

PCTEST ENGINEERING LABORATORY, INC.

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### MEASUREMENT REPORT FCC Part 22, 24, & 27 LTE

#### **Applicant Name:**

FCC ID :

EUT Type: Model(s):

**APPLICANT:** 

**FCC Classification:** 

FCC Rule Part(s):

Test Procedure(s):

**Test Device Serial No.:** 

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

Date of Testing: 3/31 - 4/21/2014 **Test Site/Location:** PCTEST Lab., Columbia, MD, USA **Test Report Serial No.:** 0Y1403310644-R1.ZNF

#### **ZNFD850**

### LG ELECTRONICS MOBILECOMM U.S.A

PCS Licensed Transmitter Held to Ear (PCE) §2; §22; §24; §27 ANSI/TIA-603-C-2004, KDB 971168 v02r01 Portable Handset LG-D850, D850, LGD850, LG-D852, D852, LGD852, LG-D852G, D852G, LGD852G identical prototype [S/N: LTE Cond 3, LTE Rad]

				ERP/EIRP	
Mode	Tx Frequency (MHz)	Emission Designator	Modulation	Max. Pow er (W)	Max. Pow er (dBm)
LTE Band 17	706.5 - 713.5	4M49G7D	QPSK	0.085	19.31
LTE Band 17	706.5 - 713.5	4M49W7D	16QAM	0.067	18.24
LTE Band 17	709 - 711	8M99G7D	QPSK	0.087	19.39
LTE Band 17	709 - 711	8M98W7D	16QAM	0.069	18.39
LTE Band 5	826.5 - 846.5	4M49G7D	QPSK	0.082	19.11
LTE Band 5	826.5 - 846.5	4M50W7D	16QAM	0.055	17.38
LTE Band 5	829 - 844	9M02G7D	QPSK	0.071	18.54
LTE Band 5	829 - 844	8M99W7D	16QAM	0.053	17.27
LTE Band 4	1712.5 - 1752.5	4M49G7D	QPSK	0.261	24.17
LTE Band 4	1712.5 - 1752.5	4M49W7D	16QAM	0.154	21.88
LTE Band 4	1715 - 1750	8M98G7D	QPSK	0.246	23.91
LTE Band 4	1715 - 1750	8M96W7D	16QAM	0.174	22.40
LTE Band 4	1717.5 - 1747.5	13M5G7D	QPSK	0.256	24.08
LTE Band 4	1717.5 - 1747.5	13M5W7D	16QAM	0.185	22.67
LTE Band 4	1720 - 1745	18M0G7D	QPSK	0.241	23.82
LTE Band 4	1720 - 1745	18M0W7D	16QAM	0.176	22.45
LTE Band 2	1852.5 - 1907.5	4M49G7D	QPSK	0.318	25.02
LTE Band 2	1852.5 - 1907.5	4M49W7D	16QAM	0.226	23.53
LTE Band 2	1855 - 1905	9M00G7D	QPSK	0.288	24.60
LTE Band 2	1855 - 1905	8M95W7D	16QAM	0.215	23.33
LTE Band 2	1857.5 - 1902.5	13M4G7D	QPSK	0.308	24.89
LTE Band 2	1857.5 - 1902.5	13M5W7D	16QAM	0.216	23.35
LTE Band 2	1860 - 1900	17M89G7D	QPSK	0.259	24.13
LTE Band 2	1860 - 1900	17M9W7D	16QAM	0.173	22.39
LTE Band 7	2502.5 - 2567.5	4M51G7D	QPSK	0.091	19.60
LTE Band 7	2502.5 - 2567.5	4M49W7D	16QAM	0.075	18.77
LTE Band 7	2505 - 2565	8M97G7D	QPSK	0.090	19.55
LTE Band 7	2506 - 2565	8M96W7D	16QAM	0.072	18.57
LTE Band 7	2507.5 - 2562.5	13M4G7D	QPSK	0.085	19.32
LTE Band 7	2507.5 - 2562.5	13M5W7D	16QAM	0.069	18.40
LTE Band 7	2510 - 2560	18M0G7D	QPSK	0.088	19.46
LTE Band 7	2510 - 2560	18M0W7D	16QAM	0.067	18.28

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.

This report (S/N: 0Y1403310644-R1.ZNF) superscedes and replaces the previous version of this test report (S/N: 0Y1403310644.ZNF). Please appropriately discard the previous version of this test report.

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## MEASUREMENT REPORT FCC Part 22, 24, & 27



### §2.1033 General Information

APPLICANT:	LG Electronics MobileComm U	J.S.A	
APPLICANT ADDRESS:	1000 Sylvan Avenue		
	Englewood Cliffs, NJ 07632, U	nited States	
TEST SITE:	PCTEST ENGINEERING LAB	ORATORY, INC.	
TEST SITE ADDRESS:	7185 Oakland Mills Road, Colu	umbia, MD 21045 USA	
FCC RULE PART(S):	§2; §22; §24; §27		
BASE MODEL:	LG-D850		
FCC ID:	ZNFD850		
FCC CLASSIFICATION:	PCS Licensed Transmitter Hele	d to Ear (PCE)	
FREQUENCY TOLERANCE:	±0.00025 % (2.5 ppm)		
Test Device Serial No.:	LTE Cond 3, LTE Rad	Productior X Pre-Production	Engineering
DATE(S) OF TEST:	3/31 - 4/21/2014		
TEST REPORT S/N:	0Y1403310644-R1.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'I (BWI) airport, the city of Baltimore and the Washington, DC area, (See Figure 1-1).

These measurement tests were conducted at the PCTEST Engineering Laboratory, Inc. facility located at 7185 Oakland Mills Road. Columbia. MD 21046. The site coordinates are 39° 10'23" N latitude and 76° 49'50" W longitude. The facility is 0.4 miles North of the FCC laboratory, and the ambient signal and ambient signal strength are approximately equal to those of the FCC laboratory. The detailed description of the measurement facility was found to be in compliance with the requirements of § 2.948 according to ANSI C63.4-2003 on February 15, 2012.

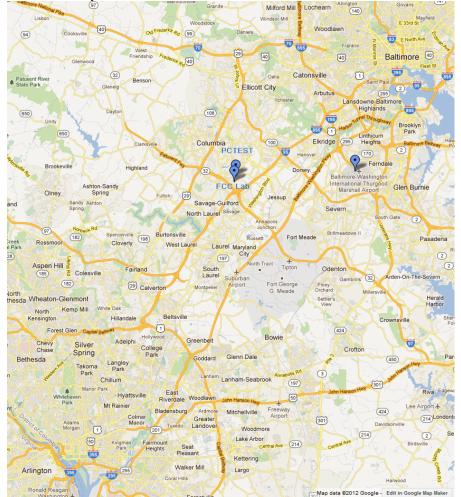


Figure 1-1. Map of the Greater Baltimore and Metropolitan Washington, D.C. area

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### 2.0 PRODUCT INFORMATION

### 2.1 Equipment Description

The Equipment Under Test (EUT) is the **LG Portable Handset FCC ID: ZNFD850**. 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, 850/1700/1900 WCDMA/HSPA, Band 17 (5, 10MHz BW), 5 (5, 10MHz BW), 4 (5, 10, 15, 20MHz BW), 2 (5, 10, 15, 20MHz BW), 7 (5, 10, 15, 20MHz BW) LTE, 802.11a/b/g/n/ac WLAN, 802.11a/n/ac UNII, Bluetooth (1x, EDR, LE), NFC

### 2.3 Test Configuration

This device supports a wireless charging cover. Per KDB 648474 D03, spurious emissions measurement data was also investigated with the wireless charging battery cover. The handset was placed on the representative charging pad under normal conditions and in a simulated call configuration. Only worst case emissions are shown in this report and identified as WCC.

### 2.4 EMI Suppression Device(s)/Modifications

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

### 2.5 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: ZNFD850.** 

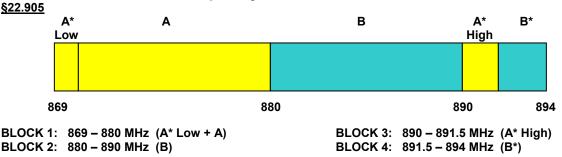
# 3.2 Block A Frequency Range

<u>§27.5(c)</u>

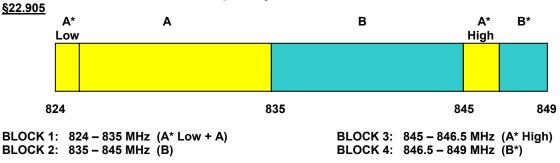
<u>698-746 MHz band</u>. The following frequencies are available for licensing pursuant to this part in the 698-746 MHz band: (1) Three paired channel blocks of 12 megahertz each are available for assignment as follows:

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.

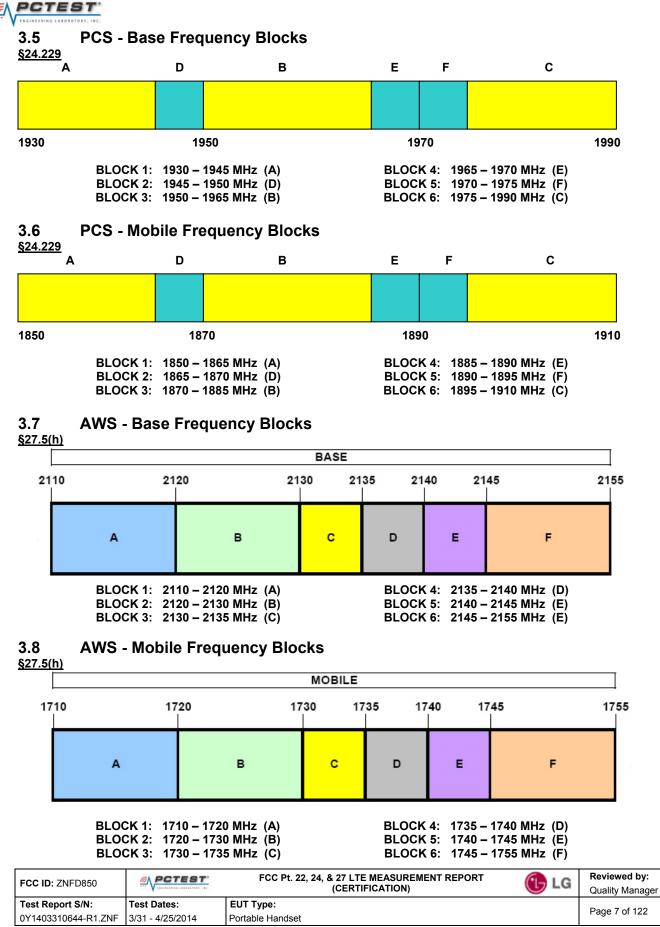




### 3.4 Cellular - Mobile Frequency Blocks



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### 3.9 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(f) §27.53(g) §27.53(h)

The radiated test facilities consisted of an indoor 3 meter semi-anechoic chamber used for final measurements and exploratory measurements, when necessary. The measurement area is contained within the semi-anechoic chamber which is shielded from any ambient interference. 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 <sup>3</sup>/<sub>4</sub>" (~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<sub>d [dBm]</sub> = P<sub>g [dBm]</sub> - cable loss <sub>[dB]</sub> + antenna gain <sub>[dBd/dBi]</sub>

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

The calculated  $P_d$  levels are then compared to the absolute spurious emission limit of -13dBm which is equivalent to the required minimum attenuation of 43 + 10log<sub>10</sub>(Power <sub>[Watts]</sub>).

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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	1/29/2014	Annual	1/29/2015	N/A
-	RE1	Radiated Emissions Cable Set (UHF/EHF)	3/5/2014	Annual	3/5/2015	N/A
Agilent	8447D	Broadband Amplifier	5/31/2013	Annual	5/31/2014	1937A03348
Agilent	N9020A	MXA Signal Analyzer	10/29/2013	Annual	10/29/2014	US46470561
Agilent	N9030A	PXA Signal Analyzer (44GHz)	1/17/2014	Annual	1/17/2015	MY52350166
Anritsu	MA2411B	Pulse Sensor	11/13/2013	Annual	11/13/2014	1027293
Anritsu	ML2495A	Power Meter	10/31/2013	Annual	10/31/2014	1039008
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	SSG-4000HP	USB Synthesized Signal Generator		N/A	-	11208010032
Mini-Circuits	TVA-11-422	RF Power Amp		N/A		QA1303002
Mini-Circuits	VHF-1200+	High Pass Filter	1/27/2014	Annual	1/27/2015	30923
Mini-Circuits	VHF-3100+	High Pass Filter	1/27/2014	Annual	1/27/2015	30841
Mini-Circuits	VHF-3100+	High Pass Filter	1/29/2014	Annual	1/29/2015	31144
Rohde & Schwarz	CMW500	LTE Radio Communication Tester		N/A		100976
Rohde & Schwarz	ESU40	EMI Test Receiver (40GHz)	1/24/2014	Annual	1/24/2015	100348
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
Schwarzbeck	UHA 9105	Dipole Antenna (400 - 1GHz) Rx	11/21/2013	Biennial	11/21/2015	9105-2404
Seekonk	NC-100	Torque Wrench (8" lb)	3/5/2012	Triennial	3/5/2015	N/A
Sunol	DRH-118	Horn Antenna (1 - 18GHz)	6/19/2013	Biennial	6/19/2015	A050307

Table 4-1. Test Equipment

#### Notes:

- 1. 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.
- 2. Equipment with a calibration date of "N/A" shown in this list was not used to make direct calibrated measurements.

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### 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:	ZNFD850
FCC Classification:	PCS Licensed Transmitter Held to Ear (PCE)
Mode(s):	LTE

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Result	Reference
TRANSMITTER MOD			-		
2.1049	Occupied Bandwidth	N/A		PASS	Section 6.2
2.1051 22.917(a) 24.238(a) 27.53(f) 27.53(g) 27.53(h)	Band Edge / Conducted Spurious Emissions	> 43 + 10log <sub>10</sub> (P[Watts]) at Band Edge and for all out-of- band emissions		PASS	Section 6.3, 6.4
27.53(m)	Band Edge / Conducted Spurious Emissions	<ul> <li>&gt; 43 + 10log<sub>10</sub> (P[Watts]) at channel edges and</li> <li>&gt; 55 + 10log<sub>10</sub> (P[Watts]) at 5.5MHz away and beyond channel edges</li> </ul>		PASS	Section 6.3, 6.4
24.232(d) 27.50(d.5)	Peak-Average Ratio	< 13 dB	-	PASS	Section 6.5
2.1046	Transmitter Conducted Output Power	N/A		PASS	See RF Exposure Report
2.1055. 22.355 24.235 27.54	Frequency Stability	< 2.5 ppm (Part 22) and fundamental emissions stay within authorized frequency block (Part 24, 27)		PASS	Section 6.8
22.913(a.2)	Effective Radiated Power (Band 5,)	< 7 Watts max. ERP		PASS	Section 6.6
27.50(c.10)	Effective Radiated Power (Band 17)	< 3 Watts max. ERP		PASS	Section 6.6
24.232(c) 27.50(h.2)	Equivalent Isotropic Radiated Power (Band 2 7)	< 2 Watts max. EIRP		PASS	Section 6.6
27.50(d.4)	Equivalent Isotropic Radiated Power (Band 4)	< 1 Watts max. EIRP	RADIATED	PASS	Section 6.6
2.1053 22.917(a) 24.238(a) 27.53(f) 27.53(g) 27.53(h)	Undesirable Emissions	> 43 + 10log <sub>10</sub> (P[Watts]) for all out-of-band emissions		PASS	Section 6.7
27.53(m)	Undesirable Emissions	<ul> <li>&gt; 43 + 10log<sub>10</sub> (P[Watts]) at channel edges and</li> <li>&gt; 55 + 10log<sub>10</sub> (P[Watts]) at 5.5MHz away and beyond channel edges</li> </ul>		PASS	Section 6.7

#### 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 (Sections 6.2, 6.3, 6.4, 6.5) were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables, directional couplers, and attenuators used as part of the system to maintain a link between the call box and the EUT at all frequencies of interest.

3) All antenna port conducted emissions testing was performed on a test bench with the antenna port of the EUT connected to the spectrum analyzer through calibrated cables, attenuators, and couplers.

4) For conducted spurious emissions, automated test software was used to measure emissions and capture the corresponding plots necessary to show compliance. The measurement software utilized is PCTEST "LTE Automation", Version 2.0.

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#### **Occupied Bandwidth** 6.2 <u>§2.1049</u>

#### **Test Overview**

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

#### **Test Procedure Used**

KDB 971168 v02r01 - Section 4.2

#### Test Settings

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

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

#### Test Setup

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

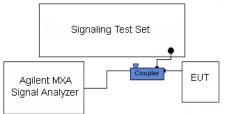


Figure 6-1. Test Instrument & Measurement Setup

#### Test Notes

None.

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Plot 6-1. Occupied Bandwidth Plot (Band 17 – 5.0MHz QPSK – RB Size 25)



Plot 6-2. Occupied Bandwidth Plot (Band 17 – 5.0MHz 16-QAM – RB Size 25)

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Plot 6-3. Occupied Bandwidth Plot (Band 17 – 10.0MHz QPSK – RB Size 50)



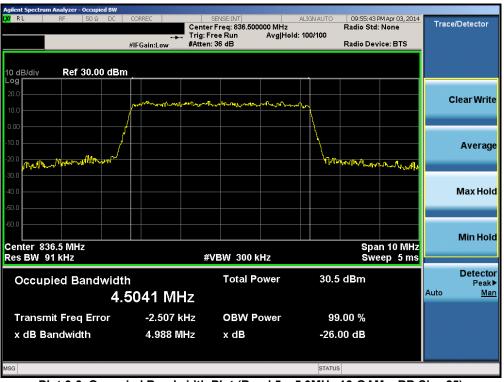
Plot 6-4. Occupied Bandwidth Plot (Band 17 – 10.0MHz 16-QAM – RB Size 50)

FCC ID: ZNFD850	<u>PCTEST</u>	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Plot 6-5. Occupied Bandwidth Plot (Band 5 - 5.0MHz QPSK - RB Size 25)



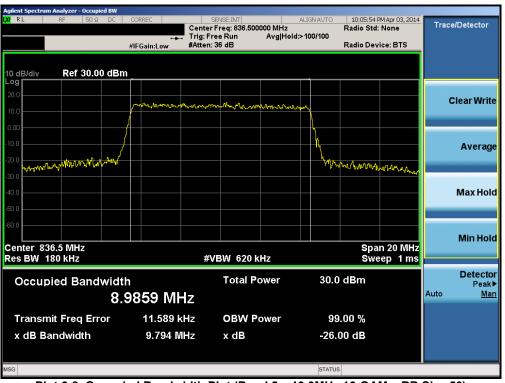
Plot 6-6. Occupied Bandwidth Plot (Band 5 – 5.0MHz 16-QAM – RB Size 25)

FCC ID: ZNFD850		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager	
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Plot 6-7. Occupied Bandwidth Plot (Band 5 – 10.0MHz QPSK – RB Size 50)



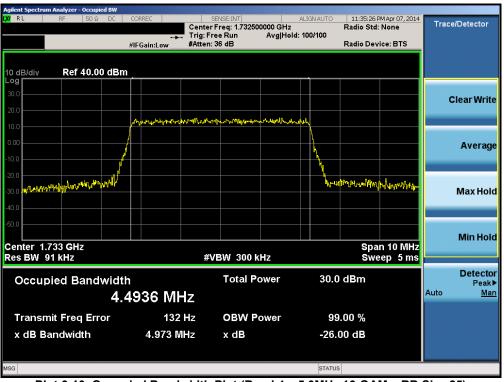
Plot 6-8. Occupied Bandwidth Plot (Band 5 – 10.0MHz 16-QAM – RB Size 50)

FCC ID: ZNFD850		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Plot 6-9. Occupied Bandwidth Plot (Band 4 – 5.0MHz QPSK – RB Size 25)



Plot 6-10. Occupied Bandwidth Plot (Band 4 – 5.0MHz 16-QAM – RB Size 25)

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Plot 6-11. Occupied Bandwidth Plot (Band 4 – 10.0MHz QPSK – RB Size 50)



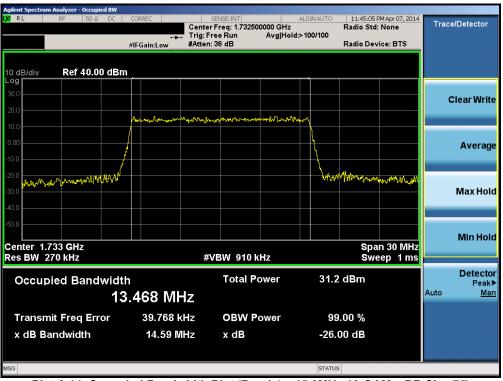
Plot 6-12. Occupied Bandwidth Plot (Band 4 – 10.0MHz 16-QAM – RB Size 50)

FCC ID: ZNFD850		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Plot 6-13. Occupied Bandwidth Plot (Band 4 – 15.0MHz QPSK – RB Size 75)



Plot 6-14. Occupied Bandwidth Plot (Band 4 – 15.0MHz 16-QAM – RB Size 75)

FCC ID: ZNFD850		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Plot 6-15. Occupied Bandwidth Plot (Band 4 – 20.0MHz QPSK – RB Size 100)



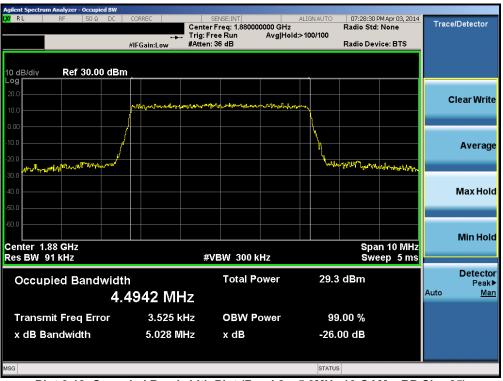
Plot 6-16. Occupied Bandwidth Plot (Band 4 – 20.0MHz 16-QAM – RB Size 100)

FCC ID: ZNFD850	<u>PCTEST</u>	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager	
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Plot 6-17. Occupied Bandwidth Plot (Band 2 - 5.0MHz QPSK - RB Size 25)



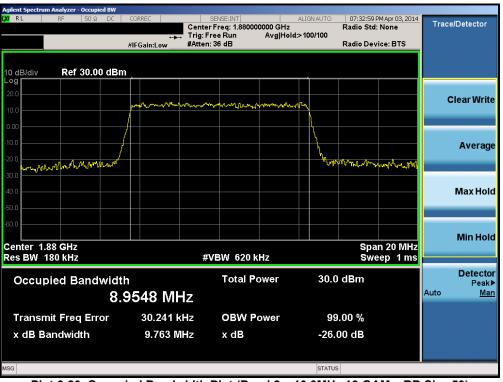
Plot 6-18. Occupied Bandwidth Plot (Band 2 – 5.0MHz 16-QAM – RB Size 25)

FCC ID: ZNFD850	<u>PCTEST</u>	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Plot 6-19. Occupied Bandwidth Plot (Band 2 – 10.0MHz QPSK – RB Size 50)



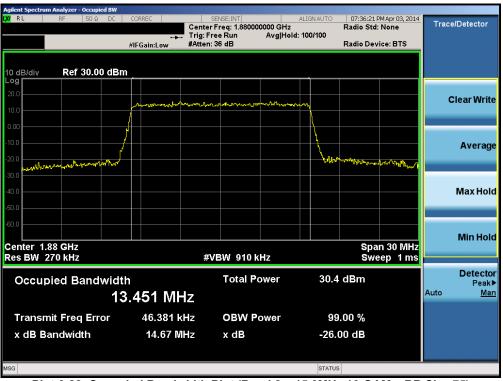
Plot 6-20. Occupied Bandwidth Plot (Band 2 – 10.0MHz 16-QAM – RB Size 50)

FCC ID: ZNFD850		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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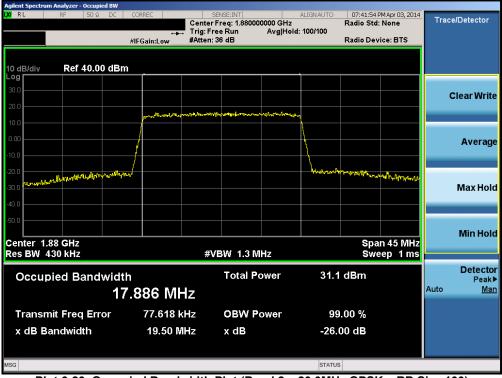
Plot 6-21. Occupied Bandwidth Plot (Band 2 – 15.0MHz QPSK – RB Size 75)



Plot 6-22. Occupied Bandwidth Plot (Band 2 – 15.0MHz 16-QAM – RB Size 75)

FCC ID: ZNFD850		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Plot 6-23. Occupied Bandwidth Plot (Band 2 – 20.0MHz QPSK – RB Size 100)



Plot 6-24. Occupied Bandwidth Plot (Band 2 – 20.0MHz 16-QAM – RB Size 100)

FCC ID: ZNFD850		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Plot 6-25. Occupied Bandwidth Plot (Band 7 – 5.0MHz QPSK – RB Size 25)



Plot 6-26. Occupied Bandwidth Plot (Band 7 – 5.0MHz 16-QAM – RB Size 25)

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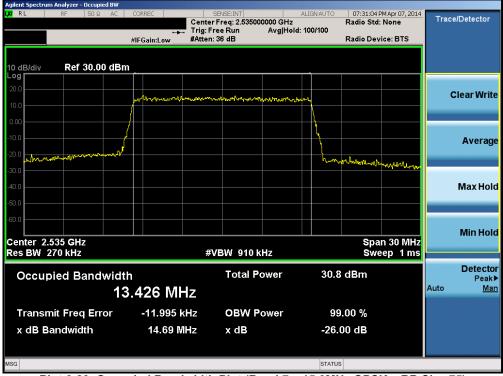
Plot 6-27. Occupied Bandwidth Plot (Band 7 – 10.0MHz QPSK – RB Size 50)



Plot 6-28. Occupied Bandwidth Plot (Band 7 – 10.0MHz 16-QAM – RB Size 50)

FCC ID: ZNFD850		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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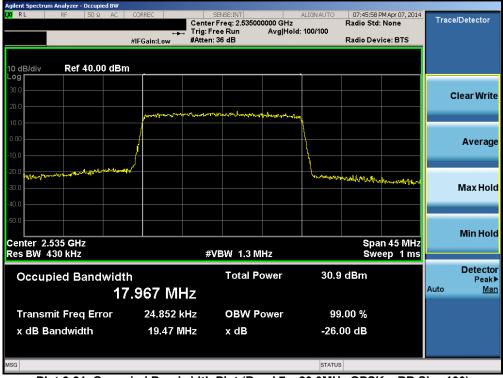
Plot 6-29. Occupied Bandwidth Plot (Band 7 – 15.0MHz QPSK – RB Size 75)



Plot 6-30. Occupied Bandwidth Plot (Band 7 – 15.0MHz 16-QAM – RB Size 75)

FCC ID: ZNFD850		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Plot 6-31. Occupied Bandwidth Plot (Band 7 – 20.0MHz QPSK – RB Size 100)



Plot 6-32. Occupied Bandwidth Plot (Band 7 – 20.0MHz 16-QAM – RB Size 100)

FCC ID: ZNFD850		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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### 6.3 Spurious and Harmonic Emissions at Antenna Terminal §2.1051 §22.917(a) §24.238(a) §27.53(f) §27.53(g) §27.53(h) §27.53(m)

#### Test Overview

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

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

#### Test Procedure Used

KDB 971168 v02r01 – Section 6.0

#### Test Settings

- 1. Start frequency was set to 30MHz and stop frequency was set to at least 10 \* the fundamental frequency (separated into at least two plots per channel)
- 2. Detector = RMS
- 3. Trace mode = max hold
- 4. Sweep time = auto couple
- 5. The trace was allowed to stabilize
- 6. Please see test notes below for RBW and VBW settings

#### Test Setup

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

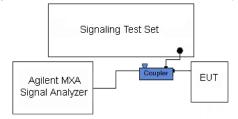


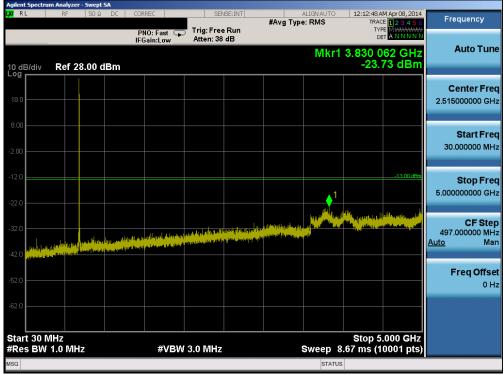
Figure 6-2. Test Instrument & Measurement Setup

#### Test Notes

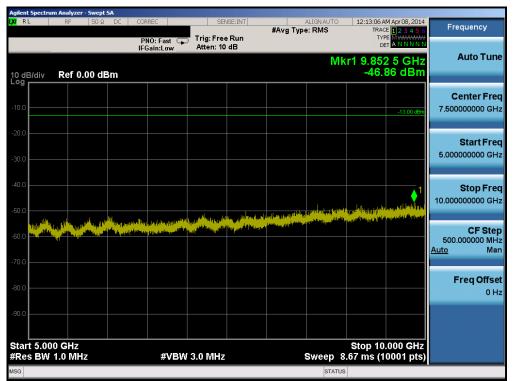
Compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater for Part 22 and 1 MHz or greater for Part 24, Part 27. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth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

FCC ID: ZNFD850		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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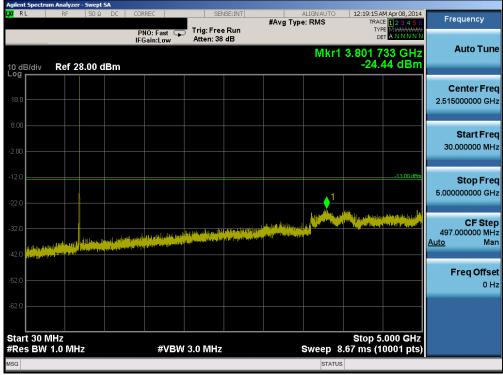
Plot 6-33. Conducted Spurious Plot (Band 17 – 10.0MHz QPSK – RB Size 1, RB Offset 0– Low Channel)



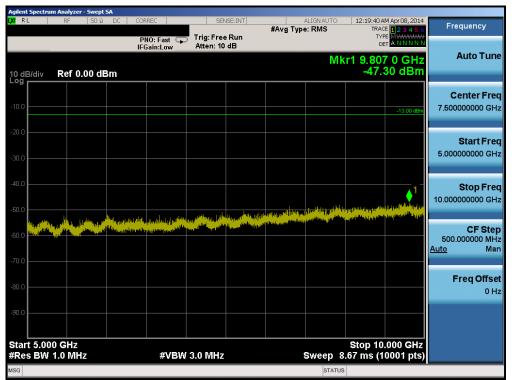
Plot 6-34. Conducted Spurious Plot (Band 17 – 10.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)

FCC ID: ZNFD850		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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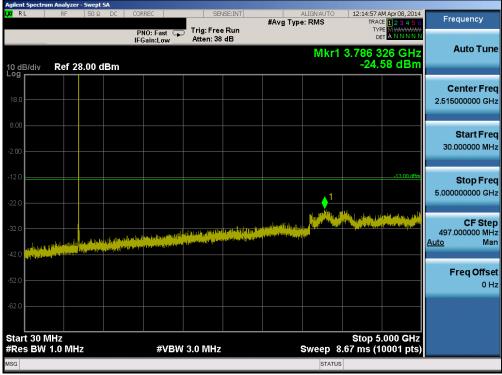
Plot 6-35. Conducted Spurious Plot (Band 17 – 10.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)



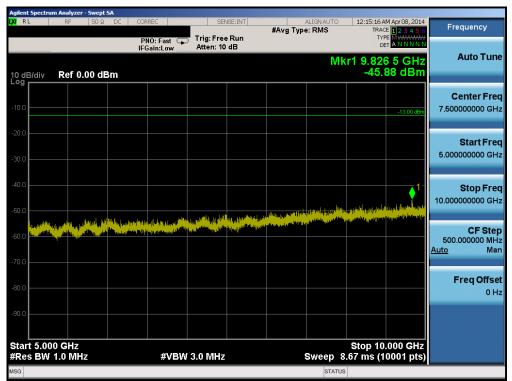
Plot 6-36. Conducted Spurious Plot (Band 17 – 10.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)

FCC ID: ZNFD850	<u> <u> <u> </u> <u> PCTEST</u> </u></u>	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Plot 6-37. Conducted Spurious Plot (Band 17 – 10.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)



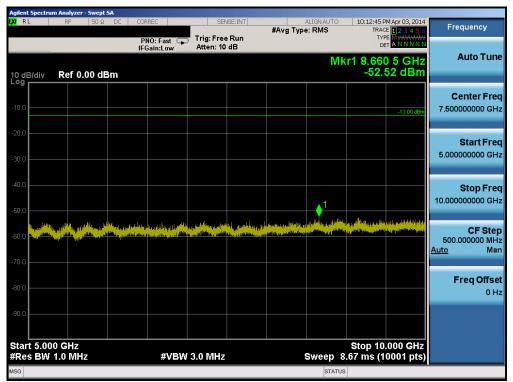
Plot 6-38. Conducted Spurious Plot (Band 17 – 10.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

FCC ID: ZNFD850		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Plot 6-39. Conducted Spurious Plot (Band 5 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)



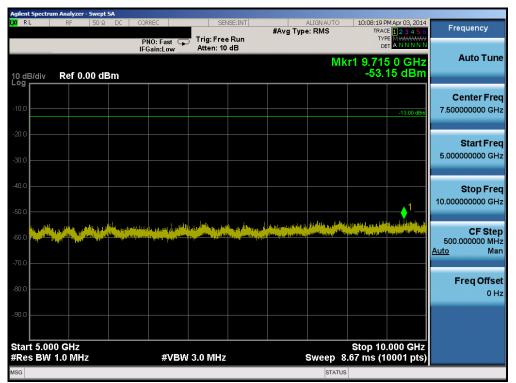
Plot 6-40. Conducted Spurious Plot (Band 5 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)

FCC ID: ZNFD850		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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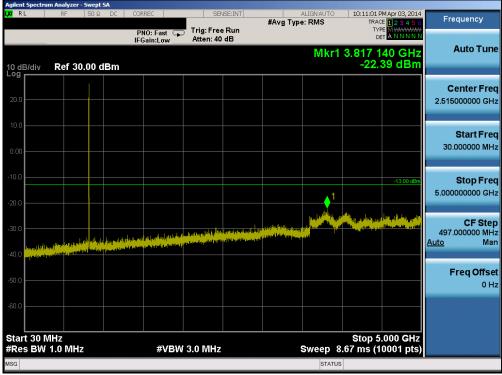
Plot 6-41. Conducted Spurious Plot (Band 5 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)



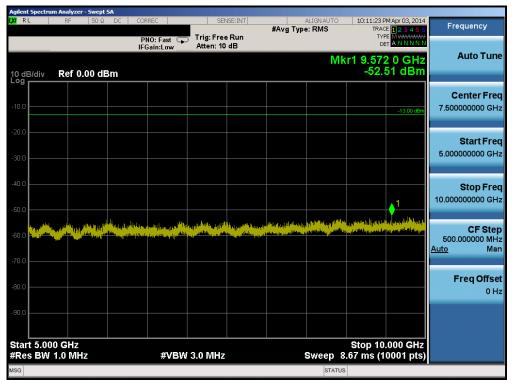
Plot 6-42. Conducted Spurious Plot (Band 5 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)

FCC ID: ZNFD850		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Plot 6-43. Conducted Spurious Plot (Band 5 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)



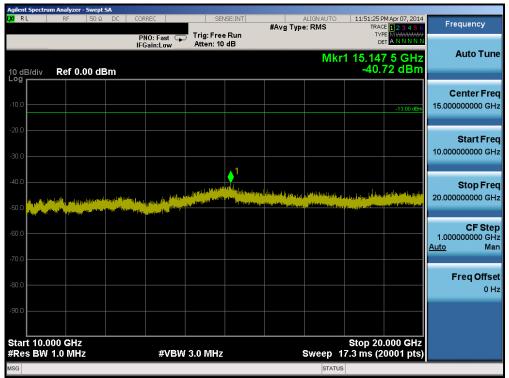
Plot 6-44. Conducted Spurious Plot (Band 5 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

FCC ID: ZNFD850		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Plot 6-45. Conducted Spurious Plot (Band 4 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)



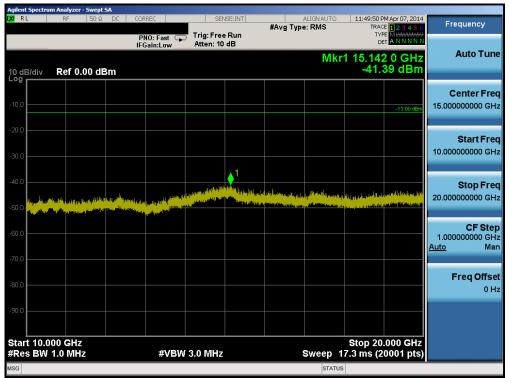
Plot 6-46. Conducted Spurious Plot (Band 4 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)

FCC ID: ZNFD850		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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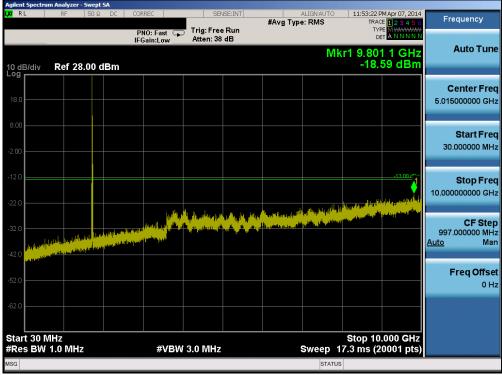
Plot 6-47. Conducted Spurious Plot (Band 4 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)



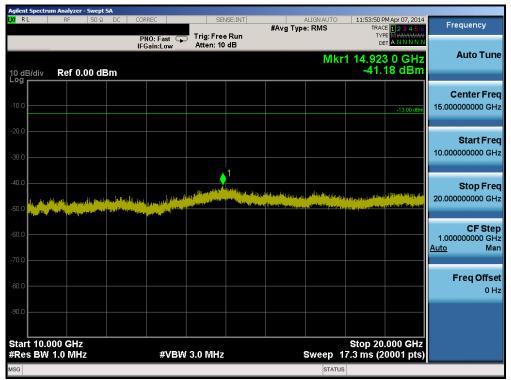
Plot 6-48. Conducted Spurious Plot (Band 4 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)

FCC ID: ZNFD850		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Plot 6-49. Conducted Spurious Plot (Band 4 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)



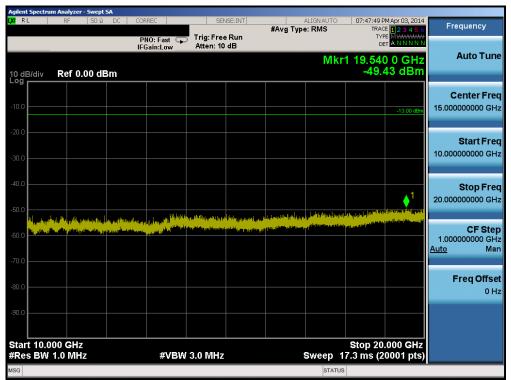
Plot 6-50. Conducted Spurious Plot (Band 4 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

FCC ID: ZNFD850		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Plot 6-51. Conducted Spurious Plot (Band 2 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)



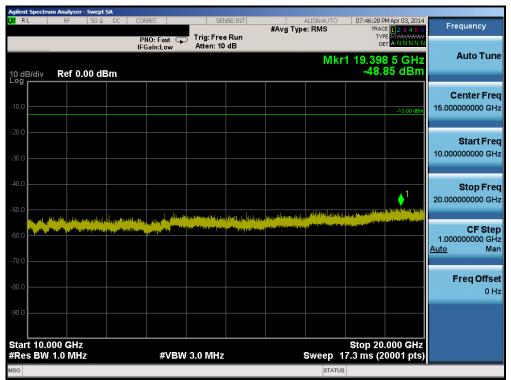
Plot 6-52. Conducted Spurious Plot (Band 2 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)

FCC ID: ZNFD850		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Plot 6-53. Conducted Spurious Plot (Band 2 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)



Plot 6-54. Conducted Spurious Plot (Band 2 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)

FCC ID: ZNFD850		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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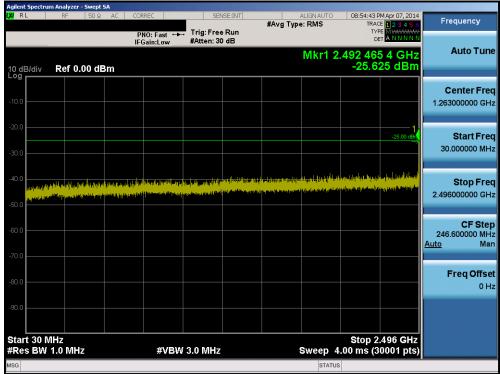
Plot 6-55. Conducted Spurious Plot (Band 2 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)



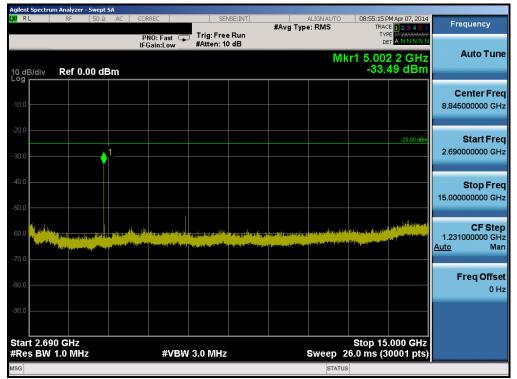
Plot 6-56. Conducted Spurious Plot (Band 2 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

FCC ID: ZNFD850		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Plot 6-57. Conducted Spurious Plot (Band 7 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)



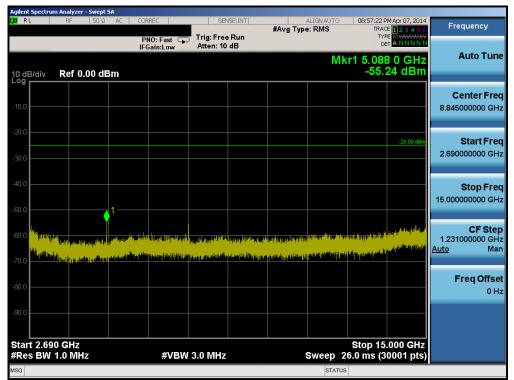
Plot 6-58. Conducted Spurious Plot (Band 7 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)

FCC ID: ZNFD850		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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		n Analyzer										
l <mark>,XI</mark> R	L	RF	50 Ω	AC I	ORREC		VSE:INT	#Avg Typ	ALIGNAUTO e: RMS	TRAC	M Apr 07, 2014	Frequency
					PNO: Fast 🕞 IFGain:Low	Trig: Free Atten: 10				TVE		
					I Galli.20w				Mkr1 1	.254 863	2.2 GHz	Auto Tune
10 dl	3/div	Ref 0	.00 dB	m						-50.	65 dBm	
Log												
												Center Fred
												1.263000000 GH
-20.0												
											-25.00 dBm	Start Fred
												30.000000 MH;
	——											Stop Fred
							1					2.496000000 GH
					ljudd <mark>ddiaen (ddiaen)</mark> Arenalddiaen (ddiaen)		ւ անետ տան		n made ann Muad	al a shahrtan sa	a hard tellar teals	CF Step
	inter (inter	and and the second	Alighter Constraints	and the second	den ettinistere ettinistere ettinistere ettinistere ettinistere ettinistere ettinistere ettinistere ettinister Alterne ettinistere ettinistere ettinistere ettinistere ettinistere ettinistere ettinistere ettinistere ettinist	n in the second seco Second second	ingen son eine sternen. Heinen son eine sterne	a grandelet all an b	المرابع معالم معالم المرابع المانة، يعمد مرجل المقاطعة ال	المرجعة فماسمهم	patrick and a second second	246.600000 MH
-70.0	أخليتم يتدأكره	NJULA, ARA	an les anna 1	and a strength of the		and the second sec						<u>Auto</u> Mar
-80.0												Freq Offset
												0 Hz
Star	L t 30 M	Hz								Stop 2	.496 GHz	
		1.0 MH	z		#VBV	/ 3.0 MHz			Sweep 4	3.00 Z 1.00 ms (3		
MSG									STATU			

Plot 6-59. Conducted Spurious Plot (Band 7 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)



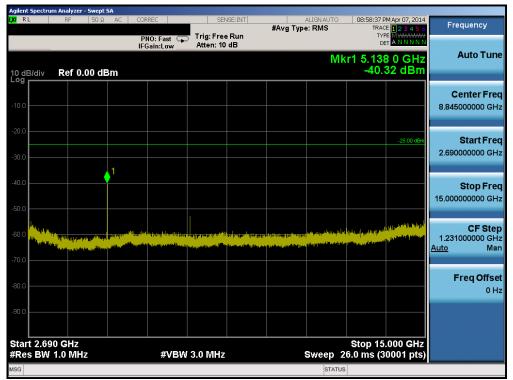
Plot 6-60. Conducted Spurious Plot (Band 7 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)

FCC ID: ZNFD850		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Agilent Spectrum Analyzer -								
(X) RL RF	50 Ω AC CO	RREC	SENSE:INT	#Avg Typ	ALIGNAUTO e: RMS	TRACE	1 Apr 07, 2014	Frequency
	P	NO: Fast 😱 Gain:Low	Trig: Free Run Atten: 10 dB	•		TYPE	ANNNN	
	IF	Gain:Low	Attent. IV 4D		Mkr1.2	.492 465		Auto Tune
10 dB/div Ref 0.0	00 dBm				WINT 2	-50.8	7 dBm	
								Center Freq
-10.0								1.263000000 GHz
-20.0							-25.00 dBm	Start Freq
-30.0								30.000000 MHz
-30.0								
-40.0								Oton Erog
							1	<b>Stop Freq</b> 2.49600000 GHz
-50.0								2.430000000 GHZ
						ang Verbalgande		OF Otom
-60.0	ومرين يعلمك الألكان ورحريهما		ang hay ang dalama na kakabata	a na shekara kalenda ku shekara Budi Albuda na Malana na Anaka			and the second second	CF Step 246.600000 MHz
at a later named State ( bit store ) also, in the life		ang ng pang pang pang pang pang pang pan	ali and a good and a second	a construction of protocols and design a list of	diam and a			<u>Auto</u> Man
-70.0								
								Freq Offset
-80.0								0 Hz
-90.0								
-50.0								
Start 30 MHz		#\/D\#			0	Stop 2.4	496 GHz	
#Res BW 1.0 MHz		#VBW 3	5.0 WIHZ			.00 ms (30	1001 pts)	
MSG					STATUS			

Plot 6-61. Conducted Spurious Plot (Band 7 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)



Plot 6-62. Conducted Spurious Plot (Band 7 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

FCC ID: ZNFD850		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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# 6.4 Band Edge Emissions at Antenna Terminal §2.1051 §22.917(a) §24.238(a) §27.53(f) §27.53(g) §27.53(h) §27.53(m)

### **Test Overview**

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

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

# The minimum permissible attenuation level for Band 7 is > $43 + 10\log_{10} (P[Watts])$ at channel edges and > $55 + 10\log_{10} (P[Watts])$ at 5.5 MHz away and beyond channel edges.

### Test Procedure Used

KDB 971168 v02r01 – Section 6.0

### Test Settings

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

#### <u>Test Setup</u>

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

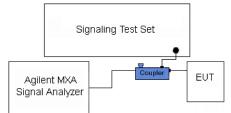


Figure 6-3. Test Instrument & Measurement Setup

#### Test Notes

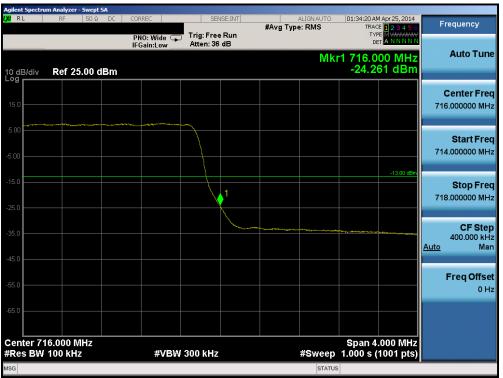
Per 22.917(b) 24.238(a) 27.53(h) in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to demonstrate compliance with the out-of-band emissions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

FCC ID: ZNFD850		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 45 of 100
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	m Analyzer - Swept SA							
LXI RL	RF 50 Ω DC	CORREC	SENSE:INT	#Avg Type	LIGNAUTO	01:32:45 AM A TRACE	pr 25, 2014	Frequency
		PNO: Wide 😱 IFGain:Low	Trig: Free Run Atten: 36 dB	5 //			123456 M <del>MMMMM</del> ANNNNN	
10 dB/div Log	Ref 25.00 dBm				Mki	1 698.00 -42.808	0 MHz 3 dBm	Auto Tune
15.0								Center Freq 698.000000 MHz
-5.00								Start Freq 696.000000 MHz
-15.0							-13.00 dBm	Stop Freq 700.000000 MHz
-35.0			1					<b>CF Step</b> 400.000 kHz <u>Auto</u> Man
-55.0								<b>Freq Offset</b> 0 Hz
-65.0	9 000 MU-					Onon 40	00 0411-	
#Res BW	8.000 MHz 100 kHz	#VBW	300 kHz		#Sweep	Span 4.0 1.000 s (10	00 MHZ 001 pts)	
MSG					STATUS			
					-	A		

Plot 6-63. Lower Band Edge Plot (Band 17 – 5.0MHz QPSK – RB Size 25)



Plot 6-64. Upper Band Edge Plot (Band 17 – 5.0MHz QPSK – RB Size 25)

FCC ID: ZNFD850		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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	m Analyzer - Swept SA						
L <mark>XI</mark> RL	RF 50 Ω D0	C CORREC	SENSE:INT	ALIGN. #Avg Type: RM		AM Apr 08, 2014 CE 123456 PE M WWWWW	Frequency
		PNO: Wide 🖵 IFGain:Low	Trig: Free Run Atten: 36 dB		Mkr1 697	ET A NNNNN	Auto Tune
10 dB/div Log	Ref 25.00 dBn	n			-38.	83 dBm	
15.0							Center Freq 698.000000 MHz
							698.000000 WHZ
5.00							Start Freq
-5.00							688.000000 MHz
-15.0						-13.00 dBm	Stop Freq
-25.0							708.000000 MHz
-35.0			1		-		CF Step
			and the second states				2.000000 MHz <u>Auto</u> Man
-45.0		market					Freq Offset
-55.0							0 Hz
-65.0							
Center 69	9 00 MH-				Spand		
#Res BW		#VBW	300 kHz	#S	weep 1.00 s	0.00 MHz (1001 pts)	
MSG					STATUS		

Plot 6-65. Lower Band Edge Plot (Band 17 – 10.0MHz QPSK – RB Size 50)



Plot 6-66. Upper Band Edge Plot (Band 17 – 10.0MHz QPSK – RB Size 50)

FCC ID: ZNFD850		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 47 of 122
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Igilent Spectrum Analyzer - Swept SA					
X/RL RF 50Ω DC	CORREC	SENSE:INT	#Avg Type: RMS	10:17:41 PM Apr 03, 2014 TRACE 1 2 3 4 5 6	Frequency
	PNO: Wide 🖵 IFGain:Low	Trig: Free Run Atten: 36 dB	MAY BYPE. KIND		
10 dB/div Ref 25.00 dBm			Mkr	1 824.000 MHz -23.853 dBm	Auto Tune
15.0					Center Freq 824.000000 MHz
-5.00					Start Freq 822.000000 MHz
-15.0		<b>1</b>		-13.00 dBm	<b>Stop Freq</b> 826.000000 MHz
-35.0	ter ga fallan an san san sa san sa sa sa sa	arriter and the second s			CF Step 400.000 kHz <u>Auto</u> Man
-45.0					Freq Offset 0 Hz
-65.0					
Center 824.000 MHz #Res BW 100 kHz	#VBW	300 kHz	#Sweep	Span 4.000 MHz 1.00 s (1001 pts)	
ISG			STATUS		

Plot 6-67. Lower Band Edge Plot (Band 5 – 5.0MHz QPSK – RB Size 25)



Plot 6-68. Upper Band Edge Plot (Band 5 – 5.0MHz QPSK – RB Size 25)

FCC ID: ZNFD850		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 48 of 122
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	m Analyzer - Swept SA					
LXI RL	RF 50Ω DC	CORREC	SENSE:INT	ALIGNAUTO #Avg Type: RMS	10:09:07 PM Apr 03, 2014	Frequency
		PNO: Wide 🗔	Trig: Free Run	warg type. And	TRACE 1 2 3 4 5 6 TYPE M WWWWW DET A N N N N N	
		IFGain:Low	Atten: 36 dB			
				Mkr	1 824.000 MHz	Auto Tune
10 dB/div	Ref 25.00 dBm				-30.739 dBm	
						Center Freq
15.0						824.000000 MHz
5.00			~			Otart Fran
						Start Freq
-5.00						820.000000 MHz
					-13.00 dBm	
-15.0						Stop Freq
						828.000000 MHz
-25.0			1/			
			- Vi			
-35.0	and the second standard and and and and and and and and and an	the state of the s				CF Step 800.000 kHz
-the area and a second	AND DO THE REPORT OF THE REPOR					Auto Man
-45.0						<u>rato</u> man
-55.0						Freq Offset
						0 Hz
-65.0						
-65,0						
Center 82	4.000 MHz				Span 8.000 MHz	
#Res BW		#VBW	300 kHz	#Sweep	1.00 s (1001 pts)	
MSG				STATUS		

Plot 6-69. Lower Band Edge Plot (Band 5 – 10.0MHz QPSK – RB Size 50)



Plot 6-70. Upper Band Edge Plot (Band 5 – 10.0MHz QPSK – RB Size 50)

FCC ID: ZNFD850	PCTEST	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 40 of 100
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	m Analyzer - Swept SA					
L <mark>XI</mark> RL	RF 50 Ω DC	CORREC	SENSE:INT	ALIGN AUTO #Avg Type: RMS	11:38:22 PM Apr 07, 2014 TRACE 1 2 3 4 5 6	Frequency
10 dB/div	Ref 25.00 dBm	PNO: Wide 🈱 IFGain:Low	Trig: Free Run Atten: 36 dB	Mkr1	1.710 000 GHz -26.767 dBm	Auto Tune
15.0						Center Freq 1.710000000 GHz
-5.00					-13.00 dBm	<b>Start Freq</b> 1.708000000 GHz
-15.0			<b>↓</b> 1			<b>Stop Freq</b> 1.712000000 GHz
-35.0			- sow of			CF Step 400.000 kHz <u>Auto</u> Man
-55.0						<b>Freq Offset</b> 0 Hz
-65.0	710000 GHz				Span 4.000 MHz	
#Res BW	51 KHz	#VBW	150 kHz	#Sweep status	1.00 s (1001 pts)	

Plot 6-71. Lower Band Edge Plot (Band 4 – 5.0MHz QPSK – RB Size 25)



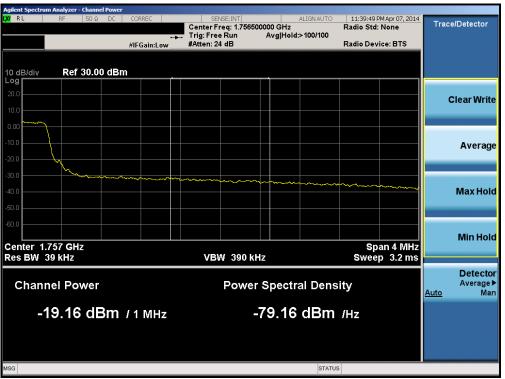
Plot 6-72. Lower Extended Band Edge Plot (Band 4 – 5.0MHz QPSK – RB Size 25)

FCC ID: ZNFD850	PCTEST	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕕 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 50 of 100
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	n Analyzer - Swept SA		_			1	
LXU RL	RF 50Ω DC	CORREC	SENSE:	INT #Avg Ty	ALIGNAUTO pe: RMS	11:39:39 PM Apr 07, 2014 TRACE 1 2 3 4 5 6 TYPE MWWWWW	Frequency
10 dB/div	Ref 25.00 dBm	PNO: Wide 🖵 IFGain:Low	Trig: Free Ru Atten: 36 dB	un }	Mkr1	TYPE MWWWWW DET ANNNNN 1.755 000 GHz -25.401 dBm	
15.0							Center Freq 1.755000000 GHz
-5.00		and the second se				-13.00 dBm	Start Freq 1.753000000 GHz
-15.0							<b>Stop Freq</b> 1.757000000 GHz
-35.0						and the second second	CF Step 400.000 kHz <u>Auto</u> Man
-45.0							Freq Offset 0 Hz
-65.0							
#Res BW	755000 GHz 51 kHz	#VBW	150 kHz		#Sweep	Span 4.000 MHz 1.00 s (1001 pts)	
MSG					STATUS		

Plot 6-73. Upper Band Edge Plot (Band 4 – 5.0MHz QPSK – RB Size 25)



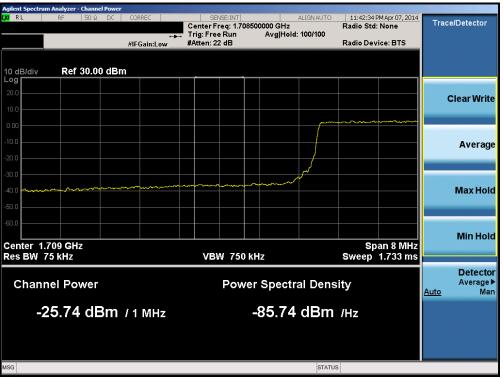
Plot 6-74. Upper Extended Band Edge Plot (Band 4 – 5.0MHz QPSK – RB Size 25)

FCC ID: ZNFD850		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 51 of 100
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PNO: Wide       Trig: Free Run IFGaint.ow       Have Type: RMS       Trace of a set or an analysis       Frequency         0 dB/div       Ref 25.00 dBm       Mkr1 1.710 0000 GHz -30.427 dBm       Auto Tune         0 dB/div       Ref 25.00 dBm       Center Frequency       Auto Tune         0 dB/div       Ref 25.00 dBm       1.71000000 GHz       Center Frequency         0 dB/div       Ref 25.00 dBm       1.71000000 GHz       Center Frequency         0 dB/div       Ref 25.00 dBm       1.710000000 GHz       Start Frequency         0 dB/div       Ref 25.00 dBm       1.7000000 GHz       Start Frequency         0 dB/div       Ref 25.00 dBm       1.7000000 GHz       Start Frequency         0 dB/div       Image: Start Frequency       1.70000000 GHz       Start Frequency         1.71000000 GHz       Image: Start Frequency       1.7000000 GHz       Image: Start Frequency         1.7100000 GHz       Image: Start Frequency       Image: Start Frequency       Image: Start Frequency         1.7100000 GHz       Image: Start Frequency       Image: Start Frequency       Image: Start Frequency         1.7100000 GHz       Image: Start Frequency       Image: Start Frequency       Image: Start Frequency         1.7100000 GHz       Image: Start Frequency       Image: Start Frequency       Imag		m Analyzer - Swept SA					
Auto Tune Mkr1 1.710 000 GHz -30.427 dBm Center Freq 1.7100000 GHz 50 50 50 50 50 50 50 50 50 50	LXU RL	RF  50Ω DC	CORREC	SENSE:INT			Frequency
De del'div       Ref 25.00 dBm       -30.427 dBm         Center Freq       1.71000000 GHz         Stop Freq       1.300 de         Stop Freq       1.71400000 GHz         Ref 25.00 dBm       -30.427 dBm         Center Freq       1.71000000 GHz         Stop Freq       1.300 de         CF Step       800.000 KHz         Stop Freq       1.71400000 GHz         Ref BW 100 KHz       #VBW 300 KHz       #Span 8.000 MHz			PNO: Wide 🌩 IFGain:Low	Trig: Free Run Atten: 36 dB		DET A NNNNN	Auto Tune
1.71000000 GHz sou sou sou sou sou sou sou sou	10 dB/div Log	Ref 25.00 dBm				-30.427 dBm	
Start Freq Start Freq Start Freq Start Freq Start Freq 1.70600000 GHz Stop Freq 1.71400000 GHz Stop Freq 1.7140000 GHz Stop Freq 1.7140000 GHz Stop Freq 1.7140000 GHz Stop Freq 1.7140000 GHz Stop Freq 1.714000 GHZ Stop	15.0						Center Freq 1.710000000 GHz
5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	-5.00						<b>Start Freq</b> 1.706000000 GHz
5.0       Auto       800.000 kHz         5.0       Freq Offset         5.0       Home State         6.0	-15.0			1		-13.00 dBm	<b>Stop Freq</b> 1.714000000 GHz
Freq Offset 0 Hz enter 1.710000 GHz Res BW 100 kHz #VBW 300 kHz #VBW 300 kHz #Sweep 1.00 s (1001 pts)	-35.0	and the second					CF Step 800.000 kHz <u>Auto</u> Man
enter 1.710000 GHz Span 8.000 MHz Res BW 100 kHz #VBW 300 kHz #Sweep 1.00 s (1001 pts)	-45.0						<b>Freq Offset</b> 0 Hz
Res BW 100 kHz #VBW 300 kHz #Sweep 1.00 s (1001 pts)	-65.0						
SG STATUS			#VBW	300 kHz	#Sweep	Span 8.000 MHz 1.00 s (1001 pts)	
	MSG				STATUS		

Plot 6-75. Lower Band Edge Plot (Band 4 – 10.0MHz QPSK – RB Size 50)



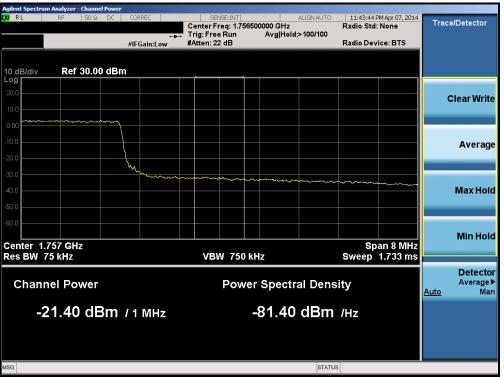
Plot 6-76. Lower Extended Band Edge Plot (Band 4 – 10.0MHz QPSK – RB Size 50)

FCC ID: ZNFD850	PCTEST	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕕 LG	Reviewed by: Quality Manager
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Agilent Spectrur I <mark>XI</mark> RL	n Analyzer - Swept SA RF 50 Ω DC	CORREC	SENSE:INT	#Avg Type	ALIGN AUTO e: RMS	11:43:38 PM Apr 07, 2014 TRACE 1 2 3 4 5 6 TYPE MWWWWWW	Frequency
10 dB/div	Ref 25.00 dBm	PNO: Wide 🕞 IFGain:Low	Atten: 36 dB		Mkr1	1.755 000 GHz -27.688 dBm	
15.0							Center Free 1.755000000 GH:
5.00	·						<b>Start Fre</b> 1.751000000 GH
-15.0			1			-13.00 dBm	<b>Stop Fre</b> 1.759000000 GH
35.0					the second s		CF Ste 800.000 kH <u>Auto</u> Ma
45.0 55.0							Freq Offse 0 H
-65.0	755000 GHz					Span 8.000 MHz	
#Res BW		#VBW	300 kHz		#Sweep	1.00 s (1001 pts)	

Plot 6-77. Upper Band Edge Plot (Band 4 – 10.0MHz QPSK – RB Size 50)



Plot 6-78. Upper Extended Band Edge Plot (Band 4 – 10.0MHz QPSK – RB Size 50)

FCC ID: ZNFD850		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 52 of 122
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	m Analyzer - Swept SA					
LXIRL	RF 50Ω [	DC CORREC	SENSE:INT	ALIGNAUTO #Avg Type: RMS	11:46:18 PM Apr 07, 2014	Frequency
		PNO: Wide 🖵	Trig: Free Run	#Avg Type. RMS	TRACE 2 3 4 5 6 TYPE MWWWW DET A N N N N N	
		IFGain:Low	Atten: 36 dB			Auto Tune
				Mkr1	1.710 000 GHz	Auto Tune
10 dB/div Log	Ref 25.00 dB	im			-32.112 dBm	
						O
						Center Freq
15.0						1.710000000 GHz
5.00			~			Start Freq
-5.00						1.704000000 GHz
					-13.00 dBm	
-15.0						Stop Freq
						1.716000000 GHz
-25.0						1.7 1000000 GH2
20.0			41/			
-35.0			and an and			CF Step
-33.0	the second se					1.200000 MHz
						<u>Auto</u> Man
-45.0						
						Freq Offset
-55.0						0 Hz
-65.0						
Center 1.	710000 GHz	4) (D) (I	400 1.11-	<b>#0</b>	Span 12.00 MHz 1.00 s (1001 pts)	
#Res BW	150 KHZ	#VBW	430 kHz	#Sweep	1.00 S (1001 pts)	
MSG				STATUS		

Plot 6-79. Lower Band Edge Plot (Band 4 – 15.0MHz QPSK – RB Size 75)



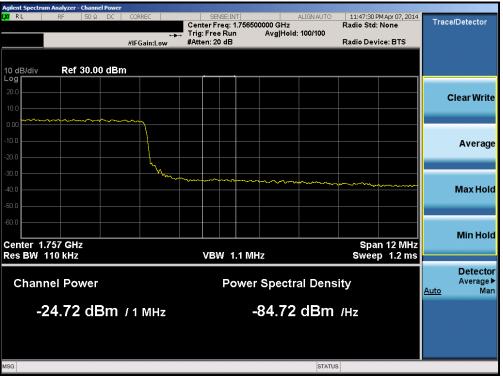
Plot 6-80. Lower Extended Band Edge Plot (Band 4 – 15.0MHz QPSK – RB Size 75)

FCC ID: ZNFD850	PCTEST	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕕 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dego 54 of 100
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Agilent Spectru X/ R L	m Analyzer - Swept SA RF 50 Ω DC	CORREC	SENS	EINT		ALIGNAUTO	11:47:23	M Apr 07, 2014	_
		PNO: Wide 🗔			#Avg Typ		TRAC	CE 123456	Frequency
		IFGain:Low	Atten: 36 d	В			D	et <mark>a nn nn n</mark>	Auto Tune
10 dB/div Log	Ref 25.00 dBm					Mkr1	1.755 C -30.	024 GHz 09 dBm	Auto Tune
									Center Fred
15.0									1.755000000 GH
5.00									
									Start Fred 1.749000000 GHz
-5.00								-13.00 dBm	
15.0								-13.00 dbm	Stop Free
-25.0				1					1.761000000 GH:
				A STATE AND A STATE OF STATE O		well also a grad of a	************		CF Step
-35.0									1.200000 MHz Auto Mar
-45.0									<u>ritto</u> mu
-55.0									Freq Offse
									0 H:
65.0									
Center 1	755000 GHz						Snan 1	2.00 MHz	
#Res BW		#VBW	430 kHz			#Sweep	1.00 s (	(1001 pts)	
ISG						STATUS			

Plot 6-81. Upper Band Edge Plot (Band 4 – 15.0MHz QPSK – RB Size 75)



Plot 6-82. Upper Extended Band Edge Plot (Band 4 – 15.0MHz QPSK – RB Size 75)

FCC ID: ZNFD850	<u>PCTEST</u>	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dege EE of 100
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	Analyzer - Swept SA					
X/RL	RF 50 Ω DC	CORREC	SENSE:INT	#Avg Type: RMS	11:51:58 PM Apr 07, 2014 TRACE 1 2 3 4 5 6	Frequency
		PNO: Wide 😱	Trig: Free Run	#Avg Type. Kino		
		IFGain:Low	Atten: 36 dB			Auto Tune
				Mkr1	1.710 000 GHz -33.414 dBm	Auto Tune
10 dB/div	Ref 25.00 dBm				-33.414 dBm	
						0
15.0						Center Fred
13.0						1.710000000 GHz
E 00						
5.00						Start Fred
						1.702000000 GHz
-5.00						
					-13.00 dBm	
-15.0						Stop Freq
						1.718000000 GHz
-25.0			1			
						CF Step
-35.0	and have been a free free					1.600000 MHz
						<u>Auto</u> Mar
45.0						
						Freq Offset
-55.0						0 Hz
65.0						
					0	
Center 1.71 #Res BW 2		#\/B\/	560 kHz	#Sween	Span 16.00 MHz 1.00 s (1001 pts)	
	00 KH2	#0600	500 KHZ		1.00 S (1001 pts)	
ISG				STATUS		

Plot 6-83. Lower Band Edge Plot (Band 4 – 20.0MHz QPSK – RB Size 100)



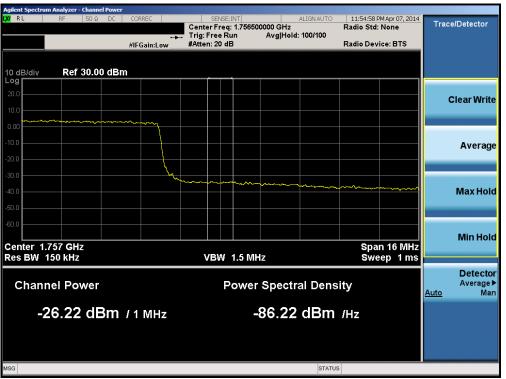
Plot 6-84. Lower Extended Band Edge Plot (Band 4 – 20.0MHz QPSK – RB Size 100)

FCC ID: ZNFD850		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga EC of 100
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	m Analyzer - Swept SA						
L <mark>XI</mark> RL	RF 50 Ω DC	CORREC	SENSE:INT	A #Avg Type	LIGNAUTO	11:54:52 PM Apr 07, 2014 TRACE 1 2 3 4 5 6 TYPE MWWWWW	Frequency
		PNO: Wide 😱 IFGain:Low	Trig: Free Run Atten: 36 dB	• •		DET A NNNNN	Auto Tune
10 dB/div Log	Ref 25.00 dBm				MKr1	1.755 016 GHz -30.89 dBm	
15.0							Center Freq 1.755000000 GHz
-5.00							Start Freq 1.747000000 GHz
-15.0						-13.00 dBm	<b>Stop Freq</b> 1.763000000 GHz
-35.0					Martin and Martin and Andrews	annihanna an	CF Step 1.600000 MHz <u>Auto</u> Man
-45.0							Freq Offset 0 Hz
-65.0							
Center 1.7 #Res BW	755000 GHz 200 kHz	#VBW	560 kHz		#Sweep	Span 16.00 MHz 1.00 s (1001 pts)	
MSG					STATUS		

Plot 6-85. Upper Band Edge Plot (Band 4 – 20.0MHz QPSK – RB Size 100)



Plot 6-86. Upper Extended Band Edge Plot (Band 4 – 20.0MHz QPSK – RB Size 100)

FCC ID: ZNFD850	PCTEST	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 57 of 100
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	m Analyzer - Swept SA					
LXIRL	RF 50 Ω DC	CORREC	SENSE:INT	ALIGNAUTO	07:31:01 PM Apr 03, 2014	Frequency
		PNO: Wide 🖵	Trig: Free Run	#Avg Type: RMS	TRACE 1 2 3 4 5 6 TYPE MWWWWW DET A N N N N N	Trequency
		IFGain:Low	Atten: 36 dB			Auto Tune
				Mkr1	1.850 000 GHz -26.574 dBm	Autorune
10 dB/div Log	Ref 25.00 dBm				-26.574 dBm	
						Center Freq
15.0						1.850000000 GHz
5.00					and a second and a second	
						Start Freq
-5.00						1.848000000 GHz
-15.0					-13.00 dBm	01 E
						Stop Freq
			<u>1</u>			1.852000000 GHz
-25.0						
		mannongen	man			CF Step
-35.0	about a second and a second					400.000 kHz
						<u>Auto</u> Man
-45.0						
						En off
-55.0						Freq Offset
						0 Hz
-65.0						
-65.0						
Center 1 8	350000 GHz				Span 4.000 MHz	
#Res BW		#VBW	150 kHz	#Sweep	1.00 s (1001 pts)	
MSG				STATUS		
				314103		

Plot 6-87. Lower Band Edge Plot (Band 2 – 5.0MHz QPSK – RB Size 25)



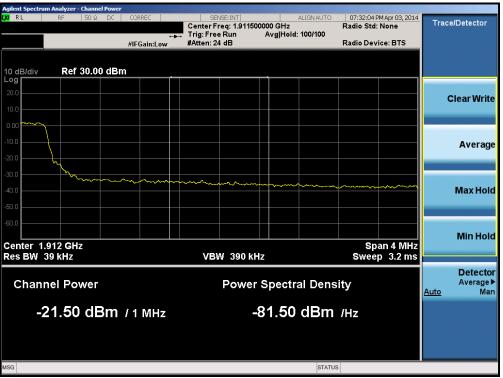
Plot 6-88. Lower Extended Band Edge Plot (Band 2 – 5.0MHz QPSK – RB Size 25)

FCC ID: ZNFD850		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dego 59 of 100
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	m Analyzer - Swept SA						_
L <mark>X/</mark> RL	RF 50 Ω DC	CORREC	SENSE:IM	#Avg	ALIGNAUTO J Type: RMS	07:31:57 PM Apr 03, 2014 TRACE 1 2 3 4 5 6 TYPE MWWWWW	Frequency
		PNO: Wide 🖵 IFGain:Low	Trig: Free Rui Atten: 36 dB	n		DET A N N N N	
		II Odinizovi			Mkr1	1.910 004 GHz	Auto Tune
10 dB/div	Ref 25.00 dBm					1.910 004 GHz -27.03 dBm	
							Center Freq
15.0							1.91000000 GHz
5.00	·····	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~				Start Freq
E 00							1.908000000 GHz
-5.00							
-15.0						-13.00 dBm	Stop Freq
							1.912000000 GHz
-25.0			<u> </u>				
25.0			<u>↓</u>		more many more that	Margaren Maralettan anna progen hangaren	CF Step
-35.0							400.000 kHz Auto Man
-45.0							<u>Auto</u> Mari
							Freq Offset
-55.0							0 Hz
o							
-65.0							
Center 1.9 #Res BW	910000 GHz 51 kHz	#VBW	150 kHz		#Sween	Span 4.000 MHz 1.00 s (1001 pts)	
MSG					STATUS	intere (neer pro)	

Plot 6-89. Upper Band Edge Plot (Band 2 – 5.0MHz QPSK – RB Size 25)



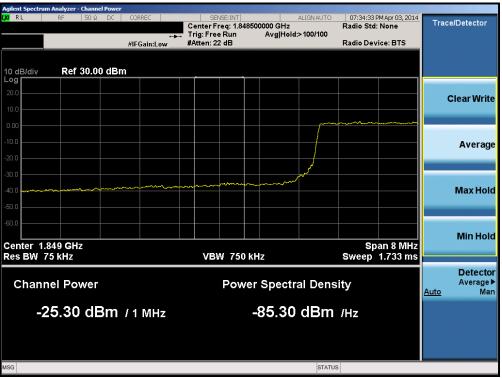
Plot 6-90. Upper Extended Band Edge Plot (Band 2 – 5.0MHz QPSK – RB Size 25)

FCC ID: ZNFD850	<u>PCTEST</u>	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 50 of 122
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RL RF 50 Ω DC					
	CORREC	SENSE:INT	ALIGNAUTO #Avg Type: RMS	07:34:19 PM Apr 03, 2014 TRACE 1 2 3 4 5 6	Frequency
	PNO: Wide 🖵 IFGain:Low	Trig: Free Run Atten: 36 dB		TYPE MWWWWWW DET ANNNNN	
dB/div Ref 25.00 dBm			Mkr1	1.850 000 GHz -31.144 dBm	Auto Tune
5.0					Center Freq 1.85000000 GHz
.00					Start Freq 1.846000000 GHz
5.0				-13.00 dBm	<b>Stop Fred</b> 1.854000000 GHz
5.0					CF Step 800.000 kH: <u>Auto</u> Mar
5.0					Freq Offse 0 H:
5.0					
enter 1.850000 GHz Res BW 100 kHz	#VBW	300 kHz	#Sweep	Span 8.000 MHz 1.00 s (1001 pts)	
G			STATUS		

Plot 6-91. Lower Band Edge Plot (Band 2 – 10.0MHz QPSK – RB Size 50)



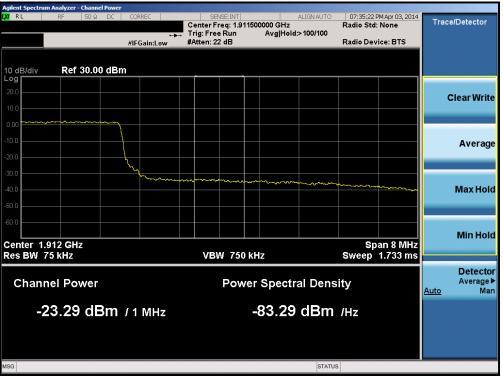
Plot 6-92. Lower Extended Band Edge Plot (Band 2 – 10.0MHz QPSK – RB Size 50)

FCC ID: ZNFD850	<u>PCTEST</u>	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dega 60 of 100	
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Plot 6-93. Upper Band Edge Plot (Band 2 – 10.0MHz QPSK – RB Size 50)



Plot 6-94. Upper Extended Band Edge Plot (Band 2 – 10.0MHz QPSK – RB Size 50)

FCC ID: ZNFD850	<u> <u> PCTEST</u> </u>	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dego 61 of 100
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Agilent Spectrum Analyzer - Swer					
<mark>X/</mark> RL RF 50:	Ω DC CORREC	SENSE:INT	ALIGNAUTO #Avg Type: RMS	07:38:01 PM Apr 03, 2014 TRACE 1 2 3 4 5 6	Frequency
	PNO: Wide 🖙 IFGain:Low	Trig: Free Run Atten: 36 dB	•	DET A NNNN	Auto Tune
10 dB/div Ref 25.00	dBm		Mkr1	1.849 664 GHz -32.94 dBm	Auto Tulle
15.0					Center Fred 1.850000000 GHz
5.00					<b>Start Fred</b> 1.844000000 GH:
25.0				-13.00 dBm	Stop Fred 1.856000000 GH:
-35.0					<b>CF Step</b> 1.200000 MH <u>Auto</u> Mar
-55.0					Freq Offse 0 H
-65.0 Center 1.850000 GHz				Spap 12 00 MHz	
#Res BW 150 kHz	#VBW	430 kHz	#Sweep	Span 12.00 MHz 1.00 s (1001 pts)	
MSG			STATUS		

Plot 6-95. Lower Band Edge Plot (Band 2 – 15.0MHz QPSK – RB Size 75)



Plot 6-96. Lower Extended Band Edge Plot (Band 2 – 15.0MHz QPSK – RB Size 75)

FCC ID: ZNFD850	PCTEST	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕕 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 62 of 122
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Plot 6-97. Upper Band Edge Plot (Band 2 – 15.0MHz QPSK – RB Size 75)



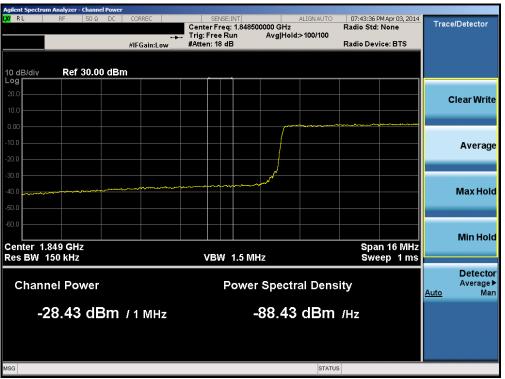
Plot 6-98. Upper Extended Band Edge Plot (Band 2 – 15.0MHz QPSK – RB Size 75)

FCC ID: ZNFD850		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dega 62 of 100	
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	m Analyzer - Swept SA					
X/RL	RF 50 Ω DC	CORREC	SENSE:INT	ALIGNAUTO #Avg Type: RMS	07:43:28 PM Apr 03, 2014 TRACE 1 2 3 4 5 6	Frequency
		PNO: Wide 😱 IFGain:Low	Trig: Free Run Atten: 36 dB	HOYY IYPE. NIIIS	TYPE MUNIMUM DET A N N N N N	
10 dB/div	Ref 25.00 dBm			Mkr1	1.850 000 GHz -33.291 dBm	Auto Tune
15.0						Center Freq 1.850000000 GHz
-5.00						Start Fred 1.842000000 GHz
-15.0					-13.00 dBm	Stop Frec 1.858000000 GHz
-45.0	en ante de la frança de la compañía	randel trace of the second	1/			CF Step 1.600000 MH: <u>Auto</u> Mar
-55.0						Freq Offse 0 H:
-65.0 Center 1.8 #Res BW	350000 GHz	#\/BM	560 kHz	#Sween	Span 16.00 MHz 1.00 s (1001 pts)	
MSG	200 KH2	#VDVV	500 KH2	#Sweep	1.00 S (100 I pls)	
						(00)

Plot 6-99. Lower Band Edge Plot (Band 2 – 20.0MHz QPSK – RB Size 100)



Plot 6-100. Lower Extended Band Edge Plot (Band 2 – 20.0MHz QPSK – RB Size 100)

FCC ID: ZNFD850	<u>PCTEST</u>	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 64 of 100
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Agilent Spectru	m Analyzer - Swept SA RF 50 Ω DC	CORREC	SEN:	BE:INT		ALIGNAUTO	07:44:031	PM Apr 03, 2014	_
		PNO: Wide 🔾			#Avg Typ		TRAI	CE 123456	Frequency
		IFGain:Low	Atten: 36	dB			D	et <mark>a n n n n n</mark>	Auto Tune
10 dB/div Log	Ref 25.00 dBm					Mkr1	1.910 7 -32.	'36 GHz 36 dBm	Auto Tulik
									Center Free
15.0									1.91000000 GHz
5.00									
-5.00									Start Fred 1.902000000 GHz
-5.00								-13.00 dBm	
-15.0									Stop Free
-25.0									1.918000000 GH:
			a voi						CF Step
-35.0						and and a second	Brand Manual Barrow		1.600000 MH Auto Mar
-45.0								- Alexandre	
-55.0									Freq Offse 0 Hz
									UH
-65.0									
Center 1.9 #Res BW	910000 GHz 200 kHz	#VBW	560 kHz			#Sweer	Span 1	6.00 MHz (1001 pts)	
MSG						STATUS			

Plot 6-101. Upper Band Edge Plot (Band 2 – 20.0MHz QPSK – RB Size 100)



Plot 6-102. Upper Extended Band Edge Plot (Band 2 – 20.0MHz QPSK – RB Size 100)

FCC ID: ZNFD850		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dege 65 of 100
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	n Analyzer - Swept SA					
X/RL	RF 50Ω AC	CORREC	SENSE:INT	ALIGNAUTO #Avg Type: RMS	07:18:37 PM Apr 07, 2014 TRACE 1 2 3 4 5 6	Frequency
		PNO: Wide 🖵	Trig: Free Run	any spectrum		
		IFGain:Low	Atten: 36 dB			Auto Tune
				Mkr1	2.500 000 GHz -24.950 dBm	Auto Tune
10 dB/div Log	Ref 25.00 dBm				-24.950 dBm	
						O and an Email
15.0						Center Freq
15.0						2.500000000 GHz
5.00						
3.00			<u> </u>			Start Freq
-5.00						2.498000000 GHz
-3.00						
-15.0			/		-13.00 dBm	
- 15.0			4			Stop Freq
-25.0			<b>&gt;</b> /			2.502000000 GHz
-20.0						
-35.0						CF Step
-33.0						400.000 kHz Auto Man
-45.0						<u>Auto</u> Man
-43.0						
-55.0						Freq Offset
						0 Hz
-65.0						
	00000 GHz				Span 4.000 MHz	
#Res BW :	51 kHz	#VBW	150 kHz	#Swee	p 1.00 s (1001 pts)	
MSG				STATU	5	

Plot 6-103. Lower Band Edge Plot (Band 7 – 5.0MHz QPSK – RB Size 25)



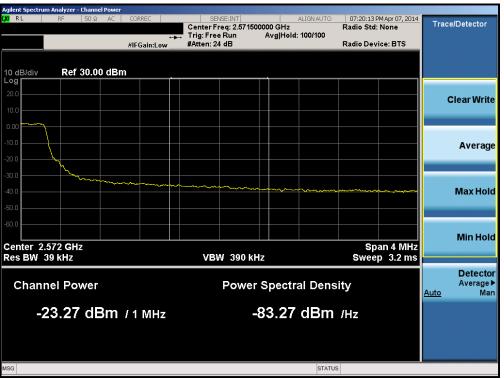
Plot 6-104. Lower Extended Band Edge Plot (Band 7 – 5.0MHz QPSK – RB Size 25)

FCC ID: ZNFD850		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 66 of 100
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	m Analyzer - Swept SA								
LXI RL	RF 50Ω AC	CORREC		E:INT	#Avg Type	ALIGNAUTO e: RMS		M Apr 07, 2014 E <mark>1 2 3 4 5 6</mark> E M WWWWWW	Frequency
		PNO: Wide 🖵 IFGain:Low	Trig: Free Atten: 36 d	Run IB			TYF	E M <del>WAMAAA</del> T <mark>ANNNNN</mark>	
		II Odimeon				Mkr1	2 570 0	20 GHz	Auto Tune
10 dB/div	Ref 25.00 dBm						-25.0	65 dBm	
15.0									Center Freq
15.0									2.570000000 GHz
5.00									
0.00			$\gamma$						Start Freq
-5.00									2.568000000 GHz
								-13.00 dBm	
-15.0									Stop Freq
			$\sim$	1					2.572000000 GHz
-25.0			- And	<u> </u>					
				- mark		- and a second as a			CF Step
-35.0								and a state of the	400.000 kHz
-45.0									<u>Auto</u> Man
									_
-55.0									Freq Offset 0 Hz
									0 Hz
-65.0									
Center 2.	570000 GHz						Span 4	.000 MHz	
#Res BW		#VBW	150 kHz			#Sweep	1.00 s (	1001 pts)	
MSG						STATUS			

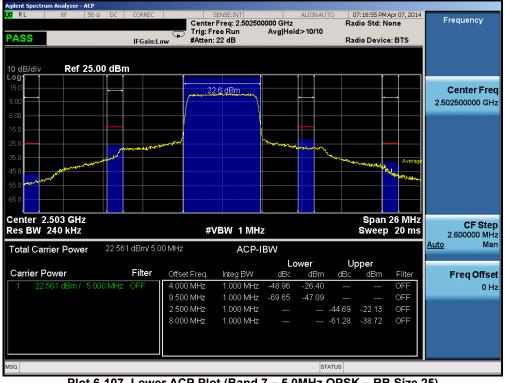
Plot 6-105. Upper Band Edge Plot (Band 7 – 5.0MHz QPSK – RB Size 25)



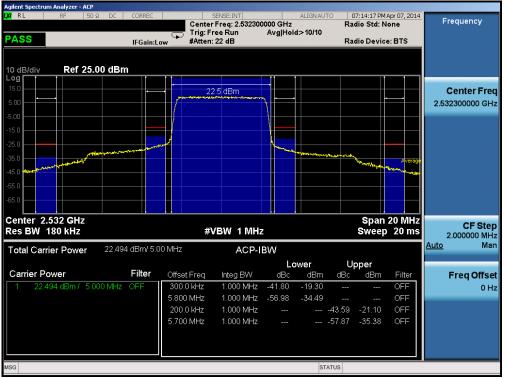
Plot 6-106. Upper Extended Band Edge Plot (Band 7 – 5.0MHz QPSK – RB Size 25)

FCC ID: ZNFD850	<u>PCTEST</u>	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dege 67 of 100
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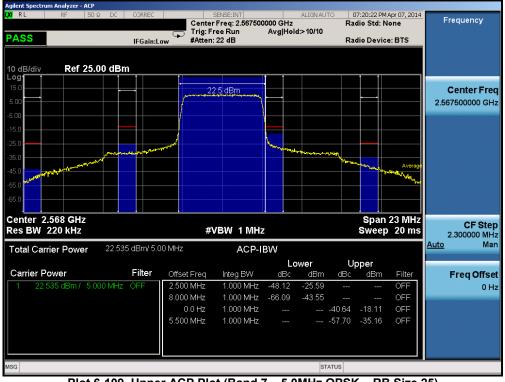
Plot 6-107. Lower ACP Plot (Band 7 – 5.0MHz QPSK – RB Size 25)



Plot 6-108. Mid ACP Plot (Band 7 – 5.0MHz QPSK – RB Size 25)

FCC ID: ZNFD850		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Plot 6-109. Upper ACP Plot (Band 7 – 5.0MHz QPSK – RB Size 25)



Plot 6-110. Lower Band Edge Plot (Band 7 – 10.0MHz QPSK – RB Size 50)

FCC ID: ZNFD850		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Plot 6-111. Lower Extended Band Edge Plot (Band 7 – 10.0MHz QPSK – RB Size 50)



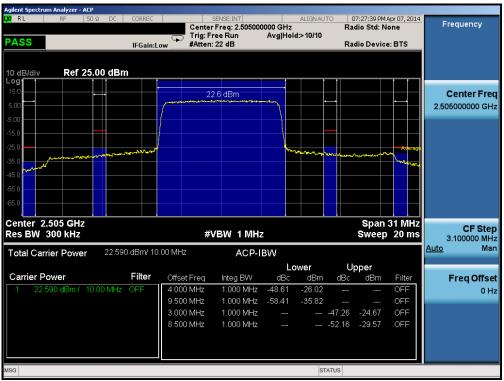
Plot 6-112. Upper Band Edge Plot (Band 7 – 10.0MHz QPSK – RB Size 50)

FCC ID: ZNFD850		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Plot 6-113. Upper Extended Band Edge Plot (Band 7 – 10.0MHz QPSK – RB Size 50)



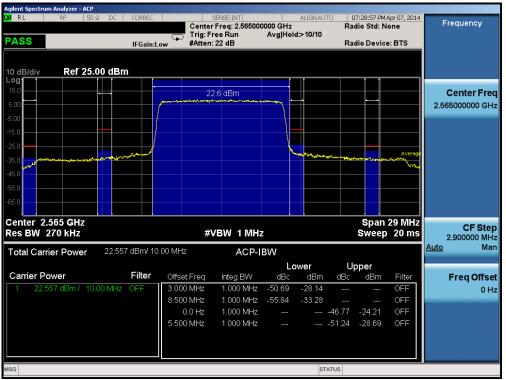
Plot 6-114. Lower ACP Plot (Band 7 – 10.0MHz QPSK – RB Size 50)

FCC ID: ZNFD850		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Agilent Spectrum Analyzer - ACP M RL RF 50 Q DC PASS	CORREC	Center Trig: Fr	ENSE:INT Freq: 2.535000 ee Run 22 dB	0000 GHz Avg Hold	ALIGNAUTO	07:22:33 PM Radio Std: N Radio Devic		Frequency
10 dB/div Ref 25.00 dB/	m I.	27	.5 dBm					Center Freq
-5.00				hereden et we				2.535000000 GHz
-15.0 -25.0 -35.0						WR. Sarah Sarah Sarah Sarah	Average	
-45.0								
Center 2.535 GHz Res BW 220 kHz			/BW 1 MHz			Span Sweep	24 MHz 20 ms	CF Step 2.400000 MHz Auto Man
Total Carrier Power 22.45	54 dBm/ 10.0	00 MHz	ACP-I		wer	Upper		
Carrier Power 1 22.454 dBm / 10.00 MHz	Filter OFF	Offset Freq 500.0 kHz 6.000 MHz 500.0 kHz	1.000 MHz 1.000 MHz	dBc -44.30 -49.33 	-21.85 -26.87 4	dBc dBm   7.41 -24.96	Filter OFF OFF OFF	Freq Offset 0 Hz
		6.000 MHz	1.000 MHz		5	1.34 -28.88	OFF	
Plot 6-11					STATU			

Plot 6-115. Mid ACP Plot (Band 7 – 10.0MHz QPSK – RB Size 50)



Plot 6-116. Upper ACP Plot (Band 7 – 10.0MHz QPSK – RB Size 50)

FCC ID: ZNFD850	<u>PCTEST</u>	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Plot 6-117. Lower Band Edge Plot (Band 7 – 15.0MHz QPSK – RB Size 75)



Plot 6-118. Lower Extended Band Edge Plot (Band 7 – 15.0MHz QPSK – RB Size 75)

FCC ID: ZNFD850		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕑 LG	Reviewed by: Quality Manager
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	m Analyzer - Swept SA					1	-
L <mark>XI</mark> RL	RF 50Ω AC	CORREC	SENSE:INT	#Avg Type	LIGNAUTO	07:42:48 PM Apr 07, 2014 TRACE 1 2 3 4 5 6 TYPE M WWWWW	Frequency
		PNO: Wide 😱 IFGain:Low	Trig: Free Run Atten: 36 dB		Mked	DET A NNNN	
10 dB/div Log	Ref 25.00 dBm					2.570 000 GHz -32.561 dBm	
15.0							<b>Center Freq</b> 2.570000000 GHz
-5.00							<b>Start Freq</b> 2.564000000 GHz
-15.0						-13.00 dBm	<b>Stop Freq</b> 2.576000000 GHz
-35.0			1	in from a nagend by the main on the first state	4 <del>4., 440, 4</del> 00, 400, 400, 400, 400, 400, 40	and and any one and one official and the for	CF Step 1.200000 MHz <u>Auto</u> Man
-45.0							Freq Offset
-65.0							
Center 2. #Res BW	570000 GHz 150 kHz	#VBW	430 kHz		#Sweep	Span 12.00 MHz 1.00 s (1001 pts)	
MSG					STATUS		

Plot 6-119. Upper Band Edge Plot (Band 7 – 15.0MHz QPSK – RB Size 75)



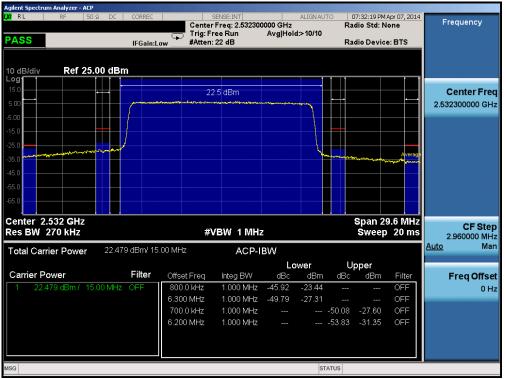
Plot 6-120. Upper Extended Band Edge Plot (Band 7 – 15.0MHz QPSK – RB Size 75)

FCC ID: ZNFD850		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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igilent Spectrum Analyzer - ACP X RL RF 50 Ω DC PASS	CORREC			0000 GHz Avg Hold	ALIGNAUT >10/10	Rac	7:34:09 PM A dio Std: No dio Device	ne	Frequency
10 dB/div Ref 25.00 dB	m					IT T			
15.0 5.00 5.00	•	22.6	dBm			<u> </u>			Center Freq 2.507500000 GHz
-15.0								Average	
-35.0					- nsa~-u <sub>n</sub> e			***	
65.0									
Center 2.508 GHz Res BW 330 kHz		#VE	3W 1 MHz				Span ( Sweep	36 MHz 20 ms	CF Step 3.600000 MH
Total Carrier Power 22.65	50 dBm/ 15.00	MHz	ACP-I						<u>Auto</u> Mar
Carrier Power	Filter	Offset Freq	Integ BW	<b>Lo</b> v dBc	<b>ver</b> dBm	Up dBc	o <b>per</b> dBm	Filter	Freq Offse
1 22.650 dBm / 15.00 MHz	OFF 4	1.000 MHz	1.000 MHz	-49.19	-26.54			OFF	0 Ha
			1.000 MHz	-53.18	-30.53			OFF	
			1.000 MHz			47.64	-24.99	OFF	
		9.000 MHz	1.000 MHz			49.79	-27.14	OFF	
ISG					STA	TUS			

Plot 6-121. Lower ACP Plot (Band 7 – 15.0MHz QPSK – RB Size 75)



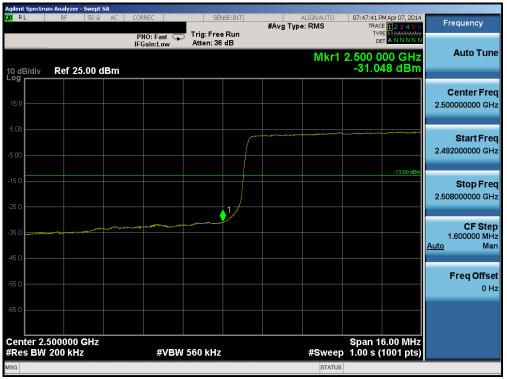
Plot 6-122. Mid ACP Plot (Band 7 – 15.0MHz QPSK – RB Size 75)

FCC ID: ZNFD850		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Agilent Spectrum Analyzer - ACP (A) RL RF 50 Ω DC	CORREC	Center Trig: Fr		0000 GHz Avg Hol	ALIGN AUT d:>10/10	Ra	7:43:12 PM A dio Std: No dio Device	one	Frequency
10 dB/div Ref 25.00 dBr	n								
5.00	•	22	.5 dBm	ر					Center Freq 2.562500000 GHz
-5.0									
-35.0					- Marina	LTORN A. H. YY	~~~~~	Average	
-55.0									
Center 2.563 GHz Res BW 330 kHz			/BW 1 MHz	2				35 MHz 20 ms	3.500000 MHz
Total Carrier Power 22.45	1 dBm/ 15.0	00 MHz	ACP-I						<u>Auto</u> Man
Carrier Power	Filter	Offset Freq	Integ BW	dBc	wer dBm	dBc	o <b>per</b> dBm	Filter	Freq Offset
1 22.451 dBm / 15.00 MHz	OFF	3.500 MHz	1.000 MHz	-52.53	-30.08			OFF	0 Hz
		9.000 MHz	1.000 MHz	-54.55	-32.10			OFF	
		0.0 Hz	1.000 MHz			-49.39	-26.94	OFF	
		5.500 MHz	1.000 MHz			-52.25	-29.79	OFF	
MSG					ST	ATUS			
Plot 6-123.	11		(D 1 7	454				0:	75

Plot 6-123. Upper ACP Plot (Band 7 – 15.0MHz QPSK – RB Size 75)



Plot 6-124. Lower Band Edge Plot (Band 7 - 20.0MHz QPSK - RB Size 100)

FCC ID: ZNFD850		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Plot 6-125. Lower Extended Band Edge Plot (Band 7 – 20.0MHz QPSK – RB Size 100)



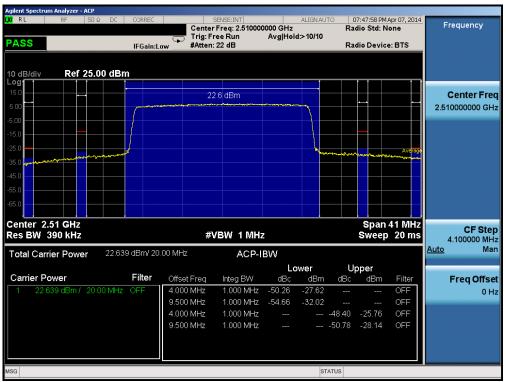
Plot 6-126. Upper Band Edge Plot (Band 7 – 20.0MHz QPSK – RB Size 100)

FCC ID: ZNFD850		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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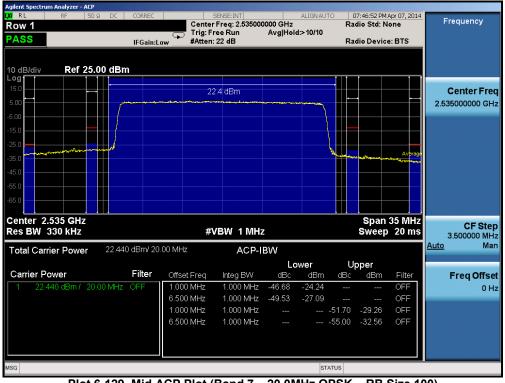
Plot 6-127. Upper Extended Band Edge Plot (Band 7 – 20.0MHz QPSK – RB Size 100)



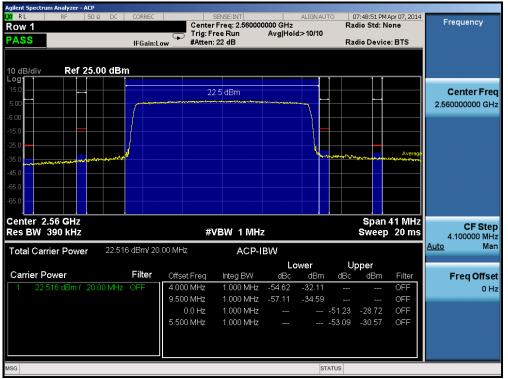
Plot 6-128. Lower ACP Plot (Band 7 - 20.0MHz QPSK - RB Size 100)

FCC ID: ZNFD850		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Plot 6-129. Mid ACP Plot (Band 7 – 20.0MHz QPSK – RB Size 100)



Plot 6-130. Upper ACP Plot (Band 7 – 20.0MHz QPSK – RB Size 100)

FCC ID: ZNFD850		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 70 of 100
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