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MEASUREMENT REPORT LTE / 5G NR Sub6

Applicant Name:

LG Electronics USA, Inc. 111 Sylvan Avenue, North Building Englewood Cliffs, NJ 07632 United States Date of Testing: 07/30/2020 - 09/03/2020 Test Site/Location: PCTEST Lab. Columbia, MD Test Report Serial No.: 1M2007130107-03.ZNF

FCC ID:

ZNFK920AM

APPLICANT:

LG Electronics USA, Inc.

Application Type: Model: Additional Model(s):

EUT Type: FCC Classification: FCC Rule Part(s): Test Procedure(s): Certification LM-K920AM LM-K920TM, LM-K920QM, LMK920AM, LMK920TM, LMK920QM, K920AM, K920TM, K920QM 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 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



		T., F.,	ERP			EIRP		
Mode	Modulation	Tx Frequency Range [MHz]	Max. Power [W]	Max. Power [dBm]	Max. Power [W]	Max. Power [dBm]	Emission Designator	
	QPSK	831.5 - 841.5	0.087	19.39	0.143	21.54	13M5G7D	
	16QAM	831.5 - 841.5	0.068	18.32	0.111	20.47	13M5W7D	
	64QAM	831.5 - 841.5	0.061	17.86	0.100	20.01	13M5W7D	
	QPSK	829.0 - 844.0	0.092	19.66	0.152	21.81	9M01G7D	
	16QAM	829.0 - 844.0	0.077	18.87	0.126	21.02	8M97W7D	
	64QAM	829.0 - 844.0	0.066	18.20	0.108	20.35	9M01W7D	
	QPSK	826.5 - 846.5	0.087	19.37	0.142	21.52	4M52G7D	
LTE Band 26/5	16QAM	826.5 - 846.5	0.085	19.31	0.140	21.46	4M51W7D	
	64QAM	826.5 - 846.5	0.076	18.80	0.124	20.95	4M54W7D	
	QPSK	825.5 - 847.5	0.091	19.57	0.149	21.72	2M70G7D	
	16QAM	825.5 - 847.5	0.069	18.40	0.114	20.55	2M72W7D	
	64QAM	825.5 - 847.5	0.054	17.29	0.088	19.44	2M71W7D	
	QPSK	824.7 - 848.3	0.089	19.49	0.146	21.64	1M10G7D	
	16QAM	824.7 - 848.3	0.071	18.53	0.117	20.68	1M10W7D	
	64QAM	824.7 - 848.3	0.058	17.64	0.095	19.79	1M10W7D	
	TT/2 BPSK	834.0 - 839.0	0.057	17.54	0.093	19.69	18M0G7D	
	QPSK	834.0 - 839.0	0.059	17.72	0.097	19.87	18M0G7D	
	16QAM	834.0 - 839.0	0.050	17.02	0.083	19.17	18M1W7D	
	64QAM	834.0 - 839.0	0.045	16.50	0.073	18.65	17M9W7D	
	256QAM	834.0 - 839.0	0.030	14.76	0.049	16.91	18M0W7D	
	π/2 BPSK	831.5 - 841.5	0.060	17.77	0.098	19.92	13M0G7D	
	QPSK	831.5 - 841.5	0.065	18.12	0.106	20.27	13M7G7D	
	16QAM	831.5 - 841.5	0.052	17.16	0.085	19.31	13M7W7D	
	64QAM	831.5 - 841.5	0.047	16.71	0.077	18.86	13M8W7D	
NR Band n5	256QAM	831.5 - 841.5	0.032	15.08	0.053	17.23	13M7W7D	
INK Dahu ho	Π/2 BPSK	829.0 - 844.0	0.077	18.84	0.126	20.99	9M07G7D	
	QPSK	829.0 - 844.0	0.067	18.25	0.110	20.40	9M22G7D	
	16QAM	829.0 - 844.0	0.055	17.39	0.090	19.54	7M68W7D	
	64QAM	829.0 - 844.0	0.047	16.70	0.077	18.85	9M32W7D	
	256QAM	829.0 - 844.0	0.033	15.23	0.055	17.38	9M70W7D	
	π/2 BPSK	826.5 - 846.5	0.062	17.95	0.102	20.10	3M67G7D	
	QPSK	826.5 - 846.5	0.064	18.07	0.105	20.22	4M06G7D	
	16QAM	826.5 - 846.5	0.050	16.96	0.082	19.11	4M01W7D	
	64QAM	826.5 - 846.5	0.051	17.09	0.084	19.24	4M04W7D	
	256QAM	826.5 - 846.5	0.032	15.07	0.053	17.22	4M03W7D	

EUT Overview (PT 22)

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		T. F	EI	RP	Fastastas
Mode	Modulation	Tx Frequency Range [MHz]	Max. Power [W]	Max. Power [dBm]	Emission Designator
	QPSK	1860 - 1905	0.201	23.04	18M1G7D
	16QAM	1860 - 1905	0.178	22.50	18M1W7D
	64QAM	1860 - 1905	0.156	21.92	18M1W7D
	QPSK	1857.5 - 1907.5	0.096	22.83	13M6G7D
	16QAM	1857.5 - 1907.5	0.192	22.17	13M6W7D
	64QAM	1857.5 - 1907.5	0.159	21.32	13M6W7D
	QPSK	1855 - 1910	0.189	22.77	9M05G7D
	16QAM	1855 - 1910	0.159	22.03	9M05W7D
LTE Dand OF/O	64QAM	1855 - 1910	0.148	21.71	9M05W7D
LTE Band 25/2	QPSK	1852.5 - 1912.5	0.216	23.35	4M54G7D
	16QAM	1852.5 - 1912.5	0.175	22.42	4M54W7D
	64QAM	1852.5 - 1912.5	0.144	21.57	4M54W7D
	QPSK	1851.5 - 1913.5	0.217	23.37	2M72G7D
	16QAM	1851.5 - 1913.5	0.180	22.55	2M72W7D
	64QAM	1851.5 - 1913.5	0.145	21.62	2M72W7D
	QPSK	1850.7 - 1914.3	0.191	22.81	1M10G7D
	16QAM	1850.7 - 1914.3	0.156	21.93	1M10W7D
	64QAM	1850.7 - 1914.3	0.100	20.00	1M10W7D
	π/2 BPSK	1860 - 1905	0.124	20.94	18M1G7D
	QPSK	1860 - 1905	0.131	21.19	18M4G7D
	16QAM	1860 - 1905	0.118	20.73	18M4W7D
	64QAM	1860 - 1905	0.113	20.54	18M3W7D
	256QAM	1860 - 1905	0.068	18.31	18M4W7D
	π/2 BPSK	1857.5 - 1907.5	0.132	21.19	13M0G7D
	QPSK	1857.5 - 1907.5	0.134	21.26	13M7G7D
	16QAM	1857.5 - 1907.5	0.146	21.65	13M8W7D
	64QAM	1857.5 - 1907.5	0.139	21.44	13M7W7D
	256QAM	1857.5 - 1907.5	0.076	18.79	13M8W7D
NR Band n2	π/2 BPSK	1855 - 1910	0.133	21.23	8M70G7D
	QPSK	1855 - 1910	0.132	21.20	8M67G7D
	16QAM	1855 - 1910	0.145	21.63	8M70W7D
	64QAM	1855 - 1910	0.116	20.65	8M67W7D
	256QAM	1855 - 1910	0.065	18.12	8M71W7D
	Π/2 BPSK	1852.5 - 1912.5	0.123	20.90	3M96G7D
	QPSK	1852.5 - 1912.5	0.124	20.95	5M19G7D
	16QAM	1852.5 - 1912.5	0.144	21.60	7M08W7D
	64QAM	1852.5 - 1912.5	0.130	21.14	4M92W7D
	256QAM	1852.5 - 1912.5	0.078	18.94	4M49W7D
		EUT Overview (Pt 24			

EUT Overview (Pt 24)

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			EIRP		El	Emission	
Mode	Modulation	Tx Frequency Range [MHz]	Max. Power	Max. Power	Max. Power	Max. Power	Designator
			[W]	[dBm]	ſWI	[dBm]	Designator
	QPSK	704.0 - 711.0	0.148	21.70	0.090	19.55	8M98G7D
	16QAM	704.0 - 711.0	0.122	20.86	0.074	18.71	8M97W7D
	64QAM	704.0 - 711.0	0.103	20.13	0.063	17.98	8M99W7D
	QPSK	701.5 - 713.5	0.146	21.63	0.089	19.48	4M51G7D
	16QAM	701.5 - 713.5	0.120	20.78	0.073	18.63	4M50W7D
LTE Band 12/17	64QAM	701.5 - 713.5	0.101	20.02	0.061	17.87	4M50W7D
LIL Danu 12/17	QPSK	700.5 - 714.5	0.138	21.41	0.084	19.26	2M70G7D
	16QAM	700.5 - 714.5	0.114	20.57	0.070	18.42	2M70W7D
	64QAM	700.5 - 714.5	0.094	19.72	0.057	17.57	2M70W7D
	QPSK	699.7 - 715.3	0.133	21.25	0.081	19.10	1M09G7D
	16QAM	699.7 - 715.3	0.109	20.39	0.067	18.24	1M09W7D
	64QAM	699.7 - 715.3	0.093	19.68	0.057	17.53	1M08W7D
	QPSK	782.0	0.133	21.24	0.081	19.09	8M98G7D
	16QAM	782.0	0.109	20.37	0.066	18.22	8M99W7D
	64QAM	782.0	0.087	19.41	0.053	17.26	8M98W7D
LTE Band 13	QPSK	779.5 - 784.5	0.139	21.42	0.085	19.27	4M50G7D
	16QAM	779.5 - 784.5	0.111	20.45	0.068	18.30	4M51W7D
	64QAM	779.5 - 784.5	0.091	19.58	0.055	17.43	4M51W7D
	QPSK	673.0 - 688.0	0.067	18.26	0.041	16.11	18M0G7D
	16QAM	673.0 - 688.0	0.063	17.98	0.038	15.83	17M9W7D
	64QAM	673.0 - 688.0	0.057	17.52	0.034	15.37	17M8W7D
	QPSK	670.5 - 690.5	0.063	17.98	0.038	15.83	13M5G7D
	16QAM	670.5 - 690.5	0.060	17.76	0.036	15.61	13M5W7D
[64QAM	670.5 - 690.5	0.057	17.57	0.035	15.42	13M5W7D
LTE Band 71	QPSK	668.0 - 693.0	0.065	18.15	0.040	16.00	8M98G7D
	16QAM	668.0 - 693.0	0.061	17.89	0.037	15.74	8M97W7D
	64QAM	668.0 - 693.0	0.058	17.61	0.035	15.46	9M00W7D
	QPSK	665.5 - 695.5	0.066	18.18	0.040	16.03	4M54G7D
	16QAM	665.5 - 695.5	0.065	18.10	0.039	15.95	4M53W7D
	64QAM	665.5 - 695.5	0.054	17.32	0.033	15.17	4M53W7D
	π/2 BPSK	673.0 - 688.0	0.124	20.94	0.076	18.79	18M0G7D
-	QPSK	673.0 - 688.0	0.126	21.01	0.077	18.86	18M2G7D
	16QAM	673.0 - 688.0	0.149	21.72	0.091	19.57	18M3W7D
	64QAM	673.0 - 688.0	0.135	21.31	0.082	19.16	18M2W7D
	256QAM	673.0 - 688.0	0.080	19.04	0.049	16.89	18M3W7D
	π/2 BPSK	670.5 - 690.5	0.120	20.80	0.073	18.65	13M0G7D
-	QPSK	670.5 - 690.5	0.115	20.59	0.070	18.44	13M6G7D
	16QAM	670.5 - 690.5	0.133	21.25	0.081	19.10	13M7W7D
-	64QAM	670.5 - 690.5	0.132	21.20	0.081	19.07	13M8W7D
	256QAM	670.5 - 690.5	0.091	19.60	0.056	17.45	13M6W7D
NR Band n71	π/2 BPSK	668.0 - 693.0	0.115	20.62	0.070	18.47	8M98G7D
-	QPSK	668.0 - 693.0	0.112	20.50	0.068	18.35	9M25G7D
	16QAM	668.0 - 693.0	0.136	21.34	0.083	19.19	9M05W7D
	64QAM	668.0 - 693.0	0.130	20.80	0.003	18.65	9M23W7D
	256QAM	668.0 - 693.0	0.076	18.80	0.046	16.65	9M59W7D
	T/2 BPSK	665.5 - 695.5	0.131	21.17	0.040	19.02	3M66G7D
	QPSK	665.5 - 695.5	0.131	20.84	0.080	18.69	4M05G7D
	16QAM	665.5 - 695.5	0.121	20.84	0.074	19.52	3M99W7D
	64QAM	665.5 - 695.5	0.136	21.35	0.083	19.20	4M02W7D
	256QAM	665.5 - 695.5	0.077	18.84	0.047	16.69	4M04W7D

EUT Overview (PT 27 (< 1GHz))

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		Try Free street start	El	Fusionian	
Mode	Modulation	Tx Frequency Range [MHz]	Max. Power [W]	Max. Power [dBm]	Emission Designator
	QPSK	1720.0 - 1770.0	0.166	22.20	18M0G7D
	16QAM	1720.0 - 1770.0	0.140	21.47	18M0W7D
	64QAM	1720.0 - 1770.0	0.084	19.25	18M0W7D
	QPSK	1717.5 - 1772.5	0.171	22.32	13M5G7D
	16QAM	1717.5 - 1772.5	0.142	21.53	13M6W7D
LTE Band 66/4	64QAM	1717.5 - 1772.5	0.073	18.64	13M6W7D
	QPSK	1715.0 - 1775.0	0.164	22.16	9M04G7D
	16QAM	1715.0 - 1775.0	0.134	21.28	9M04W7D
	64QAM	1715.0 - 1775.0	0.072	18.58	9M04W7D
LIE Danu 00/4	QPSK	1712.5 - 1777.5	0.189	22.76	4M55G7D
	16QAM	1712.5 - 1777.5	0.159	22.01	4M55W7D
	64QAM	1712.5 - 1777.5	0.084	19.23	4M55W7D
	QPSK	1711.5 - 1778.5	0.194	22.87	2M72G7D
	16QAM	1711.5 - 1778.5	0.188	22.74	2M72W7D
	64QAM	1711.5 - 1778.5	0.083	19.19	2M72W7D
	QPSK	1710.7 - 1779.3	0.166	22.21	1M10G7D
	16QAM	1710.7 - 1779.3	0.140	21.45	1M10W7D
	64QAM	1710.7 - 1779.3	0.070	18.44	1M10W7D
	Π/2 BPSK	1720.0 - 1770.0	0.115	20.60	18M0G7D
	QPSK	1720.0 - 1770.0	0.118	20.72	18M4G7D
	16QAM	1720.0 - 1770.0	0.098	19.91	18M3W7D
	64QAM	1720.0 - 1770.0	0.114	20.55	18M3W7D
	256QAM	1720.0 - 1770.0	0.067	18.27	18M3W7D
	Π/2 BPSK	1717.5 - 1772.5	0.114	20.55	13M0G7D
	QPSK	1717.5 - 1772.5	0.098	19.92	13M7G7D
	16QAM	1717.5 - 1772.5	0.098	19.90	13M8W7D
	64QAM	1717.5 - 1772.5	0.112	20.50	13M7W7D
ND Bond p66	256QAM	1717.5 - 1772.5	0.067	18.24	13M8W7D
NR Band n66	Π/2 BPSK	1715.0 - 1775.0	0.108	20.35	8M98G7D
	QPSK	1715.0 - 1775.0	0.093	19.71	9M12G7D
	16QAM	1715.0 - 1775.0	0.093	19.67	9M18W7D
	64QAM	1715.0 - 1775.0	0.110	20.43	9M06W7D
	256QAM	1715.0 - 1775.0	0.063	18.02	9M24W7D
	Π/2 BPSK	1712.5 - 1777.5	0.112	20.48	4M54G7D
	QPSK	1712.5 - 1777.5	0.095	19.77	4M52G7D
	16QAM	1712.5 - 1777.5	0.096	19.82	4M52W7D
	64QAM	1712.5 - 1777.5	0.115	20.61	4M53W7D
	256QAM	1712.5 - 1777.5	0.063	17.99	4M51W7D

EUT Overview (PT 27 (> 1GHz))

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				EI	EIRP		
Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	Max. Power [W]	Max. Power [dBm]	Emission Designator	
		QPSK	2310.0	0.107	20.30	9M06G7D	
	10 MHz	16QAM	2310.0	0.098	19.90	9M06W7D	
LTE Band 30		64QAM	2310.0	0.088	19.46	9M06W7D	
LIE Danu 30		QPSK	2307.5 - 2312.5	0.108	20.33	4M54G7D	
	5 MHz	16QAM	2307.5 - 2312.5	0.091	19.59	4M54W7D	
		64QAM	2307.5 - 2312.5	0.079	18.95	4M54W7D	
	20 MHz	QPSK	2506.0 - 2680.0	0.314	24.97	18M0G7D	
		16QAM	2506.0 - 2680.0	0.294	24.68	18M1W7D	
		64QAM	2506.0 - 2680.0	0.260	24.15	18M0W7D	
	15 MHz	QPSK	2503.5 - 2682.5	0.323	25.09	13M6G7D	
		16QAM	2503.5 - 2682.5	0.286	24.57	13M6W7D	
LTE Dood 41(DC2)		64QAM	2503.5 - 2682.5	0.259	24.14	13M5W7D	
LTE Band 41(PC3)		QPSK	2501.0 - 2685.0	0.338	25.29	9M04G7D	
	10 MHz	16QAM	2501.0 - 2685.0	0.298	24.74	9M04W7D	
		64QAM	2501.0 - 2685.0	0.262	24.18	9M04W7D	
	5 MHz	QPSK	2498.5 - 2687.5	0.324	25.10	4M56G7D	
		16QAM	2498.5 - 2687.5	0.278	24.44	4M52W7D	
		64QAM	2498.5 - 2687.5	0.242	23.83	4M52W7D	

EUT Overview (PT 27 (> 2GHz))

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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 Handset FCC ID: ZNFK920AM**. The test data contained in this report pertains only to the emissions due to the EUT's LTE function.

Test Device Serial No.: 8634, 09904, 16264, 8519, 08675, 08527

2.2 Device Capabilities

This device contains the following capabilities:

800/850/1900 CDMA/EvDO Rev0/A, 1x Advanced (BC0, BC1, BC10), 850/1900 GSM/GPRS/EDGE, 850/1700/1900 WCDMA/HSPA, Multi-band LTE, Multi-Band 5G NR, 802.11b/g/n WLAN, 802.11a/n/ac UNII, Bluetooth (1x, EDR, LE), NFC

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

LTE Band 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.

This device uses a tuner circuit that dynamically updates the antenna impedance parameters to optimize antenna performance for certain bands and modes of operation. The tuner for this device was set to simulate a "free space" condition where the transmit antenna is matched to the medium into which it is transmitting and, thus, the power is at its maximum level.

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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.

The emissions below 1GHz and above 18GHz were tested with the highest transmitting power channel and the worst case configuration.

The EUT was manipulated through three orthogonal planes of X-orientation (flatbed), Y-orientation (landscape), and Z-orientation (portrait) during the testing. Only the worst case emissions were reported in this test report. The worst orientation was found to be Y-orientation (landscape).

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 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 + 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
-	LTx2	Licensed Transmitter Cable Set	4/9/2020	Annual	4/9/2021	LTx2
Agilent	8648D	(9kHz-4GHz) Signal Generator	6/23/2020	Annual	6/23/2021	3613A00315
Anritsu	MT8821C	Radio Communication Analyzer	3/10/2020	Annual	3/10/2021	6200901190
Com-Power	AL-130	9kHz - 30MHz Loop Antenna	10/10/2019	Biennial	10/10/2021	121034
Emco	3115	Horn Antenna (1-18GHz)	6/18/2020	Biennial	6/18/2022	9704-5182
Espec	ESX-2CA	Environmental Chamber	8/13/2019	Annual	8/13/2020	17620
ETS Lindgren	3164-08	Quad Ridge Horn Antenna	3/12/2020	Biennial	3/12/2022	128337
ETS Lindgren	3164-08	Quad Ridge Horn Antenna	2/22/2019	Biennial	2/22/2021	128338
ETS-Lindgren	3115	Double Ridged Guide Horn 750MHz - 18GHz	3/12/2020	Biennial	3/12/2022	150693
Mini Circuits	TVA-11-422	RF Power Amp	N/A			QA1317001
Rohde & Schwarz	CMU200	Base Station Simulator	N/A			107826
Rohde & Schwarz	CMU200	Base Station Simulator	N/A			836536/0005
Rohde & Schwarz	CMW500	Radio Communication Tester	8/26/2019	Annual	8/26/2020	100976
Rohde & Schwarz	TS-PR26	18-26.5 GHz Pre-Amplifier	11/1/2019	Annual	11/1/2020	100040
Rohde & Schwarz	ESU26	EMI Test Receiver (26.5GHz)	7/15/2020	Annual	7/15/2021	100342
Rohde & Schwarz	ESU40	EMI Test Receiver (40GHz)	9/23/2019	Annual	9/23/2020	100348
Rohde & Schwarz	TC-TA18	Cross-Pol Antenna 400MHz-18GHz	7/8/2020	Biennial	7/8/2022	101058
Rohde & Schwarz	SFUNIT-Rx	Shielded Filter Unit	2/10/2020	Annual	2/10/2021	102134
Rohde & Schwarz	SFUNIT-Rx	Shielded Filter Unit	2/21/2020	Annual	2/21/2021	102133
Sunol	DRH-118	Horn Antenna (1-18GHz)	10/3/2019	Biennial	10/3/2021	A050307
Sunol	JB5	Bi-Log Antenna (30M - 5GHz)	7/27/2020	Biennial	7/27/2022	A051107
Sunol	DRH-118	Horn Antenna (1-18 GHz)	8/27/2019	Biennial	8/27/2021	A042511

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:	ZNFK920AM
FCC Classification:	PCS Licensed Transmitter Held to Ear (PCE)
Mode(s):	LTE/Sub6

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
2.1049	Occupied Bandwidth	N/A		PASS	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		PASS	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
27.53(a)	Out of Band Emissions	Undesirable emissions must meet the limits detailed in 27.53(a)		PASS	Section 7.3, 7.4
24.232(d), 27.50	Peak-Average Ratio	< 13 dB	CONDUCTED	PASS	Section 7.5
2.1046	Transmitter Conducted Output Power	N/A		PASS	See RF Exposure Report
22.917(a) 27.53(h) 27.53(m)	Uplink Carrier Aggregation	>43 + 10log(P[Watts]) at Band Edge and for all out-of-band emissions		PASS	Section 7.6
2.1055 22.355 24.235 27.54	Frequency Stability	< 2.5 ppm (Part 22) and fundamental emissions stay within authorized frequency block (Part 24, 27)		PASS	Section 7.10

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 5/26)	< 7 Watts max. ERP		PASS	Section 7.7
27.50(b)(10) 27.50(c)(10)	Effective Radiated Power / Equivalent Isotropic Radiated Power (Band 71, 12, 17, 13)	< 3 Watts max. ERP		PASS	Section 7.7
24.232(c) 27.50(h)(2)	Equivalent Isotropic Radiated Power (Band 2/25, 41)	< 2 Watts max. EIRP		PASS	Section 7.7
27.50(d)(4)	Equivalent Isotropic Radiated Power (Band 4/66)	< 1 Watts max. EIRP		PASS	Section 7.7
27.50(a)(3)	Equivalent Isotropic Radiated Power (Band 30)	< 0.25 Watts max. EIRP		PASS	Section 7.7
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	RADIATED	PASS	Section 7.8
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		PASS	Section 7.8
27.53(a)	Undesirable Emissions (Band 30)	> 70 + 10 log ₁₀ (P[Watts])		PASS	Section 7.8
27.53(m)	Undesirable Emissions (Band 41)	Undesirable emissions must meet the limits detailed in 27.53(m)		PASS	Section 7.8
27.53(m)	Uplink Carrier Aggregation	Undesirable emissions must meet the limits detailed in 27.53(m) & 22.913(a)(5)		PASS	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, 7.3, 7.4) 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 5.3.
- 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.

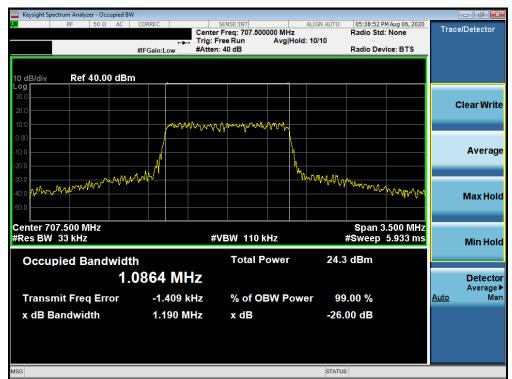
FCC ID: ZNFK920AM	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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Table 7-3. Occupied Band Width Results (<1 GHz)

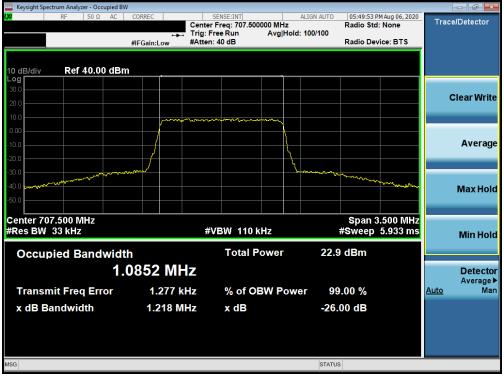
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LTE Band 12/17



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



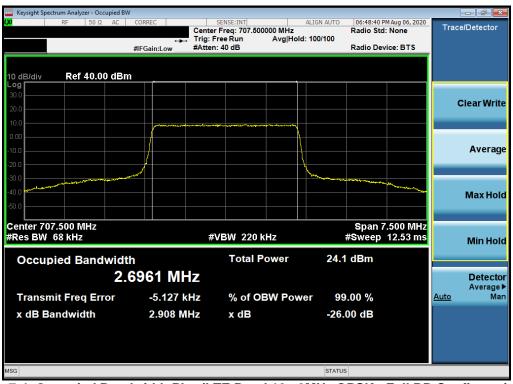
Plot 7-2. Occupied Bandwidth Plot (LTE Band 12 – 1.4MHz 16-QAM - Full RB Configuration)

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Keysight Spectrum Analyzer - Occupied BW							
LXI RF 50 Ω AC	CORREC	SENSE:INT enter Freg: 707.500000	ALIGN AUTO	05:52:54 PM/ Radio Std: N		Trace	Detector
		rig: Free Run 🛛 🖌	Avg Hold: 100/100				
	#IFGain:Low ##	Atten: 40 dB		Radio Devic	e: BTS		
10 dB/div Ref 40.00 dBm							
30.0							
20.0						С	ear Write
10.0						_	
0.00	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		\sim				
-10.0							Average
-20.0			l,				Average
-30.0							
mar water			human	www			
-40.0					www.		Max Hold
-50.0						_	
Center 707.500 MHz				Span 3.5	500 MHz		
#Res BW 33 kHz		#VBW 110 kHz	:	#Sweep 5	.933 ms		Min Hold
		Total Pov		dBm			
Occupied Bandwidth			Ver 21.3	a a di li			
1.0)834 MHz						Detector
Transmit Freq Error	-404 Hz	% of OBW	Power 99	9.00 %		<u>Auto</u>	Average ► Man
x dB Bandwidth	1.215 MHz			00 dB			
	1.215 MHZ	хав	-20.	00 aB			
MSG			STATU	S			

Plot 7-3. Occupied Bandwidth Plot (LTE Band 12 – 1.4MHz 64-QAM - Full RB Configuration)



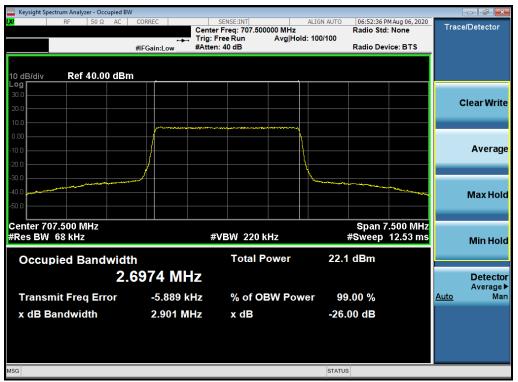
Plot 7-4. Occupied Bandwidth Plot (LTE Band 12 - 3MHz QPSK - Full RB Configuration)

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- Keysight Spectrum Analyzer - Occupied I	BW				
LXI RF 50 Ω AC	CORREC	SENSE:INT A	LIGN AUTO 06:51:14 P Radio Std	M Aug 06, 2020	Trace/Detector
	Trig: I	Free Run Avg Hold:	100/100		
	#IFGain:Low #Atter	n: 40 dB	Radio Dev	vice: BTS	
10 dB/div Ref 40.00 dB	m				
Log 30.0					
20.0					Clear Write
10.0	and the second s				
0.00					•
-10.0					Average
-20.0		\			
-30.0			her were many harring		
-40.0				and the second second	Max Hold
-50.0					
Center 707.500 MHz #Res BW 68 kHz	#	VBW 220 kHz		.500 MHz 12.53 ms	
#Res BW 08 KH2	#		#Sweep	12.55 1115	Min Hold
Occupied Bandwid	lth	Total Power	23.1 dBm		
	.6960 MHz				Detector
2					Detector Average ►
Transmit Freq Error	-5.512 kHz	% of OBW Powe	r 99.00 %		<u>Auto</u> Man
x dB Bandwidth	2.906 MHz	x dB	-26.00 dB		
	2.500 MHZ	X UD	-20.00 uB		
MSG			STATUS		

Plot 7-5. Occupied Bandwidth Plot (LTE Band 12 - 3MHz 16-QAM - Full RB Configuration)



Plot 7-6. Occupied Bandwidth Plot (LTE Band 12 - 3MHz 64-QAM - Full RB Configuration)

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Keysight Spectrum Analyzer - Occupied BV	V					
LXI RF 50 Ω AC	CORREC	SENSE:INT Center Freg: 707.500		N AUTO 07:25:52 P Radio Std	M Aug 06, 2020	Trace/Detector
	- - -	Trig: Free Run	Avg Hold: 100	/100		
	#IFGain:Low	#Atten: 40 dB		Radio Dev	vice: BTS	
10 dB/div Ref 30.00 dBn	n					
20.0						
10.0						Clear Writ
0.00						
-10.0						
-20.0						Averag
-30.0				~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~ <u>~</u>	
-40.0						
-50.0						Max Ho
-60.0						
Center 707.500 MHz				Snan 1	2.50 MHz	
#Res BW 120 kHz		#VBW 3901	۲		1.533 ms	Min Ho
Occupied Bandwidt	h	Total F	ower	24.0 dBm		
4	5079 MH	7				Detect
						Average
Transmit Freq Error	-233	Hz % of O	BW Power	99.00 %		<u>Auto</u> Ma
x dB Bandwidth	4.835 M	Hz x dB		-26.00 dB		
MSG				STATUS		

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



Plot 7-8. Occupied Bandwidth Plot (LTE Band 12/17 - 5MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFK920AM	PCTEST [®] Proud to be part of [®] element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Baga 21 of 290
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Keysight Spectrum Analyzer - Occupied B	N				
LXI RF 50 Ω AC	CORREC	SENSE:INT ALI Er Freg: 707.500000 MHz	IGN AUTO 07:27:57 P Radio Std	M Aug 06, 2020	Trace/Detector
	Trig:	Free Run Avg Hold: 1	00/100		
	#IFGain:Low #Atte	n: 40 dB	Radio Dev	rice: BTS	
10 dB/div Ref 30.00 dBr	n				
20.0					
10.0					Clear Write
0.00					
-10.0					A
-20.0					Average
-30.0					
-40.0					
-50.0					Max Hold
-60.0					
Center 707.500 MHz			Enon 1	2.50 MHz	
#Res BW 120 kHz		≇VBW 390 kHz		1.533 ms	Min Hald
					Min Hold
Occupied Bandwidt	th	Total Power	22.1 dBm		
4	5010 MHz				Detector
					Average►
Transmit Freq Error	1.622 kHz	% of OBW Power	99.00 %		<u>Auto</u> Man
x dB Bandwidth	4.839 MHz	x dB	-26.00 dB	Ì	
MSG			STATUS		

Plot 7-9. Occupied Bandwidth Plot (LTE Band 12/17 - 5MHz 64-QAM - Full RB Configuration)



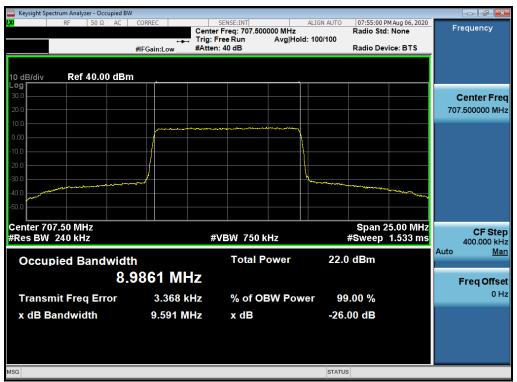
Plot 7-10. Occupied Bandwidth Plot (LTE Band 12/17 - 10MHz QPSK - Full RB Configuration)

FCC ID: ZNFK920AM	PCTEST [®] Proud to be part of [®] element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Daga 22 of 280
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	ied BW				
LXI RF 50 Ω	AC CORREC	SENSE:INT Center Freg: 707.500000 MH	ALIGN AUTO	07:54:19 PM Aug 06, 202 Radio Std: None	Frequency
			z Hold: 100/100	Radio Stu. None	
	#IFGain:Low	#Atten: 40 dB		Radio Device: BTS	
10 dB/div Ref 40.00	dBm				
Log					
30.0					Center Freq
20.0					707.500000 MHz
10.0			-		
0.00					
-10.0					
-20.0	<u>}</u>				
-30.0					
and the second s				and the second s	
-40.0				~	
-50.0					
Center 707.50 MHz				Span 25.00 MH	
#Res BW 240 kHz		#VBW 750 kHz		#Sweep 1.533 m	
					Auto Man
Occupied Bandw	vidth	Total Power	23.0) dBm	
	8.9726 MH	7			
	0.3720 1911				Freq Offset
Transmit Freq Erro	r 6.531 kH	z % of OBW P	ower 99	9.00 %	0 Hz
x dB Bandwidth	9.587 MH	z xdB	-26	00 dB	
MSG			STATU	S	

Plot 7-11. Occupied Bandwidth Plot (LTE Band 12/17 - 10MHz 16-QAM - Full RB Configuration)



Plot 7-12. Occupied Bandwidth Plot (LTE Band 12/17 - 10MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFK920AM	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 22 of 200
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LTE Band 13



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



Plot 7-14. Occupied Bandwidth Plot (LTE Band 13 - 5MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFK920AM	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N: Test Dates:		EUT Type:		Dogo 24 of 280
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Keysight Spectrum Analyzer - Occupied BW	1						- # X
LXI RF 50 Ω AC	CORREC	SENSE:INT	ALIGN A	UTO 10:16:27 PI Radio Std:	1 Aug 06, 2020	Trace	/Detector
	1	rig: Free Run	Avg Hold: 100/10	00			
	#IFGain:Low #	Atten: 40 dB		Radio Dev	ice: BTS		
10 dB/div Ref 40.00 dBm	<u> </u>						
Log 30.0							
						c	lear Write
20.0							
10.0	- I man						
0.00							_
-10.0							Average
-20.0							
-30.0							
-40.0							Max Hold
-50.0							
Center 782.000 MHz #Res BW 120 kHz		#VBW 390 k		Span 1 #Sweep	2.50 MHz		
#Res BW 120 RH2		#VBVV 390 N	.nz	#Sweep	1.555 1115		Min Hold
Occupied Bandwidt	h	Total P	ower	23.1 dBm			
	 5065 MHz						Detector
4.							Average ►
Transmit Freq Error	6.365 kH	z % of OE	3W Power	99.00 %		<u>Auto</u>	Man
x dB Bandwidth	4.832 MH	z x dB		-26.00 dB	ľ		
MSG				STATUS			
Mou			2	514105			

Plot 7-15. Occupied Bandwidth Plot (LTE Band 13 - 5MHz 64-QAM - Full RB Configuration)



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

FCC ID: ZNFK920AM	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 25 of 290
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Image: Ward of the second
Trig: Free Run Avg Hold: 100/100 #FGain:Low #Atten: 40 dB Radio Device: BTS
10 dB/div Ref 25.00 dBm
10 dB/div Ref 25.00 dBm
Log 15.0
ClearWr
-500
-15.0
-25.0 Avera
-35.0
45.0
-55.0 Max Ho
Center 782.00 MHz Span 25.00 MHz
#Res BW 240 kHz #VBW 750 kHz #Sweep 1 ms Min Ho
Occupied Bandwidth Total Power 23.1 dBm
8.9865 MHz Detect
Averag
Transmit Freq Error 7.155 kHz % of OBW Power 99.00 %
x dB Bandwidth 9.591 MHz x dB -26.00 dB
MSG STATUS

Plot 7-17. Occupied Bandwidth Plot (LTE Band 13 - 10MHz 16-QAM - Full RB Configuration)



Plot 7-18. Occupied Bandwidth Plot (LTE Band 13 - 10MHz 64-QAM - Full RB Configuration)

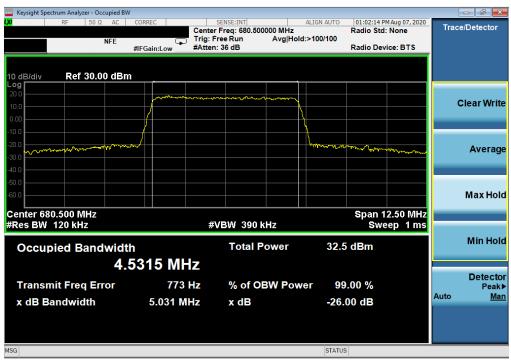
FCC ID: ZNFK920AM	PCTEST [®] Proud to be part of ® element	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dama 00 af 200	
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LTE Band 71

🔤 Keysight Spectrum Analyzer - Occupied BW							- # ×
LXI RF 50 Ω AC		SENSE:INT Freg: 680.500000 M	ALIGN AUTO	12:52:07 P	M Aug 07, 2020	Trace	/Detector
NFE	Trig: F		Hold:>100/100	Radio Dev			
	#IFGain:Low #Atten	: 36 dB		Radio Dev	/ice: DTS		
10 dB/div Ref 30.00 dBm							
20.0	·····	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~			~	lear Write
10.0						C	lear write
0.00							
-10.0							
-30.0	~		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~				Average
-40.0							
-50.0							
-60.0							Max Hold
Center 680.500 MHz				Snan 1	2.50 MHz		
#Res BW 120 kHz	#\	VBW 390 kHz			eep 1 ms		
							Min Hold
Occupied Bandwidth		Total Powe	r 33.	6 dBm			
4.5	5429 MHz						
Transmit Freq Error	-1.292 kHz	% of OBW F	Power 9	9.00 %			Detector Peak►
						Auto	<u>Man</u>
x dB Bandwidth	5.033 MHz	x dB	-26	.00 dB			
MSG			STATU	IS			

Plot 7-19. Occupied Bandwidth Plot (LTE Band 71 - 5MHz QPSK - Full RB Configuration)



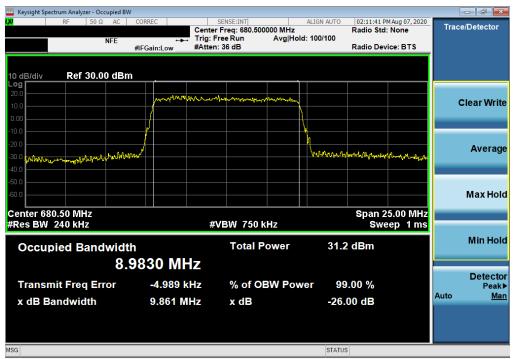
Plot 7-20. Occupied Bandwidth Plot (LTE Band 71 - 5MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFK920AM	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dage 27 of 290	
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Keysight Spectrum Analyzer - Occupied BW							×
X RF 50 Ω AC	Trig:	SENSE:INT er Freq: 680.500000 MH Free Run Avg l n: 36 dB	ALIGN AUTO z Hold: 100/100	02:06:38 PM Radio Std: Radio Devi		Trace/Detect	or
10 dB/div Ref 30.00 dBm							
20.0	mmmm	mhonom	•~~1 \ \			Clear W	rite
10.0 20.0 30.0 m. "m. 1/1/1/1/1/1/1/1/1/1/1/1/1/1/1/1/1/1/1/			www.	ᡟᡶ᠕ᠰᢧ᠕᠇᠊ᠧ᠇	J.m. Marine	Aver	ag
50.0						Max H	lol
Center 680.500 MHz #Res BW 120 kHz	7	≇VBW 390 kHz			2.50 MHz ep 1 ms		
Occupied Bandwidth	ո 5270 MHz	Total Power	30.0) dBm		Min H	lol
Transmit Freq Error	-9.064 kHz	% of OBW P	ower 99	.00 %		Deteo Pe	cto eak
x dB Bandwidth	4.933 MHz	x dB	-26.	00 dB		Auto <u></u>	<u>Mar</u>
SG			STATUS	5			

Plot 7-21. Occupied Bandwidth Plot (LTE Band 71 - 5MHz 64-QAM - Full RB Configuration)



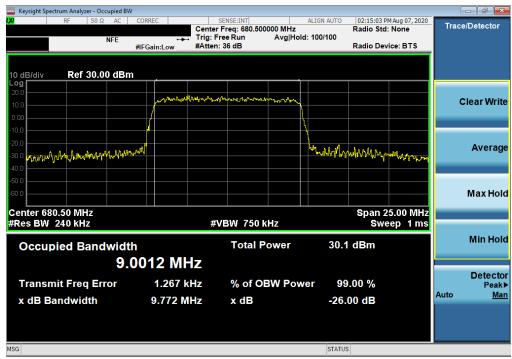
Plot 7-22. Occupied Bandwidth Plot (LTE Band 71 - 10MHz QPSK - Full RB Configuration)

FCC ID: ZNFK920AM	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager		
Test Report S/N:	Test Dates:	EUT Type:	Dogo 28 of 280		
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Keysight Spectrum Analyzer - Occupied BW							
XI RF 50 Ω AC	Trig: F	SENSE:INT r Freq: 680.500000 MHz Free Run Avg H n: 36 dB	ALIGN AUTO	02:13:06 PM Radio Std: Radio Devic		Trace	/Detector
10 dB/div Ref 30.00 dBm			<u>.</u>				
20.0	manna	WHALLOW	h			c	lear Write
20.0 30.0 manganet hander Marten Martin	ra -		h Van Mar	Mulanan	rom tu contrato		Averag
40.0 50.0 60.0							Max Hol
Center 680.50 MHz #Res BW 240 kHz	#	VBW 750 kHz			5.00 MHz ep 1 ms		
Occupied Bandwidth 8.5) 9694 MHz	Total Power	31.0	dBm			Min Hol
Transmit Freq Error x dB Bandwidth	-2.084 kHz 9.717 MHz	% of OBW Po x dB		00 % 00 dB		Auto	Detecto Peak <u>Ma</u>
SG			STATUS				

Plot 7-23. Occupied Bandwidth Plot (LTE Band 71 - 10MHz 16-QAM - Full RB Configuration)



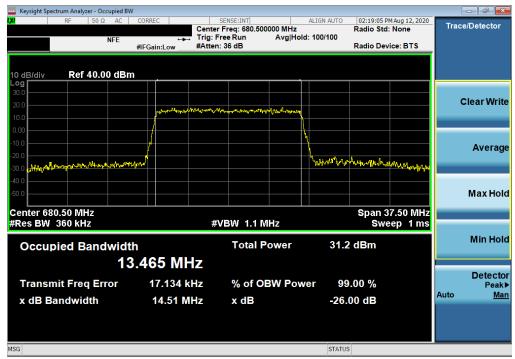
Plot 7-24. Occupied Bandwidth Plot (LTE Band 71 - 10MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFK920AM	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 20 of 200
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🚾 Keysight Spectrum Analyzer - Occupied BV					
κε 50 Ω AC	Trig:	SENSE:INT er Freq: 680.500000 MH Free Run Avgj n: 36 dB	ALIGN AUTO Iz Hold:>100/100	02:15:04 PM Aug 12, 20 Radio Std: None Radio Device: BTS	Trace/Detector
10 dB/div Ref 40.00 dBn	n		_		
20.0		~_ man and a construction of the construction			Clear Write
-10.0					Average
-20.0 -30.0 +				Concert Clarower and the former of the forme	Max Hold
Center 680.50 MHz #Res BW 360 kHz		≠VBW 1.1 MHz		Span 37.50 M Sweep 1 r	Hz
Occupied Bandwidt	^h 8.484 MHz	Total Power	33.2	2 dBm	Min Hold
Transmit Freq Error	6.737 kHz 14.78 MHz	% of OBW P x dB		9.00 % .00 dB	Detector Peak Auto <u>Mar</u>
			20		
MSG			STATU	S	

Plot 7-25. Occupied Bandwidth Plot (LTE Band 71 - 15MHz QPSK - Full RB Configuration)



Plot 7-26. Occupied Bandwidth Plot (LTE Band 71 - 15MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFK920AM	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 20 of 290
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Keysight Spectrum Analyzer - Occupied BW							- 6 ×
XI RF 50 Ω AC	🛶 Trig: I	SENSE:INT r Freq: 680.500000 MH Free Run Avg n: 36 dB	ALIGN AUTO Iz Hold: 100/100	02:18:09 PM Radio Std: I Radio Devic	None	Trace	/Detector
10 dB/div Ref 40.00 dBm							
20.0	Alere-Invillenter	لېدە ^ر رامىر _{غى} يەرس ^{ىل} ەتلىر ^م ۇرىغىلىك	พันปี			с	lear Write
10.0							
-10.0			-				Average
20.0 30.0 martyphillion and all a contraction of the contraction of th	w		Mahan	Whathhat	~~. Mutana		
40.0							Max Hole
Center 680.50 MHz #Res BW 360 kHz	#	VBW 1.1 MHz			2.50 MHz 2p 1 ms	_	_
Occupied Bandwidth	1	Total Power	30.3	dBm			Min Hold
13	.477 MHz						
Transmit Freq Error	-1.966 kHz	% of OBW P	ower 99	.00 %			Detecto Peak
x dB Bandwidth	14.55 MHz	x dB	-26.	00 dB		Auto	<u>Mar</u>
ISG			STATUS	6			

Plot 7-27. Occupied Bandwidth Plot (LTE Band 71 - 15MHz 64-QAM - Full RB Configuration)



Plot 7-28. Occupied Bandwidth Plot (LTE Band 71 - 20MHz QPSK - Full RB Configuration)

FCC ID: ZNFK920AM	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage 21 of 280
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	1					=	
IXI RF 50 Ω AC	🛶 Trig:	SENSE:INT er Freq: 680.500000 MH Free Run Avg n: 36 dB	ALIGN AUTO Iz Hold: 100/100	02:51:04 PM Radio Std: Radio Devi		Trace/	Detector
10 dB/div Ref 30.00 dBm							
20.0		Arrondon and and a school				CI	ear Write
-10.0 -20.0 -30.0 -40.0 generation on Manual Internet	end -		hand the second	lertunandurfightlag	Many May angle M		Average
-60.0				0			Max Hold
Center 680.50 MHz #Res BW 470 kHz	#	≇VBW 1.5 MHz			0.00 MHz ep 1 ms		
Occupied Bandwidt 17	^h .886 MHz	Total Power	31.2	2 dBm			Min Hold
Transmit Freq Error x dB Bandwidth	29.197 kHz 19.13 MHz	% of OBW P x dB		0.00 % 00 dB		Auto	Detector Peak► <u>Man</u>
MSG			STATUS	5			

Plot 7-29. Occupied Bandwidth Plot (LTE Band 71 - 20MHz 16-QAM - Full RB Configuration)



Plot 7-30. Occupied Bandwidth Plot (LTE Band 71 - 20MHz 64-QAM - Full RB Configuration)

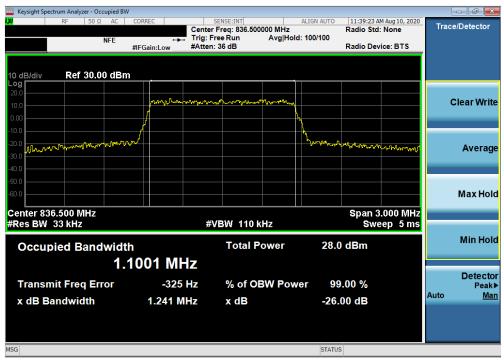
FCC ID: ZNFK920AM	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dega 22 of 290
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LTE Band 26/5

🔤 Keysight Spectrum Analyzer - Occu					
L <mark>XI</mark> RF 50 Ω	AC CORREC	SENSE:INT Center Freg: 836.500	ALIGN AUTO	11:37:43 AM Aug 10, 2020 Radio Std: None	Trace/Detector
N	NFE ++-	Trig: Free Run	Avg Hold: 100/100		
	#IFGain:Low	#Atten: 36 dB		Radio Device: BTS	
10 dB/div Ref 30.00) dBm				
20.0					
10.0	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		freeman		Clear Write
0.00	/		<u> </u>		
-10.0			<u>├</u>		
-20.0	maria		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Anger mon many	Average
-30.0					
-40.0					
-50.0					
-60.0					Max Hold
Center 836.500 MHz				Span 3.000 MHz	
#Res BW 33 kHz		#VBW 110 k	Hz	Sweep 5 ms	
		T-4-1 D			Min Hold
Occupied Bandy		Total P	ower 28.	∂dBm	
	1.0956 M	z			
Transmit Freg Erre	or -904	Hz % of O	3W Power 99	9.00 %	Detector Peak►
					Auto Man
x dB Bandwidth	1.240 N	Hz x dB	-26	.00 dB	
MSG			STATU	S	

Plot 7-31. Occupied Bandwidth Plot (LTE Band 26/5 - 1.4MHz QPSK - Full RB Configuration)



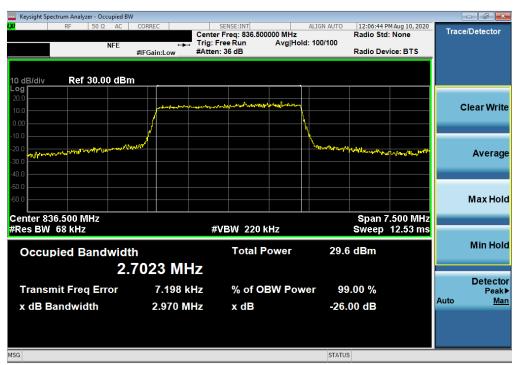
Plot 7-32. Occupied Bandwidth Plot (LTE Band 26/5 - 1.4MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFK920AM	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 22 of 280
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Keysight Spectrum Analyzer - Occupied BW					
XI RF 50 Ω AC	Trig:	SENSE:INT er Freq: 836.500000 MHz Free Run Avg H n: 36 dB	ALIGN AUTO	11:40:43 AM Aug 10, 2020 Radio Std: None Radio Device: BTS	Trace/Detector
10 dB/div Ref 30.00 dBm					
20.0 10.0 0.00	/ manadarshi	an and hope for the advertise			Clear Write
10.0 20.0 30.0 M. Am Marchan March				ᢆ᠆ᡊᡕ ^ᠰ ᡆᡘᡊ᠕᠋ᠬᡟᠰᡧᡟᡀᠰᡃᡆᡀ	Average
40.0 50.0 60.0					Max Hole
Center 836.500 MHz Res BW 33 kHz	\$	≇VBW 110 kHz		Span 3.000 MHz Sweep 5 ms	
Occupied Bandwidtl 1.(י 955 MHz	Total Power	27.1	dBm	Min Hol
Transmit Freq Error x dB Bandwidth	802 Hz 1.242 MHz	% of OBW Po x dB		000 % 00 dB	Detecto Peak Auto <u>Ma</u>
SG			STATUS	6	

Plot 7-33. Occupied Bandwidth Plot (LTE Band 26/5 - 1.4MHz 64-QAM - Full RB Configuration)



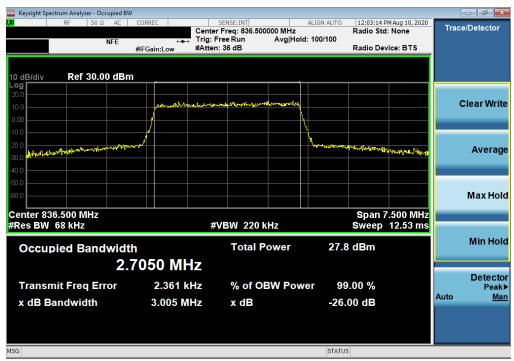
Plot 7-34. Occupied Bandwidth Plot (LTE Band 26/5 - 3MHz QPSK - Full RB Configuration)

FCC ID: ZNFK920AM	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage 24 of 200
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Keysight Spectrum Analyzer - Occupied BW							- 6
RF 50 Ω AC	Trig: I	SENSE:INT r Freq: 836.500000 MHz Free Run Avg H n: 36 dB	ALIGN AUTO	12:04:20 P Radio Std Radio Dev		Trace	e/Detector
10 dB/div Ref 30.00 dBm							
20.0	uniter from the second	Mund Internet and the second	•\ }			c	Clear Writ
0.0 0.0 0.0 0.0	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		N. Anertumo	-	an sy lle had		Averaç
							Max Ho
enter 836.500 MHz Res BW 68 kHz	#	VBW 220 kHz			.500 MHz 12.53 ms		
Occupied Bandwidth 2.7	172 MHz	Total Power	28.8	dBm			Min Ho
Transmit Freq Error x dB Bandwidth	6.545 kHz 3.031 MHz	% of OBW Po x dB		0.00 % 00 dB		Auto	Detect Peal <u>M</u>
G			STATUS	6			

Plot 7-35. Occupied Bandwidth Plot (LTE Band 26/5 - 3MHz 16-QAM - Full RB Configuration)



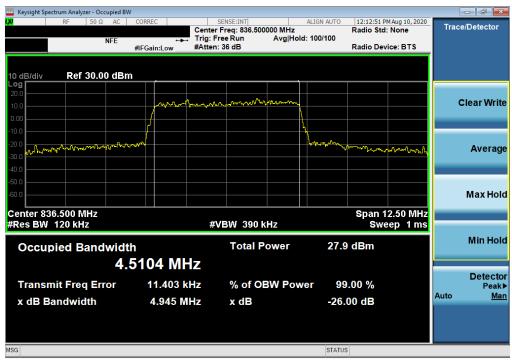
Plot 7-36. Occupied Bandwidth Plot (LTE Band 26/5 - 3MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFK920AM	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:	Page 35 of 389	
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🔤 Keysight Spectrum Analyzer - Occupied BW					- 6 💌
KI RF 50 Ω AC	🛶 Trig:	SENSE:INT er Freq: 836.500000 MHz Free Run Avg H n: 36 dB	ALIGN AUTO old: 100/100	12:08:39 PMAug 10, 2020 Radio Std: None Radio Device: BTS	Trace/Detector
10 dB/div Ref 30.00 dBm	<u> </u>		-		
20.0		mphann	M.		Clear Write
-10.0 -20.0 -30.0 -40.0			hu	m honor honor	Average
-50.0 -60.0 Center 836.500 MHz				Span 12.50 MHz	Max Hold
#Res BW 120 kHz	#	¥VBW 390 kHz		Sweep 1 ms	
Occupied Bandwidth Total Power 29.0 dBm 4.5156 MHz					Min Hold
Transmit Freq Error x dB Bandwidth	11.771 kHz 4.889 MHz	% of OBW Po x dB		.00 % 00 dB	Detector Peak≱ Auto <u>Mar</u>
MSG			STATUS		

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



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

FCC ID: ZNFK920AM	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager	
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Keysight Spectrum Analyzer - Occupied BW					
XI RF 50 Ω AC NFE	Trig:	SENSE:INT r Freq: 836.500000 MHz Free Run Avg Hold n: 36 dB	Ra 100/100	2:14:02 PM Aug 10, 2020 adio Std: None adio Device: BTS	Trace/Detector
10 dB/div Ref 30.00 dBm					
20.0	- mana	mannen			Clear Writ
10.0 20.0 30.0 0000000000000000000000000000000			marmon	man white	Averag
					Max Hol
Center 836.500 MHz #Res BW 120 kHz	#	VBW 390 kHz		Span 12.50 MHz Sweep 1 ms	
Occupied Bandwidth	י 5383 MHz	Total Power	27.0 dl	Bm	Min Ho
Transmit Freq Error x dB Bandwidth	5.688 kHz 4.944 MHz	% of OBW Pow x dB	er 99.00 -26.00		Detect Peak Auto <u>Ma</u>
SG			STATUS		

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



Plot 7-40. Occupied Bandwidth Plot (LTE Band 26/5 - 10MHz QPSK - Full RB Configuration)

FCC ID: ZNFK920AM	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 27 of 200
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Keysight Spectrum Analyzer - Occupied BW					
X RF 50 Ω AC NFE	🛶 Trig: I	SENSE:INT r Freq: 836.500000 MH Free Run Avg n: 36 dB	ALIGN AUTO iz Hold: 100/100	12:19:58 PM Aug 10, 2020 Radio Std: None Radio Device: BTS	Trace/Detector
10 dB/div Ref 30.00 dBm					
20.0	enservice.pagea.ord	way and the way	\sim		Clear Writ
10.0 20.0 30.0 40.0	Nave		h martinetica	1949 Mary Contractor	Averaç
					Max Ho
Center 836.50 MHz Res BW 240 kHz	#	VBW 750 kHz		Span 25.00 MHz Sweep 1 ms	
Occupied Bandwidt	^h 9690 MHz	Total Power	28.2	2 dBm	Min Hol
Transmit Freq Error x dB Bandwidth	27.970 kHz 9.670 MHz	% of OBW P x dB		0.00 % 00 dB	Detecto Peal Auto <u>Ma</u>
SG			STATUS	5	

Plot 7-41. Occupied Bandwidth Plot (LTE Band 26/5 - 10MHz 16-QAM - Full RB Configuration)



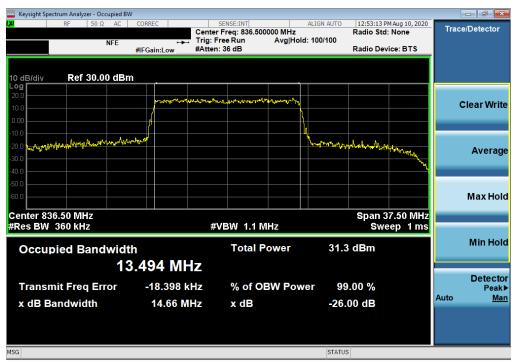
Plot 7-42. Occupied Bandwidth Plot (LTE Band 26/5 - 10MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFK920AM	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 28 of 280
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Keysight Spectrum Analyzer - Occupied BW						
XI RF 50 Ω AC	🛶 Trig: I	SENSE:INT r Freq: 836.500000 MH Free Run Avg n: 36 dB	ALIGN AUTO Iz Hold: 100/100	12:50:08 PM Radio Std: Radio Devi		Trace/Detector
10 dB/div Ref 30.00 dBm						
20.0		nenner lever 15. en en ten ten ten ten ten ten ten ten t				Clear Wri
10.0 -20.0	and .		ม การการการการการการการการการการการการการก	Lown, haged	Conner Maller Under reg	Avera
60.0 60.0 Center 836.50 MHz				Snan 37	7.50 MHz	Max Ho
Res BW 360 kHz	#	VBW 1.1 MHz			ep 1 ms	
Occupied Bandwidt	h .521 MHz	Total Power	32.3	3 dBm		Min Ho
Transmit Freq Error x dB Bandwidth	-5.714 kHz 14.58 MHz	% of OBW P x dB		9.00 % 00 dB		Detect Peal Auto <u>M</u>
SG			STATU	S		

Plot 7-43. Occupied Bandwidth Plot (LTE Band 26 - 15MHz QPSK - Full RB Configuration)



Plot 7-44. Occupied Bandwidth Plot (LTE Band 26 - 15MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFK920AM	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage 20 of 200
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0.00	Center Fi Trig: Free Low #Atten: 3		ALIGN AUTO	Adio Std:			e/Detector Clear Write
#IFGain:	:Low #Atten: 3	6 dB		Radio Dev	vice: BTS	c	Slear Write
Log //	ปปักระกับสูงการการการการการการการการการการการการการก	hanger and the second				c	Clear Write
-og 200 10.0 0.00	ปรุกกรรมหนุก 	h,				c	Clear Write
20.0 10.0 0.00	Altoning and a second	honelleraleral				c	Clear Writ
0.00						,	clear writ
			<u> </u>				
10.0			โลสสไหปโมละต				
20.0 20.0 พายีนายนี้ เป็นการและเป็นเป็นเป็นเป็นเป็นเป็นเป็นเป็นเป็นเป็น			TAL A SUPPORT	man W Man	MMM		Averag
40.0					×4,		
50.0							
60.0							Max Hol
Center 836.50 MHz				Span 3	7.50 MHz		
∜Res BW 360 kHz	#VE	3W 1.1 MHz		Swe	eep 1 ms		
Occupied Bandwidth		Total Power	30.4	dBm			Min Hol
13.543							
13.34							Detecto
Transmit Freq Error -4	.422 kHz	% of OBW Pov	ver 99	.00 %			Peak
x dB Bandwidth 14	4.51 MHz	x dB	-26.	00 dB		Auto	<u>Ma</u>
SG			STATUS				

Plot 7-45. Occupied Bandwidth Plot (LTE Band 26 - 15MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFK920AM	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 40 of 280
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LTE Band 66/4



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



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

FCC ID: ZNFK920AM	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager		
Test Report S/N:	Test Dates:	EUT Type:	Dage 41 of 200		
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🔤 Keysight Spectrum Analyzer - Occupied BW							
RF 50 Ω AC	CORREC	SENSE:INT Center Freg: 1.7450000	ALIGN A	UTO 11:04:49 PM Radio Std: 1		Trace/D	etector
		Trig: Free Run	Avg Hold: 10/10		ione		
	#IFGain:Low #	Atten: 36 dB		Radio Devic	e: BTS		
10 dB/div Ref 40.00 dBm	ì						
Log							
30.0						Cle	ar Write
20.0	Proven Marrie	march march	~			0.0	
10.0							
0.00	/						
-10.0			\				Average
-20.0	-						
-30.0 maple man man mark				Www.marthyla	mmhunn		
-40.0							
-50.0						N	lax Hold
-50.0							_
Center 1.745000 GHz				Span 3.	500 MHz		
Res BW 33 kHz		#VBW 110 kH	z	#Sweep 5	i.933 ms		Ain Hold
						-	
Occupied Bandwidt		Total Pov	wer 2	29.7 dBm			
1.0	0962 MHz	2				I	Detector
				00.00.00		•	Peak►
Transmit Freq Error	0 H:	z % of OBV	V Power	99.00 %		Auto	<u>Man</u>
x dB Bandwidth	1.244 MH	z xdB		-26.00 dB			
MSG				STATUS			
Mod			S	STATUS			

Plot 7-48. Occupied Bandwidth Plot (LTE Band 66/4 - 1.4MHz 64-QAM - Full RB Configuration)



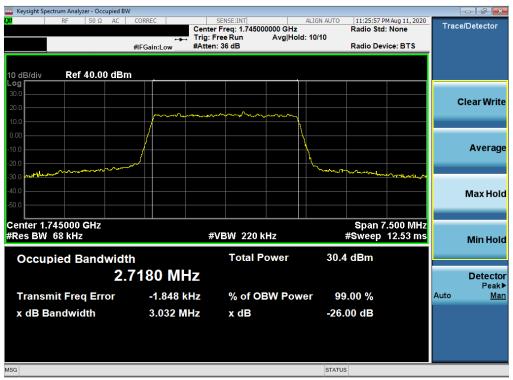
Plot 7-49. Occupied Bandwidth Plot (LTE Band 66/4 - 3MHz QPSK - Full RB Configuration)

FCC ID: ZNFK920AM	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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Keysight Spectrum Analyzer - Occupie	d BW				
RF 50 Ω A				M Aug 11, 2020	Trace/Detector
		r Freq: 1.745000000 GHz Free Run Avg Hold: 1	Radio Std 10/10	: None	
		n: 36 dB	Radio Dev	/ice: BTS	
,					
	Due				
10 dB/div Ref 40.00 d	BM				
30.0					
20.0					Clear Write
	man	man			
10.0					
0.00					
-10.0	/				Average
-20.0			<u>م</u>		
-30.0 motherson monor	www.www		monthe monther		
-40.0					Max Hold
-50.0					
Center 1.745000 GHz				'.500 MHz	
#Res BW 68 kHz	#	VBW 220 kHz	#Sweep	12.53 ms	Min Hold
	141	Total Power	30.4 dBm		
Occupied Bandwi		Total Power	30.4 dBm		
	2.7181 MHz				Detector
					Peak▶
Transmit Freq Error	-1.848 kHz	% of OBW Power	r 99.00 %		Auto <u>Man</u>
x dB Bandwidth	3.032 MHz	x dB	-26.00 dB		
	3.032 WITE	A dD	-20.00 ub		
MSG			STATUS		

Plot 7-50. Occupied Bandwidth Plot (LTE Band 66/4 - 3MHz 16-QAM - Full RB Configuration)



Plot 7-51. Occupied Bandwidth Plot (LTE Band 66/4 - 3MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFK920AM	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	🕕 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dama 40 af 000
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Keysight Spectrum Analyzer - Occupie					
X RF 50 Ω A0	C CORREC	SENSE:INT Center Freg: 1.745000000 GH	ALIGN AUTO	11:43:03 PM Aug 11, 2020 Radio Std: None	Trace/Detector
	₩FGain:Low		old:>10/10	Radio Device: BTS	
10 dB/div Ref 40.00 d	Bm		_		
20.0					Clear Write
-10.0					Average
-30.0			hr	·····	
-40.0					Max Hold
Center 1.745000 GHz #Res BW 120 kHz		#VBW 390 kHz		Span 12.50 MHz #Sweep 1 ms	Min Hole
Occupied Bandwi	dth	Total Power	31.1	dBm	
	4.5496 MH	Z			Detecto Peak
Transmit Freq Error	3.453 kl	Hz % of OBW Po	wer 99	.00 %	Auto <u>Ma</u>
x dB Bandwidth	5.045 MI	Hz x dB	-26.	00 dB	
SG			STATU	5	

Plot 7-52. Occupied Bandwidth Plot (LTE Band 66/4 - 5MHz QPSK - Full RB Configuration)



Plot 7-53. Occupied Bandwidth Plot (LTE Band 66/4 - 5MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFK920AM	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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Keysight Spectrum Analyzer - Occupied BW					
RF 50 Ω AC	CORREC	SENSE:INT ter Freg: 1.74500000	ALIGN AUTO	11:44:55 PM Aug 11, 2020 Radio Std: None	Trace/Detector
	🛶 Trig		vg Hold:>10/10	Radio Device: BTS	-
10 dB/div Ref 40.00 dBm					
20.0					Clear Write
10.0					
20.0					Averag
30.0			h	······	
-40.0					Max Hole
Center 1.745000 GHz Res BW 120 kHz		#VBW 390 kHz		Span 12.50 MHz #Sweep 1 ms	
Occupied Bandwidth	า	Total Pow	ver 31.1	dBm	
4.5	5496 MHz				Detecto Peak
Transmit Freq Error	3.456 kHz	% of OBW	Power 99	.00 %	Auto <u>Ma</u>
x dB Bandwidth	5.045 MHz	x dB	-26.	00 dB	
SG			STATUS	3	

Plot 7-54. Occupied Bandwidth Plot (LTE Band 66/4 - 5MHz 64-QAM - Full RB Configuration)



Plot 7-55. Occupied Bandwidth Plot (LTE Band 66/4 - 10MHz QPSK - Full RB Configuration)

FCC ID: ZNFK920AM	PCTEST [®] Proud to be part of [®] element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager		
Test Report S/N:	Test Dates:	EUT Type:	Dage 45 of 280		
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🔤 Keysight Spectrum Analyzer - Occupied BW					
RF 50 Ω AC	CORREC	SENSE:INT Center Freg: 1.74500	ALIGN AUTO	12:19:50 AM Aug 12, 2020 Radio Std: None	Trace/Detector
		Trig: Free Run #Atten: 36 dB	Avg Hold: 10/10	Radio Device: BTS	
10 dB/div Ref 30.00 dBm					
20.0					Clear Write
0.00					
-20.0 -30.0			hann	man man man man and a second	Average
-40.0					
-50.0					Max Hold
Center 1.74500 GHz #Res BW 240 kHz		#VBW 750 k	(Hz	Span 25.00 MHz #Sweep 1 ms	Min Hold
Occupied Bandwidth	ı	Total P	ower 30.	4 dBm	
9.0	0408 MH	Z			Detector Peak▶
Transmit Freq Error	-2.978 kH	Iz % of O	3W Power 9	9.00 %	Auto <u>Mar</u>
x dB Bandwidth	9.988 MH	lz xdB	-26	.00 dB	
ISG			STATU	IS	

Plot 7-56. Occupied Bandwidth Plot (LTE Band 66/4 - 10MHz 16-QAM - Full RB Configuration)



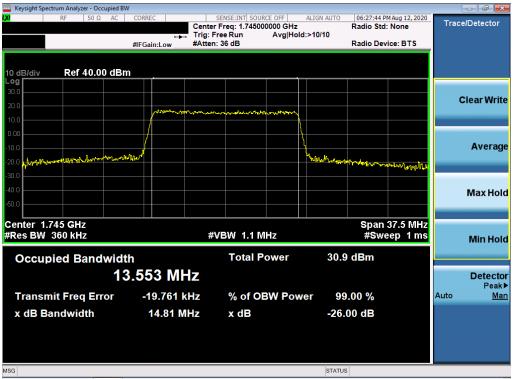
Plot 7-57. Occupied Bandwidth Plot (LTE Band 66/4 - 10MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFK920AM	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager		
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Keysight Spectrum Analyzer - Occupied BW			
RF 50 Ω AC CORREC	SENSE:INT SOURCE OFF ALIGN	AUTO 06:26:56 PM Aug 12, 2020 Radio Std: None	Trace/Detector
	Trig: Free Run Avg Hold:>10/1		
#IFGain:Low	#Atten: 36 dB	Radio Device: BTS	
10 dB/div Ref 40.00 dBm			
Log			
30.0			Clear Write
20.0	Mr. Marthan and Branch and		Clear write
10.0			
0.00	<u> </u>		
-10.0			Average
-20.0 governman man man man man	here and the second sec	man land and an and an and and and and and an	
-30.0		the second se	
-40.0			
			Max Hold
-50.0			
Center 1.745 GHz		Span 37.5 MHz	
#Res BW 360 kHz	#VBW 1.1 MHz	#Sweep 1 ms	Min Hold
			WIIITIOIG
Occupied Bandwidth	Total Power	32.0 dBm	
13.546 M	Hz		Detector
10:040	112		Peak►
Transmit Freq Error -16.695	kHz % of OBW Power	99.00 %	Auto <u>Man</u>
x dB Bandwidth 14.88	MHz xdB	-26.00 dB	
MSG		STATUS	

Plot 7-58. Occupied Bandwidth Plot (LTE Band 66/4 - 15MHz QPSK - Full RB Configuration)



Plot 7-59. Occupied Bandwidth Plot (LTE Band 66/4 - 15MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFK920AM	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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Keysight Spectrum Analyzer - Occupie					
LXI RF 50 Ω A		SENSE:INT SOURCE OFF		25 PM Aug 12, 2020 Std: None	Trace/Detector
		: Free Run Avg Hol		stu. None	
	#IFGain:Low #Att	en: 36 dB	Radio I	Device: BTS	
10 dB/div Ref 40.00 d	Bm				
Log					
30.0					Clear Write
20.0					Clear write
10.0	and the second second second second	The second secon			
0.00					
-10.0			N I		Average
	- marel		1		Arenuge
-20.0			and a straight and a straight and a straight	mannenverse	
-30.0					
-40.0					Max Hold
-50.0					
Center 1.745 GHz		40 (B14) 4 4 B411-		an 37.5 MHz	
#Res BW 360 kHz		#VBW 1.1 MHz	#5	weep 1 ms	Min Hold
Occupied Renduri	dth	Total Power	30.4 dBm		
Occupied Bandwi			50.4 dBill		
	13.556 MHz				Detector
T	26 722 1.11-	% -f 00W/ D	00.00.0/		Peak▶ Auto Man
Transmit Freq Error	-26.732 kHz	% of OBW Pow	ver 99.00 %		Auto <u>Ivian</u>
x dB Bandwidth	14.78 MHz	x dB	-26.00 dB		
MSG			STATUS		

Plot 7-60. Occupied Bandwidth Plot (LTE Band 66/4 - 15MHz 64-QAM - Full RB Configuration)



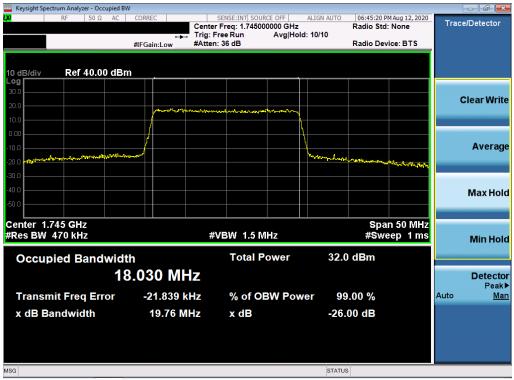
Plot 7-61. Occupied Bandwidth Plot (LTE Band 66/4 - 20MHz QPSK - Full RB Configuration)

FCC ID: ZNFK920AM	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 49 of 200
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Keysight Spectrum Analyzer - Occupied BV	V						
LXI RF 50 Ω AC	CORREC	SENSE:INT SOURCE OFF	ALIGN AUTO	06:44:51 PM Radio Std:	Aug 12, 2020	Trace/Deteo	ctor
		enter Freq: 1.745000000 GHz ig: Free Run Avg Ho	ld: 10/10	Radio Std:	None		
		Atten: 36 dB		Radio Devi	ce: BTS		
10 dB/div Ref 40.00 dBn	n						
Log	·						
30.0							
20.0						Clear	Nrite
10.0	presente and the factor	man and the second and the second					
0.00			KI I				
	1		l			Ave	rago
-10.0	4-14-1		moundance			AVE	erage
-20.0				a Tili ingele fire and	they to the party of the second se		
-30.0							
-40.0						Мах	Hold
-50.0						mux	nora
Center 1.745 GHz					n 50 MHz		
#Res BW 470 kHz		#VBW 1.5 MHz		#Swe	ep 1 ms	Min	Hold
		T-4-1 D	22.0	ID			
Occupied Bandwidt		Total Power	32.0 0	aBm			
18	3.030 MHz					Det	ector
							Peak►
Transmit Freq Error	-21.763 kHz	% of OBW Pov	wer 99.(00 %		Auto	<u>Man</u>
x dB Bandwidth	19.76 MHz	x dB	-26.00	0 dB			
MSG			STATUS				

Plot 7-62. Occupied Bandwidth Plot (LTE Band 66/4 - 20MHz 16-QAM - Full RB Configuration)



Plot 7-63. Occupied Bandwidth Plot (LTE Band 66/4 - 20MHz 64-QAM - Full RB Configuration)

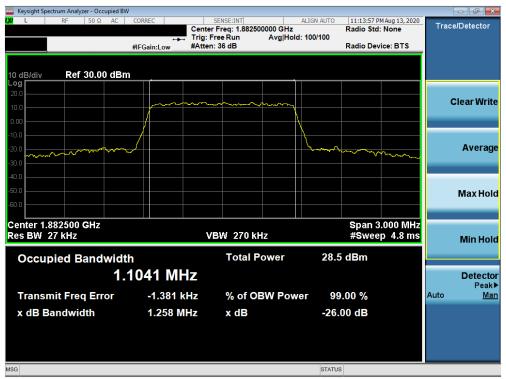
FCC ID: ZNFK920AM	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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LTE Band 25/2

🔤 Keysight Spectrum Analyzer - Occupied BW					
IX L RF 50 Ω AC	Trig:	SENSE:INT Pr Freq: 1.882500000 GHz Free Run Avg Holo n: 36 dB	ALIGN AUTO	11:13:11 PM Aug 13, 20 Radio Std: None Radio Device: BTS	Trace/Detector
10 dB/div Ref 30.00 dBm					
20.0			\		Clear Writ
-10.0					Averag
-40.0					Max Hol
Center 1.882500 GHz Res BW 27 kHz	١	/BW 270 kHz		Span 3.000 MI #Sweep 4.8 n	
Occupied Bandwidth	า	Total Power	28.5	dBm	
	1041 MHz				Detecto Peak
Transmit Freq Error	-1.379 kHz	% of OBW Pow	ver 99	.00 %	Auto <u>Ma</u>
x dB Bandwidth	1.258 MHz	x dB	-26.0	00 dB	
MSG			STATUS		

Plot 7-64. Occupied Bandwidth Plot (LTE Band 25/2 - 1.4MHz QPSK - Full RB Configuration)



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

FCC ID: ZNFK920AM	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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www.www.www.www.www.www.www.www.www.ww					
L RF 50Ω AC	CORREC	SENSE:INT Center Freq: 1.8825	ALIGN AUTO	11:15:00 PM Aug 13, 20 Radio Std: None	Trace/Detector
		Trig: Free Run	Avg Hold: 100/100		
	#IFGain:Low	#Atten: 36 dB		Radio Device: BTS	_
10 dB/div Ref 30.00 dBn	n		·····		
20.0					
10.0		·····	m		Clear Write
0.00	/		<u> </u>		
-10.0	_/		<u>λ</u>		
-20.0					Average
-30.0				and allowed	~
-40.0					
-50.0					
-60.0					Max Hold
Center 1.882500 GHz				Span 3.000 MI	
Res BW 27 kHz		VBW 270 k	Hz	#Sweep 4.8 n	1S Min Hold
Occupied Bandwidt	h	Total F	Power 28	5 dBm	
			201		
1.	1041 M⊦	1Z			Detector Peak►
Transmit Freq Error	-1.379 k	Hz % of O	BW Power 9	9.00 %	Auto <u>Man</u>
x dB Bandwidth	1.258 M	Hz xdB	-26	.00 dB	
	1.200 1		-20		
100					
MSG			STATI	05	

Plot 7-66. Occupied Bandwidth Plot (LTE Band 25/2 - 1.4MHz 64-QAM - Full RB Configuration)



Plot 7-67. Occupied Bandwidth Plot (LTE Band 25/2 - 3MHz QPSK - Full RB Configuration)

FCC ID: ZNFK920AM	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dama 54 af 200	
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Keysight Spectrum Analyzer - Occupied BV					
L RF 50Ω AC	CORREC	SENSE:INT Center Freq: 1.88250		09:06:43 PM Aug 13, 2 Radio Std: None	Trace/Detector
	↔ #IFGain:Low	Trig: Free Run #Atten: 36 dB	Avg Hold: 100/100	Radio Device: BTS	
	an ounced				
10 dB/div Ref 30.00 dBn	n				
Log 20.0					
10.0		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			Clear Write
	/				
-10.0			\		
-20.0	har		hann		Average
-30.0					
-40.0					
-50.0					Max Hold
-60.0					
Center 1.882500 GHz				Span 7.500 M	Hz
#Res BW 68 kHz		#VBW 220 k	Hz	Sweep 3.8 i	ns Min Hold
Occupied Bandwidt	h	Total P	ower 29	.0 dBm	
	 7226 M⊦	-			Detector
					Peak
Transmit Freq Error	-4.422 k	Hz % of O	BW Power 9	9.00 %	Auto <u>Mar</u>
x dB Bandwidth	3.051 M	Hz x dB	-26	5.00 dB	
MSG			STAT	US	

Plot 7-68. Occupied Bandwidth Plot (LTE Band 25/2 - 3MHz 16-QAM - Full RB Configuration)



Plot 7-69. Occupied Bandwidth Plot (LTE Band 25/2 - 3MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFK920AM	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	🕕 LG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dage 50 of 200	
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Keysight Spectrum Analyzer - Occupied B	N				
L RF 50 Ω AC	CORREC	SENSE:INT Center Freg: 1.8825000	ALIGN AUTO	09:25:49 PM Aug 13, 2020 Radio Std: None	Trace/Detector
		Trig: Free Run	Avg Hold:>100/100		
	#IFGain:Low	#Atten: 36 dB		Radio Device: BTS	
10 dB/div Ref 30.00 dBr	n				
20.0					
10.0	mon	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		Clear Write
0.00			\		
-10.0					
-20.0	~				Average
-30.0				1. and mental market	g.
-40.0					
-50.0					
					Max Hold
-60.0					
Center 1.882500 GHz				Span 12.50 MHz	
#Res BW 120 kHz		#VBW 390 kH	z	#Sweep 1 ms	Min Hold
Occupied Dendwidt	(le	Total Po	wor 20 3	2 dBm	
Occupied Bandwidt			20.2		
4.	5360 MH	Z			Detector Peak▶
Transmit Freq Error	1.332 kH	z % of OB	W Power 99	9.00 %	Auto <u>Man</u>
x dB Bandwidth	5.043 MH			.00 dB	
	5.043 MF		-20.		
MSG			STATU	S	

Plot 7-70. Occupied Bandwidth Plot (LTE Band 25/2 - 5MHz QPSK - Full RB Configuration)



Plot 7-71. Occupied Bandwidth Plot (LTE Band 25/2 - 5MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFK920AM	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	🕕 LG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dage 52 of 290	
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Keysight Spectrum Analyzer - Occupied B					
🗶 RF 50Ω AC		SENSE:INT Inter Freq: 1.882500000 GHz	ALIGN AUTO	09:26:48 PM Aug 13, 202 Radio Std: None	Trace/Detector
		ig: Free Run Avg Hol .tten: 36 dB	d: 100/100	Radio Device: BTS	
10 dB/div Ref 30.00 dBr	n				
20.0					
10.0	mon				Clear Write
0.00	/		\		
10.0			\		
-20.0	~~/		hann	man www.	Average
-30.0					
-40.0					
-50.0					Max Hold
-60.0					
Center 1.882500 GHz				Span 12.50 MH	z
#Res BW 120 kHz		#VBW 390 kHz		#Sweep 1 m	s Min Hole
Occupied Bandwidt	h	Total Power	29.2	dBm	
4.	5359 MHz				Detecto
	1.333 kHz			.00 %	Peak Auto Mar
Transmit Freq Error					Auto <u>Ivial</u>
x dB Bandwidth	5.043 MHz	x dB	-26.	00 dB	
ISG			STATUS	3	

Plot 7-72. Occupied Bandwidth Plot (LTE Band 25/2 - 5MHz 64-QAM - Full RB Configuration)



Plot 7-73. Occupied Bandwidth Plot (LTE Band 25/2 - 10MHz QPSK - Full RB Configuration)

FCC ID: ZNFK920AM	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Daga 54 of 200
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Keysight Spectrum Analyzer - Occupied E					
L RF 50 Ω AC	CORREC	SENSE:INT Center Freq: 1.88250		09:43:37 PM Aug 13, 2020 Radio Std: None	Trace/Detector
	+→→ #IFGain:Low	Trig: Free Run #Atten: 36 dB	Avg Hold: 100/100	Radio Device: BTS	
	In Gum.Eow				ſ
10 dB/div Ref 30.00 dB	m				
_ 0 g 20.0					
10.0					Clear Write
0.00					
10.0			<u> </u>		
-20.0					Average
-30.0					
-40.0					
-50.0					Max Hold
-60.0					
Center 1.88250 GHz				Span 25.00 MHz	
#Res BW 240 kHz		#VBW 750 k	Hz	#Sweep 1 ms	
Occupied Bandwid	th	Total P	ower 29.	2 dBm	
	 .0500 MH	7			Detecto
					Peak
Transmit Freq Error	-10.479 kl	Iz % of OE	3W Power 9	9.00 %	Auto <u>Ma</u>
x dB Bandwidth	9.993 MF	z x dB	-26	i.00 dB	
ISG			STAT	US	

Plot 7-74. Occupied Bandwidth Plot (LTE Band 25/2 - 10MHz 16-QAM - Full RB Configuration)



Plot 7-75. Occupied Bandwidth Plot (LTE Band 25/2 - 10MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFK920AM	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: Test Dates:		EUT Type:	Dage 55 of 280
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Keysight Spectrum Analyzer - Occupied BW					
L RF 50 Ω AC	CORREC	SENSE:INT A ter Freg: 1.882500000 GHz	LIGN AUTO	10:01:38 PM Aug 13, 2020 Radio Std: None	Trace/Detector
	trig	:Free Run Avg Hold:>	>100/100		
	#IFGain:Low #Att	ten: 36 dB		Radio Device: BTS	
10 dB/div Ref 40.00 dBm					
Log 30.0					
20.0					Clear Write
10.0	mon	man			
0.00					
					Average
-10.0					Average
-20.0 man man market			· · · · · · · · · · · · · · · · · · ·	man and a second a secon	
-30.0					
-40.0					Max Hold
-50.0					
Center 1.88250 GHz				Span 37.50 MHz	
#Res BW 360 kHz		#VBW 1.1 MHz		#Sweep 1 ms	Min Hold
					Minifiora
Occupied Bandwidt		Total Power	29.2	dBm	
13	.556 MHz				Detector
T	0.000 1.11-		- 00	00.0/	Peak▶ Auto Man
Transmit Freq Error	-9.862 kHz	% of OBW Powe		.00 %	Auto <u>Man</u>
x dB Bandwidth	14.94 MHz	x dB	-26.0	00 dB	
MSG			STATUS		

Plot 7-76. Occupied Bandwidth Plot (LTE Band 25/2 - 15MHz QPSK - Full RB Configuration)



Plot 7-77. Occupied Bandwidth Plot (LTE Band 25/2 - 15MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFK920AM	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	🕕 LG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dama 50 af 200	
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Keysight Spectrum Analyzer - Occupied BW						
L RF 50Ω AC	CORREC	SENSE:INT Center Freq: 1.88250		Radio Std:	Aug 13, 2020 None	Trace/Detector
	++→ #IFGain:Low	Trig: Free Run #Atten: 36 dB	Avg Hold: 100/100) Radio Devi	ice: BTS	
	an ounieon					
10 dB/div Ref 40.00 dBm	ì					
Log 30.0						
20.0						Clear Write
10.0		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			
0.00	/		<u> </u>			
-10.0			\			Average
-20.0	~		have	and the second second	Mr. Marrie	
-30.0						
-40.0						Max Hold
-50.0						
Center 1.88250 GHz				Span 3	7.50 MHz	
#Res BW 360 kHz		#VBW 1.1 M	Hz	#Swe	ep 1 ms	Min Hold
Occupied Bandwidt	h	Total P	ower 2	9.2 dBm		
	 5.556 M⊦	7				Detector
						Peak
Transmit Freq Error	-9.858 k	Hz % of OE	3W Power	99.00 %		Auto <u>Mar</u>
x dB Bandwidth	14.94 M	Hz x dB	-2	26.00 dB		
MSG			ST	ATUS		

Plot 7-78. Occupied Bandwidth Plot (LTE Band 25/2 - 15MHz 64-QAM - Full RB Configuration)



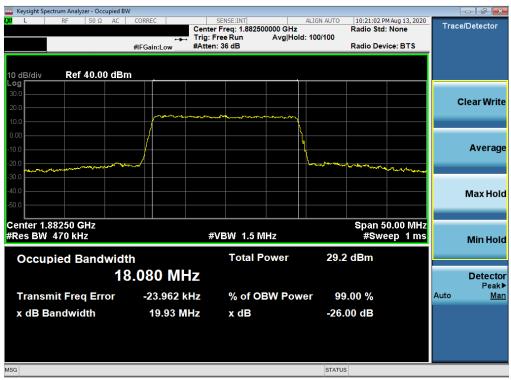
Plot 7-79. Occupied Bandwidth Plot (LTE Band 25/2 - 20MHz QPSK - Full RB Configuration)

FCC ID: ZNFK920AM	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage 57 of 290
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Keysight Spectrum Analyzer - Occupied					
<mark>XI</mark> L RF 50Ω AC	CORREC	SENSE:INT Center Freq: 1.882500000	ALIGN AUTO	10:20:39 PM Aug 13, 2020 Radio Std: None	Trace/Detector
	↔ #IFGain:Low	Trig: Free Run Av #Atten: 36 dB	vg Hold: 100/100	Radio Device: BTS	
10 dB/div Ref 40.00 dE	m				
30.0					
20.0					Clear Write
10.0		and the second and th	~~~~		
0.00					
10.0					Averag
-20.0	wwwd			to the man when the man	
-50.0					Max Hole
Center 1.88250 GHz #Res BW 470 kHz		#VBW 1.5 MHz		Span 50.00 MHz #Sweep 1 ms	Min Hold
<u> </u>		Total Pow	on 20.4	2 dBm	MITHON
Occupied Bandwic			29.		
1	8.080 MH	Z			Detecto Peak
Transmit Freq Error	-23.991 k	Hz % of OBW	Power 99	9.00 %	Auto <u>Ma</u>
x dB Bandwidth	19.93 MI	Hz x dB	-26	.00 dB	
ISG			STATU	S	

Plot 7-80. Occupied Bandwidth Plot (LTE Band 25/2 - 20MHz 16-QAM - Full RB Configuration)



Plot 7-81. Occupied Bandwidth Plot (LTE Band 25/2 - 20MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFK920AM	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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LTE Band 30

🔤 Keysight Spectrum Analyzer											(
CXI RF	50Ω)	AC CO	RREC			NSE:INT eq: 2.31000	0000 GHz	ALIGN AUTO	08:34:01 F	M Aug 10, 2020	Trace	e/Detector
					Trig: Free	Run	Avg Hold	d: 10/10				
		#IF	Gain:	Low	#Atten: 4	0 dB			Radio Dev	vice: BTS		
10 dB/div Ref 4	0.00	dBm										
Log 30.0												
20.0											c	Clear Write
10.0			~		·····	~~~~~						
0.00								\				
-10.0			/					X				Average
												Average
-20.0	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	mond						mm	and a second provided and a second	m		
-30.0												
-40.0												Max Hold
-50.0												
Center 2.310000 G	Hz								Span 1	2.50 MHz		
#Res BW 120 kHz					#VE	SW 390 H	(Hz		#Sw	eep 1 ms		Min Hold
												Milline
Occupied Ba	ndw	idth				Total P	ower	32.	9 dBm			
		4.54	04	MH	Z							Detector
												Peak▶
Transmit Freq	Erroi	r	-3.	784 kH	Z	% of O	BW Pow	ver 9	9.00 %		Auto	Man
x dB Bandwidt	h		5.0	012 MH	z	x dB		-26	.00 dB			
MSG								STATU	JS			

Plot 7-82. Occupied Bandwidth Plot (LTE Band 30 - 5MHz QPSK - Full RB Configuration)



Plot 7-83. Occupied Bandwidth Plot (LTE Band 30 - 5MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFK920AM	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Daga E0 of 200
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Keysight Spectrum Analyzer - Occupied BV						
KF 50 Ω AC	CORREC	SENSE:INT Freg: 2.310000000 GHz	ALIGN AUTO	08:35:37 PM Radio Std:	1Aug 10, 2020 None	Trace/Detector
	Trig:	Free Run Avg Ho	old: 10/10			
	#IFGain:Low #Atter	n: 40 dB		Radio Devi	ce: BTS	
10 dB/div Ref 40.00 dBn	<u> </u>		•			
30.0						
20.0	000 100000					Clear Writ
10.0						
0.00	/		<u>\</u>			
-10.0	_/					Averag
-20.0			hanne			
-30.0	~		en th	and and the second s	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	
-40.0						Max Hol
-50.0						Maxiloi
Center 2.310000 GHz #Res BW 120 kHz		VBW 390 kHz		Span 12	2.50 MHz ep 1 ms	
	77	VDVV 390 KH2		#GWC	ep i llis	Min Hol
Occupied Bandwidt	h	Total Power	32.9	dBm 🖯		
4	5400 MHz					Detecto
						Peak
Transmit Freq Error	-3.760 kHz	% of OBW Pov	wer 99	0.00 %		Auto <u>Ma</u>
x dB Bandwidth	5.012 MHz	x dB	-26.	00 dB		
ISG			STATU	S		
	1 1 1 1 BL 4 /1					

Plot 7-84. Occupied Bandwidth Plot (LTE Band 30 - 5MHz 64-QAM - Full RB Configuration)



Plot 7-85. Occupied Bandwidth Plot (LTE Band 30 - 10MHz QPSK - Full RB Configuration)

FCC ID: ZNFK920AM	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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Keysight Spectrum Analyzer - Occupied BW					
RF 50Ω AC	CORREC	SENSE:INT nter Freg: 2.310000000 GHz	ALIGN AUTO 10:19:38 Radio St	PM Aug 10, 2020 d: None	Trace/Detector
	tri	g:FreeRun Avg Hold: tten:36 dB	>10/10	evice: BTS	
10 dB/div Ref 40.00 dBm					
20.0		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			Clear Write
10.0 0.00 -10.0					Average
-20.0 -30.0 -40.0			the second second		Max Hold
Center 2.31000 GHz #Res BW 240 kHz		#VBW 750 kHz	#Sv	25.00 MHz /eep 1 ms	Min Hold
Occupied Bandwidt	^h 0591 MHz	Total Power	32.9 dBm		Detector Peak▶
Transmit Freq Error	9.373 kHz	% of OBW Powe	er 99.00 %		Auto <u>Mar</u>
x dB Bandwidth	10.02 MHz	x dB	-26.00 dB		
MSG			STATUS		

Plot 7-86. Occupied Bandwidth Plot (LTE Band 30 - 10MHz 16-QAM - Full RB Configuration)



Plot 7-87. Occupied Bandwidth Plot (LTE Band 30 - 10MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFK920AM	PCTEST [®] Proud to be part of ® element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager		
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LTE Band 41(PC3)



Plot 7-88. Occupied Bandwidth Plot (LTE Band 41(PC3) - 5MHz QPSK - Full RB Configuration)



Plot 7-89. Occupied Bandwidth Plot (LTE Band 41(PC3) - 5MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFK920AM	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dama (0. af 200	
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Keysight Spectrum Analyzer - Occupied BW							[
KL RF 50Ω DC COP	RREC	SENSE:INT enter Freg: 2.59300	0000 CH-	ALIGN AUTO	11:13:35 A Radio Std	M Aug 23, 2020	Trace	/Detector
		ig: Free Run		d:>100/100	Raulo Stu	. None		
#IF	Gain:Low #A	Atten: 36 dB			Radio Dev	rice: BTS		
10 dB/div Ref 35.00 dBm								
Log								
25.0								lear Write
15.0	mannahma	and the second s	man					
5.00	/							
-5.00	/							
-15.0 -25.0 pmm ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~				VIMMAN MY MY	Bar the c			Average
25 Mary Low May Mar Vi V				VY I IYU	. Ն. Իս էս էս էս	www.how		-
-35.0								
-45.0								Max Hold
-55.0								
Center 2.593000 GHz					Snan 1	2.50 MHz		
Res BW 120 kHz		#VBW 390 k	Hz			ep 1 ms		Min Hold
						<u> </u>		WITI HOIU
Occupied Bandwidth		Total P	ower	31.5	dBm			
4.52	12 MHz							Detector
7.52								Peak►
Transmit Freq Error	1.098 kHz	% of O	3W Pow	ver 99	.00 %		Auto	Man
x dB Bandwidth	5.387 MHz	x dB		-26	00 dB			
	5.507 WHZ	X UD		-20.				
MSG				STATUS				

Plot 7-90. Occupied Bandwidth Plot (LTE Band 41(PC3) - 5MHz 64-QAM - Full RB Configuration)



Plot 7-91. Occupied Bandwidth Plot (LTE Band 41(PC3) - 10MHz QPSK - Full RB Configuration)

FCC ID: ZNFK920AM	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 62 of 200
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Keysight Spectrum Analyzer - Occupied BW							- • •
LXI RL RF 50Ω DC	CORREC	SENSE:INT Center Freq: 2.59300		IGN AUTO 11:42:59 A Radio Std	M Aug 23, 2020	Trace	Detector
			Avg Hold: 1		None		
	#IFGain:Low	#Atten: 36 dB		Radio Dev	ice: BTS		
10 dB/div Ref 40.00 dBm							
Log							
30.0						-	lear Write
20.0	الم المحمد	Low with an above				Ľ	lear write
10.0							
0.00			<u>ι</u>				
-10.0			1				Average
and and detailed the second of the second of the second second second second second second second second second	M I		1	W.Warman and a start	-		Average
-20.0 many				a war ar di t tro m Mu	And Alexandra		
-30.0							
-40.0							Max Hold
-50.0							
Center 2.59300 GHz		40 (BW) 750 L			5.00 MHz		
Res BW 240 kHz		#VBW 750 k	HZ	SWe	ep 1 ms		Min Hold
Occupied Bandwidth		Total P	ower	33.0 dBm			
9.0)442 MH	Z					Detector
Transmit Frag Frag	9.703 k		3W Power	99.00 %		Auto	Peak▶ Man
Transmit Freq Error	9.703 K		Sw Power	99.00 %		Auto	ivian
x dB Bandwidth	9.864 M	Hz xdB		-26.00 dB			
				074710			
MSG				STATUS			

Plot 7-92. Occupied Bandwidth Plot (LTE Band 41(PC3) - 10MHz 16-QAM - Full RB Configuration)



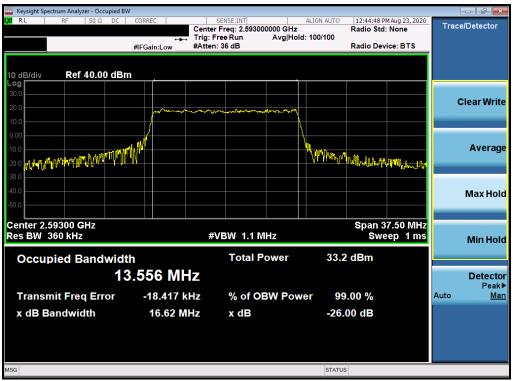
Plot 7-93. Occupied Bandwidth Plot (LTE Band 41(PC3) - 10MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFK920AM	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	🕕 LG	Approved by: Quality Manager
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Keysight Spectrum Analyzer - Occupied BV	N				
KI RF 50Ω DC	CORREC	SENSE:INT er Freg: 2.593000000 GHz		PM Aug 23, 2020	Trace/Detector
	Trig:	Free Run Avg Ho	Id: 100/100	. None	
	#IFGain:Low #Atte	n: 36 dB	Radio De	vice: BTS	
10 dB/div Ref 40.00 dBn	n				
Log					
30.0					Clear Write
20.0	monthermolecture	man all and the second of the second se			Cicui milic
10.0					
0.00	/				
-10.0	rmll		h Matalana		Average
			Valler And Marked And	ANAL MAN A MUK A	
-30.0			, , , , , , , , , , , , , , , , , , , ,	, i jan ji dine	
-40.0					
-50.0					Max Hold
-50.0					
Center 2.59300 GHz			Span 3	37.50 MHz	
Res BW 360 kHz	#	≇VBW 1.1 MHz	Sw	eep 1 ms	Min Hold
			00.4.15		
Occupied Bandwidt		Total Power	33.4 dBm		
13	3.617 MHz				Detector
			00.00		Peak▶
Transmit Freq Error	-21.035 kHz	% of OBW Pov	wer 99.00 %		Auto <u>Man</u>
x dB Bandwidth	15.22 MHz	x dB	-26.00 dB		
MSG			STATUS		
Mou			STATUS		

Plot 7-94. Occupied Bandwidth Plot (LTE Band 41(PC3) - 15MHz QPSK - Full RB Configuration)



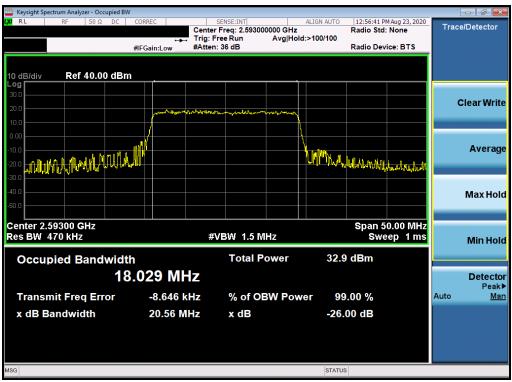
Plot 7-95. Occupied Bandwidth Plot (LTE Band 41(PC3) - 15MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFK920AM	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	🕕 LG	Approved by: Quality Manager
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Plot 7-96. Occupied Bandwidth Plot (LTE Band 41(PC3) - 15MHz 64-QAM - Full RB Configuration)



Plot 7-97. Occupied Bandwidth Plot (LTE Band 41(PC3) - 20MHz QPSK - Full RB Configuration)

FCC ID: ZNFK920AM	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 66 of 280
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Plot 7-98. Occupied Bandwidth Plot (LTE Band 41(PC3) - 20MHz 16-QAM - Full RB Configuration)



Plot 7-99. Occupied Bandwidth Plot (LTE Band 41(PC3) - 20MHz 64-QAM - Full RB Configuration)

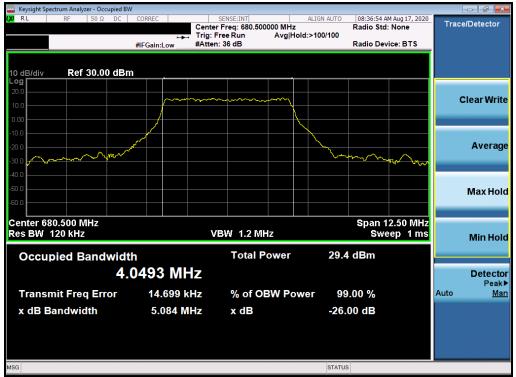
FCC ID: ZNFK920AM	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	🕕 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dara 07 at 200
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NR Band n71



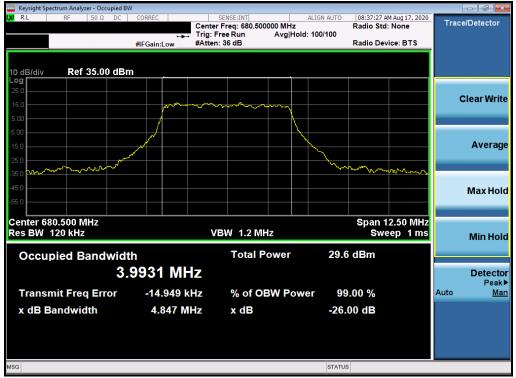
Plot 7-100. Occupied Bandwidth Plot (NR Band n71 - 5.0MHz DFT-s-OFDM BPSK - Full RB)



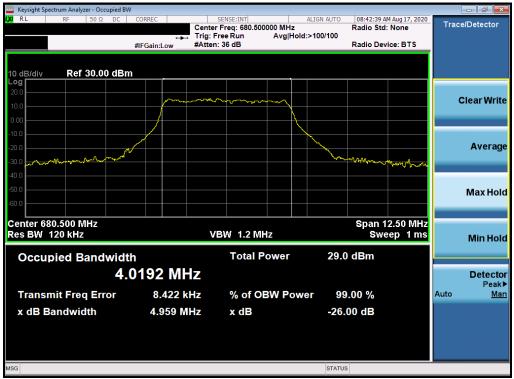
Plot 7-101. Occupied Bandwidth Plot (NR Band n71 - 5.0MHz CP-OFDM QPSK - Full RB)

FCC ID: ZNFK920AM	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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Plot 7-102. Occupied Bandwidth Plot (NR Band n71 - 5MHz CP-OFDM 16-QAM - Full RB)



Plot 7-103. Occupied Bandwidth Plot (NR Band n71 - 5MHz CP-OFDM 64-QAM - Full RB)

FCC ID: ZNFK920AM	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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Plot 7-104. Occupied Bandwidth Plot (NR Band n71 - 5MHz CP-OFDM 256-QAM - Full RB)



Plot 7-105. Occupied Bandwidth Plot (NR Band n71 - 10MHz DFT-s-OFDM BPSK - Full RB)

FCC ID: ZNFK920AM	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dama 70 of 000	
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Plot 7-106. Occupied Bandwidth Plot (NR Band n71 - 10MHz CP-OFDM QPSK - Full RB)



Plot 7-107. Occupied Bandwidth Plot (NR Band n71 - 10MHz CP-OFDM 16-QAM - Full RB)

FCC ID: ZNFK920AM	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dama 74 of 000	
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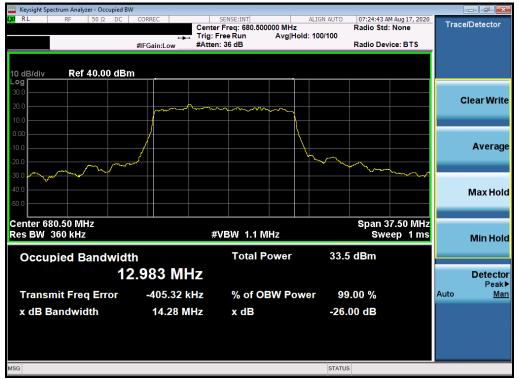
Plot 7-108. Occupied Bandwidth Plot (NR Band n71 - 10MHz CP-OFDM 64-QAM - Full RB)



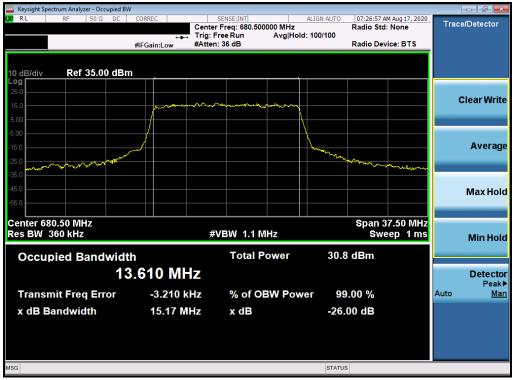
Plot 7-109. Occupied Bandwidth Plot (NR Band n71 - 10MHz CP-OFDM 256-QAM - Full RB)

FCC ID: ZNFK920AM	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dara 70 at 200	
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Plot 7-110. Occupied Bandwidth Plot (NR Band n71 - 15MHz DFT-s-OFDM BPSK - Full RB)



Plot 7-111. Occupied Bandwidth Plot (NR Band n71 - 15MHz CP-OFDM QPSK - Full RB)

FCC ID: ZNFK920AM	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	🕕 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 72 of 200
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Keysight Spectrum Analyzer - Occupied BW					
IXI RL RF 50Ω DC	CORREC	SENSE:INT r Freq: 680.500000 MHz	ALIGN AUTO 07:28:35 Radio St	AM Aug 17, 2020	Trace/Detector
	Trig: F	ree Run Avg Hold	: 100/100		
	#IFGain:Low #Atten	1: 36 dB	Radio De	vice: BTS	
10 dB/div Ref 40.00 dBm					
Log 30.0					
20.0					Clear Write
10.0	montenen	montham many			
0.00					
-10.0					Average
			han I		Average
-20.0			munt	MM	
-30.0 mm				and and and a street	
-40.0					Max Hold
-50.0					
Center 680.50 MHz			Span	37.50 MHz	
Res BW 360 kHz	#	VBW 1.1 MHz		eep 1ms	Min Hold
					MITTION
Occupied Bandwidth	h	Total Power	31.1 dBm		
13	.664 MHz				Detector
					Peak►
Transmit Freq Error	10.906 kHz	% of OBW Powe	er 99.00 %		Auto <u>Man</u>
x dB Bandwidth	15.19 MHz	x dB	-26.00 dB		
MSG			STATUS		

Plot 7-112. Occupied Bandwidth Plot (NR Band n71 - 15MHz CP-OFDM 16-QAM - Full RB)



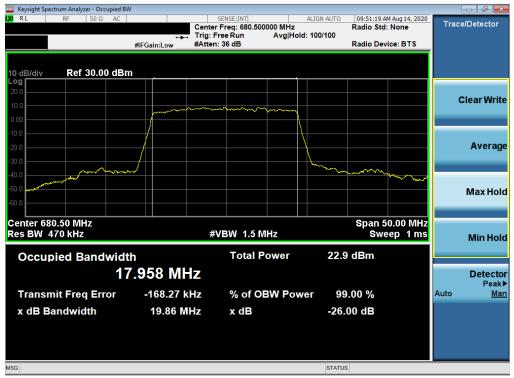
Plot 7-113. Occupied Bandwidth Plot (NR Band n71 - 15MHz CP-OFDM 64-QAM - Full RB)

FCC ID: ZNFK920AM	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:	Daga 74 of 200	
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Keysight Spectrum Analyzer - Occupied	BW					×
LX/ RL RF 50Ω DC		SENSE:INT nter Freq: 680.500000 MH	ALIGN AUTO	08:22:33 AM Aug 1 Radio Std: None		r
			∠ Hold: 100/100	Raulo Stu. None	e	
	#IFGain:Low #At	tten: 36 dB		Radio Device: B	TS	
10 dB/div Ref 30.00 dB	3m					
20.0						
		mun			Clear Wr	ite
10.0			<u> </u>			
0.00						
-10.0						
-20.0					Avera	age
-30.0	~~~		- Andrew	million -		_
-40.0						
-50.0					MaxHo	ald
-60.0					Maxing	oiu
Center 680.50 MHz				Span 37.50		
Res BW 360 kHz		#VBW 1.1 MHz		Sweep	1 ms Min Ho	old
Occupied Bondwid	dth	Total Power	27.7	dBm		
Occupied Bandwig			21.1	abiii		
	3.612 MHz				Detect	
Transmit Freq Error	-17.486 kHz	% of OBW P	ower 99	.00 %	Pea Auto <u>M</u>	ak► <u>⁄lan</u>
x dB Bandwidth	15.16 MHz	x dB	-26	00 dB		
			20.			
						_
MSG			STATUS			

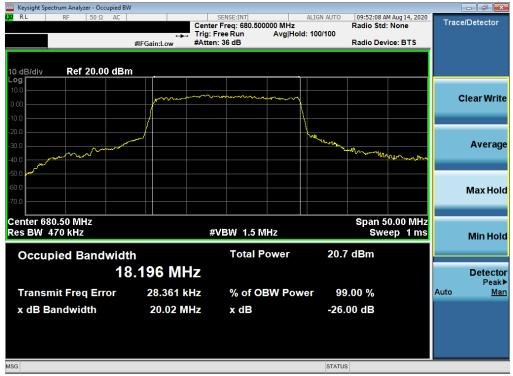
Plot 7-114. Occupied Bandwidth Plot (NR Band n71 - 15MHz CP-OFDM 256-QAM - Full RB)



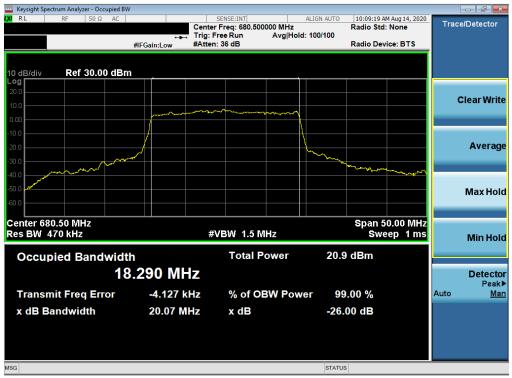
Plot 7-115. Occupied Bandwidth Plot (NR Band n71 - 20MHz DFT-s-OFDM BPSK - Full RB)

FCC ID: ZNFK920AM	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dage 75 of 200	
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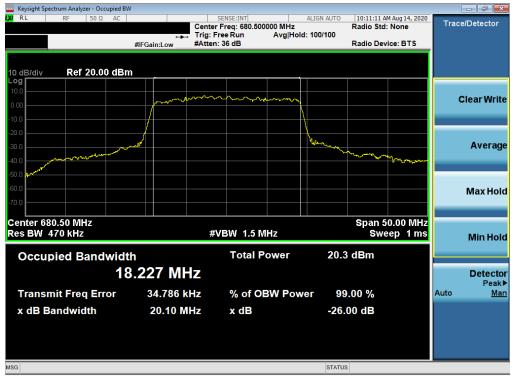
Plot 7-116. Occupied Bandwidth Plot (NR Band n71 - 20MHz CP-OFDM QPSK - Full RB)



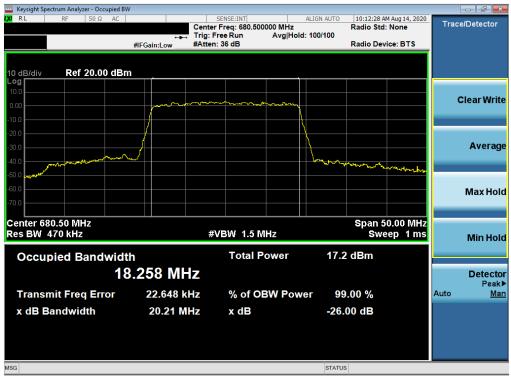
Plot 7-117. Occupied Bandwidth Plot (NR Band n71 - 20MHz CP-OFDM 16-QAM - Full RB)

FCC ID: ZNFK920AM	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:	Daga 76 of 200	
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Plot 7-118. Occupied Bandwidth Plot (NR Band n71 - 20MHz CP-OFDM 64-QAM - Full RB)

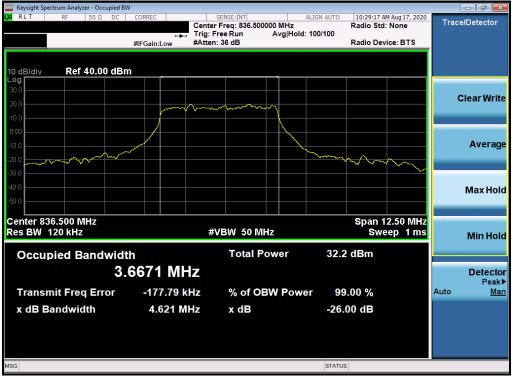


Plot 7-119. Occupied Bandwidth Plot (NR Band n71 - 20MHz CP-OFDM 256-QAM - Full RB)

FCC ID: ZNFK920AM	PCTEST [®] Proud to be part of ® element	MEASUREMENT REPORT (CERTIFICATION)	🕕 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dana 77 af 200
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NR Band n5



Plot 7-120. Occupied Bandwidth Plot (NR Band n5 - 5.0MHz DFT-s-OFDM BPSK - Full RB)



Plot 7-121. Occupied Bandwidth Plot (NR Band n5 - 5.0MHz CP-OFDM QPSK - Full RB)

FCC ID: ZNFK920AM	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 70 of 200
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