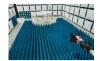


PCTEST ENGINEERING LABORATORY, INC.

7185 Oakland Mills Road, Columbia, MD 21046 USA Tel. 410.290.6652 / Fax 410.290.6654 http://www.pctest.com



MEASUREMENT REPORT LTE and n41 (ENDC)

Applicant Name:

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

Date of Testing: 11/19/2018 – 1/17/2019 Test Site/Location: PCTEST Lab. Columbia, MD, USA Test Report Serial No.: 1M1811230205-03-R1.ZNF

FCC ID:

ZNFV450PM

Certification

APPLICANT:

LG Electronics USA, Inc.

Application Type: Model: Additional Model(s): EUT Type: FCC Classification: FCC Rule Part(s): Test Procedure(s):

LM-V450PM LMV450PM, V450PM Portable Handset PCS Licensed Transmitter Held to Ear (PCE) 22, 24, & 27 ANSI C63.26-2015, ANSI/TIA-603-E-2016, KDB 971168 D01 v03r01, KDB 648474 D03 v01r04

This revised Test Report (S/N: 1M1811230205-03-R1.ZNF) supersedes and replaces the previously issued test report (S/N: 1M1811230205-03.ZNF) 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.

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

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

Randy Ortanez President



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MEASUREMENT REPORT FCC Part 22, 24, & 27



			E	RP		
Mode	FCC Rule Part	Tx Frequency (MHz)	Max. Power (W)	Max. Power (dBm)	Emission Designator	Modulation
LTE Band 71	27	665.5 - 695.5	0.048	16.77	4M54G7D	QPSK
LTE Band 71	27	665.5 - 695.5	0.040	16.07	4M53W7D	16QAM
LTE Band 71	27	665.5 - 695.5	0.033	15.15	4M53W7D	64QAM
LTE Band 71	27	668 - 693	0.055	17.38	9M02G7D	QPSK
LTE Band 71	27	668 - 693	0.047	16.68	9M03W7D	16QAM
LTE Band 71	27	668 - 693	0.040	15.98	9M04W7D	64QAM
LTE Band 71	27	670.5 - 690.5	0.052	17.14	13M5G7D	QPSK
LTE Band 71	27	670.5 - 690.5	0.043	16.34	13M5W7D	16QAM
LTE Band 71	27	670.5 - 690.5	0.035	15.45	13M5W7D	64QAM
LTE Band 71	27	673 - 688	0.057	17.52	18M1G7D	QPSK
LTE Band 71	27	673 - 688	0.047	16.76	18M1W7D	16QAM
LTE Band 71	27	673 - 688	0.039	15.87	18M0W7D	64QAM
LTE Band 12	27	699.7 - 715.3	0.063	17.98	1M10G7D	QPSK
LTE Band 12	27	699.7 - 715.3	0.052	17.14	1M10W7D	16QAM
LTE Band 12	27	699.7 - 715.3	0.043	16.33	1M10W7D	64QAM
LTE Band 12	27	700.5 - 714.5	0.060	17.81	2M73G7D	QPSK
LTE Band 12	27	700.5 - 714.5	0.050	16.98	2M71W7D	16QAM
LTE Band 12	27	700.5 - 714.5	0.040	15.97	2M72W7D	64QAM
LTE Band 12/17	27	701.5 - 713.5	0.062	17.94	4M56G7D	QPSK
LTE Band 12/17	27	701.5 - 713.5	0.053	17.23	4M54W7D	16QAM
LTE Band 12/17	27	701.5 - 713.5	0.041	16.12	4M55W7D	64QAM
LTE Band 12/17	27	704 - 711	0.063	18.01	9M02G7D	QPSK
LTE Band 12/17	27	704 - 711	0.053	17.23	9M03W7D	16QAM
LTE Band 12/17	27	704 - 711	0.041	16.15	9M01W7D	64QAM
LTE Band 13	27	779.5 - 784.5	0.100	20.01	4M55G7D	QPSK
LTE Band 13	27	779.5 - 784.5	0.086	19.33	4M58W7D	16QAM
LTE Band 13	27	779.5 - 784.5	0.070	18.44	4M55W7D	64QAM
LTE Band 13	27	782	0.083	19.18	9M02G7D	QPSK
LTE Band 13	27	782	0.067	18.27	9M03W7D	16QAM
LTE Band 13	27	782	0.056	17.52	9M04W7D	64QAM
LTE Band 26/5	22H	824.7 - 848.3	0.128	21.06	1M08G7D	QPSK
LTE Band 26/5	22H	824.7 - 848.3	0.106	20.24	1M10W7D	16QAM
LTE Band 26/5	22H	824.7 - 848.3	0.090	19.56	1M10W7D	64QAM
LTE Band 26/5	22H	825.5 - 847.5	0.130	21.14	2M71G7D	QPSK
LTE Band 26/5	22H	825.5 - 847.5	0.109	20.36	2M71W7D	16QAM
LTE Band 26/5	22H	825.5 - 847.5	0.090	19.53	2M72W7D	64QAM
LTE Band 26/5	22H	826.5 - 846.5	0.133	21.23	4M55G7D	QPSK
LTE Band 26/5	22H	826.5 - 846.5	0.109	20.38	4M54W7D	16QAM
LTE Band 26/5	22H	826.5 - 846.5	0.095	19.76	4M54W7D	64QAM
LTE Band 26/5	22H	829 - 844	0.136	21.34	9M02G7D	QPSK
LTE Band 26/5	22H	829 - 844	0.112	20.50	9M04W7D	16QAM
LTE Band 26/5	22H	829 - 844	0.096	19.83	9M00W7D	64QAM
LTE Band 26	22H	831.5 - 841.5	0.132	21.22	13M5G7D	QPSK
LTE Band 26	22H	831.5 - 841.5	0.108	20.32	13M5W7D	16QAM
LTE Band 26	22H	831.5 - 841.5	0.087	19.42	13M5W7D	64QAM

EUT Overview (<1GHz)

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Mode	FCC Rule Part	Tx Frequency (MHz)		RP Max. Pow er (dBm)	Emission Designator	Modulation
LTE Band 4/66	27	1710.7 - 1779.3	0.095	19.80	1M08G7D	QPSK
LTE Band 4/66	27	1710.7 - 1779.3	0.078	18.91	1M09W7D	16QAM
LTE Band 4/66	27	1710.7 - 1779.3	0.064	18.05	1M11W7D	64QAM
LTE Band 4/66	27	1711.5 - 1778.5	0.100	19.99	2M72G7D	QPSK
LTE Band 4/66	27	1711.5 - 1778.5	0.084	19.23	2M71W7D	16QAM
LTE Band 4/66	27	1711.5 - 1778.5	0.072	18.59	2M72W7D	64QAM
LTE Band 4/66	27	1712.5 - 1777.5	0.098	19.92	4M56G7D	QPSK
LTE Band 4/66	27	1712.5 - 1777.5	0.079	19.00	4M53W7D	16QAM
LTE Band 4/66	27	1712.5 - 1777.5	0.063	17.96	4M54W7D	64QAM
LTE Band 4/66	27	1715 - 1775	0.109	20.37	9M02G7D	QPSK
LTE Band 4/66	27	1715 - 1775	0.090	19.56	9M00W7D	16QAM
LTE Band 4/66	27	1715 - 1775	0.070	18.44	9M04W7D	64QAM
LTE Band 4/66	27	1717.5 - 1772.5	0.109	20.36	13M5G7D	QPSK
LTE Band 4/66	27	1717.5 - 1772.5	0.088	19.45	13M5W7D	16QAM
LTE Band 4/66	27	1717.5 - 1772.5	0.068	18.33	13M6W7D	64QAM
LTE Band 4/66	27	1720 - 1770	0.101	20.03	18M0G7D	QPSK
LTE Band 4/66	27	1720 - 1770	0.080	19.04	18M1W7D	16QAM
LTE Band 4/66	27	1720 - 1770	0.066	18.20	18M1W7D	64QAM
LTE Band 2/25	24E	1850.7 - 1914.3	0.114	20.56	1M09G7D	QPSK
LTE Band 2/25	24E	1850.7 - 1914.3	0.094	19.73	1M10W7D	16QAM
LTE Band 2/25	24E	1850.7 - 1914.3	0.072	18.59	1M11W7D	64QAM
LTE Band 2/25	24E	1851.5 - 1913.5	0.120	20.78	2M72G7D	QPSK
LTE Band 2/25	24E	1851.5 - 1913.5	0.093	19.70	2M72W7D	16QAM
LTE Band 2/25	24E	1851.5 - 1913.5	0.075	18.73	2M72W7D	64QAM
LTE Band 2/25	24E	1852.5 - 1912.5	0.119	20.75	4M55G7D	QPSK
LTE Band 2/25	24E	1852.5 - 1912.5	0.099	19.94	4M53W7D	16QAM
LTE Band 2/25	24E	1852.5 - 1912.5	0.078	18.91	4M53W7D	64QAM
LTE Band 2/25	24E	1855 - 1910	0.158	21.99	9M02G7D	QPSK
LTE Band 2/25	24E	1855 - 1910	0.128	21.07	9M03W7D	16QAM
LTE Band 2/25	24E	1855 - 1910	0.099	19.93	9M04W7D	64QAM
LTE Band 2/25	24E	1857.5 - 1907.5	0.129	21.11	13M5G7D	QPSK
LTE Band 2/25	24E	1857.5 - 1907.5	0.104	20.16	13M5W7D	16QAM
LTE Band 2/25	24E	1857.5 - 1907.5	0.082	19.12	13M5W7D	64QAM
LTE Band 2/25	24E	1860 - 1905	0.131	21.17	18M0G7D	QPSK
LTE Band 2/25	24E	1860 - 1905	0.104	20.15	18M0W7D	16QAM
LTE Band 2/25	24E	1860 - 1905	0.085	19.27	18M0W7D	64QAM

EUT Overview (Mid Bands)

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			EI	RP		
Mode	FCC Rule Part	Tx Frequency (MHz)	Max. Pow er (W)	Max. Pow er (dBm)	Emission Designator	Modulation
LTE Band 41 (PC2)	27	2498.5 - 2687.5	0.315	24.98	4M53G7D	QPSK
LTE Band 41 (PC2)	27	2498.5 - 2687.5	0.255	24.06	4M51W7D	16QAM
LTE Band 41 (PC2)	27	2498.5 - 2687.5	0.219	23.40	4M51W7D	64QAM
LTE Band 41 (PC2)	27	2501 - 2685	0.321	25.07	8M99G7D	QPSK
LTE Band 41 (PC2)	27	2501 - 2685	0.256	24.08	8M97W7D	16QAM
LTE Band 41 (PC2)	27	2501 - 2685	0.225	23.53	9M01W7D	64QAM
LTE Band 41 (PC2)	27	2503.5 - 2682.5	0.298	24.74	13M5G7D	QPSK
LTE Band 41 (PC2)	27	2503.5 - 2682.5	0.251	24.00	13M5W7D	16QAM
LTE Band 41 (PC2)	27	2503.5 - 2682.5	0.213	23.29	13M5W7D	64QAM
LTE Band 41 (PC2)	27	2506 - 2680	0.298	24.74	18M0G7D	QPSK
LTE Band 41 (PC2)	27	2506 - 2680	0.270	24.32	18M0W7D	16QAM
LTE Band 41 (PC2)	27	2506 - 2680	0.222	23.47	18M0W7D	64QAM
n41	27	2516-2670	0.159	22.01	38M6G7D	QPSK
n41	27	2516-2670	0.148	21.69	38M7W7D	16QAM
n41	27	2516-2670	0.056	17.48	38M4W7D	64QAM
n41	27	2526-2659.98	0.134	21.27	57M8G7D	QPSK
n41	27	2526-2659.98	0.119	20.77	57M9W7D	16QAM
n41	27	2526-2659.98	0.063	18.00	57M6W7D	64QAM

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: ZNFV450PM**. The test data contained in this report pertains only to the emissions due to the EUT's LTE and n41(ENDC) function.

Test Device Serial No.: 00083, 00084, 00054, 00053

2.2 Device Capabilities

This device contains the following capabilities:

850/1900 CDMA/EvDO Rev0/A, 1x Advanced (BC0, BC1, BC10), 850/1900 GPRS/EDGE, 850/1700/1900 WCDMA/HSPA, Multi-band LTE, 802.11b/g/n/ac WLAN, 802.11a/n/ac UNII, Bluetooth (1x, EDR, LE), NFC, ENDC + n41

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 26 (814.7 – 849 MHz) overlaps the entire frequency range of LTE Band 5 (824 – 849 MHz). Therefore, test data provided in this report covers Band 5 and the portion of Band 26 subject to Part 22.

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.

LTE Band 25 (1850 - 1915 MHz) overlaps the entire frequency range of LTE Band 2 (1850 - 1910 MHz). Therefore, test data provided in this report covers Band 2 as well as Band 25.

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.

This device supports wireless charging capability and, thus, is subject to the test requirements of KDB 648474 D03 v01r04. Additional radiated spurious emission measurements were performed with the EUT lying flat on an authorized wireless charging pad (WCP) FCC ID: PWMA-W815A while operating under normal conditions in a simulated call or data transmission configuration. The worst case radiated emissions data is shown in this report.

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

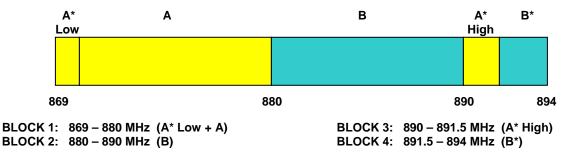
Two paired channels of 11 megahertz each are available for assignment in Block C in the 746-757 MHz and 776-787 MHz bands. In the event that no licenses for two channels in this Block C are assigned based on the results of the first auction in which such licenses were offered because the auction results 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

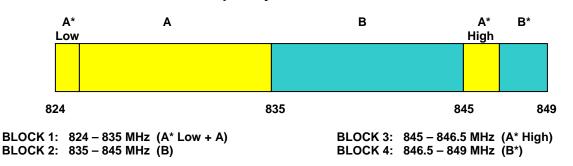
<u>698-746 MHz band</u>. The following frequencies are available for licensing pursuant to this part in the 698-746 MHz band: (1) Three paired channel blocks of 12 megahertz each are available for assignment as follows:

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

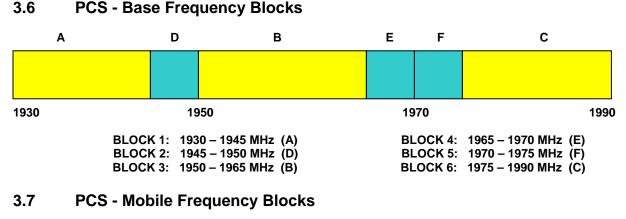


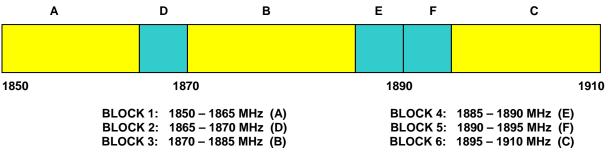
3.5 Cellular - Mobile Frequency Blocks



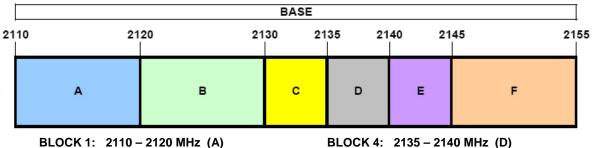
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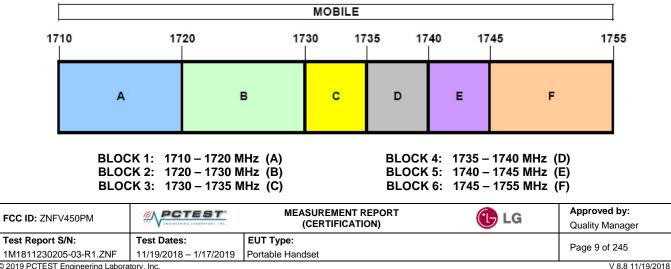


3.8 **AWS - Base Frequency Blocks**



BLOCK 2: 2120 - 2130 MHz (B) BLOCK 3: 2130 - 2135 MHz (C) BLOCK 5: 2140 - 2145 MHz (E) BLOCK 6: 2145 - 2155 MHz (F)

3.9 **AWS - Mobile Frequency Blocks**



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3.10 WCS – Mobile/Base Frequency Blocks

The following frequencies are available for WCS in the 2305-2320 MHz and 2345-2360 MHz bands:

BLOCK 1: 2305-2310 and 2350-2355 MHz (A)

BLOCK 2: 2310-2315 and 2355-236 MHz (B)

BLOCK 3: 2315-2320 MHz (C)

BLOCK 4: 2345-2350 MHz (D)

3.11 BRS/EBS Frequency Block

	_	_			_	F			Spe MH		um					_		U	npai (Sp MH:		rum			~				F		ed \$	-	ctru z)	Im				_
	A1	1	2	A3	A4	AS	Aß	A7	AS	A 9	A10	A11	A12	A13	A14	81	82	83	B4	85	86	87	88	B9	B10	A1'	AŻ	A3'	A4'	A5'	A6'	A7	A 8'	A9'	A10'	A11'	A12	A13' A	1 54'
	ŀ	Ą		E	3	0	C		D	•	Ξ	•	=	0	3	RB *		ł	Η				L		RB *	/	٩'	E	3'	0	2')'	E	;	F	-,	G	?
2500	224		2510		0000	0707	0010	2530	0000	0407	00	0007	0000	0007	0670	0107	0/07				2595				6192	0707	0630	0007	0100	10402	0.00	0007	0000	0997	0230	0107	089C	0007	2690

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3.12 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.

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 + 10log₁₀(Power [Watts]). For Band 7 and 41, 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 + 10log₁₀(Power [Watts]). For Band 30, the calculated P_d levels are compared to the absolute spurious emission limit of -40dBm which is equivalent to the required minimum attenuation of 70 + 10log₁₀(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
-	LTx2	Licensed Transmitter Cable Set	1/23/2018	Annual	1/23/2019	LTx2
Agilent	N9020A	MXA Signal Analyzer	1/24/2018	Annual	1/24/2019	US46470561
Agilent	N9030A	PXA Signal Analyzer (44GHz)	5/25/2018	Annual	5/25/2019	MY52350166
Anritsu	MT8821C	Radio Communication Analyzer	7/24/2018	Annual	7/24/2019	6201664756
Com-Power	AL-130	9kHz - 30MHz Loop Antenna	10/10/2017	Biennial	10/10/2019	121034
Com-Power	PAM-103	Pre-Amplifier (1-1000MHz)	9/17/2018	Annual	9/17/2019	441119
Emco	3115	Horn Antenna (1-18GHz)	3/28/2018	Biennial	3/28/2020	9704-5182
Espec	ESX-2CA	Environmental Chamber	3/28/2018	Annual	3/28/2019	17620
ETS Lindgren	3117	1-18 GHz DRG Horn (Medium)	12/1/2016	Biennial	12/1/2018	125518
ETS Lindgren	3164-08	Quad Ridge Horn Antenna	3/28/2018	Biennial	3/28/2020	128337
Huber + Suhner	Sucoflex 102A	40GHz Radiated Cable Set	1/23/2018	Annual	1/23/2019	251425001
Keysight Technologies	N9030A	3Hz-44GHz PXA Signal Analyzer	3/20/2018	Annual	3/20/2019	MY49430494
Mini Circuits	PWR-SEN-4GHS	USB Power Sensor	3/30/2018	Annual	3/30/2019	11401010036
Mini Circuits	TVA-11-422	RF Power Amp	N/A		N/A	QA1317001
Mini-Circuits	SSG-4000HP	Synthesized Signal Generator	N/A		N/A	11208010032
Rohde & Schwarz	CMW500	Radio Communication Tester	9/25/2018	Annual	9/25/2019	102060
Rohde & Schwarz	ESU26	EMI Test Receiver (26.5GHz)	5/21/2018	Annual	5/21/2019	100342
Rohde & Schwarz	ESU40	EMI Test Receiver (40GHz)	8/9/2018	Annual	8/9/2019	100348
Rohde & Schwarz	SFUNIT-Rx	Shielded Filter Unit	6/18/2018	Annual	6/18/2019	102134
Rohde & Schwarz	SFUNIT-Rx	Shielded Filter Unit	6/25/2018	Annual	6/25/2019	102133
Rohde & Schwarz	TC-TA18	Cross Polarized Vivaldi Test Antenna	7/16/2018	Biennial	7/16/2020	101073
Rohde & Schwarz	TS-PR26	18-26.5 GHz Pre-Amplifier	1/24/2018	Annual	1/24/2019	100040
Seekonk	NC-100	Torque Wrench	12/28/2017	Annual	12/28/2018	N/A
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:	ZNFV450PM
FCC Classification:	PCS Licensed Transmitter Held to Ear (PCE)
Mode(s):	LTE and n41 (ENDC)

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
2.1049	Occupied Bandwidth	N/A			Section 7.2
2.1051 2.917(a) 24.238(a) 27.53(c) 27.53(g) 27.53(h)	Out of Band Emissions	> 43 + 10log ₁₀ (P[Watts]) at Band Edge and for all out-of- band emissions		PASS	Section 7.3, 7.4
27.53(m)	Out of Band Emissions	Undesirable emissions must meet the limits detailed in 27.53(m)	- CONDUCTED		Section 7.3, 7.4
27.53(a)	Out of Band Emissions	Undesirable emissions must meet the limits detailed in 27.53(a)			Section 7.3, 7.4
24.232(d)	Peak-Average Ratio	< 13 dB			Section 7.5
2.1046	Transmitter Conducted Output Power	N/A			See RF Exposure Report
2.1055 22.355 24.235 27.54	Frequency Stability <a>< 2.5 ppm (Part 22) and fundamental emissions stay within authorized frequency block (Part 24, 27)			Section 7.11	

Table 7-1. Summary of Conducted Test Results

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FCC Part Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
22.913(a)(5)	Effective Radiated Power / Equivalent Isotropic Radiated Power (Band 26/5)	< 7 Watts max. ERP			Section 7.6
27.50(b)(10) 27.50(c)(10)	Effective Radiated Power / Equivalent Isotropic Radiated Power (Band 71, 12/17, 13)	< 3 Watts max. ERP			Section 7.6
24.232(c) 27.50(h)(2)	Equivalent Isotropic Radiated Power (Band 25/2, 41)	< 2 Watts max. EIRP			Section 7.6
27.50(d)(4)	Equivalent Isotropic Radiated Power (Band 66/4)	< 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)	Undesirable Emissions	> 43 + 10log ₁₀ (P[Watts]) for all out-of-band emissions			Section 7.9
27.53(f)	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 7.9
27.53(m)	Undesirable Emissions	Undesirable emissions must meet the limits detailed in 27.53(m)			Section 7.9

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, 0, 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 71 - 5.0MHz QPSK - Full RB Configuration)

Keysight Spectrum Analyzer - Occupied BW RL RF 50 Ω AC		SENSE:INT er Freq: 680.500000 MH Free Run Avg	iz Hold: 100/100	09:59:45 AM Radio Std: N		Trace/Detecto
10 dB/div Ref 30.00 dBm		en: 36 dB		Radio Devic	e: BTS	
• 9 20.0 10.010.010.010.010.010.010.010.010.010.010.010.010.010.010.010.010.010.010.0		man and a second se	~~			Clear Wr
0.00 0.00 0.00			L	Annesson	****	Avera
0.0						Max Ho
enter 680.5 MHz es BW 120 kHz		#VBW 390 kHz		Swee	2.5 MHz p 1 ms	Min Ho
Occupied Bandwidth		Total Power	27.8	8 dBm		
4.3 Transmit Freq Error	5290 MHz -5.557 kHz	% of OBW P	ower 99	9.00 %	A	Detec Pea uto <u>M</u>
x dB Bandwidth	4.966 MHz	x dB	-26.	.00 dB		
G			STATU	IS		

Plot 7-2. Occupied Bandwidth Plot (Band 71 - 5.0MHz 16-QAM - Full RB Configuration)

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Plot 7-3. Occupied Bandwidth Plot (Band 71 - 5.0MHz 64-QAM - Full RB Configuration)



Plot 7-4. Occupied Bandwidth Plot (Band 71 - 10.0MHz QPSK - Full RB Configuration)

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Keysight Spectrum Analyzer - Occupied B ¹					
KM RL RF 50Ω AC	Center	SENSE:INT r Freq: 680.500000 MHz	Radio Std	MJan 10, 2019 : None	Trace/Detector
		Free Run Avg Hold n: 36 dB	: 100/100 Radio Dev	vice: BTS	
10 dB/div Ref 40.00 dBr	m				
Log 30.0					
20.0	an Bull Burgers	an marth all and a second			Clear Wri
10.0					
0.00			<u>\</u>		
-10.0	and an and a second sec		human		Avera
-20.0 Auguntu home man				Man Junio and Providence	
-30.0					
-40.0					Max Ho
Center 680.5 MHz Res BW 240 kHz	#1	VBW 750 kHz		n 25 MHz eep 1 ms	
Res DW 240 KHZ		VDVV 750 KHZ		cep mis	Min Ho
Occupied Bandwid	th	Total Power	31.9 dBm		
9.	.0346 MHz				Detect
Transmit Freq Error	520.67 kHz	% of OBW Powe	er 99.00 %		Peal Auto Ma
x dB Bandwidth	9.883 MHz	x dB	-26.00 dB		
	9.003 MITZ	Xub	-20.00 UB		
MSG			STATUS		

Plot 7-5. Occupied Bandwidth Plot (Band 71 - 10.0MHz 16-QAM - Full RB Configuration)



Plot 7-6. Occupied Bandwidth Plot (Band 71 - 10.0MHz 64-QAM - Full RB Configuration)

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🔤 Keysight Spectrum Analyzer - Occupied BW					- ē 🗾	
ΙΧ΄ RL RF 50 Ω AC	Center	SENSE:INT Freq: 680.500000 MHz free Run Avg Hol	10:29:51 / Radio Sto d: 100/100	AM Jan 10, 2019 d: None	Trace/Detector	
	#IFGain:Low #Atten: 36 dB Radio Device: BTS					
10 dB/div Ref 40.00 dBm						
Log 30.0						
20.0					Clear Write	
10.0	monor	hand a second se	1			
0.00					A	
-10.0	want		warden and warden and the second	Manne	Average	
-20.0						
-30.0						
-40.0					Max Hold	
-50.0						
				07.5 8411-		
Center 680.5 MHz Res BW 360 kHz	#	VBW 1.1 MHz		37.5 MHz eep 1 ms		
11C3 DW 300 1112	n n	4044 1.1 IVII 12		cep mis	Min Hold	
Occupied Bandwidt	h	Total Power	33.3 dBm			
	.513 MHz				Detecto	
15					Peak	
Transmit Freq Error	515.58 kHz	% of OBW Pow	ver 99.00 %		Auto <u>Mar</u>	
x dB Bandwidth	14.83 MHz	x dB	-26.00 dB			
MSG			STATUS			

Plot 7-7. Occupied Bandwidth Plot (Band 71 - 15.0MHz QPSK - Full RB Configuration)



Plot 7-8. Occupied Bandwidth Plot (Band 71 - 15.0MHz 16-QAM - Full RB Configuration)

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Keysight Spectrum Analyzer - Occupied B	W				
LXURL RF 50ΩAC		SENSE:INT er Freq: 680.500000 MHz Free Run Avg Hold	Radio Sto	M Jan 10, 2019 I: None	Trace/Detector
		en: 36 dB	Radio De	vice: BTS	
10 dB/div Ref 40.00 dB	m				
Log 30.0					
20.0					Clear Write
10.0	manharmon	when a for the second second second			
0.00					
	/				Average
-10.0 -20.0 Allan Marine Marine	bardforman 100		In man man and a second and as second and a	who who will be	Averuge
-30.0					
-40.0					Max Hold
-50.0					
Center 680.5 MHz			Span	37.5 MHz	
Res BW 360 kHz	i	#VBW 1.1 MHz	Sw	eep 1 ms	Min Hold
Occupied Departuria	415	Total Power	31.2 dBm		
Occupied Bandwid		Total Fower	31.2 UDIII		
1	3.524 MHz				Detector Peak▶
Transmit Freq Error	523.15 kHz	% of OBW Pow	er 99.00 %		Auto <u>Man</u>
x dB Bandwidth	14.72 MHz	x dB	-26.00 dB		
MSG			STATUS		

Plot 7-9. Occupied Bandwidth Plot (Band 71 - 15.0MHz 64-QAM - Full RB Configuration)



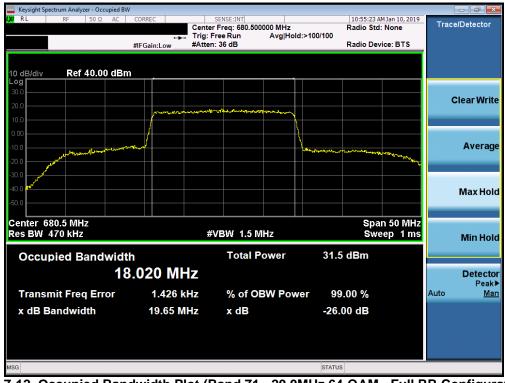
Plot 7-10. Occupied Bandwidth Plot (Band 71 - 20.0MHz QPSK - Full RB Configuration)

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Keysight Spectrum Analyzer - Occupied BW							- • •
LXI RL RF 50Ω AC	CORREC	SENSE:INT Center Freg: 680.50	0000 MHz	10:55:02 Radio Ste	AM Jan 10, 2019 d: None	Trace	/Detector
	+	Talas France Bran	Avg Hold:>		vice: BTS		
	#IFGain:Low	#Atten: 30 db		Radio De	VICE. DT3		
10 dB/div Ref 40.00 dBm							
Log							
30.0						c	lear Write
20.0	mour	moundand	money				
10.0							
0.00	/		1				A
-10.0	No. of			ala a far a second and a second	- Allow Marco		Average
-20.0					· 144		
-30.0							
-40.0							Max Hold
-50.0							
Center 680.5 MHz					an 50 MHz		
Res BW 470 kHz		#VBW 1.5 N	/Hz	Sw	eep 1 ms		Min Hold
Occupied Bandwidt	h	Total F	ower	32.3 dBm			
				0_10 0			
18	.053 MI	72					Detector Peak▶
Transmit Freq Error	-5.653 I	kHz % of O	BW Powe	r 99.00 %		Auto	Man
x dB Bandwidth	19.74 N	IHz xdB		-26.00 dB			
MSG				STATUS			

Plot 7-11. Occupied Bandwidth Plot (Band 71 - 20.0MHz 16-QAM - Full RB Configuration)



Plot 7-12. Occupied Bandwidth Plot (Band 71 - 20.0MHz 64-QAM - Full RB Configuration)

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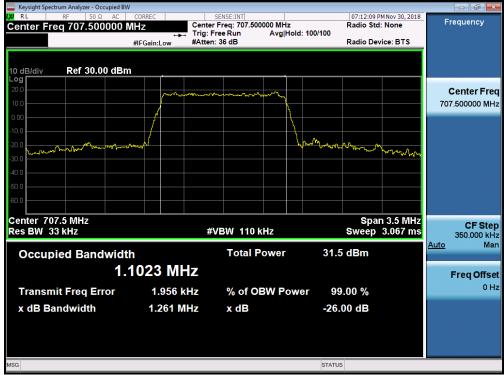
Plot 7-13. Occupied Bandwidth Plot (Band 12 - 1.4MHz QPSK - Full RB Configuration)



Plot 7-14. Occupied Bandwidth Plot (Band 12 - 1.4MHz 16-QAM - Full RB Configuration)

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Plot 7-15. Occupied Bandwidth Plot (Band 12 - 1.4MHz 64-QAM - Full RB Configuration)



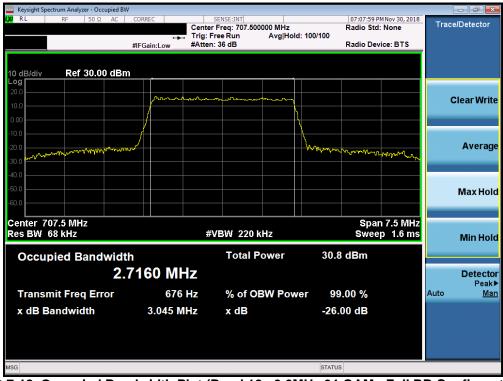
Plot 7-16. Occupied Bandwidth Plot (Band 12 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFV450PM		MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dage 25 of 245	
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Keysight Spectrum Analyzer - Occupied BW						d X
LX/ RL RF 50 Ω AC C	Center	SENSE:INT r Freq: 707.500000 MHz Free Run Avg Hol		7:47 PM Nov 30, 2018 o Std: None	Trace/D	etector
#1		n: 36 dB		o Device: BTS		
10 dB/div Ref 30.00 dBm						
20.0						
10.0	mann	mmmm			Cle	ar Write
0.00						
-10.0			1 I			
	/		L.			Average
many property and a second second			mont	monoranter		weruge
-30.0						
-40.0						
-50.0					м	lax Hold
-60.0						_
Center 707.5 MHz				Span 7.5 MHz		
Res BW 68 kHz	#	VBW 220 kHz	S	weep 1.6 ms	N	lin Hold
Occupied Bandwidth		Total Power	31.8 dBr	n		
			01.0 001			
2.7	145 MHz					Detector Peak►
Transmit Freq Error	-2.053 kHz	% of OBW Pow	ver 99.00 9	6	Auto	Man
x dB Bandwidth	3.005 MHz	x dB	-26.00 d	В		
MSG			STATUS			

Plot 7-17. Occupied Bandwidth Plot (Band 12 - 3.0MHz 16-QAM - Full RB Configuration)



Plot 7-18. Occupied Bandwidth Plot (Band 12 - 3.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFV450PM		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager	
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Keysight Spectrum Analyzer - Occupied BW					F	×
LXI RL RF 50Ω AC	Center	SENSE:INT Freq: 707.500000 MHz Free Run Avg Hold :: 36 dB	Radio Std		Trace/Detecto	or
10 dB/div Ref 40.00 dBm						
30.0 20.0		munu harry			Clear W	lrite
0.00						
-10.0 -20.0 m.hommmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmm	~		home water	-Ame	Aver	age
-40.0					Max H	lold
Center 707.5 MHz Res BW 120 kHz	#1	VBW 390 kHz	Span Swa	12.5 MHz eep 1 ms	Min H	
Occupied Bandwidth		Total Power	33.1 dBm		WIIIT	ioiu
	5595 MHz 4.049 kHz	% of OBW Pow	er 99.00 %			<mark>ctor</mark> eak ► Man
Transmit Freq Error x dB Bandwidth	4.049 KHZ 5.043 MHz	x dB	-26.00 dB			<u>mail</u>
MSG			STATUS			

Plot 7-19. Occupied Bandwidth Plot (Band 12/17 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-20. Occupied Bandwidth Plot (Band 12/17 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFV450PM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Page 27 of 245	
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🔤 Keysight Spectrum Analyzer - Occupied BV	1					
ΙΧΊ R L RF 50 Ω AC		SENSE:INT r Freq: 707.500000 MHz Free Run Avg Hold::	Radio Sto	MNov 30, 2018 I: None	Trace/Det	ector
		n: 36 dB	Radio De	vice: BTS		
10 dB/div Ref 40.00 dBn	<u>ا</u>					
Log 30.0						
20.0					Clea	r Write
10.0	how	mumment				
0.00						_
-10.0					A	verage
-20.0 -20.0	mal		monorthornow	De B : D D		_
-30.0 -30.0	• • • • • • • • • • • • • • • • • • •			. no on led but of		
-40.0					Ма	x Hold
-50.0					Me	ATION
			0	40.5 MU-		
Center 707.5 MHz Res BW 120 kHz	#	VBW 390 kHz		12.5 MHz eep 1 ms	Mi	n Hold
Occupied Bandwidt	h	Total Power	30.8 dBm			
-	 5516 MHz				D	tester
4.					D	etector Peak▶
Transmit Freq Error	4.562 kHz	% of OBW Powe	r 99.00 %		Auto	<u>Man</u>
x dB Bandwidth	5.042 MHz	x dB	-26.00 dB			
MSG			STATUS			

Plot 7-21. Occupied Bandwidth Plot (Band 12/17 - 5.0MHz 64-QAM - Full RB Configuration)



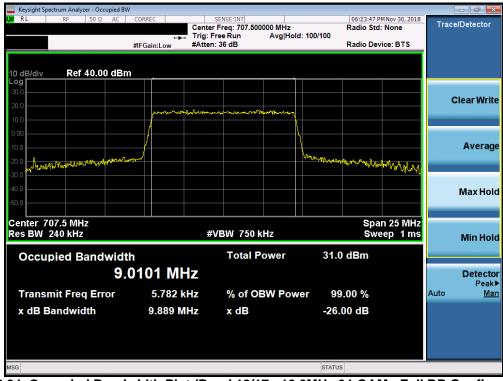
Plot 7-22. Occupied Bandwidth Plot (Band 12/17 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFV450PM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager		
Test Report S/N:	Test Dates:	EUT Type:		Dage 20 of 245		
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Plot 7-23. Occupied Bandwidth Plot (Band 12/17 - 10.0MHz 16-QAM - Full RB Configuration)



Plot 7-24. Occupied Bandwidth Plot (Band 12/17 - 10.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFV450PM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dama 00 at 045	
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Keysight Spectrum Analyzer - C	Occupied BW							- 6 ×
(X/ RL RF 50	Ω DC COR		SENSE:INT Freq: 782.000000 MHz		10:11:14 PM Radio Std:	Dec 04, 2018	Trace	/Detector
	NFE	Trig: F	ree Run Avg H	old: 100/100				
	#IFO	Gain:Low #Atten	: 36 dB		Radio Devi	ce: BTS		
	00 dBm			-				
Log 30.0								
20.0							C	lear Write
10.0		monter	man and the man and the second					
0.00				X I				
	man			hann	<u> </u>			Average
-20.0					((n	weath		Averuge
-30.0								
-40.0								
								Max Hold
-50.0								
Center 782 MHz					Span 1	2.5 MHz		
Res BW 120 kHz		#\	/BW 390 kHz			ep 1 ms		Min Hold
0	1		Total Power	22.4	dBm			
Occupied Ban			Total Power	32.4	авт			
	4.54	94 MHz						Detector
Transmit Freq E	rror	-5.312 kHz	% of OBW Po	wer 00	.00 %		Auto	Peak▶ Man
x dB Bandwidth		7.087 MHz	x dB	-26.0	00 dB			
MSG				STATUS				

Plot 7-25. Occupied Bandwidth Plot (Band 13 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-26. Occupied Bandwidth Plot (Band 13 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFV450PM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 20 of 245
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Keysight Spectrum Analyzer - Occupied B\	V					
LXI RL RF 50Ω DC		SENSE:INT r Freg: 782.000000 MHz		2 PM Dec 05, 2018 td: None	Trace/D	etector
NFE	Trig: F	Free Run Avg Hold	d: 100/100			
	#IFGain:Low #Atten: 36 dB Radio Device: BTS					
10 dB/div Ref 40.00 dBr	n					
Log 30.0						
20.0					Cle	ar Write
10.0	munham	monor				
0.00	ł					
	mind		howang			Average
-10.0			C Land Land Land	all month and		Average
-30.0						
-40.0					N	lax Hold
-50.0						
Center 782 MHz			Sna	n 12.5 MHz		
Res BW 120 kHz	#	VBW 390 kHz		veep 1 ms		/lin Hold
						minnoid
Occupied Bandwidt	th	Total Power	31.7 dBm			
4	5507 MHz				I	Detector
						Peak▶
Transmit Freq Error	7.491 kHz	% of OBW Pow	er 99.00 %		Auto	<u>Man</u>
x dB Bandwidth	8.079 MHz	x dB	-26.00 dB			
MSG			STATUS			

Plot 7-27. Occupied Bandwidth Plot (Band 13 - 5.0MHz 64-QAM - Full RB Configuration)



Plot 7-28. Occupied Bandwidth Plot (Band 13 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFV450PM		MEASUREMENT REPORT (CERTIFICATION)	G	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		
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Plot 7-29. Occupied Bandwidth Plot (Band 13 - 10.0MHz 16-QAM - Full RB Configuration)



Plot 7-30. Occupied Bandwidth Plot (Band 13 - 10.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFV450PM		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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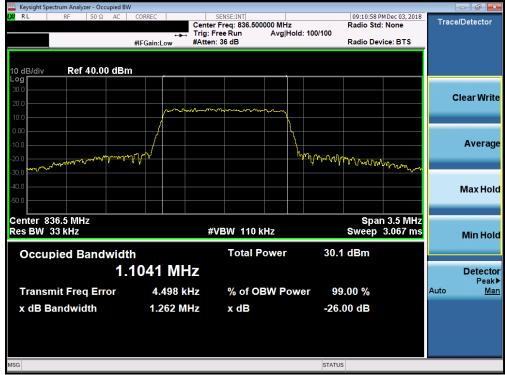
Plot 7-31. Occupied Bandwidth Plot (Band 26/5 - 1.4MHz QPSK - Full RB Configuration)



Plot 7-32. Occupied Bandwidth Plot (Band 26/5 - 1.4MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFV450PM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:			
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Plot 7-33. Occupied Bandwidth Plot (Band 26/5 - 1.4MHz 64-QAM - Full RB Configuration)



Plot 7-34. Occupied Bandwidth Plot (Band 26/5 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFV450PM		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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Keysight Spectrum Analyzer - Occupied B	W						
LXIRL RF 50Ω AC	CORREC	SENSE:INT r Freg: 836.500000 MHz		09:07:55 PM Radio Std:	Dec 03, 2018	Trace	Detector
	Trig: F	Free Run Avg Ho	old: 100/100				
	#IFGain:Low #Atten	n: 36 dB	ŀ	Radio Devi	ce: BTS		
10 dB/div Ref 35.00 dBi	m		· · · · · ·				
25.0							
15.0	<u></u>					C	lear Write
5.00	/						
-5.00	/		\				
.15.0							Average
-25.0 promotion months	www.		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Jam Martan	marchand		
-35.0							
-45.0							
-49.0							Max Hold
-55.0							
Center 836.5 MHz				Span	7.5 MHz		
Res BW 68 kHz	#	VBW 220 kHz		Sweep) 1.6 ms		Min Hold
Occurried Develuid	41-	Total Power	31.2 c	IDm	<u> </u>		
Occupied Bandwid		Total Fower	51.20				
2.	.7091 MHz						Detector
Transmit Freq Error	-2.608 kHz	% of OBW Po	wer 99.0	00 %		Auto	Peak▶ <u>Man</u>
x dB Bandwidth	3.028 MHz		-26.00				
	3.020 MHZ	x dB	-20.00	лав			
MSG			STATUS				

Plot 7-35. Occupied Bandwidth Plot (Band 26/5 - 3.0MHz 16-QAM - Full RB Configuration)



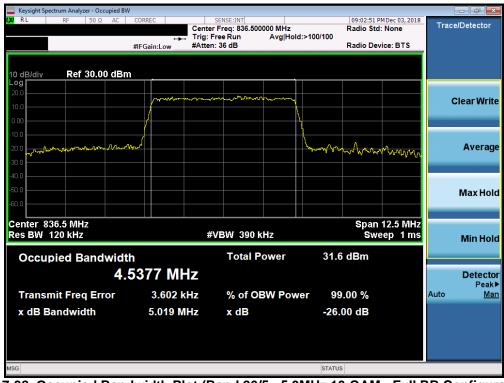
Plot 7-36. Occupied Bandwidth Plot (Band 26/5 - 3.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFV450PM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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🔤 Keysight Spectrum Analyzer - Occupied BV	V					
LXI RL RF 50Ω AC	· • • •	SENSE:INT Center Freq: 836.500 Trig: Free Run	000 MHz Avg Hold: 100/100	09:02:38 PM Dec Radio Std: No	ne	Trace/Detector
	#IFGain:Low #Atten: 36 dB Radio Device: BTS					
10 dB/div Ref 30.00 dBn	n					
20.0						
10.0	m	man	manny			Clear Write
0.00	/		λ			
-10.0						
-10.0 -20.0 pm/pm.sh/mm.mm. -30.0	w		www	a marine	www	Average
-40.0						
-50.0						Max Hold
-60.0						
Center 836.5 MHz Res BW 120 kHz		#VBW 390 k	Hz	Span 12. Sweep		Min Hold
	1-	Total P	ower 22	9 dBm		
Occupied Bandwidt			ower 52.	9 UBIII		
4.	5546 MH	Ζ				Detector
Transmit Freq Error	1.345 kH	z % of OE	3W Power 9	9.00 %	A	Peak▶ uto <u>Man</u>
x dB Bandwidth	5.011 MH	z xdB	-26	.00 dB		
MSG			STATU	JS		

Plot 7-37. Occupied Bandwidth Plot (Band 26/5 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-38. Occupied Bandwidth Plot (Band 26/5 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFV450PM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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Keysight Spectrum Analyzer - Occupied BW						×
LXURL RF 50ΩAC		SENSE:INT r Freq: 836.500000 MHz Free Run Avg Ho		03:00 PM Dec 03, 2018 o Std: None	Trace/Detec	ctor
		n: 36 dB		o Device: BTS		
10 dB/div Ref 30.00 dBm						
20.0						
10.0	www.	mpmmhn			Clear	Write
0.00	/					
-10.0			1			
	~~^^				Ave	erage
-20.0 www.how.www.holly.wh -30.0			JAM WWW	When when we		_
-40.0						
-50.0					Мах	
-60.0					Max	поіа
Center 836.5 MHz	22		\$	pan 12.5 MHz		
Res BW 120 kHz	#	VBW 390 kHz		Sweep 1 ms	Min	Hold
Occupied Bandwidth	1	Total Power	30.5 dBr	n		
	5403 MHz				Det	ector
						Peak►
Transmit Freq Error	-4.286 kHz	% of OBW Pov	wer 99.00 °	%	Auto	<u>Man</u>
x dB Bandwidth	5.037 MHz	x dB	-26.00 d	В		
MSG			STATUS			

Plot 7-39. Occupied Bandwidth Plot (Band 26/5 - 5.0MHz 64-QAM - Full RB Configuration)



Plot 7-40. Occupied Bandwidth Plot (Band 26/5 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFV450PM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager		
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Keysight Spectrum Analyzer - Occupied B\	N				
IXIRL RF 50Ω AC		SENSE:INT enter Freq: 836.500000 MHz ig: Free Run Avg Ho	08:53:32 F Radio Std old: 100/100	MDec 03, 2018 : None	Trace/Detector
		tten: 36 dB	Radio Dev	/ice: BTS	
10 dB/div Ref 40.00 dBr	n				
Log 30.0 20.0					Clear Write
10.0	manan	german and Walling and a second showing			
0.00					
-10.0 -20.0 Junit March March Marmon			Liborah A.A		Average
-20.0 Junity Water (March 1997)			Weber of the work	Marow Marona have	
-40.0					Max Hold
-50.0					Maxinoid
Center 836.5 MHz				n 25 MHz	
Res BW 240 kHz		#VBW 750 kHz	Swe	eep 1 ms	Min Hold
Occupied Bandwidt	th	Total Power	31.7 dBm		
9.	0420 MHz				Detector
Transmit Freq Error	4.135 kHz	% of OBW Po	wer 99.00 %		Peak▶ Auto <u>Man</u>
x dB Bandwidth	9.929 MHz	x dB	-26.00 dB		
MSG			STATUS		

Plot 7-41. Occupied Bandwidth Plot (Band 26/5 - 10.0MHz 16-QAM - Full RB Configuration)



Plot 7-42. Occupied Bandwidth Plot (Band 26/5 - 10.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFV450PM		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager	
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Keysight Spectrum Analyzer - Occupied BW	1				
LXIRL RF 50Ω AC	CORREC	SENSE:INT r Freg: 836.500000 MHz	09:15:14 P Radio Std	MDec 03, 2018	Trace/Detector
	🛶 Trig: F	ree Run Avg Hold:>	100/100		
	#IFGain:Low #Atten	:: 36 dB	Radio Dev	/ice: BTS	
10 dB/div Ref 40.00 dBm Log	<u> </u>				
30.0					
20.0		and a start of the			Clear Write
10.0					
0.00					
-10.0			allower and a stranger and the second		Average
-20.0 month and have and all the	www.			with	-
-30.0					
-40.0				<u> </u>	
-50.0					Max Hold
Center 836.5 MHz				37.5 MHz	
Res BW 360 kHz	#	VBW 1.1 MHz	Swe	eep 1 ms	Min Hold
Occupied Bandwidt	h	Total Power	33.1 dBm		
13	3.544 MHz				Detector Peak►
Transmit Freq Error	14.375 kHz	% of OBW Power	99.00 %		Auto <u>Man</u>
x dB Bandwidth	14.86 MHz	x dB	-26.00 dB		
	14.00 MI12	X UD	-20.00 uB		
MSG			STATUS		

Plot 7-43. Occupied Bandwidth Plot (Band 26 - 15.0MHz QPSK - Full RB Configuration)



Plot 7-44. Occupied Bandwidth Plot (Band 26 - 15.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFV450PM		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager		
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🤤 Keysight Spectrum Analyzer - Occupied BW 🗶 RL RF 50 Ω AC	CORREC	SENSE:INT		5 PM Dec 03, 2018	Trace/Detector
	Trig: F	r Freq: 836.500000 MHz Free Run Avg Holo n: 36 dB	d: 100/100	Std: None Device: BTS	Theorem
10 dB/div Ref 40.00 dBm					
.og 30.0					Clear Wri
20.0	and the sector of the distance	๛๛๛			Clear Wri
0.00					
10.0 20.0 อาราชาชาวินาณานี้หา	nund		halphranneadronavir	mm	Averaç
30.0				work	
40.0					Max Ho
enter 836.5 MHz				in 37.5 MHz	
Res BW 360 kHz		VBW 1.1 MHz		weep 1 ms	Min Ho
Occupied Bandwidt		Total Power	30.5 dBm		
	.523 MHz				Detect Peal
Transmit Freq Error	17.223 kHz	% of OBW Pow	er 99.00 %		Auto <u>M</u>
x dB Bandwidth	14.69 MHz	x dB	-26.00 dB		
G			STATUS		

Plot 7-45. Occupied Bandwidth Plot (Band 26 - 15.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFV450PM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
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Keysight Spectrum Analyzer - Occupier	d BW					-	
(X) RL RF 50 Ω AC	C CORREC	SENSE:INT Center Freg: 1.73250	0000 GHz	06:11:28 P Radio Std	M Nov 30, 2018	Trace	Detector
	• • •	Trig: Free Run	Avg Hold: 100/1	00			
	#IFGain:Low	#Atten: 36 dB		Radio Dev	vice: BTS		
10 dB/div Ref 30.00 d	Bm						
20.0							
10.0	m	······································	\dots			С	lear Write
0.00							
-10.0				N.			
-20.0				h			Average
-30.0				John Martin	www.www.		7.00. ug
-40.0							
-50.0							Max Hold
-60.0							
Center 1.733 GHz				Spar	1 2.1 MHz		
Res BW 20 kHz		#VBW_30 kH	Iz		p 5.6 ms		Min Hold
On our ind Dan dud	-141-	Total P	entor	31.7 dBm			
Occupied Bandwi			ower	31.7 uBm			
	1.0824 M⊦	Z					Detector
Transmit Freq Error	-162	Hz % of OE	3W Power	99.00 %		Auto	Peak▶ <u>Man</u>
x dB Bandwidth	1.228 M	Hz x dB		-26.00 dB			
	1.220 W			-20.00 ab			
MSG			5	STATUS			

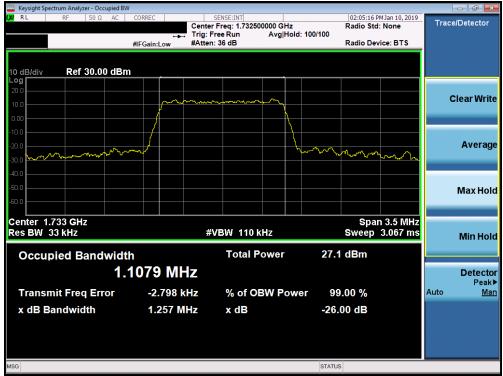
Plot 7-46. Occupied Bandwidth Plot (Band 66/4 - 1.4MHz QPSK - Full RB Configuration)



Plot 7-47. Occupied Bandwidth Plot (Band 66/4 - 1.4MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFV450PM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
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Plot 7-48. Occupied Bandwidth Plot (Band 66/4 - 1.4MHz 64-QAM - Full RB Configuration)



Plot 7-49. Occupied Bandwidth Plot (Band 66/4 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFV450PM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 40 of 045
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Keysight Spectrum Analyzer - Occupied BW					- 6 -
	#IFGain:Low Center #Atten	SENSE:INT Freq: 1.732500000 GHz Freq: 1.732500000 GHz iree Run Avg Hold : 36 dB	Radio Std		Trace/Detector
10 dB/div Ref 35.00 dBm Log 25.0 16.0 5.00					Clear Writ
-5.00 -15.0 -25.0	~~~		L.		Averag
-45.0					Max Hol
Center 1.733 GHz Res BW 68 kHz Occupied Bandwidtl		VBW 220 kHz Total Power		n 7.5 MHz p 1.6 ms	Min Hol
2.7	7138 MHz				Detecto Peak
Transmit Freq Error x dB Bandwidth	3.822 kHz 3.015 MHz	% of OBW Powe	ər 99.00 % -26.00 dB		Auto <u>Ma</u>
MSG			STATUS		

Plot 7-50. Occupied Bandwidth Plot (Band 66/4 - 3.0MHz 16-QAM - Full RB Configuration)



Plot 7-51. Occupied Bandwidth Plot (Band 66/4 - 3.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFV450PM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
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Keysight Spectrum Analyzer - Occupied I			00.04.45.0		
C RL RF 50 Ω AC	CORREC	SENSE:INT r Freq: 1.732500000 GHz	Radio Std:	Nov 29, 2018	Trace/Detector
		Free Run Avg Hold: n: 36 dB	100/100 Radio Dev	ico: BTS	
	#IFGain:Low #Atter	1. 30 00	Radio Dev	ICe. BTS	
I0 dB/div Ref 35.00 dB	m				
25.0					
15.0	mann	mann			Clear Writ
5.00					
5.00					
15.0					Averag
15.0 mmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmm	~°т»		hard and the second	mon	
35.0					
45.0					Max Ho
55.0					Maxilo
Center 1.733 GHz Res BW 120 kHz	#	VBW 390 kHz		12.5 MHz ep 1 ms	
	#		Swe	ep ms	Min Ho
Occupied Bandwid	th	Total Power	32.3 dBm		
	.5582 MHz				Detecto
	.5502 10112				Peak
Transmit Freq Error	5.060 kHz	% of OBW Powe	er 99.00 %	Au	ito <u>Ma</u>
x dB Bandwidth	5.026 MHz	x dB	-26.00 dB		
			STATUS		

Plot 7-52. Occupied Bandwidth Plot (Band 66/4 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-53. Occupied Bandwidth Plot (Band 66/4 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFV450PM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dogo 44 of 245	
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Keysight Spectrum Analyzer - Occu			00.07.44.04.1 40.0040	
α RL RF 50 Ω		SENSE:INT ter Freq: 1.732500000 GHz	02:07:14 PM Jan 10, 2019 Radio Std: None	Trace/Detector
		: Free Run Avg Hold: 100 ten: 36 dB)/100 Radio Device: BTS	
	#IFGain:Low #Att	ten. 36 db	Radio Device. B 13	
10 dB/div Ref 30.00	dBm			
20.0				
10.0	man	mmmmm		Clear Writ
0.00	/			
10.0				
20.0				Averag
20.0 30.0 Manh Manh	phone and the second se		man man	
40.0				
50.0				Max Hol
-60.0				Maxino
Center 1.733 GHz Res BW 120 kHz		#VBW 390 kHz	Span 12.5 MHz Sweep 1 ms	
		#VDVV J90 KHZ	Sweep This	Min Ho
Occupied Bandy	width	Total Power	27.5 dBm	
	4.5394 MHz			Detecto
	7.0007 Mil 12			Peak
Transmit Freq Erro	or 5.161 kHz	% of OBW Power	99.00 %	Auto <u>Ma</u>
x dB Bandwidth	5.020 MHz	x dB	-26.00 dB	
SG			STATUS	

Plot 7-54. Occupied Bandwidth Plot (Band 66/4 - 5.0MHz 64-QAM - Full RB Configuration)



Plot 7-55. Occupied Bandwidth Plot (Band 66/4 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFV450PM		MEASUREMENT REPORT (CERTIFICATION)	_G	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 45 of 245
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Keysight Spectrum Analyzer - Occupie					
RL RF 50 Ω A Center Freg 1.7325000		SENSE:INT Center Freg: 1.732500000		1 PM Nov 29, 2018 itd: None	Trace/Detector
		Trig: Free Run Av #Atten: 36 dB	g Hold: 100/100 Radio F	evice: BTS	
	#IFGain:Low	#Atten: 30 db	Radio L	evice. D13	
10 dB/div Ref 40.00 d	Bm				
Log					
30.0					Clear Write
20.0	mmm	and a contraction of the second of the secon	Mary		
10.0					
0.00	/		N N		Average
-10.0	Jan 8 100				Average
-20.0	Maral Manual of		weight for the share with the share	x ¹¹ /m ^h hm-p-11744	
-40.0					
-50.0					Max Hold
Center 1.733 GHz Res BW 240 kHz		#VBW 750 kHz		ban 25 MHz	
Res DW 240 KHZ		#VBW 750 KH2	5	weep 1ms	Min Hold
Occupied Bandwi	dth	Total Powe	er 31.0 dBm		
	9.0027 M	47			Detector
					Peak▶
Transmit Freq Error	12.835	kHz % of OBW	Power 99.00 %		Auto <u>Man</u>
x dB Bandwidth	9.929 N	∬Hz xdB	-26.00 dB		
MSG			STATUS		

Plot 7-56. Occupied Bandwidth Plot (Band 66/4 - 10.0MHz 16-QAM - Full RB Configuration)



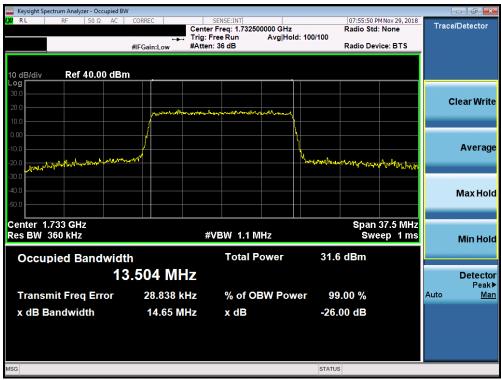
Plot 7-57. Occupied Bandwidth Plot (Band 66/4 - 10.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFV450PM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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Keysight Spectrum Analyzer - Occupied BW					
LXX RL RF 50Ω AC	#FGain:Low Center #Atten	SENSE:INT Freq: 1.732500000 GHz iree Run Avg Hold: : 36 dB	Radio Std		Trace/Detector
10 dB/div Ref 40.00 dBm Log 30.0 20.0 10.0		man			Clear Write
0.00 -10.0 -20.0 mm			her man	Marchanauthe	Average
-40.0 -50.0					Max Hold
Center 1.733 GHz Res BW 360 kHz Occupied Bandwidt		VBW 1.1 MHz Total Power		37.5 MHz eep 1 ms	Min Hold
	.528 MHz				Detector Peak►
Transmit Freq Error x dB Bandwidth	6.402 kHz 14.75 MHz	% of OBW Powe x dB	er 99.00 % -26.00 dB		Auto <u>Man</u>
MSG			STATUS		

Plot 7-58. Occupied Bandwidth Plot (Band 66/4 - 15.0MHz QPSK - Full RB Configuration)



Plot 7-59. Occupied Bandwidth Plot (Band 66/4 - 15.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFV450PM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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Keysight Spectrum Analyzer - Occupied BW					- # -
X/RL RF 50Ω AC		SENSE:INT er Freq: 1.732500000 GHz	02:08:56 Radio St	PM Jan 10, 2019 d: None	Trace/Detector
		Free Run Avg Hol n: 36 dB	d: 100/100 Radio D	evice: BTS	
	an ouncer				
10 dB/div Ref 30.00 dBn	۱ <u> </u>				
20.0					
10.0		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			Clear Writ
0.00			\		
10.0					
20.0	mast		haulton to show the address of the	Martin Day and M. A.	Averag
30.0					
40.0					
-50.0					Max Hol
-60.0					
Center 1.733 GHz				n 37.5 MHz	
Res BW 360 kHz	#	VBW 1.1 MHz	SV	/eep 1ms	Min Hol
Occupied Bandwidt	h	Total Power	27.9 dBm		
13	.553 MHz				Detecto
Transmit Freq Error	22.189 kHz	% of OBW Pow	ver 99.00 %		Peak Auto Ma
				ĺ	
x dB Bandwidth	14.90 MHz	x dB	-26.00 dB		
SG			STATUS		

Plot 7-60. Occupied Bandwidth Plot (Band 66/4 - 15.0MHz 64-QAM - Full RB Configuration)



Plot 7-61. Occupied Bandwidth Plot (Band 66/4 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFV450PM		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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Keysight Spectrum Analyzer - Occupied BW	V				- ē 🔀
IXI RL RF 50 Ω AC	Trig	SENSE:INT ter Freq: 1.732500000 GHz : Free Run Avg Ho en: 36 dB	Radio S Id: 100/100	3 PM Nov 29, 2018 itd: None Device: BTS	Trace/Detector
10 dB/div Ref 40.00 dBn	n				
Log 30.0 20.0	A adva Advala				Clear Write
10.0		and and a second product of the second s			
0.00 -10.0 -20.0	hv-system		Vanalations - and a linear and	www.	Average
-30.0					Max Hold
Center 1.733 GHz Res BW 470 kHz		#VBW 1.5 MHz		oan 50 MHz weep 1 ms	Min Hold
Occupied Bandwidt	h	Total Power	31.4 dBm		
18	3.050 MHz				Detector Peak▶
Transmit Freq Error	35.680 kHz	% of OBW Pov	ver 99.00 %		Auto <u>Man</u>
x dB Bandwidth	19.51 MHz	x dB	-26.00 dB		
MSG			STATUS		

Plot 7-62. Occupied Bandwidth Plot (Band 66/4 - 20.0MHz 16-QAM - Full RB Configuration)



Plot 7-63. Occupied Bandwidth Plot (Band 66/4 - 20.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFV450PM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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Plot 7-64. Occupied Bandwidth Plot (Band 25/2 - 1.4MHz QPSK - Full RB Configuration)



Plot 7-65. Occupied Bandwidth Plot (Band 25/2 - 1.4MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFV450PM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager		
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Plot 7-66. Occupied Bandwidth Plot (Band 25/2 - 1.4MHz 64-QAM - Full RB Configuration)



Plot 7-67. Occupied Bandwidth Plot (Band 25/2 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFV450PM		MEASUREMENT REPORT (CERTIFICATION)	Â	Approved by: Quality Manager
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Trig	nter Freq: 1.8825 g: Free Run tten: 36 dB		Id: 100/100	Radio Std Radio Dev		Frequency Center Fre 1.882500000 Gł
FGain:Low #At	iten: 36 dB			Radio Dev	ice: BTS	
	······································	^~				
	~					
,	······································	m				
	······································	·····				1.882500000 GH
/			1			
			5			
			mon	mon	Academa -	
					· · · · · · · · · · · · · · · · · · ·	
				Cnot	7.6 MHz	
	#VBW 220	kHz				CF Ste 750.000 kH
	Total I	Power	31.	.2 dBm		<u>Auto</u> Ma
156 MHz						Freq Offs
-1.736 kHz	% of O	BW Pov	ver 9	9.00 %		01
3.035 WINZ	хuв		-20	.00 UB		
	156 MHz -1.736 kHz 3.055 MHz	Total 156 MHz -1.736 kHz % of C	-1.736 kHz % of OBW Pow	#VBW 220 kHz Total Power 31. 156 MHz -1.736 kHz % of OBW Power 9 3.055 MHz x dB -26	#VBW 220 kHz Spar #VBW 220 kHz Swee Total Power 31.2 dBm 156 MHz % of OBW Power 99.00 %	Span 7.5 MHz #VBW 220 kHz Span 7.5 MHz Sweep 1.6 ms Total Power 31.2 dBm 156 MHz -1.736 kHz % of OBW Power 99.00 % 3.055 MHz x dB -26.00 dB

Plot 7-68. Occupied Bandwidth Plot (Band 25/2 - 3.0MHz 16-QAM - Full RB Configuration)



Plot 7-69. Occupied Bandwidth Plot (Band 25/2 - 3.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFV450PM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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Keysight Spectrum Analyzer - Occupied BW									- 6 -
	Center Freq: 1.882500000 GHz Radio Std: None					Trace	e/Detector		
	#FGain:Low	#Atten: 3	6 dB			Radio Dev	vice: BTS		
10 dB/div Ref 30.00 dBm									
20.0									
10.0	mm	~~~~m	$\sim \sim $	m				C	Clear Write
0.00	1				(
	1				1 1				
-10.0	~~				han a				Average
-20.0 pt the source of the sou						A Parking Marken of St	mound		Average
-30.0									
-40.0									
-50.0									Max Hold
-60.0									
Center 1.883 GHz						Snan	12.5 MHz		
Res BW 120 kHz		#VE	3W 390 k	Hz			eep 1 ms		Min Hold
									Will Hold
Occupied Bandwidth			Total P	ower	32	.5 dBm			
4.5	485 MI	-IZ							Detector
									Peak▶
Transmit Freq Error	-1.003 I	(Hz	% of O	3W Pow	er S	99.00 %		Auto	<u>Man</u>
x dB Bandwidth	5.034 N	IHz	x dB		-20	6.00 dB			
MSG					STAT	US			

Plot 7-70. Occupied Bandwidth Plot (Band 25/2 - 5.0MHz QPSK - Full RB Configuration)



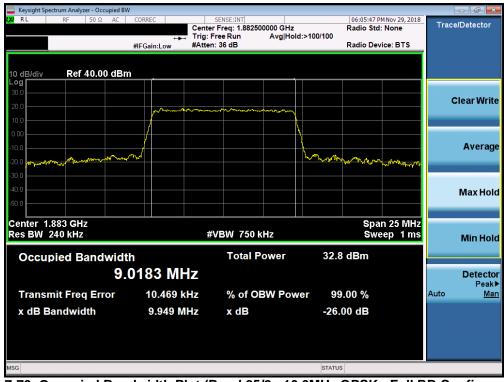
Plot 7-71. Occupied Bandwidth Plot (Band 25/2 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFV450PM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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Keysight Spectrum Analyzer - Occupied BW	CORREC	SENSE:INT	02:14:15 PM	4 Jan 10, 2019	
	Cente	r Freq: 1.88000000 GHz	Radio Std:		Trace/Detector
		Free Run Avg Hold:> n: 36 dB	100/100 Radio Devi	ice: BTS	
	an dameon				
IO dB/div Ref 30.00 dBm					
-og					
20.0					Clear Writ
10.0	m				Cical Will
0.00					
10.0					
20.0					Avera
30.0 mmmmmmm			Mar Marchen	mary	
40.0					
50.0					Max Ho
60.0					
Center 1.88 GHz			Snan	12.5 MHz	
Res BW 120 kHz	#	VBW 390 kHz		ep 1 ms	Min Ho
					Mintho
Occupied Bandwidt		Total Power	22.1 dBm		
4.	5346 MHz				Detect
Transmit Frag Error	10.721 kHz	% of OBW Power	99.00 %		Peal uto Ma
Transmit Freq Error					
x dB Bandwidth	5.048 MHz	x dB	-26.00 dB		
SG			STATUS		

Plot 7-72. Occupied Bandwidth Plot (Band 25/2 - 5.0MHz 64-QAM - Full RB Configuration)



Plot 7-73. Occupied Bandwidth Plot (Band 25/2 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFV450PM		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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Keysight Spectrum Analyzer - Occupied B	W			- ē 🔀		
LX RL RF 50Ω AC	RL RF 50 Ω AC CORREC SENSE:INT I06:06:18 PM Mov 29, 2018 Center Freq: 1.882500000 GHz Radio Std: None Trig: Free Run Avg[Hold: 100/100					
		:: 36 dB	Radio Device: BTS			
10 dB/div Ref 40.00 dB	m					
Log						
30.0				Clear Write		
20.0	mallinenuman	and an and have				
10.0						
-10.0				Average		
	- Carlos - C		n	Ŭ		
-20.0 Million and Andrew Contraction			man har work the month	M.,		
-40.0						
-50.0				Max Hold		
Center 1.883 GHz			Span 25 M			
Res BW 240 kHz	#	VBW 750 kHz	Sweep 1 r	ns Min Hold		
Occupied Bandwid	th	Total Power	31.5 dBm			
	0265 MHz			Detector		
				Peak►		
Transmit Freq Error	8.134 kHz	% of OBW Power	99.00 %	Auto <u>Man</u>		
x dB Bandwidth	9.871 MHz	x dB	-26.00 dB			
MSG			STATUS			

Plot 7-74. Occupied Bandwidth Plot (Band 25/2 - 10.0MHz 16-QAM - Full RB Configuration)



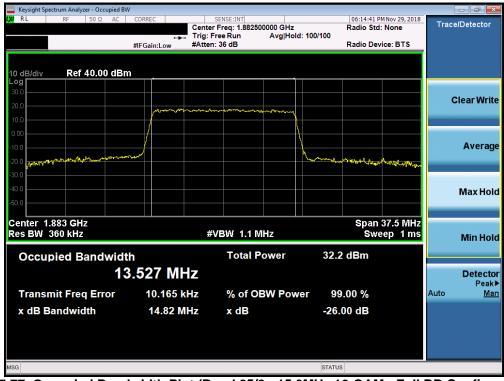
Plot 7-75. Occupied Bandwidth Plot (Band 25/2 - 10.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFV450PM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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Keysight Spectrum Analyzer - Occupied B	W				-	
LXI RL RF 50Ω AC	Center Freq: 1.882500000 GHz Radio Std: None					
	#IFGain:Low #Atter	n: 36 dB	Radio De	vice: BTS		
10 dB/div Ref 40.00 dB	m					
Log						
30.0					СІ	ear Write
20.0	man	mmmmmm				
10.0						
0.00			1			_
-10.0	n d-Di ^N		whater and			Average
-20.0 pppor und the new show			What was a for the second	manthing		
-30.0						
-40.0					1	Max Hold
-50.0						
Center 1.883 GHz			Span	37.5 MHz		
Res BW 360 kHz	#	VBW 1.1 MHz		eep 1 ms		Min Hold
Occupied Bandwid	th	Total Power	33.1 dBm			
1	3.512 MHz					Detector
						Peak▶
Transmit Freq Error	-14.270 kHz	% of OBW Pow	er 99.00 %		Auto	<u>Man</u>
x dB Bandwidth	14.77 MHz	x dB	-26.00 dB			
MSG			STATUS			

Plot 7-76. Occupied Bandwidth Plot (Band 25/2 - 15.0MHz QPSK - Full RB Configuration)



Plot 7-77. Occupied Bandwidth Plot (Band 25/2 - 15.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFV450PM		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager	
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Keysight Spectrum Analyzer - Occupied BW	/				- 6 💌
	+→+ Trig: I #IFGain:Low #Atter	SENSE:INT r Freq: 1.88000000 GHz Free Run Avg Hold: n: 36 dB	Radio Std		Trace/Detector
		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			Clear Write
-10.0 -20.0 -30.0 glygay	Juno Carlos		manutaning	vr-sham shift	Average
-50.0					Max Hold
Center 1.88 GHz Res BW 360 kHz Occupied Bandwidt		VBW 1.1 MHz Total Power		37.5 MHz eep 1 ms	Min Hold
13.503 MHz					Detector Peak▶
Transmit Freq Error x dB Bandwidth	57.968 kHz 14.77 MHz	% of OBW Powe x dB	er 99.00 % -26.00 dB		Auto <u>Man</u>
MSG			STATUS		

Plot 7-78. Occupied Bandwidth Plot (Band 25/2 - 15.0MHz 64-QAM - Full RB Configuration)



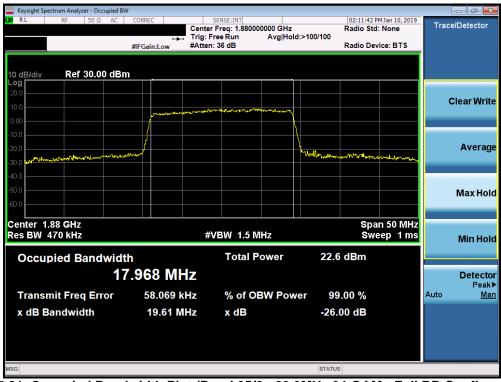
Plot 7-79. Occupied Bandwidth Plot (Band 25/2 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFV450PM		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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Keysight Spectrum Analyzer - Occupied BW							
KX RL RF 50Ω AC		SENSE:INT er Freq: 1.882500000 GHz Free Run Avg Ho	ld: 100/100	06:18:45 PN Radio Std:	Nov 29, 2018 None	Trace	e/Detector
	#IFGain:Low #Atten: 36 dB Radio Device: BTS						
10 dB/div Ref 40.00 dBm	10 dB/div Ref 40.00 dBm						
Log 30.0							
20.0						c	lear Write
10.0	port he half a be prove	๛๛๛๛๛๛๚๛๚๛๛๛๚๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛					
0.00							
-10.0							Average
-20.0	w		have been to be the second				
-30.0				hand the second s	wanter filler		
-40.0							Maylald
-50.0							Max Hold
Center 1.883 GHz		4)/D)/// 4 5 MU-			n 50 MHz		
Res BW 470 kHz	#	¥VBW 1.5 MHz		Swe	ep 1 ms		Min Hold
Occupied Bandwidth		Total Power	31.6	dBm			
	17.988 MHz					Detector Peak▶	
Transmit Freq Error	-21.579 kHz	% of OBW Pov	wer 99.0	00 %		Auto	Man
x dB Bandwidth	19.62 MHz	x dB	-26.0	0 dB			
MSG			STATUS				

Plot 7-80. Occupied Bandwidth Plot (Band 25/2 - 20.0MHz 16-QAM - Full RB Configuration)



Plot 7-81. Occupied Bandwidth Plot (Band 25/2 - 20.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFV450PM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dogo EQ of 245	
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Keysight Spectrum Analyzer - Occupied	BW				
(X) RL RF 50 Ω DC	Cente	SENSE:INT Freq: 2.593000000 GHz Free Run Avg Holo	05:35:10 F Radio Std d:>100/100	M Nov 23, 2018 : None	Trace/Detector
NFE		n: 36 dB	Radio Dev	vice: BTS	
10 dB/div Ref 25.00 dE	3m				
5.00		man man			Clear Write
-5.00 -15.0 -25.0	power		han har man	John Marine and Carles	Average
-35.0 -45.0 -65.0					Max Hold
-65.0 Center 2.593 GHz			Span	12.5 MHz	
Res BW 120 kHz	#	VBW 390 kHz	Sw	eep 1ms	Min Hold
Occupied Bandwid		Total Power	33.9 dBm		
4.5328 MHz					Detector Peak▶
Transmit Freq Error	-152 Hz	% of OBW Pow	ver 99.00 %		Auto <u>Man</u>
x dB Bandwidth	5.017 MHz	x dB	-26.00 dB		
MSG			STATUS		

Plot 7-82. Occupied Bandwidth Plot (Band 41 (PC2) - 5.0MHz QPSK - Full RB Configuration)



Plot 7-83. Occupied Bandwidth Plot (Band 41 (PC2) - 5.0MHz 16-QAM - Full RB Configuration)

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