

## MEASUREMENT REPORT LTE

**Applicant Name:**

Samsung Electronics Co., Ltd.  
129, Samsung-ro,  
Yeongtong-gu, Suwon-si  
Gyeonggi-do, 16677, Korea

**Date of Testing:**

05/04 – 07/11/2020

**Test Site/Location:**

PCTEST Lab. Columbia, MD, USA

**Test Report Serial No.:**

1M2005040080-03.A3L

**FCC ID:**

**A3LSMF707U**

**APPLICANT:**

**Samsung Electronics Co., Ltd.**

**Application Type:**

Certification

**Model:**

SM-F707U

**Additional Model(s):**

SM-F707U1, SM-F707W

**EUT Type:**

Portable Handset

**FCC Classification:**

PCS Licensed Transmitter Held to Ear (PCE)

**FCC Rule Part(s):**

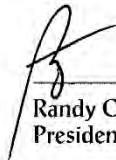
22, 24, & 27

**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

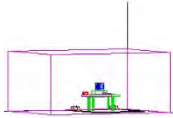


<b>FCC ID:</b> A3LSMF707U		<b>MEASUREMENT REPORT (CERTIFICATION)</b>		<b>Approved by:</b> Quality Manager
<b>Test Report S/N:</b> 1M2005040080-03.A3L	<b>Test Dates:</b> 05/04 – 07/11/2020	<b>EUT Type:</b> Portable Handset		Page 1 of 467

## T A B L E O F C O N T E N T S

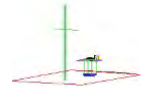
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## FCC Part 22, 24, & 27



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	0.064	18.09			4M52G7D	QPSK
LTE Band 71	27	665.5 - 695.5	0.059	17.68			4M51W7D	16QAM
LTE Band 71	27	665.5 - 695.5	0.046	16.64			4M52W7D	64QAM
LTE Band 71	27	665.5 - 695.5	0.029	14.68			4M51W7D	256QAM
LTE Band 71	27	668 - 693	0.065	18.15			9M03G7D	QPSK
LTE Band 71	27	668 - 693	0.061	17.88			8M99W7D	16QAM
LTE Band 71	27	668 - 693	0.048	16.78			9M02W7D	64QAM
LTE Band 71	27	668 - 693	0.029	14.56			9M00W7D	256QAM
LTE Band 71	27	670.5 - 690.5	0.065	18.13			13M6G7D	QPSK
LTE Band 71	27	670.5 - 690.5	0.059	17.72			13M6W7D	16QAM
LTE Band 71	27	670.5 - 690.5	0.048	16.78			13M6W7D	64QAM
LTE Band 71	27	670.5 - 690.5	0.030	14.73			13M6W7D	256QAM
LTE Band 71	27	673 - 688	0.067	18.23			18M1G7D	QPSK
LTE Band 71	27	673 - 688	0.057	17.52			18M1W7D	16QAM
LTE Band 71	27	673 - 688	0.045	16.54			18M1W7D	64QAM
LTE Band 71	27	673 - 688	0.029	14.69			18M1W7D	256QAM
LTE Band 12	27	699.7 - 715.3	0.087	19.40	0.143	21.55	1M09G7D	QPSK
LTE Band 12	27	699.7 - 715.3	0.078	18.89	0.127	21.04	1M10W7D	16QAM
LTE Band 12	27	699.7 - 715.3	0.058	17.63	0.095	19.78	1M09W7D	64QAM
LTE Band 12	27	699.7 - 715.3	0.040	15.98	0.065	18.13	1M09W7D	256QAM
LTE Band 12	27	700.5 - 714.5	0.089	19.49	0.146	21.64	2M70G7D	QPSK
LTE Band 12	27	700.5 - 714.5	0.079	18.97	0.130	21.12	2M71W7D	16QAM
LTE Band 12	27	700.5 - 714.5	0.060	17.76	0.098	19.91	2M70W7D	64QAM
LTE Band 12	27	700.5 - 714.5	0.041	16.10	0.067	18.25	2M71W7D	256QAM
LTE Band 12	27	701.5 - 713.5	0.090	19.56	0.148	21.71	4M50G7D	QPSK
LTE Band 12	27	701.5 - 713.5	0.075	18.75	0.123	20.90	4M50W7D	16QAM
LTE Band 12	27	701.5 - 713.5	0.058	17.60	0.094	19.75	4M52W7D	64QAM
LTE Band 12	27	701.5 - 713.5	0.038	15.84	0.063	17.99	4M50W7D	256QAM
LTE Band 12	27	704 - 711	0.095	19.77	0.156	21.92	9M01G7D	QPSK
LTE Band 12	27	704 - 711	0.080	19.01	0.131	21.16	8M96W7D	16QAM
LTE Band 12	27	704 - 711	0.058	17.64	0.095	19.79	8M98W7D	64QAM
LTE Band 12	27	704 - 711	0.039	15.96	0.065	18.11	8M96W7D	256QAM
LTE Band 13	27	779.5 - 784.5	0.060	17.76	0.098	19.91	4M51G7D	QPSK
LTE Band 13	27	779.5 - 784.5	0.054	17.32	0.089	19.47	4M50W7D	16QAM
LTE Band 13	27	779.5 - 784.5	0.046	16.67	0.076	18.82	4M49W7D	64QAM
LTE Band 13	27	779.5 - 784.5	0.041	16.11	0.067	18.26	4M50W7D	256QAM
LTE Band 13	27	782	0.063	18.02	0.104	20.17	8M97G7D	QPSK
LTE Band 13	27	782	0.055	17.41	0.090	19.56	8M95W7D	16QAM
LTE Band 13	27	782	0.043	16.38	0.071	18.53	8M95W7D	64QAM
LTE Band 13	27	782	0.025	13.92	0.040	16.07	8M93W7D	256QAM
LTE Band 26/5	22H	824.7 - 848.3	0.093	19.66	0.152	21.81	1M09G7D	QPSK
LTE Band 26/5	22H	824.7 - 848.3	0.074	18.71	0.122	20.86	1M10W7D	16QAM
LTE Band 26/5	22H	824.7 - 848.3	0.064	18.03	0.104	20.18	1M10W7D	64QAM
LTE Band 26/5	22H	824.7 - 848.3	0.036	15.58	0.059	17.73	1M09W7D	256QAM
LTE Band 26/5	22H	825.5 - 847.5	0.097	19.88	0.159	22.03	2M70G7D	QPSK
LTE Band 26/5	22H	825.5 - 847.5	0.076	18.79	0.124	20.94	2M71W7D	16QAM
LTE Band 26/5	22H	825.5 - 847.5	0.063	17.97	0.103	20.12	2M70W7D	64QAM
LTE Band 26/5	22H	825.5 - 847.5	0.036	15.62	0.060	17.77	2M70W7D	256QAM
LTE Band 26/5	22H	826.5 - 846.5	0.098	19.93	0.162	22.08	4M50G7D	QPSK
LTE Band 26/5	22H	826.5 - 846.5	0.076	18.80	0.125	20.95	4M49W7D	16QAM
LTE Band 26/5	22H	826.5 - 846.5	0.063	18.01	0.104	20.16	4M51W7D	64QAM
LTE Band 26/5	22H	826.5 - 846.5	0.037	15.69	0.061	17.84	4M50W7D	256QAM
LTE Band 26/5	22H	829 - 844	0.092	19.64	0.151	21.79	8M99G7D	QPSK
LTE Band 26/5	22H	829 - 844	0.077	18.89	0.127	21.04	8M99W7D	16QAM
LTE Band 26/5	22H	829 - 844	0.060	17.79	0.099	19.94	9M00W7D	64QAM
LTE Band 26/5	22H	829 - 844	0.037	15.64	0.060	17.79	8M98W7D	256QAM
LTE Band 26	22H	831.5 - 841.5	0.096	19.81	0.157	21.96	13M5G7D	QPSK
LTE Band 26	22H	831.5 - 841.5	0.070	18.43	0.114	20.58	13M5W7D	16QAM
LTE Band 26	22H	831.5 - 841.5	0.065	18.12	0.106	20.27	13M5W7D	64QAM
LTE Band 26	22H	831.5 - 841.5	0.038	15.82	0.063	17.97	13M5W7D	256QAM

### EUT Overview (<1 GHz)

FCC ID: A3LSMF707U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2005040080-03.A3L	Test Dates: 05/04 - 07/11/2020	EUT Type: Portable Handset		Page 3 of 467

Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	ERP		Emission Designator
				Max. Power [W]	Max. Power [dBm]	
NR Band n71	20 MHz	π/2 BPSK	673.0 - 688.0	0.041	16.11	18M0G7D
		QPSK	673.0 - 688.0	0.041	16.16	18M0G7D
		16QAM	673.0 - 688.0	0.034	15.34	18M0W7D
		64QAM	673.0 - 688.0	0.021	13.16	18M0W7D
		256QAM	673.0 - 688.0	0.016	11.97	17M9W7D
	15 MHz	π/2 BPSK	670.5 - 690.5	0.040	16.04	13M5G7D
		QPSK	670.5 - 690.5	0.039	15.92	13M5G7D
		16QAM	670.5 - 690.5	0.035	15.48	13M5W7D
		64QAM	670.5 - 690.5	0.021	13.15	13M5W7D
		256QAM	670.5 - 690.5	0.015	11.76	13M5W7D
	10 MHz	π/2 BPSK	668.0 - 693.0	0.041	16.09	9M00G7D
		QPSK	668.0 - 693.0	0.040	15.97	9M02G7D
		16QAM	668.0 - 693.0	0.031	14.85	9M06W7D
		64QAM	668.0 - 693.0	0.019	12.82	8M96W7D
		256QAM	668.0 - 693.0	0.014	11.44	8M99W7D
	5 MHz	π/2 BPSK	665.5 - 695.5	0.040	16.06	4M53G7D
		QPSK	665.5 - 695.5	0.040	16.02	4M50G7D
		16QAM	665.5 - 695.5	0.034	15.27	4M55W7D
		64QAM	665.5 - 695.5	0.020	12.92	4M50W7D
		256QAM	665.5 - 695.5	0.014	11.48	4M53W7D

EUT Overview (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	π/2 BPSK	834.0 - 839.0	0.069	18.38	0.113	20.53	18M0G7D
		QPSK	834.0 - 839.0	0.072	18.56	0.118	20.71	18M0G7D
		16QAM	834.0 - 839.0	0.060	17.77	0.098	19.92	17M9W7D
		64QAM	834.0 - 839.0	0.047	16.73	0.077	18.88	18M0W7D
		256QAM	834.0 - 839.0	0.029	14.69	0.048	16.84	17M9W7D
	15 MHz	π/2 BPSK	831.5 - 841.5	0.042	16.22	0.042	16.22	13M4G7D
		QPSK	831.5 - 841.5	0.045	16.53	0.045	16.53	13M5G7D
		16QAM	831.5 - 841.5	0.035	15.44	0.035	15.44	13M5W7D
		64QAM	831.5 - 841.5	0.029	14.60	0.029	14.60	13M5W7D
		256QAM	831.5 - 841.5	0.017	12.41	0.017	12.41	13M5W7D
	10 MHz	π/2 BPSK	829.0 - 844.0	0.043	16.36	0.043	16.36	9M00G7D
		QPSK	829.0 - 844.0	0.042	16.25	0.042	16.25	9M00G7D
		16QAM	829.0 - 844.0	0.035	15.44	0.035	15.44	9M06W7D
		64QAM	829.0 - 844.0	0.029	14.62	0.029	14.62	8M96W7D
		256QAM	829.0 - 844.0	0.018	12.50	0.018	12.50	9M00W7D
	5 MHz	π/2 BPSK	826.5 - 846.5	0.045	16.52	0.045	16.52	4M55G7D
		QPSK	826.5 - 846.5	0.046	16.66	0.046	16.66	4M54G7D
		16QAM	826.5 - 846.5	0.037	15.66	0.037	15.66	4M53W7D
		64QAM	826.5 - 846.5	0.032	14.99	0.032	14.99	4M51W7D
		256QAM	826.5 - 846.5	0.018	12.60	0.018	12.60	4M56W7D

EUT Overview (NR n5)

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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	0.193	22.85	1M10G7D	QPSK
LTE Band 66/4	27	1710.7 - 1779.3	0.150	21.77	1M10W7D	16QAM
LTE Band 66/4	27	1710.7 - 1779.3	0.095	19.79	1M10W7D	64QAM
LTE Band 66/4	27	1710.7 - 1779.3	0.064	18.04	1M09W7D	256QAM
LTE Band 66/4	27	1711.5 - 1778.5	0.185	22.68	2M70G7D	QPSK
LTE Band 66/4	27	1711.5 - 1778.5	0.150	21.77	2M71W7D	16QAM
LTE Band 66/4	27	1711.5 - 1778.5	0.093	19.67	2M70W7D	64QAM
LTE Band 66/4	27	1711.5 - 1778.5	0.064	18.06	2M71W7D	256QAM
LTE Band 66/4	27	1712.5 - 1777.5	0.184	22.64	4M51G7D	QPSK
LTE Band 66/4	27	1712.5 - 1777.5	0.152	21.82	4M51W7D	16QAM
LTE Band 66/4	27	1712.5 - 1777.5	0.095	19.76	4M50W7D	64QAM
LTE Band 66/4	27	1712.5 - 1777.5	0.065	18.16	4M50W7D	256QAM
LTE Band 66/4	27	1715 - 1775	0.183	22.63	9M02G7D	QPSK
LTE Band 66/4	27	1715 - 1775	0.149	21.72	8M97W7D	16QAM
LTE Band 66/4	27	1715 - 1775	0.093	19.70	9M00W7D	64QAM
LTE Band 66/4	27	1715 - 1775	0.060	17.77	8M99W7D	256QAM
LTE Band 66/4	27	1717.5 - 1772.5	0.184	22.65	13M5G7D	QPSK
LTE Band 66/4	27	1717.5 - 1772.5	0.146	21.64	13M5W7D	16QAM
LTE Band 66/4	27	1717.5 - 1772.5	0.095	19.78	13M5W7D	64QAM
LTE Band 66/4	27	1717.5 - 1772.5	0.063	18.02	13M5W7D	256QAM
LTE Band 66/4	27	1720 - 1770	0.173	22.38	18M0G7D	QPSK
LTE Band 66/4	27	1720 - 1770	0.148	21.69	18M0W7D	16QAM
LTE Band 66/4	27	1720 - 1770	0.094	19.73	18M0W7D	64QAM
LTE Band 66/4	27	1720 - 1770	0.061	17.88	18M0W7D	256QAM
LTE Band 25/2	24E	1850.7 - 1914.3	0.153	21.85	1M10G7D	QPSK
LTE Band 25/2	24E	1850.7 - 1914.3	0.124	20.92	1M10W7D	16QAM
LTE Band 25/2	24E	1850.7 - 1914.3	0.081	19.09	1M10W7D	64QAM
LTE Band 25/2	24E	1850.7 - 1914.3	0.052	17.14	1M09W7D	256QAM
LTE Band 25/2	24E	1851.5 - 1913.5	0.156	21.92	2M70G7D	QPSK
LTE Band 25/2	24E	1851.5 - 1913.5	0.123	20.90	2M71W7D	16QAM
LTE Band 25/2	24E	1851.5 - 1913.5	0.083	19.17	2M71W7D	64QAM
LTE Band 25/2	24E	1851.5 - 1913.5	0.053	17.26	2M71W7D	256QAM
LTE Band 25/2	24E	1852.5 - 1912.5	0.155	21.90	4M51G7D	QPSK
LTE Band 25/2	24E	1852.5 - 1912.5	0.124	20.94	4M51W7D	16QAM
LTE Band 25/2	24E	1852.5 - 1912.5	0.080	19.05	4M51W7D	64QAM
LTE Band 25/2	24E	1852.5 - 1912.5	0.053	17.26	4M49W7D	256QAM
LTE Band 25/2	24E	1855 - 1910	0.149	21.73	9M04G7D	QPSK
LTE Band 25/2	24E	1855 - 1910	0.125	20.97	8M98W7D	16QAM
LTE Band 25/2	24E	1855 - 1910	0.084	19.24	9M01W7D	64QAM
LTE Band 25/2	24E	1855 - 1910	0.050	16.98	8M99W7D	256QAM
LTE Band 25/2	24E	1857.5 - 1907.5	0.150	21.77	13M5G7D	QPSK
LTE Band 25/2	24E	1857.5 - 1907.5	0.118	20.71	13M5W7D	16QAM
LTE Band 25/2	24E	1857.5 - 1907.5	0.086	19.36	13M5W7D	64QAM
LTE Band 25/2	24E	1857.5 - 1907.5	0.049	16.90	13M5W7D	256QAM
LTE Band 25/2	24E	1860 - 1905	0.239	23.78	18M0G7D	QPSK
LTE Band 25/2	24E	1860 - 1905	0.202	23.04	18M0W7D	16QAM
LTE Band 25/2	24E	1860 - 1905	0.130	21.13	17M9W7D	64QAM
LTE Band 25/2	24E	1860 - 1905	0.084	19.22	18M0W7D	256QAM

### EUT Overview (Mid Bands)

FCC ID: A3LSMF707U		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	1720 - 1770	0.062	17.96	18M3G7D
		QPSK	1720 - 1770	0.069	18.36	18M0G7D
		16QAM	1720 - 1770	0.054	17.31	18M0W7D
		64QAM	1720 - 1770	0.041	16.15	18M0W7D
		256QAM	1720 - 1770	0.026	14.22	18M0W7D
	15 MHz	$\pi/2$ BPSK	1717.5 - 1772.5	0.068	18.33	14M5G7D
		QPSK	1717.5 - 1772.5	0.069	18.39	14M2G7D
		16QAM	1717.5 - 1772.5	0.046	16.59	14M2W7D
		64QAM	1717.5 - 1772.5	0.038	15.78	14M2W7D
		256QAM	1717.5 - 1772.5	0.026	14.23	14M2W7D
	10 MHz	$\pi/2$ BPSK	1715 - 1775	0.068	18.35	9M56G7D
		QPSK	1715 - 1775	0.070	18.43	9M33G7D
		16QAM	1715 - 1775	0.047	16.68	9M34W7D
		64QAM	1715 - 1775	0.033	15.18	9M37W7D
		256QAM	1715 - 1775	0.024	13.77	9M37W7D
	5 MHz	$\pi/2$ BPSK	1712.5 - 1777.5	0.069	18.36	4M75G7D
		QPSK	1712.5 - 1777.5	0.075	18.73	4M55G7D
		16QAM	1712.5 - 1777.5	0.046	16.62	4M54W7D
		64QAM	1712.5 - 1777.5	0.035	15.44	4M54W7D
			256QAM	1712.5 - 1777.5	0.025	13.98

EUT Overview (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	0.250	23.98	18M4G7D
		QPSK	1860 - 1905	0.188	22.74	18M0G7D
		16QAM	1860 - 1905	0.145	21.60	17M9W7D
		64QAM	1860 - 1905	0.114	20.58	18M0W7D
		256QAM	1860 - 1905	0.078	18.92	18M0W7D
	15 MHz	$\pi/2$ BPSK	1857.5 - 1907.5	0.249	23.96	14M5G7D
		QPSK	1857.5 - 1907.5	0.200	23.00	14M2G7D
		16QAM	1857.5 - 1907.5	0.155	21.90	14M2W7D
		64QAM	1857.5 - 1907.5	0.122	20.86	14M2W7D
		256QAM	1857.5 - 1907.5	0.072	18.55	14M2W7D
	10 MHz	$\pi/2$ BPSK	1855 - 1910	0.249	23.97	9M40G7D
		QPSK	1855 - 1910	0.190	22.80	9M38G7D
		16QAM	1855 - 1910	0.147	21.69	9M34W7D
		64QAM	1855 - 1910	0.115	20.61	9M34W7D
		256QAM	1855 - 1910	0.067	18.25	9M33W7D
	5 MHz	$\pi/2$ BPSK	1852.5 - 1912.5	0.245	23.88	4M55G7D
		QPSK	1852.5 - 1912.5	0.194	22.88	4M54G7D
		16QAM	1852.5 - 1912.5	0.141	21.49	4M54W7D
		64QAM	1852.5 - 1912.5	0.109	20.38	4M54W7D
			256QAM	1852.5 - 1912.5	0.066	18.22

EUT Overview (NR n25/2)

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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	0.153	21.86	4M51G7D	QPSK
LTE Band 30	27	2307.5 - 2312.5	0.131	21.19	4M50W7D	16QAM
LTE Band 30	27	2307.5 - 2312.5	0.107	20.31	4M53W7D	64QAM
LTE Band 30	27	2307.5 - 2312.5	0.061	17.88	4M50W7D	256QAM
LTE Band 30	27	2310	0.163	22.13	9M04G7D	QPSK
LTE Band 30	27	2310	0.137	21.38	8M98W7D	16QAM
LTE Band 30	27	2310	0.107	20.30	9M00W7D	64QAM
LTE Band 30	27	2310	0.060	17.78	8M98W7D	256QAM
LTE Band 7	27	2502.5 - 2567.5	0.166	22.19	4M50G7D	QPSK
LTE Band 7	27	2502.5 - 2567.5	0.132	21.21	4M51W7D	16QAM
LTE Band 7	27	2502.5 - 2567.5	0.092	19.62	4M51W7D	64QAM
LTE Band 7	27	2502.5 - 2567.5	0.061	17.84	4M50W7D	256QAM
LTE Band 7	27	2505 - 2565	0.171	22.33	9M02G7D	QPSK
LTE Band 7	27	2505 - 2565	0.133	21.24	8M97W7D	16QAM
LTE Band 7	27	2505 - 2565	0.092	19.62	8M99W7D	64QAM
LTE Band 7	27	2505 - 2565	0.059	17.71	9M00W7D	256QAM
LTE Band 7	27	2507.5 - 2562.5	0.171	22.34	13M5G7D	QPSK
LTE Band 7	27	2507.5 - 2562.5	0.130	21.14	13M5W7D	16QAM
LTE Band 7	27	2507.5 - 2562.5	0.089	19.47	13M5W7D	64QAM
LTE Band 7	27	2507.5 - 2562.5	0.059	17.71	13M5W7D	256QAM
LTE Band 7	27	2510 - 2560	0.187	22.72	18M0G7D	QPSK
LTE Band 7	27	2510 - 2560	0.143	21.55	17M9W7D	16QAM
LTE Band 7	27	2510 - 2560	0.100	19.98	17M9W7D	64QAM
LTE Band 7	27	2510 - 2560	0.064	18.05	17M9W7D	256QAM
LTE Band 41 (PC2)	27	2498.5 - 2687.5	0.369	25.68	4M51G7D	QPSK
LTE Band 41 (PC2)	27	2498.5 - 2687.5	0.307	24.88	4M51W7D	16QAM
LTE Band 41 (PC2)	27	2498.5 - 2687.5	0.249	23.96	4M52W7D	64QAM
LTE Band 41 (PC2)	27	2498.5 - 2687.5	0.180	22.56	4M48W7D	256QAM
LTE Band 41 (PC2)	27	2501 - 2685	0.303	24.82	9M00G7D	QPSK
LTE Band 41 (PC2)	27	2501 - 2685	0.227	23.55	8M98W7D	16QAM
LTE Band 41 (PC2)	27	2501 - 2685	0.193	22.84	9M00W7D	64QAM
LTE Band 41 (PC2)	27	2501 - 2685	0.097	19.87	8M99W7D	256QAM
LTE Band 41 (PC2)	27	2503.5 - 2682.5	0.322	25.08	13M5G7D	QPSK
LTE Band 41 (PC2)	27	2503.5 - 2682.5	0.270	24.31	13M5W7D	16QAM
LTE Band 41 (PC2)	27	2503.5 - 2682.5	0.169	22.28	13M5W7D	64QAM
LTE Band 41 (PC2)	27	2503.5 - 2682.5	0.110	20.43	13M5W7D	256QAM
LTE Band 41 (PC2)	27	2506 - 2680	0.374	25.72	18M0G7D	QPSK
LTE Band 41 (PC2)	27	2506 - 2680	0.289	24.61	17M9W7D	16QAM
LTE Band 41 (PC2)	27	2506 - 2680	0.202	23.06	17M9W7D	64QAM
LTE Band 41 (PC2)	27	2506 - 2680	0.142	21.51	17M9W7D	256QAM

**EUT Overview (High Bands)**

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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	π/2 BPSK	2546.0 - 2640.0	0.129	21.12	99M0G7D
		QPSK	2546.0 - 2640.0	0.096	19.83	96M6G7D
		16QAM	2546.0 - 2640.0	0.072	18.60	96M7W7D
		64QAM	2546.0 - 2640.0	0.059	17.71	96M5W7D
		256QAM	2546.0 - 2640.0	0.038	15.83	96M9W7D
	90 MHz	π/2 BPSK	2541.0 - 2645.0	0.114	20.57	87M5G7D
		QPSK	2541.0 - 2645.0	0.091	19.57	87M5G7D
		16QAM	2541.0 - 2645.0	0.057	17.58	87M2W7D
		64QAM	2541.0 - 2645.0	0.052	17.16	87M0W7D
		256QAM	2541.0 - 2645.0	0.037	15.63	86M9W7D
	80 MHz	π/2 BPSK	2536.0 - 2650.0	0.119	20.75	77M2G7D
		QPSK	2536.0 - 2650.0	0.093	19.69	77M2G7D
		16QAM	2536.0 - 2650.0	0.067	18.24	77M1W7D
		64QAM	2536.0 - 2650.0	0.059	17.71	77M3W7D
		256QAM	2536.0 - 2650.0	0.041	16.16	77M5W7D
	60 MHz	π/2 BPSK	2526.0 - 2660.0	0.114	20.57	58M1G7D
		QPSK	2526.0 - 2660.0	0.089	19.48	58M1G7D
		16QAM	2526.0 - 2660.0	0.060	17.81	58M4W7D
		64QAM	2526.0 - 2660.0	0.053	17.28	58M4W7D
		256QAM	2526.0 - 2660.0	0.035	15.48	58M1W7D
	50 MHz	π/2 BPSK	2521.0 - 2665.0	0.127	21.05	46M0G7D
		QPSK	2521.0 - 2665.0	0.092	19.64	46M0G7D
		16QAM	2521.0 - 2665.0	0.062	17.92	46M0W7D
		64QAM	2521.0 - 2665.0	0.063	17.96	45M8W7D
		256QAM	2521.0 - 2665.0	0.042	16.27	46M0W7D
	40 MHz	π/2 BPSK	2516.0 - 2670.0	0.124	20.95	35M9G7D
		QPSK	2516.0 - 2670.0	0.101	20.03	35M8G7D
		16QAM	2516.0 - 2670.0	0.072	18.56	35M8W7D
		64QAM	2516.0 - 2670.0	0.062	17.93	35M7W7D
		256QAM	2516.0 - 2670.0	0.040	15.99	35M8W7D
	20 MHz	π/2 BPSK	2506.0 - 2680.0	0.120	20.81	18M3G7D
		QPSK	2506.0 - 2680.0	0.097	19.87	18M0G7D
		16QAM	2506.0 - 2680.0	0.068	18.35	18M0W7D
		64QAM	2506.0 - 2680.0	0.059	17.74	18M0W7D
		256QAM	2506.0 - 2680.0	0.039	15.89	18M0W7D

EUT Overview (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 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 **Samsung Portable Handset FCC ID: A3LSMF707U**. The test data contained in this report pertains only to the emissions due to the EUT's LTE function.

This device can operate in one of two physical configurations – “open” and “closed”. All emissions are investigated in both modes for compliance.

**Test Device Serial No.:** 1049M, 1064M, 1075S, 1076S, 1130M, 1076M, 1371M

### 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, 5G NR (n71, n5, n66, n25, n2, n41), 802.11b/g/n/ax WLAN, 802.11a/n/ac/ax UNII, Bluetooth (1x, EDR, LE), NFC, Wireless Power Transfer

LTE Band 26 (814 – 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 and NR n25 (1850 - 1915 MHz) overlaps the entire frequency range of LTE Band 2 and NR n2 (1850 - 1910 MHz). Therefore, test data provided in this report covers Band 2/n2 as well as Band 25/n25.

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.

### 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) Model: EP-N5100 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  $43 + 10 \log_{10}(\text{Power [Watts]})$ .

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  $U_{\text{CISPR}}$  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
-	LTx2	Licensed Transmitter Cable Set	10/30/2019	Annual	10/30/2020	LTx2
-	LTx3	Licensed Transmitter Cable Set	10/30/2019	Annual	10/30/2020	LTx3
Agilent	N9038A	MXE EMI Receiver	7/17/2019	Annual	7/17/2020	MY51210133
Com-Power	AL-130	9kHz - 30MHz Loop Antenna	10/10/2019	Biennial	10/10/2021	121034
Espec	ESX-2CA	Environmental Chamber	6/13/2019	Annual	7/13/2020	17620
ETS Lindgren	3164-08	Quad Ridge Horn Antenna	2/22/2019	Biennial	2/22/2021	128338
Mini Circuits	TVA-11-422	RF Power Amp	N/A			QA1317001
Mini Circuits	PWR-4GHS	USB Power Sensor	6/18/2020	Annual	6/18/2021	12001070013
Mini-Circuits	SSG-4000HP	Synthesized Signal Generator	N/A			11208010032
Rohde & Schwarz	CMW500	Radio Communication Tester	N/A			100976
Rohde & Schwarz	TS-PR26	18-26.5 GHz Pre-Amplifier	11/1/2019	Annual	11/1/2020	100040
Rohde & Schwarz	ESU40	EMI Test Receiver (40GHz)	9/23/2019	Annual	9/23/2020	100348
Rohde & Schwarz	SFUNIT-Rx	Shielded Filter Unit	7/11/2019	Annual	7/11/2020	102134
Sunol	DRH-118	Horn Antenna (1-18GHz)	10/3/2019	Biennial	10/3/2021	A050307
Sunol	JB5	Bi-Log Antenna (30M - 5GHz)	7/19/2019	Biennial	7/19/2020	A051107
Sunol	DRH-118	Horn Antenna (1-18 GHz)	8/27/2019	Biennial	8/27/2021	A042511
Rohde & Schwarz	TS-PR40	26.5-40 GHz Pre-Amplifier	11/1/2019	Annual	11/1/2020	100037
Emco	3116	Horn Antenna (18 - 40GHz)	6/7/2018	Biennial	6/7/2020	9203-2178

**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

#### BPSK/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 2<sup>nd</sup> 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: Samsung Electronics Co., Ltd.  
 FCC ID: A3LSMF707U  
 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	Peak-Average Ratio	$< 13$ dB			Section 7.5
2.1046	Transmitter Conducted Output Power	N/A			See RF Exposure Report
22.917(a) 27.53(h)	Uplink Carrier Aggregation	$> 43 + 10 \log(P[\text{Watts}])$ at Band Edge and for all out-of-band emissions			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)			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	RADIATED	PASS	Section 7.7
27.50(b)(10) 27.50(c)(10)	Effective Radiated Power / Equivalent Isotropic Radiated Power (Band 71, 12, 13)	< 3 Watts max. ERP			Section 7.7
24.232(c) 27.50(h)(2)	Equivalent Isotropic Radiated Power (Band 2/25, 41)	< 2 Watts max. EIRP			Section 7.7
27.50(d)(4)	Equivalent Isotropic Radiated Power (Band 4/66)	< 1 Watts max. EIRP			Section 7.7
27.50(a)(3)	Equivalent Isotropic Radiated Power (Band 30)	< 0.25 Watts max. EIRP			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 <sub>10</sub> (P[Watts]) for all out-of-band emissions			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			Section 7.8
27.53(a)	Undesirable Emissions (Band 30)	> 70 + 10 log <sub>10</sub> (P[Watts])			Section 7.8
27.53(m)	Undesirable Emissions (Band 7, 41)	Undesirable emissions must meet the limits detailed in 27.53(m)			Section 7.8
27.53(m) 27.53(c) 27.53(g)	Uplink Carrier Aggregation	Undesirable emissions must meet the limits detailed in 27.53(m)			Section 7.9

**Table 7-2. Summary of Radiated Test Results**

**Notes:**

- 1) All modes of operation and data rates were investigated. The test results shown in the following sections represent the worst case emissions.
- 2) The analyzer plots (Sections 7.2, 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.
- 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  $\geq 3 \times$  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.

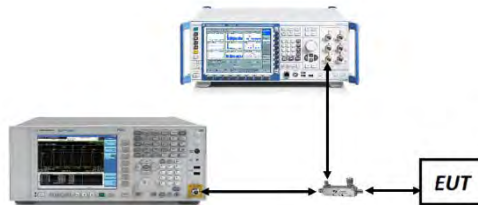


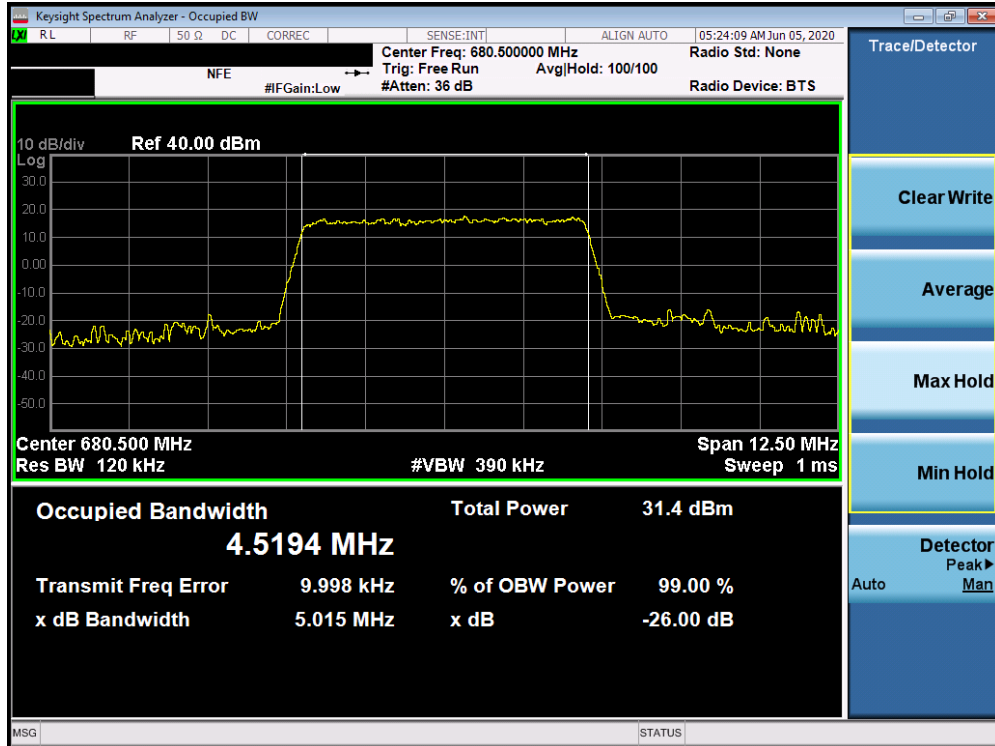
Figure 7-1. Test Instrument & Measurement Setup

### Test Notes

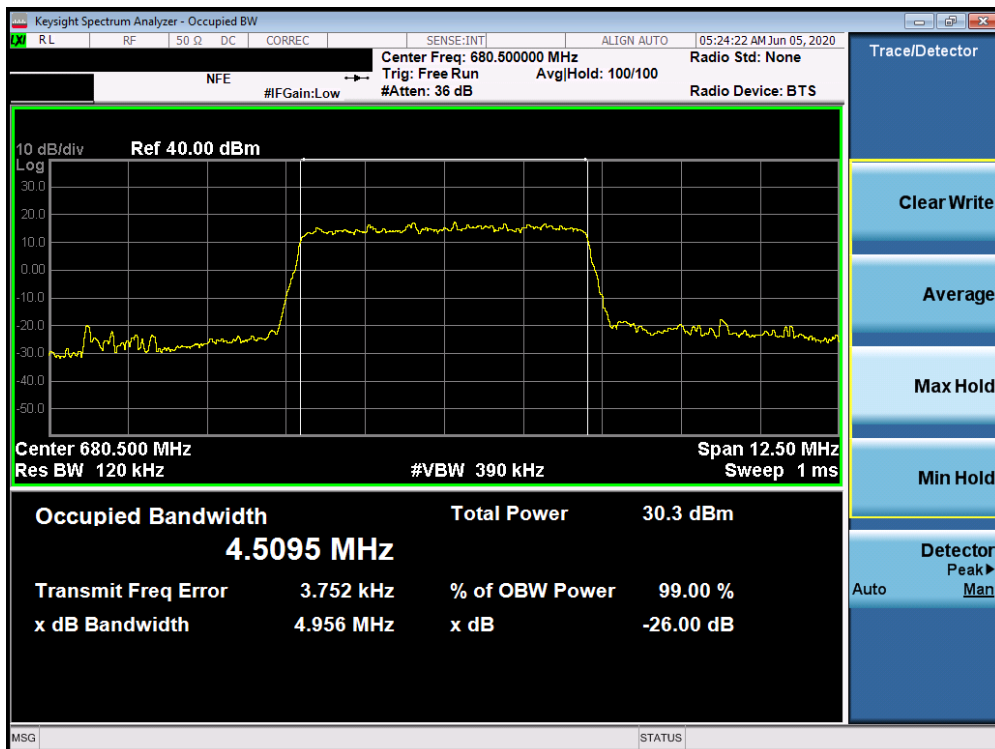
Occupied Bandwidth measurements are performed fully for both DFT-s-OFDM and CP-OFDM transmission schemes. Only the worst case (widest) OBW data is included in this section.

FCC ID: A3LSMF707U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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## Band 71

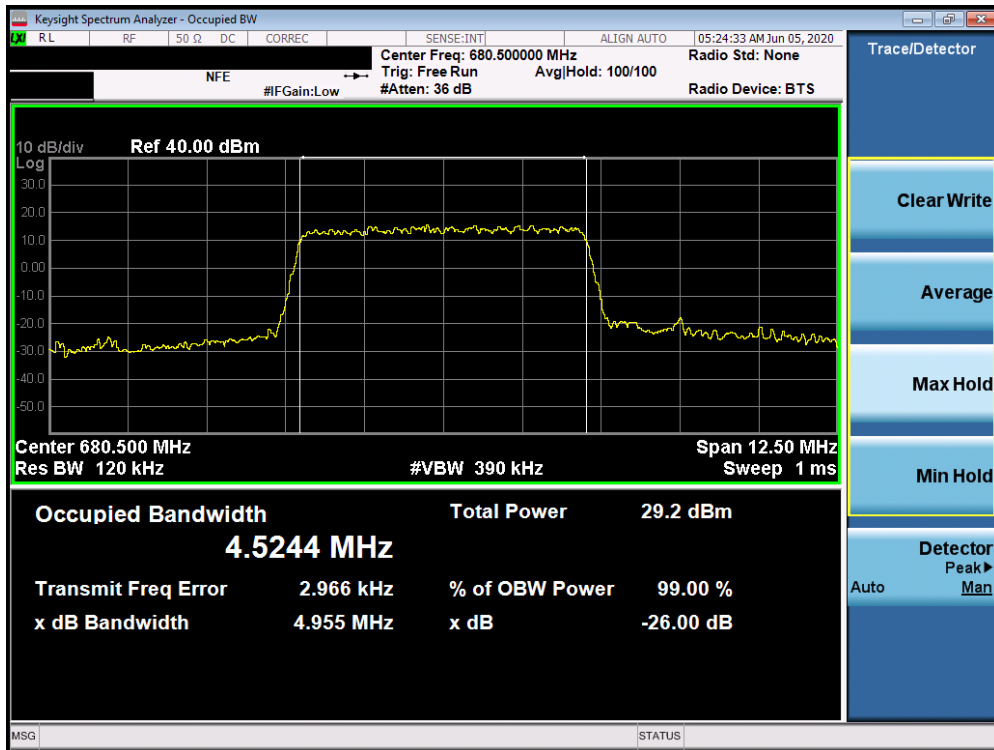


Plot 7-1. Occupied Bandwidth Plot (Band 71 - 5.0MHz QPSK - Full RB Configuration)

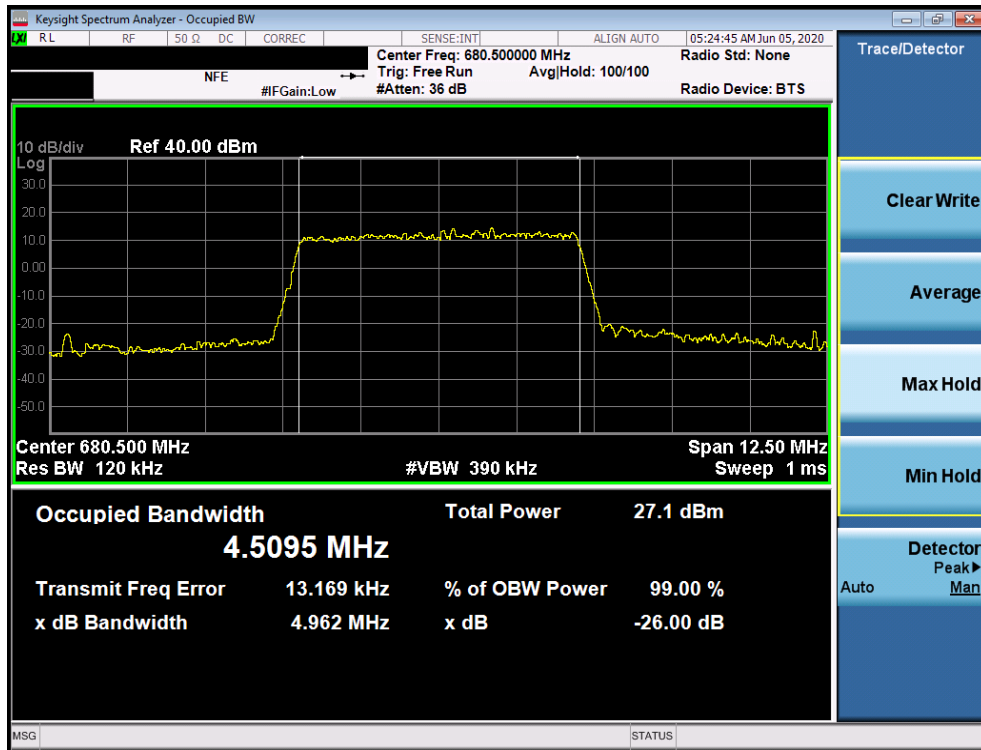


Plot 7-2. Occupied Bandwidth Plot (Band 71 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMF707U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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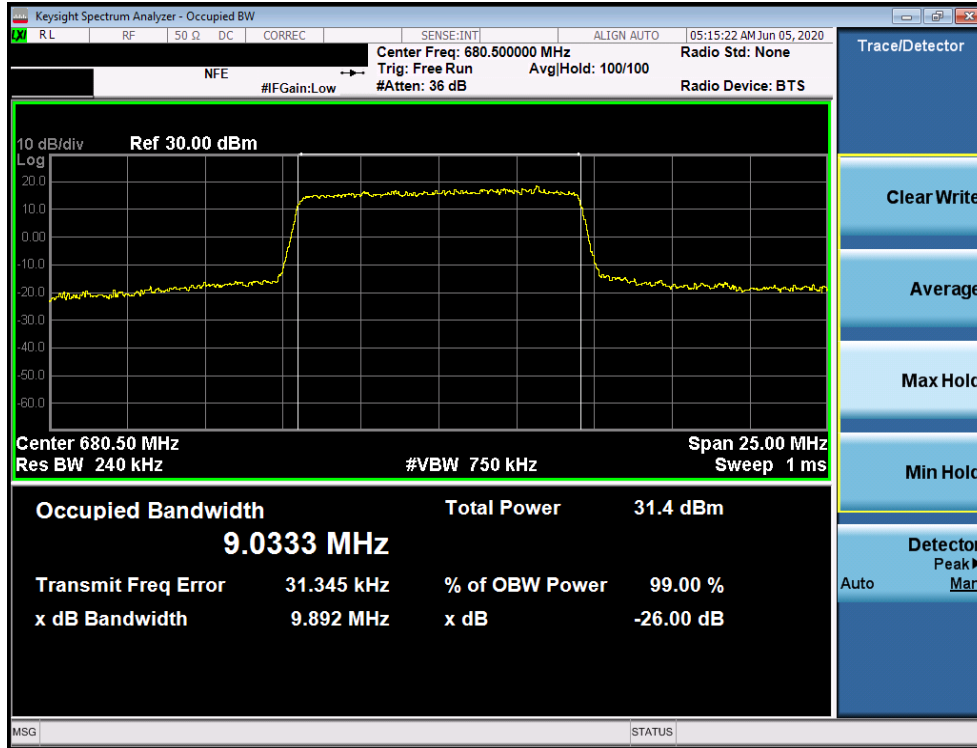


Plot 7-3. Occupied Bandwidth Plot (Band 71 - 5.0MHz 64-QAM - Full RB Configuration)

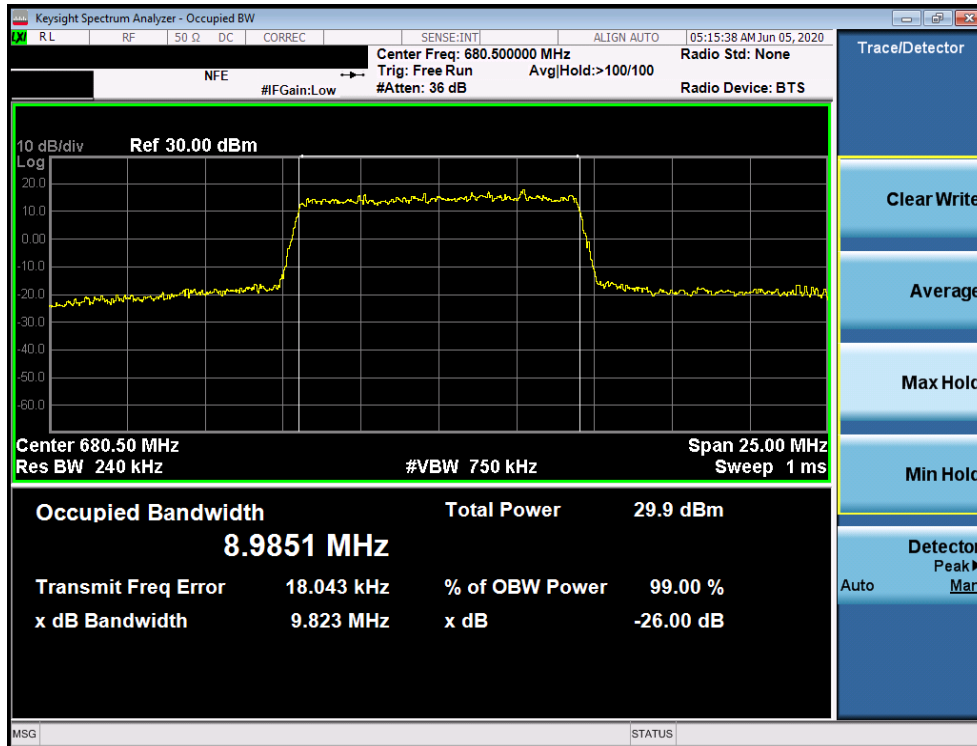


Plot 7-4. Occupied Bandwidth Plot (Band 71 - 5.0MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMF707U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2005040080-03.A3L	Test Dates: 05/04 - 07/11/2020	EUT Type: Portable Handset		Page 19 of 467



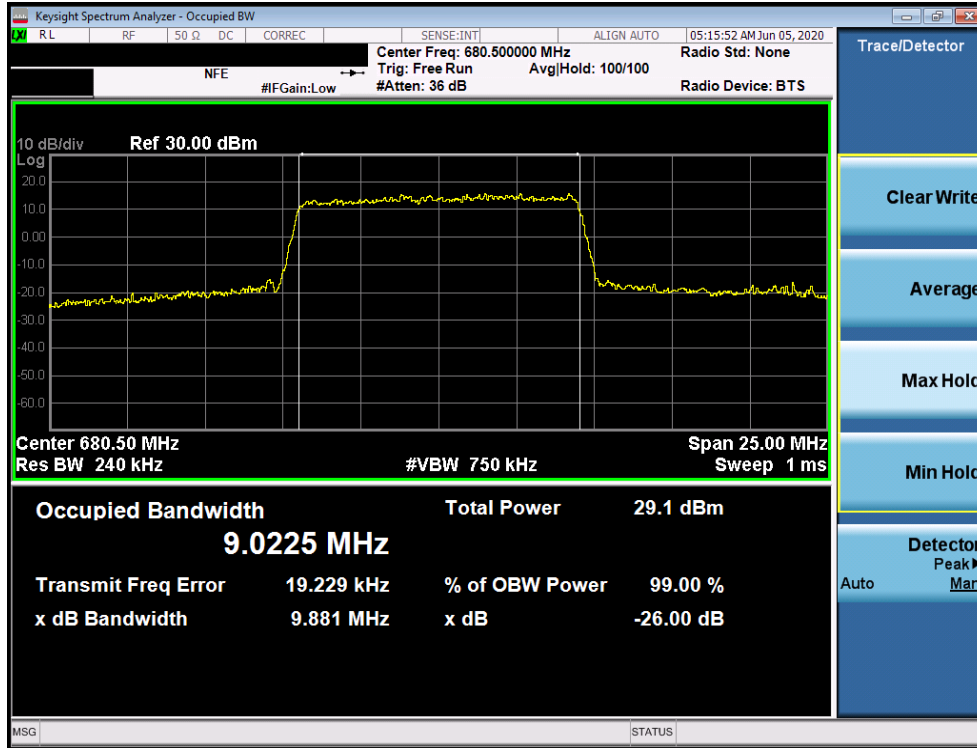
Plot 7-5. Occupied Bandwidth Plot (Band 71 - 10.0MHz QPSK - Full RB Configuration)



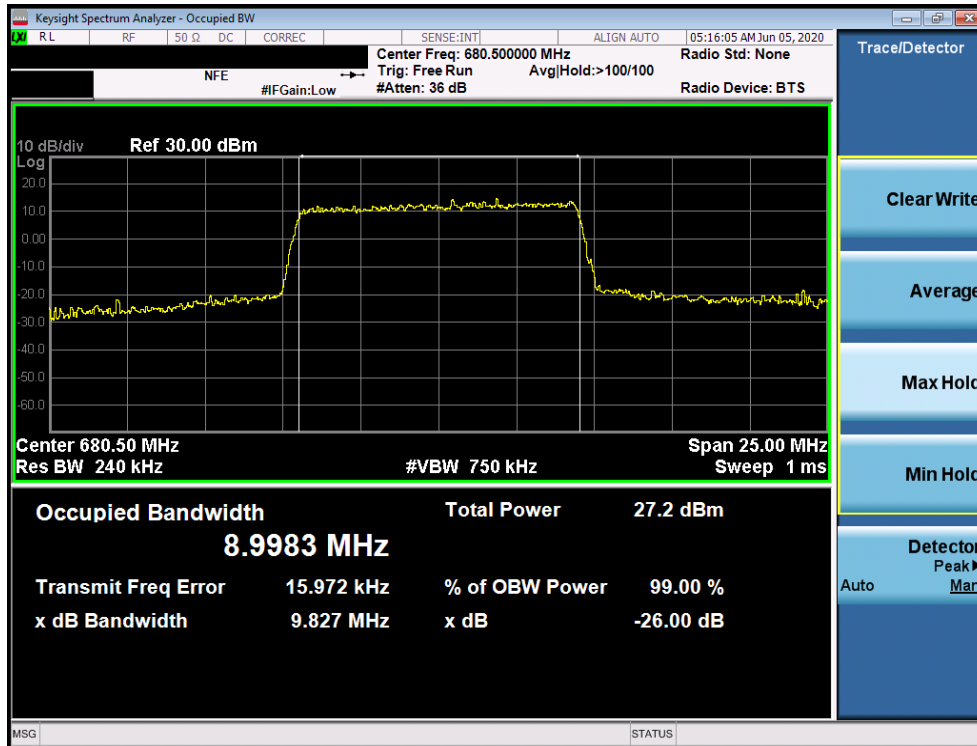
Plot 7-6. Occupied Bandwidth Plot (Band 71 - 10.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMF707U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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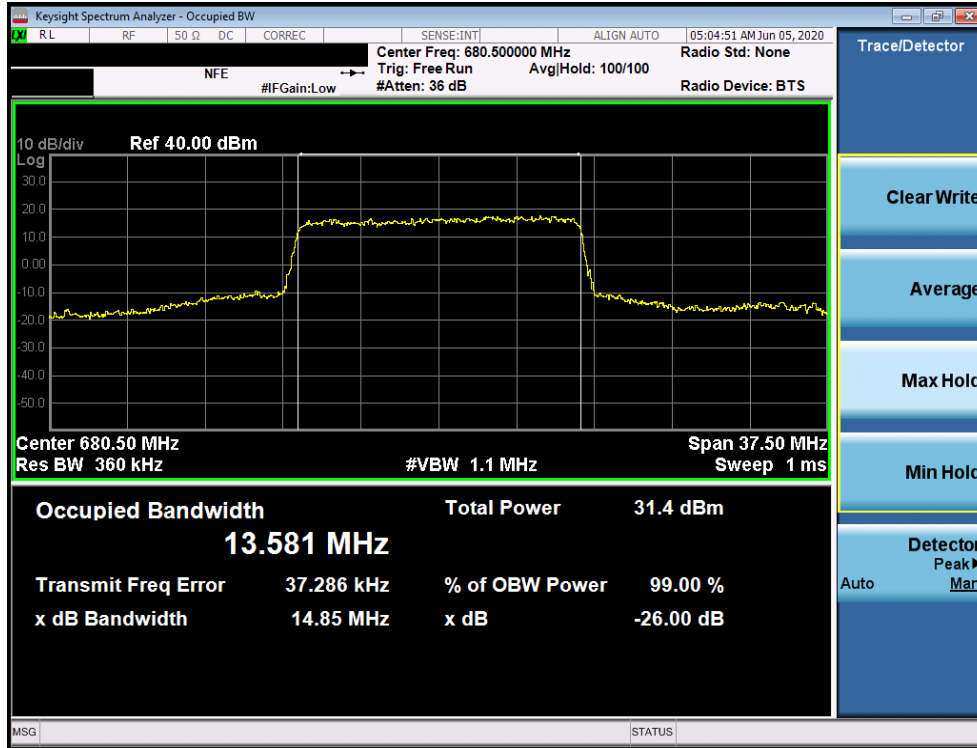


Plot 7-7. Occupied Bandwidth Plot (Band 71 - 10.0MHz 64-QAM - Full RB Configuration)



Plot 7-8. Occupied Bandwidth Plot (Band 71 - 10.0MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMF707U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2005040080-03.A3L	Test Dates: 05/04 – 07/11/2020	EUT Type: Portable Handset		Page 21 of 467

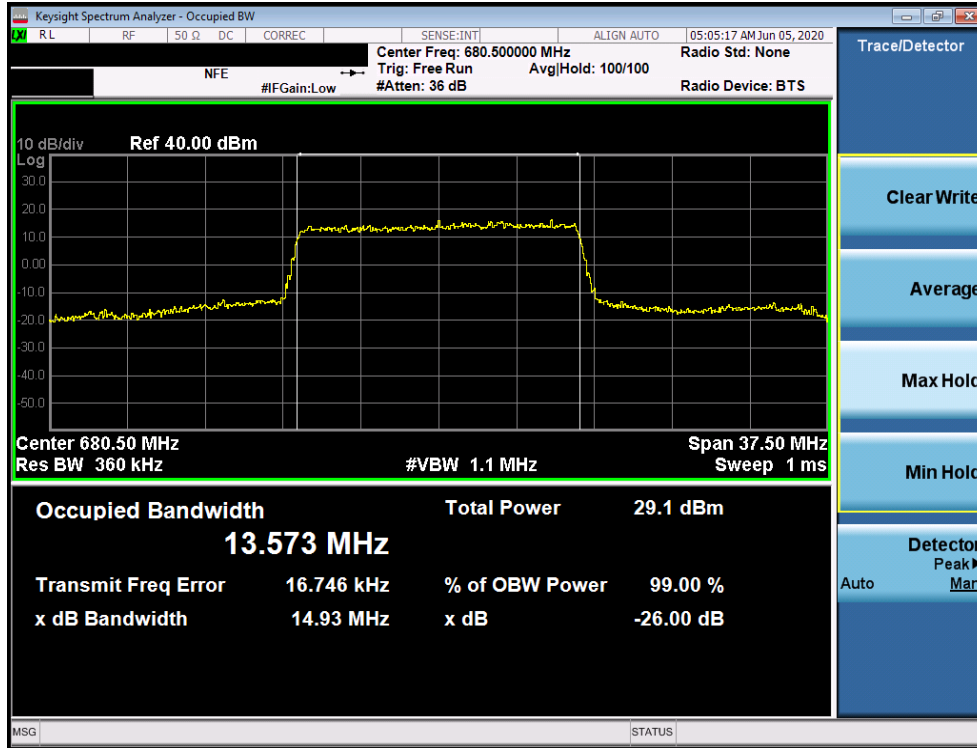


Plot 7-9. Occupied Bandwidth Plot (Band 71 - 15.0MHz QPSK - Full RB Configuration)



Plot 7-10. Occupied Bandwidth Plot (Band 71 - 15.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMF707U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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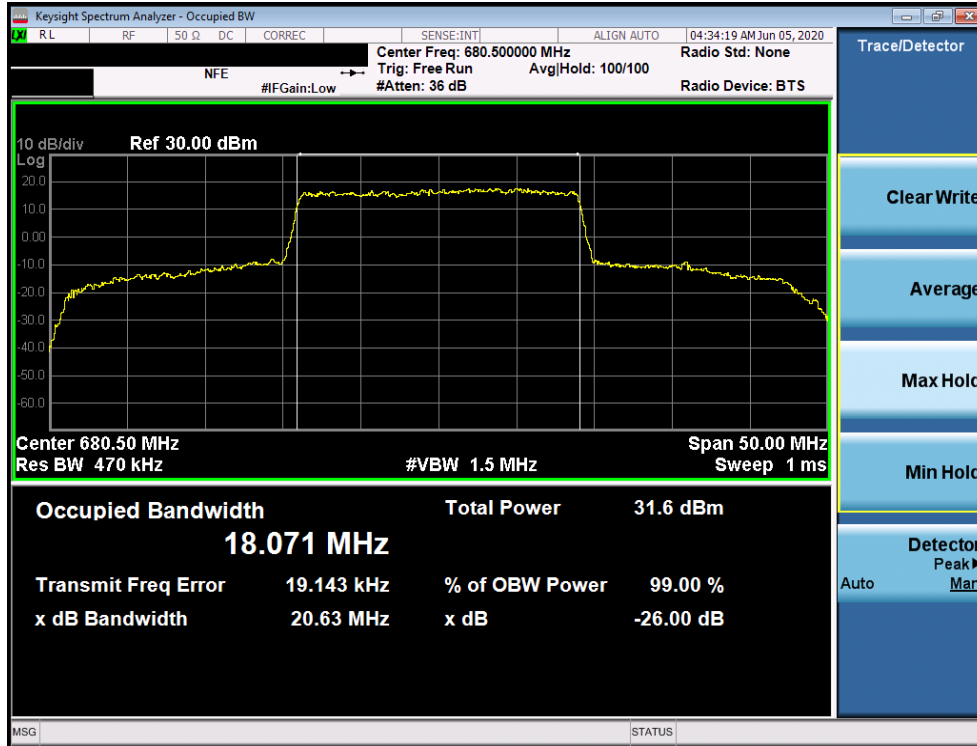


Plot 7-11. Occupied Bandwidth Plot (Band 71 - 15.0MHz 64-QAM - Full RB Configuration)



Plot 7-12. Occupied Bandwidth Plot (Band 71 - 15.0MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMF707U	<b>PCTEST</b> Proud to be part of  element	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Plot 7-13. Occupied Bandwidth Plot (Band 71 - 20.0MHz QPSK - Full RB Configuration)

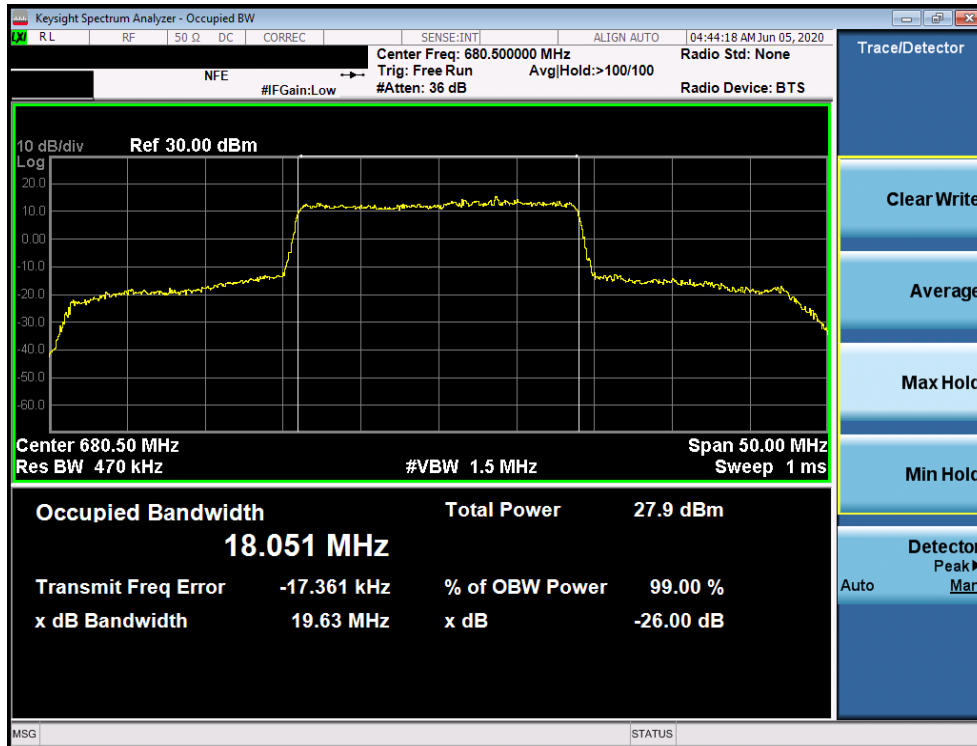


Plot 7-14. Occupied Bandwidth Plot (Band 71 - 20.0MHz 16-QAM - Full RB Configuration)



FCC ID: A3LSMF707U	<b>PCTEST</b> Proud to be part of  element	<b>MEASUREMENT REPORT (CERTIFICATION)</b>		Approved by: Quality Manager
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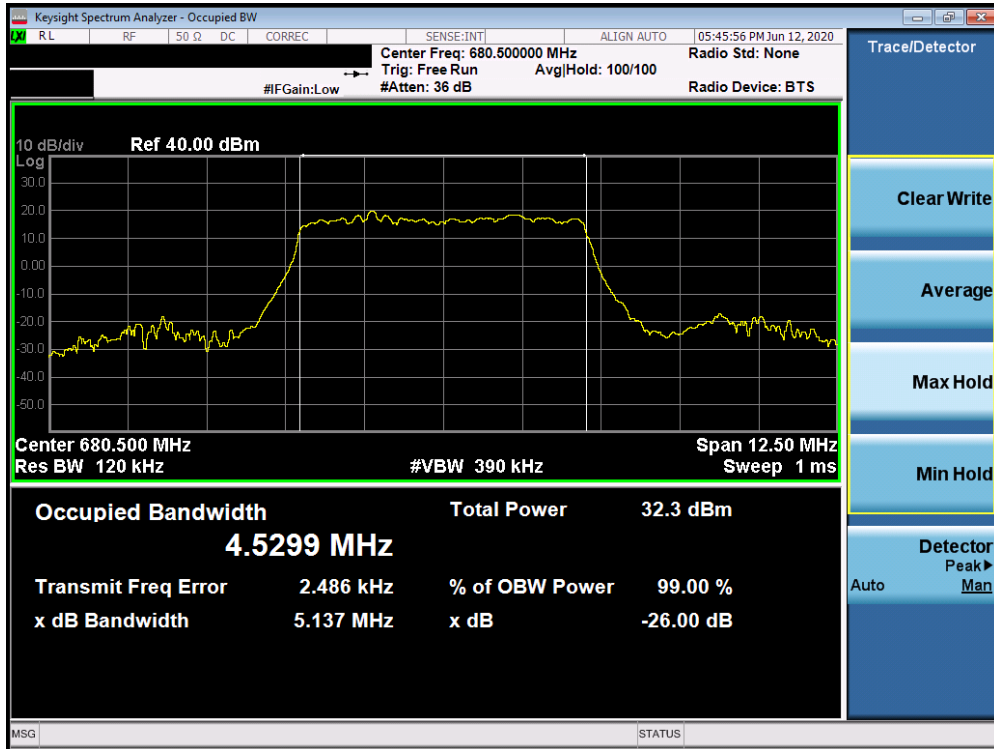
Plot 7-15. Occupied Bandwidth Plot (Band 71 - 20.0MHz 64-QAM - Full RB Configuration)



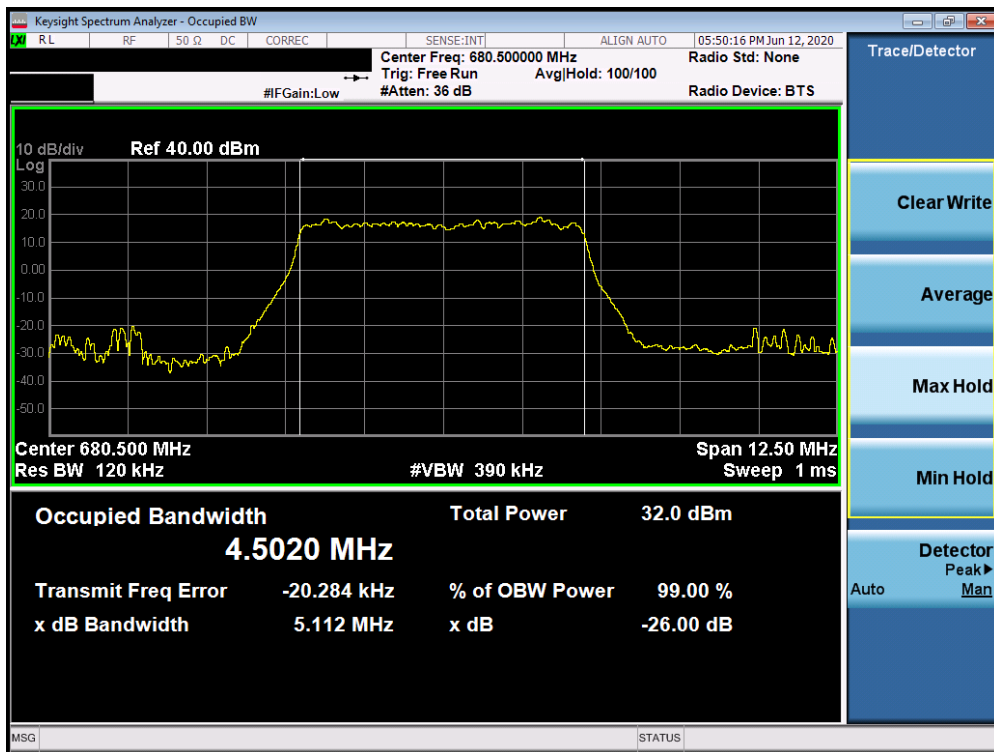
Plot 7-16. Occupied Bandwidth Plot (Band 71 - 20.0MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMF707U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2005040080-03.A3L	Test Dates: 05/04 - 07/11/2020	EUT Type: Portable Handset		Page 25 of 467


NR Band n71



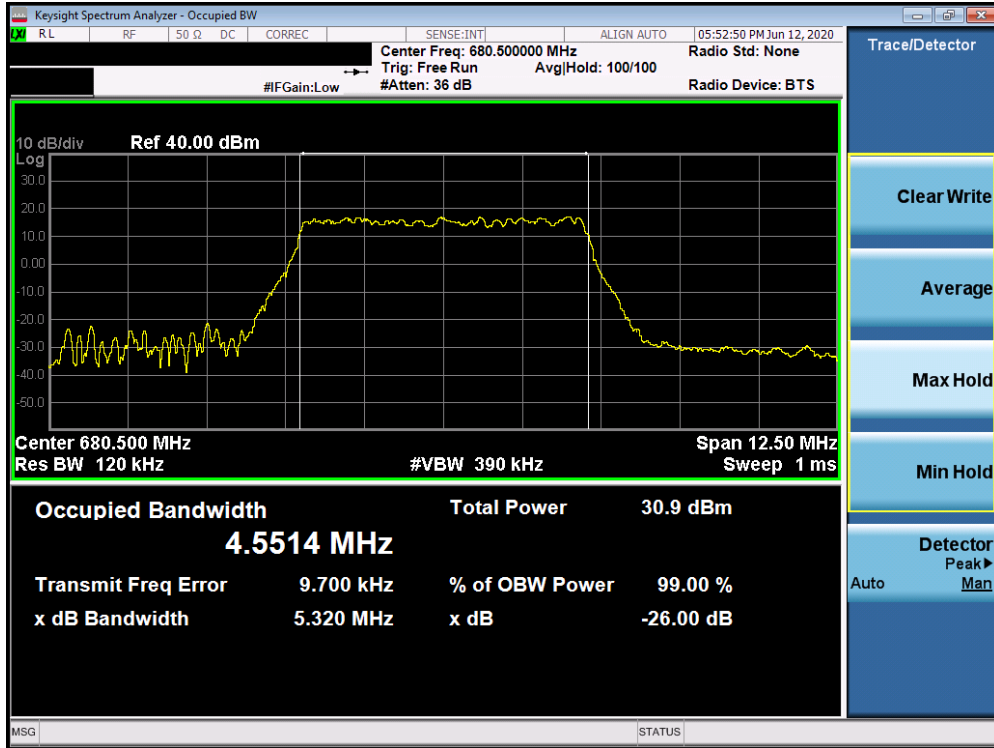
Plot 7-17. Occupied Bandwidth Plot (n71 5MHz BPSK-DFT-s-OFDM- Full RB Configuration)



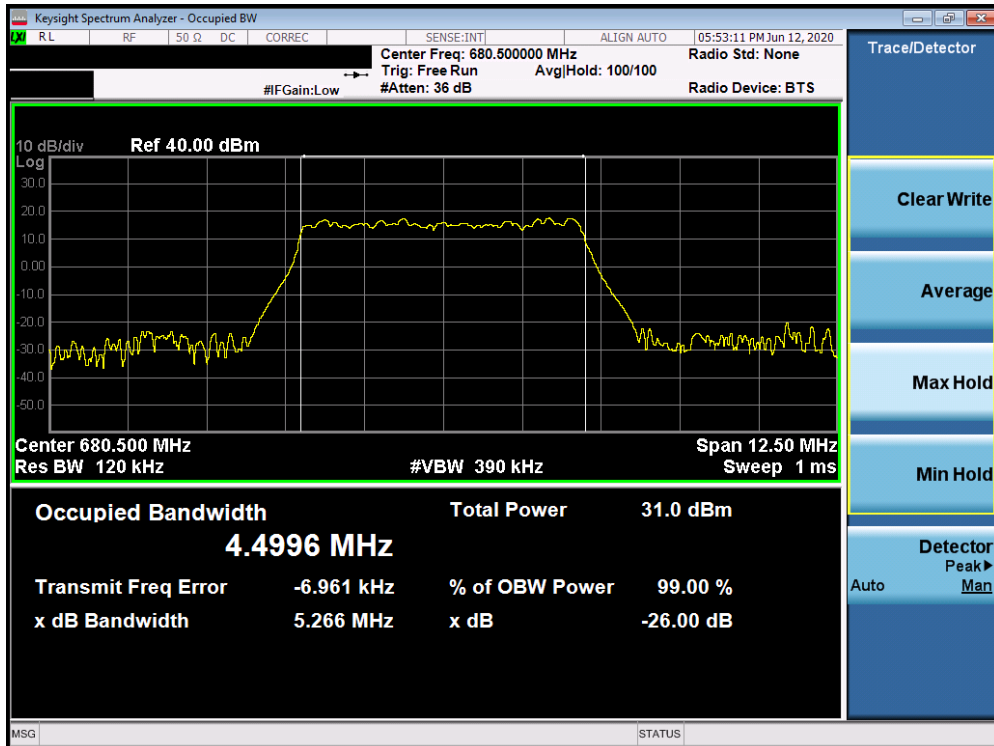
Plot 7-18. Occupied Bandwidth Plot (n71 5MHz QPSK-CP-OFDM - Full RB Configuration)

FCC ID: A3LSMF707U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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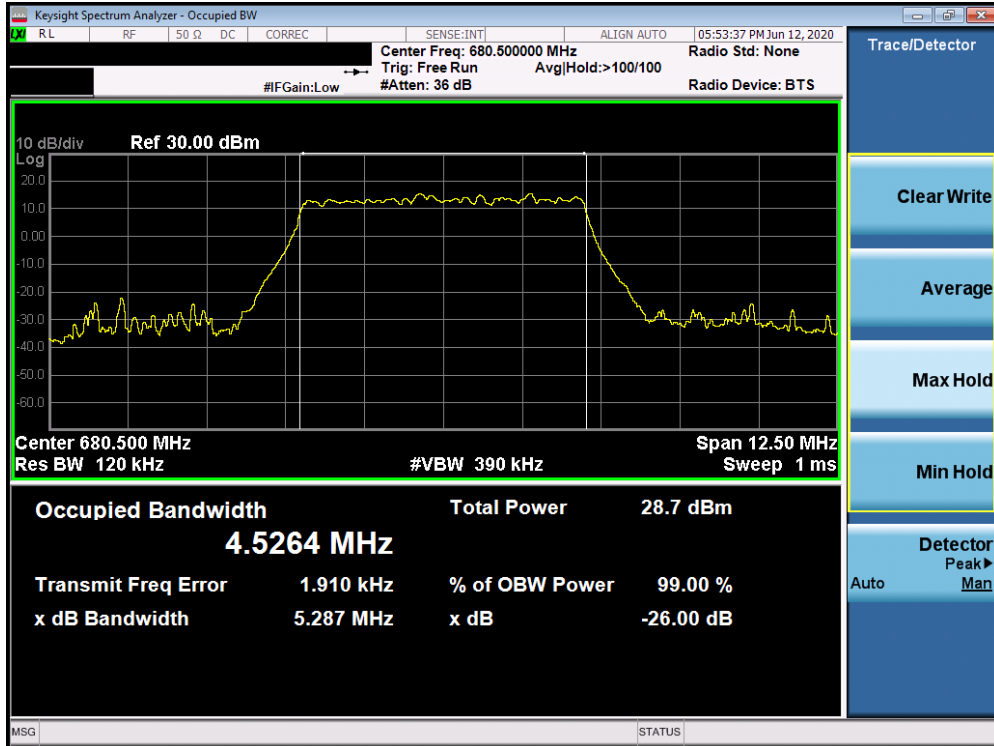


Plot 7-19. Occupied Bandwidth Plot (n71 5MHz 16QAM-CP-OFDM - Full RB Configuration)

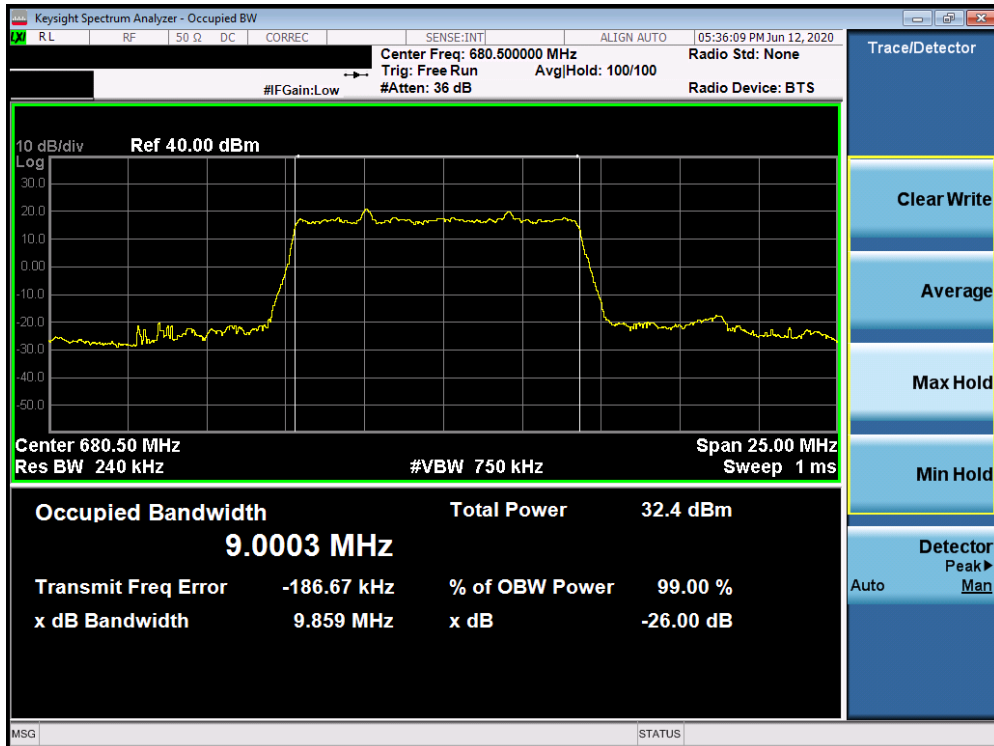


Plot 7-20. Occupied Bandwidth Plot (n71 5MHz 64QAM-CP-OFDM- Full RB Configuration)

FCC ID: A3LSMF707U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2005040080-03.A3L	Test Dates: 05/04 – 07/11/2020	EUT Type: Portable Handset		Page 27 of 467

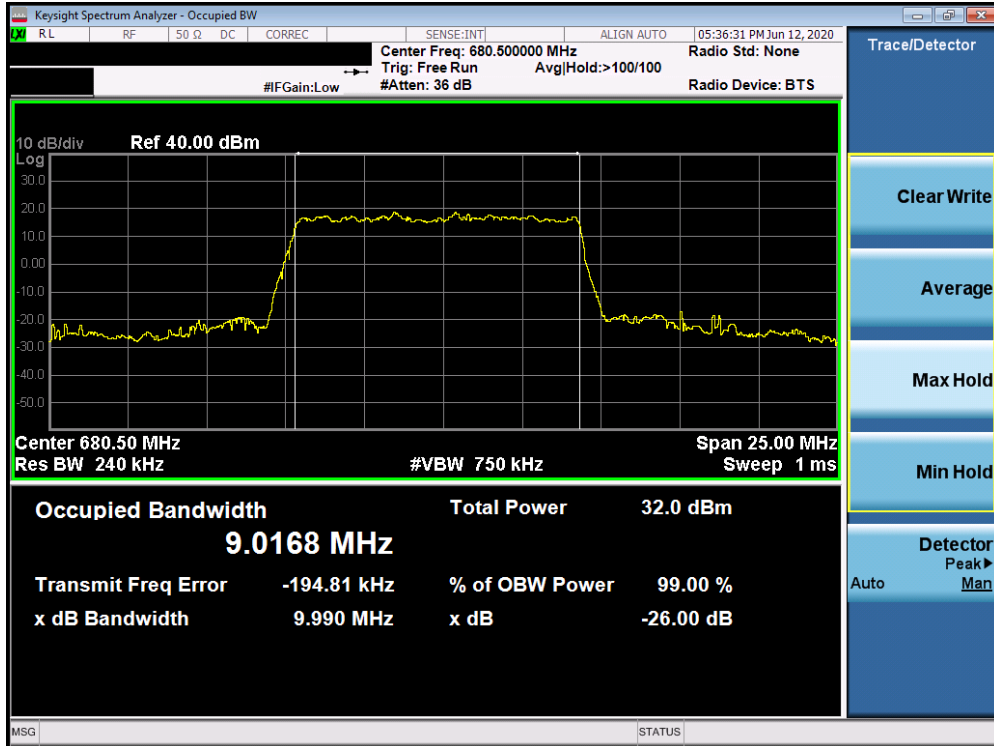


Plot 7-21. Occupied Bandwidth Plot (n71 5MHz 256QAM-CP-OFDM- Full RB Configuration)

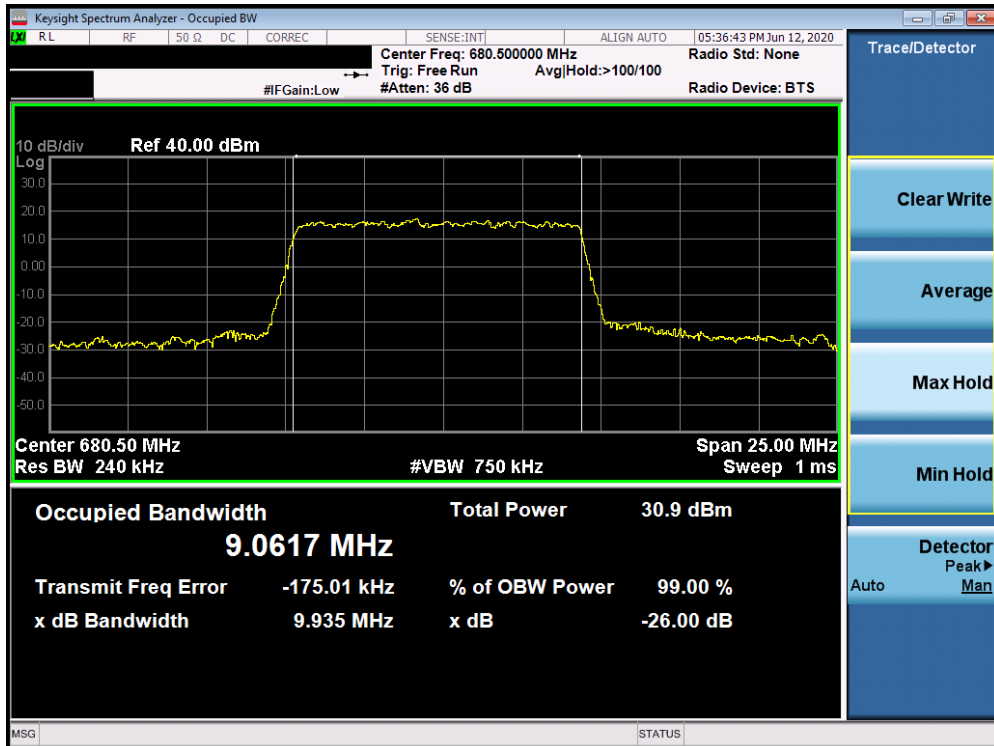


Plot 7-22. Occupied Bandwidth Plot (n71 10MHz BPSK-DFT-s-OFDM - Full RB Configuration)

FCC ID: A3LSMF707U	<b>PCTEST</b> Proud to be part of  element	<b>MEASUREMENT REPORT (CERTIFICATION)</b>		Approved by: Quality Manager
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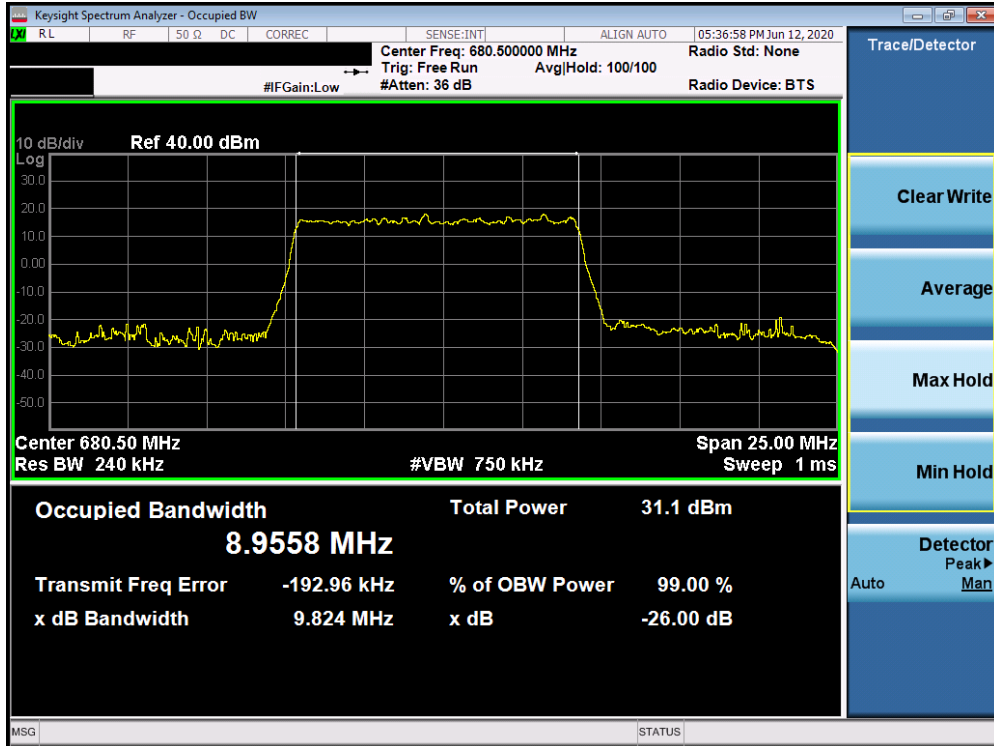


Plot 7-23. Occupied Bandwidth Plot (n71 10MHz QPSK-CP-OFDM - Full RB Configuration)

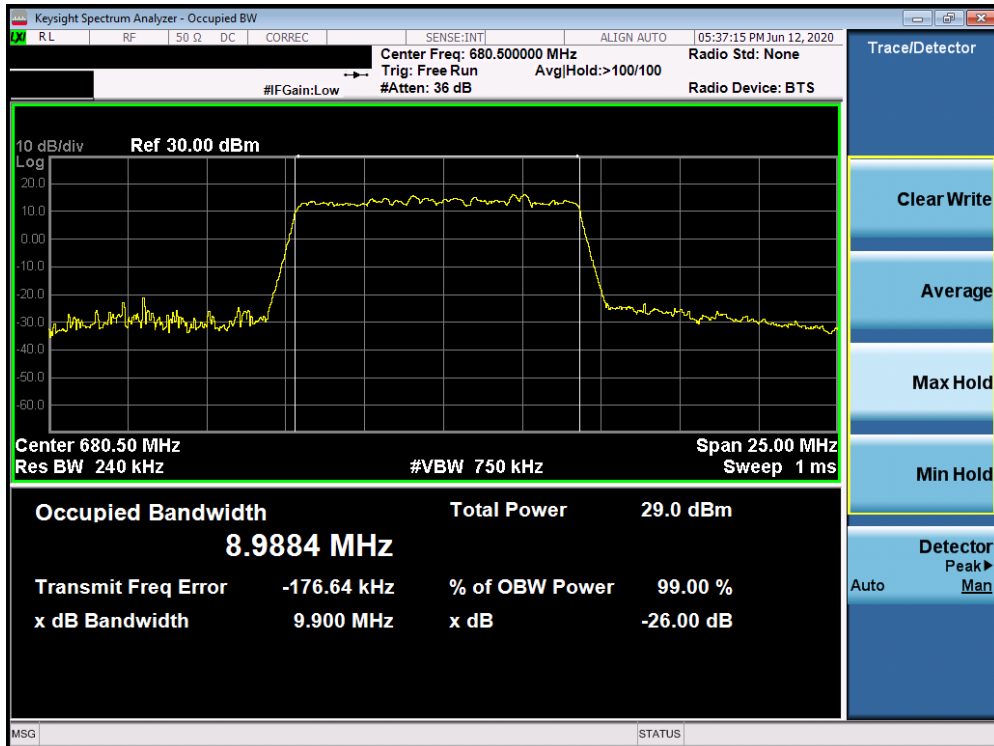


Plot 7-24. Occupied Bandwidth Plot (n71 10MHz 16QAM-CP-OFDM - Full RB Configuration)

FCC ID: A3LSMF707U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2005040080-03.A3L	Test Dates: 05/04 – 07/11/2020	EUT Type: Portable Handset		Page 29 of 467

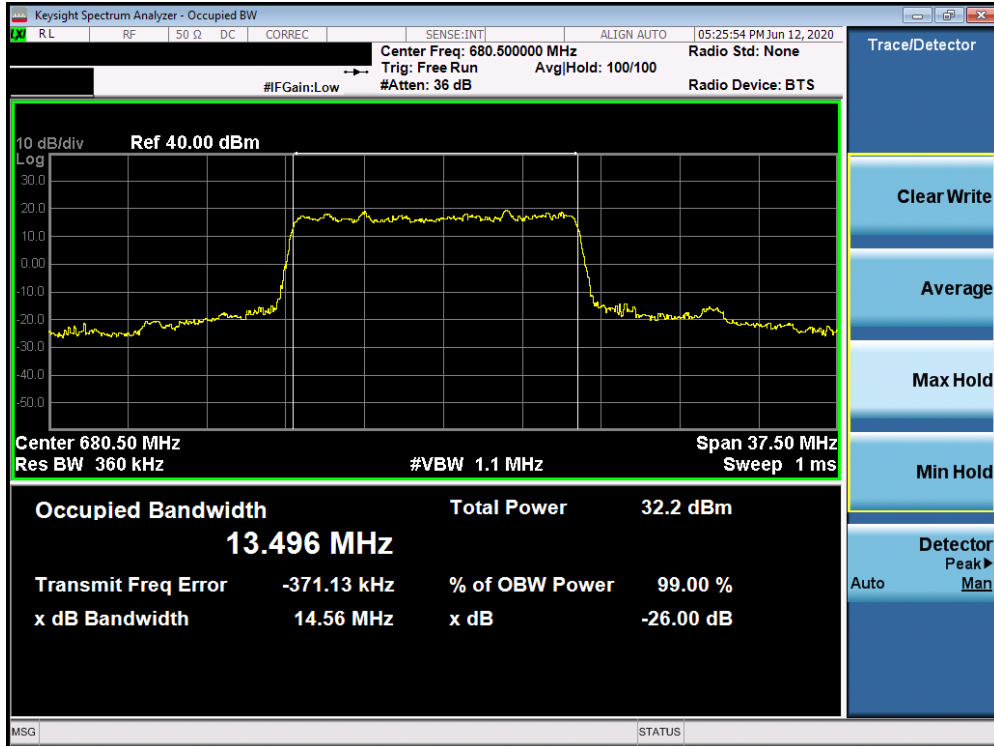


Plot 7-25. Occupied Bandwidth Plot (n71 10MHz 64QAM-CP-OFDM- Full RB Configuration)

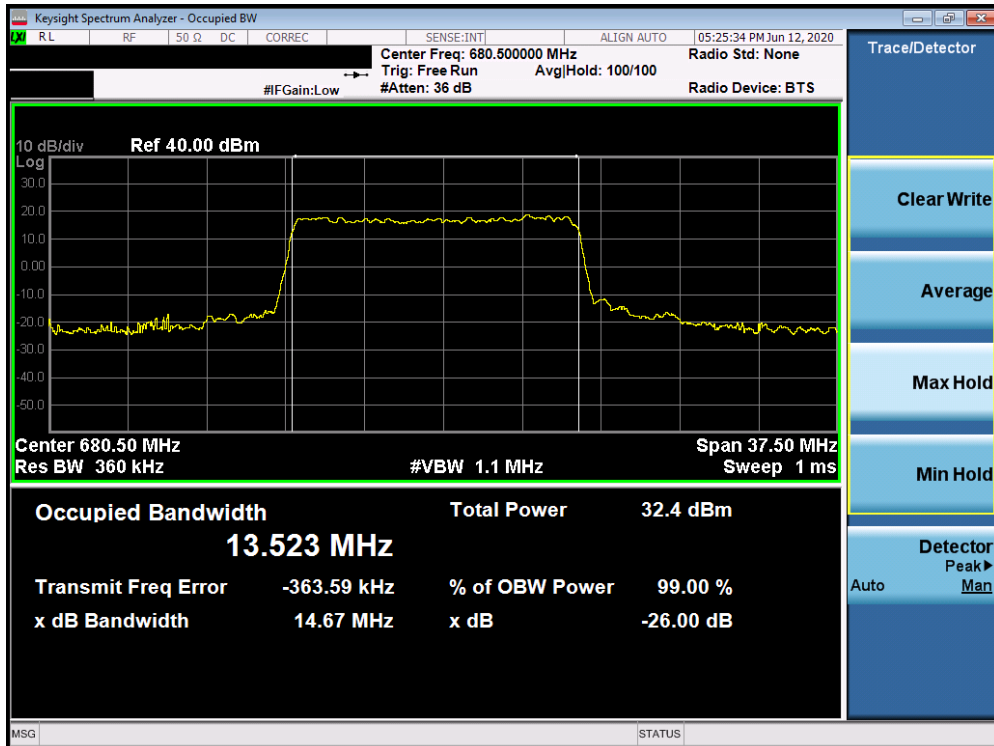


Plot 7-26. Occupied Bandwidth Plot (n71 10MHz 256QAM-CP-OFDM- Full RB Configuration)


FCC ID: A3LSMF707U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2005040080-03.A3L	Test Dates: 05/04 – 07/11/2020	EUT Type: Portable Handset		Page 30 of 467

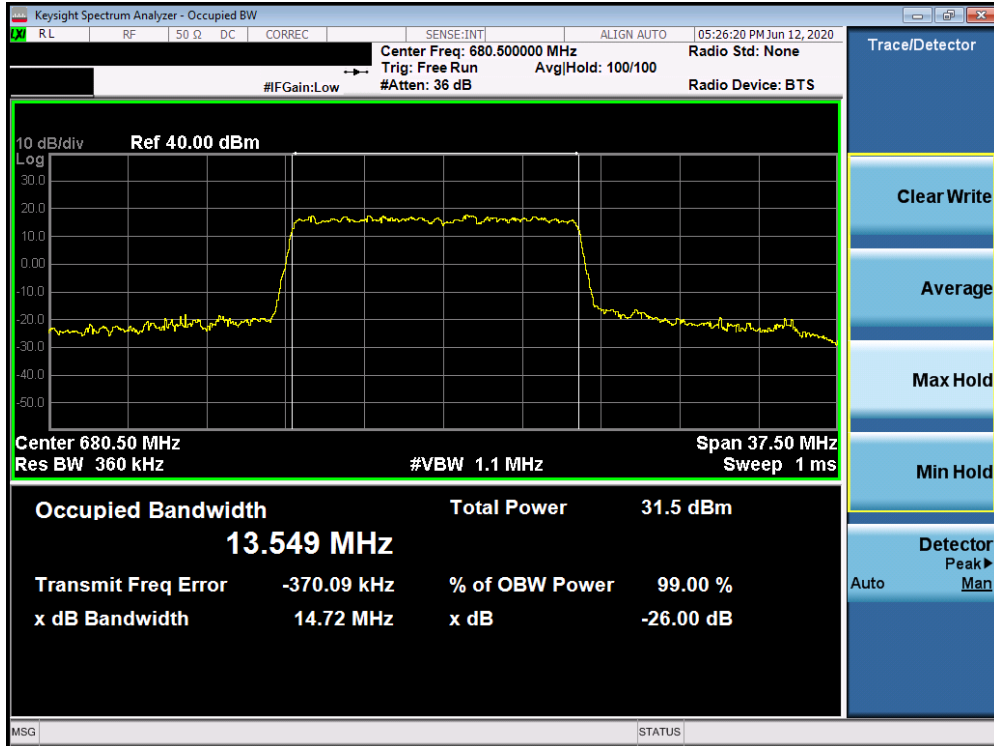


Plot 7-27. Occupied Bandwidth Plot (n71 15MHz BPSK-DFT-s-OFDM - Full RB Configuration)

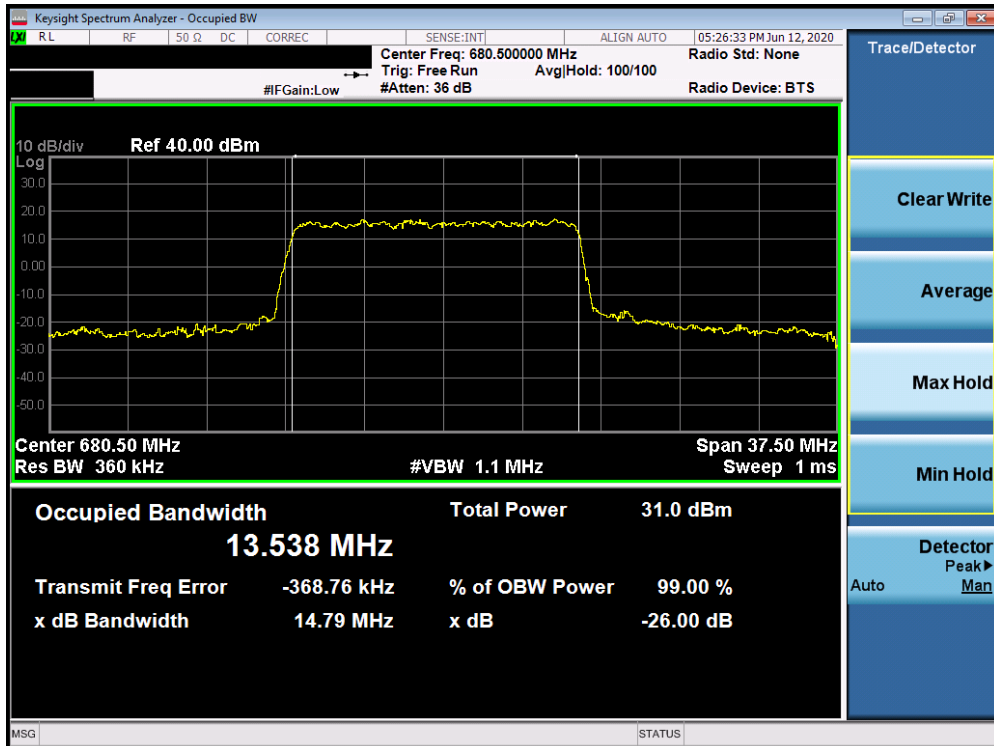


Plot 7-28. Occupied Bandwidth Plot (n71 15MHz QPSK-CP-OFDM - Full RB Configuration)

FCC ID: A3LSMF707U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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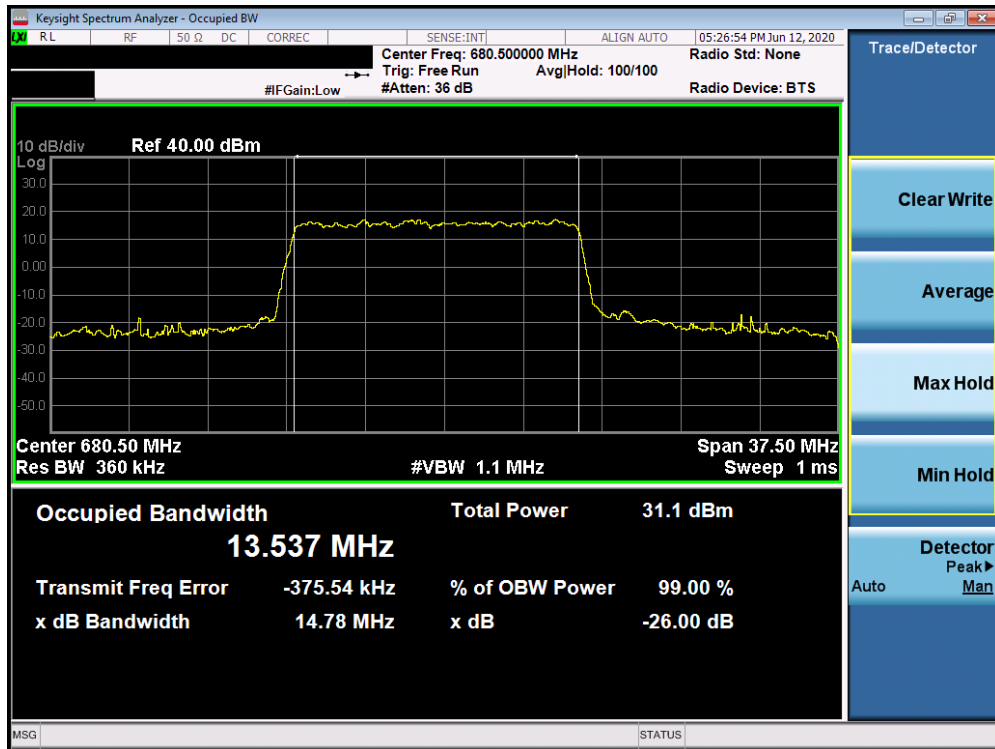
Plot 7-29. Occupied Bandwidth Plot (n71 15MHz 16QAM-CP-OFDM - Full RB Configuration)



Plot 7-30. Occupied Bandwidth Plot (n71 15MHz 64QAM-CP-OFDM- Full RB Configuration)

FCC ID: A3LSMF707U	<b>PCTEST</b> Proud to be part of  element	<b>MEASUREMENT REPORT (CERTIFICATION)</b>		Approved by: Quality Manager
Test Report S/N: 1M2005040080-03.A3L	Test Dates: 05/04 – 07/11/2020	EUT Type: Portable Handset		Page 32 of 467



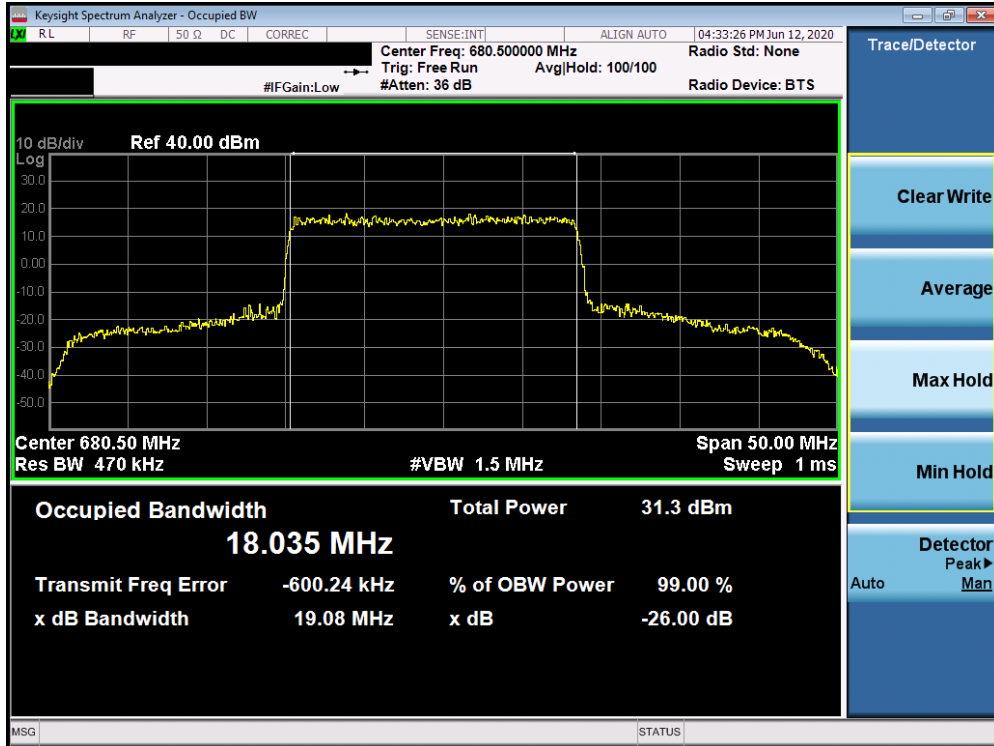


Plot 7-31. Occupied Bandwidth Plot (n71 15MHz 256QAM-CP-OFDM- Full RB Configuration)

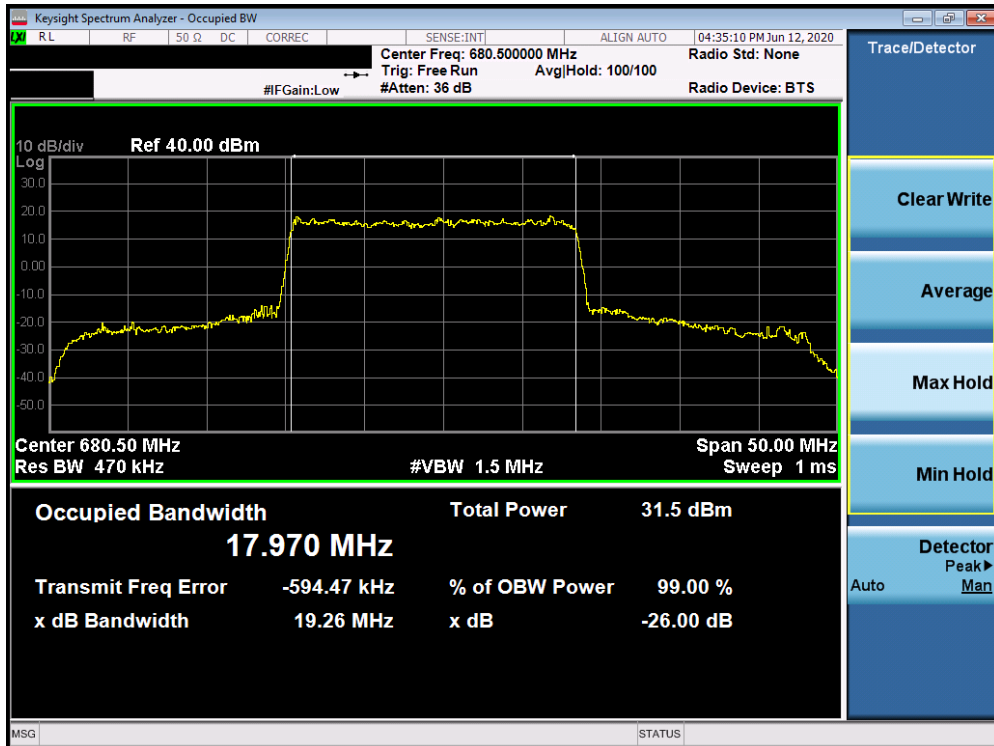


Plot 7-32. Occupied Bandwidth Plot (n71 20MHz BPSK-DFT-s-OFDM - Full RB Configuration)

FCC ID: A3LSMF707U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2005040080-03.A3L	Test Dates: 05/04 – 07/11/2020	EUT Type: Portable Handset		Page 33 of 467

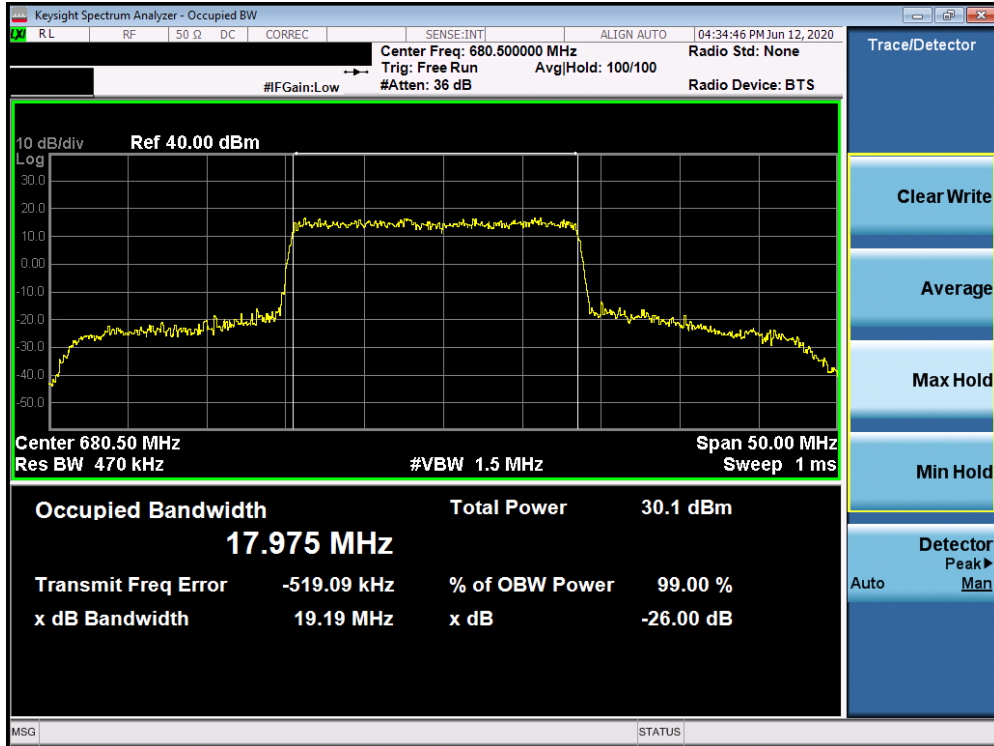


Plot 7-33. Occupied Bandwidth Plot (n71 20MHz QPSK-CP-OFDM - Full RB Configuration)

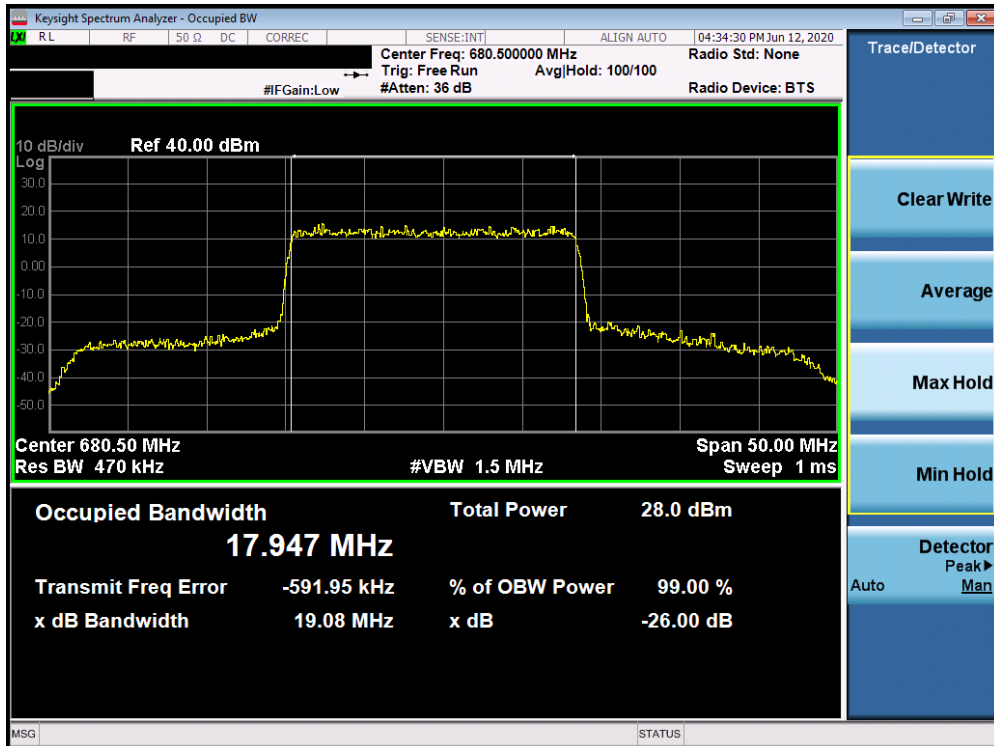


Plot 7-34. Occupied Bandwidth Plot (n71 20MHz 16QAM-CP-OFDM - Full RB Configuration)

FCC ID: A3LSMF707U	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	<b>SAMSUNG</b>	Approved by: Quality Manager
Test Report S/N: 1M2005040080-03.A3L	Test Dates: 05/04 - 07/11/2020	EUT Type: Portable Handset		Page 34 of 467



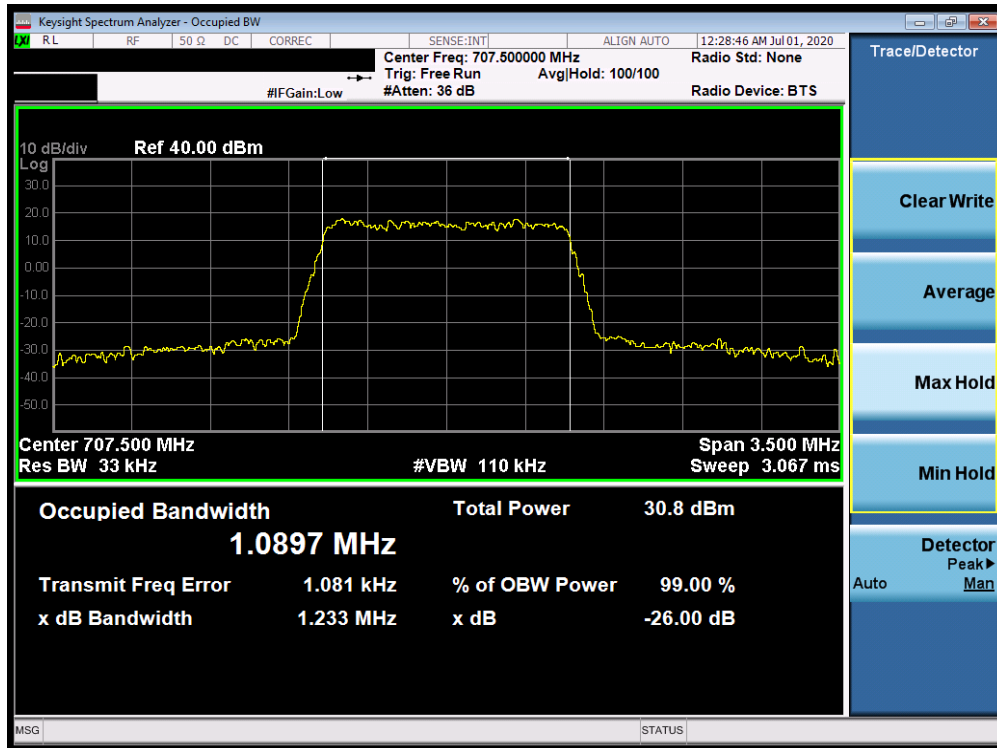
Plot 7-35. Occupied Bandwidth Plot (n71 20MHz 64QAM-CP-OFDM- Full RB Configuration)



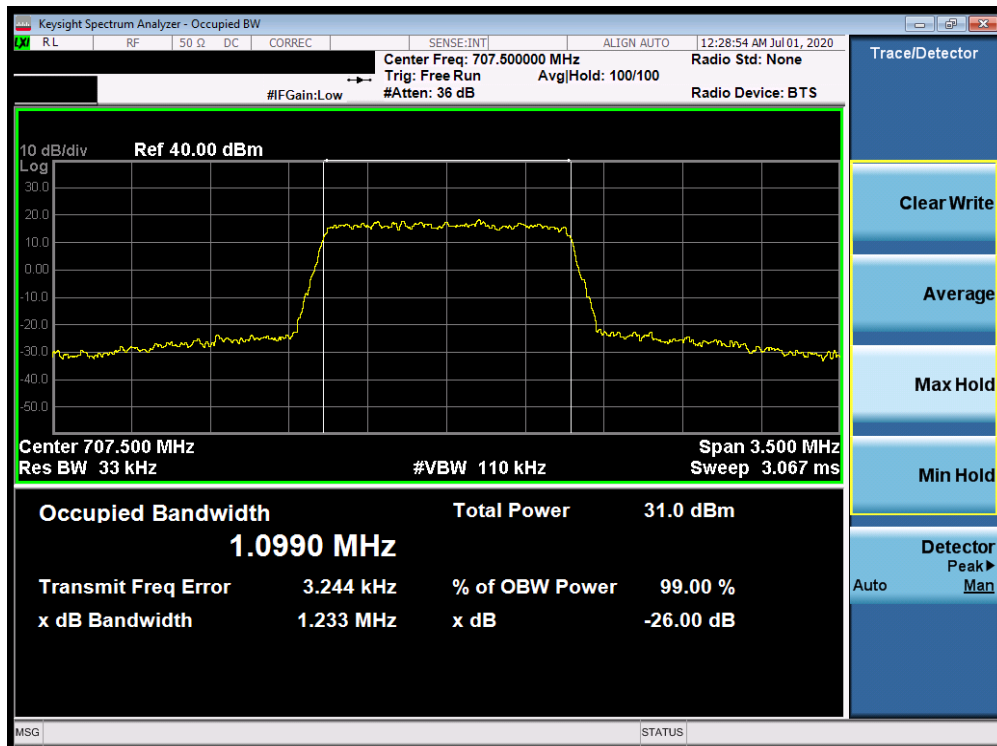
Plot 7-36. Occupied Bandwidth Plot (n71 20MHz 256QAM-CP-OFDM- Full RB Configuration)

FCC ID: A3LSMF707U	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	<b>SAMSUNG</b>	Approved by: Quality Manager
Test Report S/N: 1M2005040080-03.A3L	Test Dates: 05/04 – 07/11/2020	EUT Type: Portable Handset		Page 35 of 467

**Band 12**

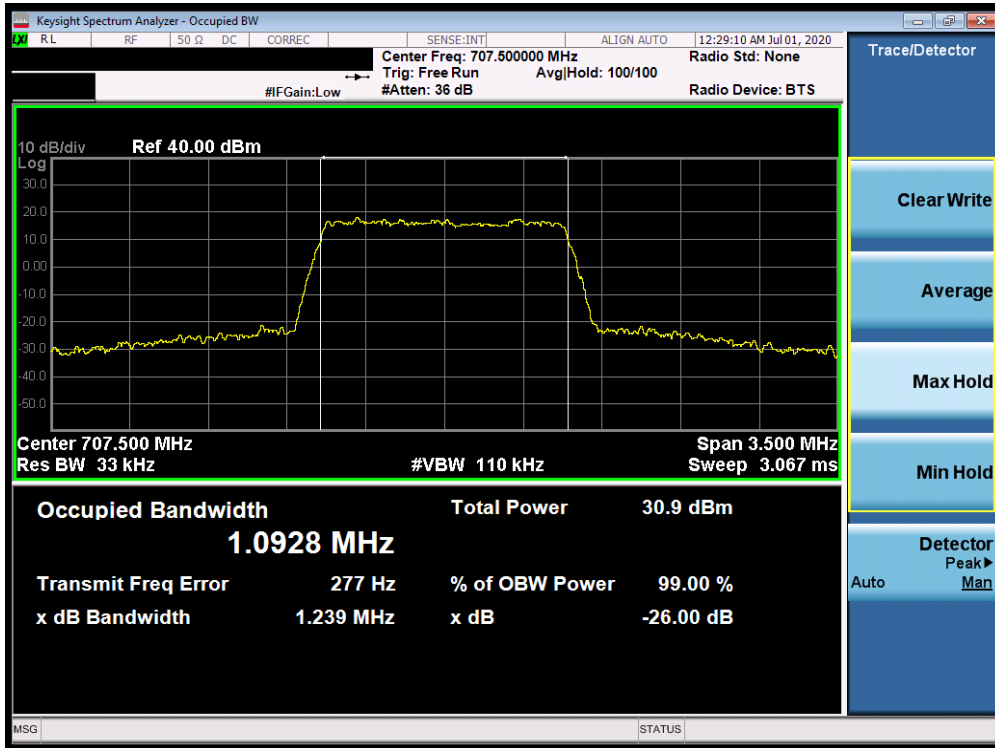


**Plot 7-37. Occupied Bandwidth Plot (Band 12 - 1.4MHz QPSK - Full RB Configuration)**

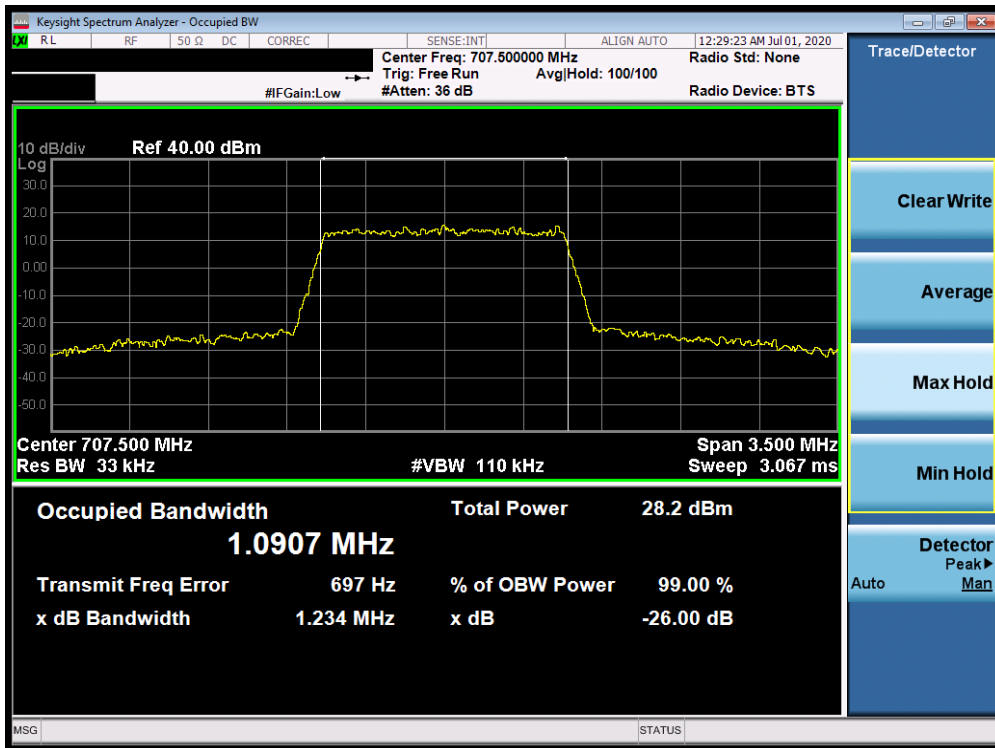


**Plot 7-38. Occupied Bandwidth Plot (Band 12 - 1.4MHz 16-QAM - Full RB Configuration)**

FCC ID: A3LSMF707U	<b>PCTEST</b> Proud to be part of element	<b>MEASUREMENT REPORT (CERTIFICATION)</b>	<b>SAMSUNG</b>	Approved by: Quality Manager
Test Report S/N: 1M2005040080-03.A3L	Test Dates: 05/04 - 07/11/2020	EUT Type: Portable Handset		Page 36 of 467

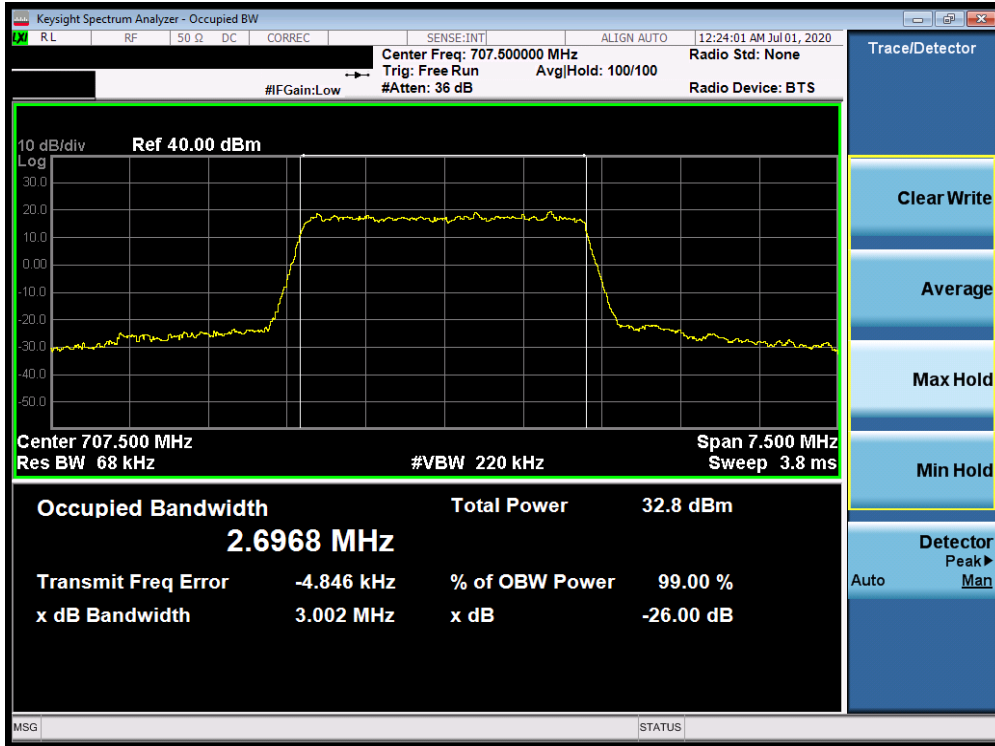


Plot 7-39. Occupied Bandwidth Plot (Band 12 - 1.4MHz 64-QAM - Full RB Configuration)

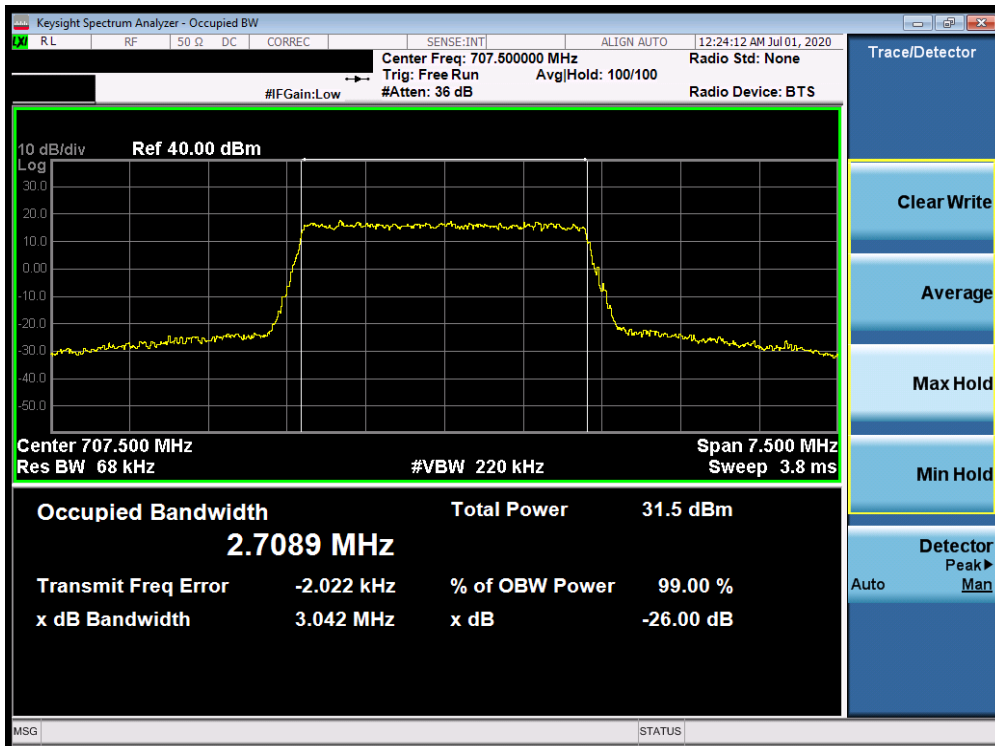


Plot 7-40. Occupied Bandwidth Plot (Band 12 - 1.4MHz 256-QAM - Full RB Configuration)


FCC ID: A3LSMF707U	PCTEST Proud to be part of  element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M2005040080-03.A3L	Test Dates: 05/04 - 07/11/2020	EUT Type: Portable Handset		Page 37 of 467



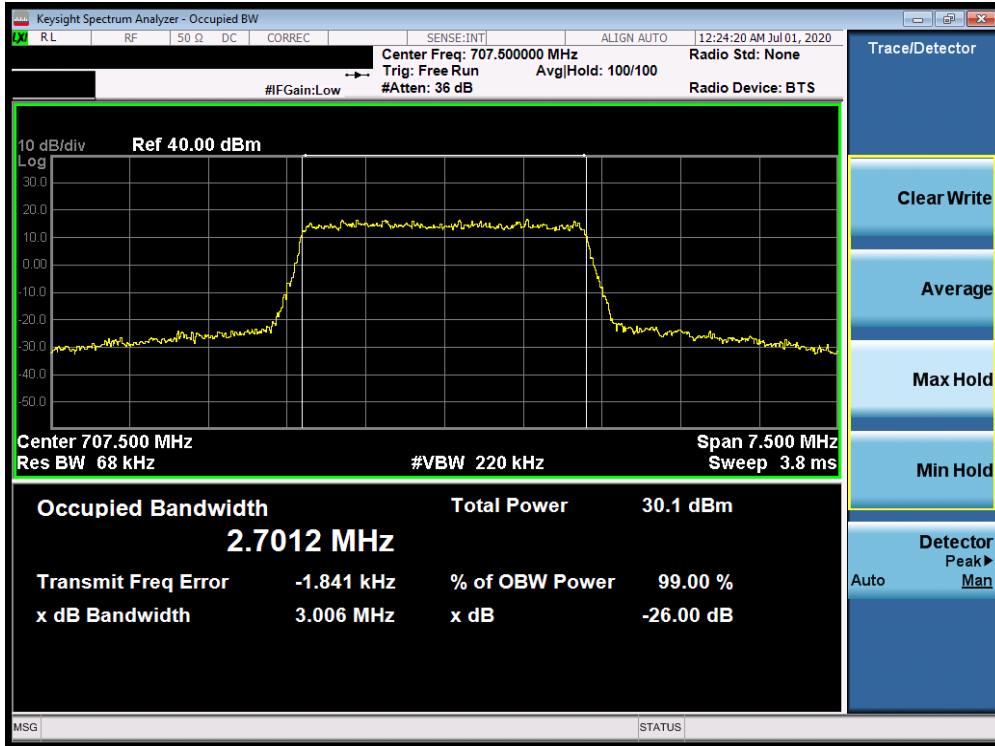
Plot 7-41. Occupied Bandwidth Plot (Band 12 - 3.0MHz QPSK - Full RB Configuration)



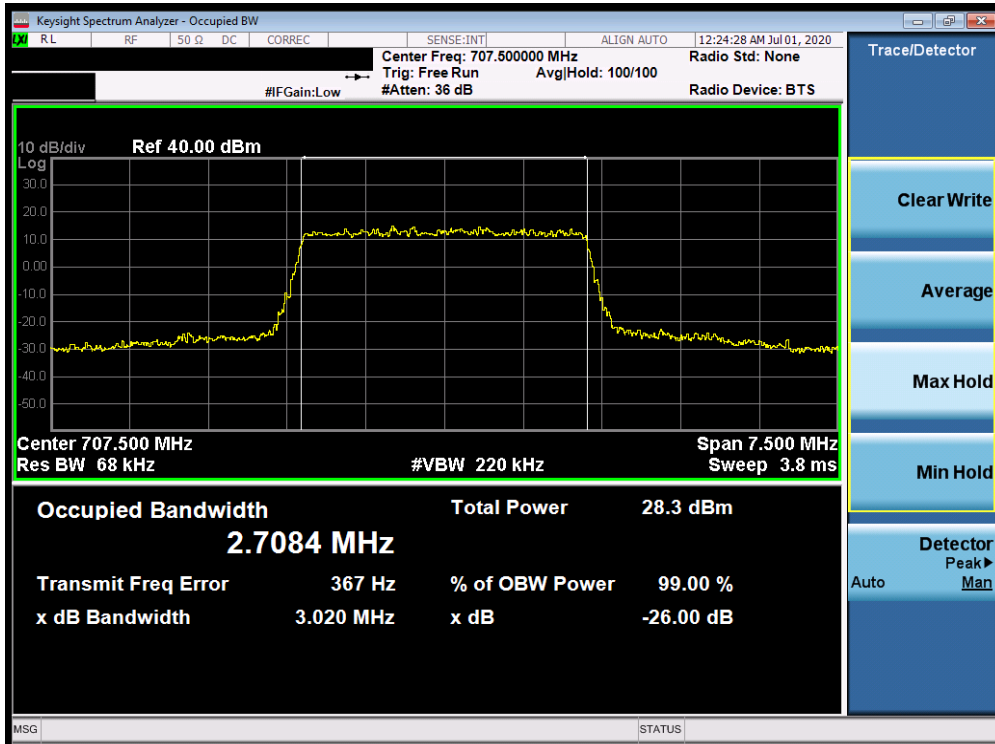
Plot 7-42. Occupied Bandwidth Plot (Band 12 - 3.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMF707U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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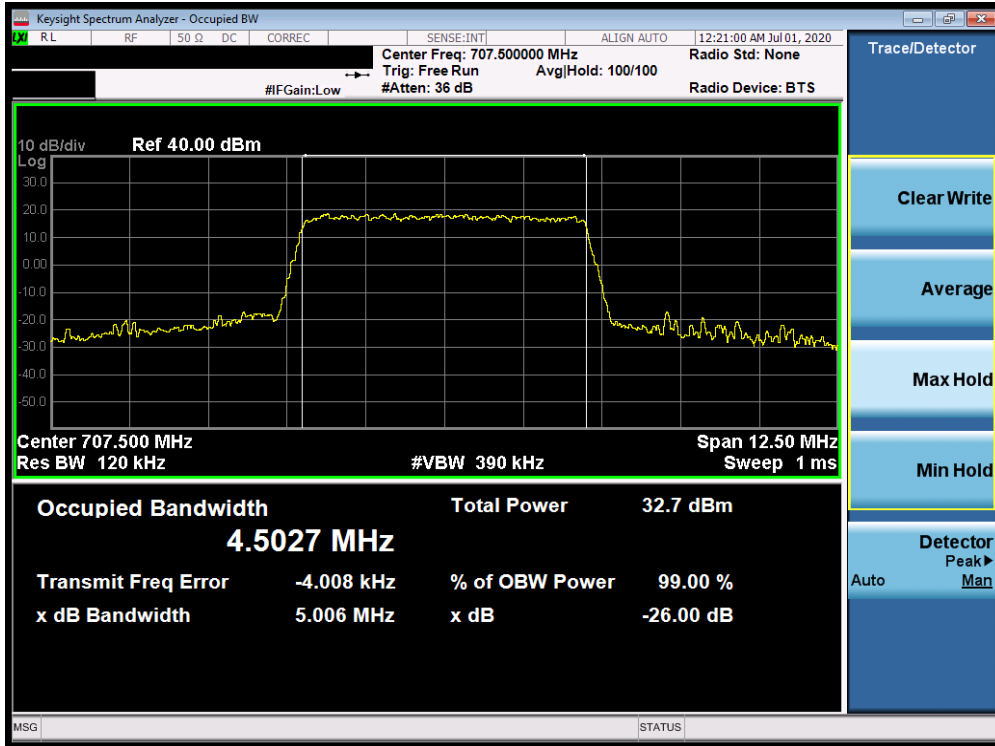


Plot 7-43. Occupied Bandwidth Plot (Band 12 - 3.0MHz 64-QAM - Full RB Configuration)

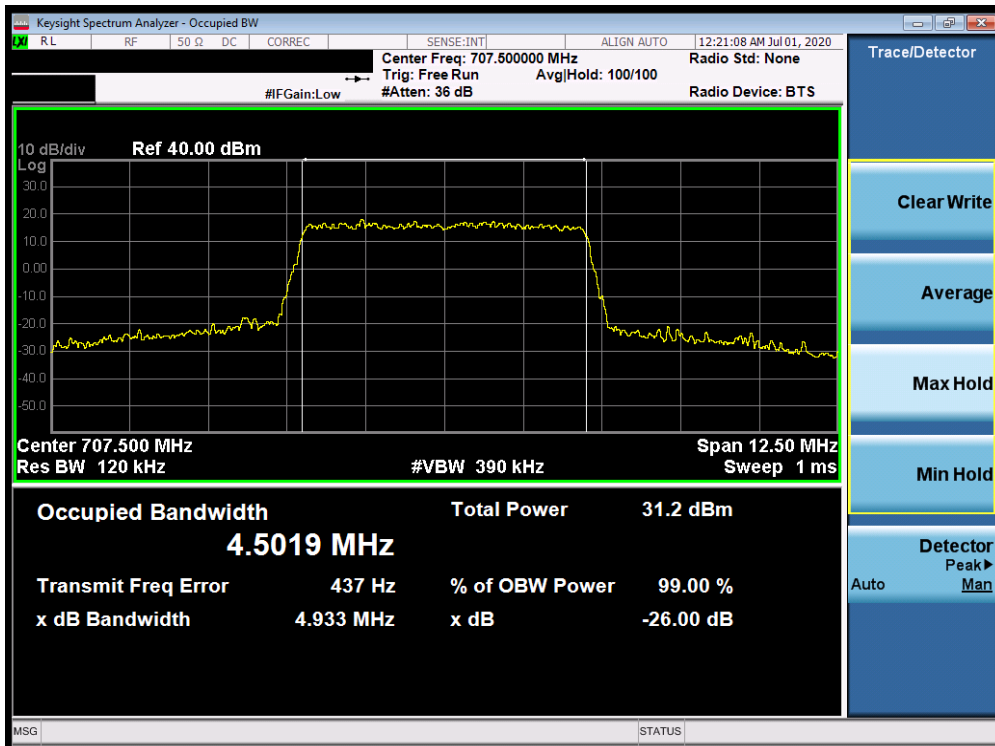


Plot 7-44. Occupied Bandwidth Plot (Band 12 - 3.0MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMF707U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2005040080-03.A3L	Test Dates: 05/04 - 07/11/2020	EUT Type: Portable Handset		Page 39 of 467

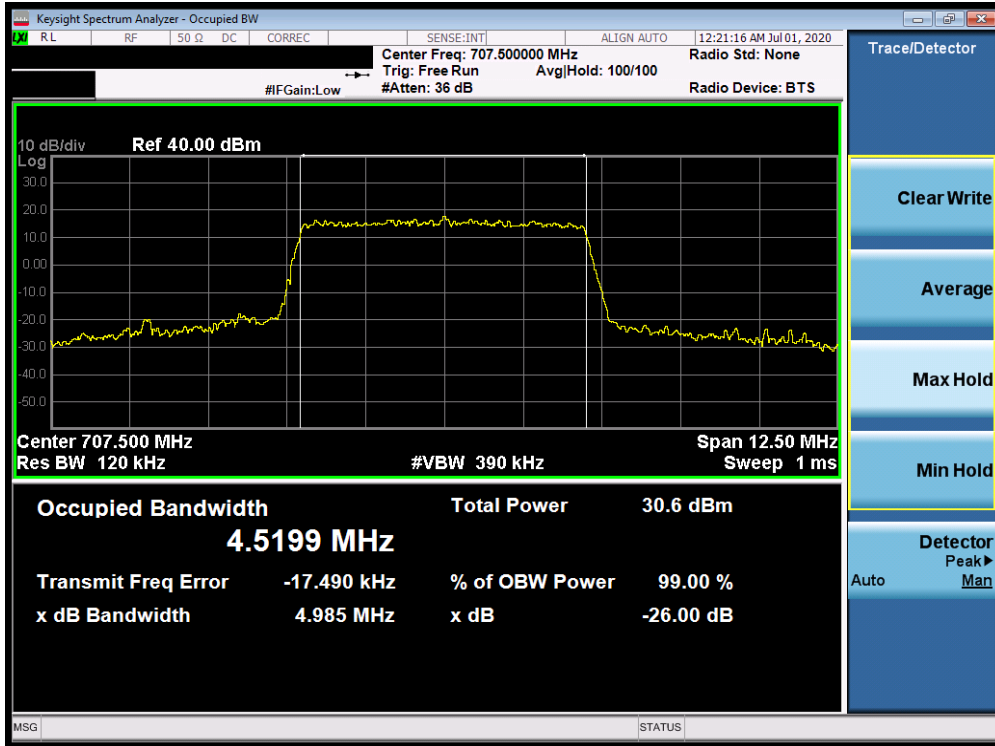


Plot 7-45. Occupied Bandwidth Plot (Band 12 - 5.0MHz QPSK - Full RB Configuration)

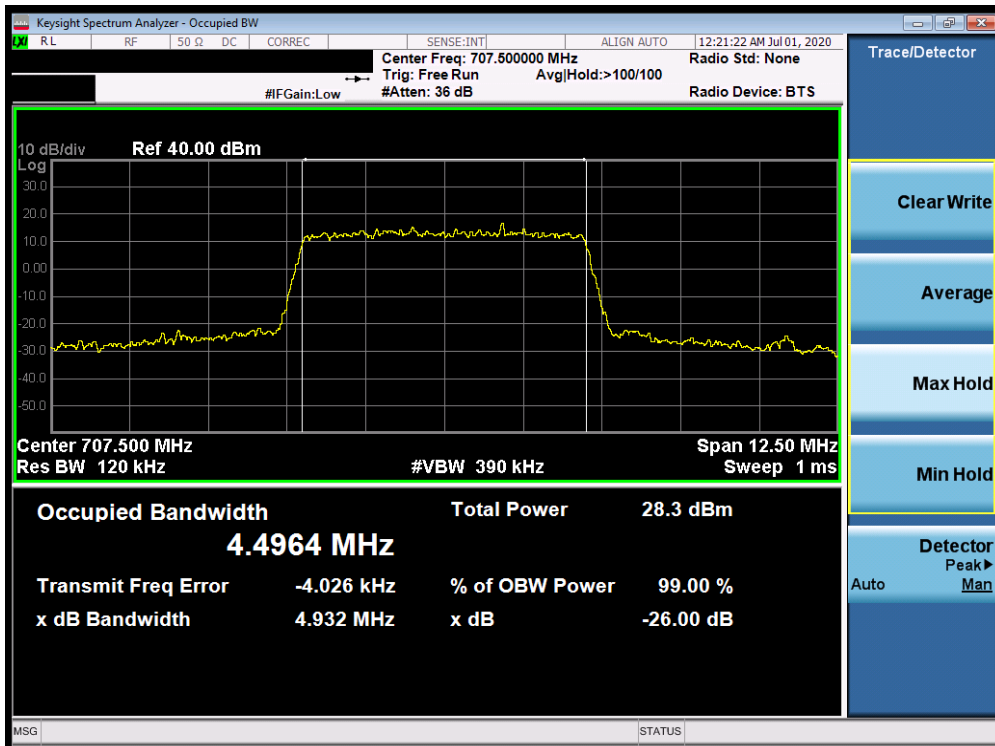


Plot 7-46. Occupied Bandwidth Plot (Band 12 - 5.0MHz 16-QAM - Full RB Configuration)



FCC ID: A3LSMF707U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2005040080-03.A3L	Test Dates: 05/04 - 07/11/2020	EUT Type: Portable Handset		Page 40 of 467

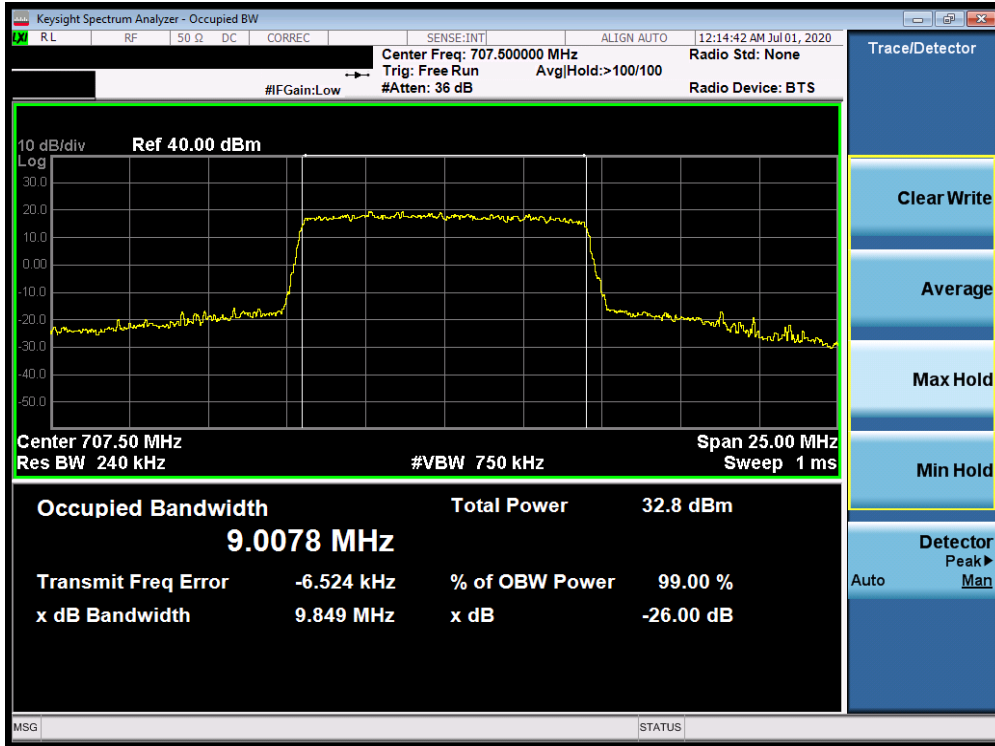


Plot 7-47. Occupied Bandwidth Plot (Band 12 - 5.0MHz 64-QAM - Full RB Configuration)

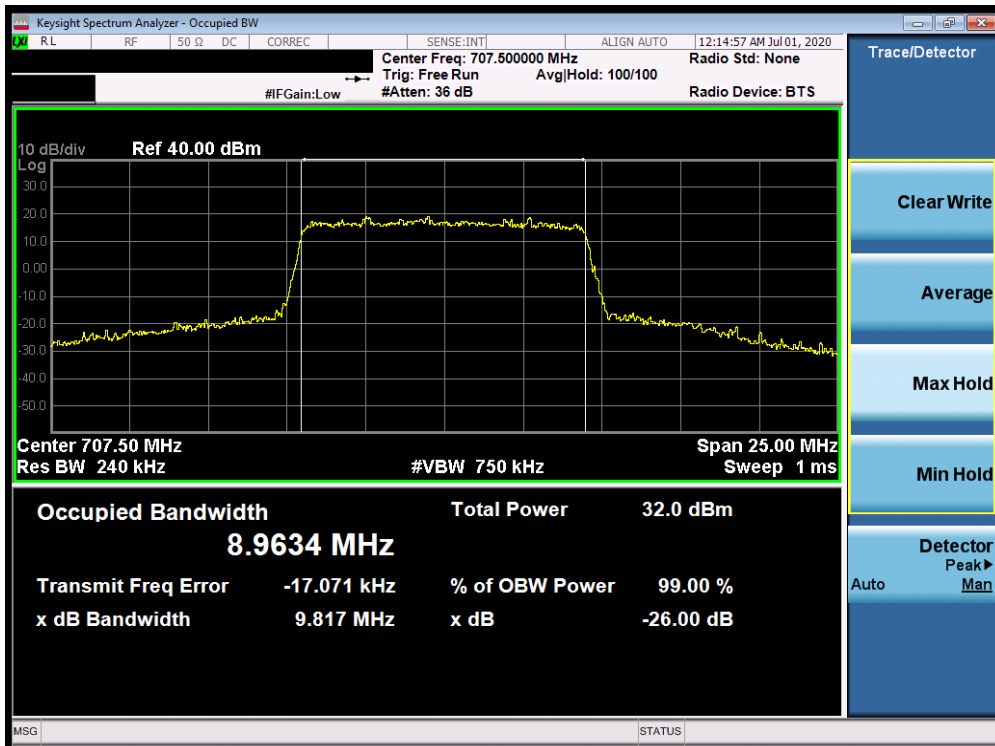


Plot 7-48. Occupied Bandwidth Plot (Band 12 - 5.0MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMF707U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2005040080-03.A3L	Test Dates: 05/04 - 07/11/2020	EUT Type: Portable Handset		Page 41 of 467

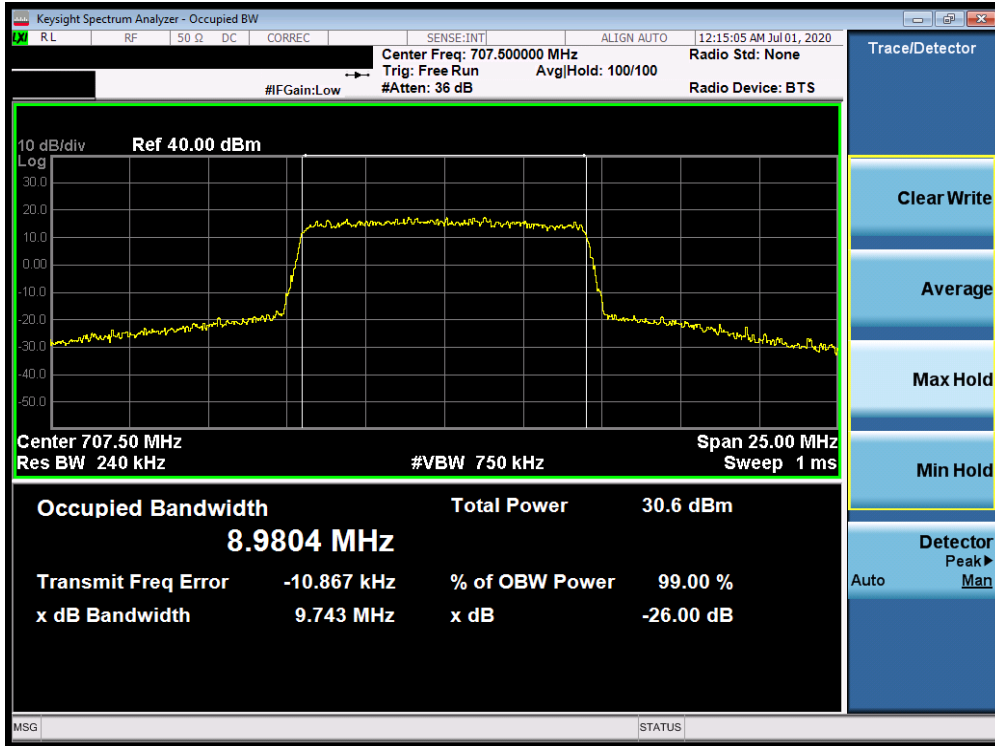


Plot 7-49. Occupied Bandwidth Plot (Band 12 - 10.0MHz QPSK - Full RB Configuration)

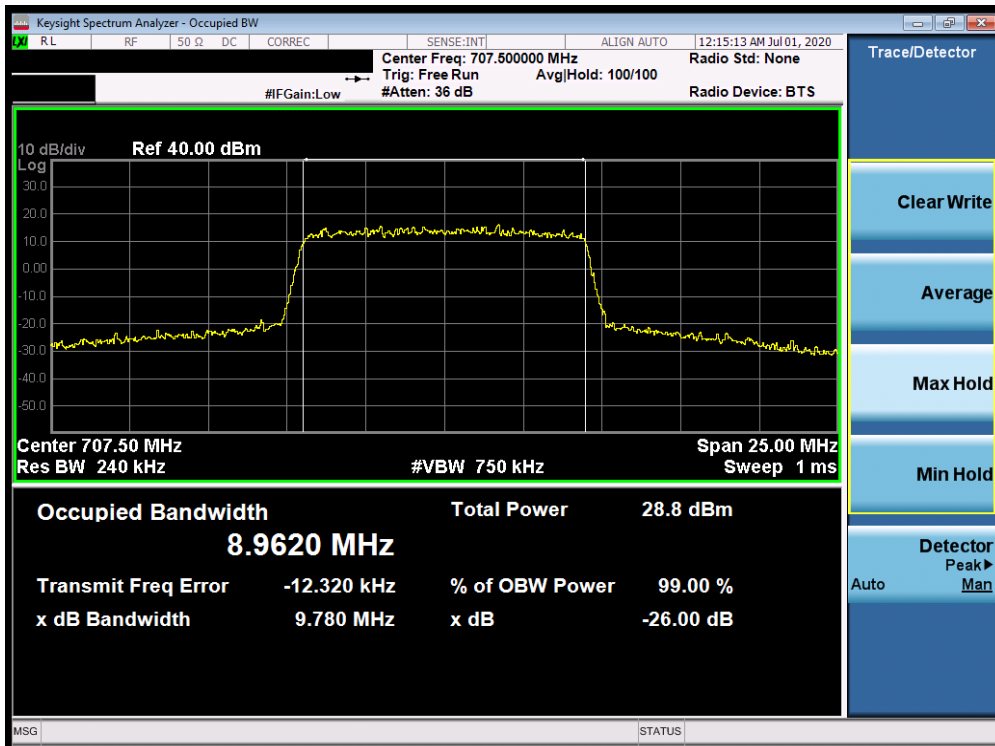


Plot 7-50. Occupied Bandwidth Plot (Band 12 - 10.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMF707U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Plot 7-51. Occupied Bandwidth Plot (Band 12 - 10.0MHz 64-QAM - Full RB Configuration)



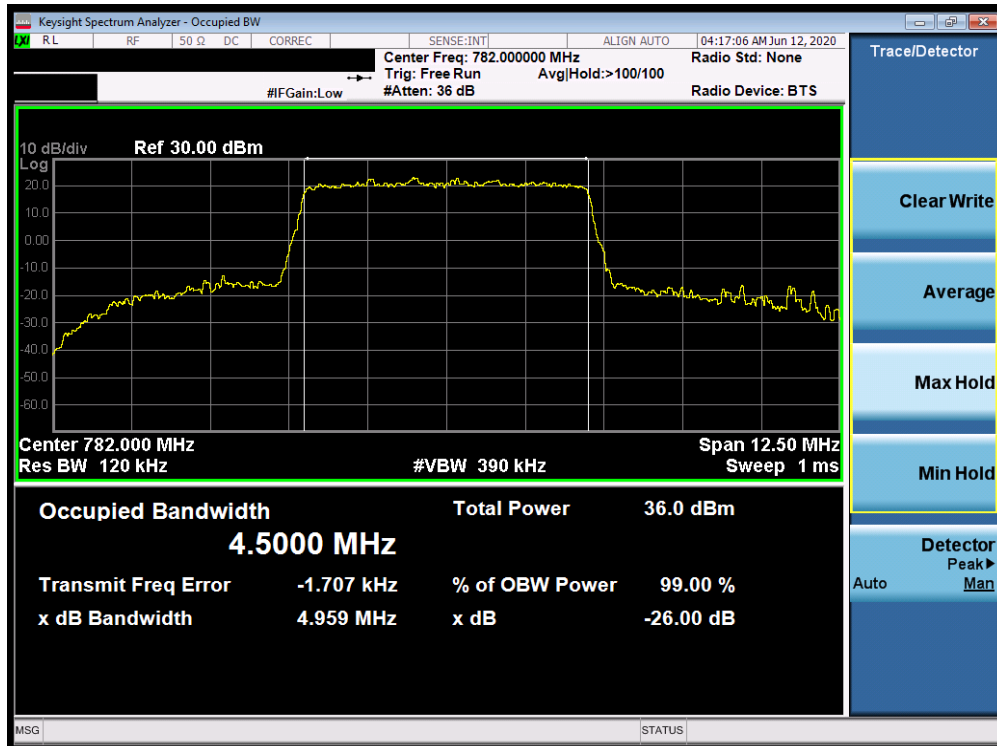
Plot 7-52. Occupied Bandwidth Plot (Band 12 - 10.0MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMF707U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2005040080-03.A3L	Test Dates: 05/04 – 07/11/2020	EUT Type: Portable Handset		Page 43 of 467


### Band 13



Plot 7-53. Occupied Bandwidth Plot (Band 13 - 5.0MHz QPSK - Full RB Configuration)



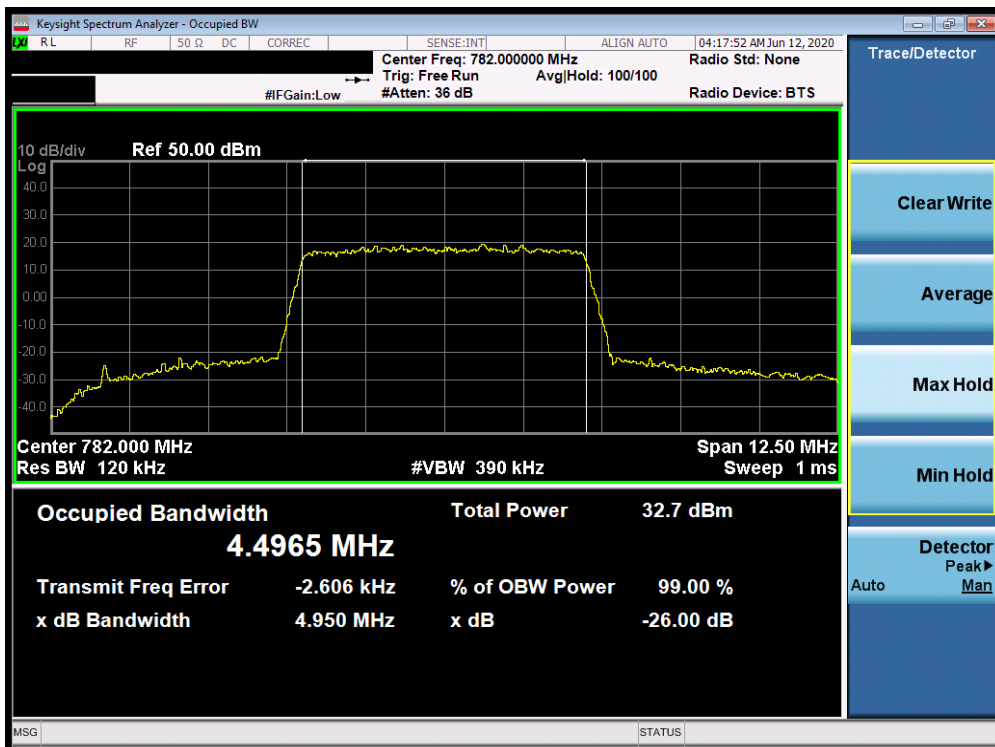
Plot 7-54. Occupied Bandwidth Plot (Band 13 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMF707U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2005040080-03.A3L	Test Dates: 05/04 - 07/11/2020	EUT Type: Portable Handset		Page 44 of 467



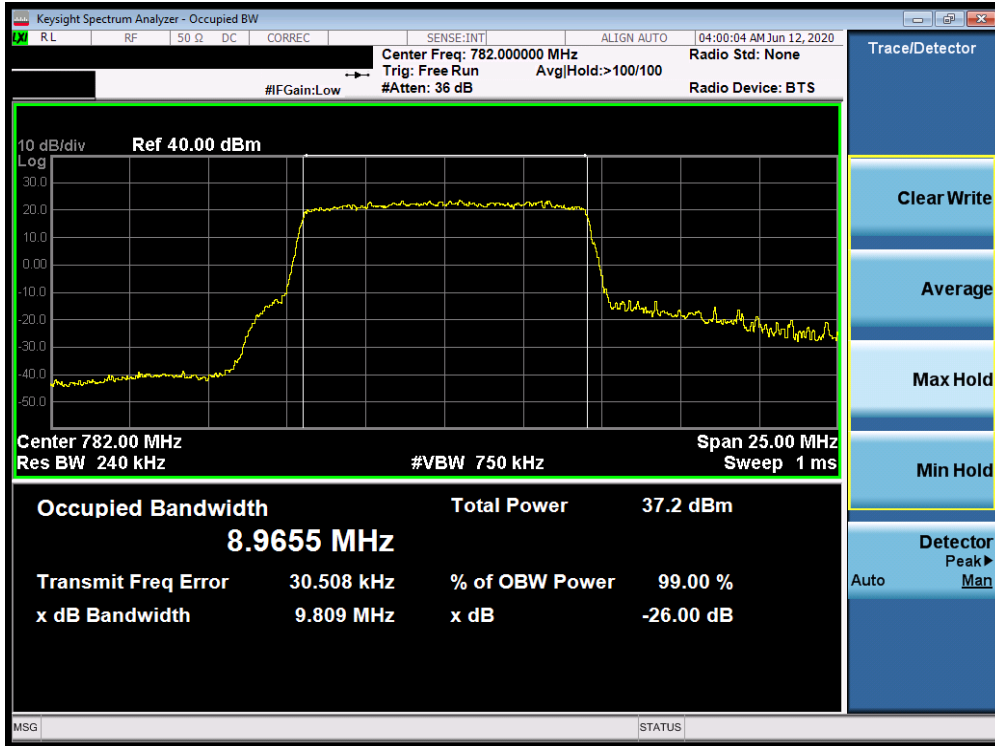


Plot 7-55. Occupied Bandwidth Plot (Band 13 - 5.0MHz 64-QAM - Full RB Configuration)

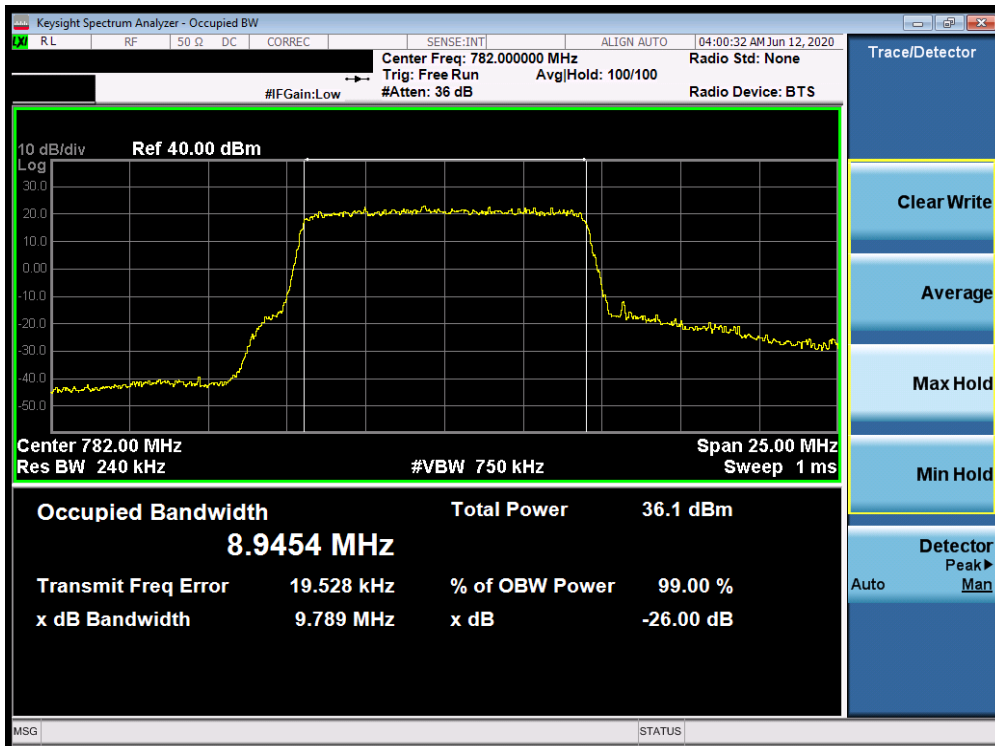


Plot 7-56. Occupied Bandwidth Plot (Band 13 - 5.0MHz 256-QAM - Full RB Configuration)



FCC ID: A3LSMF707U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Plot 7-57. Occupied Bandwidth Plot (Band 13 - 10.0MHz QPSK - Full RB Configuration)

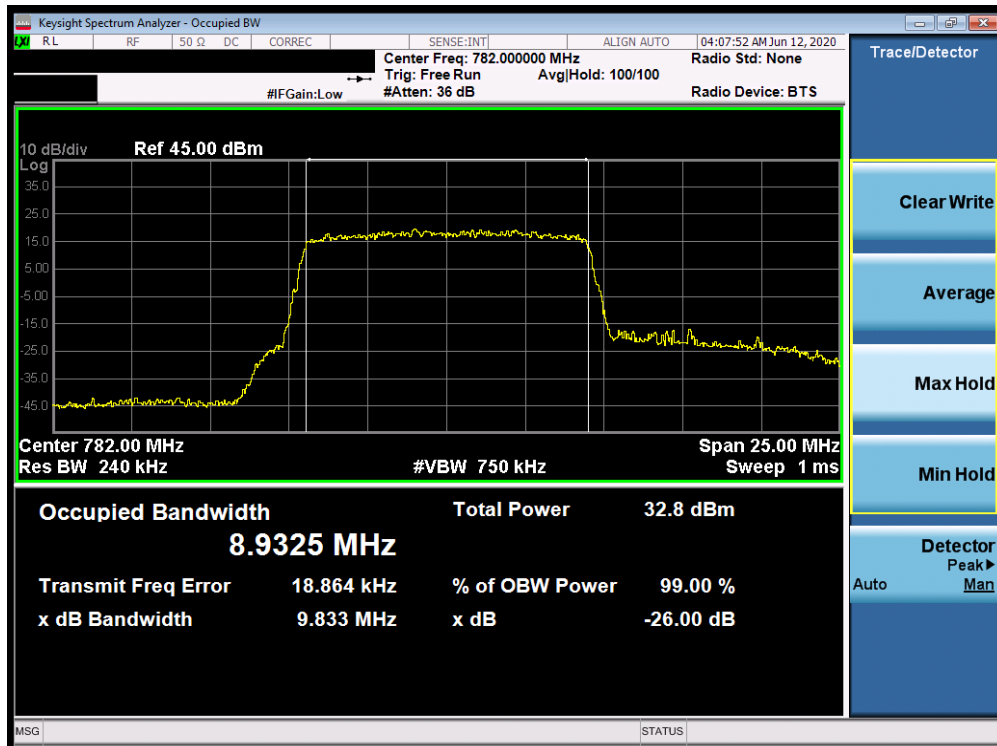


Plot 7-58. Occupied Bandwidth Plot (Band 13 - 10.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMF707U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2005040080-03.A3L	Test Dates: 05/04 - 07/11/2020	EUT Type: Portable Handset		Page 46 of 467



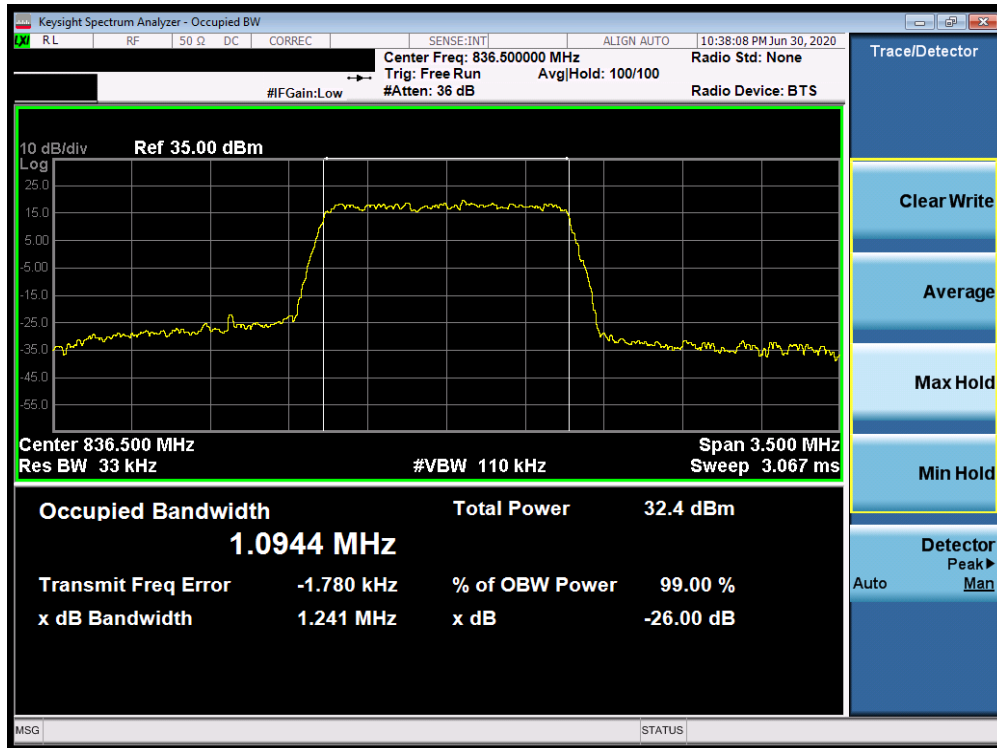
Plot 7-59. Occupied Bandwidth Plot (Band 13 - 10.0MHz 64-QAM - Full RB Configuration)



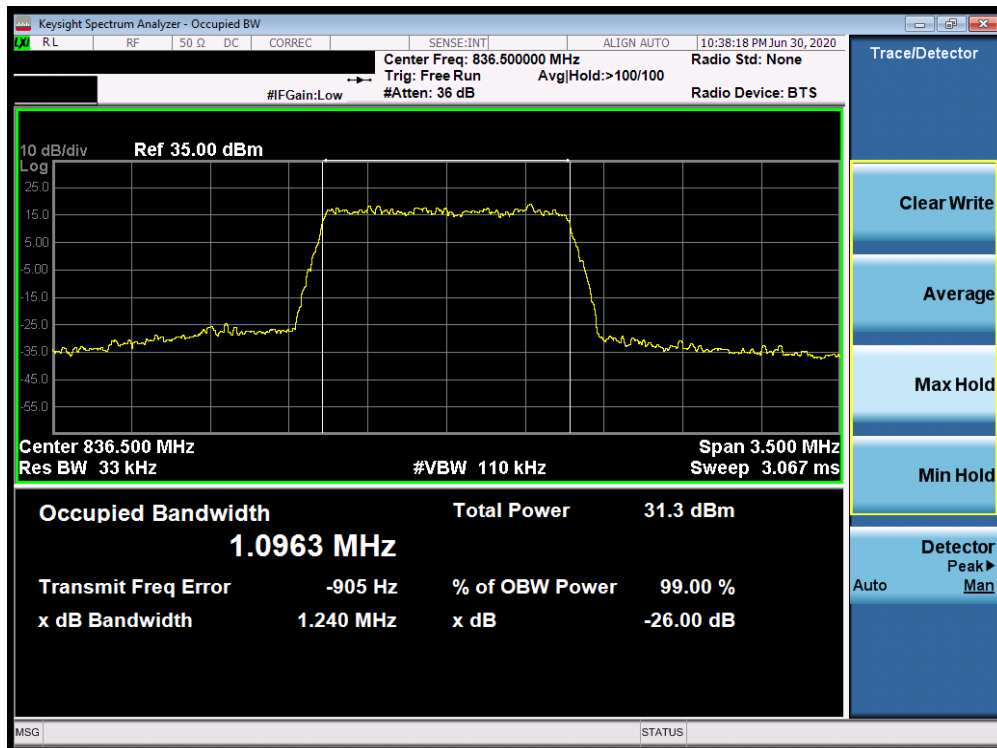
Plot 7-60. Occupied Bandwidth Plot (Band 13 - 10.0MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMF707U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2005040080-03.A3L	Test Dates: 05/04 - 07/11/2020	EUT Type: Portable Handset		Page 47 of 467

**Band 26/5**

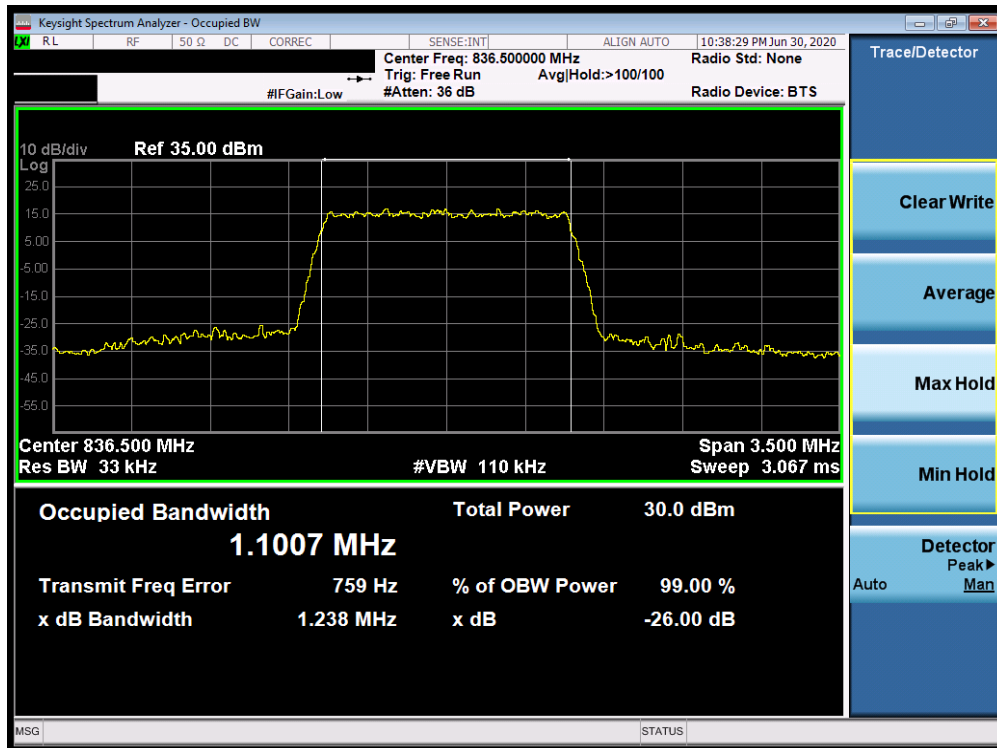


**Plot 7-61. Occupied Bandwidth Plot (Band 26/5 - 1.4MHz QPSK - Full RB Configuration)**

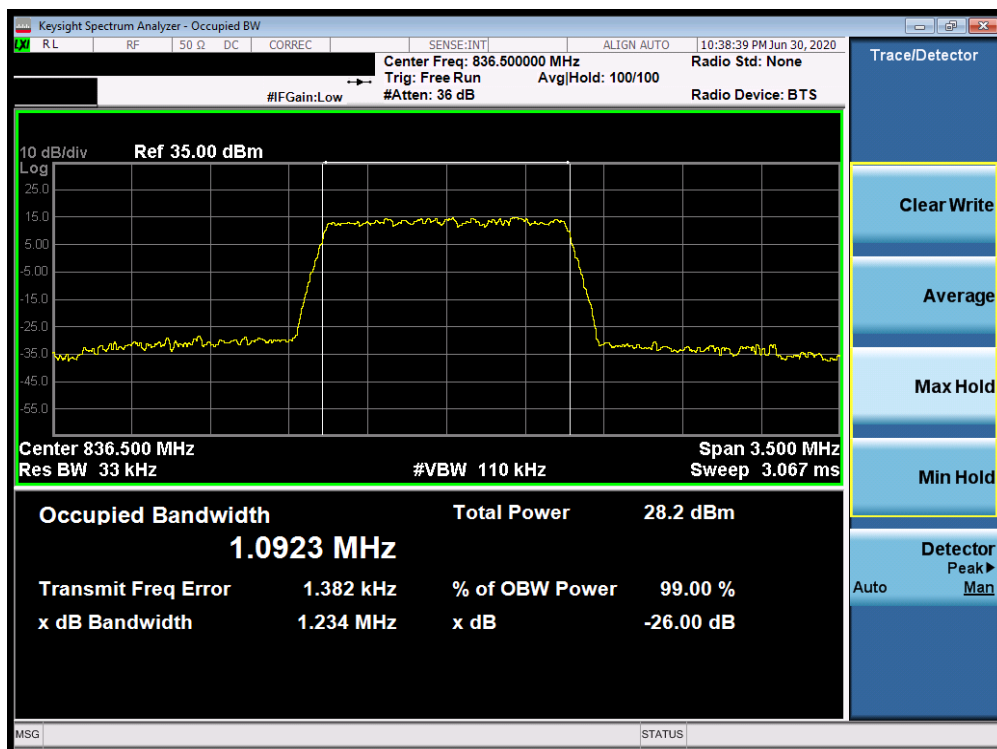


**Plot 7-62. Occupied Bandwidth Plot (Band 26/5 - 1.4MHz 16-QAM - Full RB Configuration)**

FCC ID: A3LSMF707U	<b>PCTEST</b> Proud to be part of element	<b>MEASUREMENT REPORT (CERTIFICATION)</b>	<b>SAMSUNG</b>	Approved by: Quality Manager
Test Report S/N: 1M2005040080-03.A3L	Test Dates: 05/04 - 07/11/2020	EUT Type: Portable Handset		Page 48 of 467

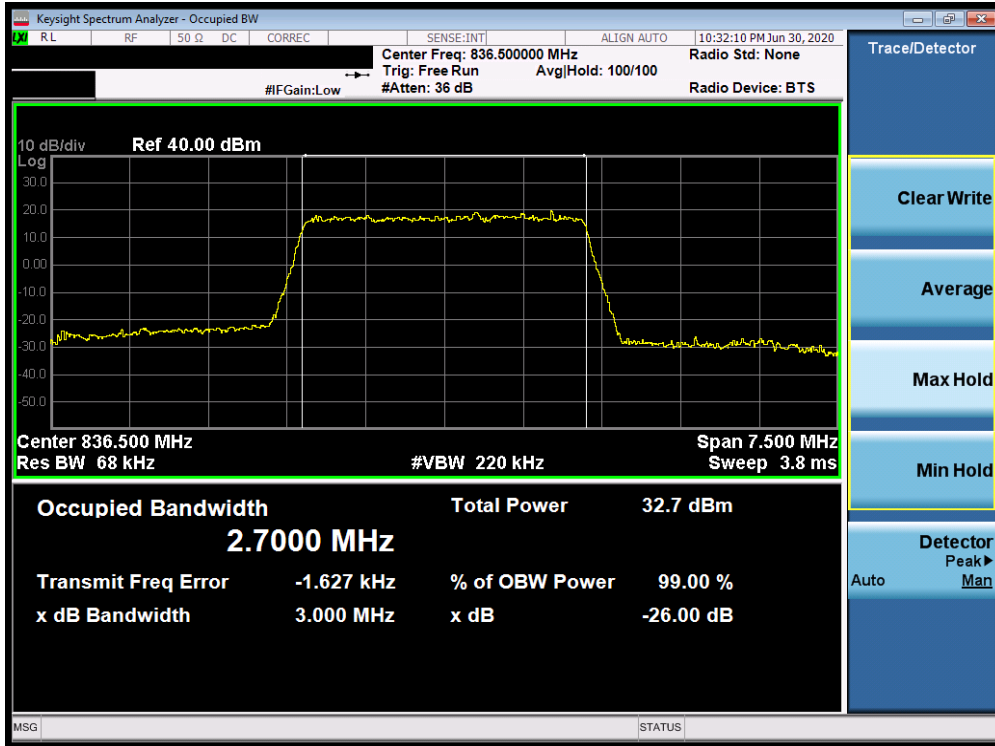


Plot 7-63. Occupied Bandwidth Plot (Band 26/5 - 1.4MHz 64-QAM - Full RB Configuration)

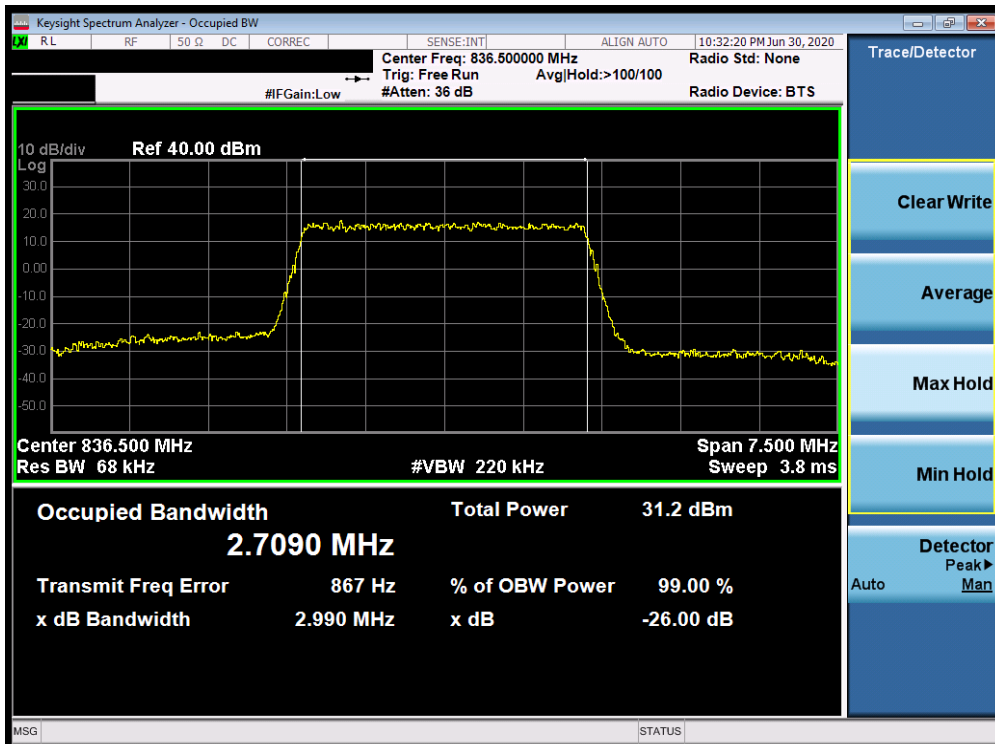


Plot 7-64. Occupied Bandwidth Plot (Band 26/5 - 1.4MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMF707U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2005040080-03.A3L	Test Dates: 05/04 - 07/11/2020	EUT Type: Portable Handset		Page 49 of 467



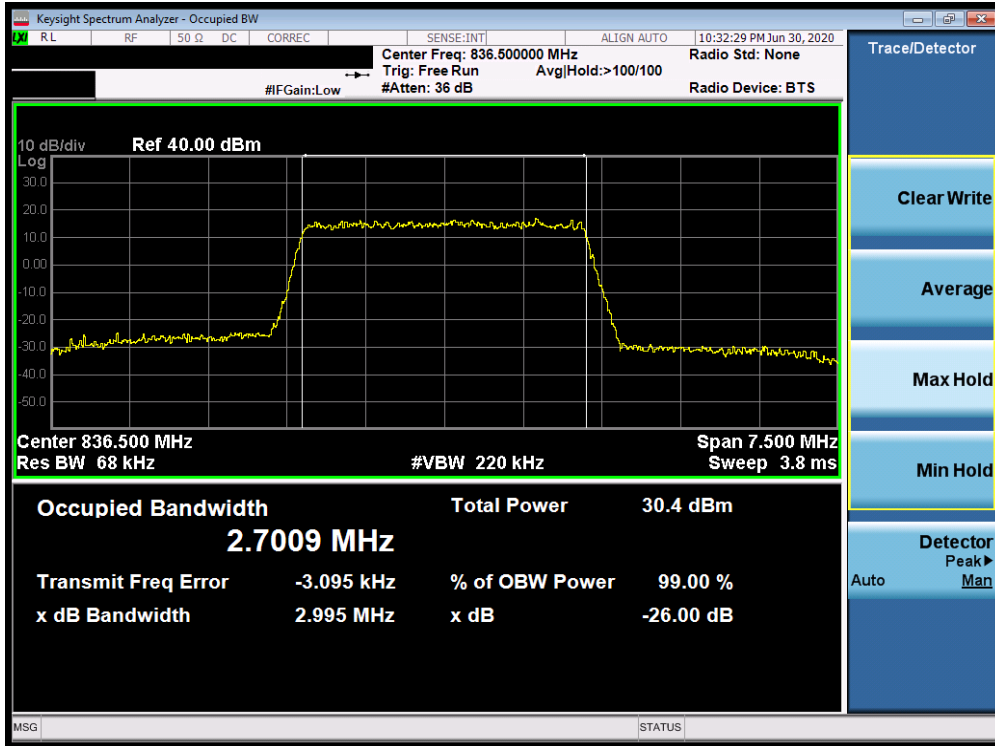
Plot 7-65. Occupied Bandwidth Plot (Band 26/5 - 3.0MHz QPSK - Full RB Configuration)



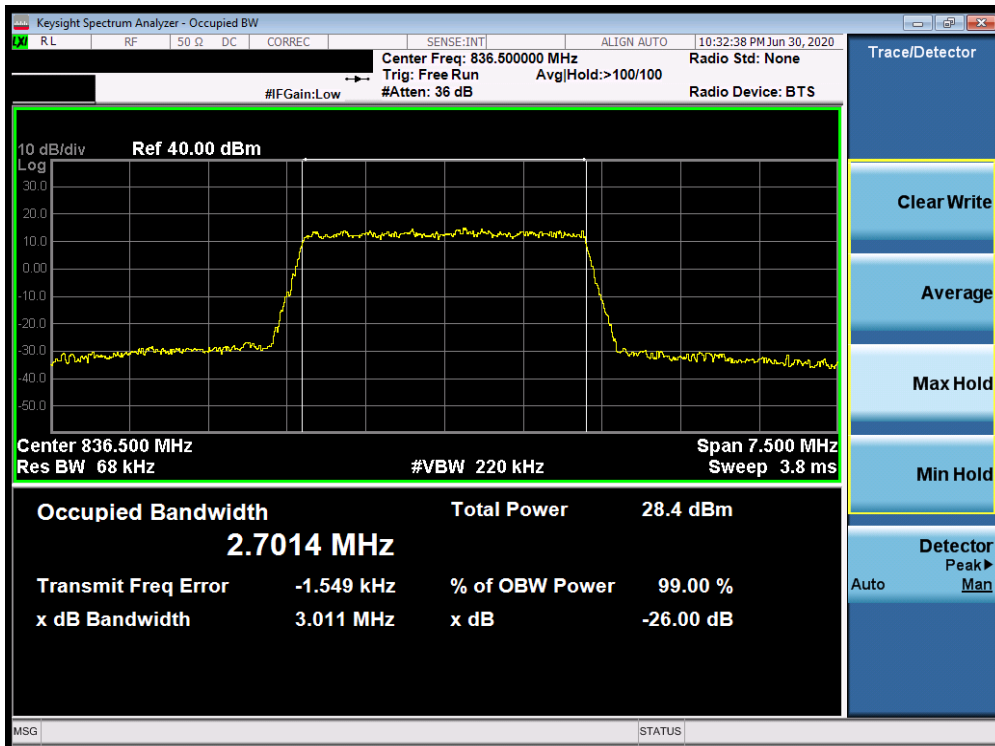
Plot 7-66. Occupied Bandwidth Plot (Band 26/5 - 3.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMF707U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2005040080-03.A3L	Test Dates: 05/04 - 07/11/2020	EUT Type: Portable Handset		Page 50 of 467



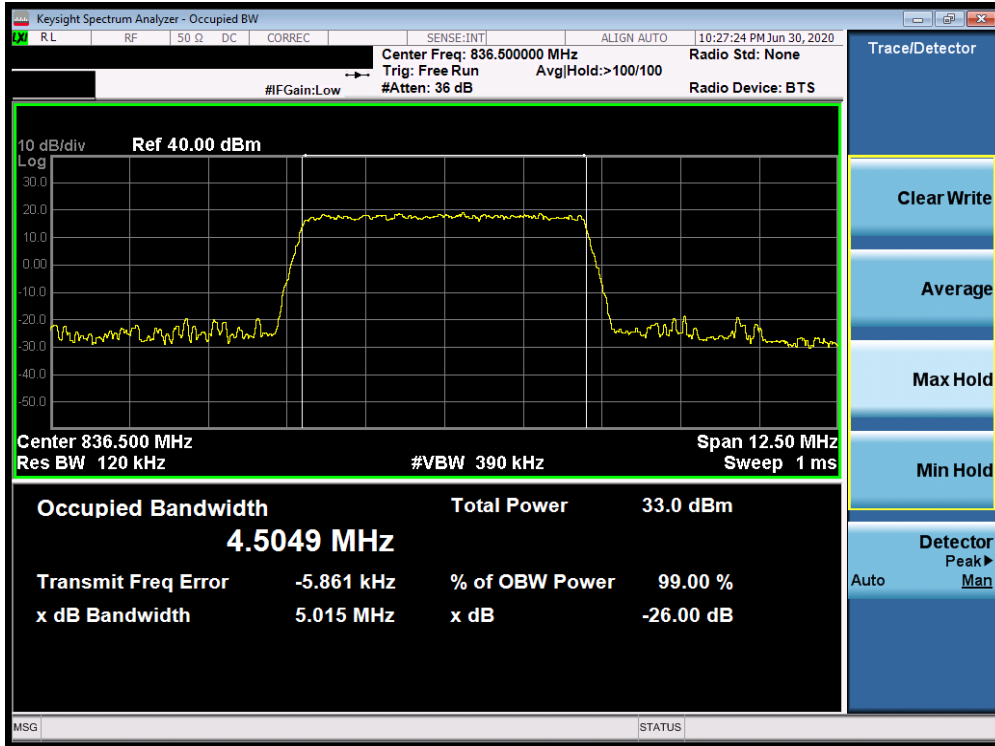


Plot 7-67. Occupied Bandwidth Plot (Band 26/5 - 3.0MHz 64-QAM - Full RB Configuration)

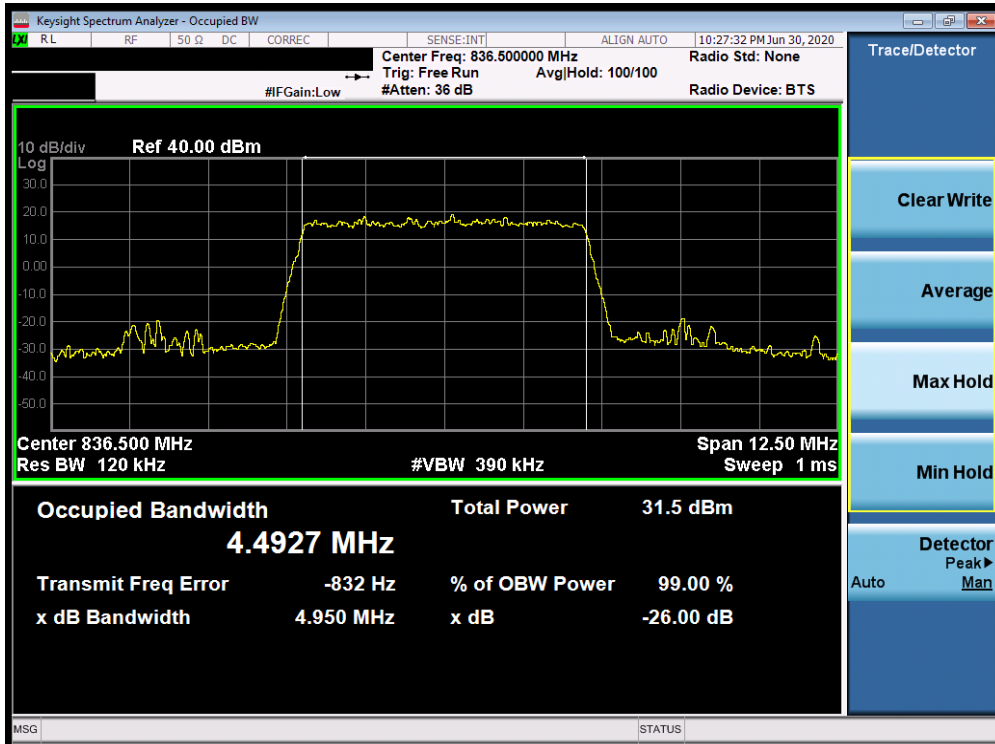


Plot 7-68. Occupied Bandwidth Plot (Band 26/5 - 3.0MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMF707U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2005040080-03.A3L	Test Dates: 05/04 - 07/11/2020	EUT Type: Portable Handset		Page 51 of 467

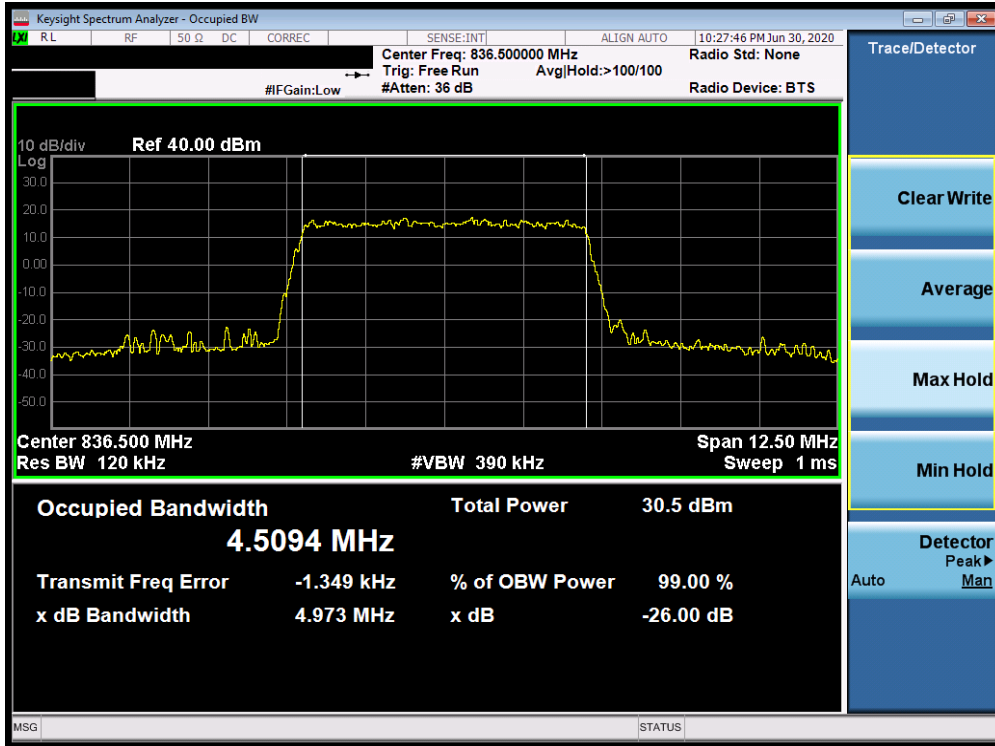


Plot 7-69. Occupied Bandwidth Plot (Band 26/5 - 5.0MHz QPSK - Full RB Configuration)

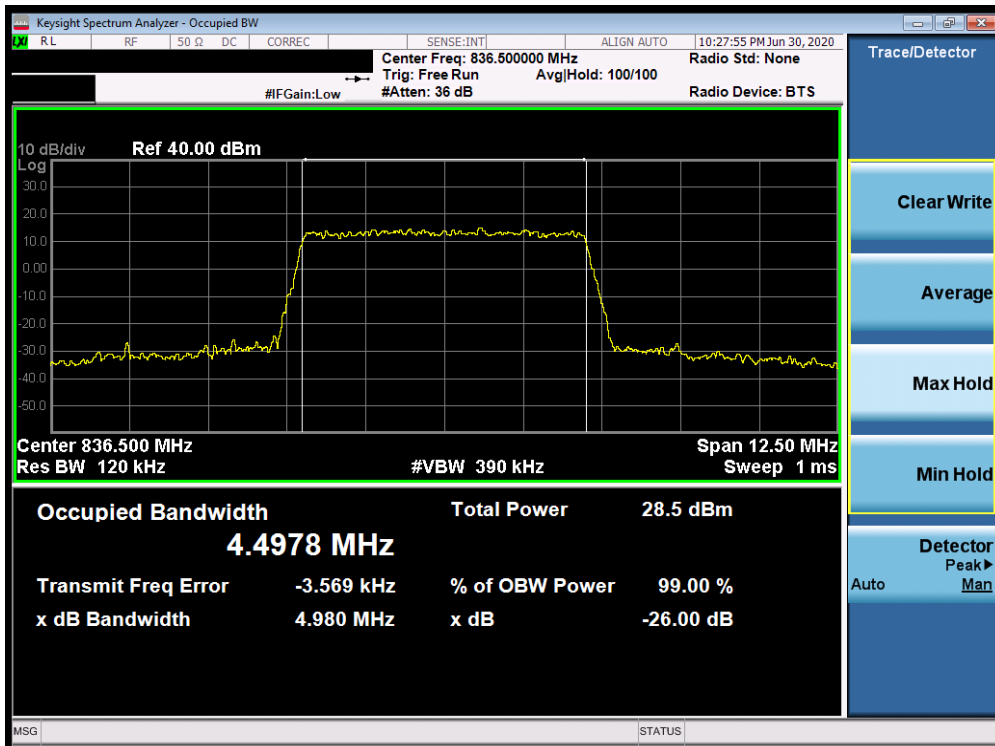


Plot 7-70. Occupied Bandwidth Plot (Band 26/5 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMF707U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2005040080-03.A3L	Test Dates: 05/04 - 07/11/2020	EUT Type: Portable Handset		Page 52 of 467

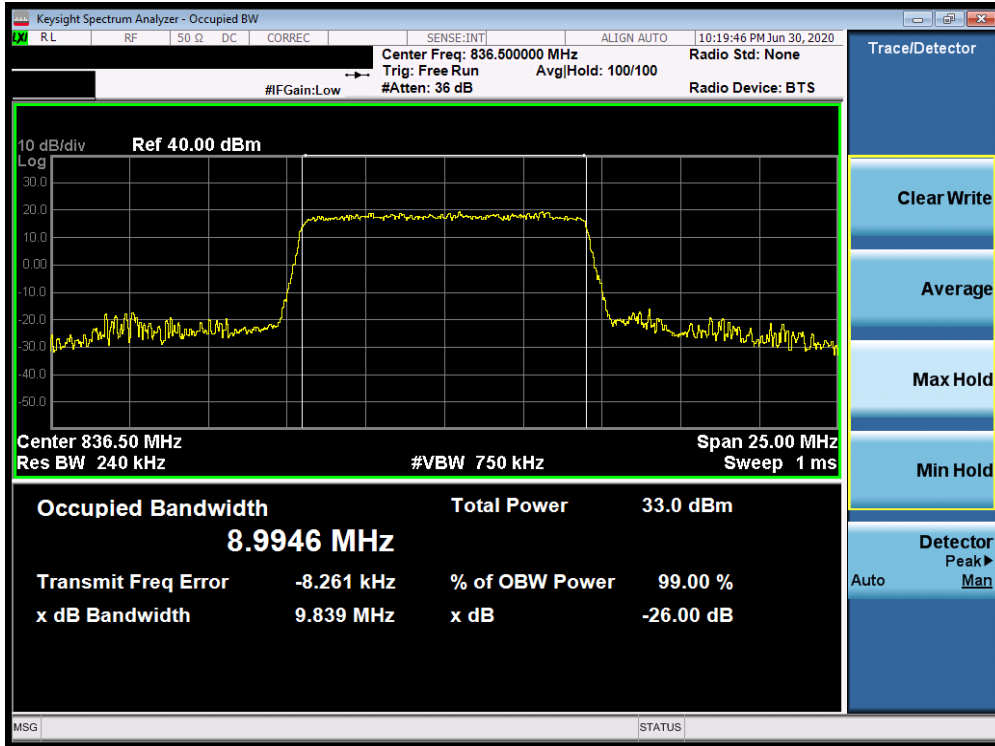


Plot 7-71. Occupied Bandwidth Plot (Band 26/5 - 5.0MHz 64-QAM - Full RB Configuration)

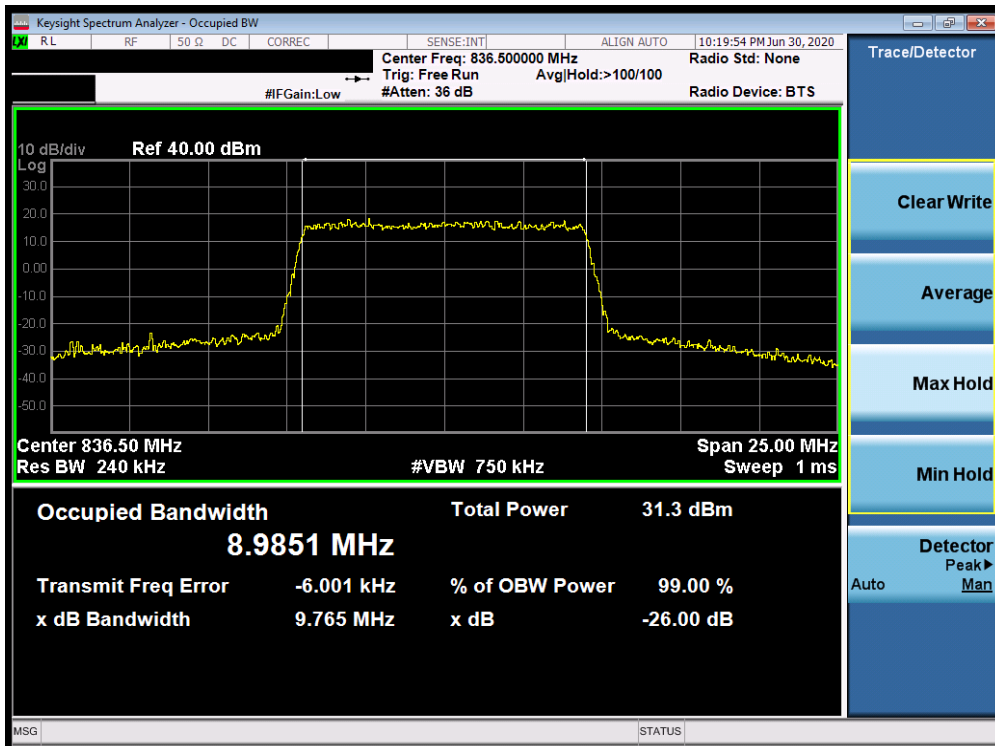


Plot 7-72. Occupied Bandwidth Plot (Band 26/5 - 5.0MHz 256-QAM - Full RB Configuration)



FCC ID: A3LSMF707U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2005040080-03.A3L	Test Dates: 05/04 - 07/11/2020	EUT Type: Portable Handset		Page 53 of 467

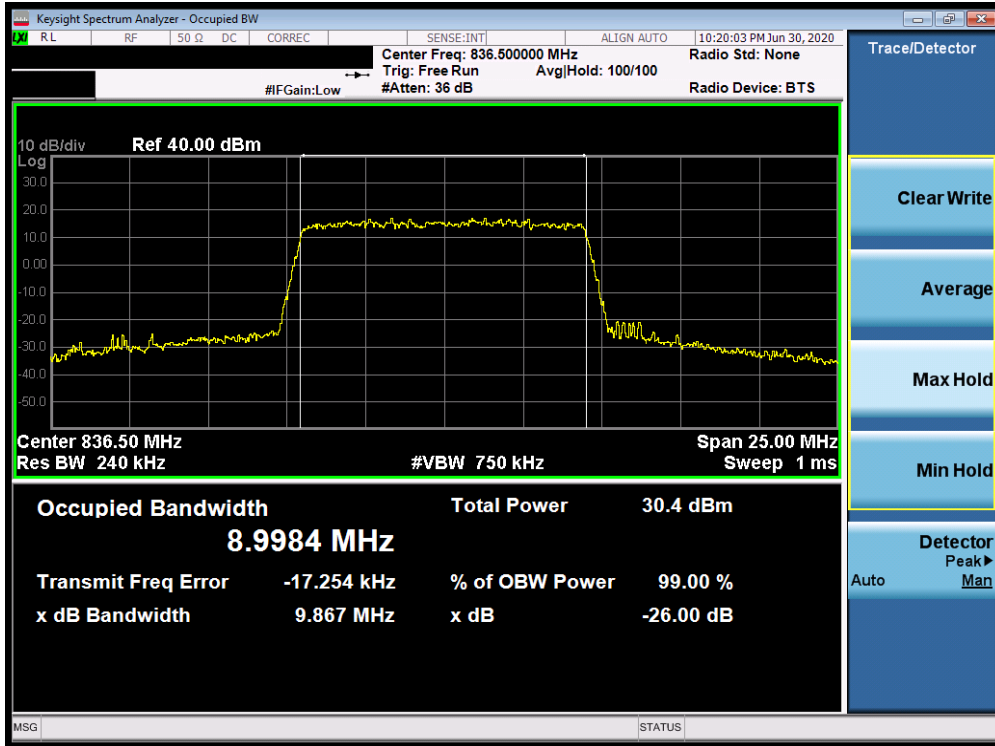


Plot 7-73. Occupied Bandwidth Plot (Band 26/5 - 10.0MHz QPSK - Full RB Configuration)

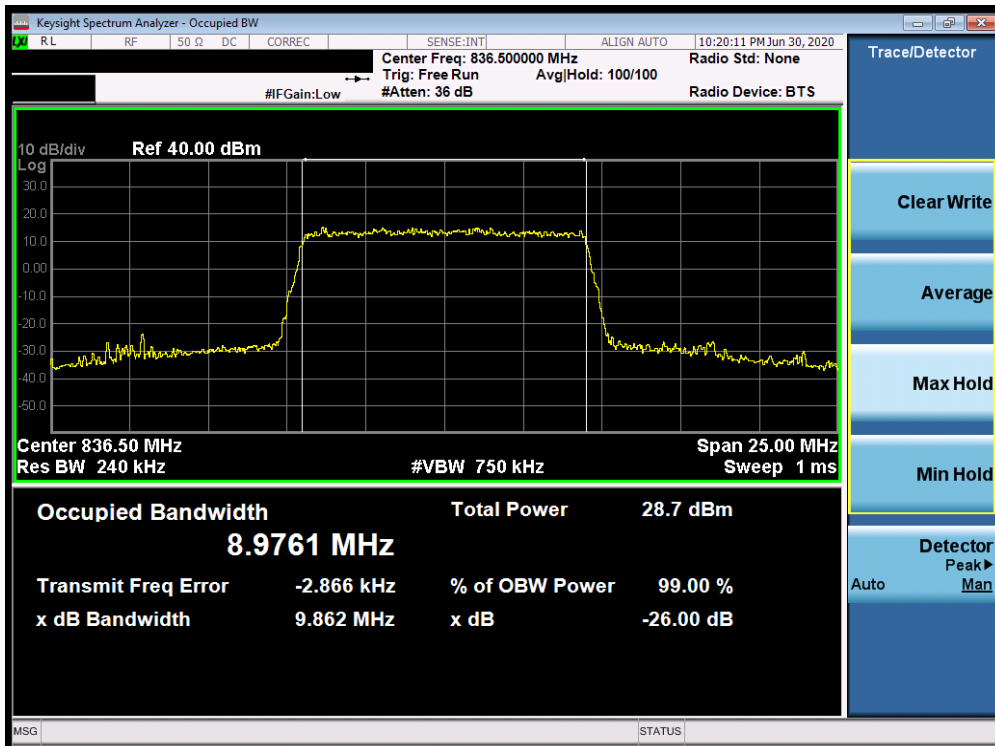


Plot 7-74. Occupied Bandwidth Plot (Band 26/5 - 10.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMF707U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2005040080-03.A3L	Test Dates: 05/04 - 07/11/2020	EUT Type: Portable Handset		Page 54 of 467

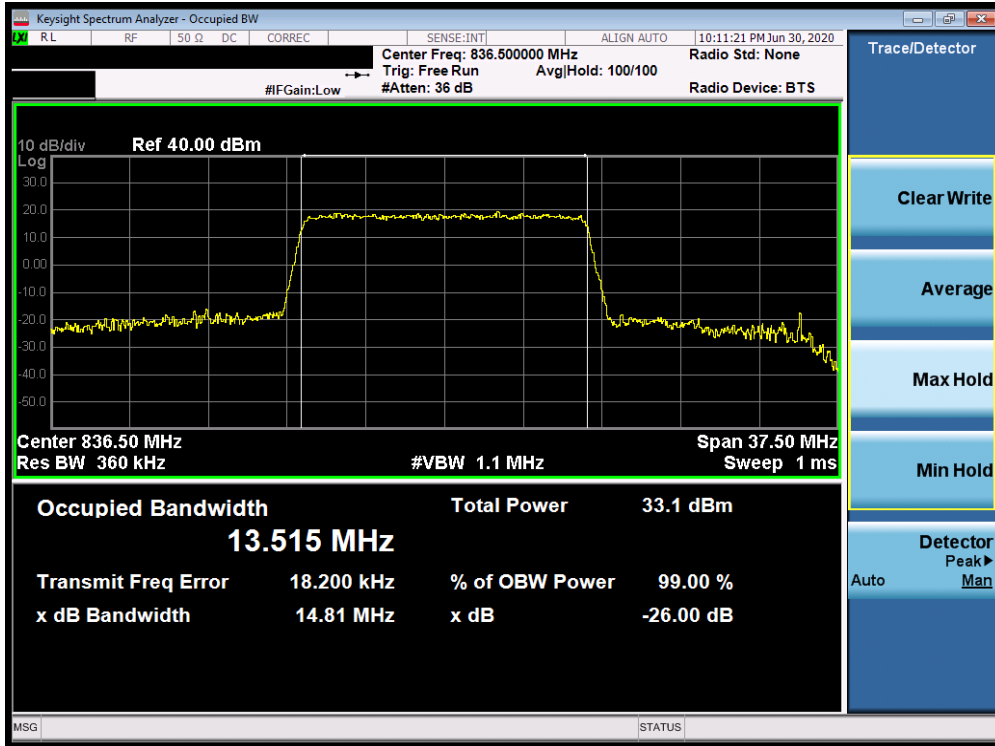


Plot 7-75. Occupied Bandwidth Plot (Band 26/5 - 10.0MHz 64-QAM - Full RB Configuration)

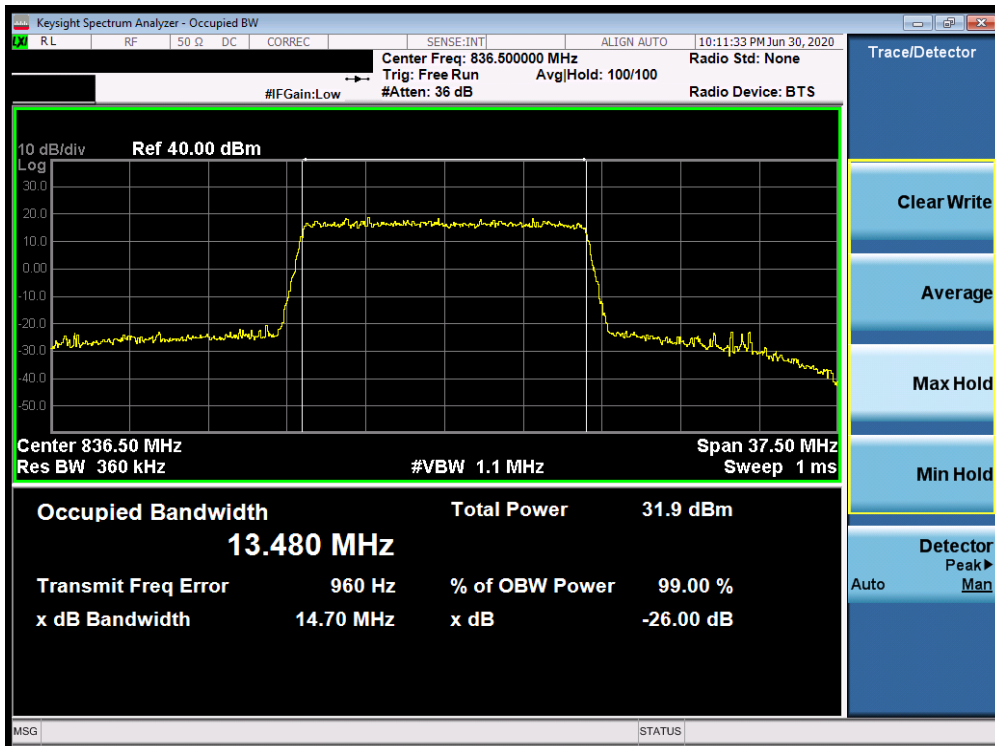


Plot 7-76. Occupied Bandwidth Plot (Band 26/5 - 10.0MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMF707U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2005040080-03.A3L	Test Dates: 05/04 - 07/11/2020	EUT Type: Portable Handset		Page 55 of 467



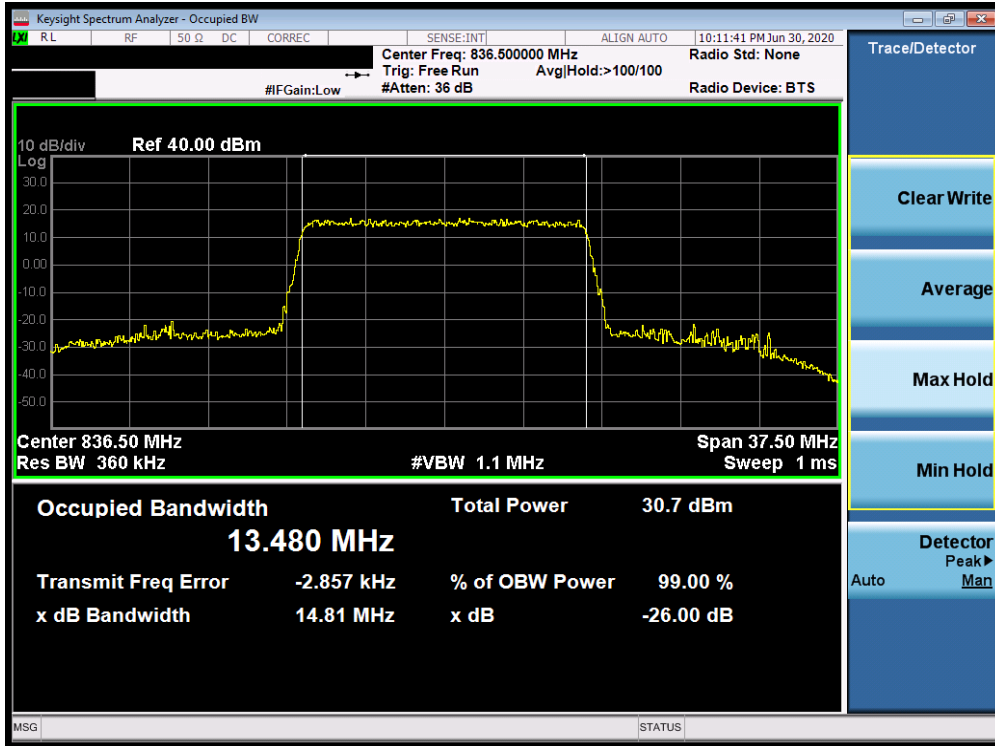
Plot 7-77. Occupied Bandwidth Plot (Band 26 - 15.0MHz QPSK - Full RB Configuration)



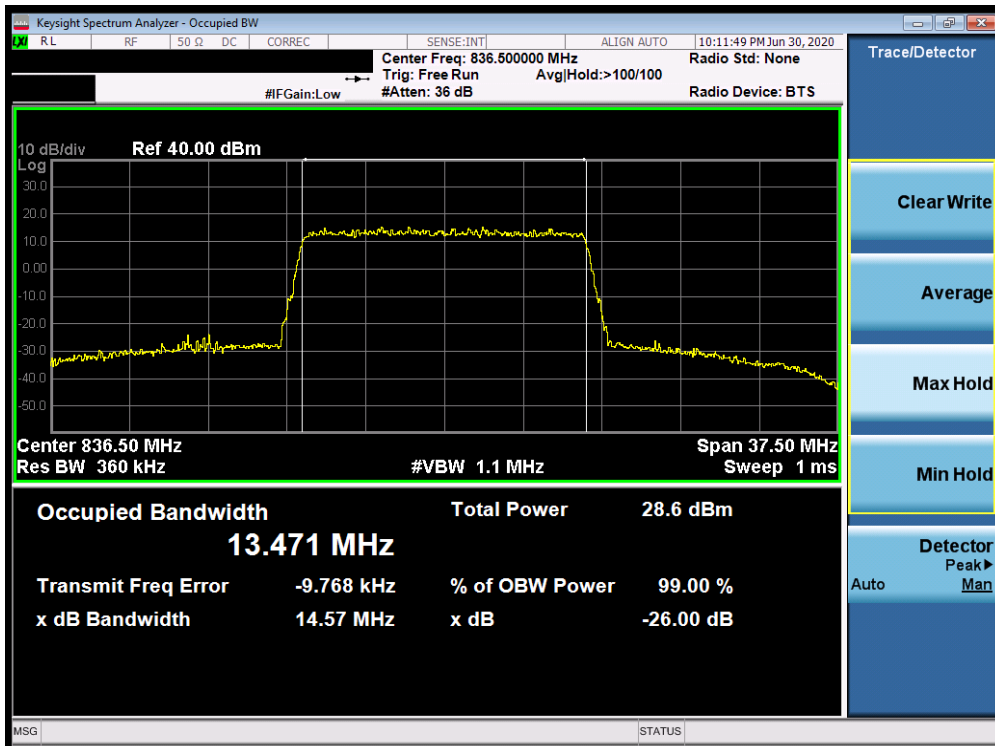
Plot 7-78. Occupied Bandwidth Plot (Band 26 - 15.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMF707U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2005040080-03.A3L	Test Dates: 05/04 - 07/11/2020	EUT Type: Portable Handset		Page 56 of 467






Plot 7-79. Occupied Bandwidth Plot (Band 26 - 15.0MHz 64-QAM - Full RB Configuration)



Plot 7-80. Occupied Bandwidth Plot (Band 26 - 15.0MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMF707U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2005040080-03.A3L	Test Dates: 05/04 - 07/11/2020	EUT Type: Portable Handset		Page 57 of 467