

MEASUREMENT REPORT

LTE

Applicant Name:

LG Electronics USA, Inc.
111 Sylvan Avenue, North Building
Englewood Cliffs, NJ 07632
United States

Date of Testing:

3/23-5/29/2020

Test Site/Location:

PCTEST Lab. Columbia, MD, USA

Test Report Serial No.:

1M2003200048-03.ZNF

FCC ID:

ZNFG900UM

APPLICANT:

LG Electronics USA, Inc.

Application Type:

Certification

Model:

LM-G900UM

Additional Model(s):

LMG900UM, G900UM, LM-G900QM, LMG900QM, G900QM,
LM-G901V, LMG901V, G901V

EUT Type:

Portable Handset

FCC Classification:

PCS Licensed Transmitter Held to Ear (PCE)

FCC Rule Part(s):

22, 24, & 27

Test Procedure(s):

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.

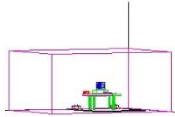

Randy Ortanez
President

FCC ID: ZNFG900UM	 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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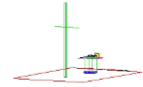
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FCC Part 22, 24, & 27



Mode	FCC Rule Part	Tx Frequency (MHz)	ERP		EIRP		Emission Designator	Modulation
			Max. Power (W)	Max. Power (dBm)	Max. Power (W)	Max. Power (dBm)		
LTE Band 71	27	665.5 - 695.5	0.052	17.13			4M56G7D	QPSK
LTE Band 71	27	665.5 - 695.5	0.041	16.11			4M52W7D	16QAM
LTE Band 71	27	665.5 - 695.5	0.031	14.92			4M52W7D	64QAM
LTE Band 71	27	668 - 693	0.048	16.79			8M99G7D	QPSK
LTE Band 71	27	668 - 693	0.039	15.89			9M03W7D	16QAM
LTE Band 71	27	668 - 693	0.029	14.66			8M96W7D	64QAM
LTE Band 71	27	670.5 - 690.5	0.048	16.84			13M5G7D	QPSK
LTE Band 71	27	670.5 - 690.5	0.039	15.90			13M5W7D	16QAM
LTE Band 71	27	670.5 - 690.5	0.030	14.71			13M5W7D	64QAM
LTE Band 71	27	673 - 688	0.050	16.99			18M0G7D	QPSK
LTE Band 71	27	673 - 688	0.039	15.93			17M9W7D	16QAM
LTE Band 71	27	673 - 688	0.030	14.83			17M9W7D	64QAM
LTE Band 12	27	699.7 - 715.3	0.051	17.10	0.084	19.25	1M09G7D	QPSK
LTE Band 12	27	699.7 - 715.3	0.041	16.08	0.067	18.23	1M10W7D	16QAM
LTE Band 12	27	699.7 - 715.3	0.033	15.15	0.054	17.30	1M09W7D	64QAM
LTE Band 12	27	700.5 - 714.5	0.053	17.21	0.086	19.36	2M71G7D	QPSK
LTE Band 12	27	700.5 - 714.5	0.041	16.15	0.068	18.30	2M70W7D	16QAM
LTE Band 12	27	700.5 - 714.5	0.032	15.11	0.053	17.26	2M70W7D	64QAM
LTE Band 12/17	27	701.5 - 713.5	0.053	17.28	0.088	19.43	4M55G7D	QPSK
LTE Band 12/17	27	701.5 - 713.5	0.041	16.18	0.068	18.33	4M52W7D	16QAM
LTE Band 12/17	27	701.5 - 713.5	0.033	15.18	0.054	17.33	4M54W7D	64QAM
LTE Band 12/17	27	704 - 711	0.051	17.05	0.083	19.20	8M99G7D	QPSK
LTE Band 12/17	27	704 - 711	0.040	16.07	0.066	18.22	9M01W7D	16QAM
LTE Band 12/17	27	704 - 711	0.032	15.03	0.052	17.18	8M97W7D	64QAM
LTE Band 13	27	779.5 - 784.5	0.053	17.26	0.087	19.41	4M52G7D	QPSK
LTE Band 13	27	779.5 - 784.5	0.043	16.35	0.071	18.50	4M51W7D	16QAM
LTE Band 13	27	779.5 - 784.5	0.034	15.34	0.056	17.49	4M53W7D	64QAM
LTE Band 13	27	782	0.052	17.13	0.085	19.28	8M97G7D	QPSK
LTE Band 13	27	782	0.040	16.07	0.066	18.22	9M00W7D	16QAM
LTE Band 13	27	782	0.031	14.85	0.050	17.00	8M98W7D	64QAM
LTE Band 5	22H	824.7 - 848.3	0.058	17.62	0.095	19.77	1M10G7D	QPSK
LTE Band 5	22H	824.7 - 848.3	0.051	17.09	0.084	19.24	1M10W7D	16QAM
LTE Band 5	22H	824.7 - 848.3	0.040	16.05	0.066	18.20	1M10W7D	64QAM
LTE Band 5	22H	825.5 - 847.5	0.059	17.69	0.096	19.84	2M71G7D	QPSK
LTE Band 5	22H	825.5 - 847.5	0.052	17.13	0.085	19.28	2M71W7D	16QAM
LTE Band 5	22H	825.5 - 847.5	0.041	16.13	0.067	18.28	2M72W7D	64QAM
LTE Band 5	22H	826.5 - 846.5	0.059	17.70	0.097	19.85	4M52G7D	QPSK
LTE Band 5	22H	826.5 - 846.5	0.051	17.05	0.083	19.20	4M52W7D	16QAM
LTE Band 5	22H	826.5 - 846.5	0.040	16.01	0.065	18.16	4M55W7D	64QAM
LTE Band 5	22H	829 - 844	0.058	17.62	0.095	19.77	8M98G7D	QPSK
LTE Band 5	22H	829 - 844	0.052	17.13	0.085	19.28	9M01W7D	16QAM
LTE Band 5	22H	829 - 844	0.040	15.98	0.065	18.13	8M97W7D	64QAM

EUT Overview (<1 GHz)

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Mode	FCC Rule Part	Tx Frequency (MHz)	EIRP		Emission Designator	Modulation
			Max. Power (W)	Max. Power (dBm)		
LTE Band 66/4	27	1710.7 - 1779.3	0.095	19.79	1M08G7D	QPSK
LTE Band 66/4	27	1710.7 - 1779.3	0.085	19.32	1M10W7D	16QAM
LTE Band 66/4	27	1710.7 - 1779.3	0.067	18.28	1M10W7D	64QAM
LTE Band 66/4	27	1711.5 - 1778.5	0.094	19.72	2M71G7D	QPSK
LTE Band 66/4	27	1711.5 - 1778.5	0.085	19.28	2M71W7D	16QAM
LTE Band 66/4	27	1711.5 - 1778.5	0.068	18.33	2M71W7D	64QAM
LTE Band 66/4	27	1712.5 - 1777.5	0.095	19.80	4M56G7D	QPSK
LTE Band 66/4	27	1712.5 - 1777.5	0.083	19.20	4M53W7D	16QAM
LTE Band 66/4	27	1712.5 - 1777.5	0.066	18.21	4M56W7D	64QAM
LTE Band 66/4	27	1715 - 1775	0.093	19.70	9M02G7D	QPSK
LTE Band 66/4	27	1715 - 1775	0.085	19.28	9M01W7D	16QAM
LTE Band 66/4	27	1715 - 1775	0.066	18.18	8M97W7D	64QAM
LTE Band 66/4	27	1717.5 - 1772.5	0.097	19.87	13M5G7D	QPSK
LTE Band 66/4	27	1717.5 - 1772.5	0.085	19.32	13M5W7D	16QAM
LTE Band 66/4	27	1717.5 - 1772.5	0.067	18.26	13M5W7D	64QAM
LTE Band 66/4	27	1720 - 1770	0.101	20.03	18M0G7D	QPSK
LTE Band 66/4	27	1720 - 1770	0.087	19.40	18M0W7D	16QAM
LTE Band 66/4	27	1720 - 1770	0.066	18.23	18M0W7D	64QAM
LTE Band 25/2	24E	1850.7 - 1914.3	0.140	21.45	1M09G7D	QPSK
LTE Band 25/2	24E	1850.7 - 1914.3	0.135	21.29	1M11W7D	16QAM
LTE Band 25/2	24E	1850.7 - 1914.3	0.109	20.36	1M09W7D	64QAM
LTE Band 25/2	24E	1851.5 - 1913.5	0.142	21.53	2M71G7D	QPSK
LTE Band 25/2	24E	1851.5 - 1913.5	0.132	21.21	2M71W7D	16QAM
LTE Band 25/2	24E	1851.5 - 1913.5	0.106	20.24	2M71W7D	64QAM
LTE Band 25/2	24E	1852.5 - 1912.5	0.148	21.70	4M52G7D	QPSK
LTE Band 25/2	24E	1852.5 - 1912.5	0.133	21.25	4M51W7D	16QAM
LTE Band 25/2	24E	1852.5 - 1912.5	0.108	20.32	4M51W7D	64QAM
LTE Band 25/2	24E	1855 - 1910	0.146	21.63	8M99G7D	QPSK
LTE Band 25/2	24E	1855 - 1910	0.132	21.21	9M04W7D	16QAM
LTE Band 25/2	24E	1855 - 1910	0.109	20.37	8M99W7D	64QAM
LTE Band 25/2	24E	1857.5 - 1907.5	0.148	21.71	13M5G7D	QPSK
LTE Band 25/2	24E	1857.5 - 1907.5	0.130	21.13	13M5W7D	16QAM
LTE Band 25/2	24E	1857.5 - 1907.5	0.106	20.25	13M5W7D	64QAM
LTE Band 25/2	24E	1860 - 1905	0.157	21.95	18M0G7D	QPSK
LTE Band 25/2	24E	1860 - 1905	0.132	21.21	18M0W7D	16QAM
LTE Band 25/2	24E	1860 - 1905	0.105	20.22	18M0W7D	64QAM

EUT Overview (Mid Bands)

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Mode	FCC Rule Part	Tx Frequency (MHz)	EIRP		Emission Designator	Modulation
			Max. Power (W)	Max. Power (dBm)		
LTE Band 30	27	2307.5 - 2312.5	0.097	19.88	4M54G7D	QPSK
LTE Band 30	27	2307.5 - 2312.5	0.082	19.14	4M53W7D	16QAM
LTE Band 30	27	2307.5 - 2312.5	0.066	18.16	4M53W7D	64QAM
LTE Band 30	27	2310	0.098	19.91	9M01G7D	QPSK
LTE Band 30	27	2310	0.083	19.19	9M03W7D	16QAM
LTE Band 30	27	2310	0.066	18.20	9M02W7D	64QAM
LTE Band 7	27	2502.5 - 2567.5	0.098	19.89	4M52G7D	QPSK
LTE Band 7	27	2502.5 - 2567.5	0.096	19.83	4M52W7D	16QAM
LTE Band 7	27	2502.5 - 2567.5	0.079	18.96	4M53W7D	64QAM
LTE Band 7	27	2505 - 2565	0.100	20.00	9M00G7D	QPSK
LTE Band 7	27	2505 - 2565	0.098	19.90	9M02W7D	16QAM
LTE Band 7	27	2505 - 2565	0.078	18.92	9M01W7D	64QAM
LTE Band 7	27	2507.5 - 2562.5	0.102	20.07	13M5G7D	QPSK
LTE Band 7	27	2507.5 - 2562.5	0.098	19.93	13M5W7D	16QAM
LTE Band 7	27	2507.5 - 2562.5	0.079	18.99	13M5W7D	64QAM
LTE Band 7	27	2510 - 2560	0.113	20.54	18M0G7D	QPSK
LTE Band 7	27	2510 - 2560	0.096	19.84	18M0W7D	16QAM
LTE Band 7	27	2510 - 2560	0.077	18.86	17M9W7D	64QAM
LTE Band 41	27	2498.5 - 2687.5	0.138	21.39	4M54G7D	QPSK
LTE Band 41	27	2498.5 - 2687.5	0.127	21.04	4M51W7D	16QAM
LTE Band 41	27	2498.5 - 2687.5	0.119	20.74	4M52W7D	64QAM
LTE Band 41	27	2501 - 2685	0.144	21.59	9M01G7D	QPSK
LTE Band 41	27	2501 - 2685	0.128	21.07	8M97W7D	16QAM
LTE Band 41	27	2501 - 2685	0.121	20.82	9M00W7D	64QAM
LTE Band 41	27	2503.5 - 2682.5	0.141	21.50	13M5G7D	QPSK
LTE Band 41	27	2503.5 - 2682.5	0.131	21.16	13M5W7D	16QAM
LTE Band 41	27	2503.5 - 2682.5	0.100	20.01	13M5W7D	64QAM
LTE Band 41	27	2506 - 2680	0.146	21.65	18M0G7D	QPSK
LTE Band 41	27	2506 - 2680	0.132	21.19	18M0W7D	16QAM
LTE Band 41	27	2506 - 2680	0.102	20.09	18M0W7D	64QAM

EUT Overview (High Bands)

FCC ID: ZNFG900UM	 PCTEST Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	ERP		Emission Designator
				Max. Power [W]	Max. Power [dBm]	
NR Band n71	20 MHz	$\pi/2$ BPSK	673.0 - 688.0	0.024	13.80	18M0G7D
		QPSK	673.0 - 688.0	0.025	13.95	18M0G7D
		16QAM	673.0 - 688.0	0.021	13.13	18M0W7D
		64QAM	673.0 - 688.0	0.013	11.02	18M0W7D
		256QAM	673.0 - 688.0	0.008	9.01	18M0W7D
	15 MHz	$\pi/2$ BPSK	670.5 - 690.5	0.015	11.89	13M6G7D
		QPSK	670.5 - 690.5	0.024	13.88	13M5G7D
		16QAM	670.5 - 690.5	0.019	12.82	13M5W7D
		64QAM	670.5 - 690.5	0.013	11.07	13M6W7D
		256QAM	670.5 - 690.5	0.008	9.10	13M5W7D
	10 MHz	$\pi/2$ BPSK	668.0 - 693.0	0.025	13.92	9M04G7D
		QPSK	668.0 - 693.0	0.029	14.65	9M04G7D
		16QAM	668.0 - 693.0	0.019	12.74	9M05W7D
		64QAM	668.0 - 693.0	0.012	10.94	9M02W7D
		256QAM	668.0 - 693.0	0.008	8.93	9M03W7D
	5 MHz	$\pi/2$ BPSK	665.5 - 695.5	0.022	13.44	4M51G7D
		QPSK	665.5 - 695.5	0.028	14.49	4M51G7D
		16QAM	665.5 - 695.5	0.019	12.70	4M52W7D
		64QAM	665.5 - 695.5	0.013	11.30	4M49W7D
		256QAM	665.5 - 695.5	0.008	9.29	4M53W7D

EUT Overview (5G NR n71)

Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	ERP		EIRP		Emission Designator
				Max. Power [W]	Max. Power [dBm]	Max. Power [W]	Max. Power [dBm]	
NR Band n5	20 MHz	$\pi/2$ BPSK	834.0 - 839.0	0.057	17.55	0.093	19.70	18M0G7D
		QPSK	834.0 - 839.0	0.058	17.63	0.095	19.78	17M9G7D
		16QAM	834.0 - 839.0	0.044	16.46	0.073	18.61	18M0W7D
		64QAM	834.0 - 839.0	0.027	14.33	0.044	16.48	17M9W7D
		256QAM	834.0 - 839.0	0.015	11.83	0.025	13.98	17M9W7D
	15 MHz	$\pi/2$ BPSK	831.5 - 841.5	0.056	17.47	0.092	19.62	13M5G7D
		QPSK	831.5 - 841.5	0.057	17.53	0.093	19.68	13M5G7D
		16QAM	831.5 - 841.5	0.045	16.53	0.074	18.68	13M4W7D
		64QAM	831.5 - 841.5	0.026	14.23	0.043	16.38	13M5W7D
		256QAM	831.5 - 841.5	0.015	11.73	0.024	13.88	13M4W7D
	10 MHz	$\pi/2$ BPSK	829.0 - 844.0	0.054	17.29	0.088	19.44	8M99G7D
		QPSK	829.0 - 844.0	0.054	17.35	0.089	19.50	9M01G7D
		16QAM	829.0 - 844.0	0.041	16.12	0.067	18.27	9M03W7D
		64QAM	829.0 - 844.0	0.025	13.95	0.041	16.10	9M00W7D
		256QAM	829.0 - 844.0	0.014	11.45	0.023	13.60	9M01W7D
	5 MHz	$\pi/2$ BPSK	826.5 - 846.5	0.055	17.38	0.090	19.53	4M51G7D
		QPSK	826.5 - 846.5	0.055	17.43	0.091	19.58	4M51G7D
		16QAM	826.5 - 846.5	0.042	16.20	0.068	18.35	4M52W7D
		64QAM	826.5 - 846.5	0.024	13.75	0.039	15.90	4M49W7D
		256QAM	826.5 - 846.5	0.013	11.25	0.022	13.40	4M54W7D

EUT Overview (5G NR n5)

FCC ID: ZNFG900UM	 PCTEST Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	EIRP		Emission Designator
				Max. Power [W]	Max. Power [dBm]	
NR Band n66	20 MHz	$\pi/2$ BPSK	834.0 - 839.0	0.187	22.72	18M0G7D
		QPSK	834.0 - 839.0	0.184	22.64	17M9G7D
		16QAM	834.0 - 839.0	0.142	21.51	18M0W7D
		64QAM	834.0 - 839.0	0.087	19.38	17M9W7D
		256QAM	834.0 - 839.0	0.058	17.63	17M9W7D
	15 MHz	$\pi/2$ BPSK	831.5 - 841.5	0.204	23.10	13M5G7D
		QPSK	831.5 - 841.5	0.200	23.01	13M5G7D
		16QAM	831.5 - 841.5	0.157	21.95	13M5W7D
		64QAM	831.5 - 841.5	0.094	19.74	13M6W7D
		256QAM	831.5 - 841.5	0.061	17.87	13M6W7D
	10 MHz	$\pi/2$ BPSK	829.0 - 844.0	0.186	22.68	9M00G7D
		QPSK	829.0 - 844.0	0.185	22.66	8M98G7D
		16QAM	829.0 - 844.0	0.195	22.89	9M01W7D
		64QAM	829.0 - 844.0	0.119	20.74	8M98W7D
		256QAM	829.0 - 844.0	0.079	18.99	8M97W7D
	5 MHz	$\pi/2$ BPSK	826.5 - 846.5	0.184	22.65	4M50G7D
		QPSK	826.5 - 846.5	0.188	22.75	4M52G7D
		16QAM	826.5 - 846.5	0.145	21.60	4M51W7D
		64QAM	826.5 - 846.5	0.089	19.47	4M51W7D
		256QAM	826.5 - 846.5	0.056	17.49	4M51W7D

EUT Overview (5G NR n66)

Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	EIRP		Emission Designator
				Max. Power [W]	Max. Power [dBm]	
NR Band n25/2	20 MHz	$\pi/2$ BPSK	1860 - 1905	0.148	21.71	18M0G7D
		QPSK	1860 - 1905	0.153	21.84	18M0G7D
		16QAM	1860 - 1905	0.113	20.52	18M0W7D
		64QAM	1860 - 1905	0.072	18.57	18M0W7D
		256QAM	1860 - 1905	0.044	16.41	18M0W7D
	15 MHz	$\pi/2$ BPSK	1857.5 - 1907.5	0.148	21.70	13M5G7D
		QPSK	1857.5 - 1907.5	0.151	21.78	13M5G7D
		16QAM	1857.5 - 1907.5	0.098	19.91	13M5W7D
		64QAM	1857.5 - 1907.5	0.049	16.93	13M5W7D
		256QAM	1857.5 - 1907.5	0.027	14.28	13M5W7D
	10 MHz	$\pi/2$ BPSK	1855 - 1910	0.148	21.69	9M02G7D
		QPSK	1855 - 1910	0.155	21.89	9M02G7D
		16QAM	1855 - 1910	0.121	20.84	8M99W7D
		64QAM	1855 - 1910	0.076	18.82	9M00W7D
		256QAM	1855 - 1910	0.028	14.41	8M98W7D
	5 MHz	$\pi/2$ BPSK	1852.5 - 1912.5	0.142	21.51	4M56G7D
		QPSK	1852.5 - 1912.5	0.150	21.75	4M51G7D
		16QAM	1852.5 - 1912.5	0.118	20.71	4M52W7D
		64QAM	1852.5 - 1912.5	0.068	18.32	4M50W7D
		256QAM	1852.5 - 1912.5	0.026	14.08	4M51W7D

EUT Overview (5G NR n25/2)

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Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	EIRP		Emission Designator
				Max. Power [W]	Max. Power [dBm]	
NR Band n41	100 MHz	$\pi/2$ BPSK	2546.0 - 2640.0	0.159	22.02	96M9G7D
		QPSK	2546.0 - 2640.0	0.164	22.16	97M1G7D
		16QAM	2546.0 - 2640.0	0.128	21.06	97M1W7D
		64QAM	2546.0 - 2640.0	0.058	17.60	97M1W7D
		256QAM	2546.0 - 2640.0	0.048	16.77	96M5W7D
	90 MHz	$\pi/2$ BPSK	2541.0 - 2645.0	0.157	21.97	85M8G7D
		QPSK	2541.0 - 2645.0	0.160	22.04	88M0G7D
		16QAM	2541.0 - 2645.0	0.112	20.49	88M0W7D
		64QAM	2541.0 - 2645.0	0.052	17.14	87M8W7D
		256QAM	2541.0 - 2645.0	0.041	16.14	87M6W7D
	80 MHz	$\pi/2$ BPSK	2536.0 - 2650.0	0.154	21.88	77M8G7D
		QPSK	2536.0 - 2650.0	0.171	22.34	78M0G7D
		16QAM	2536.0 - 2650.0	0.110	20.43	78M1W7D
		64QAM	2536.0 - 2650.0	0.051	17.05	77M9W7D
		256QAM	2536.0 - 2650.0	0.039	15.96	77M8W7D
	60 MHz	$\pi/2$ BPSK	2526.0 - 2660.0	0.149	21.72	58M5G7D
		QPSK	2526.0 - 2660.0	0.176	22.45	58M5G7D
		16QAM	2526.0 - 2660.0	0.116	20.66	58M7W7D
		64QAM	2526.0 - 2660.0	0.050	16.95	58M5W7D
		256QAM	2526.0 - 2660.0	0.042	16.18	58M4W7D
	50 MHz	$\pi/2$ BPSK	2521.0 - 2665.0	0.169	22.29	49M3G7D
		QPSK	2521.0 - 2665.0	0.173	22.39	49M2G7D
		16QAM	2521.0 - 2665.0	0.128	21.06	49M1W7D
		64QAM	2521.0 - 2665.0	0.051	17.08	49M1W7D
		256QAM	2521.0 - 2665.0	0.047	16.76	48M9W7D
	40 MHz	$\pi/2$ BPSK	2516.0 - 2670.0	0.177	22.48	38M7G7D
		QPSK	2516.0 - 2670.0	0.188	22.73	38M8G7D
		16QAM	2516.0 - 2670.0	0.127	21.05	38M9W7D
		64QAM	2516.0 - 2670.0	0.054	17.29	38M6W7D
		256QAM	2516.0 - 2670.0	0.048	16.79	38M7W7D
	20 MHz	$\pi/2$ BPSK	2506.0 - 2680.0	0.182	22.60	18M0G7D
		QPSK	2506.0 - 2680.0	0.183	22.63	19M0G7D
		16QAM	2506.0 - 2680.0	0.111	20.47	19M0W7D
		64QAM	2506.0 - 2680.0	0.055	17.43	19M0W7D
		256QAM	2506.0 - 2680.0	0.038	15.83	19M0W7D

EUT Overview (5G NR n41)

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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 ISSED Standards (RSS).
- PCTEST facility is a registered (2451B) test laboratory with the site description on file with ISSED.

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2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **LG Portable Handset FCC ID: ZNFG900UM**. The test data contained in this report pertains only to the emissions due to the EUT's LTE function.

Test Device Serial No.: 03667, 03659, 03865, 03840, 03584, 03691

2.2 Device Capabilities

This device contains the following capabilities:

850/1900 CDMA/EvDO Rev0/A, 1x Advanced (BC0, BC1), 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 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.

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

2.3 Test Configuration

The EUT was tested per the guidance of ANSI/TIA-603-E-2016 and KDB 971168 D01 v03r01. See Section 7.0 of this test report for a description of the radiated and antenna port conducted emissions tests.

This device supports wireless charging capability and, thus, is subject to the test requirements of KDB 648474 D03 v01r04. Additional radiated spurious emission measurements were performed with the EUT lying flat on an authorized wireless charging pad (WCP) ID: EP PN920 while operating under normal conditions in a simulated call or data transmission configuration. The worst case radiated emissions data is shown in this report.

2.4 EMI Suppression Device(s)/Modifications

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

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3.0 DESCRIPTION OF TESTS

3.1 Measurement Procedure

The measurement procedures described in the document titled “Land Mobile FM or PM – Communications Equipment – Measurements and Performance Standards” (ANSI/TIA-603-E-2016) and “Procedures for Compliance Measurement of the Fundamental Emission Power of Licensed Wideband (> 1 MHz) Digital Transmission Systems” (KDB 971168 D01 v03r01) were used in the measurement of the EUT.

3.2 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:

$$P_d \text{ [dBm]} = P_g \text{ [dBm]} - \text{cable loss [dB]} + \text{antenna gain [dBd/dBi]}$$

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

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 $43 + 10 \log_{10}(\text{Power [Watts]})$. For Band 7 and 41, the calculated P_d levels are compared to the absolute spurious emission limit of -25dBm which is equivalent to the required minimum attenuation of $55 + 10 \log_{10}(\text{Power [Watts]})$. For Band 30 and 48, the calculated P_d levels are compared to the absolute spurious emission limit of -40dBm which is equivalent to the required minimum attenuation of $70 + 10 \log_{10}(\text{Power [Watts]})$.

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 ($\pm$ dB)
Conducted Bench Top Measurements	1.13
Radiated Disturbance (<1GHz)	4.98
Radiated Disturbance (>1GHz)	5.07
Radiated Disturbance (>18GHz)	5.09

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5.0 TEST EQUIPMENT CALIBRATION DATA

Test Equipment Calibration is traceable to the National Institute of Standards and Technology (NIST). Measurements antennas used during testing were calibrated in accordance to the requirements of ANSI C63.5-2017.

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
-	LTx1	Licensed Transmitter Cable Set	6/4/2019	Annual	6/4/2020	LTx1
-	LTx2	Licensed Transmitter Cable Set	10/30/2019	Annual	10/30/2020	LTx2
Agilent	N9038A	MXE EMI Receiver	7/17/2019	Annual	7/17/2020	MY51210133
Agilent	N9030A	PXA Signal Analyzer (44GHz)	6/12/2019	Annual	6/12/2020	MY52350166
Com-Power	AL-130	9kHz - 30MHz Loop Antenna	10/10/2019	Biennial	10/10/2021	121034
Com-Power	PAM-103	Pre-Amplifier (1-1000MHz)	5/10/2019	Annual	5/10/2020	441112
Espec	ESX-2CA	Environmental Chamber	6/13/2019	Annual	6/13/2020	17620
ETS Lindgren	3164-08	Quad Ridge Horn Antenna	2/22/2019	Biennial	2/22/2021	128338
Mini-Circuits	SSG-4000HP	Synthesized Signal Generator	N/A			11208010032
Mini-Circuits	PWR-SEN-4RMS	USB Power Sensor	4/20/2019	Annual	4/25/2020	11210140001
Mini-Circuits	SSG-4000HP	Synthesized Signal Generator	N/A			11403100002
Rohde & Schwarz	CMW500	Radio Communication Tester	N/A			100976
Rohde & Schwarz	ESU26	EMI Test Receiver (26.5GHz)	6/5/2019	Annual	6/5/2020	100342
Rohde & Schwarz	ESU40	EMI Test Receiver (40GHz)	9/23/2019	Annual	9/23/2020	100348
Rohde & Schwarz	SFUNIT-Rx	Shielded Filter Unit	7/8/2019	Annual	7/8/2020	102133

Table 5-1. Test Equipment

Notes:

- 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.
- 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

PSK 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: ZNFG900UM
FCC Classification: PCS Licensed Transmitter Held to Ear (PCE)
Mode(s): LTE

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
2.1049	Occupied Bandwidth	N/A	CONDUCTED	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	$> 43 + 10 \log_{10}(P[\text{Watts}])$ at Band Edge and for all out-of-band emissions			Section 7.3, 7.4
27.53(m)	Out of Band Emissions	Undesirable emissions must meet the limits detailed in 27.53(m)			Section 7.3, 7.4
27.53(a)	Out of Band Emissions	Undesirable emissions must meet the limits detailed in 27.53(a)			Section 7.3, 7.4
24.232(d) 27.50(c)	Peak-Average Ratio	$< 13 \text{ dB}$			Section 7.5
2.1046	Transmitter Conducted Output Power	N/A			See RF Exposure Report
22.917(a) 27.53(h) 27.53(m)	Uplink Carrier Aggregation	$> 43 + 10 \log(P[\text{Watts}])$ at Band Edge and for all out-of-band emissions			Section 7.9
2.1055 22.355 24.235 27.54	Frequency Stability	$< 2.5 \text{ ppm}$ (Part 22) and fundamental emissions stay within authorized frequency block (Part 24, 27)			Section 7.11

Table 7-1. Summary of Conducted Test Results

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FCC Part Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
22.913(a)(5)	Effective Radiated Power / Equivalent Isotropic Radiated Power (Band 5)	< 7 Watts max. ERP	RADIATED	PASS	Section 7.8
27.50(b)(10) 27.50(c)(10)	Effective Radiated Power / Equivalent Isotropic Radiated Power (Band 71, 12/17, 13)	< 3 Watts max. ERP			Section 7.8
24.232(c) 27.50(h)(2)	Equivalent Isotropic Radiated Power (Band 2/25, 7, 41)	< 2 Watts max. EIRP			Section 7.8
27.50(d)(4)	Equivalent Isotropic Radiated Power (Band 4/66)	< 1 Watts max. EIRP			Section 7.8
27.50(a)(3)	Equivalent Isotropic Radiated Power (Band 30)	< 0.25 Watts max. EIRP			Section 7.8
2.1053 22.917(a) 24.238(a) 27.53(c) 27.53(g) 27.53(h)	Undesirable Emissions (Band 12, 13, 5, 66/4, 25/2)	> 43 + 10 log ₁₀ (P[Watts]) for all out-of-band emissions			Section 7.9
27.53(f)	Undesirable Emissions (Band 13)	< -70 dBW/MHz (for wideband signals) < -80 dBW (for discrete emissions less than 700Hz BW) For all emissions in the band 1559 – 1610 MHz			Section 7.9
27.53(a)	Undesirable Emissions (Band 30)	> 70 + 10 log ₁₀ (P[Watts])			Section 7.9
27.53(m)	Undesirable Emissions (Band 7, 41)	Undesirable emissions must meet the limits detailed in 27.53(m)			Section 7.9
27.53(m)	Uplink Carrier Aggregation	Undesirable emissions must meet the limits detailed in 27.53(m)			Section 7.10

Table 7-2. Summary of Radiated Test Results

Notes:

- 1) All modes of operation and data rates were investigated. The test results shown in the following sections represent the worst case emissions.
- 2) The analyzer plots (Sections 7.2, 7.3, 7.4, 7.5) were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables, directional couplers, and attenuators used as part of the system to maintain a link between the call box and the EUT at all frequencies of interest.
- 3) All antenna port conducted emissions testing was performed on a test bench with the antenna port of the EUT connected to the spectrum analyzer through calibrated cables, attenuators, and couplers.
- 4) For conducted spurious emissions, automated test software was used to measure emissions and capture the corresponding plots necessary to show compliance. The measurement software utilized is PCTEST "LTE Automation," Version 5.3.

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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 $\geq 3 \times$ RBW
4. Detector = Peak
5. Trace mode = max hold
6. Sweep = auto couple
7. The trace was allowed to stabilize
8. If necessary, steps 2 – 7 were repeated after changing the RBW such that it would be within 1 – 5% of the 99% occupied bandwidth observed in Step 7

Test Setup

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

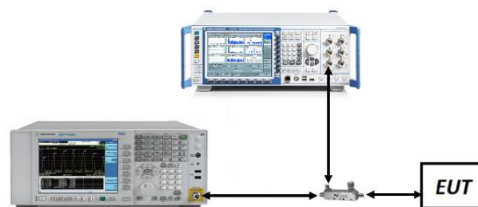


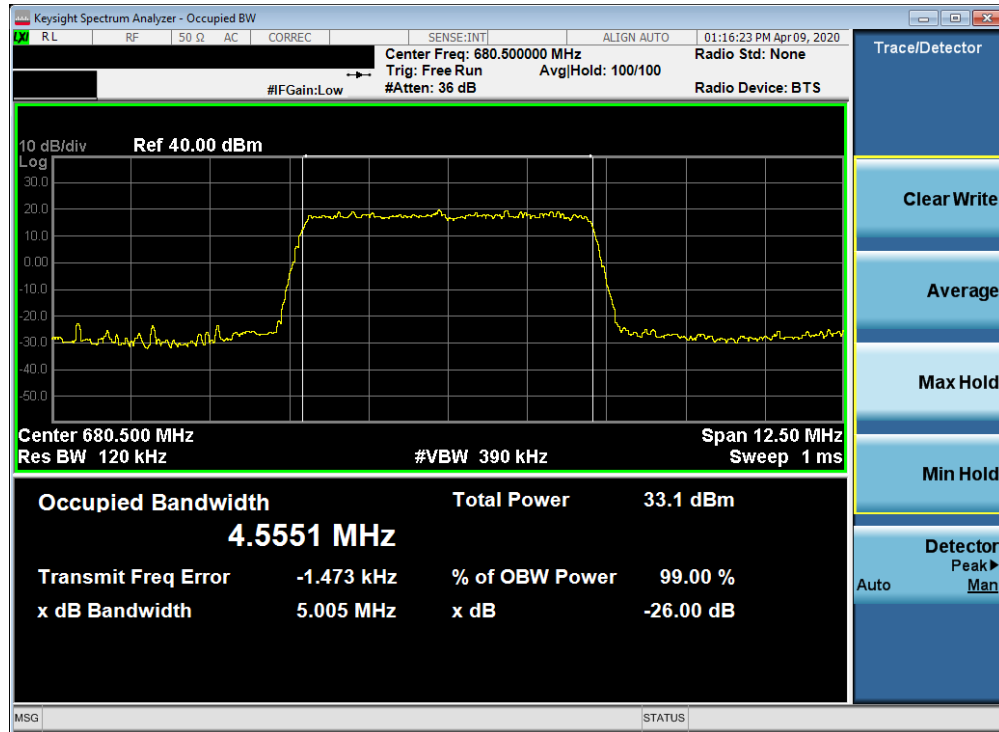
Figure 7-1. Test Instrument & Measurement Setup

Test Notes

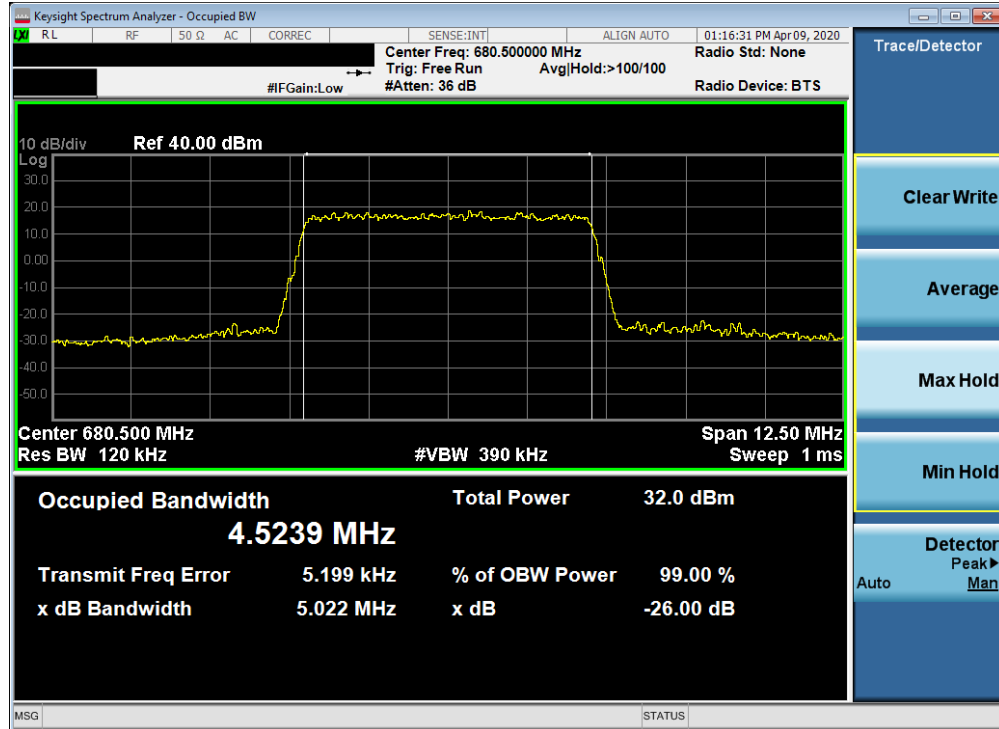
None.

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Band 71

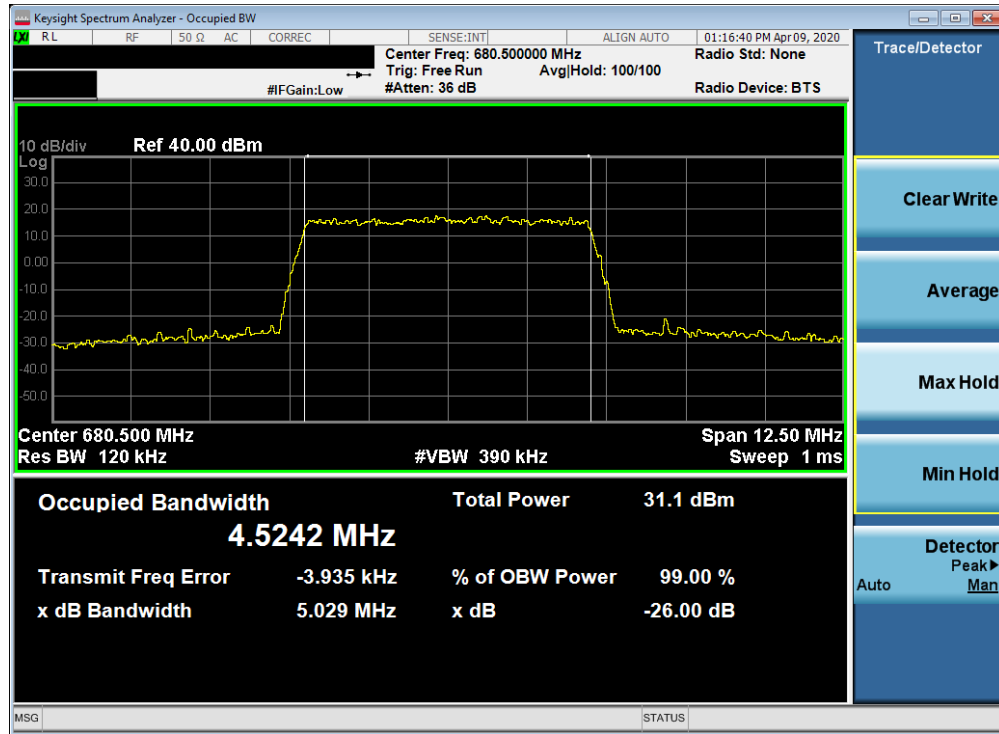


Plot 7-1. Occupied Bandwidth Plot (Band 71 - 5MHz QPSK - Full RB Configuration)

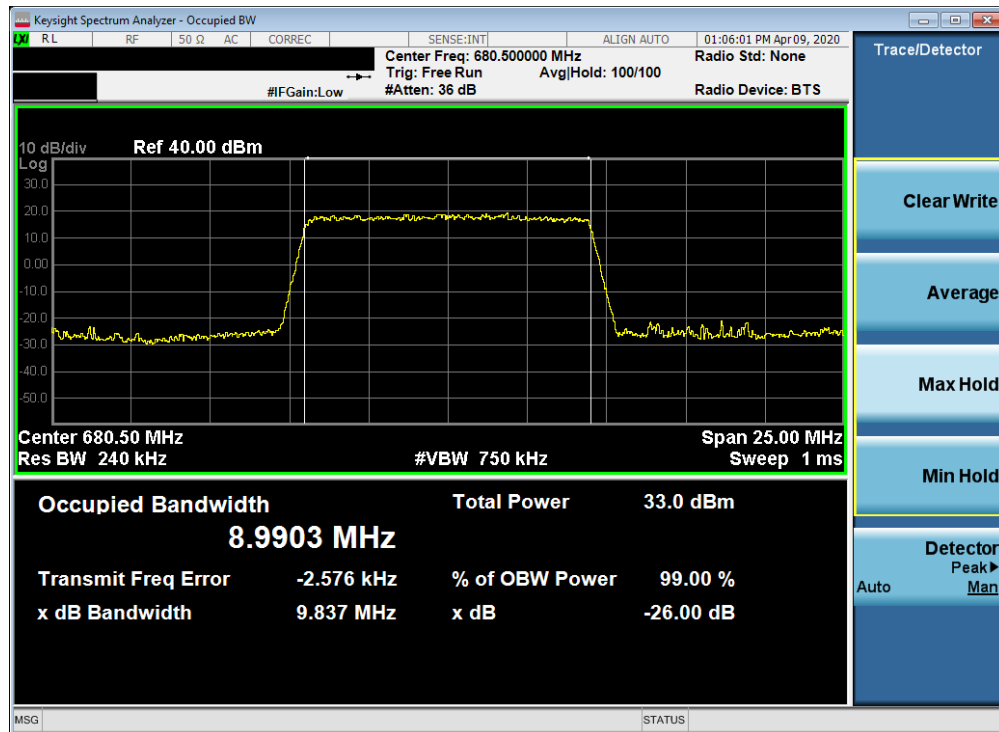


Plot 7-2. Occupied Bandwidth Plot (Band 71 - 5MHz 16-QAM - Full RB Configuration)

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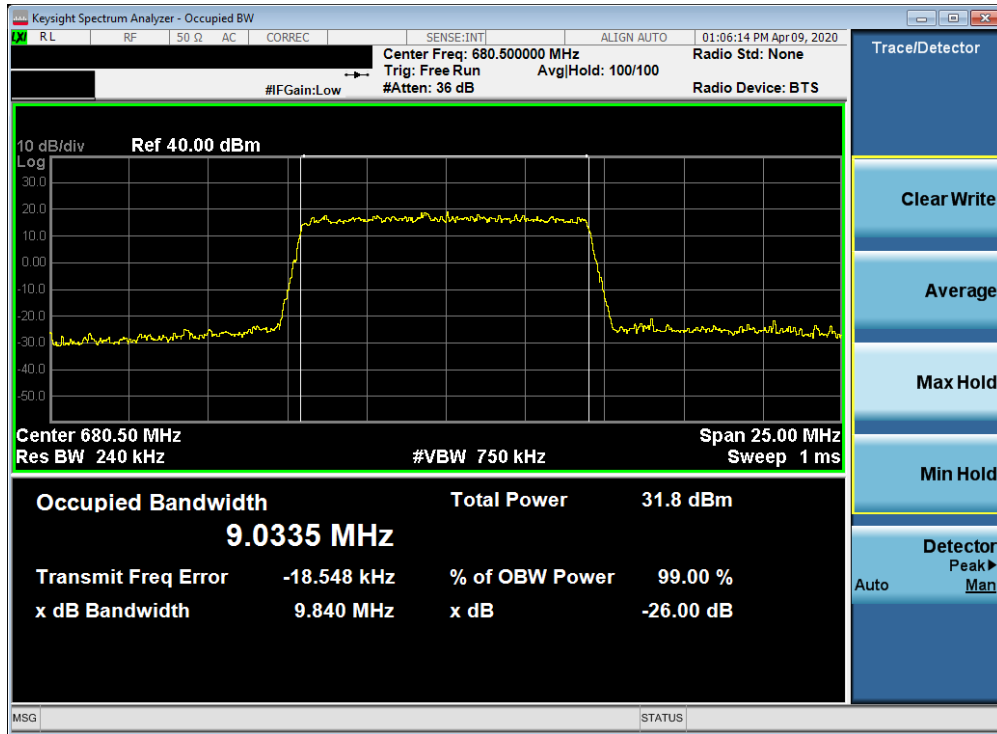


Plot 7-3. Occupied Bandwidth Plot (Band 71 - 5MHz 64-QAM - Full RB Configuration)

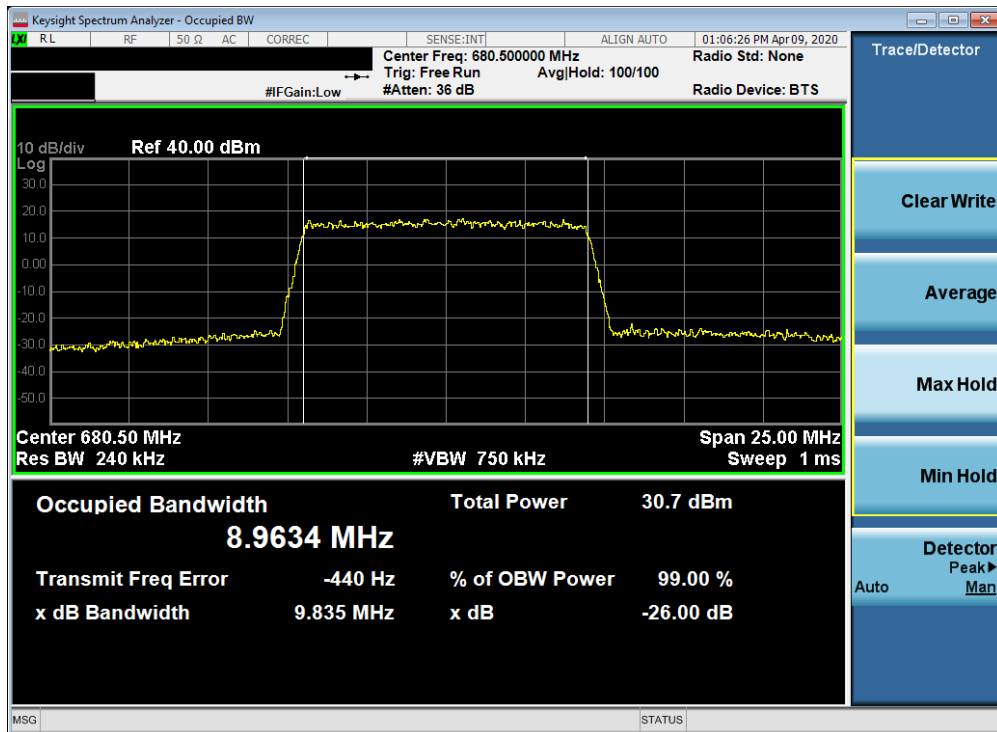


Plot 7-4. Occupied Bandwidth Plot (Band 71 - 10MHz QPSK - Full RB Configuration)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 19 of 438

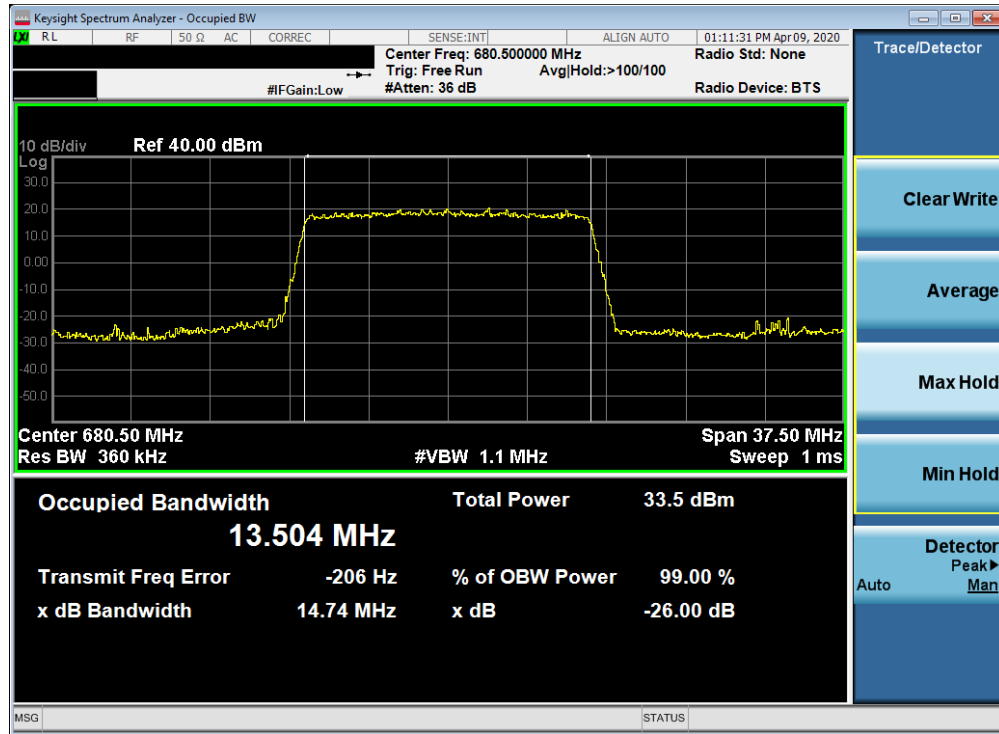


Plot 7-5. Occupied Bandwidth Plot (Band 71 - 10MHz 16-QAM - Full RB Configuration)

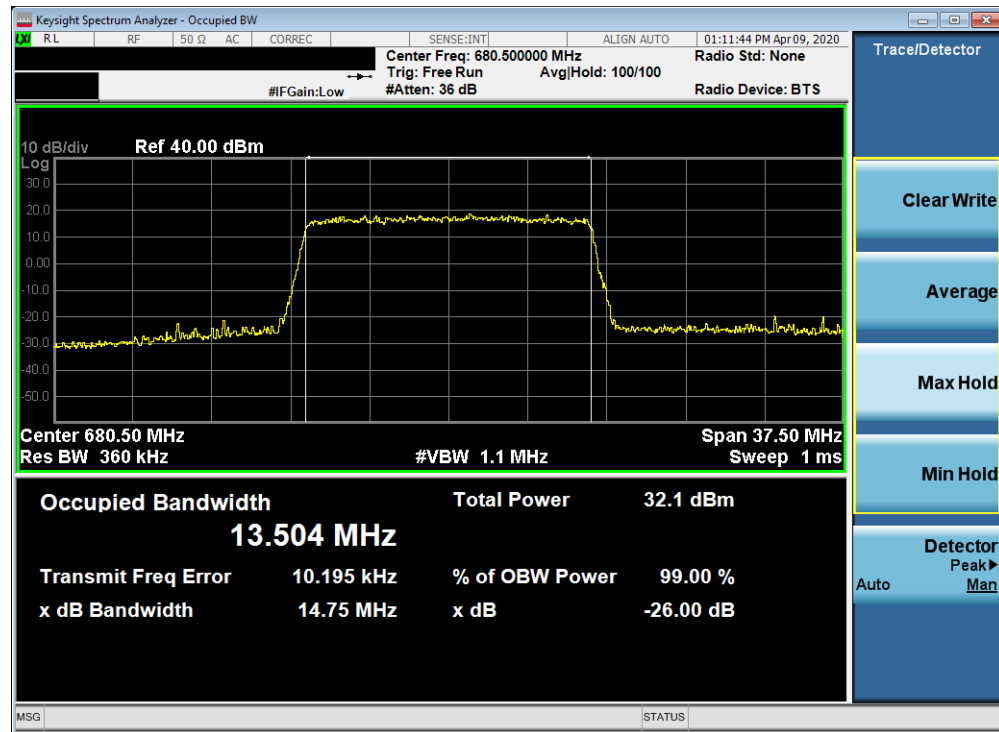


Plot 7-6. Occupied Bandwidth Plot (Band 71 - 10MHz 64QAM - Full RB Configuration)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 20 of 438

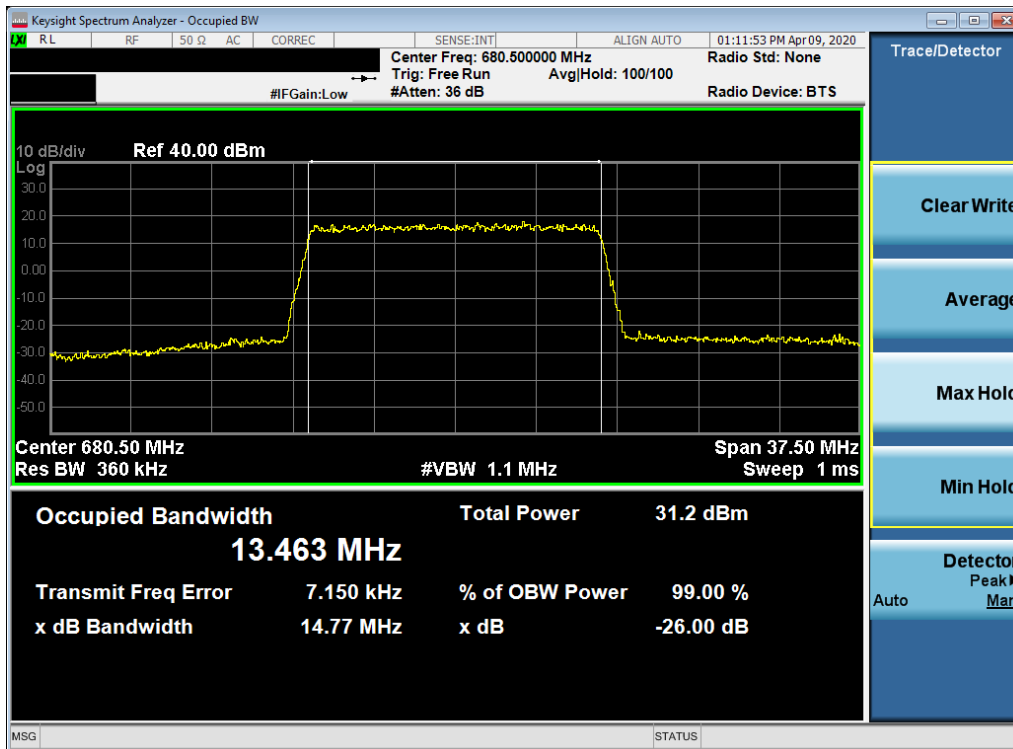


Plot 7-7. Occupied Bandwidth Plot (Band 71 - 15MHz QPSK - Full RB Configuration)

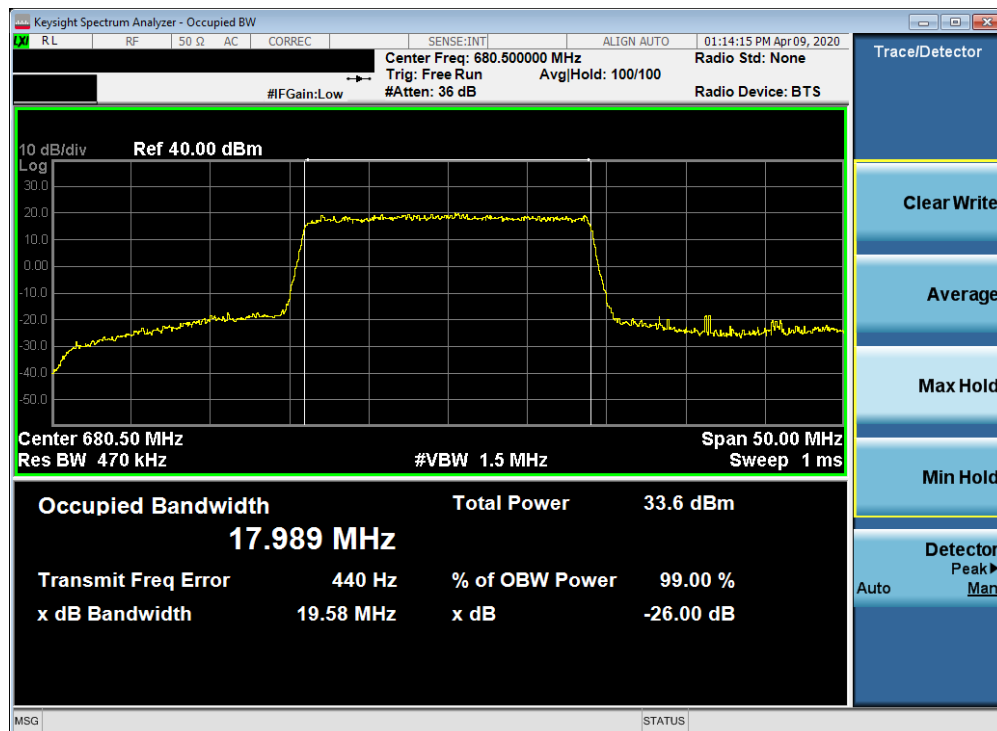


Plot 7-8. Occupied Bandwidth Plot (Band 71 - 15MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 21 of 438

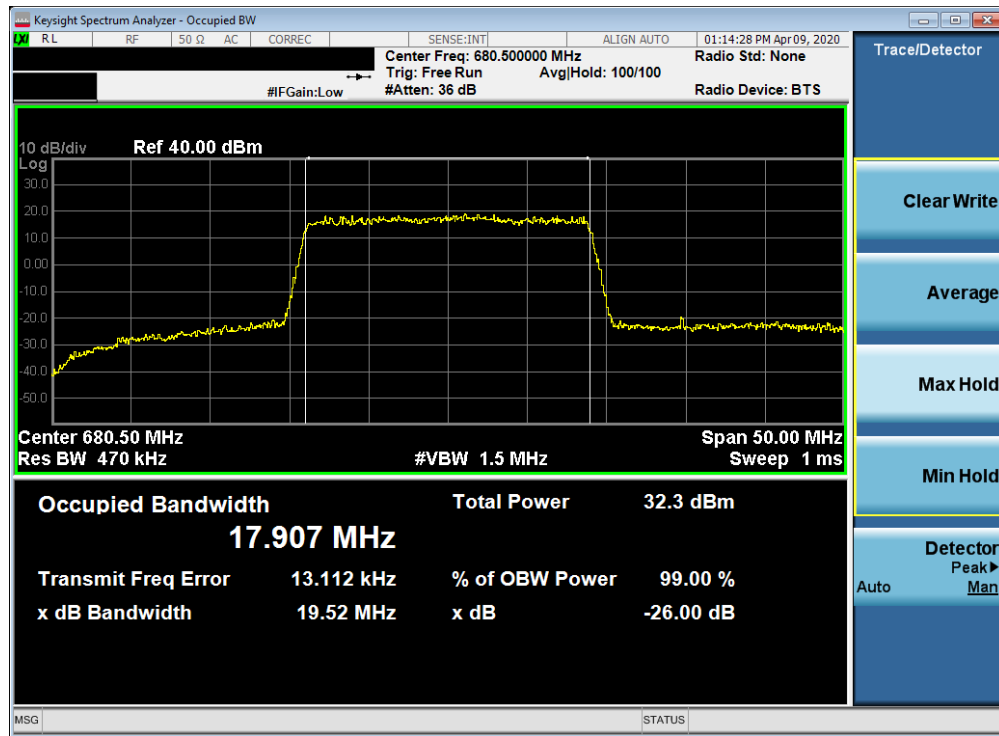


Plot 7-9. Occupied Bandwidth Plot (Band 71 - 15MHz 64-QAM - Full RB Configuration)

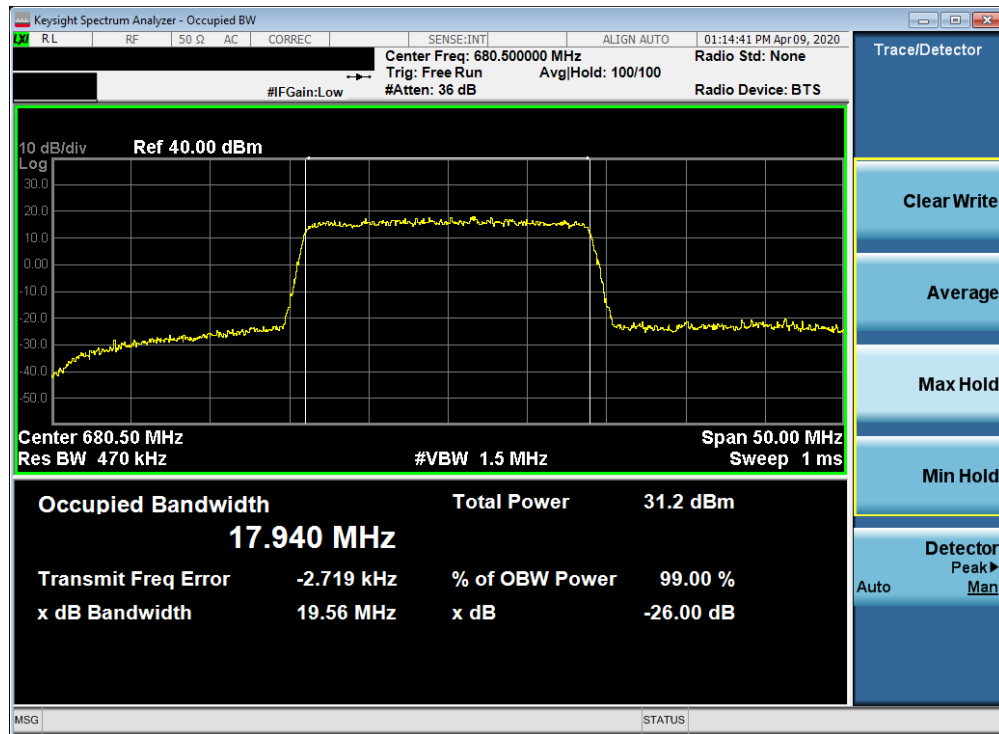


Plot 7-10. Occupied Bandwidth Plot (Band 71 - 20MHz QPSK - Full RB Configuration)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 22 of 438



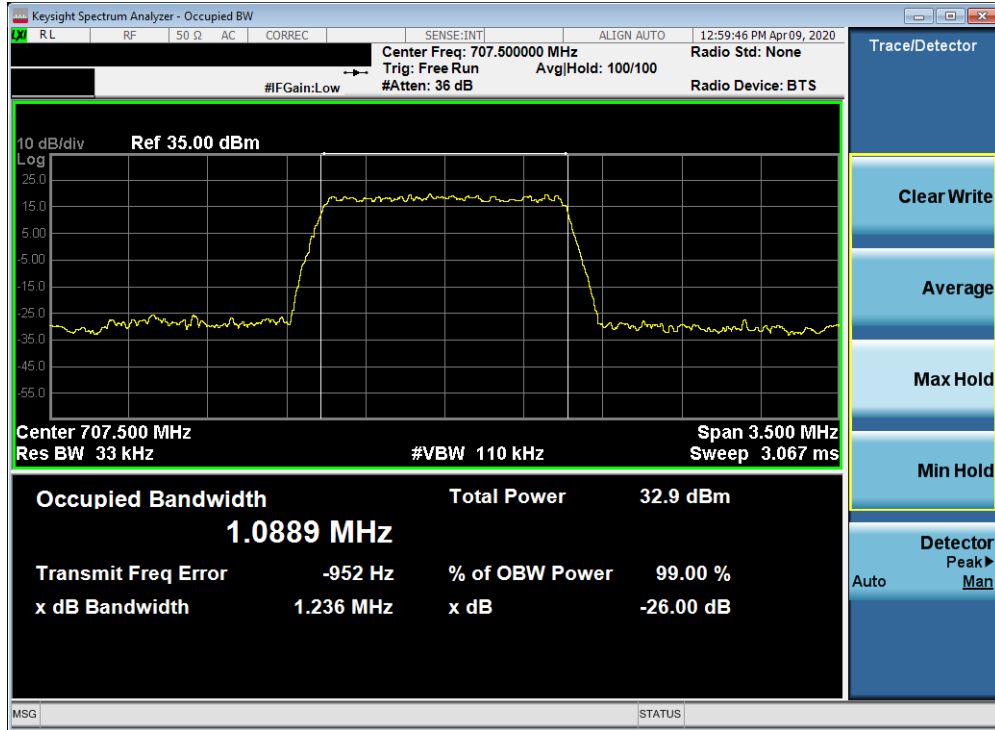
Plot 7-11. Occupied Bandwidth Plot (Band 71 - 20MHz 16-QAM - Full RB Configuration)



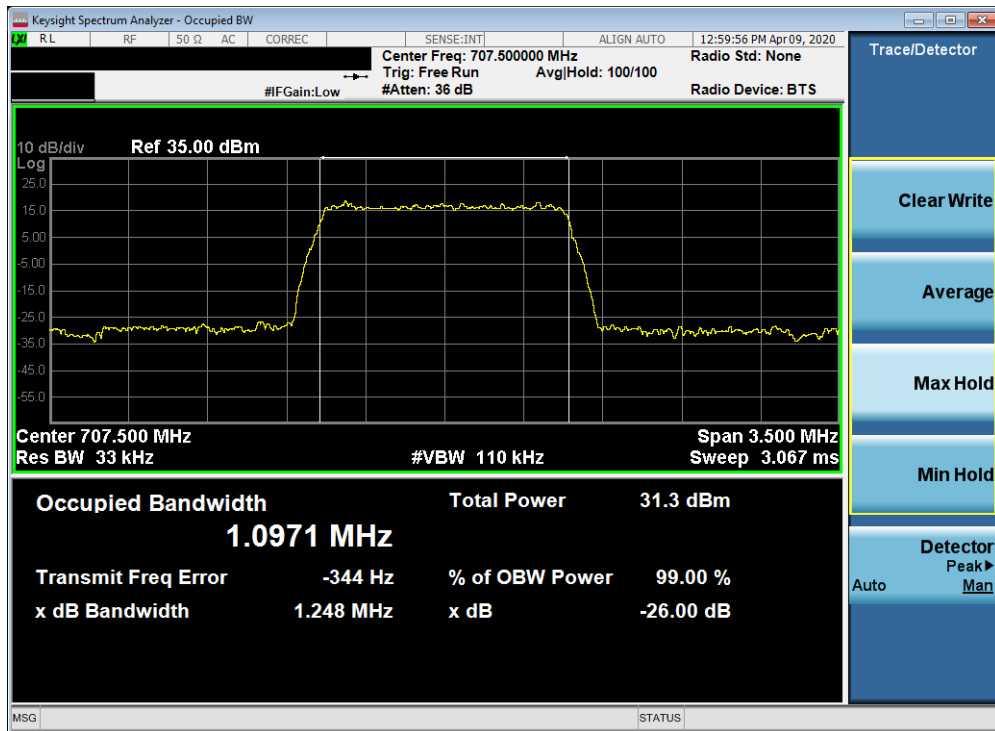
Plot 7-12. Occupied Bandwidth Plot (Band 71 - 20MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 23 of 438

Band 12/17

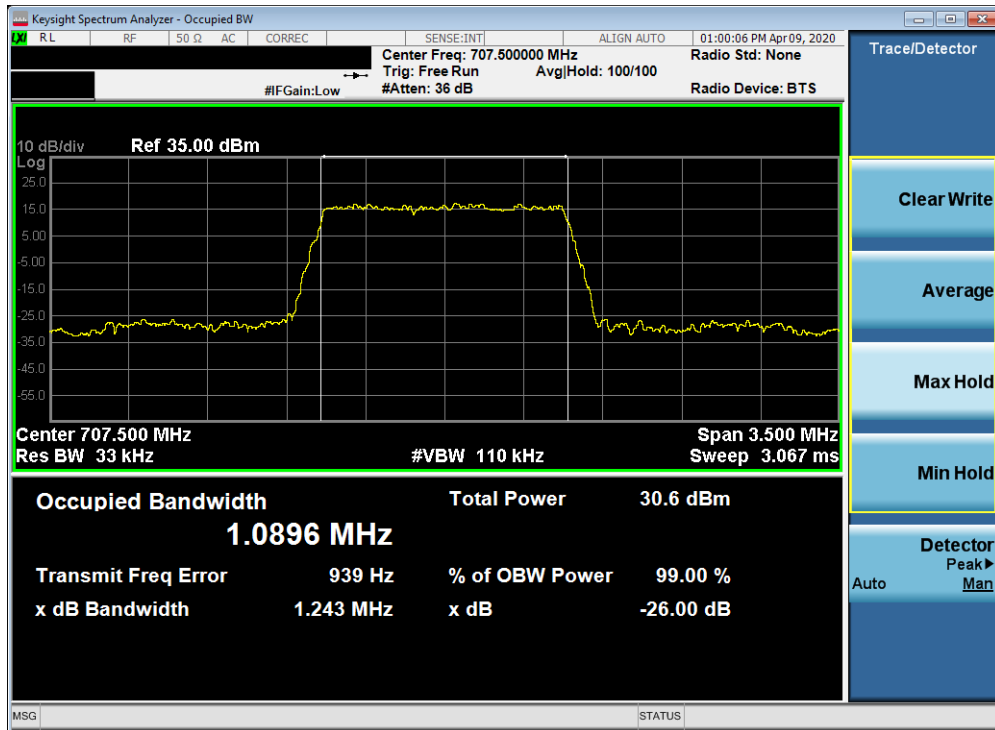


Plot 7-13. Occupied Bandwidth Plot (Band 12 - 1.4MHz QPSK - Full RB Configuration)

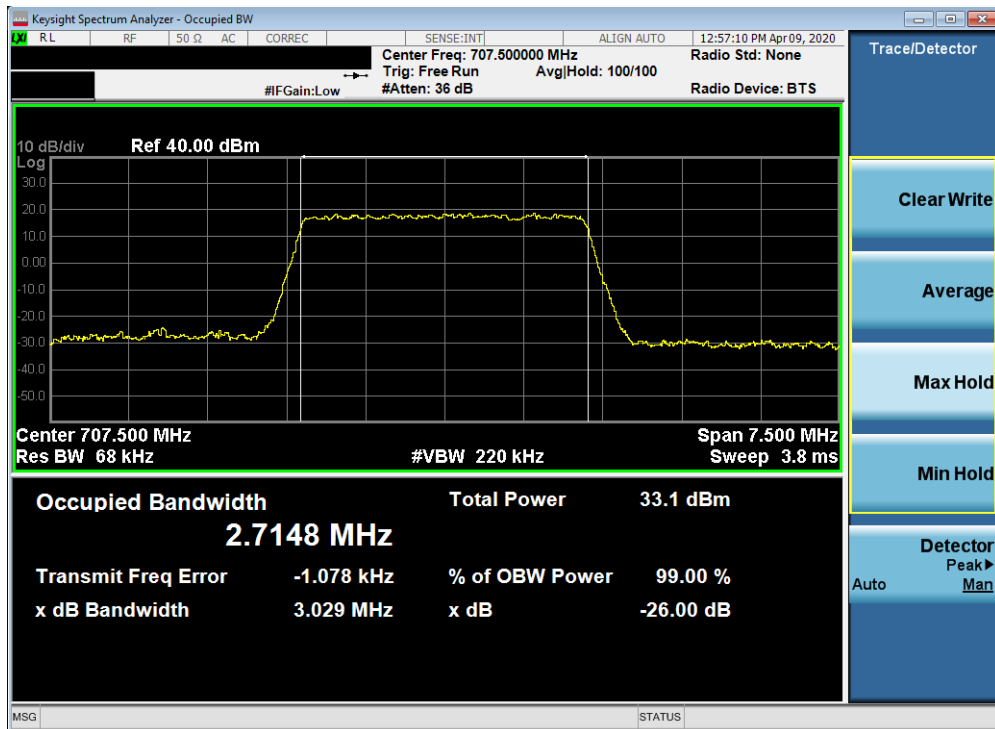


Plot 7-14. Occupied Bandwidth Plot (Band 12 - 1.4MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 24 of 438

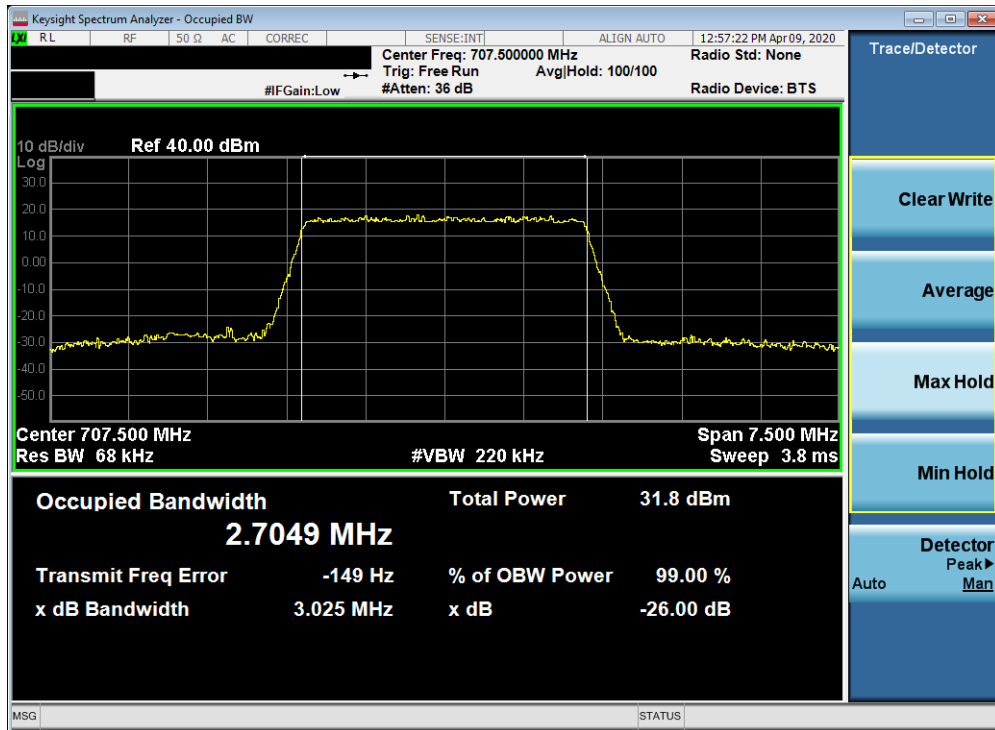


Plot 7-15. Occupied Bandwidth Plot (Band 12 - 1.4MHz 16-QAM - Full RB Configuration)

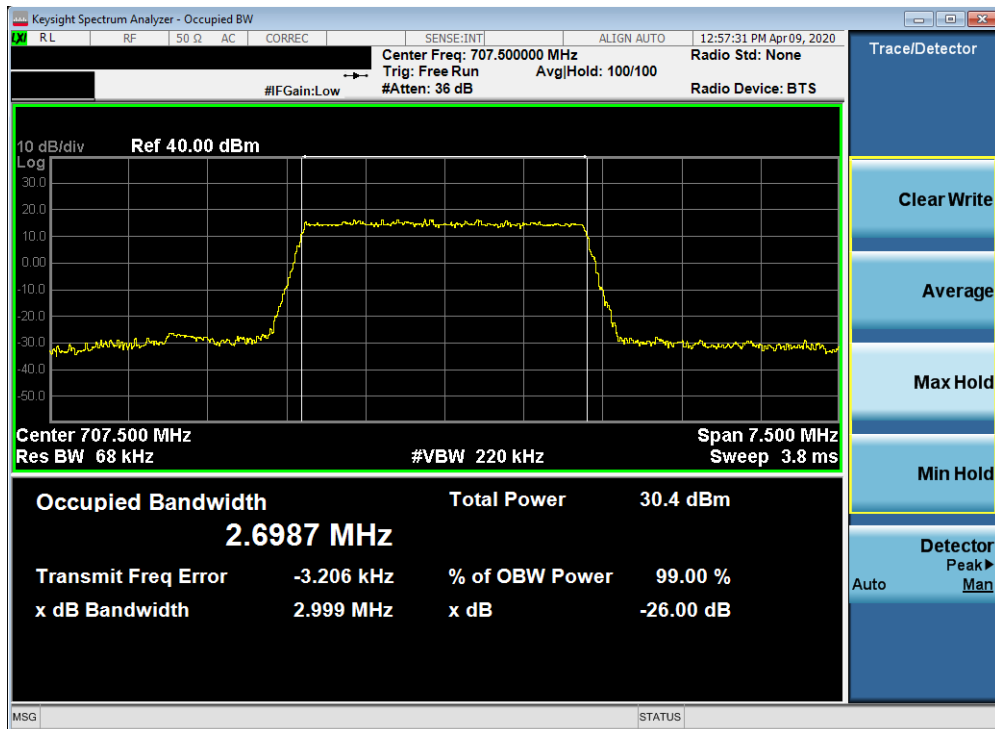


Plot 7-16. Occupied Bandwidth Plot (Band 12 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 25 of 438

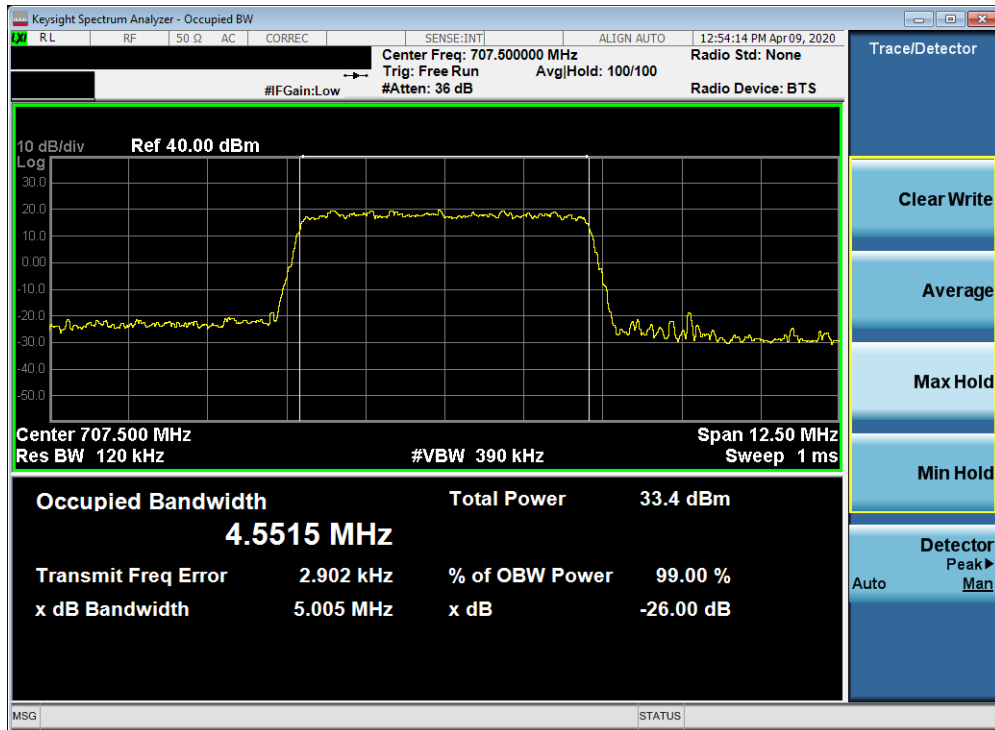


Plot 7-17. Occupied Bandwidth Plot (Band 12 - 3.0MHz 16-QAM - Full RB Configuration)

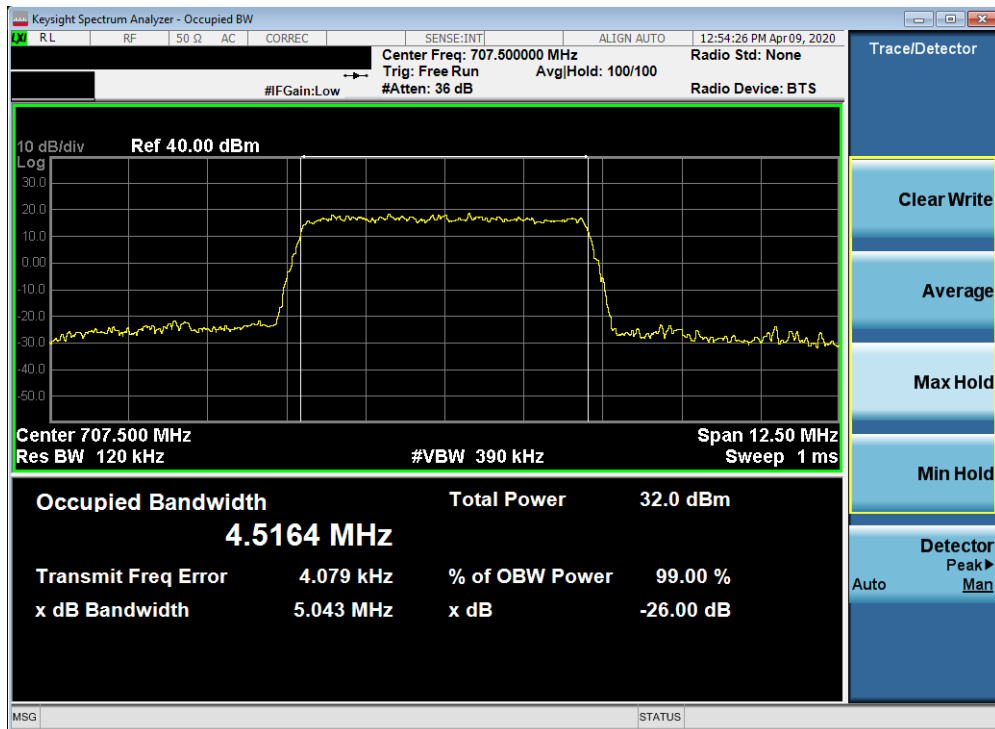


Plot 7-18. Occupied Bandwidth Plot (Band 12 - 3.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 26 of 438

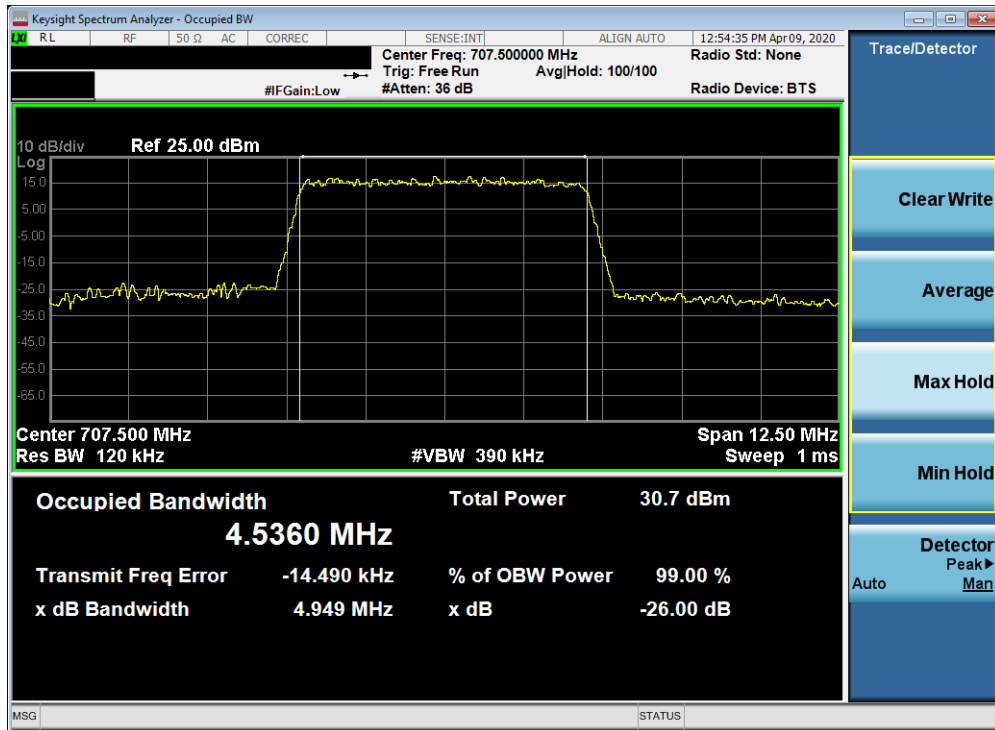


Plot 7-19. Occupied Bandwidth Plot (Band 12/17 - 5.0MHz QPSK - Full RB Configuration)

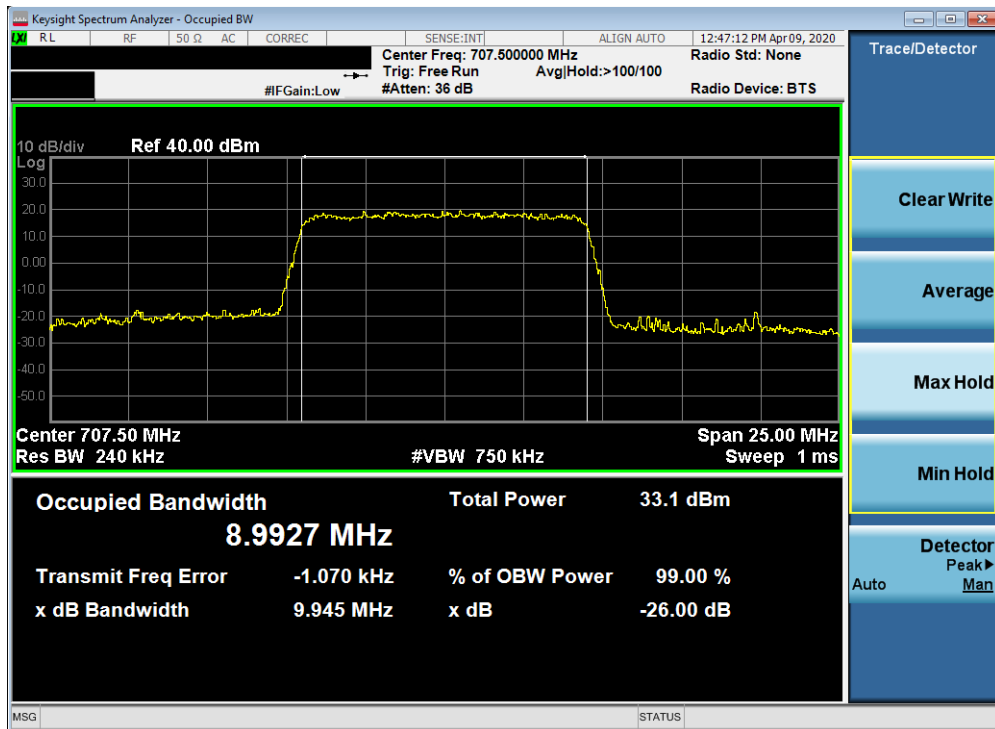


Plot 7-20. Occupied Bandwidth Plot (Band 12/17 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 27 of 438

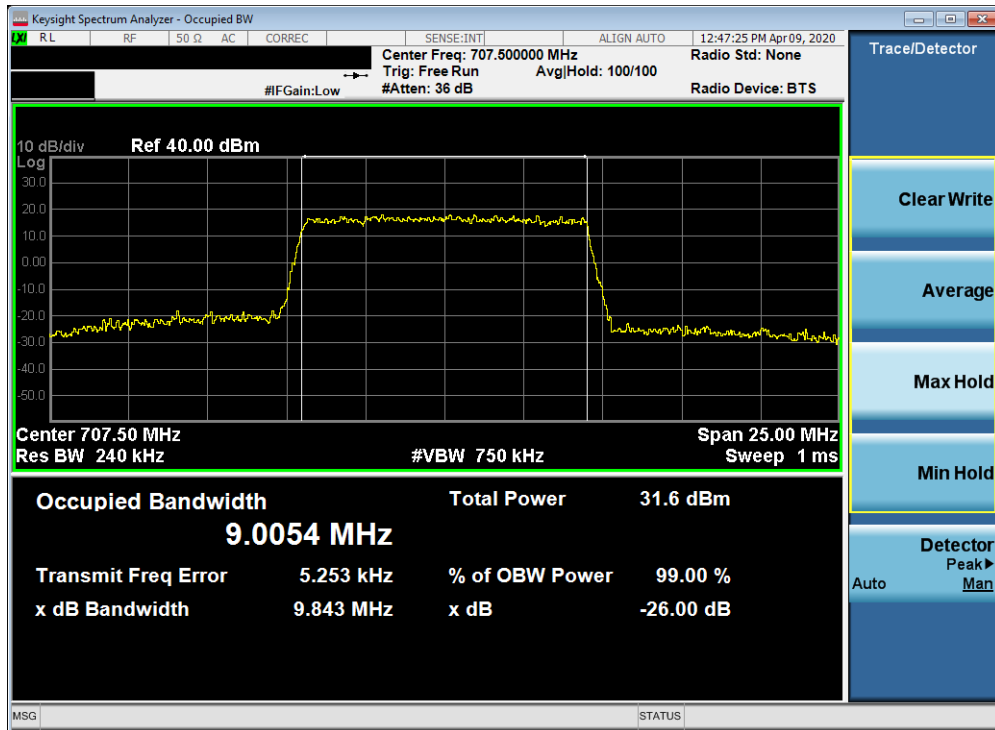


Plot 7-21. Occupied Bandwidth Plot (Band 12/17 - 5.0MHz 64-QAM - Full RB Configuration)

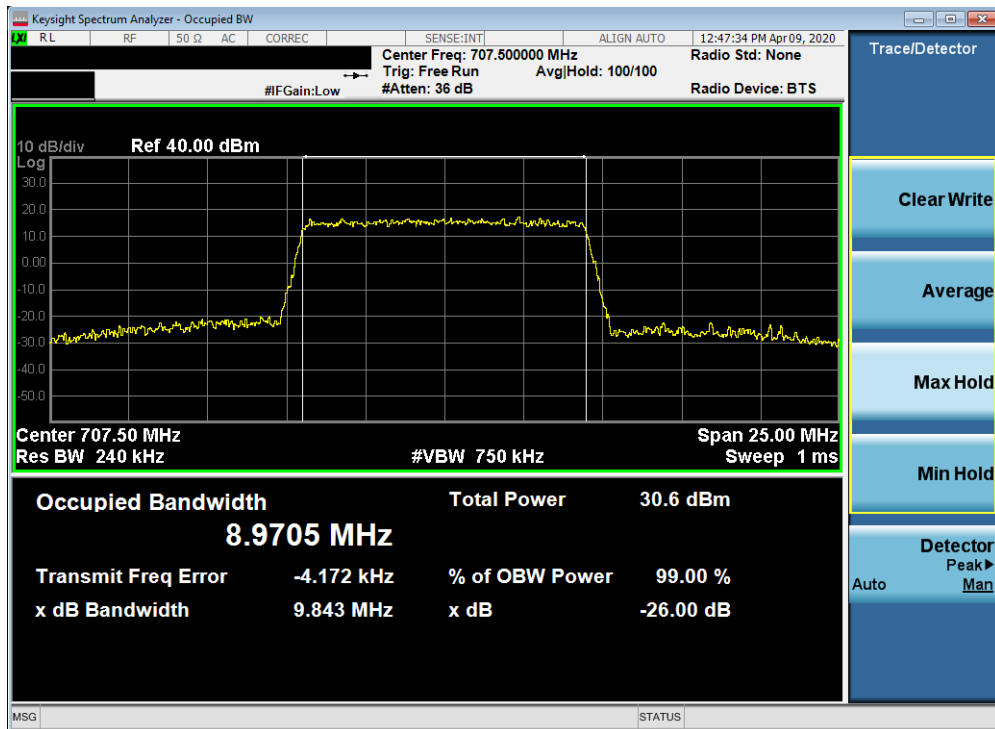


Plot 7-22. Occupied Bandwidth Plot (Band 12/17 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 28 of 438



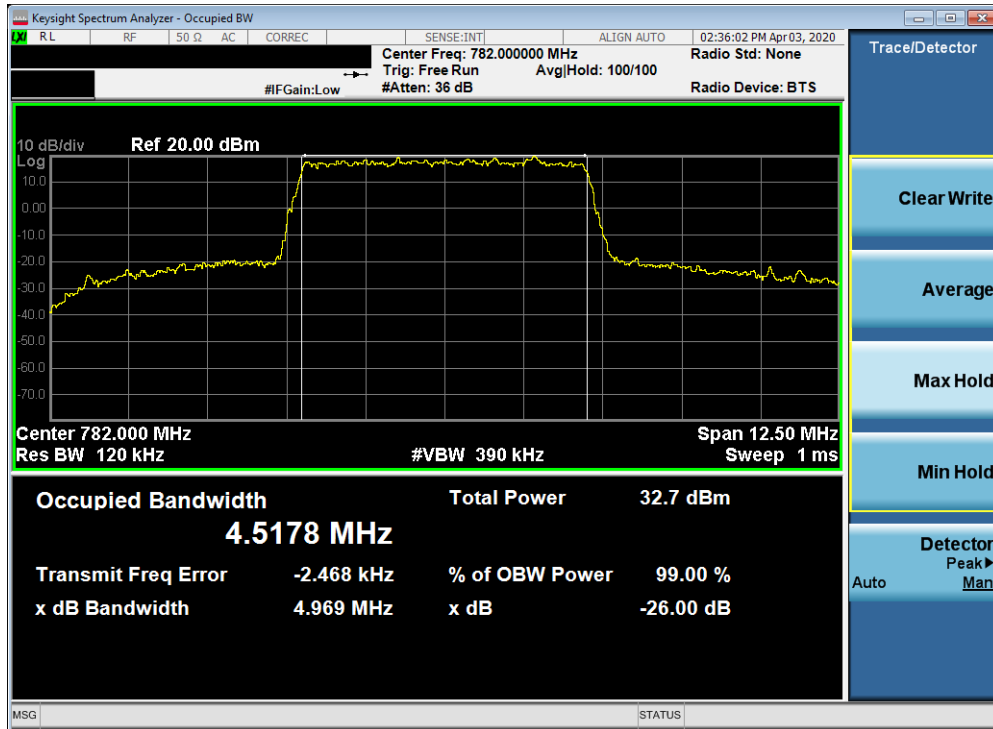
Plot 7-23. Occupied Bandwidth Plot (Band 12/17 - 10.0MHz 16-QAM - Full RB Configuration)



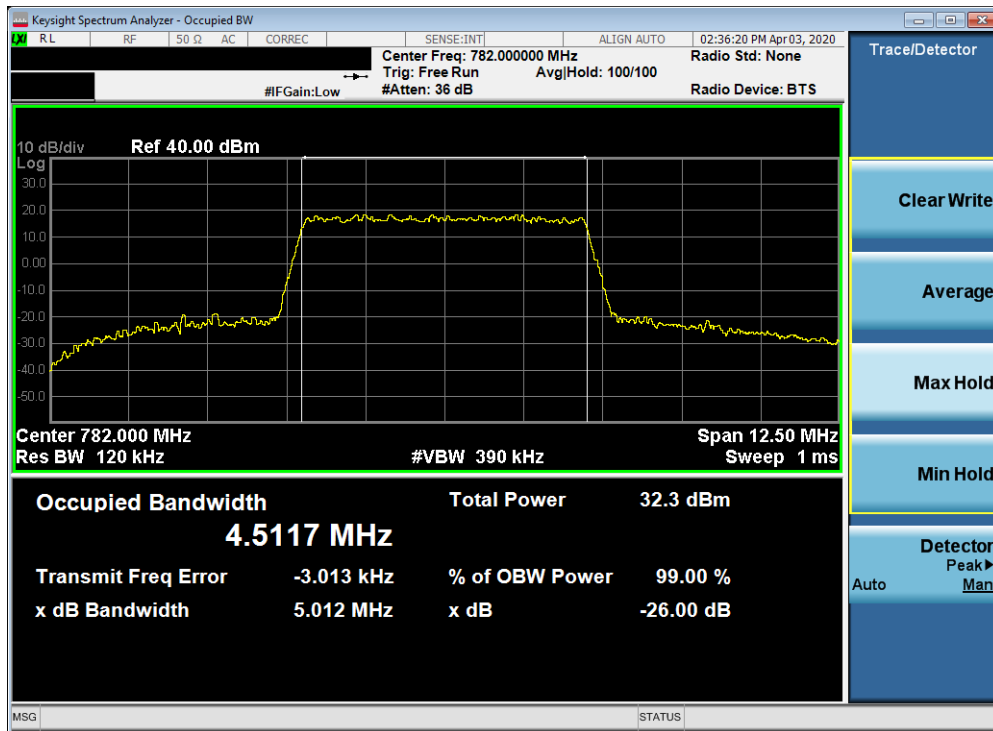
Plot 7-24. Occupied Bandwidth Plot (Band 12/17 - 10.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 29 of 438

Band 13

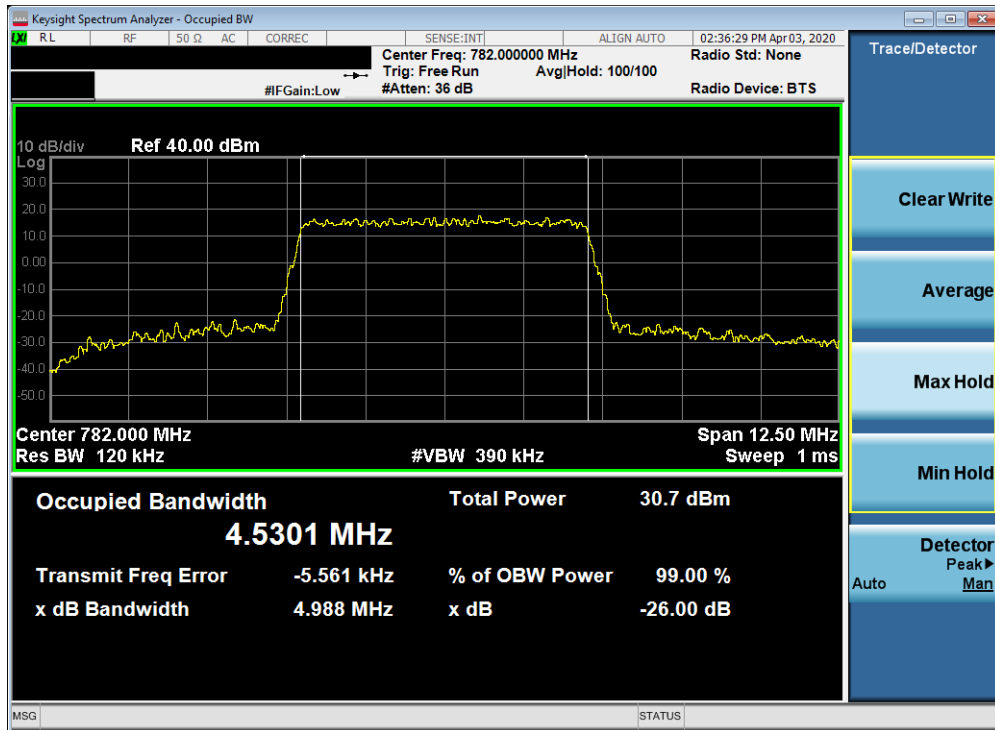


Plot 7-25. Occupied Bandwidth Plot (Band 13 - 5.0MHz QPSK - Full RB Configuration)

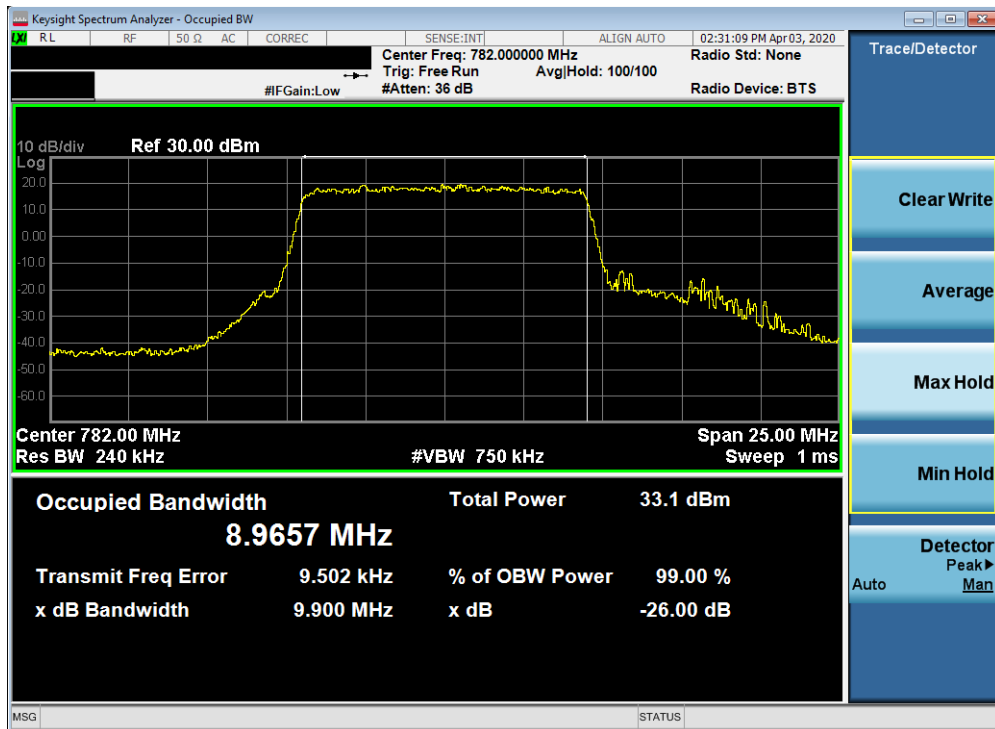


Plot 7-26. Occupied Bandwidth Plot (Band 13 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 30 of 438

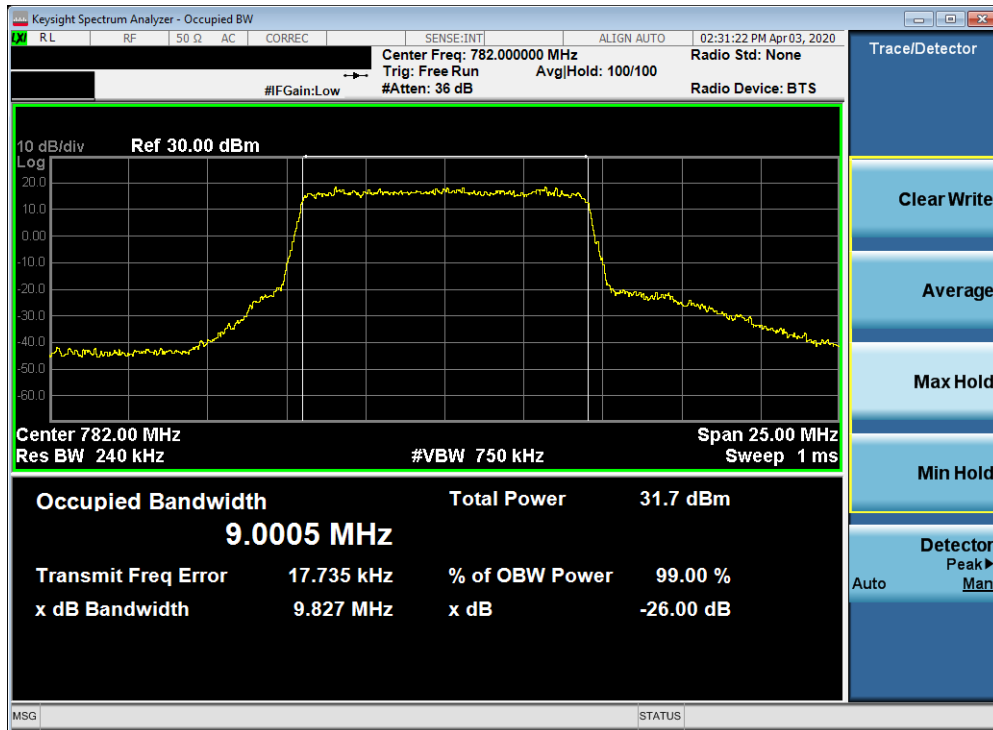


Plot 7-27. Occupied Bandwidth Plot (Band 13 - 5.0MHz 64-QAM - Full RB Configuration)

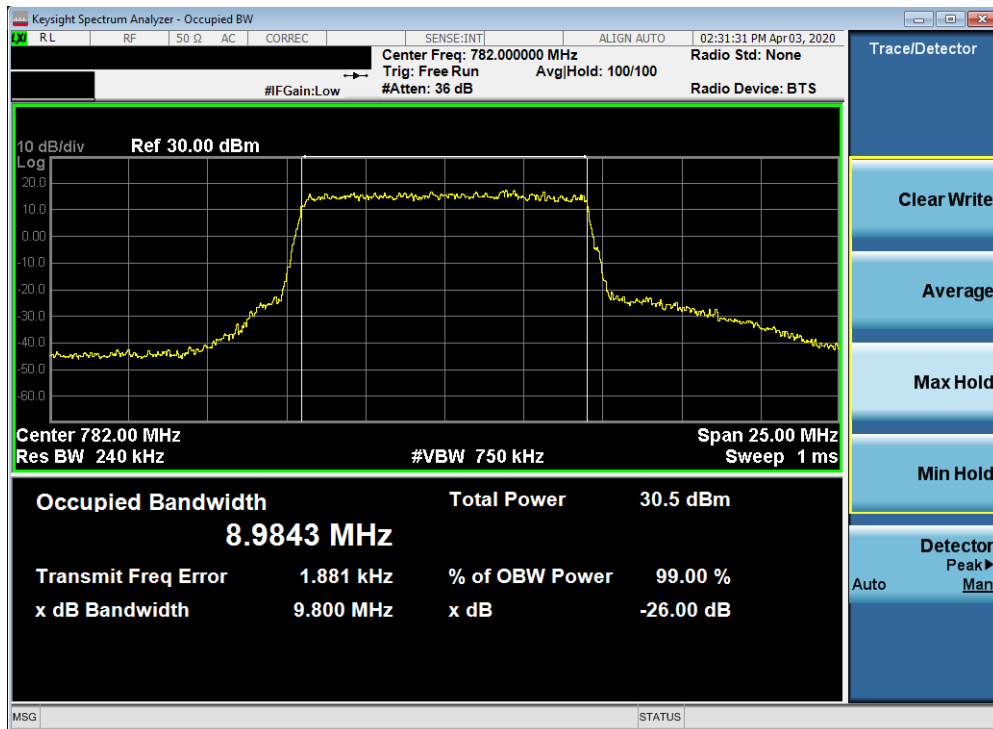


Plot 7-28. Occupied Bandwidth Plot (Band 13 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 31 of 438



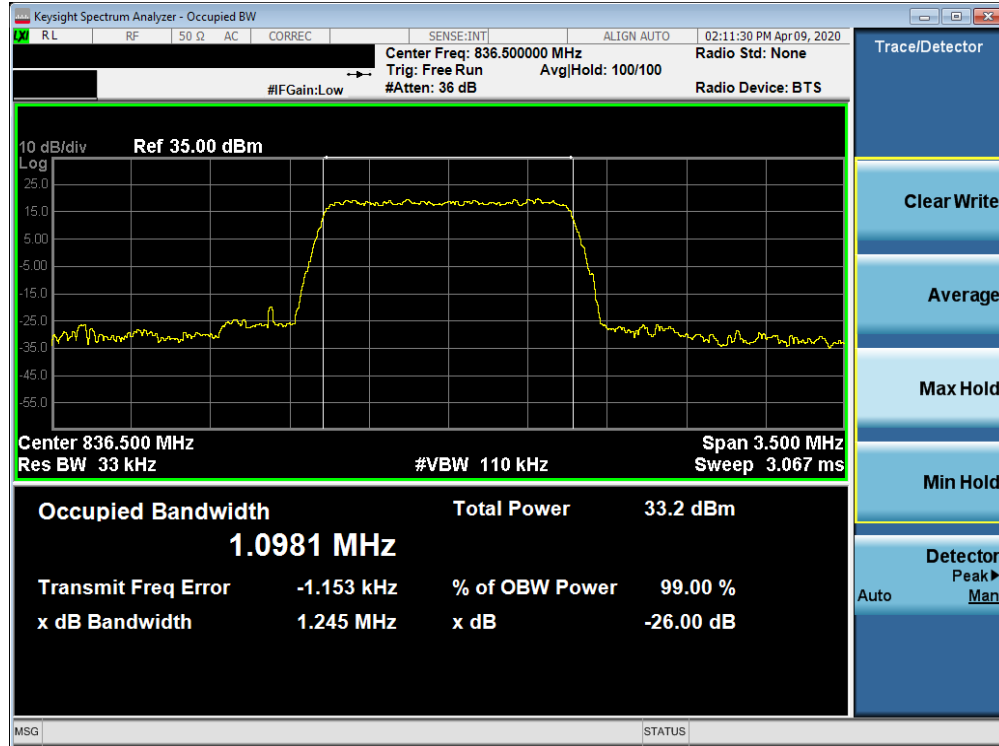
Plot 7-29. Occupied Bandwidth Plot (Band 13 - 10.0MHz 16-QAM - Full RB Configuration)



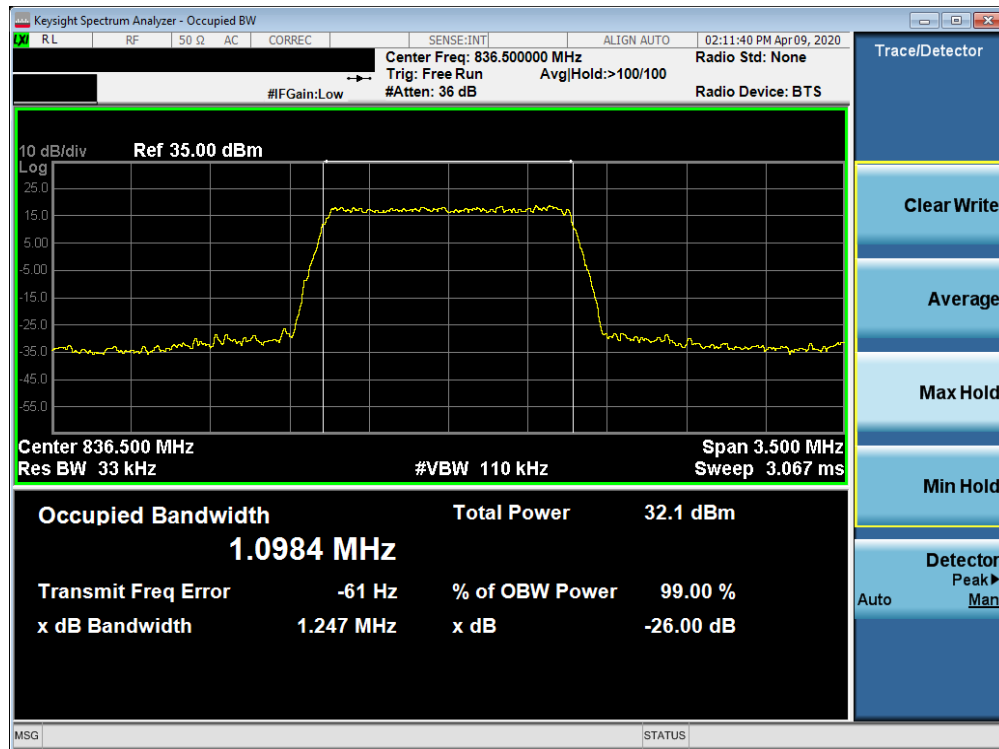
Plot 7-30. Occupied Bandwidth Plot (Band 13 - 10.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 32 of 438

Band 5

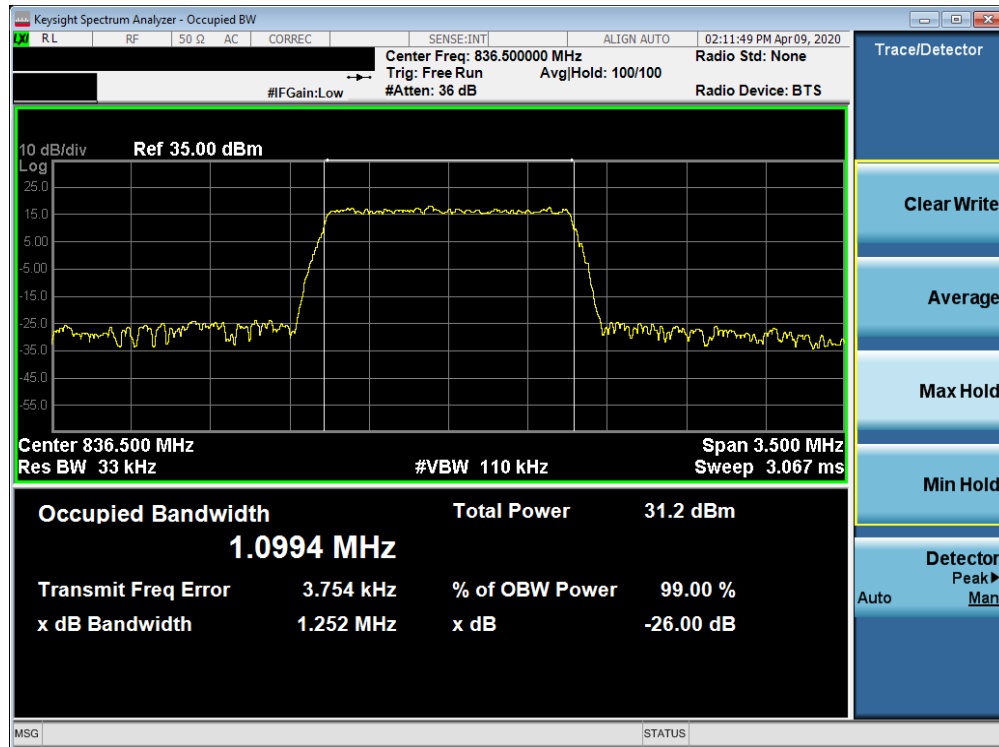


Plot 7-31. Occupied Bandwidth Plot (Band 5 - 1.4MHz QPSK - Full RB Configuration)

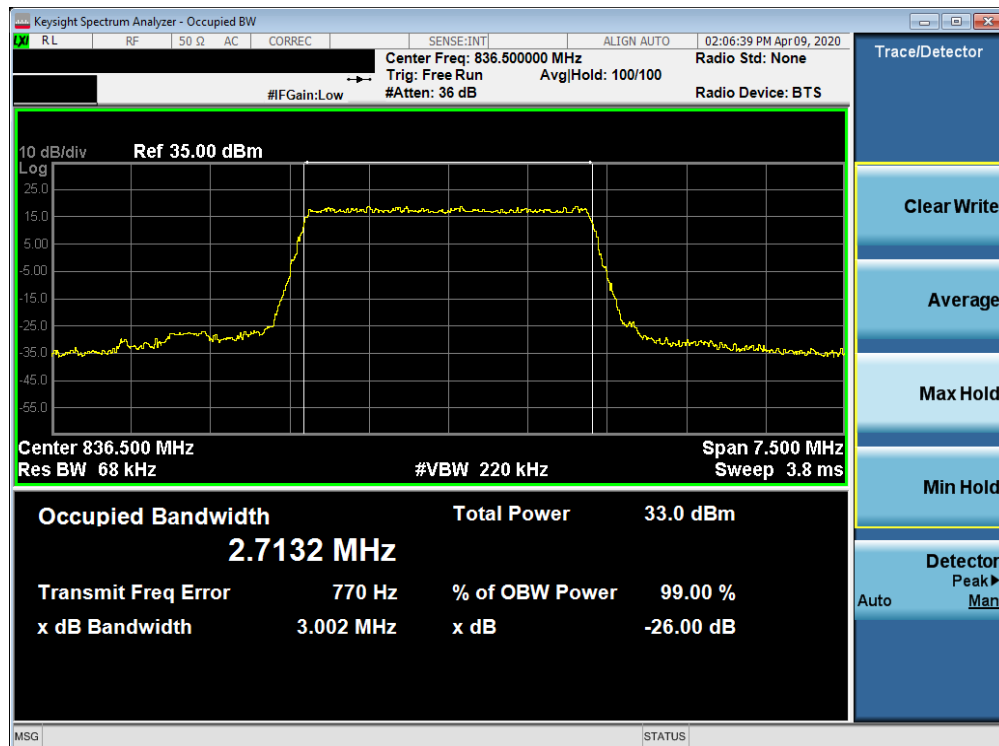


Plot 7-32. Occupied Bandwidth Plot (Band 5 - 1.4MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 33 of 438

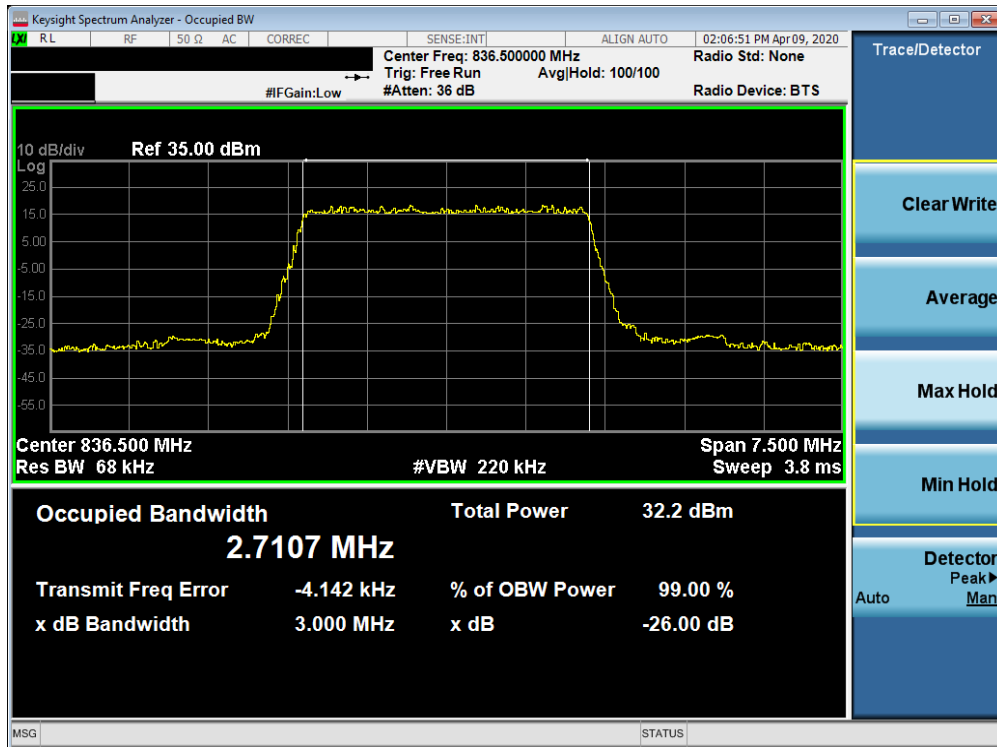


Plot 7-33. Occupied Bandwidth Plot (Band 5 - 1.4MHz 64-QAM - Full RB Configuration)

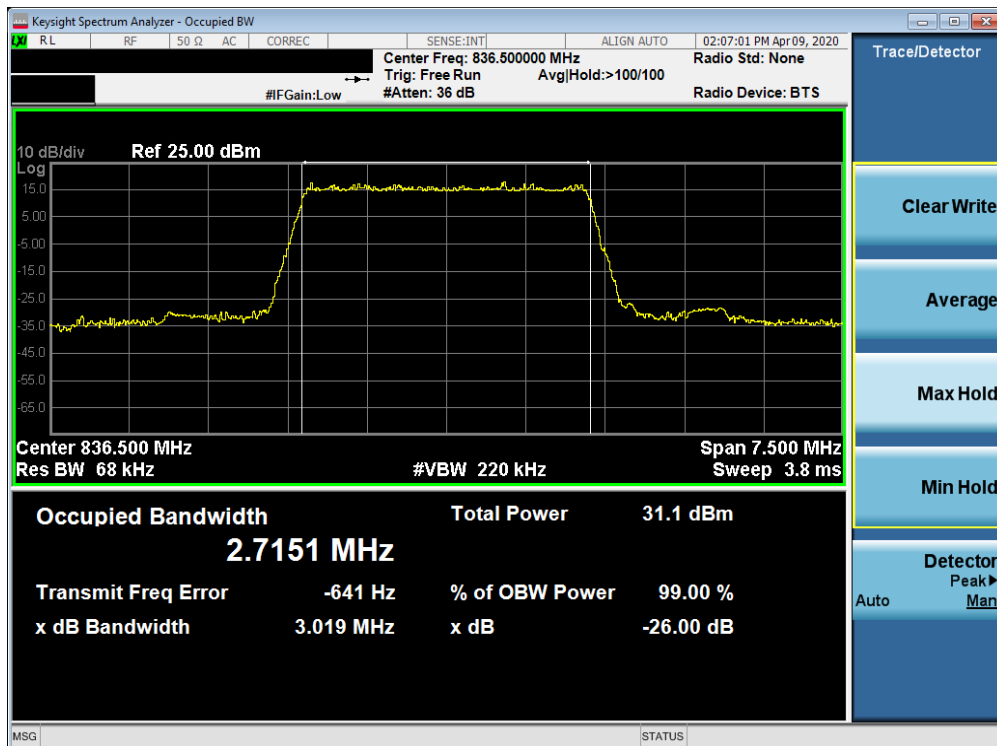


Plot 7-34. Occupied Bandwidth Plot (Band 5 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 34 of 438

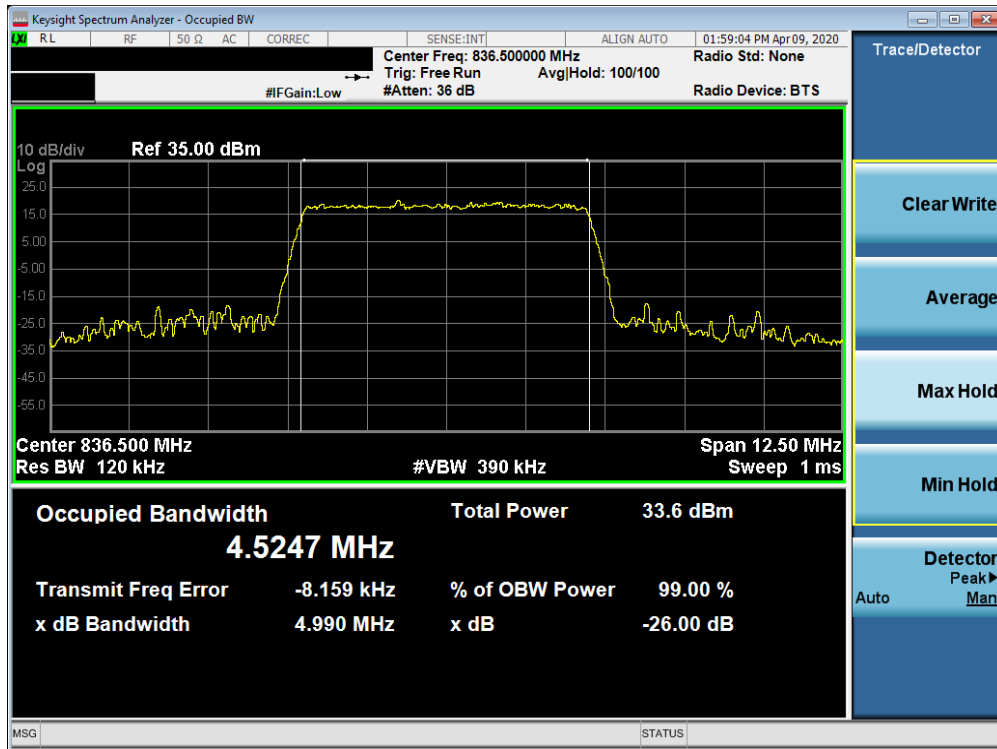


Plot 7-35. Occupied Bandwidth Plot (Band 5 - 3.0MHz 16-QAM - Full RB Configuration)

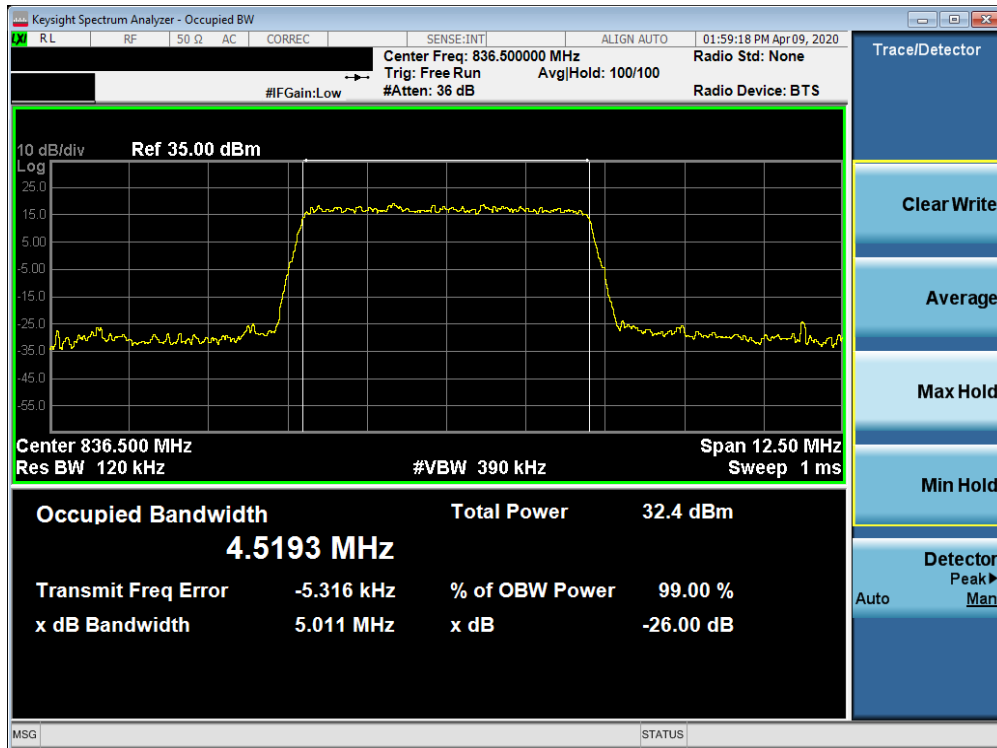


Plot 7-36. Occupied Bandwidth Plot (Band 5 - 3.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 35 of 438

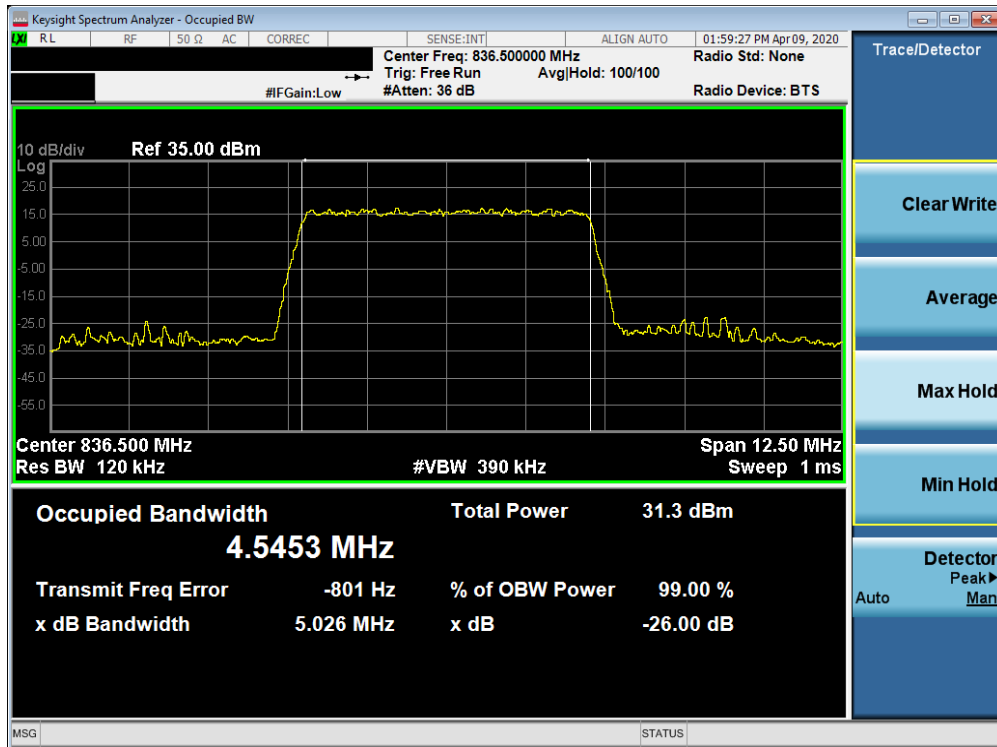


Plot 7-37. Occupied Bandwidth Plot (Band 5 - 5.0MHz QPSK - Full RB Configuration)

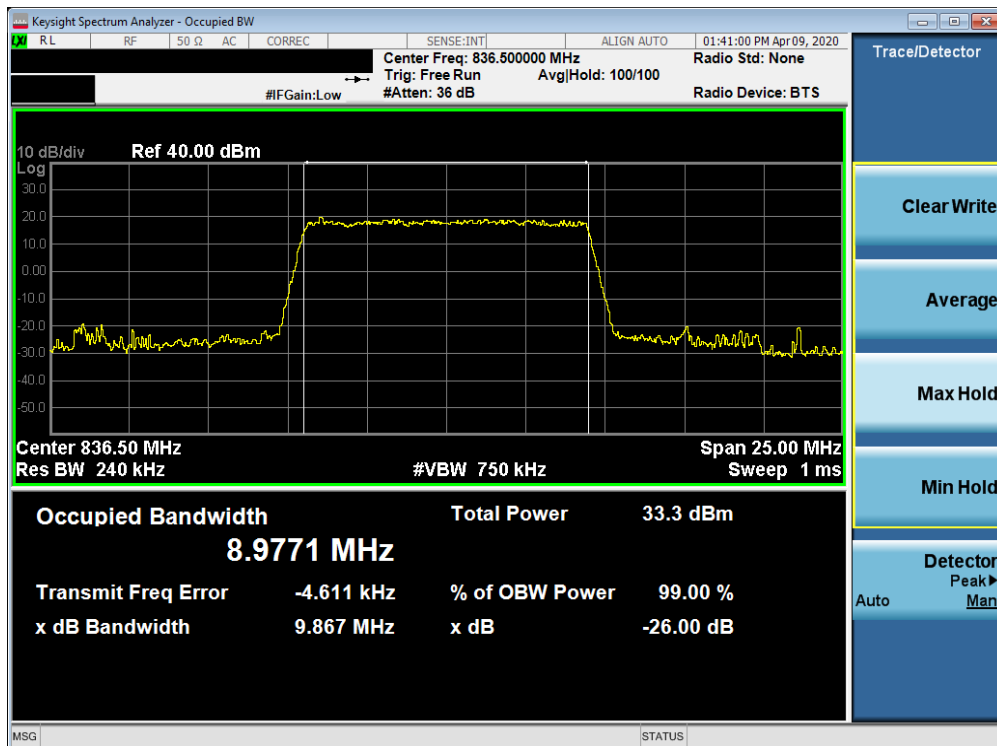


Plot 7-38. Occupied Bandwidth Plot (Band 5 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 36 of 438

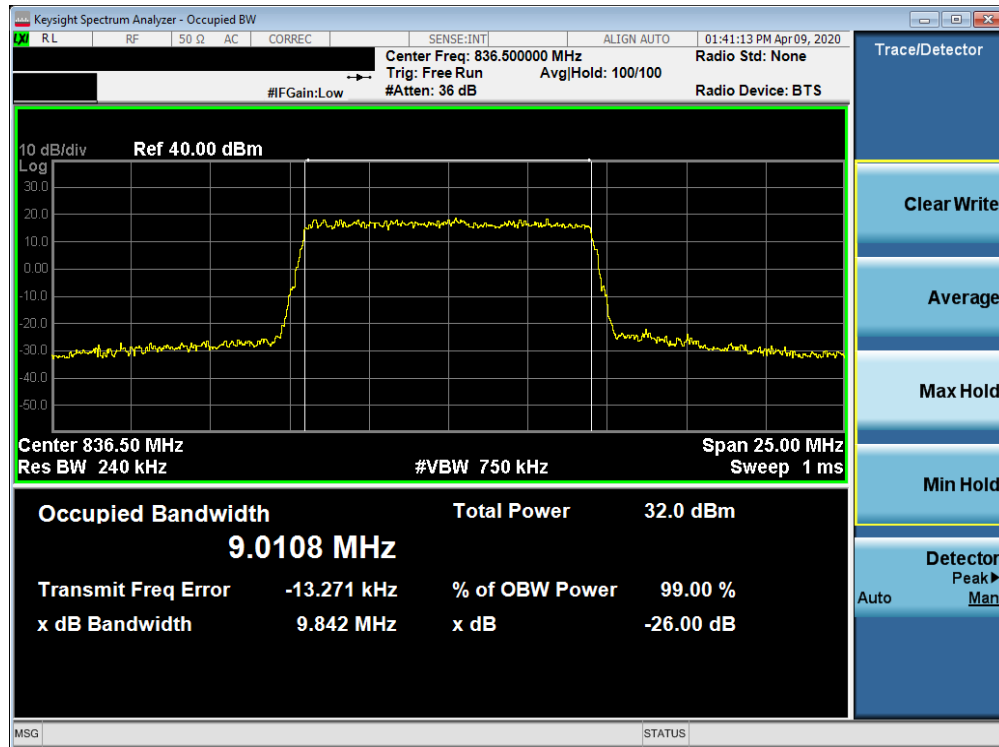


Plot 7-39. Occupied Bandwidth Plot (Band 5 - 5.0MHz 64-QAM - Full RB Configuration)

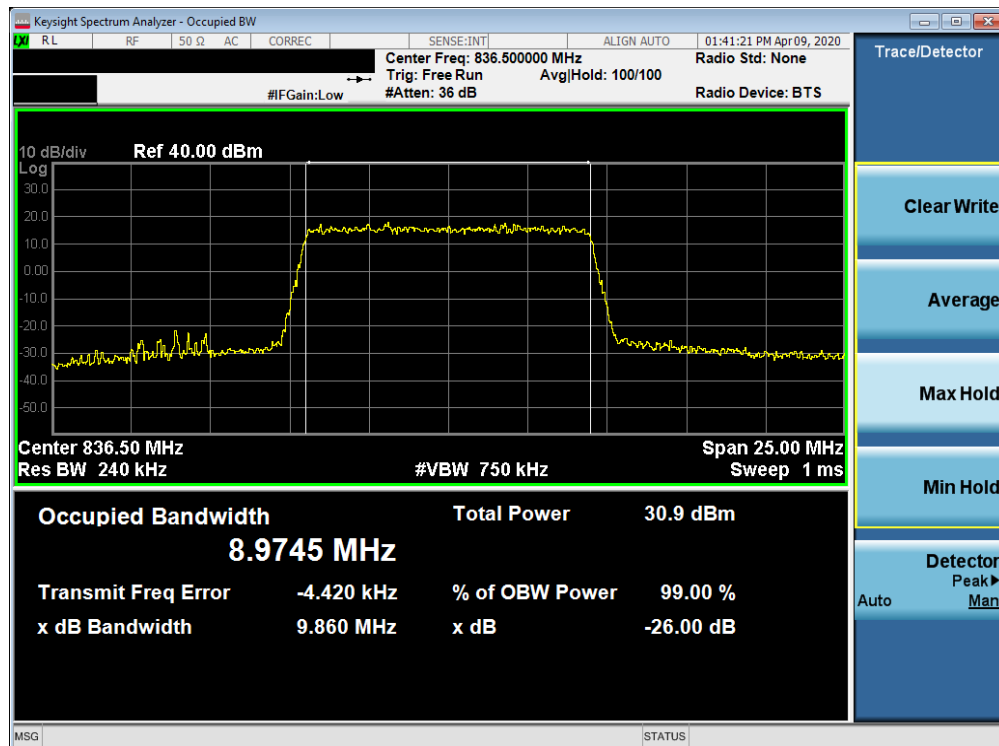


Plot 7-40. Occupied Bandwidth Plot (Band 5 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 37 of 438



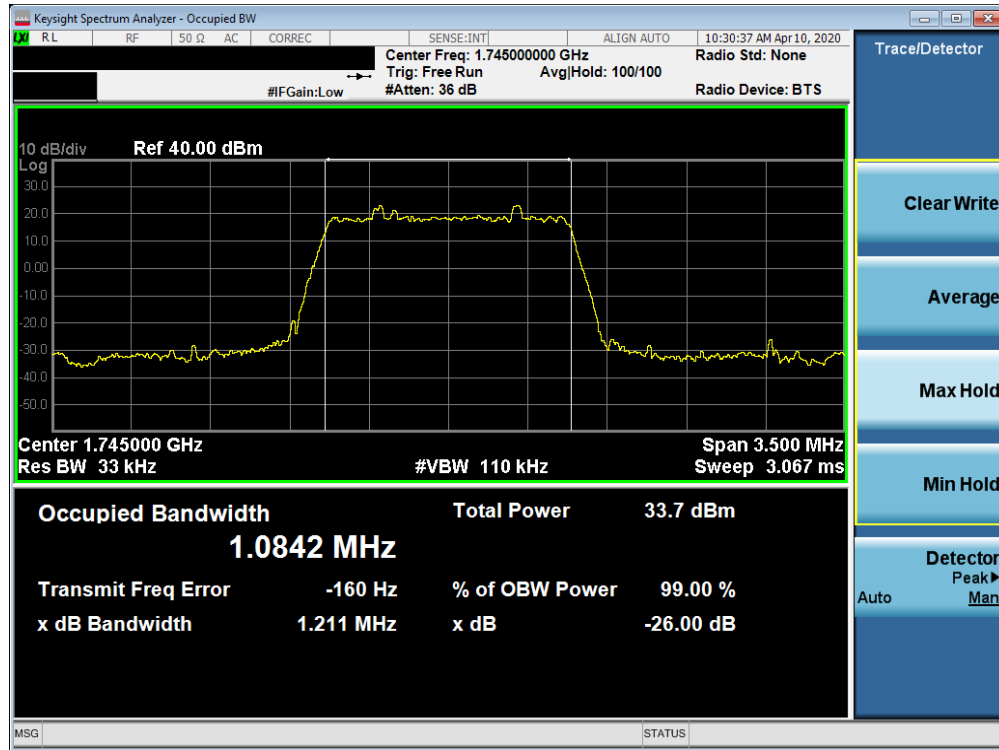
Plot 7-41. Occupied Bandwidth Plot (Band 5 - 10.0MHz 16-QAM - Full RB Configuration)



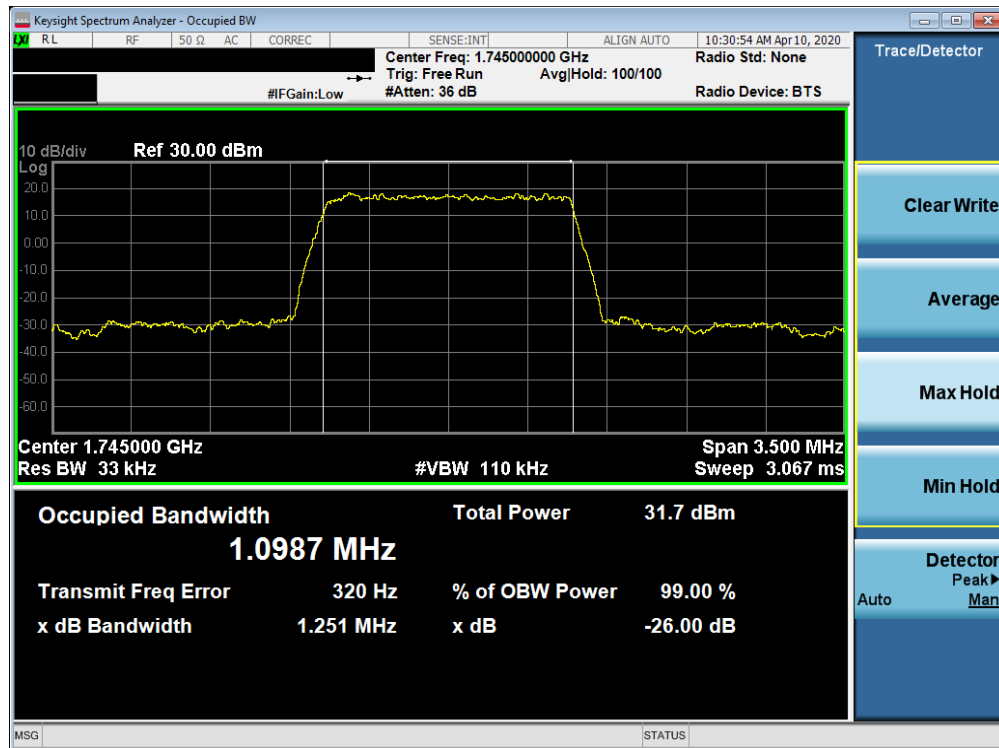
Plot 7-42. Occupied Bandwidth Plot (Band 5 - 10.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 38 of 438

Band 66/4



Plot 7-43. Occupied Bandwidth Plot (Band 66/4 - 1.4MHz QPSK - Full RB Configuration)

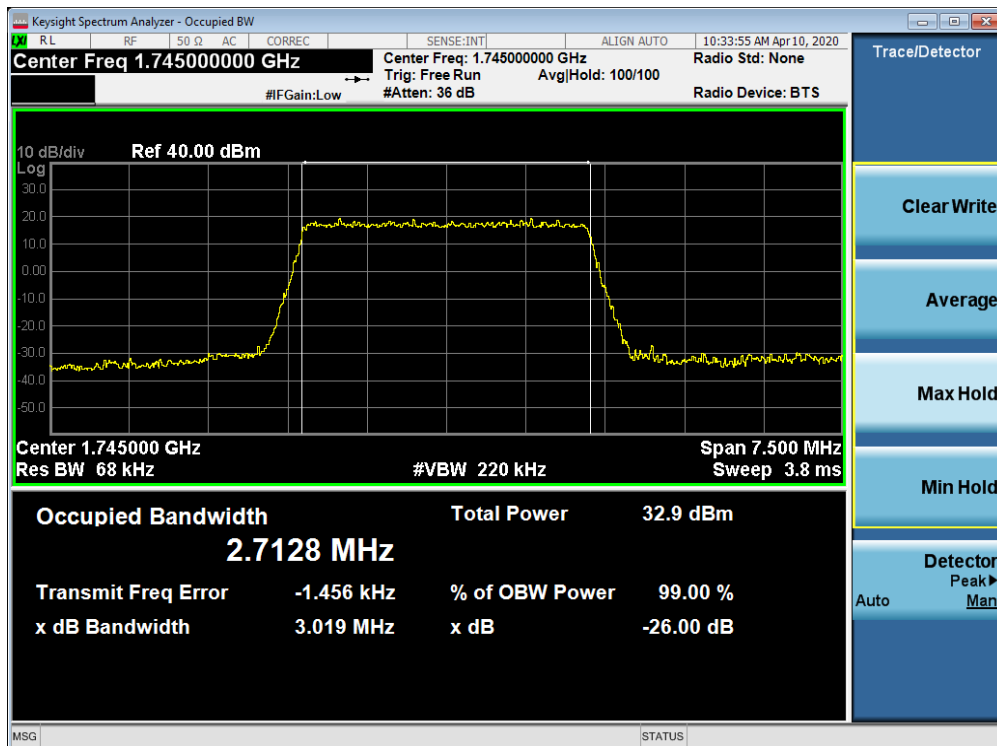


Plot 7-44. Occupied Bandwidth Plot (Band 66/4 - 1.4MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 39 of 438

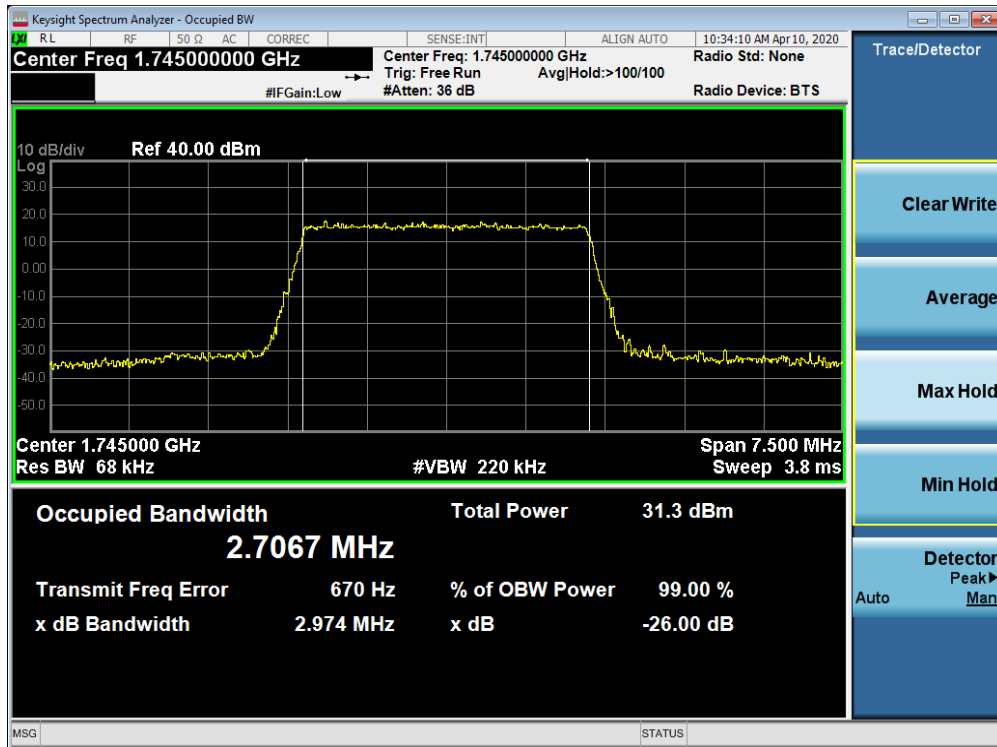


Plot 7-45. Occupied Bandwidth Plot (Band 66/4 - 1.4MHz 64-QAM - Full RB Configuration)

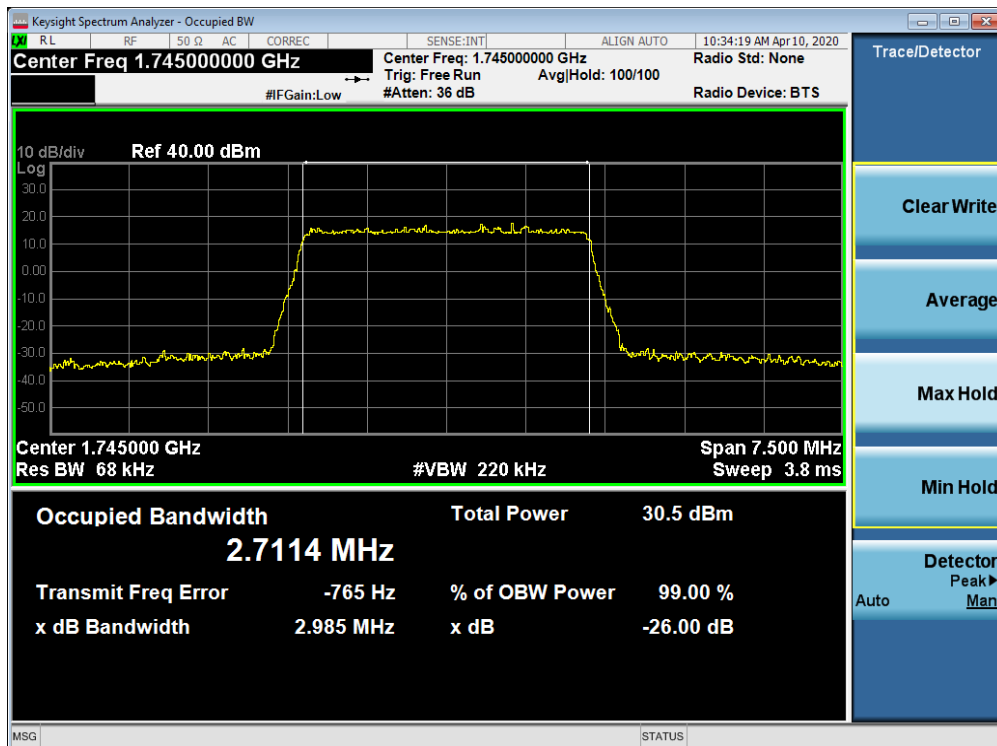


Plot 7-46. Occupied Bandwidth Plot (Band 66/4 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 40 of 438

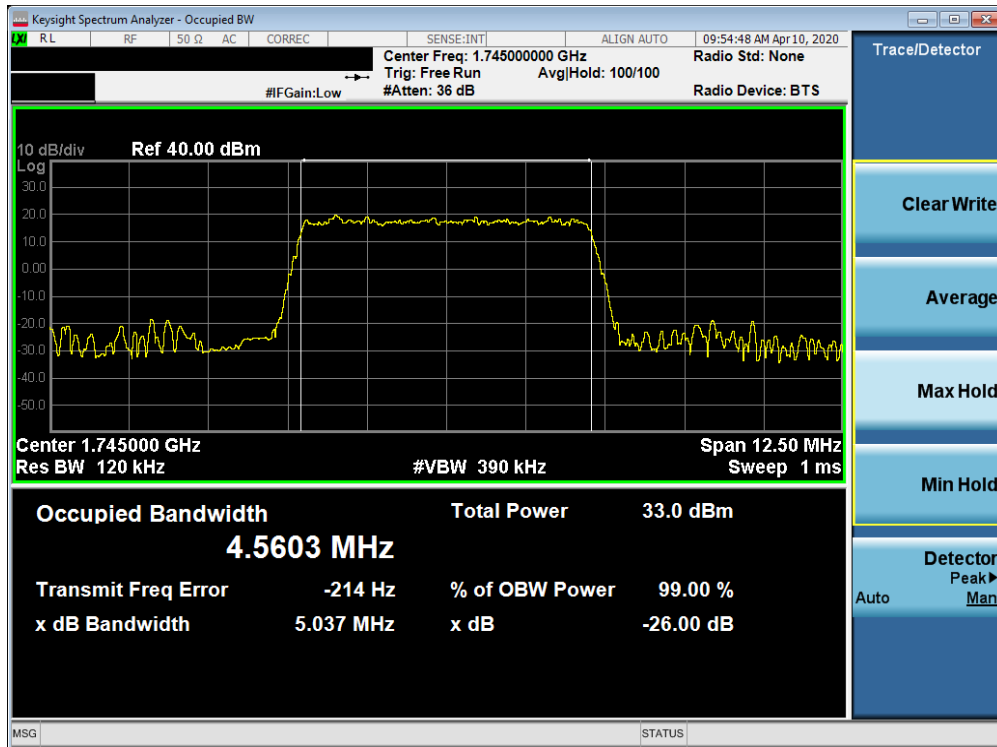


Plot 7-47. Occupied Bandwidth Plot (Band 66/4 - 3.0MHz 16-QAM - Full RB Configuration)

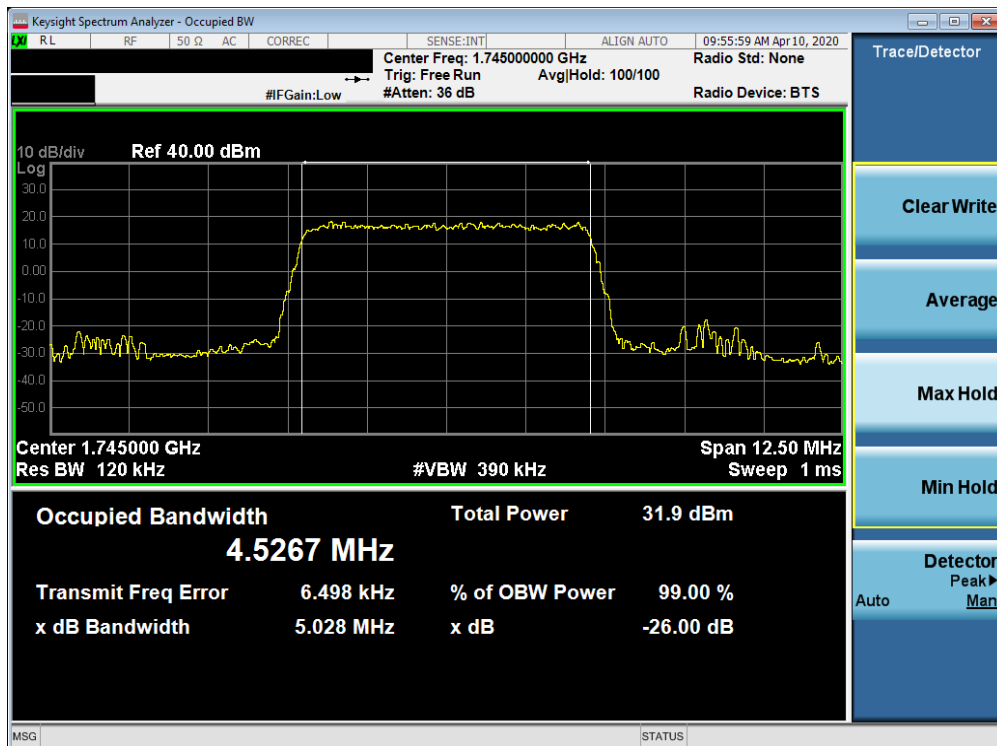


Plot 7-48. Occupied Bandwidth Plot (Band 66/4 - 3.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 41 of 438

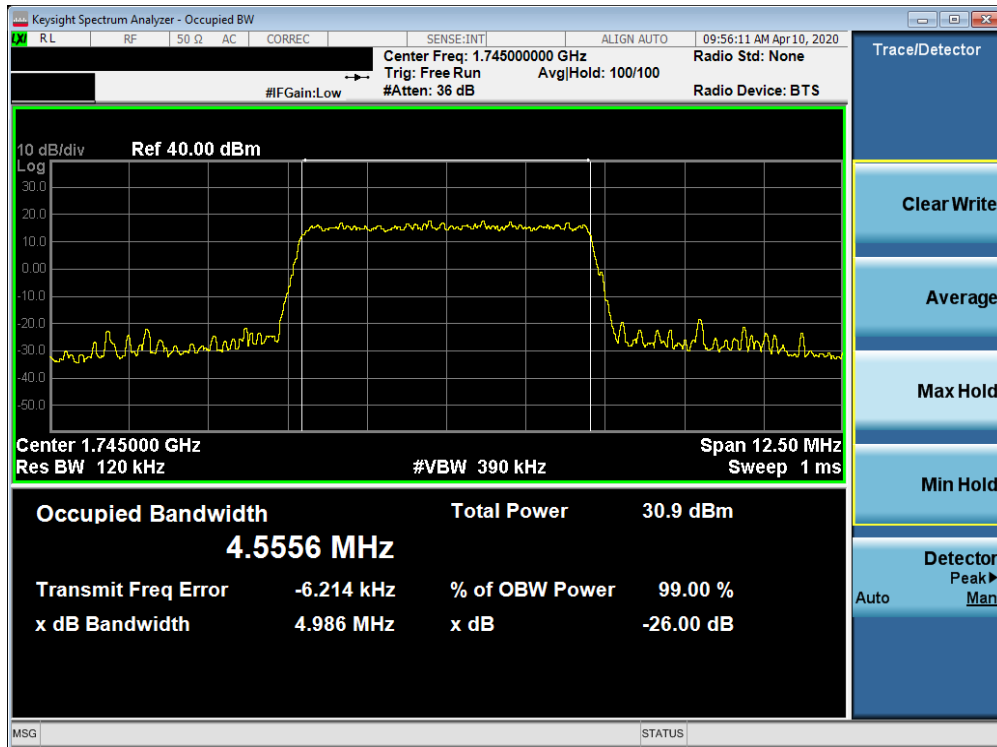


Plot 7-49. Occupied Bandwidth Plot (Band 66/4 - 5.0MHz QPSK - Full RB Configuration)

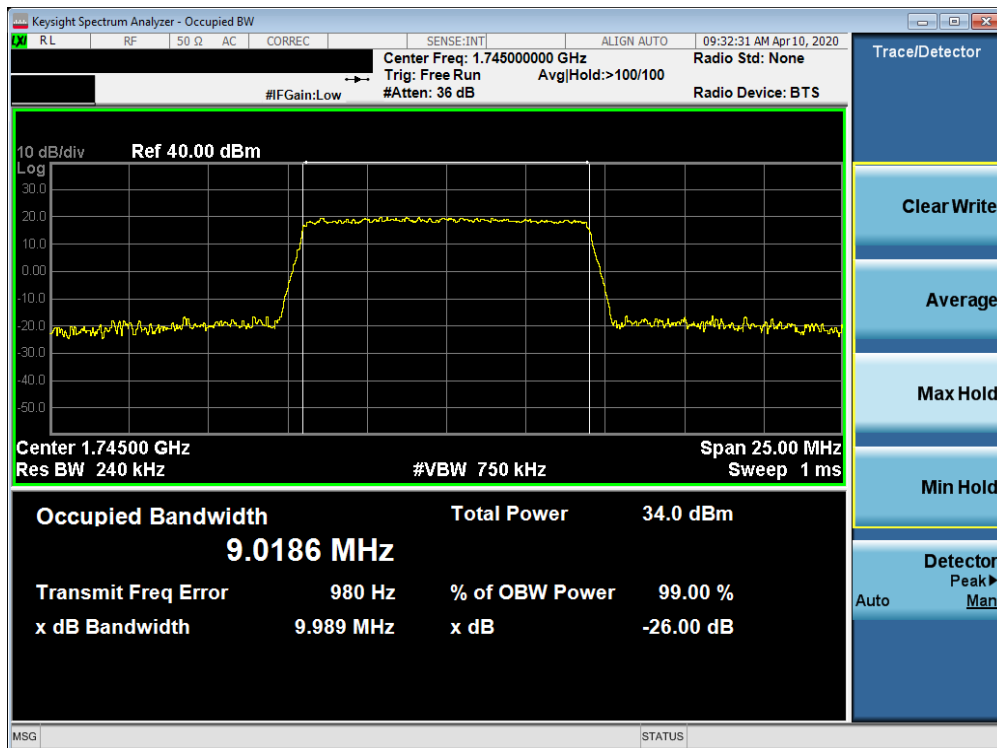


Plot 7-50. Occupied Bandwidth Plot (Band 66/4 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 42 of 438

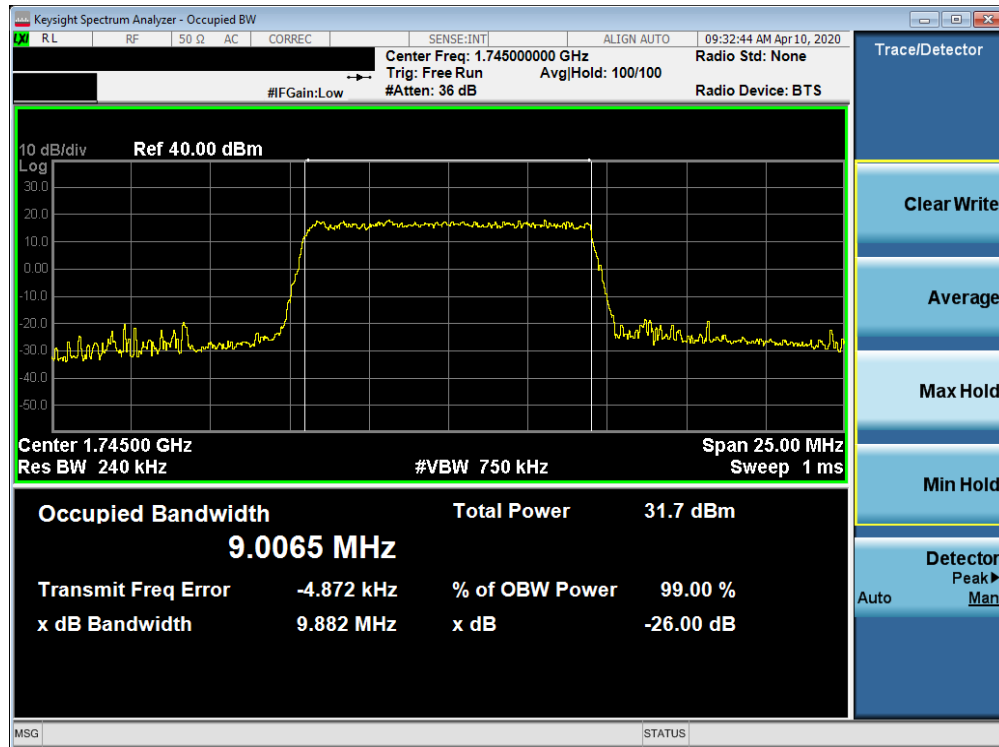


Plot 7-51. Occupied Bandwidth Plot (Band 66/4 - 5.0MHz 64-QAM - Full RB Configuration)

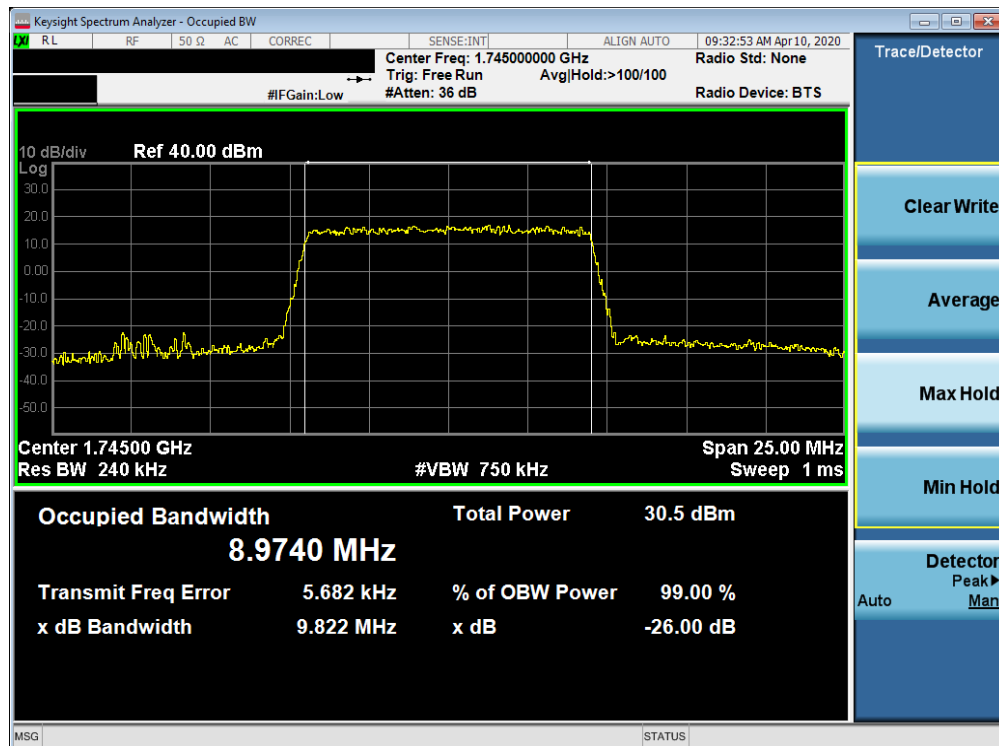


Plot 7-52. Occupied Bandwidth Plot (Band 66/4 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 43 of 438

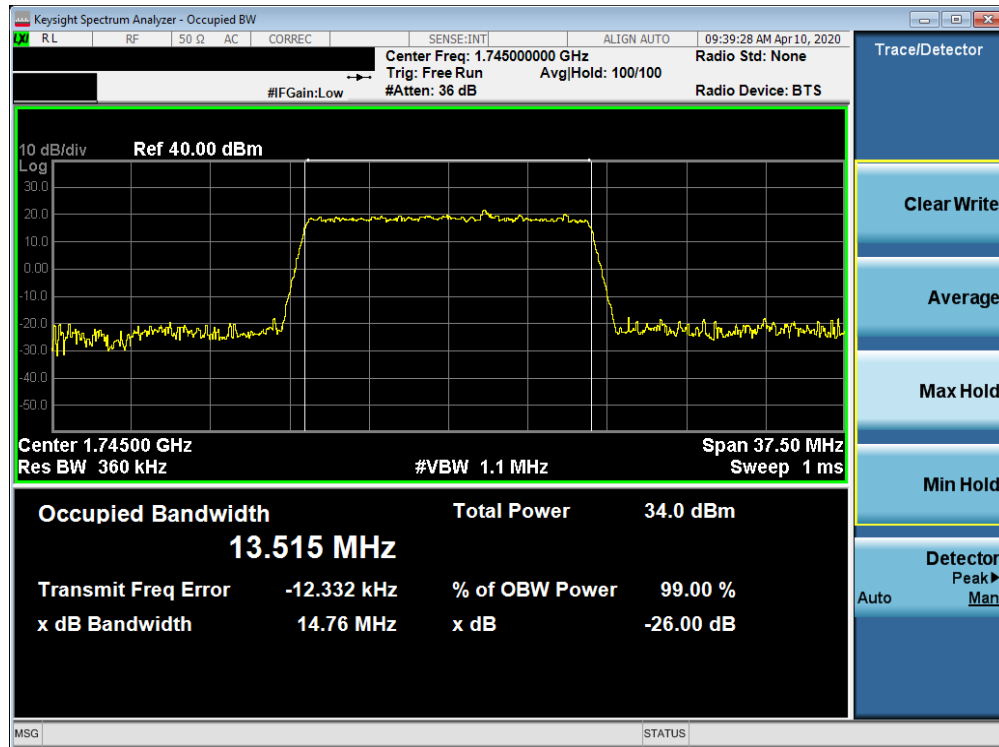


Plot 7-53. Occupied Bandwidth Plot (Band 66/4 - 10.0MHz 16-QAM - Full RB Configuration)

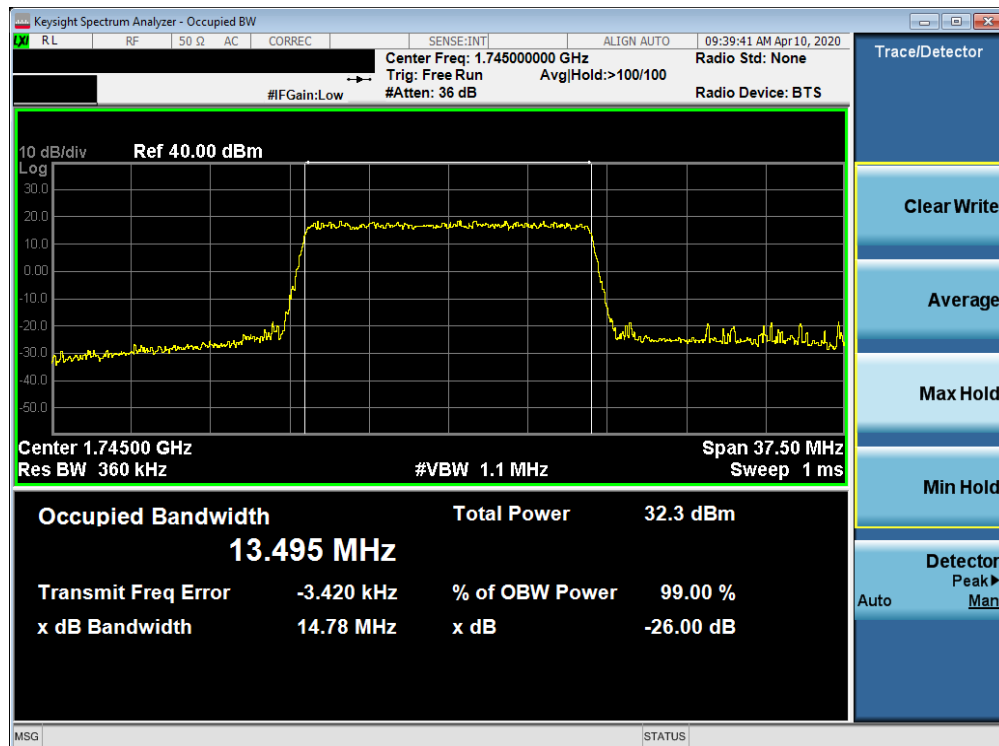


Plot 7-54. Occupied Bandwidth Plot (Band 66/4 - 10.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 44 of 438

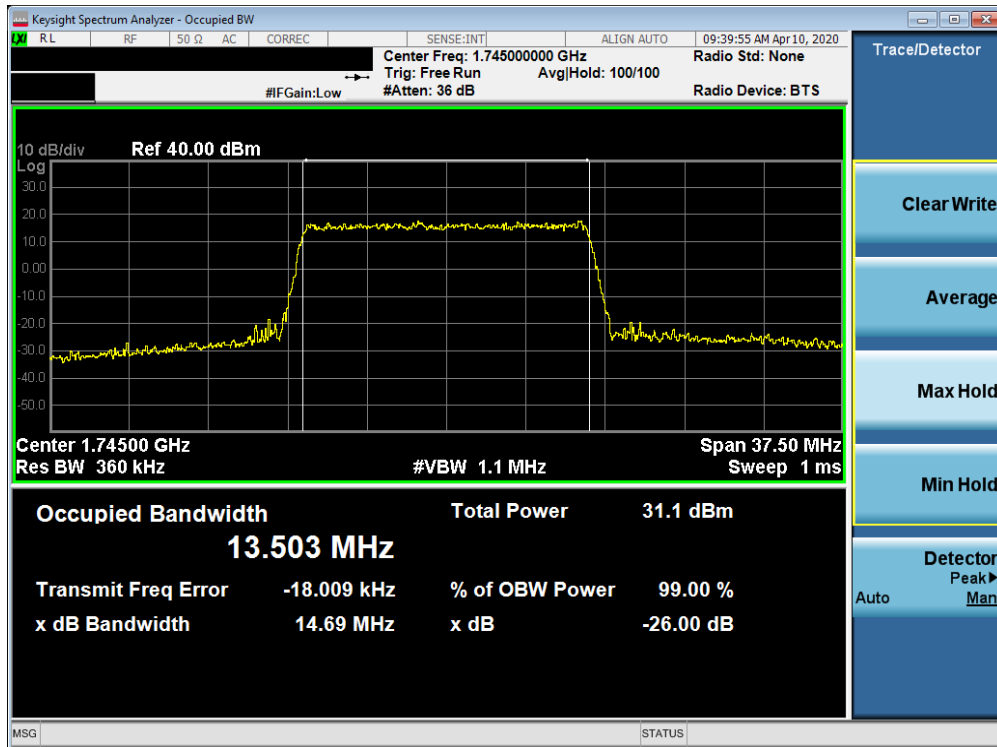


Plot 7-55. Occupied Bandwidth Plot (Band 66/4 - 15.0MHz QPSK - Full RB Configuration)

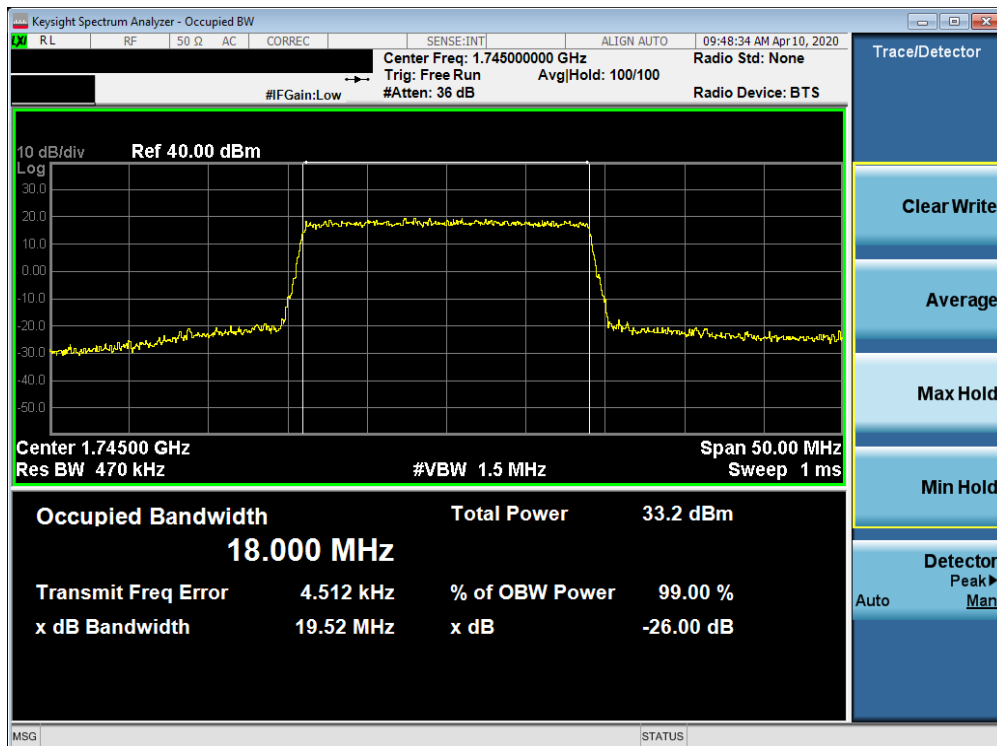


Plot 7-56. Occupied Bandwidth Plot (Band 66/4 - 15.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 45 of 438

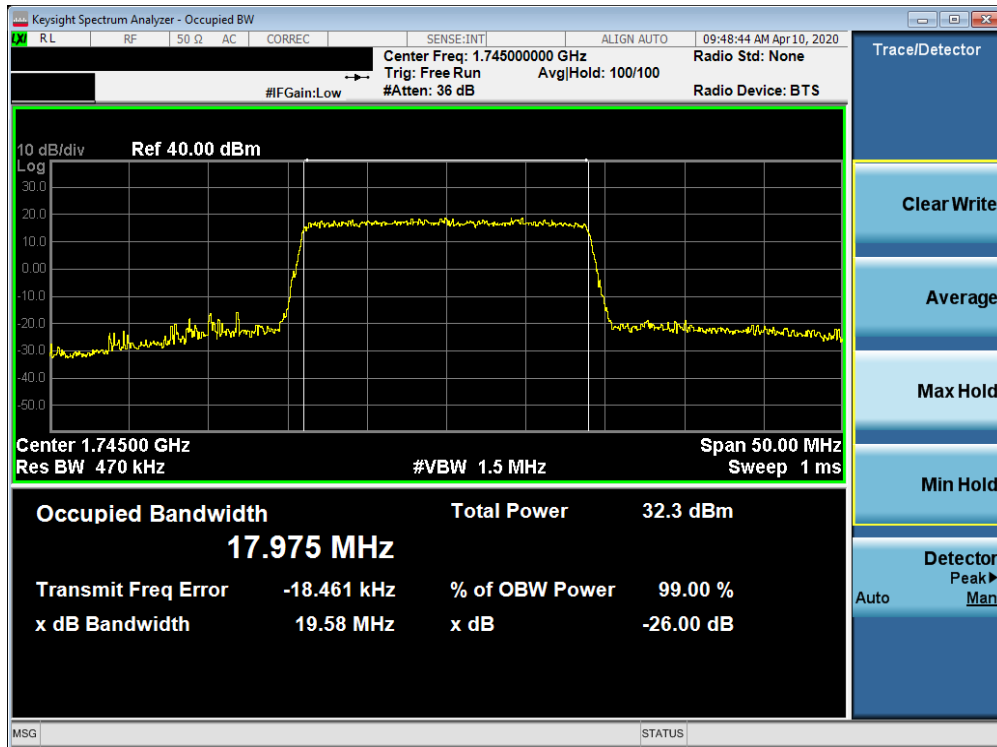


Plot 7-57. Occupied Bandwidth Plot (Band 66/4 - 15.0MHz 64-QAM - Full RB Configuration)

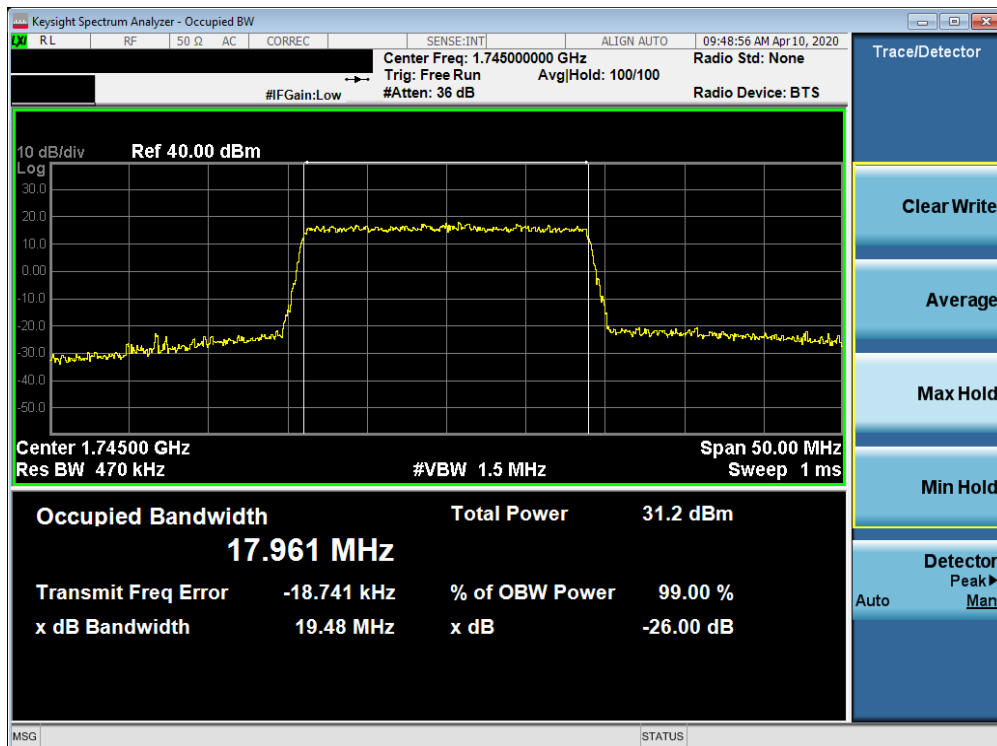


Plot 7-58. Occupied Bandwidth Plot (Band 66/4 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 46 of 438



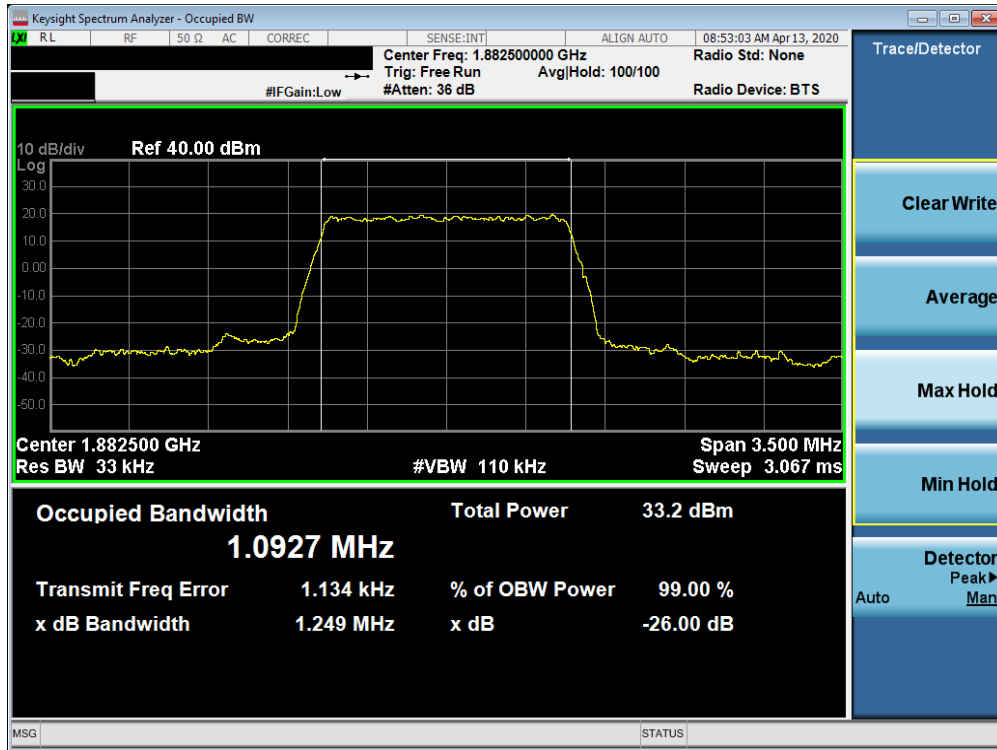
Plot 7-59. Occupied Bandwidth Plot (Band 66/4 - 20.0MHz 16-QAM - Full RB Configuration)



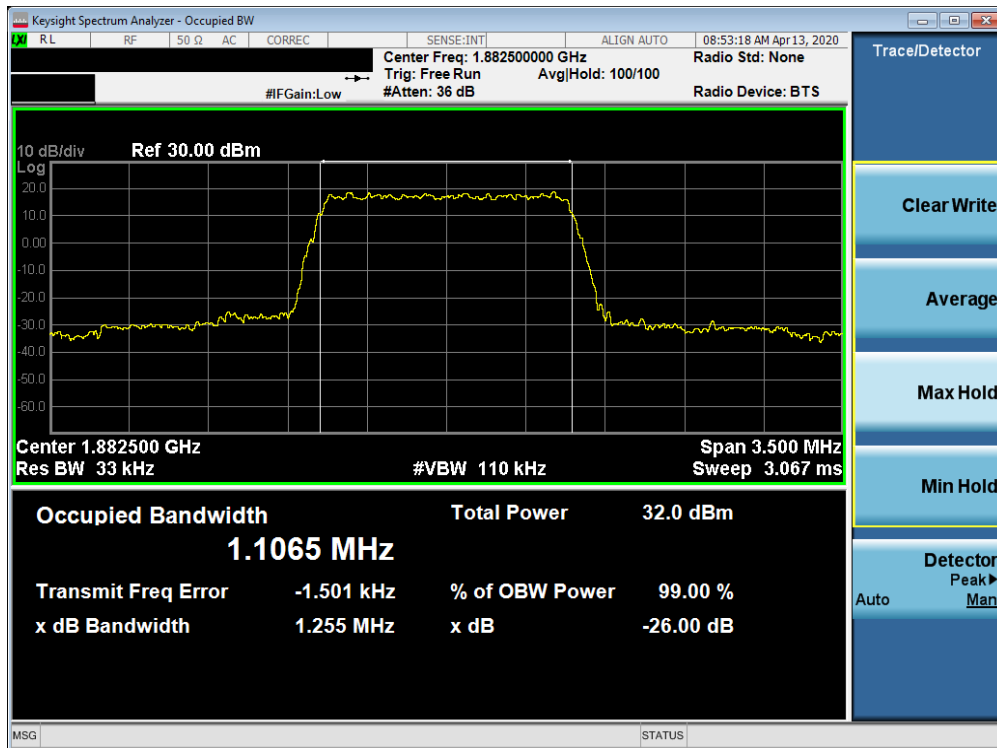
Plot 7-60. Occupied Bandwidth Plot (Band 66/4 - 20.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 47 of 438

Band 25/2

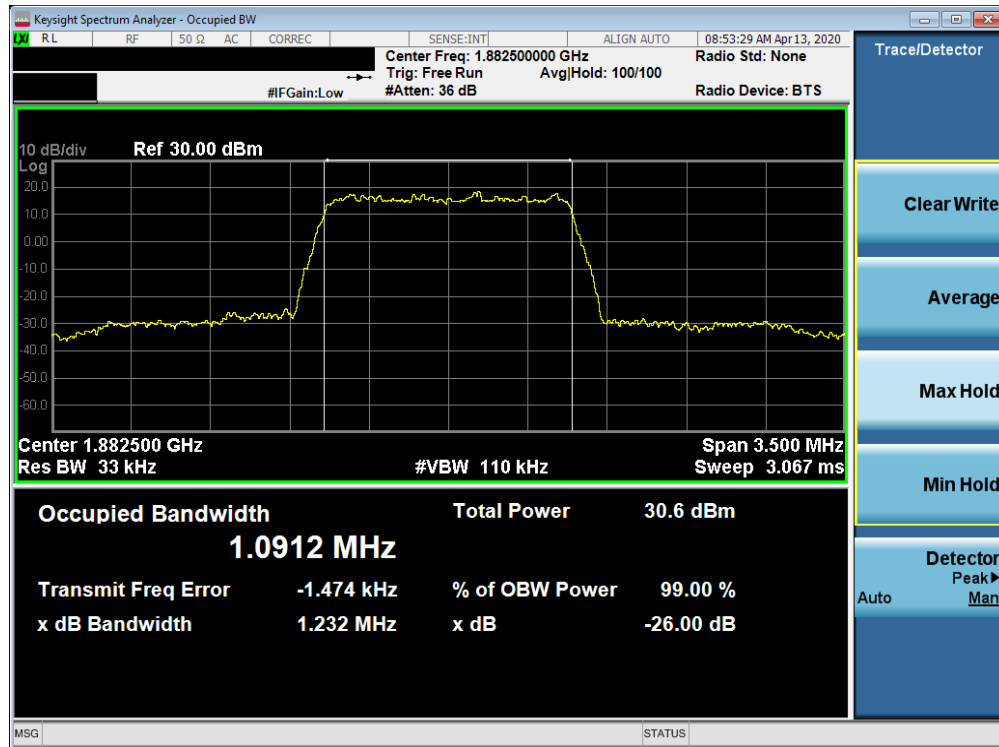


Plot 7-61. Occupied Bandwidth Plot (Band 25/2 - 1.4MHz QPSK - Full RB Configuration)

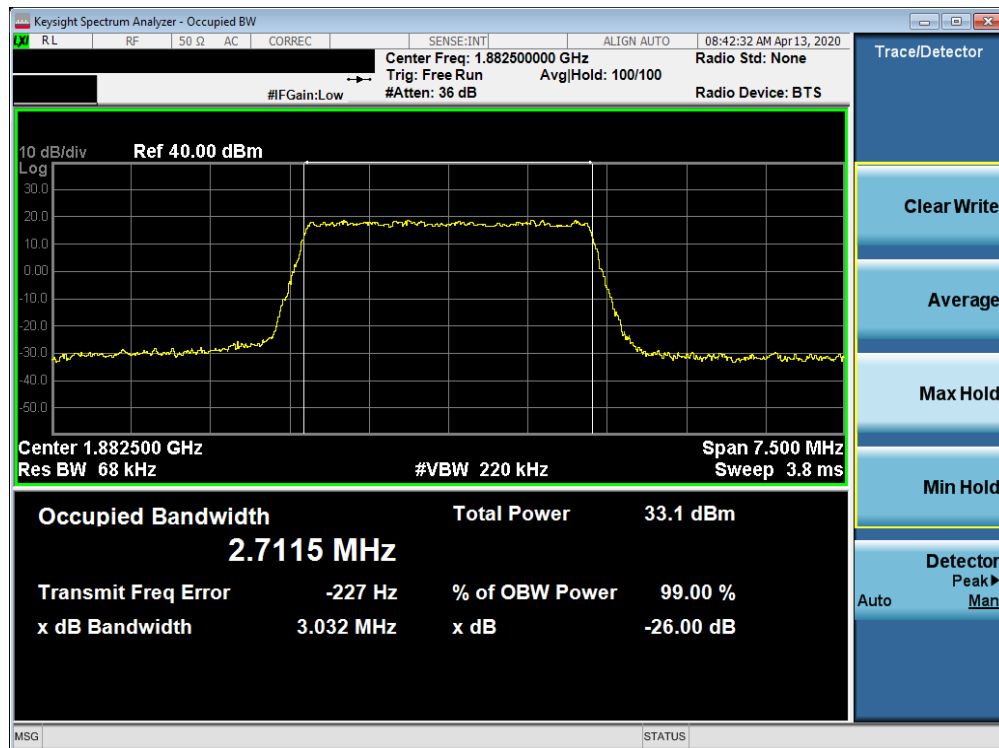


Plot 7-62. Occupied Bandwidth Plot (Band 25/2 - 1.4MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 48 of 438

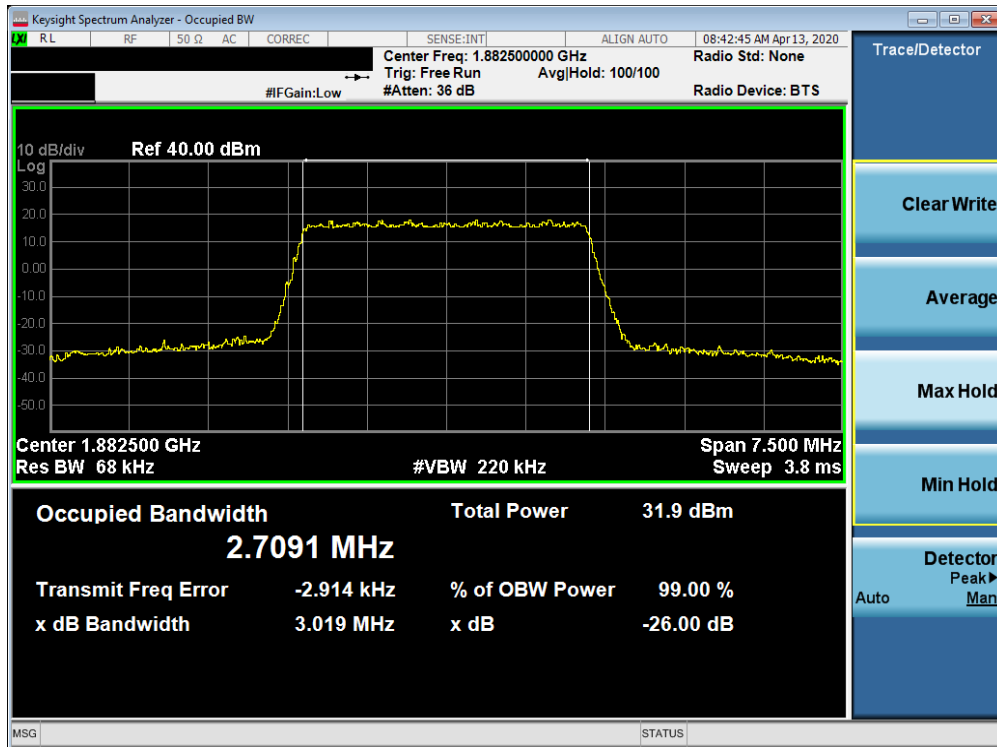


Plot 7-63. Occupied Bandwidth Plot (Band 25/2 - 1.4MHz 64-QAM - Full RB Configuration)

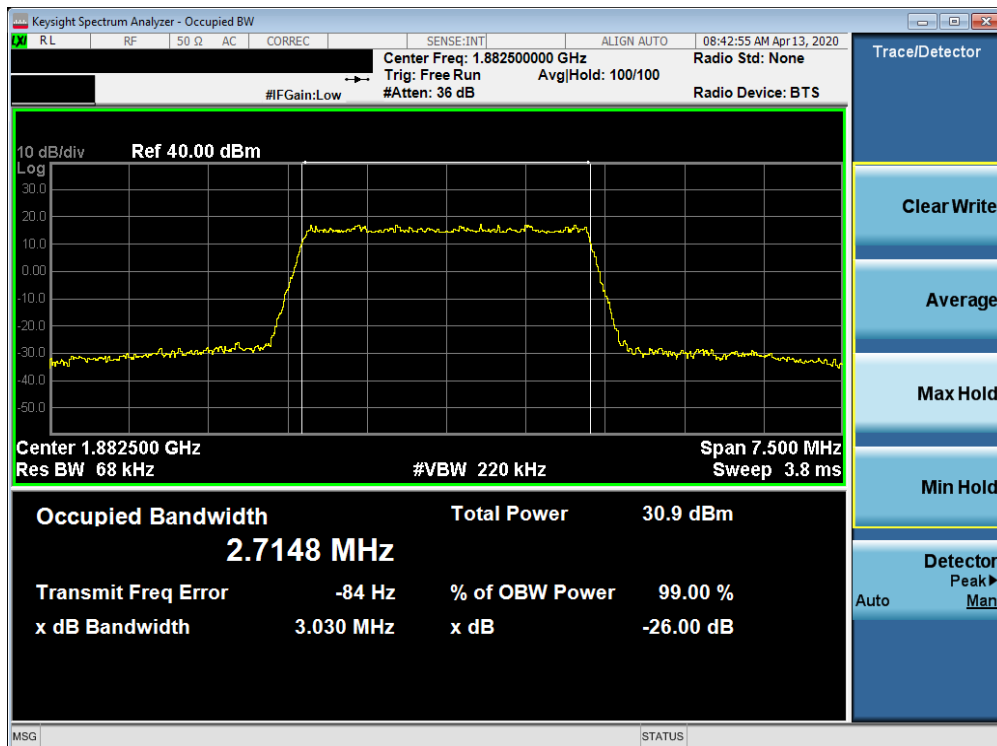


Plot 7-64. Occupied Bandwidth Plot (Band 25/2 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 49 of 438

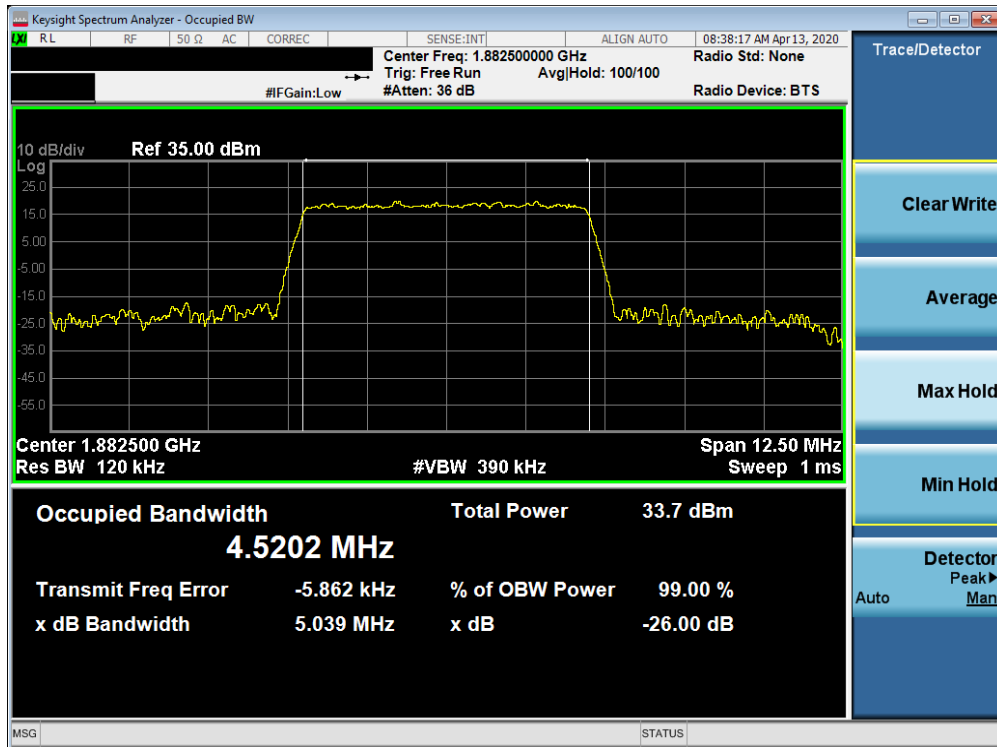


Plot 7-65. Occupied Bandwidth Plot (Band 25/2 - 3.0MHz 16-QAM - Full RB Configuration)

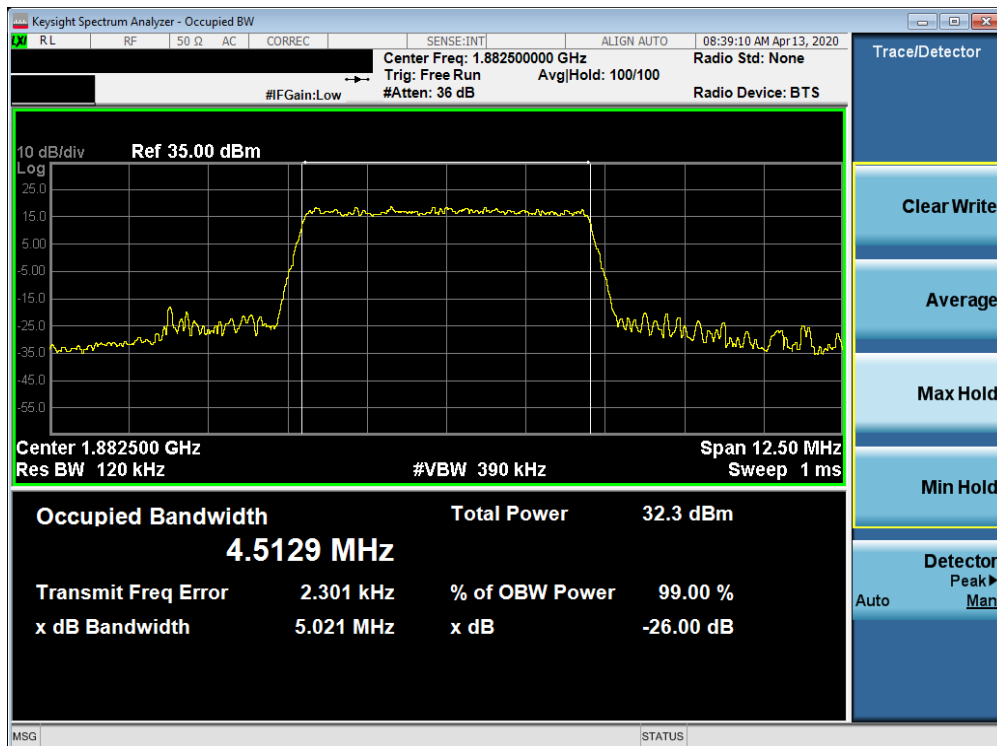


Plot 7-66. Occupied Bandwidth Plot (Band 25/2 - 3.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 50 of 438

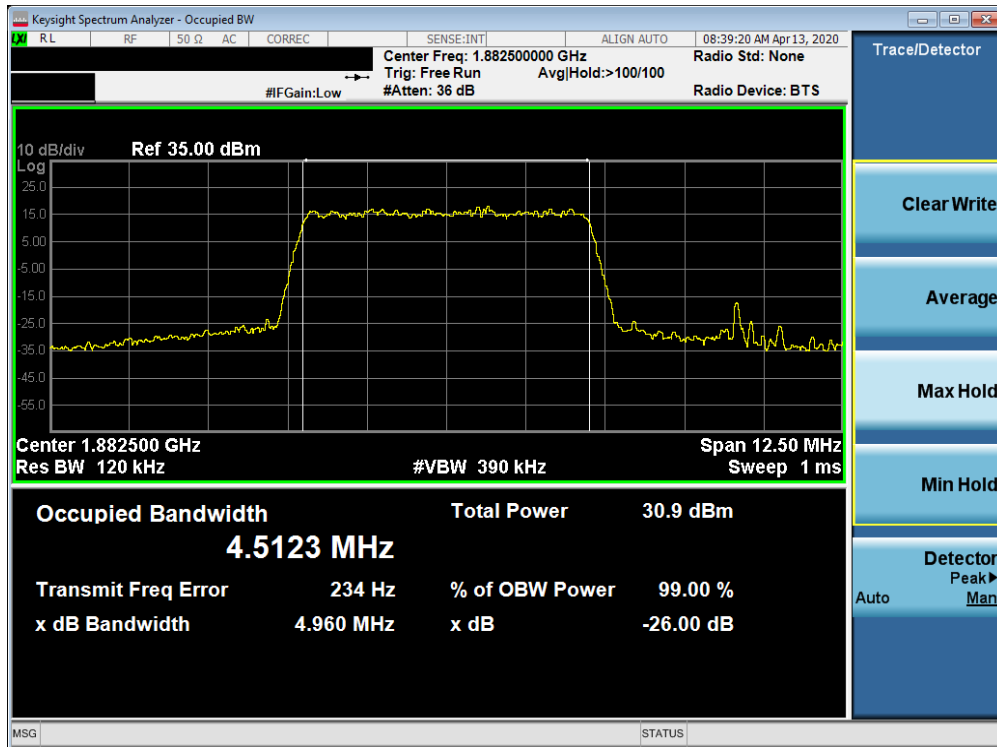


Plot 7-67. Occupied Bandwidth Plot (Band 25/2 - 5.0MHz QPSK - Full RB Configuration)

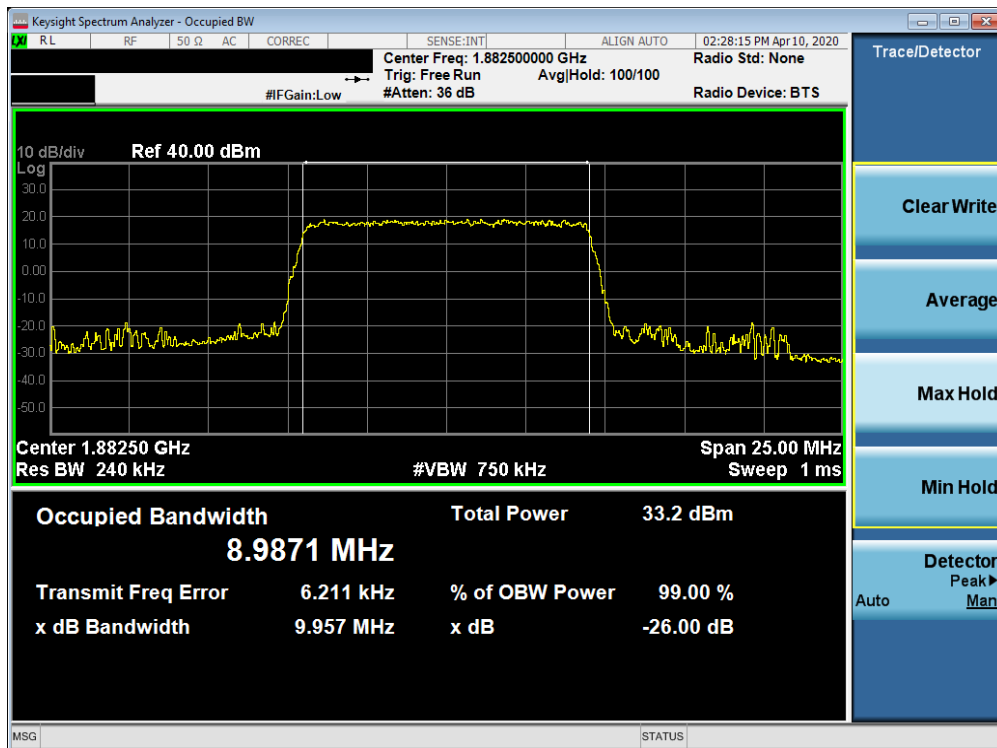


Plot 7-68. Occupied Bandwidth Plot (Band 25/2 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 51 of 438

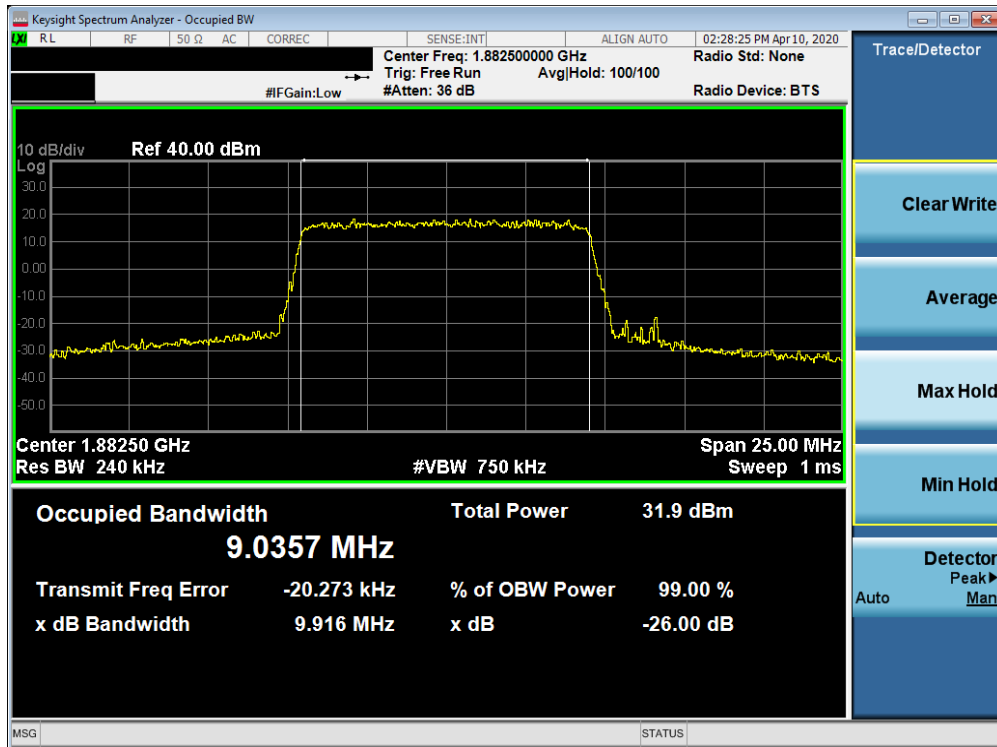


Plot 7-69. Occupied Bandwidth Plot (Band 25/2 - 5.0MHz 64-QAM - Full RB Configuration)

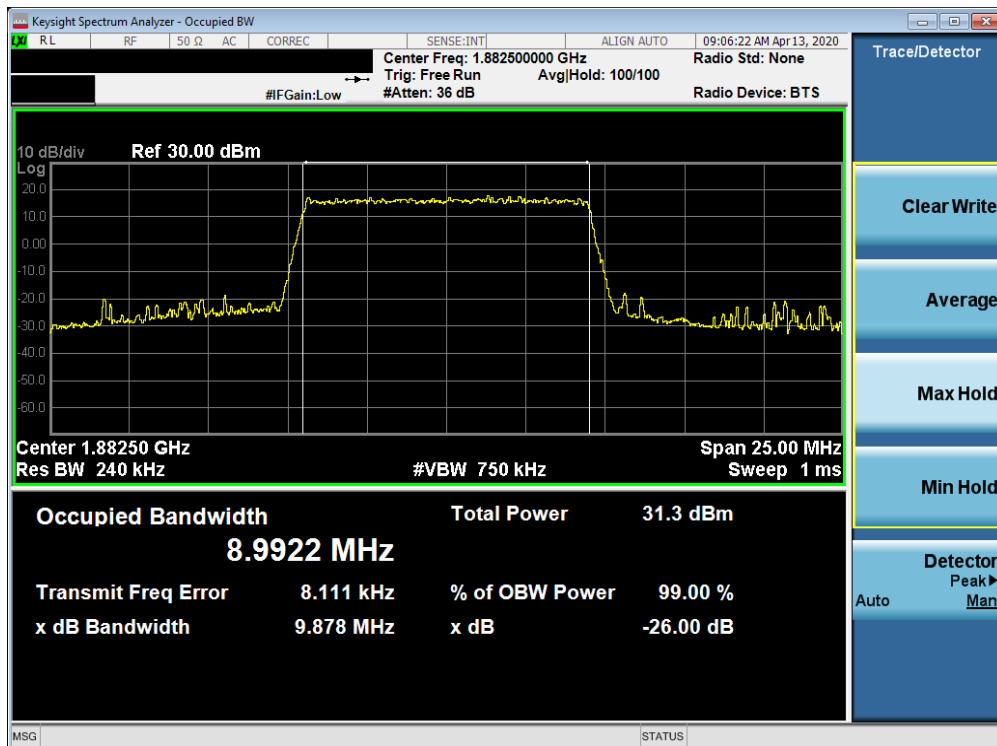


Plot 7-70. Occupied Bandwidth Plot (Band 25/2 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 52 of 438

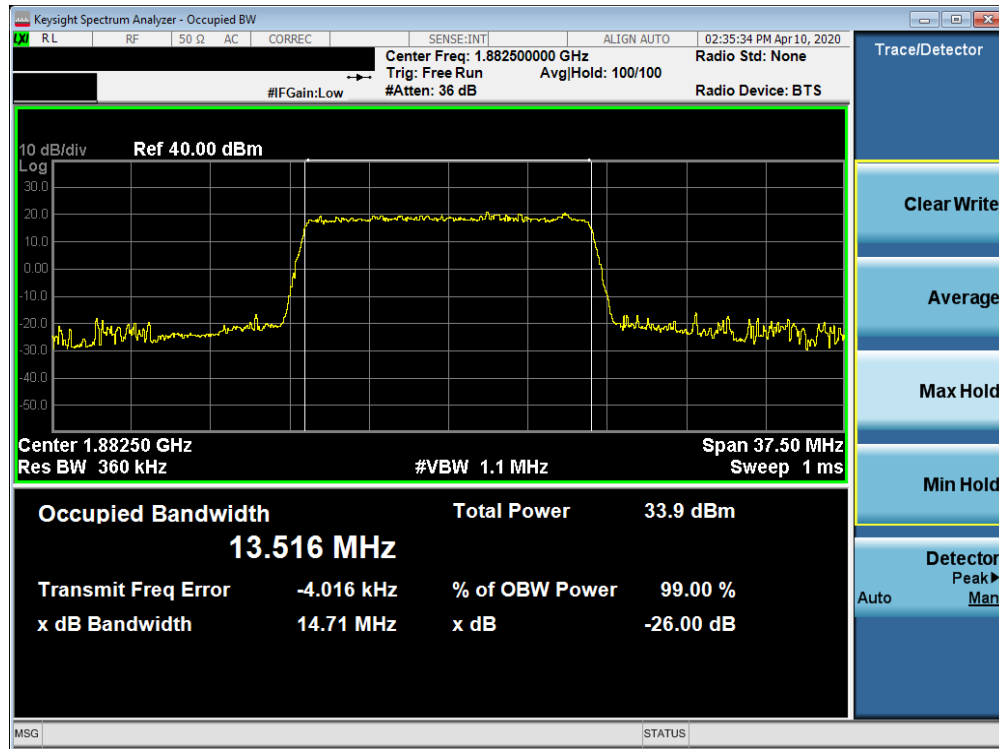


Plot 7-71. Occupied Bandwidth Plot (Band 25/2 - 10.0MHz 16-QAM - Full RB Configuration)

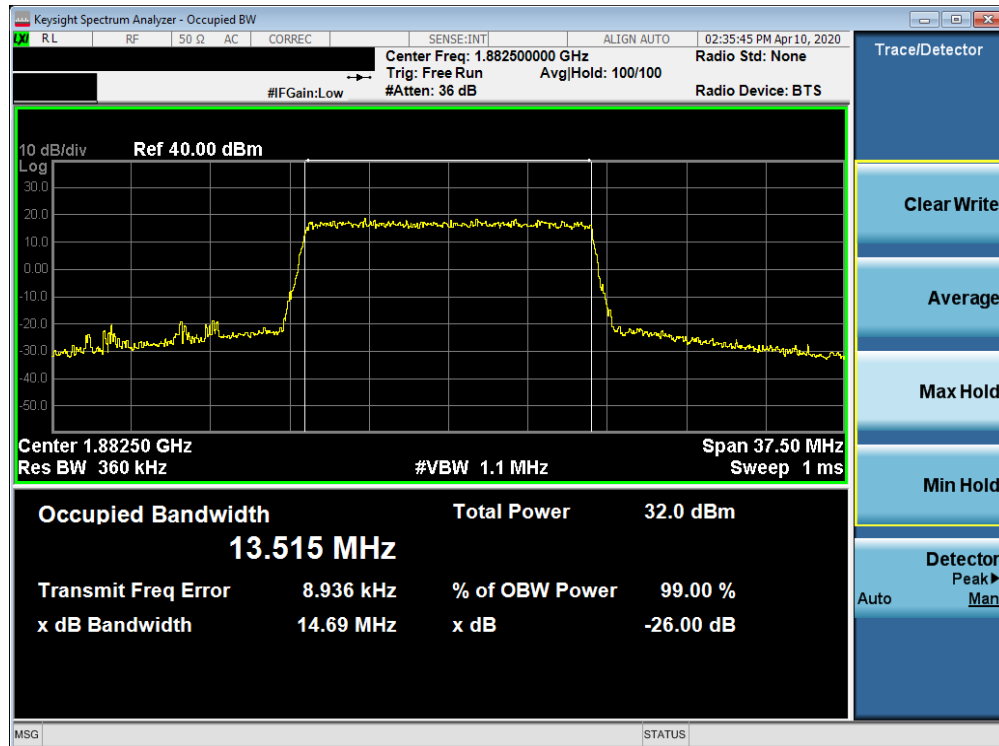


Plot 7-72. Occupied Bandwidth Plot (Band 25/2 - 10.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 53 of 438

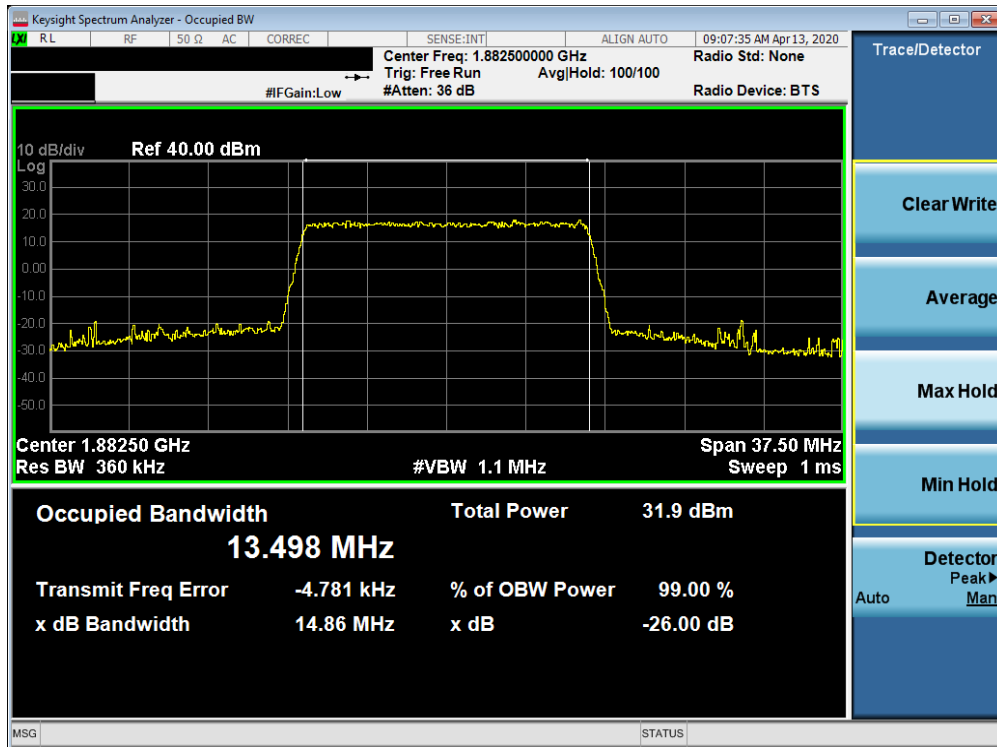


Plot 7-73. Occupied Bandwidth Plot (Band 25/2 - 15.0MHz QPSK - Full RB Configuration)

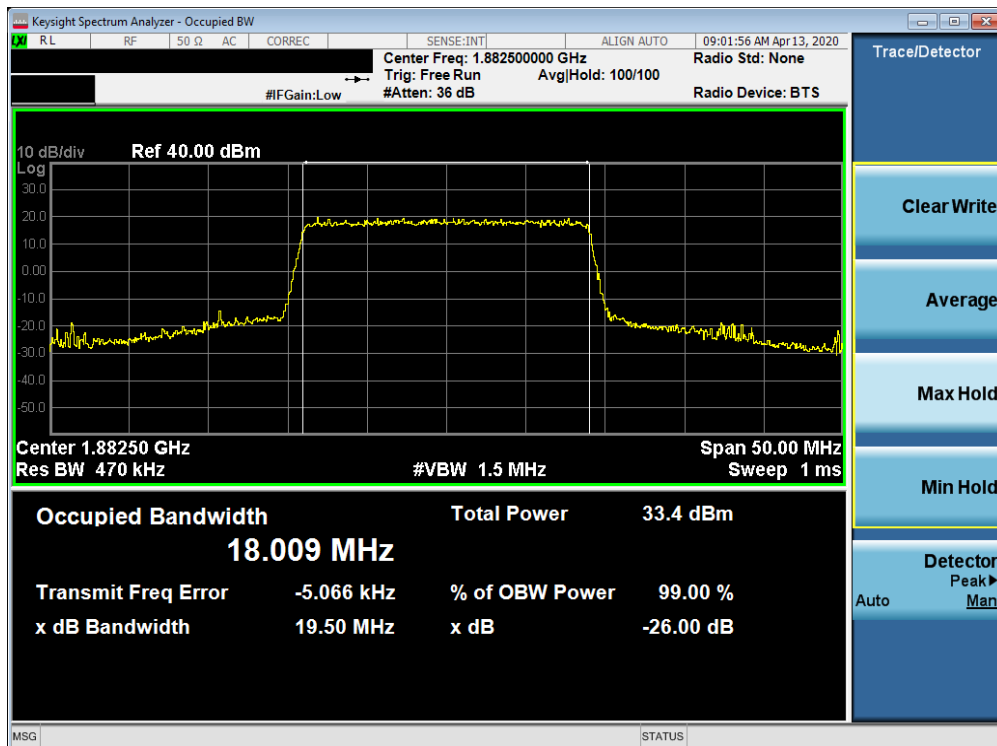


Plot 7-74. Occupied Bandwidth Plot (Band 25/2 - 15.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 54 of 438

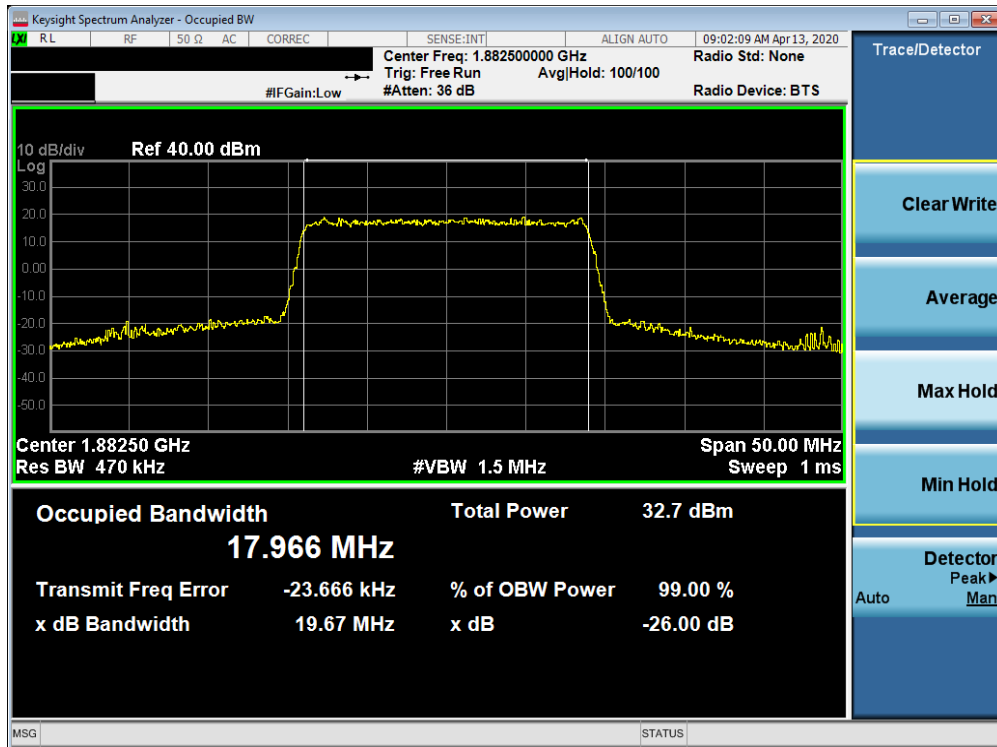


Plot 7-75. Occupied Bandwidth Plot (Band 25/2 - 15.0MHz 64-QAM - Full RB Configuration)

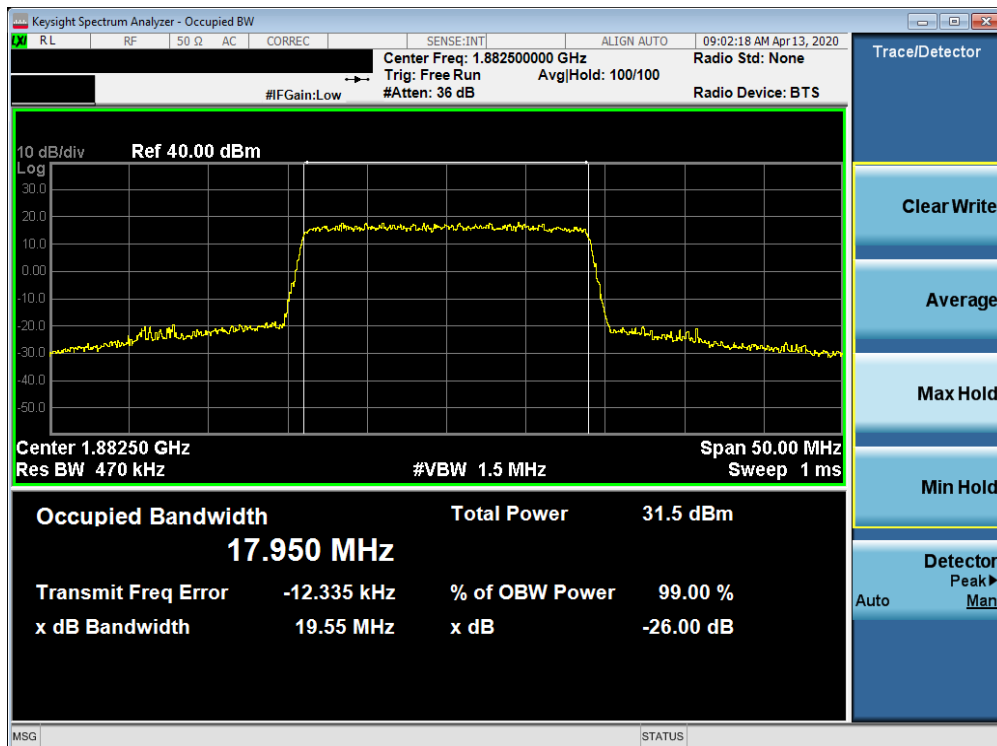


Plot 7-76. Occupied Bandwidth Plot (Band 25/2 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 55 of 438



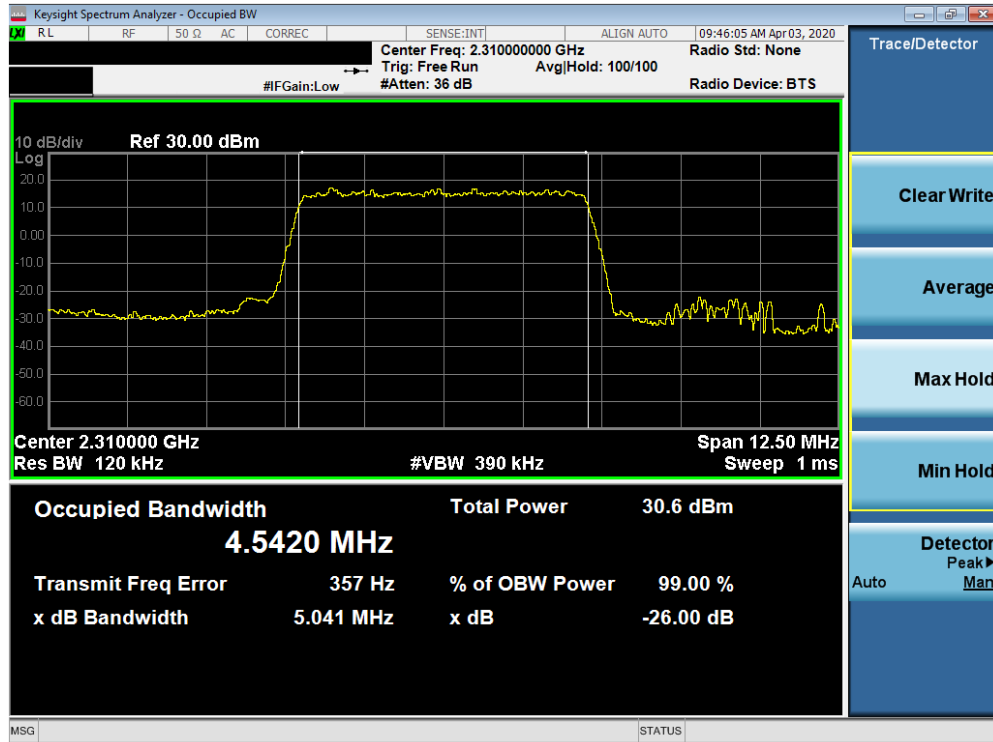
Plot 7-77. Occupied Bandwidth Plot (Band 25/2 - 20.0MHz 16-QAM - Full RB Configuration)



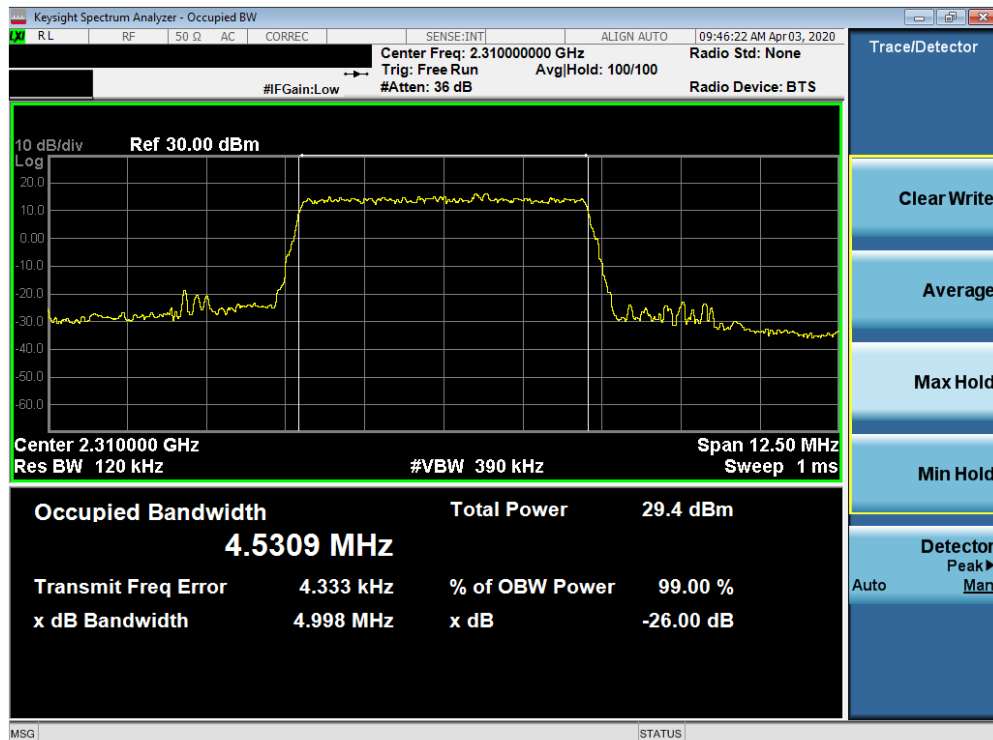
Plot 7-78. Occupied Bandwidth Plot (Band 25/2 - 20.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 56 of 438

Band 30

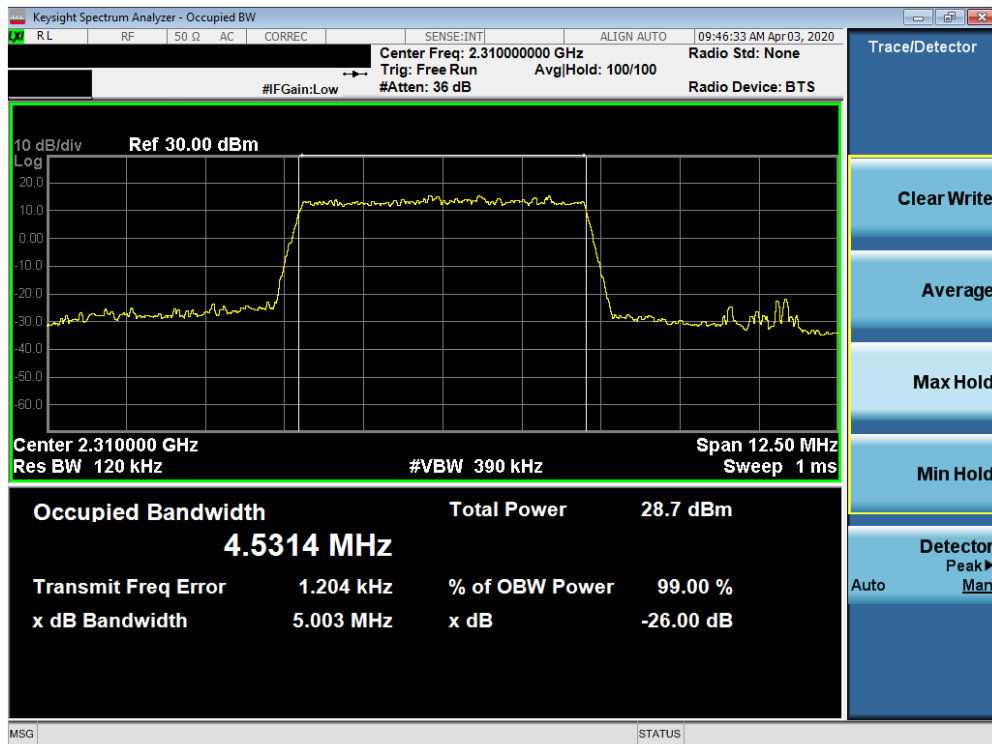


Plot 7-79. Occupied Bandwidth Plot (Band 30 - 5.0MHz QPSK - Full RB Configuration)

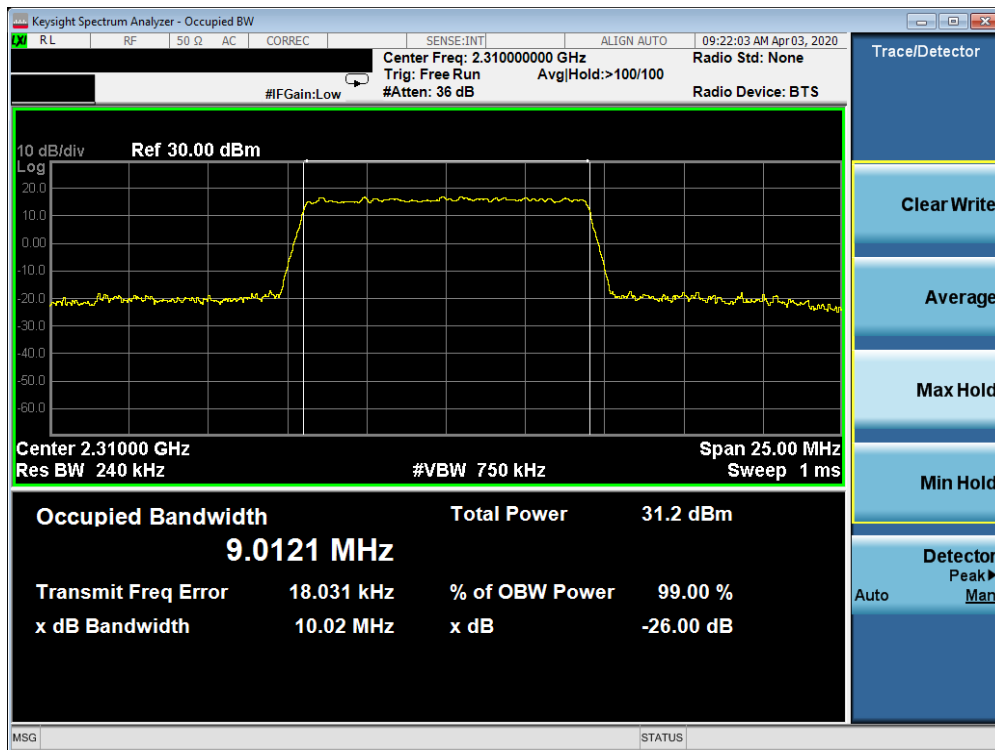


Plot 7-80. Occupied Bandwidth Plot (Band 30 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 57 of 438

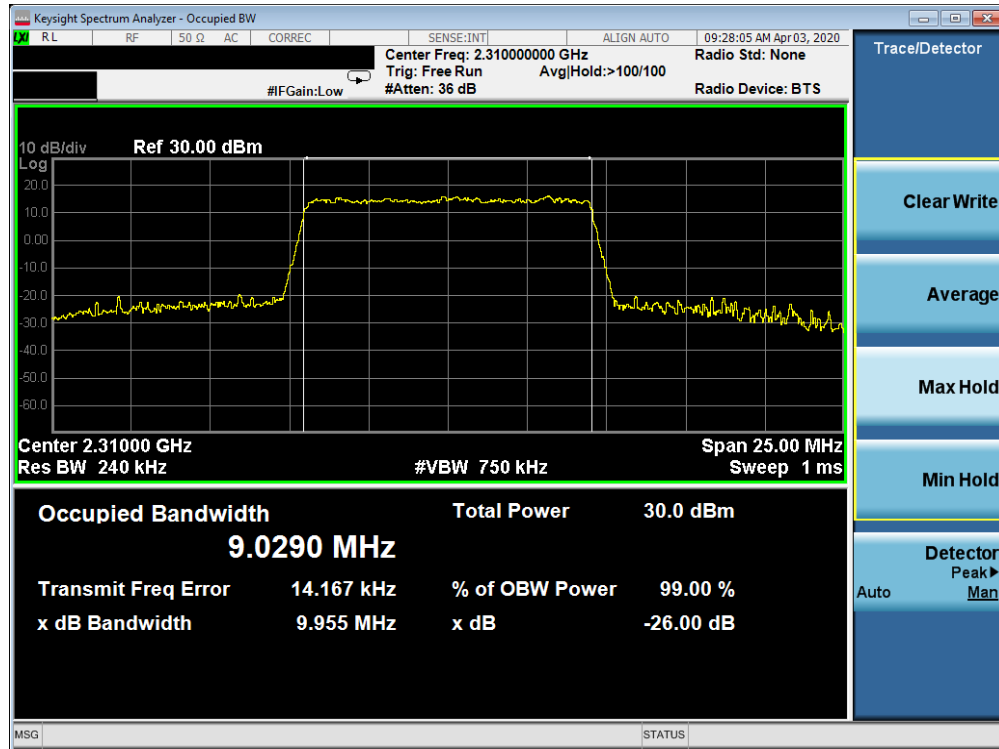


Plot 7-81. Occupied Bandwidth Plot (Band 30 - 5.0MHz 64-QAM - Full RB Configuration)

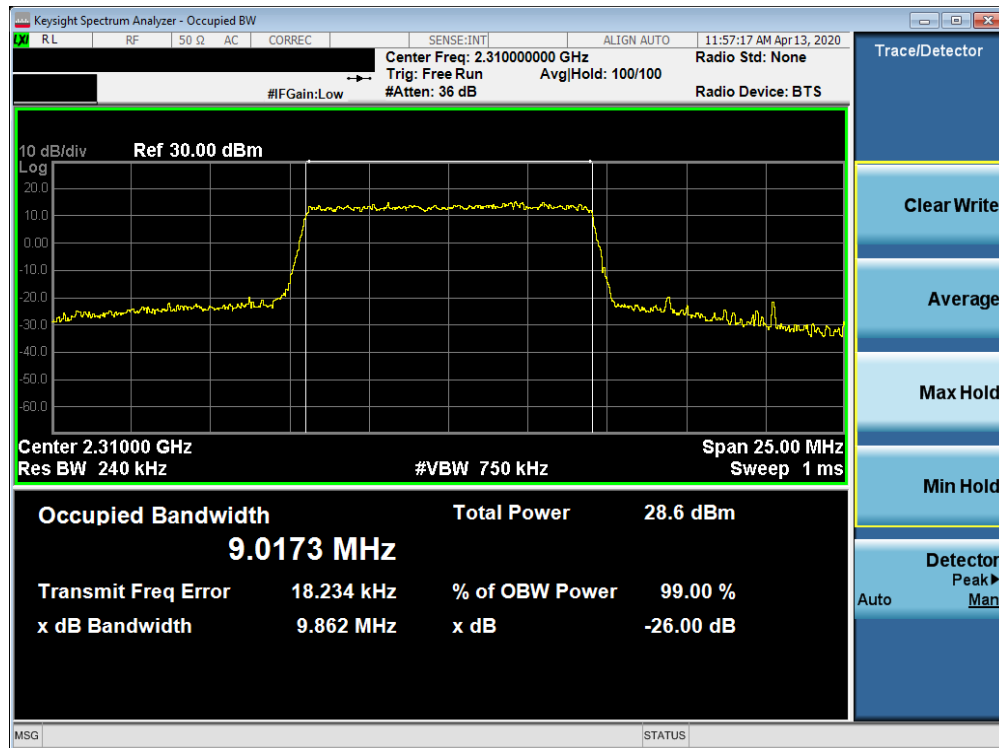


Plot 7-82. Occupied Bandwidth Plot (Band 30 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 58 of 438



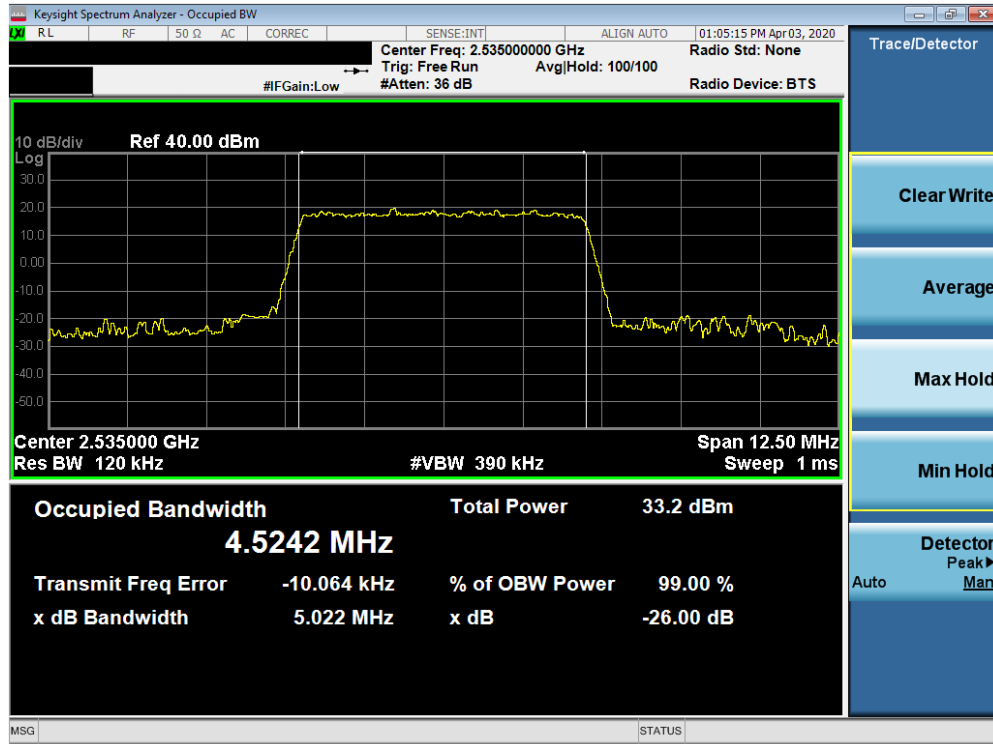
Plot 7-83. Occupied Bandwidth Plot (Band 30 - 10.0MHz 16-QAM - Full RB Configuration)



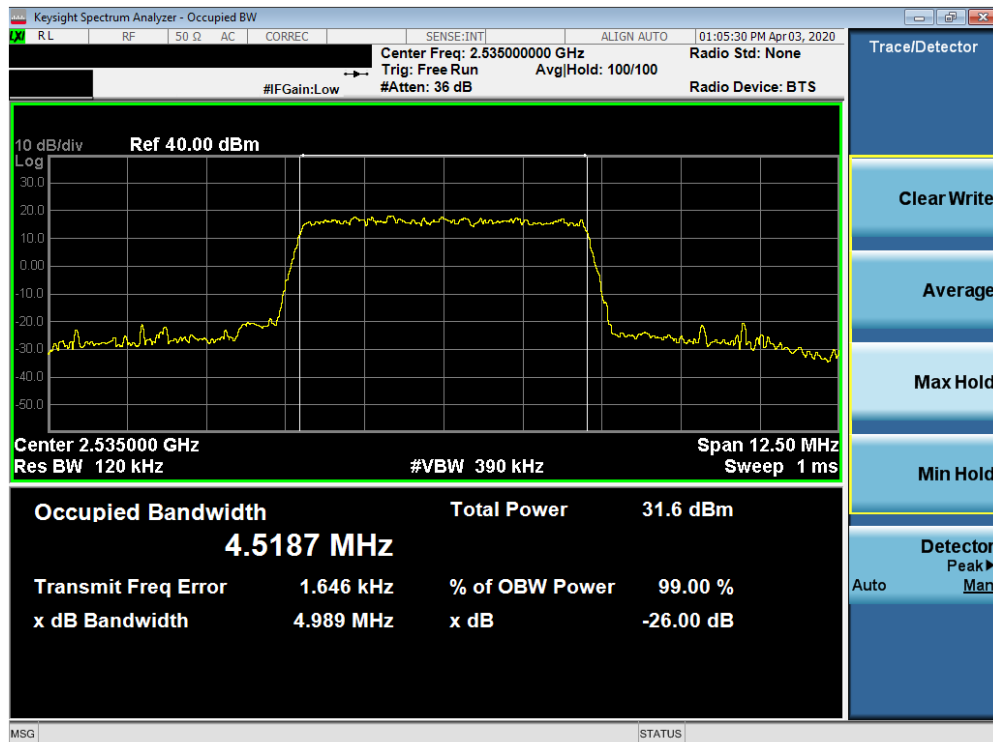
Plot 7-84. Occupied Bandwidth Plot (Band 30 - 10.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 59 of 438

Band 7

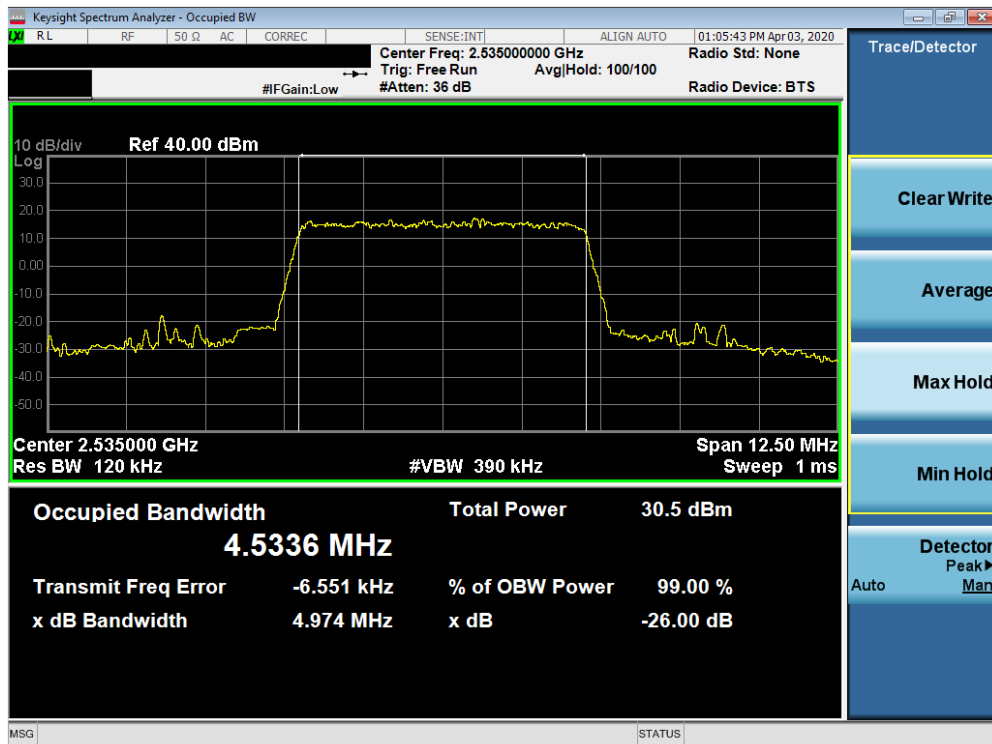


Plot 7-85. Occupied Bandwidth Plot (Band 7 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-86. Occupied Bandwidth Plot (Band 7 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 60 of 438

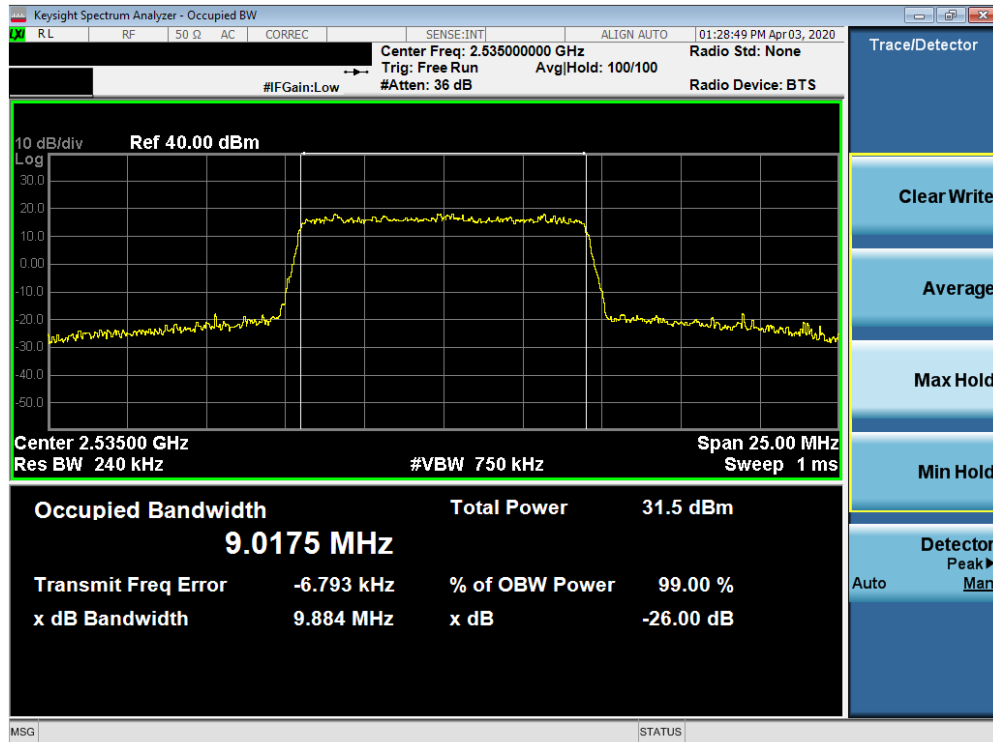


Plot 7-87. Occupied Bandwidth Plot (Band 7 - 5.0MHz 64-QAM - Full RB Configuration)



Plot 7-88. Occupied Bandwidth Plot (Band 7 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 61 of 438

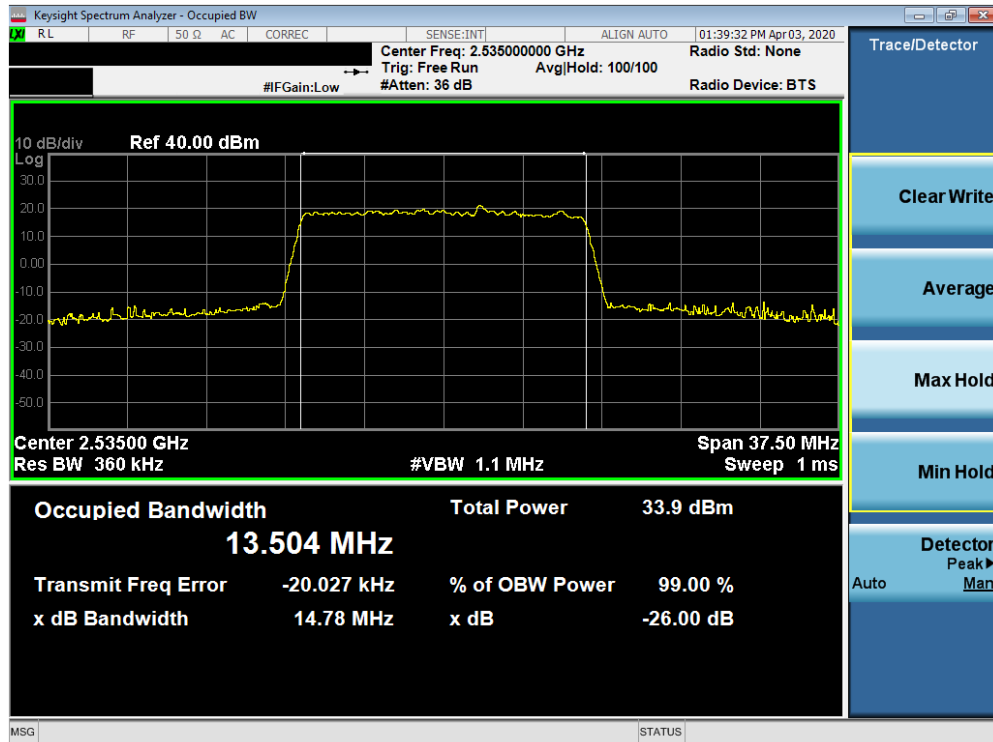


Plot 7-89. Occupied Bandwidth Plot (Band 7 - 10.0MHz 16-QAM - Full RB Configuration)



Plot 7-90. Occupied Bandwidth Plot (Band 7 - 10.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 62 of 438

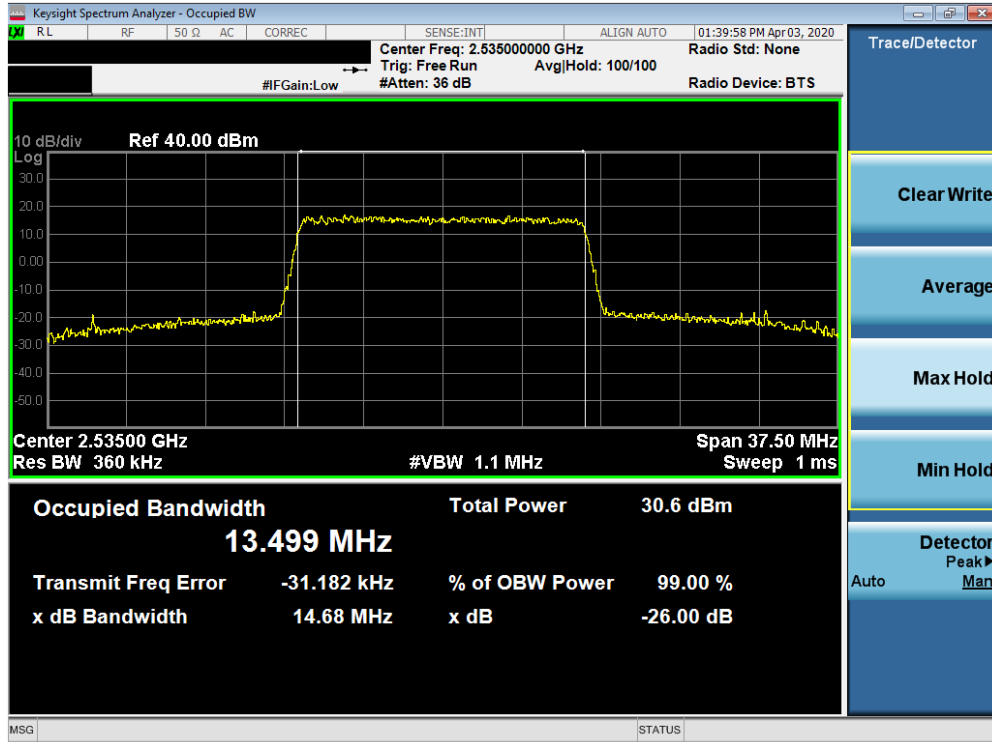


Plot 7-91. Occupied Bandwidth Plot (Band 7 - 15.0MHz QPSK - Full RB Configuration)

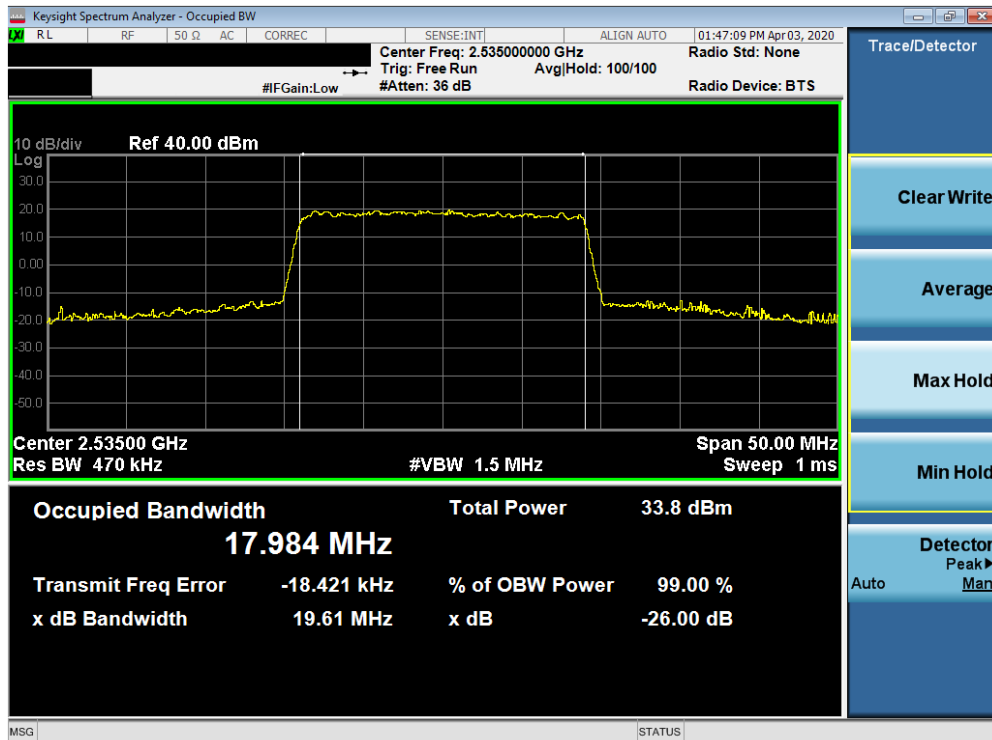


Plot 7-92. Occupied Bandwidth Plot (Band 7 - 15.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 63 of 438

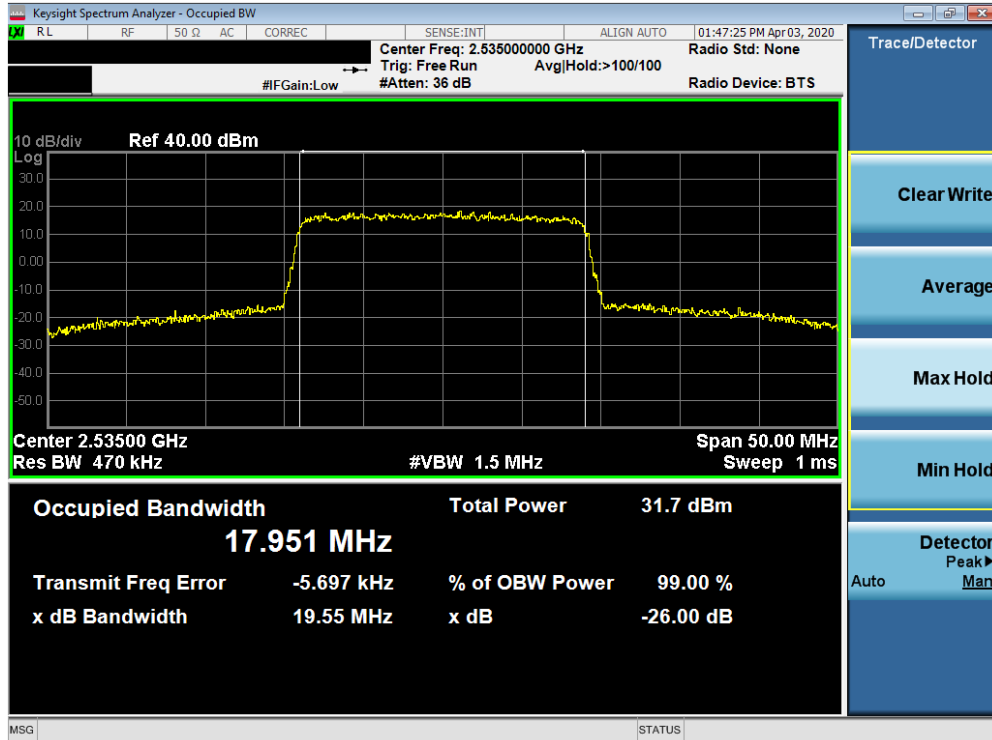


Plot 7-93. Occupied Bandwidth Plot (Band 7 - 15.0MHz 64-QAM - Full RB Configuration)

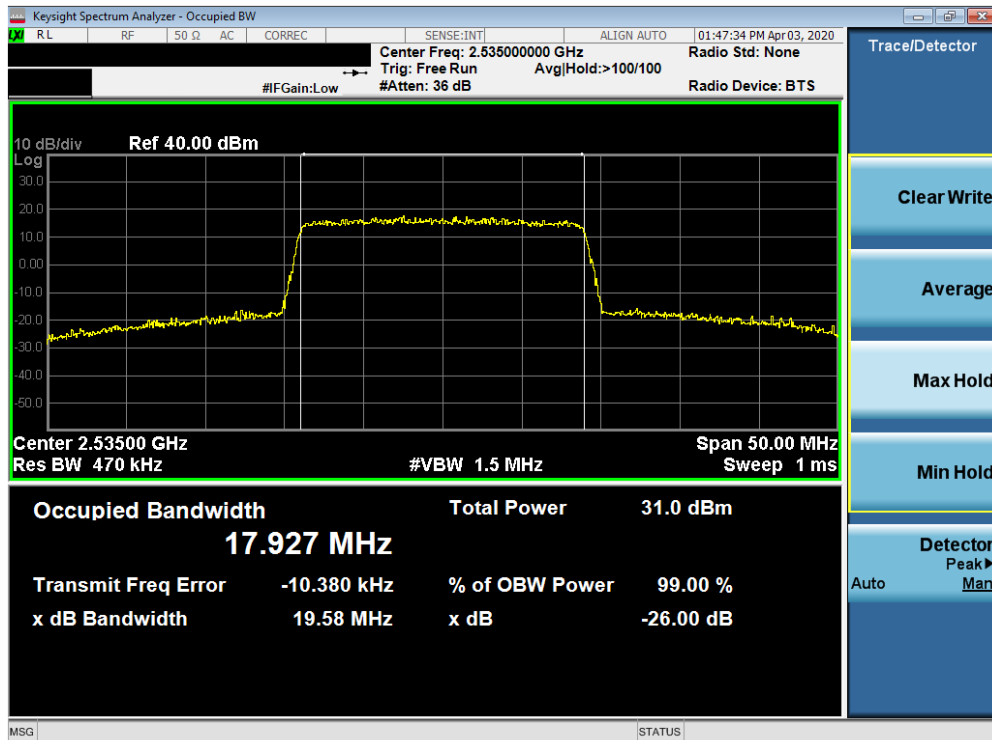


Plot 7-94. Occupied Bandwidth Plot (Band 7 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 64 of 438



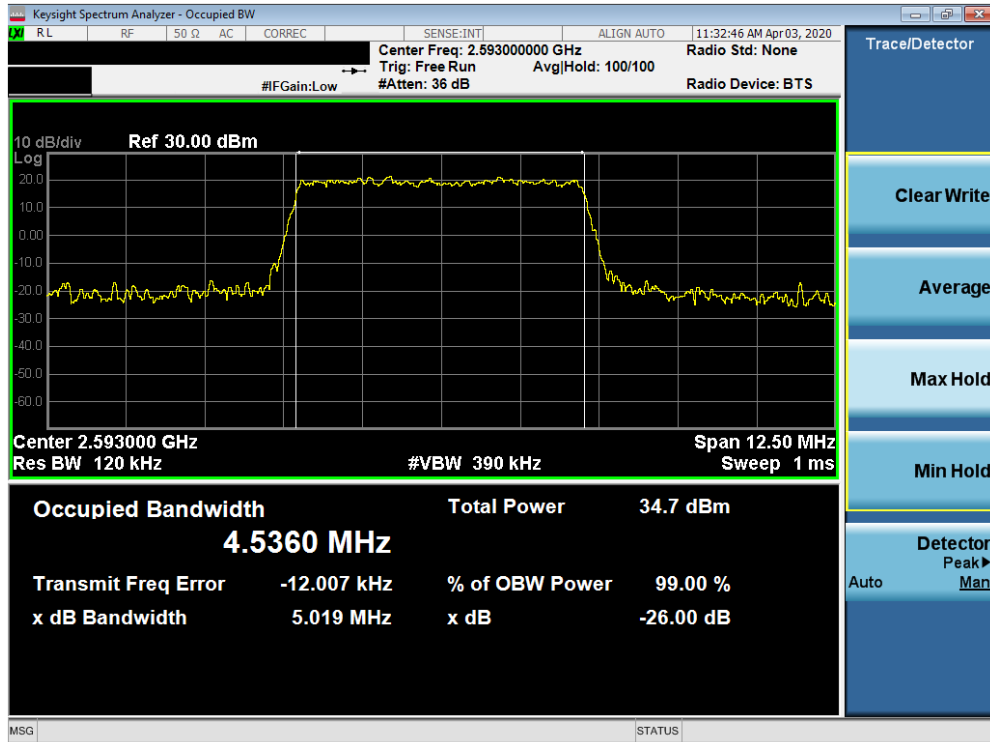
Plot 7-95. Occupied Bandwidth Plot (Band 7 - 20.0MHz 16-QAM - Full RB Configuration)



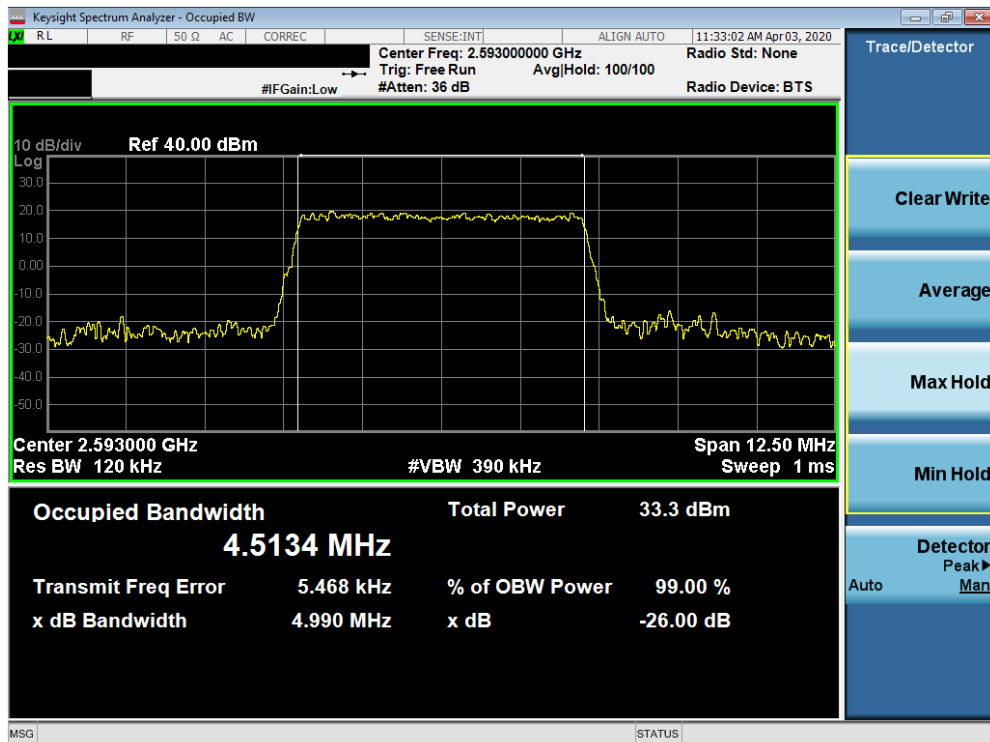
Plot 7-96. Occupied Bandwidth Plot (Band 7 - 20.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 65 of 438

Band 41



Plot 7-97. Occupied Bandwidth Plot (Band 41 - 5.0MHz QPSK - Full RB Configuration)

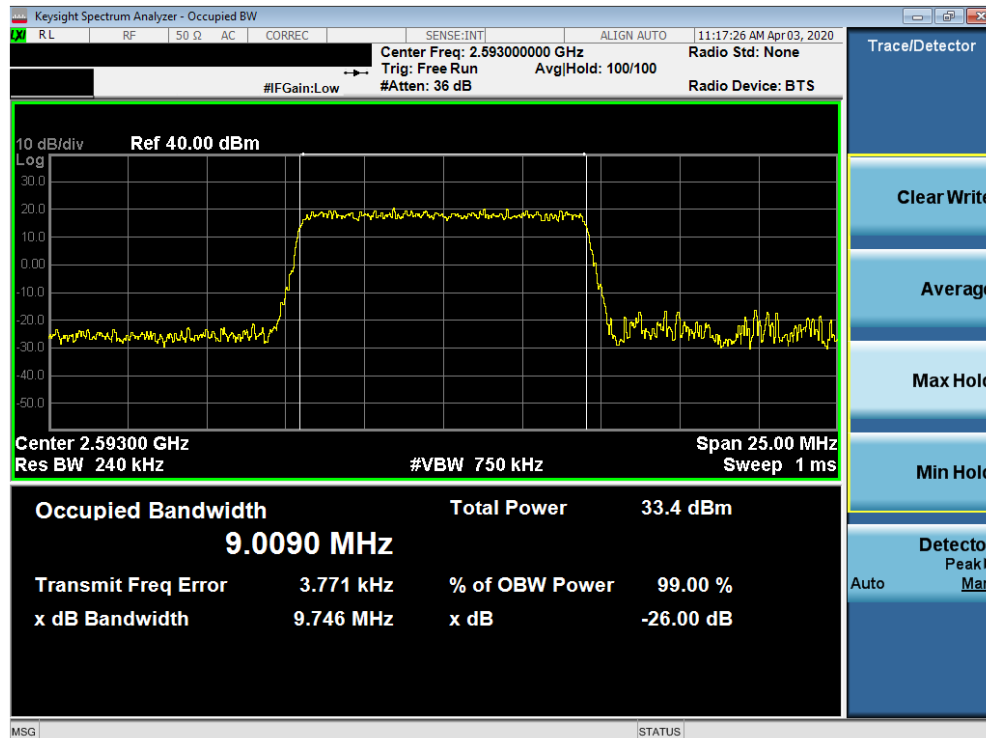


Plot 7-98. Occupied Bandwidth Plot (Band 41 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 66 of 438

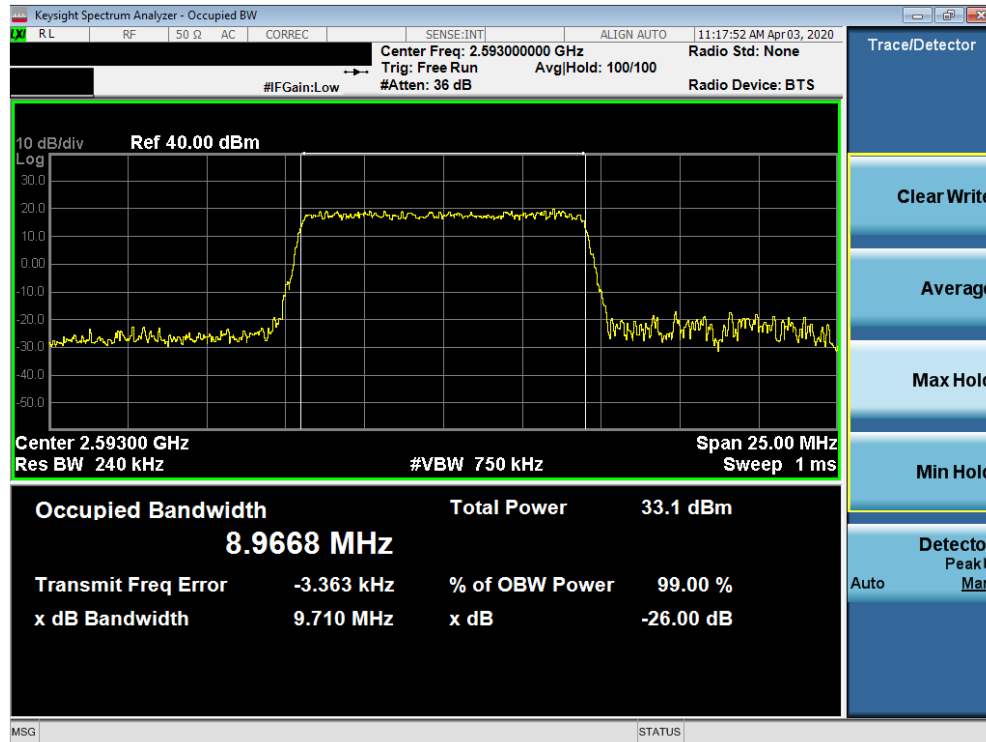


Plot 7-99. Occupied Bandwidth Plot (Band 41 - 5.0MHz 64-QAM - Full RB Configuration)

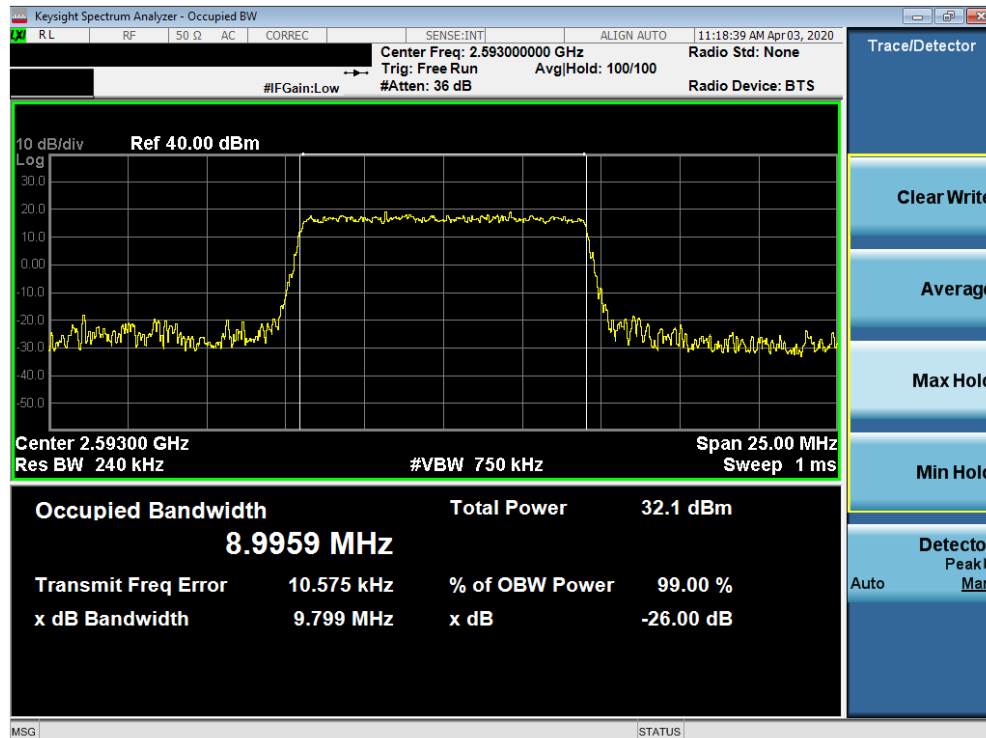


Plot 7-100. Occupied Bandwidth Plot (Band 41 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 67 of 438

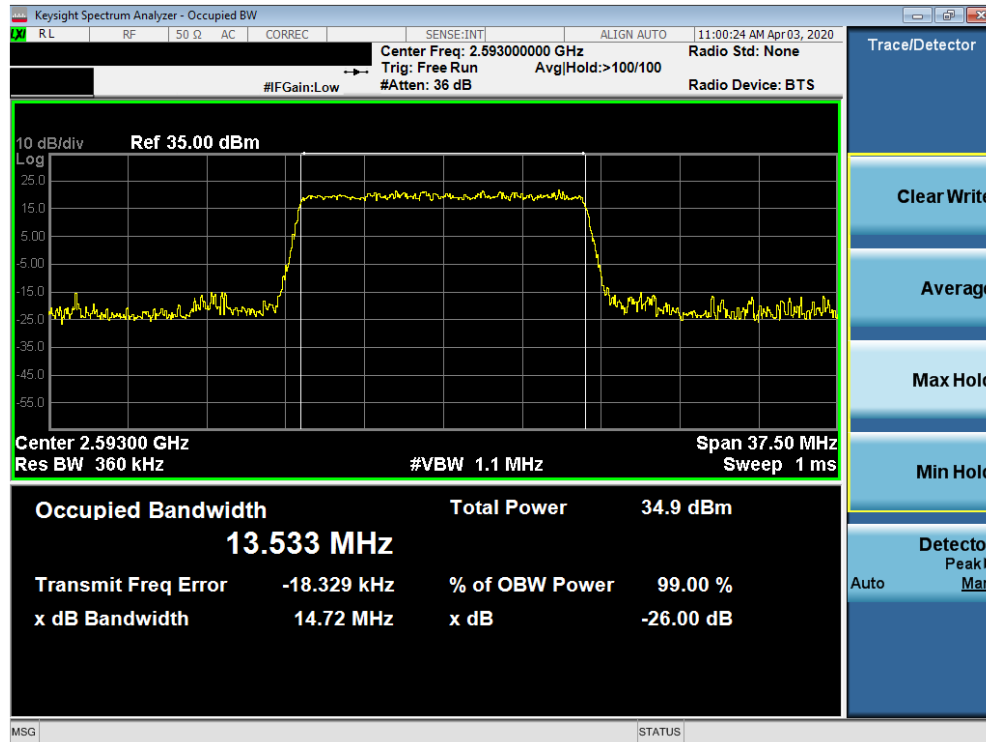


Plot 7-101. Occupied Bandwidth Plot (Band 41 - 10.0MHz 16-QAM - Full RB Configuration)

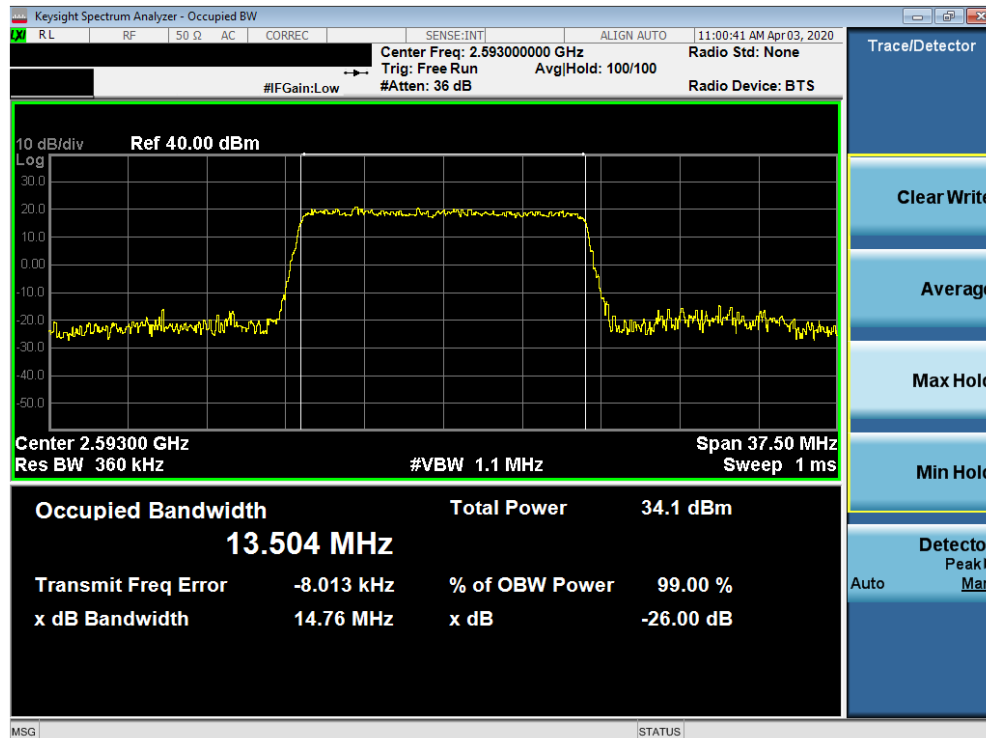


Plot 7-102. Occupied Bandwidth Plot (Band 41 - 10.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 68 of 438

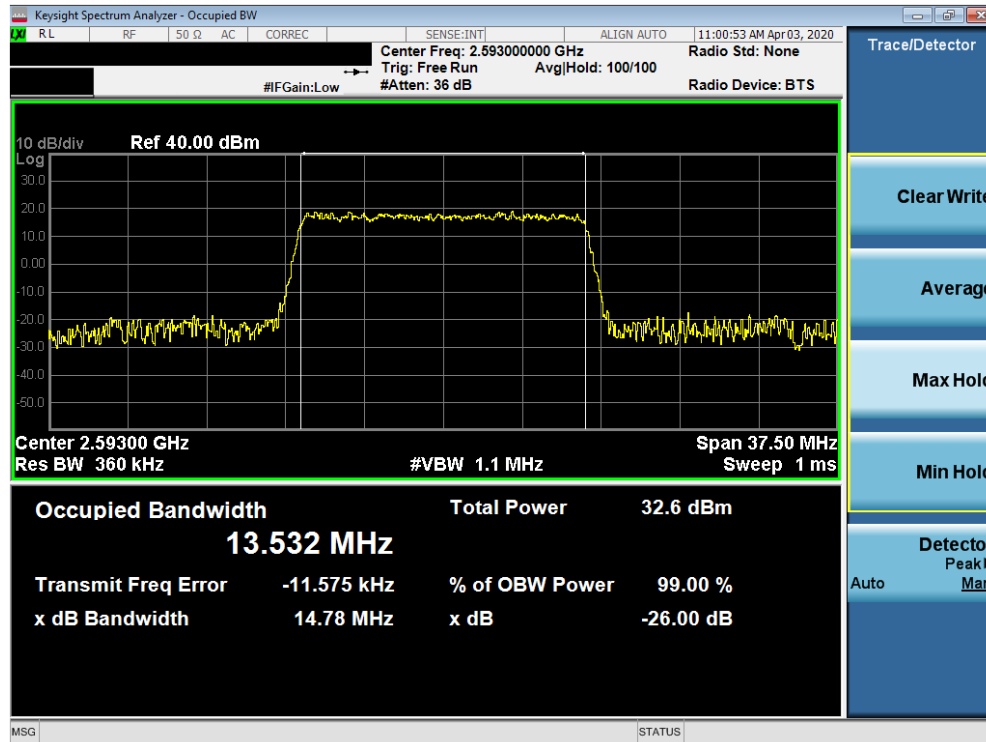


Plot 7-103. Occupied Bandwidth Plot (Band 41 - 15.0MHz QPSK - Full RB Configuration)

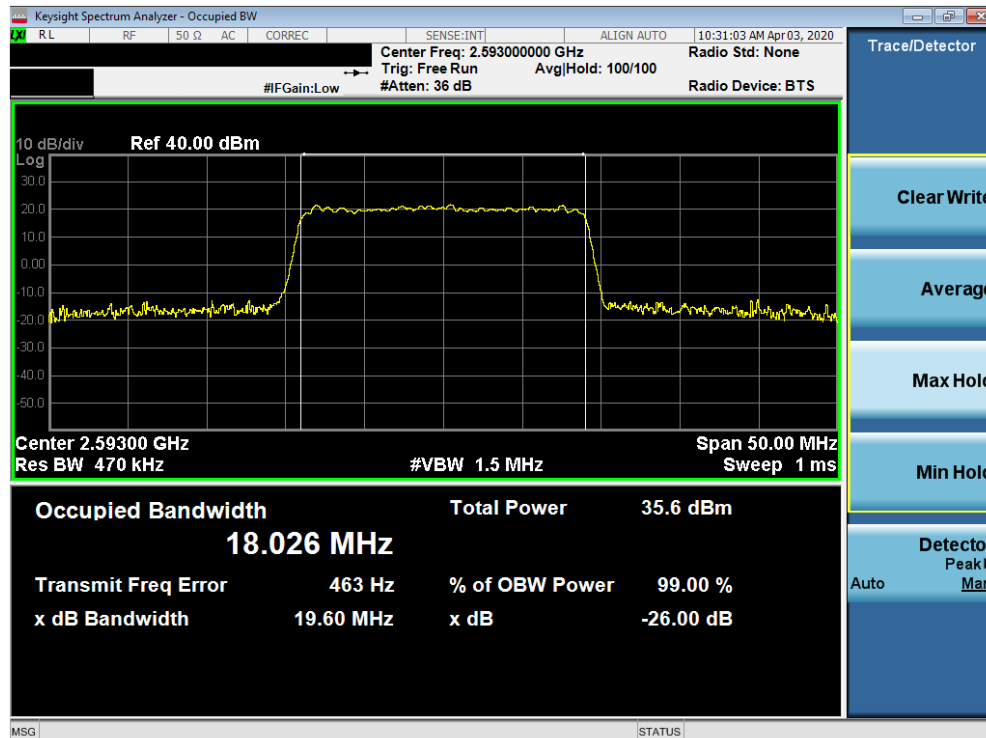


Plot 7-104. Occupied Bandwidth Plot (Band 41 - 15.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 69 of 438

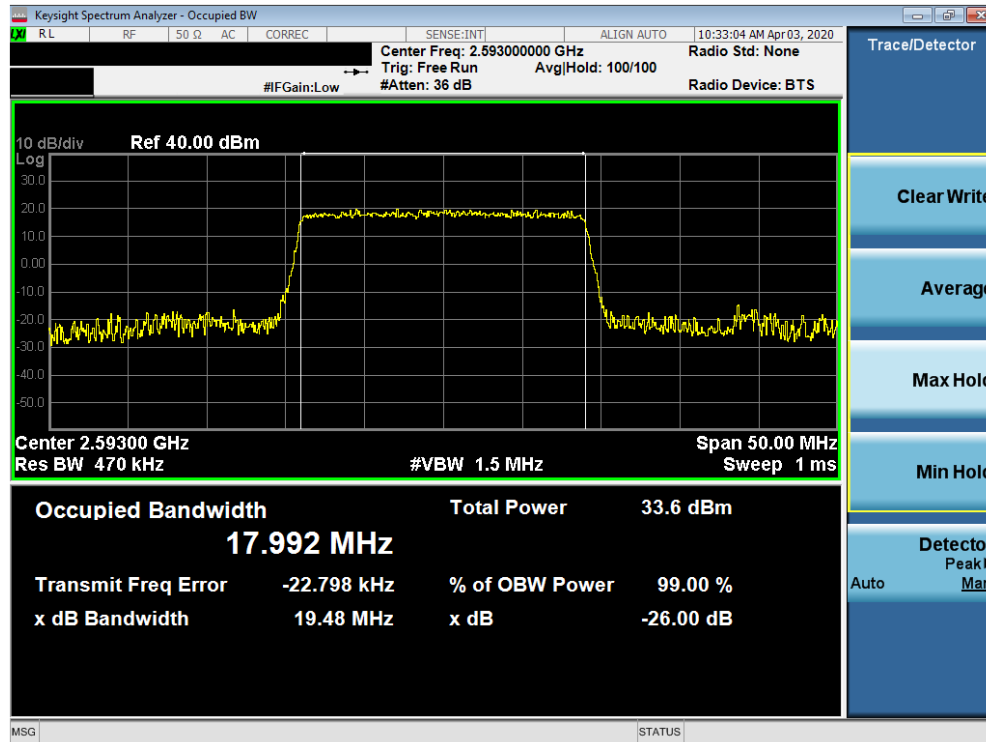


Plot 7-105. Occupied Bandwidth Plot (Band 41 - 15.0MHz 64-QAM - Full RB Configuration)

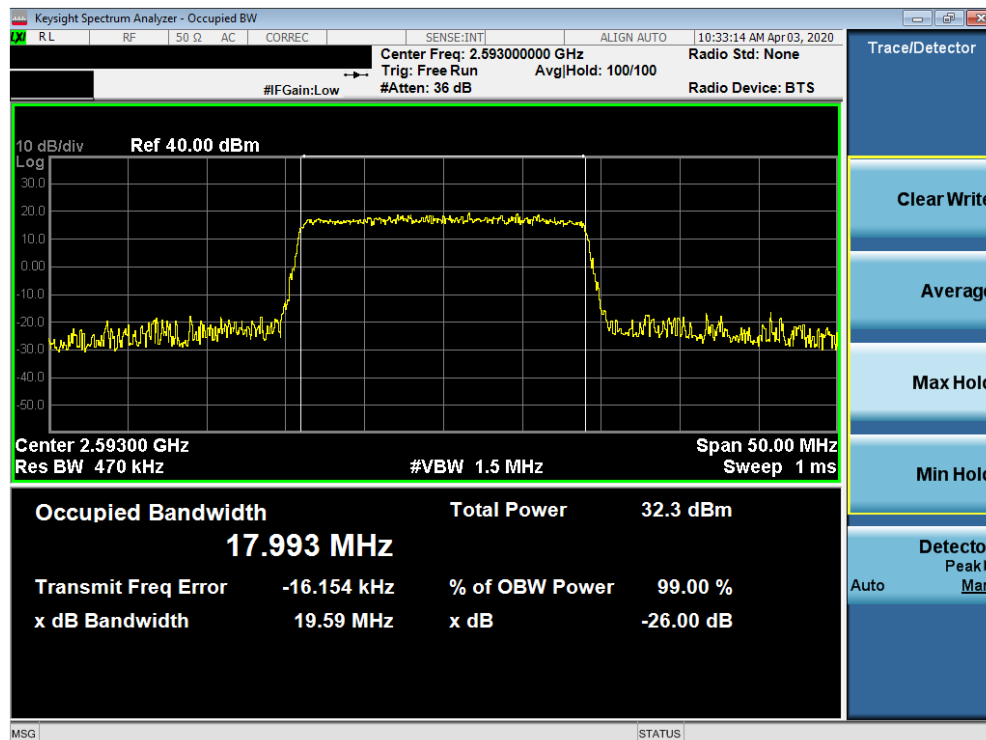


Plot 7-106. Occupied Bandwidth Plot (Band 41 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 70 of 438



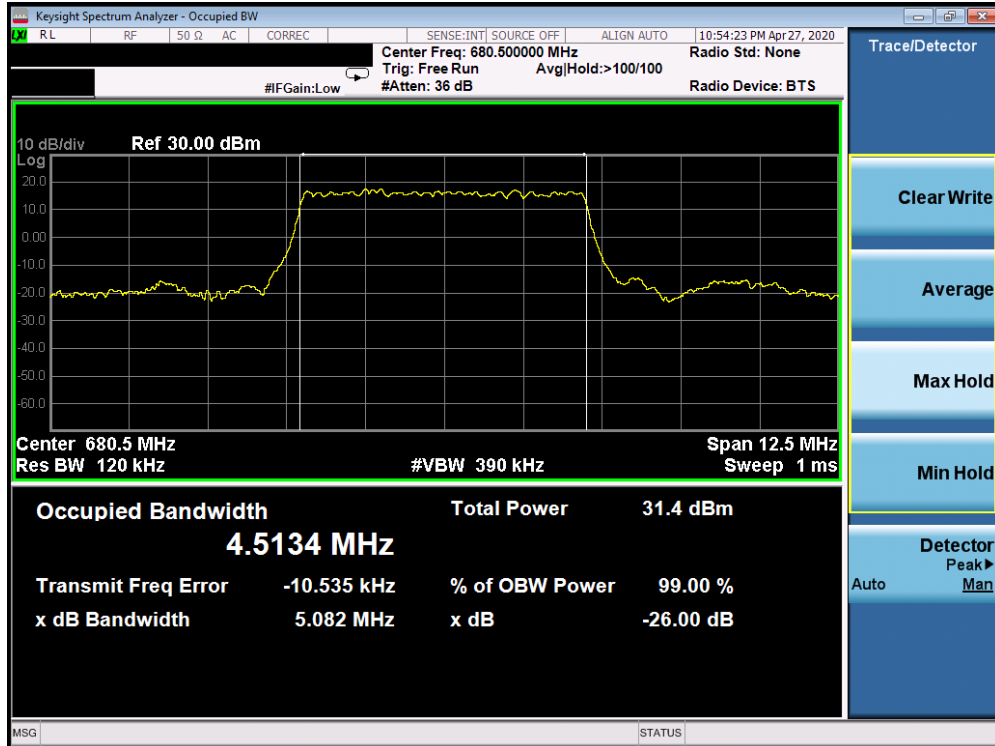
Plot 7-107. Occupied Bandwidth Plot (Band 41 - 20.0MHz 16-QAM - Full RB Configuration)



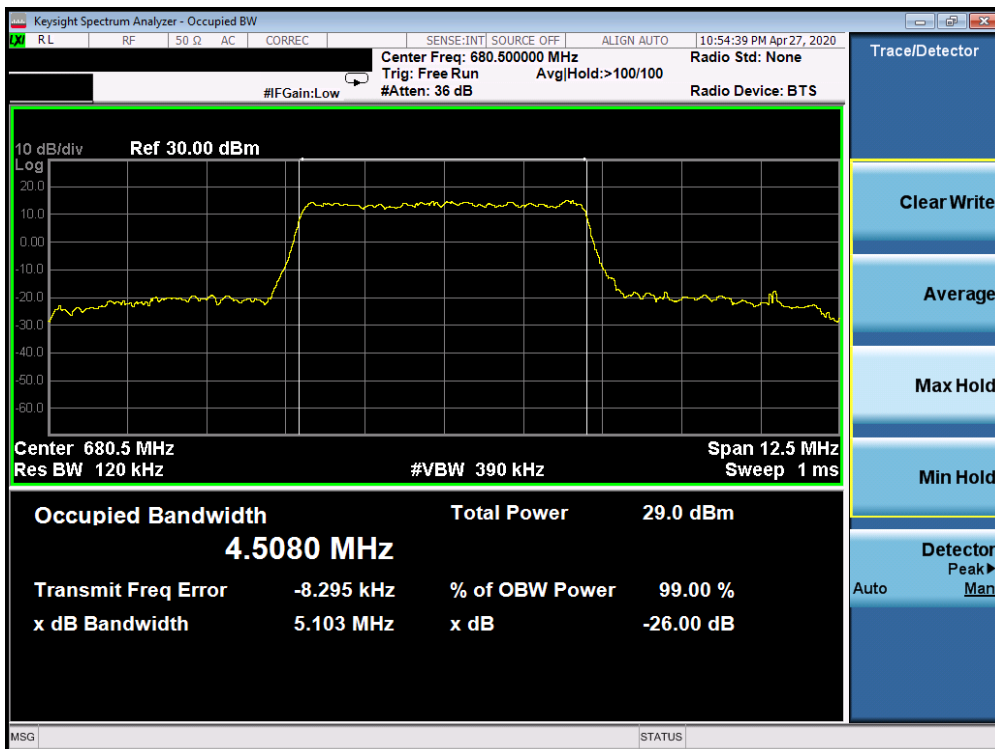
Plot 7-108. Occupied Bandwidth Plot (Band 41 - 20.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 71 of 438

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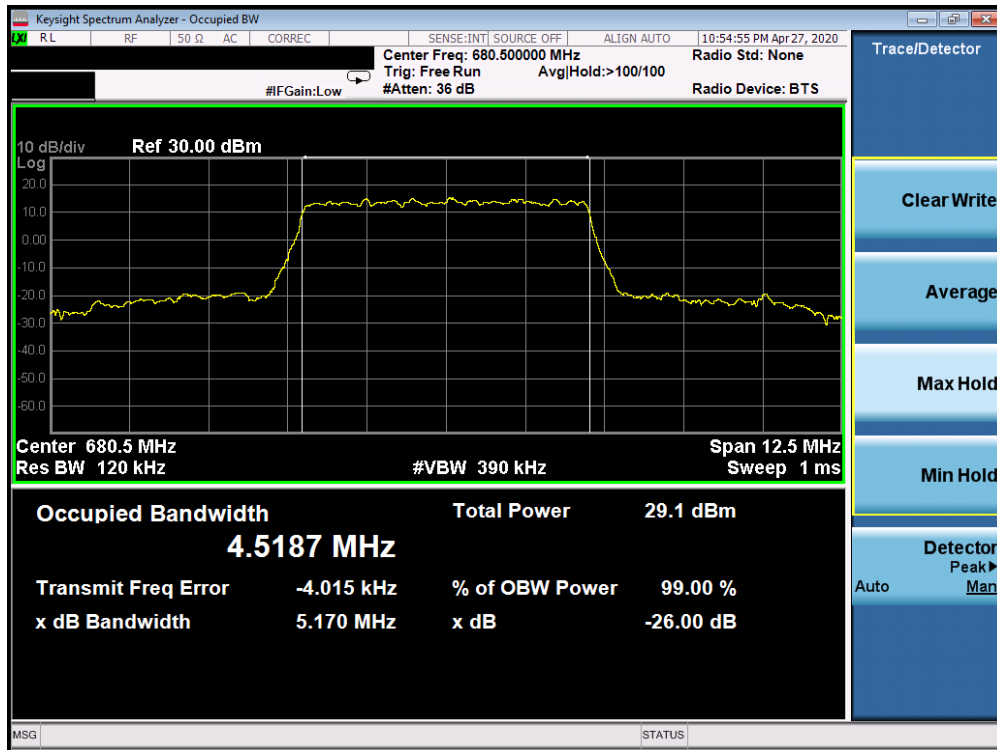


Plot 7-109. Occupied Bandwidth Plot (5G sub6 n71 - 5.0MHz BPSK - Full RB Configuration)

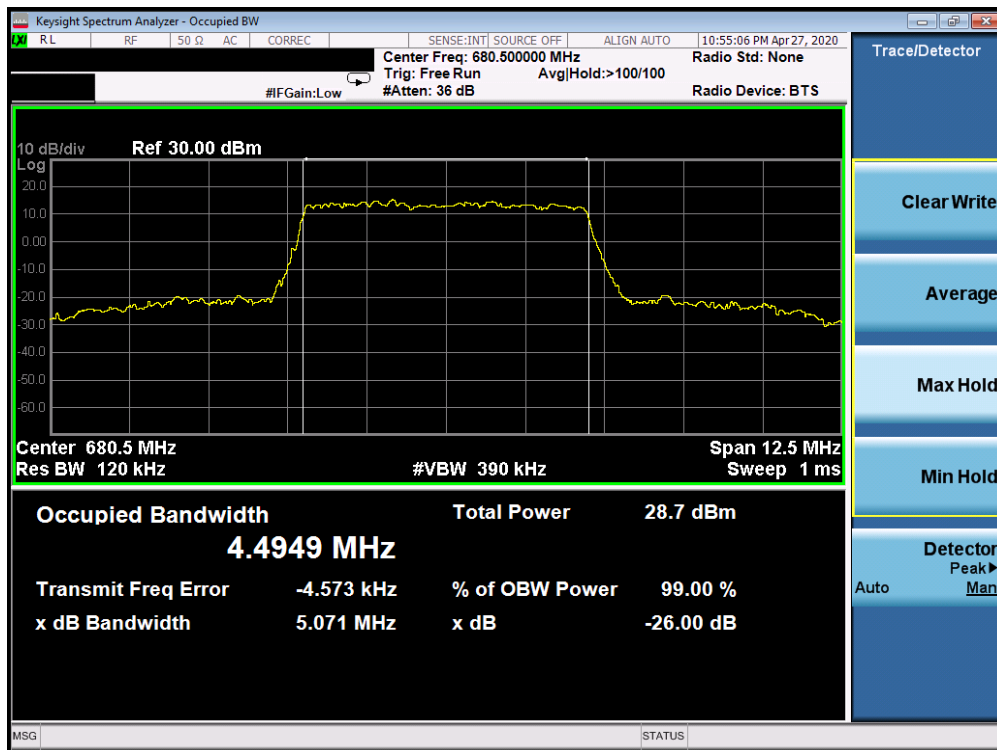


Plot 7-110. Occupied Bandwidth Plot (5G sub6 n71 - 5.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 72 of 438

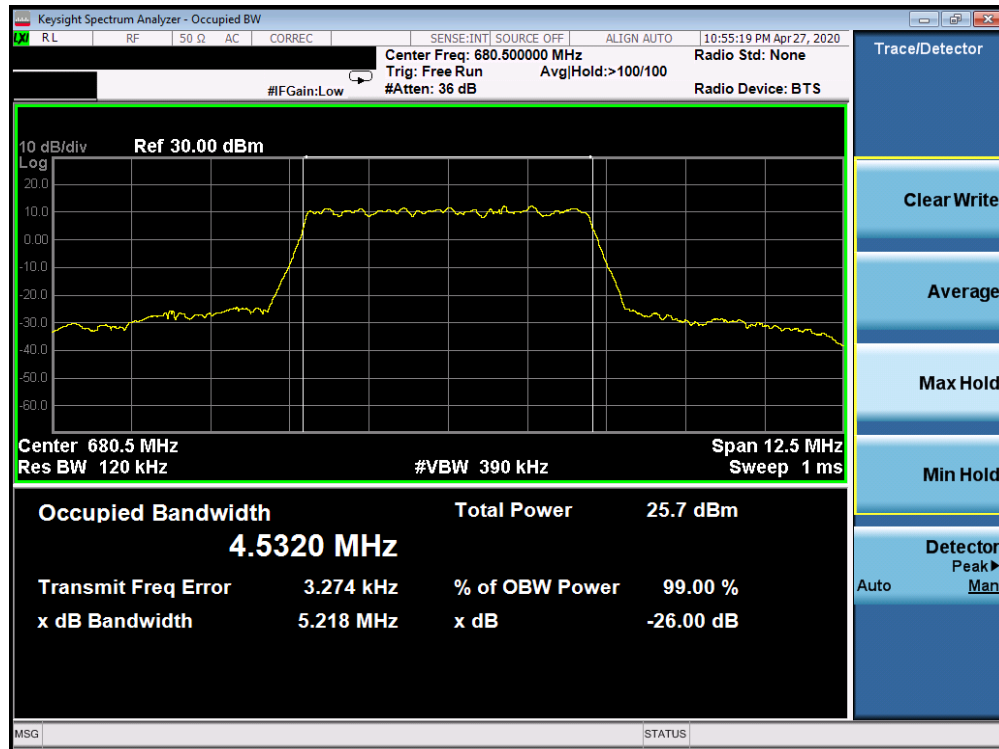


Plot 7-111. Occupied Bandwidth Plot (5G sub6 n71 - 5.0MHz 16-QAM - Full RB Configuration)

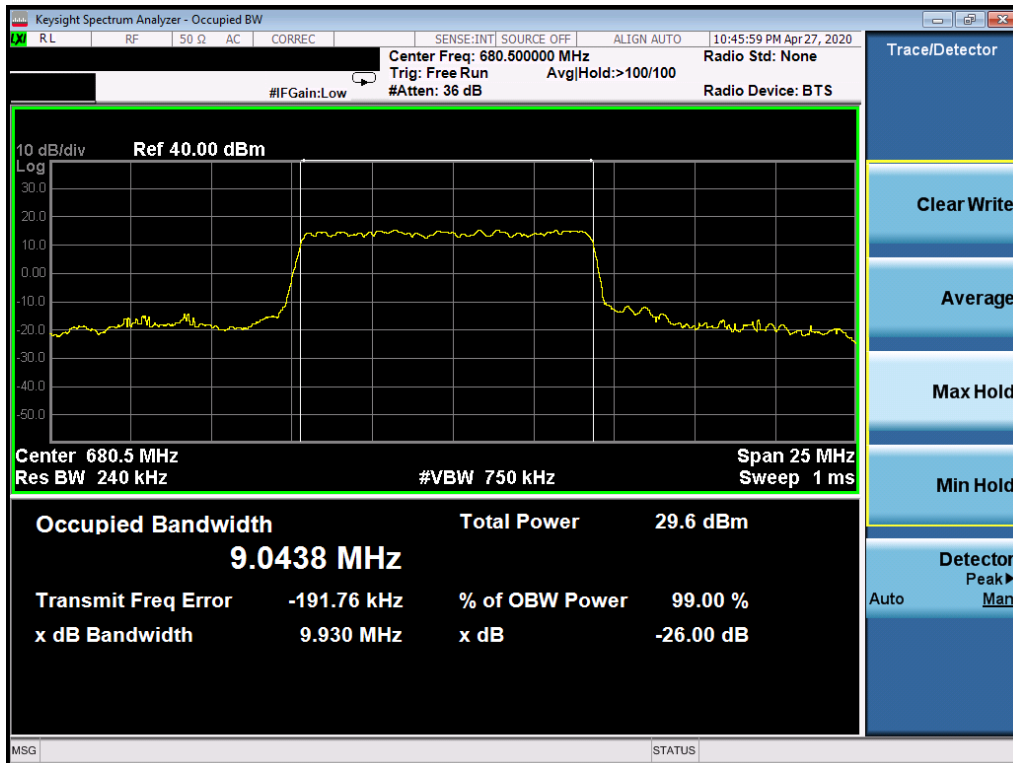


Plot 7-112. Occupied Bandwidth Plot (5G sub6 n71 - 5.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 73 of 438

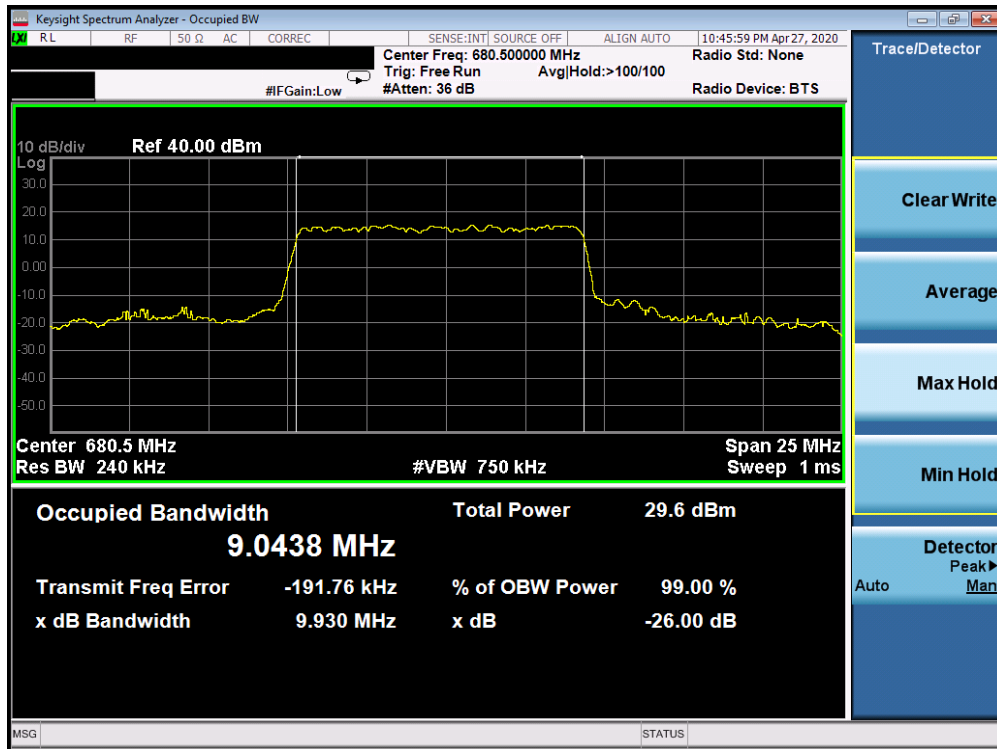


Plot 7-113. Occupied Bandwidth Plot (5G sub6 n71 - 5.0MHz 256-QAM - Full RB Configuration)

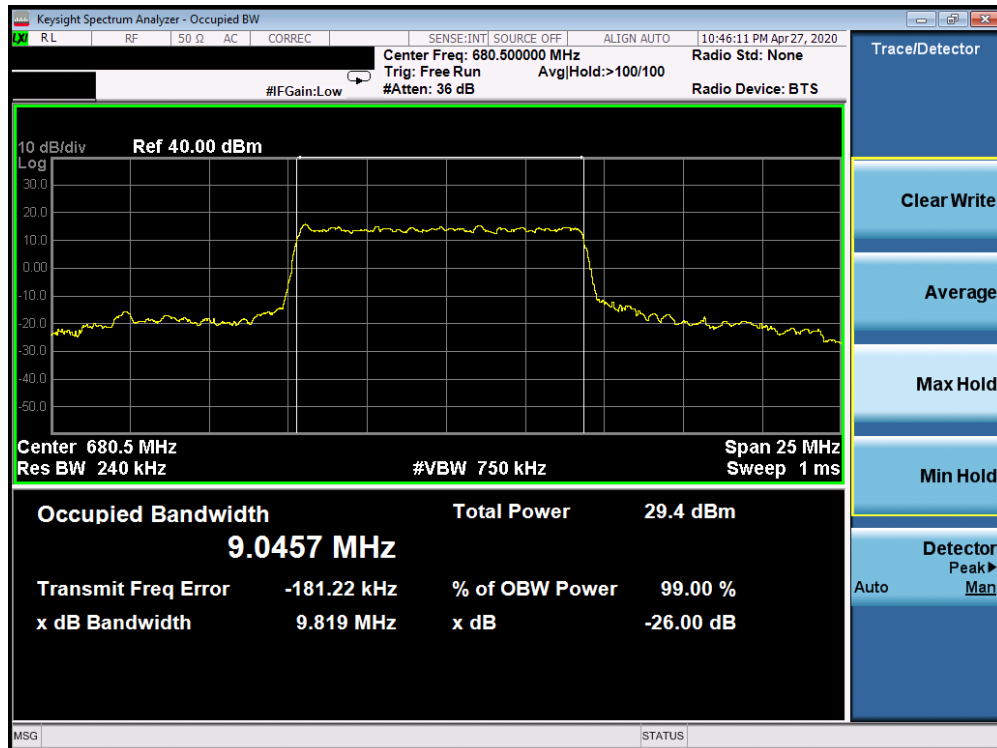


Plot 7-114. Occupied Bandwidth Plot (5G sub6 n71 - 10.0MHz BPSK - Full RB Configuration)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 74 of 438

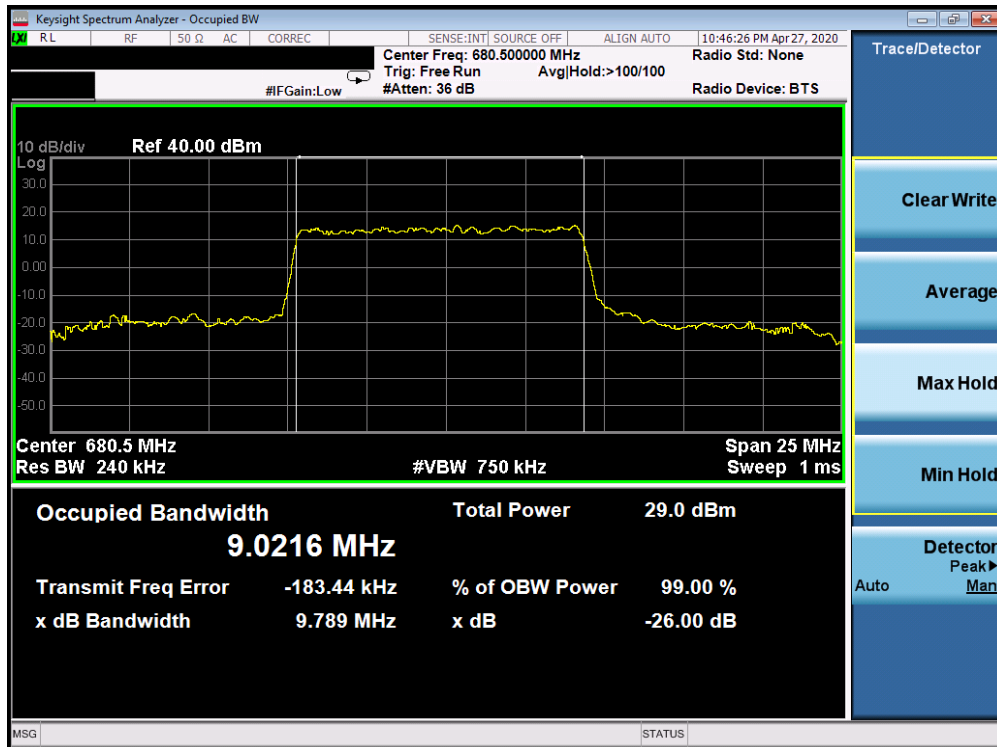


Plot 7-115. Occupied Bandwidth Plot (5G sub6 n71 - 10.0MHz QPSK - Full RB Configuration)

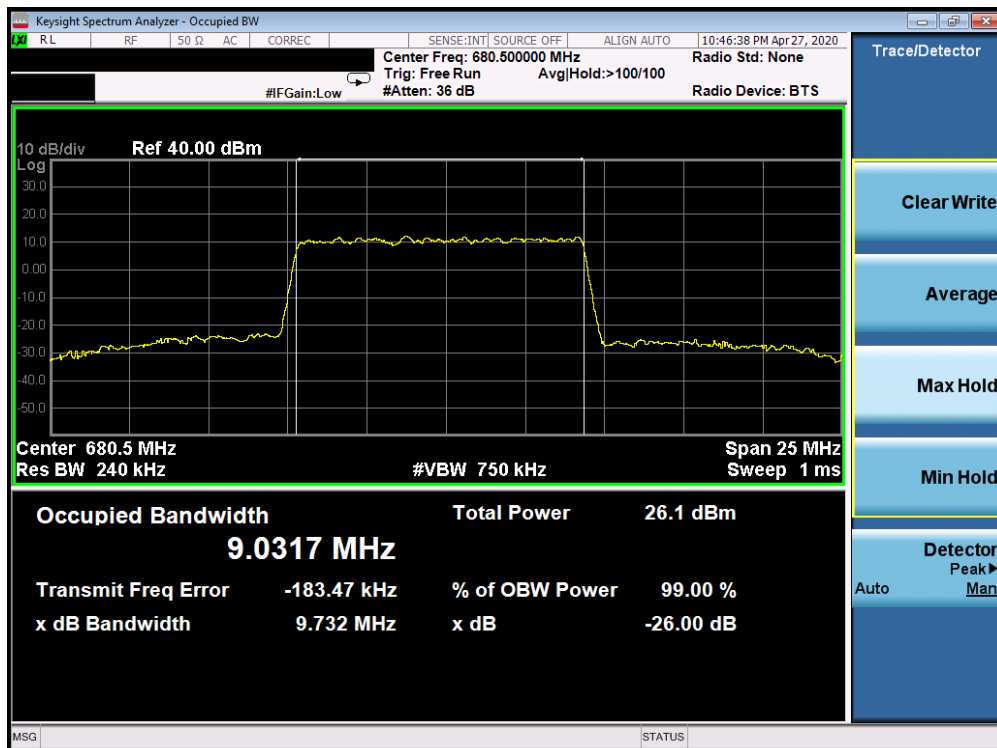


Plot 7-116. Occupied Bandwidth Plot (5G sub6 n71 - 10.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 75 of 438

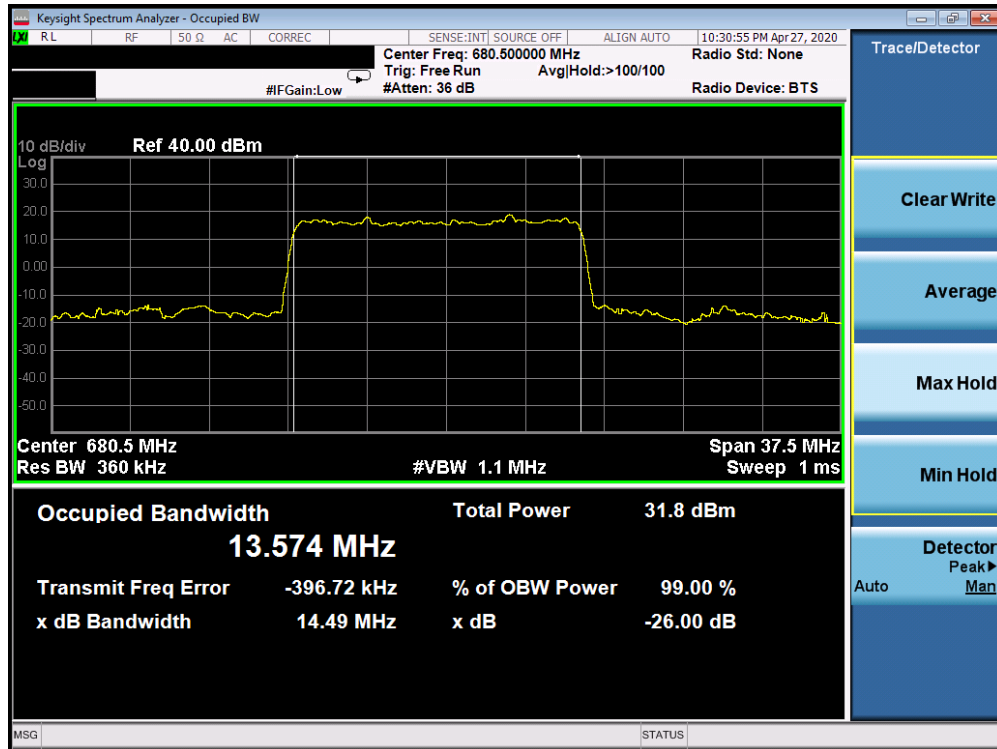


Plot 7-117. Occupied Bandwidth Plot (5G sub6 n71 - 10.0MHz 64-QAM - Full RB Configuration)

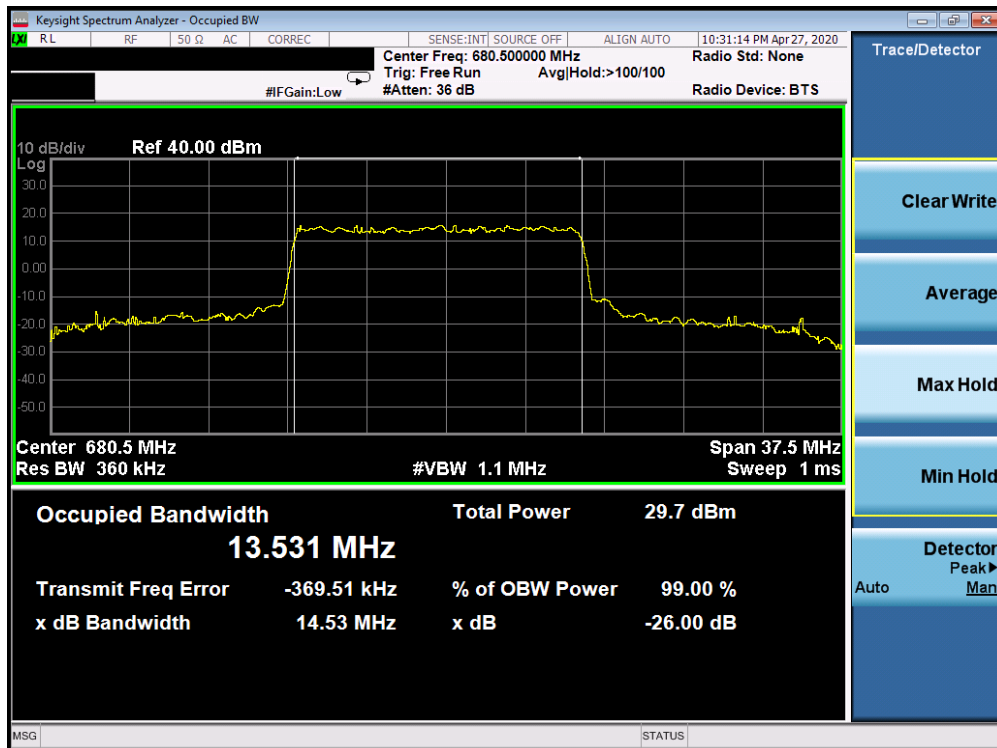


Plot 7-118. Occupied Bandwidth Plot (5G sub6 n71 - 10.0MHz 256-QAM - Full RB Configuration)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 76 of 438

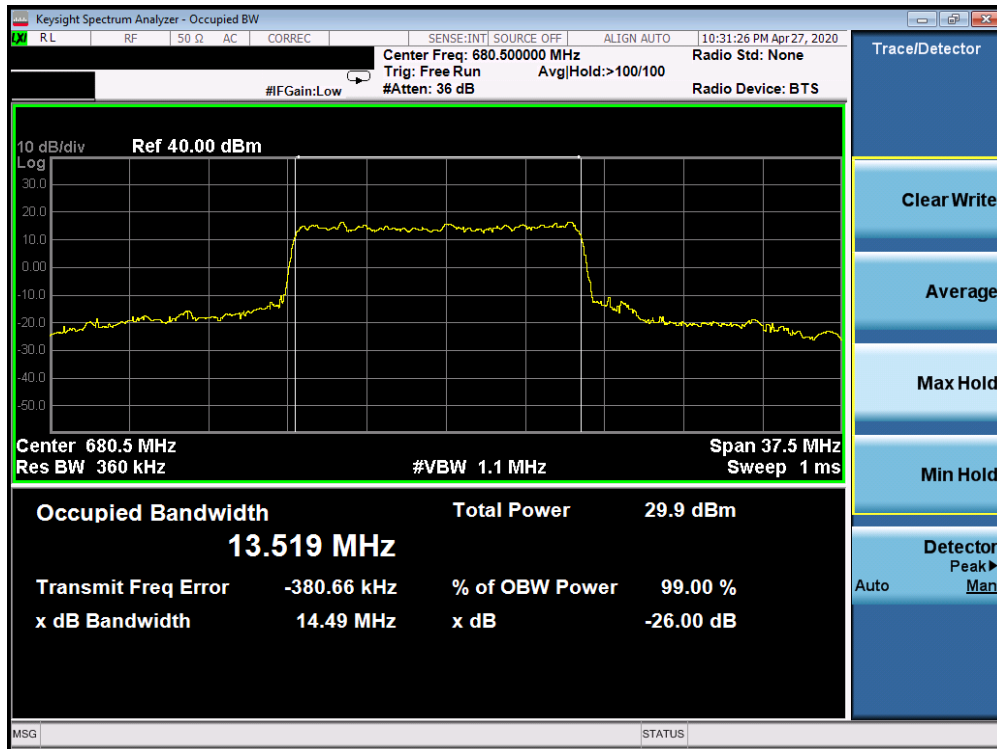


Plot 7-119. Occupied Bandwidth Plot (5G sub6 n71 - 15.0MHz BPSK - Full RB Configuration)

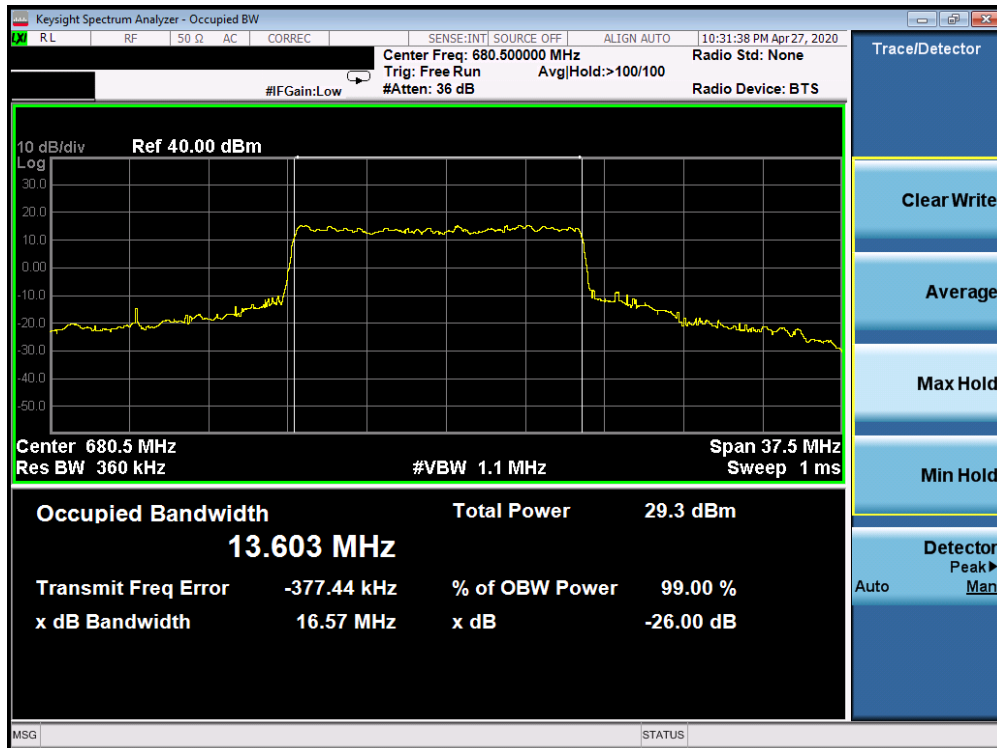


Plot 7-120. Occupied Bandwidth Plot (5G sub6 n71 - 15.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 77 of 438

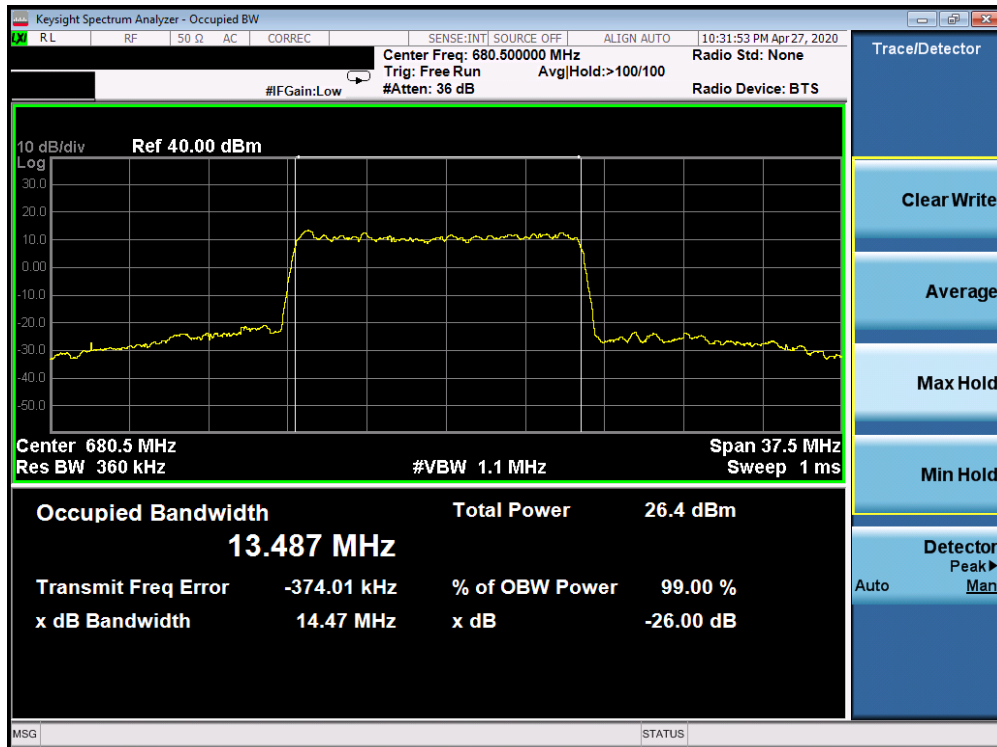


Plot 7-121. Occupied Bandwidth Plot (5G sub6 n71 - 15.0MHz 16-QAM - Full RB Configuration)

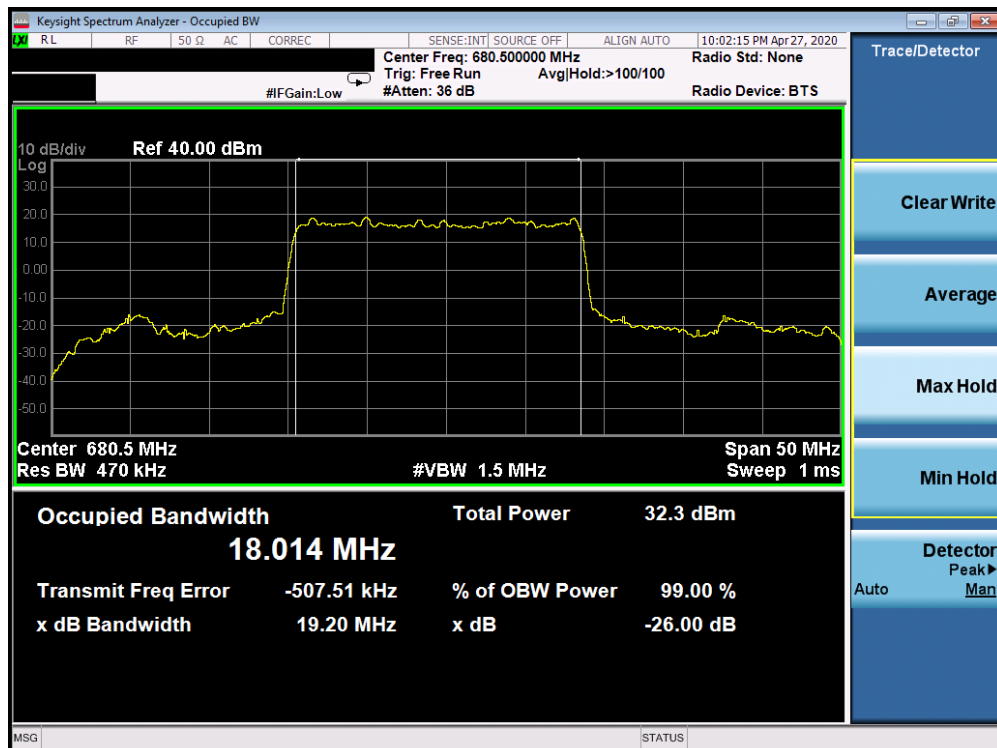


Plot 7-122. Occupied Bandwidth Plot (5G sub6 n71 - 15.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 78 of 438

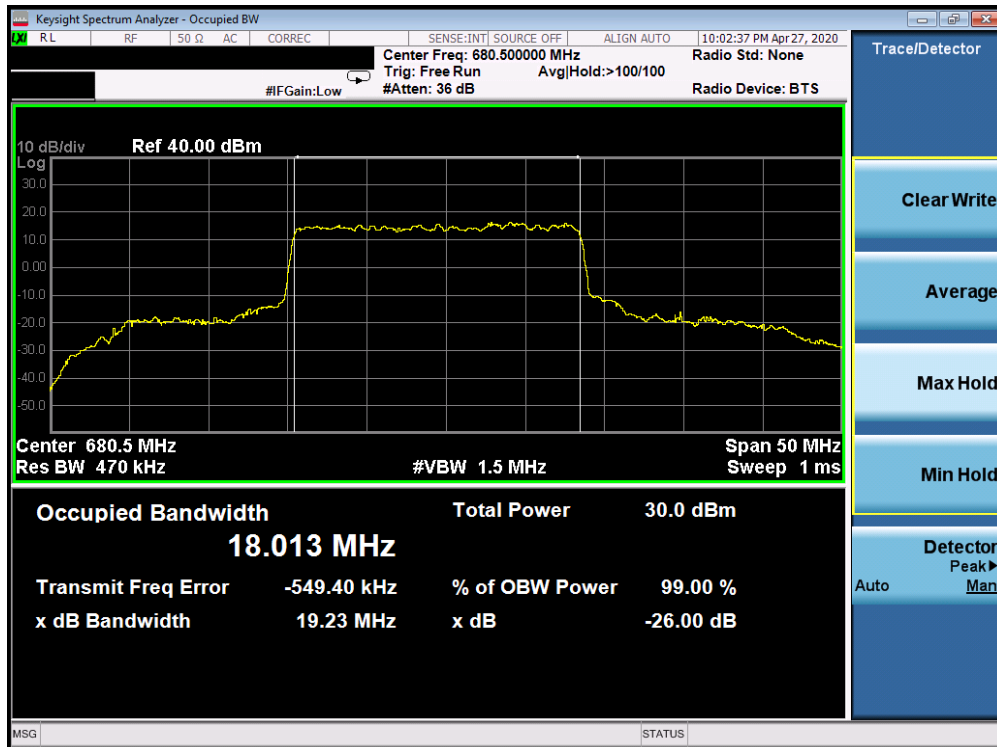


Plot 7-123. Occupied Bandwidth Plot (5G sub6 n71 - 15.0MHz 256-QAM - Full RB Configuration)

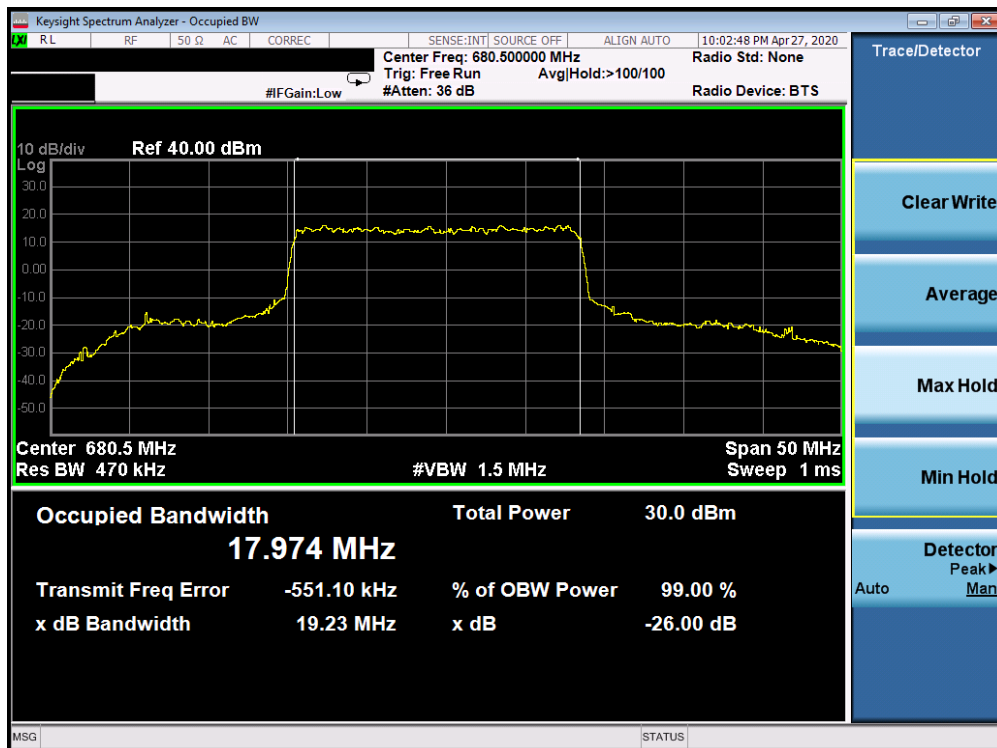


Plot 7-124. Occupied Bandwidth Plot (5G sub6 n71 - 20.0MHz BPSK - Full RB Configuration)

FCC ID: ZNFG900UM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 79 of 438

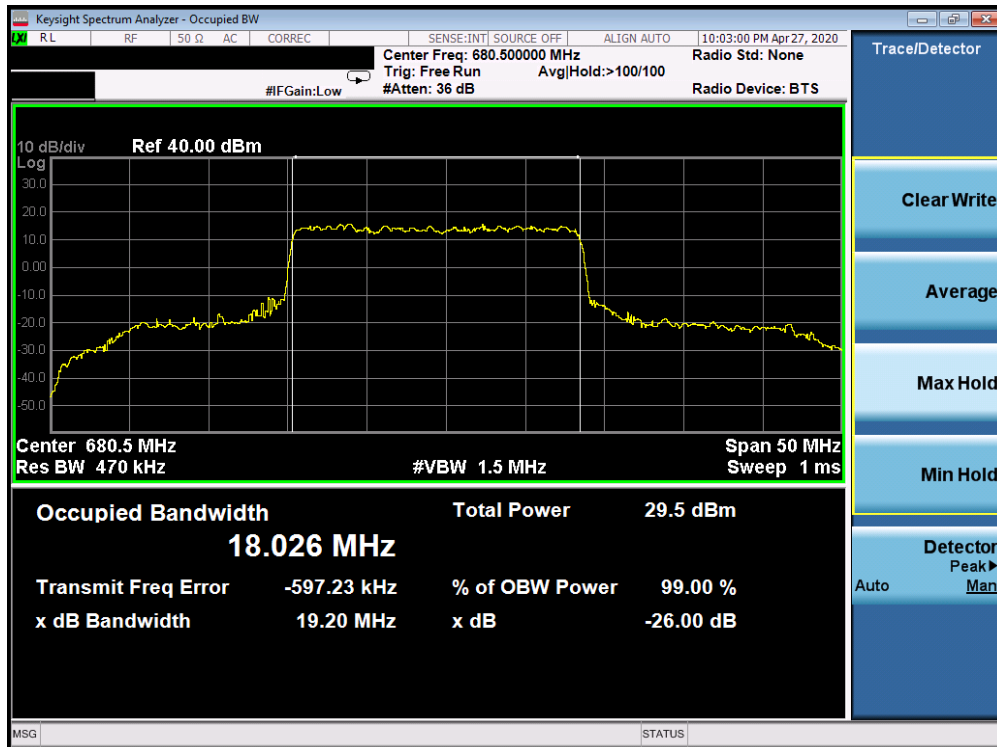


Plot 7-125. Occupied Bandwidth Plot (5G sub6 n71 - 20.0MHz QPSK - Full RB Configuration)

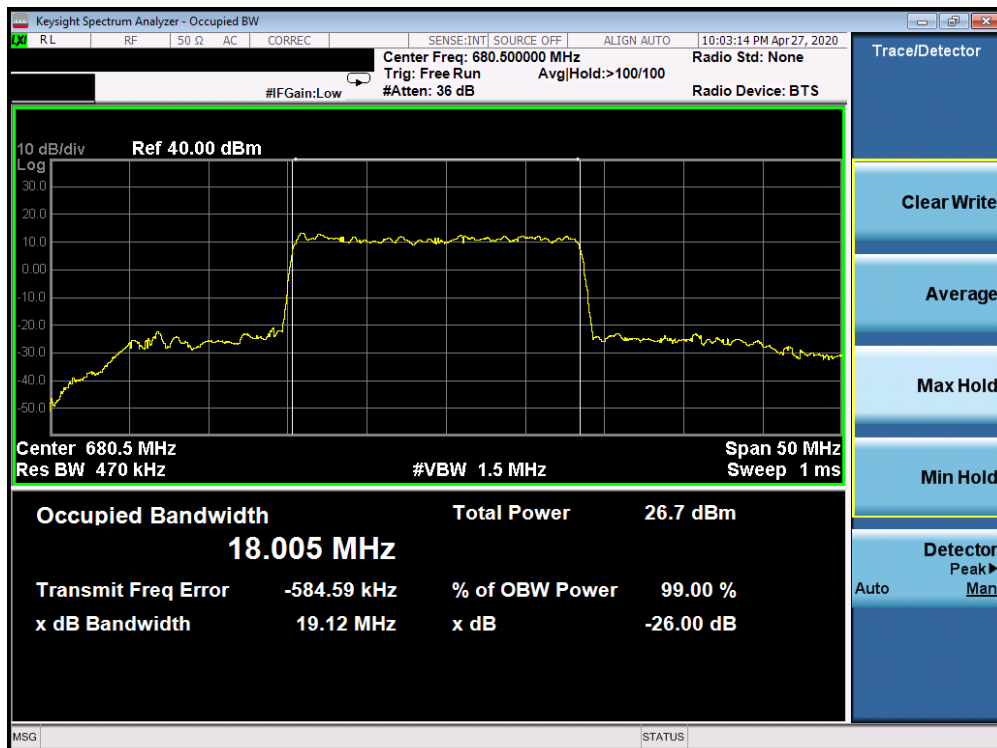


Plot 7-126. Occupied Bandwidth Plot (5G sub6 n71 - 20.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 80 of 438



Plot 7-127. Occupied Bandwidth Plot (5G sub6 n71 - 20.0MHz 64-QAM - Full RB Configuration)



Plot 7-128. Occupied Bandwidth Plot (5G sub6 n71 - 20.0MHz 256-QAM - Full RB Configuration)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 81 of 438