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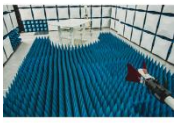

MEASUREMENT REPORT
LTE

Applicant Name:
Apple Inc.
One Apple Park Way
Cupertino, CA 95014
United States

Date of Testing:
05/01/2020 - 07/29/2020
Test Site/Location:
PCTEST Lab. Morgan Hill, CA, USA
Test Report Serial No.:
1C2004270034-03.BCG

FCC ID:	**BCGA2429**
APPLICANT:	**Apple Inc.**

Application Type:	Certification
Model:	A2429, A2430
EUT Type:	Tablet Device
FCC Classification:	PCS Licensed Transmitter (PCB)
FCC Rule Part(s):	22, 24, & 27
Test Procedure(s):	ANSI C63.26-2015, TIA-603-E-2016, KDB 971168 D01 v03r01

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
CERT #2041.02

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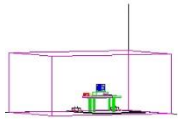
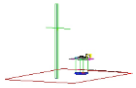


MEASUREMENT REPORT
FCC Part 22, 24, & 27



LTE	FCC Rule Part	Tx Frequency (MHz)	ERP		EIRP		Emission Designator	Modulation
			Max. Power (W)	Max. Power (dBm)	Max. Power (W)	Max. Power (dBm)		
Band 12	27	699.7 - 715.3	0.193	22.85	0.316	25.00	1M11G7W	QPSK
Band 12	27	699.7 - 715.3	0.159	22.02	0.261	24.17	1M11D7W	16QAM
Band 12	27	699.7 - 715.3	0.134	21.27	0.220	23.42	1M11D7W	64QAM
Band 12	27	700.5 - 714.5	0.185	22.67	0.303	24.82	2M74G7W	QPSK
Band 12	27	700.5 - 714.5	0.161	22.06	0.264	24.21	2M73D7W	16QAM
Band 12	27	700.5 - 714.5	0.130	21.13	0.213	23.28	2M74D7W	64QAM
Band 12	27	701.5 - 713.5	0.192	22.83	0.315	24.98	4M57G7W	QPSK
Band 12	27	701.5 - 713.5	0.165	22.18	0.271	24.33	4M54D7W	16QAM
Band 12	27	701.5 - 713.5	0.129	21.12	0.212	23.27	4M55D7W	64QAM
Band 12	27	704 - 711	0.188	22.74	0.308	24.89	9M08G7W	QPSK
Band 12	27	704 - 711	0.166	22.21	0.273	24.36	9M05D7W	16QAM
Band 12	27	704 - 711	0.129	21.12	0.212	23.27	9M09D7W	64QAM
Band 17	27	706.5 - 713.5	0.193	22.85	0.316	25.00	4M57G7W	QPSK
Band 17	27	706.5 - 713.5	0.164	22.16	0.270	24.31	4M54D7W	16QAM
Band 17	27	706.5 - 713.5	0.132	21.22	0.217	23.37	4M55D7W	64QAM
Band 17	27	709 - 711	0.193	22.85	0.316	25.00	9M08G7W	QPSK
Band 17	27	709 - 711	0.171	22.34	0.281	24.49	9M05D7W	16QAM
Band 17	27	709 - 711	0.130	21.15	0.214	23.30	9M09D7W	64QAM
Band 13	27	779.5 - 784.5	0.193	22.85	0.316	25.00	4M54G7W	QPSK
Band 13	27	779.5 - 784.5	0.164	22.14	0.269	24.29	4M53D7W	16QAM
Band 13	27	779.5 - 784.5	0.129	21.12	0.212	23.27	4M54D7W	64QAM
Band 13	27	782	0.193	22.85	0.316	25.00	9M07G7W	QPSK
Band 13	27	782	0.174	22.41	0.286	24.56	9M02D7W	16QAM
Band 13	27	782	0.134	21.27	0.220	23.42	9M05D7W	64QAM
Band 5	22H	824.7 - 848.3	0.180	22.55	0.295	24.70	1M11G7W	QPSK
Band 5	22H	824.7 - 848.3	0.145	21.61	0.238	23.76	1M11D7W	16QAM
Band 5	22H	824.7 - 848.3	0.116	20.66	0.191	22.81	1M11D7W	64QAM
Band 5	22H	825.5 - 847.5	0.180	22.55	0.295	24.70	2M72G7W	QPSK
Band 5	22H	825.5 - 847.5	0.159	22.01	0.261	24.16	2M72D7W	16QAM
Band 5	22H	825.5 - 847.5	0.124	20.92	0.203	23.07	2M73D7W	64QAM
Band 5	22H	826.5 - 846.5	0.180	22.55	0.295	24.70	4M55G7W	QPSK
Band 5	22H	826.5 - 846.5	0.157	21.97	0.258	24.12	4M55D7W	16QAM
Band 5	22H	826.5 - 846.5	0.120	20.79	0.197	22.94	4M54D7W	64QAM
Band 5	22H	829 - 844	0.180	22.55	0.295	24.70	9M06G7W	QPSK
Band 5	22H	829 - 844	0.159	22.02	0.261	24.17	9M04D7W	16QAM
Band 5	22H	829 - 844	0.119	20.76	0.195	22.91	9M06D7W	64QAM
Band 26	22H	824.7 - 848.3	0.180	22.55	0.295	24.70	1M11G7W	QPSK
Band 26	22H	824.7 - 848.3	0.145	21.61	0.238	23.76	1M11D7W	16QAM
Band 26	22H	824.7 - 848.3	0.121	20.83	0.199	22.98	1M11D7W	64QAM
Band 26	22H	825.5 - 847.5	0.180	22.55	0.295	24.70	2M72G7W	QPSK
Band 26	22H	825.5 - 847.5	0.158	22.00	0.260	24.15	2M72D7W	16QAM
Band 26	22H	825.5 - 847.5	0.124	20.94	0.204	23.09	2M73D7W	64QAM
Band 26	22H	826.5 - 846.5	0.180	22.55	0.295	24.70	4M55G7W	QPSK
Band 26	22H	826.5 - 846.5	0.156	21.94	0.256	24.09	4M55D7W	16QAM
Band 26	22H	826.5 - 846.5	0.121	20.83	0.199	22.98	4M54D7W	64QAM
Band 26	22H	829 - 844	0.180	22.55	0.295	24.70	9M06G7W	QPSK
Band 26	22H	829 - 844	0.157	21.97	0.258	24.12	9M04D7W	16QAM
Band 26	22H	829 - 844	0.122	20.87	0.200	23.02	9M06D7W	64QAM

EUT Overview (Low Band)

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LTE	FCC Rule Part	Tx Frequency (MHz)	EIRP		Emission Designator	Modulation
			Max. Power (W)	Max. Power (dBm)		
Band 4	27	1710.7 - 1754.3	0.490	26.90	1M11G7W	QPSK
Band 4	27	1710.7 - 1754.3	0.389	25.90	1M11D7W	16QAM
Band 4	27	1710.7 - 1754.3	0.329	25.17	1M11D7W	64QAM
Band 4	27	1711.5 - 1753.5	0.490	26.90	2M73G7W	QPSK
Band 4	27	1711.5 - 1753.5	0.425	26.28	2M73D7W	16QAM
Band 4	27	1711.5 - 1753.5	0.314	24.97	2M72D7W	64QAM
Band 4	27	1712.5 - 1752.5	0.490	26.90	4M55G7W	QPSK
Band 4	27	1712.5 - 1752.5	0.418	26.21	4M54D7W	16QAM
Band 4	27	1712.5 - 1752.5	0.316	25.00	4M56D7W	64QAM
Band 4	27	1715 - 1750	0.490	26.90	9M09G7W	QPSK
Band 4	27	1715 - 1750	0.431	26.34	9M07D7W	16QAM
Band 4	27	1715 - 1750	0.329	25.17	9M07D7W	64QAM
Band 4	27	1717.5 - 1747.5	0.490	26.90	13M7G7W	QPSK
Band 4	27	1717.5 - 1747.5	0.395	25.97	13M7D7W	16QAM
Band 4	27	1717.5 - 1747.5	0.313	24.96	13M6D7W	64QAM
Band 4	27	1720 - 1745	0.490	26.90	18M1G7W	QPSK
Band 4	27	1720 - 1745	0.423	26.26	18M1D7W	16QAM
Band 4	27	1720 - 1745	0.326	25.13	18M2D7W	64QAM
Band 66	27	1710.7 - 1779.3	0.490	26.90	1M11G7W	QPSK
Band 66	27	1710.7 - 1779.3	0.391	25.92	1M11D7W	16QAM
Band 66	27	1710.7 - 1779.3	0.321	25.07	1M11D7W	64QAM
Band 66	27	1711.5 - 1778.5	0.490	26.90	2M73G7W	QPSK
Band 66	27	1711.5 - 1778.5	0.443	26.46	2M73D7W	16QAM
Band 66	27	1711.5 - 1778.5	0.337	25.27	2M72D7W	64QAM
Band 66	27	1712.5 - 1777.5	0.490	26.90	4M55G7W	QPSK
Band 66	27	1712.5 - 1777.5	0.438	26.41	4M54D7W	16QAM
Band 66	27	1712.5 - 1777.5	0.334	25.24	4M56D7W	64QAM
Band 66	27	1715 - 1775	0.490	26.90	9M09G7W	QPSK
Band 66	27	1715 - 1775	0.437	26.40	9M07D7W	16QAM
Band 66	27	1715 - 1775	0.338	25.29	9M07D7W	64QAM
Band 66	27	1717.5 - 1772.5	0.490	26.90	13M7G7W	QPSK
Band 66	27	1717.5 - 1772.5	0.398	26.00	13M7D7W	16QAM
Band 66	27	1717.5 - 1772.5	0.318	25.03	13M6D7W	64QAM
Band 66	27	1720 - 1770	0.490	26.90	18M1G7W	QPSK
Band 66	27	1720 - 1770	0.421	26.24	18M1D7W	16QAM
Band 66	27	1720 - 1770	0.309	24.90	18M2D7W	64QAM
Band 2	24E	1850.7 - 1909.3	0.603	27.80	1M11G7W	QPSK
Band 2	24E	1850.7 - 1909.3	0.516	27.13	1M11D7W	16QAM
Band 2	24E	1850.7 - 1909.3	0.417	26.20	1M11D7W	64QAM
Band 2	24E	1851.5 - 1908.5	0.603	27.80	2M73G7W	QPSK
Band 2	24E	1851.5 - 1908.5	0.515	27.12	2M73D7W	16QAM
Band 2	24E	1851.5 - 1908.5	0.414	26.17	2M73D7W	64QAM
Band 2	24E	1852.5 - 1907.5	0.603	27.80	4M56G7W	QPSK
Band 2	24E	1852.5 - 1907.5	0.514	27.11	4M54D7W	16QAM
Band 2	24E	1852.5 - 1907.5	0.401	26.03	4M55D7W	64QAM
Band 2	24E	1855 - 1905	0.603	27.80	9M09G7W	QPSK
Band 2	24E	1855 - 1905	0.512	27.09	9M09D7W	16QAM
Band 2	24E	1855 - 1905	0.401	26.03	9M08D7W	64QAM
Band 2	24E	1857.5 - 1902.5	0.603	27.80	13M7G7W	QPSK
Band 2	24E	1857.5 - 1902.5	0.485	26.86	13M7D7W	16QAM
Band 2	24E	1857.5 - 1902.5	0.408	26.11	13M7D7W	64QAM
Band 2	24E	1860 - 1900	0.603	27.80	18M1G7W	QPSK
Band 2	24E	1860 - 1900	0.498	26.97	18M1D7W	16QAM
Band 2	24E	1860 - 1900	0.385	25.86	18M1D7W	64QAM
Band 25	24E	1850.7 - 1914.3	0.603	27.80	1M11G7W	QPSK
Band 25	24E	1850.7 - 1914.3	0.489	26.89	1M11D7W	16QAM
Band 25	24E	1850.7 - 1914.3	0.406	26.09	1M11D7W	64QAM
Band 25	24E	1851.5 - 1913.5	0.603	27.80	2M73G7W	QPSK
Band 25	24E	1851.5 - 1913.5	0.509	27.07	2M73D7W	16QAM
Band 25	24E	1851.5 - 1913.5	0.408	26.11	2M73D7W	64QAM
Band 25	24E	1852.5 - 1912.5	0.603	27.80	4M56G7W	QPSK
Band 25	24E	1852.5 - 1912.5	0.522	27.18	4M54D7W	16QAM
Band 25	24E	1852.5 - 1912.5	0.406	26.09	4M55D7W	64QAM
Band 25	24E	1855 - 1910	0.603	27.80	9M09G7W	QPSK
Band 25	24E	1855 - 1910	0.519	27.15	9M09D7W	16QAM
Band 25	24E	1855 - 1910	0.394	25.96	9M08D7W	64QAM
Band 25	24E	1857.5 - 1907.5	0.603	27.80	13M7G7W	QPSK
Band 25	24E	1857.5 - 1907.5	0.498	26.97	13M7D7W	16QAM
Band 25	24E	1857.5 - 1907.5	0.387	25.88	13M7D7W	64QAM
Band 25	24E	1860 - 1905	0.603	27.80	18M1G7W	QPSK
Band 25	24E	1860 - 1905	0.495	26.95	18M1D7W	16QAM
Band 25	24E	1860 - 1905	0.391	25.92	18M1D7W	64QAM

EUT Overview (Mid Bands)

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LTE	FCC Rule Part	Tx Frequency (MHz)	EIRP		Emission Designator	Modulation
			Max. Power (W)	Max. Power (dBm)		
Band 30	27	2307.5 - 2312.5	0.208	23.19	4M55G7W	QPSK
Band 30	27	2307.5 - 2312.5	0.173	22.39	4M54D7W	16QAM
Band 30	27	2307.5 - 2312.5	0.143	21.55	4M54D7W	64QAM
Band 30	27	2310	0.205	23.11	9M05G7W	QPSK
Band 30	27	2310	0.176	22.46	9M08D7W	16QAM
Band 30	27	2310	0.136	21.33	9M05D7W	64QAM
Band 7	27	2502.5 - 2567.5	0.525	27.20	4M55G7W	QPSK
Band 7	27	2502.5 - 2567.5	0.449	26.52	4M55D7W	16QAM
Band 7	27	2502.5 - 2567.5	0.347	25.40	4M54D7W	64QAM
Band 7	27	2505 - 2565	0.525	27.20	9M08G7W	QPSK
Band 7	27	2505 - 2565	0.450	26.53	9M07D7W	16QAM
Band 7	27	2505 - 2565	0.344	25.36	9M05D7W	64QAM
Band 7	27	2507.5 - 2562.5	0.525	27.20	13M6G7W	QPSK
Band 7	27	2507.5 - 2562.5	0.397	25.99	13M7D7W	16QAM
Band 7	27	2507.5 - 2562.5	0.326	25.13	13M6D7W	64QAM
Band 7	27	2510 - 2560	0.525	27.20	18M1G7W	QPSK
Band 7	27	2510 - 2560	0.433	26.36	18M1D7W	16QAM
Band 7	27	2510 - 2560	0.330	25.18	18M1D7W	64QAM
Band 41 (PC2)	27	2498.5 - 2687.5	0.741	28.70	4M61G7W	QPSK
Band 41 (PC2)	27	2498.5 - 2687.5	0.692	28.40	4M59D7W	16QAM
Band 41 (PC2)	27	2498.5 - 2687.5	0.531	27.25	4M64D7W	64QAM
Band 41 (PC2)	27	2501 - 2685	0.741	28.70	9M17G7W	QPSK
Band 41 (PC2)	27	2501 - 2685	0.670	28.26	9M23D7W	16QAM
Band 41 (PC2)	27	2501 - 2685	0.513	27.10	9M20D7W	64QAM
Band 41 (PC2)	27	2503.5 - 2682.5	0.741	28.70	13M8G7W	QPSK
Band 41 (PC2)	27	2503.5 - 2682.5	0.632	28.01	13M7D7W	16QAM
Band 41 (PC2)	27	2503.5 - 2682.5	0.509	27.07	13M8D7W	64QAM
Band 41 (PC2)	27	2506 - 2680	0.741	28.70	18M4G7W	QPSK
Band 41 (PC2)	27	2506 - 2680	0.638	28.05	18M3D7W	16QAM
Band 41 (PC2)	27	2506 - 2680	0.526	27.21	18M2D7W	64QAM
Band 41 (PC3)	27	2498.5 - 2687.5	0.525	27.20	4M61G7W	QPSK
Band 41 (PC3)	27	2498.5 - 2687.5	0.493	26.93	4M59D7W	16QAM
Band 41 (PC3)	27	2498.5 - 2687.5	0.383	25.83	4M64D7W	64QAM
Band 41 (PC3)	27	2501 - 2685	0.525	27.20	9M17G7W	QPSK
Band 41 (PC3)	27	2501 - 2685	0.492	26.92	9M23D7W	16QAM
Band 41 (PC3)	27	2501 - 2685	0.370	25.68	9M20D7W	64QAM
Band 41 (PC3)	27	2503.5 - 2682.5	0.525	27.20	13M8G7W	QPSK
Band 41 (PC3)	27	2503.5 - 2682.5	0.455	26.58	13M7D7W	16QAM
Band 41 (PC3)	27	2503.5 - 2682.5	0.373	25.72	13M8D7W	64QAM
Band 41 (PC3)	27	2506 - 2680	0.525	27.20	18M4G7W	QPSK
Band 41 (PC3)	27	2506 - 2680	0.451	26.54	18M3D7W	16QAM
Band 41 (PC3)	27	2506 - 2680	0.368	25.66	18M2D7W	64QAM

EUT 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. facility located at 18855 Adams Court, Morgan Hill, CA 95037. The measurement facility is compliant with the test site requirements specified in ANSI C63.4-2014 and KDB 414788 D01 v01r01.

1.3 Test Facility / Accreditations

`

- PCTEST is an ISO 17025-2005 accredited test facility under the American Association for Laboratory Accreditation (A2LA) with Certificate number 2041.02 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 (22831) test laboratory with the site description on file with ISED.

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2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **Apple Tablet Device FCC ID: BCGA2429**. The test data contained in this report pertains only to the emissions due to the EUT's LTE function.

Test Device Serial No.: F9FCN00DQ7LC, F9FCN01QQ7LC, F9FCN007Q7L9, F9FCN00FQ7L9

2.2 Device Capabilities

This device contains the following capabilities:

850/1900 GSM/GPRS/EDGE, 850/1700/1900 WCDMA/HSPA, Multi-band LTE, 802.11b/g/n WLAN, 802.11a/n/ac UNII, Bluetooth (1x, EDR, LE)

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

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

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

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

LTE Band 41 (2496 - 2690 MHz) overlaps the entire frequency range of LTE Band 38 (2570 - 2620 MHz). Therefore, test data provided in this report covers Band 38 as well as Band 41.

LTE Band 41 supports NS04 for Port A (Antenna C) and NS01 for Port B (Antenna D).

This device supports simultaneous multi radio transmission feature, which allows Bluetooth (1x, EDR, LE) and WiFi UNII 5GHz (802.11a/n/ac) to transmit simultaneously at the same antenna. All possible simultaneous configurations have been investigated and worst case mode has been found and reported in Bluetooth and UNII test reports.

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2.3 Antenna Description

Following antennas were used for the testing.

Antennas	
Port A	**Port B**
Antenna C	Antenna D

Table 2-1. Antenna vs Ports

Frequency [MHz]	Antennas	
	Antenna C	**Antenna D**
650-800	-0.5	-0.7
820-960	-0.8	-0.6
1700-1800	1.4	2.0
1820-2100	2.3	2.6
2300-2320	1.4	1.7
2400-2700	1.7	2.0

Table 2-2. Highest Antenna Gain

2.4 Test Support Equipment

1	Apple MacBook	Model:	A1398	S/N:	C2QKP008F6F3
	w/AC/DC Adapter	Model:	A1435	S/N:	N/A
2	Apple USB Cable	Model:	Kanzi	S/N:	32530F
3	USB-C to Lightning Cable	Model:	N/A	S/N:	N/A
	w/ AC Adapter	Model:	A2305	S/N:	N/A
4	Apple Pencil	Model:	A1603	S/N:	G64TG0FEGWTJ
5	DC Power Supply	Model:	KPS3010D	S/N:	N/A

Table 2-3. Test Support Equipment List

2.5 Test Configuration

The EUT was tested per the guidance of ANSI C63.26 2015, 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.

For emissions from 1GHz – 18GHz, low, mid, and high channels were tested with highest power and worst case configuration. The emissions below 1GHz and above 18GHz were tested with the highest transmitting power channel and the worst case configuration.

The EUT was manipulated through three orthogonal planes of X-orientation (flatbed), Y-orientation (landscape), and Z-orientation (portrait) during the testing. Only the worst case emissions were reported in this test report.

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2.6 Software and Firmware

The test was conducted with firmware version 18A325 installed on the EUT.

2.7 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 C63.26-2015/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 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. Per the guidelines of KDB 412172 D01 v01r01, radiated power levels are measured using the following formula:

$$\text{ERP or EIRP} = P_T + G_T - L_C$$

Where P_T is the transmitter output power, expressed in dBm, G_T is the gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP), and L_C signal attenuation in the connecting cable between the transmitter and antenna in dB.

Per the guidance of ANSI C63.26-2015 and 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 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 + $10\log_{10}$(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 $_{[Watts]}$).

Per KDB 414788 D01 v01r01, radiated emission test sites other than open-field test sites (e.g., shielded anechoic chambers), may be employed for emission measurements below 30MHz if characterized so that the measurements correspond to those obtained at an open-field test site. To determine test site equivalency, a reference sample transmitting at 149kHz was measured on an open field test site (asphalt with no ground plane) and then measured in the 3m semi-anechoic chamber. A calibrated 60cm loop antenna was used while the reference device was rotated through the X, Y and Z axis in order to capture the worst case level. A maximum deviation of 2.77dB at 149kHz was measured when comparing the 3 meter semi-anechoic chamber to the open field site.

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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 (±dB)
Conducted Bench Top Measurements	1.30
Radiated Disturbance (<1GHz)	4.15
Radiated Disturbance (>1GHz)	4.59
Radiated Disturbance (>18GHz)	4.96

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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
Agilent Technologies	N9030A	3Hz-44GHz PXA Signal Analyzer	3/4/2020	Annual	3/4/2021	MY49430244
ATM	180-442A-KF	20dB Nominal Gain Horn Antenna	10/29/2019	Annual	10/29/2020	T058701-02
ESPEC	SU-241	Tabletop Temperature Chamber	9/3/2019	Annual	9/3/2020	92009574
ETS-Lindgren	3142E–PA	Pre-Amplifier (30MHz - 6GHz)	9/19/2019	Annual	9/19/2020	213236
ETS-Lindgren	3142E	BiConiLog Antenna (30MHz - 6GHz)	1/6/2020	Annual	1/6/2021	224569
ETS-Lindgren	3117	Double Ridged Guide Antenna (1-18 GHz)	4/21/2020	Annual	4/21/2021	205956
Rohde & Schwarz	FSV40	Signal Analyzer (10Hz-40GHz)	3/2/2020	Annual	3/2/2021	101619
Rohde & Schwarz	ESW26	EMI Test Receiver	6/1/2020	Annual	6/1/2021	101299
Rohde & Schwarz	ESW44	EMI Test Receiver	9/13/2019	Annual	9/13/2020	101570
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	11/16/2019	Annual	11/16/2020	164715
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	4/16/2020	Annual	4/16/2021	166869
Rohde & Schwarz	TS-PR1840	Pre-Amplifier (18GHz - 40GHz)	9/19/2019	Annual	9/19/2020	100051
Rohde & Schwarz	TC-TA18	Cross Polarized Vivaldi Antenna (400MHz-18GHz)	11/14/2019	Annual	11/14/2020	101057
Rohde & Schwarz	HFH2-Z2	Loop Antenna	3/12/2020	Annual	3/12/2021	100546

Table 5-1. Test Equipment List

Notes:

For equipment listed above that has a calibration date or calibration due date that falls within the test date range, care was taken to ensure that this equipment was used after the calibration date and before the calibration due date.

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6.0 SAMPLE CALCULATIONS

Emission Designator

QPSK Modulation

Emission Designator = 8M62G7W

LTE BW = 8.62 MHz
G = Phase Modulation
7 = Quantized/Digital Info
W = Combination of Any

QAM Modulation

Emission Designator = 8M45D7W

LTE BW = 8.45 MHz
D = Amplitude/Angle Modulated
7 = Quantized/Digital Info
W = Combination of Any

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).

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7.0 TEST RESULTS

7.1 Summary

Company Name: Apple Inc.

FCC ID: BCGA2429

FCC Classification: PCS Licensed Transmitter (PCB)

Mode(s): LTE

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
2.1049	Occupied Bandwidth	N/A	CONDUCTED	PASS	Section 7.2
2.1051 22.917(a) 24.238(a) 27.53(c) 27.53(g) 27.53(h)	Out of Band Emissions	> 43 + 10 $\log_{10}$ (P[Watts]) at Band Edge and for all out-of-band emissions			Section 7.3, 7.4
27.53(m)	Out of Band Emissions	Undesirable emissions must meet the limits detailed in 27.53(m)			Section 7.3, 7.4
27.53(a)	Out of Band Emissions	Undesirable emissions must meet the limits detailed in 27.53(a)			Section 7.3, 7.4
24.232(d) 27.50(d)(5)	Peak-Average Ratio	< 13 dB			Section 7.5
2.1046	Transmitter Conducted Output Power	N/A			See RF Exposure Report
2.1046	Additional Maximum Power Reduction (A-MPR)	N/A			Section 7.6
27.53(m)	Uplink Carrier Aggregation	Undesirable emissions much meet the limits pdetailed in 27.53(m)			Section 7.7, 7.10
2.1055 22.355 24.235 27.54	Frequency Stability	< 2.5 ppm (Part 22) and fundamental emissions stay within authorized frequency block (Part 24, 27)			Section 7.11

Table 7-1. Summary of Conducted Test Results

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FCC Part Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
22.913(a)(5)	Effective Radiated Power / Equivalent Isotropic Radiated Power (Band 26/5)	< 7 Watts max. ERP	RADIATED	PASS	Section 7.8
27.50(b)(10) 27.50(c)(10)	Effective Radiated Power / Equivalent Isotropic Radiated Power (12/17, 13)	< 3 Watts max. ERP			Section 7.8
24.232(c) 27.50(h)(2)	Equivalent Isotropic Radiated Power (Band 25/2, 7, 41)	< 2 Watts max. EIRP			Section 7.8
27.50(d)(4)	Equivalent Isotropic Radiated Power (Band 66/4)	< 1 Watts max. EIRP			Section 7.8
27.50(a)(3) 27.50(d)(5)	Equivalent Isotropic Radiated Power (Band 30)	< 0.25 Watts max. EIRP			Section 7.8
2.1053 22.917(a) 24.238(a) 27.53(c) 27.53(g) 27.53(h)	Undesirable Emissions	> 43 + 10 $\log_{10}$ (P[Watts]) for all out-of-band emissions			Section 7.9
27.53(f)	Undesirable Emissions (Band 13)	< -70 dBW/MHz (for wideband signals) < -80 dBW (for discrete emissions less than 700Hz BW) For all emissions in the band 1559 – 1610 MHz			Section 7.9
27.53(a)	Undesirable Emissions (Band 30)	> 70 + 10 $\log_{10}$ (P[Watts])			Section 7.9
27.53(m)	Undesirable Emissions	Undesirable emissions must meet the limits detailed in 27.53(m)			Section 7.9

Table 7-2. Summary of Radiated Test Results

Notes:

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

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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 ≥ 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.

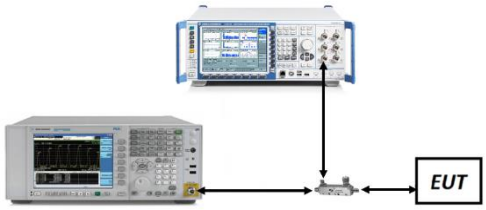

Figure 7-1. Test Instrument & Measurement Setup

Test Notes

All ports were tested and only the worst case data were reported.

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LTE	BW (MHz)	Modulation	Occupied BW [kHz]
Band 12	1.4	QPSK	1108.4
Band 12	1.4	16QAM	1107.2
Band 12	1.4	64QAM	1108.9
Band 12	3	QPSK	2736.5
Band 12	3	16QAM	2733.5
Band 12	3	64QAM	2735.8
Band 12	5	QPSK	4570.8
Band 12	5	16QAM	4543
Band 12	5	64QAM	4547.4
Band 12	10	QPSK	9075.8
Band 12	10	16QAM	9051.8
Band 12	10	64QAM	9094.1
Band 17	5	QPSK	4570.8
Band 17	5	16QAM	4543
Band 17	5	64QAM	4547.4
Band 17	10	QPSK	9075.8
Band 17	10	16QAM	9051.8
Band 17	10	64QAM	9094.1
Band 13	5	QPSK	4536.5
Band 13	5	16QAM	4525.4
Band 13	5	64QAM	4544.4
Band 13	10	QPSK	9073.3
Band 13	10	16QAM	9020.6
Band 13	10	64QAM	9050.3
Band 5	1.4	QPSK	1107.3
Band 5	1.4	16QAM	1105.5
Band 5	1.4	64QAM	1110.7
Band 5	3	QPSK	2720.1
Band 5	3	16QAM	2722.6
Band 5	3	64QAM	2731.2
Band 5	5	QPSK	4546.3
Band 5	5	16QAM	4554.4
Band 5	5	64QAM	4542.9
Band 5	10	QPSK	9063.7
Band 5	10	16QAM	9044.3
Band 5	10	64QAM	9064.3
Band 26	1.4	QPSK	1107.3
Band 26	1.4	16QAM	1105.5
Band 26	1.4	64QAM	1110.7
Band 26	3	QPSK	2720.1
Band 26	3	16QAM	2722.6
Band 26	3	64QAM	2731.2
Band 26	5	QPSK	4546.3
Band 26	5	16QAM	4554.4
Band 26	5	64QAM	4542.9
Band 26	10	QPSK	9063.7
Band 26	10	16QAM	9044.3
Band 26	10	64QAM	9064.3

Table 7-3. Occupied Band Width Results (Low Bands)

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LTE	BW (MHz)	Modulation	Occupied BW [kHz]
Band 4	1.4	QPSK	1109.7
Band 4	1.4	16QAM	1110.7
Band 4	1.4	64QAM	1108.9
Band 4	3	QPSK	2734.3
Band 4	3	16QAM	2731.7
Band 4	3	64QAM	2724.8
Band 4	5	QPSK	4552.5
Band 4	5	16QAM	4540.6
Band 4	5	64QAM	4555.9
Band 4	10	QPSK	9093.6
Band 4	10	16QAM	9073.2
Band 4	10	64QAM	9071.7
Band 4	15	QPSK	13662.0
Band 4	15	16QAM	13658.0
Band 4	15	64QAM	13602.0
Band 4	20	QPSK	18144.4
Band 4	20	16QAM	18096.5
Band 4	20	64QAM	18152.4
Band 66	1.4	QPSK	1109.7
Band 66	1.4	16QAM	1110.7
Band 66	1.4	64QAM	1108.9
Band 66	3	QPSK	2734.3
Band 66	3	16QAM	2731.7
Band 66	3	64QAM	2724.8
Band 66	5	QPSK	4552.5
Band 66	5	16QAM	4540.6
Band 66	5	64QAM	4555.9
Band 66	10	QPSK	9093.6
Band 66	10	16QAM	9073.2
Band 66	10	64QAM	9071.7
Band 66	15	QPSK	13662.0
Band 66	15	16QAM	13658.0
Band 66	15	64QAM	13602.0
Band 66	20	QPSK	18144.4
Band 66	20	16QAM	18096.5
Band 66	20	64QAM	18152.4
Band 2	1.4	QPSK	1114.4
Band 2	1.4	16QAM	1110.6
Band 2	1.4	64QAM	1105.4
Band 2	3	QPSK	2729.0
Band 2	3	16QAM	2729.5
Band 2	3	64QAM	2734.6
Band 2	5	QPSK	4556.2
Band 2	5	16QAM	4542.6
Band 2	5	64QAM	4553.0
Band 2	10	QPSK	9092.9
Band 2	10	16QAM	9093.6
Band 2	10	64QAM	9082.2
Band 2	15	QPSK	13669.4
Band 2	15	16QAM	13682.2
Band 2	15	64QAM	13664.6
Band 2	20	QPSK	18106.0
Band 2	20	16QAM	18098.0
Band 2	20	64QAM	18132.0
Band 25	1.4	QPSK	1114.4
Band 25	1.4	16QAM	1110.6
Band 25	1.4	64QAM	1105.4
Band 25	3	QPSK	2729.0
Band 25	3	16QAM	2729.5
Band 25	3	64QAM	2734.6
Band 25	5	QPSK	4556.2
Band 25	5	16QAM	4542.6
Band 25	5	64QAM	4553.0
Band 25	10	QPSK	9092.9
Band 25	10	16QAM	9093.6
Band 25	10	64QAM	9082.2
Band 25	15	QPSK	13669.4
Band 25	15	16QAM	13682.2
Band 25	15	64QAM	13664.6
Band 25	20	QPSK	18106.0
Band 25	20	16QAM	18098.0
Band 25	20	64QAM	18132.0

Table 7-4. Occupied Band Width Results (Mid Bands)

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LTE	BW (MHz)	Modulation	Occupied BW [kHz]
Band 30	5	QPSK	4550.7
Band 30	5	16QAM	4542.9
Band 30	5	64QAM	4544.9
Band 30	10	QPSK	9054.1
Band 30	10	16QAM	9081.8
Band 30	10	64QAM	9053.4
Band 7	5	QPSK	4547.3
Band 7	5	16QAM	4551.8
Band 7	5	64QAM	4540.9
Band 7	10	QPSK	9082.0
Band 7	10	16QAM	9072.1
Band 7	10	64QAM	9051.0
Band 7	15	QPSK	13613.0
Band 7	15	16QAM	13656.0
Band 7	15	64QAM	13572.0
Band 7	20	QPSK	18112.0
Band 7	20	16QAM	18112.6
Band 7	20	64QAM	18116.9
Band 41	5	QPSK	4606.3
Band 41	5	16QAM	4587.1
Band 41	5	64QAM	4640.0
Band 41	10	QPSK	9170.1
Band 41	10	16QAM	9225.1
Band 41	10	64QAM	9202.4
Band 41	15	QPSK	13791.1
Band 41	15	16QAM	13749.9
Band 41	15	64QAM	13765.0
Band 41	20	QPSK	18383.9
Band 41	20	16QAM	18285.0
Band 41	20	64QAM	18211.5

Table 7-5. Occupied Band Width Results (High Bands)

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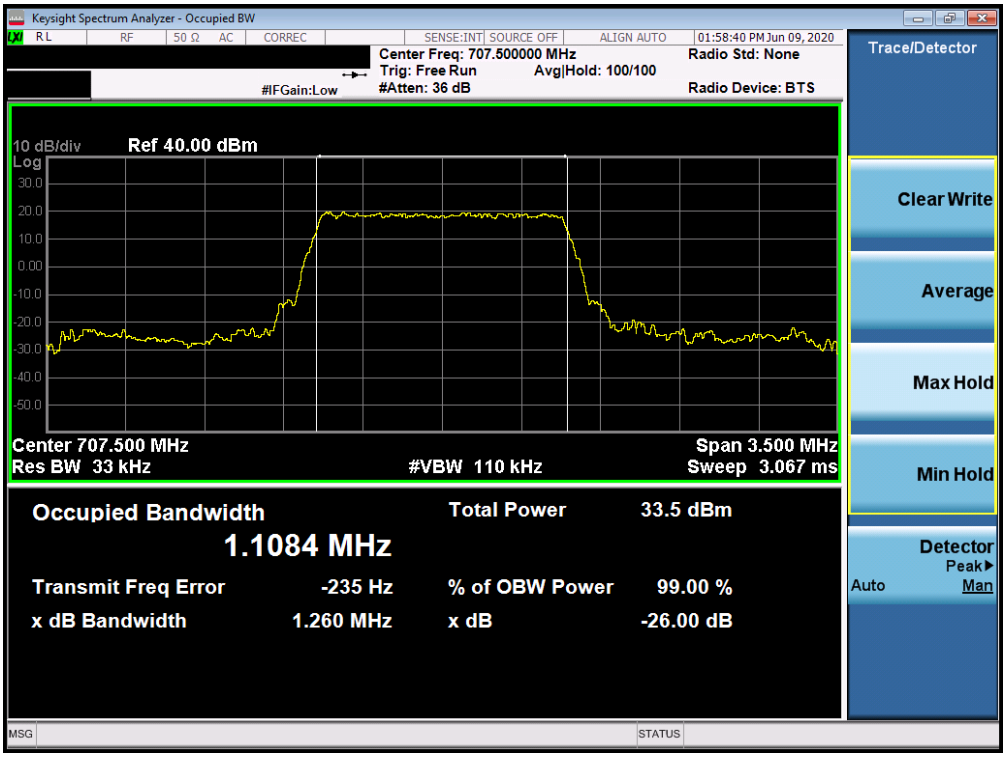
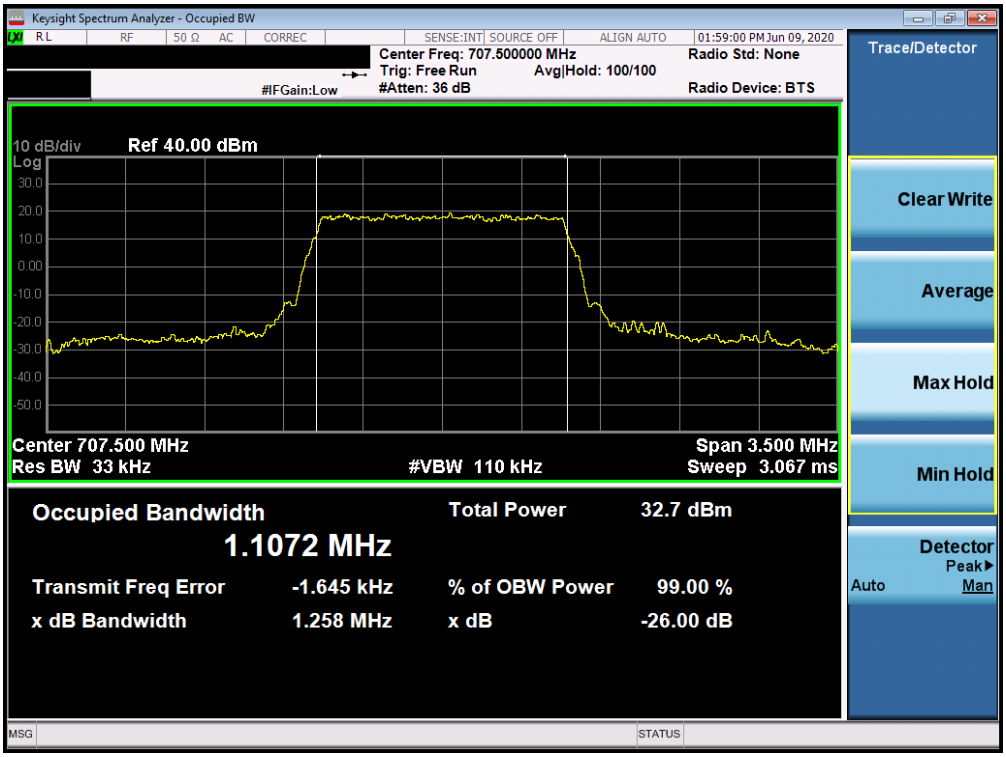
Band 12/17



Plot 7-1. Occupied Bandwidth Plot (Band 12/17 - 1.4MHz QPSK - Full RB Configuration)



Plot 7-2. Occupied Bandwidth Plot (Band 12/17 - 1.4MHz 16-QAM - Full RB Configuration)

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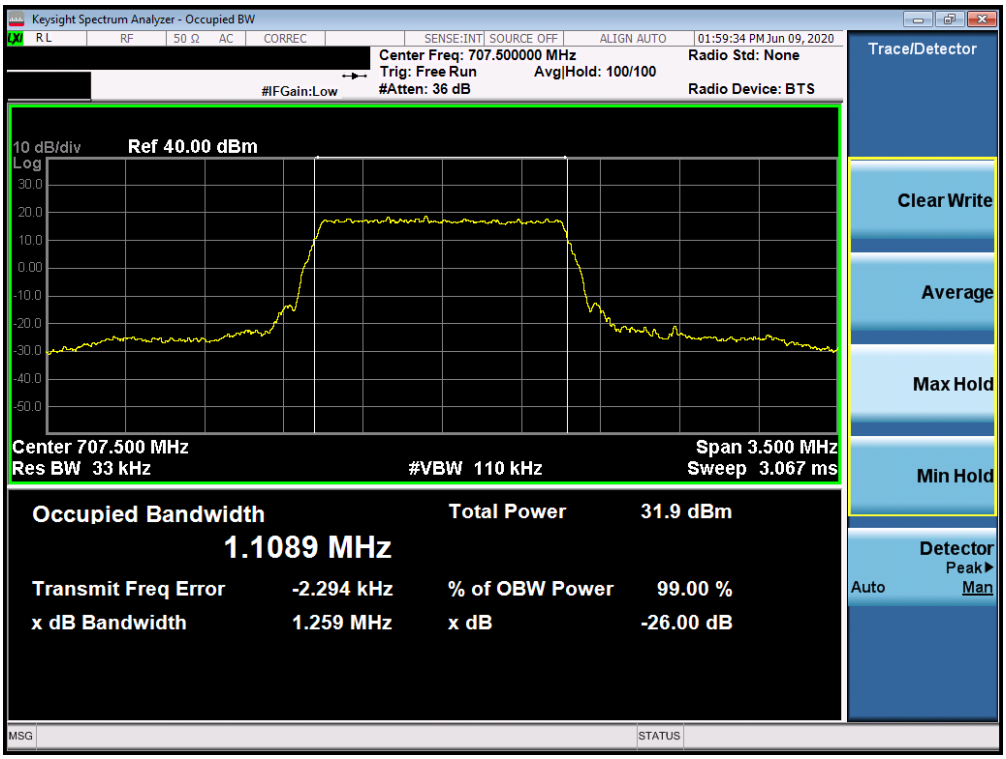
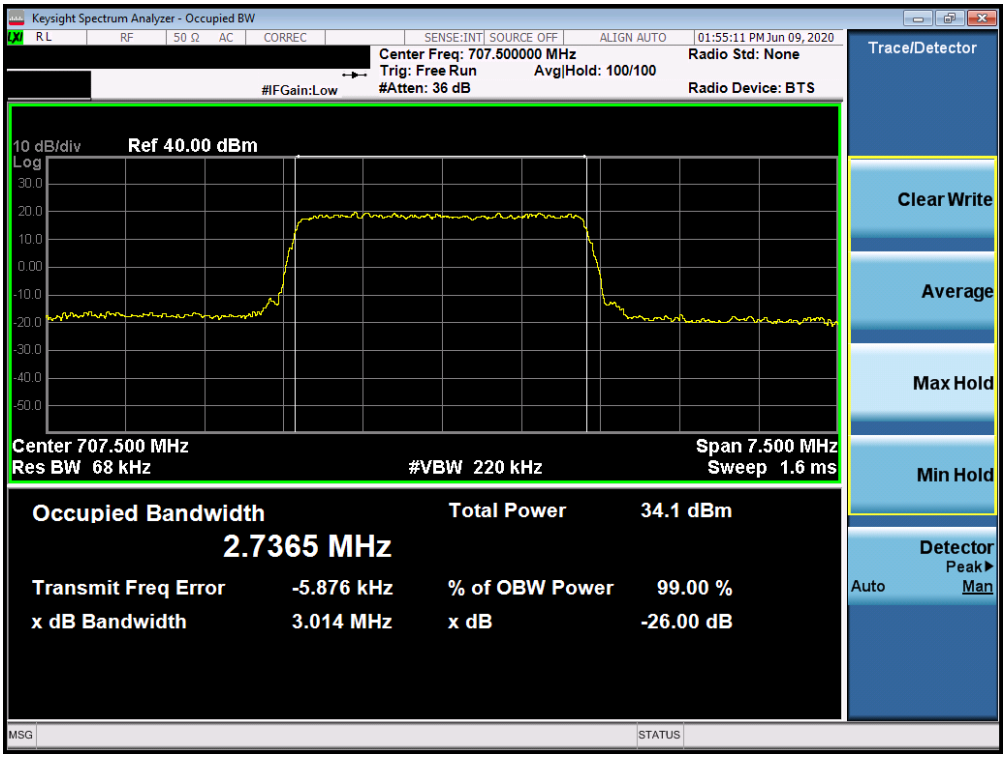


Plot 7-3. Occupied Bandwidth Plot (Band 12/17 - 1.4MHz 64-QAM - Full RB Configuration)



Plot 7-4. Occupied Bandwidth Plot (Band 12/17 - 3.0MHz QPSK - Full RB Configuration)

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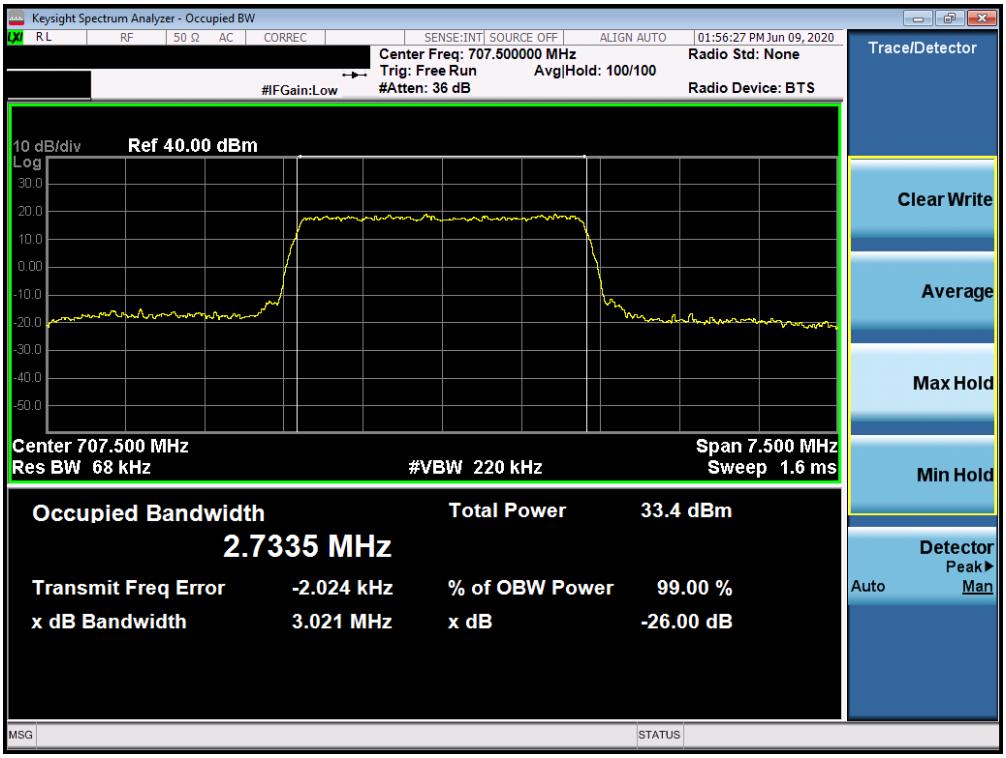
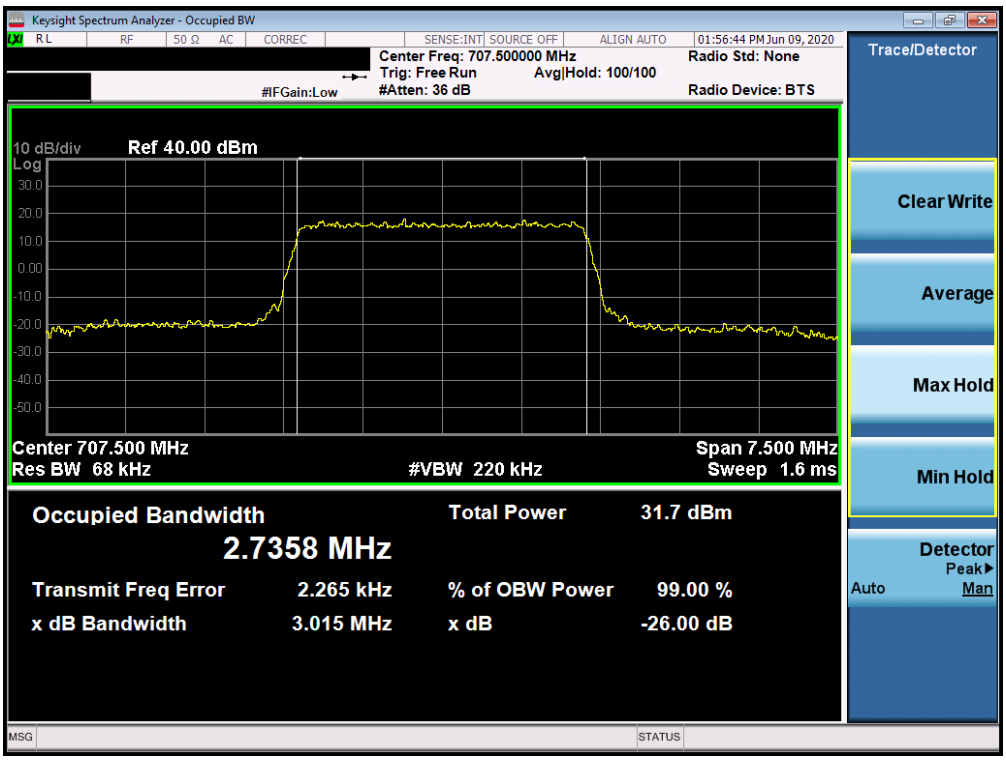


Plot 7-5. Occupied Bandwidth Plot (Band 12/17 - 3.0MHz 16-QAM - Full RB Configuration)



Plot 7-6. Occupied Bandwidth Plot (Band 12/17 - 3.0MHz 64-QAM - Full RB Configuration)

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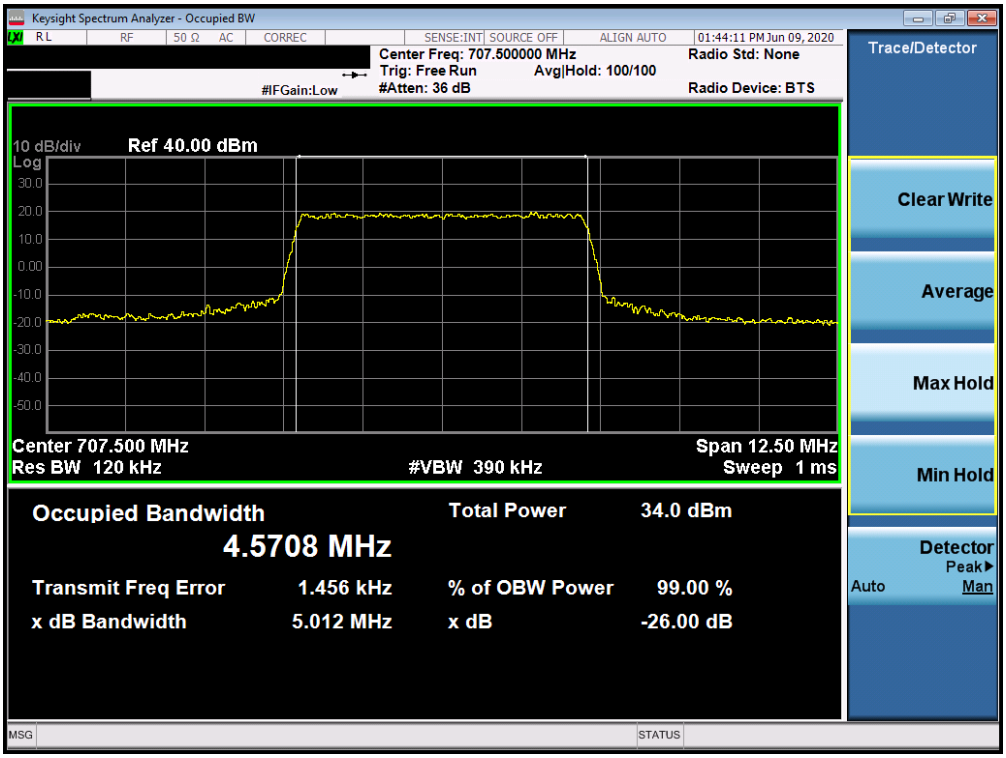
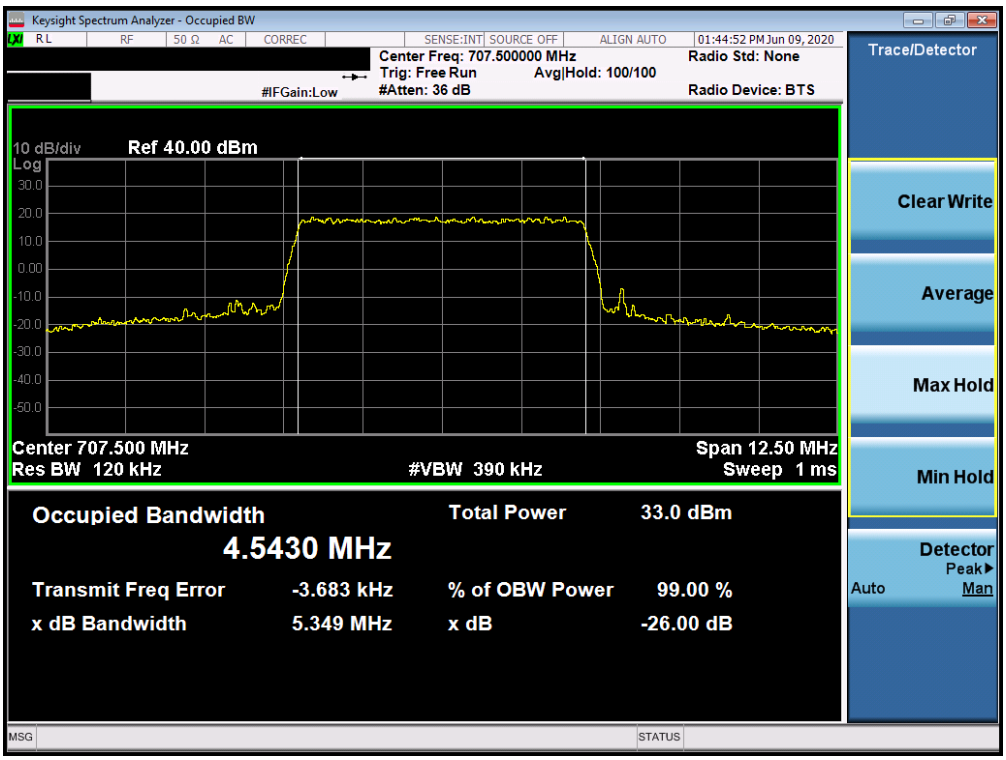


Plot 7-7. Occupied Bandwidth Plot (Band 12/17 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-8. Occupied Bandwidth Plot (Band 12/17 - 5.0MHz 16-QAM - Full RB Configuration)

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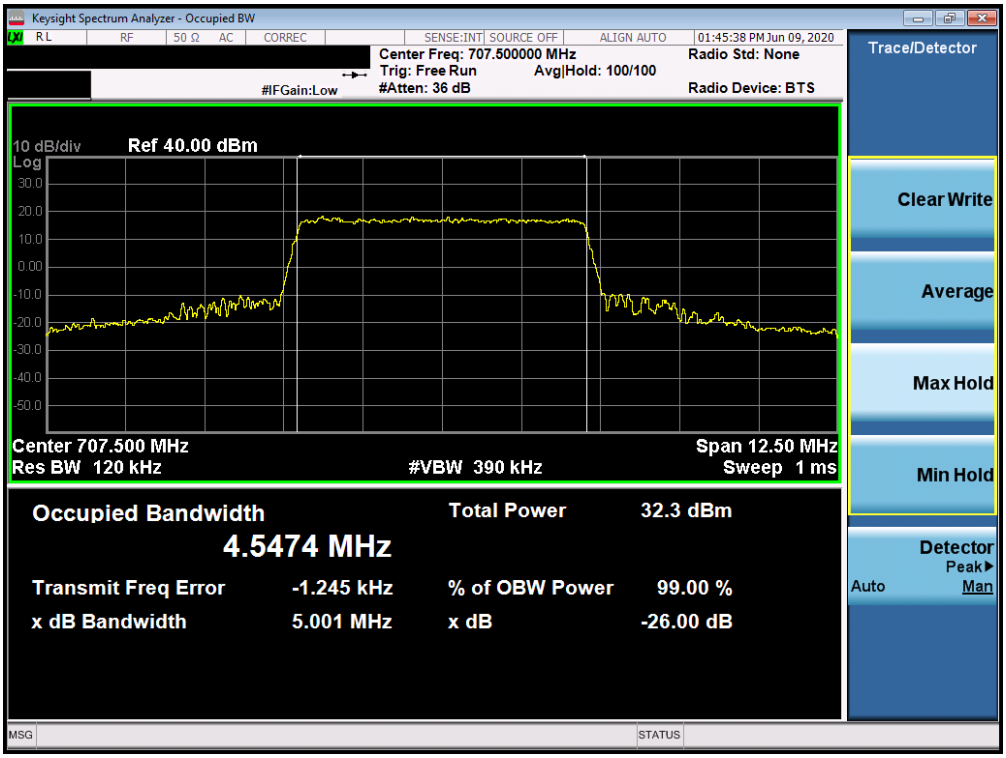
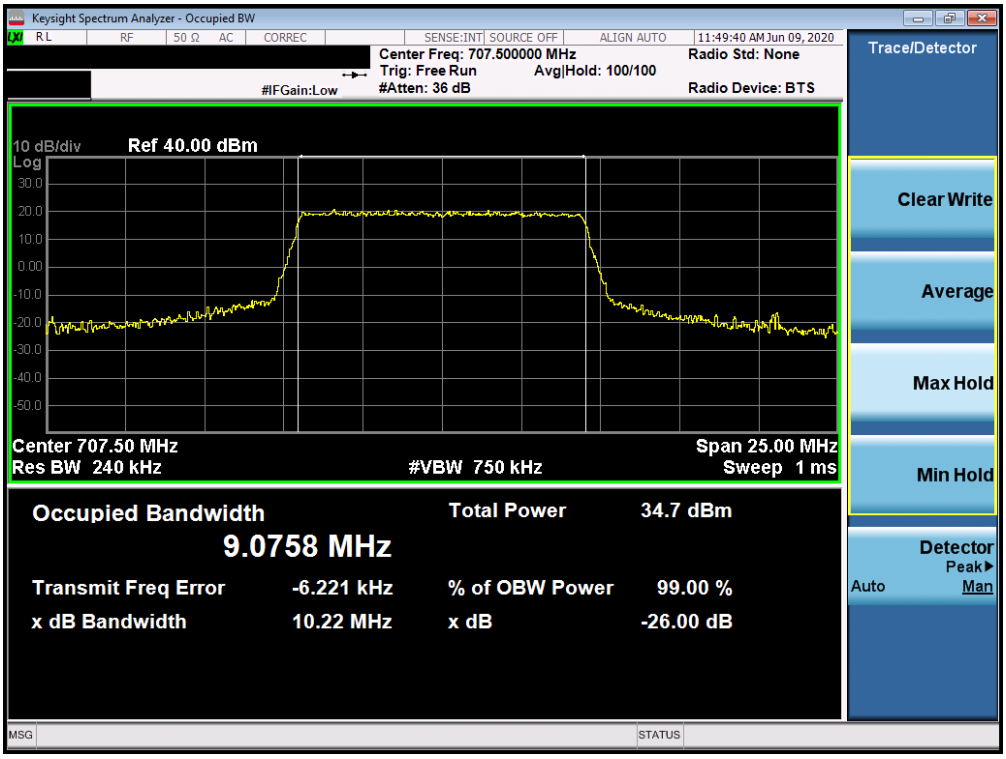


Plot 7-9. Occupied Bandwidth Plot (Band 12/17 - 5.0MHz 64-QAM - Full RB Configuration)



Plot 7-10. Occupied Bandwidth Plot (Band 12/17 - 10.0MHz QPSK - Full RB Configuration)

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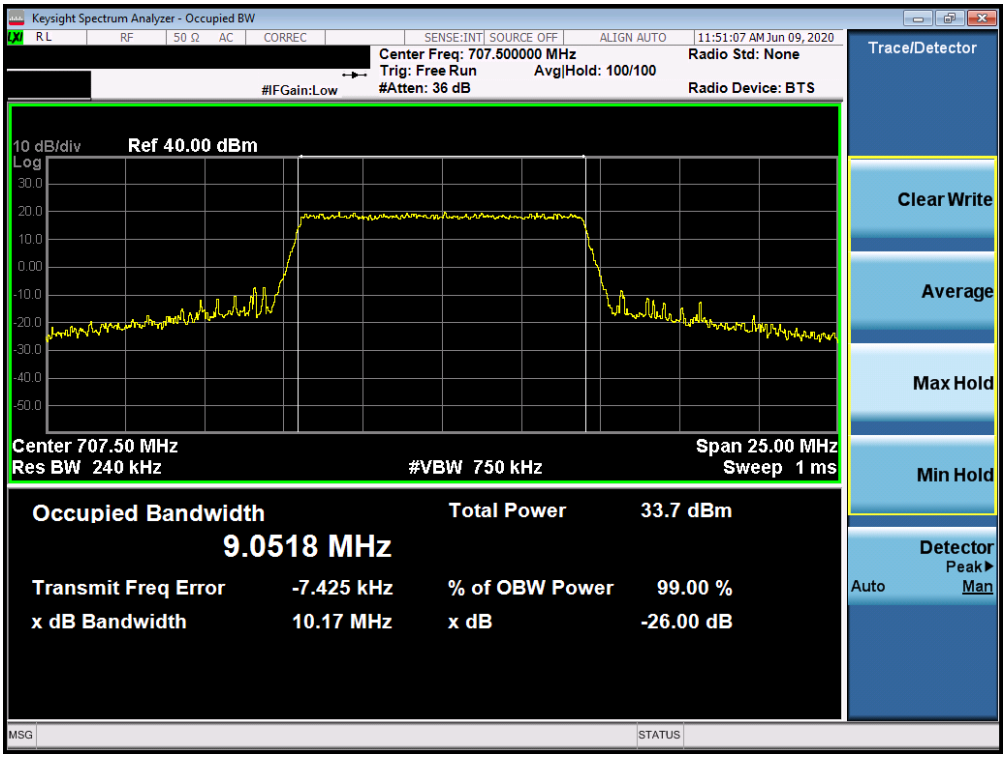
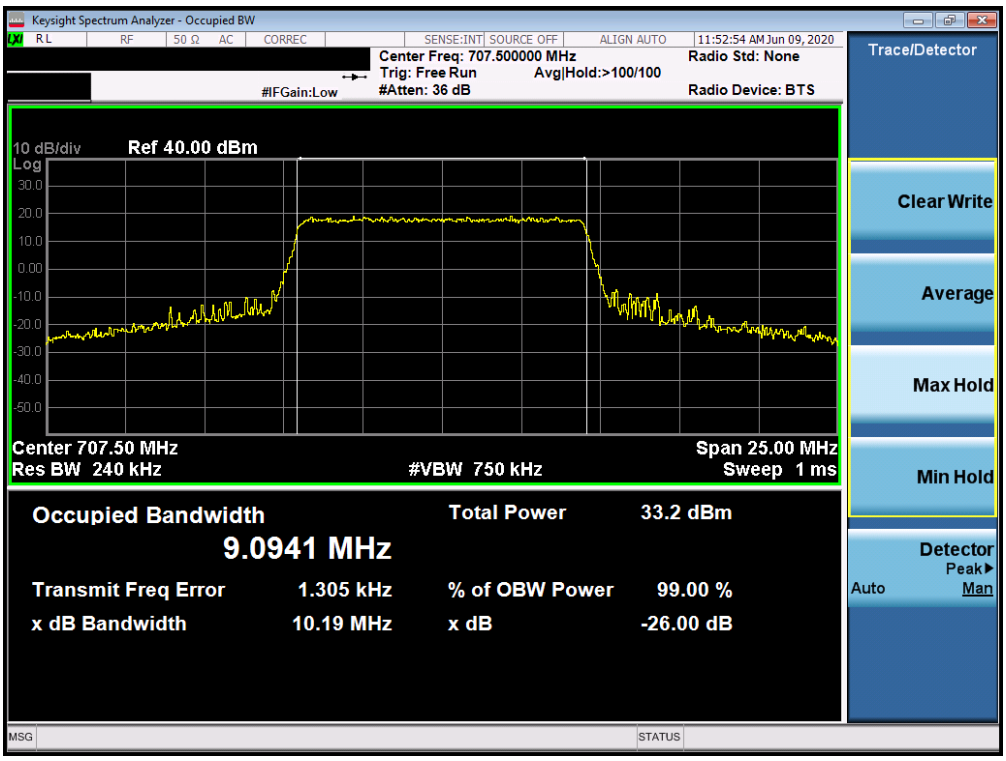


Plot 7-11. Occupied Bandwidth Plot (Band 12/17 - 10.0MHz 16-QAM - Full RB Configuration)



Plot 7-12. Occupied Bandwidth Plot (Band 12/17 - 10.0MHz 64-QAM - Full RB Configuration)

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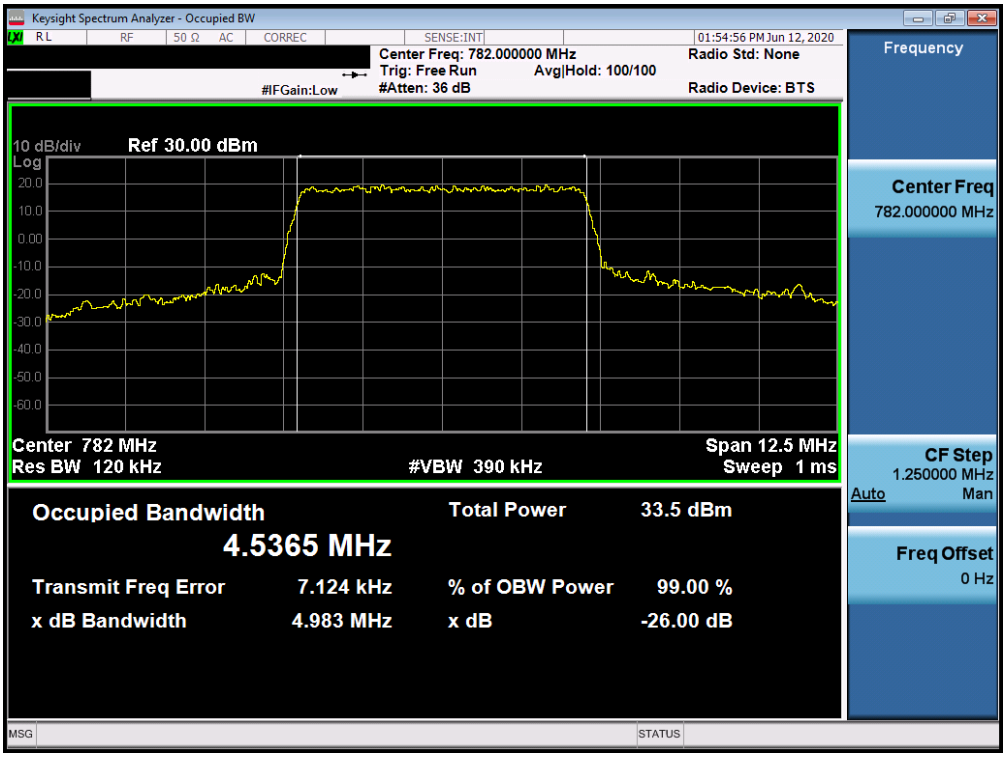
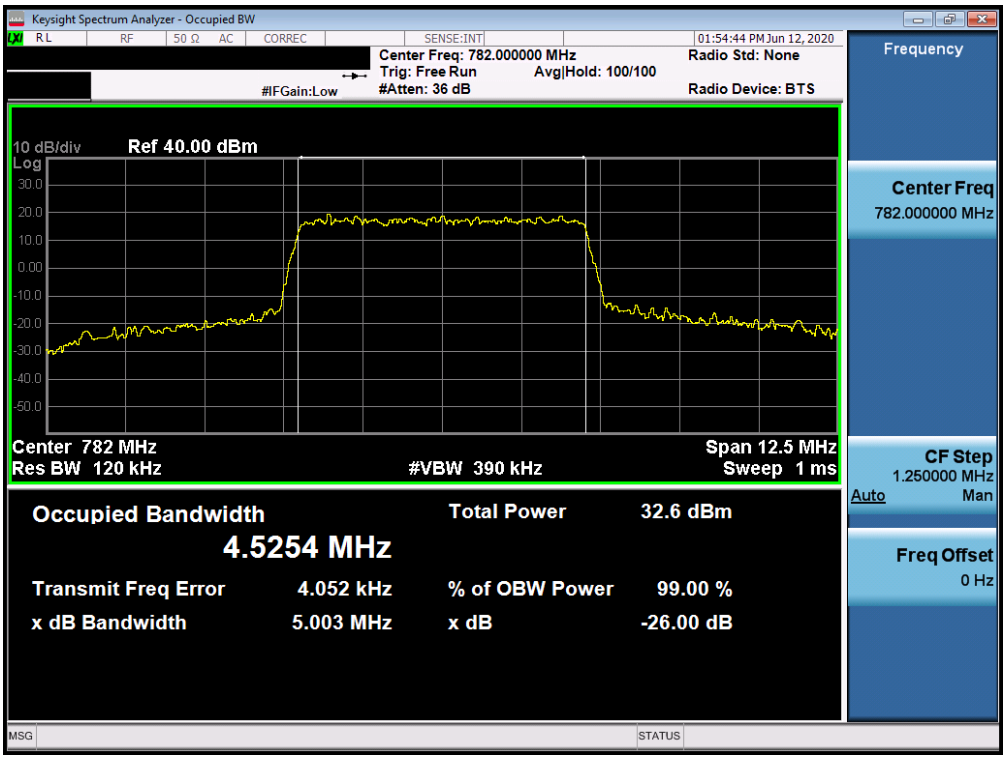
Band 13



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



Plot 7-14. Occupied Bandwidth Plot (Band 13 - 5.0MHz 16-QAM - Full RB Configuration)

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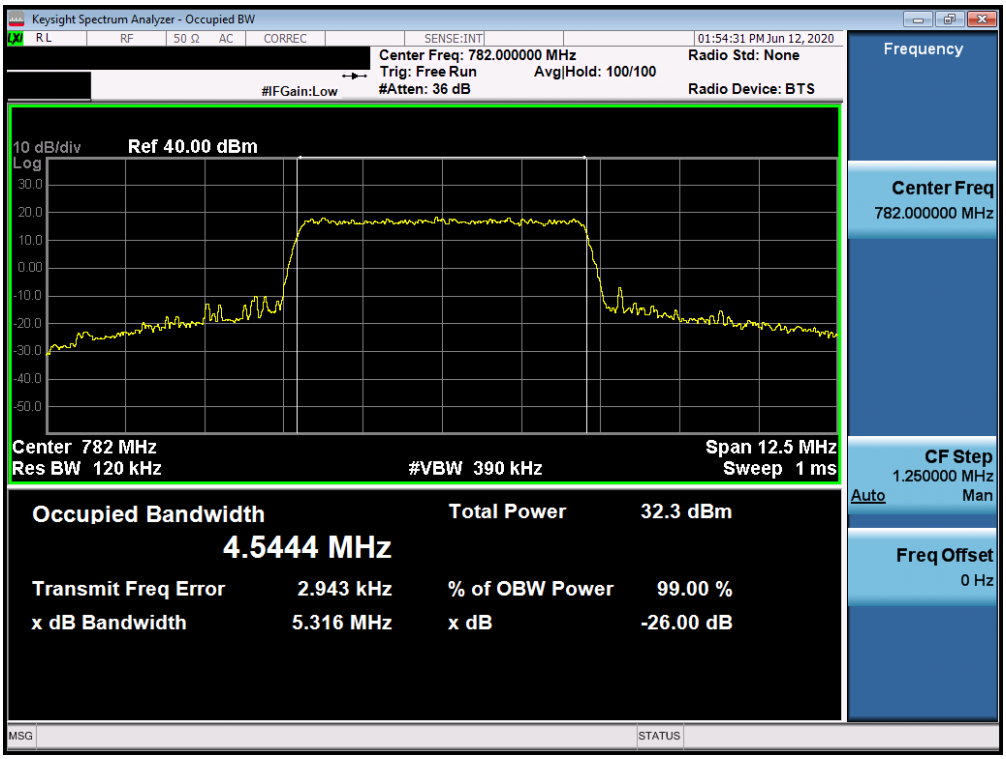
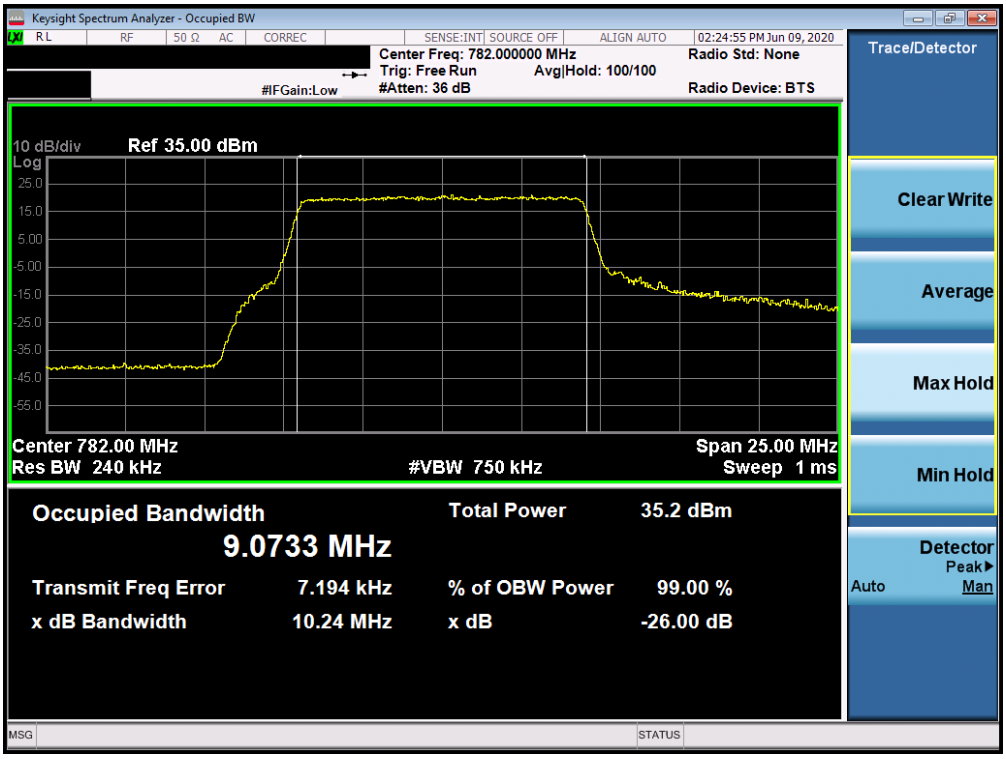


Plot 7-15. Occupied Bandwidth Plot (Band 13 - 5.0MHz 64-QAM - Full RB Configuration)



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

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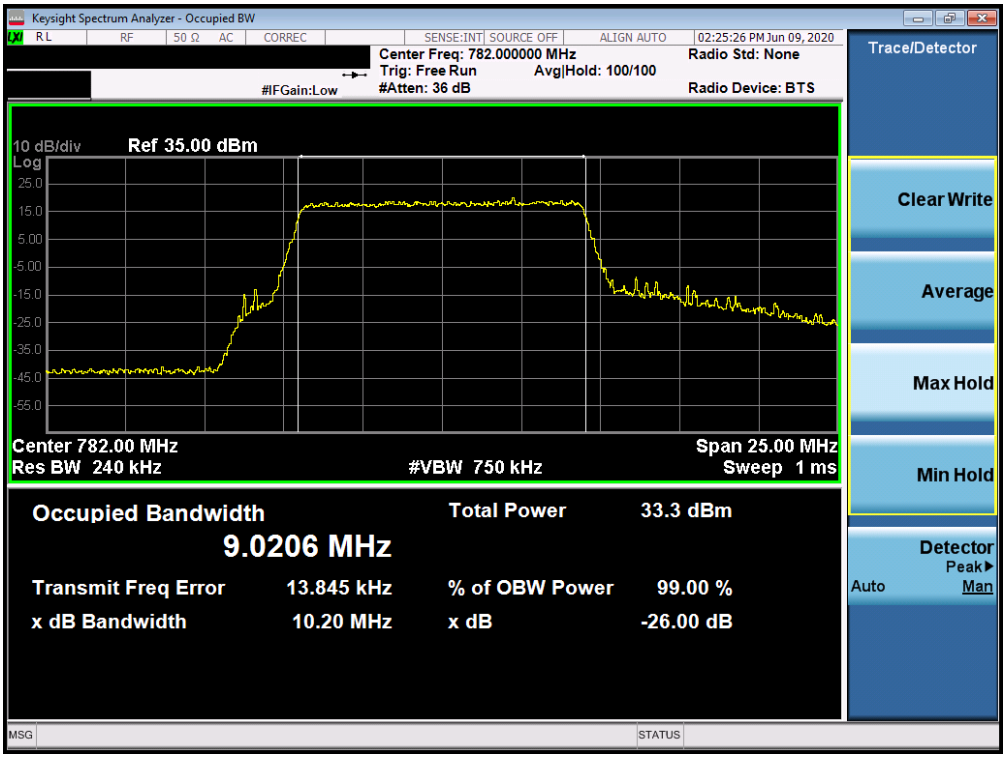
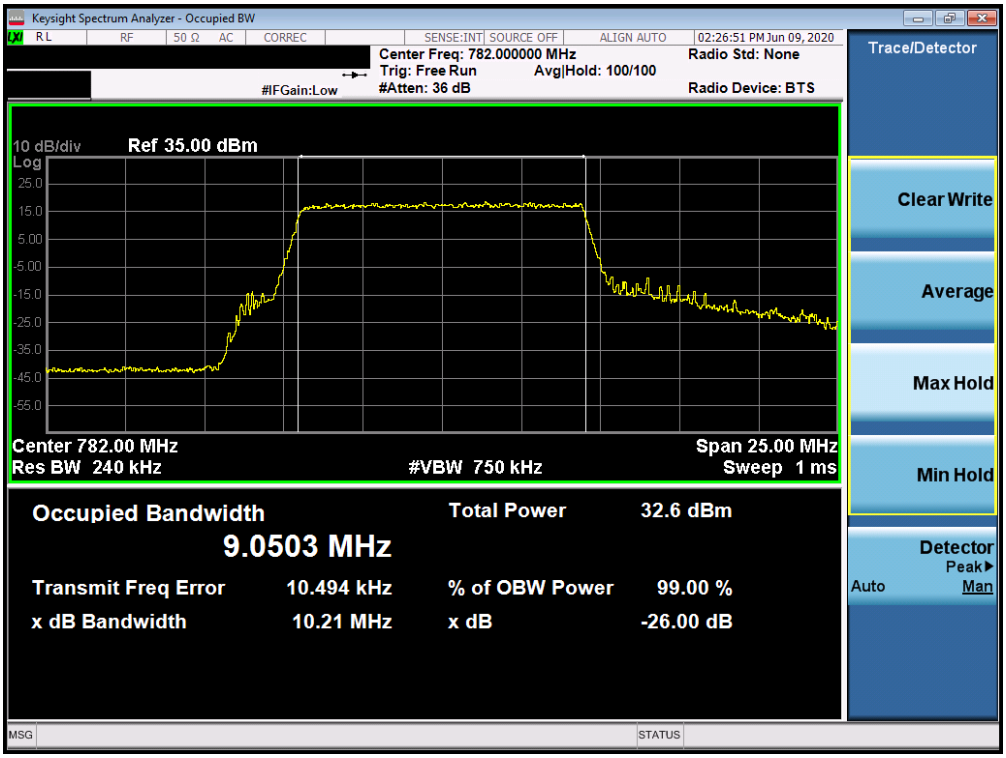


Plot 7-17. Occupied Bandwidth Plot (Band 13 - 10.0MHz 16-QAM - Full RB Configuration)



Plot 7-18. Occupied Bandwidth Plot (Band 13 - 10.0MHz 64-QAM - Full RB Configuration)

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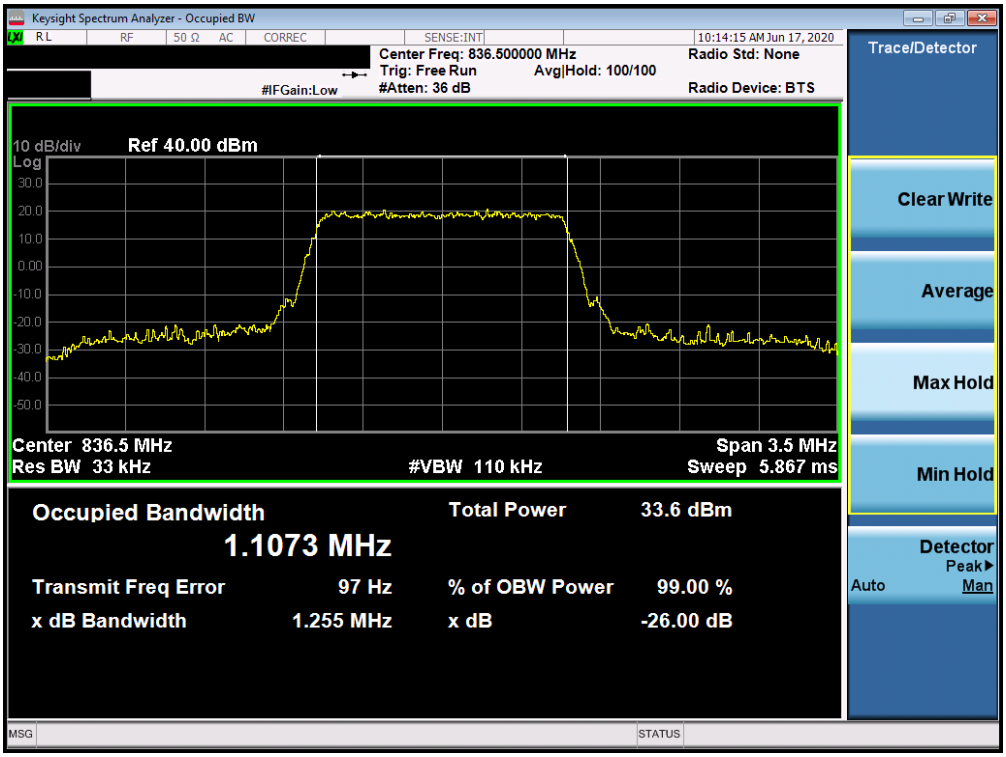
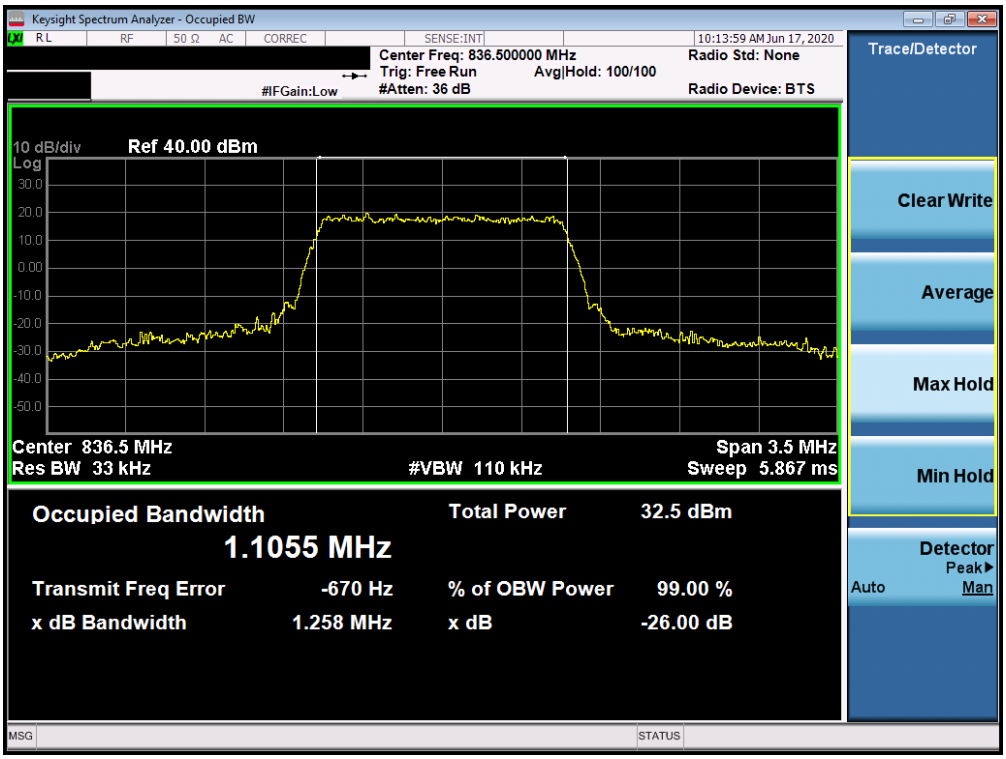
Band 26/5



Plot 7-19. Occupied Bandwidth Plot (Band 26/5 - 1.4MHz QPSK - Full RB Configuration)



Plot 7-20. Occupied Bandwidth Plot (Band 26/5 - 1.4MHz 16-QAM - Full RB Configuration)

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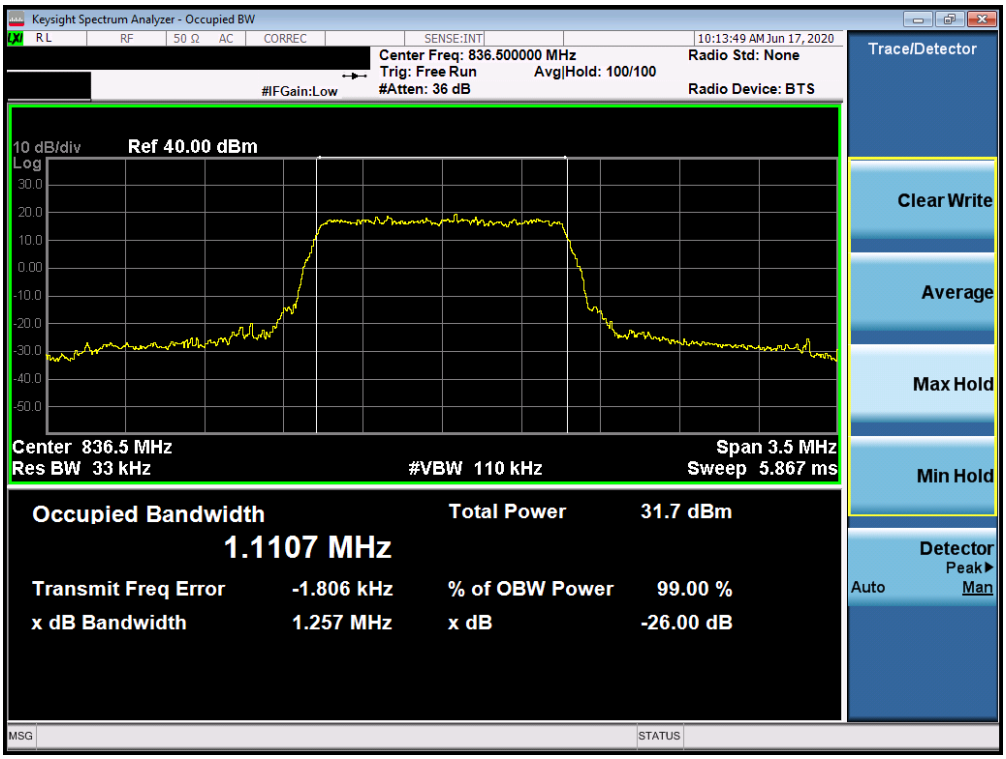
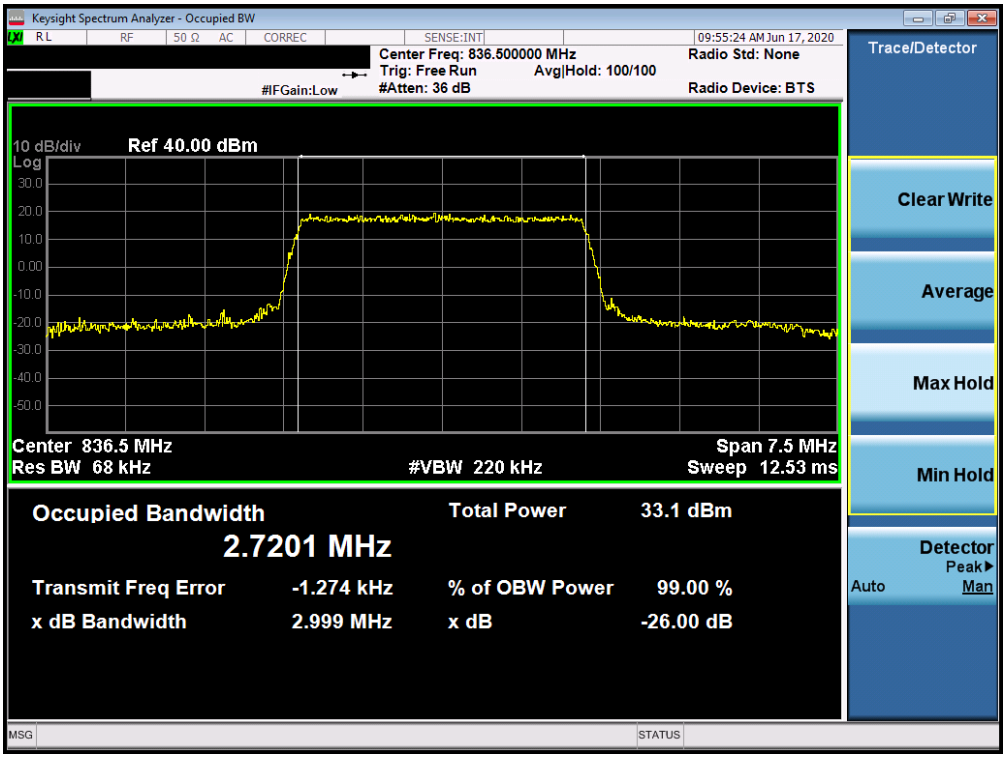


Plot 7-21. Occupied Bandwidth Plot (Band 26/5 - 1.4MHz 64-QAM - Full RB Configuration)



Plot 7-22. Occupied Bandwidth Plot (Band 26/5 - 3.0MHz QPSK - Full RB Configuration)

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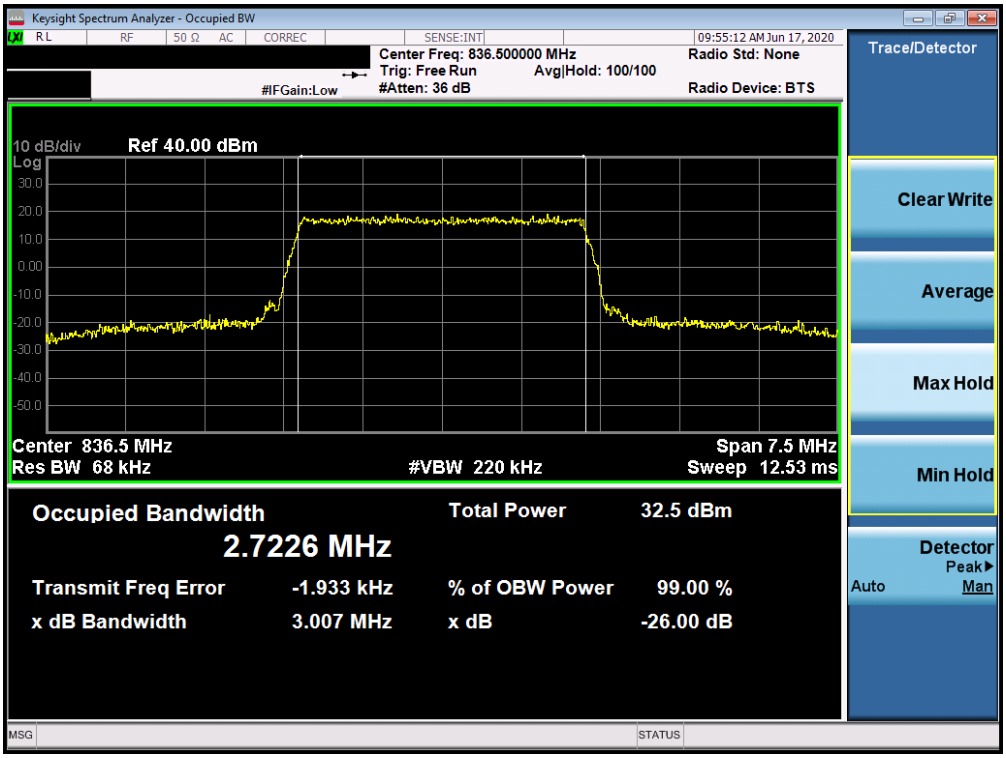
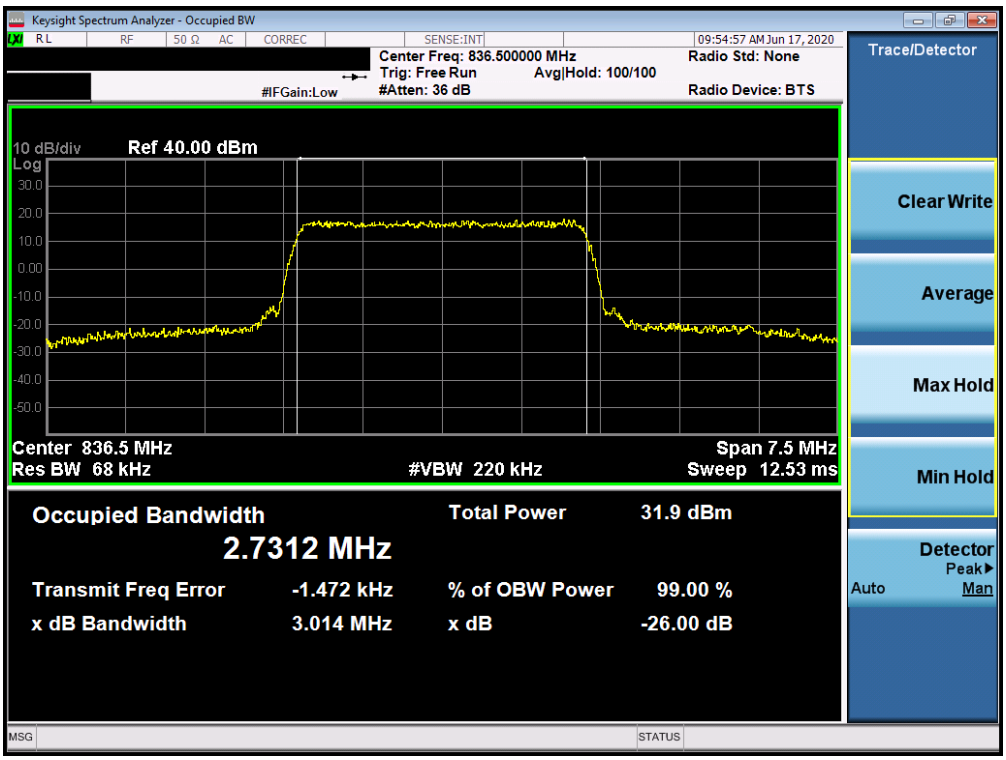


Plot 7-23. Occupied Bandwidth Plot (Band 26/5 - 3.0MHz 16-QAM - Full RB Configuration)



Plot 7-24. Occupied Bandwidth Plot (Band 26/5 - 3.0MHz 64-QAM - Full RB Configuration)

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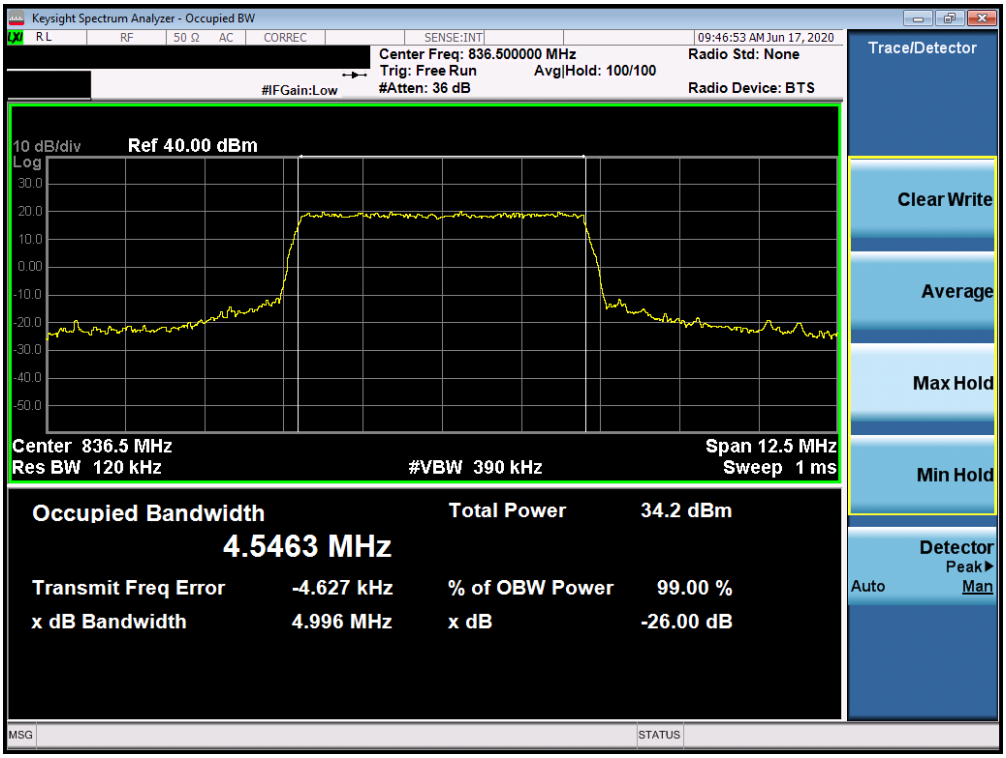
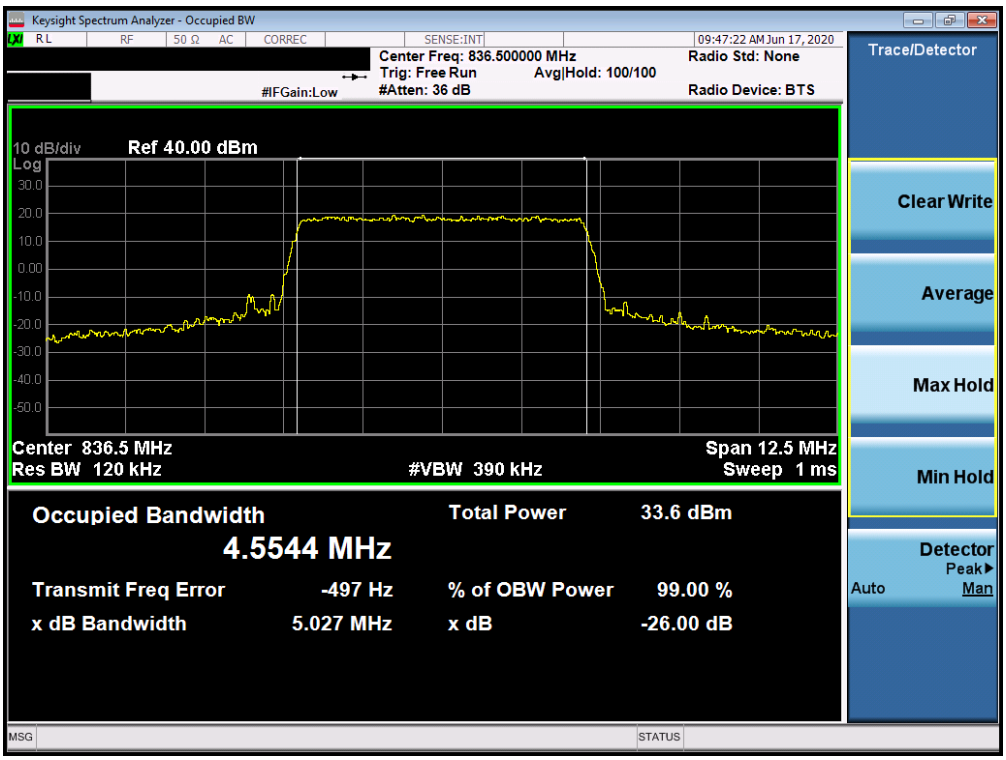


Plot 7-25. Occupied Bandwidth Plot (Band 26/5 - 5.0MHz QPSK - Full RB Configuration)



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

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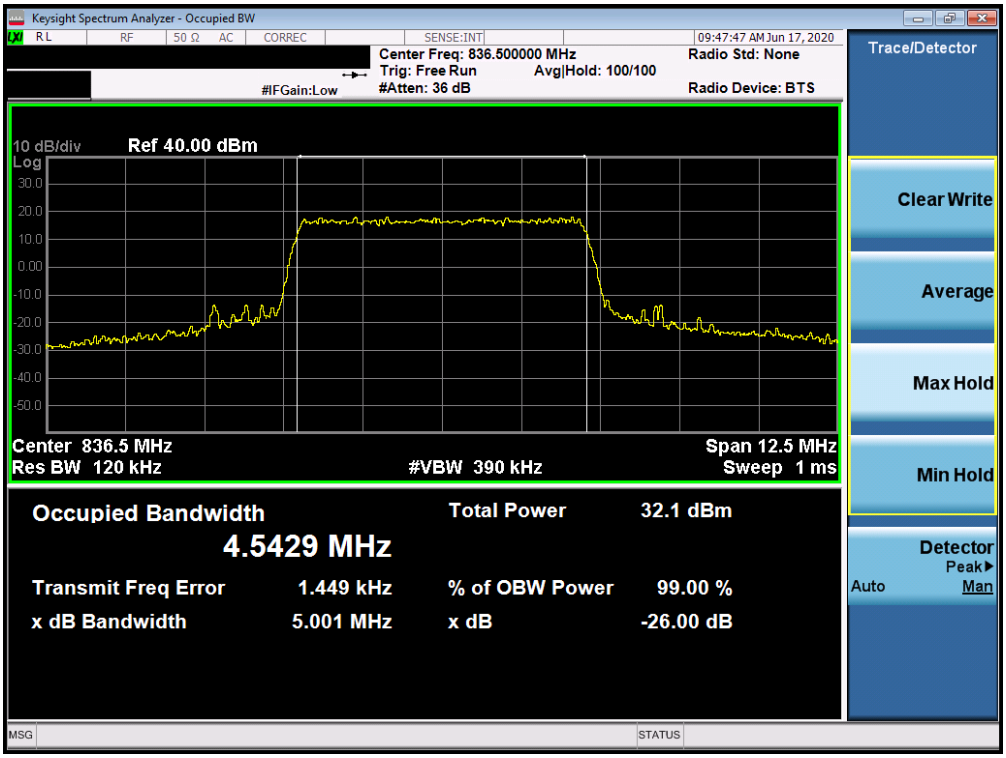
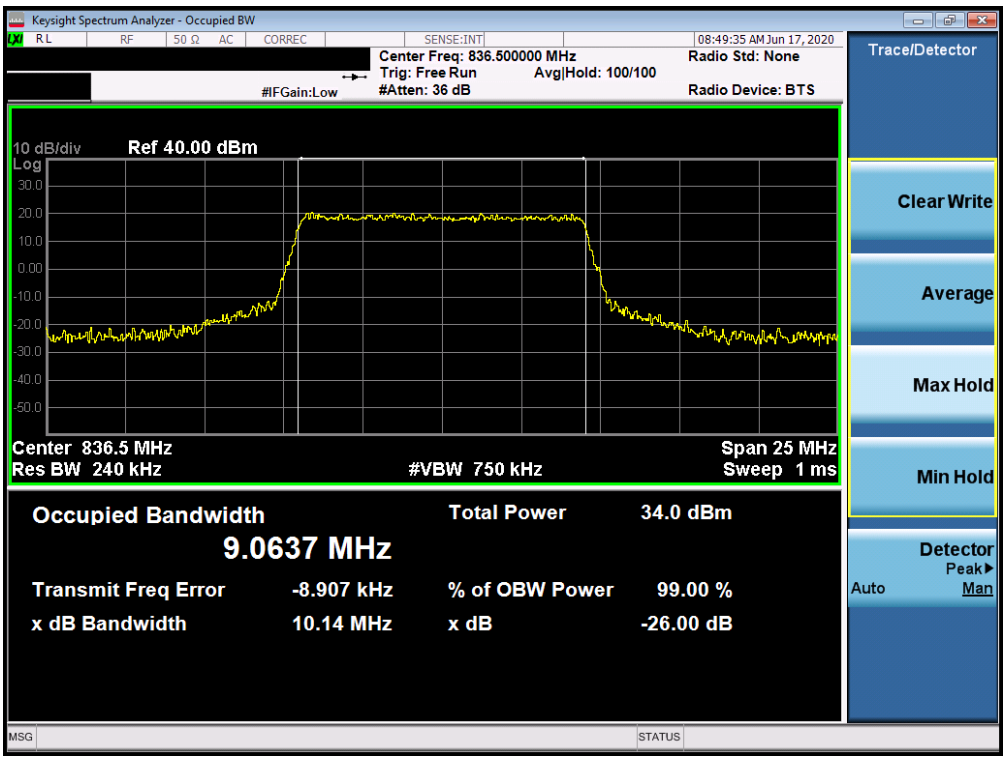


Plot 7-27. Occupied Bandwidth Plot (Band 26/5 - 5.0MHz 64-QAM - Full RB Configuration)



Plot 7-28. Occupied Bandwidth Plot (Band 26/5 - 10.0MHz QPSK - Full RB Configuration)

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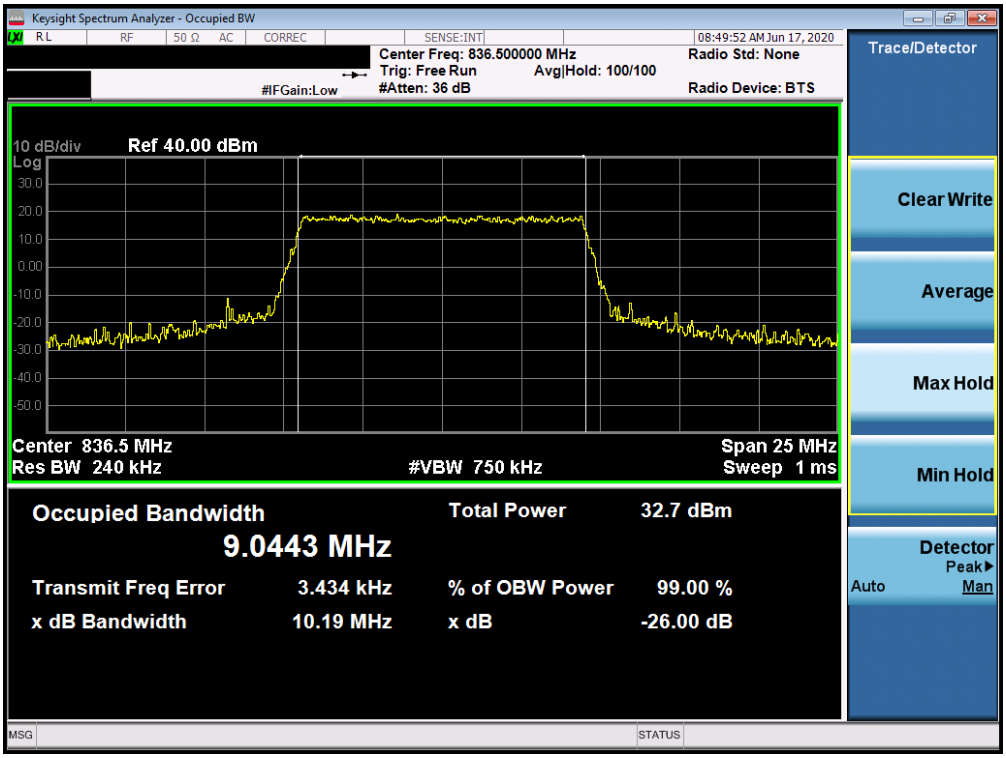
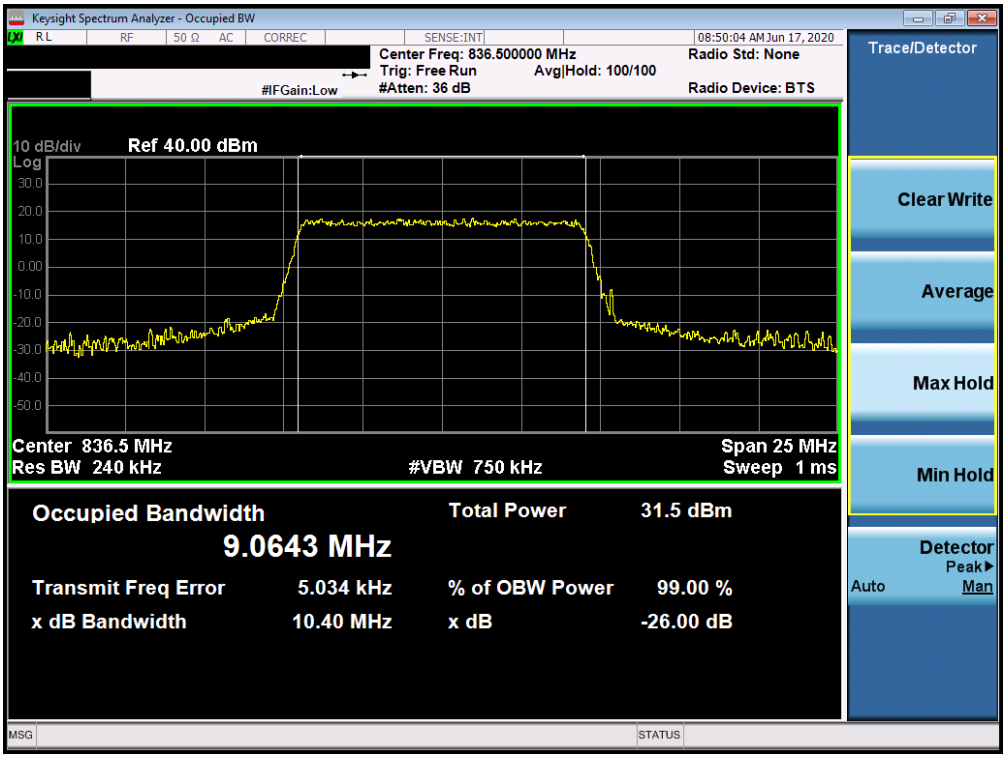


Plot 7-29. Occupied Bandwidth Plot (Band 26/5 - 10.0MHz 16-QAM - Full RB Configuration)



Plot 7-30. Occupied Bandwidth Plot (Band 26/5 - 10.0MHz 64-QAM - Full RB Configuration)

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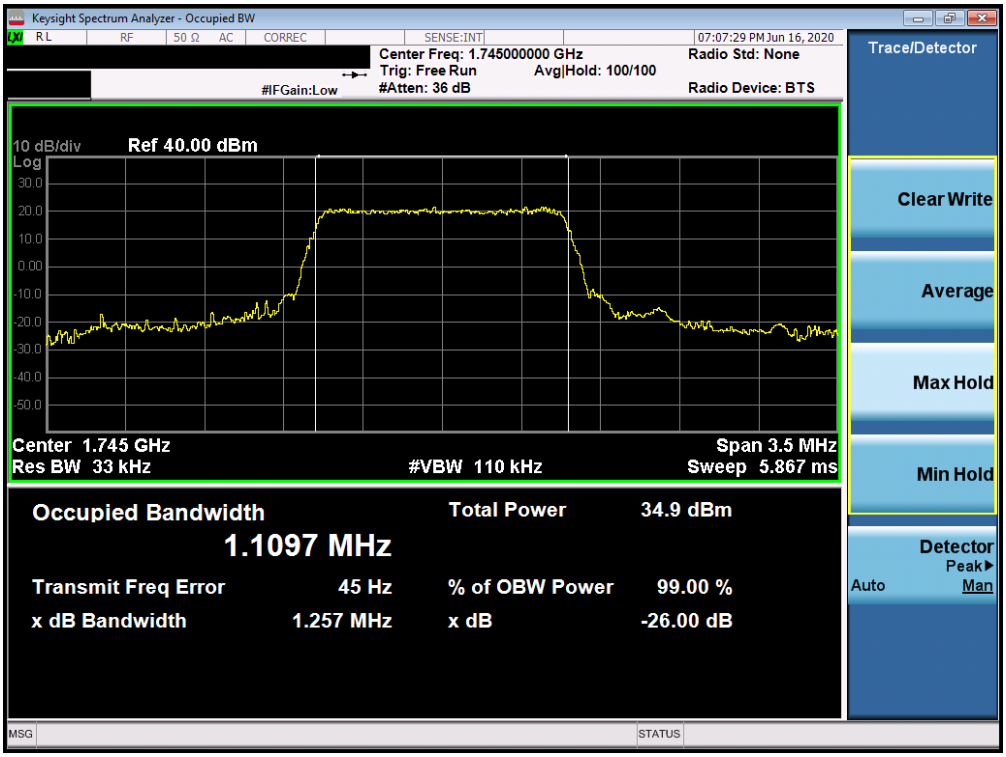
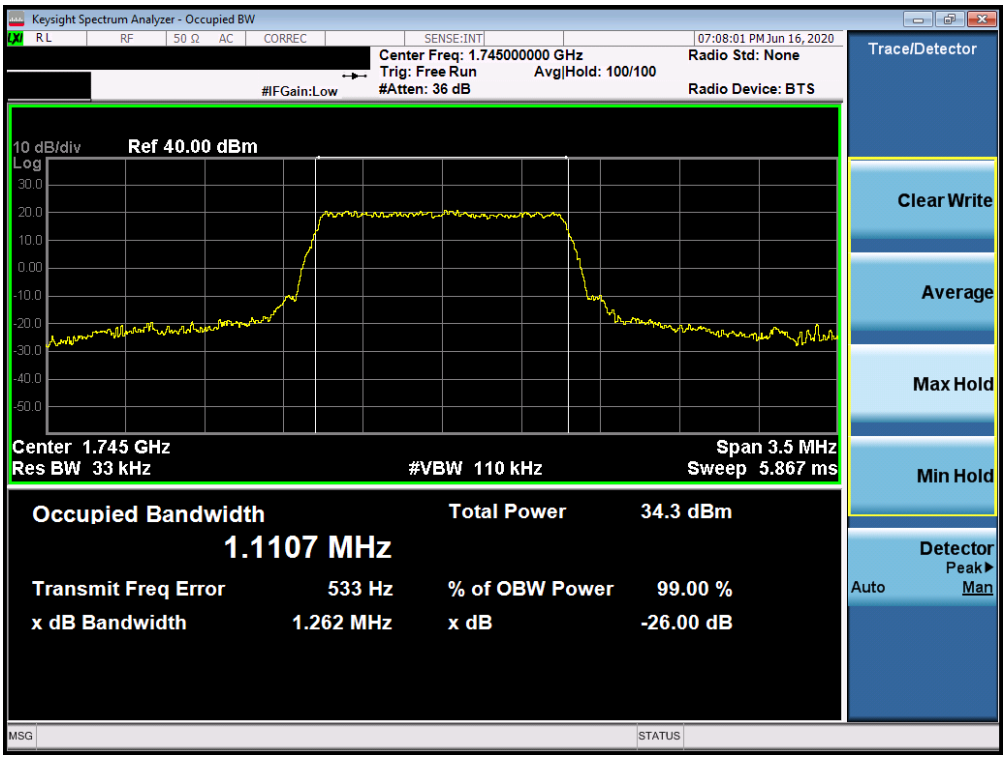
Band 66/4



Plot 7-31. Occupied Bandwidth Plot (Band 66/4 - 1.4MHz QPSK - Full RB Configuration)



Plot 7-32. Occupied Bandwidth Plot (Band 66/4 - 1.4MHz 16-QAM - Full RB Configuration)

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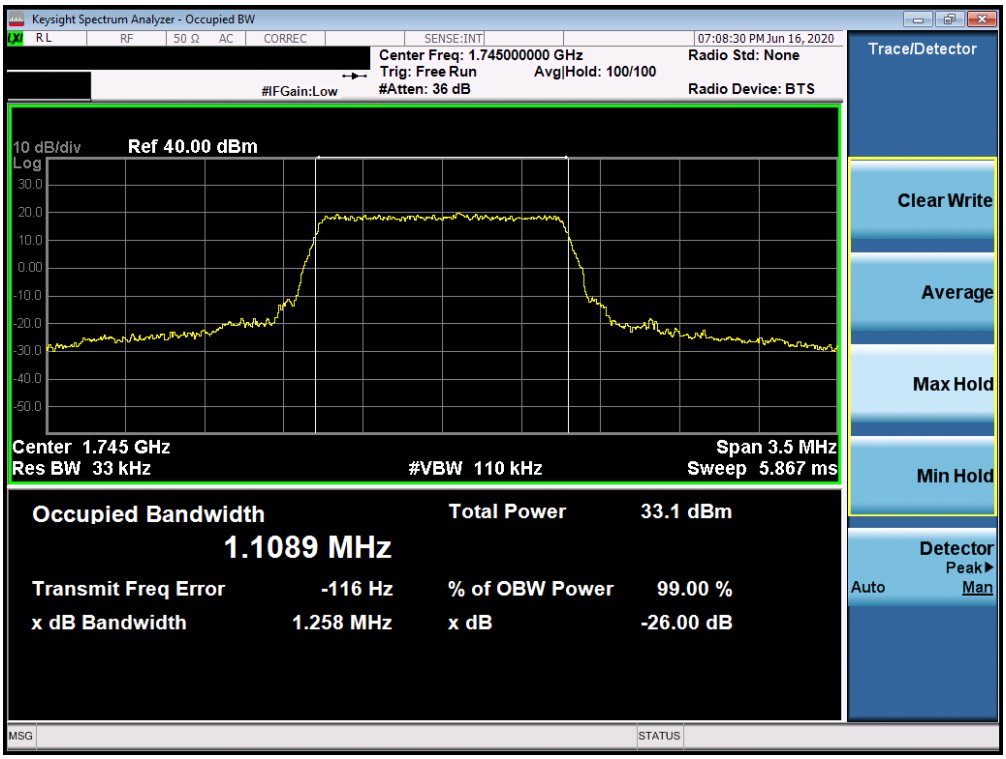
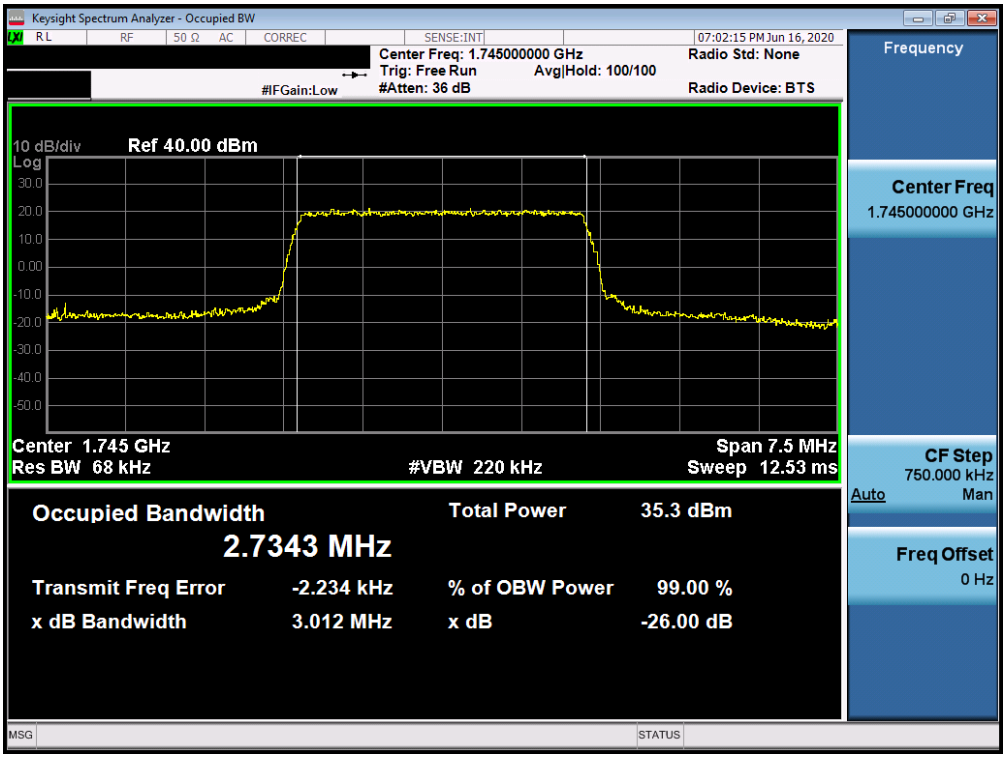


Plot 7-33. Occupied Bandwidth Plot (Band 66/4 - 1.4MHz 64-QAM - Full RB Configuration)



Plot 7-34. Occupied Bandwidth Plot (Band 66/4 - 3.0MHz QPSK - Full RB Configuration)

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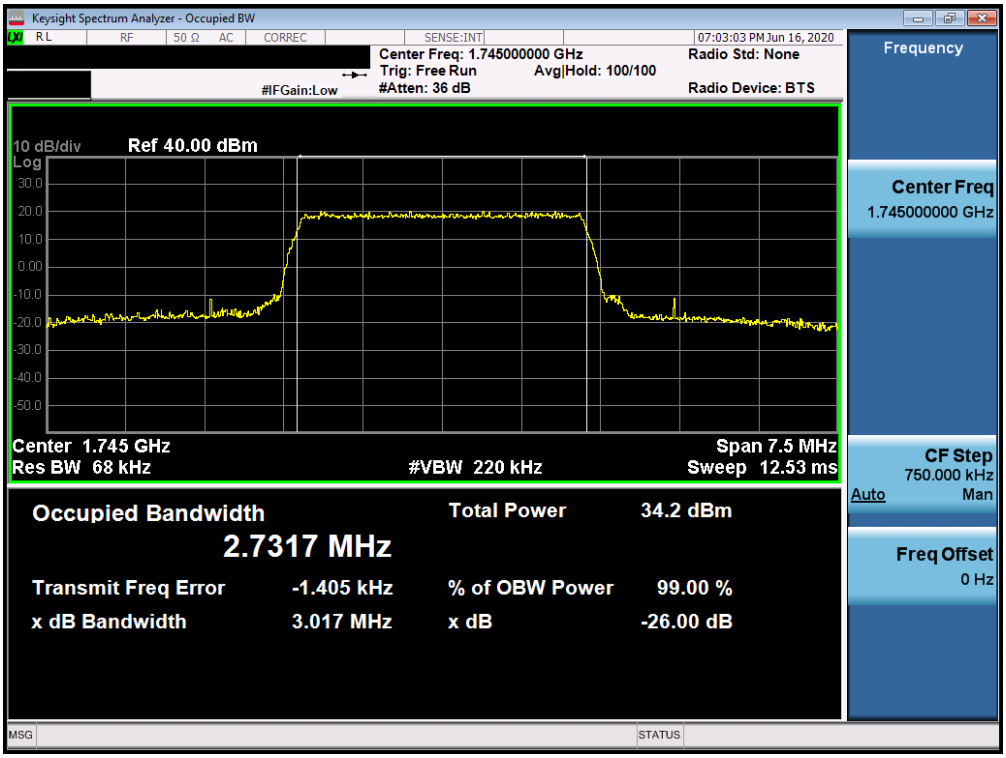
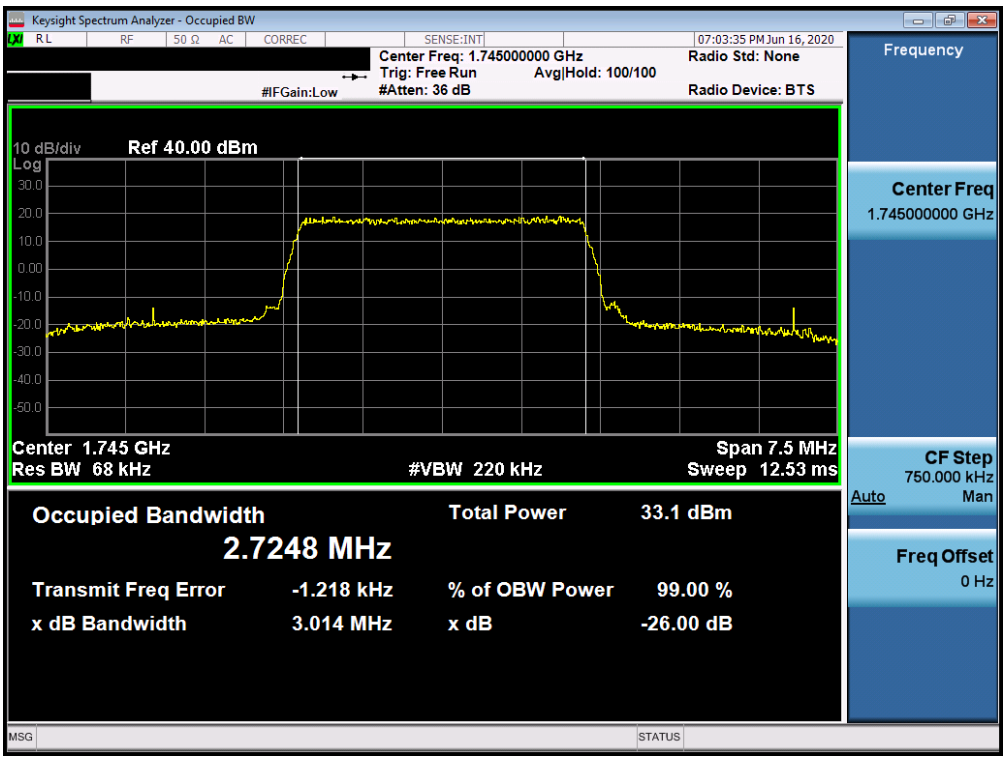


Plot 7-35. Occupied Bandwidth Plot (Band 66/4 - 3.0MHz 16-QAM - Full RB Configuration)



Plot 7-36. Occupied Bandwidth Plot (Band 66/4 - 3.0MHz 64-QAM - Full RB Configuration)

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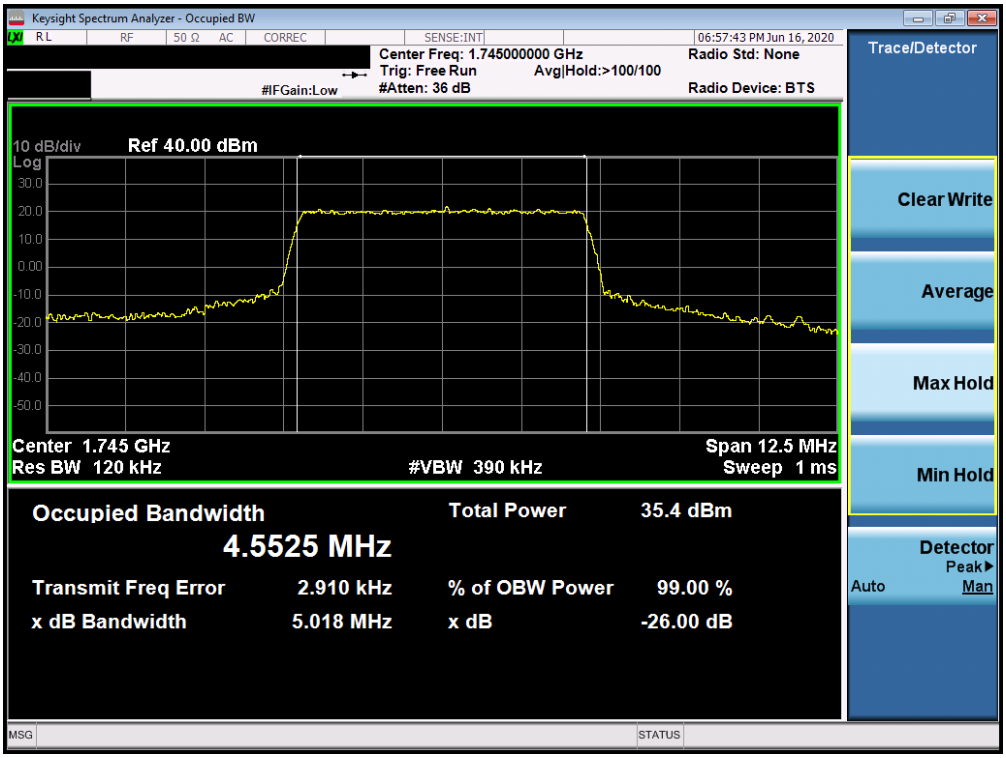
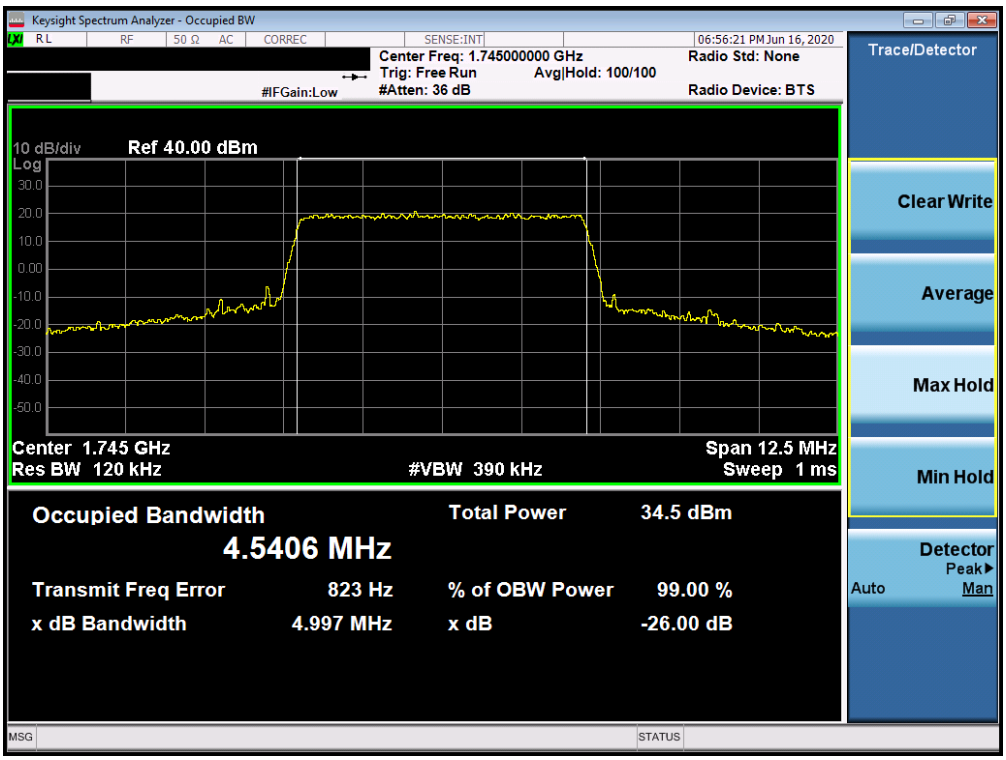


Plot 7-37. Occupied Bandwidth Plot (Band 66/4 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-38. Occupied Bandwidth Plot (Band 66/4 - 5.0MHz 16-QAM - Full RB Configuration)

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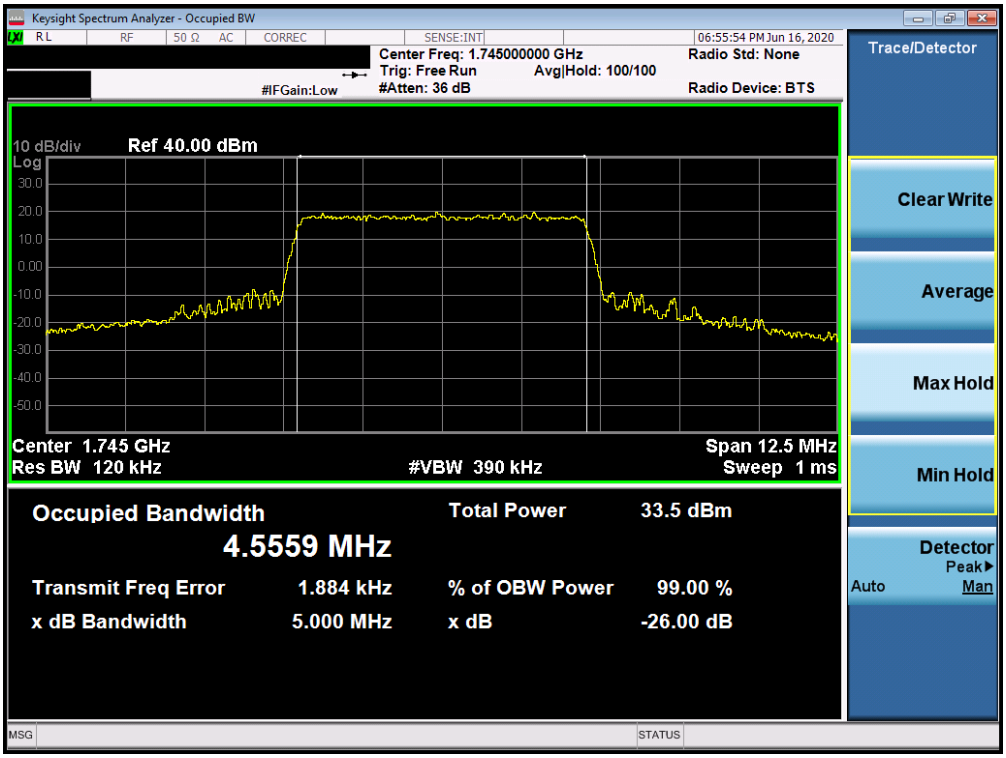
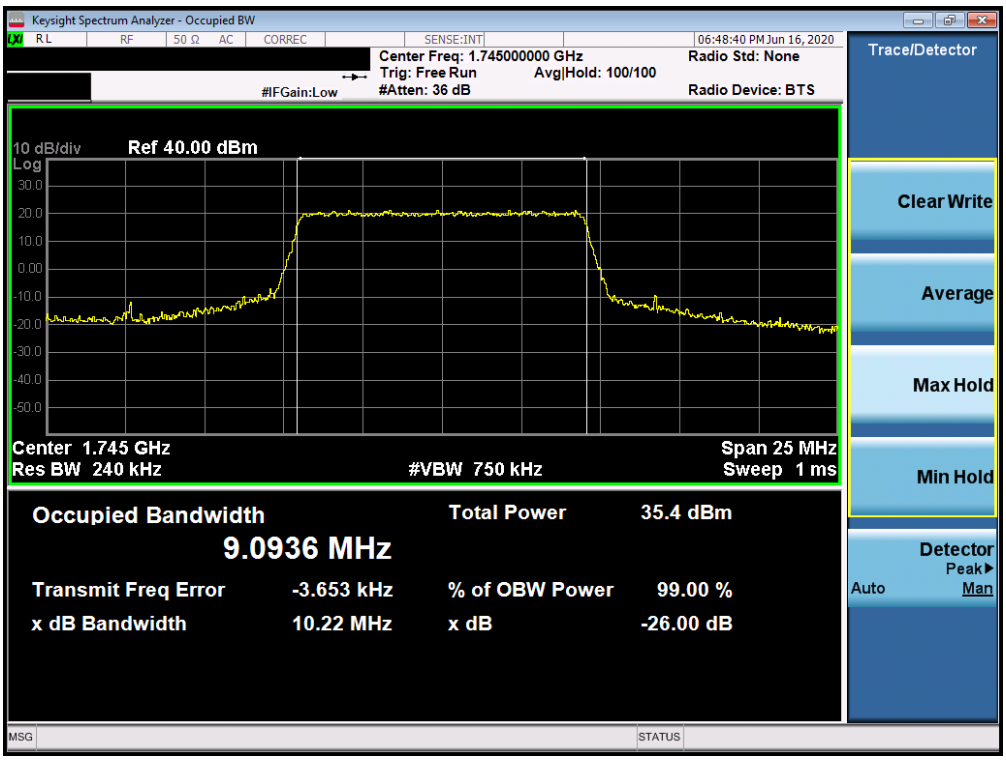


Plot 7-39. Occupied Bandwidth Plot (Band 66/4 - 5.0MHz 64-QAM - Full RB Configuration)



Plot 7-40. Occupied Bandwidth Plot (Band 66/4 - 10.0MHz QPSK - Full RB Configuration)

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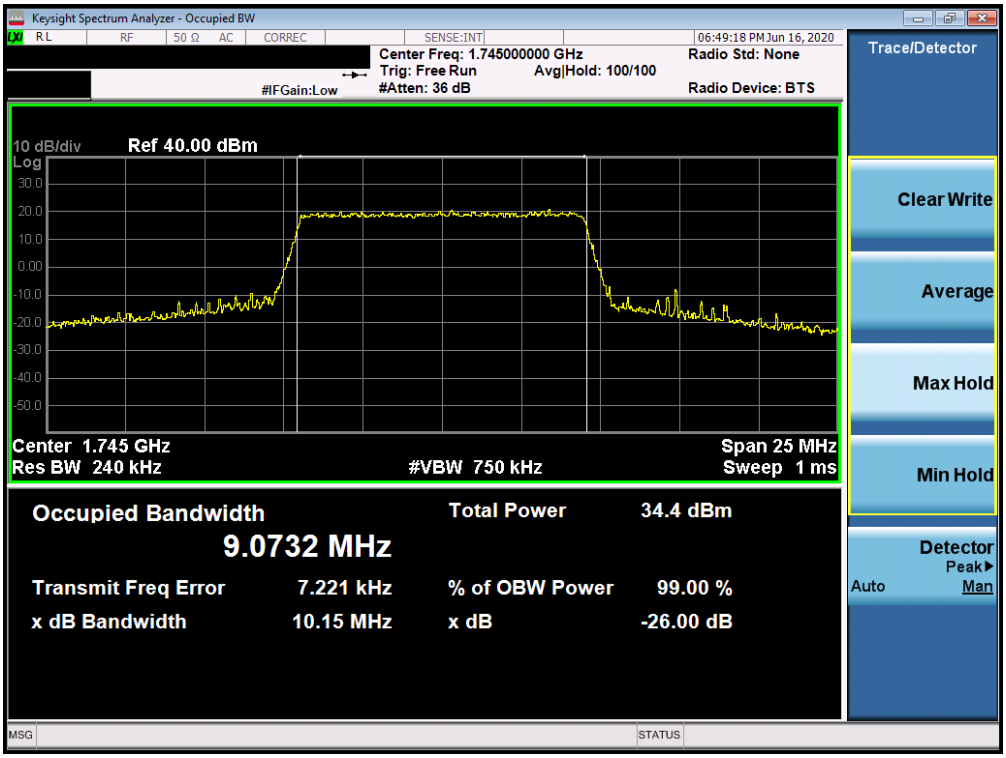
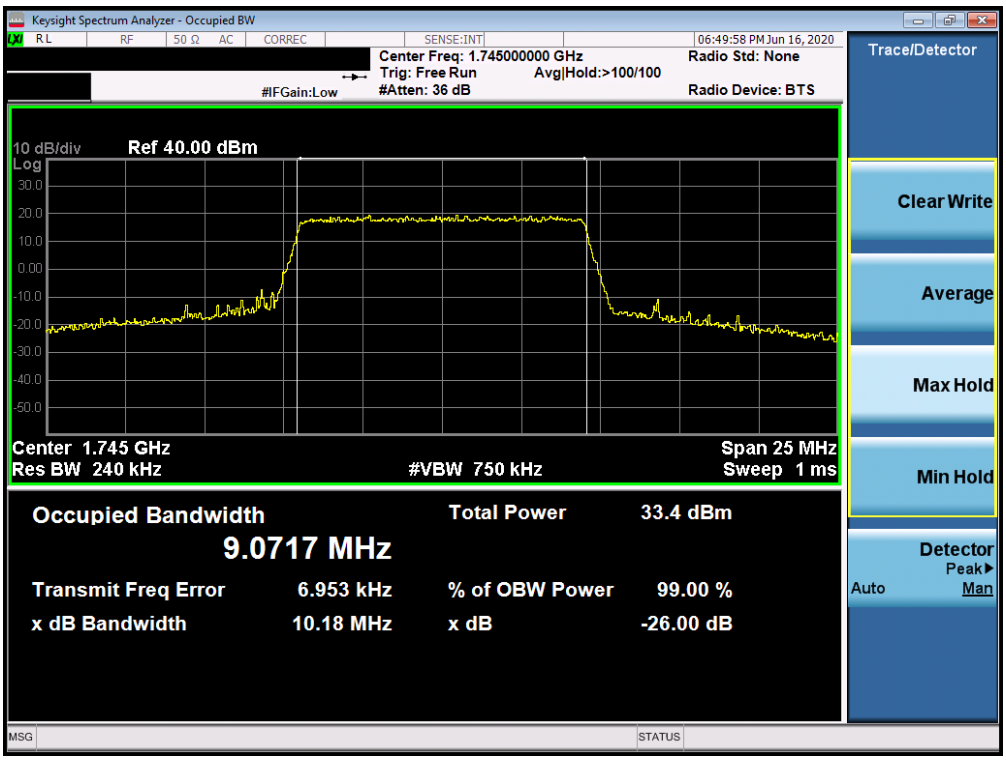


Plot 7-41. Occupied Bandwidth Plot (Band 66/4 - 10.0MHz 16-QAM - Full RB Configuration)



Plot 7-42. Occupied Bandwidth Plot (Band 66/4 - 10.0MHz 64-QAM - Full RB Configuration)

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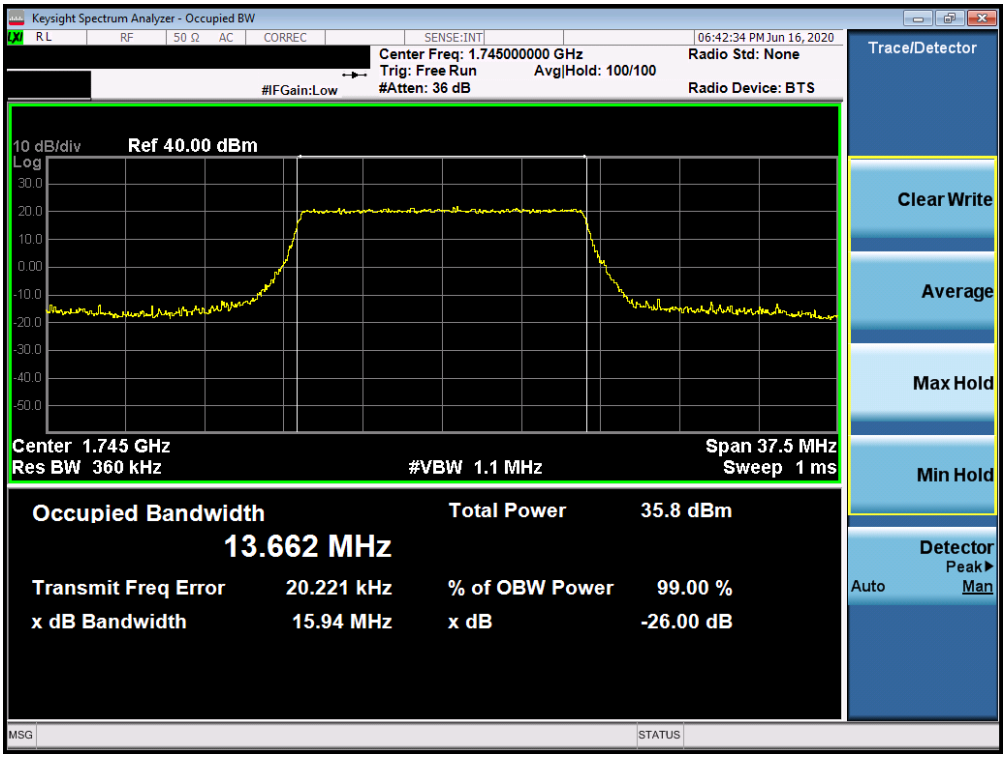
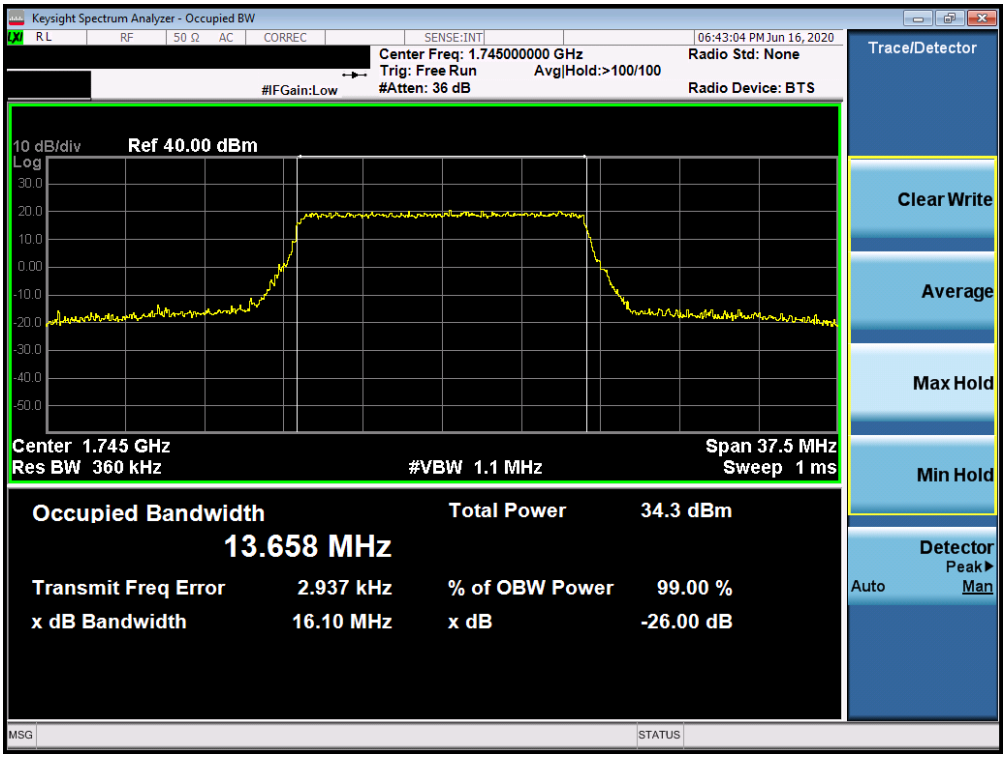


Plot 7-43. Occupied Bandwidth Plot (Band 66/4 - 15.0MHz QPSK - Full RB Configuration)



Plot 7-44. Occupied Bandwidth Plot (Band 66/4 - 15.0MHz 16-QAM - Full RB Configuration)

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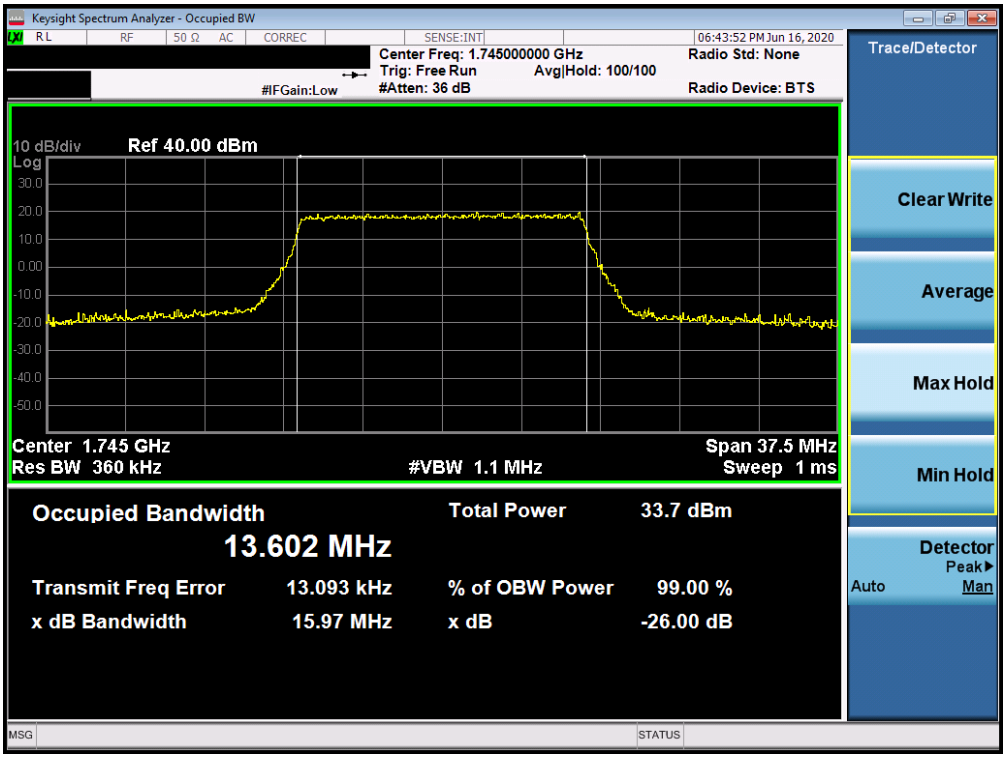
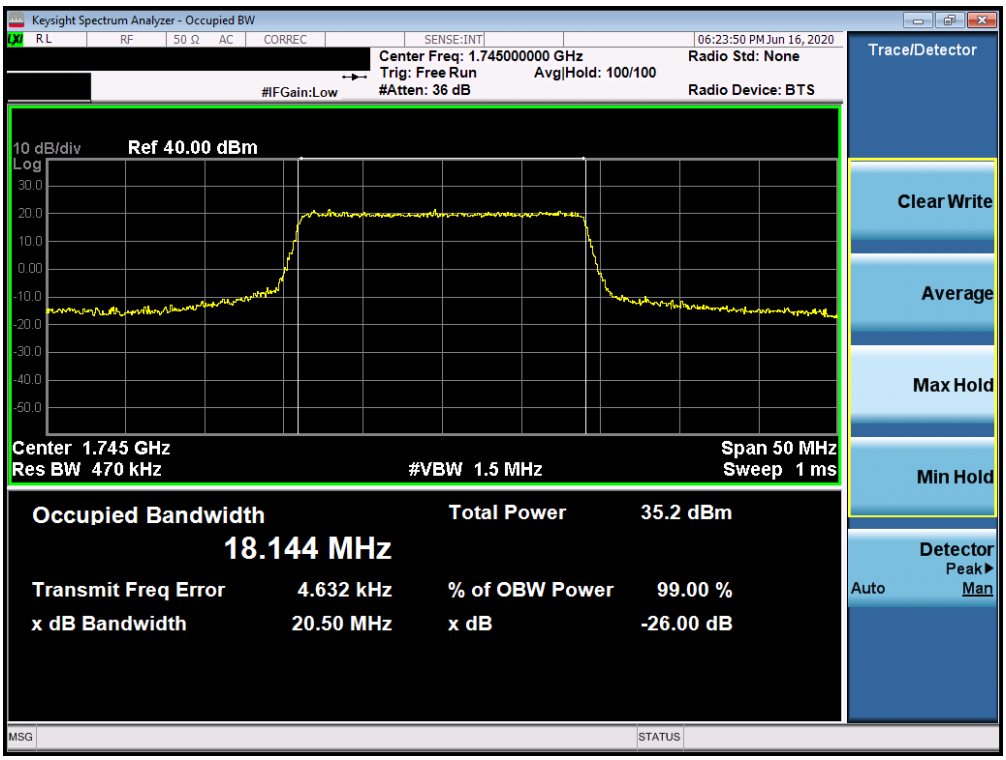


Plot 7-45. Occupied Bandwidth Plot (Band 66/4 - 15.0MHz 64-QAM - Full RB Configuration)



Plot 7-46. Occupied Bandwidth Plot (Band 66/4 - 20.0MHz QPSK - Full RB Configuration)

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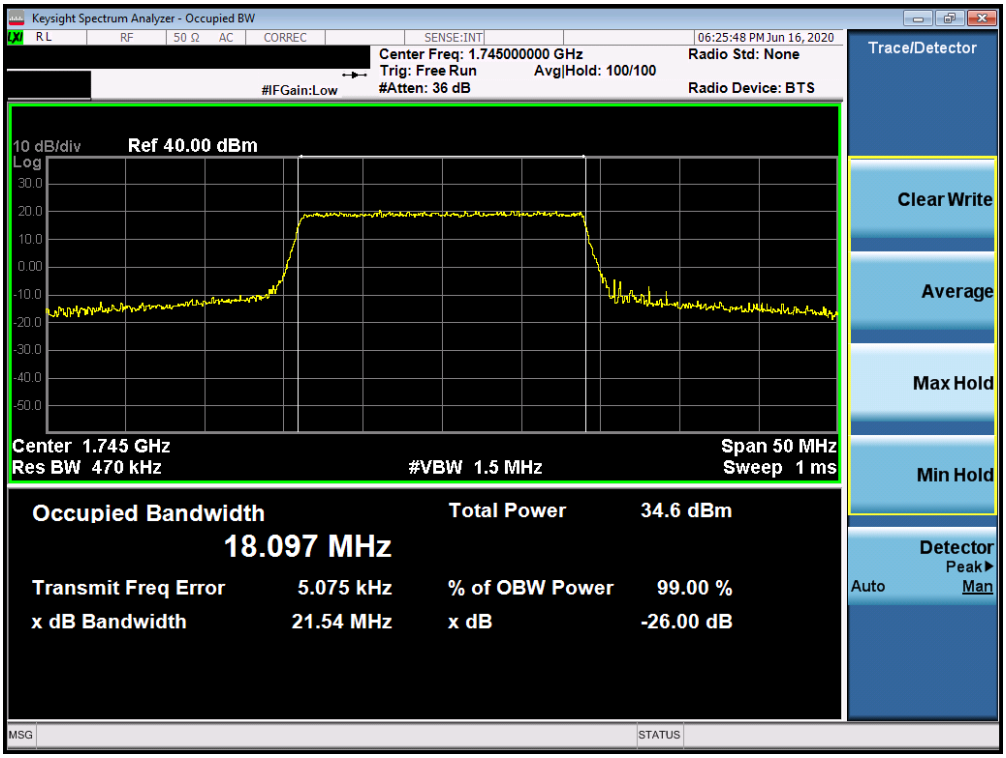
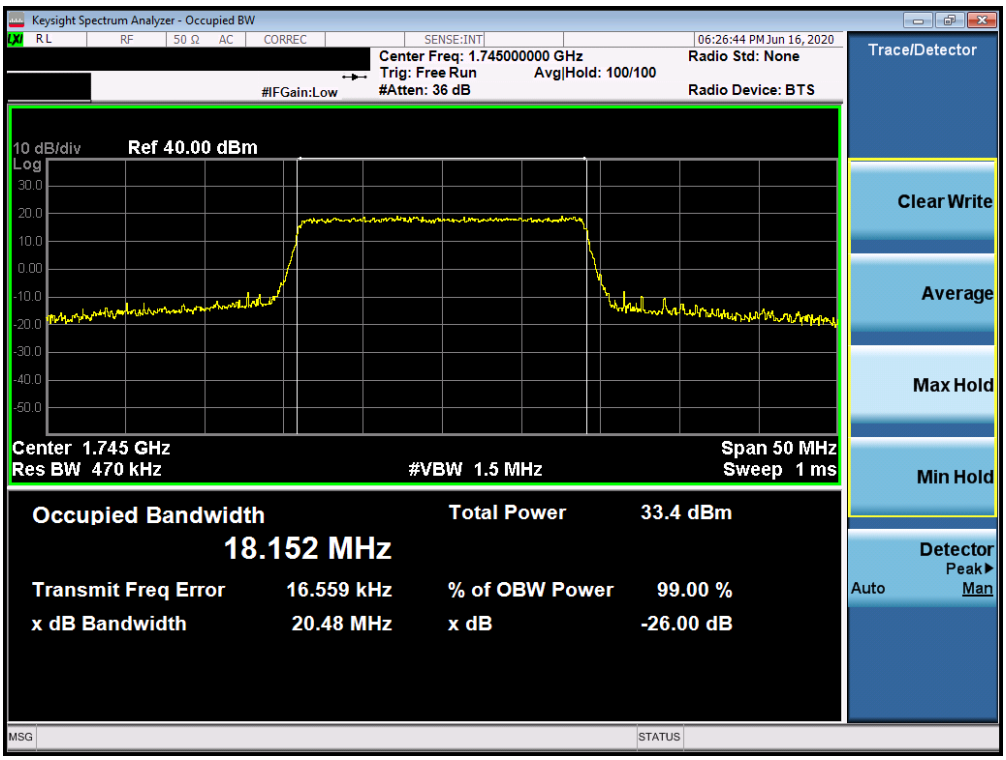


Plot 7-47. Occupied Bandwidth Plot (Band 66/4 - 20.0MHz 16-QAM - Full RB Configuration)



Plot 7-48. Occupied Bandwidth Plot (Band 66/4 - 20.0MHz 64-QAM - Full RB Configuration)

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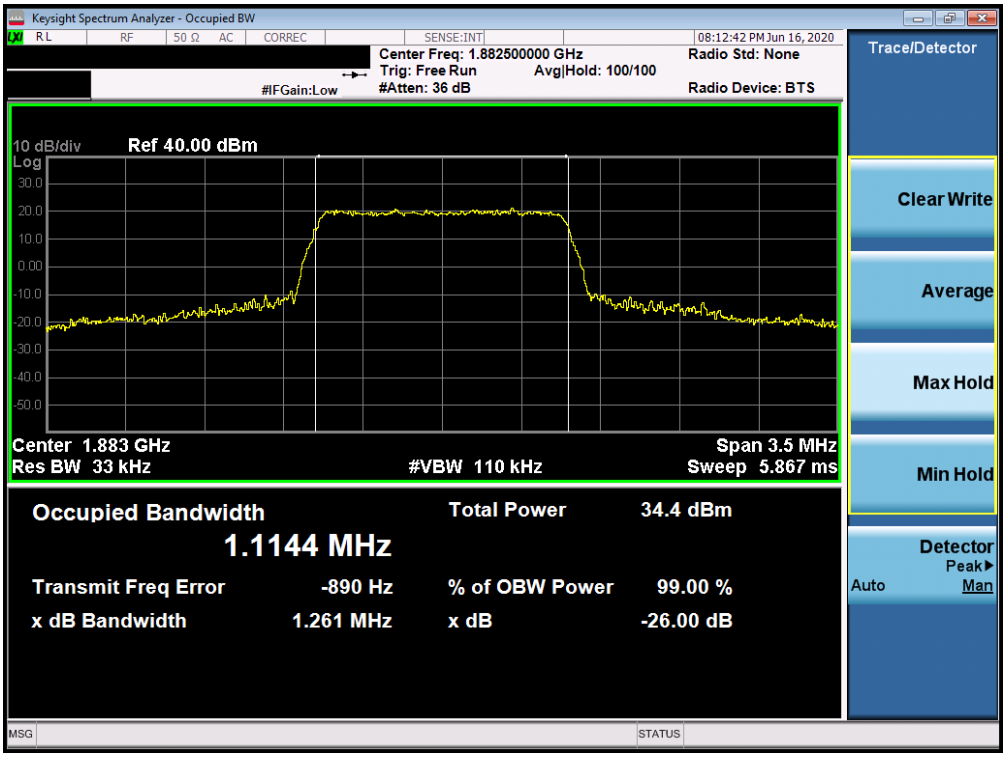
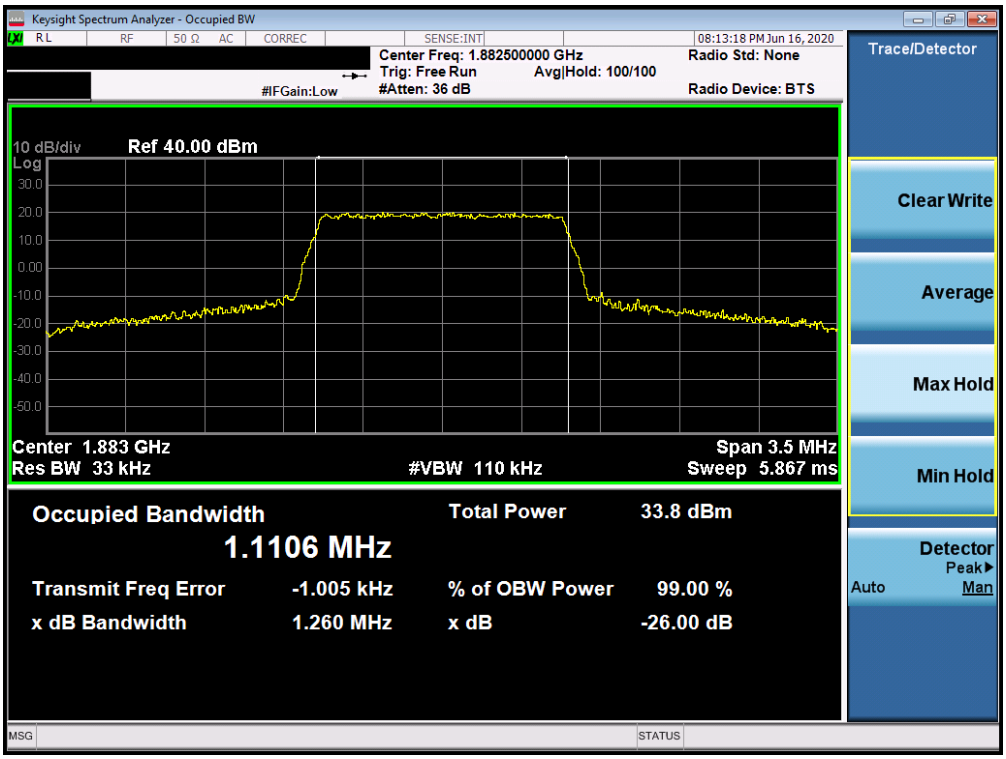
Band 25/2



Plot 7-49. Occupied Bandwidth Plot (Band 25/2 - 1.4MHz QPSK - Full RB Configuration)



Plot 7-50. Occupied Bandwidth Plot (Band 25/2 - 1.4MHz 16-QAM - Full RB Configuration)

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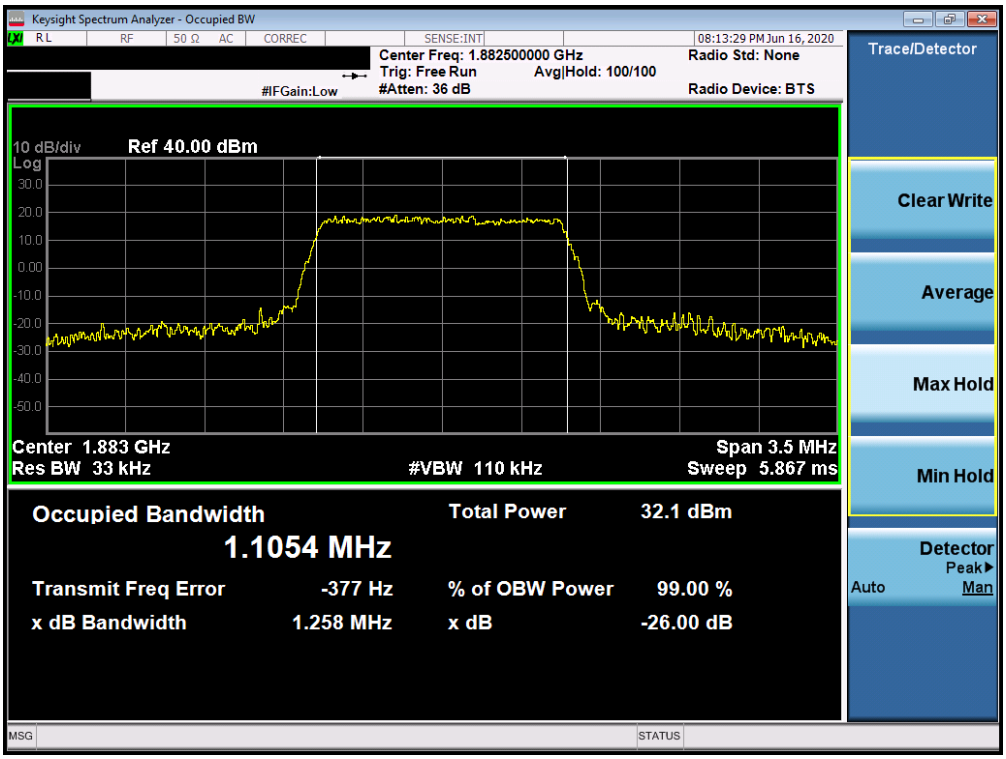

Plot 7-51. Occupied Bandwidth Plot (Band 25/2 - 1.4MHz 64-QAM - Full RB Configuration)

Plot 7-52. Occupied Bandwidth Plot (Band 25/2 - 3.0MHz QPSK - Full RB Configuration)

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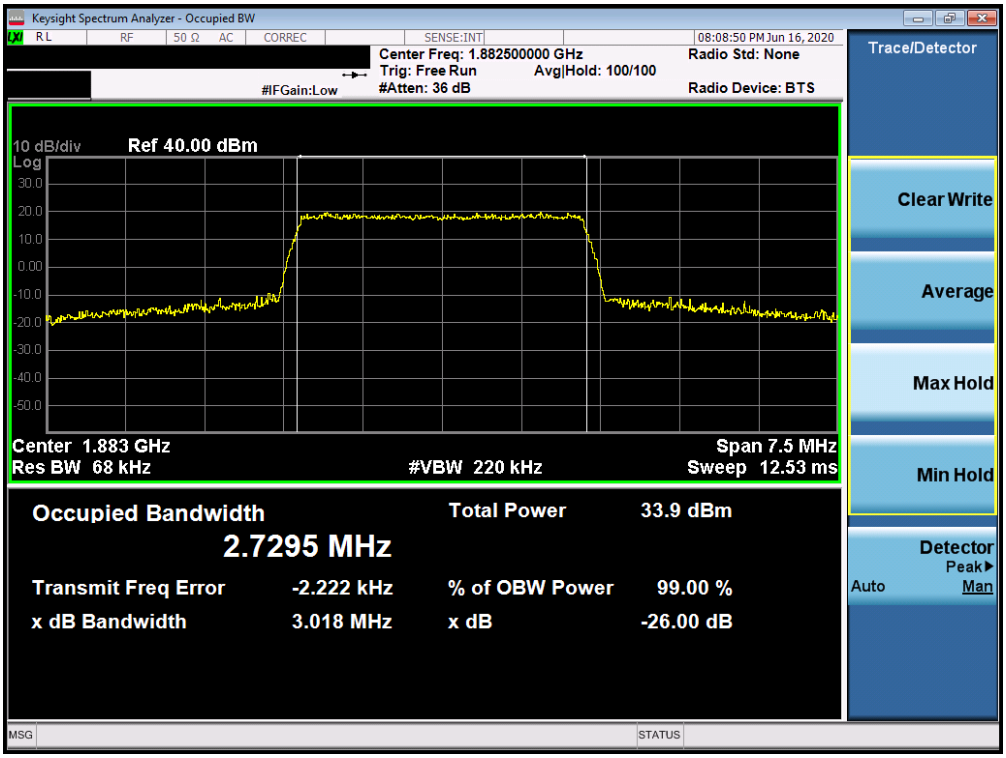
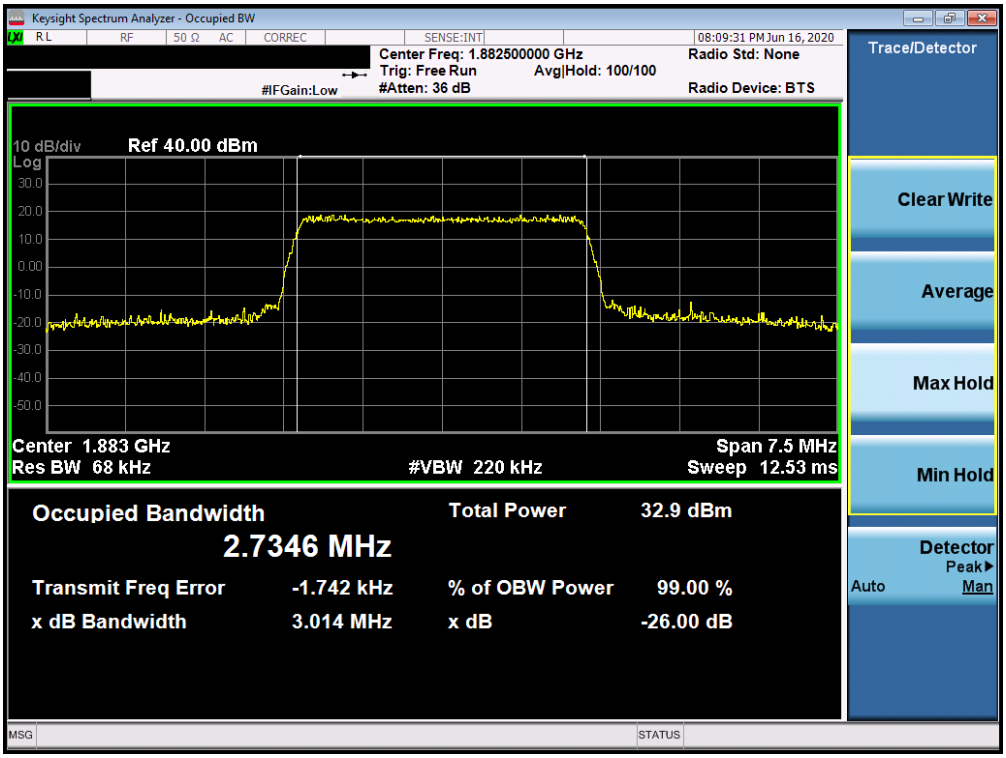


Plot 7-53. Occupied Bandwidth Plot (Band 25/2 - 3.0MHz 16-QAM - Full RB Configuration)



Plot 7-54. Occupied Bandwidth Plot (Band 25/2 - 3.0MHz 64-QAM - Full RB Configuration)

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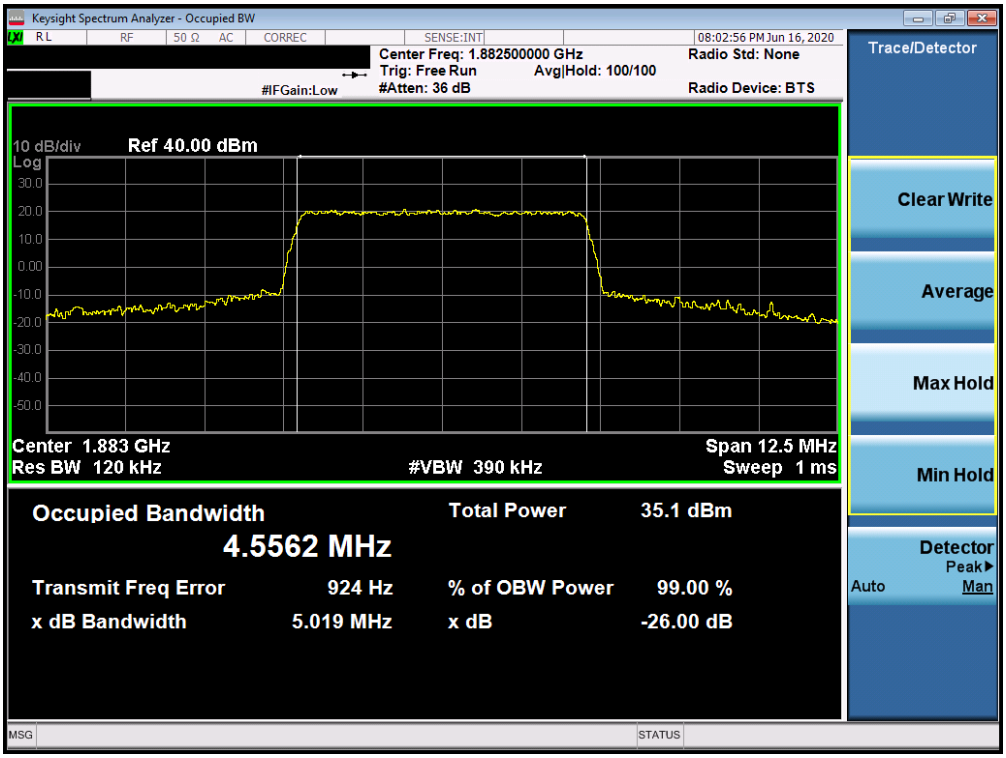
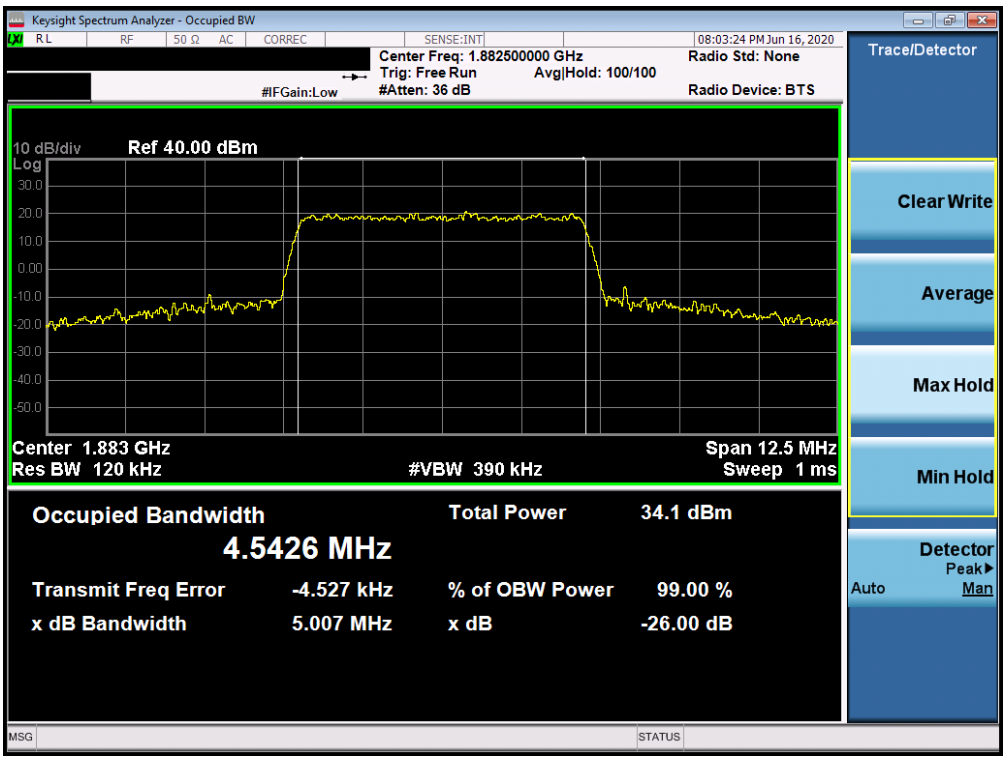


Plot 7-55. Occupied Bandwidth Plot (Band 25/2 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-56. Occupied Bandwidth Plot (Band 25/2 - 5.0MHz 16-QAM - Full RB Configuration)

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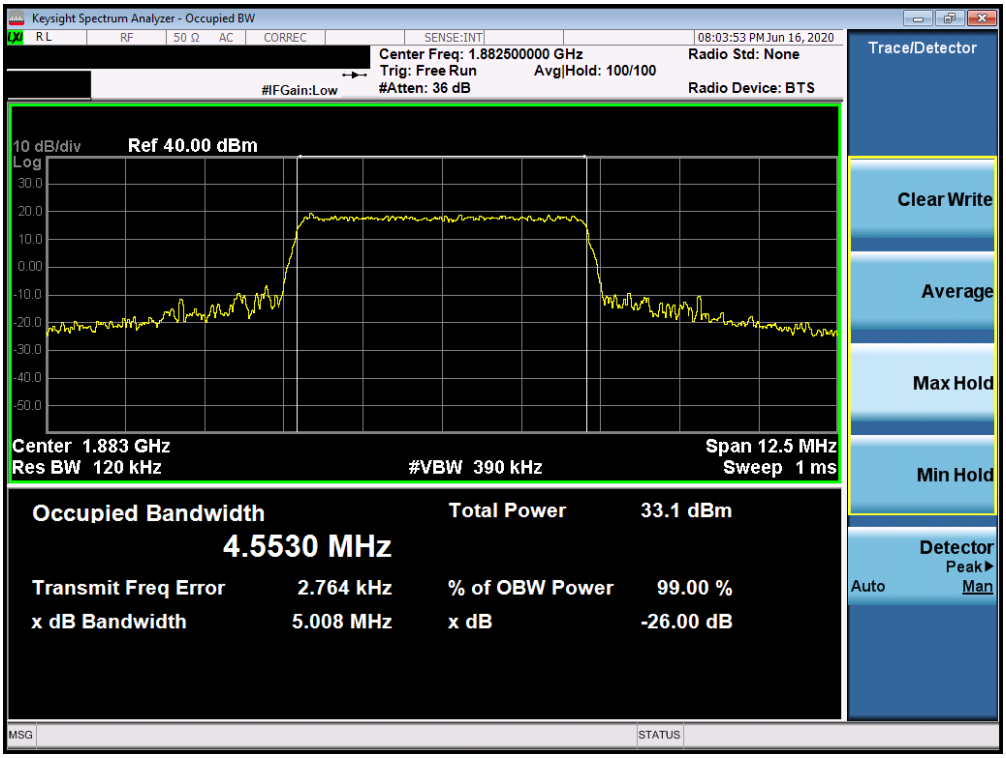
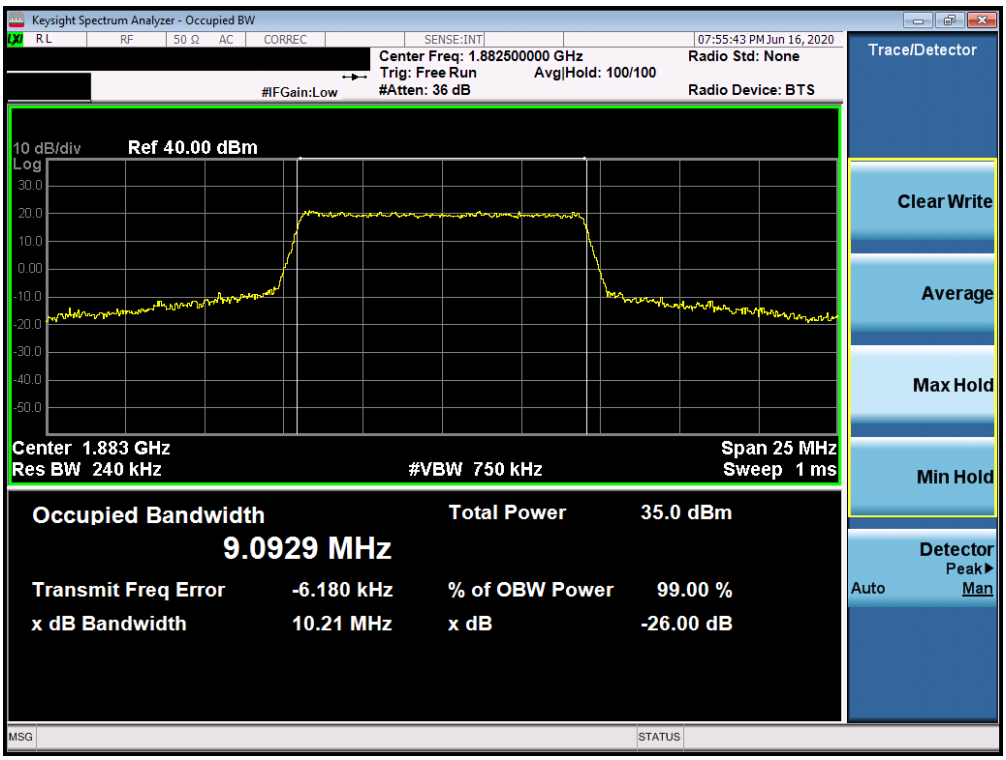


Plot 7-57. Occupied Bandwidth Plot (Band 25/2 - 5.0MHz 64-QAM - Full RB Configuration)



Plot 7-58. Occupied Bandwidth Plot (Band 25/2 - 10.0MHz QPSK - Full RB Configuration)

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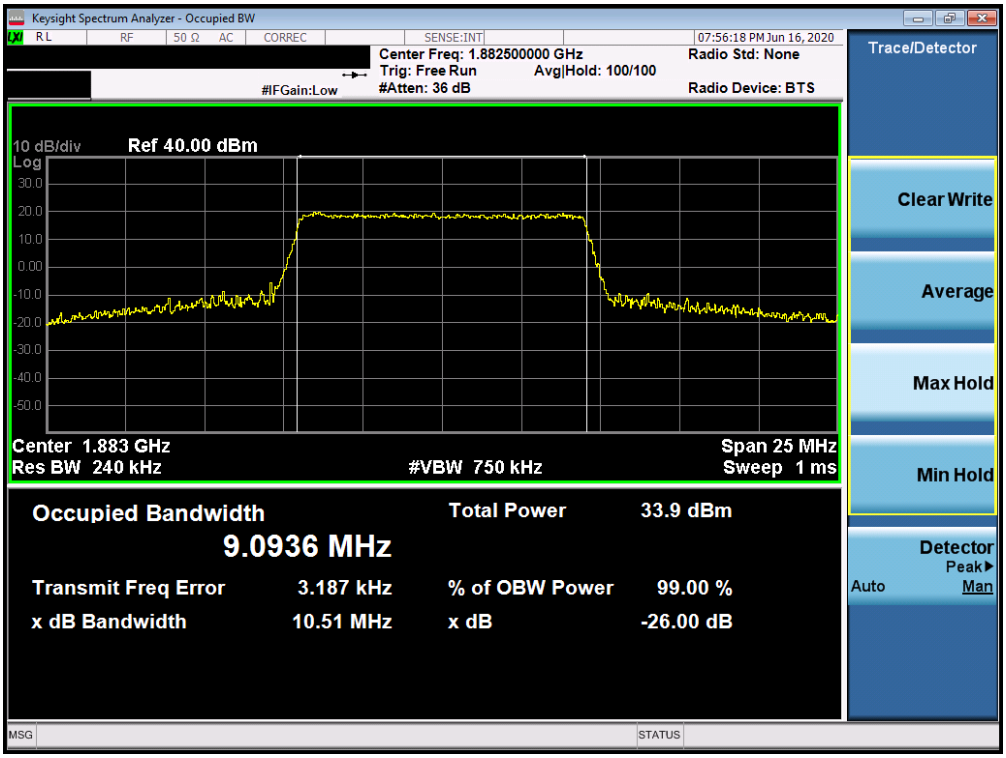
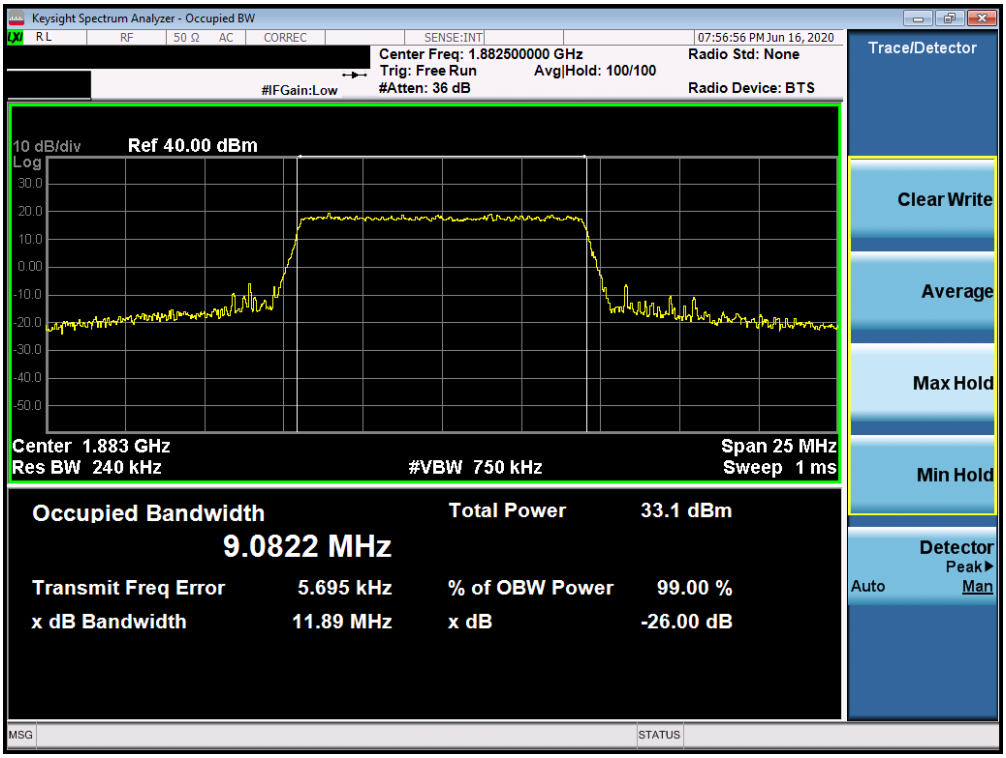


Plot 7-59. Occupied Bandwidth Plot (Band 25/2 - 10.0MHz 16-QAM - Full RB Configuration)



Plot 7-60. Occupied Bandwidth Plot (Band 25/2 - 10.0MHz 64-QAM - Full RB Configuration)

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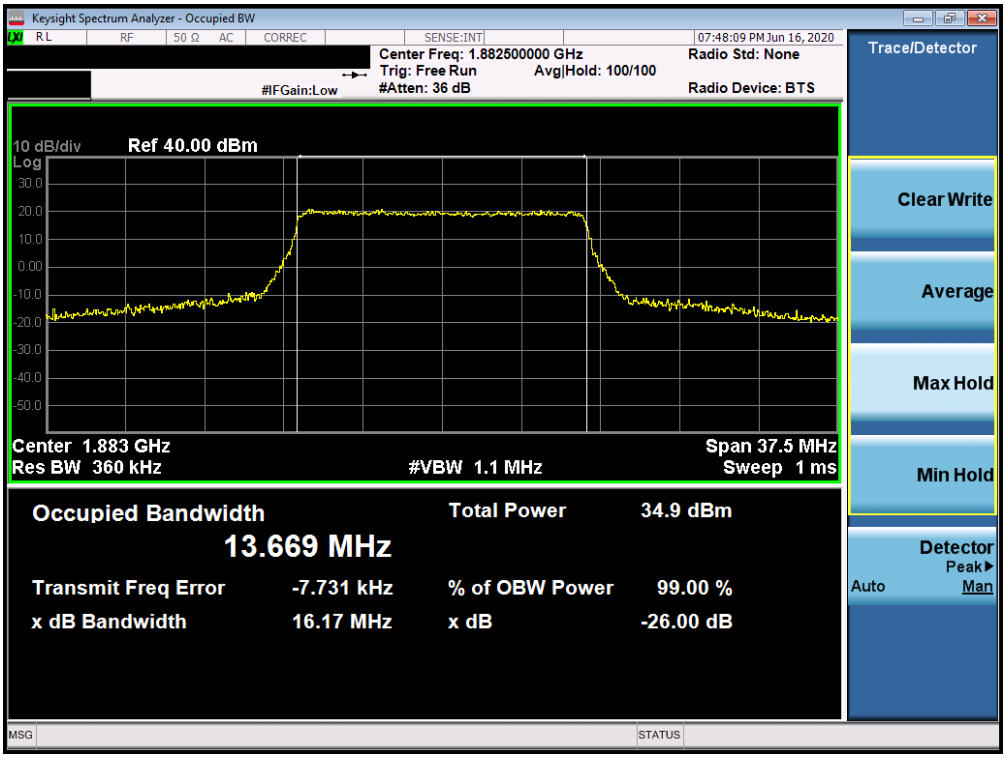
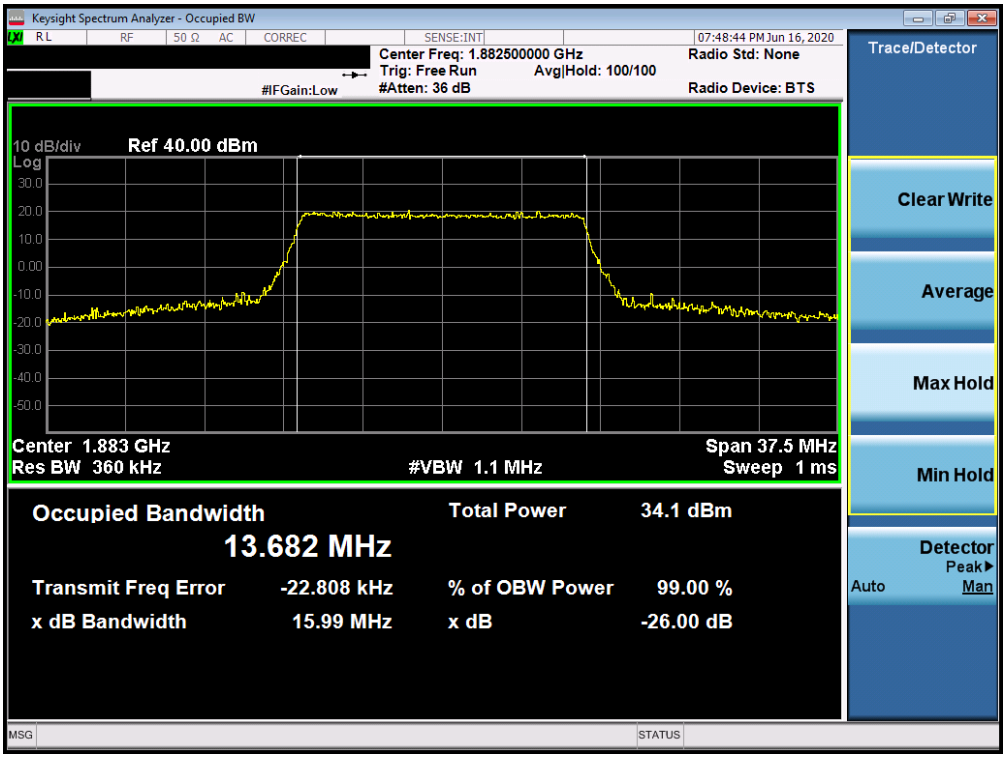


Plot 7-61. Occupied Bandwidth Plot (Band 25/2 - 15.0MHz QPSK - Full RB Configuration)



Plot 7-62. Occupied Bandwidth Plot (Band 25/2 - 15.0MHz 16-QAM - Full RB Configuration)

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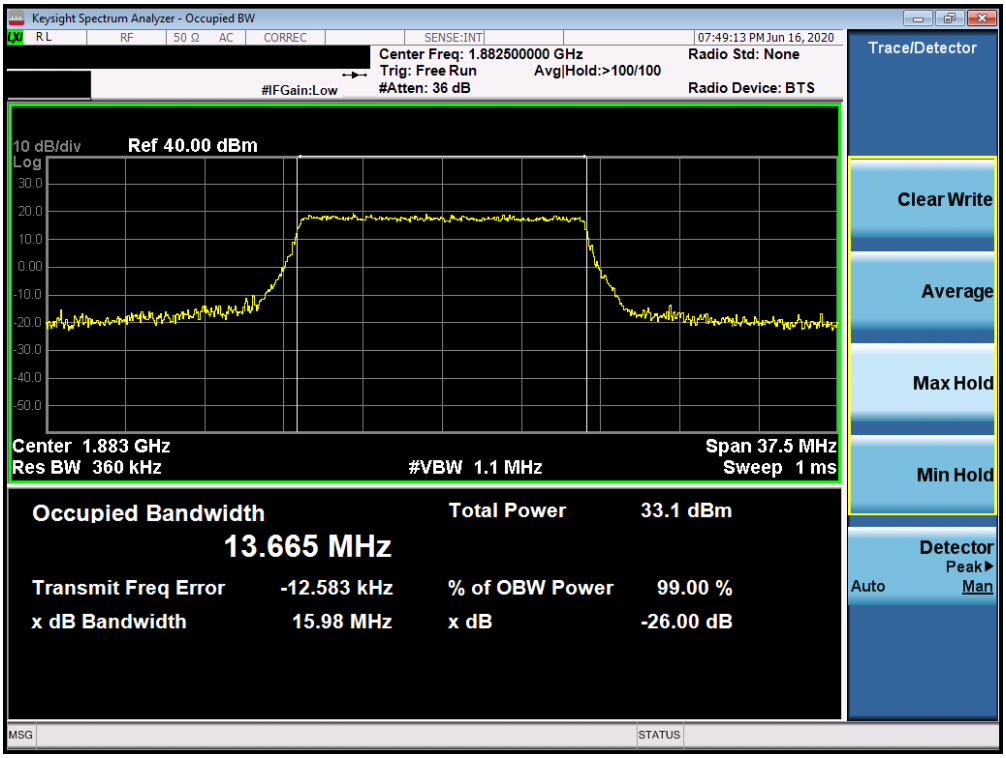
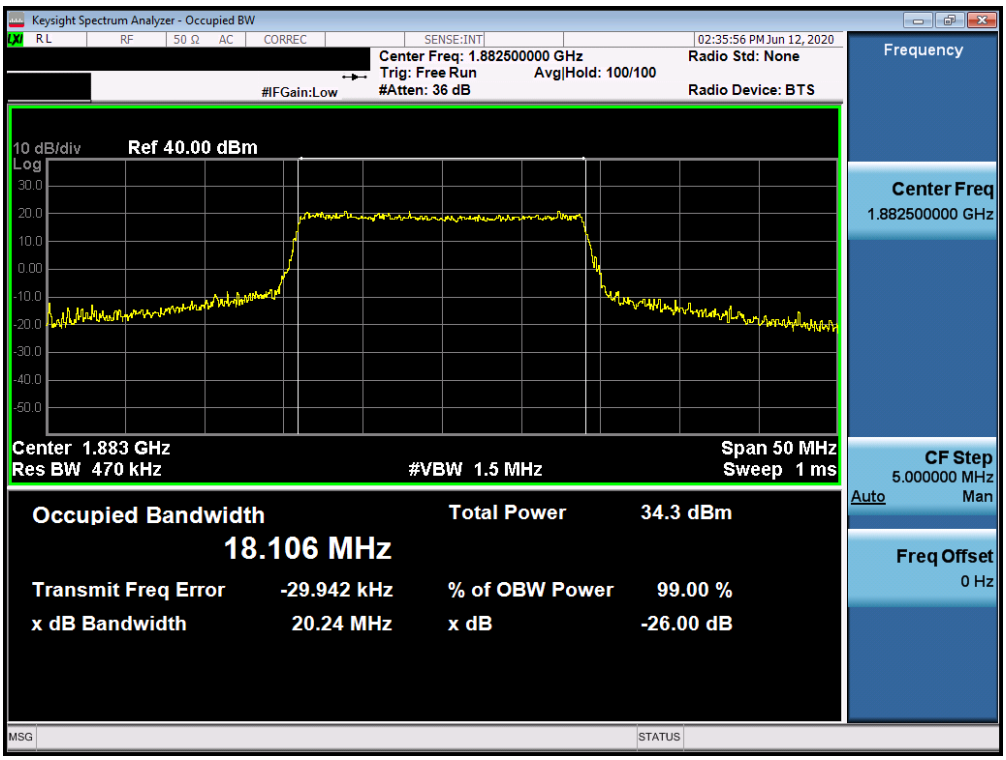


Plot 7-63. Occupied Bandwidth Plot (Band 25/2 - 15.0MHz 64-QAM - Full RB Configuration)



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

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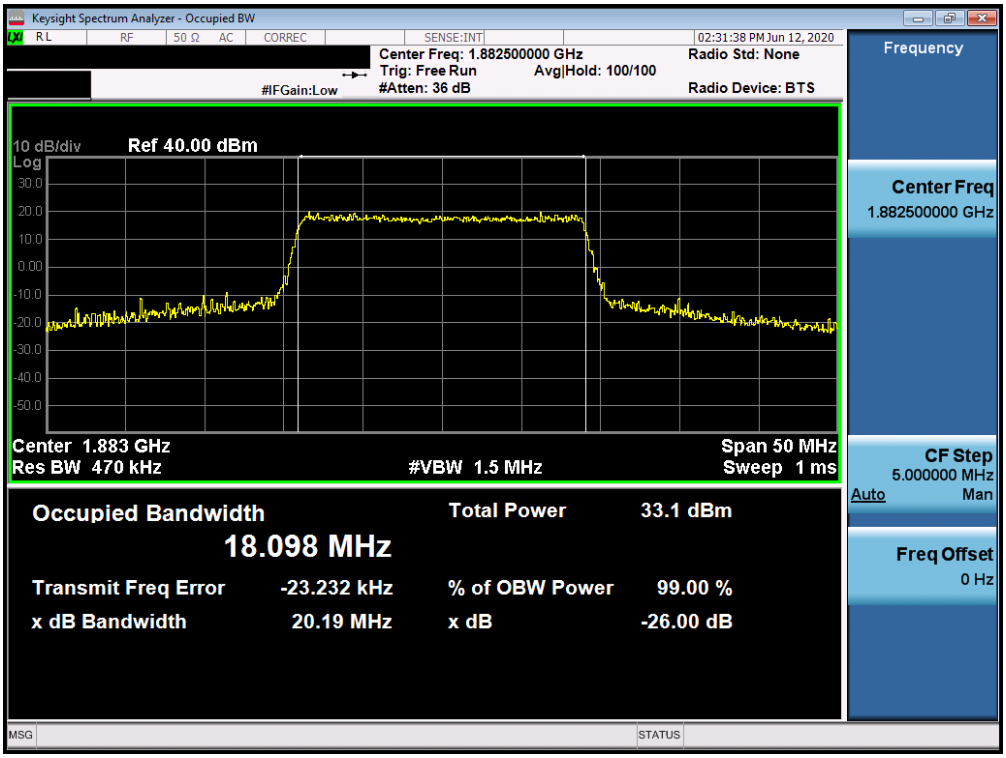
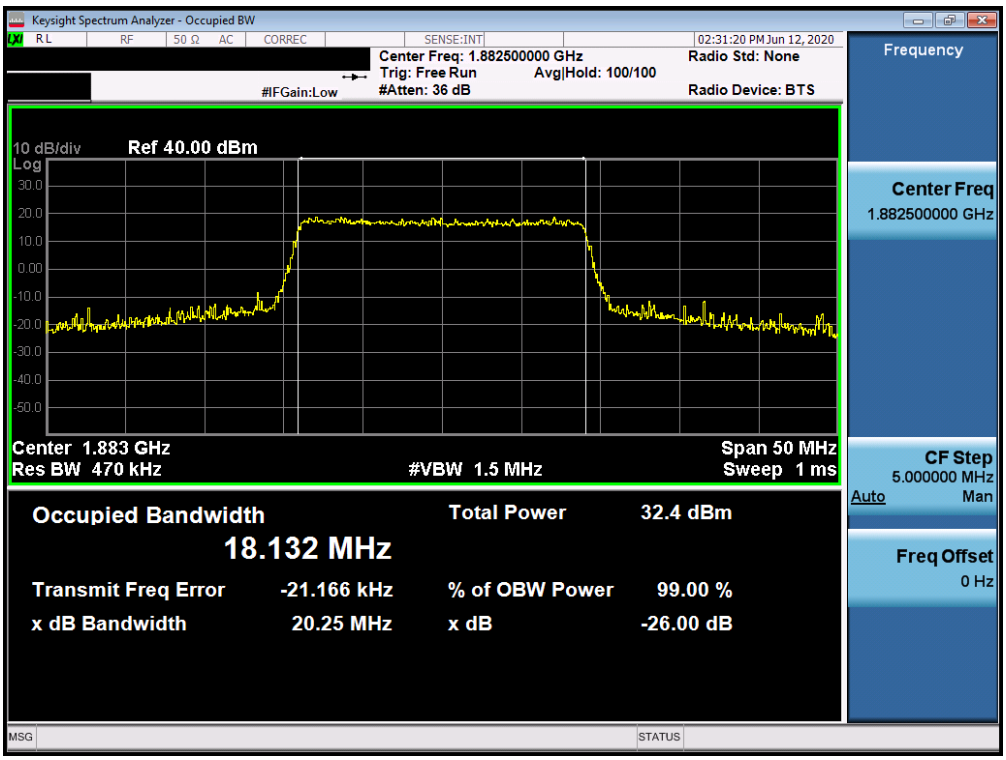


Plot 7-65. Occupied Bandwidth Plot (Band 25/2 - 20.0MHz 16-QAM - Full RB Configuration)



Plot 7-66. Occupied Bandwidth Plot (Band 25/2 - 20.0MHz 64-QAM - Full RB Configuration)

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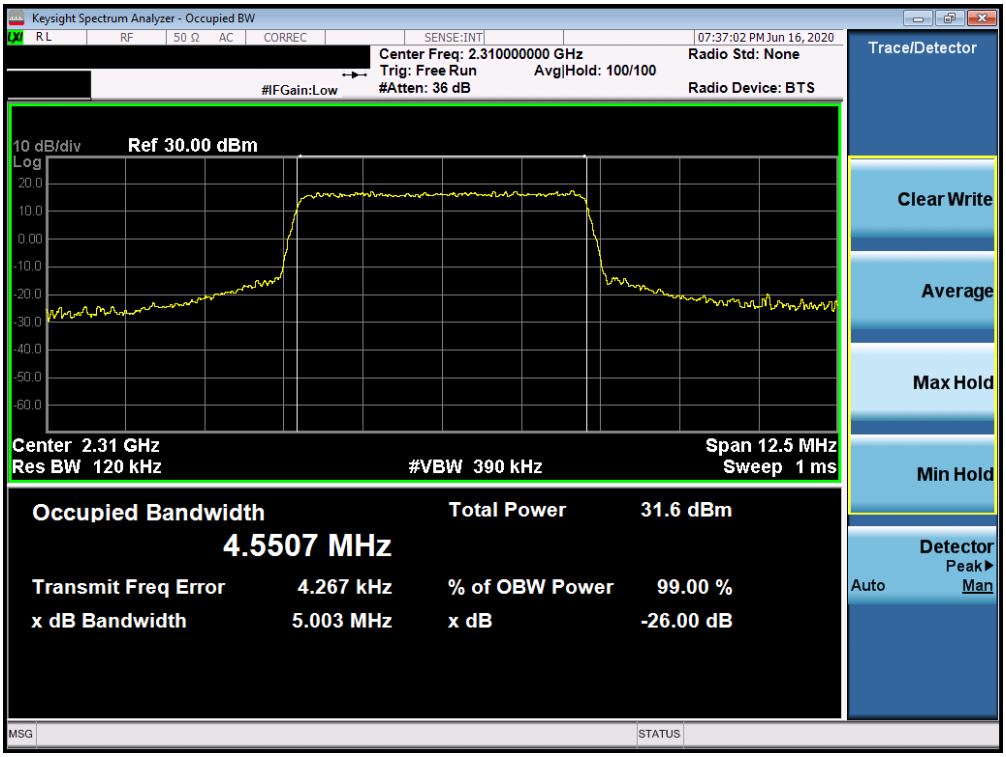
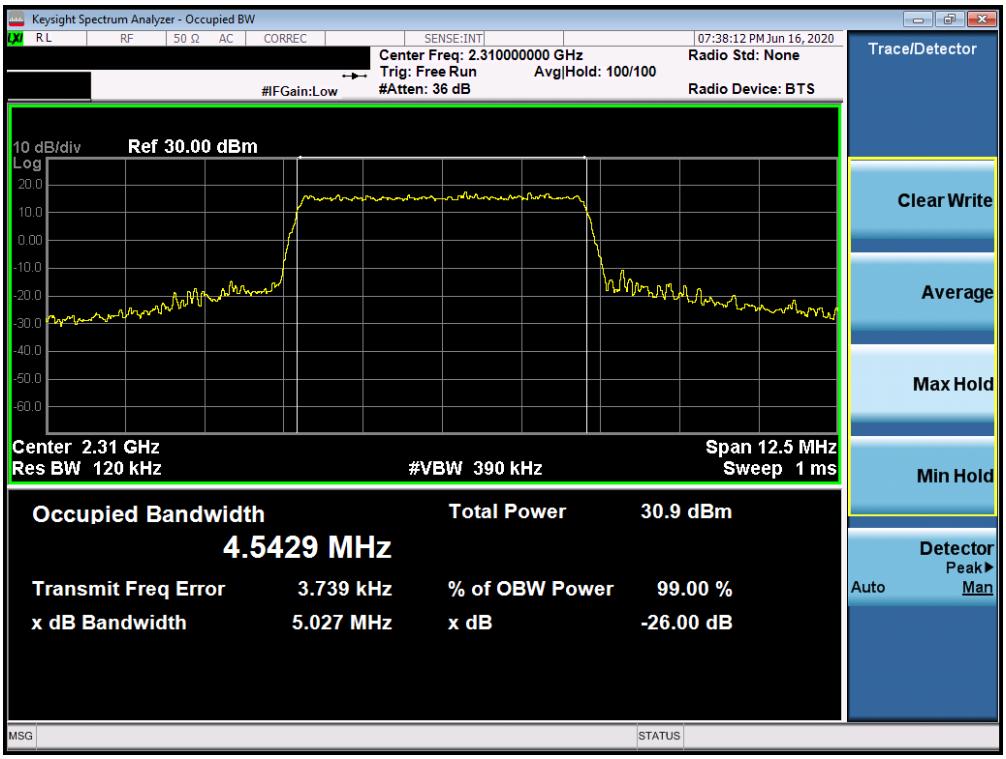
Band 30



Plot 7-67. Occupied Bandwidth Plot (Band 30 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-68. Occupied Bandwidth Plot (Band 30 - 5.0MHz 16-QAM - Full RB Configuration)

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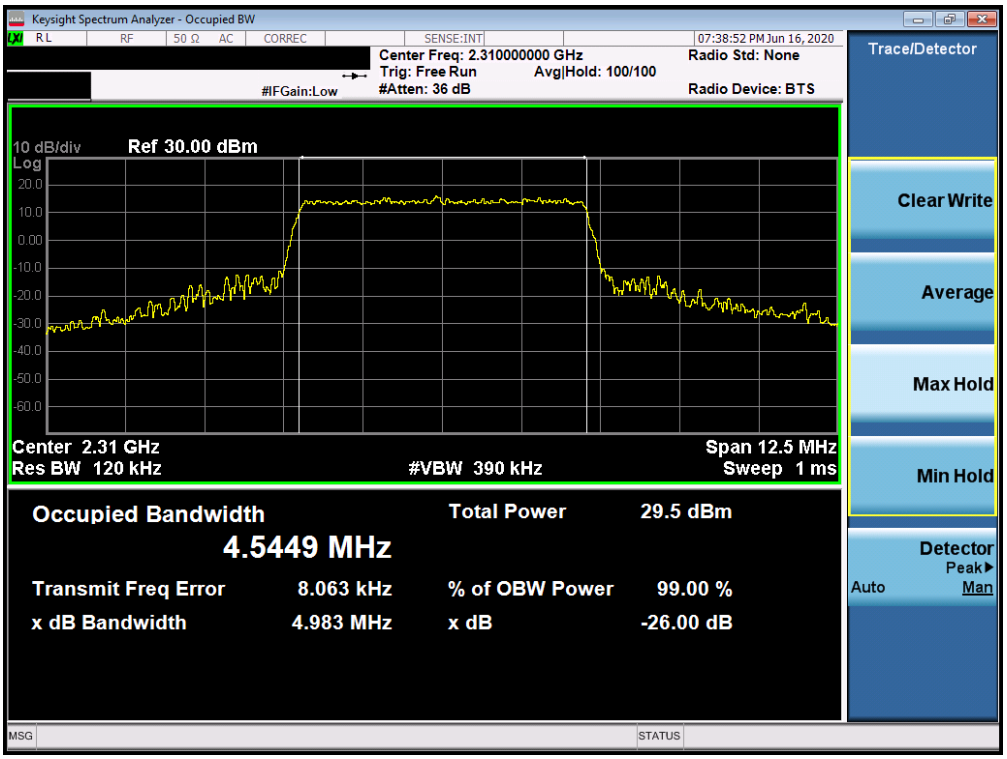
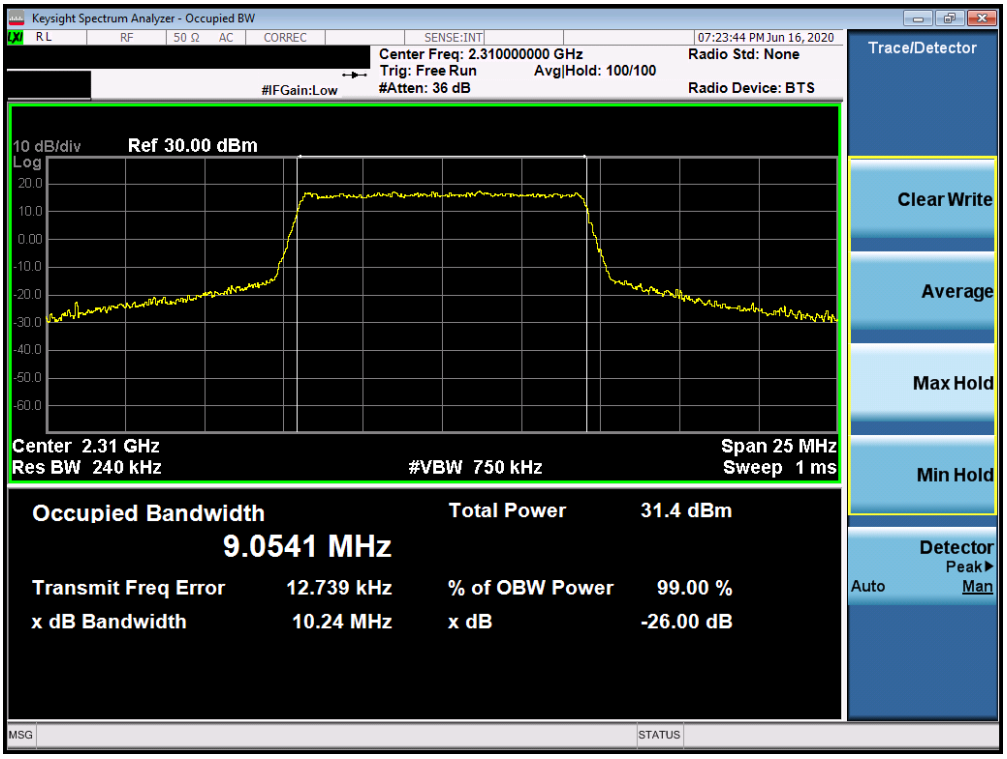


Plot 7-69. Occupied Bandwidth Plot (Band 30 - 5.0MHz 64-QAM - Full RB Configuration)



Plot 7-70. Occupied Bandwidth Plot (Band 30 - 10.0MHz QPSK - Full RB Configuration)

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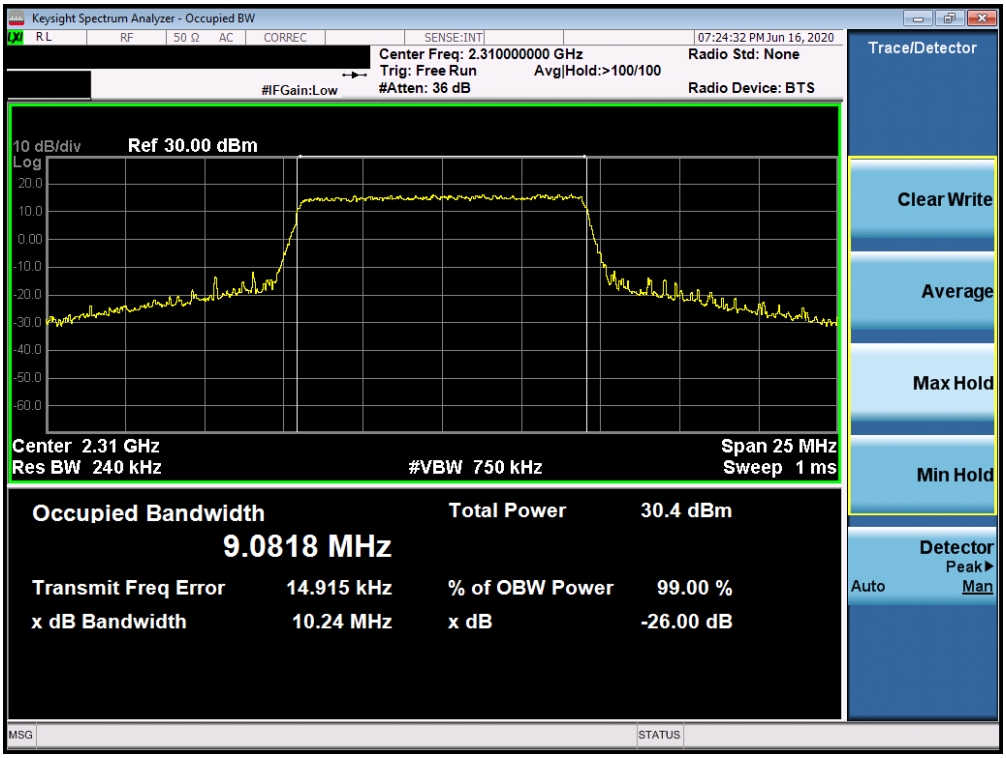
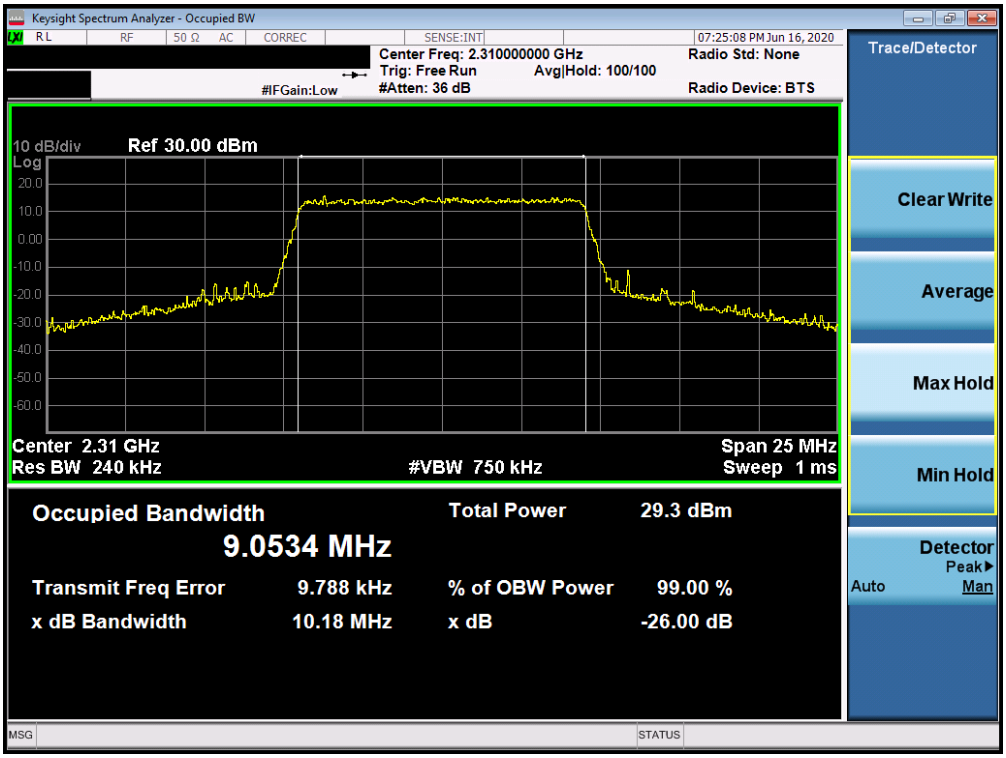


Plot 7-71. Occupied Bandwidth Plot (Band 30 - 10.0MHz 16-QAM - Full RB Configuration)



Plot 7-72. Occupied Bandwidth Plot (Band 30 - 10.0MHz 64-QAM - Full RB Configuration)

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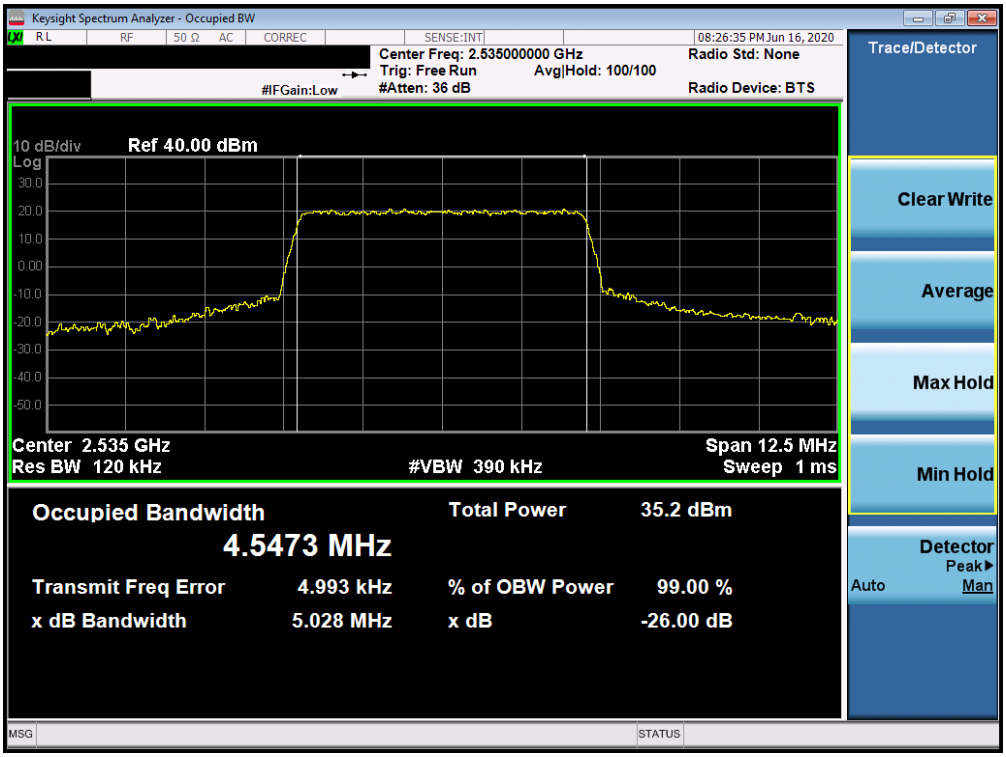
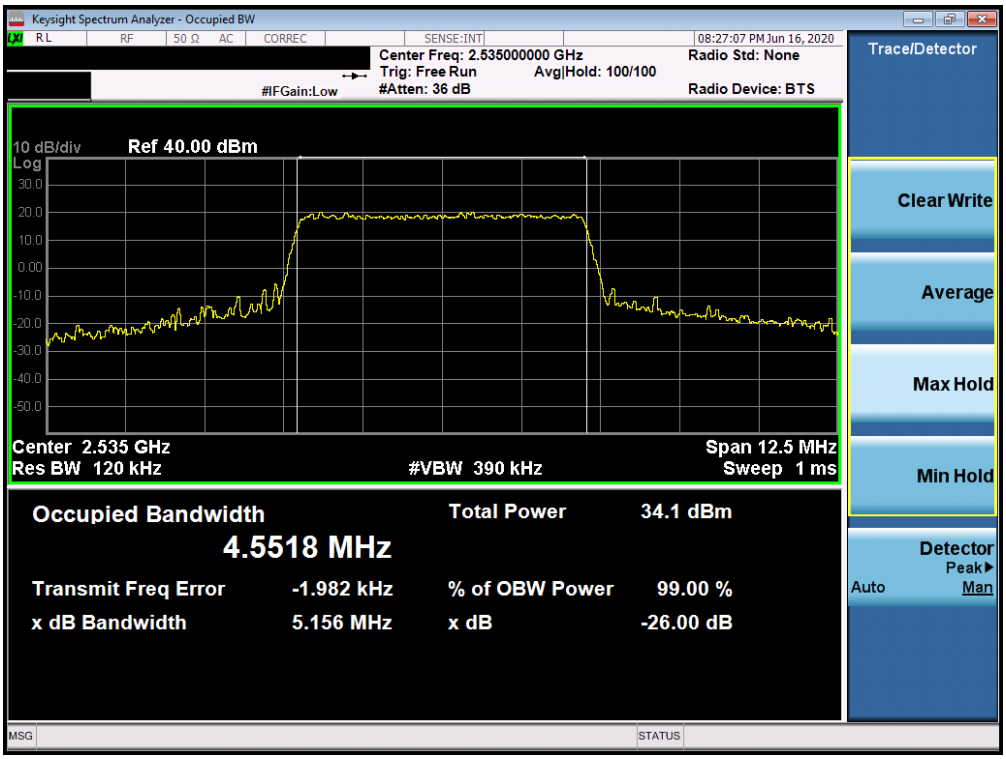
Band 7



Plot 7-73. Occupied Bandwidth Plot (Band 7 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-74. Occupied Bandwidth Plot (Band 7 - 5.0MHz 16-QAM - Full RB Configuration)

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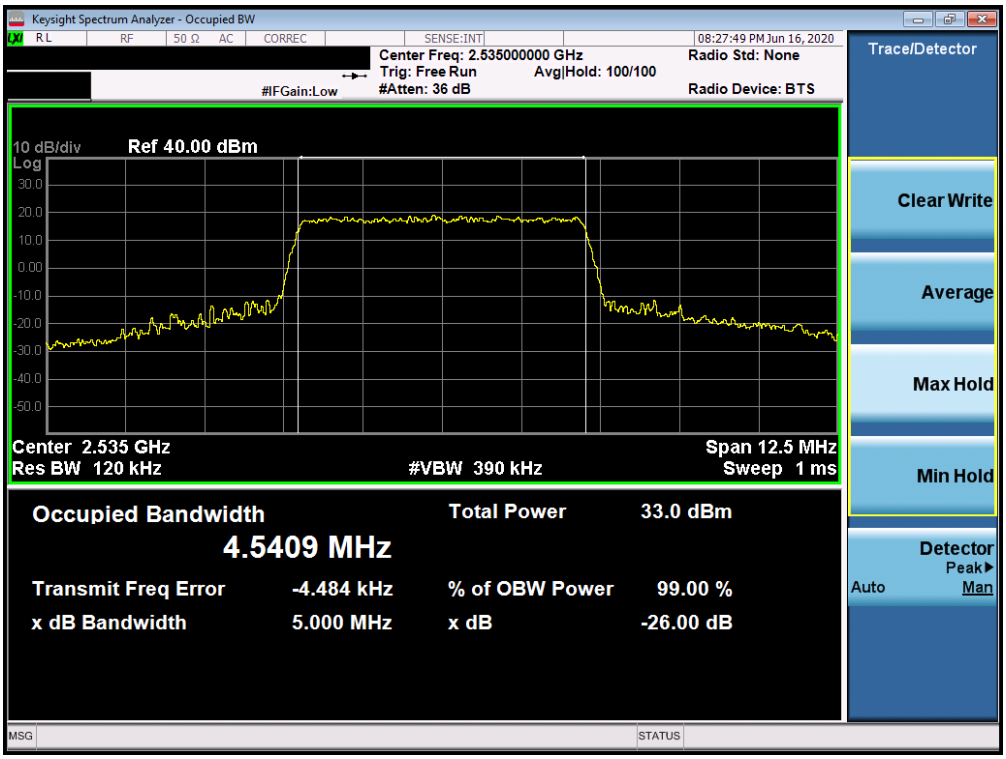
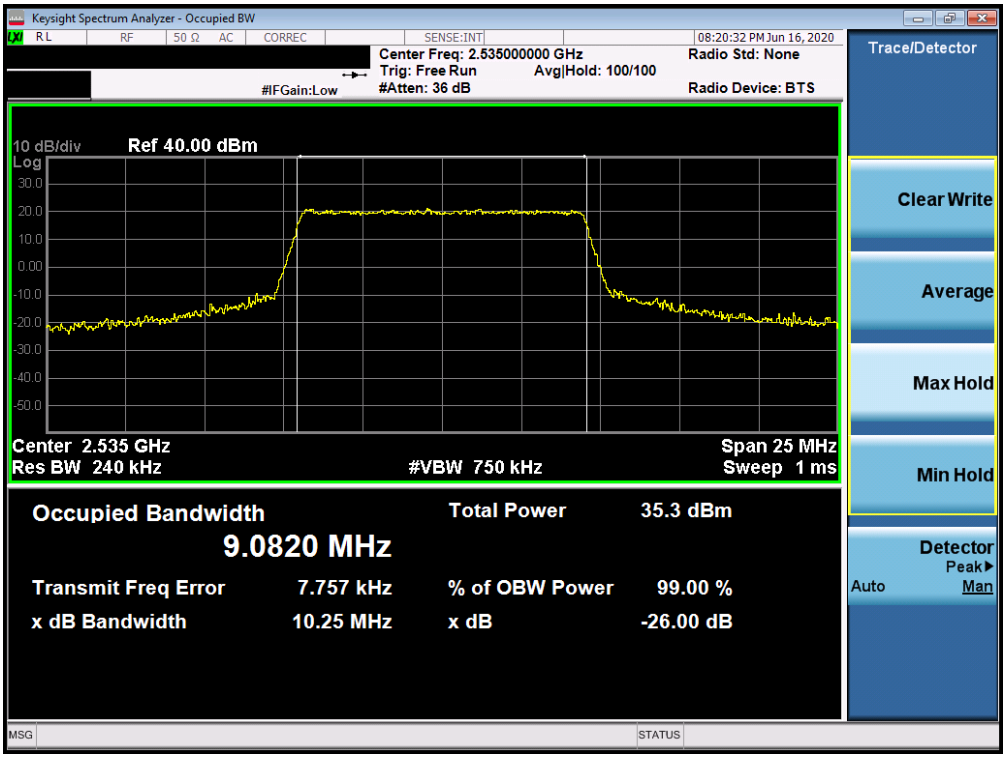


Plot 7-75. Occupied Bandwidth Plot (Band 7 - 5.0MHz 64-QAM - Full RB Configuration)



Plot 7-76. Occupied Bandwidth Plot (Band 7 - 10.0MHz QPSK - Full RB Configuration)

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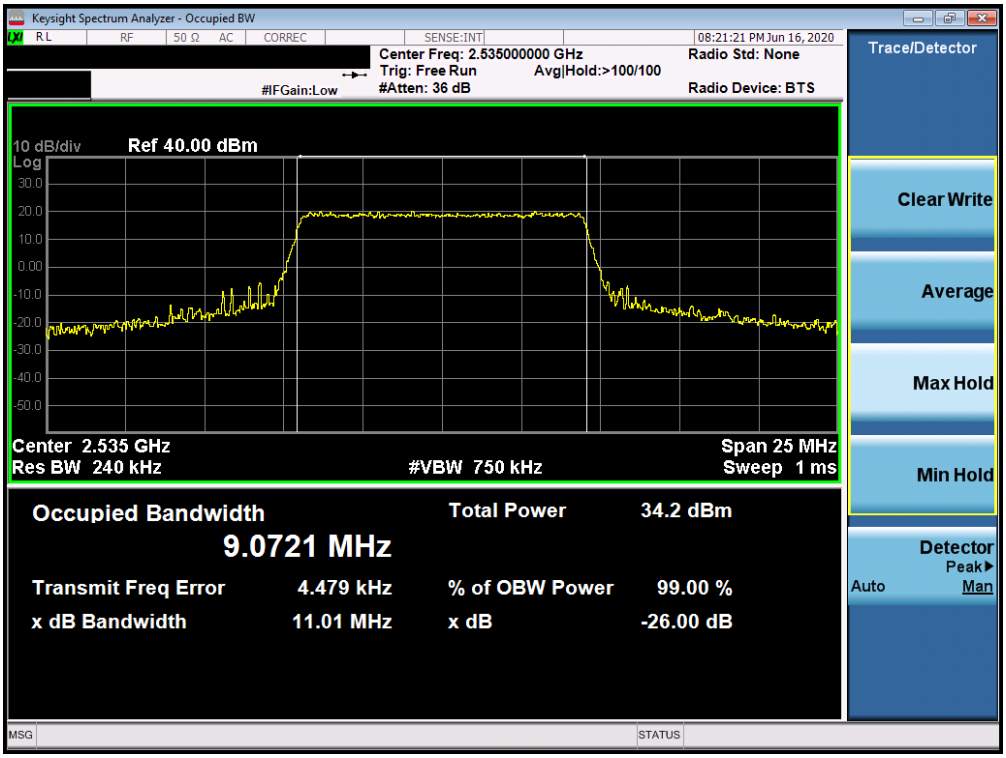
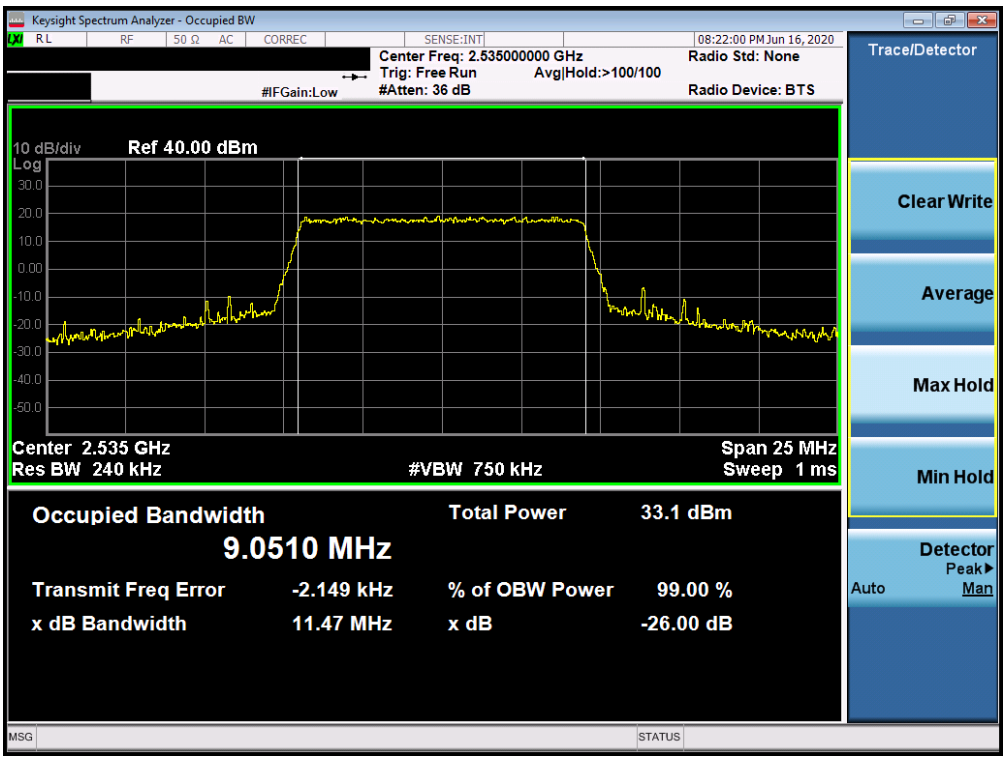


Plot 7-77. Occupied Bandwidth Plot (Band 7 - 10.0MHz 16-QAM - Full RB Configuration)



Plot 7-78. Occupied Bandwidth Plot (Band 7 - 10.0MHz 64-QAM - Full RB Configuration)

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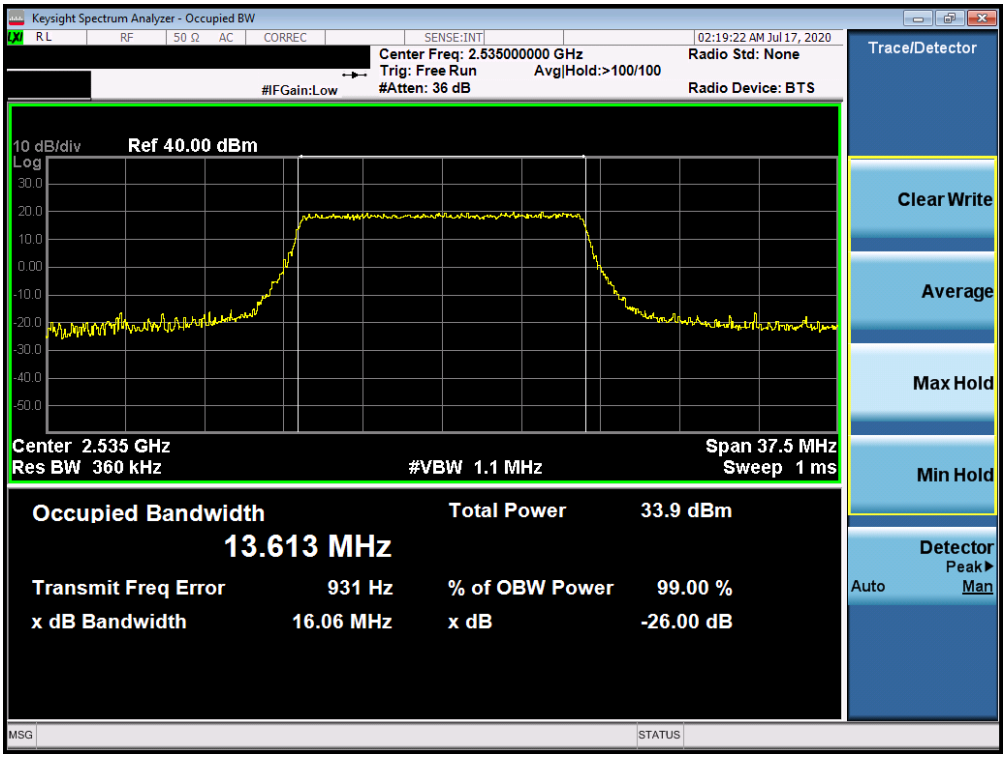
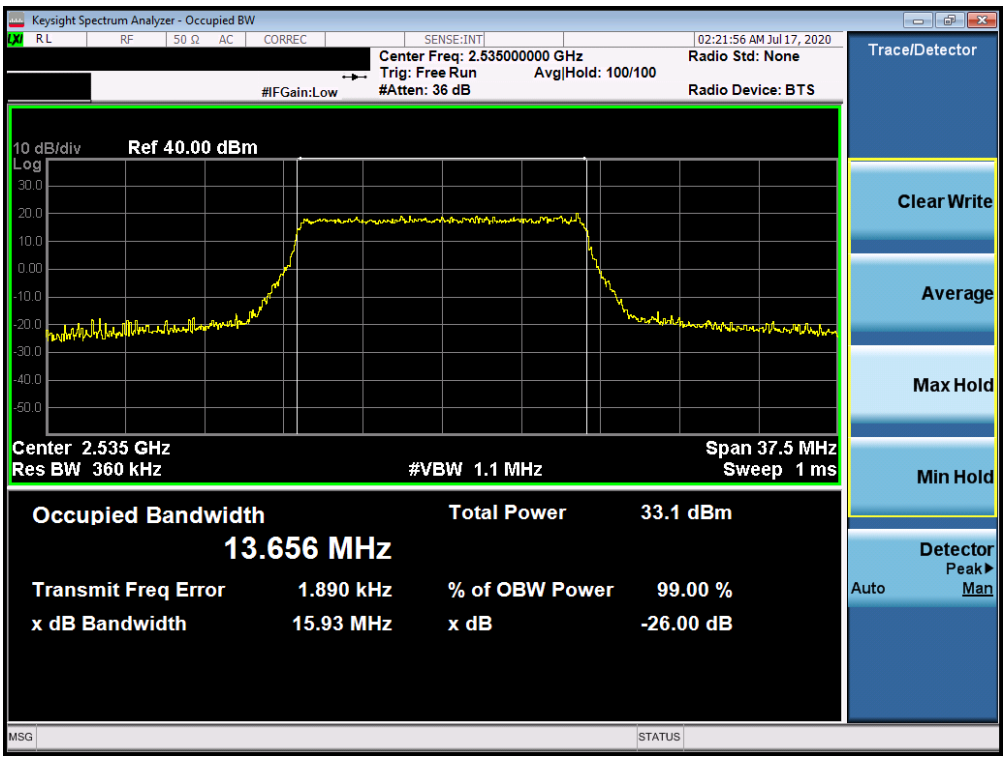


Plot 7-79. Occupied Bandwidth Plot (Band 7 - 15.0MHz QPSK - Full RB Configuration)



Plot 7-80. Occupied Bandwidth Plot (Band 7 - 15.0MHz 16-QAM - Full RB Configuration)

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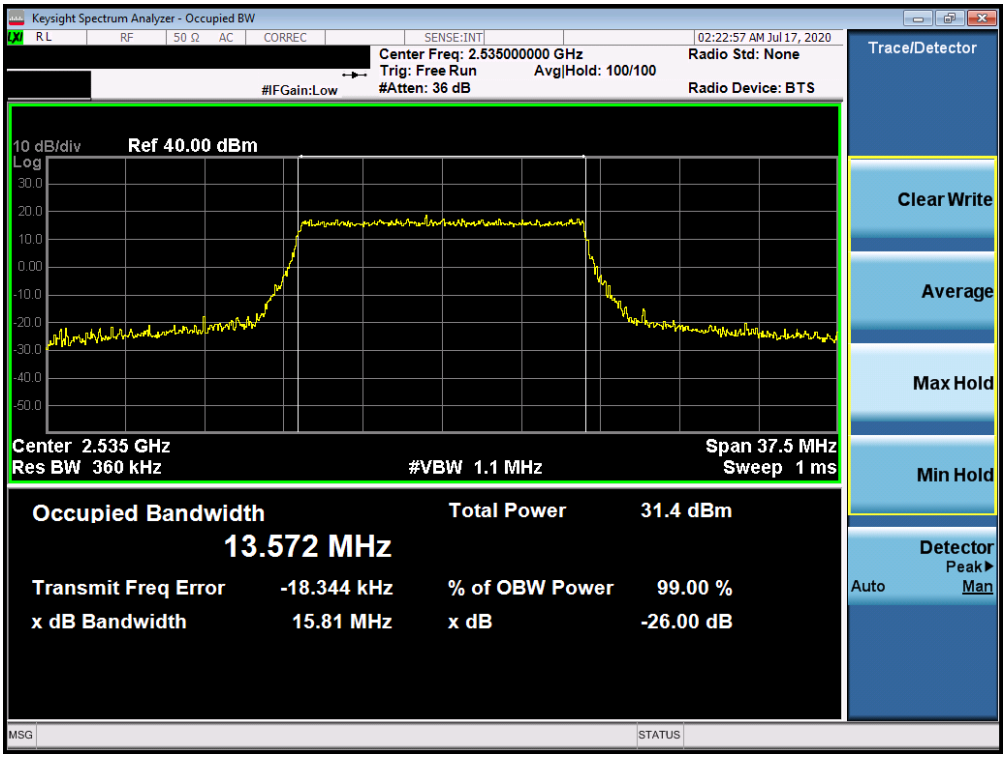
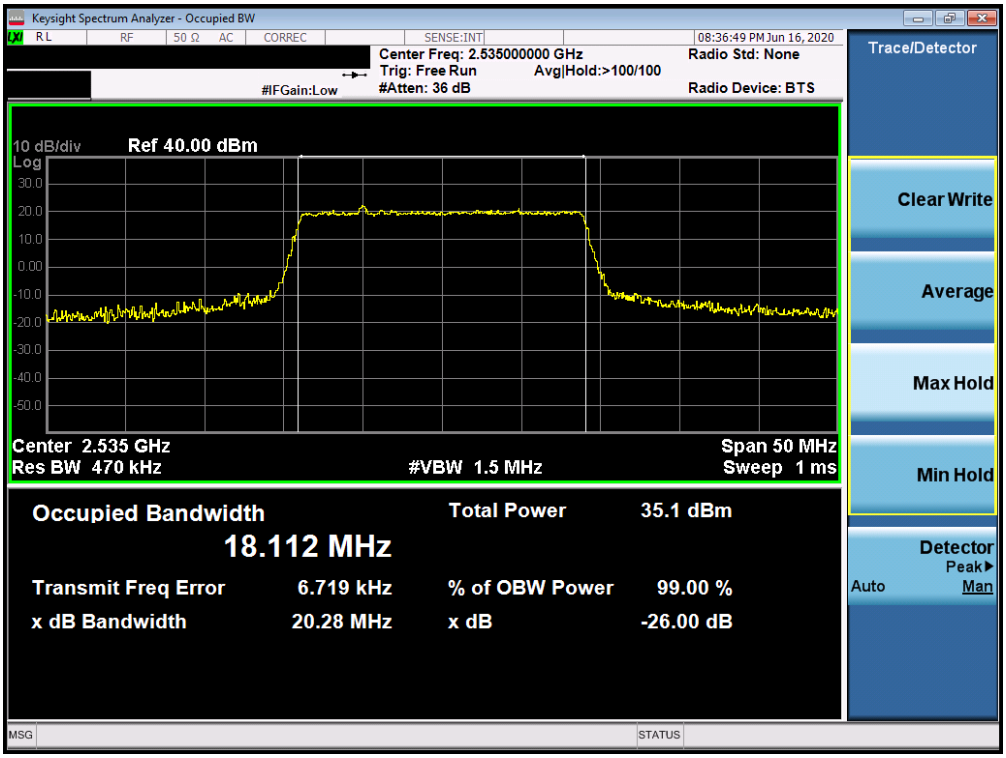


Plot 7-81. Occupied Bandwidth Plot (Band 7 - 15.0MHz 64-QAM - Full RB Configuration)



Plot 7-82. Occupied Bandwidth Plot (Band 7 - 20.0MHz QPSK - Full RB Configuration)

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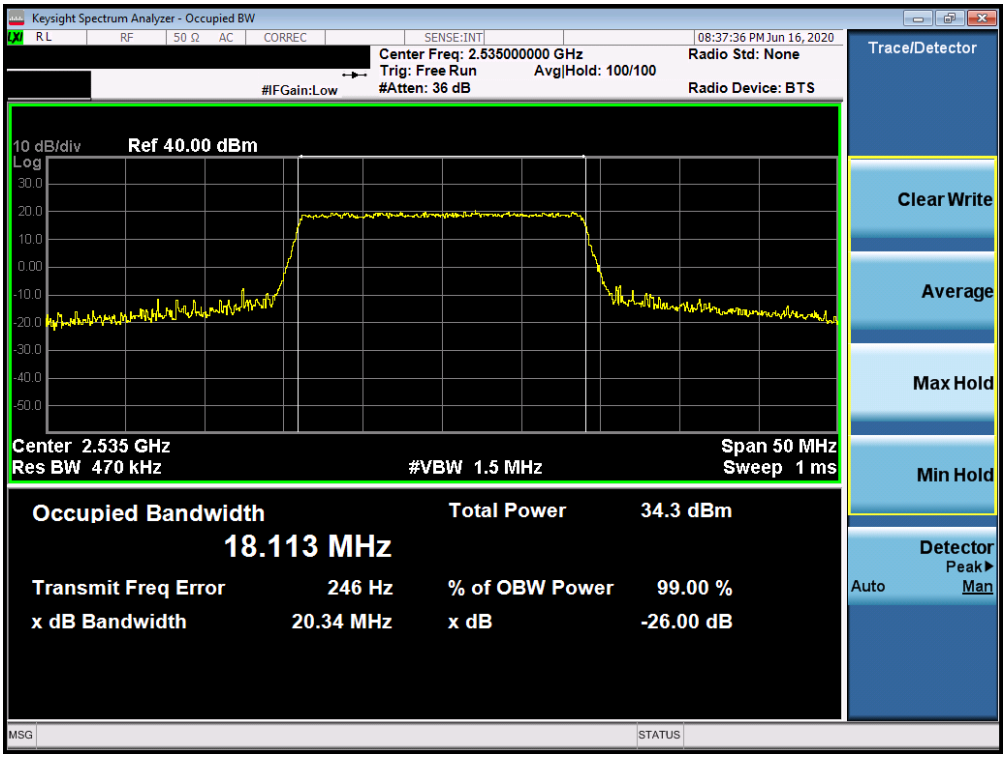
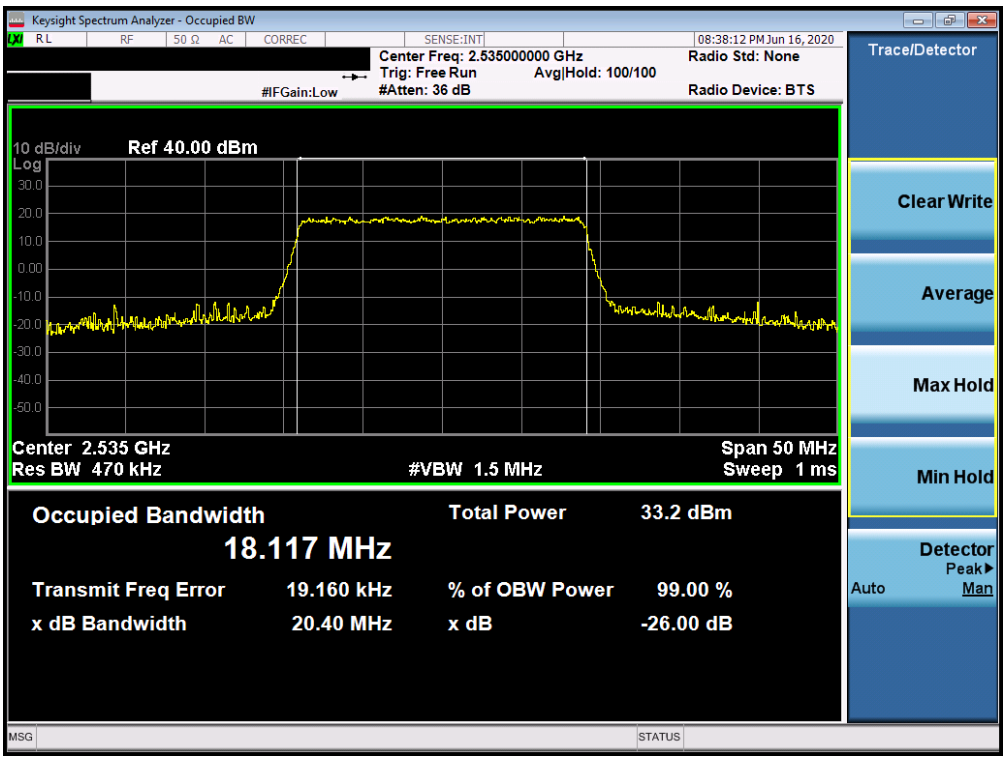


Plot 7-83. Occupied Bandwidth Plot (Band 7 - 20.0MHz 16-QAM - Full RB Configuration)



Plot 7-84. Occupied Bandwidth Plot (Band 7 - 20.0MHz 64-QAM - Full RB Configuration)

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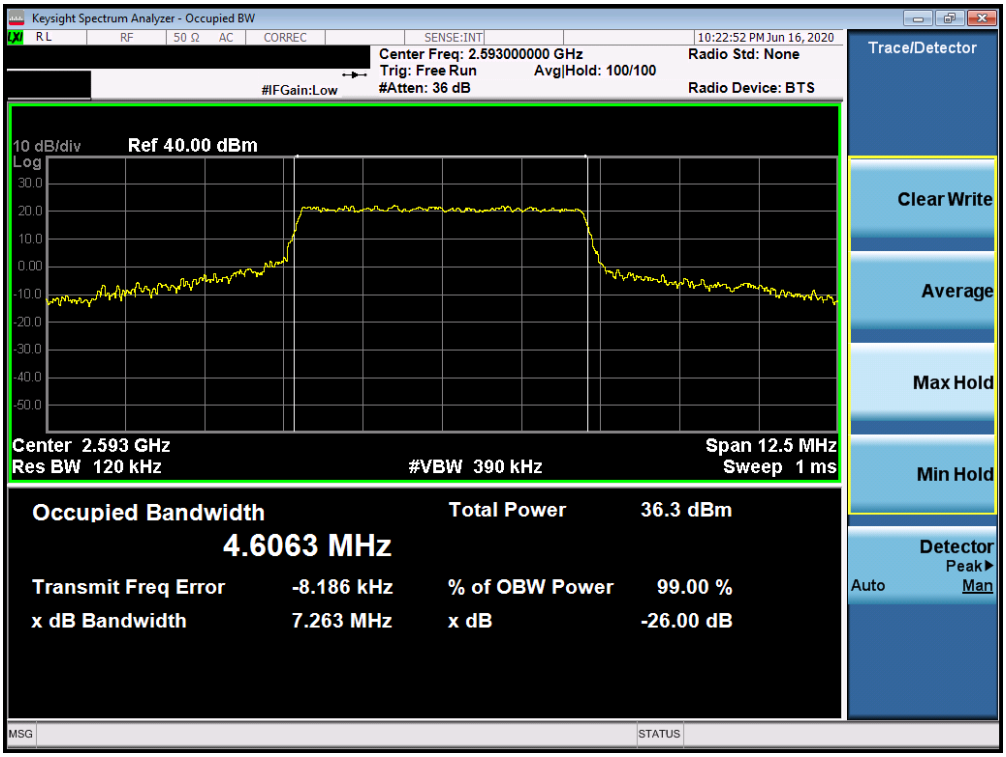
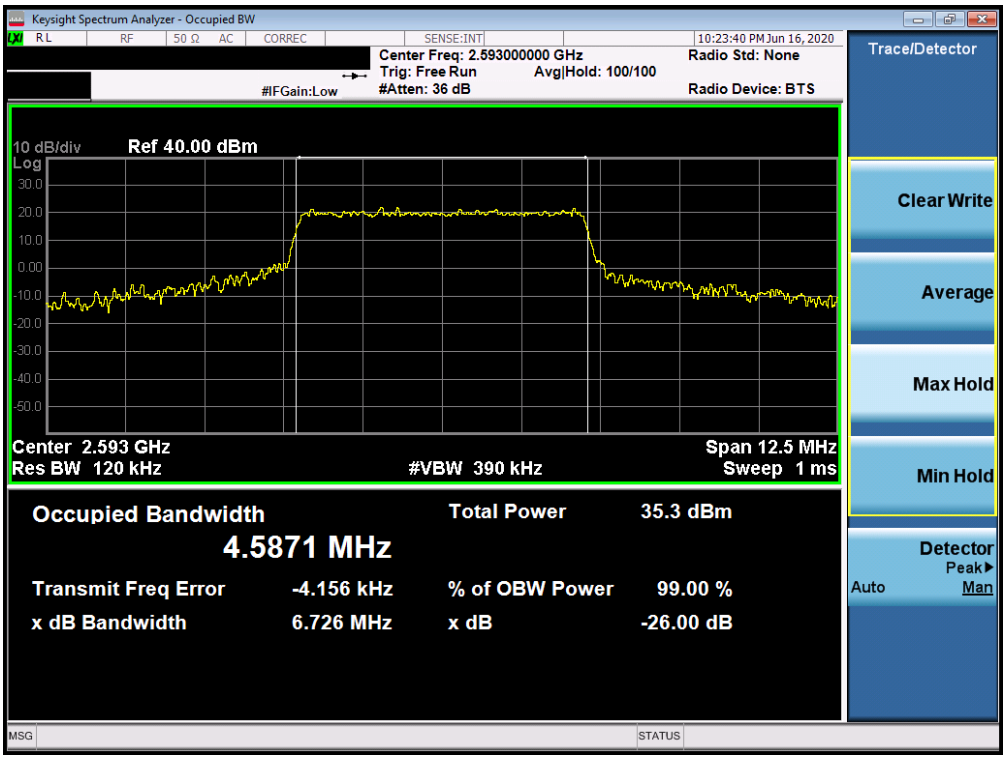
Band 41



Plot 7-85. Occupied Bandwidth Plot (Band 41 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-86. Occupied Bandwidth Plot (Band 41 - 5.0MHz 16-QAM - Full RB Configuration)

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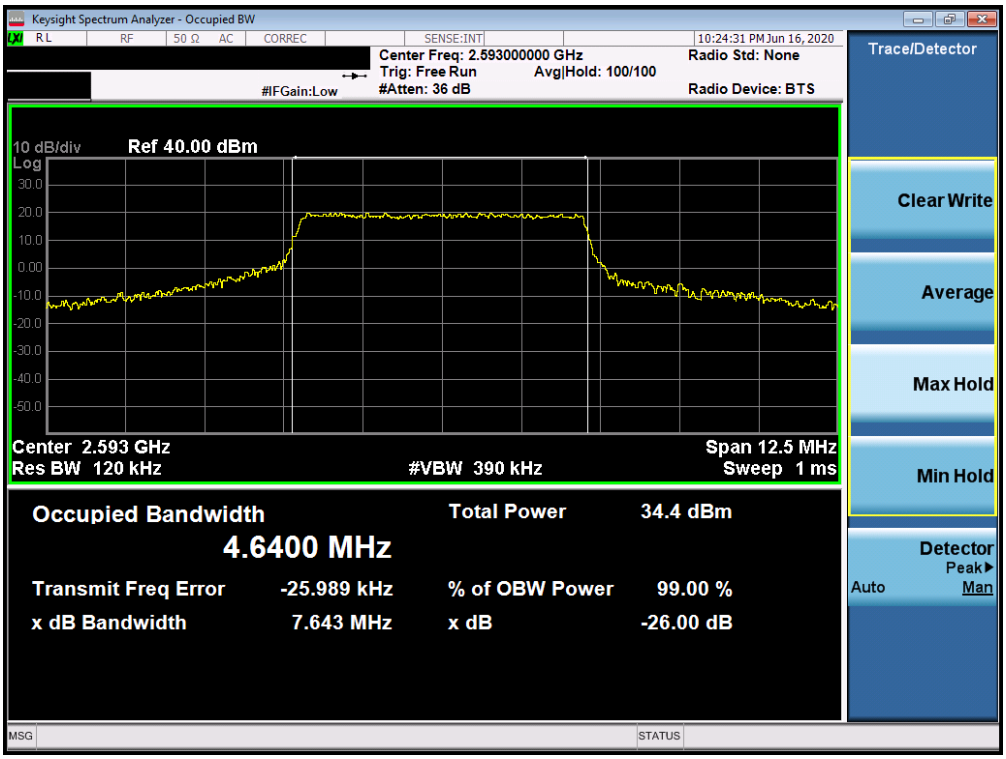
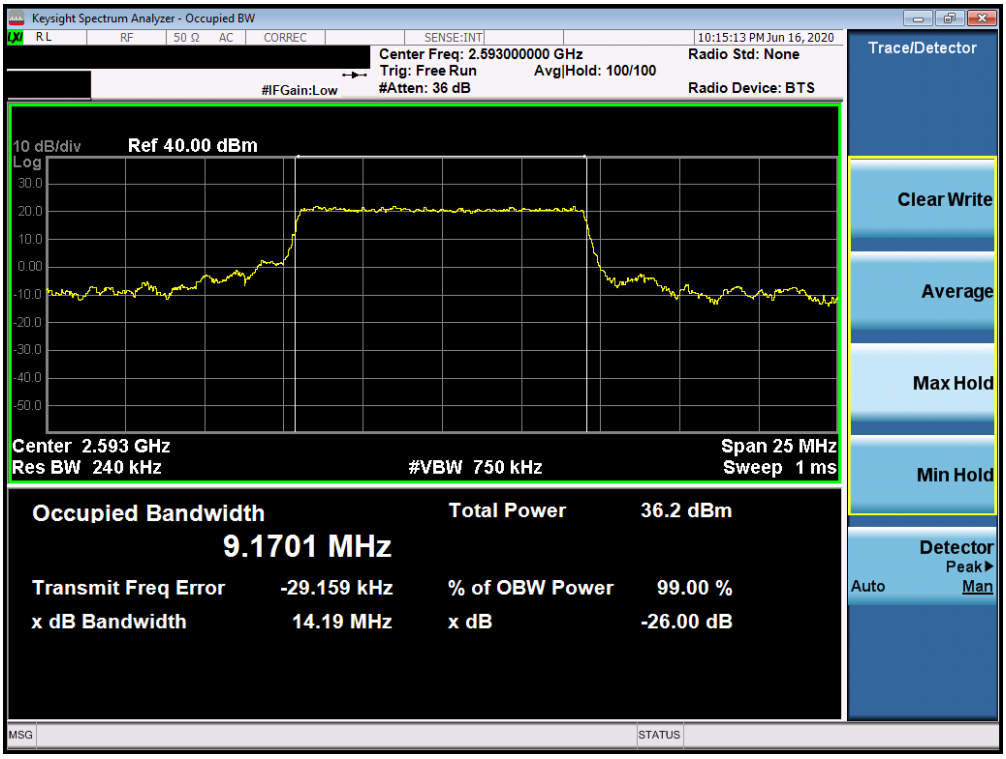


Plot 7-87. Occupied Bandwidth Plot (Band 41 - 5.0MHz 64-QAM - Full RB Configuration)



Plot 7-88. Occupied Bandwidth Plot (Band 41 - 10.0MHz QPSK - Full RB Configuration)

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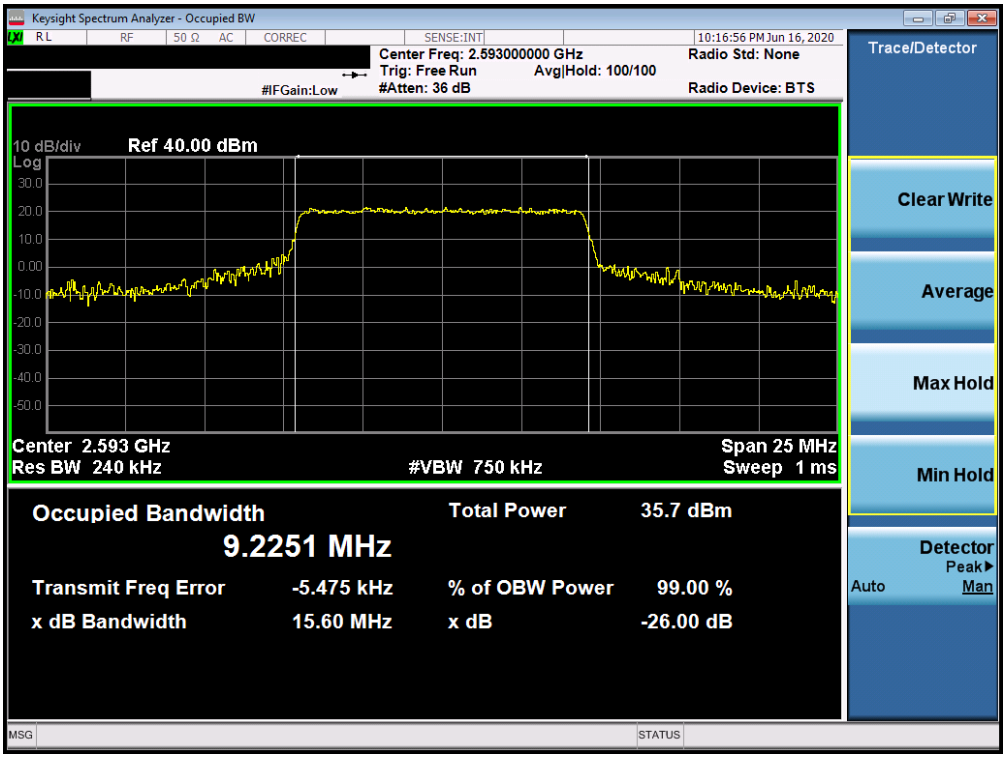
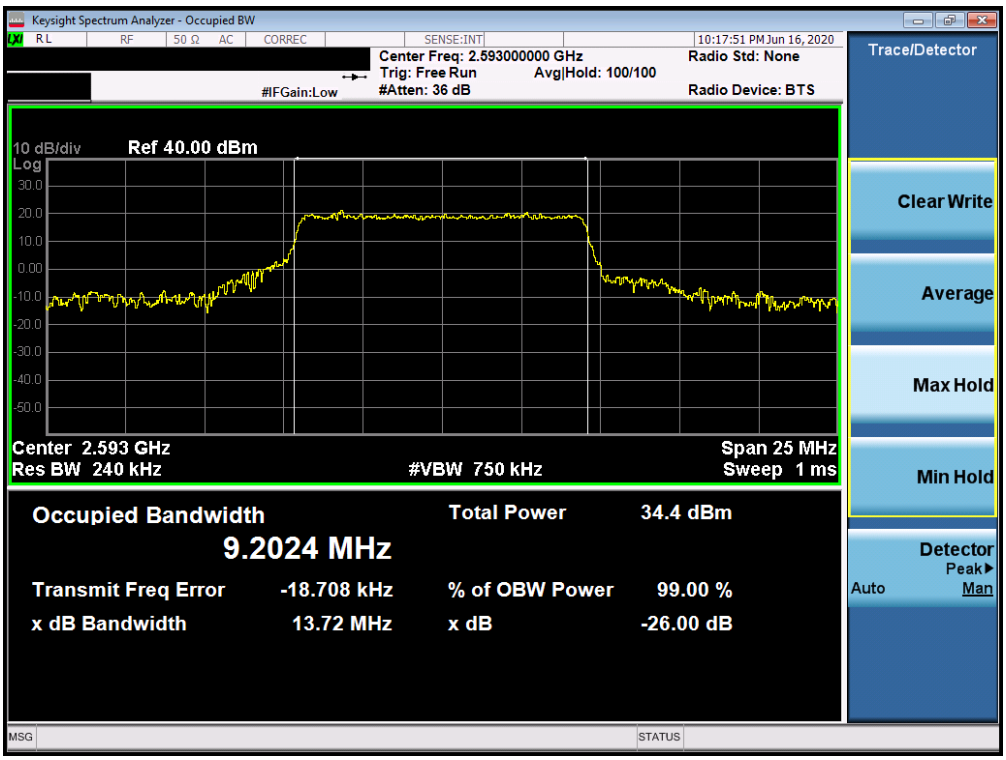


Plot 7-89. Occupied Bandwidth Plot (Band 41 - 10.0MHz 16-QAM - Full RB Configuration)



Plot 7-90. Occupied Bandwidth Plot (Band 41 - 10.0MHz 64-QAM - Full RB Configuration)

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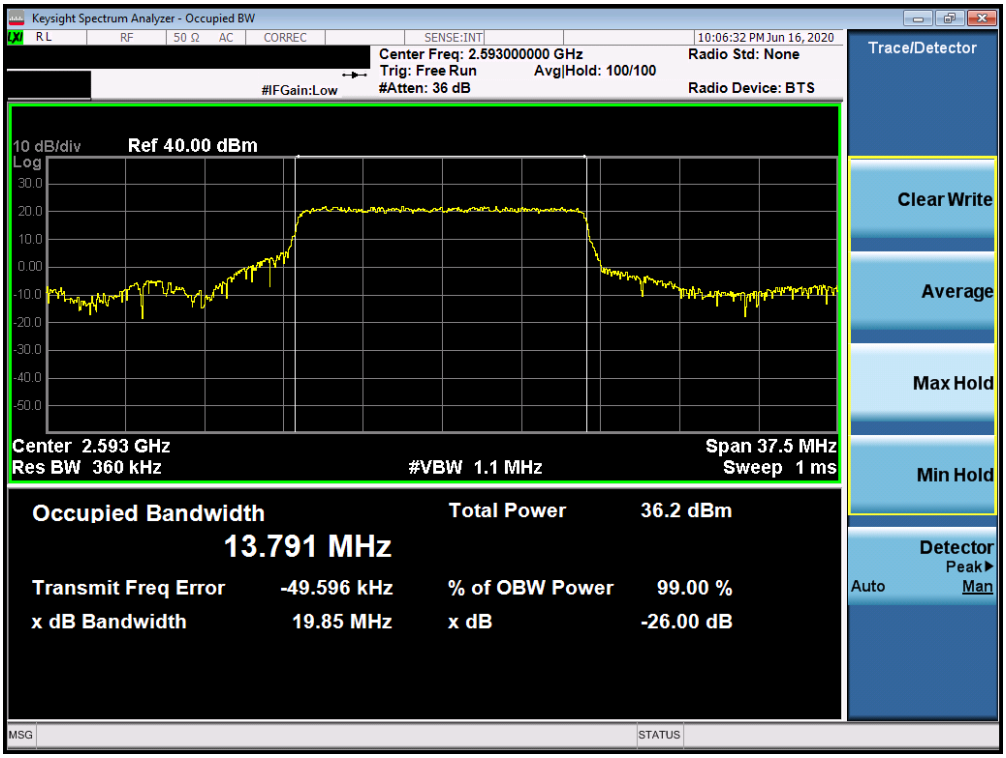
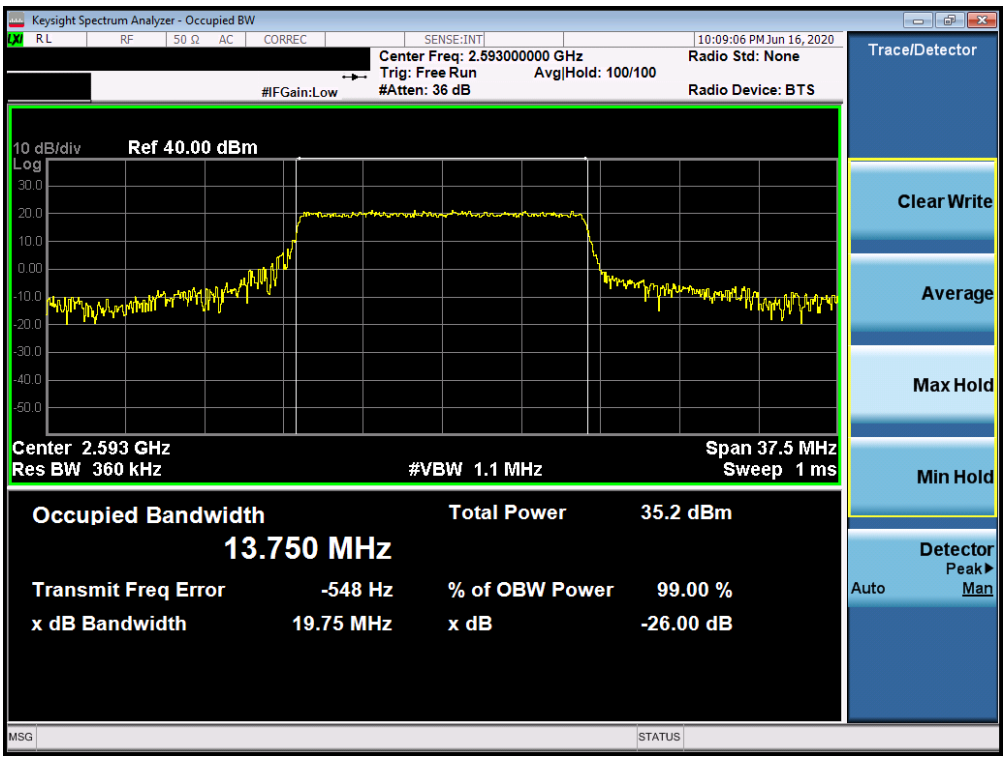


Plot 7-91. Occupied Bandwidth Plot (Band 41 - 15.0MHz QPSK - Full RB Configuration)



Plot 7-92. Occupied Bandwidth Plot (Band 41 - 15.0MHz 16-QAM - Full RB Configuration)

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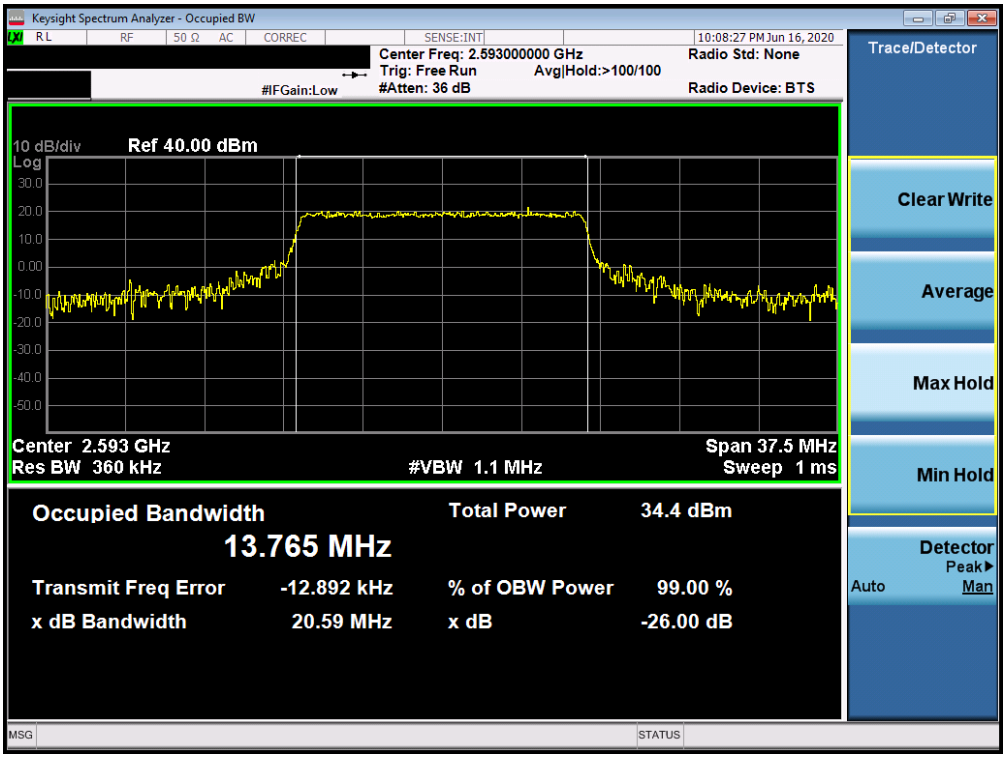
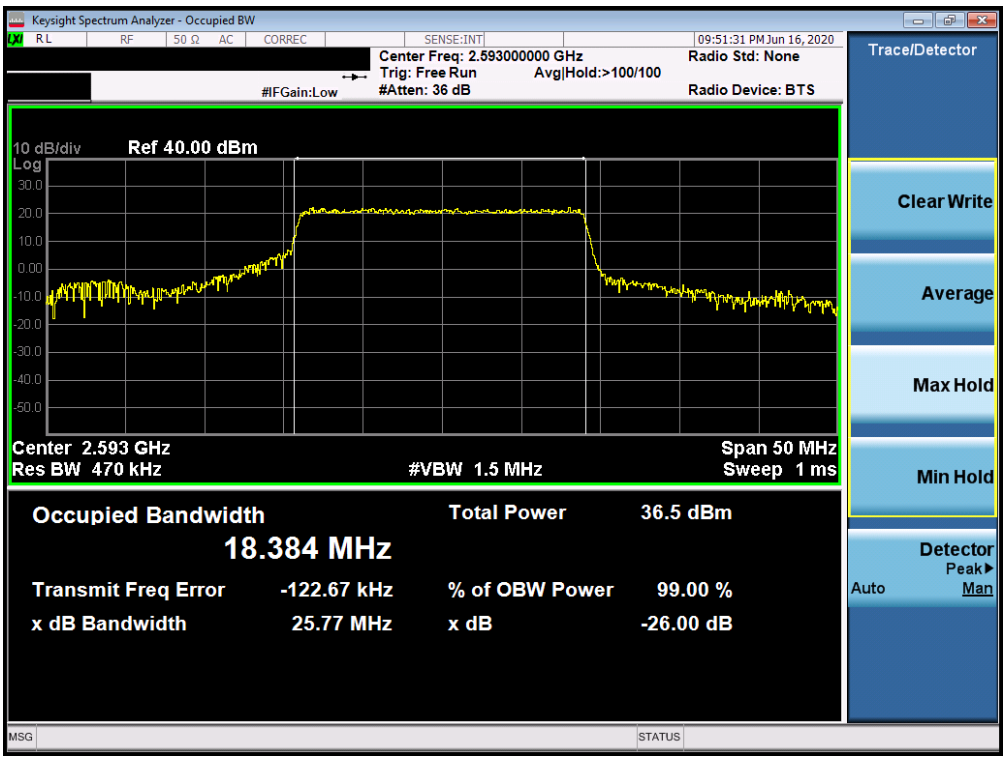


Plot 7-93. Occupied Bandwidth Plot (Band 41 - 15.0MHz 64-QAM - Full RB Configuration)



Plot 7-94. Occupied Bandwidth Plot (Band 41 - 20.0MHz QPSK - Full RB Configuration)

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