(c.10)	Effective Radiated Power (Band 17)	$< 3 \text{ Watts max. ERP}$		PASS	Section 6.2
24.232(c) 27.50(h.2)	Equivalent Isotropic Radiated Power (Band 2 EBS)	$< 2 \text{ Watts max. EIRP}$		PASS	Section 6.3
27.50(d.4)	Equivalent Isotropic Radiated Power (Band 4)	$< 1 \text{ Watts max. EIRP}$		PASS	Section 6.3
2.1053 22.917(a) 24.238(a) 27.53(g) 27.53(h) 27.53(m)	Undesirable Emissions	$> 43 + 10\log_{10} (P[\text{Watts}])$ for all out-of-band emissions		PASS	Section 6.4, 6.5, 6.6, 6.7, 6.8
2.1055. 22.355 24.235 27.5(i) 27.54	Frequency Stability	$< 2.5 \text{ ppm}$ (Part 22) and fundamental emissions stay within authorized frequency block (Part 24, 27)		PASS	Section 6.9, 6.10, 6.11, 6.12, 6.13

**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 8.0 9.0 10.0 11.0 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.

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## 6.2 Effective Radiated Power (ERP)

§22.913(a.2) §27.50(c.10) RSS-132(4.4)

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Battery	RB Size/Offset	Substitute Level [dBm]	Antenna Gain [dBd]	Pol [H/V]	ERP [dBm]	ERP [Watts]	Margin [dB]
706.50	5	QPSK	Standard	1/12	16.61	2.35	V	18.96	0.079	-15.81
710.00	5	QPSK	Standard	1/12	16.22	2.42	V	18.64	0.073	-16.13
713.50	5	QPSK	Standard	1/0	15.80	2.49	V	18.29	0.068	-16.48
706.50	5	16-QAM	Standard	1/12	15.71	2.35	V	18.06	0.064	-16.71
710.00	5	16-QAM	Standard	1/12	14.99	2.42	V	17.41	0.055	-17.36
713.50	5	16-QAM	Standard	1/0	14.92	2.49	V	17.41	0.055	-17.36
709.00	10	QPSK	Standard	1/25	16.40	2.35	V	18.75	0.075	-16.02
710.00	10	QPSK	Standard	1/25	16.30	2.42	V	18.72	0.075	-16.05
711.00	10	QPSK	Standard	1/25	16.10	2.49	V	18.59	0.072	-16.18
709.00	10	16-QAM	Standard	1/25	15.09	2.35	V	17.44	0.055	-17.33
710.00	10	16-QAM	Standard	1/25	15.17	2.42	V	17.59	0.057	-17.18
711.00	10	16-QAM	Standard	1/25	14.94	2.49	V	17.43	0.055	-17.34


Table 6-2. ERP Data (Band 17)

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Battery	RB Size/Offset	Substitute Level [dBm]	Antenna Gain [dBd]	Pol [H/V]	ERP [dBm]	ERP [Watts]	Margin [dB]
826.50	5	QPSK	Standard	1/0	14.23	4.68	V	18.91	0.078	-19.54
836.50	5	QPSK	Standard	1/12	14.76	4.82	V	19.58	0.091	-18.87
846.50	5	QPSK	Standard	1/12	13.86	4.96	V	18.82	0.076	-19.63
826.50	5	16-QAM	Standard	1/0	13.32	4.68	V	18.00	0.063	-20.45
836.50	5	16-QAM	Standard	1/12	13.71	4.82	V	18.53	0.071	-19.92
846.50	5	16-QAM	Standard	1/12	12.64	4.96	V	17.60	0.058	-20.85
829.00	10	QPSK	Standard	1/49	14.77	4.68	V	19.45	0.088	-19.00
836.50	10	QPSK	Standard	1/25	14.04	4.82	V	18.86	0.077	-19.59
844.00	10	QPSK	Standard	1/25	13.65	4.96	V	18.61	0.073	-19.84
829.00	10	16-QAM	Standard	1/49	13.81	4.68	V	18.49	0.071	-19.96
836.50	10	16-QAM	Standard	1/25	13.63	4.82	V	18.45	0.070	-20.00
844.00	10	16-QAM	Standard	1/25	12.28	4.96	V	17.24	0.053	-21.21

Table 6-3. ERP Data (Band 5)

### NOTES:

1. This device was tested under all bandwidths, and RB configurations, and modulations. This device was tested under all modulations, RB sizes and offsets, and channel bandwidth configurations and the worst case emissions are reported with 5MHz BW 1RB 12 Offset for B17/B5, 10MHz BW 1RB 0 Offset for B4/B2, and 20MHz BW 1RB 99 Offset for B7.
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 "H" positioning is defined with the EUT lying flat on the test surface, the "H2" positioning is defined with the EUT standing up on its side, and the "V" positioning is defined with the EUT standing upright. The data reported in the table above was measured in the worst case test setup.

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### 6.3 Equivalent Isotropic Radiated Power (EIRP)


§24.232(c) §27.50(d.4) §27.50(h.2) RSS-133(6.4) RSS-139(6.4)

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Battery	RB Size/Offset	Substitute Level [dBm]	Antenna Gain [dBi]	Pol [H/V]	EIRP [dBm]	EIRP [Watts]	Margin [dB]
1712.50	5	QPSK	Standard	1/12	14.87	9.89	H2	24.76	0.299	-5.24
1732.50	5	QPSK	Standard	1/12	14.61	9.85	H2	24.46	0.279	-5.54
1752.50	5	QPSK	Standard	1/12	14.75	9.80	H2	24.55	0.285	-5.45
1712.50	5	16-QAM	Standard	1/12	13.94	9.89	H2	23.83	0.242	-6.17
1732.50	5	16-QAM	Standard	1/12	13.31	9.85	H2	23.16	0.207	-6.84
1752.50	5	16-QAM	Standard	1/12	13.64	9.80	H2	23.44	0.221	-6.56
1715.00	10	QPSK	Standard	1/0	15.01	9.89	H2	24.90	0.309	-5.10
1732.50	10	QPSK	Standard	1/0	14.54	9.85	H2	24.39	0.275	-5.61
1750.00	10	QPSK	Standard	1/0	14.79	9.80	H2	24.59	0.288	-5.41
1715.00	10	16-QAM	Standard	1/0	13.95	9.89	H2	23.84	0.242	-6.16
1732.50	10	16-QAM	Standard	1/0	13.37	9.85	H2	23.22	0.210	-6.78
1750.00	10	16-QAM	Standard	1/0	13.60	9.80	H2	23.40	0.219	-6.60

**Table 6-4. EIRP Data (Band 4)**

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Battery	RB Size/Offset	Substitute Level [dBm]	Antenna Gain [dBi]	Pol [H/V]	EIRP [dBm]	EIRP [Watts]	Margin [dB]
1852.50	5	QPSK	Standard	1/0	14.18	9.59	H2	23.77	0.238	-9.24
1880.00	5	QPSK	Standard	1/0	14.73	9.53	H2	24.26	0.267	-8.75
1907.50	5	QPSK	Standard	1/12	14.43	9.48	H2	23.91	0.246	-9.10
1852.50	5	16-QAM	Standard	1/0	13.20	9.59	H2	22.79	0.190	-10.22
1880.00	5	16-QAM	Standard	1/0	13.39	9.53	H2	22.92	0.196	-10.09
1907.50	5	16-QAM	Standard	1/12	13.38	9.48	H2	22.86	0.193	-10.15
1855.00	10	QPSK	Standard	1/0	15.57	9.59	H2	25.16	0.328	-7.85
1880.00	10	QPSK	Standard	1/0	15.20	9.53	H2	24.73	0.297	-8.28
1905.00	10	QPSK	Standard	1/25	14.45	9.48	H2	23.93	0.247	-9.08
1855.00	10	16-QAM	Standard	1/0	14.44	9.59	H2	24.03	0.253	-8.98
1880.00	10	16-QAM	Standard	1/0	14.08	9.53	H2	23.61	0.230	-9.40
1905.00	10	16-QAM	Standard	1/25	13.23	9.48	H2	22.71	0.187	-10.30

**Table 6-5. EIRP Data (Band 2)**



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Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Battery	RB Size/Offset	Substitute Level [dBm]	Antenna Gain [dBi]	Pol [H/V]	EIRP [dBm]	EIRP [Watts]	Margin [dB]
2502.50	5	QPSK	Standard	1/12	10.68	8.66	V	19.34	0.086	-13.67
2535.00	5	QPSK	Standard	1/12	11.19	8.68	V	19.87	0.097	-13.14
2567.50	5	QPSK	Standard	1/0	11.10	8.70	V	19.80	0.095	-13.21
2502.50	5	16-QAM	Standard	1/12	9.67	8.66	V	18.33	0.068	-14.68
2535.00	5	16-QAM	Standard	1/12	10.04	8.68	V	18.72	0.074	-14.29
2567.50	5	16-QAM	Standard	1/0	10.08	8.70	V	18.78	0.075	-14.23
2505.00	10	QPSK	Standard	1/0	10.39	8.66	V	19.05	0.080	-13.96
2535.00	10	QPSK	Standard	1/0	11.47	8.68	V	20.15	0.103	-12.86
2565.00	10	QPSK	Standard	1/0	11.09	8.70	V	19.79	0.095	-13.22
2505.00	10	16-QAM	Standard	1/0	9.34	8.66	V	18.00	0.063	-15.01
2535.00	10	16-QAM	Standard	1/0	10.42	8.68	V	19.10	0.081	-13.91
2565.00	10	16-QAM	Standard	1/0	9.93	8.70	V	18.63	0.073	-14.38
2507.50	15	QPSK	Standard	1/0	10.41	8.66	V	19.07	0.081	-13.94
2535.00	15	QPSK	Standard	1/74	11.35	8.68	V	20.03	0.101	-12.98
2562.50	15	QPSK	Standard	1/0	10.32	8.70	V	19.02	0.080	-13.99
2507.50	15	16-QAM	Standard	1/0	9.36	8.66	V	18.02	0.063	-14.99
2535.00	15	16-QAM	Standard	1/74	10.39	8.68	V	19.07	0.081	-13.94
2562.50	15	16-QAM	Standard	1/0	9.16	8.70	V	17.86	0.061	-15.15
2510.00	20	QPSK	Standard	1/99	11.03	8.66	V	19.69	0.093	-13.32
2535.00	20	QPSK	Standard	1/99	11.66	8.68	V	20.34	0.108	-12.67
2560.00	20	QPSK	Standard	1/99	10.73	8.70	V	19.43	0.088	-13.58
2510.00	20	16-QAM	Standard	1/99	9.97	8.66	V	18.63	0.073	-14.38
2535.00	20	16-QAM	Standard	1/99	10.62	8.68	V	19.30	0.085	-13.71
2560.00	20	16-QAM	Standard	1/99	9.61	8.70	V	18.31	0.068	-14.70

**Table 6-6. EIRP Data (Band 7)**

**NOTES:**

1. This device was tested under all bandwidths, and RB configurations, and modulations. This device was tested under all modulations, RB sizes and offsets, and channel bandwidth configurations and the worst case emissions are reported with 5MHz BW 1RB 12 Offset for B17/B5, 10MHz BW 1RB 0 Offset for B4/B2, and 20MHz BW 1RB 99 Offset for B7.
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 "H" positioning is defined with the EUT lying flat on the test surface, the "H2" positioning is defined with the EUT standing up on its side, and the "V" positioning is defined with the EUT standing upright. The data reported in the table above was measured in the worst case test setup.

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## 6.4 Band 17 Radiated Spurious Emissions

§2.1053 §27.53(g)

### Field Strength of SPURIOUS Radiation



OPERATING FREQUENCY: 706.50 MHz  
 MEASURED OUTPUT POWER: 18.96 dBm = 0.079 W  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 5 MHz  
 DISTANCE: 3 meters  
 LIMIT:  $43 + 10 \log_{10} (W) =$  31.96 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
1413.00	-50.62	2.41	-48.21	H	67.18
2119.50	-80.32	3.24	-77.09	H	96.05
2826.00	-78.89	4.60	-74.29	H	93.25
3532.50	-80.01	6.14	-73.87	H	92.83
4239.00	-79.50	7.15	-72.35	H	91.32
4945.50	-78.69	7.78	-70.91	H	89.87

**Table 6-7. Radiated Spurious Data**

#### NOTES:

1. This device was tested under all bandwidths, and RB configurations, and modulations. This device was tested under all modulations, RB sizes and offsets, and channel bandwidth configurations and the worst case emissions are reported with 5MHz BW 1RB 12 Offset for B17/B5, 10MHz BW 1RB 0 Offset for B4/B2, and 20MHz BW 1RB 99 Offset for B7.
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 "H" positioning is defined with the EUT lying flat on the test surface, the "H2" positioning is defined with the EUT standing up on its side, and the "V" positioning is defined with the EUT standing upright. The worst case test configuration was found with the EUT in the [H] positioning. The data reported in the table above was measured in this test setup.

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## Band 17 Radiated Spurious Measurements (continued)

§2.1053 §27.53(g)

### Field Strength of SPURIOUS Radiation



OPERATING FREQUENCY: 710.00 MHz  
 MEASURED OUTPUT POWER: 18.64 dBm = 0.073 W  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 5 MHz  
 DISTANCE: 3 meters  
 LIMIT:  $43 + 10 \log_{10} (W) =$  31.64 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
1420.00	-51.80	2.48	-49.31	H	67.96
2130.00	-80.36	3.28	-77.08	H	95.72
2840.00	-78.84	4.62	-74.22	H	92.86
3550.00	-79.88	6.12	-73.76	H	92.40
4260.00	-79.53	7.18	-72.35	H	90.99
4970.00	-78.75	7.83	-70.92	H	89.56

Table 6-8. Radiated Spurious Data

#### NOTES:

1. This device was tested under all bandwidths, and RB configurations, and modulations. This device was tested under all modulations, RB sizes and offsets, and channel bandwidth configurations and the worst case emissions are reported with 5MHz BW 1RB 12 Offset for B17/B5, 10MHz BW 1RB 0 Offset for B4/B2, and 20MHz BW 1RB 99 Offset for B7.
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 "H" positioning is defined with the EUT lying flat on the test surface, the "H2" positioning is defined with the EUT standing up on its side, and the "V" positioning is defined with the EUT standing upright. The worst case test configuration was found with the EUT in the [H] positioning. The data reported in the table above was measured in this test setup.

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## Band 17 Radiated Spurious Measurements (continued)

§2.1053 §27.53(g)

### Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 713.50 MHz  
 MEASURED OUTPUT POWER: 18.29 dBm = 0.068 W  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 5 MHz  
 DISTANCE: 3 meters  
 LIMIT:  $43 + 10 \log_{10} (W) =$  31.29 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
1427.00	-50.19	2.56	-47.63	H	65.92
2140.50	-80.40	3.33	-77.07	H	95.36
2854.00	-78.79	4.64	-74.15	H	92.44
3567.50	-79.74	6.09	-73.65	H	91.95
4281.00	-79.54	7.22	-72.32	H	90.61
4994.50	-78.81	7.88	-70.93	H	89.22

Table 6-9. Radiated Spurious Data

#### NOTES:

1. This device was tested under all bandwidths, and RB configurations, and modulations. This device was tested under all modulations, RB sizes and offsets, and channel bandwidth configurations and the worst case emissions are reported with 5MHz BW 1RB 12 Offset for B17/B5, 10MHz BW 1RB 0 Offset for B4/B2, and 20MHz BW 1RB 99 Offset for B7.
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 "H" positioning is defined with the EUT lying flat on the test surface, the "H2" positioning is defined with the EUT standing up on its side, and the "V" positioning is defined with the EUT standing upright. The worst case test configuration was found with the EUT in the [H] positioning. The data reported in the table above was measured in this test setup.

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## 6.5 Band 5 Radiated Spurious Emissions

§2.1053 §22.917(a) RSS-132(4.5.1)

### Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 826.50 MHz  
 MEASURED OUTPUT POWER: 18.91 dBm = 0.078 W  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 5 MHz  
 DISTANCE: 3 meters  
 LIMIT:  $43 + 10 \log_{10} (W) =$  31.91 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
1653.00	-55.59	3.72	-51.87	H	70.79
2479.50	-48.45	3.61	-44.83	H	63.74
3306.00	-79.94	5.64	-74.29	H	93.21
4132.50	-79.17	6.94	-72.23	H	91.14
4959.00	-78.76	7.84	-70.92	H	89.84
5785.50	-77.04	8.55	-68.49	H	87.40

Table 6-10. Radiated Spurious Data

#### NOTES:

1. This device was tested under all bandwidths, and RB configurations, and modulations. This device was tested under all modulations, RB sizes and offsets, and channel bandwidth configurations and the worst case emissions are reported with 5MHz BW 1RB 12 Offset for B17/B5, 10MHz BW 1RB 0 Offset for B4/B2, and 20MHz BW 1RB 99 Offset for B7.
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 "H" positioning is defined with the EUT lying flat on the test surface, the "H2" positioning is defined with the EUT standing up on its side, and the "V" positioning is defined with the EUT standing upright. The worst case test configuration was found with the EUT in the [H] positioning. The data reported in the table above was measured in this test setup.

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## Band 5 Radiated Spurious Measurements (continued)

§2.1053 §22.917(a) RSS-132(4.5.1)

### Field Strength of SPURIOUS Radiation



OPERATING FREQUENCY: 836.50 MHz  
 MEASURED OUTPUT POWER: 19.58 dBm = 0.091 W  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 5 MHz  
 DISTANCE: 3 meters  
 LIMIT:  $43 + 10 \log_{10}(W) =$  32.58 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
1673.00	-53.39	3.67	-49.72	H	69.31
2509.50	-44.35	3.65	-40.70	H	60.28
3346.00	-80.00	5.74	-74.26	H	93.85
4182.50	-79.33	7.04	-72.29	H	91.87
5019.00	-78.75	7.90	-70.85	H	90.43
5855.50	-76.73	8.51	-68.22	H	87.80

Table 6-11. Radiated Spurious Data

#### NOTES:

1. This device was tested under all bandwidths, and RB configurations, and modulations. This device was tested under all modulations, RB sizes and offsets, and channel bandwidth configurations and the worst case emissions are reported with 5MHz BW 1RB 12 Offset for B17/B5, 10MHz BW 1RB 0 Offset for B4/B2, and 20MHz BW 1RB 99 Offset for B7.
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 "H" positioning is defined with the EUT lying flat on the test surface, the "H2" positioning is defined with the EUT standing up on its side, and the "V" positioning is defined with the EUT standing upright. The worst case test configuration was found with the EUT in the [H] positioning. The data reported in the table above was measured in this test setup.

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## Band 5 Radiated Spurious Measurements (continued)

§2.1053 §22.917(a) RSS-132(4.5.1)

### Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 846.50 MHz  
 MEASURED OUTPUT POWER: 18.82 dBm = 0.076 W  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 5 MHz  
 DISTANCE: 3 meters  
 LIMIT:  $43 + 10 \log_{10} (W) =$  31.82 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
1693.00	-45.88	3.62	-42.27	H	61.09
2539.50	-46.31	3.72	-42.60	H	61.42
3386.00	-80.06	5.83	-74.23	H	93.05
4232.50	-79.45	7.11	-72.34	H	91.16
5079.00	-78.59	7.93	-70.66	H	89.48
5925.50	-76.41	8.46	-67.95	H	86.77

Table 6-12. Radiated Spurious Data

#### NOTES:

1. This device was tested under all bandwidths, and RB configurations, and modulations. This device was tested under all modulations, RB sizes and offsets, and channel bandwidth configurations and the worst case emissions are reported with 5MHz BW 1RB 12 Offset for B17/B5, 10MHz BW 1RB 0 Offset for B4/B2, and 20MHz BW 1RB 99 Offset for B7.
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 "H" positioning is defined with the EUT lying flat on the test surface, the "H2" positioning is defined with the EUT standing up on its side, and the "V" positioning is defined with the EUT standing upright. The worst case test configuration was found with the EUT in the [H] positioning. The data reported in the table above was measured in this test setup.

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## 6.6 Band 4 Radiated Spurious Emissions

§2.1053 §27.53(h) RSS-139(6.5.1)

### Field Strength of SPURIOUS Radiation



OPERATING FREQUENCY: 1715.00 MHz  
 MEASURED OUTPUT POWER: 24.90 dBm = 0.309 W  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 10 MHz  
 DISTANCE: 3 meters  
 LIMIT:  $43 + 10 \log_{10} (W) =$  37.90 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3430.00	-55.81	8.11	-47.69	H	72.59
5145.00	-81.85	10.13	-71.72	H	96.62
6860.00	-80.53	11.31	-69.22	H	94.12
8575.00	-79.89	12.98	-66.91	H	91.81
10290.00	-77.26	13.22	-64.04	H	88.94
12005.00	-73.88	13.01	-60.87	H	85.77

**Table 6-13. Radiated Spurious Data**

#### NOTES:

1. This device was tested under all bandwidths, and RB configurations, and modulations. This device was tested under all modulations, RB sizes and offsets, and channel bandwidth configurations and the worst case emissions are reported with 5MHz BW 1RB 12 Offset for B17/B5, 10MHz BW 1RB 0 Offset for B4/B2, and 20MHz BW 1RB 99 Offset for B7.
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 "H" positioning is defined with the EUT lying flat on the test surface, the "H2" positioning is defined with the EUT standing up on its side, and the "V" positioning is defined with the EUT standing upright. The worst case test configuration was found with the EUT in the [H] positioning. The data reported in the table above was measured in this test setup.

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## Band 4 Radiated Spurious Measurements (continued)

§2.1053 §27.53(h) RSS-139(6.5.1)

### Field Strength of SPURIOUS Radiation


OPERATING FREQUENCY: 1732.50 MHz  
 MEASURED OUTPUT POWER: 24.39 dBm = 0.275 W  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 10 MHz  
 DISTANCE: 3 meters  
 LIMIT:  $43 + 10 \log_{10}(W) =$  37.39 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3465.00	-56.39	8.23	-48.16	H	72.55
5197.50	-81.77	10.18	-71.58	H	95.97
6930.00	-80.38	11.41	-68.96	H	93.35
8662.50	-79.77	13.00	-66.77	H	91.16
10395.00	-77.18	13.15	-64.03	H	88.42
12127.50	-73.57	13.00	-60.57	H	84.96

Table 6-14. Radiated Spurious Data

#### NOTES:

1. This device was tested under all bandwidths, and RB configurations, and modulations. This device was tested under all modulations, RB sizes and offsets, and channel bandwidth configurations and the worst case emissions are reported with 5MHz BW 1RB 12 Offset for B17/B5, 10MHz BW 1RB 0 Offset for B4/B2, and 20MHz BW 1RB 99 Offset for B7.
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 "H" positioning is defined with the EUT lying flat on the test surface, the "H2" positioning is defined with the EUT standing up on its side, and the "V" positioning is defined with the EUT standing upright. The worst case test configuration was found with the EUT in the [H] positioning. The data reported in the table above was measured in this test setup.

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## Band 4 Radiated Spurious Measurements (continued)

§2.1053 §27.53(h) RSS-139(6.5.1)

### Field Strength of SPURIOUS Radiation



OPERATING FREQUENCY: 1750.00 MHz  
 MEASURED OUTPUT POWER: 24.59 dBm = 0.288 W  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 10 MHz  
 DISTANCE: 3 meters  
 LIMIT:  $43 + 10 \log_{10} (W) =$  37.59 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3500.00	-56.27	8.32	-47.95	H	72.55
5250.00	-81.63	10.20	-71.43	H	96.03
7000.00	-80.19	11.48	-68.71	H	93.31
8750.00	-79.54	12.97	-66.57	H	91.17
10500.00	-76.84	13.04	-63.79	H	88.39
12250.00	-73.37	13.03	-60.34	H	84.93

Table 6-15. Radiated Spurious Data

#### NOTES:

1. This device was tested under all bandwidths, and RB configurations, and modulations. This device was tested under all modulations, RB sizes and offsets, and channel bandwidth configurations and the worst case emissions are reported with 5MHz BW 1RB 12 Offset for B17/B5, 10MHz BW 1RB 0 Offset for B4/B2, and 20MHz BW 1RB 99 Offset for B7.
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 "H" positioning is defined with the EUT lying flat on the test surface, the "H2" positioning is defined with the EUT standing up on its side, and the "V" positioning is defined with the EUT standing upright. The worst case test configuration was found with the EUT in the [H] positioning. The data reported in the table above was measured in this test setup.

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## 6.7 Band 2 Radiated Spurious Emissions

§2.1053 §24.238(a) RSS-133(6.5.1)

### Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 1855.00 MHz  
 MEASURED OUTPUT POWER: 25.16 dBm = 0.328 W  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 10 MHz  
 DISTANCE: 3 meters  
 LIMIT:  $43 + 10 \log_{10} (W) =$  38.16 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3710.00	-53.12	8.30	-44.83	H	69.98
5565.00	-82.00	10.59	-71.41	H	96.57
7420.00	-54.90	11.96	-42.94	H	68.10
9275.00	-79.17	13.16	-66.01	H	91.17
11130.00	-75.48	13.25	-62.22	H	87.38
12985.00	-71.68	13.29	-58.39	H	83.55

**Table 6-16. Radiated Spurious Data**

#### NOTES:

1. This device was tested under all bandwidths, and RB configurations, and modulations. This device was tested under all modulations, RB sizes and offsets, and channel bandwidth configurations and the worst case emissions are reported with 5MHz BW 1RB 12 Offset for B17/B5, 10MHz BW 1RB 0 Offset for B4/B2, and 20MHz BW 1RB 99 Offset for B7.
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 "H" positioning is defined with the EUT lying flat on the test surface, the "H2" positioning is defined with the EUT standing up on its side, and the "V" positioning is defined with the EUT standing upright. The worst case test configuration was found with the EUT in the [H] positioning. The data reported in the table above was measured in this test setup.

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## Band 2 Radiated Spurious Measurements (continued)

§2.1053 §24.238(a) RSS-133(6.5.1)

### Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 1880.00 MHz  
 MEASURED OUTPUT POWER: 24.73 dBm = 0.297 W  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 10 MHz  
 DISTANCE: 3 meters  
 LIMIT:  $43 + 10 \log_{10}(W) = 37.73$  dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3760.00	-50.06	8.32	-41.74	H	66.47
5640.00	-82.03	10.67	-71.36	H	96.09
7520.00	-54.91	12.05	-42.85	H	67.59
9400.00	-78.84	13.16	-65.68	H	90.41
11280.00	-75.41	13.32	-62.09	H	86.82
13160.00	-71.42	13.47	-57.94	H	82.67

Table 6-17. Radiated Spurious Data

#### NOTES:

1. This device was tested under all bandwidths, and RB configurations, and modulations. This device was tested under all modulations, RB sizes and offsets, and channel bandwidth configurations and the worst case emissions are reported with 5MHz BW 1RB 12 Offset for B17/B5, 10MHz BW 1RB 0 Offset for B4/B2, and 20MHz BW 1RB 99 Offset for B7.
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 "H" positioning is defined with the EUT lying flat on the test surface, the "H2" positioning is defined with the EUT standing up on its side, and the "V" positioning is defined with the EUT standing upright. The worst case test configuration was found with the EUT in the [H] positioning. The data reported in the table above was measured in this test setup.

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## Band 2 Radiated Spurious Measurements (continued)

§2.1053 §24.238(a) RSS-133(6.5.1)

### Field Strength of SPURIOUS Radiation



OPERATING FREQUENCY: 1905.00 MHz  
 MEASURED OUTPUT POWER: 23.93 dBm = 0.247 W  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 10 MHz  
 DISTANCE: 3 meters  
 LIMIT:  $43 + 10 \log_{10} (W) = 36.93$  dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3810.00	-47.56	8.36	-39.20	H	63.13
5715.00	-82.01	10.73	-71.28	H	95.21
7620.00	-54.23	12.12	-42.12	H	66.05
9525.00	-78.54	13.14	-65.40	H	89.33
11430.00	-75.54	13.36	-62.19	H	86.12
13335.00	-71.37	13.47	-57.90	H	81.83

Table 6-18. Radiated Spurious Data

#### NOTES:

1. This device was tested under all bandwidths, and RB configurations, and modulations. This device was tested under all modulations, RB sizes and offsets, and channel bandwidth configurations and the worst case emissions are reported with 5MHz BW 1RB 12 Offset for B17/B5, 10MHz BW 1RB 0 Offset for B4/B2, and 20MHz BW 1RB 99 Offset for B7.
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 "H" positioning is defined with the EUT lying flat on the test surface, the "H2" positioning is defined with the EUT standing up on its side, and the "V" positioning is defined with the EUT standing upright. The worst case test configuration was found with the EUT in the [H] positioning. The data reported in the table above was measured in this test setup.

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## 6.8 Band 7 Radiated Spurious Emissions

\$2.1053 \$27.53(m)

### Field Strength of SPURIOUS Radiation


OPERATING FREQUENCY: 2510.00 MHz  
 MEASURED OUTPUT POWER: 19.69 dBm = 0.093 W  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 20 MHz  
 DISTANCE: 3 meters  
 LIMIT:  $43 + 10 \log_{10} (W) =$  32.69 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
5020.00	-49.36	10.05	-39.31	H	59.00
7530.00	-55.36	12.05	-43.31	H	63.00
10040.00	-52.23	13.13	-39.09	H	58.78
12550.00	-73.10	13.09	-60.01	H	79.70
15060.00	-70.13	13.91	-56.22	H	75.91
17570.00	-65.78	13.74	-52.04	H	71.73

**Table 6-19. Radiated Spurious Data**

#### NOTES:

1. This device was tested under all bandwidths, and RB configurations, and modulations. This device was tested under all modulations, RB sizes and offsets, and channel bandwidth configurations and the worst case emissions are reported with 5MHz BW 1RB 12 Offset for B17/B5, 10MHz BW 1RB 0 Offset for B4/B2, and 20MHz BW 1RB 99 Offset for B7.
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 "H" positioning is defined with the EUT lying flat on the test surface, the "H2" positioning is defined with the EUT standing up on its side, and the "V" positioning is defined with the EUT standing upright. The worst case test configuration was found with the EUT in the [H] positioning. The data reported in the table above was measured in this test setup.

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## Band 7 Radiated Spurious Measurements (continued)

§2.1053 §27.53(m)

### Field Strength of SPURIOUS Radiation


OPERATING FREQUENCY: 2535.00 MHz  
 MEASURED OUTPUT POWER: 20.34 dBm = 0.108 W  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 20 MHz  
 DISTANCE: 3 meters  
 LIMIT:  $43 + 10 \log_{10}(W) =$  33.34 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
5070.00	-49.19	10.05	-39.14	H	59.48
7605.00	-55.04	12.05	-42.99	H	63.33
10140.00	-52.14	13.13	-39.00	H	59.34
12675.00	-73.10	13.09	-60.01	H	80.35
15210.00	-70.13	13.91	-56.22	H	76.56
17745.00	-65.78	13.74	-52.04	H	72.38

Table 6-20. Radiated Spurious Data

#### NOTES:

1. This device was tested under all bandwidths, and RB configurations, and modulations. This device was tested under all modulations, RB sizes and offsets, and channel bandwidth configurations and the worst case emissions are reported with 5MHz BW 1RB 12 Offset for B17/B5, 10MHz BW 1RB 0 Offset for B4/B2, and 20MHz BW 1RB 99 Offset for B7.
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 "H" positioning is defined with the EUT lying flat on the test surface, the "H2" positioning is defined with the EUT standing up on its side, and the "V" positioning is defined with the EUT standing upright. The worst case test configuration was found with the EUT in the [H] positioning. The data reported in the table above was measured in this test setup.

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## Band 7 Radiated Spurious Measurements (continued)

§2.1053 §27.53(m)

### Field Strength of SPURIOUS Radiation



OPERATING FREQUENCY: 2560.00 MHz  
 MEASURED OUTPUT POWER: 19.43 dBm = 0.088 W  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 20 MHz  
 DISTANCE: 3 meters  
 LIMIT:  $43 + 10 \log_{10} (W) = 32.43$  dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
5120.00	-45.89	10.05	-35.84	H	55.27
7680.00	-56.49	12.05	-44.44	H	63.87
10240.00	-52.95	13.13	-39.81	H	59.24
12800.00	-73.10	13.09	-60.01	H	79.44
15360.00	-70.13	13.91	-56.22	H	75.65
17920.00	-65.78	13.74	-52.04	H	71.47

Table 6-21. Radiated Spurious Data

#### NOTES:

1. This device was tested under all bandwidths, and RB configurations, and modulations. This device was tested under all modulations, RB sizes and offsets, and channel bandwidth configurations and the worst case emissions are reported with 5MHz BW 1RB 12 Offset for B17/B5, 10MHz BW 1RB 0 Offset for B4/B2, and 20MHz BW 1RB 99 Offset for B7.
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 "H" positioning is defined with the EUT lying flat on the test surface, the "H2" positioning is defined with the EUT standing up on its side, and the "V" positioning is defined with the EUT standing upright. The worst case test configuration was found with the EUT in the [H] positioning. The data reported in the table above was measured in this test setup.

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## 6.9 Band 17 Frequency Stability Measurements

\$2.1055 \$22.355 \$27.54

OPERATING FREQUENCY: 710,000,000 Hz

CHANNEL: 23090



REFERENCE VOLTAGE: 3.8 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20 (Ref)	710,000,014	14	0.0000020
100 %		- 30	710,000,027	27	0.0000038
100 %		- 20	709,999,978	-22	-0.0000031
100 %		- 10	710,000,029	29	0.0000041
100 %		0	710,000,017	17	0.0000024
100 %		+ 10	709,999,975	-25	-0.0000035
100 %		+ 20	710,000,003	3	0.0000004
100 %		+ 30	710,000,019	19	0.0000027
100 %		+ 40	709,999,985	-15	-0.0000021
100 %		+ 50	710,000,015	15	0.0000021
115 %	4.37	+ 20	709,999,981	-19	-0.0000027
BATT. ENDPOINT	3.40	+ 20	709,999,995	-5	-0.0000007

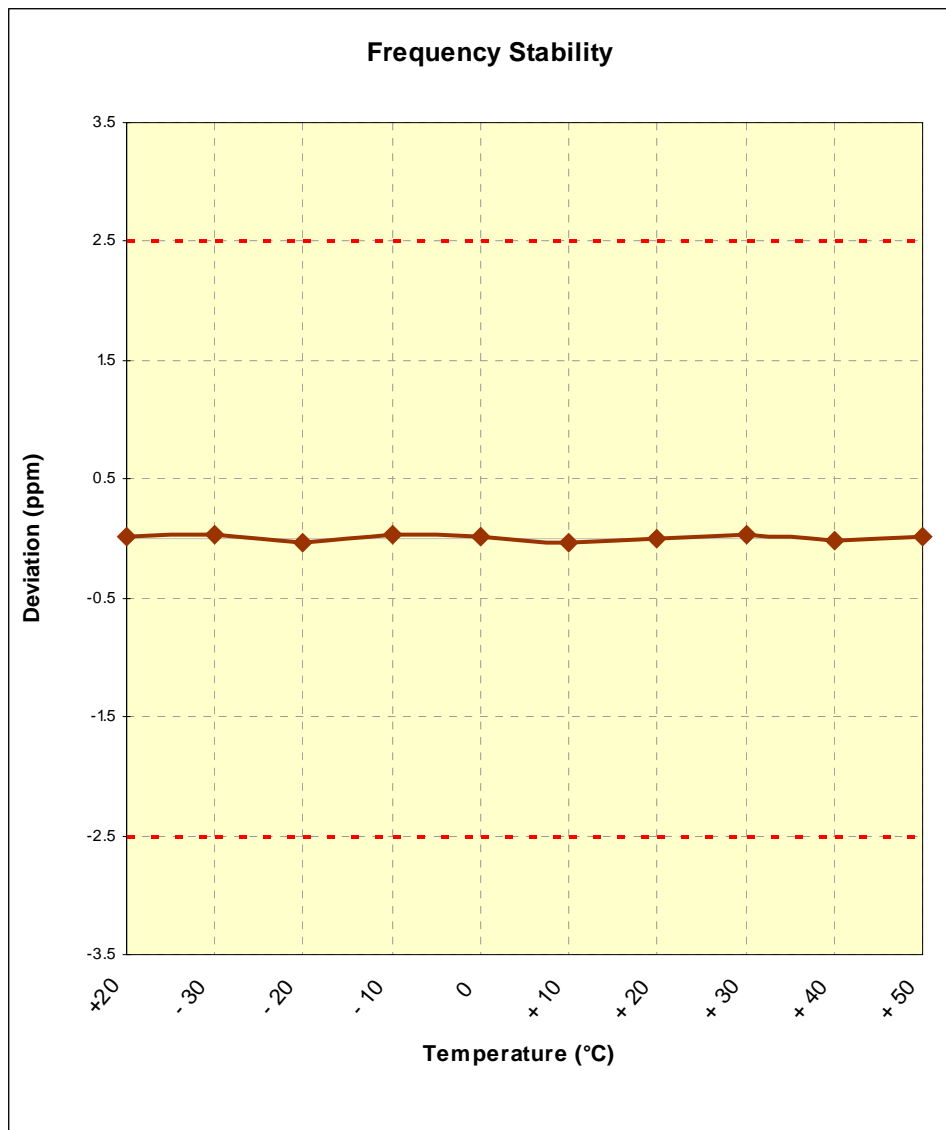
**Table 6-22. Frequency Stability Data (Band 17)**

**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 in-band 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.

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**Band 17 Frequency Stability Measurements (Cont'd)**  
**§2.1055 §22.355 §27.54**



**Figure 6-1. Frequency Stability Graph (Band 17)**

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## 6.10 Band 5 Frequency Stability Measurements

\$2.1055 \$22.355 RSS-132(4.3)

OPERATING FREQUENCY: 836,500,000 Hz

CHANNEL: 20525

REFERENCE VOLTAGE: 3.8 VDC



DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20 (Ref)	836,499,979	-21	-0.0000025
100 %		- 30	836,500,005	5	0.0000006
100 %		- 20	836,499,971	-29	-0.0000035
100 %		- 10	836,499,984	-16	-0.0000019
100 %		0	836,500,003	3	0.0000004
100 %		+ 10	836,500,014	14	0.0000017
100 %		+ 20	836,499,971	-29	-0.0000035
100 %		+ 30	836,499,995	-5	-0.0000006
100 %		+ 40	836,499,986	-14	-0.0000017
100 %		+ 50	836,500,018	18	0.0000022
115 %	4.37	+ 20	836,499,981	-19	-0.0000023
BATT. ENDPOINT	3.40	+ 20	836,500,004	4	0.0000005

**Table 6-23. Frequency Stability Data (Band 5)**

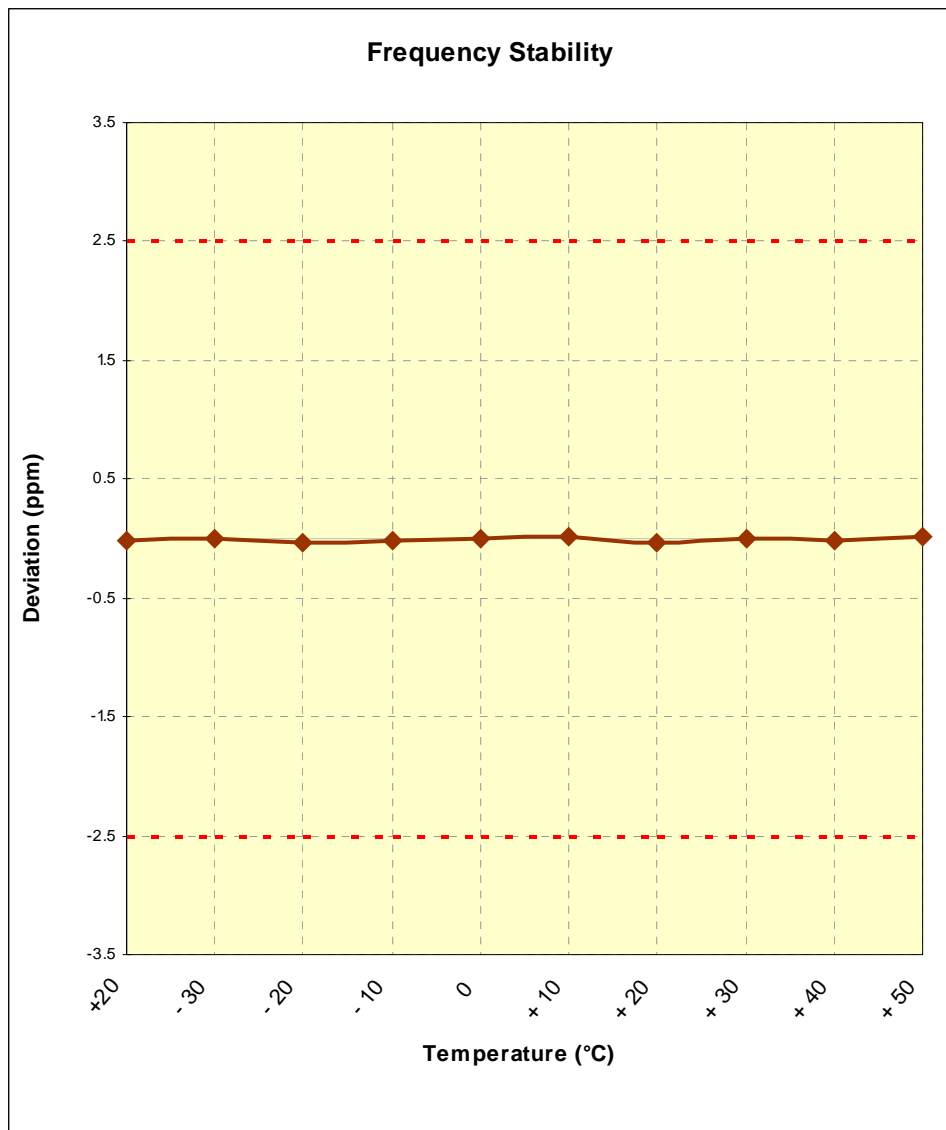
### Note:

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 in-band 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.



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## Band 5 Frequency Stability Measurements (Cont'd)

§2.1055 §22.355 RSS-132(4.3)



**Figure 6-2. Frequency Stability Graph (Band 5)**

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## 6.11 Band 4 Frequency Stability Measurements

\$2.1055 \$27.54 RSS-139(6.3)

OPERATING FREQUENCY: 1,732,500,000 Hz

CHANNEL: 20175



REFERENCE VOLTAGE: 3.8 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20 (Ref)	1,732,499,985	-15	-0.0000009
100 %		- 30	1,732,500,014	14	0.0000008
100 %		- 20	1,732,500,029	29	0.0000017
100 %		- 10	1,732,500,013	13	0.0000008
100 %		0	1,732,500,006	6	0.0000003
100 %		+ 10	1,732,500,010	10	0.0000006
100 %		+ 20	1,732,499,996	-4	-0.0000002
100 %		+ 30	1,732,499,976	-24	-0.0000014
100 %		+ 40	1,732,499,984	-16	-0.0000009
100 %		+ 50	1,732,499,976	-24	-0.0000014
115 %	4.37	+ 20	1,732,500,030	30	0.0000017
BATT. ENDPOINT	3.40	+ 20	1,732,499,990	-10	-0.0000006

**Table 6-24. Frequency Stability Data (Band 4)**

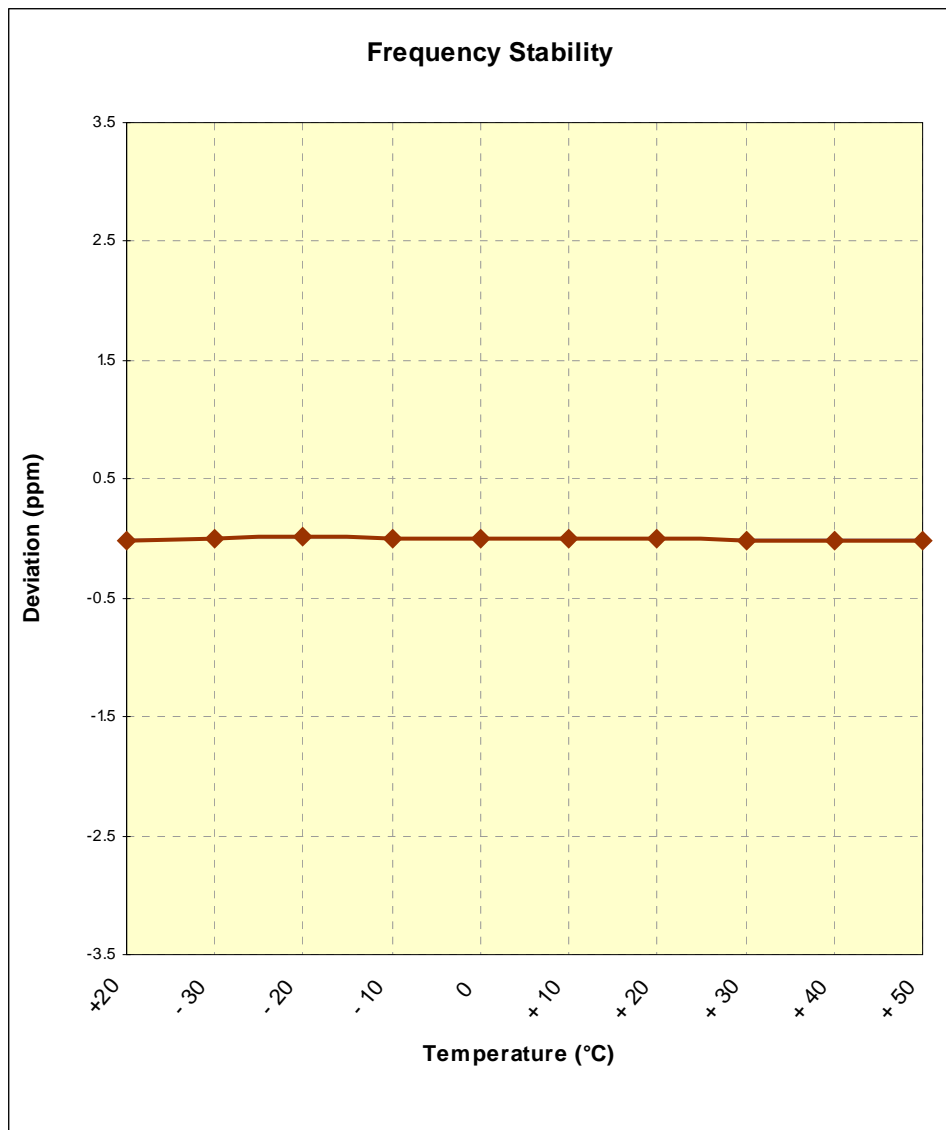
### Note:

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 in-band 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: ZNFD950		FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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## Band 4 Frequency Stability Measurements (Cont'd)

§2.1055 §§27.54 RSS-139(6.3)



**Figure 6-3. Frequency Stability Graph (Band 4)**

FCC ID: ZNFD950		FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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## 6.12 Band 2 Frequency Stability Measurements

### §2.1055 §24.235 RSS-133(6.3)

OPERATING FREQUENCY: 1,880,000,000 Hz

CHANNEL: 18900



REFERENCE VOLTAGE: 3.8 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20 (Ref)	1,880,000,003	3	0.0000002
100 %		- 30	1,880,000,000	0	0.0000000
100 %		- 20	1,879,999,994	-6	-0.0000003
100 %		- 10	1,880,000,009	9	0.0000005
100 %		0	1,880,000,012	12	0.0000006
100 %		+ 10	1,880,000,009	9	0.0000005
100 %		+ 20	1,880,000,011	11	0.0000006
100 %		+ 30	1,880,000,022	22	0.0000012
100 %		+ 40	1,879,999,988	-12	-0.0000006
100 %		+ 50	1,879,999,986	-14	-0.0000007
115 %	4.37	+ 20	1,879,999,981	-19	-0.0000010
BATT. ENDPOINT	3.40	+ 20	1,879,999,996	-4	-0.0000002

**Table 6-25. Frequency Stability Data (Band 2)**

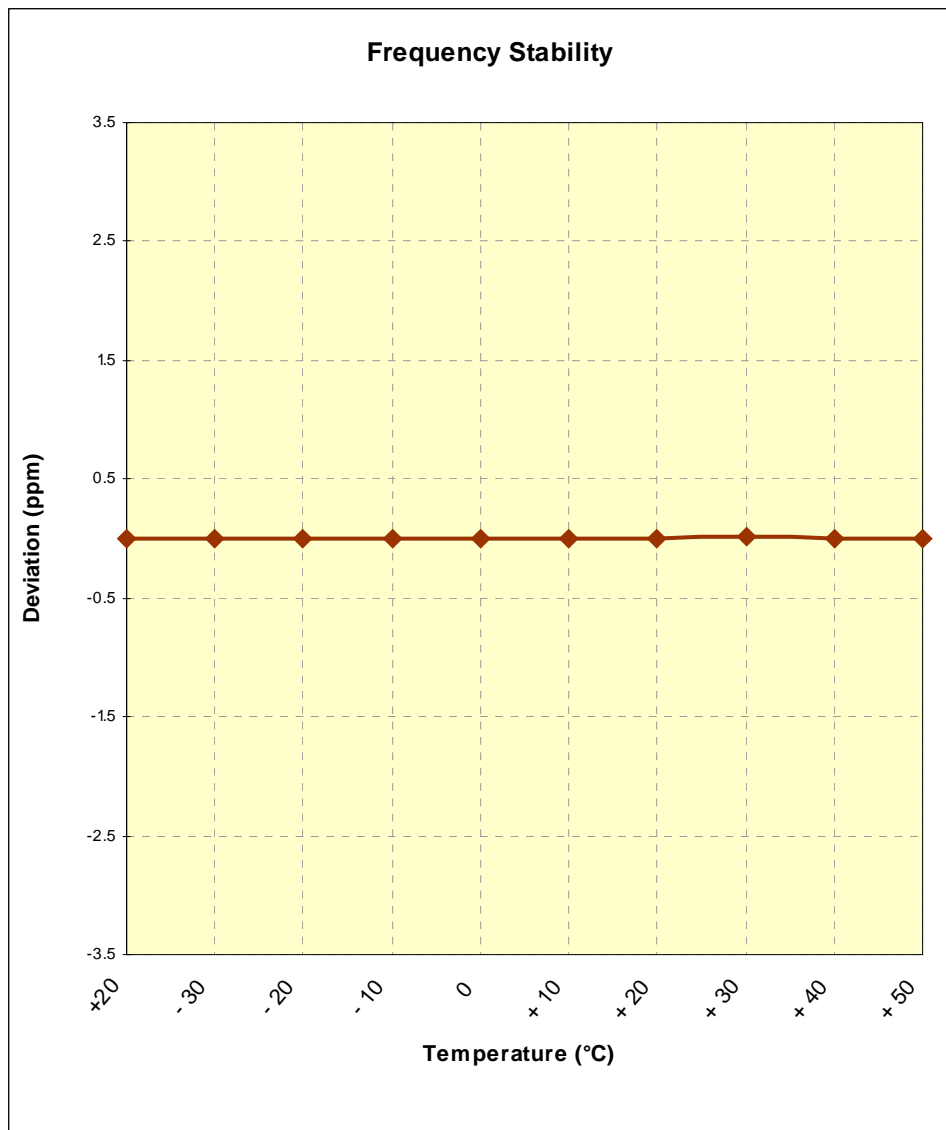
#### Note:

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 in-band 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: ZNFD950		FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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## Band 2 Frequency Stability Measurements (Cont'd)

§2.1055 §24.235 RSS-133(6.3)



**Figure 6-4. Frequency Stability Graph (Band 2)**

FCC ID: ZNFD950		FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1309161874.ZNF	Test Dates: 09/24 - 10/08/2013	EUT Type: Portable Handset		Page 39 of 110

## 6.13 Band 7 Frequency Stability Measurements

\$2.1055 \$27.5(i) \$27.54

OPERATING FREQUENCY: 2,535,000,000 Hz

CHANNEL: 2655



REFERENCE VOLTAGE: 3.8 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20 (Ref)	2,535,000,002	2	0.0000001
100 %		- 30	2,535,000,012	12	0.0000005
100 %		- 20	2,535,000,004	4	0.0000002
100 %		- 10	2,534,999,998	-2	-0.0000001
100 %		0	2,535,000,003	3	0.0000001
100 %		+ 10	2,535,000,019	19	0.0000007
100 %		+ 20	2,535,000,025	25	0.0000010
100 %		+ 30	2,534,999,997	-3	-0.0000001
100 %		+ 40	2,534,999,977	-23	-0.0000009
100 %		+ 50	2,534,999,977	-23	-0.0000009
115 %	4.37	+ 20	2,534,999,992	-8	-0.0000003
BATT. ENDPOINT	3.40	+ 20	2,535,000,018	18	0.0000007

**Table 6-26. Frequency Stability Data (Band 7)**

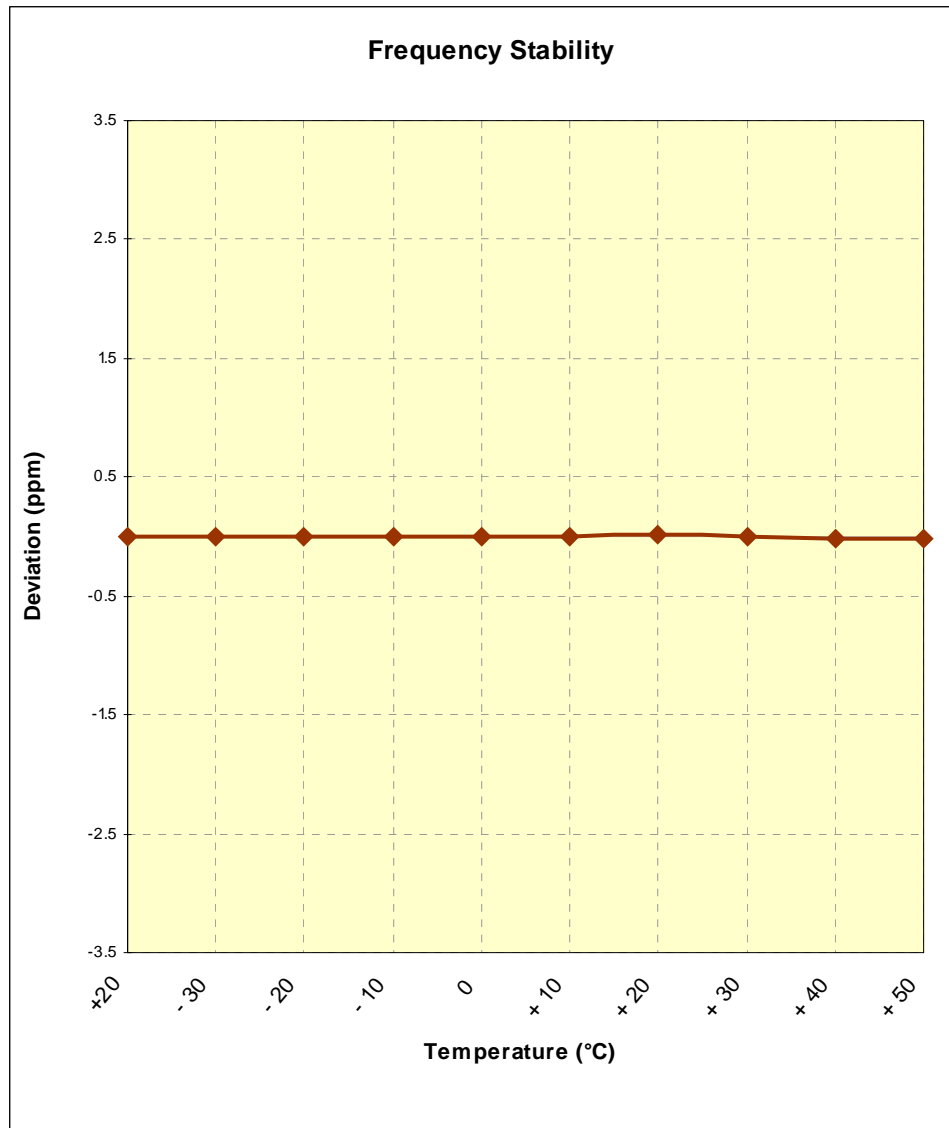
### Note:

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 in-band 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: ZNFD950		FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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## Band 7 Frequency Stability Measurements (Cont'd)

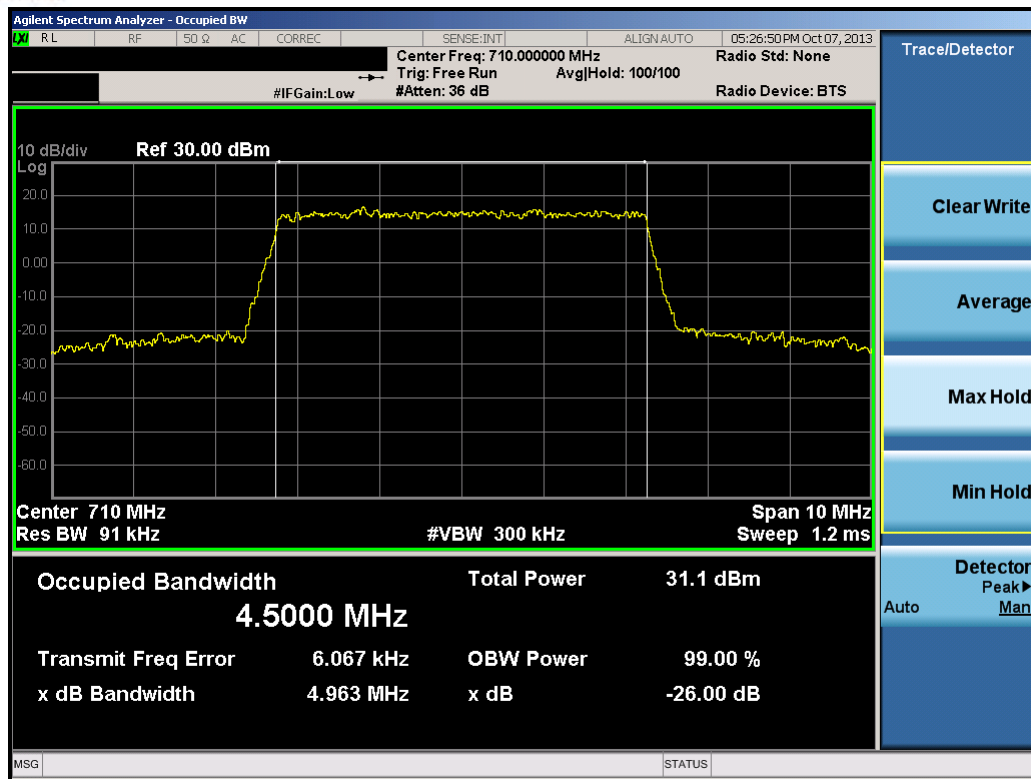
§2.1055 §27.5(i) §27.54



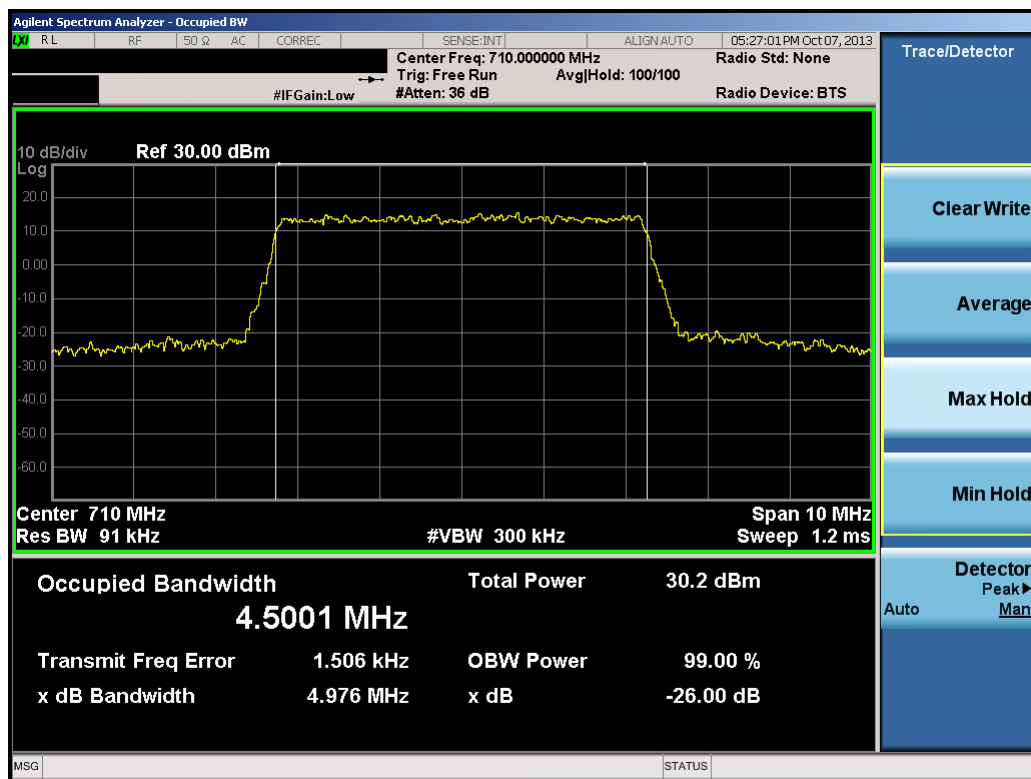
**Figure 6-5. Frequency Stability Graph (Band 7)**

FCC ID: ZNFD950		FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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Plot 7-2. Occupied Bandwidth Plot (5.0MHz QPSK – RB Size 25)

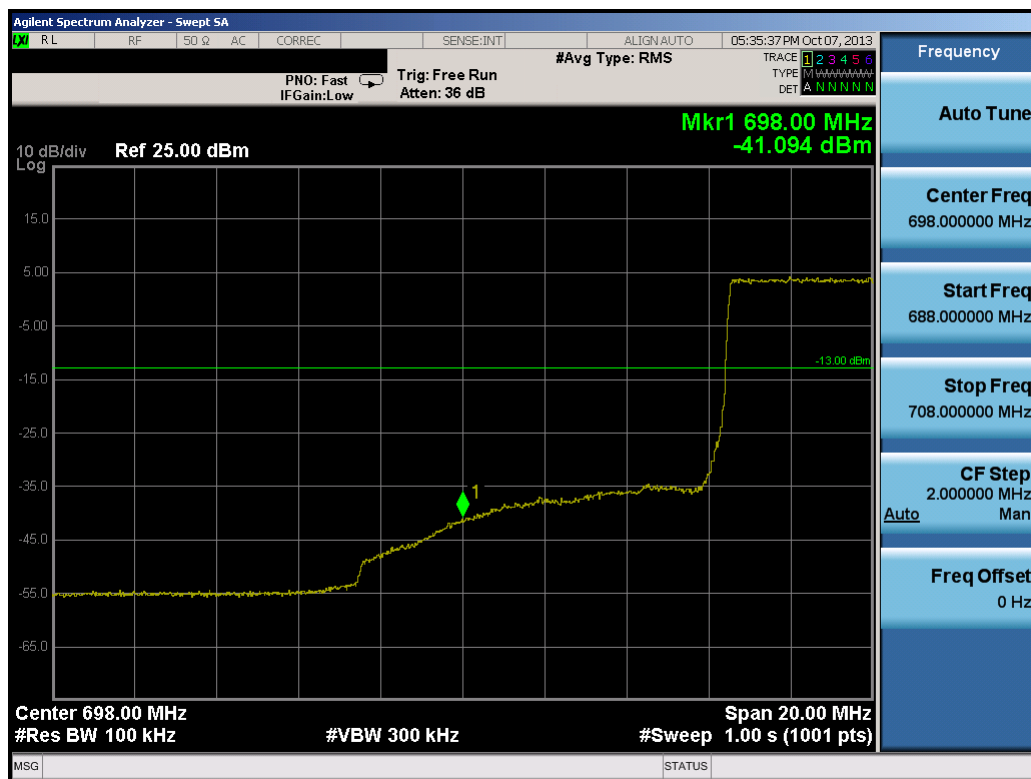


Plot 7-3. Occupied Bandwidth Plot (5.0MHz 16-QAM – RB Size 25)

FCC ID: ZNFD950	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1309161874.ZNF	Test Dates: 09/24 - 10/08/2013	EUT Type: Portable Handset		Page 43 of 110

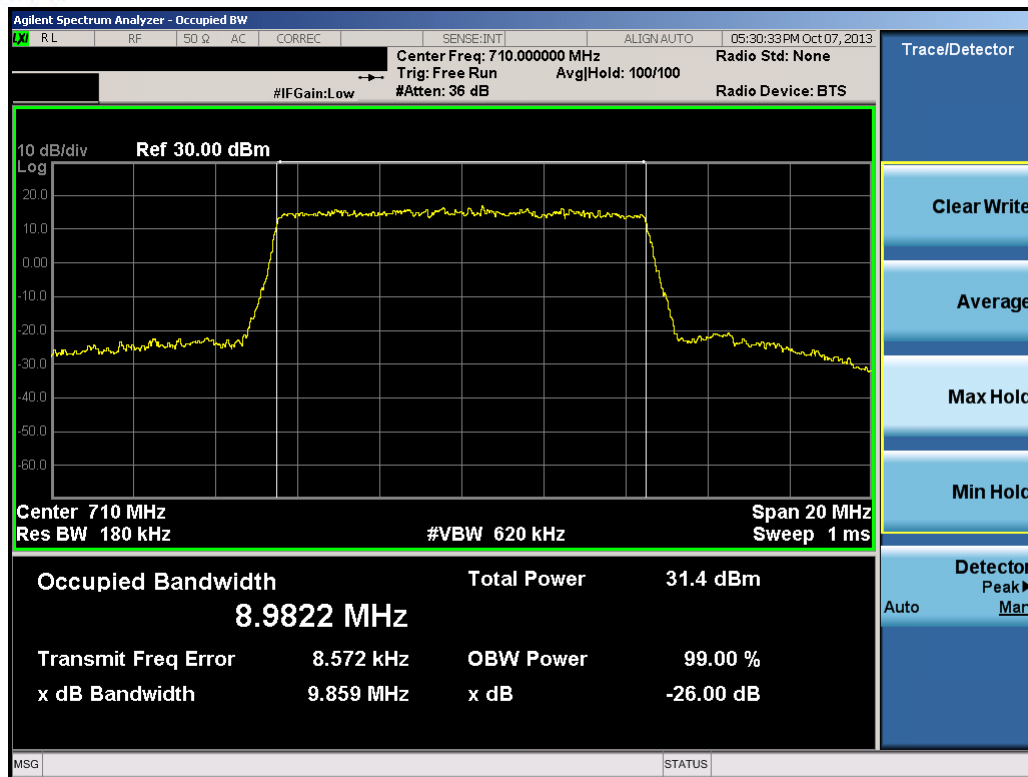


Plot 7-4. Upper Band Edge Plot (5.0MHz QPSK – RB Size 25)

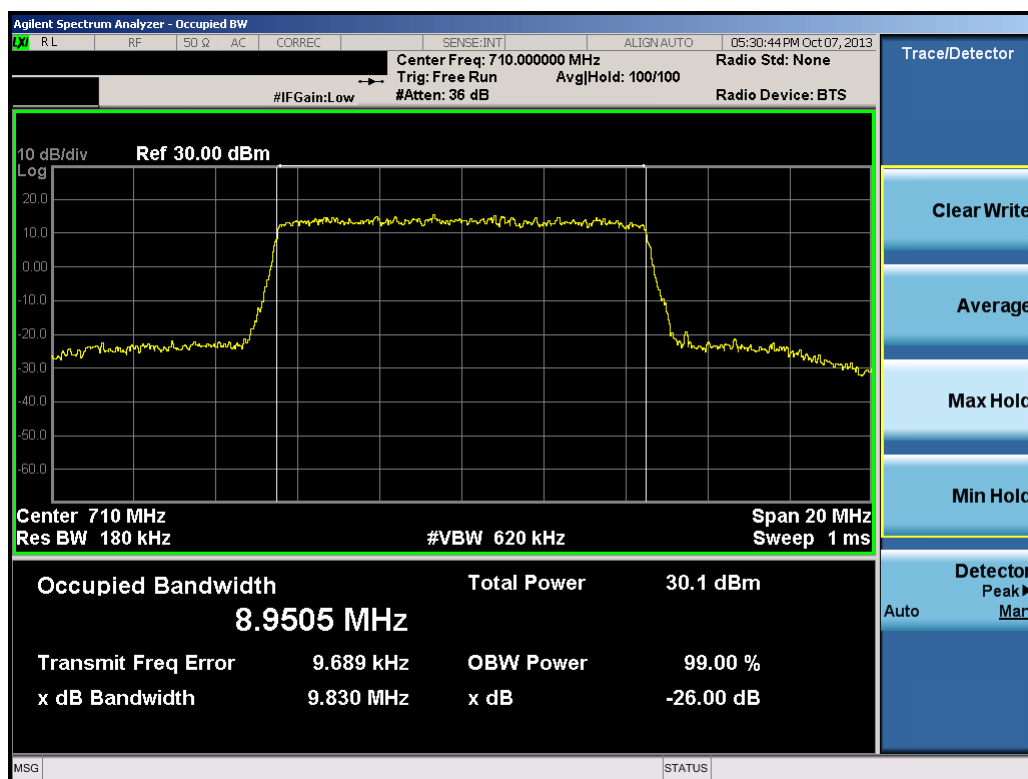


Plot 7-5. Lower Band Edge Plot (10.0MHz QPSK – RB Size 50)

FCC ID: ZNFD950	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1309161874.ZNF	Test Dates: 09/24 - 10/08/2013	EUT Type: Portable Handset		Page 44 of 110

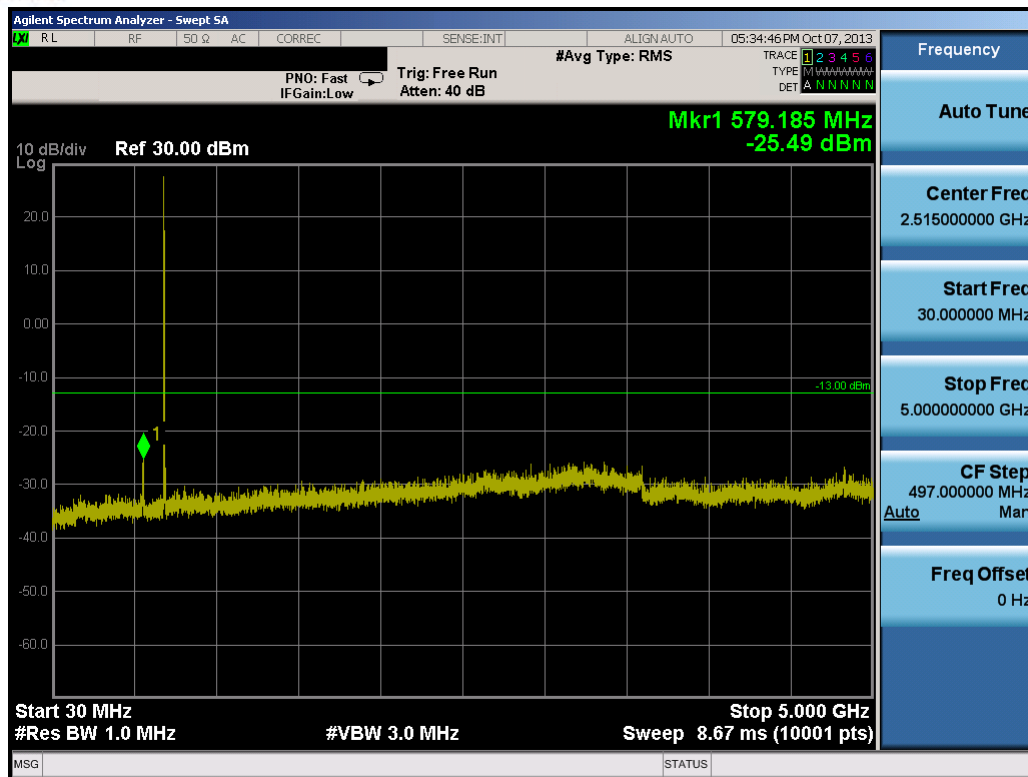


Plot 7-6. Occupied Bandwidth Plot (10.0MHz QPSK – RB Size 50)

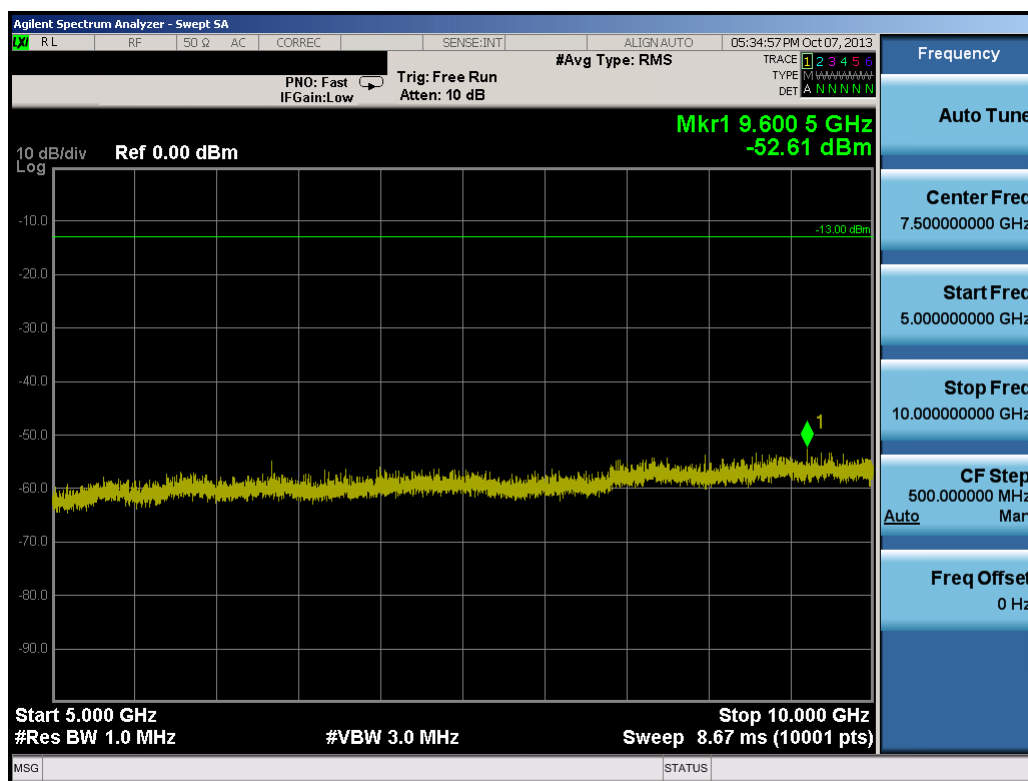


Plot 7-7. Occupied Bandwidth Plot (10.0MHz 16-QAM – RB Size 50)

FCC ID: ZNFD950	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1309161874.ZNF	Test Dates: 09/24 - 10/08/2013	EUT Type: Portable Handset		Page 45 of 110

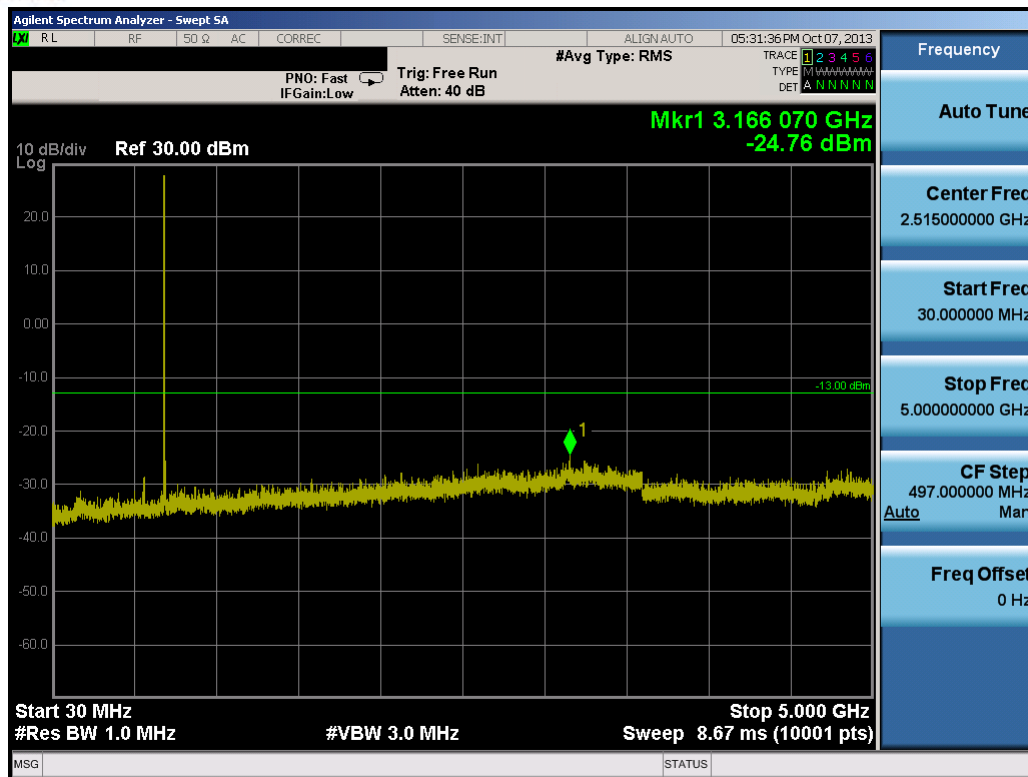


**Plot 7-8. Conducted Spurious Plot (10.0MHz QPSK – RB Size 1, RB Offset 0– Low Channel)**

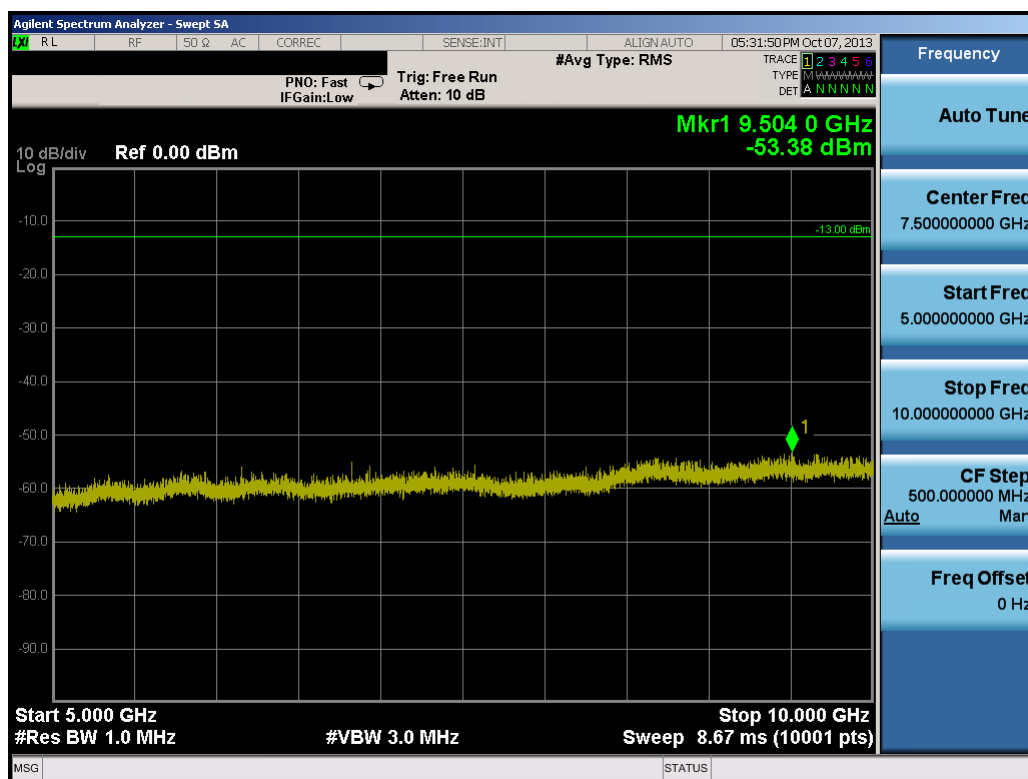


**Plot 7-9. Conducted Spurious Plot (10.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)**

FCC ID: ZNFD950	 <b>FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)</b> 		Reviewed by: Quality Manager
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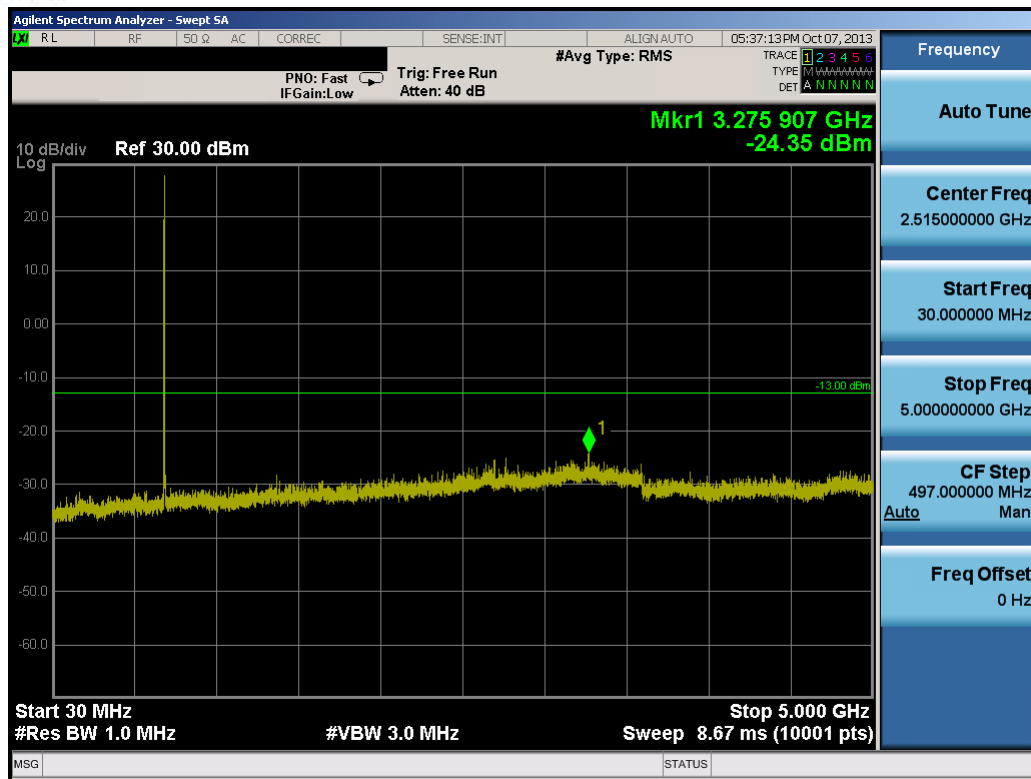


**Plot 7-10. Conducted Spurious Plot (10.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)**

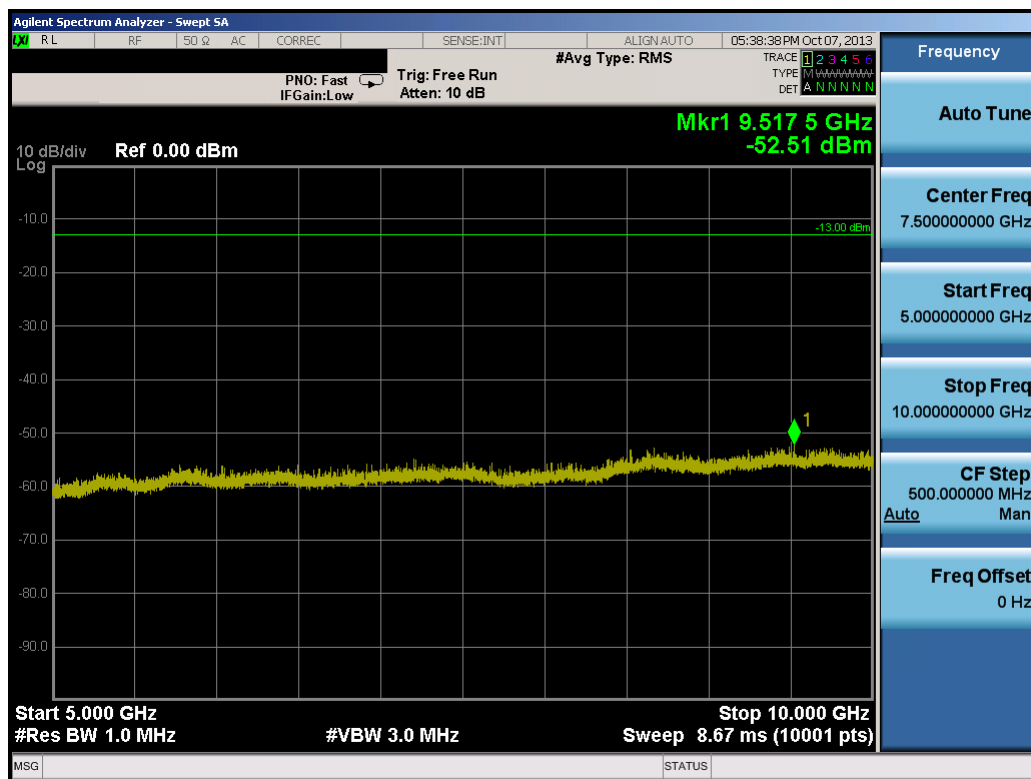


**Plot 7-11. Conducted Spurious Plot (10.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)**

FCC ID: ZNFD950	 <b>FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)</b> 		Reviewed by: Quality Manager
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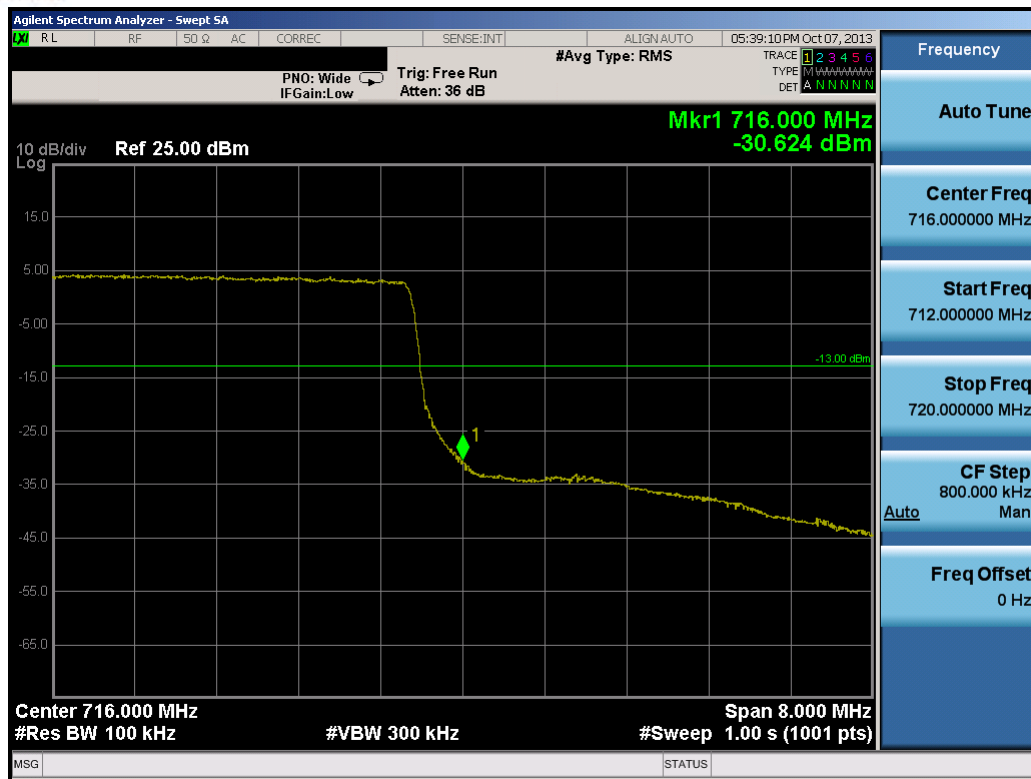


Plot 7-12. Conducted Spurious Plot (10.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)



Plot 7-13. Conducted Spurious Plot (10.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

FCC ID: ZNFD950	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1309161874.ZNF	Test Dates: 09/24 - 10/08/2013	EUT Type: Portable Handset		Page 48 of 110

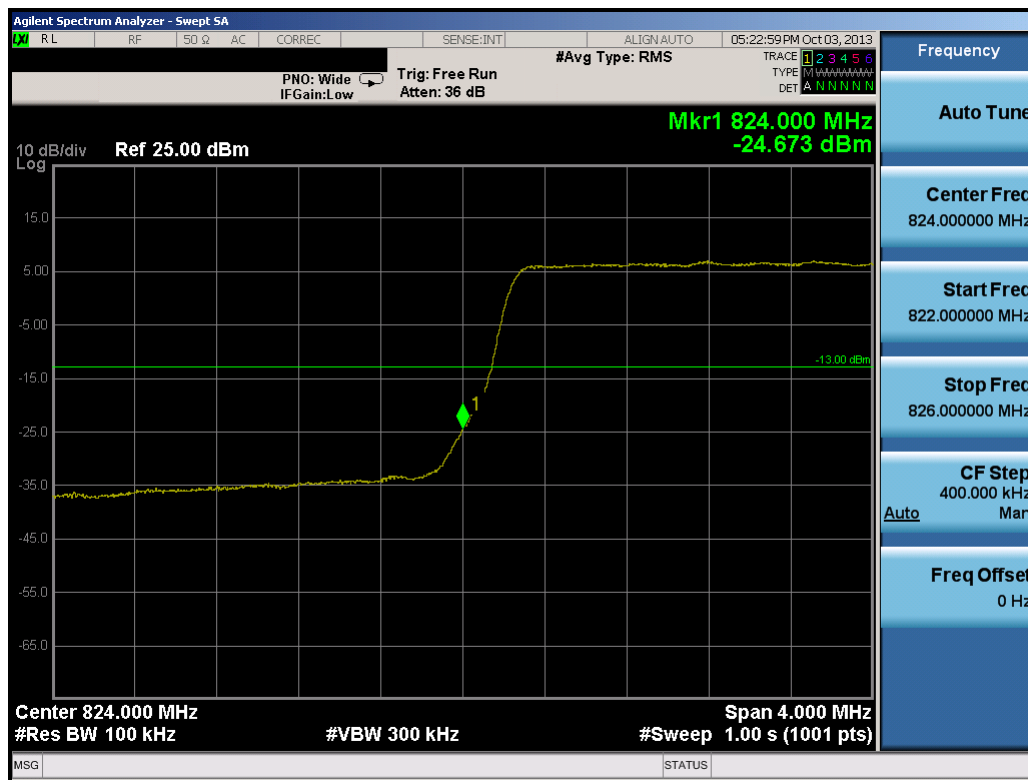


Plot 7-14. Upper Band Edge Plot (10.0MHz QPSK – RB Size 50)



FCC ID: ZNFD950	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1309161874.ZNF	Test Dates: 09/24 - 10/08/2013	EUT Type: Portable Handset		Page 49 of 110

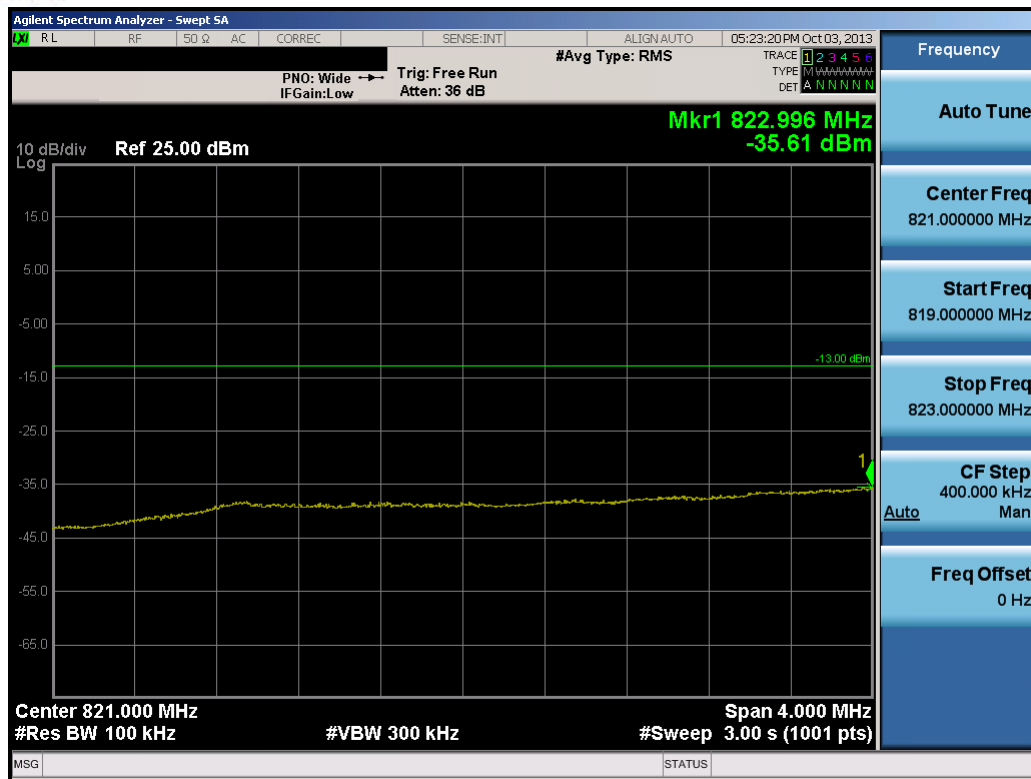
## 8.0 BAND 5 PLOTS OF EMISSIONS

**Note:** All bandwidths, RB configurations, and modulations were investigated. The worst case test results are reported below.

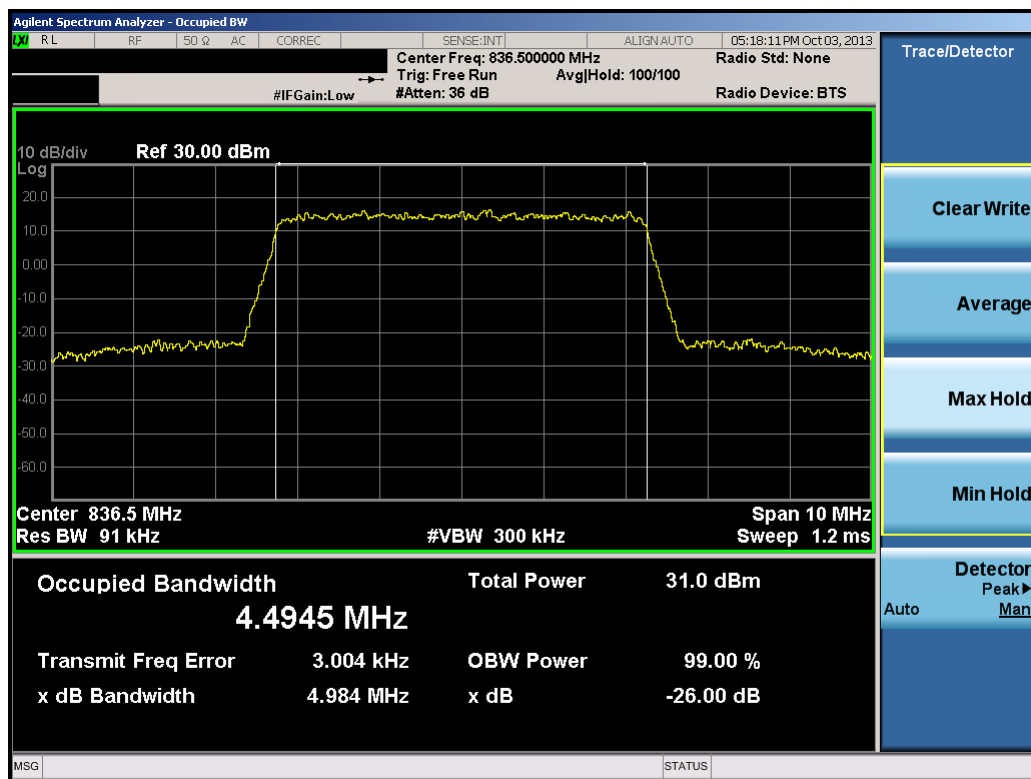


Plot 8-1. Lower Band Edge Plot (5.0MHz QPSK – RB Size 25)

FCC ID: ZNFD950		FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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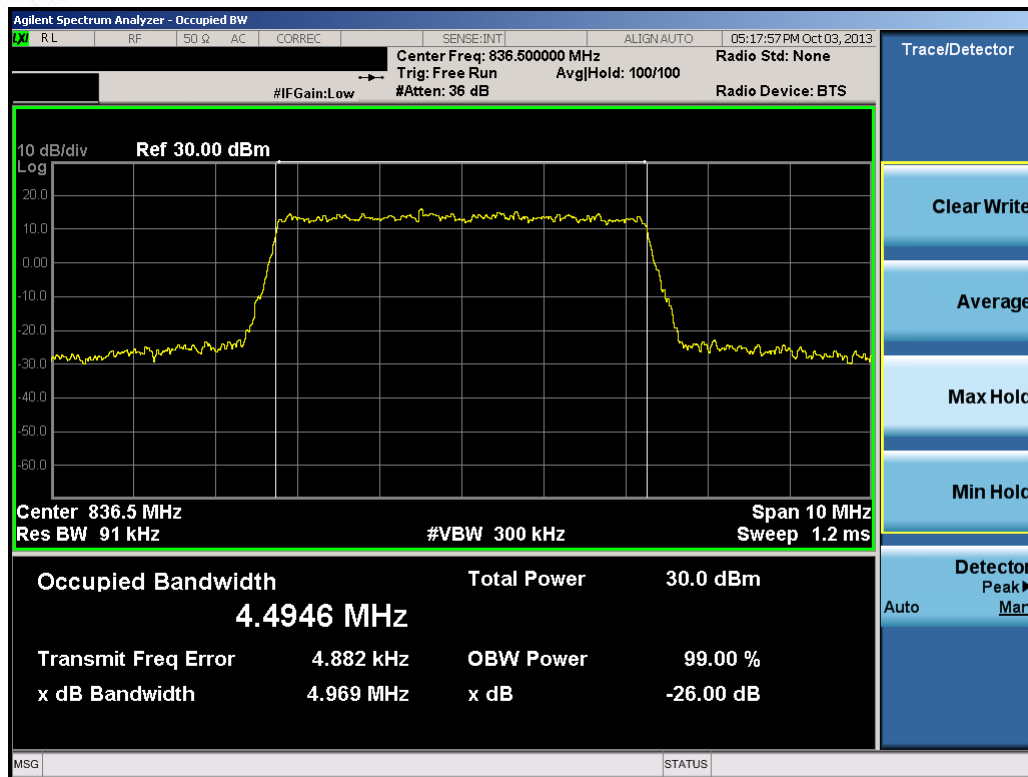


Plot 8-2. Lower Extended Band Edge Plot (5.0MHz QPSK – RB Size 25)

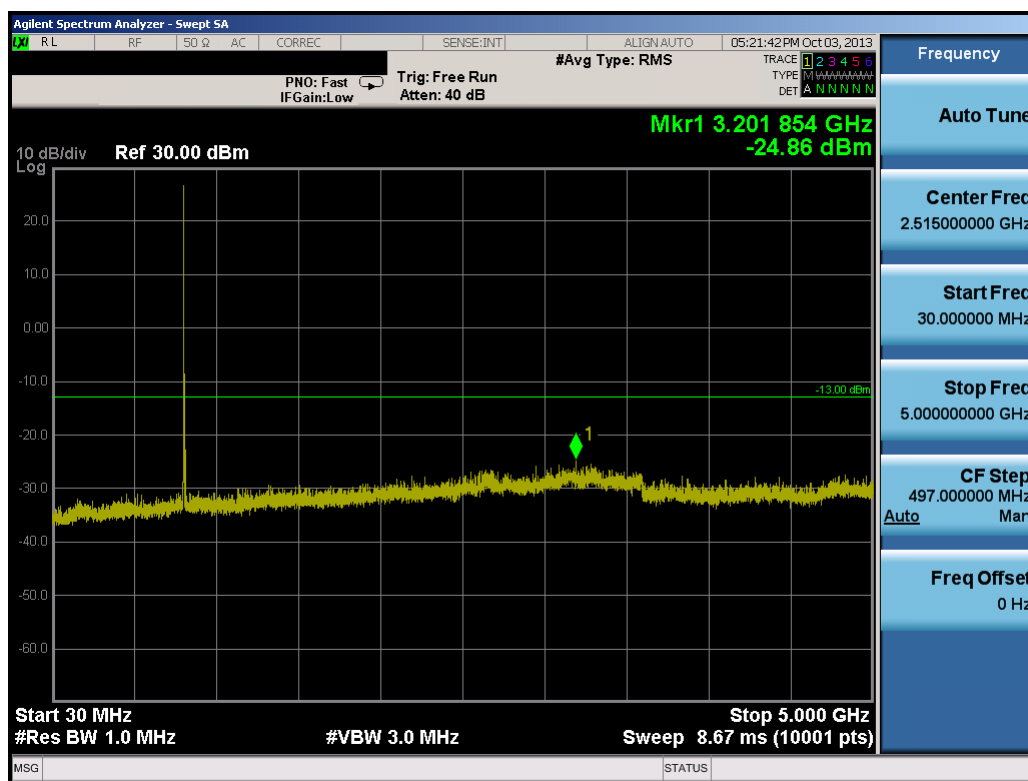


Plot 8-3. Occupied Bandwidth Plot (5.0MHz QPSK – RB Size 25)



FCC ID: ZNFD950	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
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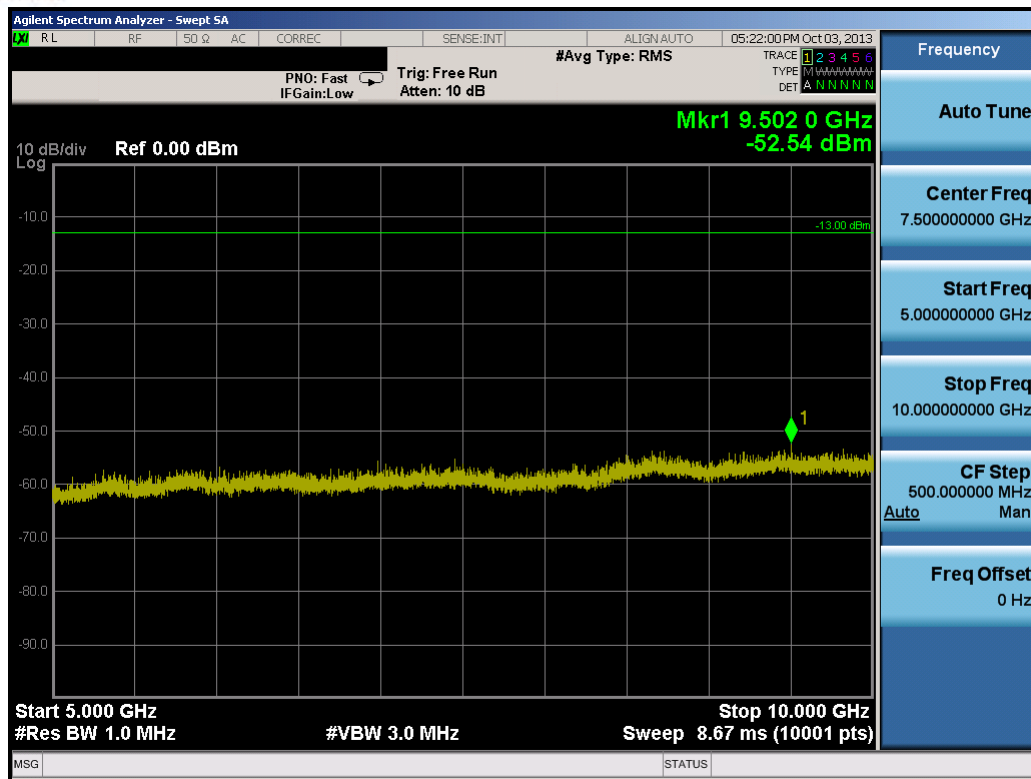


#### Plot 8-4. Occupied Bandwidth Plot (5.0MHz 16-QAM – RB Size 25)

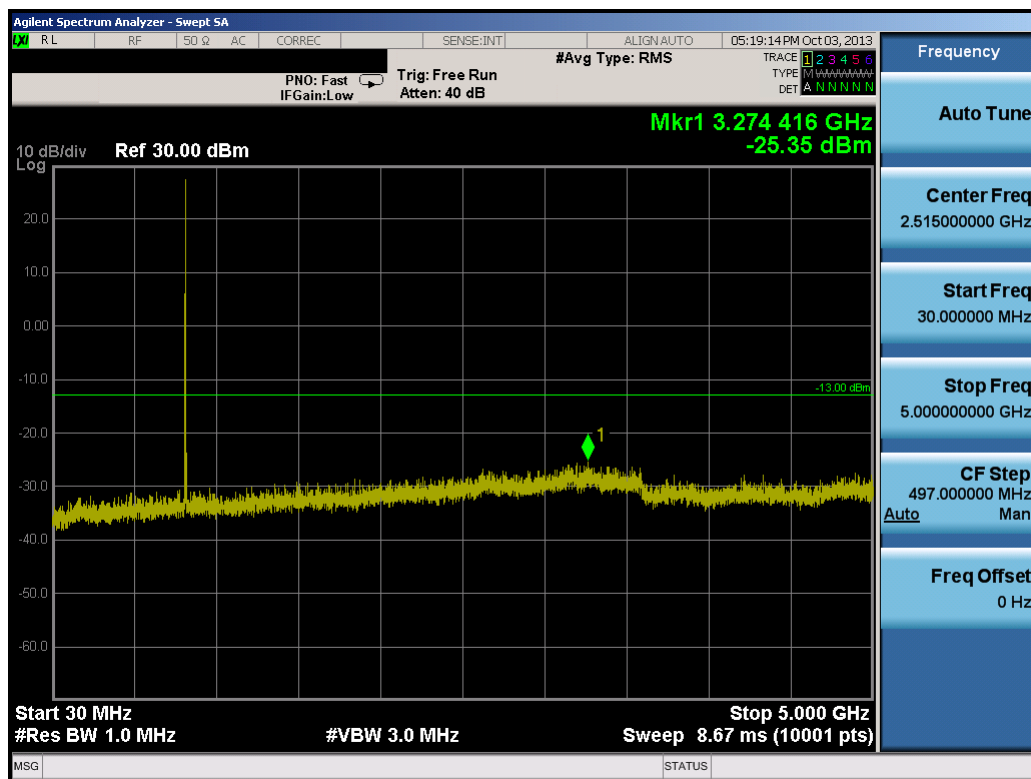


**Plot 8-5. Conducted Spurious Plot (5.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)**

<b>FCC ID:</b> ZNFD950	 <b>FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)</b> 		<b>Reviewed by:</b> Quality Manager
<b>Test Report S/N:</b> 0Y1309161874.ZNF	<b>Test Dates:</b> 09/24 - 10/08/2013	<b>EUT Type:</b> Portable Handset	Page 52 of 110

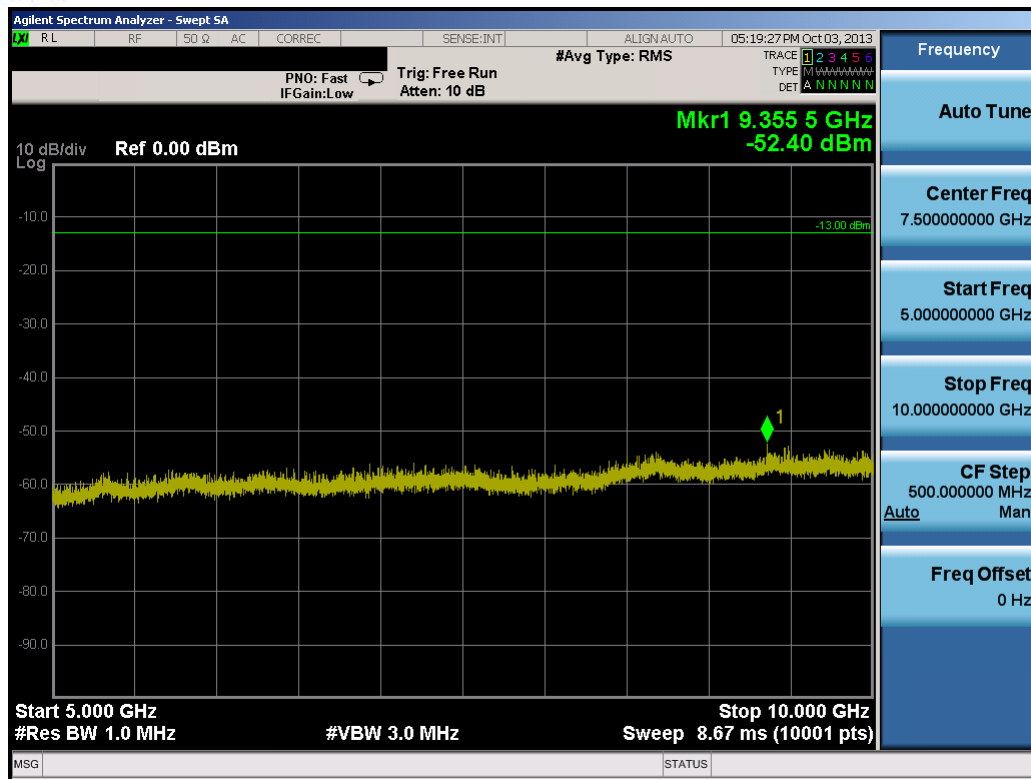


Plot 8-6. Conducted Spurious Plot (5.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)

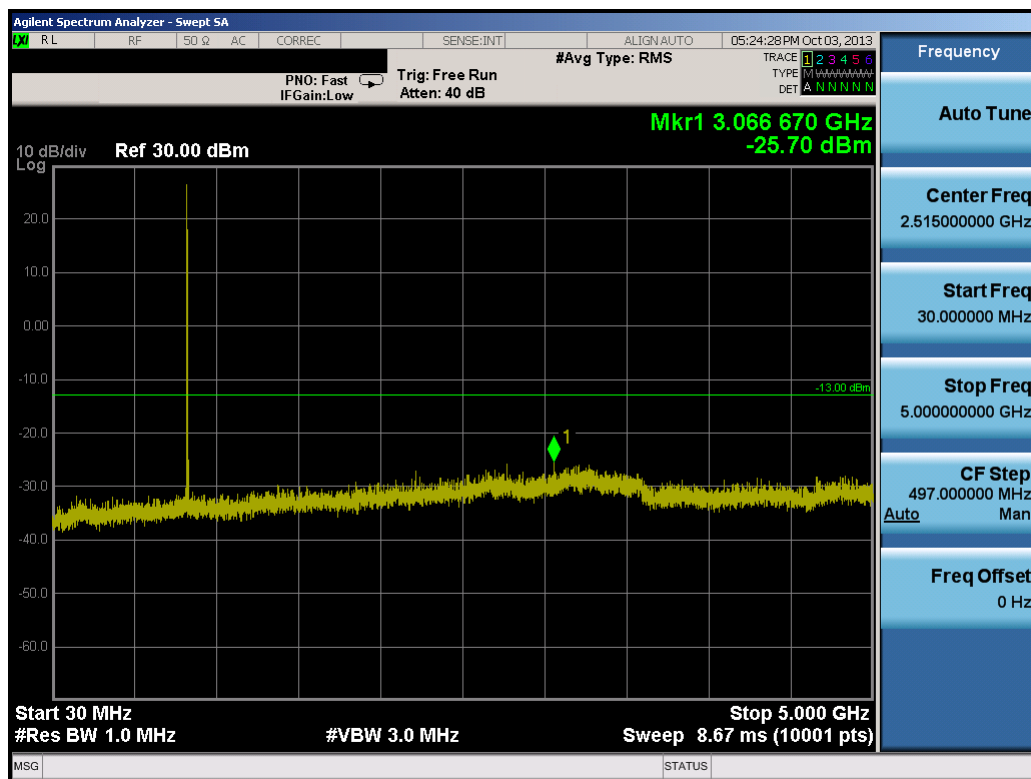


Plot 8-7. Conducted Spurious Plot (5.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)



FCC ID: ZNFD950	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1309161874.ZNF	Test Dates: 09/24 - 10/08/2013	EUT Type: Portable Handset		Page 53 of 110

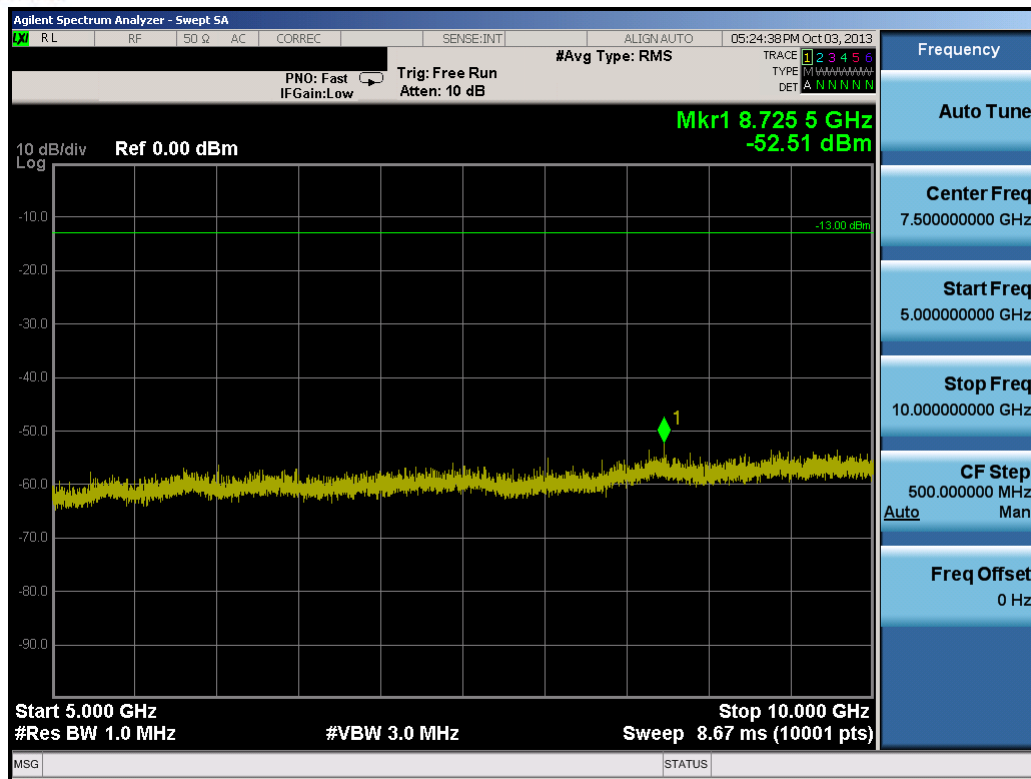


Plot 8-8. Conducted Spurious Plot (5.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)

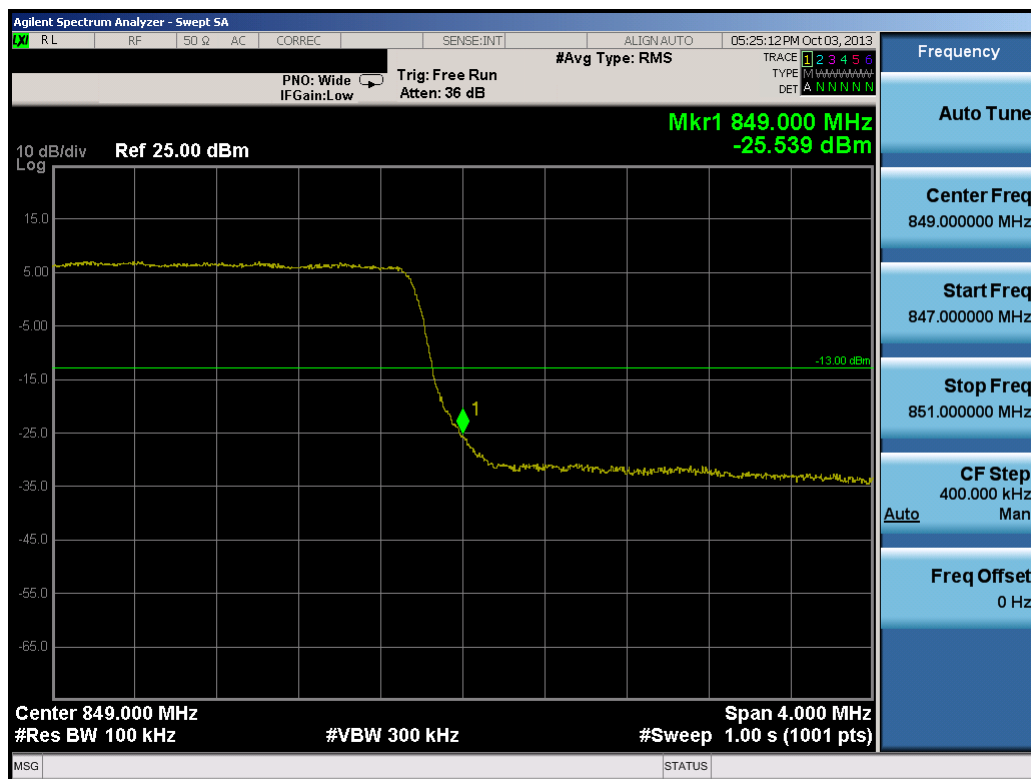


Plot 8-9. Conducted Spurious Plot (5.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

FCC ID: ZNFD950		FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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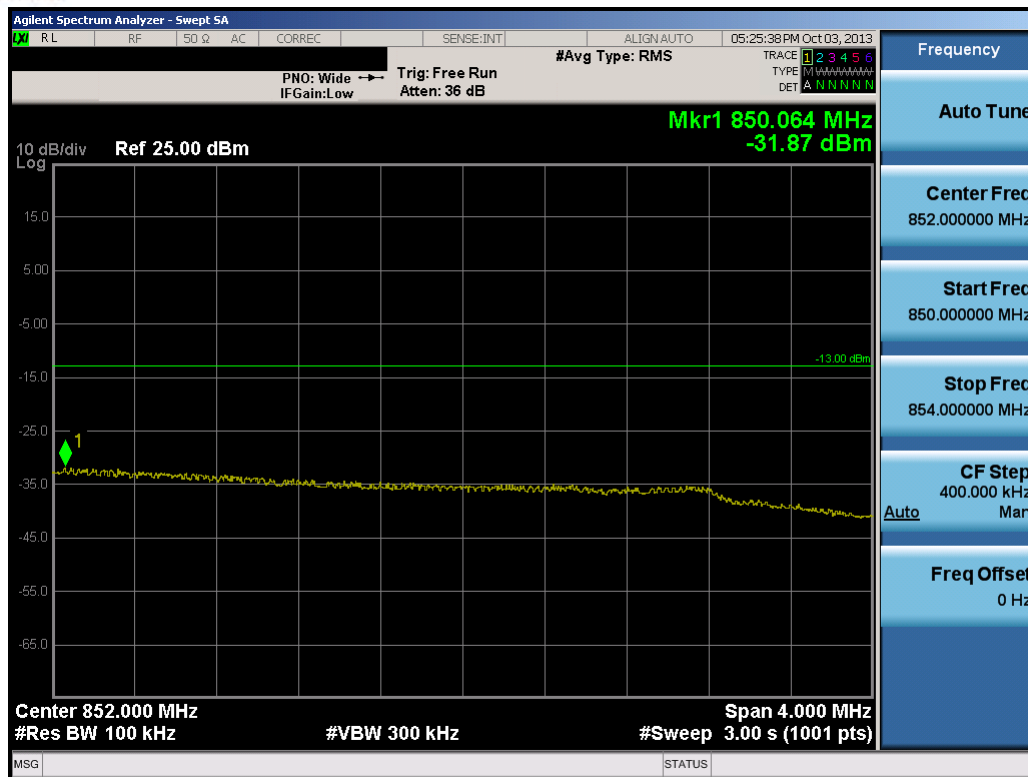


Plot 8-10. Conducted Spurious Plot (5.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

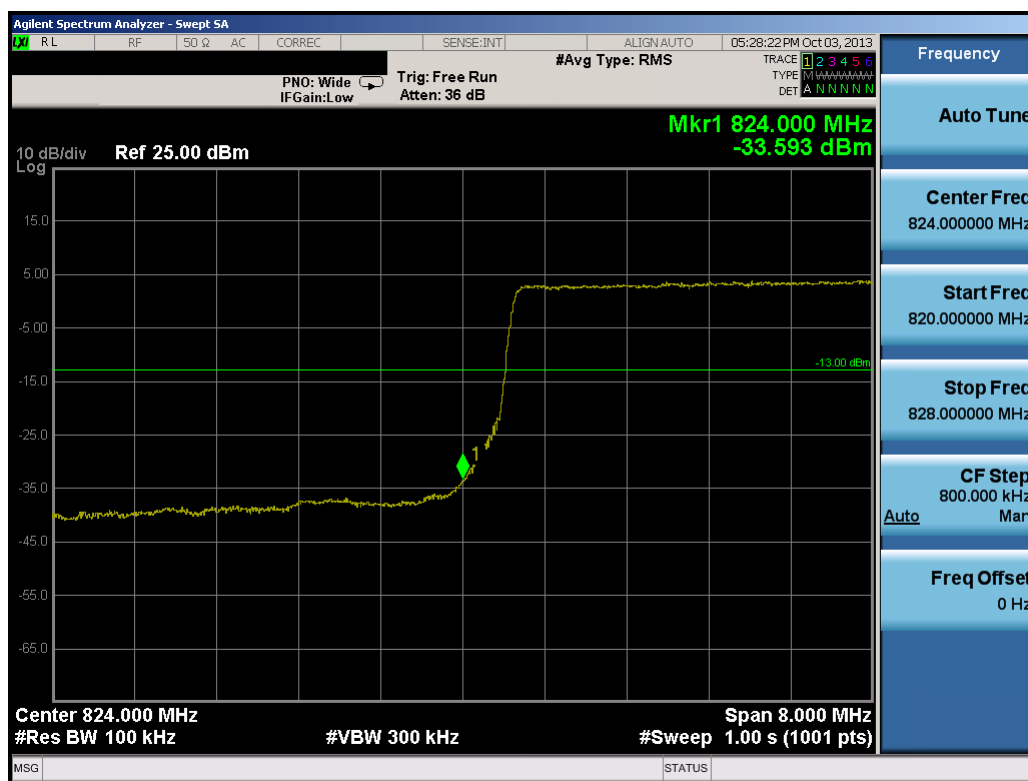


Plot 8-11. Upper Band Edge Plot (5.0MHz QPSK – RB Size 25)



FCC ID: ZNFD950	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1309161874.ZNF	Test Dates: 09/24 - 10/08/2013	EUT Type: Portable Handset		Page 55 of 110

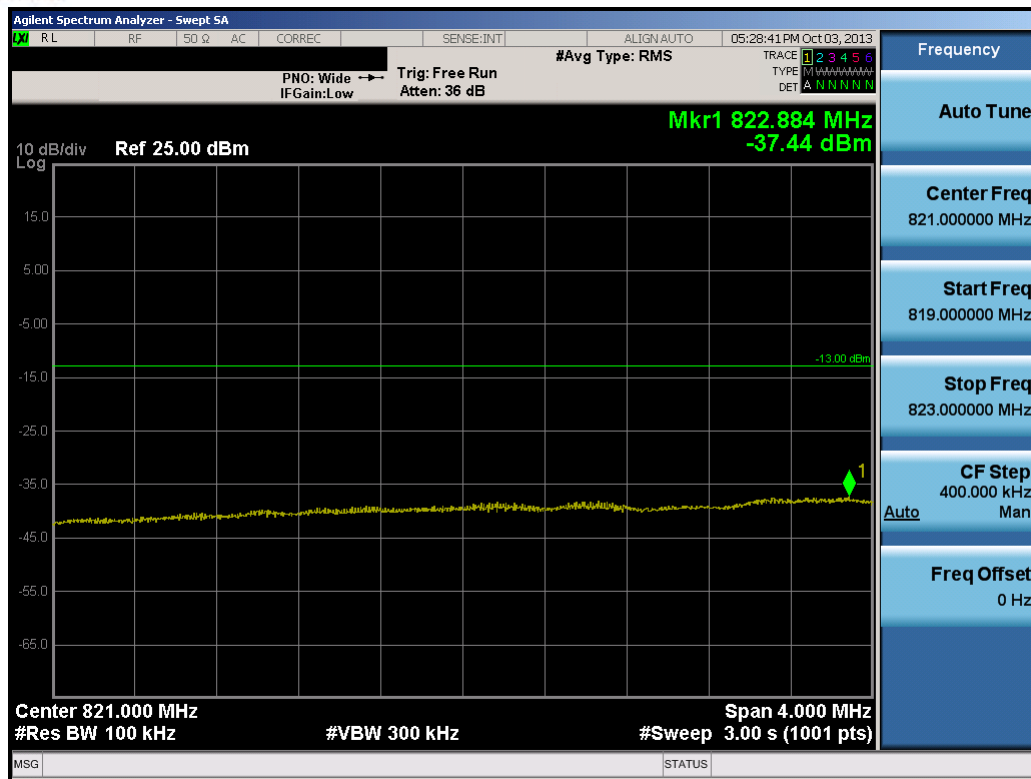


### Plot 8-12. Upper Extended Band Edge Plot (5.0MHz QPSK – RB Size 25)

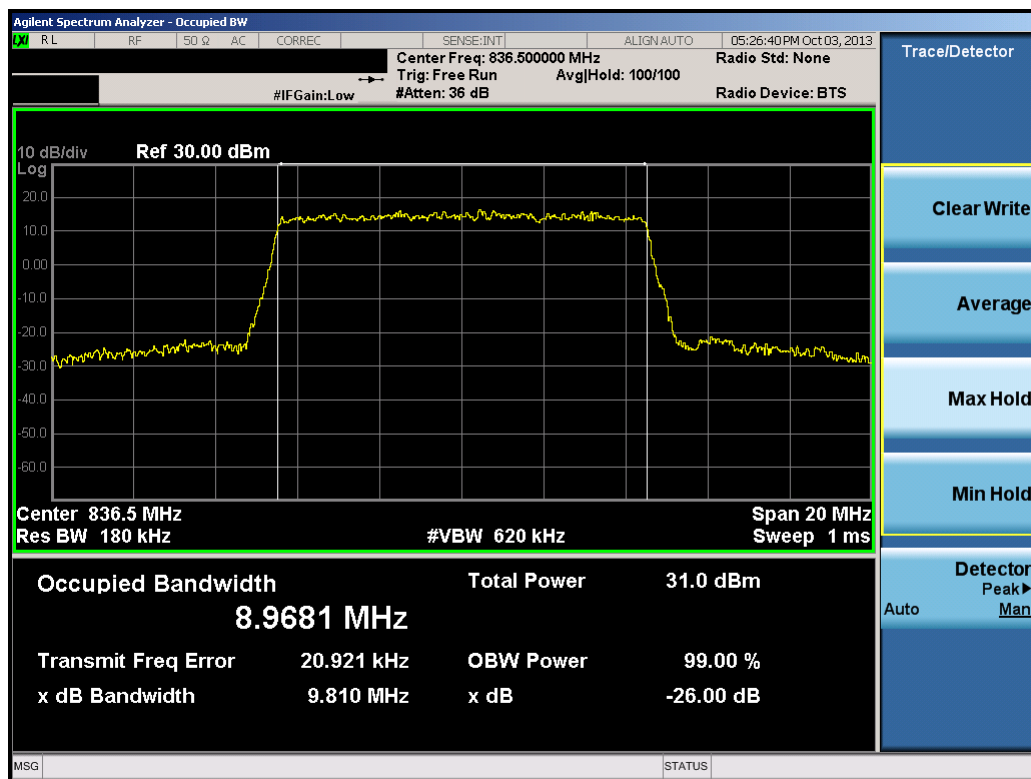


### Plot 8-13. Lower Band Edge Plot (10.0MHz QPSK – RB Size 50)

FCC ID: ZNFD950	 <b>FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)</b> 		Reviewed by: Quality Manager
Test Report S/N: 0Y1309161874.ZNF	Test Dates: 09/24 - 10/08/2013	EUT Type: Portable Handset	Page 56 of 110

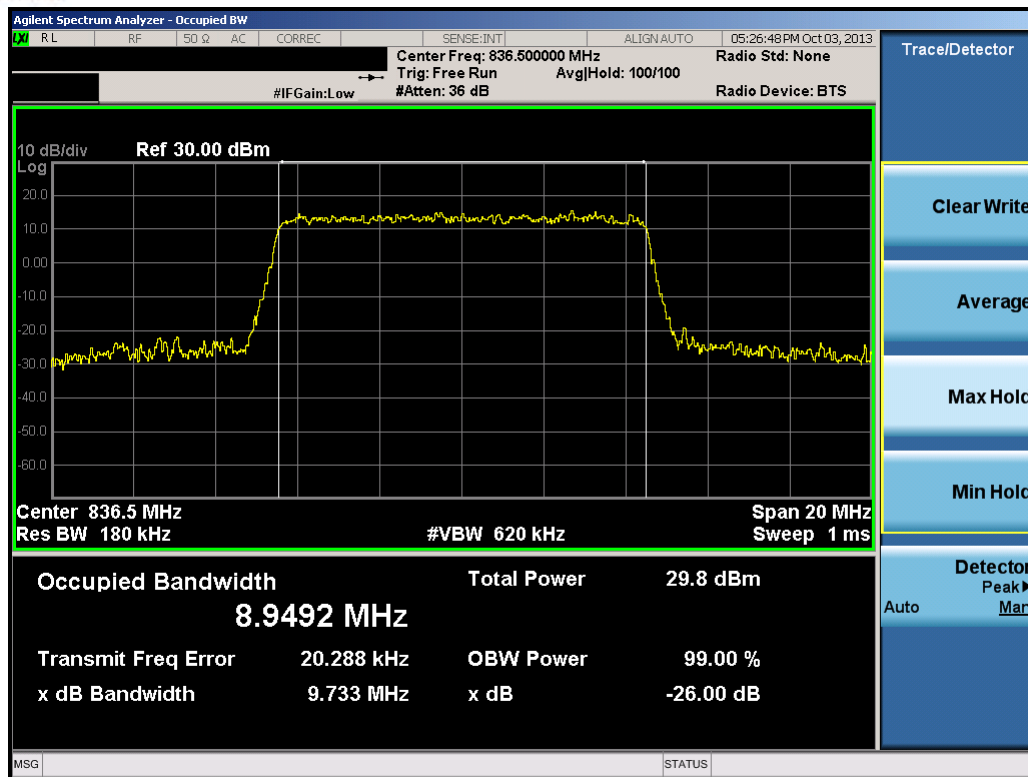


Plot 8-14. Lower Extended Band Edge Plot (10.0MHz QPSK – RB Size 50)

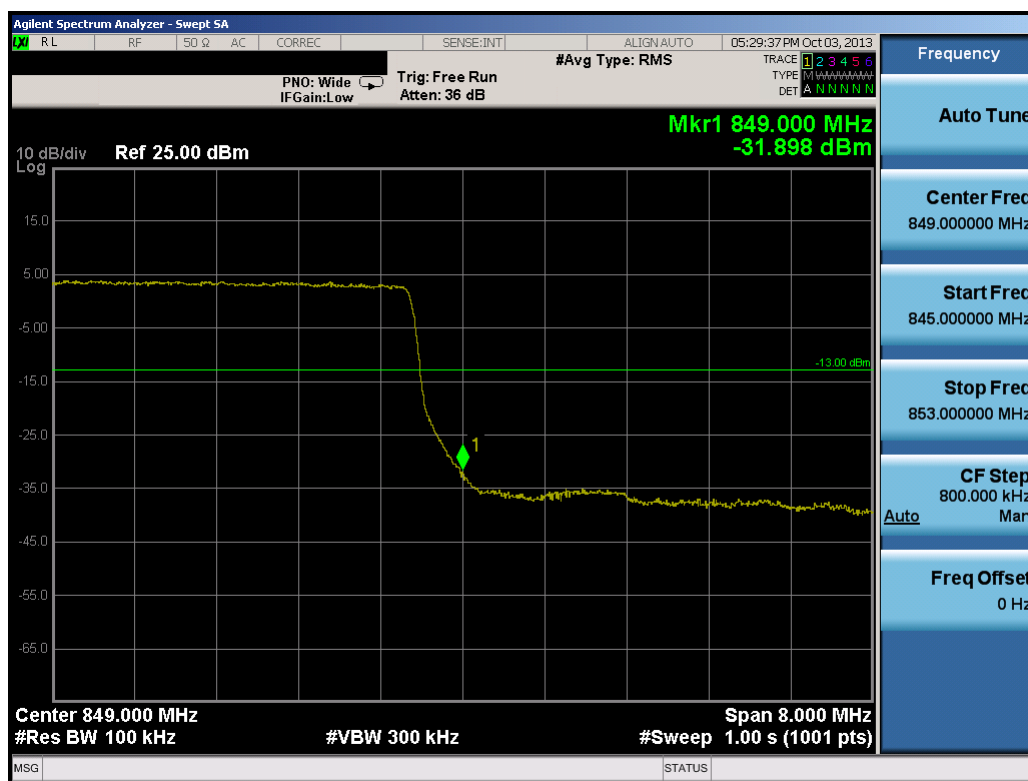


Plot 8-15. Occupied Bandwidth Plot (10.0MHz QPSK – RB Size 50)



FCC ID: ZNFD950	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1309161874.ZNF	Test Dates: 09/24 - 10/08/2013	EUT Type: Portable Handset		Page 57 of 110

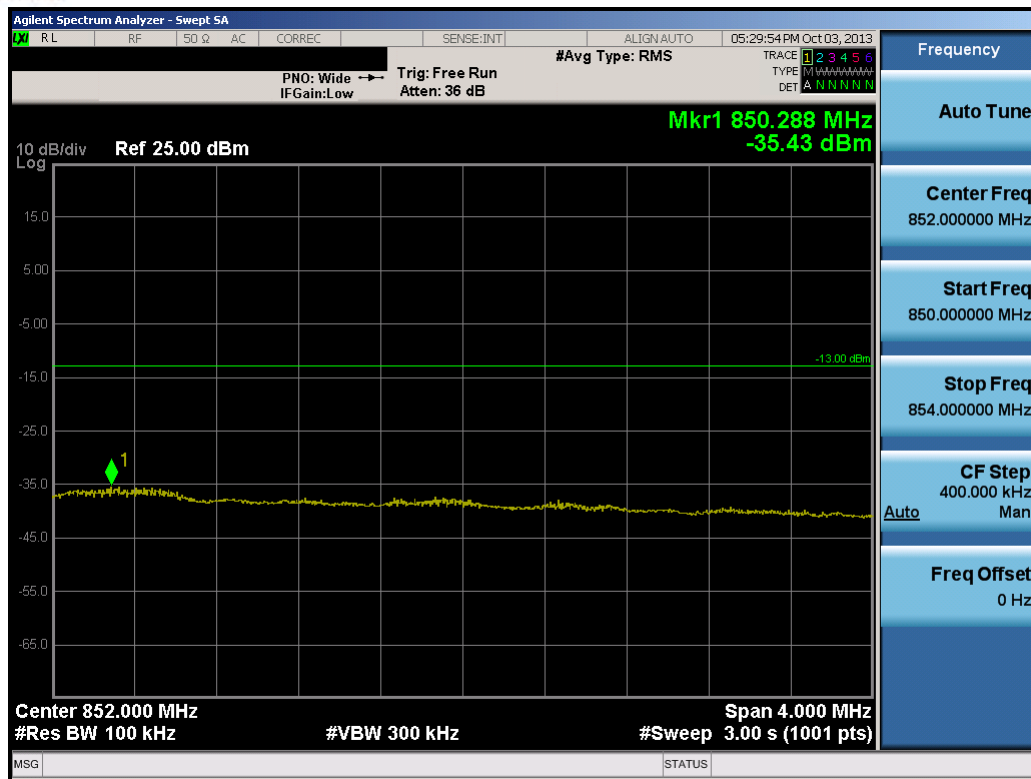


**Plot 8-16. Occupied Bandwidth Plot (10.0MHz 16-QAM – RB Size 50)**



### Plot 8-17. Upper Band Edge Plot (10.0MHz QPSK – RB Size 50)

FCC ID: ZNFD950	 <b>FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)</b> 		Reviewed by: Quality Manager
Test Report S/N: 0Y1309161874.ZNF	Test Dates: 09/24 - 10/08/2013	EUT Type: Portable Handset	Page 58 of 110

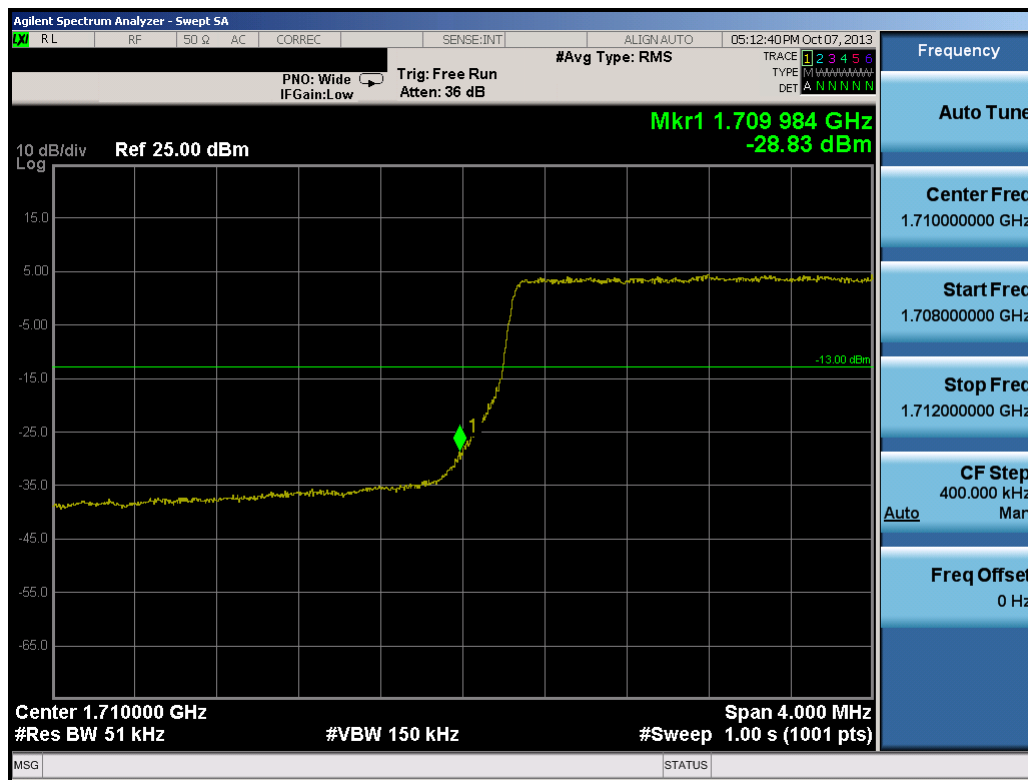


Plot 8-18. Upper Extended Band Edge Plot (10.0MHz QPSK – RB Size 50)



FCC ID: ZNFD950	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1309161874.ZNF	Test Dates: 09/24 - 10/08/2013	EUT Type: Portable Handset		Page 59 of 110

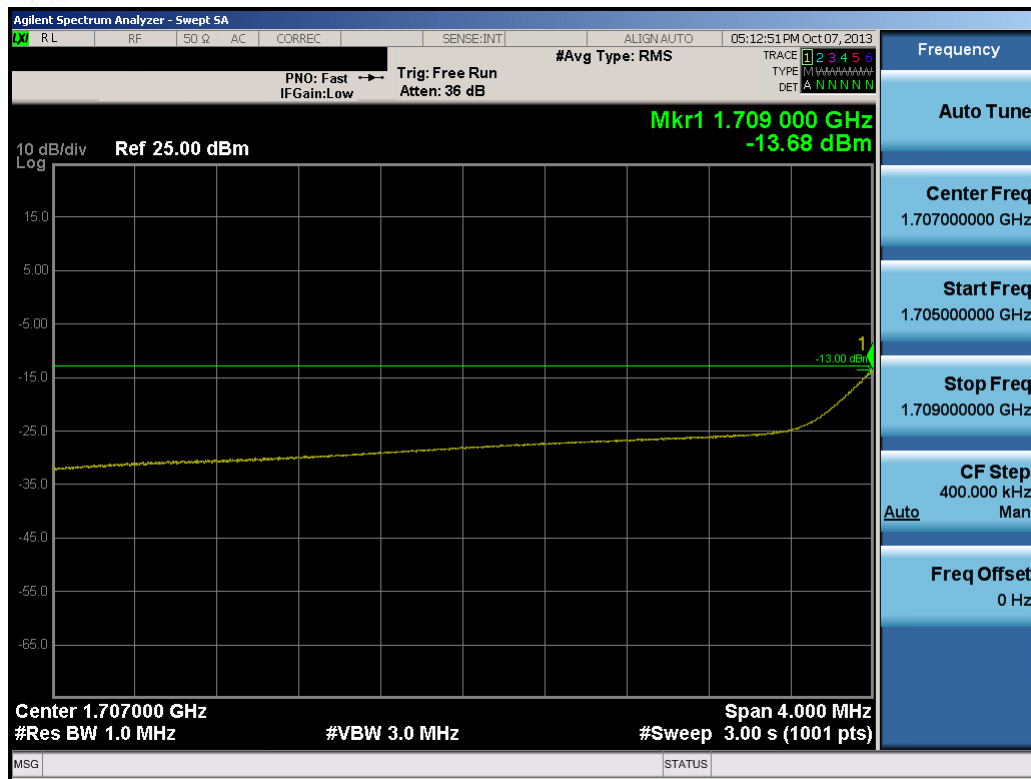
## 9.0 BAND 4 PLOTS OF EMISSIONS

**Note:** All bandwidths, RB configurations, and modulations were investigated. The worst case test results are reported below.

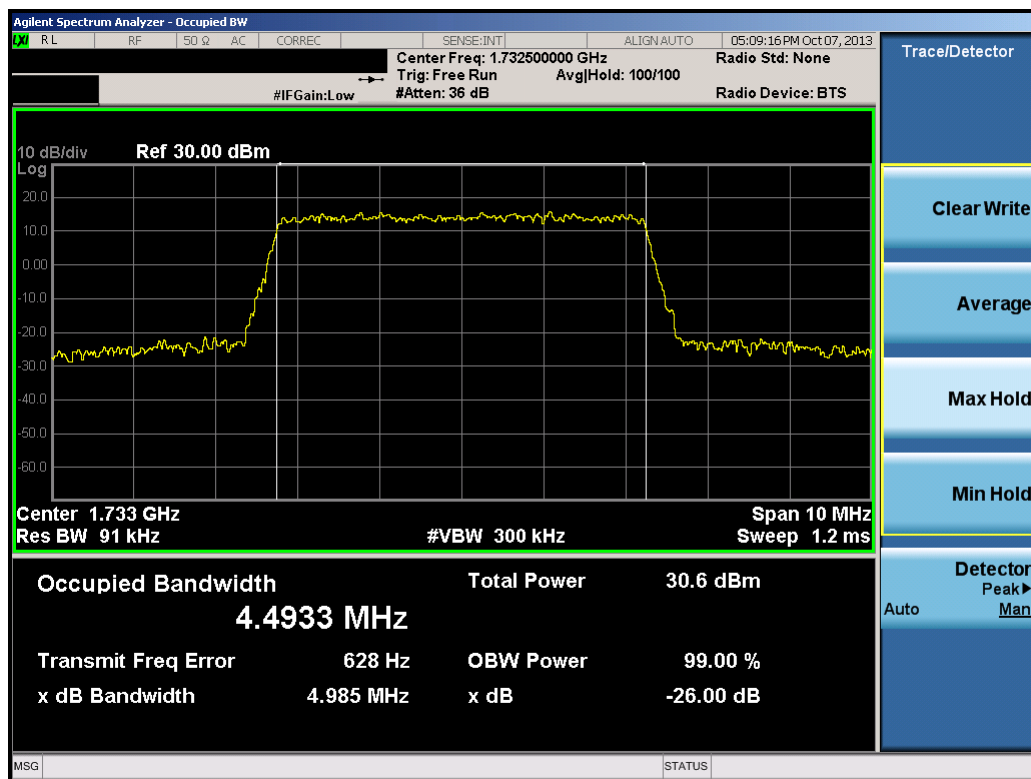


Plot 9-1. Lower Band Edge Plot (5.0MHz QPSK – RB Size 25)

FCC ID: ZNFD950		FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1309161874.ZNF	Test Dates: 09/24 - 10/08/2013	EUT Type: Portable Handset		Page 60 of 110

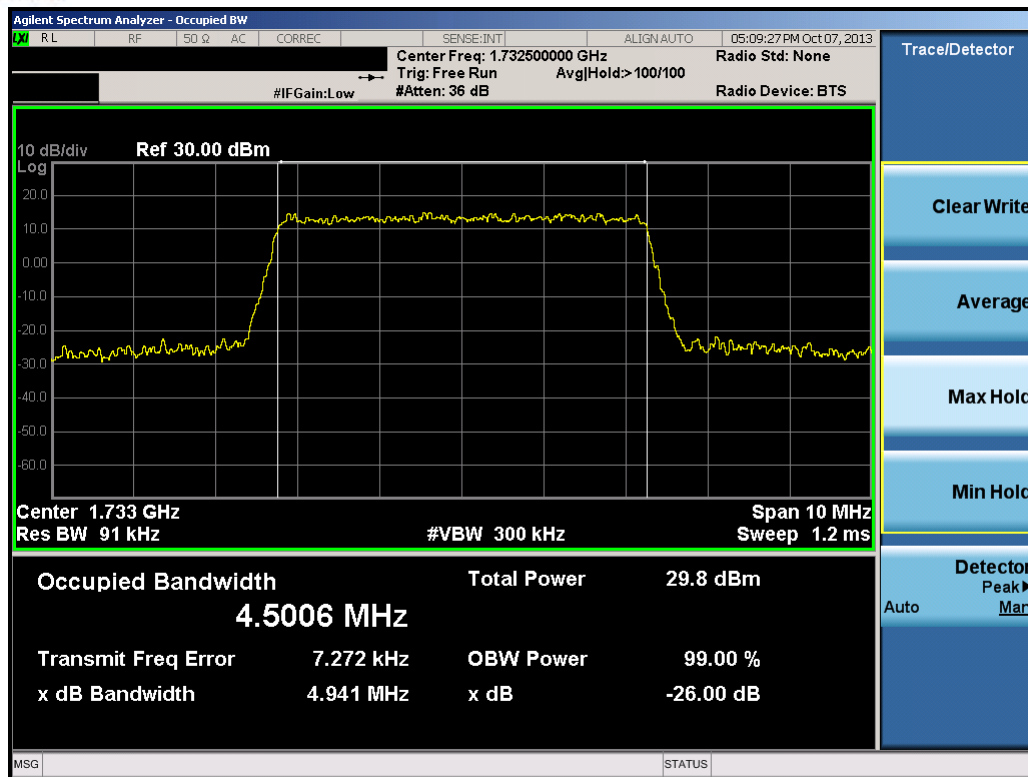


Plot 9-2. Lower Extended Band Edge Plot (5.0MHz QPSK – RB Size 25)

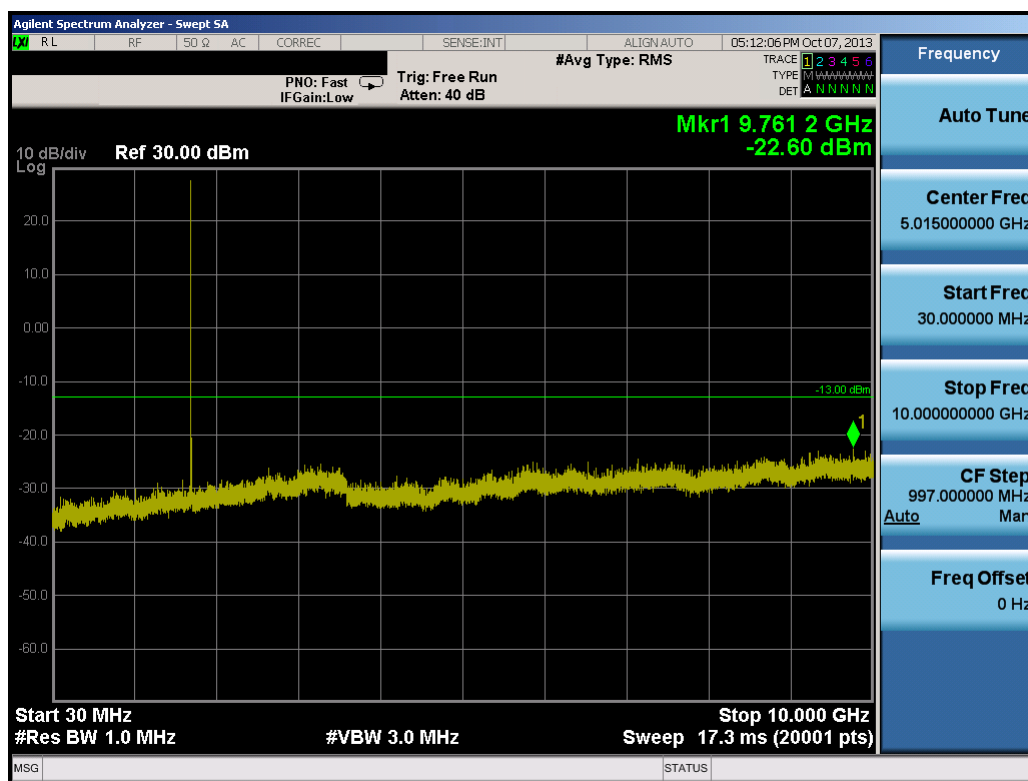


Plot 9-3. Occupied Bandwidth Plot (5.0MHz QPSK – RB Size 25)



FCC ID: ZNFD950	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1309161874.ZNF	Test Dates: 09/24 - 10/08/2013	EUT Type: Portable Handset		Page 61 of 110

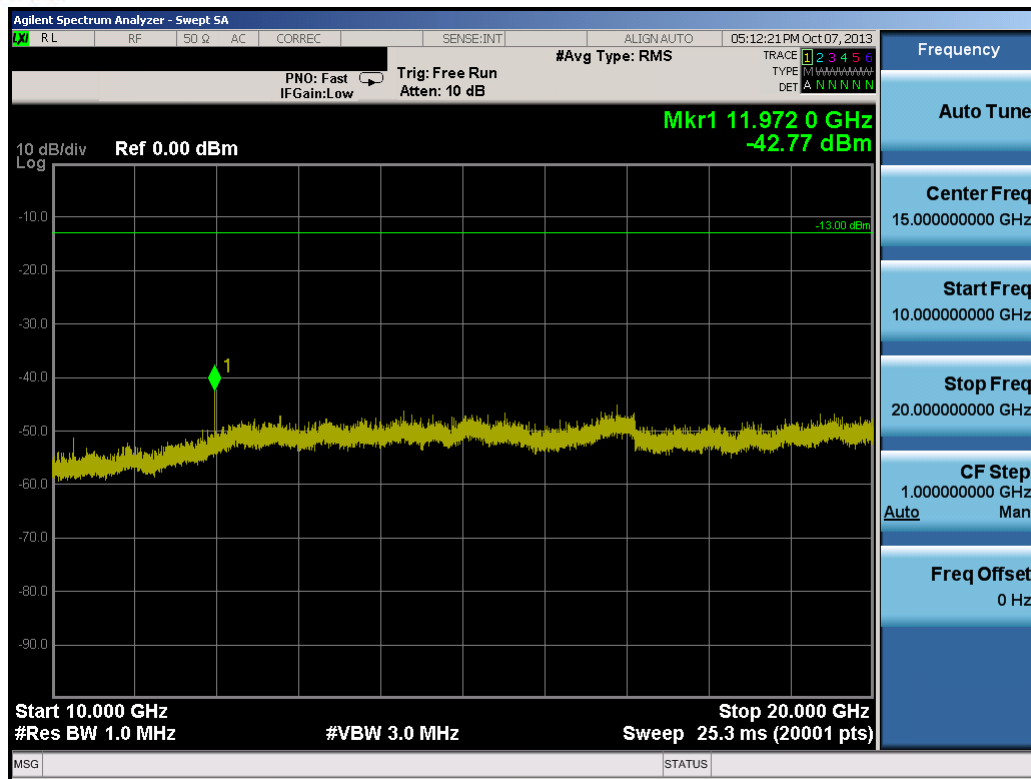


#### Plot 9-4. Occupied Bandwidth Plot (5.0MHz 16-QAM – RB Size 25)

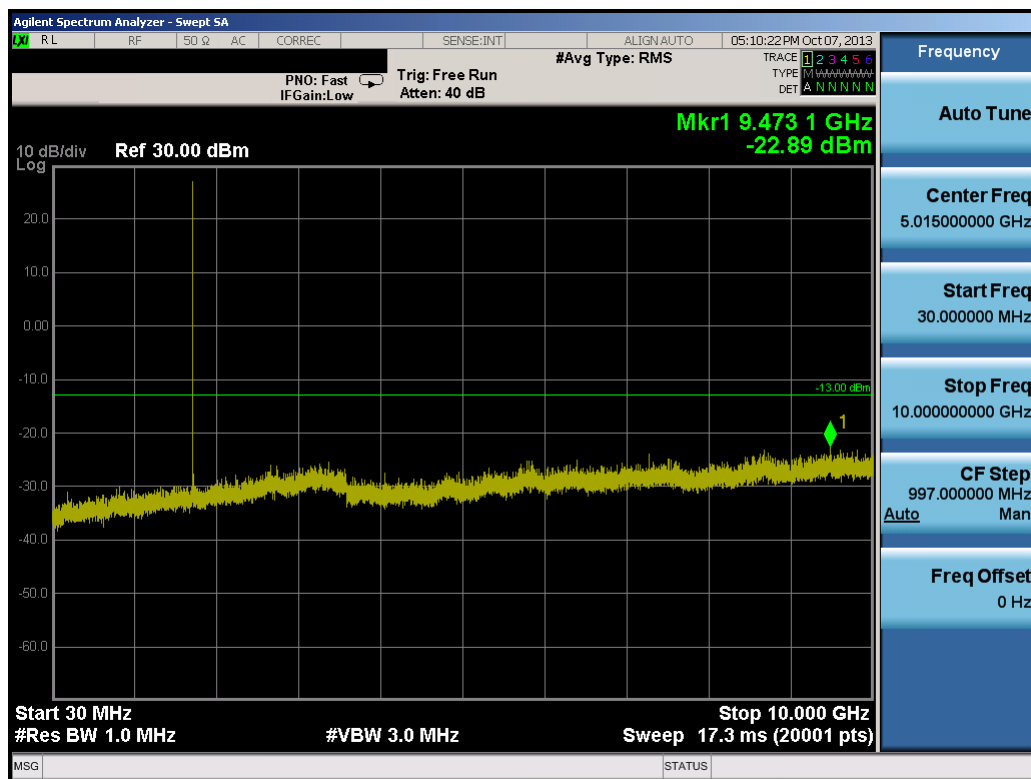


**Plot 9-5. Conducted Spurious Plot (5.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)**

FCC ID: ZNFD950	 <b>FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)</b> 		Reviewed by: Quality Manager
Test Report S/N: 0Y1309161874.ZNF	Test Dates: 09/24 - 10/08/2013	EUT Type: Portable Handset	Page 62 of 110

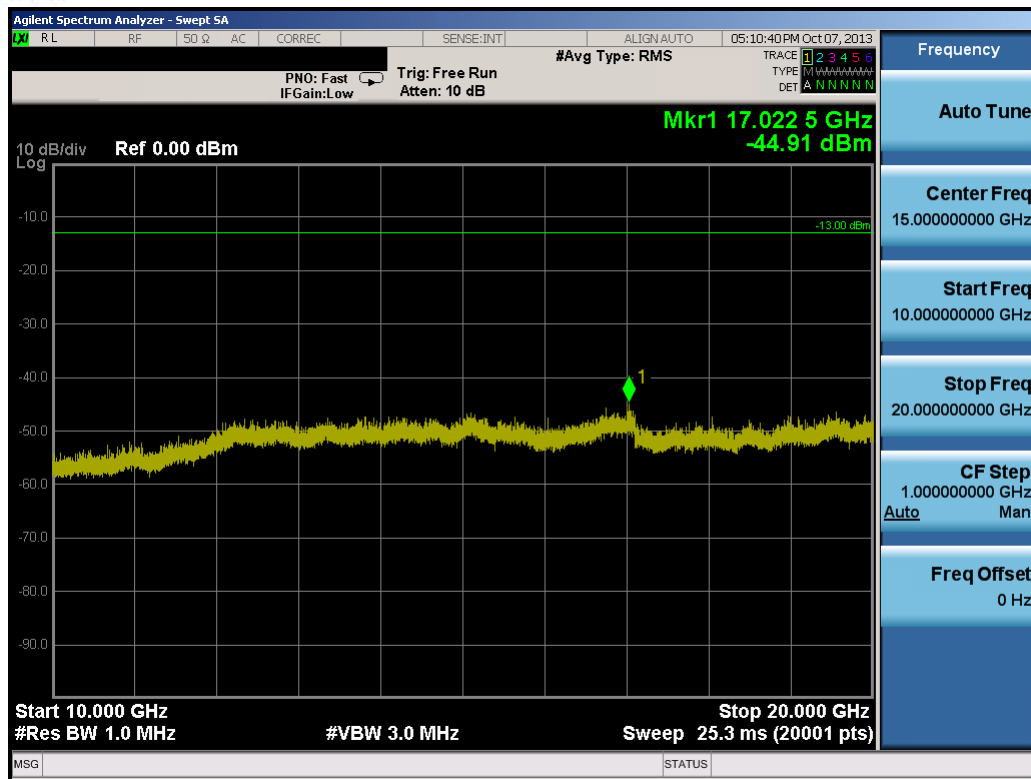


Plot 9-6. Conducted Spurious Plot (5.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)

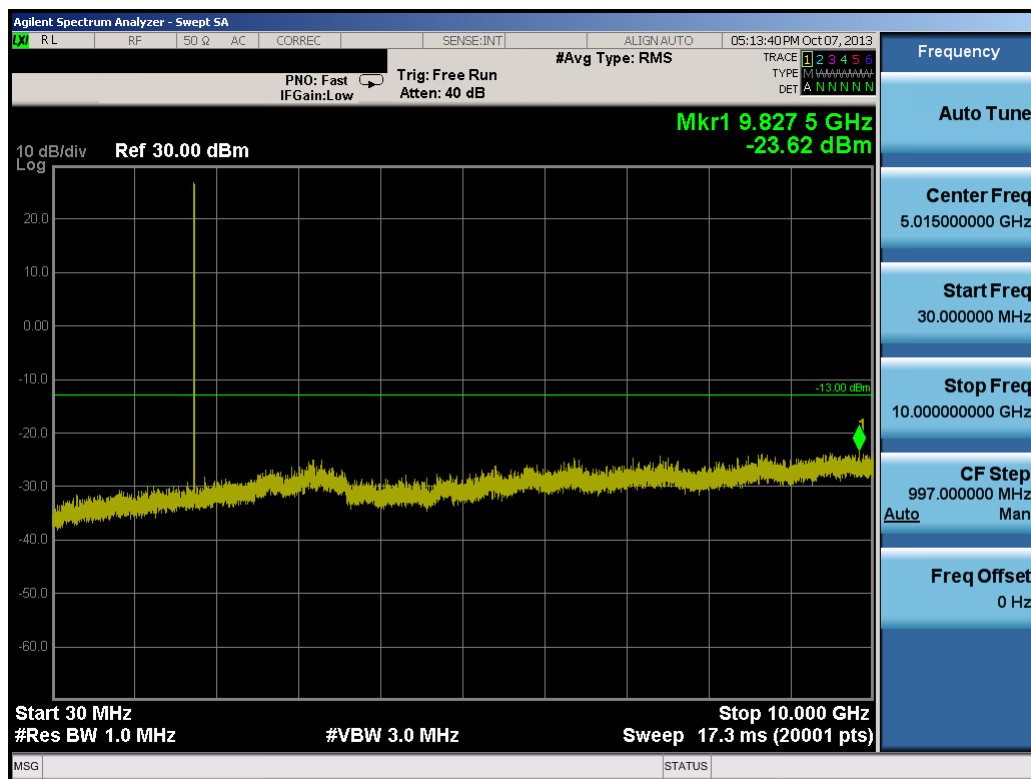


Plot 9-7. Conducted Spurious Plot (5.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)

FCC ID: ZNFD950	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1309161874.ZNF	Test Dates: 09/24 - 10/08/2013	EUT Type: Portable Handset		Page 63 of 110

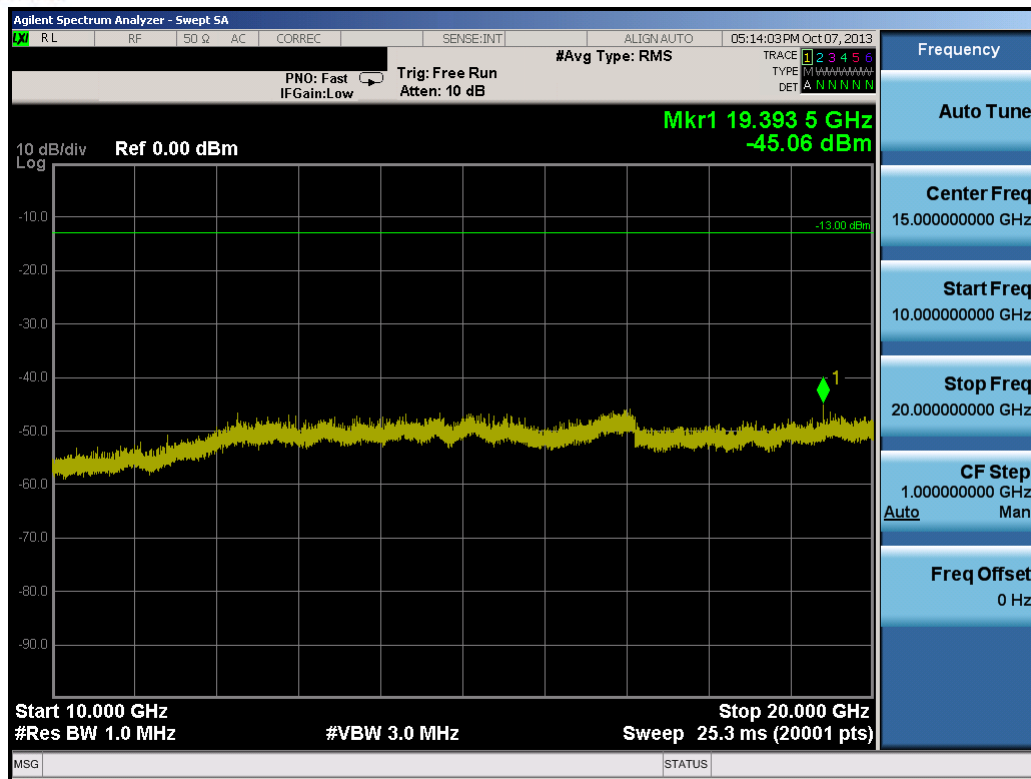


Plot 9-8. Conducted Spurious Plot (5.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)

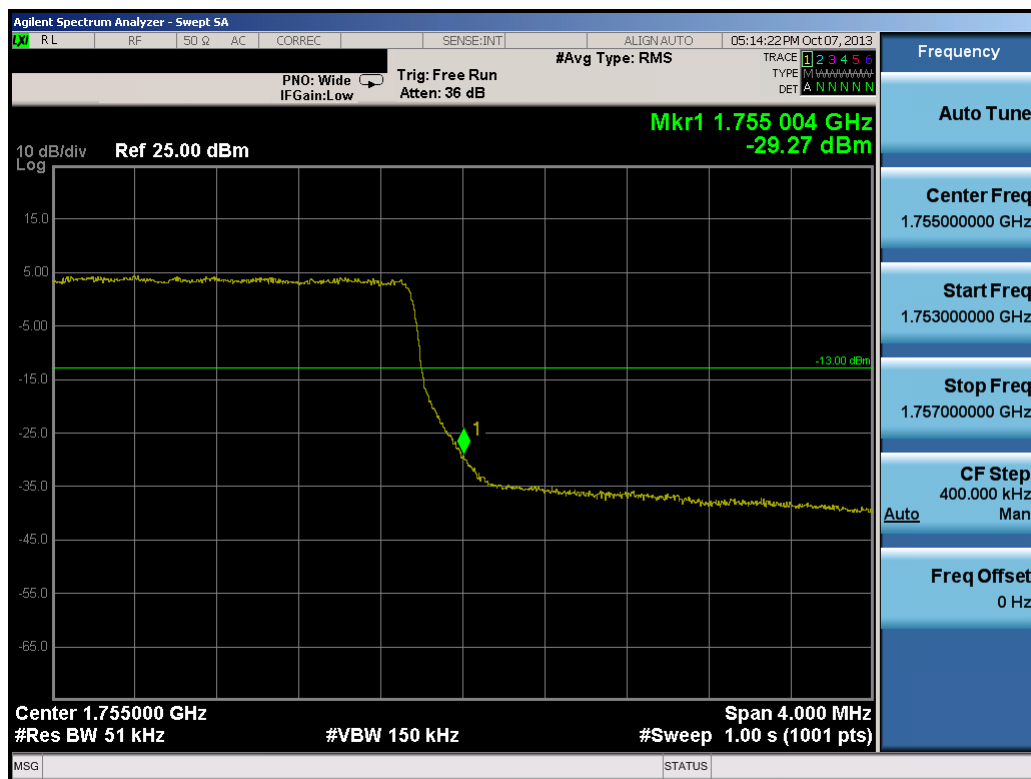


Plot 9-9. Conducted Spurious Plot (5.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

FCC ID: ZNFD950	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1309161874.ZNF	Test Dates: 09/24 - 10/08/2013	EUT Type: Portable Handset		Page 64 of 110

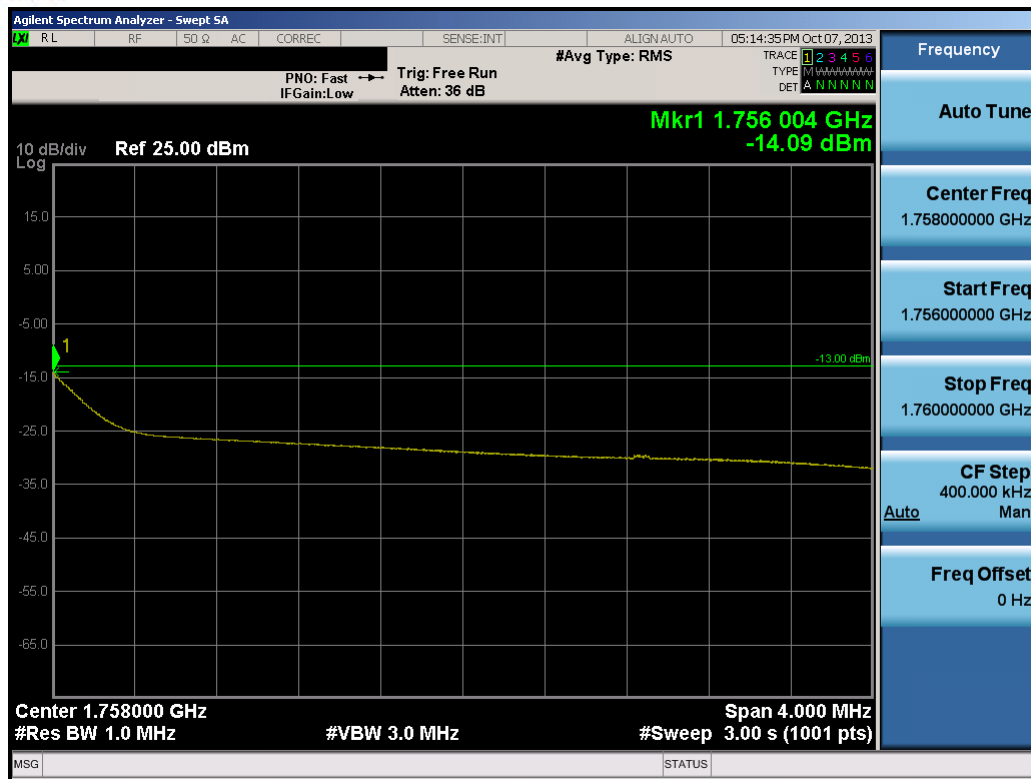


Plot 9-10. Conducted Spurious Plot (5.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

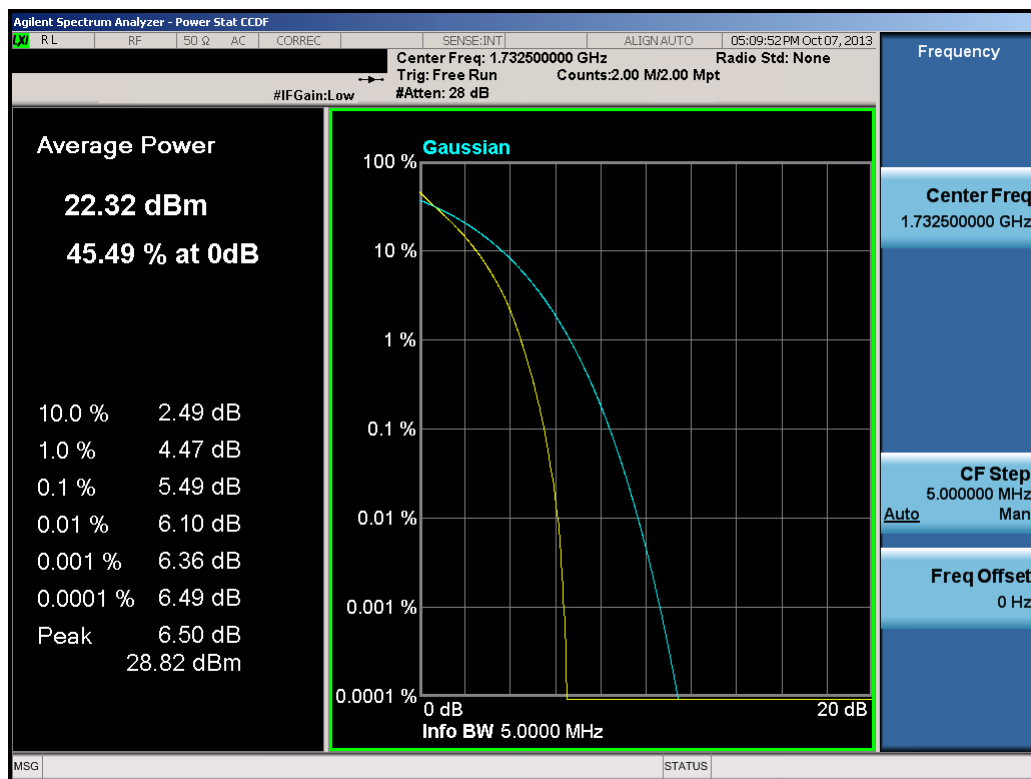


Plot 9-11. Upper Band Edge Plot (5.0MHz QPSK – RB Size 25)

FCC ID: ZNFD950	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1309161874.ZNF	Test Dates: 09/24 - 10/08/2013	EUT Type: Portable Handset		Page 65 of 110

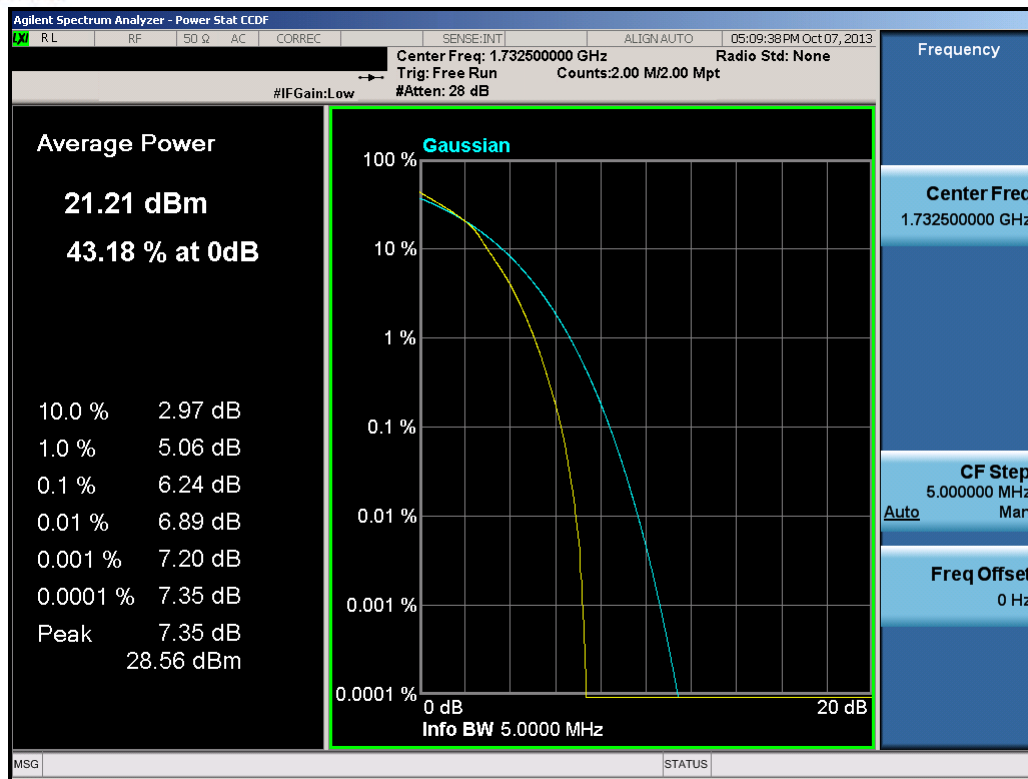


**Plot 9-12. Upper Extended Band Edge Plot (5.0MHz QPSK – RB Size 25)**

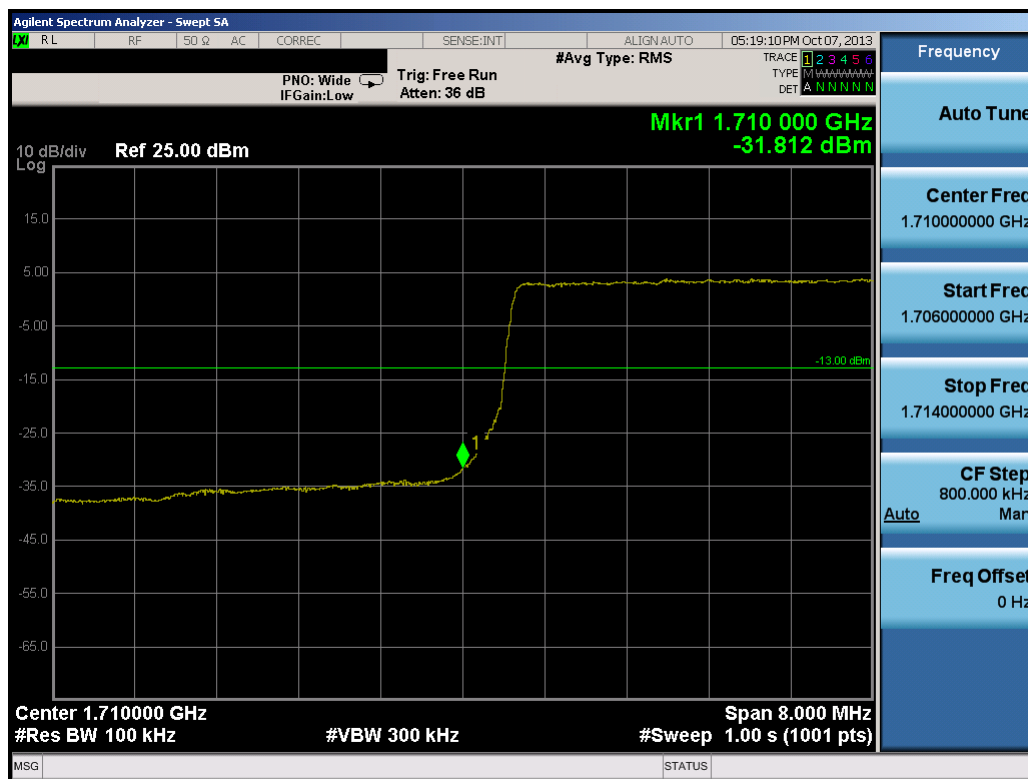


**Plot 9-13. PAR Plot (5.0MHz QPSK – RB Size 25)**

FCC ID: ZNFD950	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1309161874.ZNF	Test Dates: 09/24 - 10/08/2013	EUT Type: Portable Handset		Page 66 of 110

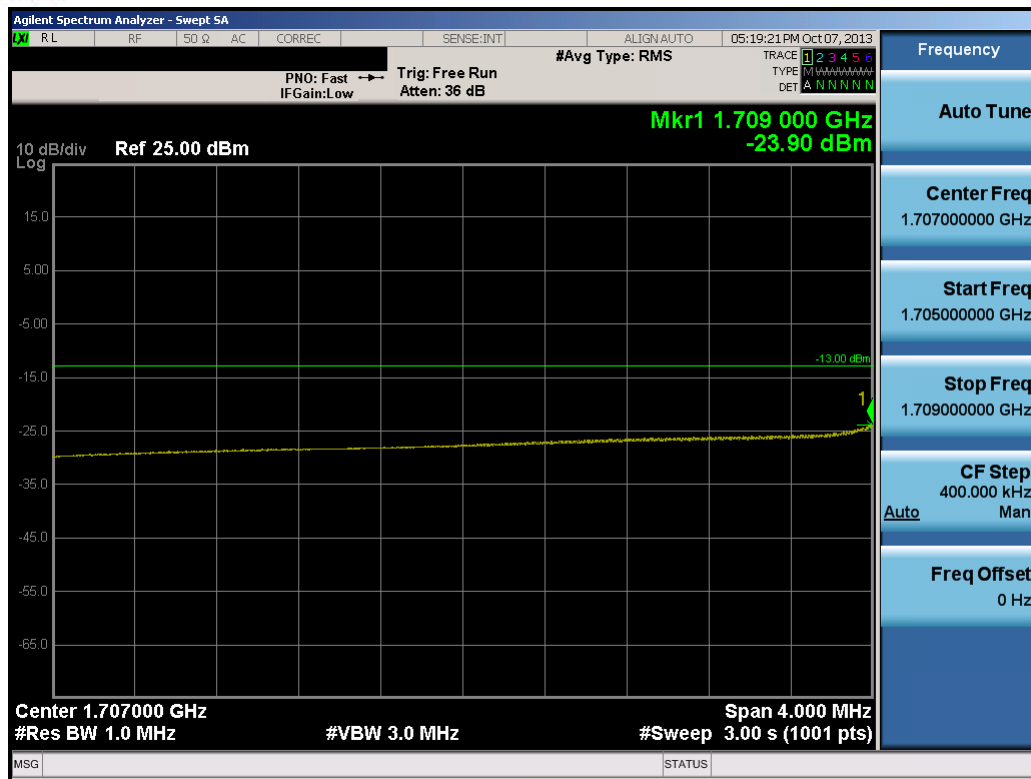


Plot 9-14. PAR Plot (5.0MHz 16-QAM – RB Size 25)

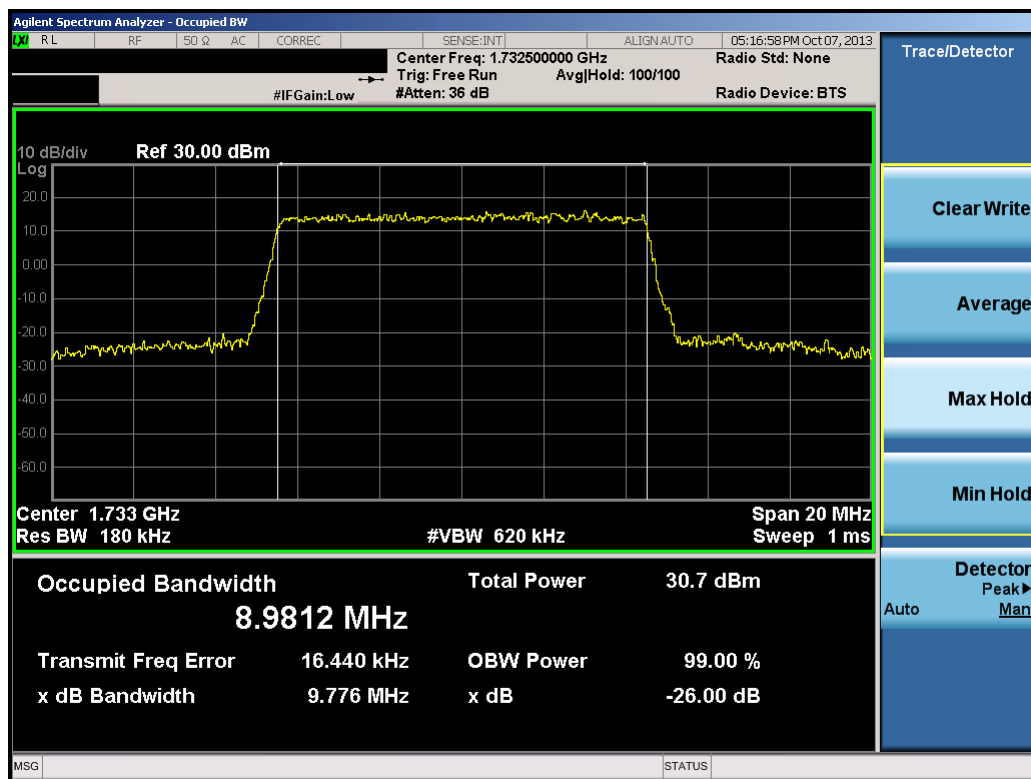


Plot 9-15. Lower Band Edge Plot (10.0MHz QPSK – RB Size 50)

FCC ID: ZNFD950	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1309161874.ZNF	Test Dates: 09/24 - 10/08/2013	EUT Type: Portable Handset		Page 67 of 110

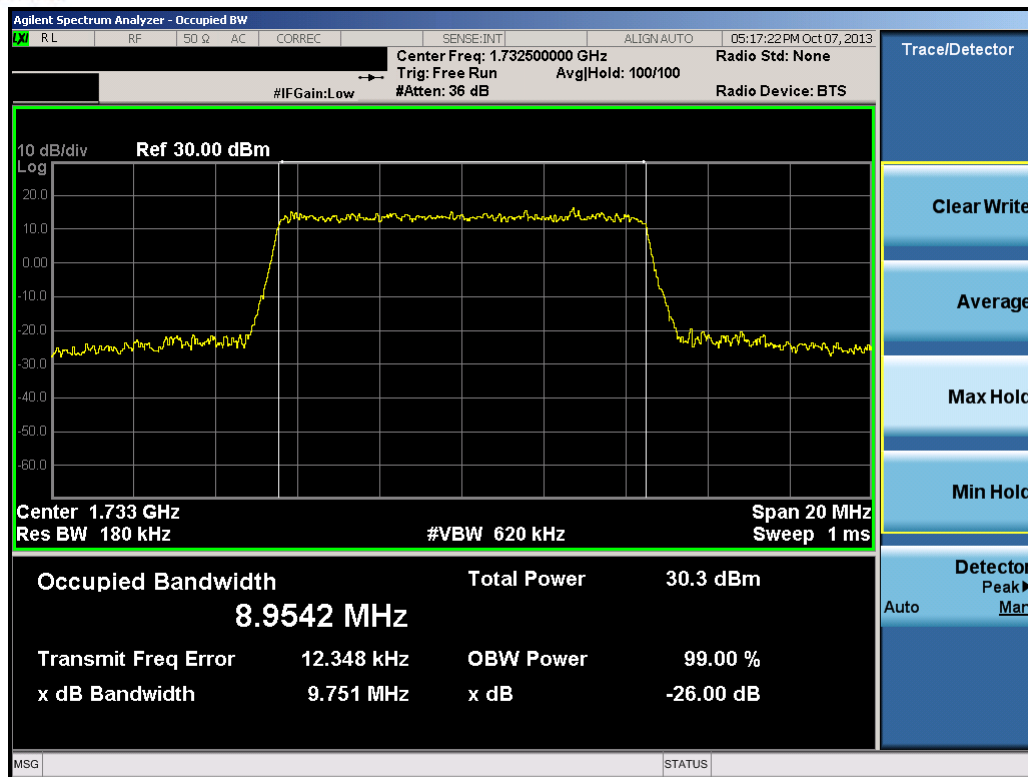


Plot 9-16. Lower Extended Band Edge Plot (10.0MHz QPSK – RB Size 50)

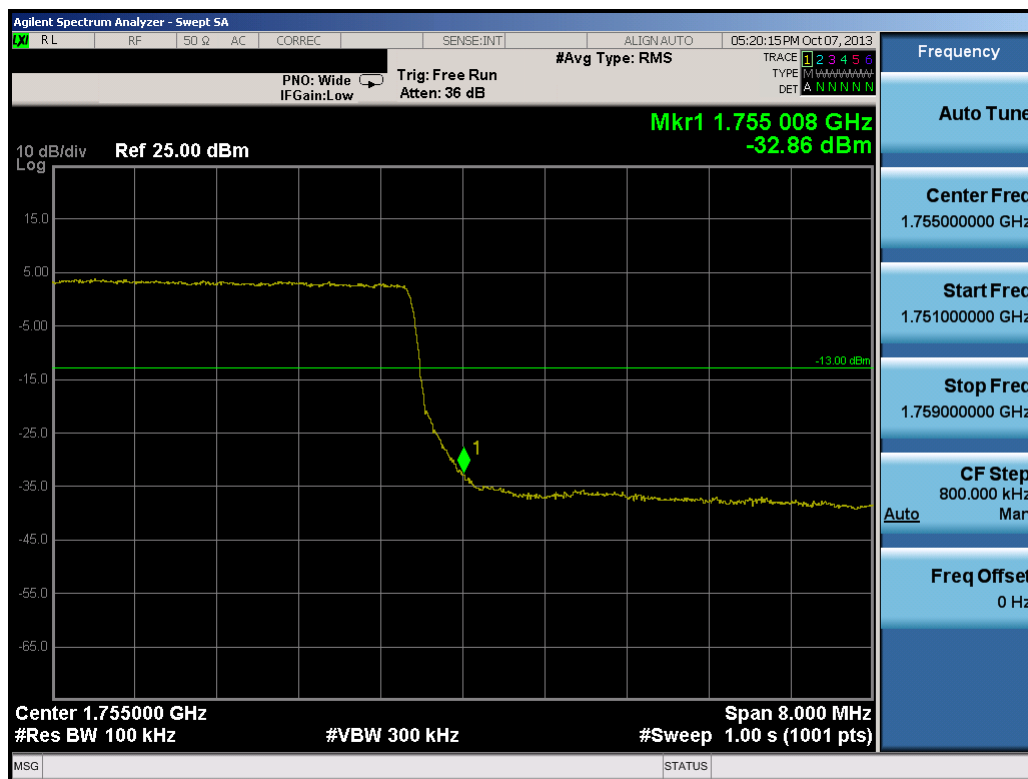


Plot 9-17. Occupied Bandwidth Plot (10.0MHz QPSK – RB Size 50)

FCC ID: ZNFD950	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1309161874.ZNF	Test Dates: 09/24 - 10/08/2013	EUT Type: Portable Handset		Page 68 of 110

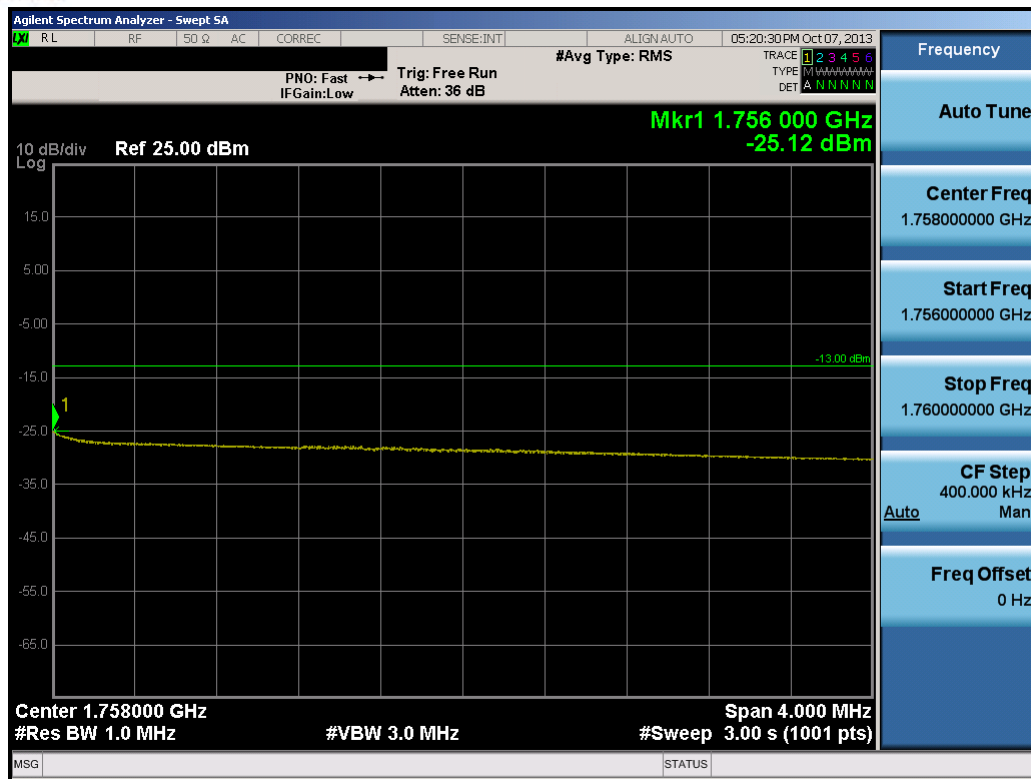


Plot 9-18. Occupied Bandwidth Plot (10.0MHz 16-QAM – RB Size 50)

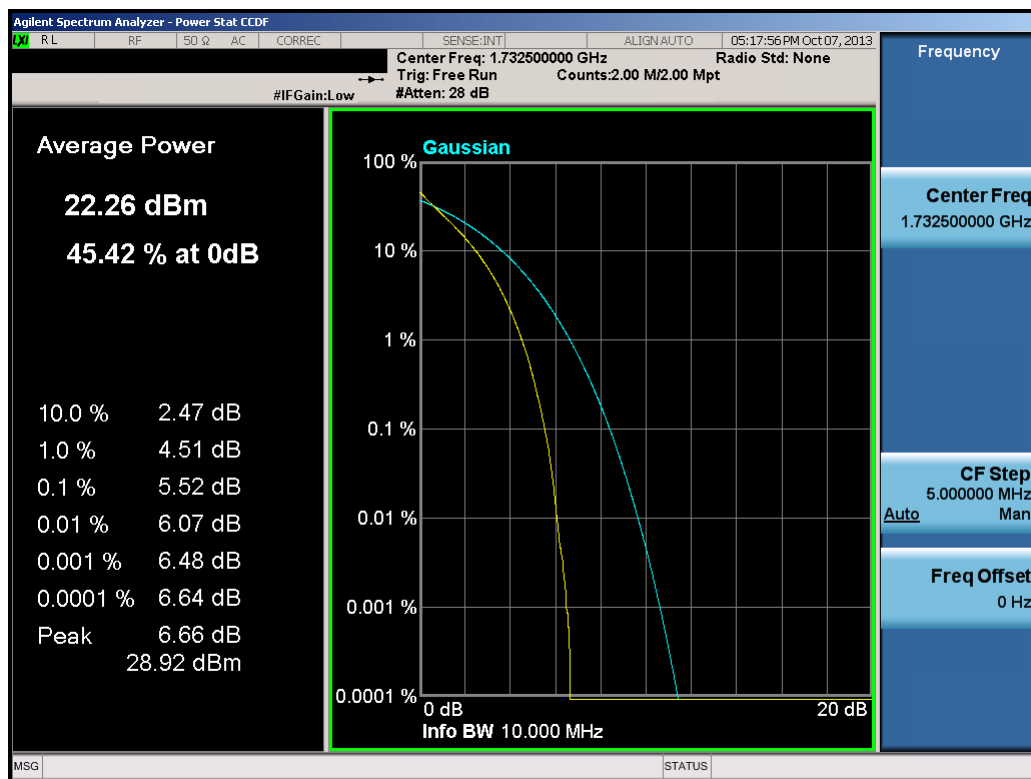


Plot 9-19. Upper Band Edge Plot (10.0MHz QPSK – RB Size 50)

FCC ID: ZNFD950	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1309161874.ZNF	Test Dates: 09/24 - 10/08/2013	EUT Type: Portable Handset		Page 69 of 110

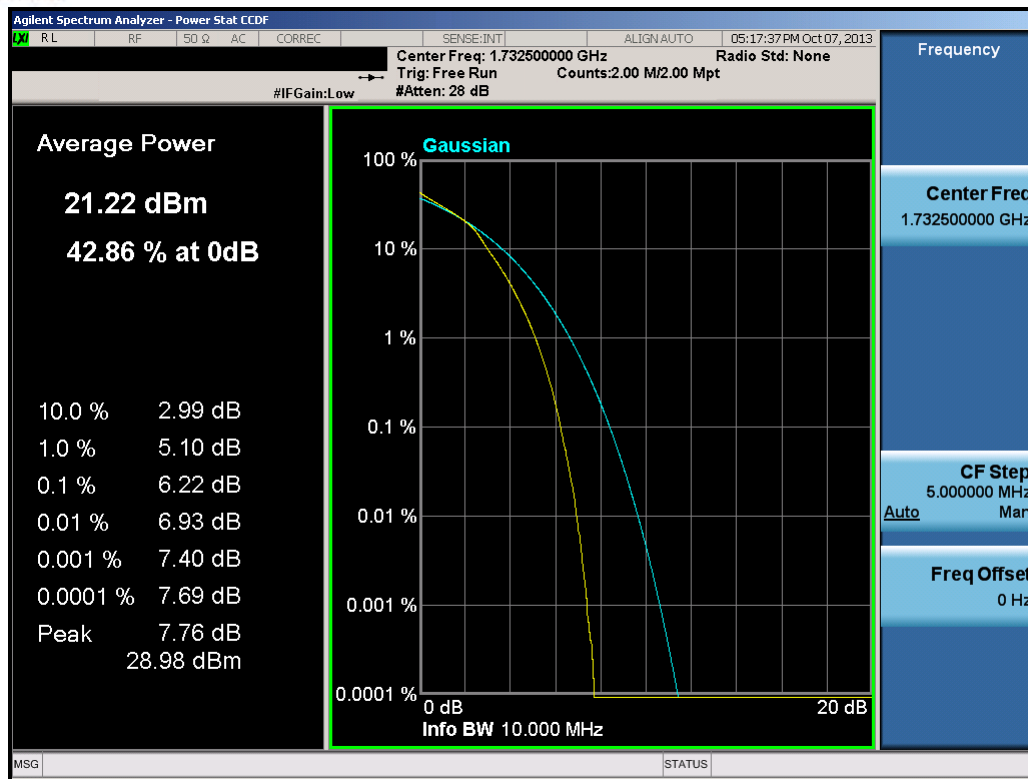


Plot 9-20. Upper Extended Band Edge Plot (10.0MHz QPSK – RB Size 50)





Plot 9-21. PAR Plot (10.0MHz QPSK – RB Size 50)

FCC ID: ZNFD950	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1309161874.ZNF	Test Dates: 09/24 - 10/08/2013	EUT Type: Portable Handset		Page 70 of 110

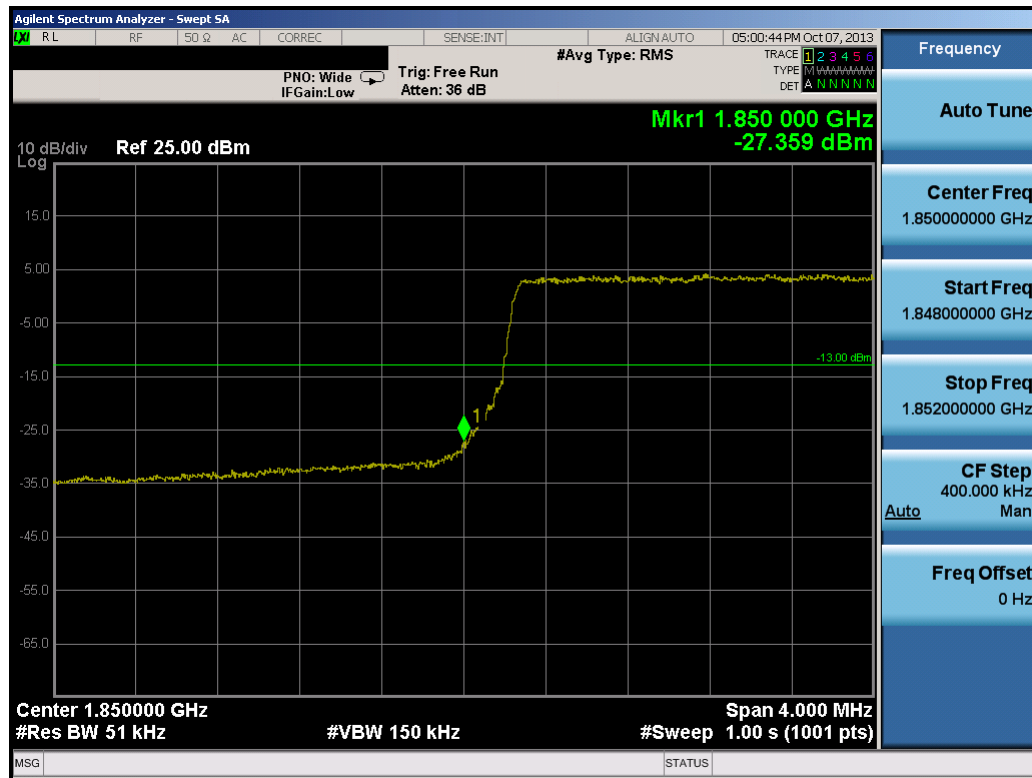


**Plot 9-22. PAR Plot (10.0MHz 16-QAM – RB Size 50)**



FCC ID: ZNFD950	 <b>FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)</b>		 <b>Reviewed by:</b> Quality Manager
Test Report S/N: 0Y1309161874.ZNF	Test Dates: 09/24 - 10/08/2013	EUT Type: Portable Handset	Page 71 of 110

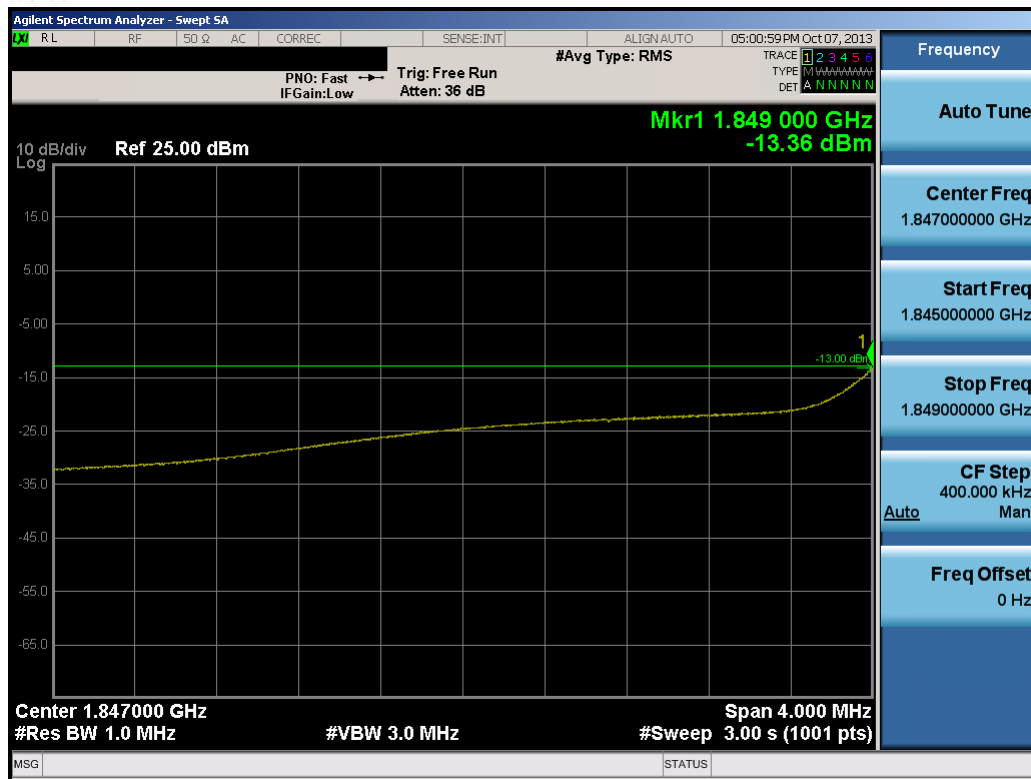
## 10.0 BAND 2 PLOTS OF EMISSIONS

**Note:** All bandwidths, RB configurations, and modulations were investigated. The worst case test results are reported below.

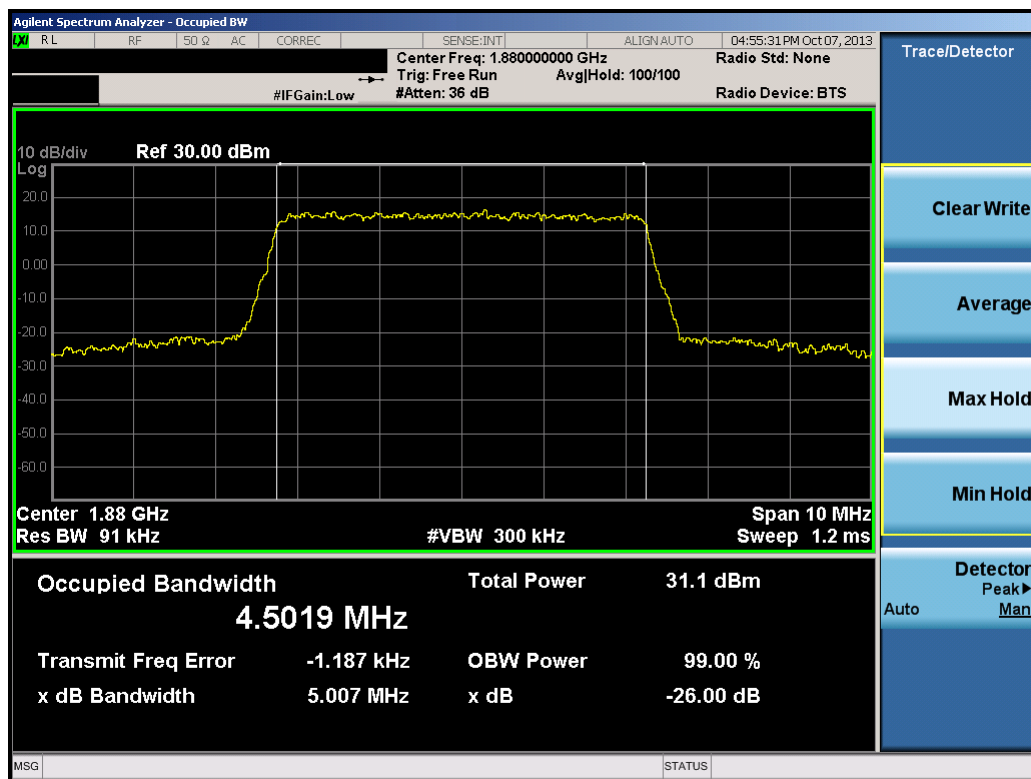


Plot 10-1. Lower Band Edge Plot (5.0MHz QPSK – RB Size 25)

FCC ID: ZNFD950		FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1309161874.ZNF	Test Dates: 09/24 - 10/08/2013	EUT Type: Portable Handset		Page 72 of 110

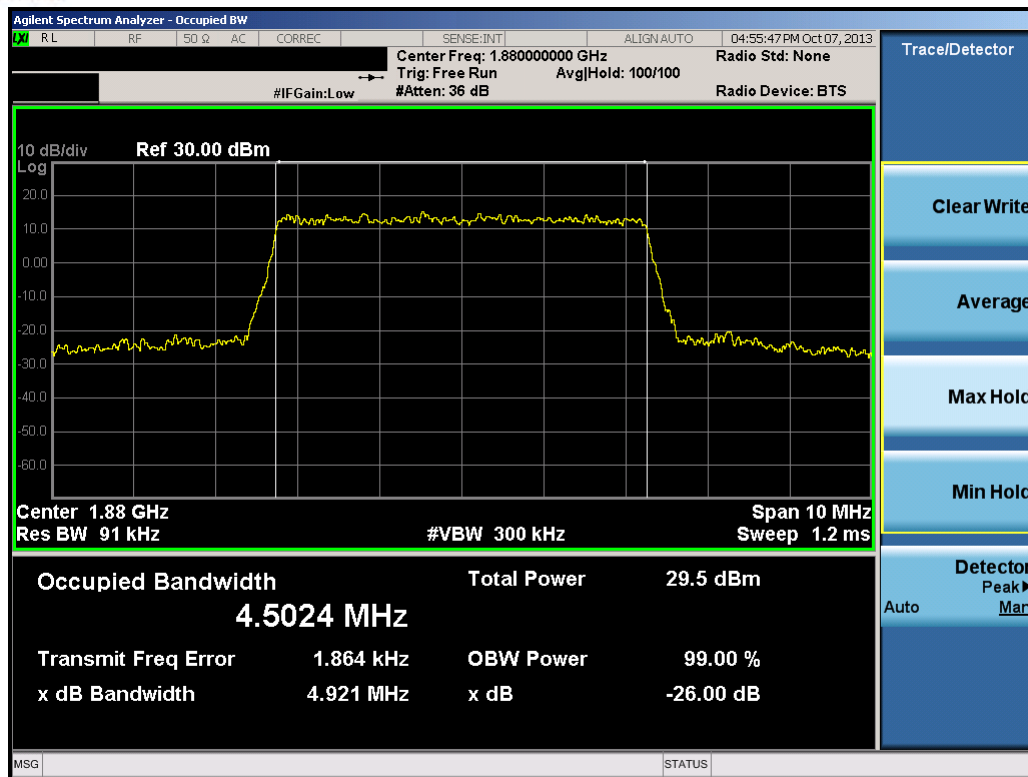


Plot 10-2. Lower Extended Band Edge Plot (5.0MHz QPSK – RB Size 25)

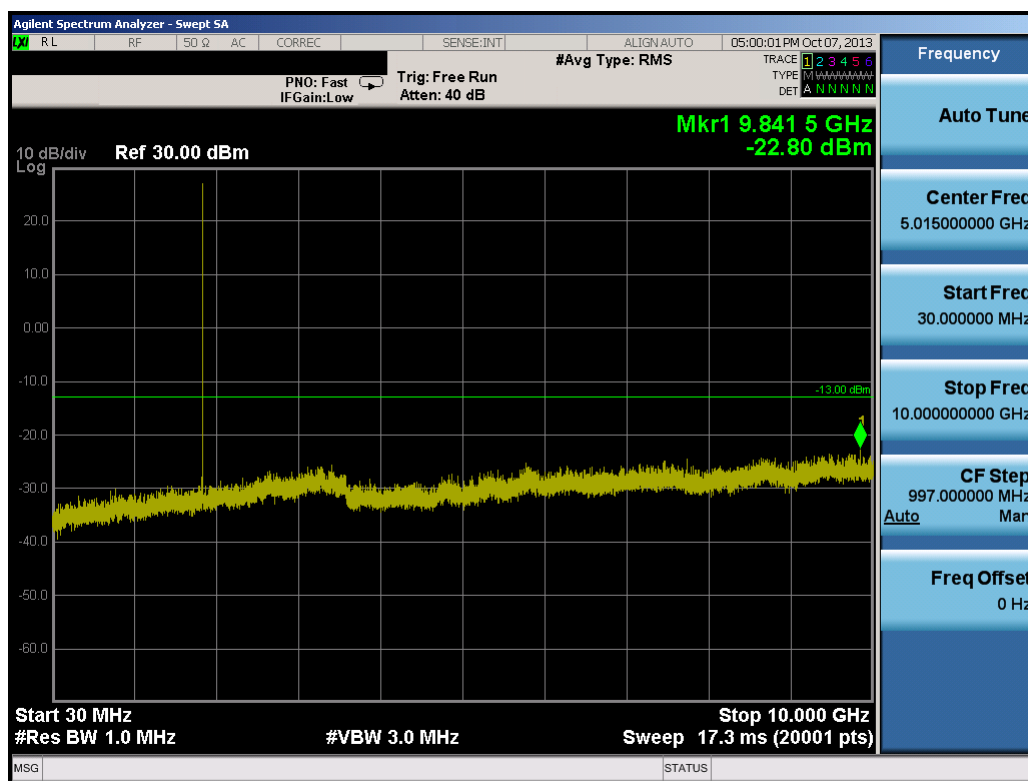


Plot 10-3. Occupied Bandwidth Plot (5.0MHz QPSK – RB Size 25)



FCC ID: ZNFD950	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1309161874.ZNF	Test Dates: 09/24 - 10/08/2013	EUT Type: Portable Handset		Page 73 of 110

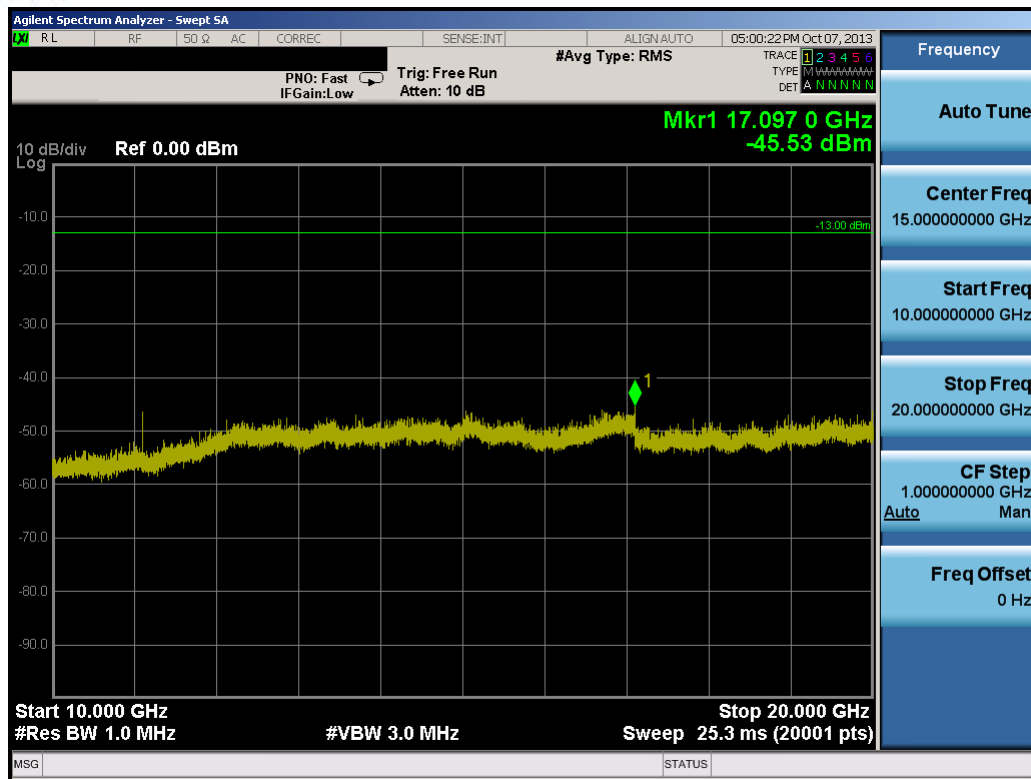


#### Plot 10-4. Occupied Bandwidth Plot (5.0MHz 16-QAM – RB Size 25)

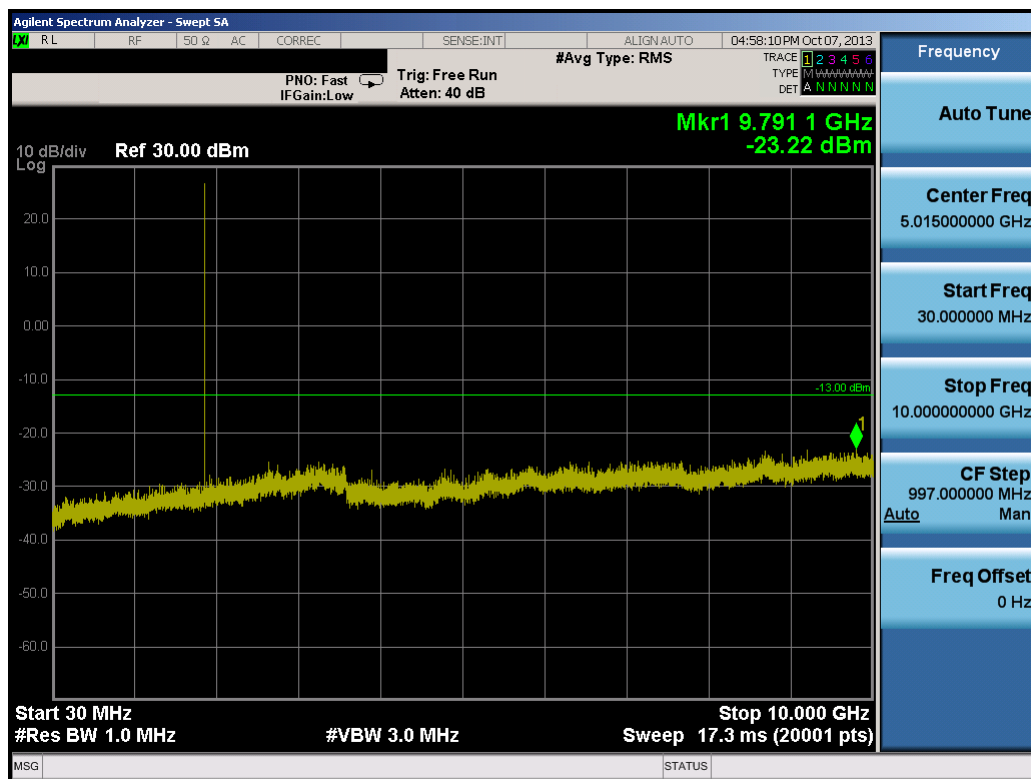


**Plot 10-5. Conducted Spurious Plot (5.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)**

FCC ID: ZNFD950	 <b>FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)</b> 		Reviewed by: Quality Manager
Test Report S/N: 0Y1309161874.ZNF	Test Dates: 09/24 - 10/08/2013	EUT Type: Portable Handset	Page 74 of 110

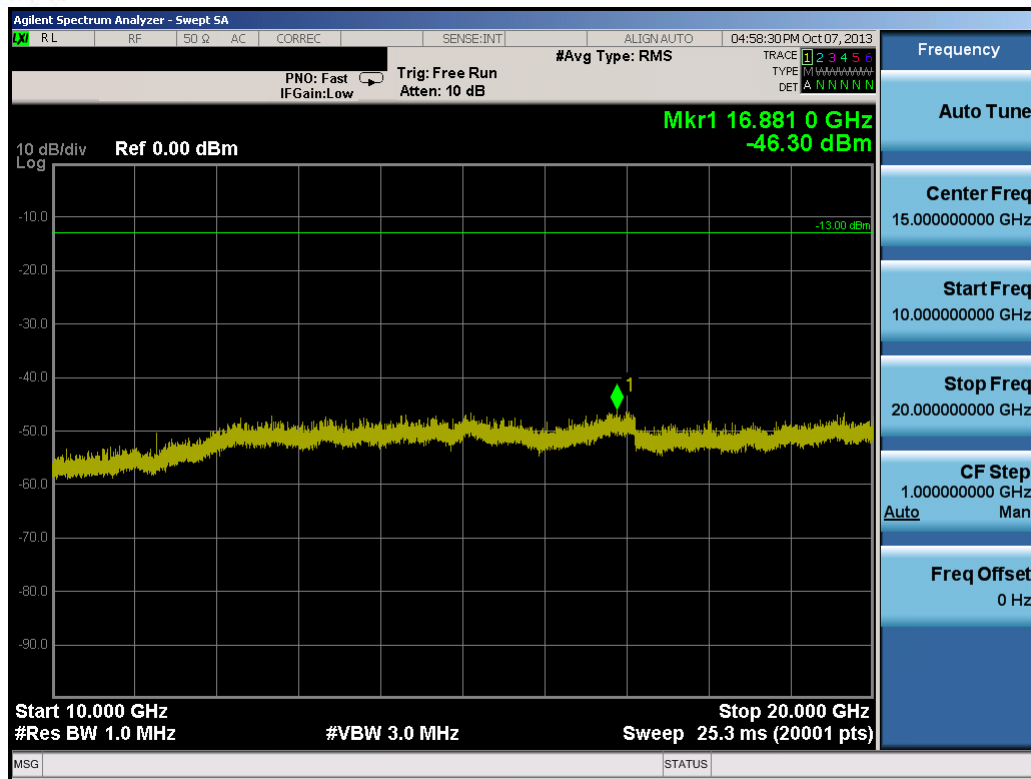


Plot 10-6. Conducted Spurious Plot (5.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)

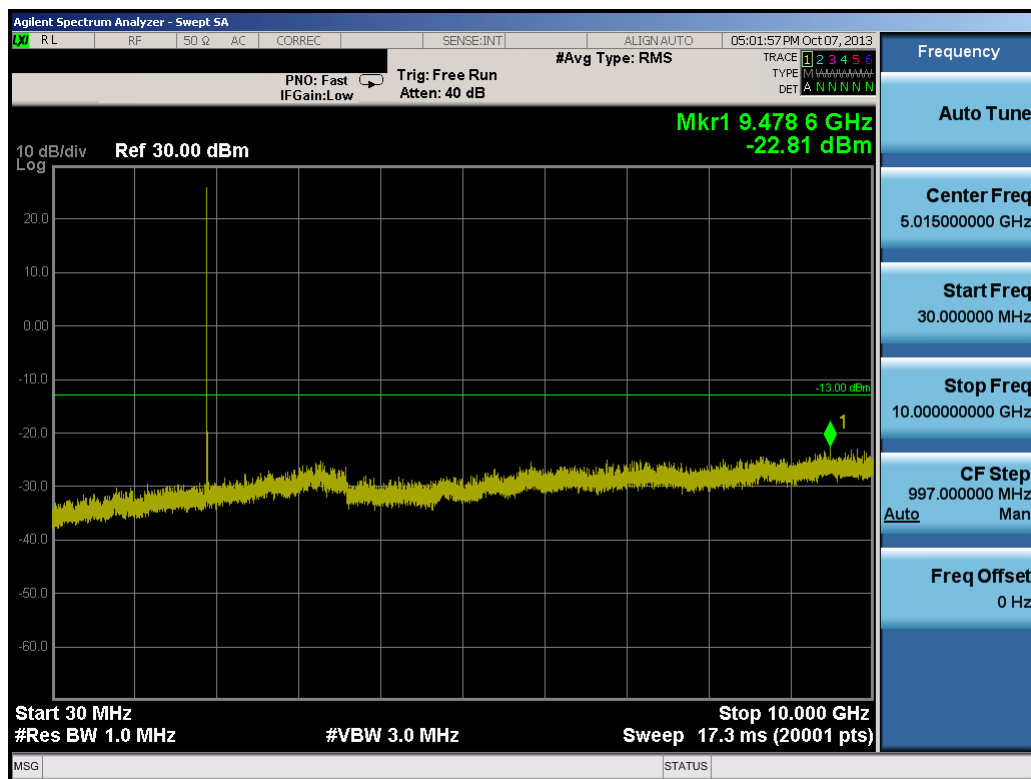


Plot 10-7. Conducted Spurious Plot (5.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)

FCC ID: ZNFD950	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1309161874.ZNF	Test Dates: 09/24 - 10/08/2013	EUT Type: Portable Handset		Page 75 of 110

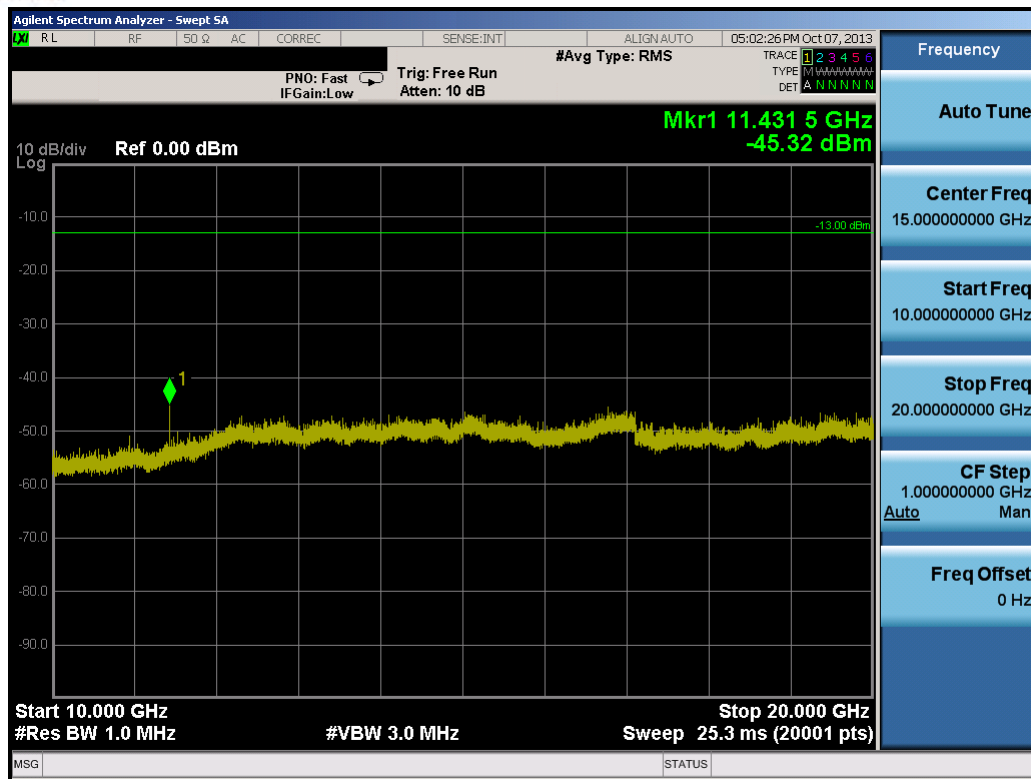


Plot 10-8. Conducted Spurious Plot (5.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)

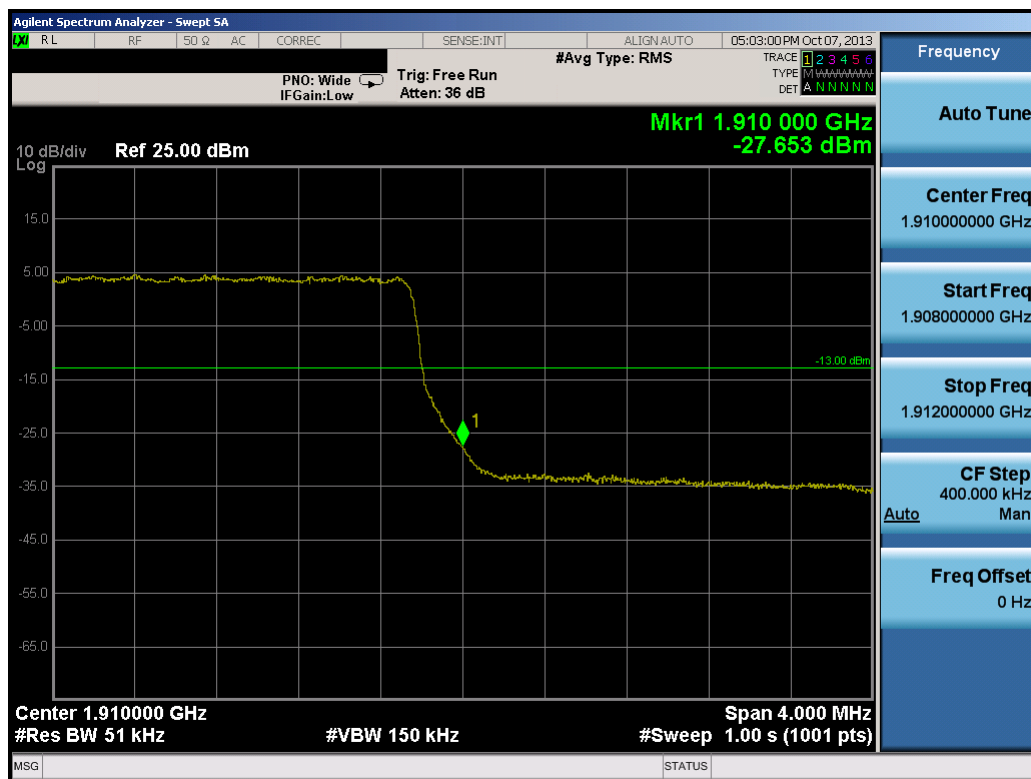


Plot 10-9. Conducted Spurious Plot (5.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

FCC ID: ZNFD950	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1309161874.ZNF	Test Dates: 09/24 - 10/08/2013	EUT Type: Portable Handset		Page 76 of 110

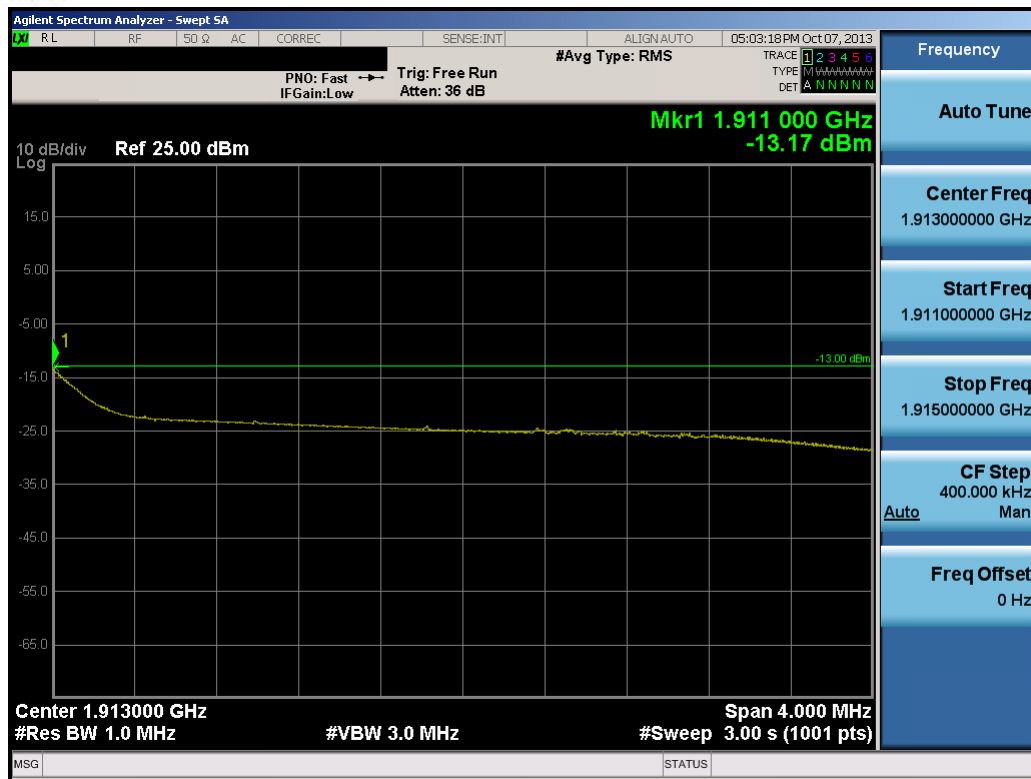


Plot 10-10. Conducted Spurious Plot (5.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

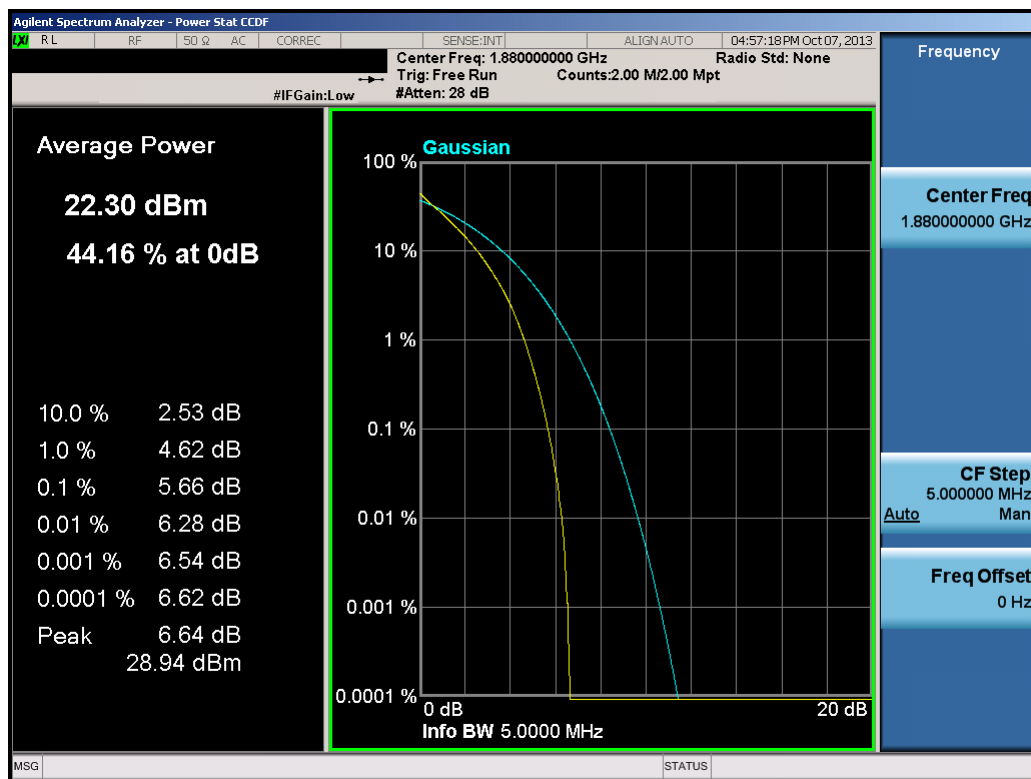


Plot 10-11. Upper Band Edge Plot (5.0MHz QPSK – RB Size 25)

FCC ID: ZNFD950	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1309161874.ZNF	Test Dates: 09/24 - 10/08/2013	EUT Type: Portable Handset		Page 77 of 110

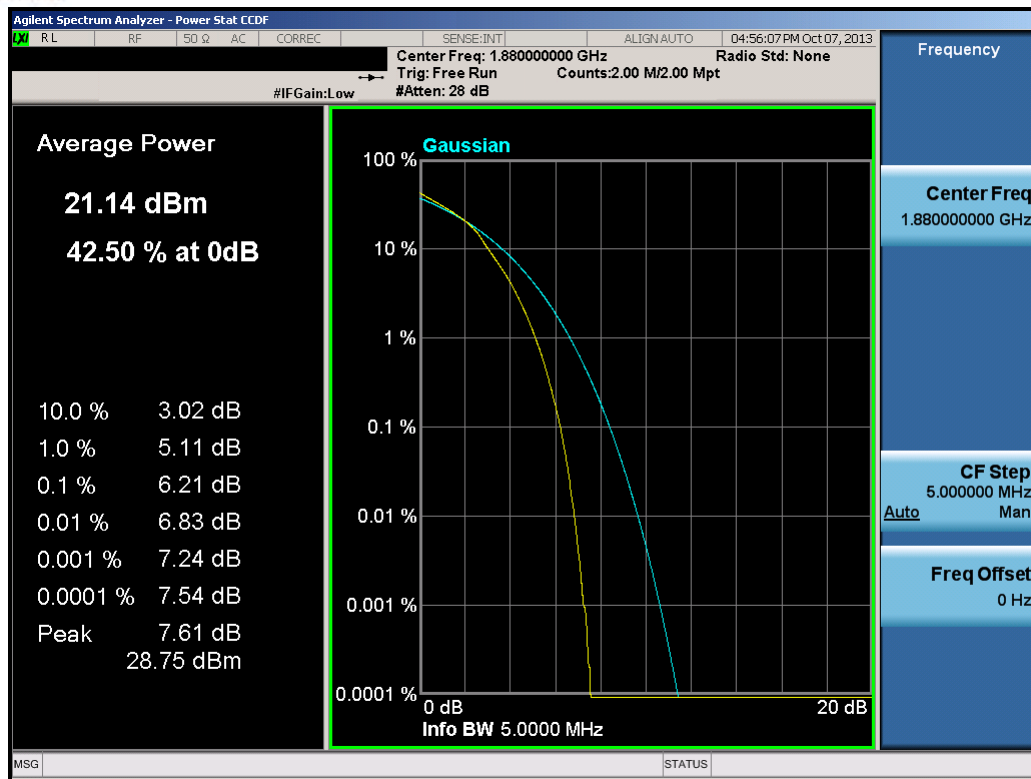


Plot 10-12. Upper Extended Band Edge Plot (5.0MHz QPSK – RB Size 25)

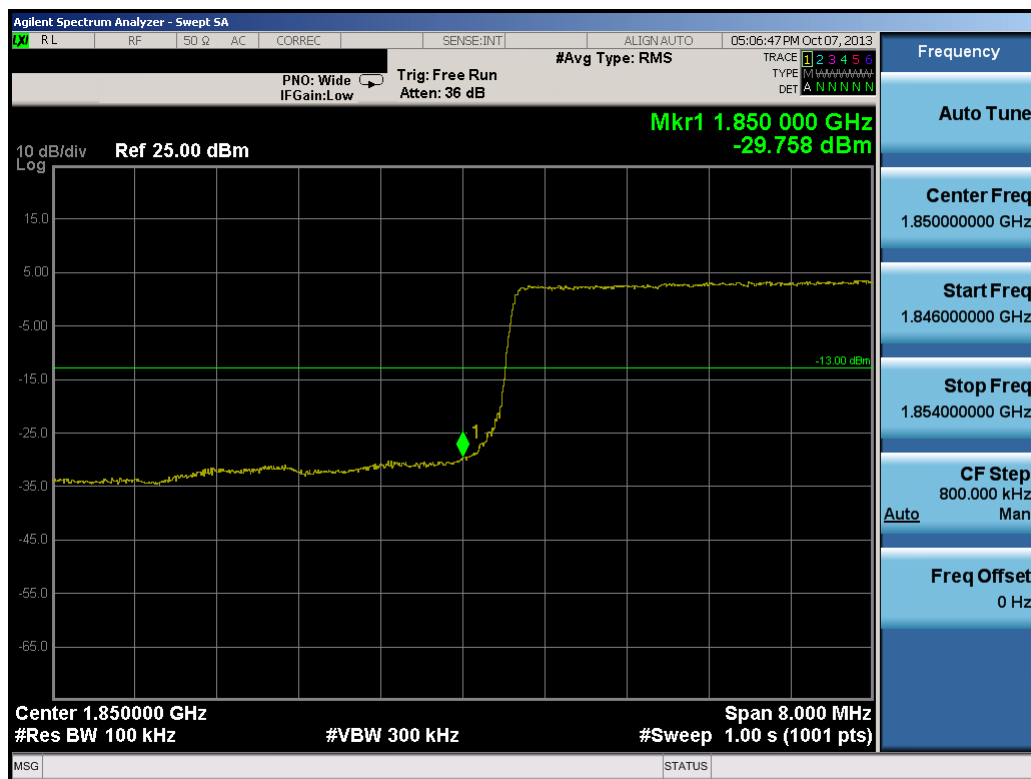


Plot 10-13. PAR Plot (5.0MHz QPSK – RB Size 25)

FCC ID: ZNFD950	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1309161874.ZNF	Test Dates: 09/24 - 10/08/2013	EUT Type: Portable Handset		Page 78 of 110

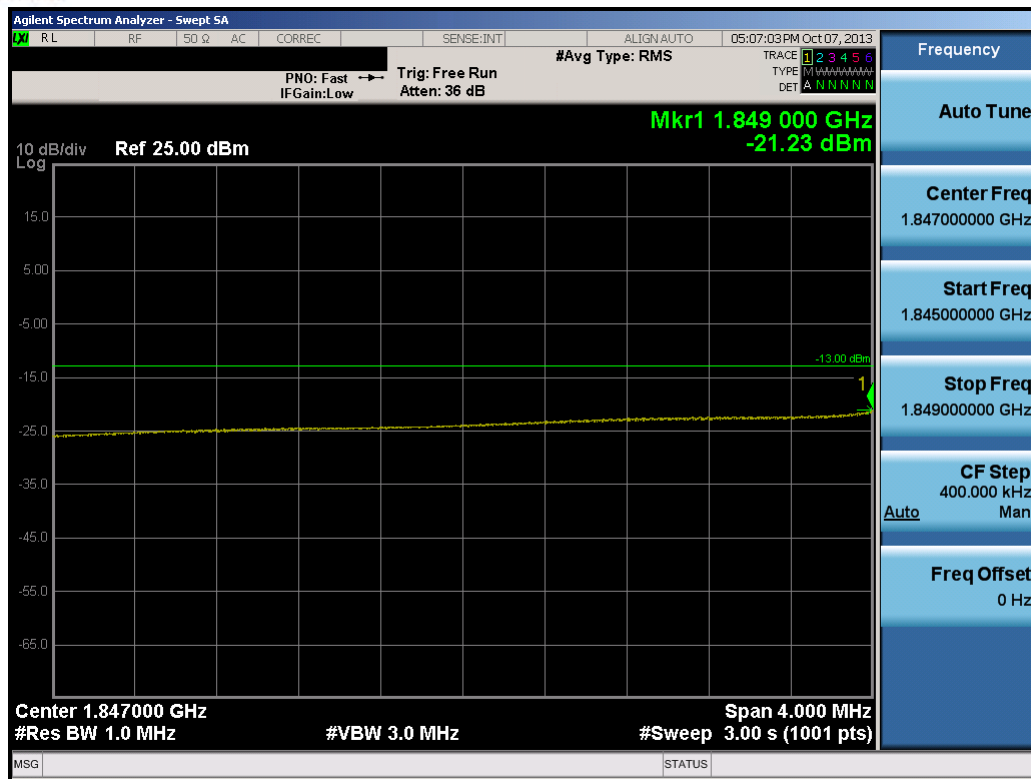


Plot 10-14. PAR Plot (5.0MHz 16-QAM – RB Size 25)

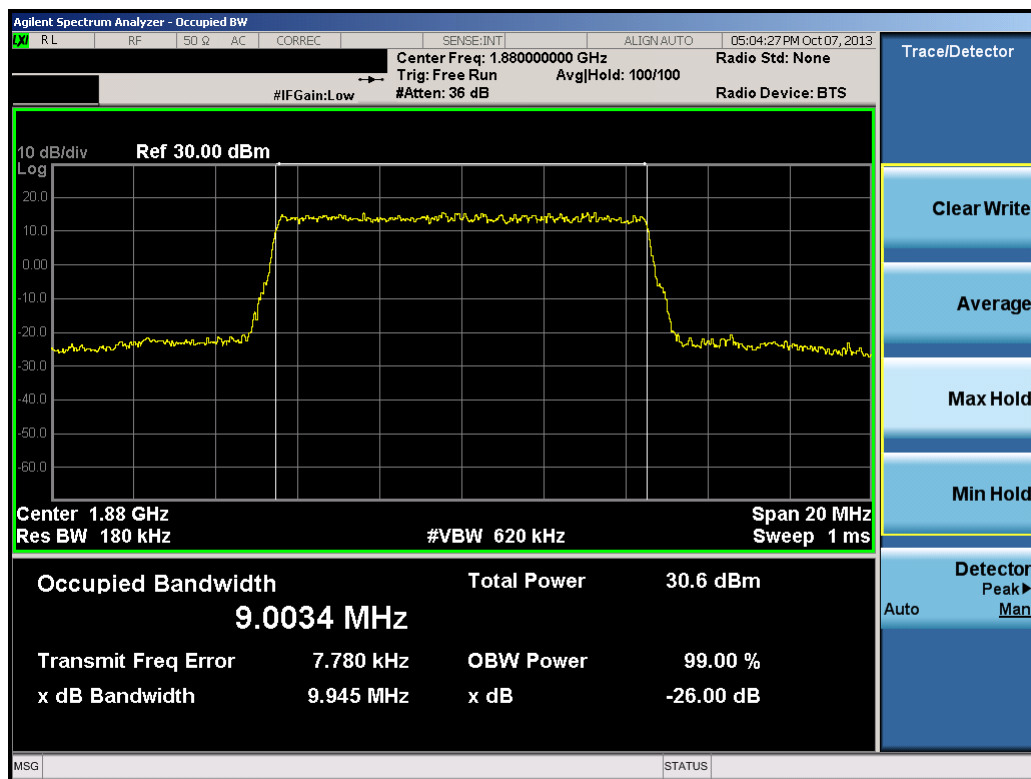


Plot 10-15. Lower Band Edge Plot (10.0MHz QPSK – RB Size 50)

FCC ID: ZNFD950	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)	<b>LG</b>	Reviewed by: Quality Manager
Test Report S/N: 0Y1309161874.ZNF	Test Dates: 09/24 - 10/08/2013	EUT Type: Portable Handset		Page 79 of 110

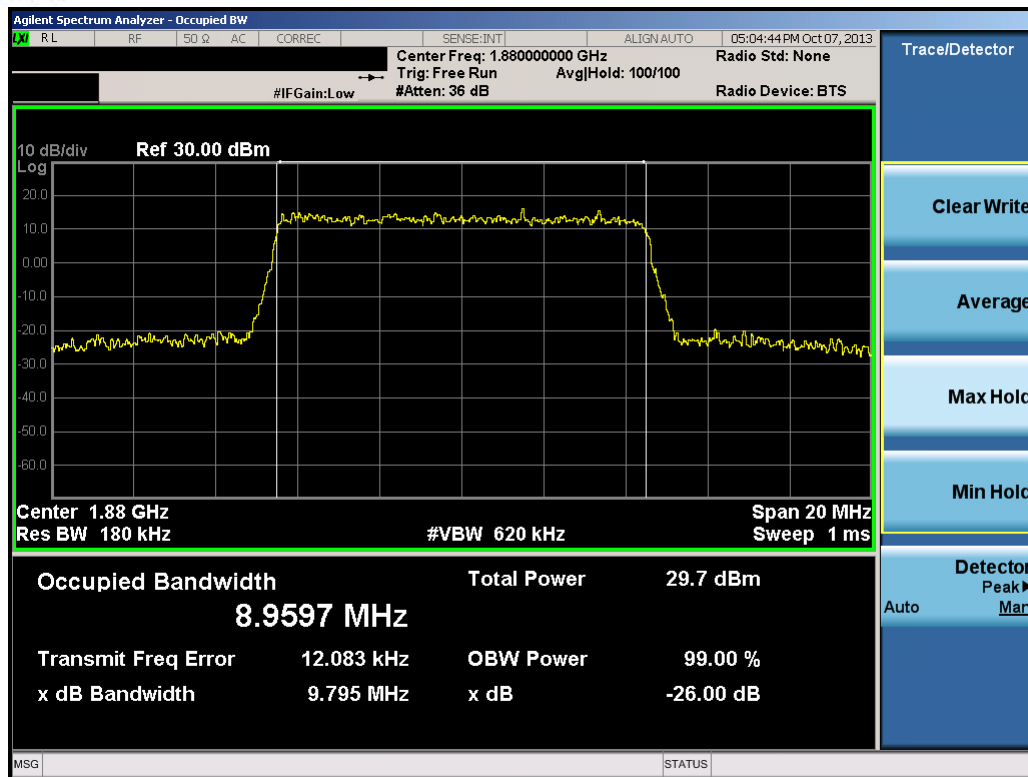


Plot 10-16. Lower Extended Band Edge Plot (10.0MHz QPSK – RB Size 50)

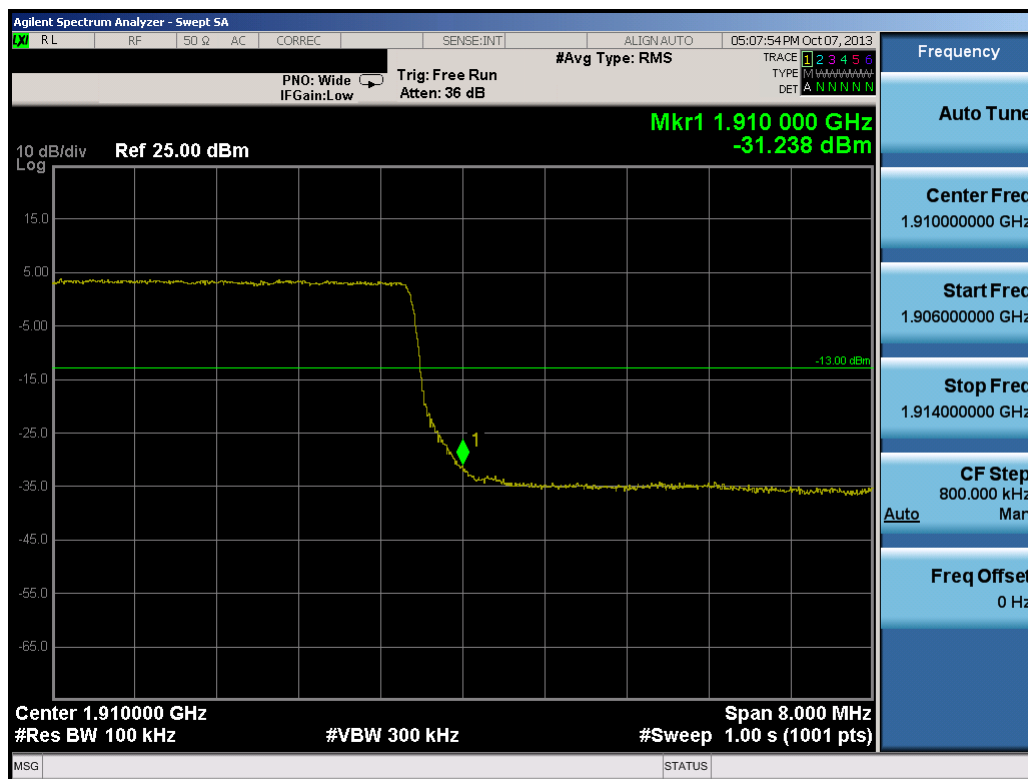


Plot 10-17. Occupied Bandwidth Plot (10.0MHz QPSK – RB Size 50)

FCC ID: ZNFD950	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1309161874.ZNF	Test Dates: 09/24 - 10/08/2013	EUT Type: Portable Handset		Page 80 of 110

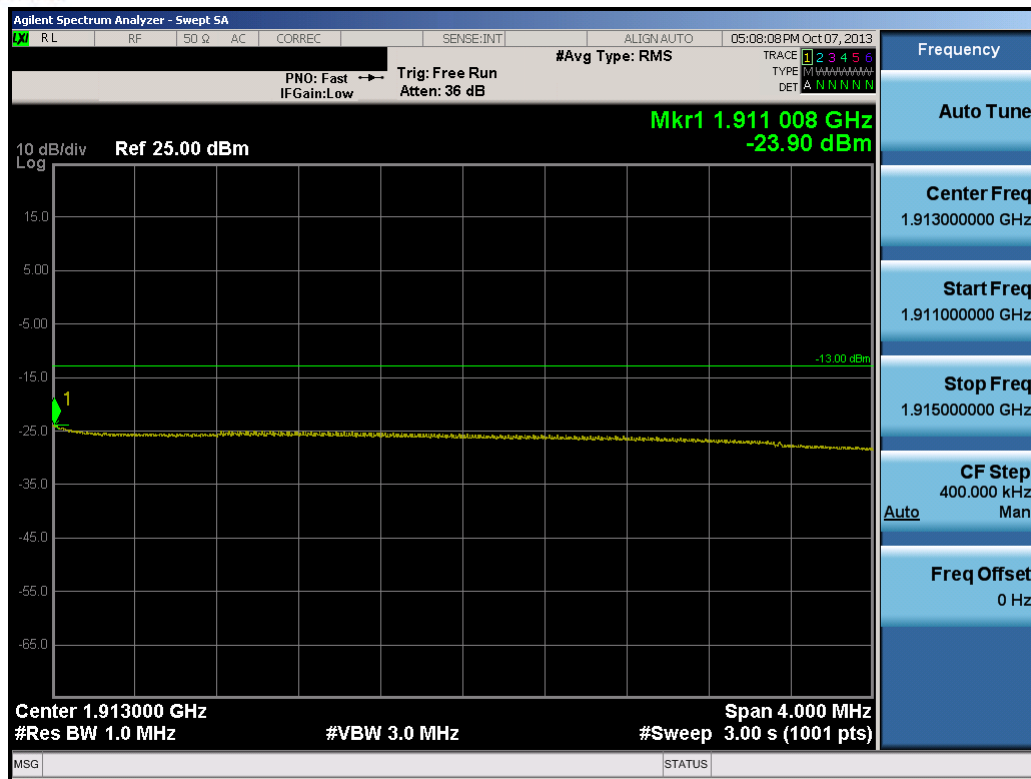


Plot 10-18. Occupied Bandwidth Plot (10.0MHz 16-QAM – RB Size 50)

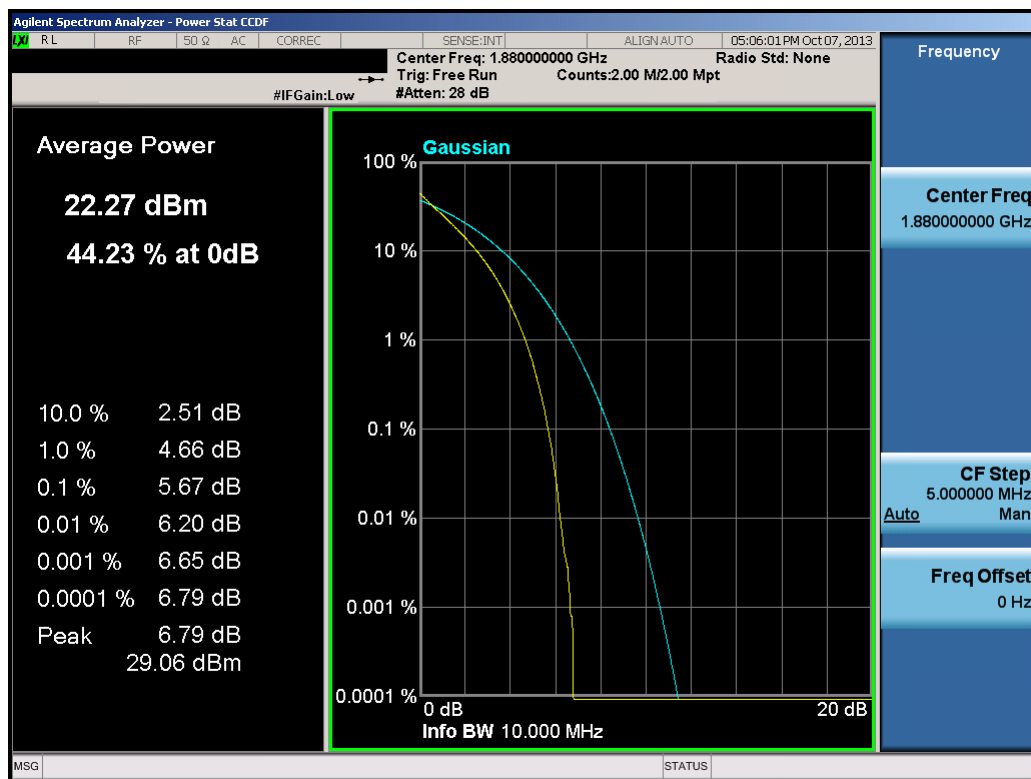


Plot 10-19. Upper Band Edge Plot (10.0MHz QPSK – RB Size 50)

FCC ID: ZNFD950	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)	<b>LG</b>	Reviewed by: Quality Manager
Test Report S/N: 0Y1309161874.ZNF	Test Dates: 09/24 - 10/08/2013	EUT Type: Portable Handset		Page 81 of 110

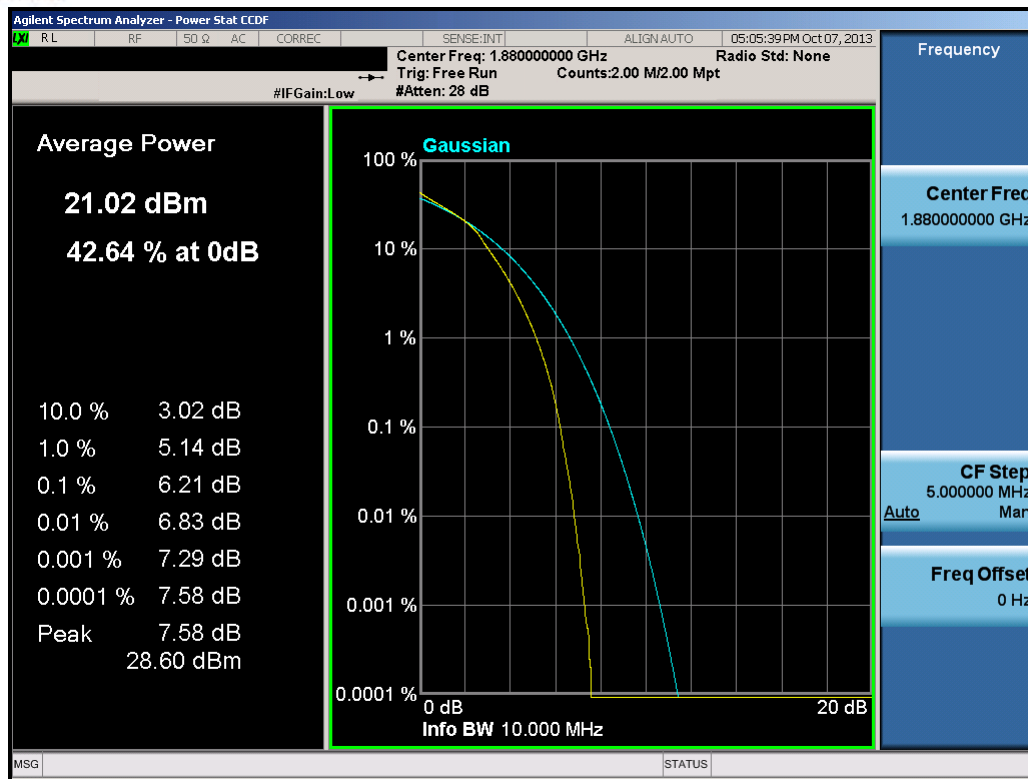


Plot 10-20. Upper Extended Band Edge Plot (10.0MHz QPSK – RB Size 50)





Plot 10-21. PAR Plot (10.0MHz QPSK – RB Size 50)

FCC ID: ZNFD950	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1309161874.ZNF	Test Dates: 09/24 - 10/08/2013	EUT Type: Portable Handset		Page 82 of 110

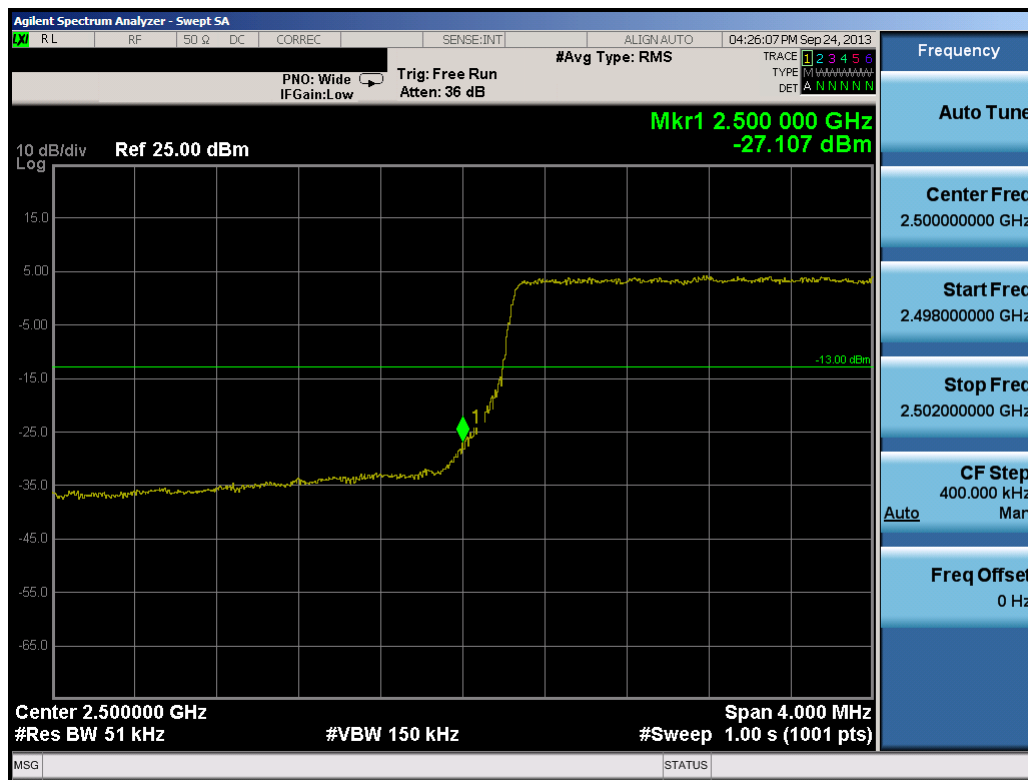


Plot 10-22. PAR Plot (10.0MHz 16-QAM - RB Size 50)



FCC ID: ZNFD950	 <b>FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)</b>		 <b>Reviewed by:</b> Quality Manager
Test Report S/N: 0Y1309161874.ZNF	Test Dates: 09/24 - 10/08/2013	EUT Type: Portable Handset	Page 83 of 110

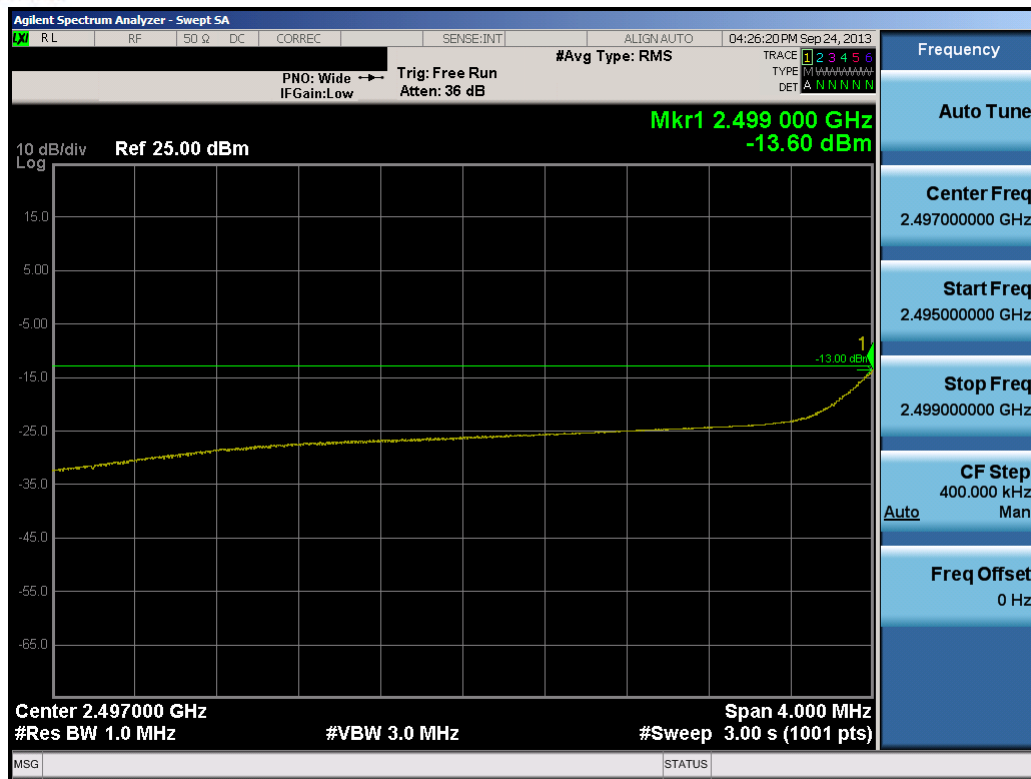
## 11.0 BAND 7 PLOTS OF EMISSIONS

**Note:** All bandwidths, RB configurations, and modulations were investigated. The worst case test results are reported below.

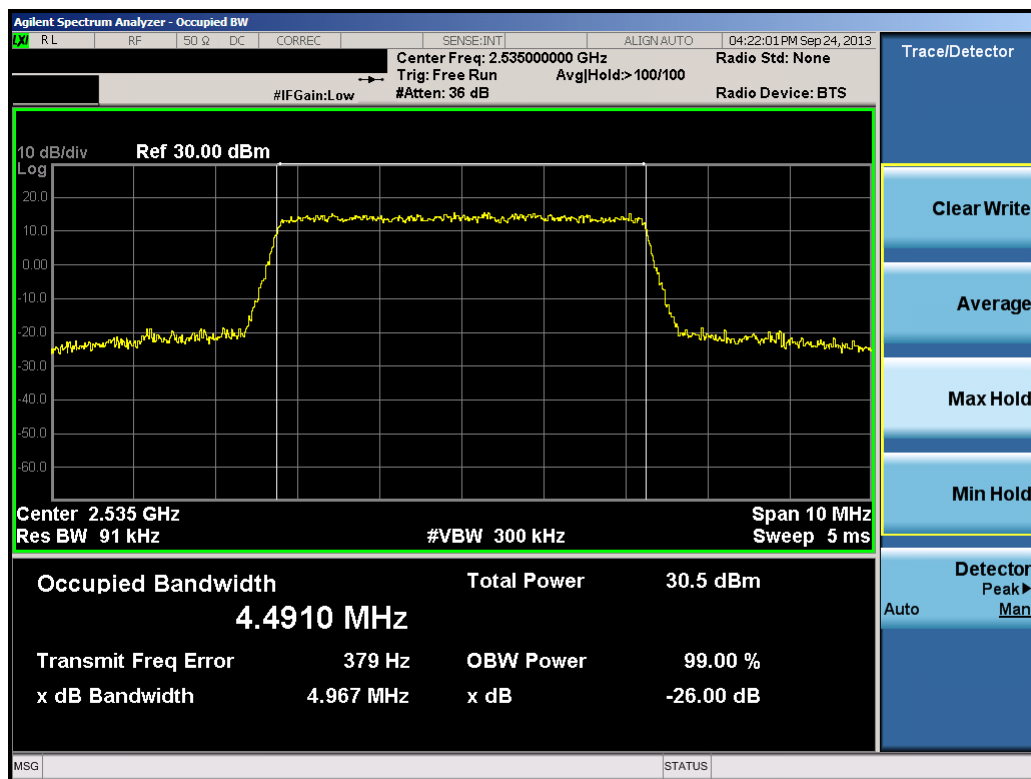


Plot 11-1. Lower Band Edge Plot (5.0MHz QPSK – RB Size 25)

FCC ID: ZNFD950		FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1309161874.ZNF	Test Dates: 09/24 - 10/08/2013	EUT Type: Portable Handset		Page 84 of 110

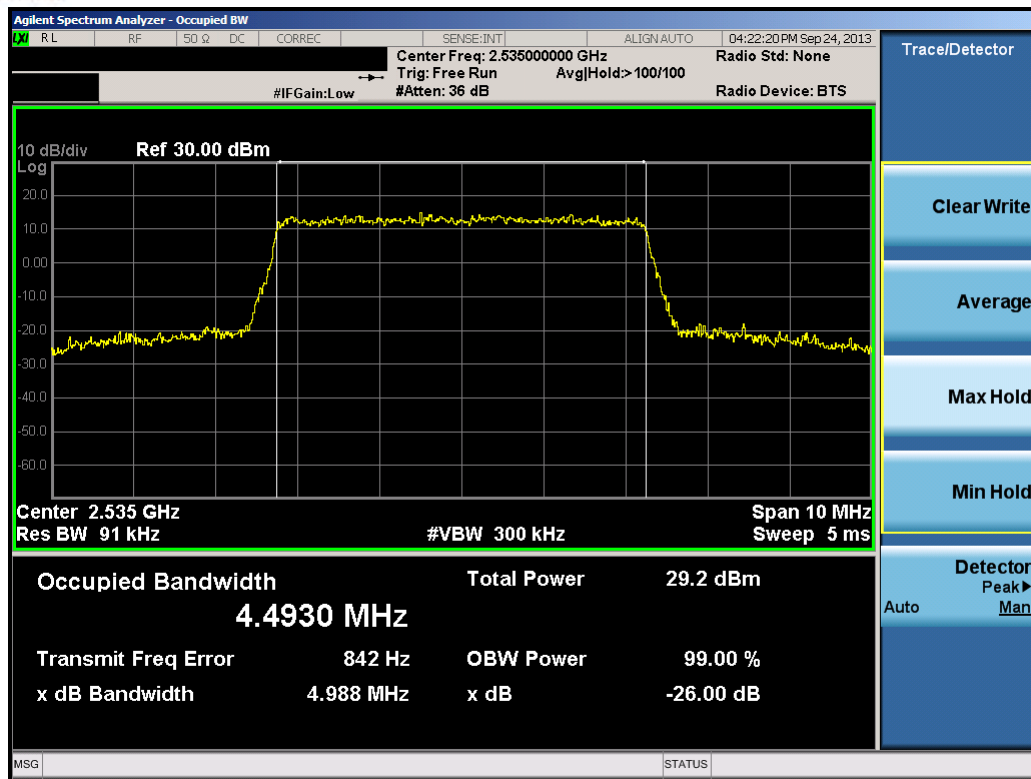


Plot 11-2. Lower Extended Band Edge Plot (5.0MHz QPSK – RB Size 25)

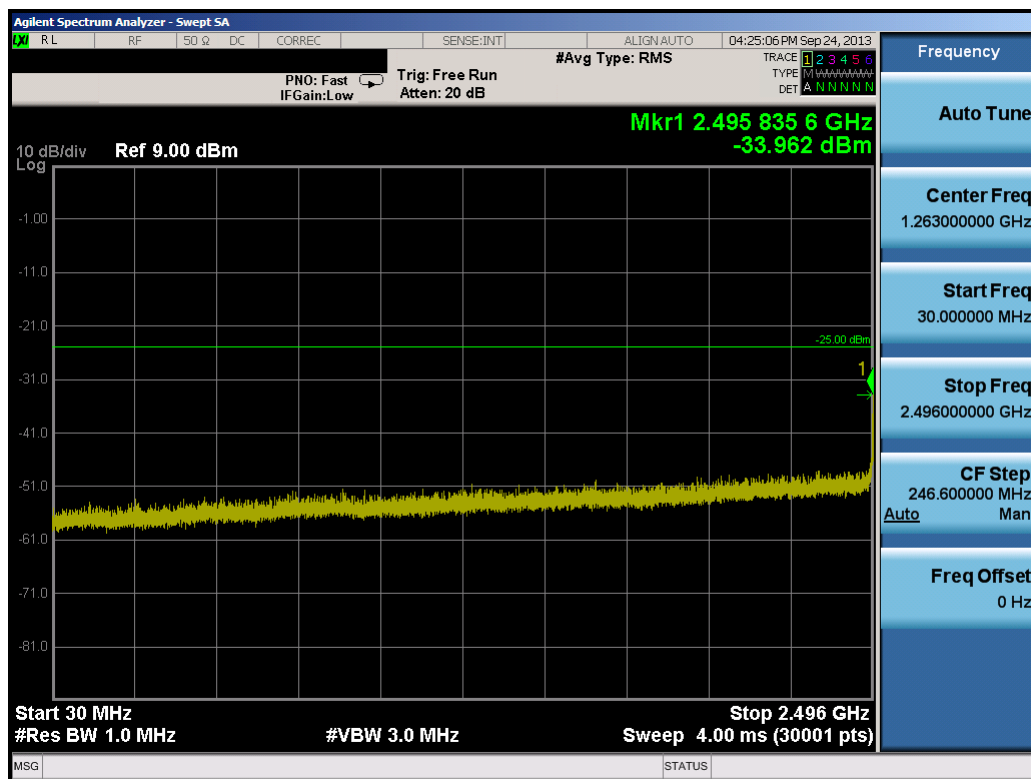


Plot 11-3. Occupied Bandwidth Plot (5.0MHz QPSK – RB Size 25)

FCC ID: ZNFD950	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1309161874.ZNF	Test Dates: 09/24 - 10/08/2013	EUT Type: Portable Handset		Page 85 of 110

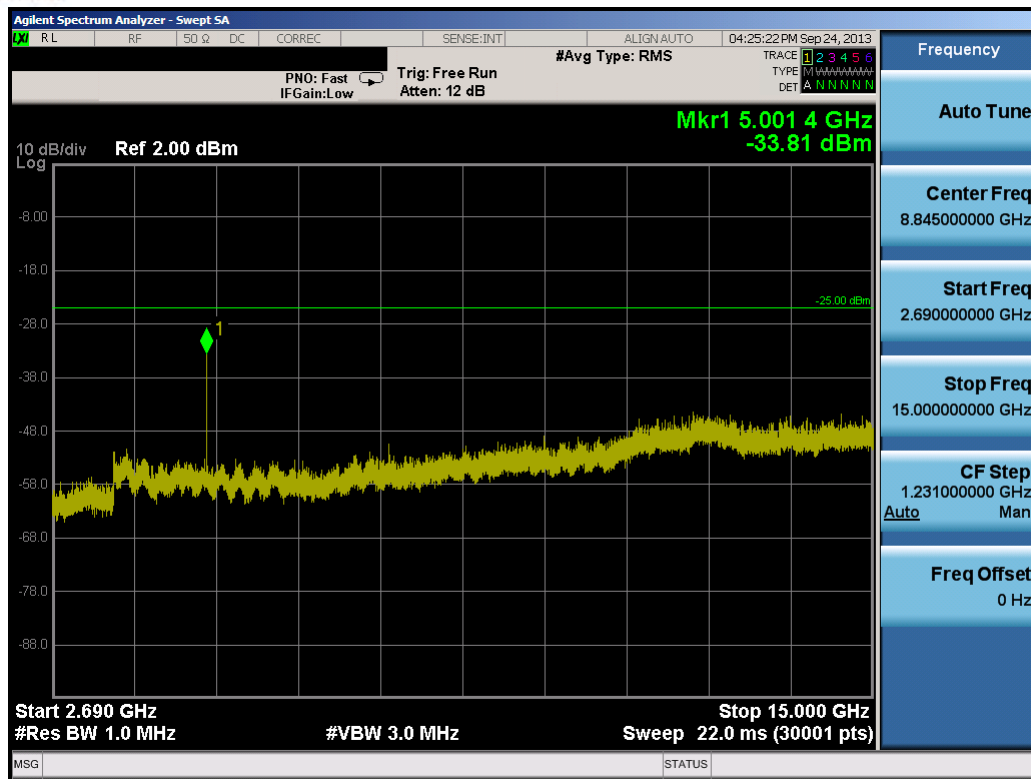


Plot 11-4. Occupied Bandwidth Plot (5.0MHz 16-QAM – RB Size 25)

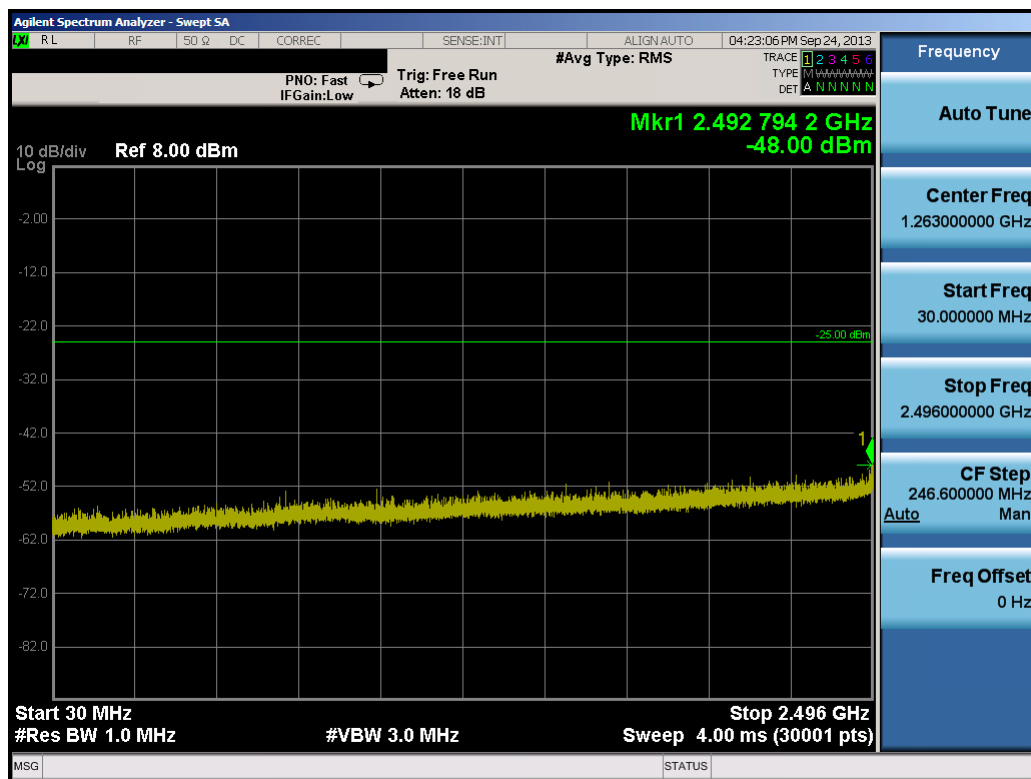


Plot 11-5. Conducted Spurious Plot (5.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)

FCC ID: ZNFD950	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1309161874.ZNF	Test Dates: 09/24 - 10/08/2013	EUT Type: Portable Handset		Page 86 of 110

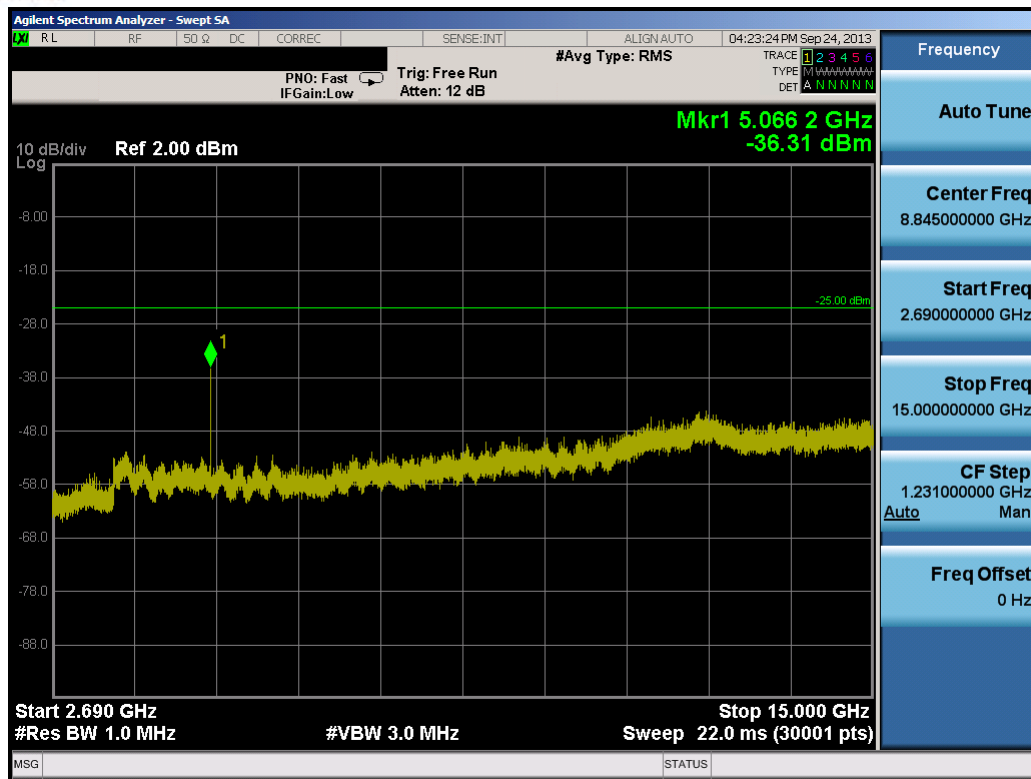


Plot 11-6. Conducted Spurious Plot (5.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)

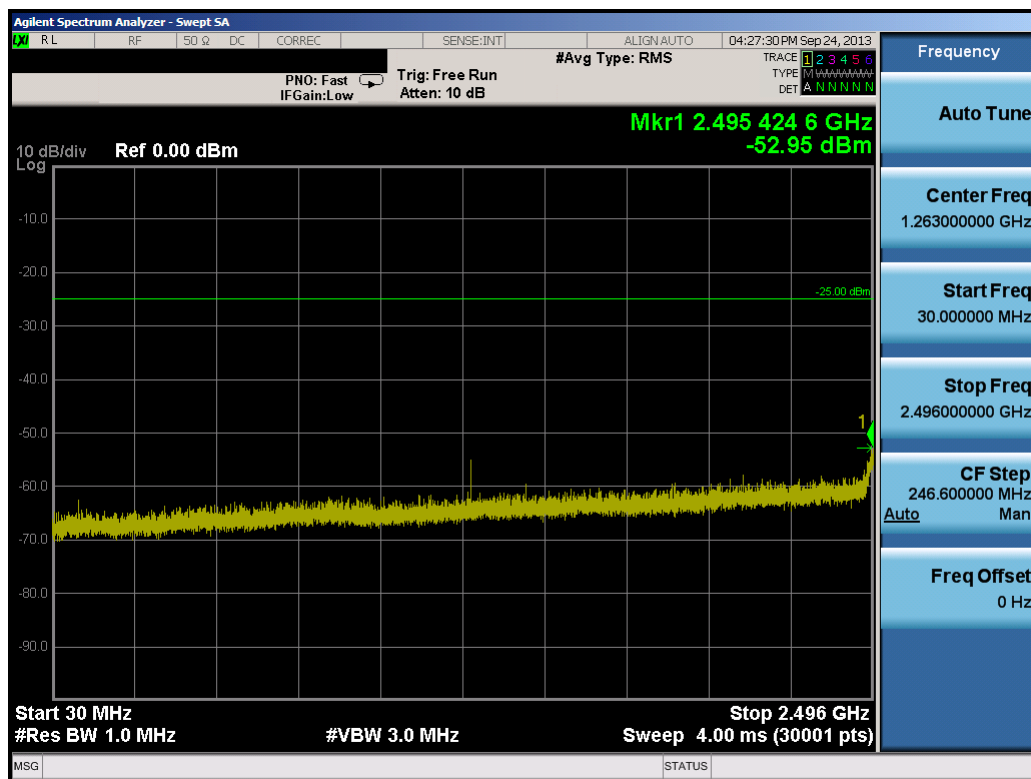


Plot 11-7. Conducted Spurious Plot (5.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)

FCC ID: ZNFD950	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1309161874.ZNF	Test Dates: 09/24 - 10/08/2013	EUT Type: Portable Handset		Page 87 of 110

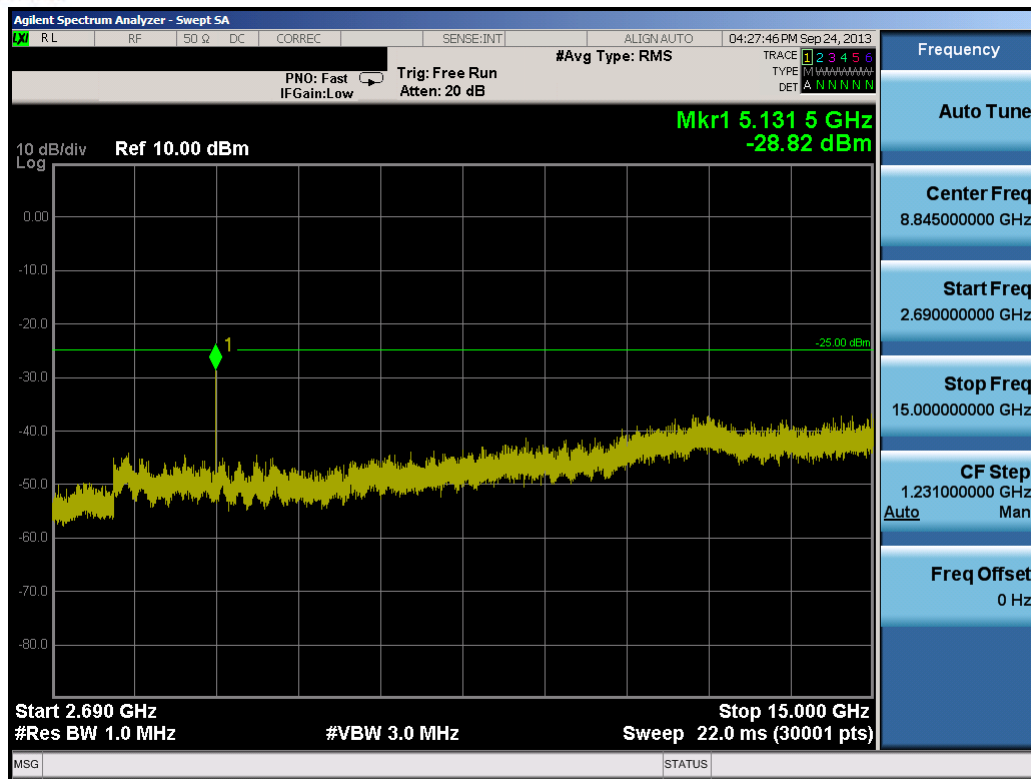


Plot 11-8. Conducted Spurious Plot (5.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)

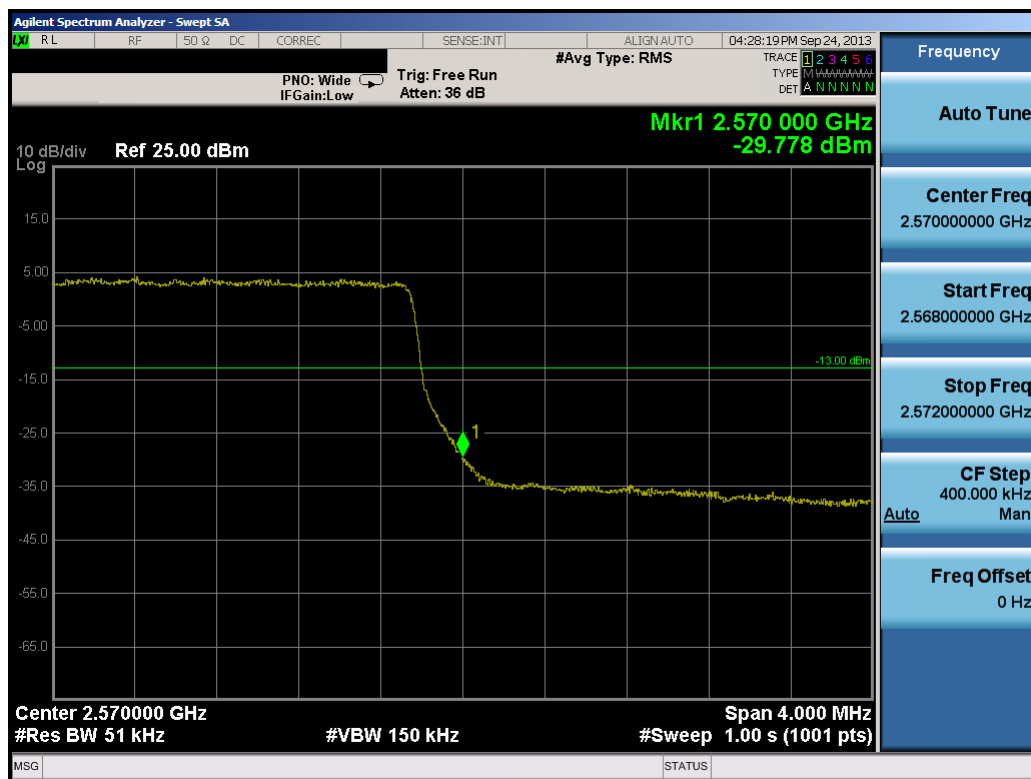


Plot 11-9. Conducted Spurious Plot (5.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

FCC ID: ZNFD950	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1309161874.ZNF	Test Dates: 09/24 - 10/08/2013	EUT Type: Portable Handset		Page 88 of 110

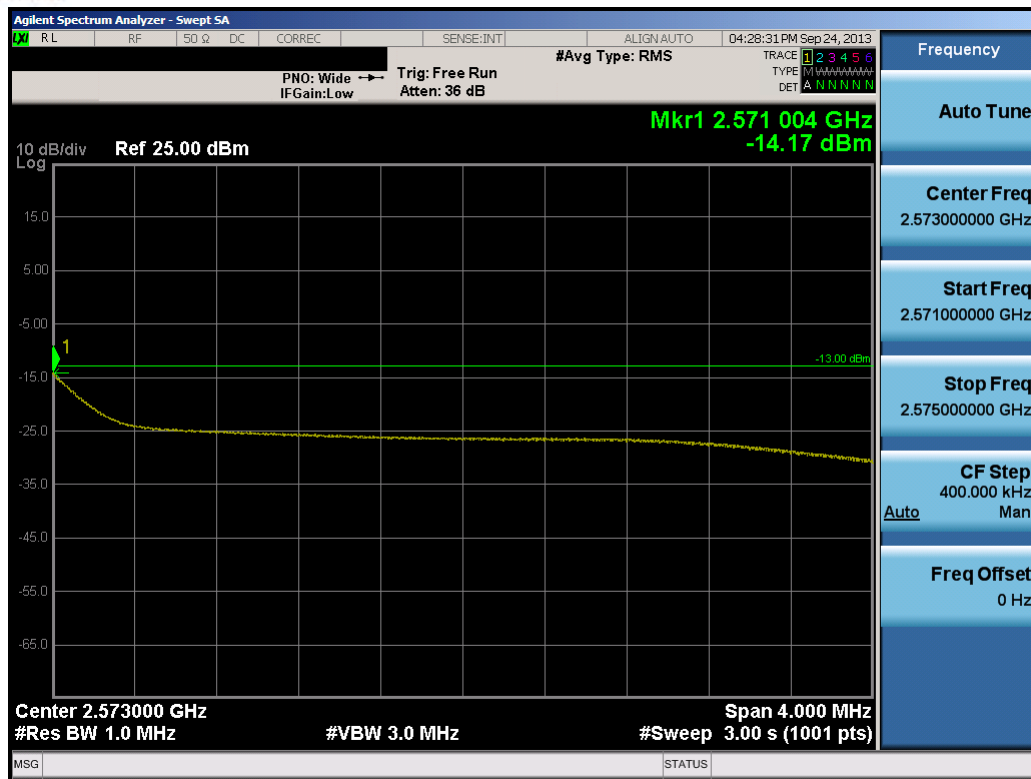


Plot 11-10. Conducted Spurious Plot (5.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

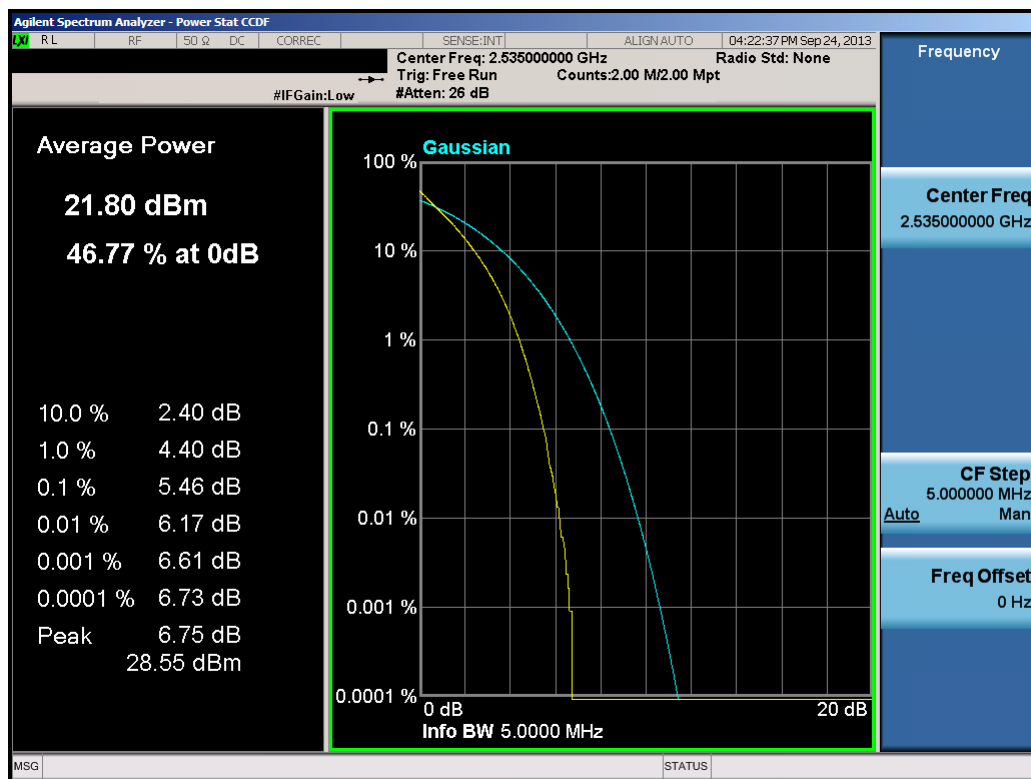


Plot 11-11. Upper Band Edge Plot (5.0MHz QPSK – RB Size 25)

FCC ID: ZNFD950	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1309161874.ZNF	Test Dates: 09/24 - 10/08/2013	EUT Type: Portable Handset		Page 89 of 110

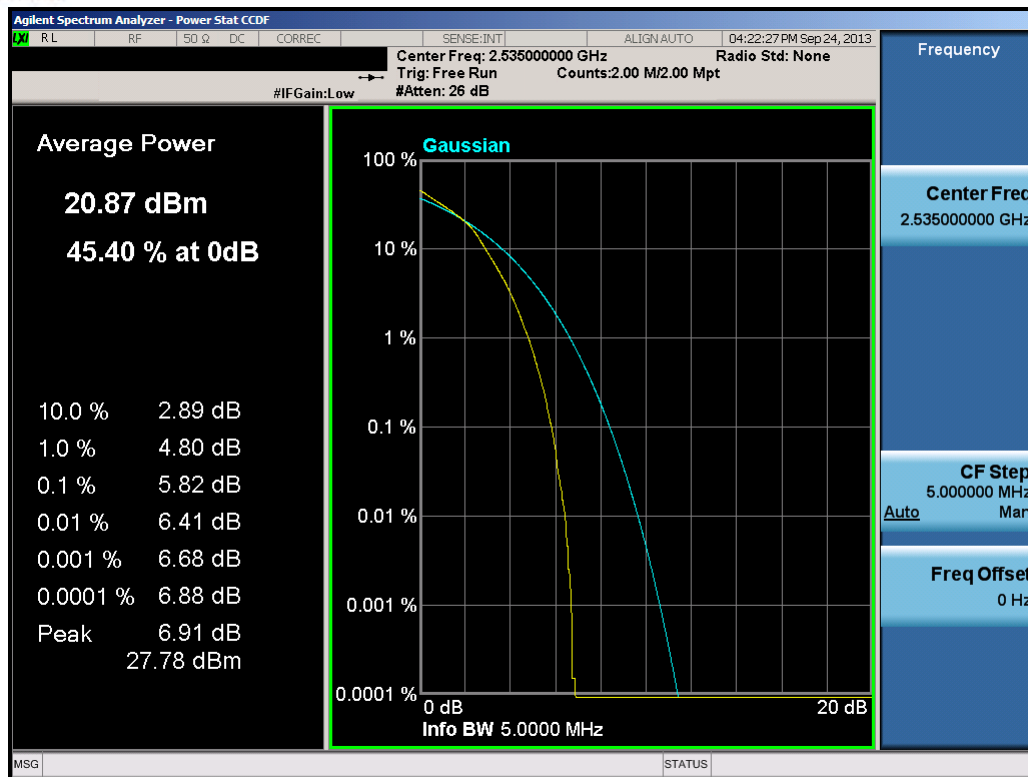


Plot 11-12. Upper Extended Band Edge Plot (5.0MHz QPSK – RB Size 25)



Plot 11-13. PAR Plot (5.0MHz QPSK – RB Size 25)

FCC ID: ZNFD950	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1309161874.ZNF	Test Dates: 09/24 - 10/08/2013	EUT Type: Portable Handset		Page 90 of 110



Plot 11-14. PAR Plot (5.0MHz 16-QAM – RB Size 25)



Plot 11-15. ACP Plot (5.0MHz QPSK – RB Size 25) – Low Channel

FCC ID: ZNFD950	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1309161874.ZNF	Test Dates: 09/24 - 10/08/2013	EUT Type: Portable Handset		Page 91 of 110

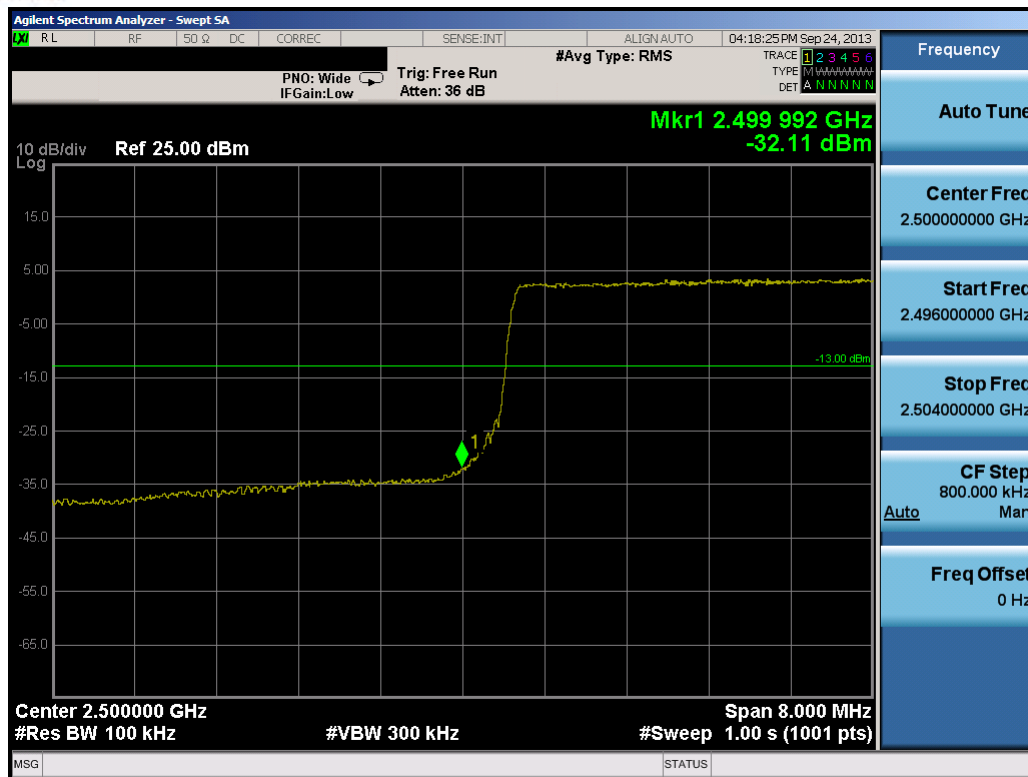


Plot 11-16. ACP Plot (5.0MHz QPSK – RB Size 25) Mid Channel

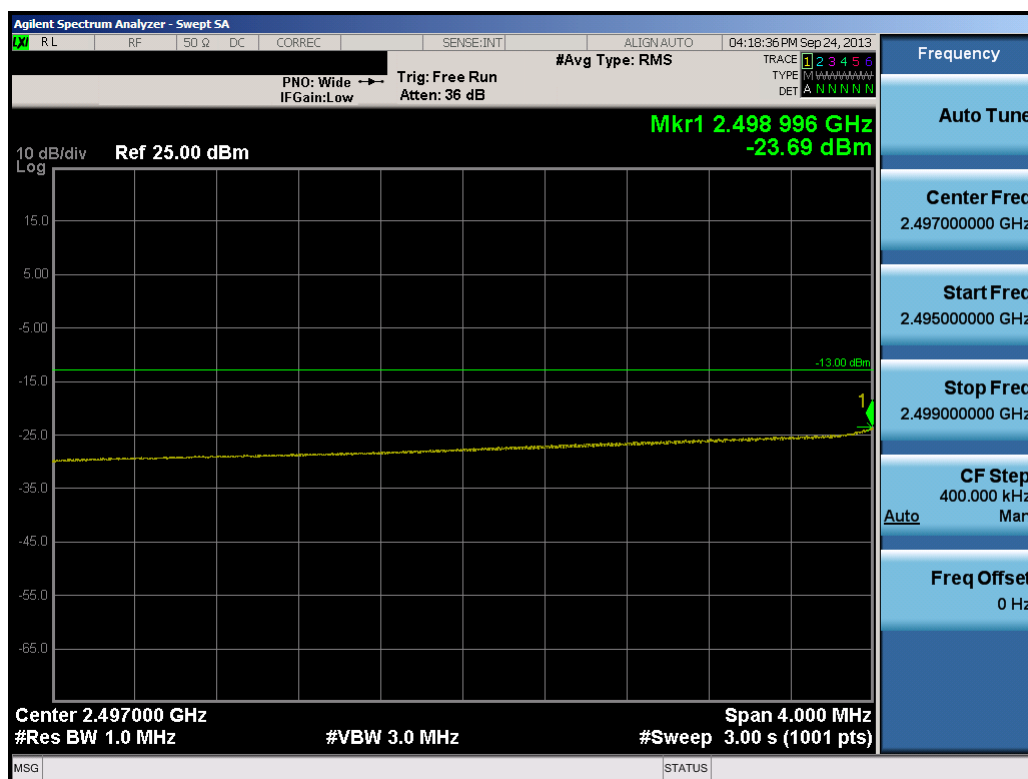


Plot 11-17. ACP Plot (5.0MHz QPSK – RB Size 25) High Channel


FCC ID: ZNFD950	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1309161874.ZNF	Test Dates: 09/24 - 10/08/2013	EUT Type: Portable Handset		Page 92 of 110

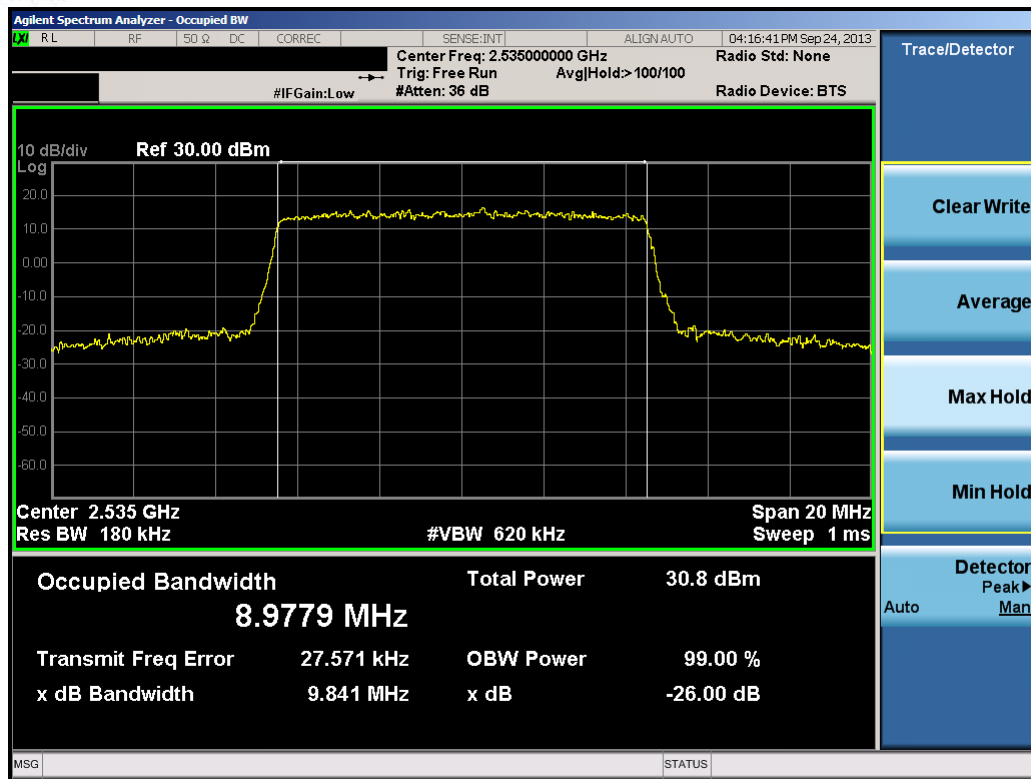


### Plot 11-18. Lower Band Edge Plot (10.0MHz QPSK – RB Size 50)

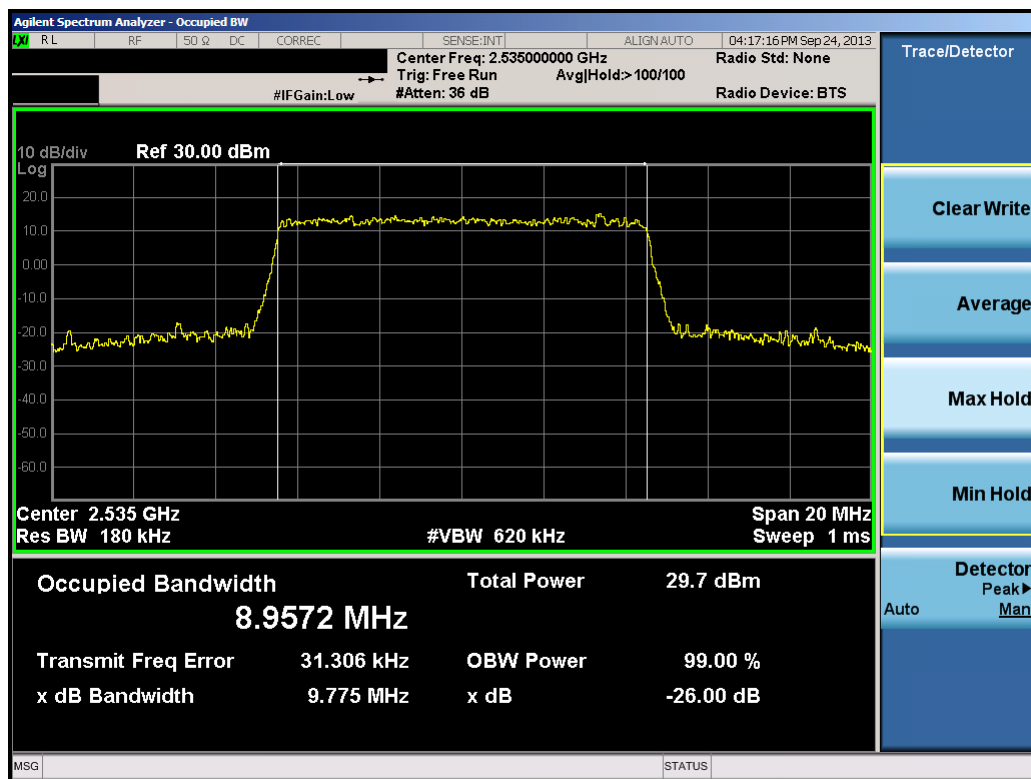


### Plot 11-19. Lower Extended Band Edge Plot (10.0MHz QPSK – RB Size 50)

<b>FCC ID:</b> ZNFD950	 <b>FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)</b> 		<b>Reviewed by:</b> Quality Manager
<b>Test Report S/N:</b> 0Y1309161874.ZNF	<b>Test Dates:</b> 09/24 - 10/08/2013	<b>EUT Type:</b> Portable Handset	Page 93 of 110

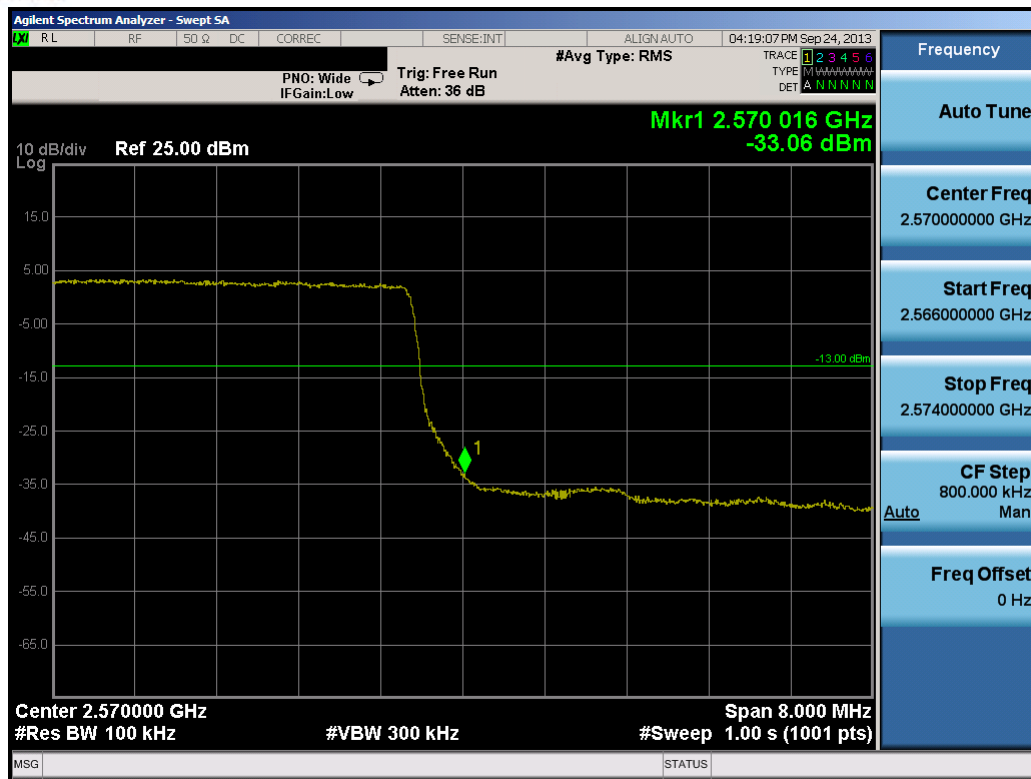


Plot 11-20. Occupied Bandwidth Plot (10.0MHz QPSK – RB Size 50)

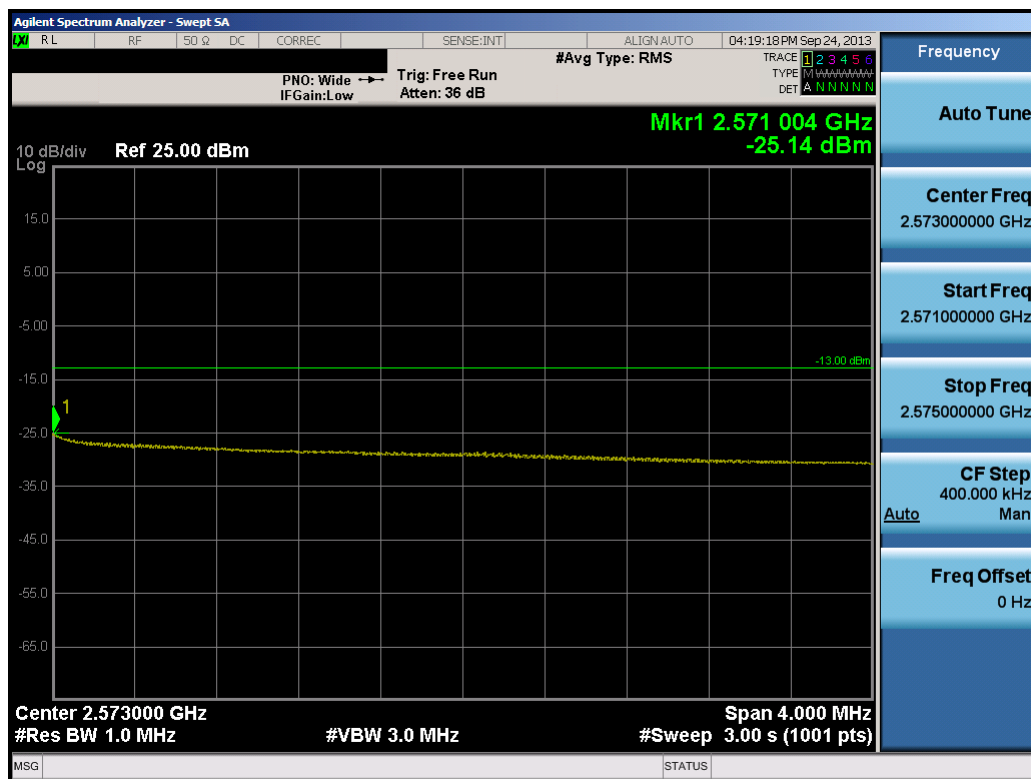


Plot 11-21. Occupied Bandwidth Plot (10.0MHz 16-QAM – RB Size 50)

FCC ID: ZNFD950	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1309161874.ZNF	Test Dates: 09/24 - 10/08/2013	EUT Type: Portable Handset		Page 94 of 110

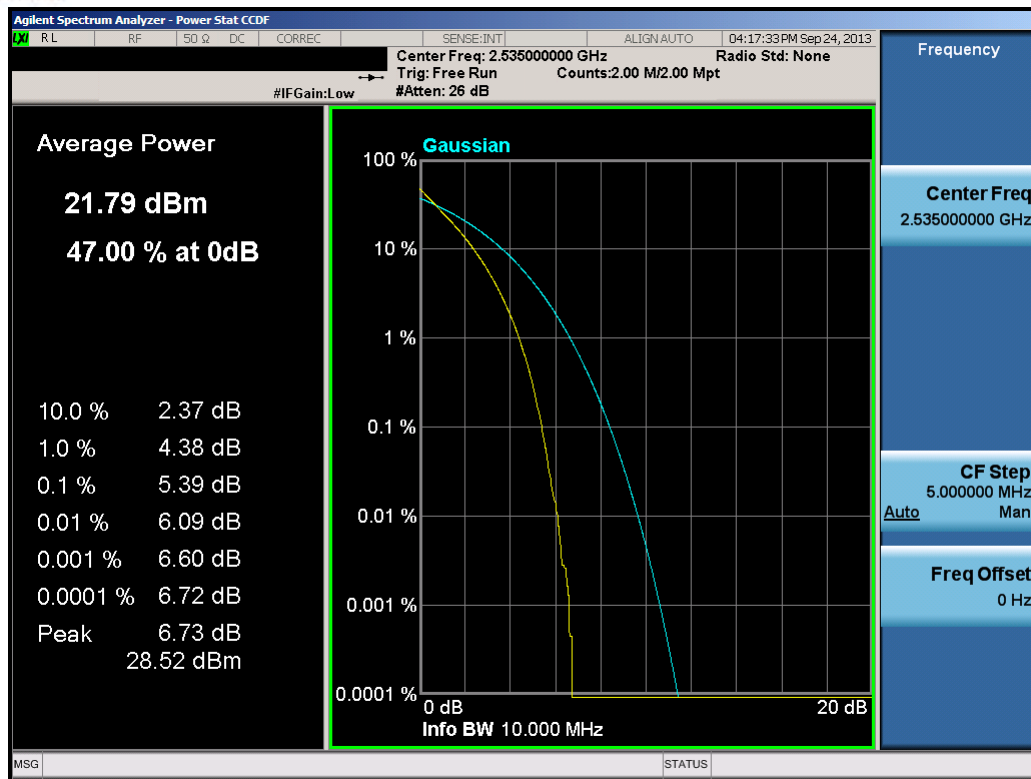


Plot 11-22. Upper Band Edge Plot (10.0MHz QPSK – RB Size 50)

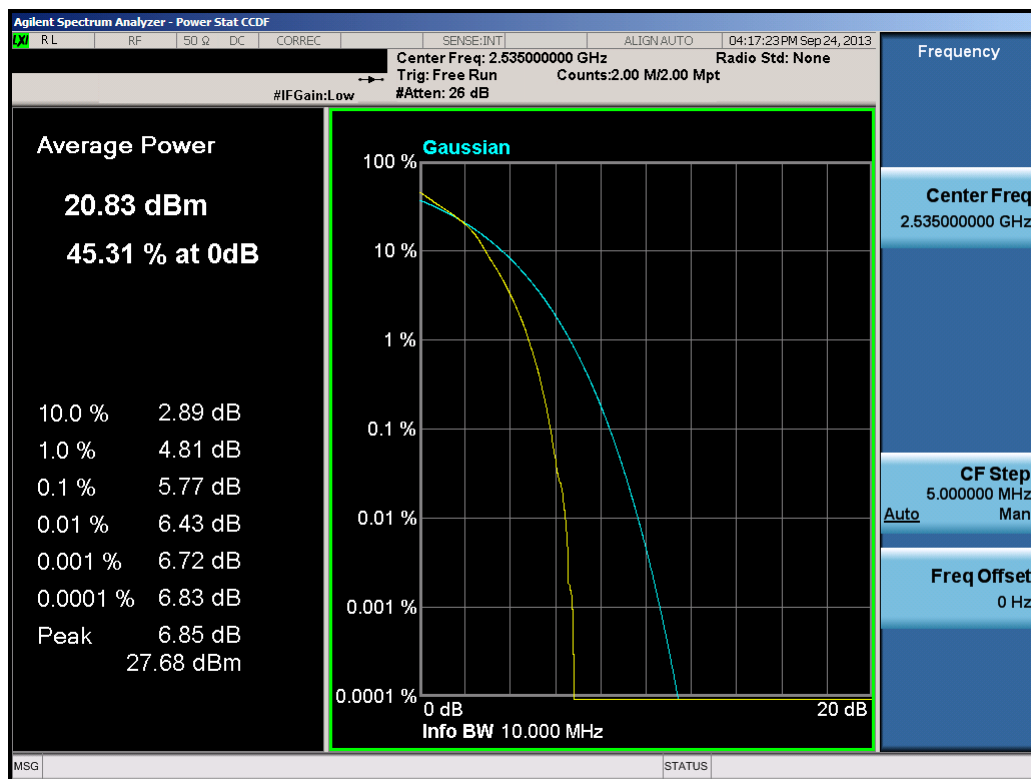


Plot 11-23. Upper Extended Band Edge Plot (10.0MHz QPSK – RB Size 50)

FCC ID: ZNFD950	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1309161874.ZNF	Test Dates: 09/24 - 10/08/2013	EUT Type: Portable Handset		Page 95 of 110



Plot 11-24. PAR Plot (10.0MHz QPSK – RB Size 50)

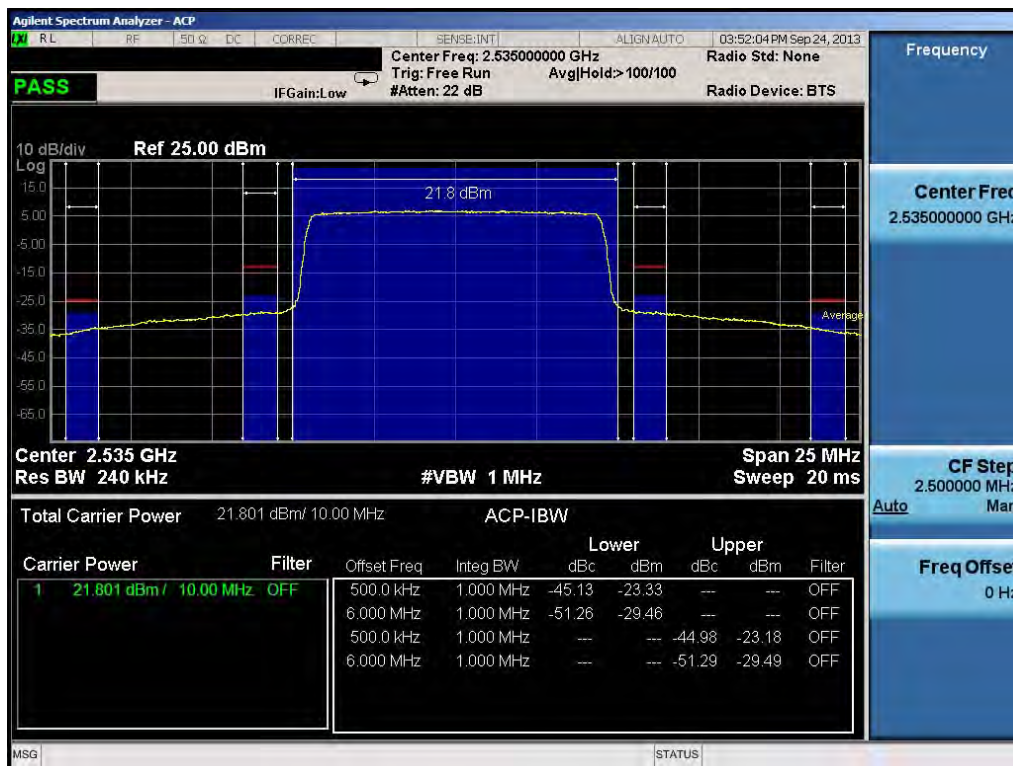


Plot 11-25. PAR Plot (10.0MHz 16-QAM – RB Size 50)

FCC ID: ZNFD950	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1309161874.ZNF	Test Dates: 09/24 - 10/08/2013	EUT Type: Portable Handset		Page 96 of 110



Plot 11-26. ACP Plot (10.0MHz QPSK – RB Size 50) – Low Channel

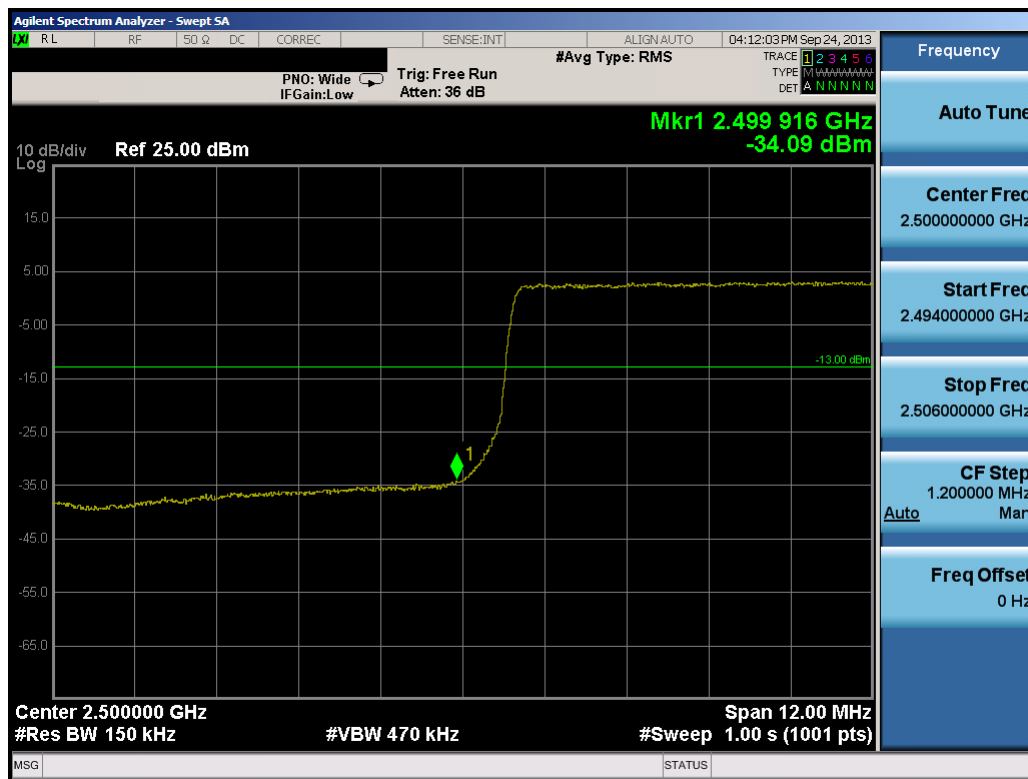


Plot 11-27. ACP Plot (10.0MHz QPSK – RB Size 50) – Mid Channel

FCC ID: ZNFD950	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1309161874.ZNF	Test Dates: 09/24 - 10/08/2013	EUT Type: Portable Handset		Page 97 of 110

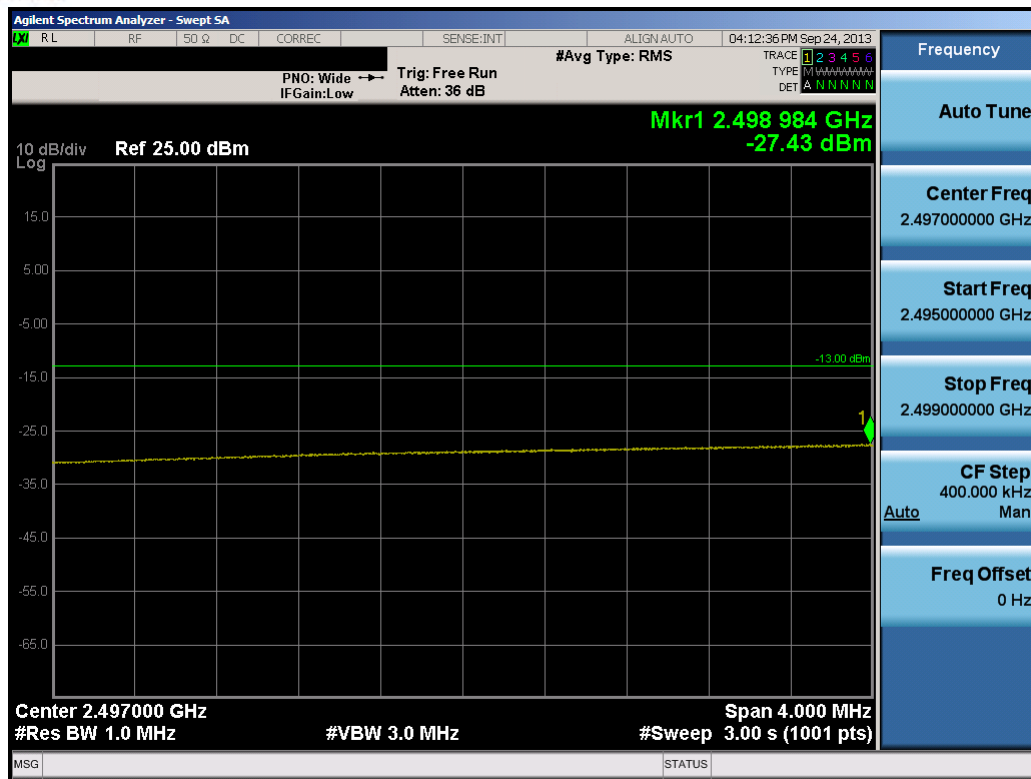


Plot 11-28. ACP Plot (10.0MHz QPSK – RB Size 50) – High Channel

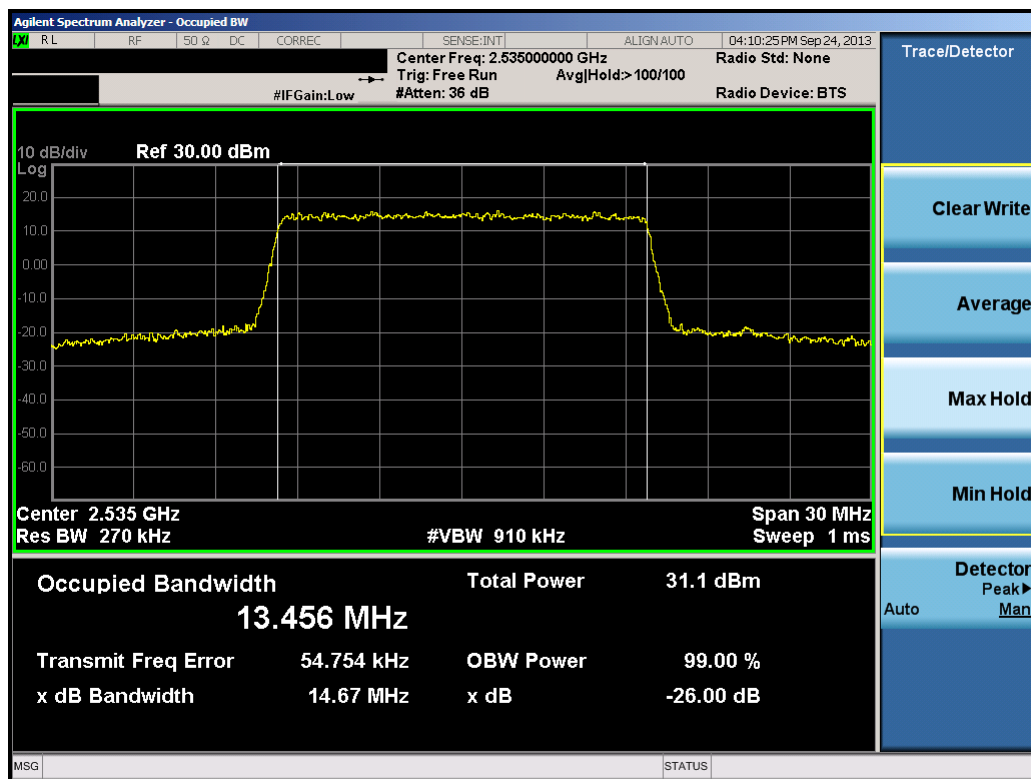


Plot 11-29. Lower Band Edge Plot (15.0MHz QPSK – RB Size 75)

FCC ID: ZNFD950	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)	<b>LG</b>	Reviewed by: Quality Manager
Test Report S/N: 0Y1309161874.ZNF	Test Dates: 09/24 - 10/08/2013	EUT Type: Portable Handset		Page 98 of 110

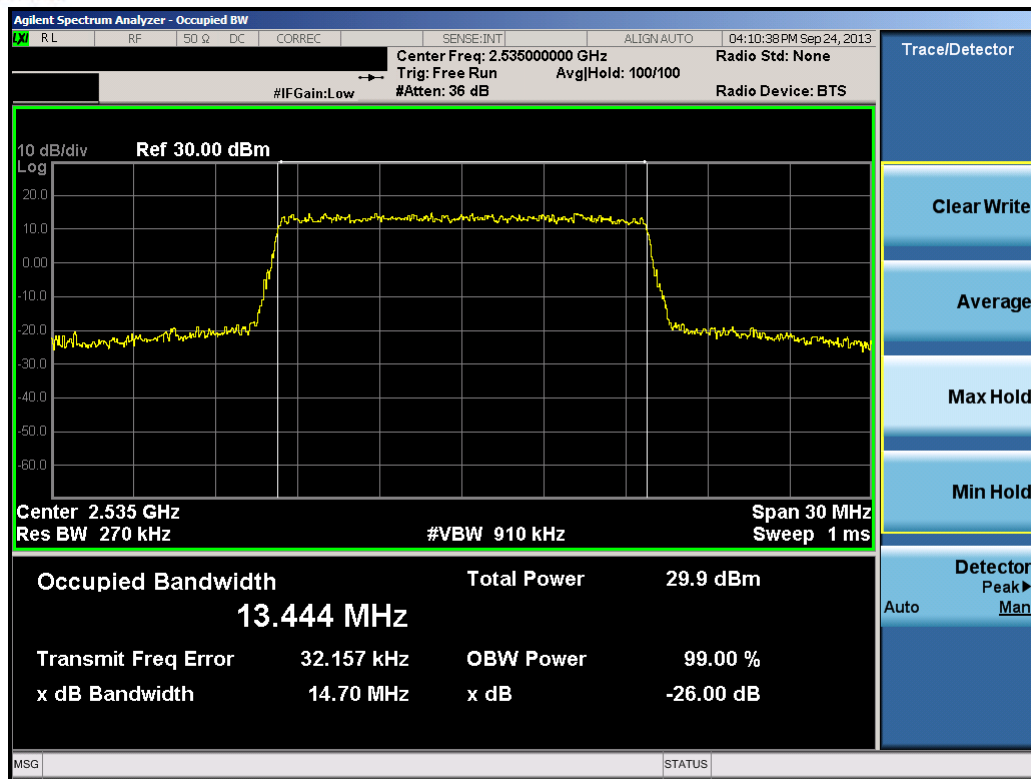


Plot 11-30. Lower Extended Band Edge Plot (15.0MHz QPSK – RB Size 75)

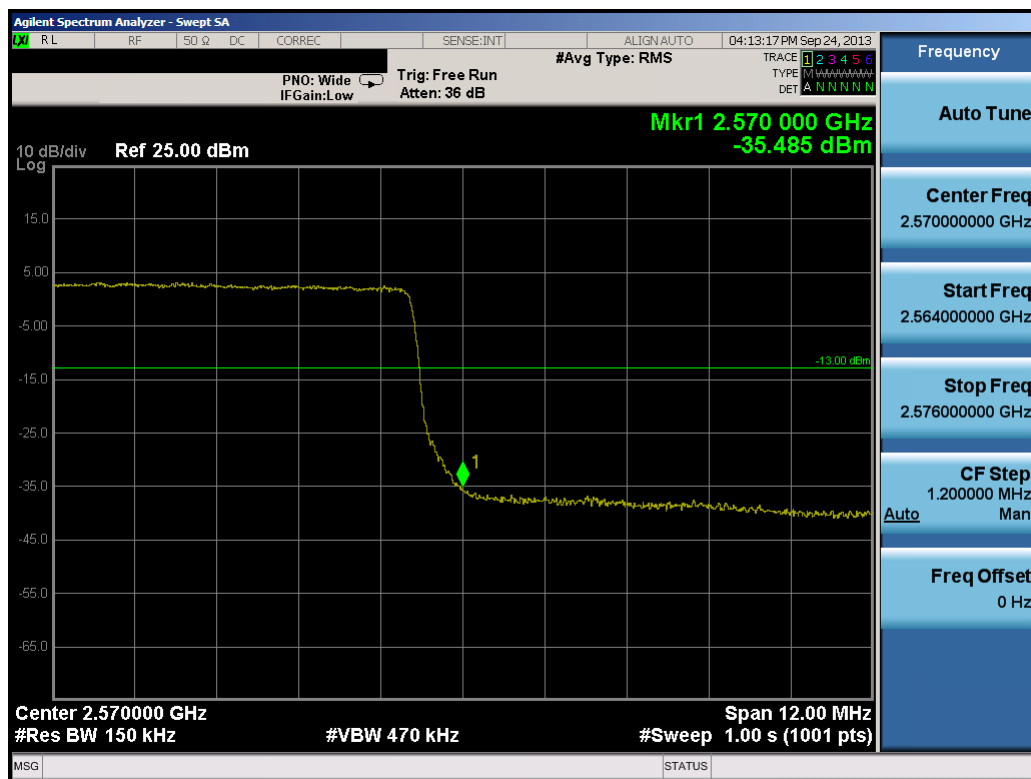


Plot 11-31. Occupied Bandwidth Plot (15.0MHz QPSK – RB Size 75)

FCC ID: ZNFD950	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1309161874.ZNF	Test Dates: 09/24 - 10/08/2013	EUT Type: Portable Handset		Page 99 of 110

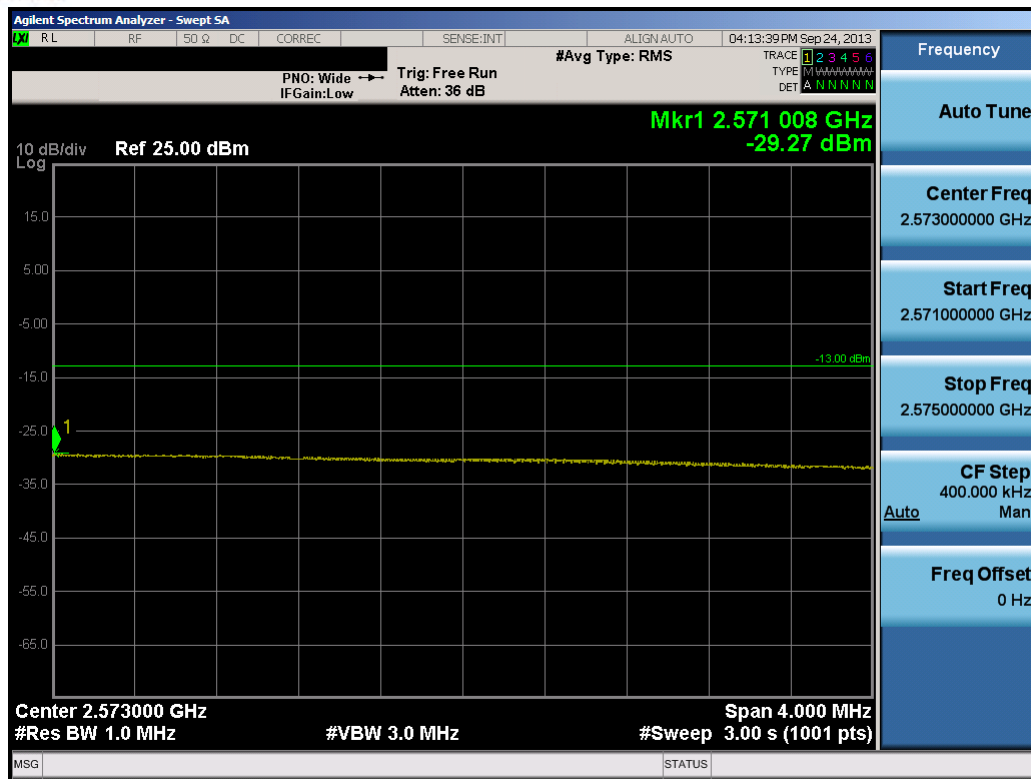


Plot 11-32. Occupied Bandwidth Plot (15.0MHz 16-QAM – RB Size 75)

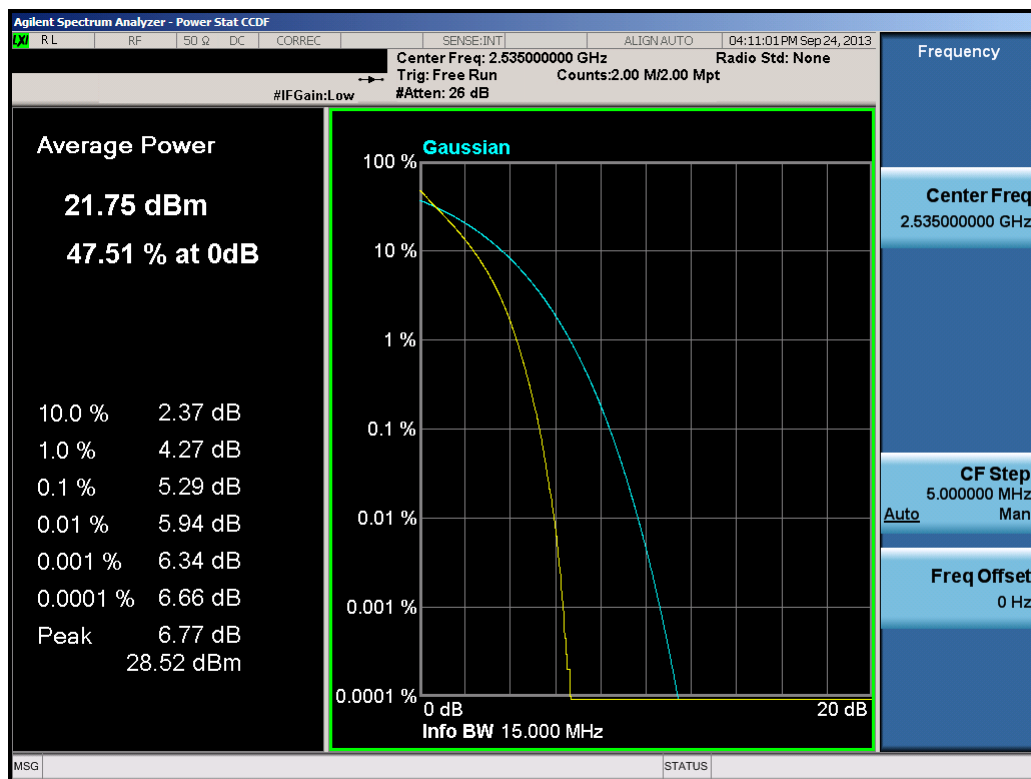


Plot 11-33. Upper Band Edge Plot (15.0MHz QPSK – RB Size 75)

FCC ID: ZNFD950	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)	<b>LG</b>	Reviewed by: Quality Manager
Test Report S/N: 0Y1309161874.ZNF	Test Dates: 09/24 - 10/08/2013	EUT Type: Portable Handset		Page 100 of 110

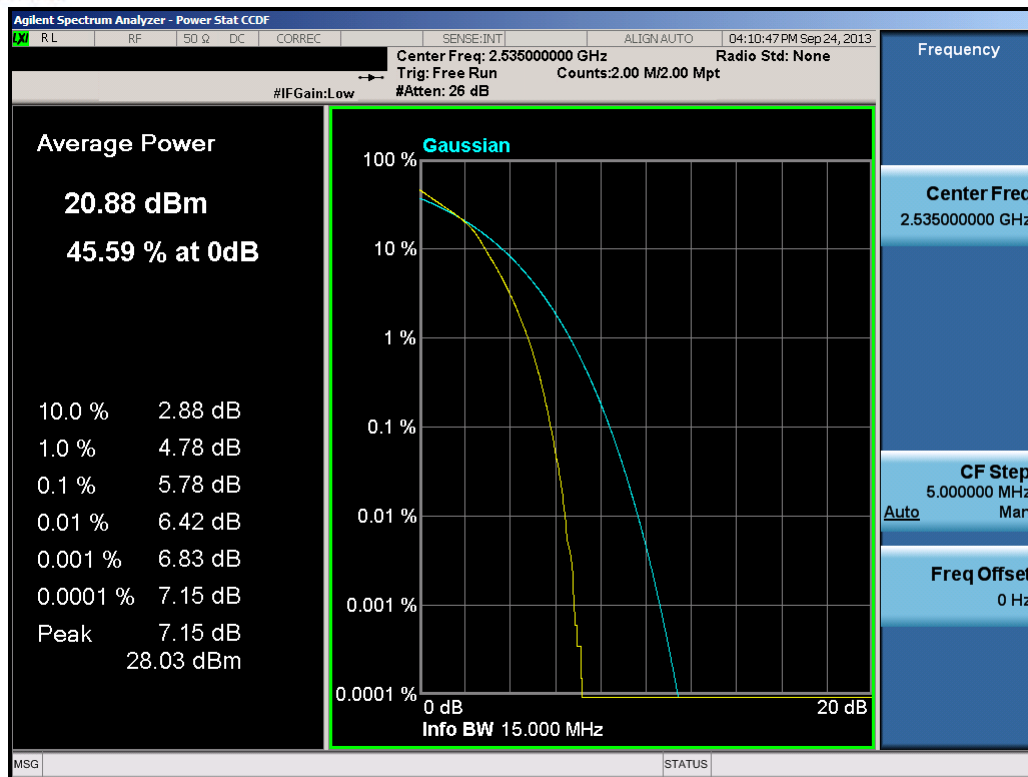


Plot 11-34. Upper Extended Band Edge Plot (15.0MHz QPSK – RB Size 75)

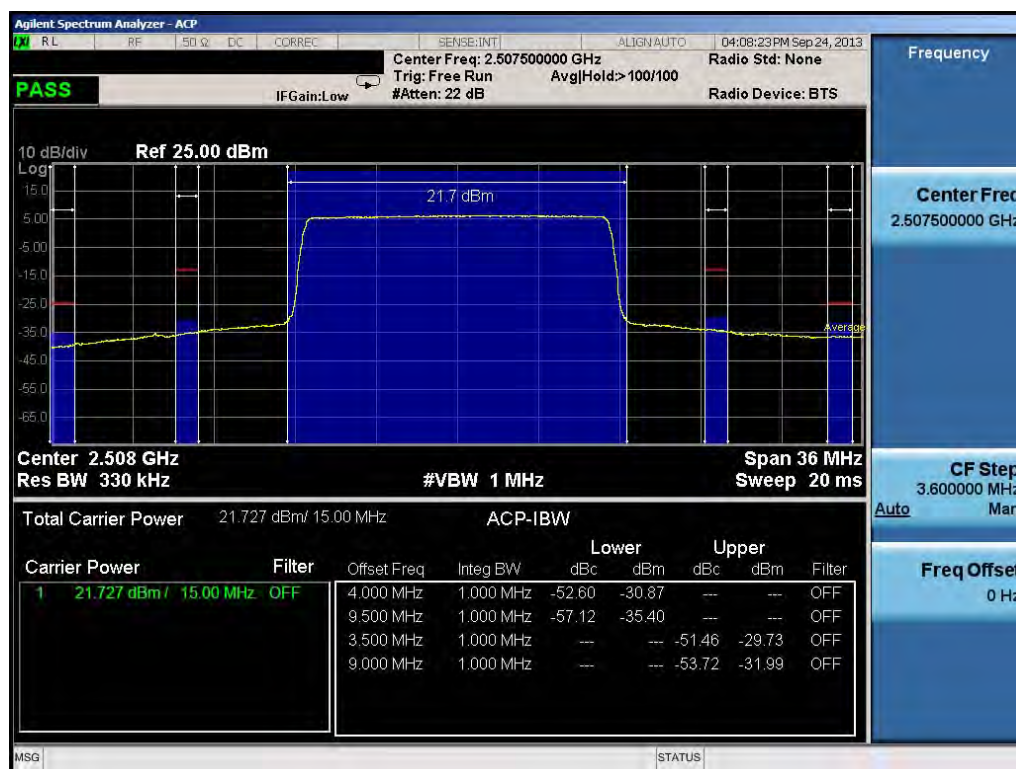


Plot 11-35. PAR Plot (15.0MHz QPSK – RB Size 75)

FCC ID: ZNFD950	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1309161874.ZNF	Test Dates: 09/24 - 10/08/2013	EUT Type: Portable Handset		Page 101 of 110

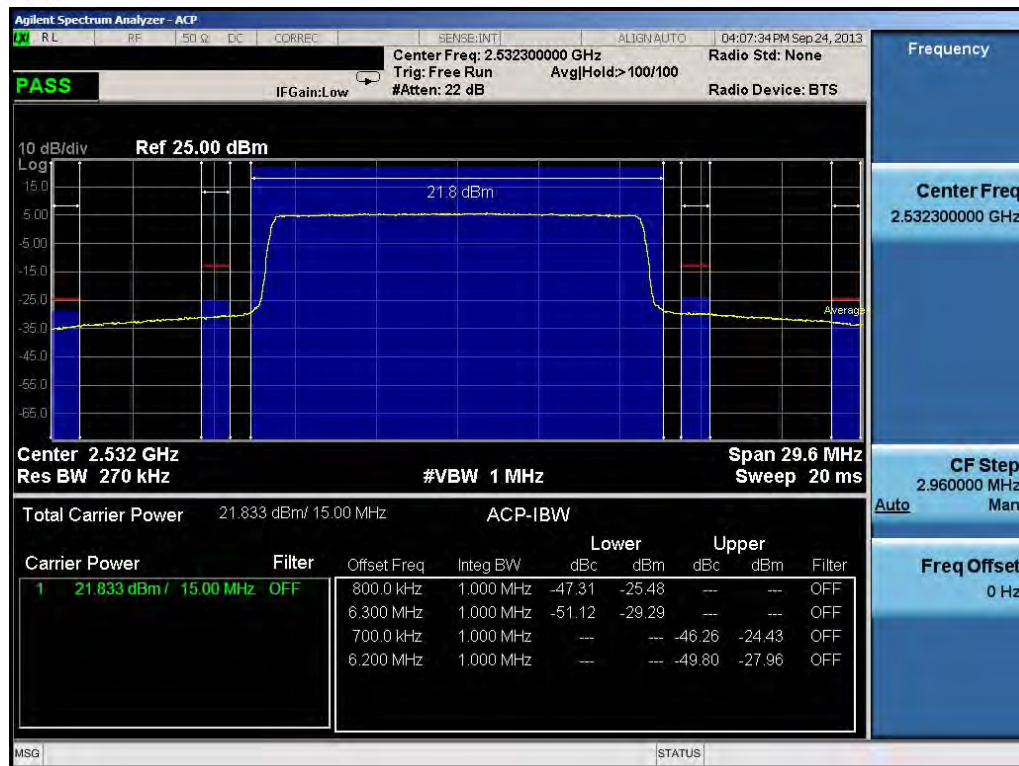


Plot 11-36. PAR Plot (15.0MHz 16-QAM – RB Size 75)



Plot 11-37. ACP Plot (15.0MHz QPSK – RB Size 75) – Low Channel

FCC ID: ZNFD950	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
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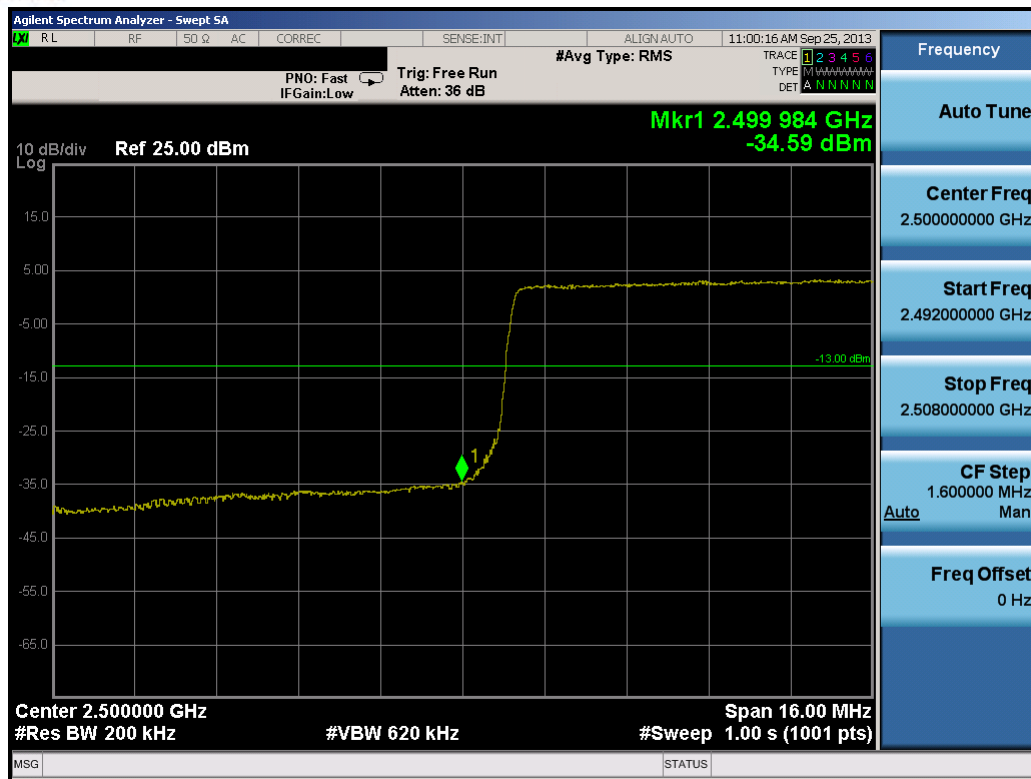


Plot 11-38. ACP Plot (15.0MHz QPSK – RB Size 75) – Mid Channel

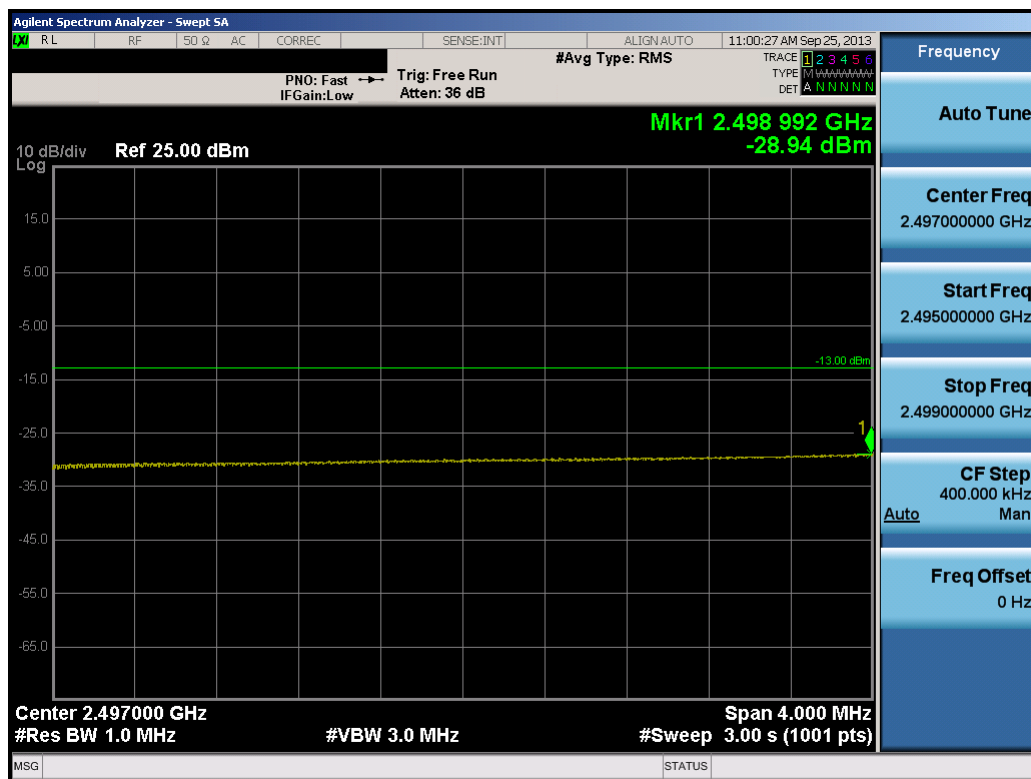


Plot 11-39. ACP Plot (15.0MHz QPSK – RB Size 75) – High Channel

FCC ID: ZNFD950	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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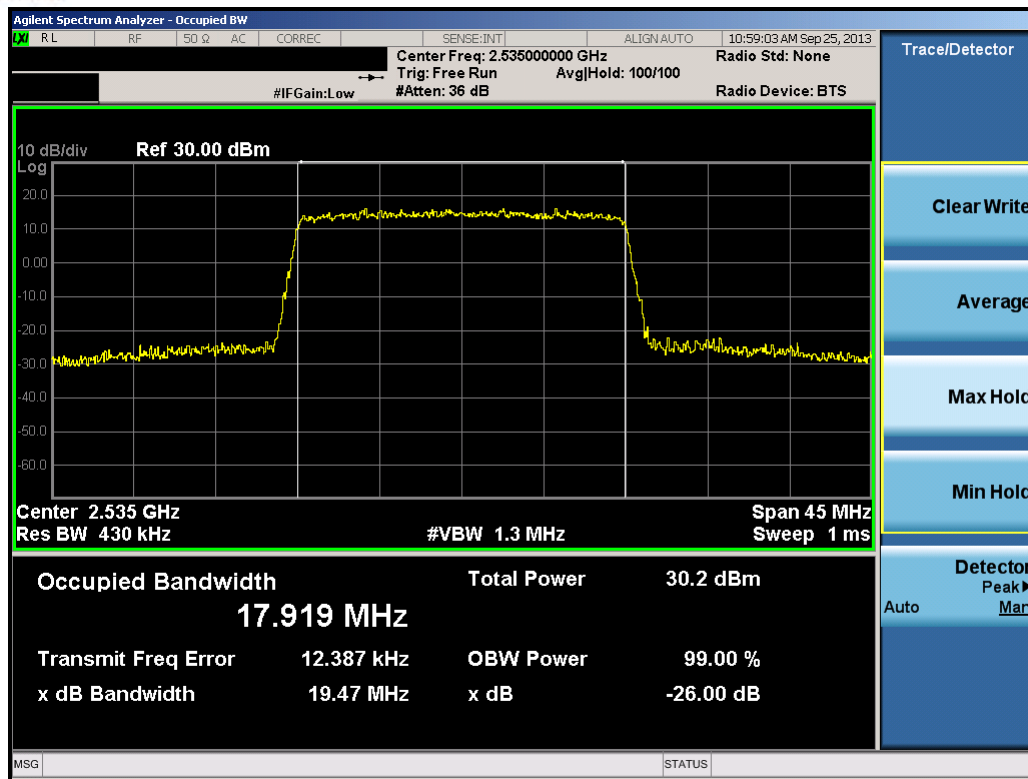


Plot 11-40. Lower Band Edge Plot (20.0MHz QPSK – RB Size 100)

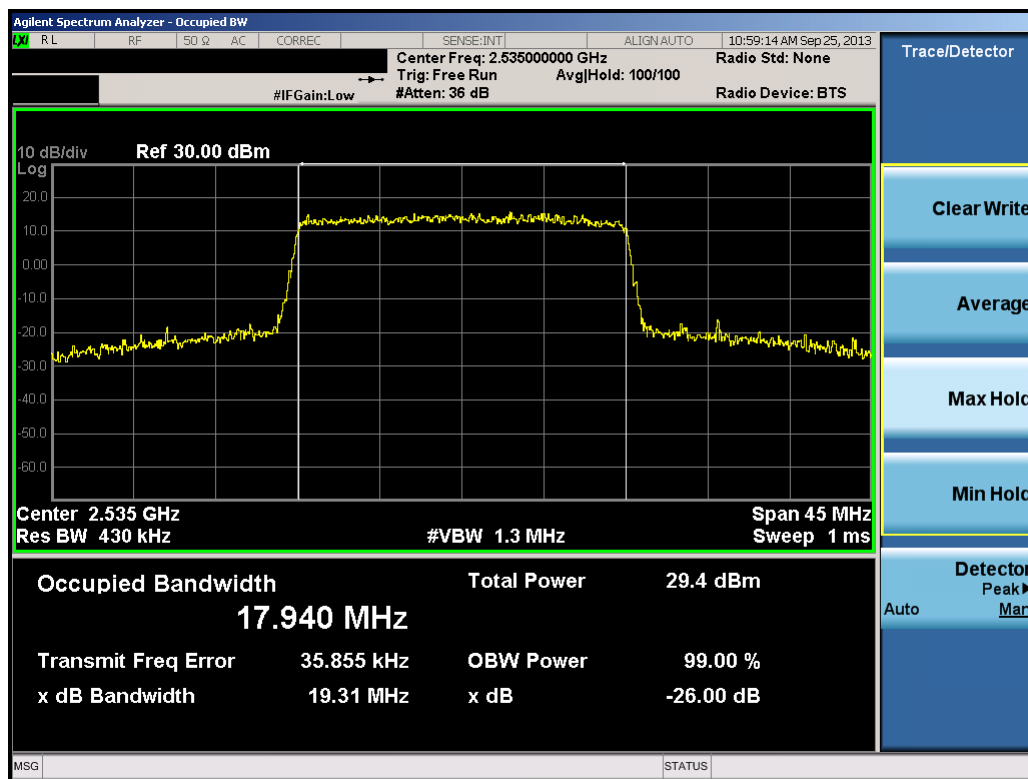


Plot 11-41. Lower Extended Band Edge Plot (20.0MHz QPSK – RB Size 100)

FCC ID: ZNFD950	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1309161874.ZNF	Test Dates: 09/24 - 10/08/2013	EUT Type: Portable Handset		Page 104 of 110

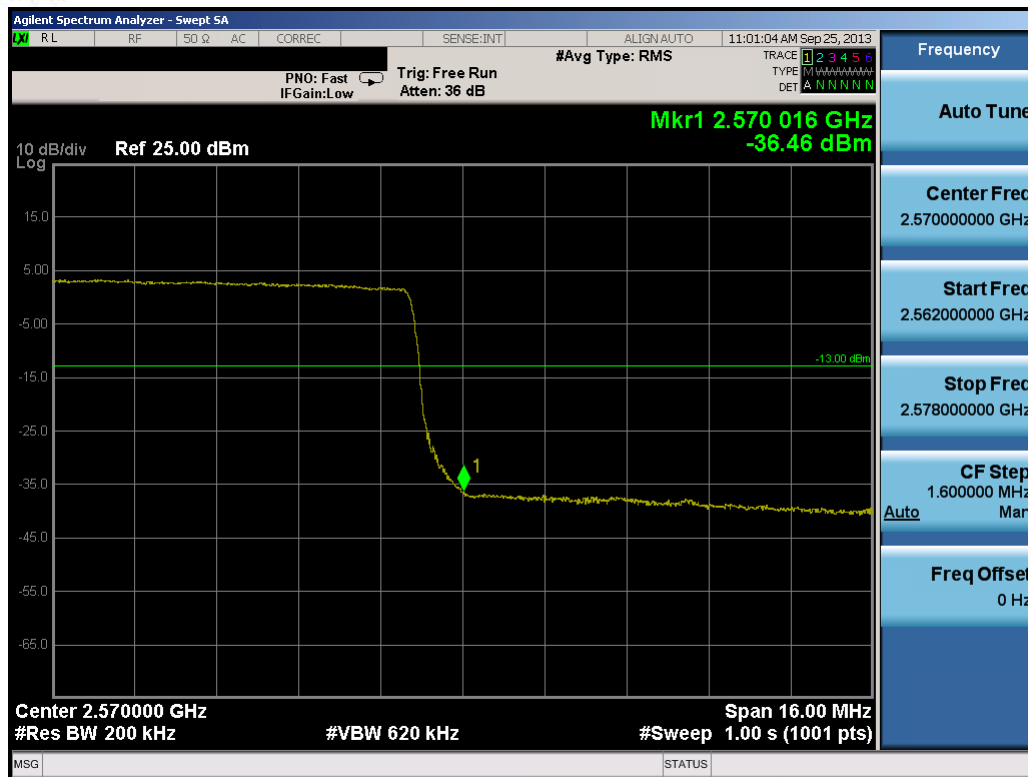


Plot 11-42. Occupied Bandwidth Plot (20.0MHz QPSK – RB Size 100)

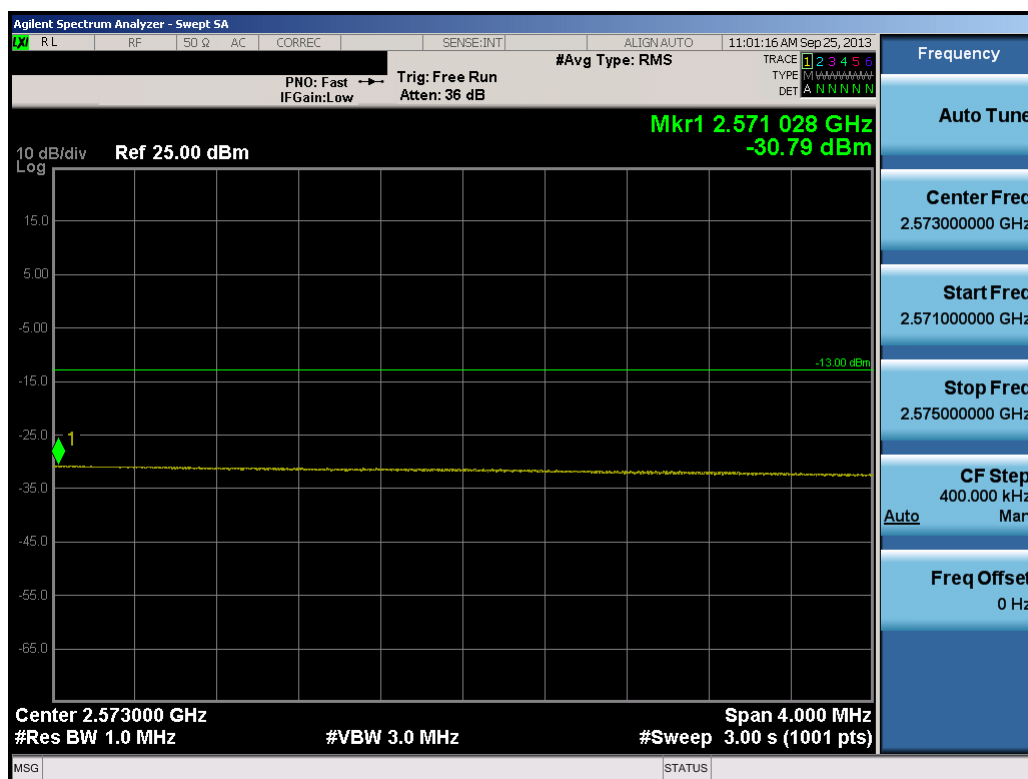


Plot 11-43. Occupied Bandwidth Plot (20.0MHz 16-QAM – RB Size 100)



FCC ID: ZNFD950	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1309161874.ZNF	Test Dates: 09/24 - 10/08/2013	EUT Type: Portable Handset		Page 105 of 110

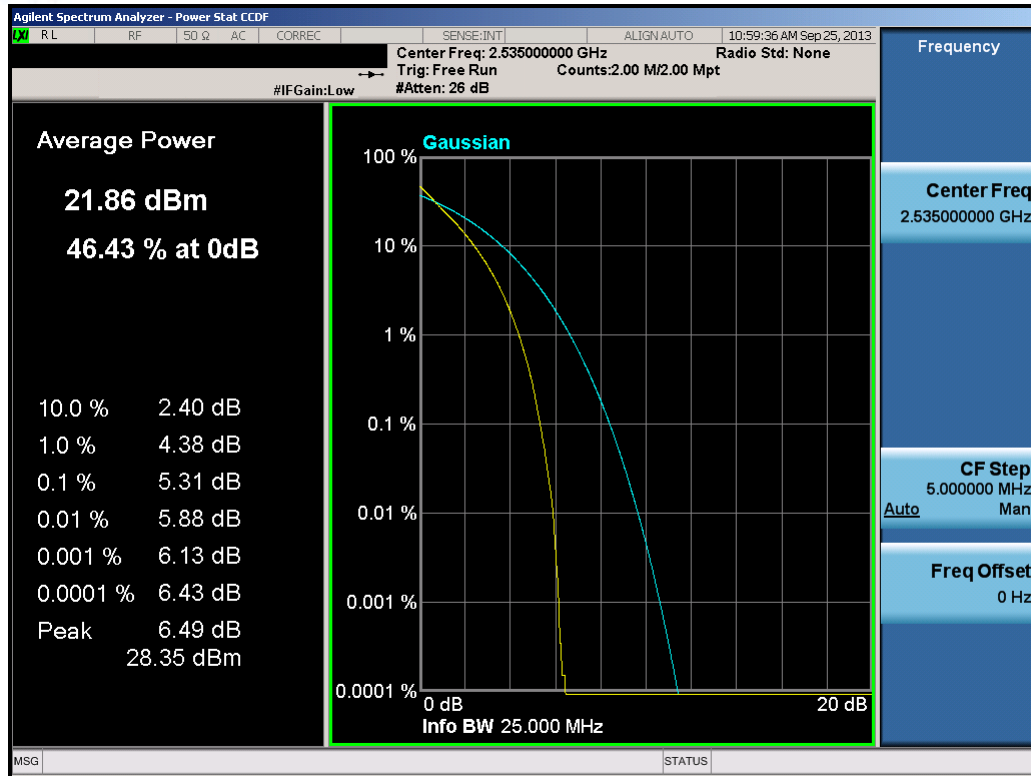


#### Plot 11-44. Upper Band Edge Plot (20.0MHz QPSK – RB Size 100)

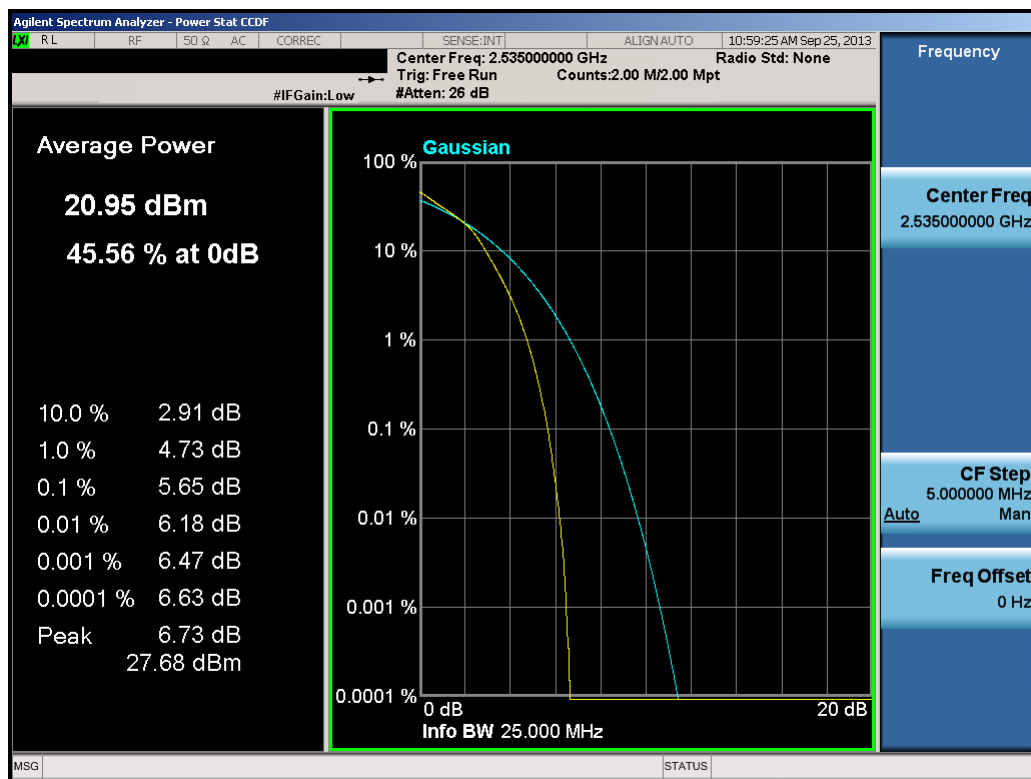


### Plot 11-45. Upper Extended Band Edge Plot (20.0MHz QPSK – RB Size 100)

<b>FCC ID:</b> ZNFD950	 <b>FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)</b> 		<b>Reviewed by:</b> Quality Manager
<b>Test Report S/N:</b> 0Y1309161874.ZNF	<b>Test Dates:</b> 09/24 - 10/08/2013	<b>EUT Type:</b> Portable Handset	Page 106 of 110

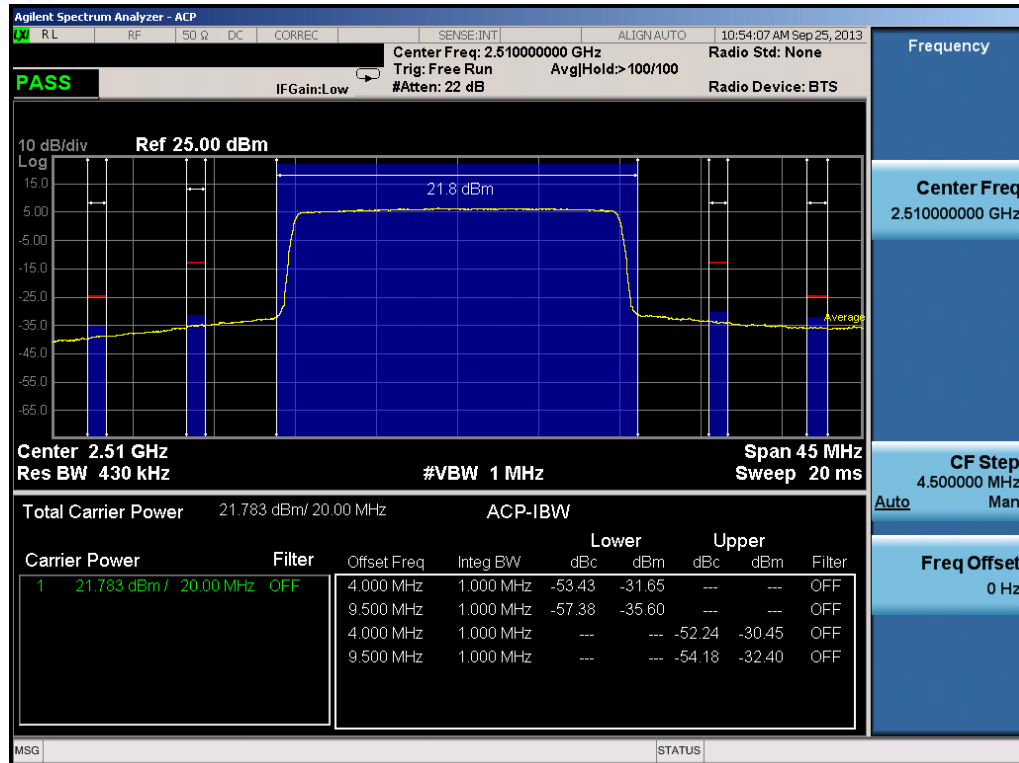


Plot 11-46. PAR Plot (20.0MHz QPSK – RB Size 100)

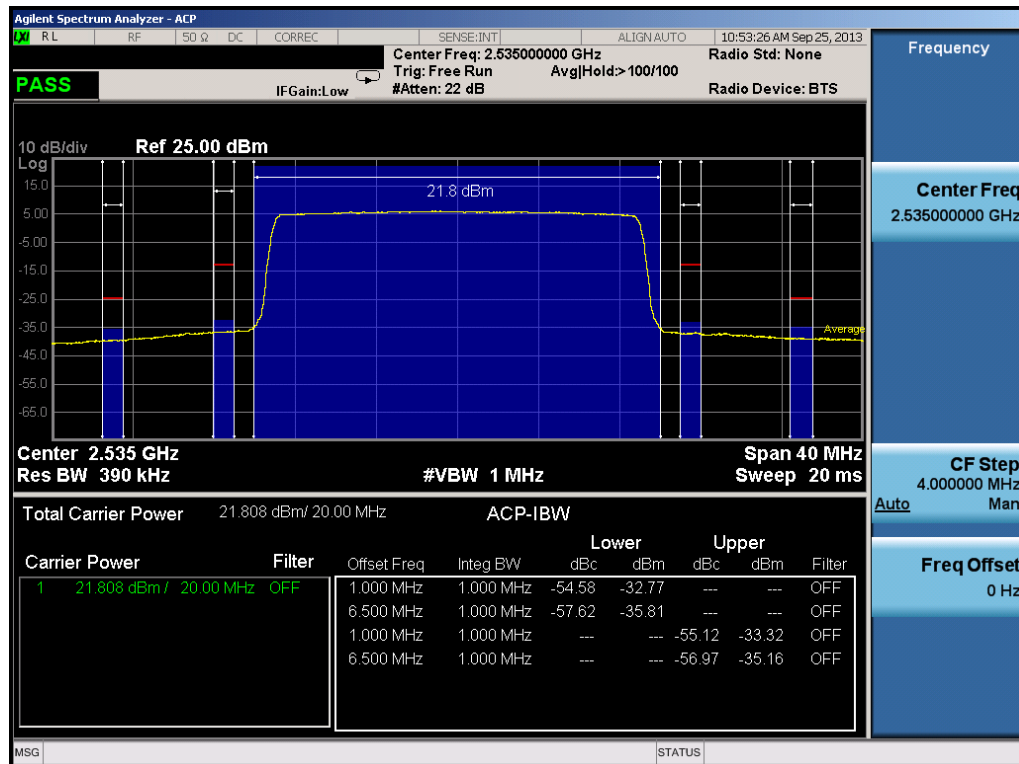


Plot 11-47. PAR Plot (20.0MHz 16-QAM – RB Size 100)

FCC ID: ZNFD950	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1309161874.ZNF	Test Dates: 09/24 - 10/08/2013	EUT Type: Portable Handset		Page 107 of 110

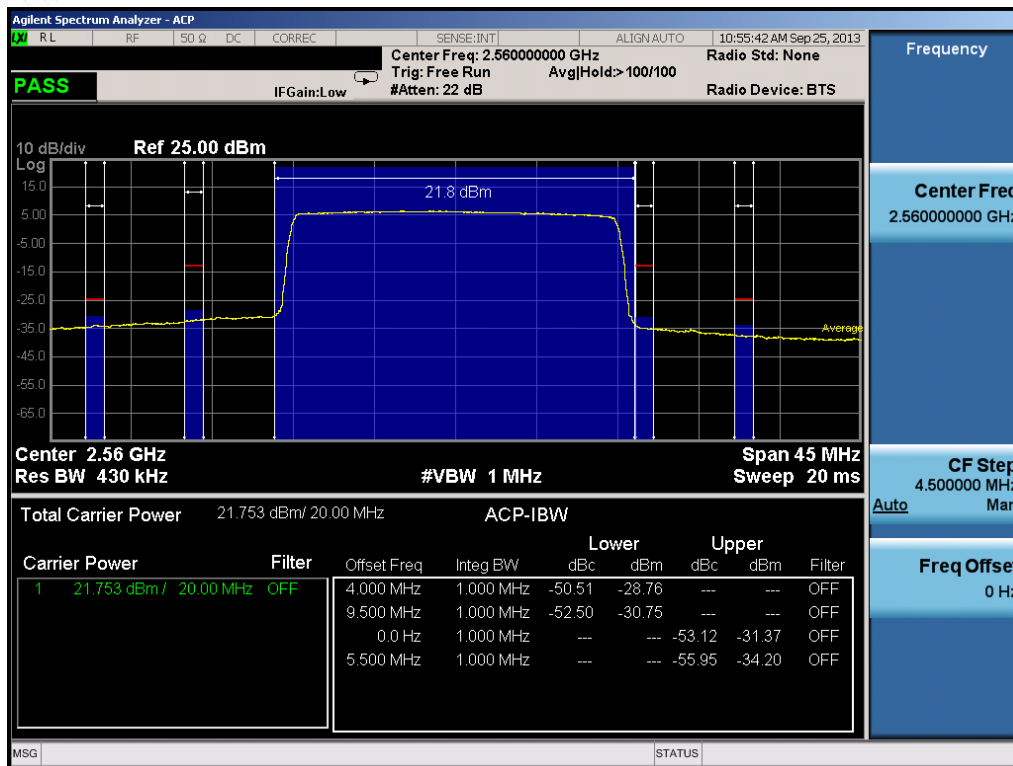


Plot 11-48. ACP Plot (20.0MHz QPSK – RB Size 100) – Low Channel



Plot 11-49. ACP Plot (20.0MHz QPSK – RB Size 100) – Mid Channel

FCC ID: ZNFD950	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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Plot 11-50. ACP Plot (20.0MHz QPSK – RB Size 100) – High Channel

FCC ID: ZNFD950	<b>FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)</b>			Reviewed by: Quality Manager
Test Report S/N: 0Y1309161874.ZNF	Test Dates: 09/24 - 10/08/2013	EUT Type: Portable Handset		Page 109 of 110

## 12.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **LG Portable Handset FCC ID: ZNFD950** complies with all the requirements of Parts 2, 22, 24, 27 of the FCC rules for LTE operation only.

FCC ID: ZNFD950		FCC Pt. 22, 24, 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1309161874.ZNF	Test Dates: 09/24 - 10/08/2013	EUT Type: Portable Handset		Page 110 of 110