

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:

11/14/2019 - 1/31/2020

Test Site/Location:

PCTEST Lab. Columbia, MD, USA

Test Report Serial No.:

1M1911140187-03-R1.A3L

FCC ID:

A3LSMG988U

APPLICANT:

Samsung Electronics Co., Ltd.

Application Type:

Certification

Model:

SM-G988U

Additional Model(s):

SM-G988U1, SM-G988W

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.

This revised Test Report (S/N: 1M1911140187-03-R1.A3L) supersedes and replaces the previously issued test report (S/N: 1M1911140187-03.A3L) 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.


Randy Ortanez
President

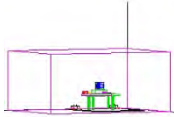


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T A B L E O F C O N T E N T S

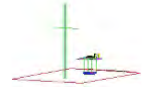
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FCC Part 22, 24, & 27



Mode	FCC Rule Part	Tx Frequency (MHz)	ERP		Emission Designator	Modulation
			Max. Power (W)	Max. Power (dBm)		
LTE Band 71	27	665.5 - 695.5	0.054	17.30	4M54G7D	QPSK
LTE Band 71	27	665.5 - 695.5	0.042	16.24	4M51W7D	16QAM
LTE Band 71	27	665.5 - 695.5	0.038	15.78	4M51W7D	64QAM
LTE Band 71	27	665.5 - 695.5	0.019	12.89	4M51W7D	256QAM
LTE Band 71	27	668 - 693	0.055	17.38	9M02G7D	QPSK
LTE Band 71	27	668 - 693	0.043	16.35	8M99W7D	16QAM
LTE Band 71	27	668 - 693	0.038	15.85	8M98W7D	64QAM
LTE Band 71	27	668 - 693	0.019	12.70	8M98W7D	256QAM
LTE Band 71	27	670.5 - 690.5	0.055	17.44	13M5G7D	QPSK
LTE Band 71	27	670.5 - 690.5	0.043	16.36	13M5W7D	16QAM
LTE Band 71	27	670.5 - 690.5	0.038	15.82	13M5W7D	64QAM
LTE Band 71	27	670.5 - 690.5	0.021	13.16	13M5W7D	256QAM
LTE Band 71	27	673 - 688	0.054	17.31	18M0G7D	QPSK
LTE Band 71	27	673 - 688	0.043	16.36	18M0W7D	16QAM
LTE Band 71	27	673 - 688	0.035	15.45	17M9W7D	64QAM
LTE Band 71	27	673 - 688	0.021	13.13	18M0W7D	256QAM
LTE Band 12	27	699.7 - 715.3	0.096	19.81	1M10G7D	QPSK
LTE Band 12	27	699.7 - 715.3	0.072	18.55	1M09W7D	16QAM
LTE Band 12	27	699.7 - 715.3	0.060	17.75	1M09W7D	64QAM
LTE Band 12	27	699.7 - 715.3	0.038	15.84	1M09W7D	256QAM
LTE Band 12	27	700.5 - 714.5	0.095	19.80	2M71G7D	QPSK
LTE Band 12	27	700.5 - 714.5	0.075	18.76	2M71W7D	16QAM
LTE Band 12	27	700.5 - 714.5	0.061	17.83	2M71W7D	64QAM
LTE Band 12	27	700.5 - 714.5	0.038	15.85	2M71W7D	256QAM
LTE Band 12	27	701.5 - 713.5	0.096	19.83	4M51G7D	QPSK
LTE Band 12	27	701.5 - 713.5	0.075	18.77	4M51W7D	16QAM
LTE Band 12	27	701.5 - 713.5	0.061	17.82	4M51W7D	64QAM
LTE Band 12	27	701.5 - 713.5	0.039	15.90	4M50W7D	256QAM
LTE Band 12	27	704 - 711	0.096	19.83	9M01G7D	QPSK
LTE Band 12	27	704 - 711	0.076	18.79	8M97W7D	16QAM
LTE Band 12	27	704 - 711	0.060	17.80	8M97W7D	64QAM
LTE Band 12	27	704 - 711	0.040	16.02	8M97W7D	256QAM
LTE Band 13	27	779.5 - 784.5	0.084	19.22	4M51G7D	QPSK
LTE Band 13	27	779.5 - 784.5	0.065	18.11	4M50W7D	16QAM
LTE Band 13	27	779.5 - 784.5	0.056	17.46	4M51W7D	64QAM
LTE Band 13	27	779.5 - 784.5	0.037	15.64	4M50W7D	256QAM
LTE Band 13	27	782	0.084	19.23	8M97G7D	QPSK
LTE Band 13	27	782	0.069	18.39	8M97W7D	16QAM
LTE Band 13	27	782	0.056	17.51	8M96W7D	64QAM
LTE Band 13	27	782	0.036	15.55	8M94W7D	256QAM
LTE Band 26/5	22H	824.7 - 848.3	0.094	19.72	1M10G7D	QPSK
LTE Band 26/5	22H	824.7 - 848.3	0.070	18.48	1M10W7D	16QAM
LTE Band 26/5	22H	824.7 - 848.3	0.052	17.13	1M10W7D	64QAM
LTE Band 26/5	22H	824.7 - 848.3	0.027	14.26	1M09W7D	256QAM
LTE Band 26/5	22H	825.5 - 847.5	0.093	19.67	2M70G7D	QPSK
LTE Band 26/5	22H	825.5 - 847.5	0.072	18.55	2M71W7D	16QAM
LTE Band 26/5	22H	825.5 - 847.5	0.052	17.17	2M70W7D	64QAM
LTE Band 26/5	22H	825.5 - 847.5	0.027	14.28	2M70W7D	256QAM
LTE Band 26/5	22H	826.5 - 846.5	0.093	19.68	4M52G7D	QPSK
LTE Band 26/5	22H	826.5 - 846.5	0.071	18.52	4M50W7D	16QAM
LTE Band 26/5	22H	826.5 - 846.5	0.052	17.13	4M52W7D	64QAM
LTE Band 26/5	22H	826.5 - 846.5	0.027	14.25	4M51W7D	256QAM
LTE Band 26/5	22H	829 - 844	0.095	19.79	9M02G7D	QPSK
LTE Band 26/5	22H	829 - 844	0.073	18.66	8M99W7D	16QAM
LTE Band 26/5	22H	829 - 844	0.051	17.09	8M98W7D	64QAM
LTE Band 26/5	22H	829 - 844	0.026	14.13	8M98W7D	256QAM
LTE Band 26	22H	831.5 - 841.5	0.091	19.59	13M5G7D	QPSK
LTE Band 26	22H	831.5 - 841.5	0.070	18.45	13M5W7D	16QAM
LTE Band 26	22H	831.5 - 841.5	0.054	17.36	13M5W7D	64QAM
LTE Band 26	22H	831.5 - 841.5	0.026	14.21	13M5W7D	256QAM

EUT LTE Overview (<1 GHz)

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Mode	FCC Rule Part	Tx Frequency (MHz)	EIRP		Emission Designator	Modulation
			Max. Power (W)	Max. Power (dBm)		
LTE Band 66/4	27	1710.7 - 1779.3	0.188	22.73	1M09G7D	QPSK
LTE Band 66/4	27	1710.7 - 1779.3	0.156	21.94	1M10W7D	16QAM
LTE Band 66/4	27	1710.7 - 1779.3	0.150	21.75	1M10W7D	64QAM
LTE Band 66/4	27	1710.7 - 1779.3	0.077	18.85	1M09W7D	256QAM
LTE Band 66/4	27	1711.5 - 1778.5	0.192	22.84	2M70G7D	QPSK
LTE Band 66/4	27	1711.5 - 1778.5	0.162	22.10	2M71W7D	16QAM
LTE Band 66/4	27	1711.5 - 1778.5	0.151	21.80	2M71W7D	64QAM
LTE Band 66/4	27	1711.5 - 1778.5	0.073	18.64	2M70W7D	256QAM
LTE Band 66/4	27	1712.5 - 1777.5	0.188	22.73	4M51G7D	QPSK
LTE Band 66/4	27	1712.5 - 1777.5	0.157	21.95	4M51W7D	16QAM
LTE Band 66/4	27	1712.5 - 1777.5	0.148	21.71	4M51W7D	64QAM
LTE Band 66/4	27	1712.5 - 1777.5	0.074	18.68	4M50W7D	256QAM
LTE Band 66/4	27	1715 - 1775	0.184	22.65	9M02G7D	QPSK
LTE Band 66/4	27	1715 - 1775	0.151	21.80	9M02W7D	16QAM
LTE Band 66/4	27	1715 - 1775	0.141	21.49	8M99W7D	64QAM
LTE Band 66/4	27	1715 - 1775	0.071	18.54	8M98W7D	256QAM
LTE Band 66/4	27	1717.5 - 1772.5	0.199	22.99	13M5G7D	QPSK
LTE Band 66/4	27	1717.5 - 1772.5	0.167	22.23	13M5W7D	16QAM
LTE Band 66/4	27	1717.5 - 1772.5	0.153	21.84	13M5W7D	64QAM
LTE Band 66/4	27	1717.5 - 1772.5	0.076	18.83	13M5W7D	256QAM
LTE Band 66/4	27	1720 - 1770	0.200	23.00	18M0G7D	QPSK
LTE Band 66/4	27	1720 - 1770	0.169	22.29	18M0W7D	16QAM
LTE Band 66/4	27	1720 - 1770	0.147	21.67	18M0W7D	64QAM
LTE Band 66/4	27	1720 - 1770	0.072	18.58	18M0W7D	256QAM
LTE Band 25/2	24E	1850.7 - 1914.3	0.281	24.48	1M10G7D	QPSK
LTE Band 25/2	24E	1850.7 - 1914.3	0.236	23.72	1M11W7D	16QAM
LTE Band 25/2	24E	1850.7 - 1914.3	0.197	22.95	1M09W7D	64QAM
LTE Band 25/2	24E	1850.7 - 1914.3	0.098	19.91	1M09W7D	256QAM
LTE Band 25/2	24E	1851.5 - 1913.5	0.292	24.66	2M71G7D	QPSK
LTE Band 25/2	24E	1851.5 - 1913.5	0.252	24.02	2M72W7D	16QAM
LTE Band 25/2	24E	1851.5 - 1913.5	0.200	23.01	2M71W7D	64QAM
LTE Band 25/2	24E	1851.5 - 1913.5	0.099	19.97	2M71W7D	256QAM
LTE Band 25/2	24E	1852.5 - 1912.5	0.298	24.75	4M53G7D	QPSK
LTE Band 25/2	24E	1852.5 - 1912.5	0.251	24.00	4M53W7D	16QAM
LTE Band 25/2	24E	1852.5 - 1912.5	0.199	23.00	4M53W7D	64QAM
LTE Band 25/2	24E	1852.5 - 1912.5	0.101	20.05	4M50W7D	256QAM
LTE Band 25/2	24E	1855 - 1910	0.312	24.94	9M01G7D	QPSK
LTE Band 25/2	24E	1855 - 1910	0.267	24.26	9M02W7D	16QAM
LTE Band 25/2	24E	1855 - 1910	0.186	22.70	9M01W7D	64QAM
LTE Band 25/2	24E	1855 - 1910	0.096	19.84	8M98W7D	256QAM
LTE Band 25/2	24E	1857.5 - 1907.5	0.312	24.94	13M5G7D	QPSK
LTE Band 25/2	24E	1857.5 - 1907.5	0.257	24.10	13M5W7D	16QAM
LTE Band 25/2	24E	1857.5 - 1907.5	0.214	23.30	13M5W7D	64QAM
LTE Band 25/2	24E	1857.5 - 1907.5	0.105	20.21	13M5W7D	256QAM
LTE Band 25/2	24E	1860 - 1905	0.313	24.95	18M0G7D	QPSK
LTE Band 25/2	24E	1860 - 1905	0.279	24.45	18M0W7D	16QAM
LTE Band 25/2	24E	1860 - 1905	0.195	22.91	18M0W7D	64QAM
LTE Band 25/2	24E	1860 - 1905	0.103	20.12	17M9W7D	256QAM

EUT LTE Overview (Mid Bands)

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Mode	FCC Rule Part	Tx Frequency (MHz)	EIRP		Emission Designator	Modulation
			Max. Power (W)	Max. Power (dBm)		
LTE Band 30	27	2307.5 - 2312.5	0.199	22.99	4M53G7D	QPSK
LTE Band 30	27	2307.5 - 2312.5	0.160	22.03	4M52W7D	16QAM
LTE Band 30	27	2307.5 - 2312.5	0.141	21.50	4M54W7D	64QAM
LTE Band 30	27	2307.5 - 2312.5	0.077	18.87	4M52W7D	256QAM
LTE Band 30	27	2310	0.205	23.12	9M00G7D	QPSK
LTE Band 30	27	2310	0.172	22.36	9M01W7D	16QAM
LTE Band 30	27	2310	0.136	21.33	9M00W7D	64QAM
LTE Band 30	27	2310	0.077	18.85	9M01W7D	256QAM
LTE Band 7	27	2502.5 - 2567.5	0.147	21.66	4M51G7D	QPSK
LTE Band 7	27	2502.5 - 2567.5	0.120	20.79	4M50W7D	16QAM
LTE Band 7	27	2502.5 - 2567.5	0.104	20.15	4M50W7D	64QAM
LTE Band 7	27	2502.5 - 2567.5	0.092	19.65	4M51W7D	256QAM
LTE Band 7	27	2505 - 2565	0.141	21.49	8M98G7D	QPSK
LTE Band 7	27	2505 - 2565	0.111	20.45	8M97W7D	16QAM
LTE Band 7	27	2505 - 2565	0.102	20.07	8M98W7D	64QAM
LTE Band 7	27	2505 - 2565	0.091	19.57	9M00W7D	256QAM
LTE Band 7	27	2507.5 - 2562.5	0.152	21.81	13M5G7D	QPSK
LTE Band 7	27	2507.5 - 2562.5	0.130	21.13	13M5W7D	16QAM
LTE Band 7	27	2507.5 - 2562.5	0.125	20.97	13M5W7D	64QAM
LTE Band 7	27	2507.5 - 2562.5	0.111	20.47	13M5W7D	256QAM
LTE Band 7	27	2510 - 2560	0.147	21.68	18M0G7D	QPSK
LTE Band 7	27	2510 - 2560	0.121	20.82	18M0W7D	16QAM
LTE Band 7	27	2510 - 2560	0.106	20.24	17M9W7D	64QAM
LTE Band 7	27	2510 - 2560	0.094	19.74	18M0W7D	256QAM
LTE Band 41 (PC2)	27	2498.5 - 2687.5	0.471	26.73	4M56G7D	QPSK
LTE Band 41 (PC2)	27	2498.5 - 2687.5	0.439	26.43	4M51W7D	16QAM
LTE Band 41 (PC2)	27	2498.5 - 2687.5	0.227	23.56	4M51W7D	64QAM
LTE Band 41 (PC2)	27	2498.5 - 2687.5	0.173	22.39	4M52W7D	256QAM
LTE Band 41 (PC2)	27	2501 - 2685	0.463	26.65	8M99G7D	QPSK
LTE Band 41 (PC2)	27	2501 - 2685	0.429	26.32	9M02W7D	16QAM
LTE Band 41 (PC2)	27	2501 - 2685	0.201	23.02	9M00W7D	64QAM
LTE Band 41 (PC2)	27	2501 - 2685	0.169	22.27	9M05W7D	256QAM
LTE Band 41 (PC2)	27	2503.5 - 2682.5	0.497	26.96	13M5G7D	QPSK
LTE Band 41 (PC2)	27	2503.5 - 2682.5	0.406	26.09	13M5W7D	16QAM
LTE Band 41 (PC2)	27	2503.5 - 2682.5	0.222	23.46	13M5W7D	64QAM
LTE Band 41 (PC2)	27	2503.5 - 2682.5	0.177	22.49	13M5W7D	256QAM
LTE Band 41 (PC2)	27	2506 - 2680	0.497	26.96	18M0G7D	QPSK
LTE Band 41 (PC2)	27	2506 - 2680	0.433	26.36	18M0W7D	16QAM
LTE Band 41 (PC2)	27	2506 - 2680	0.238	23.76	18M0W7D	64QAM
LTE Band 41 (PC2)	27	2506 - 2680	0.194	22.88	17M9W7D	256QAM
LTE Band 41 (PC3) / 38	27	2498.5 - 2687.5	0.245	23.90	4M52G7D	QPSK
LTE Band 41 (PC3) / 38	27	2498.5 - 2687.5	0.216	23.35	4M51G7D	16QAM
LTE Band 41 (PC3) / 38	27	2498.5 - 2687.5	0.133	21.24	4M48G7D	64QAM
LTE Band 41 (PC3) / 38	27	2498.5 - 2687.5	0.117	20.70	4M49G7D	256QAM
LTE Band 41 (PC3) / 38	27	2501 - 2685	0.241	23.82	8M81G7D	QPSK
LTE Band 41 (PC3) / 38	27	2501 - 2685	0.211	23.24	8M79G7D	16QAM
LTE Band 41 (PC3) / 38	27	2501 - 2685	0.118	20.70	8M79G7D	64QAM
LTE Band 41 (PC3) / 38	27	2501 - 2685	0.104	20.16	8M67G7D	256QAM
LTE Band 41 (PC3) / 38	27	2503.5 - 2682.5	0.249	23.96	13M5G7D	QPSK
LTE Band 41 (PC3) / 38	27	2503.5 - 2682.5	0.202	23.06	13M5G7D	16QAM
LTE Band 41 (PC3) / 38	27	2503.5 - 2682.5	0.132	21.19	13M5G7D	64QAM
LTE Band 41 (PC3) / 38	27	2503.5 - 2682.5	0.116	20.65	13M4G7D	256QAM
LTE Band 41 (PC3) / 38	27	2506 - 2680	0.259	24.13	17M9G7D	QPSK
LTE Band 41 (PC3) / 38	27	2506 - 2680	0.213	23.28	17M9G7D	16QAM
LTE Band 41 (PC3) / 38	27	2506 - 2680	0.123	20.90	18M0G7D	64QAM
LTE Band 41 (PC3) / 38	27	2506 - 2680	0.093	19.67	18M0G7D	256QAM

EUT LTE Overview (High Bands)

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Mode	FCC Rule Part	Tx Frequency (MHz)	ERP		Emission Designator	Modulation
			Max. Power (W)	Max. Power (dBm)		
n71	27	665.5 - 695.5	0.057	17.54	4M51G7D	QPSK
n71	27	665.5 - 695.5	0.050	16.96	4M51W7D	16QAM
n71	27	665.5 - 695.5	0.040	15.97	4M49W7D	64QAM
n71	27	665.5 - 695.5	0.021	13.21	4M51W7D	256QAM
n71	27	668 - 693	0.055	17.39	9M35G7D	QPSK
n71	27	668 - 693	0.054	17.29	9M34W7D	16QAM
n71	27	668 - 693	0.041	16.15	9M35W7D	64QAM
n71	27	668 - 693	0.021	13.30	9M36W7D	256QAM
n71	27	670.5 - 690.5	0.051	17.11	14M2G7D	QPSK
n71	27	670.5 - 690.5	0.043	16.33	14M2W7D	16QAM
n71	27	670.5 - 690.5	0.040	15.97	14M2W7D	64QAM
n71	27	670.5 - 690.5	0.022	13.35	14M2W7D	256QAM
n71	27	673 - 688	0.052	17.19	19M2G7D	QPSK
n71	27	673 - 688	0.045	16.55	19M1W7D	16QAM
n71	27	673 - 688	0.032	14.99	19M1W7D	64QAM
n71	27	673 - 688	0.016	11.95	19M2W7D	256QAM
n5	22H	826.5 - 846.5	0.085	19.28	4M52G7D	QPSK
n5	22H	826.5 - 846.5	0.074	18.69	4M52W7D	16QAM
n5	22H	826.5 - 846.5	0.049	16.94	4M55W7D	64QAM
n5	22H	826.5 - 846.5	0.026	14.10	4M50W7D	256QAM
n5	22H	829 - 844	0.069	18.40	9M37G7D	QPSK
n5	22H	829 - 844	0.052	17.12	9M38W7D	16QAM
n5	22H	829 - 844	0.032	15.02	9M35W7D	64QAM
n5	22H	829 - 844	0.021	13.18	9M35W7D	256QAM
n5	22H	831.5 - 841.5	0.087	19.41	14M3G7D	QPSK
n5	22H	831.5 - 841.5	0.073	18.60	14M2W7D	16QAM
n5	22H	831.5 - 841.5	0.050	17.00	14M4W7D	64QAM
n5	22H	831.5 - 841.5	0.026	14.23	14M3W7D	256QAM
n5	22H	834 - 839	0.090	19.56	19M2G7D	QPSK
n5	22H	834 - 839	0.087	19.39	19M1W7D	16QAM
n5	22H	834 - 839	0.060	17.75	19M0W7D	64QAM
n5	22H	834 - 839	0.029	14.63	19M2W7D	256QAM

EUT Sub 6GHz NR Overview (<1 GHz)

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Mode	FCC Rule Part	Tx Frequency (MHz)	EIRP		Emission Designator	Modulation
			Max. Power (W)	Max. Power (dBm)		
n66	27	1712.5 - 1777.5	0.179	22.54	4M50G7D	QPSK
n66	27	1712.5 - 1777.5	0.168	22.25	4M52W7D	16QAM
n66	27	1712.5 - 1777.5	0.108	20.34	4M50W7D	64QAM
n66	27	1712.5 - 1777.5	0.080	19.02	4M49W7D	256QAM
n66	27	1715 - 1775	0.166	22.20	9M15G7D	QPSK
n66	27	1715 - 1775	0.159	22.03	9M15W7D	16QAM
n66	27	1715 - 1775	0.137	21.36	9M15W7D	64QAM
n66	27	1715 - 1775	0.093	19.69	9M15W7D	256QAM
n66	27	1717.5 - 1772.5	0.174	22.42	14M2G7D	QPSK
n66	27	1717.5 - 1772.5	0.166	22.20	14M2W7D	16QAM
n66	27	1717.5 - 1772.5	0.133	21.23	14M2W7D	64QAM
n66	27	1717.5 - 1772.5	0.096	19.83	14M2W7D	256QAM
n66	27	1720 - 1770	0.183	22.63	19M0G7D	QPSK
n66	27	1720 - 1770	0.165	22.18	19M0W7D	16QAM
n66	27	1720 - 1770	0.127	21.03	19M1W7D	64QAM
n66	27	1720 - 1770	0.062	17.92	19M0W7D	256QAM
n2	24E	1852.5 - 1907.5	0.139	21.43	4M51G7D	QPSK
n2	24E	1852.5 - 1907.5	0.116	20.64	4M51W7D	16QAM
n2	24E	1852.5 - 1907.5	0.086	19.35	4M52W7D	64QAM
n2	24E	1852.5 - 1907.5	0.065	18.16	4M51W7D	256QAM
n2	24E	1855 - 1905	0.159	22.01	9M36G7D	QPSK
n2	24E	1855 - 1905	0.126	21.00	9M33W7D	16QAM
n2	24E	1855 - 1905	0.102	20.10	9M34W7D	64QAM
n2	24E	1855 - 1905	0.075	18.76	9M34W7D	256QAM
n2	24E	1857.5 - 1902.5	0.195	22.91	14M2G7D	QPSK
n2	24E	1857.5 - 1902.5	0.144	21.57	14M2W7D	16QAM
n2	24E	1857.5 - 1902.5	0.123	20.89	14M2W7D	64QAM
n2	24E	1857.5 - 1902.5	0.078	18.94	14M2W7D	256QAM
n2	24E	1860 - 1900	0.211	23.25	19M0G7D	QPSK
n2	24E	1860 - 1900	0.174	22.42	19M0W7D	16QAM
n2	24E	1860 - 1900	0.146	21.65	19M0W7D	64QAM
n2	24E	1860 - 1900	0.066	18.23	19M0W7D	256QAM

EUT SUB 6GHz NR Overview (Mid Bands)

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Mode	FCC Rule Part	Tx Frequency (MHz)	EIRP		Emission Designator	Modulation
			Max. Power (W)	Max. Power (dBm)		
n41	27	2506.02 - 2679.99	0.130	21.16	18M3G7D	QPSK
n41	27	2506.02 - 2679.99	0.127	21.02	18M3W7D	16QAM
n41	27	2506.02 - 2679.99	0.105	20.23	18M4W7D	64QAM
n41	27	2506.02 - 2679.99	0.099	19.94	18M4W7D	256QAM
n41	27	2516.01 - 2670	0.137	21.38	37M9G7D	QPSK
n41	27	2516.01 - 2670	0.133	21.25	37M9W7D	16QAM
n41	27	2516.01 - 2670	0.106	20.27	37M9W7D	64QAM
n41	27	2516.01 - 2670	0.084	19.25	38M1W7D	256QAM
n41	27	2521.02 - 2664.99	0.139	21.42	49M8G7D	QPSK
n41	27	2521.02 - 2664.99	0.137	21.37	54M9W7D	16QAM
n41	27	2521.02 - 2664.99	0.105	20.21	48M9W7D	64QAM
n41	27	2521.02 - 2664.99	0.082	19.11	47M8W7D	256QAM
n41	27	2526 - 2659.98	0.184	22.64	58M0G7D	QPSK
n41	27	2526 - 2659.98	0.154	21.86	58M0W7D	16QAM
n41	27	2526 - 2659.98	0.120	20.80	58M1W7D	64QAM
n41	27	2526 - 2659.98	0.101	20.06	57M9W7D	256QAM
n41	27	2536.02 - 2649.99	0.153	21.85	78M1G7D	QPSK
n41	27	2536.02 - 2649.99	0.151	21.80	78M1W7D	16QAM
n41	27	2536.02 - 2649.99	0.154	21.88	78M0W7D	64QAM
n41	27	2536.02 - 2649.99	0.092	19.63	78M2W7D	256QAM
n41	27	2541 - 2644.98	0.143	21.55	88M2G7D	QPSK
n41	27	2541 - 2644.98	0.141	21.48	88M1W7D	16QAM
n41	27	2541 - 2644.98	0.140	21.46	88M1W7D	64QAM
n41	27	2541 - 2644.98	0.124	20.92	88M1W7D	256QAM
n41	27	2546.01 - 2640	0.141	21.50	98M0G7D	QPSK
n41	27	2546.01 - 2640	0.140	21.45	98M3W7D	16QAM
n41	27	2546.01 - 2640	0.138	21.41	97M8W7D	64QAM
n41	27	2546.01 - 2640	0.122	20.87	98M0W7D	256QAM

EUT SUB 6GHz NR Overview (High Bands)

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1.0 INTRODUCTION

1.1 Scope

Measurement and determination of electromagnetic emissions (EMC) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission and the Innovation, Science and Economic Development Canada.

1.2 PCTEST Test Location

These measurement tests were conducted at the PCTEST Engineering Laboratory, Inc. 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 Engineering Lab located in Columbia, MD 21046, U.S.A.

- PCTEST is an ISO 17025-2005 accredited test facility under the American Association for Laboratory Accreditation (A2LA) with Certificate number 2041.01 for Specific Absorption Rate (SAR), Hearing Aid Compatibility (HAC) testing, where applicable, and Electromagnetic Compatibility (EMC) testing for FCC and Innovation, Science, and Economic Development Canada rules.
- PCTEST TCB is a Telecommunication Certification Body (TCB) accredited to ISO/IEC 17065-2012 by A2LA (Certificate number 2041.03) in all scopes of FCC Rules and ISSED Standards (RSS).
- PCTEST facility is a registered (2451B) test laboratory with the site description on file with ISSED.

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2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **Samsung Portable Handset FCC ID: A3LSMG988U**. The test data contained in this report pertains only to the emissions due to the EUT's LTE and Sub6 NR functions.

Test Device Serial No.: 1768S, 1216M, 1312S, 1763S, 1124M, 1766S, 1337S, 1332S, 1203M, 1322S, 0643M, 0669M, 1125M, 1788S

2.2 Device Capabilities

This device contains the following capabilities:

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, n2, n41, n260, n261), 802.11b/g/n/ax WLAN, 802.11a/n/ac/ax UNII, Bluetooth (1x, EDR, LE), NFC, ANT+, Wireless Power Transfer

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.

Sub 6GHz NR Band n71 (663 – 698 MHz) operates using 15kHz Subcarrier Spacing with both CP-OFDM and DFT-s OFDM waveforms. The band supports QPSK, 16QAM, 64QAM, and 256QAM modulation. The test data provided in this report represents the worst case configuration.

Sub 6GHz NR Band n5 (824 – 849 MHz) operates using 15kHz Subcarrier Spacing with both CP-OFDM and DFT-s OFDM waveforms. The band supports QPSK, 16QAM, 64QAM, and 256QAM modulation. The test data provided in this report represents the worst case configuration.

Sub 6GHz NR Band n66 (1710 – 1780 MHz) operates using 15kHz Subcarrier Spacing with both CP-OFDM and DFT-s OFDM waveforms. The band supports QPSK, 16QAM, 64QAM, and 256QAM modulation. The test data provided in this report represents the worst case configurations.

Sub 6GHz NR Band n2 (1850 – 1910 MHz) operates using 15kHz Subcarrier Spacing with both CP-OFDM and DFT-s OFDM waveforms. The band supports QPSK, 16QAM, 64QAM, and 256QAM modulation. The test data provided in this report represents the worst case configurations.

Sub 6GHz NR Band n41 (2496 – 2690 MHz) operates using 30kHz Subcarrier Spacing with both CP-OFDM and DFT-s OFDM waveforms. The band supports QPSK, 16QAM, 64QAM, and 256QAM modulation. The test data provided in this report represents the worst case configurations.

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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.

The device was operated using FTM test software to broadcast Sub 6GHz functions as well as LTE during EN-DC operations.

2.4 EMI Suppression Device(s)/Modifications

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

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3.0 DESCRIPTION OF TESTS

3.1 Measurement Procedure

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

3.2 Radiated Power and Radiated Spurious Emissions

The radiated test facilities consisted of an indoor 3 meter semi-anechoic chamber used for final measurements and exploratory measurements, when necessary. The measurement area is contained within the semi-anechoic chamber which is shielded from any ambient interference. The test site inside the chamber is a 6m x 5.2m elliptical, obstruction-free area in accordance with Figure 5.7 of Clause 5 in ANSI C63.4-2014. Absorbers are arranged on the floor between the turn table and the antenna mast in such a way so as to maximize the reduction of reflections for measurements above 1GHz. For measurements below 1GHz, the absorbers are removed. A raised turntable is used for radiated measurement. The turn table is a continuously rotatable, remote-controlled, metallic turntable and 2 meters (6.56 ft.) in diameter. The turn table is flush with the raised floor of the chamber in order to maintain its function as a ground plane. An 80cm tall test table made of Styrodur is placed on top of the turn table. A Styrodur pedestal is placed on top of the test table to bring the total table height to 1.5m.

The equipment under test was transmitting while connected to its integral antenna and is placed on a turntable 3 meters from the receive antenna. The receive antenna height is adjusted between 1 and 4 meter height, the turntable is rotated through 360 degrees, and the EUT is manipulated through all orthogonal planes representative of its typical use to achieve the highest reading on the receive spectrum analyzer. Radiated power levels are also investigated with the receive antenna horizontally and vertically polarized. The maximized power level is recorded using the spectrum analyzer "Channel Power" function with the integration band set to the emissions' occupied bandwidth, a RMS detector, RBW = 100kHz, VBW = 300kHz, and a 1 second sweep time over a minimum of 10 sweeps, per the guidelines of KDB 971168 D01 v03r01.

Per the guidance of ANSI/TIA-603-E-2016, a half-wave dipole is then substituted in place of the EUT. For emissions above 1GHz, a horn antenna is substituted in place of the EUT. The substitute antenna is driven by a signal generator with the level of the signal generator being adjusted to obtain the same receive spectrum analyzer level previously recorded from the spurious emission from the EUT. The power of the emission is calculated using the following formula:

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

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

The calculated P_d levels are then compared to the absolute spurious emission limit of -13dBm which is equivalent to the required minimum attenuation of $43 + 10 \log_{10}(\text{Power [Watts]})$. For Band 7 and 41, the calculated P_d levels are compared to the absolute spurious emission limit of -25dBm which is equivalent to the required minimum attenuation of $55 + 10 \log_{10}(\text{Power [Watts]})$. For Band 30 and 48, the calculated P_d levels are compared to the absolute spurious emission limit of -40dBm which is equivalent to the required minimum attenuation of $70 + 10 \log_{10}(\text{Power [Watts]})$.

All radiated measurements are performed in a chamber that meets the site requirements per ANSI C63.4-2014. Additionally, radiated emissions below 30MHz are also validated on an Open Area Test Site to assert correlation with the chamber measurements per the requirements of KDB 474788 D01.

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4.0 MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.4-2014. All measurement uncertainty values are shown with a coverage factor of $k = 2$ to indicate a 95% level of confidence. The measurement uncertainty shown below meets or exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

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

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5.0 TEST EQUIPMENT CALIBRATION DATA

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

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
-	LTx1	Licensed Transmitter Cable Set	6/4/2019	Annual	6/4/2020	LTx1
-	LTx2	Licensed Transmitter Cable Set	10/30/2019	Annual	10/30/2020	LTx2
Agilent	N9020A	MXA Signal Analyzer	4/20/2019	Annual	4/20/2020	US46470561
Com-Power	AL-130	9kHz - 30MHz Loop Antenna	10/10/2019	Biennial	10/10/2021	121034
Com-Power	PAM-103	Pre-Amplifier (1-1000MHz)	5/10/2019	Annual	5/10/2020	441112
Emco	3115	Horn Antenna (1-18GHz)	3/28/2018	Biennial	3/28/2020	9704-5182
EMCO	3160-09	Small Horn (18 - 26.5GHz)	8/9/2018	Biennial	8/9/2020	135427
Mini-Circuits	PWR-SEN-4RMS	USB Power Sensor	4/20/2019	Annual	4/20/2020	11210140001
Mini-Circuits	SSG-4000HP	Synthesized Signal Generator	N/A			11208010032
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	ESU26	EMI Test Receiver (26.5GHz)	6/5/2019	Annual	6/5/2020	100342
Rohde & Schwarz	ESU40	EMI Test Receiver (40GHz)	9/23/2019	Annual	9/23/2020	100348
Rohde & Schwarz	SFUNIT-Rx	Shielded Filter Unit	7/11/2019	Annual	7/11/2020	102134
Rohde & Schwarz	SFUNIT-Rx	Shielded Filter Unit	7/8/2019	Annual	7/8/2020	102133
Rohde & Schwarz	TS-PR26	18-26.5 GHz Pre-Amplifier	1/31/2019	Annual	1/31/2020	100040
Sunol	DRH-118	Horn Antenna (1-18 GHz)	8/27/2019	Biennial	8/27/2021	A042511
Sunol	JB5	Bi-Log Antenna (30M - 5GHz)	4/19/2018	Biennial	4/19/2020	A051107

Table 5-1. Test Equipment

Notes:

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

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6.0 SAMPLE CALCULATIONS

Emission Designator

QPSK Modulation

Emission Designator = 8M62G7D

LTE BW = 8.62 MHz

G = Phase Modulation

7 = Quantized/Digital Info

D = Data transmission, telemetry, telecommand

QAM Modulation

Emission Designator = 8M45W7D

LTE BW = 8.45 MHz

W = Amplitude/Angle Modulated

7 = Quantized/Digital Info

D = Data transmission, telemetry, telecommand

Spurious Radiated Emission – LTE Band

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

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

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7.0 TEST RESULTS

7.1 Summary

Company Name: Samsung Electronics Co., Ltd.
 FCC ID: A3LSMG988U
 FCC Classification: PCS Licensed Transmitter Held to Ear (PCE)
 Mode(s): LTE / Sub 6GHz NR

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
2.1049	Occupied Bandwidth	N/A	CONDUCTED	PASS	Section 7.2, 7.12
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, 7.12
27.53(m)	Out of Band Emissions	Undesirable emissions must meet the limits detailed in 27.53(m)			Section 7.3, 7.4, 7.12
27.53(a)	Out of Band Emissions	Undesirable emissions must meet the limits detailed in 27.53(a)			Section 7.3, 7.4, 7.12
24.232(d) 27.50(d)	Peak-Average Ratio	$< 13 \text{ dB}$			Section 7.5, 7.12
2.1046	Transmitter Conducted Output Power	N/A			See RF Exposure Report
2.1046	Additional Maximum Power Reduction (AMPR)	N/A			Section 7.6
22.917(a) 27.53(h) 27.53(m)	Uplink Carrier Aggregation	$> 43 + 10 \log(P[\text{Watts}])$ at Band Edge and for all out-of-band emissions			Section 7.7
2.1055 22.355 24.235 27.54	Frequency Stability	$< 2.5 \text{ ppm}$ (Part 22) and fundamental emissions stay within authorized frequency block (Part 24, 27)			Section 7.11 7.12

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 7.6, 7.12
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, 7.12
24.232(c) 27.50(h)(2)	Equivalent Isotropic Radiated Power (Band 2/25, 7, 41/38)	< 2 Watts max. EIRP			Section 7.6, 7.12
27.50(d)(4)	Equivalent Isotropic Radiated Power (Band 4/66)	< 1 Watts max. EIRP			Section 7.6, 7.12
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 7.9, 7.12
96.41(e)	Undesirable Emissions	-40 dBm/MHz			Section 7.12
27.53(f)	Undesirable Emissions (Band 13)	< -70 dBW/MHz (for wideband signals) < -80 dBW (for discrete emissions less than 700Hz BW) For all emissions in the band 1559 – 1610 MHz			Section 7.9
27.53(a)	Undesirable Emissions (Band 30)	> 70 + 10 log ₁₀ (P[Watts])			Section 7.9
27.53(m)	Undesirable Emissions (Band 7, 41/38)	Undesirable emissions must meet the limits detailed in 27.53(m)			Section 7.9 7.12
27.53(m) 27.53(c) 27.53(g)	Uplink Carrier Aggregation	Undesirable emissions must meet the limits detailed in 27.53(m)			Section 7.10

Table 7-2. Summary of Radiated Test Results

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Notes:

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

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7.2 Occupied Bandwidth

Test Overview

The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured. All modes of operation were investigated and the worst case configuration results are reported in this section.

Test Procedure Used

KDB 971168 D01 v03r01 – Section 4.2

Test Settings

1. The signal analyzer's automatic bandwidth measurement capability was used to perform the 99% occupied bandwidth and the 26dB bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
2. RBW = 1 – 5% of the expected OBW
3. VBW $\geq 3 \times$ RBW
4. Detector = Peak
5. Trace mode = max hold
6. Sweep = auto couple
7. The trace was allowed to stabilize
8. If necessary, steps 2 – 7 were repeated after changing the RBW such that it would be within 1 – 5% of the 99% occupied bandwidth observed in Step 7

Test Setup

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

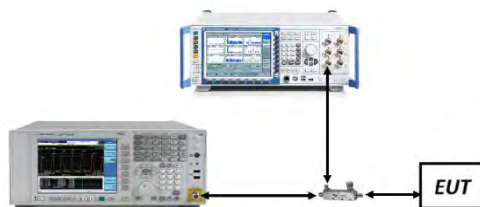


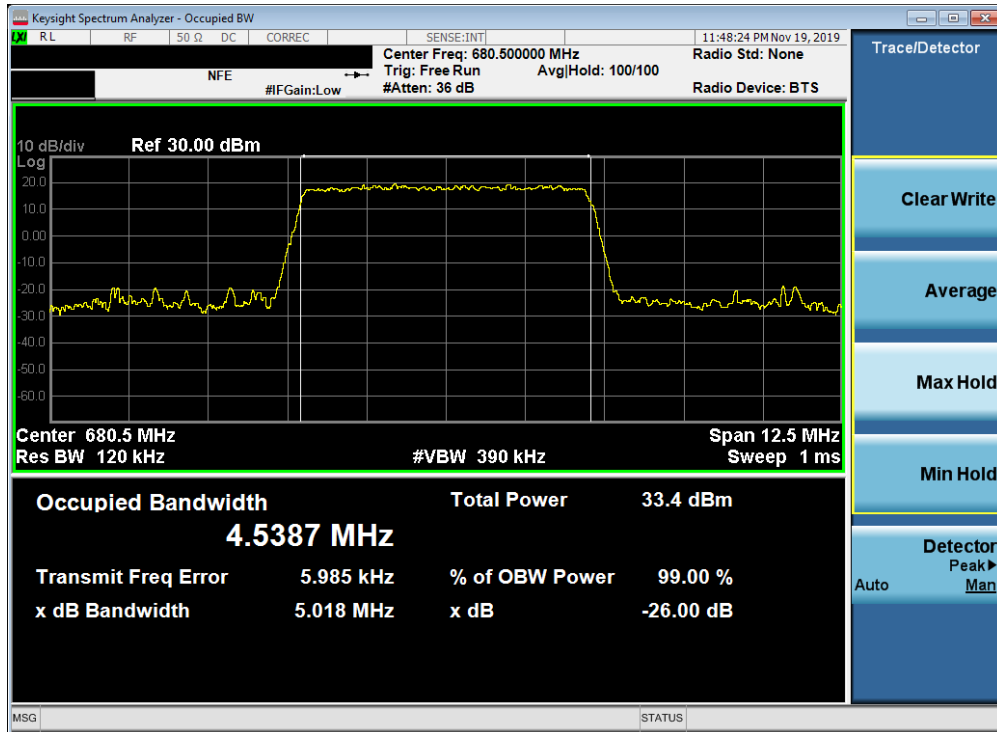
Figure 7-1. Test Instrument & Measurement Setup

Test Notes

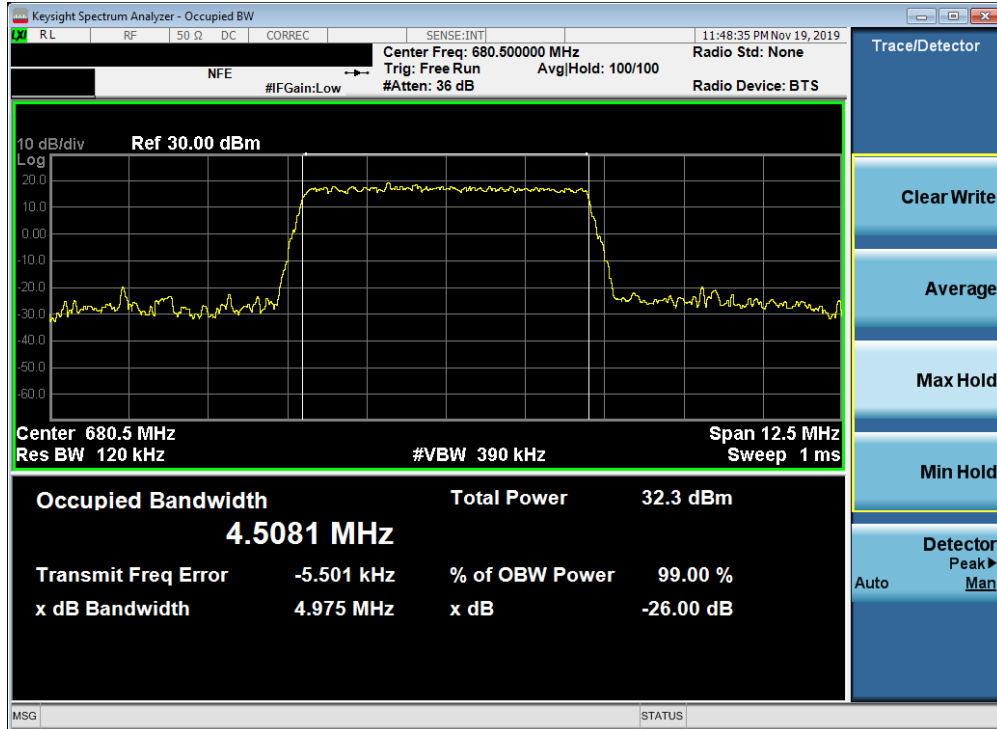
None.

FCC ID: A3LSMG988U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band 71

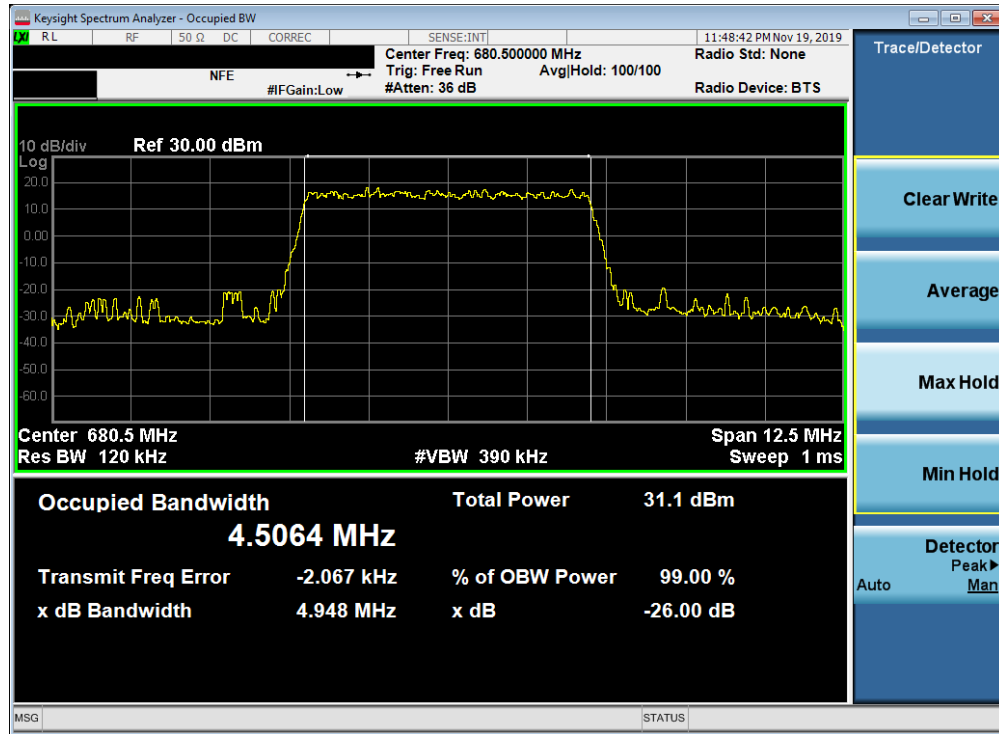


Plot 7-1. Occupied Bandwidth Plot (Band 71 - 5.0MHz QPSK - Full RB Configuration)

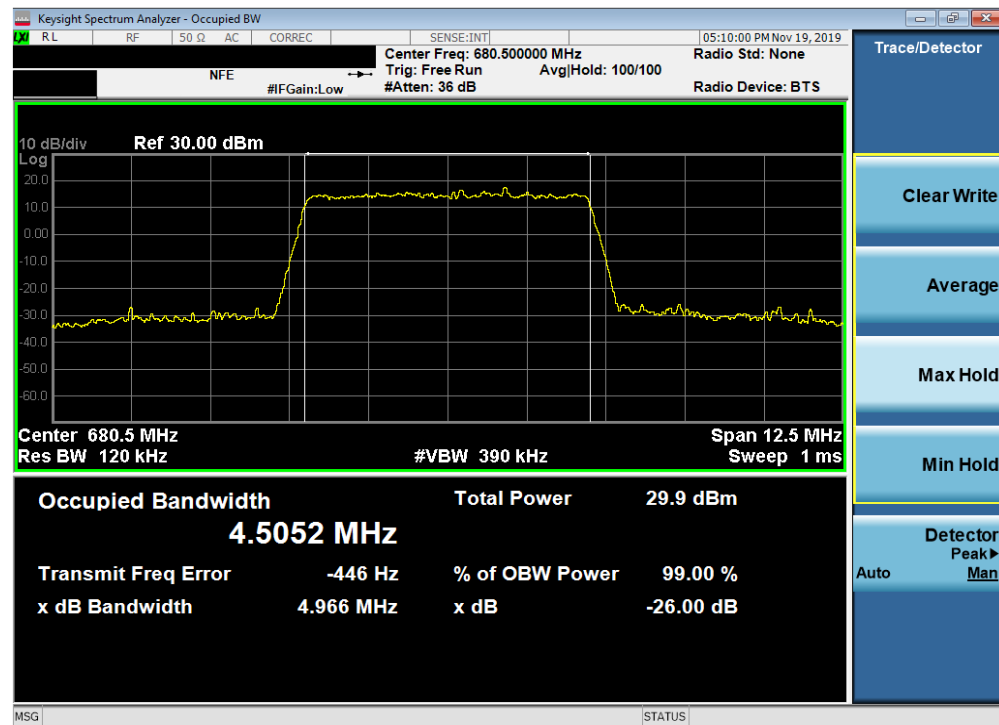


Plot 7-2. Occupied Bandwidth Plot (Band 71 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG988U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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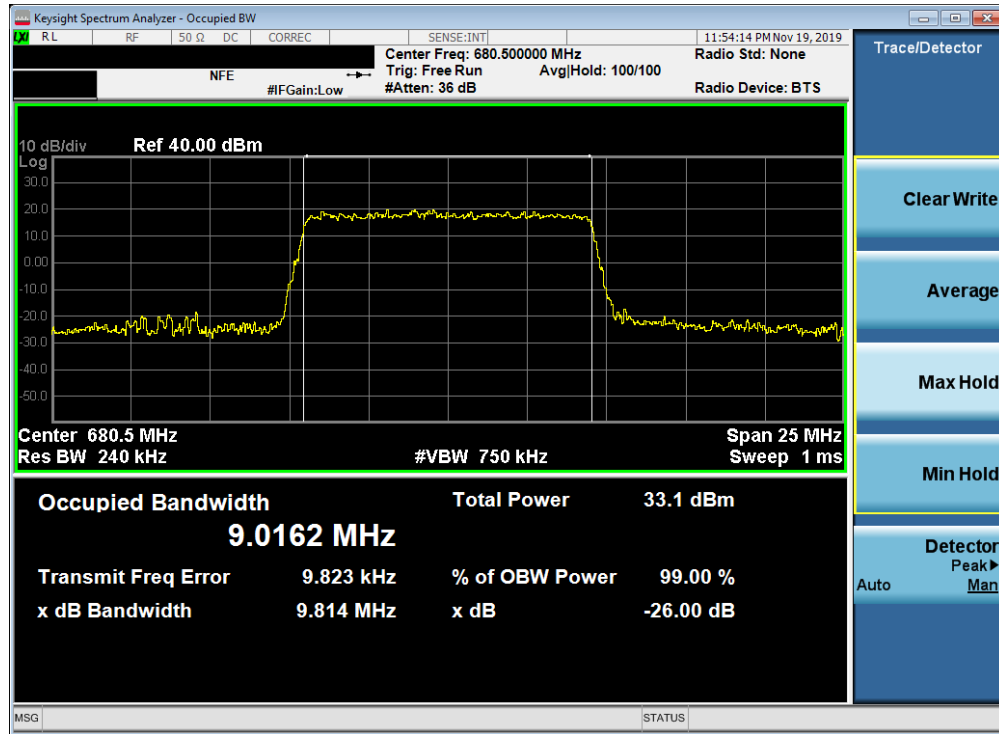


Plot 7-3. Occupied Bandwidth Plot (Band 71 - 5.0MHz 64-QAM - Full RB Configuration)

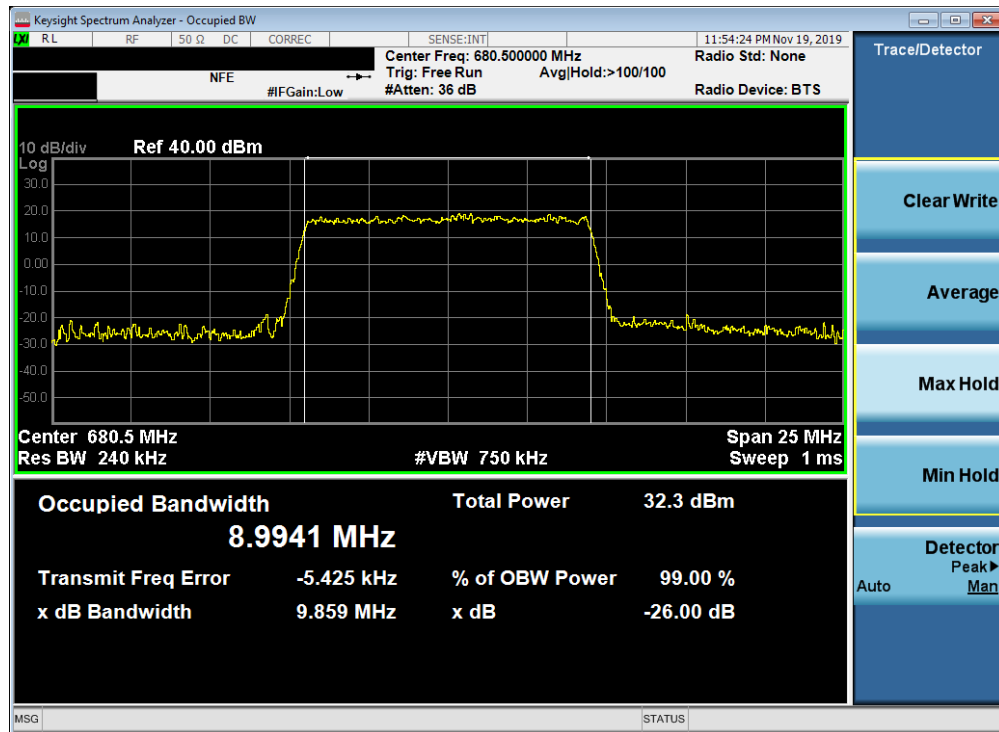


Plot 7-4. Occupied Bandwidth Plot (Band 71 - 5.0MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMG988U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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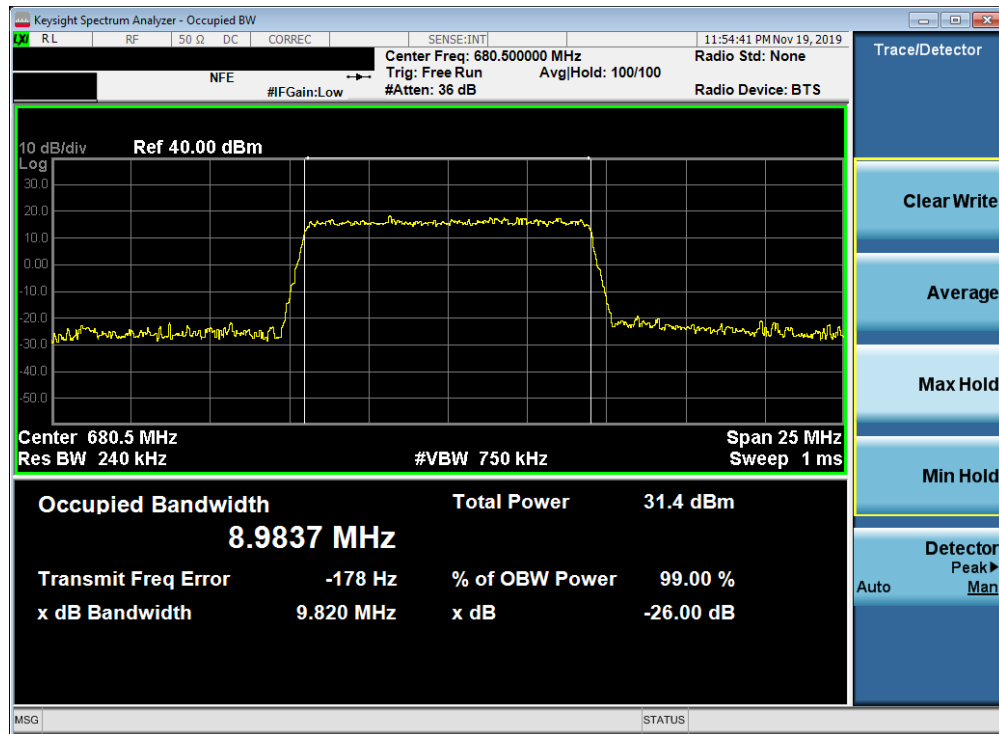


Plot 7-5. Occupied Bandwidth Plot (Band 71 - 10.0MHz QPSK - Full RB Configuration)

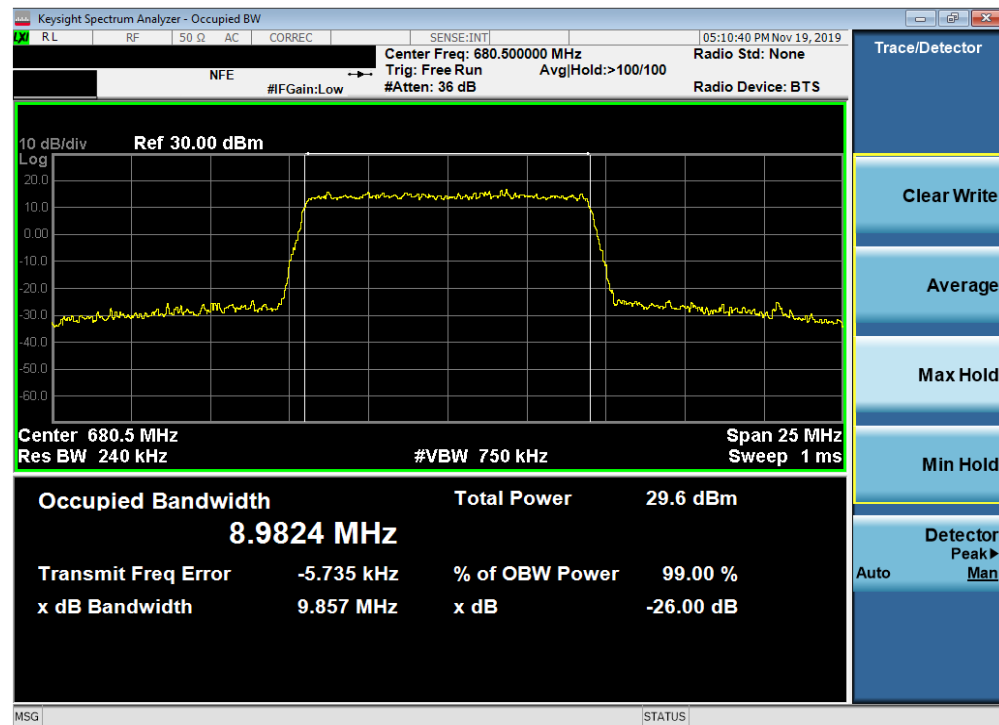


Plot 7-6. Occupied Bandwidth Plot (Band 71 - 10.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG988U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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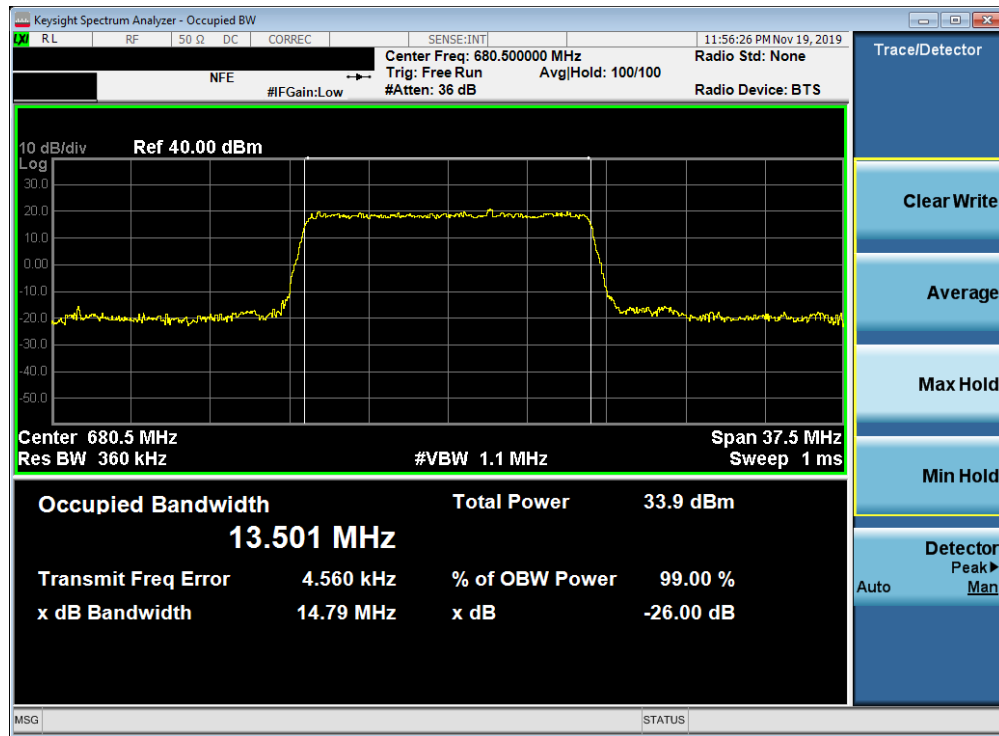


Plot 7-7. Occupied Bandwidth Plot (Band 71 - 10.0MHz 64-QAM - Full RB Configuration)

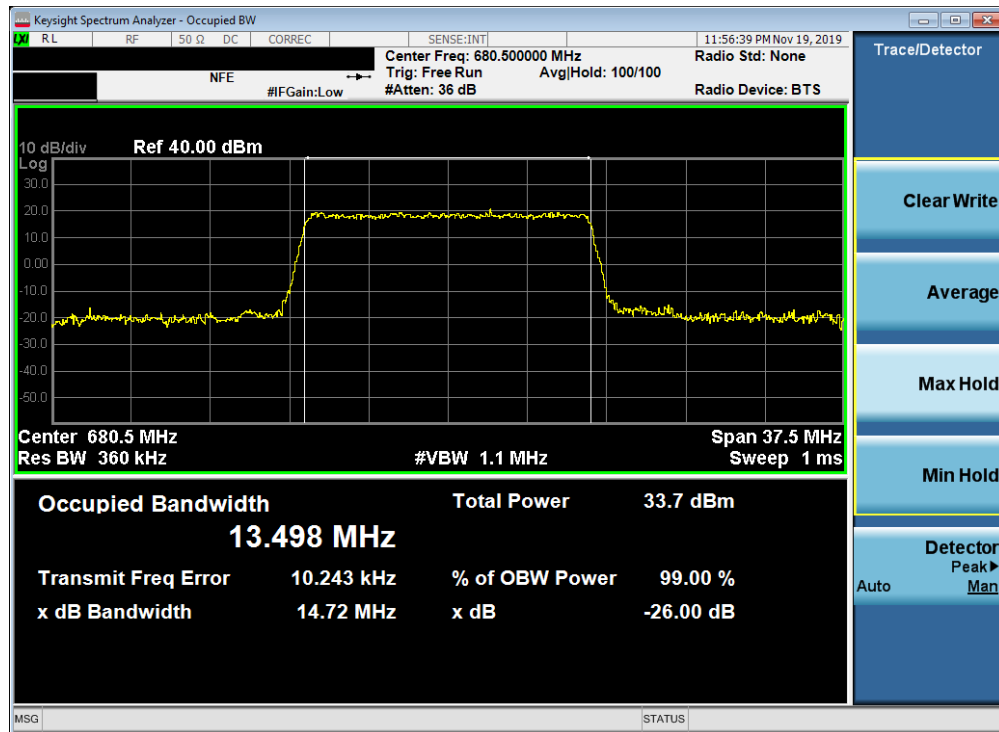


Plot 7-8. Occupied Bandwidth Plot (Band 71 - 10.0MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMG988U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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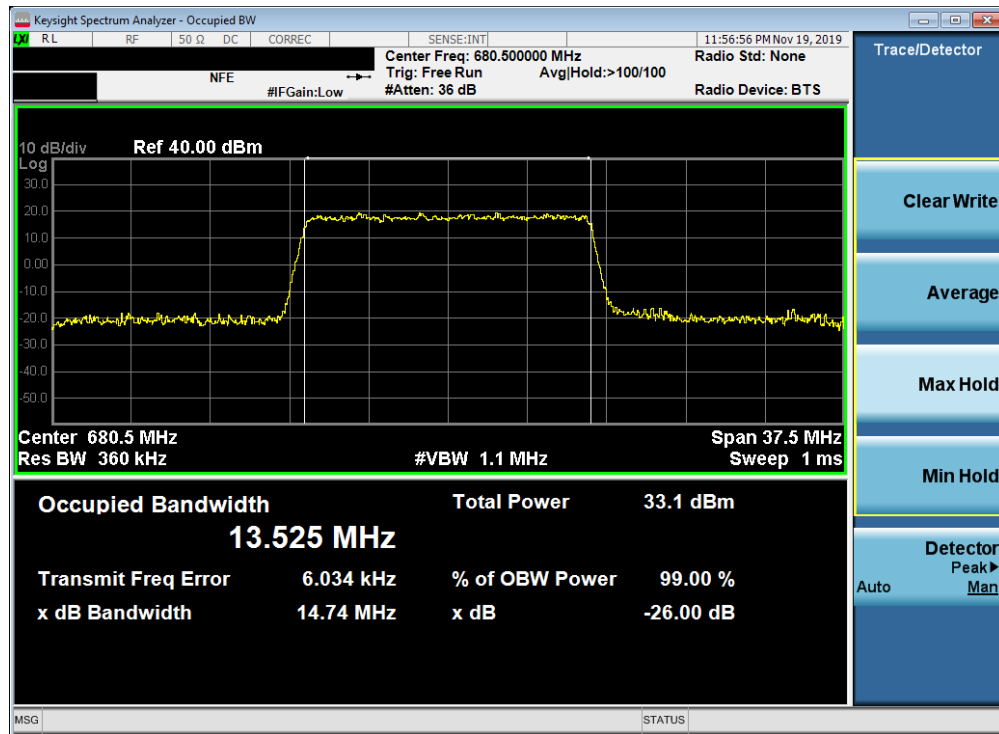


Plot 7-9. Occupied Bandwidth Plot (Band 71 - 15.0MHz QPSK - Full RB Configuration)

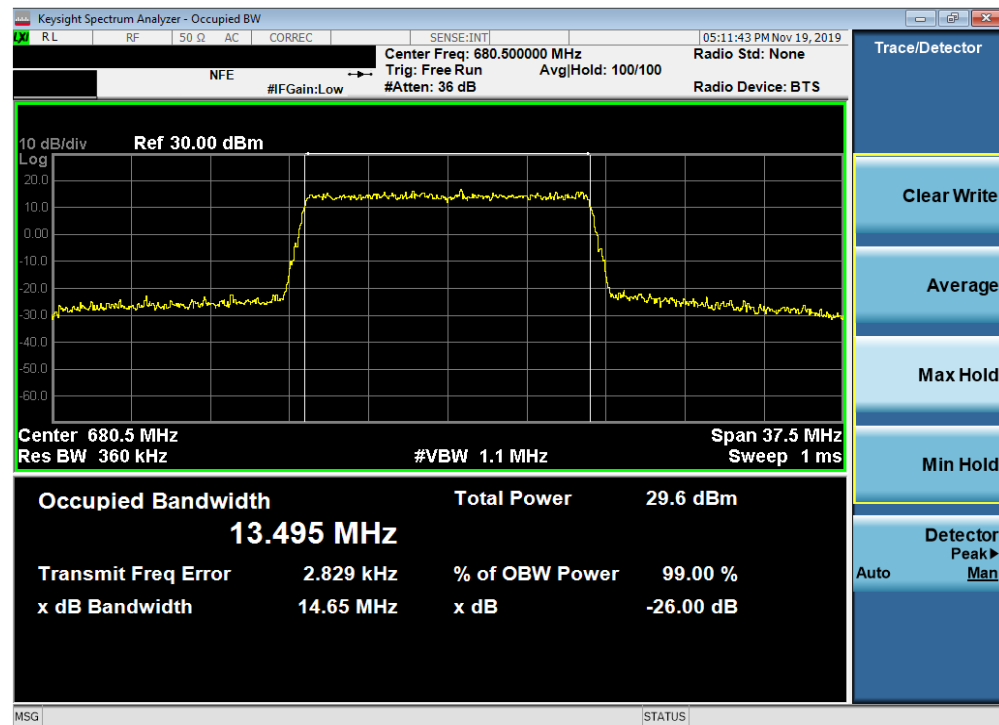


Plot 7-10. Occupied Bandwidth Plot (Band 71 - 15.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG988U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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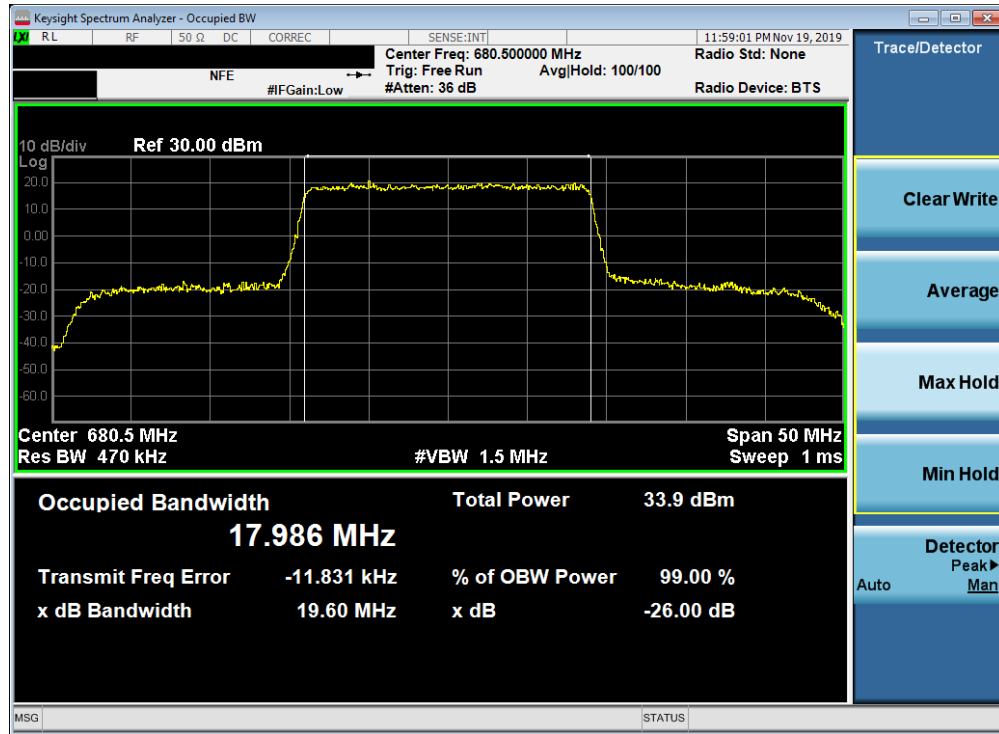


Plot 7-11. Occupied Bandwidth Plot (Band 71 - 15.0MHz 64-QAM - Full RB Configuration)

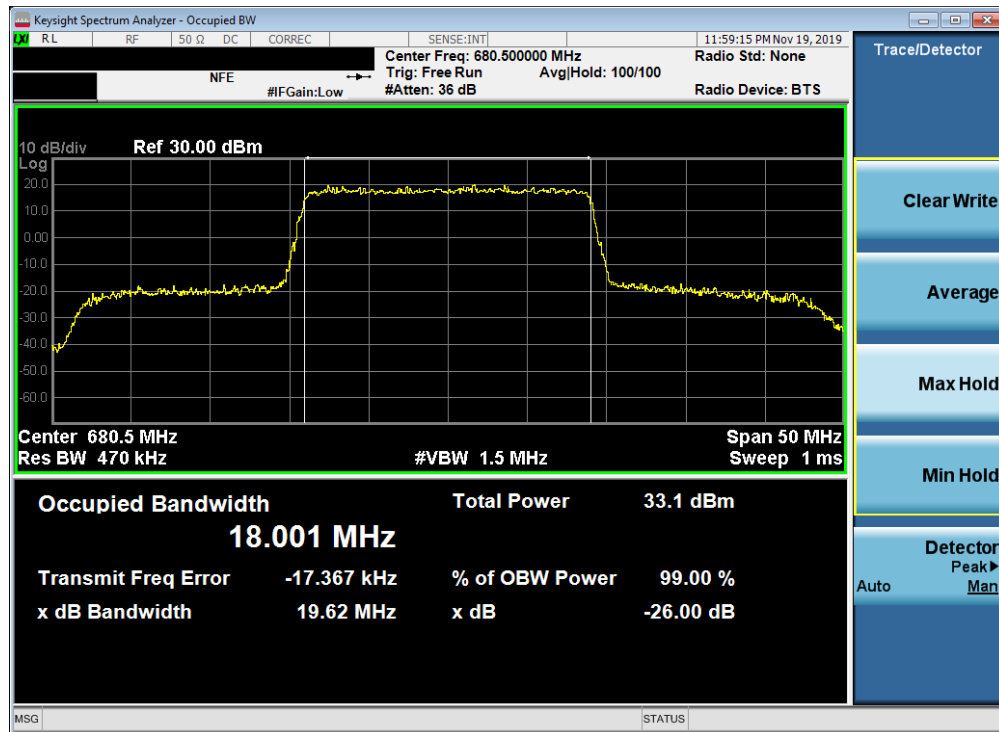


Plot 7-12. Occupied Bandwidth Plot (Band 71 - 15.0MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMG988U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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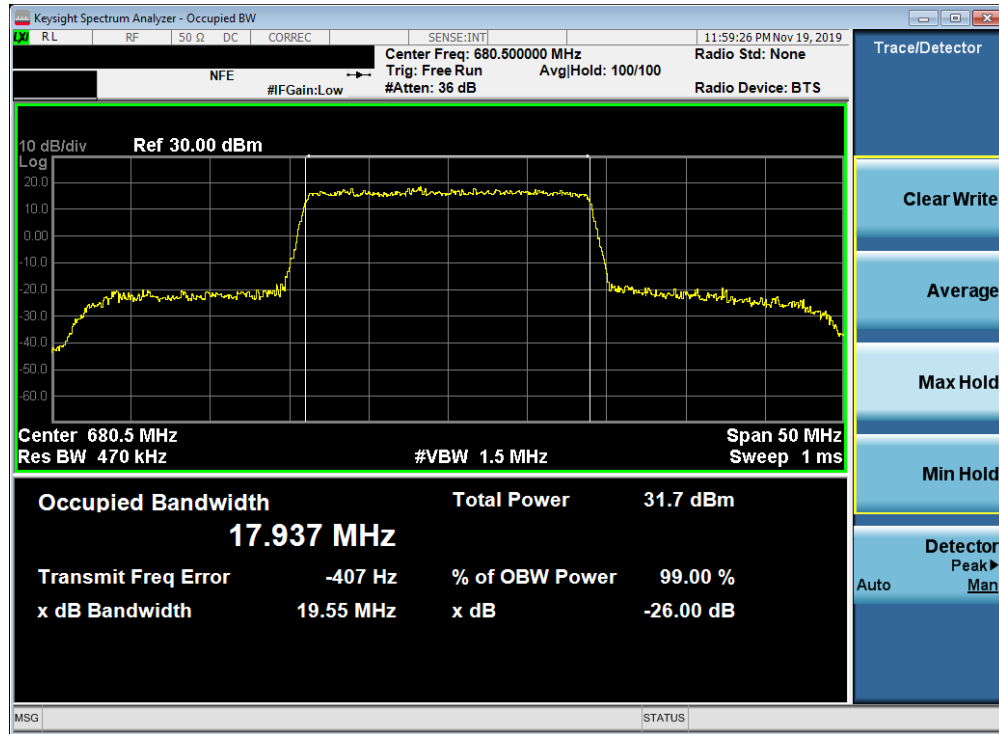


Plot 7-13. Occupied Bandwidth Plot (Band 71 - 20.0MHz QPSK - Full RB Configuration)

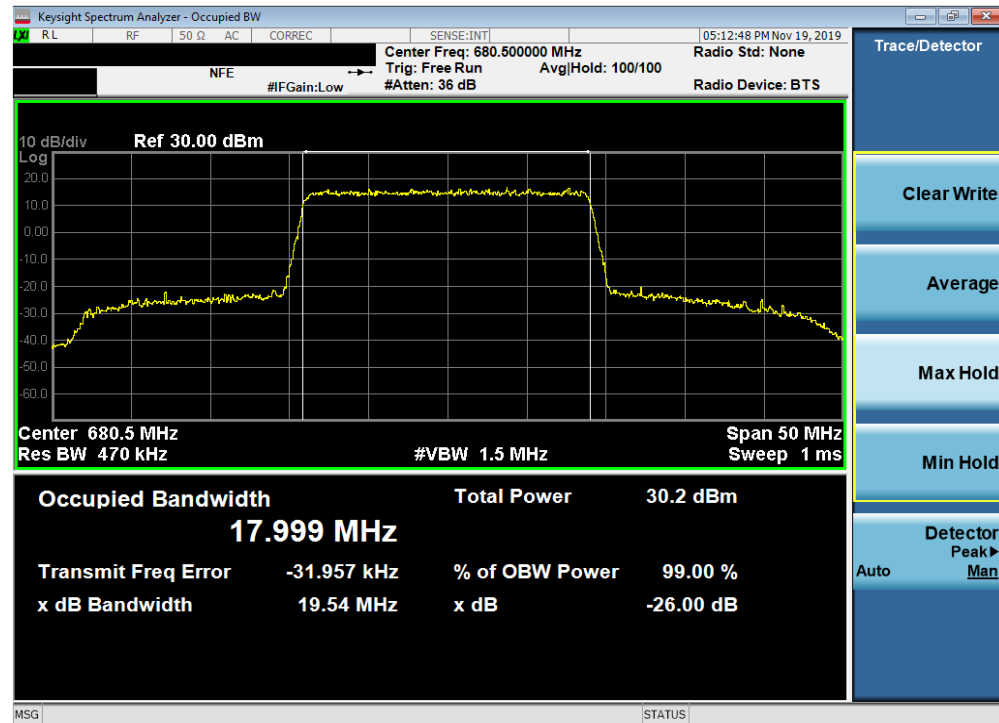


Plot 7-14. Occupied Bandwidth Plot (Band 71 - 20.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG988U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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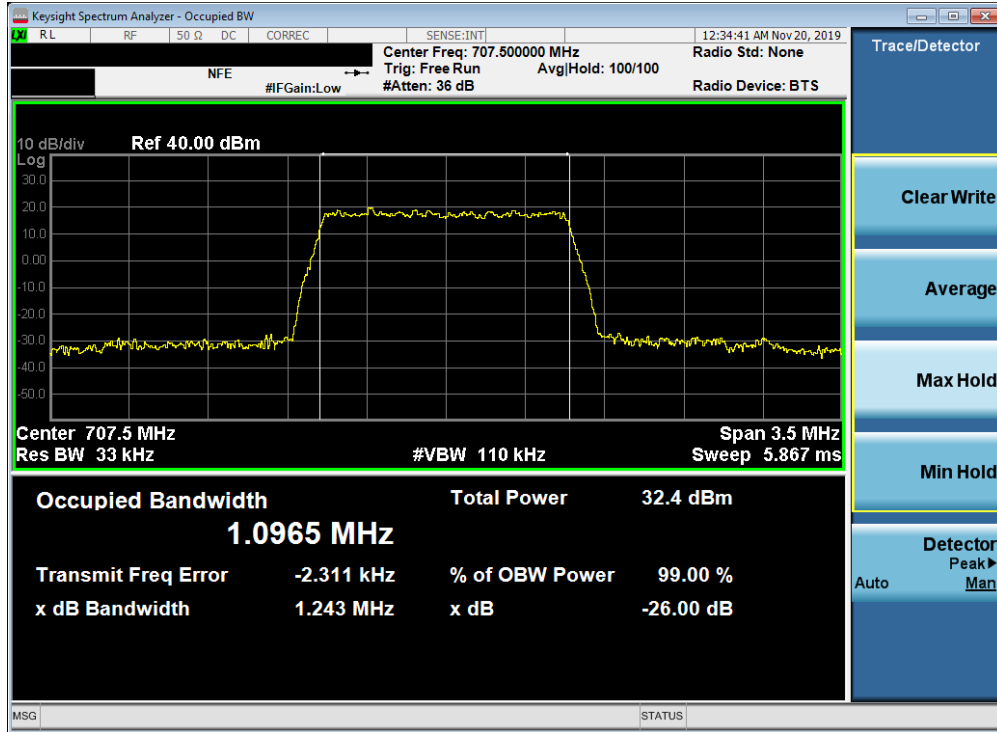
Plot 7-15. Occupied Bandwidth Plot (Band 71 - 20.0MHz 64-QAM - Full RB Configuration)



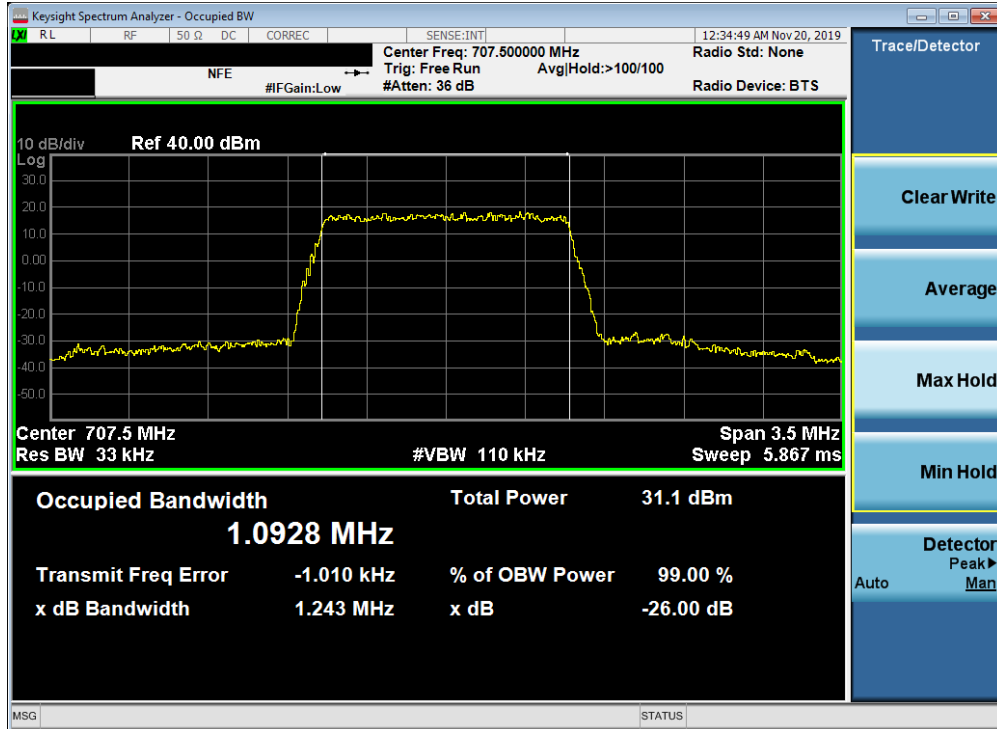
Plot 7-16. Occupied Bandwidth Plot (Band 71 - 20.0MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMG988U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1911140187-03-R1.A3L	Test Dates: 11/14/2019 - 1/31/2020	EUT Type: Portable Handset		Page 27 of 486

Band 12

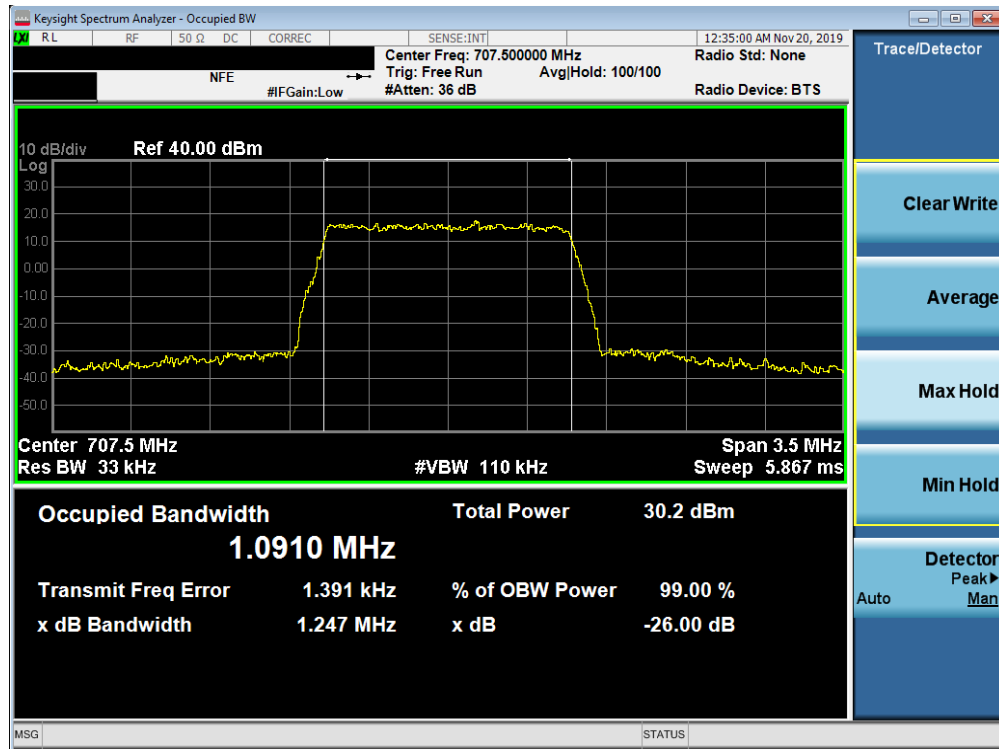


Plot 7-17. Occupied Bandwidth Plot (Band 12 - 1.4MHz QPSK - Full RB Configuration)



Plot 7-18. Occupied Bandwidth Plot (Band 12 - 1.4MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG988U	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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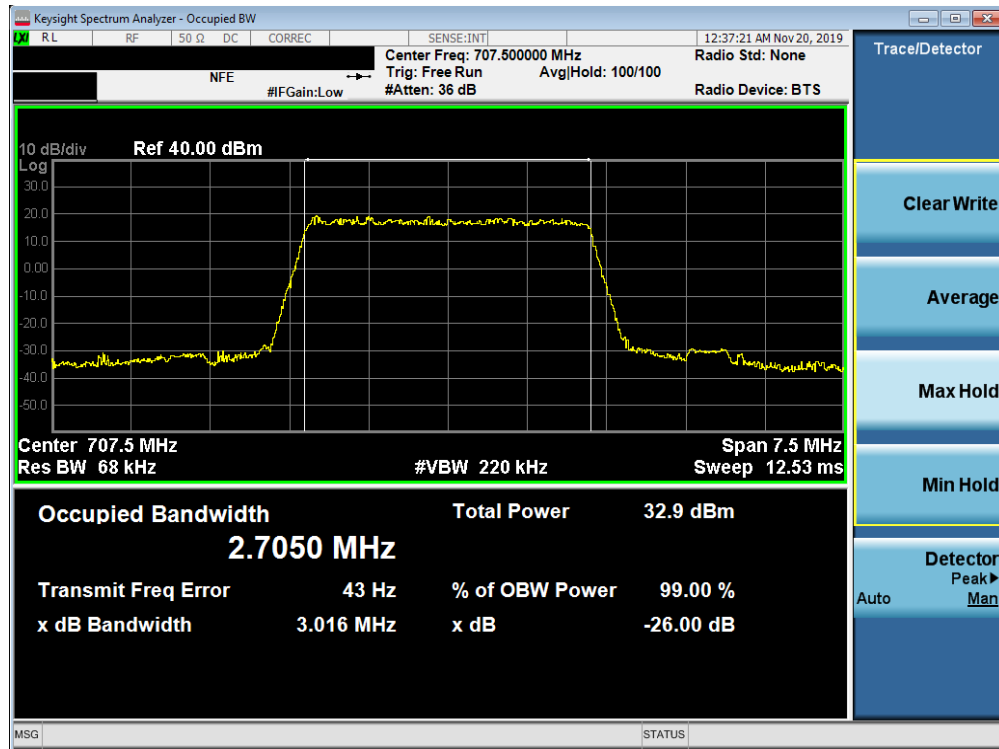


Plot 7-19. Occupied Bandwidth Plot (Band 12 - 1.4MHz 64-QAM - Full RB Configuration)

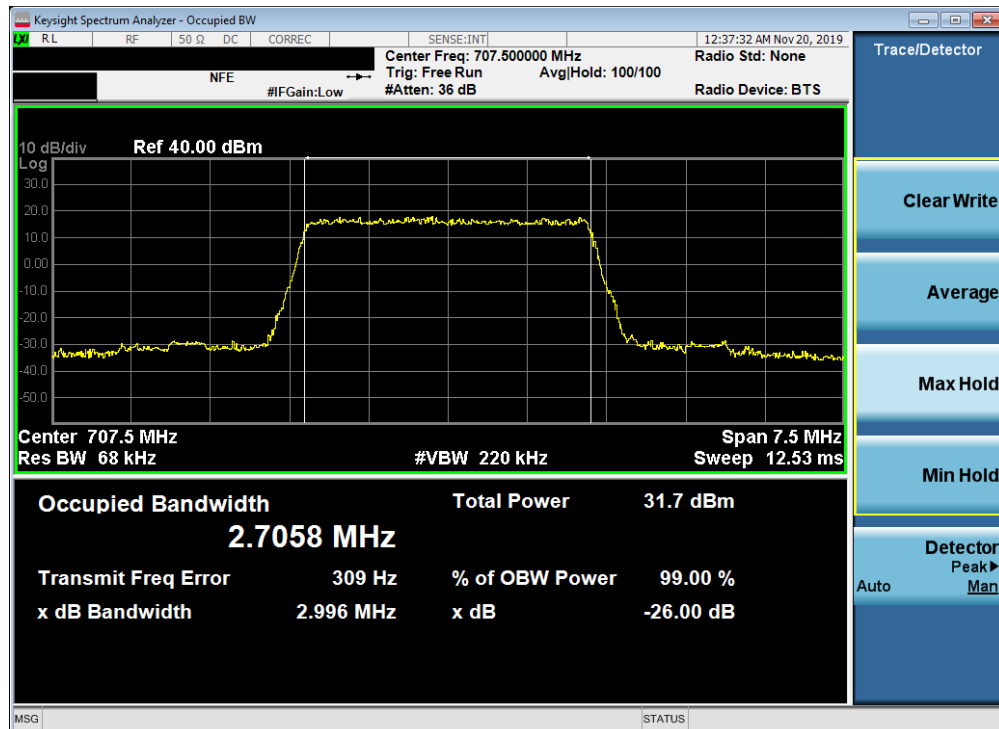


Plot 7-20. Occupied Bandwidth Plot (Band 12 - 1.4MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMG988U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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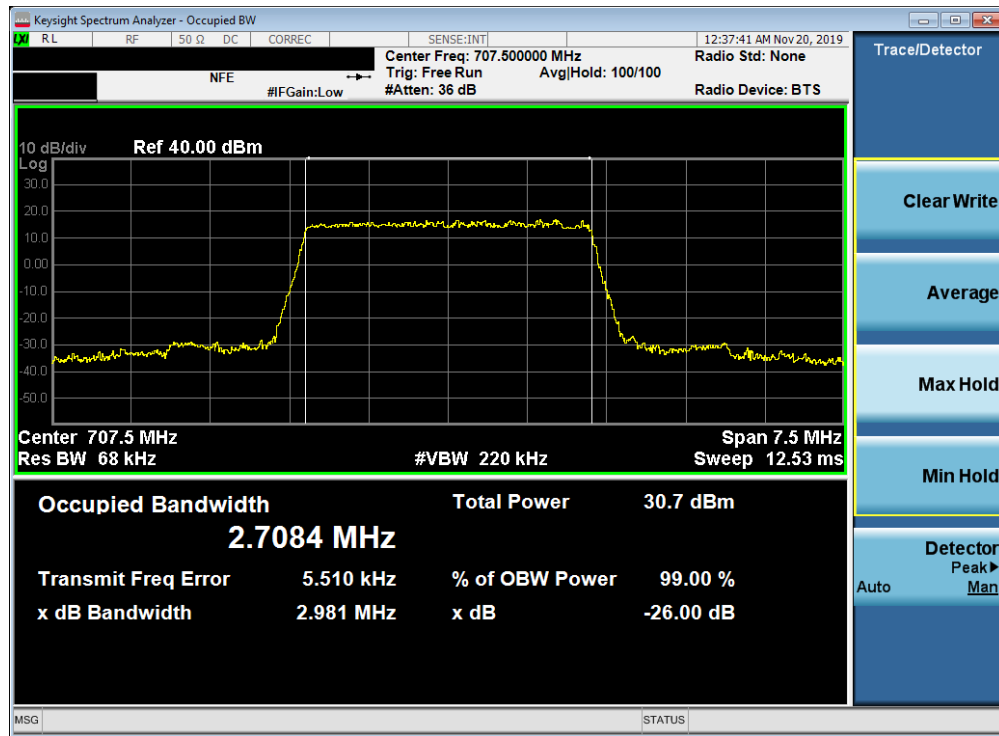


Plot 7-21. Occupied Bandwidth Plot (Band 12 - 3.0MHz QPSK - Full RB Configuration)

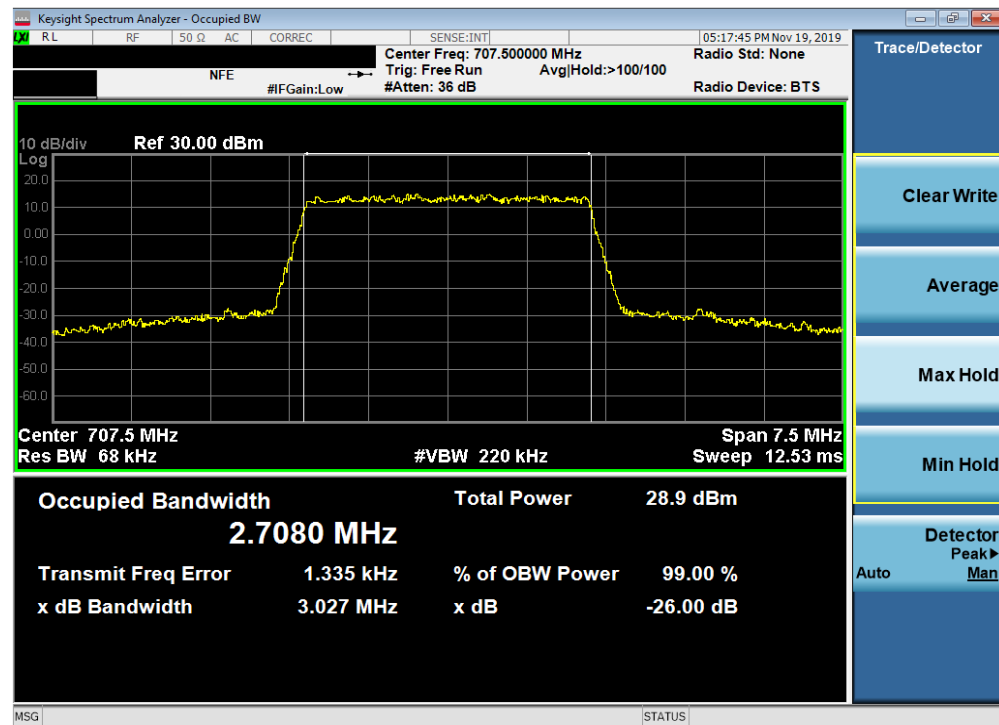


Plot 7-22. Occupied Bandwidth Plot (Band 12 - 3.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG988U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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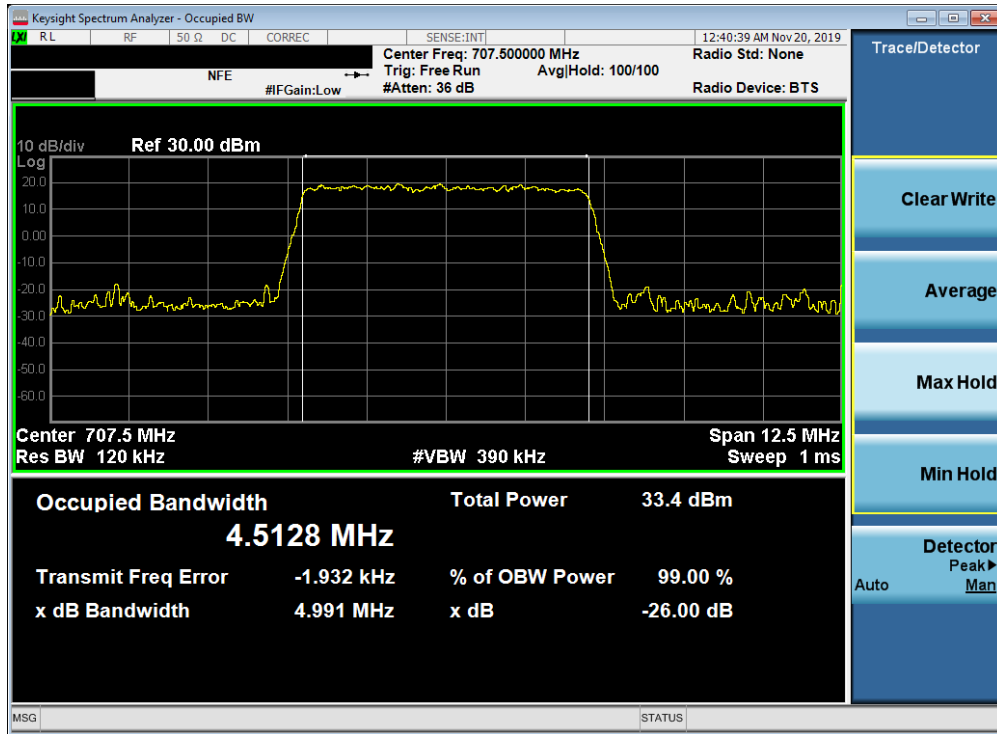


Plot 7-23. Occupied Bandwidth Plot (Band 12 - 3.0MHz 64-QAM - Full RB Configuration)

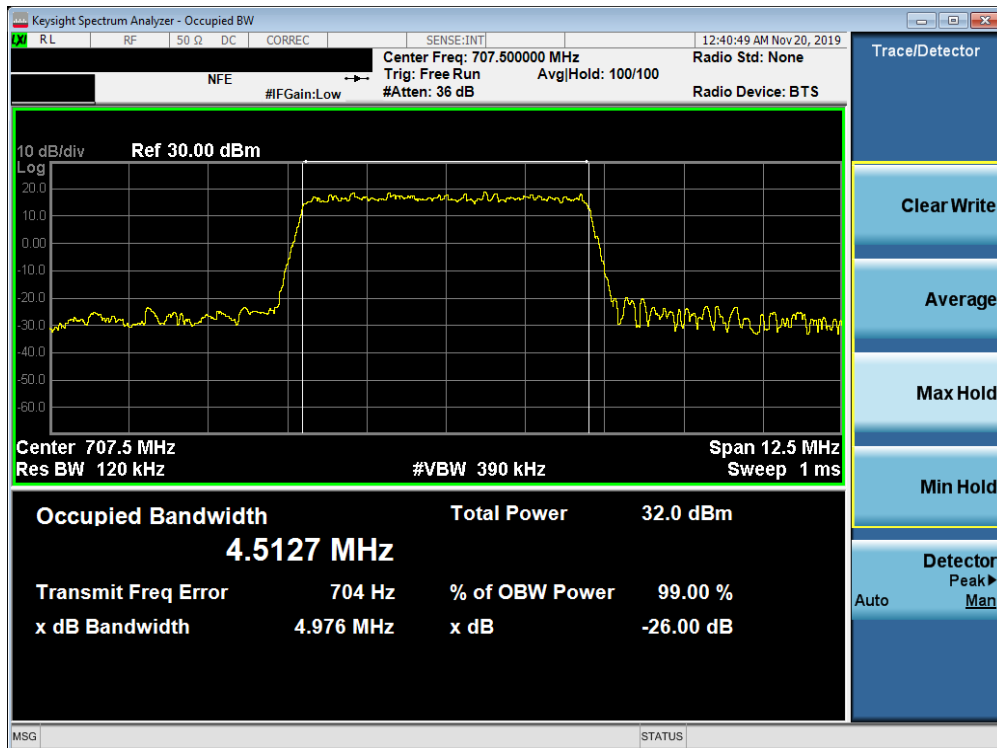


Plot 7-24. Occupied Bandwidth Plot (Band 12 - 3.0MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMG988U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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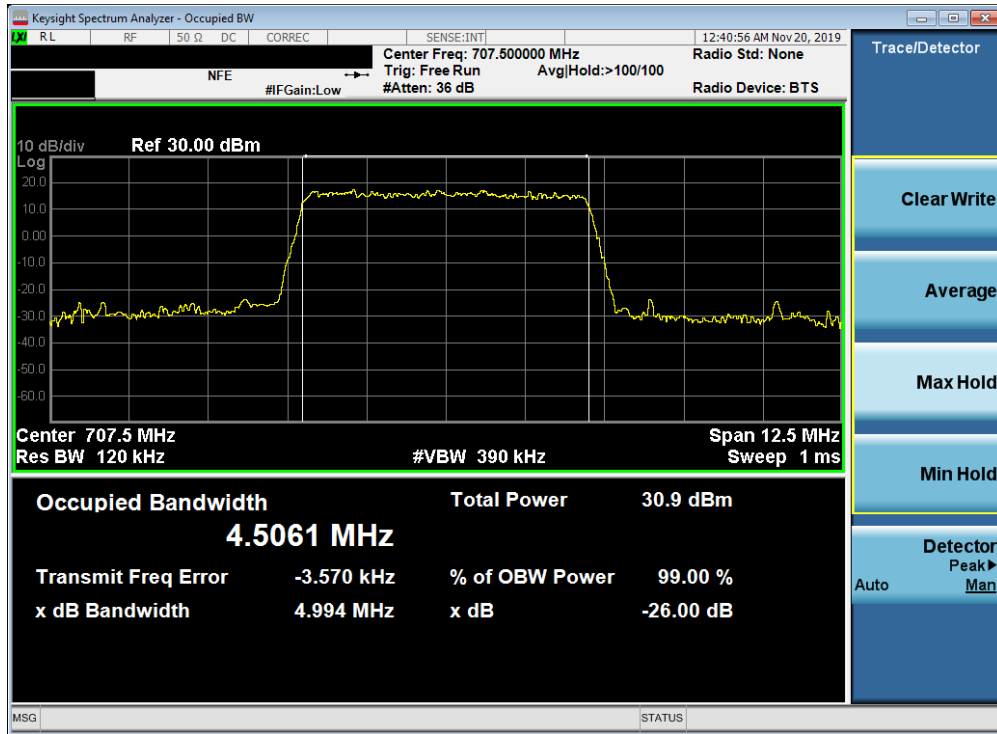


Plot 7-25. Occupied Bandwidth Plot (Band 12 - 5.0MHz QPSK - Full RB Configuration)

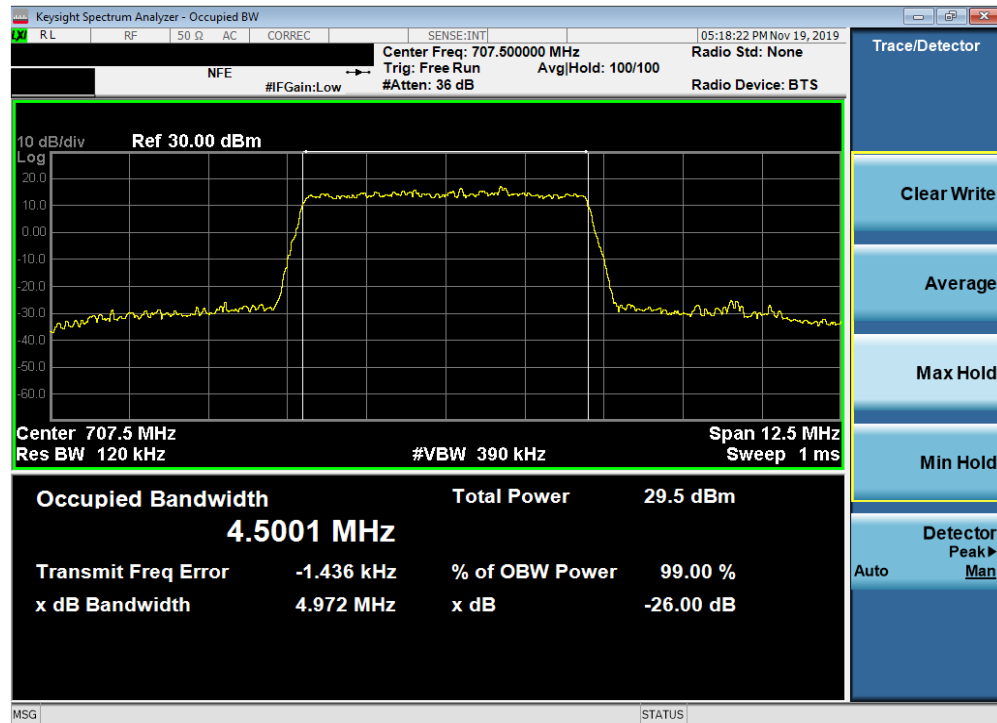


Plot 7-26. Occupied Bandwidth Plot (Band 12 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG988U	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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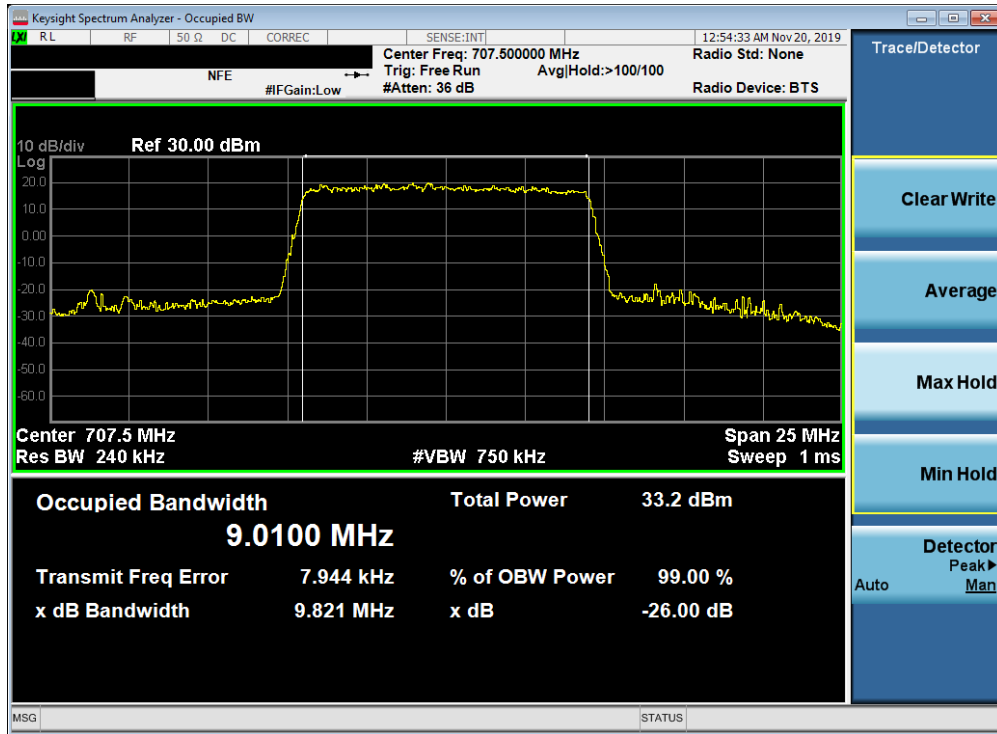


Plot 7-27. Occupied Bandwidth Plot (Band 12 - 5.0MHz 64-QAM - Full RB Configuration)

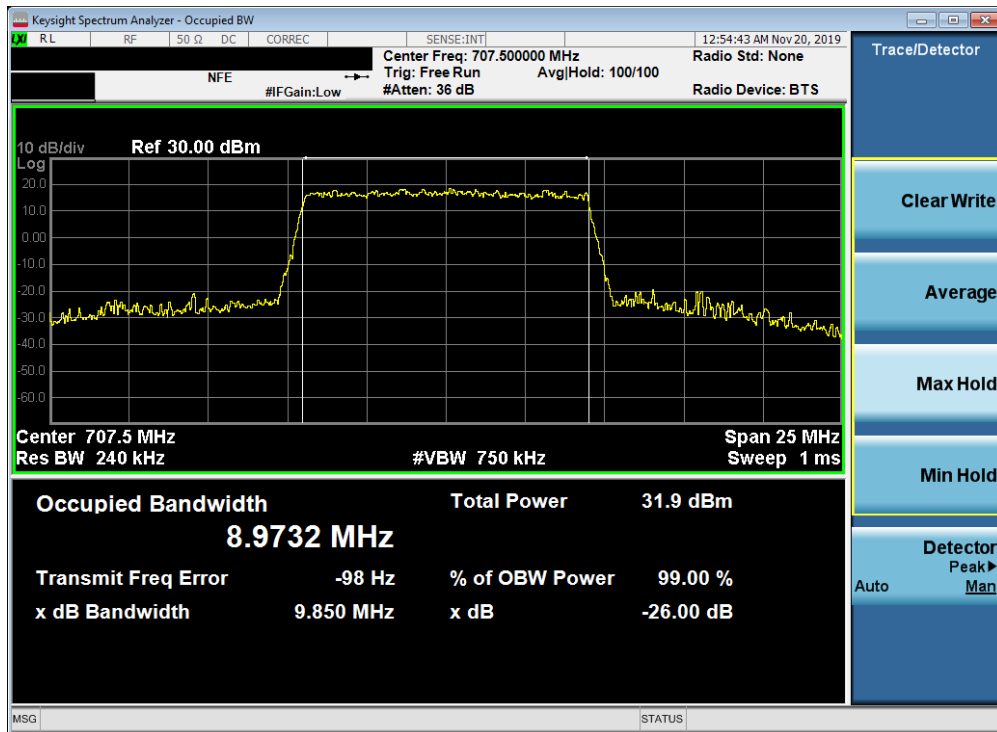


Plot 7-28. Occupied Bandwidth Plot (Band 12 - 5.0MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMG988U	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1911140187-03-R1.A3L	Test Dates: 11/14/2019 - 1/31/2020	EUT Type: Portable Handset		Page 33 of 486

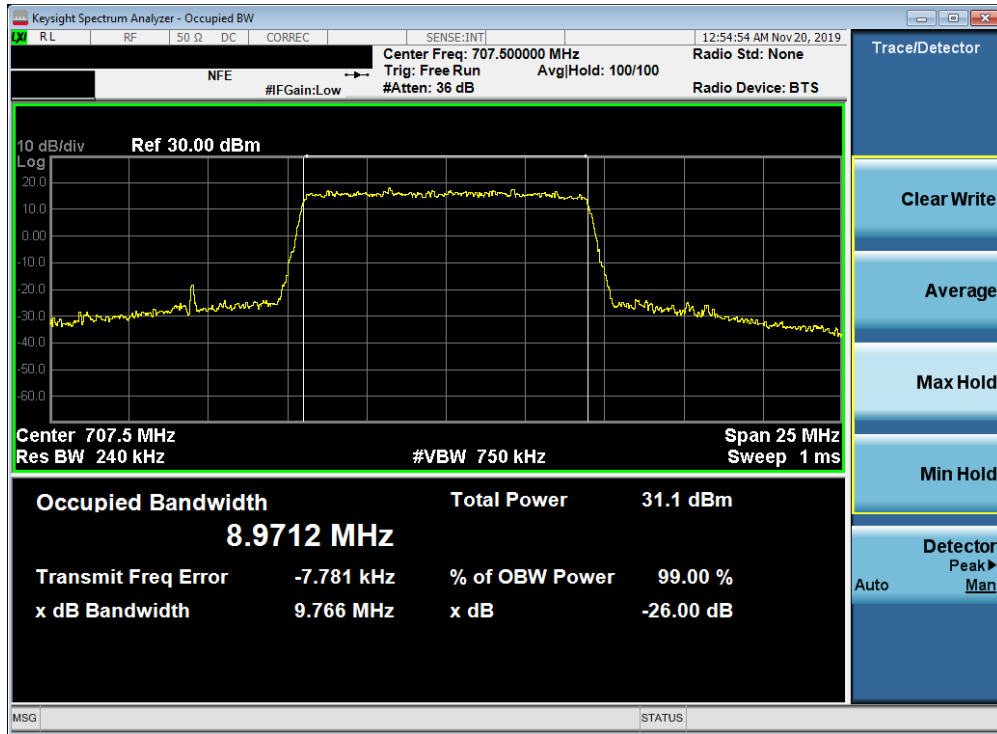


Plot 7-29. Occupied Bandwidth Plot (Band 12 - 10.0MHz QPSK - Full RB Configuration)

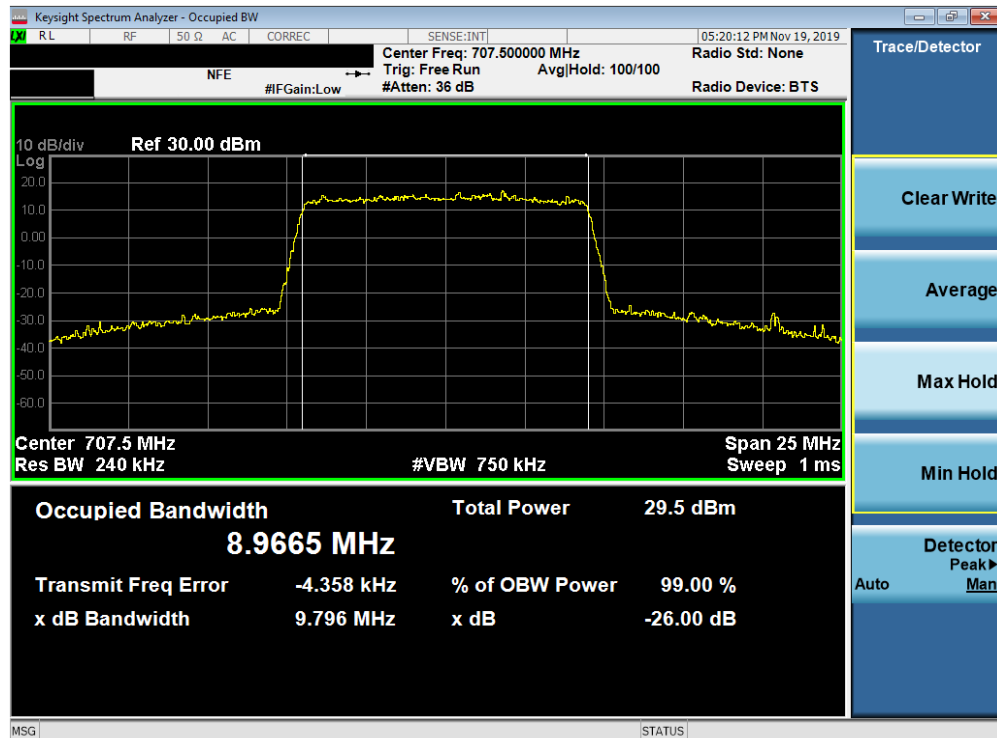


Plot 7-30. Occupied Bandwidth Plot (Band 12 - 10.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG988U	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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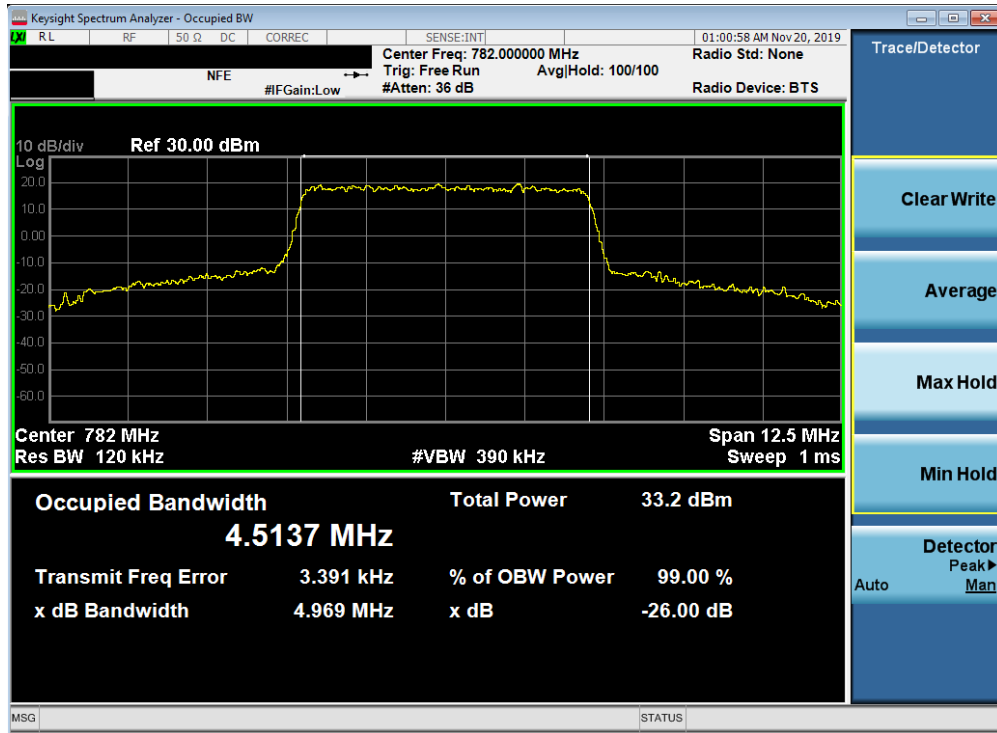
Plot 7-31. Occupied Bandwidth Plot (Band 12 - 10.0MHz 64-QAM - Full RB Configuration)



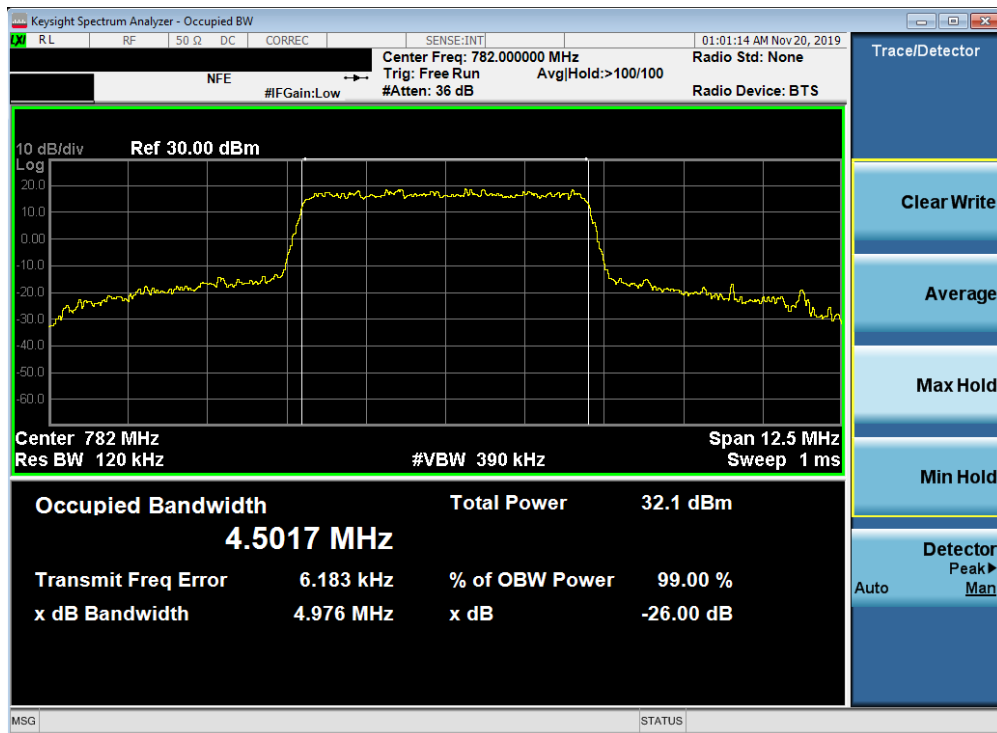
Plot 7-32. Occupied Bandwidth Plot (Band 12 - 10.0MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMG988U	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1911140187-03-R1.A3L	Test Dates: 11/14/2019 - 1/31/2020	EUT Type: Portable Handset		Page 35 of 486

Band 13

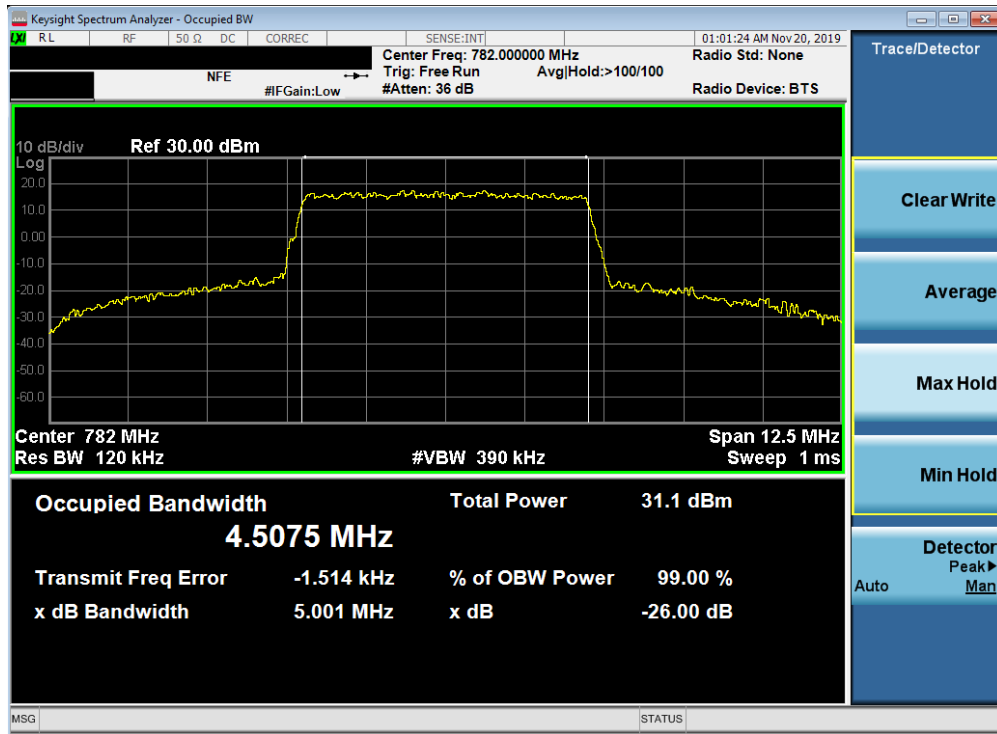


Plot 7-33. Occupied Bandwidth Plot (Band 13 - 5.0MHz QPSK - Full RB Configuration)

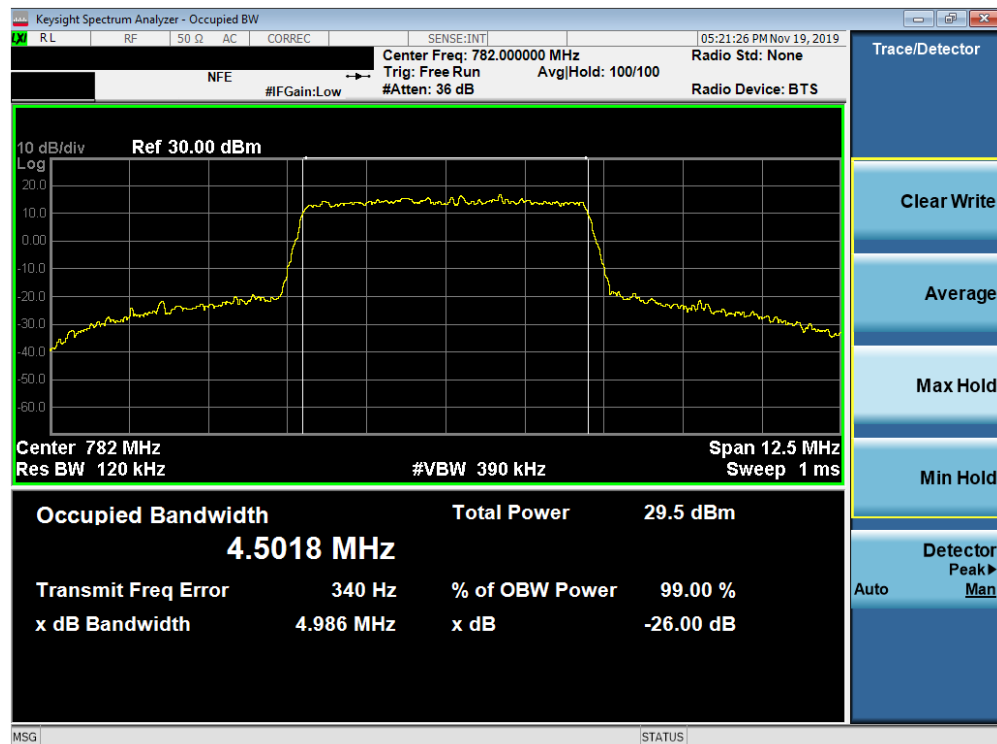


Plot 7-34. Occupied Bandwidth Plot (Band 13 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG988U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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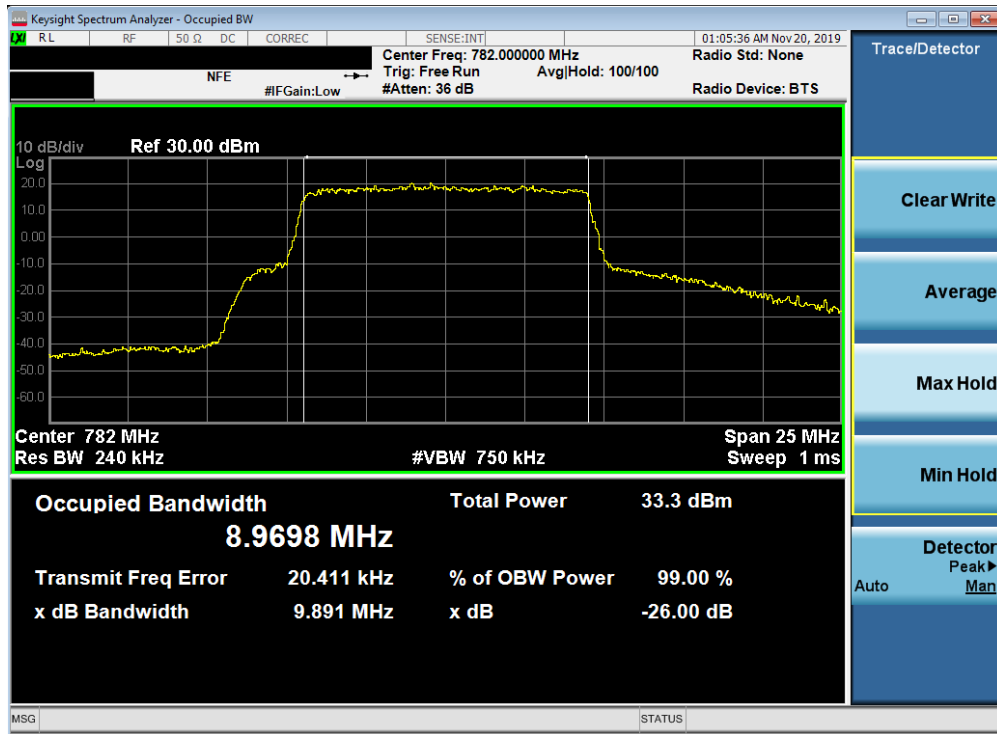


Plot 7-35. Occupied Bandwidth Plot (Band 13 - 5.0MHz 64-QAM - Full RB Configuration)

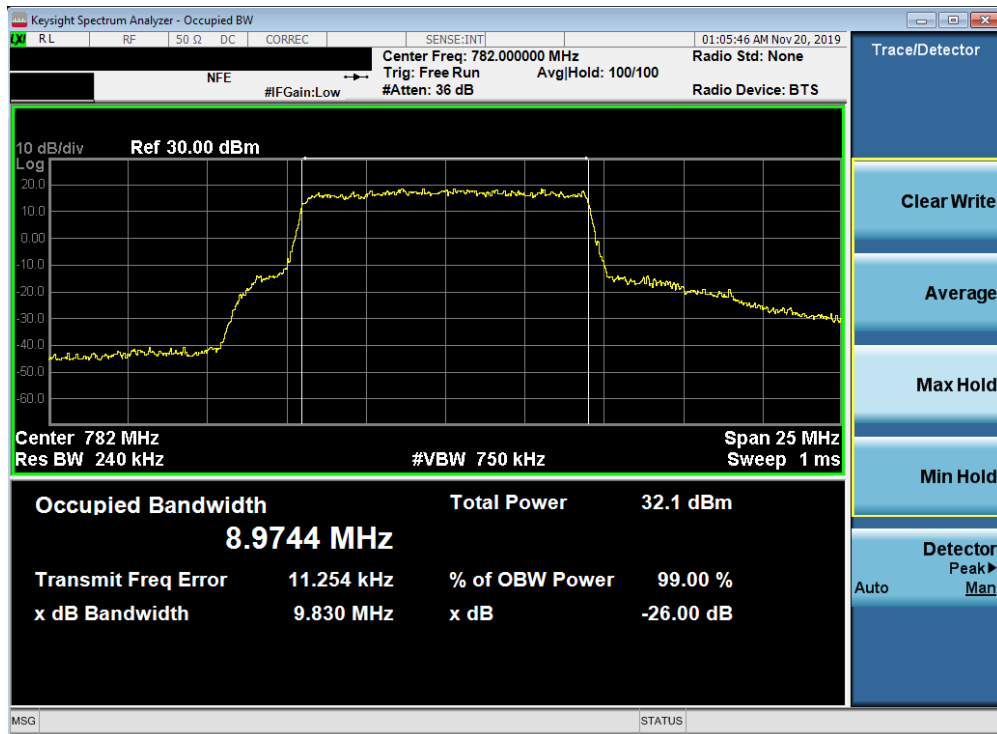


Plot 7-36. Occupied Bandwidth Plot (Band 13 - 5.0MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMG988U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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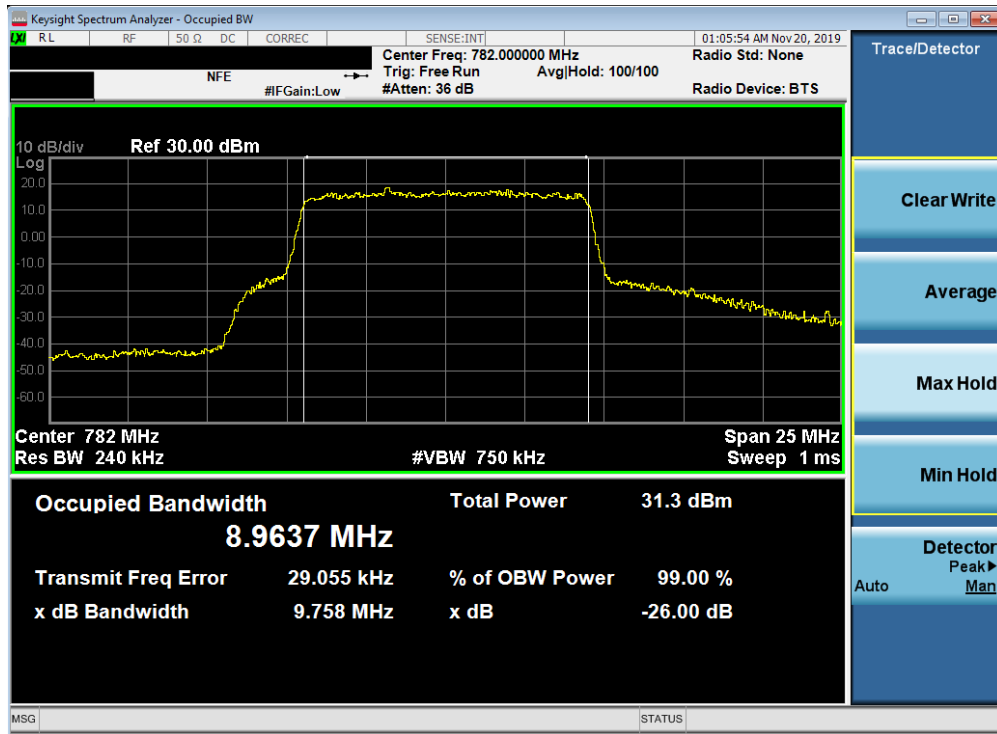


Plot 7-37. Occupied Bandwidth Plot (Band 13 - 10.0MHz QPSK - Full RB Configuration)

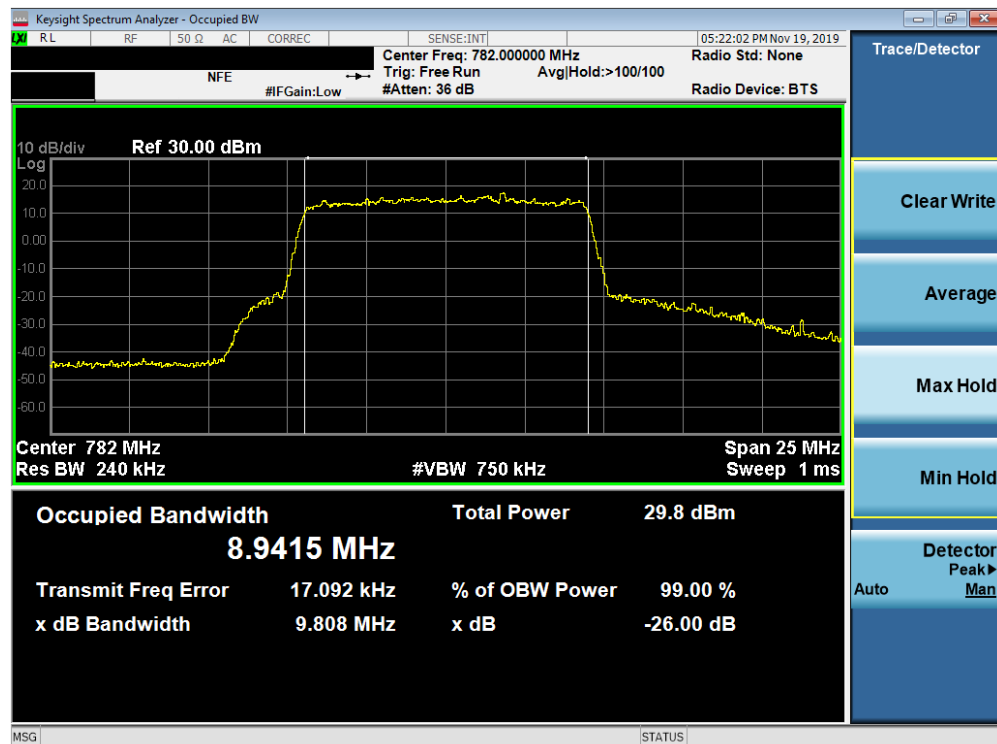


Plot 7-38. Occupied Bandwidth Plot (Band 13 - 10.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG988U	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1911140187-03-R1.A3L	Test Dates: 11/14/2019 - 1/31/2020	EUT Type: Portable Handset		Page 38 of 486



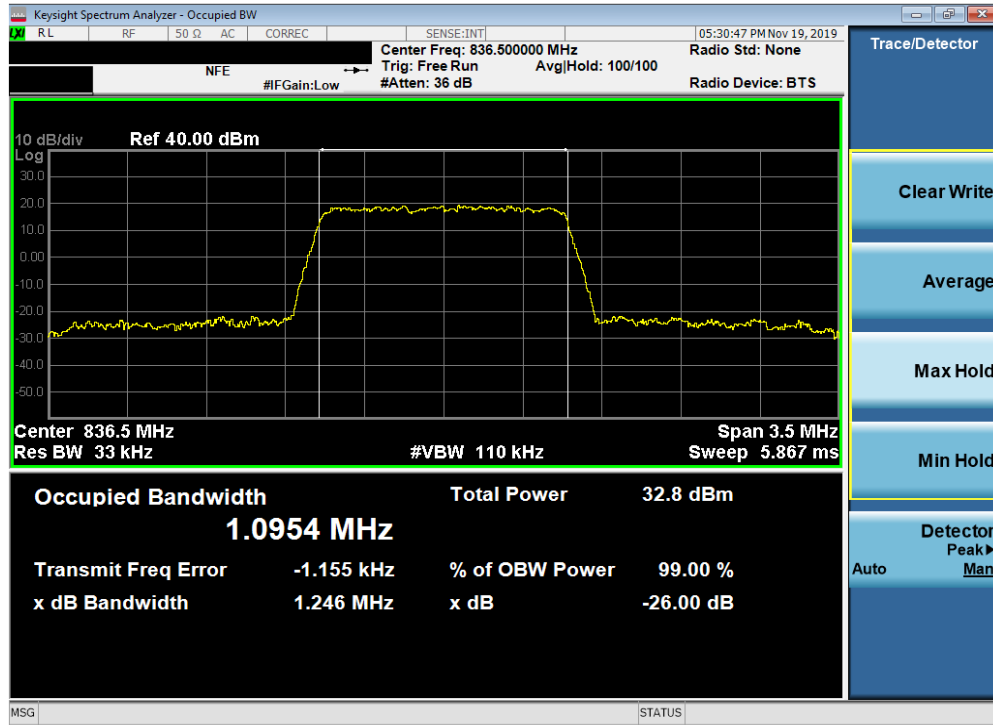
Plot 7-39. Occupied Bandwidth Plot (Band 13 - 10.0MHz 64-QAM - Full RB Configuration)



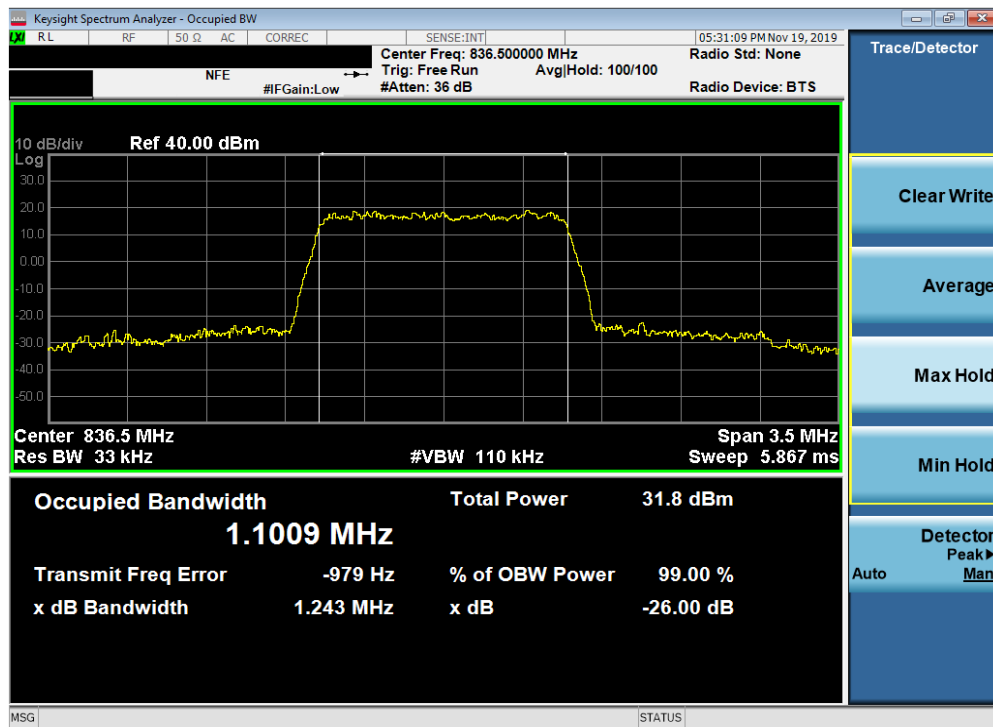
Plot 7-40. Occupied Bandwidth Plot (Band 13 - 10.0MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMG988U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band 26/5

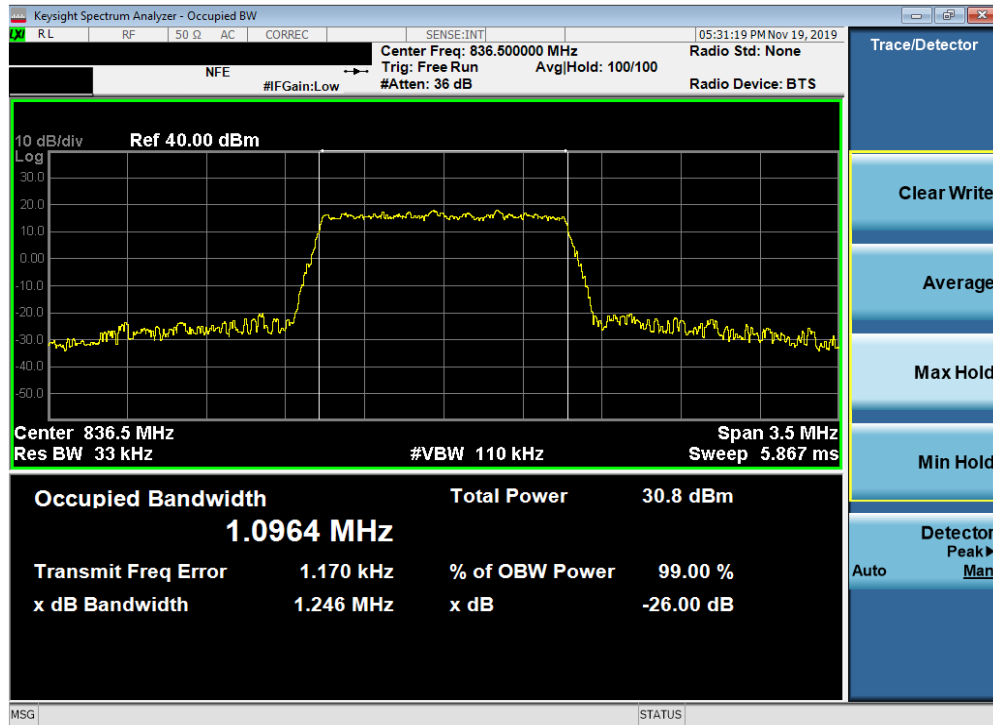


Plot 7-41. Occupied Bandwidth Plot (Band 26/5 - 1.4MHz QPSK - Full RB Configuration)

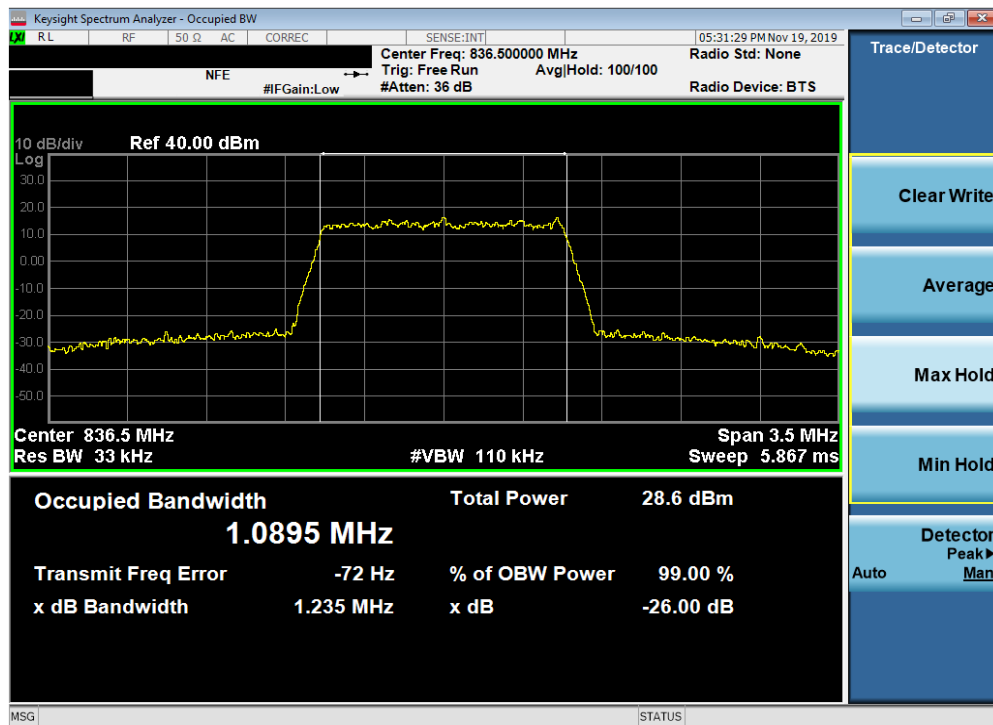


Plot 7-42. Occupied Bandwidth Plot (Band 26/5 - 1.4MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG988U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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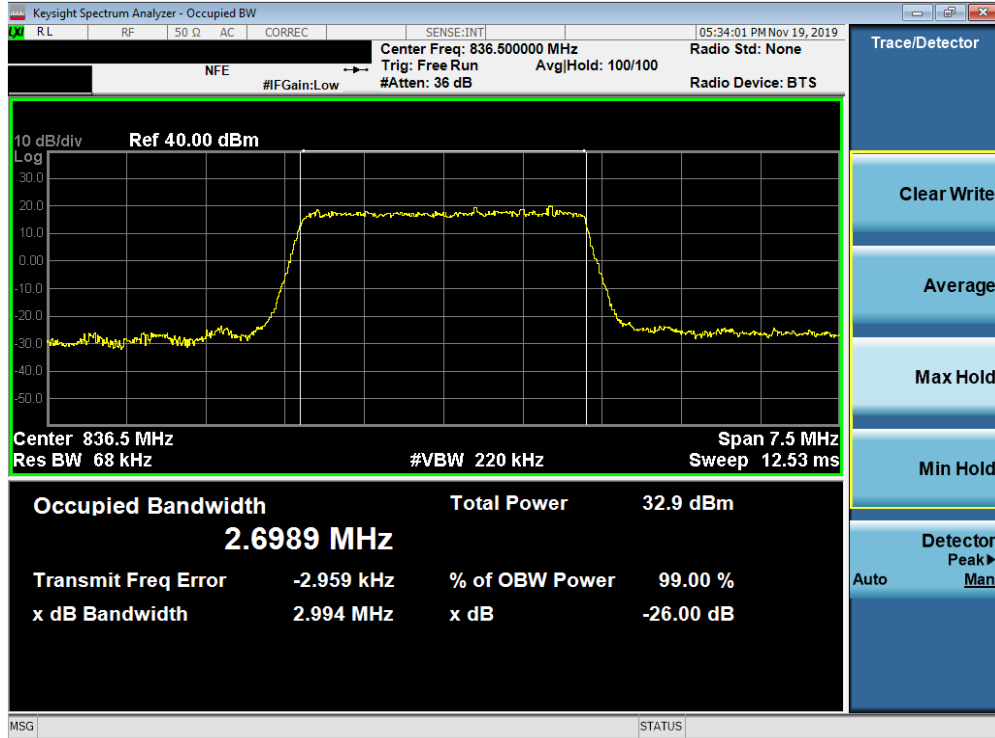


Plot 7-43. Occupied Bandwidth Plot (Band 26/5 - 1.4MHz 64-QAM - Full RB Configuration)

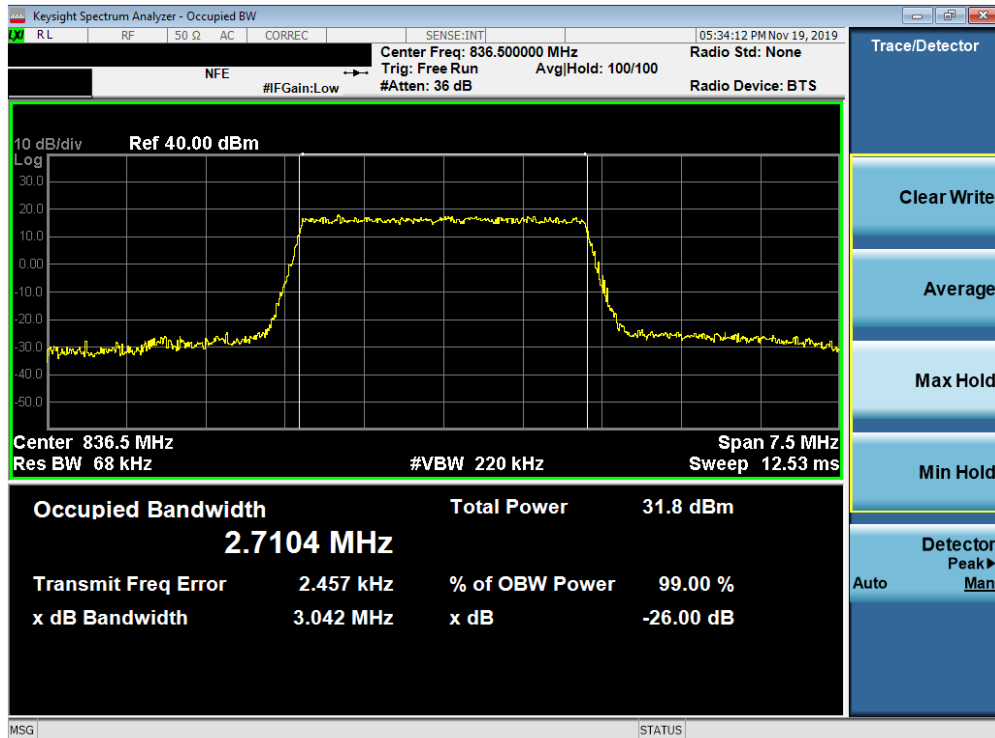


Plot 7-44. Occupied Bandwidth Plot (Band 26/5 - 1.4MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMG988U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1911140187-03-R1.A3L	Test Dates: 11/14/2019 - 1/31/2020	EUT Type: Portable Handset		Page 41 of 486

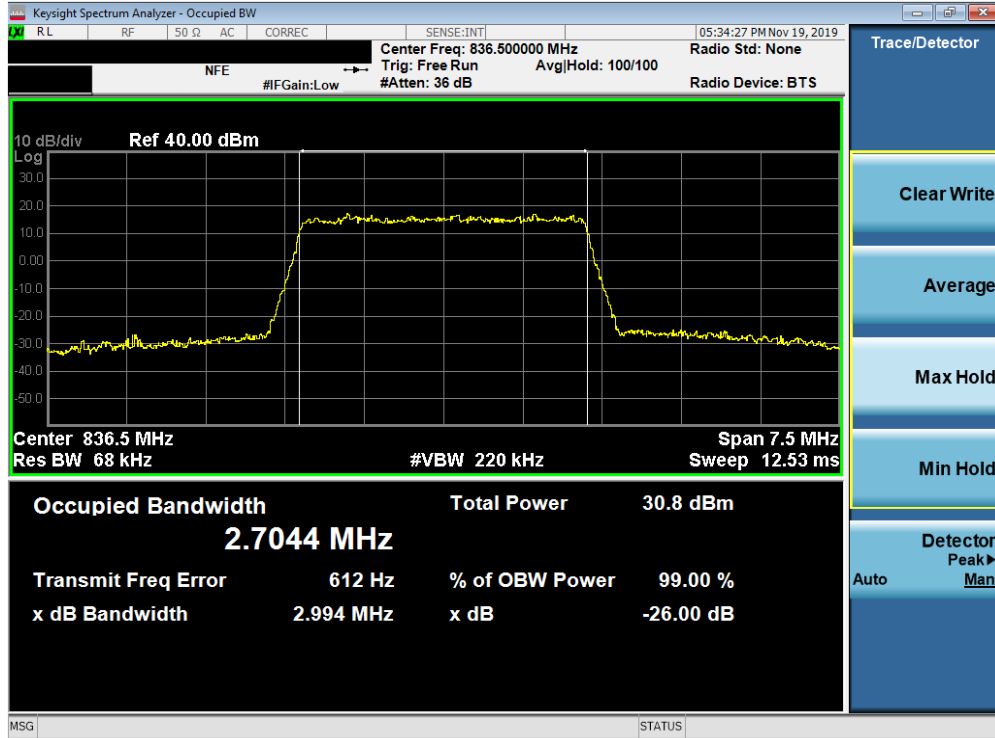


Plot 7-45. Occupied Bandwidth Plot (Band 26/5 - 3.0MHz QPSK - Full RB Configuration)

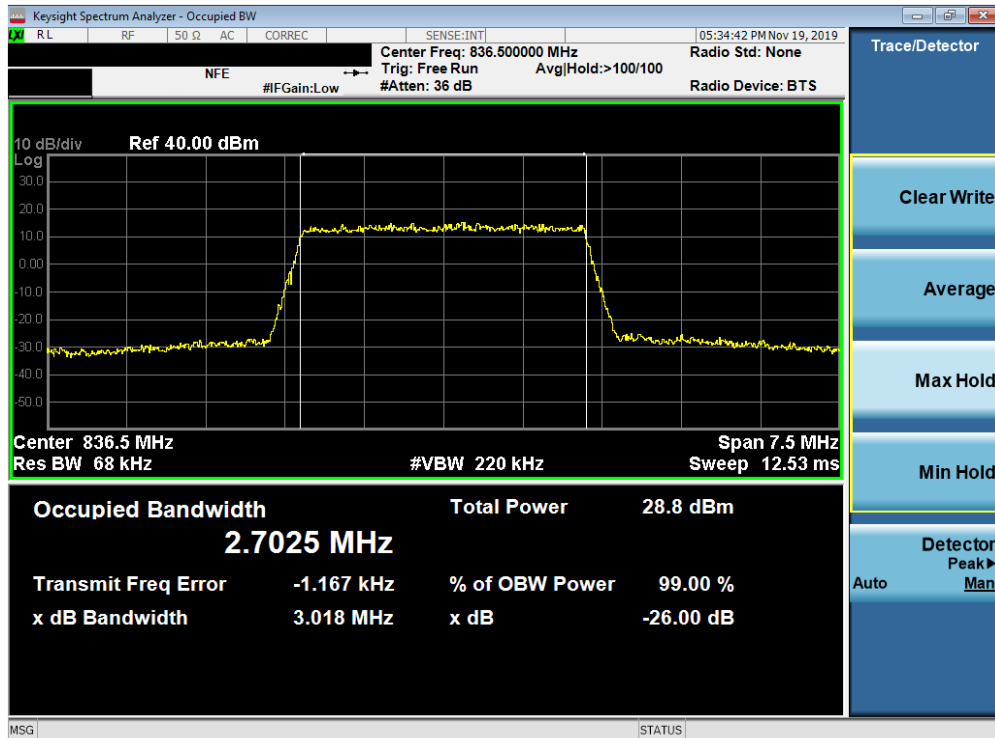


Plot 7-46. Occupied Bandwidth Plot (Band 26/5 - 3.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG988U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1911140187-03-R1.A3L	Test Dates: 11/14/2019 - 1/31/2020	EUT Type: Portable Handset		Page 42 of 486

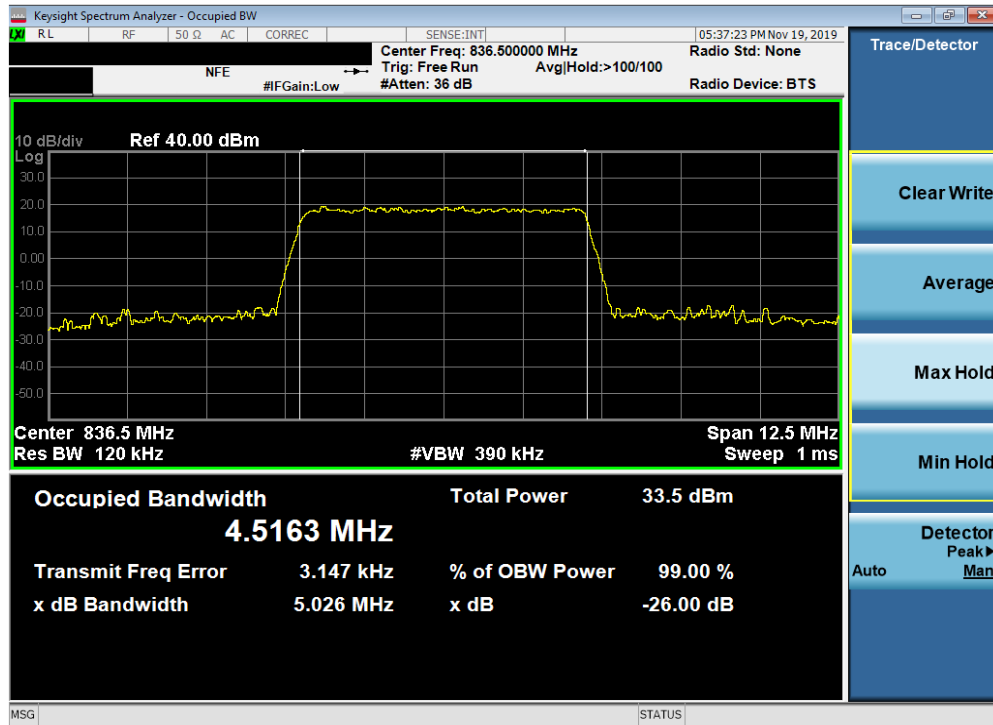


Plot 7-47. Occupied Bandwidth Plot (Band 26/5 - 3.0MHz 64-QAM - Full RB Configuration)

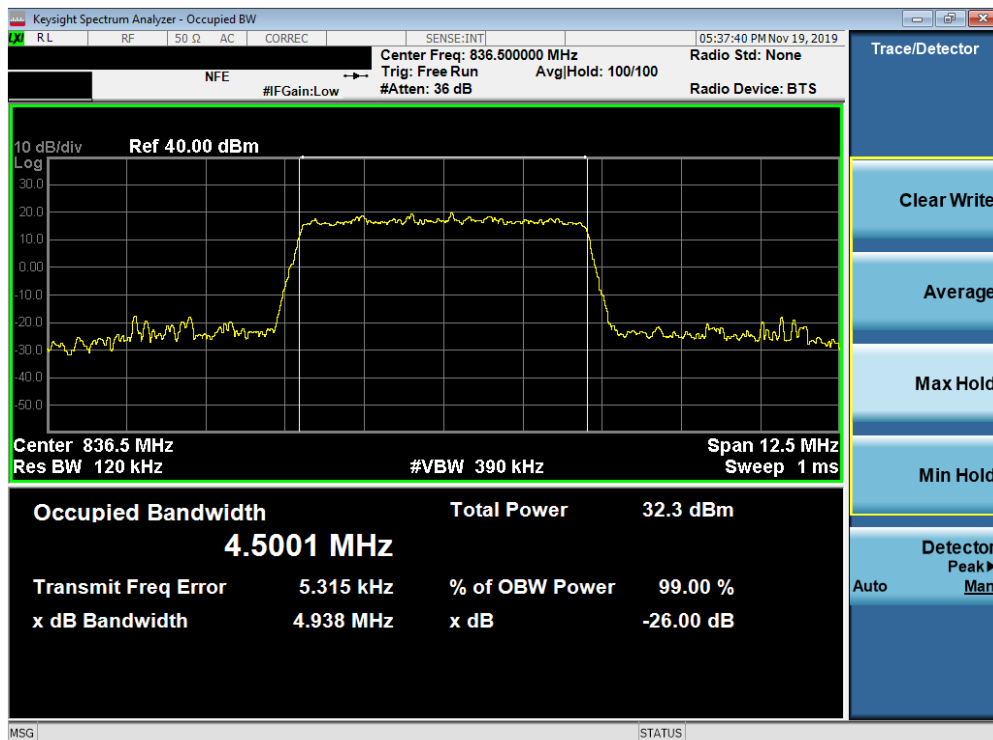


Plot 7-48. Occupied Bandwidth Plot (Band 26/5 - 3.0MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMG988U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1911140187-03-R1.A3L	Test Dates: 11/14/2019 - 1/31/2020	EUT Type: Portable Handset		Page 43 of 486

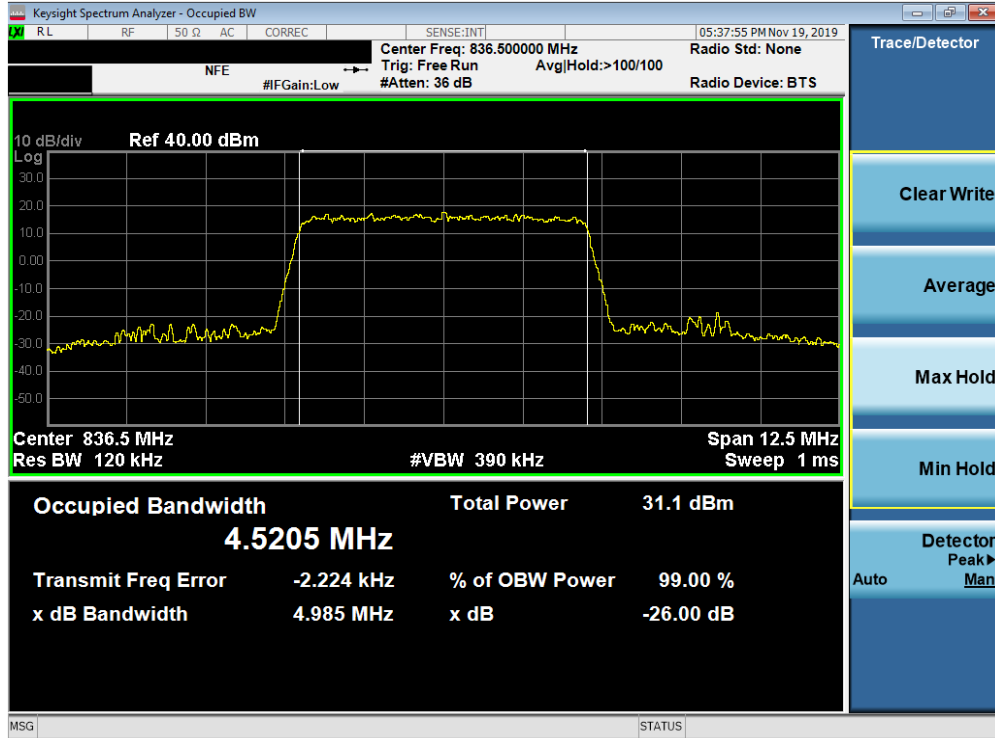


Plot 7-49. Occupied Bandwidth Plot (Band 26/5 - 5.0MHz QPSK - Full RB Configuration)

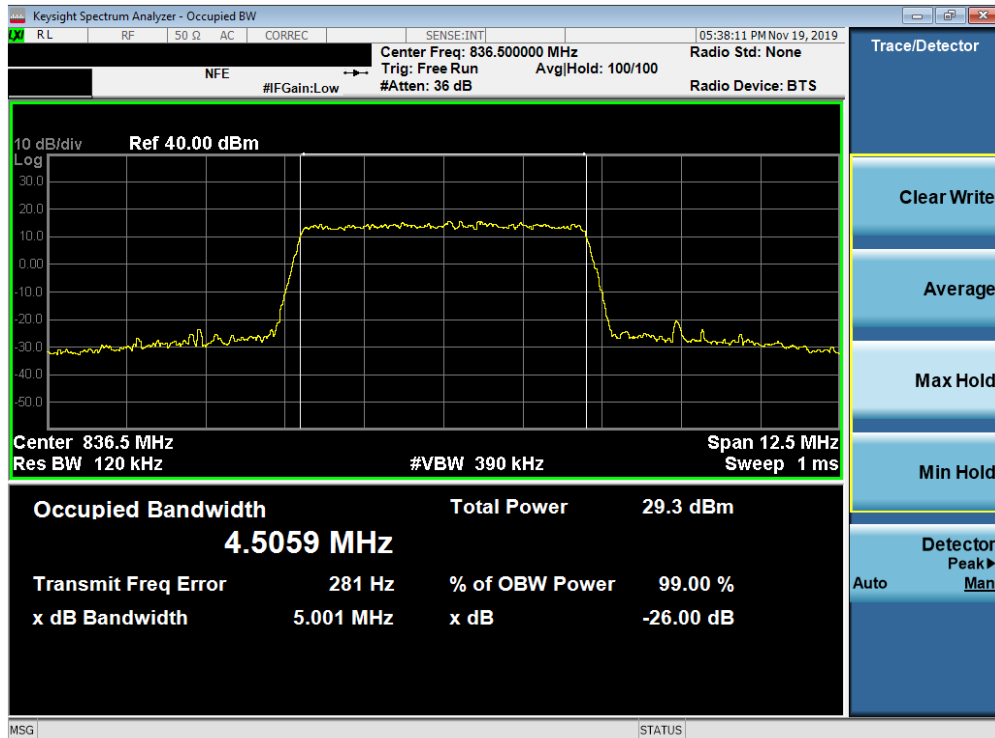


Plot 7-50. Occupied Bandwidth Plot (Band 26/5 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG988U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1911140187-03-R1.A3L	Test Dates: 11/14/2019 - 1/31/2020	EUT Type: Portable Handset		Page 44 of 486

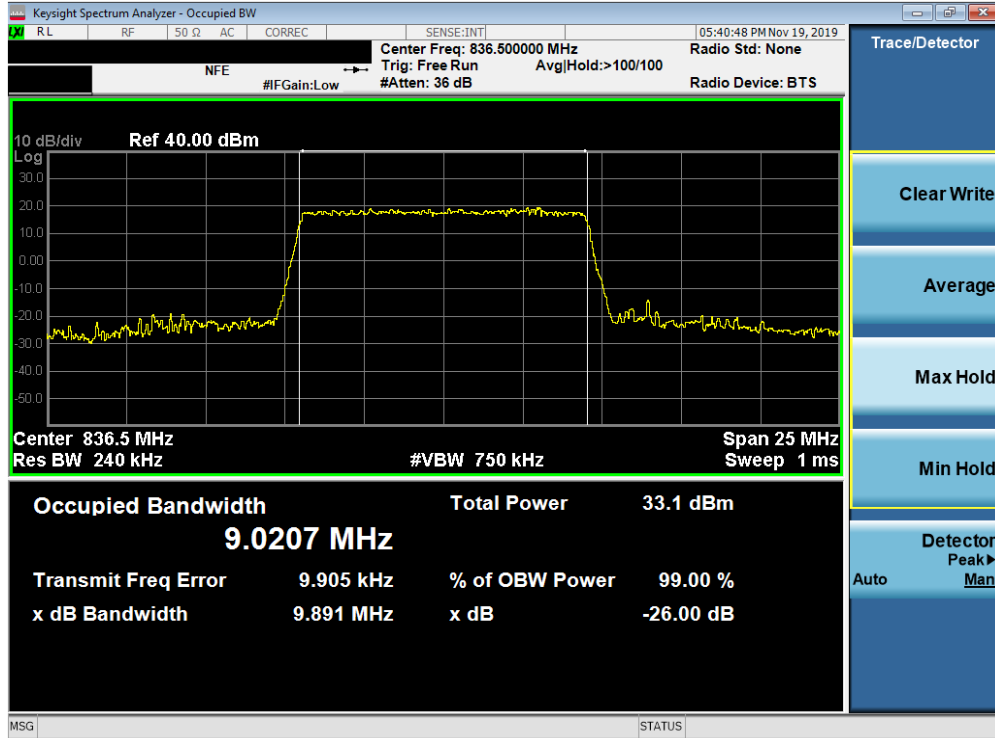


Plot 7-51. Occupied Bandwidth Plot (Band 26/5 - 5.0MHz 64-QAM - Full RB Configuration)

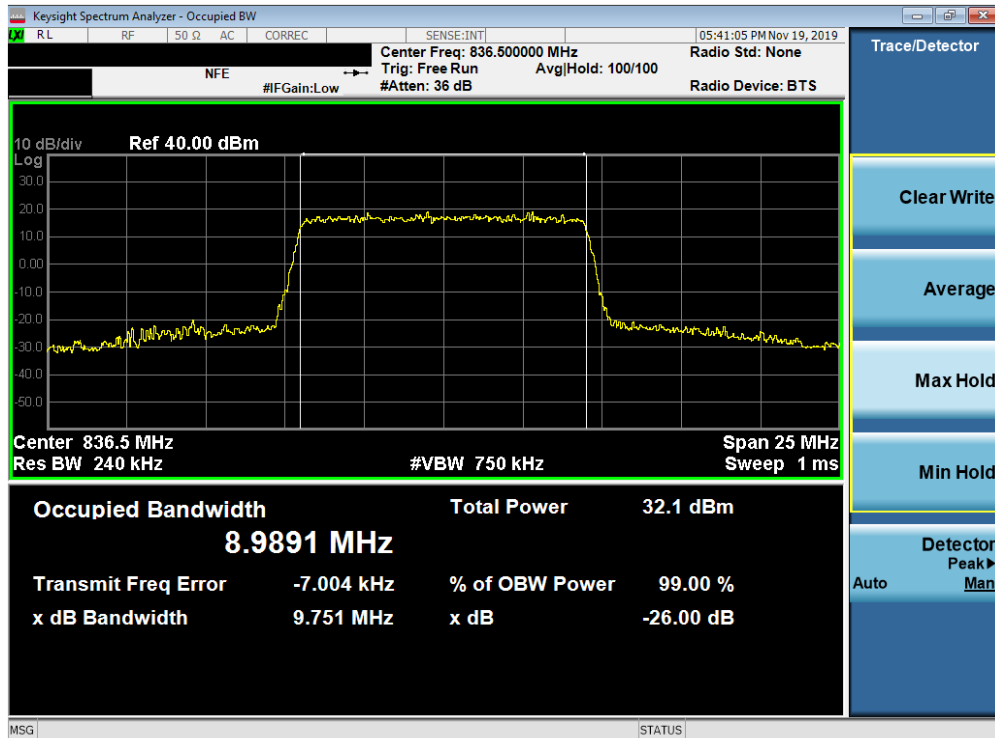


Plot 7-52. Occupied Bandwidth Plot (Band 26/5 - 5.0MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMG988U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1911140187-03-R1.A3L	Test Dates: 11/14/2019 - 1/31/2020	EUT Type: Portable Handset		Page 45 of 486



Plot 7-53. Occupied Bandwidth Plot (Band 26/5 - 10.0MHz QPSK - Full RB Configuration)



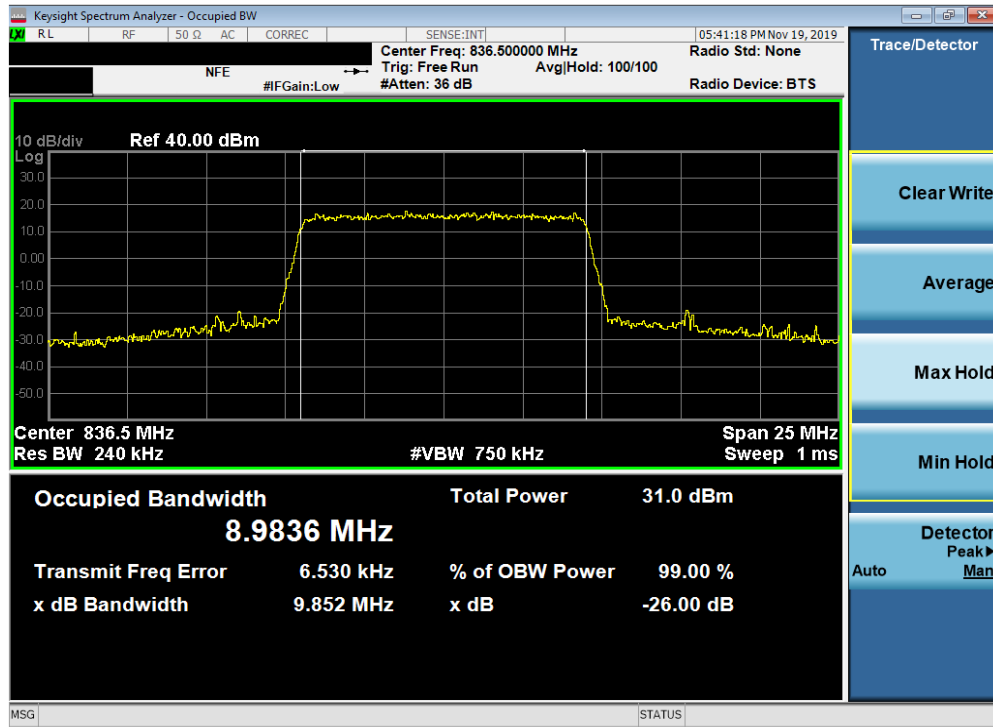
Plot 7-54. Occupied Bandwidth Plot (Band 26/5 - 10.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG988U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1911140187-03-R1.A3L	Test Dates: 11/14/2019 - 1/31/2020	EUT Type: Portable Handset		Page 46 of 486

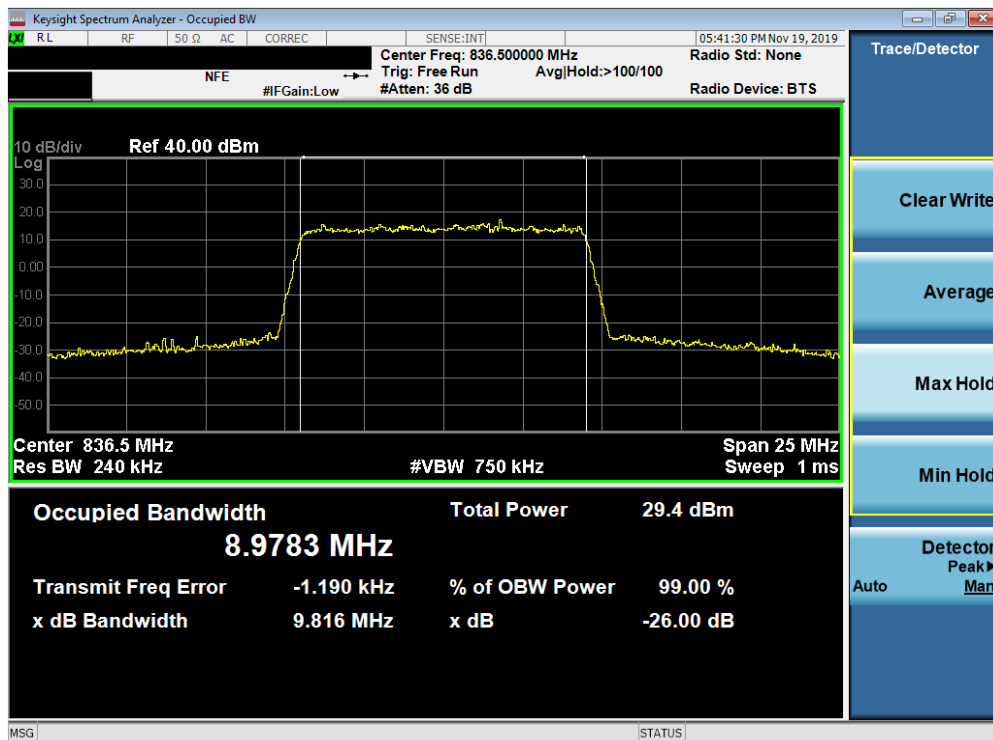
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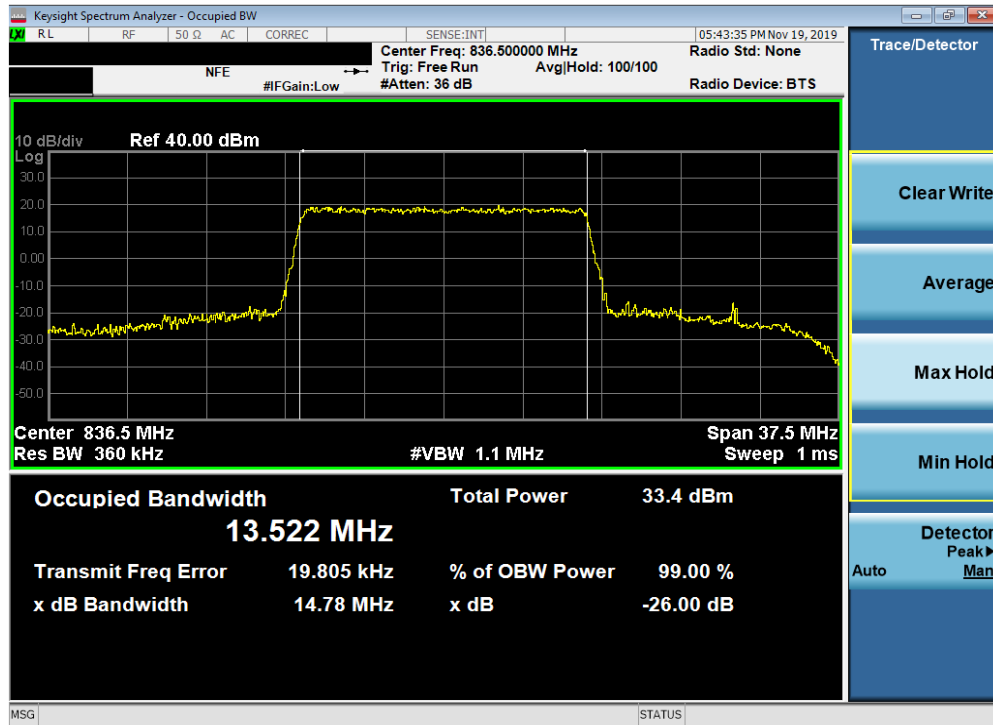


Plot 7-55. Occupied Bandwidth Plot (Band 26/5 - 10.0MHz 64-QAM - Full RB Configuration)

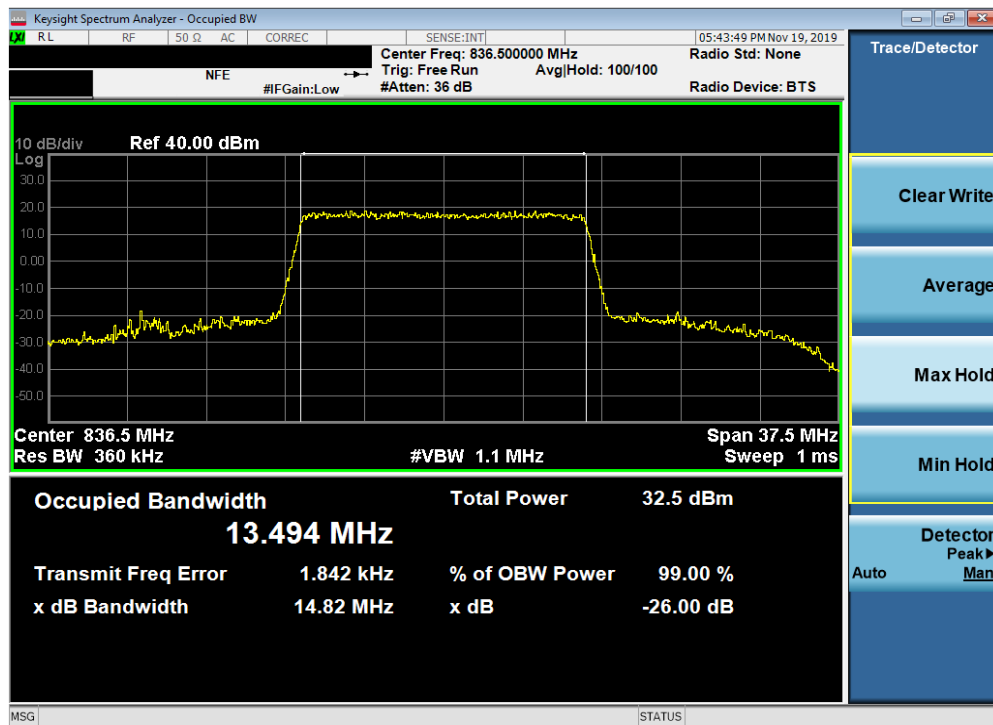


Plot 7-56. Occupied Bandwidth Plot (Band 26/5 - 10.0MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMG988U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1911140187-03-R1.A3L	Test Dates: 11/14/2019 - 1/31/2020	EUT Type: Portable Handset		Page 47 of 486

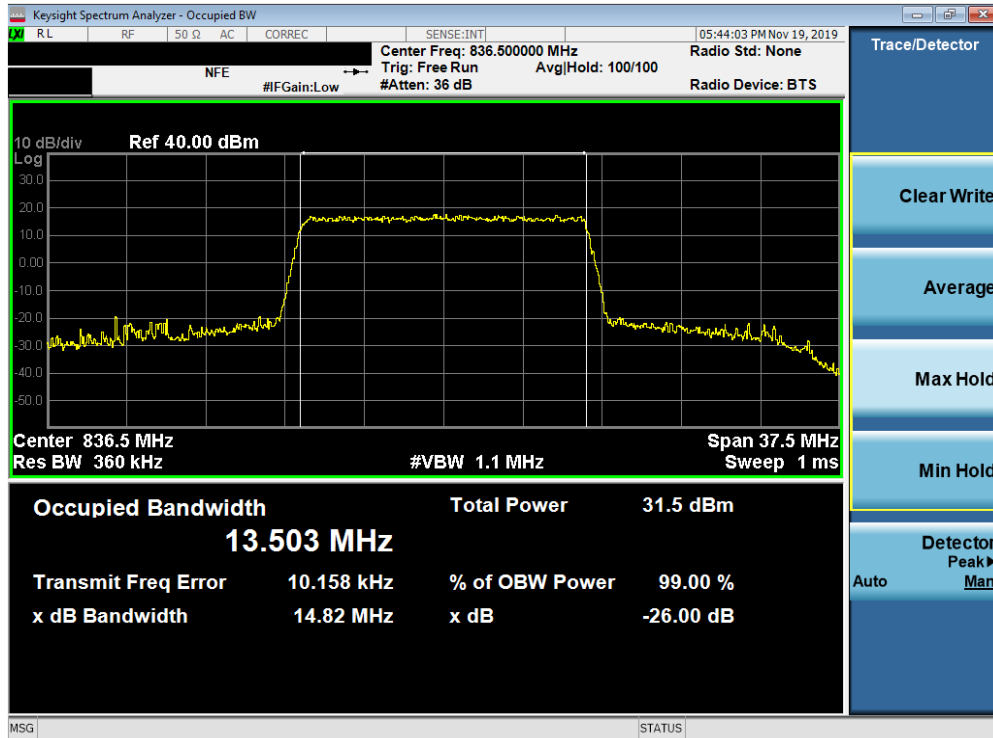


Plot 7-57. Occupied Bandwidth Plot (Band 26 - 15.0MHz QPSK - Full RB Configuration)

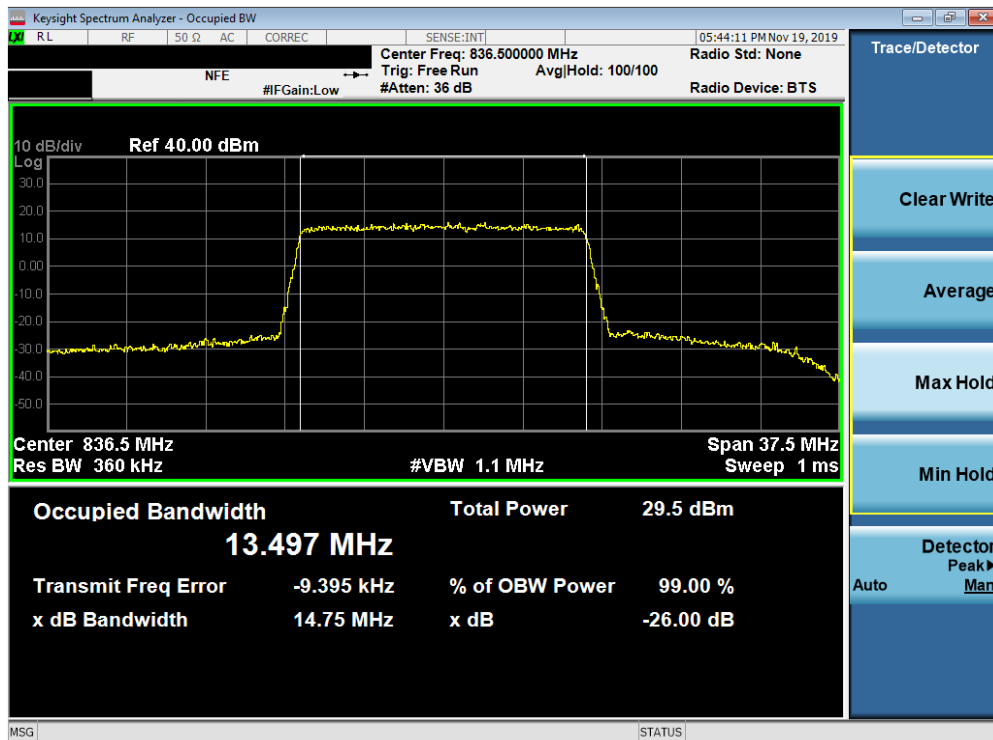


Plot 7-58. Occupied Bandwidth Plot (Band 26 - 15.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG988U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1911140187-03-R1.A3L	Test Dates: 11/14/2019 - 1/31/2020	EUT Type: Portable Handset		Page 48 of 486



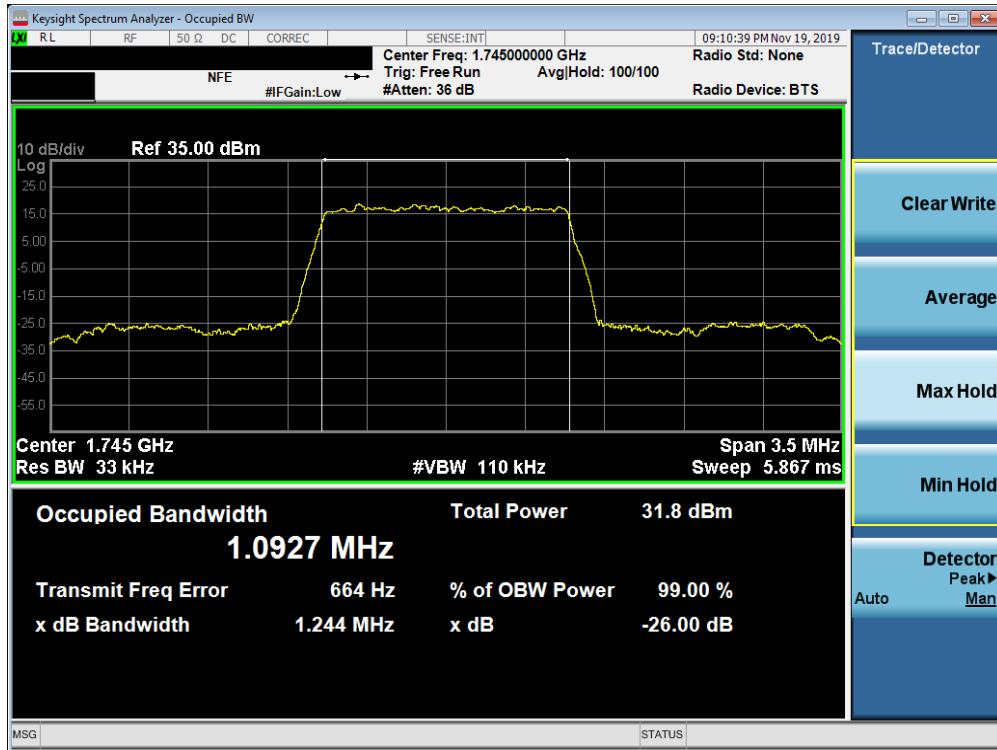
Plot 7-59. Occupied Bandwidth Plot (Band 26 - 15.0MHz 64-QAM - Full RB Configuration)



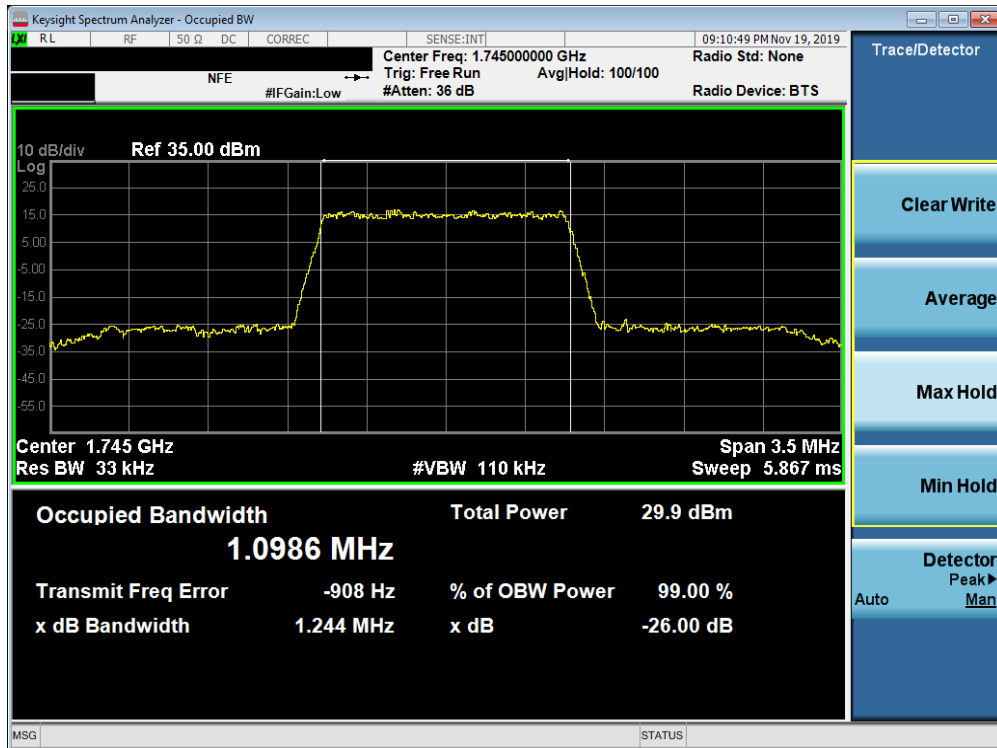
Plot 7-60. Occupied Bandwidth Plot (Band 26 - 15.0MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMG988U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1911140187-03-R1.A3L	Test Dates: 11/14/2019 - 1/31/2020	EUT Type: Portable Handset		Page 49 of 486

Band 66/4

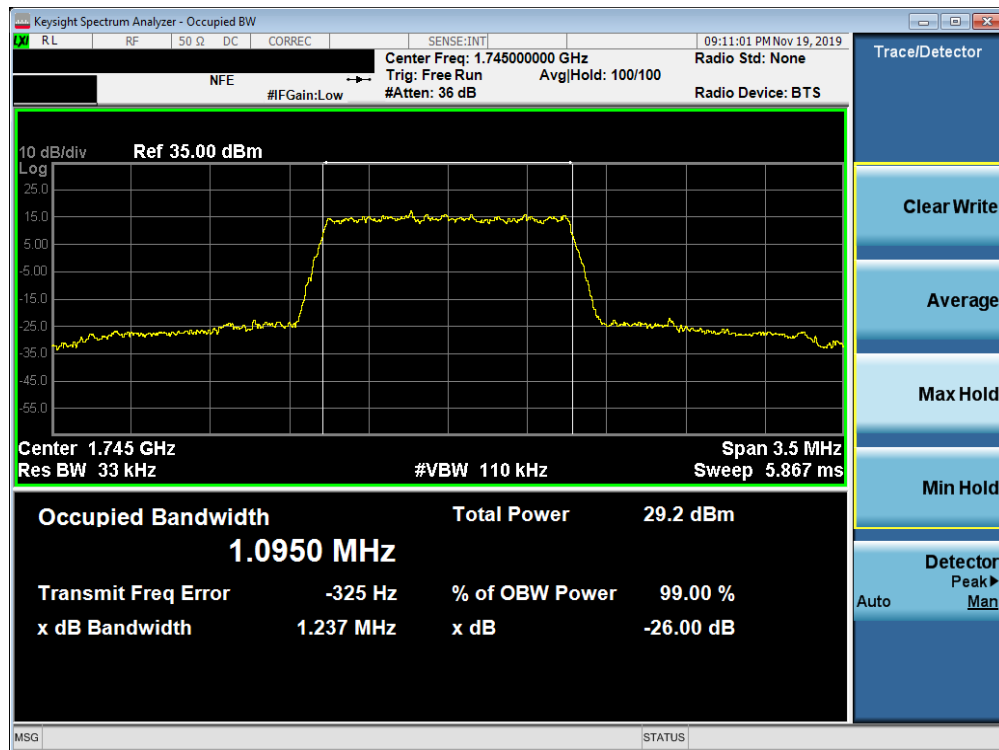


Plot 7-61. Occupied Bandwidth Plot (Band 66/4 - 1.4MHz QPSK - Full RB Configuration)

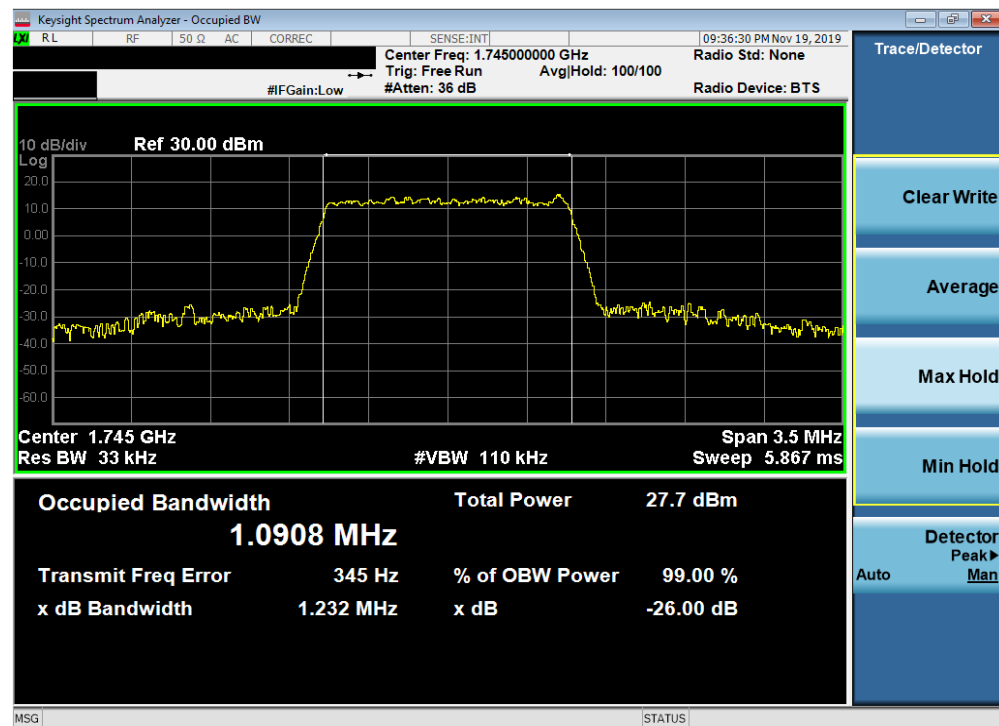


Plot 7-62. Occupied Bandwidth Plot (Band 66/4 - 1.4MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG988U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1911140187-03-R1.A3L	Test Dates: 11/14/2019 - 1/31/2020	EUT Type: Portable Handset		Page 50 of 486

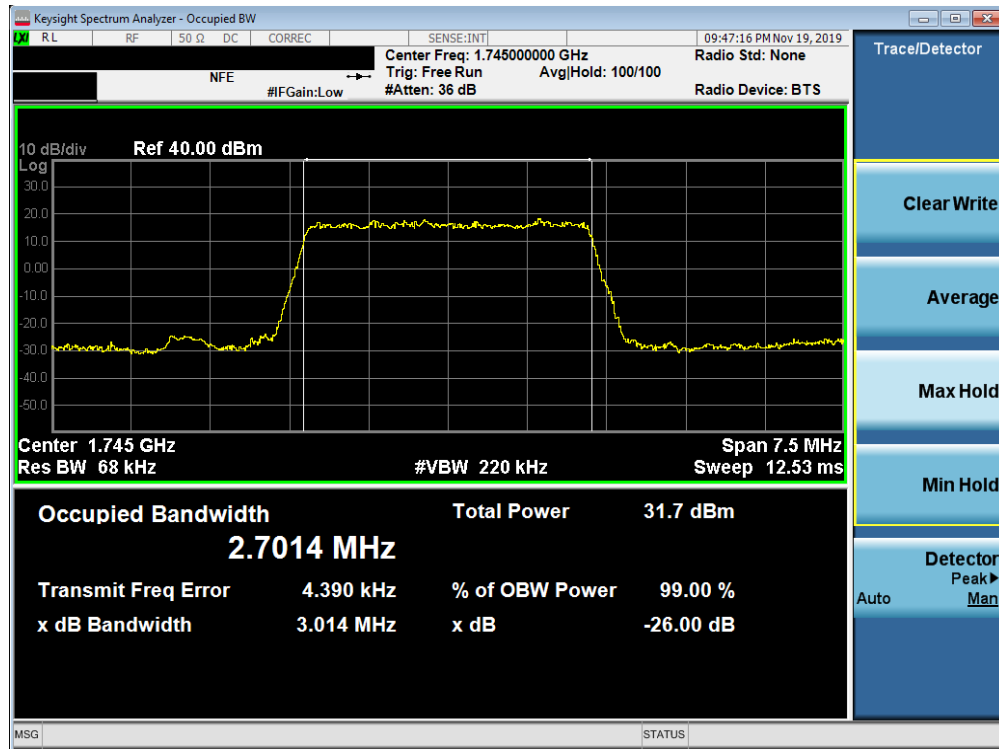


Plot 7-63. Occupied Bandwidth Plot (Band 66/4 - 1.4MHz 64-QAM - Full RB Configuration)

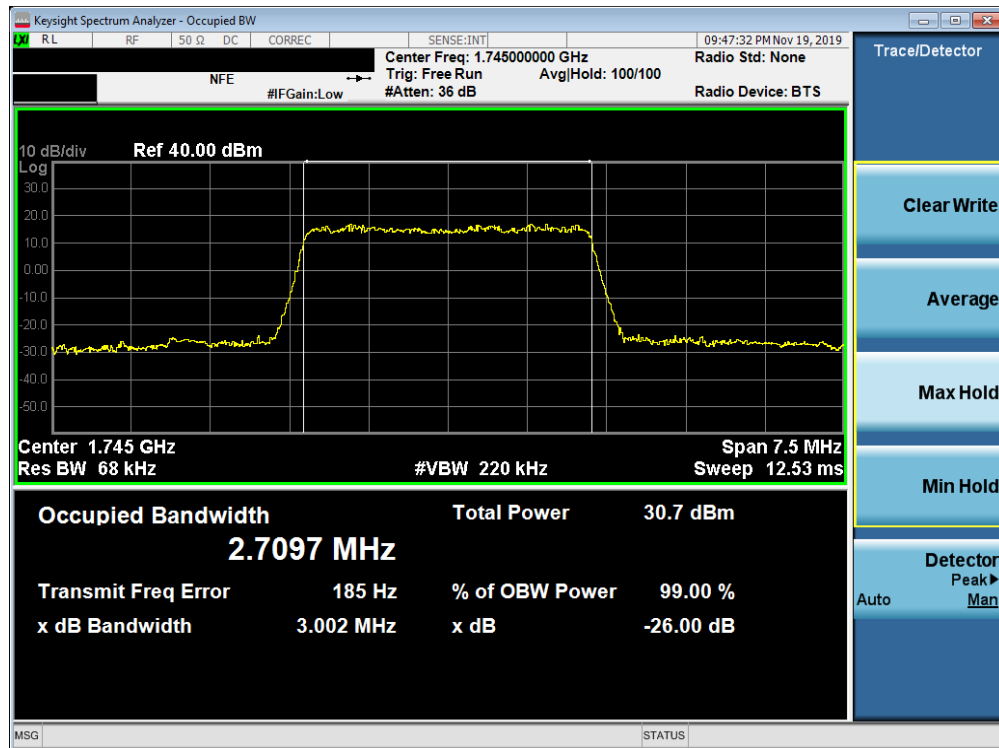


Plot 7-64. Occupied Bandwidth Plot (Band 66/4 - 1.4MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMG988U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1911140187-03-R1.A3L	Test Dates: 11/14/2019 - 1/31/2020	EUT Type: Portable Handset		Page 51 of 486

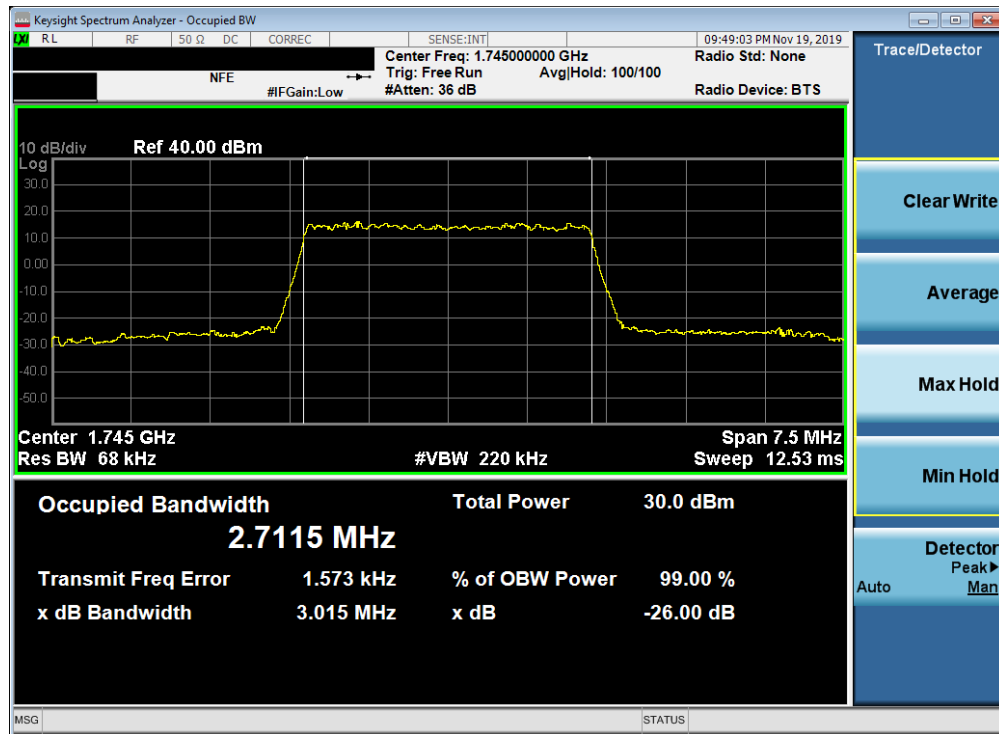


Plot 7-65. Occupied Bandwidth Plot (Band 66/4 - 3.0MHz QPSK - Full RB Configuration)

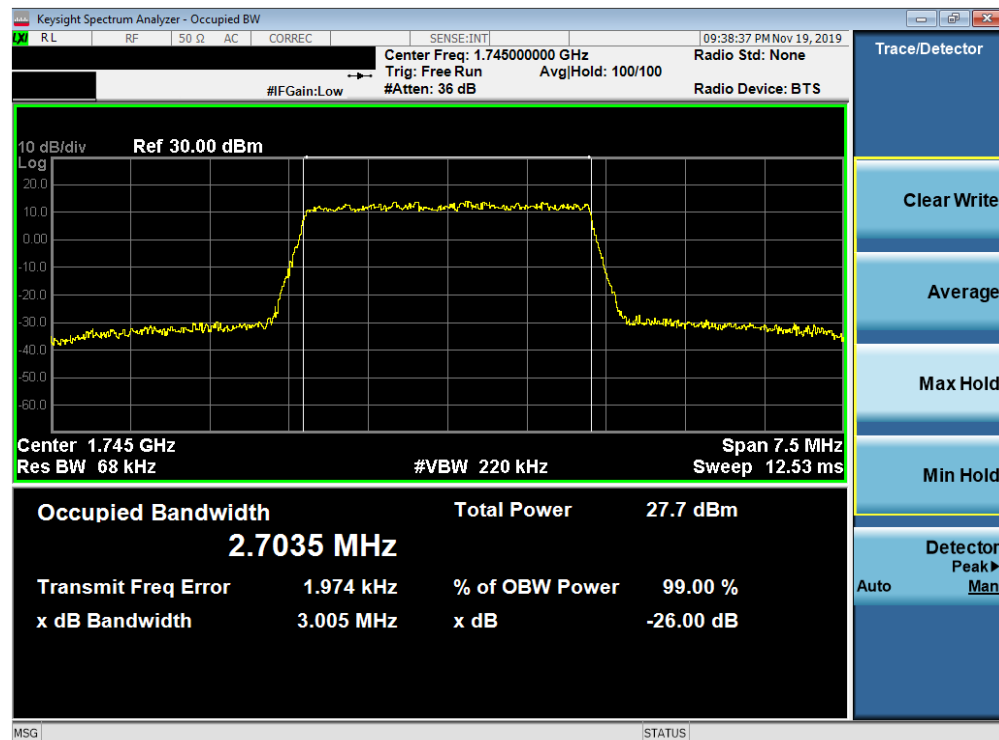


Plot 7-66. Occupied Bandwidth Plot (Band 66/4 - 3.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG988U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1911140187-03-R1.A3L	Test Dates: 11/14/2019 - 1/31/2020	EUT Type: Portable Handset		Page 52 of 486

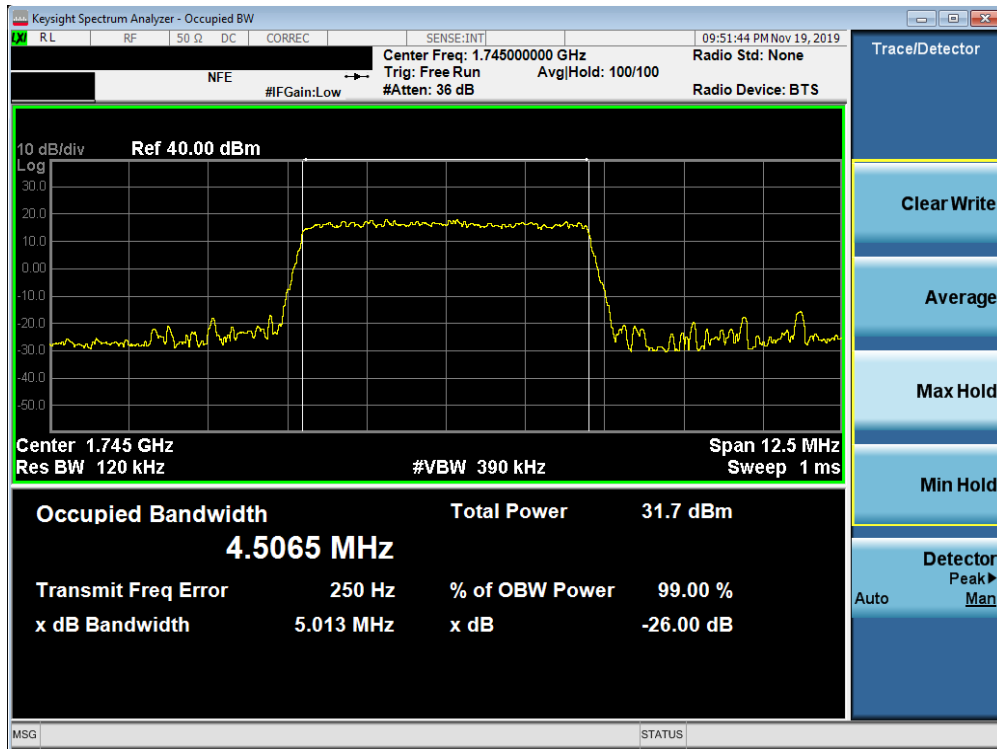


Plot 7-67. Occupied Bandwidth Plot (Band 66/4 - 3.0MHz 64-QAM - Full RB Configuration)

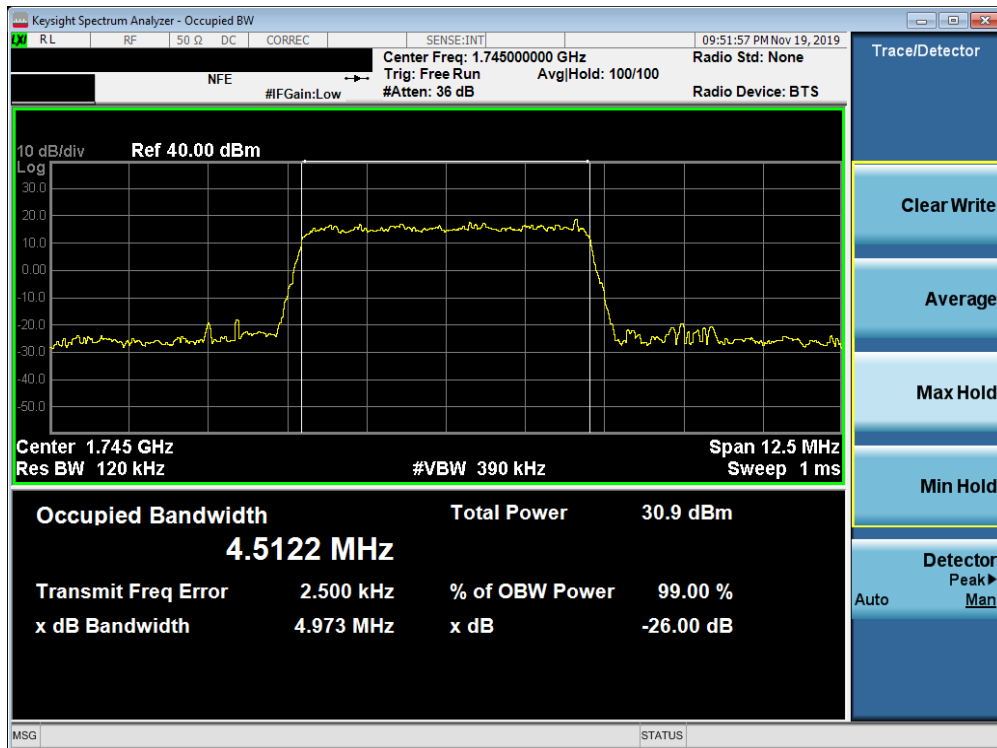


Plot 7-68. Occupied Bandwidth Plot (Band 66/4 - 3.0MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMG988U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1911140187-03-R1.A3L	Test Dates: 11/14/2019 - 1/31/2020	EUT Type: Portable Handset		Page 53 of 486

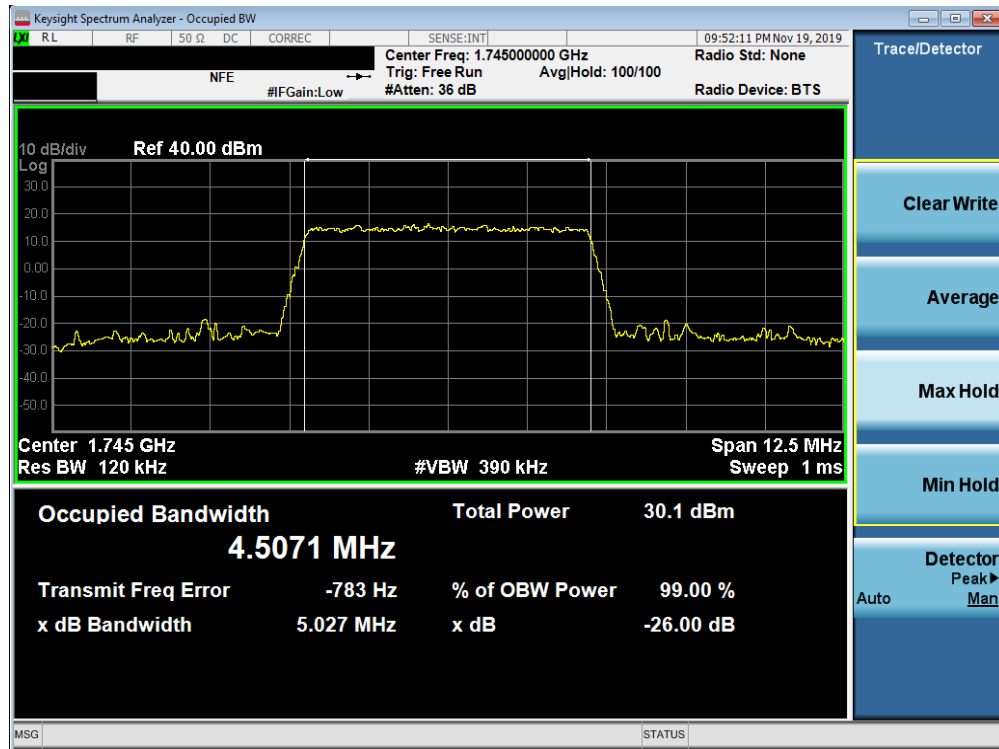


Plot 7-69. Occupied Bandwidth Plot (Band 66/4 - 5.0MHz QPSK - Full RB Configuration)

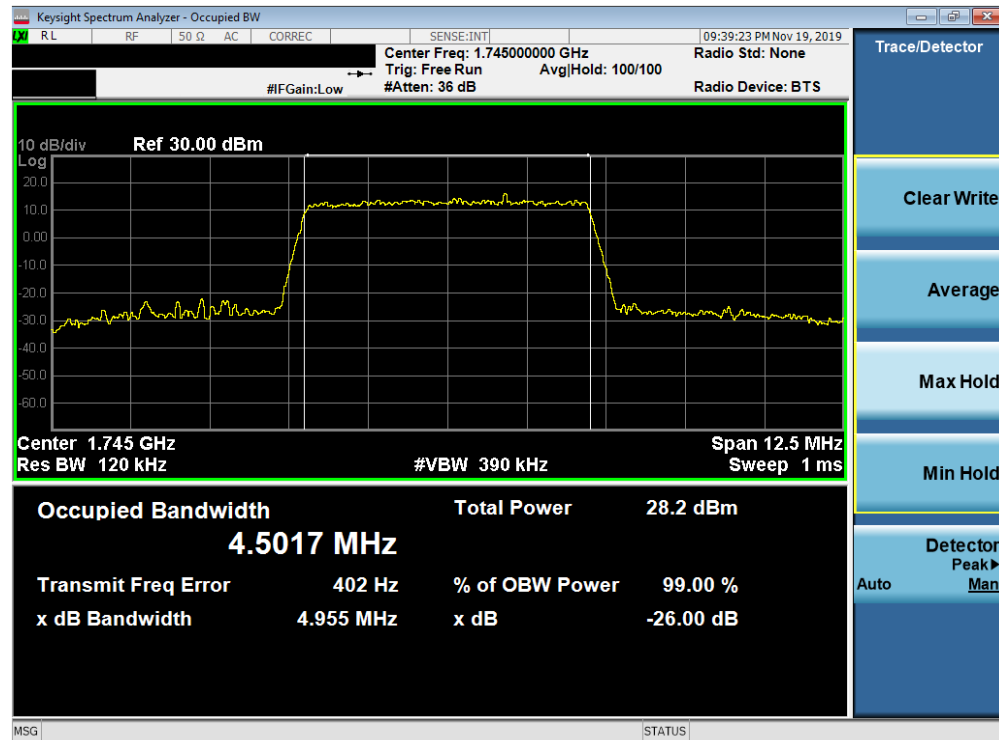


Plot 7-70. Occupied Bandwidth Plot (Band 66/4 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG988U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1911140187-03-R1.A3L	Test Dates: 11/14/2019 - 1/31/2020	EUT Type: Portable Handset		Page 54 of 486

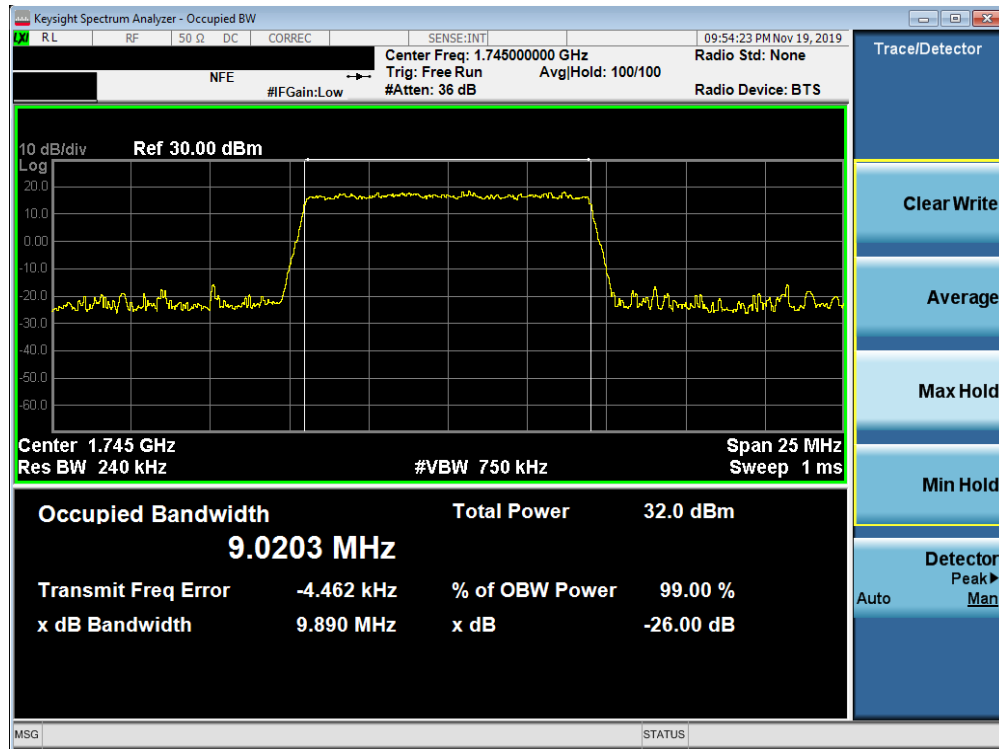


Plot 7-71. Occupied Bandwidth Plot (Band 66/4 - 5.0MHz 64-QAM - Full RB Configuration)

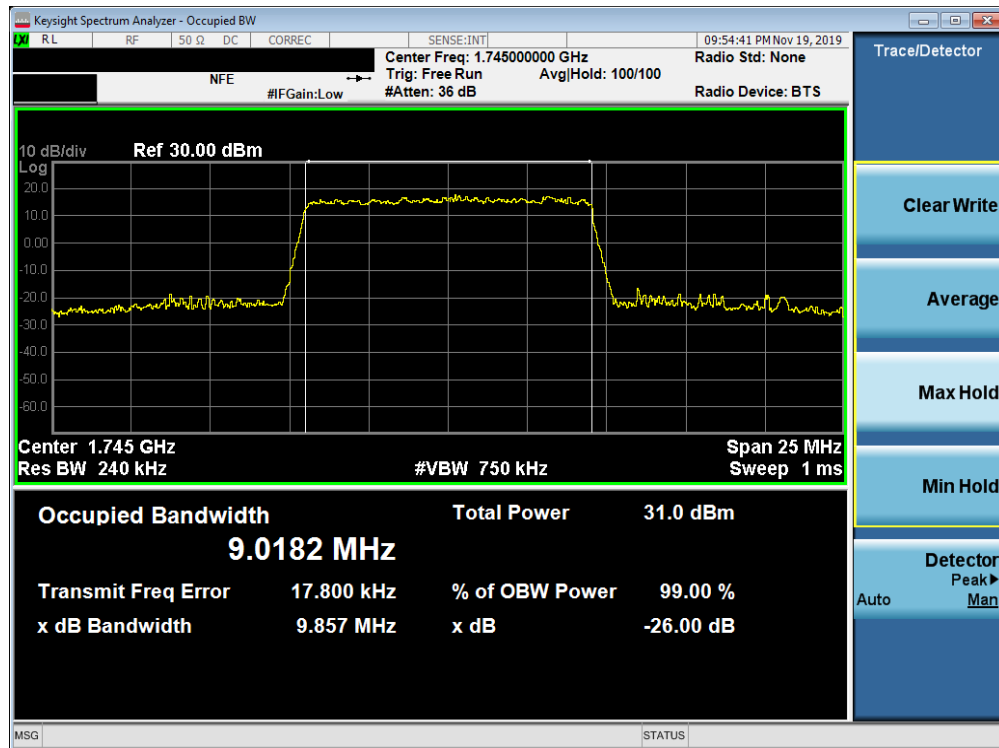


Plot 7-72. Occupied Bandwidth Plot (Band 66/4 - 5.0MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMG988U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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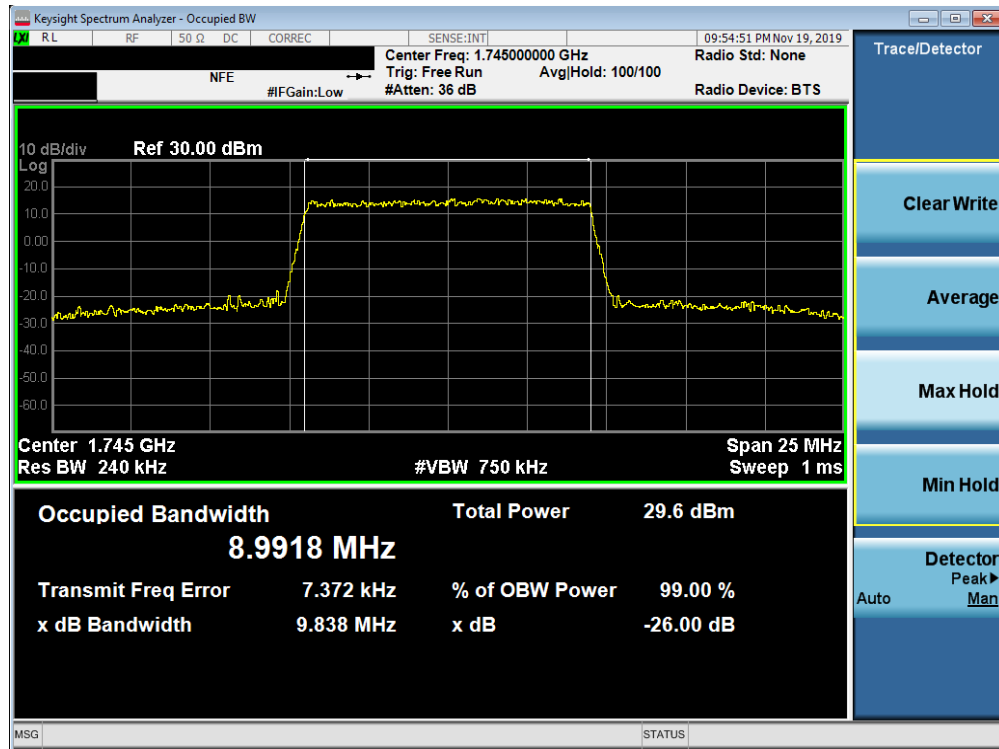


Plot 7-73. Occupied Bandwidth Plot (Band 66/4 - 10.0MHz QPSK - Full RB Configuration)

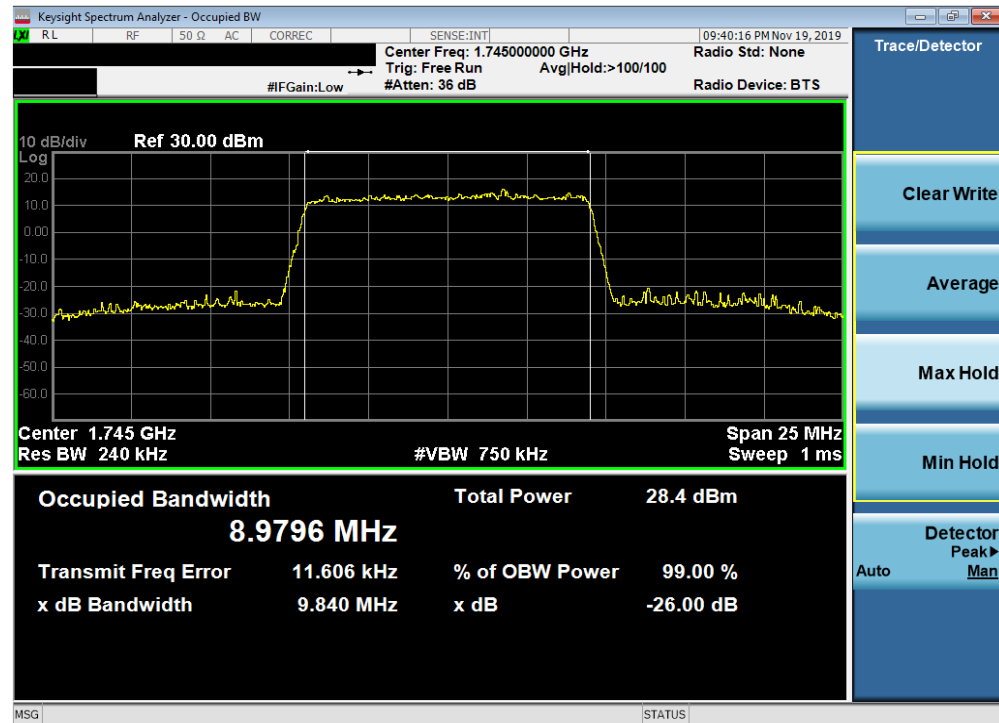


Plot 7-74. Occupied Bandwidth Plot (Band 66/4 - 10.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG988U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1911140187-03-R1.A3L	Test Dates: 11/14/2019 - 1/31/2020	EUT Type: Portable Handset		Page 56 of 486

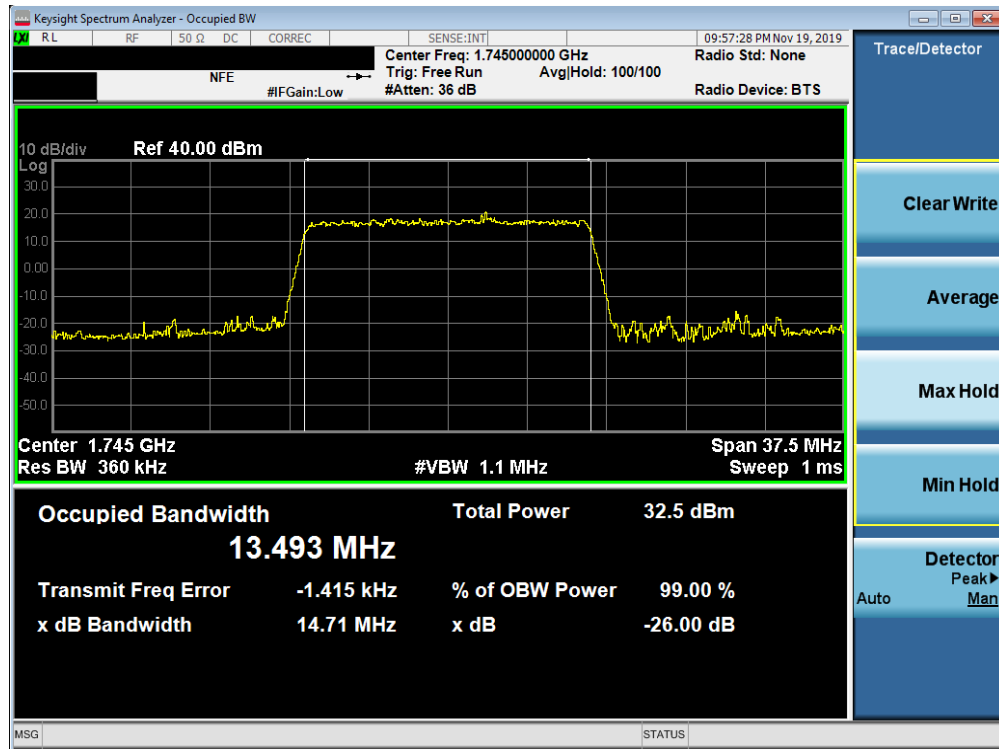


Plot 7-75. Occupied Bandwidth Plot (Band 66/4 - 10.0MHz 64-QAM - Full RB Configuration)

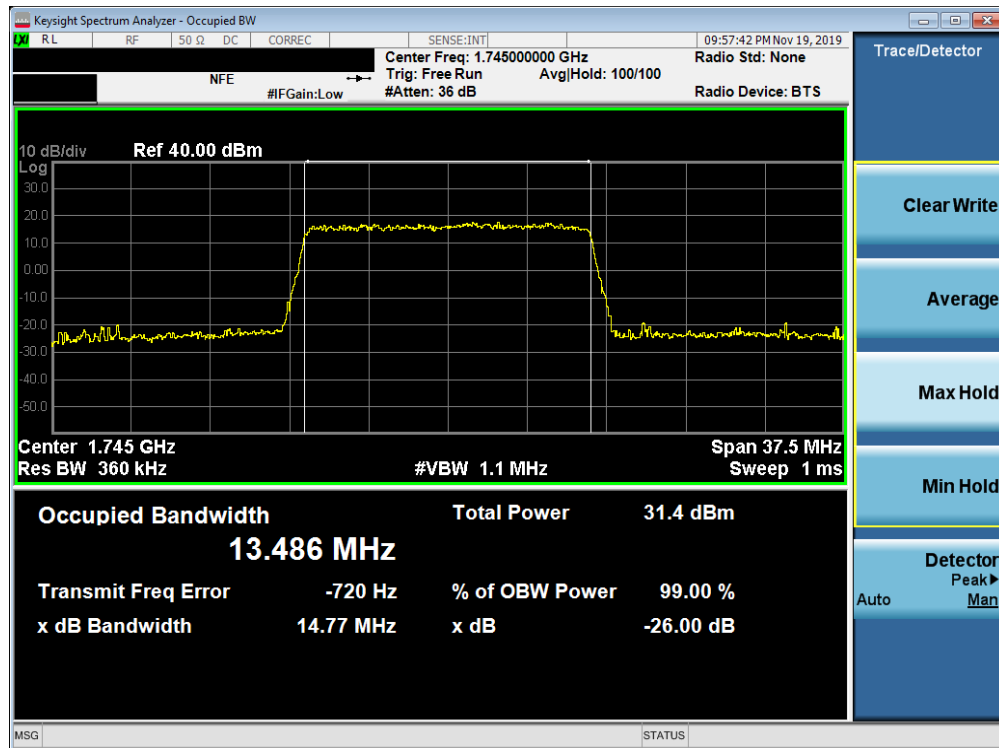


Plot 7-76. Occupied Bandwidth Plot (Band 66/4 - 10.0MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMG988U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1911140187-03-R1-A3L	Test Dates: 11/14/2019 - 1/31/2020	EUT Type: Portable Handset		Page 57 of 486

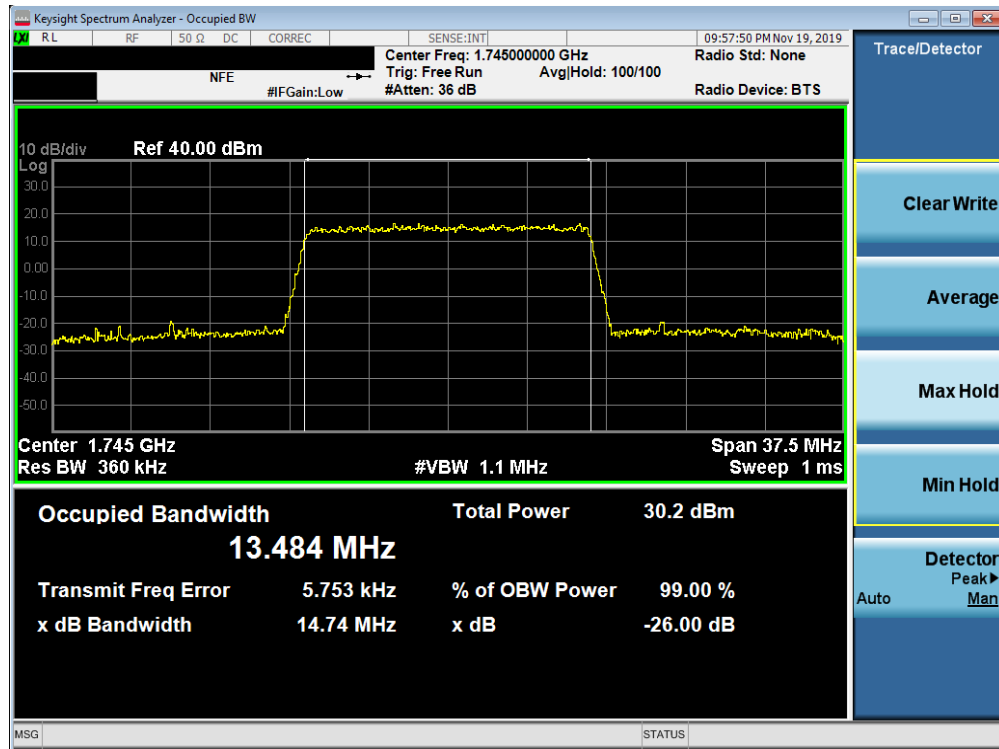


Plot 7-77. Occupied Bandwidth Plot (Band 66/4 - 15.0MHz QPSK - Full RB Configuration)

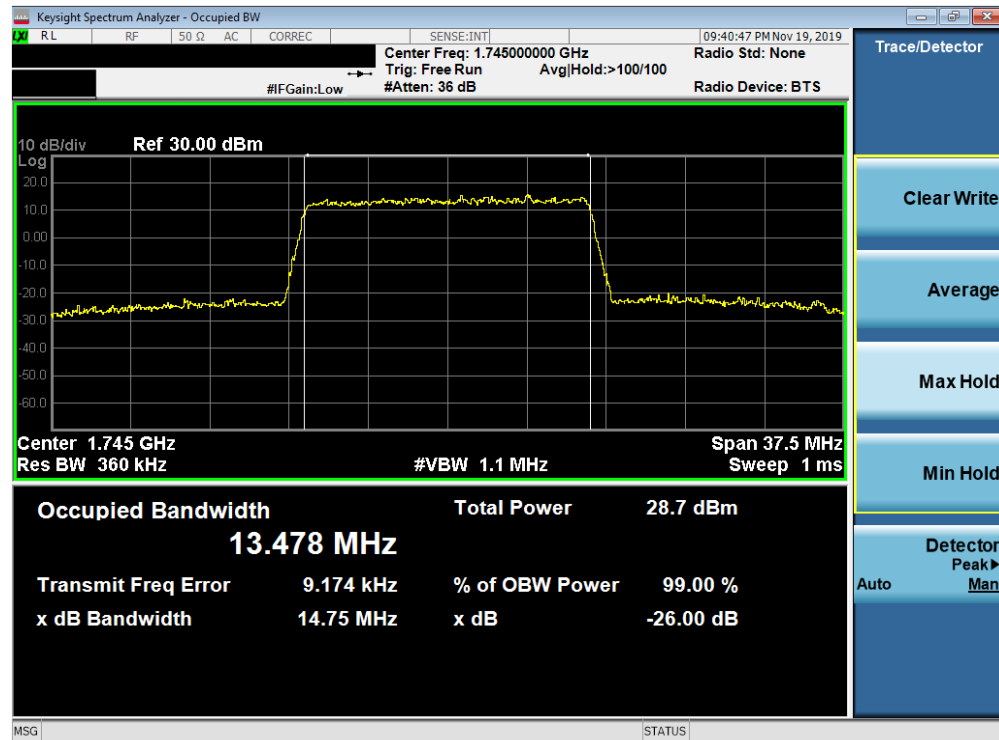


Plot 7-78. Occupied Bandwidth Plot (Band 66/4 - 15.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG988U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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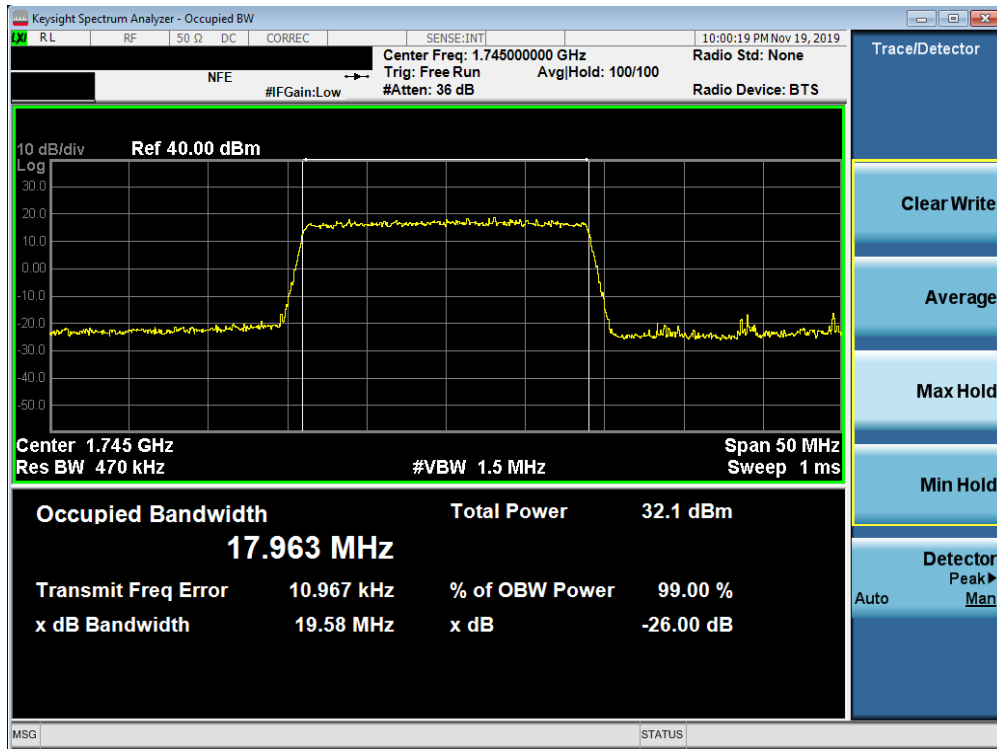


Plot 7-79. Occupied Bandwidth Plot (Band 66/4 - 15.0MHz 64-QAM - Full RB Configuration)

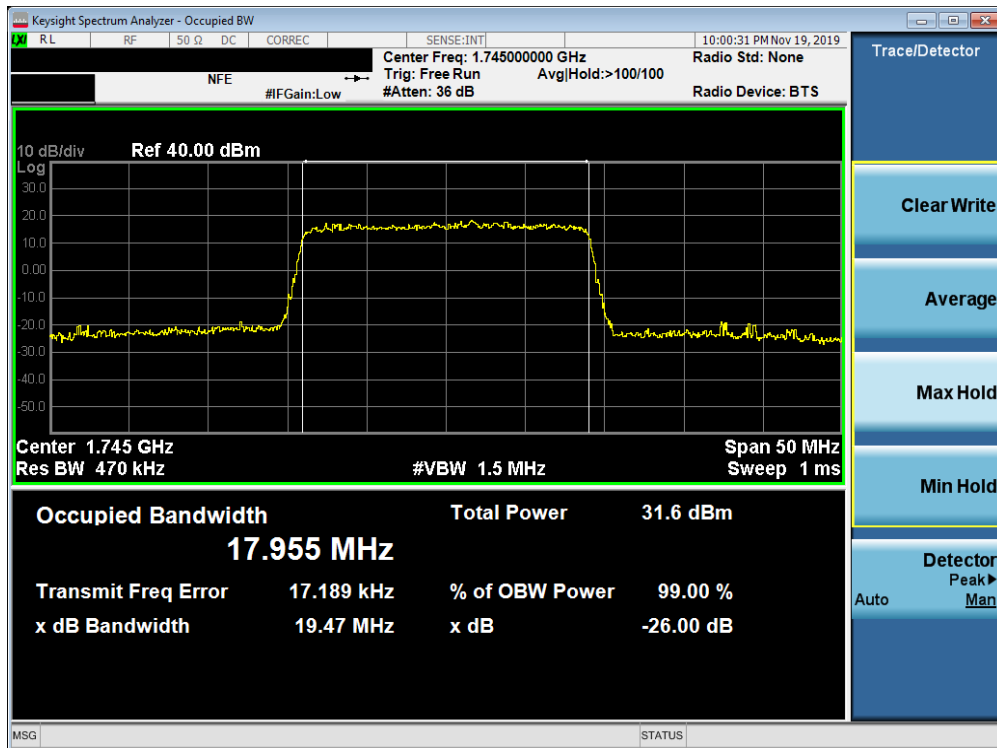


Plot 7-80. Occupied Bandwidth Plot (Band 66/4 - 15.0MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMG988U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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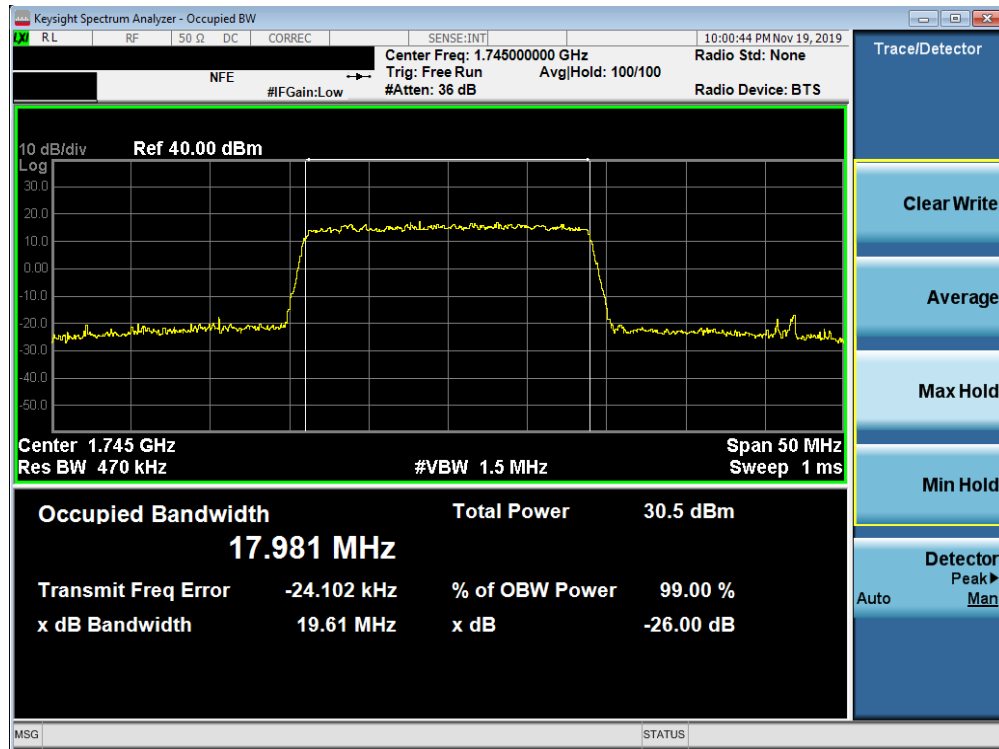


Plot 7-81. Occupied Bandwidth Plot (Band 66/4 - 20.0MHz QPSK - Full RB Configuration)

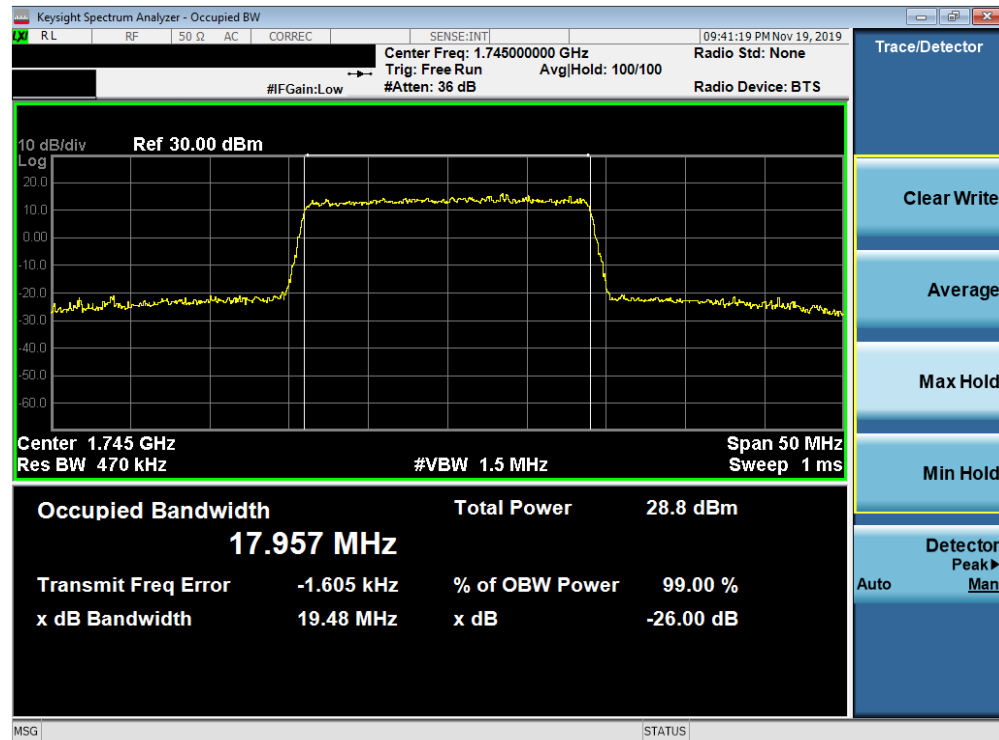


Plot 7-82. Occupied Bandwidth Plot (Band 66/4 - 20.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG988U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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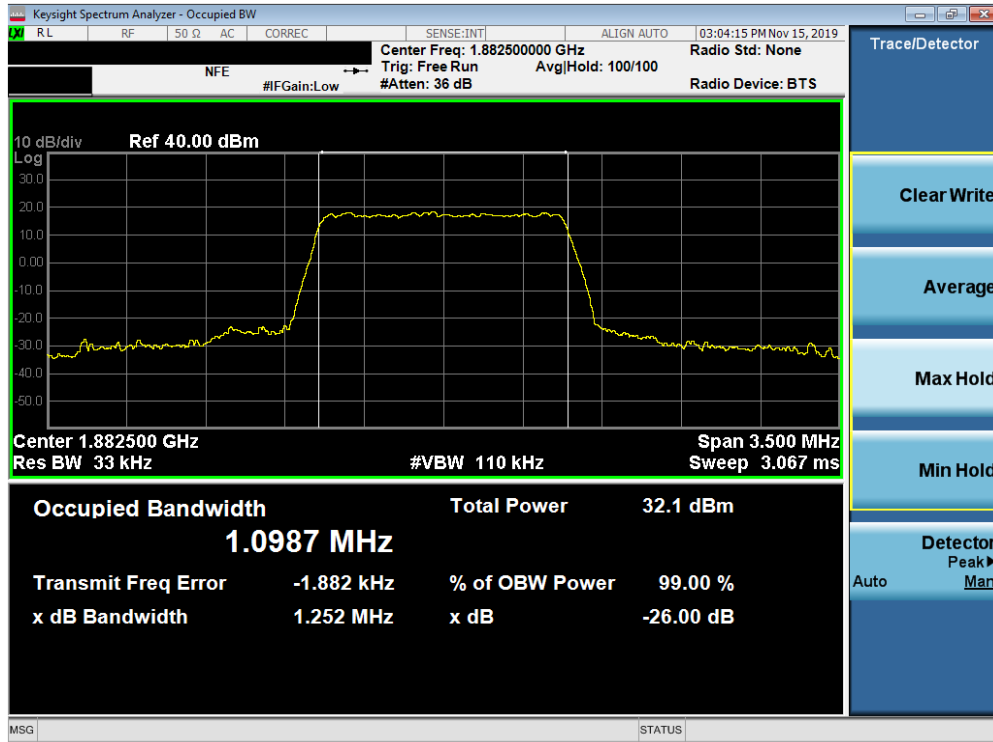
Plot 7-83. Occupied Bandwidth Plot (Band 66/4 - 20.0MHz 64-QAM - Full RB Configuration)



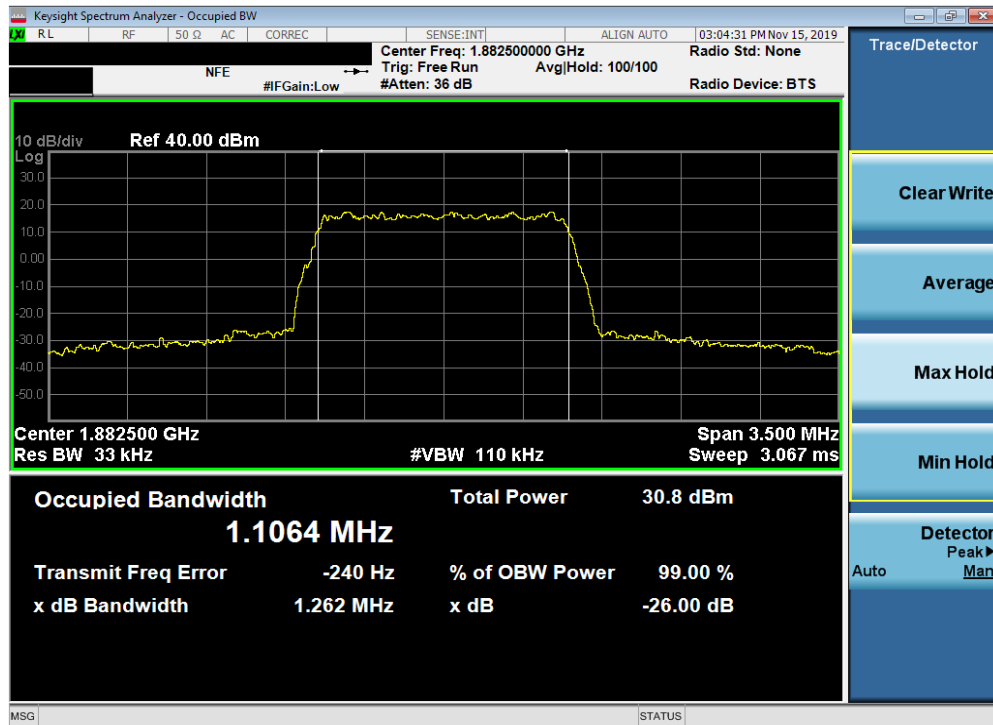
Plot 7-84. Occupied Bandwidth Plot (Band 66/4 - 20.0MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMG988U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band 25/2

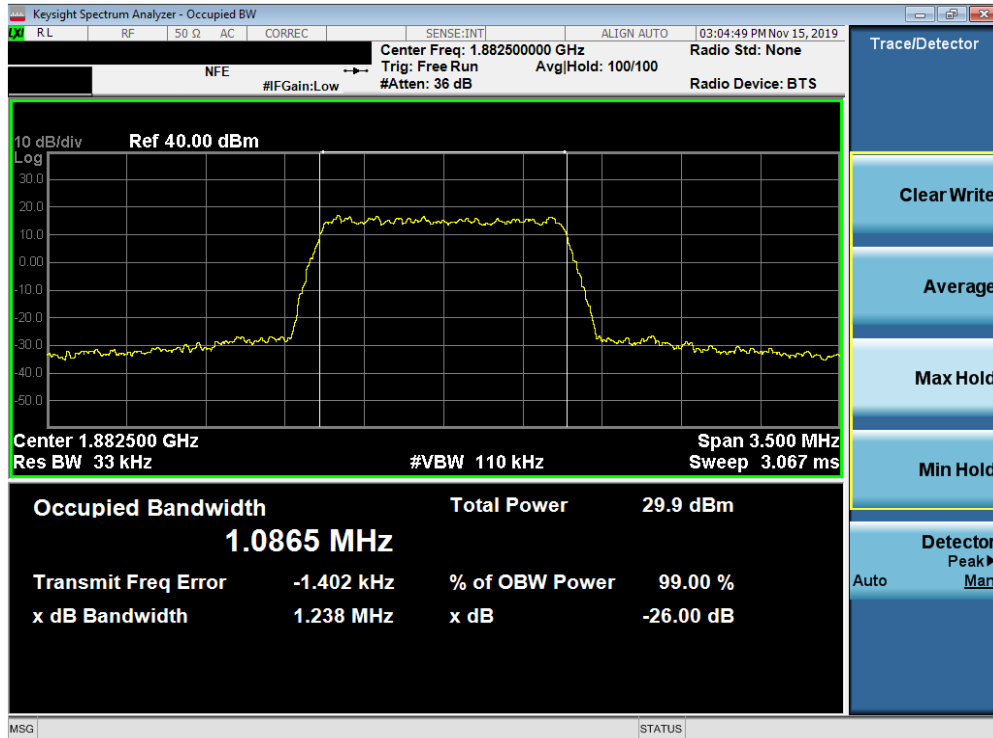


Plot 7-85. Occupied Bandwidth Plot (Band 25/2 - 1.4MHz QPSK - Full RB Configuration)

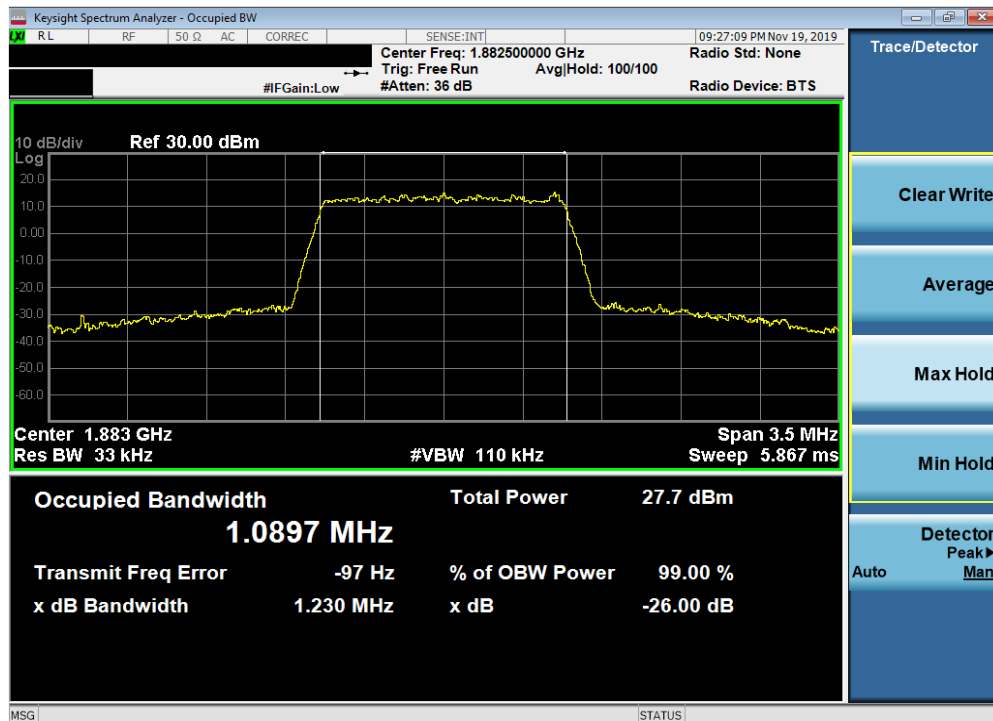


Plot 7-86. Occupied Bandwidth Plot (Band 25/2 - 1.4MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG988U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1911140187-03-R1.A3L	Test Dates: 11/14/2019 - 1/31/2020	EUT Type: Portable Handset		Page 62 of 486

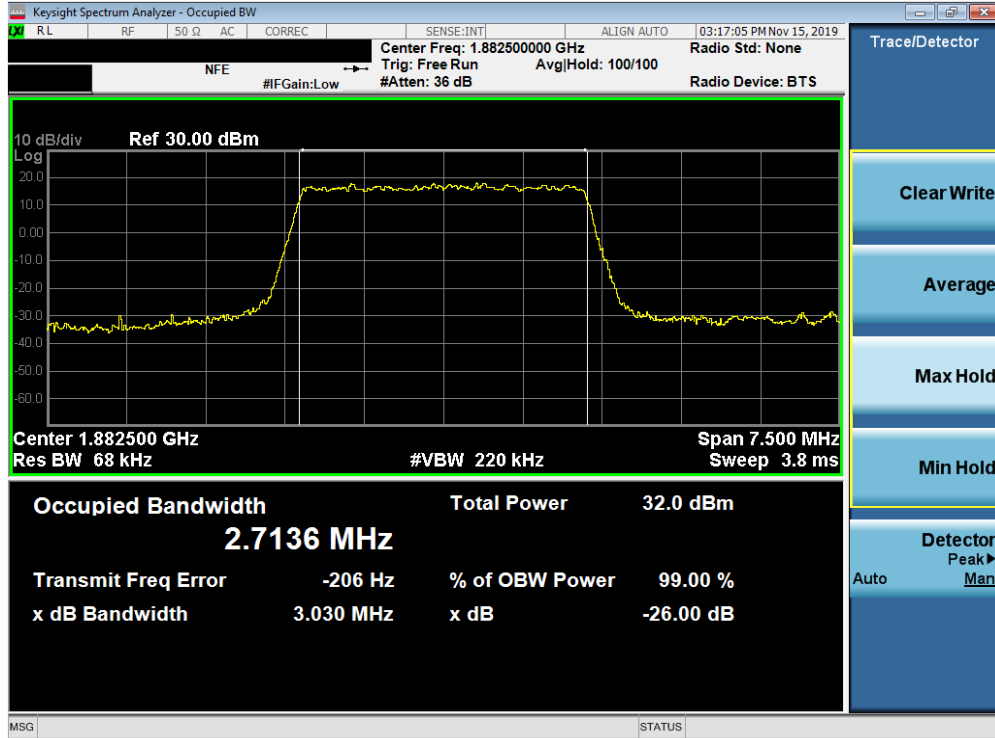


Plot 7-87. Occupied Bandwidth Plot (Band 25/2 - 1.4MHz 64-QAM - Full RB Configuration)

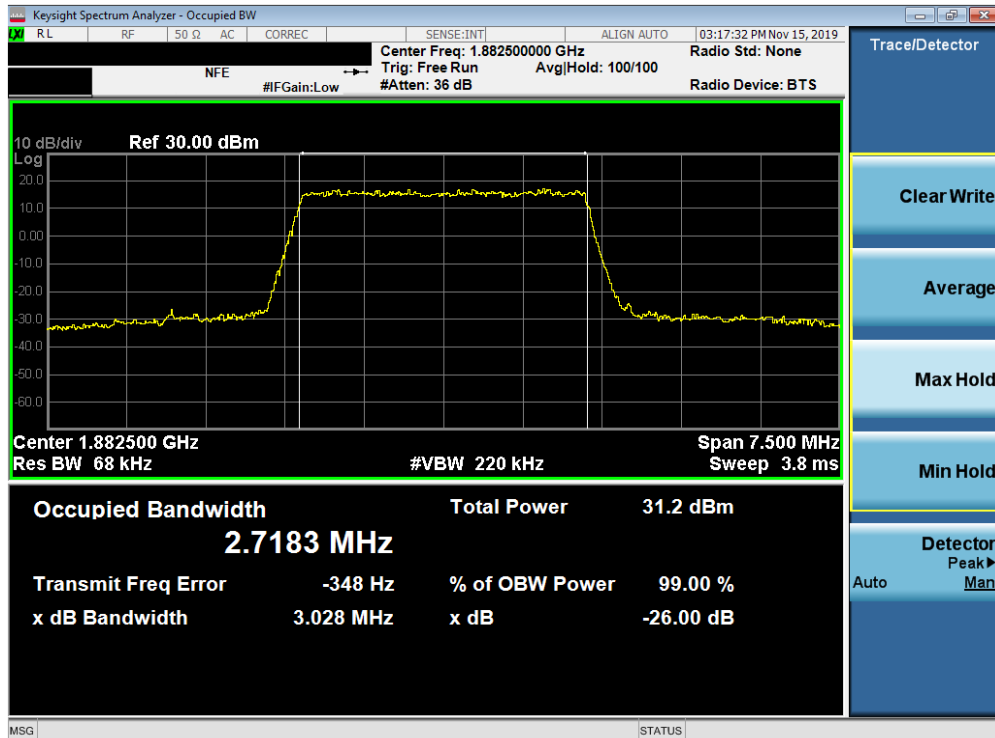


Plot 7-88. Occupied Bandwidth Plot (Band 25/2 - 1.4MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMG988U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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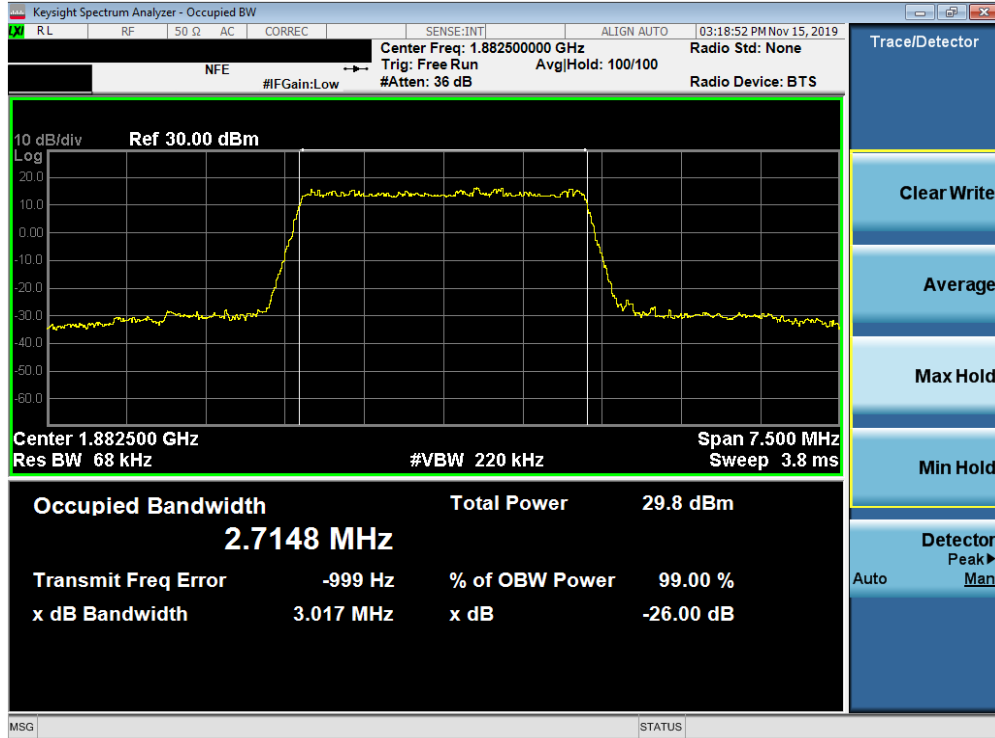


Plot 7-89. Occupied Bandwidth Plot (Band 25/2 - 3.0MHz QPSK - Full RB Configuration)

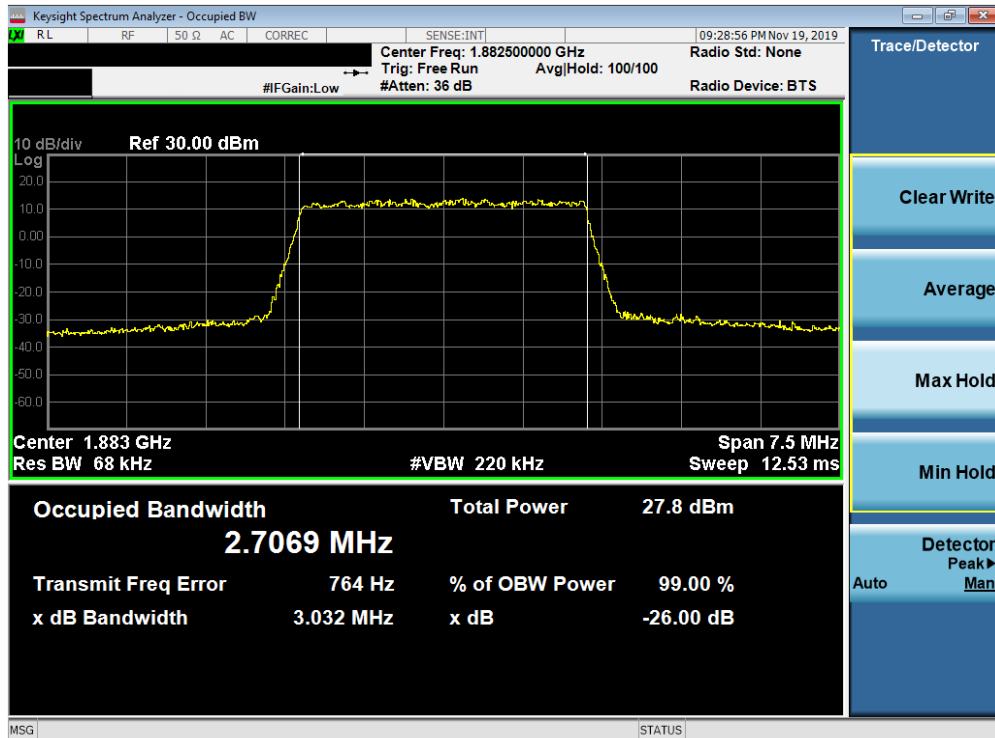


Plot 7-90. Occupied Bandwidth Plot (Band 25/2 - 3.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG988U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1911140187-03-R1.A3L	Test Dates: 11/14/2019 - 1/31/2020	EUT Type: Portable Handset		Page 64 of 486

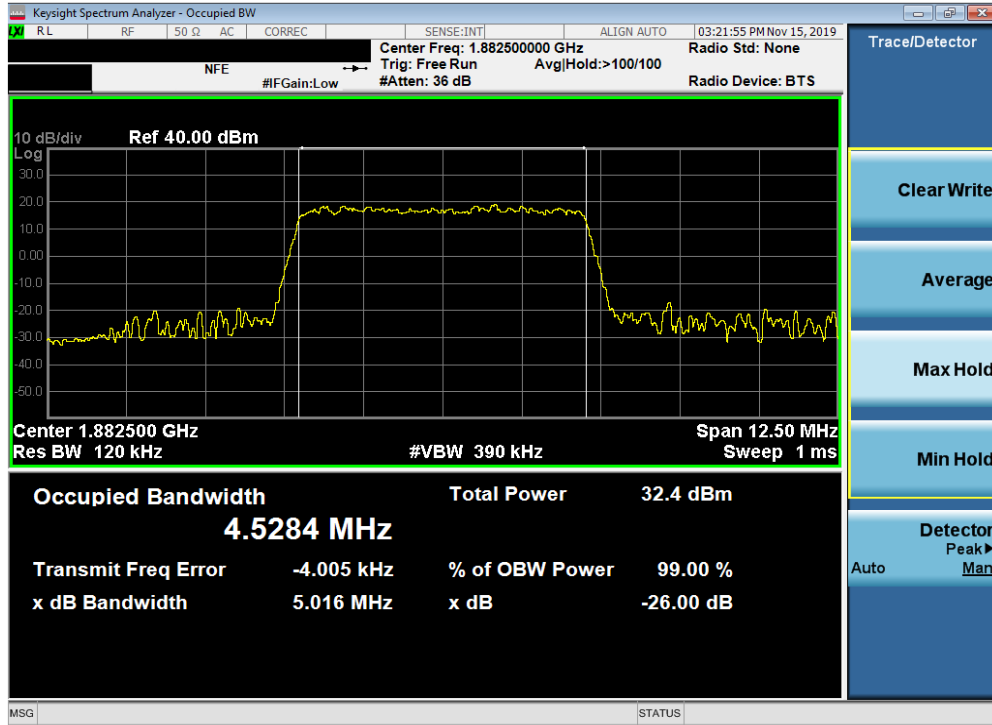


Plot 7-91. Occupied Bandwidth Plot (Band 25/2 - 3.0MHz 64-QAM - Full RB Configuration)

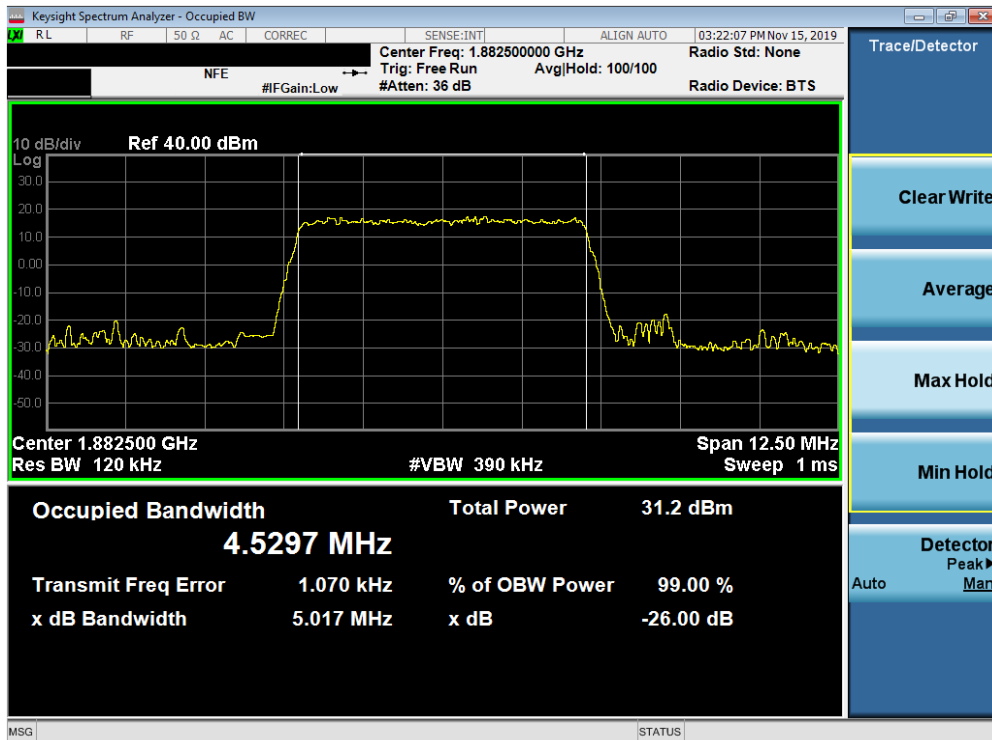


Plot 7-92. Occupied Bandwidth Plot (Band 25/2 - 3.0MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMG988U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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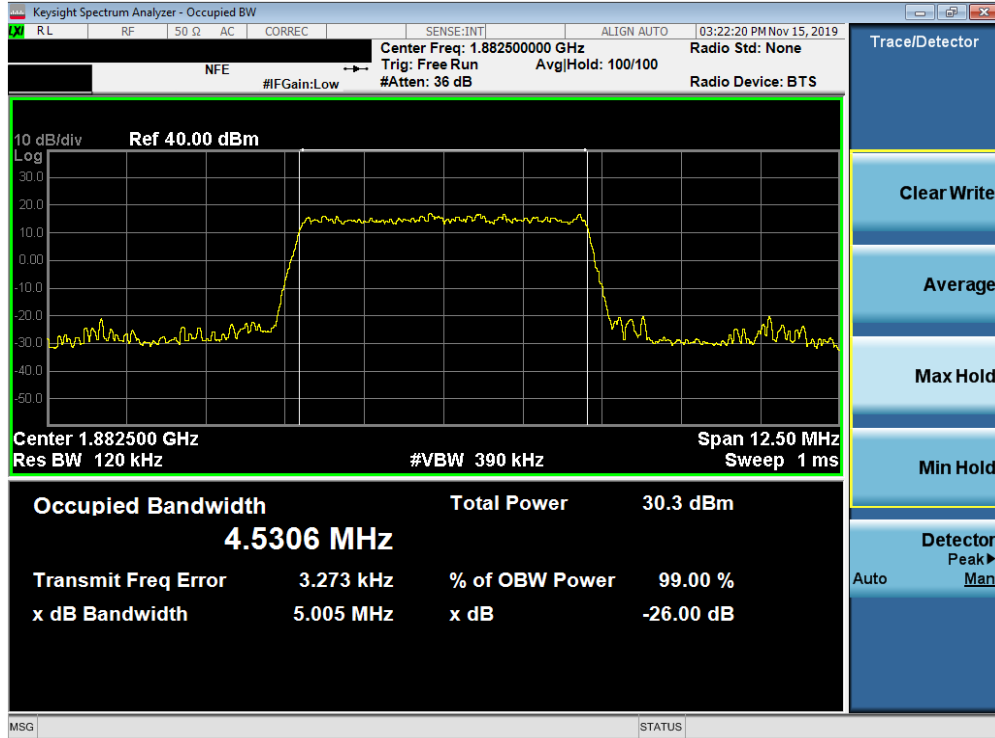


Plot 7-93. Occupied Bandwidth Plot (Band 25/2 - 5.0MHz QPSK - Full RB Configuration)

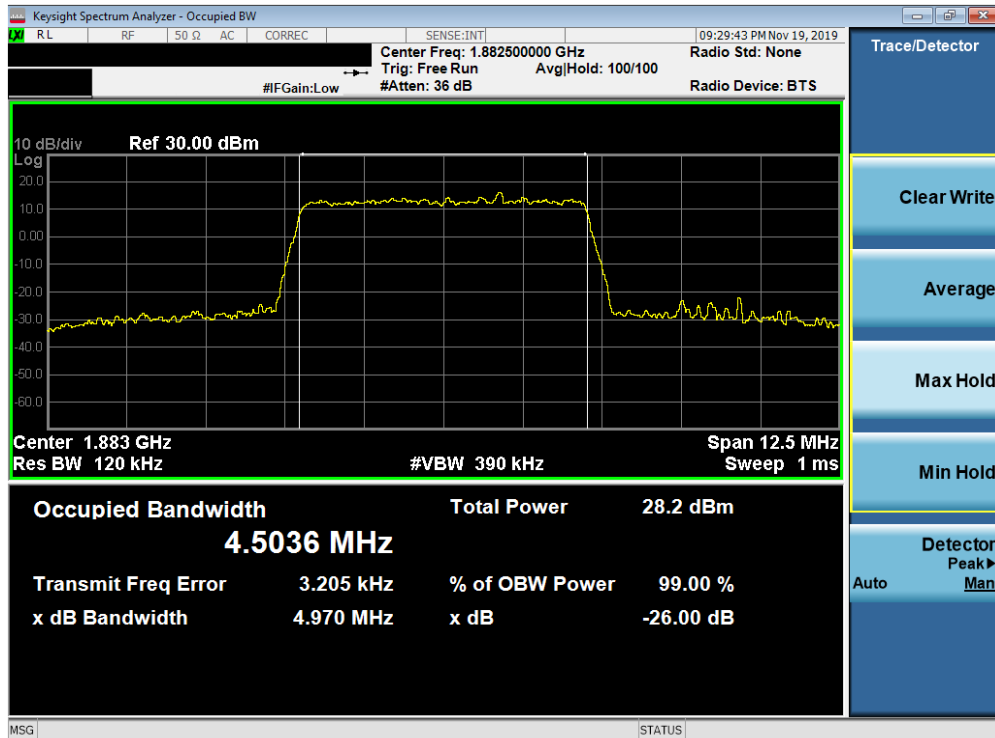


Plot 7-94. Occupied Bandwidth Plot (Band 25/2 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG988U			MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1911140187-03-R1.A3L	Test Dates: 11/14/2019 - 1/31/2020	EUT Type: Portable Handset		Page 66 of 486	

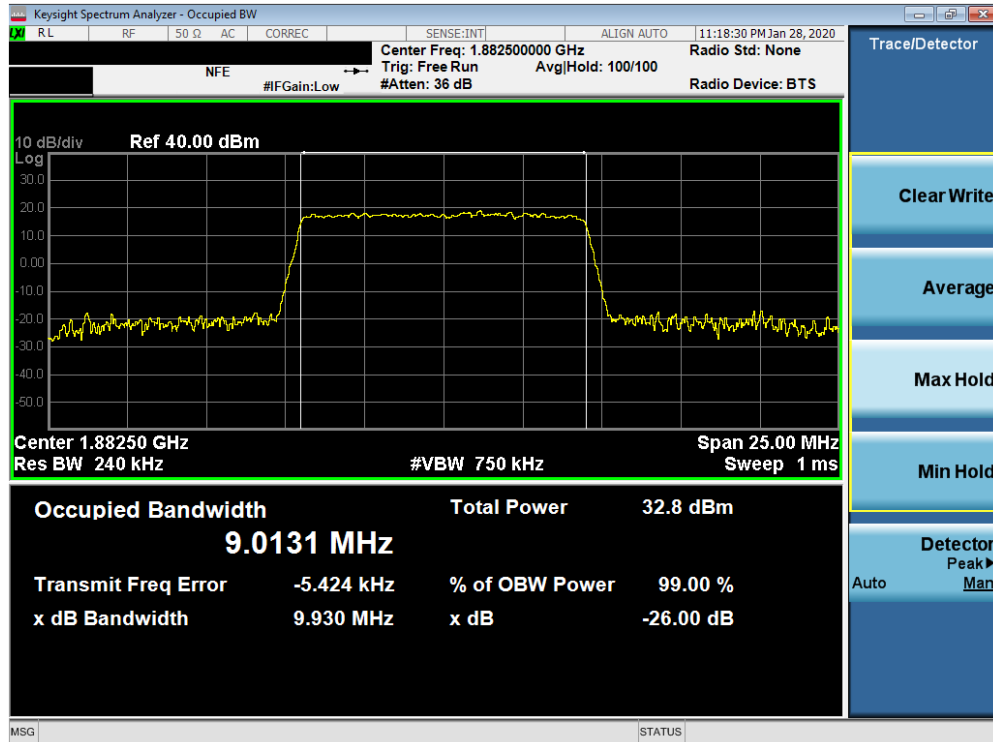


Plot 7-95. Occupied Bandwidth Plot (Band 25/2 - 5.0MHz 64-QAM - Full RB Configuration)

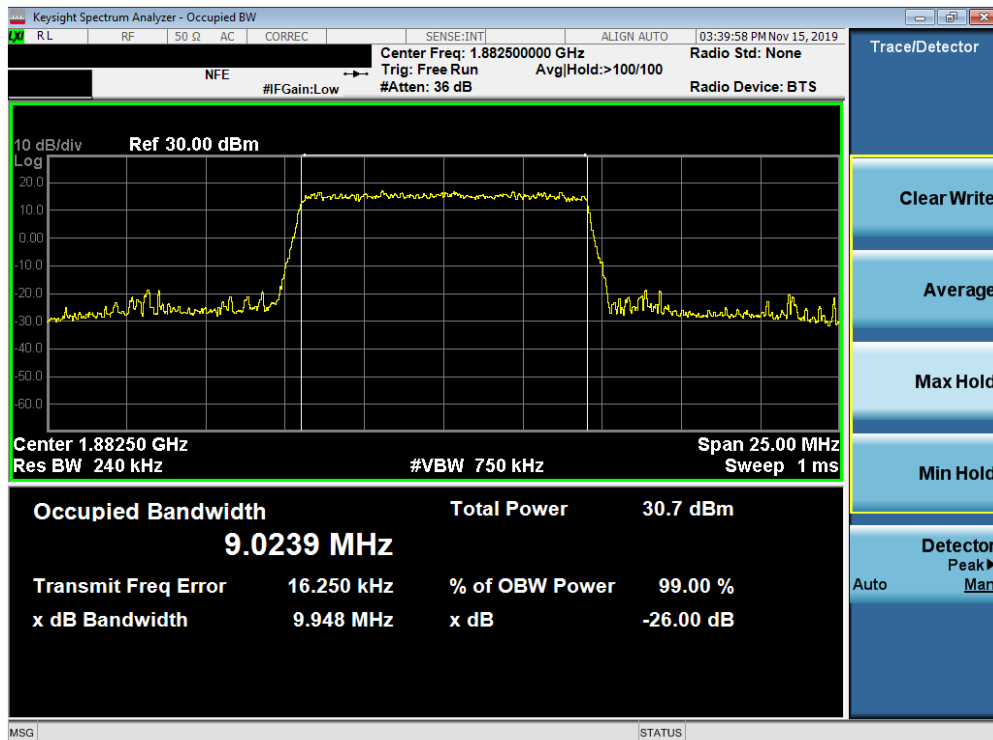


Plot 7-96. Occupied Bandwidth Plot (Band 25/2 - 5.0MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMG988U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1911140187-03-R1.A3L	Test Dates: 11/14/2019 - 1/31/2020	EUT Type: Portable Handset		Page 67 of 486

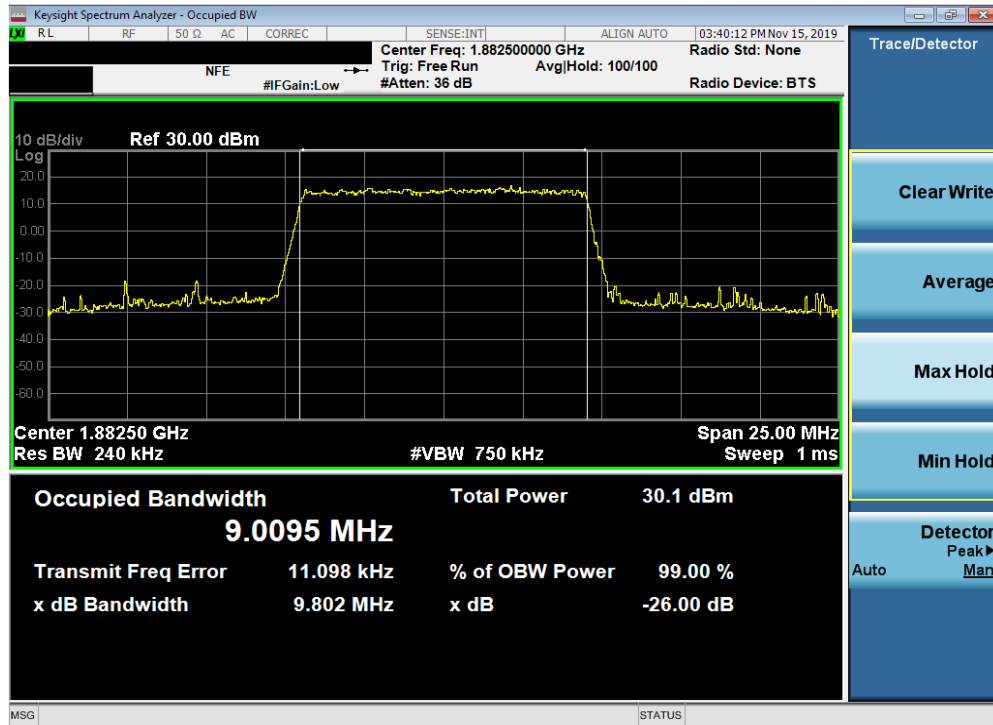


Plot 7-97. Occupied Bandwidth Plot (Band 25/2 - 10.0MHz QPSK - Full RB Configuration)

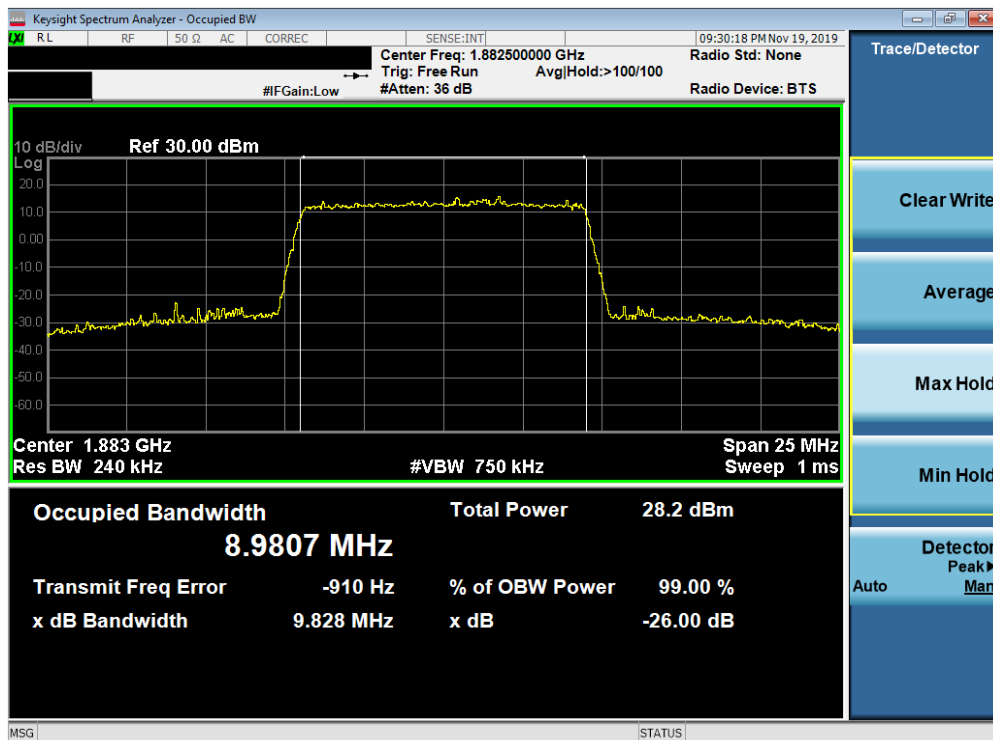


Plot 7-98. Occupied Bandwidth Plot (Band 25/2 - 10.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG988U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1911140187-03-R1.A3L	Test Dates: 11/14/2019 - 1/31/2020	EUT Type: Portable Handset		Page 68 of 486

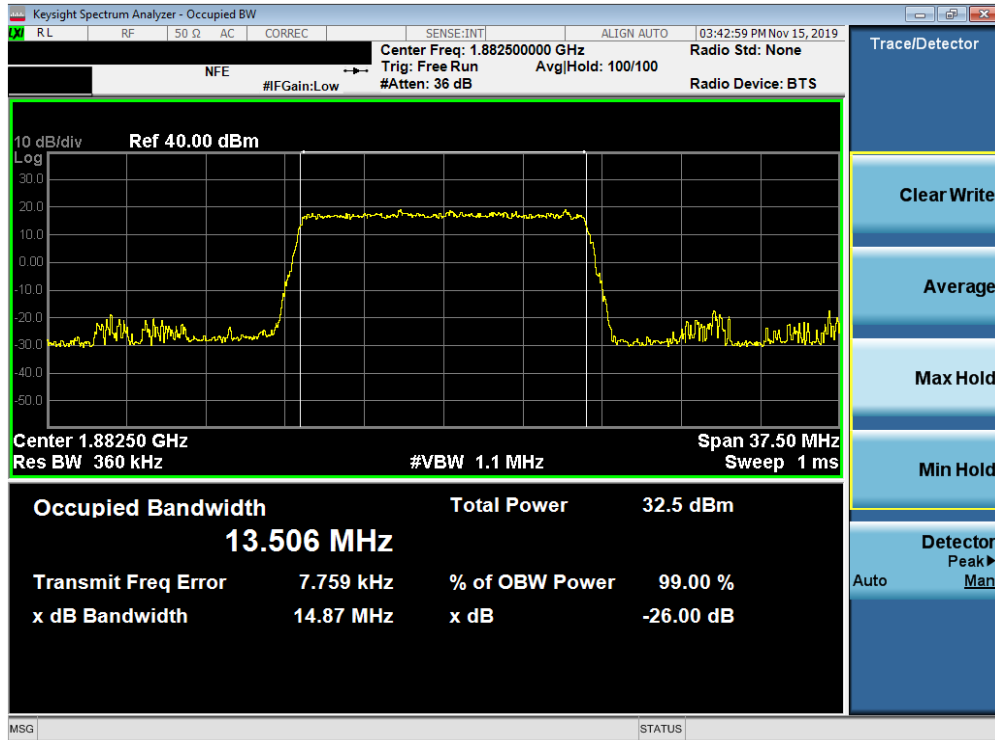


Plot 7-99. Occupied Bandwidth Plot (Band 25/2 - 10.0MHz 64-QAM - Full RB Configuration)

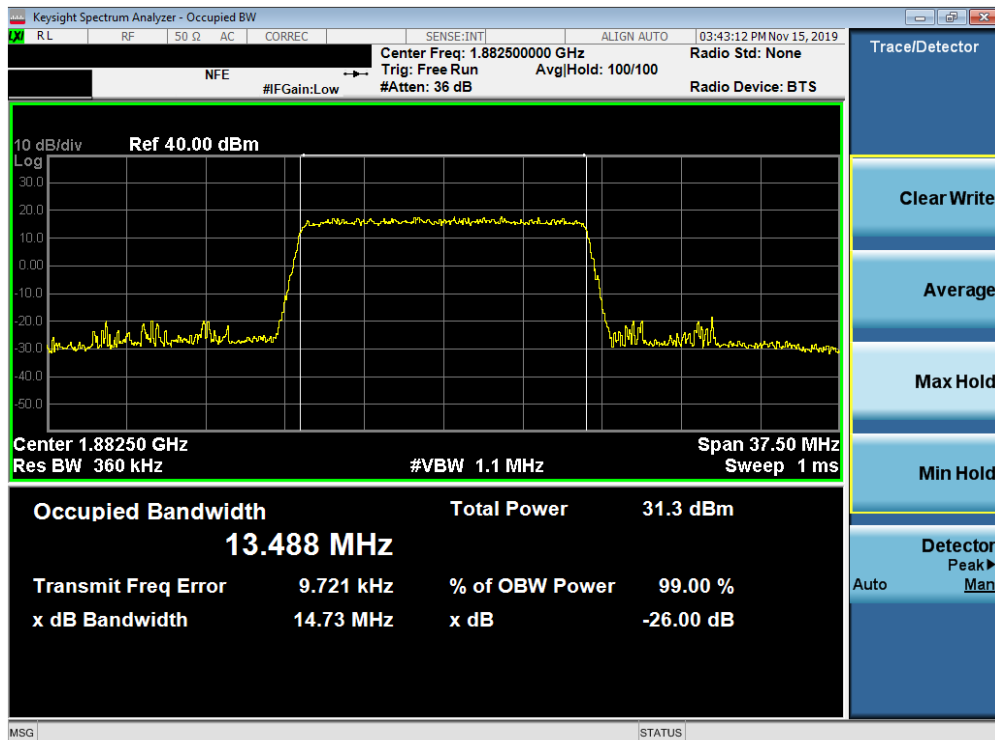


Plot 7-100. Occupied Bandwidth Plot (Band 25/2 - 10.0MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMG988U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1911140187-03-R1.A3L	Test Dates: 11/14/2019 - 1/31/2020	EUT Type: Portable Handset		Page 69 of 486

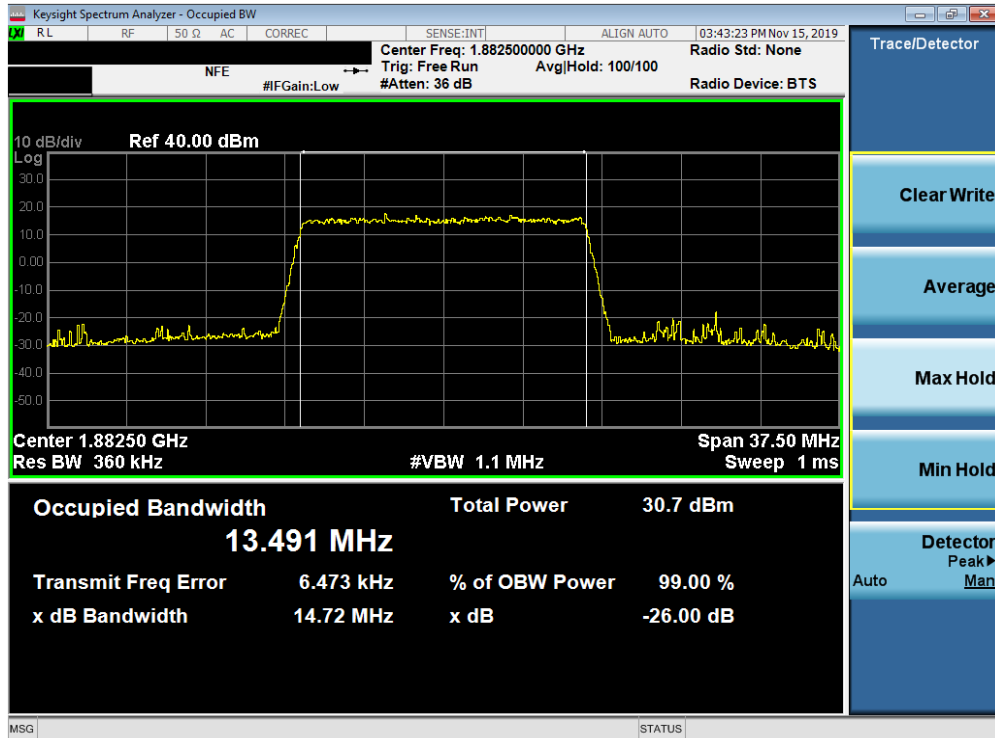


Plot 7-101. Occupied Bandwidth Plot (Band 25/2 - 15.0MHz QPSK - Full RB Configuration)

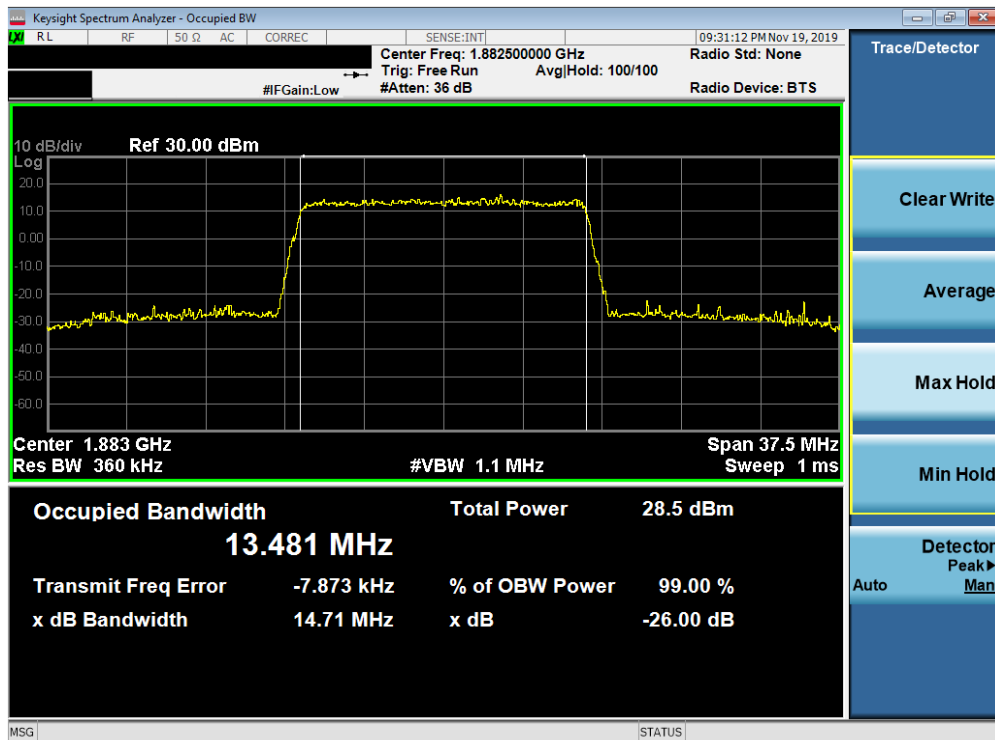


Plot 7-102. Occupied Bandwidth Plot (Band 25/2 - 15.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG988U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1911140187-03-R1.A3L	Test Dates: 11/14/2019 - 1/31/2020	EUT Type: Portable Handset		Page 70 of 486

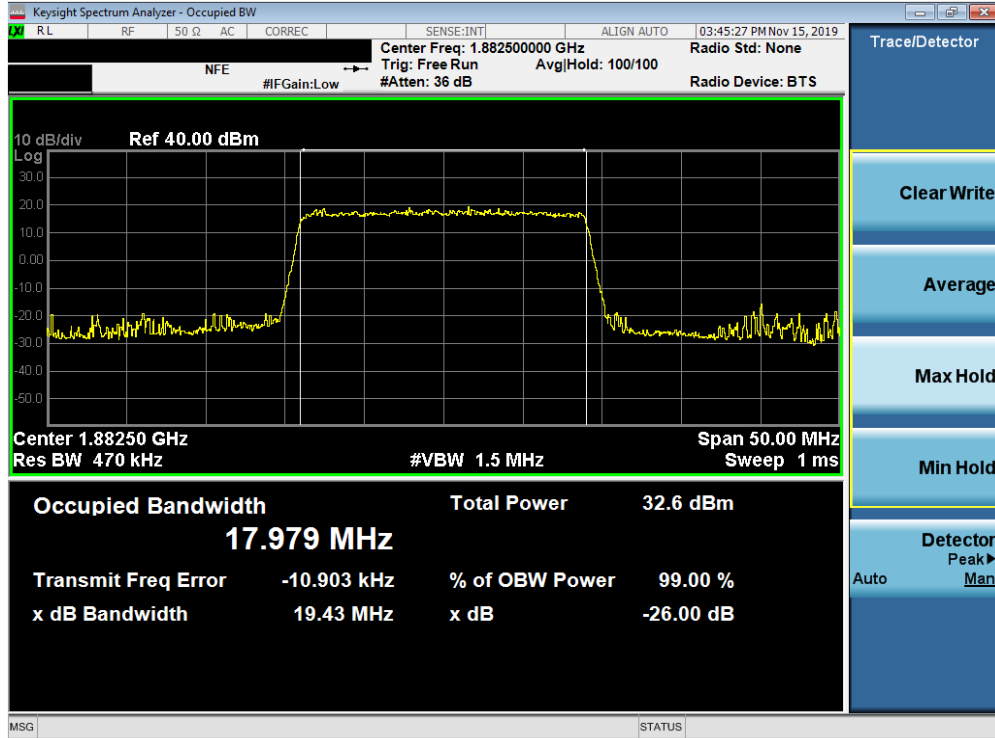


Plot 7-103. Occupied Bandwidth Plot (Band 25/2 - 15.0MHz 64-QAM - Full RB Configuration)

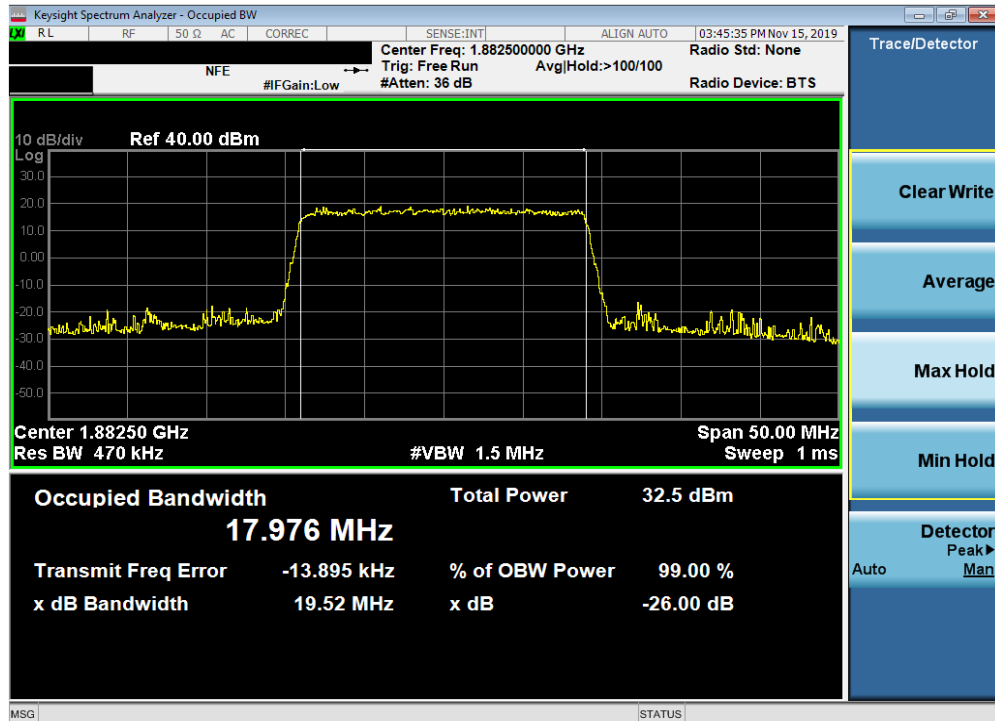


Plot 7-104. Occupied Bandwidth Plot (Band 25/2 - 15.0MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMG988U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1911140187-03-R1.A3L	Test Dates: 11/14/2019 - 1/31/2020	EUT Type: Portable Handset		Page 71 of 486

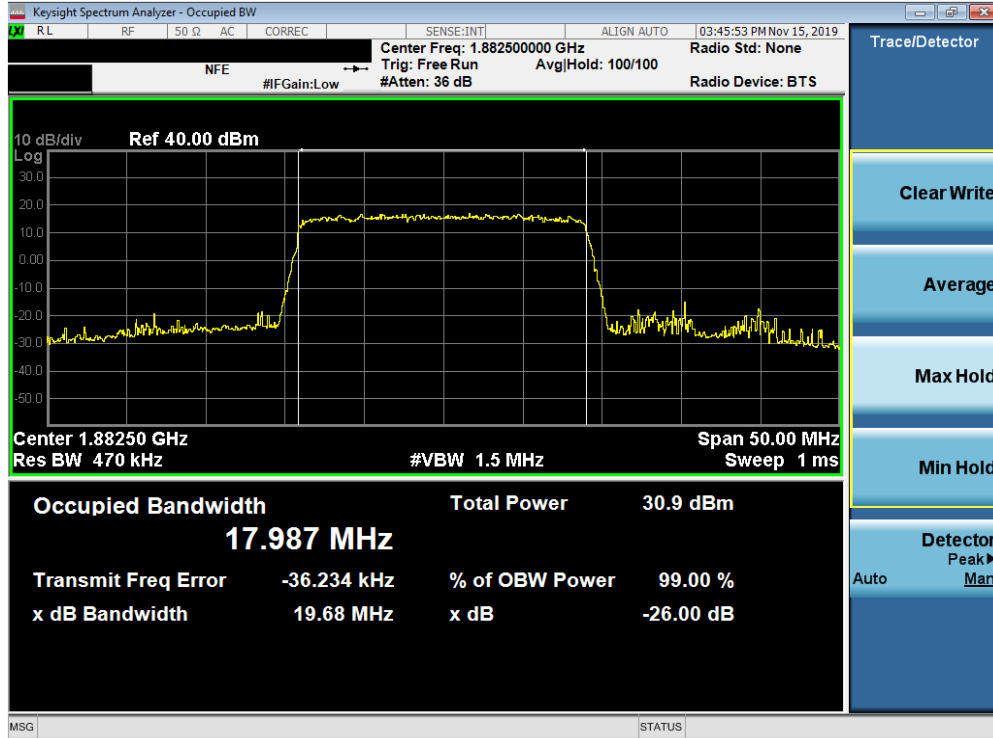


Plot 7-105. Occupied Bandwidth Plot (Band 25/2 - 20.0MHz QPSK - Full RB Configuration)

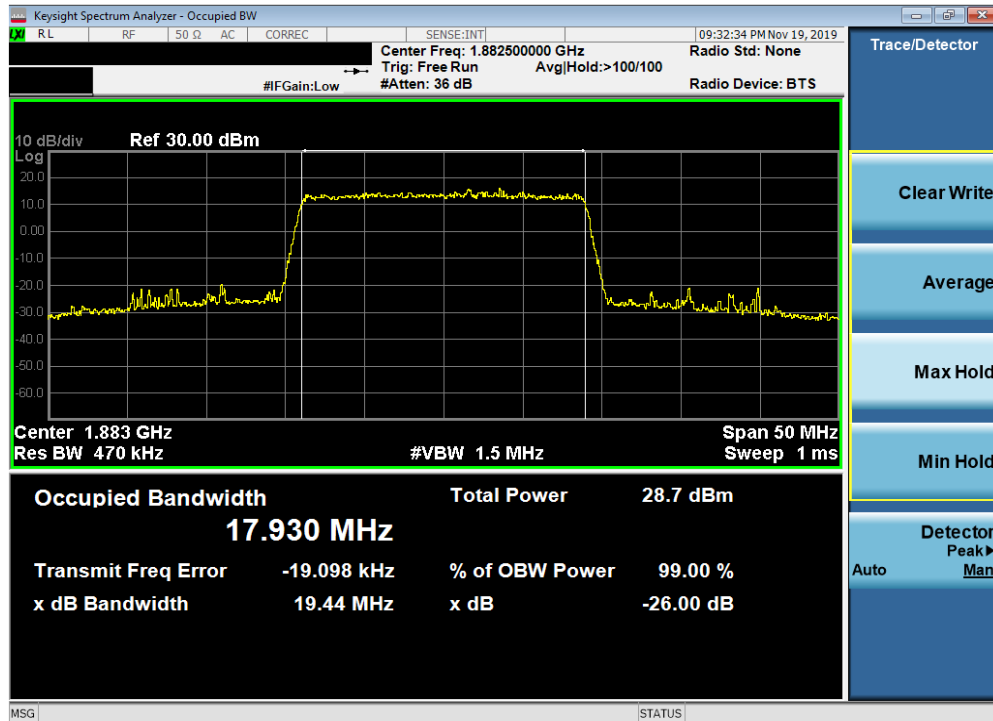


Plot 7-106. Occupied Bandwidth Plot (Band 25/2 - 20.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG988U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1911140187-03-R1.A3L	Test Dates: 11/14/2019 - 1/31/2020	EUT Type: Portable Handset		Page 72 of 486



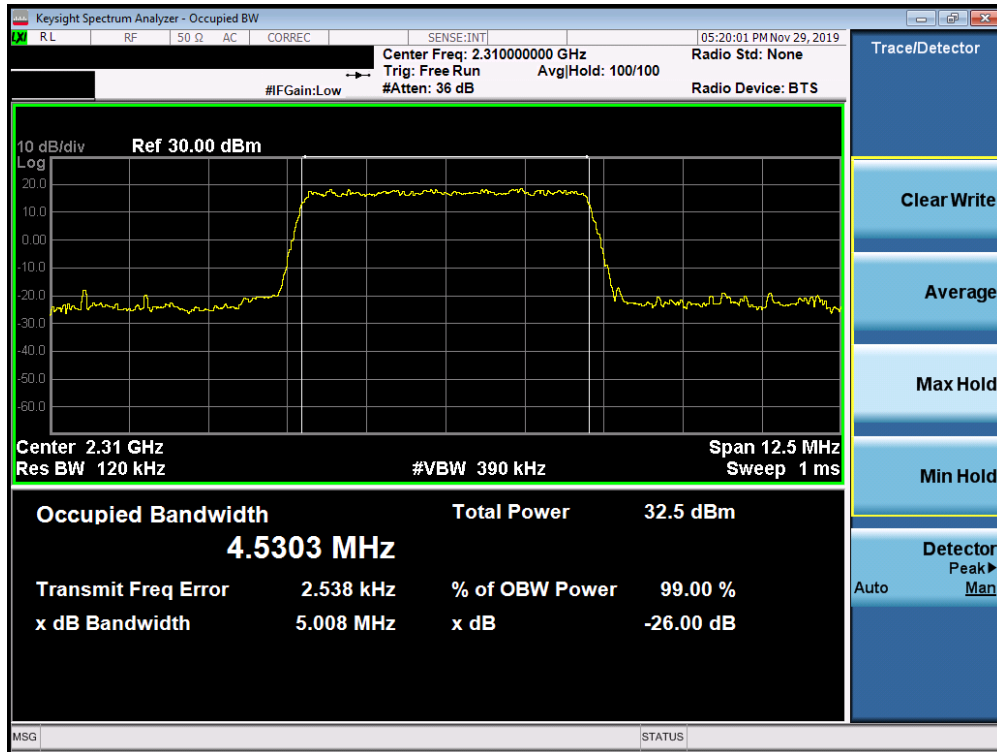
Plot 7-107. Occupied Bandwidth Plot (Band 25/2 - 20.0MHz 64-QAM - Full RB Configuration)



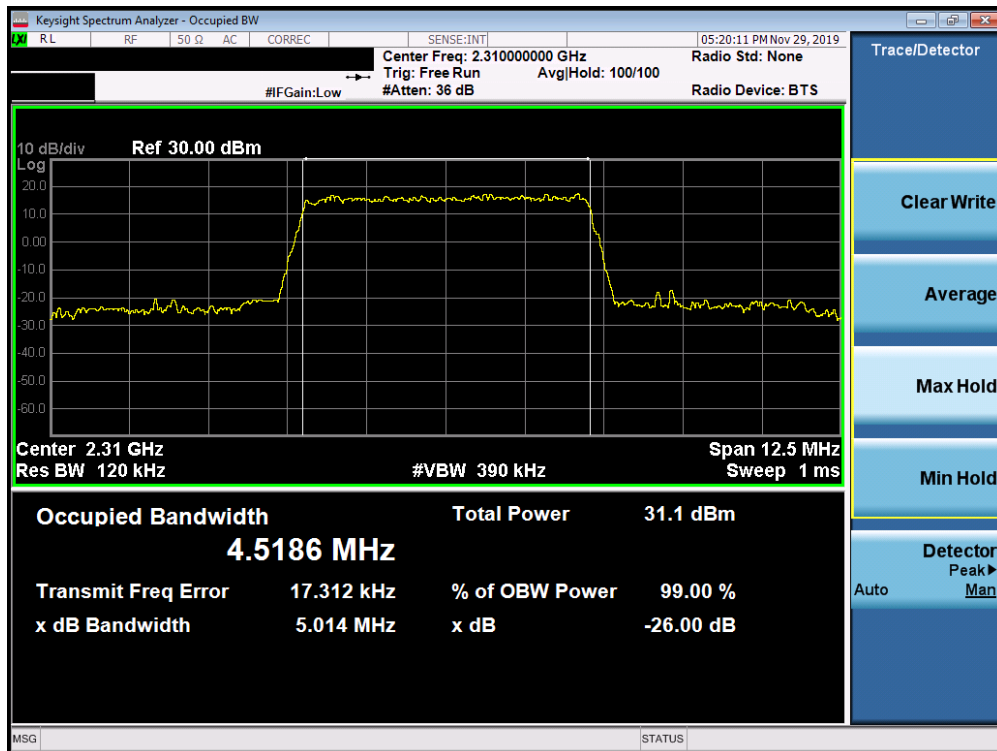
Plot 7-108. Occupied Bandwidth Plot (Band 25/2 - 20.0MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMG988U	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1911140187-03-R1-A3L	Test Dates: 11/14/2019 - 1/31/2020	EUT Type: Portable Handset		Page 73 of 486

Band 30

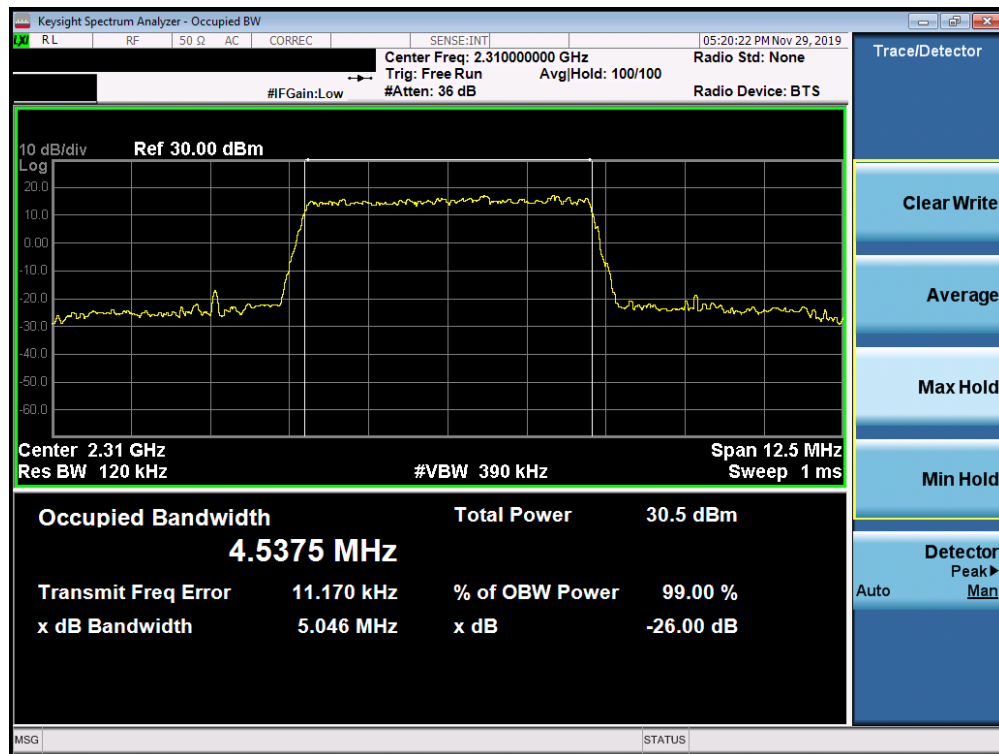


Plot 7-109. Occupied Bandwidth Plot (Band 30 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-110. Occupied Bandwidth Plot (Band 30 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG988U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1911140187-03-R1.A3L	Test Dates: 11/14/2019 - 1/31/2020	EUT Type: Portable Handset		Page 74 of 486

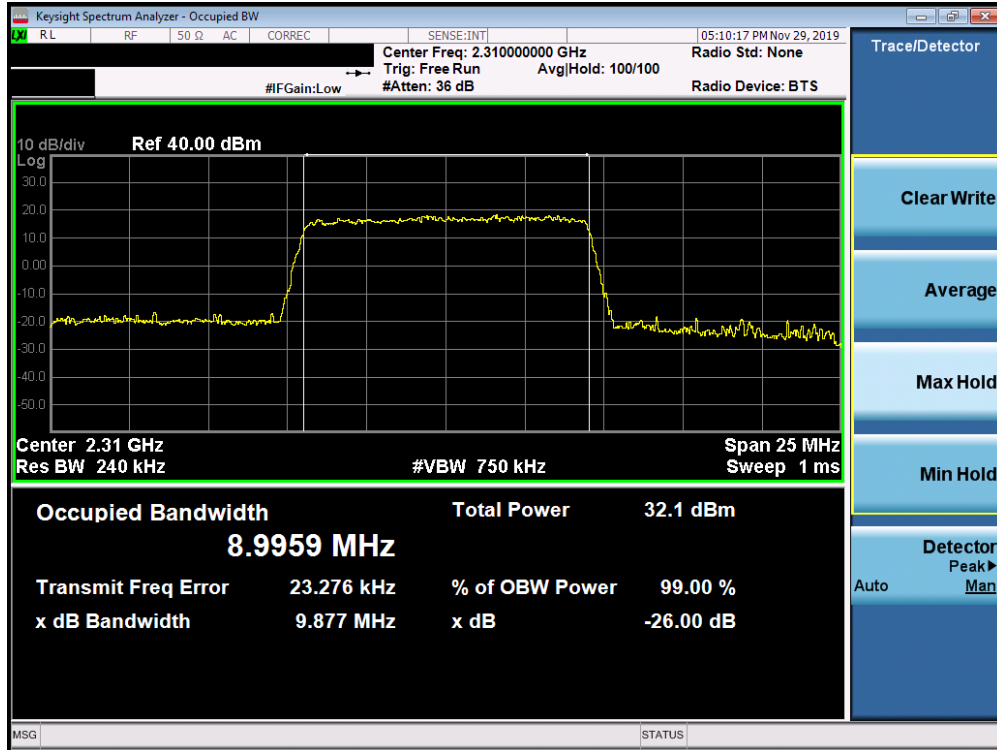


Plot 7-111. Occupied Bandwidth Plot (Band 30 - 5.0MHz 64-QAM - Full RB Configuration)

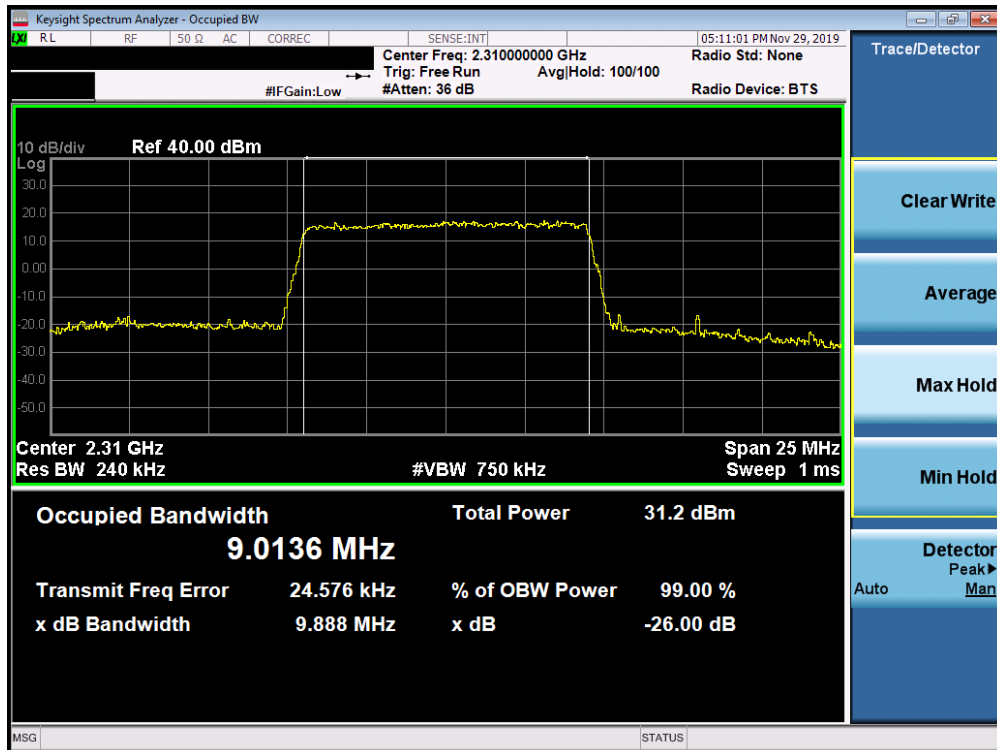


Plot 7-112. Occupied Bandwidth Plot (Band 30 - 5.0MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMG988U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1911140187-03-R1.A3L	Test Dates: 11/14/2019 - 1/31/2020	EUT Type: Portable Handset		Page 75 of 486



Plot 7-113. Occupied Bandwidth Plot (Band 30 - 10.0MHz QPSK - Full RB Configuration)



Plot 7-114. Occupied Bandwidth Plot (Band 30 - 10.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG988U	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1911140187-03-R1.A3L	Test Dates: 11/14/2019 - 1/31/2020	EUT Type: Portable Handset		Page 76 of 486