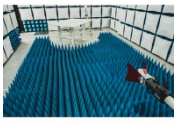
PCTEST
7185 Oakland Mills Road, Columbia, MD 21046 USA
Tel. 410.290.6652 / Fax 410.290.6654
http://www.pctest.com



MEASUREMENT REPORT
LTE / Sub 6Ghz NR

Applicant Name:
LG Electronics USA, Inc.
1000 Sylvan Avenue
Englewood Cliffs, NJ 07632
United States

Date of Testing:
12/30/2019 - 2/14/2020
Test Site/Location:
PCTEST Lab. Columbia, MD, USA
Test Report Serial No.:
1M1912300229-03.ZNF

FCC ID:	**ZNFV600AM**
APPLICANT:	**LG Electronics USA, Inc.**

Application Type:	Certification
Model:	LM-V600AM
Additional Model(s):	LMV600AM, V600AM
EUT Type:	Portable Handset
FCC Classification:	PCS Licensed Transmitter Held to Ear (PCE)
FCC Rule Part(s):	22, 24, & 27
Test Procedure(s):	ANSI C63.26-2015, ANSI/TIA-603-E-2016, KDB 971168 D01 v03r01, KDB 648474 D03 v01r04

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in §2.947. Test results reported herein relate only to the item(s) tested.

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

Randy Ortanez
President

ACCREDITED
TESTING CERT#2041.01

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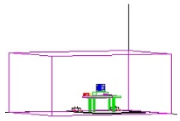
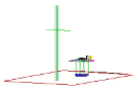


MEASUREMENT REPORT
FCC Part 22, 24, & 27



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 12	27	699.7 - 715.3	0.073	18.66	0.121	20.81	1M11G7D	QPSK
LTE Band 12	27	699.7 - 715.3	0.059	17.71	0.097	19.86	1M10W7D	16QAM
LTE Band 12	27	699.7 - 715.3	0.046	16.64	0.076	18.79	1M09W7D	64QAM
LTE Band 12	27	699.7 - 715.3	0.023	13.53	0.037	15.68	1M10W7D	256QAM
LTE Band 12	27	700.5 - 714.5	0.073	18.65	0.120	20.80	2M70G7D	QPSK
LTE Band 12	27	700.5 - 714.5	0.059	17.74	0.097	19.89	2M71W7D	16QAM
LTE Band 12	27	700.5 - 714.5	0.046	16.67	0.076	18.82	2M70W7D	64QAM
LTE Band 12	27	700.5 - 714.5	0.023	13.61	0.038	15.76	2M70W7D	256QAM
LTE Band 12	27	701.5 - 713.5	0.073	18.62	0.119	20.77	4M52G7D	QPSK
LTE Band 12	27	701.5 - 713.5	0.058	17.63	0.095	19.78	4M50W7D	16QAM
LTE Band 12	27	701.5 - 713.5	0.047	16.70	0.077	18.85	4M52W7D	64QAM
LTE Band 12	27	701.5 - 713.5	0.023	13.68	0.038	15.83	4M50W7D	256QAM
LTE Band 12	27	704 - 711	0.074	18.68	0.121	20.83	9M00G7D	QPSK
LTE Band 12	27	704 - 711	0.044	16.44	0.072	18.59	8M97W7D	16QAM
LTE Band 12	27	704 - 711	0.034	15.29	0.055	17.44	9M01W7D	64QAM
LTE Band 12	27	704 - 711	0.016	11.95	0.026	14.10	8M97W7D	256QAM
LTE Band 5	22H	824.7 - 848.3	0.055	17.38	0.090	19.53	0M11G7D	QPSK
LTE Band 5	22H	824.7 - 848.3	0.040	15.98	0.065	18.13	1M10W7D	16QAM
LTE Band 5	22H	824.7 - 848.3	0.032	15.11	0.053	17.26	1M09W7D	64QAM
LTE Band 5	22H	824.7 - 848.3	0.016	12.11	0.027	14.26	1M10W7D	256QAM
LTE Band 5	22H	825.5 - 847.5	0.054	17.31	0.088	19.46	2M70G7D	QPSK
LTE Band 5	22H	825.5 - 847.5	0.041	16.10	0.067	18.25	2M71W7D	16QAM
LTE Band 5	22H	825.5 - 847.5	0.032	15.10	0.053	17.25	2M70W7D	64QAM
LTE Band 5	22H	825.5 - 847.5	0.016	12.06	0.026	14.21	2M71W7D	256QAM
LTE Band 5	22H	826.5 - 846.5	0.054	17.33	0.089	19.48	4M50G7D	QPSK
LTE Band 5	22H	826.5 - 846.5	0.039	15.92	0.064	18.07	4M51W7D	16QAM
LTE Band 5	22H	826.5 - 846.5	0.032	15.06	0.053	17.21	4M53W7D	64QAM
LTE Band 5	22H	826.5 - 846.5	0.016	12.02	0.026	14.17	4M56W7D	256QAM
LTE Band 5	22H	829 - 844	0.055	17.40	0.090	19.55	8M99G7D	QPSK
LTE Band 5	22H	829 - 844	0.036	15.61	0.060	17.76	8M98W7D	16QAM
LTE Band 5	22H	829 - 844	0.028	14.49	0.046	16.64	9M00W7D	64QAM
LTE Band 5	22H	829 - 844	0.014	11.52	0.023	13.67	9M03W7D	256QAM

EUT Overview (<1 GHz)

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	0.155	21.90	1M11G7D	QPSK
LTE Band 66/4	27	1710.7 - 1779.3	0.124	20.93	1M10W7D	16QAM
LTE Band 66/4	27	1710.7 - 1779.3	0.097	19.85	1M09W7D	64QAM
LTE Band 66/4	27	1710.7 - 1779.3	0.047	16.72	1M10W7D	256QAM
LTE Band 66/4	27	1711.5 - 1778.5	0.156	21.92	2M71G7D	QPSK
LTE Band 66/4	27	1711.5 - 1778.5	0.115	20.62	2M71W7D	16QAM
LTE Band 66/4	27	1711.5 - 1778.5	0.097	19.87	2M71W7D	64QAM
LTE Band 66/4	27	1711.5 - 1778.5	0.049	16.88	2M71W7D	256QAM
LTE Band 66/4	27	1712.5 - 1777.5	0.153	21.85	4M54G7D	QPSK
LTE Band 66/4	27	1712.5 - 1777.5	0.115	20.60	4M54W7D	16QAM
LTE Band 66/4	27	1712.5 - 1777.5	0.097	19.87	4M54W7D	64QAM
LTE Band 66/4	27	1712.5 - 1777.5	0.047	16.74	4M54W7D	256QAM
LTE Band 66/4	27	1715 - 1775	0.155	21.90	8M99G7D	QPSK
LTE Band 66/4	27	1715 - 1775	0.117	20.69	9M01W7D	16QAM
LTE Band 66/4	27	1715 - 1775	0.092	19.66	9M01W7D	64QAM
LTE Band 66/4	27	1715 - 1775	0.049	16.91	9M01W7D	256QAM
LTE Band 66/4	27	1717.5 - 1772.5	0.153	21.85	13M5G7D	QPSK
LTE Band 66/4	27	1717.5 - 1772.5	0.117	20.70	13M5W7D	16QAM
LTE Band 66/4	27	1717.5 - 1772.5	0.094	19.71	13M5W7D	64QAM
LTE Band 66/4	27	1717.5 - 1772.5	0.048	16.81	13M5W7D	256QAM
LTE Band 66/4	27	1720 - 1770	0.157	21.95	18M0G7D	QPSK
LTE Band 66/4	27	1720 - 1770	0.110	20.41	18M0W7D	16QAM
LTE Band 66/4	27	1720 - 1770	0.089	19.50	18M0W7D	64QAM
LTE Band 66/4	27	1720 - 1770	0.047	16.68	18M0W7D	256QAM
LTE Band 2	24E	1850.7 - 1909.3	0.149	21.73	1M10G7D	QPSK
LTE Band 2	24E	1850.7 - 1909.3	0.122	20.85	1M10W7D	16QAM
LTE Band 2	24E	1850.7 - 1909.3	0.094	19.73	1M10W7D	64QAM
LTE Band 2	24E	1850.7 - 1909.3	0.048	16.82	1M10W7D	256QAM
LTE Band 2	24E	1851.5 - 1908.5	0.155	21.91	2M70G7D	QPSK
LTE Band 2	24E	1851.5 - 1908.5	0.123	20.90	2M70W7D	16QAM
LTE Band 2	24E	1851.5 - 1908.5	0.096	19.84	2M70W7D	64QAM
LTE Band 2	24E	1851.5 - 1908.5	0.048	16.85	2M71W7D	256QAM
LTE Band 2	24E	1852.5 - 1907.5	0.153	21.86	4M52G7D	QPSK
LTE Band 2	24E	1852.5 - 1907.5	0.117	20.70	4M52W7D	16QAM
LTE Band 2	24E	1852.5 - 1907.5	0.090	19.55	4M53W7D	64QAM
LTE Band 2	24E	1852.5 - 1907.5	0.049	16.86	4M50W7D	256QAM
LTE Band 2	24E	1855 - 1905	0.153	21.85	9M01G7D	QPSK
LTE Band 2	24E	1855 - 1905	0.115	20.60	8M97W7D	16QAM
LTE Band 2	24E	1855 - 1905	0.097	19.89	9M00W7D	64QAM
LTE Band 2	24E	1855 - 1905	0.048	16.81	8M95W7D	256QAM
LTE Band 2	24E	1857.5 - 1902.5	0.155	21.91	13M5G7D	QPSK
LTE Band 2	24E	1857.5 - 1902.5	0.115	20.62	13M5W7D	16QAM
LTE Band 2	24E	1857.5 - 1902.5	0.097	19.87	13M5W7D	64QAM
LTE Band 2	24E	1857.5 - 1902.5	0.049	16.88	13M5W7D	256QAM
LTE Band 2	24E	1860 - 1900	0.358	25.53	17M9G7D	QPSK
LTE Band 2	24E	1860 - 1900	0.252	24.01	17M9W7D	16QAM
LTE Band 2	24E	1860 - 1900	0.203	23.07	18M0W7D	64QAM
LTE Band 2	24E	1860 - 1900	0.057	17.53	18M0W7D	256QAM

EUT Overview (Mid Bands)

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	0.101	20.05	4M51G7D	QPSK
LTE Band 30	27	2307.5 - 2312.5	0.069	18.41	4M49W7D	16QAM
LTE Band 30	27	2307.5 - 2312.5	0.058	17.61	4M53W7D	64QAM
LTE Band 30	27	2307.5 - 2312.5	0.036	15.53	4M55W7D	256QAM
LTE Band 30	27	2310	0.109	20.36	9M05G7D	QPSK
LTE Band 30	27	2310	0.078	18.90	8M97W7D	16QAM
LTE Band 30	27	2310	0.062	17.92	8M99W7D	64QAM
LTE Band 30	27	2310	0.033	15.22	9M01W7D	256QAM
LTE Band 41 (PC3)	27	2498.5 - 2687.5	0.150	21.77	4M53G7D	QPSK
LTE Band 41 (PC3)	27	2498.5 - 2687.5	0.110	20.42	4M53W7D	16QAM
LTE Band 41 (PC3)	27	2498.5 - 2687.5	0.084	19.25	4M51W7D	64QAM
LTE Band 41 (PC3)	27	2498.5 - 2687.5	0.044	16.43	4M52W7D	256QAM
LTE Band 41 (PC3)	27	2501 - 2685	0.153	21.84	9M00G7D	QPSK
LTE Band 41 (PC3)	27	2501 - 2685	0.112	20.49	9M02W7D	16QAM
LTE Band 41 (PC3)	27	2501 - 2685	0.086	19.32	9M00W7D	64QAM
LTE Band 41 (PC3)	27	2501 - 2685	0.045	16.50	9M03W7D	256QAM
LTE Band 41 (PC3)	27	2503.5 - 2682.5	0.153	21.85	13M5G7D	QPSK
LTE Band 41 (PC3)	27	2503.5 - 2682.5	0.112	20.50	13M5W7D	16QAM
LTE Band 41 (PC3)	27	2503.5 - 2682.5	0.086	19.33	13M5W7D	64QAM
LTE Band 41 (PC3)	27	2503.5 - 2682.5	0.045	16.51	13M5W7D	256QAM
LTE Band 41 (PC3)	27	2506 - 2680	0.157	21.97	18M0G7D	QPSK
LTE Band 41 (PC3)	27	2506 - 2680	0.123	20.90	18M0W7D	16QAM
LTE Band 41 (PC3)	27	2506 - 2680	0.104	20.19	18M0W7D	64QAM
LTE Band 41 (PC3)	27	2506 - 2680	0.050	17.03	18M0W7D	256QAM

EUT Overview (High Bands)

Mode	FCC Rule Part	Tx Frequency (MHz)	ERP		EIRP		Emission Designator	Modulation
			Max. Power (W)	Max. Power (dBm)	Max. Power (W)	Max. Power (dBm)		
n5	22H	826.5 - 846.5	0.033	15.14	0.054	17.29	4M50G7D	QPSK
n5	22H	826.5 - 846.5	0.021	13.20	0.034	15.35	4M52W7D	16QAM
n5	22H	826.5 - 846.5	0.017	12.27	0.028	14.42	4M57W7D	64QAM
n5	22H	826.5 - 846.5	0.010	10.20	0.017	12.35	4M52W7D	256QAM
n5	22H	829 - 844	0.033	15.19	0.054	17.34	9M35G7D	QPSK
n5	22H	829 - 844	0.021	13.25	0.035	15.40	9M37W7D	16QAM
n5	22H	829 - 844	0.017	12.32	0.028	14.47	9M34W7D	64QAM
n5	22H	829 - 844	0.011	10.25	0.017	12.40	9M30W7D	256QAM
n5	22H	831.5 - 841.5	0.034	15.32	0.056	17.47	14M2G7D	QPSK
n5	22H	831.5 - 841.5	0.022	13.38	0.036	15.53	14M2W7D	16QAM
n5	22H	831.5 - 841.5	0.018	12.45	0.029	14.60	14M2W7D	64QAM
n5	22H	831.5 - 841.5	0.011	10.38	0.018	12.53	14M2W7D	256QAM
n5	22H	834 - 839	0.034	15.32	0.056	17.47	19M0G7D	QPSK
n5	22H	834 - 839	0.022	13.38	0.036	15.53	18M9W7D	16QAM
n5	22H	834 - 839	0.018	12.45	0.029	14.60	18M9W7D	64QAM
n5	22H	834 - 839	0.011	10.38	0.018	12.53	19M0W7D	256QAM

EUT Sub 6GHz NR Overview (<1 GHz)

Mode	FCC Rule Part	Tx Frequency (MHz)	EIRP		Emission Designator	Modulation
			Max. Power (W)	Max. Power (dBm)		
n66	27	1712.5 - 1777.5	0.155	21.91	4M51G7D	QPSK
n66	27	1712.5 - 1777.5	0.089	19.50	4M53W7D	16QAM
n66	27	1712.5 - 1777.5	0.071	18.51	4M54W7D	64QAM
n66	27	1712.5 - 1777.5	0.040	16.07	4M52W7D	256QAM
n66	27	1715 - 1775	0.153	21.84	9M33G7D	QPSK
n66	27	1715 - 1775	0.088	19.43	9M33W7D	16QAM
n66	27	1715 - 1775	0.070	18.44	9M37W7D	64QAM
n66	27	1715 - 1775	0.040	16.00	9M32W7D	256QAM
n66	27	1717.5 - 1772.5	0.161	22.06	14M2G7D	QPSK
n66	27	1717.5 - 1772.5	0.092	19.65	14M2W7D	16QAM
n66	27	1717.5 - 1772.5	0.073	18.66	14M2W7D	64QAM
n66	27	1717.5 - 1772.5	0.042	16.22	14M2W7D	256QAM
n66	27	1720 - 1770	0.298	24.74	19M0G7D	QPSK
n66	27	1720 - 1770	0.171	22.33	19M0W7D	16QAM
n66	27	1720 - 1770	0.136	21.34	19M1W7D	64QAM
n66	27	1720 - 1770	0.078	18.90	19M0W7D	256QAM
n2	24E	1852.5 - 1907.5	0.385	25.86	4M53G7D	QPSK
n2	24E	1852.5 - 1907.5	0.265	24.24	4M52W7D	16QAM
n2	24E	1852.5 - 1907.5	0.207	23.15	4M52W7D	64QAM
n2	24E	1852.5 - 1907.5	0.144	21.58	4M53W7D	256QAM
n2	24E	1855 - 1905	0.386	25.87	9M37G7D	QPSK
n2	24E	1855 - 1905	0.266	24.25	9M33W7D	16QAM
n2	24E	1855 - 1905	0.207	23.16	9M38W7D	64QAM
n2	24E	1855 - 1905	0.144	21.59	9M33W7D	256QAM
n2	24E	1857.5 - 1902.5	0.394	25.96	14M1G7D	QPSK
n2	24E	1857.5 - 1902.5	0.272	24.34	14M2W7D	16QAM
n2	24E	1857.5 - 1902.5	0.211	23.25	14M2W7D	64QAM
n2	24E	1857.5 - 1902.5	0.147	21.68	14M2W7D	256QAM
n2	24E	1860 - 1900	0.406	26.09	19M0G7D	QPSK
n2	24E	1860 - 1900	0.280	24.47	19M1W7D	16QAM
n2	24E	1860 - 1900	0.218	23.38	19M0W7D	64QAM
n2	24E	1860 - 1900	0.152	21.81	19M0W7D	256QAM

EUT SUB 6GHZ NR Overview (Mid Bands)

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.

2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **LG Portable Handset FCC ID: ZNFV600AM**. The test data contained in this report pertains only to the emissions due to the EUT's LTE and Sub 6GHz NR function.

Test Device Serial No.: 00075, 00083, 00091, 00034, 00042, 00059, 00067

2.2 Device Capabilities

This device contains the following capabilities:

850/1900 GSM/GPRS/EDGE, 850/1700/1900 WCDMA/HSPA, Multi-band LTE, 5G NR (n66, n2, n5), 802.11b/g/n/ac/ax WLAN, 802.11a/n/ac/ax UNII, Bluetooth (1x, EDR, LE), NFC

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.

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 configurations.

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.

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) FCC ID: YZP-PWMAW815A while operating under normal conditions in a simulated call or data transmission configuration. The worst case radiated emissions data is shown in this report.

This device supports Dual Display (DD) Cover, which attaches to the device to provide a secondary display on the inside of the cover. The display was rotated through all possible orientations to determine worst case angle. The worst case radiated emission data with the Dual Display Cover is included in this report.

2.4 EMI Suppression Device(s)/Modifications

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

3.0 DESCRIPTION OF TESTS

3.1 Measurement Procedure

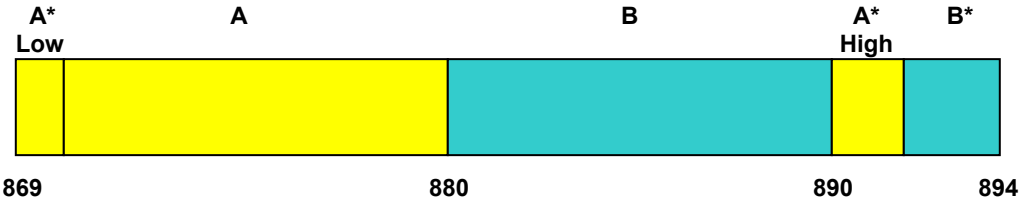
The measurement procedures described in the document titled "Land Mobile FM or PM – Communications Equipment – Measurements and Performance Standards" (ANSI/TIA-603-E-2016) and "Procedures for Compliance Measurement of the Fundamental Emission Power of Licensed Wideband (> 1 MHz) Digital Transmission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

3.2 Block A Frequency Range

698-746 MHz band. The following frequencies are available for licensing pursuant to this part in the 698-746 MHz band: (1) Three paired channel blocks of 12 megahertz each are available for assignment as follows:

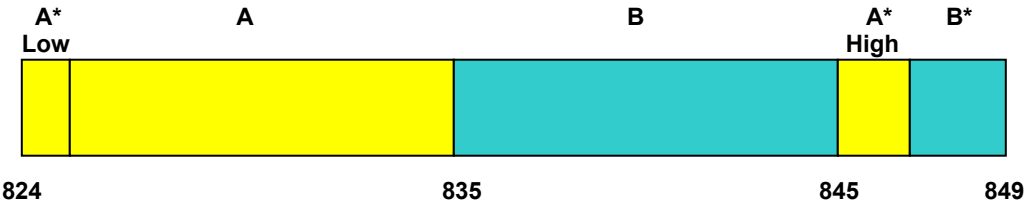
Block A: 698-704 MHz and 728-734 MHz;
Block B: 704-710 MHz and 734-740 MHz; and
Block C: 710-716 MHz and 740-746 MHz.

3.3 Cellular - Base Frequency Blocks



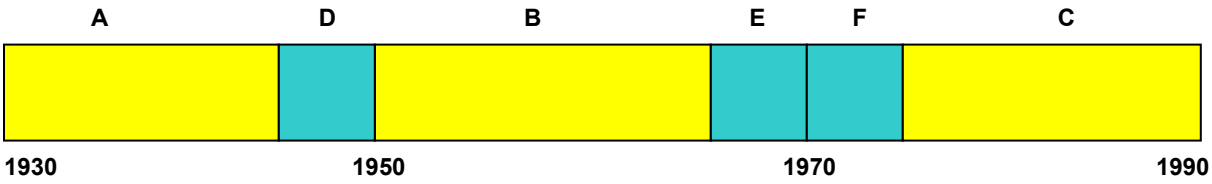
BLOCK 1: 869 – 880 MHz (A* Low + A)
BLOCK 2: 880 – 890 MHz (B)
BLOCK 3: 890 – 891.5 MHz (A* High)
BLOCK 4: 891.5 – 894 MHz (B*)

3.4 Cellular - Mobile Frequency Blocks



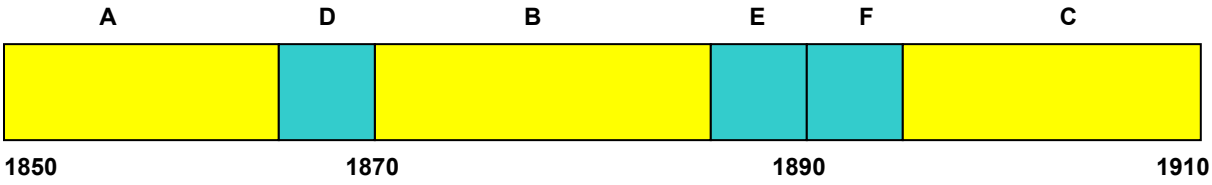
BLOCK 1: 824 – 835 MHz (A* Low + A)
BLOCK 2: 835 – 845 MHz (B)
BLOCK 3: 845 – 846.5 MHz (A* High)
BLOCK 4: 846.5 – 849 MHz (B*)

3.5 PCS - Base Frequency Blocks



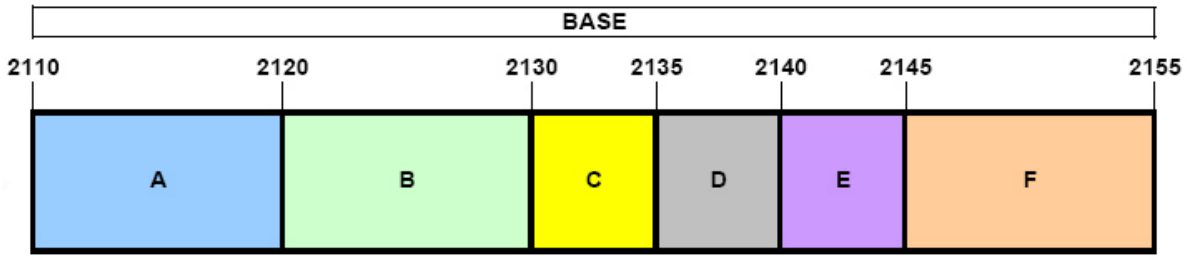
BLOCK 1: 1930 – 1945 MHz (A)
BLOCK 2: 1945 – 1950 MHz (D)
BLOCK 3: 1950 – 1965 MHz (B)
BLOCK 4: 1965 – 1970 MHz (E)
BLOCK 5: 1970 – 1975 MHz (F)
BLOCK 6: 1975 – 1990 MHz (C)

3.6 PCS - Mobile Frequency Blocks



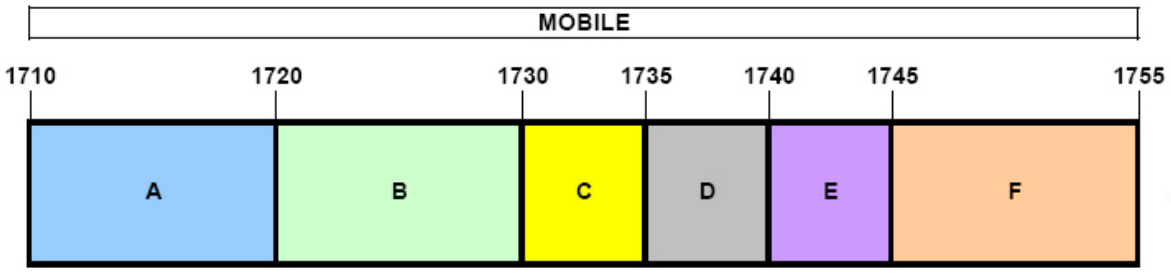
BLOCK 1: 1850 – 1865 MHz (A)
BLOCK 2: 1865 – 1870 MHz (D)
BLOCK 3: 1870 – 1885 MHz (B)
BLOCK 4: 1885 – 1890 MHz (E)
BLOCK 5: 1890 – 1895 MHz (F)
BLOCK 6: 1895 – 1910 MHz (C)

3.7 AWS - Base Frequency Blocks



BLOCK 1: 2110 – 2120 MHz (A)
BLOCK 2: 2120 – 2130 MHz (B)
BLOCK 3: 2130 – 2135 MHz (C)
BLOCK 4: 2135 – 2140 MHz (D)
BLOCK 5: 2140 – 2145 MHz (E)
BLOCK 6: 2145 – 2155 MHz (F)

3.8 AWS - Mobile Frequency Blocks



BLOCK 1: 1710 – 1720 MHz (A)
BLOCK 2: 1720 – 1730 MHz (B)
BLOCK 3: 1730 – 1735 MHz (C)
BLOCK 4: 1735 – 1740 MHz (D)
BLOCK 5: 1740 – 1745 MHz (E)
BLOCK 6: 1745 – 1755 MHz (F)

3.9 WCS – Mobile/Base Frequency Blocks

The following frequencies are available for WCS in the 2305-2320 MHz and 2345-2360 MHz bands:

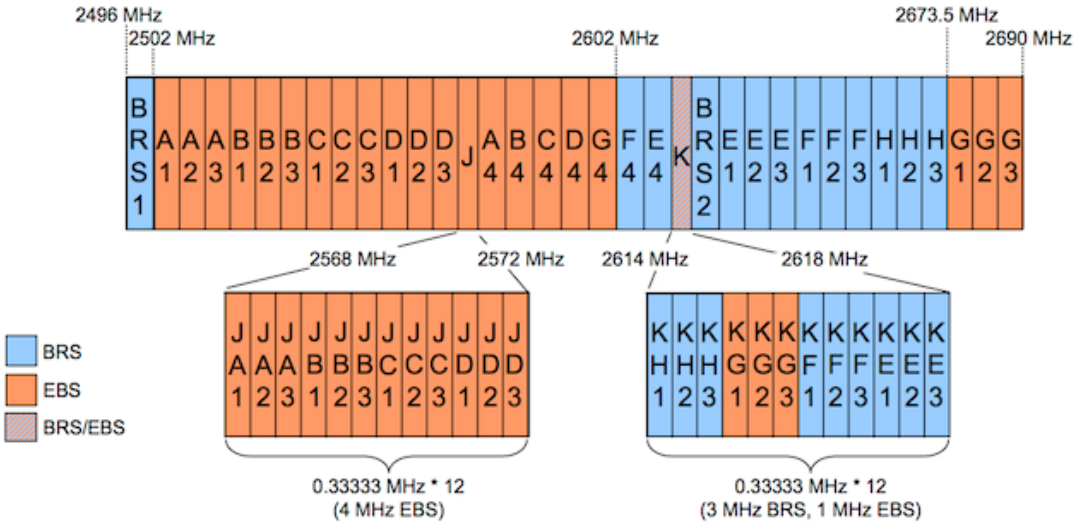
BLOCK 1: 2305-2310 and 2350-2355 MHz (A)

BLOCK 2: 2310-2315 and 2355-236 MHz (B)

BLOCK 3: 2315-2320 MHz (C)

BLOCK 4: 2345-2350 MHz (D)

3.10 BRS/EBS Frequency Block



3.11 Radiated Power and Radiated Spurious Emissions

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

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

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

$$P_{d\ [dBm]} = P_{g\ [dBm]} - \text{cable loss}_{\ [dB]} + \text{antenna gain}_{\ [dBd/dBi]}$$

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 $P_{g\ [dBm]}$ – cable loss $_{[dB]}$.

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

4.0 MEASUREMENT UNCERTAINTY

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

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

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
-	LTx3	LIcensed Transmitter Cable Set	6/3/2019	Annual	6/3/2020	LTx3
Agilent	N9020A	MXA Signal Analyzer	4/20/2019	Annual	4/20/2020	US46470561
Agilent	N9030A	PXA Signal Analyzer (44GHz)	6/12/2019	Annual	6/12/2020	MY52350166
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
ETS Lindgren	3164-08	Quad Ridge Horn Antenna	2/22/2019	Biennial	2/22/2021	128338
Mini Circuits	TVA-11-422	RF Power Amp	N/A			QA1317001
Mini Circuits	PWR-SEN-4GHS	USB Power Sensor	4/19/2019	Annual	4/19/2020	11401010036
Rohde & Schwarz	CMW500	Radio Communication Tester	N/A			100976
Rohde & Schwarz	CMW500	Radio Communication Tester	N/A			112347
Rohde & Schwarz	ESU26	EMI Test Receiver (26.5GHz)	6/5/2019	Annual	6/5/2020	100342
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
Seekonk	NC-100	Torque Wrench (8" lb)	5/10/2018	Biennial	5/10/2020	N/A
Sunol	JB5	Bi-Log Antenna (30M - 5GHz)	4/19/2018	Biennial	4/19/2020	A051107

Table 5-1. Test Equipment

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 analzyer. 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).

7.0 TEST RESULTS

7.1 Summary

Company Name: LG Electronics USA, Inc.

FCC ID: ZNFV600AM

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(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, 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)	Peak-Average Ratio	< 13 dB			Section 7.5, 7.12
2.1046	Transmitter Conducted Output Power	N/A			See RF Exposure Report
2.1055 22.355 24.235 27.54	Frequency Stability	< 2.5 ppm (Part 22) and fundamental emissions stay within authorized frequency block (Part 27)			Section 7.9

Table 7-1. Summary of Conducted Test Results

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, n5)	< 7 Watts max. ERP	RADIATED	PASS	Section 7.6, 7.12
27.50(c)(10)	Effective Radiated Power / Equivalent Isotropic Radiated Power (Band 12)	< 3 Watts max. ERP			Section 7.6
24.232(c) 27.50(h)(2)	Equivalent Isotropic Radiated Power (Band 2, n2)	< 2 Watts max. EIRP			Section 7.6, 7.12
27.50(d)(4)	Equivalent Isotropic Radiated Power (Band 4/66, n66)	< 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(g) 27.53(h)	Undesirable Emissions (Band 12/5, 66/4, 2, n2, n66)	> 43 + 10 $\log_{10}$ (P[Watts]) for all out-of-band emissions			Section 7.8, 7.12
27.53(a)	Undesirable Emissions (Band 30)	> 70 + 10 $\log_{10}$ (P[Watts])			Section 7.8
27.53(m)	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

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.

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

Test Setup

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

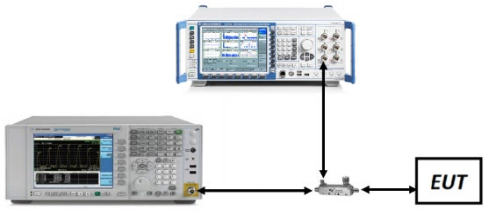
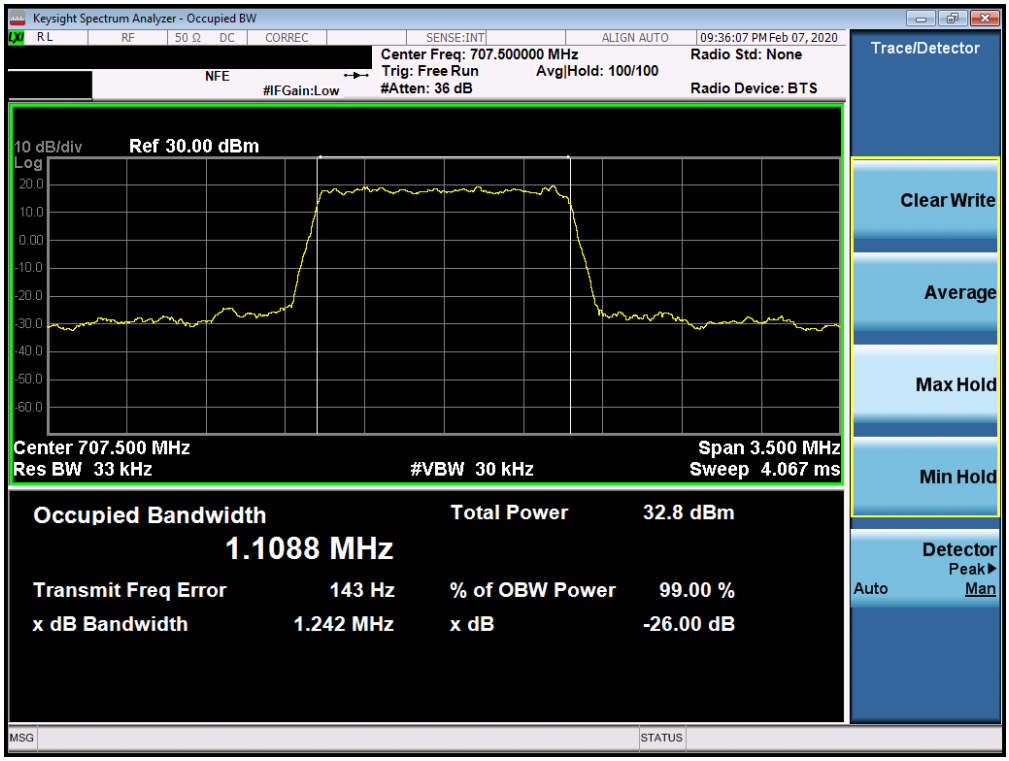


Figure 7-1. Test Instrument & Measurement Setup

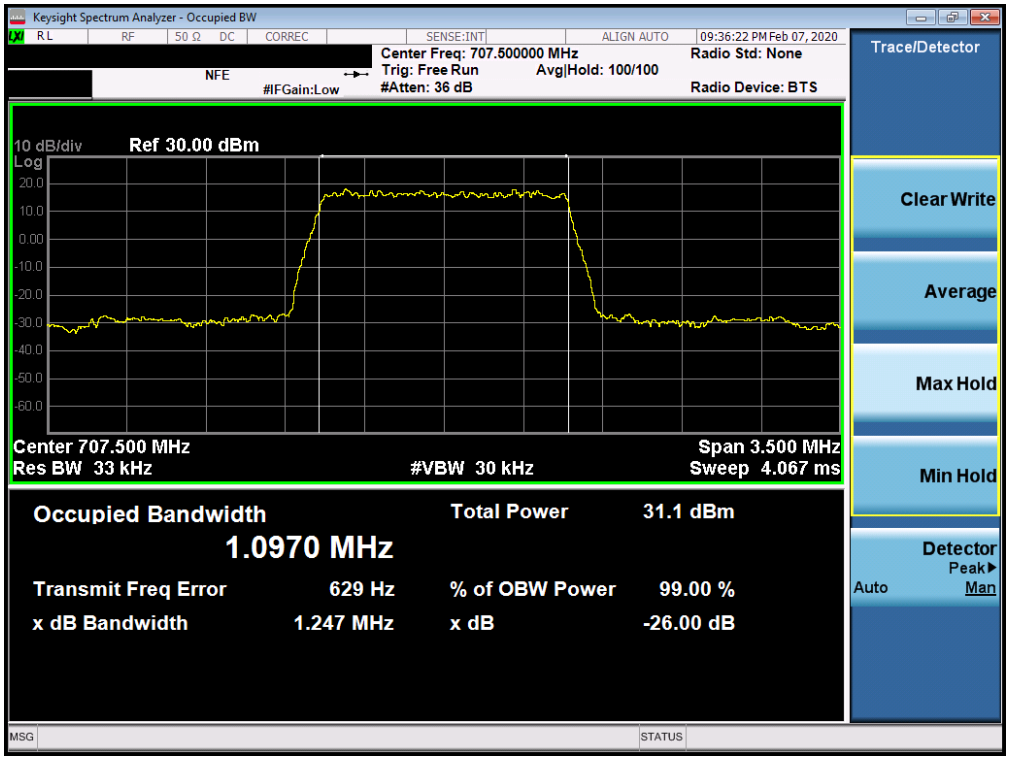
Test Notes

None.

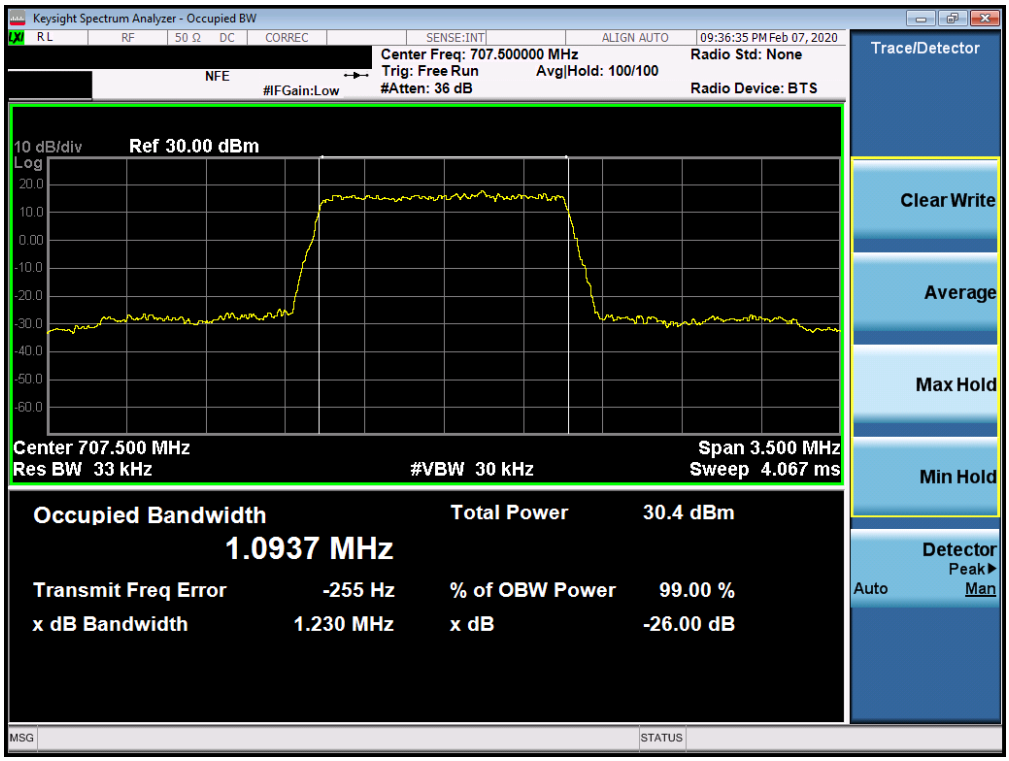
Band 12



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

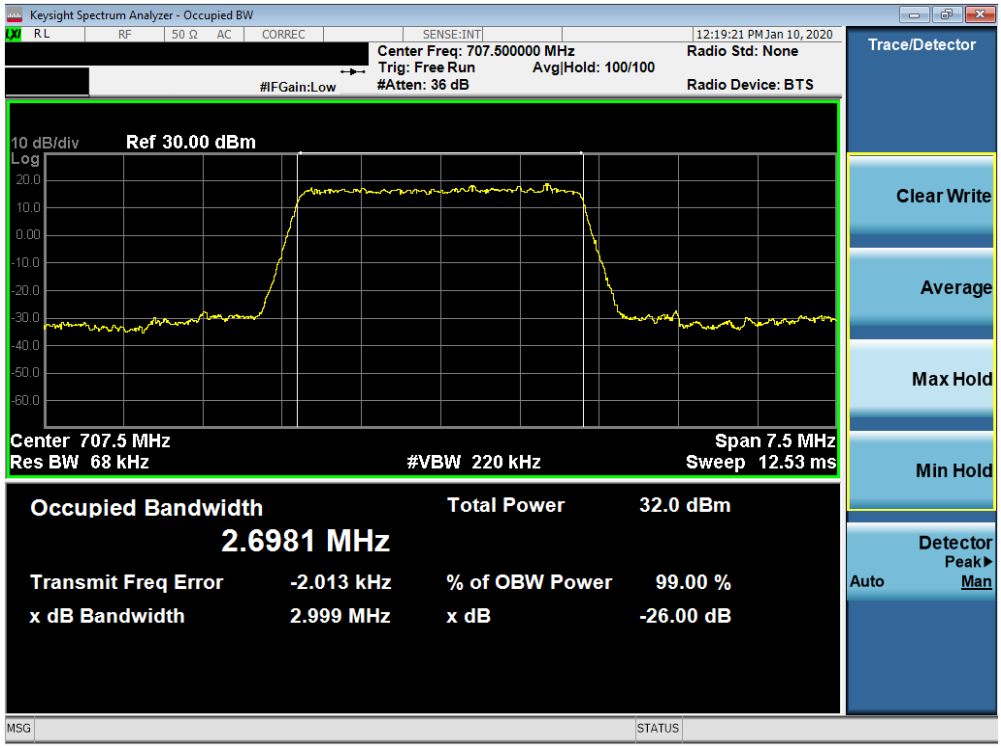


Plot 7-2. Occupied Bandwidth Plot (Band 12 – 1.4MHz 16-QAM - Full RB Configuration)

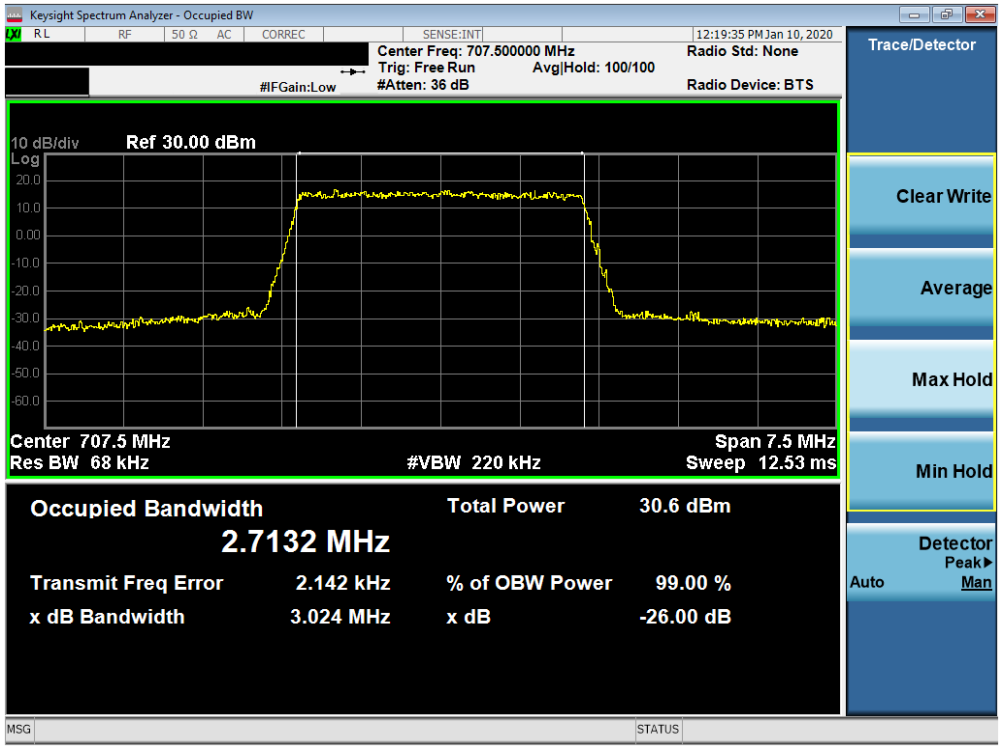


Plot 7-3. Occupied Bandwidth Plot (Band 12 – 1.4MHz 64-QAM - Full RB Configuration)

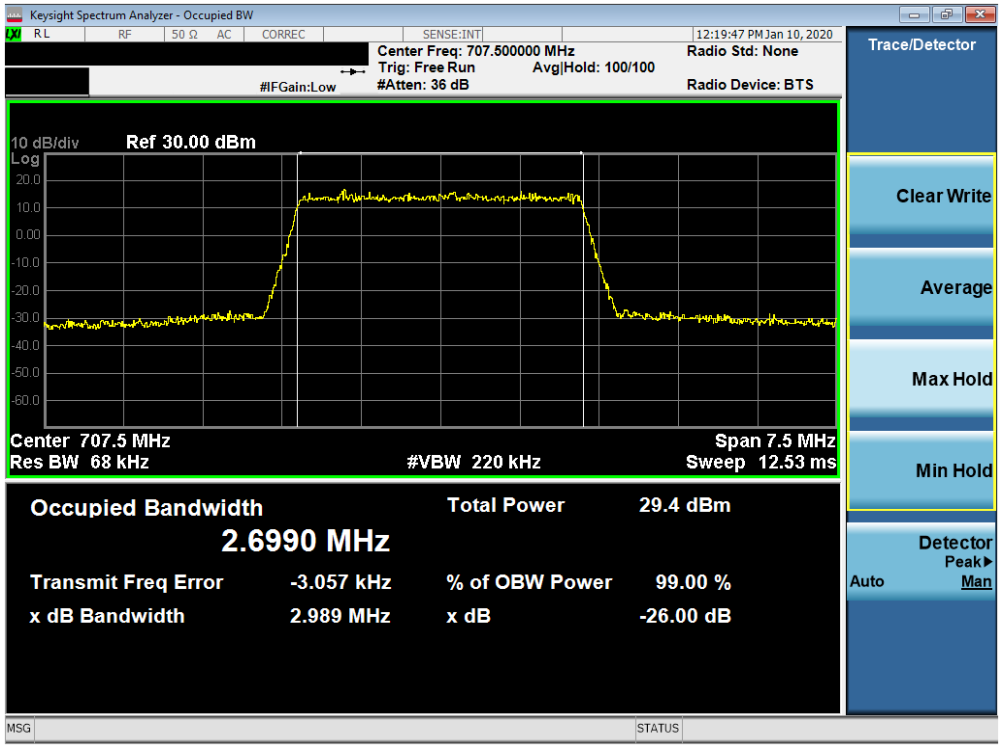
Plot 7-4. Occupied Bandwidth Plot (Band 12 – 1.4MHz 256-QAM - Full RB Configuration)



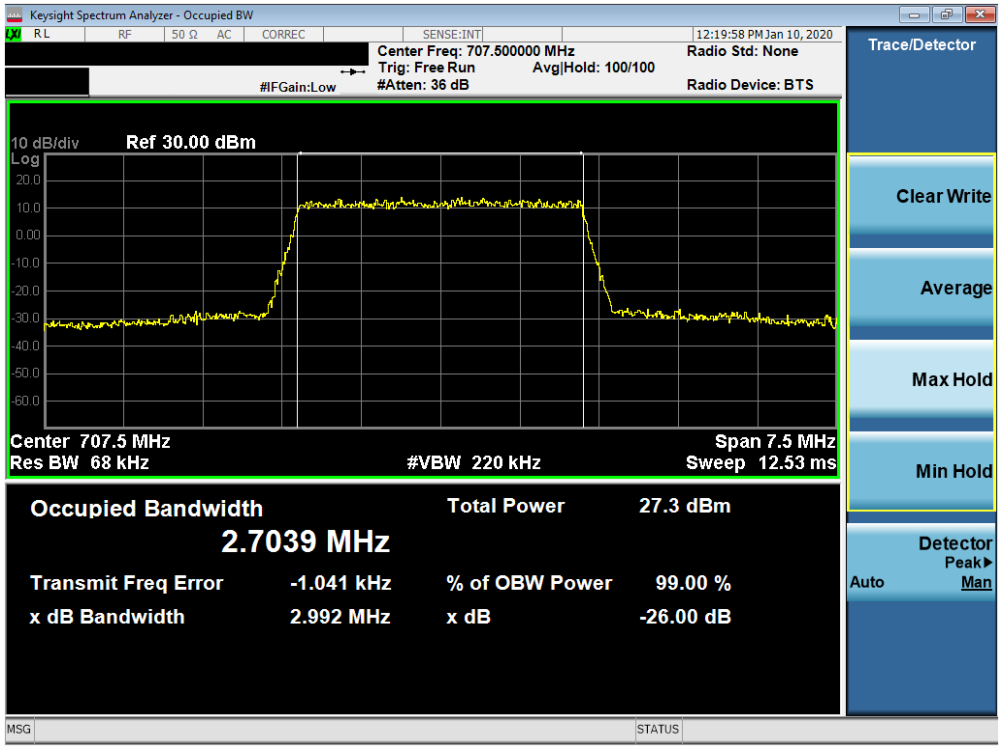
Plot 7-5. Occupied Bandwidth Plot (Band 12 - 3.0MHz QPSK - Full RB Configuration)



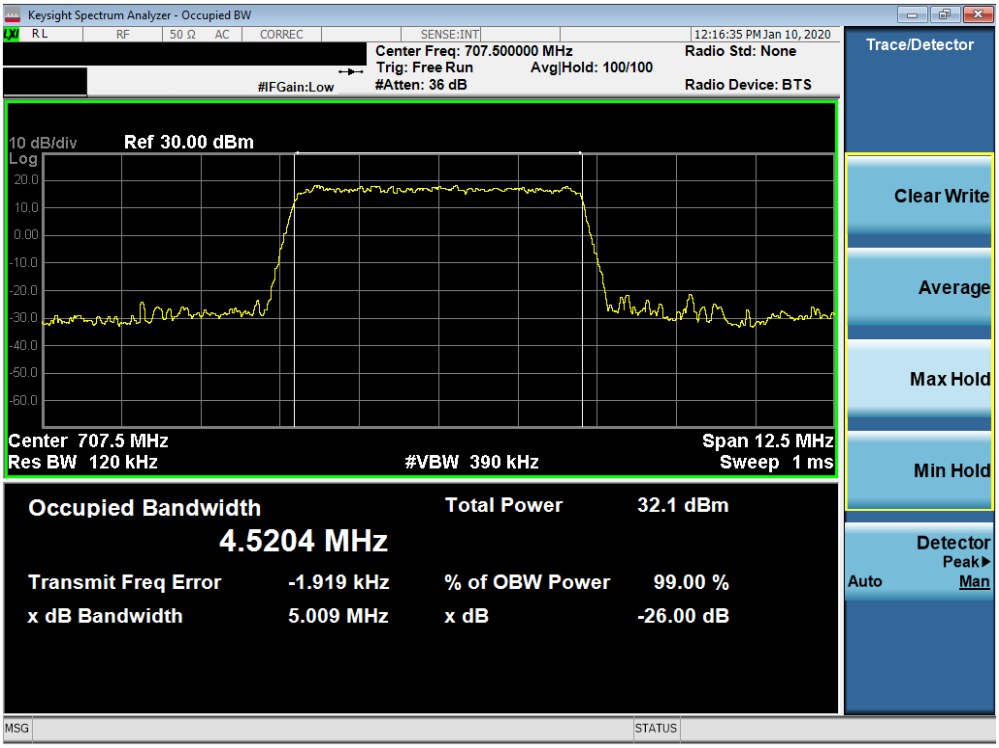
Plot 7-6. Occupied Bandwidth Plot (Band 12 - 3.0MHz 16-QAM - Full RB Configuration)



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

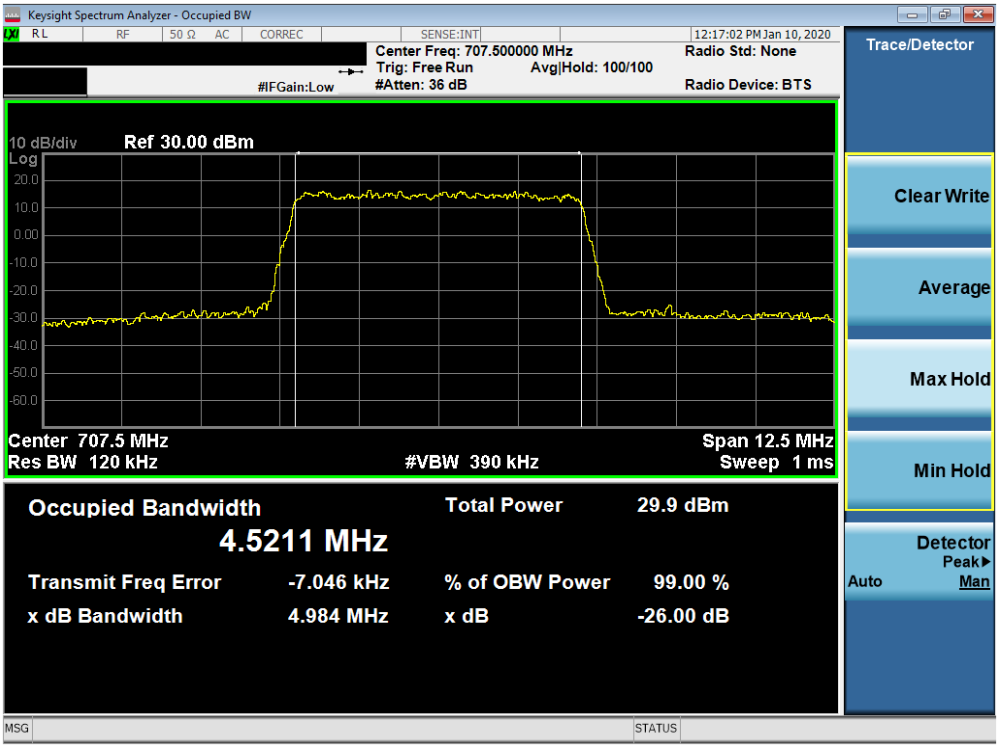


Plot 7-8. Occupied Bandwidth Plot (Band 12 - 3.0MHz 256-QAM - Full RB Configuration)

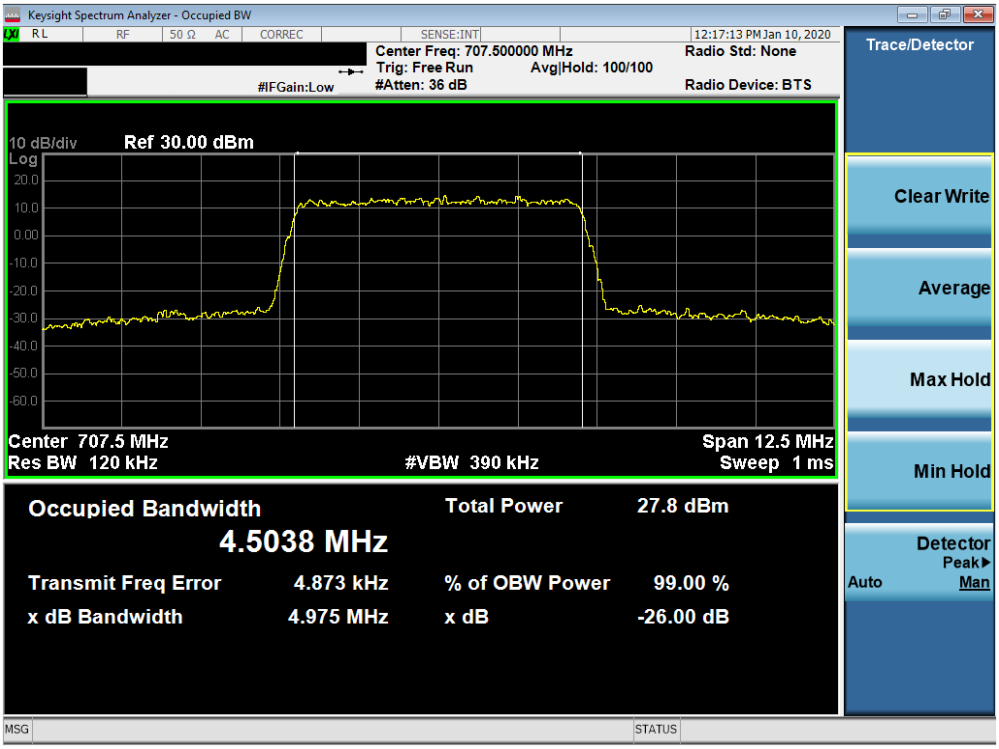


Plot 7-9. Occupied Bandwidth Plot (Band 12 - 5.0MHz QPSK - Full RB Configuration)

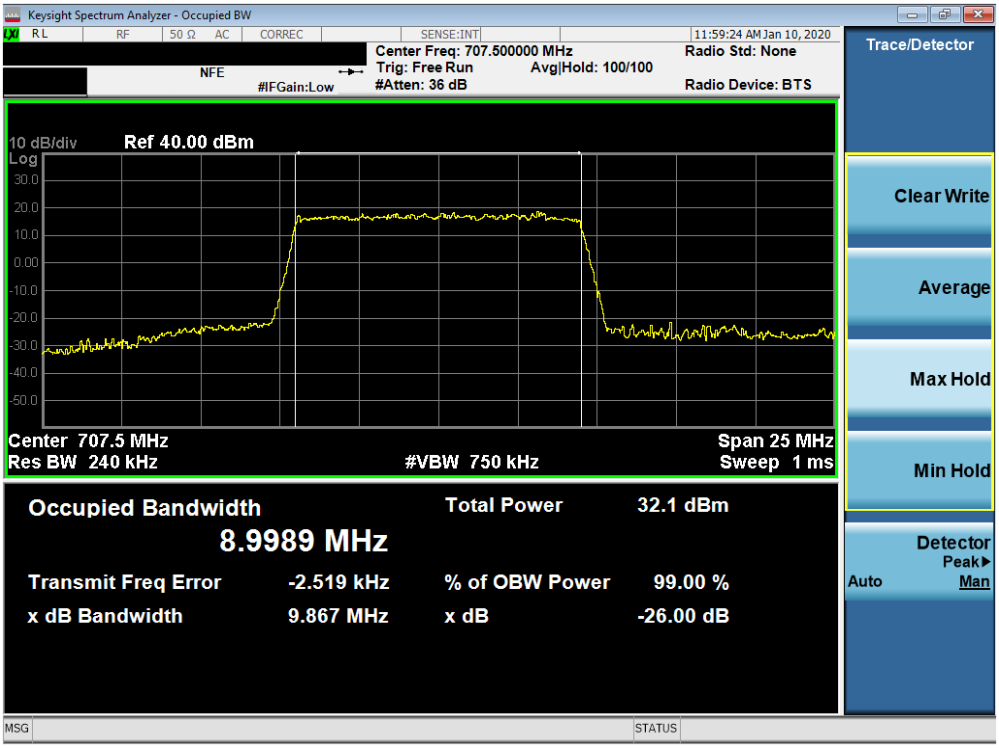
Plot 7-10. Occupied Bandwidth Plot (Band 12 - 5.0MHz 16-QAM - Full RB Configuration)



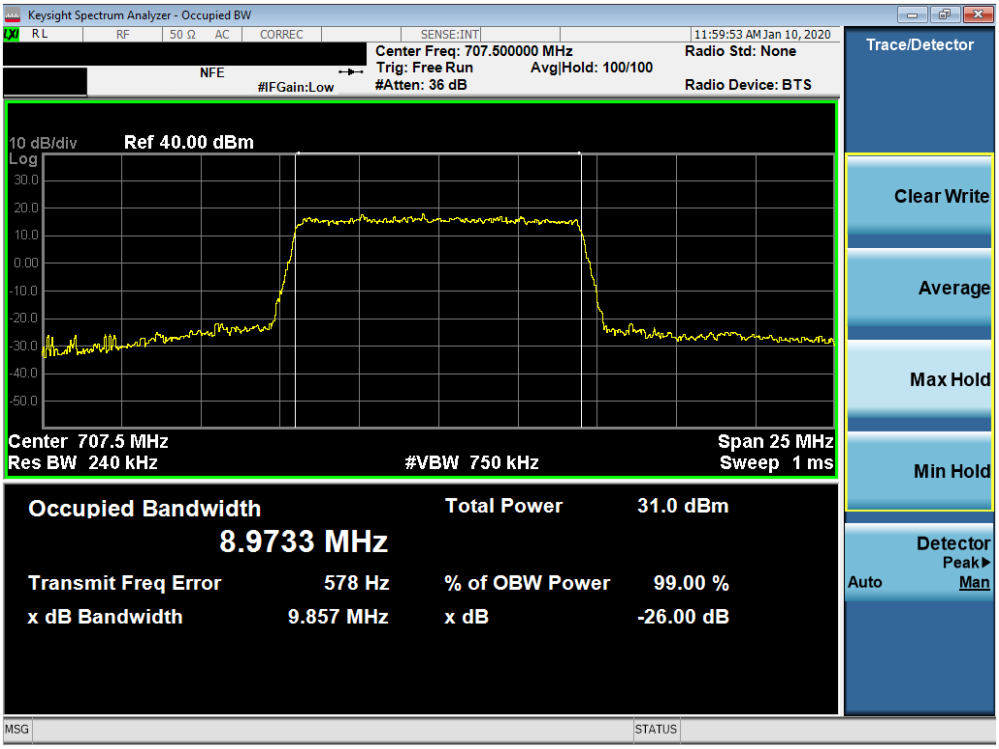
Plot 7-11. Occupied Bandwidth Plot (Band 12 - 5.0MHz 64-QAM - Full RB Configuration)



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

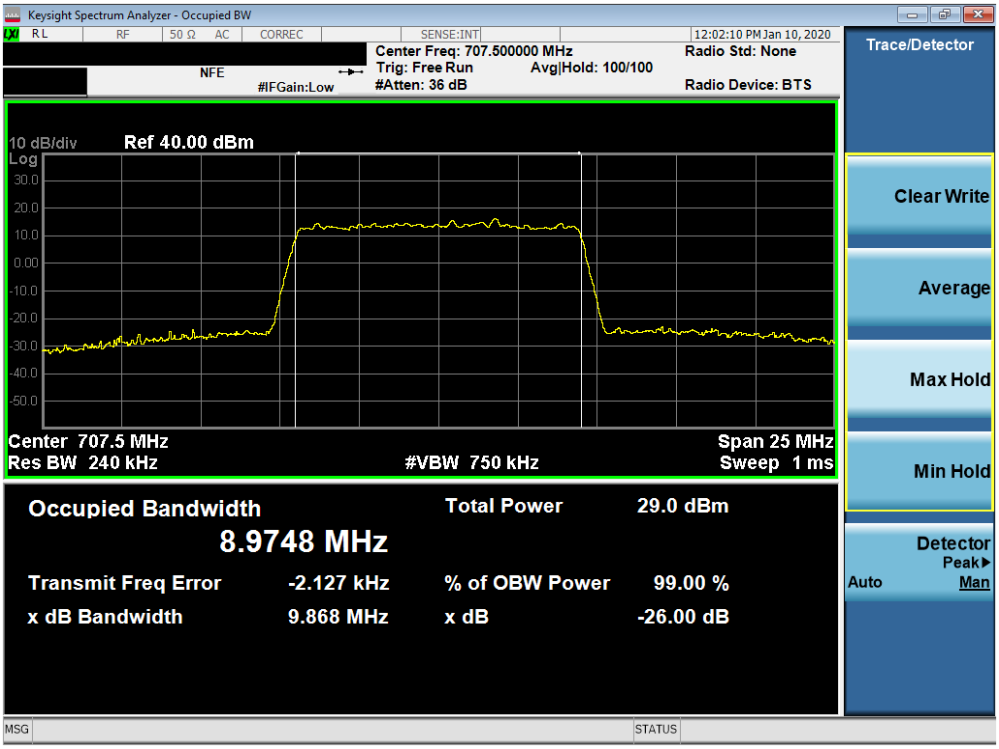


Plot 7-13. Occupied Bandwidth Plot (Band 12 - 10.0MHz QPSK - Full RB Configuration)



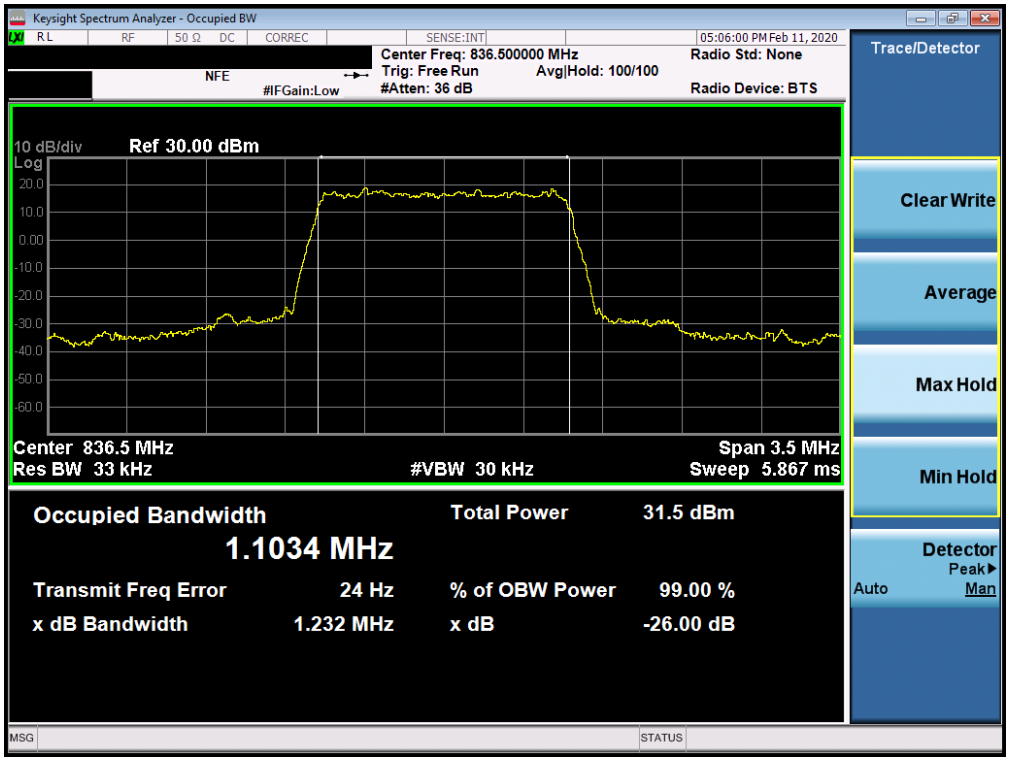
Plot 7-14. Occupied Bandwidth Plot (Band 12 - 10.0MHz 16-QAM - Full RB Configuration)

Plot 7-15. Occupied Bandwidth Plot (Band 12 - 10.0MHz 64-QAM - Full RB Configuration)

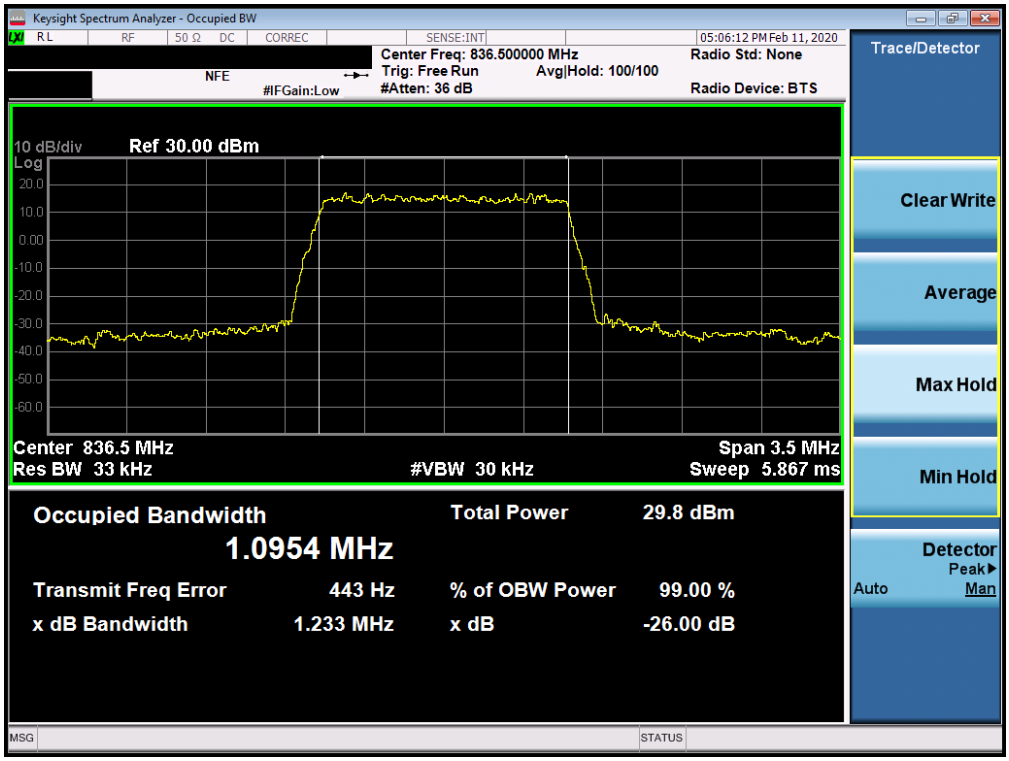


Plot 7-16. Occupied Bandwidth Plot (Band 12 - 10.0MHz 256-QAM - Full RB Configuration)

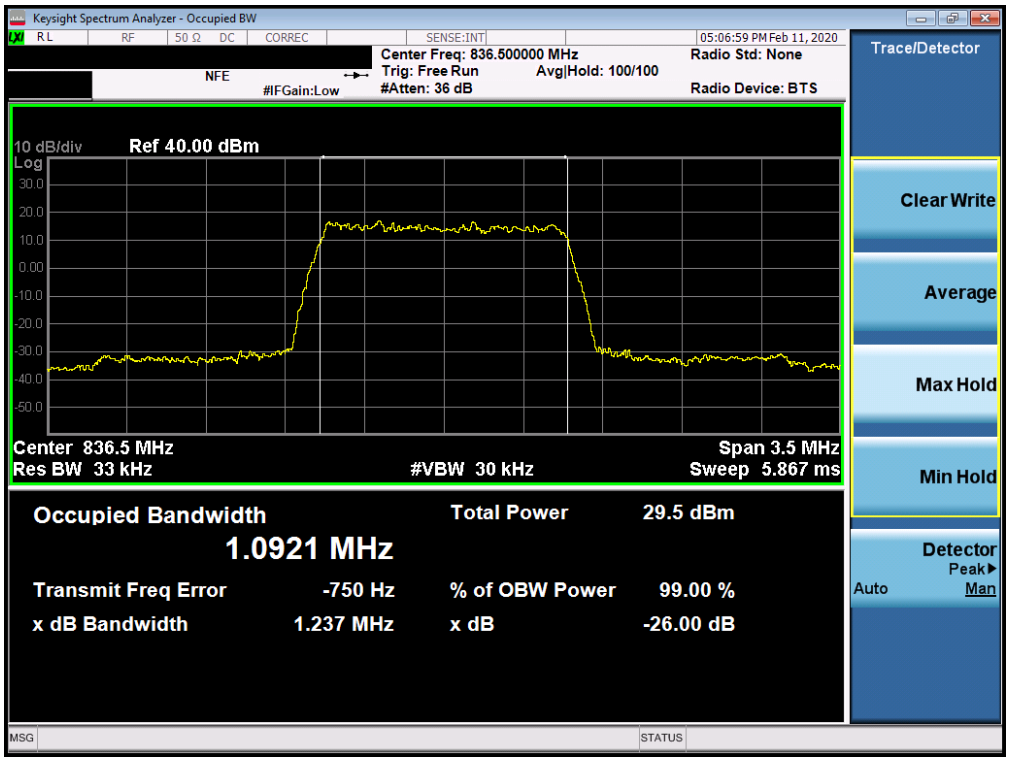
Band 5



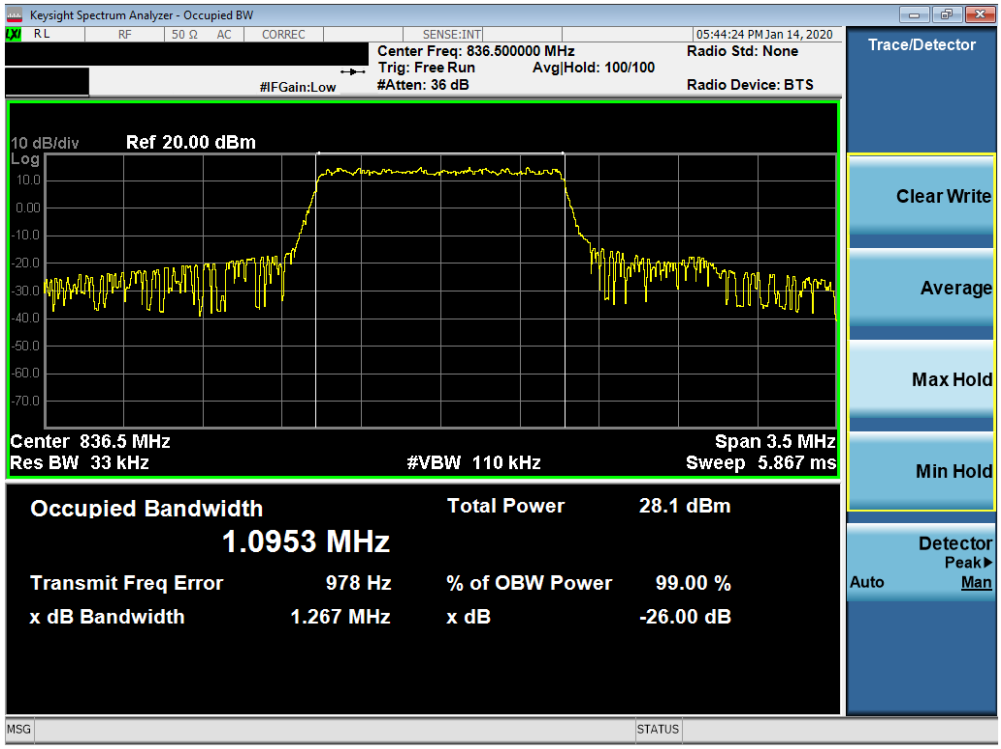
Plot 7-17. Occupied Bandwidth Plot (Band 5 – 1.4MHz QPSK - Full RB Configuration)



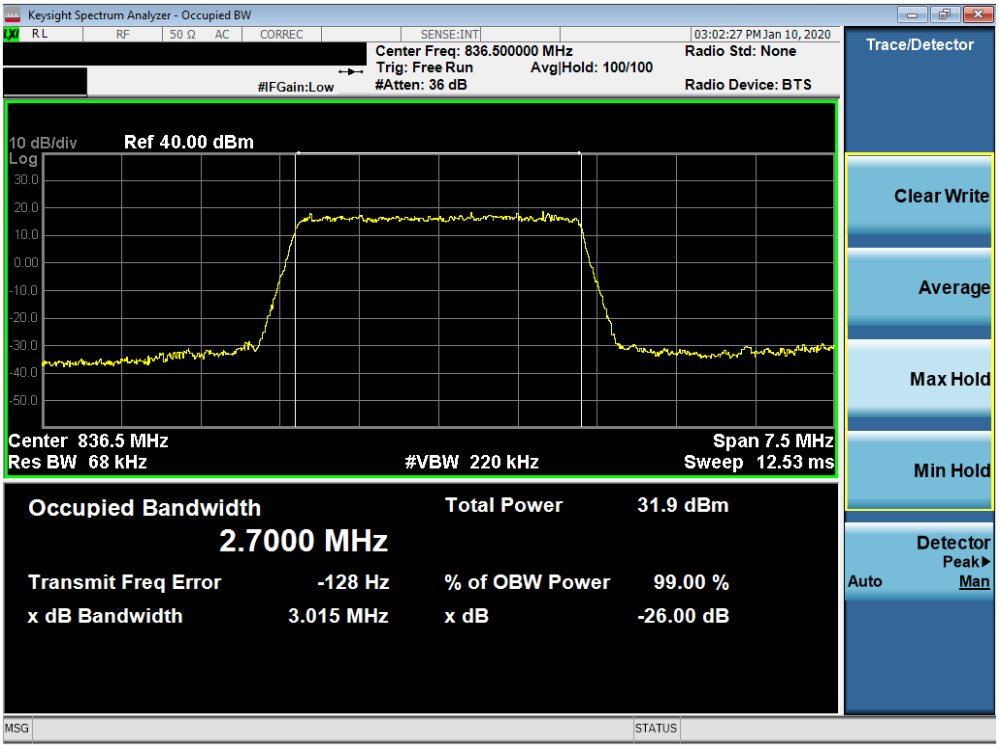
Plot 7-18. Occupied Bandwidth Plot (Band 5 – 1.4MHz 16-QAM - Full RB Configuration)



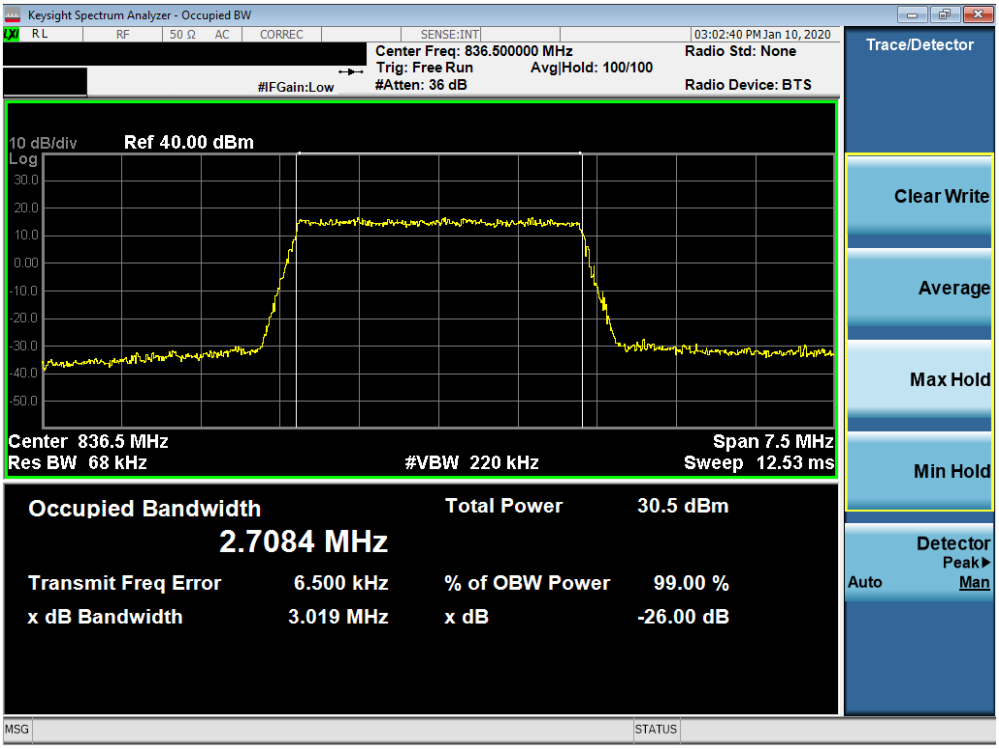
Plot 7-19. Occupied Bandwidth Plot (Band 5 – 1.4MHz 64-QAM - Full RB Configuration)



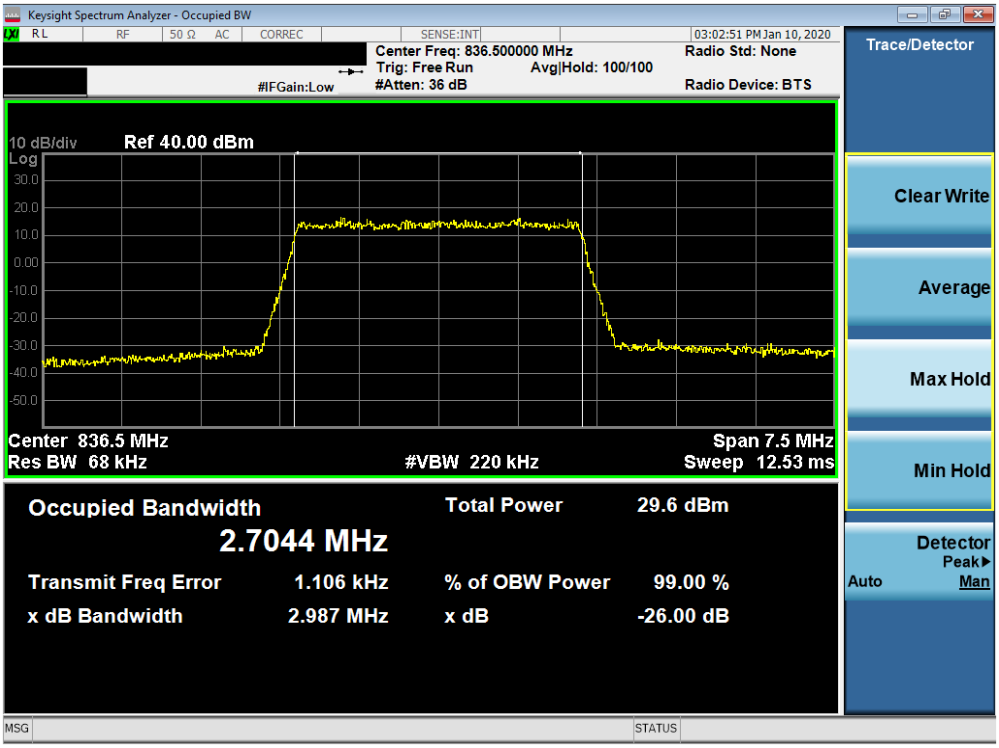
Plot 7-20. Occupied Bandwidth Plot (Band 5 - 1.4MHz 256-QAM - Full RB Configuration)



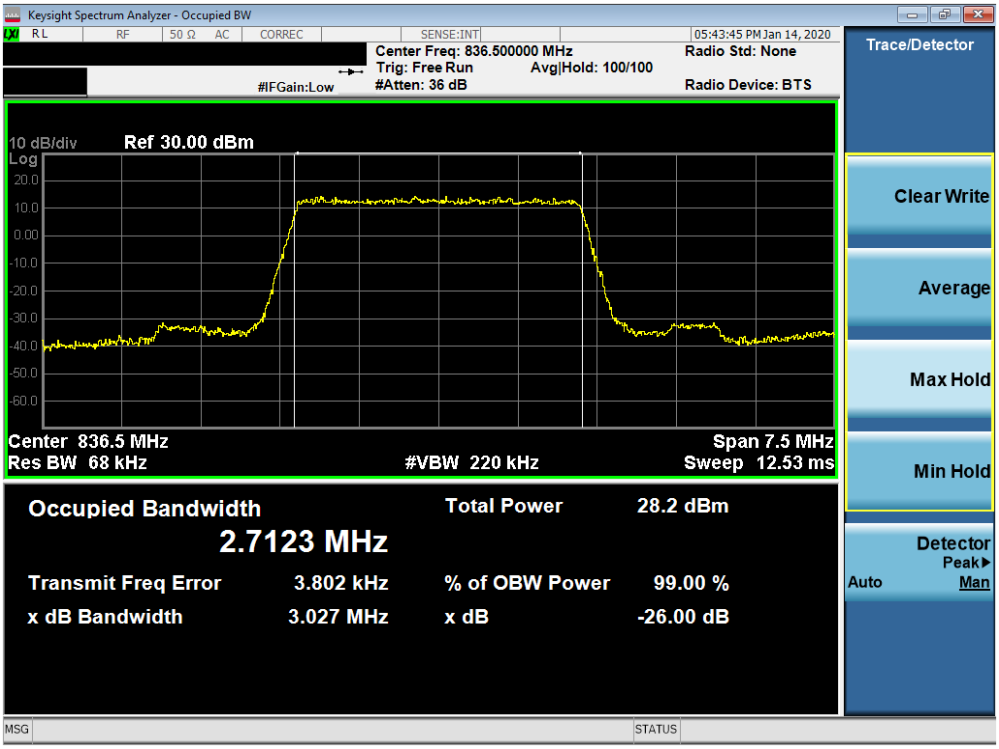
Plot 7-21. Occupied Bandwidth Plot (Band 5 - 3.0MHz QPSK - Full RB Configuration)



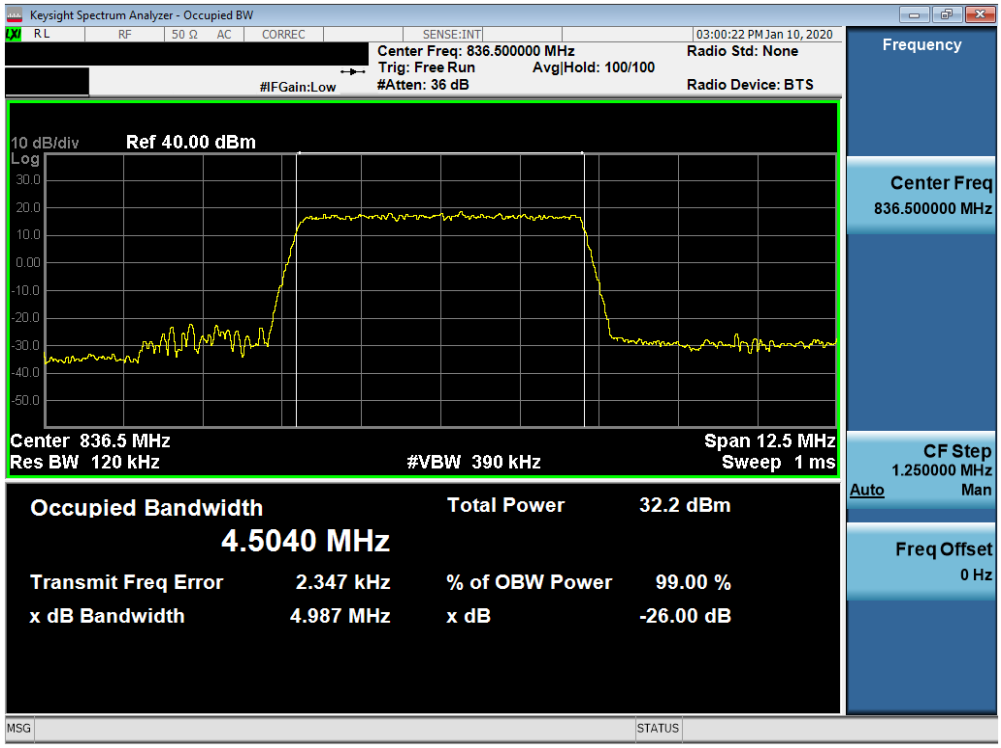
Plot 7-22. Occupied Bandwidth Plot (Band 5 - 3.0MHz 16-QAM - Full RB Configuration)



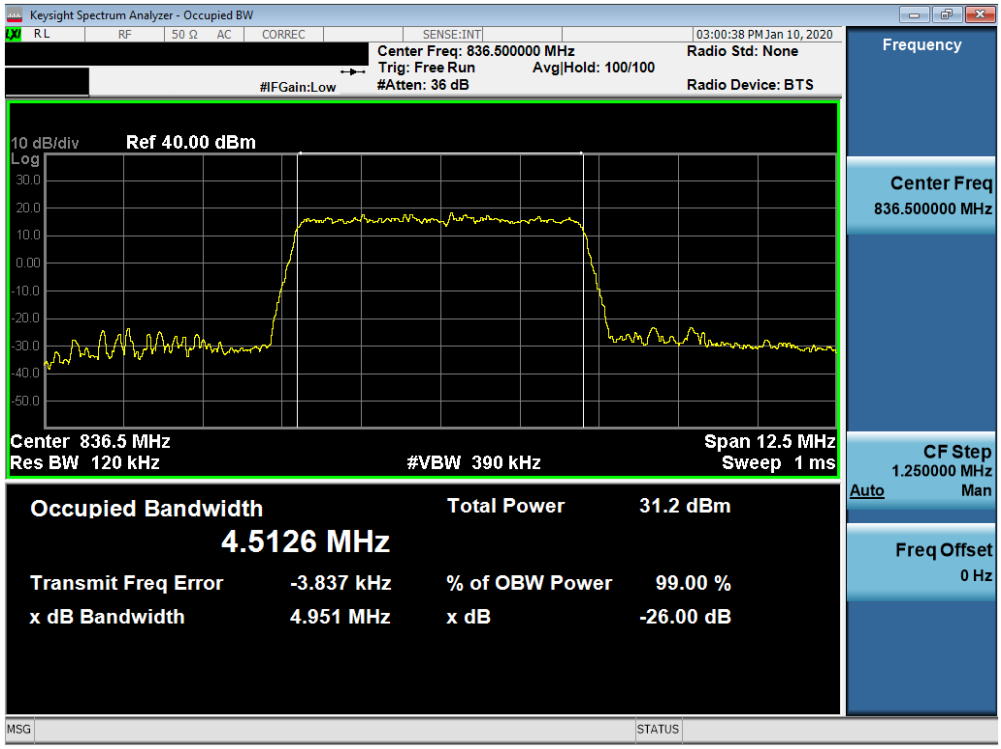
Plot 7-23. Occupied Bandwidth Plot (Band 5 - 3.0MHz 64-QAM - Full RB Configuration)



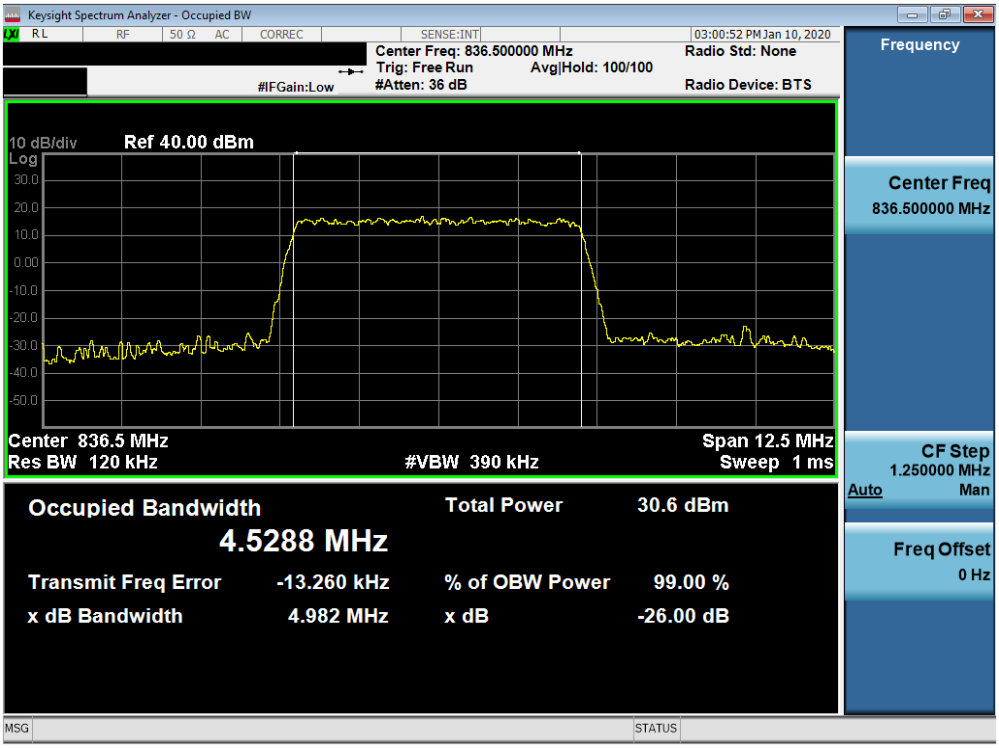
Plot 7-24. Occupied Bandwidth Plot (Band 5 - 3.0MHz 256-QAM - Full RB Configuration)



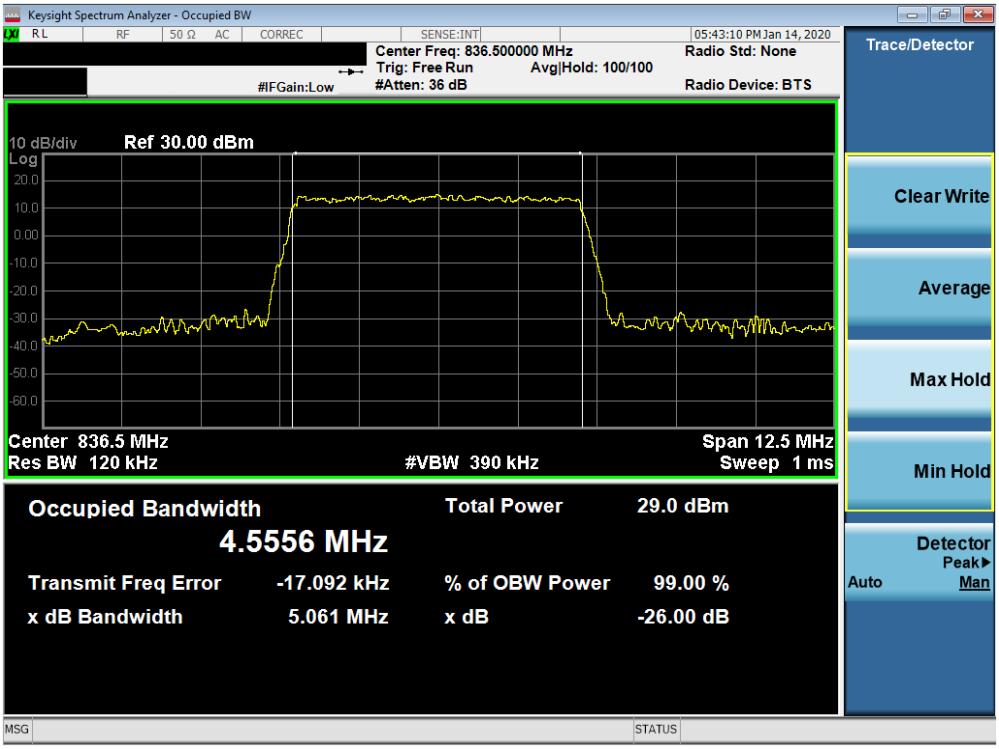
Plot 7-25. Occupied Bandwidth Plot (Band 5 - 5.0MHz QPSK - Full RB Configuration)



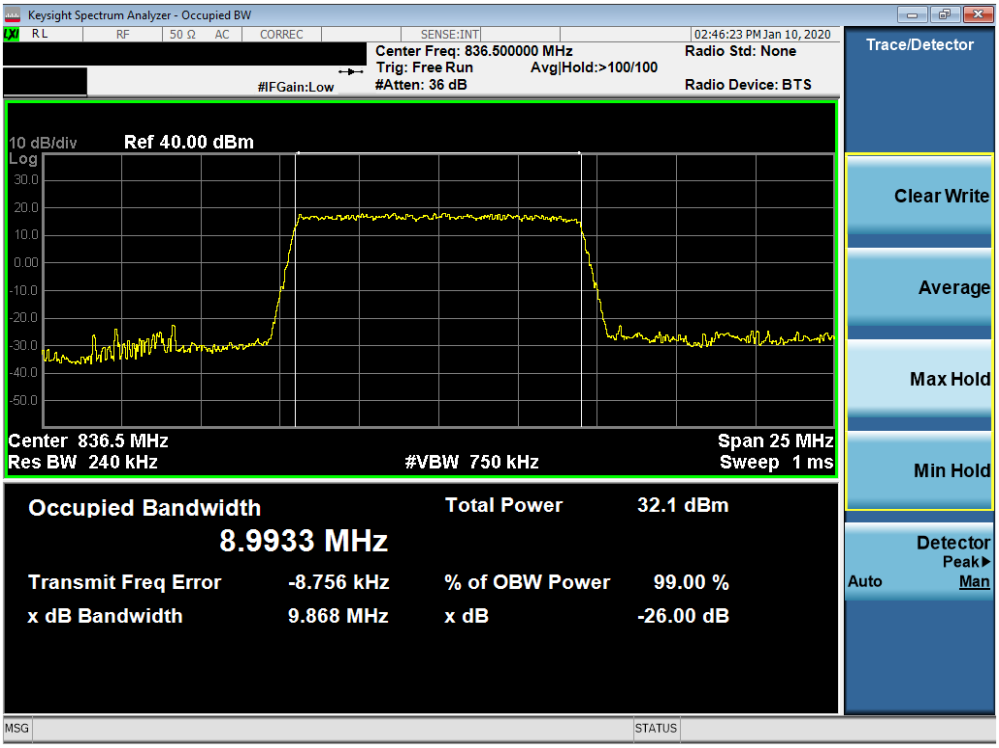
Plot 7-26. Occupied Bandwidth Plot (Band 5 - 5.0MHz 16-QAM - Full RB Configuration)



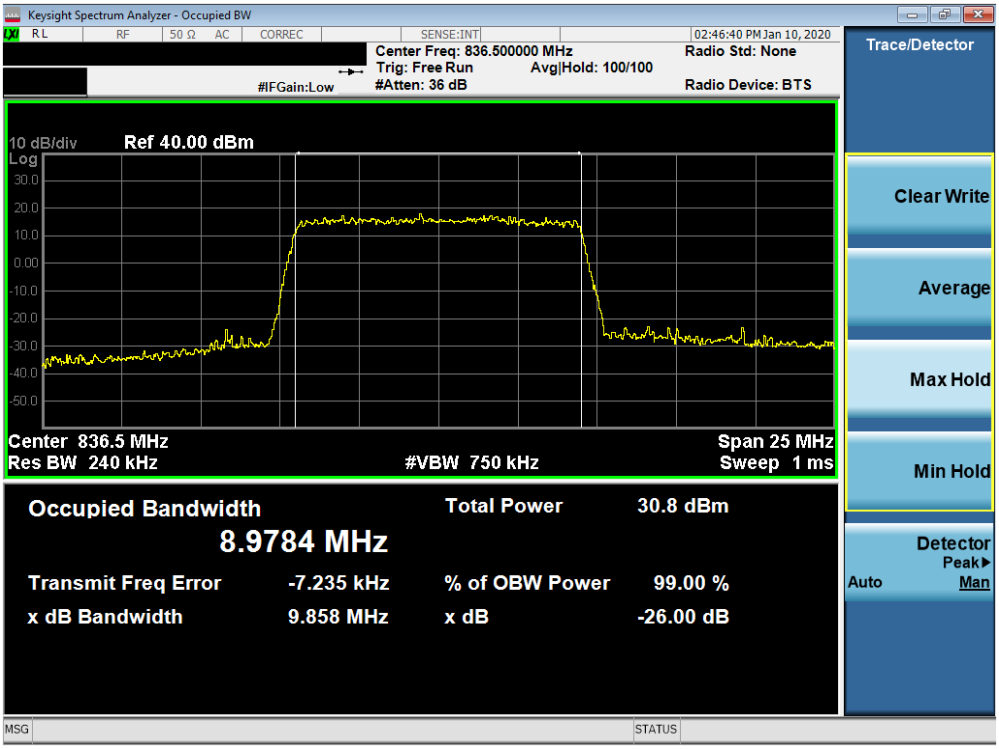
Plot 7-27. Occupied Bandwidth Plot (Band 5 - 5.0MHz 64-QAM - Full RB Configuration)



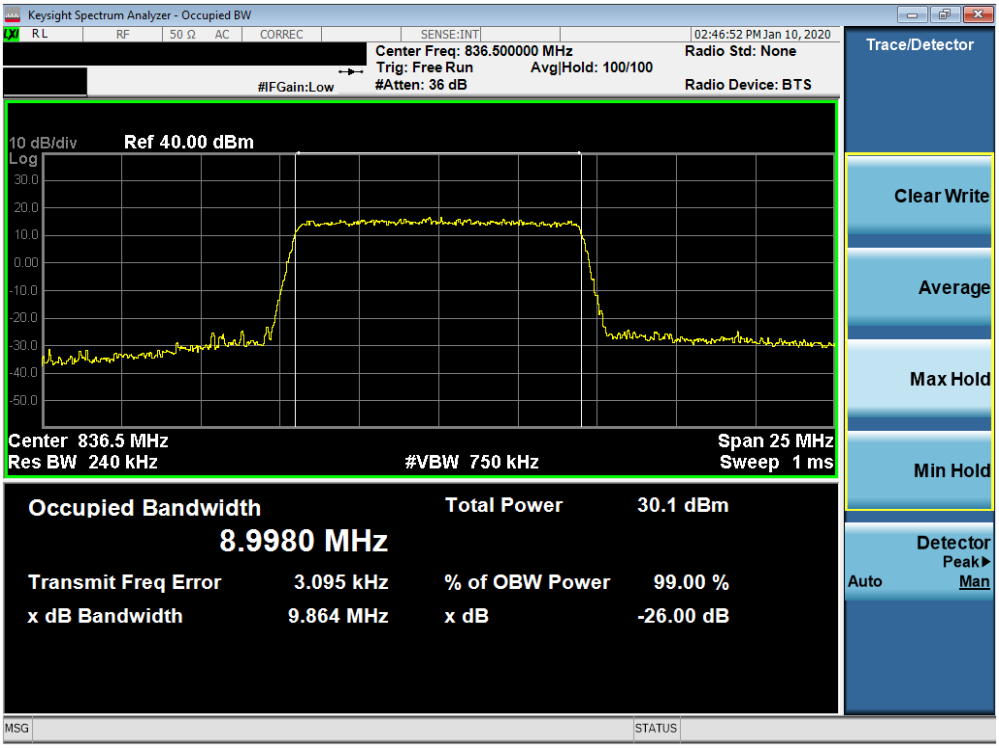
Plot 7-28. Occupied Bandwidth Plot (Band 5 - 5.0MHz 256-QAM - Full RB Configuration)



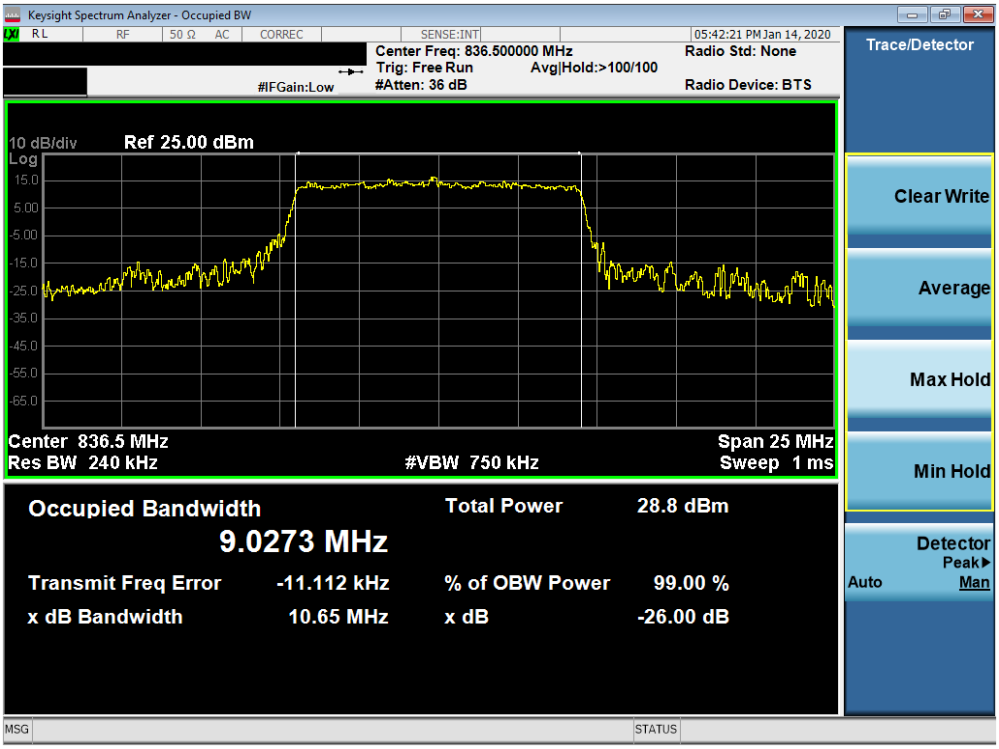
Plot 7-29. Occupied Bandwidth Plot (Band 5 - 10.0MHz QPSK - Full RB Configuration)



Plot 7-30. Occupied Bandwidth Plot (Band 5 - 10.0MHz 16-QAM - Full RB Configuration)

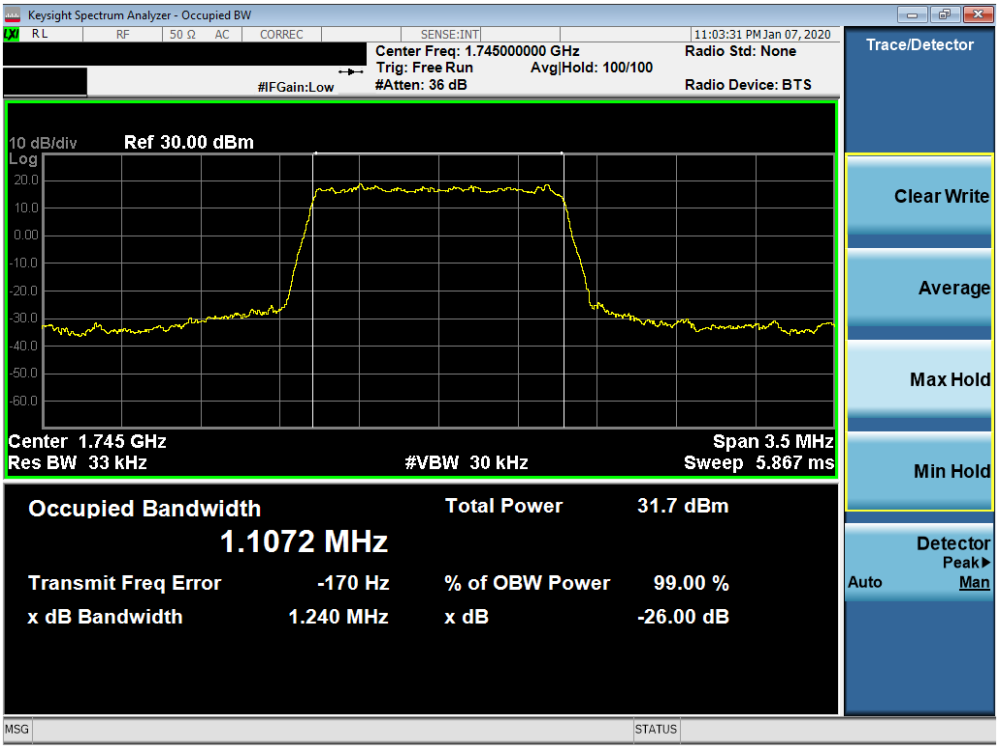


Plot 7-31. Occupied Bandwidth Plot (Band 5 - 10.0MHz 64-QAM - Full RB Configuration)

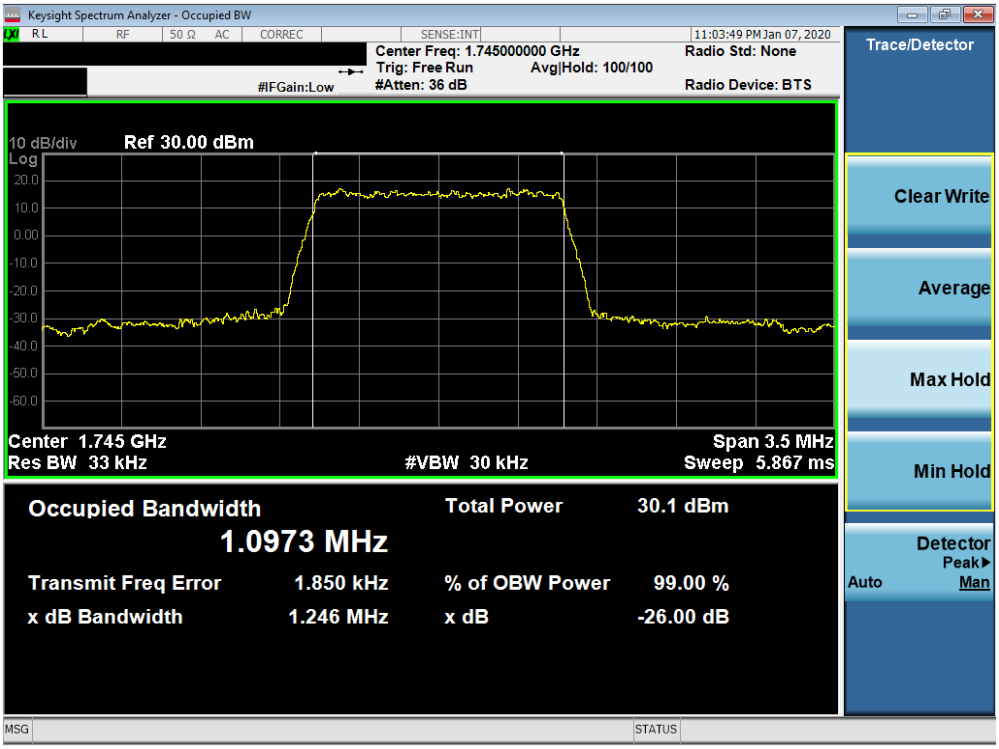


Plot 7-32. Occupied Bandwidth Plot (Band 5 - 10.0MHz 256-QAM - Full RB Configuration)

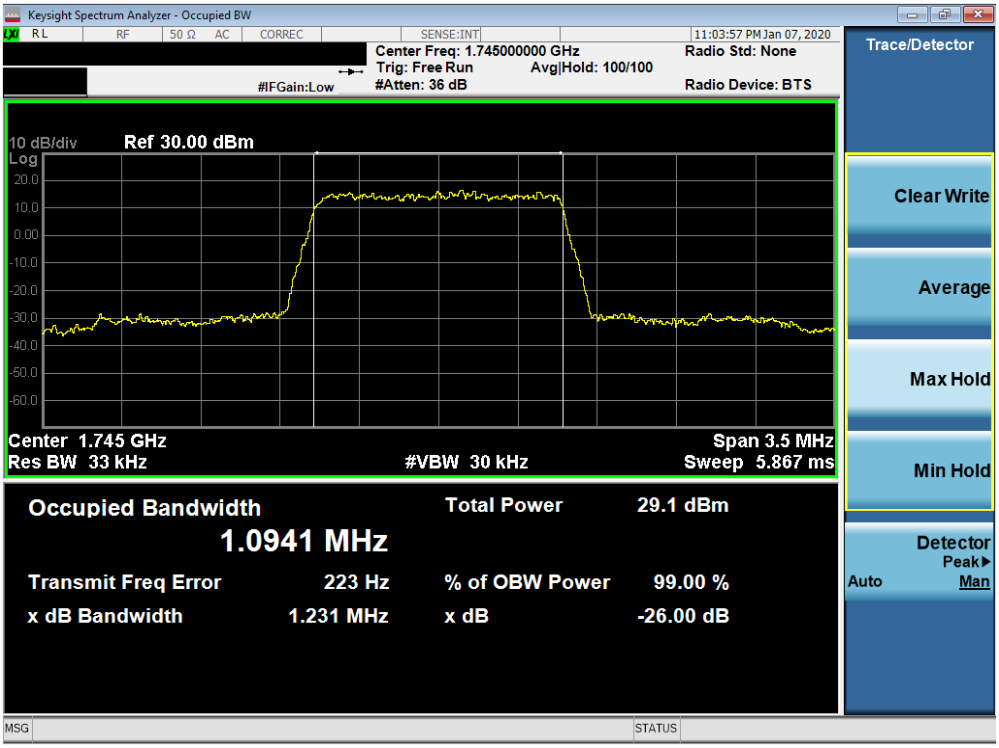
Band 66/4



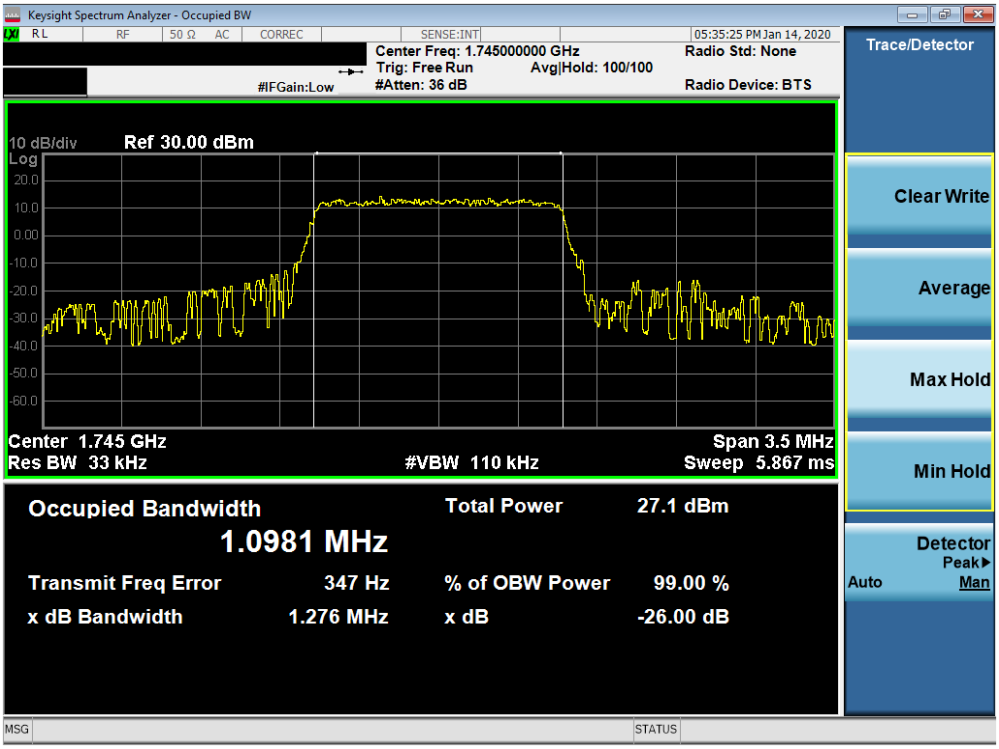
Plot 7-33. Occupied Bandwidth Plot (Band 66/4 - 1.4MHz QPSK - Full RB Configuration)



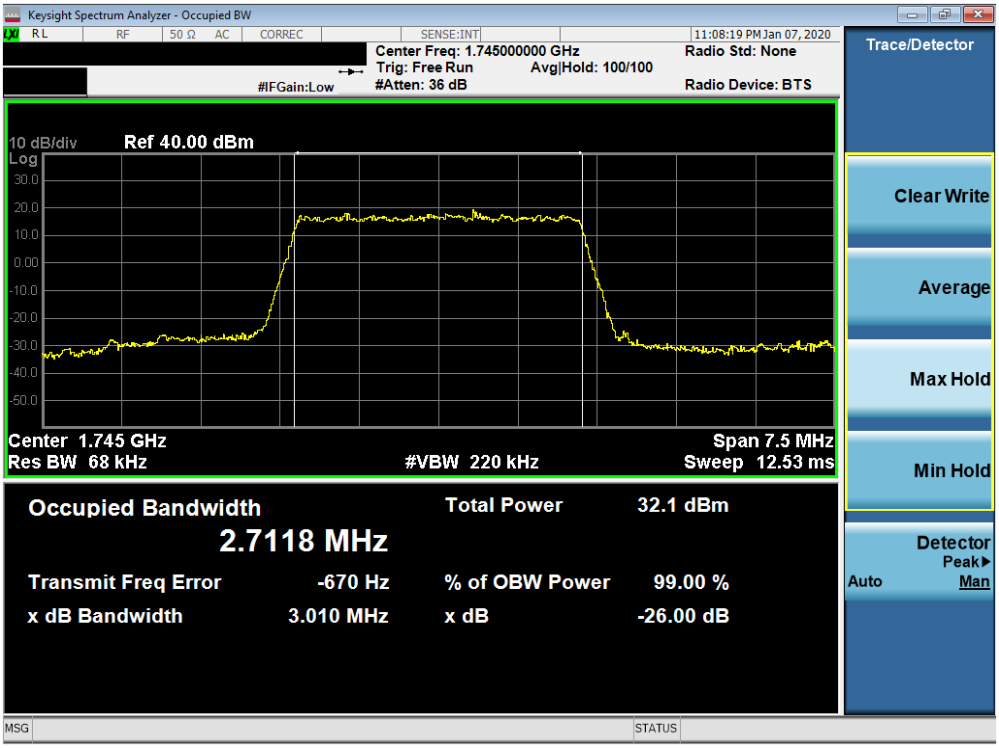
Plot 7-34. Occupied Bandwidth Plot (Band 66/4 - 1.4MHz 16-QAM - Full RB Configuration)



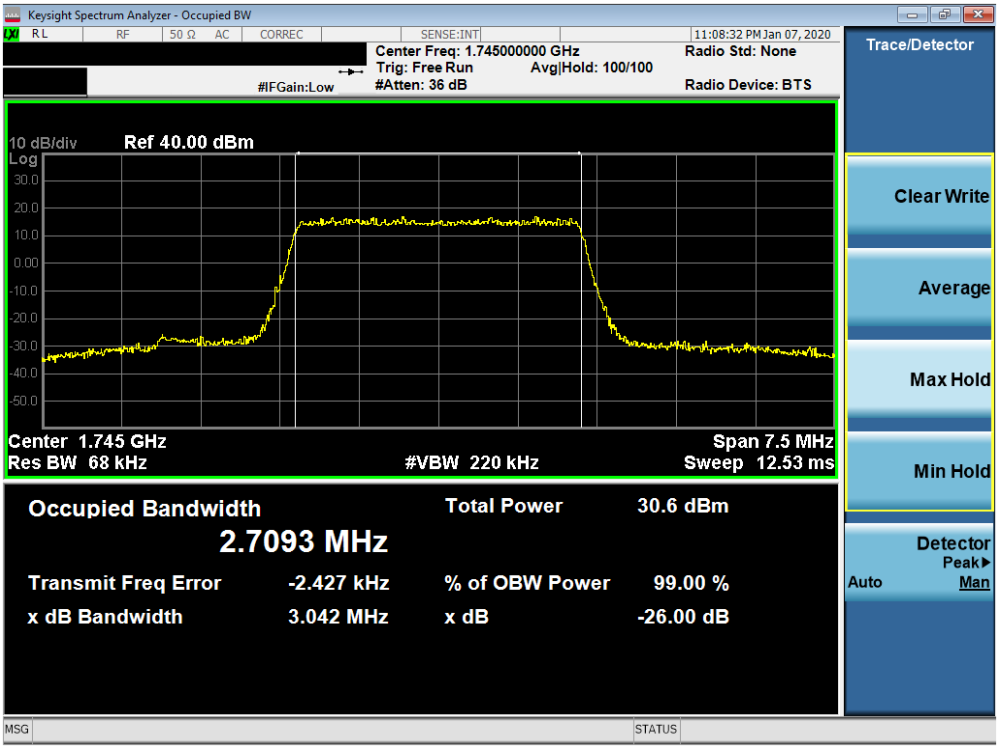
Plot 7-35. Occupied Bandwidth Plot (Band 66/4 - 1.4MHz 64-QAM - Full RB Configuration)



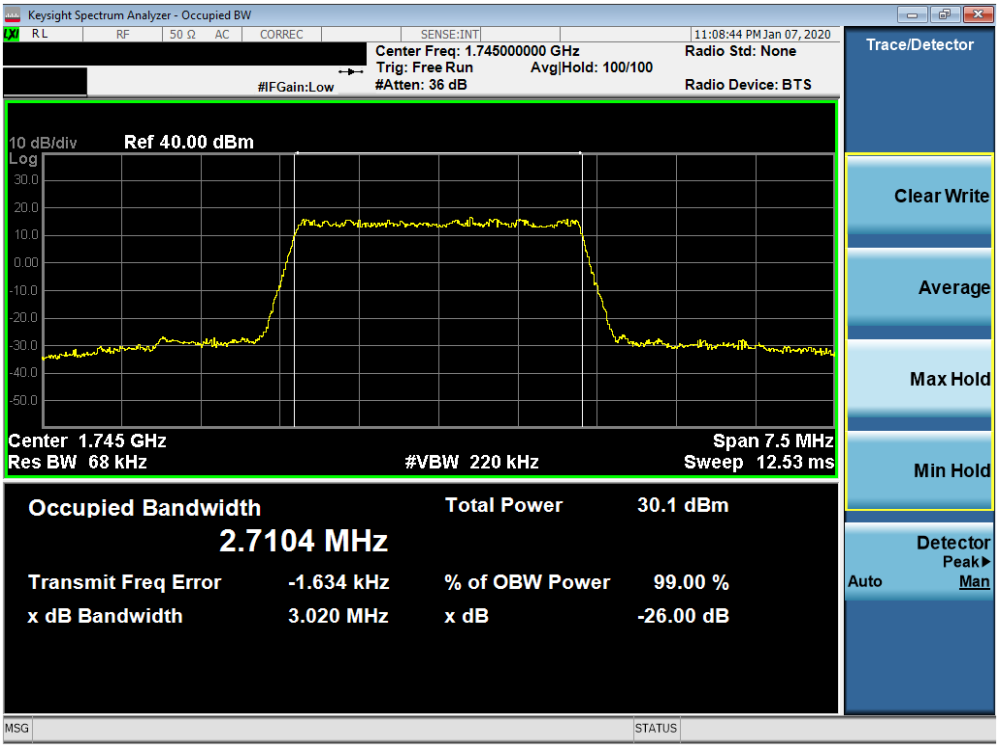
Plot 7-36. Occupied Bandwidth Plot (Band 66/4 - 1.4MHz 256-QAM - Full RB Configuration)



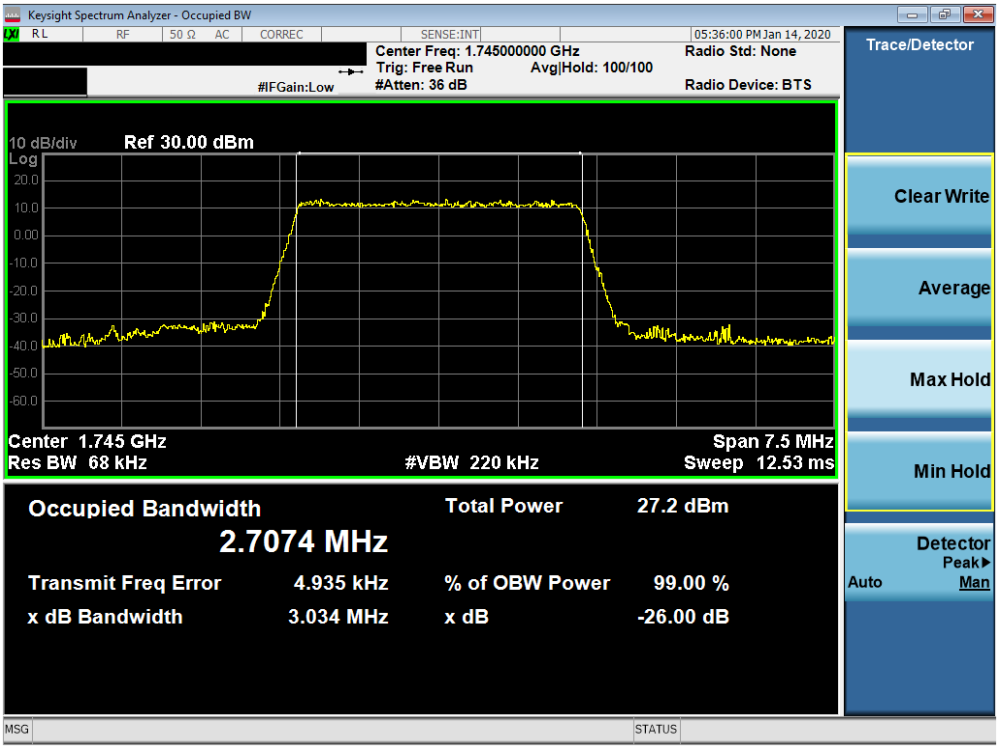
Plot 7-37. Occupied Bandwidth Plot (Band 66/4 - 3.0MHz QPSK - Full RB Configuration)



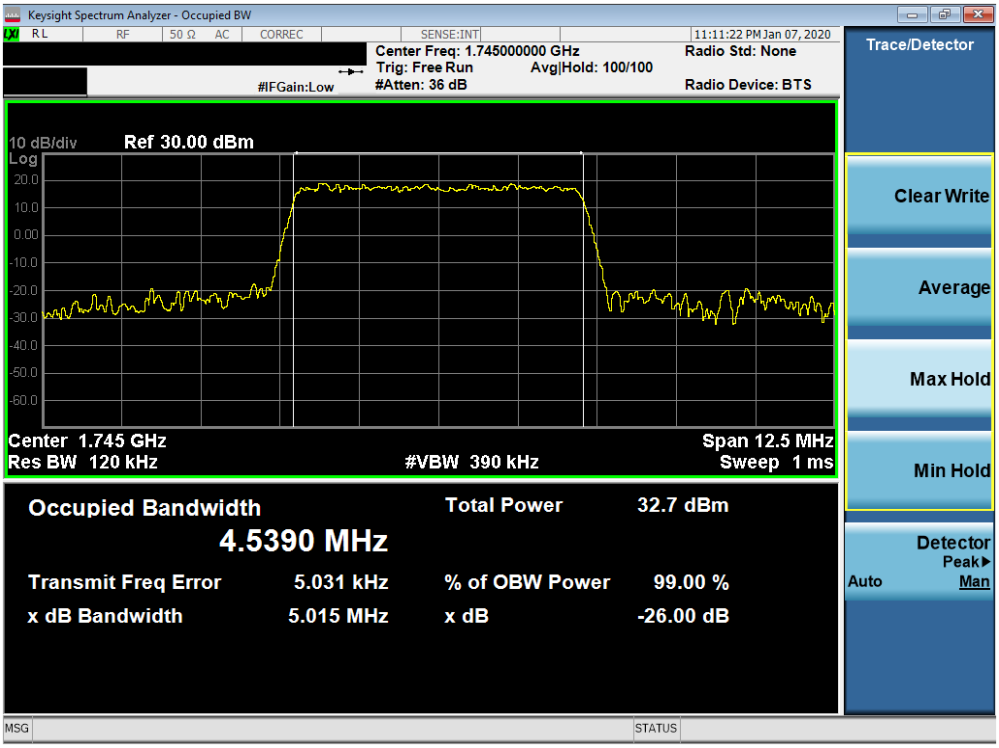
Plot 7-38. Occupied Bandwidth Plot (Band 66/4 - 3.0MHz 16-QAM - Full RB Configuration)



Plot 7-39. Occupied Bandwidth Plot (Band 66/4 - 3.0MHz 64-QAM - Full RB Configuration)

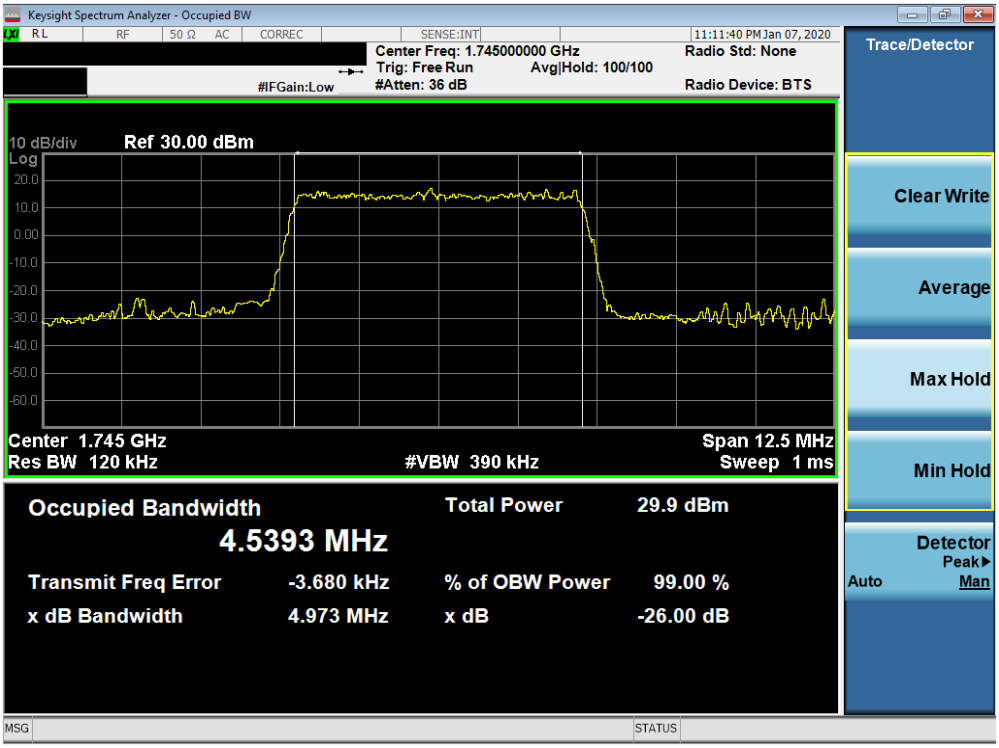


Plot 7-40. Occupied Bandwidth Plot (Band 66/4 - 3.0MHz 256-QAM - Full RB Configuration)

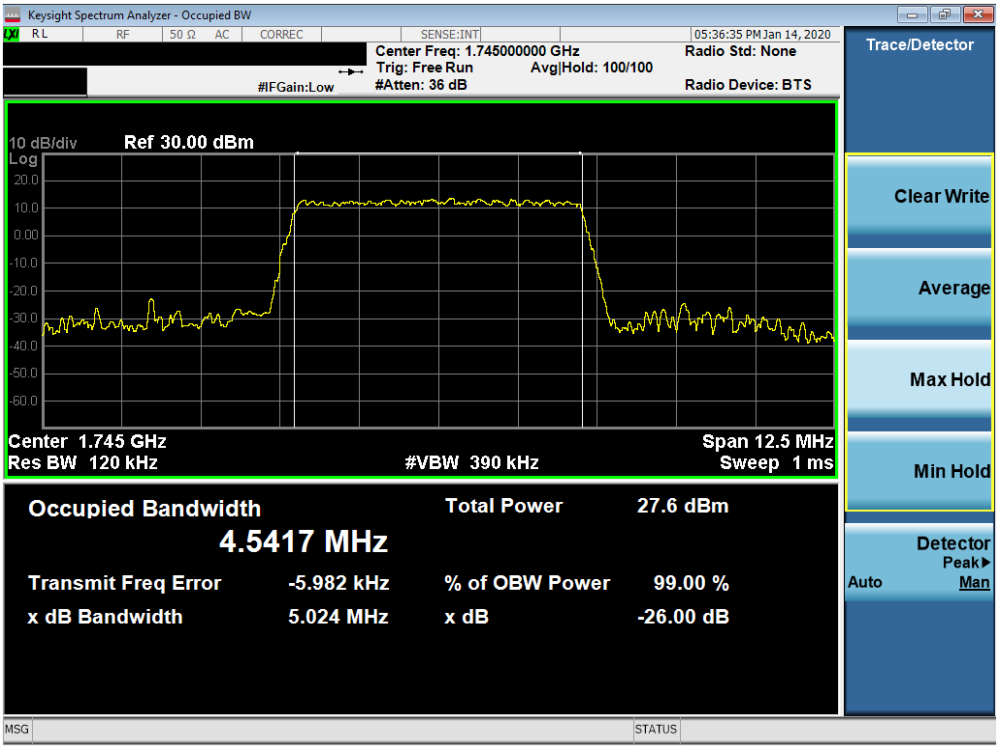


Plot 7-41. Occupied Bandwidth Plot (Band 66/4 - 5.0MHz QPSK - Full RB Configuration)

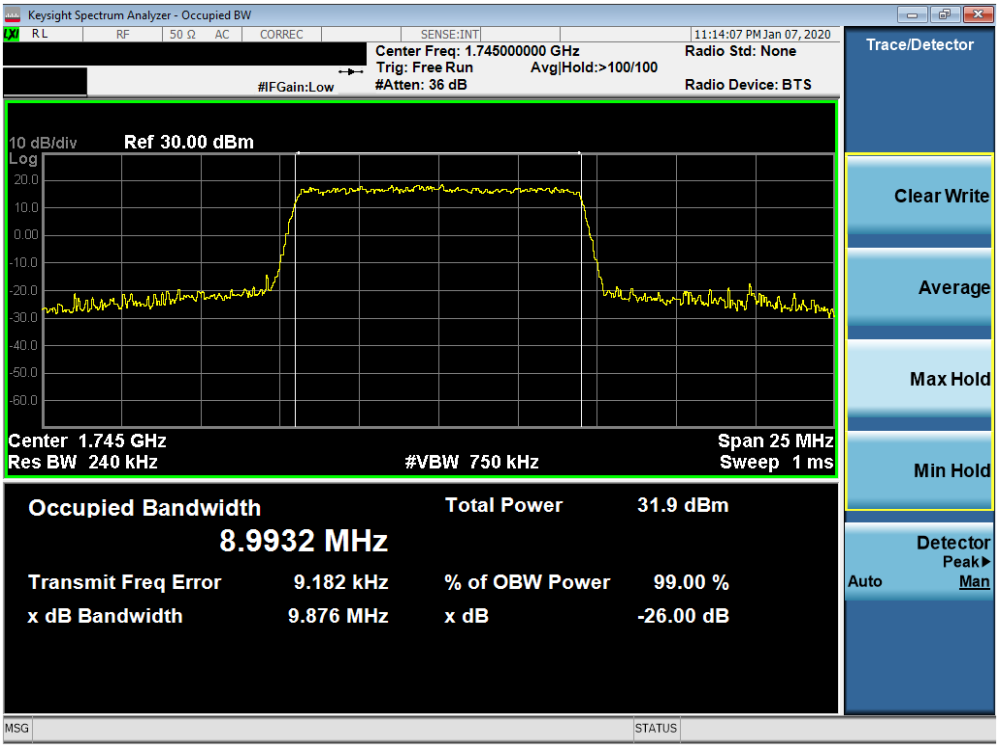
Plot 7-42. Occupied Bandwidth Plot (Band 66/4 - 5.0MHz 16-QAM - Full RB Configuration)



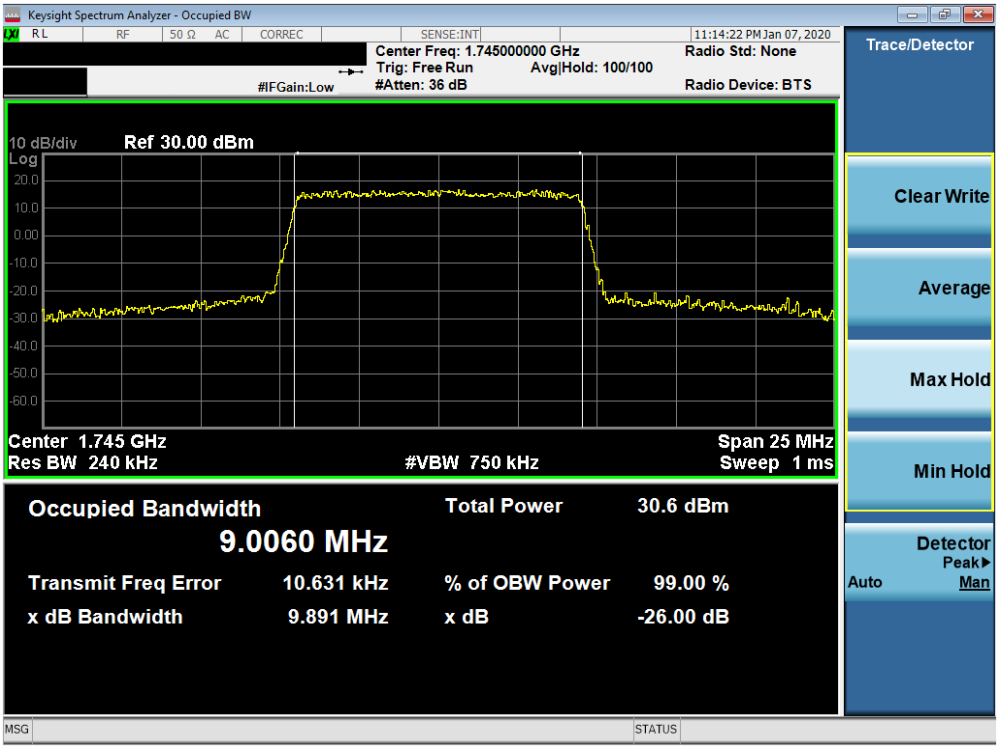
Plot 7-43. Occupied Bandwidth Plot (Band 66/4 - 5.0MHz 64-QAM - Full RB Configuration)



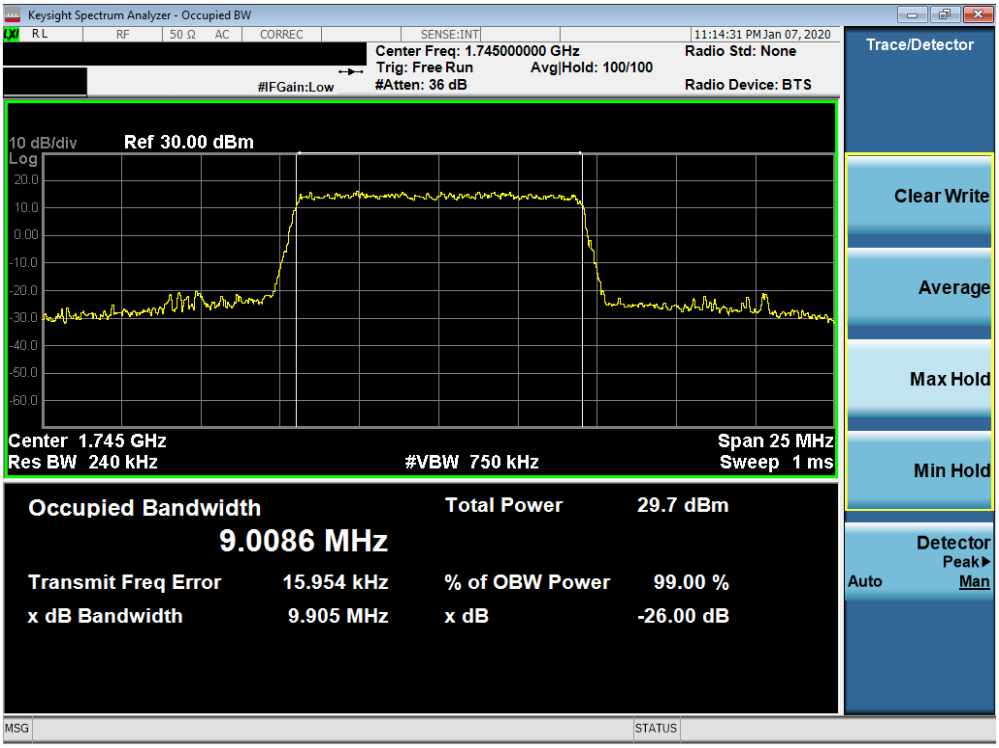
Plot 7-44. Occupied Bandwidth Plot (Band 66/4 - 5.0MHz 256-QAM - Full RB Configuration)



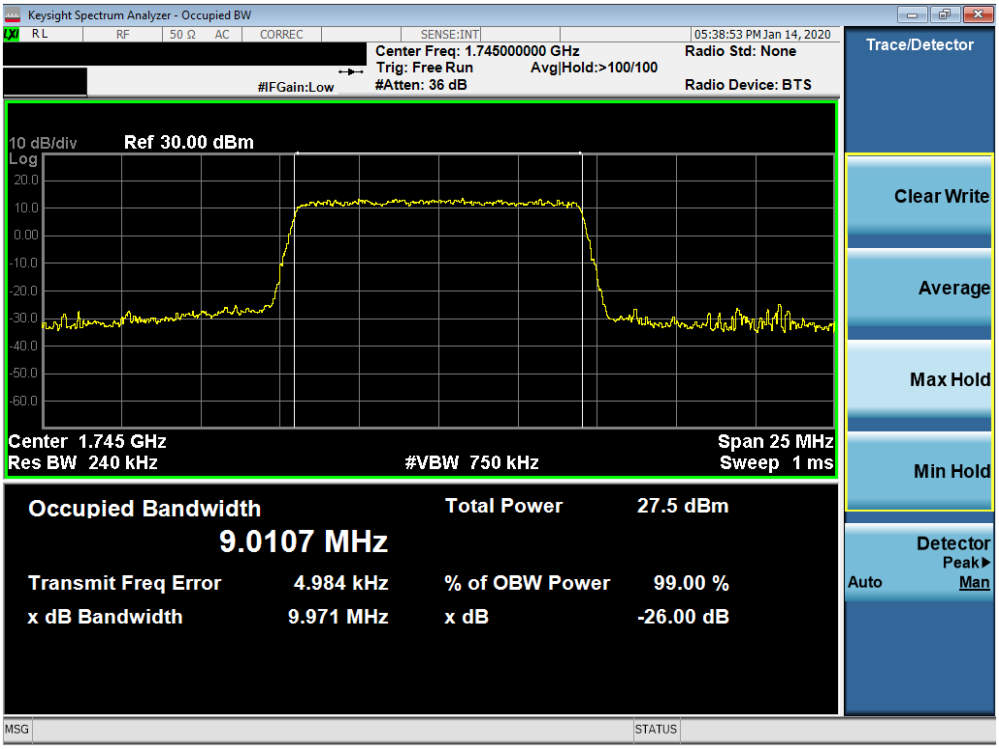
Plot 7-45. Occupied Bandwidth Plot (Band 66/4 - 10.0MHz QPSK - Full RB Configuration)



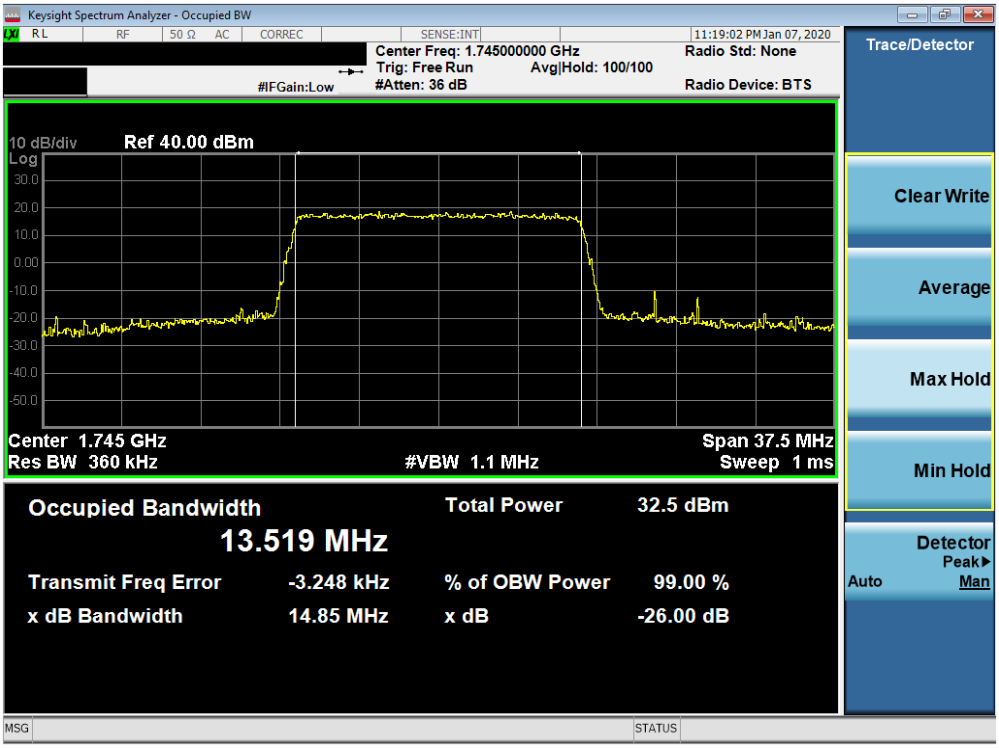
Plot 7-46. Occupied Bandwidth Plot (Band 66/4 - 10.0MHz 16-QAM - Full RB Configuration)



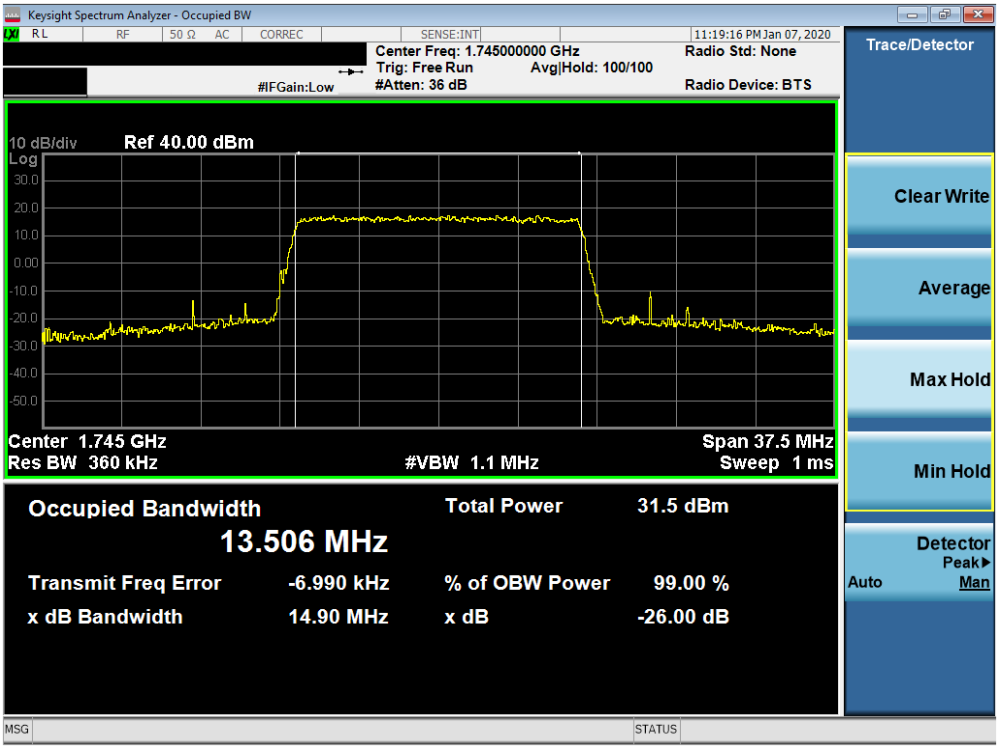
Plot 7-47. Occupied Bandwidth Plot (Band 66/4 - 10.0MHz 64-QAM - Full RB Configuration)



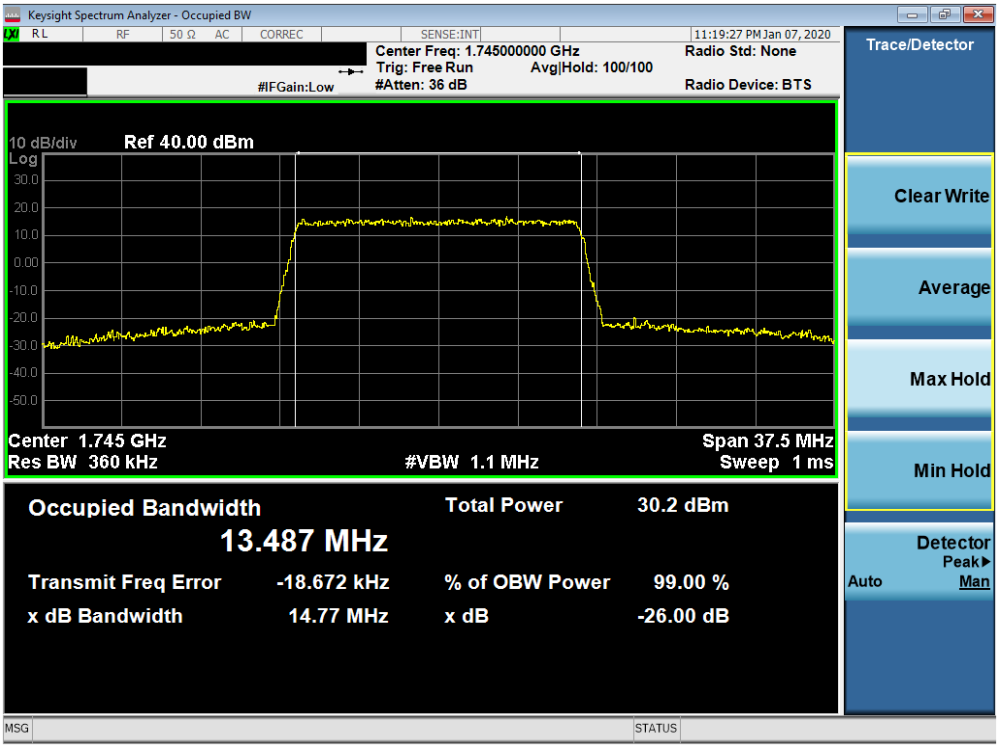
Plot 7-48. Occupied Bandwidth Plot (Band 66/4 - 10.0MHz 256-QAM - Full RB Configuration)



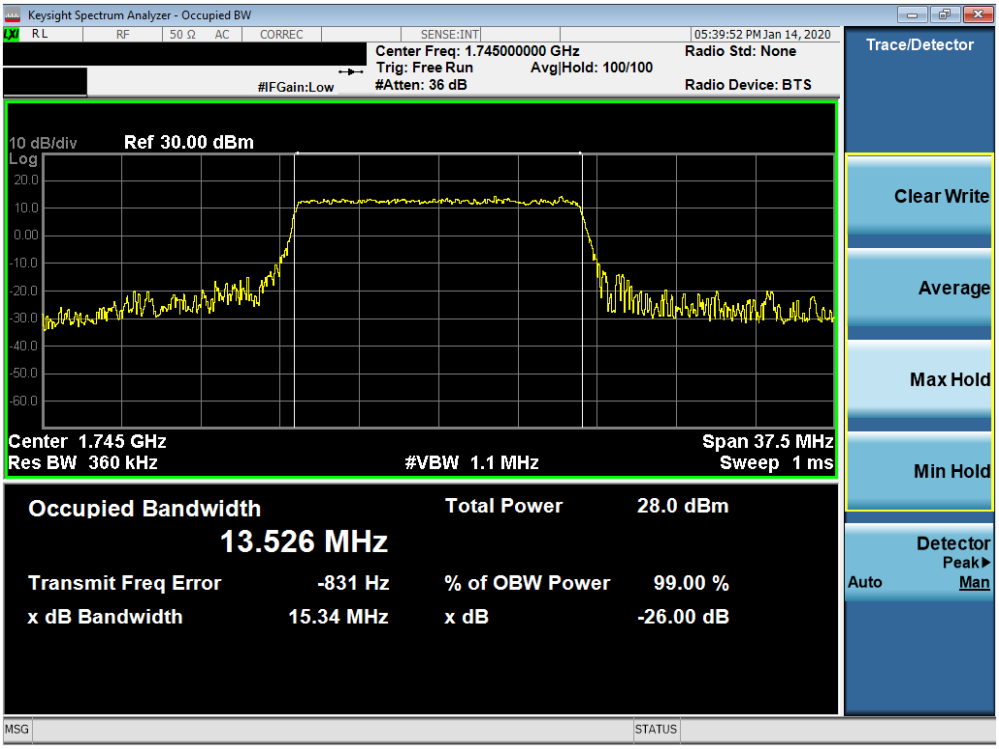
Plot 7-49. Occupied Bandwidth Plot (Band 66/4 - 15.0MHz QPSK - Full RB Configuration)



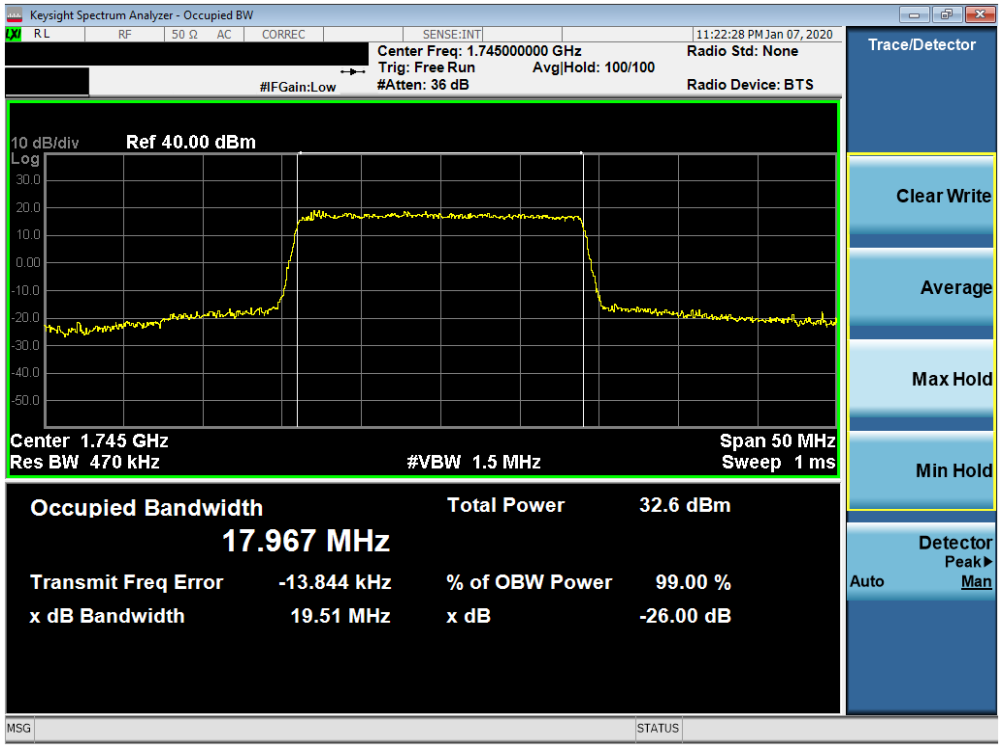
Plot 7-50. Occupied Bandwidth Plot (Band 66/4 - 15.0MHz 16-QAM - Full RB Configuration)



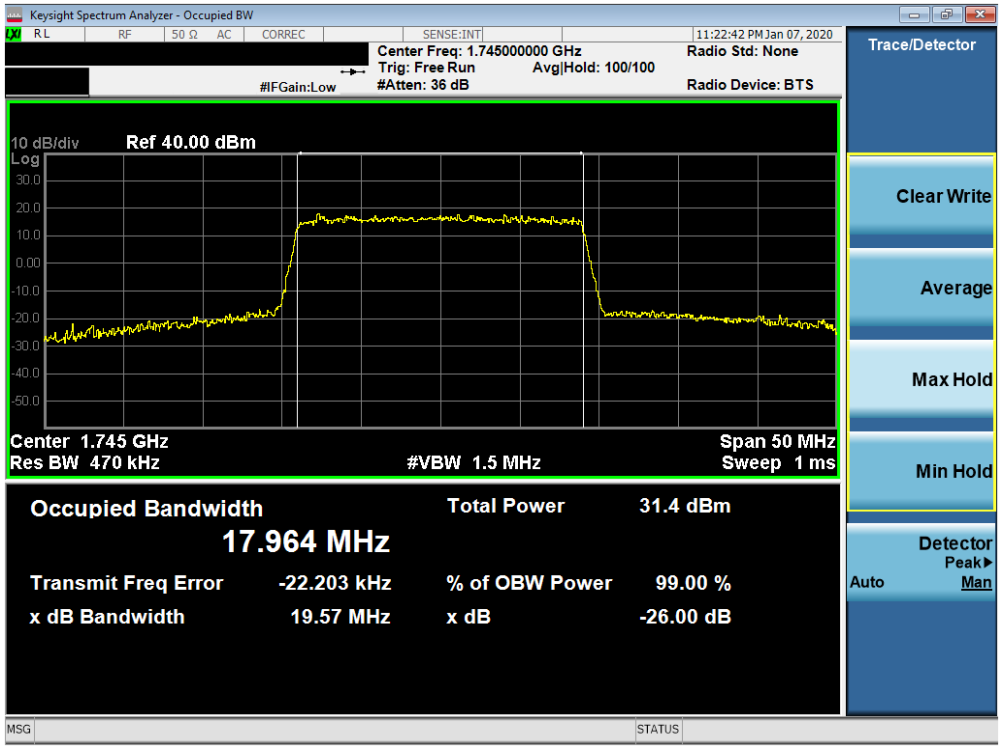
Plot 7-51. Occupied Bandwidth Plot (Band 66/4 - 15.0MHz 64-QAM - Full RB Configuration)



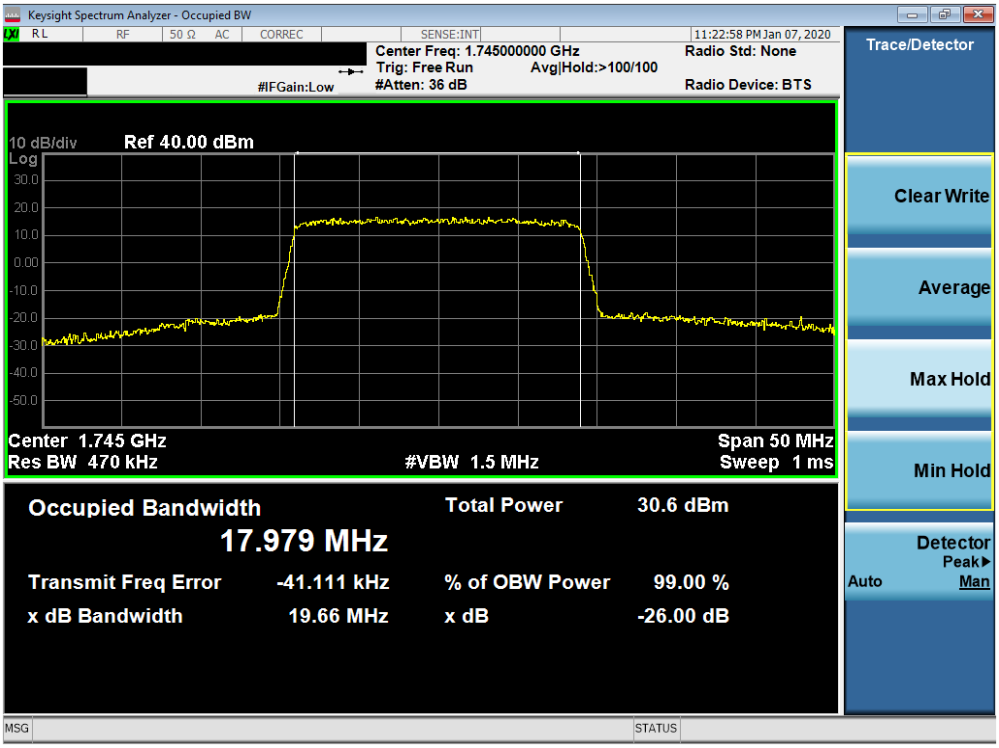
Plot 7-52. Occupied Bandwidth Plot (Band 66/4 - 15.0MHz 256-QAM - Full RB Configuration)



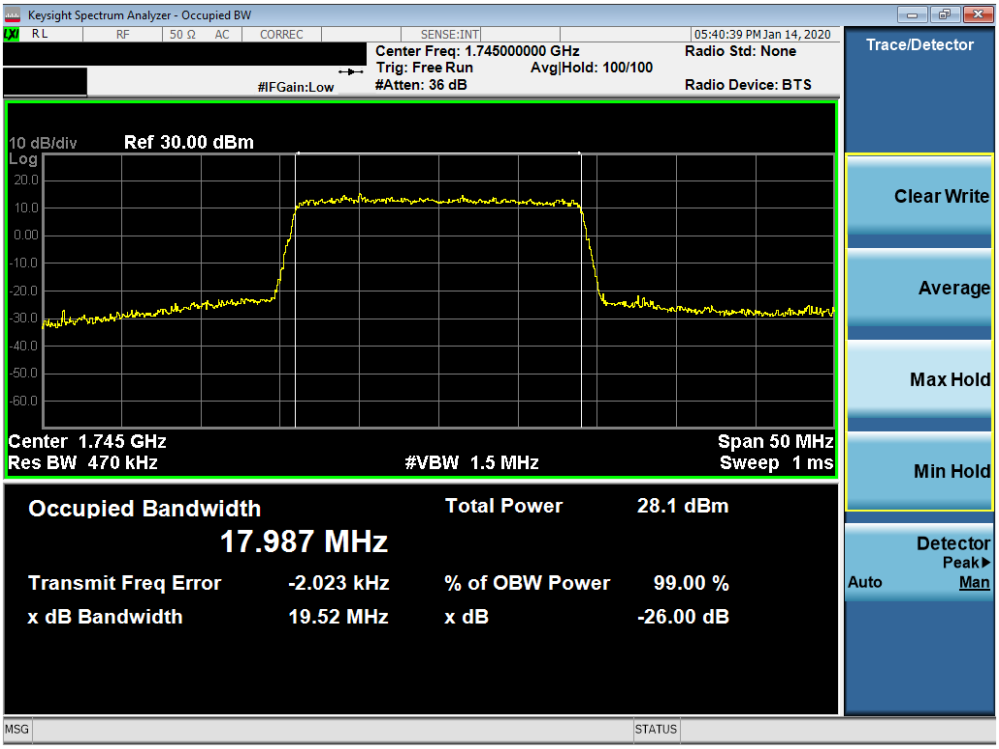
Plot 7-53. Occupied Bandwidth Plot (Band 66/4 - 20.0MHz QPSK - Full RB Configuration)



Plot 7-54. Occupied Bandwidth Plot (Band 66/4 - 20.0MHz 16-QAM - Full RB Configuration)

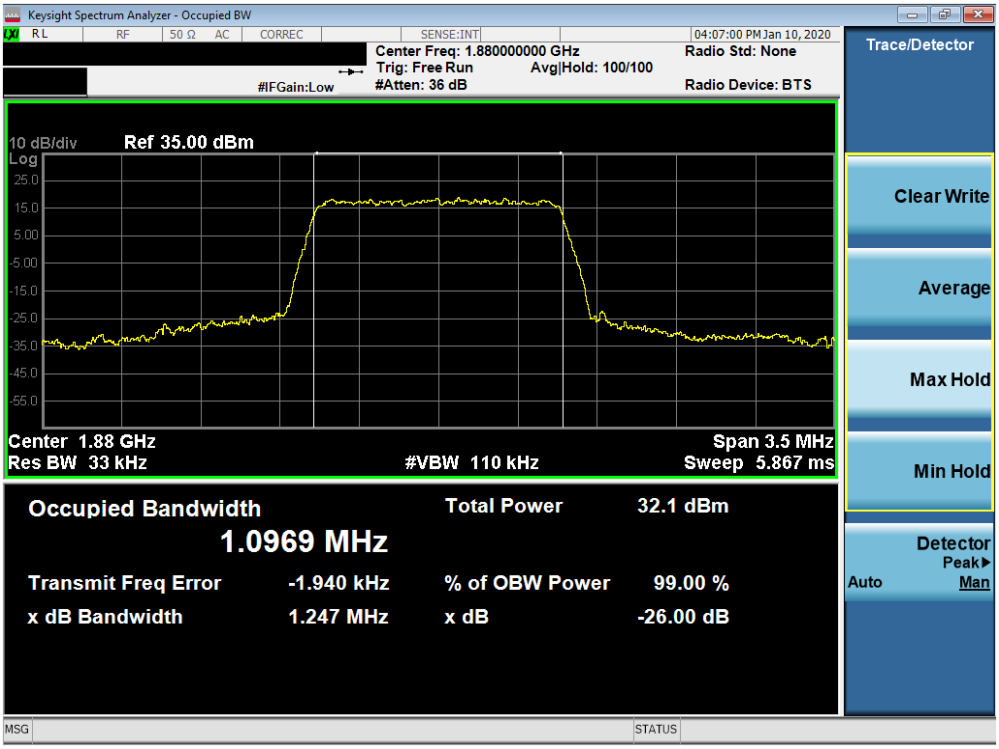


Plot 7-55. Occupied Bandwidth Plot (Band 66/4 - 20.0MHz 64-QAM - Full RB Configuration)

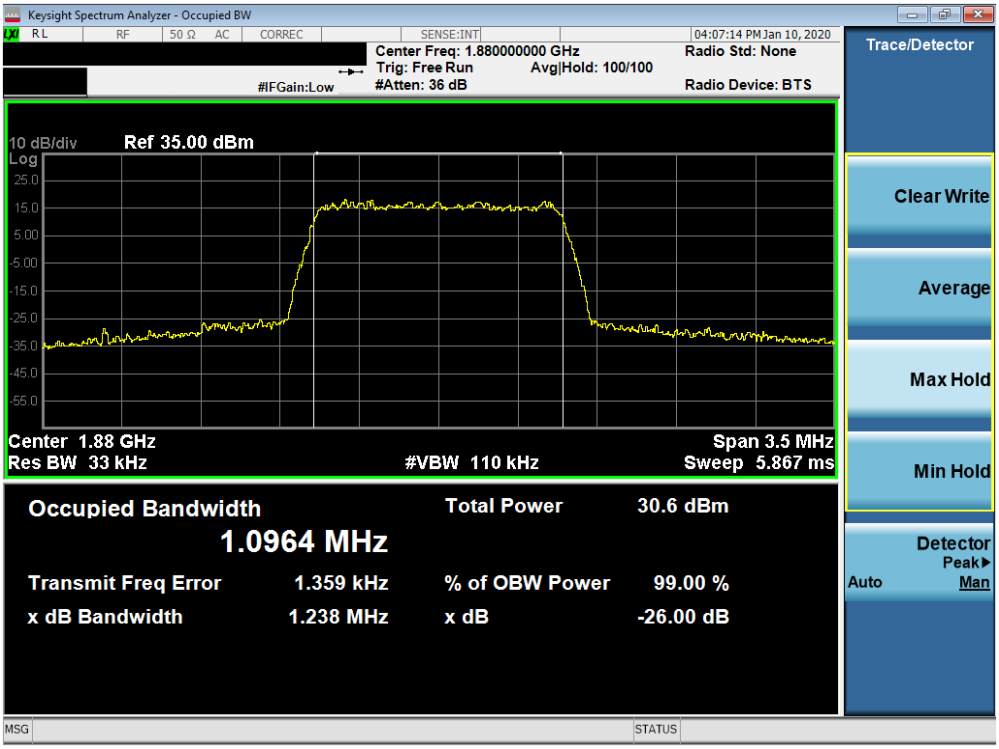


Plot 7-56. Occupied Bandwidth Plot (Band 66/4 - 20.0MHz 256-QAM - Full RB Configuration)

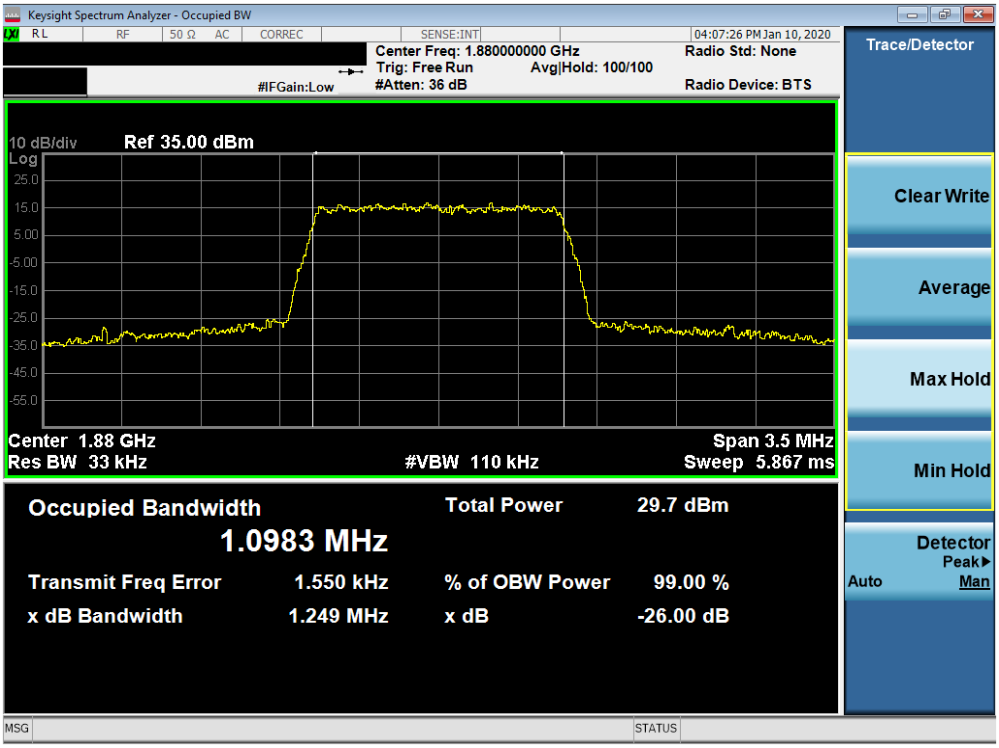
Band 2



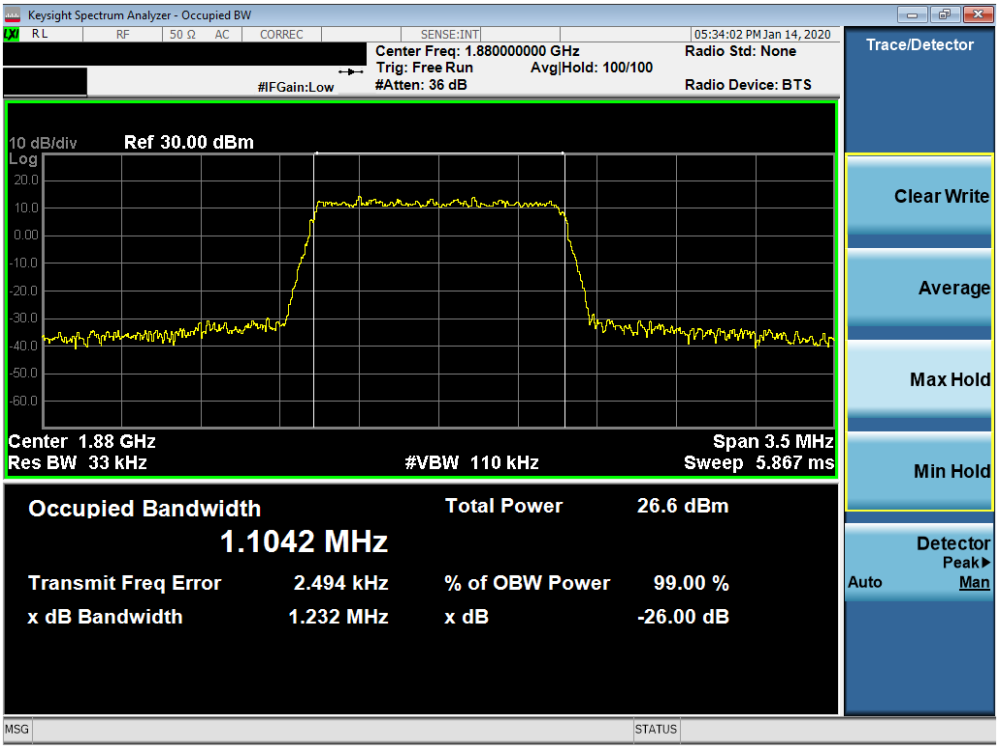
Plot 7-57. Occupied Bandwidth Plot (Band 2 - 1.4MHz QPSK - Full RB Configuration)



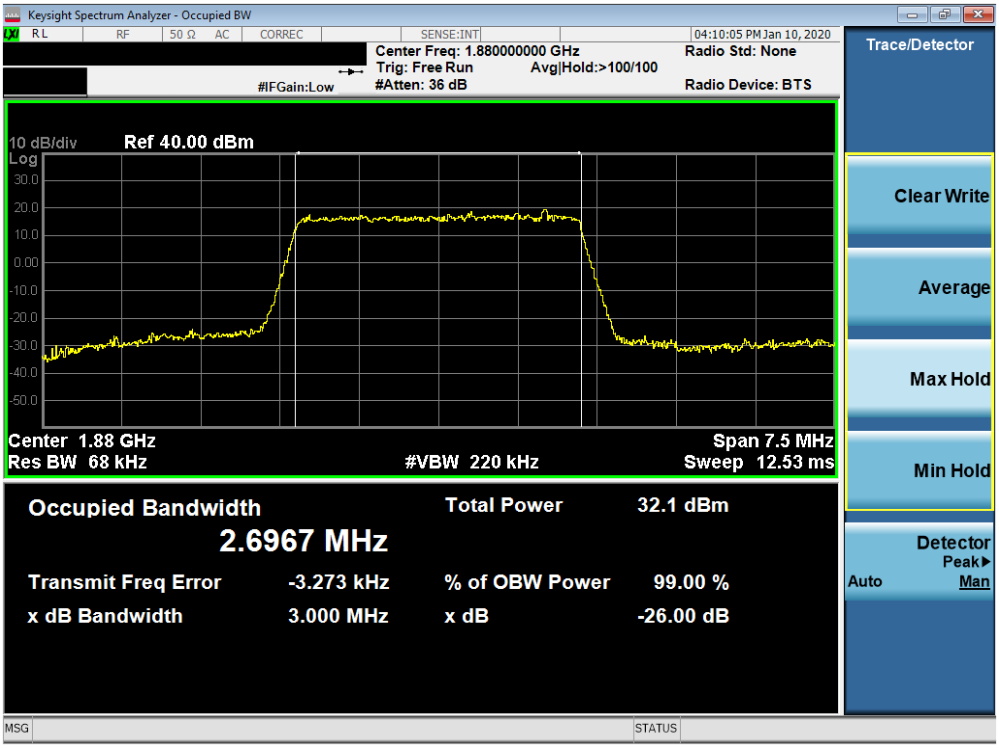
Plot 7-58. Occupied Bandwidth Plot (Band 2 - 1.4MHz 16-QAM - Full RB Configuration)



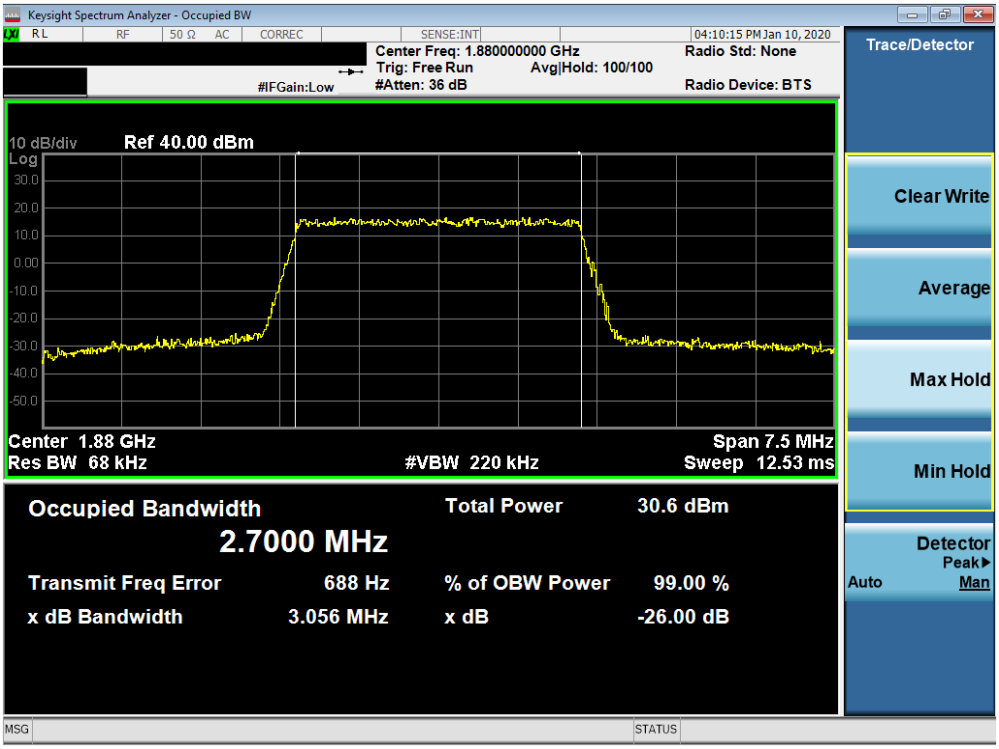
Plot 7-59. Occupied Bandwidth Plot (Band 2 - 1.4MHz 64-QAM - Full RB Configuration)



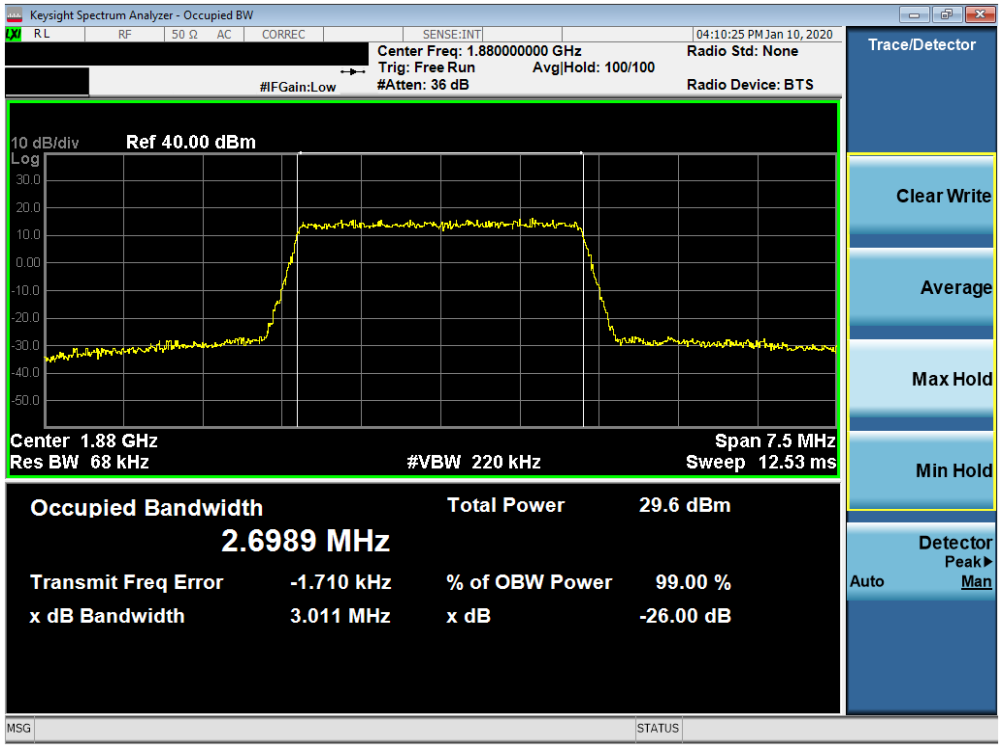
Plot 7-60. Occupied Bandwidth Plot (Band 2 - 1.4MHz 256-QAM - Full RB Configuration)



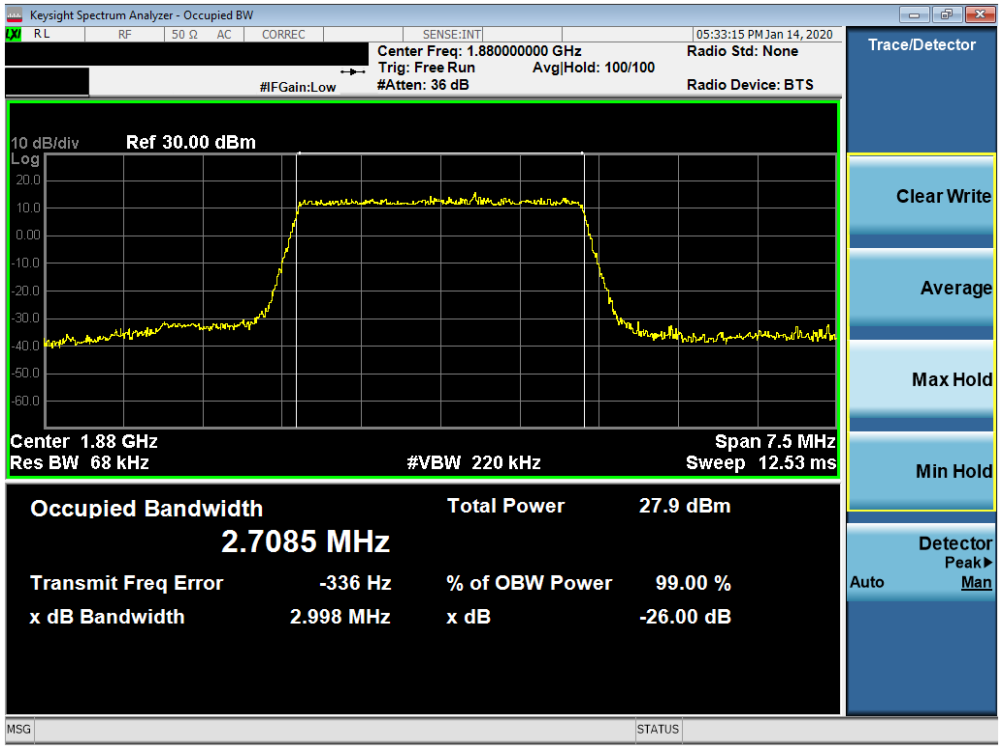
Plot 7-61. Occupied Bandwidth Plot (Band 2 - 3.0MHz QPSK - Full RB Configuration)



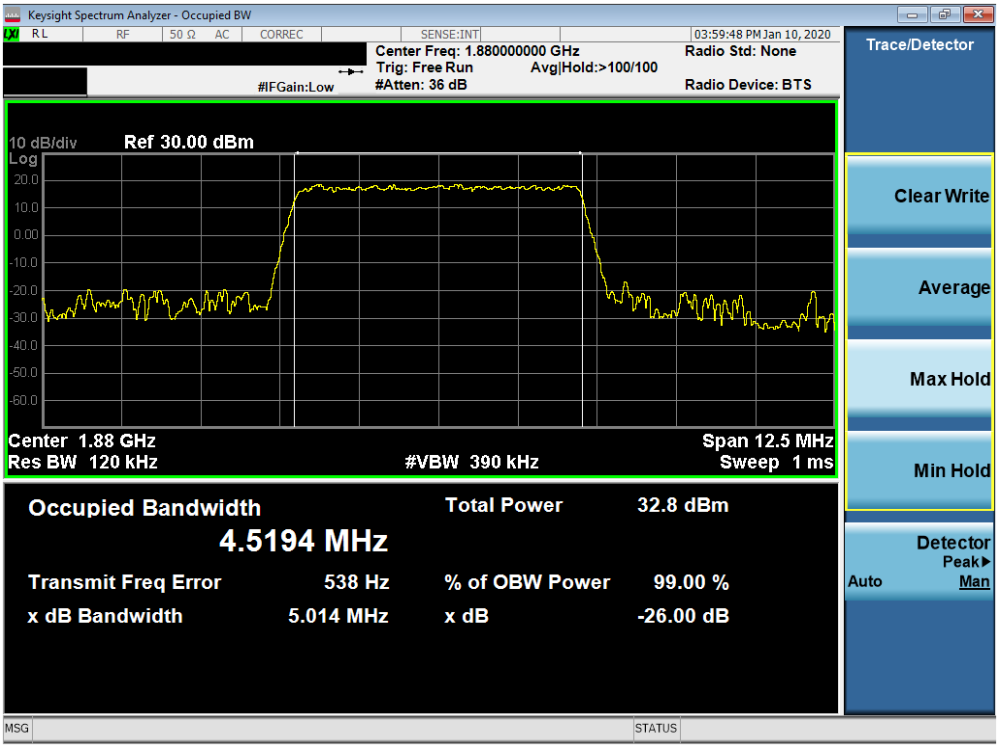
Plot 7-62. Occupied Bandwidth Plot (Band 2 - 3.0MHz 16-QAM - Full RB Configuration)



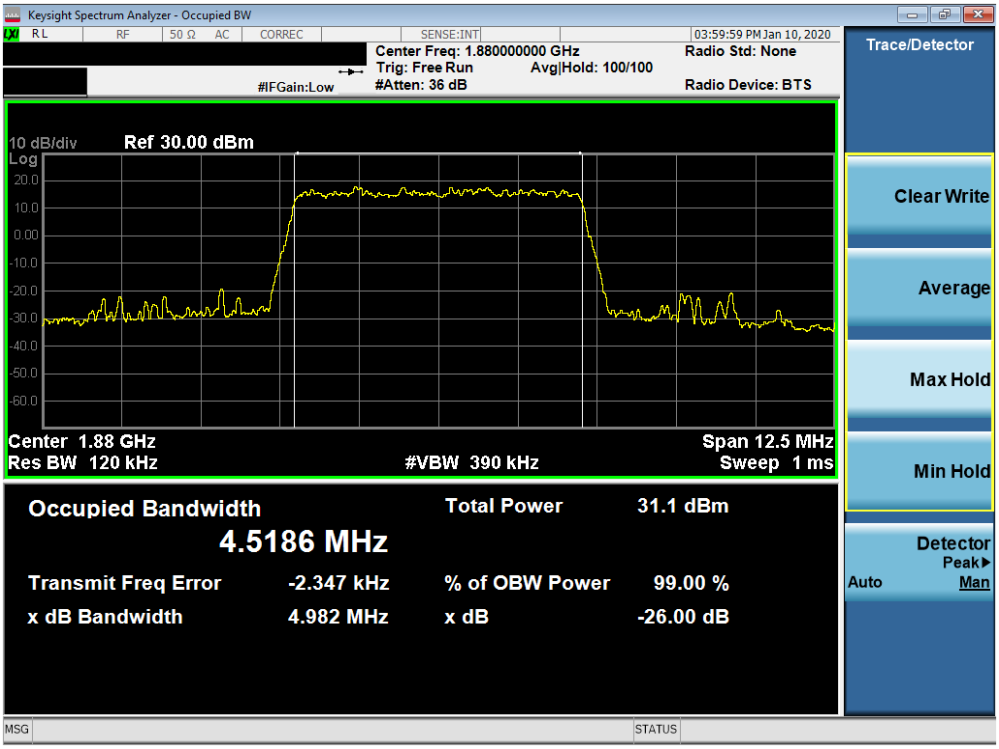
Plot 7-63. Occupied Bandwidth Plot (Band 2 - 3.0MHz 64-QAM - Full RB Configuration)



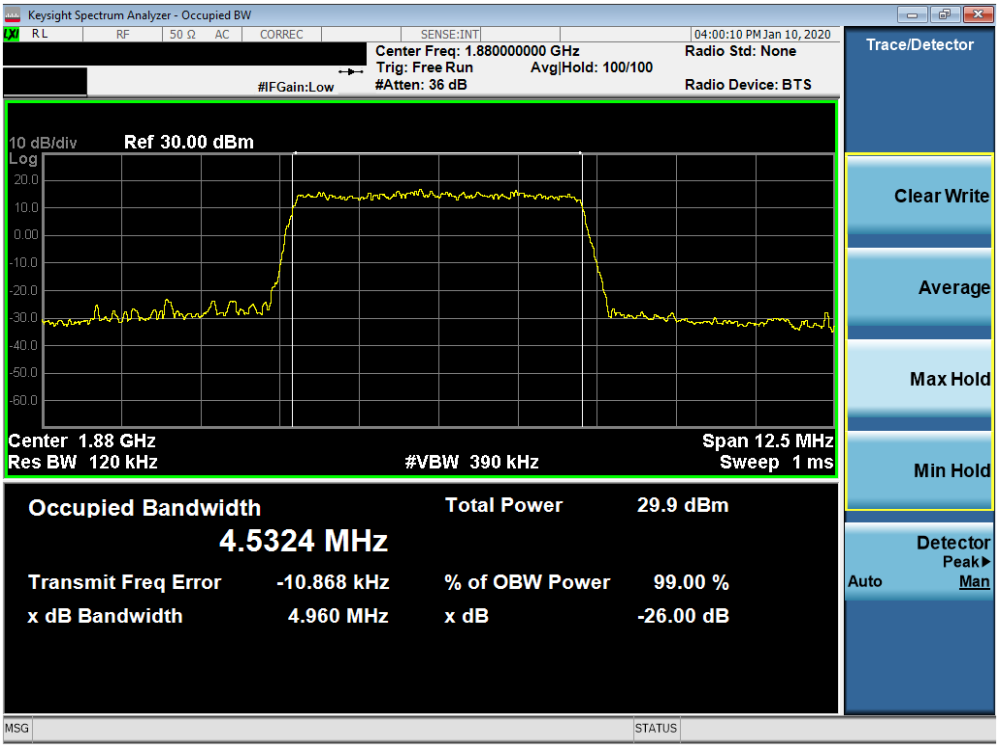
Plot 7-64. Occupied Bandwidth Plot (Band 2 - 3.0MHz 256-QAM - Full RB Configuration)



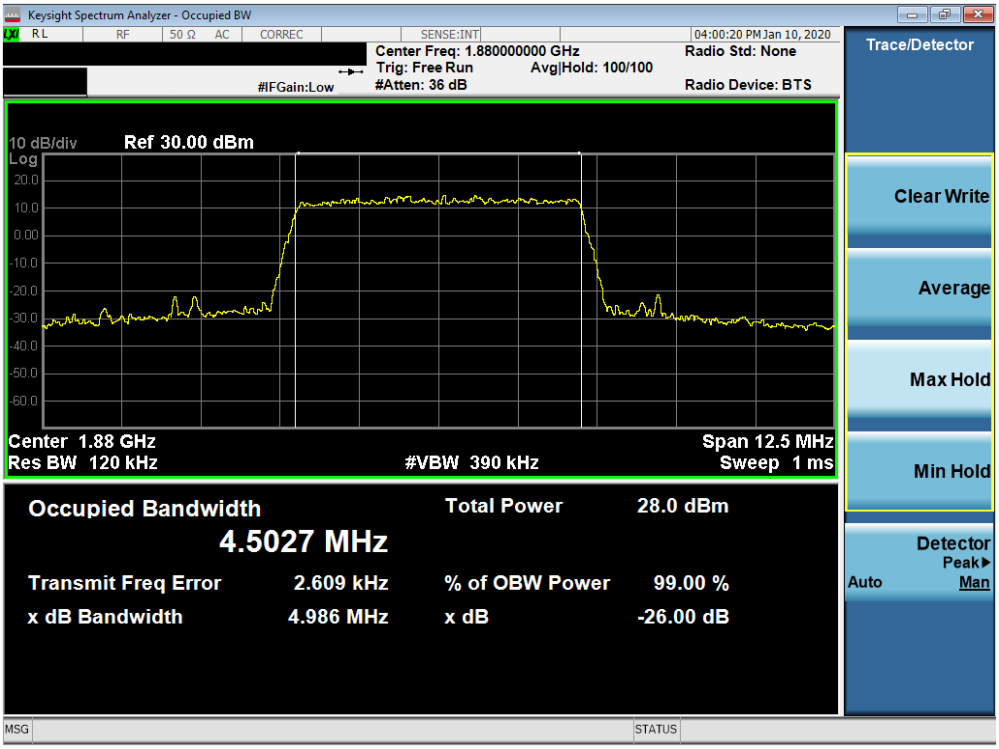
Plot 7-65. Occupied Bandwidth Plot (Band 2 - 5.0MHz QPSK - Full RB Configuration)



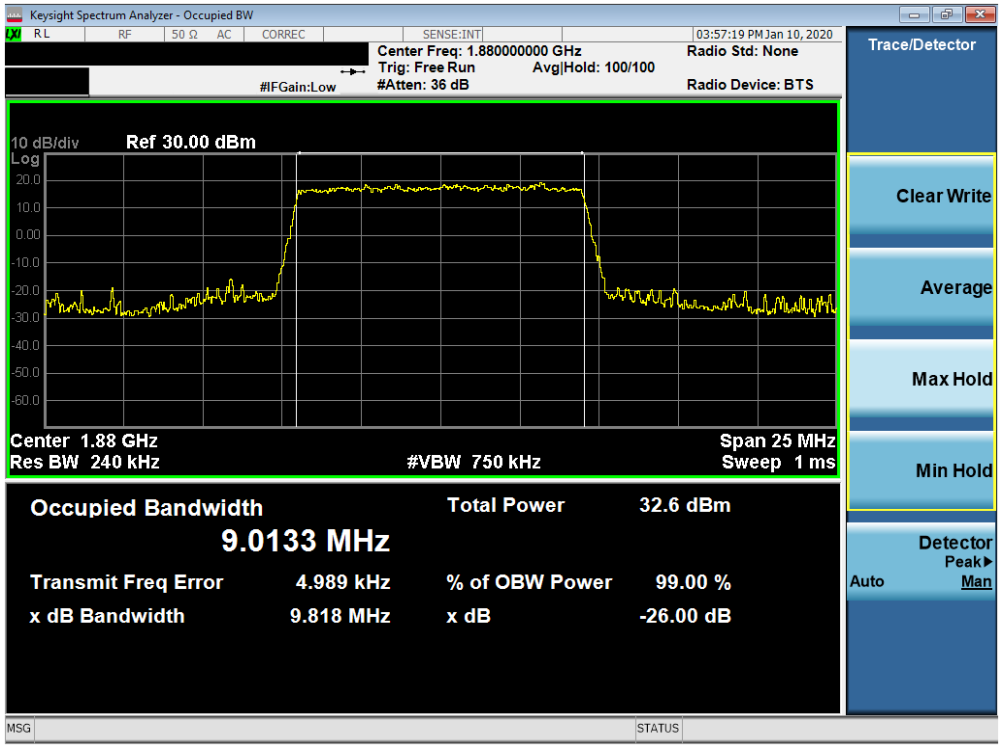
Plot 7-66. Occupied Bandwidth Plot (Band 2 - 5.0MHz 16-QAM - Full RB Configuration)



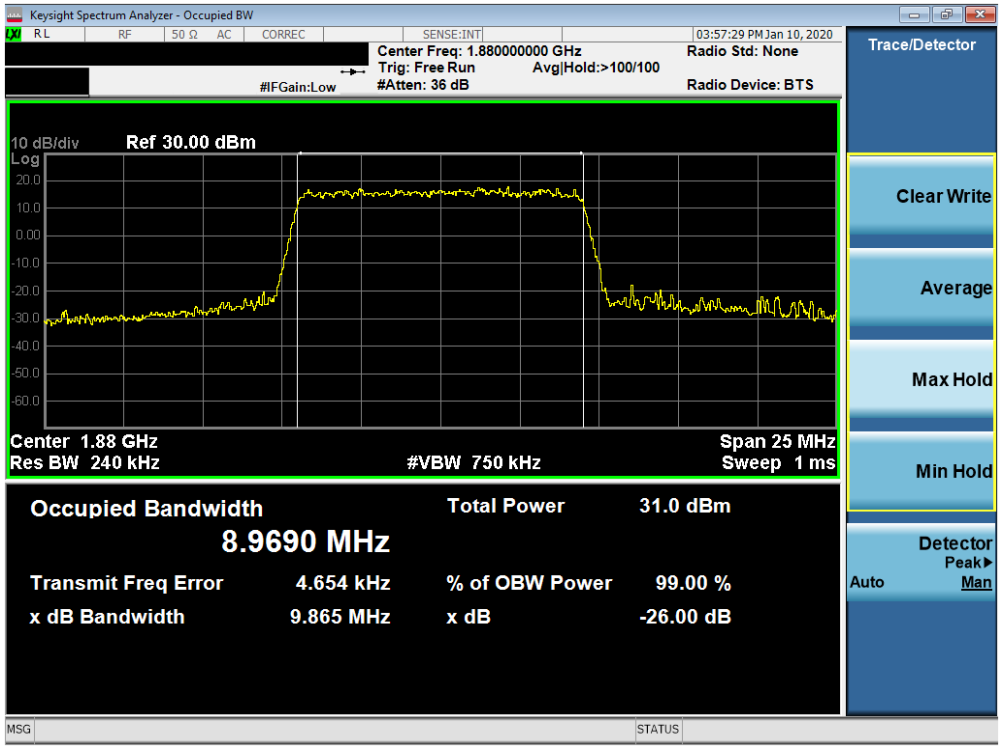
Plot 7-67. Occupied Bandwidth Plot (Band 2 - 5.0MHz 64-QAM - Full RB Configuration)



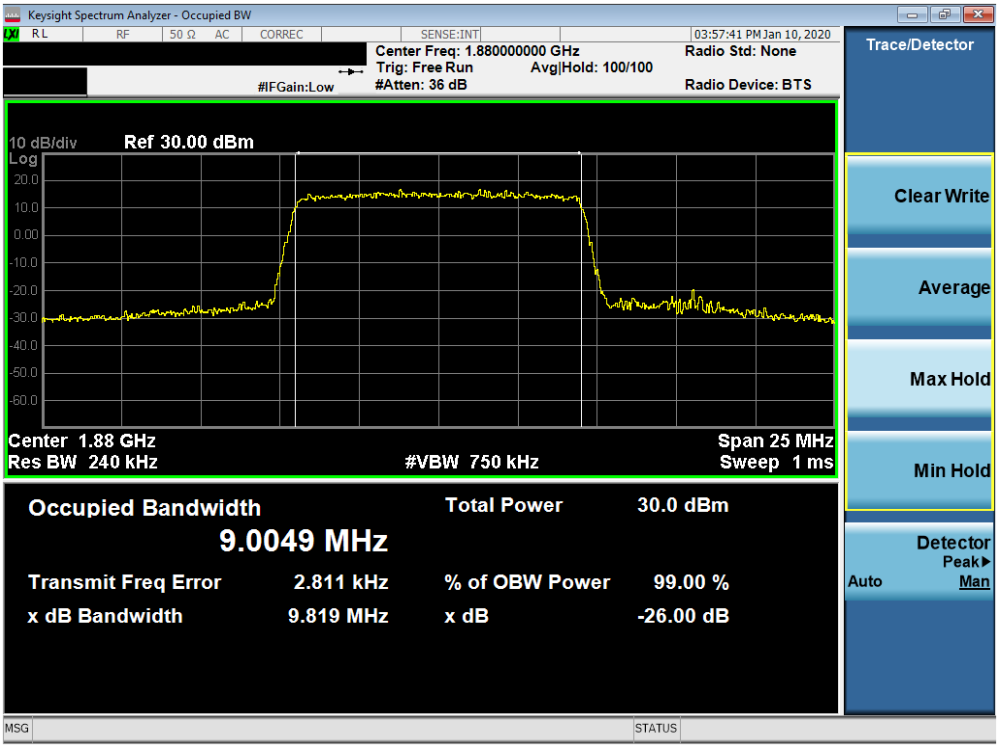
Plot 7-68. Occupied Bandwidth Plot (Band 2 - 5.0MHz 256-QAM - Full RB Configuration)



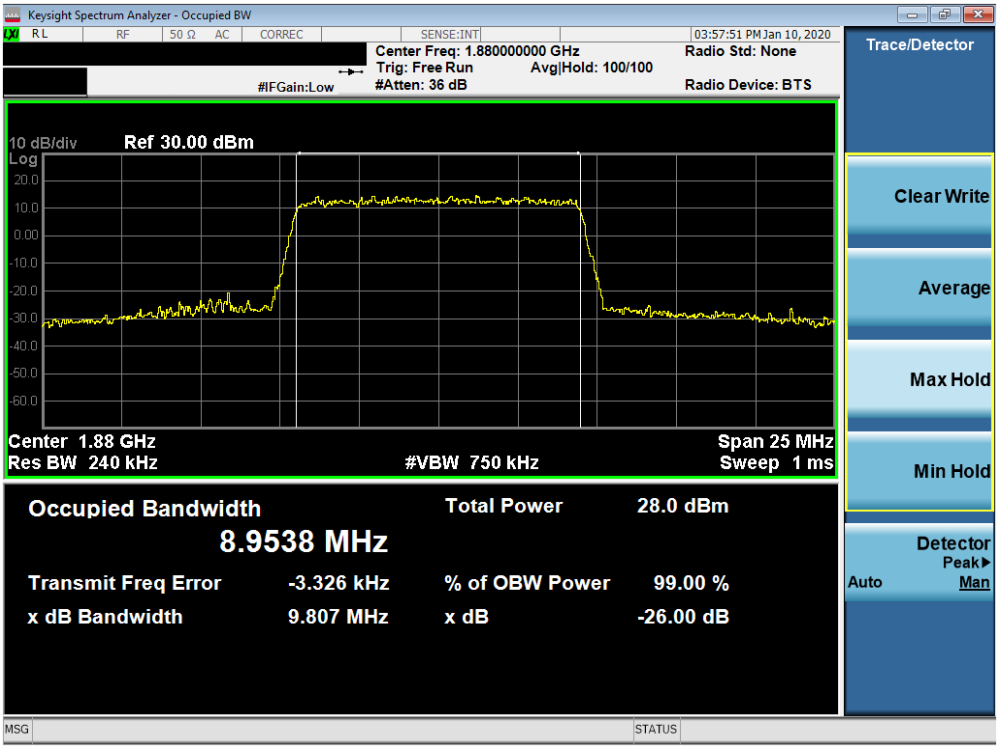
Plot 7-69. Occupied Bandwidth Plot (Band 2 - 10.0MHz QPSK - Full RB Configuration)



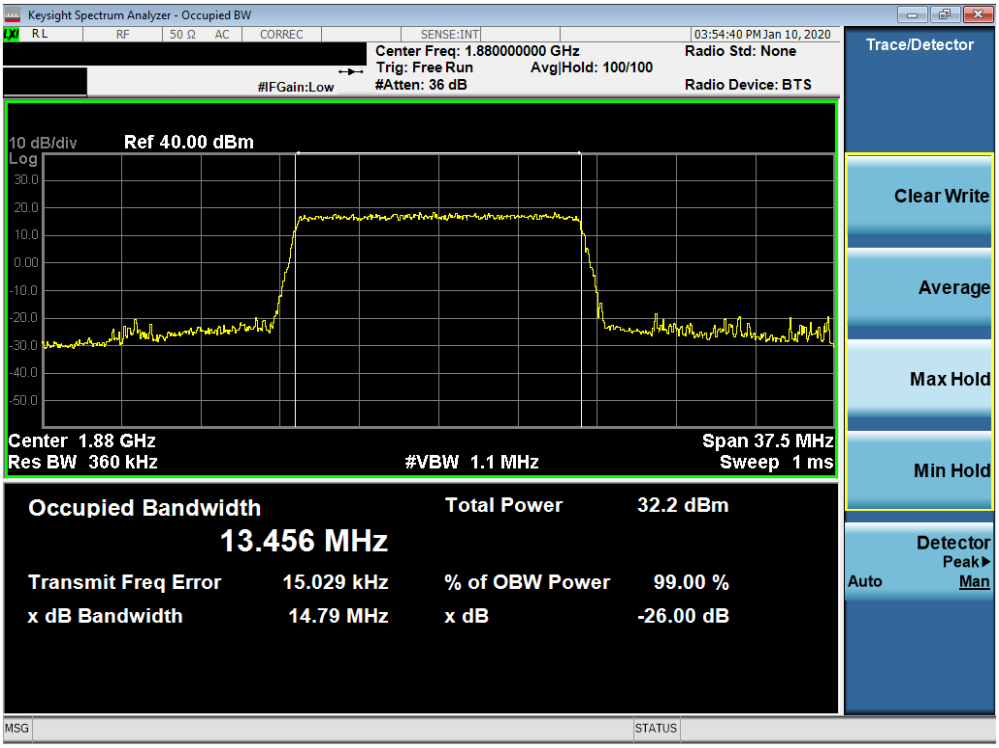
Plot 7-70. Occupied Bandwidth Plot (Band 2 - 10.0MHz 16-QAM - Full RB Configuration)



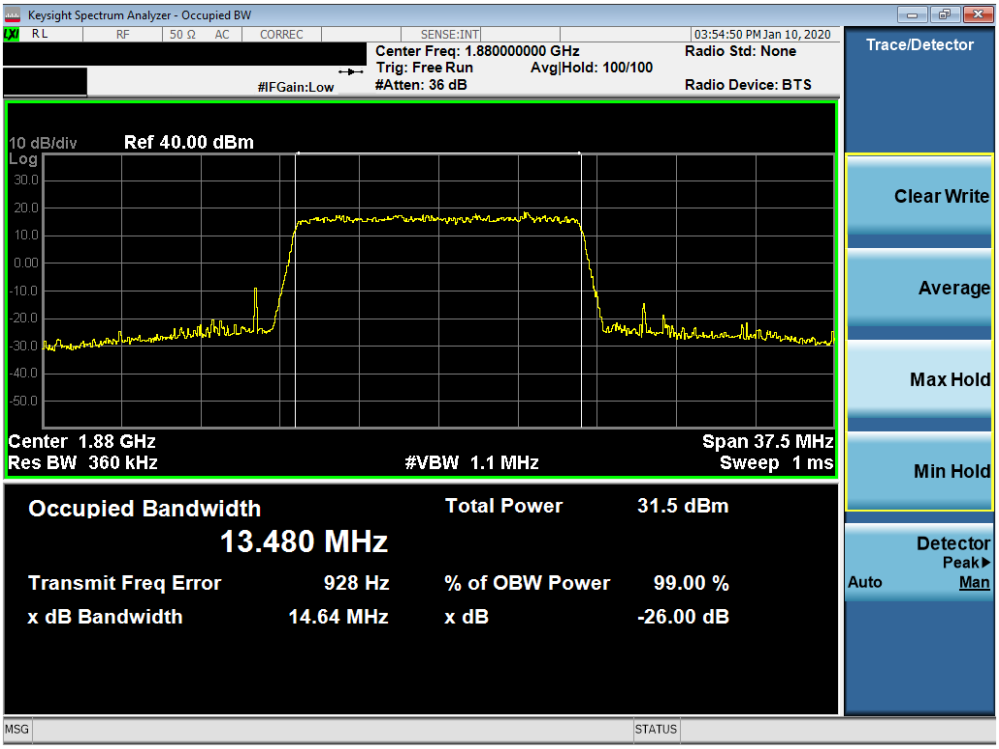
Plot 7-71. Occupied Bandwidth Plot (Band 2 - 10.0MHz 64-QAM - Full RB Configuration)



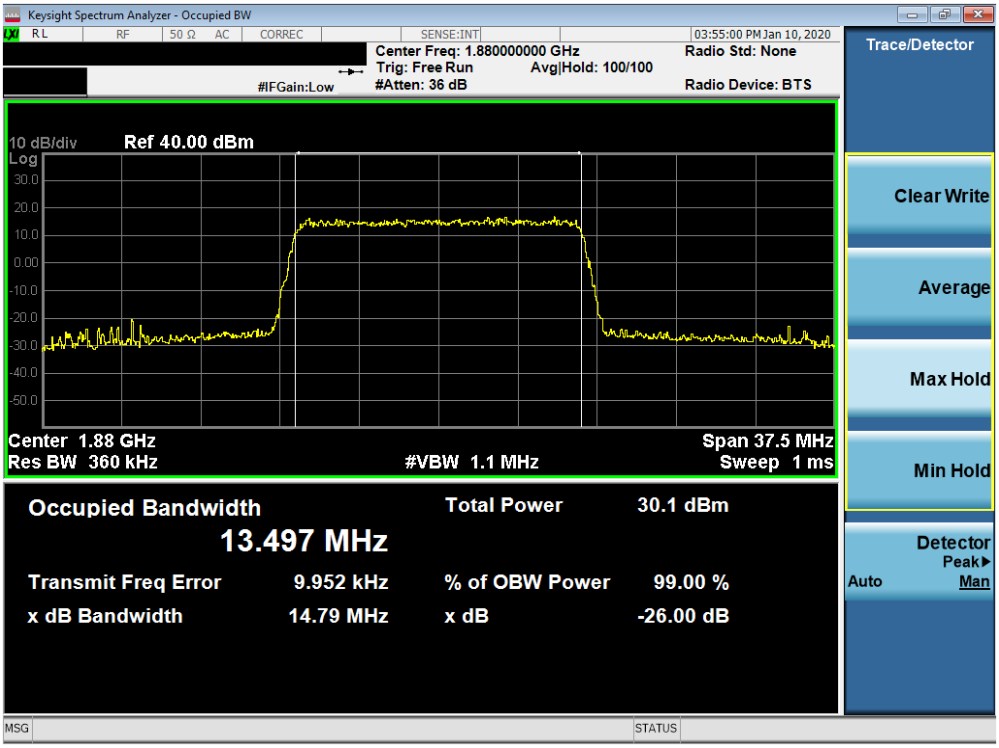
Plot 7-72. Occupied Bandwidth Plot (Band 2 - 10.0MHz 256-QAM - Full RB Configuration)



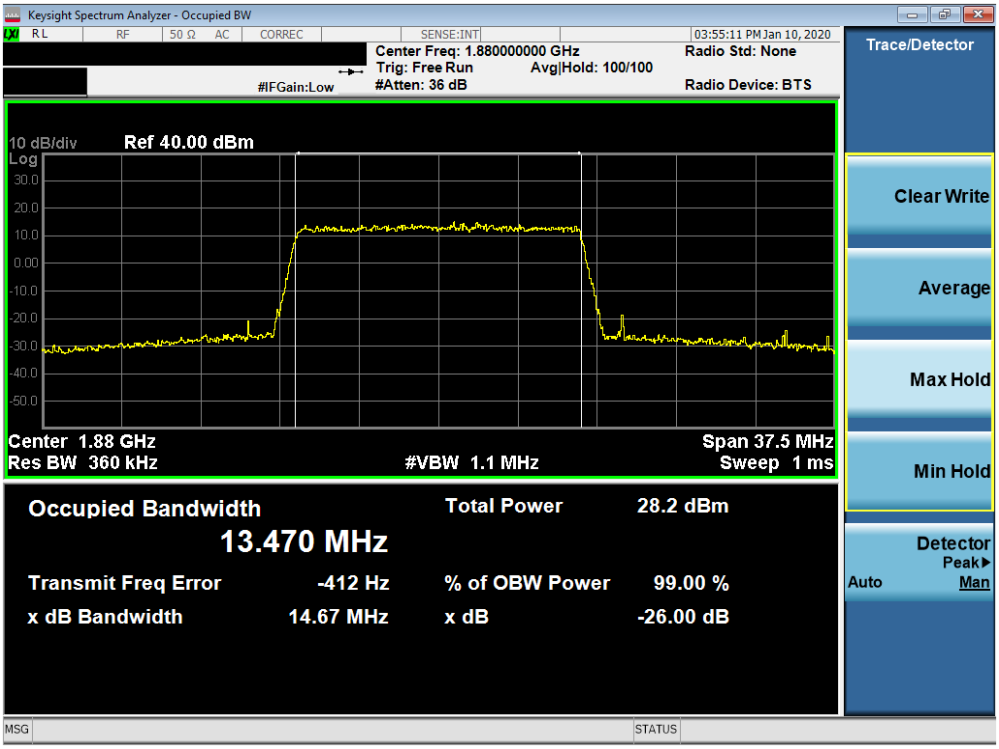
Plot 7-73. Occupied Bandwidth Plot (Band 2 - 15.0MHz QPSK - Full RB Configuration)



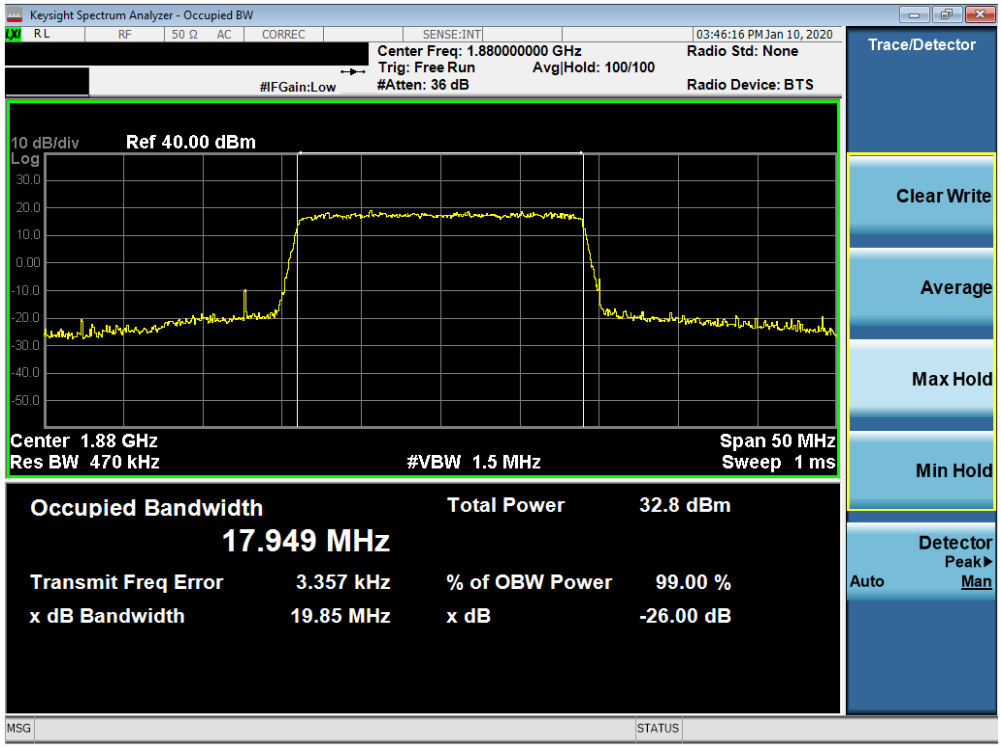
Plot 7-74. Occupied Bandwidth Plot (Band 2 - 15.0MHz 16-QAM - Full RB Configuration)



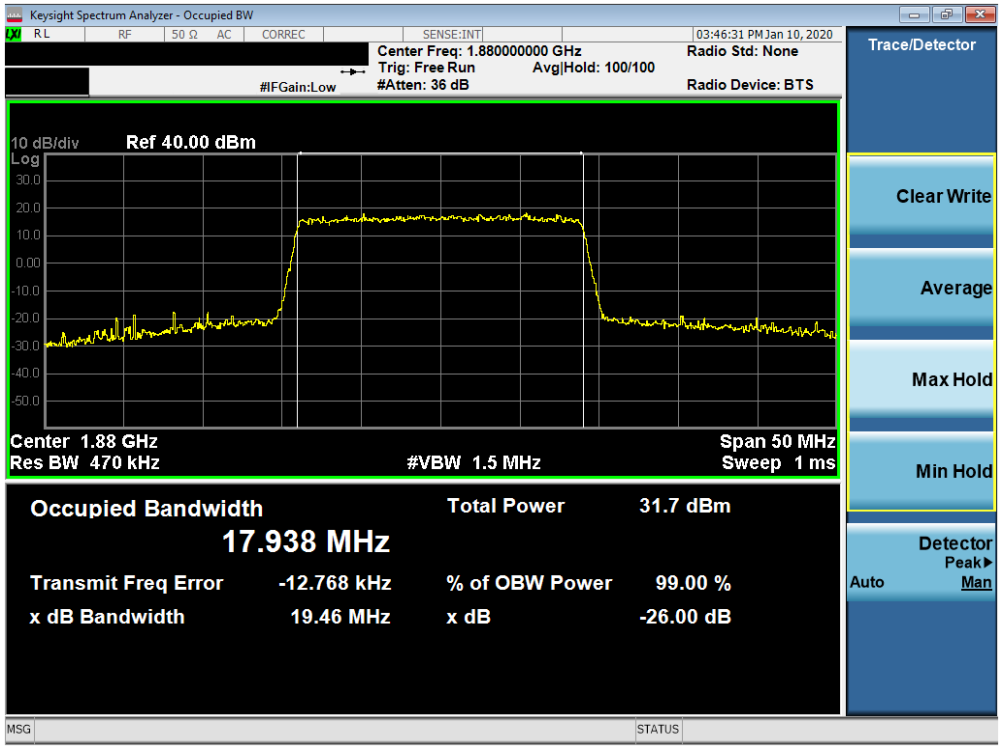
Plot 7-75. Occupied Bandwidth Plot (Band 2 - 15.0MHz 64-QAM - Full RB Configuration)



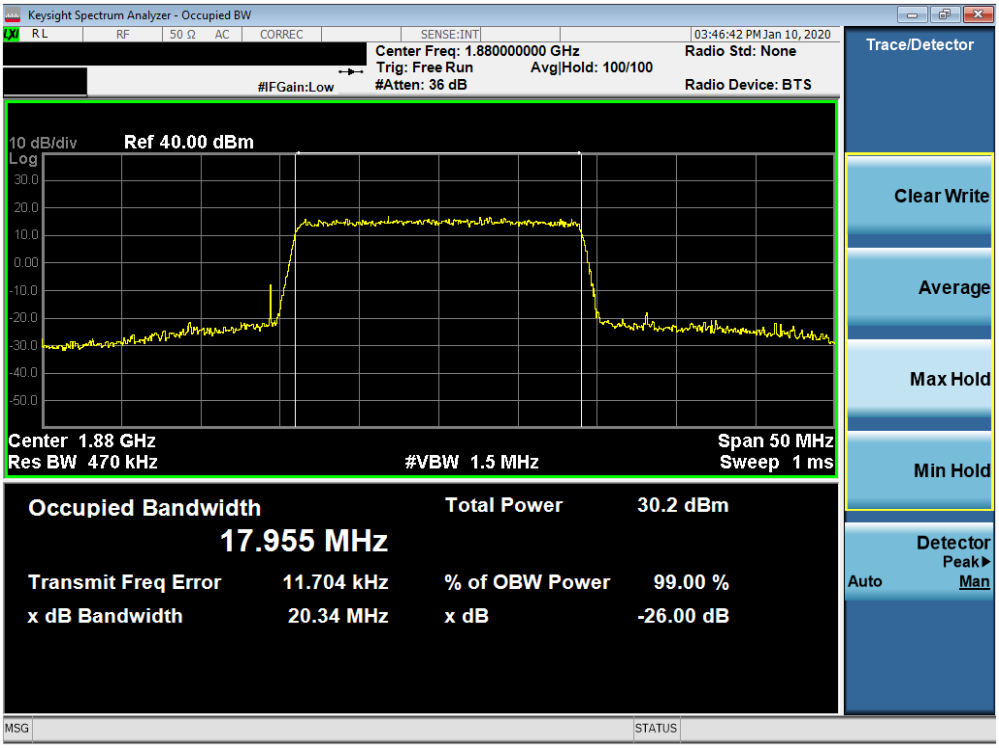
Plot 7-76. Occupied Bandwidth Plot (Band 2 - 15.0MHz 256-QAM - Full RB Configuration)



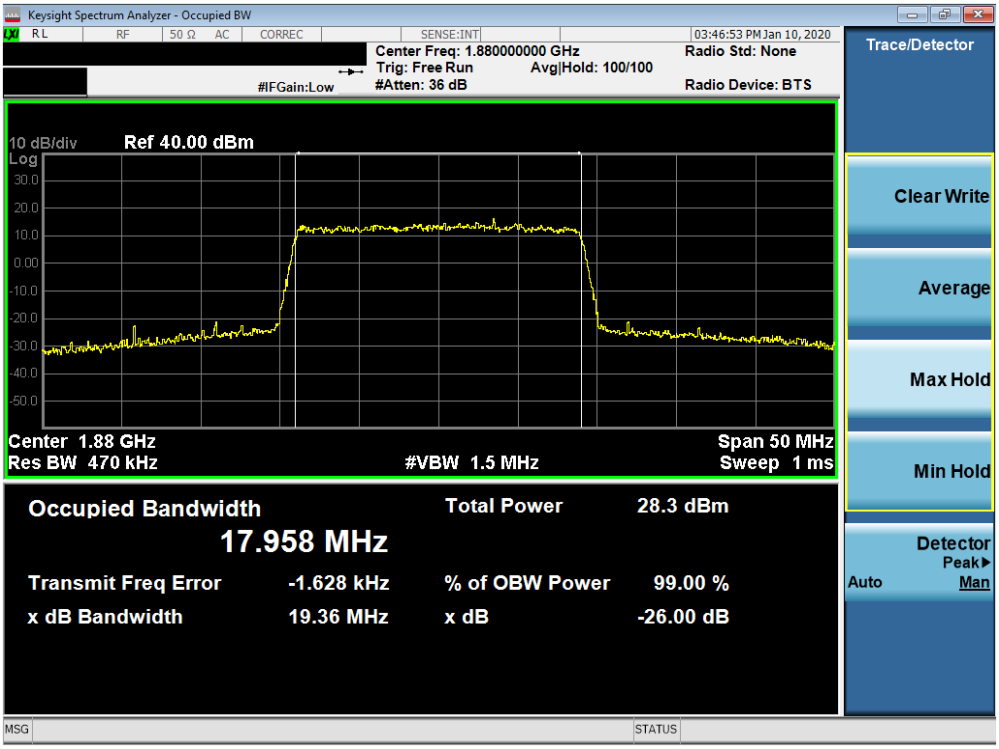
Plot 7-77. Occupied Bandwidth Plot (Band 2 - 20.0MHz QPSK - Full RB Configuration)



Plot 7-78. Occupied Bandwidth Plot (Band 2 - 20.0MHz 16-QAM - Full RB Configuration)

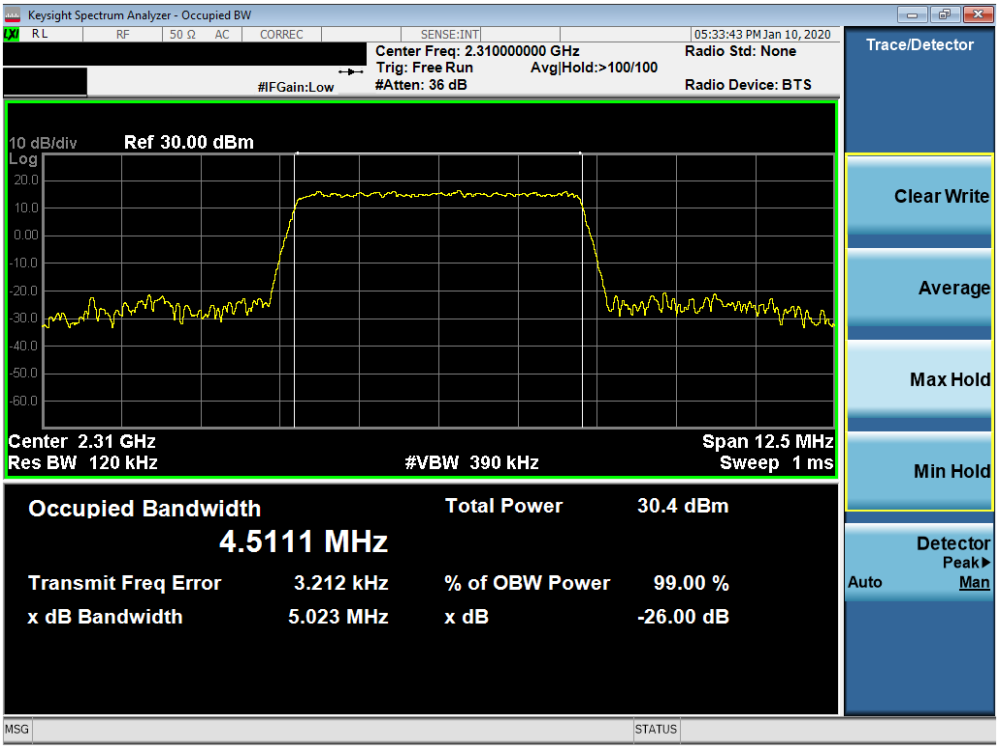


Plot 7-79. Occupied Bandwidth Plot (Band 2 - 20.0MHz 64-QAM - Full RB Configuration)

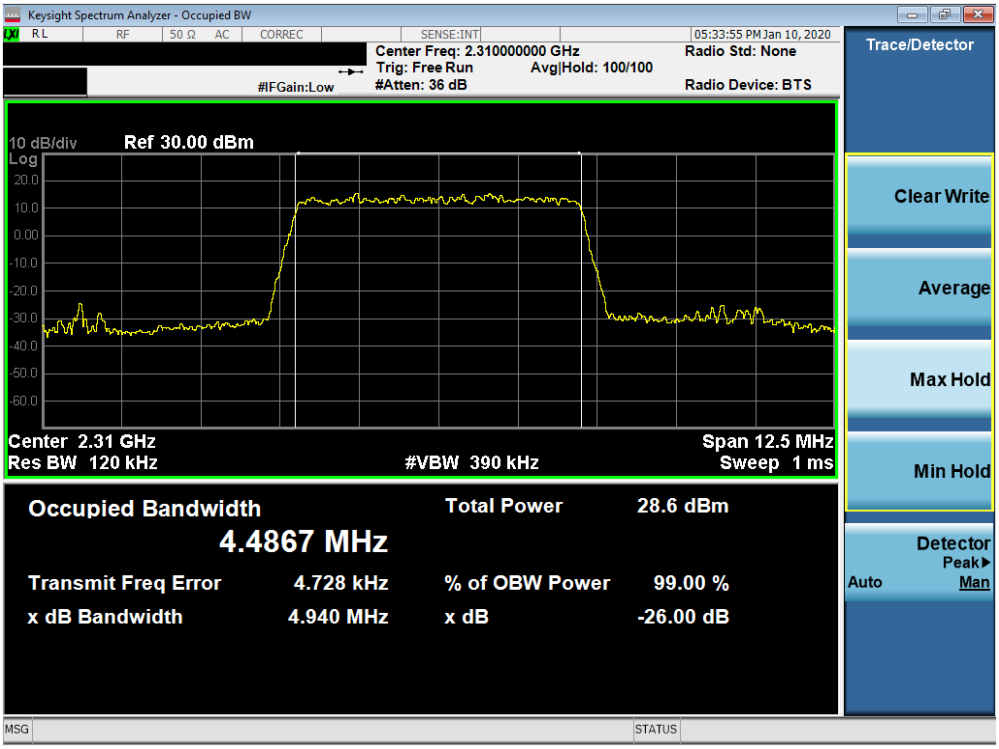


Plot 7-80. Occupied Bandwidth Plot (Band 2 - 20.0MHz 256-QAM - Full RB Configuration)

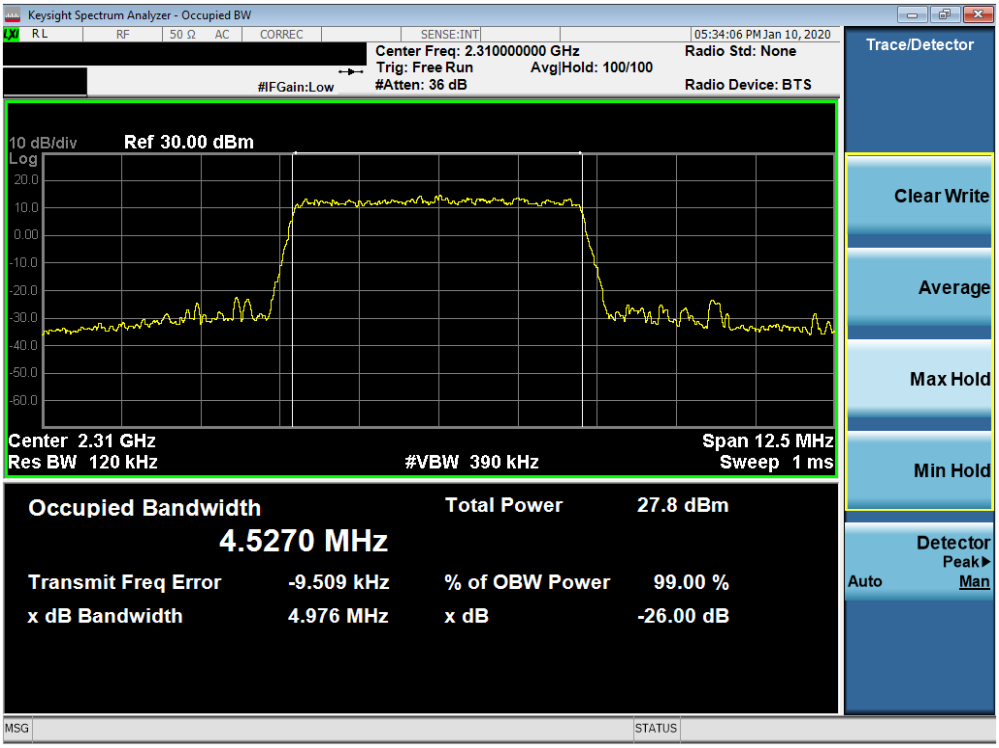
Band 30



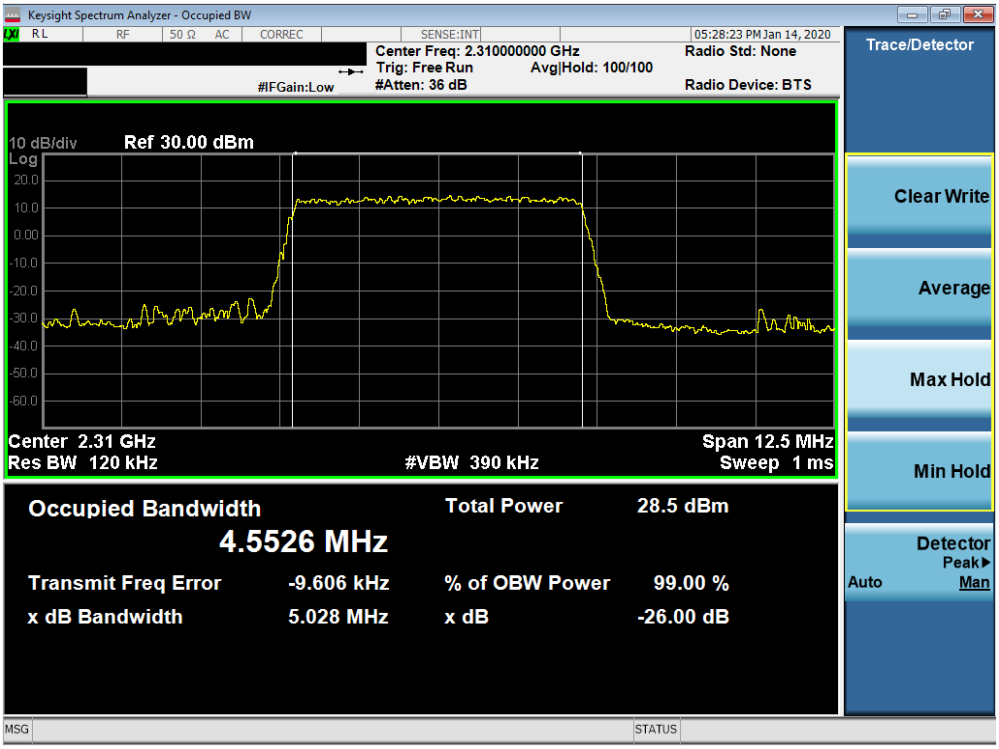
Plot 7-81. Occupied Bandwidth Plot (Band 30 - 5.0MHz QPSK - Full RB Configuration)



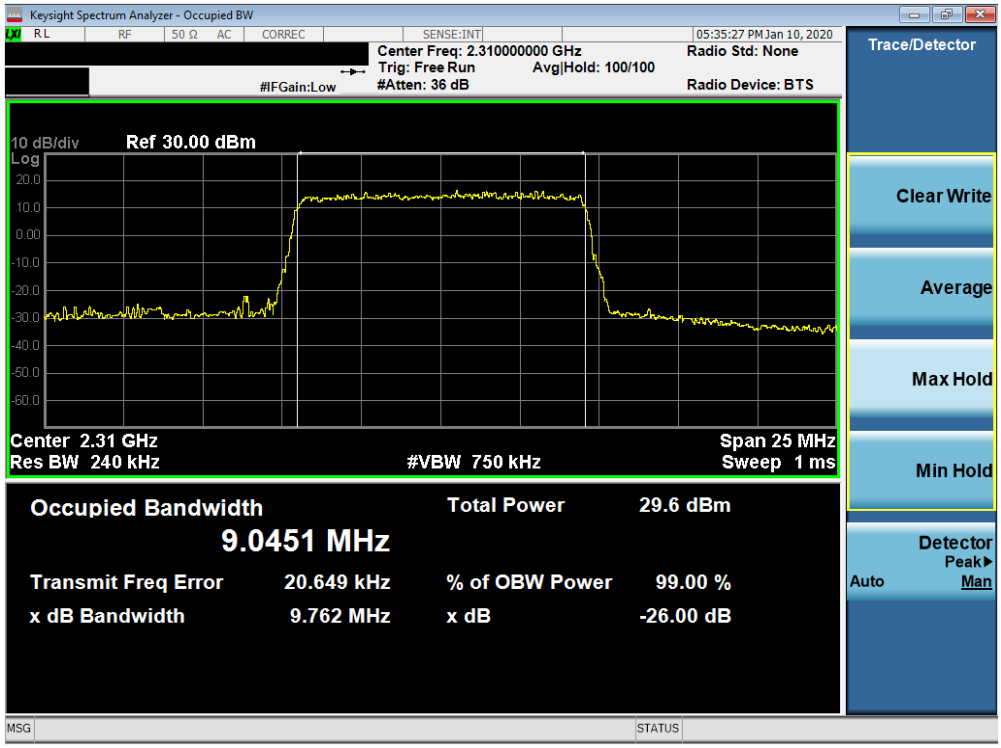
Plot 7-82. Occupied Bandwidth Plot (Band 30 - 5.0MHz 16-QAM - Full RB Configuration)



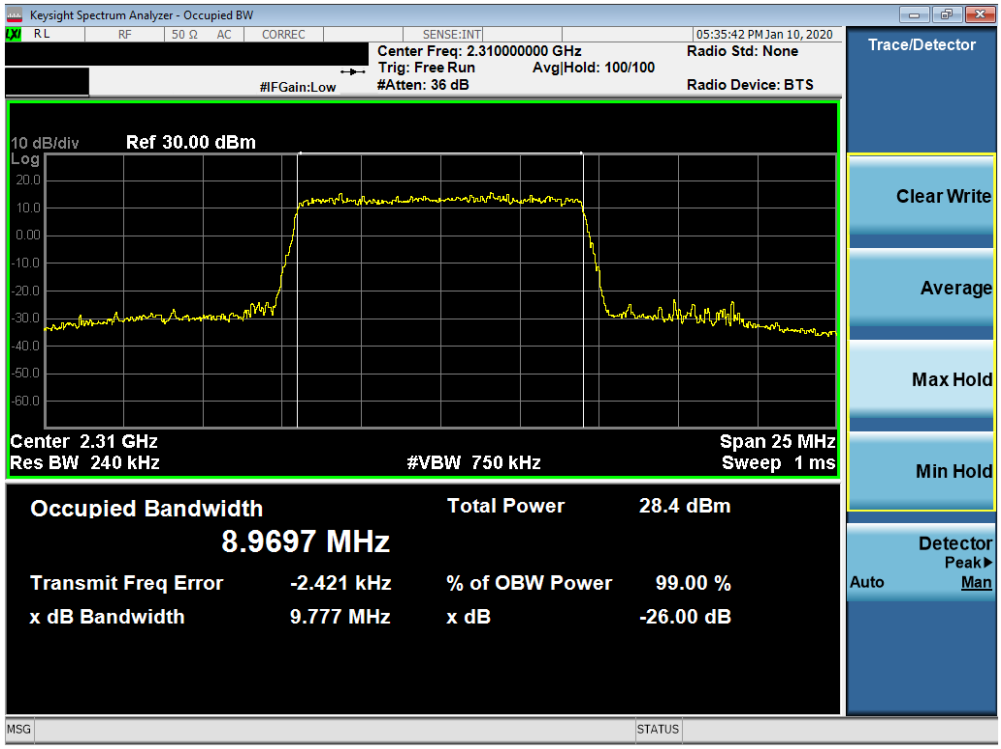
Plot 7-83. Occupied Bandwidth Plot (Band 30 - 5.0MHz 64-QAM - Full RB Configuration)



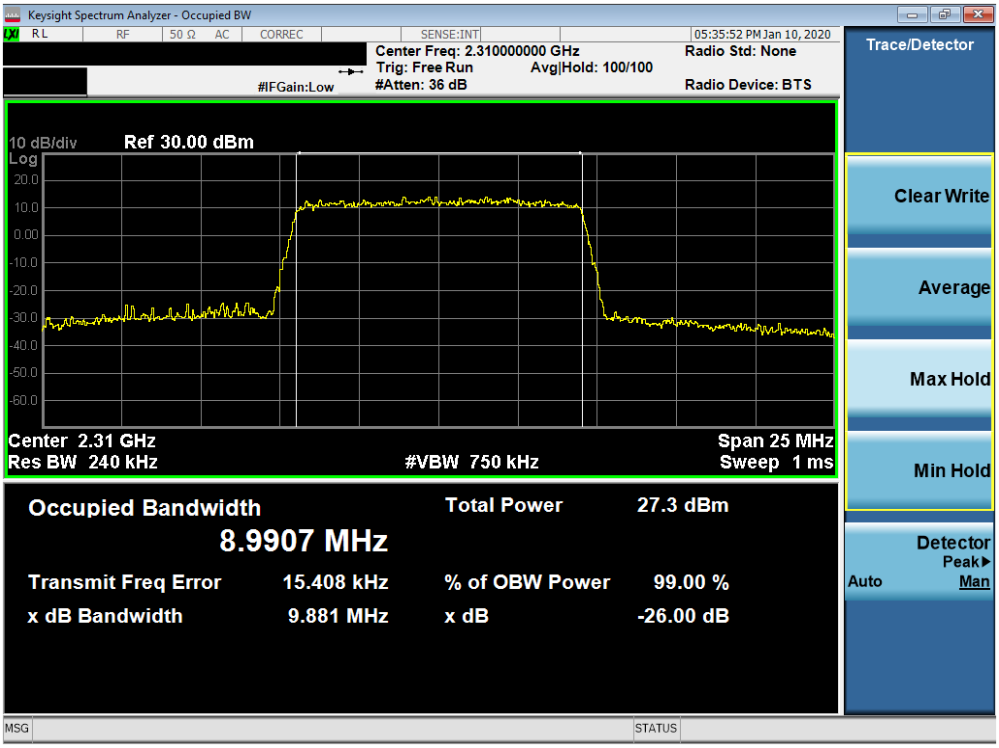
Plot 7-84. Occupied Bandwidth Plot (Band 30 - 5.0MHz 256-QAM - Full RB Configuration)



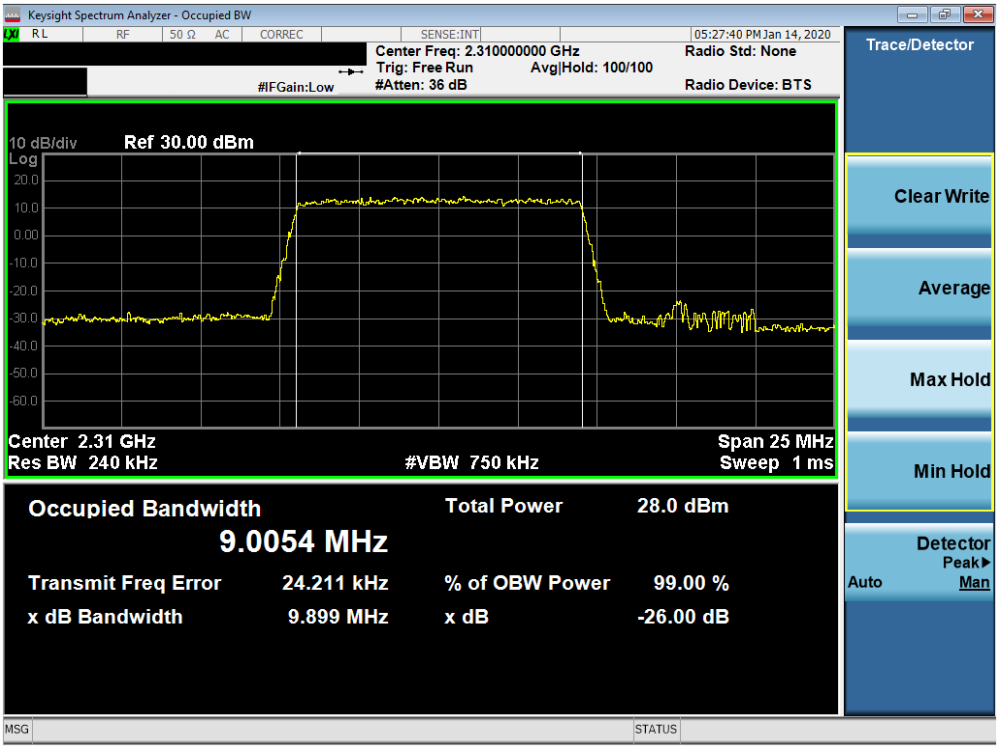
Plot 7-85. Occupied Bandwidth Plot (Band 30 - 10.0MHz QPSK - Full RB Configuration)



Plot 7-86. Occupied Bandwidth Plot (Band 30 - 10.0MHz 16-QAM - Full RB Configuration)

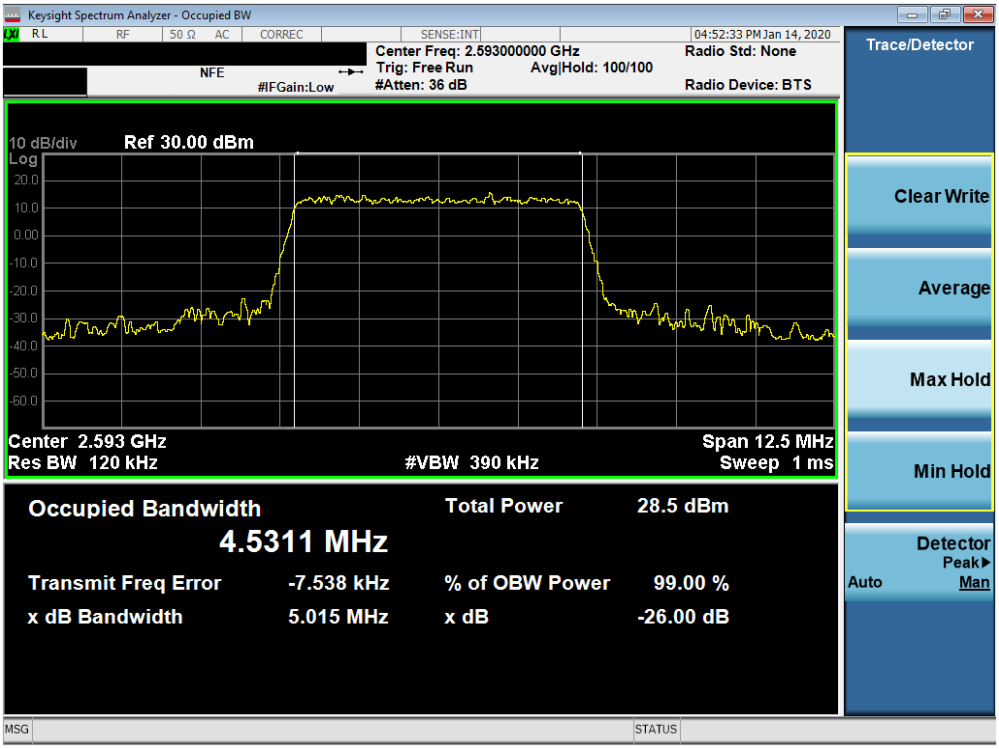


Plot 7-87. Occupied Bandwidth Plot (Band 30 - 10.0MHz 64-QAM - Full RB Configuration)

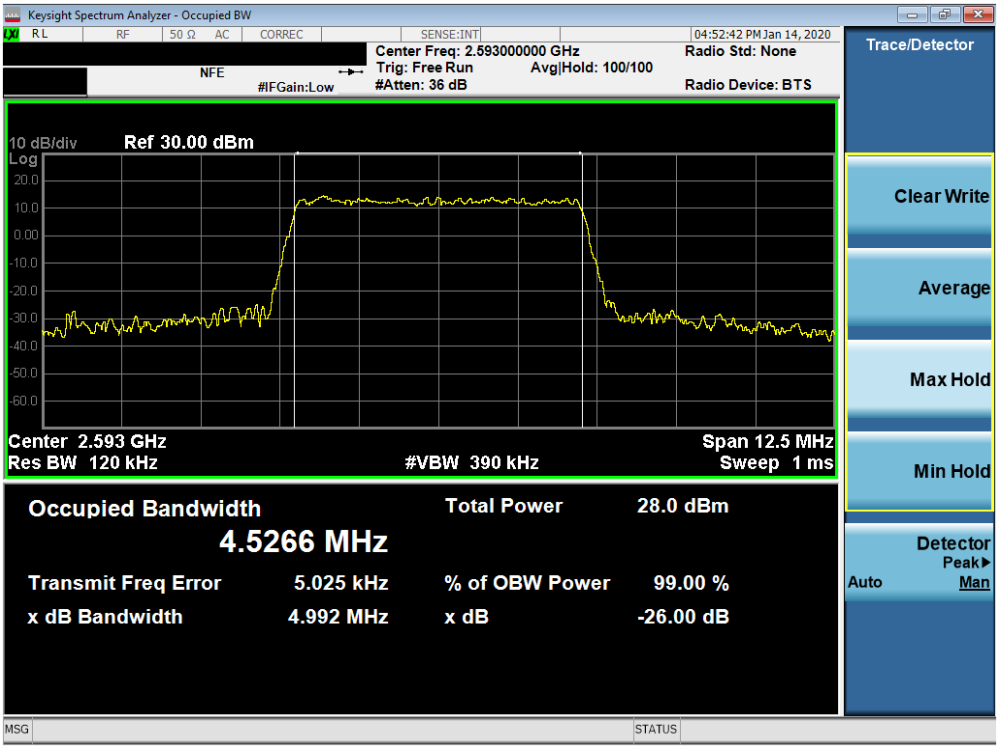


Plot 7-88. Occupied Bandwidth Plot (Band 30 - 10.0MHz 256-QAM - Full RB Configuration)

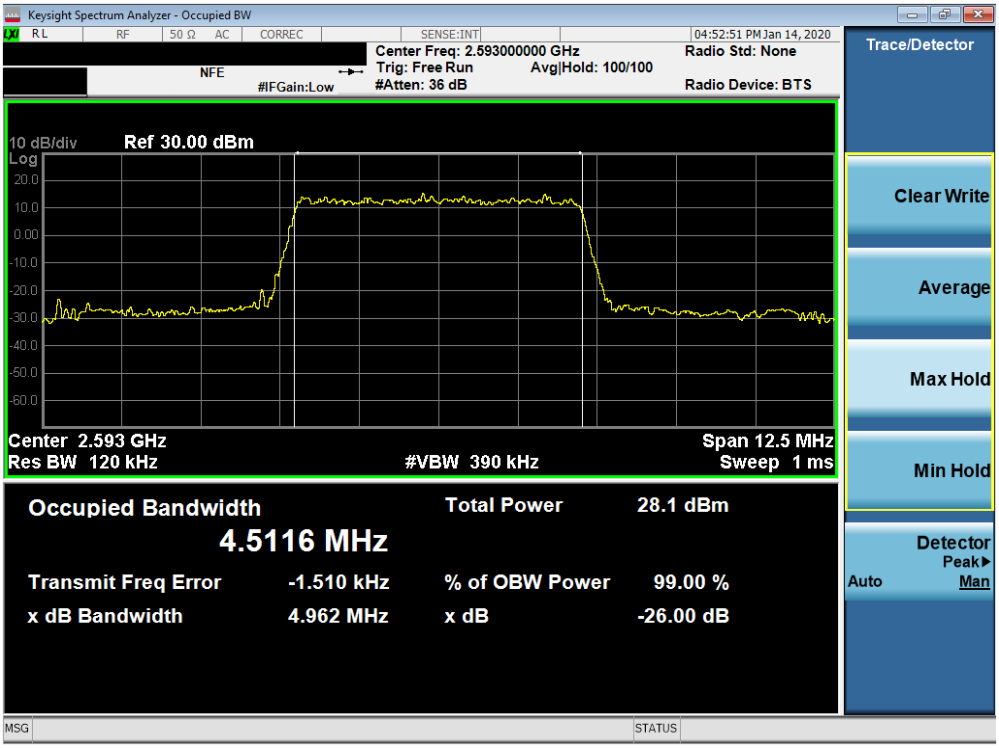
Band 41



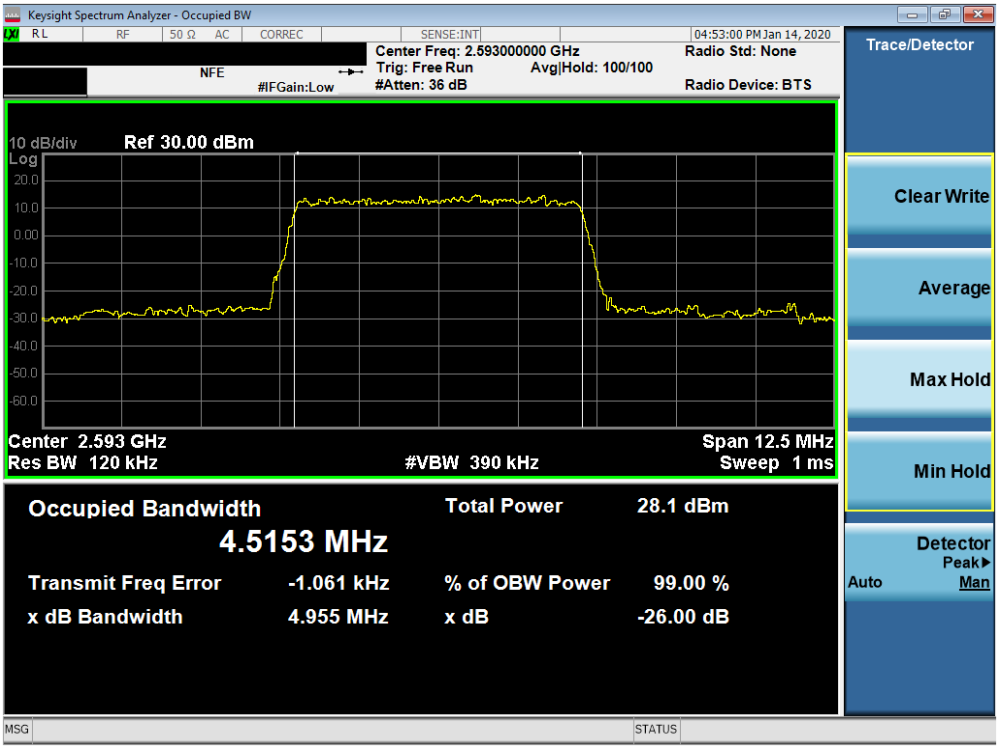
Plot 7-89. Occupied Bandwidth Plot (Band 41 - 5.0MHz QPSK - Full RB Configuration)



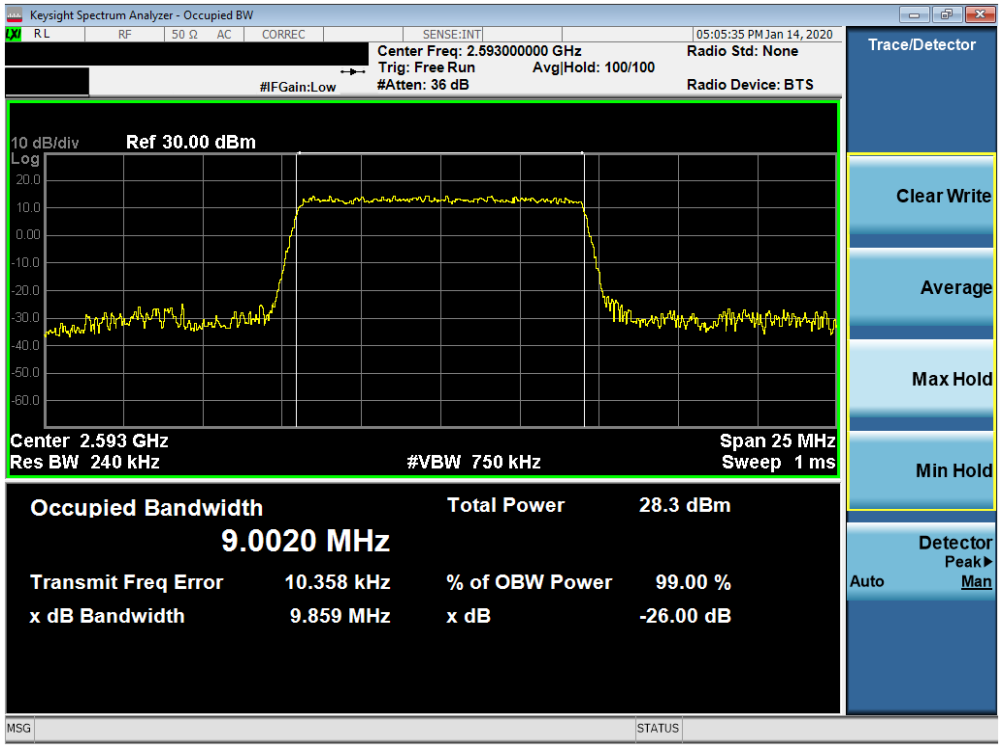
Plot 7-90. Occupied Bandwidth Plot (Band 41 - 5.0MHz 16-QAM - Full RB Configuration)



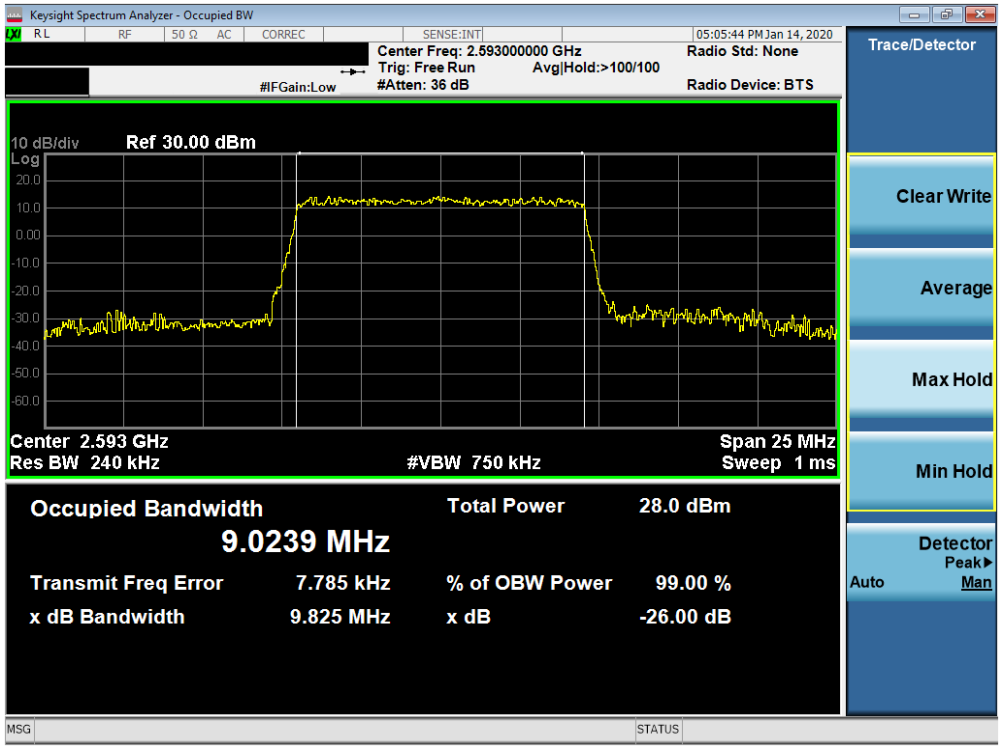
Plot 7-91. Occupied Bandwidth Plot (Band 41 - 5.0MHz 64-QAM - Full RB Configuration)



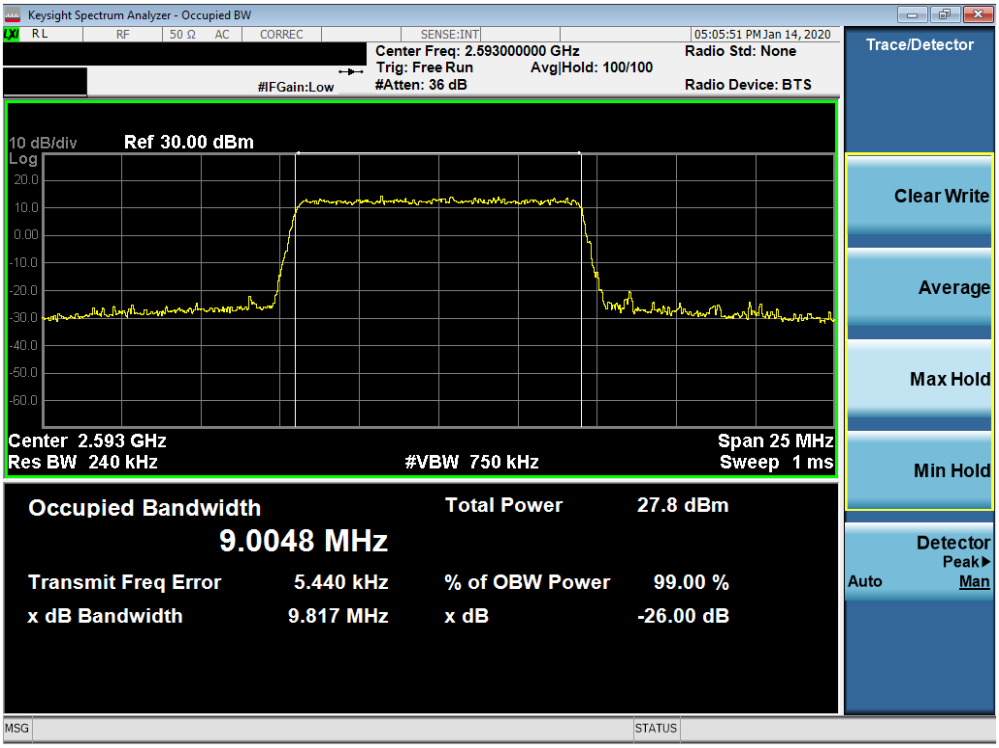
Plot 7-92. Occupied Bandwidth Plot (Band 41 - 5.0MHz 256-QAM - Full RB Configuration)



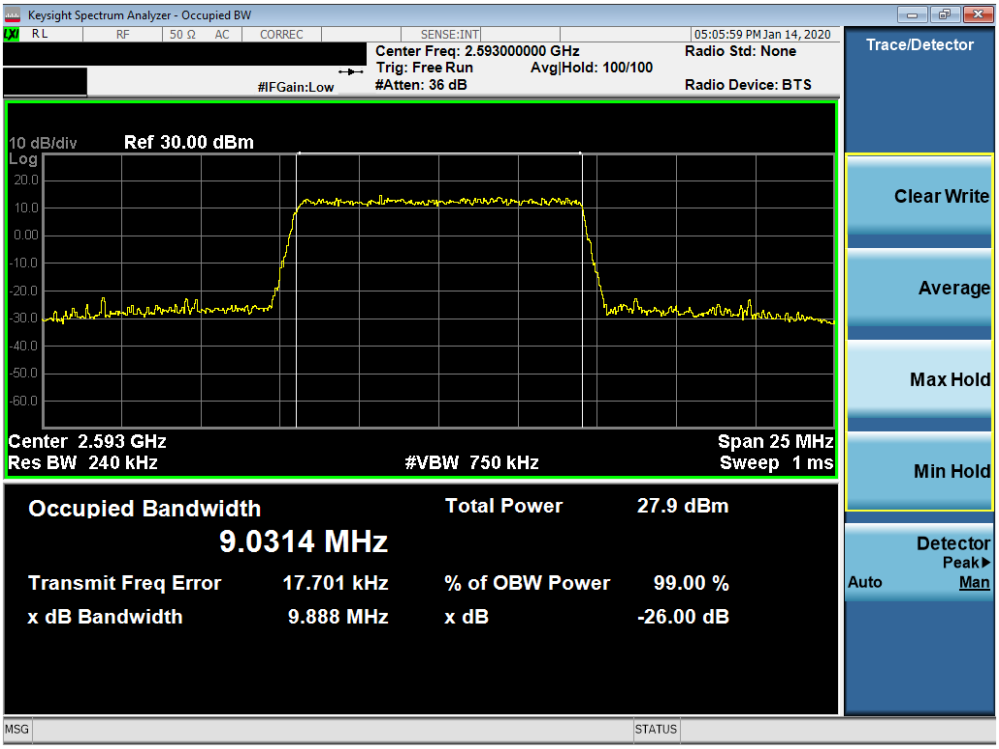
Plot 7-93. Occupied Bandwidth Plot (Band 41 - 10.0MHz QPSK - Full RB Configuration)



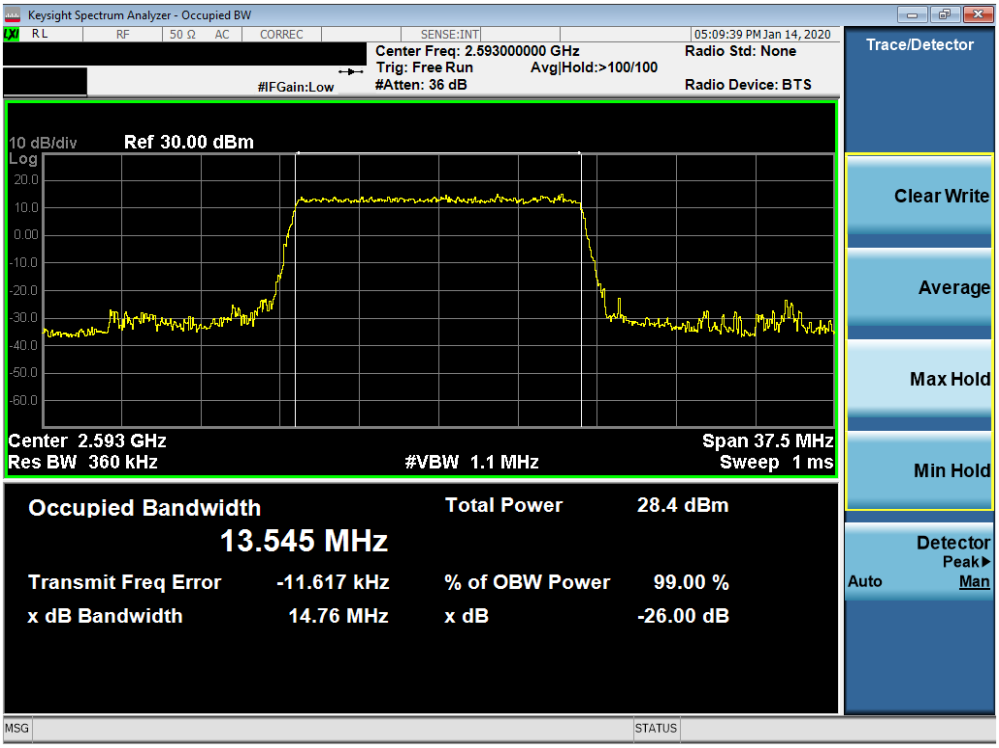
Plot 7-94. Occupied Bandwidth Plot (Band 41 - 10.0MHz 16-QAM - Full RB Configuration)



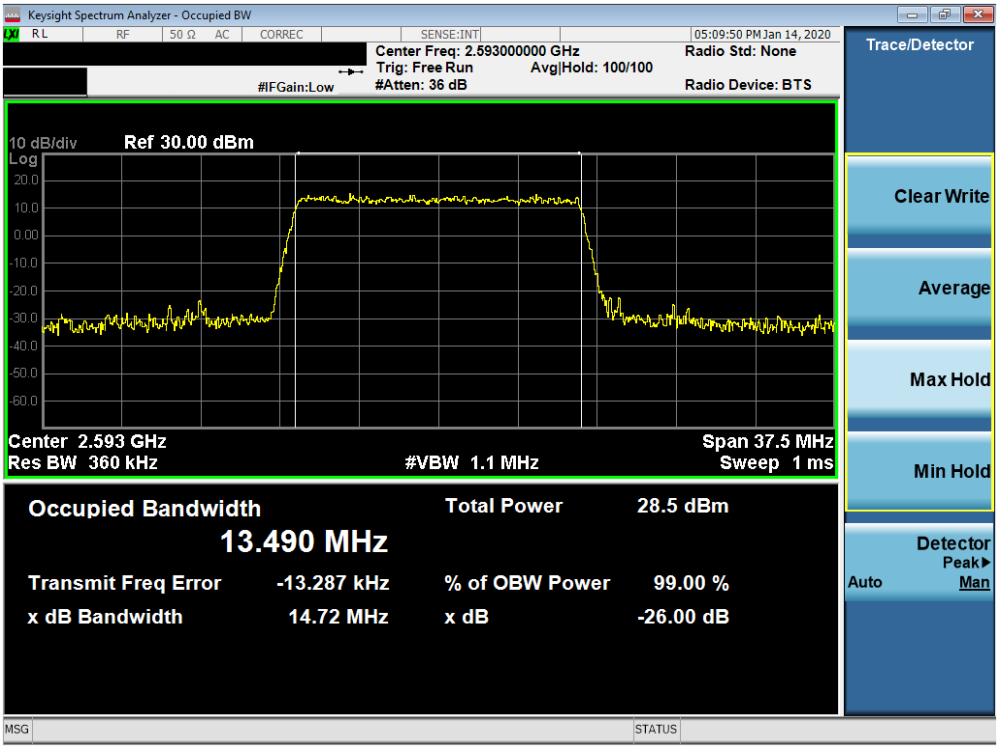
Plot 7-95. Occupied Bandwidth Plot (Band 41 - 10.0MHz 64-QAM - Full RB Configuration)



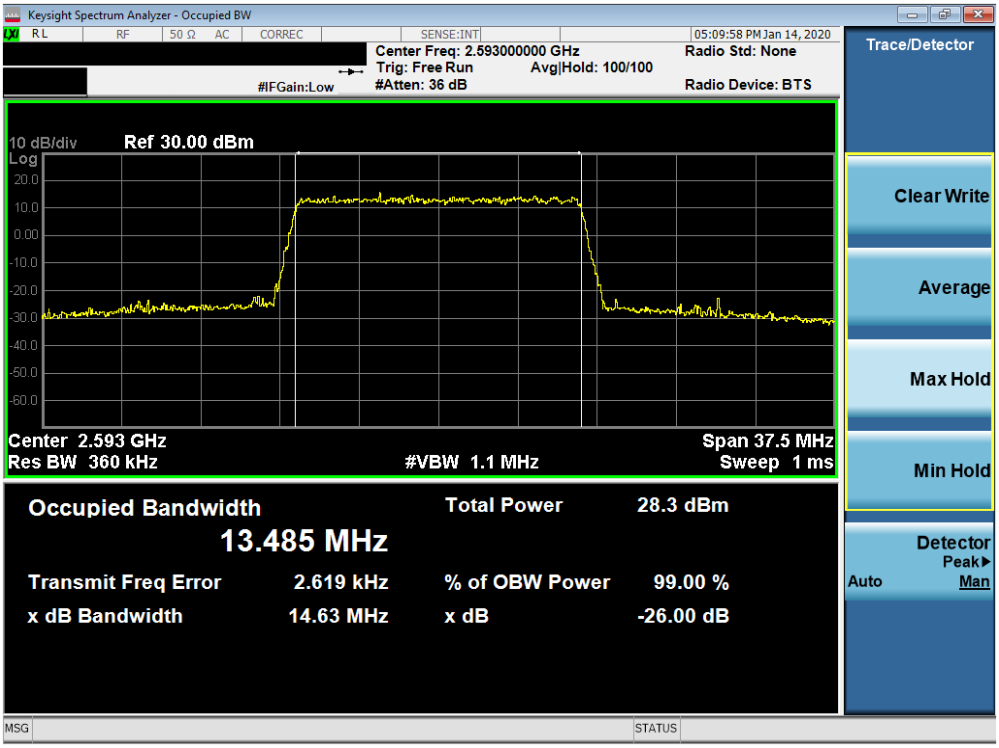
Plot 7-96. Occupied Bandwidth Plot (Band 41 - 10.0MHz 256-QAM - Full RB Configuration)



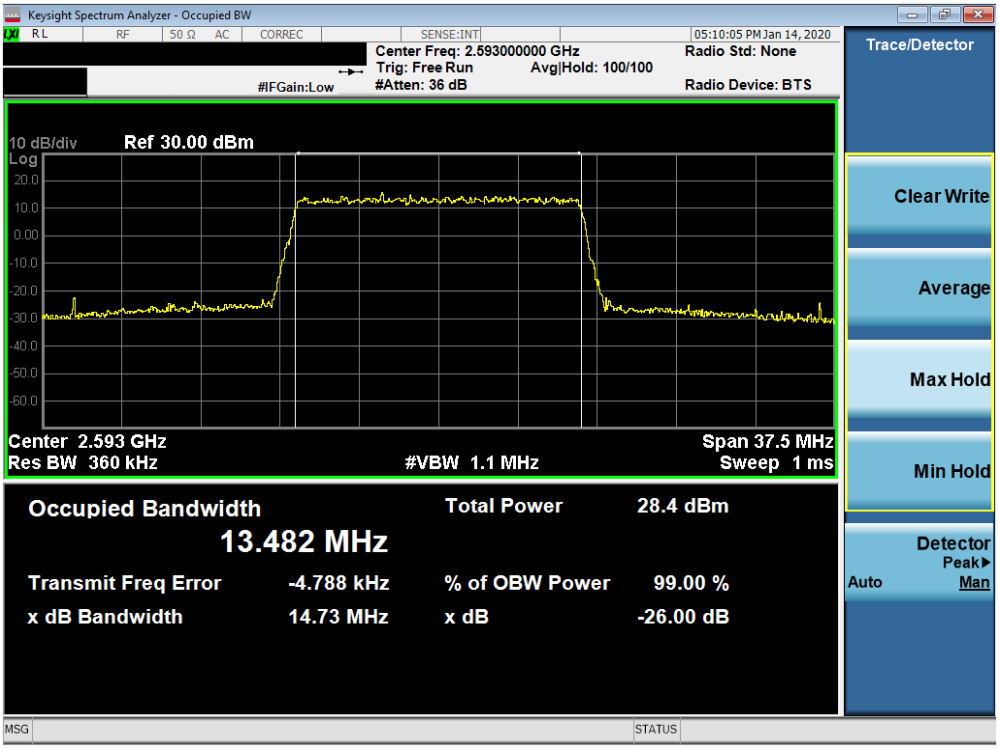
Plot 7-97. Occupied Bandwidth Plot (Band 41 - 15.0MHz QPSK - Full RB Configuration)



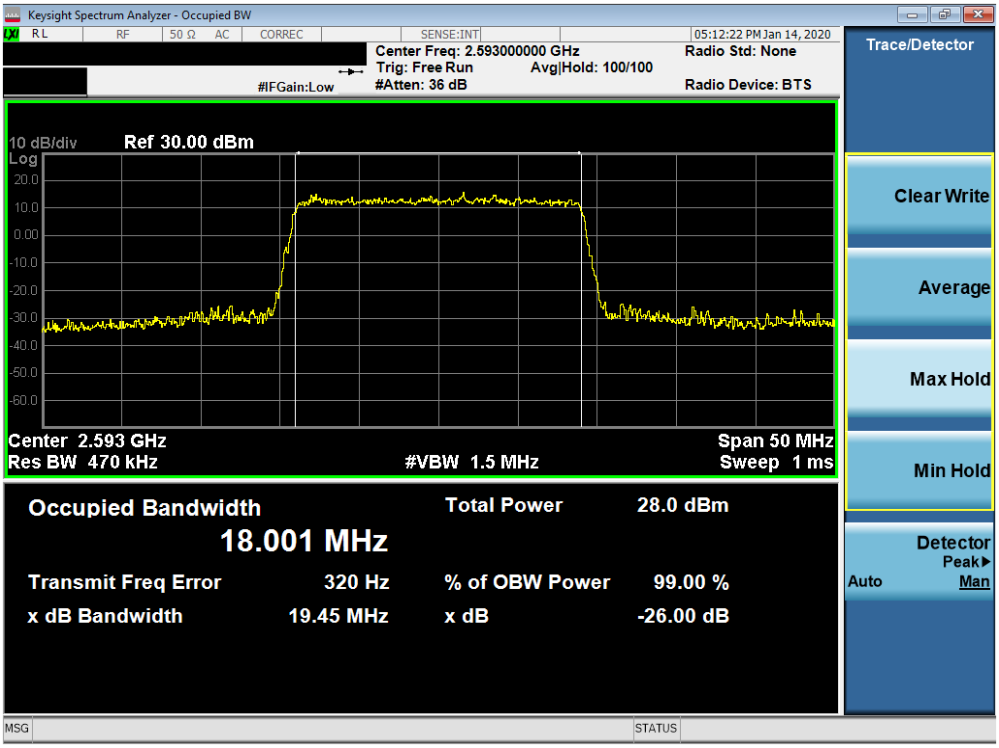
Plot 7-98. Occupied Bandwidth Plot (Band 41 - 15.0MHz 16-QAM - Full RB Configuration)



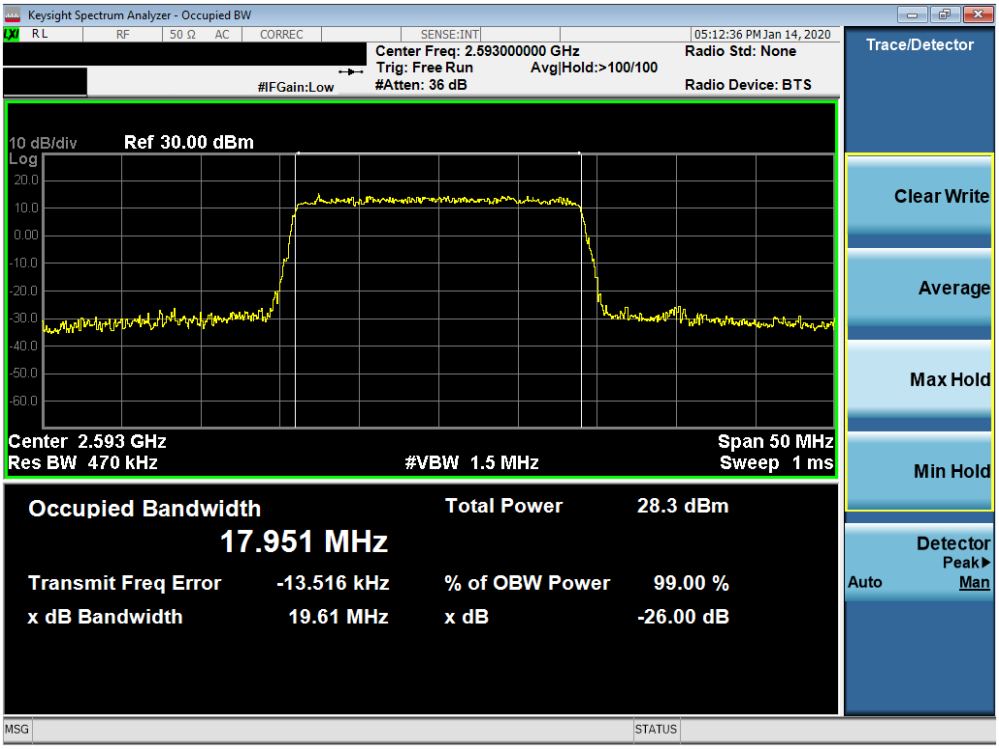
Plot 7-99. Occupied Bandwidth Plot (Band 41 - 15.0MHz 64-QAM - Full RB Configuration)



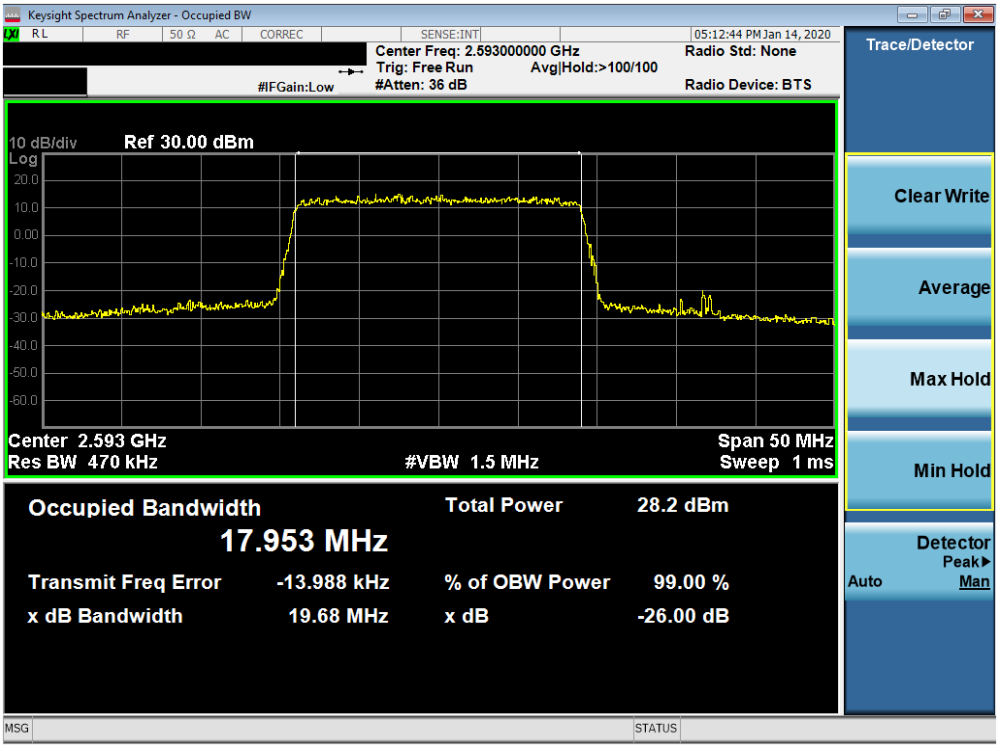
Plot 7-100. Occupied Bandwidth Plot (Band 41 - 15.0MHz 256-QAM - Full RB Configuration)



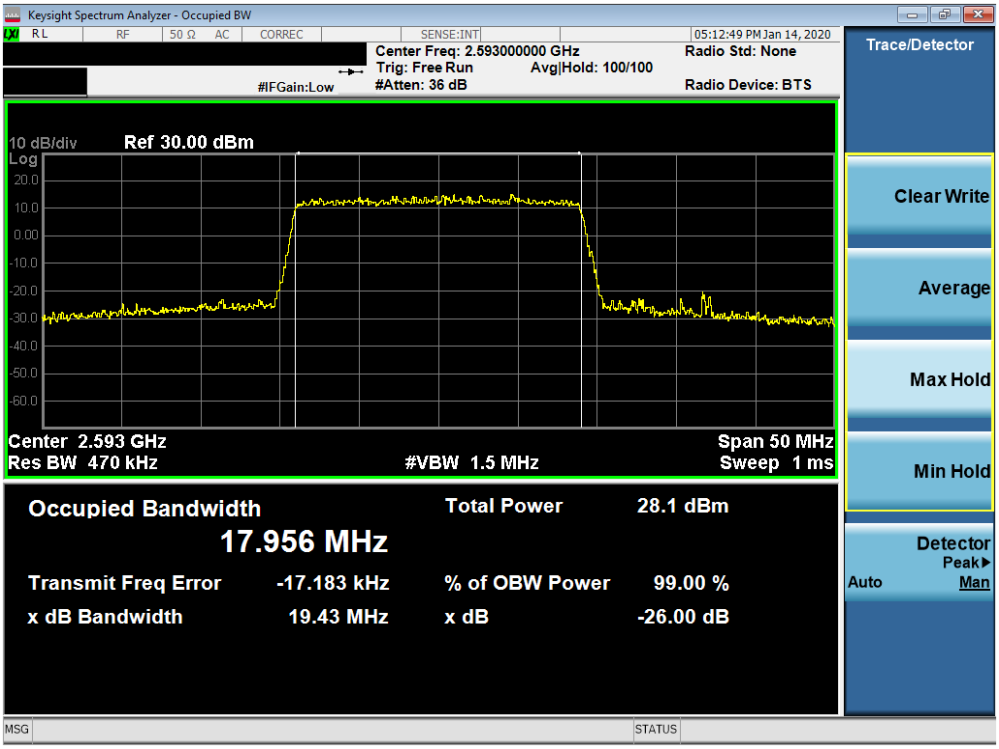
Plot 7-101. Occupied Bandwidth Plot (Band 41 - 20.0MHz QPSK - Full RB Configuration)



Plot 7-102. Occupied Bandwidth Plot (Band 41 - 20.0MHz 16-QAM - Full RB Configuration)



Plot 7-103. Occupied Bandwidth Plot (Band 41 - 20.0MHz 64-QAM - Full RB Configuration)



Plot 7-104. Occupied Bandwidth Plot (Band 41 - 20.0MHz 256-QAM - Full RB Configuration)

7.3 Spurious and Harmonic Emissions at Antenna Terminal

Test Overview

The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic. All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

The minimum permissible attenuation level of any spurious emission is 43 + 10 $\log_{10}(P_{[Watts]})$, where P is the transmitter power in Watts.

For Band 30, the minimum permissible attenuation level of any spurious emission <2288MHz and >2365MHz is 70 + 10 $\log_{10}(P_{[Watts]})$.

For Band 41, the minimum permissible attenuation level of any spurious emission is 55 + 10 $\log_{10}(P_{[Watts]})$.

Test Procedure Used

KDB 971168 D01 v03r01 – Section 6.0

Test Settings

1. Start frequency was set to 30MHz and stop frequency was set to at least 10 * the fundamental frequency (separated into at least two plots per channel)
2. Detector = RMS
3. Trace mode = trace average for continuous emissions, max hold for pulse emissions
4. Sweep time = auto couple
5. The trace was allowed to stabilize
6. Please see test notes below for RBW and VBW settings

Test Setup

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

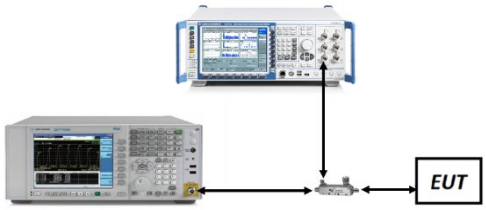
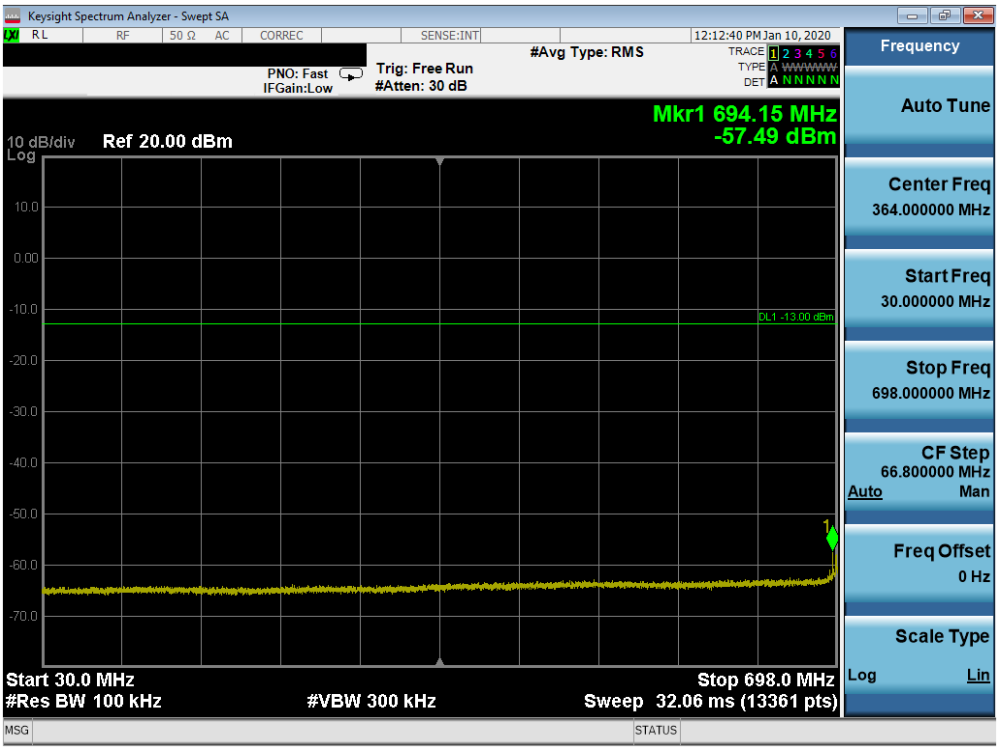


Figure 7-2. Test Instrument & Measurement Setup

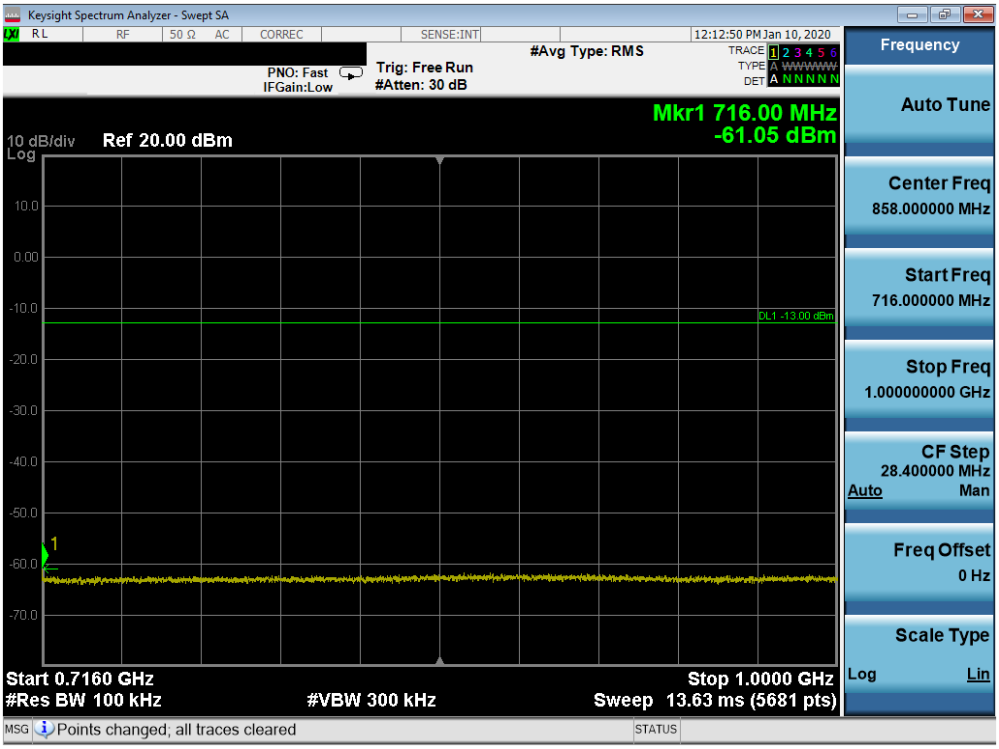
Test Notes

Compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater for frequencies less than 1 GHz and 1 MHz or greater for frequencies greater than 1 GHz. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emission are attenuated at least 26 dB below the transmitter power.

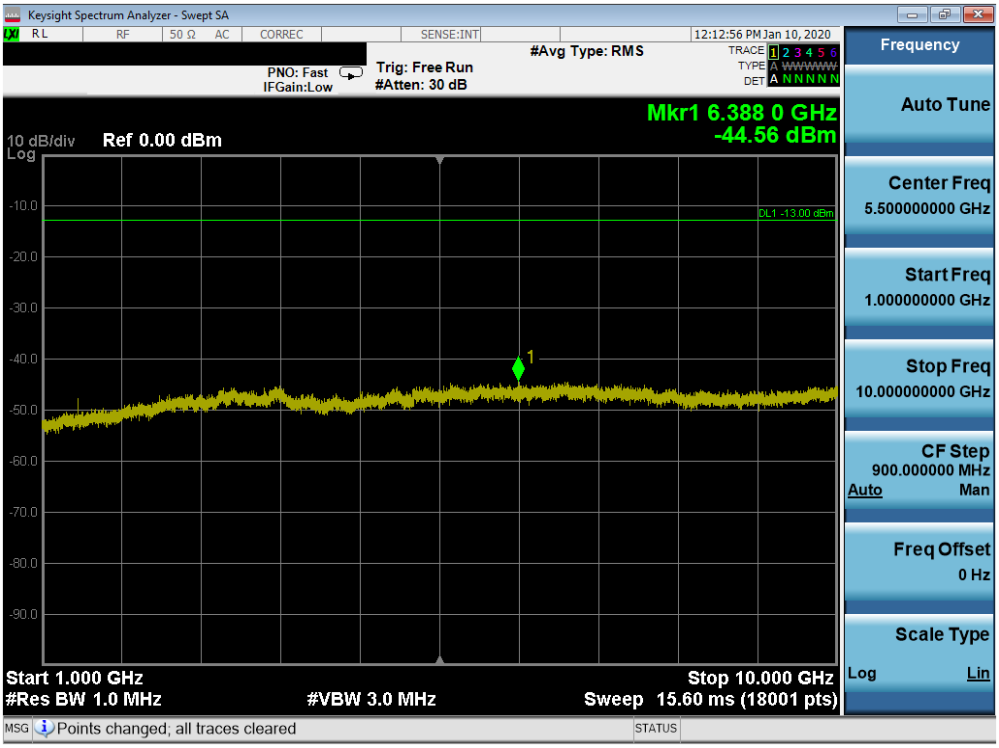
Band 12



Plot 7-105. Conducted Spurious Plot (Band 12 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

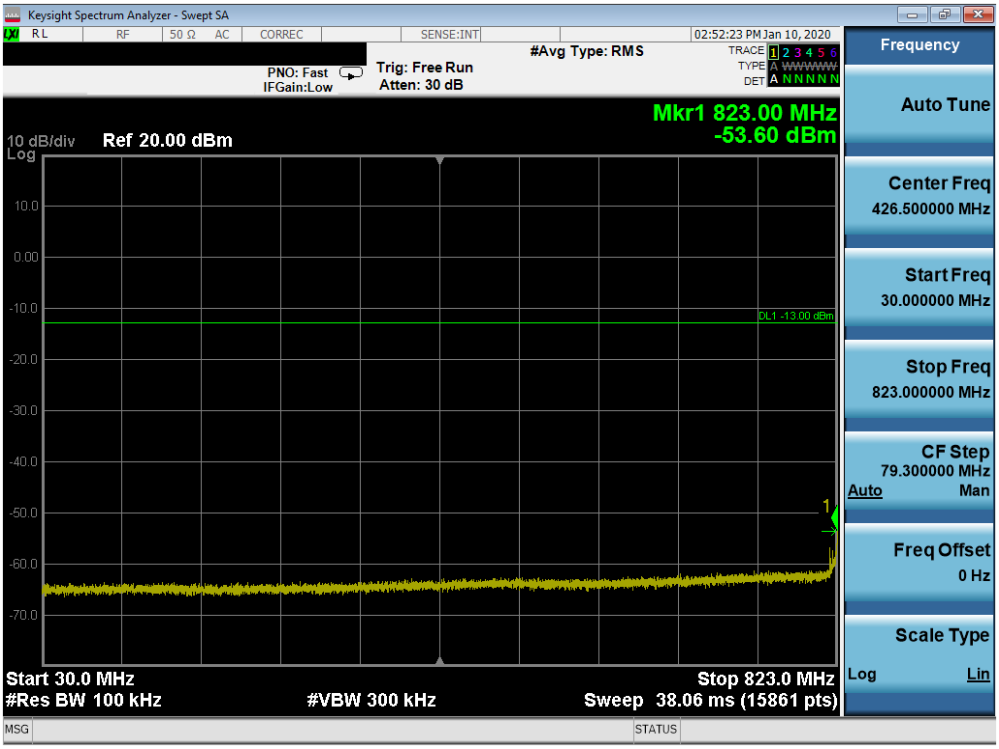


Plot 7-106. Conducted Spurious Plot (Band 12 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

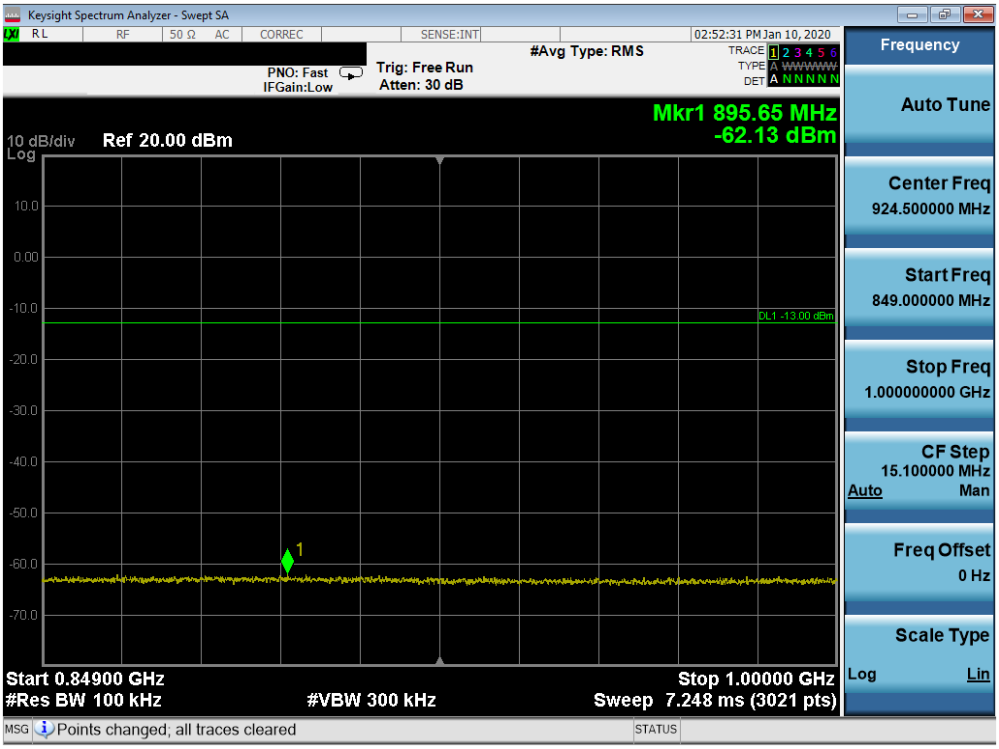


Plot 7-107. Conducted Spurious Plot (Band 12 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

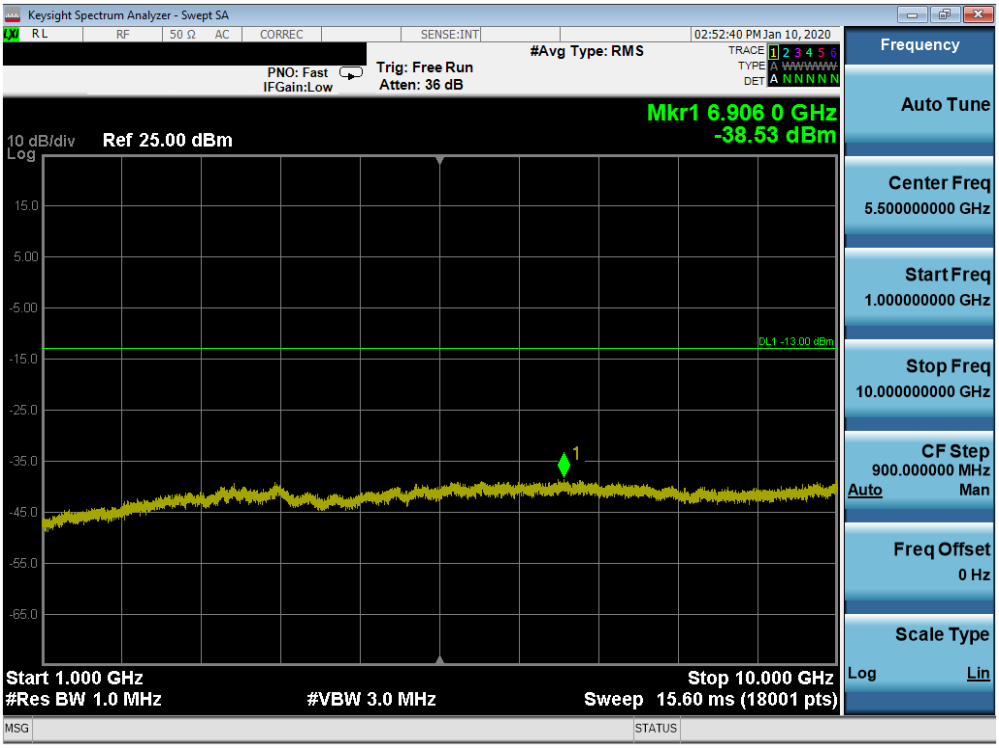
Band 5



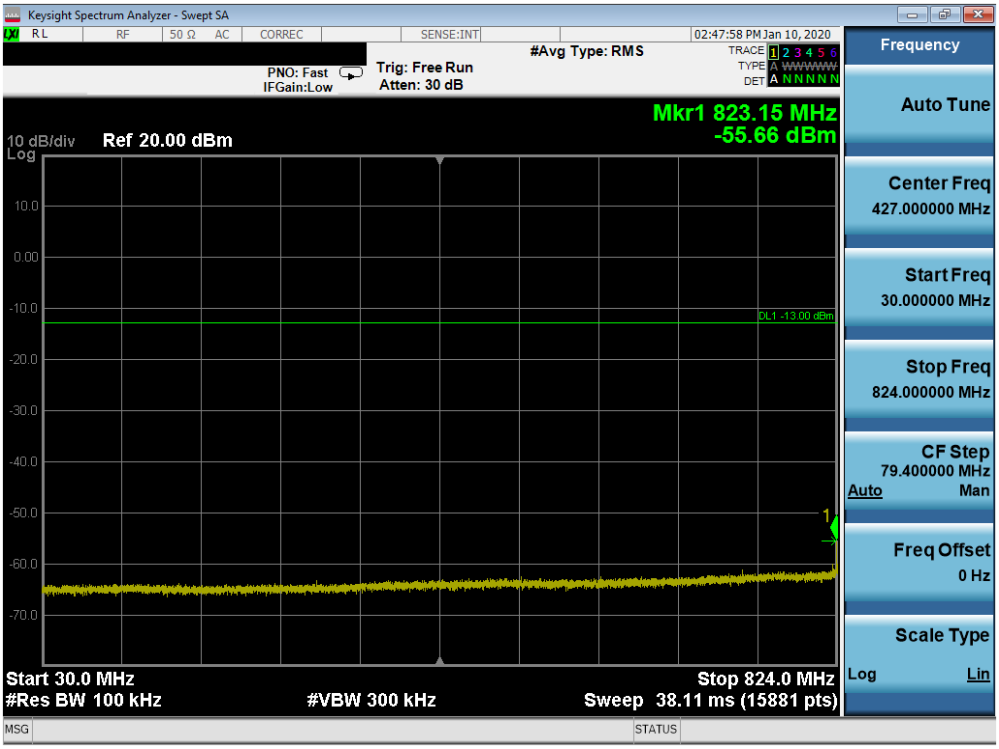
Plot 7-108. Conducted Spurious Plot (Band 5 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



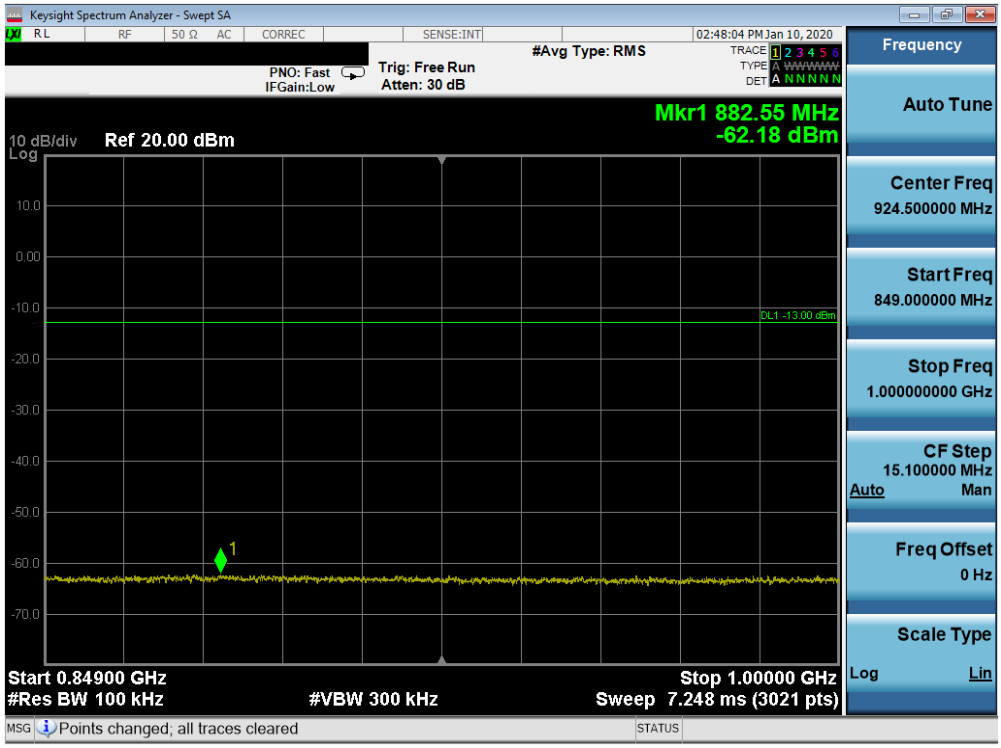
Plot 7-109. Conducted Spurious Plot (Band 5 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



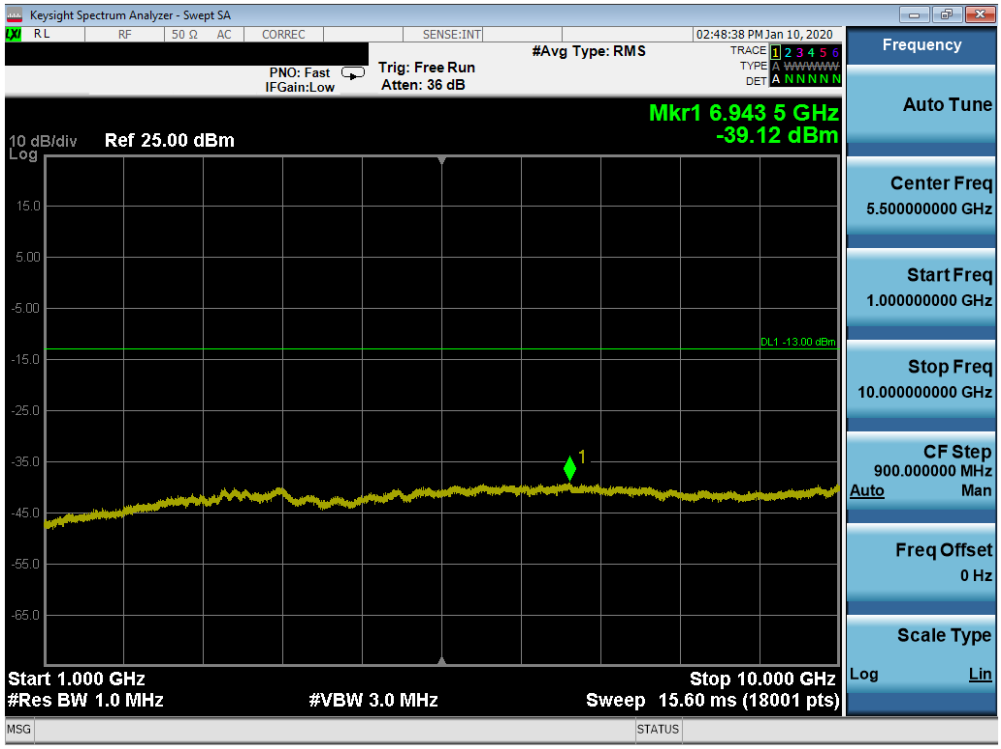
Plot 7-110. Conducted Spurious Plot (Band 5 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



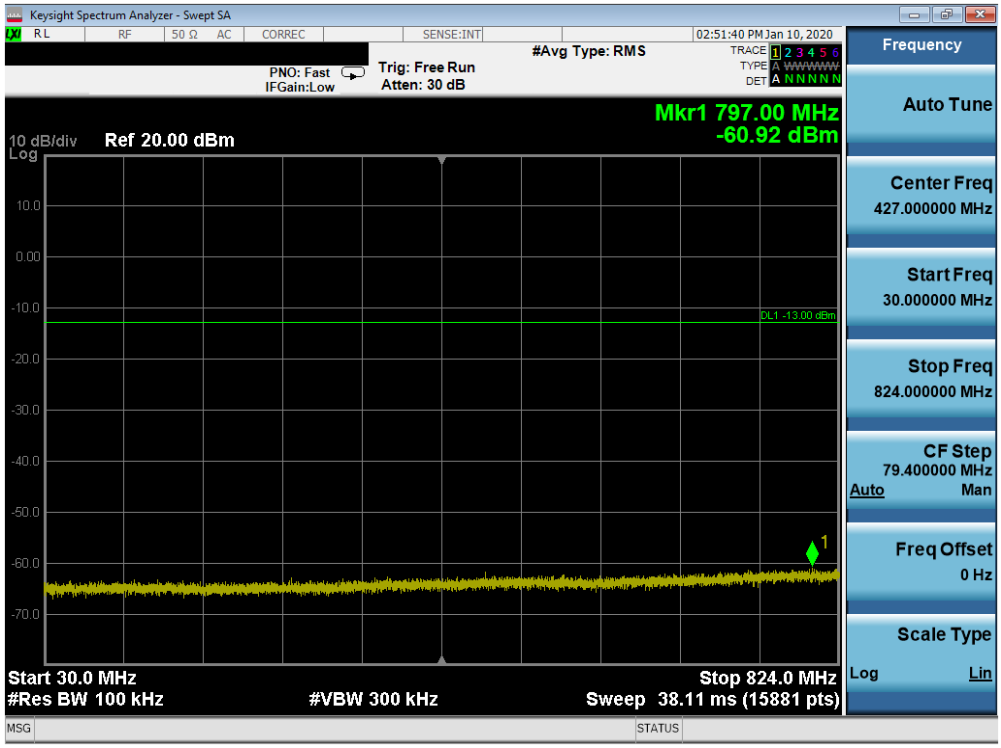
Plot 7-111. Conducted Spurious Plot (Band 5 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)



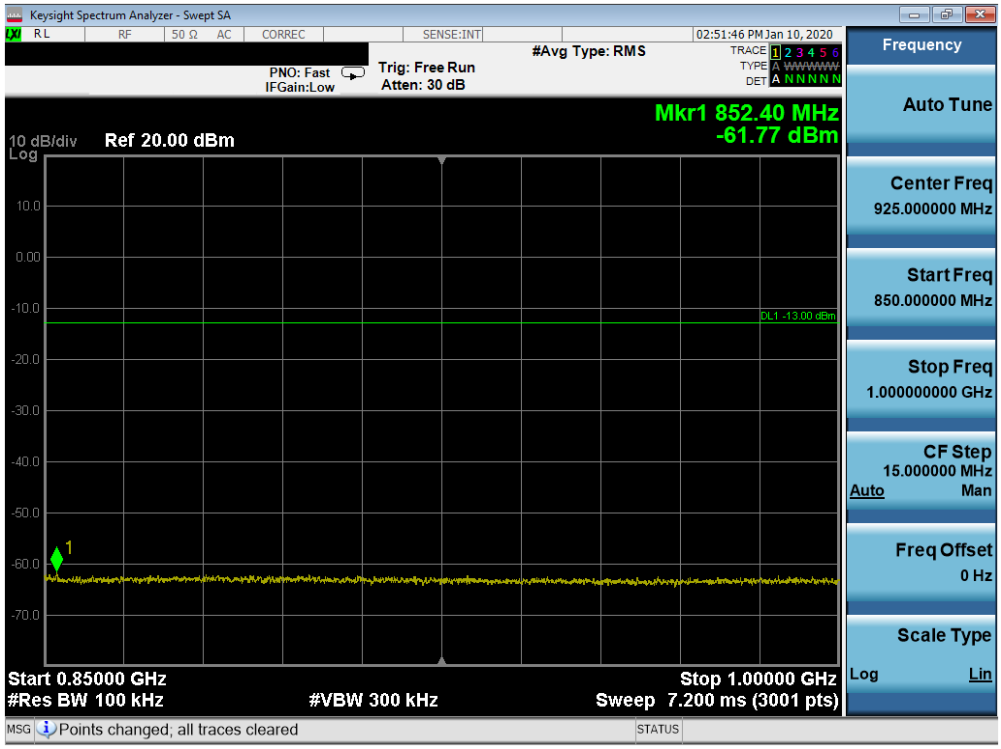
Plot 7-112. Conducted Spurious Plot (Band 5 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)



Plot 7-113. Conducted Spurious Plot (Band 5 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)



Plot 7-114. Conducted Spurious Plot (Band 5 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)



Plot 7-115. Conducted Spurious Plot (Band 5 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)