



ELEMENT WASHINGTON DC LLC

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PART 27 MEASUREMENT REPORT

Applicant Name:

Samsung Electronics Co., Ltd.
129, Samsung-ro,
Yeongtong-gu, Suwon-si
Gyeonggi-do, 16677, Korea

Date of Testing:

5/23/2024 - 6/13/2024

Test Report Issue Date:

7/22/2024

Test Site/Location:

Element lab., Columbia, MD, USA

Test Report Serial No.:

1M2405140039-02.A3L

FCC ID:

A3LSMX828U

APPLICANT:

Samsung Electronics Co., Ltd.

Application Type:

Certification

Model:

SM-X828U

EUT Type:

Portable Tablet

FCC Classification:

PCS Licensed Transmitter (PCB)

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



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Test Report S/N: 1M2405140039-02.A3L	Test Dates: 5/23/2024 - 6/13/2024	EUT Type: Portable Tablet	Page 1 of 186

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MEASUREMENT REPORT

FCC Part 27

Antenna-1						
Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	ERP		Emission Designator
				Max. Power [W]	Max. Power [dBm]	
LTE Band 71	20 MHz	QPSK	673.0 - 688.0	0.127	21.04	18M0G7D
		16QAM	673.0 - 688.0	0.106	20.27	18M0W7D
	15 MHz	QPSK	670.5 - 690.5	0.127	21.03	13M6G7D
		16QAM	670.5 - 690.5	0.103	20.11	13M5W7D
	10 MHz	QPSK	668.0 - 693.0	0.125	20.98	9M02G7D
		16QAM	668.0 - 693.0	0.102	20.07	8M99W7D
	5 MHz	QPSK	665.5 - 695.5	0.131	21.18	4M50G7D
		16QAM	665.5 - 695.5	0.100	19.99	4M52W7D
LTE Band 12/17	10 MHz	QPSK	704.0 - 711.0	0.167	22.22	8M98G7D
		16QAM	704.0 - 711.0	0.142	21.52	8M94W7D
	5 MHz	QPSK	701.5 - 713.5	0.164	22.15	4M51G7D
		16QAM	701.5 - 713.5	0.144	21.59	4M51W7D
	3 MHz	QPSK	700.5 - 714.5	0.159	22.02	2M70G7D
		16QAM	700.5 - 714.5	0.139	21.44	2M71W7D
	1.4 MHz	QPSK	699.7 - 715.3	0.169	22.29	1M09G7D
		16QAM	699.7 - 715.3	0.144	21.58	1M10W7D
LTE Band 13	10 MHz	QPSK	782.0	0.148	21.71	9M01G7D
		16QAM	782.0	0.125	20.96	8M94W7D
	5 MHz	QPSK	779.5 - 784.5	0.153	21.84	4M51G7D
		16QAM	779.5 - 784.5	0.134	21.28	4M51W7D
NR Band n71	20 MHz	$\pi/2$ BPSK	673.0 - 688.0	0.106	20.27	18M0G7D
		QPSK	673.0 - 688.0	0.105	20.21	19M1G7D
		16QAM	673.0 - 688.0	0.083	19.22	19M1W7D
		$\pi/2$ BPSK	670.5 - 690.5	0.102	20.10	13M5G7D
	15 MHz	QPSK	670.5 - 690.5	0.101	20.03	14M2G7D
		16QAM	670.5 - 690.5	0.079	18.97	14M2W7D
	10 MHz	$\pi/2$ BPSK	668.0 - 693.0	0.104	20.17	9M01G7D
		QPSK	668.0 - 693.0	0.097	19.89	9M37G7D
		16QAM	668.0 - 693.0	0.076	18.82	9M37W7D
	5 MHz	$\pi/2$ BPSK	665.5 - 695.5	0.101	20.03	4M49G7D
		QPSK	665.5 - 695.5	0.099	19.94	4M52G7D
		16QAM	665.5 - 695.5	0.075	18.77	4M51W7D
		$\pi/2$ BPSK	706.5 - 708.5	0.167	22.22	13M5G7D
NR Band n12	15 MHz	QPSK	706.5 - 708.5	0.169	22.28	14M1G7D
		16QAM	706.5 - 708.5	0.136	21.33	14M1W7D
	10 MHz	$\pi/2$ BPSK	704.0 - 711.0	0.169	22.29	8M99G7D
		QPSK	704.0 - 711.0	0.177	22.49	9M33G7D
		16QAM	704.0 - 711.0	0.137	21.36	9M31W7D
	5 MHz	$\pi/2$ BPSK	701.5 - 713.5	0.170	22.31	4M48G7D
		QPSK	701.5 - 713.5	0.169	22.28	4M50G7D
		16QAM	701.5 - 713.5	0.134	21.26	4M51W7D

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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	0.168	22.25	4M17F9W
LTE Band 66/4	20 MHz	QPSK	1720.0 - 1770.0	0.210	23.21	18M0G7D
		16QAM	1720.0 - 1770.0	0.180	22.56	17M9W7D
	15 MHz	QPSK	1717.5 - 1772.5	0.205	23.11	13M4G7D
		16QAM	1717.5 - 1772.5	0.193	22.86	13M4W7D
	10 MHz	QPSK	1715.0 - 1775.0	0.208	23.17	9M01G7D
		16QAM	1715.0 - 1775.0	0.191	22.80	8M98W7D
	5 MHz	QPSK	1712.5 - 1777.5	0.208	23.18	4M50G7D
		16QAM	1712.5 - 1777.5	0.194	22.88	4M51W7D
	3 MHz	QPSK	1711.5 - 1778.5	0.207	23.16	2M70G7D
		16QAM	1711.5 - 1778.5	0.185	22.66	2M71W7D
	1.4 MHz	QPSK	1710.7 - 1779.3	0.211	23.23	1M10G7D
		16QAM	1710.7 - 1779.3	0.186	22.70	1M10W7D
NR Band n70	15 MHz	$\pi/2$ BPSK	1702.5	0.149	21.72	13M5G7D
		QPSK	1702.5	0.147	21.66	14M1G7D
		16QAM	1702.5	0.118	20.73	14M2W7D
	10 MHz	$\pi/2$ BPSK	1700.0 - 1705.0	0.148	21.70	9M02G7D
		QPSK	1700.0 - 1705.0	0.147	21.66	9M33G7D
		16QAM	1700.0 - 1705.0	0.126	21.01	9M32W7D
	5 MHz	$\pi/2$ BPSK	1697.5 - 1707.5	0.155	21.91	4M49G7D
		QPSK	1697.5 - 1707.5	0.145	21.60	4M50G7D
		16QAM	1697.5 - 1707.5	0.132	21.21	4M49W7D
NR Band n66	40 MHz	$\pi/2$ BPSK	1730.0 - 1760.0	0.191	22.81	38M8G7D
		QPSK	1730.0 - 1760.0	0.192	22.84	38M8G7D
		16QAM	1730.0 - 1760.0	0.147	21.68	38M8W7D
	35 MHz	$\pi/2$ BPSK	1727.5 - 1762.5	0.177	22.47	32M3G7D
		QPSK	1727.5 - 1762.5	0.173	22.38	33M7G7D
		16QAM	1727.5 - 1762.5	0.141	21.51	33M7W7D
	30 MHz	$\pi/2$ BPSK	1725.0 - 1765.0	0.195	22.89	28M6G7D
		QPSK	1725.0 - 1765.0	0.194	22.88	28M6G7D
		16QAM	1725.0 - 1765.0	0.155	21.91	28M7W7D
	25 MHz	$\pi/2$ BPSK	1725.0 - 1765.0	0.193	22.85	23M0G7D
		QPSK	1725.0 - 1765.0	0.192	22.84	23M9G7D
		16QAM	1725.0 - 1765.0	0.145	21.60	24M0W7D
	20 MHz	$\pi/2$ BPSK	1720.0 - 1770.0	0.197	22.94	23M0G7D
		QPSK	1720.0 - 1770.0	0.197	22.94	23M9G7D
		16QAM	1720.0 - 1770.0	0.154	21.88	24M0W7D
	15 MHz	$\pi/2$ BPSK	1717.5 - 1772.5	0.192	22.84	13M5G7D
		QPSK	1717.5 - 1772.5	0.195	22.90	14M2G7D
		16QAM	1717.5 - 1772.5	0.149	21.72	14M2W7D
	10 MHz	$\pi/2$ BPSK	1715.0 - 1775.0	0.196	22.92	8M99G7D
		QPSK	1715.0 - 1775.0	0.195	22.90	9M33G7D
		16QAM	1715.0 - 1775.0	0.154	21.87	9M34W7D
	5 MHz	$\pi/2$ BPSK	1712.5 - 1777.5	0.200	23.00	4M49G7D
		QPSK	1712.5 - 1777.5	0.199	22.99	4M51G7D
		16QAM	1712.5 - 1777.5	0.148	21.71	4M52W7D

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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	0.209	23.21	18M0G7D
		16QAM	1720.0 - 1770.0	0.178	22.51	18M0W7D
	15 MHz	QPSK	1717.5 - 1772.5	0.210	23.22	13M5G7D
		16QAM	1717.5 - 1772.5	0.175	22.44	13M5W7D
	10 MHz	QPSK	1715.0 - 1775.0	0.217	23.36	9M01G7D
		16QAM	1715.0 - 1775.0	0.187	22.73	9M01W7D
	5 MHz	QPSK	1712.5 - 1777.5	0.222	23.47	4M51G7D
		16QAM	1712.5 - 1777.5	0.183	22.63	4M50W7D
	3 MHz	QPSK	1711.5 - 1778.5	0.207	23.17	2M70G7D
		16QAM	1711.5 - 1778.5	0.186	22.68	2M71W7D
	1.4 MHz	QPSK	1710.7 - 1779.3	0.212	23.26	1M10G7D
		16QAM	1710.7 - 1779.3	0.178	22.50	1M11W7D

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1.0 INTRODUCTION

1.1 Scope

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

1.2 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.

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2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **Samsung Portable Tablet FCC ID: A3LSMX828U**. 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.: 2003M, 2085M, 18231

2.2 Device Capabilities

This device contains the following capabilities:

850/1700/1900 WCDMA/HSPA, Multi-band LTE, Multi-band 5G NR (FR1 and FR2), 802.11b/g/n/ac/ax WLAN, 802.11a/n/ac/ax UNII (5GHz and 6GHz), Bluetooth (1x, EDR, LE), Wireless Power Transfer

This device uses a tuner circuit that dynamically updates the antenna impedance parameters to optimize antenna performance for certain bands and modes of operation. The tuner for this device was set to simulate a "free space" condition where the transmit antenna is matched to the medium into which it is transmitting and, thus, the power is at its maximum level.

2.3 Test Configuration

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

2.4 Software and Firmware

Testing was performed on device(s) using software/firmware version X828USQU0AXFE 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.

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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:

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

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

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:

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

And

$$\text{EIRP}_{\text{[dBm]}} = E_{\text{[dB}\mu\text{V/m]}} + 20\log D - 104.8; \text{ where } D \text{ is the measurement distance in meters.}$$

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.

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4.0 MEASUREMENT UNCERTAINTY

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

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

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5.0 TEST EQUIPMENT CALIBRATION DATA

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

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
-	ETS	EMC Cable and Switch System	4/2/2024	Annual	4/2/2025	ETS
-	AP1	EMC Cable and Switch System	4/2/2024	Annual	4/2/2025	AP1
-	AP2	EMC Cable and Switch System	4/2/2024	Annual	4/2/2025	AP2
-	LTx2	Licensed Transmitter Cable Set	4/2/2024	Annual	4/2/2025	LTx2
-	LTx3	Licensed Transmitter Cable Set	4/2/2024	Annual	4/2/2025	LTx3
-	LTx5	Licensed Transmitter Cable Set	4/2/2024	Annual	4/2/2025	LTx5
Agilent	N9030A	50GHz PXA Signal Analyzer	4/23/2024	Annual	4/23/2025	US51350301
Anritsu	MT8821C	Radio Communication Analyzer	N/A			6201381794
Com-Power	AL-130R	Active Loop Antenna	2/22/2024	Biennial	2/22/2026	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	Triennial	7/5/2025	9203-2178
ETS Lindgren	3117	1-18 GHz DRG Horn (Medium)	2/22/2024	Biennial	2/22/2026	125518
ETS Lindgren	3164-08	Quad Ridge Horn Antenna	3/29/2023	Biennial	3/29/2025	128337
ETS Lindgren	3164-10	Quad Ridge Horn 400MHz - 10000MHz	7/13/2023	Biennial	7/13/2025	166283
ETS Lindgren	3816/2NM	LISN	8/11/2022	Biennial	8/11/2024	114451
Keysight Technologies	N9020A	MXA Signal Analyzer	4/11/2024	Annual	4/11/2025	MY54500644
Keysight Technologies	N9030A	PXA Signal Analyzer (44GHz)	8/29/2023	Annual	8/29/2024	MY49430494
Keysight Technologies	N9030A	PXA Signal Analyzer	8/7/2023	Annual	8/7/2024	MY54490576
Mini-Circuits	SSG-4000HP	Synthesized Signal Generator	N/A			11403100002
Rohde & Schwarz	CMW500	Radio Communication Tester	N/A			100976
Rohde & Schwarz	ESU26	EMI Test Receiver (26.5GHz)	9/25/2023	Annual	9/25/2024	100342
Rohde & Schwarz	ESU40	EMI Test Receiver (40GHz)	9/11/2023	Annual	9/11/2024	100348
Rohde & Schwarz	FSW26	Hz-26.5GHz Signal and Spectrum Analyzer	3/8/2024	Annual	3/8/2025	103187
Sunol	JB5	Bi-Log Antenna (30M - 5GHz)	8/30/2022	Biennial	8/30/2024	A051107

Table 5-1. Test Equipment

Notes:

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

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6.0 SAMPLE CALCULATIONS

Emission Designator

QPSK Modulation

Emission Designator = 8M62G7D

LTE BW = 8.62 MHz

G = Phase Modulation

7 = Quantized/Digital Info

D = Data transmission, telemetry, telecommand

QAM Modulation

Emission Designator = 8M45W7D

LTE BW = 8.45 MHz

W = Amplitude/Angle Modulated

7 = Quantized/Digital Info

D = Data transmission, telemetry, telecommand

Spurious Radiated Emission – LTE Band

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

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

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7.0 TEST RESULTS

7.1 Summary

Company Name: Samsung Electronics Co., Ltd.
 FCC ID: A3LSMX828U
 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	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, 17, 71; NR Band n12, n71)	2.1051, 27.53(g)	$\geq 43 + 10 \log (P[\text{Watts}])$ 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)	$\geq 43 + 10 \log (P[\text{Watts}])$ 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, 17, 71; NR Band n12, 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. ERP	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, 17, 71; NR Band n12, n71)	2.1053, 27.53(g)	$\geq 43 + 10 \log (P[\text{Watts}])$ 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)	$\geq 43 + 10 \log (P[\text{Watts}])$ 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 v2.3.0.

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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.

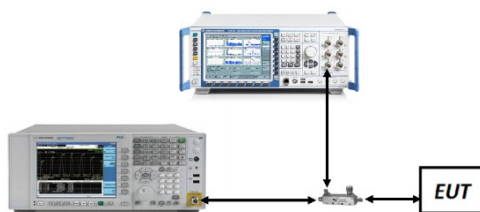


Figure 7-1. Test Instrument & Measurement Setup

Test Notes

1. Uplink carrier aggregation is only supported in this EUT while operating in Power Class 3.
2. 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.
3. All other conducted power measurements are contained in the RF exposure report for this filing.
4. 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.

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Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
20 MHz	QPSK	133222	673.0	1 / 0	24.86
		133297	680.5	1 / 0	24.63
		133372	688.0	1 / 0	24.29
	16-QAM	133297	680.5	1 / 0	24.03
15 MHz	QPSK	133197	670.5	1 / 0	24.83
		133297	680.5	1 / 0	24.54
		133397	690.5	1 / 0	24.29
	16-QAM	133297	680.5	1 / 0	23.87
10 MHz	QPSK	133172	668.0	1 / 0	24.95
		133297	680.5	1 / 0	24.55
		133422	693.0	1 / 0	24.24
	16-QAM	133422	693.0	1 / 0	23.56
5 MHz	QPSK	133147	665.5	1 / 0	24.81
		133297	680.5	1 / 0	24.49
		133447	695.5	1 / 0	24.44
	16-QAM	133447	695.5	1 / 0	23.47

Table 7-2. Conducted Power - LTE Band 71 – Ant1

Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
10 MHz	QPSK	23060	704.0	1 / 25	24.39
		23095	707.5	1 / 25	24.42
		23130	711.0	1 / 0	24.30
	16-QAM	23130	711.0	1 / 0	23.24
5 MHz	QPSK	23035	701.5	1 / 0	24.59
		23095	707.5	1 / 0	24.34
		23155	713.5	1 / 0	24.00
	16-QAM	23095	707.5	1 / 0	23.63
3 MHz	QPSK	23025	700.5	1 / 0	24.37
		23095	707.5	1 / 7	24.22
		23165	714.5	1 / 7	23.75
	16-QAM	23095	707.5	1 / 7	23.47
1.4 MHz	QPSK	23017	699.7	1 / 0	24.48
		23095	707.5	1 / 0	24.49
		23173	715.3	1 / 0	23.64
	16-QAM	23095	707.5	1 / 3	23.62

Table 7-3. Conducted Power - LTE Band 12 – Ant1

FCC ID: A3LSMX828U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
10 MHz	QPSK	23230	782.0	1 / 25	24.13
	16-QAM	23230	782.0	1 / 25	23.38
5 MHz	QPSK	23205	779.5	1 / 12	24.25
		23230	782.0	1 / 12	24.21
		23255	784.5	1 / 0	24.26
	16-QAM	23230	782.0	1 / 12	23.71

Table 7-4. Conducted Power - LTE Band 13 – Ant1

Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
20 MHz	QPSK	132072	1720.0	1 / 99	24.12
		132322	1745.0	1 / 50	24.34
		132572	1770.0	1 / 99	24.56
	16-QAM	132072	1720.0	1 / 99	23.23
15 MHz	QPSK	132047	1717.5	1 / 37	24.09
		132322	1745.0	1 / 74	24.24
		132597	1772.5	1 / 74	24.68
	16-QAM	132047	1717.5	1 / 37	23.54
10 MHz	QPSK	132022	1715.0	1 / 25	24.18
		132322	1745.0	1 / 25	24.30
		132622	1775.0	1 / 49	24.58
	16-QAM	132022	1715.0	1 / 25	23.47
5 MHz	QPSK	131997	1712.5	1 / 0	24.20
		132322	1745.0	1 / 24	24.31
		132647	1777.5	1 / 0	24.57
	16-QAM	131997	1712.5	1 / 0	23.56
3 MHz	QPSK	131987	1711.5	1 / 14	24.22
		132322	1745.0	1 / 0	24.29
		132657	1778.5	1 / 14	24.64
	16-QAM	131987	1711.5	1 / 14	23.34
1.4 MHz	QPSK	131979	1710.7	1 / 3	23.90
		132322	1745.0	1 / 0	24.36
		132665	1779.3	1 / 3	24.76
	16-QAM	131979	1710.7	1 / 5	23.37

Table 7-5. Conducted Power - LTE Band 66/4 – Ant1

FCC ID: A3LSMX828U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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Power State	Band	Bandwidth (PCC + SCC)	PCC					SCC					ULCATx. Power [dBm]
			Modulation	UL Channel	UL Frequency	UL # RB	UL RB Offset	Modulation	UL Channel	UL Frequency	UL # RB	UL RB Offset	
Max	LTE B66	20MHz + 20MHz	QPSK	132072	1720.0	1	99	QPSK	132270	1739.8	1	0	23.41
				132322	1745.0	1	99		132520	1764.8	1	0	23.67
				132572	1770.0	1	0		132374	1750.2	1	99	23.73
			QPSK	132572	1770	100	0	QPSK	132374	1750.2	100	0	22.05
			16-QAM	132572	1770	100	0	16-QAM	132374	1750.2	100	0	21.24
			64-QAM	132572	1770	100	0	64-QAM	132374	1750.2	100	0	21.12
			256-QAM	132572	1770	100	0	256-QAM	132374	1750.2	100	0	19.17

Table 7-6. Conducted Power - LTE Band 66/4 ULCA – Ant1

Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
20 MHz	$\pi/2$ BPSK	134600	673.0	1 / 1	24.94
		136100	680.5	1 / 1	24.84
		137600	688.0	1 / 1	24.43
	QPSK	134600	673.0	1 / 1	24.95
		136100	680.5	1 / 1	24.75
		137600	688.0	1 / 1	24.34
	16-QAM	137600	688.0	1 / 1	23.28
15 MHz	$\pi/2$ BPSK	134100	670.5	1 / 1	24.94
		136100	680.5	1 / 1	24.83
		138100	690.5	1 / 1	24.27
	QPSK	134100	670.5	1 / 1	24.95
		136100	680.5	1 / 1	24.59
		138100	690.5	1 / 1	24.17
	16-QAM	138100	690.5	1 / 1	23.03
10 MHz	$\pi/2$ BPSK	133600	668.0	1 / 1	24.94
		136100	680.5	1 / 1	24.76
		138600	693.0	1 / 26	24.33
	QPSK	133600	668.0	1 / 1	24.93
		136100	680.5	1 / 1	24.48
		138600	693.0	1 / 50	24.02
	16-QAM	138600	693.0	1 / 26	22.89
5 MHz	$\pi/2$ BPSK	133100	665.5	1 / 12	24.84
		136100	680.5	1 / 1	24.50
		139100	695.5	1 / 1	24.19
	QPSK	133100	665.5	1 / 12	24.90
		136100	680.5	1 / 12	24.38
		139100	695.5	1 / 1	24.08
	16-QAM	139100	695.5	1 / 1	22.83

Table 7-7. Conducted Power - NR Band n71 – Ant1

FCC ID: A3LSMX828U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
15 MHz	$\pi/2$ BPSK	340500	1702.5	1 / 39	24.15
	QPSK	340500	1702.5	1 / 39	24.25
	16-QAM	340500	1702.5	1 / 39	22.78
10 MHz	$\pi/2$ BPSK	340000	1700.0	1 / 1	24.11
		340500	1702.5	1 / 26	24.04
		341000	1705.0	1 / 26	24.13
	QPSK	340000	1700.0	1 / 50	24.22
		340500	1702.5	1 / 26	24.25
		341000	1705.0	1 / 1	24.15
	16-QAM	340000	1700.0	1 / 50	23.06
5 MHz	$\pi/2$ BPSK	339500	1697.5	1 / 12	24.13
		340500	1702.5	1 / 23	24.23
		341500	1707.5	1 / 1	24.34
	QPSK	339500	1697.5	1 / 23	24.18
		340500	1702.5	1 / 1	24.02
		341500	1707.5	1 / 12	24.19
	16-QAM	339500	1697.5	1 / 12	23.25

Table 7-8. Conducted Power - NR Band n70 – Ant1

FCC ID: A3LSMX828U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
15 MHz	$\pi/2$ BPSK	141300	706.5	1 / 39	24.22
		141500	707.5	1 / 39	24.14
		141700	708.5	1 / 39	24.16
	QPSK	141300	706.5	1 / 39	24.12
		141500	707.5	1 / 39	24.03
		141700	708.5	1 / 39	24.03
	16-QAM	141700	708.5	1 / 39	22.65
10 MHz	$\pi/2$ BPSK	140800	704.0	1 / 26	24.24
		141500	707.5	1 / 26	24.20
		142200	711.0	1 / 1	23.93
	QPSK	140800	704.0	1 / 1	24.20
		141500	707.5	1 / 26	24.06
		142200	711.0	1 / 1	24.23
	16-QAM	142200	711.0	1 / 1	22.67
5 MHz	$\pi/2$ BPSK	140300	701.5	1 / 1	24.14
		141500	707.5	1 / 12	24.23
		142700	713.5	1 / 12	23.89
	QPSK	140300	701.5	1 / 1	24.00
		141500	707.5	1 / 12	24.06
		142700	713.5	1 / 1	23.84
	16-QAM	140300	701.5	1 / 1	23.83

Table 7-9. Conducted Power - NR Band n12 – Ant1

FCC ID: A3LSMX828U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
40 MHz	$\pi/2$ BPSK	346000	1730.0	1 / 108	24.56
		349000	1745.0	1 / 108	24.51
		352000	1760.0	1 / 108	24.91
	QPSK	346000	1730.0	1 / 108	24.61
		349000	1745.0	1 / 108	24.61
		352000	1760.0	1 / 214	24.84
	16-QAM	349000	1745.0	1 / 108	23.31
35 MHz	$\pi/2$ BPSK	346500	1727.5	1 / 186	24.33
		349000	1745.0	1 / 1	24.11
		352500	1762.5	1 / 94	24.05
	QPSK	346500	1727.5	1 / 94	24.07
		349000	1745.0	1 / 94	24.14
		352500	1762.5	1 / 1	24.06
	16-QAM	349000	1745.0	1 / 94	23.13
30 MHz	$\pi/2$ BPSK	345000	1725.0	1 / 80	24.43
		349000	1745.0	1 / 80	24.59
		353000	1765.0	1 / 80	24.82
	QPSK	345000	1725.0	1 / 80	24.72
		349000	1745.0	1 / 80	24.64
		353000	1765.0	1 / 80	24.76
	16-QAM	349000	1745.0	1 / 80	23.54
20 MHz	$\pi/2$ BPSK	344000	1720.0	1 / 104	24.53
		349000	1745.0	1 / 104	24.64
		354000	1770.0	1 / 104	24.87
	QPSK	344000	1720.0	1 / 53	24.34
		349000	1745.0	1 / 104	24.70
		354000	1770.0	1 / 104	24.83
	16-QAM	349000	1745.0	1 / 104	23.50
15 MHz	$\pi/2$ BPSK	343500	1717.5	1 / 39	24.55
		349000	1745.0	1 / 77	24.54
		354500	1772.5	1 / 39	24.96
	QPSK	343500	1717.5	1 / 77	24.39
		349000	1745.0	1 / 77	24.67
		354500	1772.5	1 / 39	24.93
	16-QAM	349000	1745.0	1 / 39	23.34
10 MHz	$\pi/2$ BPSK	343000	1715.0	1 / 26	24.50
		349000	1745.0	1 / 50	24.62
		355000	1775.0	1 / 50	24.88
	QPSK	343000	1715.0	1 / 26	24.61
		349000	1745.0	1 / 26	24.66
		355000	1775.0	1 / 50	24.88
	16-QAM	343000	1715.0	1 / 26	23.59
5 MHz	$\pi/2$ BPSK	342500	1712.5	1 / 12	24.69
		349000	1745.0	1 / 12	24.70
		355500	1777.5	1 / 1	24.96
	QPSK	342500	1712.5	1 / 1	24.35
		349000	1745.0	1 / 12	24.76
		355500	1777.5	1 / 12	24.96
	16-QAM	349000	1745.0	1 / 12	23.33

Table 7-10. Conducted Power - NR Band n66 – Ant1

FCC ID: A3LSMX828U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
20 MHz	QPSK	132072	1720.0	1 / 0	24.08
		132322	1745.0	1 / 99	24.04
		132572	1770.0	1 / 50	24.01
	16-QAM	132072	1720.0	1 / 0	23.66
15 MHz	QPSK	132047	1717.5	1 / 0	24.09
		132322	1745.0	1 / 0	23.98
		132597	1772.5	1 / 37	24.07
	16-QAM	132322	1745.0	1 / 0	23.50
10 MHz	QPSK	132022	1715.0	1 / 0	24.23
		132322	1745.0	1 / 49	24.14
		132622	1775.0	1 / 0	24.09
	16-QAM	132322	1745.0	1 / 49	23.79
5 MHz	QPSK	131997	1712.5	1 / 12	24.33
		132322	1745.0	1 / 12	24.13
		132647	1777.5	1 / 12	24.14
	16-QAM	131997	1712.5	1 / 12	23.78
3 MHz	QPSK	131987	1711.5	1 / 0	24.04
		132322	1745.0	1 / 14	23.93
		132657	1778.5	1 / 7	24.02
	16-QAM	132322	1745.0	1 / 14	23.75
1.4 MHz	QPSK	131979	1710.7	1 / 0	24.12
		132322	1745.0	1 / 0	23.99
		132665	1779.3	1 / 0	23.98
	16-QAM	131979	1710.7	1 / 0	23.66

Table 7-11. Conducted Power - LTE Band 66/4 - Ant2

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

Test Setup

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

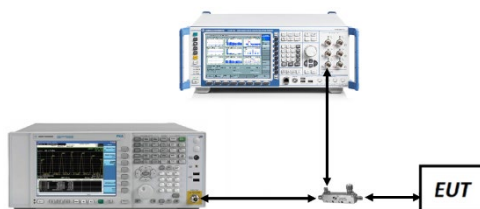


Figure 7-2. Test Instrument & Measurement Setup

Test Notes

None.

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Mode	Bandwidth	Modulation	OBW [MHz]
WCDMA-AWS	5MHz	GMSK	4.174
LTE-B71	20MHz	QPSK	18.00
		16QAM	18.02
	15MHz	QPSK	13.60
		16QAM	13.53
	10MHz	QPSK	9.02
		16QAM	8.99
	5MHz	QPSK	4.50
		16QAM	4.52
LTE-B12	10MHz	QPSK	8.98
		16QAM	8.94
	5MHz	QPSK	4.51
		16QAM	4.51
	3MHz	QPSK	2.70
		16QAM	2.71
	1.4MHz	QPSK	1.09
		16QAM	1.10
LTE-B13	10MHz	QPSK	9.01
		16QAM	8.94
	5MHz	QPSK	4.51
		16QAM	4.51
LTE-B66-4	20MHz	QPSK	18.00
		16QAM	17.94
	15MHz	QPSK	13.45
		16QAM	13.44
	10MHz	QPSK	9.01
		16QAM	8.98
	5MHz	QPSK	4.50
		16QAM	4.51
	3MHz	QPSK	2.70
		16QAM	2.71
	1.4MHz	QPSK	1.10
		16QAM	1.10

Table 7-12. Occupied Bandwidth Results – Ant1

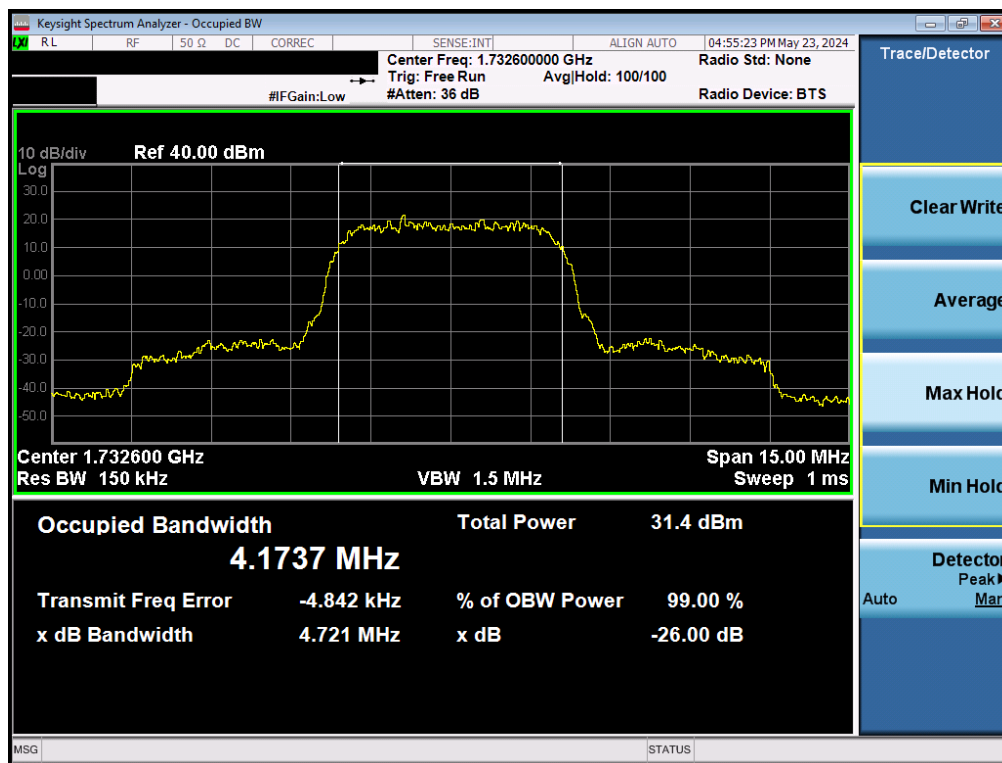
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Mode	Bandwidth	Modulation	OBW [MHz]
NR-n12	15MHz	$\pi/2$ BPSK	13.48
		QPSK	14.13
		16QAM	14.14
	10MHz	$\pi/2$ BPSK	8.99
		QPSK	9.33
		16QAM	9.31
	5MHz	$\pi/2$ BPSK	4.48
		QPSK	4.50
		16QAM	4.51
NR-n71	20MHz	$\pi/2$ BPSK	18.03
		QPSK	19.14
		16QAM	19.11
	15MHz	$\pi/2$ BPSK	13.54
		QPSK	14.24
		16QAM	14.22
	10MHz	$\pi/2$ BPSK	9.01
		QPSK	9.41
		16QAM	9.37
	5MHz	$\pi/2$ BPSK	4.49
		QPSK	4.52
		16QAM	4.51
NR-n70	15MHz	$\pi/2$ BPSK	13.48
		QPSK	14.13
		16QAM	14.16
	10MHz	$\pi/2$ BPSK	9.02
		QPSK	9.33
		16QAM	9.32
	5MHz	$\pi/2$ BPSK	4.49
		QPSK	4.55
		16QAM	4.49
NR-n66	40MHz	$\pi/2$ BPSK	38.80
		QPSK	38.75
		16QAM	38.79
	35MHz	$\pi/2$ BPSK	32.32
		QPSK	33.74
		16QAM	33.68
	30MHz	$\pi/2$ BPSK	28.64
		QPSK	28.63
		16QAM	28.68
	25MHz	$\pi/2$ BPSK	23.04
		QPSK	23.93
		16QAM	24.01
	20MHz	$\pi/2$ BPSK	17.98
		QPSK	9.06
		16QAM	18.97
	15MHz	$\pi/2$ BPSK	13.49
		QPSK	14.16
		16QAM	14.21
	10MHz	$\pi/2$ BPSK	8.99
		QPSK	9.33
		16QAM	9.34
	5MHz	$\pi/2$ BPSK	4.49
		QPSK	4.51
		16QAM	4.52

Table 7-13. Occupied Bandwidth Results – Ant1

FCC ID: A3LSMX828U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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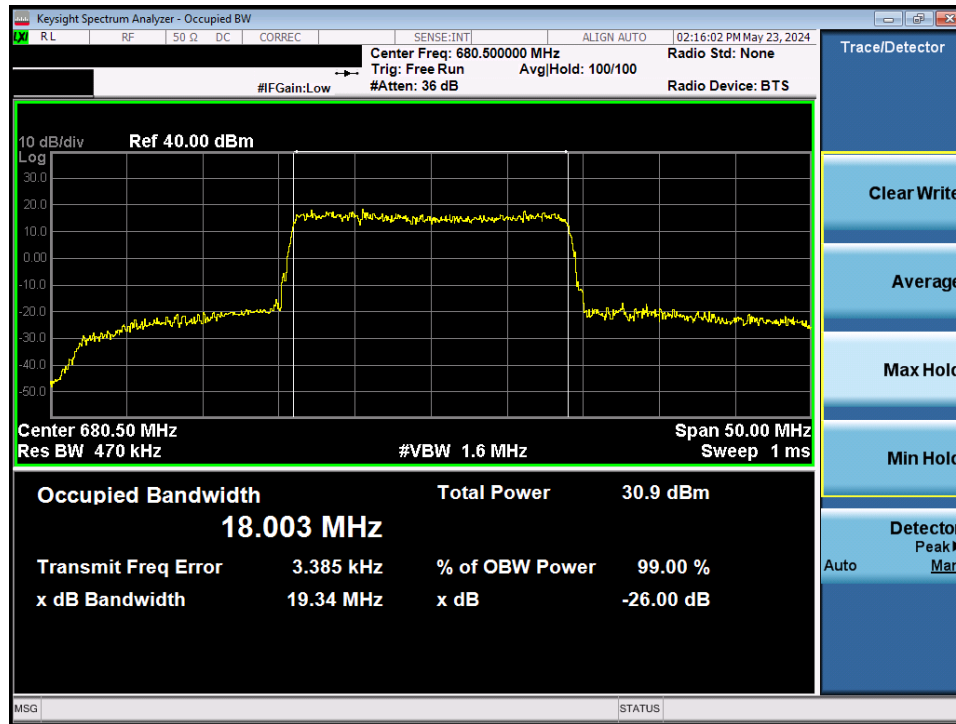
WCDMA AWS – ANT1



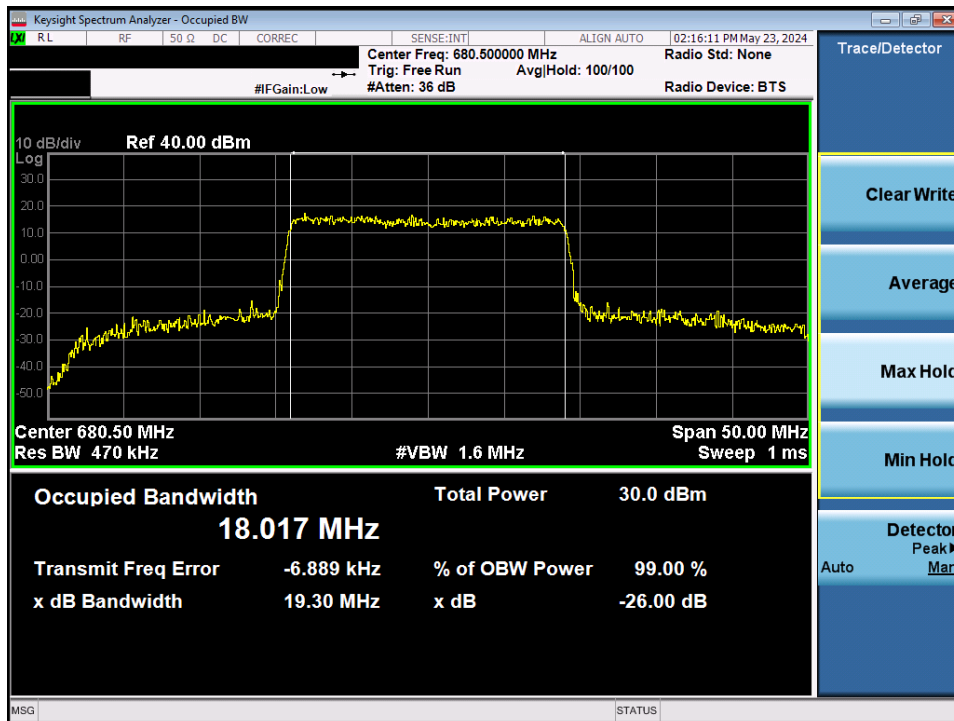
Plot 7-1. Occupied Bandwidth Plot (WCDMA, Ch. 1413 – ANT1)

FCC ID: A3LSMX828U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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LTE Band 71 – ANT1

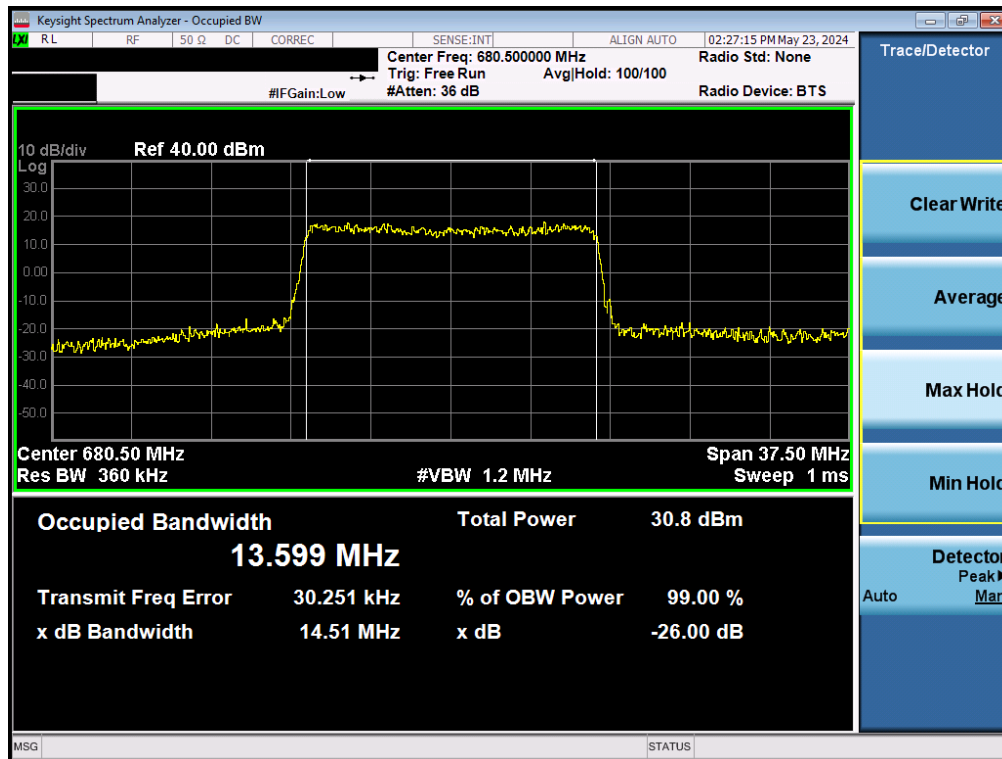


Plot 7-2. Occupied Bandwidth Plot (LTE Band 71 - 20MHz QPSK - Full RB – ANT1)

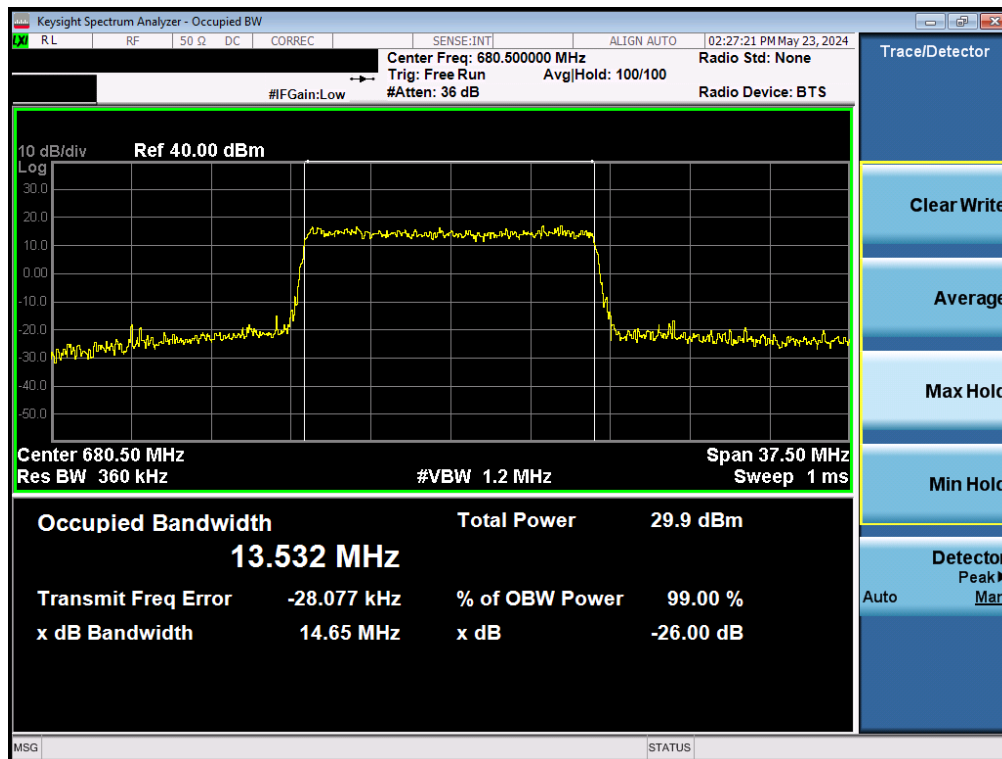


Plot 7-3. Occupied Bandwidth Plot (LTE Band 71 - 20MHz 16-QAM - Full RB – ANT1)

FCC ID: A3LSMX828U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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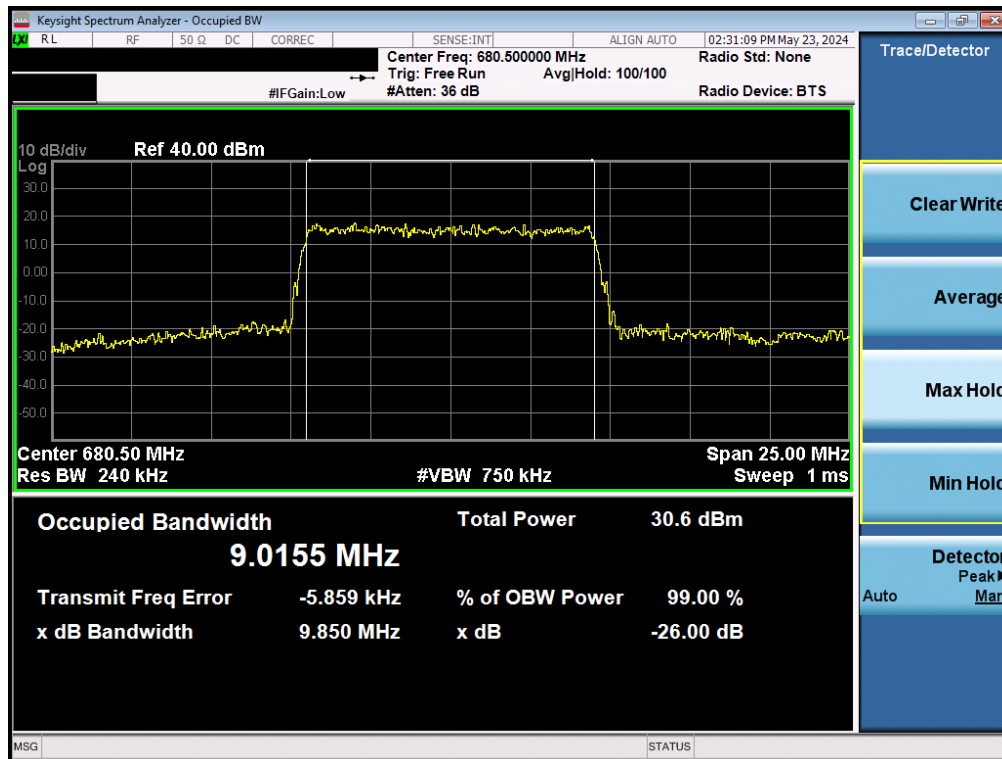


Plot 7-4. Occupied Bandwidth Plot (LTE Band 71 - 15MHz QPSK - Full RB – ANT1)

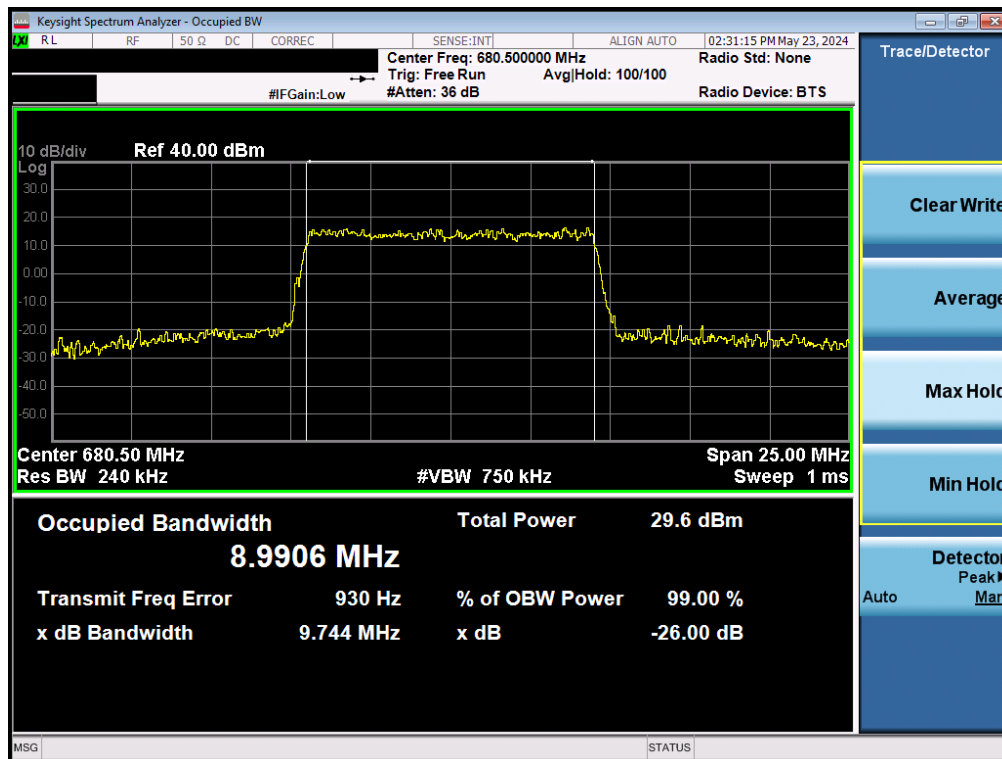


Plot 7-5. Occupied Bandwidth Plot (LTE Band 71 - 15MHz 16-QAM - Full RB – ANT1)

FCC ID: A3LSMX828U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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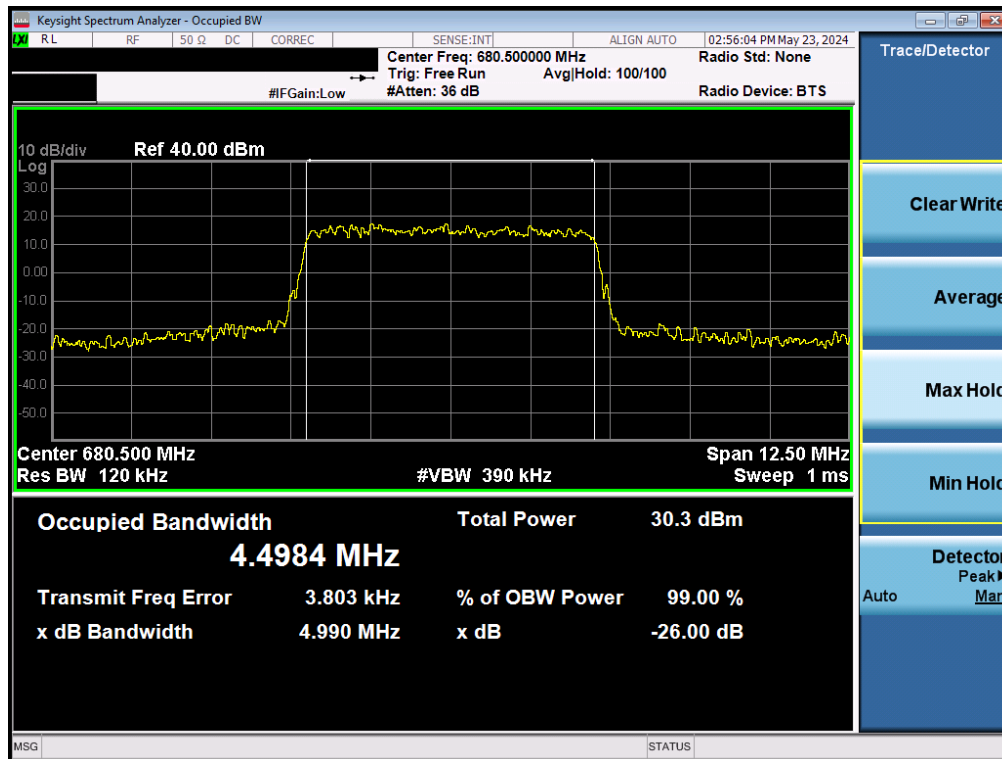


Plot 7-6. Occupied Bandwidth Plot (LTE Band 71 - 10MHz QPSK - Full RB - ANT1)

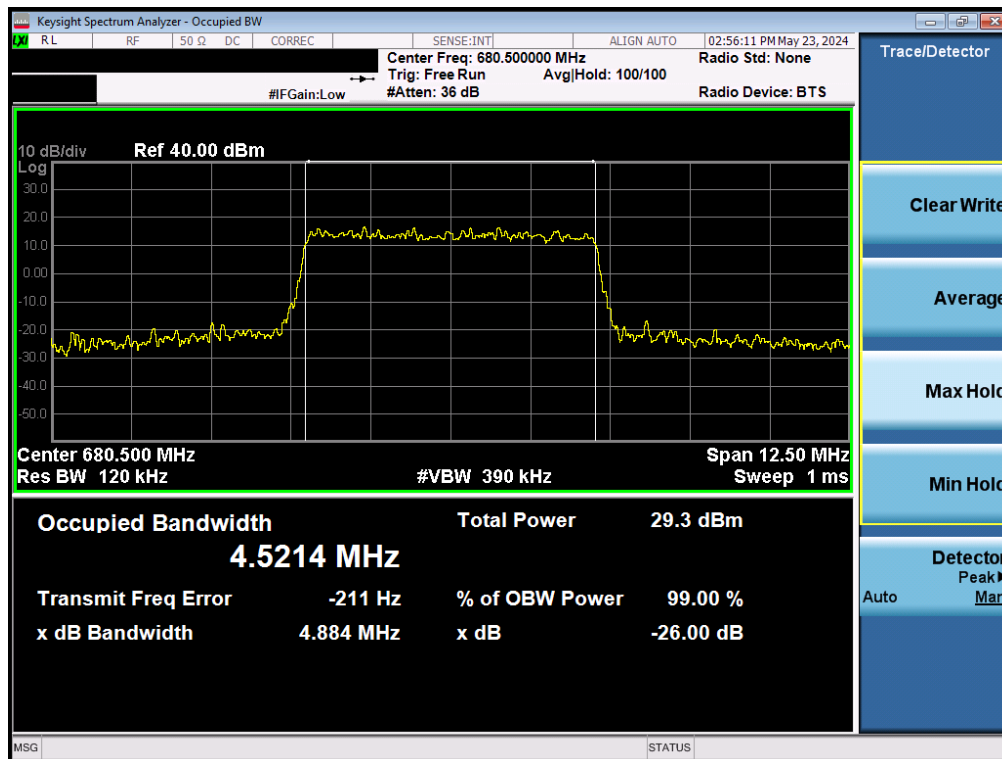


Plot 7-7. Occupied Bandwidth Plot (LTE Band 71 - 10MHz 16-QAM - Full RB - ANT1)

FCC ID: A3LSMX828U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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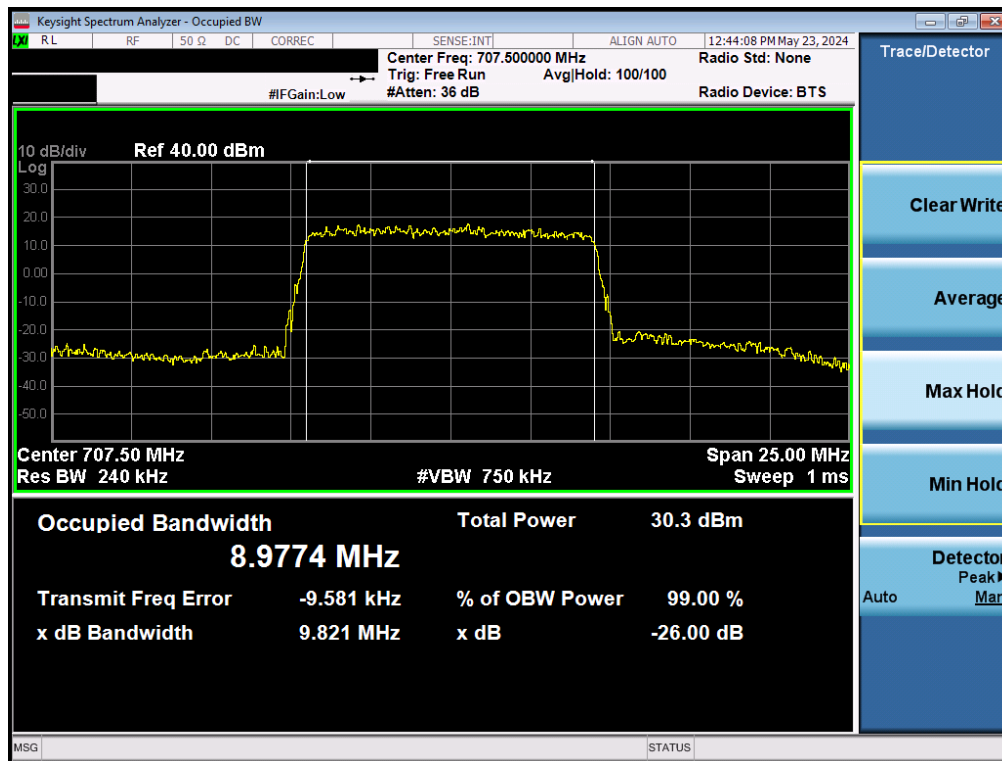
Plot 7-8. Occupied Bandwidth Plot (LTE Band 71 - 5MHz QPSK - Full RB – ANT1)



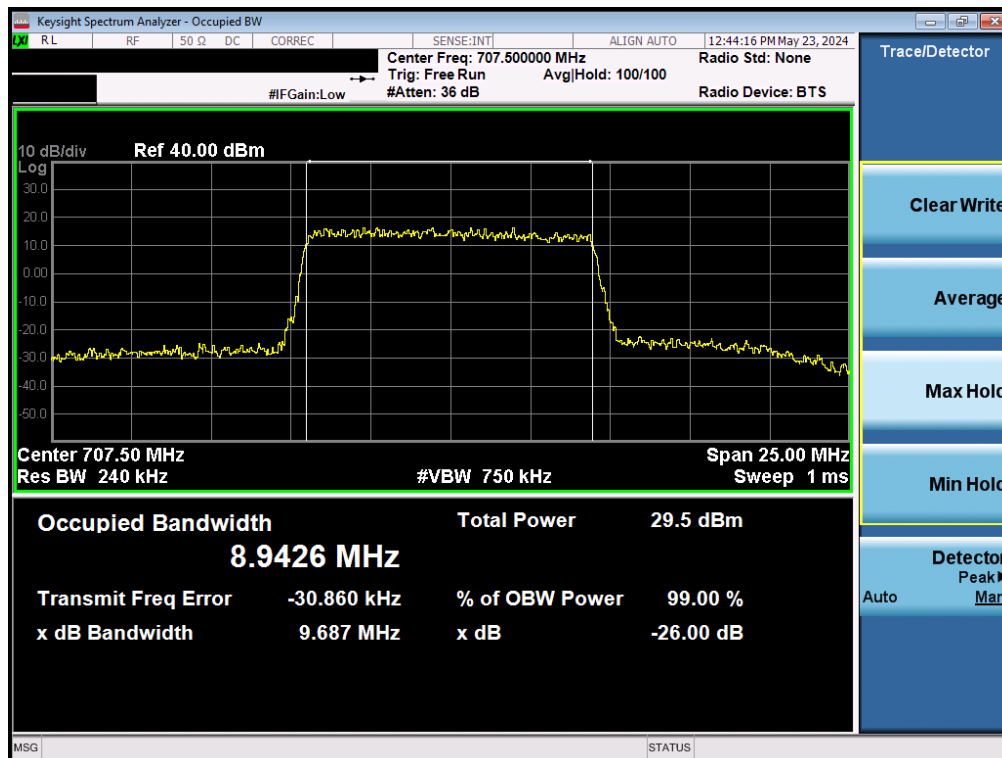
Plot 7-9. Occupied Bandwidth Plot (LTE Band 71 - 5MHz 16-QAM - Full RB – ANT1)

FCC ID: A3LSMX828U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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LTE Band 12 – ANT1

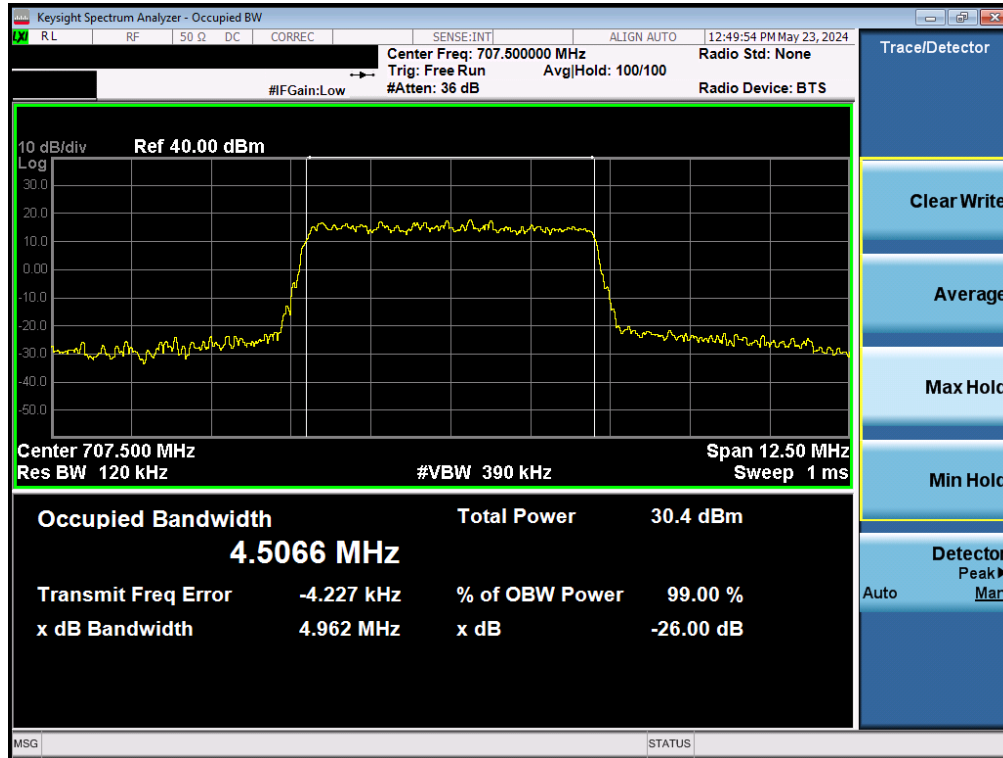


Plot 7-10. Occupied Bandwidth Plot (LTE Band 12 - 10MHz QPSK - Full RB – ANT1)

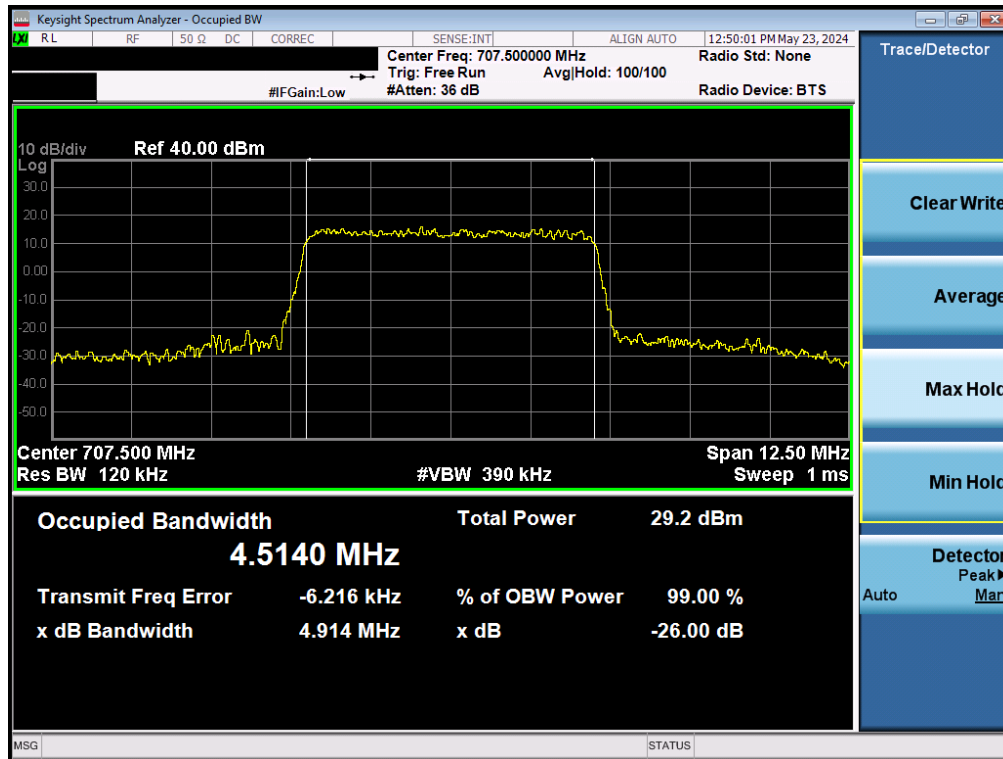


Plot 7-11. Occupied Bandwidth Plot (LTE Band 12 - 10MHz 16-QAM - Full RB – ANT1)

FCC ID: A3LSMX828U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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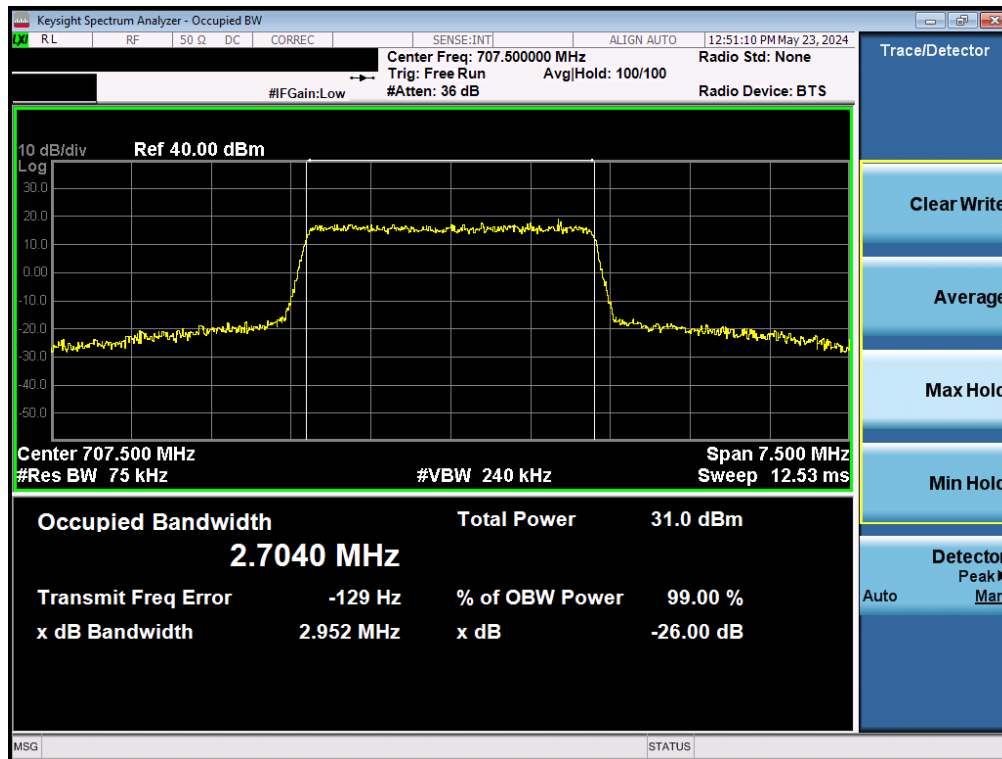


Plot 7-12. Occupied Bandwidth Plot (LTE Band 12 - 5MHz QPSK - Full RB - ANT1)

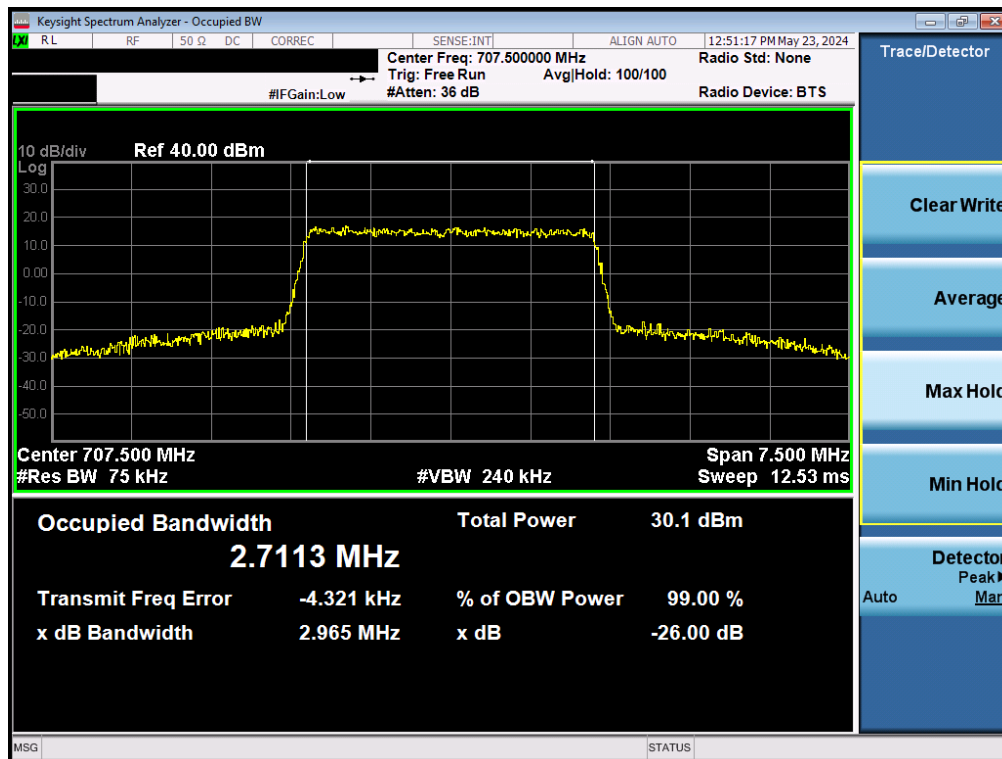


Plot 7-13. Occupied Bandwidth Plot (LTE Band 12 - 5MHz 16-QAM - Full RB - ANT1)

FCC ID: A3LSMX828U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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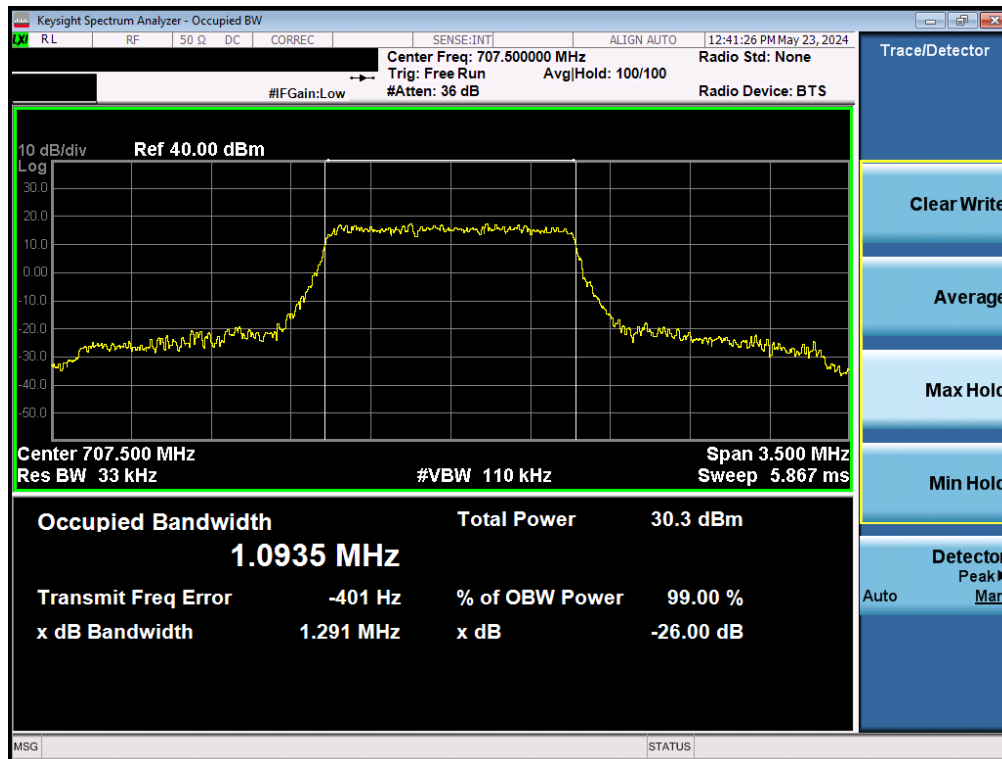


Plot 7-14. Occupied Bandwidth Plot (LTE Band 12 - 3MHz QPSK - Full RB - ANT1)

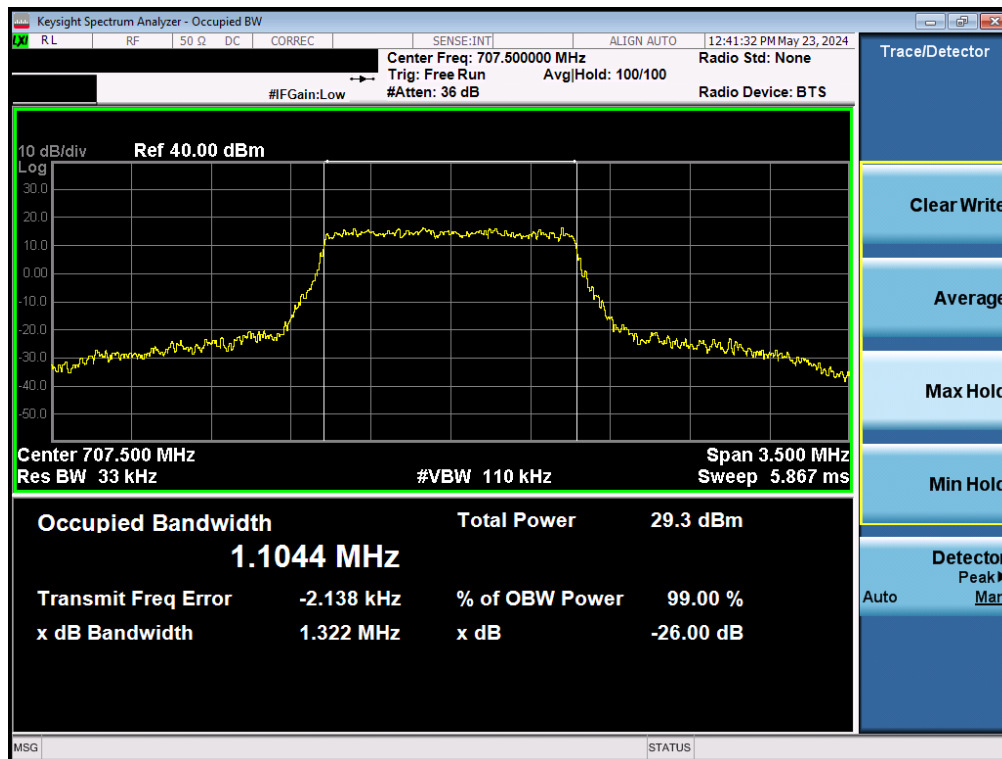


Plot 7-15. Occupied Bandwidth Plot (LTE Band 12 - 3MHz 16-QAM - Full RB - ANT1)

FCC ID: A3LSMX828U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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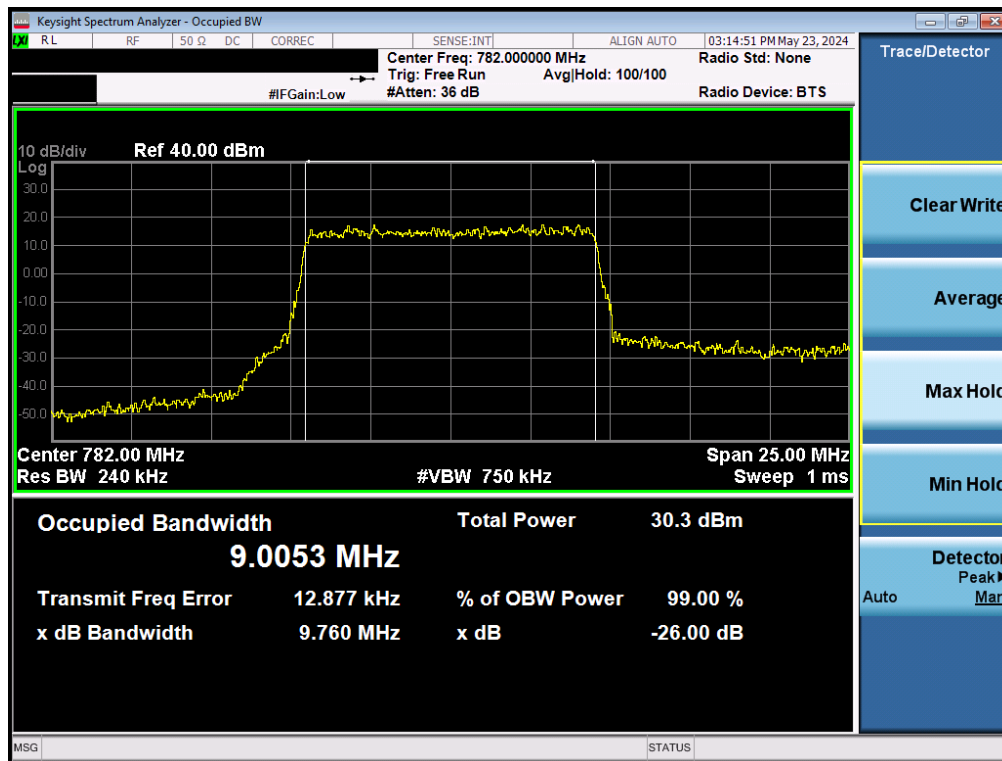
Plot 7-16. Occupied Bandwidth Plot (LTE Band 12 – 1.4MHz QPSK - Full RB – ANT1)



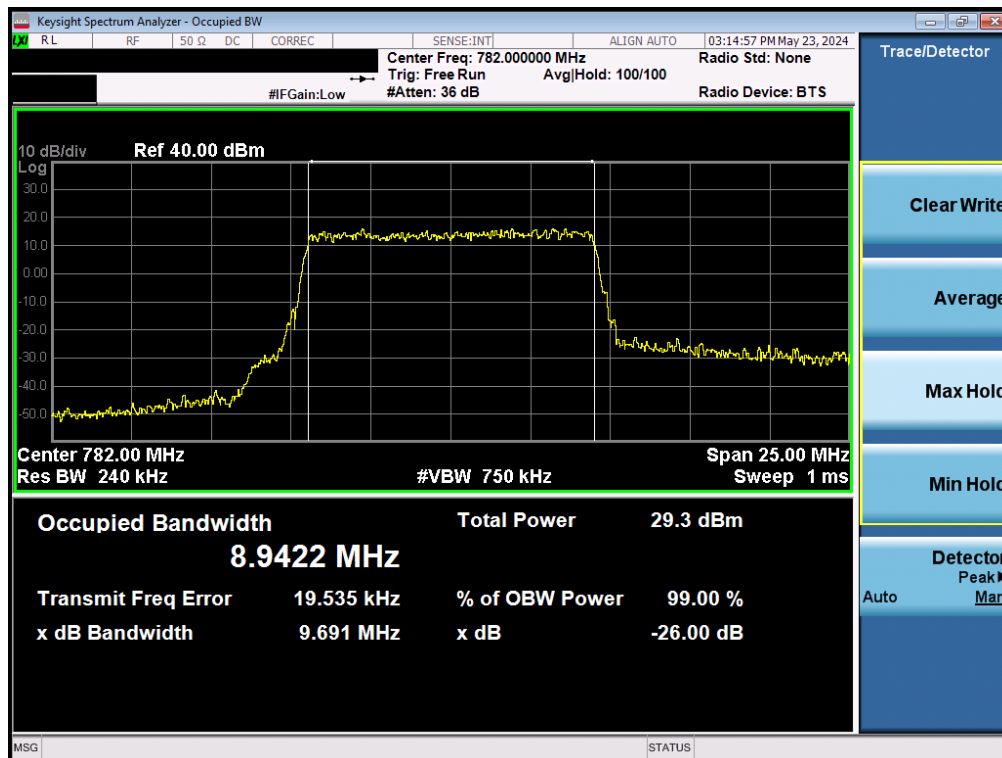
Plot 7-17. Occupied Bandwidth Plot (LTE Band 12 – 1.4MHz 16-QAM - Full RB – ANT1)

FCC ID: A3LSMX828U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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LTE Band 13 – ANT1

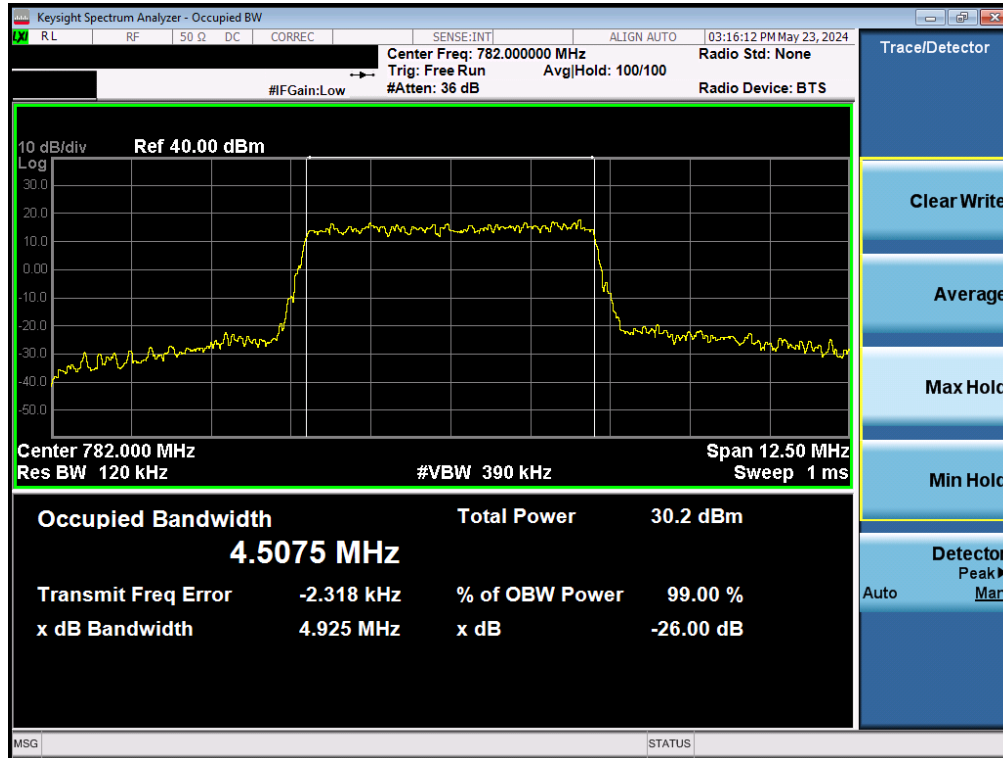


Plot 7-18. Occupied Bandwidth Plot (LTE Band 13 - 10MHz QPSK - Full RB – ANT1)

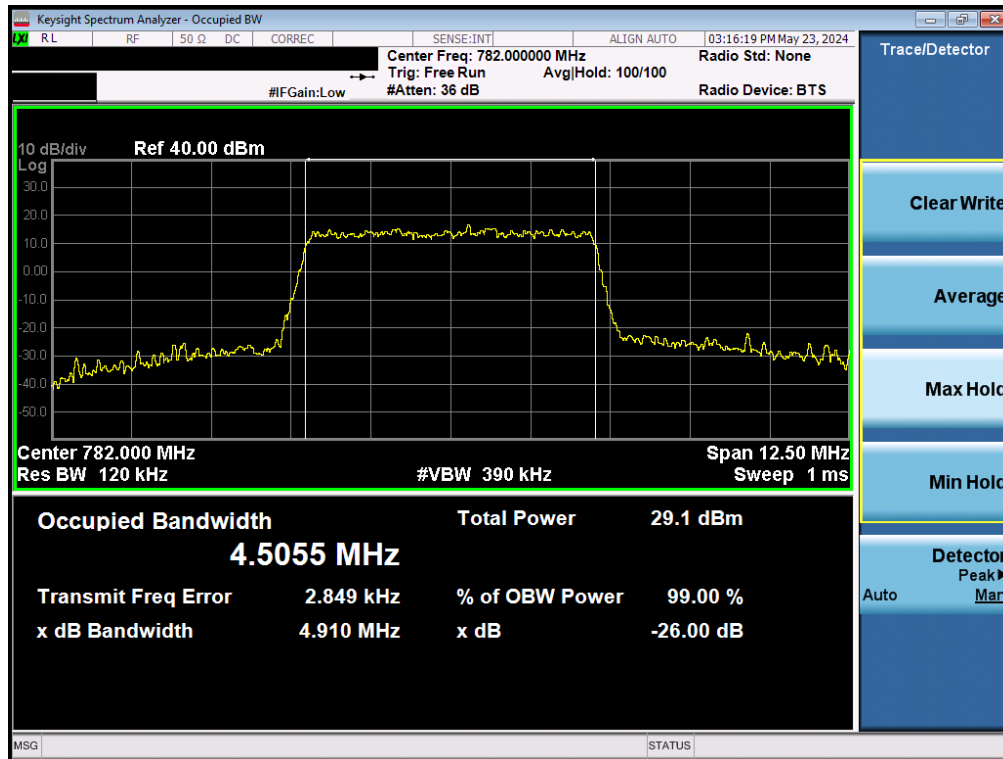


Plot 7-19. Occupied Bandwidth Plot (LTE Band 13 - 10MHz 16-QAM - Full RB – ANT1)

FCC ID: A3LSMX828U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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Plot 7-20. Occupied Bandwidth Plot (LTE Band 13 - 5MHz QPSK - Full RB - ANT1)



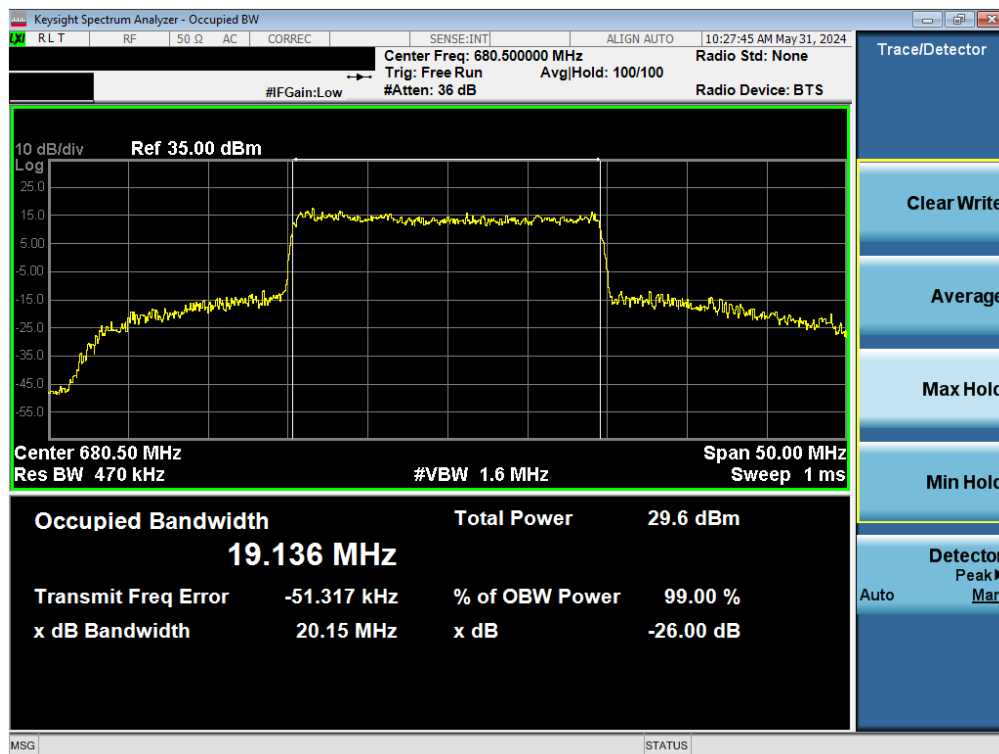
Plot 7-21. Occupied Bandwidth Plot (LTE Band 13 - 5MHz 16-QAM - Full RB - ANT1)

FCC ID: A3LSMX828U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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NR Band n71 – ANT1

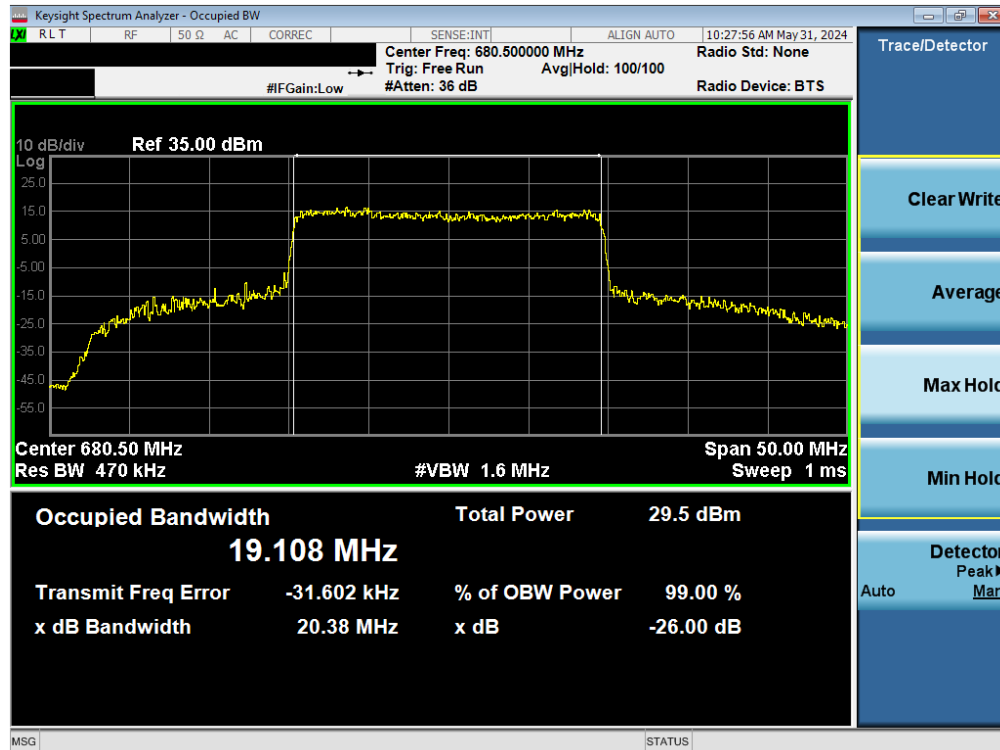


Plot 7-22. Occupied Bandwidth Plot (NR Band n71 - 20MHz DFT-s-OFDM BPSK - Full RB – ANT1)

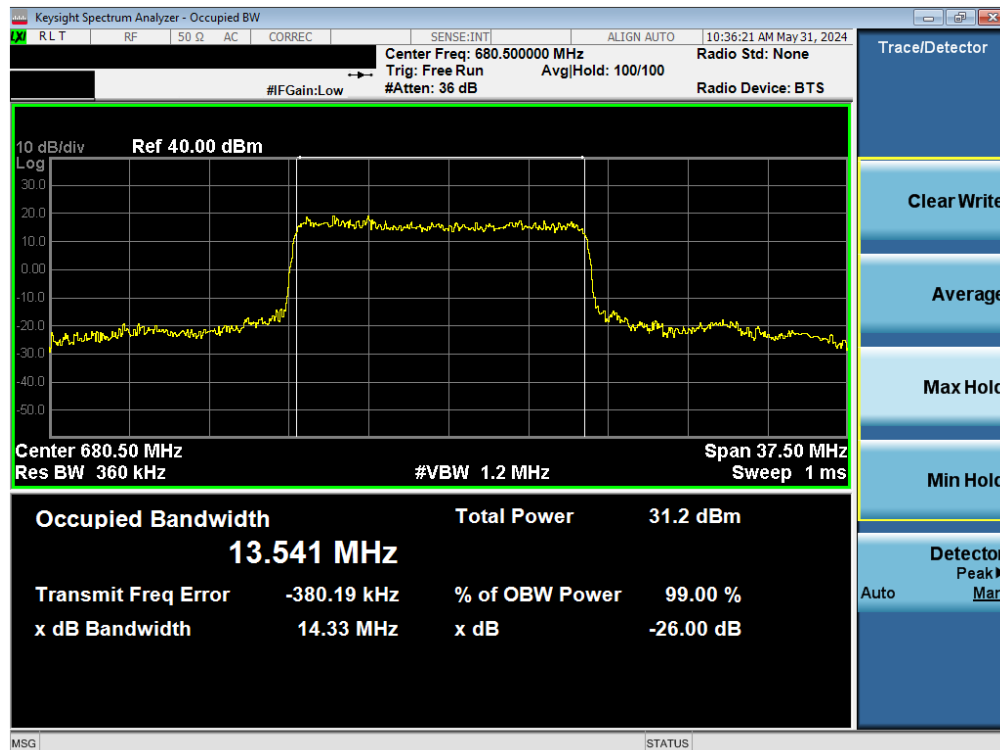


Plot 7-23. Occupied Bandwidth Plot (NR Band n71 - 20MHz CP-OFDM QPSK - Full RB – ANT1)

FCC ID: A3LSMX828U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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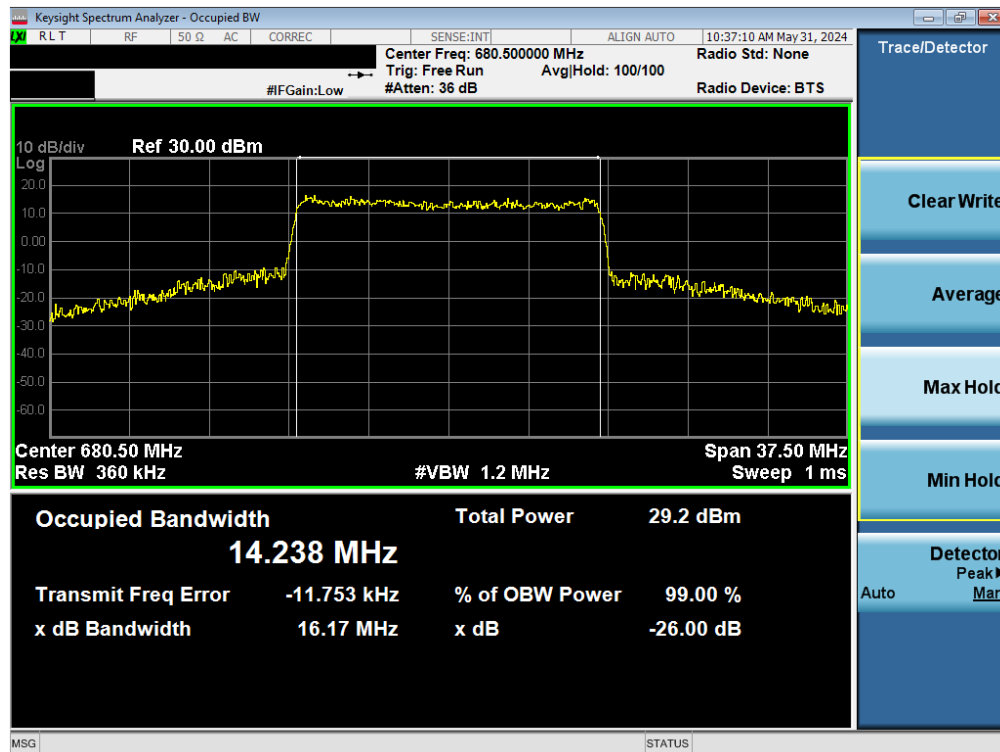


Plot 7-24. Occupied Bandwidth Plot (NR Band n71 - 20MHz CP-OFDM 16-QAM - Full RB - ANT1)

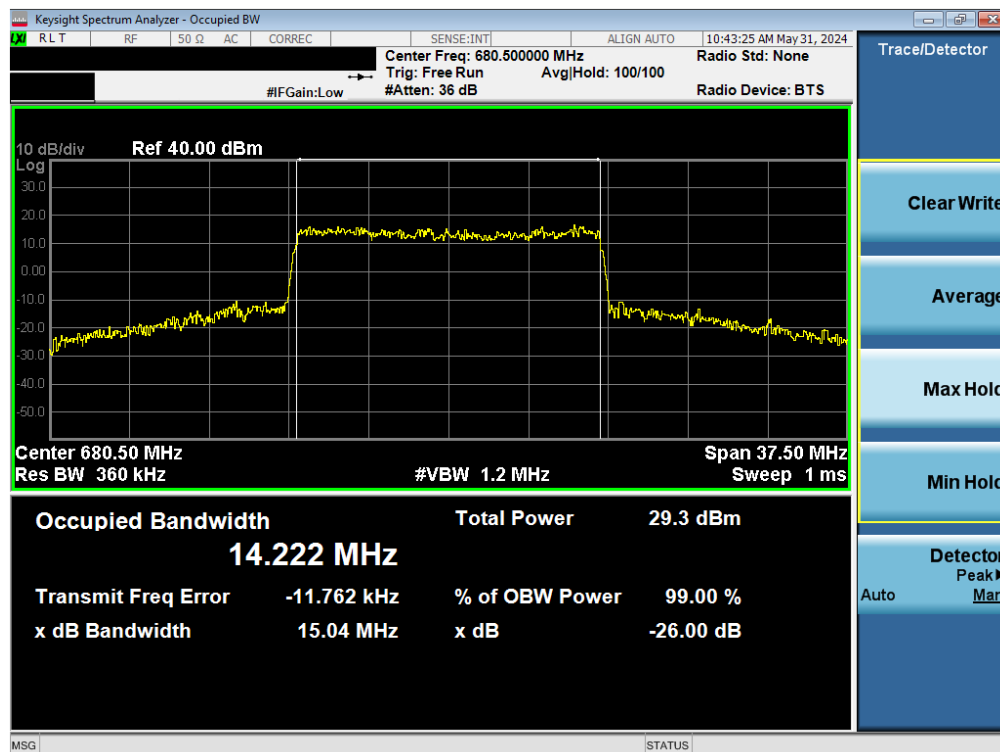


Plot 7-25. Occupied Bandwidth Plot (NR Band n71 - 15MHz DFT-s-OFDM BPSK - Full RB - ANT1)

FCC ID: A3LSMX828U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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Plot 7-26. Occupied Bandwidth Plot (NR Band n71 - 15MHz QPSK - Full RB – ANT1)

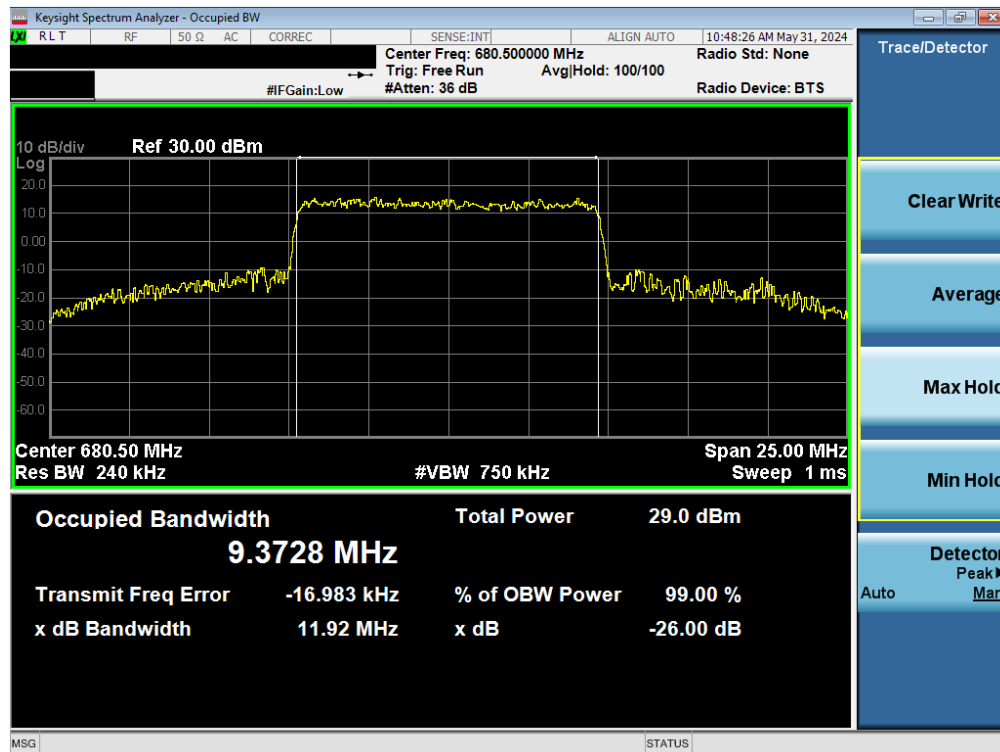


Plot 7-27. Occupied Bandwidth Plot (NR Band n71 - 15MHz CP-OFDM 16-QAM - Full RB – ANT1)

FCC ID: A3LSMX828U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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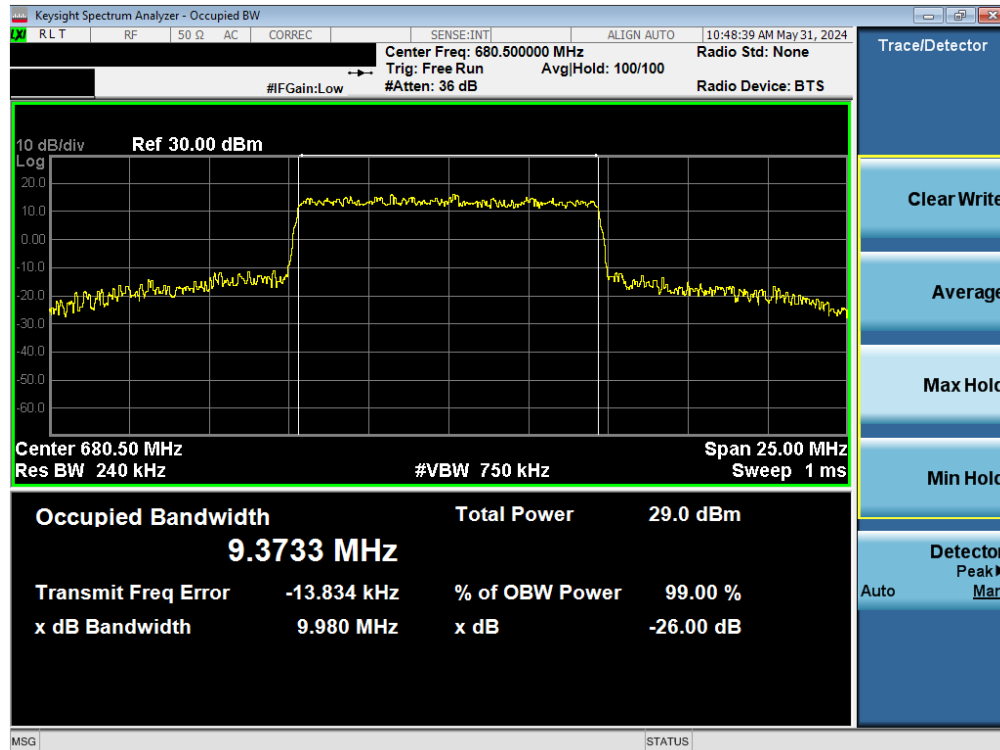


Plot 7-28. Occupied Bandwidth Plot (NR Band n71 - 10MHz DFT-s-OFDM BPSK - Full RB – ANT1)

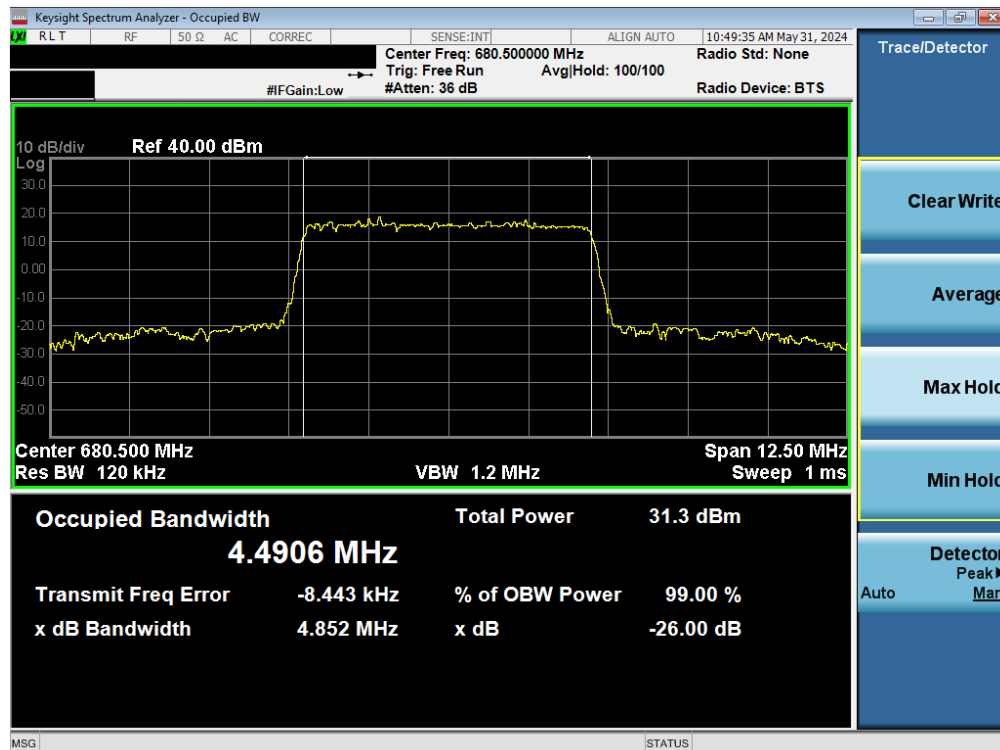


Plot 7-29. Occupied Bandwidth Plot (NR Band n71 - 10MHz CP-OFDM QPSK - Full RB – ANT1)

FCC ID: A3LSMX828U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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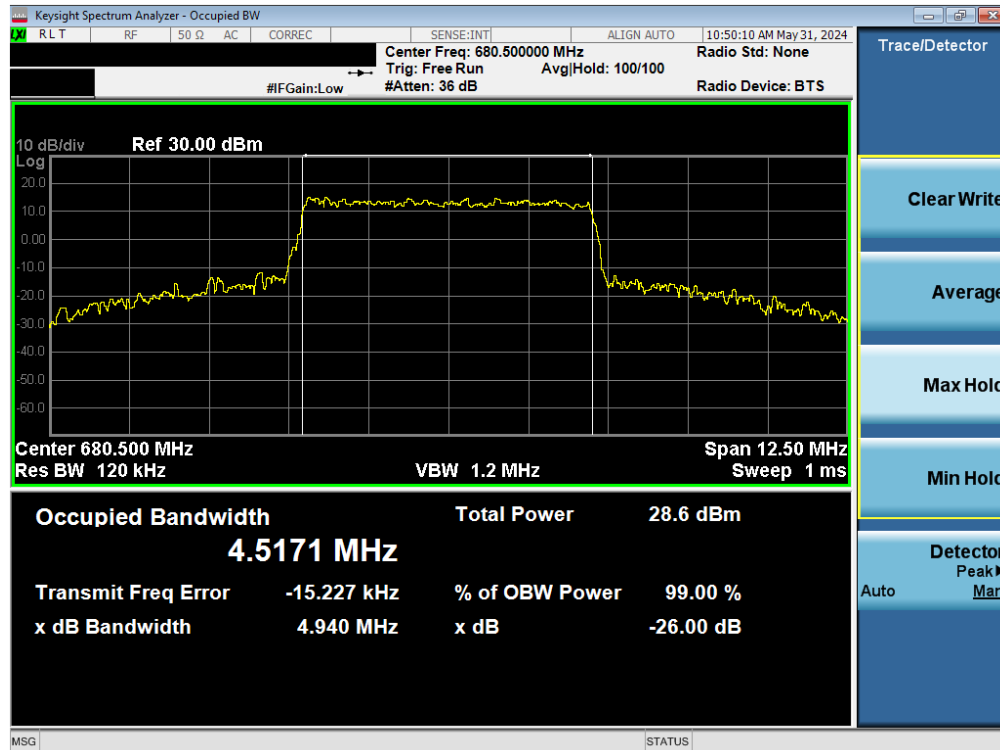


Plot 7-30. Occupied Bandwidth Plot (NR Band n71 - 10MHz CP-OFDM 16-QAM - Full RB – ANT1)

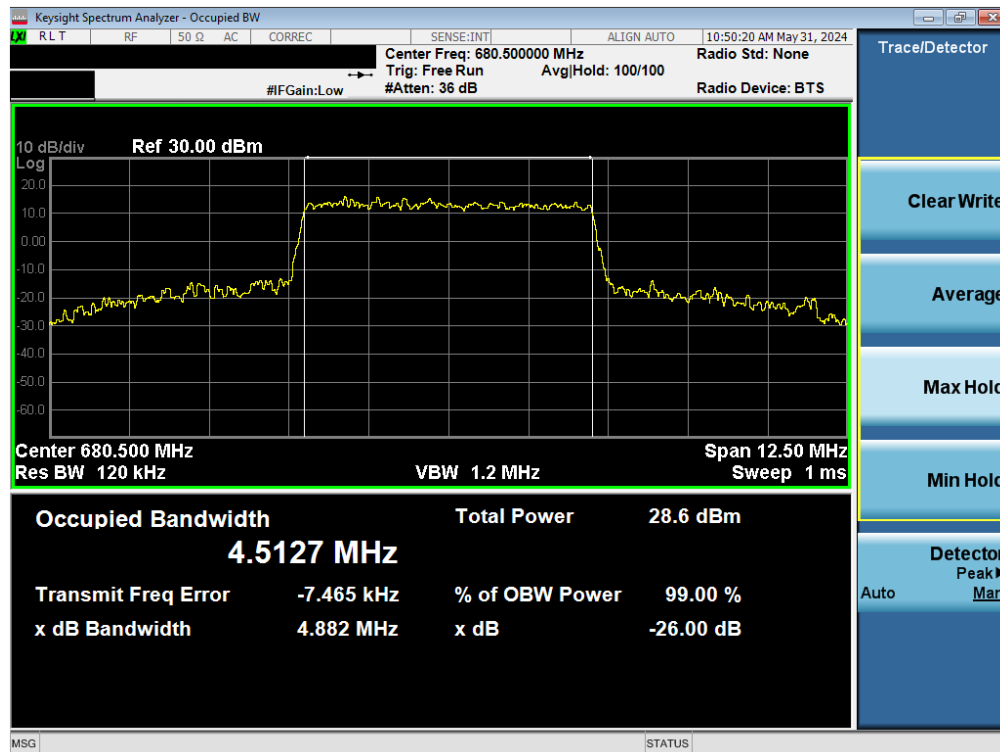


Plot 7-31. Occupied Bandwidth Plot (NR Band n71 - 5MHz DFT-s-OFDM BPSK - Full RB – ANT1)

FCC ID: A3LSMX828U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2405140039-02.A3L	Test Dates: 5/23/2024 - 6/13/2024	EUT Type: Portable Tablet	Page 39 of 186



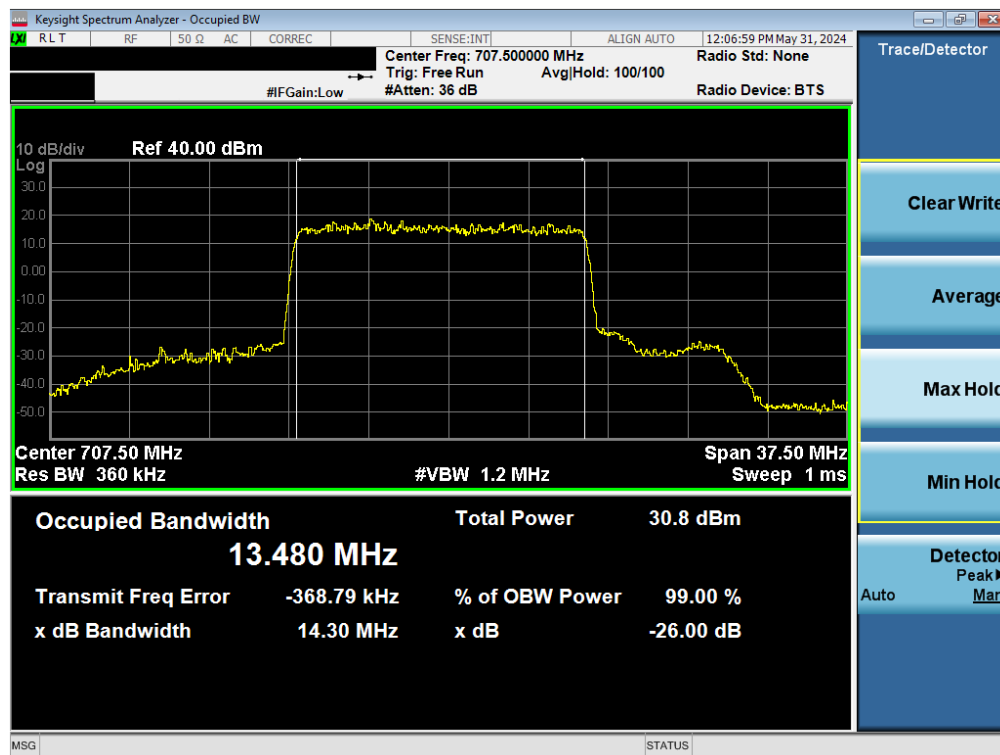
Plot 7-32. Occupied Bandwidth Plot (NR Band n71 - 5MHz CP-OFDM QPSK - Full RB – ANT1)



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

FCC ID: A3LSMX828U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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NR Band n12 – ANT1

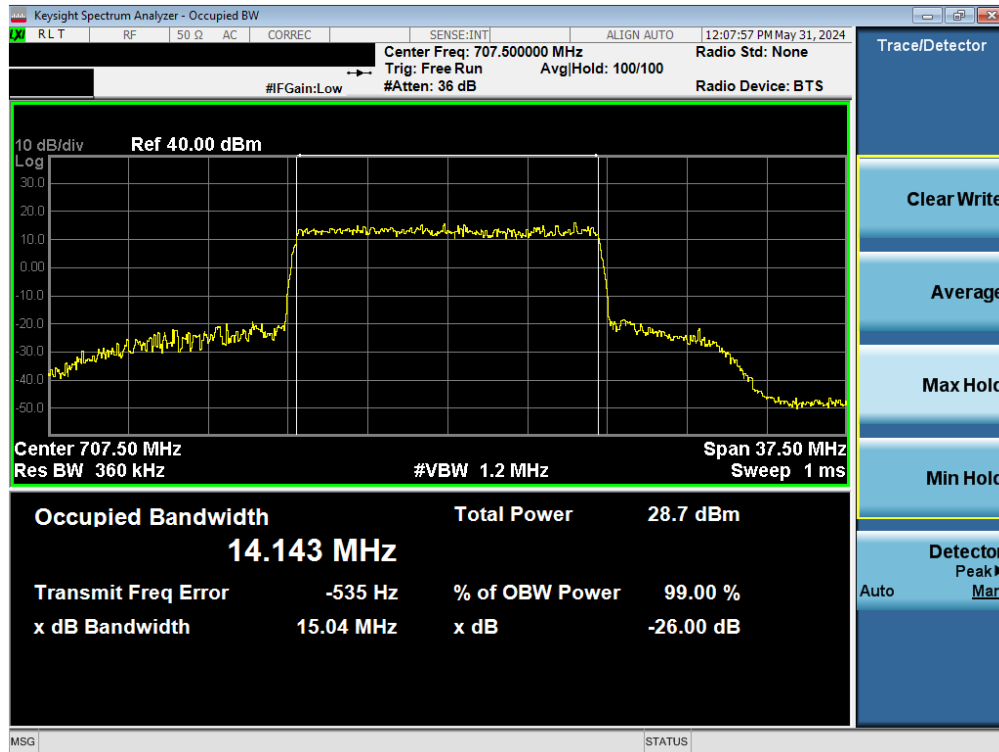


Plot 7-34. Occupied Bandwidth Plot (NR Band n12 - 15MHz DFT-s-OFDM BPSK - Full RB – ANT1)

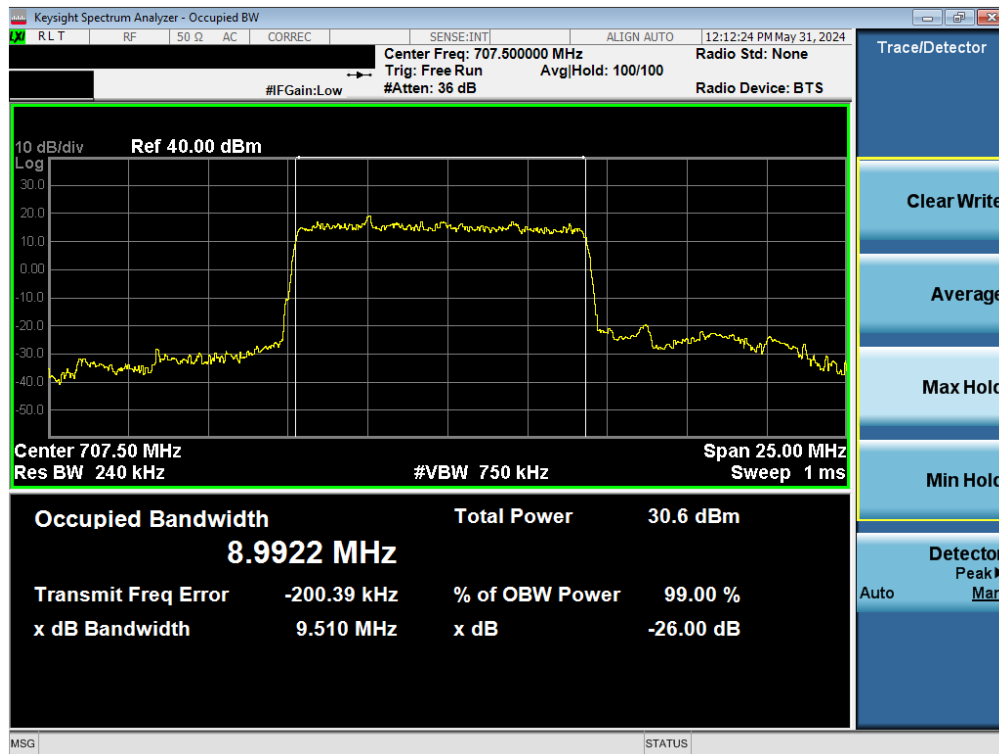


Plot 7-35. Occupied Bandwidth Plot (NR Band n12 - 15MHz QPSK - Full RB – ANT1)

FCC ID: A3LSMX828U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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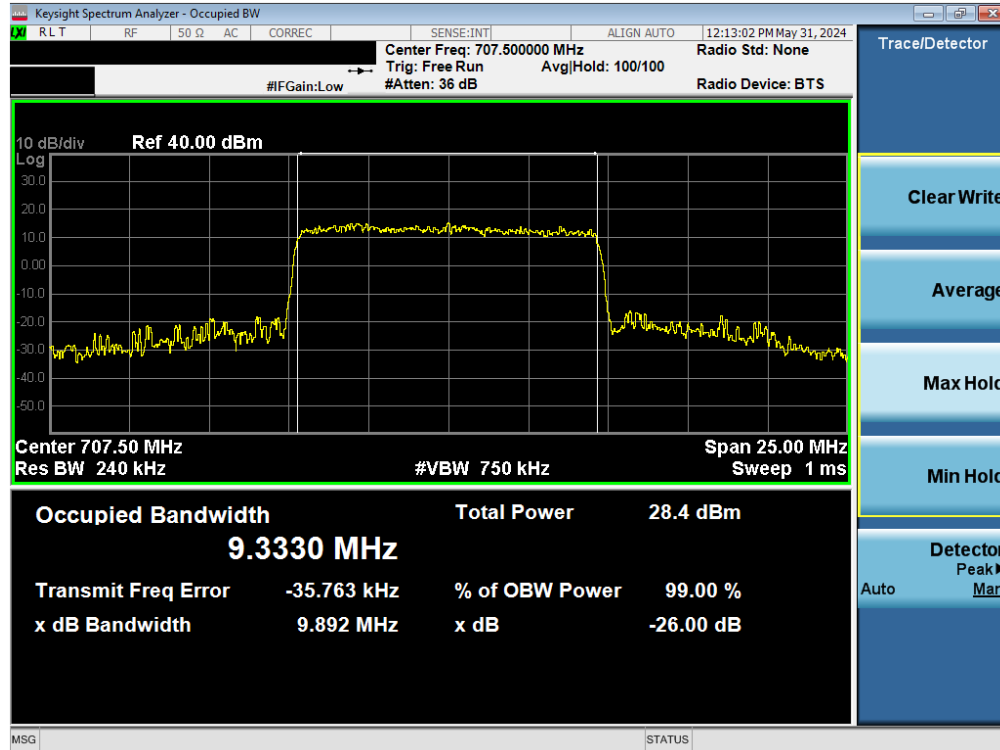


Plot 7-36. Occupied Bandwidth Plot (NR Band n12 - 15MHz CP-OFDM 16-QAM - Full RB – ANT1)

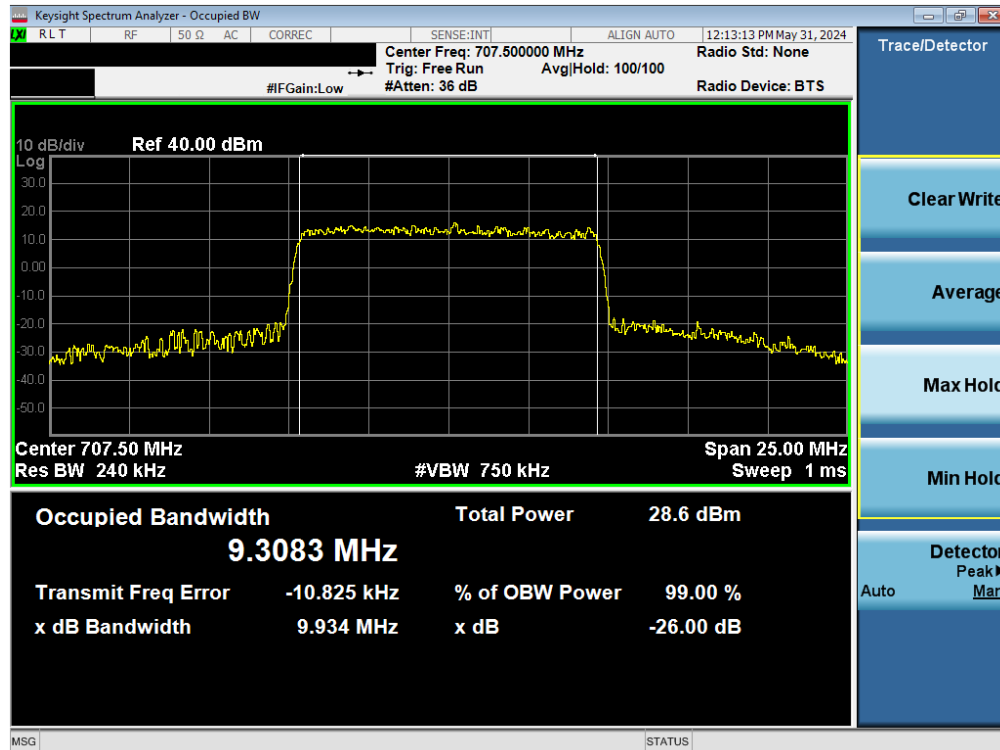


Plot 7-37. Occupied Bandwidth Plot (NR Band n12 - 10MHz DFT-s-OFDM BPSK - Full RB – ANT1)

FCC ID: A3LSMX828U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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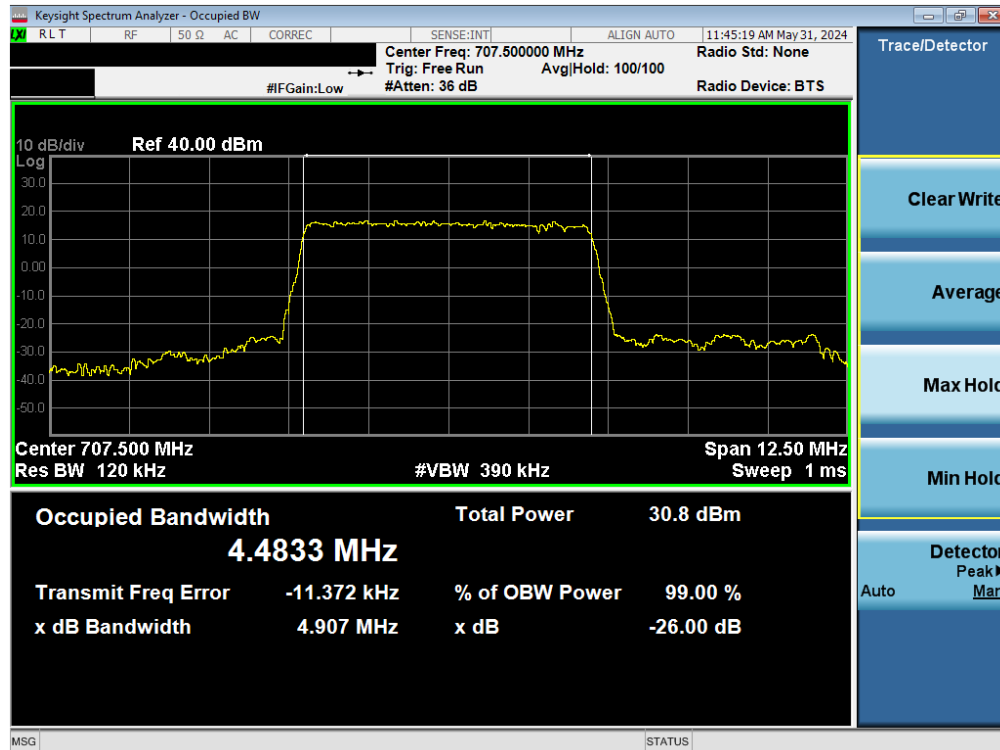


Plot 7-38. Occupied Bandwidth Plot (NR Band n12 - 10MHz CP-OFDM QPSK - Full RB - ANT1)

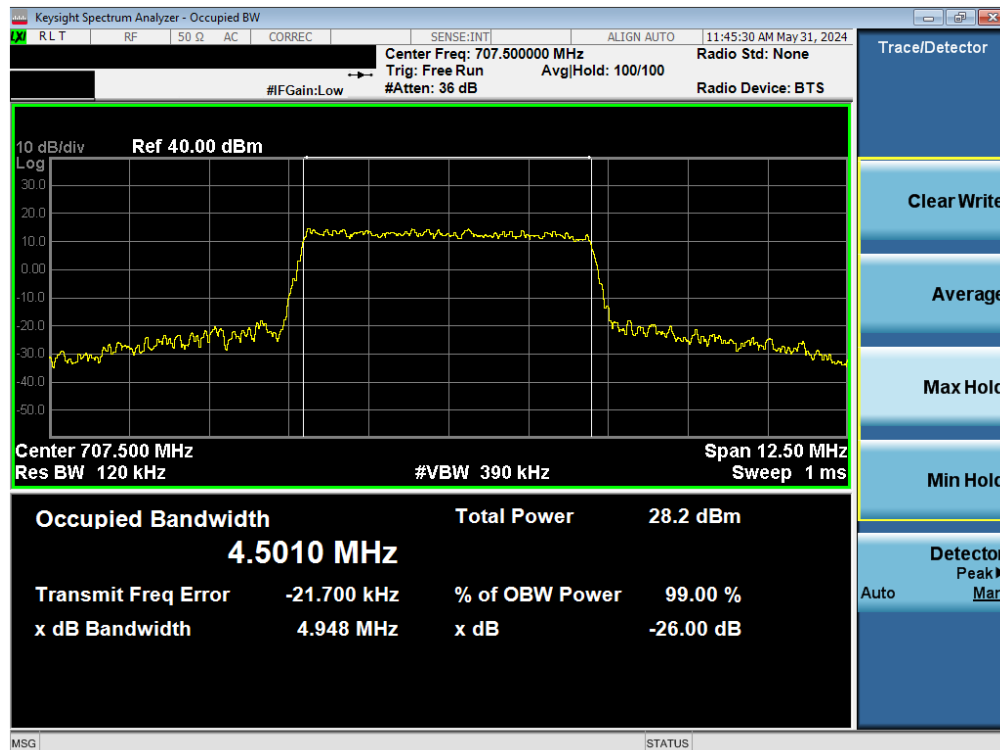


Plot 7-39. Occupied Bandwidth Plot (NR Band n12 - 10MHz CP-OFDM 16-QAM - Full RB - ANT1)

FCC ID: A3LSMX828U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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Plot 7-40. Occupied Bandwidth Plot (NR Band n12 - 5MHz DFT-s-OFDM BPSK - Full RB – ANT1)



Plot 7-41. Occupied Bandwidth Plot (NR Band n12 - 5MHz CP-OFDM QPSK - Full RB – ANT1)

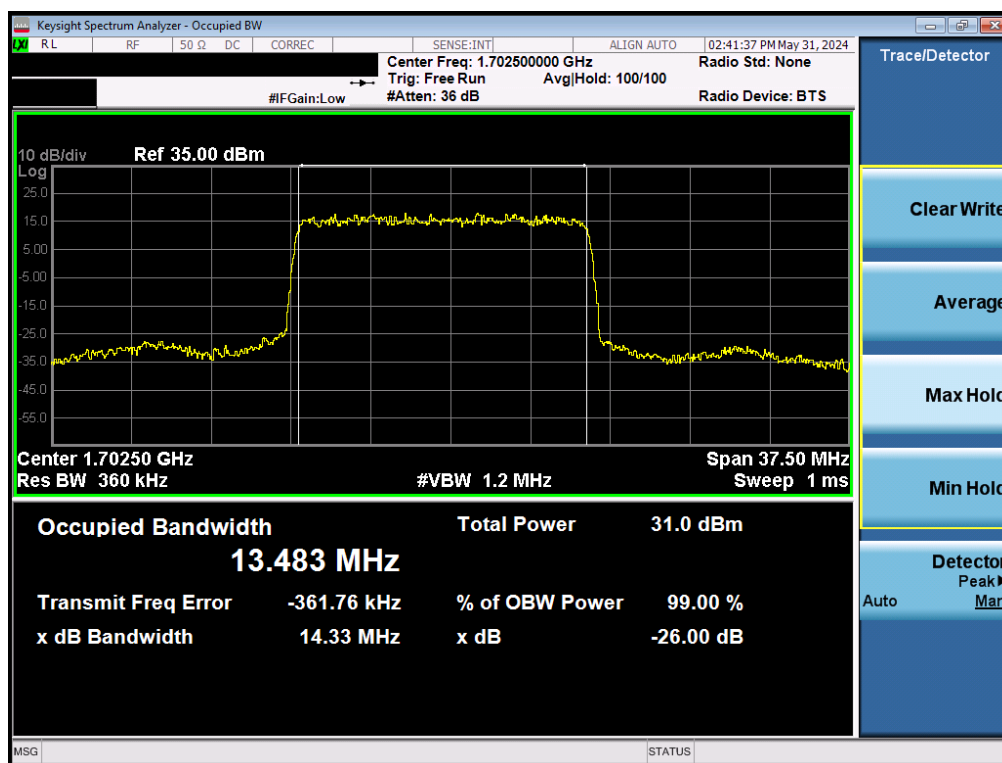
FCC ID: A3LSMX828U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2405140039-02.A3L	Test Dates: 5/23/2024 - 6/13/2024	EUT Type: Portable Tablet	Page 44 of 186



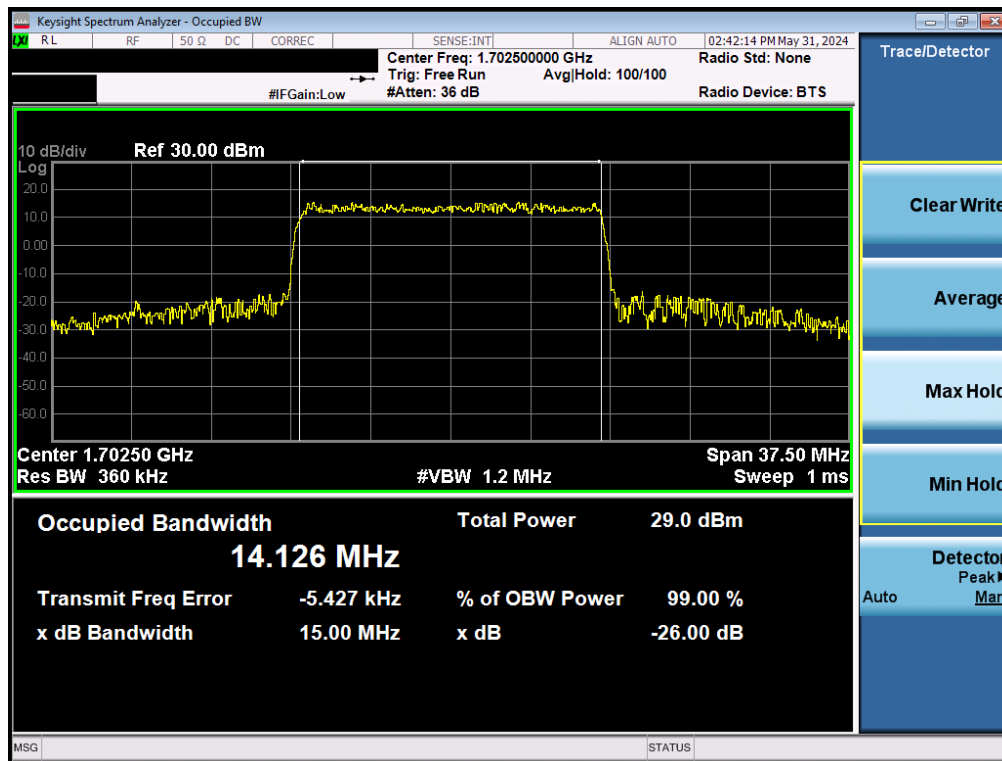
Plot 7-42. Occupied Bandwidth Plot (NR Band n12 - 5MHz CP-OFDM 16-QAM - Full RB – ANT1)

FCC ID: A3LSMX828U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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NR Band n70 – ANT1

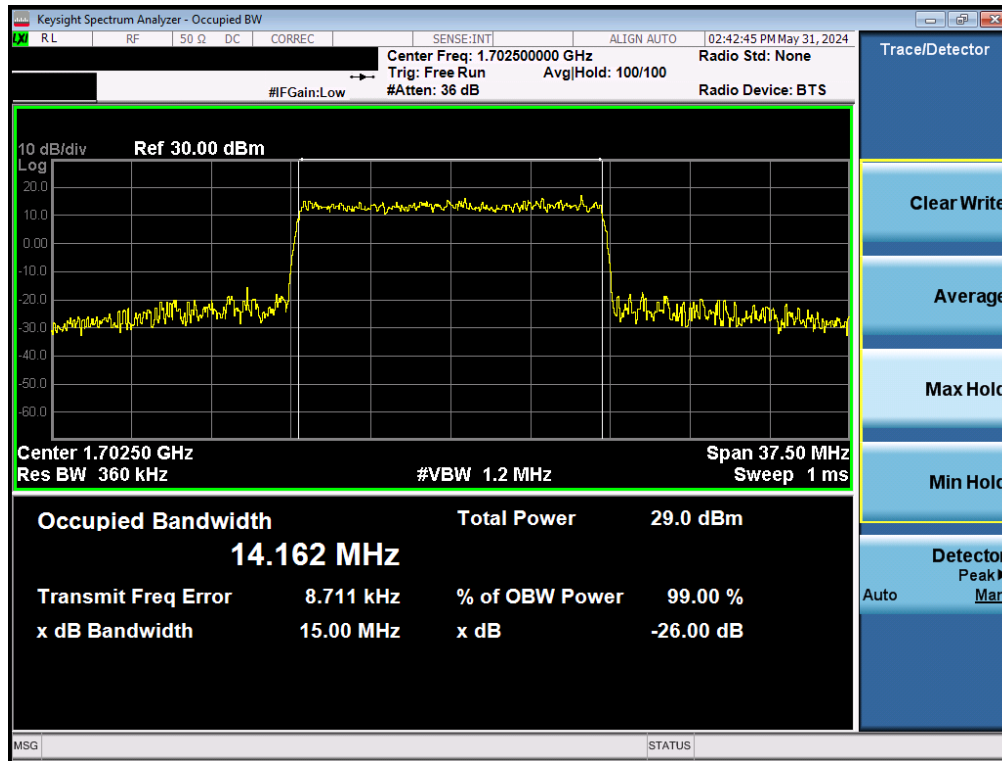


Plot 7-43. Occupied Bandwidth Plot (NR Band n70 - 15.0MHz DFT-s-OFDM BPSK - Full RB – ANT1)

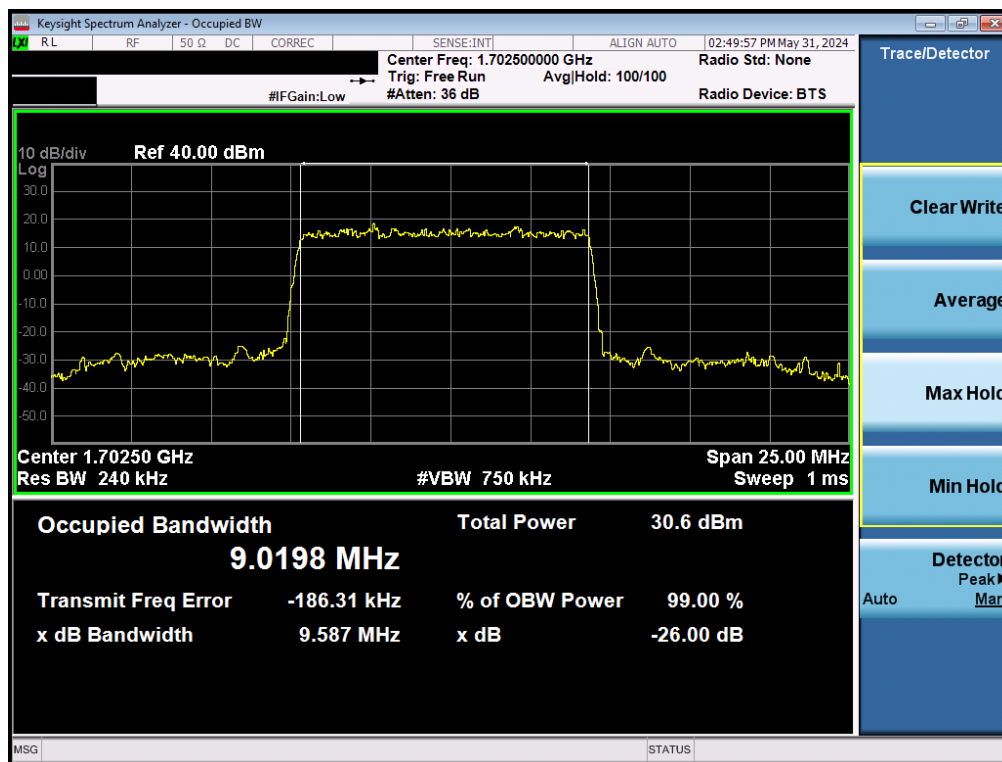


Plot 7-44. Occupied Bandwidth Plot (NR Band n70 - 15.0MHz CP-OFDM QPSK - Full RB – ANT1)

FCC ID: A3LSMX828U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2405140039-02.A3L	Test Dates: 5/23/2024 - 6/13/2024	EUT Type: Portable Tablet	Page 46 of 186

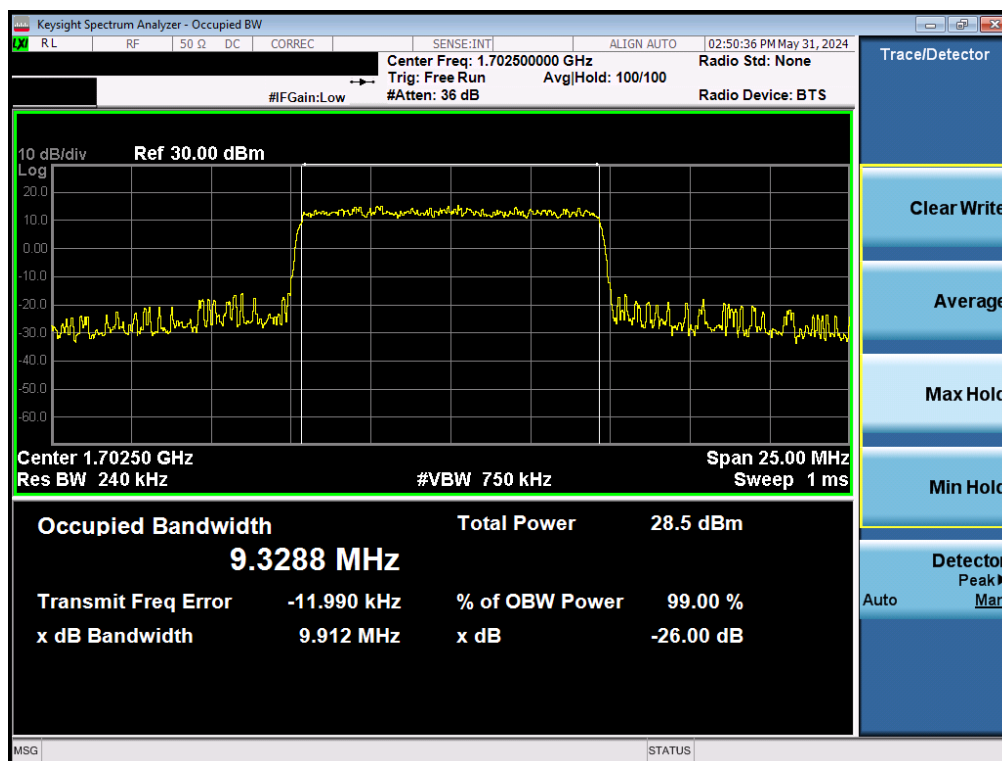


Plot 7-45. Occupied Bandwidth Plot (NR Band n70 - 15.0MHz CP-OFDM 16QAM - Full RB – ANT1)

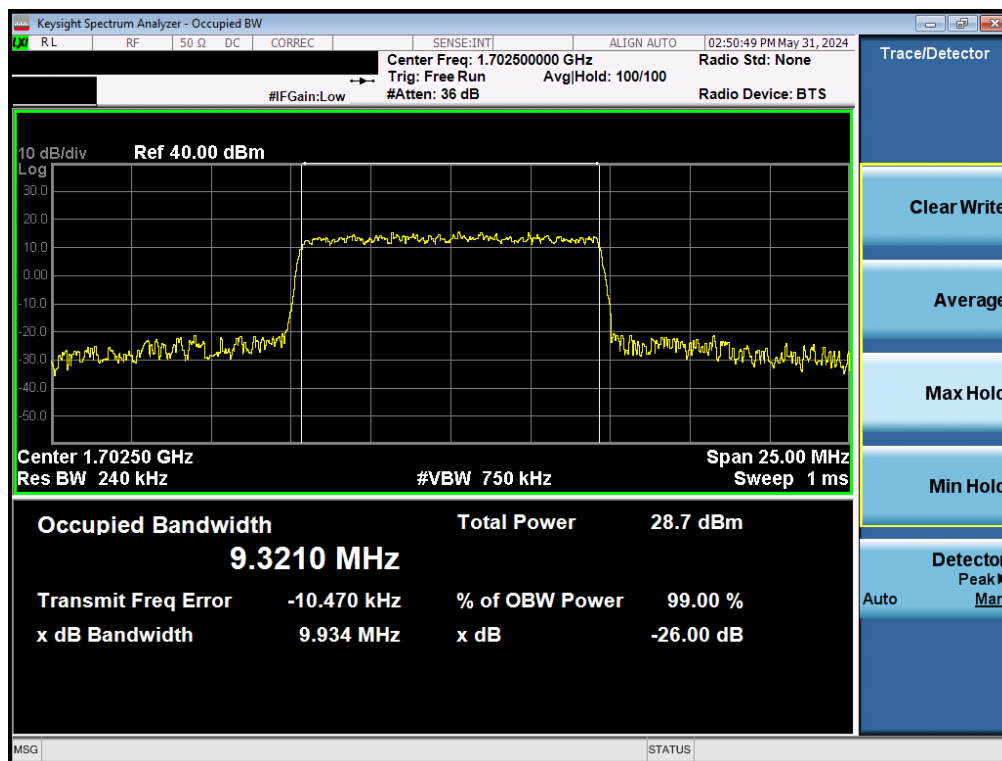


Plot 7-46. Occupied Bandwidth Plot (NR Band n70 - 10.0MHz DFT-s-OFDM BPSK - Full RB – ANT1)

FCC ID: A3LSMX828U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2405140039-02.A3L	Test Dates: 5/23/2024 - 6/13/2024	EUT Type: Portable Tablet	Page 47 of 186

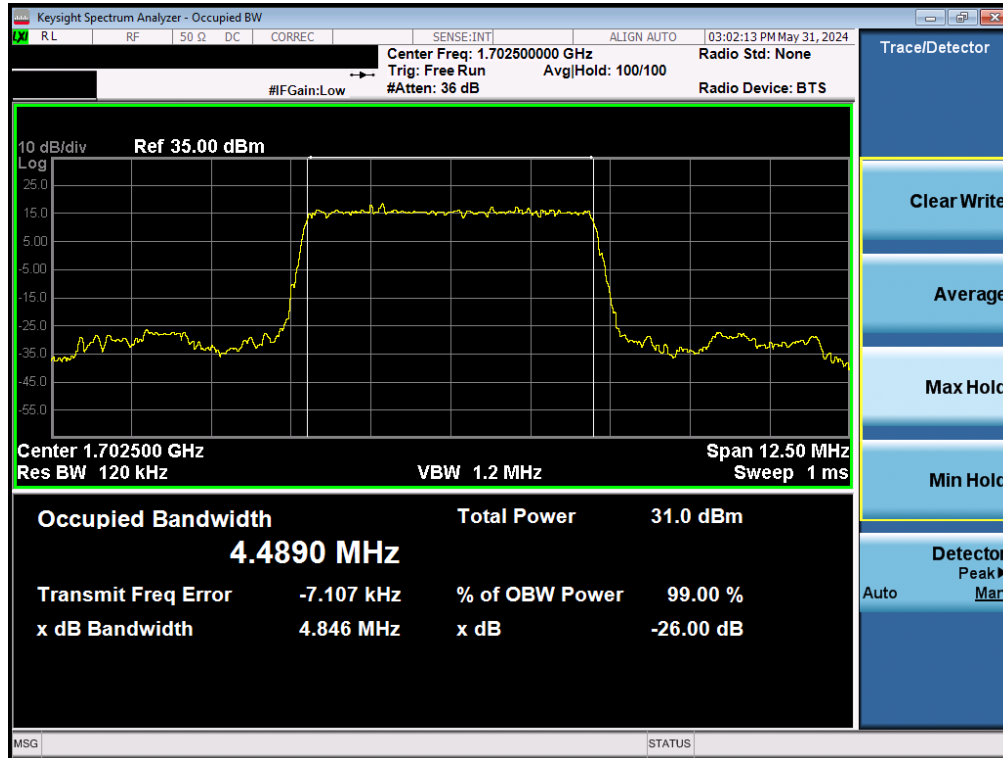


Plot 7-47. Occupied Bandwidth Plot (NR Band n70 - 10.0MHz CP-OFDM QPSK - Full RB – ANT1)

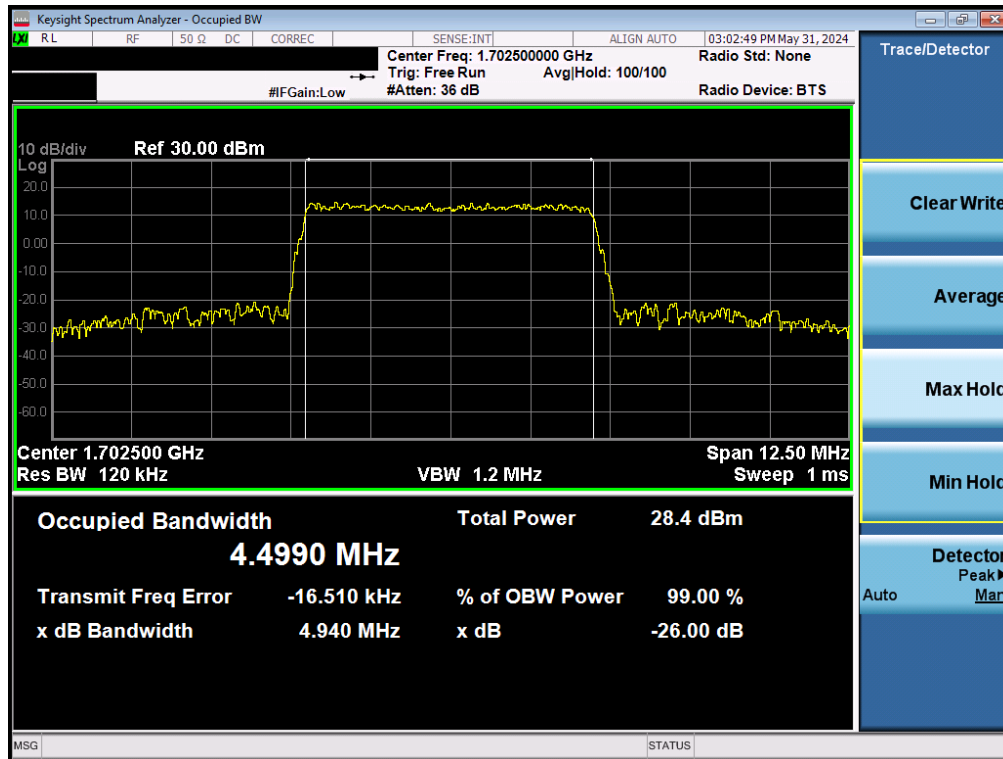


Plot 7-48. Occupied Bandwidth Plot (NR Band n70 - 10.0MHz CP-OFDM 16QAM - Full RB – ANT1)

FCC ID: A3LSMX828U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2405140039-02.A3L	Test Dates: 5/23/2024 - 6/13/2024	EUT Type: Portable Tablet	Page 48 of 186

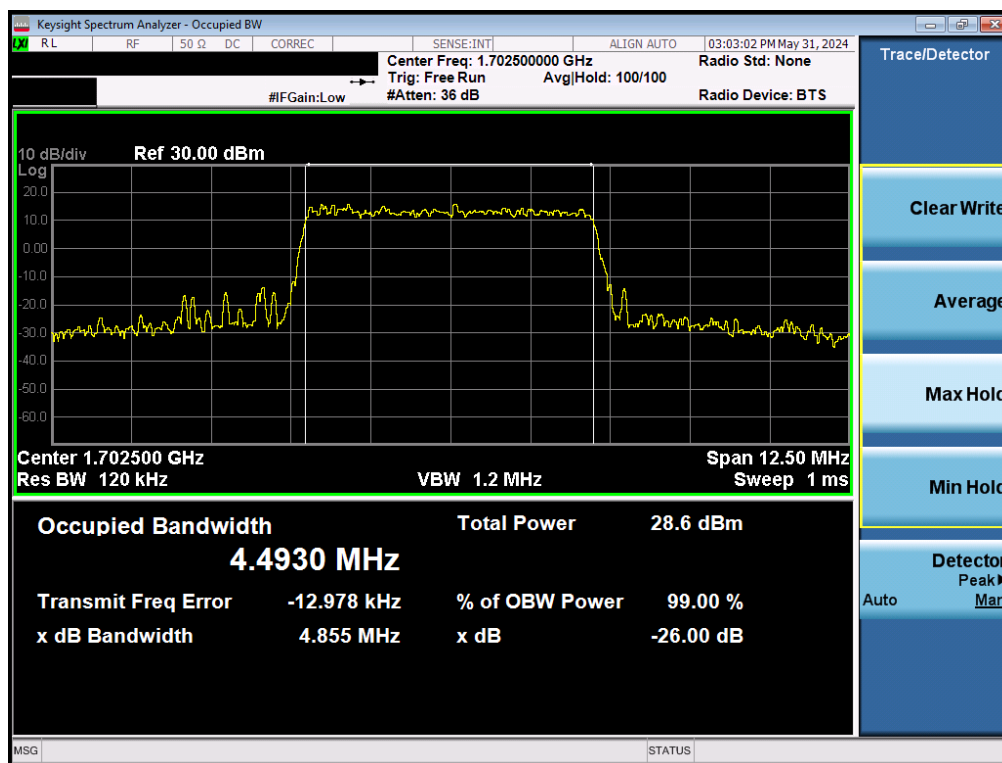


Plot 7-49. Occupied Bandwidth Plot (NR Band n70 - 5.0MHz DFT-s-OFDM BPSK - Full RB – ANT1)



Plot 7-50. Occupied Bandwidth Plot (NR Band n70 - 5.0MHz CP-OFDM QPSK - Full RB – ANT1)

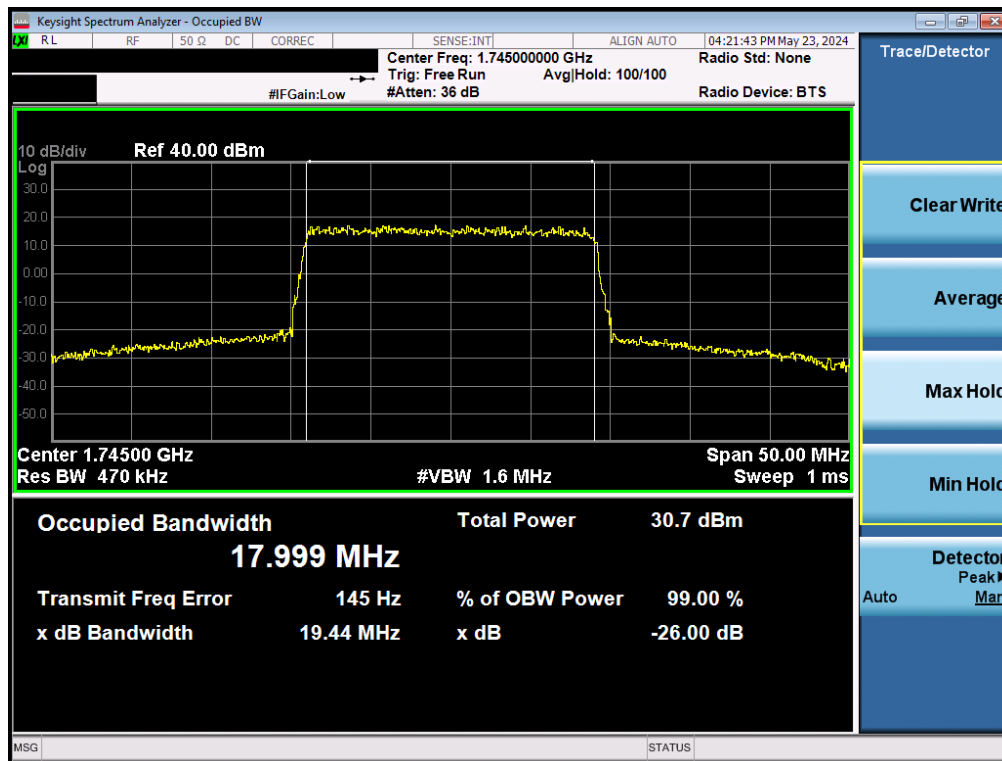
FCC ID: A3LSMX828U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2405140039-02.A3L	Test Dates: 5/23/2024 - 6/13/2024	EUT Type: Portable Tablet	Page 49 of 186



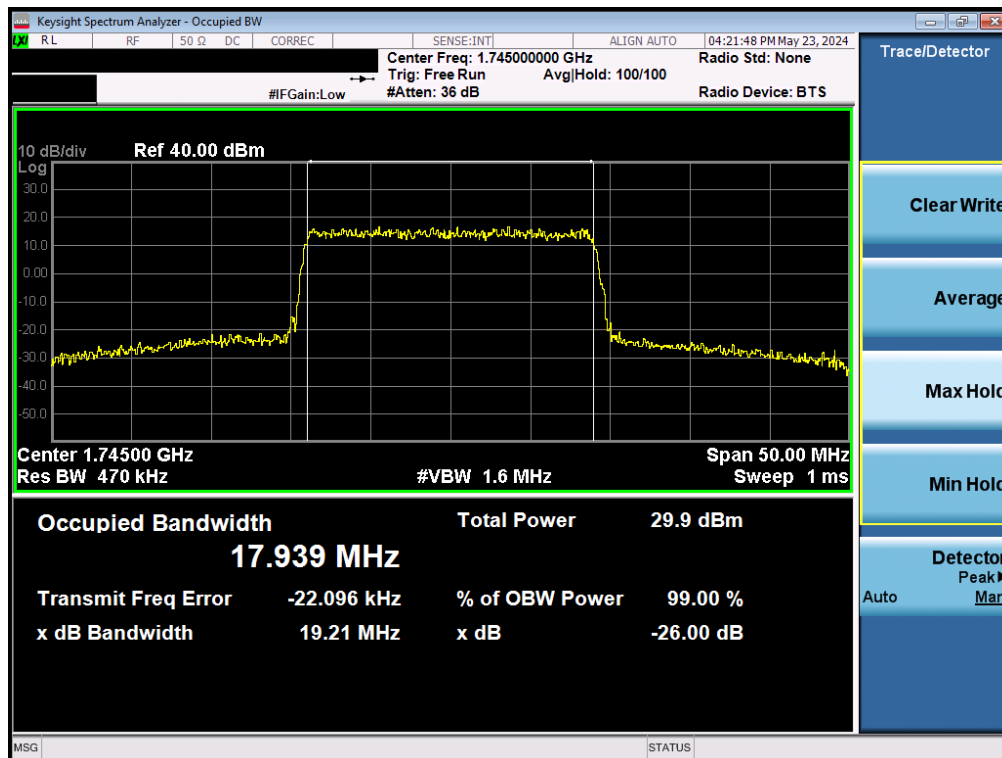
Plot 7-51. Occupied Bandwidth Plot (NR Band n66 - 5.0MHz CP-OFDM 16QAM - Full RB – ANT1)

FCC ID: A3LSMX828U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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LTE Band 66/4 - ANT1

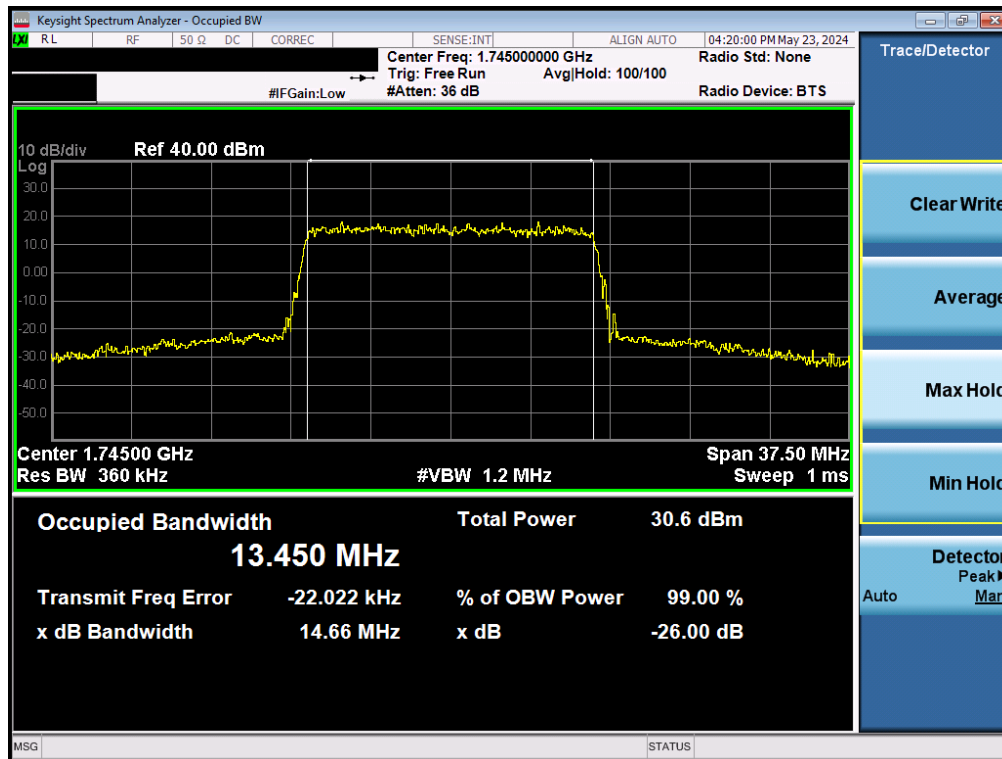


Plot 7-52. Occupied Bandwidth Plot (LTE Band 66/4 - 20MHz QPSK - Full RB - ANT1)

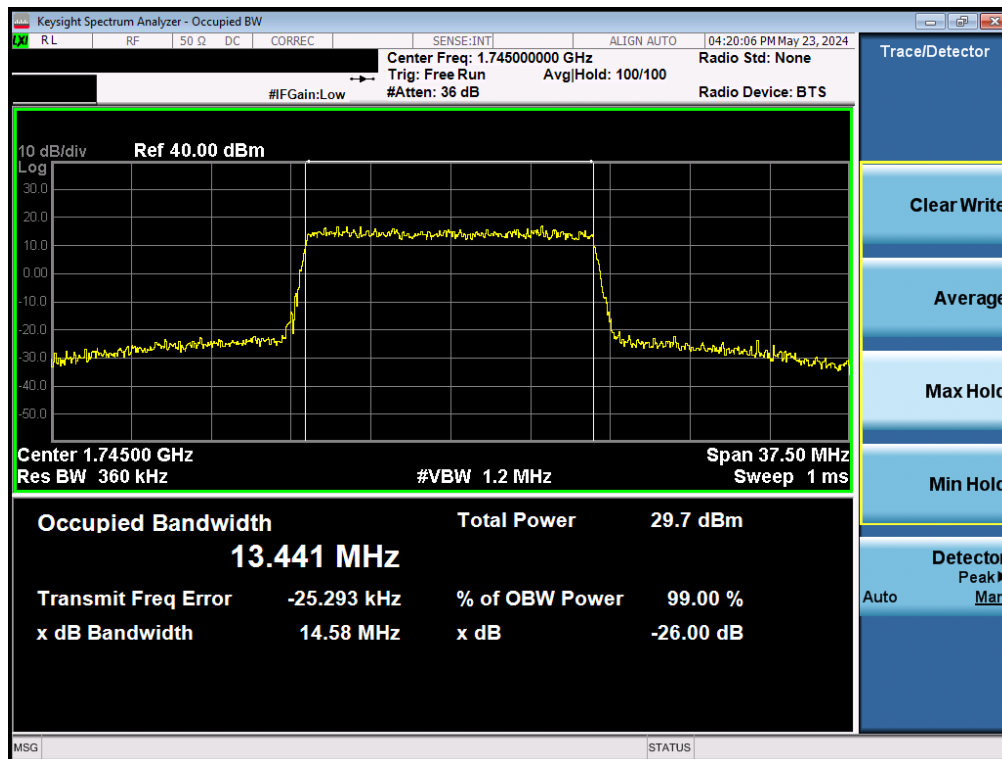


Plot 7-53. Occupied Bandwidth Plot (LTE Band 66/4 - 20MHz 16-QAM - Full RB - ANT1)

FCC ID: A3LSMX828U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2405140039-02.A3L	Test Dates: 5/23/2024 - 6/13/2024	EUT Type: Portable Tablet	Page 51 of 186

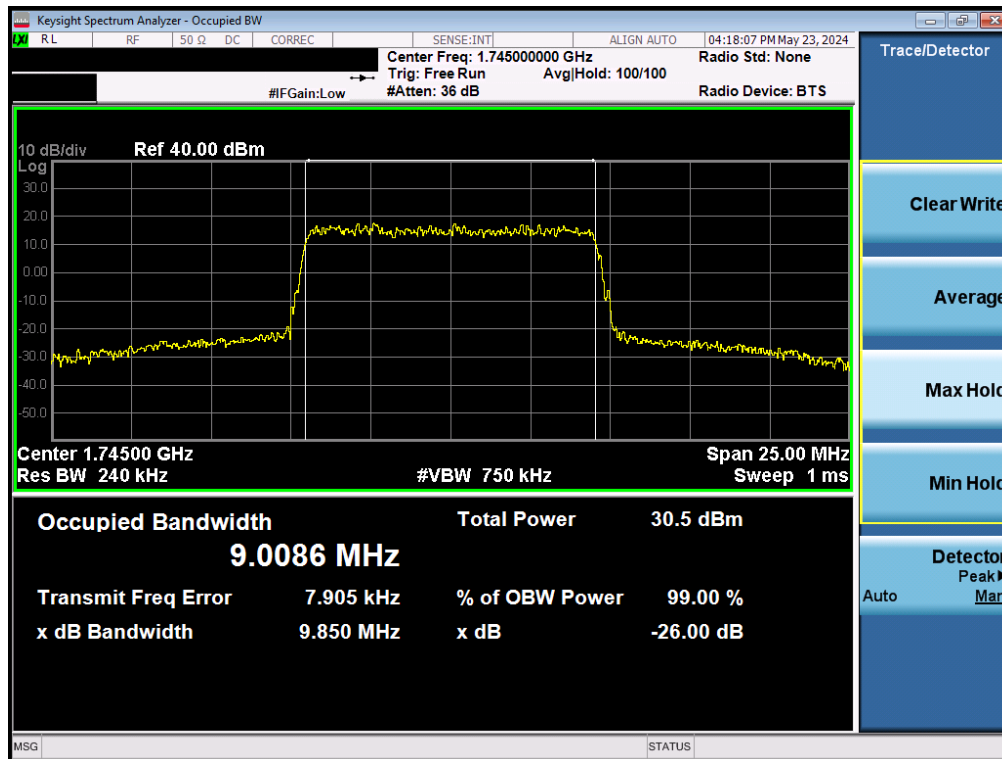


Plot 7-54. Occupied Bandwidth Plot (LTE Band 66/4 - 15MHz QPSK - Full RB - ANT1)

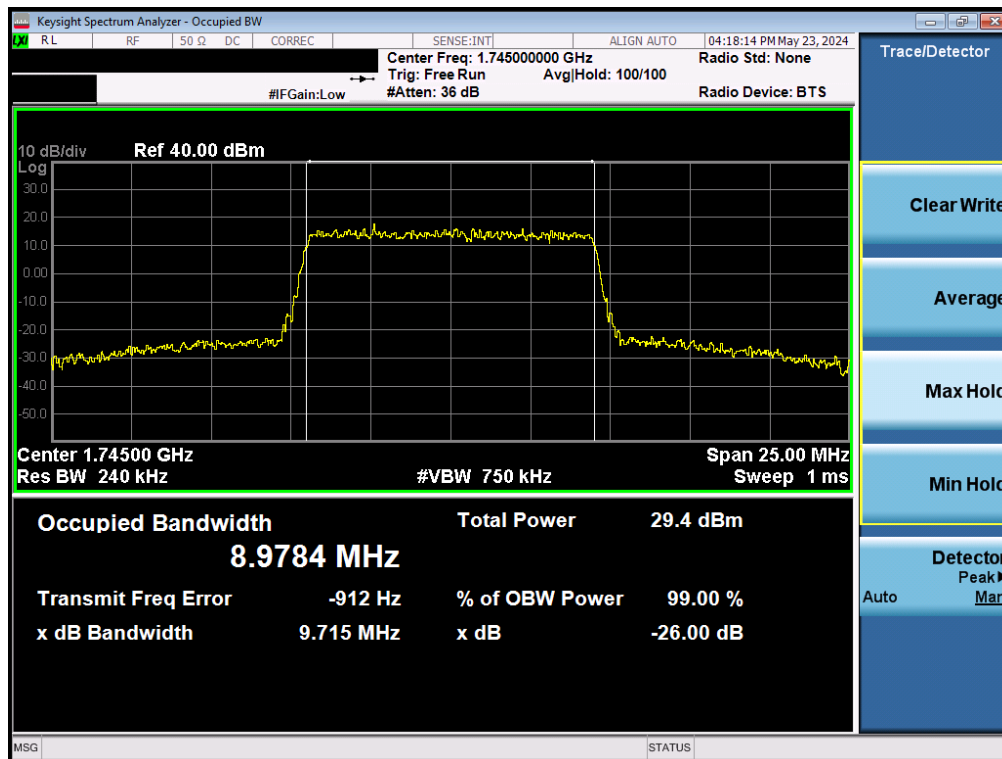


Plot 7-55. Occupied Bandwidth Plot (LTE Band 66/4 - 15MHz 16-QAM - Full RB - ANT1)

FCC ID: A3LSMX828U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2405140039-02.A3L	Test Dates: 5/23/2024 - 6/13/2024	EUT Type: Portable Tablet	Page 52 of 186

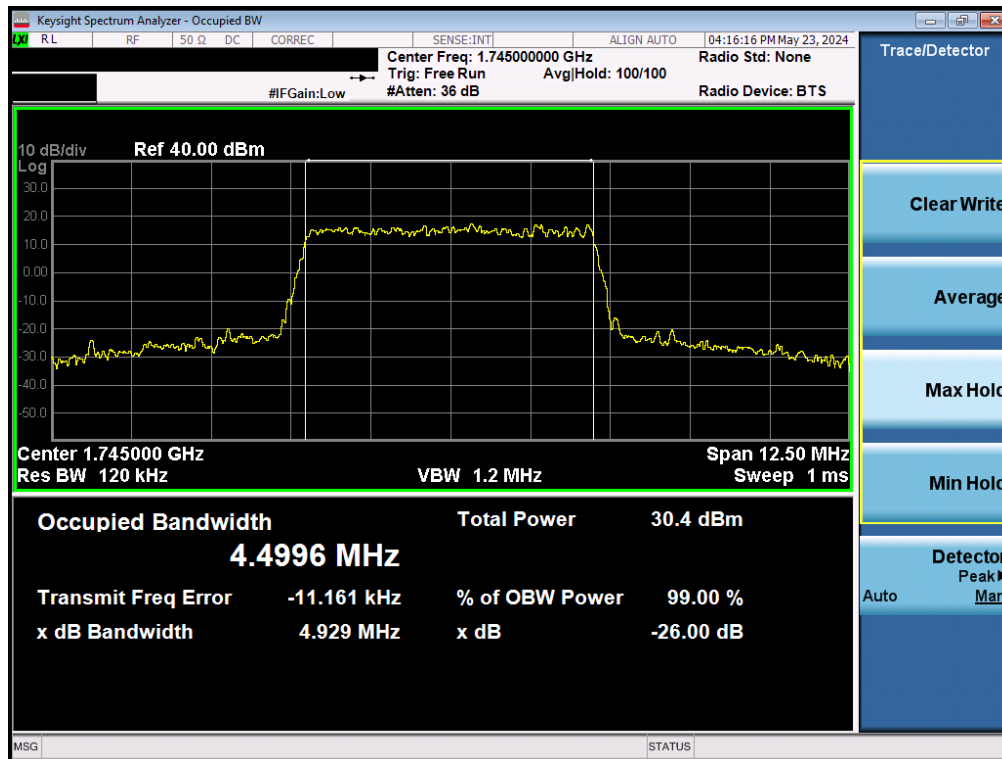


Plot 7-56. Occupied Bandwidth Plot (LTE Band 66/4 - 10MHz QPSK - Full RB - ANT1)

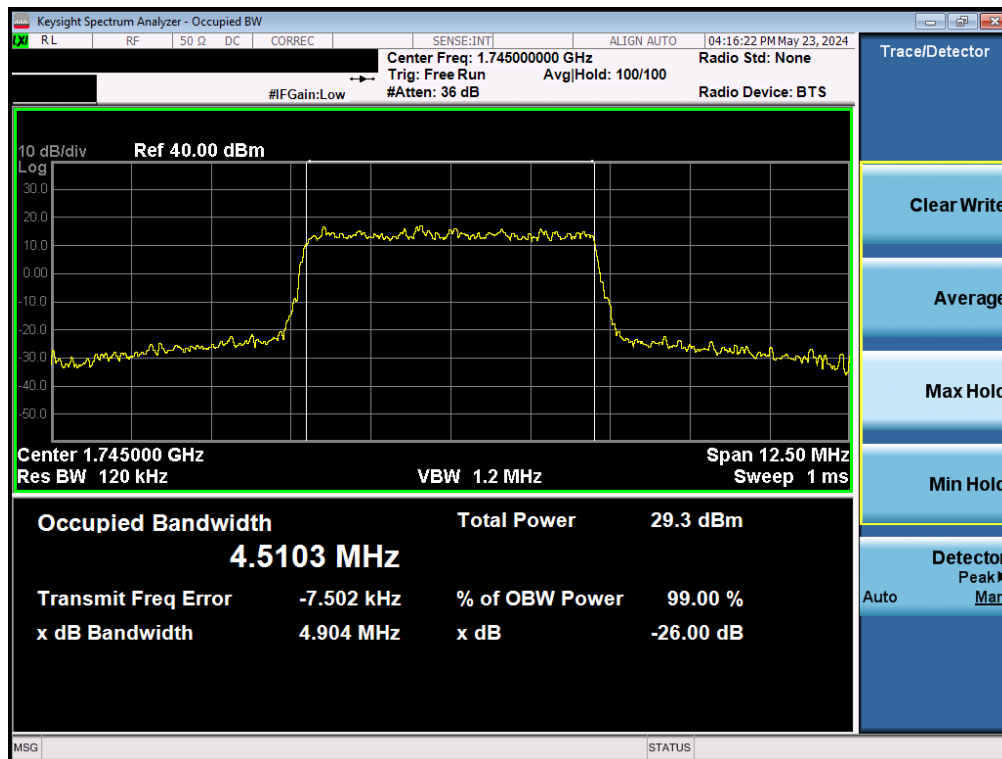


Plot 7-57. Occupied Bandwidth Plot (LTE Band 66/4 - 10MHz 16-QAM - Full RB - ANT1)

FCC ID: A3LSMX828U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2405140039-02.A3L	Test Dates: 5/23/2024 - 6/13/2024	EUT Type: Portable Tablet	Page 53 of 186

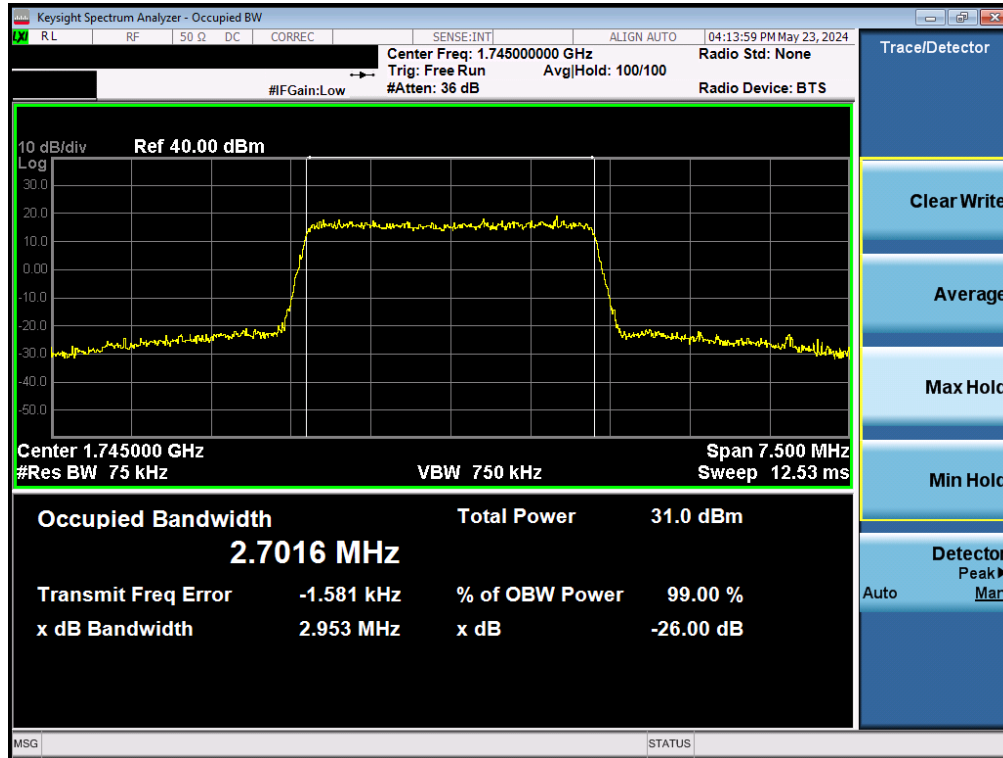


Plot 7-58. Occupied Bandwidth Plot (LTE Band 66/4 - 5MHz QPSK - Full RB - ANT1)

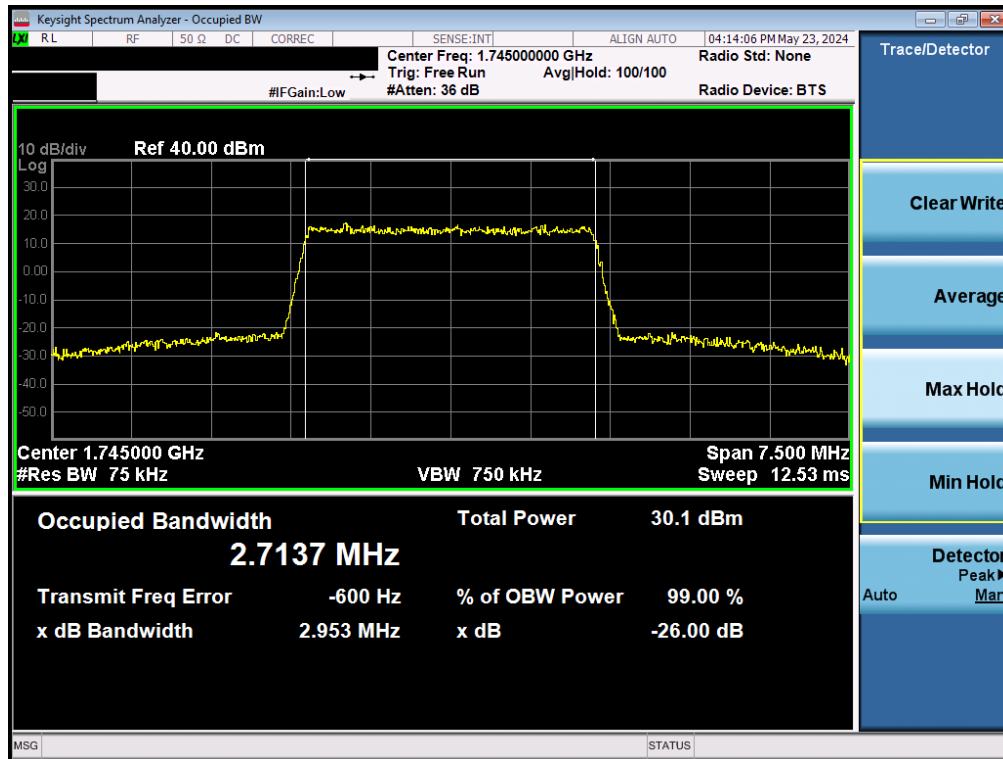


Plot 7-59. Occupied Bandwidth Plot (LTE Band 66/4 - 5MHz 16-QAM - Full RB - ANT1)

FCC ID: A3LSMX828U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2405140039-02.A3L	Test Dates: 5/23/2024 - 6/13/2024	EUT Type: Portable Tablet	Page 54 of 186

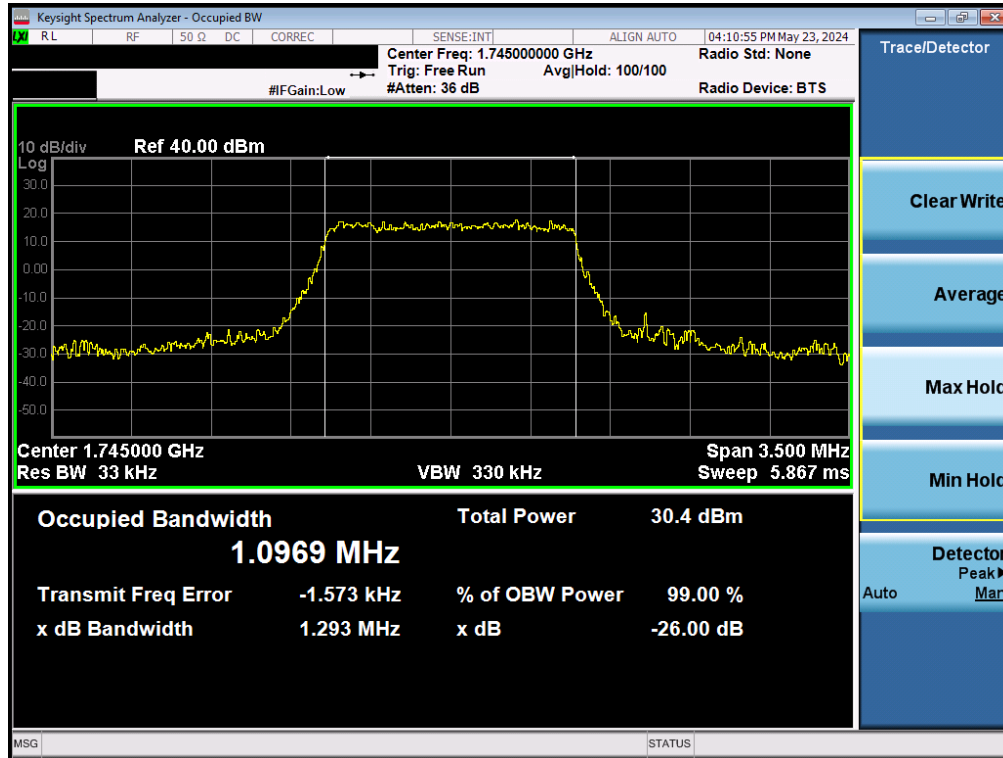


Plot 7-60. Occupied Bandwidth Plot (LTE Band 66/4 - 3MHz QPSK - Full RB - ANT1)

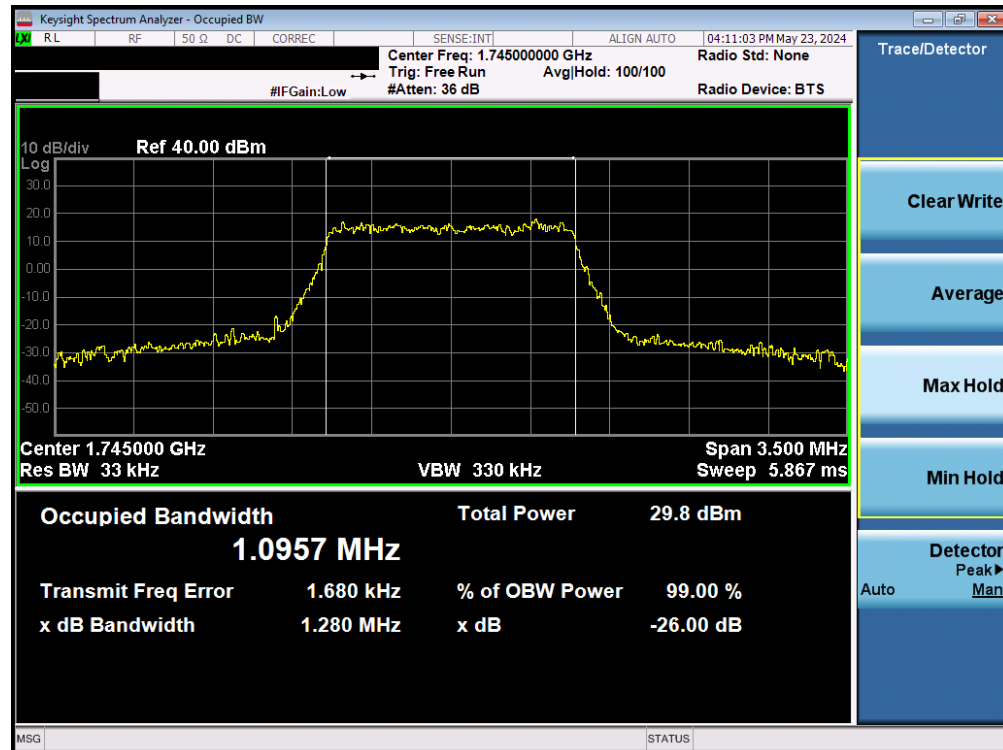


Plot 7-61. Occupied Bandwidth Plot (LTE Band 66/4 - 3MHz 16-QAM - Full RB - ANT1)

FCC ID: A3LSMX828U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2405140039-02.A3L	Test Dates: 5/23/2024 - 6/13/2024	EUT Type: Portable Tablet	Page 55 of 186



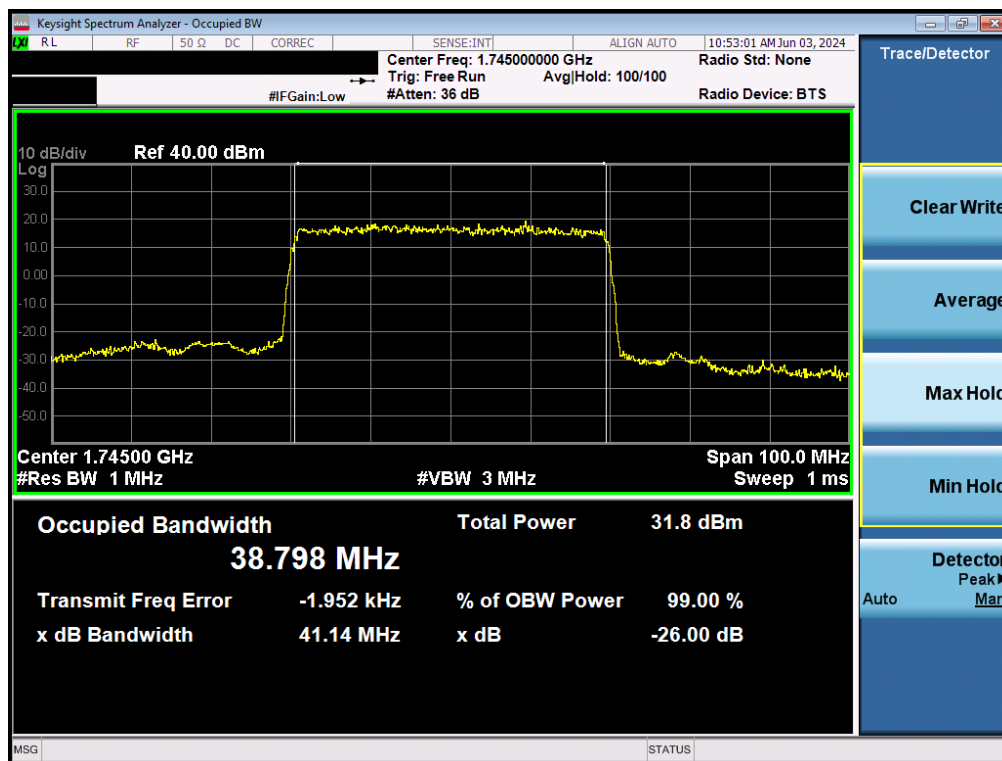
Plot 7-62. Occupied Bandwidth Plot (LTE Band 66/4 - 1.4MHz QPSK - Full RB - ANT1)



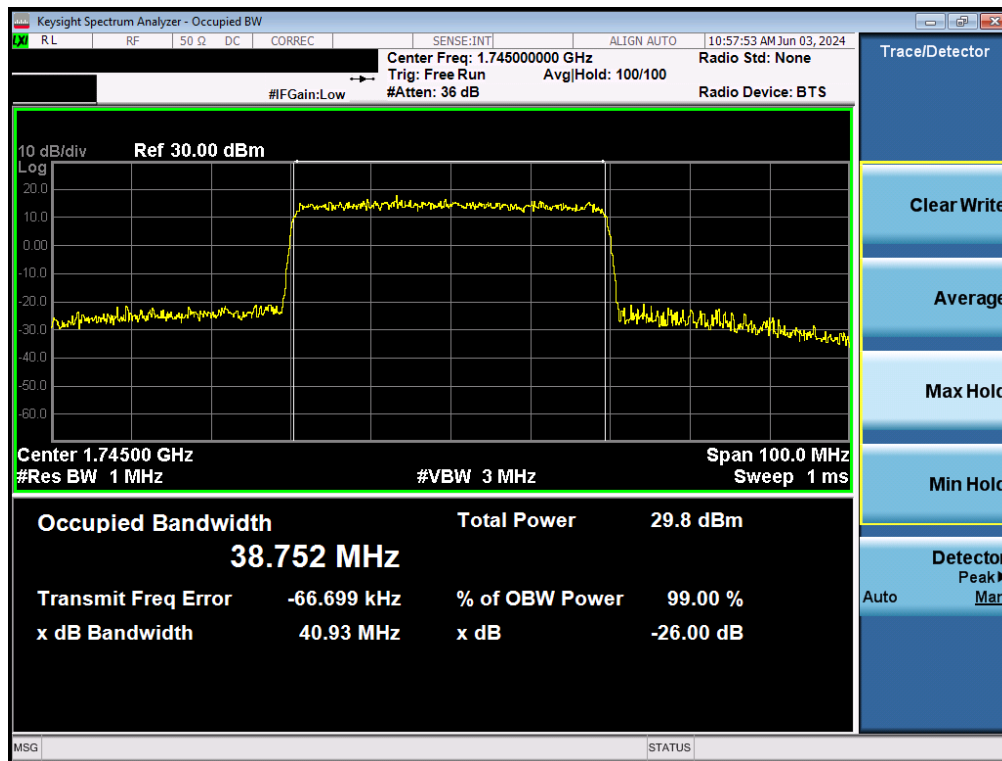
Plot 7-63. Occupied Bandwidth Plot (LTE Band 66/4 - 1.4MHz 16-QAM - Full RB - ANT1)

FCC ID: A3LSMX828U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2405140039-02.A3L	Test Dates: 5/23/2024 - 6/13/2024	EUT Type: Portable Tablet	Page 56 of 186

NR Band n66 – ANT1

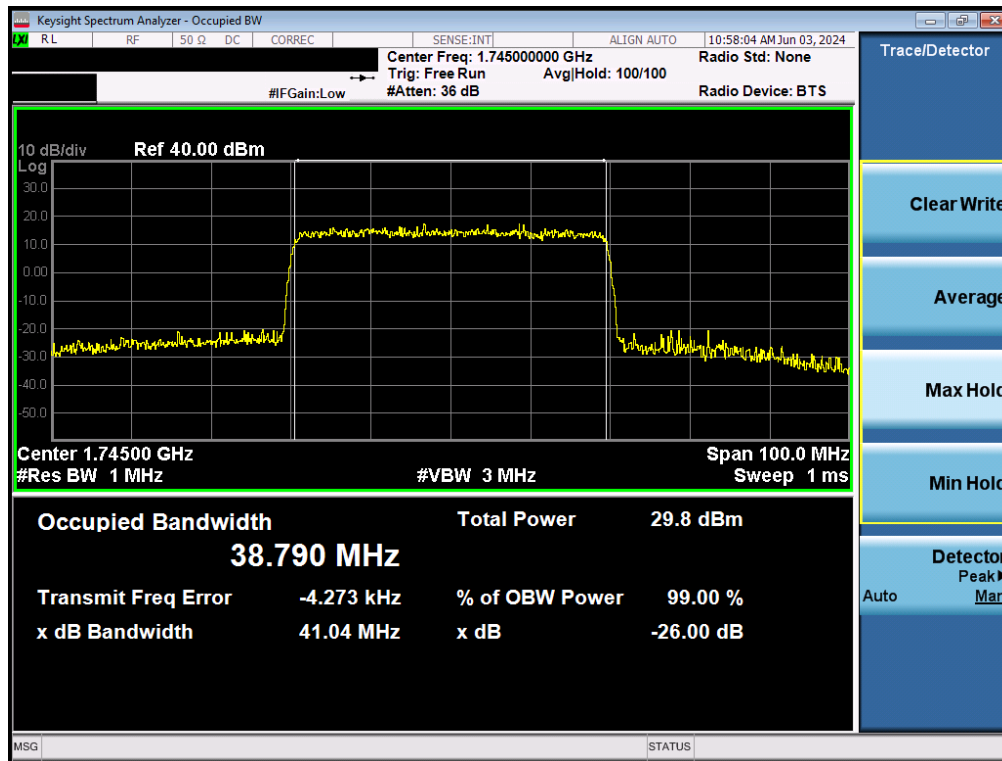


Plot 7-64. Occupied Bandwidth Plot (NR Band n66 - 40.0MHz DFT-s-OFDM BPSK - Full RB – ANT1)

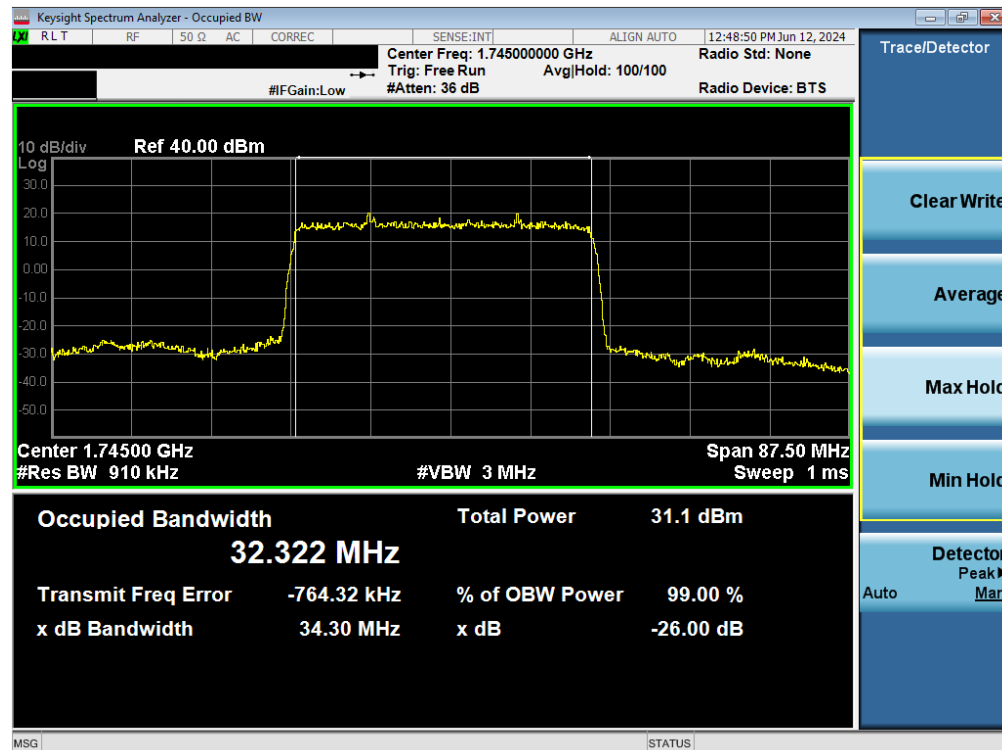


Plot 7-65. Occupied Bandwidth Plot (NR Band n66 - 40.0MHz CP-OFDM QPSK - Full RB – ANT1)

FCC ID: A3LSMX828U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2405140039-02.A3L	Test Dates: 5/23/2024 - 6/13/2024	EUT Type: Portable Tablet	Page 57 of 186

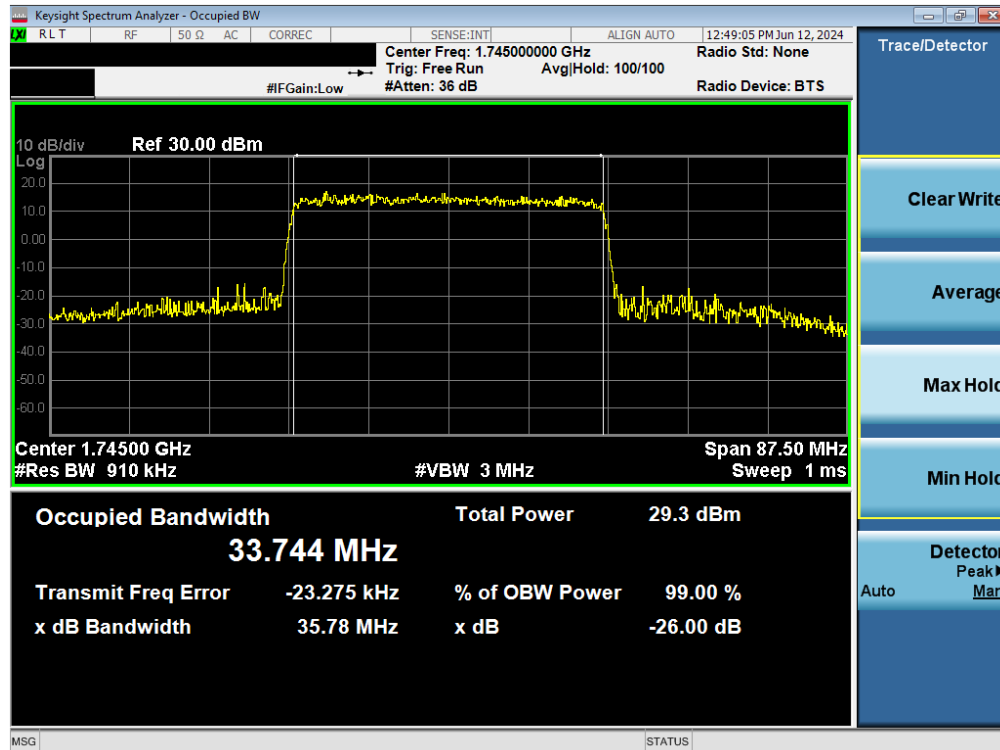


Plot 7-66. Occupied Bandwidth Plot (NR Band n66 - 40.0MHz CP-OFDM 16QAM - Full RB – ANT1)

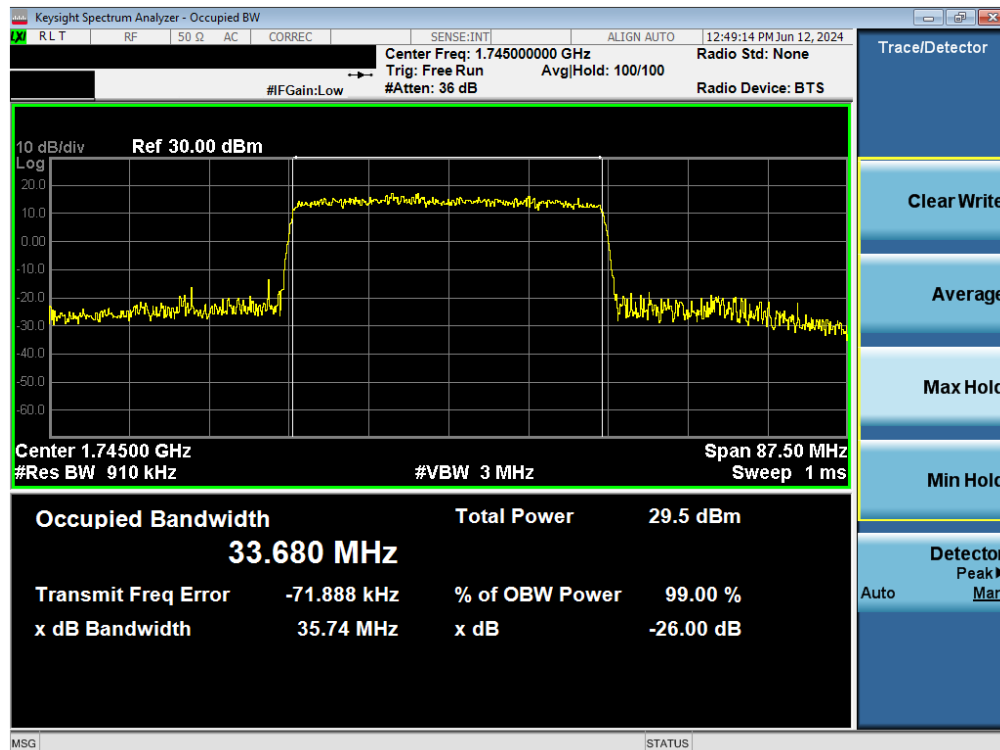


Plot 7-67. Occupied Bandwidth Plot (NR Band n66 - 35.0MHz DFT-s-OFDM BPSK - Full RB – ANT1)

FCC ID: A3LSMX828U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2405140039-02.A3L	Test Dates: 5/23/2024 - 6/13/2024	EUT Type: Portable Tablet	Page 58 of 186

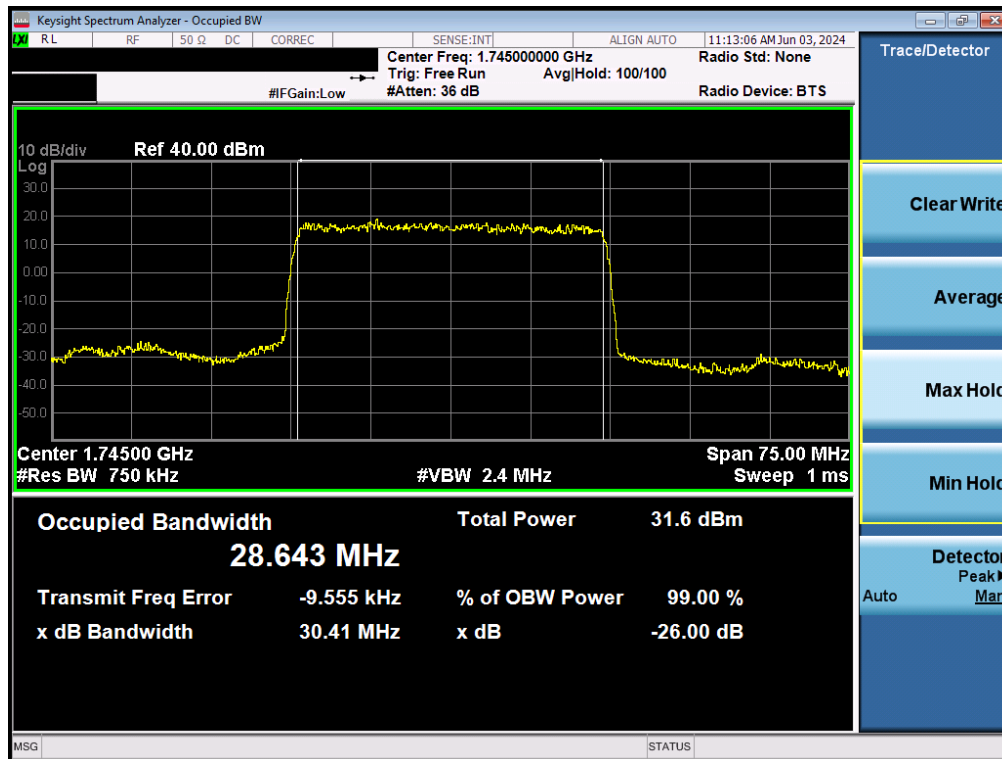


Plot 7-68. Occupied Bandwidth Plot (NR Band n66 - 35.0MHz CP-OFDM QPSK - Full RB - ANT1)

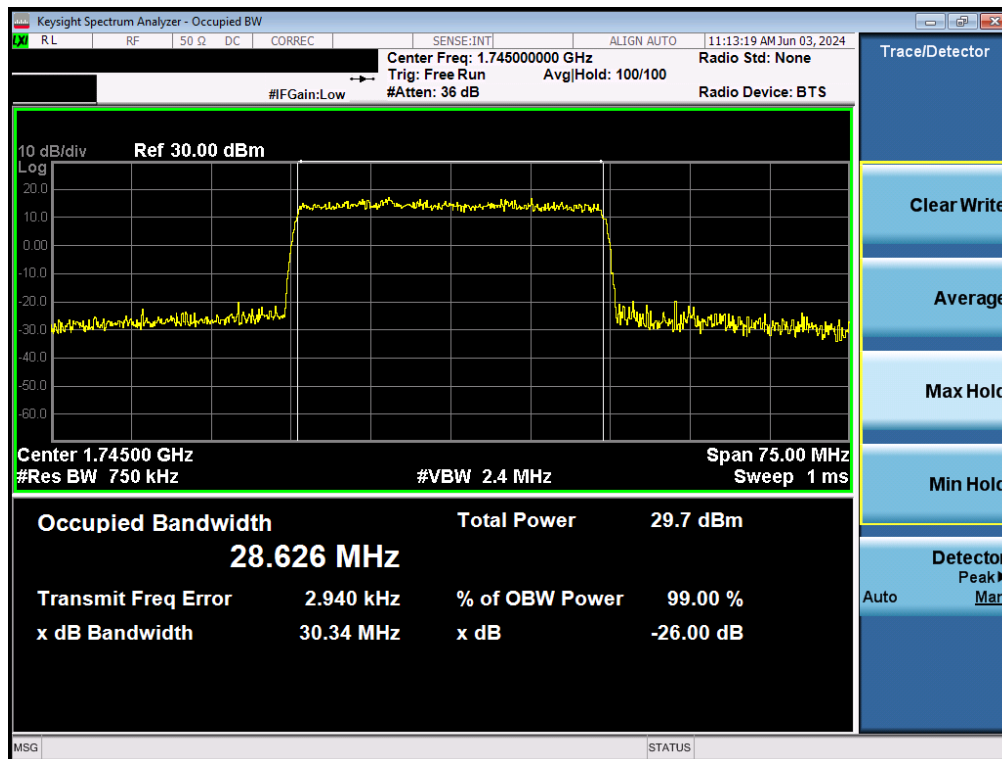


Plot 7-69. Occupied Bandwidth Plot (NR Band n66 - 35.0MHz CP-OFDM 16QAM - Full RB - ANT1)

FCC ID: A3LSMX828U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2405140039-02.A3L	Test Dates: 5/23/2024 - 6/13/2024	EUT Type: Portable Tablet	Page 59 of 186

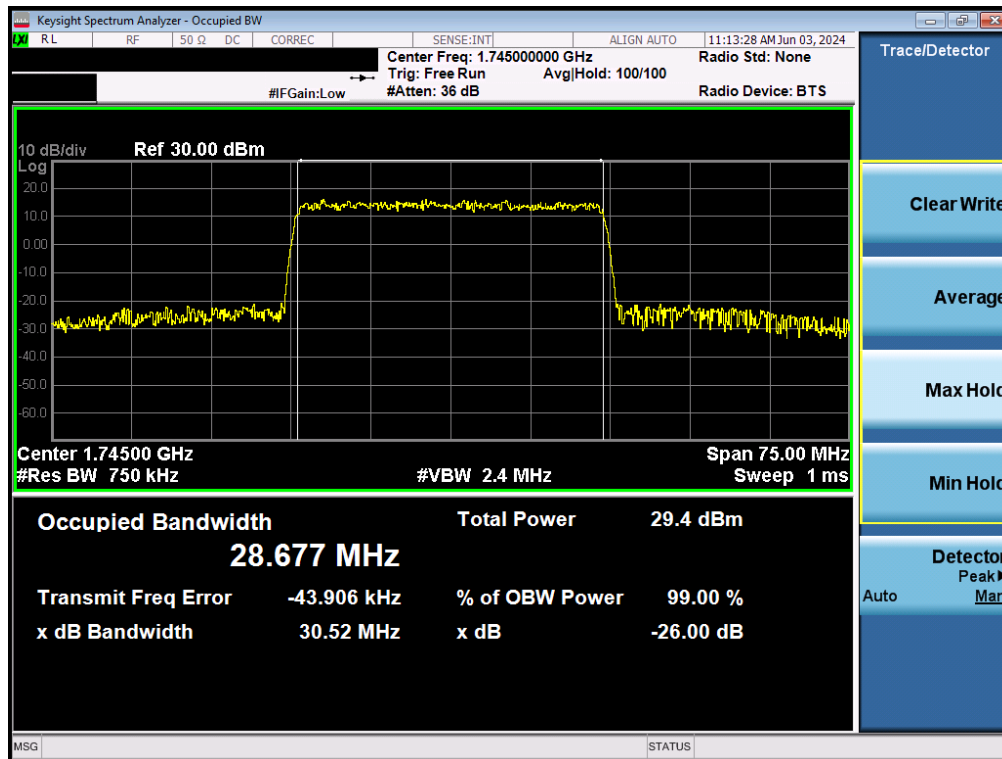


Plot 7-70. Occupied Bandwidth Plot (NR Band n66 - 30.0MHz DFT-s-OFDM BPSK - Full RB – ANT1)

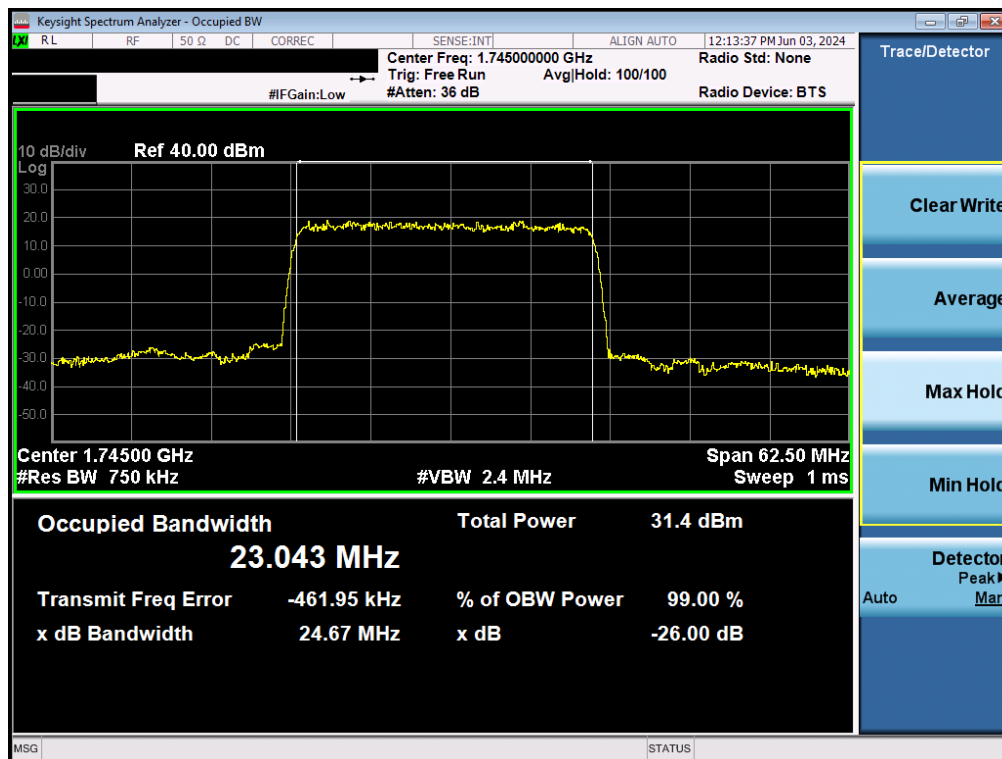


Plot 7-71. Occupied Bandwidth Plot (NR Band n66 - 30.0MHz CP-OFDM QPSK - Full RB – ANT1)

FCC ID: A3LSMX828U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2405140039-02.A3L	Test Dates: 5/23/2024 - 6/13/2024	EUT Type: Portable Tablet	Page 60 of 186

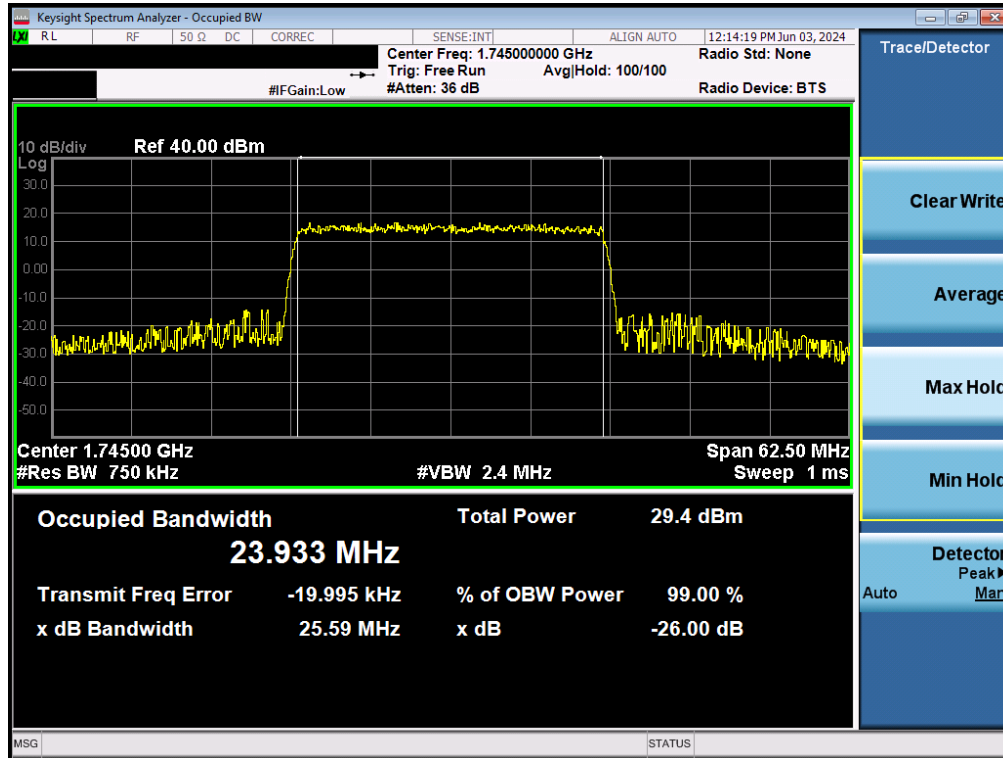


Plot 7-72. Occupied Bandwidth Plot (NR Band n66 - 30.0MHz CP-OFDM 16QAM - Full RB – ANT1)

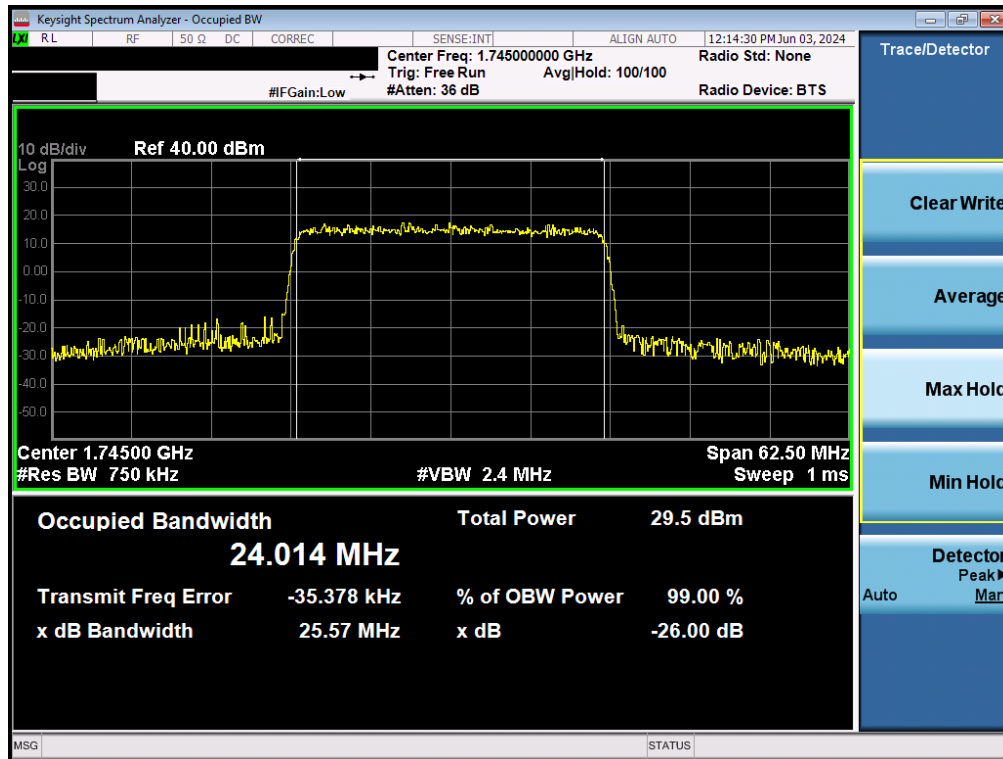


Plot 7-73. Occupied Bandwidth Plot (NR Band n66 - 25.0MHz DFT-s-OFDM BPSK - Full RB – ANT1)

FCC ID: A3LSMX828U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2405140039-02.A3L	Test Dates: 5/23/2024 - 6/13/2024	EUT Type: Portable Tablet	Page 61 of 186

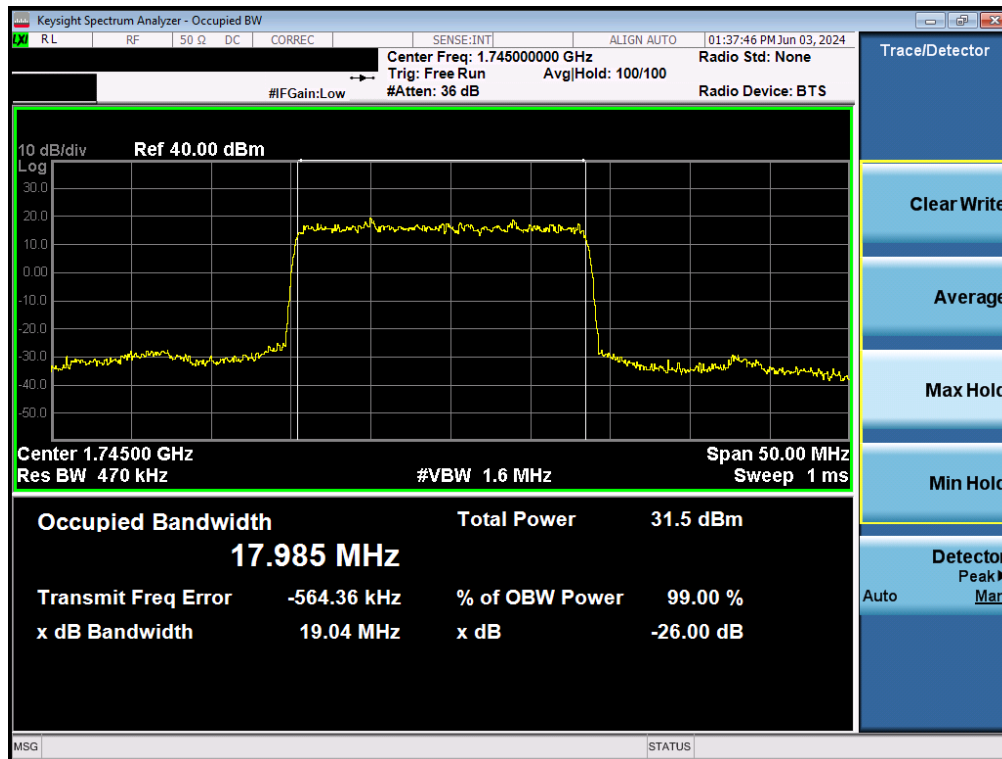


Plot 7-74. Occupied Bandwidth Plot (NR Band n66 - 25.0MHz CP-OFDM QPSK - Full RB – ANT1)

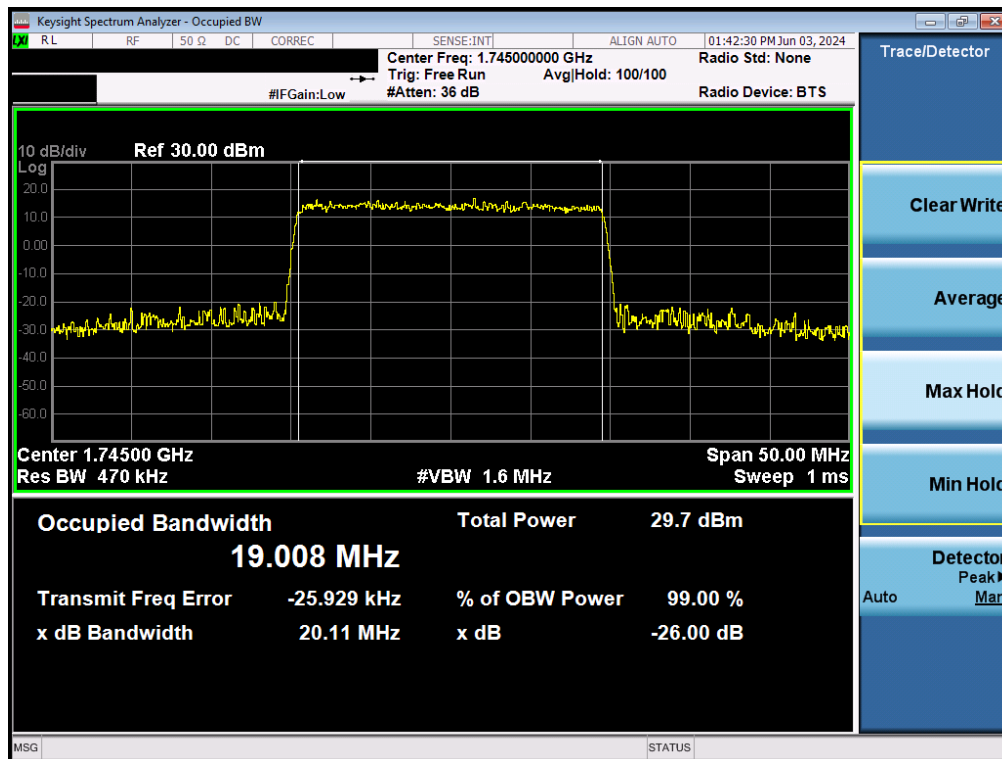


Plot 7-75. Occupied Bandwidth Plot (NR Band n66 - 25.0MHz CP-OFDM 16QAM - Full RB – ANT1)

FCC ID: A3LSMX828U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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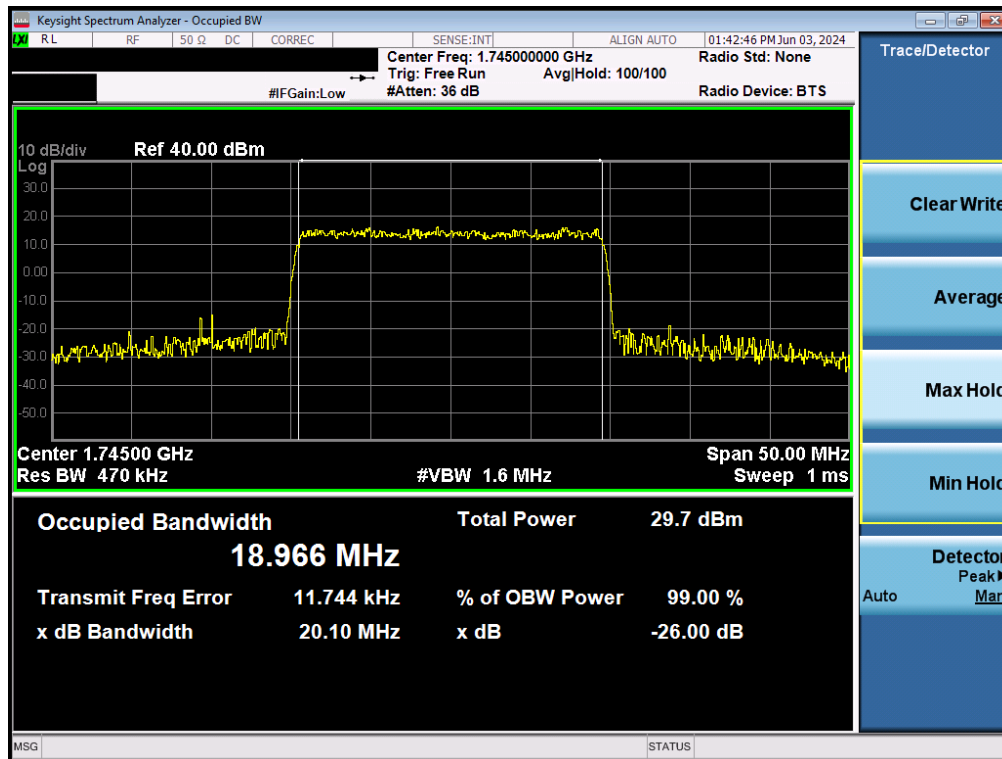


Plot 7-76. Occupied Bandwidth Plot (NR Band n66 - 20.0MHz DFT-s-OFDM BPSK - Full RB – ANT1)

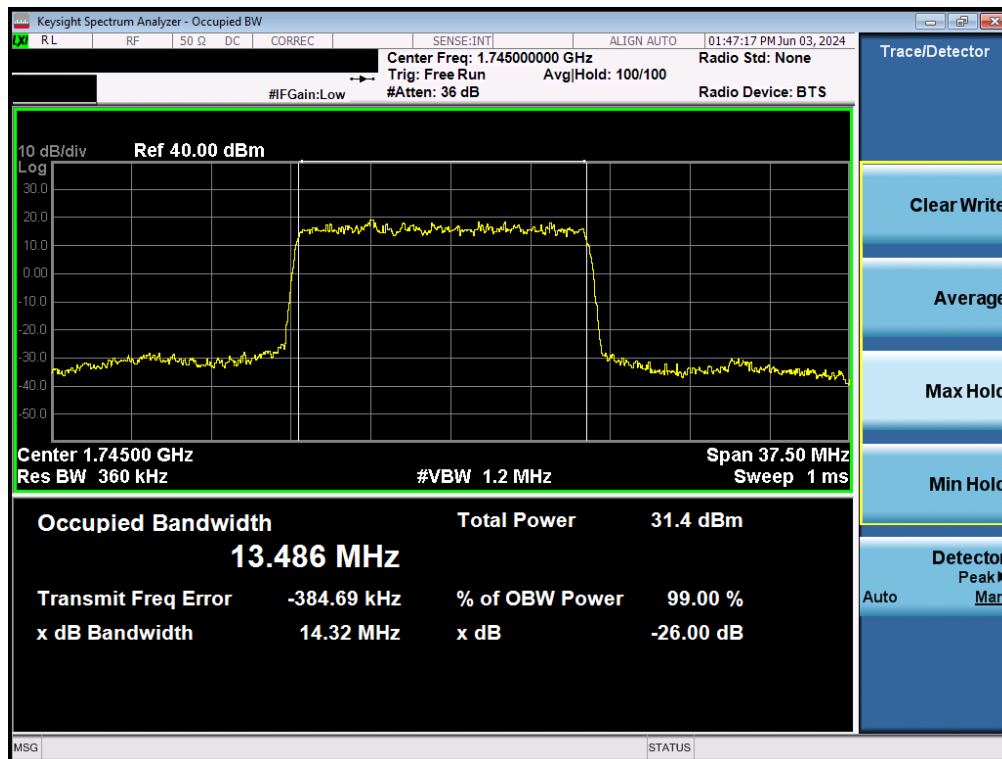


Plot 7-77. Occupied Bandwidth Plot (NR Band n66 - 20.0MHz CP-OFDM QPSK - Full RB – ANT1)

FCC ID: A3LSMX828U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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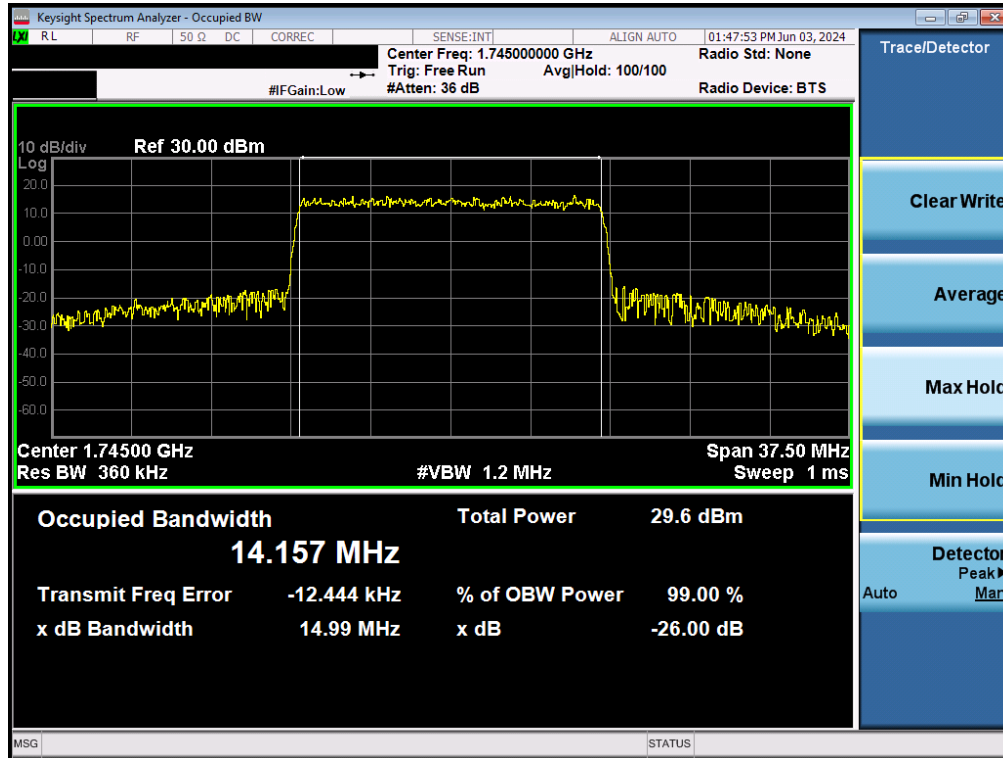


Plot 7-78. Occupied Bandwidth Plot (NR Band n66 - 20.0MHz CP-OFDM 16QAM - Full RB – ANT1)

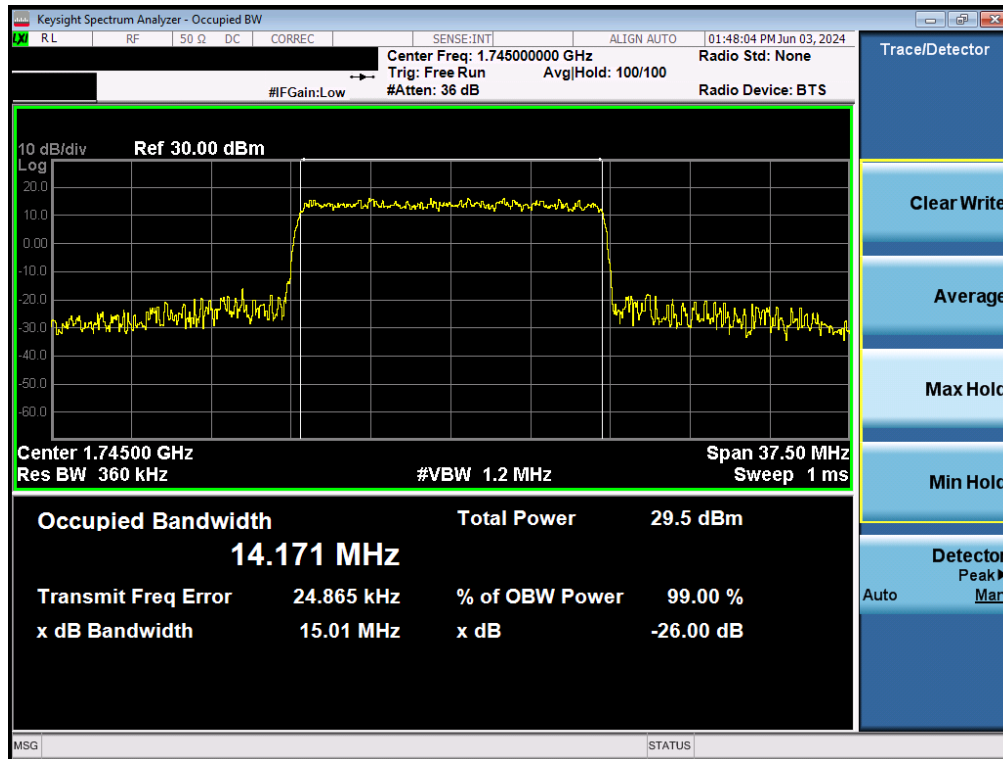


Plot 7-79. Occupied Bandwidth Plot (NR Band n66 - 15.0MHz DFT-s-OFDM BPSK - Full RB – ANT1)

FCC ID: A3LSMX828U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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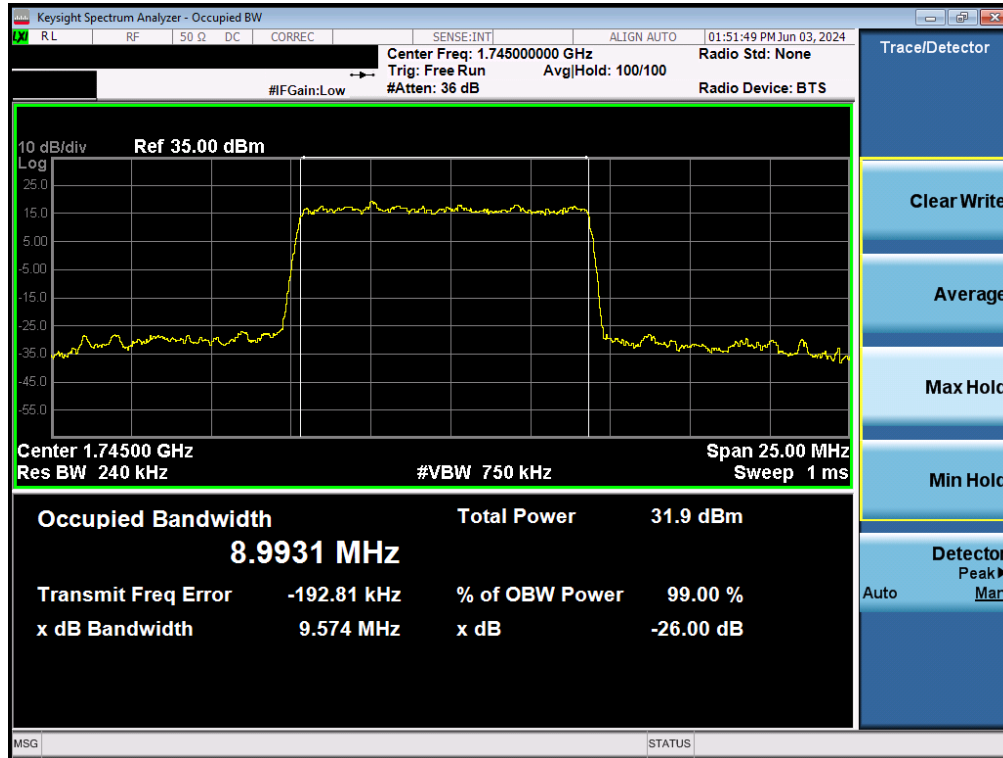


Plot 7-80. Occupied Bandwidth Plot (NR Band n66 - 15.0MHz CP-OFDM QPSK - Full RB – ANT1)

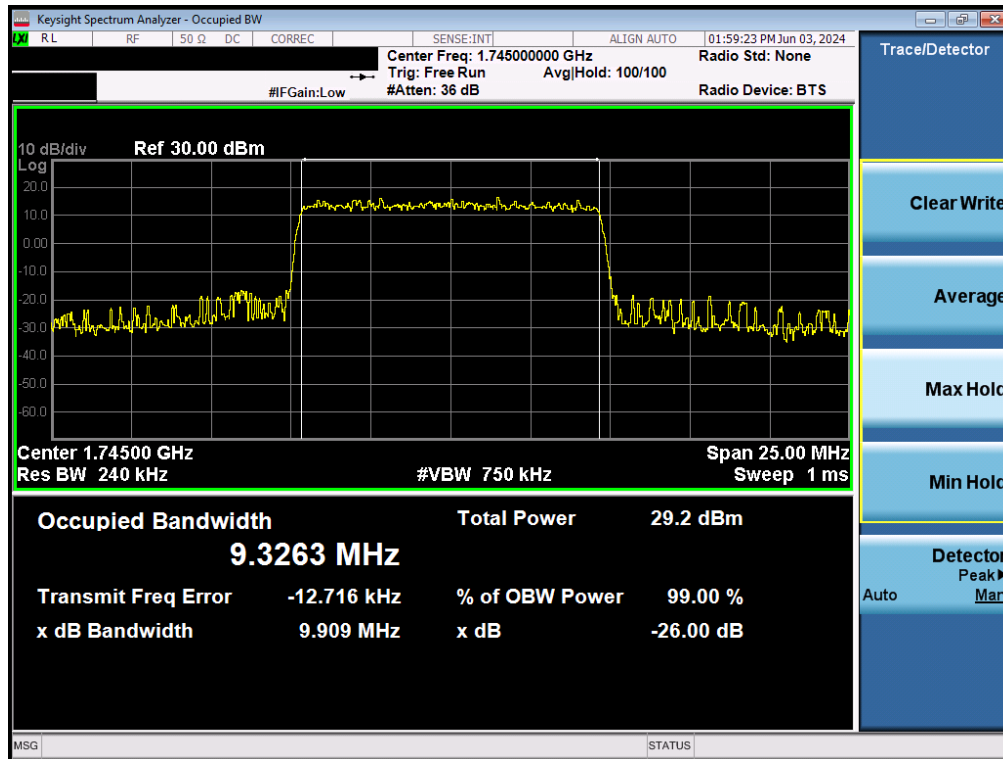


Plot 7-81. Occupied Bandwidth Plot (NR Band n66 - 15.0MHz CP-OFDM 16QAM - Full RB – ANT1)

FCC ID: A3LSMX828U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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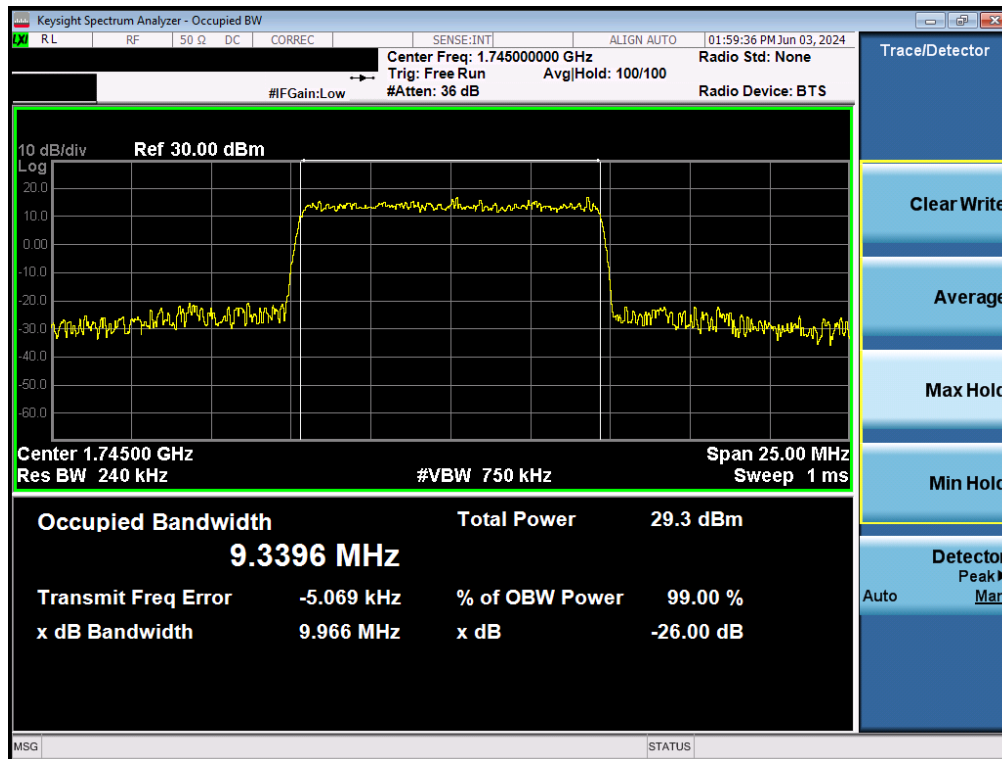


Plot 7-82. Occupied Bandwidth Plot (NR Band n66 - 10.0MHz DFT-s-OFDM BPSK - Full RB – ANT1)

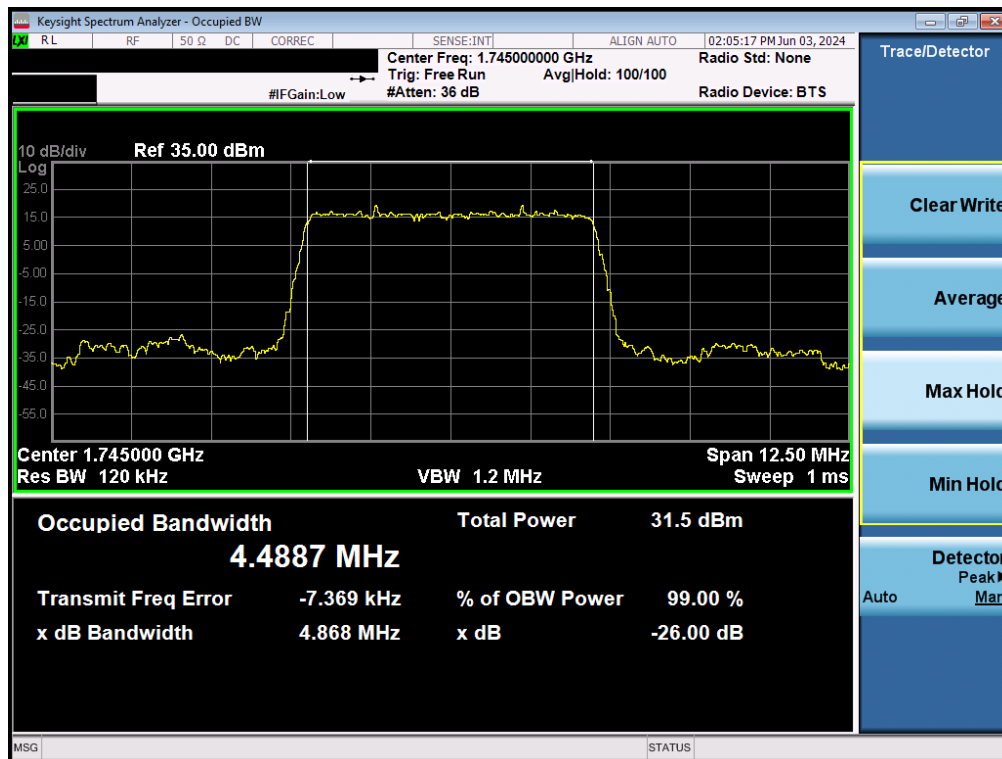


Plot 7-83. Occupied Bandwidth Plot (NR Band n66 - 10.0MHz CP-OFDM QPSK - Full RB – ANT1)

FCC ID: A3LSMX828U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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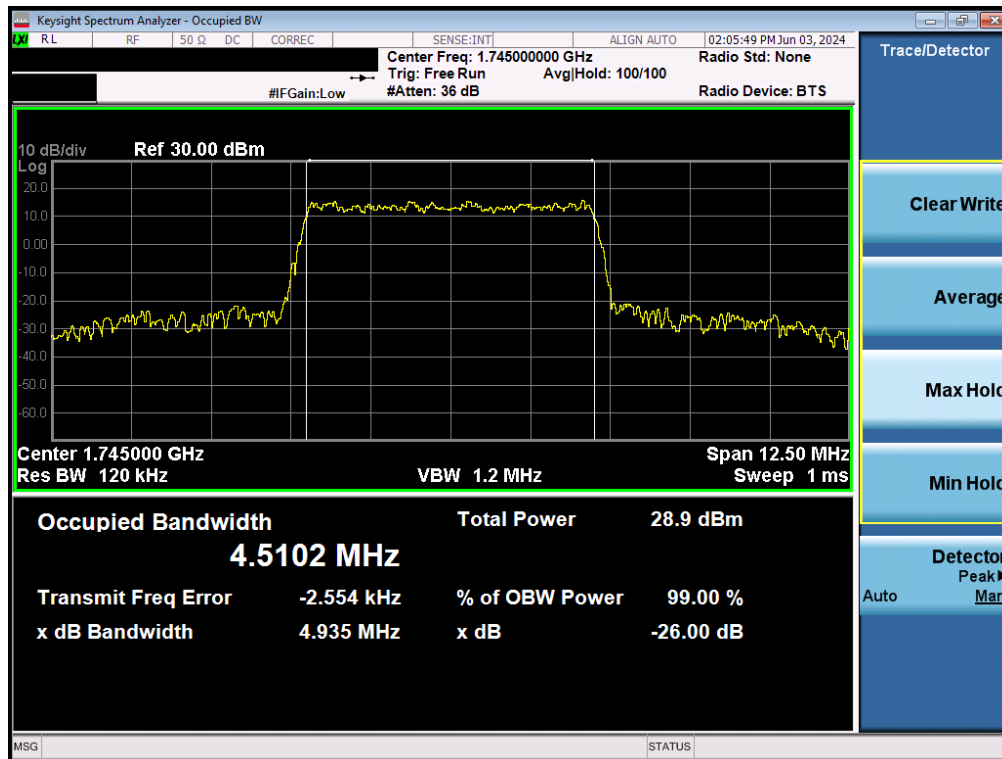


Plot 7-84. Occupied Bandwidth Plot (NR Band n66 - 10.0MHz CP-OFDM 16QAM - Full RB – ANT1)

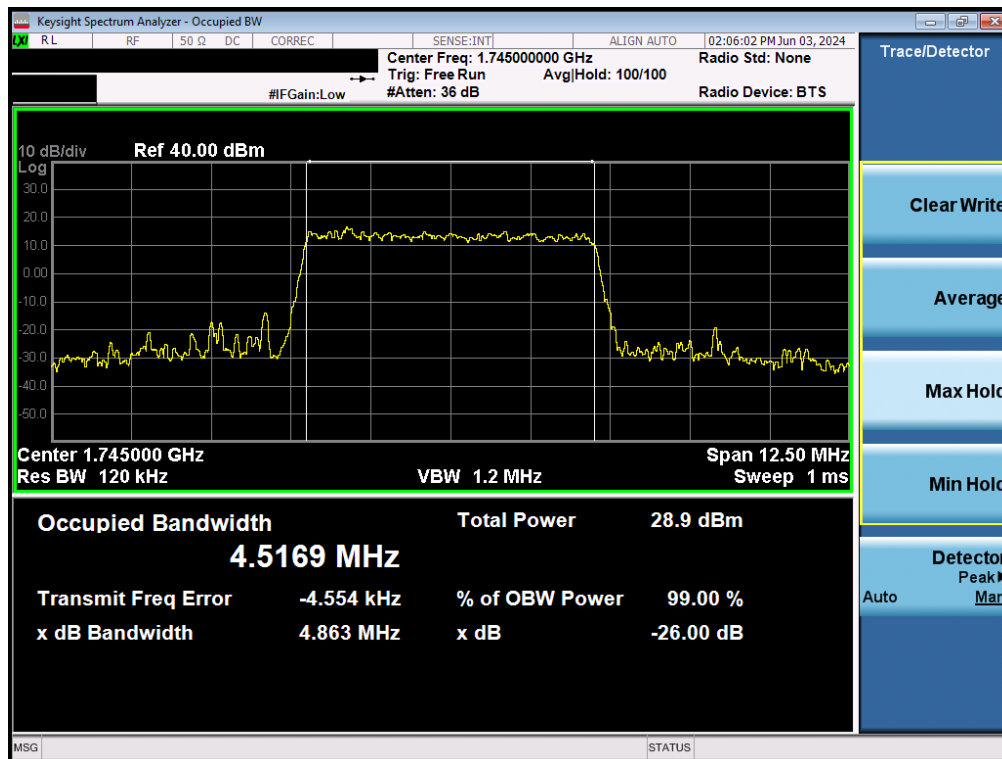


Plot 7-85. Occupied Bandwidth Plot (NR Band n66 - 5.0MHz DFT-s-OFDM BPSK - Full RB – ANT1)

FCC ID: A3LSMX828U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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Plot 7-86. Occupied Bandwidth Plot (NR Band n66 - 5.0MHz CP-OFDM QPSK - Full RB - ANT1)



Plot 7-87. Occupied Bandwidth Plot (NR Band n66 - 5.0MHz CP-OFDM 16QAM - Full RB - ANT1)

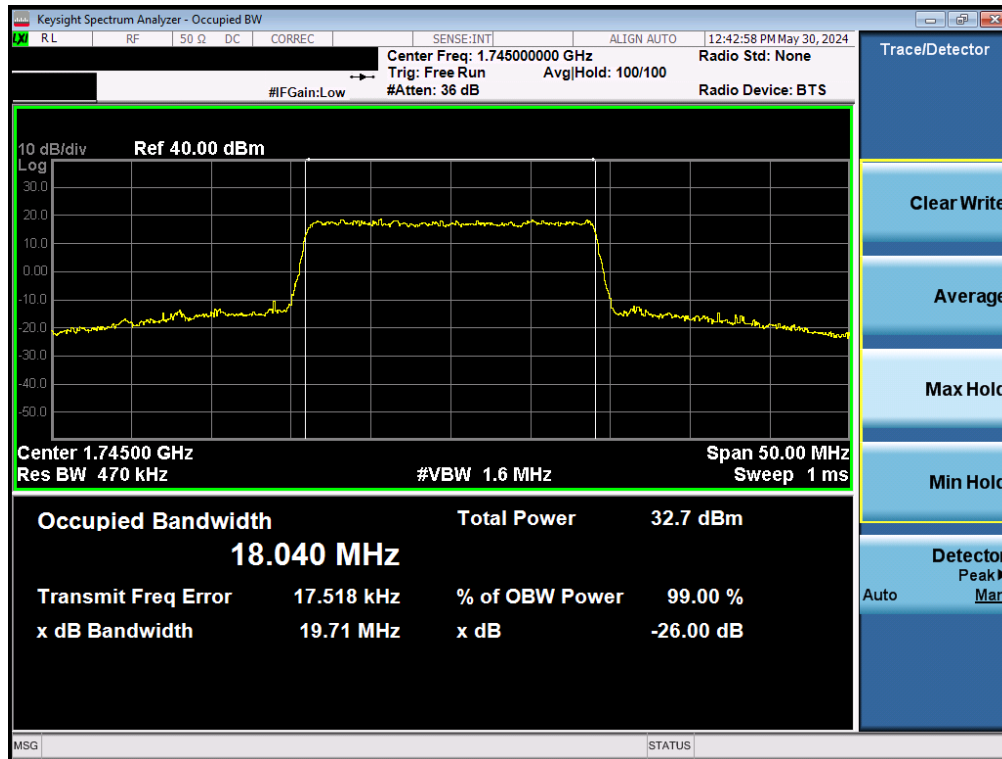
FCC ID: A3LSMX828U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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Mode	Bandwidth	Modulation	OBW [MHz]
LTE-B66-4	20MHz	QPSK	18.04
		16QAM	18.02
	15MHz	QPSK	13.53
		16QAM	13.52
	10MHz	QPSK	9.01
		16QAM	9.01
	5MHz	QPSK	4.51
		16QAM	4.50
	3MHz	QPSK	2.70
		16QAM	2.71
	1.4MHz	QPSK	1.10
		16QAM	1.11

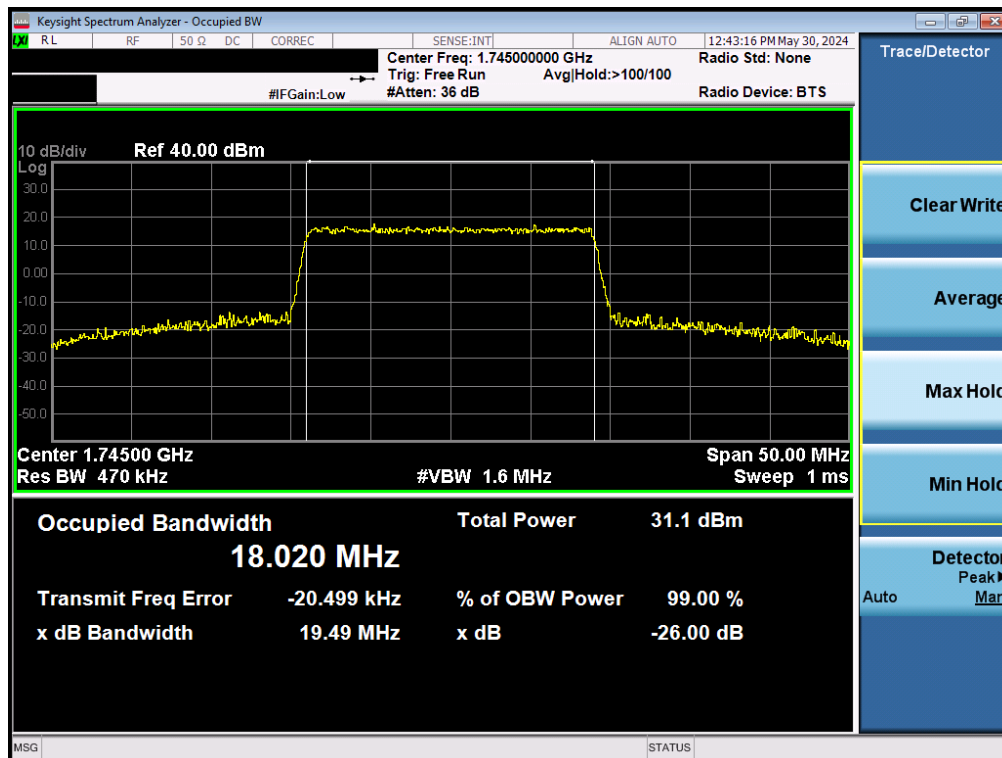
Table 7-14. Occupied Bandwidth Results – Ant2

FCC ID: A3LSMX828U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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LTE Band 66/4 - ANT2

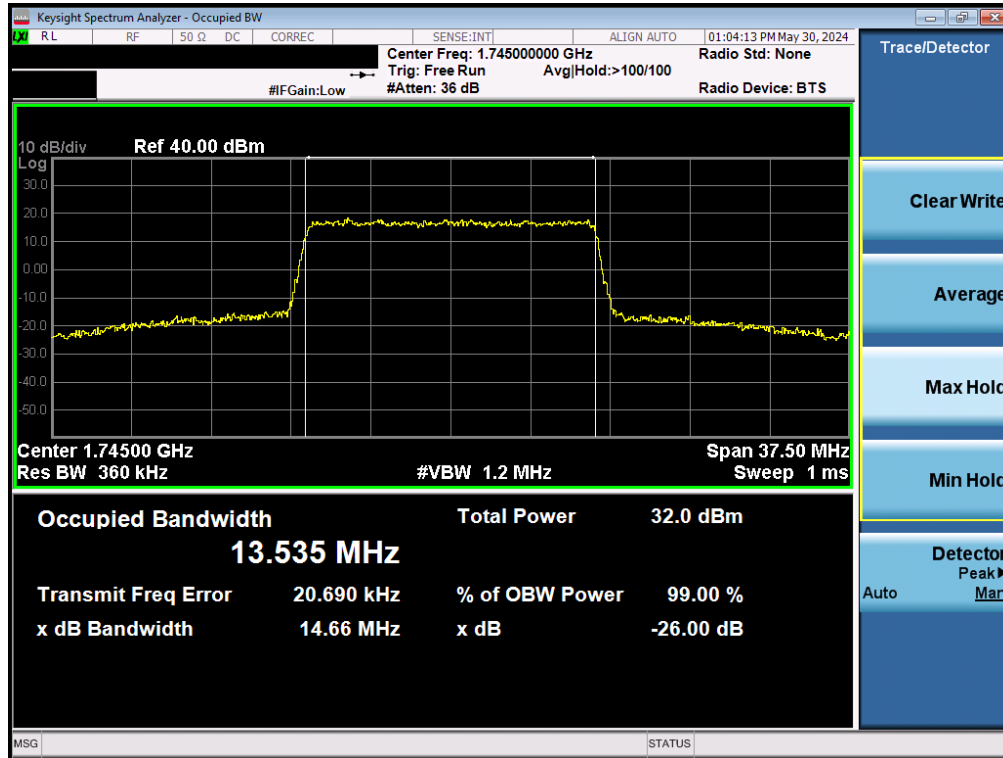


Plot 7-88. Occupied Bandwidth Plot (LTE Band 66/4 - 20MHz QPSK - Full RB - ANT2)

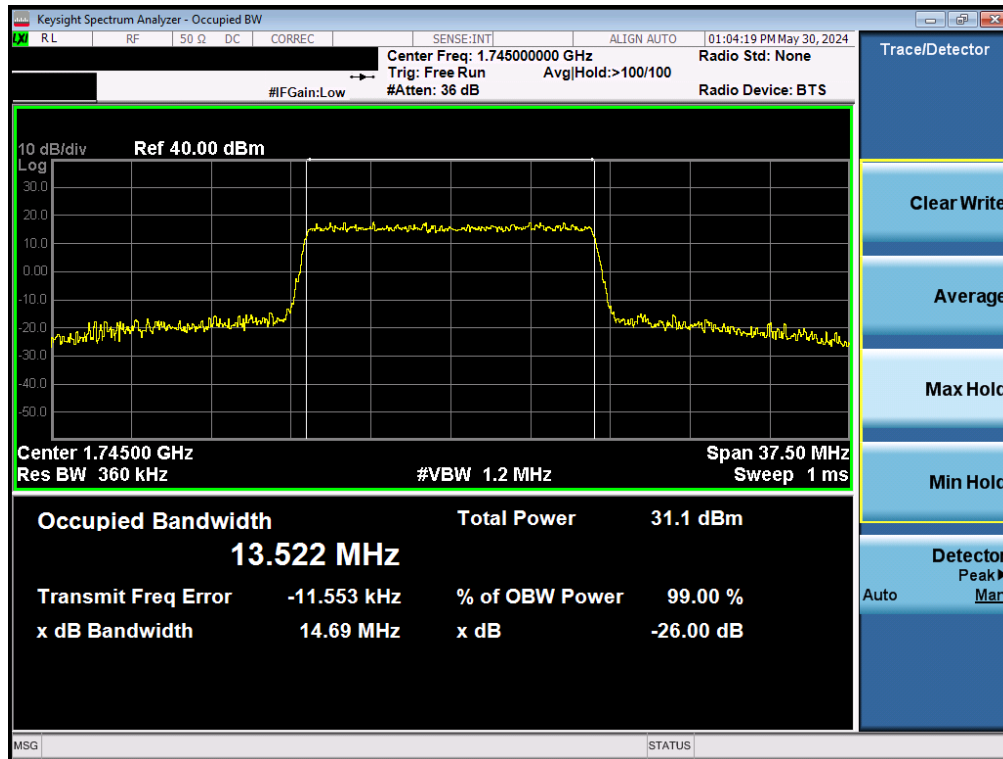


Plot 7-89. Occupied Bandwidth Plot (LTE Band 66/4 - 20MHz 16-QAM - Full RB - ANT2)

FCC ID: A3LSMX828U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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Plot 7-90. Occupied Bandwidth Plot (LTE Band 66/4 - 15MHz QPSK - Full RB - ANT2)



Plot 7-91. Occupied Bandwidth Plot (LTE Band 66/4 - 15MHz 16-QAM - Full RB - ANT2)

FCC ID: A3LSMX828U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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