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PART 27 MEASUREMENT REPORT

Applicant Name:
Samsung Electronics Co., Ltd.
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Gyeonggi-do, 16677, Korea

Date of Testing:
11/6/2023 - 12/28/2023
Test Report Issue Date:
12/29/2023
Test Site/Location:
Element lab., Columbia, MD, USA
Test Report Serial No.:
1M2311010111-05.A3L

FCC ID:	**A3LSMA356U**
APPLICANT:	**Samsung Electronics Co., Ltd.**

Application Type:	Certification
Model:	SM-A356U
Additional Model(s):	SM-A356U1, SM-S356V
EUT Type:	Portable Handset
FCC Classification:	PCS Licensed Transmitter Held to Ear (PCE)
FCC Rule Part:	27
Test Procedure(s):	ANSI C63.26-2015, KDB 648474 D03 v01r04

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

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

RJ Ortanez
Executive Vice President

ACCREDITED
CERT #2041.01

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Antenna-1						
Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	EIRP		Emission Designator
				Max. Power [W]	Max. Power [dBm]	
WCDMA1700	N/A	Spread Spectrum	1712.4 - 1752.6	0.250	23.98	4M19F9W
LTE Band 66/4	20 MHz	QPSK	1720.0 - 1770.0	0.234	23.69	18M0G7D
		16QAM	1720.0 - 1770.0	0.193	22.85	18M0W7D
	15 MHz	QPSK	1717.5 - 1772.5	0.217	23.36	13M5G7D
		16QAM	1717.5 - 1772.5	0.180	22.54	13M5W7D
	10 MHz	QPSK	1715.0 - 1775.0	0.213	23.28	9M05G7D
		16QAM	1715.0 - 1775.0	0.180	22.55	9M02W7D
	5 MHz	QPSK	1712.5 - 1777.5	0.228	23.58	4M53G7D
		16QAM	1712.5 - 1777.5	0.191	22.82	4M53W7D
	3 MHz	QPSK	1711.5 - 1778.5	0.229	23.59	2M73G7D
		16QAM	1711.5 - 1778.5	0.177	22.48	2M72W7D
	1.4 MHz	QPSK	1710.7 - 1779.3	0.227	23.56	1M10G7D
		16QAM	1710.7 - 1779.3	0.187	22.72	1M11W7D
NR Band n70	15 MHz	π/2 BPSK	1702.5	0.245	23.90	13M5G7D
		QPSK	1702.5	0.249	23.97	14M2G7D
		16QAM	1702.5	0.198	22.97	14M2W7D
	10 MHz	π/2 BPSK	1700.0 - 1705.0	0.251	24.00	9M03G7D
		QPSK	1700.0 - 1705.0	0.262	24.18	9M36G7D
		16QAM	1700.0 - 1705.0	0.202	23.06	9M37W7D
	5 MHz	π/2 BPSK	1697.5 - 1707.5	0.257	24.09	4M54G7D
		QPSK	1697.5 - 1707.5	0.263	24.20	4M54G7D
		16QAM	1697.5 - 1707.5	0.206	23.15	4M54W7D
NR Band n66	40 MHz	π/2 BPSK	1730.0 - 1760.0	0.239	23.78	39M0G7D
		QPSK	1730.0 - 1760.0	0.237	23.75	38M9G7D
		16QAM	1730.0 - 1760.0	0.194	22.87	38M8W7D
	30 MHz	π/2 BPSK	1725.0 - 1765.0	0.251	24.00	28M9G7D
		QPSK	1725.0 - 1765.0	0.244	23.87	29M0G7D
		16QAM	1725.0 - 1765.0	0.208	23.19	28M9W7D
	20 MHz	π/2 BPSK	1720.0 - 1770.0	0.240	23.80	18M0G7D
		QPSK	1720.0 - 1770.0	0.237	23.74	19M0G7D
		16QAM	1720.0 - 1770.0	0.202	23.05	19M0W7D
	15 MHz	π/2 BPSK	1717.5 - 1772.5	0.240	23.80	13M5G7D
		QPSK	1717.5 - 1772.5	0.237	23.74	14M2G7D
		16QAM	1717.5 - 1772.5	0.198	22.96	14M2W7D
	10 MHz	π/2 BPSK	1715.0 - 1775.0	0.236	23.73	9M03G7D
		QPSK	1715.0 - 1775.0	0.231	23.63	9M35G7D
		16QAM	1715.0 - 1775.0	0.191	22.82	9M34W7D
	5 MHz	π/2 BPSK	1712.5 - 1777.5	0.233	23.68	4M54G7D
		QPSK	1712.5 - 1777.5	0.235	23.70	4M55G7D
		16QAM	1712.5 - 1777.5	0.194	22.88	4M53W7D

Antenna-1								
Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	ERP		EIRP		Emission Designator
				Max. Power [W]	Max. Power [dBm]	Max. Power [W]	Max. Power [dBm]	
LTE Band 71	20 MHz	QPSK	673.0 - 688.0	0.110	20.41	0.180	22.56	18M1G7D
		16QAM	673.0 - 688.0	0.094	19.73	0.154	21.88	18M1W7D
	15 MHz	QPSK	670.5 - 690.5	0.111	20.44	0.182	22.59	13M6G7D
		16QAM	670.5 - 690.5	0.095	19.78	0.156	21.93	13M6W7D
	10 MHz	QPSK	668.0 - 693.0	0.114	20.55	0.186	22.70	9M11G7D
		16QAM	668.0 - 693.0	0.100	19.98	0.163	22.13	9M11W7D
	5 MHz	QPSK	665.5 - 695.5	0.110	20.40	0.180	22.55	4M57G7D
		16QAM	665.5 - 695.5	0.093	19.69	0.153	21.84	4M56W7D
LTE Band 12	10 MHz	QPSK	704.0 - 711.0	0.072	18.59	0.119	20.74	9M00G7D
		16QAM	704.0 - 711.0	0.069	18.38	0.113	20.53	9M02W7D
	5 MHz	QPSK	701.5 - 713.5	0.075	18.74	0.123	20.89	4M54G7D
		16QAM	701.5 - 713.5	0.069	18.41	0.114	20.56	4M54W7D
	3 MHz	QPSK	700.5 - 714.5	0.076	18.78	0.124	20.93	2M72G7D
		16QAM	700.5 - 714.5	0.070	18.43	0.114	20.58	2M72W7D
	1.4 MHz	QPSK	699.7 - 715.3	0.073	18.66	0.120	20.81	1M10G7D
		16QAM	699.7 - 715.3	0.067	18.28	0.110	20.43	1M11W7D
LTE Band 13	10 MHz	QPSK	782.0	0.090	19.52	0.147	21.67	9M08G7D
		16QAM	782.0	0.077	18.84	0.126	20.99	9M05W7D
	5 MHz	QPSK	779.5 - 784.5	0.092	19.63	0.151	21.78	4M58G7D
		16QAM	779.5 - 784.5	0.078	18.91	0.128	21.06	4M57W7D
NR Band n71	20 MHz	π/2 BPSK	673.0 - 688.0	0.072	18.60	0.119	20.75	18M1G7D
		QPSK	673.0 - 688.0	0.071	18.53	0.117	20.68	19M1G7D
		16QAM	673.0 - 688.0	0.058	17.63	0.095	19.78	19M1W7D
	15 MHz	π/2 BPSK	670.5 - 690.5	0.073	18.62	0.119	20.77	13M6G7D
		QPSK	670.5 - 690.5	0.074	18.72	0.122	20.87	14M2G7D
		16QAM	670.5 - 690.5	0.061	17.83	0.100	19.98	14M3W7D
	10 MHz	π/2 BPSK	668.0 - 693.0	0.077	18.86	0.126	21.01	9M06G7D
		QPSK	668.0 - 693.0	0.072	18.60	0.119	20.75	9M45G7D
		16QAM	668.0 - 693.0	0.060	17.80	0.099	19.95	9M42W7D
	5 MHz	π/2 BPSK	665.5 - 695.5	0.074	18.69	0.121	20.84	4M55G7D
		QPSK	665.5 - 695.5	0.073	18.65	0.120	20.80	4M60G7D
		16QAM	665.5 - 695.5	0.061	17.84	0.100	19.99	4M55W7D

Antenna-2						
Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	EIRP		Emission Designator
				Max. Power [W]	Max. Power [dBm]	
LTE Band 66/4	20 MHz	QPSK	1720.0 - 1770.0	0.159	22.02	18M0G7D
		16QAM	1720.0 - 1770.0	0.133	21.25	18M0W7D
	15 MHz	QPSK	1717.5 - 1772.5	0.153	21.83	13M5G7D
		16QAM	1717.5 - 1772.5	0.131	21.18	13M6W7D
	10 MHz	QPSK	1715.0 - 1775.0	0.160	22.03	9M11G7D
		16QAM	1715.0 - 1775.0	0.140	21.47	9M04W7D
	5 MHz	QPSK	1712.5 - 1777.5	0.156	21.94	4M54G7D
		16QAM	1712.5 - 1777.5	0.136	21.33	4M56W7D
	3 MHz	QPSK	1711.5 - 1778.5	0.155	21.89	2M72G7D
		16QAM	1711.5 - 1778.5	0.134	21.28	2M73W7D
	1.4 MHz	QPSK	1710.7 - 1779.3	0.154	21.88	1M10G7D
		16QAM	1710.7 - 1779.3	0.135	21.30	1M11W7D
NR Band n66	40 MHz	π/2 BPSK	1730.0 - 1760.0	0.137	21.36	39M0G7D
		QPSK	1730.0 - 1760.0	0.141	21.49	38M9G7D
		16QAM	1730.0 - 1760.0	0.106	20.27	38M8W7D
	30 MHz	π/2 BPSK	1725.0 - 1765.0	0.133	21.25	28M9G7D
		QPSK	1725.0 - 1765.0	0.133	21.24	28M9G7D
		16QAM	1725.0 - 1765.0	0.110	20.42	28M8W7D
	20 MHz	π/2 BPSK	1720.0 - 1770.0	0.136	21.33	18M0G7D
		QPSK	1720.0 - 1770.0	0.140	21.45	19M1G7D
		16QAM	1720.0 - 1770.0	0.107	20.30	19M1W7D
	15 MHz	π/2 BPSK	1717.5 - 1772.5	0.137	21.37	13M5G7D
		QPSK	1717.5 - 1772.5	0.139	21.44	14M2G7D
		16QAM	1717.5 - 1772.5	0.102	20.09	14M3W7D
	10 MHz	π/2 BPSK	1715.0 - 1775.0	0.136	21.35	9M08G7D
		QPSK	1715.0 - 1775.0	0.136	21.35	9M40G7D
		16QAM	1715.0 - 1775.0	0.104	20.18	9M40W7D
	5 MHz	π/2 BPSK	1712.5 - 1777.5	0.140	21.48	4M54G7D
		QPSK	1712.5 - 1777.5	0.143	21.57	4M57G7D
		16QAM	1712.5 - 1777.5	0.104	20.19	4M56W7D

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 Element Test Location

These measurement tests were conducted at the Element laboratory located at 7185 Oakland Mills Road, Columbia, MD 21046. The measurement facility is compliant with the test site requirements specified in ANSI C63.4-2014.

1.3 Test Facility / Accreditations

Measurements were performed at Element lab located in Columbia, MD 21046, U.S.A.

- Element Washington DC LLC is an ISO 17025-2017 accredited test facility under the American Association for Laboratory Accreditation (A2LA) with Certificate number 2041.01 for Specific Absorption Rate (SAR), Hearing Aid Compatibility (HAC) testing, where applicable, and Electromagnetic Compatibility (EMC) testing for FCC and Innovation, Science, and Economic Development Canada rules.

- Element Washington DC LLC 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).

- Element Washington DC LLC facility is a registered (2451B) test laboratory with the site description on file with ISED.

- Element Washington DC LLC is a Recognized U.S. Certification Assessment Body (CAB # US0110) for ISED Canada as designated by NIST under the U.S. and Canada Mutual Recognition Agreement.

2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **Samsung Portable Handset FCC ID: A3LSMA356U**. 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.: 3425M, 3383M, 3425M, 3597M, 3698M

2.2 Device Capabilities

This device contains the following capabilities:

850/1900 GSM/GPRS/EDGE, 850/1700/1900 WCDMA/HSPA, Multi-band LTE, Multi-band 5G NR (FR1), 802.11b/g/n/ax WLAN, 802.11a/n/ac/ax UNII (5GHz), Bluetooth (1x, EDR, LE), NFC

2.3 Test Configuration

The EUT was tested per the guidance of ANSI C63.26-2015. See Section 7.0 of this test report for a description of the radiated and antenna port conducted emissions tests.

Band	Ant1	Ant2
WCDMA	Ant B	N/A
B71/n71	Ant A	N/A
B12	Ant A	N/A
B13	Ant A	N/A
B66/4/n66	Ant B	Ant F
n70	Ant B	N/A

Table 2-1. Antenna Naming Convention

2.4 Software and Firmware

Testing was performed on device(s) using software/firmware version A356USQU0AWJ2 installed on the EUT.

2.5 EMI Suppression Device(s)/Modifications

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

3.0 DESCRIPTION OF TESTS

3.1 Evaluation Procedure

The measurement procedures described in the "American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services" (ANSI C63.26-2015) were used in the measurement of the EUT**.**

Deviation from Measurement Procedure……..None

3.2 Radiated Power and Radiated Spurious Emissions

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

The equipment under test was transmitting while connected to its integral antenna and is placed on a turntable 3 meters from the receive antenna. The receive antenna height is adjusted between 1 and 4 meter height, the turntable is rotated through 360 degrees, and the EUT is manipulated through all orthogonal planes representative of its typical use to achieve the highest reading on the receive spectrum analyzer.

For radiated power measurements, substitution method is used per the guidance of ANSI C63.26-2015. For emissions below 1GHz, a half-wave dipole is 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 $_{[dB]}$.

For radiated spurious emissions measurements, the field strength conversion method is used per the formulas in Section 5.2.7 of ANSI C63.26-2015. 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. Additionally, radiated emissions below 30MHz are also validated on an Open Area Test Site to assert correlation with the chamber measurements per the requirements of KDB 414788 D01 v01r01.

Radiated power and radiated spurious emission levels are investigated with the receive antenna horizontally and vertically polarized per ANSI C63.26-2015.

4.0 MEASUREMENT UNCERTAINTY

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

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

5.0 TEST EQUIPMENT CALIBRATION DATA

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

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
-	AP2-001	EMC Cable and Switch System	1/11/2023	Annual	1/11/2024	AP2-001
-	AP2-002	EMC Cable and Switch System	1/11/2023	Annual	1/11/2024	AP2-002
-	ETS-001	EMC Cable and Switch System	1/11/2023	Annual	1/11/2024	ETS-001
-	ETS-002	EMC Cable and Switch System	1/11/2023	Annual	1/11/2024	ETS-002
-	LTX4	Licensed Transmitter Cable Set	1/12/2023	Annual	1/12/2024	LTX4
-	LTX5	Licensed Transmitter Cable Set	1/12/2023	Annual	1/12/2024	LTX5
Anritsu	MT8821C	Radio Communication Analyzer	N/A			620152694
Com-Power	AL-130R	9kHz - 30MHz Loop Antenna	1/18/2022	Biennial	1/19/2024	121085
EMCO	3115	Horn Antenna (1-18GHz)	8/8/2022	Biennial	8/8/2024	9704-5182
EMCO	3116	Horn Antenna (18-40GHz)	7/5/2023	Biennial	7/5/2025	9203-2178
Keysight Technologies	N9030A	PXA Signal Analyzer (3Hz-26.5GHz)	8/7/2023	Annual	8/7/2024	MY54490576
Keysight Technologies	N9030A	PXA Signal Analyzer (44GHz)	3/15/2023	Annual	3/15/2024	MY52350166
Rohde & Schwarz	CMW500	Radio Communication Tester	N/A			112347
Rohde & Schwarz	TC-TA18	Cross Polarized Vivaldi Test Antenna	9/28/2022	Biennial	9/28/2024	101058
Rohde & Schwarz	ESU26	EMI Test Receiver (26.5GHz)	9/25/2023	Annual	9/25/2024	100342
Rohde & Schwarz	ESW44	EMI Test Receiver (2Hz-44GHz)	3/1/2023	Annual	3/1/2024	101716
Rohde & Schwarz	VULB9162	Bi-Log Antenna	2/21/2023	Biennial	2/21/2025	00301
Sunol	DRH-118	Horn Antenna (1-18GHz)	2/14/2022	Biennial	2/14/2024	A050307
Sunol	JB5	Bi-Log Antenna (30M - 5GHz)	8/30/2022	Biennial	8/30/2024	A051107

Table 5-1. Test Equipment

Notes:

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

2. Equipment with a calibration date of “N/A” shown in this list was not used to make direct calibrated measurements.

6.0 SAMPLE CALCULATIONS

Emission Designator

QPSK Modulation

Emission Designator = 8M62G7D

LTE BW = 8.62 MHz
G = Phase Modulation
7 = Quantized/Digital Info
D = Data transmission, telemetry, telecommand

QAM Modulation

Emission Designator = 8M45W7D

LTE BW = 8.45 MHz
W = Amplitude/Angle Modulated
7 = Quantized/Digital Info
D = Data transmission, telemetry, telecommand

Spurious Radiated Emission – LTE Band

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

The average spectrum analyzer reading at 3 meters with the EUT on the turntable was –81.0 dBm. The gain of the substituted antenna is 8.1 dBi. The signal generator connected to the substituted antenna terminals is adjusted to produce a reading of –81.0 dBm on the spectrum analzyer. The loss of the cable between the signal generator and the terminals of the substituted antenna is 2.0 dB at 1564 MHz. So 6.1 dB is added to the signal generator reading of –30.9 dBm yielding –24.80 dBm. The fundamental EIRP was 25.501 dBm so this harmonic was 25.501 dBm – (-24.80) = 50.3 dBc.

7.0 TEST RESULTS

7.1 Summary

Company Name: Samsung Electronics Co., Ltd.

FCC ID: A3LSMA356U

FCC Classification: PCS Licensed Transmitter Held to Ear (PCE)

Mode(s): WCDMA, LTE, NR

Test Condition	Test Description	FCC Part Section(s)	Test Limit	Test Result	Reference
CONDUCTED	Transmitter Conducted Output Power*	2.1046(a), 2.1046(c)	N/A	PASS	Section 7.2
	Occupied Bandwidth	2.1049(h)	N/A	PASS	Section 7.3
	Conducted Band Edge / Spurious Emissions (LTE Band 13)	2.1051, 27.53(c), 27.53(f)	Undesirable emissions must meet the limits detailed in sections 27.53(c) and 27.53(f)	PASS	Sections 7.4, 7.5
	Conducted Band Edge / Spurious Emissions (LTE Band 12, 71; NR Band n71)	2.1051, 27.53(g)	≥ 43 + 10 log (P[Watts]) dB of attenuation below transmitter power	PASS	Sections 7.4, 7.5
	Conducted Band Edge / Spurious Emissions (WCDMA AWS; LTE Band 4, 66; NR Band n70, n66)	2.1051, 27.53(h)	≥ 43 + 10 log (P[Watts]) dB of attenuation below transmitter power	PASS	Sections 7.4, 7.5
	Peak-to-Average Ratio (WCDMA AWS; LTE Band 4, 66; NR Band n70, n66)	27.50(d)(5)	≤ 13 dB	PASS	Section 7.6
	Frequency Stability	2.1055, 27.54	Fundamental emissions stay within authorized frequency block	PASS	Section 7.9
RADIATED	Effective Radiated Power (LTE Band 13)	27.50(b)(10)	≤ 3 Watts max. ERP	PASS	Section 7.7
	Effective Radiated Power (LTE Band 12, 71; NR Band n71)	27.50(c)(10)	≤ 3 Watts max. ERP	PASS	Section 7.7
	Equivalent Isotropic Radiated Power (WCDMA AWS; LTE Band 4, 66; NR Band n70, n66)	27.50(d)(4)	≤ 1 Watt max. EIRP	PASS	Section 7.7
	Radiated Spurious Emissions (LTE Band 13)	2.1053, 27.53(c), 27.53(f)	Undesirable emissions must meet the limits detailed in sections 27.53(c) and 27.53(f)	PASS	Section 7.8
	Radiated Spurious Emissions (LTE Band 12, 71; NR Band n71)	2.1053, 27.53(g)	≥ 43 + 10 log (P[Watts]) dB of attenuation below transmitter power	PASS	Section 7.8
	Radiated Spurious Emissions (WCDMA AWS; LTE Band 4, 66; NR Band n70, n66)	2.1053, 27.53(h)(1)	≥ 43 + 10 log (P[Watts]) dB of attenuation below transmitter power	PASS	Section 7.8

* The only transmitter output conducted powers included in this report are those where the Pmax value, per the tune-up document, is higher than any of the DSI power levels. For the remaining conducted power measurements, see the **RF Exposure Report**.

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 EMC Software Tool v1.2.2.

7.2 Conducted Output Power Data

Test Overview

All emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst-case configuration. All modes of operation were investigated and the worst-case configuration results are reported in this section.

Test Procedure Used

ANSI C63.26-2015 – Section 5.2

Test Settings

1. Detector = RMS
2. Trace mode = trace average for continuous emissions, max hold for pulse emissions
3. Sweep time = auto couple
4. The trace was allowed to stabilize
5. Please see test notes below for RBW and VBW settings

Test Setup

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

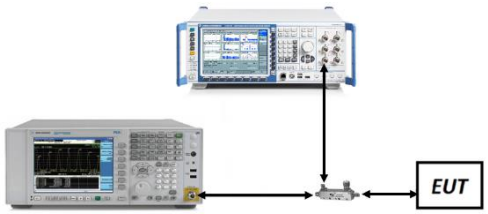


Figure 7-1. Test Instrument & Measurement Setup

Test Notes

1. Conducted power measurements were evaluated using various combinations of RB size, RB offset, modulation, and channel bandwidth. Channel bandwidth data is shown in the tables below based only on the channel bandwidths that were supported in this device.

2. All other conducted power measurements are contained in the RF exposure report for this filing.

3. Conducted power was found to reduce for the higher order QAM modulations when compared to 16QAM. Due to this trend, only the worst-case QAM (16QAM) powers are included in this section.

Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
20 MHz	QPSK	132072	1720.0	1 / 0	23.78
		132322	1745.0	1 / 50	23.59
		132572	1770.0	1 / 99	23.91
	16-QAM	132072	1720.0	1 / 99	22.90
15 MHz	QPSK	132047	1717.5	1 / 0	23.68
		132322	1745.0	1 / 0	23.34
		132597	1772.5	1 / 37	23.82
	16-QAM	132047	1717.5	1 / 0	23.06
10 MHz	QPSK	132022	1715.0	1 / 0	23.73
		132322	1745.0	1 / 0	23.34
		132622	1775.0	1 / 49	23.66
	16-QAM	132022	1715.0	1 / 25	22.93
5 MHz	QPSK	131997	1712.5	1 / 24	23.81
		132322	1745.0	1 / 0	23.36
		132647	1777.5	1 / 24	23.87
	16-QAM	131997	1712.5	1 / 12	23.19
3 MHz	QPSK	131987	1711.5	1 / 7	23.74
		132322	1745.0	1 / 0	23.45
		132657	1778.5	1 / 7	23.81
	16-QAM	131987	1711.5	1 / 7	23.17
1.4 MHz	QPSK	131979	1710.7	1 / 0	23.84
		132322	1745.0	1 / 3	23.28
		132665	1779.3	1 / 0	23.71
	16-QAM	131979	1710.7	1 / 3	22.96

Table 7-2. Max Conducted Power Results – LTE Band 66/4 - Ant1

Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
40 MHz	π/2 BPSK	346000	1730.0	1 / 1	24.25
		349000	1745.0	1 / 1	24.05
		352000	1760.0	1 / 108	24.10
	QPSK	346000	1730.0	1 / 1	24.18
		349000	1745.0	1 / 1	23.96
		352000	1760.0	1 / 108	23.97
	16-QAM	346000	1730.0	1 / 1	23.04
30 MHz	π/2 BPSK	345000	1725.0	1 / 1	24.25
		349000	1745.0	1 / 1	24.05
		353000	1765.0	1 / 80	24.10
	QPSK	345000	1725.0	1 / 1	24.18
		349000	1745.0	1 / 1	23.96
		353000	1765.0	1 / 80	23.97
	16-QAM	353000	1765.0	1 / 158	22.99
30 MHz	π/2 BPSK	345000	1725.0	1 / 1	24.27
		349000	1745.0	1 / 158	24.06
		353000	1765.0	1 / 158	24.15
	QPSK	345000	1725.0	1 / 1	24.36
		349000	1745.0	1 / 158	24.05
		353000	1765.0	1 / 158	24.12
	16-QAM	353000	1765.0	1 / 158	23.18
20 MHz	π/2 BPSK	344000	1720.0	1 / 104	24.12
		349000	1745.0	1 / 1	23.94
		354000	1770.0	1 / 104	24.00
	QPSK	344000	1720.0	1 / 1	24.08
		349000	1745.0	1 / 1	23.84
		354000	1770.0	1 / 104	24.03
	16-QAM	354000	1770.0	1 / 104	23.06
15 MHz	π/2 BPSK	343500	1717.5	1 / 1	24.27
		349000	1745.0	1 / 77	23.98
		354500	1772.5	1 / 77	24.23
	QPSK	343500	1717.5	1 / 1	24.10
		349000	1745.0	1 / 77	23.88
		354500	1772.5	1 / 39	24.01
	16-QAM	343500	1717.5	1 / 1	23.18
10 MHz	π/2 BPSK	343000	1715.0	1 / 1	24.23
		349000	1745.0	1 / 1	23.90
		355000	1775.0	1 / 50	24.14
	QPSK	343000	1715.0	1 / 1	24.12
		349000	1745.0	1 / 1	23.83
		355000	1775.0	1 / 50	24.08
	16-QAM	343000	1715.0	1 / 1	22.95
5 MHz	π/2 BPSK	342500	1712.5	1 / 1	24.24
		349000	1745.0	1 / 1	23.78
		355500	1777.5	1 / 1	24.14
	QPSK	342500	1712.5	1 / 12	24.26
		349000	1745.0	1 / 23	23.93
		355500	1777.5	25 / 0	23.05
	16-QAM	342500	1712.5	1 / 23	22.99

Table 7-3. Max Conducted Power Results – NR n66 - Ant1

Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
20 MHz	QPSK	132072	1720.0	1 / 50	23.31
		132322	1745.0	1 / 0	23.26
		132572	1770.0	1 / 99	23.53
	16-QAM	132322	1745.0	1 / 99	22.55
15 MHz	QPSK	132047	1717.5	1 / 74	23.46
		132322	1745.0	1 / 37	23.24
		132597	1772.5	1 / 74	23.56
	16-QAM	132322	1745.0	1 / 37	22.44
10 MHz	QPSK	132022	1715.0	1 / 0	23.37
		132322	1745.0	1 / 25	23.32
		132622	1775.0	1 / 49	23.54
	16-QAM	132322	1745.0	1 / 25	22.55
5 MHz	QPSK	131997	1712.5	1 / 0	23.50
		132322	1745.0	1 / 24	23.51
		132647	1777.5	1 / 12	23.54
	16-QAM	132322	1745.0	1 / 0	22.45
3 MHz	QPSK	131987	1711.5	1 / 7	23.38
		132322	1745.0	1 / 0	23.47
		132657	1778.5	1 / 0	23.54
	16-QAM	132322	1745.0	1 / 14	22.58
1.4 MHz	QPSK	131979	1710.7	1 / 0	23.36
		132322	1745.0	1 / 5	23.24
		132665	1779.3	1 / 3	23.54
	16-QAM	132322	1745.0	1 / 5	22.48

Table 7-4. Max Conducted Power Results – LTE B66/4 – Ant2

Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
40 MHz	π/2 BPSK	346000	1730.0	1 / 1	22.24
		349000	1745.0	1 / 214	22.13
		352000	1760.0	1 / 214	22.11
	QPSK	346000	1730.0	1 / 1	22.35
		349000	1745.0	1 / 214	22.13
		352000	1760.0	1 / 214	22.05
	16-QAM	349000	1745.0	1 / 214	21.87
30 MHz	π/2 BPSK	345000	1725.0	1 / 1	22.53
		349000	1745.0	1 / 1	22.43
		353000	1765.0	1 / 1	22.37
	QPSK	345000	1725.0	1 / 1	22.51
		349000	1745.0	1 / 1	22.47
		353000	1765.0	1 / 1	22.39
	16-QAM	353000	1765.0	1 / 1	21.69
20 MHz	π/2 BPSK	344000	1720.0	1 / 1	22.23
		349000	1745.0	1 / 53	22.01
		354000	1770.0	1 / 104	22.31
	QPSK	344000	1720.0	1 / 1	22.32
		349000	1745.0	1 / 53	22.06
		354000	1770.0	1 / 104	22.09
	16-QAM	349000	1745.0	1 / 1	21.93
15 MHz	π/2 BPSK	343500	1717.5	1 / 1	22.15
		349000	1745.0	1 / 1	21.99
		354500	1772.5	1 / 39	22.19
	QPSK	343500	1717.5	1 / 1	22.36
		349000	1745.0	1 / 1	21.98
		354500	1772.5	1 / 77	22.05
	16-QAM	349000	1745.0	1 / 1	21.88
10 MHz	π/2 BPSK	343000	1715.0	1 / 26	23.35
		349000	1745.0	1 / 50	22.98
		355000	1775.0	1 / 50	23.16
	QPSK	343000	1715.0	1 / 1	23.29
		349000	1745.0	1 / 1	22.98
		355000	1775.0	1 / 26	23.10
	16-QAM	349000	1745.0	1 / 50	22.37
5 MHz	π/2 BPSK	342500	1712.5	1 / 1	20.57
		349000	1745.0	1 / 1	23.07
		355500	1777.5	1 / 23	19.95
	QPSK	342500	1712.5	1 / 12	20.66
		349000	1745.0	1 / 12	23.22
		355500	1777.5	1 / 23	20.35
	16-QAM	349000	1745.0	1 / 23	22.32

Table 7-5. Max Conducted Power Results – NR n66 – Ant2

7.3 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

ANSI C63.26-2015 – Section 5.4.4

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.

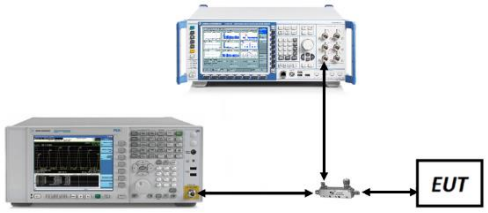


Figure 7-2. Test Instrument & Measurement Setup

Test Notes

None.

Mode	Bandwidth	Modulation	OBW [MHz]
WCDMA-AWS	5MHz	Spread Spectrum	4.19
LTE-B71	20MHz	QPSK	18.14
		16QAM	18.10
	15MHz	QPSK	13.58
		16QAM	13.57
	10MHz	QPSK	9.11
		16QAM	9.11
	5MHz	QPSK	4.57
		16QAM	4.56
LTE-B12	10MHz	QPSK	9.00
		16QAM	9.02
	5MHz	QPSK	4.54
		16QAM	4.54
LTE-B13	10MHz	QPSK	9.08
		16QAM	9.05
	5MHz	QPSK	4.58
		16QAM	4.57

Table 7-6. Occupied Bandwidth Results – Ant1

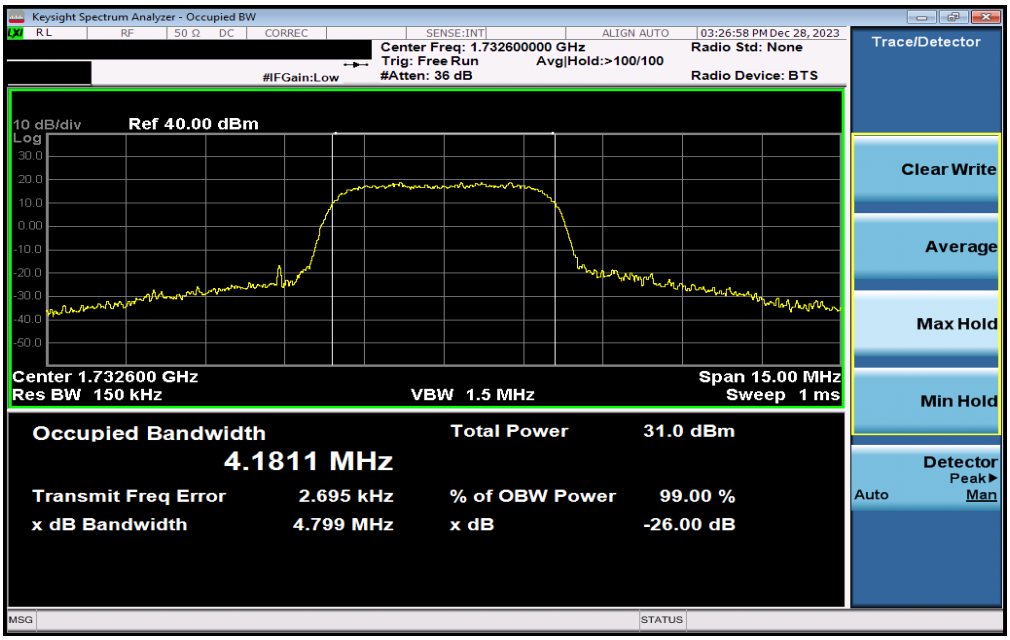
Mode	Bandwidth	Modulation	OBW [MHz]
LTE-B66-4	20MHz	QPSK	17.98
		16QAM	17.97
	15MHz	QPSK	13.45
		16QAM	13.50
	10MHz	QPSK	9.05
		16QAM	9.02
	5MHz	QPSK	4.53
		16QAM	4.53
	3MHz	QPSK	2.73
		16QAM	2.72
	1.4MHz	QPSK	1.10
		16QAM	1.11

Table 7-7. Occupied Bandwidth Results – Ant1

Mode	Bandwidth	Modulation	OBW [MHz]
NR-n71	20MHz	π/2 BPSK	18.09
		QPSK	19.13
		16QAM	19.14
	15MHz	π/2 BPSK	13.59
		QPSK	14.25
		16QAM	14.27
	10MHz	π/2 BPSK	9.06
		QPSK	9.41
		16QAM	9.42
	5MHz	π/2 BPSK	4.55
		QPSK	4.60
		16QAM	4.55
NR-n70	15MHz	π/2 BPSK	13.53
		QPSK	14.20
		16QAM	14.19
	10MHz	π/2 BPSK	9.03
		QPSK	9.36
		16QAM	9.37
	5MHz	π/2 BPSK	4.54
		QPSK	4.55
		16QAM	4.54
NR-n66	40MHz	π/2 BPSK	39.01
		QPSK	38.92
		16QAM	38.84
	30MHz	π/2 BPSK	28.89
		QPSK	28.95
		16QAM	28.85
	20MHz	π/2 BPSK	18.05
		QPSK	9.06
		16QAM	19.05
	15MHz	π/2 BPSK	13.53
		QPSK	14.16
		16QAM	14.21
	10MHz	π/2 BPSK	9.03
		QPSK	9.35
		16QAM	9.34
	5MHz	π/2 BPSK	4.54
		QPSK	4.55
		16QAM	4.53

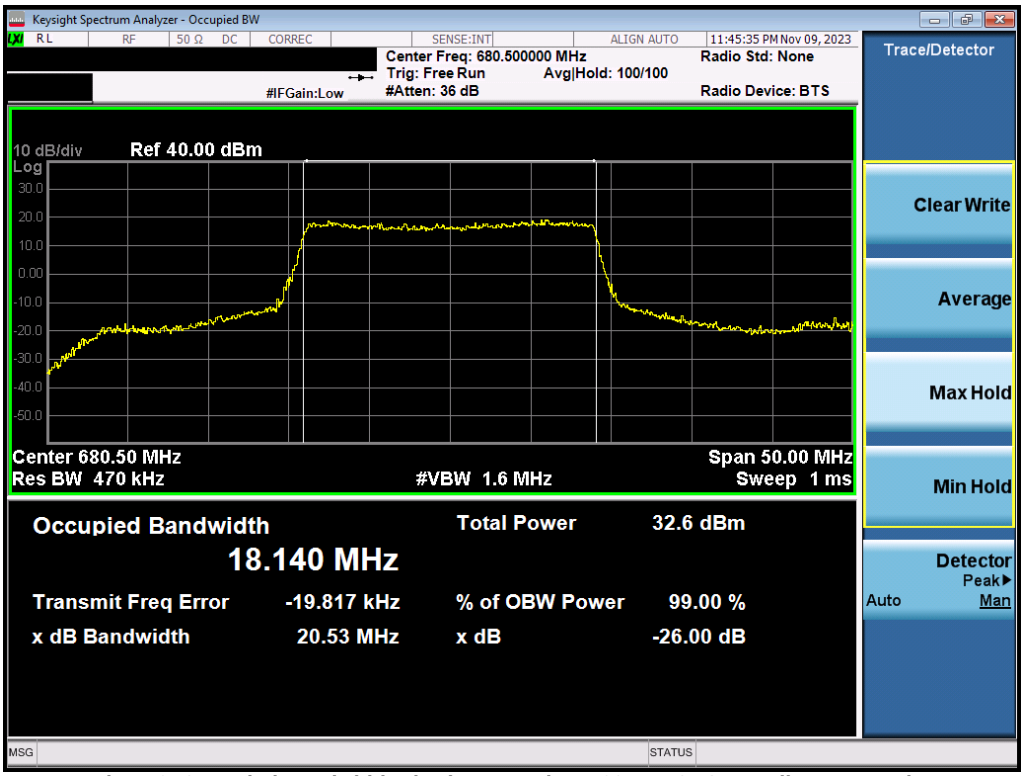
Table 7-8. Occupied Bandwidth Results – Ant1

WCDMA AWS – ANT1

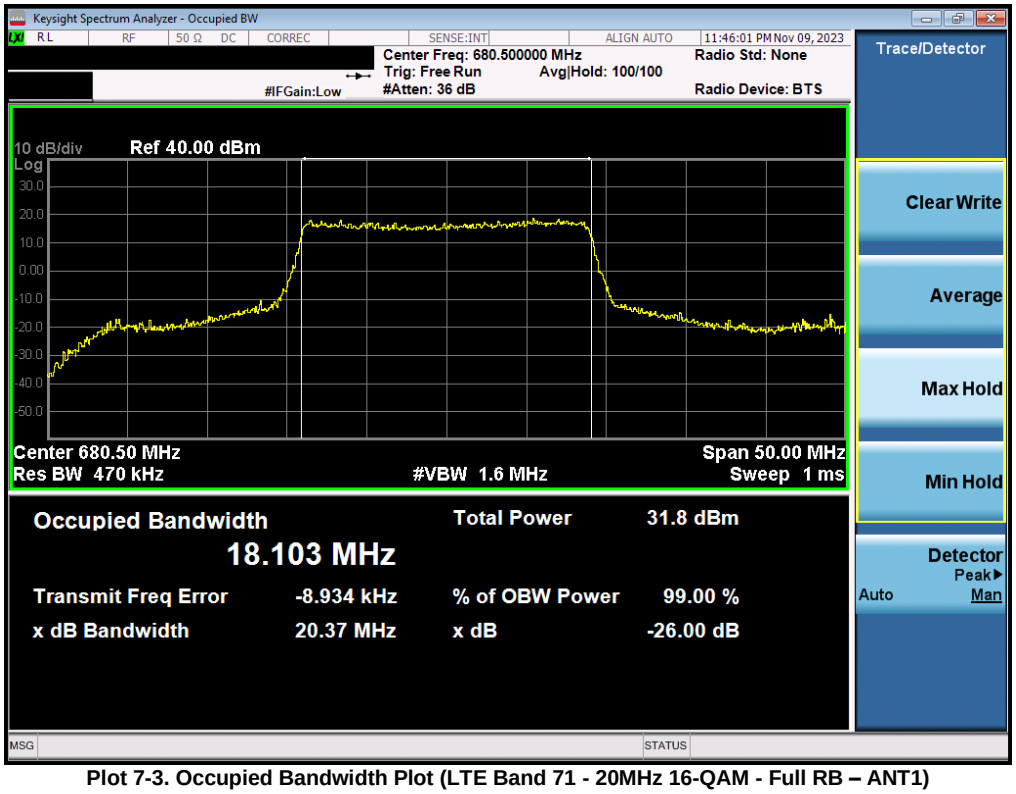


Plot 7-1. Occupied Bandwidth Plot (WCDMA, Ch. 1413 – ANT1)

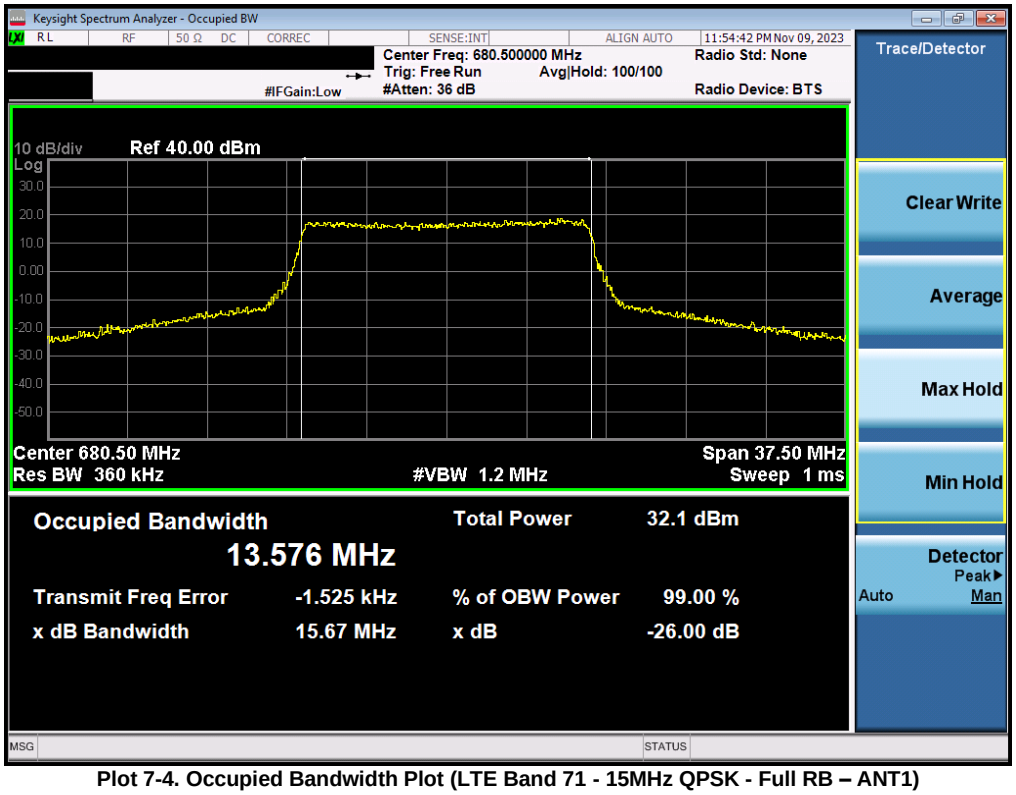
LTE Band 71 – ANT1



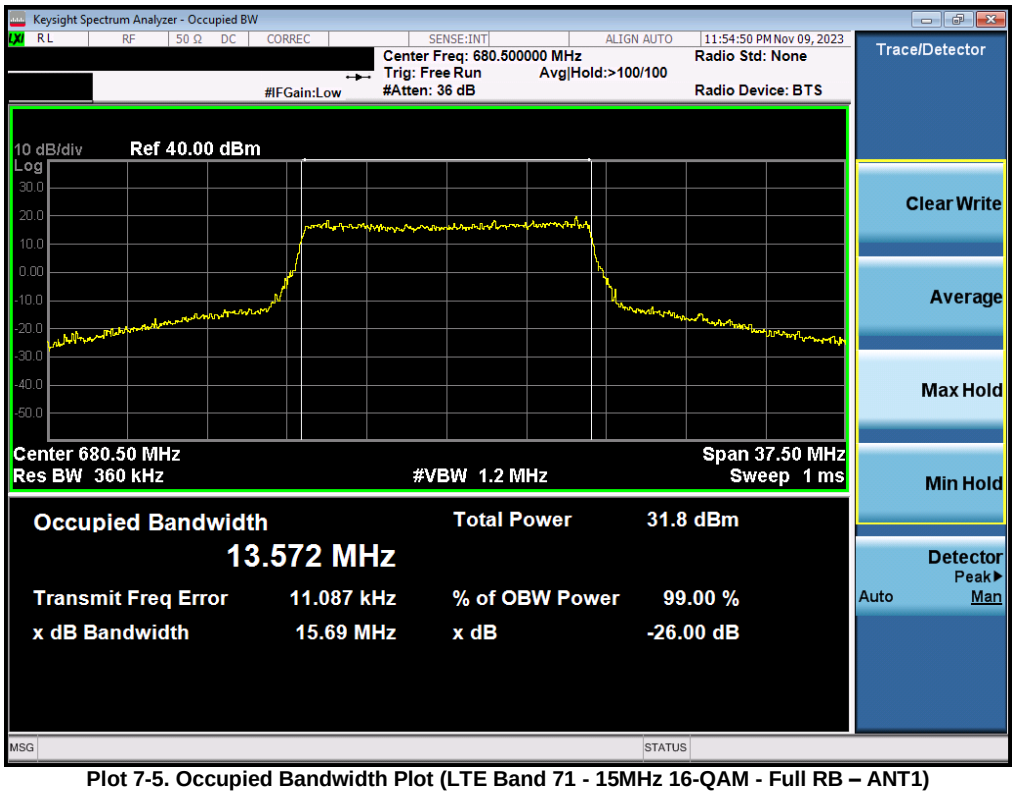
Plot 7-2. Occupied Bandwidth Plot (LTE Band 71 - 20MHz QPSK - Full RB – ANT1)



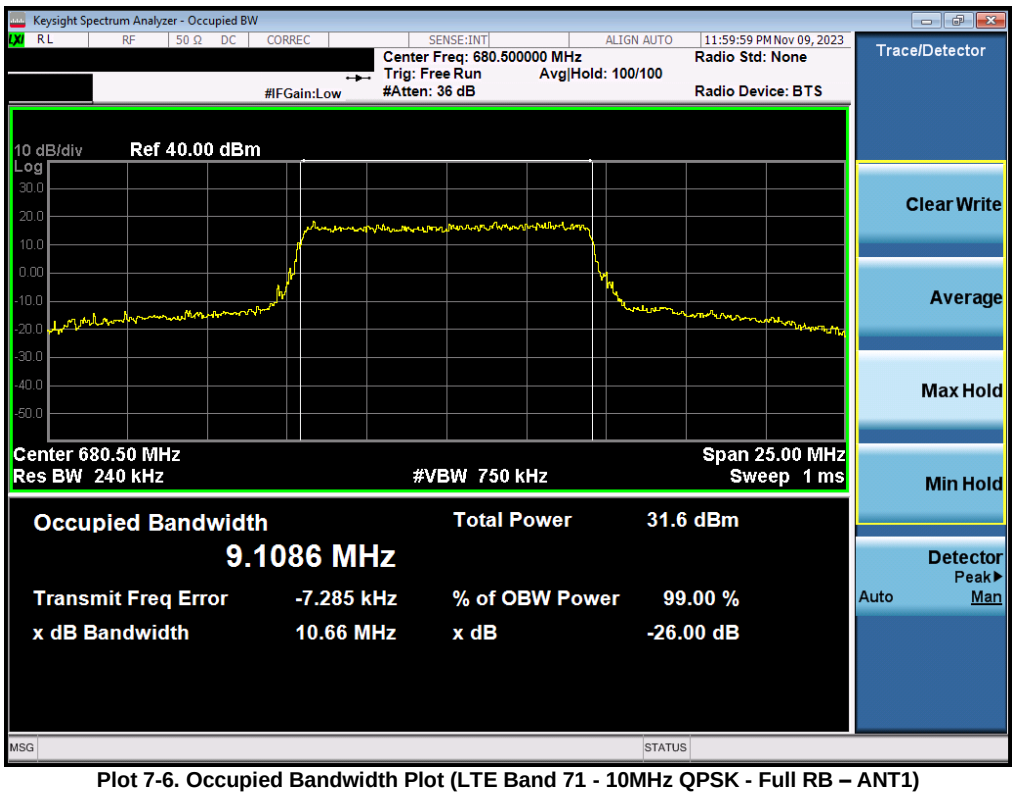
Plot 7-3. Occupied Bandwidth Plot (LTE Band 71 - 20MHz 16-QAM - Full RB – ANT1)



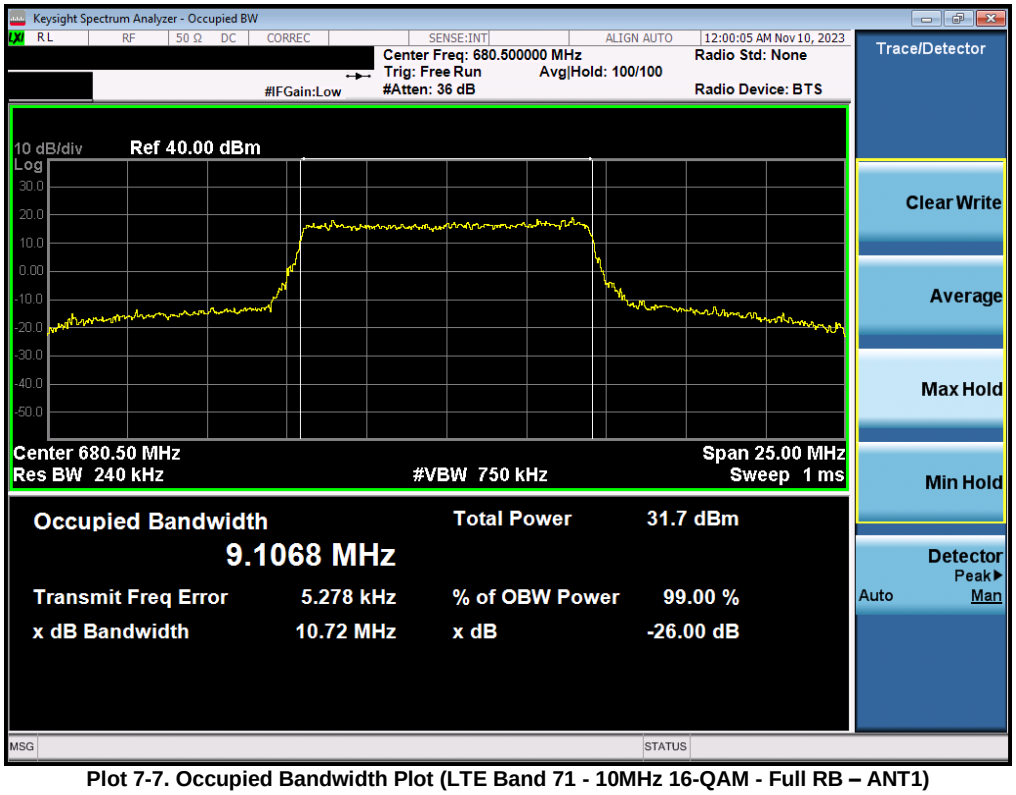
Plot 7-4. Occupied Bandwidth Plot (LTE Band 71 - 15MHz QPSK - Full RB – ANT1)



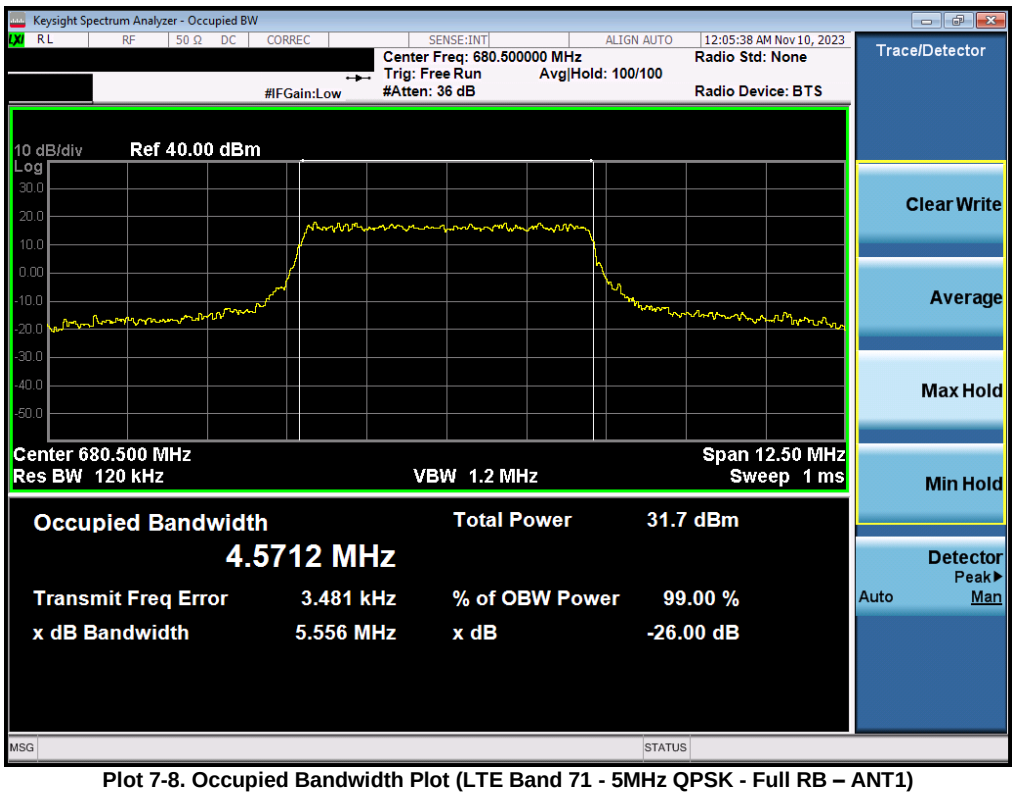
Plot 7-5. Occupied Bandwidth Plot (LTE Band 71 - 15MHz 16-QAM - Full RB – ANT1)



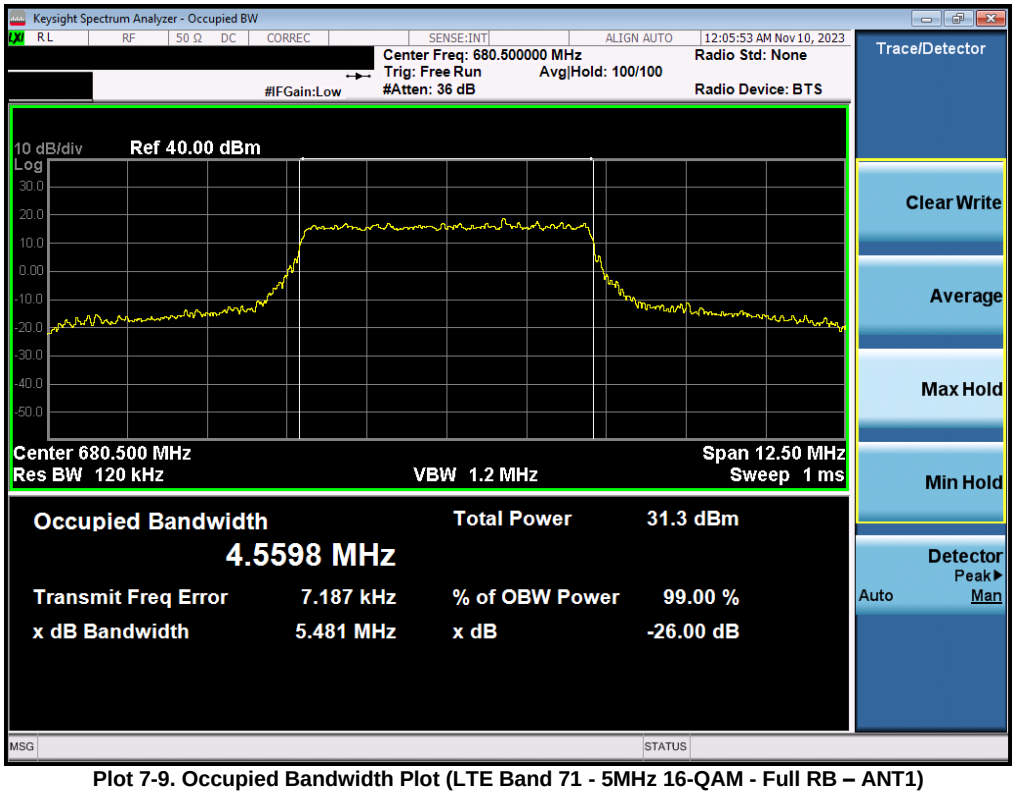
Plot 7-6. Occupied Bandwidth Plot (LTE Band 71 - 10MHz QPSK - Full RB – ANT1)



Plot 7-7. Occupied Bandwidth Plot (LTE Band 71 - 10MHz 16-QAM - Full RB – ANT1)

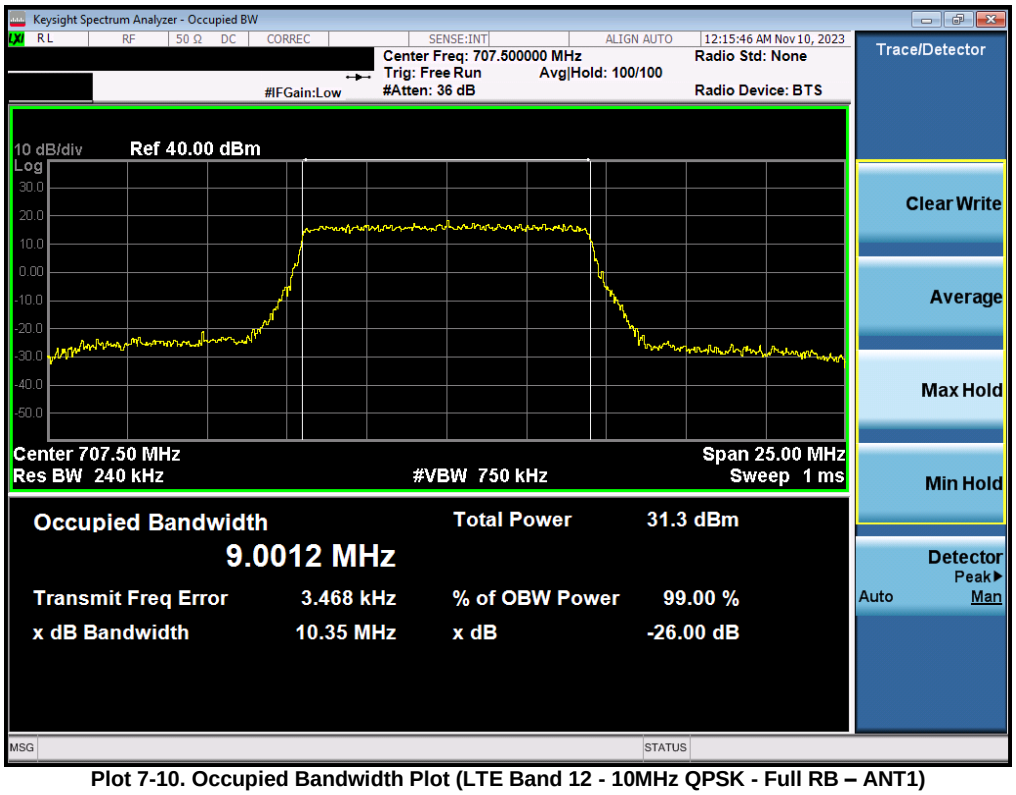


Plot 7-8. Occupied Bandwidth Plot (LTE Band 71 - 5MHz QPSK - Full RB – ANT1)

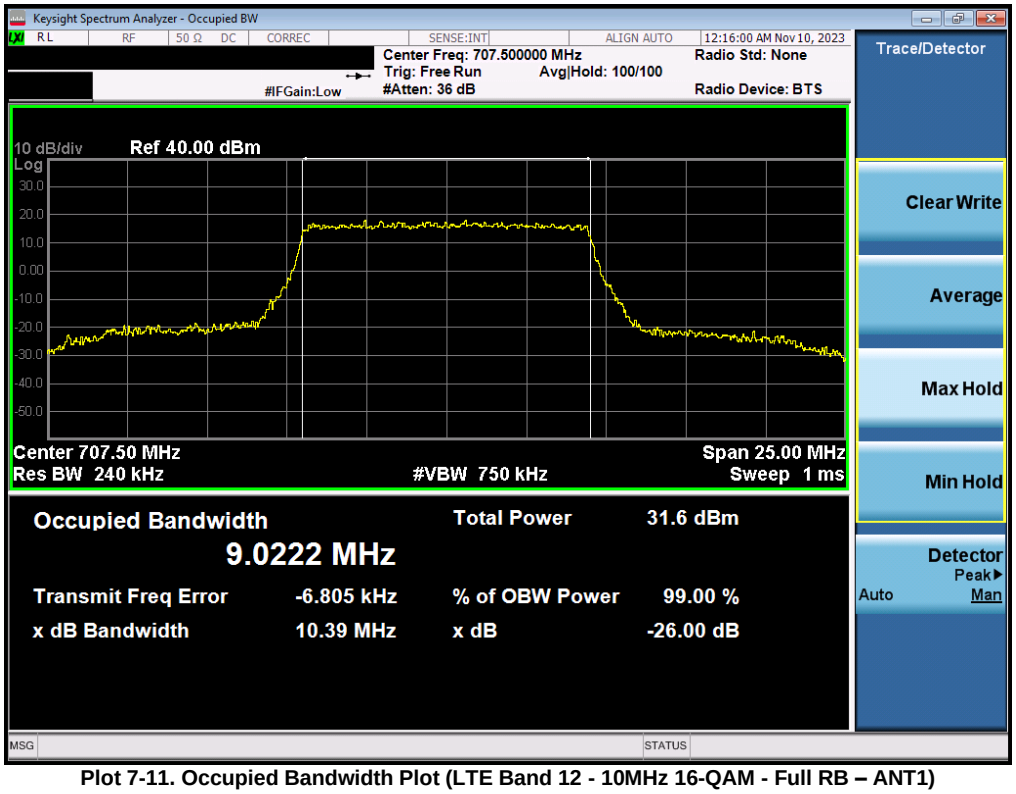


Plot 7-9. Occupied Bandwidth Plot (LTE Band 71 - 5MHz 16-QAM - Full RB – ANT1)

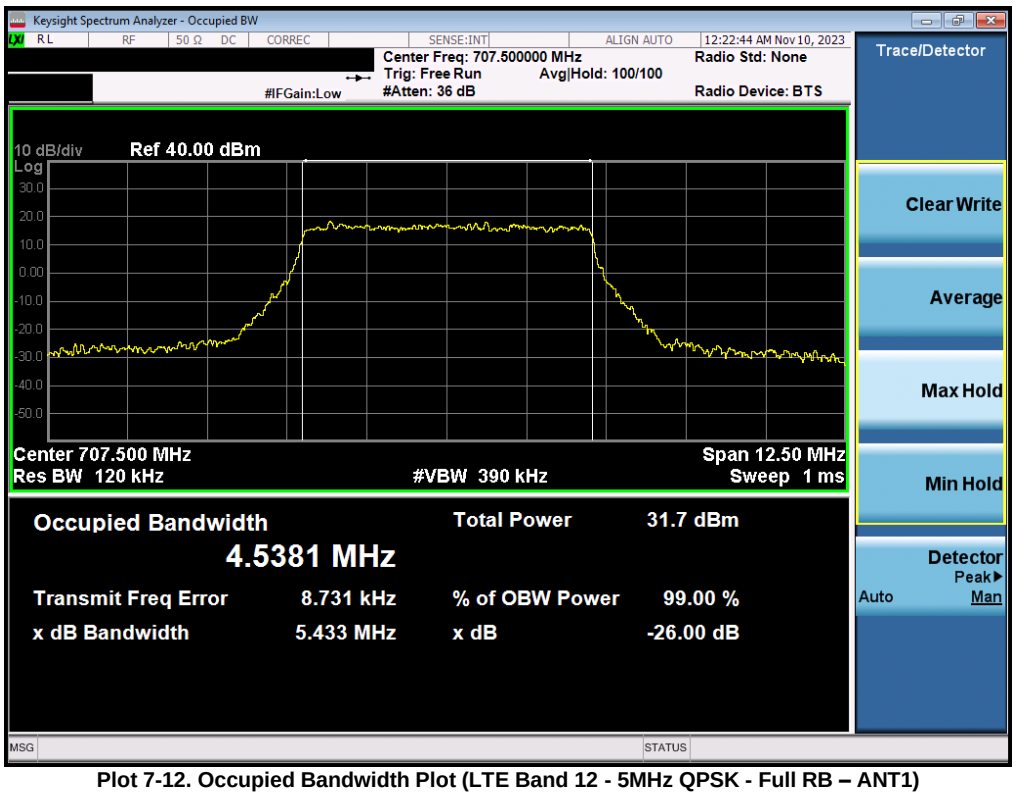
LTE Band 12 – ANT1



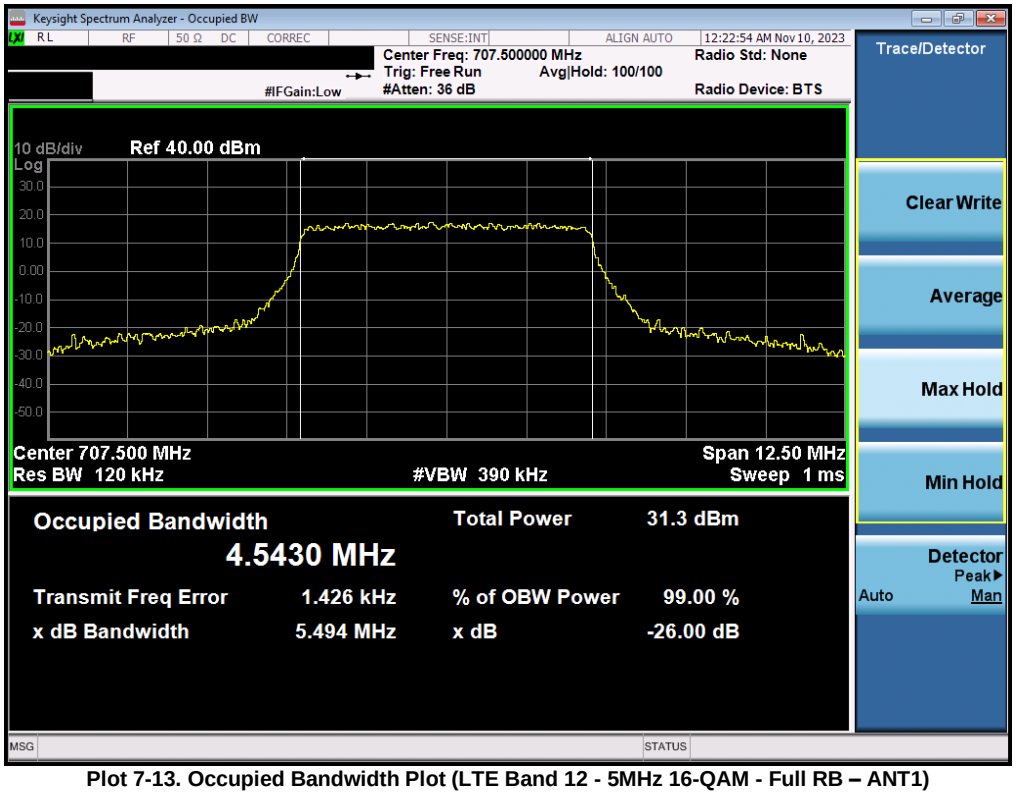
Plot 7-10. Occupied Bandwidth Plot (LTE Band 12 - 10MHz QPSK - Full RB – ANT1)



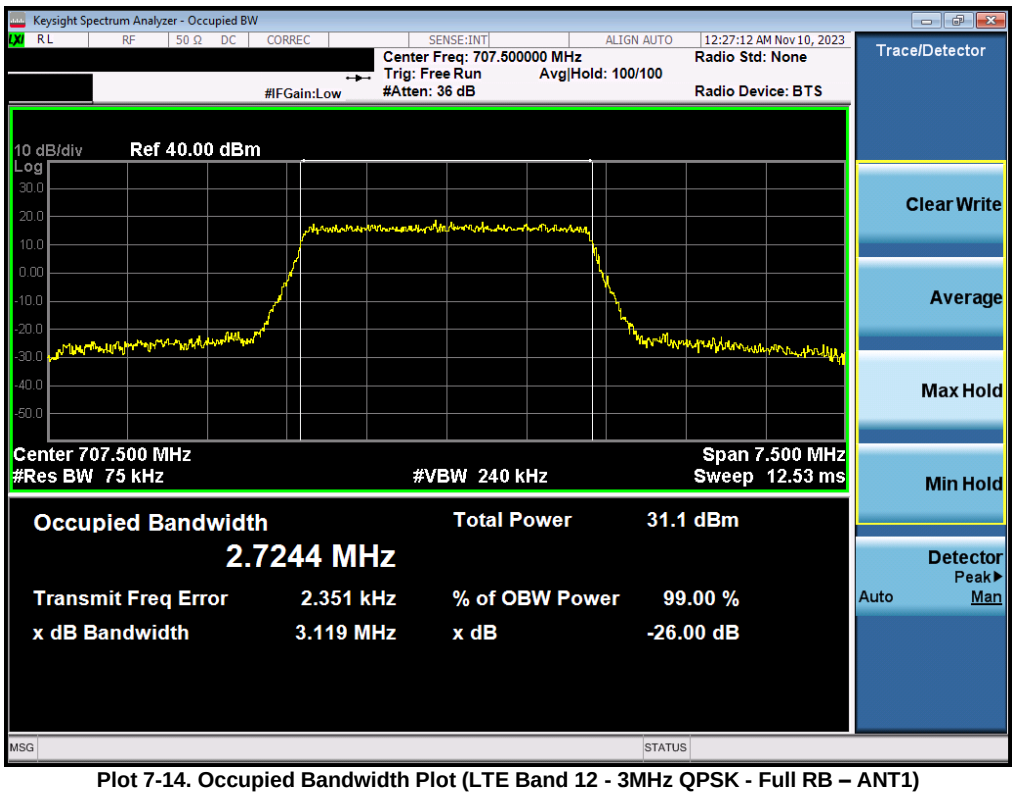
Plot 7-11. Occupied Bandwidth Plot (LTE Band 12 - 10MHz 16-QAM - Full RB – ANT1)



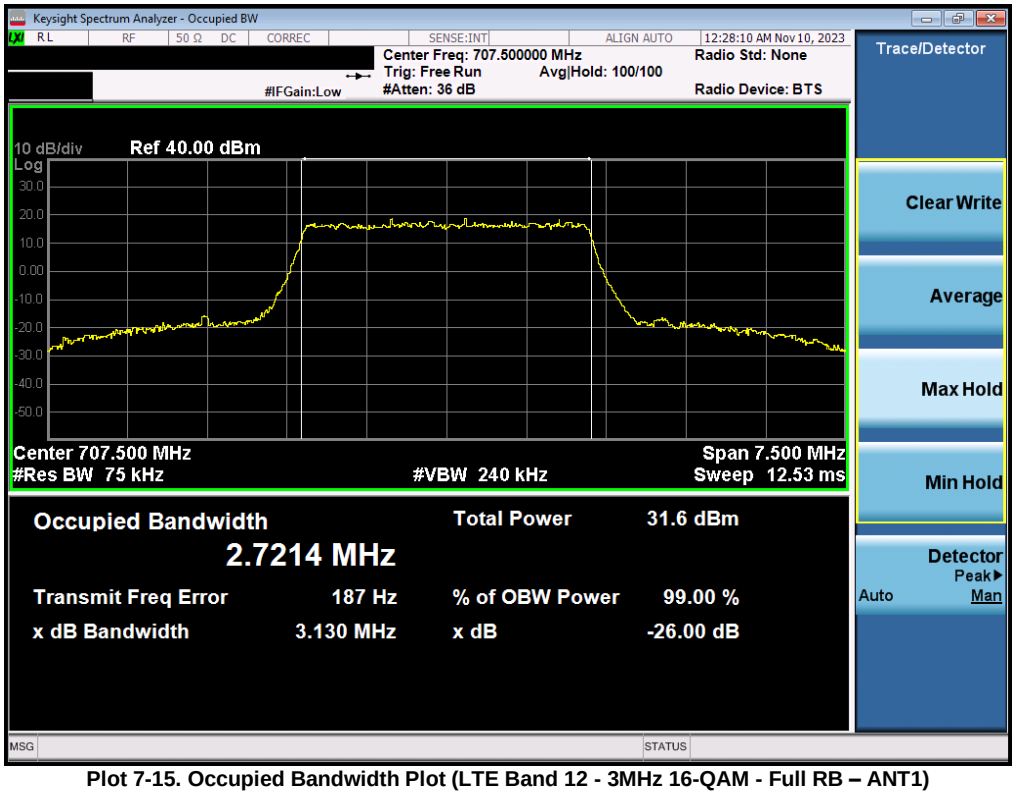
Plot 7-12. Occupied Bandwidth Plot (LTE Band 12 - 5MHz QPSK - Full RB – ANT1)



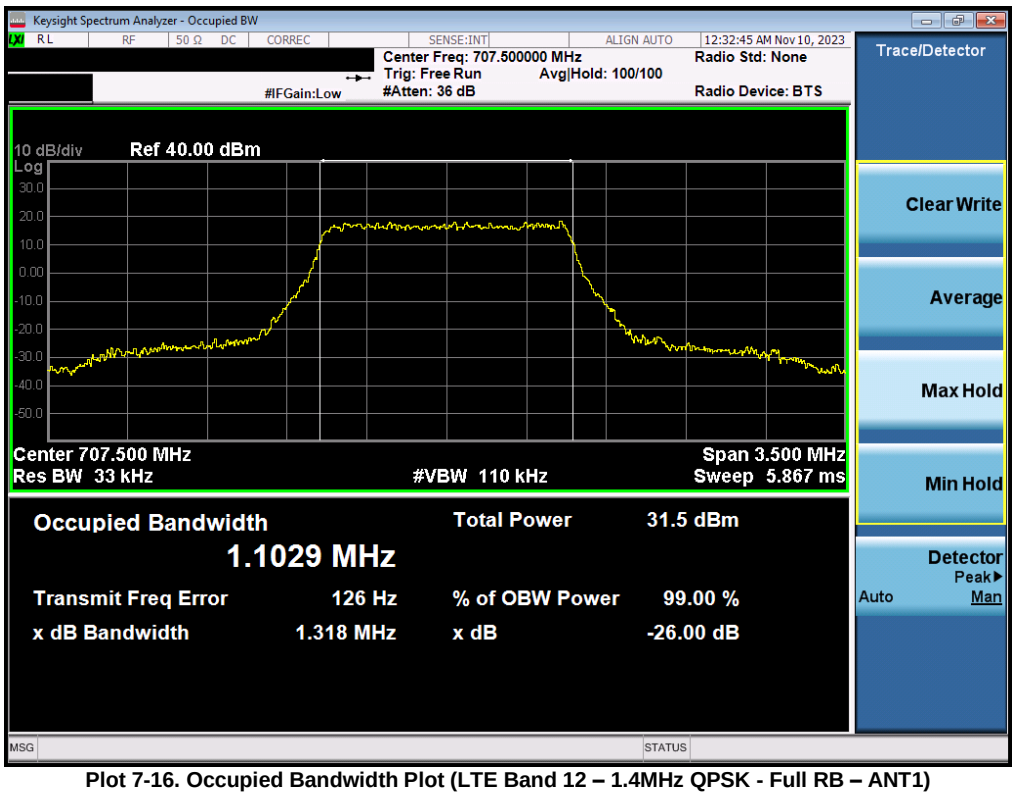
Plot 7-13. Occupied Bandwidth Plot (LTE Band 12 - 5MHz 16-QAM - Full RB – ANT1)



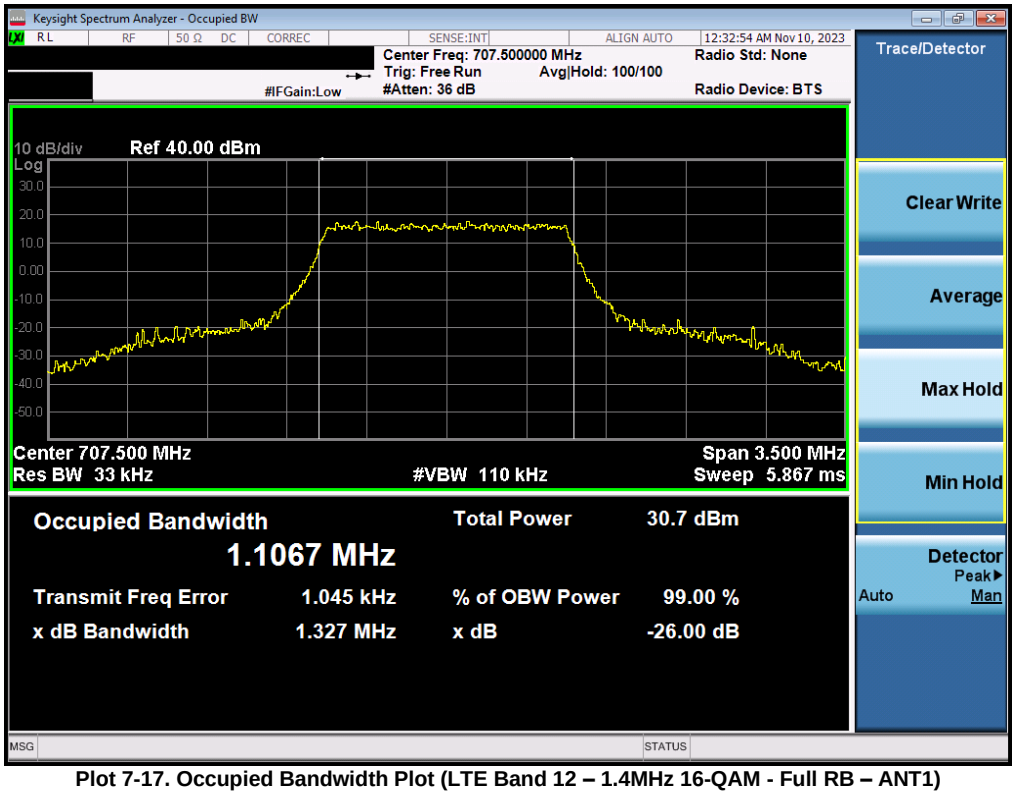
Plot 7-14. Occupied Bandwidth Plot (LTE Band 12 - 3MHz QPSK - Full RB – ANT1)



Plot 7-15. Occupied Bandwidth Plot (LTE Band 12 - 3MHz 16-QAM - Full RB – ANT1)

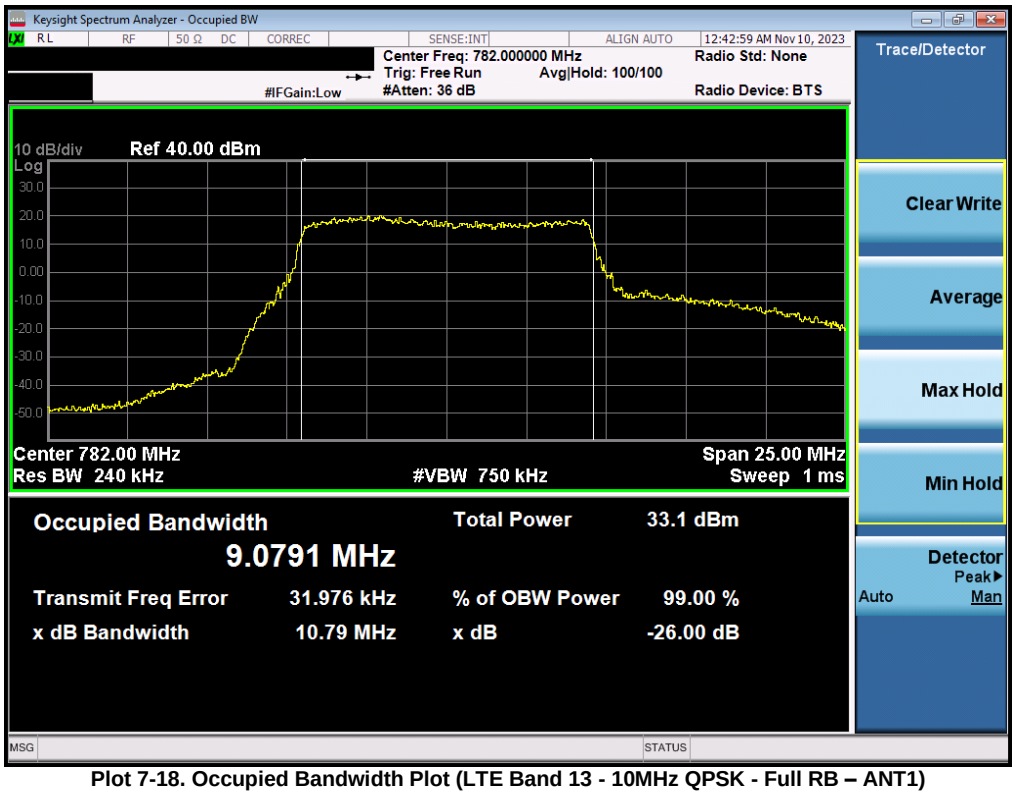


Plot 7-16. Occupied Bandwidth Plot (LTE Band 12 – 1.4MHz QPSK - Full RB – ANT1)

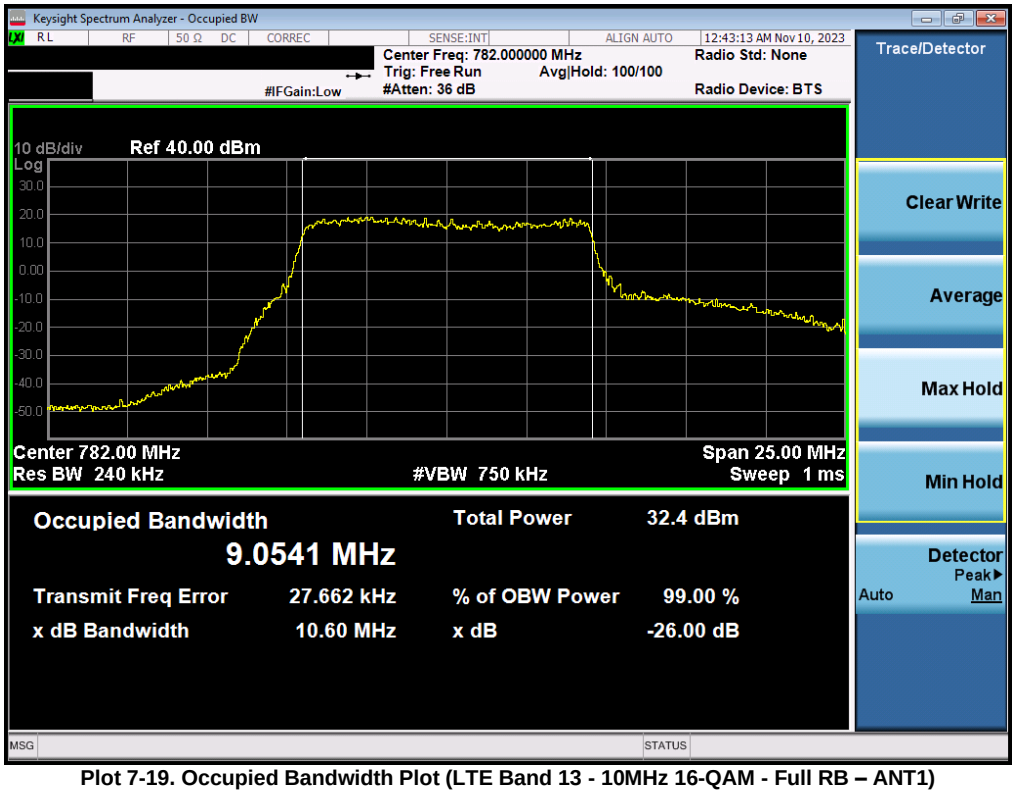


Plot 7-17. Occupied Bandwidth Plot (LTE Band 12 – 1.4MHz 16-QAM - Full RB – ANT1)

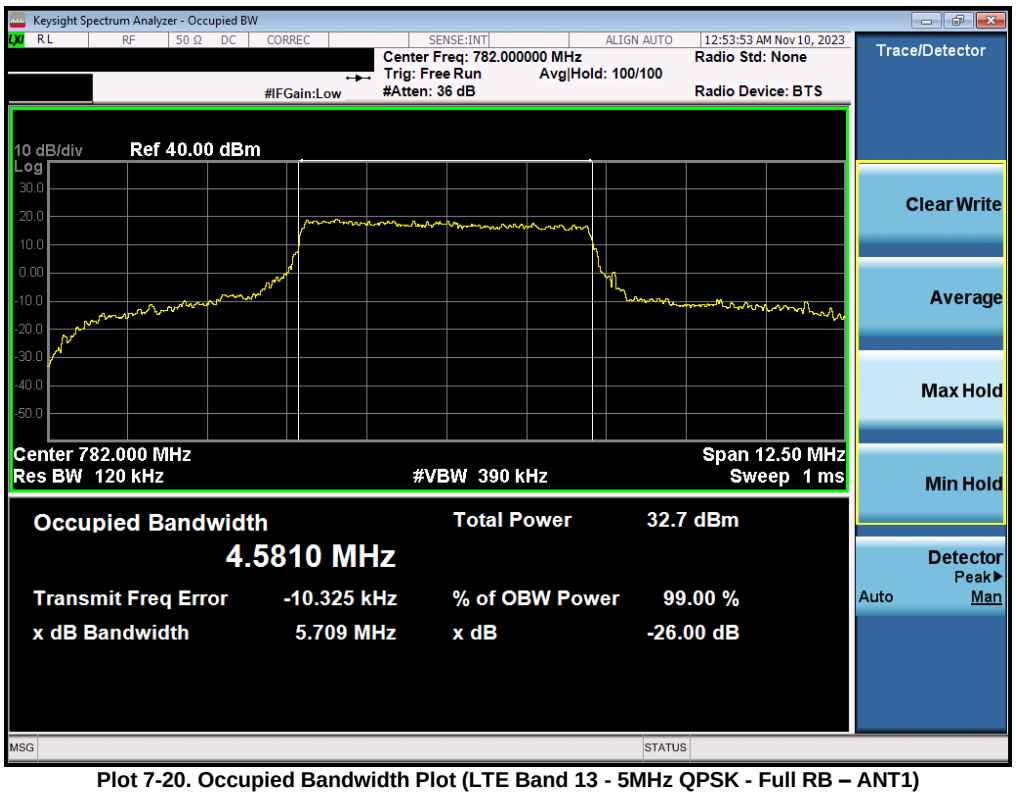
LTE Band 13 – ANT1



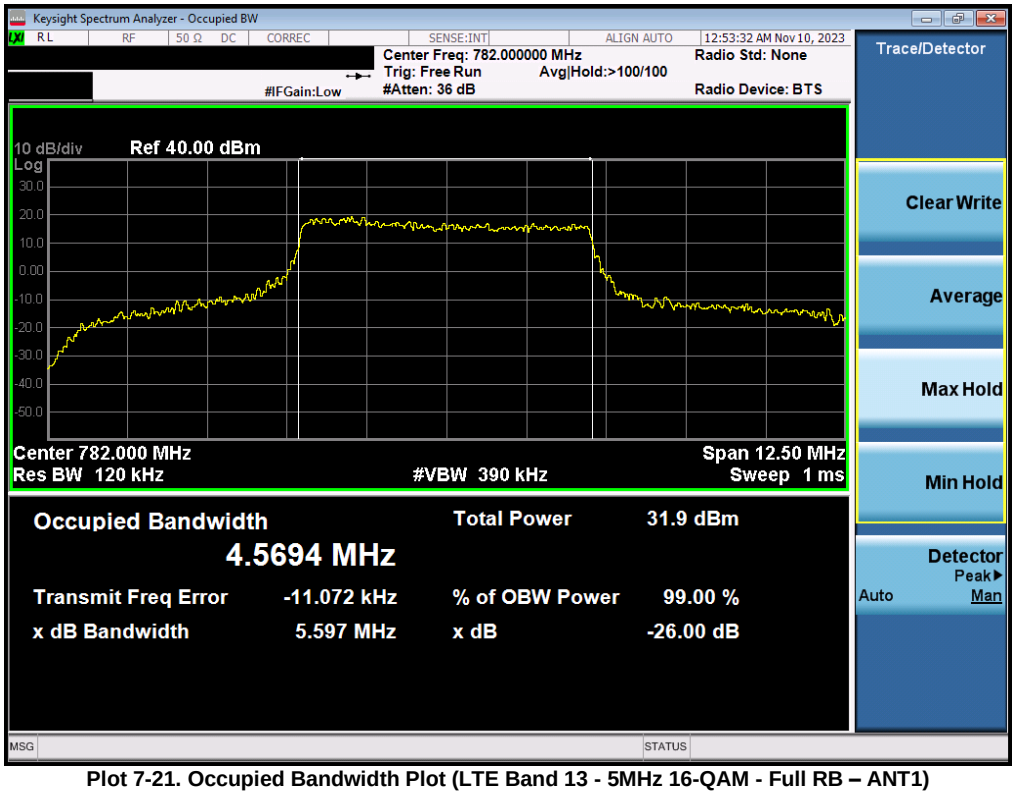
Plot 7-18. Occupied Bandwidth Plot (LTE Band 13 - 10MHz QPSK - Full RB – ANT1)



Plot 7-19. Occupied Bandwidth Plot (LTE Band 13 - 10MHz 16-QAM - Full RB – ANT1)

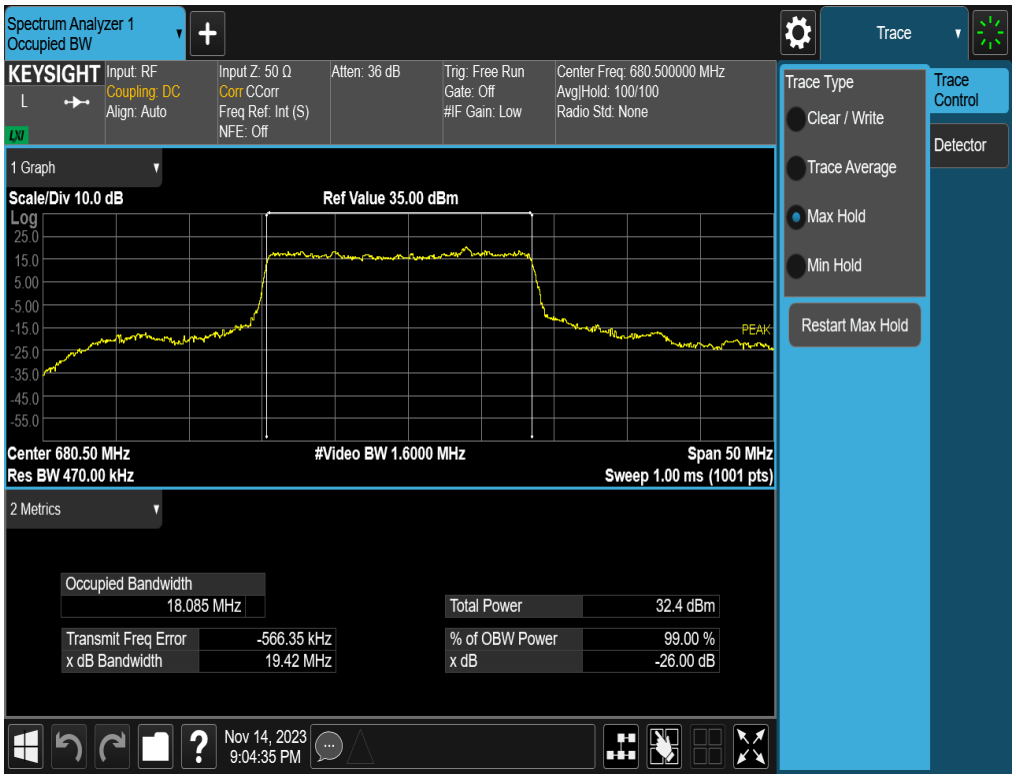


Plot 7-20. Occupied Bandwidth Plot (LTE Band 13 - 5MHz QPSK - Full RB – ANT1)



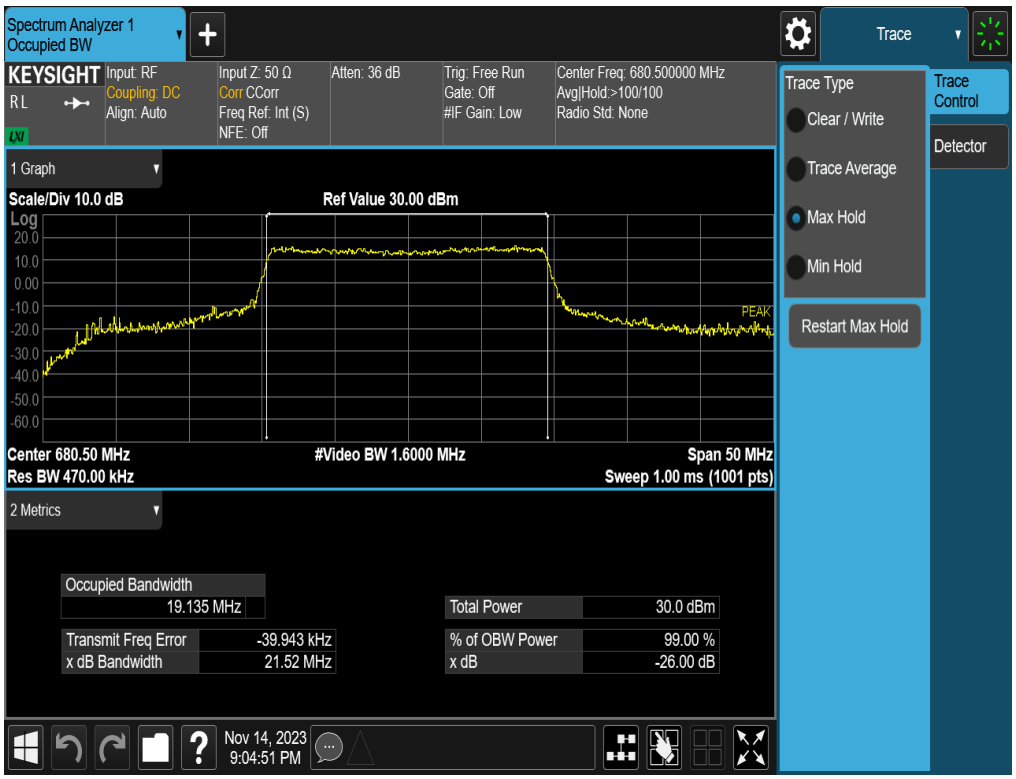
Plot 7-21. Occupied Bandwidth Plot (LTE Band 13 - 5MHz 16-QAM - Full RB – ANT1)

NR Band n71 – ANT1



Plot 7-22. Occupied Bandwidth Plot (NR Band n71 - 20MHz DFT-s-OFDM BPSK - Full RB – ANT1)

Plot 7-23. Occupied Bandwidth Plot (NR Band n71 - 20MHz CP-OFDM QPSK - Full RB – ANT1)



Plot 7-24. Occupied Bandwidth Plot (NR Band n71 - 20MHz CP-OFDM 16-QAM - Full RB – ANT1)

Plot 7-25. Occupied Bandwidth Plot (NR Band n71 - 15MHz DFT-s-OFDM BPSK - Full RB – ANT1)

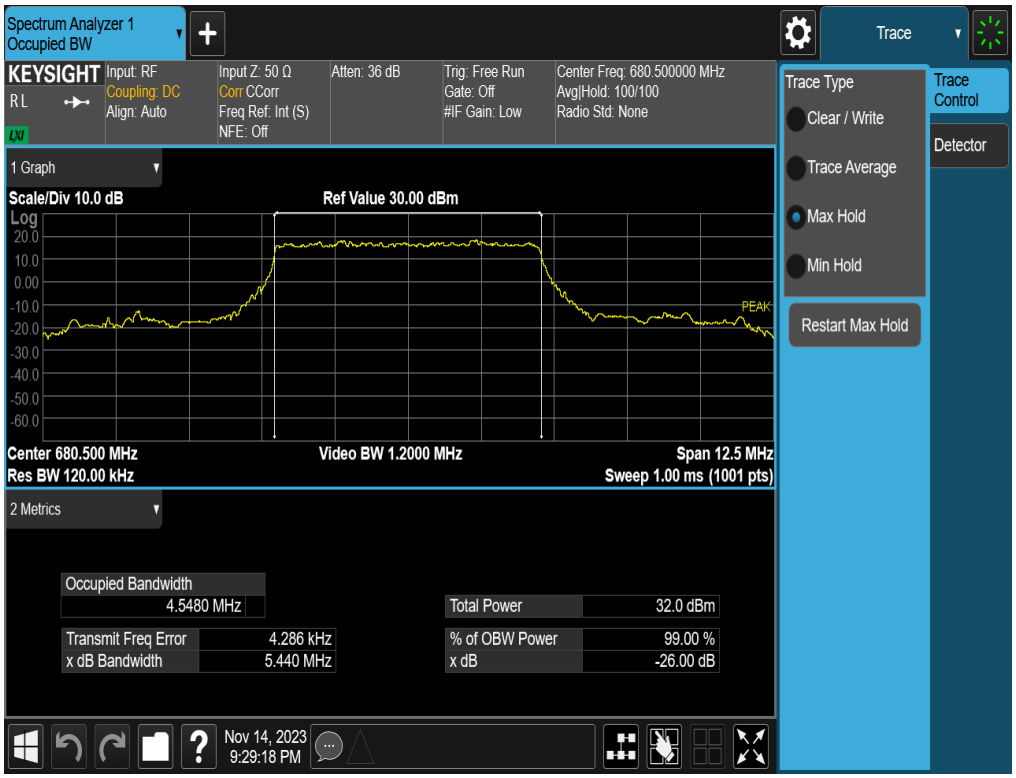
Plot 7-26. Occupied Bandwidth Plot (NR Band n71 - 15MHz QPSK - Full RB – ANT1)

Plot 7-27. Occupied Bandwidth Plot (NR Band n71 - 15MHz CP-OFDM 16-QAM - Full RB – ANT1)

Plot 7-28. Occupied Bandwidth Plot (NR Band n71 - 10MHz DFT-s-OFDM BPSK - Full RB – ANT1)

Plot 7-29. Occupied Bandwidth Plot (NR Band n71 - 10MHz CP-OFDM QPSK - Full RB – ANT1)

Plot 7-30. Occupied Bandwidth Plot (NR Band n71 - 10MHz CP-OFDM 16-QAM - Full RB – ANT1)

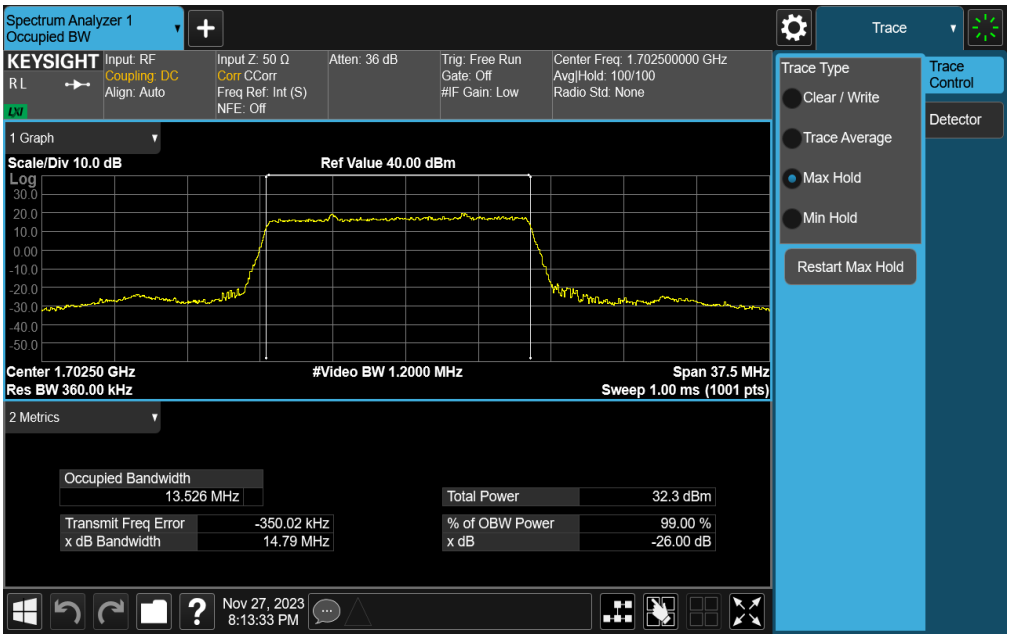


Plot 7-31. Occupied Bandwidth Plot (NR Band n71 - 5MHz DFT-s-OFDM BPSK - Full RB – ANT1)

Plot 7-32. Occupied Bandwidth Plot (NR Band n71 - 5MHz CP-OFDM QPSK - Full RB – ANT1)

Plot 7-33. Occupied Bandwidth Plot (NR Band n71 - 5MHz CP-OFDM 16-QAM - Full RB – ANT1)

NR Band n70 – ANT1



Plot 7-34. Occupied Bandwidth Plot (NR Band n70 - 15.0MHz DFT-s-OFDM BPSK - Full RB – ANT1)

Plot 7-35. Occupied Bandwidth Plot (NR Band n70 - 15.0MHz CP-OFDM QPSK - Full RB – ANT1)

Plot 7-36. Occupied Bandwidth Plot (NR Band n70 - 15.0MHz CP-OFDM 16QAM - Full RB – ANT1)

Plot 7-37. Occupied Bandwidth Plot (NR Band n70 - 10.0MHz DFT-s-OFDM BPSK - Full RB – ANT1)

Plot 7-38. Occupied Bandwidth Plot (NR Band n70 - 10.0MHz CP-OFDM QPSK - Full RB – ANT1)

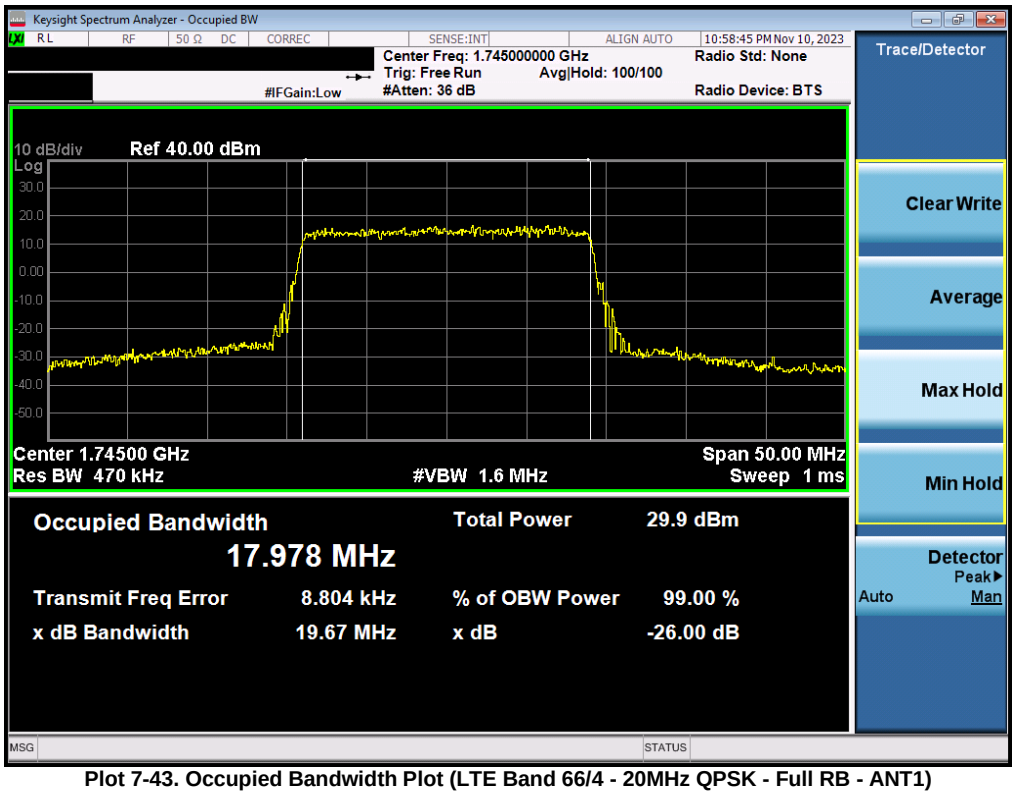
Plot 7-39. Occupied Bandwidth Plot (NR Band n70 - 10.0MHz CP-OFDM 16QAM - Full RB – ANT1)

Plot 7-40. Occupied Bandwidth Plot (NR Band n70 - 5.0MHz DFT-s-OFDM BPSK - Full RB – ANT1)

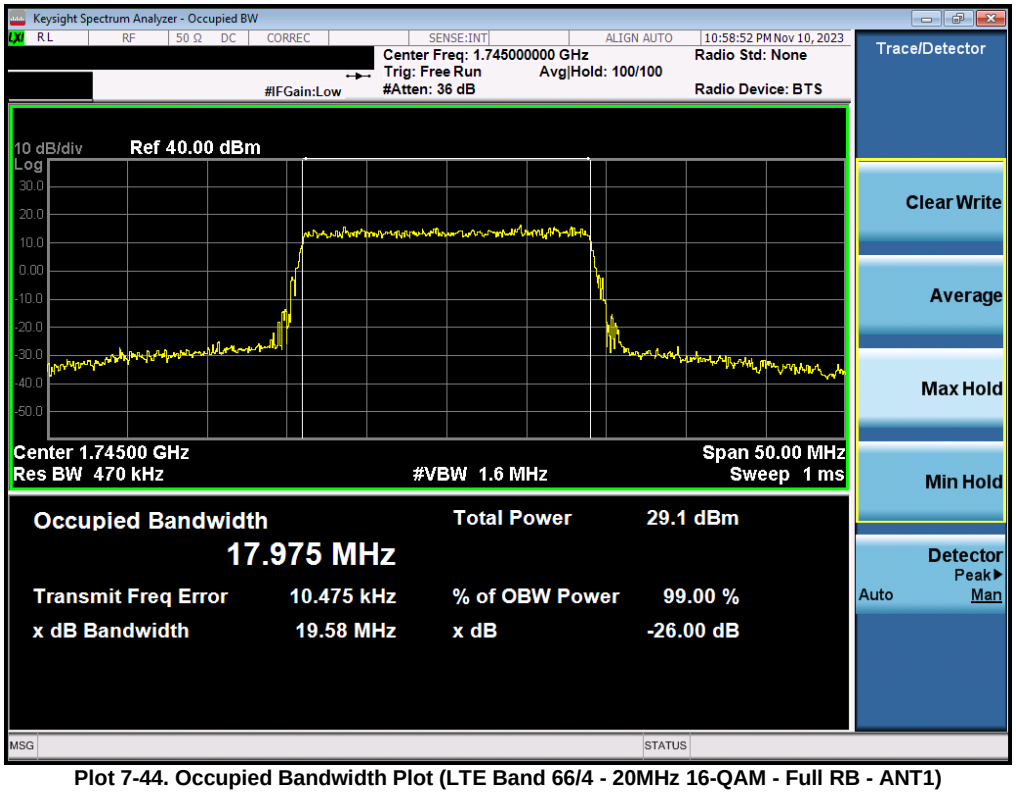
Plot 7-41. Occupied Bandwidth Plot (NR Band n70 - 5.0MHz CP-OFDM QPSK - Full RB – ANT1)

Plot 7-42. Occupied Bandwidth Plot (NR Band n66 - 5.0MHz CP-OFDM 16QAM - Full RB – ANT1)

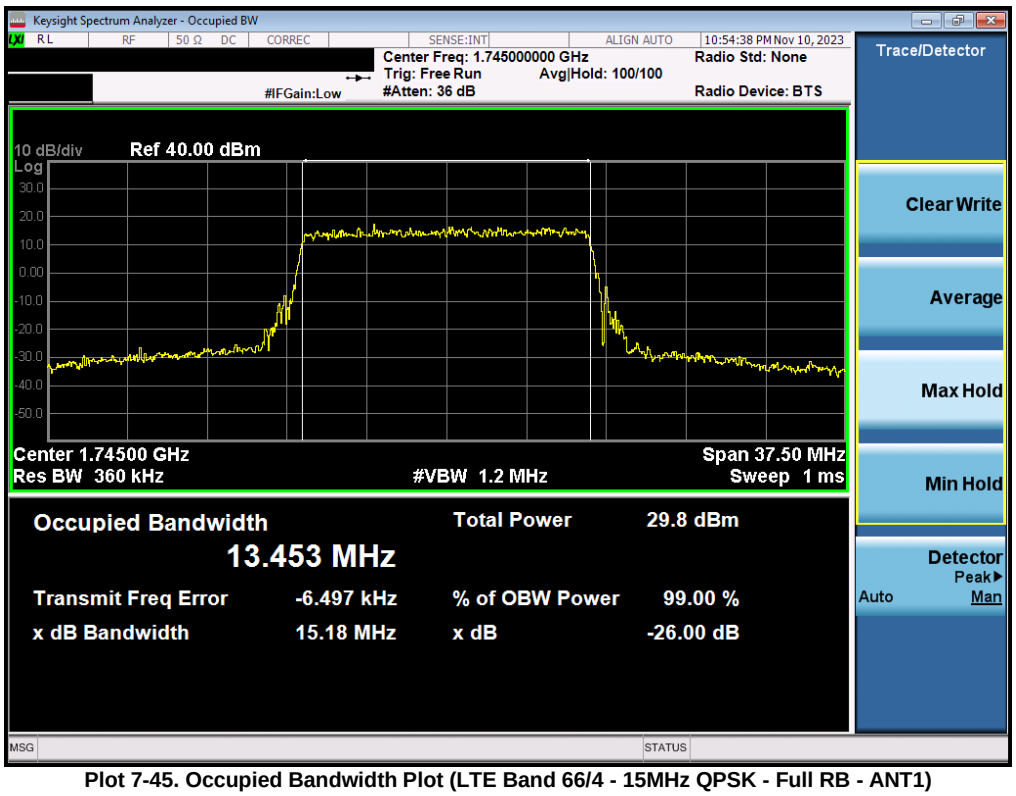
LTE Band 66/4 - ANT1



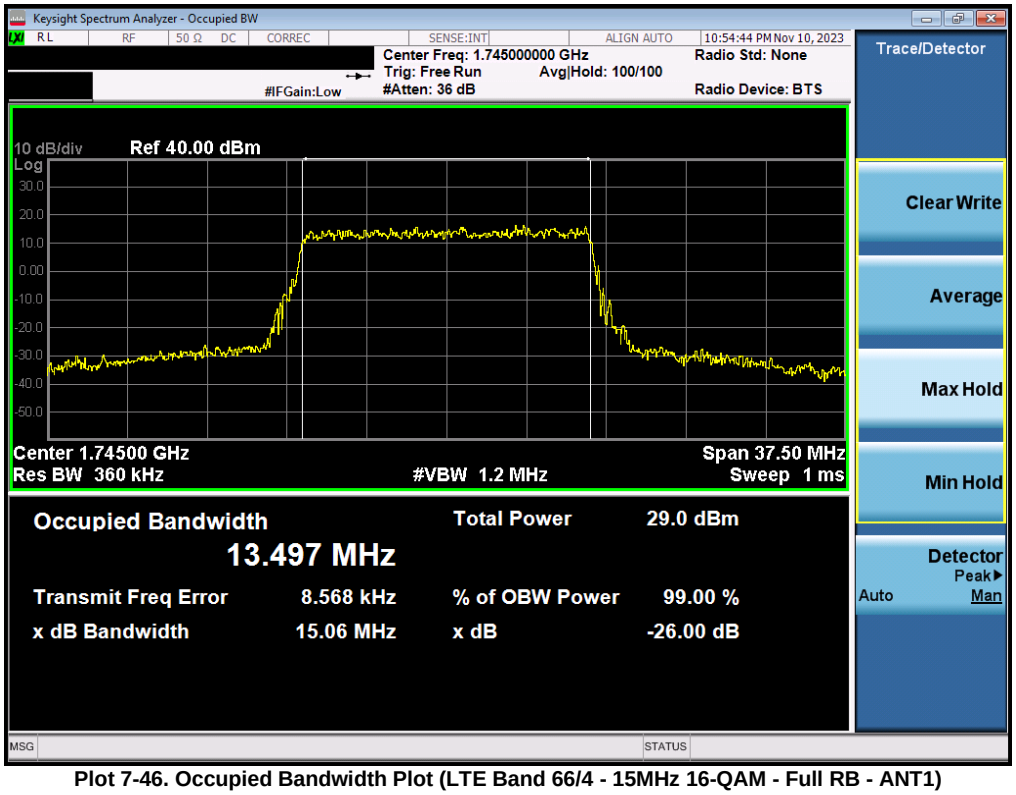
Plot 7-43. Occupied Bandwidth Plot (LTE Band 66/4 - 20MHz QPSK - Full RB - ANT1)



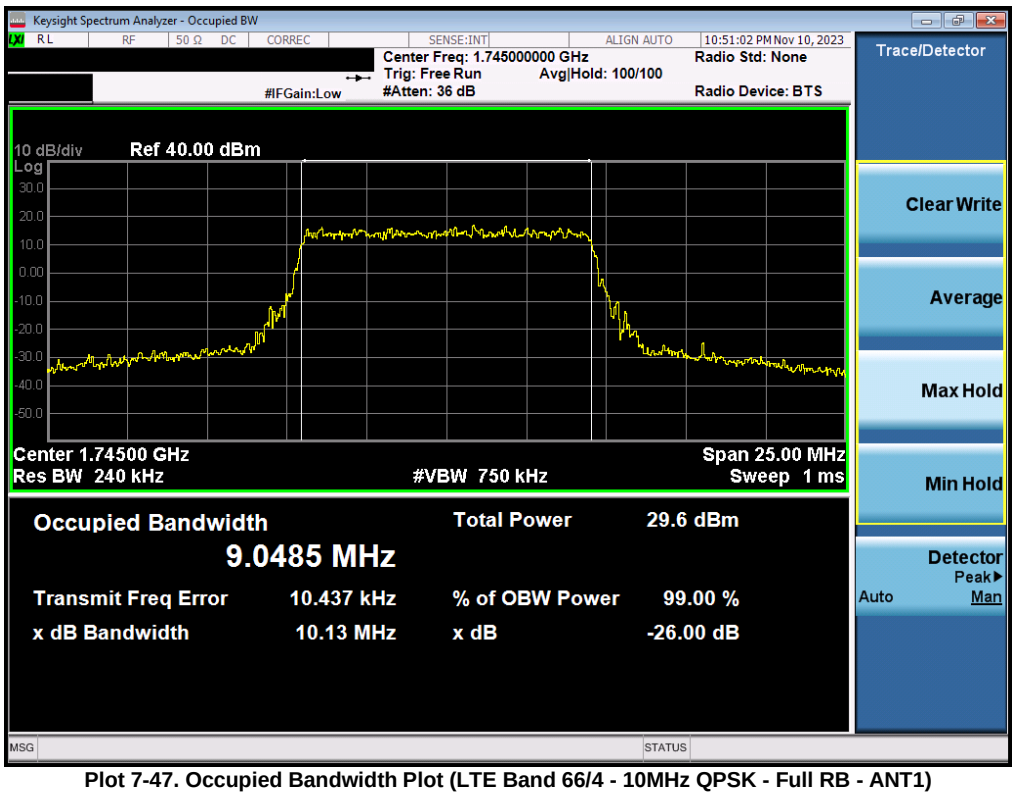
Plot 7-44. Occupied Bandwidth Plot (LTE Band 66/4 - 20MHz 16-QAM - Full RB - ANT1)



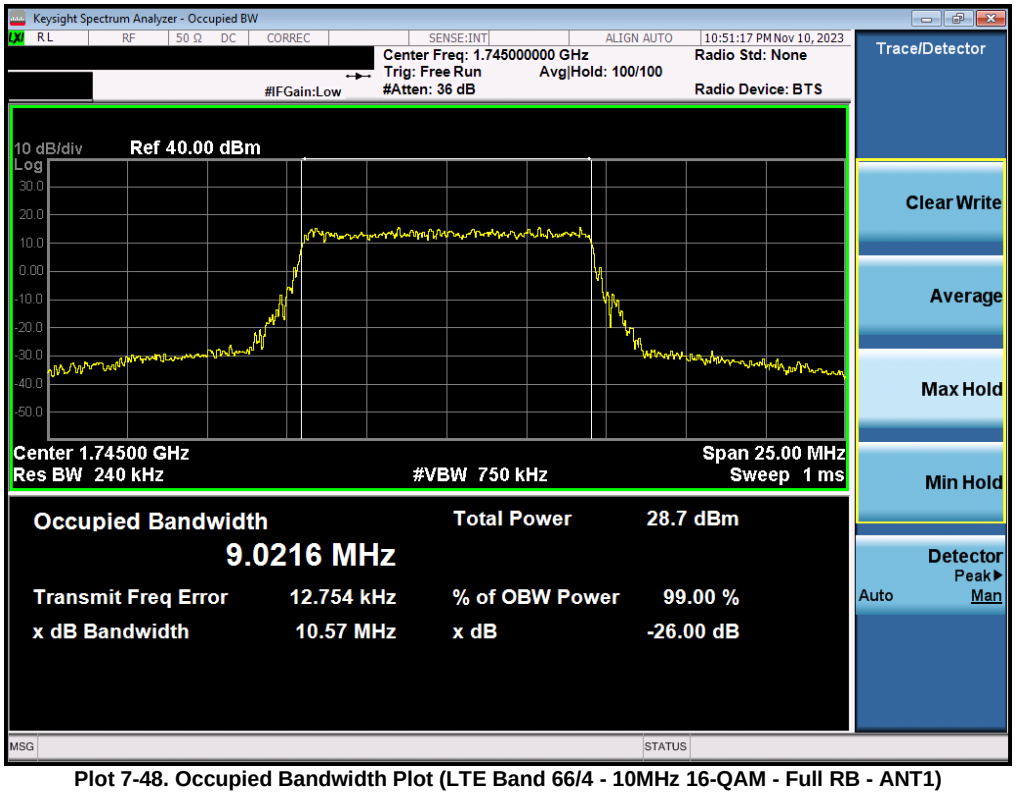
Plot 7-45. Occupied Bandwidth Plot (LTE Band 66/4 - 15MHz QPSK - Full RB - ANT1)



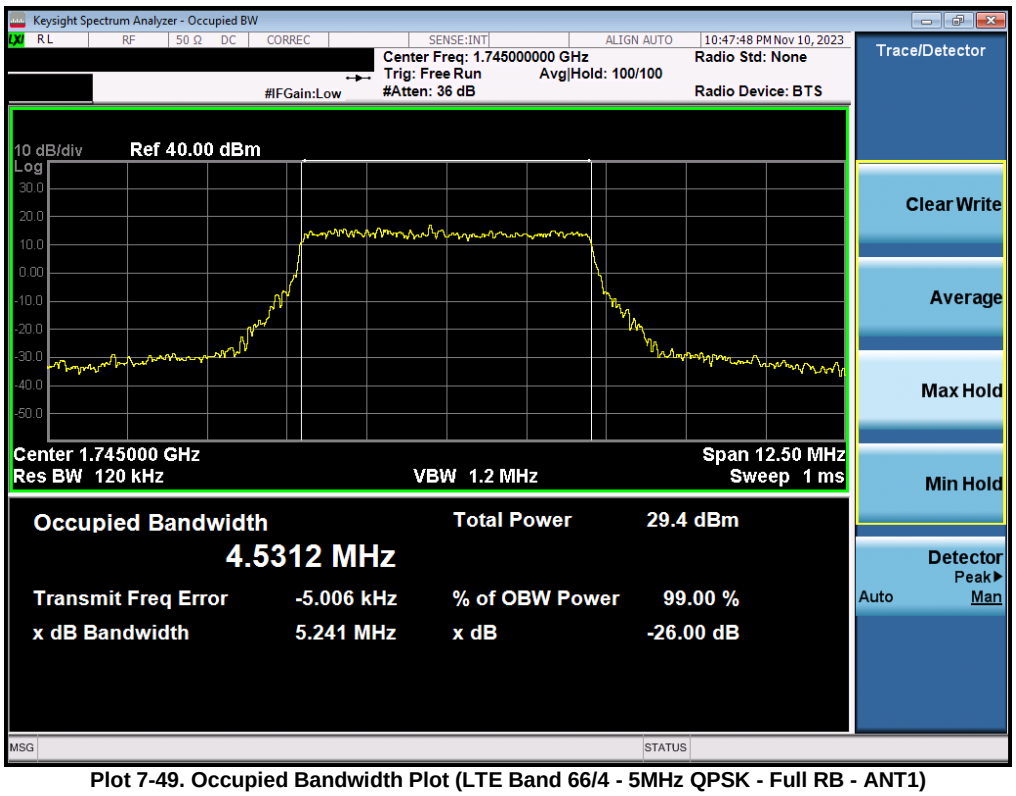
Plot 7-46. Occupied Bandwidth Plot (LTE Band 66/4 - 15MHz 16-QAM - Full RB - ANT1)



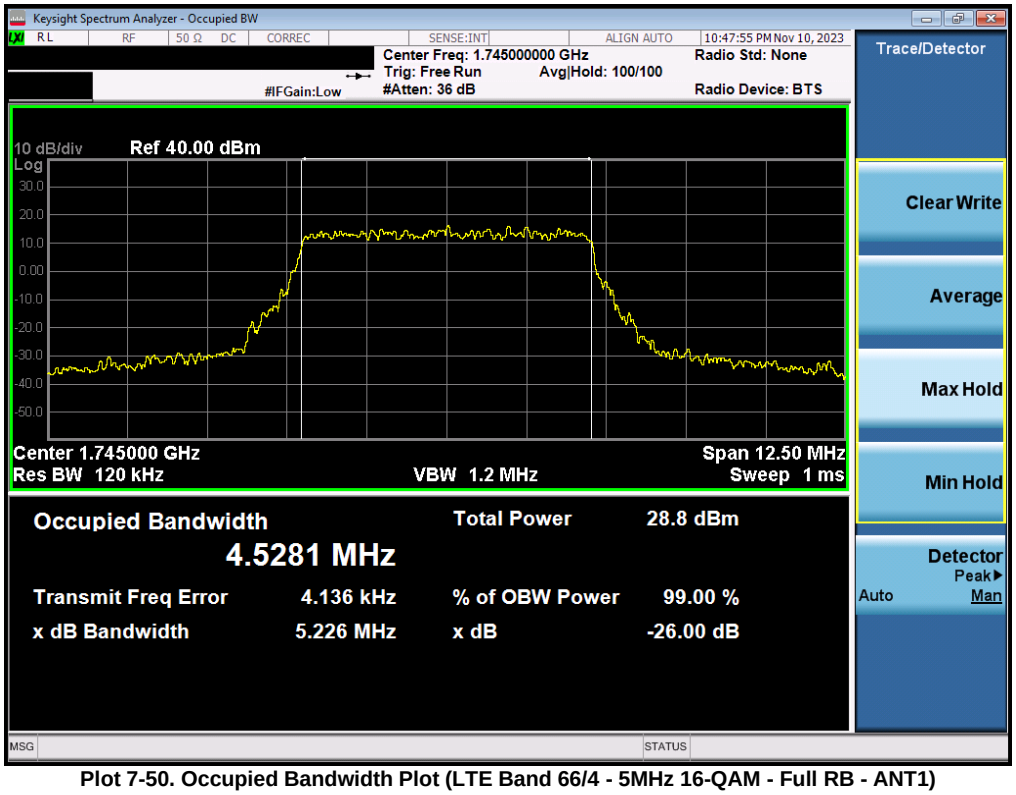
Plot 7-47. Occupied Bandwidth Plot (LTE Band 66/4 - 10MHz QPSK - Full RB - ANT1)



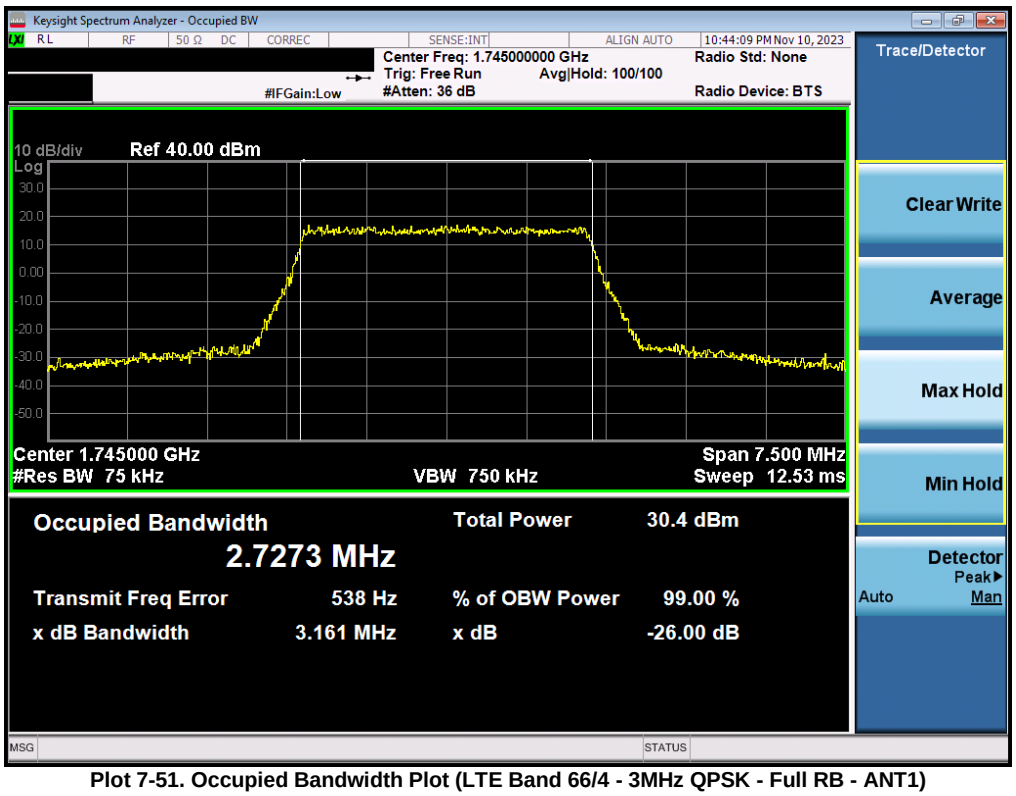
Plot 7-48. Occupied Bandwidth Plot (LTE Band 66/4 - 10MHz 16-QAM - Full RB - ANT1)



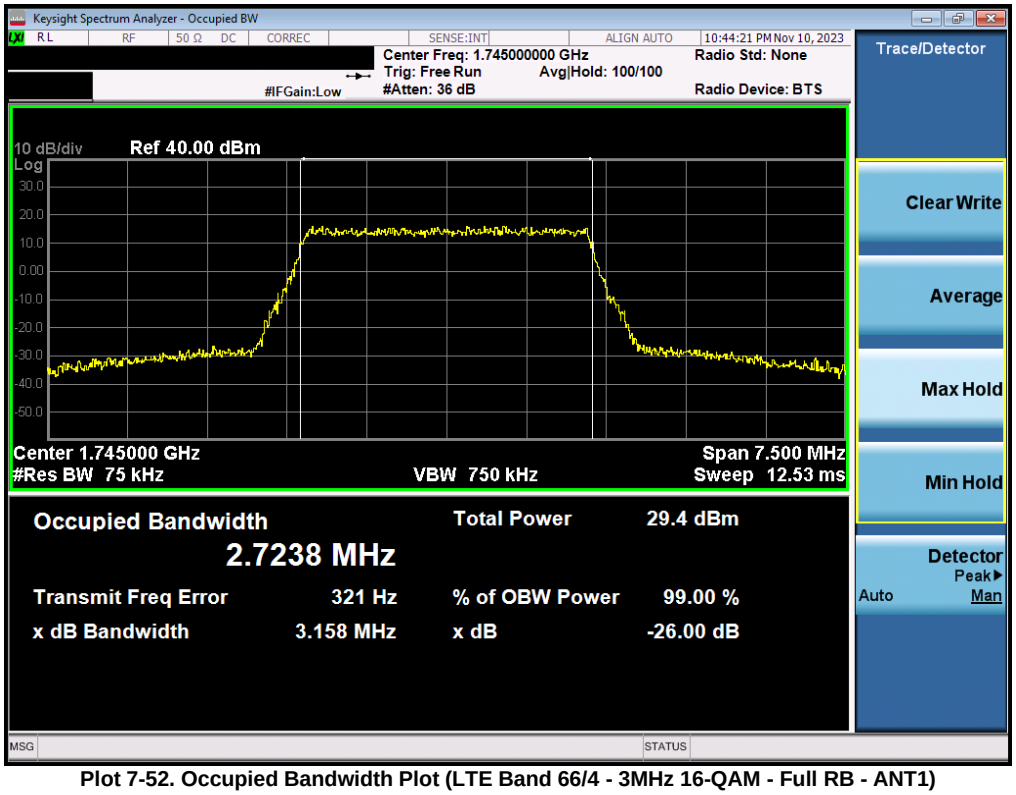
Plot 7-49. Occupied Bandwidth Plot (LTE Band 66/4 - 5MHz QPSK - Full RB - ANT1)



Plot 7-50. Occupied Bandwidth Plot (LTE Band 66/4 - 5MHz 16-QAM - Full RB - ANT1)

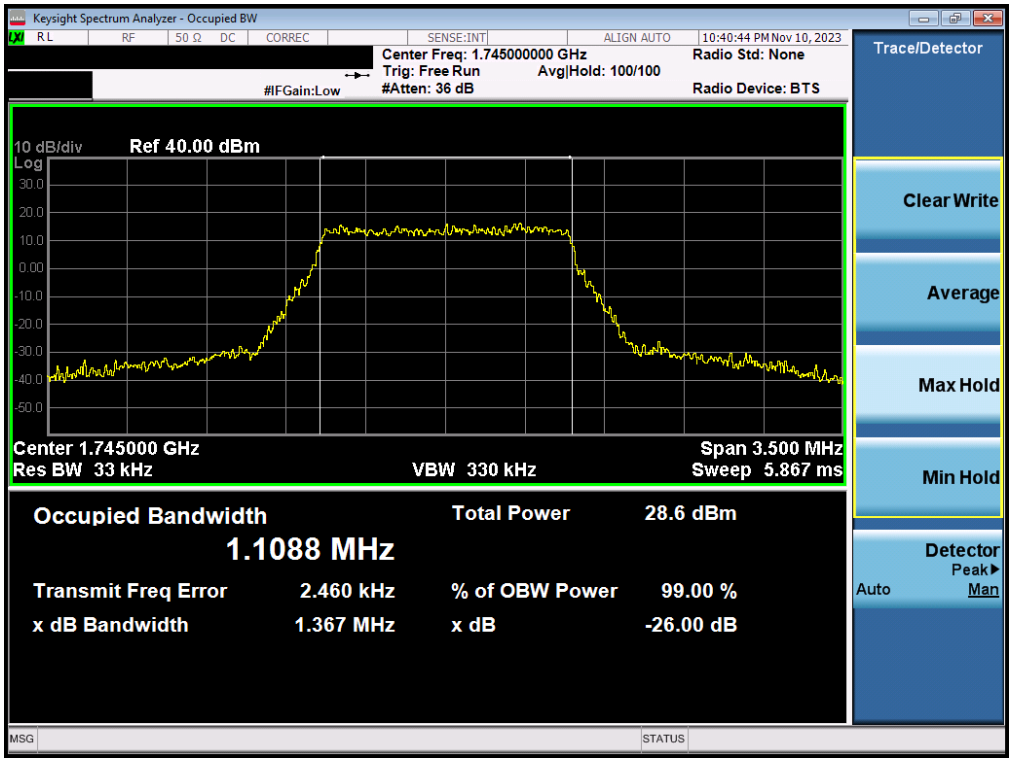


Plot 7-51. Occupied Bandwidth Plot (LTE Band 66/4 - 3MHz QPSK - Full RB - ANT1)



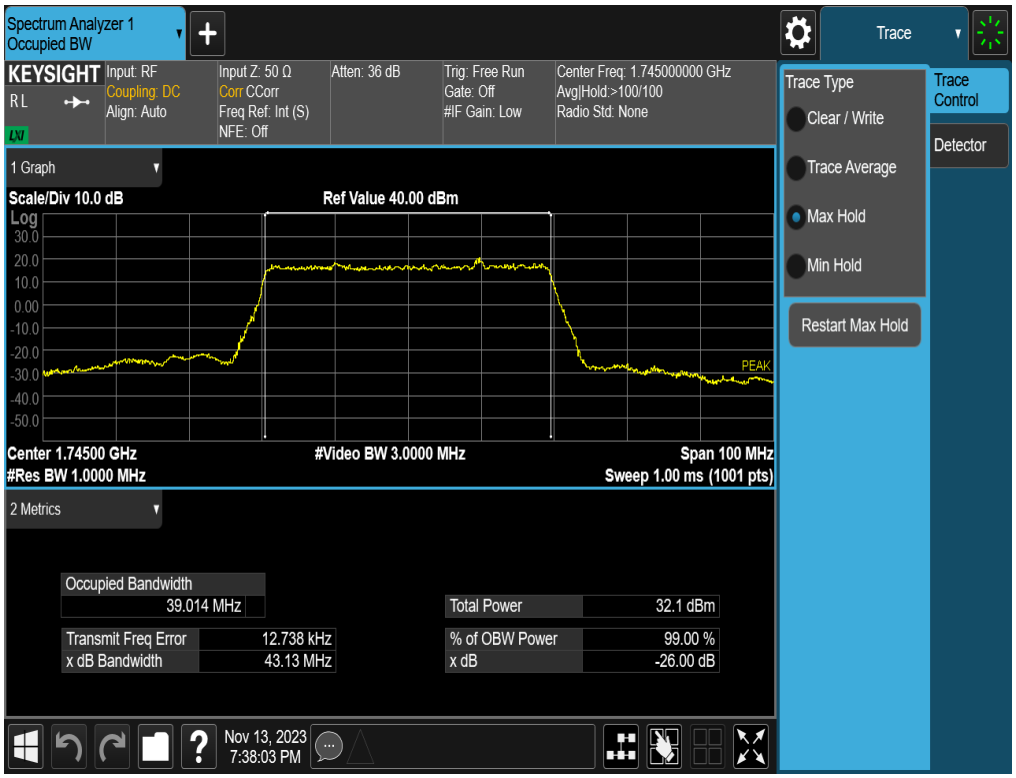
Plot 7-52. Occupied Bandwidth Plot (LTE Band 66/4 - 3MHz 16-QAM - Full RB - ANT1)

Plot 7-53. Occupied Bandwidth Plot (LTE Band 66/4 - 1.4MHz QPSK - Full RB - ANT1)

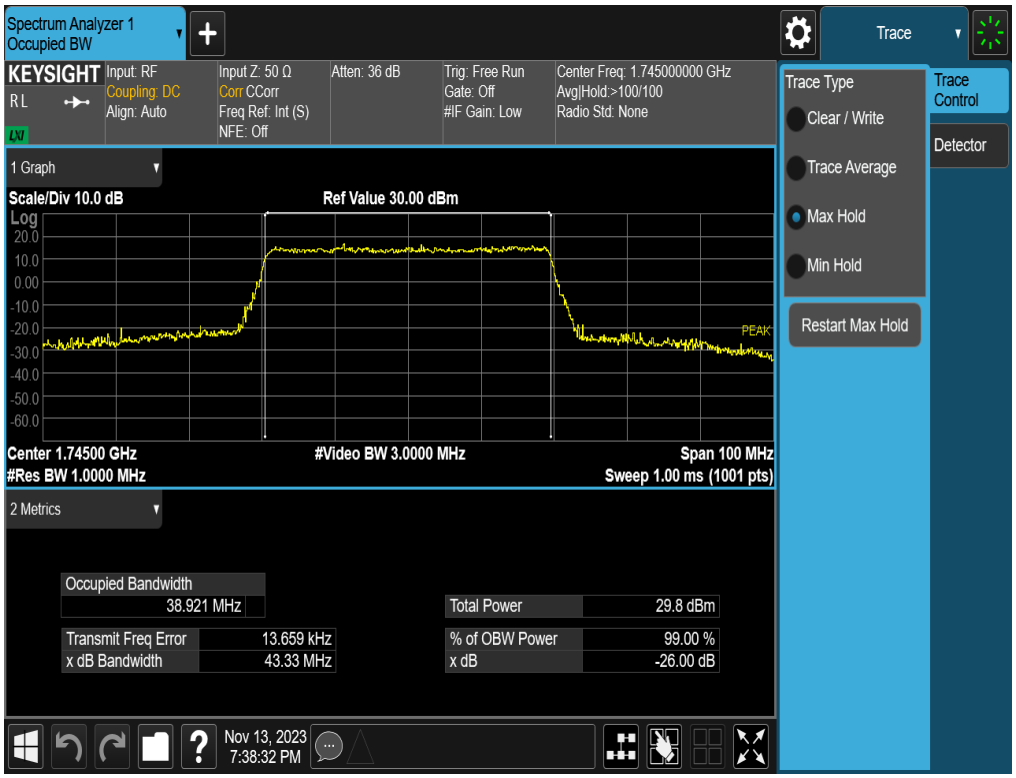


Plot 7-54. Occupied Bandwidth Plot (LTE Band 66/4 - 1.4MHz 16-QAM - Full RB - ANT1)

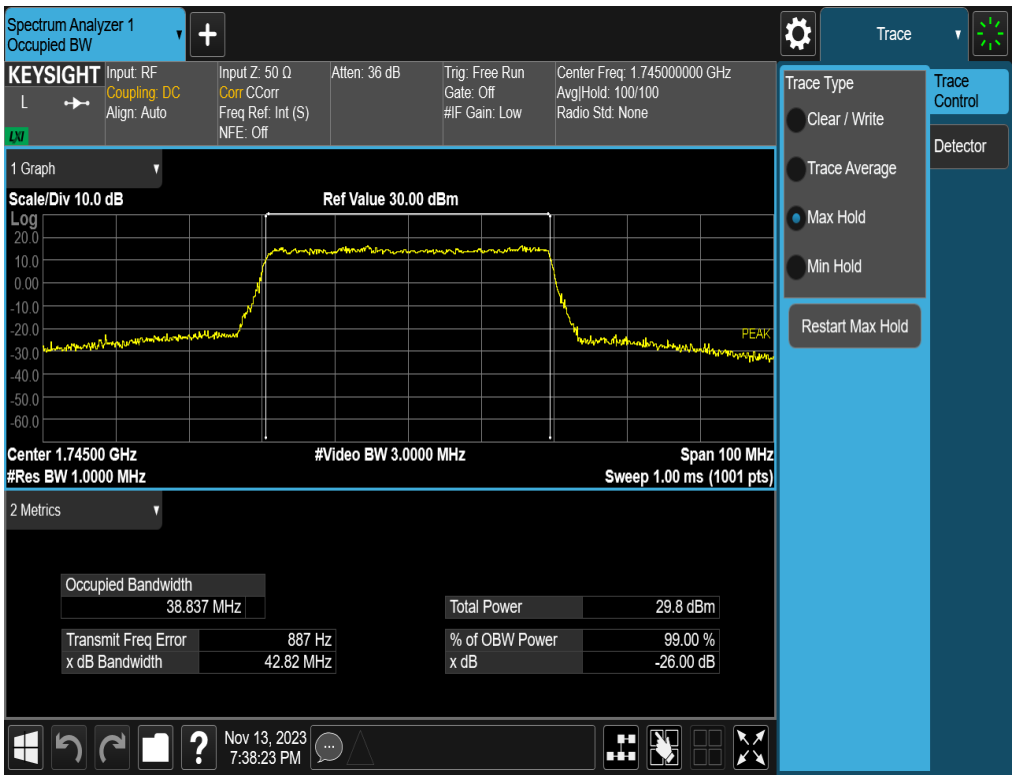
NR Band n66 – ANT1



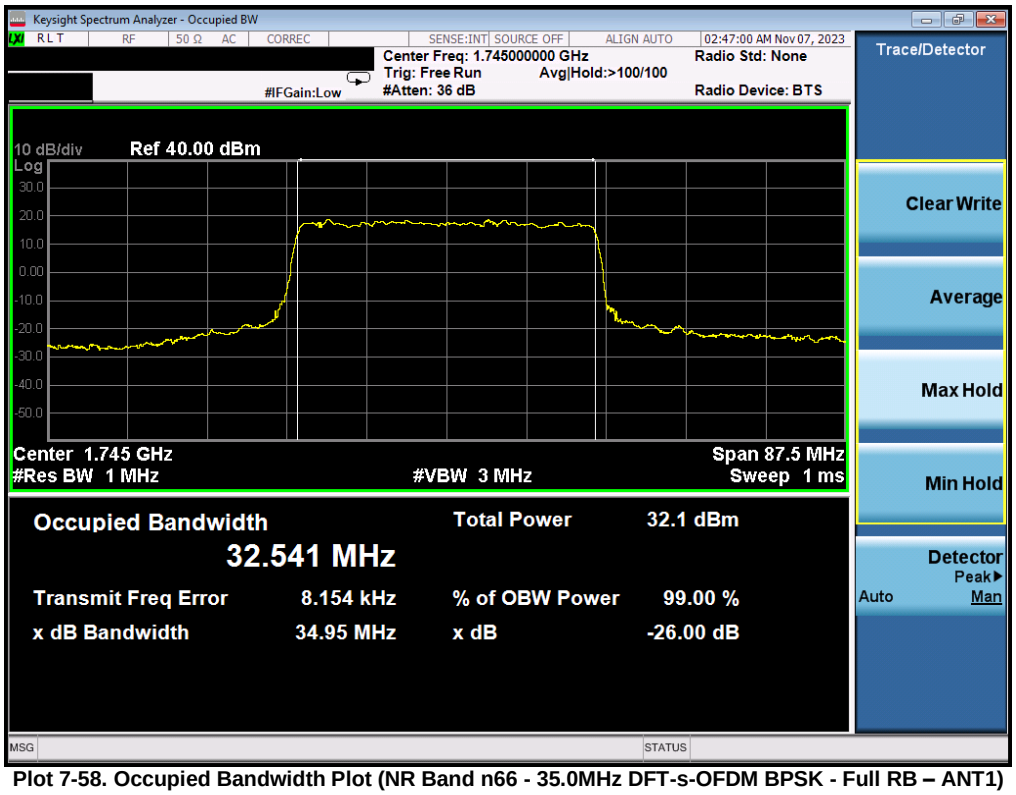
Plot 7-55. Occupied Bandwidth Plot (NR Band n66 - 40.0MHz DFT-s-OFDM BPSK - Full RB – ANT1)



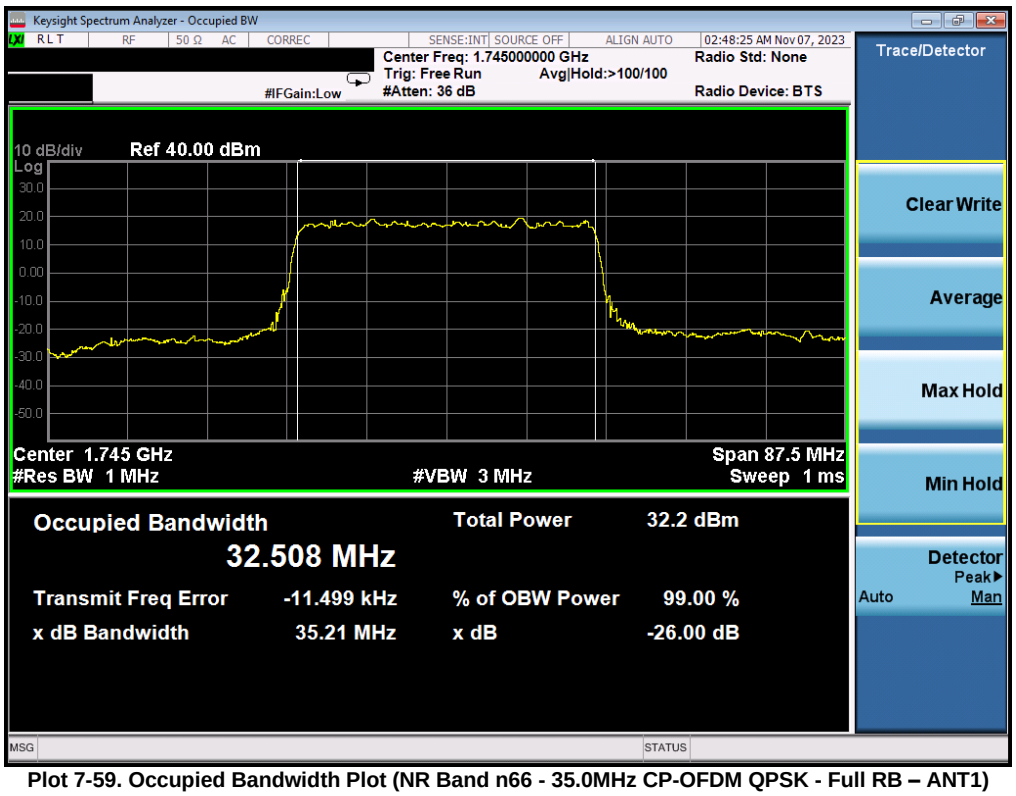
Plot 7-56. Occupied Bandwidth Plot (NR Band n66 - 40.0MHz CP-OFDM QPSK - Full RB – ANT1)



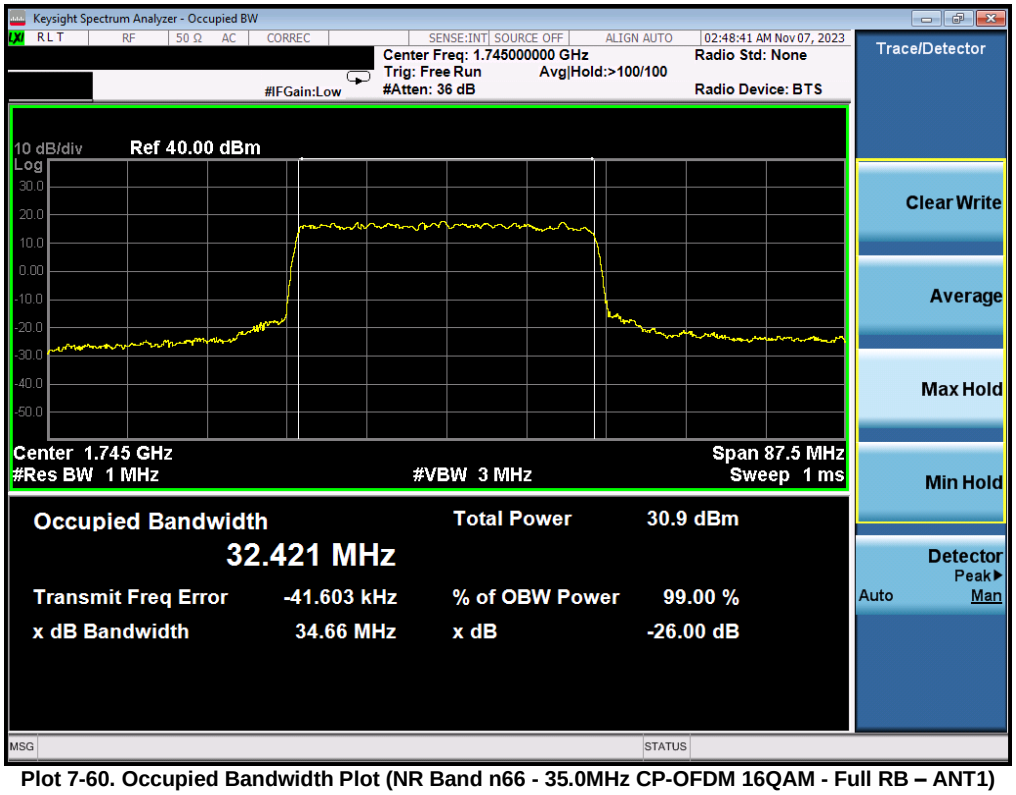
Plot 7-57. Occupied Bandwidth Plot (NR Band n66 - 40.0MHz CP-OFDM 16QAM - Full RB – ANT1)



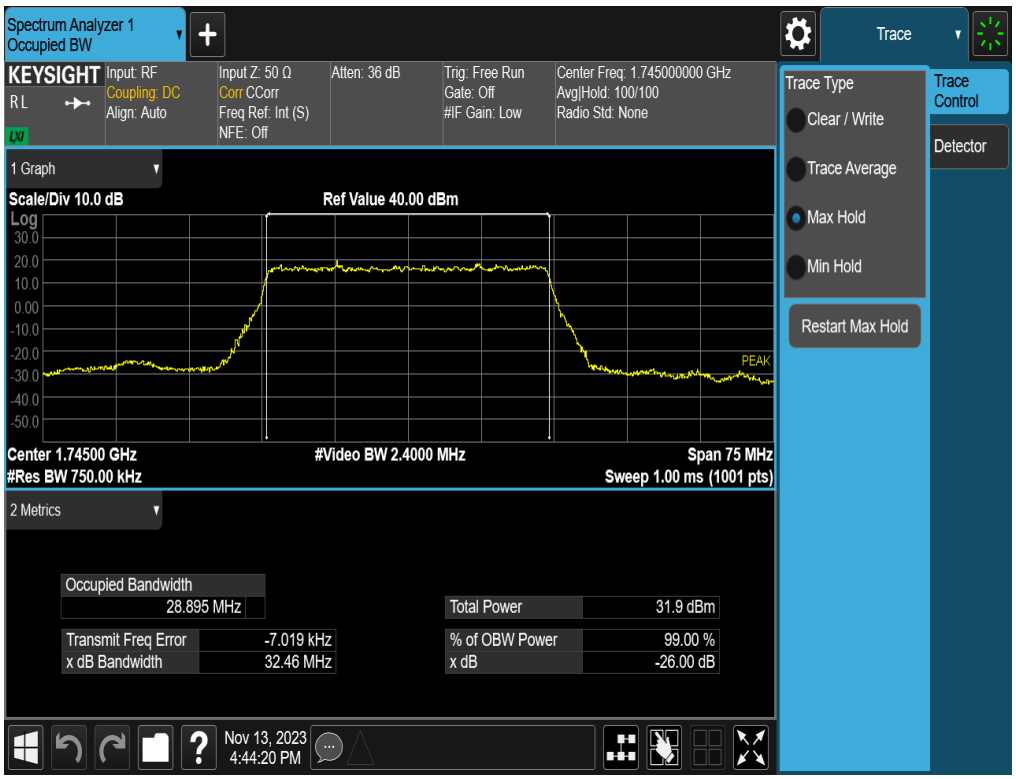
Plot 7-58. Occupied Bandwidth Plot (NR Band n66 - 35.0MHz DFT-s-OFDM BPSK - Full RB – ANT1)



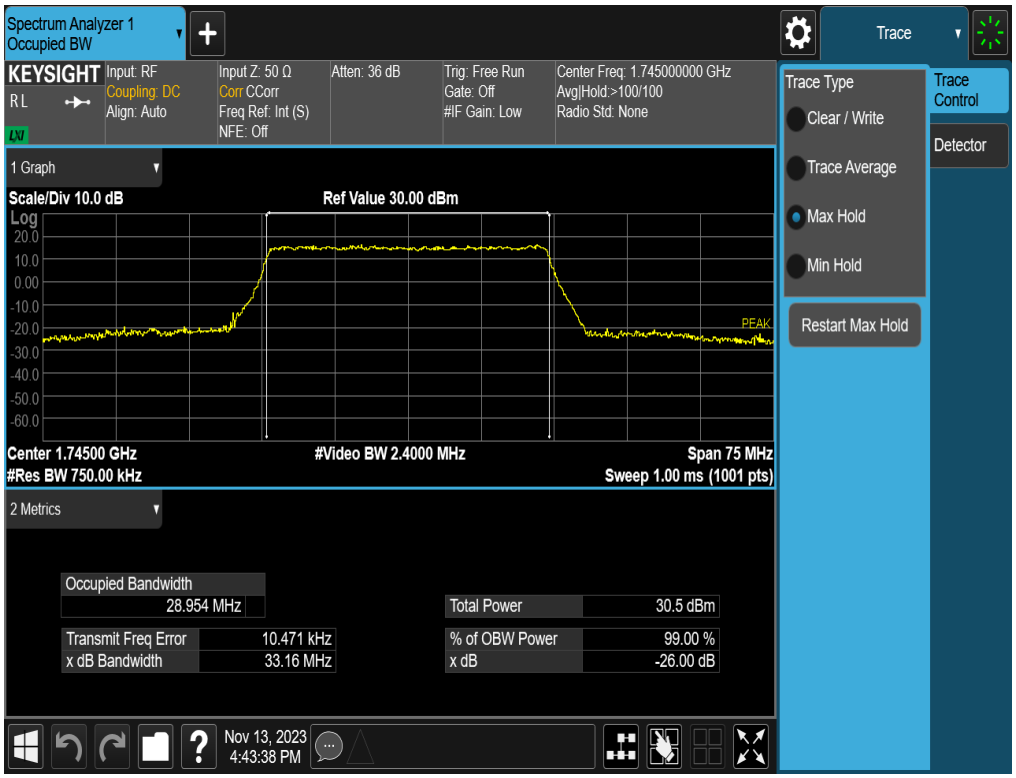
Plot 7-59. Occupied Bandwidth Plot (NR Band n66 - 35.0MHz CP-OFDM QPSK - Full RB – ANT1)



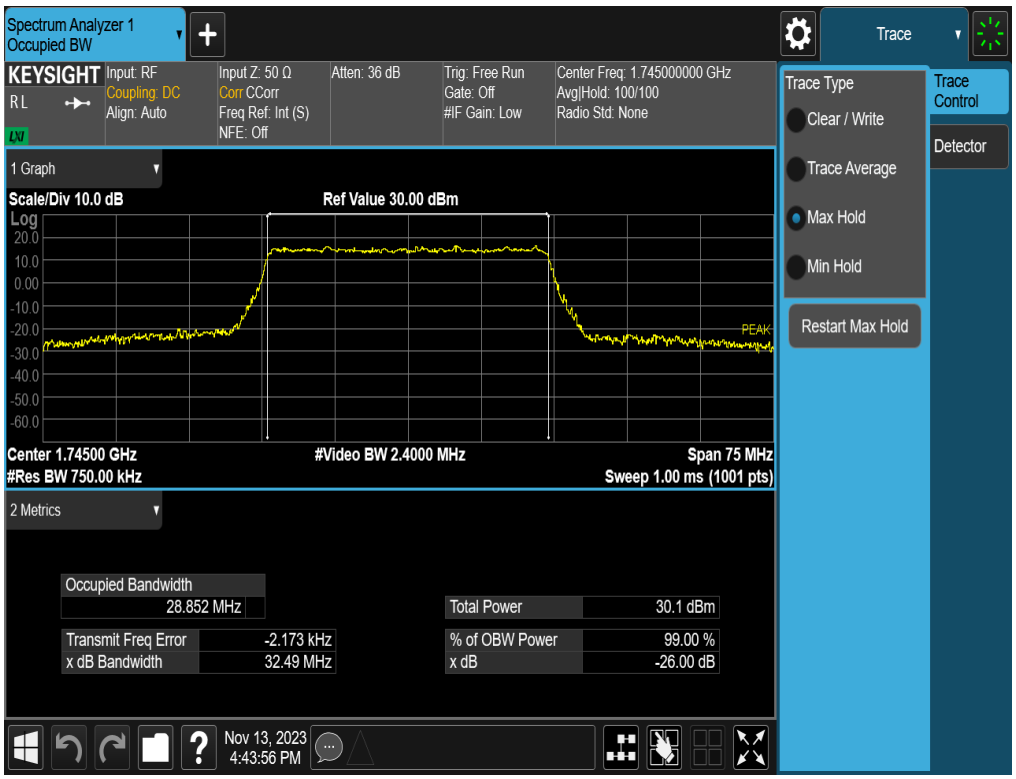
Plot 7-60. Occupied Bandwidth Plot (NR Band n66 - 35.0MHz CP-OFDM 16QAM - Full RB – ANT1)



Plot 7-61. Occupied Bandwidth Plot (NR Band n66 - 30.0MHz DFT-s-OFDM BPSK - Full RB – ANT1)



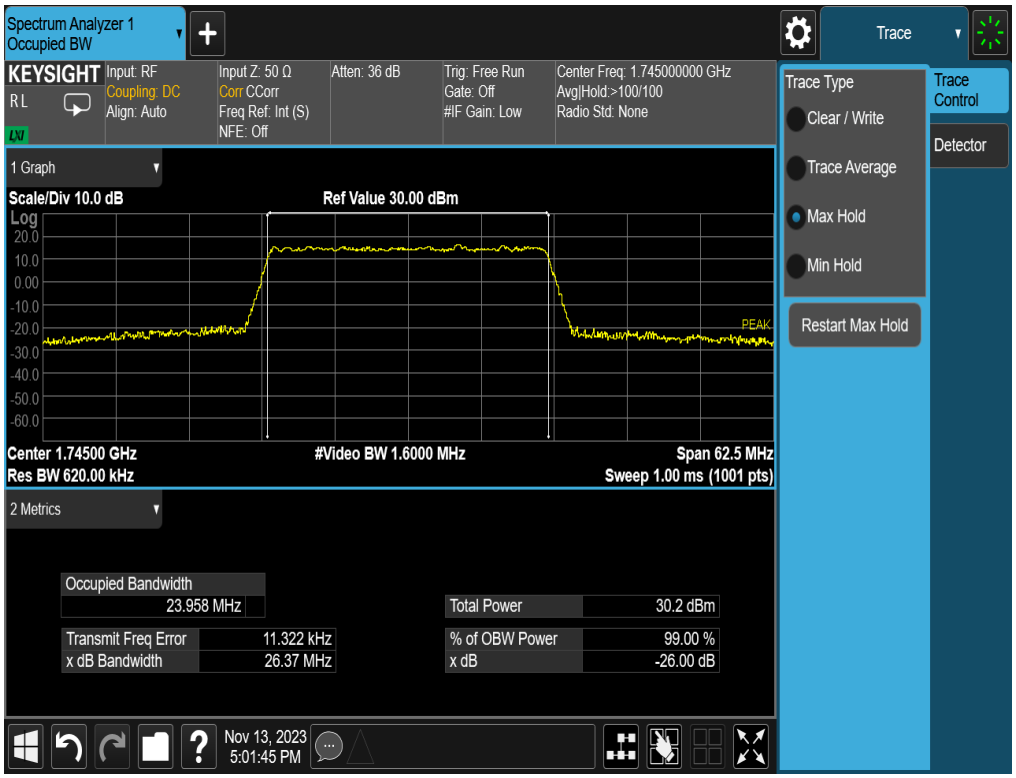
Plot 7-62. Occupied Bandwidth Plot (NR Band n66 - 30.0MHz CP-OFDM QPSK - Full RB – ANT1)



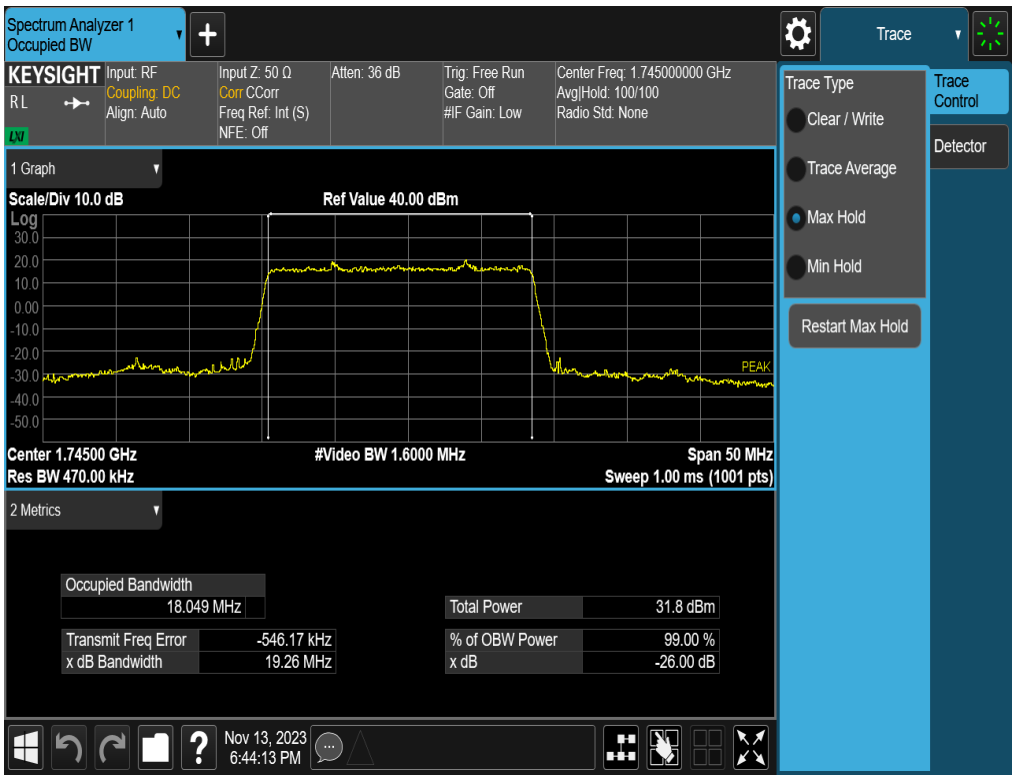
Plot 7-63. Occupied Bandwidth Plot (NR Band n66 - 30.0MHz CP-OFDM 16QAM - Full RB – ANT1)

Plot 7-64. Occupied Bandwidth Plot (NR Band n66 - 25.0MHz DFT-s-OFDM BPSK - Full RB – ANT1)

Plot 7-65. Occupied Bandwidth Plot (NR Band n66 - 25.0MHz CP-OFDM QPSK - Full RB – ANT1)



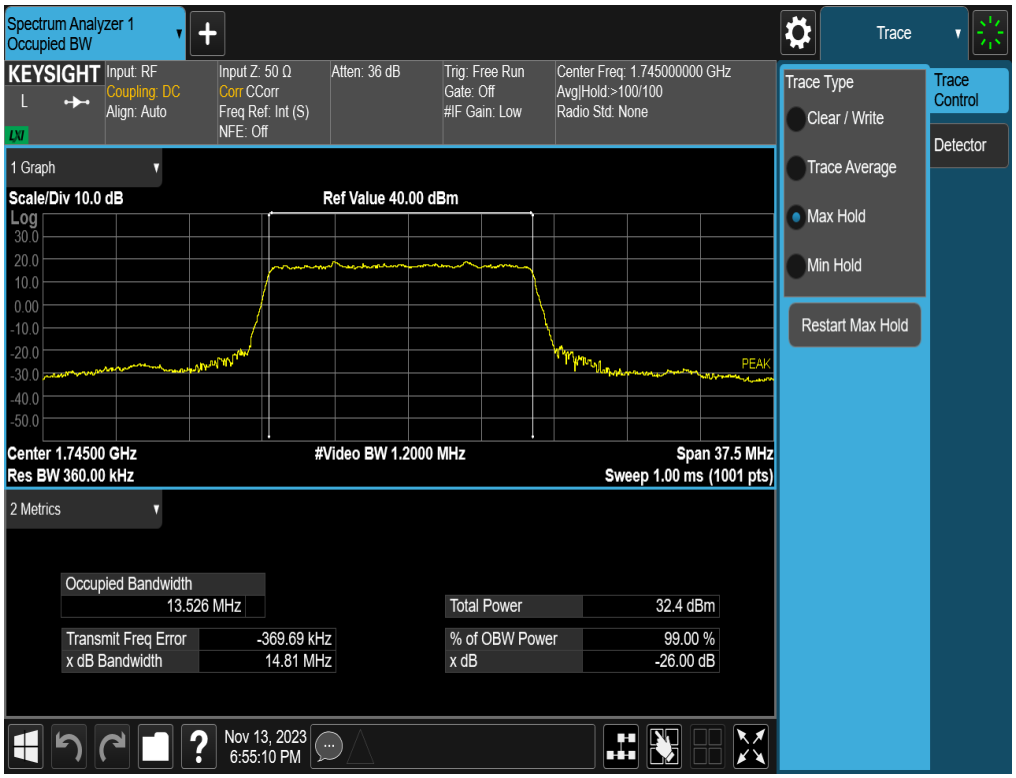
Plot 7-66. Occupied Bandwidth Plot (NR Band n66 - 25.0MHz CP-OFDM 16QAM - Full RB – ANT1)



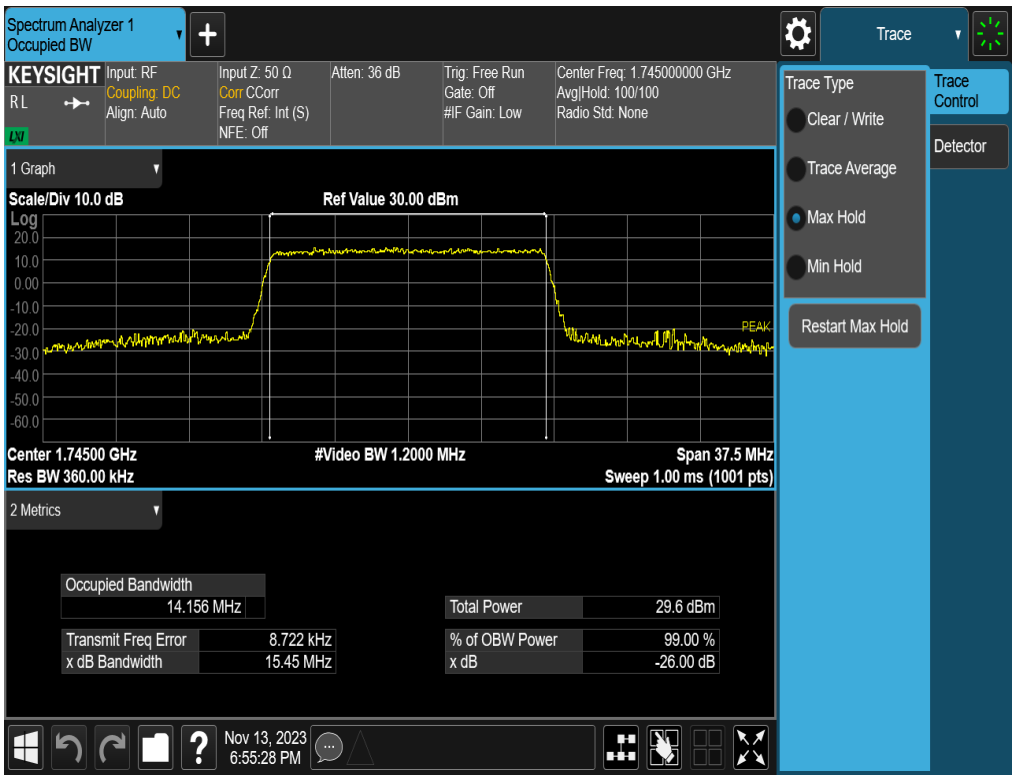
Plot 7-67. Occupied Bandwidth Plot (NR Band n66 - 20.0MHz DFT-s-OFDM BPSK - Full RB – ANT1)

Plot 7-68. Occupied Bandwidth Plot (NR Band n66 - 20.0MHz CP-OFDM QPSK - Full RB – ANT1)

Plot 7-69. Occupied Bandwidth Plot (NR Band n66 - 20.0MHz CP-OFDM 16QAM - Full RB – ANT1)

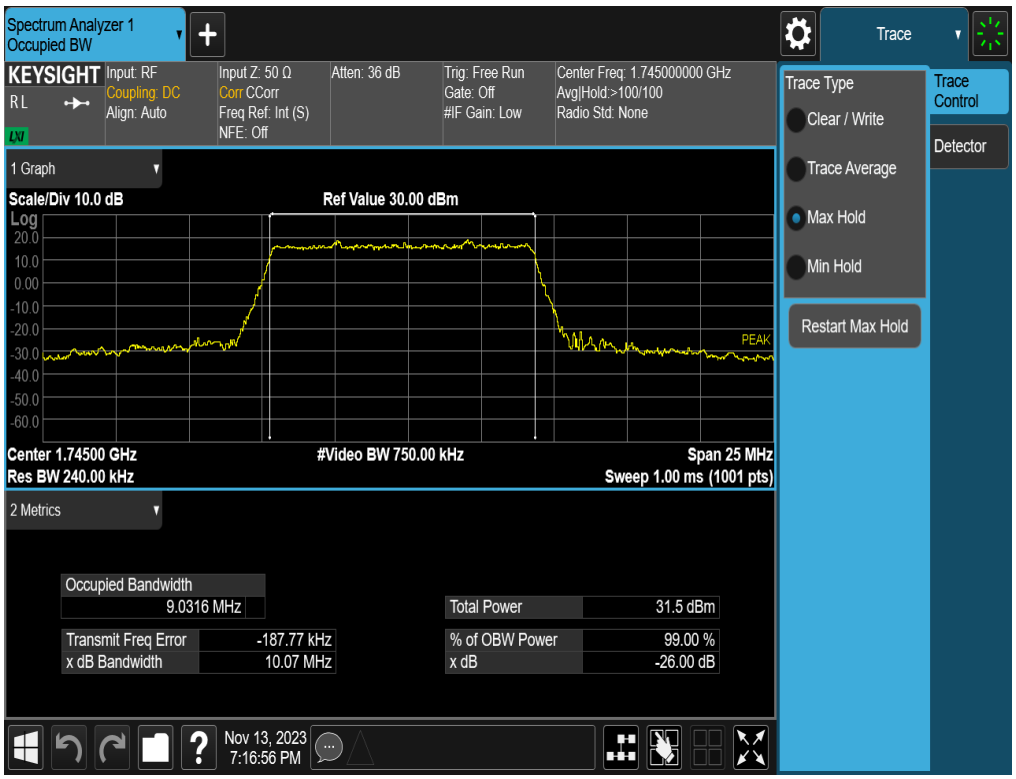


Plot 7-70. Occupied Bandwidth Plot (NR Band n66 - 15.0MHz DFT-s-OFDM BPSK - Full RB – ANT1)

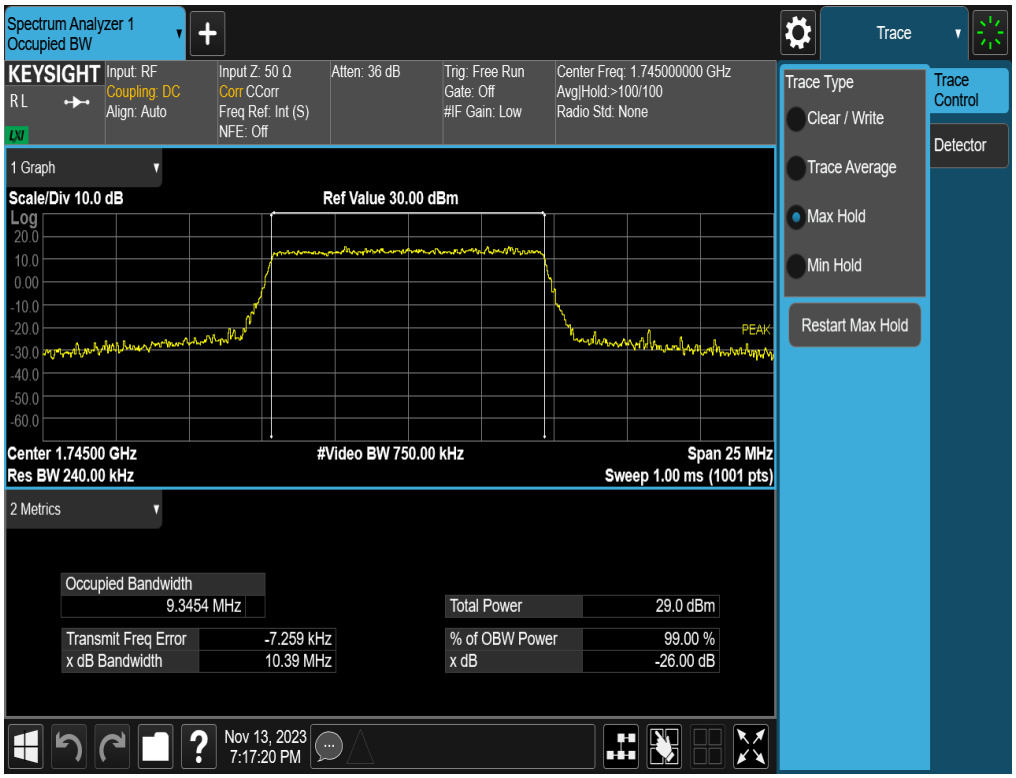


Plot 7-71. Occupied Bandwidth Plot (NR Band n66 - 15.0MHz CP-OFDM QPSK - Full RB – ANT1)

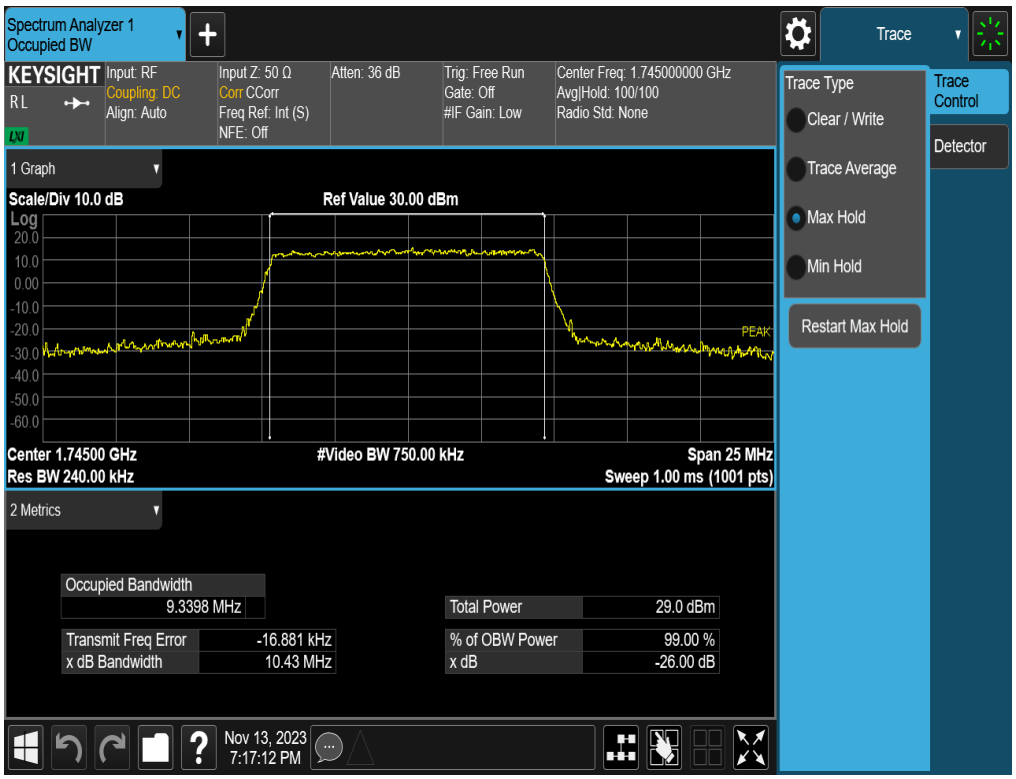
Plot 7-72. Occupied Bandwidth Plot (NR Band n66 - 15.0MHz CP-OFDM 16QAM - Full RB – ANT1)



Plot 7-73. Occupied Bandwidth Plot (NR Band n66 - 10.0MHz DFT-s-OFDM BPSK - Full RB – ANT1)

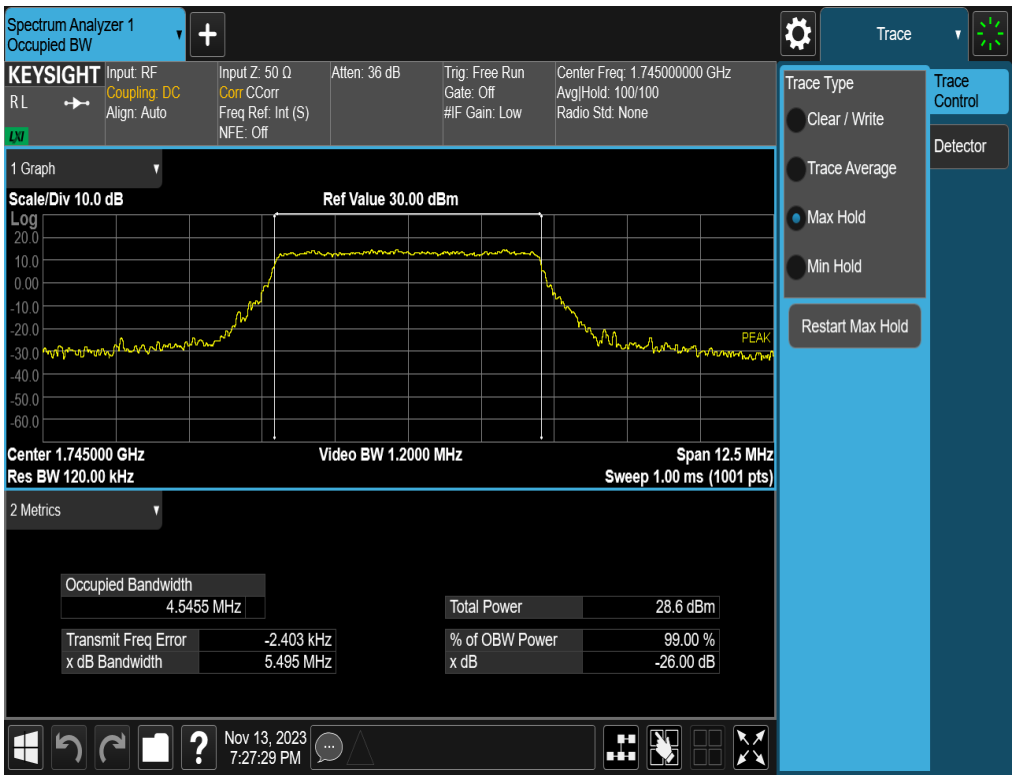


Plot 7-74. Occupied Bandwidth Plot (NR Band n66 - 10.0MHz CP-OFDM QPSK - Full RB – ANT1)

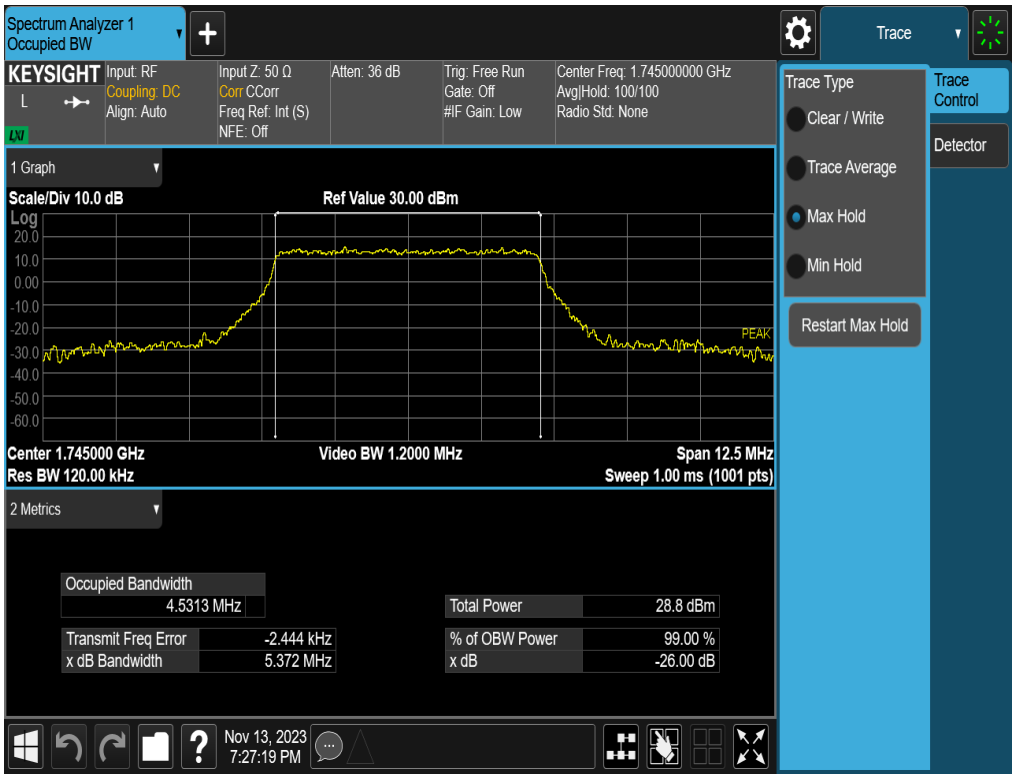


Plot 7-75. Occupied Bandwidth Plot (NR Band n66 - 10.0MHz CP-OFDM 16QAM - Full RB – ANT1)

Plot 7-76. Occupied Bandwidth Plot (NR Band n66 - 5.0MHz DFT-s-OFDM BPSK - Full RB – ANT1)



Plot 7-77. Occupied Bandwidth Plot (NR Band n66 - 5.0MHz CP-OFDM QPSK - Full RB – ANT1)



Plot 7-78. Occupied Bandwidth Plot (NR Band n66 - 5.0MHz CP-OFDM 16QAM - Full RB – ANT1)

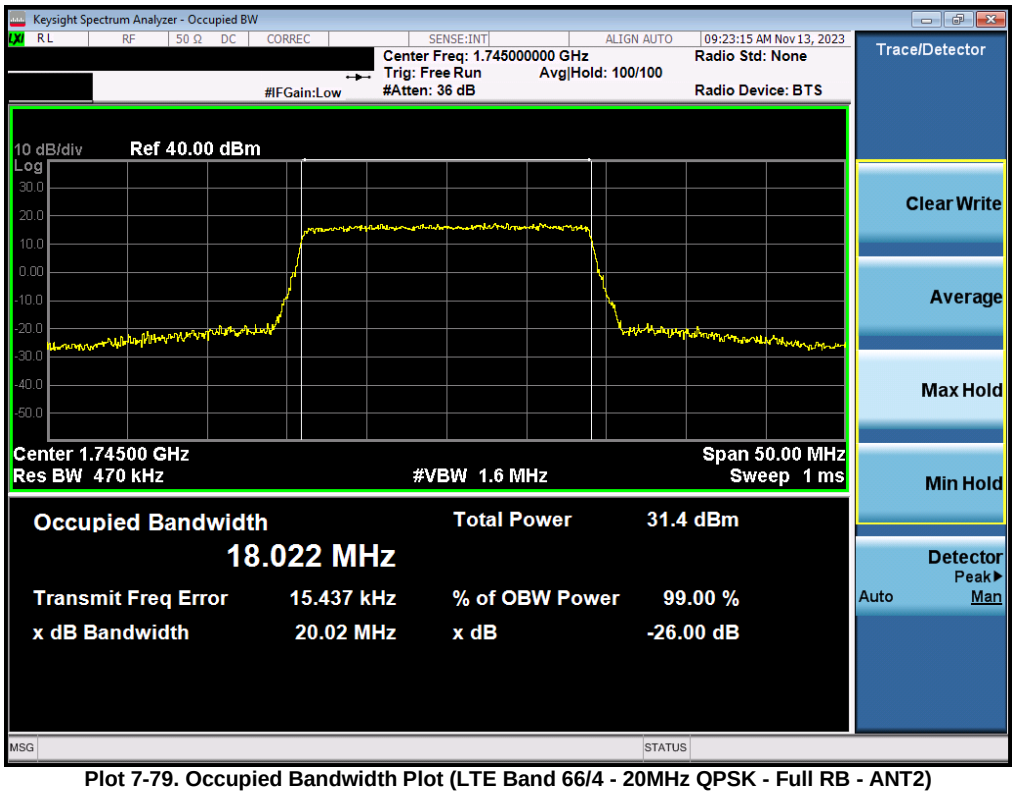
Mode	Bandwidth	Modulation	OBW [MHz]
LTE-B66-4	20MHz	QPSK	18.02
		16QAM	18.02
	15MHz	QPSK	13.54
		16QAM	13.57
	10MHz	QPSK	9.11
		16QAM	9.04
	5MHz	QPSK	4.54
		16QAM	4.56
	3MHz	QPSK	2.72
		16QAM	2.73
	1.4MHz	QPSK	1.10
		16QAM	1.11

Table 7-9. Occupied Bandwidth Results – Ant2

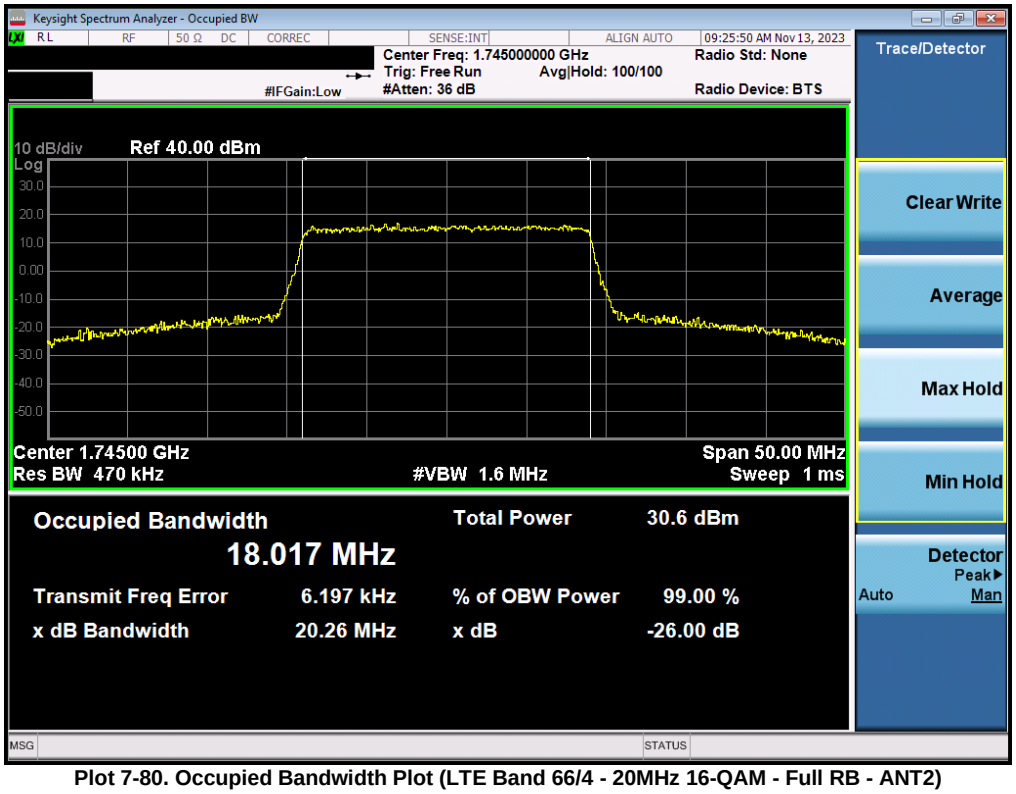
Mode	Bandwidth	Modulation	OBW [MHz]
NR-n66	40MHz	π/2 BPSK	38.95
		QPSK	38.91
		16QAM	38.81
	30MHz	π/2 BPSK	28.86
		QPSK	28.93
		16QAM	28.76
	20MHz	π/2 BPSK	17.99
		QPSK	19.06
		16QAM	19.07
	15MHz	π/2 BPSK	13.52
		QPSK	14.22
		16QAM	14.25
	10MHz	π/2 BPSK	9.08
		QPSK	9.40
		16QAM	9.40
	5MHz	π/2 BPSK	4.54
		QPSK	4.57
		16QAM	4.56

Table 7-10. Occupied Bandwidth Results – Ant2

LTE Band 66/4 - ANT2



Plot 7-79. Occupied Bandwidth Plot (LTE Band 66/4 - 20MHz QPSK - Full RB - ANT2)



Plot 7-80. Occupied Bandwidth Plot (LTE Band 66/4 - 20MHz 16-QAM - Full RB - ANT2)