

PCTEST ENGINEERING LABORATORY, INC.

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MEASUREMENT REPORT

LTE

Applicant Name:

LG Electronics USA, Inc. 1000 Sylvan Avenue Englewood Cliffs, NJ 07632 United States

Date of Testing: 5/30 - 6/18/2019 Test Site/Location: PCTEST Lab. Columbia, MD, USA Test Report Serial No.: 1M1905300091-03-R1.ZNF

FCC ID: IC:

ZNFX525WA

2703C-X525WA

APPLICANT:

LG Electronics USA, Inc.

Application Type: Model/HVIN: Additional Model(s): Additional HVIN(s): EUT Type: FCC Classification: FCC Rule Part(s): ISED Specification: Test Procedure(s):

Certification LM-X525WA LMX525WA, X525WA, LM-X525PR, LMX525PR, X525PR LMX525WA, X525WA Portable Handset PCS Licensed Transmitter Held to Ear (PCE) 22, 24, & 27 RSS-130, RSS-132, RSS-133, RSS-139, RSS-199 ANSI C63.26-2015, ANSI/TIA-603-E-2016, KDB 971168 D01 v03r01

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.

Note: This revised Test Report (S/N: 1M1905300091-03-R1.ZNF) supersedes and replaces the previously issued test report on the same subject device for the same type of testing as indicated. Please discard or destroy the previously issued test report(s) and dispose of it accordingly.

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

Randy Ortanez President



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MEASUREMENT REPORT FCC Part 22, 24, & 27



			ERP		EIRP				
Mode	FCC Rule Part	IX Frequency (IVIHZ)		Max. Power (dBm)	Max. Power (W)	Max. Power (dBm)	Emission Designator	Modulation	
LTE Band 12	27	699.7 - 715.3	0.071	18.53	0.117	20.68	1M10G7D	QPSK	
LTE Band 12	27	699.7 - 715.3	0.058	17.61	0.095	19.76	1M11W7D	16QAM	
LTE Band 12	27	700.5 - 714.5	0.073	18.66	0.121	20.81	2M70G7D	QPSK	
LTE Band 12	27	700.5 - 714.5	0.060	17.81	0.099	19.96	2M70W7D	16QAM	
LTE Band 12/17	27	701.5 - 713.5	0.084	19.27	0.139	21.42	4M56G7D	QPSK	
LTE Band 12/17	27	701.5 - 713.5	0.070	18.44	0.114	20.59	4M55W7D	16QAM	
LTE Band 12/17	27	704 - 711	0.087	19.38	0.142	21.53	9M05G7D	QPSK	
LTE Band 12/17	27	704 - 711	0.071	18.50	0.116	20.65	9M09W7D	16QAM	
LTE Band 13	27	779.5 - 784.5	0.114	20.55	0.186	22.70	4M55G7D	QPSK	
LTE Band 13	27	779.5 - 784.5	0.096	19.80	0.157	21.95	4M54W7D	16QAM	
LTE Band 13	27	782	0.102	20.10	0.168	22.25	9M07G7D	QPSK	
LTE Band 13	27	782	0.080	19.02	0.131	21.17	9M06W7D	16QAM	
LTE Band 5	22H	824.7 - 848.3	0.120	20.79	0.197	22.94	1M10G7D	QPSK	
LTE Band 5	22H	824.7 - 848.3	0.091	19.59	0.149	21.74	1M10W7D	16QAM	
LTE Band 5	22H	825.5 - 847.5	0.125	20.99	0.206	23.14	2M70G7D	QPSK	
LTE Band 5	22H	825.5 - 847.5	0.095	19.79	0.156	21.94	2M69W7D	16QAM	
LTE Band 5	22H	826.5 - 846.5	0.123	20.91	0.202	23.06	4M57G7D	QPSK	
LTE Band 5	22H	826.5 - 846.5	0.099	19.97	0.163	22.12	4M52W7D	16QAM	
LTE Band 5	22H	829 - 844	0.153	21.84	0.251	23.99	9M03G7D	QPSK	
LTE Band 5	22H	829 - 844	0.120	20.80	0.197	22.95	9M00W7D	16QAM	

EUT Overview (<1 GHz)

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			EI	RP		
Mode	FCC Rule Part	Tx Frequency (MHz)	Max. Power (W)	Max. Power (dBm)	Emission Designator	Modulation
LTE Band 66/4	27	1710.7 - 1779.3	0.347	25.41	1M10G7D	QPSK
LTE Band 66/4	27	1710.7 - 1779.3	0.291	24.64	1M10W7D	16QAM
LTE Band 66/4	27	1711.5 - 1778.5	0.325	25.12	2M69G7D	QPSK
LTE Band 66/4	27	1711.5 - 1778.5	0.272	24.34	2M70W7D	16QAM
LTE Band 66/4	27	1712.5 - 1777.5	0.331	25.20	4M53G7D	QPSK
LTE Band 66/4	27	1712.5 - 1777.5	0.262	24.19	4M53W7D	16QAM
LTE Band 66/4	27	1715 - 1775	0.305	24.84	9M02G7D	QPSK
LTE Band 66/4	27	1715 - 1775	0.247	23.92	9M00W7D	16QAM
LTE Band 66/4	27	1717.5 - 1772.5	0.305	24.84	13M5G7D	QPSK
LTE Band 66/4	27	1717.5 - 1772.5	0.260	24.15	13M5W7D	16QAM
LTE Band 66/4	27	1720 - 1770	0.271	24.32	18M0G7D	QPSK
LTE Band 66/4	27	1720 - 1770	0.236	23.72	17M9W7D	16QAM
LTE Band 2	24E	1850.7 - 1909.3	0.310	24.92	1M12G7D	QPSK
LTE Band 2	24E	1850.7 - 1909.3	0.266	24.25	1M12W7D	16QAM
LTE Band 2	24E	1851.5 - 1908.5	0.321	25.07	2M69G7D	QPSK
LTE Band 2	24E	1851.5 - 1908.5	0.260	24.15	2M70W7D	16QAM
LTE Band 2	24E	1852.5 - 1907.5	0.314	24.97	4M54G7D	QPSK
LTE Band 2	24E	1852.5 - 1907.5	0.265	24.23	4M52W7D	16QAM
LTE Band 2	24E	1855 - 1905	0.294	24.68	9M00G7D	QPSK
LTE Band 2	24E	1855 - 1905	0.245	23.90	8M99W7D	16QAM
LTE Band 2	24E	1857.5 - 1902.5	0.302	24.80	13M5G7D	QPSK
LTE Band 2	24E	1857.5 - 1902.5	0.250	23.98	13M5W7D	16QAM
LTE Band 2	24E	1860 - 1900	0.283	24.53	18M0G7D	QPSK
LTE Band 2	24E	1860 - 1900	0.209	23.20	17M9W7D	16QAM

EUT Overview (Mid Bands)

		EIRP			
FCC Rule Part	Tx Frequency (MHz)	Max. Power (W)	Max. Power (dBm)	Emission Designator	Modulation
27	2502.5 - 2567.5	0.218	23.38	4M52G7D	QPSK
27	2502.5 - 2567.5	0.186	22.69	4M52W7D	16QAM
27	2505 - 2565	0.222	23.47	9M03G7D	QPSK
27	2505 - 2565	0.189	22.77	9M02W7D	16QAM
27	2507.5 - 2562.5	0.217	23.37	13M5G7D	QPSK
27	2507.5 - 2562.5	0.182	22.60	13M5W7D	16QAM
27	2510 - 2560	0.222	23.46	18M0G7D	QPSK
27	2510 - 2560	0.187	22.72	18M0W7D	16QAM
	Part 27 27 27 27 27 27 27 27 27	Part Ix Frequency (MHz) 27 2502.5 - 2567.5 27 2502.5 - 2567.5 27 2505 - 2565 27 2505 - 2565 27 2507.5 - 2565 27 2507.5 - 2562.5 27 2507.5 - 2562.5 27 2507.5 - 2562.5 27 2507.5 - 2562.5 27 2510 - 2560 27 2510 - 2560	FCC Rule PartTx Frequency (MHz)Max. Power (W)272502.5 - 2567.50.218272502.5 - 2567.50.186272505 - 25650.222272505 - 25650.189272507.5 - 2562.50.182272507.5 - 2562.50.182272510 - 25600.222272510 - 25600.222	FCC Rule PartTx Frequency (MHz)Max. Power (W)Max. Power (dBm)272502.5 - 2567.50.21823.38272502.5 - 2567.50.18622.69272505 - 25650.22223.47272505 - 25650.18922.77272507.5 - 2562.50.21723.37272507.5 - 2562.50.18222.60272510 - 25600.22223.46	FCC Rule Part Tx Frequency (MHz) Max. Power (W) Max. Power (dBm) Emission Designator 27 2502.5 - 2567.5 0.218 23.38 4M52G7D 27 2502.5 - 2567.5 0.186 22.69 4M52W7D 27 2505 - 2565 0.222 23.47 9M03G7D 27 2505 - 2565 0.189 22.77 9M02W7D 27 2507.5 - 2562.5 0.217 23.37 13M5G7D 27 2507.5 - 2562.5 0.182 22.60 13M5W7D 27 2510 - 2560 0.222 23.46 18M0G7D 27 2510 - 2560 0.187 22.72 18M0W7D

EUT Overview (High Bands)

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1.0 INTRODUCTION

1.1 Scope

Measurement and determination of electromagnetic emissions (EMC) 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 Innovation, Science and Economic Development Canada.

1.2 PCTEST Test Location

These measurement tests were conducted at the PCTEST Engineering Laboratory, Inc. facility located at 7185 Oakland Mills Road, Columbia, MD 21046. The measurement facility is compliant with the test site requirements specified in ANSI C63.4-2014.

1.3 Test Facility / Accreditations

Measurements were performed at PCTEST Engineering Lab located in Columbia, MD 21046, U.S.A.

- PCTEST is an ISO 17025-2005 accredited test facility under the American Association for Laboratory Accreditation (A2LA) with Certificate number 2041.01 for Specific Absorption Rate (SAR), Hearing Aid Compatibility (HAC) testing, where applicable, and Electromagnetic Compatibility (EMC) testing for FCC and Innovation, Science, and Economic Development Canada rules.
- PCTEST TCB is a Telecommunication Certification Body (TCB) accredited to ISO/IEC 17065-2012 by A2LA (Certificate number 2041.03) in all scopes of FCC Rules and ISED Standards (RSS).
- PCTEST facility is a registered (2451B) test laboratory with the site description on file with ISED.

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2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **LG Portable Handset FCC ID: ZNFX525WA**. The test data contained in this report pertains only to the emissions due to the EUT's LTE function.

Test Device Serial No.: 12997, 16113, 16477

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, 802.11a/n/ac UNII, Bluetooth (1x, EDR, LE), NFC

LTE Band 12 (698 - 716 MHz) overlaps the entire frequency range of LTE Band 17 (704 - 716 MHz). Therefore, test data provided in this report covers Band 17 as well as Band 12.

LTE Band 66 (1710 - 1780 MHz) overlaps the entire frequency range of LTE Band 4 (1710 - 1755 MHz). Therefore, test data provided in this report covers Band 4 as well as Band 66.

2.3 Test Configuration

The EUT was tested per the guidance of ANSI/TIA-603-E-2016 and KDB 971168 D01 v03r01. 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-E-2016) and "Procedures for Compliance Measurement of the Fundamental Emission Power of Licensed Wideband (> 1 MHz) Digital Transmission Systems" (KDB 971168 D01 v03r01) were used in the measurement of the EUT.

3.2 Block C Frequency Range

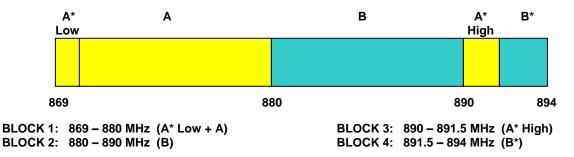
Two paired channels of 11 megahertz each are available for assignment in Block C in the 746-757 MHz and 776-787 MHz bands. In the event that no licenses for two channels in this Block C are assigned based on the results of the first auction in which such licenses were offered because the auction results do not satisfy the applicable reserve price, the spectrum in the 746-757 MHz and 776-787 MHz bands will instead be made available for assignment at a subsequent auction as follows: (i) Two paired channels of 6 megahertz each available for assignment in Block C1 in the 746-752 MHz and 776-782 MHz bands. (ii) Two paired channels of 5 megahertz each available for assignment in Block C2 in the 752-757 MHz and 782-787 MHz bands.

3.3 Block A Frequency Range

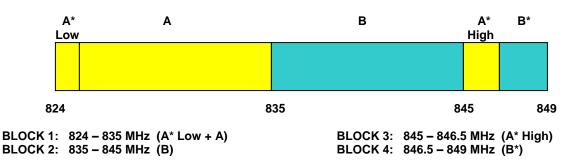
<u>698-746 MHz band</u>. The following frequencies are available for licensing pursuant to this part in the 698-746 MHz band: (1) Three paired channel blocks of 12 megahertz each are available for assignment as follows:

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 - Base Frequency Blocks



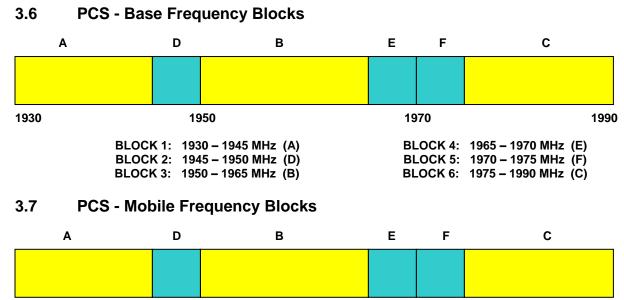
3.5 Cellular - Mobile Frequency Blocks



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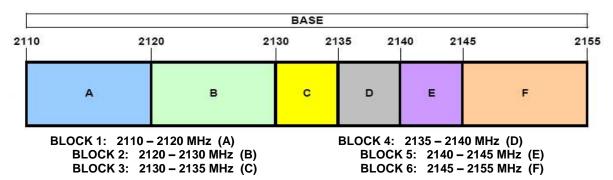


BLOCK 1: 1850 - 1865 MHz (A) BLOCK 2: 1865 - 1870 MHz (D) BLOCK 3: 1870 - 1885 MHz (B)

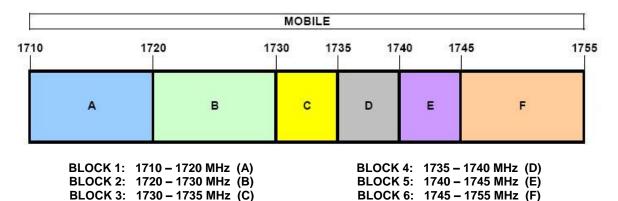
1870



3.8 **AWS - Base Frequency Blocks**



3.9 **AWS - Mobile Frequency Blocks**

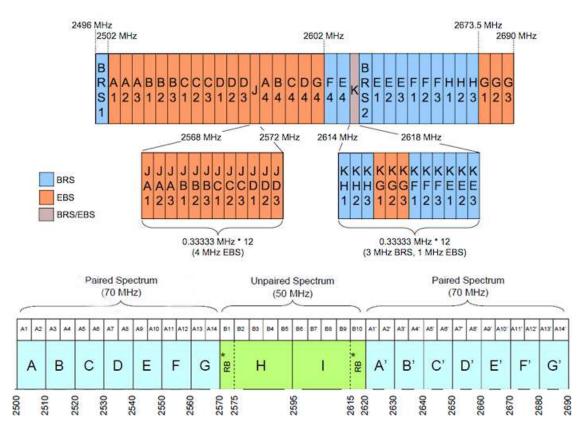


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3.10 BRS/EBS Frequency Block



3.11 Radiated Power and Radiated Spurious Emissions

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 Figure 5.7 of Clause 5 in ANSI C63.4-2014. 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 above 1GHz. For measurements below 1GHz, the absorbers are removed. A raised turntable is used for radiated measurement. The turn table 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. An 80cm tall test table made of Styrodur is placed on top of the turn table. A Styrodur pedestal is placed on top of the test table to bring the total table height to 1.5m.

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 D01 v03r01.

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Per the guidance of ANSI/TIA-603-E-2016, 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 $P_{g [dBm]}$ – cable loss [dB].

The calculated P_d levels are then compared to the absolute spurious emission limit of -13dBm which is equivalent to the required minimum attenuation of 43 + 10 log₁₀(Power [Watts]). For Band 7, the calculated P_d levels are compared to the absolute spurious emission limit of -25dBm which is equivalent to the required minimum attenuation of 55 + 10 log₁₀(Power [Watts]).

All radiated measurements are performed in a chamber that meets the site requirements per ANSI C63.4-2014. Additionally, radiated emissions below 30MHz are also validated on an Open Area Test Site to assert correlation with the chamber measurements per the requirements of KDB 474788 D01.

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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 uncertainty shown below 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). Measurements antennas used during testing were calibrated in accordance to the requirements of ANSI C63.5-2017.

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
-	LTx1	Licensed Transmitter Cable Set	6/4/2019	Annual	6/4/2020	LTx1
-	LTx3	Licensed Transmitter Cable Set	6/3/2019	Annual	6/3/2020	LTx3
Agilent	8648D	(9kHz-4GHz) Signal Generator	4/29/2019	Annual	4/29/2020	3613A00315
Agilent	N9020A	MXA Signal Analyzer	4/20/2019	Annual	4/20/2020	US46470561
Com-Power	AL-130	9kHz - 30MHz Loop Antenna	10/10/2017	Biennial	10/10/2019	121034
Com-Power	PAM-103	Pre-Amplifier (1-1000MHz)	8/8/2018	Annual	8/8/2019	441128
Emco	3115	Horn Antenna (1-18GHz)	3/28/2018	Biennial	3/28/2020	9704-5182
EMCO	3160-09	Small Horn (18 - 26.5GHz)	8/9/2018	Biennial	8/9/2020	135427
ETS Lindgren	3117	1-18 GHz DRG Horn (Medium)	2/14/2019	Biennial	2/14/2021	125518
ETS Lindgren	3164-08	Quad Ridge Horn Antenna	3/28/2018	Biennial	3/28/2020	128337
Keysight Technologie	N9020A	MXA Signal Analyzer	4/29/2019	Annual	4/29/2020	MY54500644
Rohde & Schwarz	CMW500	Radio Communication Tester	11/14/2018	Annual	11/14/2019	100976
Rohde & Schwarz	TS-PR26	18-26.5 GHz Pre-Amplifier	9/19/2018	Annual	9/19/2019	100040
Rohde & Schwarz	ESU26	EMI Test Receiver (26.5GHz)	6/5/2019	Annual	6/5/2020	100342
Rohde & Schwarz	SFUNIT-Rx	Shielded Filter Unit	6/18/2018	Annual	6/18/2019	102134
Sunol	DRH-118	Horn Antenna (1-18GHz)	8/11/2017	Biennial	8/11/2019	A050307
Sunol	JB5	Bi-Log Antenna (30M - 5GHz)	4/19/2018	Biennial	4/19/2020	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

QAM 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:	LG Electronics USA, Inc.
FCC ID:	ZNFX525WA
FCC Classification:	PCS Licensed Transmitter Held to Ear (PCE)
Mode(s):	<u>LTE</u>

FCC Part Section(s)	RSS Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
2.1049	RSS-Gen(4.6.1) RSS-133(2.3) RSS-139(2.3)	Occupied Bandwidth	N/A			Section 7.2
2.1051 22.917(a) 24.238(a) 27.53(c) 27.53(g) 27.53(h)	RSS-130(4.6) RSS-132(5.5) RSS-133(6.5) RSS-139(6.6)	Out of Band Emissions	> 43 + 10 log ₁₀ (P[Watts]) at Band Edge and for all out-of- band emissions			Section 7.3, 7.4
27.53(m)	RSS-199(4.5)	Out of Band Emissions	Undesirable emissions must meet the limits detailed in 27.53(m)			Section 7.3, 7.4
24.232(d) 27.50	RSS-130(4.4) RSS-132(5.4) RSS-133(6.4) RSS-139(6.5)	Peak-Average Ratio	< 13 dB	CONDUCTED	PASS	Section 7.5
2.1046	RSS-130(4.4) RSS-132(5.4) RSS-133(4.1) RSS-139(4.1) RSS-199(4.4)	Transmitter Conducted Output Power	N/A			See RF Exposure Report
2.1055 22.355 24.235 27.54	RSS-130(4.3) RSS-132(5.3) RSS-133(6.3) RSS-139(6.4) RSS-199(4.3)	Frequency Stability	< 2.5 ppm (Part 22) and fundamental emissions stay within authorized frequency block (Part 24, 27)			Section 7.8

Table 7-1. Summary of Conducted Test Results

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FCC Part Section(s)	RSS Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
22.913(a)(5)	RSS-132(5.4)	Effective Radiated Power / Equivalent Isotropic Radiated Power (Band 5)	< 7 Watts max. ERP < 11.5 Watts max. EIRP (ISED)			Section 7.6
27.50(b)(10) 27.50(c)(10)	RSS-130(4.6)	Effective Radiated Power / Equivalent Isotropic Radiated Power (Band 12/17, 13)	< 3 Watts max. ERP			Section 7.6
24.232(c) 27.50(h)(2)	RSS-133(6.4) RSS-199(4.4)	Equivalent Isotropic Radiated Power (Band 2/7)	< 2 Watts max. EIRP			Section 7.6
27.50(d)(4)	RSS-139(6.5)	Equivalent Isotropic Radiated Power (Band 4/66)	< 1 Watts max. EIRP	RADIATED	PASS	Section 7.6
2.1053 22.917(a) 24.238(a) 27.53(c) 27.53(g) 27.53(h)	RSS-130(4.7.1) RSS-132(5.5) RSS-133(6.5) RSS-139(6.6)	Undesirable Emissions (Band 12/17, 13/5, 66/4/2)	> 43 + 10 log ₁₀ (P[Watts]) for all out-of-band emissions			Section 7.7
27.53(f)	RSS-130(4.7.2)	Undesirable Emissions (Band 13)	 < -70 dBW/MHz (for wideband signals) < -80 dBW (for discrete emissions less than 700Hz BW) For all emissions in the band 1559 – 1610 MHz 			Section 7.7
27.53(m)	RSS-199(4.5)	Undesirable Emissions (Band 7)	Undesirable emissions must meet the limits detailed in 27.53(m)			Section 7.7

Table 7-2. Summary of Radiated 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 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 4.8.
- 5) For operation <1GHz, the EIRP limits in the table above are referenced to the specifications written in the relevant Radio Standards Specifications for Innovation, Science, and Economic Development Canada.

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7.2 Occupied Bandwidth

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 v03r01 - 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

Test Notes

None.

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Plot 7-1. Occupied Bandwidth Plot (Band 12 - 1.4MHz QPSK - Full RB Configuration)



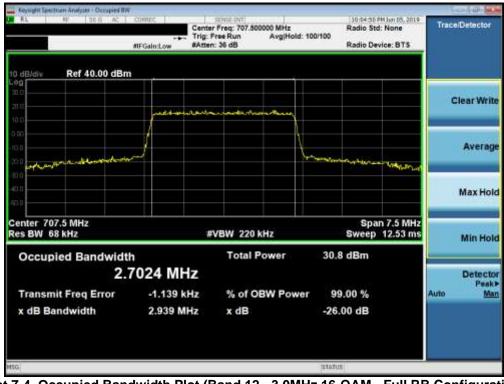
Plot 7-2. Occupied Bandwidth Plot (Band 12 - 1.4MHz 16-QAM - Full RB Configuration)

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Plot 7-3. Occupied Bandwidth Plot (Band 12 - 3.0MHz QPSK - Full RB Configuration)



Plot 7-4. Occupied Bandwidth Plot (Band 12 - 3.0MHz 16-QAM - Full RB Configuration)

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Plot 7-5. Occupied Bandwidth Plot (Band 12/17 - 5.0MHz QPSK - Full RB Configuration)



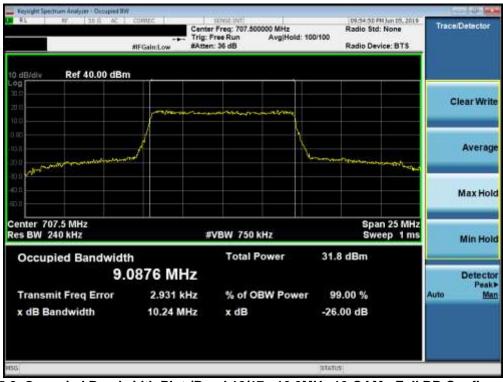
Plot 7-6. Occupied Bandwidth Plot (Band 12/17 - 5.0MHz 16-QAM - Full RB Configuration)

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Plot 7-7. Occupied Bandwidth Plot (Band 12/17 - 10.0MHz QPSK - Full RB Configuration)



Plot 7-8. Occupied Bandwidth Plot (Band 12/17 - 10.0MHz 16-QAM - Full RB Configuration)

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Plot 7-9. Occupied Bandwidth Plot (Band 13 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-10. Occupied Bandwidth Plot (Band 13 - 5.0MHz 16-QAM - Full RB Configuration)

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Plot 7-11. Occupied Bandwidth Plot (Band 13 - 10.0MHz QPSK - Full RB Configuration)



Plot 7-12. Occupied Bandwidth Plot (Band 13 - 10.0MHz 16-QAM - Full RB Configuration)

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Plot 7-13. Occupied Bandwidth Plot (Band 5 - 1.4MHz QPSK - Full RB Configuration)



Plot 7-14. Occupied Bandwidth Plot (Band 5 - 1.4MHz 16-QAM - Full RB Configuration)

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🚆 Keysight Spectrum Analyzer - Occupied BW		CHUNCHAR MA		- 27/12/200			
	AIFGsin:Low #Atter	spessberi Freq: 836.500000 MHz Free Run Avg Hol t: 36 dB	id: 100/100	Radio Std	1000	Trace	Detector
10 dB/dlv Ref 40.00 dBm		rimen de activent				c	lear Write
5 00 -00 20 1 -00 20 1 -00 -00	~		Lanna	ارون مهامه دامورا	ust when you		Average
-000 -4000 						1	Max Hold
Center 836.5 MHz Res BW 68 kHz	19	VBW 220 kHz Total Power			n 7.5 MHz 12.53 ms		Min Hold
Occupied Bandwidth 2.7	7007 MHz	Total Power	32.4	aem			Detector Peak>
Transmit Freq Error x dB Bandwidth	-3.440 kHz 2.937 MHz	% of OBW Pow x dB		.00 % 00 dB		Auto	Man
HSG			jutaro:	1			

Plot 7-15. Occupied Bandwidth Plot (Band 5 - 3.0MHz QPSK - Full RB Configuration)



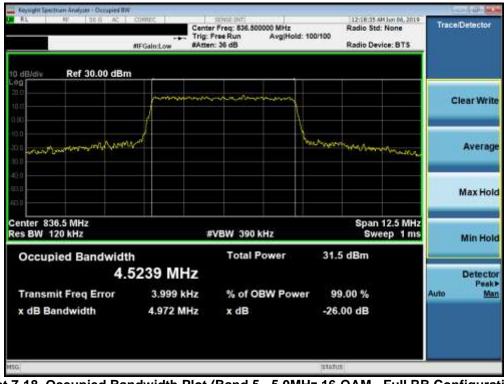
Plot 7-16. Occupied Bandwidth Plot (Band 5 - 3.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFX525WA	AVPCTEST	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Keysight Spectrum Analyzer - Occupied B		caused and the	200325		
RL HF 150 B AC	HFGain:Low #Atten	spest peri r Freq: \$36.500000 MHz Free Run Avg Hold t: 36 dB	Radio St : 100/100	AM Jun 06, 2019 d: None wice: BTS	Trace/Detector
10 dB/dlv Ref 30.00 dBr					Clear Write
10.0 30 h	mal		hannen		Average
-40.0 -ec.n -ec.n					Max Hold
Center 836.5 MHz Res BW 120 kHz	107	VBW 390 kHz	Sw	eep 1 ms	Min Hold
Occupied Bandwid 4. Transmit Freq Error x dB Bandwidth	th 5672 MHz -19.034 kHz 5.022 MHz	Total Power % of OBW Power x dB	33.0 dBm er 99.00 % -26.00 dB		Detector Pesk⊁ Auto <u>Man</u>
NSG			atanos		

Plot 7-17. Occupied Bandwidth Plot (Band 5 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-18. Occupied Bandwidth Plot (Band 5 - 5.0MHz 16-QAM - Full RB Configuration)

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ree - Occupied BW	
Center Freq: 836.500000 MHz Rad	13:13:44 Jun (M, 2019 Ilo Std: None Ilo Device: BTS
40.00 dBm	Clear Write
man have have have have have have have have	Average
	Max Hold
łz z #VBW 750 kHz	Span 25 MHz Sweep 1 ms Min Hold
Bandwidth Total Power 33.0 dB 9.0256 MHz	Detector Peak
q Error -2.841 kHz % of OBW Power 99.00 dth 9.929 MHz x dB -26.00 d	% Auto Man
IITATUS	

Plot 7-19. Occupied Bandwidth Plot (Band 5 - 10.0MHz QPSK - Full RB Configuration)



Plot 7-20. Occupied Bandwidth Plot (Band 5 - 10.0MHz 16-QAM - Full RB Configuration)

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Band 66/4



Plot 7-21. Occupied Bandwidth Plot (Band 66/4 - 1.4MHz QPSK - Full RB Configuration)



Plot 7-22. Occupied Bandwidth Plot (Band 66/4 - 1.4MHz 16-QAM - Full RB Configuration)

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Plot 7-23. Occupied Bandwidth Plot (Band 66/4 - 3.0MHz QPSK - Full RB Configuration)



Plot 7-24. Occupied Bandwidth Plot (Band 66/4 - 3.0MHz 16-QAM - Full RB Configuration)

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Keysight Spectrum Analyzer - Occupied BW		101111100 II	100000000000000000000000000000000000000	
RL III (2010 AC)	FGain:Low Cente #FGain:Low #Atter	r Freq: 1.732500000 GHz Free Run Avg Hold: 10 :: 36 dB	Radio Device: 8TS	Trace/Detector
to aB/atv Ref 30.00 dBm				Clear Write
10.0 20.0 30.0 30.0	1		mmmmmm	Average
40.0 40.0 40.0				Max Hold
Center 1.733 GHz Res BW 120 kHz Occupied Bandwidtl		VBW 390 kHz Total Power	Span 12.5 MHz Sweep 1 ms 30.5 dBm	
	798 Hz 5.012 MHz	% of OBW Power x dB	99.00 % -26.00 dB	Detector Peak> Auto Man
HSG			status	

Plot 7-25. Occupied Bandwidth Plot (Band 66/4 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-26. Occupied Bandwidth Plot (Band 66/4 - 5.0MHz 16-QAM - Full RB Configuration)

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Keysight Spectrum Analyzer - Occupied BW	0.000 I.S.	48145NG (A	V ALTRACIA A	0111111111	
	Trig: I	r Freq: 1.732500000 GHz Free Run Avg Hold: a: 36 dB	10:18:22 PM Radio Std: 100/100 Radio Devi	None	Trace/Detector
10 dB/dly Ref 30.00 dBm					
10.0 0.00	f				Clear Write
100 200 000	d		Jan an a	na n	Average
40.0 40.0 40.0					Max Hold
Center 1.733 GHz Res BW 240 kHz		VBW 750 kHz		ep 1 ms	Min Hold
Occupied Bandwidth 9.0) 189 MHz	Total Power	30.6 dBm		Detector
Transmit Freq Error x dB Bandwidth	6.734 kHz 9.953 MHz	% of OBW Powe x dB	r 99.00 % -26.00 dB		Peak≯ Auto <u>Man</u>
HSG			STATUS	_	

Plot 7-27. Occupied Bandwidth Plot (Band 66/4 - 10.0MHz QPSK - Full RB Configuration)



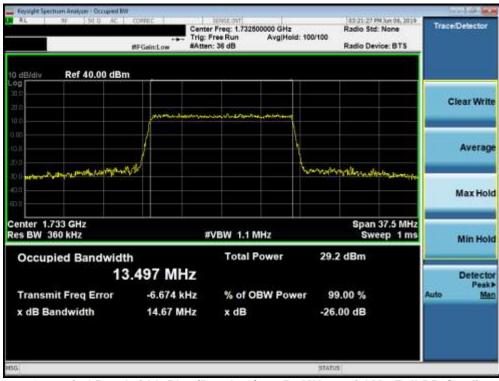
Plot 7-28. Occupied Bandwidth Plot (Band 66/4 - 10.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFX525WA	A PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🛞 LG	Approved by: Quality Manager
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Keysight Spectrum Analyzar - Occupied BW	and the second	101413NG 11	Value		
	Trig: I	r Freq: 1.732500000 GHz Free Run Avg Hold: n: 36 dB	Radio St 100/100	PN Jun 06, 2019 d: None rvice: BTS	Trace/Detector
10 dB/div Ref 40.00 dBm					Clear Write
000 -05 203 -03			hand		Average
10.0 				Chipman San	Max Hold
Center 1.733 GHz Res BW 360 kHz Occupied Bandwidth		VBW 1.1 MHz Total Power		a 37.5 MHz veep 1 ms	Min Hold
	508 MHz	Total Power	00.0 0011	1	Detector Peak
Transmit Freq Error x dB Bandwidth	7.501 kHz 14.76 MHz	% of OBW Powe x dB	er 99.00 % -26.00 dB		Auto <u>Man</u>
HSG			status		

Plot 7-29. Occupied Bandwidth Plot (Band 66/4 - 15.0MHz QPSK - Full RB Configuration)



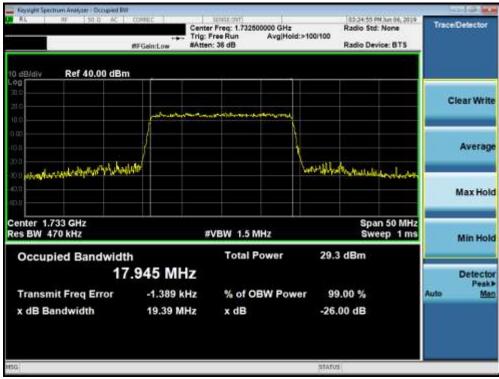
Plot 7-30. Occupied Bandwidth Plot (Band 66/4 - 15.0MHz 16-QAM - Full RB Configuration)

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Keysight Spectrum Analyzer - Occupied BW		141.1550 II			
873	Trig: I	r Freq: 1.732500000 GHz ree Run Avg Hol 1: 36 dB	d: 100/100	Radio Device: BTS	Trace/Detector
10 dB/dlv Ref 40.00 dBm	frankum	- meneral and a second			Clear Write
0.00 -0.0 20.0 30.0 30.0 30.0			Intertake	~1~1.5~1.018.00~~A	Average
10.0 				a transfer (transfer (tran	Max Hold
Center 1.733 GHz Res BW 470 kHz Occupied Bandwidth		VBW 1.5 MHz Total Power	30.4	Span 50 MHz Sweep 1 ms dBm	Min Hold
17.9	077 MHz -13.769 kHz	% of OBW Pow		.00 %	Detector Peak≯ Auto <u>Man</u>
x dB Bandwidth	19.53 MHz	x dB	-26.	00 dB	
HSG			status		

Plot 7-31. Occupied Bandwidth Plot (Band 66/4 - 20.0MHz QPSK - Full RB Configuration)



Plot 7-32. Occupied Bandwidth Plot (Band 66/4 - 20.0MHz 16-QAM - Full RB Configuration)

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Band 2



Plot 7-33. Occupied Bandwidth Plot (Band 2 - 1.4MHz QPSK - Full RB Configuration)



Plot 7-34. Occupied Bandwidth Plot (Band 2 - 1.4MHz 16-QAM - Full RB Configuration)

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Keysight Spectrum Analyzer - Occupied BW		1907-00-00		2004234		
	Cente Trig: F	r Freq: 1.880000000 GH Free Run Avg H t: 36 dB	z old: 100/100	Radio Std Radio Dev	100000	Trace/Detector
10 dB/dlw Ref 30.00 dBm	jornam		1			Clear Write
10.0 30.0 30.0 40.0	"/		Andress	Marrie In	timen-ty	Average
40.0 60.0						Max Hold
Center 1.88 GHz Res BW 68 kHz Occupied Bandwidth	19	VBW 220 kHz Total Power	30		n 7.5 MHz 12.53 ms	Min Hold
	2.766 kHz 2.944 MHz	% of OBW Po	wer 9	9.00 % .00 dB		Detector Pesk≻ Auto <u>Man</u>
1150			337470	5		

Plot 7-35. Occupied Bandwidth Plot (Band 2 - 3.0MHz QPSK - Full RB Configuration)



Plot 7-36. Occupied Bandwidth Plot (Band 2 - 3.0MHz 16-QAM - Full RB Configuration)

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Plot 7-37. Occupied Bandwidth Plot (Band 2 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-38. Occupied Bandwidth Plot (Band 2 - 5.0MHz 16-QAM - Full RB Configuration)

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Plot 7-39. Occupied Bandwidth Plot (Band 2 - 10.0MHz QPSK - Full RB Configuration)



Plot 7-40. Occupied Bandwidth Plot (Band 2 - 10.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFX525WA	AVPCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
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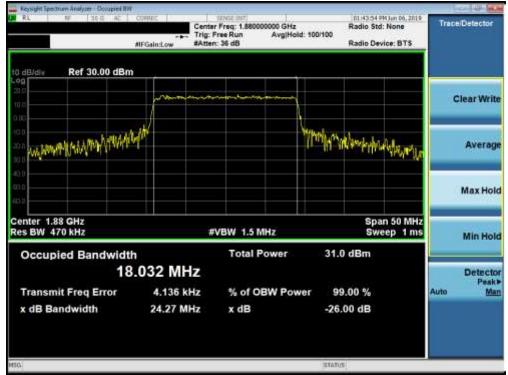
Plot 7-41. Occupied Bandwidth Plot (Band 2 - 15.0MHz QPSK - Full RB Configuration)



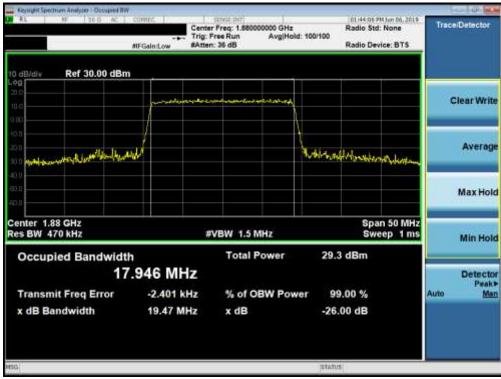
Plot 7-42. Occupied Bandwidth Plot (Band 2 - 15.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFX525WA	AVPCTEST	MEASUREMENT REPORT (CERTIFICATION)	🚯 LG	Approved by: Quality Manager
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Plot 7-43. Occupied Bandwidth Plot (Band 2 - 20.0MHz QPSK - Full RB Configuration)



Plot 7-44. Occupied Bandwidth Plot (Band 2 - 20.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFX525WA	AVPCTEST	MEASUREMENT REPORT (CERTIFICATION)	🚯 LG	Approved by: Quality Manager
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Band 7



Plot 7-45. Occupied Bandwidth Plot (Band 7 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-46. Occupied Bandwidth Plot (Band 7 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFX525WA	AVPCTEST	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Keysight Spectrum Analyzer - Occupied BW		conception vi		concernance and the	
RL NF 120.0 AC	Cente Trig: 1	r Freq: 2.536000000 GHz Free Run Avg Hold t: 36 dB	R: 100/100	2:20:02 PH Jun 04, 2019 adio Std: None adio Device: BTS	Trace/Detector
10 dB/dlv Ref 40.00 dBm	- e				-
21.0		an a			Clear Write
10.0					Average
				mannerstration	Max Hold
Center 2.535 GHz Res BW 240 kHz	#	VBW 750 kHz		Span 25 MHz Sweep 1 ms	Min Hold
Occupied Bandwidth 9.0	י 278 MHz	Total Power	30.4 di	Bm	Detector
Transmit Freq Error x dB Bandwidth	7.105 kHz 9.948 MHz	% of OBW Pow x dB	er 99.00 -26.00		Auto <u>Man</u>
HSG			status.		

Plot 7-47. Occupied Bandwidth Plot (Band 7 - 10.0MHz QPSK - Full RB Configuration)



Plot 7-48. Occupied Bandwidth Plot (Band 7 - 10.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFX525WA	AVPCTEST	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
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Plot 7-49. Occupied Bandwidth Plot (Band 7 - 15.0MHz QPSK - Full RB Configuration)



Plot 7-50. Occupied Bandwidth Plot (Band 7 - 15.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFX525WA	AVPCTEST	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
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	an a		wells with		Spectrum Analyzer - Occupied BW	
Trace/Detector	Radio Std: None Radio Device: BT\$	d: 100/100			97 (20.0 AC	
-					Ref 30.00 dBm	10 dB/div
Clear Write				for the second s		20.0 10.0
Average	and the second	home		1	and and the second s	10.0
Max Hold						40 () 62.0 63.1
Min Hold	Span 50 MHz Sweep 1 ms		W 1.5 MHz	#	2.535 GHz 470 kHz	Center 2.5 Res BW 4
Detector	dBm	30.5	Total Power	.027 MHz	upied Bandwidth 18	Occup
Auto <u>Mar</u>		ver 99 -26.0	% of OBW Pow x dB	15.490 kHz 19.53 MHz	smit Freq Error Bandwidth	
		intanus				HSG

Plot 7-51. Occupied Bandwidth Plot (Band 7 - 20.0MHz QPSK - Full RB Configuration)



Plot 7-52. Occupied Bandwidth Plot (Band 7 - 20.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFX525WA	AVPCTEST	MEASUREMENT REPORT (CERTIFICATION)	💽 LG	Approved by: Quality Manager
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7.3 Spurious and Harmonic Emissions at Antenna Terminal

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 $43 + 10 \log_{10}(P_{[Watts]})$, where P is the transmitter power in Watts.

For Band 7, the minimum permissible attenuation level of any spurious emission is 55 + 10 log₁₀(P_[Watts]).

Test Procedure Used

KDB 971168 D01 v03r01 - 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 for continuous emissions, max hold for pulse emissions
- 4. Sweep time = auto couple
- 5. The trace was allowed to stabilize
- 6. Please see test notes below for RBW and VBW settings

Test Setup

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



Figure 7-2. Test Instrument & Measurement Setup

Test Notes

Compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater for 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.

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Rumphit Spectrum Analyster Swept 54 Rumphi Spectrum Analyster Swept 54	PNO: Fast	Trig: Free Run Atten: 30 dB	#Avg Type: RMS	10:07:43 PM Jun 05, 2019 TRACE 12 3:44 TYPE A MOMMONY DET A NINALA M	Frequency
0 dB/div Ref 20.00 dBm			M	kr1 697.85 MHz -54.00 dBm	Auto Tun
u.o					Center Free 363.950000 MH
0.00 10.1				Dur a tiblione	Start Fre 30.000000 MH
20 N					Stop Fre 697.900000 MH
40 U				3	CF Ste 66.790000 Mi Auto Ma
					Freq Offs 0 H
no.n	Na sa da ka				Scale Typ
Start 30.0 MHz Res BW 100 kHz	#VBW	300 kHz	Sweep 3	Stop 697.9 MHz 2.06 ms (13359 pts)	Log <u>Li</u>

Plot 7-53. Conducted Spurious Plot (Band 12/17 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



Plot 7-54. Conducted Spurious Plot (Band 12/17 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

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Plot 7-55. Conducted Spurious Plot (Band 12/17 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



Plot 7-56. Conducted Spurious Plot (Band 12/17 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: ZNFX525WA	AVPCTEST	MEASUREMENT REPORT (CERTIFICATION)	🚯 LG	Approved by: Quality Manager
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RL NF 30.0 AC	PNO: Fast Trig: Free Run IFGain:Low #Atten: 50 dB	#Avg Type: RMS	09/58/53 PM Jun 05, 2019 TRACE 2 7 4 5 Type A substance DET A NINN N	Frequency
10 dB/dly Ref 20.00 dBm		N	40.32 dBm	Auto Tune
10.0				Center Free 858,000000 MH
0.00			0.1-13.00.0bm	Start Fre 716.000000 MH
30.0				Stop Fre 1.000000000 GH
0.00 10.00 10.00 10.00		and the second		CF Ste 28.400000 MH Auto Ma
60.11				Freq Offse 0 H
Start 0.7160 GHz #Res BW 100 kHz	#VBW 300 kHz	Sweep	Stop 1.0000 GHz 13.63 ms (5681 pts)	Scale Typ Log <u>Li</u>

Plot 7-57. Conducted Spurious Plot (Band 12/17 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)



Plot 7-58. Conducted Spurious Plot (Band 12/17 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: ZNFX525WA	PCTEST	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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RL NF 30.0 AC	PNO: Fast	Trig: Free Run Atten: 30 dB	#Avg Type: RMS	10:11:53 PM Jun 05, 2019 TRACE 13:14 A TYPE A MONOMOUND DET A NINNIN N	Frequency
10 dBidiy Ref 20.00 dBm			N	kr1 697.80 MHz -52.41 dBm	Auto Tune
10.0					Center Free 364.000000 MH
to n				D.(-13.00 eBrs	Start Free 30.000000 MH
30.0					Stop Fre 698.000000 MH
40.1					CF Ste 66.800000 MH Auto Ma
e.i					Freq Offse 0 H
					Scale Type
Start 30.0 MHz #Res BW 100 kHz	#VBW	300 kHz	Sweep 3	Stop 698.0 MHz 2.06 ms (13361 pts)	Log <u>Li</u>

Plot 7-59. Conducted Spurious Plot (Band 12/17 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)



Plot 7-60. Conducted Spurious Plot (Band 12/17 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

FCC ID: ZNFX525WA	AVPCTEST	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
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RL 87 20.0 AC	PNO: Sart CO T	rig: Free Run Atten: 34 dB	#Avg Type: RMS	10:32:35 PM Jun 05, 2019 TRACE 12:0413 TYPE & WWWWW DET & NINNIN	Frequency
0 dBidiy Ref 0.00 dBm			41. mm	Mkr1 9.980 0 GHz -44.11 dBm	Auto Tun
10.11				04.1 (13.00 video	Center Fre 5.50000000 GH
2011					Start Fre 1.00000000 GH
40.0		~~~~	****		Stop Fre 10.00000000 GH
					CF Ste 900.000000 MH Auto Me
80 B					Freq Offse 0 H
Gtart 1.000 GHz				Stop 10.000 GHz	Scale Typ
Start 1.000 GHz Res BW 1.0 MHz	#VBW 3.	0 MHz	1.0	Stop 10.000 GHz 15.60 ms (18001 pts)	Log

Plot 7-61. Conducted Spurious Plot (Band 12/17 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

FCC ID: ZNFX525WA	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🚯 LG	Approved by: Quality Manager
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Frequency	11:57:22 PN but 05, 2019 TRACE 11:7:0 4 TIPE A WARNING DET A NIN NUM	#Avg Type: RMS	Trig: Free Run Atten: 30 dB	PNO: Fast	chum Analyzer / Sorget SA RF SO O AC	RL
Auto Tune	kr1 776.70 MHz -49.97 dBm	N			Ref 20.00 dBm	10 dB/div
Center Fred 403,450000 MHz						w.o
Start Free 30.000000 MH	201-1310-1 2 5					0.00 to.n
Stop Free 776.900000 MH						30,0 30,0
CF Stej 74.690000 MH Auto Ma						40.0
Freq Offse 0 H		terioren nerzia, sin por ministrativa				60.5
Scale Type	Stop 776.9 MHz				MHz	Start 30.0
	5.85 ms (14939 pts)	Sweep 3	300 kHz	#VBW :		Res BW

Plot 7-62. Conducted Spurious Plot (Band 13 - 10.0MHz QPSK - RB Size 1, RB Offset 0)



Plot 7-63. Conducted Spurious Plot (Band 13 - 10.0MHz QPSK - RB Size 1, RB Offset 0)

FCC ID: ZNFX525WA	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	C LG	Approved by: Quality Manager
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RL NF 30.0 AC		Trig: Free Run	#Avg Type: RMS	TRACE 2 2 4 5 TRACE 2 2 4 5 TYPE 6 CONSISTENT	Frequency
	PNO: Fast 😱	#Atten: 30 dB		DET A N NN N	
10 dB/dly Ref 0.00 dBm	<i>1</i> 9		M	kr1 1.564 0 GHz -45.683 dBm	Auto Tune
					Center Fred
101				Di.1 (13.02)(Diri	5.50000000 GHz
20.0					Start Freq
30.N					1,00000000 GHz
40.0					Stop Freq
ent					10.00000000 GHa
m					CF Step
10.8					900.000000 MHz Auto Mar
3010					E
80.n					Freq Offset 0 Hz
92.0					
···					Scale Type
Start 1.000 GHz #Res BW 1.0 MHz	#VBW 3	.0 MHz	Sweep 1	Stop 10.000 GHz 5.60 ms (18001 pts)	Log <u>Lir</u>
150			intati		

Plot 7-64. Conducted Spurious Plot (Band 13 - 10.0MHz QPSK - RB Size 1, RB Offset 0)

FCC ID: ZNFX525WA	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🚯 LG	Approved by: Quality Manager	
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RL 10 20.0 AC	PNO: Fast ()	Trig: Free Run Atten: 30 dB	#Avg Type: RMS	12:13:14 AM Sun 06, 2019 TRACE 11 2 11 4 5 Trate 2 Management Det A NIN N N N	Frequency
10 dB/div Ref 20.00 dBm			N	kr1 822.90 MHz -50.73 dBm	Auto Tun
u.p					Center Fre 426.500000 MH
0.00				13(1-1200)(Em	Start Fre 30.000000 MH
201					Stop Fre 823.000000 MH
40.0					CF Ste 79.300000 MH Auto Ma
eui					Freq Offse
Start 30.0 MHz #Res BW 100 kHz	#VBM	300 kHz	Sween 3	Stop 823.0 MHz 8.06 ms (15861 pts)	Scale Typ Log <u>L</u>

Plot 7-65. Conducted Spurious Plot (Band 5 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



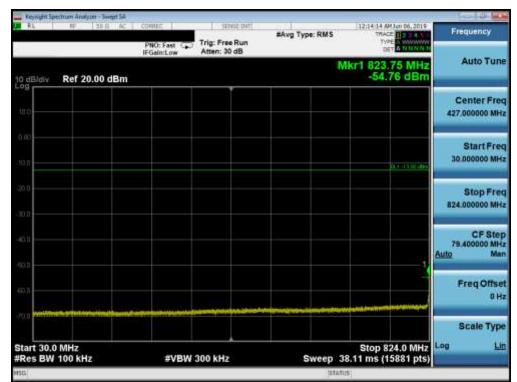
Plot 7-66. Conducted Spurious Plot (Band 5 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

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RL NF SOG AC	PNO: Fast CO Trig:	Free Run In: 32 dB	#Avg Type: RMS	12:15:43 AM Jun 06, 2019 TRACE 1 3 1 4 1 SyRE & MANAGEME DET & MININ M	Frequency
10 dBidly Ref 0.00 dBm			м	kr1 1.658 0 GHz -44.99 dBm	Auto Tune
10.1				Di. 1 13.00 vites	Center Fre 5.50000000 GH
2011					Start Fre 1.000000000 GH
40.0					Stop Fre 10.000000000 GH
					CF Ste 900.000000 MH Auto Me
80 N					Freq Offse
Start 1.000 GHz Res BW 1.0 MHz	#VBW 3.0 M	Hz	Sweep 1	Stop 10.000 GHz 5.60 ms (18001 pts)	Scale Typ Log <u>L</u> i

Plot 7-67. Conducted Spurious Plot (Band 5 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



Plot 7-68. Conducted Spurious Plot (Band 5 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

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RL 87 30.0 AC	PNO: Fast Trig: Free Run IFGain:Low Atten: 30 dB	#Avg Type: RMS	12:14:20 AMJun 06, 2019 TRACE 12:04 A Type: A submitted Det A NINN N	Frequency
10 dBidly Ref 20.00 dBm		N	lkr1 849.00 MHz -55.63 dBm	Auto Tune
10.0				Center Free 924.500000 MH
0.00			0.(-13.01.0 0 m	Start Free 849.000000 MH
20.0				Stop Fre 1.00000000 GH
43.0				CF Ste 15.100000 MH <u>Auto Ma</u>
			n ja ja dinaminina di pangi na kana na m	Freq Offse 0 H
Start 0.84900 GHz #Res BW 100 kHz	#VBW 300 kHz	Sween	Stop 1.00000 GHz 7.248 ms (3021 pts)	Scale Type Log <u>Li</u>

Plot 7-69. Conducted Spurious Plot (Band 5 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)



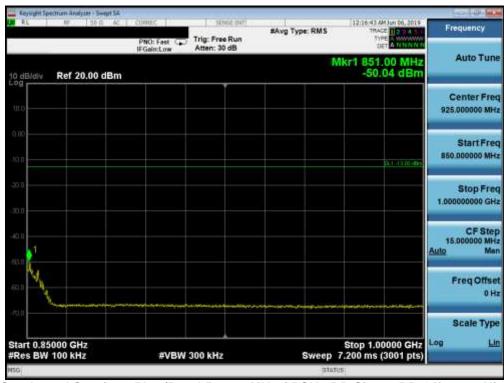
Plot 7-70. Conducted Spurious Plot (Band 5 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: ZNFX525WA	AVPCTEST	MEASUREMENT REPORT (CERTIFICATION)	💽 LG	Approved by: Quality Manager
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Keysight Spectrum Analyzer - Swight 54 RL - Kp - 30 R - AC -	PNC: Fast CC Tri	Free Run en: 30 dB	#Avg Type: RMS	12:16:35 AM Jun 00, 2019 TRACE 12:14 A Type A WANNAW DET A NUNNAW	Frequency
ID dBidiy Ref 20.00 dBm			N	kr1 820.30 MHz -60.91 dBm	Auto Tune
10.0					Center Free 427,000000 MH
0.00				D.(1-13.00 obvi	Start Free 30.000000 MH
30.0					Stop Fre 824.000000 MH
11 CAN					CF Ste 79,400000 MH Auto Ma
			Angungani a gang saking bin netek	Ì	Freq Offse 0 H
					Scale Typ
Start 30.0 MHz #Res BW 100 kHz	#VBW 300	kHz	Sweep 3	Stop 824.0 MHz 8.11 ms (15881 pts)	Log <u>Li</u> l

Plot 7-71. Conducted Spurious Plot (Band 5 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)



Plot 7-72. Conducted Spurious Plot (Band 5 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

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RL NF 30.0		Trig: Free Run	#Avg Type: RMS	12:17:03 AM Jun 06, 2019 TRACE	Frequency
	PNO: Fast 😱	#Atten: 32 dB		DET A NINNIN	
0 dBldly Ref 0.00 dBn	1		M	kr1 1.688 0 GHz -44.75 dBm	Auto Tun
					Center Fre
13.0				04.1 (13.00 uBes	5.50000000 GH
20.11					Start Fre
10.0					1,00000000 GH
0.0					Stop Fre
en 0	ma	·····			10.000000000 GH
					CF Ste
£11					900.000000 MH Auto Ma
10.0					
80.n					Freq Offse
92.11					C589
					Scale Type
Start 1.000 GHz Res BW 1.0 MHz	#VBW	3.0 MHz	Sweep 1	Stop 10.000 GHz 5.60 ms (18001 pts)	Log <u>Li</u>
56			utan		

Plot 7-73. Conducted Spurious Plot (Band 5 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

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Band 66/4

RL 17 30.0 AC	PNO: Fast	Trig: Free Run Atten: 30 dB	#Avg Type: RMS	192:25:23 PM Jun 06, 2019 TRACE 1 2:3 4 1 TYPE 1 WWWWWW DET A SUN 1111	Frequency
IO dBidiv Ref 20.00 dBm			1V	Akr1 1.709 0 GHz -27.72 dBm	Auto Tune
in 0					Center Free 869.500000 MH
10.11				51.1-13.01 dm	Start Fre 30.000000 MH
20 0 30 n				1	Stop Fre 1.709000000 GH
400					CF Ste 167.900000 MH <u>Auto</u> Ma
					Freq Offse 0 H
300 Start 0.0300 GHz #Res BW 1.0 MHz	#VBW 3	LO MHZ	Sween	Stop 1.7090 GHz 2.239 ms (3359 pts)	Scale Typ

Plot 7-74. Conducted Spurious Plot (Band 66/4 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



Plot 7-75. Conducted Spurious Plot (Band 66/4 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

FCC ID: ZNFX525WA	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🚯 LG	Approved by: Quality Manager
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Plot 7-76. Conducted Spurious Plot (Band 66/4 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



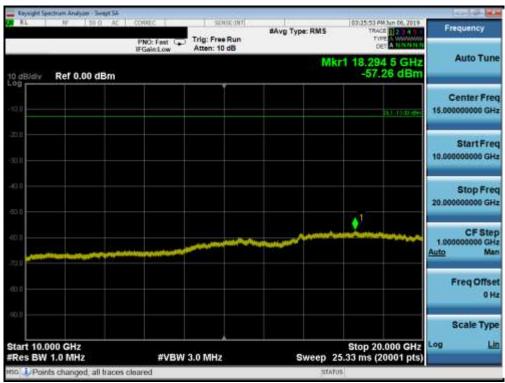
Plot 7-77. Conducted Spurious Plot (Band 66/4 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: ZNFX525WA	PCTEST	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager	
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Keysight Spectrum Analyzin - Sintat 54 RL 37 20 0 AC	CONTREC	Trig: Free Run	#Avg Type: RMS	102.25.44 PM Jun 06, 2019 TRACE 11 224 4 Type 12 24 4 CTTPE 12 24 4 CTTPE 12 24 4	Frequency
lo dBłdiv Ref 20.00 dBm	IFGain:Low	Atten: 30 dB	٨	Akr1 1.759 0 GHz -27.80 dBm	Auto Tun
00					Center Fre 5.877500000 GH
0.03				pt.1-1300.em	Start Fre 1.755000000 GF
1					Stop Fre 10.00000000 GF
				And the state of the	CF Ste 824.500000 Mi Auto Mi
					Freq Offs 01
itart 1.755 GHz Res BW 1.0 MHz	#VBW	3.0 MHz	Sween	Stop 10.000 GHz 14.29 ms (16491 pts)	Scale Typ

Plot 7-78. Conducted Spurious Plot (Band 66/4 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)



Plot 7-79. Conducted Spurious Plot (Band 66/4 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: ZNFX525WA	AVPCTEST	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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NF 10.0 AC	CONNEC	SEWER JW7	#Avg Type: RMS	02:27:41 PM Jun 06, 2019 TRACE 22:24 4	Frequency
	PNC: Fast C Trig	g: Free Run ten: 30 dB	and the one	DET A NININ N	
div Ref 20.00 dBm			-Iv	kr1 1.700 5 GHz -45.06 dBm	Auto Tune
					Center Free 870.000000 MH
				p.(-(10) em	Start Free 30.000000 MH
					Stop Free 1.710000000 GH
					CF Ste 168.000000 MH <u>Auto</u> Ma
- Anna All Andrea Carlos and a second a second and a					Freq Offse 0 H
0.0300 GHz BW 1.0 MHz	#VBW 3.0			Stop 1.7100 GHz 2.240 ms (3361 pts)	Scale Type

Plot 7-80. Conducted Spurious Plot (Band 66/4 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)



Plot 7-81. Conducted Spurious Plot (Band 66/4 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

FCC ID: ZNFX525WA	AVPCTEST	MEASUREMENT REPORT (CERTIFICATION)	🚯 LG	Approved by: Quality Manager
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RL 37 30.0 AC	PNO: Fast	Trig: Free Run Atten: 10 dB	#Avg Type: RMS	02/2017 PM Jun 06, 2019 TRACE 11 2/3/4/0 Type 14 WWWWWW OET 14 SMANN 11	Frequency
o dBidiy Ref 0.00 dBm				Mkr1 18.866 5 GHz -57.42 dBm	Auto Tune
				: 211,1-11) 00 réses	Center Fred 15.00000000 GH
0.1					Start Free 10.000000000 GH
0.0					Stop Fre 20.00000000 GR
0.0					CF Stej 1.000000000 GH <u>Auto</u> Mai
					Freq Offse 0 H
itart 10.000 GHz Res BW 1.0 MHz	#VBW 3			Stop 20.000 GHz 25.33 ms (20001 pts)	Scale Type

Plot 7-82. Conducted Spurious Plot (Band 66/4 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

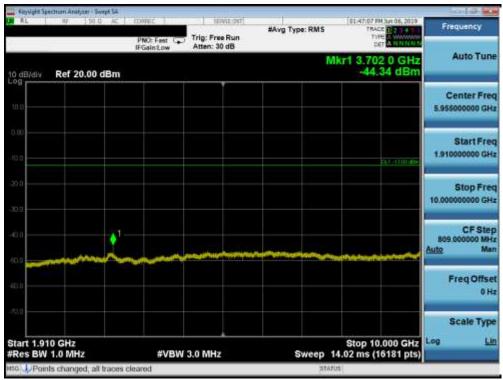
FCC ID: ZNFX525WA	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	C LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 60 of 179
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Band 2

RL 19 50.0 AC	PNO: Fest	Trig: Free Run Atten: 30 dB	#Avg Type: RMS	01346-59 PM Jun 06, 2019 TRACE 07 114 1 Type 0 Wommun DET A N N N N	Frequency
10 dB/div Ref 20.00 dBm			M	kr1 1.849 0 GHz -32.79 dBm	Auto Tune
10.0					Center Free 939.500000 MH
о ю				23(1-1200) (B e	Start Free 30.000000 MH
20.0					Stop Fre 1.849000000 GH
40.0 90.0					CF Ste 181.900000 MH Auto Ma
					Freq Offse 0 H
Start 0.0300 GHz	#VBW	3.0 MHz	Sweep	Stop 1.8490 GHz 2.425 ms (3639 pts)	Scale Typ Log <u>Li</u>

Plot 7-83. Conducted Spurious Plot (Band 2 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



Plot 7-84. Conducted Spurious Plot (Band 2 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

FCC ID: ZNFX525WA	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕞 LG	Approved by: Quality Manager
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RL 80 30.0 AC	PNO: Fast (C) Trig: P	Free Run 10 dB	#Avg Type: RM!	1764	MJun Dd, 2019 C2 12 24 9 PE ANNANA SET A NINANA	Frequency
o dBidiy Ref 0.00 dBm				Mkr1 18.29 -57	3 0 GHz 18 dBm	Auto Tun
01					04.1 (1.5 00 offers	Center Fre 15.00000000 GH
0.11 0.11						Start Fre 10.000000000 GH
						Stop Fre 20.000000000 GF
0.11 		-	-		*****	CF Ste 1.000000000 GI <u>Auto</u> M
0.n						Freq Offs 01
tart 10.000 GHz Res BW 1.0 MHz	#VBW 3.0 M			Stop 20	0.000 GHz	Scale Typ Log L

Plot 7-85. Conducted Spurious Plot (Band 2 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



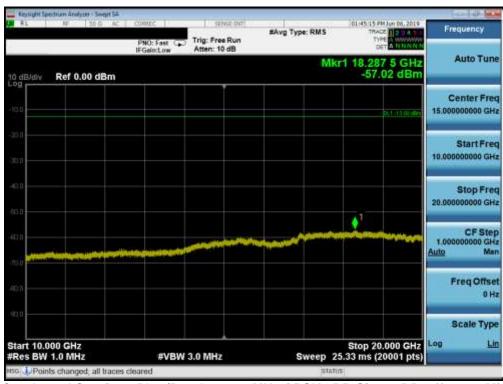
Plot 7-86. Conducted Spurious Plot (Band 2 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: ZNFX525WA	AVPCTEST	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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Plot 7-87. Conducted Spurious Plot (Band 2 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)



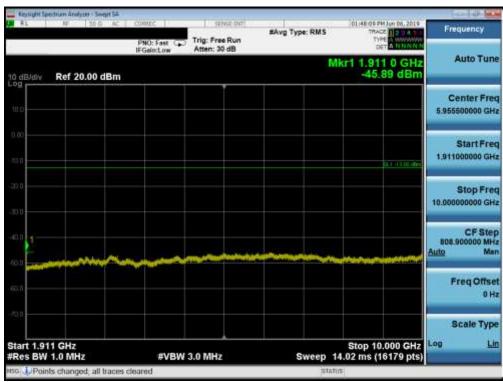
Plot 7-88. Conducted Spurious Plot (Band 2 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: ZNFX525WA	PCTEST	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager	
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RL 87 20.0 AC	PNO: Fast Trig: Free Run IFGain:Low Atten: 30 dB	#Avg Type: RMS	TRACE II 2 24 11 TYPE & OWNOOD DET A NUNNIS	Frequency
to dBidiy Ref 20.00 dBm		Mkr1	1.827 5 GHz -50.29 dBm	Auto Tune
tino.				Center Free
0.00			0.1-13.01.001	Start Free
20.0			1.	Stop Fre 85000000 GH
40.0			Auto	CF Ste 82.000000 MH 2 Ma
				Freq Offse 0 H
Start 0.0300 GHz	#VBW 3.0 MHz	Sween 242	top 1.8500 GHz	Scale Type

Plot 7-89. Conducted Spurious Plot (Band 2 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)



Plot 7-90. Conducted Spurious Plot (Band 2 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

FCC ID: ZNFX525WA	AVPCTEST	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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RL NF SOG AC	PNO: Fast	Trig: Free Run Atten: 10 dB	#Avg Type: RMS	TRA	M Jun Dd. 2019 CE II S Dd. A PE A MANAGANA ST A NAMAGANA	Frequency
10 dBidly Ref 0.00 dBm			М	kr1 18.28 -57.	7 0 GHz 11 dBm	Auto Tune
-og					04.1 (13.00 (db))	Center Free 15.00000000 GH
2011						Start Free 10.000000000 GH
40.0						Stop Fre 20.000000000 GH
	An and a spectrum to the	and the second s				CF Ste 1.000000000 GH <u>Auto</u> Ma
80.6						Freq Offse 0 H
Start 10.000 GHz	#VBW:	3.0 MHz	Sweep	Stop 20 25.33 ms (2).000 GHz	Scale Typ Log <u>Li</u>

Plot 7-91. Conducted Spurious Plot (Band 2 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

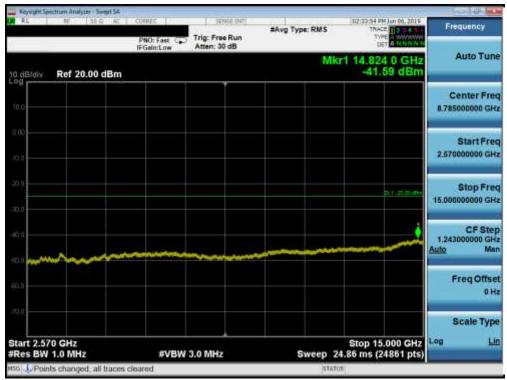
FCC ID: ZNFX525WA	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕞 LG	Approved by: Quality Manager
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Band 7

Frequency	02:03:41 PM 3un 06, 2019 TRACE 017 012:001	#Avg Type: RMS		octuum Analyzer / Swept SA NF 50 0 AC COMPLE
	DET A N N N N N		Trig: Free Run Atten: 30 dB	PNO: Fast 😱
z Auto Tun	kr1 2.401 5 GHz -48.19 dBm	M		Ref 20.00 dBm
Center Fre 1.252500000 GH				
Start Fre 30.000000 MH				
Stop Fre 2.475000000 GH	CO SIDIO			
СF Ste 244.500000 Мн Ацто Ма	♦ ¹			
Freq Offs 0 H				
Scale Typ				
	Stop 2.475 GHz 3.260 ms (4891 pts)	Sweep 3	3.0 MHz	0 GHz 1.0 MHz #VBW
	1	statu		

Plot 7-92. Conducted Spurious Plot (Band 7 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



Plot 7-93. Conducted Spurious Plot (Band 7 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

FCC ID: ZNFX525WA	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	C LG	Approved by: Quality Manager
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RL 87 30.0 AC	PNO: Fast	Trig: Free Run Atten: 10 dB	#Avg Type: RMS	02-34-05 PM Jun 06, 2019 TRACE 3 3 3 4 Syst 6 sourcestre Det A N N.N.N.N	Frequency
ID dBidiy Ref 0.00 dBm			Mk	-51.62 dBm	Auto Tun
10.1					Center Fre 21.00000000 GH
2011				D.1-2510 dBs	Start Fre 15.00000000 GH
40.0				1	Stop Fre 27.000000000 GH
	a and a state of the				CF Ste 1.200000000 GP Auto Me
10:n					Freq Offs 0 H
Start 15.000 GHz Res BW 1.0 MHz		3.0 MHz	Cuson 2	Stop 27.000 GHz 0.40 ms (24001 pts)	Scale Typ Log L

Plot 7-94. Conducted Spurious Plot (Band 7 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



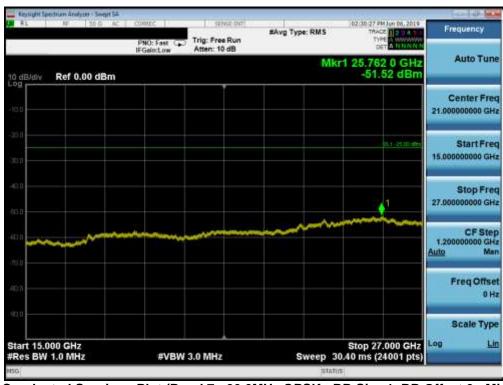
Plot 7-95. Conducted Spurious Plot (Band 7 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: ZNFX525WA	AVPCTEST	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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RL 80 30 0 AC	PNO: Fast	Trig: Free Run Atten: 30 dB	#Avg Type: RMS	02:30:13 PM Jun 06, 2019 TRACE 3 2:34 5 Type 5 watercome DET 6 NM N N N	Frequency
0 dBidly Ref 20.00 dBm			Mk	r1 14.794 0 GHz -41.34 dBm	Auto Tune
ino					Center Free 8.78500000 GH
00.0					Start Free 2.570000000 GH
20.0				DK 1.30 STHERN	Stop Free 15.00000000 GH
		-	بدو معروب المحاصر الم		CF Step 1.243000000 GH Auto Ma
					Freq Offse 0 H
tart 2.570 GHz Res BW 1.0 MHz		3.0 MHz		Stop 15.000 GHz 4.86 ms (24861 pts)	Scale Type

Plot 7-96. Conducted Spurious Plot (Band 7 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)



Plot 7-97. Conducted Spurious Plot (Band 7 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: ZNFX525WA	AVPCTEST	MEASUREMENT REPORT (CERTIFICATION)	🚯 LG	Approved by: Quality Manager
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Keynght Spectrum Analyser - Swight SA RL IV SO D AC	PNO: Fast 😱 Trig: Free Run	#Avg Type: RMS	102:15:51 PM Jun 06, 2019 TRACE 13:14 5 TYPE 13:04 5 DET 4 N MIN N 1	Frequency
10 dBidly Ref 20.00 dBm	IFGain:Low Atten: 30 dB	М	kr1 2.466 5 GHz -48.20 dBm	Auto Tune
100				Center Fred 1.265000000 GH
0.00				Start Free 30.000000 MH
30.0			DK 1.30 SHIBH	Stop Fre 2.500000000 GH
40.0			Į.	CF Ste 247.000000 MH <u>Auto</u> Ma
453. Il				Freq Offse 0 H
Start 0.030 GHz #Res BW 1.0 MHz	#VBW 3.0 MHz	Sweep	Stop 2.500 GHz 3.293 ms (4941 pts)	Scale Typ Log <u>Li</u>

Plot 7-98. Conducted Spurious Plot (Band 7 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)



Plot 7-99. Conducted Spurious Plot (Band 7 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

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Plot 7-100. Conducted Spurious Plot (Band 7 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

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7.4 Band Edge Emissions at Antenna Terminal

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 + 10 log₁₀(P_[Watts]), where P is the transmitter power in Watts.

The minimum permissible attenuation level for Band 7 is as noted in the Test Notes on the following page.

Test Procedure Used

KDB 971168 D01 v03r01 - 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 \geq 3 x RBW
- 5. Detector = RMS
- 6. Number of sweep points $\geq 2 \times \text{Span/RBW}$
- 7. Trace mode = trace average for continuous emissions, max hold for pulse emissions
- 8. Sweep time = auto couple
- 9. The trace was allowed to stabilize

Test Setup

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



Figure 7-3. Test Instrument & Measurement Setup

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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.

Per 27.53(g) for operations in the 698-746 MHz band, in the 100 kHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least 30 kHz may be employed to demonstrate compliance with the out-of-band emissions limit.

Per 27.53(c)(5) for operations in the 776-788 MHz band, in the 100 kHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least 30 kHz may be employed to demonstrate compliance with the out-of-band emissions limit.

For all plots showing emissions in the 763 – 775MHz and 793 – 805MHz band, the FCC limit per 27.53(c)(4) is 65 + 10 $\log_{10}(P) = -35$ dBm in a 6.25kHz bandwidth.

Per 27.53(m) for operations in the BRS/EBS bands, the attenuation factor shall be not less than $40 + 10 \log (P) dB$ on all frequencies between the channel edge and 5 megahertz from the channel edge, $43 + 10 \log (P) dB$ on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth. In addition, the attenuation factor shall not be less that $43 + 10 \log (P) dB$ on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz.

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Plot 7-101. Lower Band Edge Plot (Band 12 - 1.4MHz QPSK - Full RB Configuration)



Plot 7-102. Upper Band Edge Plot (Band 12 - 1.4MHz QPSK - Full RB Configuration)

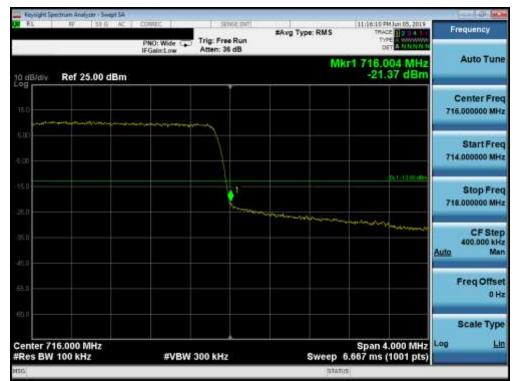
FCC ID: ZNFX525WA	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	C LG	Approved by: Quality Manager
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RL NF 20.0 AC	PNO: Wide CP	Trig: Free Run Atten: 36 dB	#Avg Type: RMS	TRACE 3 2 4 1 TRACE 3 3 4 1 TYPE A MANNAN DET A MININIA	Frequency
ID dBidiy Ref 25.00 dBm			M	471 697.992 MHz -27.96 dBm	Auto Tun
15.0					Center Fre 698.000000 MH
5 00 6.00					Start Fre 696.000000 MH
5.0 2.0		1		24.1 - 12.00 (dbs)	Stop Fre 700.000000 MH
Ell					CF Ste 400,000 kF Auto Ma
二					Freq Offse 0 H
Center 698.000 MHz Res BW 100 KHz	#VBW :	300 kHz	Sweep	Span 4.000 MHz 6.667 ms (1001 pts)	Scale Typ Log Li

Plot 7-103. Lower Band Edge Plot (Band 12 - 3.0MHz QPSK - Full RB Configuration)



Plot 7-104. Upper Band Edge Plot (Band 12 - 3.0MHz QPSK - Full RB Configuration)

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Keysight Spectrum Analyser - Swept SA RL NF 20 (2 AC	PNO: Wide	Trig: Free Run Atten: 36 dB	#Avg Type: RMS	TRA	Milan DS, 2019 CE HIS RATE RE A MARKAN	Frequency
10 dBidiy Ref 25.00 dBm			N	lkr1 697. -28	940 MHz .50 dBm	Auto Tun
15.0						Center Fre 698.000000 MH
5.00				1		Start Fre 696.000000 MH
15.0				4	64.1 - 1.3 (0) offer	Stop Fre 700.000000 MH
25.0 martin Advances - aliman	and an and a second					CF Ste 400,000 kH <u>Auto</u> Ma
₩.I						Freq Offse 0 H
Center 698.000 MHz Res BW 100 KHz	(D)(D)(4)	300 kHz	Quioan	Span 4 6.667 ms	1.000 MHz	Scale Typ Log <u>L</u> i

Plot 7-105. Lower Band Edge Plot (Band 12 - 5.0MHz QPSK - Full RB Configuration)



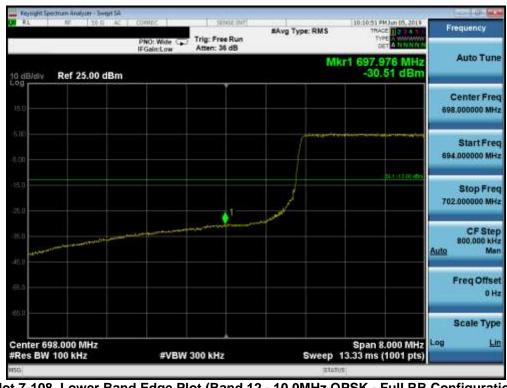
Plot 7-106. Lower Band Edge Plot (Band 17 - 5.0MHz QPSK - Full RB Configuration)

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Plot 7-107. Upper Band Edge Plot (Band 12/17 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-108. Lower Band Edge Plot (Band 12 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFX525WA	AVPCTEST	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	De
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RL 87 30.0 AC	PNO: Wide	Trig: Free Run Atten: 36 dB	#Avg Type: RMS	TRACE 2 2 4 1 TRACE 2 3 4 4 TYPE A MONTON D	Frequency
o dBidiy Ref 25.00 dBm			M	cr1 703.984 MHz -27.11 dBm	Auto Tune
15.0					Center Free 704.000000 MH
5.00 6.00					Start Free 700.000000 MH
5.0		2		54.1 -13.00 obey	Stop Free 708.000000 MH
	an a	user and			CF Ster 800,000 kH Auto Ma
14 年 19 日 19 日 19 日 19 日 19 日 19 日 19 日 19 日					Freq Offse 0 H
Center 704.000 MHz				Span 8.000 MHz	Scale Type
Center 704.000 MHz Res BW 100 kHz	#VBW	300 kHz	Sweep	13.33 ms (1001 pts)	

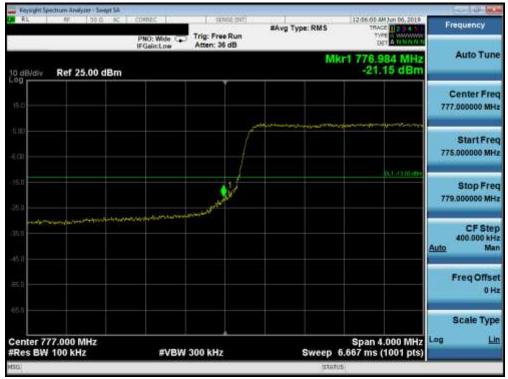
Plot 7-109. Lower Band Edge Plot (Band 17 - 10.0MHz QPSK - Full RB Configuration)



Plot 7-110. Upper Band Edge Plot (Band 12/17 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFX525WA	AVPCTEST	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager		
Test Report S/N:	Test Dates:	EUT Type:		Dega 77 of 170		
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Plot 7-111. Lower Band Edge Plot (Band 13 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-112. Lower Emission Mask Plot (Band 13 - 5.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFX525WA	AVPCTEST	MEASUREMENT REPORT (CERTIFICATION)	🚯 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 78 of 178
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RL NF 20.0 AC	PNO: Wide Con Trig	Free Run en: 36 dB	#Avg Type: RMS	12:07:05 AM Jun 06, 2019 TRACE 12:07 4 1 SYPE A SUMMON OF DET A N N A K N	Frequency
IO dBidiy Ref 25.00 dBm	I CHELCHE THE		M	r1 787.004 MHz -22.08 dBm	Auto Tune
15.0					Center Fre 787.000000 MH
5.00 6.00					Start Fre 785.000000 MH
250		No. 1		5.1 i 1 m des	Stop Fre 789.000000 MH
25.0				1 martin Martin Concerned	CF Ste 400,000 kH Auto Ma
40.00 (1) (注:) (注:)					Freq Offse 0 H
Center 787.000 MHz				Span 4.000 MHz 5.667 ms (1001 pts)	Scale Typ
Res BW 100 kHz	#VBW 300	kHz	Sweep (

Plot 7-113. Upper Band Edge Plot (Band 13 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-114. Upper Emission Mask Plot (Band 13 - 5.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFX525WA	PCTEST	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dega 70 of 170	
1M1905300091-03-R1.ZNF	5/30 - 6/18/2019	Portable Handset		Page 79 of 178	
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RL NF SOG AC	PNO: Wide	Trig: Free Run Atten: 36 dB	#Avg Type: RMS	11/19-01 PM Jun 10, 2019 TRACE 2019 14 1 Trate 2019	Frequency
10 dB/dly Ref 25.00 dBm	IF GBILLOW		M	cr1 777.000 MHz -27.701 dBm	Auto Tune
150					Center Free 777.000000 MH
530 6.00		ſ	ang tankan, and an an an an	nga da mangang sa kanaga ang sa	Start Free 773.000000 MH
5.0		1		54.1 -13.00 obey	Stop Fre 781.000000 MH
20) and and the second se	and the second	harring and the			CF Ster 800,000 kH Auto Ma
=.)					Freq Offse 0 H
Center 777.000 MHz #Res BW 100 KHz	10/BW	300 kHz	<u>Supara</u>	Span 8.000 MHz 13.33 ms (1001 pts)	Scale Type Log <u>Li</u>

Plot 7-115. Lower Band Edge Plot (Band 13 - 10.0MHz QPSK - Full RB Configuration)



Plot 7-116. Lower Emission Mask Plot (Band 13 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFX525WA	AVPCTEST	MEASUREMENT REPORT (CERTIFICATION)	🚯 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Degs 90 of 179
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■ RL NF 30.0 AC CON PM IFG	Wide Co Tr	fig: Free Run tten: 36 dB	#Avg Type: RMS	12/91:57 AM Jun 06, 2019 TRACE 1 3 3 4 5 TYPE & WANNIN IN	Frequency
10 dB/dly Ref 25.00 dBm			N	kr1 787.000 MHz -28.03 dBm	Auto Tune
15.0					Center Free 787.000000 MH
5 00					Start Free 783.000000 MH
5.0		1		54.1 -1.1.00 offes	Stop Fre 791.000000 MH
50		No. and and the second			CF Ste 800,000 kH Auto Ma
2019 第月					Freq Offse 0 H
Center 787.000 MHz Res BW 100 KHz	#VBW 30	0.6147	Suizan	Span 8.000 MHz 13.33 ms (1001 pts)	Scale Typ Log Li

Plot 7-117. Upper Band Edge Plot (Band 13 - 10.0MHz QPSK - Full RB Configuration)



Plot 7-118. Upper Emission Mask Plot (Band 13 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFX525WA	AVPCTEST	MEASUREMENT REPORT (CERTIFICATION)	💽 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 91 of 179
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Plot 7-119. Lower Band Edge Plot (Band 5 - 1.4MHz QPSK - Full RB Configuration)



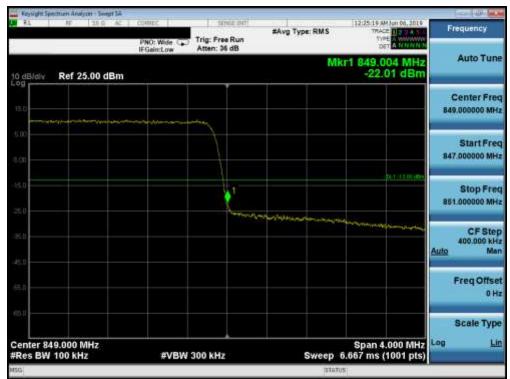
Plot 7-120. Upper Band Edge Plot (Band 5 - 1.4MHz QPSK - Full RB Configuration)

FCC ID: ZNFX525WA	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	💽 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 82 of 178
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	PNO: Wide C	Trig: Free Run Atten: 36 dB	#Avg Type: RMS	12:25:50 AM Jun 04, 2019 TRACE 12:34 4 1 TYPE A WANNING	Frequency
dBidiy Ref 25.00 dBm	FGBRLOW	MILEN. 99 0D	Mk	r1 824.000 MHz -24.254 dBm	Auto Tune
50			بوالاور المحالي المراجع	a tan surraw di tanan surada	Center Free 824.000000 MH
.u) .u					Start Free 822.000000 MH
5.0 #.0		1		DL1 112 00 x0xx	Stop Fre 826.000000 MH
50 51	an a	nt mangal th			CF Ste 400.000 kH Auto Ma
5.11					Freq Offse 0 H
enter 824.000 MHz Res BW 100 kHz	#VBW	300 kHz	Sweep	Span 4.000 MHz 3.667 ms (1001 pts)	Scale Typ Log <u>Li</u>

Plot 7-121. Lower Band Edge Plot (Band 5 - 3.0MHz QPSK - Full RB Configuration)



Plot 7-122. Upper Band Edge Plot (Band 5 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFX525WA	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 02 of 170
1M1905300091-03-R1.ZNF	5/30 - 6/18/2019	Portable Handset		Page 83 of 178
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RL N 30.0 AC 1	PNO: Wide	Trig: Free Run Atten: 36 dB	#Avg Type: RMS	12(19:25 AM Jun 04, 2019 TRACE 12(14.1 Type A substance Det A N N.N.N.N	Frequency
10 dBidiy Ref 25.00 dBm			M	cr1 823.976 MHz -26.46 dBm	Auto Tune
15.0					Center Free 824.000000 MH
510 6.01					Start Free 822.000000 MH
15.0				54.1-13.01 offer	Stop Fre 826.000000 MH
en a 195 D	and the second	n na			CF Ster 400,000 kH Auto Ma
第19 第19					Freq Offse 0 H
Center 824.000 MHz Res BW 100 KHz	#VBW :	100 kHz	Suisan	Span 4.000 MHz 6.667 ms (1001 pts)	Scale Typ Log <u>Li</u>

Plot 7-123. Lower Band Edge Plot (Band 5 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-124. Upper Band Edge Plot (Band 5 - 5.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFX525WA	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🚯 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 04 of 179
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RL 87 30.0 AC	PNO: Wide	Trig: Free Run Atten: 36 dB	#Avg Type: RMS	12:16:02 AM Jun 06, 2019 TRACE 2 2 1 4 1 Syre A Manual A DET A MINNIN M	Frequency
0 dBidiy Ref 25.00 dBm			M	cr1 823.976 MHz -31.69 dBm	Auto Tune
15.0					Center Fre 824.000000 MH
500 6.00		ſ		,	Start Fre 820.000000 MH
15.0 26.0				54.1-13.01 offer	Stop Fre 828.000000 MH
15 II Reference and the second se	ngnagnahaisenderdelt	San Providence and Party of Pa			CF Ste 800,000 kH Auto Ma
45.0 (元月)					Freq Offse 0 H
Center 824.000 MHz Res BW 100 kHz	m/8//	300 kHz		Span 8.000 MHz 13.33 ms (1001 pts)	Scale Typ Log Li

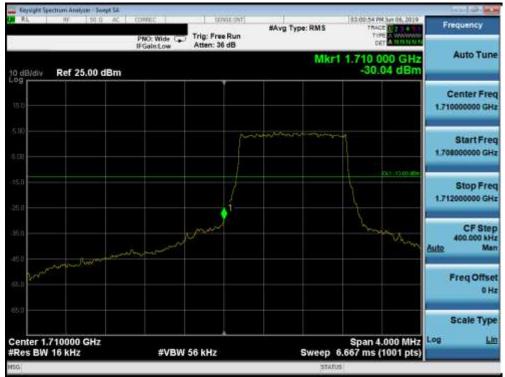
Plot 7-125. Lower Band Edge Plot (Band 5 - 10.0MHz QPSK - Full RB Configuration)



Plot 7-126. Upper Band Edge Plot (Band 5 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFX525WA	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🚯 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 05 of 170
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Plot 7-127. Lower Band Edge Plot (Band 66/4 - 1.4MHz QPSK - Full RB Configuration)



Plot 7-128. Lower Extended Band Edge Plot (Band 66/4 - 1.4MHz QPSK - Full RB Configuration)

FCC ID: ZNFX525WA	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🚯 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 06 of 170
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Plot 7-130. Upper Extended Band Edge Plot (Band 4 - 1.4MHz QPSK - Full RB Configuration)

FCC ID: ZNFX525WA	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🚯 LG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dega 07 of 170	
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#Res BW 16 kHz	#VBW 56 kHz	Sweep	6.667 ms (1001 pts)	
Center 1.780000 GHz	MURINE COLUM		Span 4.000 MHz	Log <u>Li</u>
				Scale Typ
es 11				Freq Offse 0 H
25.11 45.11		hump	martine.	CF Ste 400,000 kH Auto Ma
25.0				Stop Fre 1.782000000 GH
5.0			DL 1 13 00 0004	1.778000000 GH
500	many			Start Fre
15.0				Center Fre 1.78000000 GH
10 dBidiy Ref 25.00 dBm		Mkr	1 1.780 000 GHz -32.565 dBm	Auto Tun
	PNO: Wide C Trig: Free Run IFGein:Low Atten: 36 dB	#Avg Type: RMS	TRACE 2 2 4 4 1 TVPE A MINIMUM DET A NINA NIN	Frequency
RL NF 20.0 AC	conuc sense out	and the second second	03:40:07 PM Jun 06, 2019	ANDOLOUM

Plot 7-131. Upper Band Edge Plot (Band 66 - 1.4MHz QPSK - Full RB Configuration)



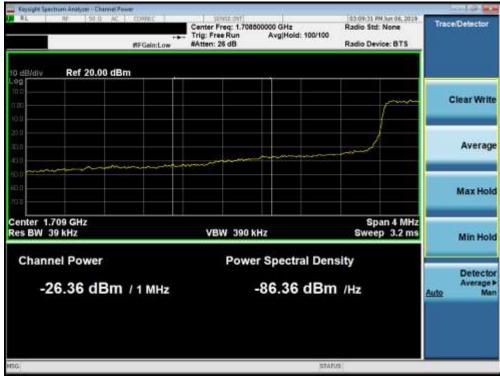
Plot 7-132. Upper Extended Band Edge Plot (Band 66 - 1.4MHz QPSK - Full RB Configuration)

FCC ID: ZNFX525WA	AVPCTEST	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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RL 11 20.0 AC	PNO: Wide C	Trig: Free Run Atten: 36 dB	#Avg Type: RMS	03:06:04 PM 3ut 06, 2019 TRACE 11 2 1 4 1 Trate A Wommon Det A NIN N M M	Frequency
0 dB/div Ref 25.00 dBm			Mkr	1 1.710 000 GHz -30.79 dBm	Auto Tun
50					Center Fre 1.71000000 GH
5 D0 6 C0			angelangaan series of the seri	and the second	Start Fre 1.708000000 GH
50				D(1, 1200 vBH	Stop Fre 1.712000000 GH
En and the second secon	J. A. S. M. S.	and the second			CF Ste 400.000 kF Auto Ma
÷.1					Freq Offso 0 H
Center 1.710000 GHz				Span 4.000 MHz	Scale Typ
Res BW 36 kHz	#VBW	120 kHz	Sweep	6.667 ms (1001 pts)	

Plot 7-133. Lower Band Edge Plot (Band 66/4 - 3.0MHz QPSK - Full RB Configuration)



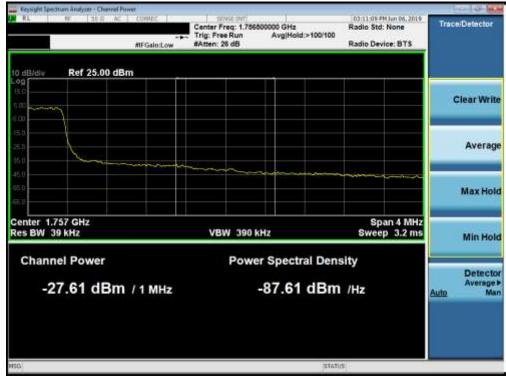
Plot 7-134. Lower Extended Band Edge Plot (Band 66/4 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFX525WA	APCTEST	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager		
Test Report S/N:	Test Dates:	EUT Type:	Dage 90 of 179		
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	PNO: Wide	Trig: Free Run Atten: 36 dB	#Avg Type: RMS	103(13:03 PM) on 04, 2019 TRACE 10 04, 401 TYPE 05 PM	Frequency
0 dBidly Ref 25.00 dBm	a t 1 77		Mkr	1.755 000 GHz -32.72 dBm	Auto Tune
15.0					Center Fred 1.755000000 GH
500 may gave of the other states of the stat	an a	-			Start Free 1.753000000 GH
5.0				64.1 - 1.2 (0) - db y	Stop Fre 1.757000000 GH
511 40.0		1 Charles		man man	CF Ste 400,000 kH Auto Ma
					Freq Offse 0 H
Center 1.755000 GHz				Span 4.000 MHz	Scale Typ

Plot 7-135. Upper Band Edge Plot (Band 4 - 3.0MHz QPSK - Full RB Configuration)



Plot 7-136. Upper Extended Band Edge Plot (Band 4 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFX525WA	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🚯 LG	Approved by: Quality Manager
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RL NF 30.0 AC	PNO: Wide	Trig: Free Run Atten: 36 dB	#Avg Typ	e: RMS	TRACE 13 14 A TYPE & SHOWN N DET A N NN N N	Frequency
10 dB/div Ref 25.00 dBm				Mkr	1.780 000 GHz -32.158 dBm	Auto Tune
15.0						Center Free 1.78000000 GH
500	an a	way				Start Free 1.778000000 GH
15,0					DL 1-13 DL dby	Stop Fre 1.782000000 GH
¥11		1				CF Ste 400,000 kH Auto Ma
45.0 英方						Freq Offse 0 H
Center 1.780000 GHz		120 kHz			Span 4.000 MHz 3.667 ms (1001 pts)	Scale Typ

Plot 7-137. Upper Band Edge Plot (Band 66 - 3.0MHz QPSK - Full RB Configuration)



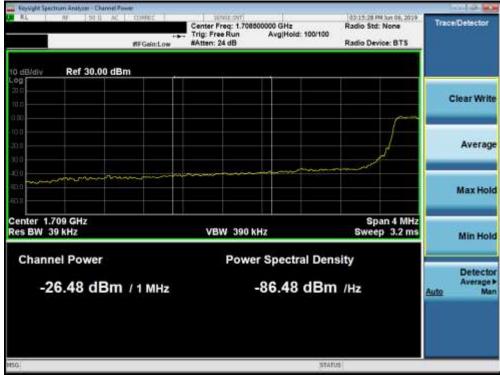
Plot 7-138. Upper Extended Band Edge Plot (Band 66 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFX525WA	AVPCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Degs 01 of 179	
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Plot 7-139. Lower Band Edge Plot (Band 66/4 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-140. Lower Extended Band Edge Plot (Band 66/4 - 5.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFX525WA	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🛞 LG	Approved by: Quality Manager
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RL W 200 AC CONUC PNO: Wide CD IFGein:Low	Trig: Free Run Atten: 36 dB	#Avg Type: RMS	TRACE 1 2 14 1 TRACE 2 14 1 TYPE & MANNA 1 DET & NANNA 1	Frequency
10 dB/dly Ref 25.00 dBm		Mkr	11.755 000 GHz -31.31 dBm	Auto Tune
15.0				Center Free 1.755000000 GH
5.00	7			Start Fre 1.753000000 GH
5.0			(54,1-13,00 offers	Stop Fre 1.75700000 GH
25.0			والمعارب والمروح والاروار والاستراب والمعار	CF Ste 400,000 kH Auto Ma
二,1				Freq Offse 0 H
Center 1.755000 GHz Res BW 62 kHz #VBW 3	220 kHz	Quaan	Span 4.000 MHz 6.667 ms (1001 pts)	Scale Typ Log Li

Plot 7-141. Upper Band Edge Plot (Band 4 - 5.0MHz QPSK - Full RB Configuration)



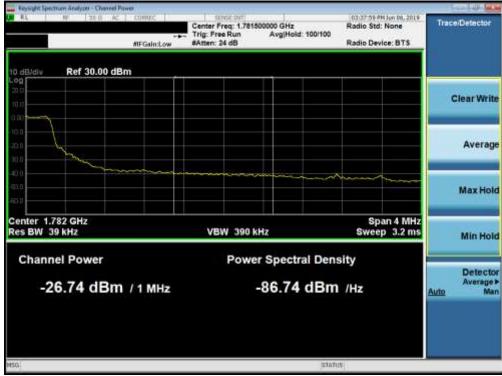
Plot 7-142. Upper Extended Band Edge Plot (Band 4 - 5.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFX525WA	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🛞 LG	Approved by: Quality Manager
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RL NF 30.0 AC	PNO: Wide	Trig: Free Rui Atten: 36 dB	#Avg Typ	e: RMS	103:37:47 PM Jun 00, 2019 TRACE 13 214 1 TyPE & www.www. DET & N M N N	Frequency
0 dBidly Ref 25.00 dBm				Mkr1	1.780 000 GHz -25.259 dBm	Auto Tune
15.0						Center Fre 1.78000000 GH
5.00 million yr mei a far yn mei yn yn ar far yn ar yn a 6.00	yan yan yang dari kang dari kan	Ŋ				Start Fre 1.778000000 GH
150 260		the 1			04.1 -1 1.01 ofber	Stop Fre 1.782000000 GH
26.11		* %,	Warner and the second		er-ne-agreenes	CF Ste 400,000 kH Auto Ma
₩2 8 奈月						Freq Offse 0 H
Center 1.780000 GHz					Span 4.000 MHz	Scale Typ
Res BW 62 kHz	#VBW :	220 kHz		Sweep (667 ms (1001 pts)	

Plot 7-143. Upper Band Edge Plot (Band 66 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-144. Upper Extended Band Edge Plot (Band 66 - 5.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFX525WA	AVPCTEST	MEASUREMENT REPORT (CERTIFICATION)	🚯 LG	Approved by: Quality Manager
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Bm		Mkr	1 1.709 968 GHz -33.35 dBm	Auto Tuni
			الدري ويهي ا	
				Center Fre 1.710000000 GH
	ſ	ang sa gart na partit na bata ba	n n de al par par president de la constant de	Start Fre 1.706000000 GH
			E41; (13.00 offer	Stop Fre 1.714000000 GH
alan da managan da kata	a survey and the second			CF Ste 800.000 kF Auto Mu
				Freq Offs 0 H
			Spap 8 000 MHz	Scale Typ
		#VBW 430 kHz		للمراجع المراجع المراجع Span 8.000 MHz #VBW 430 kHz Sweep 13.33 ms (1001 pts)

Plot 7-145. Lower Band Edge Plot (Band 66/4 - 10.0MHz QPSK - Full RB Configuration)



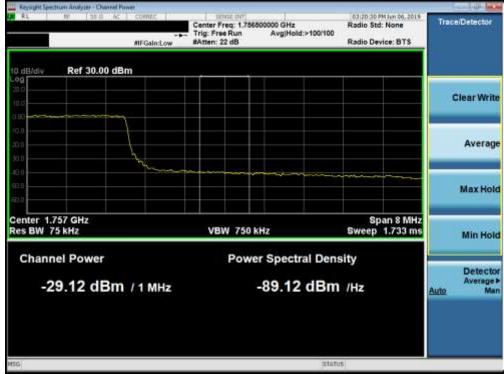
Plot 7-146. Lower Extended Band Edge Plot (Band 66/4 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFX525WA	AVPCTEST	MEASUREMENT REPORT (CERTIFICATION)	🛞 LG	Approved by: Quality Manager
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RL 30 30 AC C	PNO: Wide C	Trig: Free Run Atten: 36 dB	#Avg Type: RI	AS TRAC		Frequency
0 dBidiy Ref 25.00 dBm				Mkr1 1.755 0 -34.	08 GHz 26 dBm	Auto Tune
15.0						Center Fre 1.755000000 GH
6.00 		7				Start Fre 1.751000000 GH
5.0					511-13-01-00-5	Stop Fre 1.75900000 GH
25.11		ha!		****		CFSte 800,000 kH Auto Ma
Ξ.h						Freq Offse 0 H
Center 1.755000 GHz Res BW 120 kHz		430 kHz		Span 8 rep 13.33 ms (.000 MHz	Scale Typ .og L

Plot 7-147. Upper Band Edge Plot (Band 4 - 10.0MHz QPSK - Full RB Configuration)



Plot 7-148. Upper Extended Band Edge Plot (Band 4 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFX525WA	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🚯 LG	Approved by: Quality Manager
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RL NF 30.0 AC 1	PNO: Wide C	Trig: Free Run Atten: 36 dB	#Avg Type: RMS	TRACE 3 214 5 TRACE 3 214 5 SyRE & MANAGEMENT DET & N.N.N.N.M	Frequency
ID dBidly Ref 25.00 dBm			Mkr	1 1.780 000 GHz -29.701 dBm	Auto Tune
15.0					Center Fre
5.00)		7			Start Fre 1.776000000 GH
50 20		1		04.1.1107.00X	Stop Fre 1.78400000 GH
95.0 46.0		No. Noter States		- Territoria a Markagini ang a	CF Ste 800,000 kH Auto Ma
奈月					Freq Offse 0 H
Center 1.780000 GHz Res BW 120 KHz	#VBW			Span 8.000 MHz 13.33 ms (1001 pts)	Scale Typ Log <u>L</u>

Plot 7-149. Upper Band Edge Plot (Band 66 - 10.0MHz QPSK - Full RB Configuration)



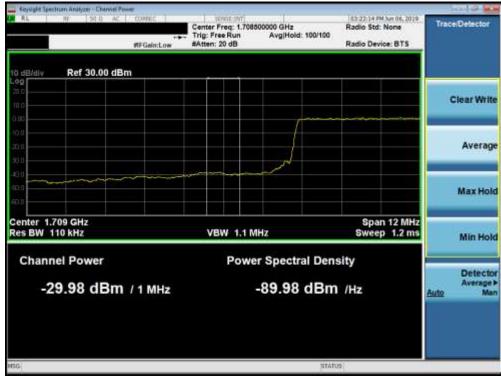
Plot 7-150. Upper Extended Band Edge Plot (Band 66 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFX525WA	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🚯 LG	Approved by: Quality Manager
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	PNO: Wide ()	Trig: Free Run Atten: 36 dB	#Avg Type: RMS	103:23:02 PM turi 06, 2039 TRACE 11 21 3 4 1 Trave A WARMANN DOT A N M H N M	Frequency
0 dB/dly Ref 25.00 dBm			Mkr	1 1.709 976 GHz -34.52 dBm	Auto Tune
15 D					Center Fred 1.71000000 GH
5 IIO 6.00					Start Free 1.704000000 GH
50				Dut 12.00 uBw	Stop Fre 1.716000000 GH
E1	- juma	VN			CF Ste 1.200000 MH Auto Ma
₩					Freq Offse 0 H
Center 1.710000 GHz				Span 12.00 MHz	Scale Type Log <u>Li</u> e

Plot 7-151. Lower Band Edge Plot (Band 66/4 - 15.0MHz QPSK - Full RB Configuration)



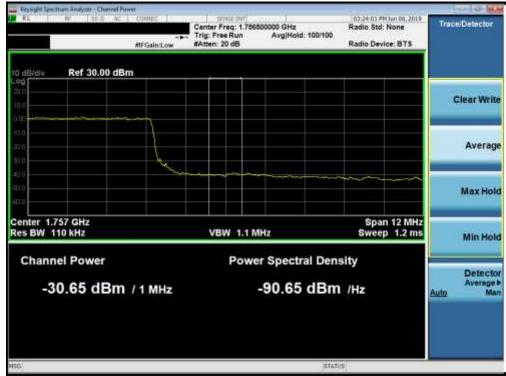
Plot 7-152. Lower Extended Band Edge Plot (Band 66/4 - 15.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFX525WA	AVPCTEST	MEASUREMENT REPORT (CERTIFICATION)	💽 LG	Approved by: Quality Manager
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RL IF 195.0 AC CONUC PNO: Wide IFGeint.tow	Trig: Free Run Atten: 36 dB	#Avg Type: RMS	103;23;47 PM Jun 06, 2019 TRACE 3 2 4 4 Type & source of Det A Nukin N	Frequency
0 dB/dly Ref 25.00 dBm		Mkr	1.755 000 GHz -36.09 dBm	Auto Tune
150				Center Frei 1.75500000 GH
5.00				Start Fre 1.749000000 GH
50 20			64.1 -13.00 yBrs	Stop Fre 1.761000000 GH
95 n	1. 1.	-	******	CF Ste 1.200000 MH Auto Ma
5.1				Freq Offse 0 H
©	3W 620 kHz		Span 12.00 MHz 1.000 ms (1001 pts)	Scale Typ Log Li

Plot 7-153. Upper Band Edge Plot (Band 4 - 15.0MHz QPSK - Full RB Configuration)



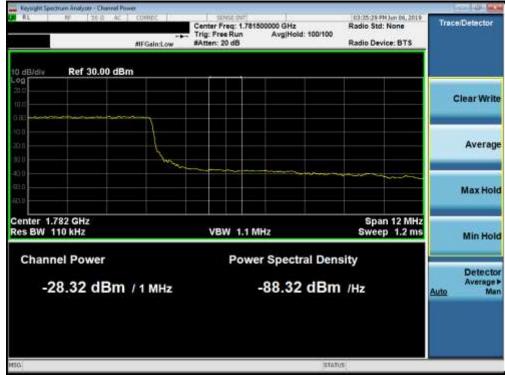
Plot 7-154. Upper Extended Band Edge Plot (Band 4 - 15.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFX525WA	AVPCTEST	MEASUREMENT REPORT (CERTIFICATION)	🚯 LG	Approved by: Quality Manager
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	PNO: Wide	Trig: Free Run Atten: 36 dB	#Avg Type: RMS	TRACE 1 2 1 4 1 TYPE & COMMONW DET A NING A M	Frequency
0 dB/div Ref 25.00 dBm			Mkr	1.780 096 GHz -31.49 dBm	Auto Tun
150					Center Fre 1.78000000 GH
5 D0 6.00					Start Fre 1.774000000 GH
50 80		h		04.1 i 13.00 obis	Stop Fre 1.78600000 GH
96.0		"hul			CF Ste 1.200000 MH Auto Me
た。 第月 					Freq Offse 0 H
Center 1.780000 GHz				Span 12.00 MHz	Scale Typ

Plot 7-155. Upper Band Edge Plot (Band 66 - 15.0MHz QPSK - Full RB Configuration)



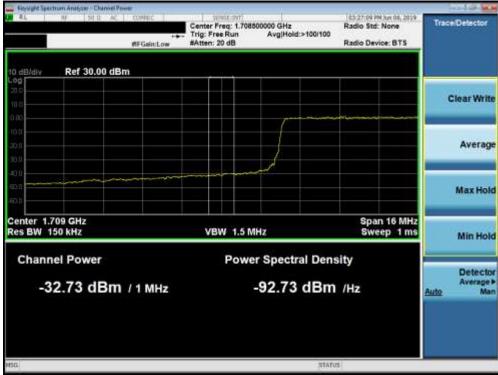
Plot 7-156. Upper Extended Band Edge Plot (Band 66 - 15.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFX525WA	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🛞 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 100 of 179
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	PNO: Wide C	Trig: Free Run Atten: 36 dB	#Avg Type: RMS	03:27:02 PM tun 06, 2019 TRACE 0 7:04 1 Trave 0: Water of the test Det 0: Min to N M	Frequency
0 dB/dly Ref 25.00 dBm			Mkr	1 1.709 856 GHz -36.45 dBm	Auto Tune
15 D					Center Free 1.71000000 GH
5 10 6.00					Start Fre 1.702000000 GH
50				Dut 12.00 uBw	Stop Fre 1.718000000 GH
Ell		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			CF Ste 1.600000 MH Auto Ma
±1					Freq Offse 0 H
Center 1.710000 GHz				Span 16.00 MHz	Scale Type

Plot 7-157. Lower Band Edge Plot (Band 66/4 - 20.0MHz QPSK - Full RB Configuration)



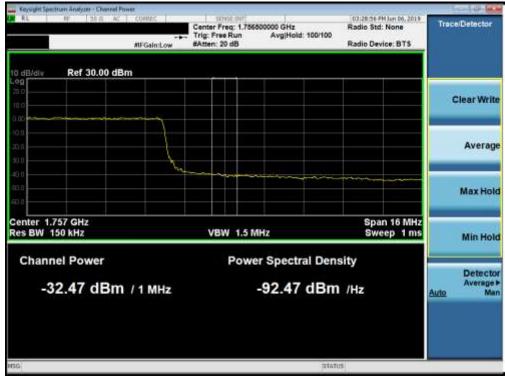
Plot 7-158. Lower Extended Band Edge Plot (Band 66/4 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFX525WA	A PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🛞 LG	Approved by: Quality Manager
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RL IF 120.0 AC CONNEC PNO: Wide C IFGein:Low	Trig: Free Run Atten: 36 dB	#Avg Type: RMS	103:28:45 PM Jun 06, 2019 TRACE 13:0413 Type & www.www. DET & N N.N.N.N	Frequency
10 dB/div Ref 25.00 dBm		Mkr	1.755 000 GHz -35.35 dBm	Auto Tuni
15.0				Center Fre 1.75500000 GH
5.00	7			Start Fre 1.747000000 GH
50 20			04.1 -1 3 00 obs	Stop Fre 1.763000000 GH
95 n	he	-		CF Ste 1.500000 MH <u>Auto</u> Me
루				Freq Offse 0 H
Center 1.755000 GHz Res BW 240 KHz #VBW	820 kHz	Sylaan	Span 16.00 MHz 1.000 ms (1001 pts)	Scale Typ

Plot 7-159. Upper Band Edge Plot (Band 4 - 20.0MHz QPSK - Full RB Configuration)



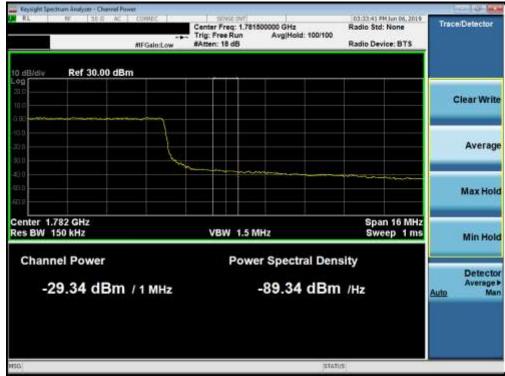
Plot 7-160. Upper Extended Band Edge Plot (Band 4 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFX525WA	A PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🛞 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 102 of 179
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RL 10 30.0 AC 0	PNO: Wide	Trig: Free Run Atten: 36 dB	#Avg Type: RMS	03:32:34 PM Jun 06, 2019 TRACE 1 3 3 4 4 Type 5 commonly Det A N M N N N	Frequency
ID dBidly Ref 25.00 dBm			Mkr	1.780 016 GHz -32.20 dBm	Auto Tune
15.0					Center Free 1.78000000 GH
6.00 6.00	and the second				Start Fre 1.772000000 GH
5.0				04.1 i 13.00 obo	Stop Fre 1.788000000 GH
25.11		he'		and the second	CFSte 1.500000 MH Auto Ma
₩.					Freq Offse 0 H
Center 1.780000 GHz Res BW 240 KHz		820 kHz		Span 16.00 MHz 1.000 ms (1001 pts)	Scale Typ

Plot 7-161. Upper Band Edge Plot (Band 66 - 20.0MHz QPSK - Full RB Configuration)

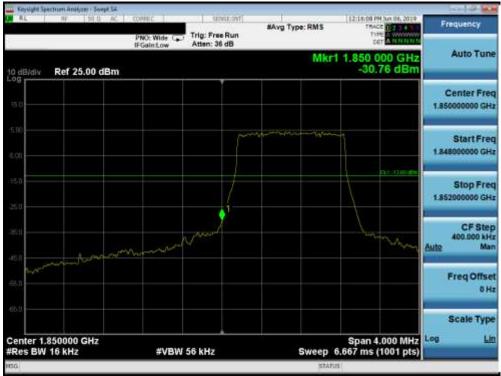


Plot 7-162. Upper Extended Band Edge Plot (Band 66 - 20.0MHz QPSK - Full RB Configuration)

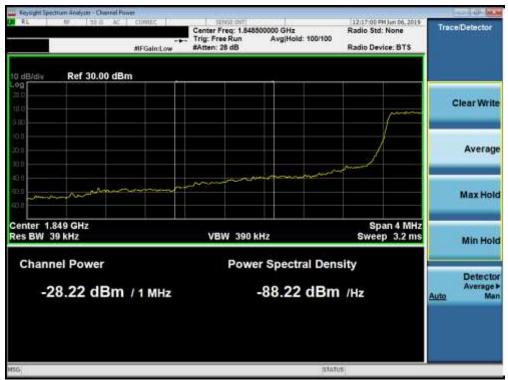
FCC ID: ZNFX525WA	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🚯 LG	Approved by: Quality Manager
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Band 2



Plot 7-163. Lower Band Edge Plot (Band 2 - 1.4MHz QPSK - Full RB Configuration)



Plot 7-164. Lower Extended Band Edge Plot (Band 2 - 1.4MHz QPSK - Full RB Configuration)

FCC ID: ZNFX525WA	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🚯 LG	Approved by: Quality Manager
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RL NF 30.0 AC	PNO: Wide 😱 Trig: Free Run	#Avg Type: RMS	12:17:55 PM Jun 06, 2019 TRACE 1 2 2 4 5 TYPE A WARNER	Frequency
0 dB/div Ref 25.00 dBm	IFGain:Low Atten: 36 dB	Mkr	1 1.910 000 GHz -33.564 dBm	Auto Tun
50				Center Fre 1.91000000 GH
5 U0	mmenen			Start Fre 1,908000000 GH
5.0			54.1 1100 dby	Stop Fre 1.912000000 GH
En and and a start	- In	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		CF Ste 400,000 kF Auto Ma
20 D			- man and a second	Freq Offso 0 H
65.11				Scale Typ
Center 1.910000 GHz Res BW 16 kHz	#VBW 56 kHz	Sweep	Span 4.000 MHz 6.667 ms (1001 pts)	Log L

Plot 7-165. Upper Band Edge Plot (Band 2 - 1.4MHz QPSK - Full RB Configuration)



Plot 7-166. Upper Extended Band Edge Plot (Band 2 - 1.4MHz QPSK - Full RB Configuration)

FCC ID: ZNFX525WA	AVPCTEST	MEASUREMENT REPORT (CERTIFICATION)	🚯 LG	Approved by: Quality Manager
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