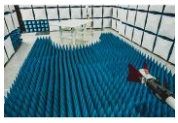
PCTEST
18855 Adams Court, Morgan Hill, CA 95037 USA
Tel. 410.290.6652 / Fax 410.290.6654
http://www.pctest.com



PART 27 MEASUREMENT REPORT

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

Date of Testing:
12/15/2020 - 02/20/2021
Test Site/Location:
PCTEST Lab. Morgan Hill, CA, USA
Test Report Serial No.:
1C2101020005-04-R1.BCG

FCC ID:	**BCGA2379**
APPLICANT:	**Apple Inc.**

Application Type:	Certification
Model:	A2379
EUT Type:	Tablet Device
FCC Classification:	PCS Licensed Transmitter (PCB)
FCC Rule Part:	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.

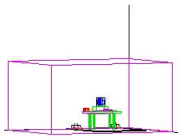
This revised Test Report (S/N: 1C2101020005-04-R1.BCG Report SNs) supersedes and replaces the previously issued test report on the same subject device for the same type of testing as indicated. Please discard or destroy the previously issued test report(s) and dispose of it accordingly.

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

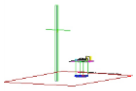
Randy Ortanez
President

ACCREDITED
CERT #2041.02

TABLE OF CONTENTS



MEASUREMENT REPORT
FCC Part 27



Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	OBW [MHZ]	ERP		EIRP		Emission Designator
					Max. Power [W]	Max. Power [dBm]	Max. Power [W]	Max. Power [dBm]	
LTE Band 12	10 MHz	QPSK	704.0 - 711.0	9.0171	0.146	21.65	0.240	23.80	9M02G7W
		16QAM	704.0 - 711.0	9.0350	0.132	21.21	0.217	23.36	9M04D7W
		64QAM	704.0 - 711.0	8.9874	0.113	20.53	0.185	22.68	8M99D7W
		256QAM	704.0 - 711.0	9.0244	0.057	17.53	0.093	19.68	9M02D7W
	5 MHz	QPSK	701.5 - 713.5	4.5520	0.146	21.65	0.240	23.80	4M55G7W
		16QAM	701.5 - 713.5	4.5196	0.134	21.26	0.219	23.41	4M52D7W
		64QAM	701.5 - 713.5	4.5181	0.114	20.58	0.187	22.73	4M52D7W
		256QAM	701.5 - 713.5	4.5206	0.055	17.44	0.091	19.59	4M52D7W
	3 MHz	QPSK	700.5 - 714.5	2.7108	0.146	21.65	0.240	23.80	2M71G7W
		16QAM	700.5 - 714.5	2.7094	0.129	21.12	0.212	23.27	2M71D7W
		64QAM	700.5 - 714.5	2.7113	0.111	20.47	0.183	22.62	2M71D7W
		256QAM	700.5 - 714.5	2.7071	0.056	17.51	0.092	19.66	2M71D7W
	1.4 MHz	QPSK	699.7 - 715.3	1.0997	0.146	21.65	0.240	23.80	1M10G7W
		16QAM	699.7 - 715.3	1.1040	0.131	21.17	0.215	23.32	1M10D7W
		64QAM	699.7 - 715.3	1.0878	0.112	20.50	0.184	22.65	1M09D7W
		256QAM	699.7 - 715.3	1.0936	0.055	17.37	0.090	19.52	1M09D7W
LTE Band 17	10 MHz	QPSK	709.0 - 711.0	9.0171	0.146	21.65	0.240	23.80	9M02G7W
		16QAM	709.0 - 711.0	9.0350	0.132	21.21	0.217	23.36	9M04D7W
		64QAM	709.0 - 711.0	8.9874	0.114	20.55	0.186	22.70	8M99D7W
		256QAM	709.0 - 711.0	9.0244	0.054	17.32	0.089	19.47	9M02D7W
	5 MHz	QPSK	706.5 - 713.5	4.5520	0.141	21.50	0.232	23.65	4M55G7W
		16QAM	706.5 - 713.5	4.5196	0.126	21.00	0.207	23.15	4M52D7W
		64QAM	706.5 - 713.5	4.5181	0.109	20.37	0.179	22.52	4M52D7W
		256QAM	706.5 - 713.5	4.5206	0.055	17.37	0.090	19.52	4M52D7W
LTE Band 13	10 MHz	QPSK	782.0	8.9867	0.092	19.65	0.151	21.80	8M99G7W
		16QAM	782.0	8.9950	0.076	18.78	0.124	20.93	9M00D7W
		64QAM	782.0	8.9851	0.062	17.95	0.102	20.10	8M99D7W
		256QAM	782.0	8.9737	0.035	15.47	0.058	17.62	8M97D7W
	5 MHz	QPSK	779.5 - 784.5	4.5595	0.092	19.65	0.151	21.80	4M56G7W
		16QAM	779.5 - 784.5	4.5244	0.079	18.96	0.129	21.11	4M52D7W
		64QAM	779.5 - 784.5	4.5530	0.068	18.35	0.112	20.50	4M55D7W
		256QAM	779.5 - 784.5	4.5356	0.035	15.49	0.058	17.64	4M54D7W
LTE Band 71	20 MHz	QPSK	673.0 - 688.0	18.0040	0.140	21.45	0.229	23.60	18M0G7W
		16QAM	673.0 - 688.0	18.0000	0.119	20.76	0.195	22.91	18M0D7W
		64QAM	673.0 - 688.0	17.9570	0.088	19.45	0.145	21.60	18M0D7W
		256QAM	673.0 - 688.0	18.0140	0.051	17.08	0.084	19.23	18M0D7W
	15 MHz	QPSK	670.5 - 690.5	13.5380	0.140	21.45	0.229	23.60	13M5G7W
		16QAM	670.5 - 690.5	13.5180	0.123	20.90	0.202	23.05	13M5D7W
		64QAM	670.5 - 690.5	13.5190	0.096	19.81	0.157	21.96	13M5D7W
		256QAM	670.5 - 690.5	13.4800	0.053	17.21	0.086	19.36	13M5D7W
	10 MHz	QPSK	668.0 - 693.0	9.0152	0.140	21.45	0.229	23.60	9M02G7W
		16QAM	668.0 - 693.0	9.0141	0.123	20.91	0.202	23.06	9M01D7W
		64QAM	668.0 - 693.0	9.0140	0.096	19.82	0.157	21.97	9M01D7W
		256QAM	668.0 - 693.0	8.9938	0.052	17.15	0.085	19.30	8M99D7W
	5 MHz	QPSK	665.5 - 695.5	4.5370	0.140	21.45	0.229	23.60	4M54G7W
		16QAM	665.5 - 695.5	4.5345	0.130	21.13	0.213	23.28	4M53D7W
		64QAM	665.5 - 695.5	4.5387	0.099	19.96	0.163	22.11	4M54D7W
		256QAM	665.5 - 695.5	4.5335	0.052	17.18	0.086	19.33	4M53D7W
NR Band n12	15 MHz	π/2 BPSK	706.5 - 708.5	13.5090	0.146	21.65	0.240	23.80	13M5G7W
		QPSK	706.5 - 708.5	14.1995	0.143	21.54	0.234	23.69	14M2G7W
		16QAM	706.5 - 708.5	14.1887	0.121	20.82	0.198	22.97	14M2D7W
		64QAM	706.5 - 708.5	14.2442	0.082	19.12	0.134	21.27	14M2D7W
		256QAM	706.5 - 708.5	14.1945	0.055	17.37	0.090	19.52	14M2D7W
	10 MHz	π/2 BPSK	704.0 - 711.0	9.0058	0.146	21.65	0.240	23.80	9M01G7W
		QPSK	704.0 - 711.0	9.3637	0.144	21.60	0.237	23.75	9M36G7W
		16QAM	704.0 - 711.0	9.3434	0.120	20.79	0.197	22.94	9M34D7W
		64QAM	704.0 - 711.0	9.3562	0.081	19.09	0.133	21.24	9M36D7W
		256QAM	704.0 - 711.0	9.3313	0.055	17.37	0.090	19.52	9M33D7W
	5 MHz	π/2 BPSK	701.5 - 713.5	4.5146	0.146	21.65	0.240	23.80	4M51G7W
		QPSK	701.5 - 713.5	4.5191	0.143	21.55	0.235	23.70	4M52G7W
		16QAM	701.5 - 713.5	4.5147	0.122	20.85	0.200	23.00	4M51D7W
		64QAM	701.5 - 713.5	4.5067	0.087	19.41	0.143	21.56	4M51D7W
		256QAM	701.5 - 713.5	4.5051	0.056	17.51	0.092	19.66	4M51D7W
NR Band n71	20 MHz	π/2 BPSK	673.0 - 688.0	17.9500	0.140	21.45	0.229	23.60	18M0G7W
		QPSK	673.0 - 688.0	18.9811	0.140	21.45	0.229	23.60	19M0G7W
		16QAM	673.0 - 688.0	18.9665	0.121	20.82	0.198	22.97	19M0D7W
		64QAM	673.0 - 688.0	19.0184	0.085	19.31	0.140	21.46	19M0D7W
		256QAM	673.0 - 688.0	18.9961	0.050	16.99	0.082	19.14	19M0D7W
	15 MHz	π/2 BPSK	670.5 - 690.5	13.4910	0.138	21.40	0.227	23.55	13M5G7W
		QPSK	670.5 - 690.5	14.2019	0.140	21.45	0.229	23.60	14M2G7W
		16QAM	670.5 - 690.5	14.2169	0.120	20.79	0.197	22.94	14M2D7W
		64QAM	670.5 - 690.5	14.2030	0.082	19.13	0.134	21.28	14M2D7W
		256QAM	670.5 - 690.5	14.1452	0.052	17.18	0.086	19.33	14M1D7W
	10 MHz	π/2 BPSK	668.0 - 693.0	8.9891	0.140	21.45	0.229	23.60	8M99G7W
		QPSK	668.0 - 693.0	9.3282	0.139	21.43	0.228	23.58	9M33G7W
		16QAM	668.0 - 693.0	9.3264	0.116	20.64	0.190	22.79	9M33D7W
		64QAM	668.0 - 693.0	9.3609	0.078	18.91	0.128	21.06	9M36D7W
		256QAM	668.0 - 693.0	9.3341	0.052	17.15	0.085	19.30	9M33D7W
	5 MHz	π/2 BPSK	665.5 - 695.5	4.4998	0.140	21.45	0.229	23.60	4M50G7W
		QPSK	665.5 - 695.5	4.5110	0.137	21.36	0.224	23.51	4M51G7W
		16QAM	665.5 - 695.5	4.5095	0.115	20.60	0.188	22.75	4M51D7W
		64QAM	665.5 - 695.5	4.4962	0.079	18.99	0.130	21.14	4M50D7W
		256QAM	665.5 - 695.5	4.5076	0.050	17.03	0.083	19.18	4M51D7W

Overview Table (<1GHz Bands)

Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	OBW [MHz]	PAR at 0.1% [dB]	EIRP	
						Max. Power [W]	Max. Power [dBm]
WCDMA1700	5 MHz	Spread Spectrum	1712.4 - 1752.6	4.1606	2.83	0.416	26.19
LTE Band 4	20 MHz	QPSK	1720.0 - 1745.0	17.9973	5.22	0.427	26.30
		16QAM	1720.0 - 1745.0	17.9734	6.03	0.366	25.64
		64QAM	1720.0 - 1745.0	18.0000	6.68	0.313	24.95
		256QAM	1720.0 - 1745.0	17.9949	6.58	0.135	21.30
	15 MHz	QPSK	1717.5 - 1747.5	13.5194	5.45	0.427	26.30
		16QAM	1717.5 - 1747.5	13.5297	6.16	0.378	25.78
		64QAM	1717.5 - 1747.5	13.5287	6.72	0.292	24.66
		256QAM	1717.5 - 1747.5	13.5022	6.64	0.136	21.34
	10MHz	QPSK	1715.0 - 1750.0	9.0084	5.25	0.427	26.30
		16QAM	1715.0 - 1750.0	9.0399	6.03	0.367	25.65
		64QAM	1715.0 - 1750.0	9.0209	6.70	0.286	24.57
		256QAM	1715.0 - 1750.0	9.0059	6.68	0.135	21.29
	5 MHz	QPSK	1712.5 - 1752.5	4.5573	5.25	0.427	26.30
		16QAM	1712.5 - 1752.5	4.5483	6.16	0.391	25.92
		64QAM	1712.5 - 1752.5	4.5481	6.79	0.280	24.47
		256QAM	1712.5 - 1752.5	4.5303	6.66	0.136	21.32
	3 MHz	QPSK	1711.5 - 1753.5	2.7195	5.29	0.427	26.30
		16QAM	1711.5 - 1753.5	2.7112	6.08	0.378	25.77
		64QAM	1711.5 - 1753.5	2.7150	6.75	0.279	24.45
		256QAM	1711.5 - 1753.5	2.7081	6.68	0.135	21.29
	1.4 MHz	QPSK	1710.7 - 1754.3	1.0968	5.45	0.427	26.30
		16QAM	1710.7 - 1754.3	1.1071	6.19	0.364	25.61
		64QAM	1710.7 - 1754.3	1.0874	6.94	0.275	24.39
		256QAM	1710.7 - 1754.3	1.0932	6.62	0.134	21.26
LTE Band 66	20 MHz	QPSK	1720.0 - 1770.0	17.9973	5.29	0.427	26.30
		16QAM	1720.0 - 1770.0	17.9734	5.93	0.394	25.96
		64QAM	1720.0 - 1770.0	17.9995	5.93	0.320	25.05
		256QAM	1720.0 - 1770.0	17.9949	6.57	0.151	21.80
	15 MHz	QPSK	1717.5 - 1772.5	13.5194	5.43	0.427	26.30
		16QAM	1717.5 - 1772.5	13.5297	6.10	0.377	25.76
		64QAM	1717.5 - 1772.5	13.5287	6.61	0.301	24.79
		256QAM	1717.5 - 1772.5	13.5022	6.64	0.165	22.17
	10 MHz	QPSK	1715.0 - 1775.0	9.0084	5.15	0.427	26.30
		16QAM	1715.0 - 1775.0	9.0399	6.00	0.378	25.77
		64QAM	1715.0 - 1775.0	9.0209	6.58	0.290	24.63
		256QAM	1715.0 - 1775.0	9.0059	6.65	0.164	22.15
	5 MHz	QPSK	1712.5 - 1777.5	4.5573	5.26	0.427	26.30
		16QAM	1712.5 - 1777.5	4.5483	6.13	0.391	25.92
		64QAM	1712.5 - 1777.5	4.5481	6.71	0.282	24.51
		256QAM	1712.5 - 1777.5	4.5303	6.64	0.148	21.71
	3 MHz	QPSK	1711.5 - 1778.5	2.7195	5.22	0.427	26.30
		16QAM	1711.5 - 1778.5	2.7112	6.05	0.376	25.75
		64QAM	1711.5 - 1778.5	2.7150	6.76	0.291	24.64
		256QAM	1711.5 - 1778.5	2.7081	6.75	0.163	22.12
	1.4 MHz	QPSK	1710.7 - 1779.3	1.0968	5.37	0.427	26.30
		16QAM	1710.7 - 1779.3	1.1071	6.19	0.326	25.13
		64QAM	1710.7 - 1779.3	1.0874	6.73	0.286	24.56
		256QAM	1710.7 - 1779.3	1.0932	6.70	0.146	21.65
NR Band n66	20 MHz	π/2 BPSK	1720.0 - 1770.0	17.9920	4.20	0.424	26.27
		QPSK	1720.0 - 1770.0	19.0176	5.34	0.407	26.09
		16QAM	1720.0 - 1770.0	18.9985	6.29	0.338	25.28
		64QAM	1720.0 - 1770.0	19.0653	6.54	0.242	23.83
		256QAM	1720.0 - 1770.0	18.9956	6.75	0.155	21.89
	15 MHz	π/2 BPSK	1717.5 - 1772.5	13.4770	4.22	0.401	26.03
		QPSK	1717.5 - 1772.5	14.1817	5.42	0.398	25.99
		16QAM	1717.5 - 1772.5	14.1626	6.41	0.342	25.35
		64QAM	1717.5 - 1772.5	14.2108	6.59	0.229	23.59
		256QAM	1717.5 - 1772.5	14.1625	6.68	0.152	21.83
	10 MHz	π/2 BPSK	1715.0 - 1775.0	9.0116	4.57	0.427	26.30
		QPSK	1715.0 - 1775.0	9.3419	5.73	0.401	26.03
		16QAM	1715.0 - 1775.0	9.3217	6.41	0.365	25.63
		64QAM	1715.0 - 1775.0	9.3533	6.68	0.241	23.82
		256QAM	1715.0 - 1775.0	9.3099	6.72	0.146	21.64
	5 MHz	π/2 BPSK	1712.5 - 1777.5	4.5184	4.09	0.413	26.16
		QPSK	1712.5 - 1777.5	4.5159	5.26	0.403	26.05
		16QAM	1712.5 - 1777.5	4.4992	6.39	0.354	25.49
		64QAM	1712.5 - 1777.5	4.5086	6.72	0.241	23.81
		256QAM	1712.5 - 1777.5	4.5269	7.01	0.148	21.69

Overview Table (>1GHz 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 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 17025-2017 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.

2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **Apple Tablet Device FCC ID: BCGA2379**. The test data contained in this report pertains only to the emissions due to the EUT's licensed transmitters that operate under the provisions of Part 27.

Test Device Serial No.: H4MTX492NT, NN63X069PP

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 (FR1/FR2), 802.11b/g/n/ax WLAN, 802.11a/n/ac/ax UNII, Bluetooth (1x, EDR, LE1M, LE2M, HDR4, HDR8), WPT

This device supports BT Beamforming

This device supports simultaneous transmission operations, which allows for multiple transmitters to transmit simultaneously on the same antenna. The table below shows all configurations possible.

Antenna	Simultaneous Tx Config	WLAN	Bluetooth	GSM / WCDMA	LTE / FR1 NR			UNII
		802.11 b/g/n/ax	BDR, EDR, HDR4/8, LE1/2M	Mid Band	Mid Band	High Band	Ultra High Band	802.11 a/n/ac/ax
2a	Config 1	✓	×	×	×	×	✓	×
2a	Config 2	×	✓	×	×	×	✓	×
4a	Config 3	✓	×	×	×	×	✓	×
4a	Config 4	×	✓	×	×	×	✓	×
4b	Config 5	×	×	✓	×	×	×	✓
4b	Config 6	×	×	×	✓	×	×	✓
4b	Config 7	×	×	×	×	✓	×	✓

Table 2-1. Simultaneous Transmission Configurations

✓ = Support; × = Not Support

Note:
All the above simultaneous transmission configurations have been tested and the worst case configuration was found to be config 7 and reported in UNII (OFDMA) and Part 27b test reports.

2.3 Antenna Description

Following antenna gains provided by manufacturer were used for the testing.

Band	Antenna Gain (dBi)			
	Antenna 3	Antenna 1	Antenna 4b	Antenna 2b
LTE Band 12/17	-1.9	-3.2	N/A	N/A
NR Band n12				
LTE Band 13	-3.9	-3.5		
LTE Band 71	-2.1	-3.1		
NR Band n71				
LTE Band 4/66	0.6	1.1	-5.2	-1.8
NR Band n66				
WCDMA1700				

Table 2-2. Highest Antenna Gain

2.4 Test Support Equipment

1	Apple MacBook Pro	Model:	A2141	S/N:	C02DV7VKMD6T
	w/AC/DC Adapter	Model:	A2166	S/N:	N/A
2	Apple USB-C Cable	Model:	Chimp	S/N:	420A57
3	USB-C Cable	Model:	A146	S/N:	N/A
	w/ AC Adapter	Model:	A2305	S/N:	N/A
4	Apple Pencil	Model:	N/A	S/N:	GQXYGSXBJKM9
5	DC Power Supply	Model:	KPS3010D	S/N:	N/A

Table 2-3. Test Support Equipment

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 and the worst case channel.

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.

2.6 Software and Firmware

The test was conducted with firmware version 18E20700y 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.

3.0 DESCRIPTION OF TESTSEVALUAION PROCEDURE

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.

For radiated spurious emissions measurements and calculations, conversion method is used per the formulas in KDB 971168 Section 5.8.4. Field Strength (EIRP) is calculated using the following formulas:

$$E_{[dB\mu V/m]} = \text{Measured amplitude level}_{[dBm]} + 107 + \text{Cable Loss}_{[dB]} + \text{Antenna Factor}_{[dB/m]}$$

And

$$EIRP_{[dBm]} = E_{[dB\mu V/m]} + 20\log D - 104.8;$$

Where D is the measurement distance in meters.

All radiated measurements are performed in a chamber that meets the site requirements per ANSI C63.4-2014.

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.

Radiated spurious emission levels are investigated with the receive antenna horizontally and vertically polarized per ANSI C63.26 and TIA-603-E-2016.

4.0 MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.23-2012. 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	1.65
Radiated Disturbance (<30MHz)	4.06
Radiated Disturbance (30MHz-1GHz)	4.30
Radiated Disturbance (1-18GHz)	4.78
Radiated Disturbance (>18GHz)	4.79

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	PXA Signal Analyzer (3Hz - 26.5 GHz)	7/24/2020	Annual	7/24/2021	MY55330128
Keysight Technology	N9040B	UXA Signal Analyzer	12/19/2020	Annual	12/19/2021	MY57212015
Keysight Technology	E7515B	UXM 5G Wireless Test Platform	11/14/2020	Annual	11/14/2021	MY60192562
ATM	180-442A-KF	20dB Nominal Gain Horn Antenna	8/11/2020	Annual	8/11/2021	T058701-01
ESPEC	SU-241	Tabletop Temperature Chamber	9/28/2020	Annual	9/28/2021	92009574
ETS-Lindgren	3142E	BiConiLog Antenna (30MHz - 6GHz)	9/15/2020	Annual	9/15/2021	208204
ETS-Lindgren	3117	Double Ridged Guide Antenna (1-18 GHz)	4/21/2020	Annual	4/21/2021	205956
Rohde & Schwarz	TS-PR8	Pre-Amplifier (30MHz - 8GHz)	7/15/2020	Annual	7/15/2021	102356
Rohde & Schwarz	TS-PR18	Pre-Amplifier (1GHz - 18GHz)	12/3/2020	Annual	12/3/2021	101648
Rohde & Schwarz	ESW26	EMI Test Receiver	6/8/2020	Annual	6/8/2021	101299
Rohde & Schwarz	ESW44	EMI Test Receiver	8/6/2020	Annual	8/6/2021	101668
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	10/13/2020	Annual	10/13/2021	161616
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	4/16/2020	Annual	4/16/2021	166869
Rohde & Schwarz	TS-PR1840	Pre-Amplifier (18GHz - 40GHz)	4/23/2020	Annual	4/23/2021	100052
Rohde & Schwarz	TC-TA18	Cross Polarized Vivaldi Antenna (400MHz-18GHz)	10/2/2020	Annual	10/2/2021	101063
Rohde & Schwarz	HFH2-Z2	Loop Antenna	3/12/2020	Annual	3/12/2021	100546

Table 5-1. Test Equipment List

Notes:

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

6.0 SAMPLE CALCULATIONS

Emission Designator

WCDMA Emission Designator

Emission Designator = 4M16F9W
WCDMA BW = 4.16 MHz
F = Frequency Modulation
9 = Composite Digital Info
W = Combination (Audio/Data)

π/2 BPSK / QPSK Modulation

Emission Designator = 8M62G7W
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
W = 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 analyzer. The loss of the cable between the signal generator and the terminals of the substituted antenna is 2.0 dB at 1564 MHz. So 6.1 dB is added to the signal generator reading of –30.9 dBm yielding –24.80 dBm. The fundamental EIRP was 25.501 dBm so this harmonic was 25.501 dBm – (-24.80).

7.0 TEST RESULTS

7.1 Summary

Company Name: Apple Inc.

FCC ID: BCGA2379

FCC Classification: PCS Licensed Transmitter (PCB)

Mode(s): WCDMA/LTE/NR

Test Condition	Test Description	FCC Part Section(s)	Test Limit	Test Result	Reference
CONDUCTED	Occupied Bandwidth	2.1049	N/A	N/A	Section 7.2
	Conducted Band Edge / Spurious Emissions	2.1051, 27.53	> 43 + 10log$_{10}$(P[Watts]) at Band Edge and for all out-of-band emissions	PASS	Sections 7.3, 7.4
	Peak-Average Ratio	27.50(d)(5)	< 13 dB	PASS	Section 7.5
	Transmitter Conducted Output Power	2.1046	N/A	N/A	See RF Exposure Report
	Frequency Stability	2.1055, 27.54	Fundamental emissions stay within authorized frequency block over the temperature and voltage range as tested	PASS	Section 7.8
	Effective Radiated Power / Equivalent Isotropic Radiated Power (LTE Band 71)	27.50(b)(10)	< 3 Watts max. ERP	PASS	Section 7.6
	Effective Radiated Power / Equivalent Isotropic Radiated Power (NR Band n71)			PASS	Section 7.6
	Effective Radiated Power / Equivalent Isotropic Radiated Power (LTE Band 12/17)			PASS	Section 7.6
	Effective Radiated Power / Equivalent Isotropic Radiated Power (NR Band 12)			PASS	Section 7.6
	Effective Radiated Power / Equivalent Isotropic Radiated Power (LTE Band 13)	27.50(c)(10)	< 3 Watts max. ERP	PASS	Section 7.6
	Equivalent Isotropic Radiated Power (WCDMA)	27.50(d)(4)	< 1 Watts max. EIRP	PASS	Section 7.6
	Equivalent Isotropic Radiated Power (NR Band n66)			PASS	Section 7.6
	Equivalent Isotropic Radiated Power (LTE Band 4/66)			PASS	Section 7.6
RADIATED	Radiated Spurious Emissions (LTE Band 13)	2.1053, 27.53(f)	< -70 dBW/MHz (for wideband signals) < -80 dBW (for discrete emissions less than 700Hz BW) For all emissions in the band 1559 - 1610 MHz	PASS	Section 7.7
	Radiated Spurious Emissions	2.1053, 27.53	> 43 + 10 log$_{10}$(P[Watts]) for all out-of-band emissions	PASS	Section 7.7

Table 7-1. Summary of 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 shown in Section 7.0 were 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 2G/3G Automation Version 4.5 and LTE Automation Version 5.3.

7.2 Occupied Bandwidth

§2.1049

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

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.

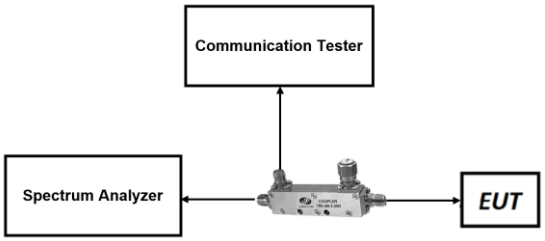
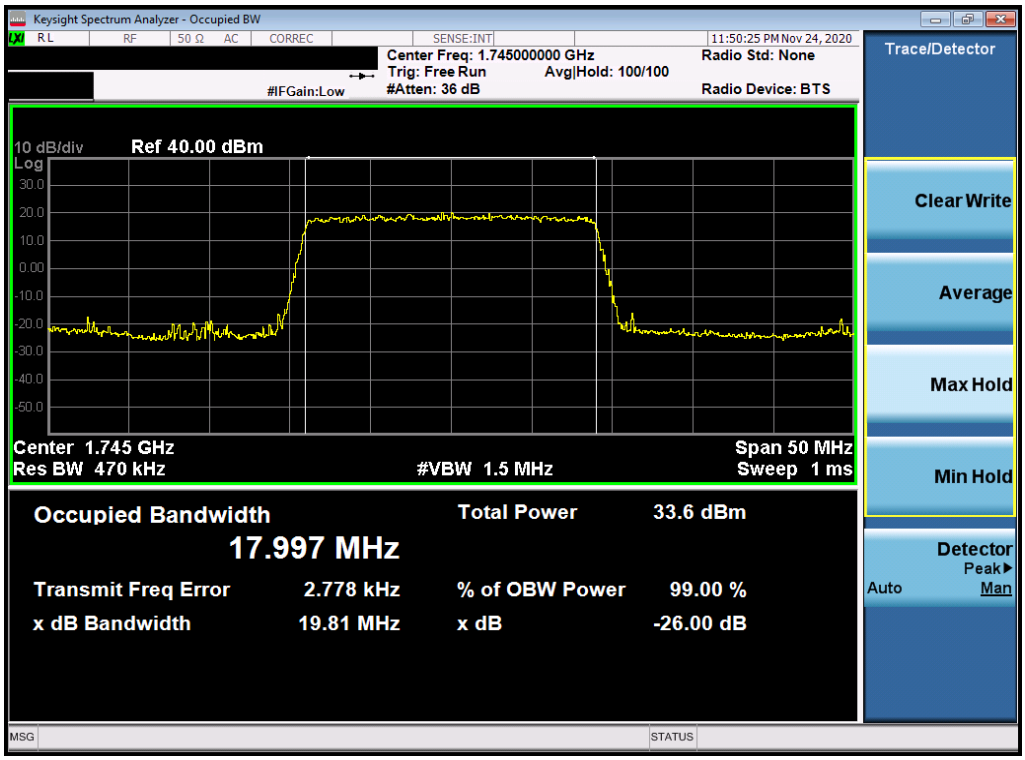


Figure 7-1. Test Instrument & Measurement Setup

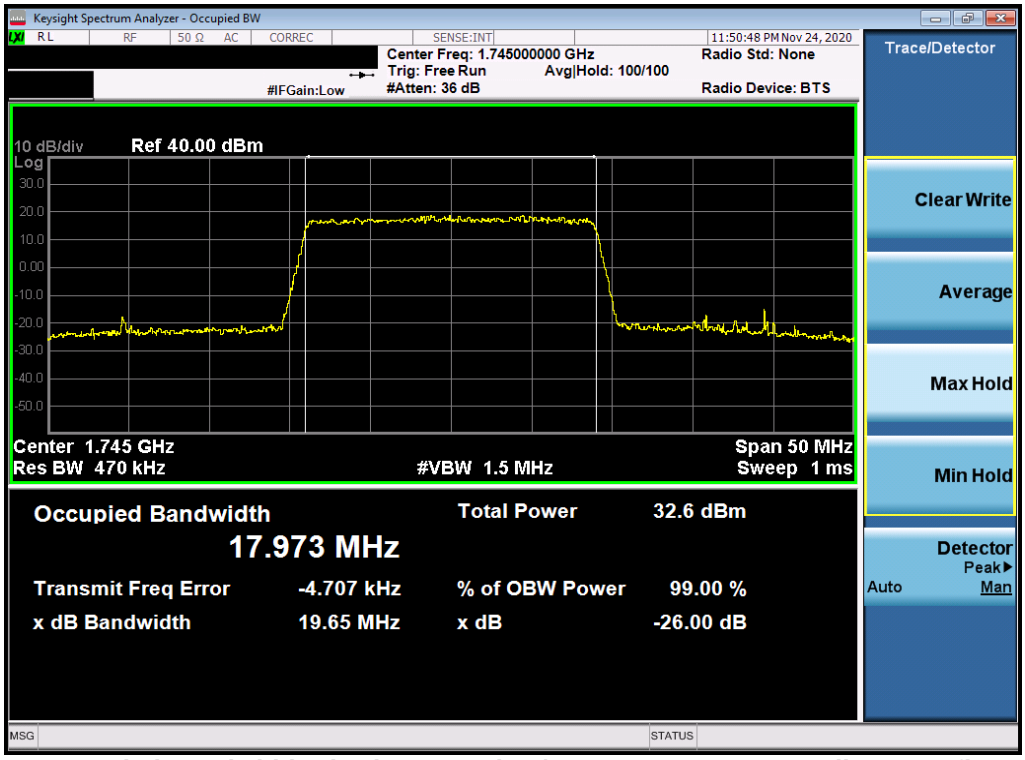
Test Notes

None.

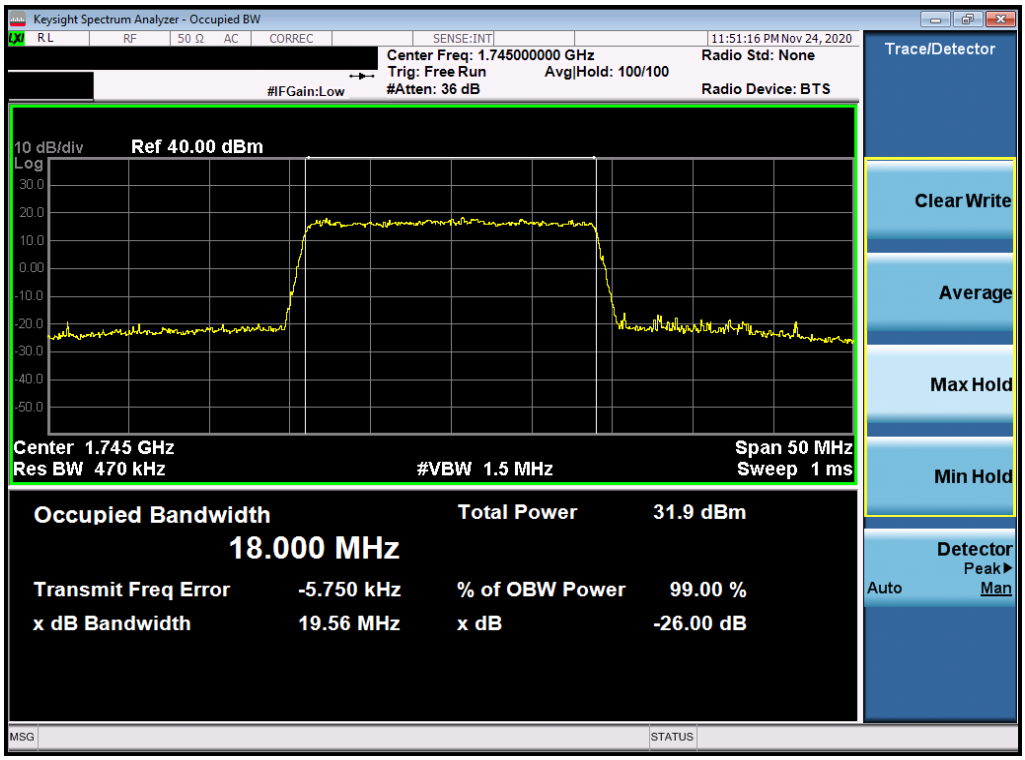
LTE Band 66/4



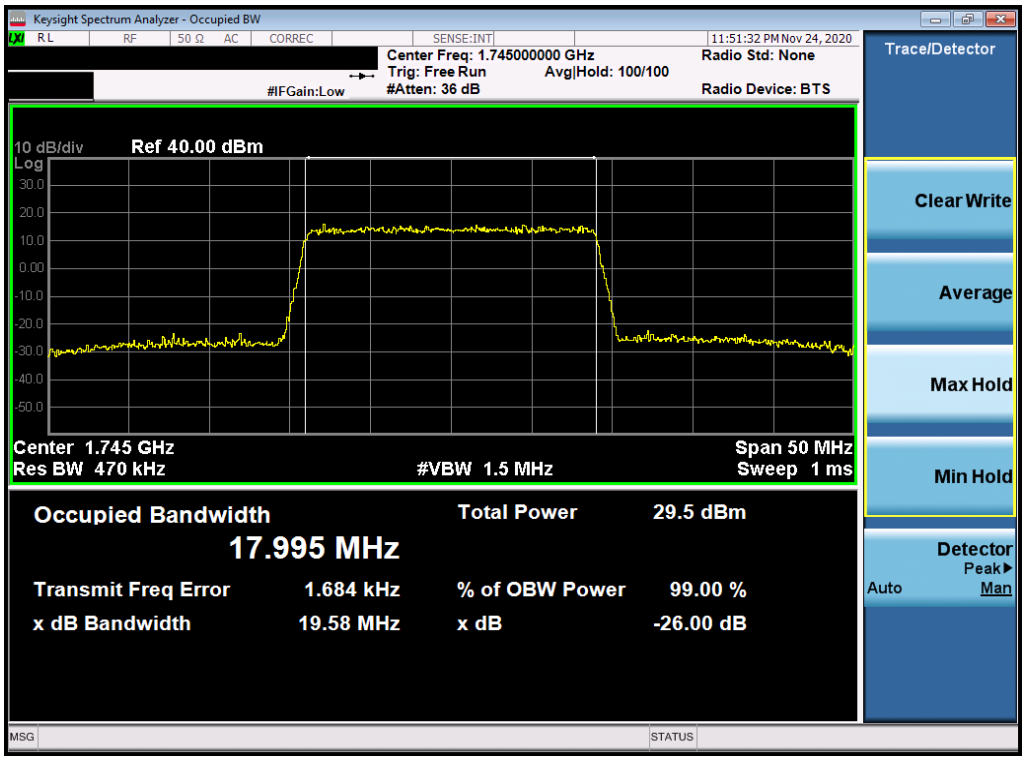
Plot 7-1. Occupied Bandwidth Plot (LTE Band 66/4 - 20MHz QPSK - Full RB Configuration)



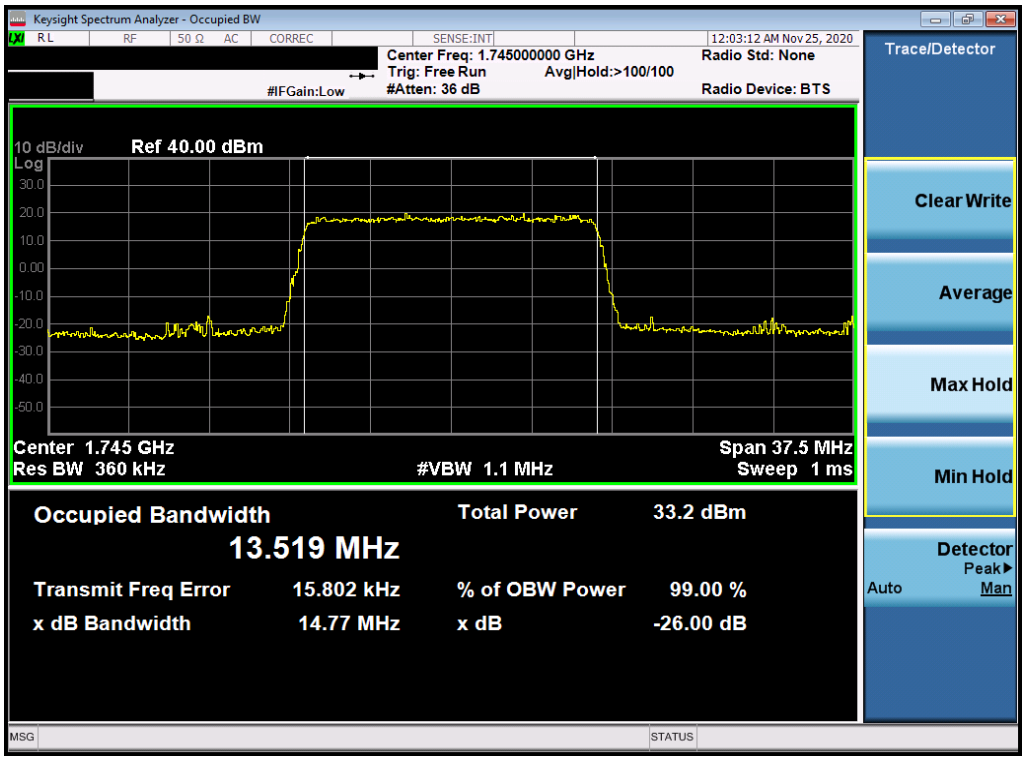
Plot 7-2. Occupied Bandwidth Plot (LTE Band 66/4 - 20MHz 16-QAM - Full RB Configuration)



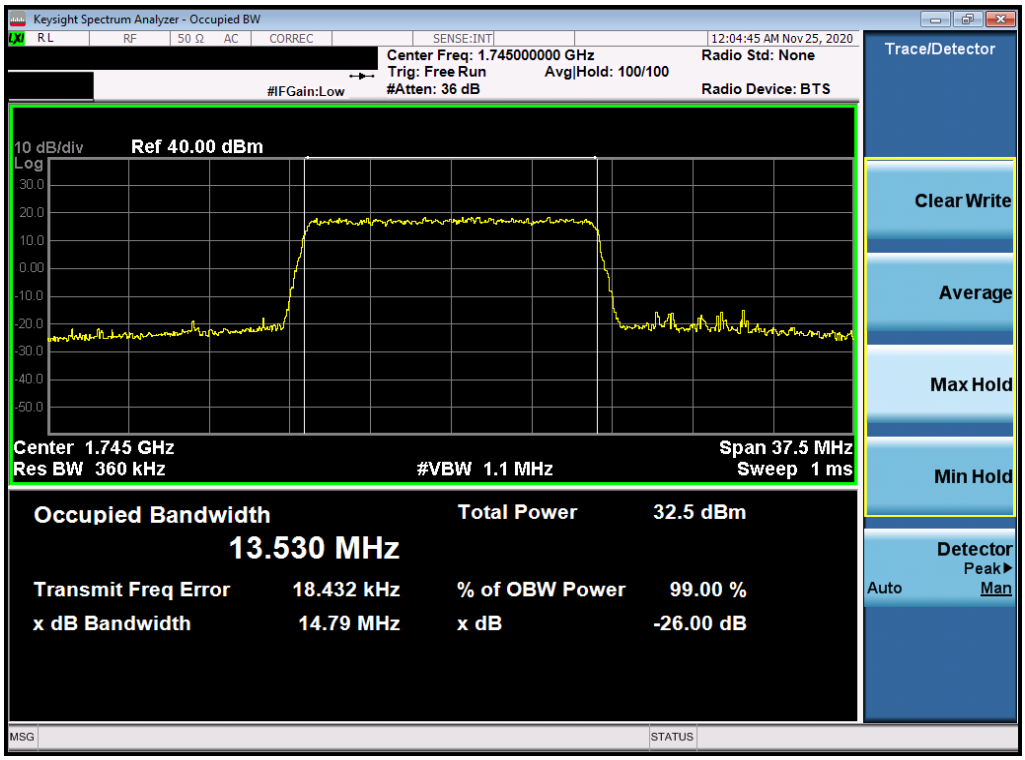
Plot 7-3. Occupied Bandwidth Plot (LTE Band 66/4 - 20MHz 64-QAM - Full RB Configuration)



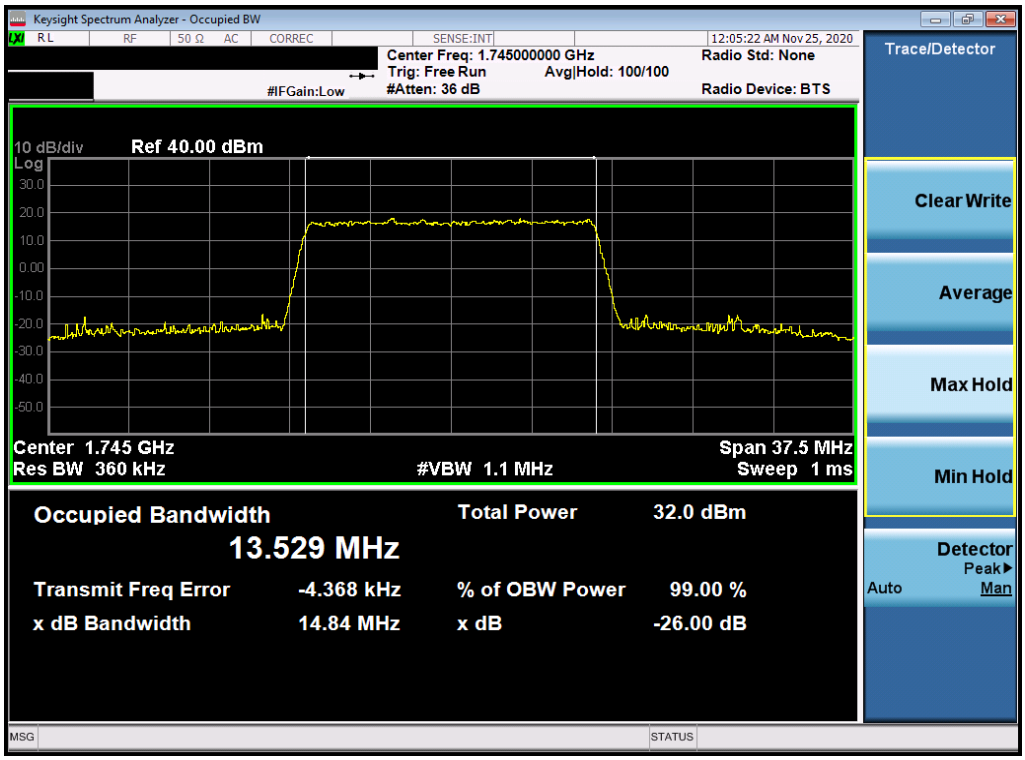
Plot 7-4. Occupied Bandwidth Plot (LTE Band 66/4 - 20MHz 256-QAM - Full RB Configuration)



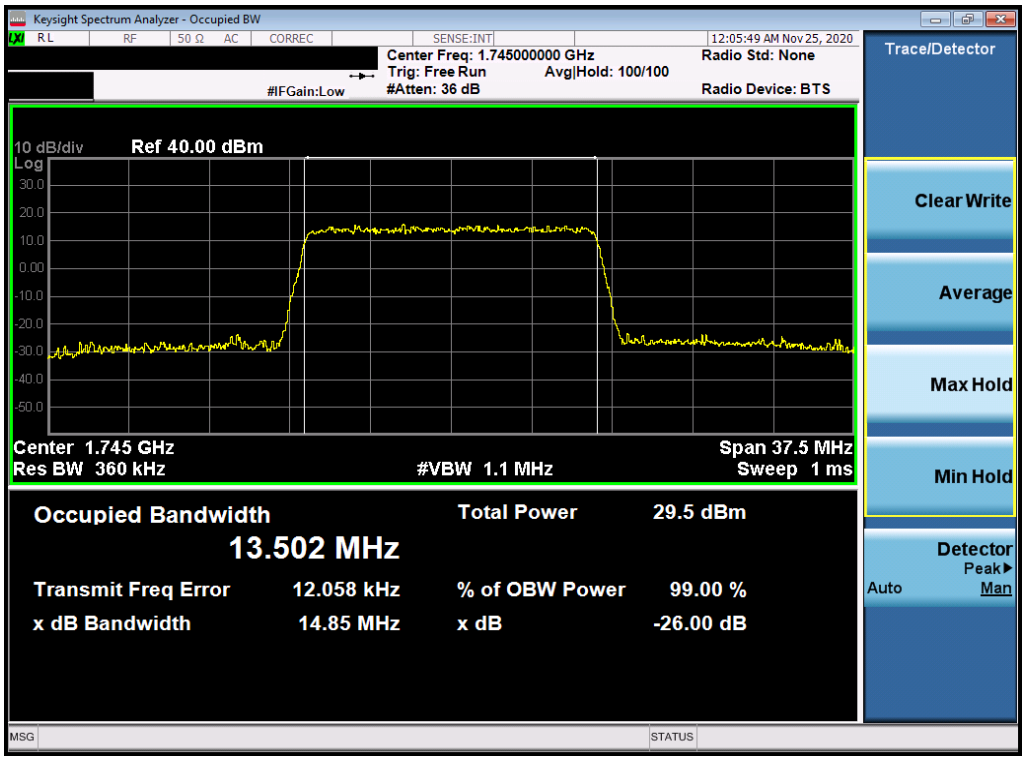
Plot 7-5. Occupied Bandwidth Plot (LTE Band 66/4 - 15MHz QPSK - Full RB Configuration)



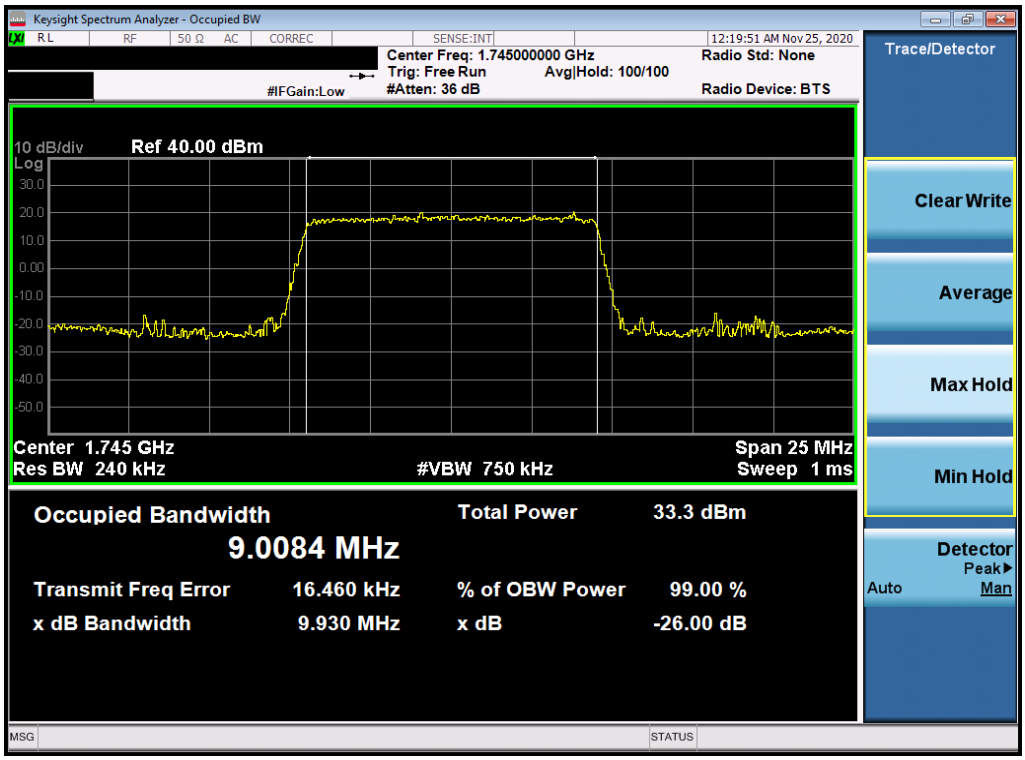
Plot 7-6. Occupied Bandwidth Plot (LTE Band 66/4 - 15MHz 16-QAM - Full RB Configuration)



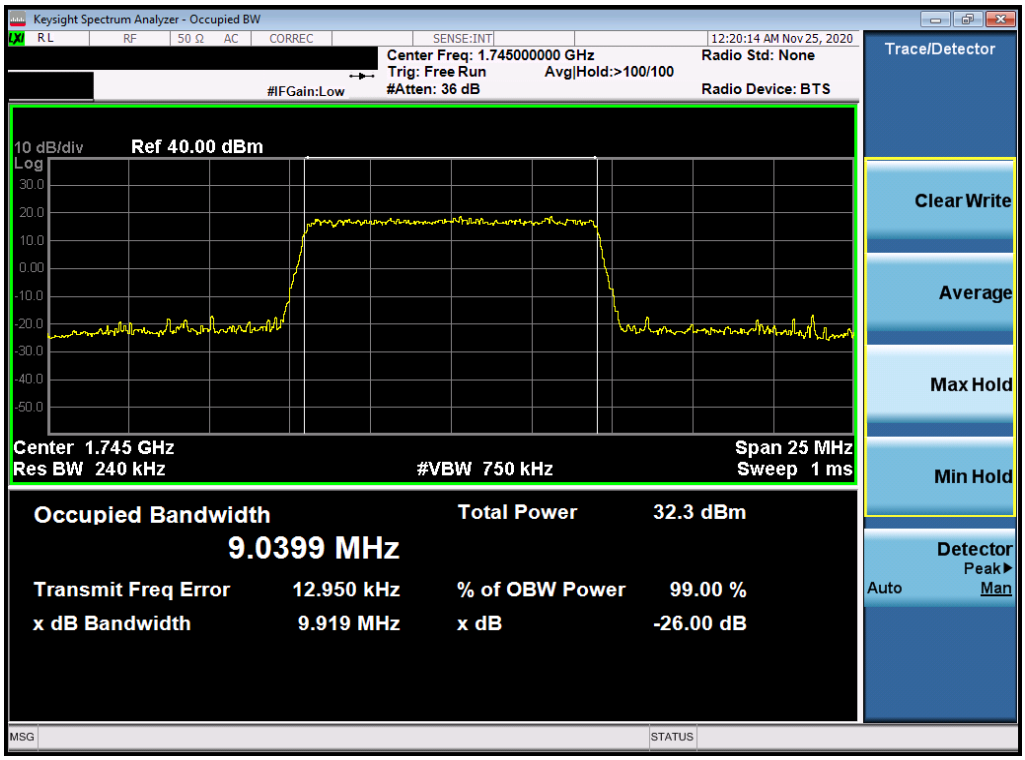
Plot 7-7. Occupied Bandwidth Plot (LTE Band 66/4 - 15MHz 64-QAM - Full RB Configuration)



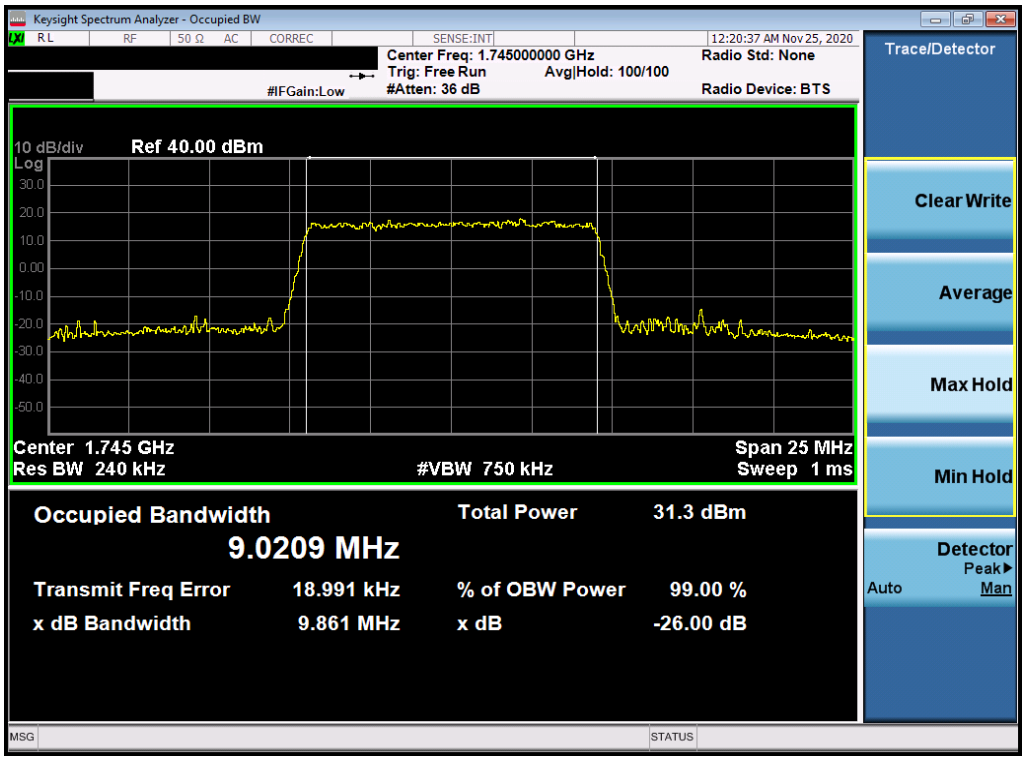
Plot 7-8. Occupied Bandwidth Plot (LTE Band 66/4 - 15MHz 256-QAM - Full RB Configuration)



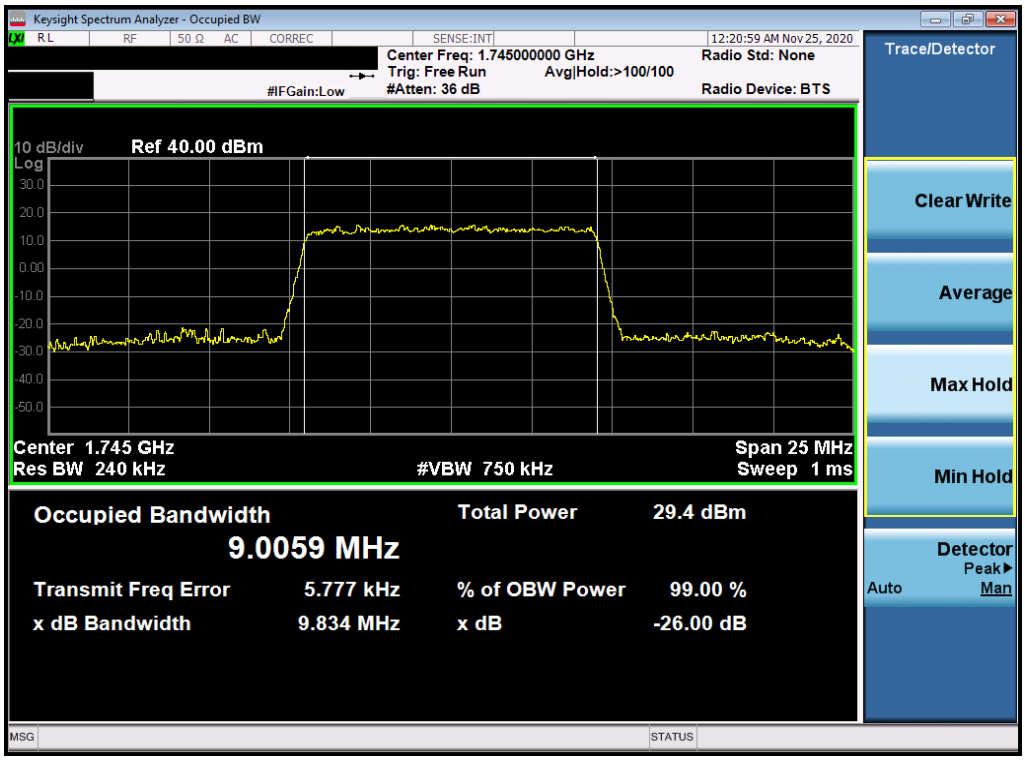
Plot 7-9. Occupied Bandwidth Plot (LTE Band 66/4 - 10MHz QPSK - Full RB Configuration)



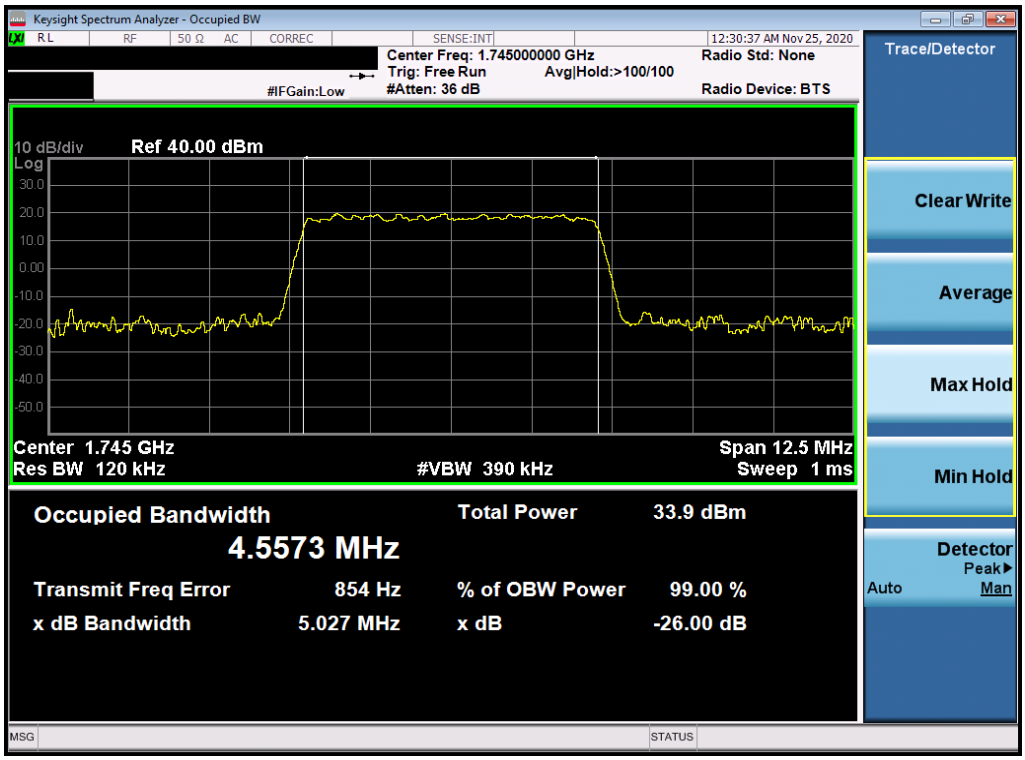
Plot 7-10. Occupied Bandwidth Plot (LTE Band 66/4 - 10MHz 16-QAM - Full RB Configuration)



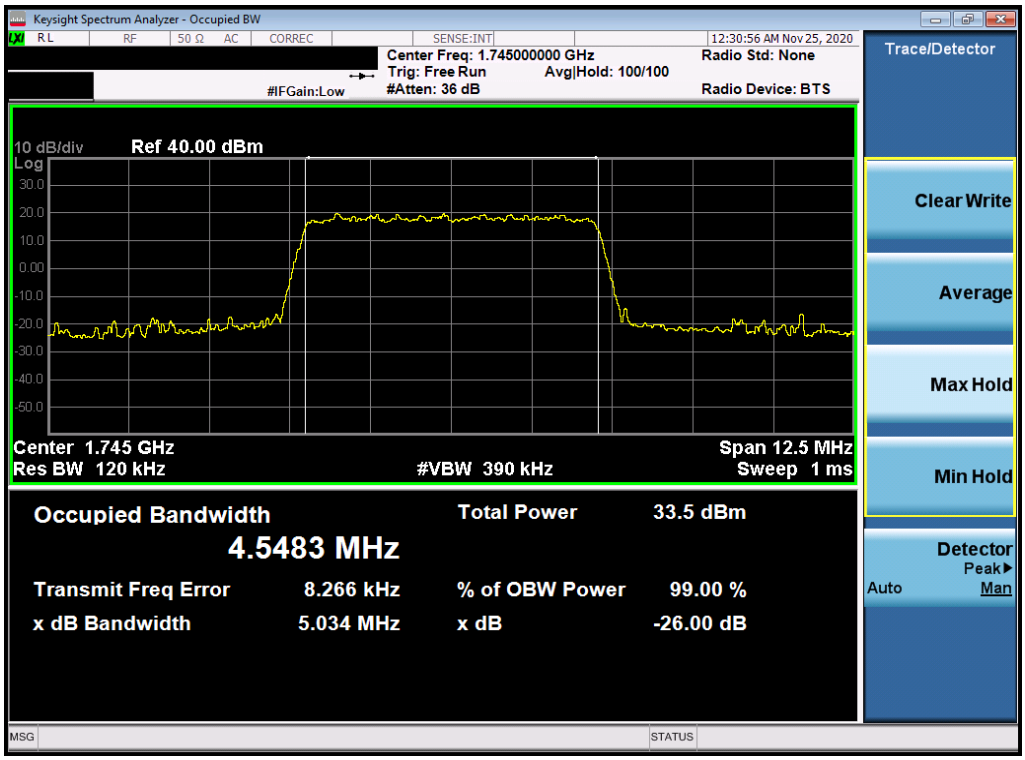
Plot 7-11. Occupied Bandwidth Plot (LTE Band 66/4 - 10MHz 64-QAM - Full RB Configuration)



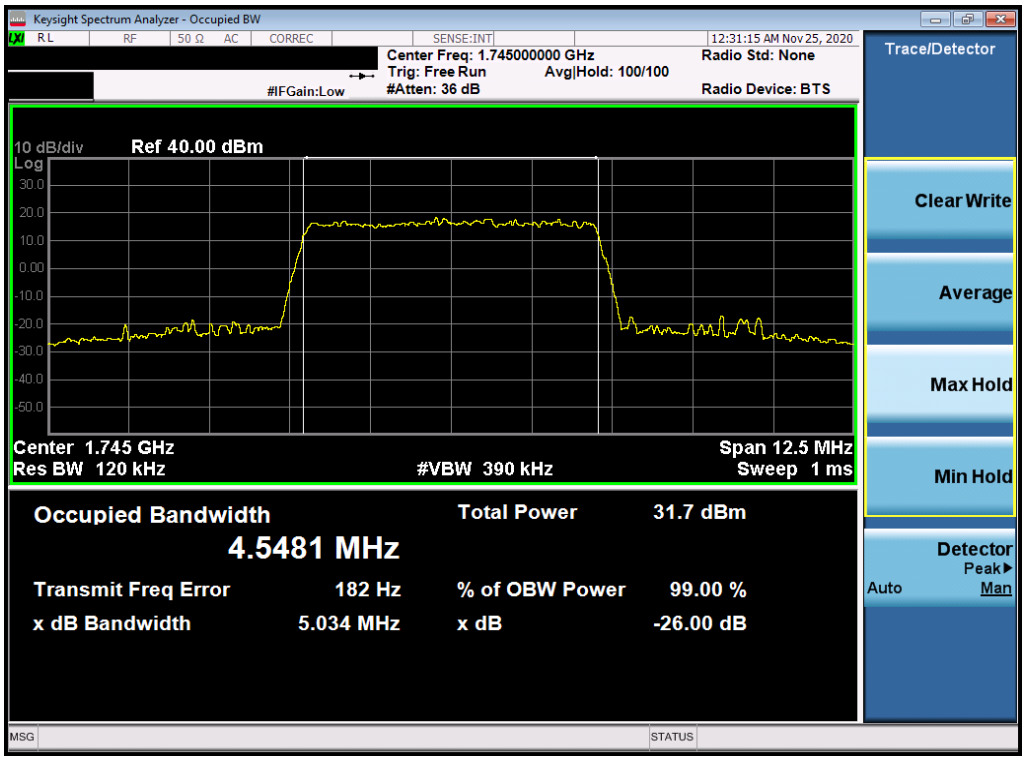
Plot 7-12. Occupied Bandwidth Plot (LTE Band 66/4 - 10MHz 256-QAM - Full RB Configuration)



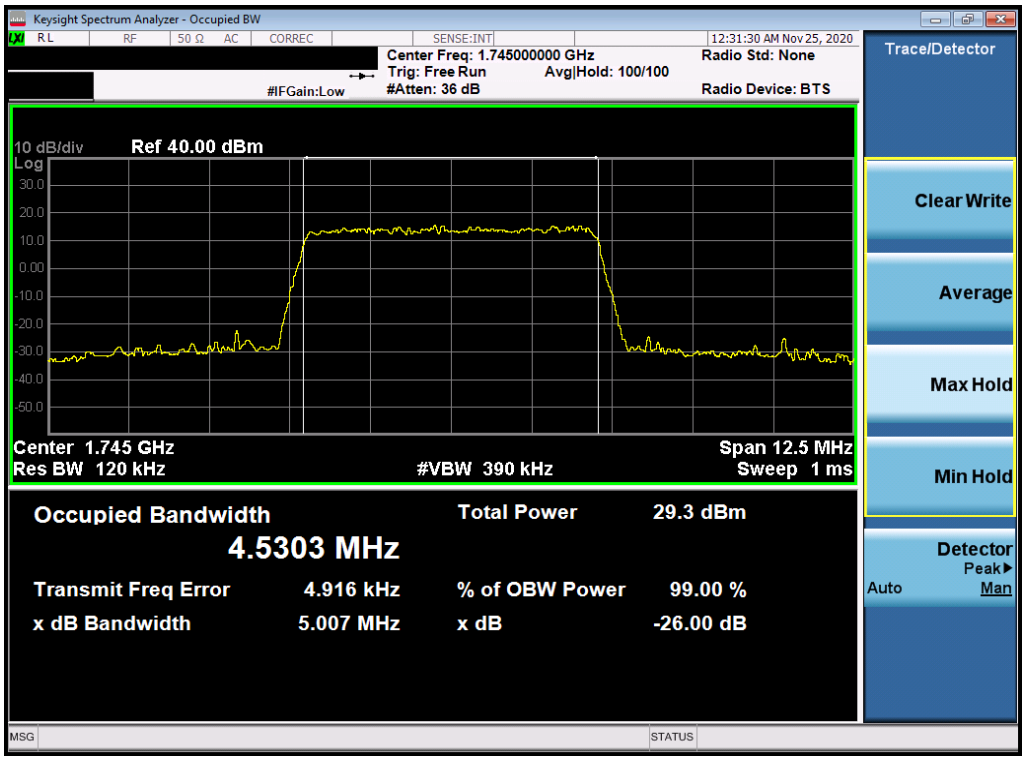
Plot 7-13. Occupied Bandwidth Plot (LTE Band 66/4 - 5MHz QPSK - Full RB Configuration)



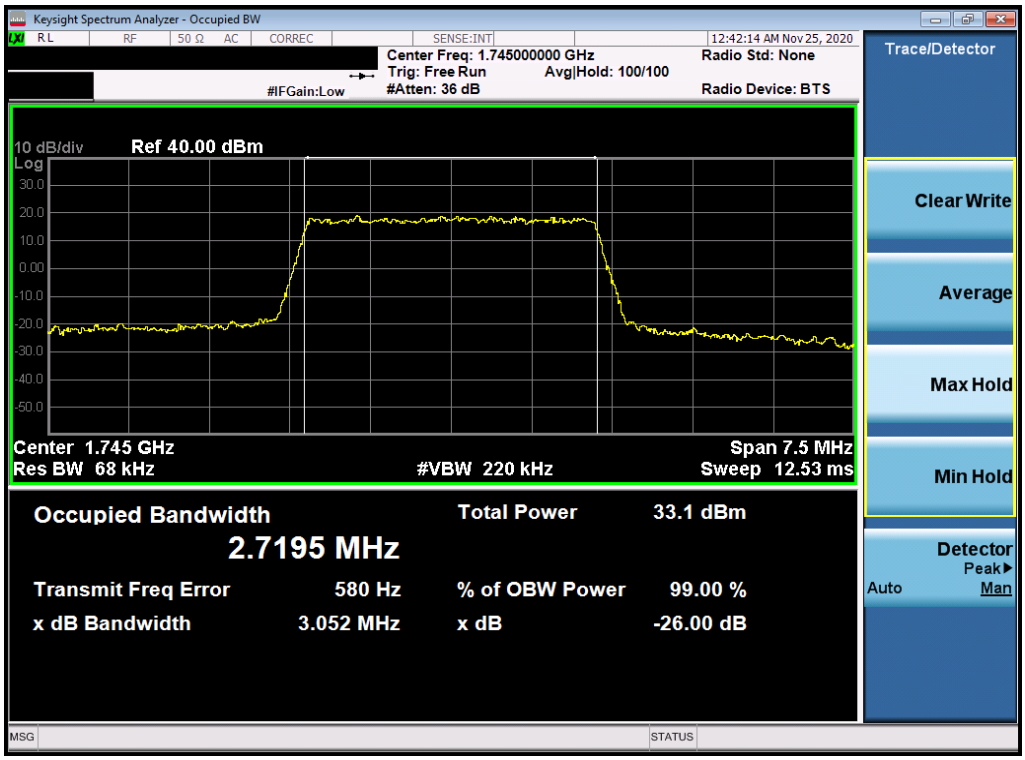
Plot 7-14. Occupied Bandwidth Plot (LTE Band 66/4 - 5MHz 16-QAM - Full RB Configuration)



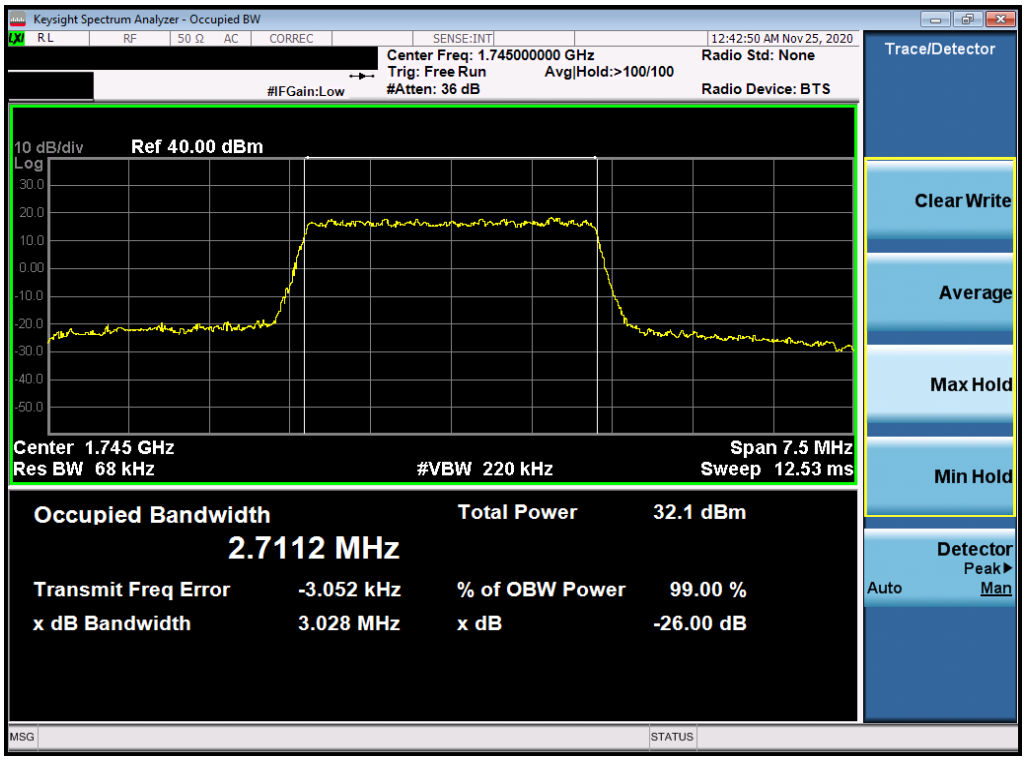
Plot 7-15. Occupied Bandwidth Plot (LTE Band 66/4 - 5MHz 64-QAM - Full RB Configuration)



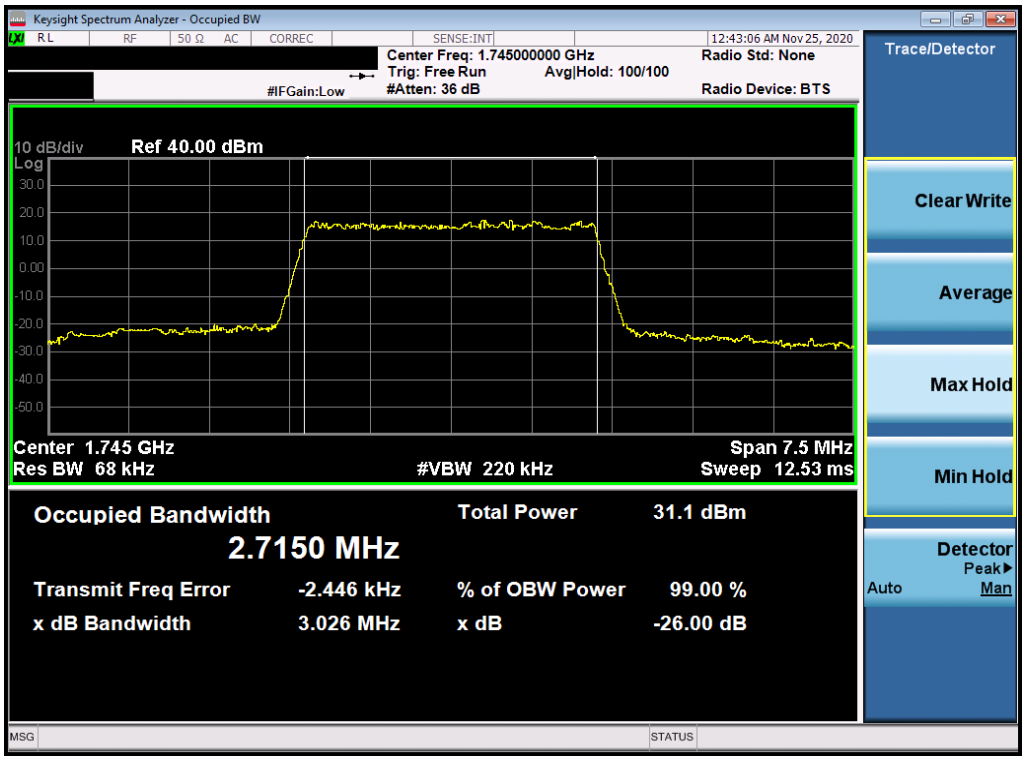
Plot 7-16. Occupied Bandwidth Plot (LTE Band 66/4 - 5MHz 256-QAM - Full RB Configuration)



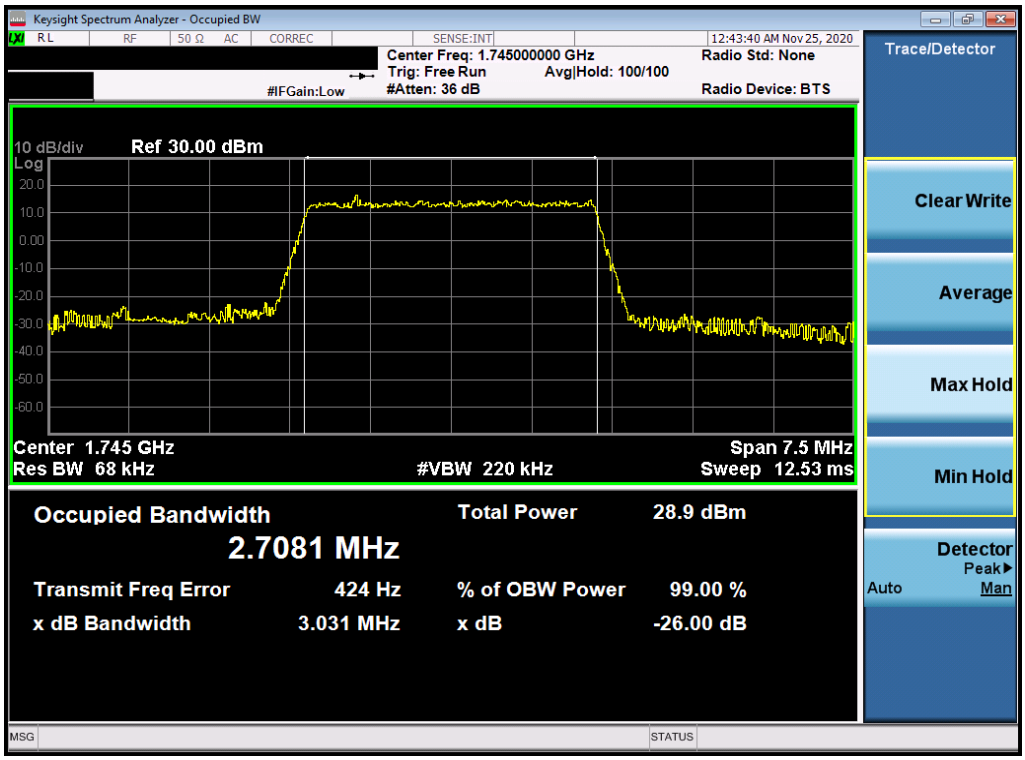
Plot 7-17. Occupied Bandwidth Plot (LTE Band 66/4 - 3MHz QPSK - Full RB Configuration)



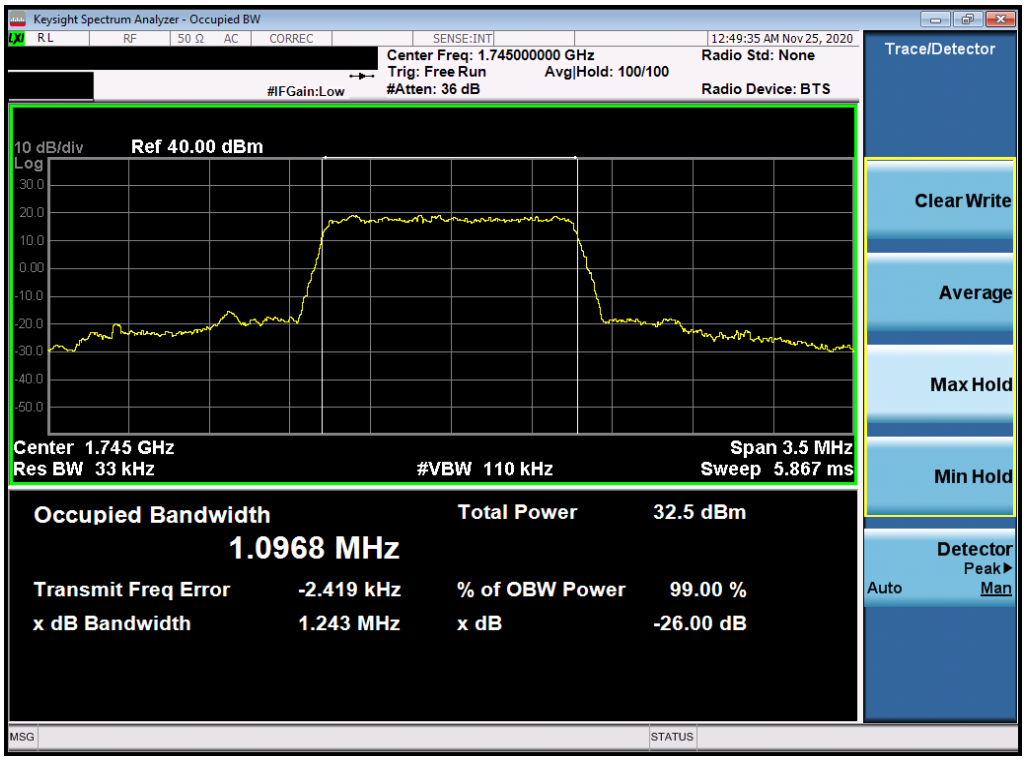
Plot 7-18. Occupied Bandwidth Plot (LTE Band 66/4 - 3MHz 16-QAM - Full RB Configuration)



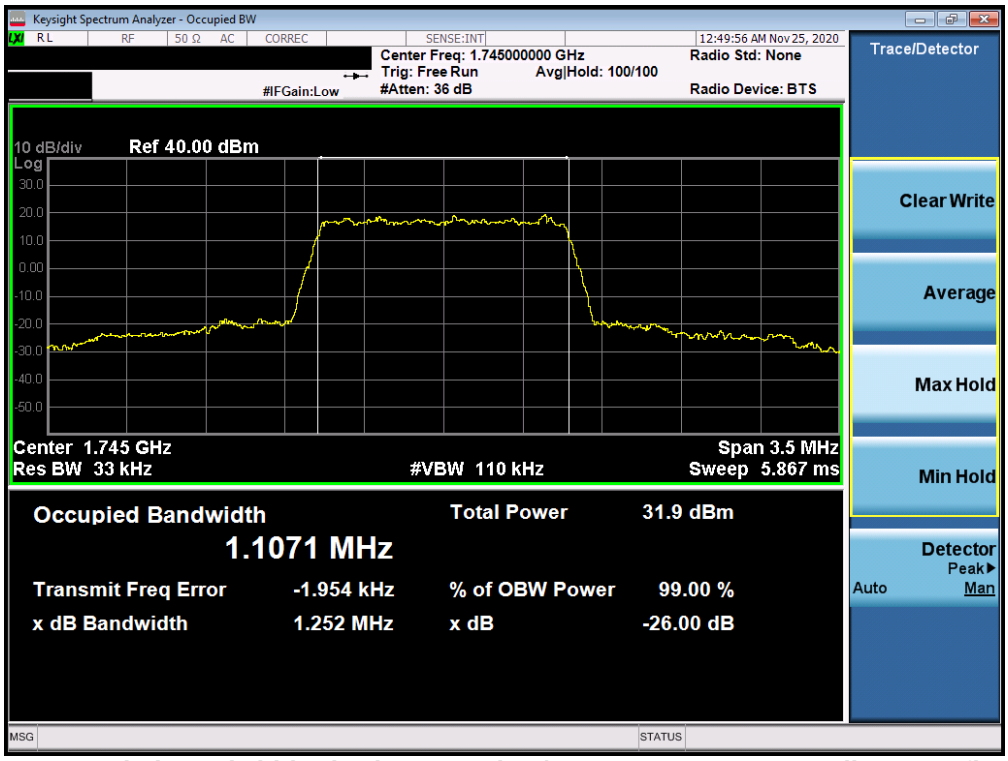
Plot 7-19. Occupied Bandwidth Plot (LTE Band 66/4 - 3MHz 64-QAM - Full RB Configuration)



Plot 7-20. Occupied Bandwidth Plot (LTE Band 66/4 - 3MHz 256-QAM - Full RB Configuration)

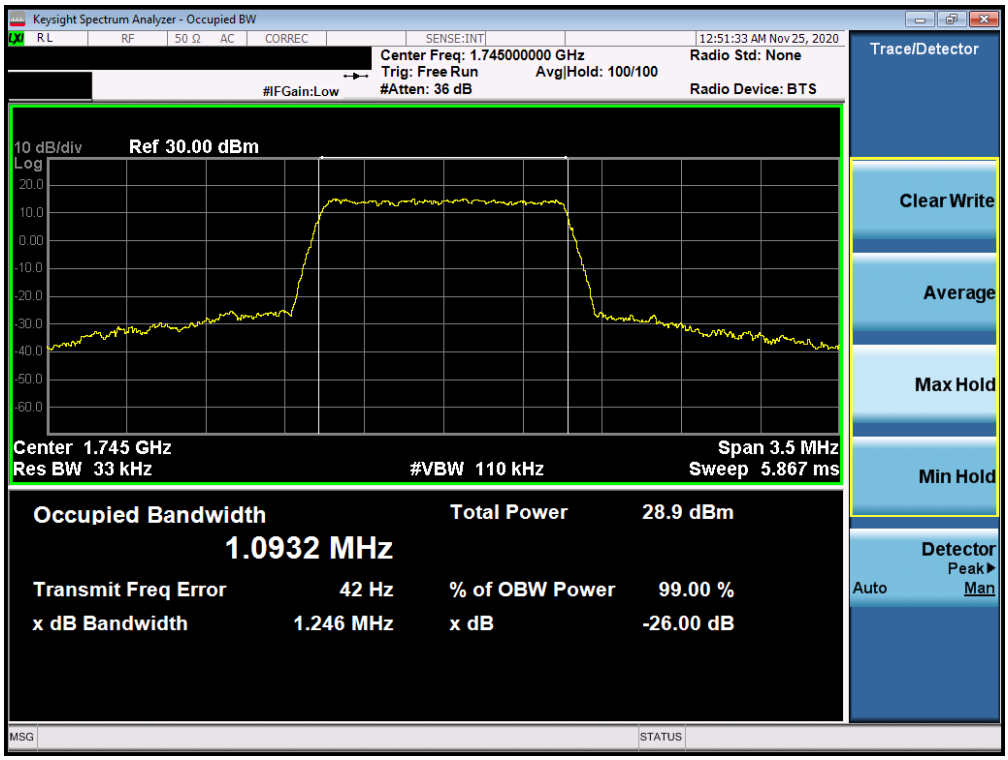


Plot 7-21. Occupied Bandwidth Plot (LTE Band 66/4 - 1.4MHz QPSK - Full RB Configuration)

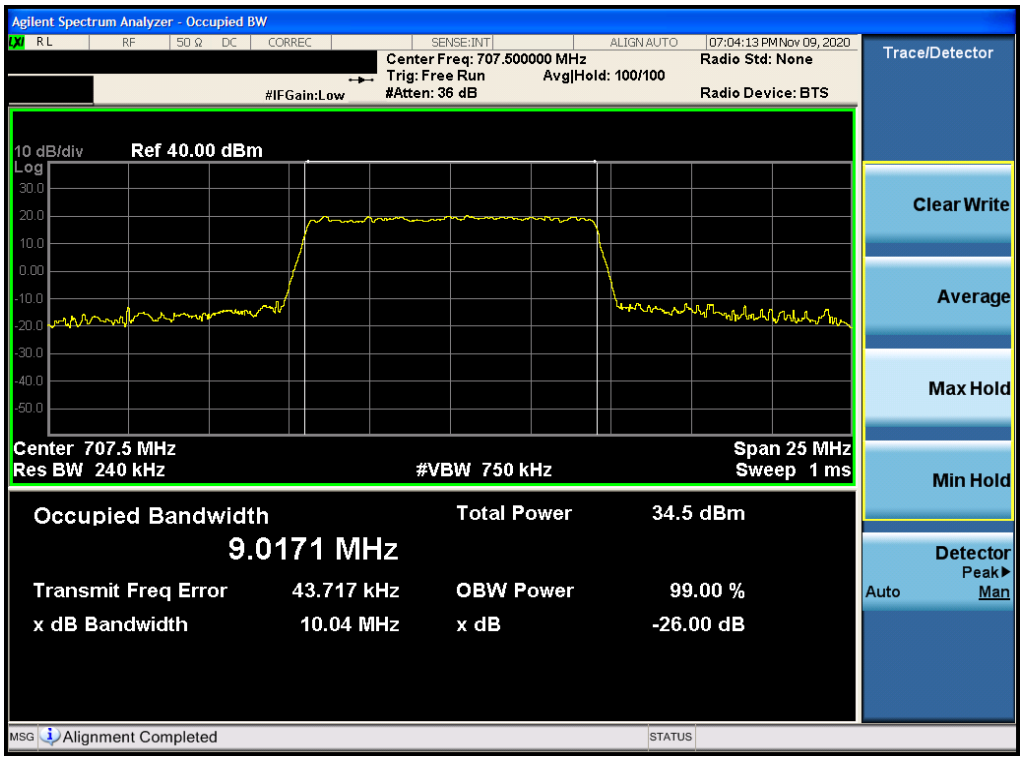


Plot 7-22. Occupied Bandwidth Plot (LTE Band 66/4 - 1.4MHz 16-QAM - Full RB Configuration)

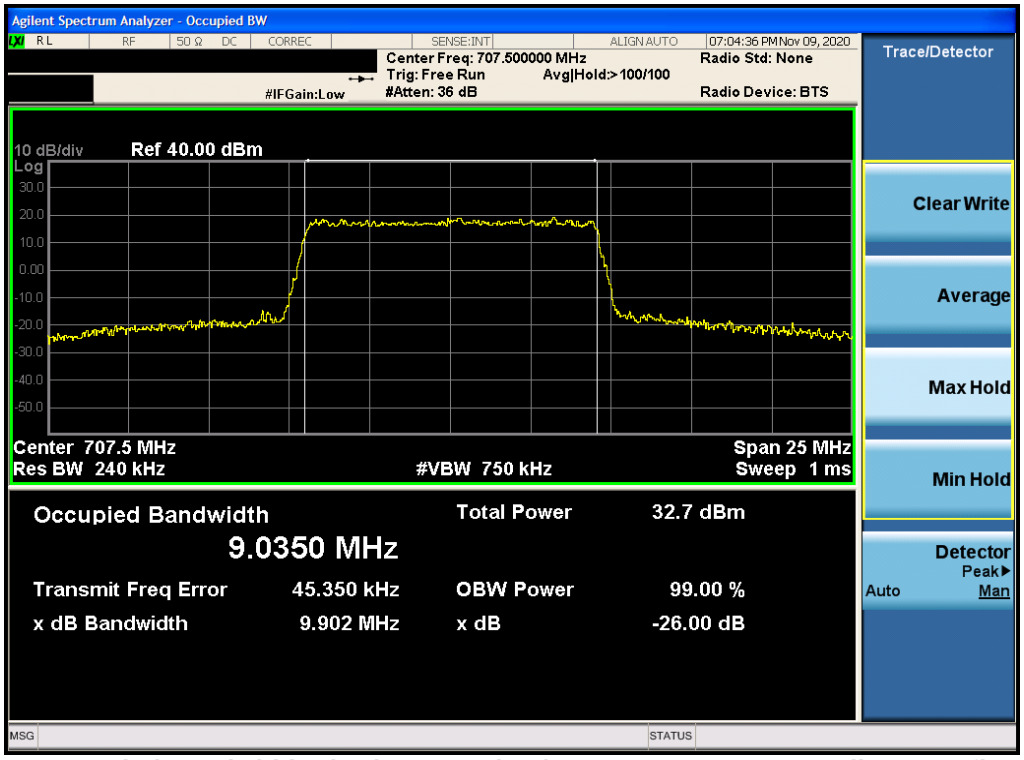
Plot 7-23. Occupied Bandwidth Plot (LTE Band 66/4 - 1.4MHz 64-QAM - Full RB Configuration)



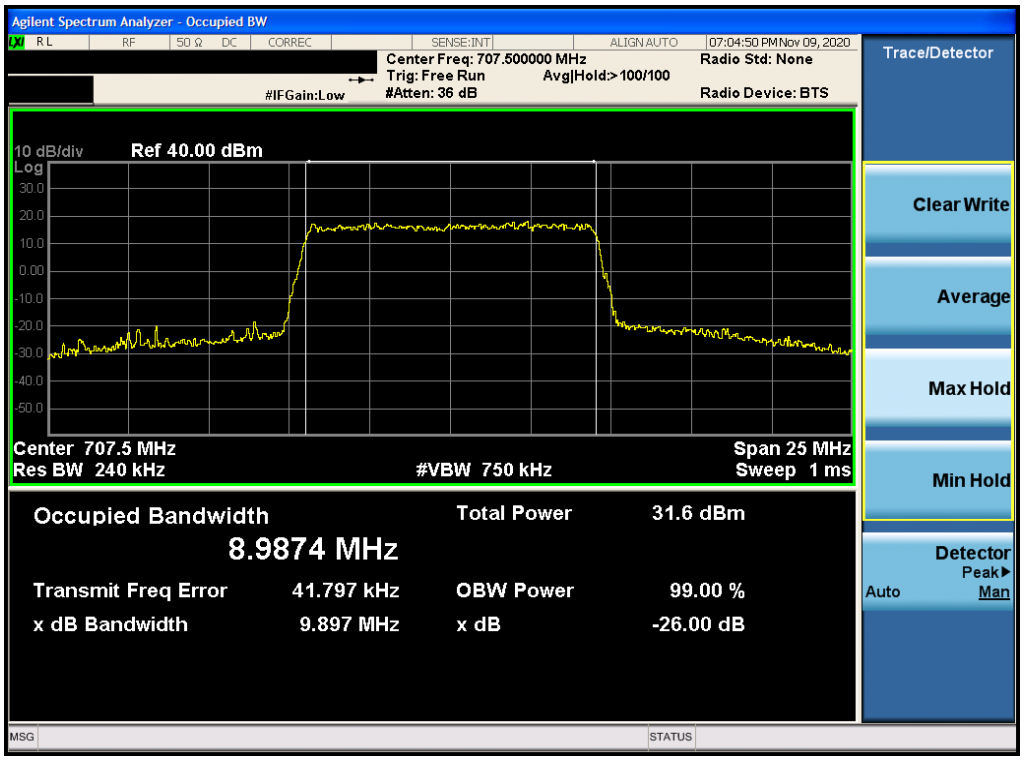
Plot 7-24. Occupied Bandwidth Plot (LTE Band 66/4 - 1.4MHz 256-QAM - Full RB Configuration)



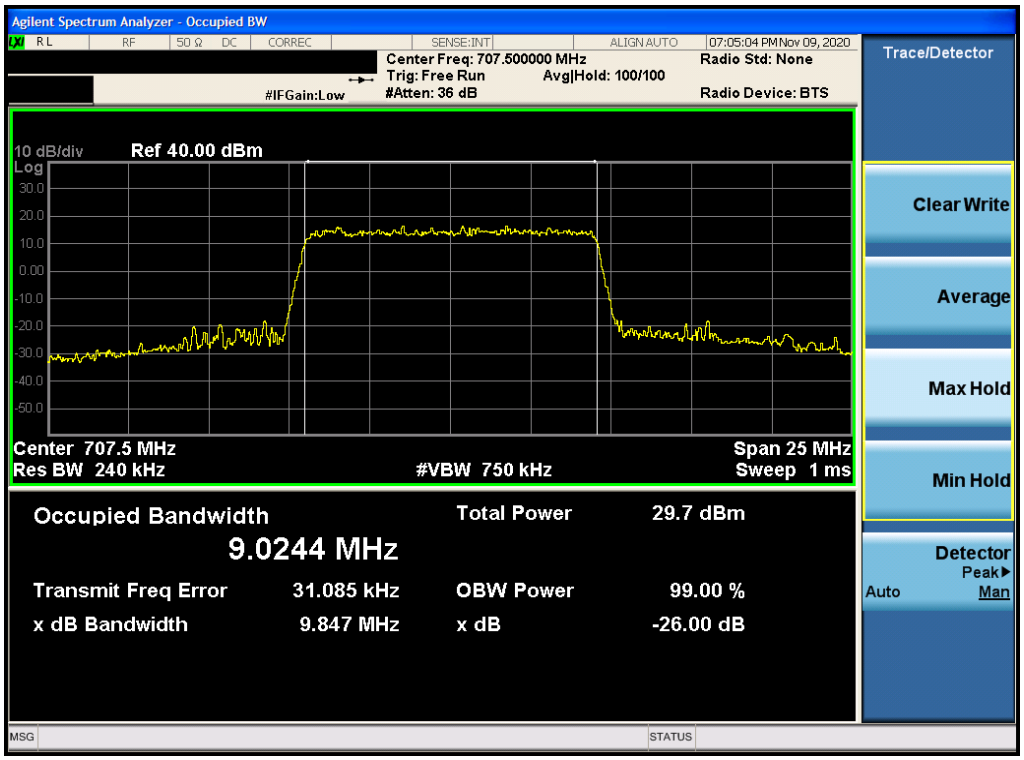
Plot 7-25. Occupied Bandwidth Plot (LTE Band 12/17 - 10MHz QPSK - Full RB Configuration)



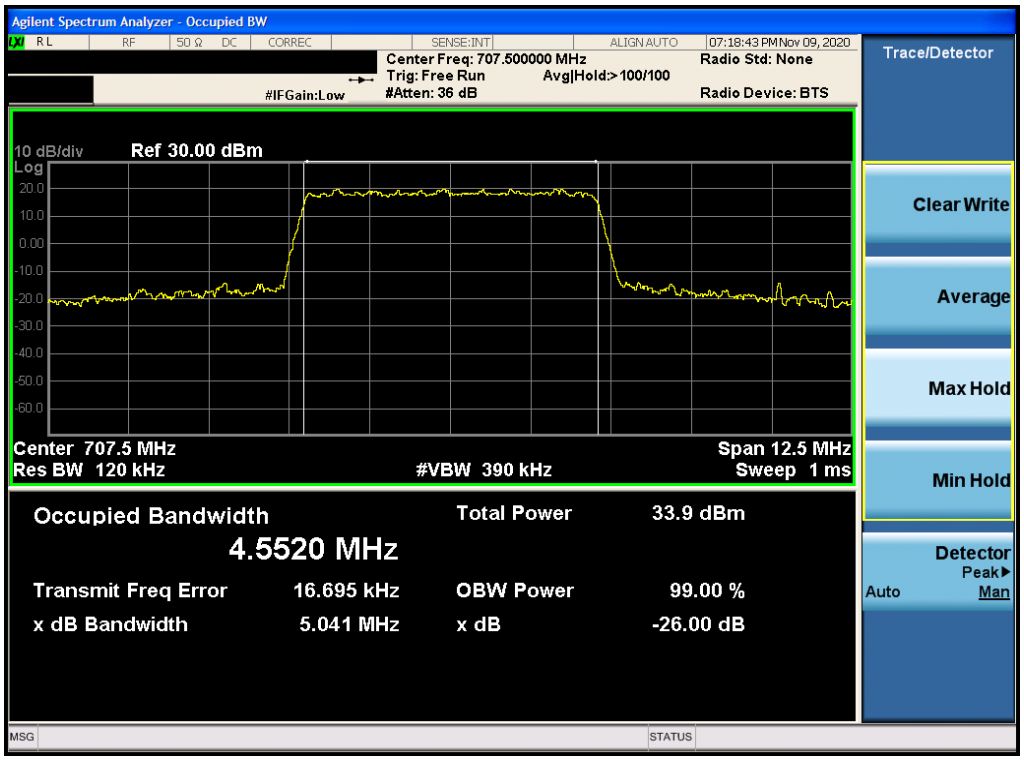
Plot 7-26. Occupied Bandwidth Plot (LTE Band 12/17 - 10MHz 16-QAM - Full RB Configuration)



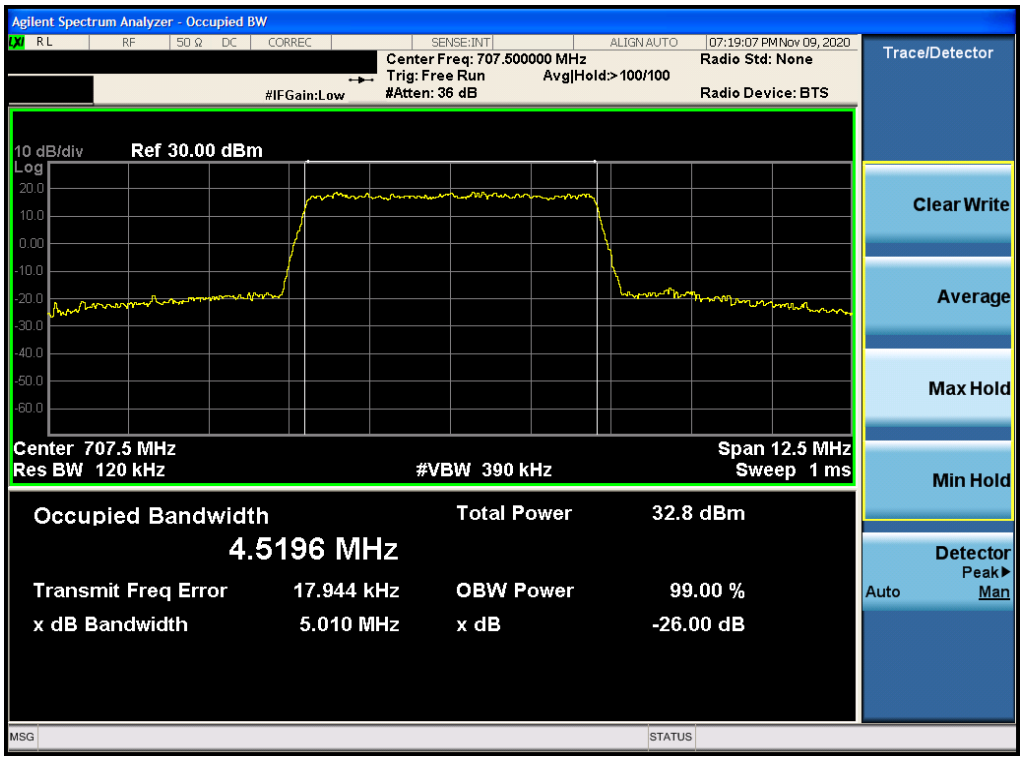
Plot 7-27. Occupied Bandwidth Plot (LTE Band 12/17 - 10MHz 64-QAM - Full RB Configuration)



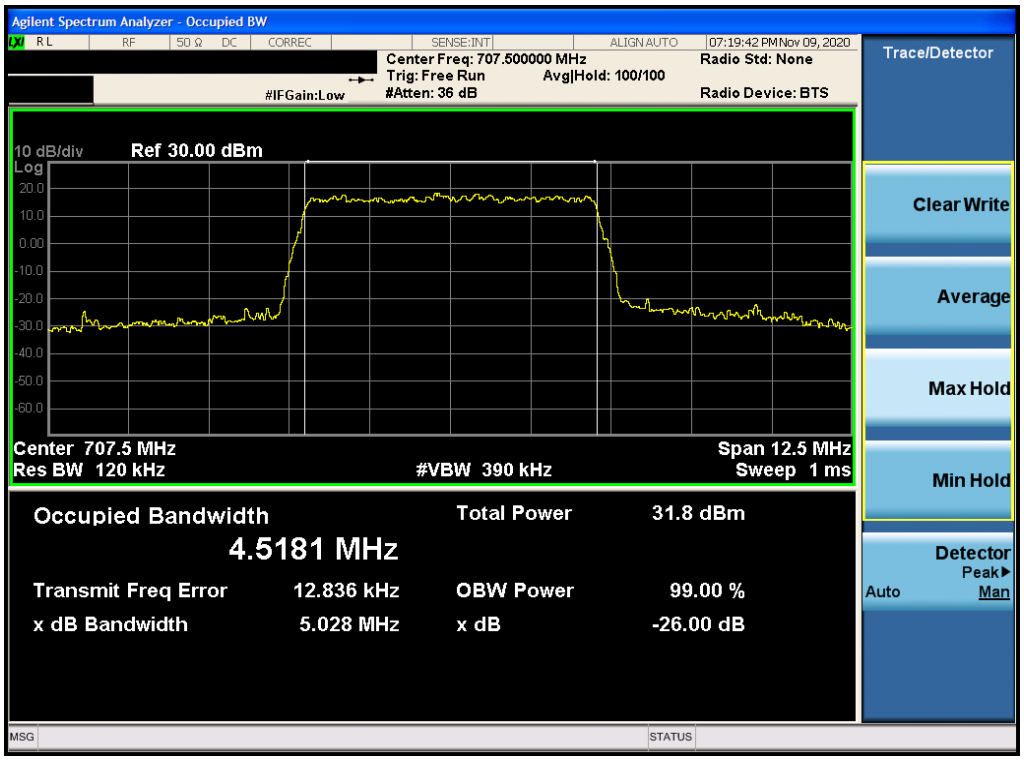
Plot 7-28. Occupied Bandwidth Plot (LTE Band 12/17 - 10MHz 256-QAM - Full RB Configuration)



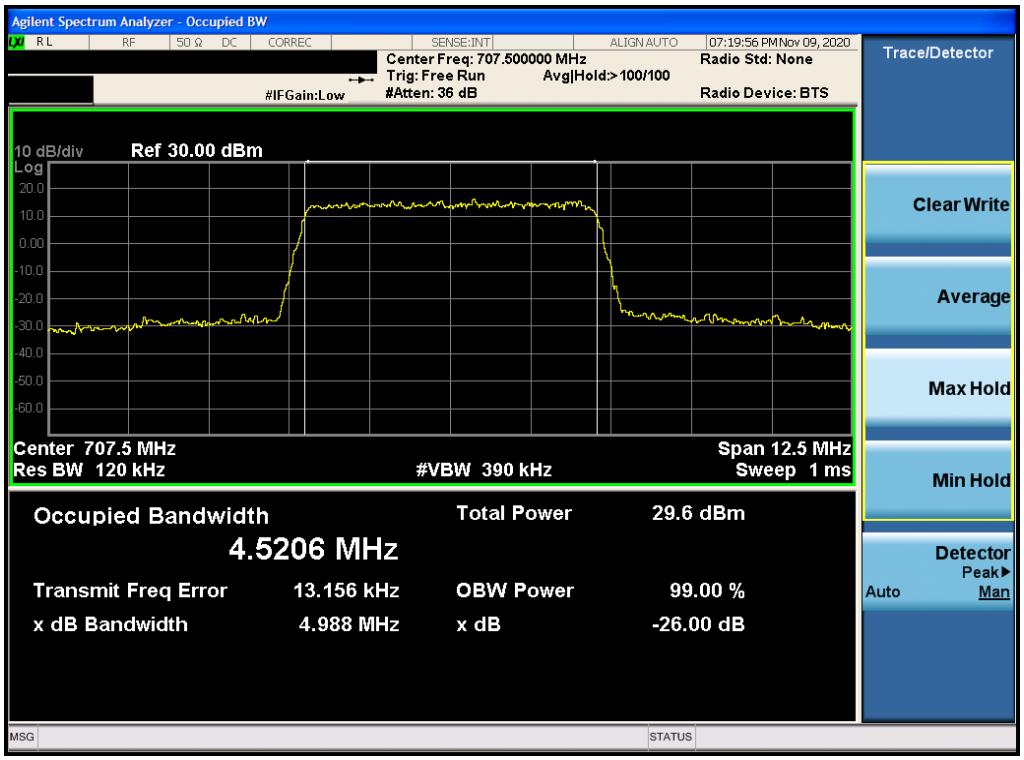
Plot 7-29. Occupied Bandwidth Plot (LTE Band 12/17 - 5MHz QPSK - Full RB Configuration)



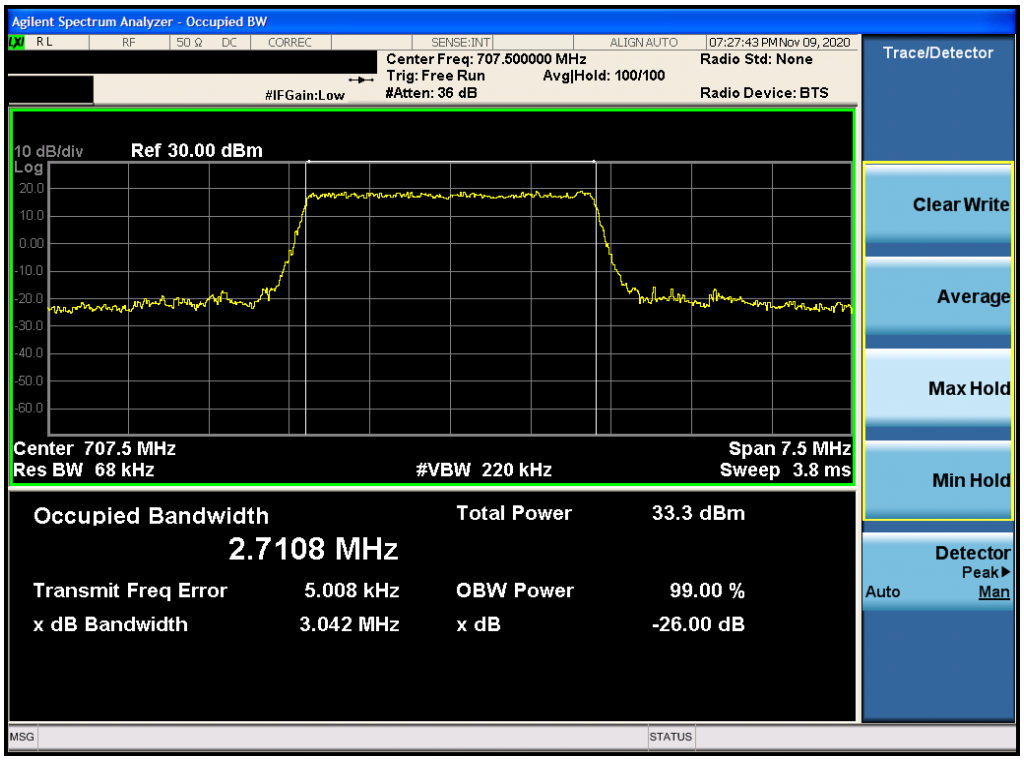
Plot 7-30. Occupied Bandwidth Plot (LTE Band 12/17 - 5MHz 16-QAM - Full RB Configuration)



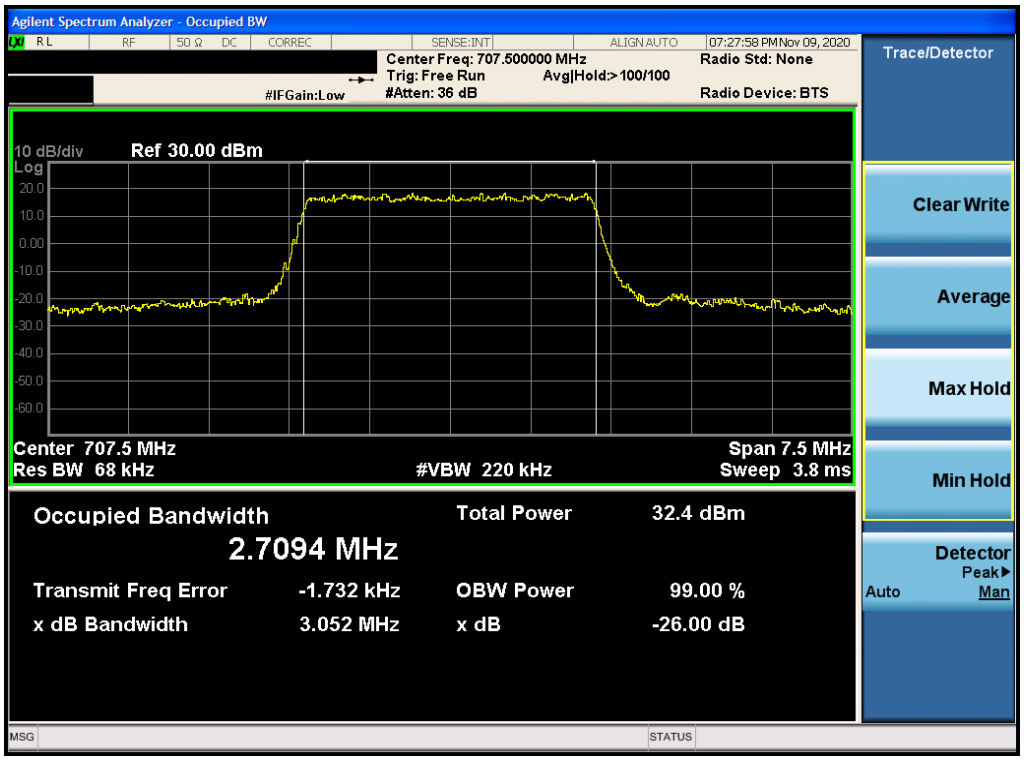
Plot 7-31. Occupied Bandwidth Plot (LTE Band 12/17 - 5MHz 64-QAM - Full RB Configuration)



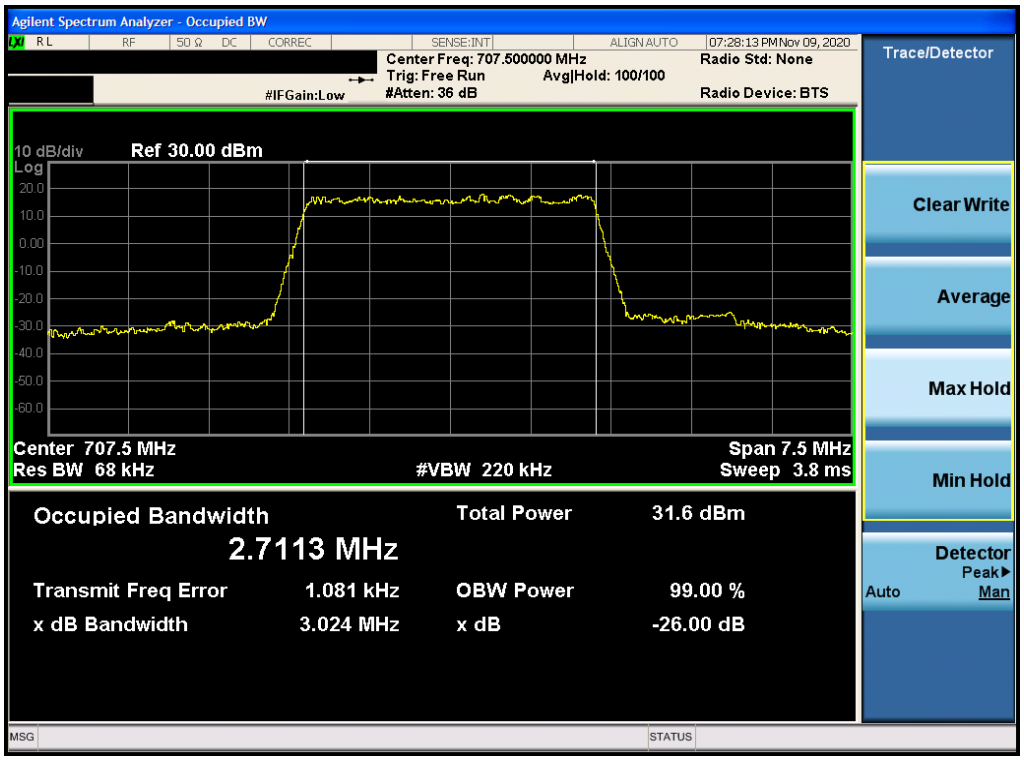
Plot 7-32. Occupied Bandwidth Plot (LTE Band 12/17 - 5MHz 256-QAM - Full RB Configuration)



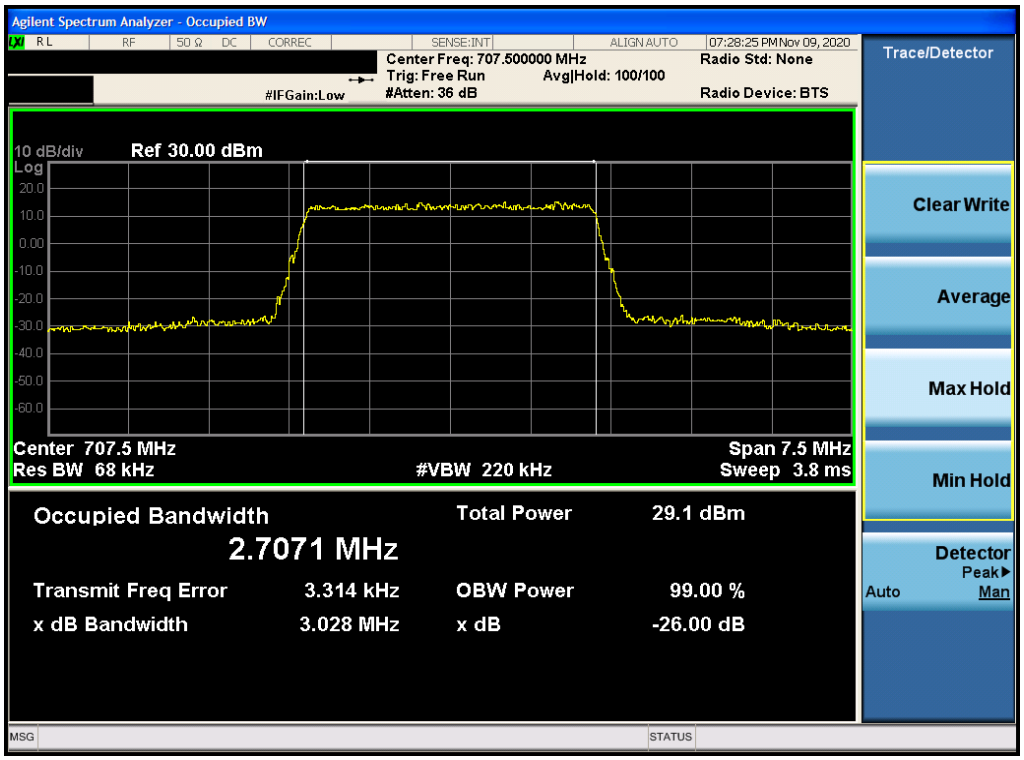
Plot 7-33. Occupied Bandwidth Plot (LTE Band 12 - 3MHz QPSK - Full RB Configuration)



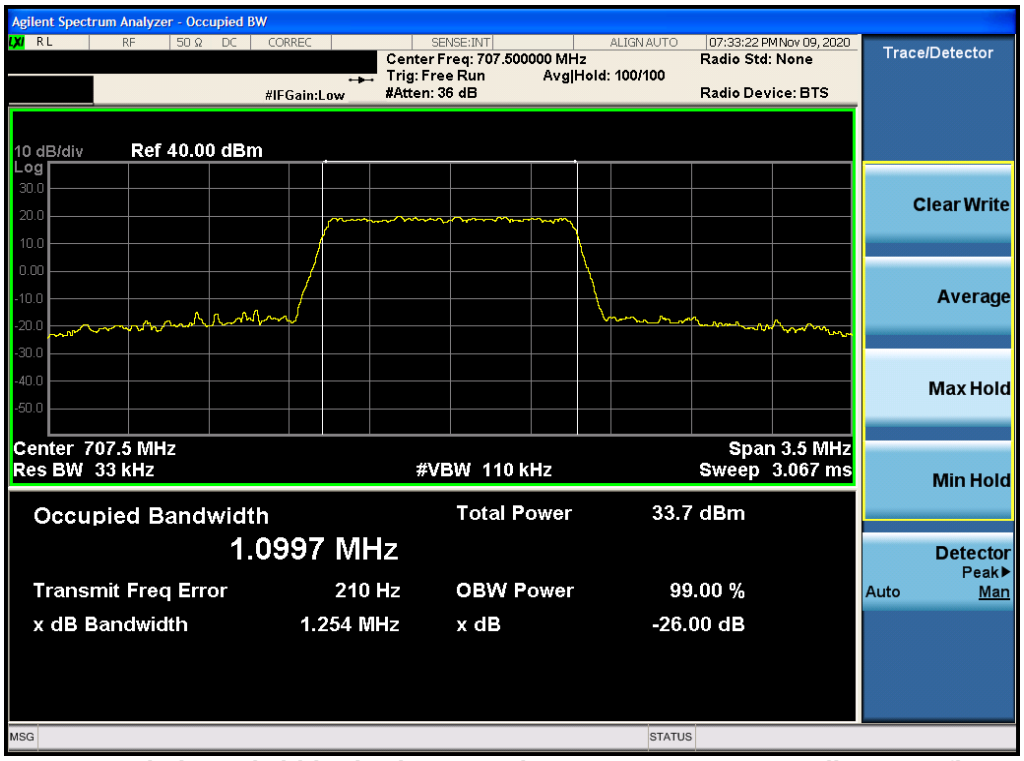
Plot 7-34. Occupied Bandwidth Plot (LTE Band 12 - 3MHz 16-QAM - Full RB Configuration)



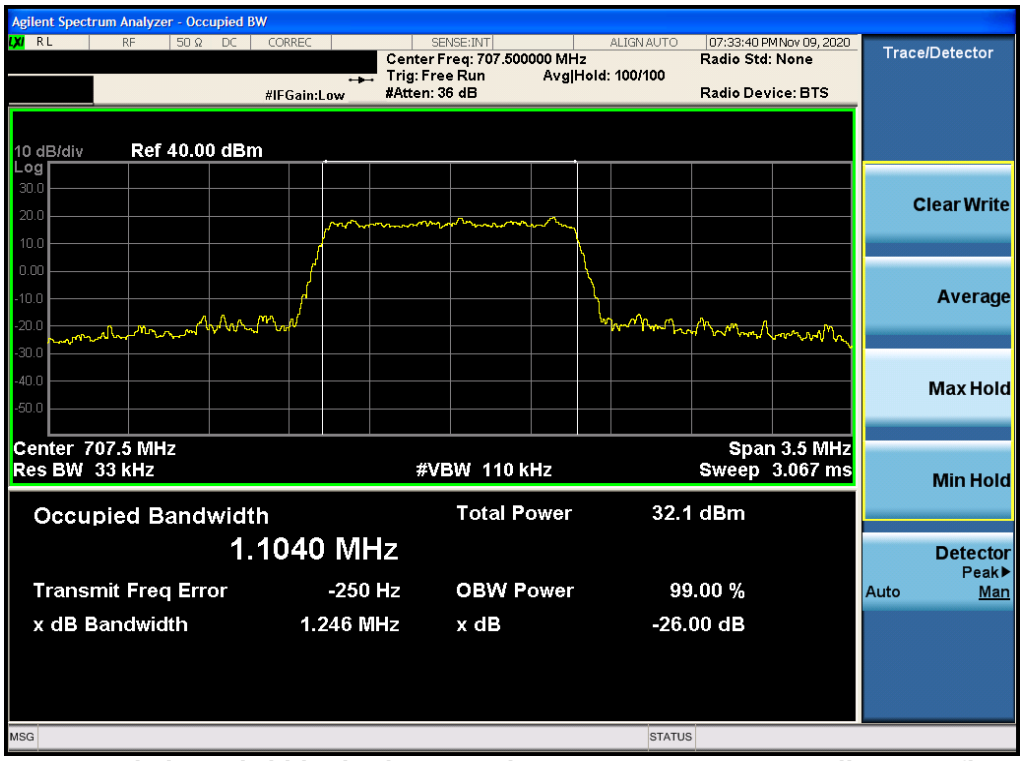
Plot 7-35. Occupied Bandwidth Plot (LTE Band 12 - 3MHz 64-QAM - Full RB Configuration)



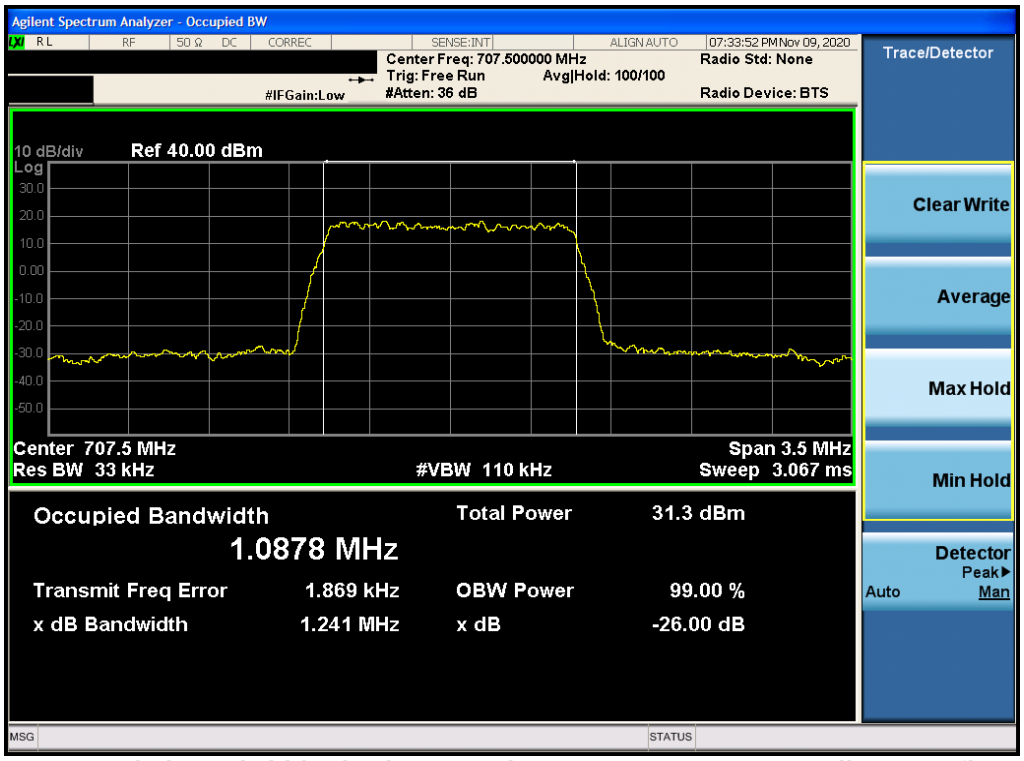
Plot 7-36. Occupied Bandwidth Plot (LTE Band 12 - 3MHz 256-QAM - Full RB Configuration)



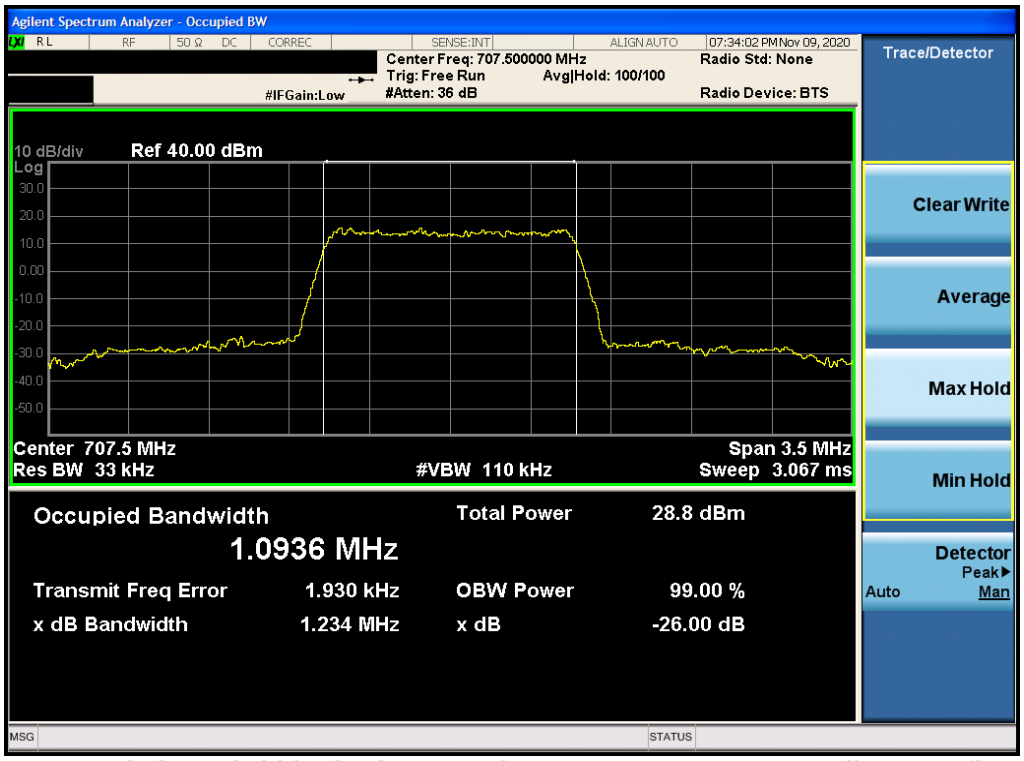
Plot 7-37. Occupied Bandwidth Plot (LTE Band 12 – 1.4MHz QPSK - Full RB Configuration)



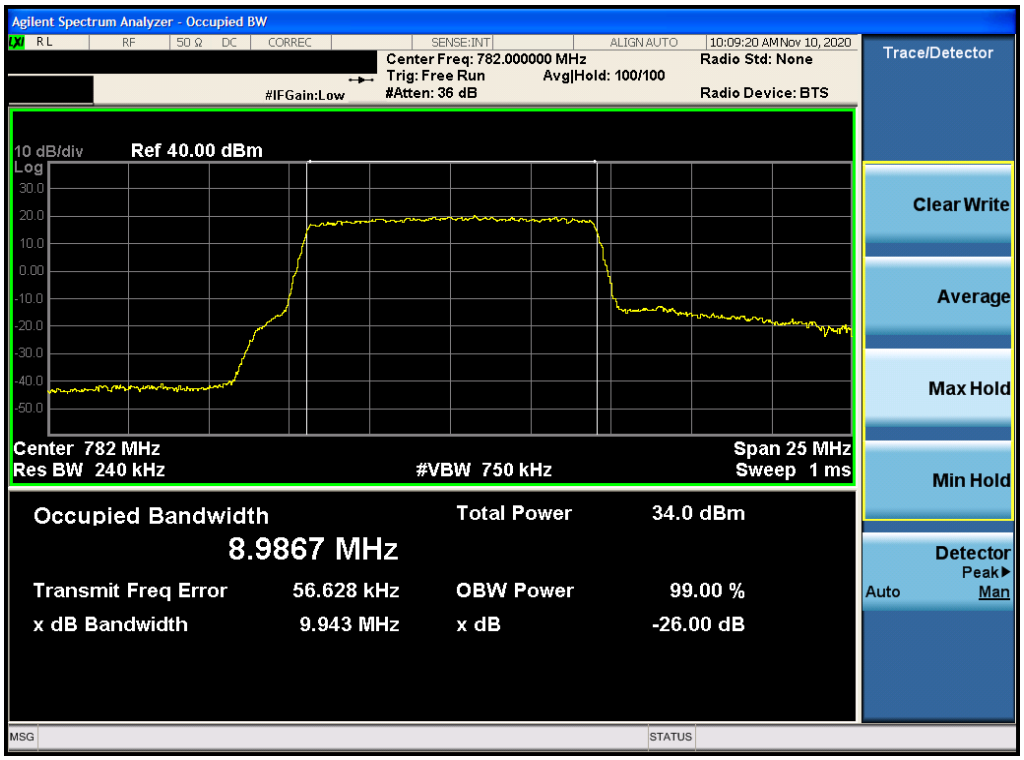
Plot 7-38. Occupied Bandwidth Plot (LTE Band 12 – 1.4MHz 16-QAM - Full RB Configuration)



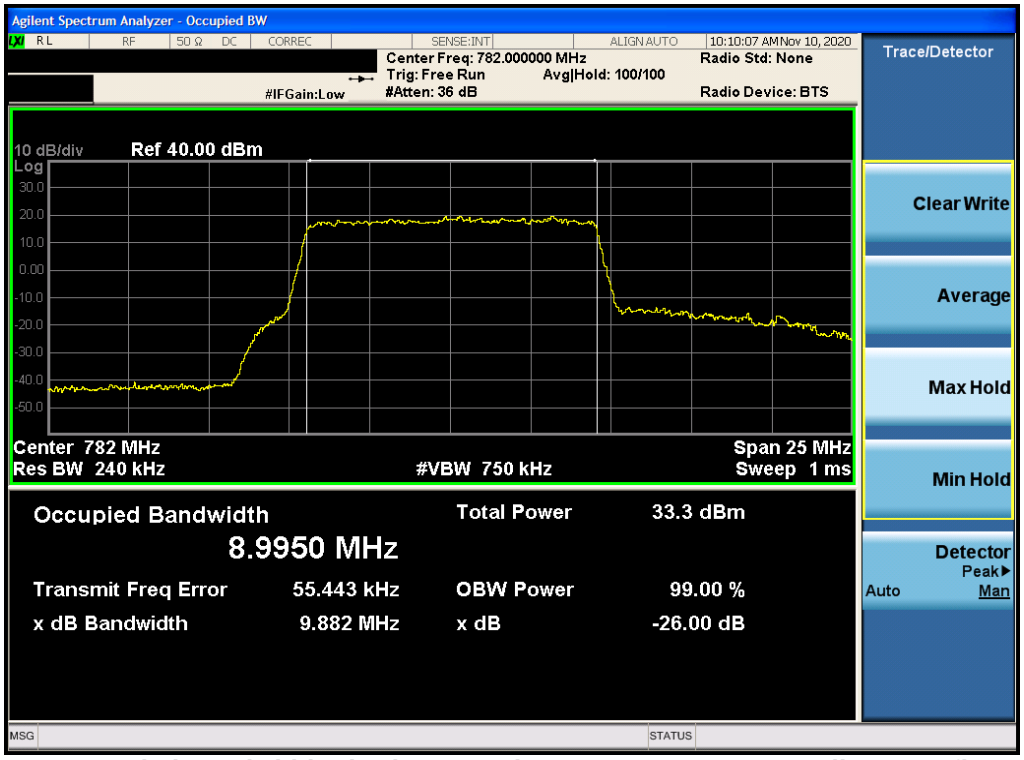
Plot 7-39. Occupied Bandwidth Plot (LTE Band 12 – 1.4MHz 64-QAM - Full RB Configuration)



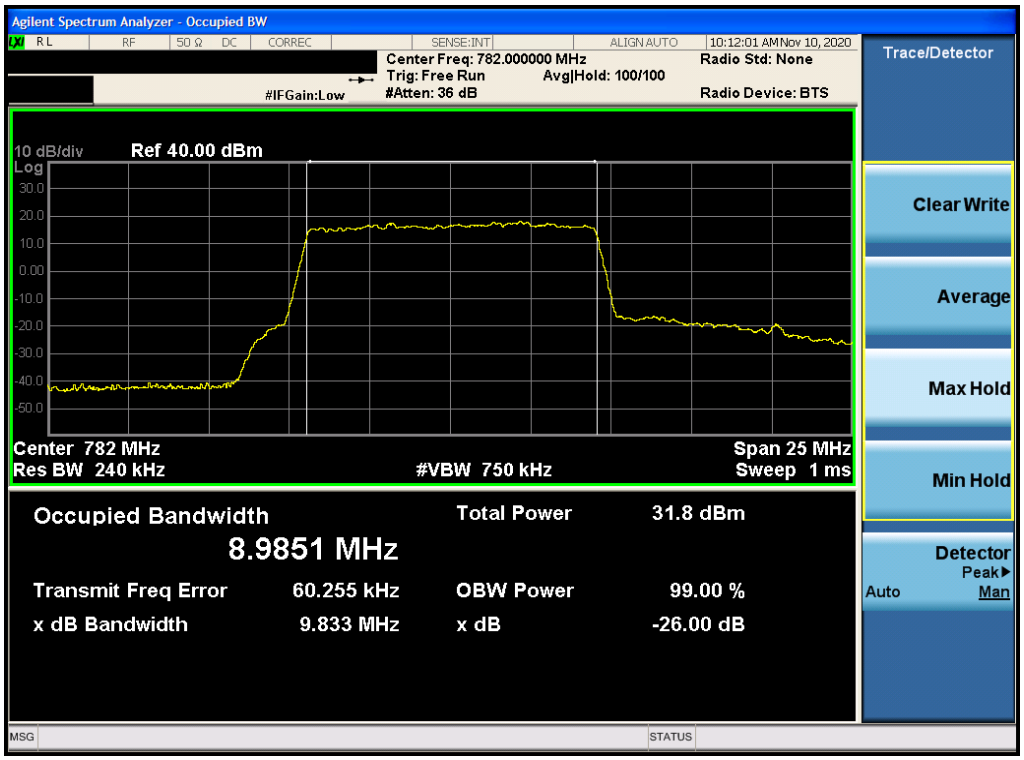
Plot 7-40. Occupied Bandwidth Plot (LTE Band 12 – 1.4MHz 256-QAM - Full RB Configuration)



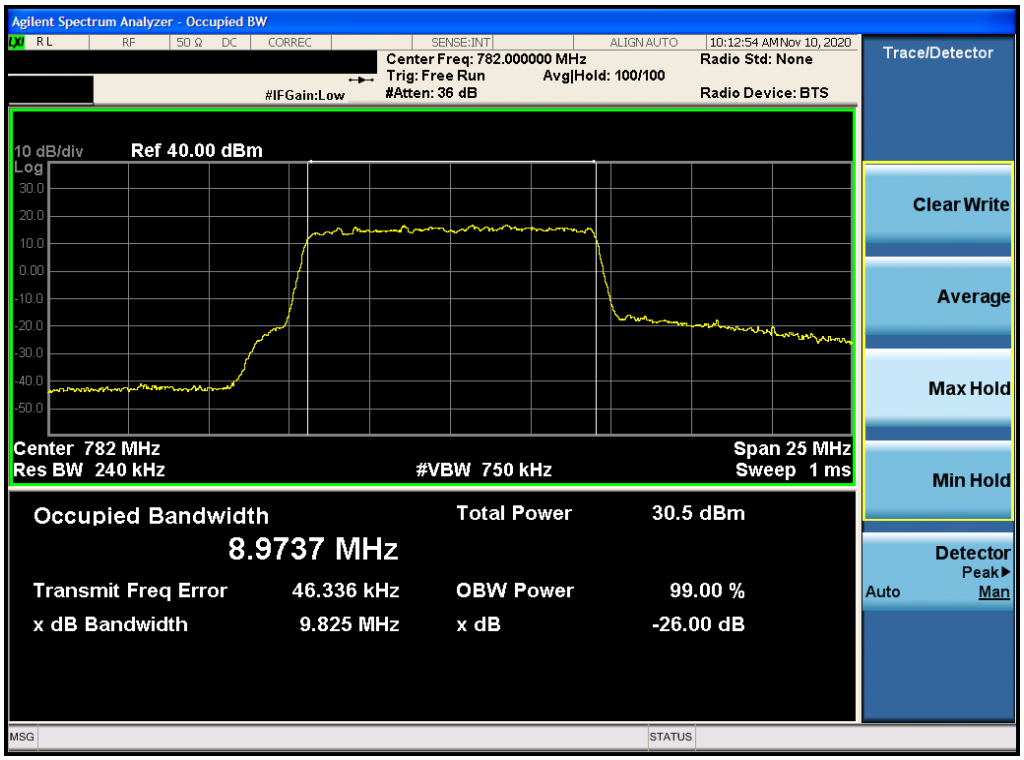
Plot 7-41. Occupied Bandwidth Plot (LTE Band 13 - 10MHz QPSK - Full RB Configuration)



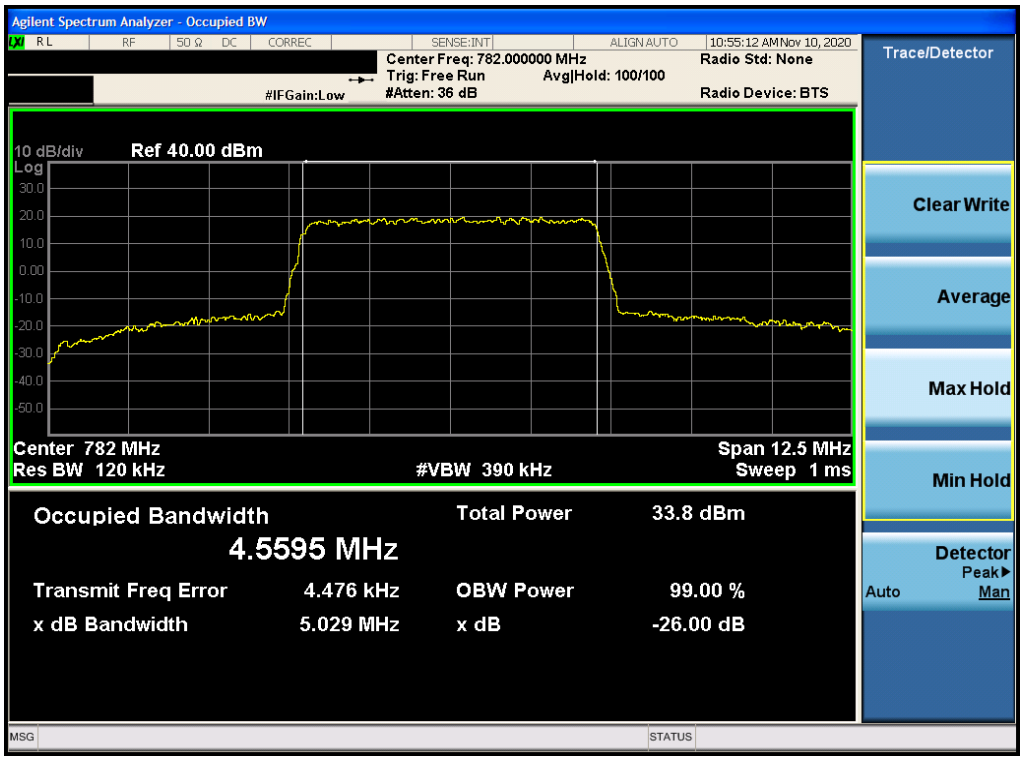
Plot 7-42. Occupied Bandwidth Plot (LTE Band 13 - 10MHz 16-QAM - Full RB Configuration)



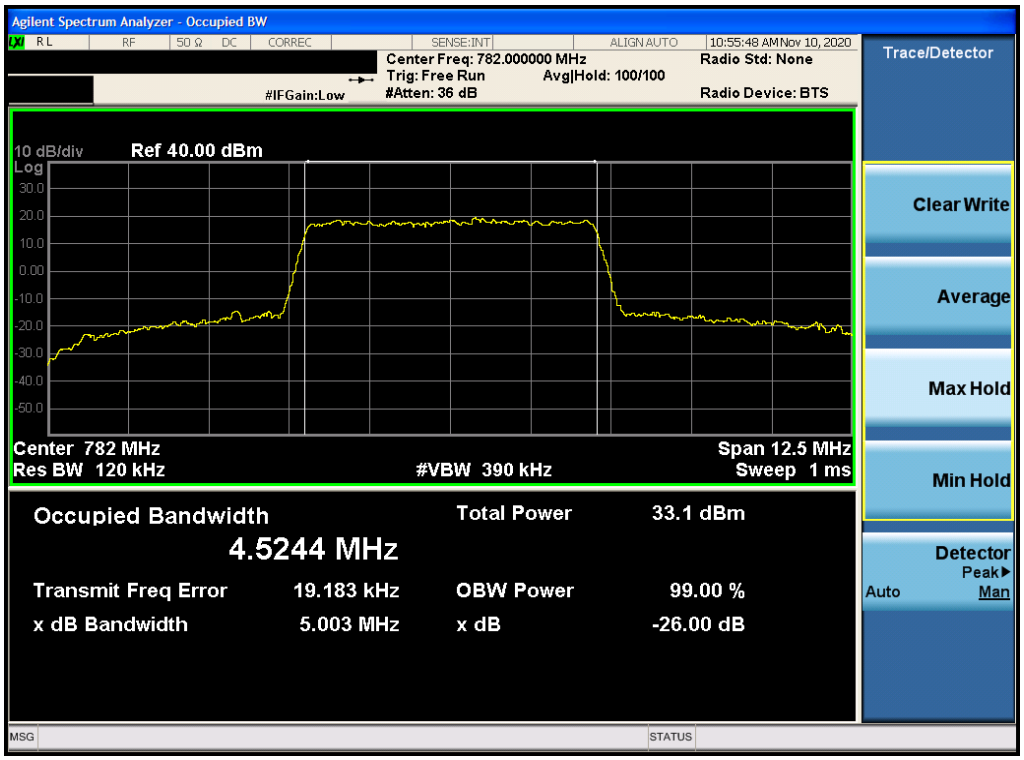
Plot 7-43. Occupied Bandwidth Plot (LTE Band 13 - 10MHz 64-QAM - Full RB Configuration)



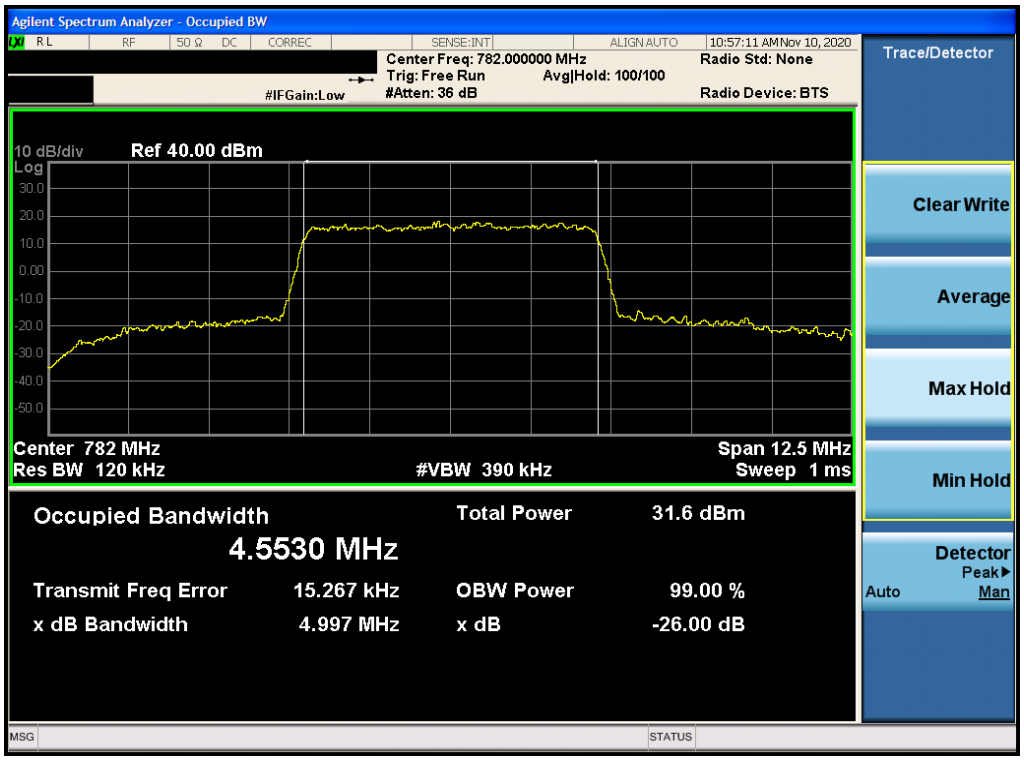
Plot 7-44. Occupied Bandwidth Plot (LTE Band 13 - 10MHz 256-QAM - Full RB Configuration)



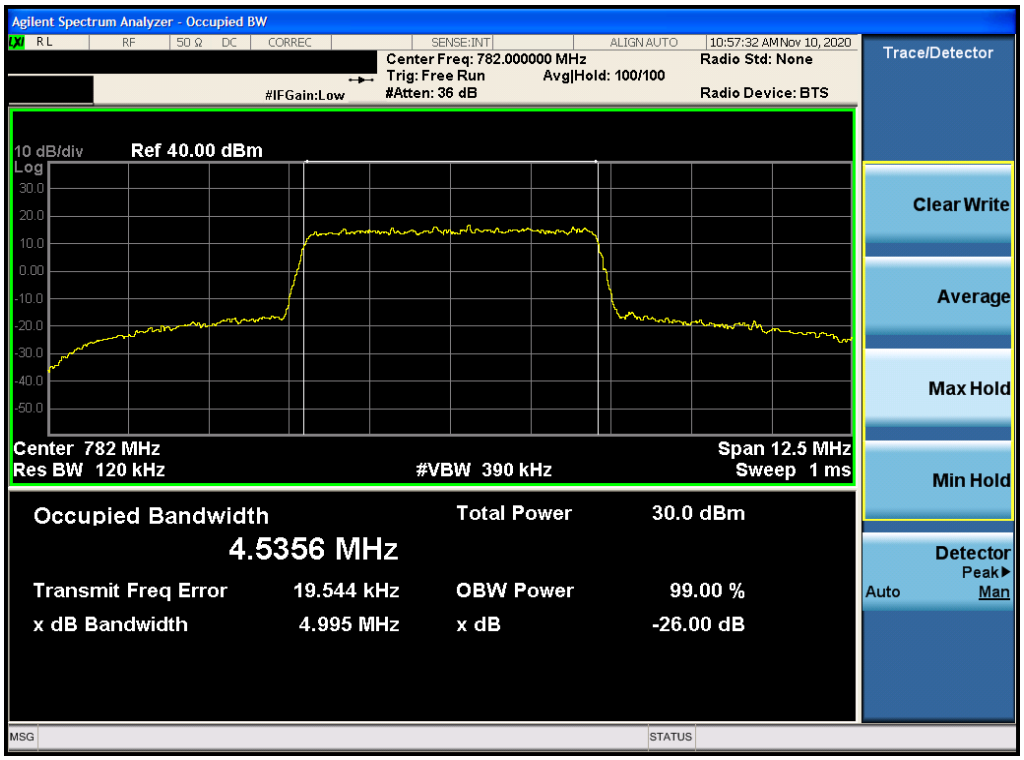
Plot 7-45. Occupied Bandwidth Plot (LTE Band 13 - 5MHz QPSK - Full RB Configuration)



Plot 7-46. Occupied Bandwidth Plot (LTE Band 13 - 5MHz 16-QAM - Full RB Configuration)

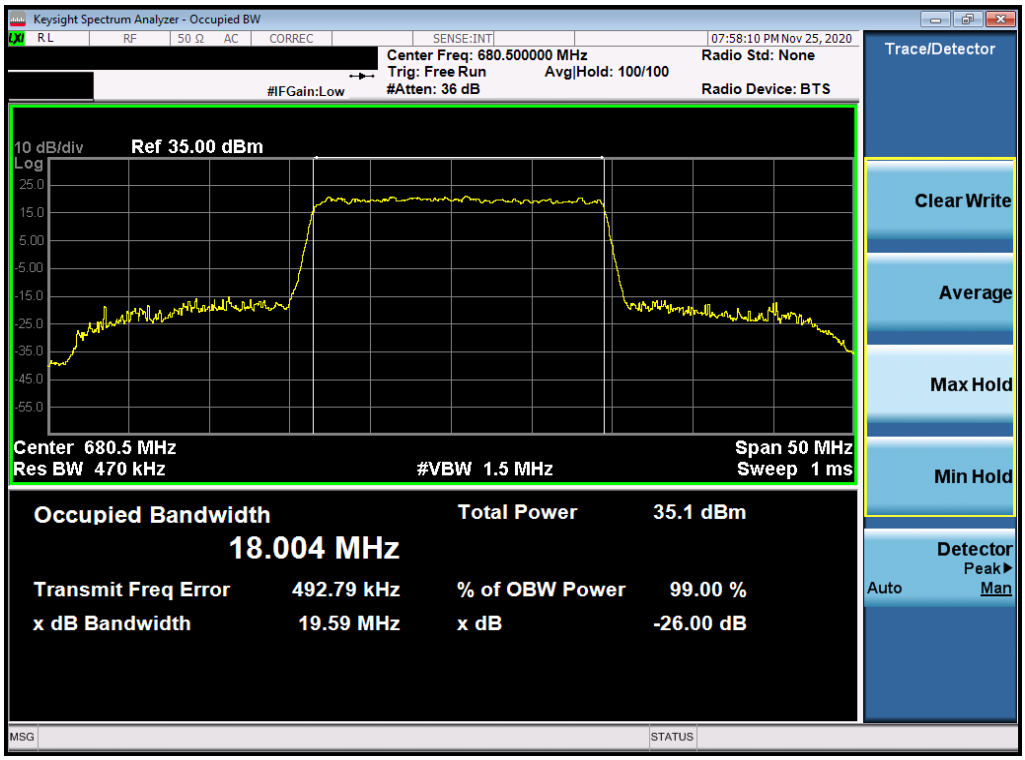


Plot 7-47. Occupied Bandwidth Plot (LTE Band 13 - 5MHz 64-QAM - Full RB Configuration)

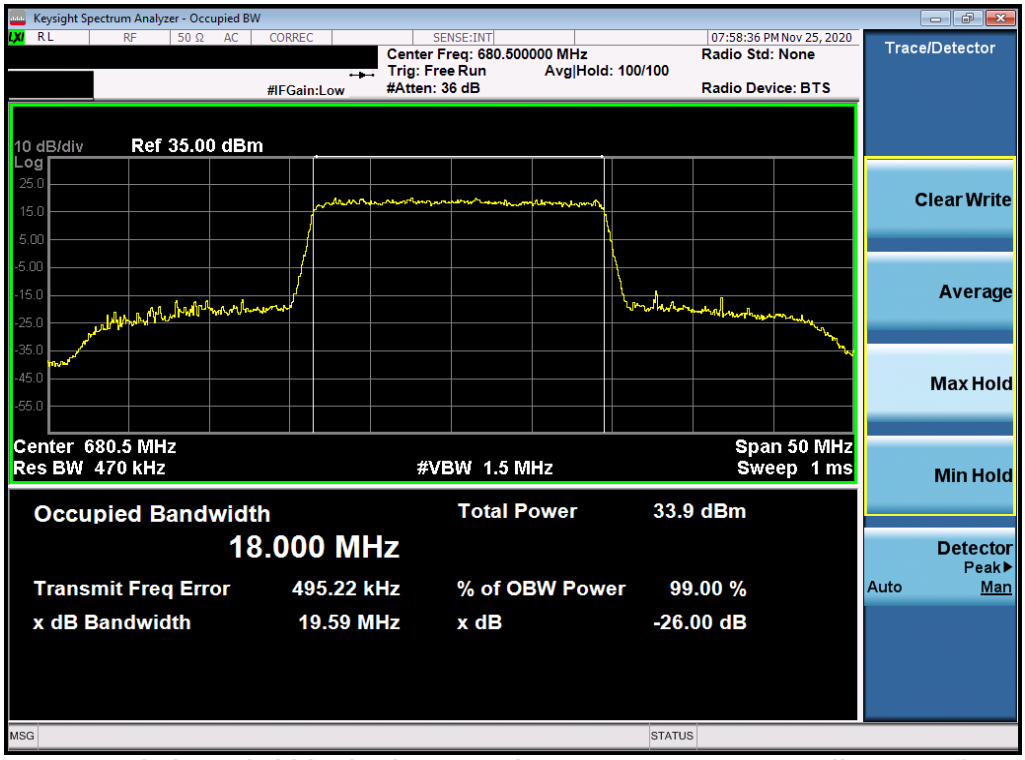


Plot 7-48. Occupied Bandwidth Plot (LTE Band 13 - 5MHz 256-QAM - Full RB Configuration)

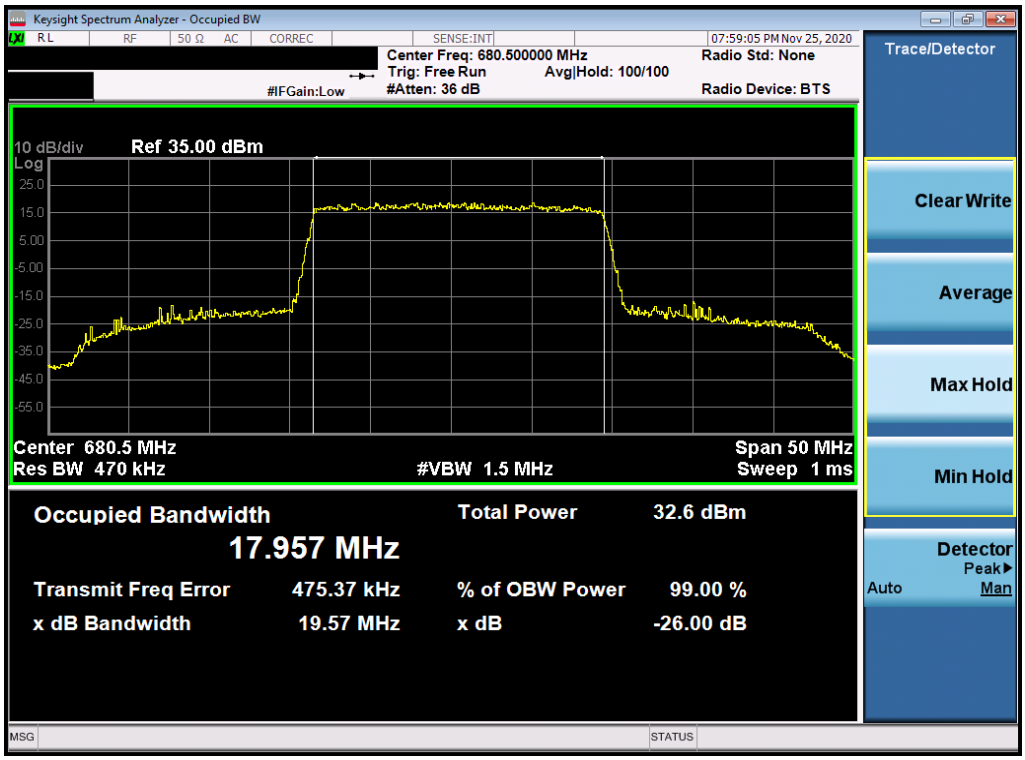
LTE Band 71



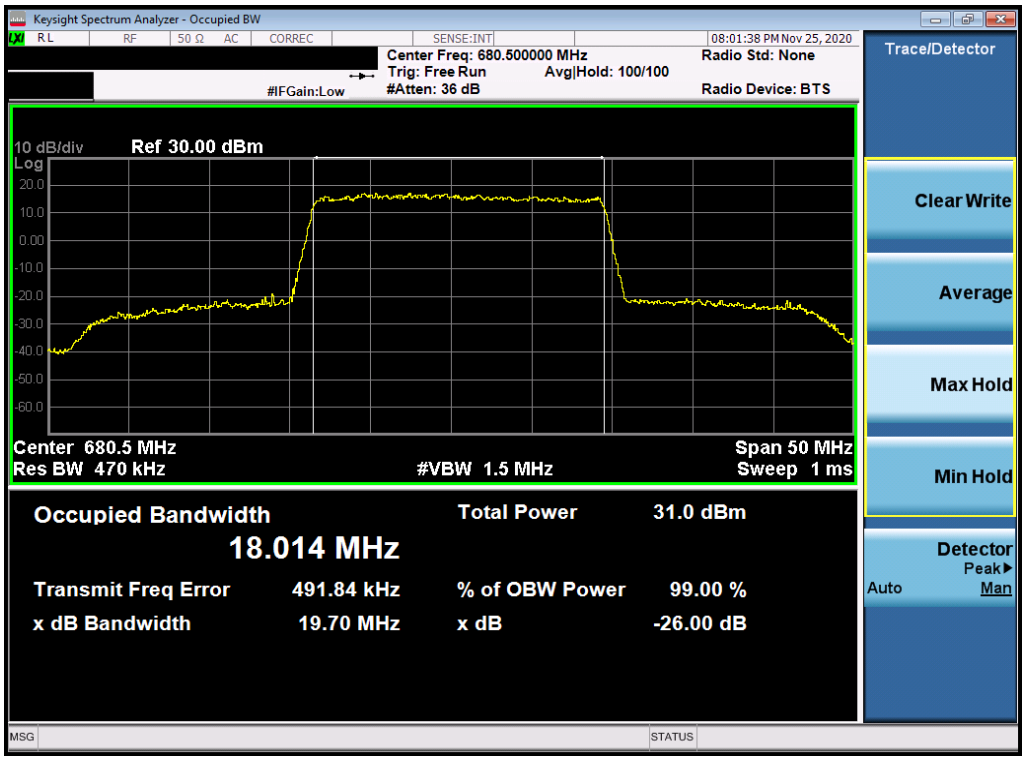
Plot 7-49. Occupied Bandwidth Plot (LTE Band 71 - 20MHz QPSK - Full RB Configuration)



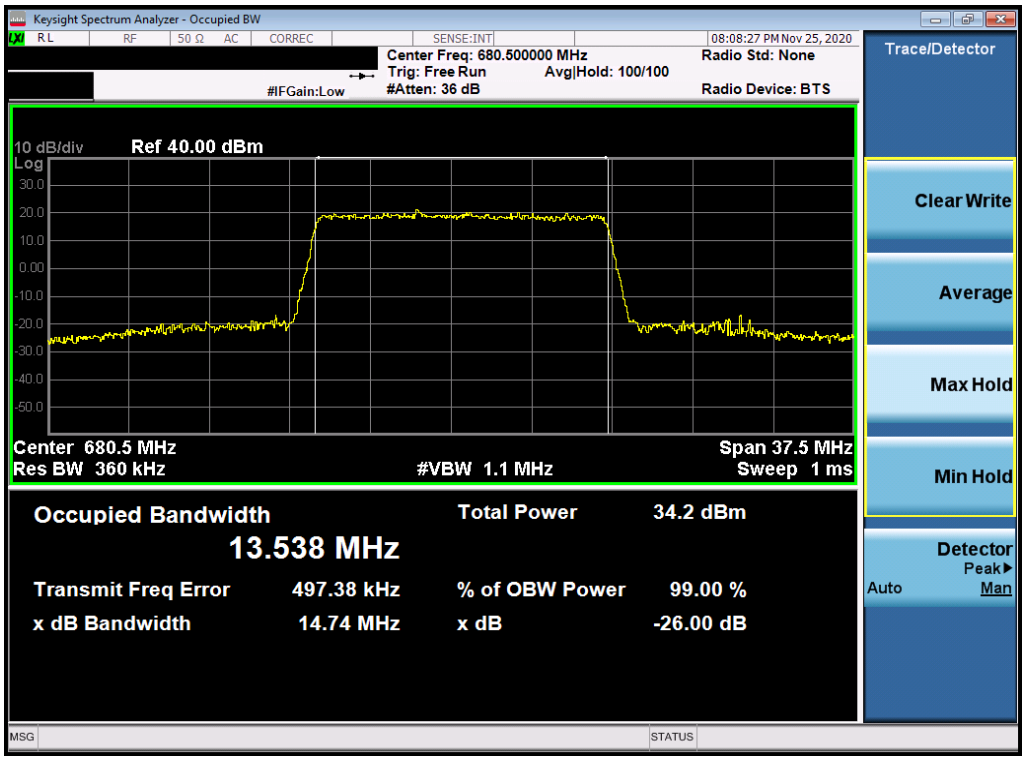
Plot 7-50. Occupied Bandwidth Plot (LTE Band 71 - 20MHz 16-QAM - Full RB Configuration)



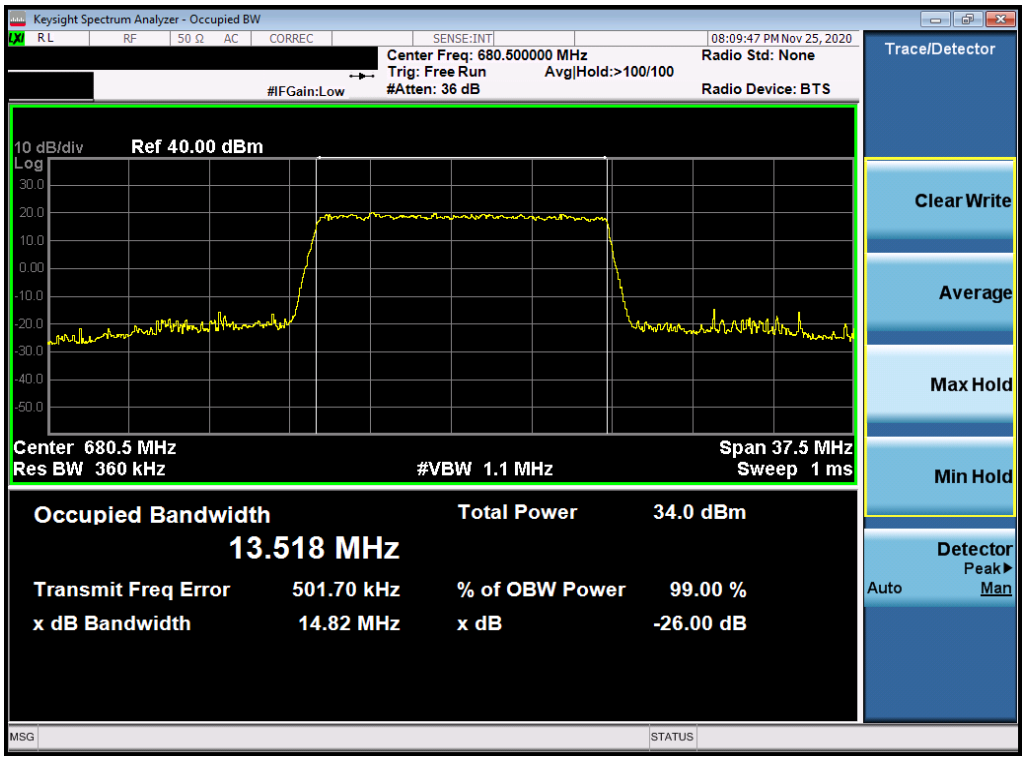
Plot 7-51. Occupied Bandwidth Plot (LTE Band 71 - 20MHz 64-QAM - Full RB Configuration)



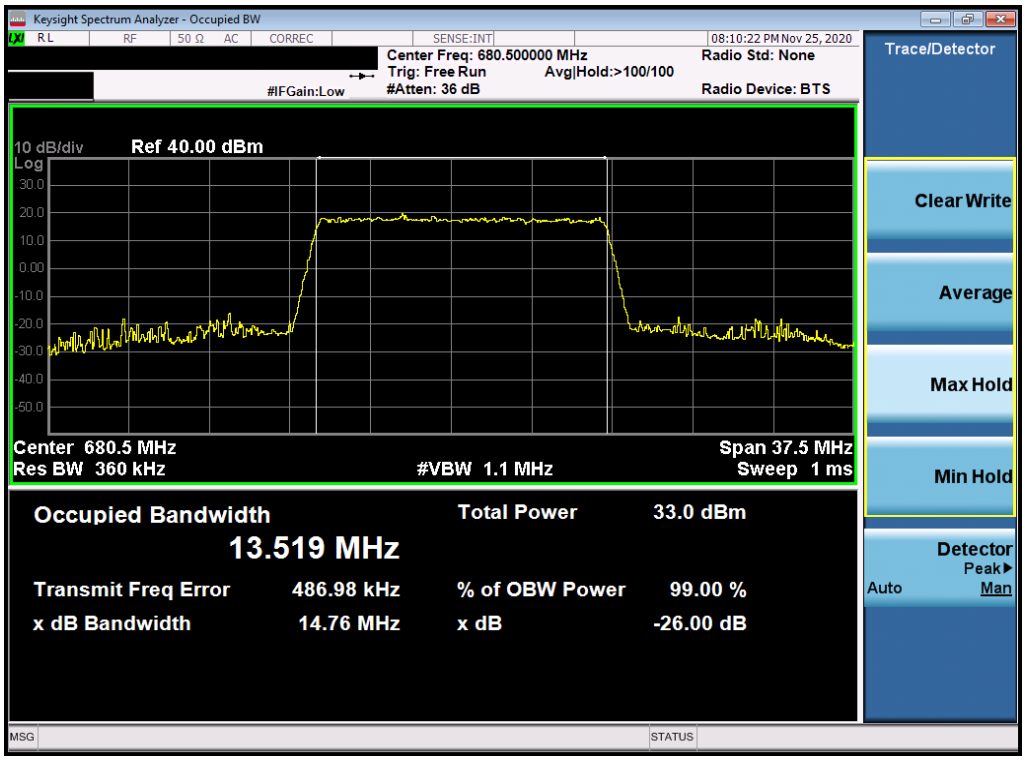
Plot 7-52. Occupied Bandwidth Plot (LTE Band 71 - 20MHz 256-QAM - Full RB Configuration)



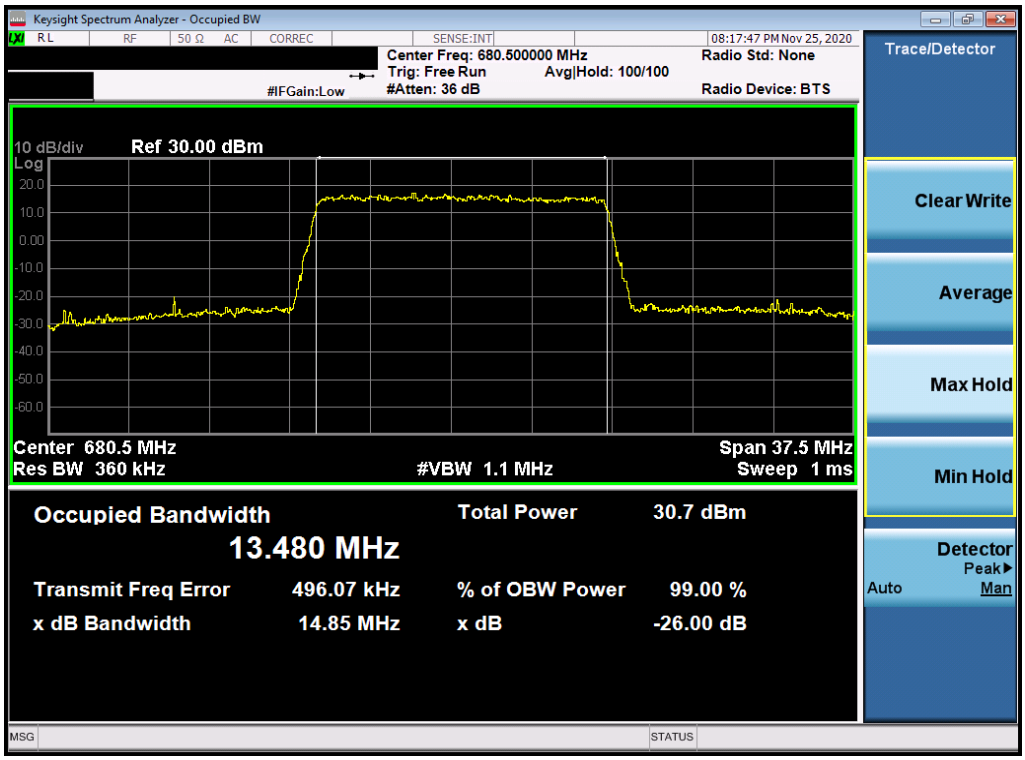
Plot 7-53. Occupied Bandwidth Plot (LTE Band 71 - 15MHz QPSK - Full RB Configuration)



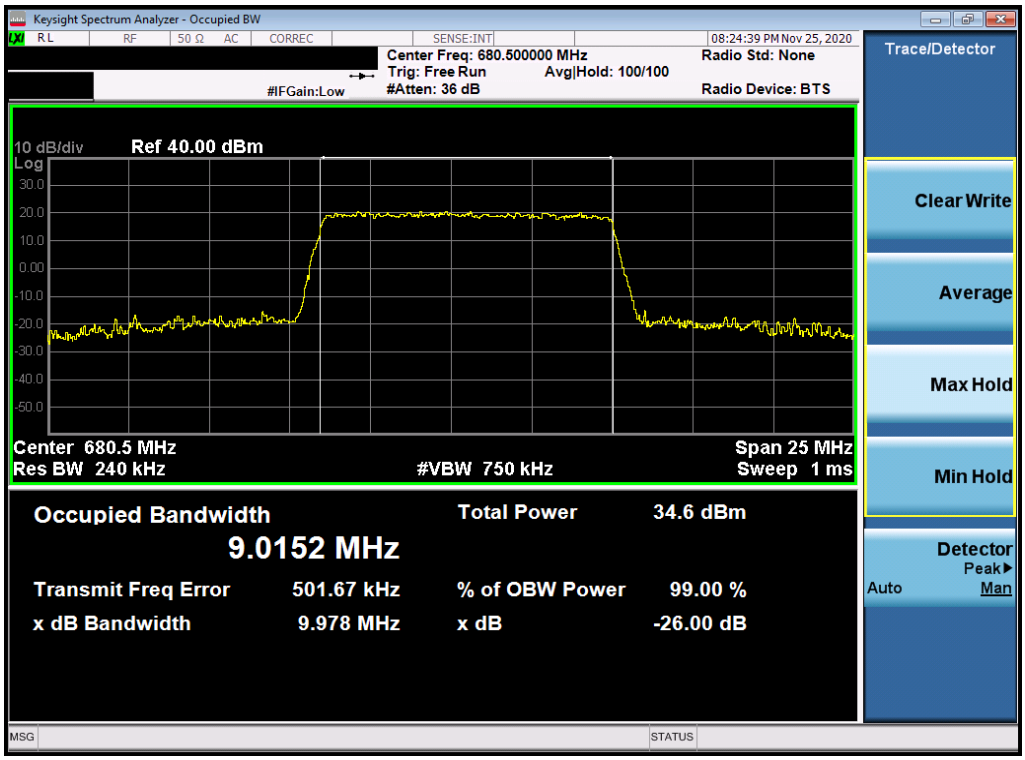
Plot 7-54. Occupied Bandwidth Plot (LTE Band 71 - 15MHz 16-QAM - Full RB Configuration)



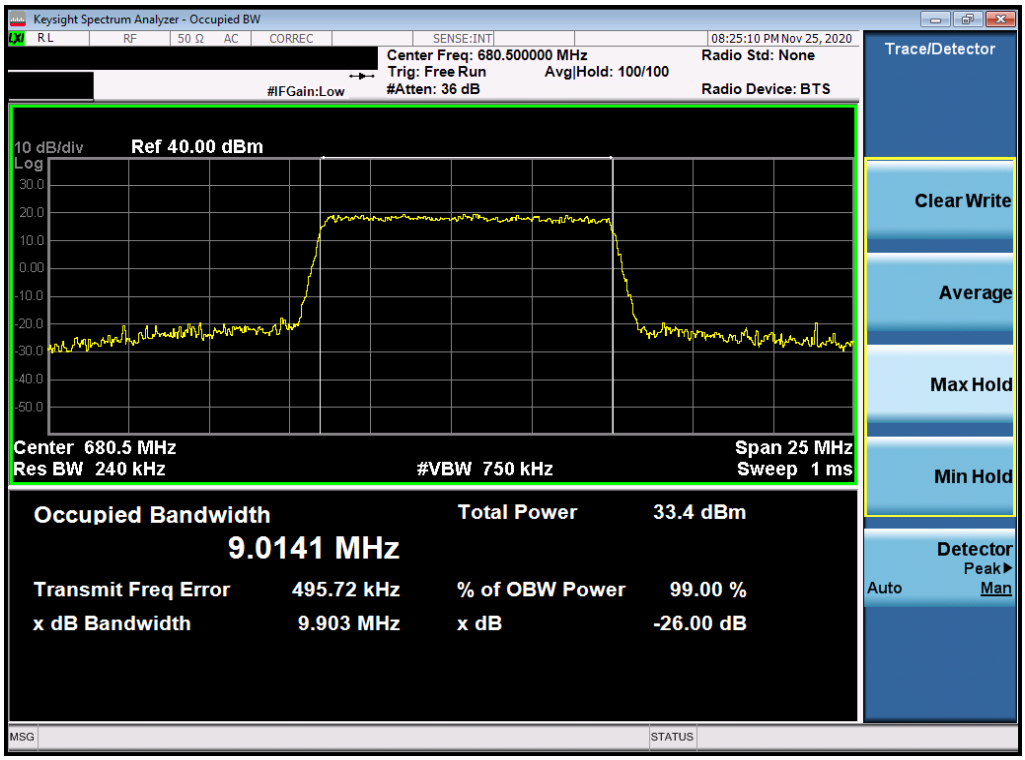
Plot 7-55. Occupied Bandwidth Plot (LTE Band 71 - 15MHz 64-QAM - Full RB Configuration)



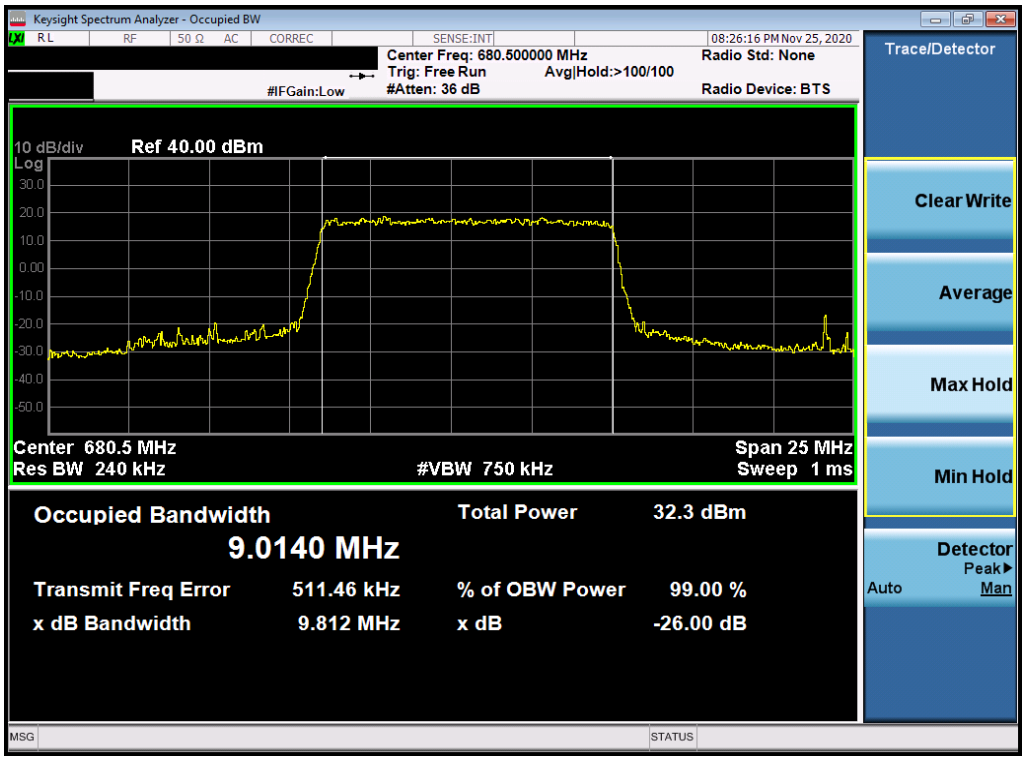
Plot 7-56. Occupied Bandwidth Plot (LTE Band 71 - 15MHz 256-QAM - Full RB Configuration)



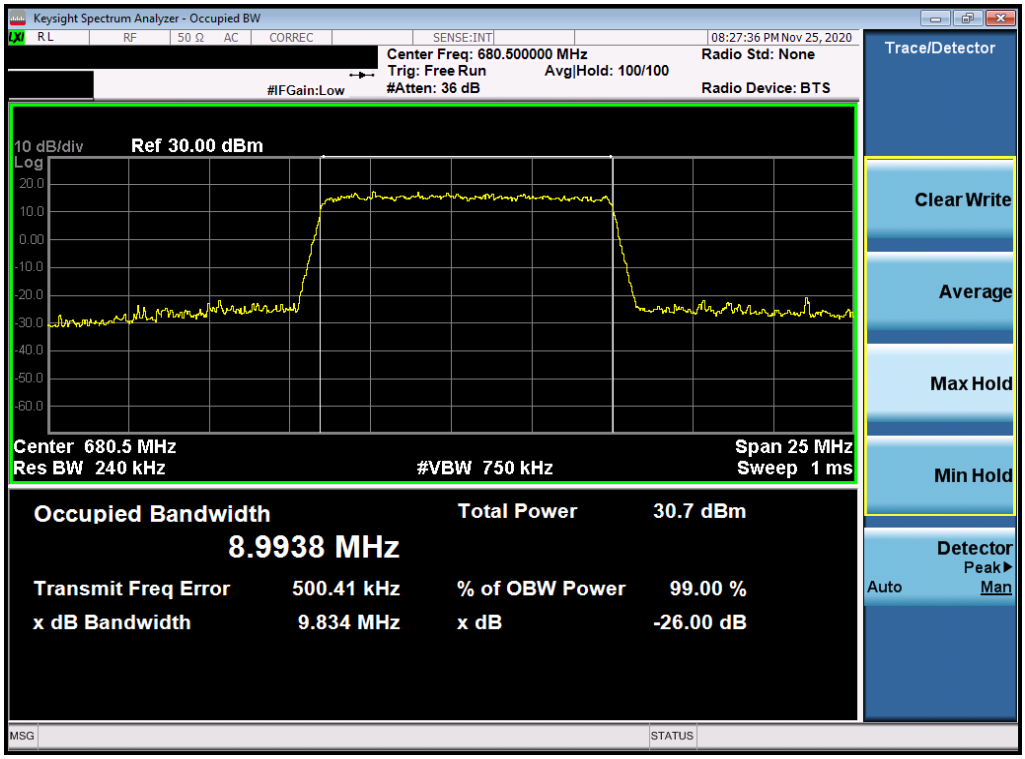
Plot 7-57. Occupied Bandwidth Plot (LTE Band 71 - 10MHz QPSK - Full RB Configuration)



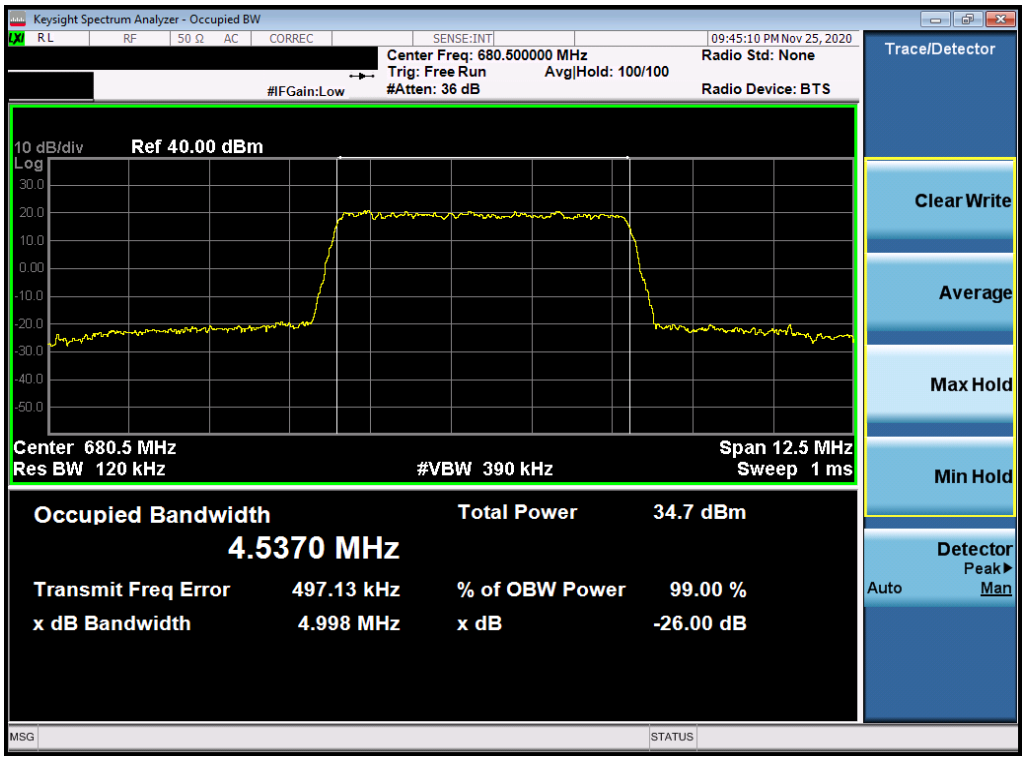
Plot 7-58. Occupied Bandwidth Plot (LTE Band 71 - 10MHz 16-QAM - Full RB Configuration)



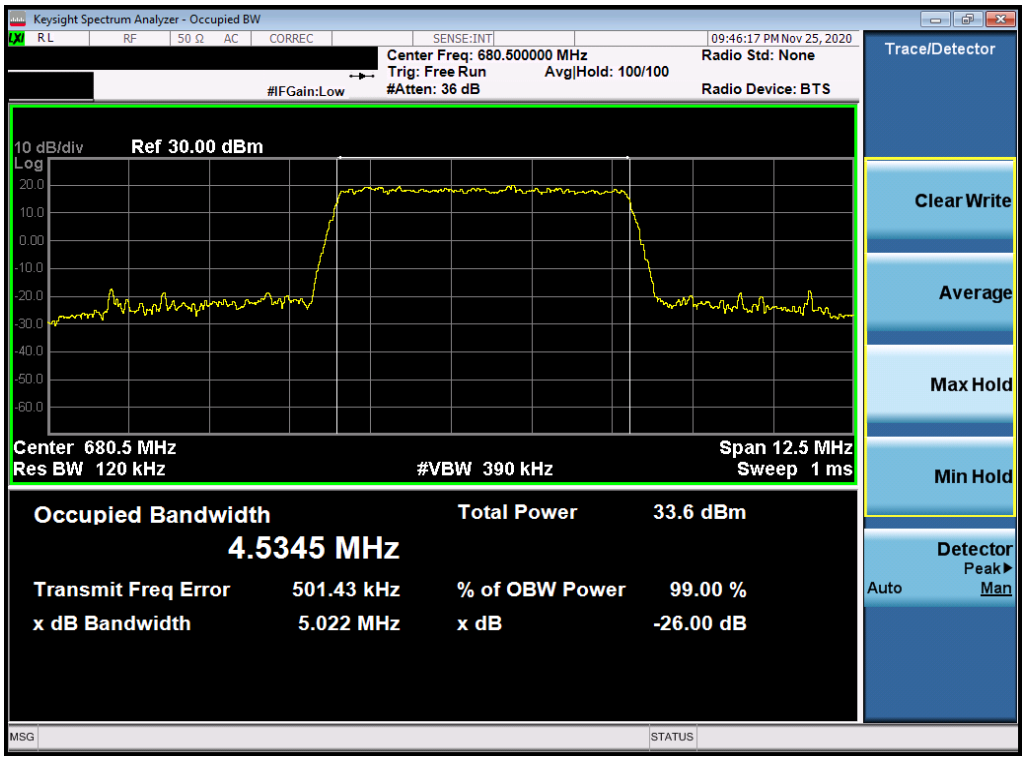
Plot 7-59. Occupied Bandwidth Plot (LTE Band 71 - 10MHz 64-QAM - Full RB Configuration)



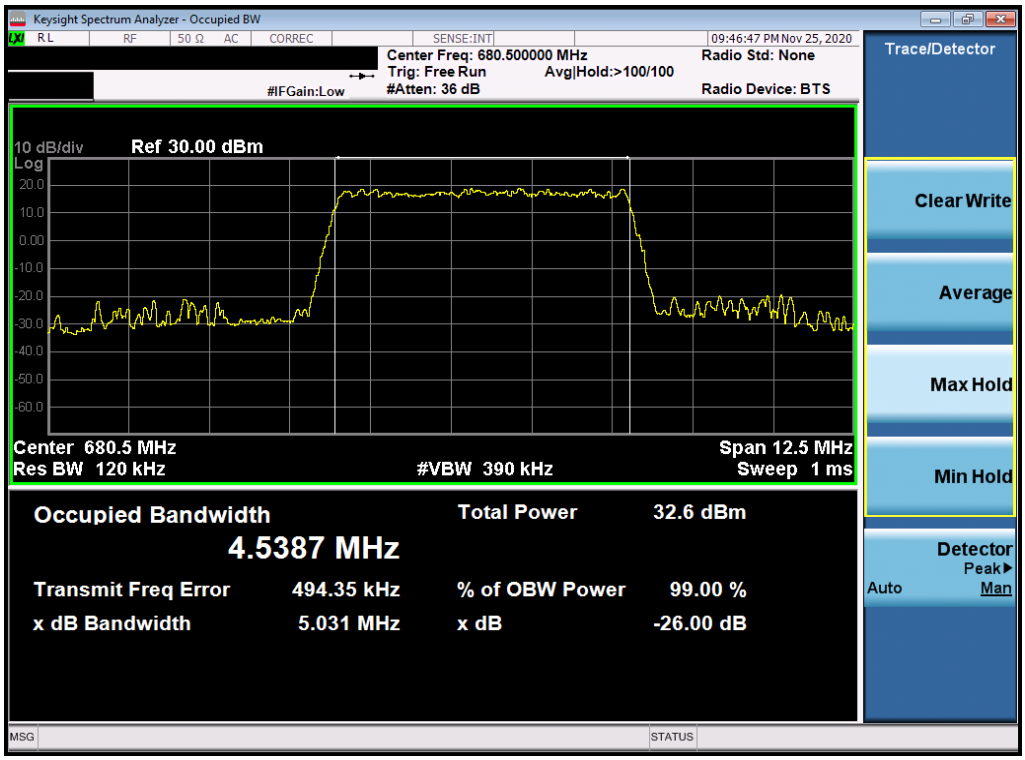
Plot 7-60. Occupied Bandwidth Plot (LTE Band 71 - 10MHz 256-QAM - Full RB Configuration)



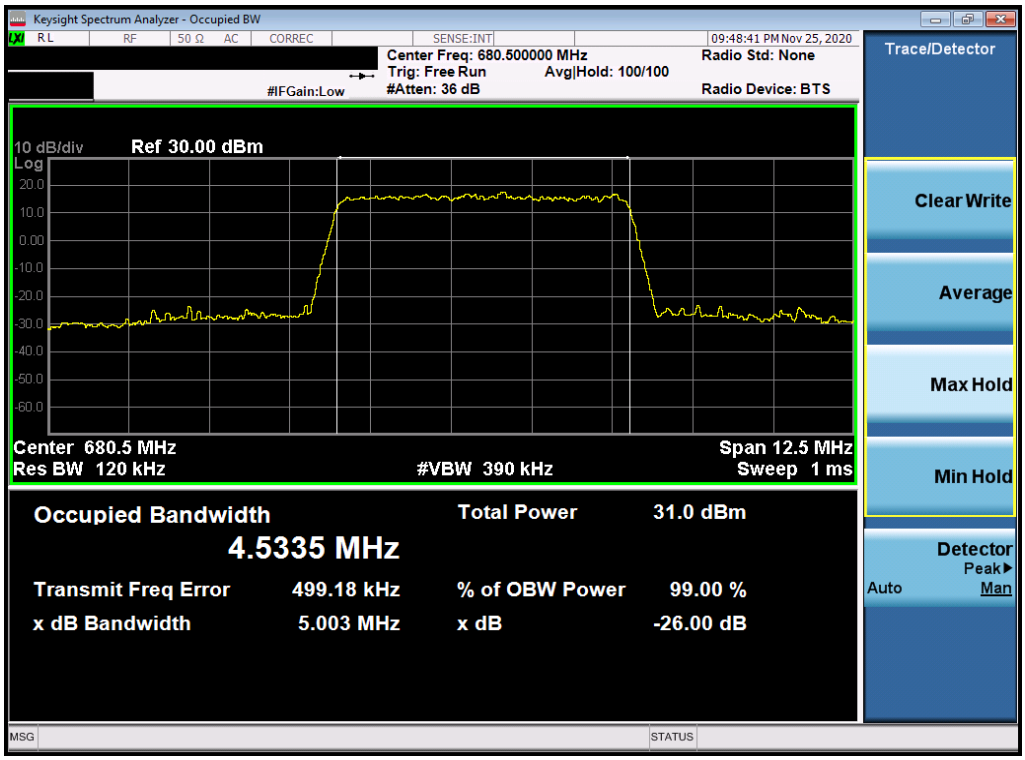
Plot 7-61. Occupied Bandwidth Plot (LTE Band 71 - 5MHz QPSK - Full RB Configuration)



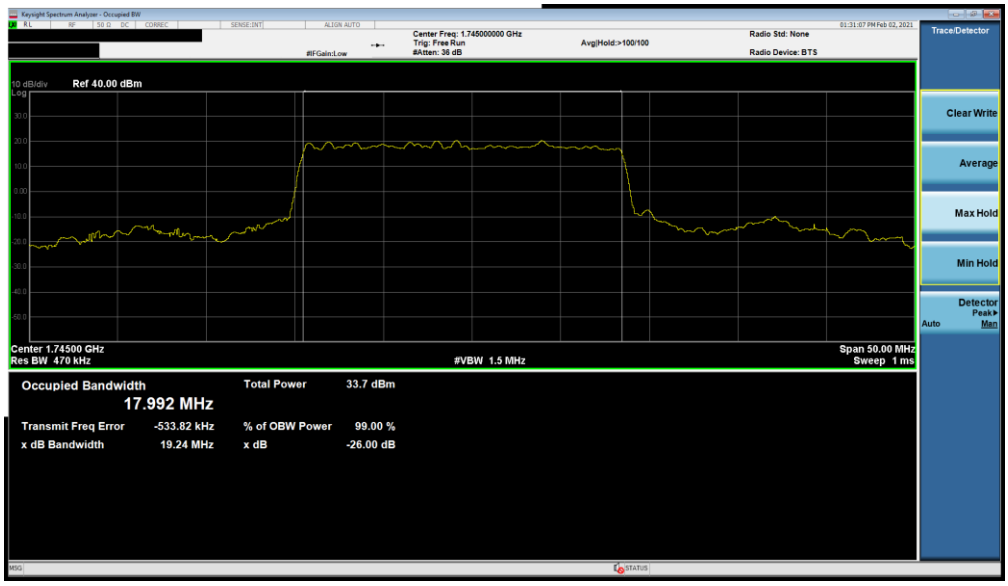
Plot 7-62. Occupied Bandwidth Plot (LTE Band 71 - 5MHz 16-QAM - Full RB Configuration)



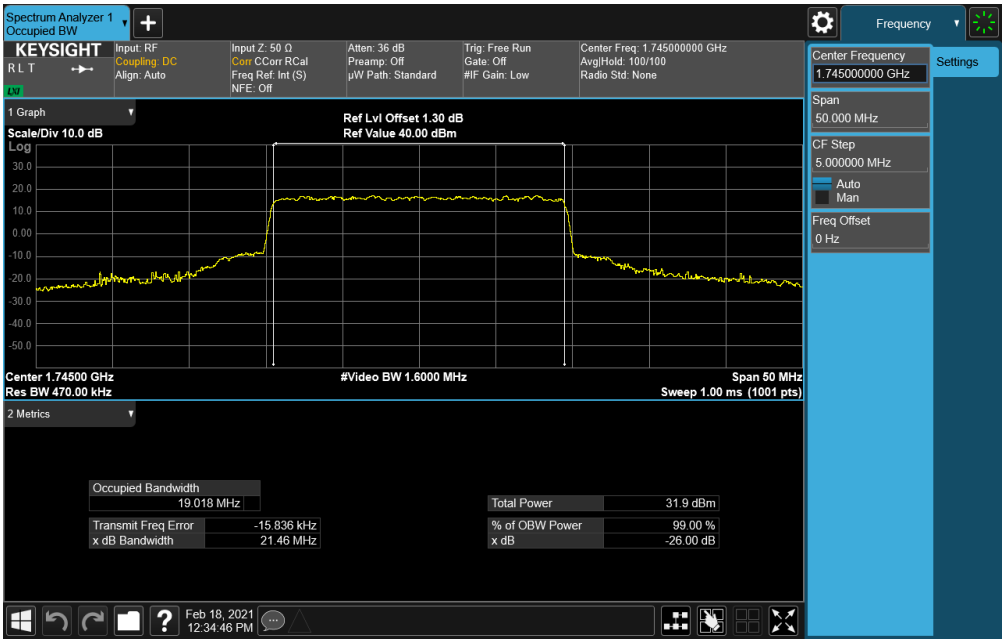
Plot 7-63. Occupied Bandwidth Plot (LTE Band 71 - 5MHz 64-QAM - Full RB Configuration)



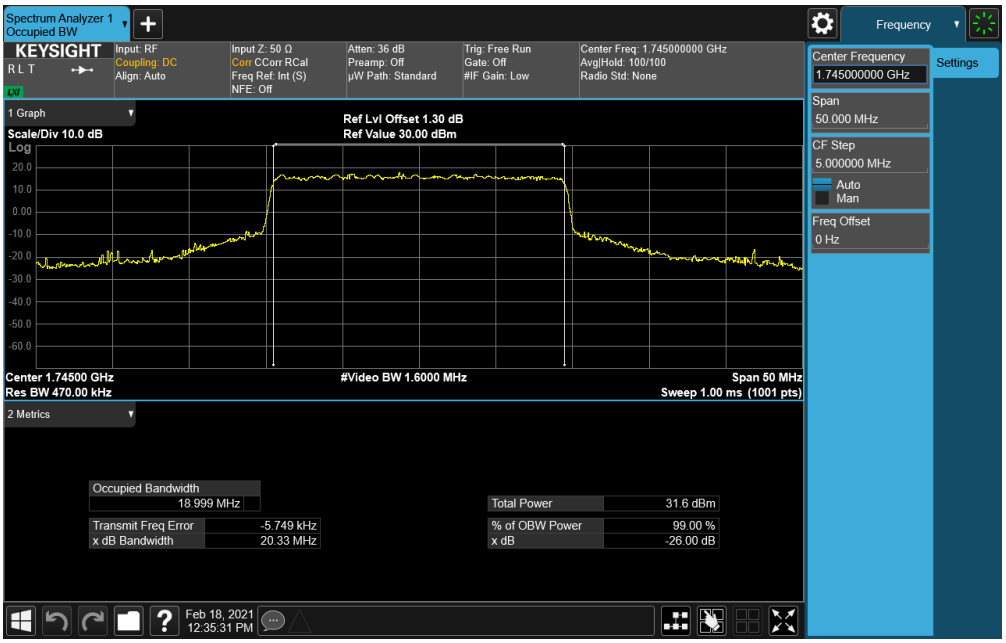
Plot 7-64. Occupied Bandwidth Plot (LTE Band 71 - 5MHz 256-QAM - Full RB Configuration)



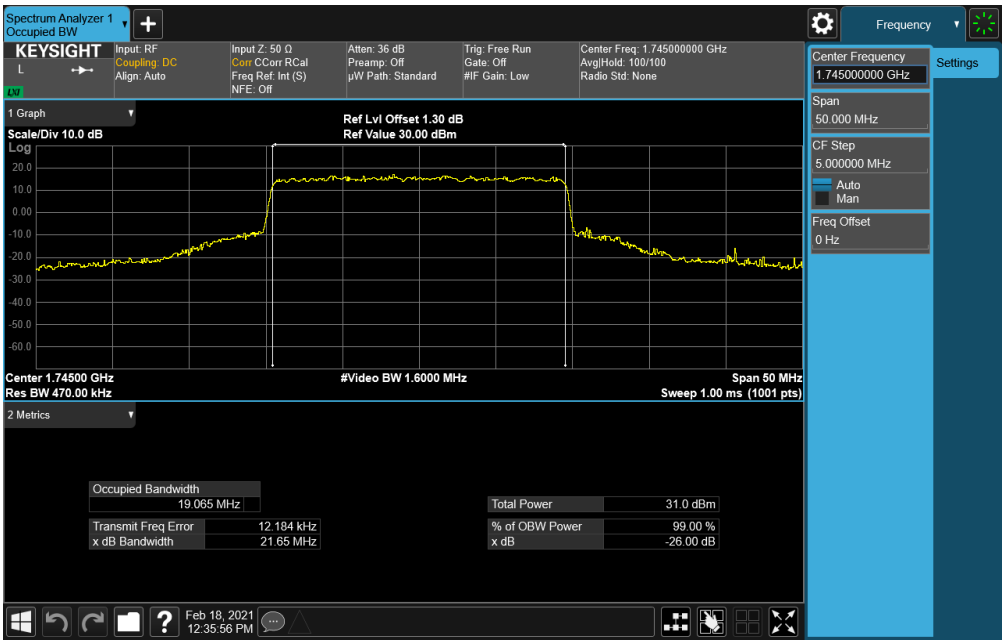
Plot 7-65. Occupied Bandwidth Plot (NR Band n66 - 20.0MHz DFT-s-OFDM π/2 BPSK - Full RB)



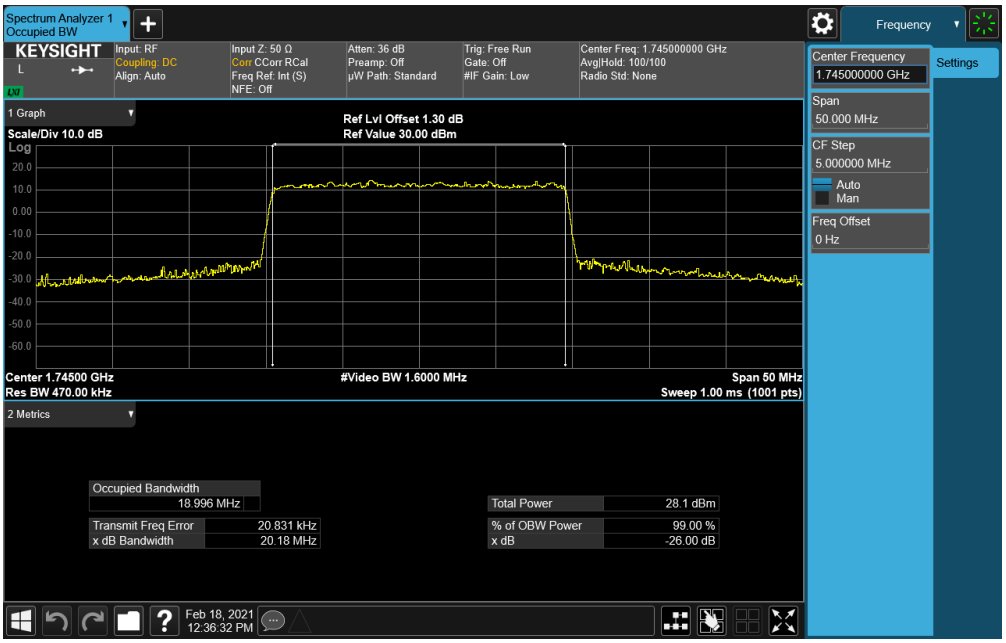
Plot 7-66. Occupied Bandwidth Plot (NR Band n66 - 20.0MHz CP-OFDM QPSK - Full RB)



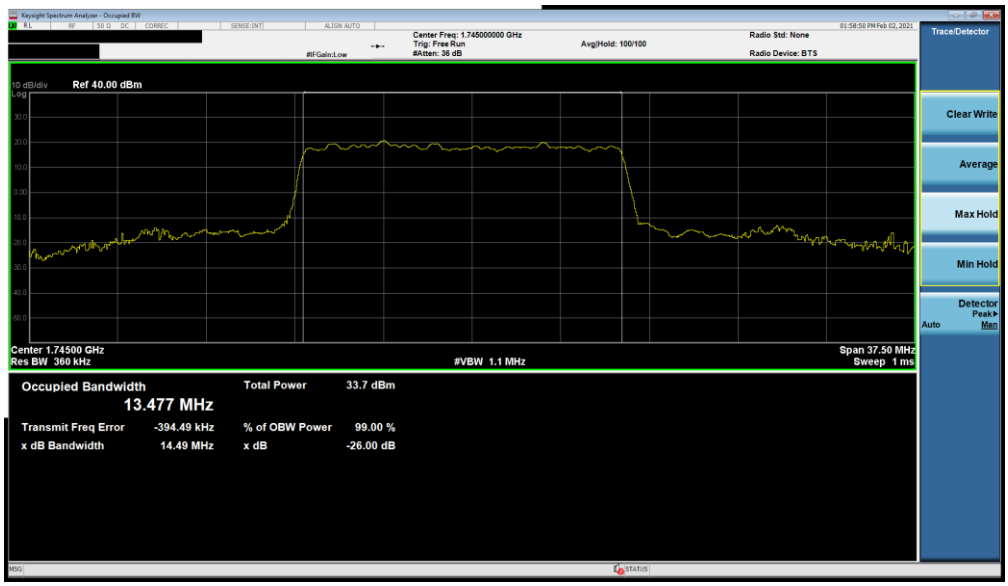
Plot 7-67. Occupied Bandwidth Plot (NR Band n66 - 20.0MHz CP-OFDM 16QAM - Full RB)



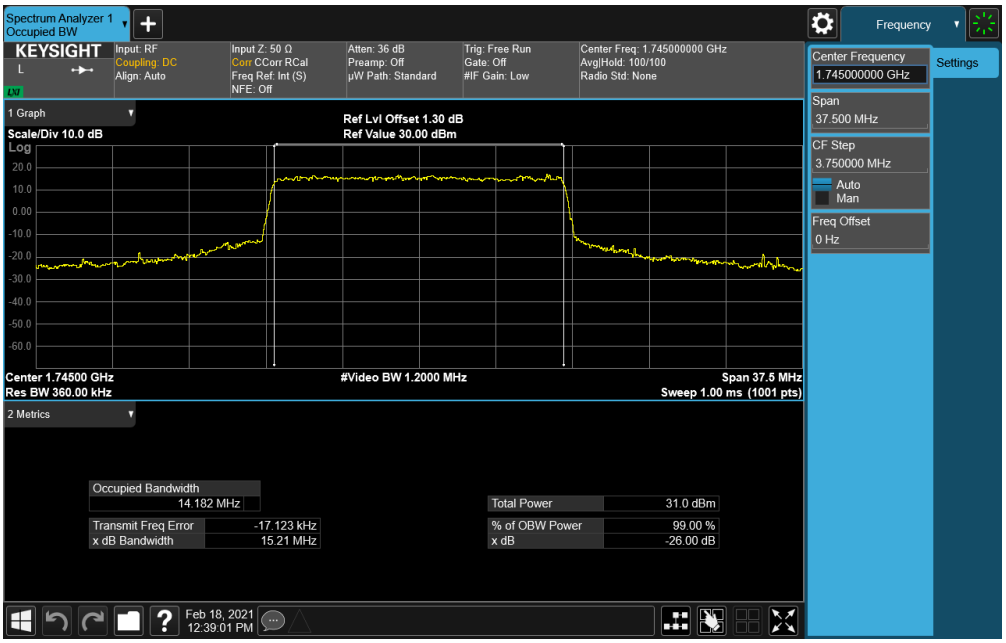
Plot 7-68. Occupied Bandwidth Plot (NR Band n66 - 20.0MHz CP-OFDM 64QAM - Full RB)



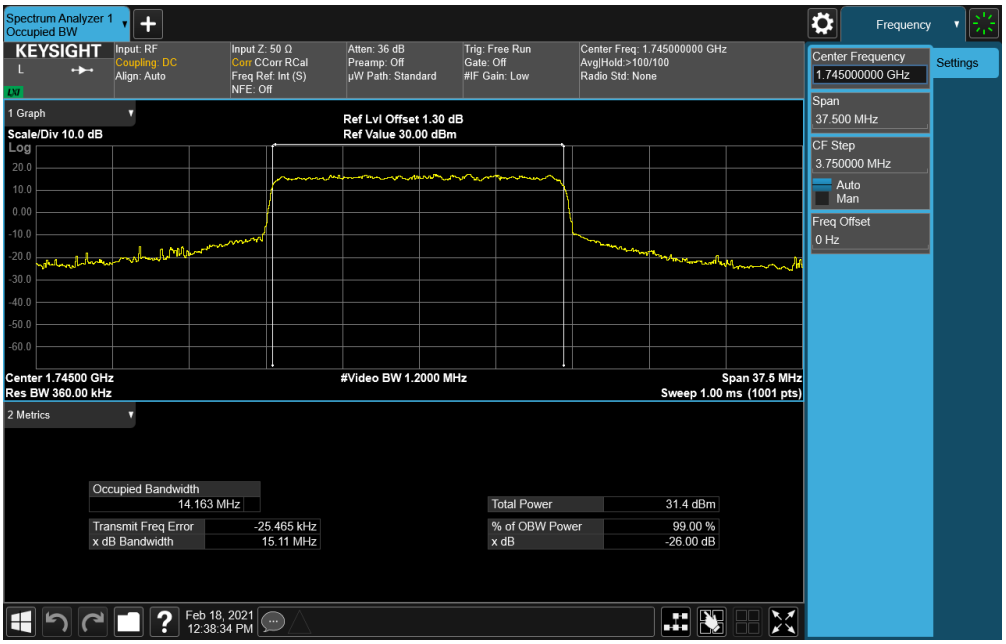
Plot 7-69. Occupied Bandwidth Plot (NR Band n66 - 20.0MHz CP-OFDM 256QAM - Full RB)



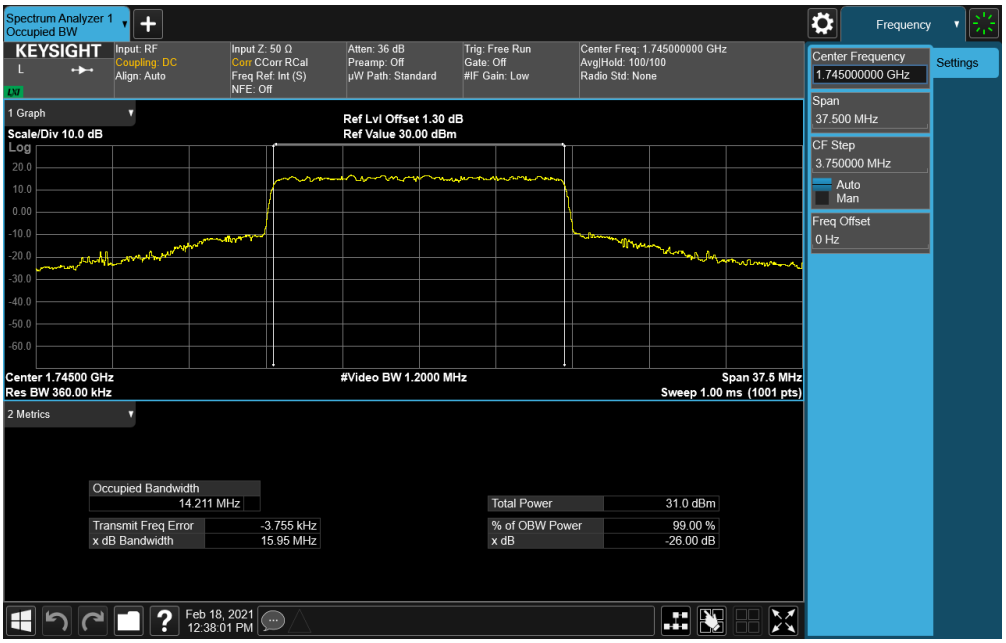
Plot 7-70. Occupied Bandwidth Plot (NR Band n66 - 15.0MHz DFT-s-OFDM π/2 BPSK - Full RB)



Plot 7-71. Occupied Bandwidth Plot (NR Band n66 - 15.0MHz CP-OFDM QPSK - Full RB)

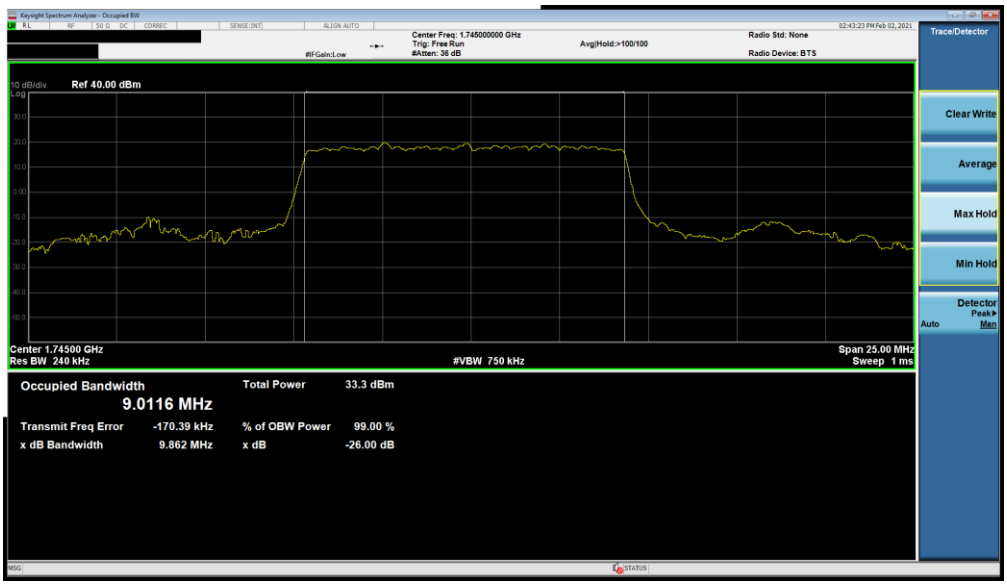


Plot 7-72. Occupied Bandwidth Plot (NR Band n66 - 15.0MHz CP-OFDM 16QAM - Full RB)

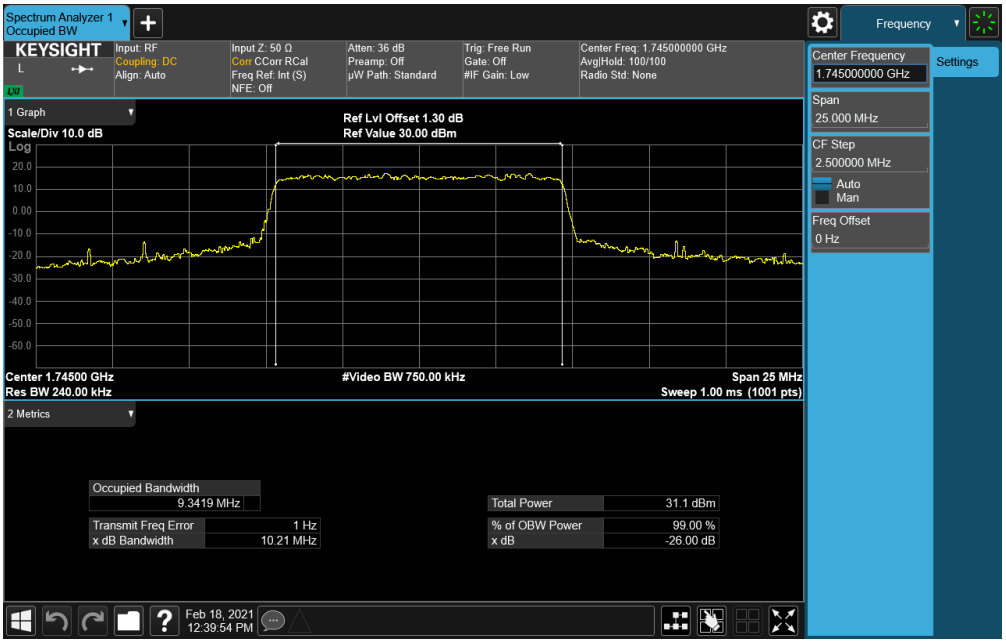


Plot 7-73. Occupied Bandwidth Plot (NR Band n66 - 15.0MHz CP-OFDM 64QAM - Full RB)

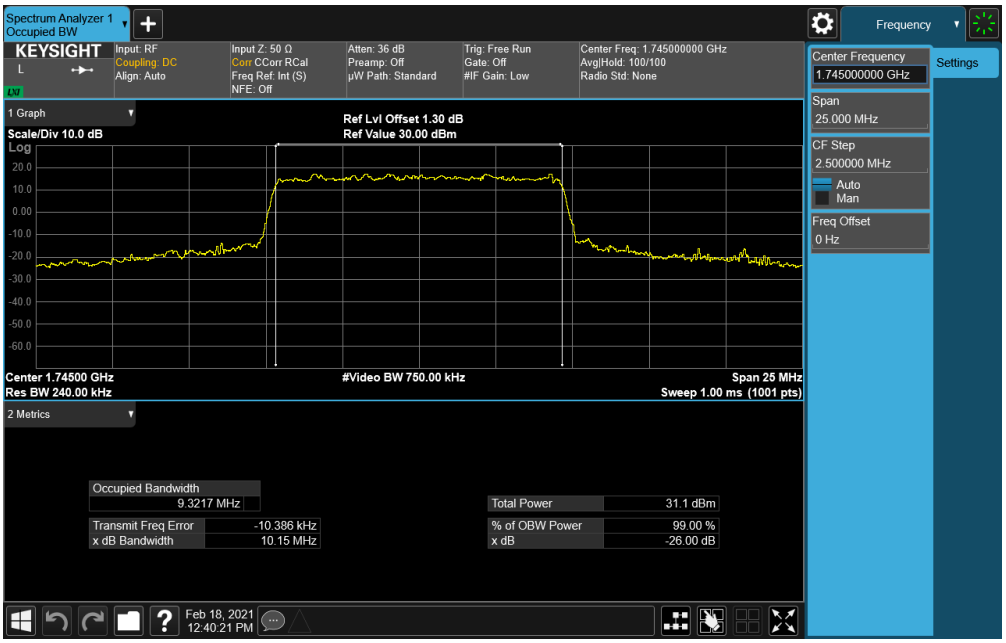
Plot 7-74. Occupied Bandwidth Plot (NR Band n66 - 15.0MHz CP-OFDM 256QAM - Full RB)



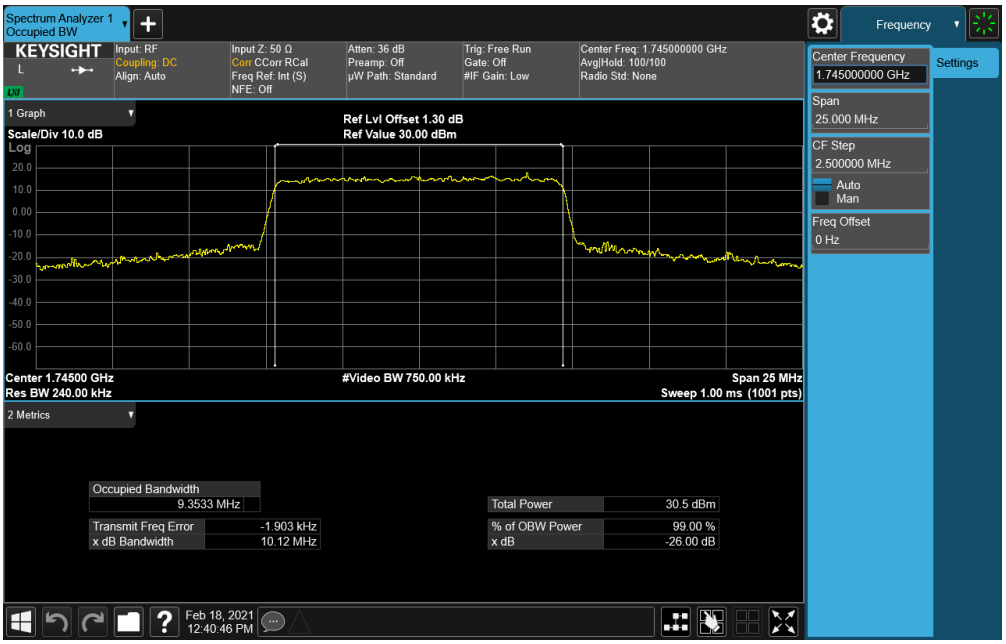
Plot 7-75. Occupied Bandwidth Plot (NR Band n66 - 10.0MHz DFT-s-OFDM π/2 BPSK - Full RB)



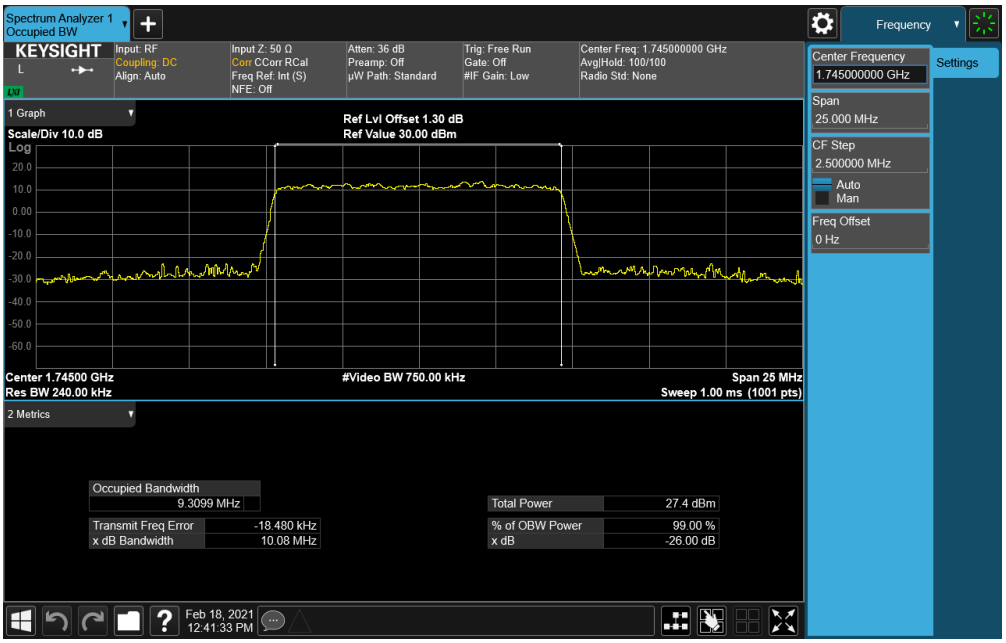
Plot 7-76. Occupied Bandwidth Plot (NR Band n66 - 10.0MHz CP-OFDM QPSK - Full RB)



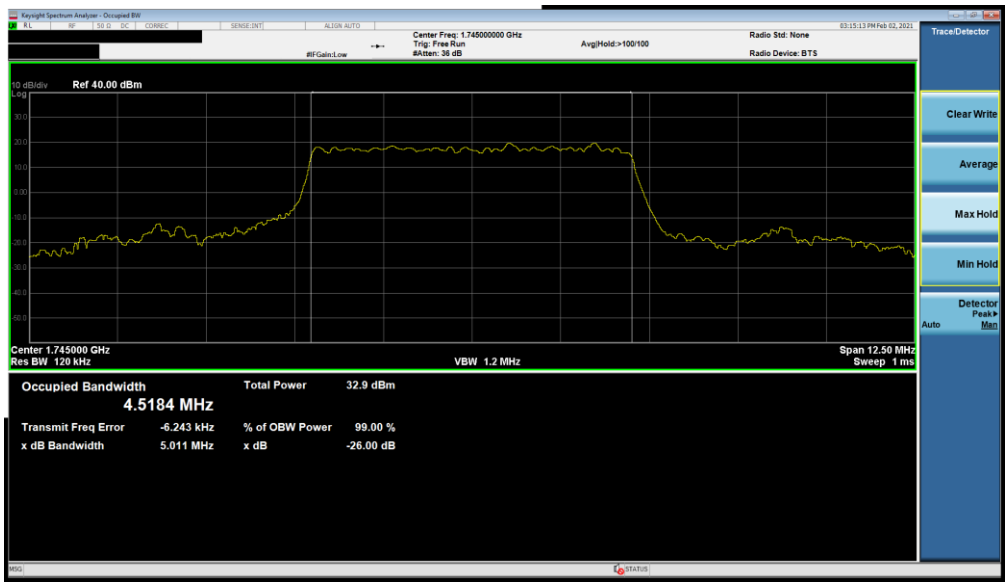
Plot 7-77. Occupied Bandwidth Plot (NR Band n66 - 10.0MHz CP-OFDM 16QAM - Full RB)



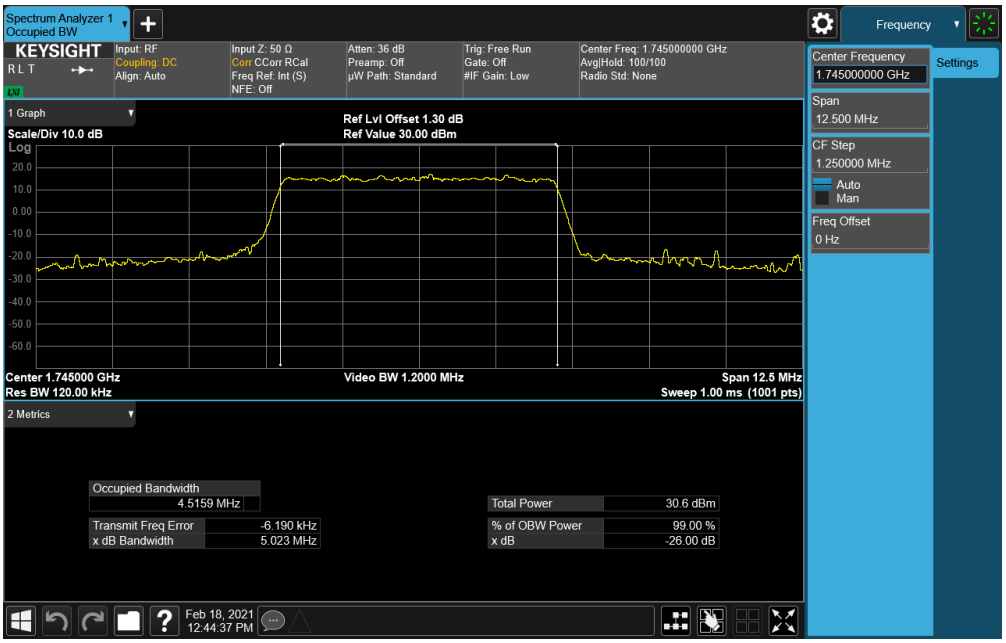
Plot 7-78. Occupied Bandwidth Plot (NR Band n66 - 10.0MHz CP-OFDM 64QAM - Full RB)



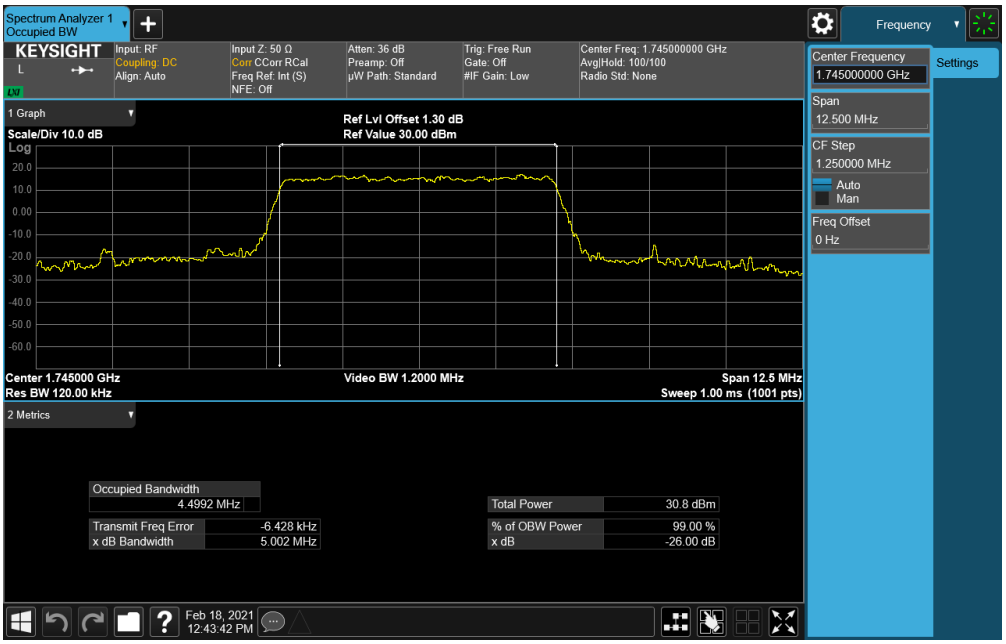
Plot 7-79. Occupied Bandwidth Plot (NR Band n66 - 10.0MHz CP-OFDM 256QAM - Full RB)



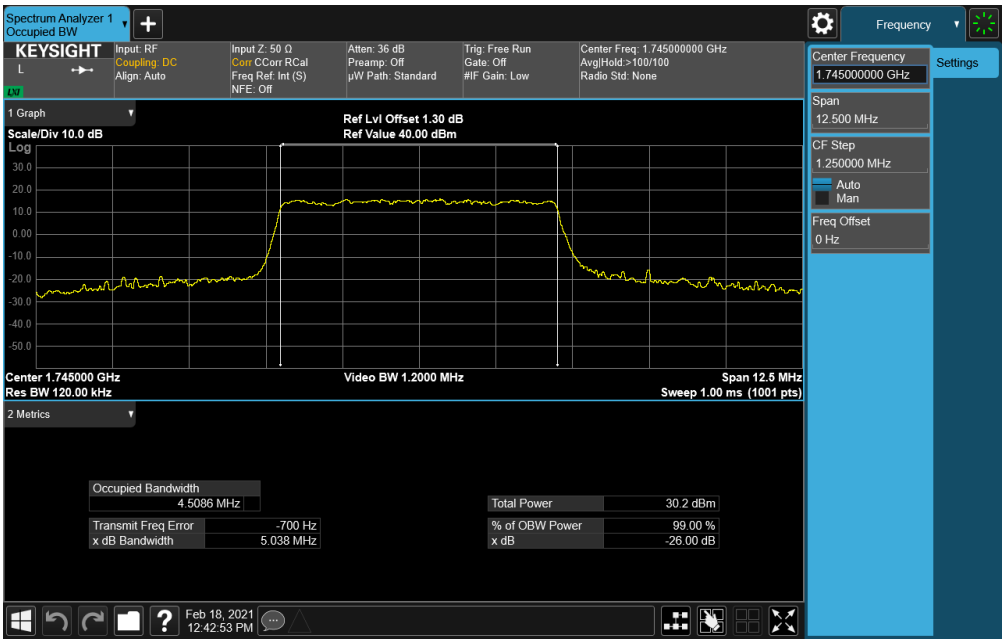
Plot 7-80. Occupied Bandwidth Plot (NR Band n66 - 5.0MHz DFT-s-OFDM π/2 BPSK - Full RB)



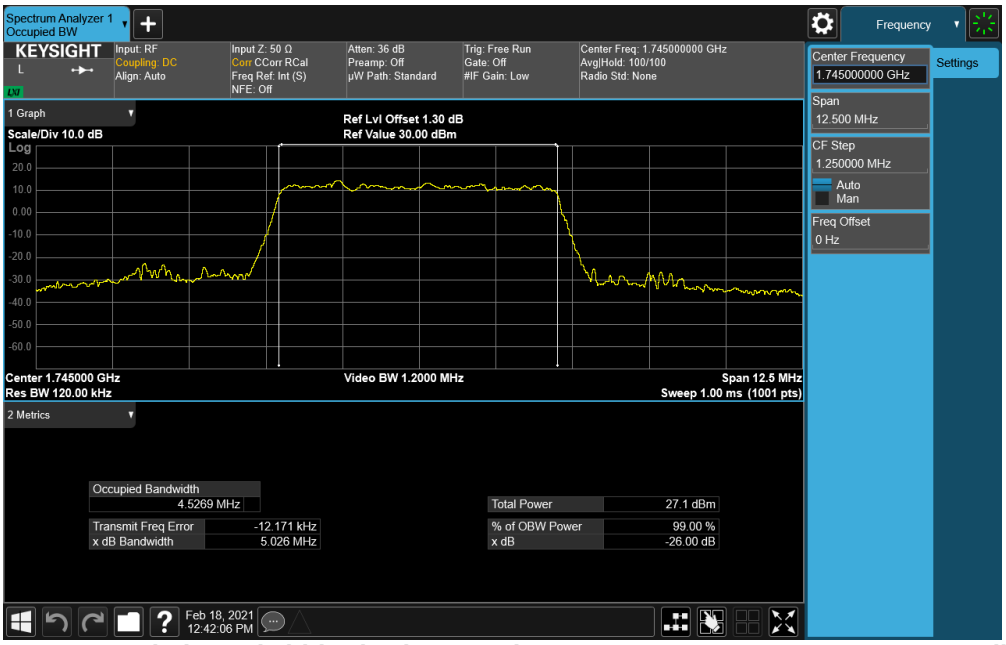
Plot 7-81. Occupied Bandwidth Plot (NR Band n66 - 5.0MHz CP-OFDM QPSK - Full RB)



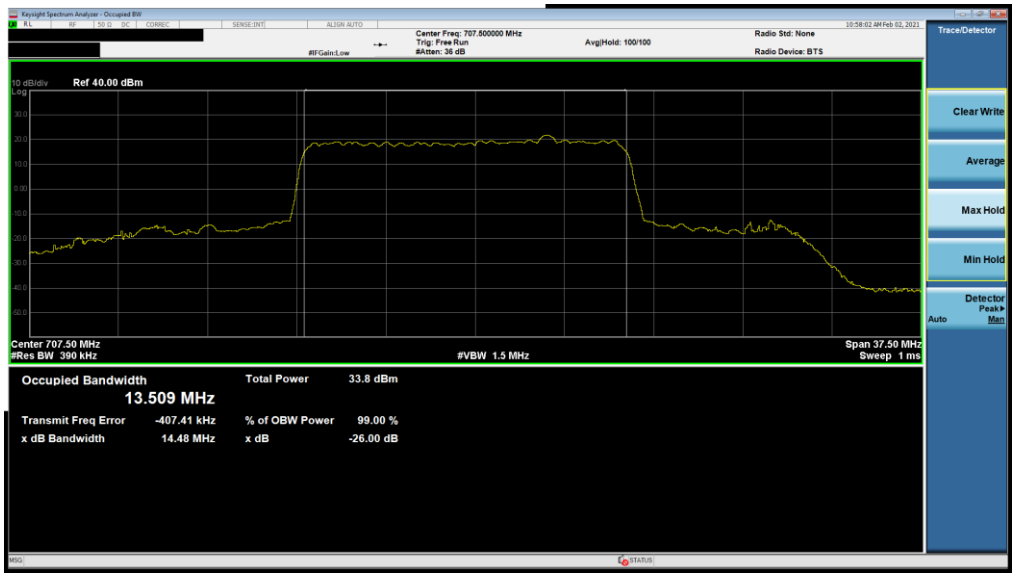
Plot 7-82. Occupied Bandwidth Plot (NR Band n66 - 5.0MHz CP-OFDM 16QAM - Full RB)



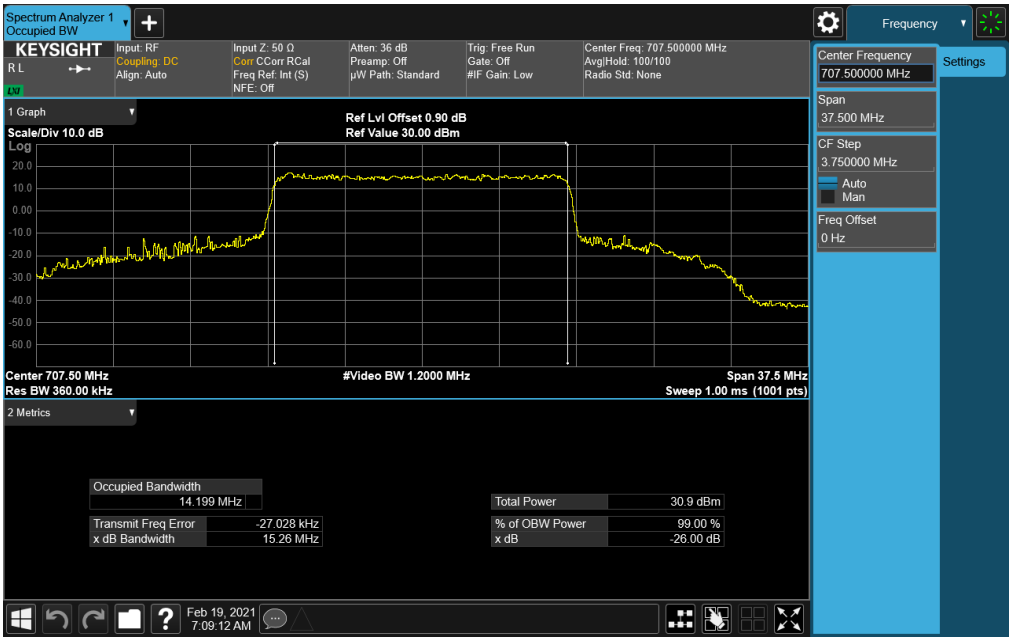
Plot 7-83. Occupied Bandwidth Plot (NR Band n66 - 5.0MHz CP-OFDM 64QAM - Full RB)



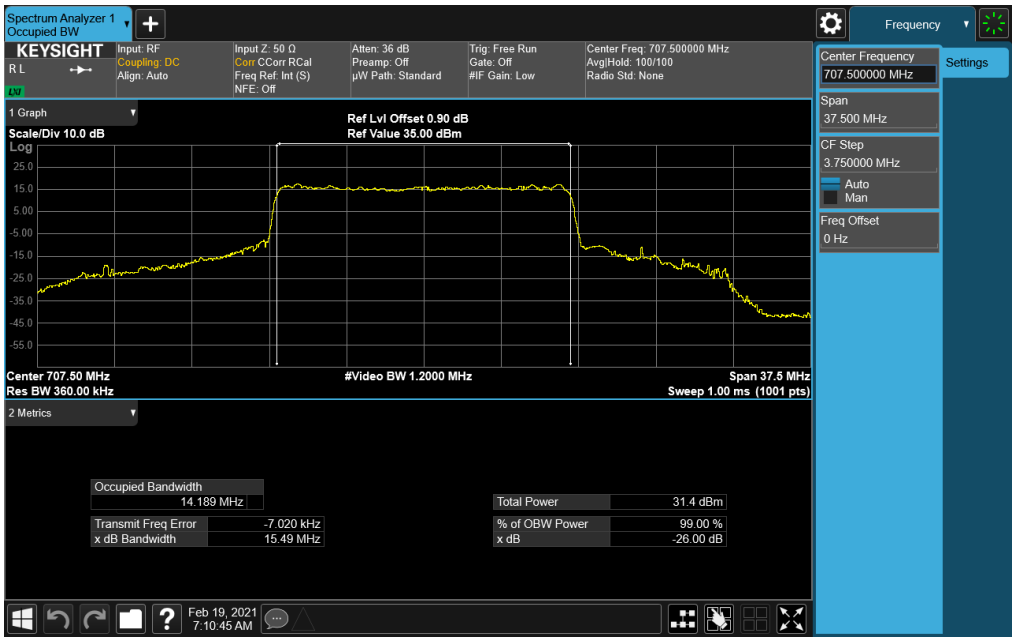
Plot 7-84. Occupied Bandwidth Plot (NR Band n66 - 5.0MHz CP-OFDM 256QAM - Full RB)



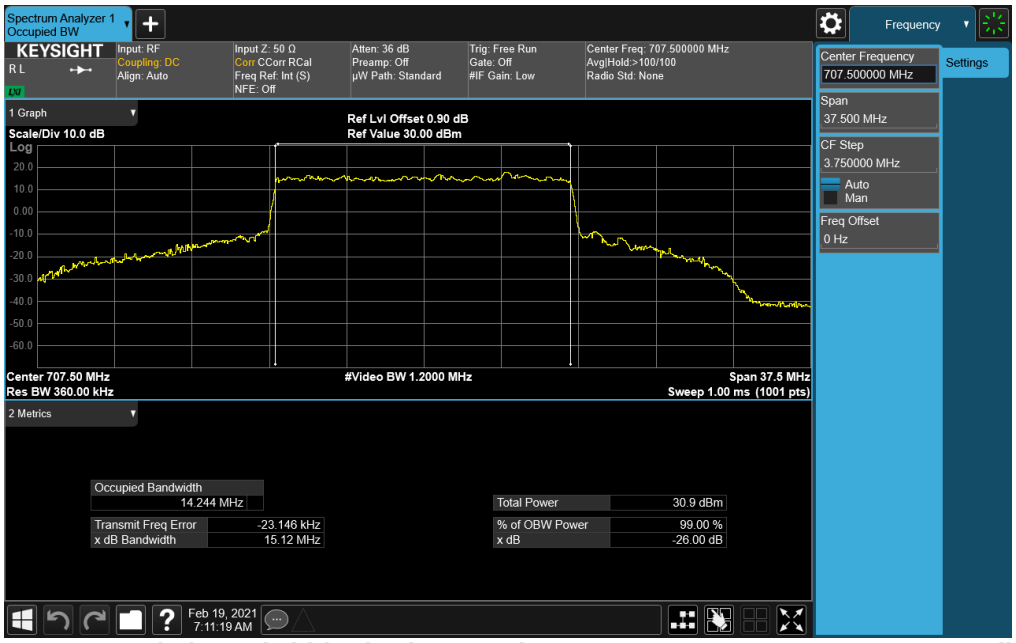
Plot 7-85. Occupied Bandwidth Plot (NR Band n12 - 15.0MHz DFT-s-OFDM π/2 BPSK - Full RB)



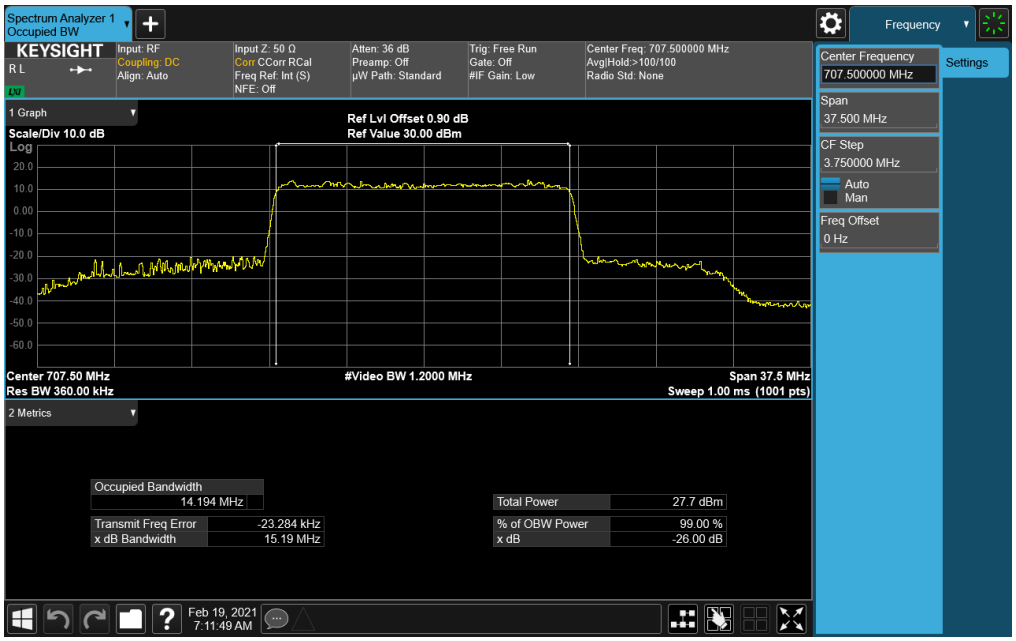
Plot 7-86. Occupied Bandwidth Plot (NR Band n12 - 15.0MHz CP-OFDM QPSK - Full RB)



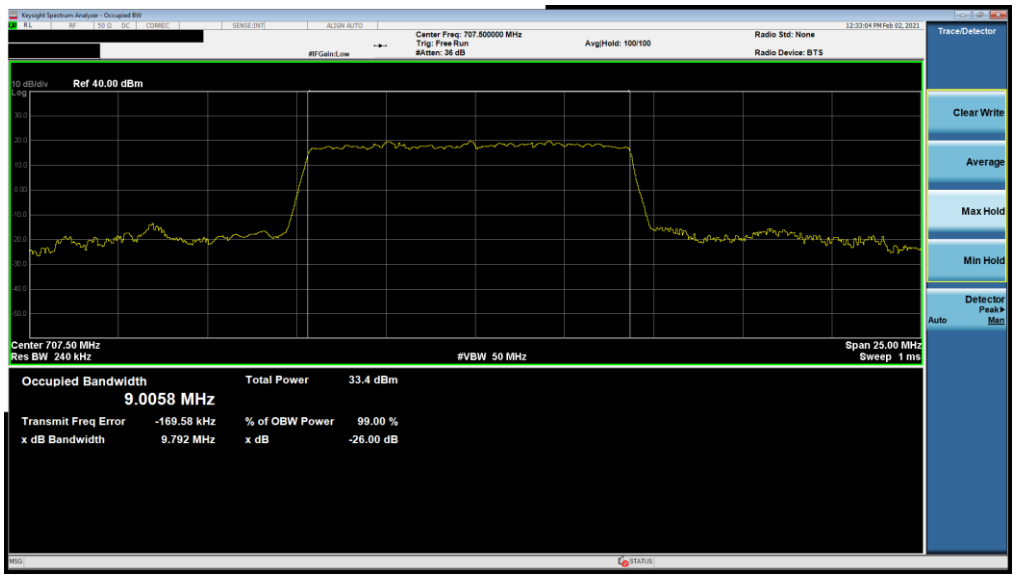
Plot 7-87. Occupied Bandwidth Plot (NR Band n12 - 15.0MHz CP-OFDM 16QAM - Full RB)



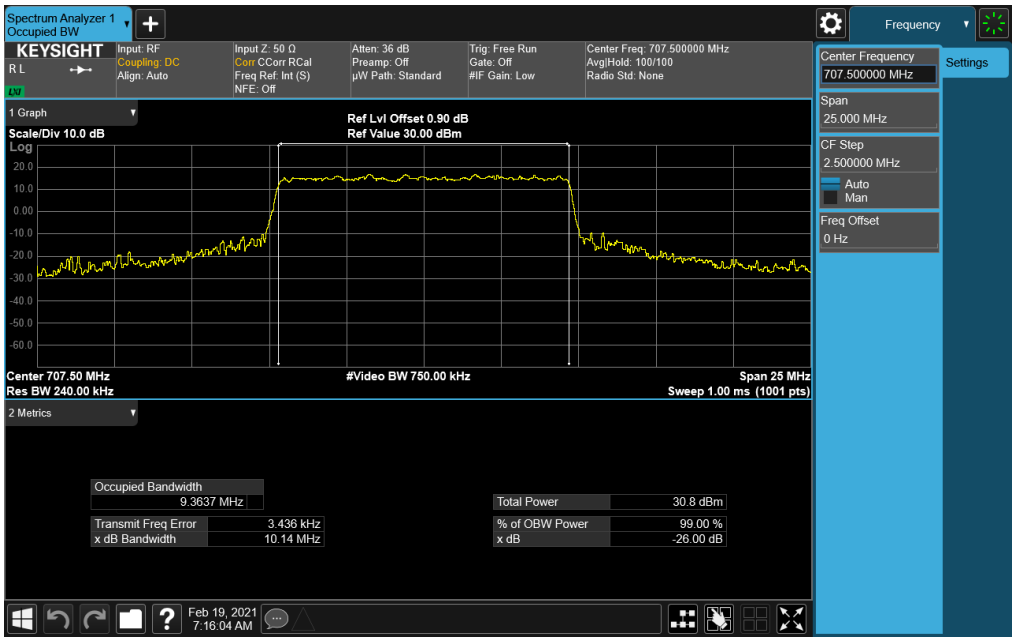
Plot 7-88. Occupied Bandwidth Plot (NR Band n12 - 15.0MHz CP-OFDM 64QAM - Full RB)



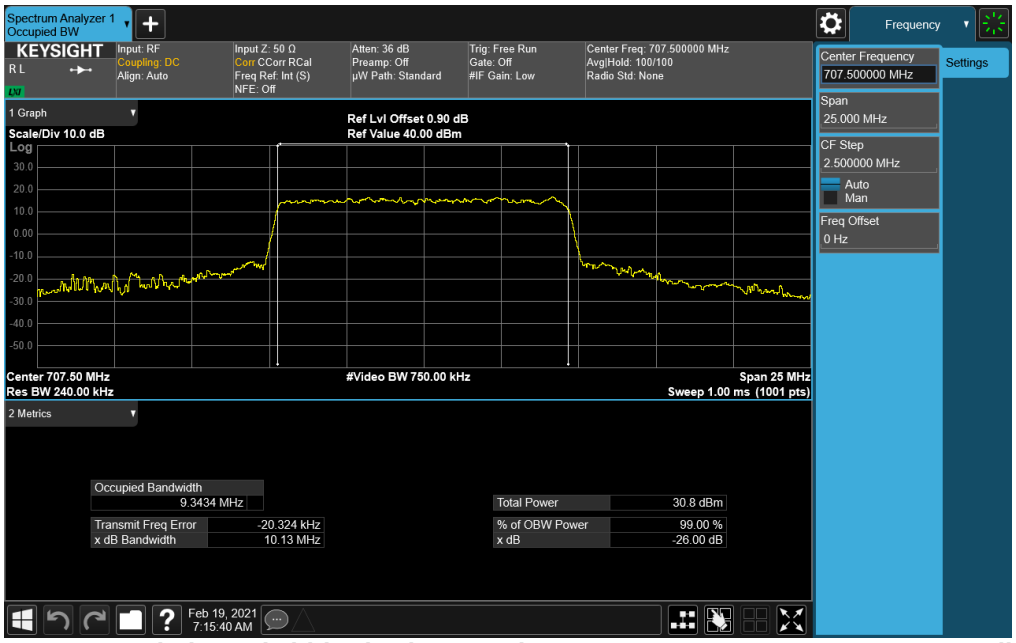
Plot 7-89. Occupied Bandwidth Plot (NR Band n12 - 15.0MHz CP-OFDM 256QAM - Full RB)



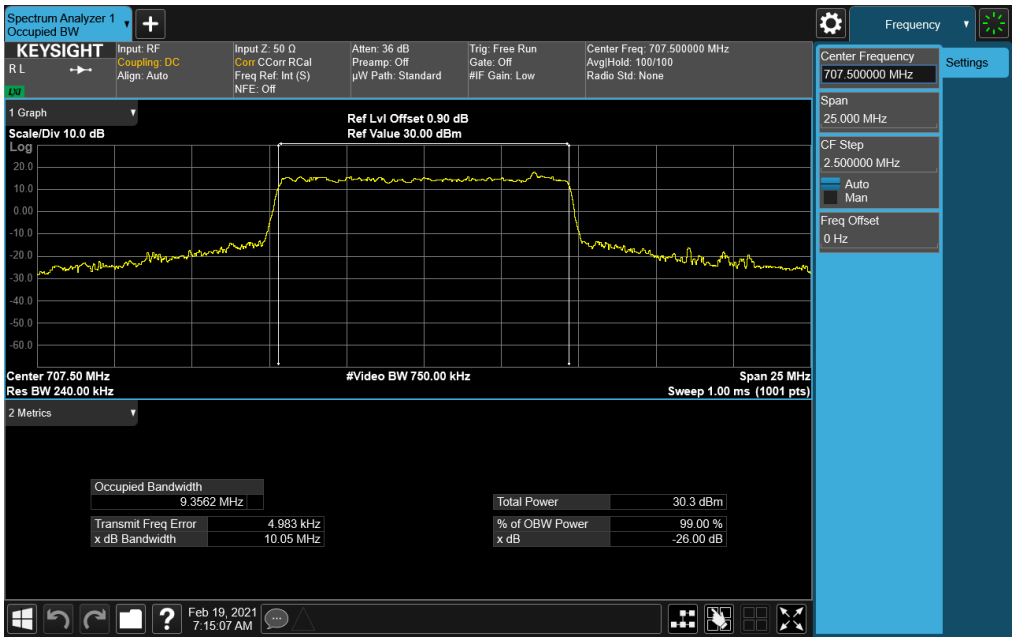
Plot 7-90. Occupied Bandwidth Plot (NR Band n12 - 10.0MHz DFT-s-OFDM π/2 BPSK - Full RB)



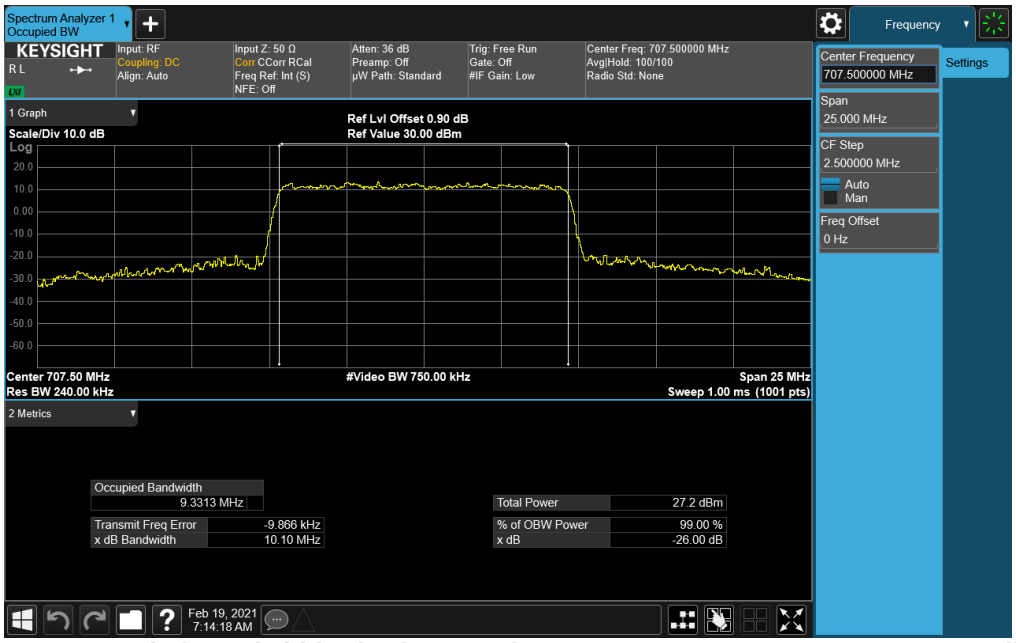
Plot 7-91. Occupied Bandwidth Plot (NR Band n12 - 10.0MHz CP-OFDM QPSK - Full RB)



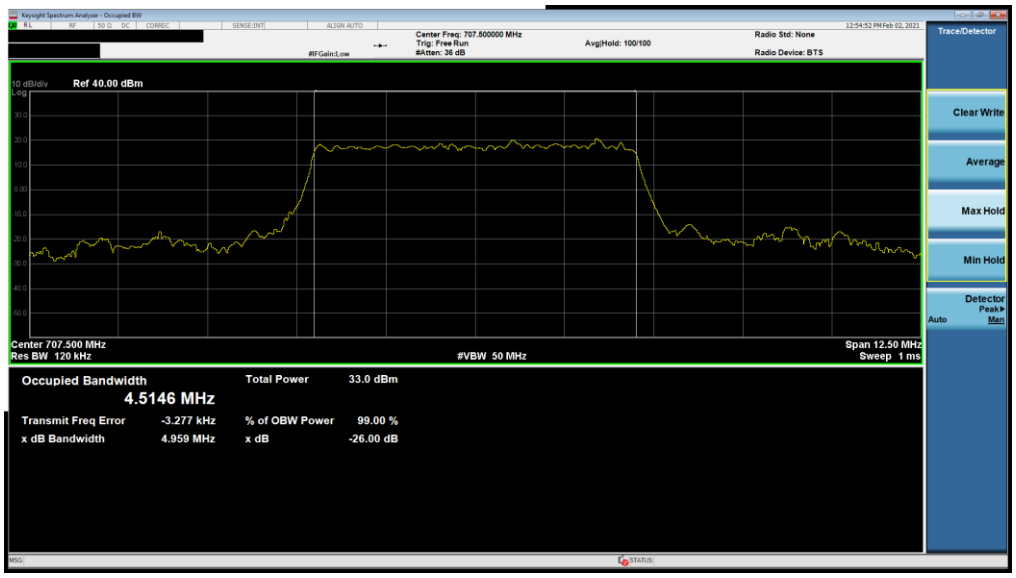
Plot 7-92. Occupied Bandwidth Plot (NR Band n12 - 10.0MHz CP-OFDM 16QAM - Full RB)



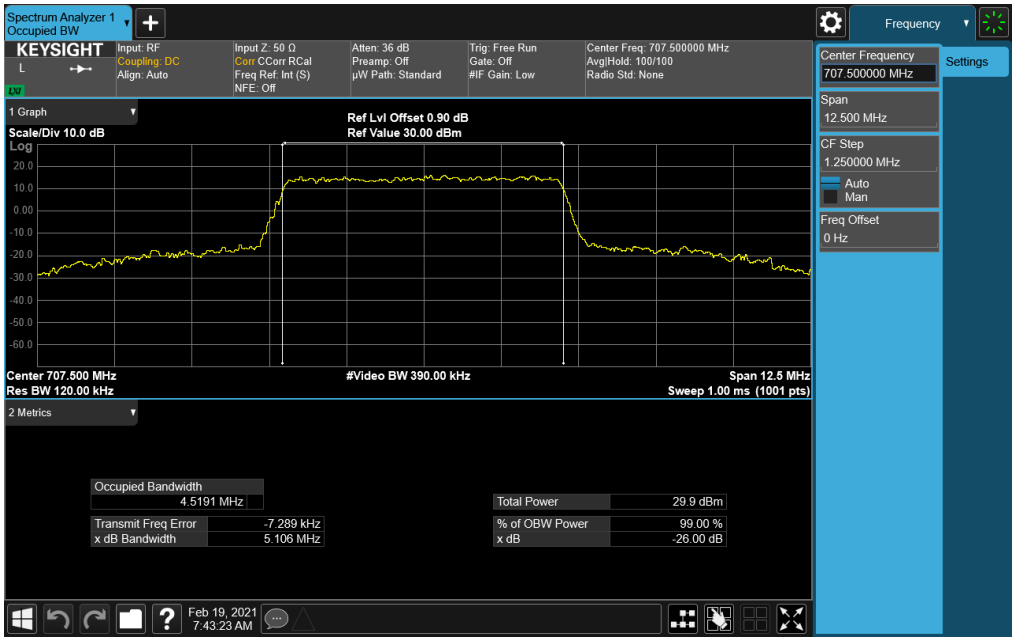
Plot 7-93. Occupied Bandwidth Plot (NR Band n12 - 10.0MHz CP-OFDM 64QAM - Full RB)



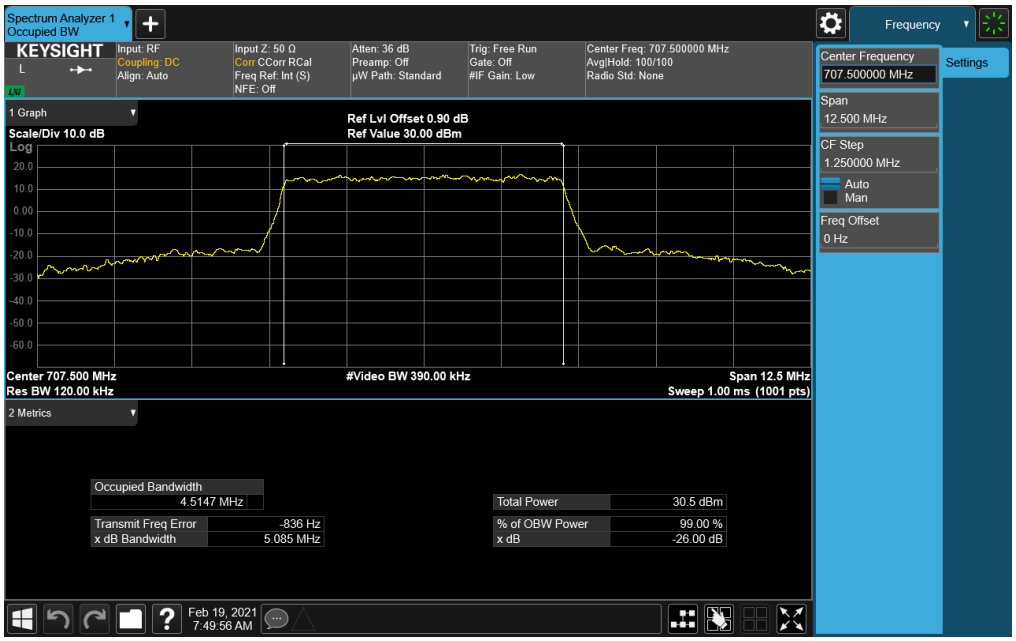
Plot 7-94. Occupied Bandwidth Plot (NR Band n12 - 10.0MHz CP-OFDM 256QAM - Full RB)



Plot 7-95. Occupied Bandwidth Plot (NR Band n12 - 5.0MHz DFT-s-OFDM π/2 BPSK - Full RB)

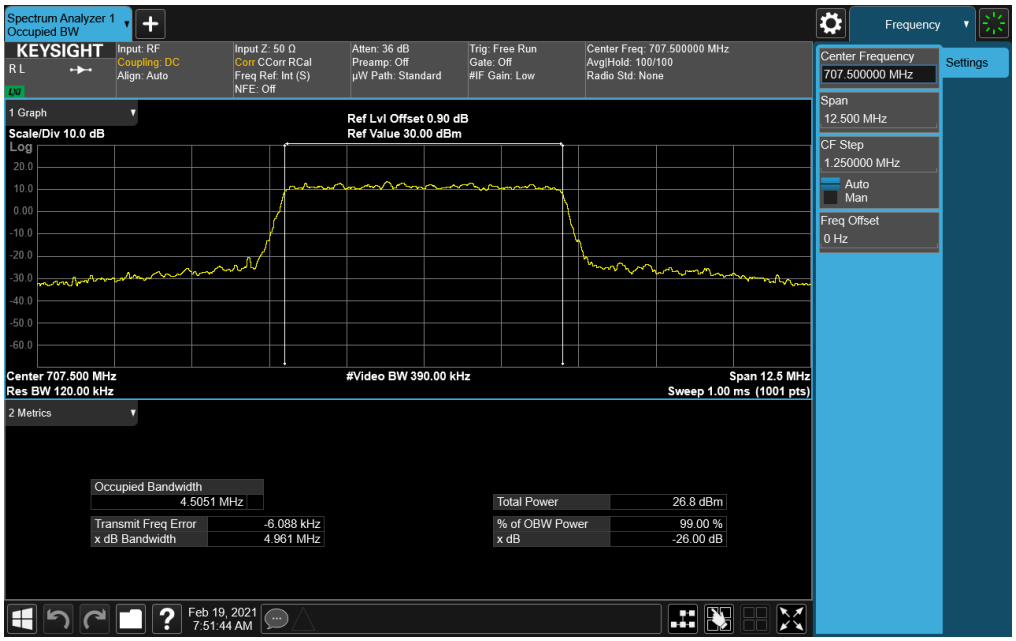


Plot 7-96. Occupied Bandwidth Plot (NR Band n12 - 5.0MHz CP-OFDM QPSK - Full RB)



Plot 7-97. Occupied Bandwidth Plot (NR Band n12 - 5.0MHz CP-OFDM 16QAM - Full RB)

Plot 7-98. Occupied Bandwidth Plot (NR Band n12 - 5.0MHz CP-OFDM 64QAM - Full RB)



Plot 7-99. Occupied Bandwidth Plot (NR Band n12 - 5.0MHz CP-OFDM 256QAM - Full RB)