

MEASUREMENT REPORT
LTE/ Sub 6GHz NR

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

Date of Testing:
4/17 - 6/22/2020
Test Site/Location:
PCTEST Lab. Columbia, MD, USA
Test Report Serial No.:
1M2004170065-03-R3.A3L

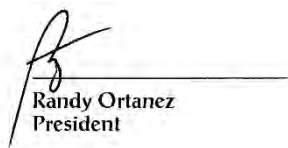
FCC ID:	A3LSMN986U
APPLICANT:	Samsung Electronics Co., Ltd.

Application Type: Certification
Model: SM-N986U
Additional Model(s): SM-N986U1
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.

This revised Test Report (S/N: 1M2004170065-03-R3 FCC Report SNs) supersedes and replaces the previously issued test report on the same subject device for the same type of testing as indicated. Please discard or destroy the previously issued test report(s) and dispose of it accordingly.

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

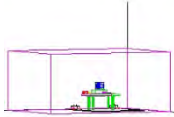


FCC ID: A3LSMN986U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2004170065-03-R3.A3L	Test Dates: 4/17 - 6/22/2020	EUT Type: Portable Handset		Page 1 of 494

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

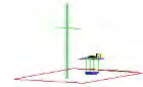
1.0	INTRODUCTION.....	9
1.1	Scope	9
1.2	PCTEST Test Location.....	9
1.3	Test Facility / Accreditations	9
2.0	PRODUCT INFORMATION.....	10
2.1	Equipment Description	10
2.2	Device Capabilities.....	10
2.3	Test Configuration	10
2.4	EMI Suppression Device(s)/Modifications.....	10
3.0	DESCRIPTION OF TESTS.....	11
3.1	Measurement Procedure.....	11
3.2	Radiated Power and Radiated Spurious Emissions.....	11
4.0	MEASUREMENT UNCERTAINTY.....	12
5.0	TEST EQUIPMENT CALIBRATION DATA	13
6.0	SAMPLE CALCULATIONS.....	14
7.0	TEST RESULTS.....	15
7.1	Summary.....	15
7.2	Occupied Bandwidth	18
7.3	Spurious and Harmonic Emissions at Antenna Terminal.....	159
7.4	Band Edge Emissions at Antenna Terminal	229
7.5	Peak-Average Ratio	334
7.6	Uplink Carrier Aggregation.....	377
7.7	Radiated Power (ERP/EIRP)	398
7.8	Radiated Spurious Emissions Measurements	414
7.9	Uplink Carrier Aggregation Radiated Measurements	450
7.10	Frequency Stability / Temperature Variation.....	463
8.0	CONCLUSION	494

FCC ID: A3LSMN986U	 PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2004170065-03-R3.A3L	Test Dates: 4/17 - 6/22/2020	EUT Type: Portable Handset	Page 2 of 494	





MEASUREMENT REPORT

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	0.054	17.32			4M56G7D	QPSK
LTE Band 71	27	665.5 - 695.5	0.044	16.39			4M52W7D	16QAM
LTE Band 71	27	665.5 - 695.5	0.035	15.50			4M53W7D	64QAM
LTE Band 71	27	665.5 - 695.5	0.018	12.58			4M51W7D	256QAM
LTE Band 71	27	668 - 693	0.052	17.20			8M97G7D	QPSK
LTE Band 71	27	668 - 693	0.042	16.23			8M97W7D	16QAM
LTE Band 71	27	668 - 693	0.036	15.54			8M98W7D	64QAM
LTE Band 71	27	668 - 693	0.017	12.41			9M00W7D	256QAM
LTE Band 71	27	670.5 - 690.5	0.052	17.17			13M5G7D	QPSK
LTE Band 71	27	670.5 - 690.5	0.043	16.30			13M5W7D	16QAM
LTE Band 71	27	670.5 - 690.5	0.035	15.48			13M5W7D	64QAM
LTE Band 71	27	670.5 - 690.5	0.019	12.70			13M5W7D	256QAM
LTE Band 71	27	673 - 688	0.052	17.20			17M9G7D	QPSK
LTE Band 71	27	673 - 688	0.045	16.55			17M9W7D	16QAM
LTE Band 71	27	673 - 688	0.036	15.55			18M0W7D	64QAM
LTE Band 71	27	673 - 688	0.017	12.35			17M9W7D	256QAM
LTE Band 12	27	699.7 - 715.3	0.052	17.17	0.086	19.32	1M09G7D	QPSK
LTE Band 12	27	699.7 - 715.3	0.041	16.18	0.068	18.33	1M11W7D	16QAM
LTE Band 12	27	699.7 - 715.3	0.033	15.19	0.054	17.34	1M09W7D	64QAM
LTE Band 12	27	699.7 - 715.3	0.017	12.36	0.028	14.51	1M09W7D	256QAM
LTE Band 12	27	700.5 - 714.5	0.053	17.23	0.087	19.38	2M71G7D	QPSK
LTE Band 12	27	700.5 - 714.5	0.044	16.45	0.072	18.60	2M71W7D	16QAM
LTE Band 12	27	700.5 - 714.5	0.034	15.30	0.056	17.45	2M71W7D	64QAM
LTE Band 12	27	700.5 - 714.5	0.018	12.48	0.029	14.63	2M71W7D	256QAM
LTE Band 12	27	701.5 - 713.5	0.054	17.29	0.088	19.44	4M53G7D	QPSK
LTE Band 12	27	701.5 - 713.5	0.042	16.26	0.069	18.41	4M52W7D	16QAM
LTE Band 12	27	701.5 - 713.5	0.034	15.35	0.056	17.50	4M54W7D	64QAM
LTE Band 12	27	701.5 - 713.5	0.017	12.43	0.029	14.58	4M53W7D	256QAM
LTE Band 12	27	704 - 711	0.088	19.44	0.144	21.59	9M03G7D	QPSK
LTE Band 12	27	704 - 711	0.062	17.93	0.102	20.08	9M04W7D	16QAM
LTE Band 12	27	704 - 711	0.047	16.74	0.077	18.89	9M02W7D	64QAM
LTE Band 12	27	704 - 711	0.031	14.91	0.051	17.06	8M99W7D	256QAM
LTE Band 13	27	779.5 - 784.5	0.118	20.72	0.194	22.87	4M53G7D	QPSK
LTE Band 13	27	779.5 - 784.5	0.096	19.82	0.158	21.97	4M52W7D	16QAM
LTE Band 13	27	779.5 - 784.5	0.071	18.52	0.117	20.67	4M52W7D	64QAM
LTE Band 13	27	779.5 - 784.5	0.045	16.56	0.074	18.71	4M53W7D	256QAM
LTE Band 13	27	782	0.113	20.53	0.185	22.68	9M05G7D	QPSK
LTE Band 13	27	782	0.090	19.56	0.148	21.71	9M03W7D	16QAM
LTE Band 13	27	782	0.059	17.73	0.097	19.88	8M99W7D	64QAM
LTE Band 13	27	782	0.037	15.65	0.060	17.80	9M00W7D	256QAM
LTE Band 26/5	22H	824.7 - 848.3	0.061	17.87	0.100	20.02	1M11G7D	QPSK
LTE Band 26/5	22H	824.7 - 848.3	0.050	16.96	0.081	19.11	1M09W7D	16QAM
LTE Band 26/5	22H	824.7 - 848.3	0.042	16.20	0.068	18.35	1M10W7D	64QAM
LTE Band 26/5	22H	824.7 - 848.3	0.029	14.62	0.048	16.77	1M09W7D	256QAM
LTE Band 26/5	22H	825.5 - 847.5	0.061	17.84	0.100	19.99	2M71G7D	QPSK
LTE Band 26/5	22H	825.5 - 847.5	0.050	16.99	0.082	19.14	2M71W7D	16QAM
LTE Band 26/5	22H	825.5 - 847.5	0.040	15.98	0.065	18.13	2M71W7D	64QAM
LTE Band 26/5	22H	825.5 - 847.5	0.033	15.18	0.054	17.33	2M71W7D	256QAM
LTE Band 26/5	22H	826.5 - 846.5	0.061	17.87	0.100	20.02	4M54G7D	QPSK
LTE Band 26/5	22H	826.5 - 846.5	0.051	17.04	0.083	19.19	4M51W7D	16QAM
LTE Band 26/5	22H	826.5 - 846.5	0.041	16.08	0.067	18.23	4M54W7D	64QAM
LTE Band 26/5	22H	826.5 - 846.5	0.029	14.57	0.047	16.72	4M52W7D	256QAM
LTE Band 26/5	22H	829 - 844	0.063	18.01	0.104	20.16	9M00G7D	QPSK
LTE Band 26/5	22H	829 - 844	0.053	17.21	0.086	19.36	9M02W7D	16QAM
LTE Band 26/5	22H	829 - 844	0.044	16.45	0.072	18.60	8M98W7D	64QAM
LTE Band 26/5	22H	829 - 844	0.033	15.13	0.053	17.28	8M99W7D	256QAM
LTE Band 26	22H	831.5 - 841.5	0.064	18.05	0.105	20.20	13M5G7D	QPSK
LTE Band 26	22H	831.5 - 841.5	0.054	17.29	0.088	19.44	13M5W7D	16QAM
LTE Band 26	22H	831.5 - 841.5	0.041	16.16	0.068	18.31	13M5W7D	64QAM
LTE Band 26	22H	831.5 - 841.5	0.030	14.80	0.050	16.95	13M5W7D	256QAM

EUT Overview (<1 GHz)

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Test Report S/N: 1M2004170065-03-R3.A3L	Test Dates: 4/17 - 6/22/2020	EUT Type: Portable Handset		Page 3 of 494

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	0.225	23.53	1M10G7D	QPSK
LTE Band 66/4	27	1710.7 - 1779.3	0.163	22.12	1M09W7D	16QAM
LTE Band 66/4	27	1710.7 - 1779.3	0.147	21.68	1M09W7D	64QAM
LTE Band 66/4	27	1710.7 - 1779.3	0.081	19.07	1M09W7D	256QAM
LTE Band 66/4	27	1711.5 - 1778.5	0.238	23.76	2M72G7D	QPSK
LTE Band 66/4	27	1711.5 - 1778.5	0.166	22.21	2M71W7D	16QAM
LTE Band 66/4	27	1711.5 - 1778.5	0.152	21.81	2M72W7D	64QAM
LTE Band 66/4	27	1711.5 - 1778.5	0.082	19.14	2M71W7D	256QAM
LTE Band 66/4	27	1712.5 - 1777.5	0.228	23.58	4M55G7D	QPSK
LTE Band 66/4	27	1712.5 - 1777.5	0.179	22.52	4M52W7D	16QAM
LTE Band 66/4	27	1712.5 - 1777.5	0.150	21.75	4M53W7D	64QAM
LTE Band 66/4	27	1712.5 - 1777.5	0.082	19.16	4M53W7D	256QAM
LTE Band 66/4	27	1715 - 1775	0.237	23.74	9M02G7D	QPSK
LTE Band 66/4	27	1715 - 1775	0.173	22.38	9M03W7D	16QAM
LTE Band 66/4	27	1715 - 1775	0.146	21.65	9M00W7D	64QAM
LTE Band 66/4	27	1715 - 1775	0.082	19.14	9M01W7D	256QAM
LTE Band 66/4	27	1717.5 - 1772.5	0.237	23.74	13M5G7D	QPSK
LTE Band 66/4	27	1717.5 - 1772.5	0.168	22.25	13M5W7D	16QAM
LTE Band 66/4	27	1717.5 - 1772.5	0.156	21.94	13M5W7D	64QAM
LTE Band 66/4	27	1717.5 - 1772.5	0.084	19.24	13M5W7D	256QAM
LTE Band 66/4	27	1720 - 1770	0.239	23.78	18M0G7D	QPSK
LTE Band 66/4	27	1720 - 1770	0.200	23.00	18M0W7D	16QAM
LTE Band 66/4	27	1720 - 1770	0.161	22.06	18M0W7D	64QAM
LTE Band 66/4	27	1720 - 1770	0.082	19.16	18M0W7D	256QAM
LTE Band 25/2	24E	1850.7 - 1914.3	0.275	24.39	1M09G7D	QPSK
LTE Band 25/2	24E	1850.7 - 1914.3	0.221	23.45	1M10W7D	16QAM
LTE Band 25/2	24E	1850.7 - 1914.3	0.173	22.39	1M09W7D	64QAM
LTE Band 25/2	24E	1850.7 - 1914.3	0.089	19.47	1M09W7D	256QAM
LTE Band 25/2	24E	1851.5 - 1913.5	0.276	24.41	2M71G7D	QPSK
LTE Band 25/2	24E	1851.5 - 1913.5	0.221	23.45	2M72W7D	16QAM
LTE Band 25/2	24E	1851.5 - 1913.5	0.179	22.52	2M71W7D	64QAM
LTE Band 25/2	24E	1851.5 - 1913.5	0.089	19.49	2M71W7D	256QAM
LTE Band 25/2	24E	1852.5 - 1912.5	0.274	24.37	4M53G7D	QPSK
LTE Band 25/2	24E	1852.5 - 1912.5	0.223	23.49	4M52W7D	16QAM
LTE Band 25/2	24E	1852.5 - 1912.5	0.177	22.48	4M52W7D	64QAM
LTE Band 25/2	24E	1852.5 - 1912.5	0.089	19.47	4M54W7D	256QAM
LTE Band 25/2	24E	1855 - 1910	0.273	24.36	9M02G7D	QPSK
LTE Band 25/2	24E	1855 - 1910	0.238	23.76	9M00W7D	16QAM
LTE Band 25/2	24E	1855 - 1910	0.183	22.62	9M03W7D	64QAM
LTE Band 25/2	24E	1855 - 1910	0.091	19.57	9M02W7D	256QAM
LTE Band 25/2	24E	1857.5 - 1907.5	0.275	24.39	13M5G7D	QPSK
LTE Band 25/2	24E	1857.5 - 1907.5	0.240	23.81	13M5W7D	16QAM
LTE Band 25/2	24E	1857.5 - 1907.5	0.184	22.65	13M5W7D	64QAM
LTE Band 25/2	24E	1857.5 - 1907.5	0.090	19.54	13M5W7D	256QAM
LTE Band 25/2	24E	1860 - 1905	0.291	24.64	18M0G7D	QPSK
LTE Band 25/2	24E	1860 - 1905	0.135	21.31	18M0W7D	16QAM
LTE Band 25/2	24E	1860 - 1905	0.116	20.65	18M0W7D	64QAM
LTE Band 25/2	24E	1860 - 1905	0.077	18.85	18M0W7D	256QAM

EUT Overview (Mid Bands)

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Test Report S/N: 1M2004170065-03-R3.A3L	Test Dates: 4/17 - 6/22/2020	EUT Type: Portable Handset	Page 4 of 494	

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	0.190	22.79	4M53G7D	QPSK
LTE Band 30	27	2307.5 - 2312.5	0.149	21.72	4M52W7D	16QAM
LTE Band 30	27	2307.5 - 2312.5	0.098	19.92	4M51W7D	64QAM
LTE Band 30	27	2307.5 - 2312.5	0.069	18.38	4M51W7D	256QAM
LTE Band 30	27	2310	0.195	22.91	9M00G7D	QPSK
LTE Band 30	27	2310	0.166	22.21	8M99W7D	16QAM
LTE Band 30	27	2310	0.109	20.39	9M01W7D	64QAM
LTE Band 30	27	2310	0.064	18.05	9M01W7D	256QAM
LTE Band 7	27	2502.5 - 2567.5	0.215	23.33	4M51G7D	QPSK
LTE Band 7	27	2502.5 - 2567.5	0.206	23.13	4M52W7D	16QAM
LTE Band 7	27	2502.5 - 2567.5	0.147	21.66	4M51W7D	64QAM
LTE Band 7	27	2502.5 - 2567.5	0.080	19.03	4M51W7D	256QAM
LTE Band 7	27	2505 - 2565	0.222	23.47	9M04G7D	QPSK
LTE Band 7	27	2505 - 2565	0.206	23.13	8M98W7D	16QAM
LTE Band 7	27	2505 - 2565	0.153	21.86	9M01W7D	64QAM
LTE Band 7	27	2505 - 2565	0.079	18.98	8M99W7D	256QAM
LTE Band 7	27	2507.5 - 2562.5	0.222	23.46	13M5G7D	QPSK
LTE Band 7	27	2507.5 - 2562.5	0.195	22.91	13M5W7D	16QAM
LTE Band 7	27	2507.5 - 2562.5	0.149	21.73	13M5W7D	64QAM
LTE Band 7	27	2507.5 - 2562.5	0.082	19.13	13M5W7D	256QAM
LTE Band 7	27	2510 - 2560	0.228	23.59	18M0G7D	QPSK
LTE Band 7	27	2510 - 2560	0.195	22.90	18M0W7D	16QAM
LTE Band 7	27	2510 - 2560	0.129	21.12	18M0W7D	64QAM
LTE Band 7	27	2510 - 2560	0.073	18.66	17M9W7D	256QAM
LTE Band 41 (PC2)	27	2498.5 - 2687.5	0.405	26.07	4M51G7D	QPSK
LTE Band 41 (PC2)	27	2498.5 - 2687.5	0.367	25.65	4M52W7D	16QAM
LTE Band 41 (PC2)	27	2498.5 - 2687.5	0.297	24.73	4M51W7D	64QAM
LTE Band 41 (PC2)	27	2498.5 - 2687.5	0.143	21.56	4M50W7D	256QAM
LTE Band 41 (PC2)	27	2501 - 2685	0.417	26.20	9M01G7D	QPSK
LTE Band 41 (PC2)	27	2501 - 2685	0.371	25.69	9M00W7D	16QAM
LTE Band 41 (PC2)	27	2501 - 2685	0.291	24.64	9M00W7D	64QAM
LTE Band 41 (PC2)	27	2501 - 2685	0.147	21.66	9M00W7D	256QAM
LTE Band 41 (PC2)	27	2503.5 - 2682.5	0.409	26.12	13M5G7D	QPSK
LTE Band 41 (PC2)	27	2503.5 - 2682.5	0.331	25.20	13M5W7D	16QAM
LTE Band 41 (PC2)	27	2503.5 - 2682.5	0.268	24.28	13M5W7D	64QAM
LTE Band 41 (PC2)	27	2503.5 - 2682.5	0.139	21.44	13M5W7D	256QAM
LTE Band 41 (PC2)	27	2506 - 2680	0.419	26.22	17M9G7D	QPSK
LTE Band 41 (PC2)	27	2506 - 2680	0.328	25.16	17M9W7D	16QAM
LTE Band 41 (PC2)	27	2506 - 2680	0.254	24.04	18M0W7D	64QAM
LTE Band 41 (PC2)	27	2506 - 2680	0.188	22.74	18M0W7D	256QAM

EUT Overview (High Bands)

FCC ID: A3LSMN986U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2004170065-03-R3.A3L	Test Dates: 4/17 - 6/22/2020	EUT Type: Portable Handset		Page 5 of 494

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	0.044	16.42	17M9G7D
		QPSK	673.0 - 688.0	0.045	16.55	19M0G7D
		16QAM	673.0 - 688.0	0.038	15.82	19M0W7D
		64QAM	673.0 - 688.0	0.028	14.54	19M0W7D
		256QAM	673.0 - 688.0	0.019	12.71	19M0W7D
	15 MHz	$\pi/2$ BPSK	670.5 - 690.5	0.043	16.29	13M5G7D
		QPSK	670.5 - 690.5	0.043	16.36	14M2G7D
		16QAM	670.5 - 690.5	0.042	16.27	14M2W7D
		64QAM	670.5 - 690.5	0.033	15.17	14M2W7D
		256QAM	670.5 - 690.5	0.021	13.27	14M1W7D
	10 MHz	$\pi/2$ BPSK	668.0 - 693.0	0.043	16.29	9M01G7D
		QPSK	668.0 - 693.0	0.043	16.36	9M32G7D
		16QAM	668.0 - 693.0	0.039	15.86	9M30W7D
		64QAM	668.0 - 693.0	0.028	14.54	9M32W7D
		256QAM	668.0 - 693.0	0.018	12.58	9M37W7D
	5 MHz	$\pi/2$ BPSK	665.5 - 695.5	0.042	16.26	4M51G7D
		QPSK	665.5 - 695.5	0.043	16.32	4M55G7D
		16QAM	665.5 - 695.5	0.039	15.96	4M50W7D
		64QAM	665.5 - 695.5	0.030	14.74	4M52W7D
		256QAM	665.5 - 695.5	0.019	12.69	4M56W7D
NR Band n12	15 MHz	$\pi/2$ BPSK	706.5 - 708.5	0.043	16.29	13M5G7D
		QPSK	706.5 - 708.5	0.043	16.33	14M2G7D
		16QAM	706.5 - 708.5	0.033	15.15	14M2W7D
		64QAM	706.5 - 708.5	0.026	14.21	14M2W7D
		256QAM	706.5 - 708.5	0.042	16.22	14M2W7D
	10 MHz	$\pi/2$ BPSK	704.0 - 711.0	0.037	15.68	8M98G7D
		QPSK	704.0 - 711.0	0.038	15.77	9M35G7D
		16QAM	704.0 - 711.0	0.032	15.09	9M36W7D
		64QAM	704.0 - 711.0	0.022	13.45	9M41W7D
		256QAM	704.0 - 711.0	0.040	16.00	9M37W7D
	5 MHz	$\pi/2$ BPSK	701.5 - 713.5	0.039	15.87	4M53G7D
		QPSK	701.5 - 713.5	0.039	15.94	4M53G7D
		16QAM	701.5 - 713.5	0.033	15.16	4M51W7D
		64QAM	701.5 - 713.5	0.025	14.03	4M51W7D
		256QAM	701.5 - 713.5	0.041	16.16	4M52W7D
NR Band n5	20 MHz	$\pi/2$ BPSK	834.0 - 839.0	0.064	18.05	17M9G7D
		QPSK	834.0 - 839.0	0.087	19.41	19M0G7D
		16QAM	834.0 - 839.0	0.060	17.77	19M0W7D
		64QAM	834.0 - 839.0	0.042	16.21	19M0W7D
		256QAM	834.0 - 839.0	0.027	14.37	19M0W7D
	15 MHz	$\pi/2$ BPSK	831.5 - 841.5	0.037	15.67	13M5G7D
		QPSK	831.5 - 841.5	0.039	15.87	14M2G7D
		16QAM	831.5 - 841.5	0.036	15.59	14M2W7D
		64QAM	831.5 - 841.5	0.025	14.03	14M1W7D
		256QAM	831.5 - 841.5	0.017	12.19	14M1W7D
	10 MHz	$\pi/2$ BPSK	829.0 - 844.0	0.038	15.82	9M01G7D
		QPSK	829.0 - 844.0	0.039	15.96	9M32G7D
		16QAM	829.0 - 844.0	0.040	16.03	9M30W7D
		64QAM	829.0 - 844.0	0.028	14.47	9M33W7D
		256QAM	829.0 - 844.0	0.018	12.63	9M38W7D
	5 MHz	$\pi/2$ BPSK	826.5 - 846.5	0.037	15.71	4M50G7D
		QPSK	826.5 - 846.5	0.039	15.87	4M53G7D
		16QAM	826.5 - 846.5	0.041	16.13	4M53W7D
		64QAM	826.5 - 846.5	0.029	14.57	4M52W7D
		256QAM	826.5 - 846.5	0.017	12.42	4M55W7D

EUT Overview (NR Low Bands)

FCC ID: A3LSMN986U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2004170065-03-R3.A3L	Test Dates: 4/17 - 6/22/2020	EUT Type: Portable Handset	Page 6 of 494	

Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	EIRP		Emission Designator
				Max. Power [W]	Max. Power [dBm]	
NR Band n66	20 MHz	$\pi/2$ BPSK	1720.0 - 1770.0	0.278	24.44	17M9G7D
		QPSK	1720.0 - 1770.0	0.291	24.64	19M0G7D
		16QAM	1720.0 - 1770.0	0.235	23.71	19M0W7D
		64QAM	1720.0 - 1770.0	0.165	22.17	19M0W7D
		256QAM	1720.0 - 1770.0	0.116	20.66	19M0W7D
	15 MHz	$\pi/2$ BPSK	1717.5 - 1772.5	0.284	24.53	13M5G7D
		QPSK	1717.5 - 1772.5	0.287	24.57	14M2G7D
		16QAM	1717.5 - 1772.5	0.250	23.97	14M2W7D
		64QAM	1717.5 - 1772.5	0.192	22.82	14M2W7D
		256QAM	1717.5 - 1772.5	0.106	20.23	14M2W7D
	10 MHz	$\pi/2$ BPSK	1715.0 - 1775.0	0.295	24.70	9M03G7D
		QPSK	1715.0 - 1775.0	0.286	24.56	9M34G7D
		16QAM	1715.0 - 1775.0	0.248	23.94	9M31W7D
		64QAM	1715.0 - 1775.0	0.190	22.79	9M34W7D
		256QAM	1715.0 - 1775.0	0.100	20.00	9M39W7D
	5 MHz	$\pi/2$ BPSK	1712.5 - 1777.5	0.278	24.44	4M51G7D
		QPSK	1712.5 - 1777.5	0.289	24.60	4M54G7D
		16QAM	1712.5 - 1777.5	0.244	23.88	4M49W7D
		64QAM	1712.5 - 1777.5	0.188	22.73	4M52W7D
		256QAM	1712.5 - 1777.5	0.101	20.05	4M55W7D
NR Band n25/2	20 MHz	$\pi/2$ BPSK	1860 - 1905	0.220	23.43	18M2G7D
		QPSK	1860 - 1905	0.241	23.82	19M0G7D
		16QAM	1860 - 1905	0.182	22.61	19M0W7D
		64QAM	1860 - 1905	0.123	20.90	19M0W7D
		256QAM	1860 - 1905	0.080	19.01	17M9W7D
	15 MHz	$\pi/2$ BPSK	1857.5 - 1907.5	0.216	23.34	13M5G7D
		QPSK	1857.5 - 1907.5	0.239	23.78	14M2G7D
		16QAM	1857.5 - 1907.5	0.195	22.89	14M2W7D
		64QAM	1857.5 - 1907.5	0.112	20.49	14M2W7D
		256QAM	1857.5 - 1907.5	0.077	18.89	14M2W7D
	10 MHz	$\pi/2$ BPSK	1855 - 1910	0.220	23.43	9M02G7D
		QPSK	1855 - 1910	0.236	23.72	9M35G7D
		16QAM	1855 - 1910	0.191	22.80	9M35W7D
		64QAM	1855 - 1910	0.110	20.40	9M32W7D
		256QAM	1855 - 1910	0.076	18.80	9M34W7D
	5 MHz	$\pi/2$ BPSK	1852.5 - 1914.3	0.204	23.10	4M50G7D
		QPSK	1852.5 - 1914.3	0.235	23.70	4M49G7D
		16QAM	1852.5 - 1914.3	0.169	22.28	4M54W7D
		64QAM	1852.5 - 1914.3	0.097	19.88	4M53W7D
		256QAM	1852.5 - 1914.3	0.067	18.28	4M52W7D

EUT Overview (NR Mid Bands)

FCC ID: A3LSMN986U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2004170065-03-R3.A3L	Test Dates: 4/17 - 6/22/2020	EUT Type: Portable Handset	Page 7 of 494	

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	0.222	23.46	96M8G7D
		QPSK	2546.0 - 2640.0	0.183	22.61	96M8G7D
		16QAM	2546.0 - 2640.0	0.136	21.32	96M7W7D
		64QAM	2546.0 - 2640.0	0.087	19.41	96M5W7D
		256QAM	2546.0 - 2640.0	0.078	18.91	96M5W7D
	90 MHz	$\pi/2$ BPSK	2541.0 - 2645.0	0.211	23.25	88M4G7D
		QPSK	2541.0 - 2645.0	0.191	22.81	87M7G7D
		16QAM	2541.0 - 2645.0	0.155	21.89	87M6W7D
		64QAM	2541.0 - 2645.0	0.083	19.18	87M8W7D
		256QAM	2541.0 - 2645.0	0.062	17.92	87M7W7D
	80 MHz	$\pi/2$ BPSK	2536.0 - 2650.0	0.220	23.42	77M3G7D
		QPSK	2536.0 - 2650.0	0.217	23.36	77M6G7D
		16QAM	2536.0 - 2650.0	0.140	21.46	77M6W7D
		64QAM	2536.0 - 2650.0	0.066	18.22	77M6W7D
		256QAM	2536.0 - 2650.0	0.044	16.44	77M5W7D
	60 MHz	$\pi/2$ BPSK	2526.0 - 2660.0	0.229	23.60	58M2G7D
		QPSK	2526.0 - 2660.0	0.203	23.08	58M0G7D
		16QAM	2526.0 - 2660.0	0.150	21.76	58M1W7D
		64QAM	2526.0 - 2660.0	0.083	19.21	58M0W7D
		256QAM	2526.0 - 2660.0	0.077	18.87	57M9W7D
	50 MHz	$\pi/2$ BPSK	2521.0 - 2665.0	0.232	23.66	45M8G7D
		QPSK	2521.0 - 2665.0	0.192	22.84	47M6G7D
		16QAM	2521.0 - 2665.0	0.159	22.02	47M7W7D
		64QAM	2521.0 - 2665.0	0.087	19.37	47M9W7D
		256QAM	2521.0 - 2665.0	0.053	17.24	47M7W7D
	40 MHz	$\pi/2$ BPSK	2516.0 - 2670.0	0.208	23.17	35M8G7D
		QPSK	2516.0 - 2670.0	0.193	22.85	37M9G7D
		16QAM	2516.0 - 2670.0	0.131	21.17	37M9W7D
		64QAM	2516.0 - 2670.0	0.061	17.85	37M9W7D
		256QAM	2516.0 - 2670.0	0.055	17.37	37M9W7D
	20 MHz	$\pi/2$ BPSK	2506.0 - 2680.0	0.186	22.69	18M0G7D
		QPSK	2506.0 - 2680.0	0.162	22.09	18M3G7D
		16QAM	2506.0 - 2680.0	0.128	21.07	18M3W7D
		64QAM	2506.0 - 2680.0	0.066	18.19	18M3W7D
		256QAM	2506.0 - 2680.0	0.050	17.03	18M3W7D

EUT Overview (NR High Bands)

FCC ID: A3LSMN986U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2004170065-03-R3.A3L	Test Dates: 4/17 - 6/22/2020	EUT Type: Portable Handset	Page 8 of 494	

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.

FCC ID: A3LSMN986U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2004170065-03-R3.A3L	Test Dates: 4/17 - 6/22/2020	EUT Type: Portable Handset	Page 9 of 494	

2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **Samsung Portable Handset FCC ID: A3LSMN986U**. The test data contained in this report pertains only to the emissions due to the EUT's LTE function.

Test Device Serial No.: 0064M, 0109M, 0067M, 0073M, 0132M, 0077M, 0053M, 0066M, 0065M, 0089M, 0070M, 0074M, 0119M, 0101M, 0097M, 1191M

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 (n5, n12, n71, n41, n66, n2/n25, n260, n261), 802.11b/g/n/ax WLAN, 802.11a/n/ac/ax UNII, Bluetooth (1x, EDR, LE), NFC, Wireless Power Transfer, UWB

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

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

LTE Band 66 (1710 - 1780 MHz) overlaps the entire frequency range of LTE Band 4 (1710 - 1755 MHz). Therefore, test data provided in this report covers Band 4 as well as Band 66.

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

NR Band n25 (1850 - 1915 MHz) overlaps the entire frequency range of NR Band n2 (1850 - 1910 MHz). Therefore, test data provided in this report covers NR Band n2 as well as NR Band 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.

FCC ID: A3LSMN986U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2004170065-03-R3.A3L	Test Dates: 4/17 - 6/22/2020	EUT Type: Portable Handset	Page 10 of 494	

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.

FCC ID: A3LSMN986U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2004170065-03-R3.A3L	Test Dates: 4/17 - 6/22/2020	EUT Type: Portable Handset		Page 11 of 494

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

FCC ID: A3LSMN986U	 PCTEST Proud to be part of  element	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2004170065-03-R3.A3L	Test Dates: 4/17 - 6/22/2020	EUT Type: Portable Handset		Page 12 of 494

5.0 TEST EQUIPMENT CALIBRATION DATA

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

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
-	LTx2	Licensed Transmitter Cable Set	4/9/2020	Annual	4/9/2021	LTx2
-	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
Anritsu	MT8821C	Radio Communication Analyzer	3/10/2020	Annual	3/10/2021	6200901190
Anritsu	MS46322A	Vector Network Analyzer	8/19/2019	Annual	8/19/2020	1521001
Anritsu	36585K-2F	Precision Autocal 2-Port	7/16/2019	Annual	7/16/2020	1628014
Com-Power	AL-130	9kHz - 30MHz Loop Antenna	10/10/2019	Biennial	10/10/2021	121034
EMCO	3160-09	Small Horn (18 - 26.5GHz)	8/9/2018	Biennial	8/9/2020	135427
Espec	ESX-2CA	Environmental Chamber	6/13/2019	Annual	6/13/2020	17620
ETS Lindgren	3117	1-18 GHz DRG Horn (Medium)	2/14/2019	Biennial	2/14/2021	125518
ETS Lindgren	3164-08	Quad Ridge Horn Antenna	3/12/2020	Biennial	3/12/2022	128337
ETS-Lindgren	3115	Double Ridged Guide Horn 750MHz - 18GHz	3/12/2020	Biennial	3/12/2022	150693
Mini Circuits	TVA-11-422	RF Power Amp	N/A			QA1317001
Mini-Circuits	SSG-4000HP	Synthesized Signal Generator	N/A			11403100002
Rohde & Schwarz	CMU200	Base Station Simulator	N/A			107826
Rohde & Schwarz	CMU200	Base Station Simulator	N/A			836536/0005
Rohde & Schwarz	CMW500	Radio Communication Tester	8/26/2019	Annual	8/26/2020	100976
Rohde & Schwarz	CMW500	Radio Communication Tester	6/26/2019	Annual	6/26/2020	112347
Rohde & Schwarz	TS-PR26	18-26.5 GHz Pre-Amplifier	11/1/2019	Annual	11/1/2020	100040
Rohde & Schwarz	TC-TA18	Cross-Pol Antenna 400MHz-18GHz	12/12/2018	Biennial	12/12/2020	101058
Rohde & Schwarz	SFUNIT-Rx	Shielded Filter Unit	7/11/2019	Annual	7/11/2020	102134
Rohde & Schwarz	SFUNIT-Rx	Shielded Filter Unit	7/8/2019	Annual	7/8/2020	102133
Sunol	DRH-118	Horn Antenna (1-18GHz)	10/3/2019	Biennial	10/3/2021	A050307
Sunol	DRH-118	Horn Antenna (1-18 GHz)	8/27/2019	Biennial	8/27/2021	A042511

Table 5-1. Test Equipment

Notes:

1. For equipment listed above that has a calibration date or calibration due date that falls within the test date range, care was taken to ensure that this equipment was used after the calibration date and before the calibration due date.
2. Equipment with a calibration date of "N/A" shown in this list was not used to make direct calibrated measurements.

FCC ID: A3LSMN986U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2004170065-03-R3.A3L	Test Dates: 4/17 - 6/22/2020	EUT Type: Portable Handset	Page 13 of 494	

6.0 SAMPLE CALCULATIONS

Emission Designator

QPSK Modulation

Emission Designator = 8M62G7D

LTE BW = 8.62 MHz

G = Phase Modulation

7 = Quantized/Digital Info

D = Data transmission, telemetry, telecommand

QAM Modulation

Emission Designator = 8M45W7D

LTE BW = 8.45 MHz

W = Amplitude/Angle Modulated

7 = Quantized/Digital Info

D = Data transmission, telemetry, telecommand

Spurious Radiated Emission – LTE Band

Example: Middle Channel LTE Mode 2nd Harmonic (1564 MHz)

The average spectrum analyzer reading at 3 meters with the EUT on the turntable was -81.0 dBm. The gain of the substituted antenna is 8.1 dBi. The signal generator connected to the substituted antenna terminals is adjusted to produce a reading of -81.0 dBm on the spectrum analyzer. The loss of the cable between the signal generator and the terminals of the substituted antenna is 2.0 dB at 1564 MHz. So 6.1 dB is added to the signal generator reading of -30.9 dBm yielding -24.80 dBm. The fundamental EIRP was 25.501 dBm so this harmonic was 25.501 dBm – (-24.80).

FCC ID: A3LSMN986U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2004170065-03-R3.A3L	Test Dates: 4/17 - 6/22/2020	EUT Type: Portable Handset		Page 14 of 494

7.0 TEST RESULTS

7.1 Summary

Company Name: Samsung Electronics Co., Ltd.
 FCC ID: A3LSMN986U
 FCC Classification: PCS Licensed Transmitter Held to Ear (PCE)
 Mode(s): LTE / NR SUB6

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[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)	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 + 10log(P[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

FCC ID: A3LSMN986U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2004170065-03-R3.A3L	Test Dates: 4/17 - 6/22/2020	EUT Type: Portable Handset	Page 15 of 494	

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 7.6
27.50(b)(10) 27.50(c)(10)	Effective Radiated Power / Equivalent Isotropic Radiated Power (Band 71, 12, 13)	< 3 Watts max. ERP			Section 7.6
24.232(c) 27.50(h)(2)	Equivalent Isotropic Radiated Power (Band 2/25, 7, 41)	< 2 Watts max. EIRP			Section 7.6
27.50(d)(4)	Equivalent Isotropic Radiated Power (Band 4/66)	< 1 Watts max. EIRP			Section 7.6
27.50(a)(3)	Equivalent Isotropic Radiated Power (Band 30)	< 0.25 Watts max. EIRP			Section 7.6
2.1053 22.917(a) 24.238(a) 27.53(c) 27.53(g) 27.53(h)	Undesirable Emissions (Band 12, 13, 26/5, 66/4, 25/2)	> 43 + 10 log ₁₀ (P[Watts]) for all out-of-band emissions			Section 7.8
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 ₁₀ (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 7.8

Table 7-2. Summary of Radiated Test Results

FCC ID: A3LSMN986U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2004170065-03-R3.A3L	Test Dates: 4/17 - 6/22/2020	EUT Type: Portable Handset	Page 16 of 494	

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.

FCC ID: A3LSMN986U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2004170065-03-R3.A3L	Test Dates: 4/17 - 6/22/2020	EUT Type: Portable Handset	Page 17 of 494	

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.

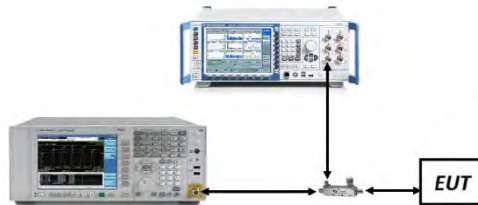


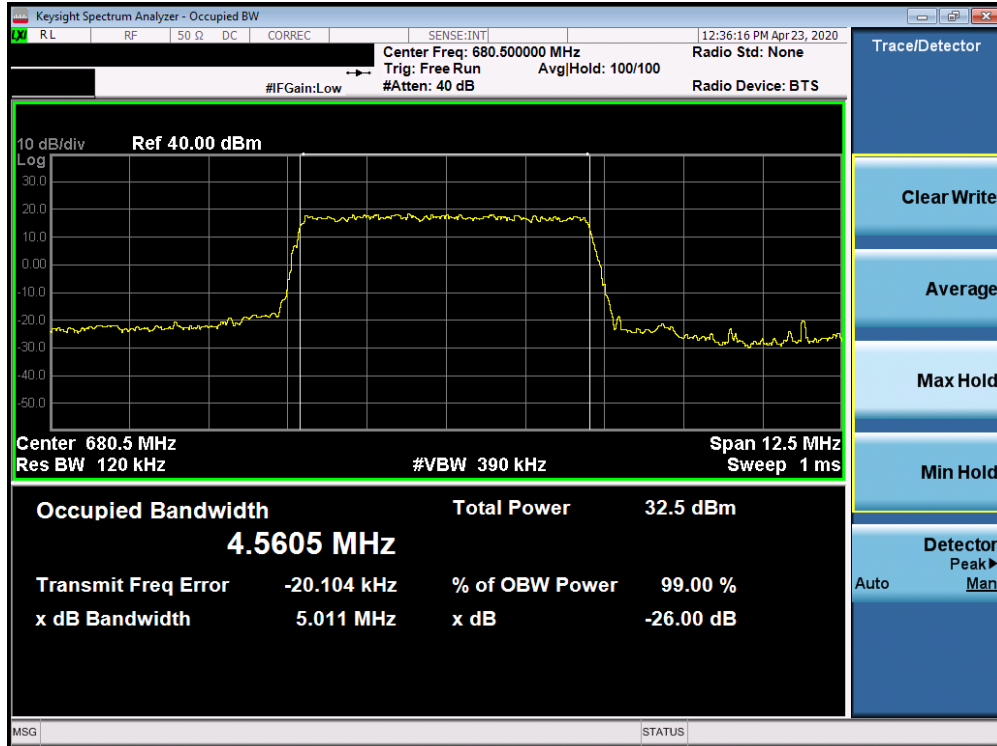
Figure 7-1. Test Instrument & Measurement Setup

Test Notes

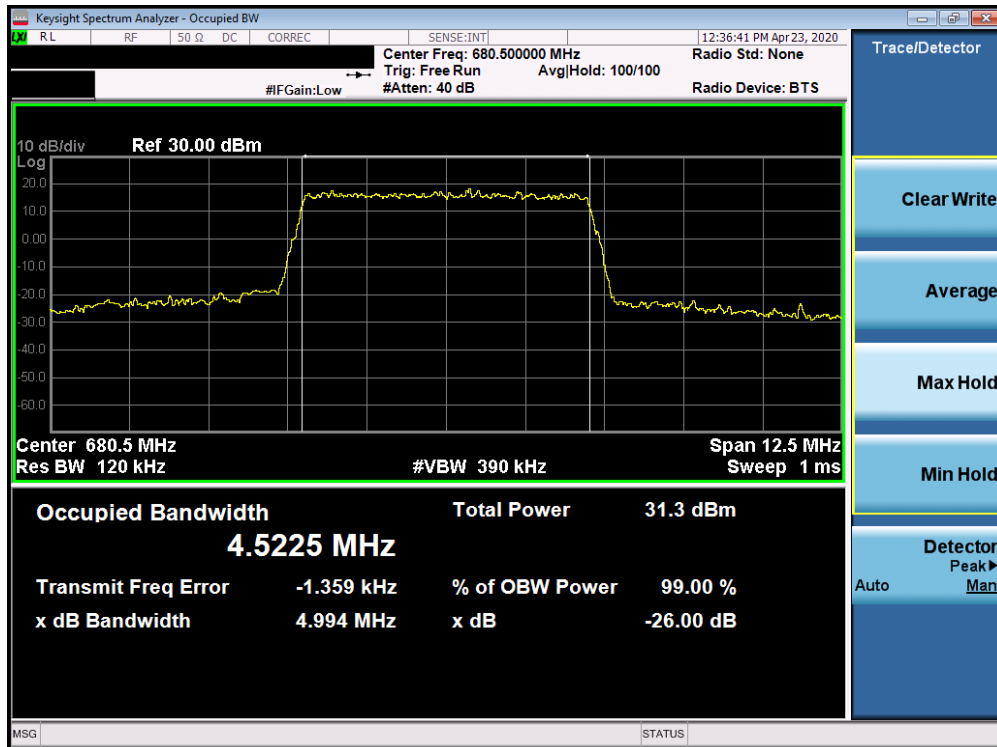
None.

FCC ID: A3LSMN986U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2004170065-03-R3.A3L	Test Dates: 4/17 - 6/22/2020	EUT Type: Portable Handset		Page 18 of 494

Band 71

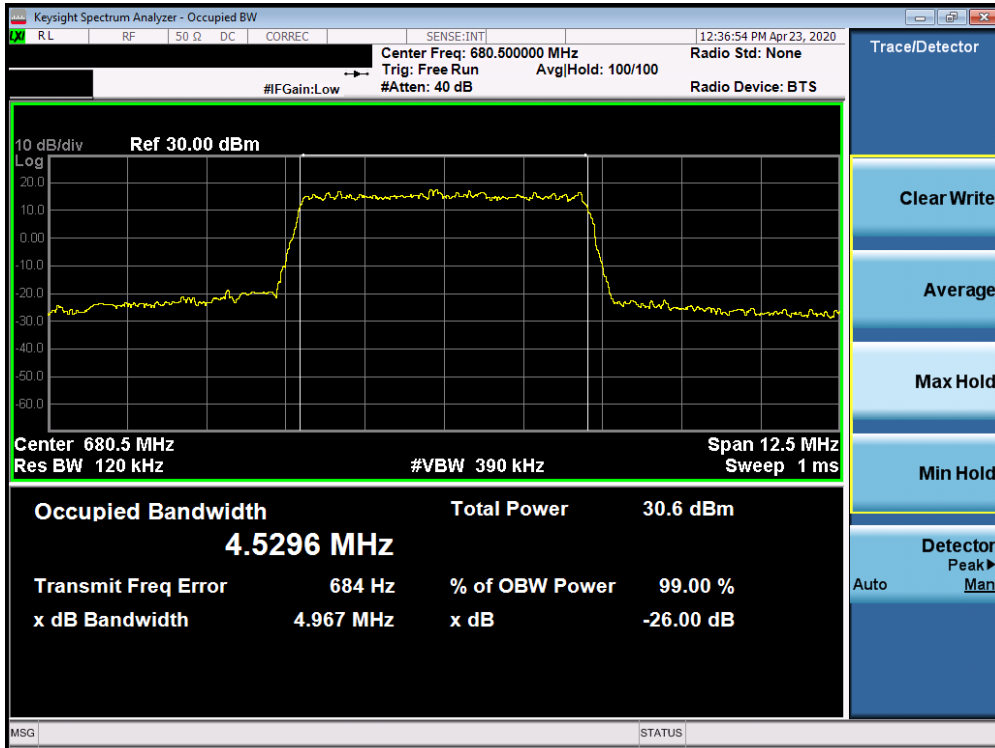


Plot 7-1. Occupied Bandwidth Plot (Band 71 - 5.0MHz QPSK - Full RB Configuration)

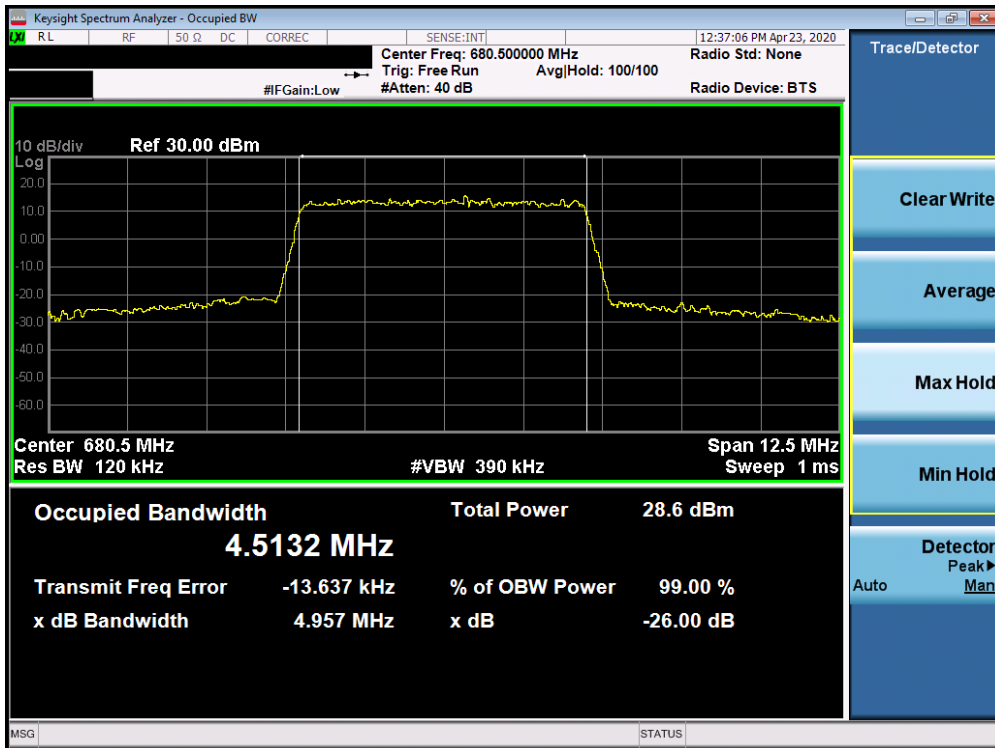


Plot 7-2. Occupied Bandwidth Plot (Band 71 - 5.0MHz 16-QAM - Full RB Configuration)


FCC ID: A3LSMN986U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2004170065-03-R3.A3L	Test Dates: 4/17 - 6/22/2020	EUT Type: Portable Handset		Page 19 of 494

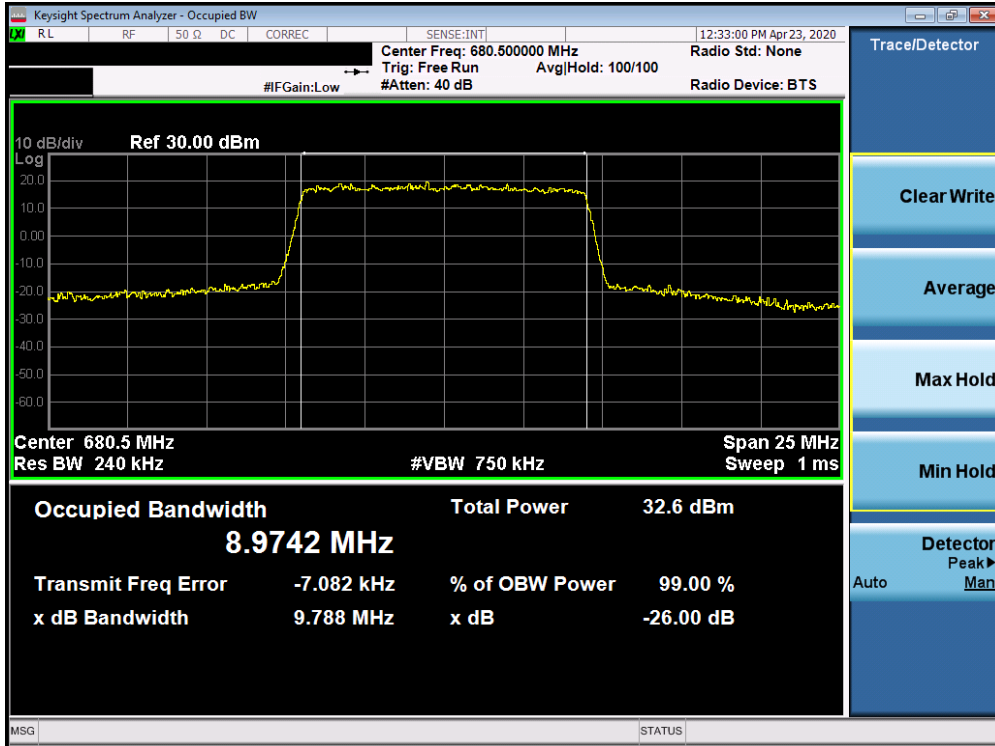


Plot 7-3. Occupied Bandwidth Plot (Band 71 - 5.0MHz 64-QAM - Full RB Configuration)

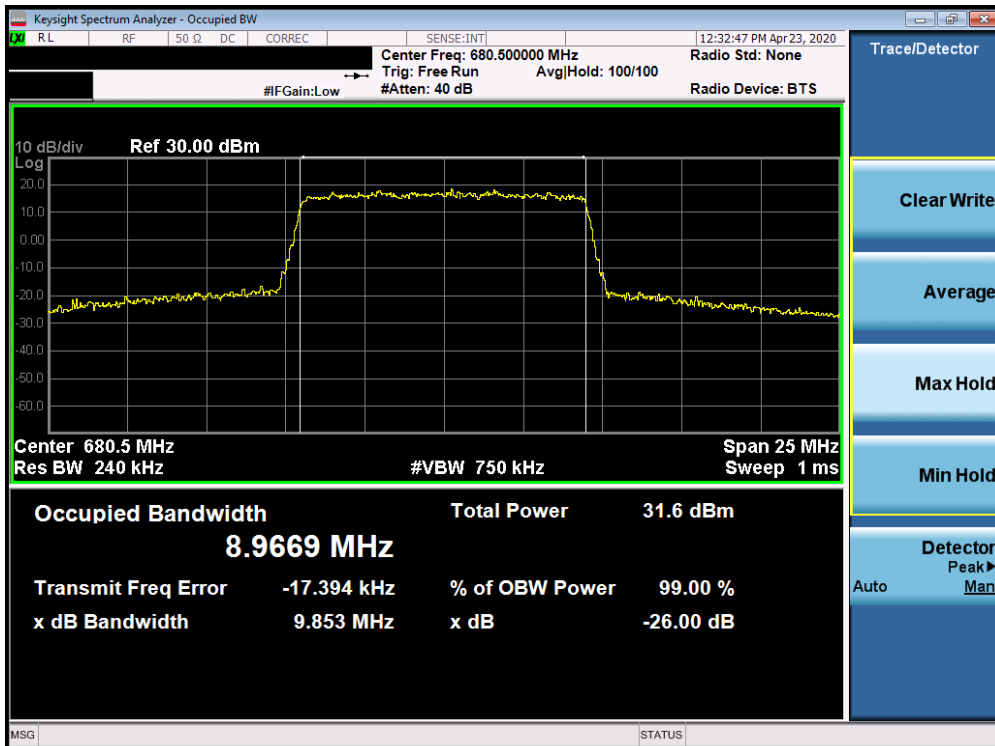


Plot 7-4. Occupied Bandwidth Plot (Band 71 - 5.0MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMN986U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2004170065-03-R3.A3L	Test Dates: 4/17 - 6/22/2020	EUT Type: Portable Handset		Page 20 of 494

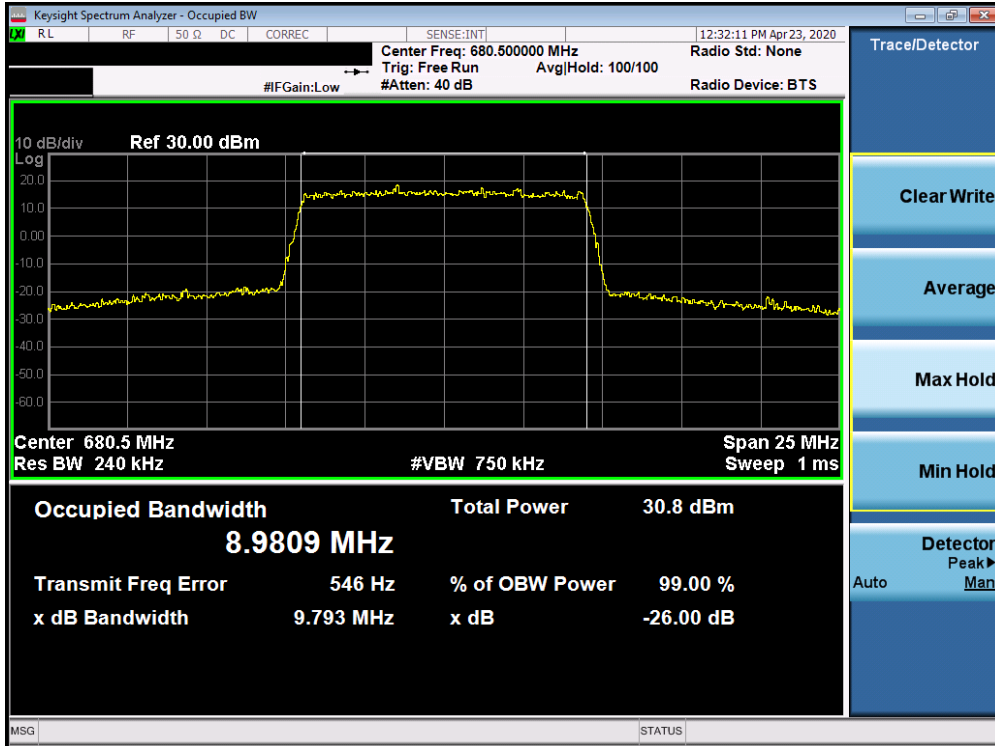


Plot 7-5. Occupied Bandwidth Plot (Band 71 - 10.0MHz QPSK - Full RB Configuration)

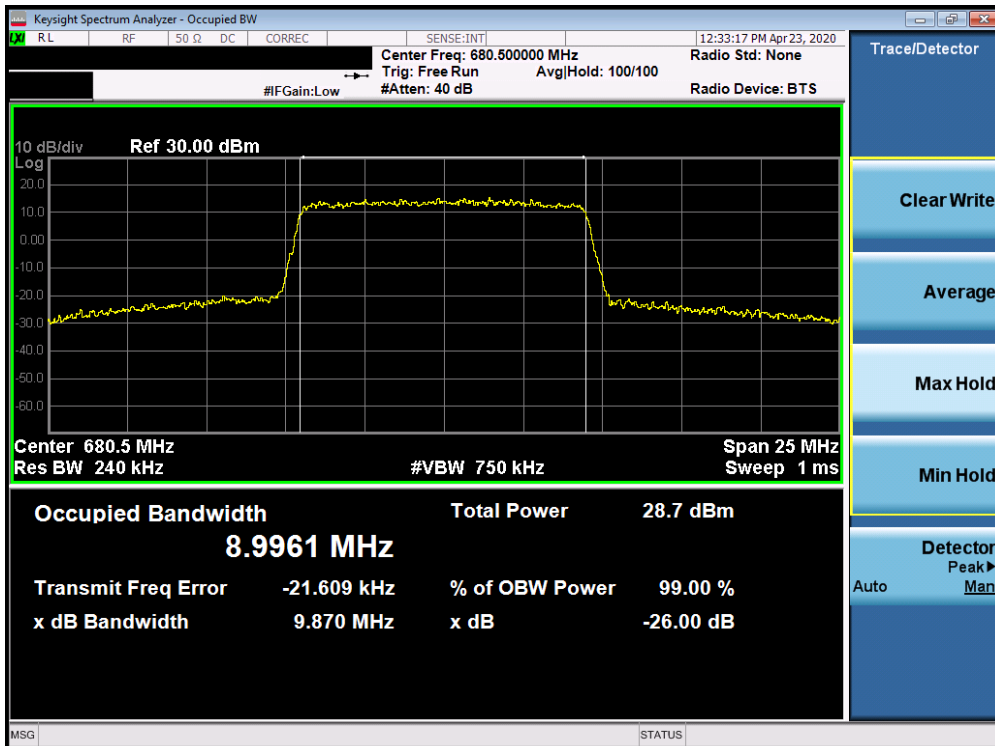


Plot 7-6. Occupied Bandwidth Plot (Band 71 - 10.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMN986U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2004170065-03-R3.A3L	Test Dates: 4/17 - 6/22/2020	EUT Type: Portable Handset		Page 21 of 494

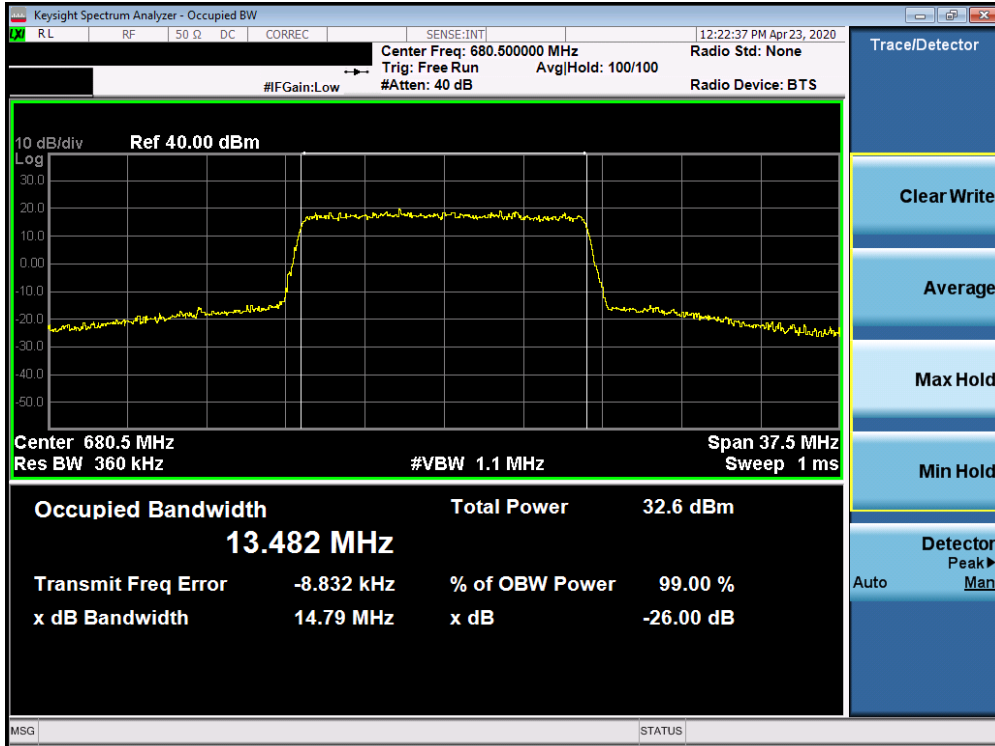


Plot 7-7. Occupied Bandwidth Plot (Band 71 - 10.0MHz 64-QAM - Full RB Configuration)

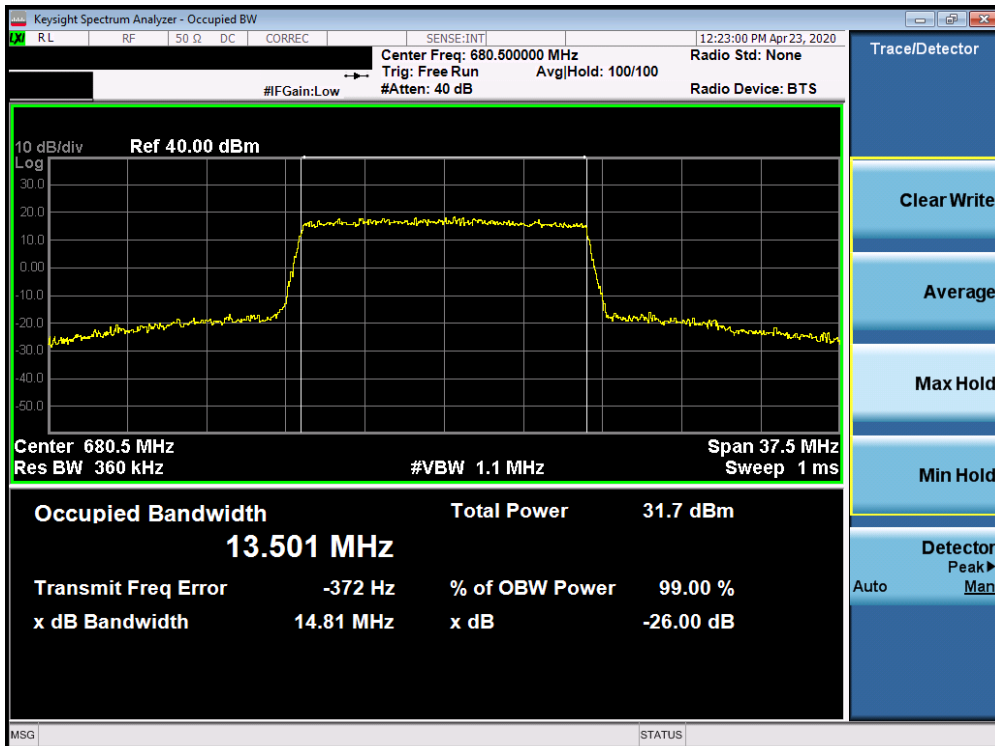


Plot 7-8. Occupied Bandwidth Plot (Band 71 - 10.0MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMN986U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2004170065-03-R3.A3L	Test Dates: 4/17 - 6/22/2020	EUT Type: Portable Handset		Page 22 of 494

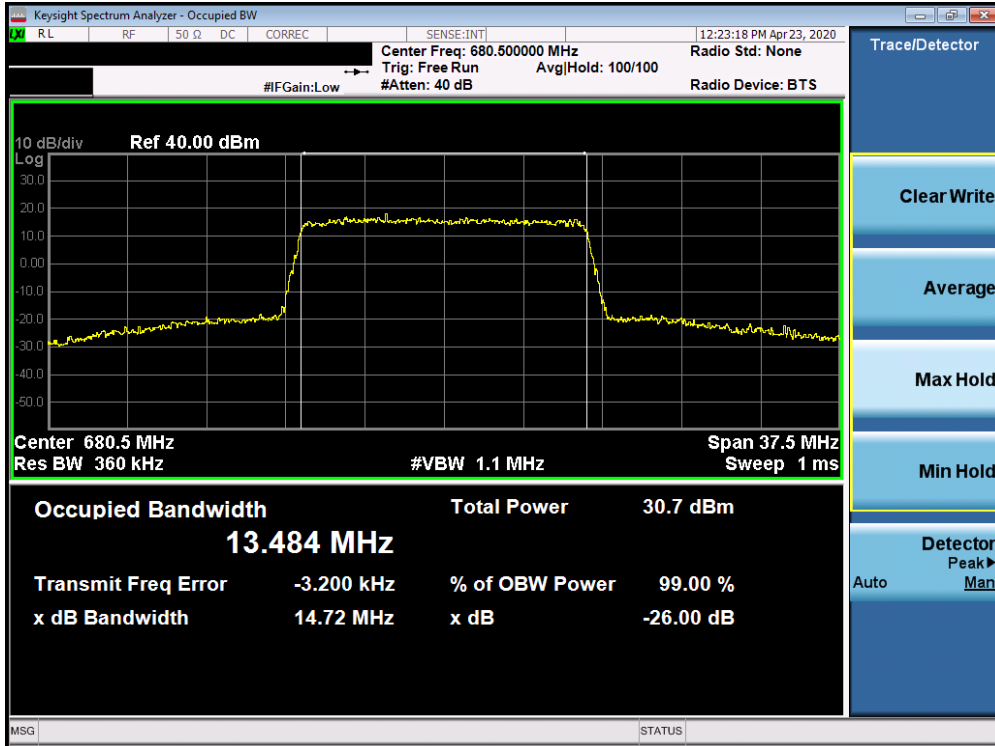


Plot 7-9. Occupied Bandwidth Plot (Band 71 - 15.0MHz QPSK - Full RB Configuration)

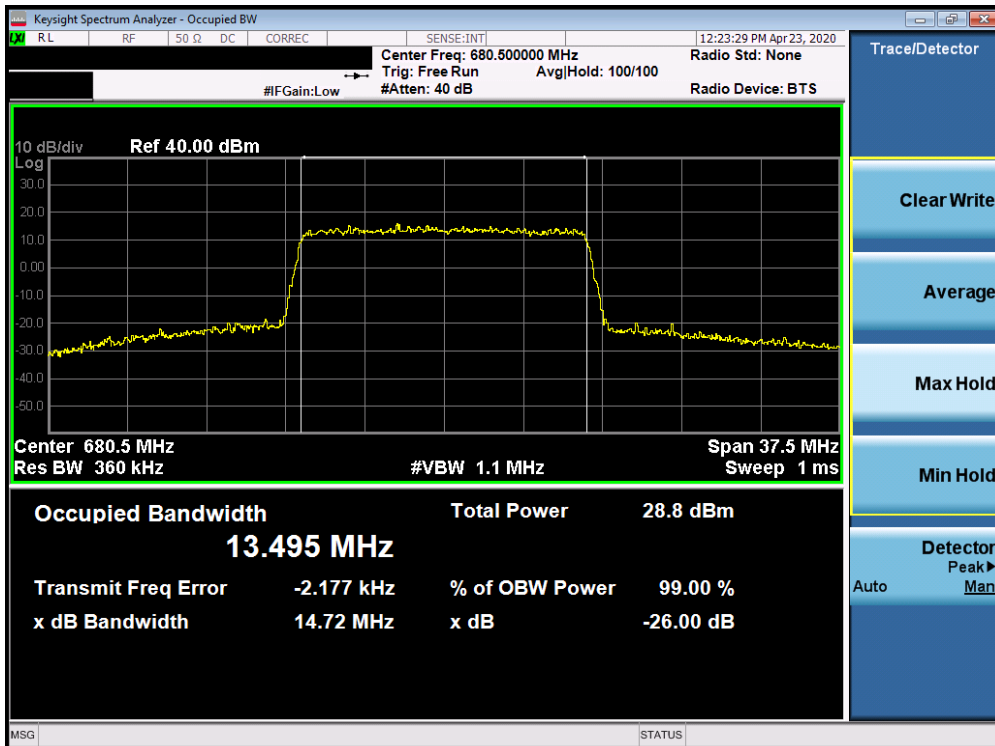


Plot 7-10. Occupied Bandwidth Plot (Band 71 - 15.0MHz 16-QAM - Full RB Configuration)


FCC ID: A3LSMN986U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2004170065-03-R3.A3L	Test Dates: 4/17 - 6/22/2020	EUT Type: Portable Handset		Page 23 of 494



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

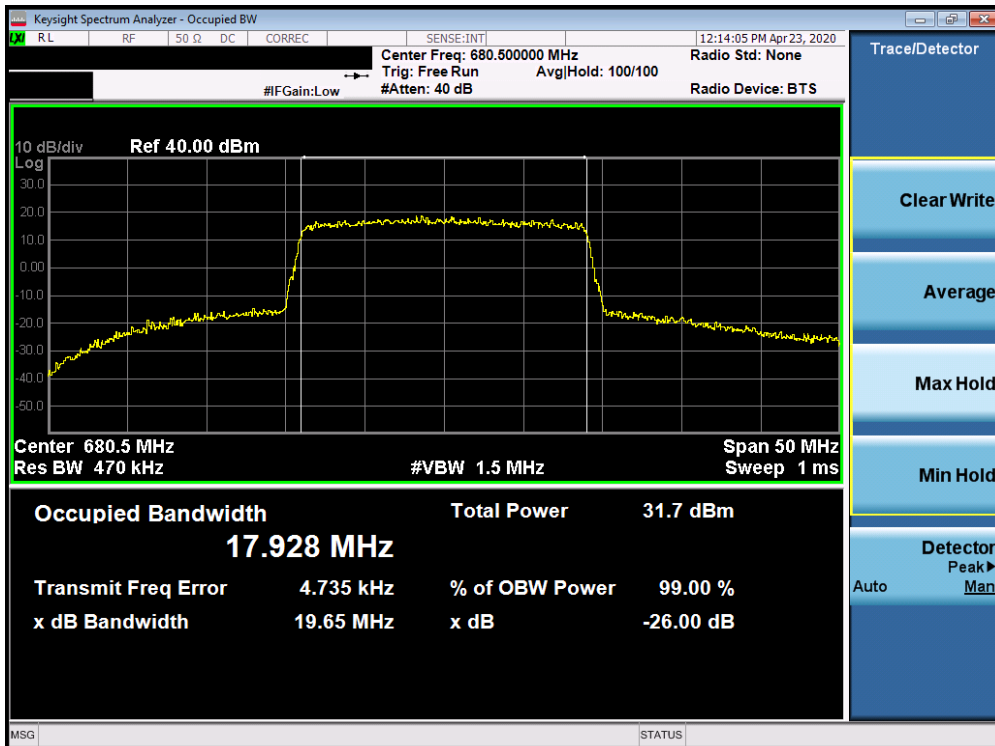


Plot 7-12. Occupied Bandwidth Plot (Band 71 - 15.0MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMN986U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2004170065-03-R3.A3L	Test Dates: 4/17 - 6/22/2020	EUT Type: Portable Handset		Page 24 of 494

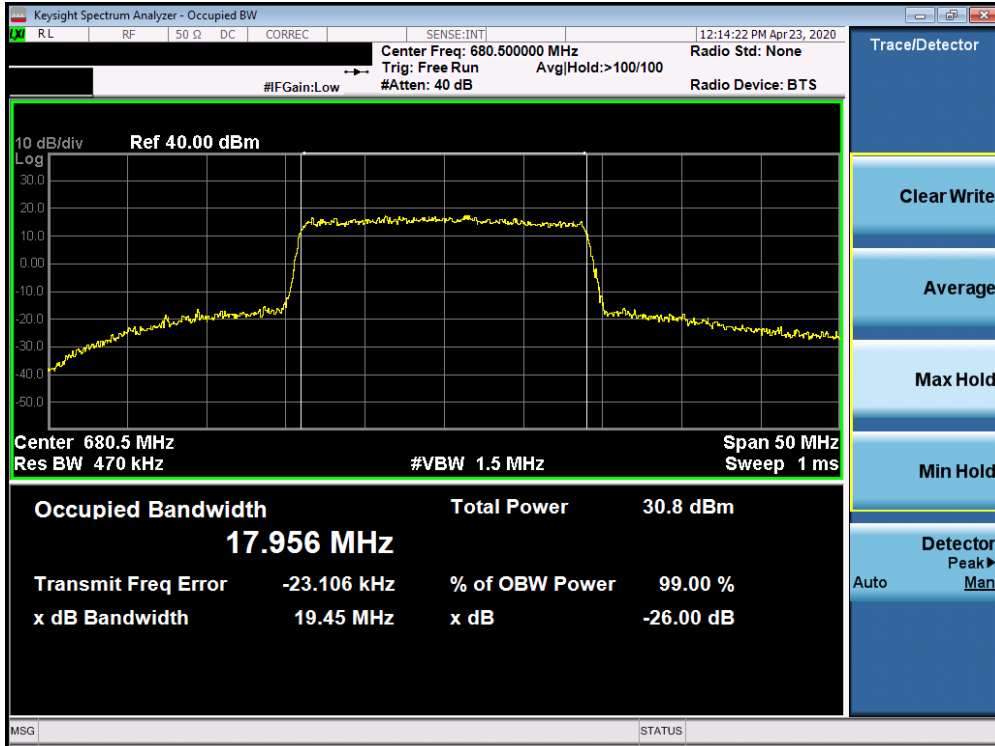


Plot 7-13. Occupied Bandwidth Plot (Band 71 - 20.0MHz QPSK - Full RB Configuration)

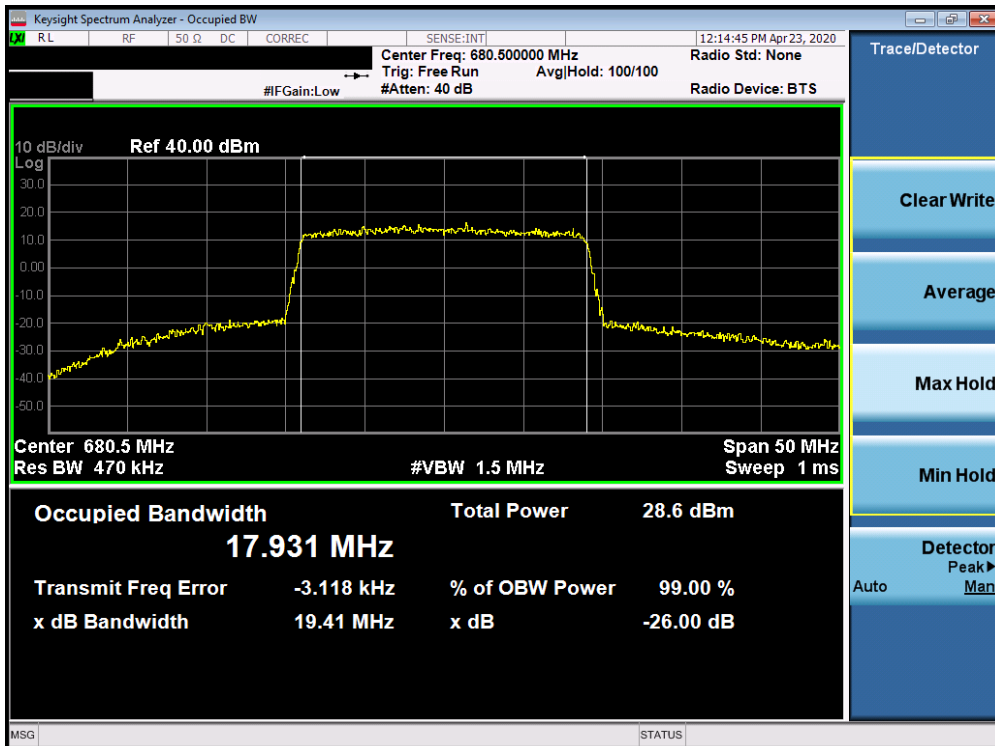


Plot 7-14. Occupied Bandwidth Plot (Band 71 - 20.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMN986U	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M2004170065-03-R3.A3L	Test Dates: 4/17 - 6/22/2020	EUT Type: Portable Handset		Page 25 of 494



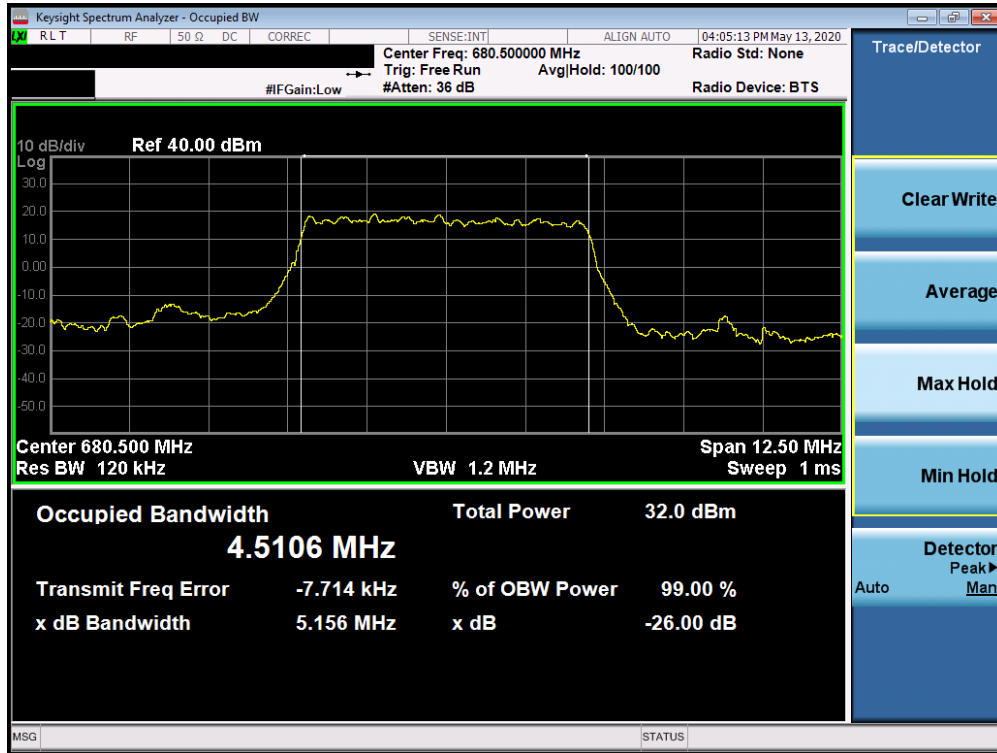
Plot 7-15. Occupied Bandwidth Plot (Band 71 - 20.0MHz 64-QAM - Full RB Configuration)



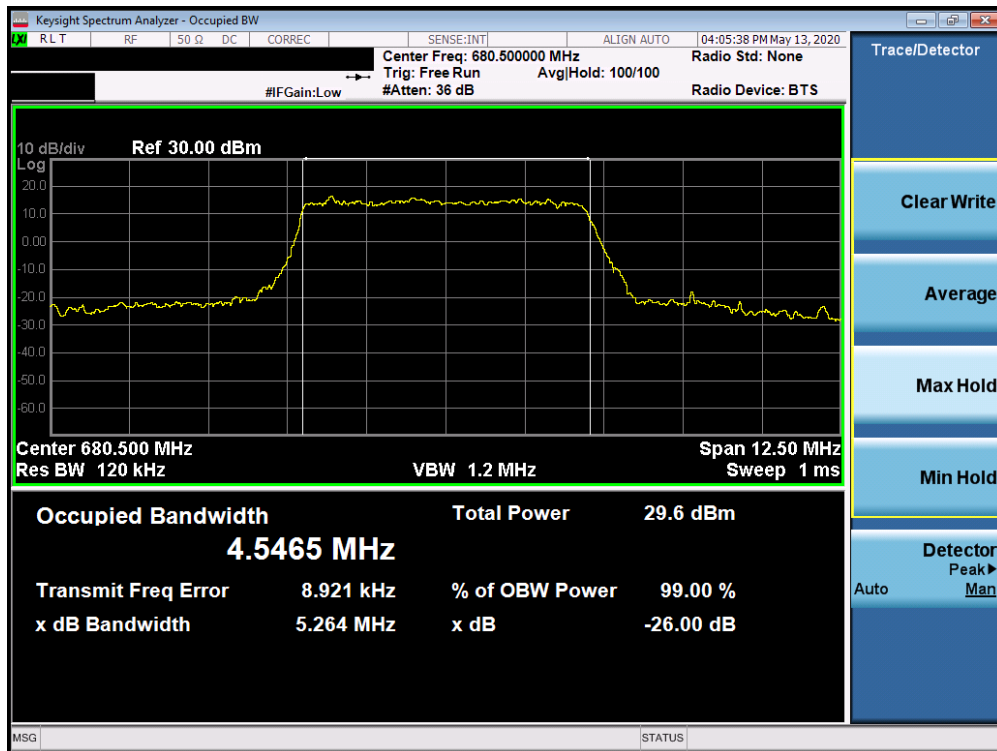
Plot 7-16. Occupied Bandwidth Plot (Band 71 - 20.0MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMN986U	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M2004170065-03-R3.A3L	Test Dates: 4/17 - 6/22/2020	EUT Type: Portable Handset		Page 26 of 494


NR Band n71

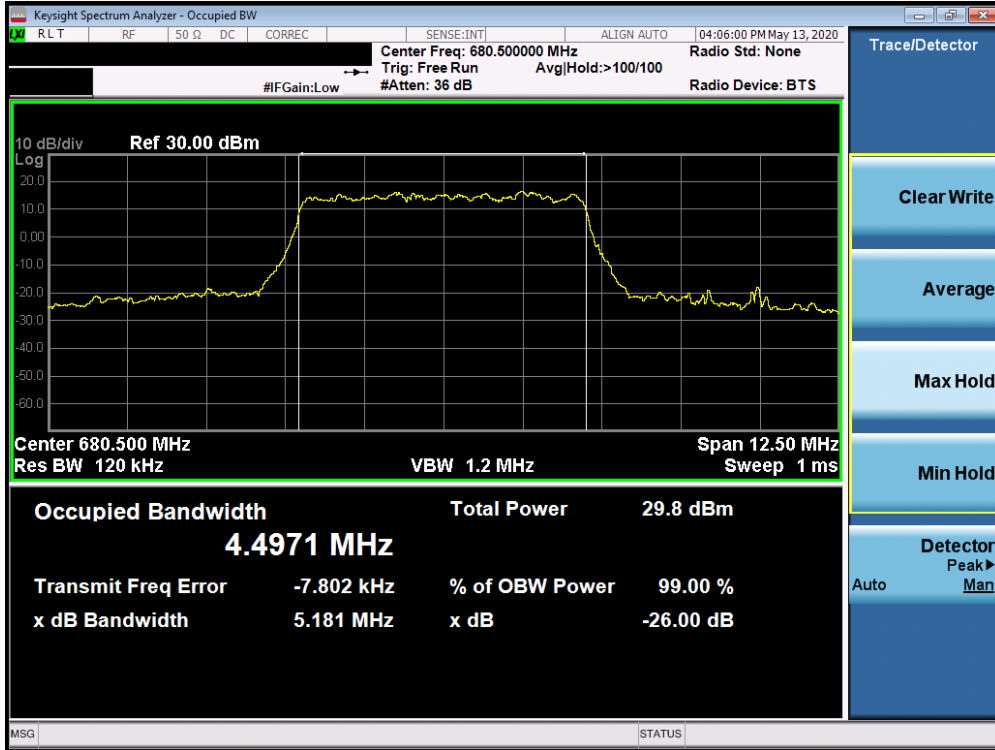


Plot 7-17. Occupied Bandwidth Plot (n71 5MHz BPSK-DFT-s-OFDM- Full RB Configuration)

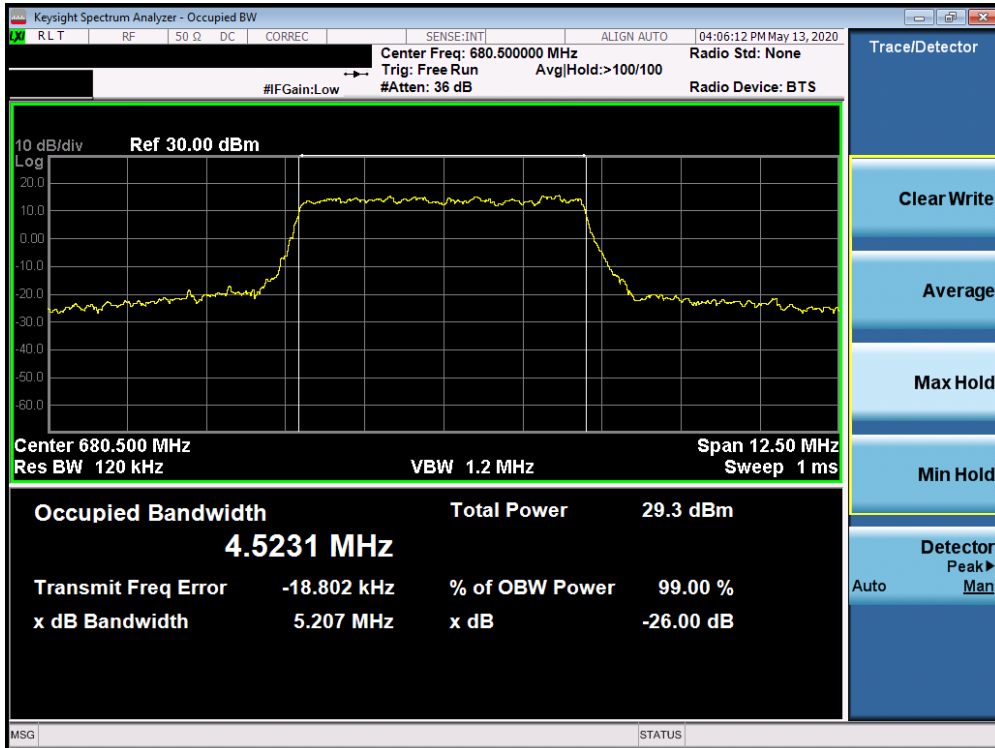


Plot 7-18. Occupied Bandwidth Plot (n71 5MHz QPSK-CP-OFDM - Full RB Configuration)

FCC ID: A3LSMN986U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2004170065-03-R3.A3L	Test Dates: 4/17 - 6/22/2020	EUT Type: Portable Handset		Page 27 of 494

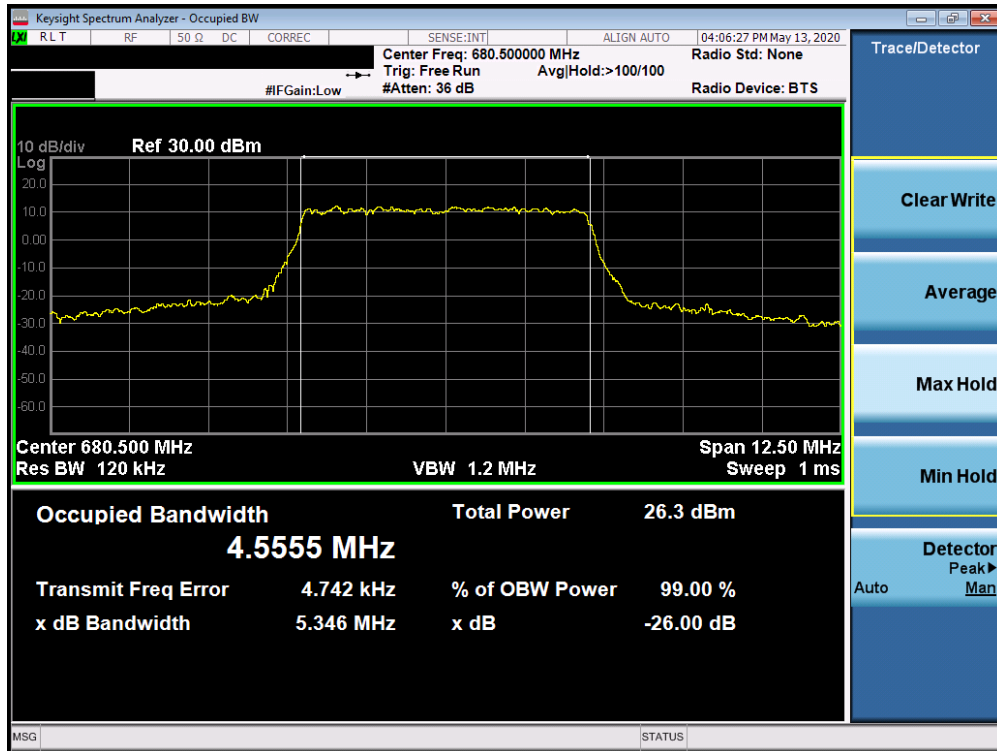


Plot 7-19. Occupied Bandwidth Plot (n71 5MHz 16QAM-CP-OFDM - Full RB Configuration)

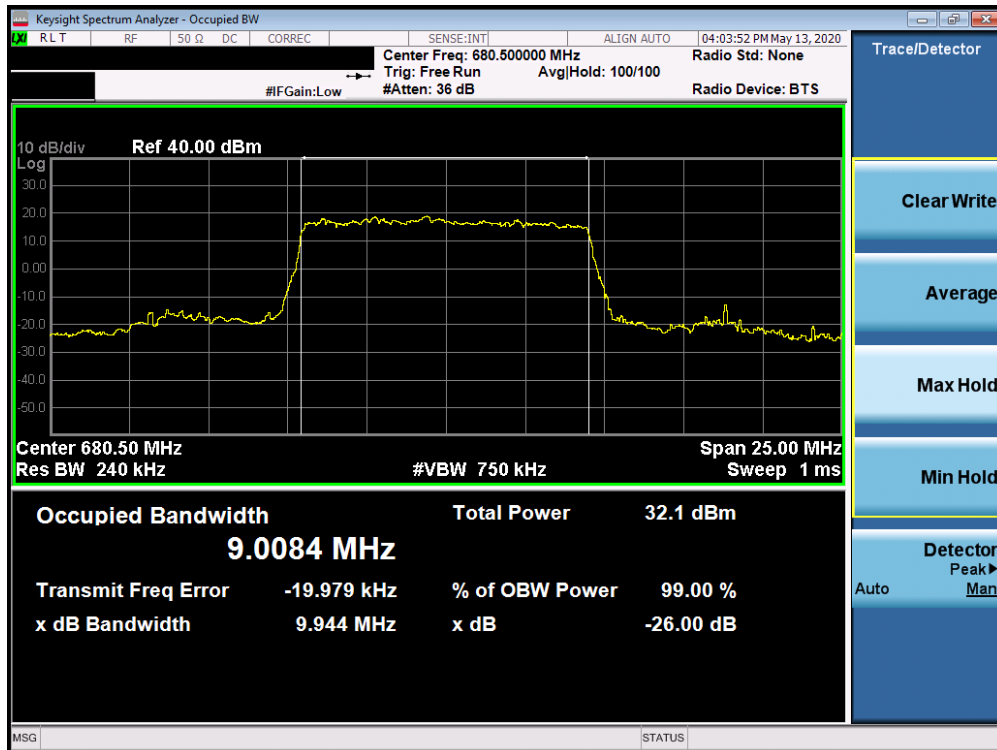


Plot 7-20. Occupied Bandwidth Plot (n71 5MHz 64QAM-CP-OFDM- Full RB Configuration)

FCC ID: A3LSMN986U	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M2004170065-03-R3.A3L	Test Dates: 4/17 - 6/22/2020	EUT Type: Portable Handset		Page 28 of 494

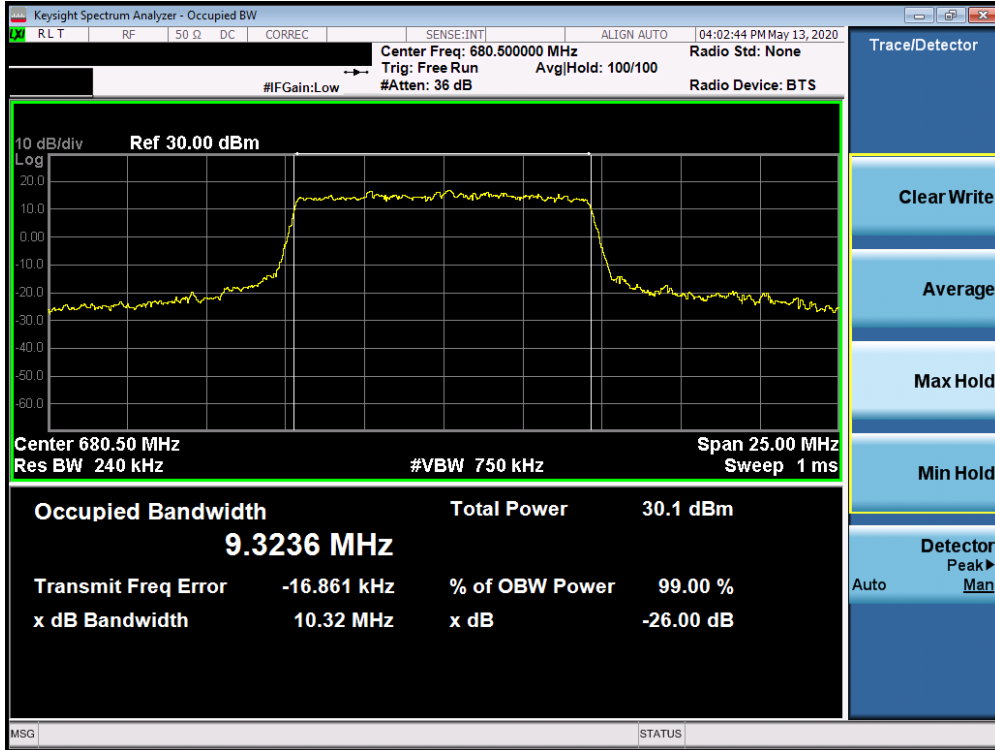


Plot 7-21. Occupied Bandwidth Plot (n71 5MHz 256QAM-CP-OFDM- Full RB Configuration)

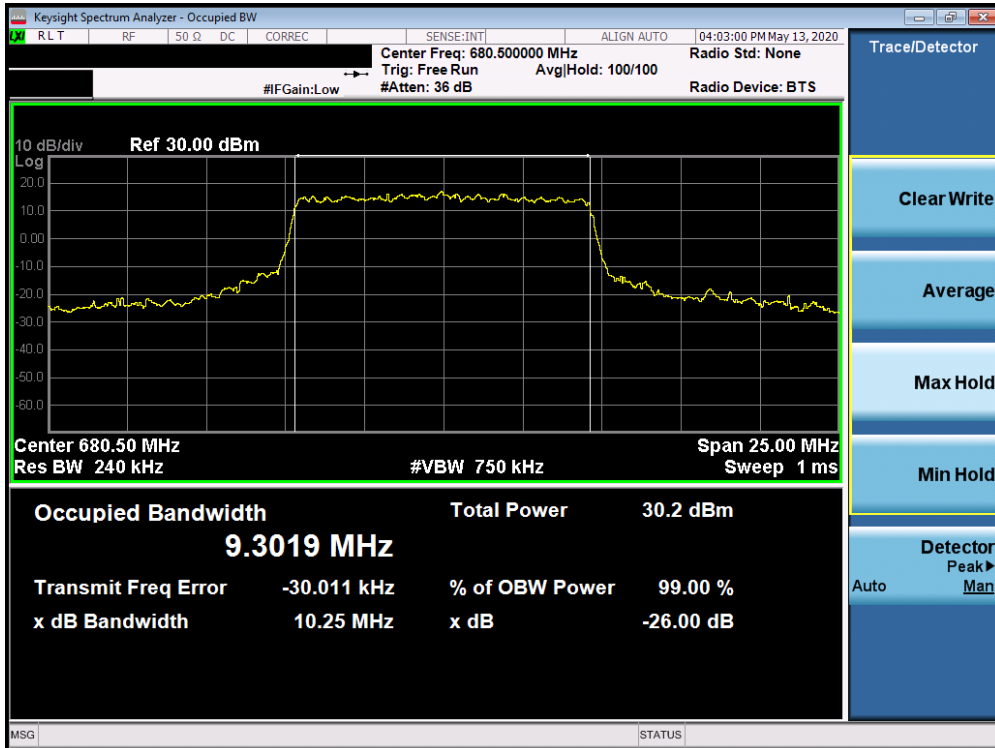


Plot 7-22. Occupied Bandwidth Plot (n71 10MHz BPSK-DFT-s-OFDM - Full RB Configuration)

FCC ID: A3LSMN986U	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M2004170065-03-R3.A3L	Test Dates: 4/17 - 6/22/2020	EUT Type: Portable Handset		Page 29 of 494

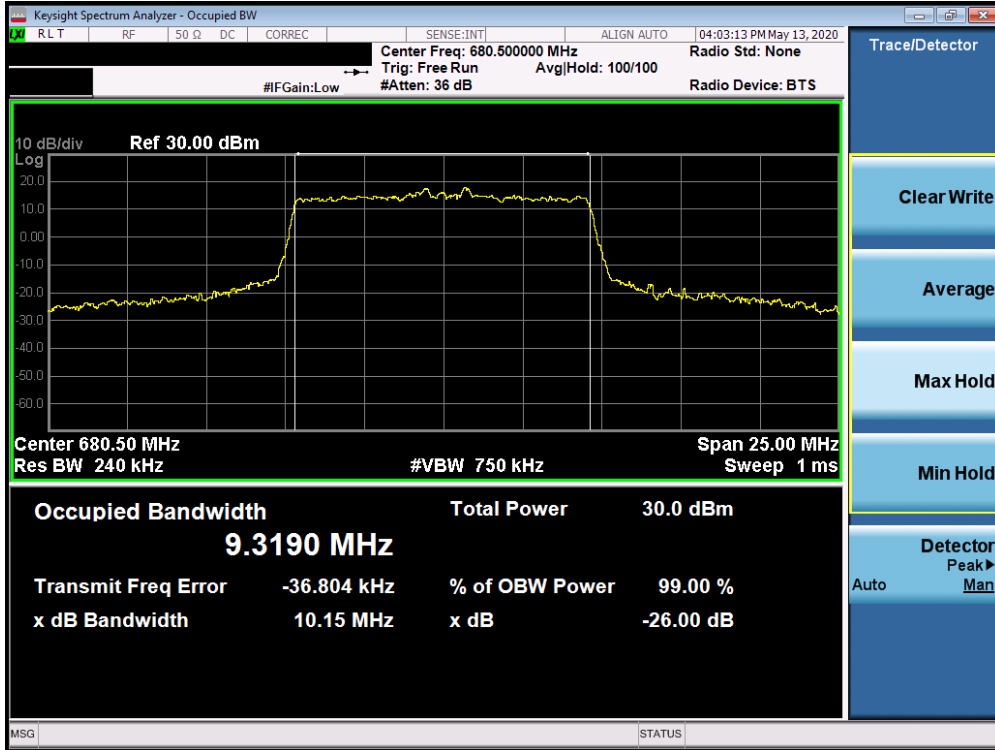


Plot 7-23. Occupied Bandwidth Plot (n71 10MHz QPSK-CP-OFDM - Full RB Configuration)

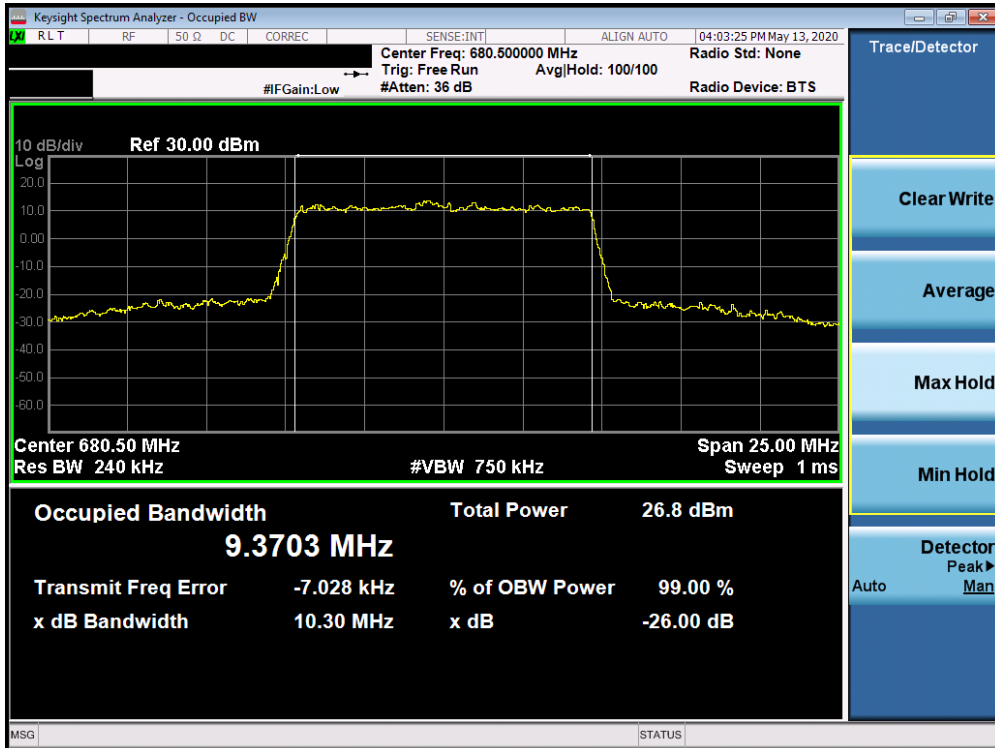


Plot 7-24. Occupied Bandwidth Plot (n71 10MHz 16QAM-CP-OFDM - Full RB Configuration)

FCC ID: A3LSMN986U	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M2004170065-03-R3.A3L	Test Dates: 4/17 - 6/22/2020	EUT Type: Portable Handset		Page 30 of 494

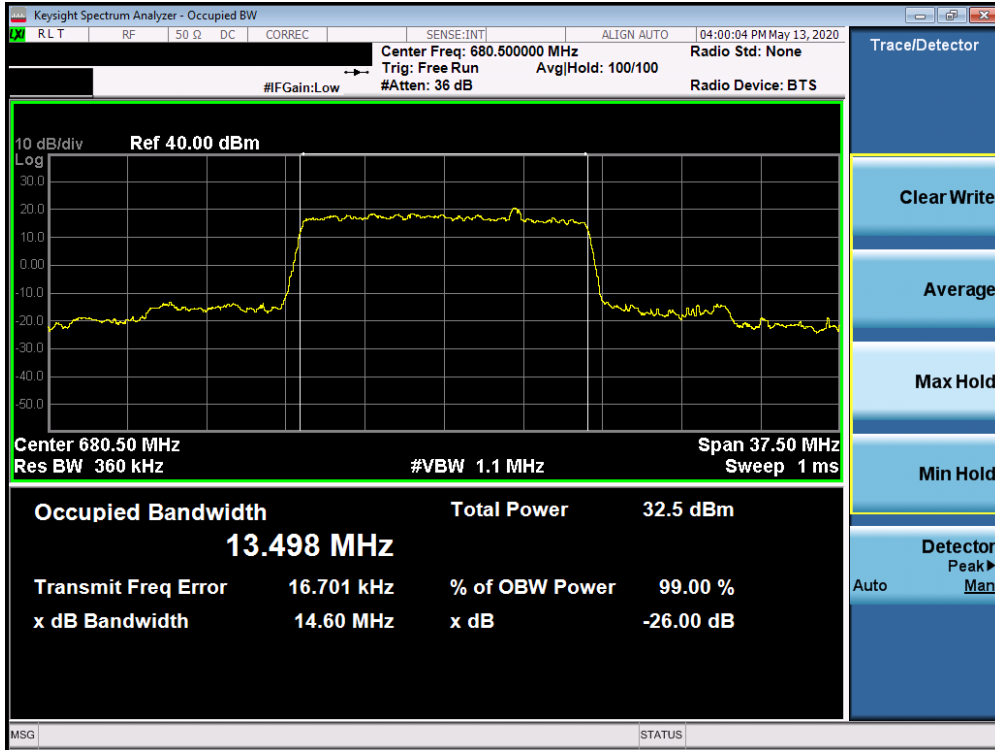


Plot 7-25. Occupied Bandwidth Plot (n71 10MHz 64QAM-CP-OFDM- Full RB Configuration)

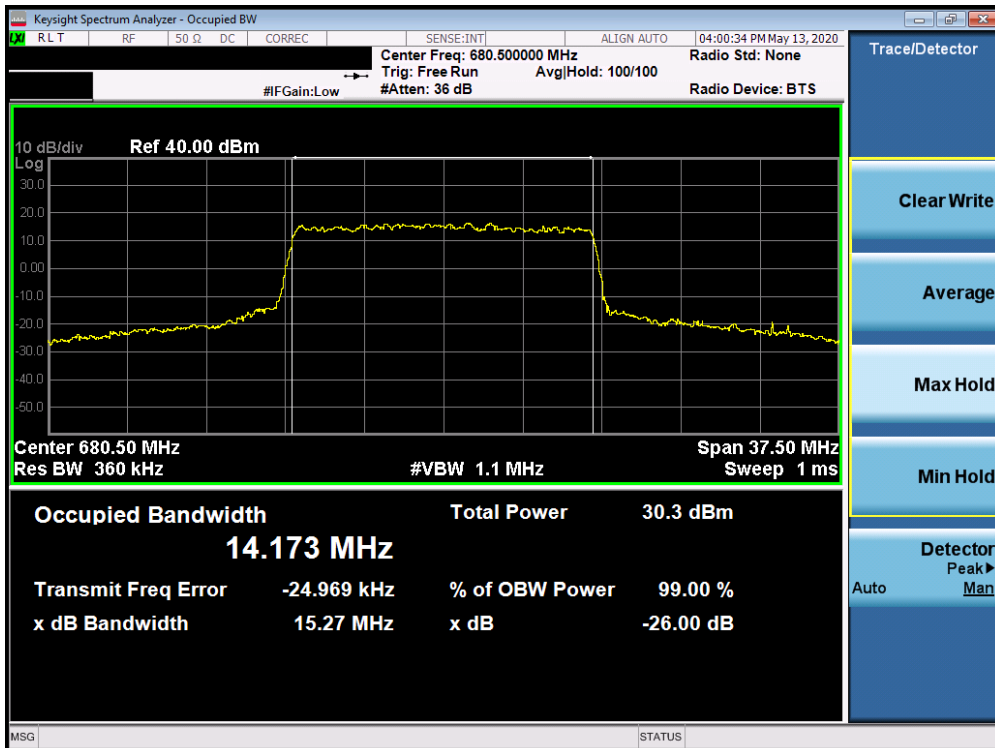


Plot 7-26. Occupied Bandwidth Plot (n71 10MHz 256QAM-CP-OFDM- Full RB Configuration)

FCC ID: A3LSMN986U	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M2004170065-03-R3.A3L	Test Dates: 4/17 - 6/22/2020	EUT Type: Portable Handset		Page 31 of 494

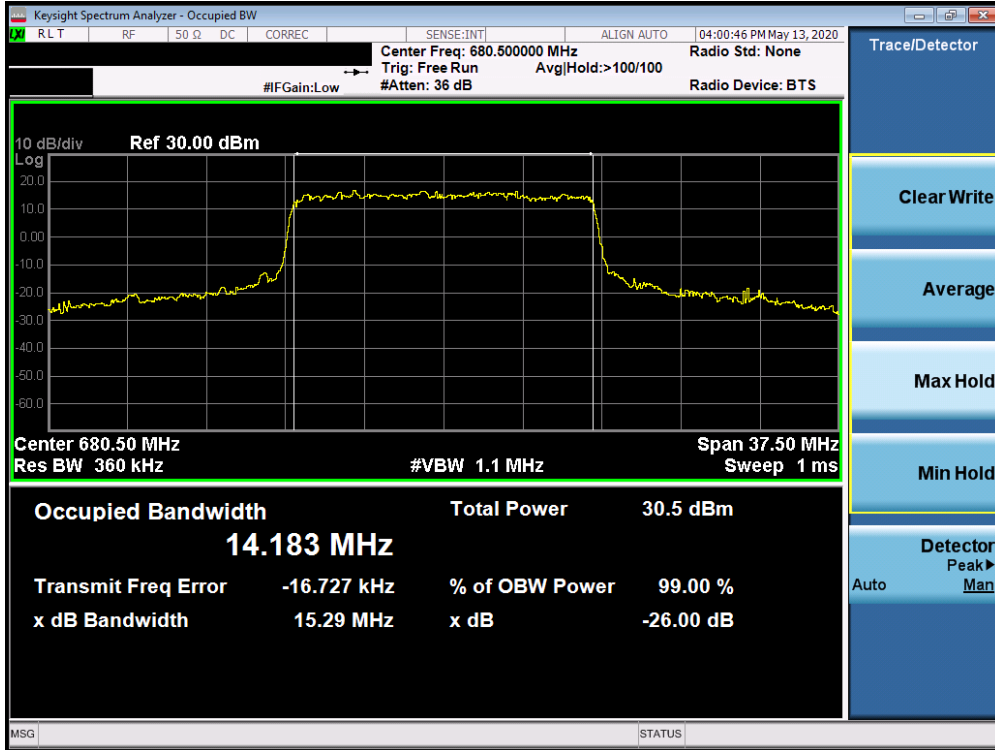


Plot 7-27. Occupied Bandwidth Plot (n71 15MHz BPSK-DFT-s-OFDM - Full RB Configuration)

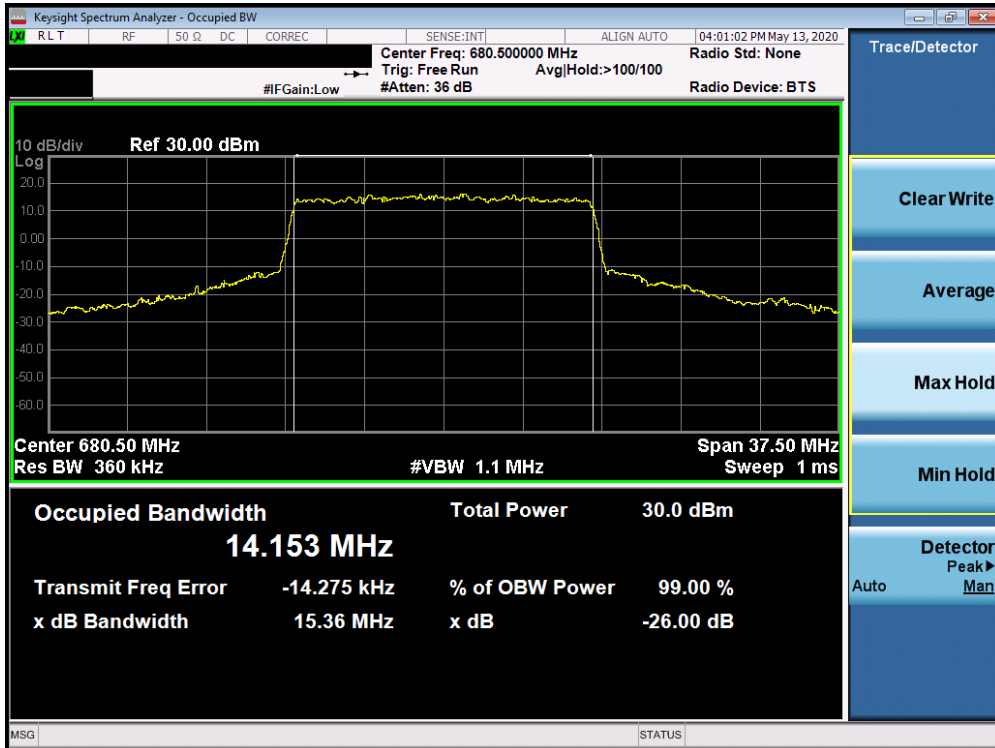


Plot 7-28. Occupied Bandwidth Plot (n71 15MHz QPSK-CP-OFDM - Full RB Configuration)

FCC ID: A3LSMN986U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2004170065-03-R3.A3L	Test Dates: 4/17 - 6/22/2020	EUT Type: Portable Handset		Page 32 of 494

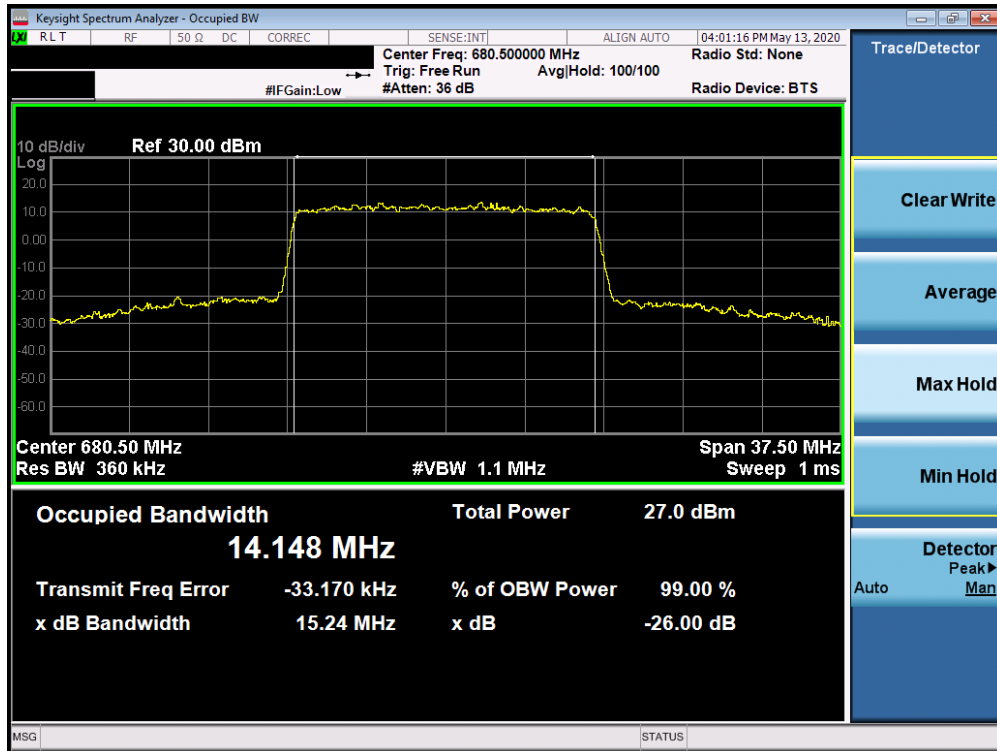


Plot 7-29. Occupied Bandwidth Plot (n71 15MHz 16QAM-CP-OFDM - Full RB Configuration)

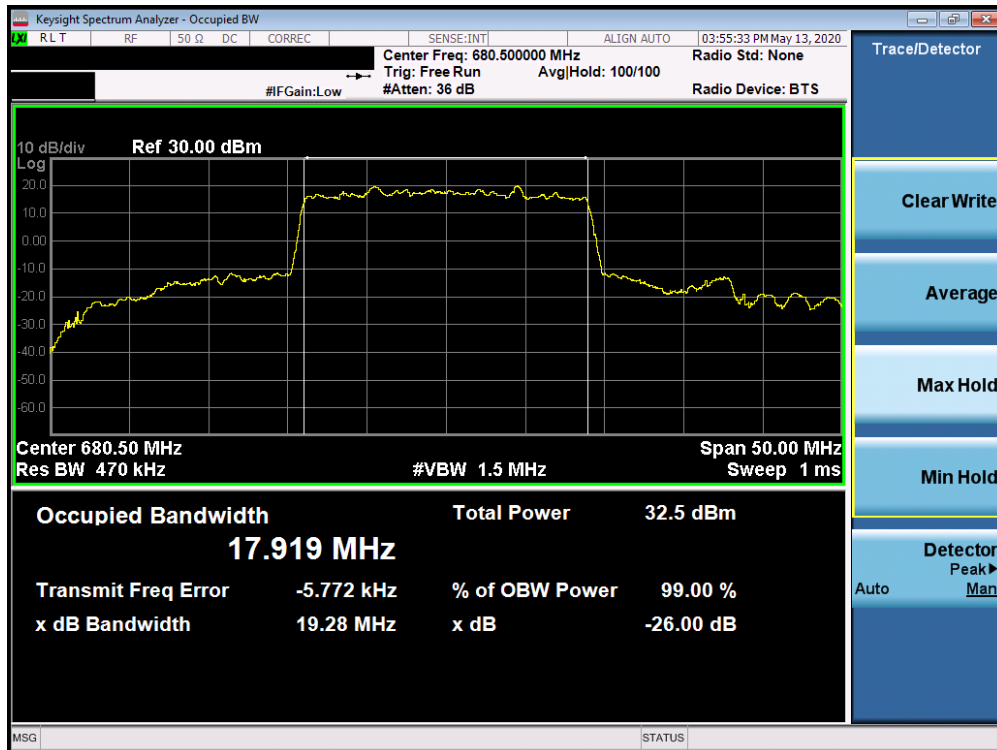


Plot 7-30. Occupied Bandwidth Plot (n71 15MHz 64QAM-CP-OFDM- Full RB Configuration)

FCC ID: A3LSMN986U	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M2004170065-03-R3.A3L	Test Dates: 4/17 - 6/22/2020	EUT Type: Portable Handset		Page 33 of 494

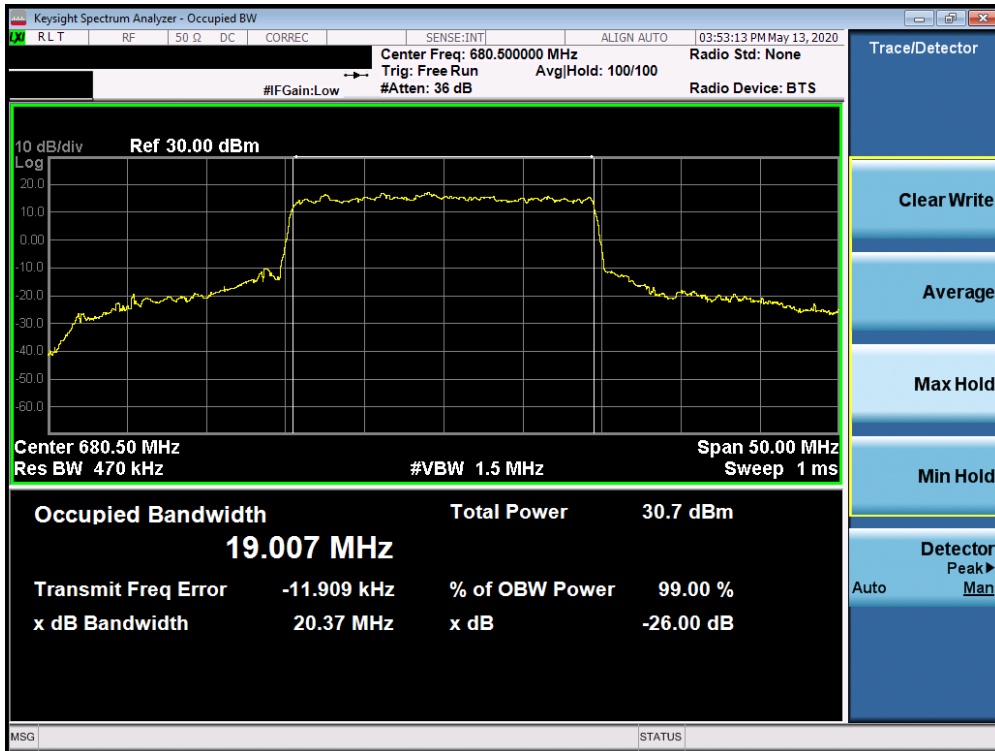


Plot 7-31. Occupied Bandwidth Plot (n71 15MHz 256QAM-CP-OFDM- Full RB Configuration)

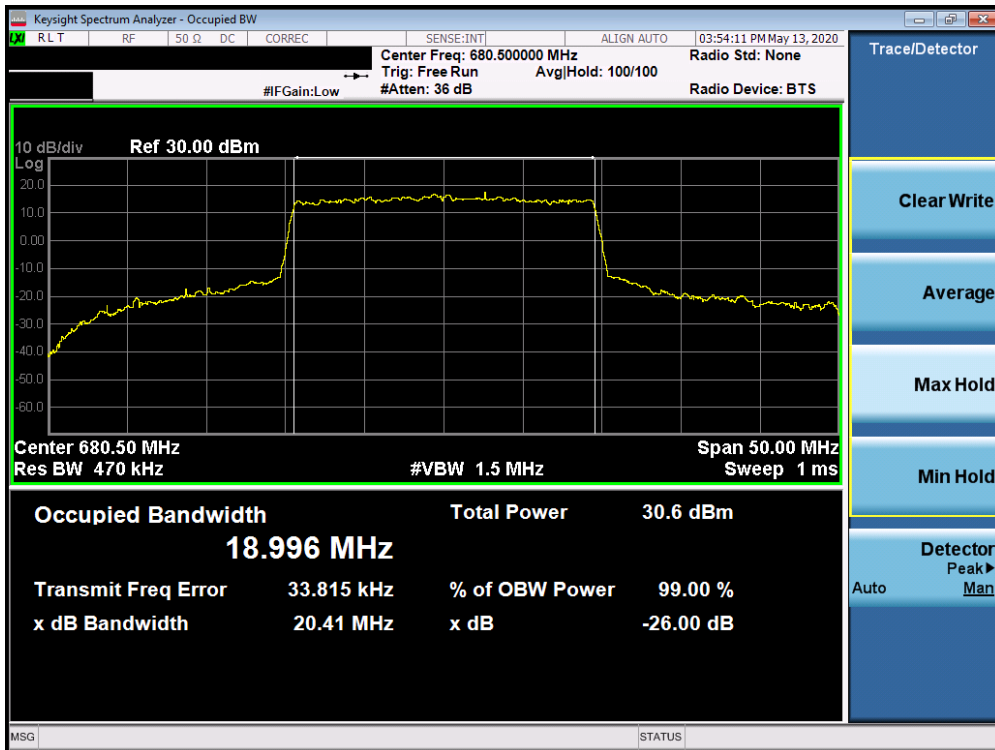


Plot 7-32. Occupied Bandwidth Plot (n71 20MHz BPSK-DFT-s-OFDM - Full RB Configuration)

FCC ID: A3LSMN986U	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M2004170065-03-R3.A3L	Test Dates: 4/17 - 6/22/2020	EUT Type: Portable Handset		Page 34 of 494



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

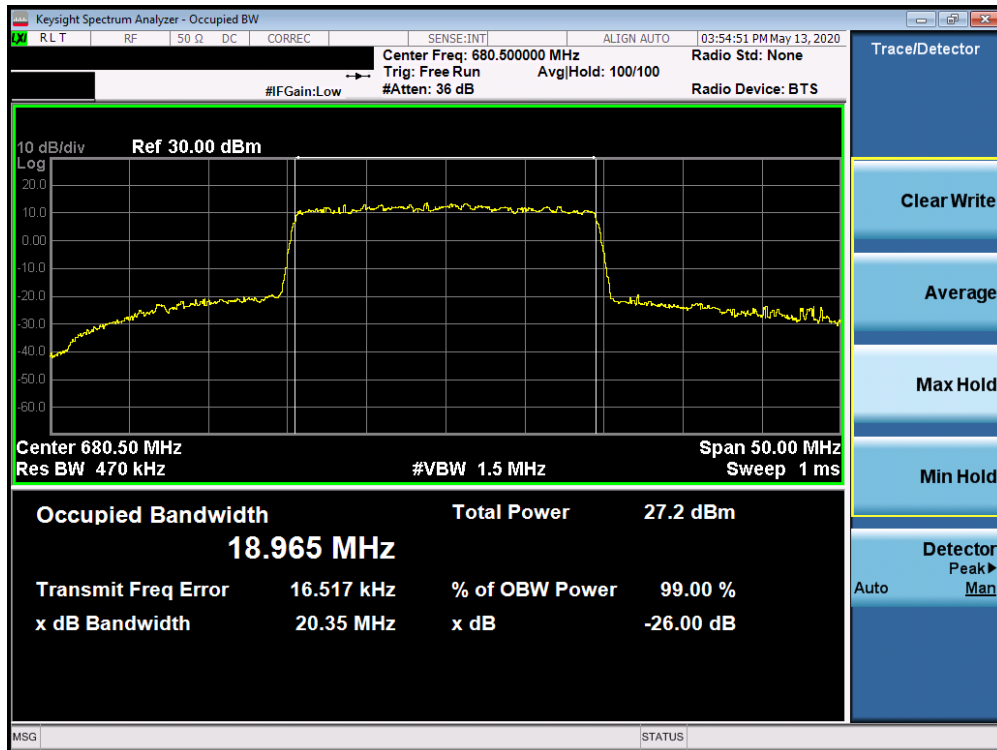


Plot 7-34. Occupied Bandwidth Plot (n71 20MHz 16QAM-CP-OFDM - Full RB Configuration)

FCC ID: A3LSMN986U	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M2004170065-03-R3.A3L	Test Dates: 4/17 - 6/22/2020	EUT Type: Portable Handset		Page 35 of 494



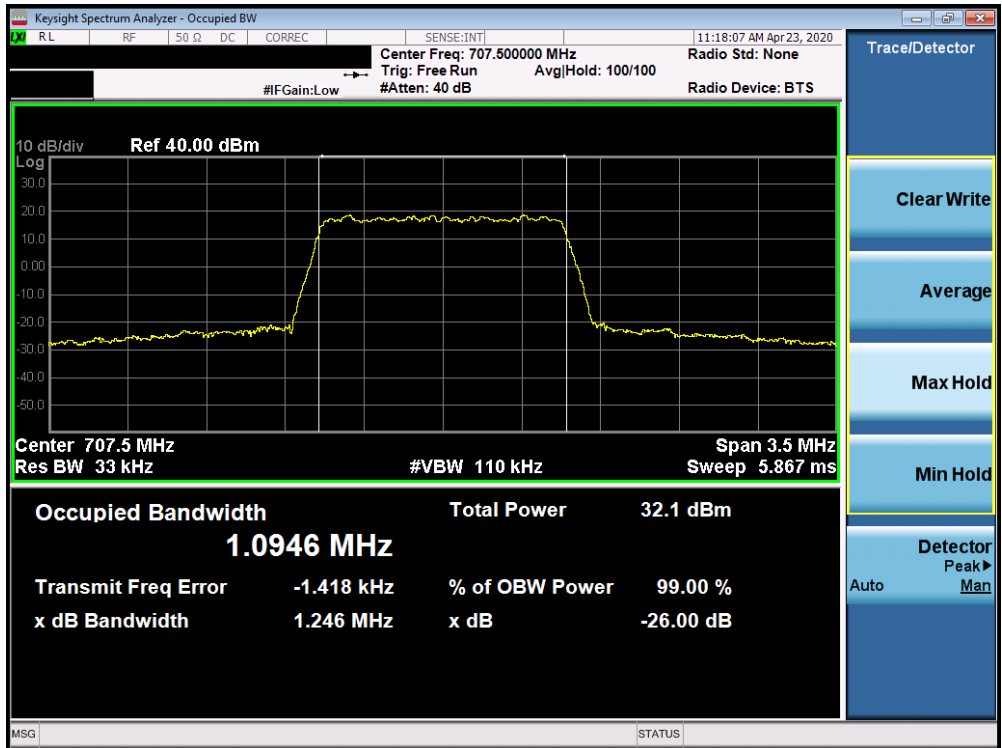
Plot 7-35. Occupied Bandwidth Plot (n71 20MHz 64QAM-CP-OFDM- Full RB Configuration)



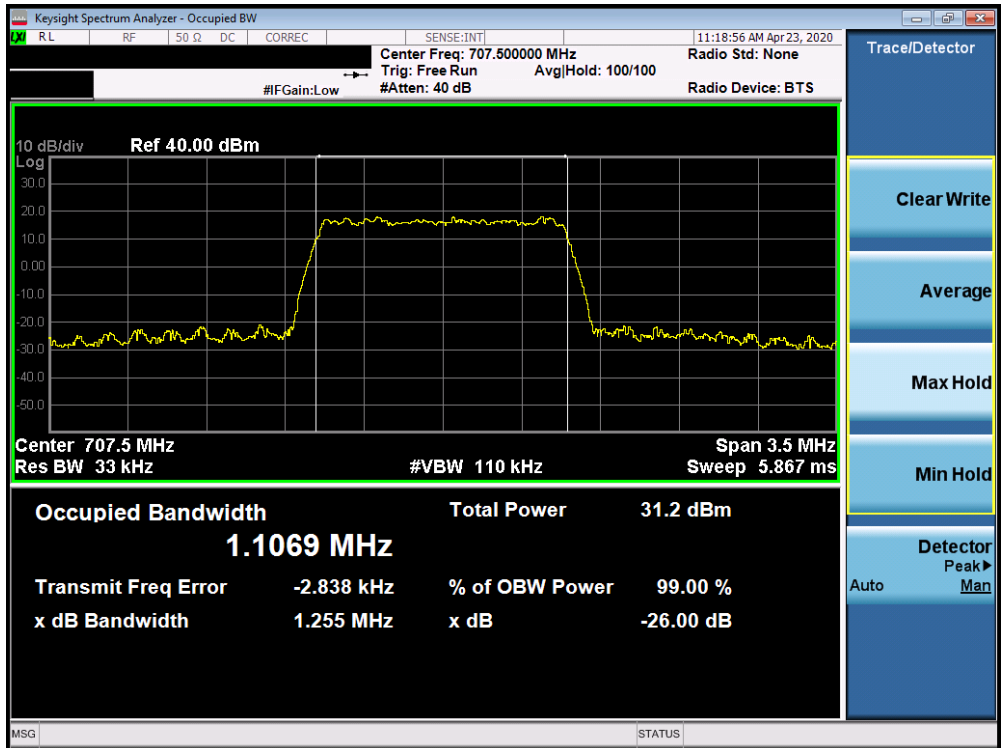
Plot 7-36. Occupied Bandwidth Plot (n71 20MHz 256QAM-CP-OFDM- Full RB Configuration)

FCC ID: A3LSMN986U	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M2004170065-03-R3.A3L	Test Dates: 4/17 - 6/22/2020	EUT Type: Portable Handset		Page 36 of 494

Band 12

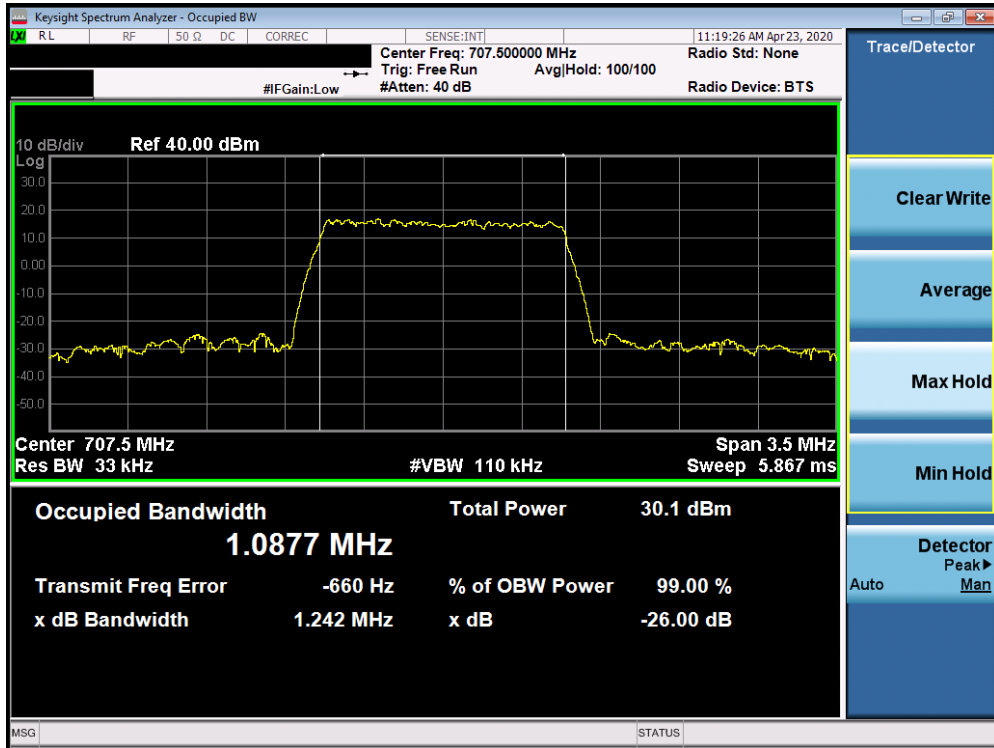


Plot 7-37. Occupied Bandwidth Plot (Band 12 - 1.4MHz QPSK - Full RB Configuration)

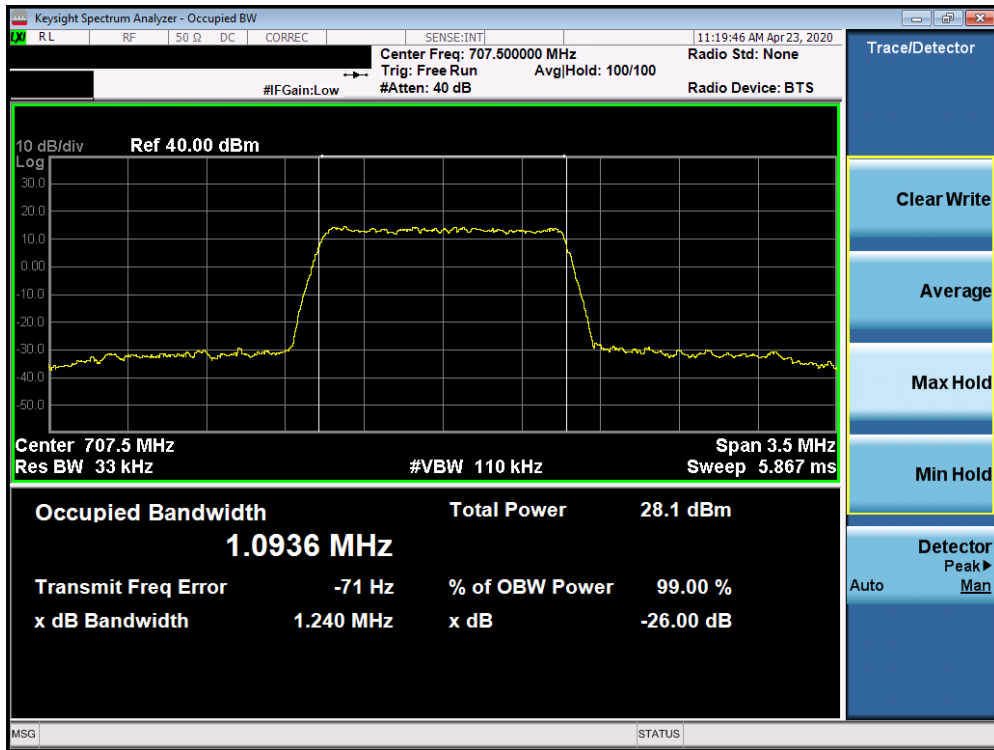


Plot 7-38. Occupied Bandwidth Plot (Band 12 - 1.4MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMN986U	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M2004170065-03-R3.A3L	Test Dates: 4/17 - 6/22/2020	EUT Type: Portable Handset		Page 37 of 494

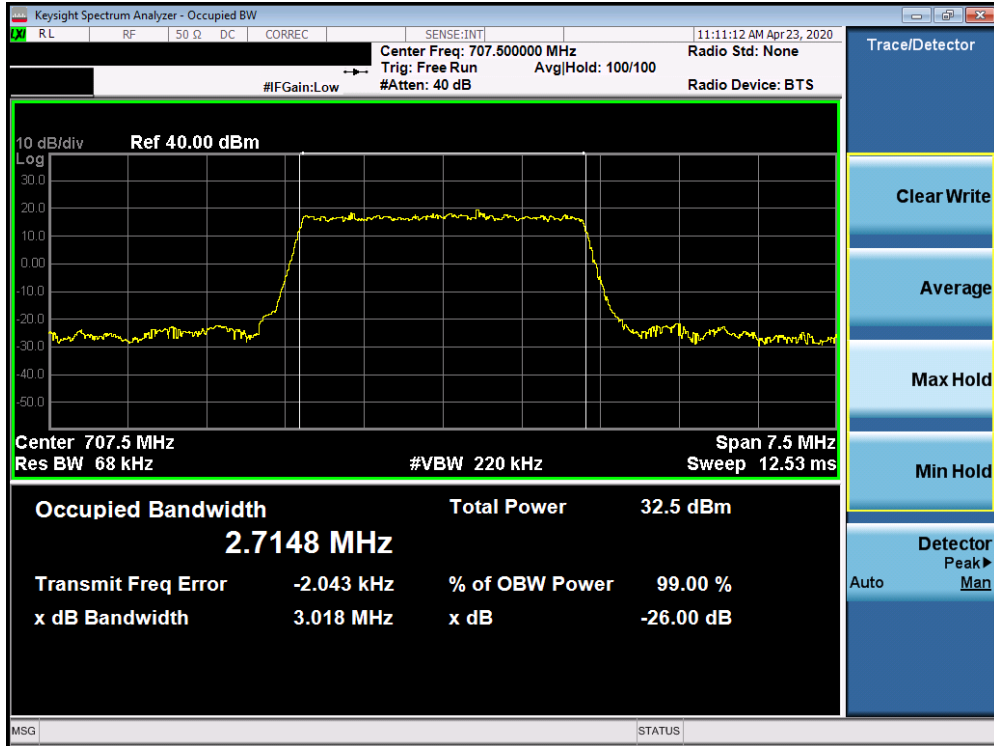


Plot 7-39. Occupied Bandwidth Plot (Band 12 - 1.4MHz 64-QAM - Full RB Configuration)

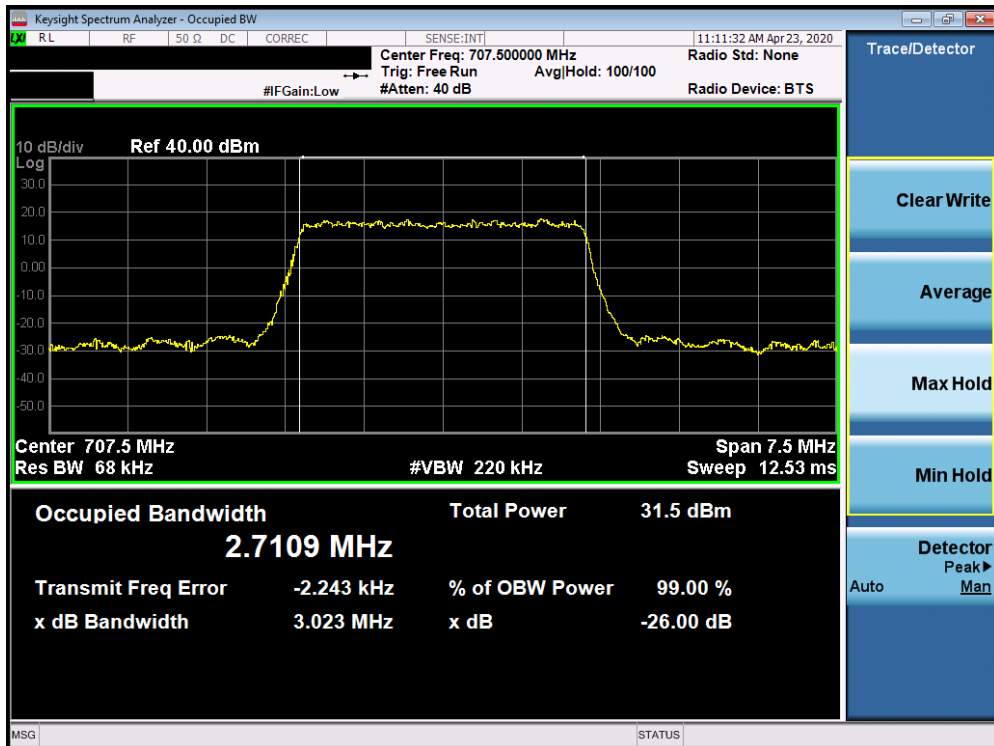


Plot 7-40. Occupied Bandwidth Plot (Band 12 - 1.4MHz 256-QAM - Full RB Configuration)



FCC ID: A3LSMN986U	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M2004170065-03-R3.A3L	Test Dates: 4/17 - 6/22/2020	EUT Type: Portable Handset		Page 38 of 494

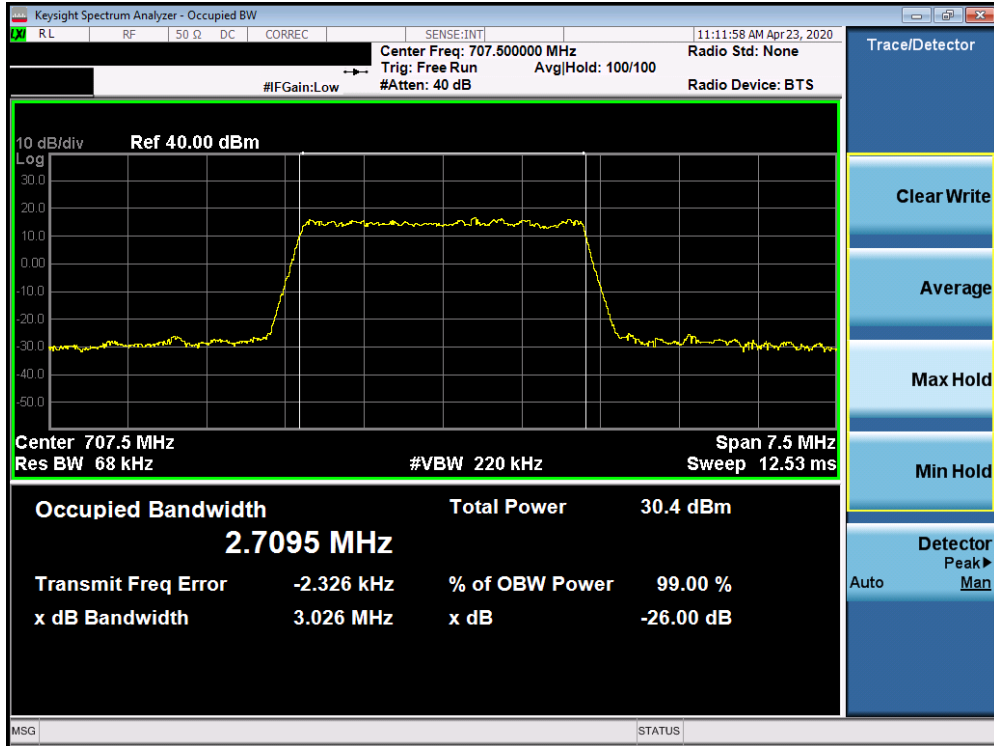


Plot 7-41. Occupied Bandwidth Plot (Band 12 - 3.0MHz QPSK - Full RB Configuration)

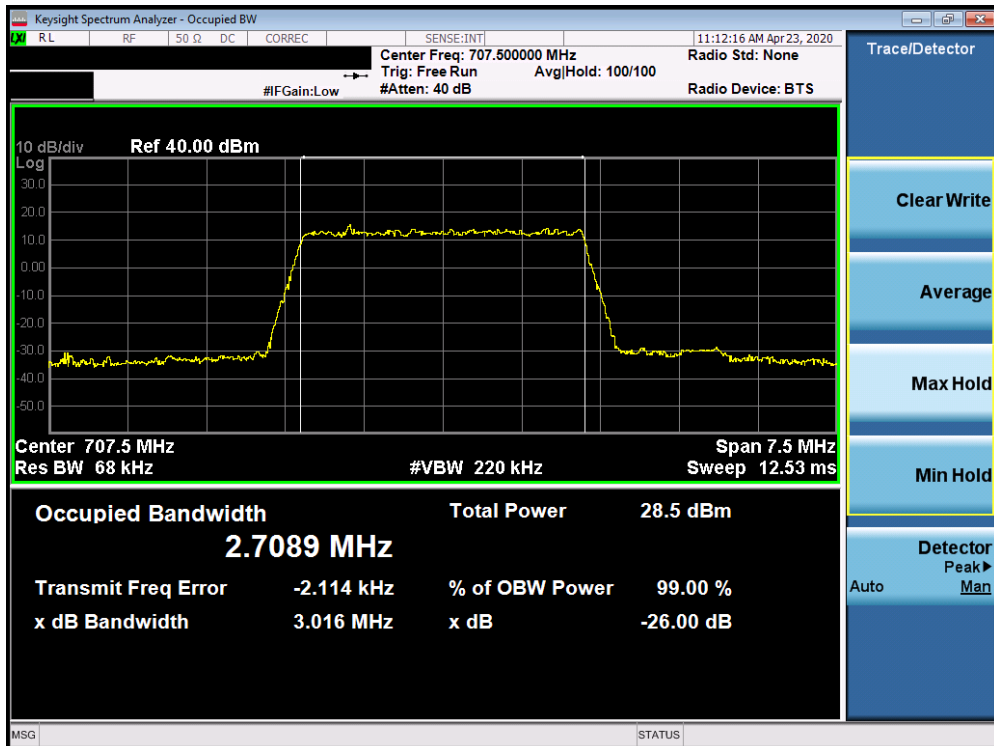


Plot 7-42. Occupied Bandwidth Plot (Band 12 - 3.0MHz 16-QAM - Full RB Configuration)


FCC ID: A3LSMN986U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2004170065-03-R3.A3L	Test Dates: 4/17 - 6/22/2020	EUT Type: Portable Handset		Page 39 of 494

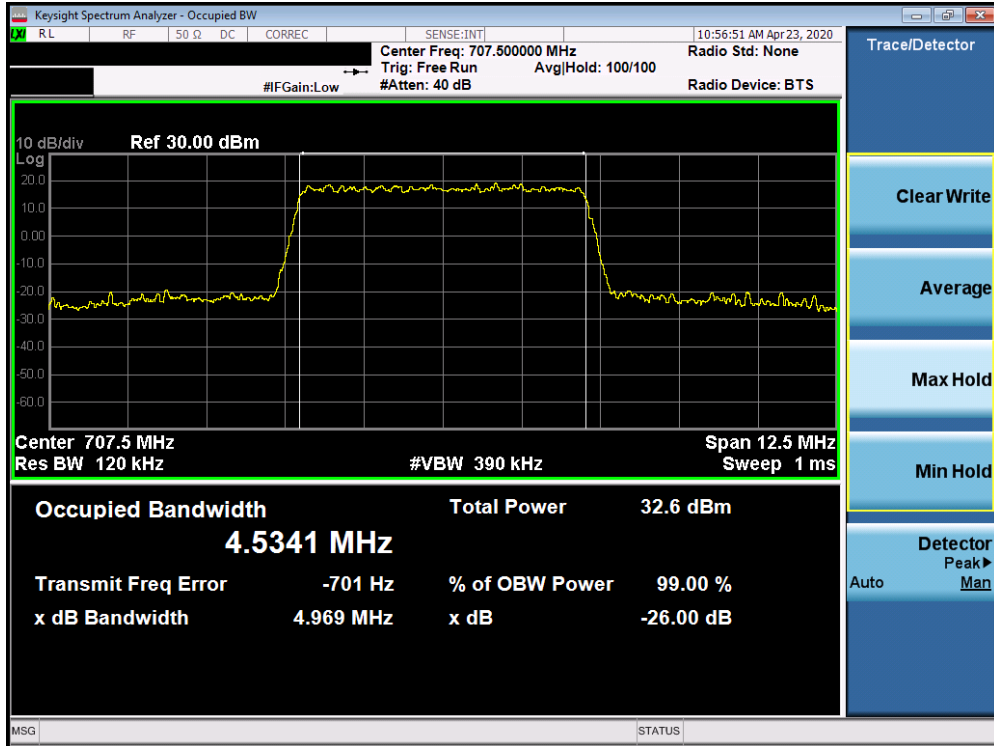


Plot 7-43. Occupied Bandwidth Plot (Band 12 - 3.0MHz 64-QAM - Full RB Configuration)

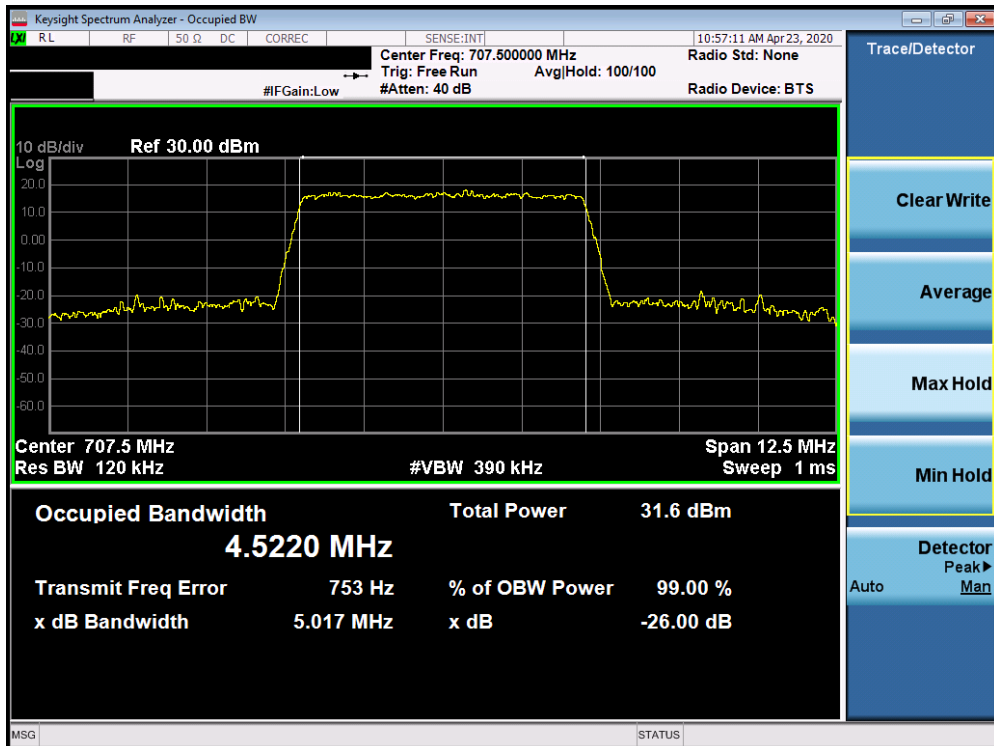


Plot 7-44. Occupied Bandwidth Plot (Band 12 - 3.0MHz 256-QAM - Full RB Configuration)



FCC ID: A3LSMN986U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2004170065-03-R3.A3L	Test Dates: 4/17 - 6/22/2020	EUT Type: Portable Handset		Page 40 of 494

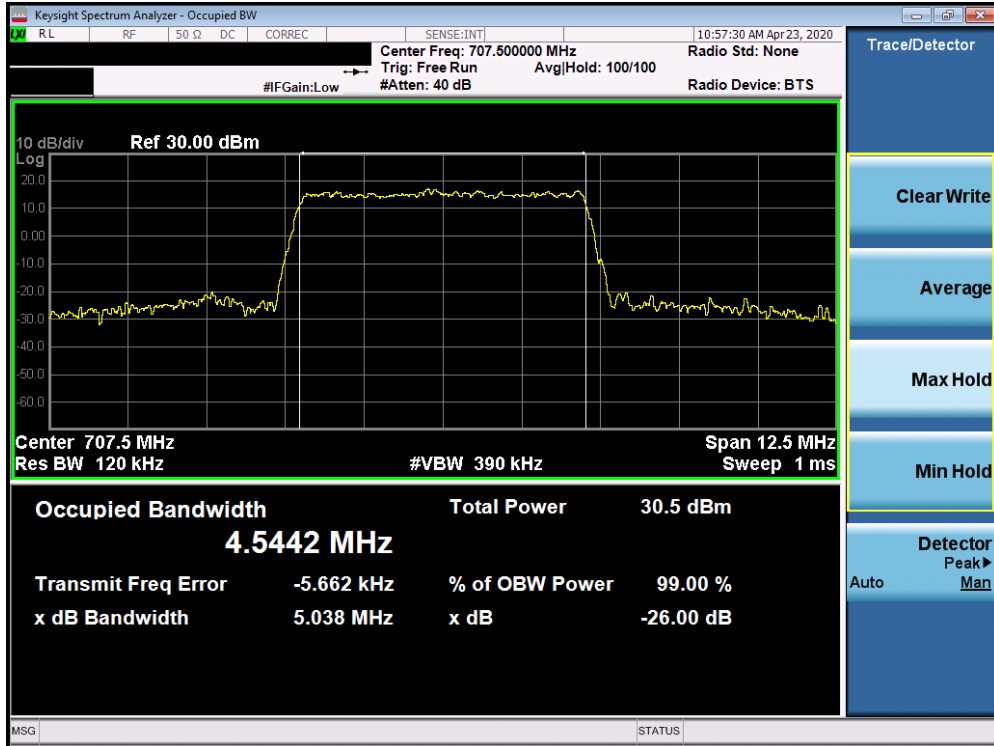


Plot 7-45. Occupied Bandwidth Plot (Band 12 - 5.0MHz QPSK - Full RB Configuration)

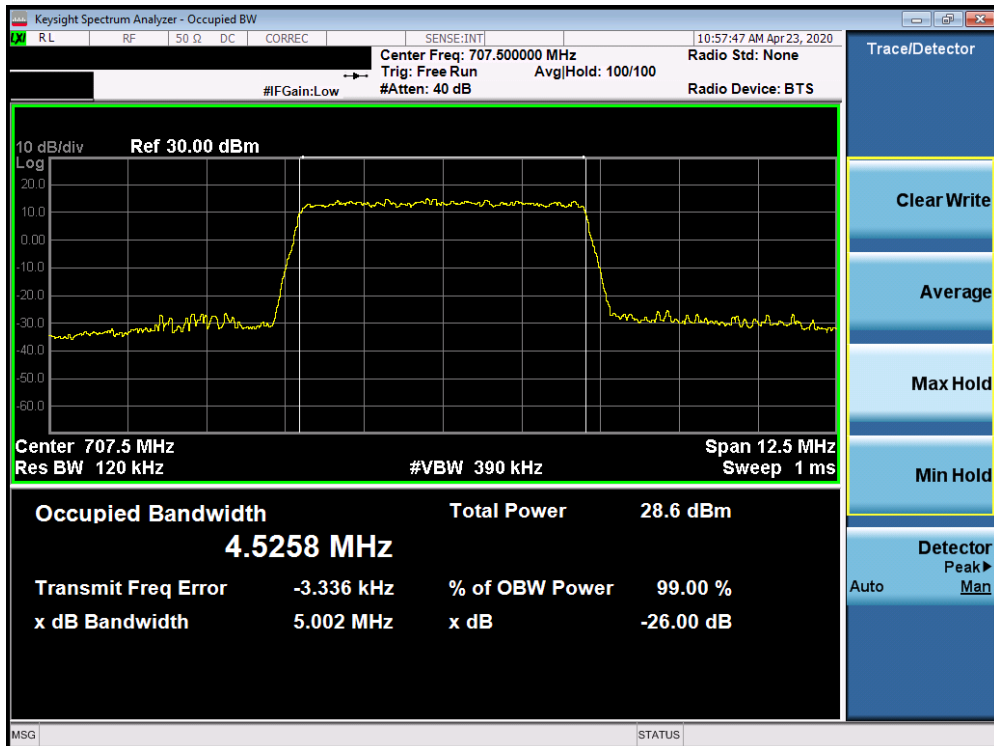


Plot 7-46. Occupied Bandwidth Plot (Band 12 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMN986U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2004170065-03-R3.A3L	Test Dates: 4/17 - 6/22/2020	EUT Type: Portable Handset		Page 41 of 494

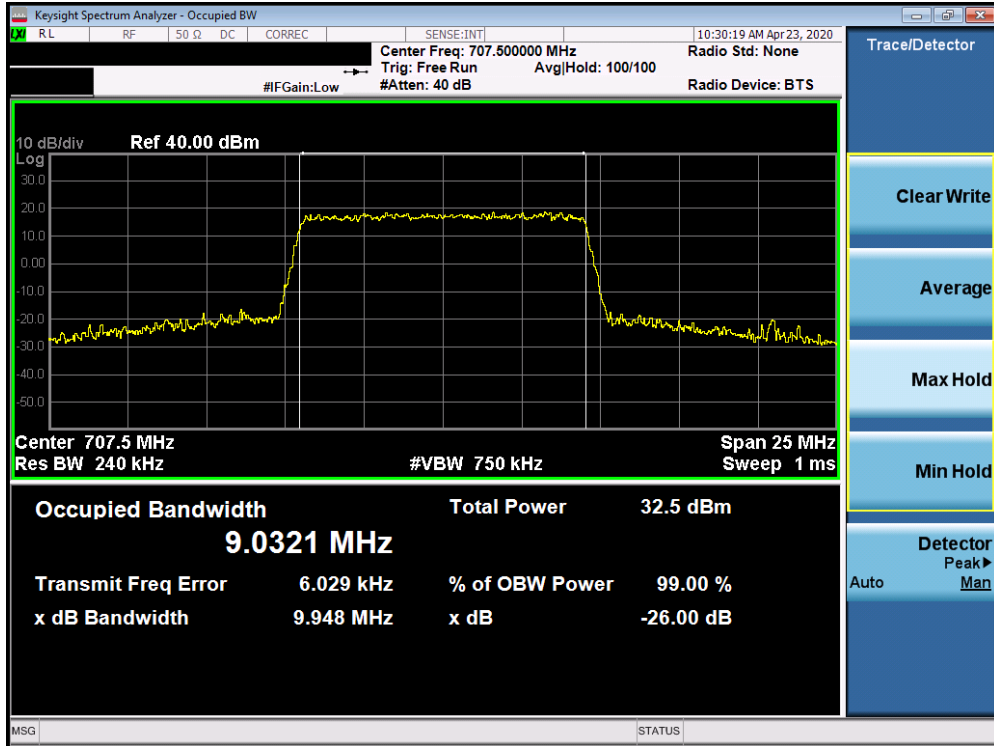


Plot 7-47. Occupied Bandwidth Plot (Band 12 - 5.0MHz 64-QAM - Full RB Configuration)

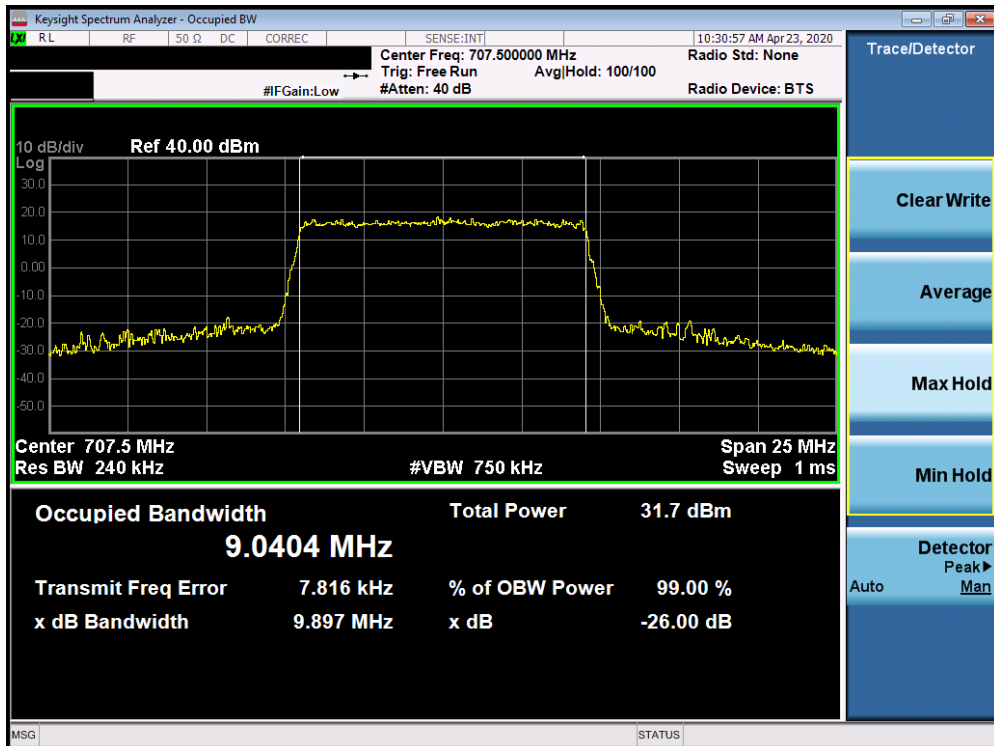


Plot 7-48. Occupied Bandwidth Plot (Band 12 - 5.0MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMN986U	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M2004170065-03-R3.A3L	Test Dates: 4/17 - 6/22/2020	EUT Type: Portable Handset		Page 42 of 494

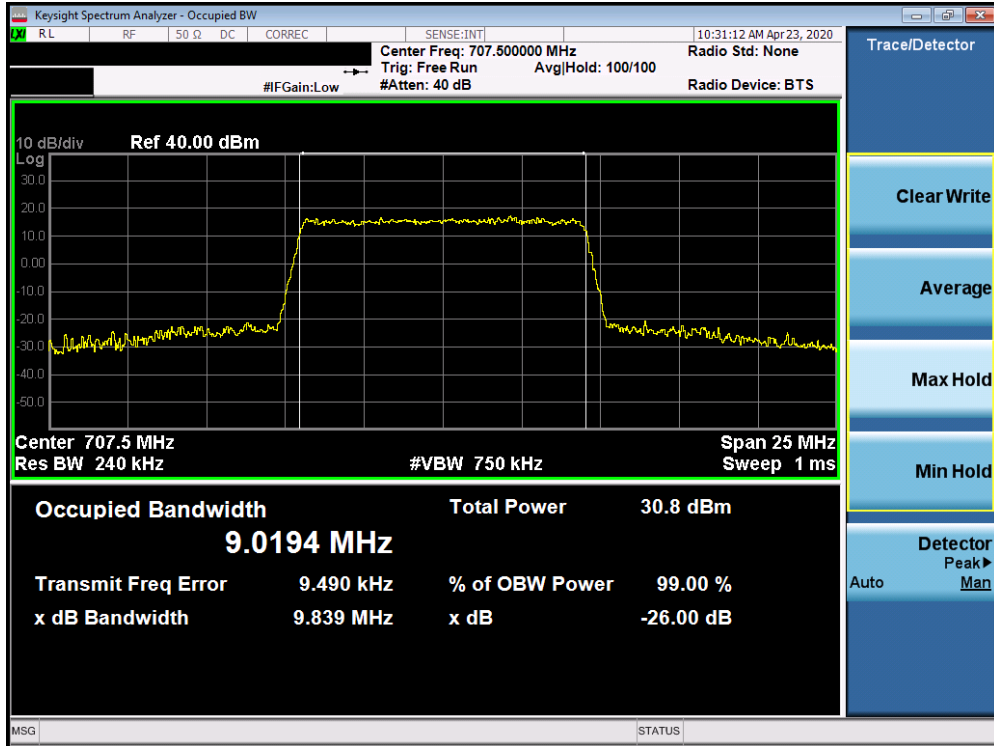


Plot 7-49. Occupied Bandwidth Plot (Band 12 - 10.0MHz QPSK - Full RB Configuration)

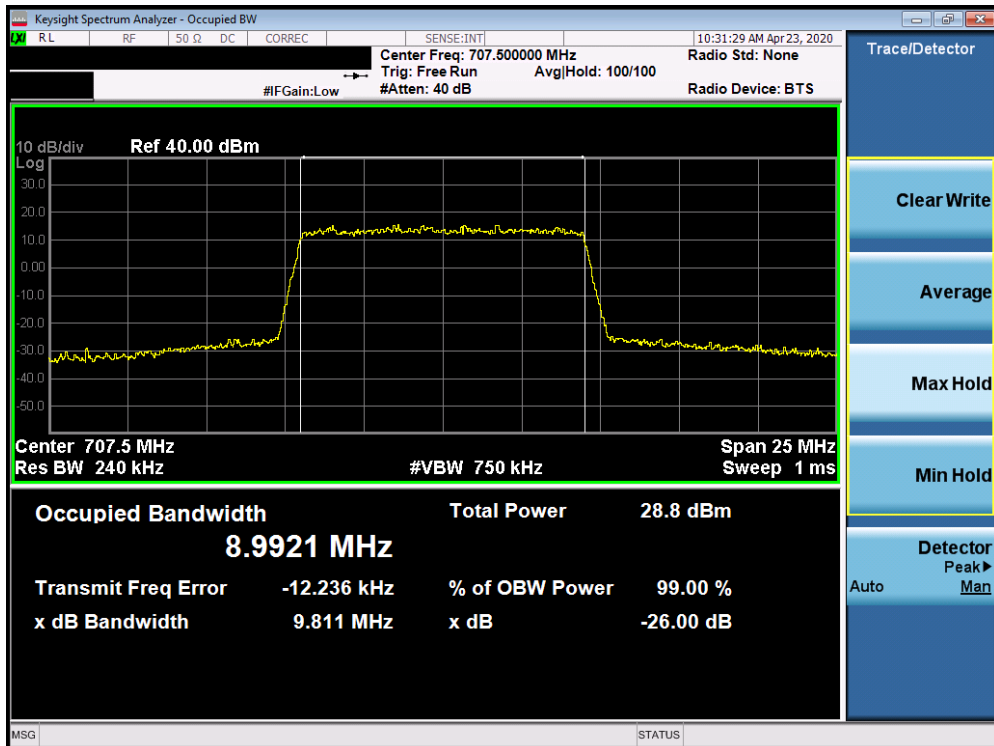


Plot 7-50. Occupied Bandwidth Plot (Band 12 - 10.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMN986U	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2004170065-03-R3.A3L	Test Dates: 4/17 - 6/22/2020	EUT Type: Portable Handset		Page 43 of 494



Plot 7-51. Occupied Bandwidth Plot (Band 12 - 10.0MHz 64-QAM - Full RB Configuration)



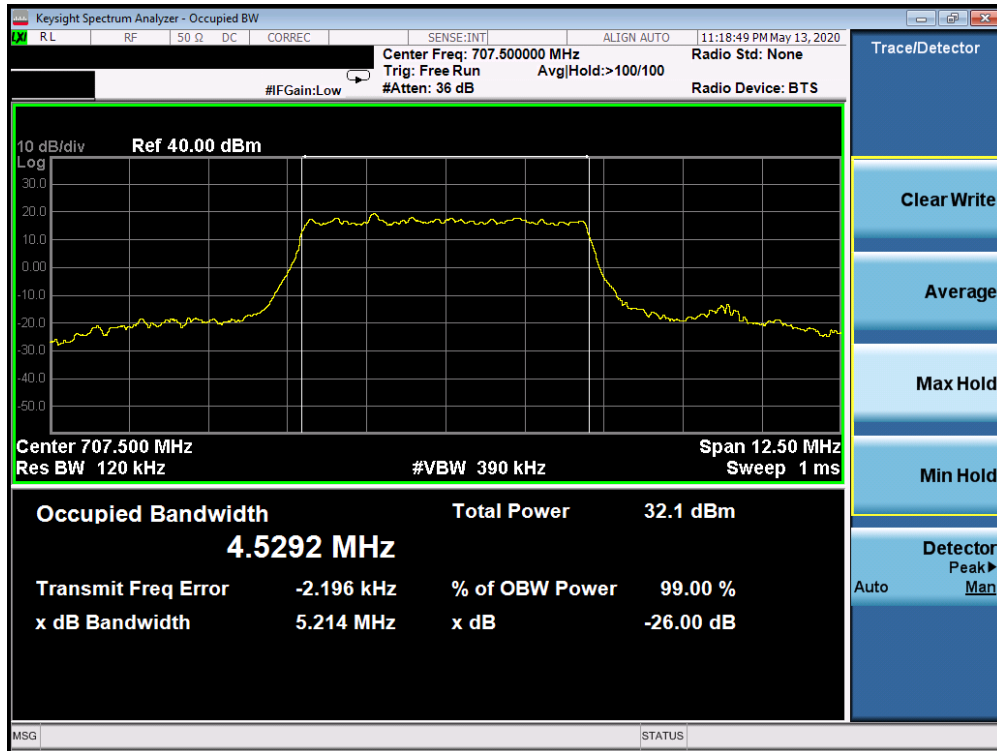
Plot 7-52. Occupied Bandwidth Plot (Band 12 - 10.0MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMN986U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2004170065-03-R3.A3L	Test Dates: 4/17 - 6/22/2020	EUT Type: Portable Handset		Page 44 of 494

NR Band n12

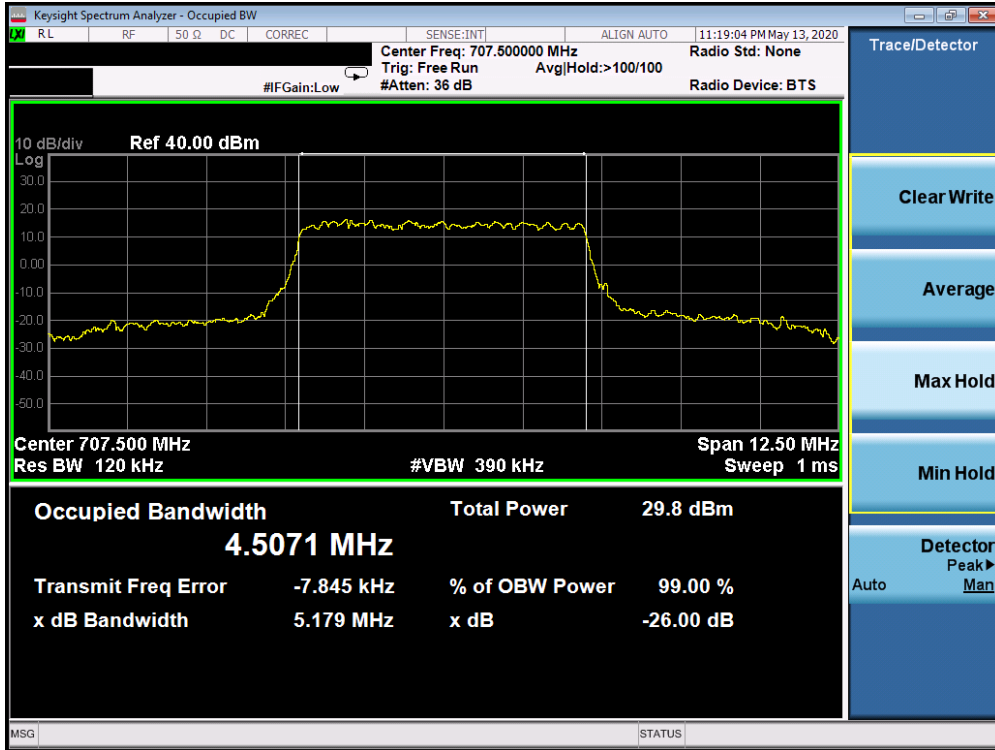


Plot 7-53. Occupied Bandwidth Plot (n12 5MHz BPSK-DFT-s-OFDM- Full RB Configuration)

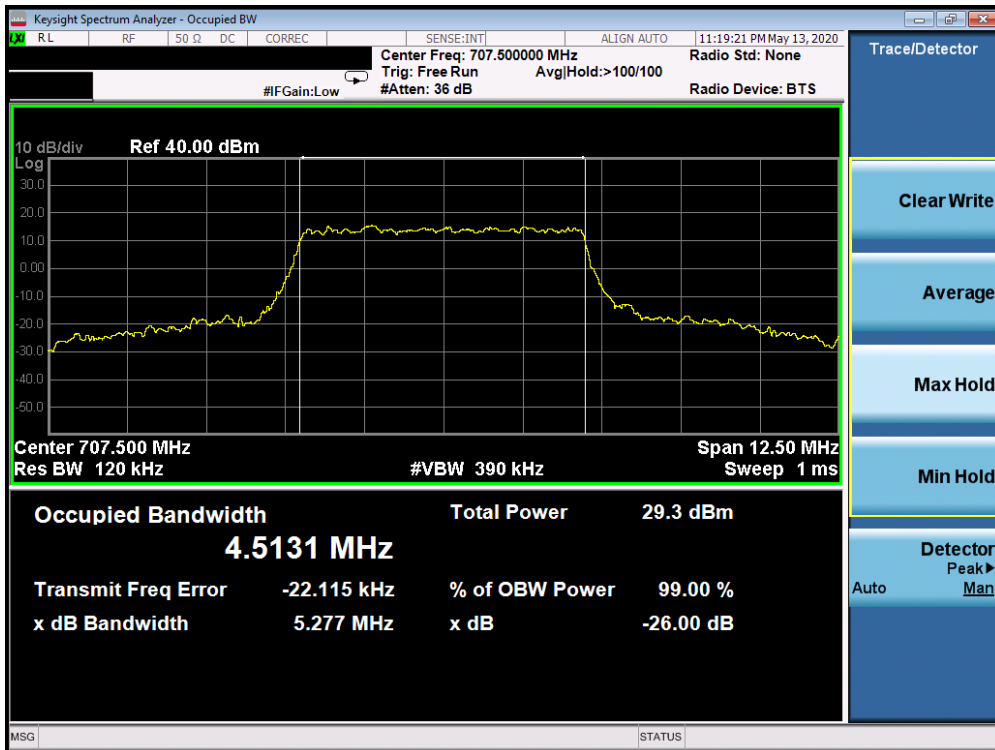


Plot 7-54. Occupied Bandwidth Plot (n12 5MHz QPSK-CP-OFDM - Full RB Configuration)

FCC ID: A3LSMN986U	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M2004170065-03-R3.A3L	Test Dates: 4/17 - 6/22/2020	EUT Type: Portable Handset		Page 45 of 494

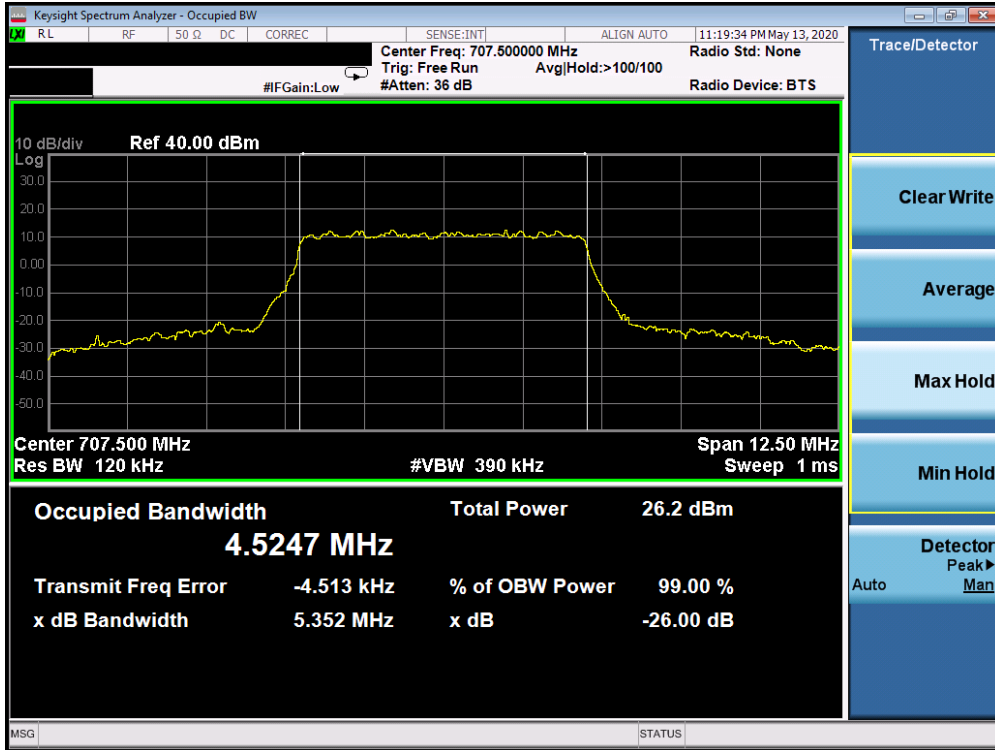


Plot 7-55. Occupied Bandwidth Plot (n12 5MHz 16QAM-CP-OFDM - Full RB Configuration)

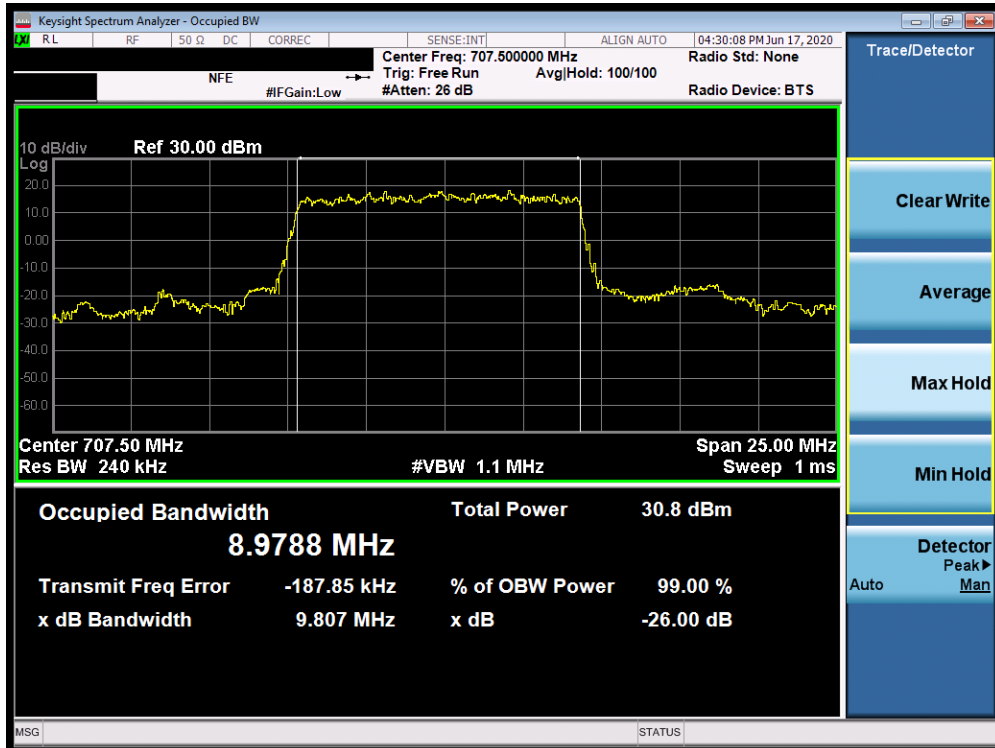


Plot 7-56. Occupied Bandwidth Plot (n12 5MHz 64QAM-CP-OFDM- Full RB Configuration)

FCC ID: A3LSMN986U	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M2004170065-03-R3.A3L	Test Dates: 4/17 - 6/22/2020	EUT Type: Portable Handset		Page 46 of 494

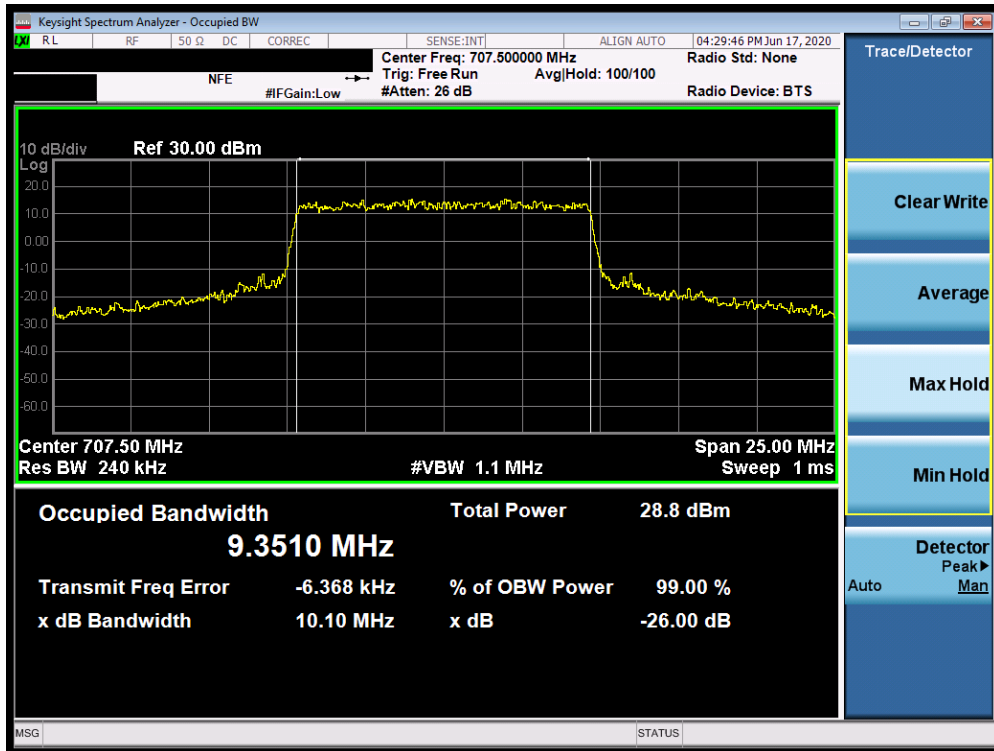


Plot 7-57. Occupied Bandwidth Plot (n12 5MHz 256QAM-CP-OFDM- Full RB Configuration)



Plot 7-58. Occupied Bandwidth Plot (n12 10MHz BPSK-DFT-s-OFDM - Full RB Configuration)


FCC ID: A3LSMN986U	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M2004170065-03-R3.A3L	Test Dates: 4/17 - 6/22/2020	EUT Type: Portable Handset		Page 47 of 494



Plot 7-59. Occupied Bandwidth Plot (n12 10MHz QPSK-CP-OFDM - Full RB Configuration)

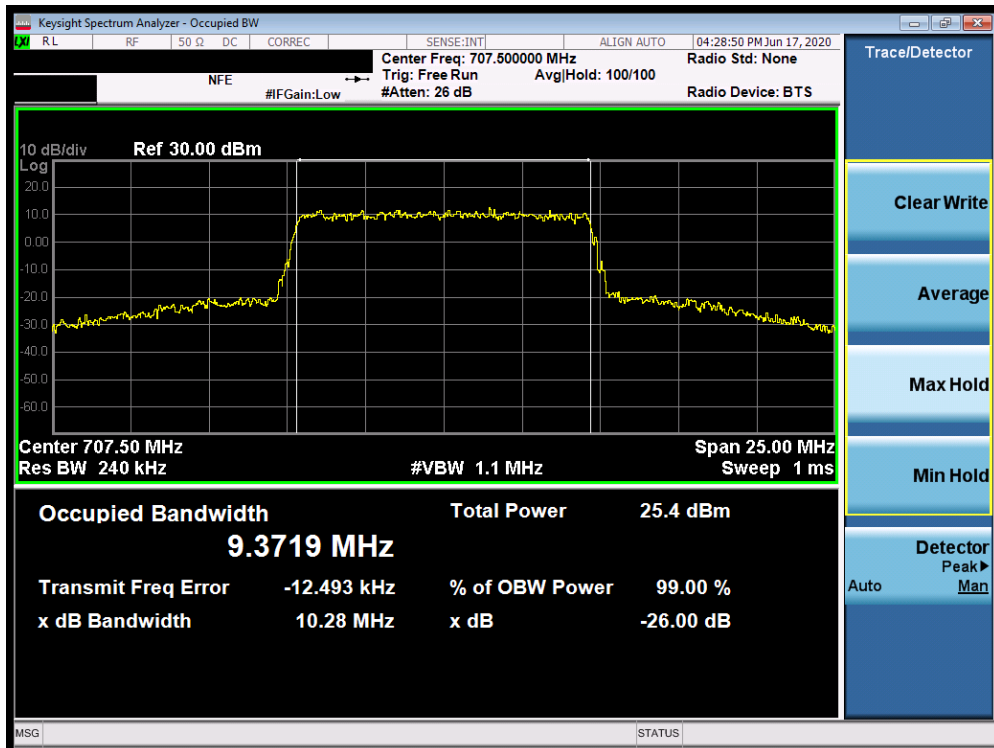


Plot 7-60. Occupied Bandwidth Plot (n12 10MHz 16QAM-CP-OFDM - Full RB Configuration)

FCC ID: A3LSMN986U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2004170065-03-R3.A3L	Test Dates: 4/17 - 6/22/2020	EUT Type: Portable Handset		Page 48 of 494

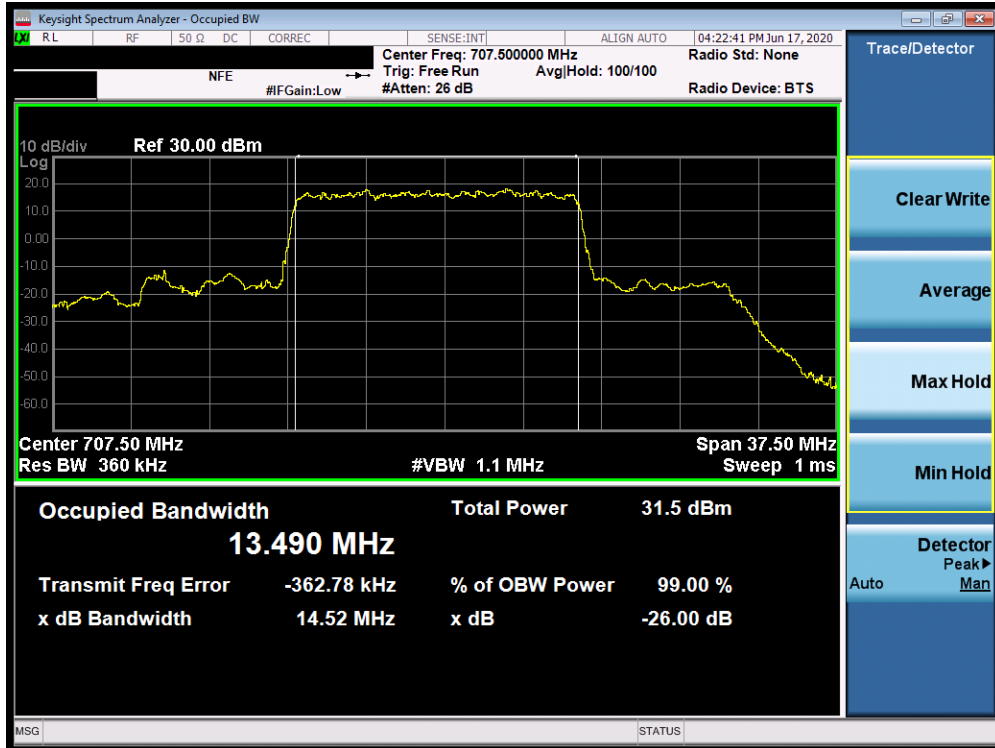


Plot 7-61. Occupied Bandwidth Plot (n12 10MHz 64QAM-CP-OFDM- Full RB Configuration)



Plot 7-62. Occupied Bandwidth Plot (n12 10MHz 256QAM-CP-OFDM- Full RB Configuration)

FCC ID: A3LSMN986U	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M2004170065-03-R3.A3L	Test Dates: 4/17 - 6/22/2020	EUT Type: Portable Handset		Page 49 of 494

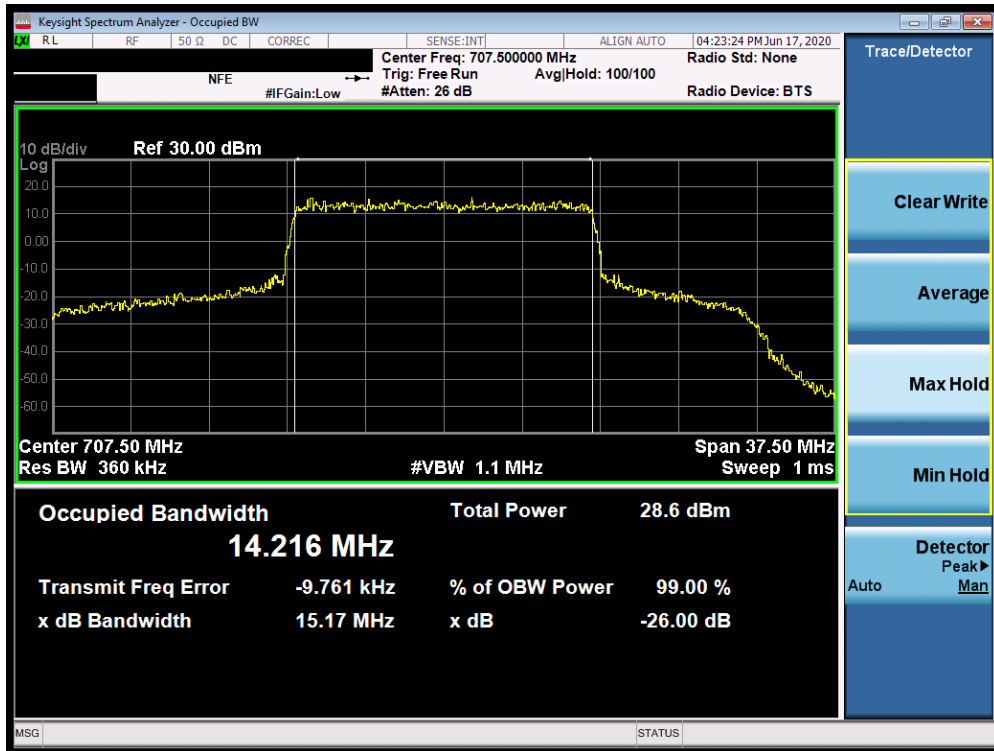


Plot 7-63. Occupied Bandwidth Plot (n12 15MHz BPSK-DFT-s-OFDM - Full RB Configuration)



Plot 7-64. Occupied Bandwidth Plot (n12 15MHz QPSK-CP-OFDM - Full RB Configuration)

FCC ID: A3LSMN986U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2004170065-03-R3.A3L	Test Dates: 4/17 - 6/22/2020	EUT Type: Portable Handset		Page 50 of 494

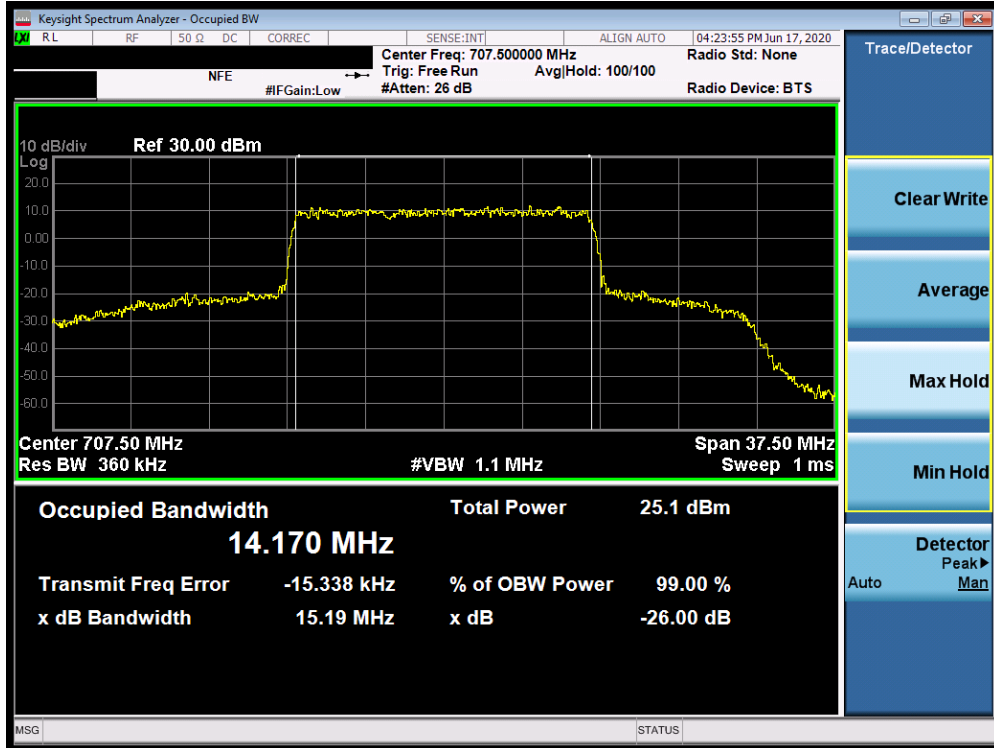


Plot 7-65. Occupied Bandwidth Plot (n12 15MHz 16QAM-CP-OFDM - Full RB Configuration)



Plot 7-66. Occupied Bandwidth Plot (n12 15MHz 64QAM-CP-OFDM- Full RB Configuration)

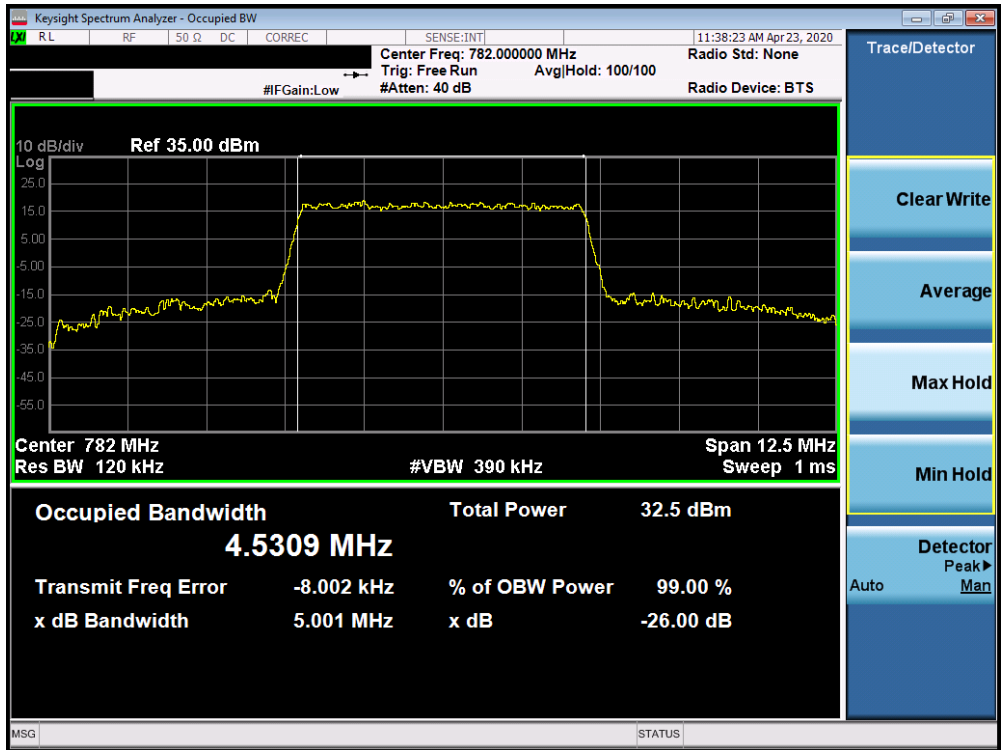
FCC ID: A3LSMN986U	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M2004170065-03-R3.A3L	Test Dates: 4/17 - 6/22/2020	EUT Type: Portable Handset		Page 51 of 494



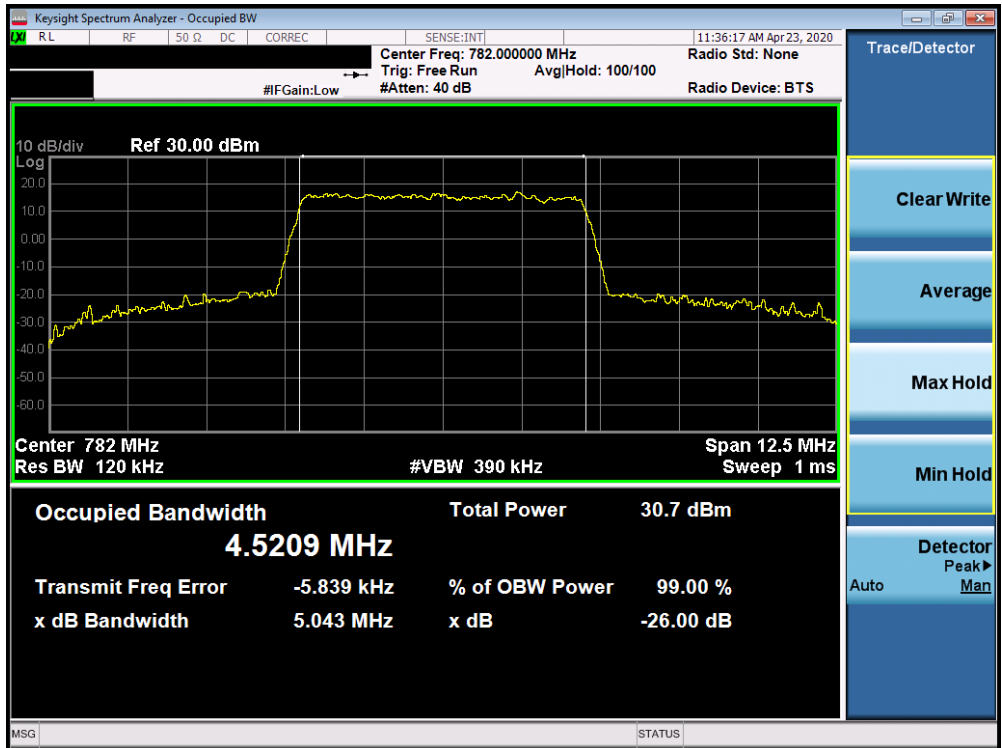
Plot 7-67. Occupied Bandwidth Plot (n12 15MHz 256QAM-CP-OFDM- Full RB Configuration)

FCC ID: A3LSMN986U	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2004170065-03-R3.A3L	Test Dates: 4/17 - 6/22/2020	EUT Type: Portable Handset		Page 52 of 494

Band 13

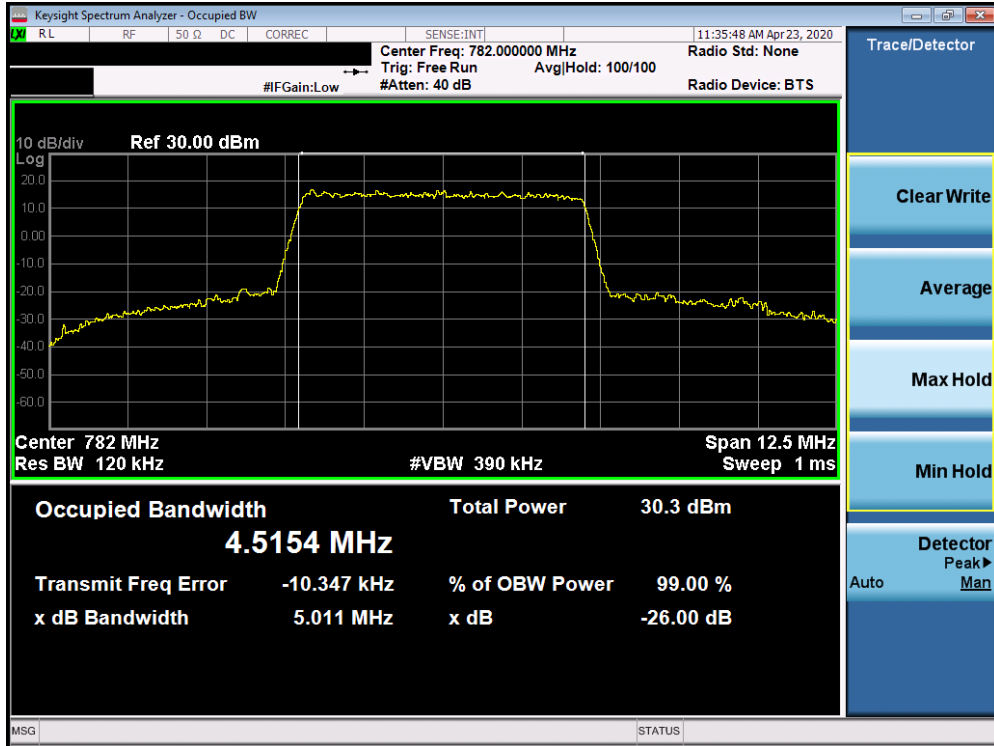


Plot 7-68. Occupied Bandwidth Plot (Band 13 - 5.0MHz QPSK - Full RB Configuration)

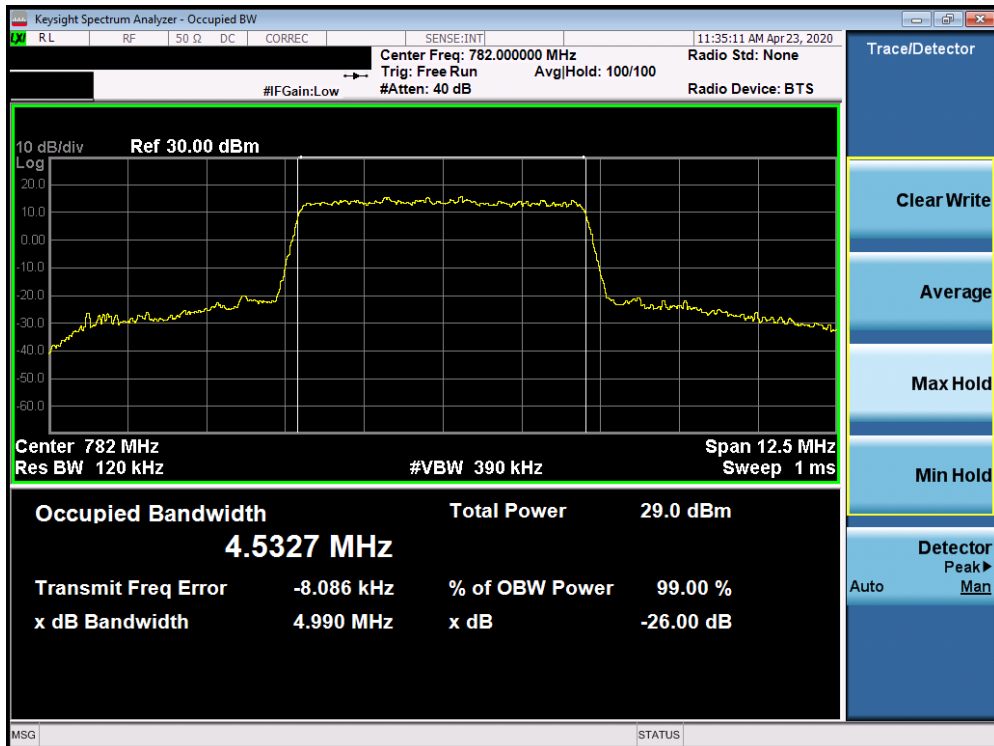


Plot 7-69. Occupied Bandwidth Plot (Band 13 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMN986U	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M2004170065-03-R3.A3L	Test Dates: 4/17 - 6/22/2020	EUT Type: Portable Handset		Page 53 of 494

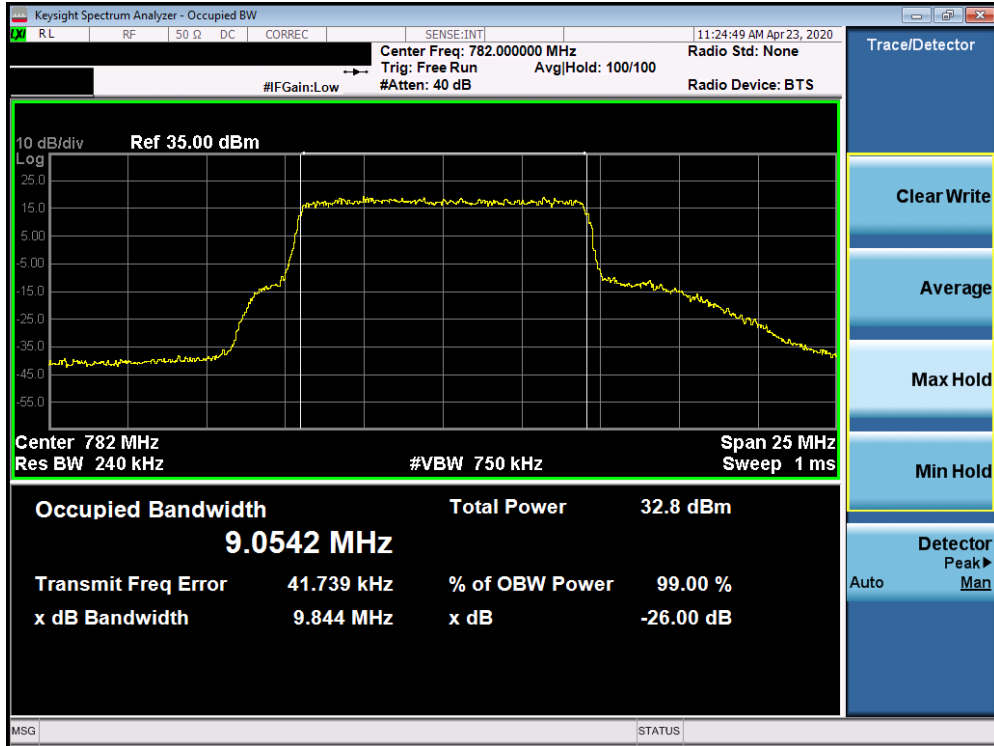


Plot 7-70. Occupied Bandwidth Plot (Band 13 - 5.0MHz 64-QAM - Full RB Configuration)

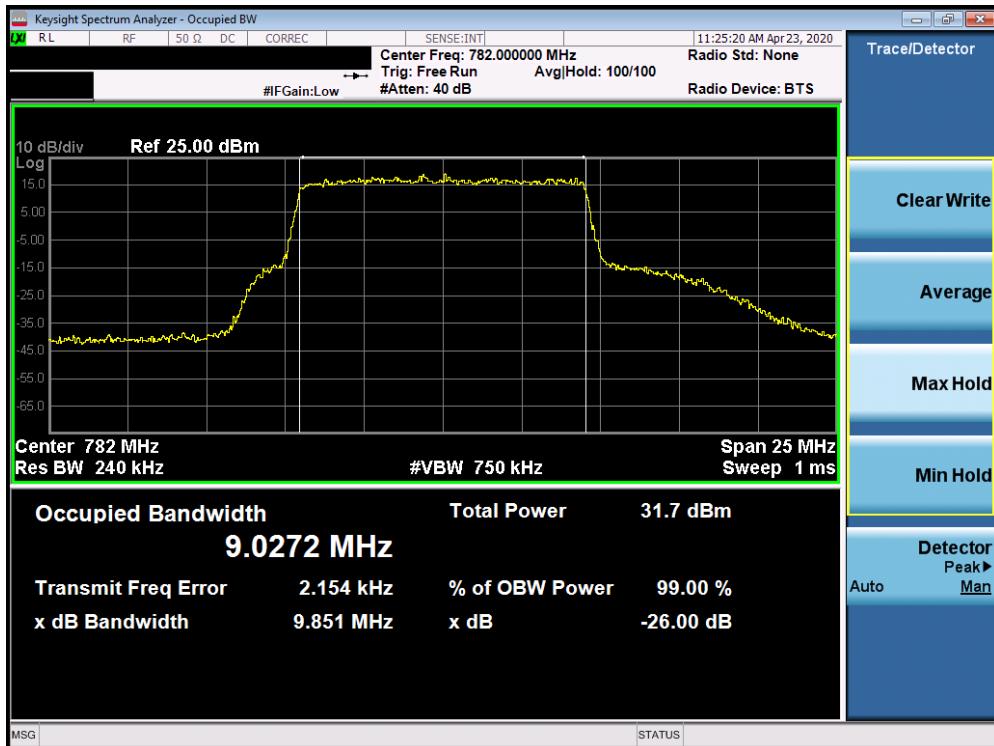


Plot 7-71. Occupied Bandwidth Plot (Band 13 - 5.0MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMN986U	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M2004170065-03-R3.A3L	Test Dates: 4/17 - 6/22/2020	EUT Type: Portable Handset		Page 54 of 494

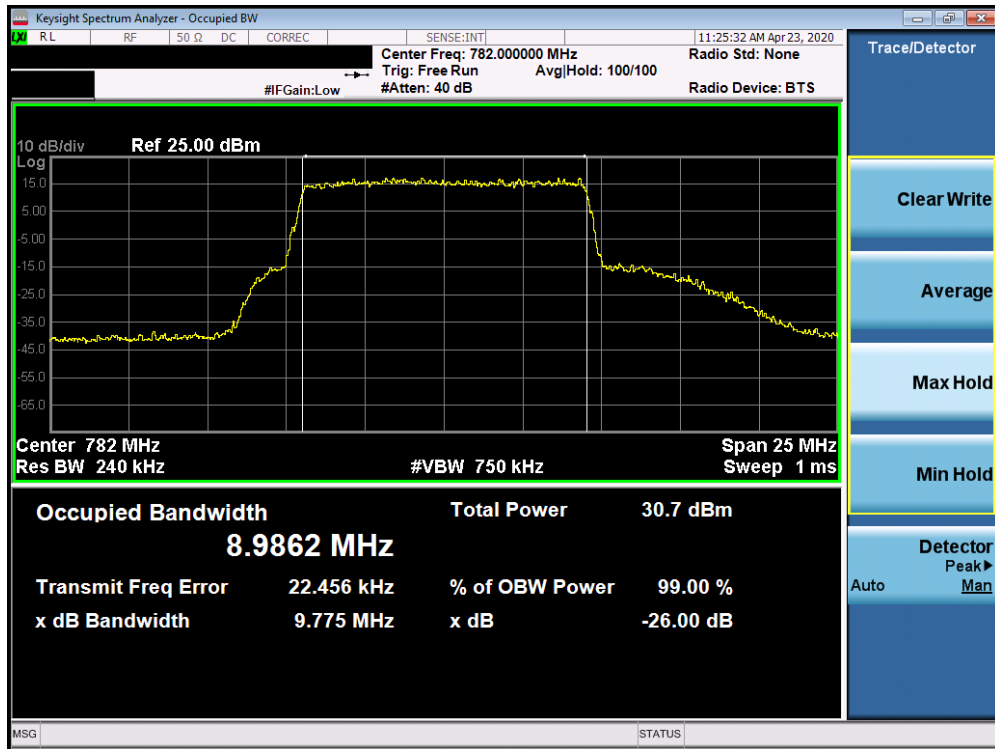


Plot 7-72. Occupied Bandwidth Plot (Band 13 - 10.0MHz QPSK - Full RB Configuration)

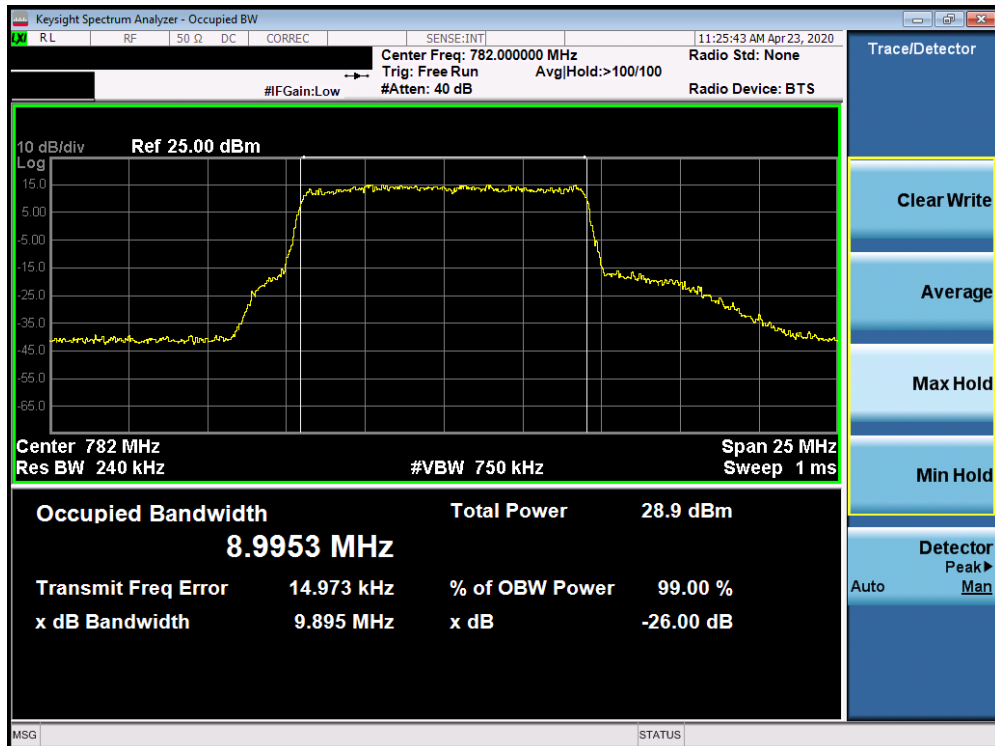


Plot 7-73. Occupied Bandwidth Plot (Band 13 - 10.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMN986U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2004170065-03-R3.A3L	Test Dates: 4/17 - 6/22/2020	EUT Type: Portable Handset		Page 55 of 494



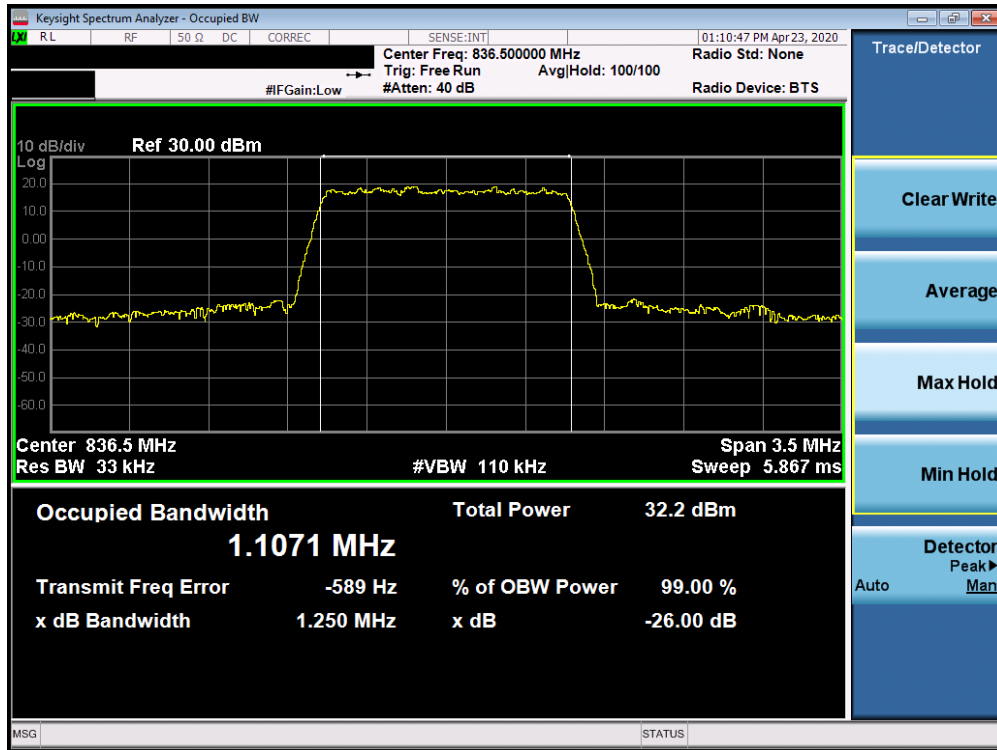
Plot 7-74. Occupied Bandwidth Plot (Band 13 - 10.0MHz 64-QAM - Full RB Configuration)



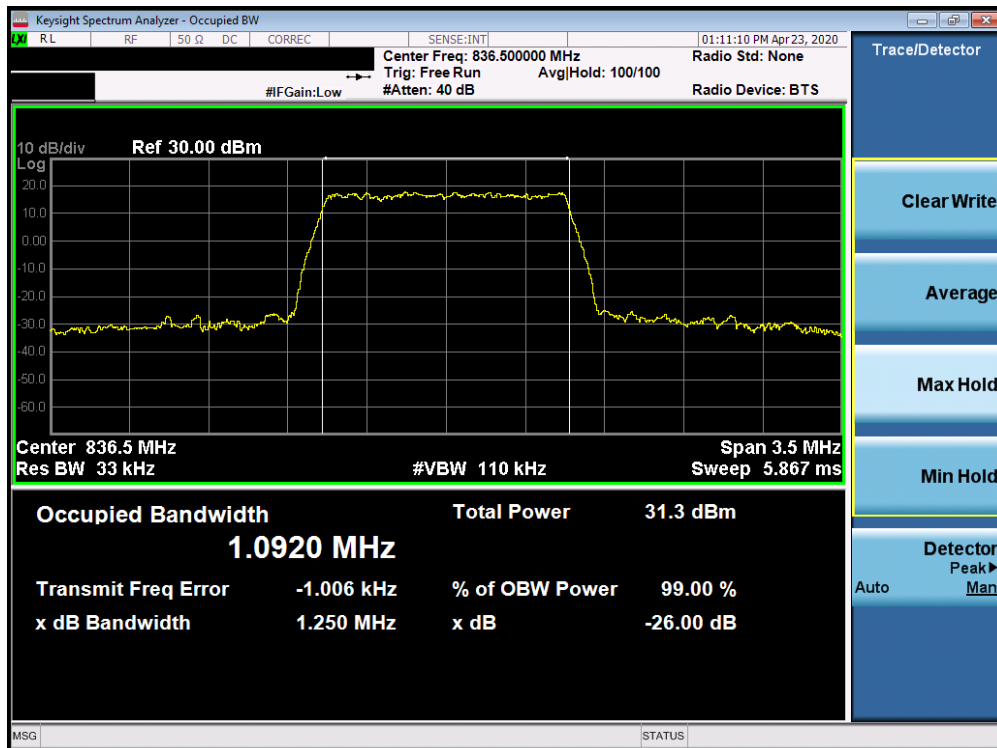
Plot 7-75. Occupied Bandwidth Plot (Band 13 - 10.0MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMN986U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2004170065-03-R3.A3L	Test Dates: 4/17 - 6/22/2020	EUT Type: Portable Handset		Page 56 of 494

Band 26/5

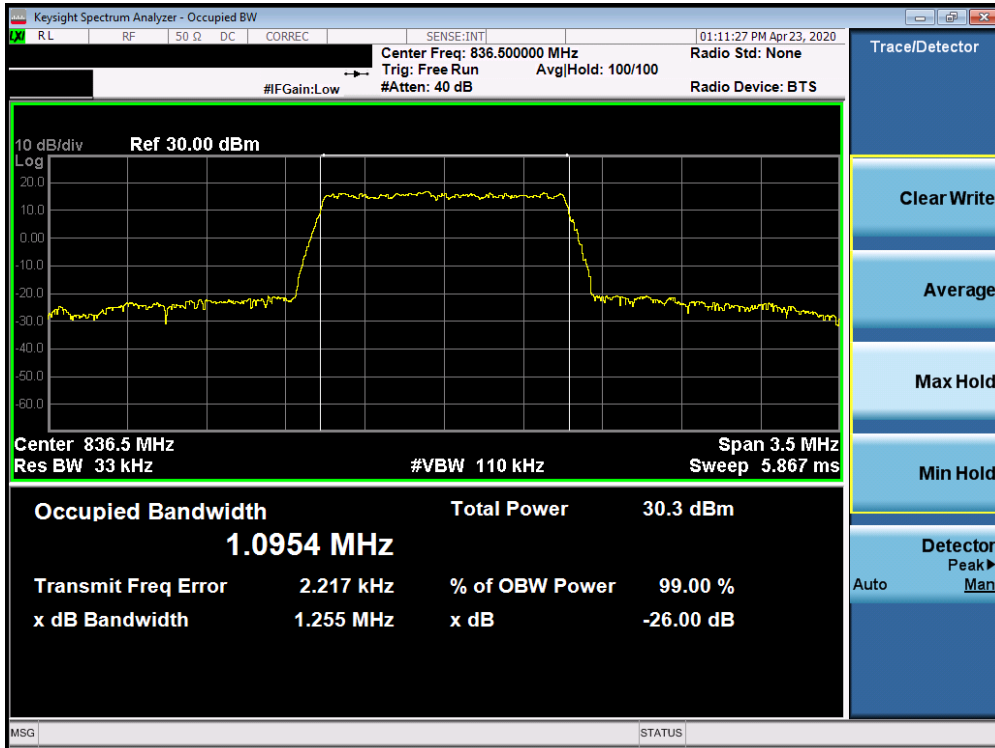


Plot 7-76. Occupied Bandwidth Plot (Band 26/5 - 1.4MHz QPSK - Full RB Configuration)

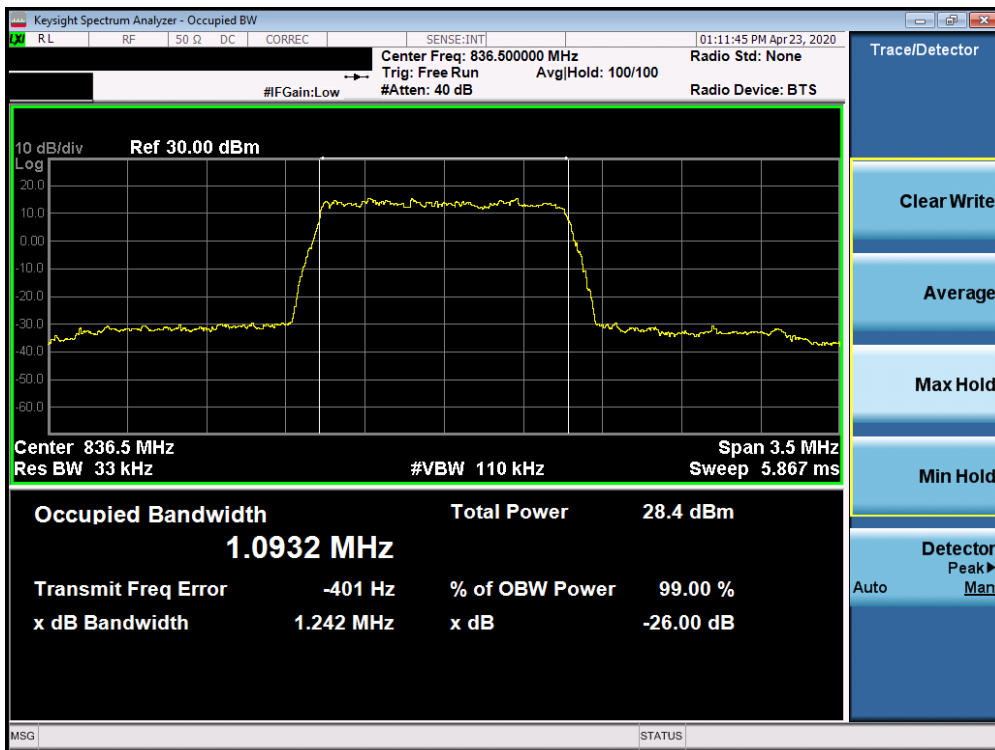


Plot 7-77. Occupied Bandwidth Plot (Band 26/5 - 1.4MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMN986U	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M2004170065-03-R3.A3L	Test Dates: 4/17 - 6/22/2020	EUT Type: Portable Handset		Page 57 of 494

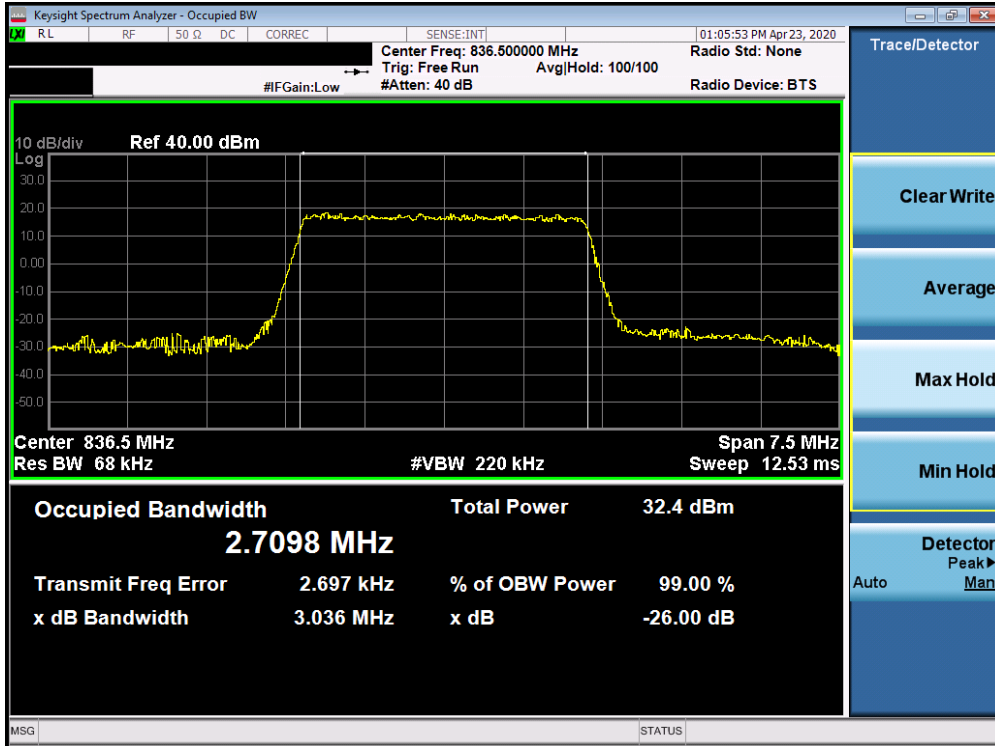


Plot 7-78. Occupied Bandwidth Plot (Band 26/5 - 1.4MHz 64-QAM - Full RB Configuration)

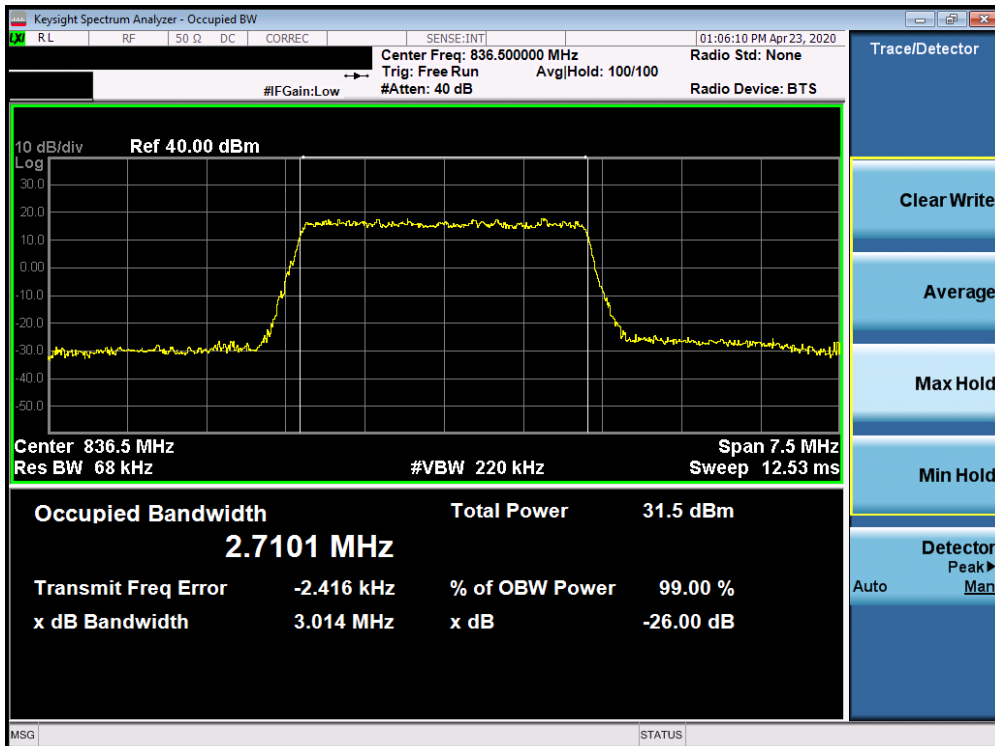


Plot 7-79. Occupied Bandwidth Plot (Band 26/5 - 1.4MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMN986U	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M2004170065-03-R3.A3L	Test Dates: 4/17 - 6/22/2020	EUT Type: Portable Handset		Page 58 of 494



Plot 7-80. Occupied Bandwidth Plot (Band 26/5 - 3.0MHz QPSK - Full RB Configuration)



Plot 7-81. Occupied Bandwidth Plot (Band 26/5 - 3.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMN986U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2004170065-03-R3.A3L	Test Dates: 4/17 - 6/22/2020	EUT Type: Portable Handset		Page 59 of 494