

PCTEST ENGINEERING LABORATORY, INC.

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MEASUREMENT REPORT FCC Part 22, 24, & 27 LTE

Applicant Name:

FCC ID :

APPLICANT:

LG Electronics MobileComm U.S.A 1000 Sylvan Avenue Englewood Cliffs, NJ 07632 United States Date of Testing: 2/3-3/30/2016, 4/5/2016, 4/20/2016 Test Site/Location: PCTEST Lab., Columbia, MD, USA Test Report Serial No.: 0Y1604040679.ZNF

ZNFK425

LG ELECTRONICS MOBILECOMM U.S.A

Application Type: FCC Classification: FCC Rule Part(s): Test Procedure(s): EUT Type: Model(s): Test Device Serial No.: Certification PCS Licensed Transmitter Held to Ear (PCE) §2; §24; §27 ANSI/TIA-603-C-2004, KDB 971168 D01 v02r02 Portable Handset LGK425, LG-K425, K425 *identical prototype* [S/N: 08440]

		ERP/EI	EIRP		
Mode	Tx Frequency	Emission	Modulation	Max. Pow er	Max. Pow er
mode	(MHz)	Designator	woodulation	(W)	(dBm)
				. ,	. ,
LTE Band 12	699.7 - 715.3	1M12G7D	QPSK	0.096	19.82
LTE Band 12	699.7 - 715.3	1M12W7D	16QAM	0.077	18.87
LTE Band 12	700.5 - 714.5	2M73G7D	QPSK	0.095	19.78
LTE Band 12	700.5 - 714.5	2M72W7D	16QAM	0.079	18.98
LTE Band 12	701.5 - 713.5	4M51G7D	QPSK	0.105	20.20
LTE Band 12	701.5 - 713.5	4M52W7D	16QAM	0.082	19.16
LTE Band 12	704 - 711	8M99G7D	QPSK	0.098	19.92
LTE Band 12	704 - 711	8M97W7D	16QAM	0.085	19.29
LTE Band 5	824.7 - 848.3	1M11G7D	QPSK	0.102	20.07
LTE Band 5	824.7 - 848.3	1M13W7D	16QAM	0.079	18.97
LTE Band 5	825.5 - 847.5	2M73G7D	QPSK	0.108	20.34
LTE Band 5	825.5 - 847.5	2M73W7D	16QAM	0.084	19.24
LTE Band 5	826.5 - 846.5	4M54G7D	QPSK	0.109	20.38
LTE Band 5	826.5 - 846.5	4M52W7D	16QAM	0.086	19.34
LTE Band 5	829 - 844	9M00G7D	QPSK	0.107	20.27
LTE Band 5	829 - 844	9M00W7D	16QAM	0.080	19.03
LTE Band 4	1710.7 - 1754.3	1M12G7D	QPSK	0.180	22.55
LTE Band 4	1710.7 - 1754.3	1M11W7D	16QAM	0.147	21.68
LTE Band 4	1711.5 - 1753.5	2M72G7D	QPSK	0.184	22.64
LTE Band 4	1711.5 - 1753.5	2M72W7D	16QAM	0.153	21.85
LTE Band 4	1712.5 - 1752.5	4M56G7D	QPSK	0.177	22.48
LTE Band 4	1712.5 - 1752.5	4M52W7D	16QAM	0.150	21.77
LTE Band 4	1715 - 1750	8M97G7D	QPSK	0.235	23.70
LTE Band 4	1715 - 1750	8M99W7D	16QAM	0.201	23.03
LTE Band 4	1717.5 - 1747.5	13M5G7D	QPSK	0.244	23.87
LTE Band 4	1717.5 - 1747.5	13M4W7D	16QAM	0.202	23.05
LTE Band 4	1720 - 1745	18M0G7D	QPSK	0.214	23.30
LTE Band 4	1720 - 1745	18M0W7D	16QAM	0.184	22.64
LTE Band 2	1850.7 - 1909.3	1M11G7D	QPSK	0.217	23.36
LTE Band 2	1850.7 - 1909.3	1M12W7D	16QAM	0.174	22.40
LTE Band 2	1851.5 - 1908.5	2M73G7D	QPSK	0.220	23.42
LTE Band 2	1851.5 - 1908.5	2M72W7D	16QAM	0.179	22.53
LTE Band 2	1852.5 - 1907.5	4M53G7D	QPSK	0.200	23.01
LTE Band 2	1852.5 - 1907.5	4M51W7D	16QAM	0.157	21.96
LTE Band 2	1855 - 1905	9M00G7D	QPSK	0.188	22.75
LTE Band 2	1855 - 1905	9M00W7D	16QAM	0.160	22.05
LTE Band 2	1857.5 - 1902.5	13M5G7D	QPSK	0.174	22.41
LTE Band 2	1857.5 - 1902.5	13M5W7D	16QAM	0.147	21.67
LTE Band 2	1860 - 1900	17M9G7D	QPSK	0.171	22.33
LTE Band 2	1860 - 1900	18M0W7D	16QAM	0.139	21.43

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.



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MEASUREMENT REPORT FCC Part 22, 24, & 27



§2.1033 General Information

APPLICANT:	LG Electronics MobileCom	m U.S.A		
APPLICANT ADDRESS:	1000 Sylvan Avenue			
	Englewood Cliffs, NJ 07632	2, United States		
TEST SITE:	PCTEST ENGINEERING L	ABORATORY, INC		
TEST SITE ADDRESS:	7185 Oakland Mills Road, (Columbia, MD 2104	5 USA	
FCC RULE PART(S):	§2; §24; §27			
BASE MODEL:	LGK425			
FCC ID:	ZNFK425			
FCC CLASSIFICATION:	PCS Licensed Transmitter	Held to Ear (PCE)		
FREQUENCY TOLERANCE:	±0.00025 % (2.5 ppm)			
Test Device Serial No.:	08440	Production	Pre-Production	Engineering
DATE(S) OF TEST:	2/3-3/30/2016, 4/5/2016, 4/	20/2016		
TEST REPORT S/N:	0Y1604040679.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 C63.4-2014 on January 22, 2015.

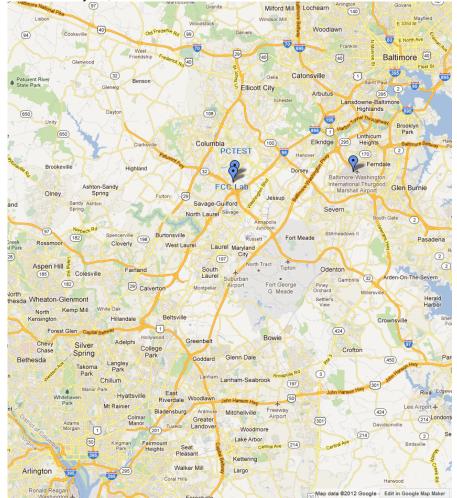


Figure 1-1. Map of the Greater Baltimore and Metropolitan Washington, D.C. area

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2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **LG Portable Handset FCC ID: ZNFK425**. 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, Multi-band LTE, 802.11b/g/n WLAN, Bluetooth (1x, EDR, LE), NFC

2.3 Test Configuration

The LG Portable Handset FCC ID: ZNFK425 was tested per the guidance of ANSI/TIA-603-C-2004 and KDB 971168 D01 v02r02. See Section 7.0 of this test report for a description of the radiated and antenna port conducted emissions tests.

2.4 EMI Suppression Device(s)/Modifications

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

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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 D01 v02r02) were used in the measurement of the **LG Portable Handset FCC ID: ZNFK425.**

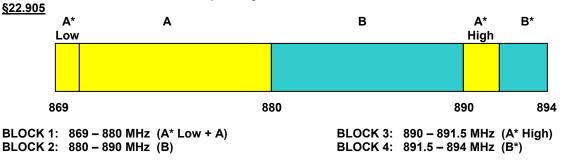
3.2 Block A Frequency Range

<u>§27.5(c)</u>

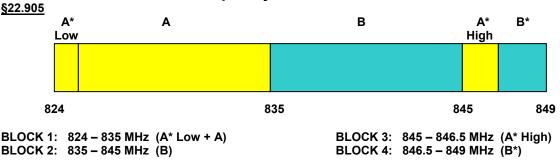
<u>698-746 MHz band</u>. The following frequencies are available for licensing pursuant to this part in the 698-746 MHz band: (1) Three paired channel blocks of 12 megahertz each are available for assignment as follows:

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.

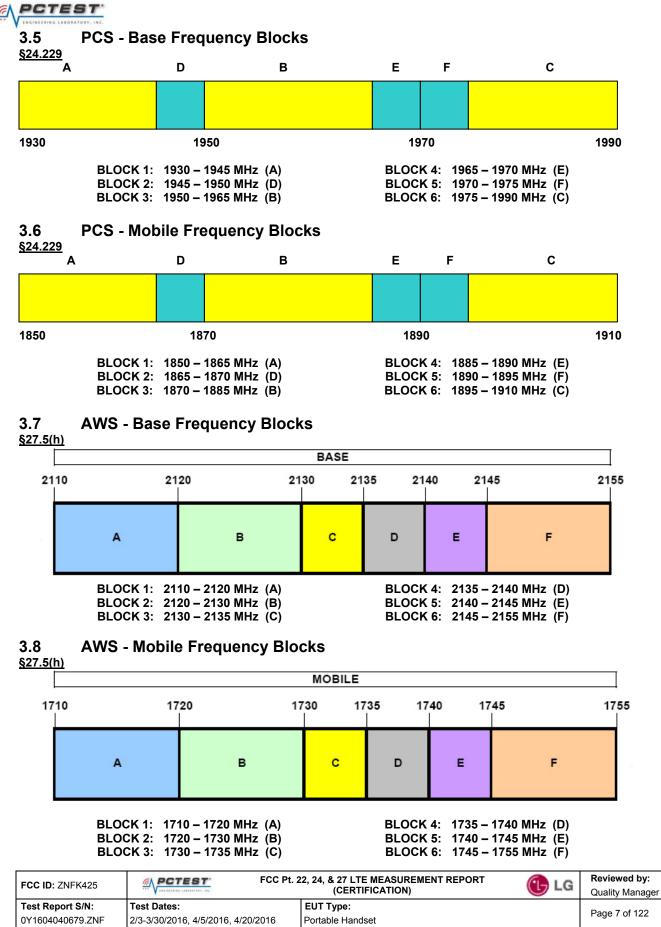




3.4 Cellular - Mobile Frequency Blocks



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

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

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

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

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 + 10log₁₀(Power _[Watts]).

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4.0 MEASUREMENT UNCERTAINTY

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

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

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5.0 TEST EQUIPMENT CALIBRATION DATA

Test Equipment Calibration is traceable to the National Institute of Standards and Technology (NIST).

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
-	LTx3	Licensed Transmitter Cable Set	6/12/2015	Annual	6/12/2016	LTx3
-	RE3	Radiated Emissions Cable Set	4/29/2015	Annual	4/29/2016	RE3
Agilent	8447D	Broadband Amplifier	6/12/2015	Annual	6/12/2016	2443A01900
Agilent	N9020A	MXA Signal Analyzer	11/5/2015	Annual	11/5/2016	US46470561
Com-Power	AL-130	9kHz - 30MHz Loop Antenna	7/30/2015	Biennial	7/30/2017	121034
Espec	ESX-2CA	Environmental Chamber	3/17/2015	Annual	3/17/2016	17620
ETS Lindgren	3117	1-18 GHz DRG Horn (Medium)	4/8/2014	Biennial	4/8/2016	125518
ETS Lindgren	3160-09	18-26.5 GHz Standard Gain Horn	6/17/2014	Biennial	6/17/2016	135427
ETS Lindgren	3164-08	Quad Ridge Horn Antenna	10/22/2014	Biennial	10/22/2016	128338
K & L	11SH10-3075/U18000	High Pass Filter	7/18/2015	Annual	7/18/2016	11SH10-3075/U18000-2
K & L	13SH10-1000/U1000	N Type High Pass Filter	7/18/2015	Annual	7/18/2016	13SH10-1000/U1000-2
Mini Circuits	PWR-SEN-4GHS	USB Power Sensor	3/11/2015	Annual	3/11/2016	11401010036
Mini-Circuits	SSG-4000HP	Synthesized Signal Generator		N/A		11403100002
Mini-Circuits	TVA-11-422	RF Power Amp		N/A		QA1303002
Rohde & Schwarz	CMW500	Radio Communication Tester		N/A		102060
Rohde & Schwarz	ESU40	EMI Test Receiver (40GHz)	7/17/2015	Annual	7/17/2016	100348
Rohde & Schwarz	TS-PR18	1-18 GHz Pre-Amplifier	3/7/2016	Annual	3/7/2017	100071
Rohde & Schwarz	TS-PR26	18-26.5 GHz Pre-Amplifier	3/7/2016	Annual	3/7/2017	100040
Schwarzbeck	UHA 9105	Dipole Antenna (400 - 1GHz) Rx	11/18/2015	Biennial	11/18/2017	91052523RX
Sunol	JB5	Bi-Log Antenna (30M - 5GHz)	3/28/2014	Biennial	3/28/2016	A051107

Table 5-1. Test Equipment

Notes:

- 1. For equipment listed above that has a calibration date or calibration due date that falls within the test date range, care was taken to ensure that this equipment was used after the calibration date and before the calibration due date.
- 2. Equipment with a calibration date of "N/A" shown in this list was not used to make direct calibrated measurements.

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6.0 SAMPLE CALCULATIONS

Emission Designator

QPSK Modulation

Emission Designator = 8M62G7D

LTE BW = 8.62 MHz

G = Phase Modulation

7 = Quantized/Digital Info

D = Data transmission, telemetry, telecommand

16QAM Modulation

Emission Designator = 8M45W7D

LTE BW = 8.45 MHz W = Amplitude/Angle Modulated 7 = Quantized/Digital Info D = Data transmission, telemetry, telecommand

Spurious Radiated Emission – LTE Band

Example: Middle Channel LTE Mode 2nd 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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7.0 TEST RESULTS

7.1 Summary

Company Name: FCC ID:	LG Electronics MobileComm U.S.A ZNEK425
FCC Classification:	PCS Licensed Transmitter Held to Ear (PCE)
Mode(s):	LTE

	Test Limit	Test Condition	Result	Reference
MODE (TX)				
Occupied Bandwidth	N/A		PASS	Section 7.2
Out of Band Emissions	> 43 + 10log ₁₀ (P[Watts]) at Band Edge and for all out-of-band emissions		PASS	Section 7.3, 7.4
Peak-Average Ratio	< 13 dB	CONDUCTED	PASS	Section 7.5
Transmitter Conducted Output Power	N/A		PASS	See RF Exposure Report
Frequency Stability	Fundamental emissions stay within authorized frequency block (Part 24, 27)		PASS	Section 7.8
Effective Radiated Power (Band 5)	< 7 Watts max. ERP		PASS	Section 7.6
Effective Radiated Power (Band 12)	< 3 Watts max. ERP		PASS	Section 7.6
Equivalent Isotropic Radiated Power (Band 2)	< 2 Watts max. EIRP	RADIATED	PASS	Section 7.6
Equivalent Isotropic Radiated Power (Band 4)	< 1 Watts max. EIRP		PASS	Section 7.6
Undesirable Emissions	> 43 + 10log ₁₀ (P[Watts]) for all out-of-band emissions		PASS	Section 7.7
	Occupied Bandwidth Out of Band Emissions Peak-Average Ratio Transmitter Conducted Output Power Frequency Stability Effective Radiated Power (Band 5) Effective Radiated Power (Band 12) Equivalent Isotropic Radiated Power (Band 2) Equivalent Isotropic Radiated Power (Band 4)	Occupied BandwidthN/AOut of Band Emissions> 43 + 10log10 (P[Watts]) at Band Edge and for all out-of-band emissionsPeak-Average Ratio< 13 dB	Occupied BandwidthN/AOut of Band Emissions>43 + 10log10 (P[Watts]) at Band Edge and for all out-of-band emissionsPeak-Average Ratio< 13 dB	Occupied BandwidthN/APASSOut of Band Emissions\$43 + 10log_{10} (P[Watts]) at Band Edge and for all out-of-band emissionsPASSPeak-Average Ratio<13 dB

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 7.2, 7.3, 7.4, 7.5) 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 4.0.

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7.2 Occupied Bandwidth §2.1049

Test Overview

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

Test Procedure Used

KDB 971168 D01 v02r02 – 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.

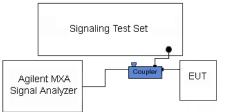


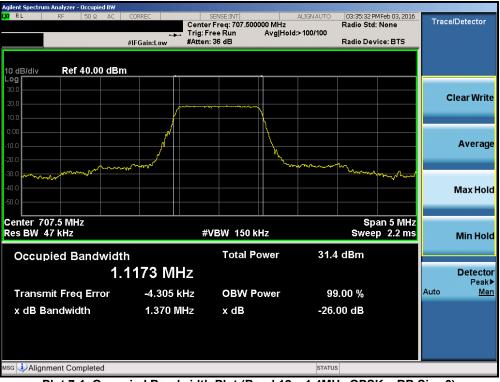
Figure 7-1. Test Instrument & Measurement Setup

<u>Test Notes</u>

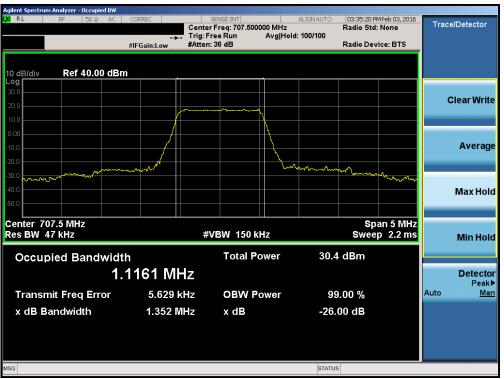
None.

FCC ID: ZNFK425	FCC	Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Plot 7-1. Occupied Bandwidth Plot (Band 12 – 1.4MHz QPSK – RB Size 6)



Plot 7-2. Occupied Bandwidth Plot (Band 12 – 1.4MHz 16-QAM – RB Size 6)

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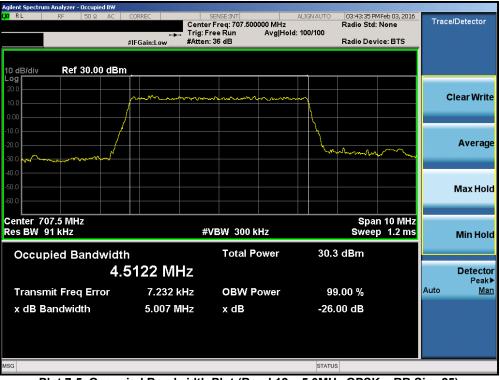
Plot 7-3. Occupied Bandwidth Plot (Band 12 – 3.0MHz QPSK – RB Size 15)



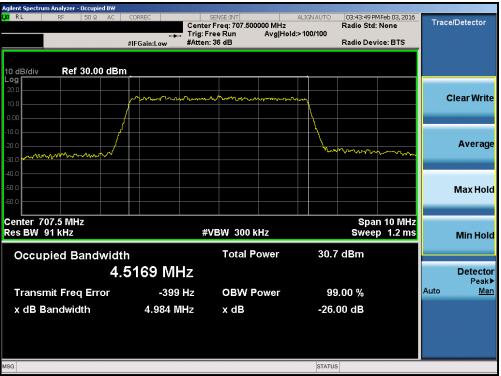
Plot 7-4. Occupied Bandwidth Plot (Band 12 – 3.0MHz 16-QAM – RB Size 15)

FCC ID: ZNFK425	FCC Pt.	22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	💽 LG	Reviewed by: Quality Manager
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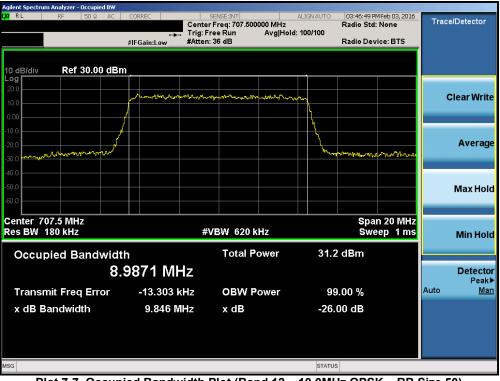
Plot 7-5. Occupied Bandwidth Plot (Band 12 – 5.0MHz QPSK – RB Size 25)



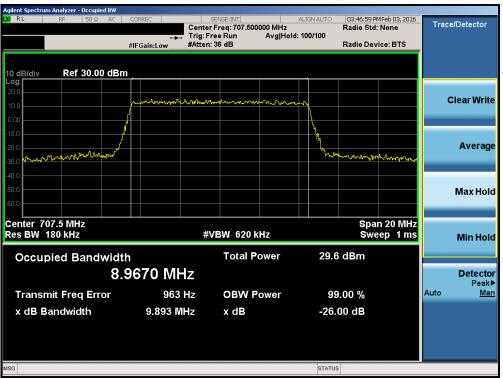
Plot 7-6. Occupied Bandwidth Plot (Band 12 – 5.0MHz 16-QAM – RB Size 25)

FCC ID: ZNFK425	FCC Pt.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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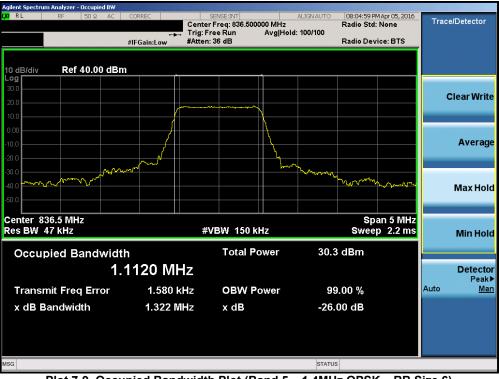
Plot 7-7. Occupied Bandwidth Plot (Band 12 – 10.0MHz QPSK – RB Size 50)



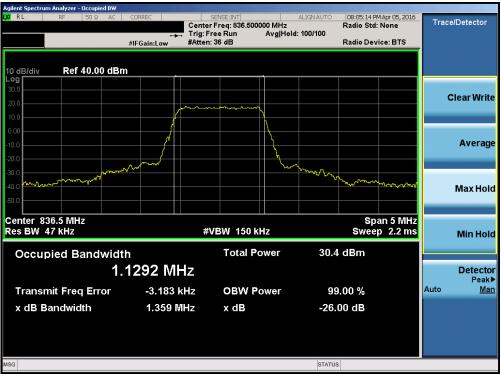
Plot 7-8. Occupied Bandwidth Plot (Band 12 – 10.0MHz 16-QAM – RB Size 50)

FCC ID: ZNFK425	FCC Pt.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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Plot 7-9. Occupied Bandwidth Plot (Band 5 – 1.4MHz QPSK – RB Size 6)



Plot 7-10. Occupied Bandwidth Plot (Band 5 – 1.4MHz 16-QAM – RB Size 6)

FCC ID: ZNFK425	FCC Pt.	22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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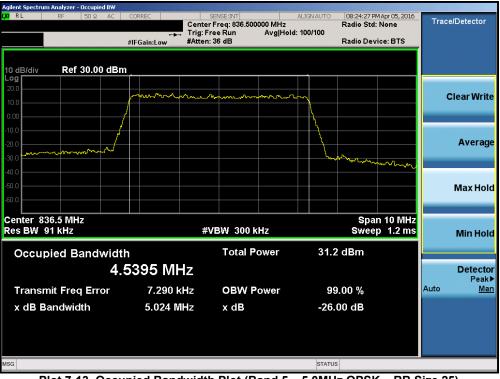
Plot 7-11. Occupied Bandwidth Plot (Band 5 – 3.0MHz QPSK – RB Size 15)



Plot 7-12. Occupied Bandwidth Plot (Band 5 – 3.0MHz 16-QAM – RB Size 15)

FCC ID: ZNFK425	FCC Pt.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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Plot 7-13. Occupied Bandwidth Plot (Band 5 – 5.0MHz QPSK – RB Size 25)



Plot 7-14. Occupied Bandwidth Plot (Band 5 – 5.0MHz 16-QAM – RB Size 25)

FCC ID: ZNFK425	FCC Pt.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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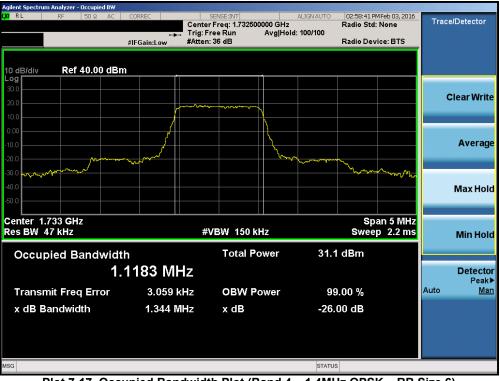
Plot 7-15. Occupied Bandwidth Plot (Band 5 – 10.0MHz QPSK – RB Size 50)



Plot 7-16. Occupied Bandwidth Plot (Band 5 – 10.0MHz 16-QAM – RB Size 50)

FCC ID: ZNFK425	FCC Pt.	22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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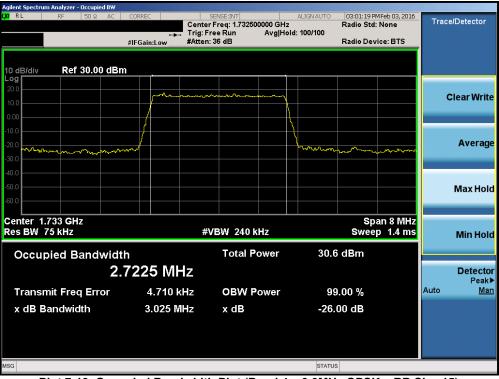
Plot 7-17. Occupied Bandwidth Plot (Band 4 – 1.4MHz QPSK – RB Size 6)



Plot 7-18. Occupied Bandwidth Plot (Band 4 – 1.4MHz 16-QAM – RB Size 6)

FCC ID: ZNFK425	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		🕒 LG	Reviewed by: Quality Manager
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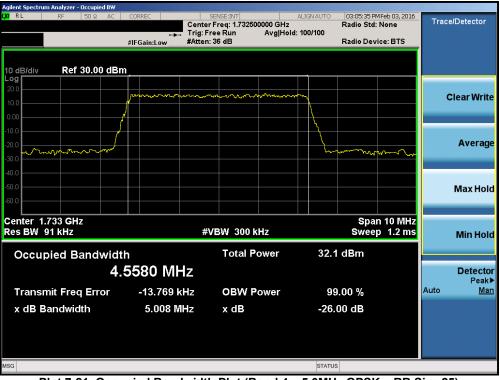
Plot 7-19. Occupied Bandwidth Plot (Band 4 – 3.0MHz QPSK – RB Size 15)



Plot 7-20. Occupied Bandwidth Plot (Band 4 – 3.0MHz 16-QAM – RB Size 15)

FCC ID: ZNFK425	FCC Pt.	22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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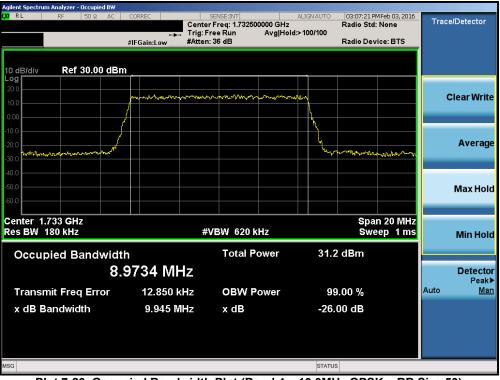
Plot 7-21. Occupied Bandwidth Plot (Band 4 – 5.0MHz QPSK – RB Size 25)



Plot 7-22. Occupied Bandwidth Plot (Band 4 – 5.0MHz 16-QAM – RB Size 25)

FCC ID: ZNFK425	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		🕒 LG	Reviewed by: Quality Manager
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Plot 7-23. Occupied Bandwidth Plot (Band 4 – 10.0MHz QPSK – RB Size 50)



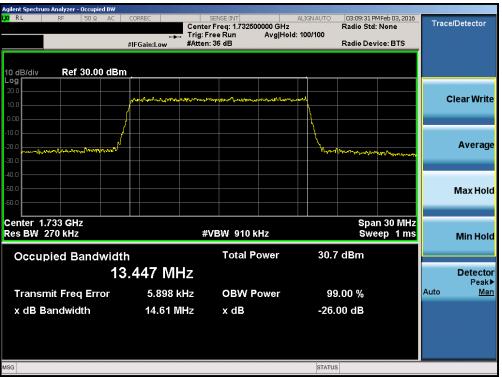
Plot 7-24. Occupied Bandwidth Plot (Band 4 – 10.0MHz 16-QAM – RB Size 50)

FCC ID: ZNFK425	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		💽 LG	Reviewed by: Quality Manager
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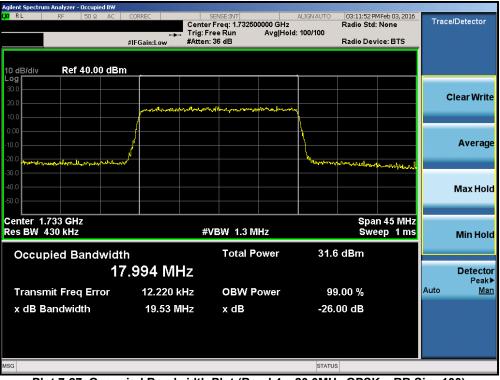
Plot 7-25. Occupied Bandwidth Plot (Band 4 – 15.0MHz QPSK – RB Size 75)



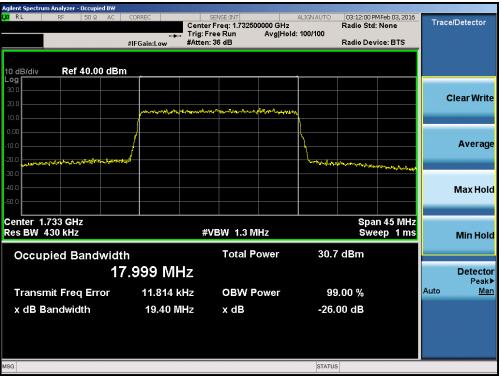
Plot 7-26. Occupied Bandwidth Plot (Band 4 – 15.0MHz 16-QAM – RB Size 75)

FCC ID: ZNFK425	FCC Pt.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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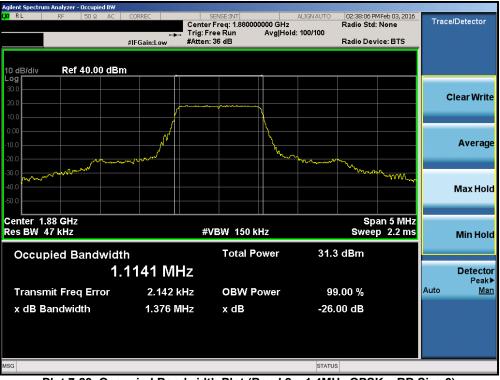
Plot 7-27. Occupied Bandwidth Plot (Band 4 – 20.0MHz QPSK – RB Size 100)



Plot 7-28. Occupied Bandwidth Plot (Band 4 – 20.0MHz 16-QAM – RB Size 100)

FCC ID: ZNFK425	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		🕒 LG	Reviewed by: Quality Manager
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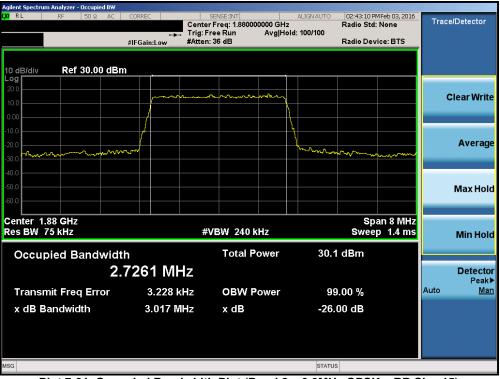
Plot 7-29. Occupied Bandwidth Plot (Band 2 – 1.4MHz QPSK – RB Size 6)



Plot 7-30. Occupied Bandwidth Plot (Band 2 – 1.4MHz 16-QAM – RB Size 6)

FCC ID: ZNFK425	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 29 of 122
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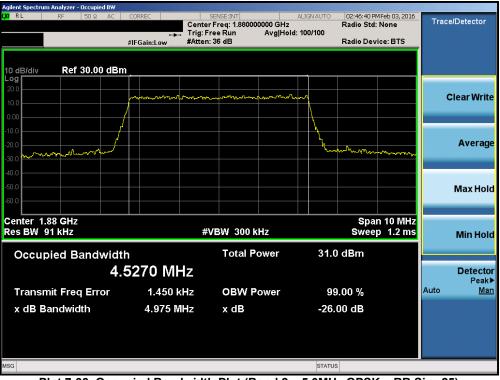
Plot 7-31. Occupied Bandwidth Plot (Band 2 – 3.0MHz QPSK – RB Size 15)



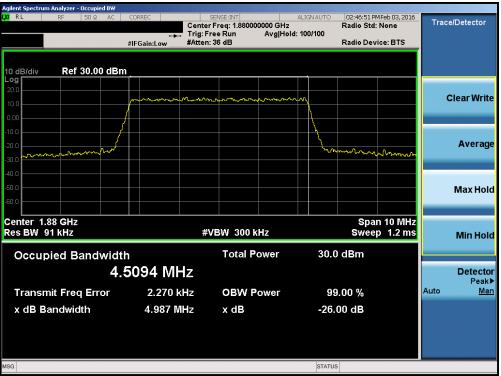
Plot 7-32. Occupied Bandwidth Plot (Band 2 – 3.0MHz 16-QAM – RB Size 15)

FCC ID: ZNFK425	FCC Pt.	22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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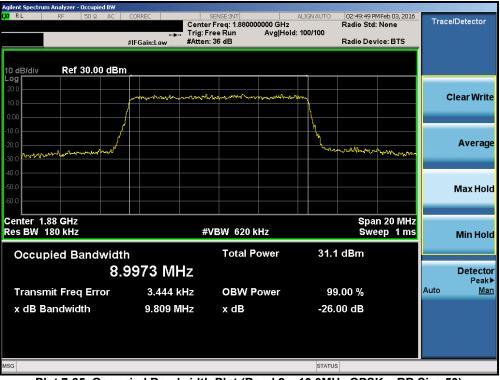
Plot 7-33. Occupied Bandwidth Plot (Band 2 – 5.0MHz QPSK – RB Size 25)



Plot 7-34. Occupied Bandwidth Plot (Band 2 – 5.0MHz 16-QAM – RB Size 25)

FCC ID: ZNFK425	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		🕒 LG	Reviewed by: Quality Manager
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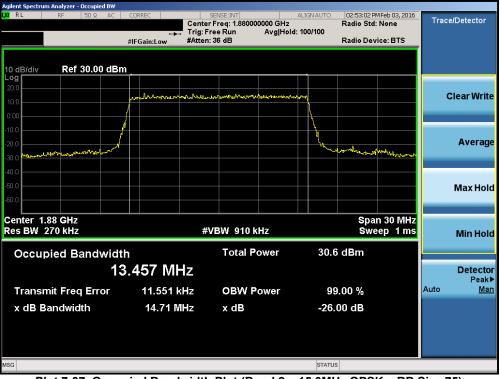
Plot 7-35. Occupied Bandwidth Plot (Band 2 – 10.0MHz QPSK – RB Size 50)



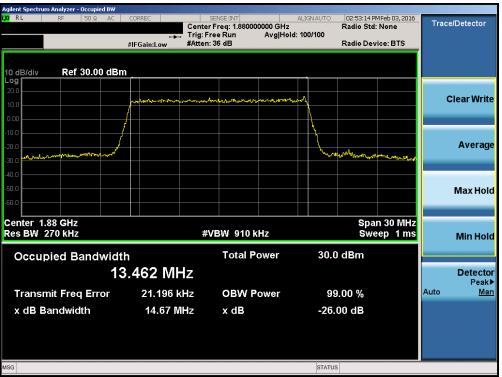
Plot 7-36. Occupied Bandwidth Plot (Band 2 – 10.0MHz 16-QAM – RB Size 50)

FCC ID: ZNFK425	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		💽 LG	Reviewed by: Quality Manager	
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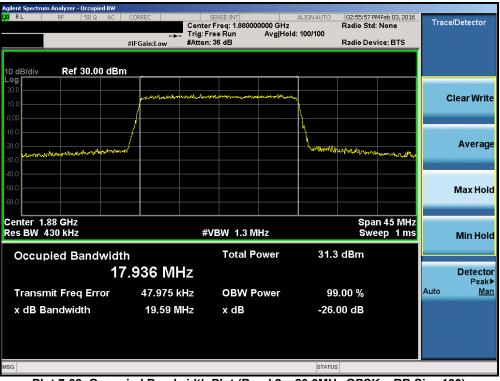
Plot 7-37. Occupied Bandwidth Plot (Band 2 – 15.0MHz QPSK – RB Size 75)



Plot 7-38. Occupied Bandwidth Plot (Band 2 – 15.0MHz 16-QAM – RB Size 75)

FCC ID: ZNFK425	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		💽 LG	Reviewed by: Quality Manager	
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Plot 7-39. Occupied Bandwidth Plot (Band 2 – 20.0MHz QPSK – RB Size 100)



Plot 7-40. Occupied Bandwidth Plot (Band 2 – 20.0MHz 16-QAM – RB Size 100)

FCC ID: ZNFK425	FCC Pt.	22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager	
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7.3 Spurious and Harmonic Emissions at Antenna Terminal §2.1051 §22.917(a) §24.238(a) §27.53(g) §27.53(h)

Test Overview

The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic. All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at 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 D01 v02r02 - 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 = trace average
- 4. Sweep time = auto couple
- 5. The trace was allowed to stabilize
- 6. Please see test notes below for RBW and VBW settings

Test Setup

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

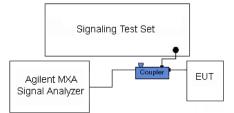


Figure 7-2. Test Instrument & Measurement Setup

Test Notes

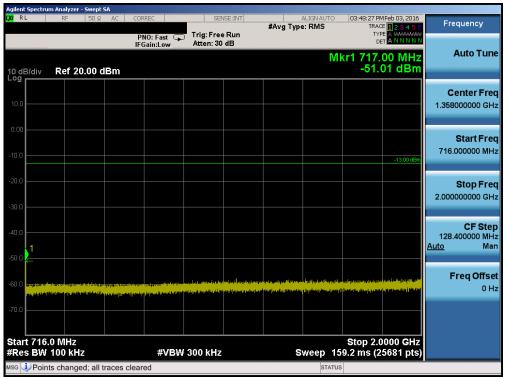
Compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater for frequencies less than 1 GHz and 1 MHz or greater for frequencies greater than 1 GHz. However, in the 1 MHz bands immediately outside and adjacent to the 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: ZNFK425	FCC Pt	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager	
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RL RF SO Q AC CORREC SENSE:INT ALIGNAUTO 03:48:20 PMeb 03:2016 #Avg Type: RMS Trig: Free Run IFGain:Low Mkr1 697.90 MHz OEF ANNNNN Mkr1 697.90 MHz OEF ANNNNN Center Fi 363.950000 M Sense:INT ALIGNAUTO 0 Mkr1 697.90 MHz -46.64 dBm Center Fi 363.950000 M Sense:INT
PNO: Fast Trig: Free Run IFGain:Low Atten: 30 dB Mkr1 697.90 MHz dB/div Ref 20.00 dBm Center Fi 363.950000 M Start Fi 30.000000 M
dB/div Ref 20.00 dBm -46.64 dBm 0 -46.64 dBm
Center Fi 363.950000 M Start Fi 30.00000 N
Start Fi
0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
art 30.0 MHz Stop 697.9 MHz es BW 100 kHz #VBW 300 kHz Sweep 82.82 ms (13359 pts)
STATUS

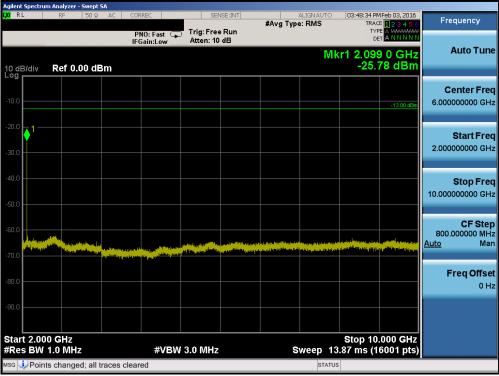
Plot 7-41. Conducted Spurious Plot (Band 12 – 10.0MHz QPSK – RB Size 1, RB Offset 0– Low Channel)



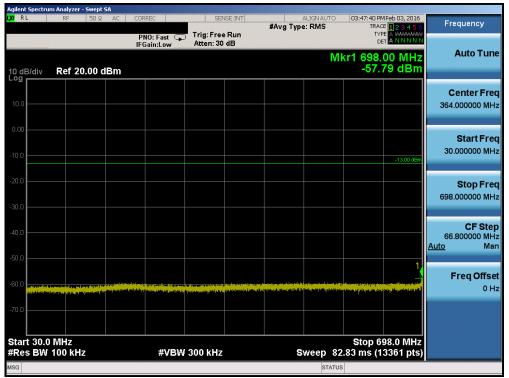
Plot 7-42. Conducted Spurious Plot (Band 12 – 10.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)

FCC ID: ZNFK425	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		🕒 LG	Reviewed by: Quality Manager
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Plot 7-43. Conducted Spurious Plot (Band 12 – 10.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)



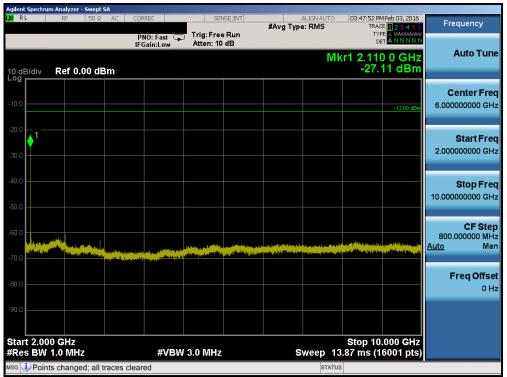
Plot 7-44. Conducted Spurious Plot (Band 12 – 10.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)

FCC ID: ZNFK425	FCC Pt.	22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	💽 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 36 of 122
0Y1604040679.ZNF	2/3-3/30/2016, 4/5/2016, 4/20/2016	Portable Handset		Page 36 01 122
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#Avg Type: RMS Frequency #Avg Type: RMS True Down and the second and the	Agilent Spectru											
PN0: Fast Trig: Free Run Atten: 30 dB Image: Start Trig: Free Run Atten: 30 dB Mikr1 720.40 MHz -56.29 dBm Center Freq 1.358000000 GHz O dB/div Ref 20.00 dBm Center Freq 1.358000000 GHz O dB/div Ref 20.00 dBm Center Freq 1.358000000 GHz O dB/div Ref 20.00 dBm Center Freq 1.358000000 GHz O dB/div Ref 20.00 dBm Center Freq 1.358000000 GHz O dB/div Ref 20.00 dBm Center Freq 1.358000000 GHz O da	L <mark>XI</mark> RL	RF	50 Ω AC	CORRE	:C	SEM	ISE:INT		ALIGN AUTO			Frequency
OBJC/IV Ref 20.00 dBm Center Freq 000								ming typ		TY	PE A WWWWW	
10.0	10 dB/div	Ref 20	.00 dBm	1					M	kr1 720. -56.	40 MHz 29 dBm	Auto Tune
10.0 Start Freq 20.0 3.13.00 des 20.00000000 des 20.00000000 des 20.00000000 des 20.00000000 des 20.00000000 des 20.00000000 des 20.0000000 des 20.000000 des 20.0000000 des <td>10.0</td> <td></td>	10.0											
Start 716.0 MHz #VBW 300 kHz #VBW 300 kHz Stop 2.0000 GHz	-10.0										-13.00 dBm	
40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0	-20.0											
60.0 Industrian de la balancia de la companya de l	-40.0											128.400000 MHz
Start 716.0 MHz Stop 2.0000 GHz Res BW 100 kHz #VBW 300 kHz Sweep 159.2 ms (25681 pts)	-60.0	ann an Airgin ann Airgin an Airgin an Airgin	tenten en e	terroretaliseo Laturpheningsp	an an the second se	an a	and a second state of the second	l population of the	a M _{ayana} ya ku jana a	dagarah pilipi Mila Milang	n selan per per se	
Res BW 100 kHz #VBW 300 kHz Sweep 159.2 ms (25681 pts)	-70.0											
					#VBW	300 kHz		s	weep 15	Stop 2.0 9.2 ms (2	0000 GHz 25681 pts)	
SG Points changed; all traces cleared STATUS	MSG Devints changed; all traces cleared											

Plot 7-45. Conducted Spurious Plot (Band 12 – 10.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)



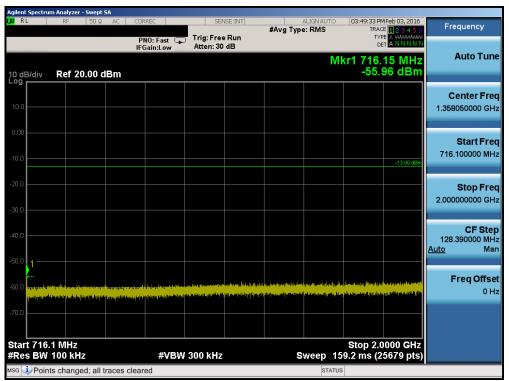
Plot 7-46. Conducted Spurious Plot (Band 12 – 10.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)

FCC ID: ZNFK425	FCC Pt.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager			
Test Report S/N:	Test Dates:	EUT Type:		Page 37 of 122			
0Y1604040679.ZNF	2/3-3/30/2016, 4/5/2016, 4/20/2016	Portable Handset		Page 37 01 122			
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Agilent Spectru									_		
LXI RL	RF	50 Ω AC	CORREC		SEN	ISE:INT	#Avg Typ	ALIGNAUTO		MFeb 03, 2016	Frequency
			PNO: Fa IFGain:Lo		Trig: Free Atten: 30				TY		
10 dB/div Log	Ref 20.	.00 dBm						M	kr1 697. -58.	95 MHz 23 dBm	Auto Tune
10.0											Center Freq 364.000000 MHz
-10.0										-13.00 dBm	Start Freq 30.000000 MHz
-20.0											Stop Freq 698.000000 MHz
-40.0											CF Step 66.800000 MHz <u>Auto</u> Man
-60.0 providen	and a start of the s	a tanan kasa sa sa sa sa sa sa		ayar ayar an gan yang bernelay taip	lennel by cyntra dd y d Gynereg yn gwleidiau y	i dan papanan dan menjarah Penjaran menjarah Kabupatén dan kerikan	ning ang kanalakan katan Kanalakan kanalakan katan	is tendlaforiyas tenenistes seda patro escator tengoj pikkanyas t	t in Ny Ingelateratio	1	Freq Offset 0 Hz
-70.0 Start 30.0	MHz								Stop 6	98.0 MHz	
#Res BW			#	VBW 3	300 kHz		s	Sweep 82	2.83 ms (1	3361 pts)	
mod								STATUS			

Plot 7-47. Conducted Spurious Plot (Band 12 – 10.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)



Plot 7-48. Conducted Spurious Plot (Band 12 – 10.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

FCC ID: ZNFK425	FCC Pt.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager			
Test Report S/N:	Test Dates:	EUT Type:		Dogo 28 of 100			
0Y1604040679.ZNF	2/3-3/30/2016, 4/5/2016, 4/20/2016	Portable Handset		Page 38 of 122			
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	n Analyzer - Swe	-								
URL	RF 50	Ω AC	CORREC	SEN	ISE:INT	#Avg Typ	ALIGNAUTO		4Feb 03, 2016 E 1 2 3 4 5 6	Frequency
			PNO: Fast 🖵 IFGain:Low	Trig: Free Atten: 10				TYP		
I0 dB/div	Ref 0.00	dBm					Mk	r1 2.120 -26.4) 5 GHz 41 dBm	Auto Tune
10.0									-13.00 dBm	Center Fred 6.000000000 GH:
20.0 <mark>- 1</mark>										Start Free 2.000000000 GH:
40.0										Stop Free 10.000000000 GH:
60.0			in stand and state of the state						and the second states of the	CF Step 800.000000 MH <u>Auto</u> Mar
80.0										Freq Offse 0 H
90.0	0 GHz							Stop 10	.000 GHz	
[∉] Res BW	1.0 MHz			3.0 MHz			weep 13	.87 ms (1	6001 pts)	
sg 🗼 Poin	ts changed; a	Il traces o	leared				STATUS			

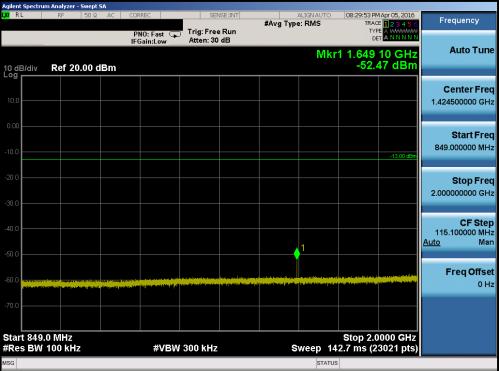
Plot 7-49. Conducted Spurious Plot (Band 12 – 10.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)



Plot 7-50. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – RB Size 1, RB Offset 0– Low Channel)

FCC ID: ZNFK425	FCC Pt.	22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	💽 LG	Reviewed by: Quality Manager			
Test Report S/N:	Test Dates:	EUT Type:		Dogo 20 of 122			
0Y1604040679.ZNF	2/3-3/30/2016, 4/5/2016, 4/20/2016	Portable Handset		Page 39 of 122			
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Plot 7-51. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)



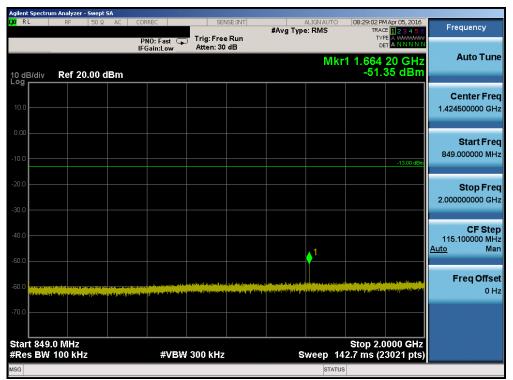
Plot 7-52. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)

FCC ID: ZNFK425	FCC Pt.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager			
Test Report S/N:	Test Dates:	EUT Type:		Page 40 of 122			
0Y1604040679.ZNF	2/3-3/30/2016, 4/5/2016, 4/20/2016	Portable Handset		Page 40 01 122			
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	ım Analyzer - Swept SA					
L <mark>XI</mark> RL	RF 50Ω AC	CORREC	SENSE:INT	ALIGNAUTO #Avg Type: RMS	08:28:54 PM Apr 05, 2016 TRACE 123456	Frequency
		PNO: Fast 😱 IFGain:Low	Trig: Free Run Atten: 30 dB	0 //	TYPE A WARMAN DET A N N N N N	
10 dB/div Log	Ref 20.00 dBm			M	kr1 823.40 MHz -56.97 dBm	Auto Tune
10.0						Center Freq 427.000000 MHz
-10.0					-13.00 dBm	Start Freq 30.000000 MHz
-20.0						Stop Freq 824.000000 MHz
-40.0						CF Step 79.400000 MHz <u>Auto</u> Man
	n teransteri i teratori en teratori en antici de la setta de la	Marth March Strandstrandstrandstrandstrandstrandstrandstrandstrandstrandstrandstrandstrandstrandstrandstrandstr Ander Strandstrandstrandstrandstrandstrandstrandstrandstrandstrandstrandstrandstrandstrandstrandstrandstrandstra		n an	Les sections and the section of the	Freq Offset 0 Hz
-70.0						
Start 30.0 #Res BW		#VBW	300 kHz	Sweep 9	Stop 824.0 MHz 8.46 ms (15881 pts)	
MSG				STATL	IS	

Plot 7-53. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)



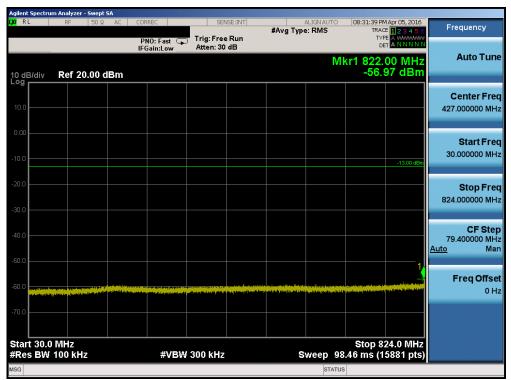
Plot 7-54. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)

FCC ID: ZNFK425	FCC Pt	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager			
Test Report S/N:	Test Dates:	EUT Type:		Page 41 of 122			
0Y1604040679.ZNF	2/3-3/30/2016, 4/5/2016, 4/20/2016	Portable Handset		Page 41 01 122			
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Plot 7-55. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)



Plot 7-56. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

FCC ID: ZNFK425	FCC Pt.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager			
Test Report S/N:	Test Dates:	EUT Type:		Dega 42 of 122			
0Y1604040679.ZNF	2/3-3/30/2016, 4/5/2016, 4/20/2016	Portable Handset		Page 42 of 122			
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	Spectrun			5A									
l <mark>XI</mark> RI	L	RF	50 Ω	AC	CORREC		SEM	ISE:INT	#Avg Typ	ALIGN AUTO		PM Apr 05, 2016	Frequency
					PNO: IFGain	Fast 🖵 :Low	Trig: Free Atten: 30		MUL B U M	e. 1000	T		
10 dE Log i	3/div	Ref 2	0.00 d	IBm						MI	kr1 1.679 -51	20 GHz .36 dBm	Auto Tune
10.0													Center Freq 1.425000000 GHz
0.00 -10.0												-13.00 dBm	Start Freq 850.000000 MHz
-20.0 -30.0													Stop Freq 2.000000000 GHz
-40.0 -50.0										∮ 1			CF Step 115.000000 MHz <u>Auto</u> Man
-60.0	tang tanan sa	distant in the party of	and the second second				ligan ing ang bagang ang ang ang ang ang ang ang ang an	angestell totogen. Verdflesteren type	tele a l'assertation de la sur-			in a de augustado De agantes plantas Alexandras da plantas políticas	Freq Offset 0 Hz
-70.0													
	t 850.0 s BW		z			#VBW	300 kHz		s	weep	Stop 2. 142.6 ms (.0000 GHz 23001 pts)	
MSG										STAT	TUS		

Plot 7-57. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)



Plot 7-58. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

FCC ID: ZNFK425	FCC Pt.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager			
Test Report S/N:	Test Dates:	EUT Type:		Page 43 of 122			
0Y1604040679.ZNF	2/3-3/30/2016, 4/5/2016, 4/20/2016	Portable Handset		Page 45 01 122			
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	ım Analyzer - Swept									
XURL	RF 50 Ω	DC CC	RREC	SEN	ISE:INT	#Avg Type	ALIGN AUTO		Apr 20, 2016	Frequency
			PNO: Fast 🖵 Gain:Low	Trig: Free Atten: 30				TYP		
10 dB/div Log	Ref 20.00 c	dBm					Mk	r1 1.849 -38.3	0 GHz 38 dBm	Auto Tune
10.0										Center Freq 939.500000 MHz
-10.0									-13.00 dBm	Start Free 30.000000 MHz
-20.0									1	Stop Fred 1.849000000 GHz
-40.0										CF Step 181.900000 MH: <u>Auto</u> Mar
-60.0	^{سرواد} بارور المراجع والمراجع و	5 5	later an	an a	an a	د واليرينيي (المحافر والجام في المحافر المحافر المحافر في المحافر المحافر المحافر المحافر المحافر المحافر المحاف	n yy (p mae Adder ei offer	,1944,45944,1941,1947,4944,494	line and the second	Freq Offse 0 Ha
-70.0) MHz							Stop 1-8	490 GHz	
#Res BW			#VBW	3.0 MHz			Sweep 2	.425 ms (3639 pts)	
MSG							STATUS			

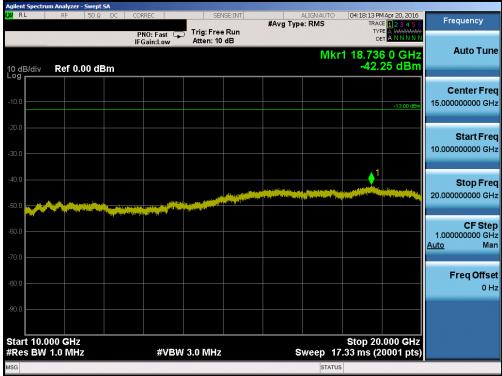
Plot 7-59. Conducted Spurious Plot (Band 2 – 20.0MHz QPSK – RB Size 1, RB Offset 0– Low Channel)



Plot 7-60. Conducted Spurious Plot (Band 2 – 20.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)

FCC ID: ZNFK425	FCC Pt.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dega 44 of 100	
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Plot 7-61. Conducted Spurious Plot (Band 2 – 20.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)



Plot 7-62. Conducted Spurious Plot (Band 2 – 20.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)

FCC ID: ZNFK425	FCC Pt.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dage 45 of 100	
0Y1604040679.ZNF	2/3-3/30/2016, 4/5/2016, 4/20/2016	Portable Handset		Page 45 of 122	
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Plot 7-63. Conducted Spurious Plot (Band 2 – 20.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)



Plot 7-64. Conducted Spurious Plot (Band 2 – 20.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)

FCC ID: ZNFK425	FCC Pt.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 46 of 122
0Y1604040679.ZNF	2/3-3/30/2016, 4/5/2016, 4/20/2016	Portable Handset		Page 46 01 122
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	ım Analyzer - Swept SA					
XIRL	RF 50 Ω DC	CORREC	SENSE:INT	ALIGNAUTO #Avg Type: RMS	04:18:46 PM Apr 20, 2016 TRACE 1 2 3 4 5 6	Frequency
		PNO: Fast 😱 IFGain:Low	Trig: Free Run Atten: 30 dB	and grapped the	TYPE A WWWWWW DET A N N N N N	
10 dB/div	Ref 20.00 dBm			М	kr1 1.840 0 GHz -49.71 dBm	Auto Tune
10.0						Center Fred 940.000000 MHz
-10.0					-13.00 dBm	Start Free 30.000000 MHz
30.0						Stop Fred 1.850000000 GHz
40.0					1	CF Step 182.000000 MH <u>Auto</u> Mar
-50.0	<u> 1964 - 1966 - Angelon Storege and Angelon (</u> 1994 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995	ertamatein bit ofing backyriaedry in And	n ya kata kata kata kata kata kata kata k	<u>5079-9</u> 095459-000956-05-5028-59-09-99-99-99-99-99-99-99-99-99-99-99-99	an a	Freq Offse 0 H:
-70.0						
Start 30.0 #Res BW		#VBW 3	.0 MHz	Sweep	Stop 1.8500 GHz 2.427 ms (3641 pts)	
ISG				STATU		

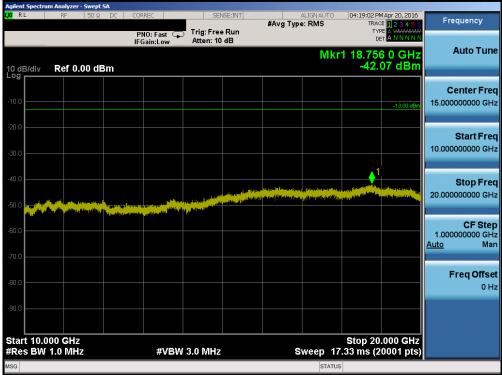
Plot 7-65. Conducted Spurious Plot (Band 2 – 20.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)



Plot 7-66. Conducted Spurious Plot (Band 2 – 20.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

FCC ID: ZNFK425	FCC Pt.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Daga 47 of 100	
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Plot 7-67. Conducted Spurious Plot (Band 2 – 20.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)



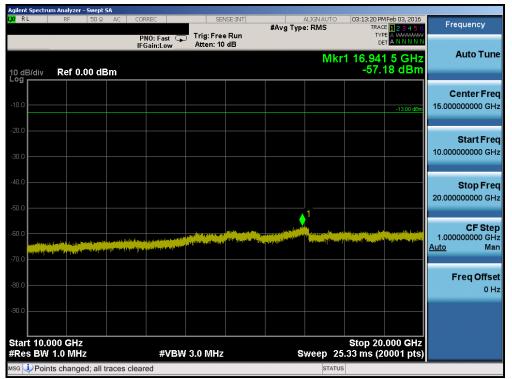
Plot 7-68. Conducted Spurious Plot (Band 4 – 20.0MHz QPSK – RB Size 1, RB Offset 0– Low Channel)

FCC ID: ZNFK425	FCC Pt.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Daga 49 of 100	
0Y1604040679.ZNF	2/3-3/30/2016, 4/5/2016, 4/20/2016	Portable Handset		Page 48 of 122	
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gilent Spectru	ım Analyzer - Swept		CODDEC	05	05.11.12			00 40 44 01	5 L 00 0010	
A RL	RF 50 Ω	AC	CORREC		SE:INT	#Avg Typ	ALIGNAUTO e: RMS	TRAC	Feb 03, 2016	Frequency
			PNO: Fast 🖵 IFGain:Low	Trig: Free Atten: 30					ANNNN	
							Mk	r1 3.422	5 GHz 38 dBm	Auto Tune
10 dB/div Log	Ref 20.00	dBm						-42.0		
										Center Freq
10.0										5.877500000 GHz
0.00										
0.00										Start Freq
10.0									-13.00 dBm	1.755000000 GHz
20.0										Stop Fred
30.0										10.00000000 GHz
40.0		∲ ¹ ──								CF Step 824.500000 MHz
	A State of the sta	l windered	and and the Original Station of the Original Station o	and the local state of the	The second s	and Charge States in Algorithm	denniger og sjæleter og Sjælet og sjælet stære		and the Republic	<u>Auto</u> Man
50.0 (11)	واللعين فيدلا يشرك		A A A A A A A A A A A A A A A A A A A	part						
60.0										Freq Offset
										0 Hz
70.0										
Start 1.75								Stop 10.	000 GHz	
	1.0 MHz			3.0 MHz		s	weep 14	.29 ms (1	5491 pts)	
sg 🗼 Poin	ts changed; all	traces cl	eared				STATUS			

Plot 7-69. Conducted Spurious Plot (Band 4 – 20.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)



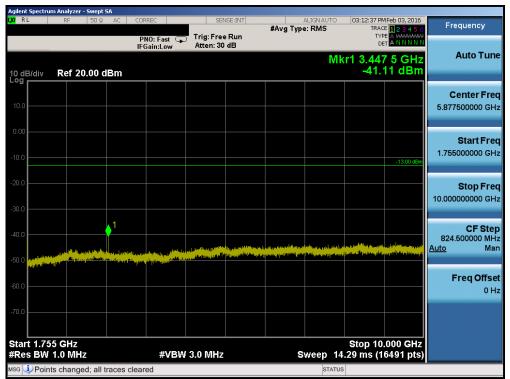
Plot 7-70. Conducted Spurious Plot (Band 4 – 20.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)

FCC ID: ZNFK425	FCC Pt.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Page 49 of 122	
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0 dB/div	RF 50Ω AC	CORREC PNO: Fast	SENSE:INT Trig: Free Run Atten: 30 dB	ALIGNAUTO #Avg Type: RMS	03:12:31 PMFeb 03, 2016 TRACE 1 2 3 4 5 6 TYPE A WARMAN	Frequency
0 dB/div	B-6.00.00 JB-	II OGINIZOV			DET A N N N N N	
	Ref 20.00 dBm	ı		M	(r1 1.706 5 GHz -45.64 dBm	Auto Tun
10.0						Center Fre 870.000000 MH
10.0					-13.00 dBm	Start Fre 30.000000 M⊦
20.0 30.0						Stop Fre 1.710000000 G⊦
40.0 50.0					1 	CF Ste 168.000000 MH <u>Auto</u> Ma
60.0						Freq Offs e 0 ⊦
70.0					Stop 1.7100 GHz	
Res BW 1	.0 MHZ	#VBW	3.0 MHz	Sweep 2	.240 ms (3361 pts)	

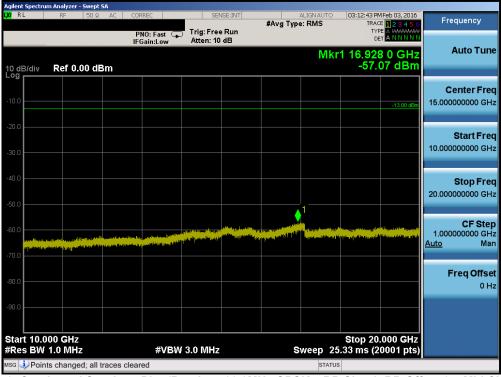
Plot 7-71. Conducted Spurious Plot (Band 4 – 20.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)



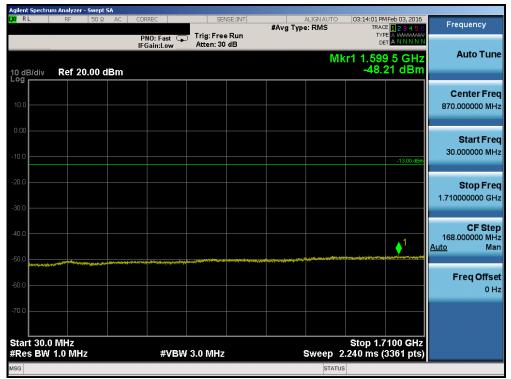
Plot 7-72. Conducted Spurious Plot (Band 4 – 20.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)

FCC ID: ZNFK425	FCC Pt.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Page 50 of 122	
0Y1604040679.ZNF	2/3-3/30/2016, 4/5/2016, 4/20/2016	Portable Handset		Page 50 01 122	
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Plot 7-73. Conducted Spurious Plot (Band 4 – 20.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)



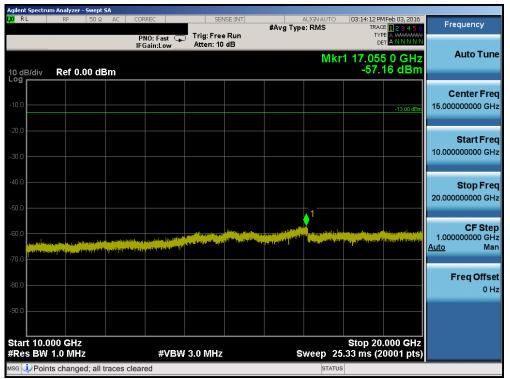
Plot 7-74. Conducted Spurious Plot (Band 4 – 20.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

FCC ID: ZNFK425	FCC Pt.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Page 51 of 122	
0Y1604040679.ZNF	2/3-3/30/2016, 4/5/2016, 4/20/2016	Portable Handset		Page 51 01 122	
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Agilent Spectrum Analyzer - Swept SA										
X/RL	RF 50 Ω	AC AC	CORREC		SENSE:INT		ALIGNAUT g Type: RMS	TRA	MFeb 03, 2016	Frequency
			PNO: Fast IFGain:Low		ig: Free Run tten: 30 dB			T		
10 dB/div	Ref 20.00	dBm					r	47 vikr1 3.47 39-	2 5 GHz 11 dBm	Auto Tune
Log										Center Freq 5.878000000 GHz
0.00										5.87800000 GH2
-10.0										Start Freq 1.756000000 GHz
-20.0									-13.00 dBm	Stop Freq
-30.0										10.000000000 GHz
-40.0		♦ ¹								CF Step 824.400000 MHz
-50.0	ا الالفادين ويوجا الألم الالفادين ويوجا الألم مرجعا الالا	Property in	i poper provinsi prografi na prima provinsi prografi		nalas Alder Balla alt	al maria a substanti da substant En la filma da substanti da substa	ang ng n	n land manafilitik kanadarak Gilagai ang Katikana sara	in southers the state	Auto Man
-60.0										Freq Offset 0 Hz
-70.0										
Start 1.75 #Res BW			#V	BW 3.0	MHz		Sweep	Stop 1 14.29 ms (0.000 GHz 16489 pts)	
	ts changed; all	traces c						TUS	/	

Plot 7-75. Conducted Spurious Plot (Band 4 – 20.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)



Plot 7-76. Conducted Spurious Plot (Band 4 – 20.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

FCC ID: ZNFK425	FCC Pt.	22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager				
Test Report S/N:	Test Dates:	EUT Type:		Daga E2 of 100				
0Y1604040679.ZNF	2/3-3/30/2016, 4/5/2016, 4/20/2016	Portable Handset		Page 52 of 122				
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