

PCTEST

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MEASUREMENT REPORT

LTE

Applicant Name:

FCC ID:

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

Date of Testing: 1/13 - 2/14/2020 Test Site/Location: PCTEST Lab. Columbia, MD, USA Test Report Serial No.: 1M2001100004-03.ZNF

ZNFT600TS

APPLICANT:

LG Electronics USA, Inc.

Application Type:	Certification
Model:	LM-T600TS
Additional Model(s):	LMT600TS, T600TS
EUT Type:	Portable Tablet
FCC Classification:	PCS Licensed Transmitter (PCB)
FCC Rule Part(s):	22, 24, & 27
Test Procedure(s):	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.

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		RP			
Mode	FCC Rule	Tx Frequency (MHz)	Max. Power	Max. Power	Max. Power	Max. Power	Emission	Modulation
	Part		(W)	(dBm)	(W)	(dBm)	Designator	
LTE Band 71	27	665.5 - 695.5	0.073	18.65			4M53G7D	QPSK
LTE Band 71	27	665.5 - 695.5	0.052	17.17			4M53W7D	16QAM
LTE Band 71	27	665.5 - 695.5	0.046	16.64			4M53W7D	64QAM
LTE Band 71	27	668 - 693	0.065	18.10			9M01G7D	QPSK
LTE Band 71	27	668 - 693	0.047	16.69			9M01W7D	16QAM
LTE Band 71	27	668 - 693	0.042	16.28			8M99W7D	64QAM
LTE Band 71	27	670.5 - 690.5	0.076	18.78			13M5G7D	QPSK
LTE Band 71	27	670.5 - 690.5	0.053	17.25			13M5W7D	16QAM
LTE Band 71	27	670.5 - 690.5	0.048	16.82			13M5W7D	64QAM
LTE Band 71	27	673 - 688	0.075	18.77			18M0G7D	QPSK
LTE Band 71	27	673 - 688	0.055	17.41			18M0W7D	16QAM
LTE Band 71	27	673 - 688	0.049	16.91			18M0W7D	64QAM
LTE Band 12	27	699.7 - 715.3	0.099	19.96	0.163	22.11	1M09G7D	QPSK
LTE Band 12	27	699.7 - 715.3	0.068	18.31	0.111	20.46	1M11W7D	16QAM
LTE Band 12	27	699.7 - 715.3	0.062	17.95	0.102	20.10	1M09W7D	64QAM
LTE Band 12	27	700.5 - 714.5	0.097	19.87	0.159	22.02	2M72G7D	QPSK
LTE Band 12	27	700.5 - 714.5	0.070	18.44	0.115	20.59	2M71W7D	16QAM
LTE Band 12	27	700.5 - 714.5	0.063	17.98	0.103	20.13	2M72W7D	64QAM
LTE Band 12	27	701.5 - 713.5	0.092	19.62	0.150	21.77	4M57G7D	QPSK
LTE Band 12	27	701.5 - 713.5	0.067	18.26	0.110	20.41	4M53W7D	16QAM
LTE Band 12	27	701.5 - 713.5	0.059	17.73	0.097	19.88	4M52W7D	64QAM
LTE Band 12	27	704 - 711	0.100	20.01	0.164	22.16	9M00G7D	QPSK
LTE Band 12	27	704 - 711	0.071	18.52	0.117	20.67	9M04W7D	16QAM
LTE Band 12	27	704 - 711	0.065	18.13	0.107	20.28	9M00W7D	64QAM
LTE Band 13	27	779.5 - 784.5	0.091	19.60	0.150	21.75	4M55G7D	QPSK
LTE Band 13	27	779.5 - 784.5	0.065	18.13	0.107	20.28	4M53W7D	16QAM
LTE Band 13	27	779.5 - 784.5	0.058	17.63	0.095	19.78	4M56W7D	64QAM
LTE Band 13	27	782	0.065	18.16	0.107	20.31	8M99G7D	QPSK
LTE Band 13	27	782	0.046	16.59	0.075	18.74	9M02W7D	16QAM
LTE Band 13	27	782	0.041	16.12	0.067	18.27	8M99W7D	64QAM
LTE Band 26/5	22H	824.7 - 848.3	0.114	20.56	0.187	22.71	1M09G7D	QPSK
LTE Band 26/5	22H	824.7 - 848.3	0.079	18.97	0.129	21.12	1M11W7D	16QAM
LTE Band 26/5	22H	824.7 - 848.3	0.070	18.47	0.115	20.62	1M10W7D	64QAM
LTE Band 26/5	22H	825.5 - 847.5	0.115	20.59	0.188	22.74	2M71G7D	QPSK
LTE Band 26/5	22H	825.5 - 847.5	0.079	18.99	0.130	21.14	2M70W7D	16QAM
LTE Band 26/5	22H	825.5 - 847.5	0.071	18.53	0.117	20.68	2M72W7D	64QAM
LTE Band 26/5	22H	826.5 - 846.5	0.105	20.23	0.173	22.38	4M55G7D	QPSK
LTE Band 26/5	22H	826.5 - 846.5	0.085	19.28	0.139	21.43	4M52W7D	16QAM
LTE Band 26/5	22H	826.5 - 846.5	0.074	18.69	0.121	20.84	4M55W7D	64QAM
LTE Band 26/5	22H	829 - 844	0.113	20.52	0.185	22.67	9M03G7D	QPSK
LTE Band 26/5	22H	829 - 844	0.080	19.01	0.131	21.16	9M02W7D	16QAM
LTE Band 26/5	22H	829 - 844	0.071	18.51	0.116	20.66	9M01W7D	64QAM
LTE Band 26	22H	831.5 - 841.5	0.116	20.63	0.190	22.78	13M6G7D	QPSK
LTE Band 26	22H	831.5 - 841.5	0.081	19.06	0.132	21.21	13M5W7D	16QAM
LTE Band 26	22H	831.5 - 841.5	0.073	18.62	0.119	20.77	13M6W7D	64QAM

EUT Overview (<1 GHz)

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			EI	RP		
Mode	FCC Rule	Tx Frequency (MHz)	Max. Power	Max. Power	Emission	Modulation
	Part	······································	(W)	(dBm)	Designator	
TE Dand CC/4	07	4740 7 4770 0	0.474	00.00	4144070	
LTE Band 66/4	27 27	1710.7 - 1779.3	0.171	22.32 20.67	1M11G7D	QPSK 4604M
LTE Band 66/4		1710.7 - 1779.3	0.117		1M10W7D	16QAM
LTE Band 66/4	27	1710.7 - 1779.3	0.102	20.10	1M10W7D	64QAM
LTE Band 66/4	27	1711.5 - 1778.5	0.174	22.40	2M72G7D	QPSK
LTE Band 66/4	27	1711.5 - 1778.5	0.121	20.82	2M71W7D	16QAM
LTE Band 66/4	27	1711.5 - 1778.5	0.103	20.13	2M71W7D	64QAM
LTE Band 66/4	27	1712.5 - 1777.5	0.179	22.54	4M56G7D	QPSK
LTE Band 66/4	27	1712.5 - 1777.5	0.115	20.62	4M53W7D	16QAM
LTE Band 66/4	27	1712.5 - 1777.5	0.102	20.07	4M53W7D	64QAM
LTE Band 66/4	27	1715 - 1775	0.195	22.89	9M03G7D	QPSK
LTE Band 66/4	27	1715 - 1775	0.135	21.30	9M03W7D	16QAM
LTE Band 66/4	27	1715 - 1775	0.116	20.65	9M01W7D	64QAM
LTE Band 66/4	27	1717.5 - 1772.5	0.207	23.15	13M5G7D	QPSK
LTE Band 66/4	27	1717.5 - 1772.5	0.154	21.88	13M6W7D	16QAM
LTE Band 66/4	27	1717.5 - 1772.5	0.130	21.15	13M5W7D	64QAM
LTE Band 66/4	27	1720 - 1770	0.206	23.14	18M1G7D	QPSK
LTE Band 66/4	27	1720 - 1770	0.149	21.72	18M0W7D	16QAM
LTE Band 66/4	27	1720 - 1770	0.127	21.03	18M0W7D	64QAM
LTE Band 25/2	24E	1850.7 - 1914.3	0.240	23.80	1M09G7D	QPSK
LTE Band 25/2	24E	1850.7 - 1914.3	0.165	22.19	1M10W7D	16QAM
LTE Band 25/2	24E	1850.7 - 1914.3	0.145	21.61	1M09W7D	64QAM
LTE Band 25/2	24E	1851.5 - 1913.5	0.215	23.32	2M71G7D	QPSK
LTE Band 25/2	24E	1851.5 - 1913.5	0.150	21.76	2M72W7D	16QAM
LTE Band 25/2	24E	1851.5 - 1913.5	0.128	21.07	2M72W7D	64QAM
LTE Band 25/2	24E	1852.5 - 1912.5	0.228	23.58	4M55G7D	QPSK
LTE Band 25/2	24E	1852.5 - 1912.5	0.158	21.98	4M54W7D	16QAM
LTE Band 25/2	24E	1852.5 - 1912.5	0.141	21.49	4M56W7D	64QAM
LTE Band 25/2	24E	1855 - 1910	0.235	23.70	9M04G7D	QPSK
LTE Band 25/2	24E	1855 - 1910	0.163	22.11	9M04W7D	16QAM
LTE Band 25/2	24E	1855 - 1910	0.142	21.53	9M02W7D	64QAM
LTE Band 25/2	24E	1857.5 - 1907.5	0.253	24.03	13M6G7D	QPSK
LTE Band 25/2	24E	1857.5 - 1907.5	0.174	22.40	13M6W7D	16QAM
LTE Band 25/2	24E	1857.5 - 1907.5	0.151	21.80	13M6W7D	64QAM
LTE Band 25/2	24E	1860 - 1905	0.287	24.58	18M1G7D	QPSK
LTE Band 25/2	24E	1860 - 1905	0.200	23.00	18M1W7D	16QAM
LTE Band 25/2	24E	1860 - 1905	0.172	22.36	18M1W7D	64QAM

EUT Overview (Mid Bands)

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Mode	FCC Rule Part	Tx Frequency (MHz)	EI Max. Power (W)	RP Max. Power (dBm)	Emission Designator	Modulation
LTE Band 41 (PC2)	27	2498.5 - 2687.5	0.341	25.33	4M51G7D	QPSK
LTE Band 41 (PC2)	27	2498.5 - 2687.5	0.281	24.48	4M52W7D	16QAM
LTE Band 41 (PC2)	27	2498.5 - 2687.5	0.228	23.58	4M53W7D	64QAM
LTE Band 41 (PC2)	27	2501 - 2685	0.361	25.58	9M00G7D	QPSK
LTE Band 41 (PC2)	27	2501 - 2685	0.269	24.30	8M99W7D	16QAM
LTE Band 41 (PC2)	27	2501 - 2685	0.239	23.79	8M96W7D	64QAM
LTE Band 41 (PC2)	27	2503.5 - 2682.5	0.338	25.29	13M5G7D	QPSK
LTE Band 41 (PC2)	27	2503.5 - 2682.5	0.293	24.67	13M5W7D	16QAM
LTE Band 41 (PC2)	27	2503.5 - 2682.5	0.240	23.80	13M5W7D	64QAM
LTE Band 41 (PC2)	27	2506 - 2680	0.350	25.44	18M0G7D	QPSK
LTE Band 41 (PC2)	27	2506 - 2680	0.280	24.48	18M0W7D	16QAM
LTE Band 41 (PC2)	27	2506 - 2680	0.286	24.56	18M0W7D	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 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 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 Tablet FCC ID: ZNFT600TS**. The test data contained in this report pertains only to the emissions due to the EUT's LTE function.

Test Device Serial No.: 02180, 02495, 04160

2.2 Device Capabilities

This device contains the following capabilities:

850/1700/1900 WCDMA/HSPA, Multi-band LTE, 802.11b/g/n WLAN, 802.11a/n/ac UNII, Bluetooth (1x, EDR, LE)

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.

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

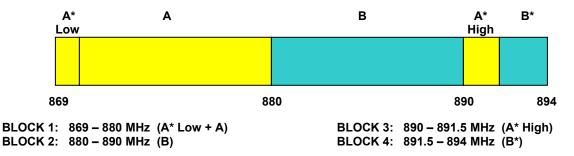
Two paired channels of 11 megahertz each are available for assignment in Block C in the 746-757 MHz and 776-787 MHz bands. In the event that no licenses for two channels in this Block C are assigned based on the results of the first auction in which such licenses were offered because the auction results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

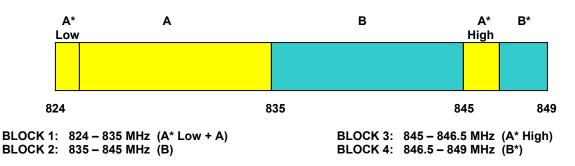
<u>698-746 MHz band</u>. The following frequencies are available for licensing pursuant to this part in the 698-746 MHz band: (1) Three paired channel blocks of 12 megahertz each are available for assignment as follows:

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

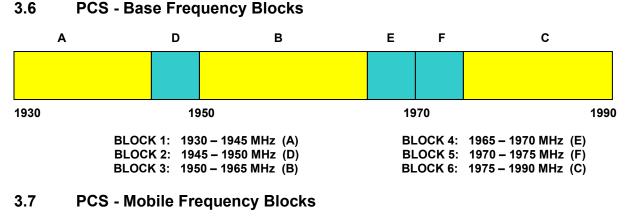


3.5 Cellular - Mobile Frequency Blocks



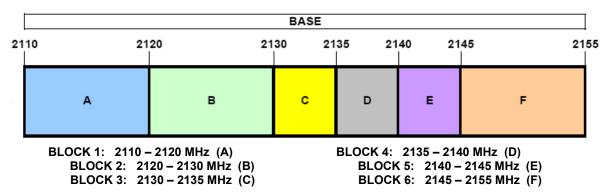
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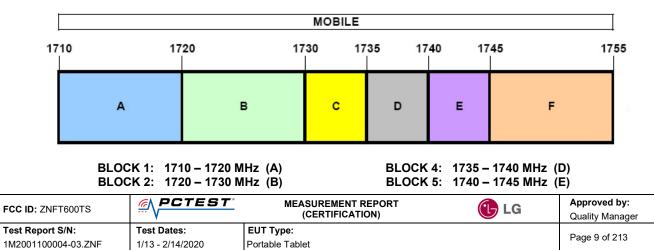


F D В Ε С Α 1850 1870 1890 1910 BLOCK 1: 1850 - 1865 MHz (A) BLOCK 4: 1885 - 1890 MHz (E) BLOCK 2: 1865 – 1870 MHz (D) BLOCK 5: 1890 - 1895 MHz (F) BLOCK 3: 1870 - 1885 MHz (B) BLOCK 6: 1895 – 1910 MHz (C)

3.8 AWS - Base Frequency Blocks



3.9 AWS - Mobile Frequency Blocks



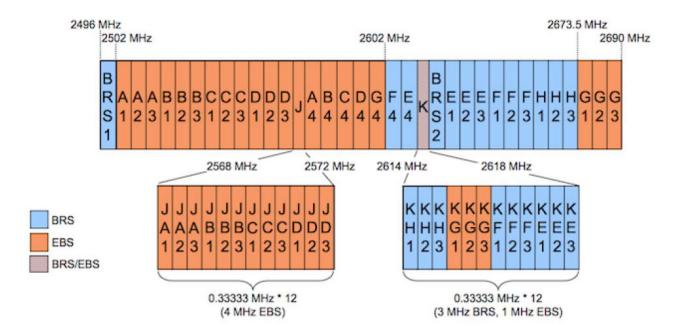
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BLOCK 3: 1730 - 1735 MHz (C)



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.

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

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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 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 + 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
	LTx5	Licensed Transmitter Cable Set	6/5/2019	Annual	6/5/2020	LTx5
Agilent	N9020A	MXA Signal Analyzer	4/20/2019	Annual	4/20/2020	US46470561
Agilent	N9038A	MXE EMI Receiver	7/17/2019	Annual	7/17/2020	MY51210133
Agilent	N9030A	PXA Signal Analyzer (44GHz)	6/12/2019	Annual	6/12/2020	MY52350166
Com-Power	PAM-103	Pre-Amplifier (1-1000MHz)	5/10/2019	Annual	5/10/2020	441112
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	2/22/2019	Biennial	2/22/2021	128338
Mini Circuits	TVA-11-422	RF Power Amp		N/A		QA1317001
Mini-Circuits	SSG-4000HP	Synthesized Signal Generator		N/A		11208010032
Mini-Circuits	PWR-SEN-4RMS	USB Power Sensor	4/20/2019	Annual	4/20/2020	11210140001
Mini-Circuits	SSG-4000HP	Synthesized Signal Generator	A	N/A	in and the second	11403100002
Rohde & Schwarz	CMW500	Radio Communication Tester		N/A		100976
Rohde & Schwarz	ESU26	EMI Test Receiver (26.5GHz)	6/5/2019	Annual	6/5/2020	100342
Rohde & Schwarz	SFUNIT-Rx	Shielded Filter Unit	7/11/2019	Annual	7/11/2020	102134
Schwarzbeck	UHA 9105	Dipole Antenna (400 - 1GHz) Tx	4/30/2018	Biennial	4/30/2020	9105-2403
Seekonk	NC-100	Torque Wrench (8" lb)	5/10/2018	Biennial	5/10/2020	N/A
Sunol	DRH-118	Horn Antenna (1-18GHz)	10/3/2019	Biennial	10/3/2021	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:	ZNFT600TS
FCC Classification:	PCS Licensed Transmitter (PCB)
Mode(s):	LTE

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
2.1049	Occupied Bandwidth	N/A			Section 7.2
2.1051 22.917(a) 24.238(a) 27.53(c) 27.53(g) 27.53(h)	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)	Out of Band Emissions	Undesirable emissions must meet the limits detailed in 27.53(m)		PASS	Section 7.3, 7.4
24.232(d)	Peak-Average Ratio	< 13 dB	CONDUCTED		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	< 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

FCC ID: ZNFT600TS	<u><u>PCTEST</u></u>	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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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 5/26)	< 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, 13)	< 3 Watts max. ERP			Section 7.6
24.232(c) 27.50(h)(2)	Equivalent Isotropic Radiated Power (Band 2/25, 41)	< 2 Watts max. EIRP			Section 7.6
27.50(d)(4)	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)	Undesirable Emissions (Band 12, 13, 26/5, 66/4, 25/2)	> 43 + 10 log ₁₀ (P[Watts]) for all out-of-band emissions			Section 7.7
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 7.7
27.53(m)	Undesirable Emissions (Band 41)	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 5.6.
- 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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Band 71



Plot 7-1. Occupied Bandwidth Plot (Band 71 - 5.0MHz QPSK - Full RB Configuration)

Keysight Spectrum Analyzer - Occupied BW					
RL RF 50 Ω DC	T	sense:INT enter Freq: 680.500000 MH rig: Free Run Avg Atten: 36 dB	ALIGN AUTO Iz Hold: 100/100	12:56:37 PM Feb 05, 2020 Radio Std: None Radio Device: BTS	Trace/Detector
0 dB/div Ref 30.00 dBm 99 000	m	munernan mar	~		Clear Writ
0.00 0.0 0.0 0.0				Mar Martin from the Chard	Averaç
0.0					Max Ho
enter 680.500 MHz es BW 120 kHz		#VBW 390 kHz Total Power	24.0	Span 12.50 MHz Sweep 1 ms dBm	Min Ho
Occupied Bandwidth 4.5 Transmit Freq Error	268 MHz -2.683 kHz				Detect Peal Auto <u>M</u> a
x dB Bandwidth	4.982 MHz			00 dB	
3			STATUS	3	

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

FCC ID: ZNFT600TS	<u><u><u></u><u>PCTEST</u></u></u>	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
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Keysight Spectrum Analyzer - Occupied BV						
KX RL RF 50Ω DC	Trig		ALIGN AUTO MHz rg Hold: 100/100	12:56:48 PM Feb 0 Radio Std: None	•	race/Detector
	#IFGain:Low #At	ten: 36 dB		Radio Device: B	TS	
10 dB/div Ref 30.00 dBr	n					
20.0	mannum	www.www.www.	~~~~			Clear Write
0.00						
-20.0	malt			way way	Server the	Average
-40.0						
-60.0						Max Hold
Center 680.500 MHz Res BW 120 kHz		#VBW 390 kHz		Span 12.50 Sweep		Min Hold
Occupied Bandwidt	h	Total Powe	er 30.8	3 dBm	_	
	5329 MHz					Detector Peak▶
Transmit Freq Error	-6.200 kHz	% of OBW	Power 99	9.00 %	Aut	o <u>Man</u>
x dB Bandwidth	5.013 MHz	x dB	-26.	00 dB		
MSG			STATU	S		

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)

FCC ID: ZNFT600TS	<u><u>PCTEST</u></u>	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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Keysight Spectrum Analyzer - Occupied	BW				- ē 🔀
ΙΧ RL RF 50 Ω DC	Cent	SENSE:INT er Freq: 680.500000 MHz Free Run Avg Hol en: 36 dB	ALIGN AUTO 01:10:44 P Radio Std d: 100/100 Radio Dev		Trace/Detector
10 dB/div Ref 40.00 dB	3m				
30.0					Clear Write
0.00		and the second and the second			
-10.0	h		how who was a second		Average
-20.0 1000 1000 1000 1000 1000 1000 1000				westment to the	
-40.0					Max Hold
Center 680.50 MHz Res BW 240 kHz		#VBW 750 kHz		25.00 MHz ep 1 ms	Min Hold
Occupied Bandwi		Total Power	32.2 dBm		
	0.0069 MHz		00.00.0/		Detector Peak▶ Auto Man
Transmit Freq Error x dB Bandwidth	-13.569 kHz 9.929 MHz	% of OBW Pow x dB	er 99.00 % -26.00 dB		Auto <u>Man</u>
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	1					_	
μα RL RF 50 Ω DC	Center	SENSE:INT Freq: 680.500000 MHz ree Run Avg Ho : 36 dB	ALIGN AUTO	01:14:59 PM Radio Std: Radio Devi		Trace/	Detector
10 dB/div Ref 30.00 dBm	n _						
20.0 10.0 0.00		ne hanna hall hall generation				CI	ear Write
-10.0 -20.0			- Construction	๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛	Magaen, and		Average
-40.0							Max Hold
Center 680.50 MHz Res BW 360 kHz	#	VBW 1.1 MHz			′.50 MHz ep 1 ms		Min Hold
Occupied Bandwidt	h	Total Power	32.6	dBm			
	8.533 MHz						Detector Peak▶
Transmit Freq Error	-583 Hz	% of OBW Po	wer 99	.00 %		Auto	Man
x dB Bandwidth	14.80 MHz	x dB	-26.0	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\	V					
LXIRL RF 50Ω DC	CORREC	SENSE:INT ter Freg: 680.500000 MH	ALIGN AUTO	01:15:18 PM Feb Radio Std: No		Trace/Detector
	🛶 Trig	: Free Run Avg	Hold: 100/100			
	#IFGain:Low #Att	en: 36 dB		Radio Device:	BTS	
10 dB/div Ref 30.00 dBr	n					
20.0						
10.0	marconten	Marana manager and	~~~			Clear Write
0.00			l.			
	1		T L			
-10.0						
-20.0	hand		howway	- Martin Martin	Array Mar an	Average
-30.0					1.000	
-40.0						
-50.0						Max Hold
-60.0						
				0	O BALL	
Center 680.50 MHz Res BW 360 kHz		#VBW 1.1 MHz		Span 37.5 Sweep		
Res DW 300 KHZ		# 40 94 1.1 141112		aweep		Min Hold
Occupied Bandwidt	th	Total Power	30.	6 dBm		
	3.508 MHz					Detector
						Detector Peak►
Transmit Freq Error	4.294 kHz	% of OBW P	ower 99	9.00 %	1	Auto <u>Man</u>
x dB Bandwidth	14.76 MHz	x dB	-26	.00 dB		
	14.10 11112	X db	20	.00 aB		
MSG			STATU	S		

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	IBW				
ΙΧΙ RL RF 50 Ω DC	Center Center Center	er Freq: 680.500000 MHz Free Run Avg Hold:		lone	Trace/Detector
	#IFGain:Low #Atte	en: 36 dB	Radio Device	e: BTS	
10 dB/div Ref 40.00 dB	3m				
30.0		La and month when a bit a little matter			Clear Write
10.0		Instantin have a start and the start of the			
0.00					Average
-20.0	source		Howen Martin Person Maring M		Ű
-30.0			~~ ~~ ~~ ~~ ~~ ~~ ~~ ~~ ~~ ~~ ~~ ~	and a state of the	
-40.0					Max Hold
Center 680.50 MHz Res BW 470 kHz	ŧ	#VBW 1.5 MHz	Span 50. Sweej	00 MHZ p 1 ms	Min Hold
Occupied Bandwi	dth	Total Power	31.8 dBm		
1	18.013 MHz				Detector Peak▶
Transmit Freq Error	9.613 kHz	% of OBW Powe	er 99.00 %	A	uto <u>Man</u>
x dB Bandwidth	19.63 MHz	x dB	-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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Band 12



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)

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Keysight Spectrum Analyzer - Occupied BV	V				
LX RL RF 50 Ω DC	Center Trig: F	SENSE:INT r Freq: 707.500000 MHz ree Run Avg Ho I: 36 dB	Radio St old:>100/100	PMFeb 05, 2020 d: None wice: BTS	Trace/Detector
10 dB/div Ref 35.00 dBn	n				
25.0					Clear Writ
5.00 -5.00 -15.0 -25.0			hummun		Averaç
-25.0 					Max Ho
Center 707.500 MHz Res BW 68 kHz	#	VBW 220 kHz		7.500 MHz ep 3.8 ms	Min Ho
Occupied Bandwidt	h	Total Power	31.3 dBm		
2.	7121 MHz				Detect Peak
Transmit Freq Error	-3.701 kHz	% of OBW Po	wer 99.00 %		Auto <u>Ma</u>
x dB Bandwidth	3.047 MHz	x dB	-26.00 dB		
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)

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🧫 Keysight Spectrum Analyzer - Occupied	BW						
LX RL RF 50Ω DC	CORREC	SENSE:INT ter Freg: 707.500000 MH;	ALIGN AUTO	12:27:37 PM Radio Std:	1Feb 05, 2020	Trace	e/Detector
	🛶 Trig	g: Free Run Avg ⊦	lold: 100/100				
	#IFGain:Low #At	ten: 36 dB		Radio Devi	ce: BTS		
10 dB/div Ref 40.00 dE	\$m		_				
30.0							
20.0						C	lear Write
10.0	m	www.weeksen	γ				
0.00	/		<u>\</u>				
-10.0							Average
-20.0 aller and many many many	mart		mont	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~ <u>~</u> ~~~		
-30.0					1014U.d		
-40.0							
							Max Hold
-50.0							
Center 707.500 MHz				Span 1	2.50 MHz		
Res BW 120 kHz		#VBW 390 kHz			ep 1 ms		Min Hold
		Total Power	22.0	dBm			
Occupied Bandwic		Total Power	32.0	abm			
4	.5700 MHz						Detector
Transmit Freq Error	2.003 kHz	% of OBW Pc	wer 99	.00 %		Auto	Peak▶ Man
x dB Bandwidth	5.065 MHz	x dB	-26.0	00 dB			
MSG			STATUS				

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



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

FCC ID: ZNFT600TS	PCTEST.	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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Keysight Spectrum Analyzer - Occupied B	W							
XX RL RF 50Ω DC	CORREC	SENSE:INT Center Freq: 707.500 Trig: Free Run		IGN AUTO	12:27:59 PI Radio Std:	M Feb 05, 2020 None	Trace	Detector
	#IFGain:Low	#Atten: 36 dB			Radio Dev	ice: BTS		
10 dB/div Ref 40.00 dB	m							
Log								
30.0							c	lear Write
20.0	mm	man man man	m					
10.0	/		Ι L					
0.00								
-10.0			<u>├</u>					Average
-20.0	<u>~~//\/</u>			www.www.	Yorgen	mon		
-30.0								
-40.0								Max Hold
-50.0								
Center 707.500 MHz					Snan 1	2.50 MHz		
Res BW 120 kHz		#VBW 390 k	Hz			ep 1 ms		Min Hold
						<u> </u>		WIIITHOID
Occupied Bandwid	th	Total P	ower	31.1	dBm			
4	5226 MH	Z						Detector
					00.0/			Peak▶
Transmit Freq Error	-6.382 kl		3W Power	99.	.00 %		Auto	Man
x dB Bandwidth	5.008 MI	lz xdB		-26.0)0 dB			
MSG				STATUS				

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



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

FCC ID: ZNFT600TS	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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Keysight Spectrum Analyzer - Occupied	IBW				
(X) RL RF 50 Ω DC	#IFGain:Low	SENSE:INT Center Freq: 707.5000 Trig: Free Run #Atten: 36 dB	ALIGN AUTO 000 MHz Avg Hold:>100/100	Radio Std: None	Trace/Detector
	#IFGaIn:Low	#Atten: 30 dB		Radio Device. D	13
10 dB/div Ref 40.00 dl	3m				
Log 30.0					
20.0					Clear Write
10.0					
0.00			\\		
-10.0	When		wallen		Average
-20.0 -30.0 m/www.when.	N/WW			- Martin Martin Contraction	when
-40.0					Max Hold
-30.0					
Center 707.50 MHz				Span 25.00	
Res BW 240 kHz		#VBW 750 k	HZ	Sweep	n ms Min Hold
Occupied Bandwi	dth	Total P	ower 31	.4 dBm	
9	9.0436 MH	Z			Detector Peak▶
Transmit Freq Error	15.230 kł	Hz % of OE	SW Power 9	99.00 %	Auto <u>Man</u>
x dB Bandwidth	9.909 MI	lz xdB	-20	6.00 dB	
MSG			STAT	US	

Plot 7-23. Occupied Bandwidth Plot (Band 12 - 10.0MHz 16-QAM - Full RB Configuration)



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

FCC ID: ZNFT600TS	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dama 00 of 040
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Band 13



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: ZNFT600TS	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 20 of 212
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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: ZNFT600TS	<u><u><u></u><u>PCTEST</u></u></u>	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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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: ZNFT600TS	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dava 00 af 040
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Band 26/5



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: ZNFT600TS	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 22 of 212
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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: ZNFT600TS	<u><u>PCTEST</u></u>	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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Keysight Spectrum Analyzer - Occupied B ¹	N				
02 RL RF 50 Ω DC	, → Trig: I #FGain:Low #Atter	SENSE:INT r Freq: 836.500000 MHz Free Run Avg Hol n: 36 dB	Radio St d: 100/100	AM Feb 05, 2020 d: None vice: BTS	Trace/Detector
25.0	- Automation	- Mar Mar Mar			Clear Write
-5.00 -15.0 -25.0 -35.0	V		2 Jan	+ โพยไหญ่ เม	Average
-45.0					Max Hold
Center 836.500 MHz Res BW 68 kHz Occupied Bandwidt	th	VBW 220 kHz Total Power		7.500 MHz ep 3.8 ms	Min Hold
2.	7012 MHz				Detector Peak▶
Transmit Freq Error x dB Bandwidth	2.904 kHz 3.017 MHz	% of OBW Pow x dB	ver 99.00 % -26.00 dB		Auto <u>Man</u>
MSG			STATUS		

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



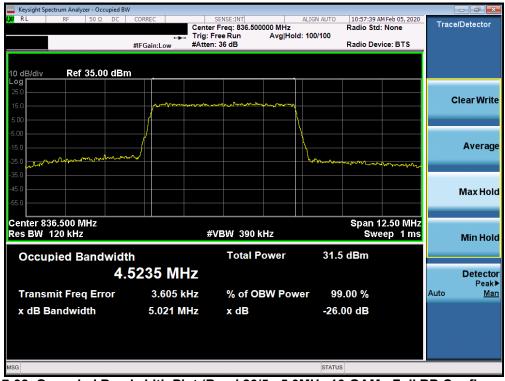
Plot 7-36. Occupied Bandwidth Plot (Band 26/5 - 3.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFT600TS	<u><u>PCTEST</u></u>	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dama 05 of 040	
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Keysight Spectrum Analyzer - Occupied B ¹	N				
μX RL RF 50Ω DC	Trig: I	SENSE:INT Freq: 836.500000 MHz Free Run Avg Hold: n: 36 dB	Radio Std		Trace/Detector
10 dB/div Ref 35.00 dBr	n				
25.0					Clear Write
5.00					Average
-25.0			La contraction of the second	dynen ar fran fr	
-45.0			Spop (2.50 MHz	Max Hold
Res BW 120 kHz		VBW 390 kHz Total Power		2.50 MHz eep 1 ms	Min Hold
Occupied Bandwid 4.	5509 MHz		55.0 dBiii		Detecto Peak
Transmit Freq Error x dB Bandwidth	6.050 kHz 5.009 MHz	% of OBW Powe x dB	er 99.00 % -26.00 dB		Auto <u>Mar</u>
MSG			STATUS		

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



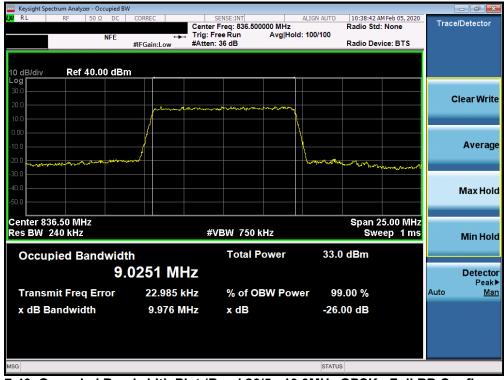
Plot 7-38. Occupied Bandwidth Plot (Band 26/5 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFT600TS	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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🤤 Keysight Spectrum Analyzer - Occup	oied BW						
ίχα RL RF 50Ω		SENSE:INT Center Freq: 836.500 Trig: Free Run #Atten: 36 dB	ALIGN 0000 MHz Avg Hold:>100/	Radio Std:		Trace/D	etector
10 dB/div Ref 30.00	dBm						
20.0			m			Cle	ar Write
-10.0							
-20.0	~~~~		- In	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		Average
-40.0						M	ax Hold
-60.0							ux noru
Center 836.500 MHz Res BW 120 kHz		#VBW 3901	(Hz		2.50 MHz ep 1 ms	N	lin Hold
Occupied Bandw		Total P	ower	31.9 dBm			
Transmit Freq Erro	4.5493 MH		BW Power	99.00 %		C Auto)etector Peak▶ Man
x dB Bandwidth	5.019 MH			-26.00 dB		, allo	man
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: ZNFT600TS	<u>«</u> PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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Keysight Spectrum Analyzer - Oc	cupied BW					
10 dB/div Ref 40.0	#IFGain:Low	SENSE:INT Center Freq: 836.50 Trig: Free Run #Atten: 36 dB	ALIGN / 00000 MHz Avg Hold: 100/1	Radio Std: N	None	Trace/Detector
Log 30.0 20.0 10.0		ng war and a strend of	un windom of			Clear Write
-10.0 -20.0 -30.0	A			when managenerated	Munnor Mar	Average
-40.0						Max Hold
Center 836.50 MHz Res BW 240 kHz Occupied Band		#VBW 750 Total I		Span 25 Swee 31.2 dBm	.00 MHz ep 1 ms	Min Hold
	9.0245 N	IHz				Detector Peak▶
Transmit Freq Err x dB Bandwidth	ror 13.261 9.849		BW Power	99.00 % -26.00 dB		Auto <u>Man</u>
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: ZNFT600TS	<u><u>PCTEST</u></u>	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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Keysight Spectrum Analyzer - Occupied B	W				- ē 🔀
(X) RL RF 50 Ω DC	Center Trig: F	r Freq: 836.500000 MHz	Radio Std:		Trace/Detector
10 dB/div Ref 40.00 dB	m				
20.0	potennonomotom	Portuge Population			Clear Write
10.0					Average
-20.0 -20.0	wpth_cl		and and a second to make a	And and a marked and	
-40.0					Max Hold
Center 836.50 MHz Res BW 360 kHz		VBW 1.1 MHz	Swe	7.50 MHz ep 1 ms	Min Hold
Occupied Bandwid	th 3.556 MHz	Total Power	33.0 dBm		Detector Peak▶
Transmit Freq Error x dB Bandwidth	16.114 kHz 14.80 MHz	% of OBW Powe x dB	r 99.00 % -26.00 dB		Auto <u>Man</u>
MSG			STATUS		
Mod			314103		

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: ZNFT600TS	<u>«</u> PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕑 LG	Approved by: Quality Manager
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Keysight Spectrum Analyzer - Occupied BW					
C RL RF 50Ω DC	CORREC	SENSE:INT Center Freq: 836.5000	ALIGN AUTO	11:24:38 AM Feb 06, 2020 Radio Std: None	Trace/Detector
NFE	· → -	Trig: Free Run	Avg Hold: 100/100		
	#IFGain:Low	#Atten: 36 dB		Radio Device: BTS	-
0 dB/div Ref 35.00 dBm	<u> </u>				
og 5.0					
5.0	0.000.0000	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	wm		Clear Writ
.00	/		l l		
5.0					Averad
- man make mile provinced	word		mound		Avera
5.0					
5.0				h h	
15.0					Max Ho
55.0					
enter 836.50 MHz				Span 37.50 MHz	
es BW 360 kHz		#VBW 1.1 M	Hz	Sweep 1 ms	
		Total Po	24	4 dBm	
Occupied Bandwidt			ower 31.4	4 abm	
13	.564 MH	Z			Detect
Transmit Freq Error	12.325 ki	z % of OB	W Power 99	9.00 %	Peak Auto Ma
x dB Bandwidth	14.78 MI	Hz xdB	-26.	.00 dB	
G			STATU	s	

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

FCC ID: ZNFT600TS	<u><i>CPCTEST</i></u>	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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Band 66/4



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: ZNFT600TS	<u><u><u></u><u>PCTEST</u></u></u>	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: ZNFT600TS	PCTEST [®]	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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Keysight Spectrum Analyzer - Occupied BW						
ΙΧΙ R L RF 50 Ω AC		SENSE:INT Center Freq: 1.74500 Trig: Free Run	0000 GHz Avg Hold: 100/	Radio Std:	Jan 31, 2020 None	Trace/Detector
		#Atten: 36 dB		Radio Devi	ce: BTS	
10 dB/div Ref 40.00 dBn	1					
30.0 20.0						Clear Write
10.0	pure and a second	un thus when many market	and Britanika Ne			
0.00	/					
-10.0						Average
-20.0 งหารษณฑิษณฑิษณฑิษณฑาราว				warman white the the standing	howant	
-30.0						
-40.0						Max Hold
-50.0						
Center 1.745 GHz				Span	7.5 MHz	
Res BW 68 kHz		#VBW 220 k	Hz	Sweep	12.53 ms	Min Hold
Occupied Bandwidt	h	Total P	ower	31.8 dBm		
	7144 MH	7				Detector
						Peak▶
Transmit Freq Error	-2.766 kH		BW Power	99.00 %	4	Auto <u>Man</u>
x dB Bandwidth	3.063 MH	z x dB		-26.00 dB		
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: ZNFT600TS	<u>«</u> PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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www.www.www.www.www.www.www.www.www.ww	V							
LX/RL RF 50Ω AC	CORREC	SENSE:INT	00000 GHz		11:22:21 F	M Jan 31, 2020	Trace	/Detector
		Trig: Free Run	Avg Hold:	>100/100				
	#IFGain:Low	#Atten: 36 dB			Radio Dev	vice: BTS		
10 dB/div Ref 30.00 dBn	n							
20.0								
10.0	Junio	www.	Jum				c	lear Write
0.00	/		\				_	
-10.0			\					
-20 0 ml who who who who	~~~			month	marl and the const	man man		Average
-30.0								
-40.0								
-50.0								
-60.0								Max Hold
-00.0								
Center 1.745 GHz						12.5 MHz		
Res BW 120 kHz		#VBW 3901	kHz		SW	eep 1 ms		Min Hold
Occupied Bandwidt	h	Total P	ower	33.0	dBm			
4.	5585 MH	Z						Detector Peak▶
Transmit Freq Error	-9.852 kH	z % of O	BW Powe	er 99	.00 %		Auto	Man
x dB Bandwidth	5.070 MH	lz xdB		-26 ()0 dB			
				201				
MSG				STATUS				
mod				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: ZNFT600TS	<u><u><u></u><u>PCTEST</u></u></u>	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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www.www.www.www.www.www.www.www.www.ww	,						
LX/ RL RF 50Ω AC	CORREC	SENSE:INT Center Freg: 1.7450	00000 GHz		PMJan 31, 2020	Trace/E)etector
	→ →→	Trig: Free Run	Avg Hold:	100/100			
	#IFGain:Low	#Atten: 36 dB		Radio D	evice: BTS		
10 dB/div Ref 30.00 dBm Log	<u> </u>						
20.0			<u> </u>				
10.0	Jun w	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	mar Marcal			Cle	ear Write
0.00	/		\				_
-10.0	_/		\				
-20.0 - mut have have have have	Ner		V	Tyn Verry warne annys	Vmmmm Jan		Average
-30.0							-
-40.0							
-50.0							lax Hold
-60.0						'n	
Center 1.745 GHz Res BW 120 kHz		#VBW 390			n 12.5 MHz veep 1 ms		
Res BW 120 KH2		#VDVV J90	KI1Z		veep mis	1	Min Hold
Occupied Bandwidt	h	Total F	ower	31.4 dBm			
	5330 MH	7					Detector
		2					Peak►
Transmit Freq Error	-7.260 k⊦	z % of O	BW Powe	r 99.00 %		Auto	<u>Man</u>
x dB Bandwidth	5.030 MH	z xdB		-26.00 dB			
MSG				STATUS			

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



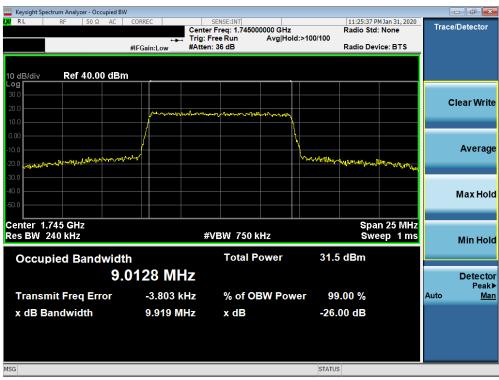
Plot 7-55. Occupied Bandwidth Plot (Band 66/4 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFT600TS	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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www.www.www.www.www.www.www.www.www.ww				
LX/ RL RF 50Ω AC	CORREC	SENSE:INT Freg: 1.745000000 GHz	11:25:31 PM Jan 31, Radio Std: None	Trace/Detector
		Free Run Avg Hold: n: 36 dB	100/100 Radio Device: BT	s .
	#IFGalli:Low #Atte	1. 00 00	Radio Device. D I	
10 dB/div Ref 40.00 dB	m			
Log				
30.0				Clear Write
20.0	Multimerer	- Mar and Mar and Ball of		
0.00		<u> </u>		
	/	<u> </u>		Average
-10.0 -20.0 - Aller Min Man Mark	when		how many market and	Average
-30.0				
-40.0				
-50.0				Max Hold
Center 1.745 GHz Res BW 240 kHz	+	¢VBW 750 kHz	Span 25 M Sweep 1	mag
	"		Sweep I	Min Hold
Occupied Bandwid	lth	Total Power	32.1 dBm	
9	.0260 MHz			Detector
			00.00.0/	Peak►
Transmit Freq Error	-15.363 kHz	% of OBW Powe		Auto <u>Man</u>
x dB Bandwidth	9.890 MHz	x dB	-26.00 dB	
MSG			STATUS	

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



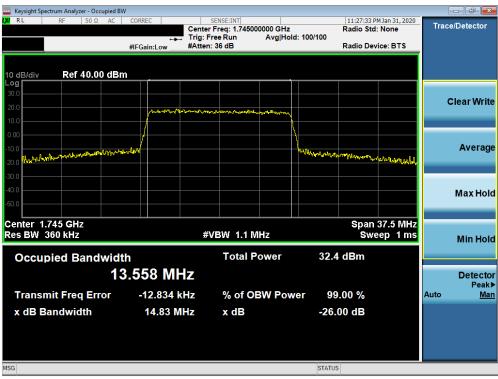
Plot 7-57. Occupied Bandwidth Plot (Band 66/4 - 10.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFT600TS	<u><u><u></u><u>PCTEST</u>°</u></u>	MEASUREMENT REPORT (CERTIFICATION)	🕞 LG	Approved by: Quality Manager
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🔤 Keysight Spectrum Analyzer - Occupie	ed BW				- 6 -
LXI RL RF 50Ω A		SENSE:INT Inter Freg: 1.745000000 GHz	11:27:27 P Radio Std	M Jan 31, 2020	Trace/Detector
	🛶 Tri	ig: Free Run Avg Hold	: 100/100		
	#IFGain:Low #A	tten: 36 dB	Radio Dev	vice: BTS	
10 dB/div Ref 40.00 d	IBm				
30.0					
20.0	Another the star 196	At alter of the offer the offer the second s			Clear Write
10.0					
0.00	/	\			
-10.0		V			Average
-10.0			mar and the start	Manu Manu	-
-30.0					
-40.0					Max Hold
-50.0					
Center 1.745 GHz				37.5 MHz	
Res BW 360 kHz		#VBW 1.1 MHz	SWe	eep 1 ms	Min Hold
Occupied Bandwi	idth	Total Power	33.4 dBm		
	13.531 MHz				Detector
	13.551 MITZ				Detector Peak▶
Transmit Freq Error	-18.458 kHz	% of OBW Powe	er 99.00 %	A	uto <u>Man</u>
x dB Bandwidth	14.87 MHz	x dB	-26.00 dB		
MSG			STATUS		
			UNIO		

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: ZNFT600TS	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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Cent	er Freq: 1.745000000 GHz	Radio Sto		Trace/Detector
			vice: BTS	
#I Gain.Low #/				
n				
				Clear Write
maninpluman	and we have a marked and			
/				
				Average
www		how when have been and have been been been been been been been be	Whenham the a	3
				Max Hold
				maxiloid
		Enon	27.5 MHz	
	#VBW 1.1 MHz			Min Hold
		04.0.10		WIII HOIG
	lotal Power	31.6 dBm		
3.536 MHz				Detector Peak▶
-19.977 kHz	% of OBW Pov	ver 99.00 %		Auto <u>Man</u>
1/ 71 MHz	v dB	-26 00 dB		
14.7 1 141112	A db	-20.00 uB		
	m m m m m m m m m m m m m m m m m m m	CORREC SENSE:INT Center Freq: 1.74500000 GHz #IFGain:Low Trig: Free Run Avg Ho #Atten: 36 dB m #WBW #VBW 1 4 5 4 5 6 7	CORREC SENSE:INT I1:27:391 Center Freq: 1.74500000 GHz Radio Ste #FGain:Low Avg Hold: 100/100 Radio De m Market and a ste Ste Ste m Ste Ste Ste Ste m Ste Ste Ste Ste Ste m Ste Ste Ste Ste Ste Ste m Ste Ste Ste Ste Ste Ste Ste m Ste Ste Ste Ste Ste Ste Ste m Ste Ste Ste Ste Ste Ste m Total Power 31.6 dBm Ste Ste Ste th Total Power 99.00 % Ste Ste Ste Ste a Ste Ste Ste Ste Ste Ste	CORREC SENSE:INT 11:27:39 PM Jan 31, 2020 Center Freq: 1.745000000 GHz Trig: Free Run Avg Hold: 100/100 #Atten: 36 dB m m M M M M M M M M M M M M M

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



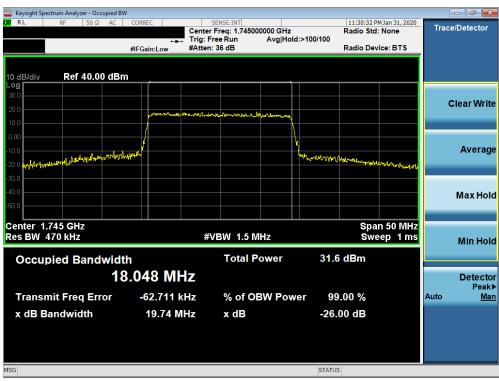
Plot 7-61. Occupied Bandwidth Plot (Band 66/4 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFT600TS	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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Keysight Spectrum Analyzer - Occupied BW					
LXU RE 50 Ω AC	CORREC Cent	SENSE:INT er Freg: 1.745000000 GH2		30:27 PM Jan 31, 2020 o Std: None	Trace/Detector
	↔ Trig:		old: 100/100		
1	#FGain:Low #Atte	en: 36 dB	Radi	o Device: BTS	
10 dB/div Ref 40.00 dBm			•		
30.0					
20.0	en marting to the second	unal march has a structure of			Clear Write
10.0					
0.00			<u>}</u>		
-10.0	A		Materia and		Average
-20.0 papapal marin when more hard and			Manhappin	mulionarginally	
-30.0					
-40.0					Max Hold
-50.0					
				On an 50 Mile	
Center 1.745 GHz Res BW 470 kHz		#VBW 1.5 MHz		Span 50 MHz Sweep 1 ms	
				oweep rino	Min Hold
Occupied Bandwidth		Total Power	32.3 dBi	m	
18	036 MHz				Detector
					Peak▶
Transmit Freq Error	-25.088 kHz	% of OBW Po	wer 99.00	%	Auto <u>Man</u>
x dB Bandwidth	19.56 MHz	x dB	-26.00 d	В	
MSG			STATUS		

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

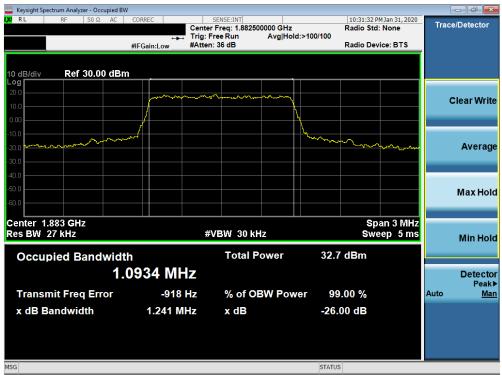


Plot 7-63. Occupied Bandwidth Plot (Band 66/4 - 20.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFT600TS	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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Band 25/2



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: ZNFT600TS	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dama 50 of 010
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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: ZNFT600TS	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Daga 51 of 212
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Keysight Spectrum Analyzer - Occupied BV							
LX/RL RF 50Ω AC	CORREC	SENSE:INT enter Freq: 1.882500000 GH	Ηz	10:40:10 F Radio Std	MJan 31, 2020 : None	Trace	Detector
		rig:FreeRun Avg∥ Atten:36 dB	Hold: 100/100	Radio Dev	vice: BTS		
	#il Gam.cow						
10 dB/div Ref 40.00 dBr	n						
Log 30.0							
20.0						с	lear Write
10.0	putternegates	athread and the second states and the second	~				
0.00	<u>/</u>						
-10.0			<u> </u>				Average
-20.0 alphysolynomic magunation	wr.~~		The second	Man Mare			-
-30.0							
-40.0							Max Hold
-50.0							
Center 1.883 GHz				Spa	n 7.5 MHz		
Res BW 68 kHz		#VBW 220 kHz			12.53 ms		Min Hold
Occupied Bandwidt	b	Total Power	31.8	3 dBm			
	 7186 MHz		0				Detector
۷.							Detector Peak▶
Transmit Freq Error	-4.248 kHz	% of OBW Po	ower 99	9.00 %		Auto	<u>Man</u>
x dB Bandwidth	3.037 MHz	x dB	-26.	00 dB			
MSG			STATU	S			

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: ZNFT600TS	<u><u>FCTEST</u></u>	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 52 of 212
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Keysight Spectrum Analyzer - Occupied BW					
IX RL RF 50Ω AC		sense:INT er Freq: 1.882500000 GHz Free Run Avg Hold:	Radio Std:	M Jan 31, 2020 None	Trace/Detector
		en: 36 dB	Radio Dev	ice: BTS	
10 dB/div Ref 40.00 dBm					
30.0					Clear Write
20.0	mm	mmmmmm			Clear write
10.0					
0.00					Average
-10.0	m		mann	man	Average
-30.0					
-40.0					Max Hold
-50.0					Wax Holu
Center 1.883 GHz				12.5 MHz	
Res BW 120 kHz		#VBW 390 kHz		ep 1 ms	Min Hold
Occupied Bandwidth	ı	Total Power	33.3 dBm		
	5503 MHz				Detector
					Peak►
Transmit Freq Error	-1.382 kHz	% of OBW Powe		, i i i i i i i i i i i i i i i i i i i	Auto <u>Man</u>
x dB Bandwidth	5.012 MHz	x dB	-26.00 dB		
MSG			STATUS		

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: ZNFT600TS	<u><u>@</u>PCTEST[®]</u>	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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Even See Strate See Strate Strate See Strate							
LX/RL RF 50Ω AC	CORREC	SENSE:INT enter Freg: 1.882500000	GHz	10:45:07 P Radio Std	M Jan 31, 2020 : None	Trace/I	Detector
		rig: Free Run Av Atten: 36 dB	g Hold: 100/100	Radio Dev	/ice: BTS		
	an Gam. Low						
10 dB/div Ref 40.00 dBm							
Log 30.0							
20.0						CI	ear Write
10.0	m	······································	~~~				_
0.00	A		<u>}</u>				
-10.0	~						Average
-20.0 mm month market			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		_
-30.0							
-40.0							Max Hold
-50.0							
Center 1.883 GHz					12.5 MHz		
Res BW 120 kHz		#VBW 390 kHz		SW	eep 1 ms		Min Hold
Occupied Bandwidth		Total Powe	er 31	1.7 dBm			
4.5	557 MHz						Detector
Transmit Freq Error	-9.276 kHz		Power	99.00 %		Auto	Peak▶ Man
						Auto	man
x dB Bandwidth	5.025 MHz	хив	-2	6.00 dB			
MSG			STA	TUS			

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: ZNFT600TS	<u><u>FCTEST</u></u>	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dere E4 of 212
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Keysight Spectrum Analyzer - Occupied BW					- ¢ ×
LXX RL RF 50Ω AC		SENSE:INT er Freq: 1.882500000 GHz	Rac	:48:12 PM Jan 31, 2020 lio Std: None	Frequency
		Free Run Avg Holo en: 36 dB	d: 100/100 Rac	lio Device: BTS	
10 dB/div Ref 40.00 dBm	n				
Log 30.0					Center Freq
20.0	many	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			1.882500000 GHz
10.0		mathematic bound of the contraction of the contract			
0.00	/		\		
-10.0	cocol		hour harmon and har		
				ᡟᢇ᠁ᢛᡗᢇᢇᢩ᠆ᠲᡧᢂᡗᡄᢐᢧᡘᡁ᠕ᢢᠰᢇ	
-30.0					
-40.0					
Center 1.883 GHz Res BW 240 kHz	-	#VBW 750 kHz		Span 25 MHz Sweep 1 ms	CF Step
					2.500000 MHz Auto Man
Occupied Bandwidt		Total Power	32.0 dB	m	
9.	0431 MHz				Freq Offset
Transmit Freq Error	4.493 kHz	% of OBW Pow	ver 99.00	%	0 Hz
x dB Bandwidth	9.898 MHz	x dB	-26.00 c	B	
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: ZNFT600TS	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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www.www.com analyzer - Occupied BW	,					
LX/RL RF 50Ω AC	CORREC	SENSE:INT Center Freg: 1.88250	0000 GHz	10:49:50 PI Radio Std:	MJan 31, 2020	Trace/Detector
	#IFGain:Low	Talas Free Press	Avg Hold:>100/10	0 Radio Dev	ice: BTS	
10 dB/div Ref 40.00 dBm						
Log 30.0						Clear Write
20.0	former	m.J	www.			Clear write
0.00						
-10.0	maren		how the second	multinanty	and a stranger	Average
-30.0						
-40.0						Max Hold
Center 1.883 GHz					37.5 MHz	
Res BW 360 kHz		#VBW 1.1 M	Hz	Swe	ep 1 ms	Min Hold
Occupied Bandwidt	h	Total P	ower 3	3.0 dBm		
13	.584 M⊦	z				Detector Peak▶
Transmit Freq Error	-9.538 k	Hz % of OE	3W Power	99.00 %		Auto <u>Man</u>
x dB Bandwidth	14.92 M	Hz x dB	-4	26.00 dB		
MSG			ST	ATUS		

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



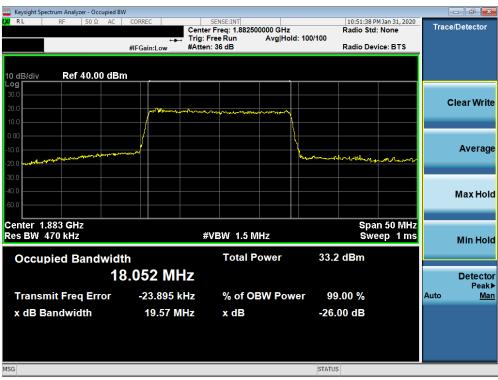
Plot 7-77. Occupied Bandwidth Plot (Band 25/2 - 15.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFT600TS	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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Keysight Spectrum Analyzer - Occupied B	V				
LXU R L RF 50 Ω AC	CORREC	SENSE:INT er Freg: 1.882500000 GHz		3 PM Jan 31, 2020 td: None	Trace/Detector
	Trig:		ld: 100/100	evice: BTS	
	#IFGain:Low #Atte	en: 36 dB	Radio D	evice: DTS	
10 dB/div Ref 40.00 dBr					
30.0					Clear Write
20.0	momenturament	your water and the second			Clear Write
10.0					
0.00			1		
-10.0	-low		himmer man for the second	1	Average
-20.0				^~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	
-30.0					
-40.0					Max Hold
-50.0					
Center 1.883 GHz				n 37.5 MHz	
Res BW 360 kHz		#VBW 1.1 MHz	Si	veep 1 ms	Min Hold
Occupied Bandwidt	h	Total Power	31.3 dBm		
	 3.555 MHz				Datastar
	5.555 MITZ				Detector Peak►
Transmit Freq Error	-14.863 kHz	% of OBW Pov	ver 99.00 %		Auto <u>Man</u>
x dB Bandwidth	14.79 MHz	x dB	-26.00 dB		
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: ZNFT600TS	<u><i>CPCTEST</i></u>	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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www.www.www.www.www.www.www.www.www.ww				
LX/ RL RF 50Ω AC	CORREC	SENSE:INT er Freg: 1.882500000 GHz	10:51:50 PM Jan 3 Radio Std: Non	
		Free Run Avg Hold: 1 n: 36 dB	100/100 Radio Device: E	TS
	#IFGalli:Low #Atte	1. 00 0.0	Radio Device. L	
10 dB/div Ref 40.00 dB	m			
Log				
30.0				Clear Write
20.0		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		
0.00				
-10.0		l l l l l l l l l l l l l l l l l l l		Average
-20.0 algoright and marked and and and and and and and and and an	muner		and the second and the second	
-30.0				
-40.0				Manufactura
-50.0				Max Hold
Center 1.883 GHz Res BW 470 kHz	+	¢VBW 1.5 MHz	Span 50 Sweep	1 mo
NCS DW 470 KHZ	"		Sweep	Min Hold
Occupied Bandwid	lth	Total Power	32.2 dBm	
1	8.067 MHz			Detector
	-24.929 kHz	% of OBW Power	r 99.00 %	Peak▶ Auto Man
				Auto <u>Ivian</u>
x dB Bandwidth	19.60 MHz	x dB	-26.00 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: ZNFT600TS	<u><u>FCTEST</u></u>	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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Band 41 (PC2)



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)

FCC ID: ZNFT600TS	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
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Plot 7-84. Occupied Bandwidth Plot (Band 41 (PC2) - 5.0MHz 64-QAM - Full RB Configuration)



Plot 7-85. Occupied Bandwidth Plot (Band 41 (PC2) - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFT600TS	<u><u>@</u>PCTEST[®]</u>	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dama 60 of 040
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Plot 7-86. Occupied Bandwidth Plot (Band 41 (PC2) - 10.0MHz 16-QAM - Full RB Configuration)



Plot 7-87. Occupied Bandwidth Plot (Band 41 (PC2) - 10.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFT600TS	PCTEST [®]	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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Keysight Spectrum Analyzer - Occupied B	W					7 ×
ΙΧΙ RF 50 Ω AC		sense:INT r Freq: 2.593000000 GHz Free Run Avg Ho		17 PM Jan 28, 2020 Std: None	Trace/Dete	ctor
		n: 36 dB		Device: BTS		
10 dB/div Ref 35.00 dB	n					
25.0		unter a construction of the second of the	N		Clear	Write
-5.00						
-15.0 -25.0 Allow Marker Maker Maker Marker			hoppy and the second second	NIN Mutritan Anton	Av	erage
-35.0					Мах	(Hold
Center 2.593 GHz Res BW 360 kHz	#	VBW 1.1 MHz		an 37.5 MHz weep 1 ms	Min	n Hold
Occupied Bandwid		Total Power	32.4 dBm			
	3.546 MHz					tector Peak▶
Transmit Freq Error	2.702 kHz	% of OBW Pov	ver 99.00 %		Auto	<u>Man</u>
x dB Bandwidth	14.82 MHz	x dB	-26.00 dB			
MSG			STATUS			

Plot 7-88. Occupied Bandwidth Plot (Band 41 (PC2) - 15.0MHz QPSK - Full RB Configuration)



Plot 7-89. Occupied Bandwidth Plot (Band 41 (PC2) - 15.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFT600TS	PCTEST [®]	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
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www.www.com analyzer - Occupied BW							- d 🗙
X RL RF 50Ω AC	CORREC	SENSE:INT Center Freg: 2.59300	0000 GH-	07:50:07 PI Radio Std:	1 Jan 28, 2020	Trace	e/Detector
		Trig: Free Run	Avg Hold: 100/100	Raulo Stu.	None		
	#IFGain:Low	#Atten: 36 dB		Radio Dev	ice: BTS		
10 dB/div Ref 35.00 dBm							
25.0							
						c	lear Write
15.0	manne	and an and a start and a start of the second s	m				
5.00	1		<u> </u>				
-5.00	191 T		<u> </u>				
-15.0 -25.0	M 1			100 10 101			Average
-25.0 -25.0 -25.0 -25.0				WM.	and halamout	_	
-35.0							
-45.0							Max Hold
-55.0							maxmona
Center 2.593 GHz Res BW 360 kHz					37.5 MHz		
Res BW 300 KH2		#VBW 1.1 M	Π2	Swe	ep 1 ms		Min Hold
Occupied Bandwidt	h	Total P	ower 30	.3 dBm			
							-
13	.494 MH	Z					Detector Peak►
Transmit Freq Error	-23.482 kH	Iz % of OE	BW Power S	9.00 %		Auto	Man
x dB Bandwidth	15.43 MH	z xdB	-20	5.00 dB			
MSG			STAT	US			

Plot 7-90. Occupied Bandwidth Plot (Band 41 (PC2) - 15.0MHz 64-QAM - Full RB Configuration)



Plot 7-91. Occupied Bandwidth Plot (Band 41 (PC2) - 20.0MHz QPSK - Full RB Configuration)

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Keysight Spectrum Analyzer - Occupied BW	1						- 6 ×
XX RL RF 50Ω AC		SENSE:INT		07:52:18 PI Radio Std:	MJan 28, 2020 None	Trace	/Detector
		g:FreeRun Avg ten:36dB	Hold:>100/100	Radio Dev	ice: BTS		
10 dB/div Ref 35.00 dBm	າ						
25.0							
15.0	and the second s	www.marthunder.marthanaru	m. No			С	lear Write
5.00							
-5.00	/						
-15.0	b /						Average
-15.0 -25.0			՝ երթինին	Murau	Jun Mary		
-35.0							
-45.0							Max Hold
-55.0							
Center 2.593 GHz				Sna	n 50 MHz		
Res BW 470 kHz		#VBW 1.5 MHz			ep 1 ms		Min Hold
Occupied Bandwidt	h	Total Powe	31.4	4 dBm			
	 .982 MHz						Detector
1/	.302 11172						Peak ►
Transmit Freq Error	-43.166 kHz	% of OBW F	ower 9	9.00 %		Auto	<u>Man</u>
x dB Bandwidth	19.88 MHz	x dB	-26	.00 dB			
MSG			STATU	s			

Plot 7-92. Occupied Bandwidth Plot (Band 41 (PC2) - 20.0MHz 16-QAM - Full RB Configuration)



Plot 7-93. Occupied Bandwidth Plot (Band 41 (PC2) - 20.0MHz 64-QAM - Full RB Configuration)

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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 41, 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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