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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:
5/24/2023 - 7/31/2023
Test Report Issue Date:
8/1/2023
Test Site/Location:
Element lab., Columbia, MD, USA
Test Report Serial No.:
1M2304260060-08.A3L

FCC ID:	A3LSMS711U
Applicant Name:	Samsung Electronics Co., Ltd.

Application Type:	Certification
Model:	SM-S711U
Additional Model(s):	SM-S711U1
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



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Antenna A						
Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	EIRP		Emission Designator
				Max. Power [W]	Max. Power [dBm]	
LTE Band 30	10 MHz	QPSK	2310.0	0.191	22.80	9M06G7D
		16QAM	2310.0	0.158	21.98	9M07W7D
	5 MHz	QPSK	2307.5 - 2312.5	0.192	22.84	4M55G7D
		16QAM	2307.5 - 2312.5	0.161	22.08	4M56W7D
NR Band n30	10 MHz	$\pi/2$ BPSK	2310.0	0.169	22.27	9M00G7D
		QPSK	2310.0	0.170	22.30	9M35G7D
		16QAM	2310.0	0.139	21.42	9M35W7D
	5 MHz	$\pi/2$ BPSK	2307.5 - 2312.5	0.174	22.40	4M54G7D
		QPSK	2307.5 - 2312.5	0.169	22.28	4M54G7D
		16QAM	2307.5 - 2312.5	0.137	21.37	4M54W7D

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Antenna B						
Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	EIRP		Emission Designator
				Max. Power [W]	Max. Power [dBm]	
LTE Band 7	20 MHz	QPSK	2510.0 - 2560.0	0.250	23.99	18M1G7D
		16QAM	2510.0 - 2560.0	0.206	23.15	18M1W7D
	15 MHz	QPSK	2507.5 - 2562.5	0.249	23.96	13M6G7D
		16QAM	2507.5 - 2562.5	0.206	23.14	13M5W7D
	10 MHz	QPSK	2505.0 - 2565.0	0.255	24.07	9M05G7D
		16QAM	2505.0 - 2565.0	0.218	23.38	9M06W7D
5 MHz	QPSK	2502.5 - 2567.5	0.254	24.06	4M55G7D	
	16QAM	2502.5 - 2567.5	0.213	23.28	4M55W7D	
LTE Band 41(PC2)	20 MHz	QPSK	2506.0 - 2680.0	0.432	26.35	18M1G7D
		16QAM	2506.0 - 2680.0	0.366	25.63	18M0W7D
	15 MHz	QPSK	2503.5 - 2682.5	0.423	26.26	13M5G7D
		16QAM	2503.5 - 2682.5	0.359	25.55	13M5W7D
	10 MHz	QPSK	2501.0 - 2685.0	0.430	26.33	9M05G7D
		16QAM	2501.0 - 2685.0	0.359	25.55	9M04W7D
5 MHz	QPSK	2498.5 - 2687.5	0.436	26.39	4M56G7D	
	16QAM	2498.5 - 2687.5	0.359	25.55	4M55W7D	
LTE Band 41(PC3)/38	20 MHz	QPSK	2506.0 - 2680.0	0.305	24.84	18M0G7D
		16QAM	2506.0 - 2680.0	0.247	23.92	18M0W7D
	15 MHz	QPSK	2503.5 - 2682.5	0.301	24.78	13M5G7D
		16QAM	2503.5 - 2682.5	0.238	23.76	13M6W7D
	10 MHz	QPSK	2501.0 - 2685.0	0.313	24.95	9M05G7D
		16QAM	2501.0 - 2685.0	0.251	23.99	9M03W7D
5 MHz	QPSK	2498.5 - 2687.5	0.315	24.98	4M55G7D	
	16QAM	2498.5 - 2687.5	0.248	23.94	4M54W7D	
NR Band n41	100 MHz	$\pi/2$ BPSK	2546.0 - 2640.0	0.493	26.93	97M3G7D
		QPSK	2546.0 - 2640.0	0.459	26.62	98M0G7D
		16QAM	2546.0 - 2640.0	0.341	25.33	97M8W7D
	90 MHz	$\pi/2$ BPSK	2541.0 - 2645.0	0.488	26.88	87M5G7D
		QPSK	2541.0 - 2645.0	0.453	26.56	87M9G7D
		16QAM	2541.0 - 2645.0	0.335	25.25	88M0W7D
	80 MHz	$\pi/2$ BPSK	2536.0 - 2650.0	0.476	26.77	77M5G7D
		QPSK	2536.0 - 2650.0	0.461	26.63	77M9G7D
		16QAM	2536.0 - 2650.0	0.332	25.21	77M9W7D
	70 MHz	$\pi/2$ BPSK	2526.0 - 2660.0	0.499	26.98	64M5G7D
		QPSK	2526.0 - 2660.0	0.471	26.73	67M8G7D
		16QAM	2526.0 - 2660.0	0.334	25.23	67M8W7D
	60 MHz	$\pi/2$ BPSK	2521.0 - 2665.0	0.502	27.00	58M0G7D
		QPSK	2521.0 - 2665.0	0.473	26.75	58M3G7D
		16QAM	2521.0 - 2665.0	0.346	25.39	58M2W7D
	50 MHz	$\pi/2$ BPSK	2516.0 - 2670.0	0.493	26.93	46M0G7D
		QPSK	2516.0 - 2670.0	0.472	26.74	47M8G7D
		16QAM	2516.0 - 2670.0	0.341	25.32	47M8W7D
	40 MHz	$\pi/2$ BPSK	2511.0 - 2675.0	0.524	27.19	36M0G7D
		QPSK	2511.0 - 2675.0	0.479	26.80	38M0G7D
		16QAM	2511.0 - 2675.0	0.357	25.52	37M9W7D
	30 MHz	$\pi/2$ BPSK	2506.0 - 2680.0	0.503	27.01	27M0G7D
		QPSK	2506.0 - 2680.0	0.470	26.72	28M0G7D
		16QAM	2506.0 - 2680.0	0.341	25.33	28M0W7D
20MHz	$\pi/2$ BPSK	2580.0 - 2610.0	0.482	26.83	18M0G7D	
	QPSK	2580.0 - 2610.0	0.454	26.57	18M3G7D	
	16QAM	2580.0 - 2610.0	0.336	25.26	18M4W7D	

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Antenna F						
Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	EIRP		Emission Designator
				Max. Power [W]	Max. Power [dBm]	
LTE Band 30	10 MHz	QPSK	2310.0	0.118	20.70	9M07G7D
		16QAM	2310.0	0.100	19.98	9M06W7D
	5 MHz	QPSK	2307.5 - 2312.5	0.118	20.72	4M55G7D
		16QAM	2307.5 - 2312.5	0.102	20.09	4M56W7D
LTE Band 7	20 MHz	QPSK	2510.0 - 2560.0	0.118	20.73	18M1G7D
		16QAM	2510.0 - 2560.0	0.100	20.00	18M0W7D
	15 MHz	QPSK	2507.5 - 2562.5	0.122	20.85	13M5G7D
		16QAM	2507.5 - 2562.5	0.098	19.90	13M5W7D
	10 MHz	QPSK	2505.0 - 2565.0	0.123	20.90	9M02G7D
		16QAM	2505.0 - 2565.0	0.097	19.88	9M03W7D
	5 MHz	QPSK	2502.5 - 2567.5	0.120	20.81	4M54G7D
		16QAM	2502.5 - 2567.5	0.098	19.93	4M51W7D
LTE Band 41(PC2)	20 MHz	QPSK	2506.0 - 2680.0	0.131	21.18	17M9G7D
		16QAM	2506.0 - 2680.0	0.107	20.29	18M0W7D
	15 MHz	QPSK	2503.5 - 2682.5	0.114	20.55	13M5G7D
		16QAM	2503.5 - 2682.5	0.102	20.10	13M5W7D
	10 MHz	QPSK	2501.0 - 2685.0	0.104	20.18	9M04G7D
		16QAM	2501.0 - 2685.0	0.104	20.19	9M00W7D
	5 MHz	QPSK	2498.5 - 2687.5	0.126	20.99	4M55G7D
		16QAM	2498.5 - 2687.5	0.107	20.31	4M52W7D
LTE Band 41(PC3)/38	20 MHz	QPSK	2506.0 - 2680.0	0.115	20.60	18M0G7D
		16QAM	2506.0 - 2680.0	0.090	19.52	18M0W7D
	15 MHz	QPSK	2503.5 - 2682.5	0.114	20.57	13M5G7D
		16QAM	2503.5 - 2682.5	0.077	18.88	13M5W7D
	10 MHz	QPSK	2501.0 - 2685.0	0.119	20.77	9M03G7D
		16QAM	2501.0 - 2685.0	0.082	19.12	9M00W7D
	5 MHz	QPSK	2498.5 - 2687.5	0.120	20.81	4M53G7D
		16QAM	2498.5 - 2687.5	0.081	19.11	4M54W7D
NR Band n30	10 MHz	$\pi/2$ BPSK	2310.0	0.107	20.29	9M00G7D
		QPSK	2310.0	0.118	20.73	9M36G7D
		16QAM	2310.0	0.085	19.30	9M36W7D
	5 MHz	$\pi/2$ BPSK	2307.5 - 2312.5	0.107	20.31	4M56G7D
		QPSK	2307.5 - 2312.5	0.118	20.71	4M54G7D
		16QAM	2307.5 - 2312.5	0.085	19.29	4M54W7D
NR Band n41	100 MHz	$\pi/2$ BPSK	2546.0 - 2640.0	0.112	20.49	-
		QPSK	2546.0 - 2640.0	0.114	20.58	-

Antenna E						
NR Band n41(PC2)	100 MHz	$\pi/2$ BPSK	2546.0 - 2640.0	0.075	18.74	-
		QPSK	2546.0 - 2640.0	0.081	19.09	-
		16QAM	2546.0 - 2640.0	0.059	17.69	-

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Antenna D						
Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	EIRP		Emission Designator
				Max. Power [W]	Max. Power [dBm]	
NR Band n41(PC2)	100 MHz	$\pi/2$ BPSK	2546.0 - 2640.0	0.063	17.97	-
		QPSK	2546.0 - 2640.0	0.058	17.64	-
		16QAM	2546.0 - 2640.0	0.054	17.31	-

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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 Handset FCC ID: A3LSMS711U**. 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.: 0325M, 0602M, 0588M, 0182M, 0594M, 0640M, 0597M, 1200M, 0660M, 0590M, 0754M, 0656M, 0591M, 0604M, 0658M, 1388M

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 and FR2), 802.11b/g/n/ax WLAN, 802.11a/n/ac/ax UNII (5GHz and 6GHz), Bluetooth (1x, EDR, LE), NFC, Wireless Power

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.

Band	Ant1	Ant2	Ant3	Ant4
B30/n30	ANT A	ANT F	N/A	N/A
B7/n7	ANT B	ANT F	N/A	N/A
B41	ANT B	ANT F	N/A	N/A
n41	ANT B	ANT F	ANT E	ANT D

Table 2-1. Antenna Naming Convention

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.

This device supports wireless charging capability and, thus, is subject to the test requirements of KDB 648474 D03 v01r04. Additional radiated spurious emission measurements were performed with the EUT lying flat on an authorized wireless charging pad (WCP) Model: EP-N5100 while operating under normal conditions in a simulated call or data transmission configuration. The worst case radiated emissions data is shown in this report.

2.4 Software and Firmware

Testing was performed on device(s) using software/firmware version S711USQU0AWG7 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:

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

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
-	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
-	LTX1	Licensed Transmitter Cable Set	1/12/2023	Annual	1/12/2024	LTX1
-	LTX2	Licensed Transmitter Cable Set	1/12/2023	Annual	1/12/2024	LTX2
-	LTX3	Licensed Transmitter Cable Set	1/12/2023	Annual	1/12/2024	LTX3
-	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
EMCO	3115	Horn Antenna (1-18GHz)	8/8/2022	Biennial	8/8/2024	9704-5182
EMCO	3116	Horn Antenna (18-40GHz)	7/20/2021	Biennial	8/30/2023	9203-2178
Keysight Technologies	N9030A	PXA Signal Analyzer (3Hz-26.5GHz)	9/6/2022	Annual	9/6/2023	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)	8/29/2022	Annual	8/29/2023	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	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

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

Example: Spurious emission at 3700.40 MHz

The receive 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 3700.40 MHz. So 6.1 dB is added to the signal generator reading of -30.9 dBm yielding -24.80 dBm. The fundamental EIRP was 25.50 dBm so this harmonic was 25.50 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: A3LSMS711U
 FCC Classification: PCS Licensed Transmitter Held to Ear (PCE)
 Mode(s): LTE/NR/ULCA

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 30; NR Band n30)	2.1051, 27.53(a)(4)	Undesirable emissions must meet the limits detailed in 27.53(a)(4)	PASS	Sections 7.4, 7.5
	Conducted Band Edge / Spurious Emissions (LTE Band 7, 38, 41; NR Band n7, n38, n41)	2.1051, 27.53(m)(4)	Undesirable emissions must meet the limits detailed in 27.53(m)(4)	PASS	Sections 7.4, 7.5
	Frequency Stability	2.1055, 27.54	Fundamental emissions stay within authorized frequency block	PASS	Section 7.8
RADIATED	Equivalent Isotropic Radiated Power (LTE Band 30; NR Band n30)	27.50(a)(3)	≤ 250mW / 5MHz max. EIRP	PASS	Section 7.6
	Equivalent Isotropic Radiated Power (LTE Band 7, 38, 41; NR Band n7, n38, n41)	27.50(h)(2)	≤ 2 Watts max. EIRP	PASS	Section 7.6
	Radiated Spurious Emissions (LTE Band 30; NR Band n30)	2.1053, 27.53(a)(4)	Undesirable emissions must meet the limits detailed in 27.53(a)(4)	PASS	Section 7.7
	Radiated Spurious Emissions (LTE Band 7, 38, 41; NR Band n7, n38, n41)	2.1053, 27.53(m)	Undesirable emissions must meet the limits detailed in 27.53(m)	PASS	Section 7.7

* 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 (FCC)

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 were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables, directional couplers, and attenuators used as part of the system to maintain a link between the call box and the EUT at all frequencies of interest.
- 3) All antenna port conducted emissions testing was performed on a test bench with the antenna port of the EUT connected to the spectrum analyzer through calibrated cables, attenuators, and couplers.

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- 4) All conducted emissions measurements are performed with automated test software to capture the corresponding plots necessary to show compliance. The measurement software utilized is EMC Software Tool v1.0.

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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.

A-MPR is implemented in this device when operating at Power Class 2 in LTE Band 41 per the A-MPR specification in 3GPP TS 36.101. The conducted powers are shown herein to cover the different A-MPR levels specified in the standard. Measurement equipment was set up with triggering/gating on the spectrum analyzer such that powers were measured only during the on-time of the signal.

Test Procedure Used

ANSI C63.26-2015 – Section 5.2

Test Settings

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

Test Setup

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

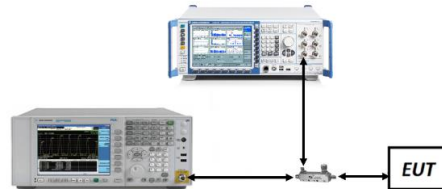


Figure 7-1. Test Instrument & Measurement Setup

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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Power State	Band	Bandwidth (PCC + SCC)	PCC				SCC				ULCA Tx. Power [dBm]		
			Modulation	UL Channel	UL Frequency	UL # RB	UL RB Offset	Modulation	UL Channel	UL Frequency		UL # RB	UL RB Offset
Max	LTE B41 (PC2)	20MHz + 20MHz	QPSK	39750	2506.0	1	99	QPSK	39948	2525.8	1	0	25.41
				40620	2593.0	1	99		40818	2612.8	1	0	25.37
				41490	2680.0	1	0		41292	2660.2	1	99	25.35
			QPSK	39750	2506	100	0	QPSK	39948	2525.8	100	0	23.77
			16-QAM	39750	2506	100	0	16-QAM	39948	2525.8	100	0	22.61
			64-QAM	39750	2506	100	0	64-QAM	39948	2525.8	100	0	22.32
			256-QAM	39750	2506	100	0	256-QAM	39948	2525.8	100	0	20.60

Table 7-1. Conducted Power Data (ULCA LTE B41(PC2) – Ant1)

Power State	Band	Bandwidth (PCC + SCC)	PCC				SCC				ULCA Tx. Power [dBm]		
			Modulation	UL Channel	UL Frequency	UL # RB	UL RB Offset	Modulation	UL Channel	UL Frequency		UL # RB	UL RB Offset
Max	LTE B41 (PC3)	20MHz + 20MHz	QPSK	39750	2506.0	1	99	QPSK	39948	2525.8	1	0	23.47
				40620	2593.0	1	99		40818	2612.8	1	0	23.44
				41490	2680.0	1	0		41292	2660.2	1	99	23.36
			QPSK	39750	2506	100	0	QPSK	39948	2525.8	100	0	22.15
			16-QAM	39750	2506	100	0	16-QAM	39948	2525.8	100	0	21.01
			64-QAM	39750	2506	100	0	64-QAM	39948	2525.8	100	0	20.70
			256-QAM	39750	2506	100	0	256-QAM	39948	2525.8	100	0	18.82

Table 7-2. Conducted Power Data (ULCA LTE B41(PC3) – Ant1)

Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
10 MHz	QPSK	27710	2310.0	1 / 0	21.81
	16-QAM	27710	2310.0	1 / 49	21.04
5 MHz	QPSK	27685	2307.5	1 / 0	21.80
		27710	2310.0	1 / 12	21.83
		27735	2312.5	1 / 0	21.74
	16-QAM	27685	2307.5	1 / 0	21.15

Table 7-3. Conducted Power Data (LTE B30 – Ant2)

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Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
20 MHz	QPSK	20850	2510.0	1 / 99	20.72
		21100	2535.0	1 / 0	20.58
		21350	2560.0	1 / 0	20.65
	16-QAM	20850	2510.0	1 / 50	20.14
15 MHz	QPSK	20825	2507.5	1 / 0	20.85
		21100	2535.0	1 / 0	20.70
		21375	2562.5	1 / 74	20.60
	16-QAM	20825	2507.5	1 / 37	19.91
10 MHz	QPSK	20800	2505.0	1 / 0	20.83
		21100	2535.0	1 / 0	20.75
		21400	2565.0	1 / 49	20.76
	16-QAM	20800	2505.0	1 / 25	20.07
5 MHz	QPSK	20775	2502.5	1 / 12	20.78
		21100	2535.0	1 / 12	20.66
		21425	2567.5	1 / 12	20.75
	16-QAM	20775	2502.5	1 / 24	20.09

Table 7-4. Conducted Power Data (LTE B7 – Ant2)

Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
20 MHz	QPSK	39790	2510.0	1 / 50	22.99
		40620	2593.0	1 / 50	23.15
		41490	2680.0	1 / 50	22.91
	16-QAM	40620	2593.0	1 / 99	21.89
15 MHz	QPSK	39765	2507.5	1 / 37	22.22
		40620	2593.0	1 / 37	22.53
		41515	2682.5	1 / 37	22.22
	16-QAM	40620	2593.0	1 / 37	21.71
10 MHz	QPSK	39740	2505.0	1 / 25	22.94
		40620	2593.0	1 / 49	22.15
		41540	2685.0	1 / 25	22.81
	16-QAM	40620	2593.0	1 / 25	21.79
5 MHz	QPSK	39715	2502.5	1 / 12	23.02
		40620	2593.0	1 / 12	22.96
		41565	2687.5	1 / 12	22.81
	16-QAM	40620	2593.0	1 / 24	21.91

Table 7-5. Conducted Power Data (LTE B41(PC2) – Ant2)

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Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
20 MHz	QPSK	39790	2510.0	1 / 50	21.54
		40620	2593.0	1 / 0	21.70
		41490	2680.0	1 / 0	21.61
	16-QAM	40620	2593.0	1 / 50	21.35
15 MHz	QPSK	39765	2507.5	1 / 37	21.56
		40620	2593.0	1 / 74	21.67
		41515	2682.5	1 / 0	21.56
	16-QAM	40620	2593.0	1 / 0	20.71
10 MHz	QPSK	39740	2505.0	1 / 25	21.84
		40620	2593.0	1 / 25	21.87
		41540	2685.0	1 / 25	21.78
	16-QAM	40620	2593.0	1 / 25	20.95
5 MHz	QPSK	39715	2502.5	1 / 12	21.74
		40620	2593.0	1 / 12	21.91
		41565	2687.5	1 / 12	21.68
	16-QAM	40620	2593.0	1 / 0	20.94

Table 7-6. Conducted Power Data (LTE B41(PC3) – Ant2)

Power State	Band	Bandwidth (PCC + SCC)	PCC				SCC				ULCA Tx. Power [dBm]			
			Modulation	UL Channel	UL Frequency	UL # RB	UL RB Offset	Modulation	UL Channel	UL Frequency		UL # RB	UL RB Offset	
Max	LTE B41 (PC3)	20MHz + 20MHz	QPSK	39750	2506.0	1	99	QPSK	39948	2525.8	1	0	22.27	
				40620	2593.0	1	99		40818	2612.8	1	0	22.36	
				41490	2680.0	1	0		41292	2660.2	1	99	22.53	
			QPSK	41490	2680	100	0	QPSK	41292	2660.2	100	0	20.42	
				16-QAM	41490	2680	100	0	16-QAM	41292	2660.2	100	0	19.41
				64-QAM	41490	2680	100	0	64-QAM	41292	2660.2	100	0	19.39
				256-QAM	41490	2680	100	0	256-QAM	41292	2660.2	100	0	17.46

Table 7-7. Conducted Power Data (ULCA LTE B41(PC2) – Ant2)

Power State	Band	Bandwidth (PCC + SCC)	PCC				SCC				ULCA Tx. Power [dBm]			
			Modulation	UL Channel	UL Frequency	UL # RB	UL RB Offset	Modulation	UL Channel	UL Frequency		UL # RB	UL RB Offset	
Max	LTE B41 (PC2)	20MHz + 20MHz	QPSK	39750	2506.0	1	99	QPSK	39948	2525.8	1	0	22.56	
				40620	2593.0	1	99		40818	2612.8	1	0	22.41	
				41490	2680.0	1	0		41292	2660.2	1	99	22.52	
			QPSK	39750	2506	100	0	QPSK	39948	2525.8	100	0	20.61	
				16-QAM	39750	2506	100	0	16-QAM	39948	2525.8	100	0	19.80
				64-QAM	39750	2506	100	0	64-QAM	39948	2525.8	100	0	19.59
				256-QAM	39750	2506	100	0	256-QAM	39948	2525.8	100	0	17.59

Table 7-8. Conducted Power Data (ULCA LTE B41(PC3) – Ant2)

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Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
10 MHz	$\pi/2$ BPSK	27710	2310.0	1 / 26	22.22
	QPSK	27710	2310.0	1 / 26	22.31
	16-QAM	27710	2310.0	1 / 26	21.28
5 MHz	$\pi/2$ BPSK	27685	2307.5	1 / 12	22.22
		27710	2310.0	1 / 12	22.24
		27735	2312.5	1 / 12	22.22
	QPSK	27685	2307.5	1 / 12	22.17
		27710	2310.0	1 / 12	22.29
		27735	2312.5	1 / 12	22.14
	16-QAM	27735	2312.5	1 / 12	21.27

Table 7-9. Conducted Power Data (NR n30 – Ant2)

Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
100 MHz	$\pi/2$ BPSK	509202	2546.01	1 / 1	22.40
		518598	2592.99	1 / 1	22.27
		528000	2640.00	1 / 136	22.53
	QPSK	509202	2546.01	1 / 1	22.79
		518598	2592.99	1 / 1	22.39
		528000	2640.00	1 / 136	22.53
	16-QAM	528000	2640.00	1 / 136	22.05

Table 7-10. Conducted Power Data (NR n41 – Ant2)

Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
100 MHz	$\pi/2$ BPSK	509202	2546.01	1 / 136	20.39
		518598	2592.99	1 / 136	20.34
		528000	2640.00	1 / 136	20.39
	QPSK	509202	2546.01	1 / 136	20.48
		518598	2592.99	1 / 136	20.47
		528000	2640.00	1 / 136	20.48
	16-QAM	528000	2640.00	1 / 136	19.99

Table 7-11. Conducted Power Data (NR n41 – Ant3)

FCC ID: A3LSMS711U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
100 MHz	π/2 BPSK	509202	2546.01	1 / 136	19.89
		518598	2592.99	1 / 271	19.90
		528000	2640.00	1 / 136	18.48
	QPSK	509202	2546.01	1 / 136	19.98
		518598	2592.99	1 / 1	19.92
		528000	2640.00	1 / 136	19.60
	16-QAM	509202	2546.01	1 / 136	19.43

Table 7-12. Conducted Power Data (NR n41 – Ant4)

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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 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.

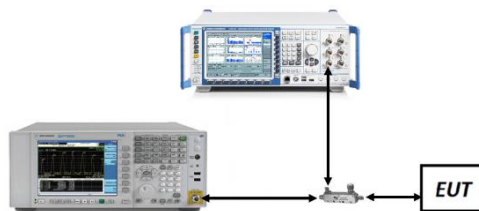


Figure 7-2. Test Instrument & Measurement Setup

Test Notes

None.

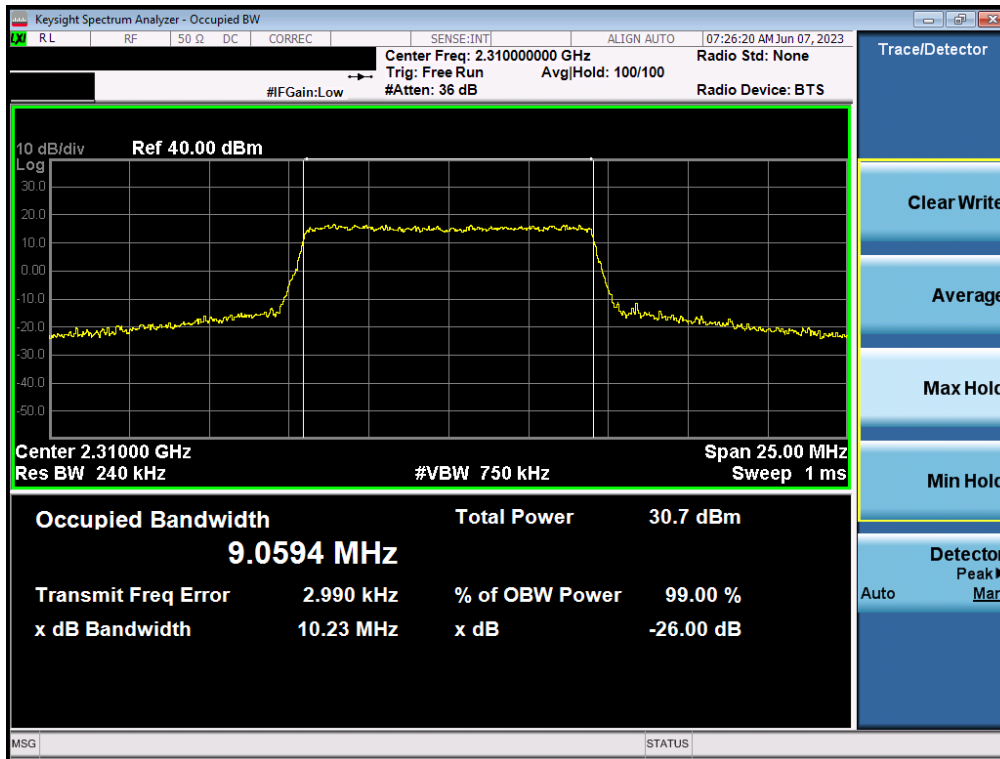
FCC ID: A3LSMS711U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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Mode	Bandwidth	Modulation	OBW [MHz]
LTE Band 30	10MHz	QPSK	9.06
		16QAM	9.07
	5 MHz	QPSK	4.55
		16QAM	4.56
LTE Band 7	20 MHz	QPSK	18.13
		16QAM	18.09
	15 MHz	QPSK	13.58
		16QAM	13.54
	10 MHz	QPSK	9.05
		16QAM	9.06
	5 MHz	QPSK	4.55
		16QAM	4.55
LTE Band 41(PC2)	20 MHz	QPSK	18.08
		16QAM	18.03
	15 MHz	QPSK	13.55
		16QAM	13.52
	10 MHz	QPSK	9.05
		16QAM	9.04
	5 MHz	QPSK	4.56
		16QAM	4.55
LTE Band 41(PC3)/38	20 MHz	QPSK	18.03
		16QAM	18.04
	15 MHz	QPSK	13.54
		16QAM	13.56
	10 MHz	QPSK	9.05
		16QAM	9.03
	5 MHz	QPSK	4.55
		16QAM	4.54

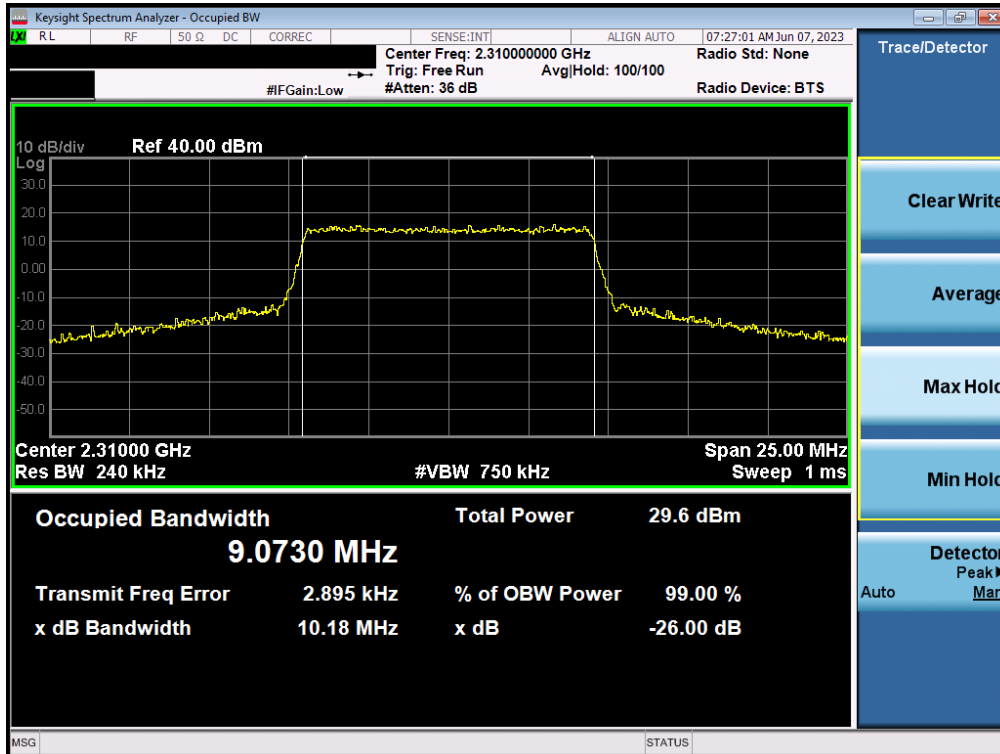
Table 7-13. Occupied Bandwidth Test Results (Ant1)

FCC ID: A3LSMS711U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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LTE Band 30 – Ant1

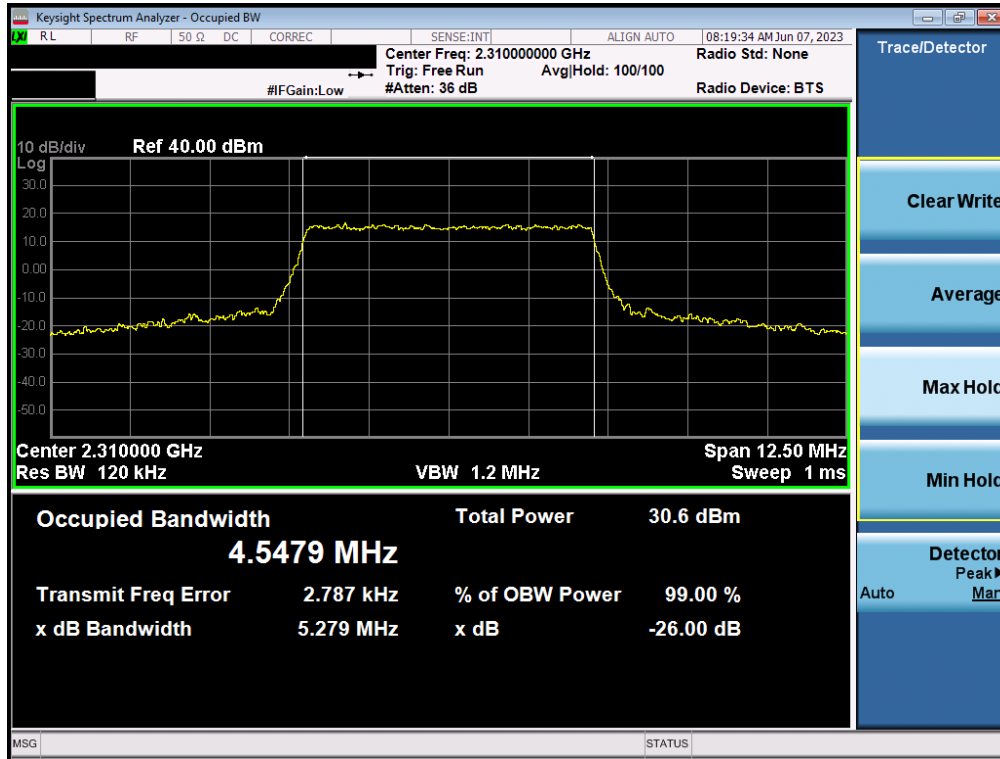


Plot 7-14. Occupied Bandwidth Plot (LTE Band 30 - 10MHz QPSK - Full RB - Ant1 – Ant1)

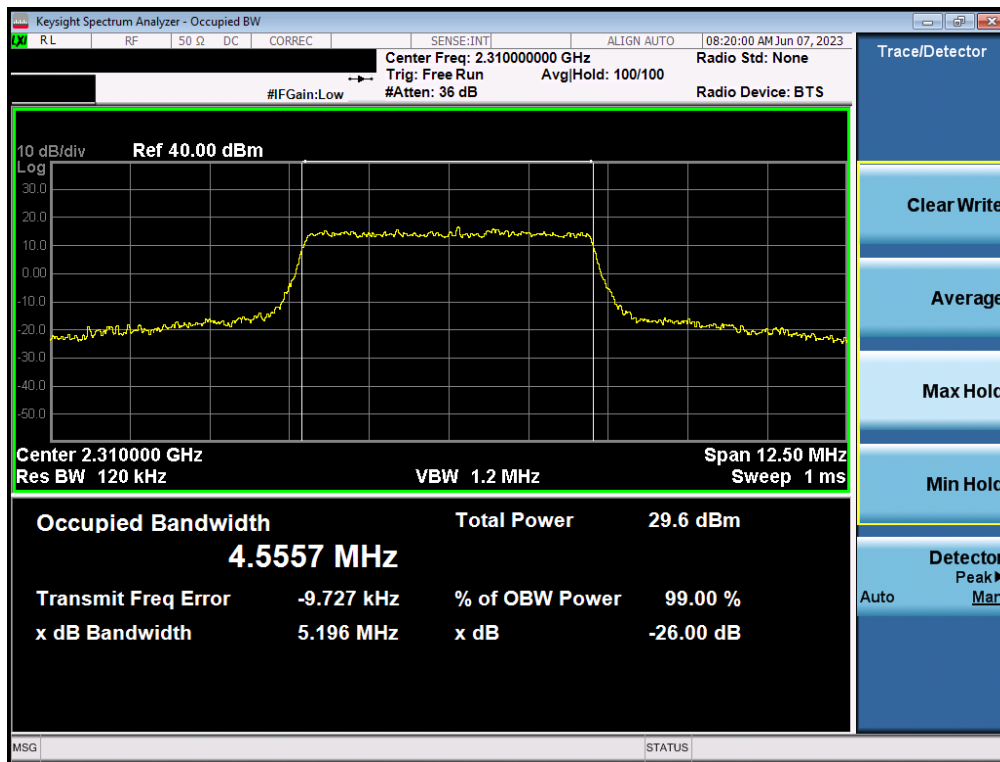


Plot 7-15. Occupied Bandwidth Plot (LTE Band 30 - 10MHz 16-QAM - Full RB - Ant1)

FCC ID: A3LSMS711U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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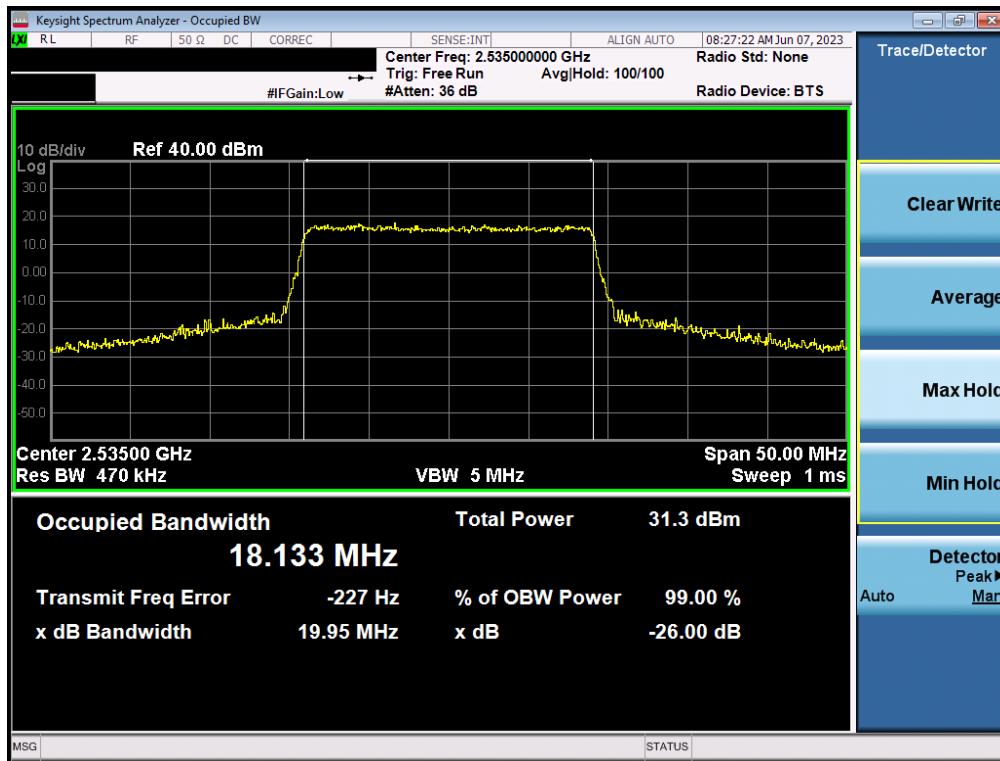
Plot 7-16. Occupied Bandwidth Plot (LTE Band 30 - 5MHz QPSK - Full RB - Ant1)



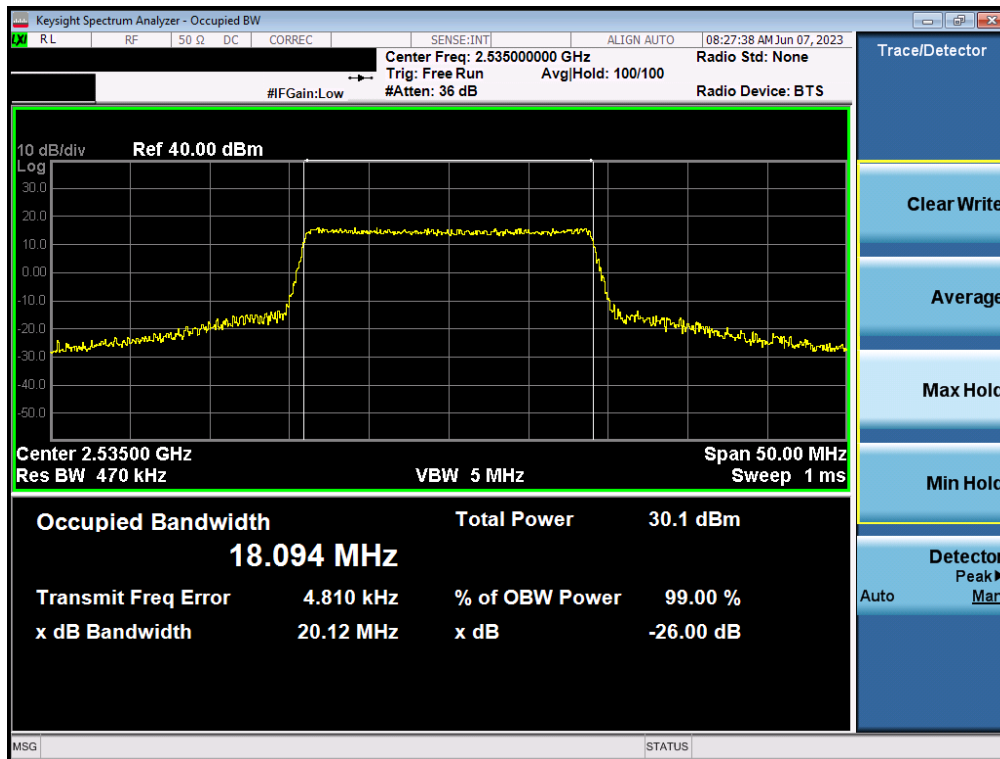
Plot 7-17. Occupied Bandwidth Plot (LTE Band 30 - 5MHz 16-QAM - Full RB - Ant1)

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LTE Band 7 – Ant1

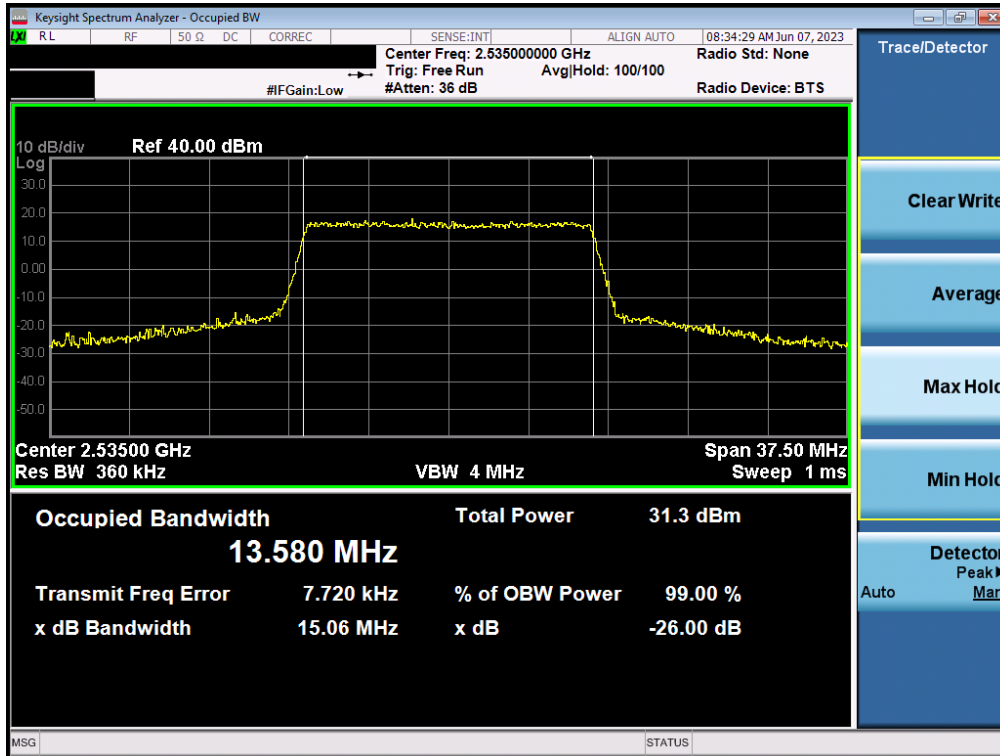


Plot 7-18. Occupied Bandwidth Plot (LTE Band 7 - 20MHz QPSK - Full RB - Ant1)

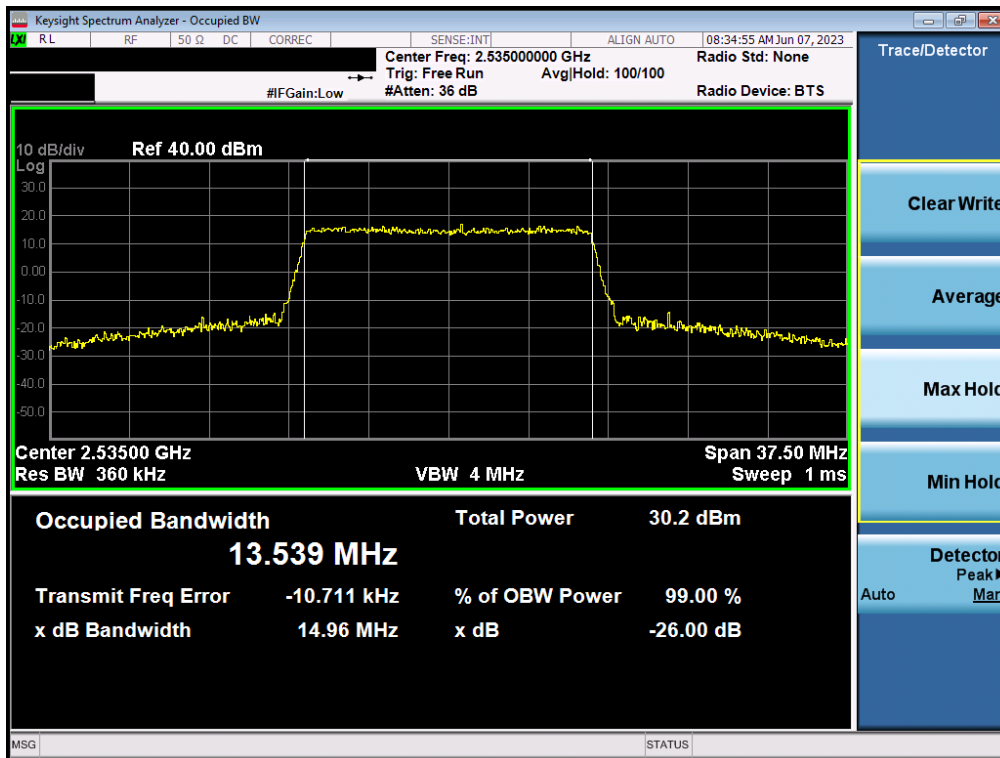


Plot 7-19. Occupied Bandwidth Plot (LTE Band 7 - 20MHz 16-QAM - Full RB - Ant1)

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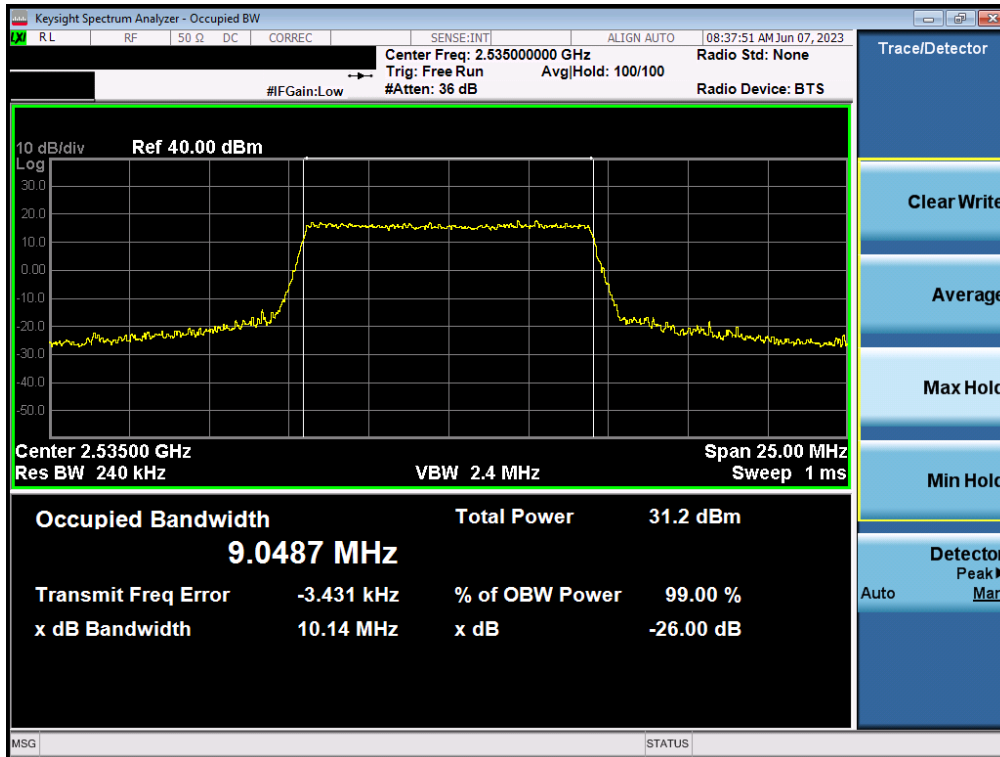


Plot 7-20. Occupied Bandwidth Plot (LTE Band 7 - 15MHz QPSK - Full RB - Ant1)

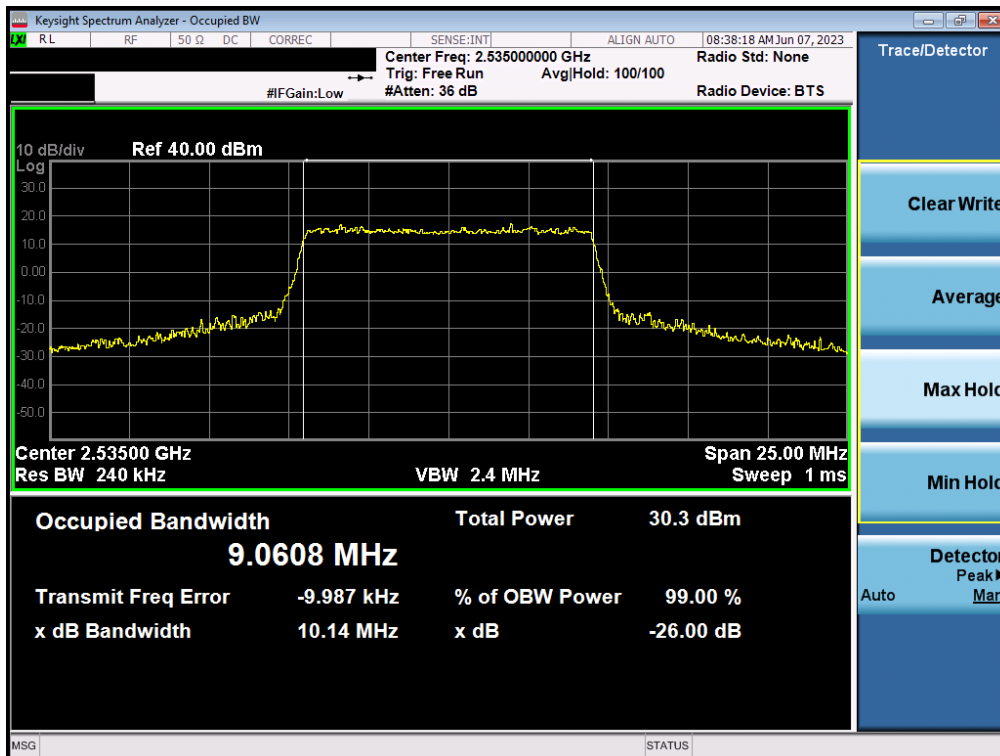


Plot 7-21. Occupied Bandwidth Plot (LTE Band 7 - 15MHz 16-QAM - Full RB - Ant1)

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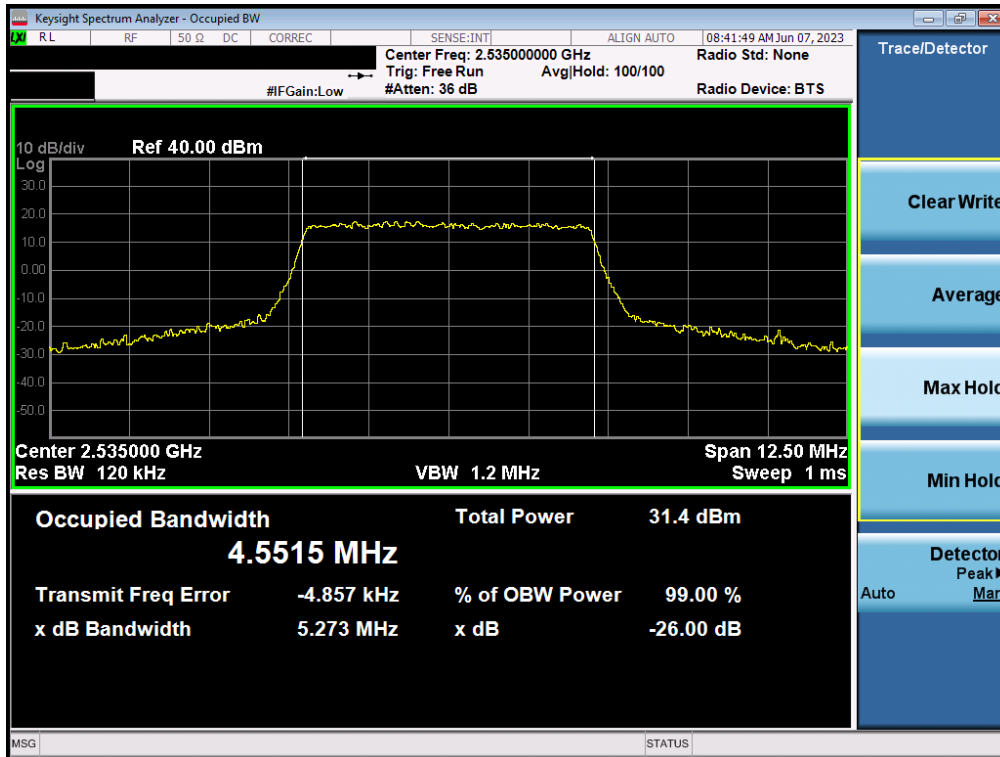


Plot 7-22. Occupied Bandwidth Plot (LTE Band 7 - 10MHz QPSK - Full RB - Ant1)



Plot 7-23. Occupied Bandwidth Plot (LTE Band 7 - 10MHz 16-QAM - Full RB - Ant1)

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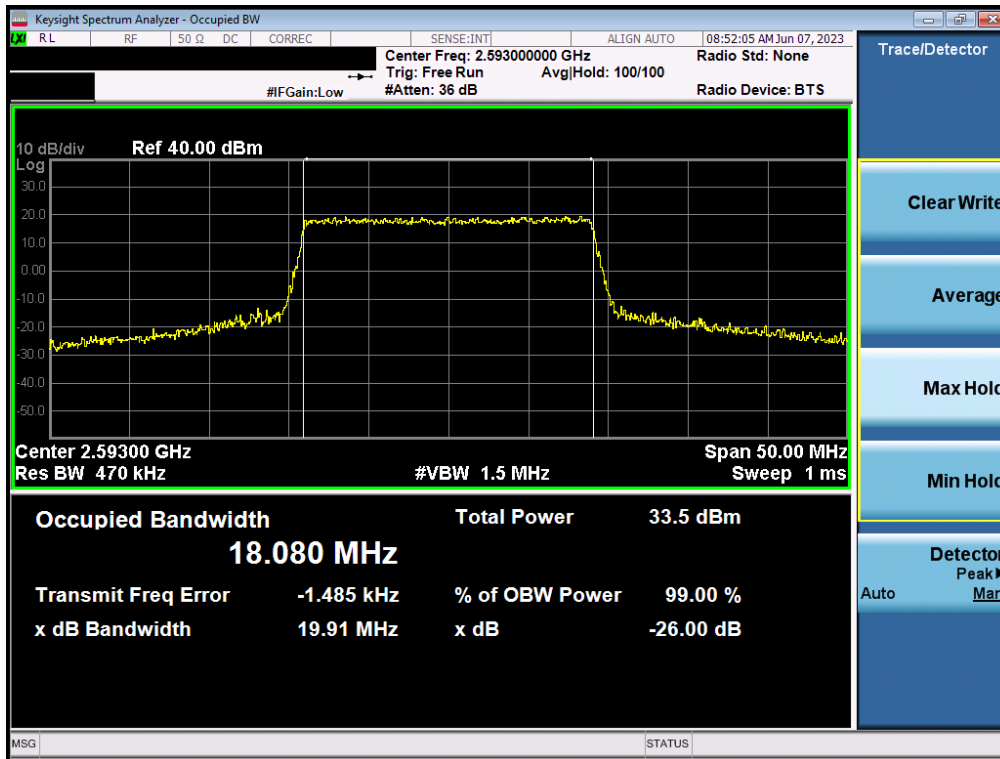
Plot 7-24. Occupied Bandwidth Plot (LTE Band 7 - 5MHz QPSK - Full RB - Ant1)



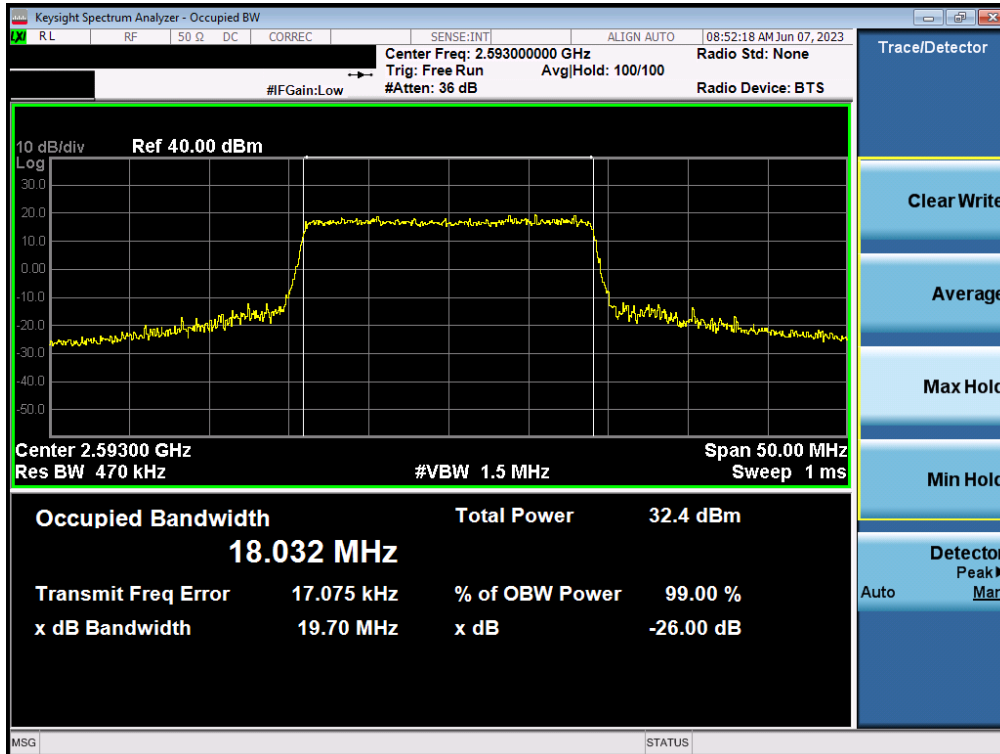
Plot 7-25. Occupied Bandwidth Plot (LTE Band 7 - 5MHz 16-QAM - Full RB - Ant1)

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LTE Band 41(PC2) – Ant1

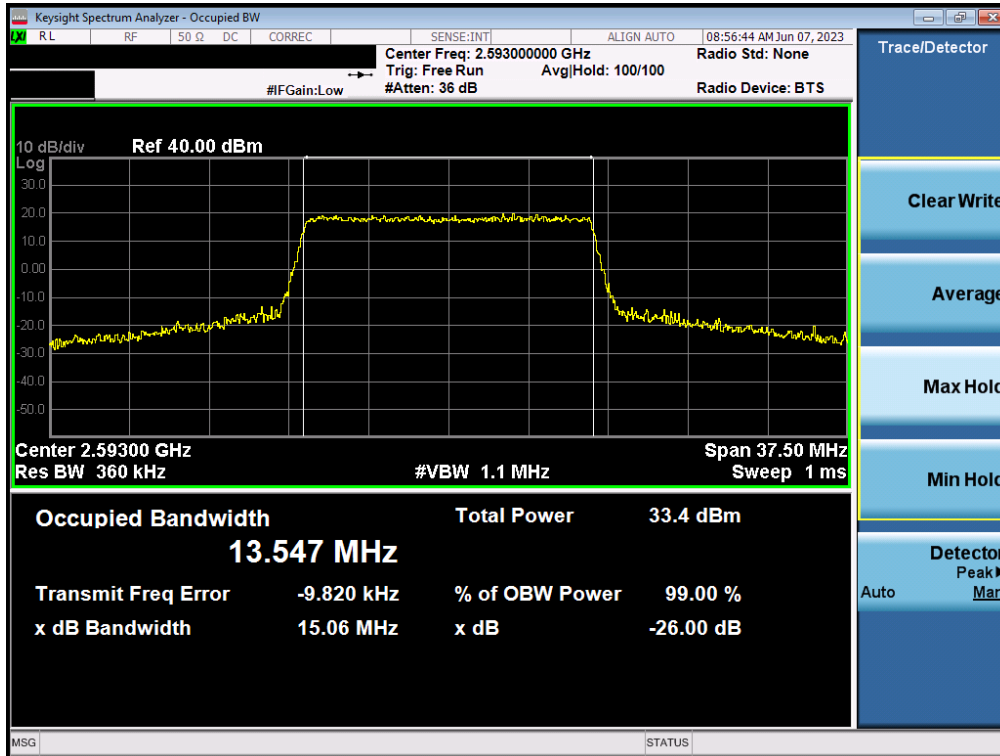


Plot 7-26. Occupied Bandwidth Plot (LTE Band 41(PC2) - 20MHz QPSK - Full RB - Ant1)

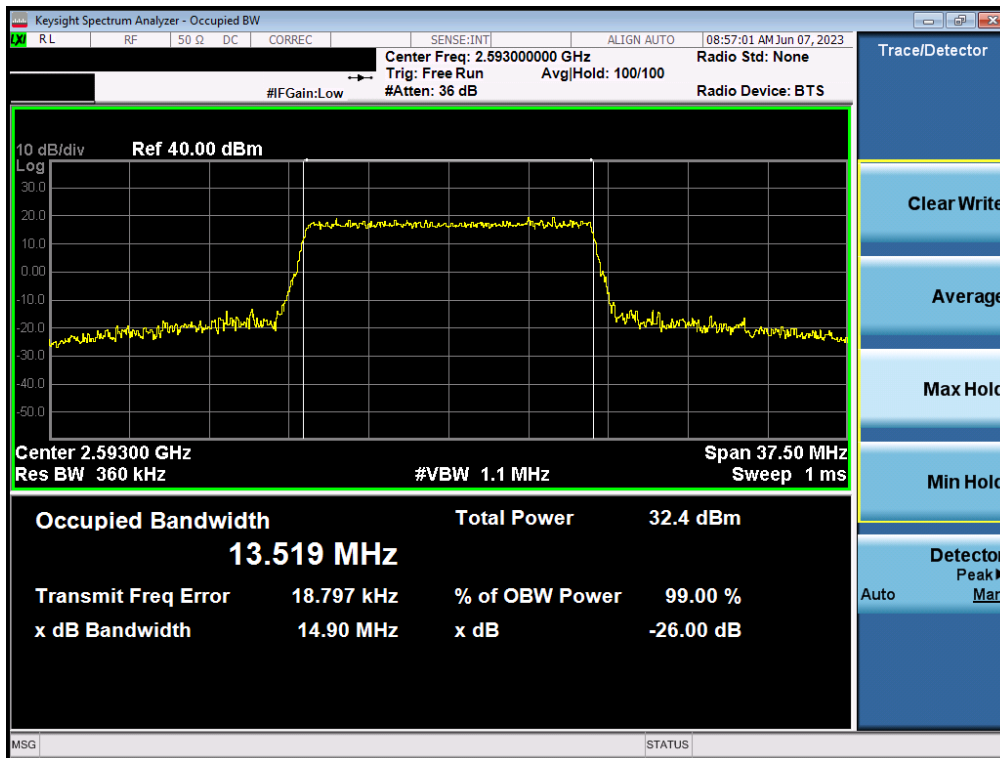


Plot 7-27. Occupied Bandwidth Plot (LTE Band 41(PC2) - 20MHz 16-QAM - Full RB - Ant1)

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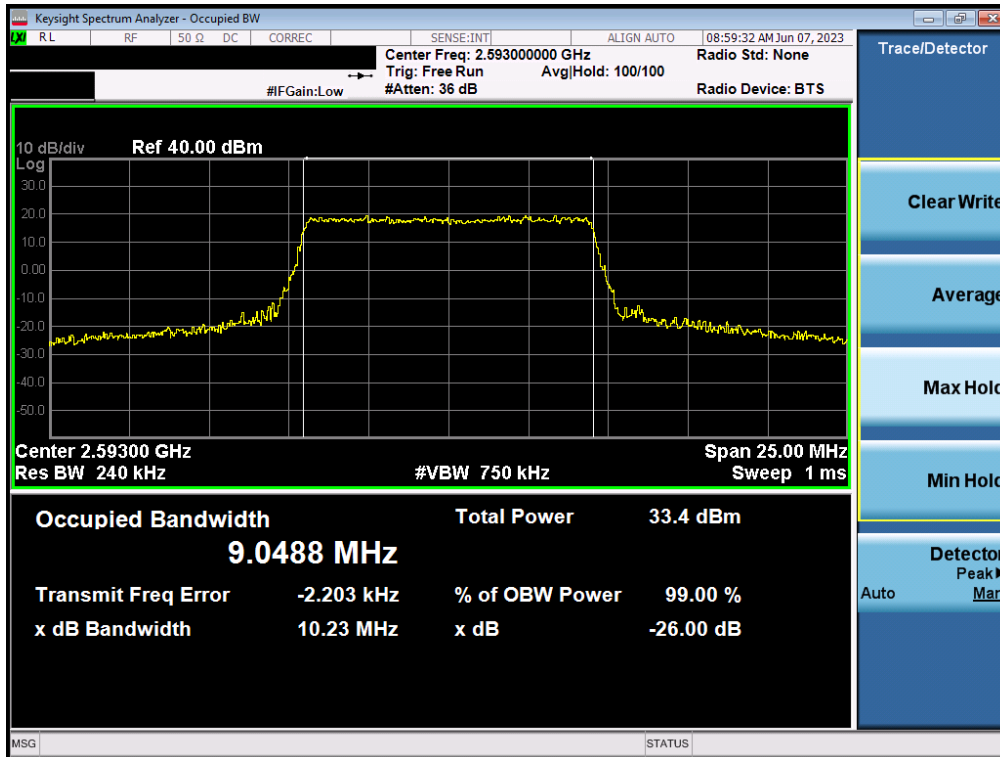


Plot 7-28. Occupied Bandwidth Plot (LTE Band 41(PC2) - 15MHz QPSK - Full RB - Ant1)



Plot 7-29. Occupied Bandwidth Plot (LTE Band 41(PC2) - 15MHz 16-QAM - Full RB - Ant1)

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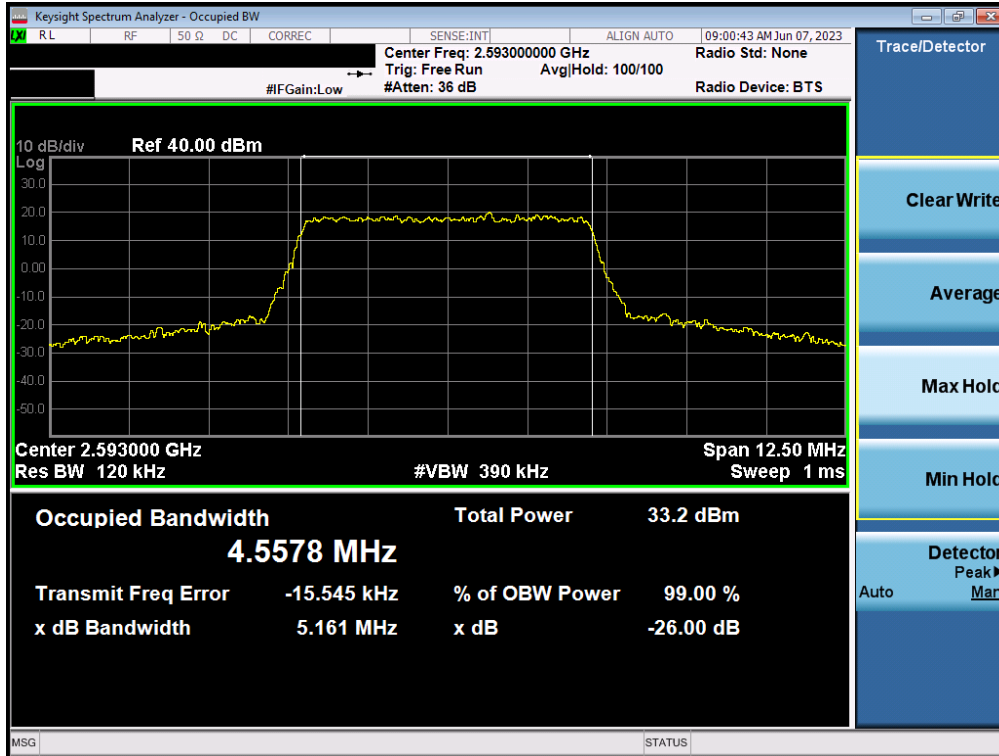


Plot 7-30. Occupied Bandwidth Plot (LTE Band 41(PCI) - 10MHz QPSK - Full RB - Ant1)

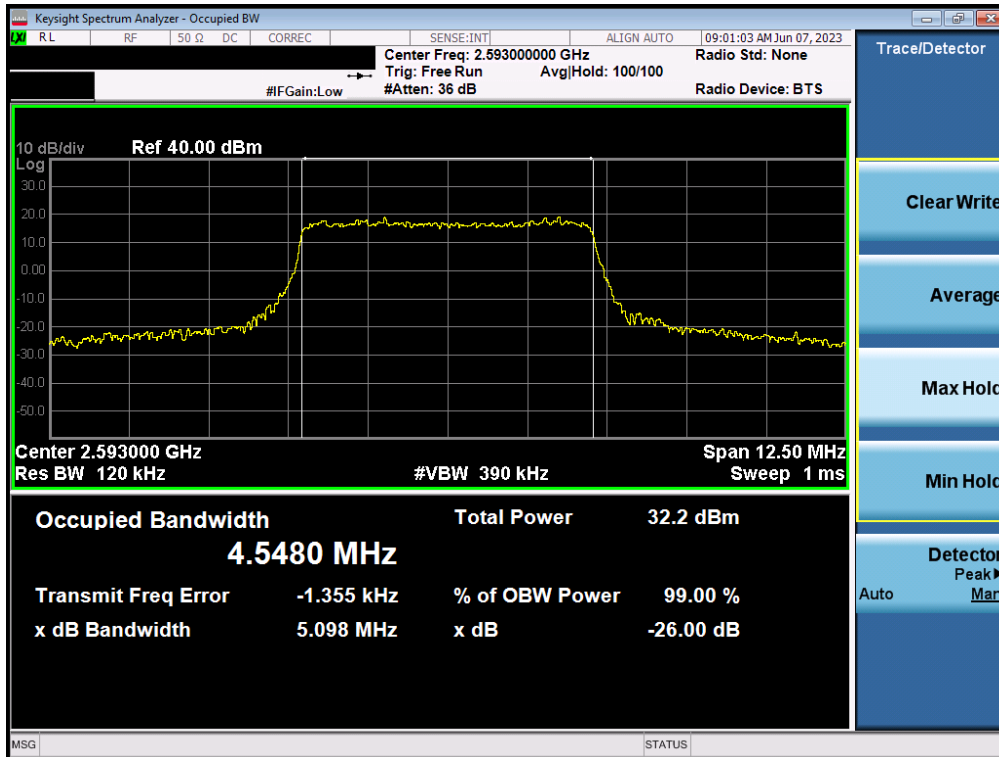


Plot 7-31. Occupied Bandwidth Plot (LTE Band 41(PCI) - 10MHz 16-QAM - Full RB - Ant1)

FCC ID: A3LSMS711U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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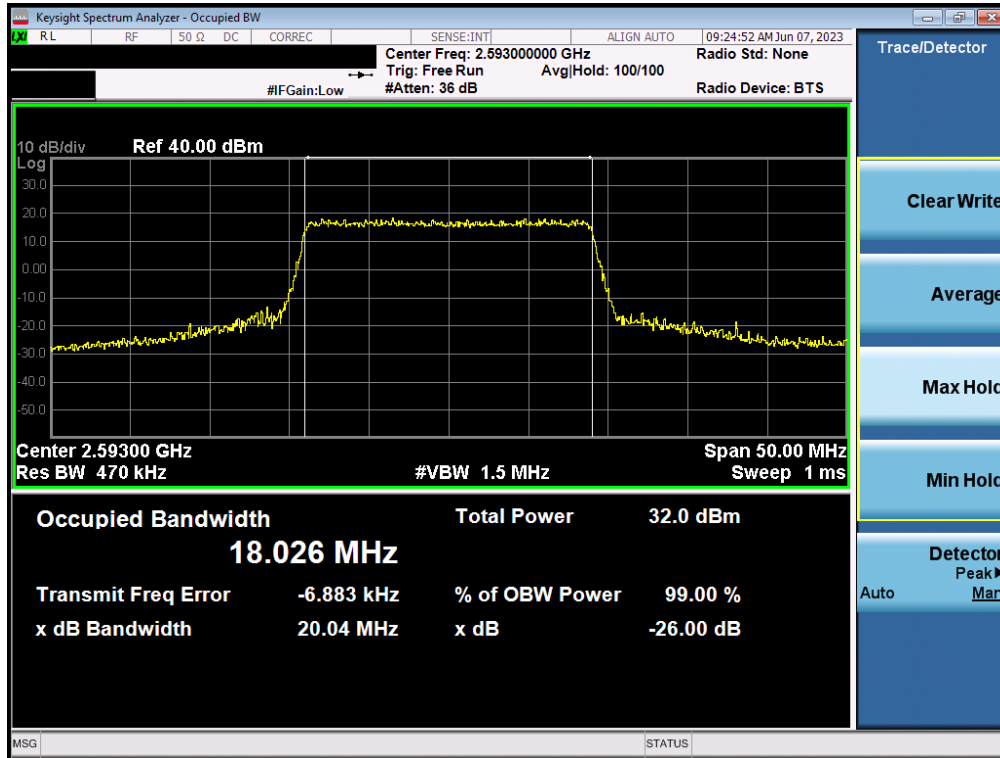
Plot 7-32. Occupied Bandwidth Plot (LTE Band 41(PC2) - 5MHz QPSK - Full RB - Ant1)



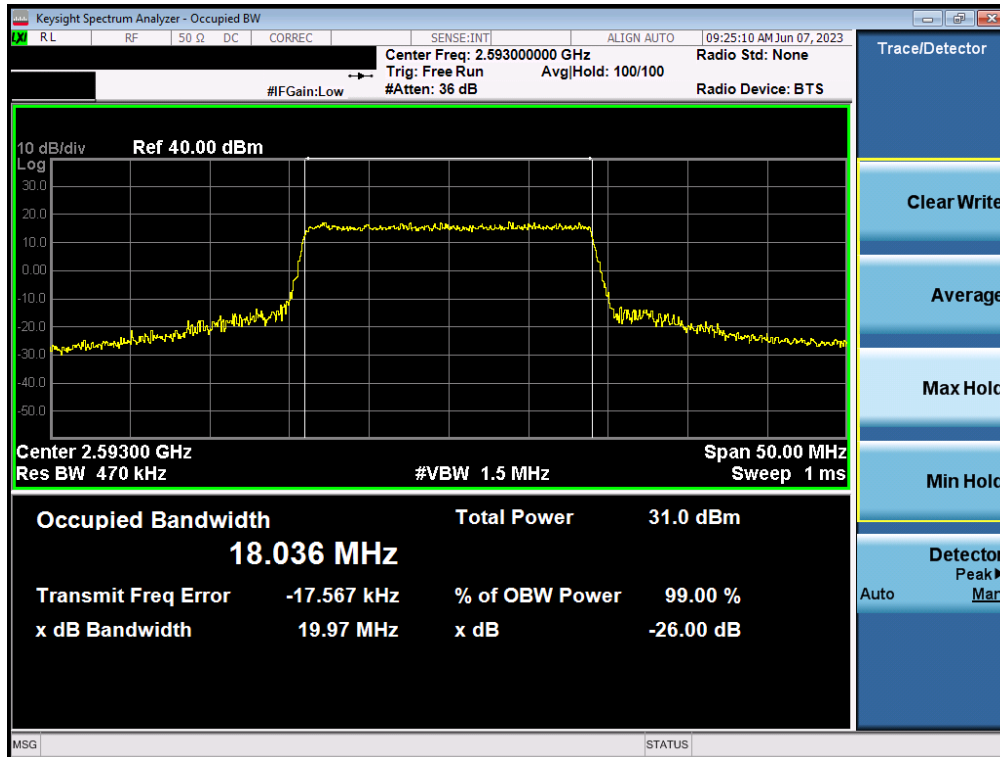
Plot 7-33. Occupied Bandwidth Plot (LTE Band 41(PC2) - 5MHz 16-QAM - Full RB - Ant1)

FCC ID: A3LSMS711U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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LTE Band 41(PC3)/38 – Ant1



Plot 7-34. Occupied Bandwidth Plot (LTE Band 41(PC3)/38 - 20MHz QPSK - Full RB - Ant1)

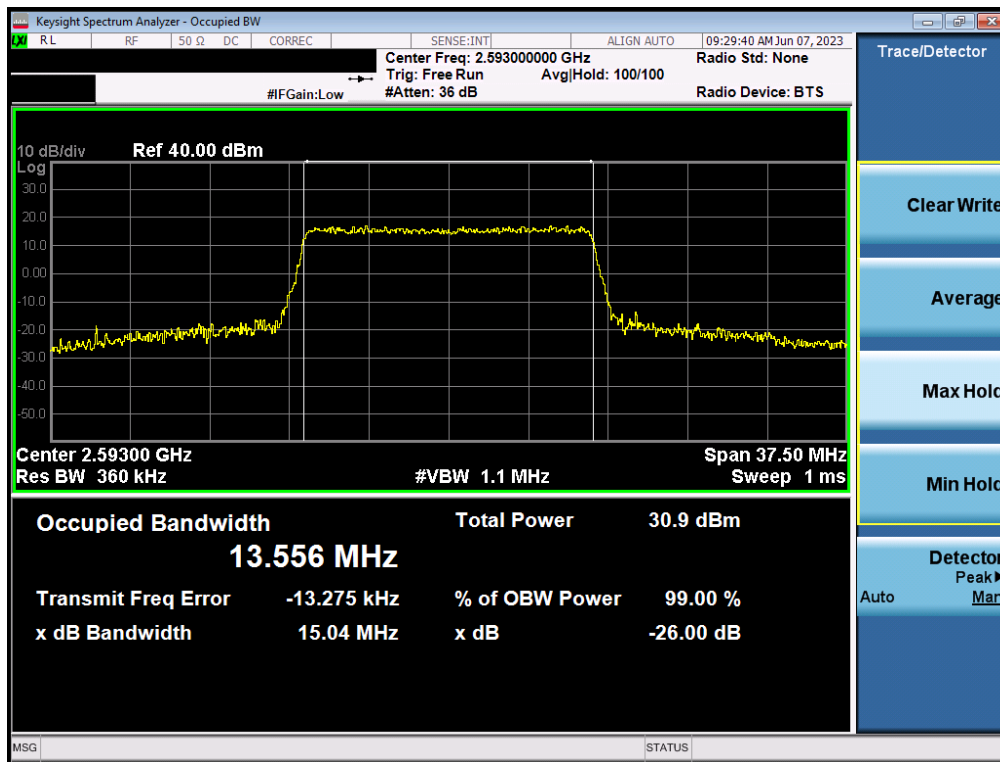


Plot 7-35. Occupied Bandwidth Plot (LTE Band 41(PC3)/38 - 20MHz 16-QAM - Full RB - Ant1)

FCC ID: A3LSMS711U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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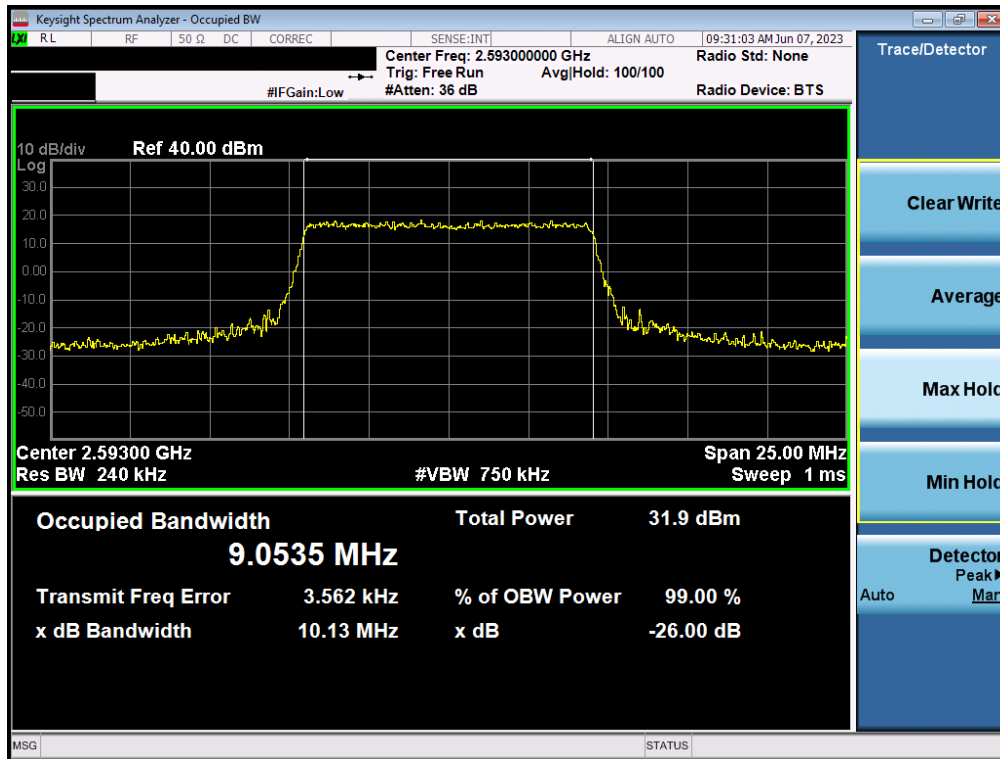


Plot 7-36. Occupied Bandwidth Plot (LTE Band 41(PC3)/38 - 15MHz QPSK - Full RB - Ant1)



Plot 7-37. Occupied Bandwidth Plot (LTE Band 41(PC3)/38 - 15MHz 16-QAM - Full RB - Ant1)

FCC ID: A3LSMS711U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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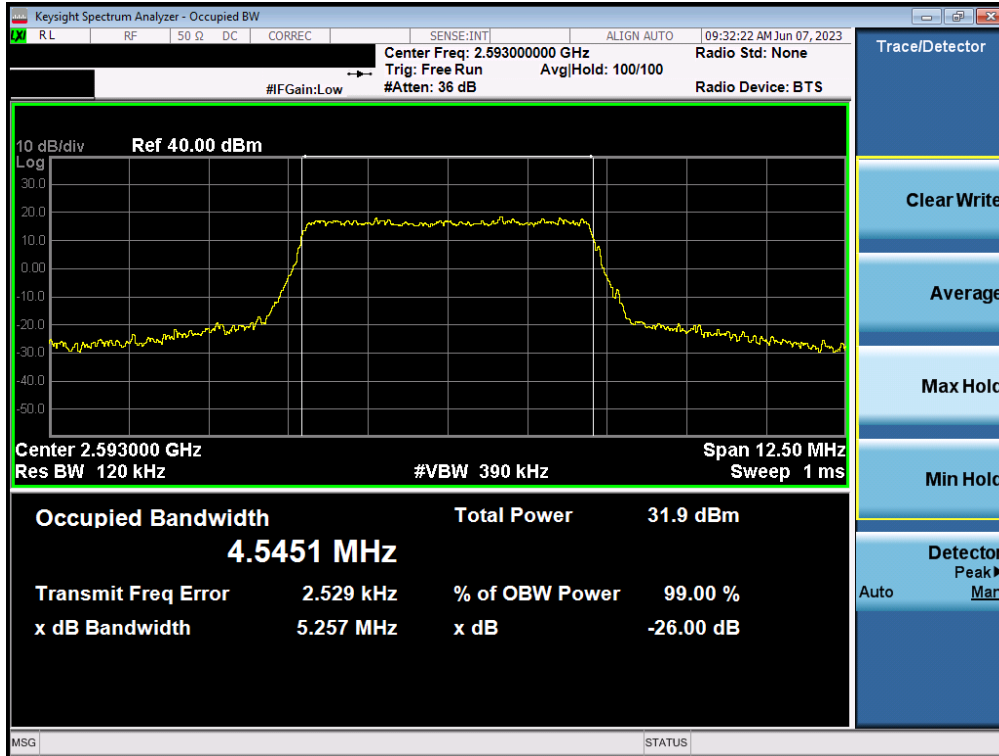


Plot 7-38. Occupied Bandwidth Plot (LTE Band 41(PC3)/38 - 10MHz QPSK - Full RB - Ant1)

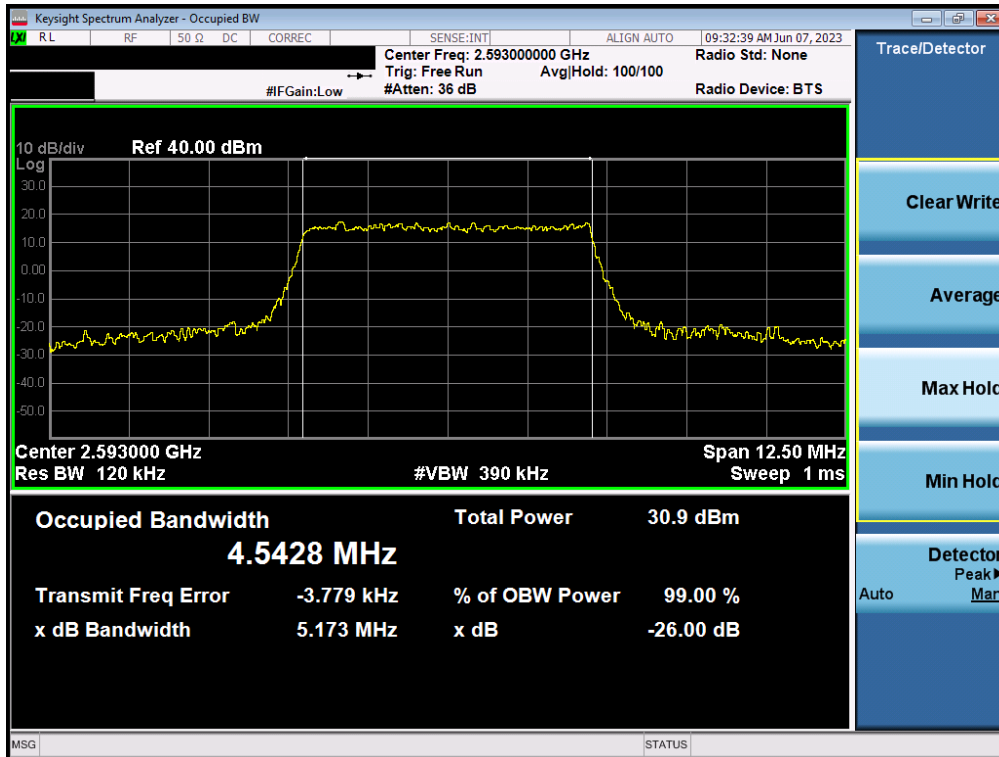


Plot 7-39. Occupied Bandwidth Plot (LTE Band 41(PC3)/38 - 10MHz 16-QAM - Full RB - Ant1)

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Plot 7-40. Occupied Bandwidth Plot (LTE Band 41(PC3)/38 - 5MHz QPSK - Full RB - Ant1)



Plot 7-41. Occupied Bandwidth Plot (LTE Band 41(PC3)/38 - 5MHz 16-QAM - Full RB - Ant1)

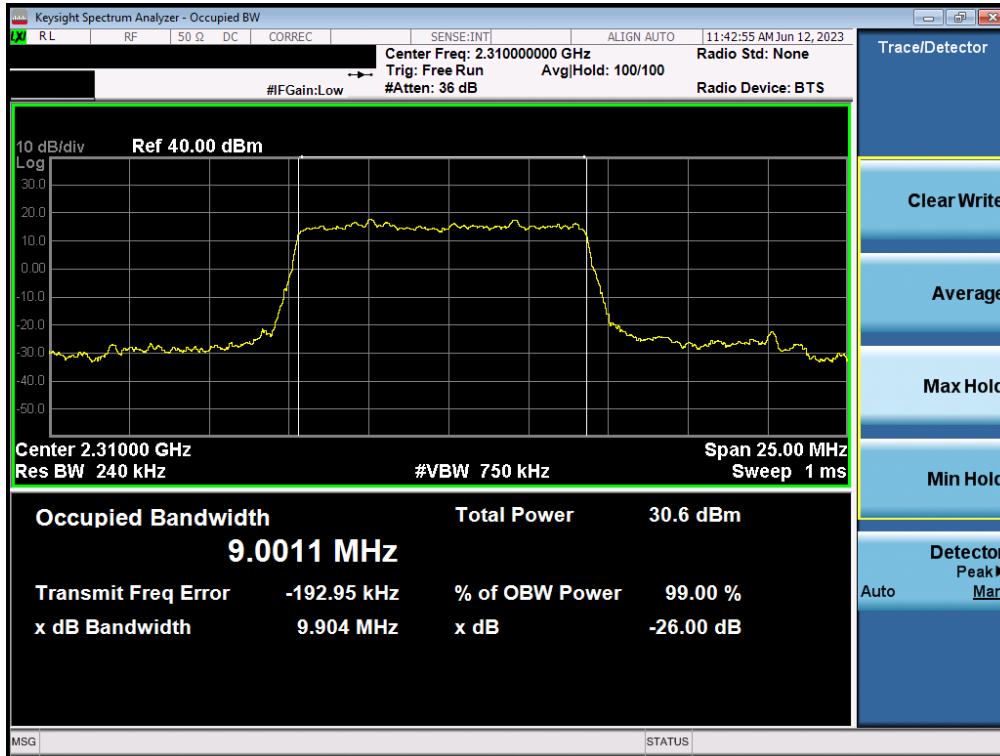
FCC ID: A3LSMS711U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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Mode	Bandwidth	Modulation	OBW [MHz]
NR Band n30	10MHz	$\pi/2$ BPSK	9.00
		QPSK	9.35
		16QAM	9.35
	5 MHz	$\pi/2$ BPSK	4.54
		QPSK	4.54
		16QAM	4.54
NR Band n41(PC2)	100 MHz	$\pi/2$ BPSK	97.29
		QPSK	98.05
		16QAM	97.83
	90 MHz	$\pi/2$ BPSK	87.48
		QPSK	87.86
		16QAM	88.01
	80 MHz	$\pi/2$ BPSK	77.51
		QPSK	77.86
		16QAM	77.88
	70 MHz	$\pi/2$ BPSK	64.52
		QPSK	67.81
		16QAM	67.77
	60 MHz	$\pi/2$ BPSK	58.00
		QPSK	58.25
		16QAM	58.20
	50 MHz	$\pi/2$ BPSK	46.04
		QPSK	47.85
		16QAM	47.81
	40 MHz	$\pi/2$ BPSK	35.98
		QPSK	38.04
		16QAM	37.94
	30MHz	$\pi/2$ BPSK	27.03
		QPSK	28.02
		16QAM	28.01
	20MHz	$\pi/2$ BPSK	17.99
		QPSK	18.33
		16QAM	18.35

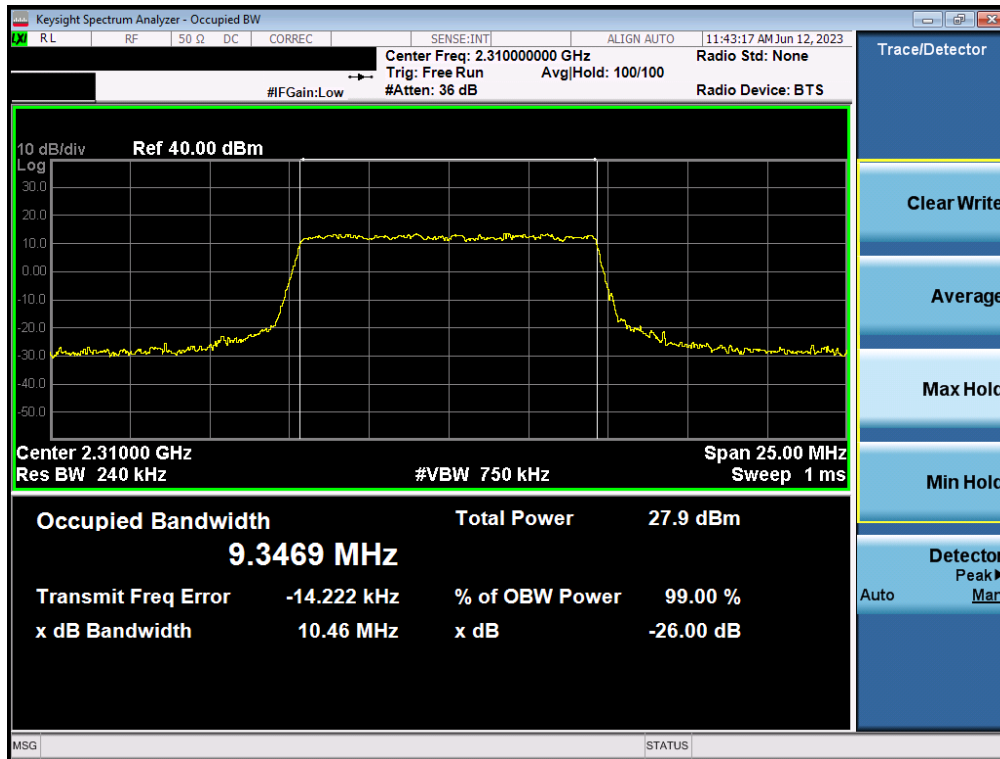
Table 7-42. Occupied Bandwidth Test Results (Ant1)

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NR Band n30 – Ant1

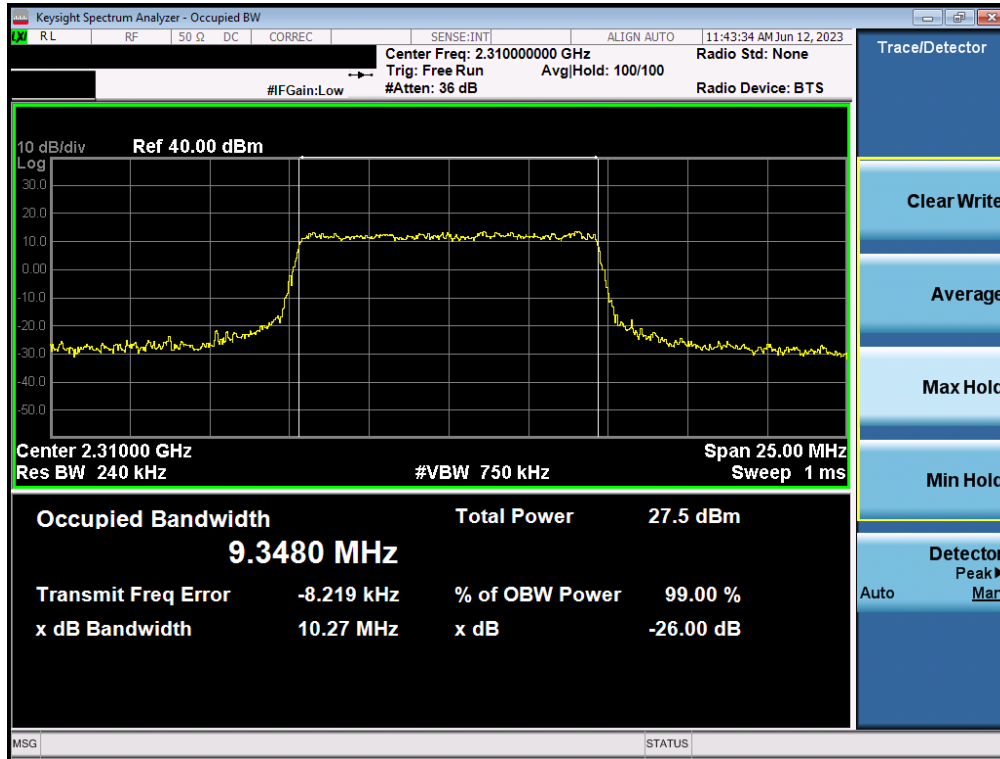


Plot 7-43. Occupied Bandwidth Plot (NR Band n30 - 10MHz $\pi/2$ BPSK - Full RB - Ant1)

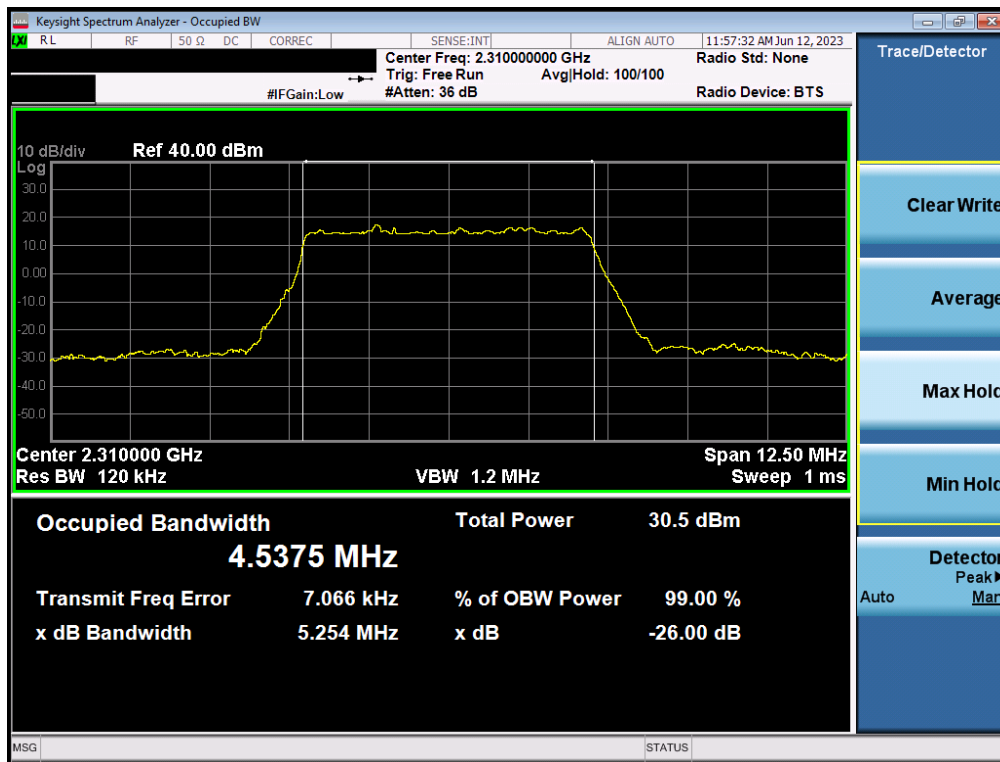


Plot 7-44. Occupied Bandwidth Plot (NR Band n30 - 10MHz QPSK - Full RB - Ant1)

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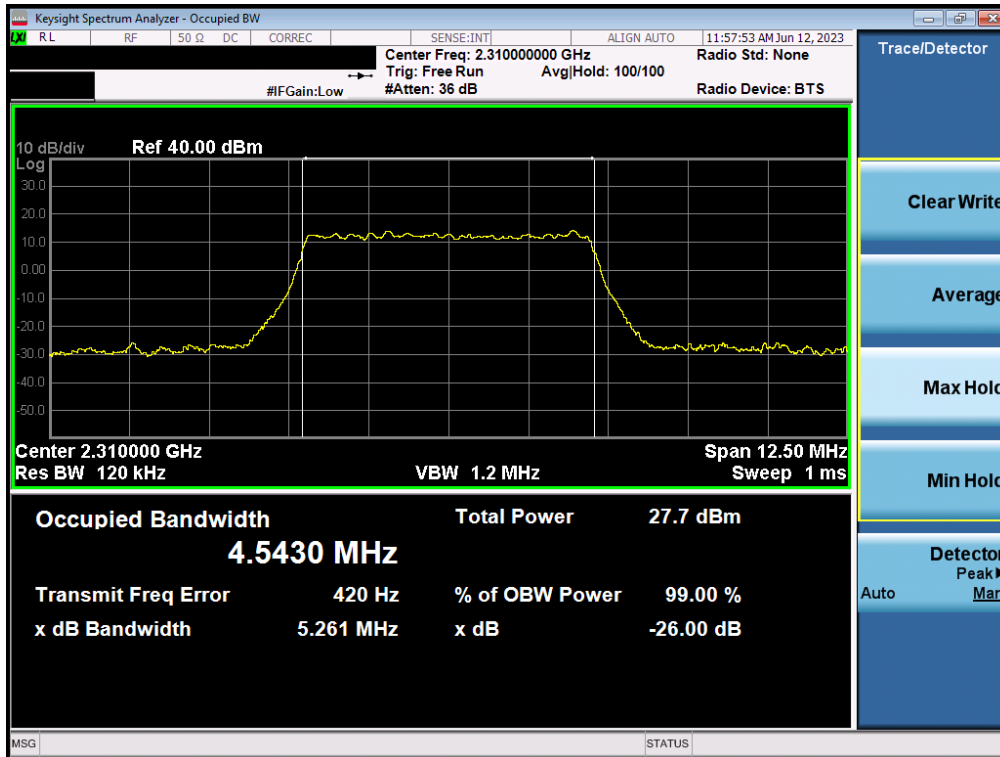


Plot 7-45. Occupied Bandwidth Plot (NR Band n30 - 10MHz 16-QAM - Full RB - Ant1)

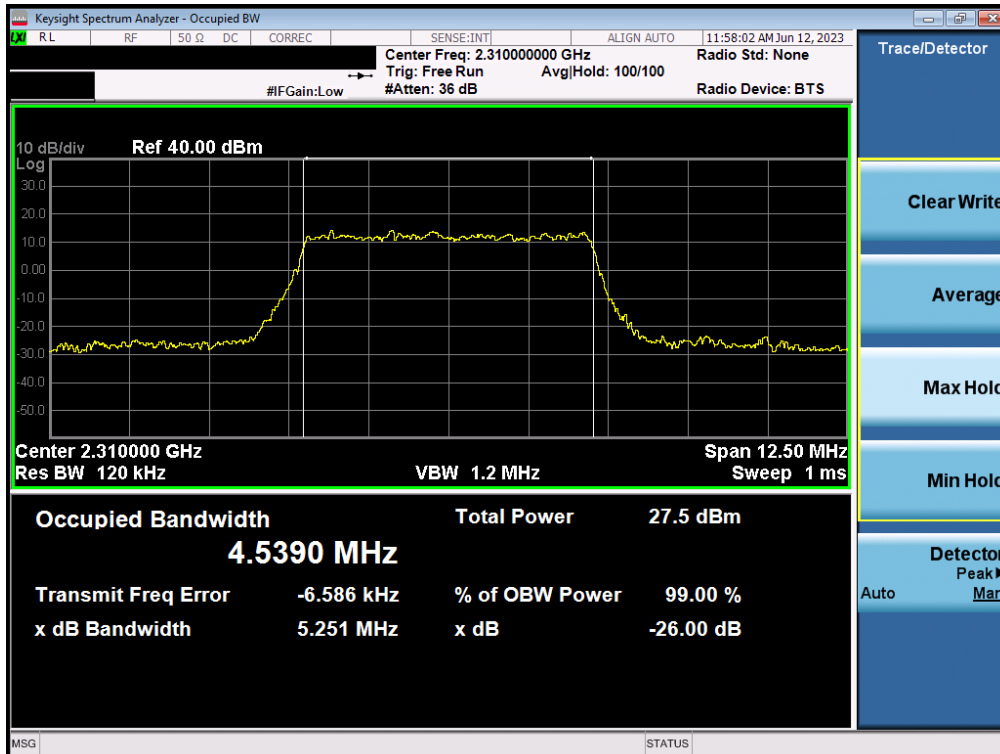


Plot 7-46. Occupied Bandwidth Plot (NR Band n30 - 5MHz $\pi/2$ BPSK - Full RB - Ant1)

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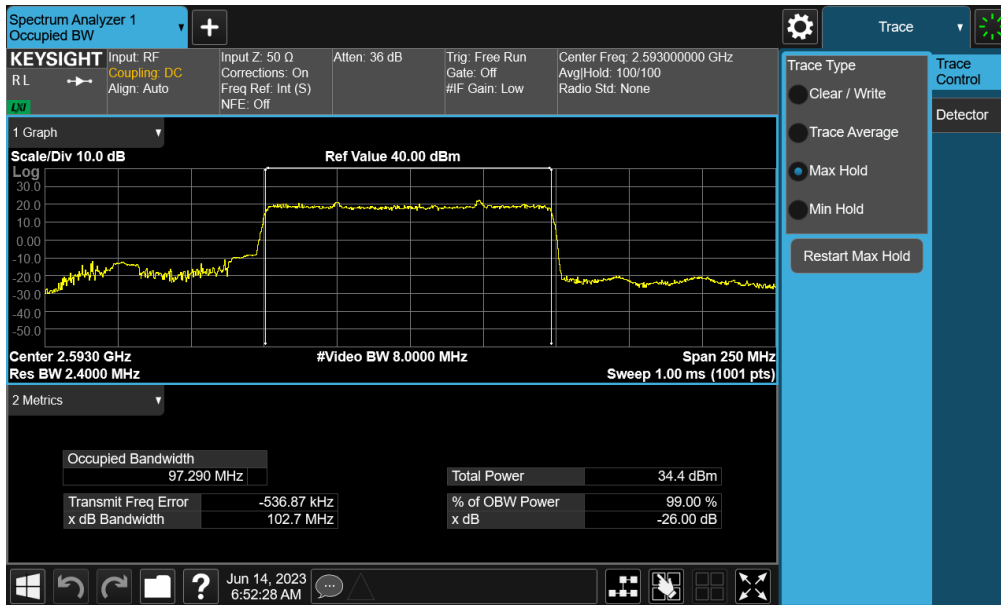
Plot 7-47. Occupied Bandwidth Plot (NR Band n30 - 5MHz QPSK - Full RB - Ant1)



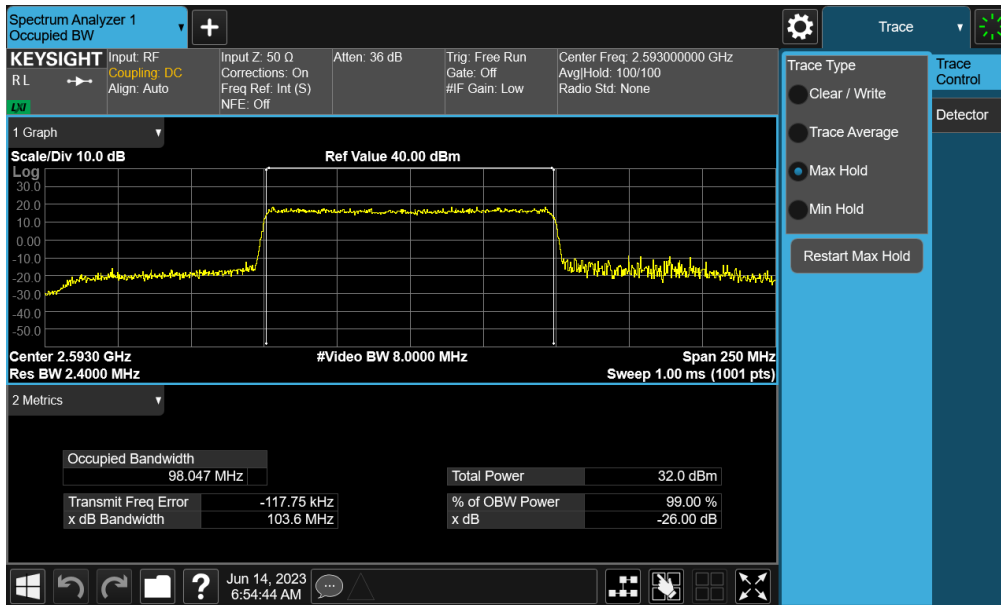
Plot 7-48. Occupied Bandwidth Plot (NR Band n30 - 5MHz 16-QAM - Full RB - Ant1)

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NR Band n41 – Ant1

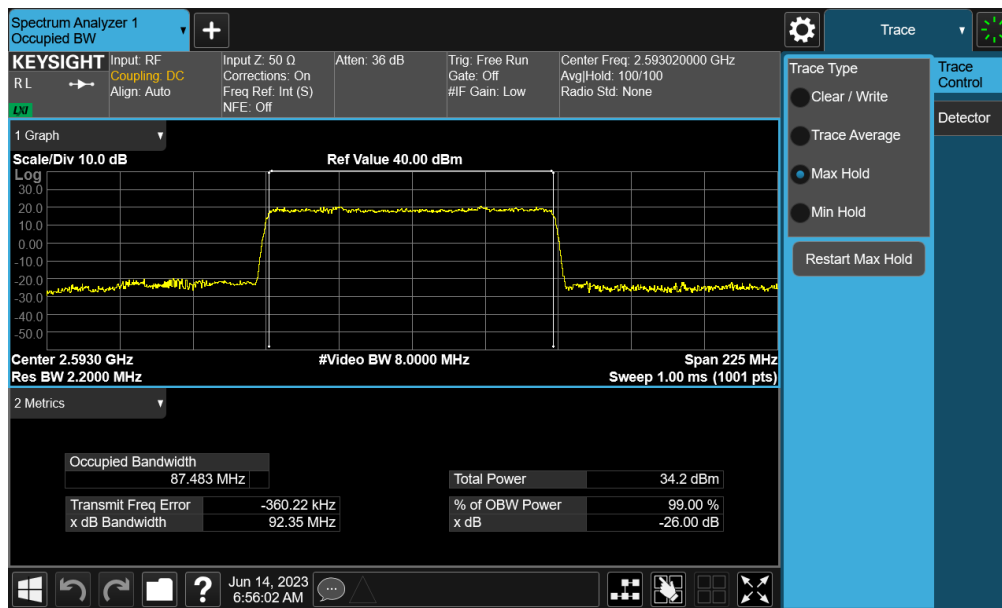
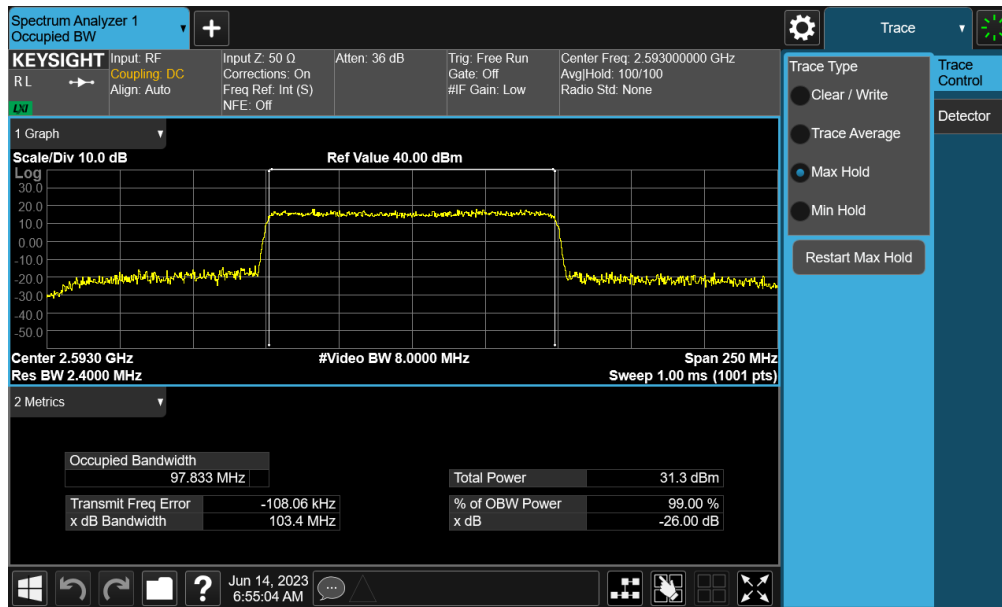


Plot 7-49. Occupied Bandwidth Plot (NR Band n41 - 100MHz $\pi/2$ BPSK - Full RB - Ant1)

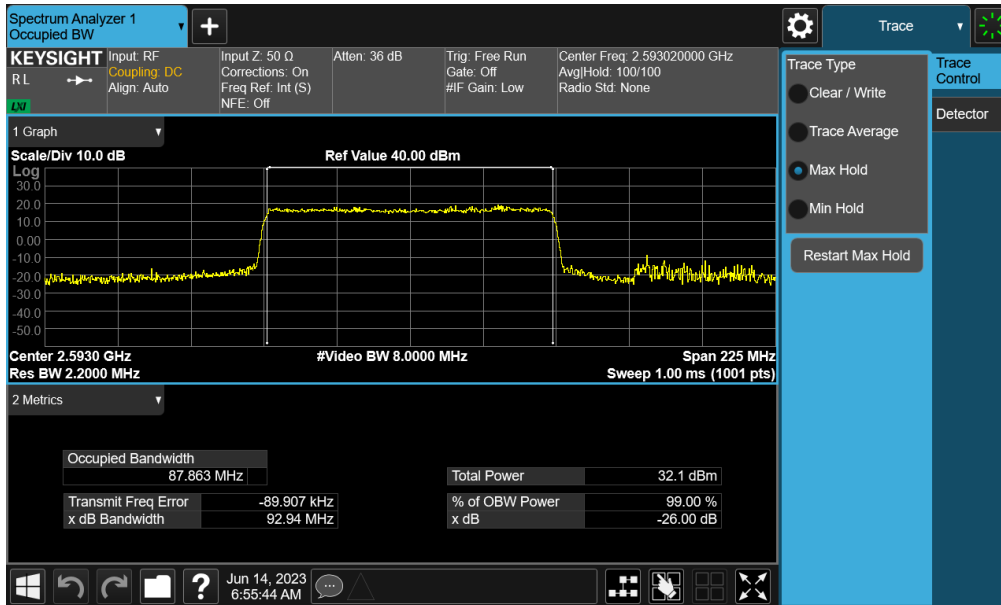


Plot 7-50. Occupied Bandwidth Plot (NR Band n41 - 100MHz QPSK - Full RB - Ant1)

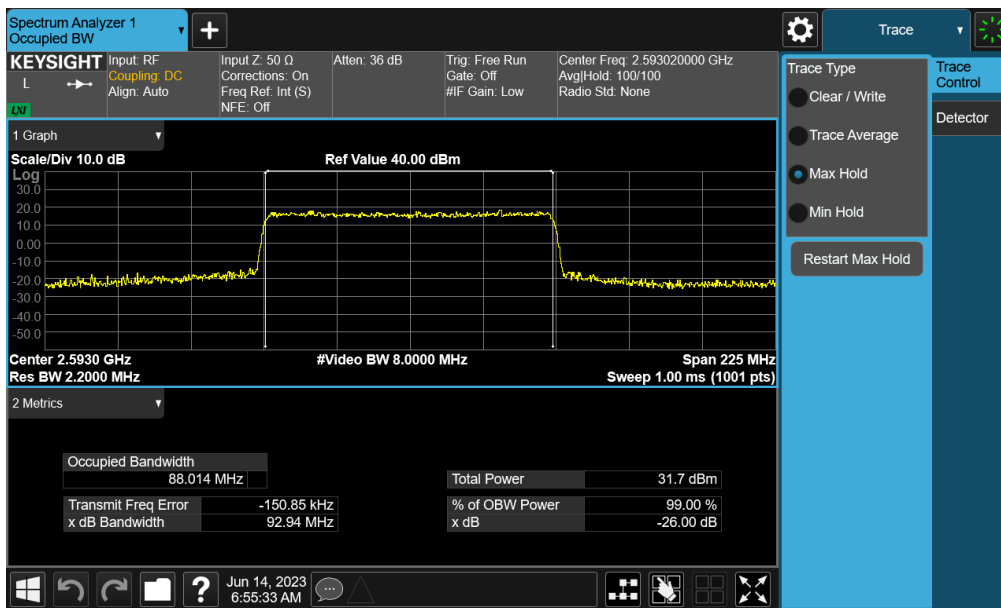
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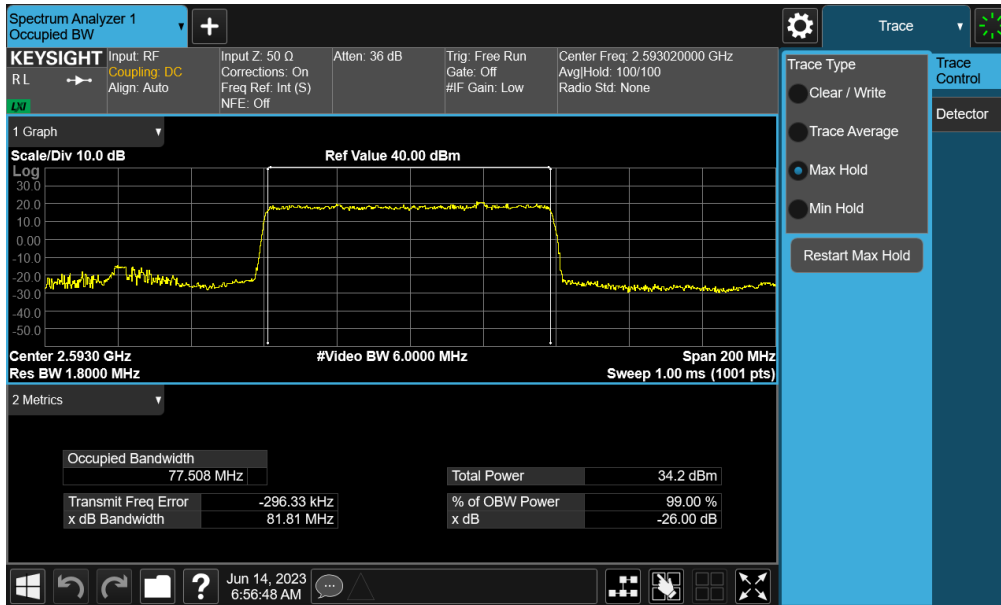


Plot 7-53. Occupied Bandwidth Plot (NR Band n41 - 90MHz QPSK - Full RB - Ant1)

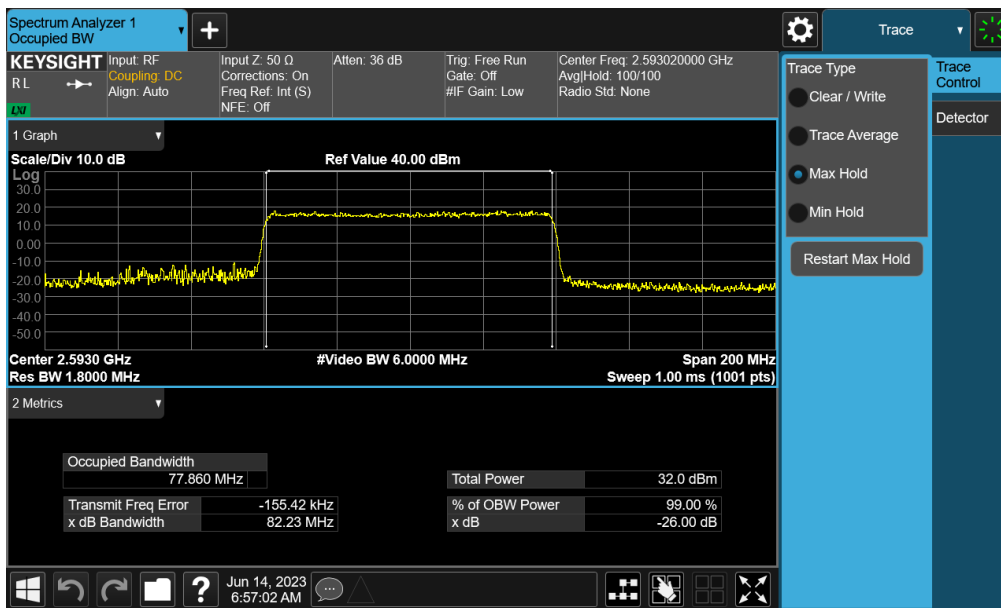


Plot 7-54. Occupied Bandwidth Plot (NR Band n41 - 90MHz 16-QAM - Full RB - Ant1)

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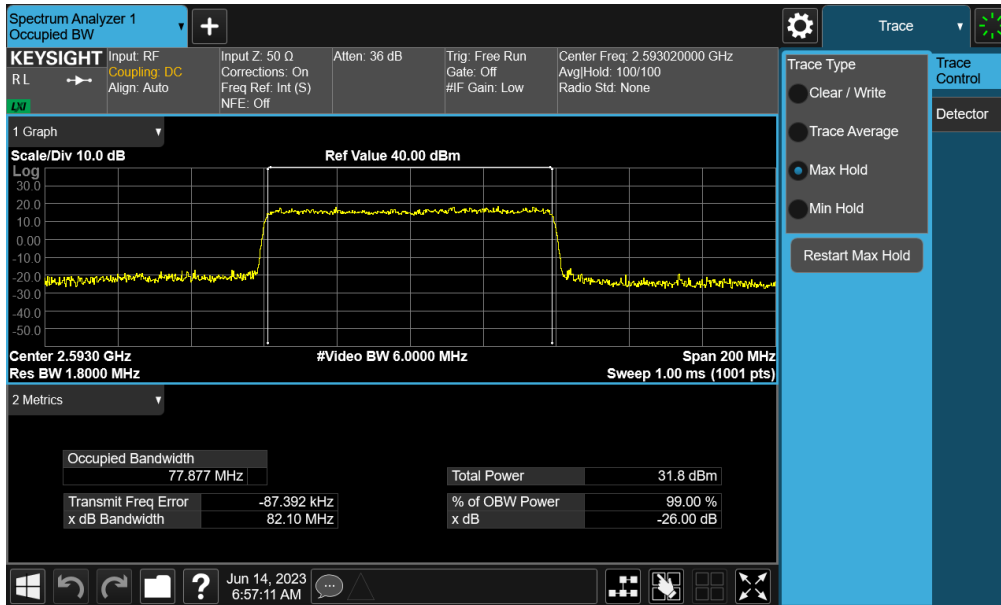


Plot 7-55. Occupied Bandwidth Plot (NR Band n41 - 80MHz $\pi/2$ BPSK - Full RB - Ant1)

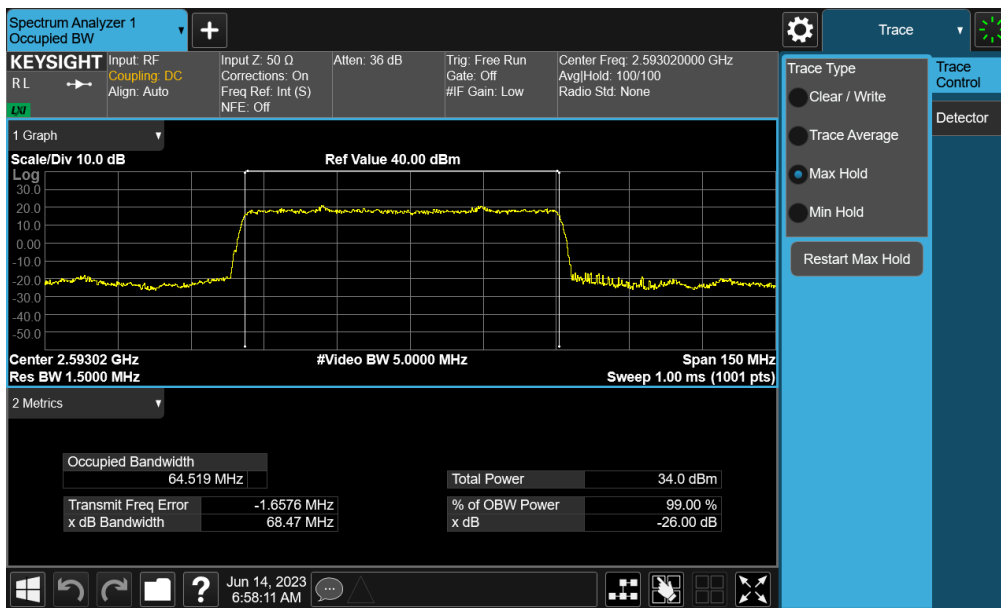


Plot 7-56. Occupied Bandwidth Plot (NR Band n41 - 80MHz QPSK - Full RB - Ant1)

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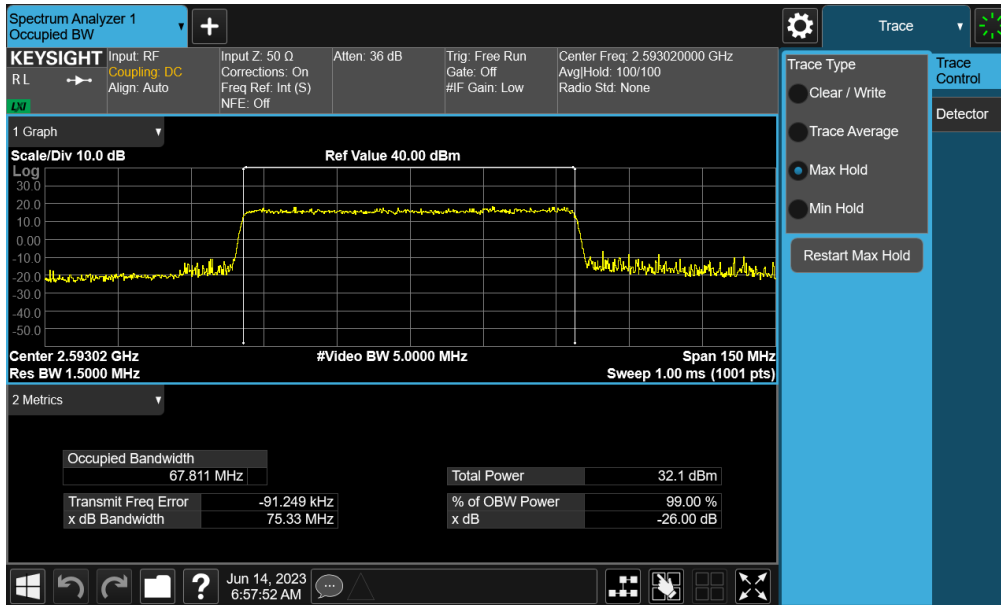


Plot 7-57. Occupied Bandwidth Plot (NR Band n41 - 80MHz 16-QAM - Full RB - Ant1)

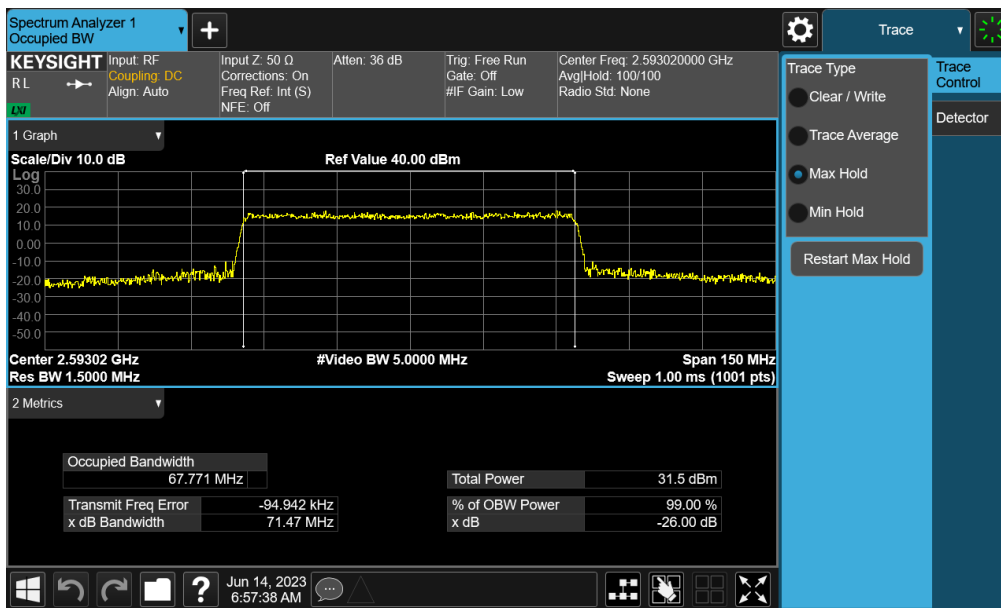


Plot 7-58. Occupied Bandwidth Plot (NR Band n41 - 70MHz $\pi/2$ BPSK - Full RB - Ant1)

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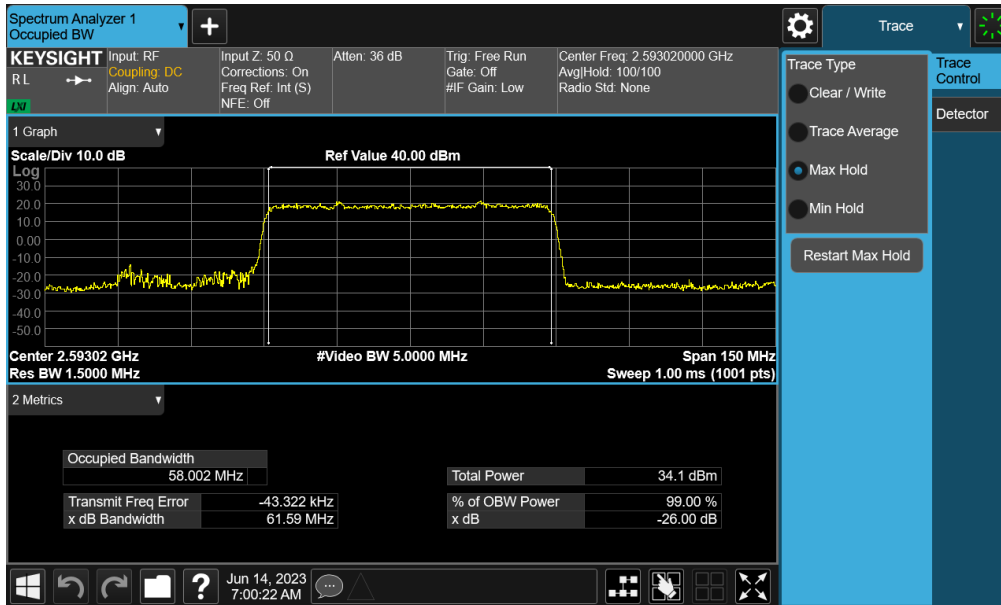


Plot 7-59. Occupied Bandwidth Plot (NR Band n41 - 70MHz QPSK - Full RB - Ant1)

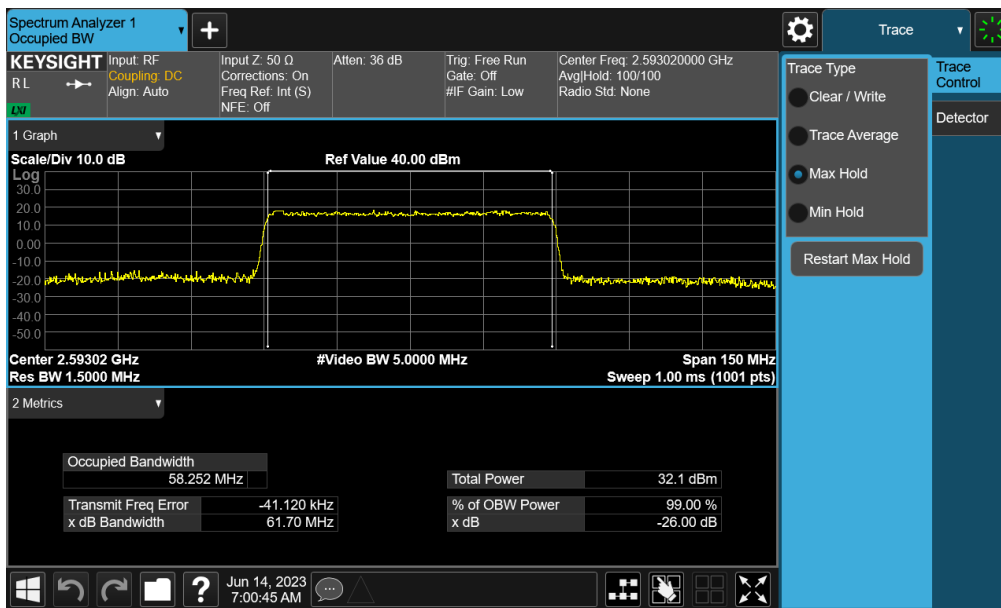


Plot 7-60. Occupied Bandwidth Plot (NR Band n41 - 70MHz 16-QAM - Full RB - Ant1)

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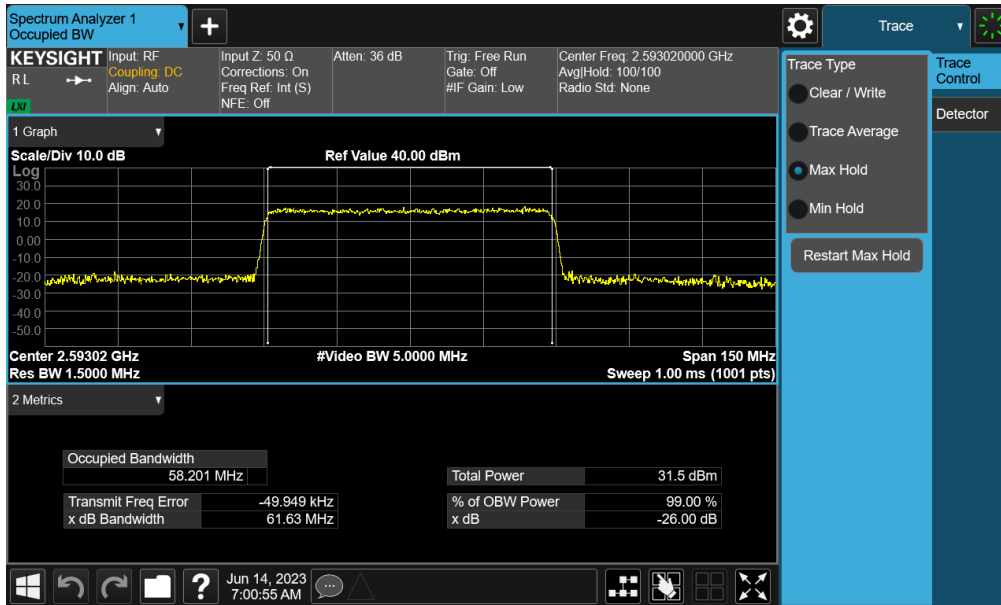


Plot 7-61. Occupied Bandwidth Plot (NR Band n41 - 60MHz $\pi/2$ BPSK - Full RB - Ant1)

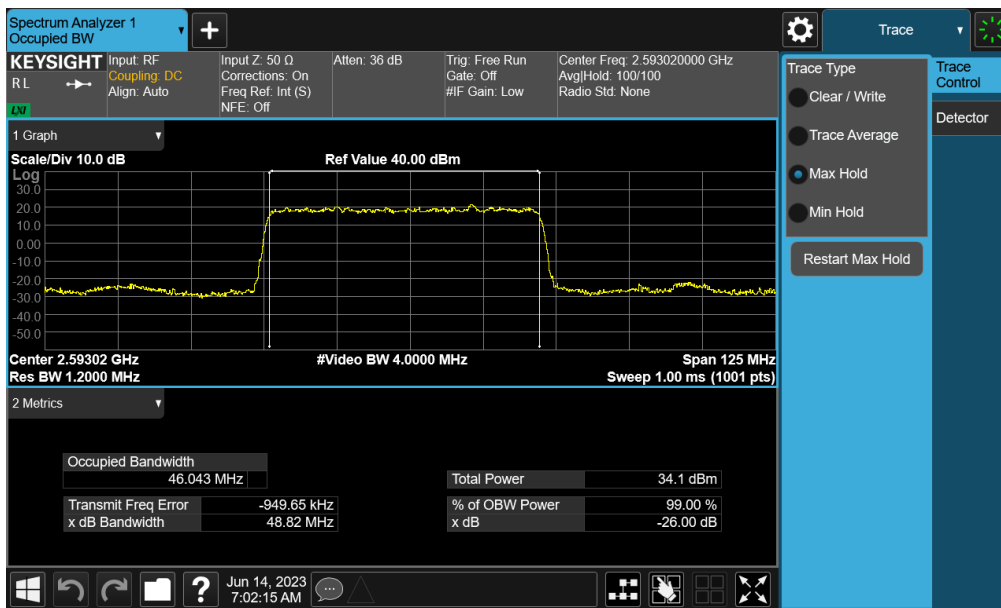


Plot 7-62. Occupied Bandwidth Plot (NR Band n41 - 60MHz QPSK - Full RB - Ant1)

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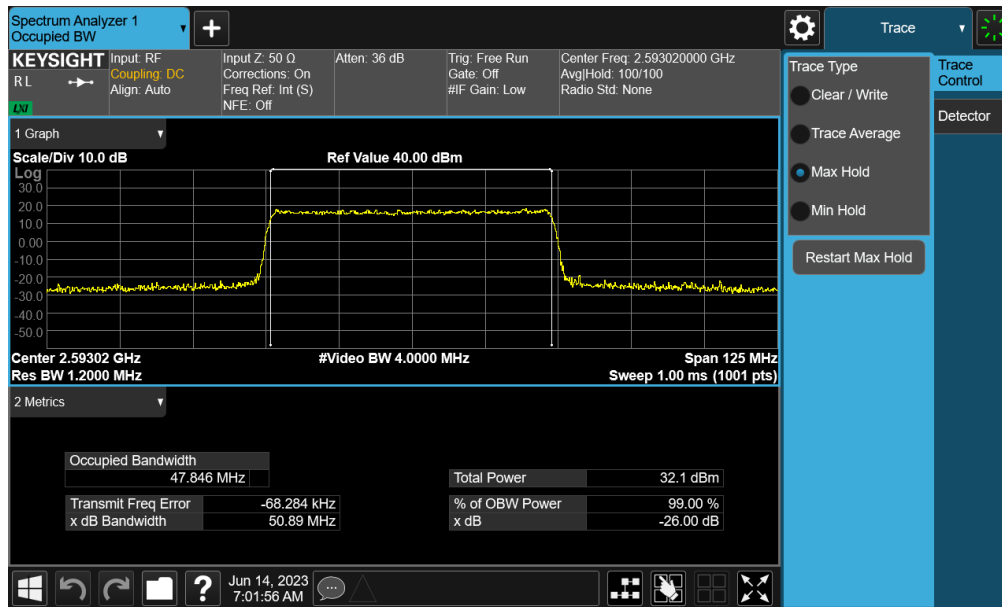


Plot 7-63. Occupied Bandwidth Plot (NR Band n41 - 60MHz 16-QAM - Full RB - Ant1)

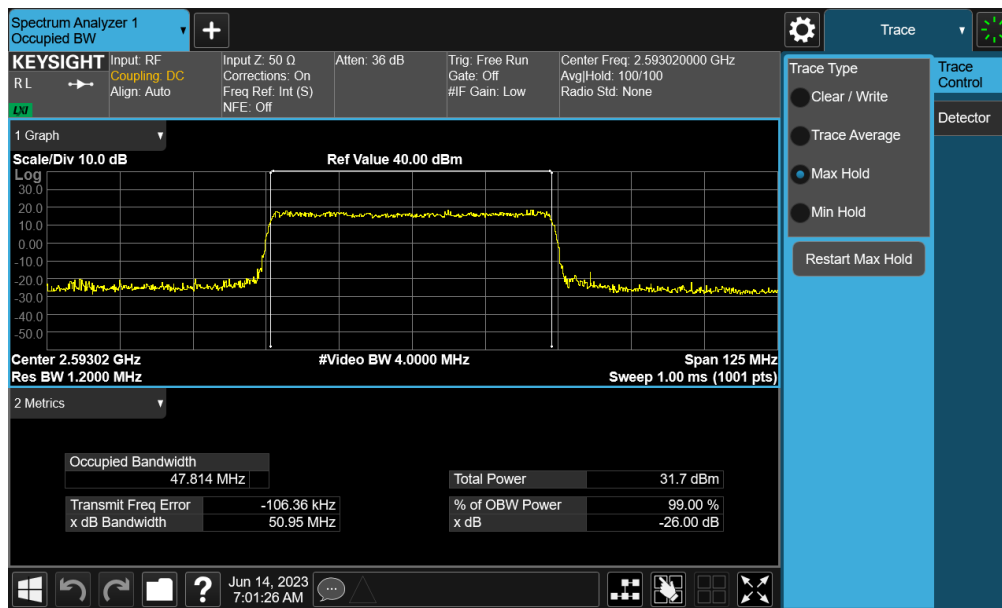


Plot 7-64. Occupied Bandwidth Plot (NR Band n41 - 50MHz $\pi/2$ BPSK - Full RB - Ant1)

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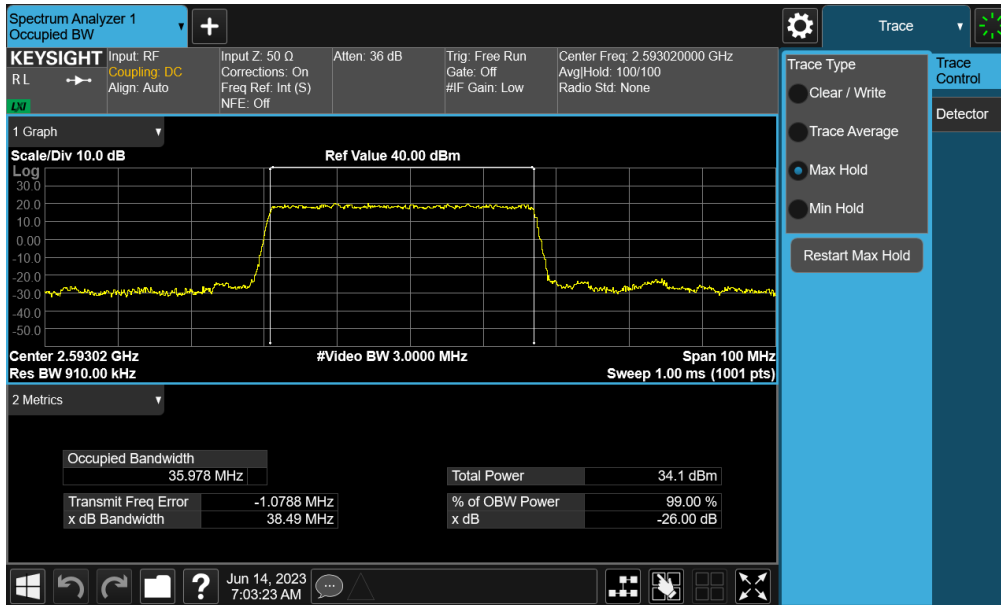


Plot 7-65. Occupied Bandwidth Plot (NR Band n41 - 50MHz QPSK - Full RB - Ant1)

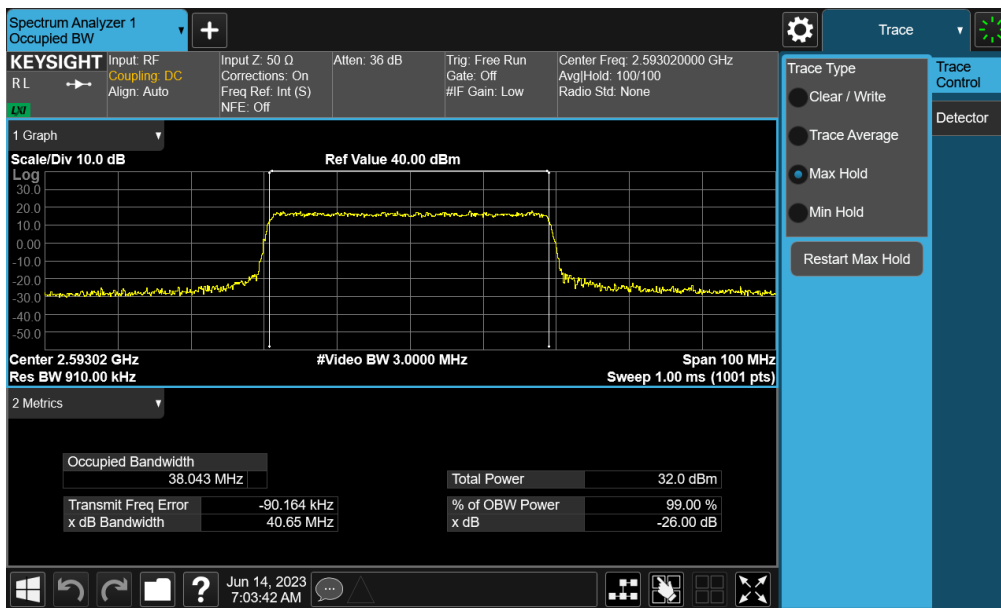


Plot 7-66. Occupied Bandwidth Plot (NR Band n41 - 50MHz 16-QAM - Full RB - Ant1)

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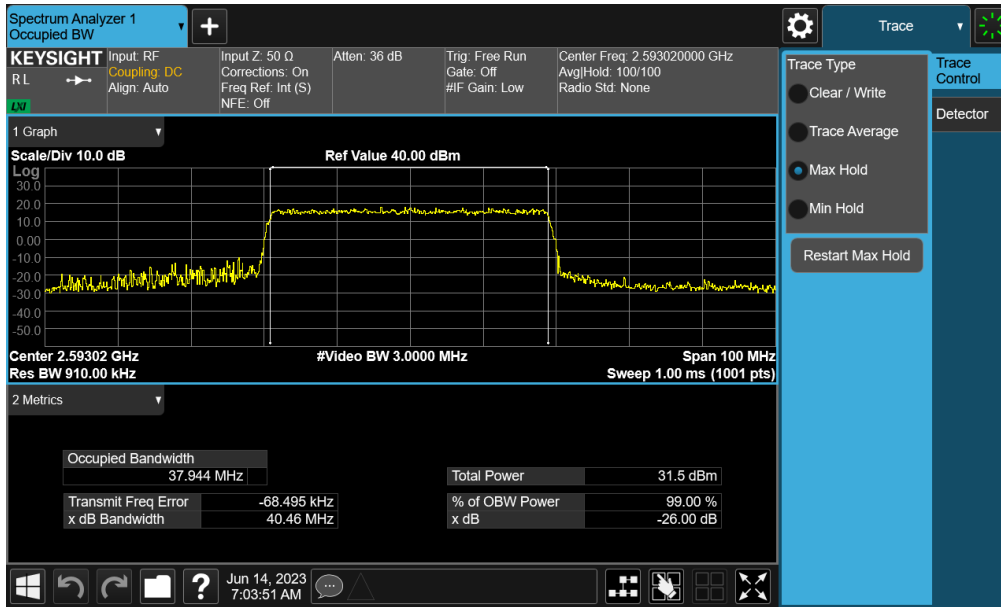


Plot 7-67. Occupied Bandwidth Plot (NR Band n41 - 40MHz $\pi/2$ BPSK - Full RB - Ant1)

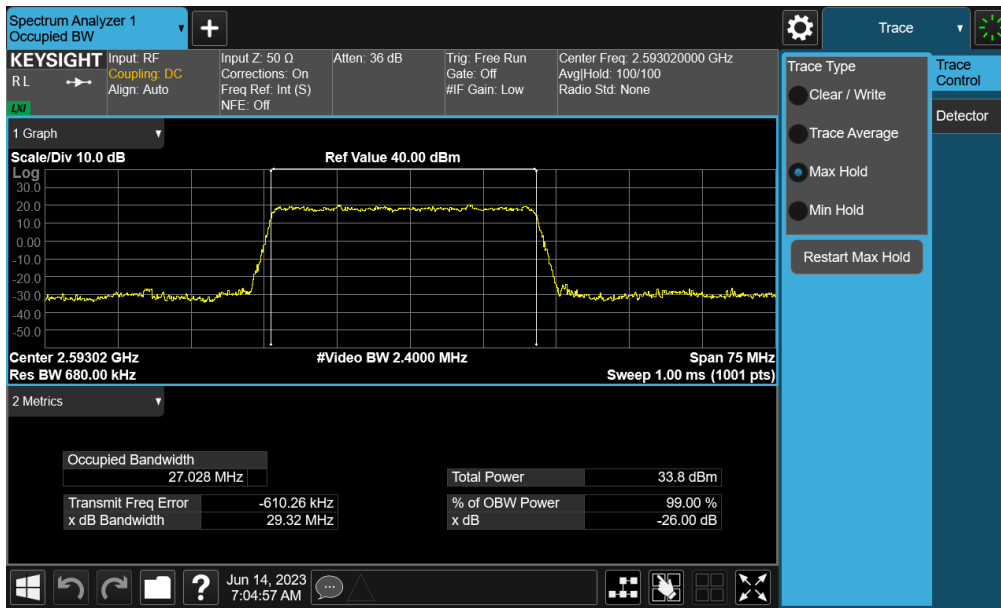


Plot 7-68. Occupied Bandwidth Plot (NR Band n41 - 40MHz QPSK - Full RB - Ant1)

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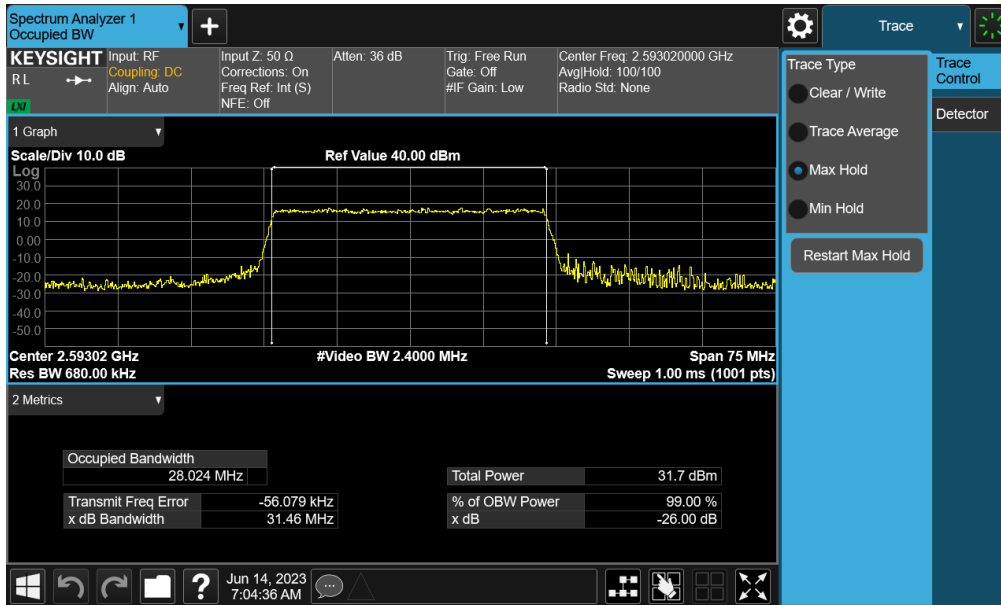


Plot 7-69. Occupied Bandwidth Plot (NR Band n41 - 40MHz 16-QAM - Full RB - Ant1)

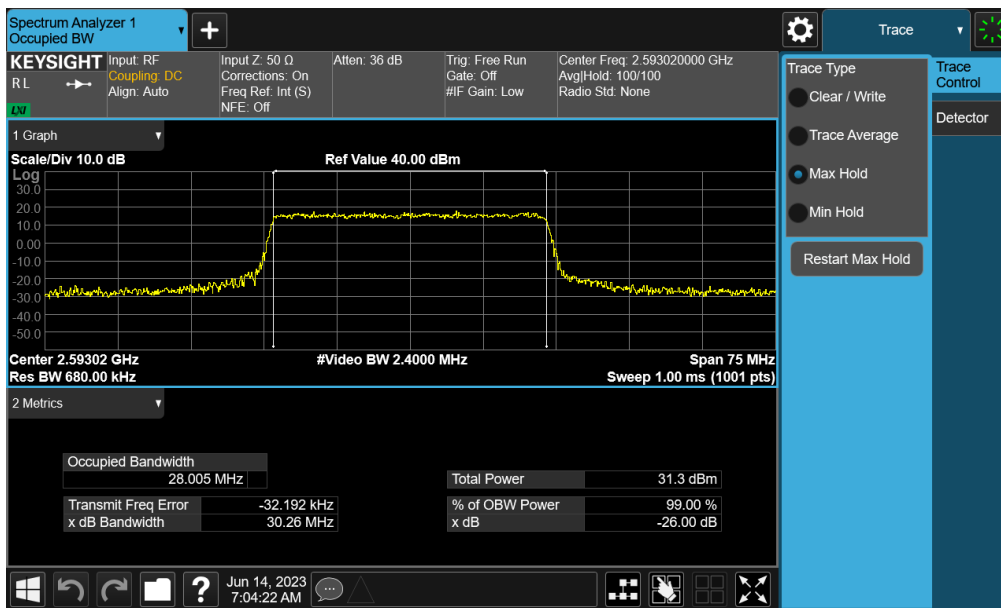


Plot 7-70. Occupied Bandwidth Plot (NR Band n41 - 30MHz $\pi/2$ BPSK - Full RB - Ant1)

FCC ID: A3LSMS711U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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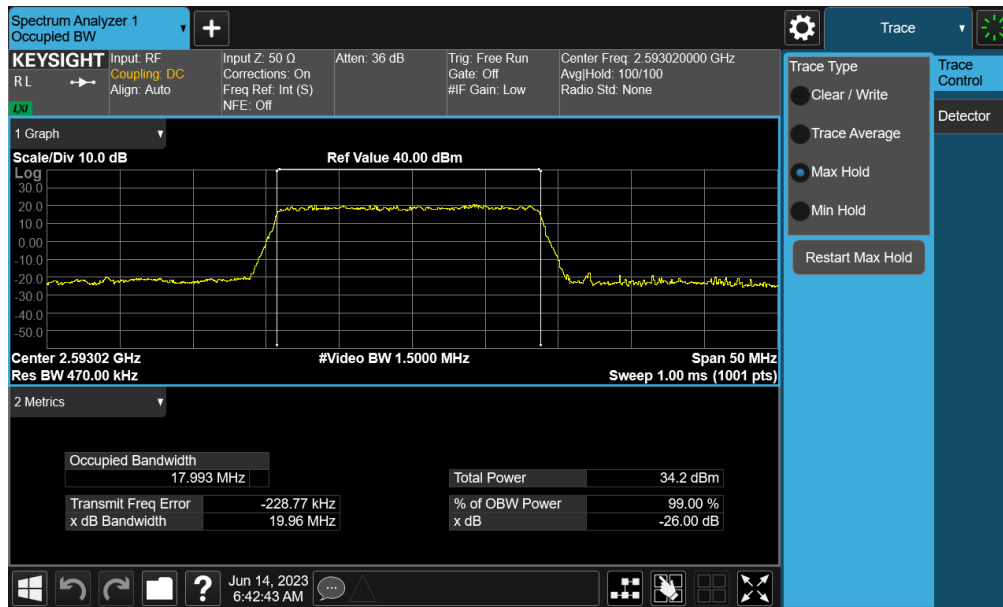


Plot 7-71. Occupied Bandwidth Plot (NR Band n41 - 30MHz QPSK - Full RB - Ant1)

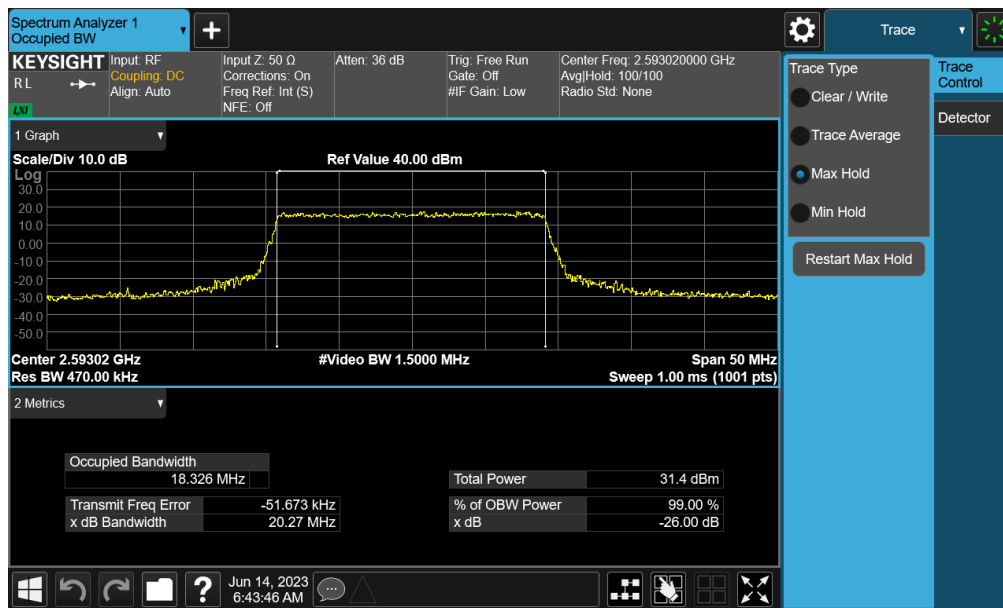


Plot 7-72. Occupied Bandwidth Plot (NR Band n41 - 30MHz 16-QAM - Full RB - Ant1)

FCC ID: A3LSMS711U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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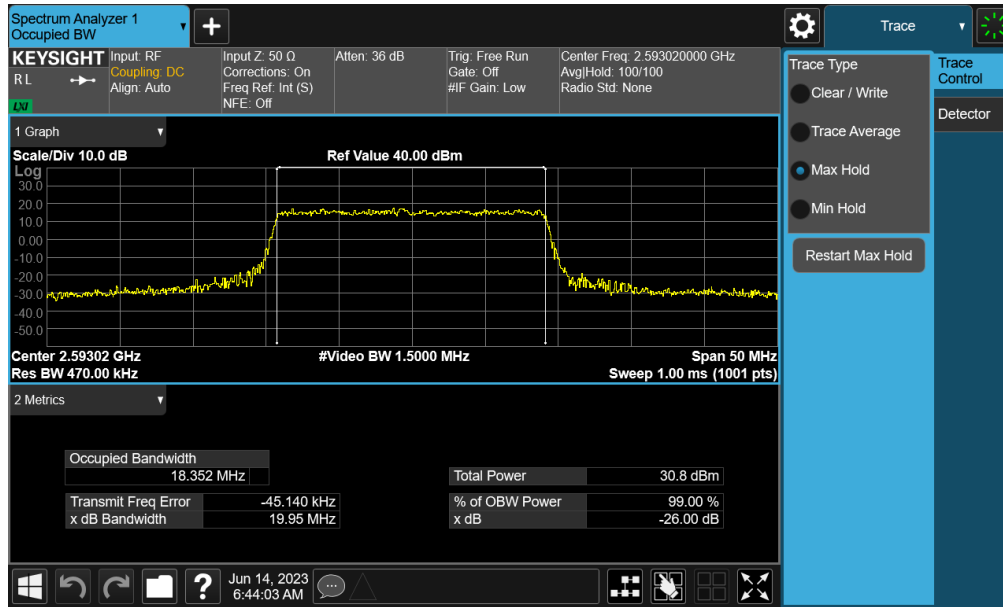


Plot 7-73. Occupied Bandwidth Plot (NR Band n41 - 20MHz $\pi/2$ BPSK - Full RB - Ant1)



Plot 7-74. Occupied Bandwidth Plot (NR Band n41 - 20MHz QPSK - Full RB - Ant1)

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Plot 7-75. Occupied Bandwidth Plot (NR Band n41 - 20MHz 16-QAM - Full RB - Ant1)

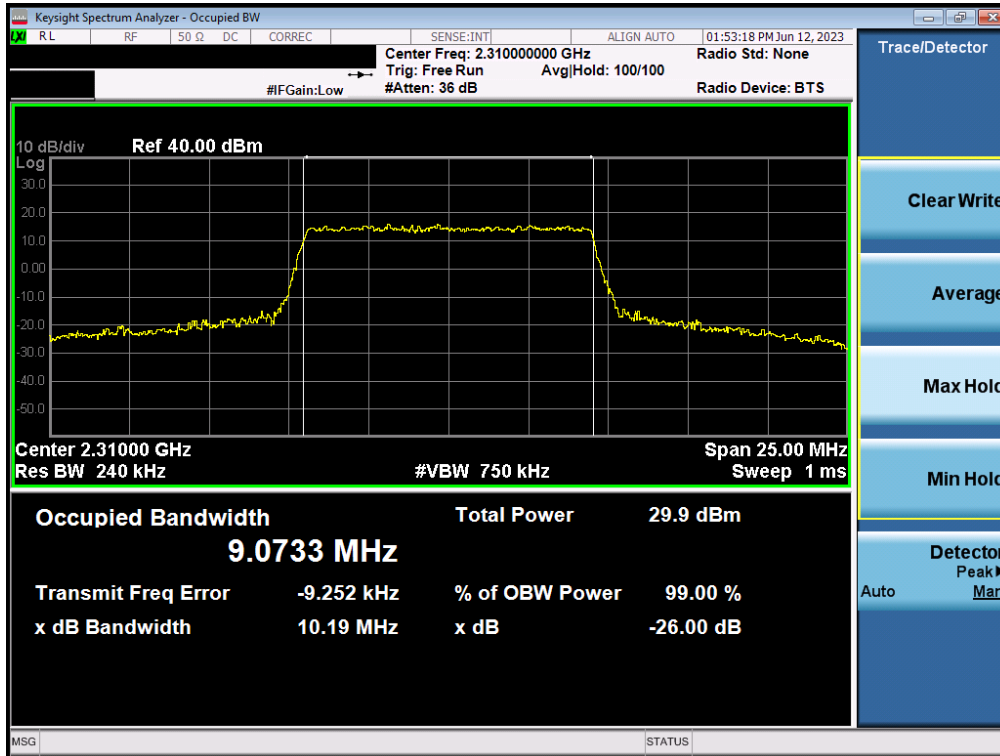
FCC ID: A3LSMS711U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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Mode	Bandwidth	Modulation	OBW [MHz]
LTE Band 30	10MHz	QPSK	9.07
		16QAM	9.06
	5 MHz	QPSK	4.55
		16QAM	4.56
LTE Band 7	20 MHz	QPSK	18.10
		16QAM	18.00
	15 MHz	QPSK	13.55
		16QAM	13.51
	10 MHz	QPSK	9.02
		16QAM	9.03
	5 MHz	QPSK	4.54
		16QAM	4.51
LTE Band 41(PC2)	20 MHz	QPSK	17.92
		16QAM	18.00
	15 MHz	QPSK	13.55
		16QAM	13.52
	10 MHz	QPSK	9.04
		16QAM	9.00
	5 MHz	QPSK	4.55
		16QAM	4.52
LTE Band 41(PC3)/38	20 MHz	QPSK	18.00
		16QAM	18.02
	15 MHz	QPSK	13.53
		16QAM	13.51
	10 MHz	QPSK	9.03
		16QAM	9.00
	5 MHz	QPSK	4.53
		16QAM	4.54

Table 7-76. Occupied Bandwidth Test Results (Ant2)

FCC ID: A3LSMS711U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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LTE Band 30 – Ant2

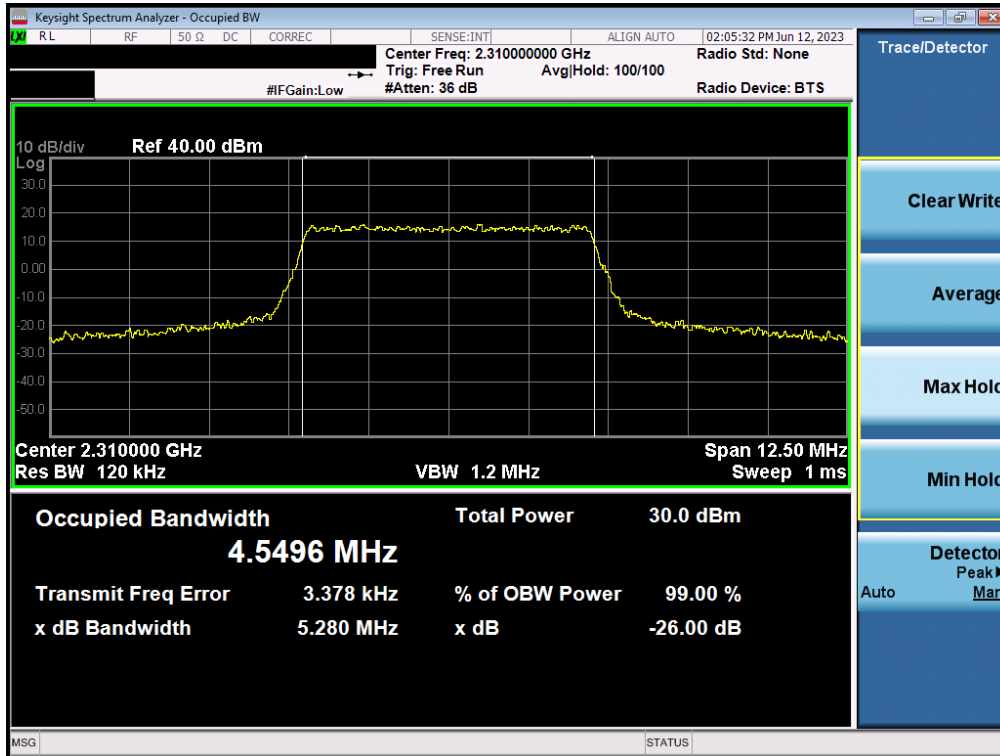


Plot 7-77. Occupied Bandwidth Plot (LTE Band 30 - 10MHz QPSK - Full RB - Ant2 – Ant2)



Plot 7-78. Occupied Bandwidth Plot (LTE Band 30 - 10MHz 16-QAM - Full RB - Ant2)

FCC ID: A3LSMS711U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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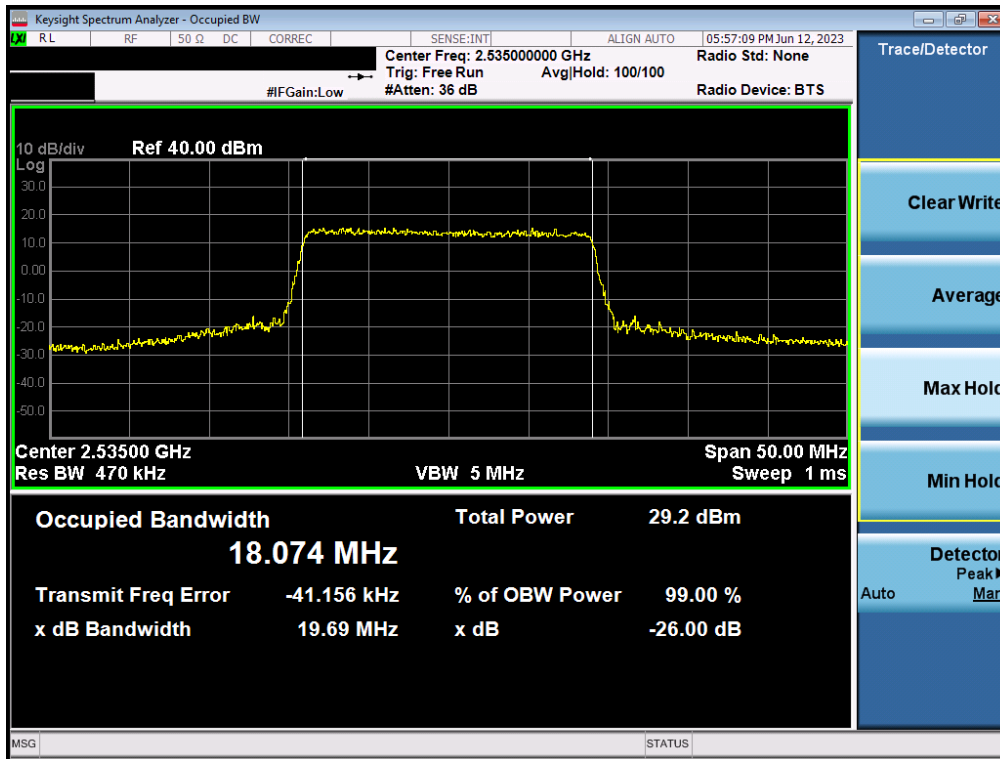
Plot 7-79. Occupied Bandwidth Plot (LTE Band 30 - 5MHz QPSK - Full RB - Ant2)



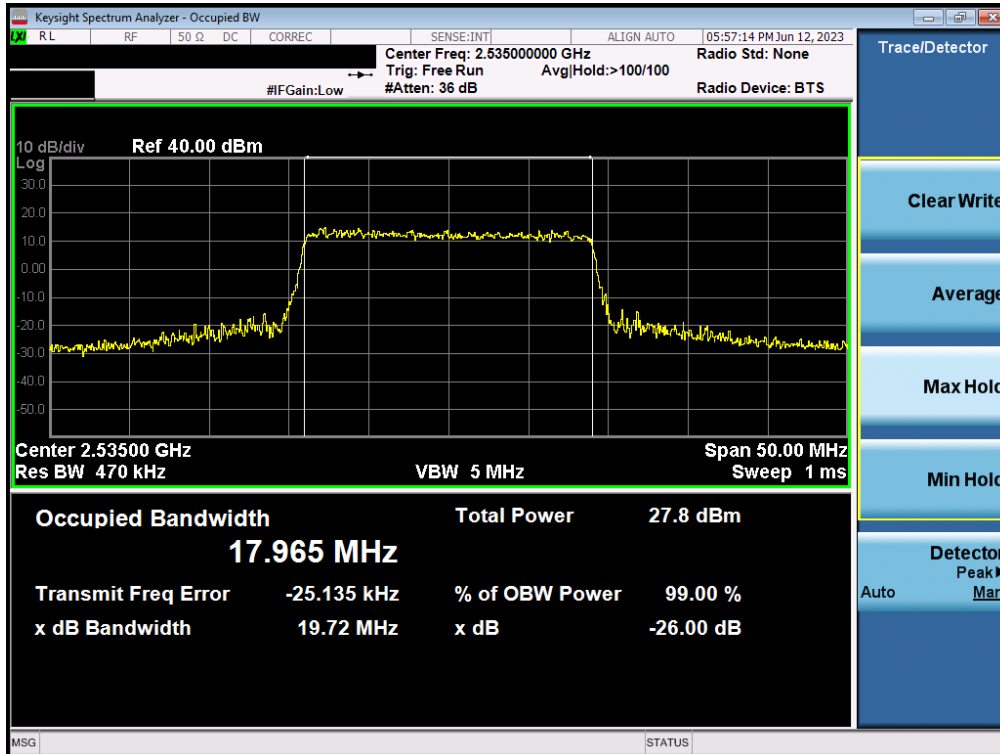
Plot 7-80. Occupied Bandwidth Plot (LTE Band 30 - 5MHz 16-QAM - Full RB - Ant2)

FCC ID: A3LSMS711U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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LTE Band 7 – Ant2

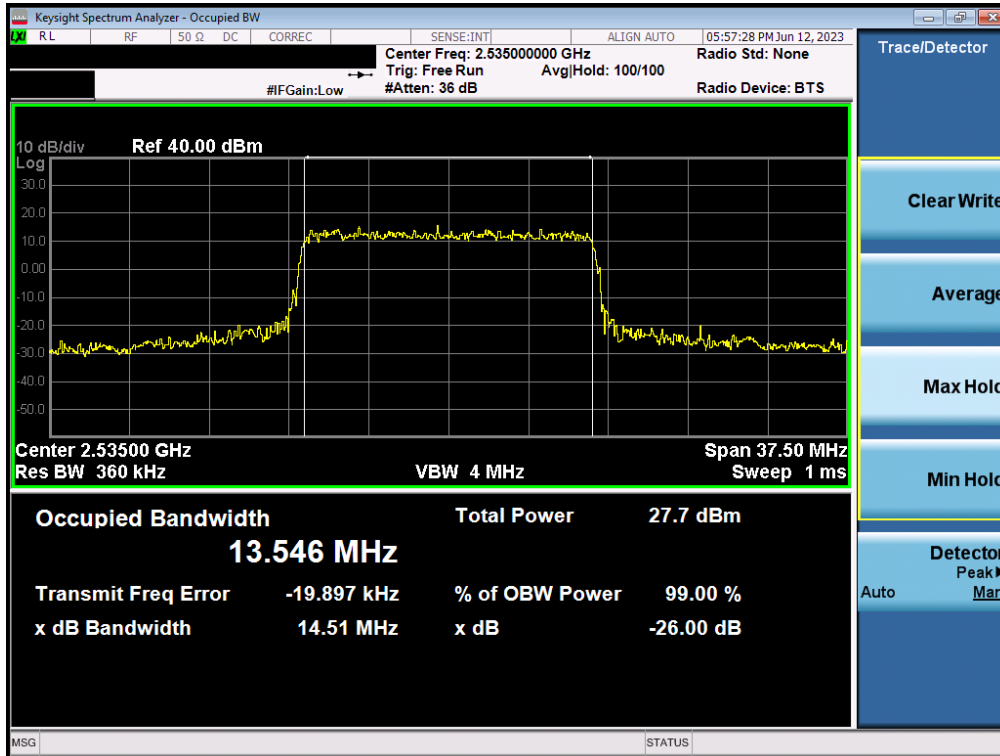


Plot 7-81. Occupied Bandwidth Plot (LTE Band 7 - 20MHz QPSK - Full RB - Ant2)

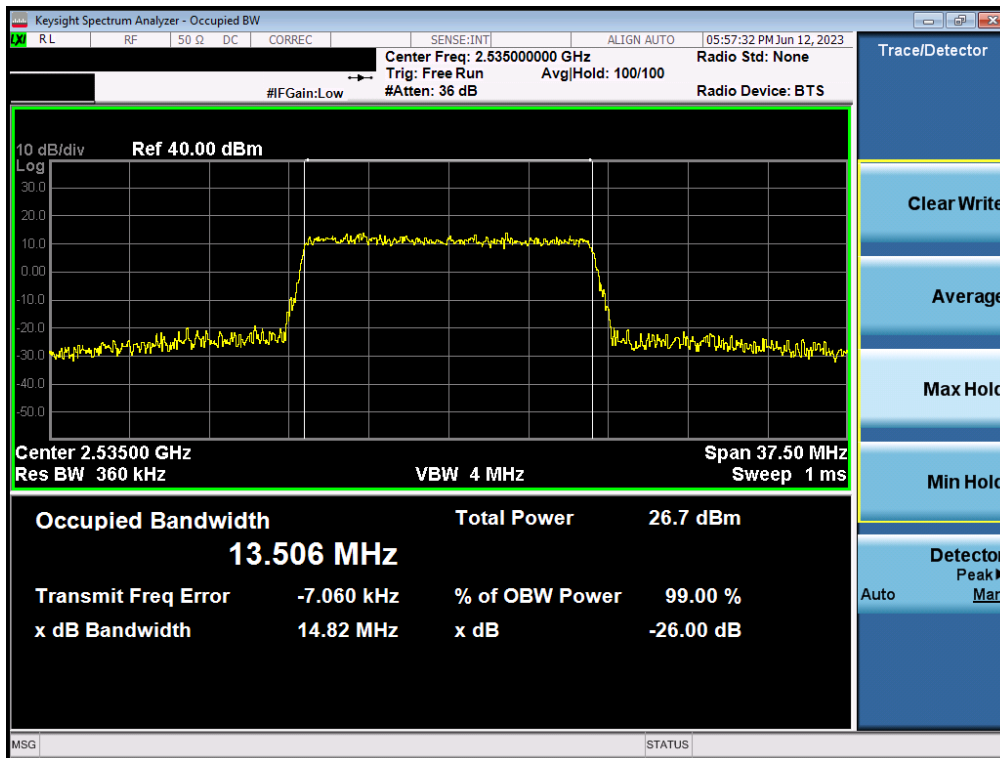


Plot 7-82. Occupied Bandwidth Plot (LTE Band 7 - 20MHz 16-QAM - Full RB - Ant2)

FCC ID: A3LSMS711U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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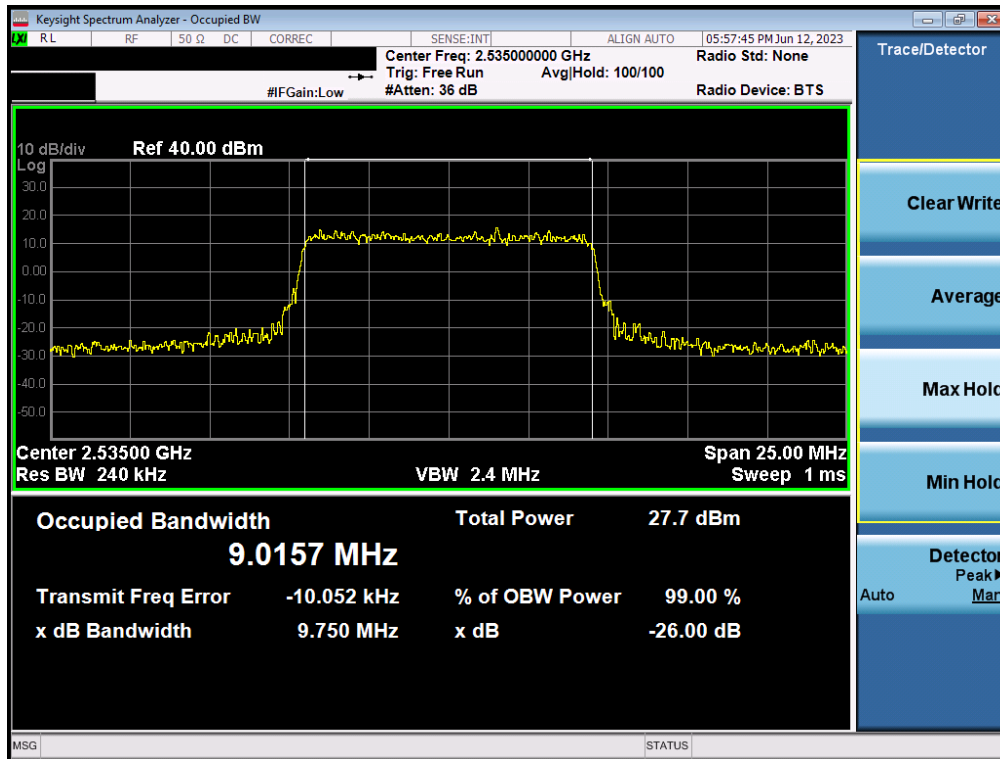


Plot 7-83. Occupied Bandwidth Plot (LTE Band 7 - 15MHz QPSK - Full RB - Ant2)



Plot 7-84. Occupied Bandwidth Plot (LTE Band 7 - 15MHz 16-QAM - Full RB - Ant2)

FCC ID: A3LSMS711U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2304260060-08.A3L	Test Dates: 5/24/2023 - 7/31/2023	EUT Type: Portable Handset	Page 59 of 214

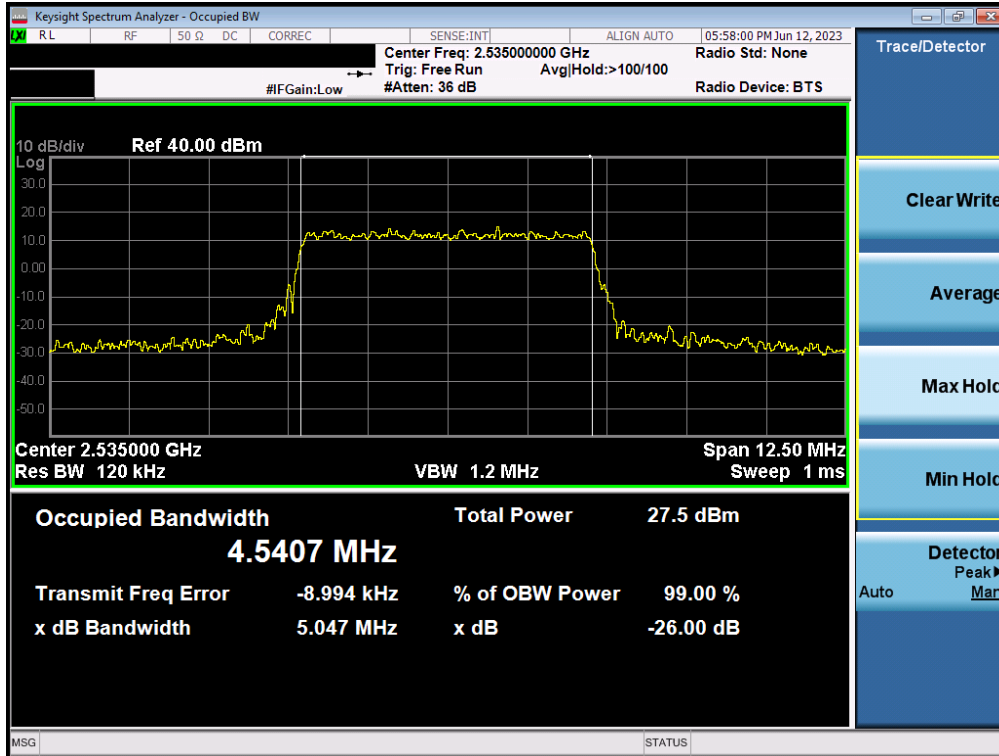


Plot 7-85. Occupied Bandwidth Plot (LTE Band 7 - 10MHz QPSK - Full RB - Ant2)

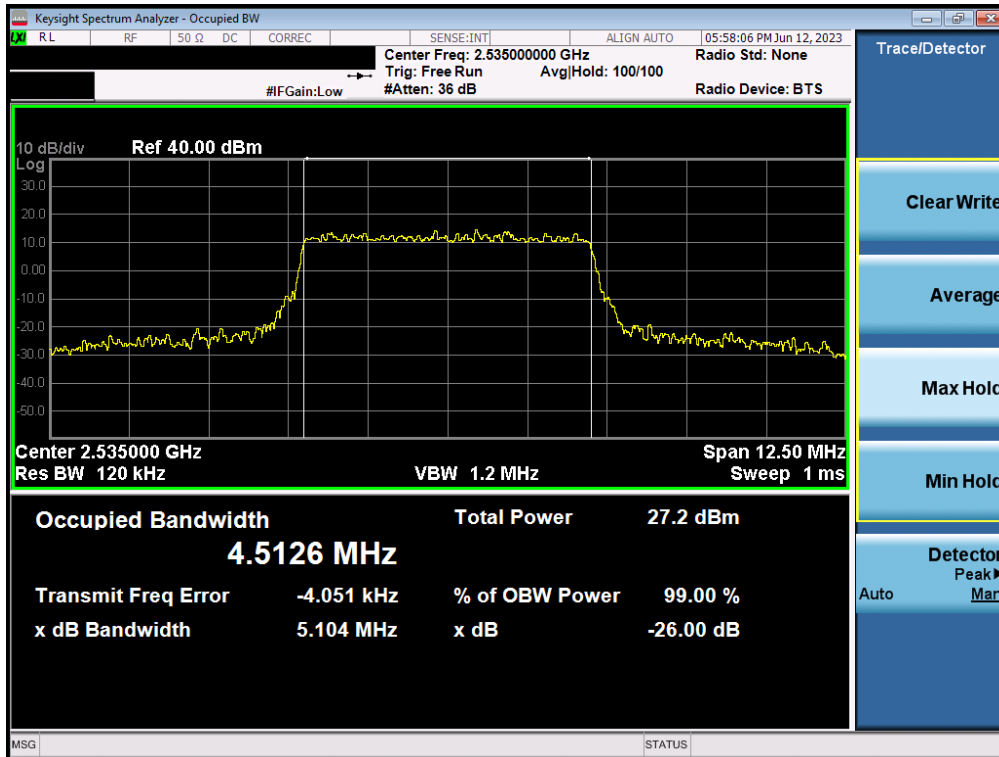


Plot 7-86. Occupied Bandwidth Plot (LTE Band 7 - 10MHz 16-QAM - Full RB - Ant2)

FCC ID: A3LSMS711U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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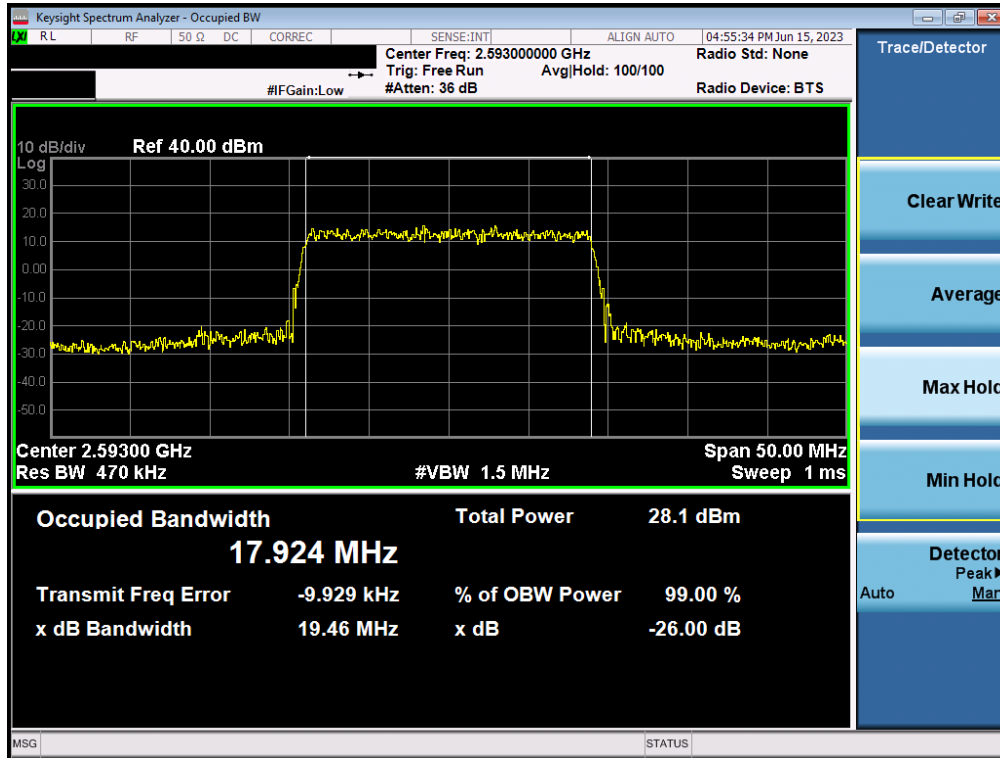
Plot 7-87. Occupied Bandwidth Plot (LTE Band 7 - 5MHz QPSK - Full RB - Ant2)



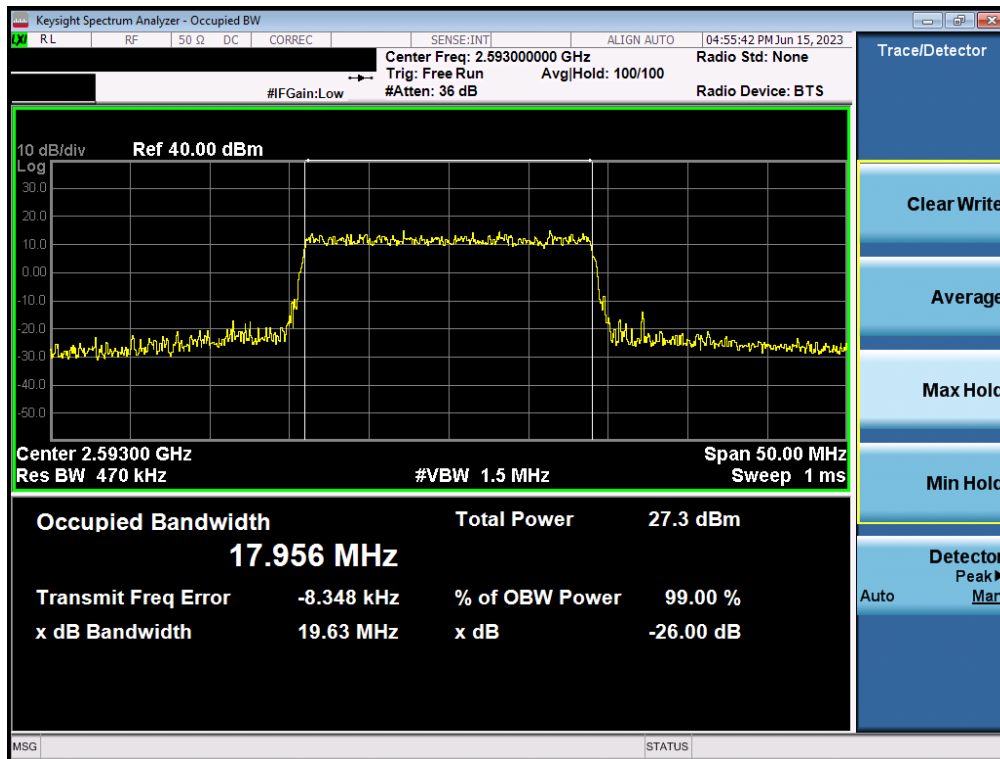
Plot 7-88. Occupied Bandwidth Plot (LTE Band 7 - 5MHz 16-QAM - Full RB - Ant2)

FCC ID: A3LSMS711U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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LTE Band 41(PC2) – Ant2

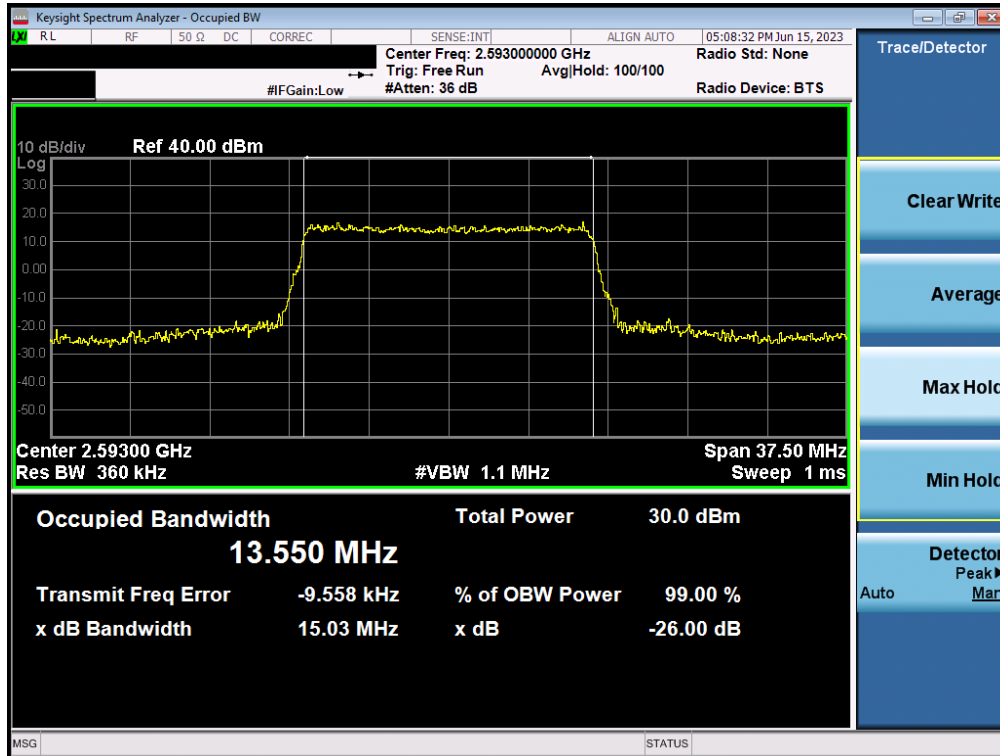


Plot 7-89. Occupied Bandwidth Plot (LTE Band 41(PC2) - 20MHz QPSK - Full RB - Ant2)



Plot 7-90. Occupied Bandwidth Plot (LTE Band 41(PC2) - 20MHz 16-QAM - Full RB - Ant2)

FCC ID: A3LSMS711U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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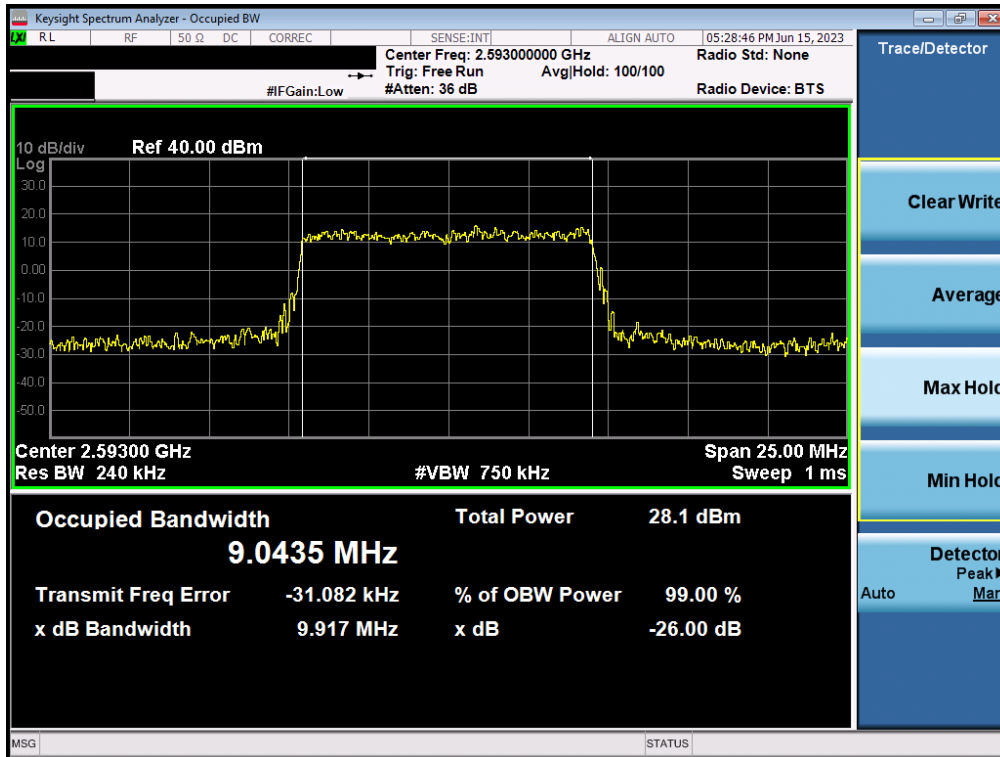


Plot 7-91. Occupied Bandwidth Plot (LTE Band 41(PC2) - 15MHz QPSK - Full RB - Ant2)

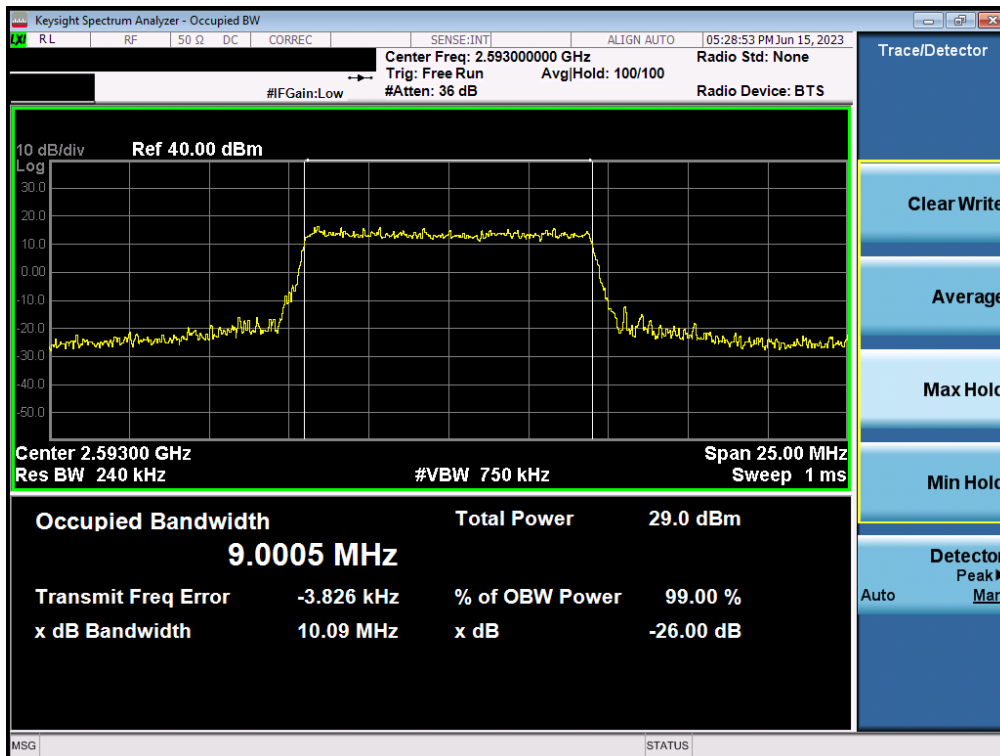


Plot 7-92. Occupied Bandwidth Plot (LTE Band 41(PC2) - 15MHz 16-QAM - Full RB - Ant2)

FCC ID: A3LSMS711U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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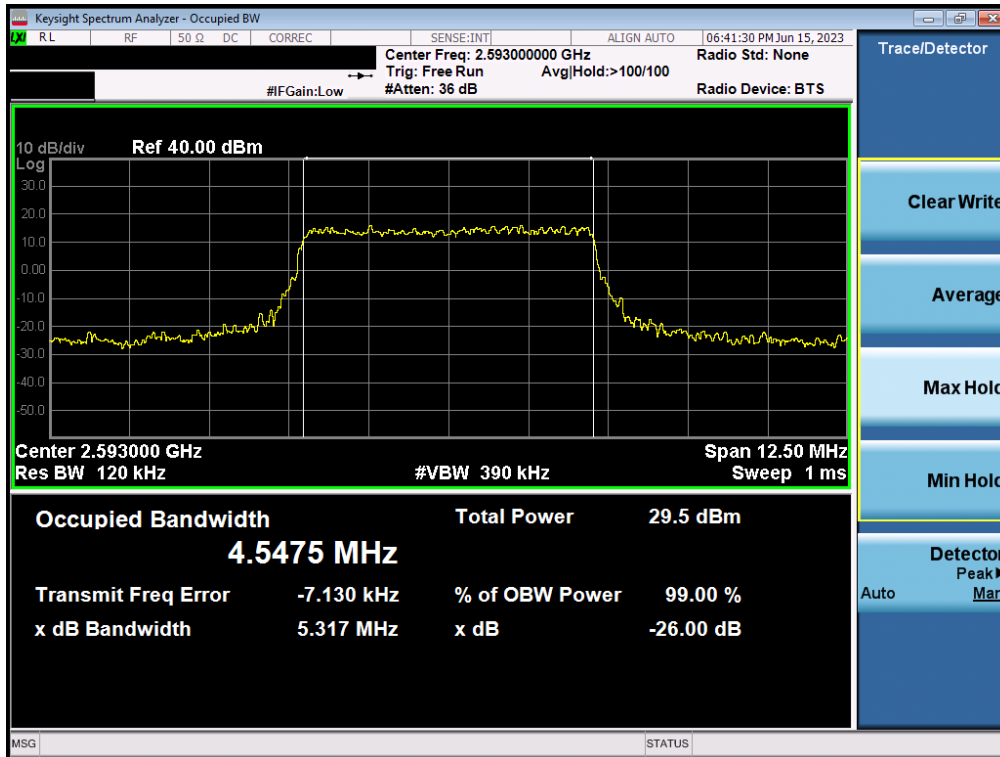


Plot 7-93. Occupied Bandwidth Plot (LTE Band 41(PC2) - 10MHz QPSK - Full RB - Ant2)

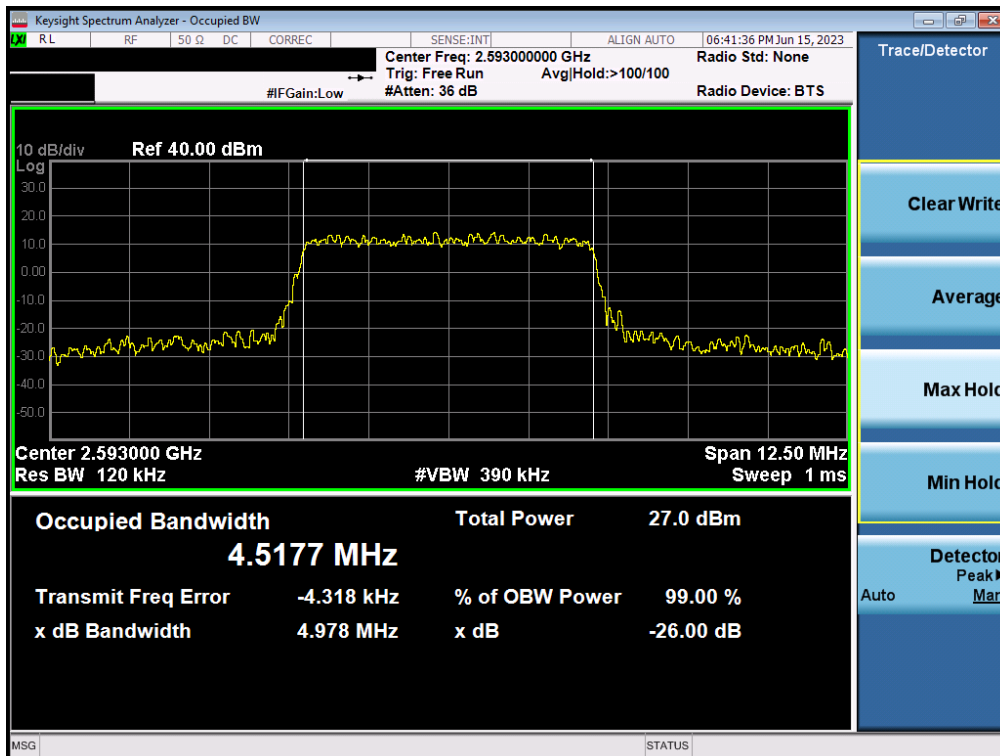


Plot 7-94. Occupied Bandwidth Plot (LTE Band 41(PC2) - 10MHz 16-QAM - Full RB - Ant2)

FCC ID: A3LSMS711U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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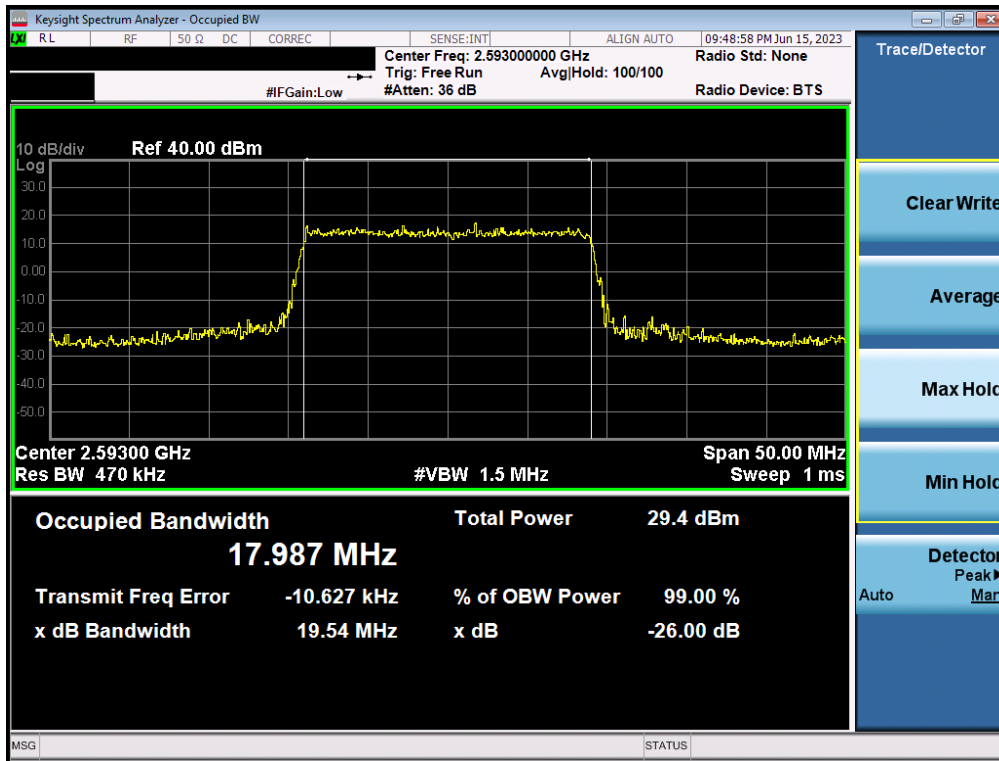
Plot 7-95. Occupied Bandwidth Plot (LTE Band 41(PC2) - 5MHz QPSK - Full RB - Ant2)



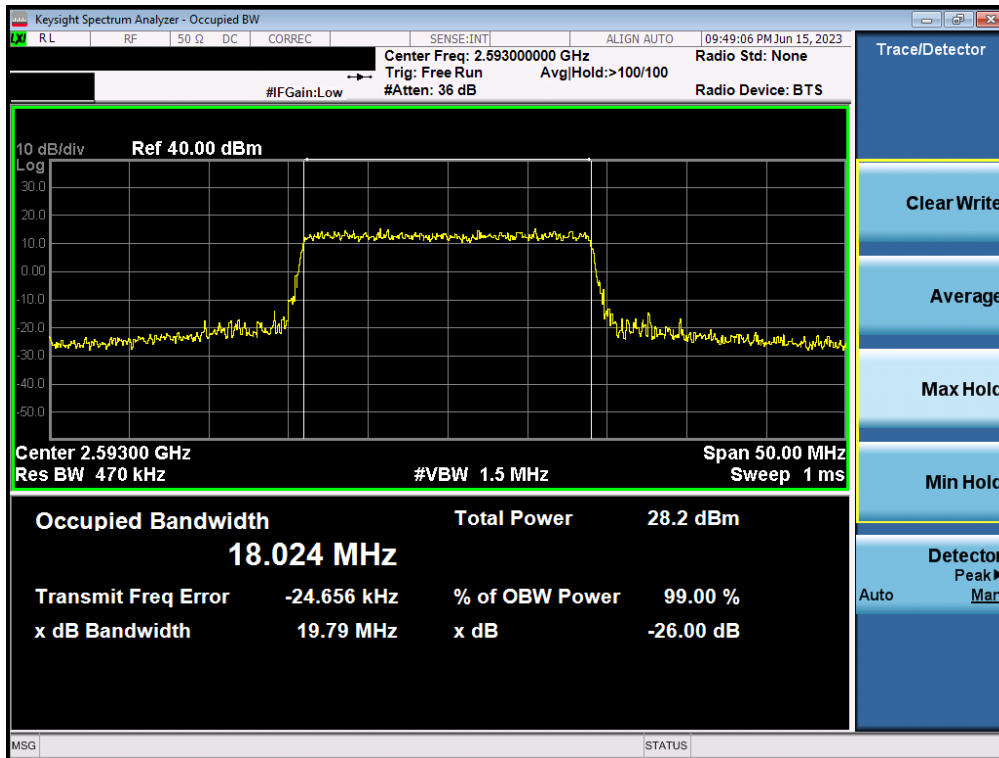
Plot 7-96. Occupied Bandwidth Plot (LTE Band 41(PC2) - 5MHz 16-QAM - Full RB - Ant2)

FCC ID: A3LSMS711U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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LTE Band 41(PC3)/38 – Ant2

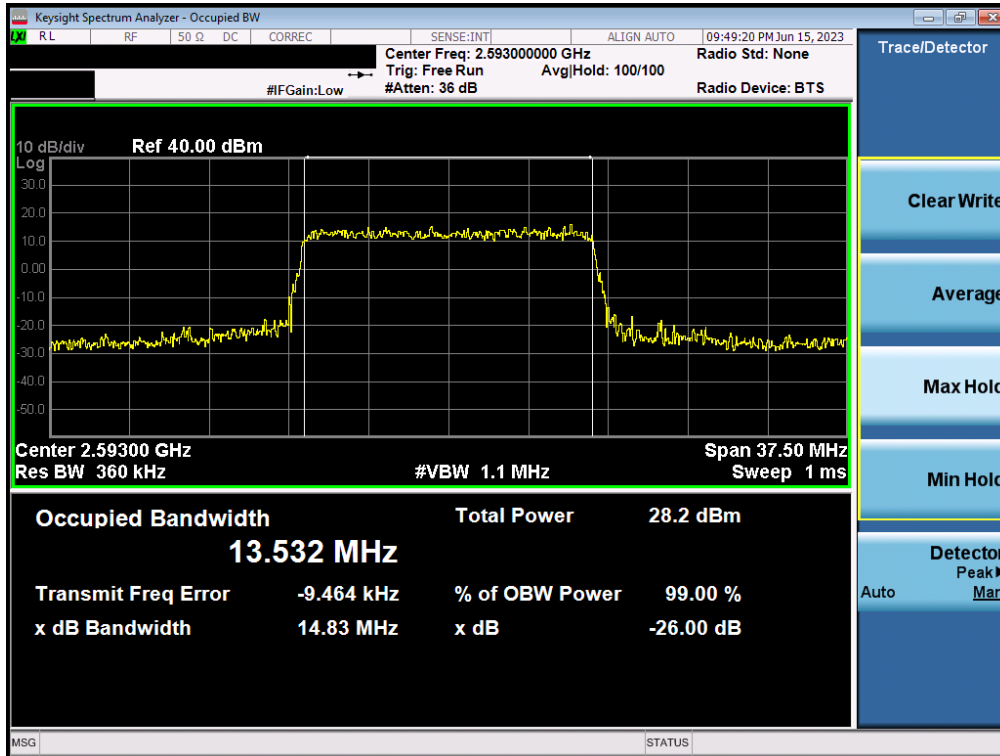


Plot 7-97. Occupied Bandwidth Plot (LTE Band 41(PC3)/38 - 20MHz QPSK - Full RB - Ant2)

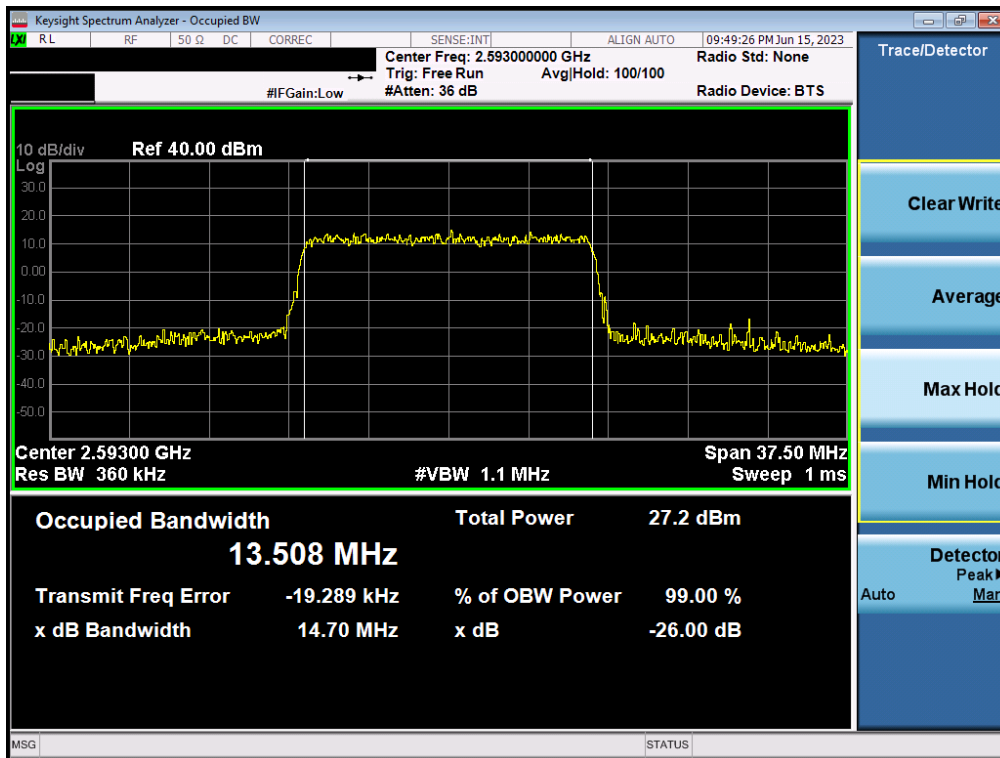


Plot 7-98. Occupied Bandwidth Plot (LTE Band 41(PC3)/38 - 20MHz 16-QAM - Full RB - Ant2)

FCC ID: A3LSMS711U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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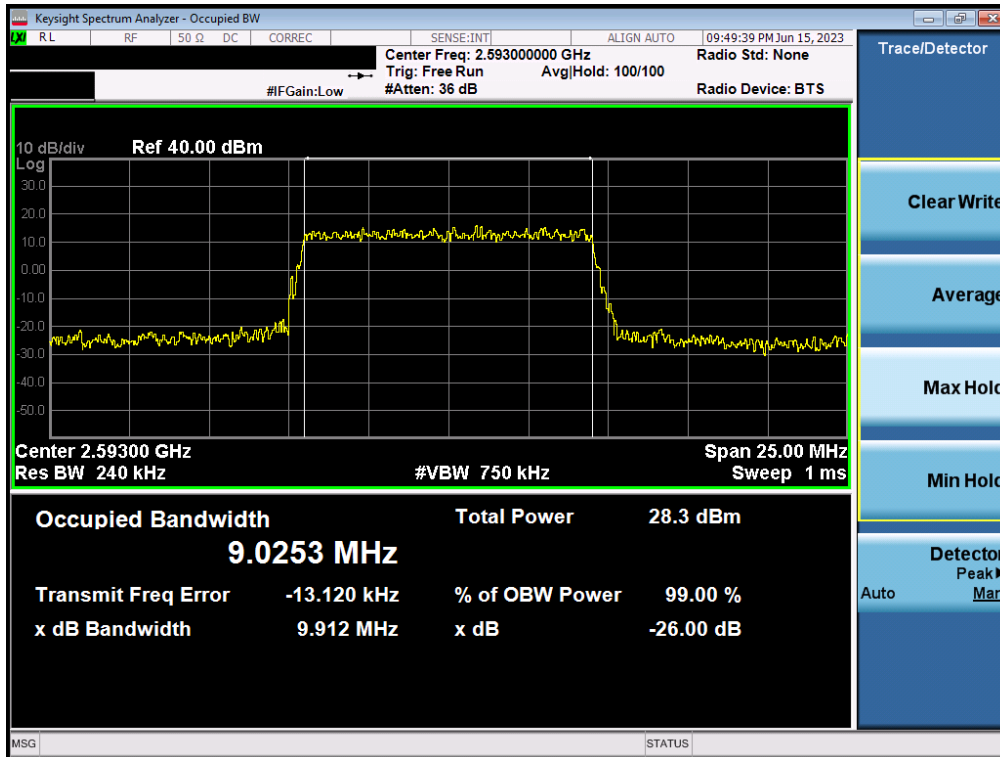


Plot 7-99. Occupied Bandwidth Plot (LTE Band 41(PC3)/38 - 15MHz QPSK - Full RB - Ant2)

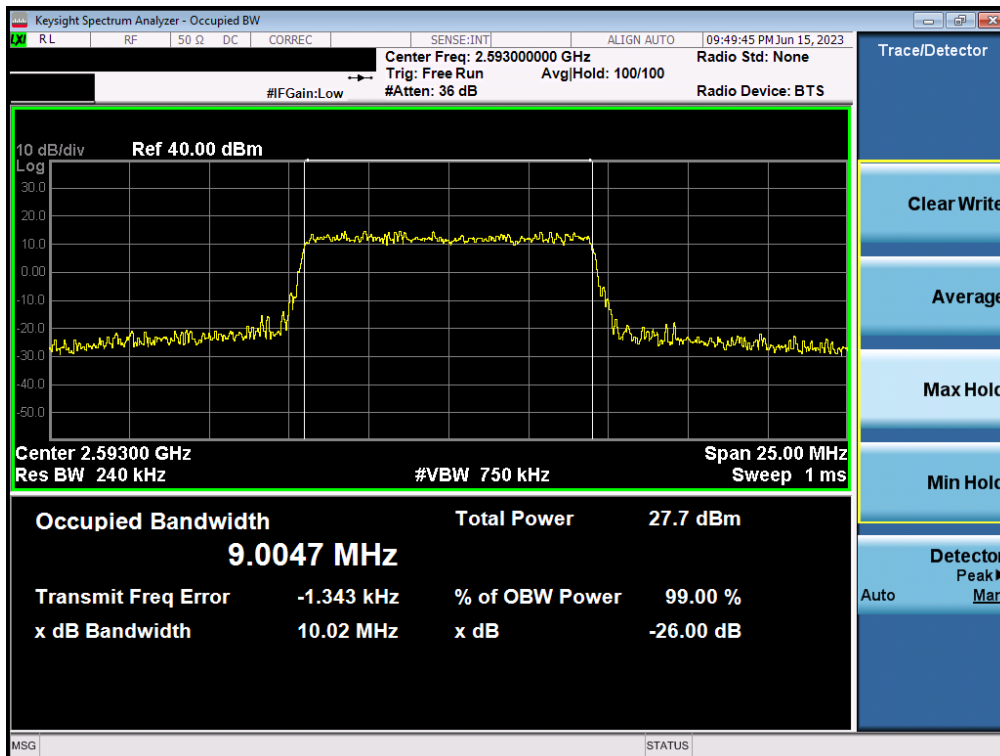


Plot 7-100. Occupied Bandwidth Plot (LTE Band 41(PC3)/38 - 15MHz 16-QAM - Full RB - Ant2)

FCC ID: A3LSMS711U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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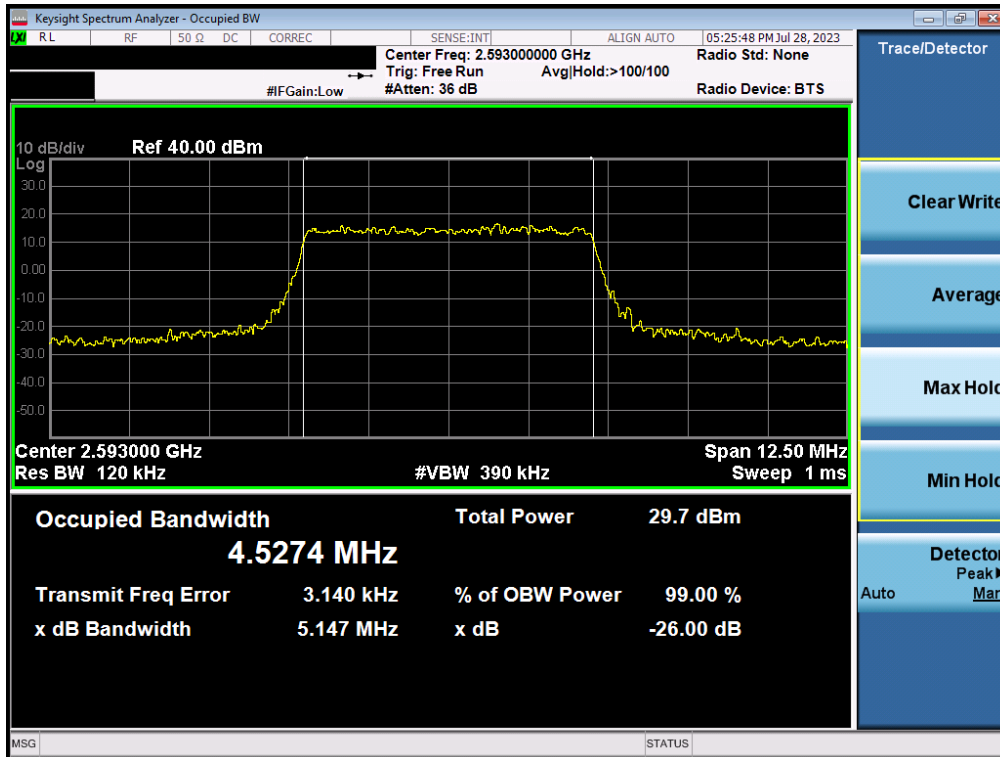


Plot 7-101. Occupied Bandwidth Plot (LTE Band 41(PC3)/38 - 10MHz QPSK - Full RB - Ant2)

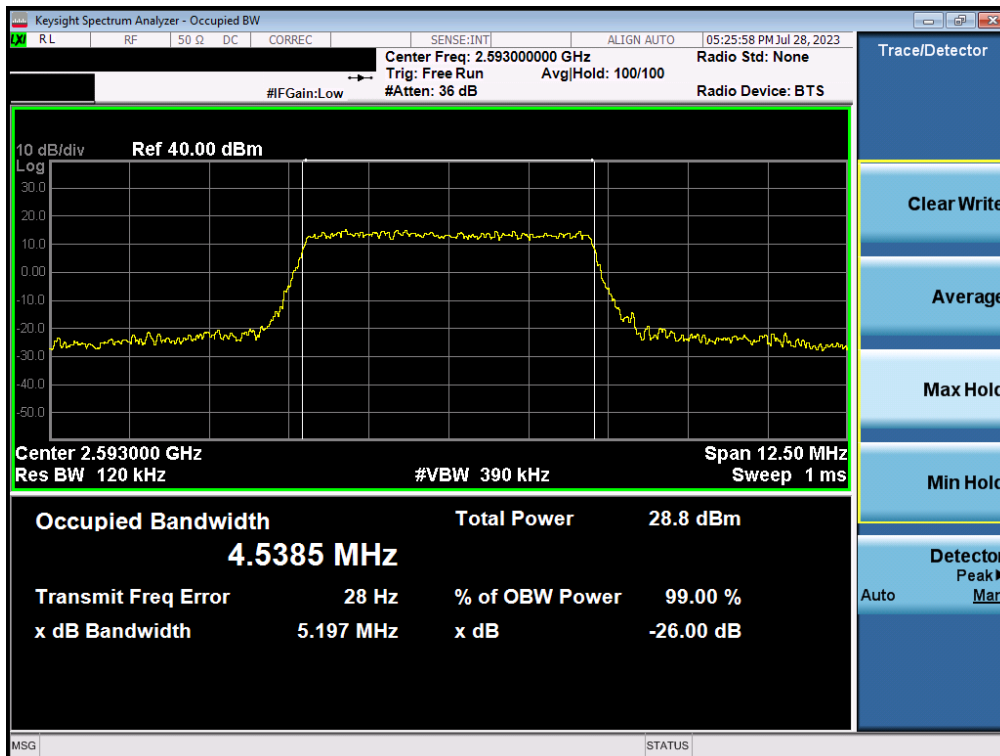


Plot 7-102. Occupied Bandwidth Plot (LTE Band 41(PC3)/38 - 10MHz 16-QAM - Full RB - Ant2)

FCC ID: A3LSMS711U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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Plot 7-103. Occupied Bandwidth Plot (LTE Band 41(PC3)/38 - 5MHz QPSK - Full RB - Ant2)



Plot 7-104. Occupied Bandwidth Plot (LTE Band 41(PC3)/38 - 5MHz 16-QAM - Full RB - Ant2)

FCC ID: A3LSMS711U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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Mode	Bandwidth	Modulation	OBW [MHz]
NR Band n30	10MHz	$\pi/2$ BPSK	9.00
		QPSK	9.36
		16QAM	9.36
	5 MHz	$\pi/2$ BPSK	4.56
		QPSK	4.54
		16QAM	4.54

Table 7-105. Occupied Bandwidth Test Results (Ant2)

FCC ID: A3LSMS711U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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