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PART 27 MEASUREMENT REPORT

Applicant Name:
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Date of Testing:
9/9/2022 - 11/25/2022
Test Report Issue Date:
11/25/2022
Test Site/Location:
Element lab., Columbia, MD, USA
Test Report Serial No.:
1M2209010096-04.A3L

FCC ID:	**A3LSMS911U**
Applicant Name:	**Samsung Electronics Co., Ltd.**

Application Type:	Certification
Model:	SM-S911U
Additional Model(s):	SM-S911U1
EUT Type:	Portable Tablet
FCC Classification:	PCS Licensed Transmitter Held to Ear (PCE)
FCC Rule Part:	27
Test Procedure(s):	ANSI C63.26-2015, KDB 648474 D03 v01r04

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

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

RJ Ortanez
Executive Vice President

ACCREDITED
CERT #2041.01

TABLE OF CONTENTS

1.0 INTRODUCTION 7
1.1 Scope 7
1.2 Element Test Location 7
1.3 Test Facility / Accreditations 7
2.0 PRODUCT INFORMATION 8
2.1 Equipment Description 8
2.2 Device Capabilities 8
2.3 Test Configuration 8
2.4 Software and Firmware 8
2.5 EMI Suppression Device(s)/Modifications 8
3.0 DESCRIPTION OF TESTS 9
3.1 Evaluation Procedure 9
3.2 Radiated Power and Radiated Spurious Emissions 9
4.0 MEASUREMENT UNCERTAINTY 10
5.0 TEST EQUIPMENT CALIBRATION DATA 11
6.0 SAMPLE CALCULATIONS 12
7.0 TEST RESULTS 13
7.1 Summary 13
7.2 Conducted Output Power Data 14
7.3 Occupied Bandwidth 25
7.4 Spurious and Harmonic Emissions at Antenna Terminal 116
7.5 Band Edge Emissions at Antenna Terminal 229
7.6 Radiated Power (EIRP) 318
7.7 Radiated Spurious Emissions Measurements 330
7.8 Frequency Stability / Temperature Variation 394
8.0 CONCLUSION 401

PART 27 MEASUREMENT REPORT

Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	EIRP		Emission Designator
				Max. Power [W]	Max. Power [dBm]	
LTE Band 30 Ant A	10 MHz	QPSK	2310.0	0.188	22.75	9M04G7D
		16QAM	2310.0	0.156	21.94	9M04W7D
	5 MHz	QPSK	2307.5 - 2312.5	0.189	22.77	4M55G7D
		16QAM	2307.5 - 2312.5	0.160	22.05	4M53W7D
LTE Band 7 Ant B	20 MHz	QPSK	2510.0 - 2560.0	0.187	22.71	18M0G7D
		16QAM	2510.0 - 2560.0	0.161	22.07	18M1W7D
	15 MHz	QPSK	2507.5 - 2562.5	0.194	22.88	13M6G7D
		16QAM	2507.5 - 2562.5	0.162	22.10	13M6W7D
	10 MHz	QPSK	2505.0 - 2565.0	0.201	23.03	9M05G7D
		16QAM	2505.0 - 2565.0	0.165	22.17	9M04W7D
	5 MHz	QPSK	2502.5 - 2567.5	0.200	23.02	4M52G7D
		16QAM	2502.5 - 2567.5	0.166	22.19	4M54W7D
LTE Band 41(PC2) Ant B	20 MHz	QPSK	2506.0 - 2680.0	0.390	25.91	18M0G7D
		16QAM	2506.0 - 2680.0	0.319	25.03	18M0W7D
	15 MHz	QPSK	2503.5 - 2682.5	0.421	26.25	13M6G7D
		16QAM	2503.5 - 2682.5	0.339	25.30	13M6W7D
	10 MHz	QPSK	2501.0 - 2685.0	0.441	26.44	9M04G7D
		16QAM	2501.0 - 2685.0	0.379	25.78	9M08W7D
	5 MHz	QPSK	2498.5 - 2687.5	0.440	26.43	4M56G7D
		16QAM	2498.5 - 2687.5	0.392	25.93	4M53W7D
LTE Band 41(PC3)/38 Ant B	20 MHz	QPSK	2506.0 - 2680.0	0.300	24.77	18M0G7D
		16QAM	2506.0 - 2680.0	0.247	23.93	18M0W7D
	15 MHz	QPSK	2503.5 - 2682.5	0.298	24.74	13M5G7D
		16QAM	2503.5 - 2682.5	0.248	23.95	13M5W7D
	10 MHz	QPSK	2501.0 - 2685.0	0.338	25.29	9M04G7D
		16QAM	2501.0 - 2685.0	0.290	24.62	9M05W7D
	5 MHz	QPSK	2498.5 - 2687.5	0.322	25.08	4M53G7D
		16QAM	2498.5 - 2687.5	0.261	24.17	4M54W7D

EUT Overview (LTE Band)

Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	EIRP		Emission Designator
				Max. Power [W]	Max. Power [dBm]	
LTE Band 30 Ant F	10 MHz	QPSK	2310.0	0.140	21.47	9M04G7D
		16QAM	2310.0	0.118	20.74	9M03W7D
	5 MHz	QPSK	2307.5 - 2312.5	0.142	21.51	4M53G7D
		16QAM	2307.5 - 2312.5	0.127	21.04	4M55W7D
LTE Band 7 Ant F	20 MHz	QPSK	2510.0 - 2560.0	0.168	22.24	18M0G7D
		16QAM	2510.0 - 2560.0	0.141	21.49	18M0W7D
	15 MHz	QPSK	2507.5 - 2562.5	0.167	22.22	13M6G7D
		16QAM	2507.5 - 2562.5	0.141	21.49	13M5W7D
	10 MHz	QPSK	2505.0 - 2565.0	0.174	22.40	9M05G7D
		16QAM	2505.0 - 2565.0	0.151	21.78	9M04W7D
	5 MHz	QPSK	2502.5 - 2567.5	0.177	22.48	4M56G7D
		16QAM	2502.5 - 2567.5	0.148	21.70	4M55W7D
LTE Band 41(PC2) Ant F	20 MHz	QPSK	2506.0 - 2680.0	0.414	26.16	18M0G7D
		16QAM	2506.0 - 2680.0	0.292	24.65	18M1W7D
	15 MHz	QPSK	2503.5 - 2682.5	0.396	25.98	13M5G7D
		16QAM	2503.5 - 2682.5	0.288	24.60	13M5W7D
	10 MHz	QPSK	2501.0 - 2685.0	0.342	25.35	9M01G7D
		16QAM	2501.0 - 2685.0	0.256	24.08	9M02W7D
	5 MHz	QPSK	2498.5 - 2687.5	0.304	24.84	4M53G7D
		16QAM	2498.5 - 2687.5	0.203	23.07	4M53W7D
LTE Band 41(PC3)/38 Ant F	20 MHz	QPSK	2506.0 - 2680.0	0.294	24.68	18M0G7D
		16QAM	2506.0 - 2680.0	0.209	23.20	18M0W7D
	15 MHz	QPSK	2503.5 - 2682.5	0.281	24.48	13M5G7D
		16QAM	2503.5 - 2682.5	0.217	23.36	13M5W7D
	10 MHz	QPSK	2501.0 - 2685.0	0.315	24.98	9M02G7D
		16QAM	2501.0 - 2685.0	0.212	23.27	9M04W7D
	5 MHz	QPSK	2498.5 - 2687.5	0.304	24.83	4M53G7D
		16QAM	2498.5 - 2687.5	0.207	23.16	4M52W7D

EUT Overview (LTE Band)

Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	EIRP		Emission Designator
				Max. Power [W]	Max. Power [dBm]	
NR Band n30 Ant A	10 MHz	π/2 BPSK	2310.0	0.172	22.37	9M02G7D
		QPSK	2310.0	0.165	22.17	9M35G7D
		16QAM	2310.0	0.135	21.32	9M35W7D
	5 MHz	π/2 BPSK	2307.5 - 2312.5	0.181	22.58	4M56G7D
		QPSK	2307.5 - 2312.5	0.164	22.14	4M52G7D
		16QAM	2307.5 - 2312.5	0.130	21.15	4M54W7D
NR Band n7 Ant B	40MHz	π/2 BPSK	2520.0 - 2550.0	0.186	22.70	38M7G7D
		QPSK	2520.0 - 2550.0	0.159	22.00	38M9G7D
		16QAM	2520.0 - 2550.0	0.109	20.39	38M8W7D
	30MHz	π/2 BPSK	2515.0 - 2555.0	0.183	22.63	28M8G7D
		QPSK	2515.0 - 2555.0	0.161	22.07	28M6G7D
		16QAM	2515.0 - 2555.0	0.115	20.61	28M7W7D
	25MHz	π/2 BPSK	2512.5 - 2557.5	0.188	22.74	23M0G7D
		QPSK	2512.5 - 2557.5	0.161	22.07	23M9G7D
		16QAM	2512.5 - 2557.5	0.114	20.58	23M9W7D
	20MHz	π/2 BPSK	2510.0 - 2560.0	0.181	22.57	18M0G7D
		QPSK	2510.0 - 2560.0	0.155	21.91	19M0G7D
		16QAM	2510.0 - 2560.0	0.116	20.64	19M1W7D
	15 MHz	π/2 BPSK	2507.5 - 2562.5	0.178	22.50	13M5G7D
		QPSK	2507.5 - 2562.5	0.159	22.02	14M2G7D
		16QAM	2507.5 - 2562.5	0.117	20.66	14M2W7D
	10MHz	π/2 BPSK	2505.0 - 2565.0	0.178	22.50	9M05G7D
		QPSK	2505.0 - 2565.0	0.151	21.79	9M37G7D
		16QAM	2505.0 - 2565.0	0.111	20.44	9M34W7D
	5 MHz	π/2 BPSK	2502.5 - 2567.5	0.180	22.56	4M53G7D
		QPSK	2502.5 - 2567.5	0.161	22.06	4M52G7D
		16QAM	2502.5 - 2567.5	0.118	20.73	4M52W7D
NR Band n41(PC2) Ant F	100 MHz	π/2 BPSK	2546.0 - 2640.0	0.391	25.92	97M1G7D
		QPSK	2546.0 - 2640.0	0.380	25.80	98M3G7D
		16QAM	2546.0 - 2640.0	0.330	25.18	98M3W7D
	90 MHz	π/2 BPSK	2541.0 - 2645.0	0.406	26.09	87M4G7D
		QPSK	2541.0 - 2645.0	0.403	26.05	88M0G7D
		16QAM	2541.0 - 2645.0	0.394	25.95	88M2W7D
	80 MHz	π/2 BPSK	2536.0 - 2650.0	0.398	26.00	77M6G7D
		QPSK	2536.0 - 2650.0	0.409	26.12	77M9G7D
		16QAM	2536.0 - 2650.0	0.385	25.85	77M8W7D
	70 MHz	π/2 BPSK	2531.0 - 2655.0	0.408	26.11	64M7G7D
		QPSK	2531.0 - 2655.0	0.404	26.06	67M7G7D
		16QAM	2531.0 - 2655.0	0.348	25.41	67M9W7D
	60 MHz	π/2 BPSK	2526.0 - 2660.0	0.422	26.25	58M4G7D
		QPSK	2526.0 - 2660.0	0.412	26.15	58M2G7D
		16QAM	2526.0 - 2660.0	0.383	25.84	58M2W7D
	50 MHz	π/2 BPSK	2521.0 - 2665.0	0.405	26.07	46M0G7D
		QPSK	2521.0 - 2665.0	0.398	26.00	47M8G7D
		16QAM	2521.0 - 2665.0	0.372	25.71	47M8W7D
	40 MHz	π/2 BPSK	2516.0 - 2670.0	0.439	26.42	35M9G7D
		QPSK	2516.0 - 2670.0	0.454	26.57	38M1G7D
		16QAM	2516.0 - 2670.0	0.348	25.42	38M2W7D
	30 MHz	π/2 BPSK	2511.0 - 2675.0	0.426	26.30	27M0G7D
		QPSK	2511.0 - 2675.0	0.418	26.21	28M0G7D
		16QAM	2511.0 - 2675.0	0.391	25.92	28M0W7D
	20 MHz	π/2 BPSK	2506.0 - 2680.0	0.452	26.55	18M1G7D
		QPSK	2506.0 - 2680.0	0.447	26.50	18M4G7D
		16QAM	2506.0 - 2680.0	0.417	26.21	18M3W7D
	15 MHz	π/2 BPSK	2511.0 - 2675.0	0.483	26.84	13M0G7D
		QPSK	2511.0 - 2675.0	0.439	26.42	13M7G7D
		16QAM	2511.0 - 2675.0	0.401	26.03	13M7W7D
	10 MHz	π/2 BPSK	2506.0 - 2680.0	0.467	26.69	8M69G7D
		QPSK	2506.0 - 2680.0	0.461	26.64	8M67G7D
		16QAM	2506.0 - 2680.0	0.407	26.09	8M69W7D

EUT Overview (NR Band)

Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	EIRP		Emission Designator
				Max. Power [W]	Max. Power [dBm]	
NR Band n30 Ant F	10 MHz	π/2 BPSK	2310.0	0.147	21.67	9M02G7D
		QPSK	2310.0	0.145	21.62	9M35G7D
		16QAM	2310.0	0.126	21.00	9M36W7D
	5 MHz	π/2 BPSK	2307.5 - 2312.5	0.152	21.82	4M54G7D
		QPSK	2307.5 - 2312.5	0.149	21.73	4M53G7D
		16QAM	2307.5 - 2312.5	0.138	21.40	4M52W7D
NR Band n7 Ant F	40MHz	π/2 BPSK	2520.0 - 2550.0	0.220	23.43	38M8G7D
		QPSK	2520.0 - 2550.0	0.216	23.35	38M9G7D
		16QAM	2520.0 - 2550.0	0.180	22.54	38M8W7D
	30MHz	π/2 BPSK	2515.0 - 2555.0	0.217	23.37	28M8G7D
		QPSK	2515.0 - 2555.0	0.218	23.39	28M7G7D
		16QAM	2515.0 - 2555.0	0.176	22.46	28M7W7D
	25MHz	π/2 BPSK	2512.5 - 2557.5	0.218	23.39	23M0G7D
		QPSK	2512.5 - 2557.5	0.207	23.17	23M9G7D
		16QAM	2512.5 - 2557.5	0.179	22.52	23M9W7D
	20MHz	π/2 BPSK	2510.0 - 2560.0	0.217	23.37	18M0G7D
		QPSK	2510.0 - 2560.0	0.210	23.22	19M1G7D
		16QAM	2510.0 - 2560.0	0.181	22.59	19M1W7D
	15 MHz	π/2 BPSK	2507.5 - 2562.5	0.212	23.26	13M5G7D
		QPSK	2507.5 - 2562.5	0.207	23.15	14M2G7D
		16QAM	2507.5 - 2562.5	0.183	22.63	14M2W7D
	10MHz	π/2 BPSK	2505.0 - 2565.0	0.215	23.33	9M07G7D
		QPSK	2505.0 - 2565.0	0.211	23.25	9M37G7D
		16QAM	2505.0 - 2565.0	0.173	22.38	9M35W7D
	5 MHz	π/2 BPSK	2502.5 - 2567.5	0.218	23.38	4M53G7D
		QPSK	2502.5 - 2567.5	0.210	23.23	4M52G7D
		16QAM	2502.5 - 2567.5	0.187	22.73	4M52W7D
NR Band n41(PC2) Switching Ant B	100 MHz	π/2 BPSK	2546.0 - 2640.0	0.320	25.05	96M9G7D
		QPSK	2546.0 - 2640.0	0.297	24.73	97M0G7D
		16QAM	2546.0 - 2640.0	0.248	23.94	96M9W7D
	90 MHz	π/2 BPSK	2541.0 - 2645.0	0.331	25.19	87M3G7D
		QPSK	2541.0 - 2645.0	0.310	24.91	87M8G7D
		16QAM	2541.0 - 2645.0	0.289	24.61	88M0W7D
	80 MHz	π/2 BPSK	2536.0 - 2650.0	0.301	24.78	77M5G7D
		QPSK	2536.0 - 2650.0	0.301	24.79	77M9G7D
		16QAM	2536.0 - 2650.0	0.229	23.60	77M8W7D
	70 MHz	π/2 BPSK	2531.0 - 2655.0	0.347	25.40	64M7G7D
		QPSK	2531.0 - 2655.0	0.328	25.16	67M6G7D
		16QAM	2531.0 - 2655.0	0.257	24.10	67M8W7D
	60 MHz	π/2 BPSK	2526.0 - 2660.0	0.305	24.84	58M2G7D
		QPSK	2526.0 - 2660.0	0.313	24.95	58M2G7D
		16QAM	2526.0 - 2660.0	0.264	24.22	58M2W7D
	50 MHz	π/2 BPSK	2521.0 - 2665.0	0.327	25.15	46M1G7D
		QPSK	2521.0 - 2665.0	0.301	24.79	47M7G7D
		16QAM	2521.0 - 2665.0	0.277	24.43	47M7W7D
	40 MHz	π/2 BPSK	2516.0 - 2670.0	0.379	25.79	36M2G7D
		QPSK	2516.0 - 2670.0	0.397	25.98	38M0G7D
		16QAM	2516.0 - 2670.0	0.273	24.36	38M0W7D
	30 MHz	π/2 BPSK	2511.0 - 2675.0	0.335	25.25	27M0G7D
		QPSK	2511.0 - 2675.0	0.337	25.28	27M9G7D
		16QAM	2511.0 - 2675.0	0.284	24.54	28M0W7D
	20 MHz	π/2 BPSK	2506.0 - 2680.0	0.348	25.42	18M0G7D
		QPSK	2506.0 - 2680.0	0.374	25.73	18M4G7D
		16QAM	2506.0 - 2680.0	0.314	24.97	18M3W7D
	15 MHz	π/2 BPSK	2550.0 - 2640.0	0.315	24.98	13M0G7D
		QPSK	2550.0 - 2640.0	0.280	24.47	12M9G7D
		16QAM	2550.0 - 2640.0	0.236	23.74	13M0W7D
	10 MHz	π/2 BPSK	2545.0 - 2645.0	0.302	24.80	8M65G7D
		QPSK	2545.0 - 2645.0	0.272	24.35	8M67G7D
		16QAM	2545.0 - 2645.0	0.219	23.41	8M66W7D

EUT Overview (NR Band)

1.0 INTRODUCTION

1.1 Scope

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

1.2 Element Test Location

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

1.3 Test Facility / Accreditations

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

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

- Element Washington DC LLC TCB is a Telecommunication Certification Body (TCB) accredited to ISO/IEC 17065-2012 by A2LA (Certificate number 2041.03) in all scopes of FCC Rules and ISED Standards (RSS).

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

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

2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **Samsung Portable Tablet FCC ID: A3LSMS911U**. 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.: 0227M, 0218M, 0172M, 0178M, 0235M, 0441M, 0371M, 0179M, 0236M, 0136M, 0286M, 0247M, 0228M, 0238M, 0241M

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 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.

The device has 2 Tx antenna for n41 data (Ant F & B) and 2 Rx antennas (Ant E, D). With SRS operations, all 4 antennas can transmit the SRS signal to check for the channel quality of n41. The antennas cannot simultaneously transmit. Only the single TX/RX antenna is used for Data transmission. The device is also capable of path switching for all antennas during n41 operation and data is provided to cover all possible paths.

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 S911USQU0AVJM installed on the EUT.

2.5 EMI Suppression Device(s)/Modifications

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

3.0 DESCRIPTION OF TESTS

3.1 Evaluation Procedure

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

Deviation from Measurement Procedure……..None

3.2 Radiated Power and Radiated Spurious Emissions

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

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

For radiated power measurements, substitution method is used per the guidance of ANSI C63.26-2015. For emissions below 1GHz, a half-wave dipole is substituted in place of the EUT. For emissions above 1GHz, a horn antenna is substituted in place of the EUT. The substitute antenna is driven by a signal generator with the level of the signal generator being adjusted to obtain the same receive spectrum analyzer level previously recorded from the spurious emission from the EUT. The power of the emission is calculated using the following formula:

$$P_{d\ [dBm]} = P_{g\ [dBm]} - \text{cable loss}_{\ [dB]} + \text{antenna gain}_{\ [dBd/dBi]};$$

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

For radiated spurious emissions measurements, the field strength conversion method is used per the formulas in Section 5.2.7 of ANSI C63.26-2015. Field Strength (EIRP) is calculated using the following formulas:

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

And

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

All radiated measurements are performed in a chamber that meets the site requirements per ANSI C63.4-2014. Additionally, radiated emissions below 30MHz are also validated on an Open Area Test Site to assert correlation with the chamber measurements per the requirements of KDB 414788 D01 v01r01.

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

4.0 MEASUREMENT UNCERTAINTY

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

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

5.0 TEST EQUIPMENT CALIBRATION DATA

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

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
-	AP2	EMC Cable and Switch System	8/11/2022	Annual	8/11/2023	AP2
-	AP1	EMC Cable and Switch System	8/15/2022	Annual	8/15/2023	AP1
-	ETS	EMC Cable and Switch System	8/11/2022	Annual	8/11/2023	ETS
-	LTx1	Licensed Transmitter Cable Set	7/29/2022	Annual	7/29/2023	LTx1
-	LTx2	Licensed Transmitter Cable Set	8/15/2022	Annual	8/15/2023	LTx2
-	LTx3	LIcensed Transmitter Cable Set	8/15/2022	Annual	8/15/2023	LTx3
-	LTx4	Licensed Transmitter Cable Set	7/29/2022	Annual	7/29/2023	LTx4
-	LTx5	LIcensed Transmitter Cable Set	7/29/2022	Annual	7/29/2023	LTx5
Agilent	E5515C	Wireless Communications Test Set	N/A			GB45360985
Agilent	E5515C	Wireless Communications Test Set	N/A			GB46310798
Anritsu	MT8820C	Radio Communication Analyzer	N/A			6201300731
Anritsu	MT8821C	Radio Communication Analyzer	N/A			6201381794
Anritsu	MT8821C	Radio Communication Analyzer	N/A			6200901190
Anritsu	MT8821C	Radio Communication Analyzer	N/A			6201525694
Com-Power	AL-130R	Active Loop Antenna	1/19/2022	Biennial	1/19/2024	121085
Emco	3115	Horn Antenna (1-18GHz)	8/8/2022	Biennial	8/8/2024	9704-5182
Espec	ESX-2CA	Environmental Chamber	5/25/2022	Biennial	5/25/2024	17620
ETS Lindgren	3117	1-18 GHz DRG Horn (Medium)	4/20/2021	Biennial	4/20/2023	00125518
ETS Lindgren	3164-10	Quad Ridge Horn 400MHz - 10000MHz	5/10/2021	Biennial	5/10/2023	00166283
ETS Lindgren	3816/2NM	LISN	8/11/2022	Biennial	8/11/2024	00114451
Keysight Technologies	N9020A	MXA Signal Analyzer	3/15/2022	Annual	3/15/2023	MY54500644
Keysight Technologies	N9030A	PXA Signal Analyzer (44GHz)	8/18/2022	Annual	8/18/2023	MY49430494
Keysight Technologies	N9030A	PXA Signal Analyzer (44GHz)	2/14/2022	Annual	2/14/2023	MY52350166
Mini-Circuits	SSG-4000HP	Synthesized Signal Generator	N/A			11208010032
Mini-Circuits	SSG-4000HP	Synthesized Signal Generator	N/A			11403100002
Rohde & Schwarz	CMU200	Base Station Simulator	N/A			836371/0079
Rohde & Schwarz	CMU200	Base Station Simulator	N/A			833855/0010
Rohde & Schwarz	CMU200	Base Station Simulator	N/A			107826
Rohde & Schwarz	CMU200	Base Station Simulator	N/A			109892
Rohde & Schwarz	CMU200	Base Station Simulator	N/A			836536/0005
Rohde & Schwarz	CMW500	Radio Communication Tester	N/A			100976
Rohde & Schwarz	CMW500	Radio Communication Tester	N/A			112347
Rohde & Schwarz	ESU26	EMI Test Receiver (26.5GHz)	8/29/2022	Annual	8/29/2023	100342
Rohde & Schwarz	ESU40	EMI Test Receiver (40GHz)	8/25/2022	Annual	8/25/2023	100348
Rohde & Schwarz	ESW44	EMI Test Receiver 2Hz to 44 GHz	3/28/2022	Annual	3/28/2023	101716
Rohde & Schwarz	FSW26	2Hz-26.5GHz Signal and Spectrum Analyzer	4/14/2022	Annual	4/14/2023	103187
Sunol	JB6	LB6 Antenna	11/13/2020	Biennial	11/13/2022	A082816

Table 5-1. Test Equipment

Notes:

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

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

6.0 SAMPLE CALCULATIONS

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.

7.0 TEST RESULTS

7.1 Summary

Company Name: Samsung Electronics Co., Ltd.

FCC ID: A3LSMS911U

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

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.
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 v1.1.

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. RBW = 1% to 5% of the OBW
3. Detector = RMS
4. Trace mode = trace average for continuous emissions, max hold for pulse emissions
5. Sweep time = auto couple
6. The trace was allowed to stabilize

Test Setup

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

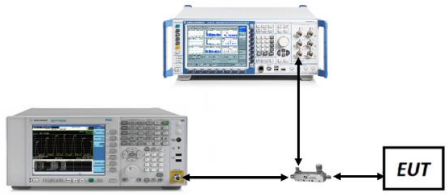


Figure 7-1. Test Instrument & Measurement Setup

Test Notes

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

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

Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
10 MHz	QPSK	27710	2310.0	1 / 25	21.38
	16-QAM	27710	2310.0	1 / 49	20.62
5 MHz	QPSK	27685	2307.5	1 / 24	21.32
		27710	2310.0	1 / 12	21.43
		27735	2312.5	1 / 24	21.32
	16-QAM	27685	2307.5	1 / 0	20.93

Table 7-2. Conducted Power Data (LTE Band 30 ANT F)

Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
20 MHz	QPSK	39750	2506.0	1 / 99	26.47
		40620	2593.0	1 / 99	26.49
		41490	2680.0	1 / 99	26.02
	16-QAM	39750	2506.0	1 / 99	25.54
15 MHz	QPSK	39725	2503.5	1 / 74	26.28
		40620	2593.0	1 / 74	26.35
		41515	2682.5	1 / 74	25.90
	16-QAM	39725	2503.5	1 / 74	25.48
10 MHz	QPSK	39700	2501.0	1 / 25	25.65
		40620	2593.0	1 / 25	26.45
		41540	2685.0	1 / 25	26.40
	16-QAM	39700	2501.0	1 / 25	24.96
5 MHz	QPSK	39675	2498.5	1 / 12	25.14
		40620	2593.0	1 / 12	25.70
		41565	2687.5	1 / 24	25.66
	16-QAM	39675	2498.5	1 / 12	23.95

Table 7-3. Conducted Power Data (LTE Band 41 (PC2) ANT F)

NS	MCC	MNC	Channel BW [MHz]	Channel Number	Channel Frequency [MHz]	RB Size	RB Offset	A-MPR [dB]	Modulation	MPR [dB]	Measured Power [dBm]
01	311	490	10	39700	2501	50	0	≤ 3	QPSK	1	22.87
									16-QAM	2	21.89
									64-QAM	3	20.73
									256-QAM	5	18.75
			15	39725	2503.5	75	0	≤ 4	QPSK	1	20.81
									16-QAM	2	19.81
									64-QAM	3	18.72
									256-QAM	5	16.80
			20	39750	2506	100	0	≤ 4	QPSK	1	20.76
									16-QAM	2	19.74
									64-QAM	3	18.75
									256-QAM	5	15.72
01	001	01	20	39750	2506	50	0	0	QPSK	1	24.77
									16-QAM	2	23.81
									64-QAM	3	22.76
									256-QAM	5	20.69
			5	39675	2498.5	75	0	0	QPSK	1	24.83
									16-QAM	2	23.78
									64-QAM	3	22.80
									256-QAM	5	20.65
			20	39750	2506	100	0	0	QPSK	1	24.97
									16-QAM	2	23.98
									64-QAM	3	22.90
									256-QAM	5	20.84

Table 7-4. Conducted Power Data (LTE Band 41 (PC2) A-MPR)

Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
20 MHz	QPSK	39790	2510.0	1 / 99	24.59
		40620	2593.0	1 / 99	24.49
		41490	2680.0	1 / 99	24.49
	16-QAM	39790	2510.0	1 / 99	23.35
15 MHz	QPSK	39765	2507.5	1 / 74	24.39
		40620	2593.0	1 / 74	24.26
		41515	2682.5	1 / 74	24.36
	16-QAM	39765	2507.5	1 / 74	23.51
10 MHz	QPSK	39740	2505.0	1 / 25	24.89
		40620	2593.0	1 / 25	24.49
		41540	2685.0	1 / 25	24.72
	16-QAM	39740	2505.0	1 / 25	23.42
5 MHz	QPSK	39715	2502.5	1 / 12	24.73
		40620	2593.0	1 / 12	24.35
		41565	2687.5	1 / 12	24.50
	16-QAM	39715	2502.5	1 / 12	23.31

Table 7-5. Conducted Power Data (LTE Band 38/41 (PC3) ANT F)

Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
20 MHz	QPSK	20850	2510.0	1 / 0	23.50
		21100	2535.0	1 / 0	23.08
		21350	2560.0	1 / 0	22.95
	16-QAM	21100	2535.0	1 / 0	22.46
15 MHz	QPSK	20825	2507.5	1 / 0	23.54
		21100	2535.0	1 / 0	23.06
		21375	2562.5	1 / 74	23.00
	16-QAM	21100	2535.0	1 / 0	22.46
10 MHz	QPSK	20800	2505.0	1 / 25	23.56
		21100	2535.0	1 / 0	23.24
		21400	2565.0	1 / 49	23.24
	16-QAM	21100	2535.0	1 / 25	22.75
5 MHz	QPSK	20775	2502.5	1 / 12	23.77
		21100	2535.0	1 / 12	23.32
		21425	2567.5	1 / 12	23.35
	16-QAM	21100	2535.0	1 / 24	22.67

Table 7-6. Conducted Power Data (LTE Band 7 ANT F)

Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
10 MHz	π/2 BPSK	27710	2310.0	1 / 38	22.78
	QPSK	27710	2310.0	1 / 26	22.61
	16-QAM	27710	2310.0	1 / 26	21.79
5 MHz	π/2 BPSK	27685	2307.5	1 / 6	22.82
		27710	2310.0	1 / 12	22.94
		27735	2312.5	1 / 18	22.28
	QPSK	27685	2307.5	1 / 18	22.64
		27710	2310.0	1 / 6	22.72
		27735	2312.5	1 / 6	22.16
	16-QAM	27735	2312.5	1 / 12	22.20

Table 7-7. Conducted Power Data (NR Band n30 ANT F)

Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
40 MHz	π/2 BPSK	504000	2520.0	1 / 54	23.55
		507000	2535.0	1 / 108	23.38
		510000	2550.0	1 / 108	23.41
	QPSK	504000	2520.0	1 / 54	23.57
		507000	2535.0	1 / 108	23.29
		510000	2550.0	1 / 108	23.32
	16-QAM	504000	2520.0	1 / 54	22.49
30 MHz	π/2 BPSK	503000	2515.0	1 / 80	23.49
		507000	2535.0	1 / 80	23.40
		511000	2555.0	1 / 40	23.43
	QPSK	503000	2515.0	1 / 80	23.44
		507000	2535.0	1 / 80	23.37
		511000	2555.0	1 / 40	23.35
	16-QAM	503000	2515.0	1 / 80	22.40
25 MHz	π/2 BPSK	502500	2512.5	1 / 33	23.51
		507000	2535.0	1 / 33	23.26
		511500	2557.5	1 / 33	23.27
	QPSK	502500	2512.5	1 / 33	23.35
		507000	2535.0	1 / 33	23.15
		511500	2557.5	1 / 33	23.15
	16-QAM	502500	2512.5	1 / 33	22.47
20 MHz	π/2 BPSK	502000	2510.0	1 / 26	23.49
		507000	2535.0	1 / 26	23.38
		512000	2560.0	1 / 79	23.03
	QPSK	502000	2510.0	1 / 26	23.43
		507000	2535.0	1 / 26	23.08
		512000	2560.0	1 / 79	23.02
	16-QAM	507000	2535.0	1 / 26	22.40
15 MHz	π/2 BPSK	501500	2507.5	1 / 39	23.39
		507000	2535.0	1 / 20	23.31
		512500	2562.5	1 / 58	23.08
	QPSK	501500	2507.5	1 / 39	23.35
		507000	2535.0	1 / 20	23.13
		512500	2562.5	1 / 58	23.16
	16-QAM	501500	2507.5	1 / 39	22.58
10 MHz	π/2 BPSK	501000	2505.0	1 / 13	23.45
		507000	2535.0	1 / 38	23.28
		513000	2565.0	1 / 38	23.22
	QPSK	501000	2505.0	1 / 13	23.39
		507000	2535.0	1 / 38	23.24
		513000	2565.0	1 / 38	23.01
	16-QAM	507000	2535.0	1 / 38	22.20
5 MHz	π/2 BPSK	500500	2502.5	1 / 18	23.50
		507000	2535.0	1 / 6	23.22
		513500	2567.5	1 / 18	22.97
	QPSK	500500	2502.5	1 / 18	23.45
		507000	2535.0	1 / 6	23.11
		513500	2567.5	1 / 18	22.91
	16-QAM	500500	2502.5	1 / 18	22.68

Table 7-8. Conducted Power Data (NR Band n7 ANT F)

Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
100 MHz	π/2 BPSK	509202	2546.01	1 / 68	25.95
		518598	2592.99	1 / 68	25.95
		528000	2640.00	1 / 204	25.74
	QPSK	509202	2546.01	1 / 68	25.88
		518598	2592.99	1 / 68	26.02
		528000	2640.00	1 / 204	25.69
	16-QAM	528000	2640.00	1 / 204	24.34
90 MHz	π/2 BPSK	508200	2541.00	1 / 61	25.95
		518598	2592.99	1 / 61	25.84
		528996	2644.98	1 / 61	25.90
	QPSK	508200	2541.00	1 / 61	26.15
		518598	2592.99	1 / 61	25.82
		528996	2644.98	1 / 61	25.94
	16-QAM	528996	2644.98	1 / 61	25.11
80 MHz	π/2 BPSK	507204	2536.02	1 / 108	25.68
		518598	2592.99	1 / 162	25.90
		529998	2649.99	1 / 162	25.81
	QPSK	507204	2536.02	1 / 108	26.20
		518598	2592.99	1 / 162	26.34
		529998	2649.99	1 / 108	26.00
	16-QAM	529998	2649.99	1 / 162	25.01
70 MHz	π/2 BPSK	506202	2531.01	1 / 47	26.19
		518598	2592.99	1 / 47	25.73
		531000	2655.00	1 / 47	25.80
	QPSK	506202	2531.01	1 / 47	26.11
		518598	2592.99	1 / 47	25.90
		531000	2655.00	1 / 47	25.95
	16-QAM	531000	2655.00	1 / 47	24.57
60 MHz	π/2 BPSK	505200	2526.00	1 / 40	26.33
		518598	2592.99	1 / 40	25.94
		531996	2659.98	1 / 40	26.00
	QPSK	505200	2526.00	1 / 40	26.35
		518598	2592.99	1 / 40	26.21
		531996	2659.98	1 / 40	26.03
	16-QAM	531996	2659.98	1 / 40	25.00
50 MHz	π/2 BPSK	504204	2521.02	1 / 99	26.14
		518598	2592.99	1 / 66	26.10
		532998	2664.99	1 / 33	25.79
	QPSK	504204	2521.02	1 / 99	26.20
		518598	2592.99	1 / 66	25.84
		532998	2664.99	1 / 33	25.89
	16-QAM	532998	2664.99	1 / 33	24.87
40 MHz	π/2 BPSK	503202	2516.01	1 / 26	26.10
		518598	2592.99	1 / 79	26.01
		534000	2670.00	1 / 26	26.24
	QPSK	503202	2516.01	1 / 26	26.27
		518598	2592.99	1 / 79	25.99
		534000	2670.00	1 / 26	26.46
	16-QAM	534000	2670.00	1 / 26	24.58
30 MHz	π/2 BPSK	502200	2511.00	1 / 58	26.38
		518598	2592.99	1 / 39	25.98
		534996	2674.98	1 / 19	26.10
	QPSK	502200	2511.00	1 / 58	26.37
		518598	2592.99	1 / 39	26.01
		534996	2674.98	1 / 19	26.10
	16-QAM	534996	2674.98	1 / 19	25.08
20 MHz	π/2 BPSK	501204	2506.02	1 / 13	26.62
		518598	2592.99	1 / 37	26.21
		535998	2679.99	1 / 13	26.37
	QPSK	501204	2506.02	1 / 13	26.64
		518598	2592.99	1 / 37	26.21
		535998	2679.99	1 / 13	26.39
	16-QAM	535998	2679.99	1 / 13	25.37
15 MHz	π/2 BPSK	502200	2511.00	1 / 28	26.78
		518598	2592.99	1 / 28	26.87
		534996	2674.98	1 / 28	26.21
	QPSK	502200	2511.00	1 / 28	26.79
		518598	2592.99	1 / 28	26.08
		534996	2674.98	1 / 28	26.22
	16-QAM	518598	2592.99	1 / 9	25.14
10 MHz	π/2 BPSK	501204	2506.02	1 / 6	26.77
		518598	2592.99	1 / 6	26.19
		535998	2679.99	1 / 6	26.01
	QPSK	501204	2506.02	1 / 6	26.81
		518598	2592.99	1 / 12	26.63
		535998	2679.99	1 / 6	26.53
	16-QAM	501204	2506.02	1 / 6	25.62

Table 7-9. Conducted Power Data (NR Band n41 PC2 ANT F)

Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
100 MHz	π/2 BPSK	509202	2546.01	1 / 204	19.42
		518598	2592.99	1 / 68	19.96
		528000	2640.00	1 / 68	19.78
	QPSK	509202	2546.01	1 / 204	19.56
		518598	2592.99	1 / 68	19.82
		528000	2640.00	1 / 68	19.84
	16-QAM	518598	2592.99	1 / 136	19.28

Table 7-10. Conducted Power Data (NR Band n41 PC2 ANT B)

Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
100 MHz	π/2 BPSK	509202	2546.01	1 / 68	22.48
		518598	2592.99	1 / 68	22.22
		528000	2640.00	1 / 136	22.50
	QPSK	509202	2546.01	1 / 68	22.42
		518598	2592.99	1 / 204	22.13
		528000	2640.00	1 / 68	22.33
	16-QAM	528000	2640.00	1 / 68	21.88

Table 7-11. Conducted Power Data (NR Band n41 PC2 ANT E)

Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
100 MHz	π/2 BPSK	509202	2546.01	1 / 68	16.79
		518598	2592.99	1 / 68	16.33
		528000	2640.00	1 / 136	16.35
	QPSK	509202	2546.01	1 / 68	16.87
		518598	2592.99	1 / 136	16.71
		528000	2640.00	1 / 68	16.43
	16-QAM	528000	2640.00	1 / 68	16.11

Table 7-12. Conducted Power Data (NR Band n41 PC2 ANT D)

Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
100 MHz	π/2 BPSK	509202	2546.01	1 / 68	26.25
		518598	2592.99	1 / 136	26.15
		528000	2640.00	1 / 136	25.83
	QPSK	509202	2546.01	1 / 68	25.97
		518598	2592.99	1 / 136	26.10
		528000	2640.00	1 / 136	25.77
	16-QAM	509202	2546.01	1 / 68	24.82
90 MHz	π/2 BPSK	508200	2541.00	1 / 61	26.06
		518598	2592.99	1 / 122	26.11
		528996	2644.98	1 / 122	26.36
	QPSK	508200	2541.00	1 / 61	26.15
		518598	2592.99	1 / 122	25.72
		528996	2644.98	1 / 122	25.88
	16-QAM	528996	2644.98	1 / 122	25.74
80 MHz	π/2 BPSK	507204	2536.02	1 / 108	26.20
		518598	2592.99	1 / 54	25.82
		529998	2649.99	1 / 54	25.95
	QPSK	507204	2536.02	1 / 108	25.75
		518598	2592.99	1 / 54	26.04
		529998	2649.99	1 / 54	26.22
	16-QAM	507204	2536.02	1 / 108	24.49
70 MHz	π/2 BPSK	506202	2531.01	1 / 47	26.52
		518598	2592.99	1 / 47	26.50
		531000	2655.00	1 / 141	26.27
	QPSK	506202	2531.01	1 / 47	26.40
		518598	2592.99	1 / 47	25.92
		531000	2655.00	1 / 141	26.06
	16-QAM	531000	2655.00	1 / 141	25.23
60 MHz	π/2 BPSK	505200	2526.00	1 / 81	26.12
		518598	2592.99	1 / 40	25.94
		531996	2659.98	1 / 81	26.00
	QPSK	505200	2526.00	1 / 81	26.19
		518598	2592.99	1 / 40	26.39
		531996	2659.98	1 / 81	26.17
	16-QAM	505200	2526.00	1 / 81	25.11
50 MHz	π/2 BPSK	504204	2521.02	1 / 99	26.00
		518598	2592.99	1 / 99	25.96
		532998	2664.99	1 / 66	26.32
	QPSK	504204	2521.02	1 / 99	26.03
		518598	2592.99	1 / 99	25.92
		532998	2664.99	1 / 66	25.18
	16-QAM	504204	2521.02	1 / 99	25.31
40 MHz	π/2 BPSK	503202	2516.01	1 / 53	26.41
		518598	2592.99	1 / 79	26.66
		534000	2670.00	1 / 26	26.30
	QPSK	503202	2516.01	1 / 79	26.17
		518598	2592.99	1 / 79	26.84
		534000	2670.00	1 / 79	25.18
	16-QAM	503202	2516.01	1 / 79	25.25
30 MHz	π/2 BPSK	502200	2511.00	1 / 58	26.58
		518598	2592.99	1 / 58	26.35
		534996	2674.98	1 / 39	26.40
	QPSK	502200	2511.00	1 / 58	26.52
		518598	2592.99	1 / 58	26.32
		534996	2674.98	1 / 39	26.53
	16-QAM	502200	2511.00	1 / 58	25.42
20 MHz	π/2 BPSK	501204	2506.02	1 / 25	26.97
		518598	2592.99	1 / 37	26.39
		535998	2679.99	1 / 13	26.54
	QPSK	501204	2506.02	1 / 37	26.97
		518598	2592.99	1 / 37	26.37
		535998	2679.99	1 / 37	26.55
	16-QAM	535998	2679.99	1 / 37	25.55
15 MHz	π/2 BPSK	502200	2511.00	1 / 28	25.70
		518598	2592.99	1 / 9	26.08
		534996	2674.98	1 / 9	25.99
	QPSK	502200	2511.00	1 / 28	25.63
		518598	2592.99	1 / 9	26.00
		534996	2674.98	1 / 9	25.90
	16-QAM	502200	2511.00	1 / 28	24.62
10 MHz	π/2 BPSK	501204	2506.02	1 / 17	25.33
		518598	2592.99	1 / 17	25.90
		535998	2679.99	1 / 17	25.82
	QPSK	501204	2506.02	1 / 17	25.30
		518598	2592.99	1 / 17	25.91
		535998	2679.99	1 / 17	25.78
	16-QAM	535998	2679.99	1 / 17	24.54

Table 7-13. Conducted Power Data (NR Band n41 PC2 -Switching ANT B)

Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
100 MHz	π/2 BPSK	509202	2546.01	1 / 204	18.45
		518598	2592.99	1 / 68	18.33
		528000	2640.00	1 / 204	18.48
	QPSK	509202	2546.01	1 / 204	18.19
		518598	2592.99	1 / 68	18.29
		528000	2640.00	1 / 204	18.48
	16-QAM	528000	2640.00	1 / 204	18.08

Table 7-14. Conducted Power Data (NR Band n41 PC2 -Switching ANT F)

Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
100 MHz	π/2 BPSK	509202	2546.01	1 / 136	17.77
		518598	2592.99	1 / 68	17.68
		528000	2640.00	1 / 204	17.92
	QPSK	509202	2546.01	1 / 136	17.58
		518598	2592.99	1 / 68	17.81
		528000	2640.00	1 / 204	17.58
	16-QAM	528000	2640.00	1 / 204	17.09

Table 7-15. Conducted Power Data (NR Band n41 PC2 -Switching ANT D)

Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
100 MHz	π/2 BPSK	509202	2546.01	1 / 68	20.98
		518598	2592.99	1 / 204	20.95
		528000	2640.00	1 / 204	20.63
	QPSK	509202	2546.01	1 / 68	20.45
		518598	2592.99	1 / 204	20.93
		528000	2640.00	1 / 204	20.41
	16-QAM	528000	2640.00	1 / 204	19.96

Table 7-16. Conducted Power Data (NR Band n41 PC2 -Switching ANT E)

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	25.73
				40620	2593.0	1	99		40818	2612.8	1	0	25.55
				41490	2680.0	1	0		41292	2660.2	1	99	25.68
			QPSK	39750	2506.0	100	0	QPSK	39948	2525.8	100	0	24.55
			16-QAM	39750	2506.0	100	0	16-QAM	39948	2525.8	100	0	23.68
			64-QAM	39750	2506.0	100	0	64-QAM	39948	2525.8	100	0	22.84
			256-QAM	39750	2506.0	100	0	256-QAM	39948	2525.8	100	0	20.88

Table 7-17. Conducted Power Data (ULCA LTE B41(PC2) – Ant B)

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	24.55
				40620	2593.0	1	99		40818	2612.8	1	0	24.71
				41490	2680.0	1	0		41292	2660.2	1	99	24.59
			QPSK	40620	2593.00	100	0	QPSK	40818	2612.8	100	0	23.49
			16-QAM	40620	2593.00	100	0	16-QAM	40818	2612.8	100	0	22.38
			64-QAM	40620	2593.00	100	0	64-QAM	40818	2612.8	100	0	21.4
			256-QAM	40620	2593.00	100	0	256-QAM	40818	2612.8	100	0	19.47

Table 7-18. Conducted Power Data (ULCA LTE B41(PC3) – Ant B)

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	25.82
				40620	2593.0	1	99		40818	2612.8	1	0	25.67
				41490	2680.0	1	0		41292	2660.2	1	99	25.54
			QPSK	39750	2506.0	100	0	QPSK	39948	2525.8	100	0	23.67
			16-QAM	39750	2506.0	100	0	16-QAM	39948	2525.8	100	0	22.72
			64-QAM	39750	2506.0	100	0	64-QAM	39948	2525.8	100	0	22.65
			256-QAM	39750	2506.0	100	0	256-QAM	39948	2525.8	100	0	20.68

Table 7-19. Conducted Power Data (ULCA LTE B41(PC2) – Ant F)

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	24.26
				40620	2593.0	1	99		40818	2612.8	1	0	24.08
				41490	2680.0	1	0		41292	2660.2	1	99	23.78
			QPSK	39750	2506.0	100	0	QPSK	39948	2525.8	100	0	22.12
			16-QAM	39750	2506.0	100	0	16-QAM	39948	2525.8	100	0	21.10
			64-QAM	39750	2506.0	100	0	64-QAM	39948	2525.8	100	0	20.98
			256-QAM	39750	2506.0	100	0	256-QAM	39948	2525.8	100	0	19.08

Table 7-20. Conducted Power Data (ULCA LTE B41(PC3) – Ant F)

NR (SCS 15kHz)						LTE						NR Conducted Power [dBm]	LTE Conducted Power [dBm]	EN-DC Total Tx. Power [dBm]
NR Band	NR Bandwidth [MHz]	NR Channel	NR Frequency [MHz]	Mod.	NR RB#/Offset	LTE Band	LTE Bandwidth [MHz]	LTE Channel	LTE Frequency [MHz]	Mod.	LTE RB#/Offset			
n30 ANT A	10	Mid	2310	QPSK	50/0	B12 ANT A	10	Mid	707.5	QPSK	50/0	17.20	22.78	23.84
				QPSK	50/0					QPSK	1/25	17.23	22.87	23.92
				QPSK	1/26					QPSK	50/0	17.54	22.80	23.93
				QPSK	1/26					QPSK	1/25	17.47	22.82	23.93
				16Q	1/26					16Q	1/25	17.42	23.14	24.17

Table 7-21. Conducted Power Data (EN-DC Combo n30 ANT A – B12)

NR (SCS 15kHz)						LTE						NR Conducted Power [dBm]	LTE Conducted Power [dBm]	EN-DC Total Tx. Power [dBm]
NR Band	NR Bandwidth [MHz]	NR Channel	NR Frequency [MHz]	Mod.	NR RB#/Offset	LTE Band	LTE Bandwidth [MHz]	LTE Channel	LTE Frequency [MHz]	Mod.	LTE RB#/Offset			
n30 ANT F	10	Mid	2310	QPSK	50/0	B12 ANT A	10	Mid	707.5	QPSK	50/0	16.79	22.97	23.91
				QPSK	50/0					QPSK	1/25	16.77	23.01	23.94
				QPSK	1/26					QPSK	50/0	16.74	22.94	23.87
				QPSK	1/26					QPSK	1/25	16.77	22.98	23.91
				16Q	1/26					16Q	1/25	16.69	23.27	24.13

Table 7-22. Conducted Power Data (EN-DC Combo n30 ANT F – B12)

NR (SCS 15kHz)						LTE						NR Conducted Power [dBm]	LTE Conducted Power [dBm]	EN-DC Total Tx. Power [dBm]
NR Band	NR Bandwidth [MHz]	NR Channel	NR Frequency [MHz]	Mod.	NR RB#/Offset	LTE Band	LTE Bandwidth [MHz]	LTE Channel	LTE Frequency [MHz]	Mod.	LTE RB#/Offset			
n30 ANT F	10	Mid	2310	QPSK	50/0	B2 ANT A	20	Mid	1880	QPSK	100 / 0	18.22	21.45	23.14
				QPSK	50/0					QPSK	1 / 50	16.91	21.93	23.12
				QPSK	1/26					QPSK	100 / 0	18.40	21.48	23.22
				QPSK	1/26					QPSK	1 / 50	16.89	21.86	23.06
				16Q	1/26					16Q	100 / 0	19.08	20.35	22.77

Table 7-23. Conducted Power Data (EN-DC Combo n30 ANT F – B2)

NR (SCS 30kHz)						LTE						NR Conducted Power [dBm]	LTE Conducted Power [dBm]	EN-DC Total Tx. Power [dBm]
NR Band	NR Bandwidth [MHz]	NR Channel	NR Frequency [MHz]	Mod.	NR RB#/Offset	LTE Band	LTE Bandwidth [MHz]	LTE Channel	LTE Frequency [MHz]	Mod.	LTE RB#/Offset			
n41 ANT F	100	Mid	2593	QPSK	270/0	B2 ANT A	20	Mid	1880	QPSK	100/0	18.38	22.21	23.71
				QPSK	270/0					QPSK	1/50	14.10	23.21	23.71
				QPSK	1/136					QPSK	100/0	18.38	22.21	23.71
				QPSK	1/136					QPSK	1/50	14.25	23.31	23.82
				16Q	1/136					16Q	1/50	18.44	22.43	23.89

Table 7-24. Conducted Power Data (EN-DC Combo n41 ANT F – B25/2)

7.3 Occupied Bandwidth

Test Overview

The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured. All modes of operation were investigated and the worst case configuration results are reported in this section.

Test Procedure Used

ANSI C63.26-2015 – Section 5.4.4

Test Settings

1. The signal analyzer's automatic bandwidth measurement capability was used to perform the 99% occupied bandwidth and the 26dB bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
2. RBW = 1 – 5% of the expected OBW
3. VBW ≥ 3 x RBW
4. Detector = Peak
5. Trace mode = max hold
6. Sweep = auto couple
7. The trace was allowed to stabilize
8. If necessary, steps 2 – 7 were repeated after changing the RBW such that it would be within 1 – 5% of the 99% occupied bandwidth observed in Step 7

Test Setup

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

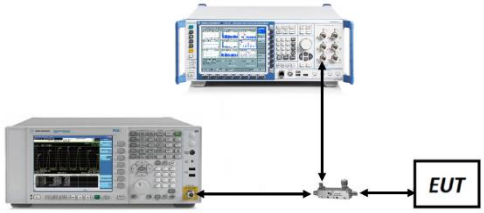
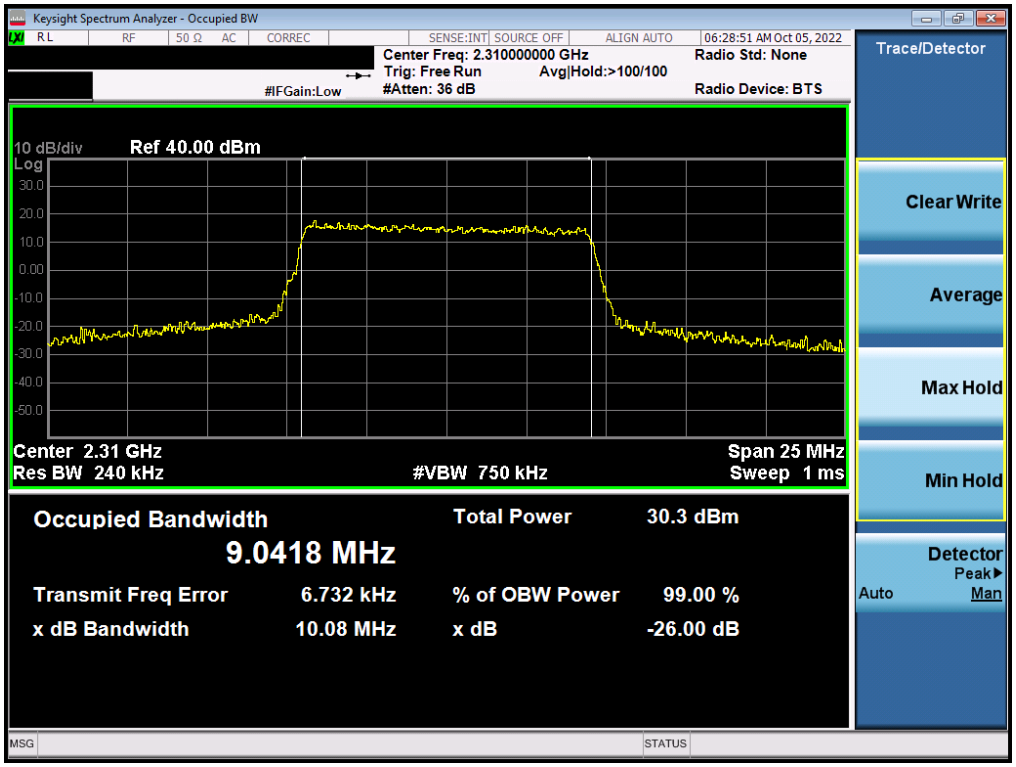


Figure 7-2. Test Instrument & Measurement Setup

Test Notes

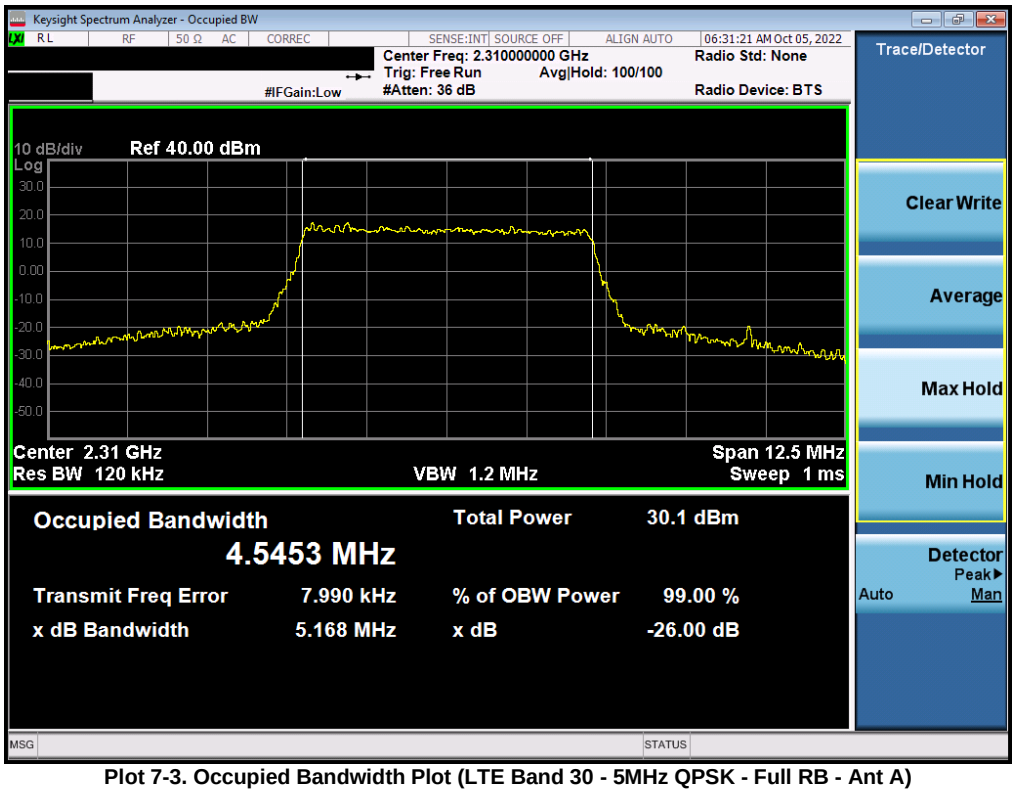
None.

LTE Band 30 – Ant A

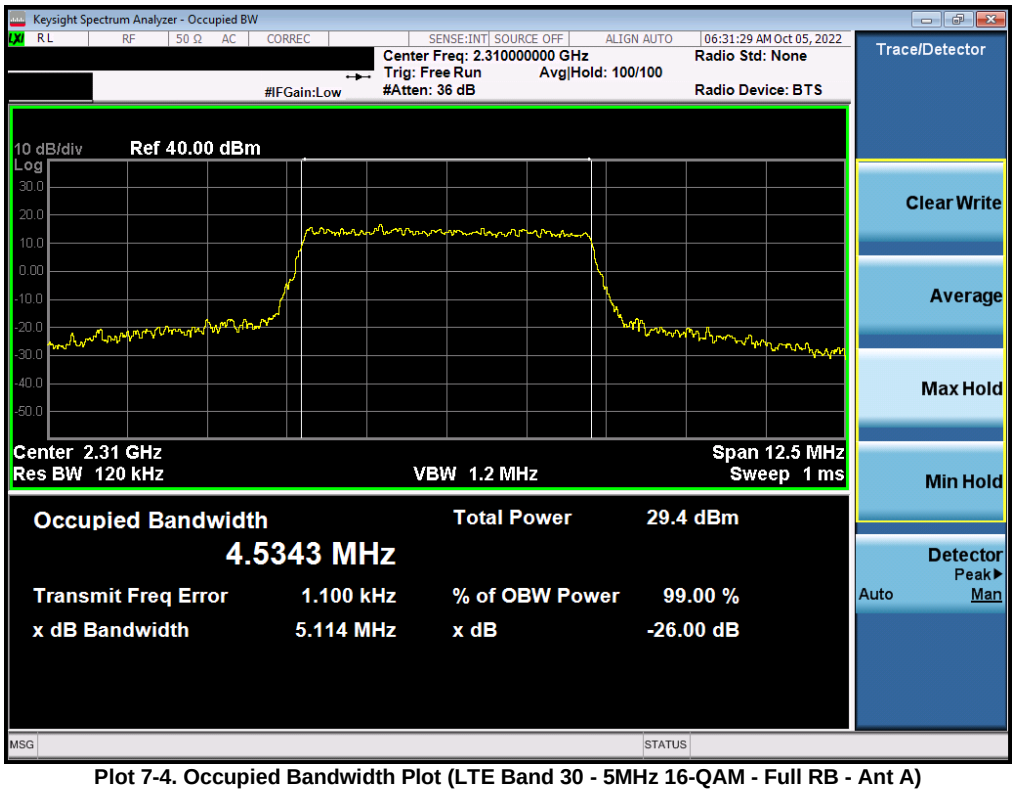


Plot 7-1. Occupied Bandwidth Plot (LTE Band 30 - 10MHz QPSK - Full RB – Ant A)

Plot 7-2. Occupied Bandwidth Plot (LTE Band 30 - 10MHz 16-QAM - Full RB - Ant A)

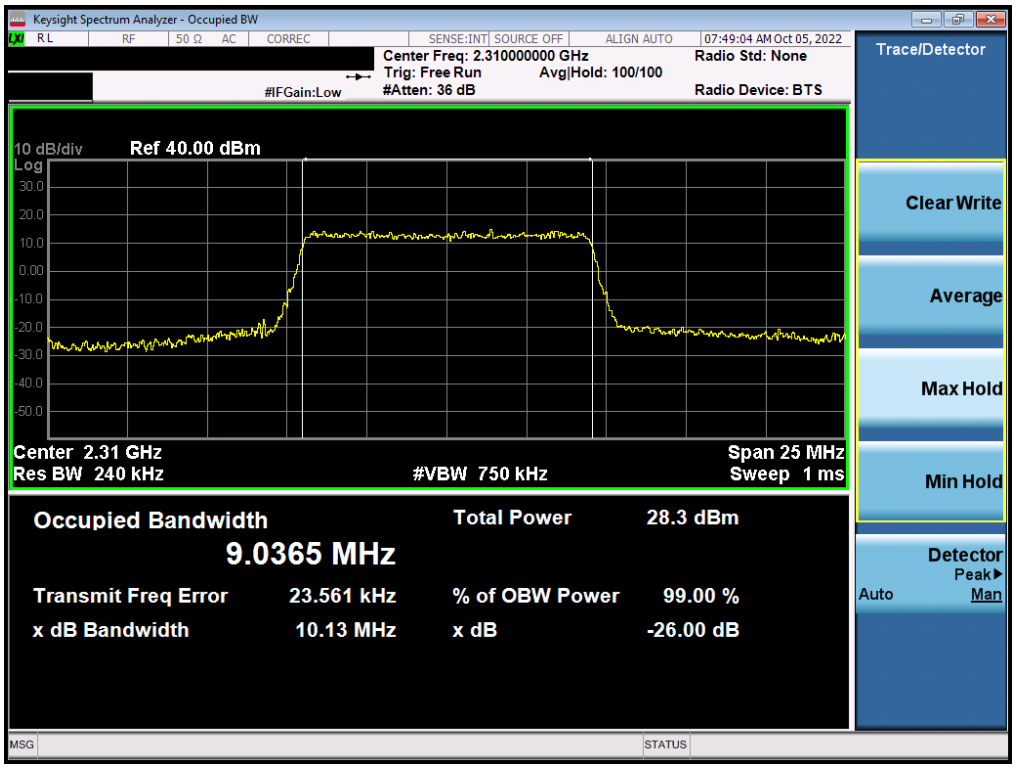


Plot 7-3. Occupied Bandwidth Plot (LTE Band 30 - 5MHz QPSK - Full RB - Ant A)

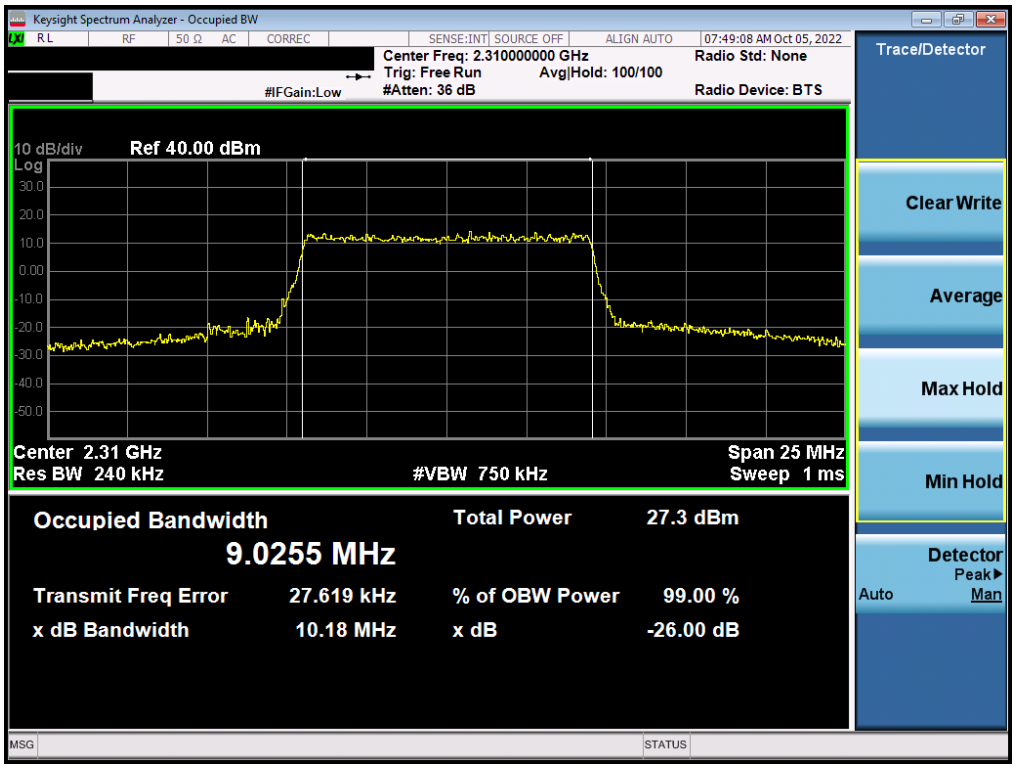


Plot 7-4. Occupied Bandwidth Plot (LTE Band 30 - 5MHz 16-QAM - Full RB - Ant A)

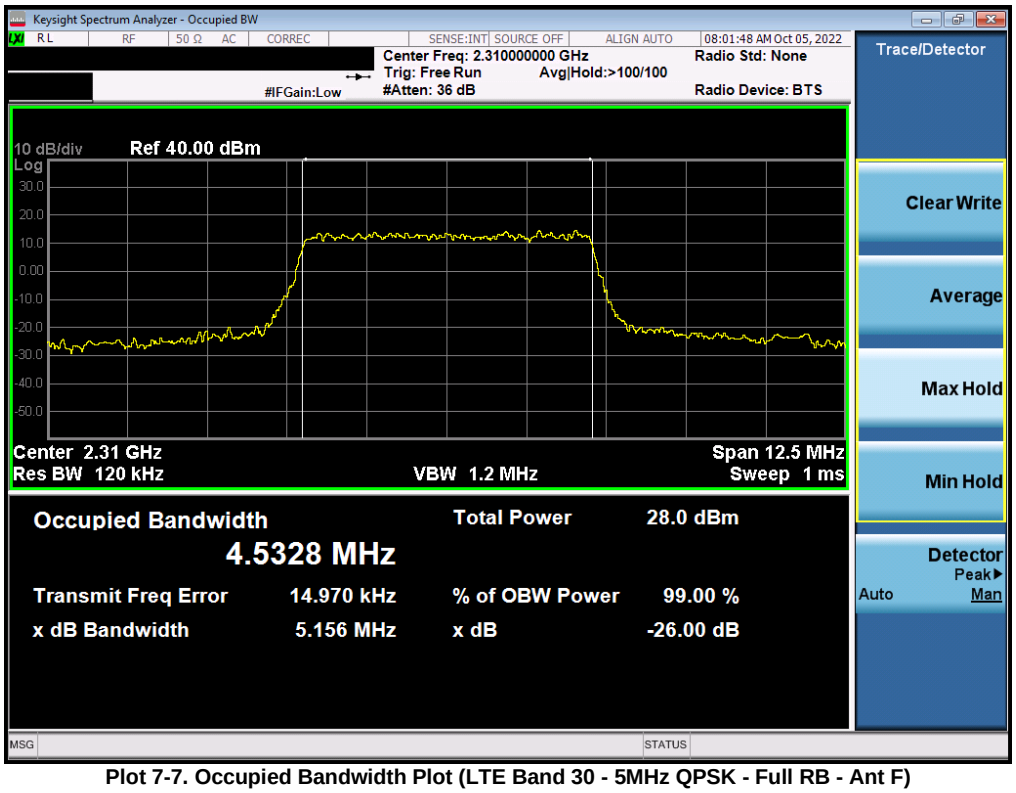
LTE Band 30 – Ant F



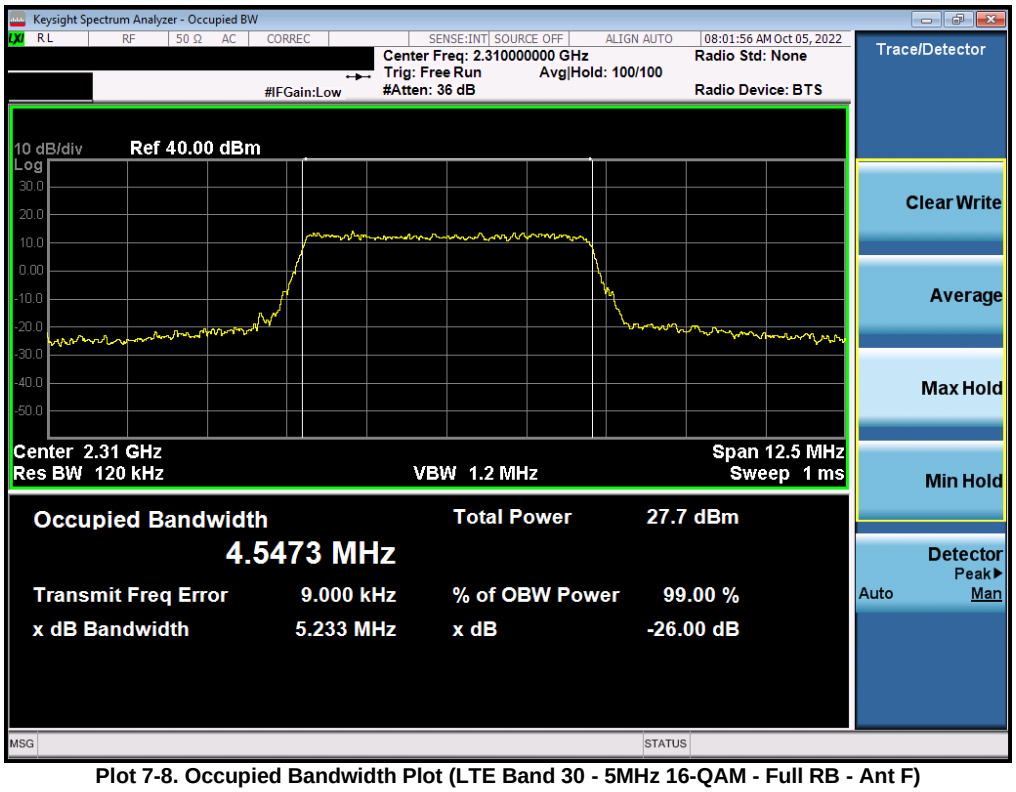
Plot 7-5. Occupied Bandwidth Plot (LTE Band 30 - 10MHz QPSK - Full RB - Ant F)



Plot 7-6. Occupied Bandwidth Plot (LTE Band 30 - 10MHz 16-QAM - Full RB - Ant F)

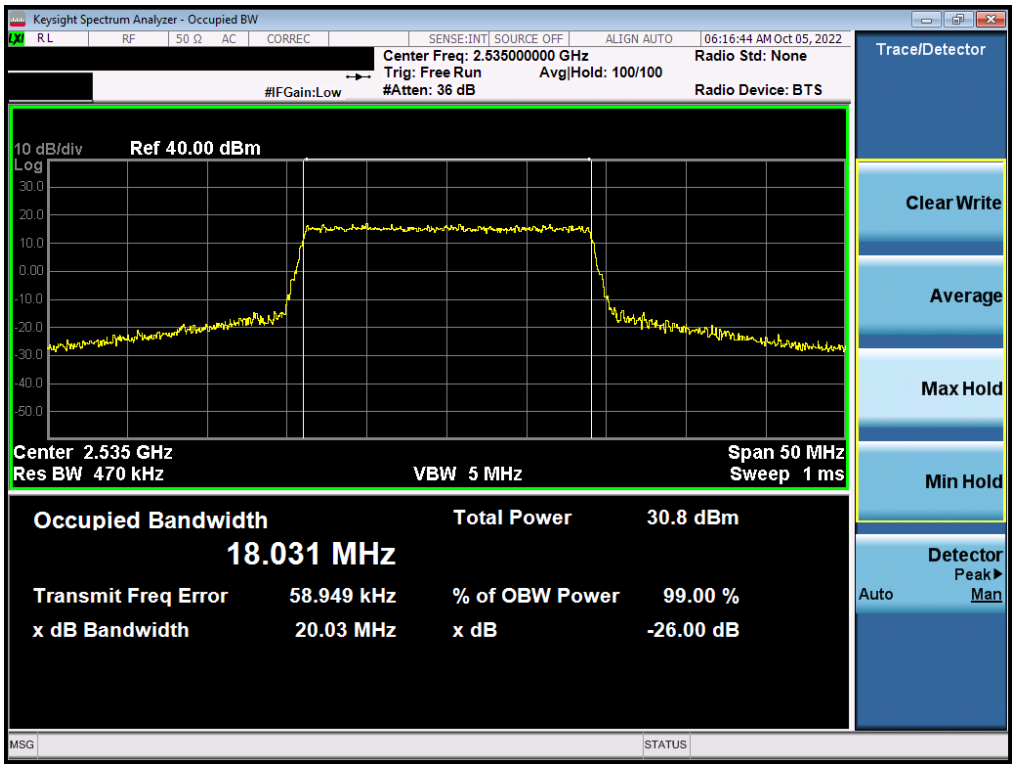


Plot 7-7. Occupied Bandwidth Plot (LTE Band 30 - 5MHz QPSK - Full RB - Ant F)

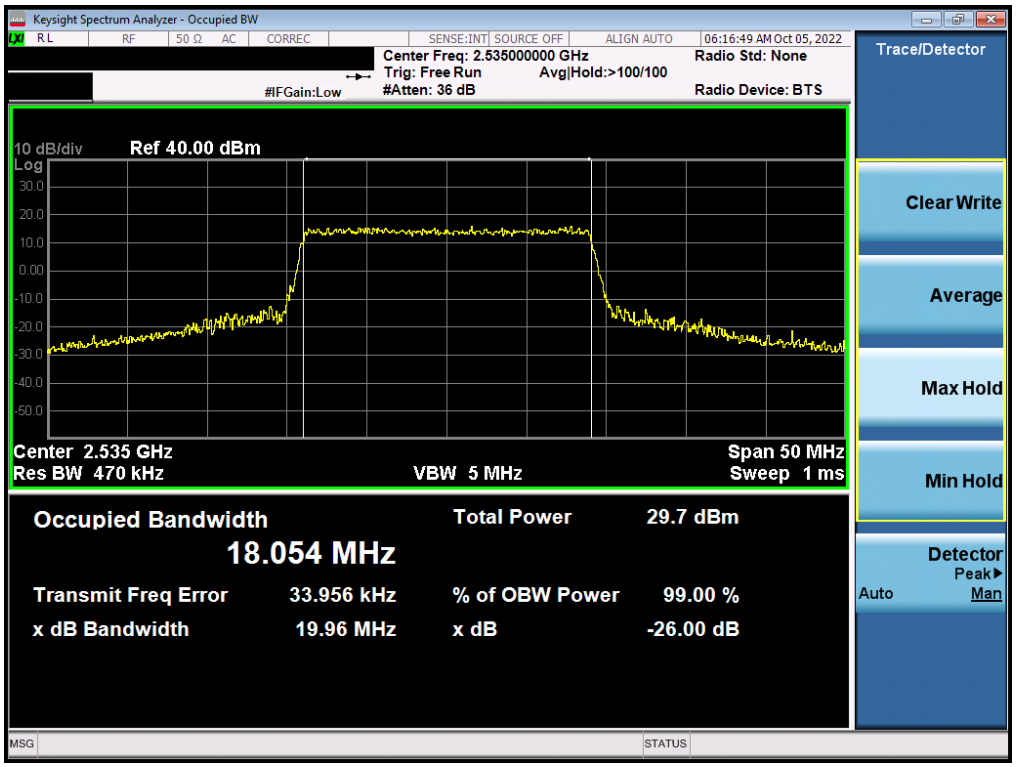


Plot 7-8. Occupied Bandwidth Plot (LTE Band 30 - 5MHz 16-QAM - Full RB - Ant F)

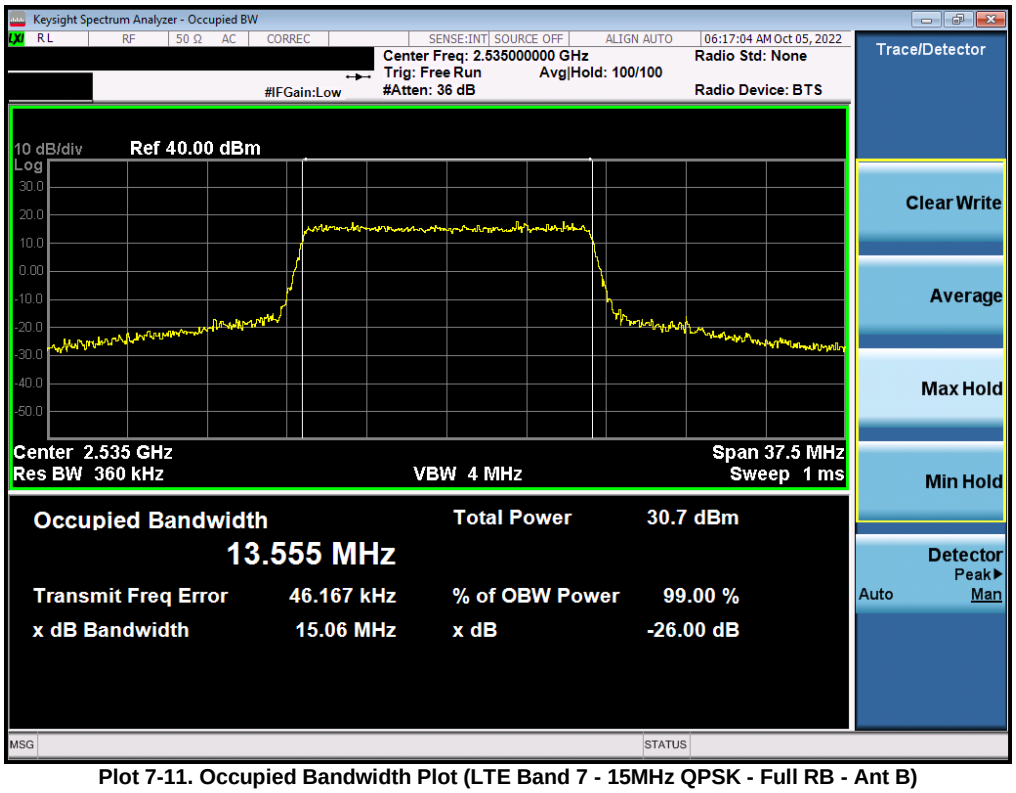
LTE Band 7 – Ant B



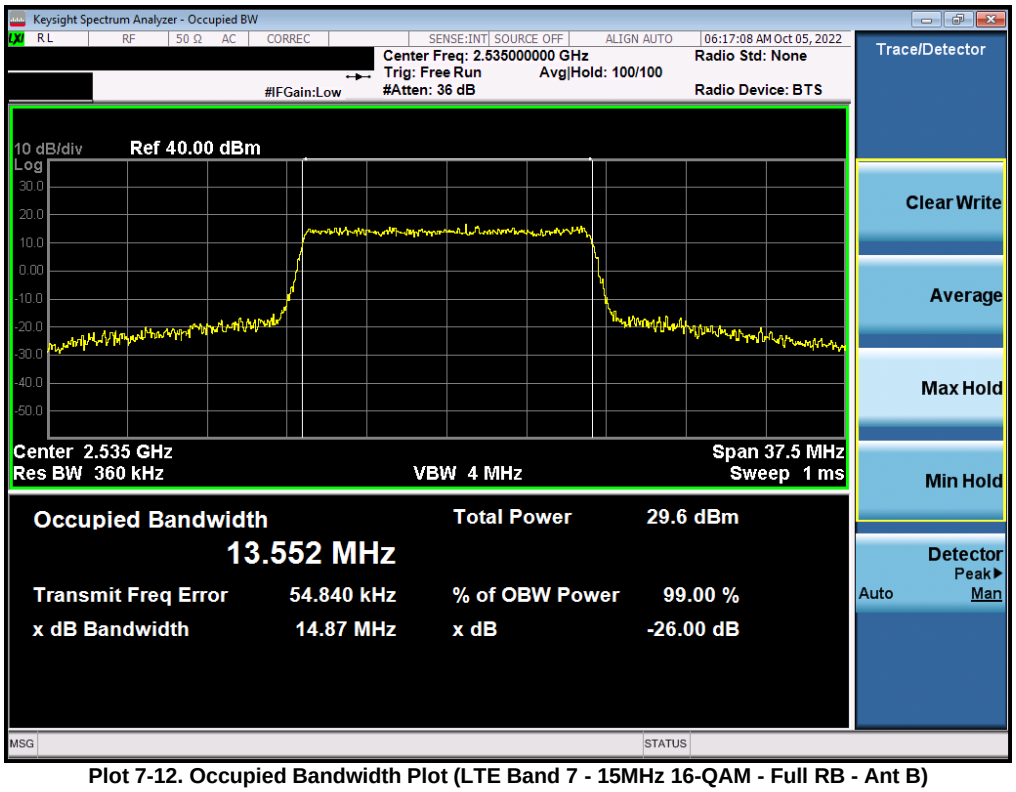
Plot 7-9. Occupied Bandwidth Plot (LTE Band 7 - 20MHz QPSK - Full RB - Ant B)



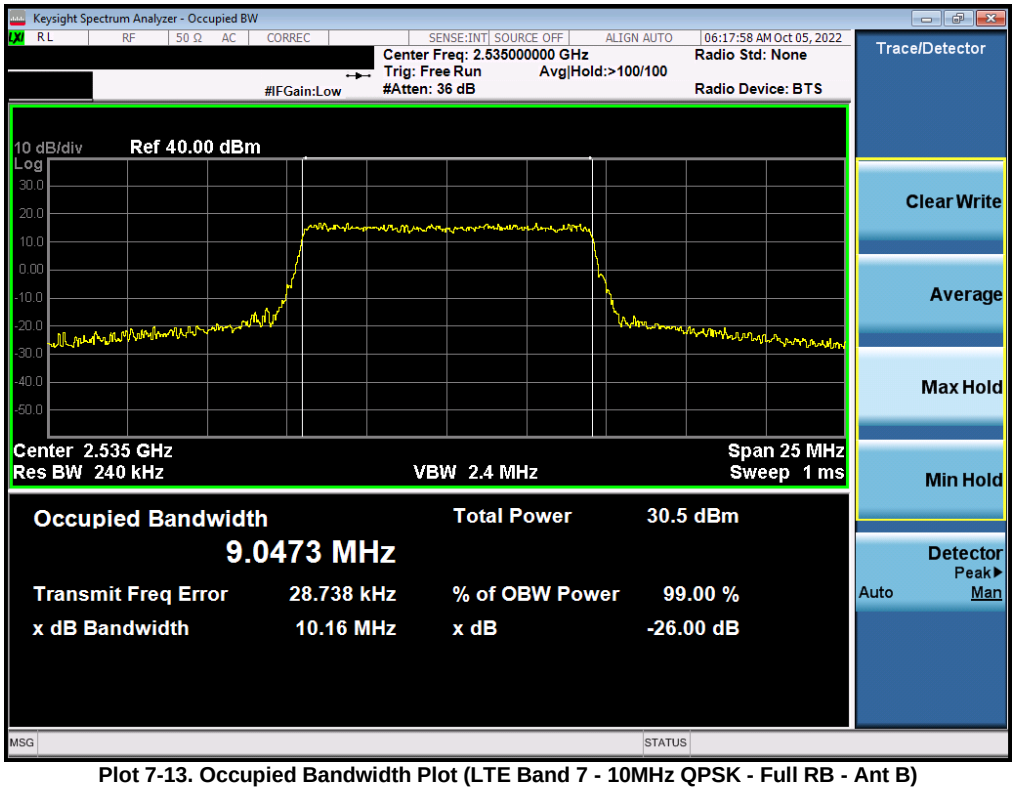
Plot 7-10. Occupied Bandwidth Plot (LTE Band 7 - 20MHz 16-QAM - Full RB - Ant B)



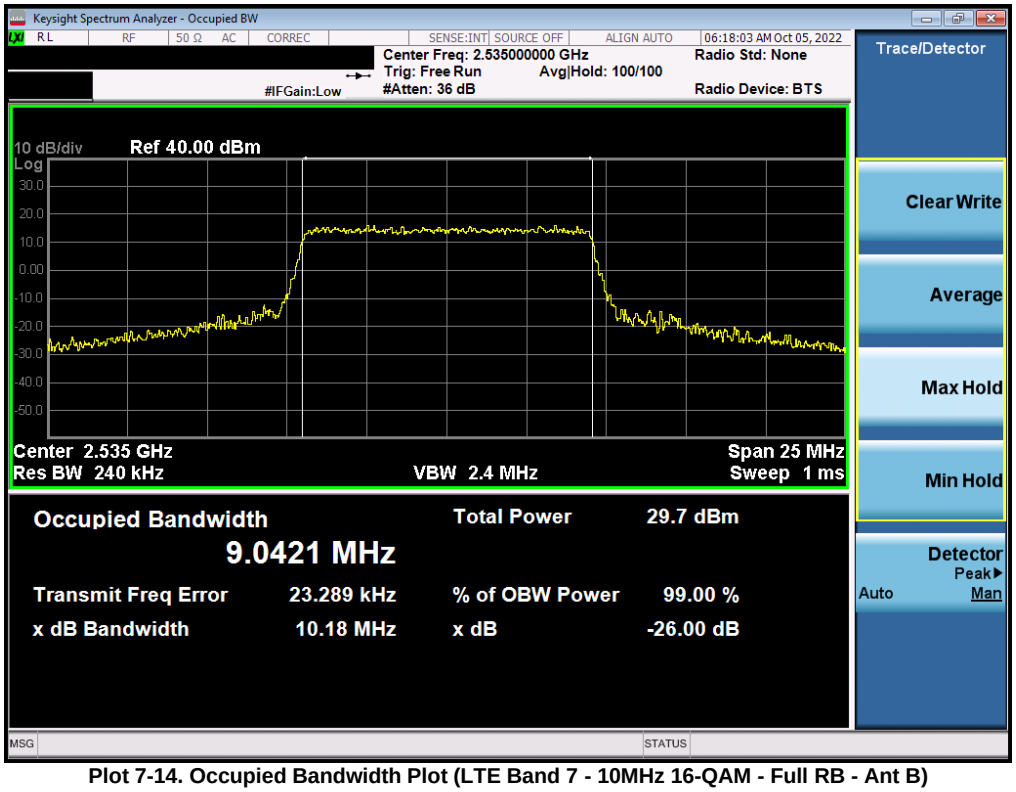
Plot 7-11. Occupied Bandwidth Plot (LTE Band 7 - 15MHz QPSK - Full RB - Ant B)



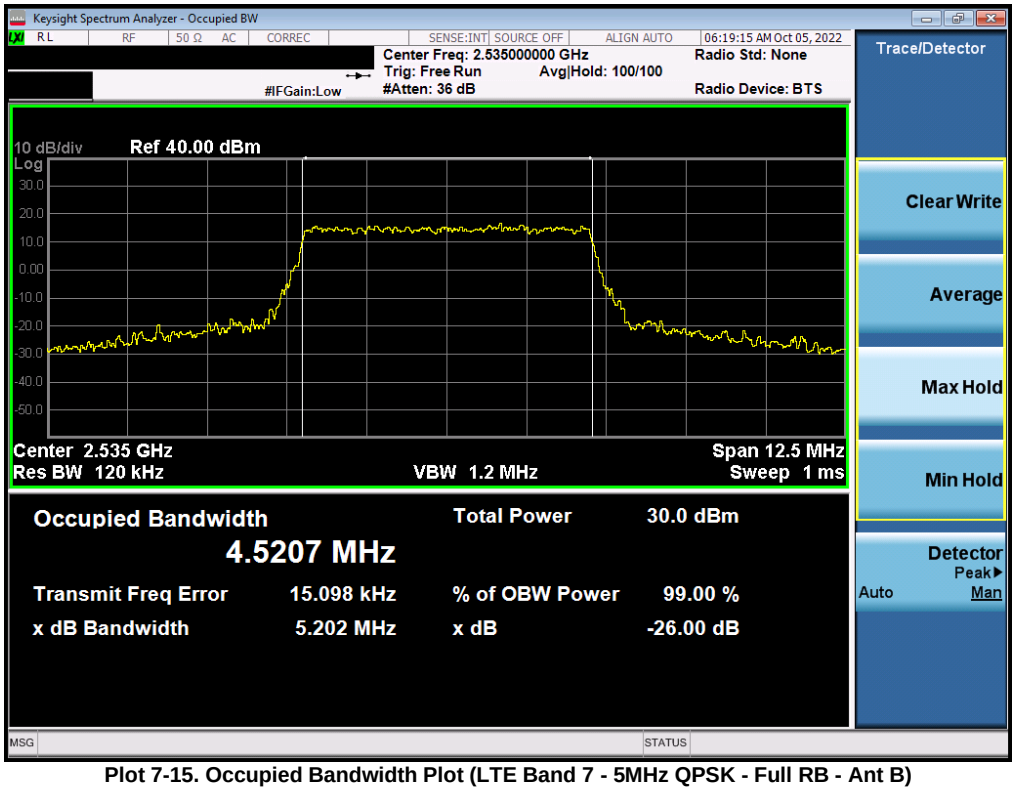
Plot 7-12. Occupied Bandwidth Plot (LTE Band 7 - 15MHz 16-QAM - Full RB - Ant B)



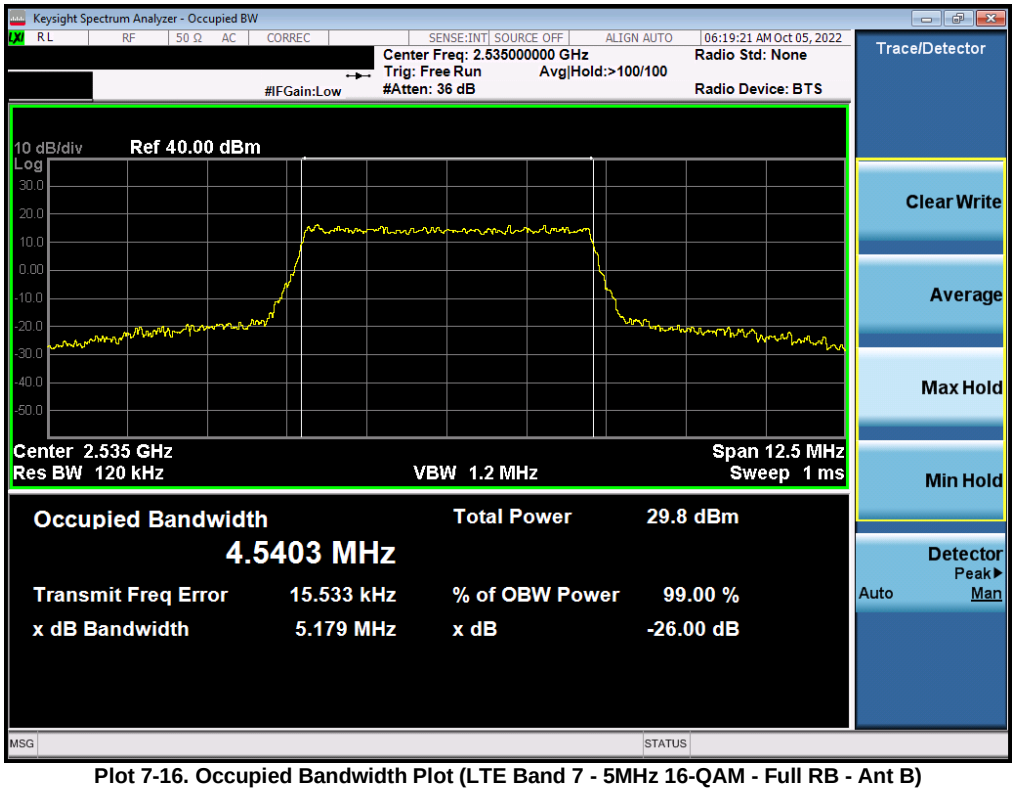
Plot 7-13. Occupied Bandwidth Plot (LTE Band 7 - 10MHz QPSK - Full RB - Ant B)



Plot 7-14. Occupied Bandwidth Plot (LTE Band 7 - 10MHz 16-QAM - Full RB - Ant B)

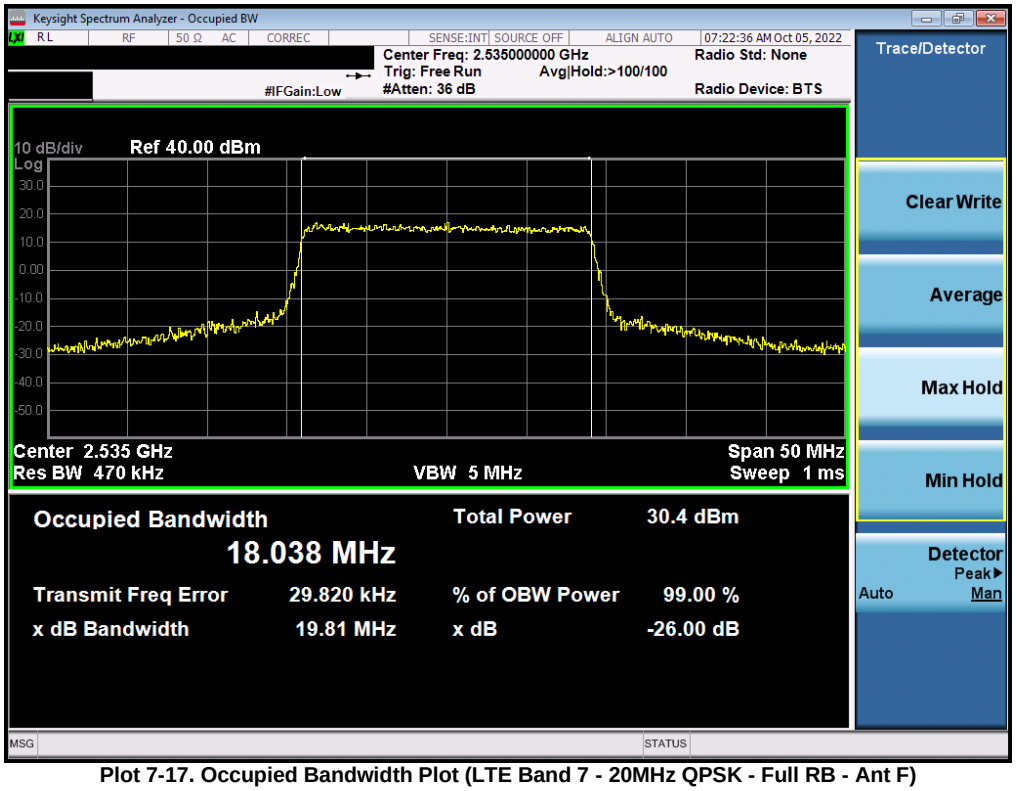


Plot 7-15. Occupied Bandwidth Plot (LTE Band 7 - 5MHz QPSK - Full RB - Ant B)

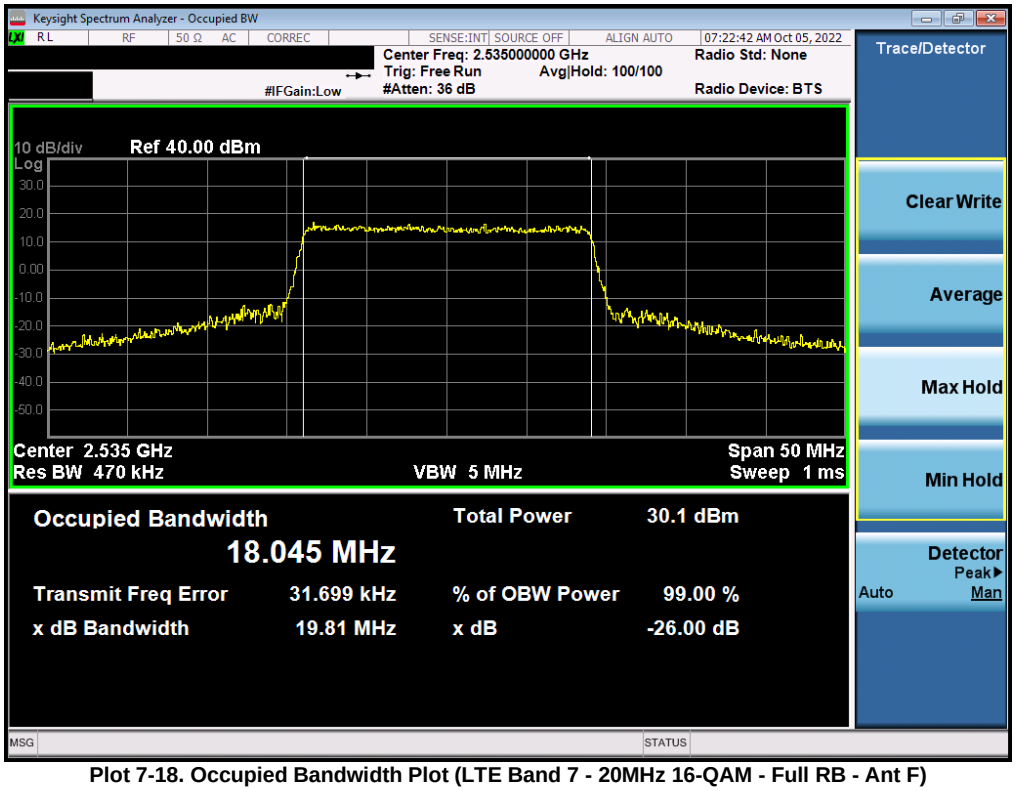


Plot 7-16. Occupied Bandwidth Plot (LTE Band 7 - 5MHz 16-QAM - Full RB - Ant B)

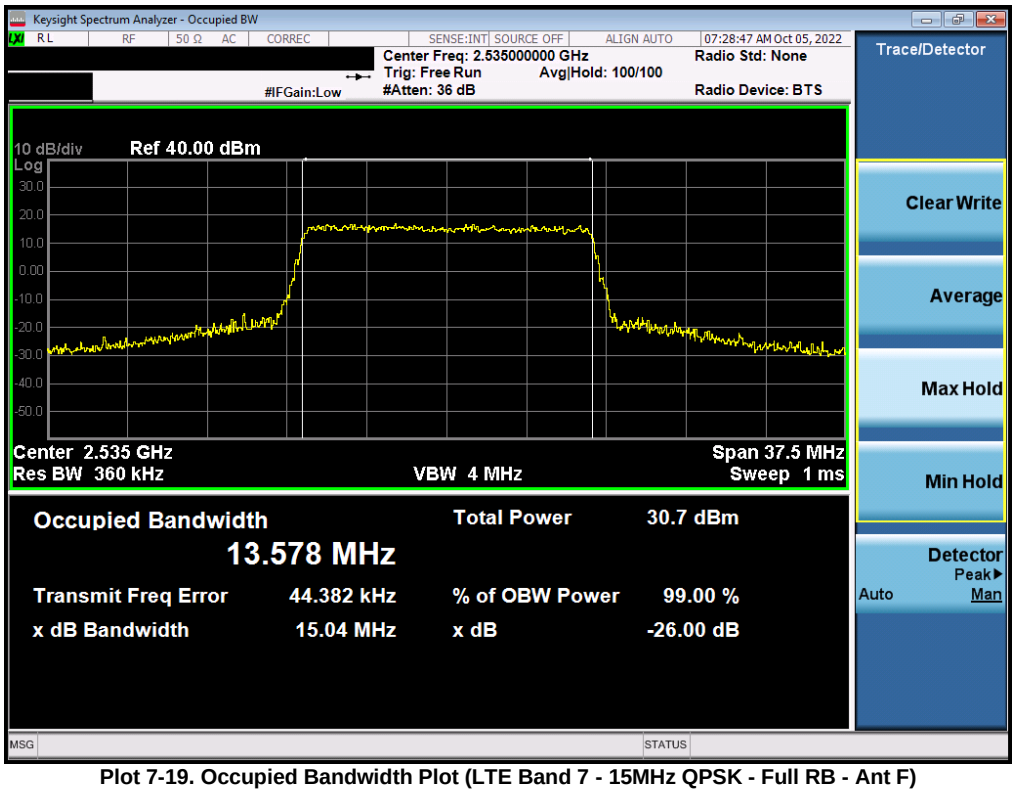
LTE Band 7 – Ant F



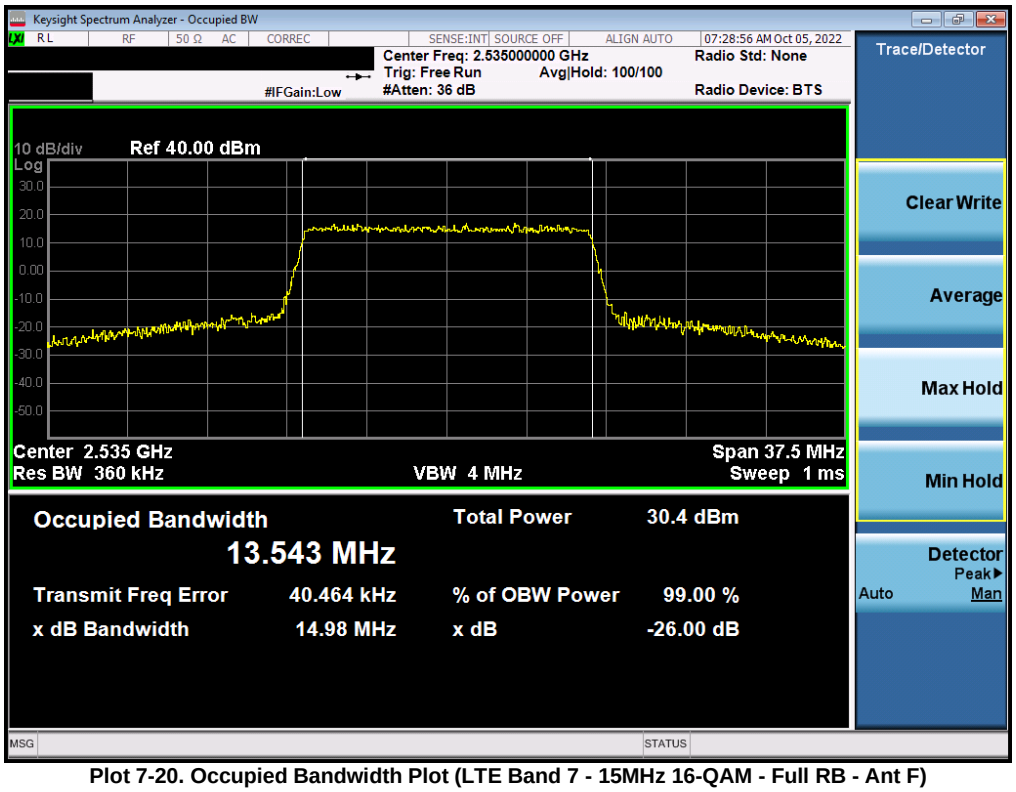
Plot 7-17. Occupied Bandwidth Plot (LTE Band 7 - 20MHz QPSK - Full RB - Ant F)



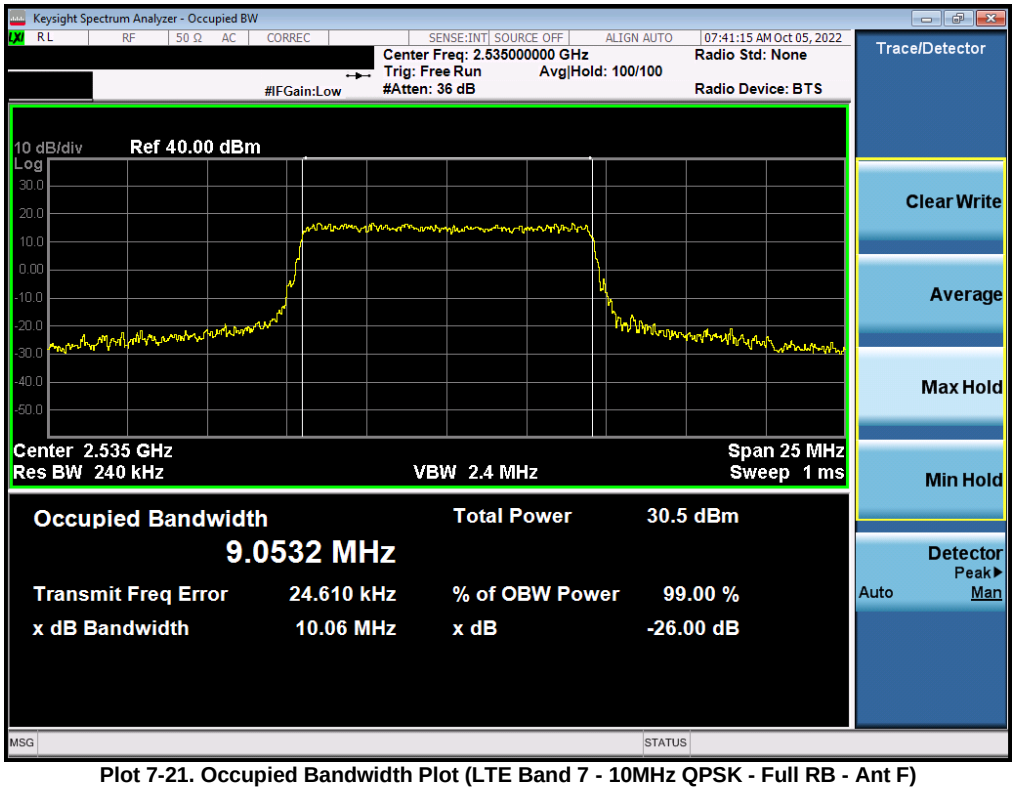
Plot 7-18. Occupied Bandwidth Plot (LTE Band 7 - 20MHz 16-QAM - Full RB - Ant F)



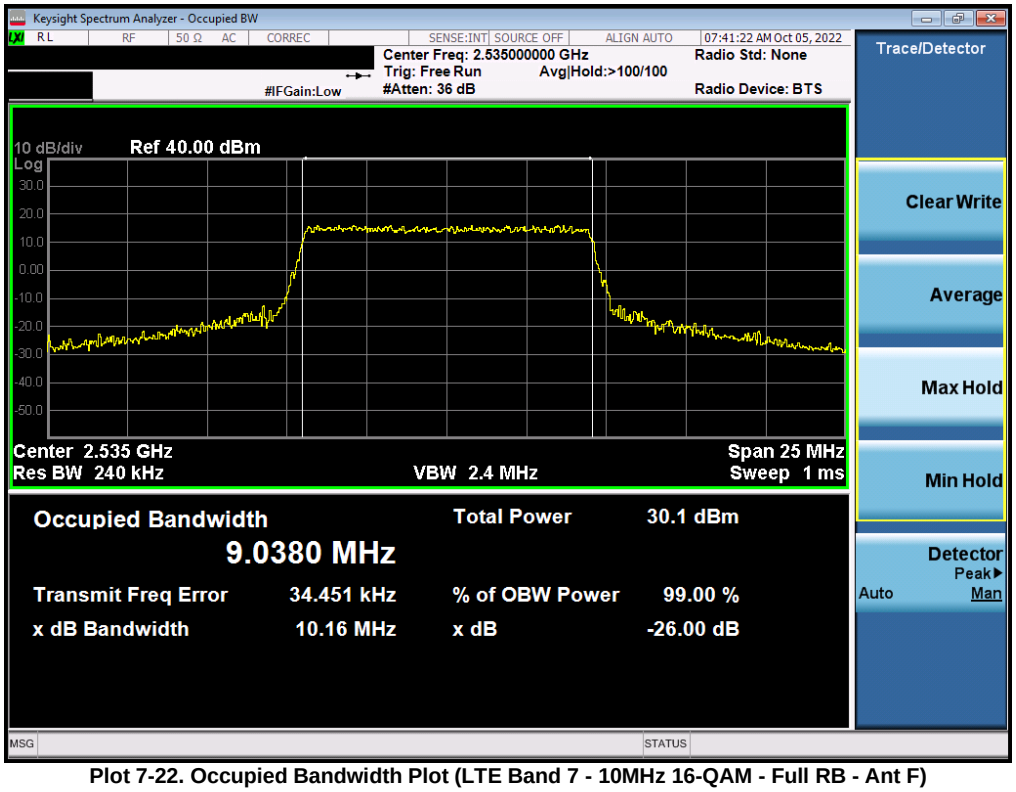
Plot 7-19. Occupied Bandwidth Plot (LTE Band 7 - 15MHz QPSK - Full RB - Ant F)



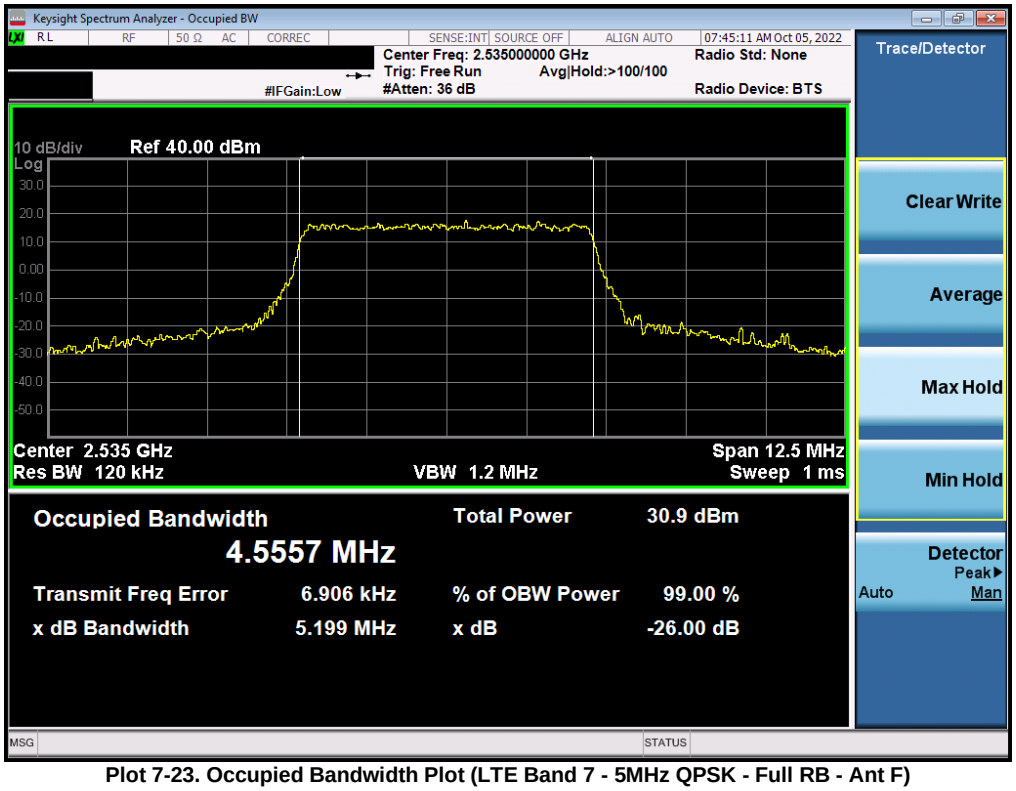
Plot 7-20. Occupied Bandwidth Plot (LTE Band 7 - 15MHz 16-QAM - Full RB - Ant F)



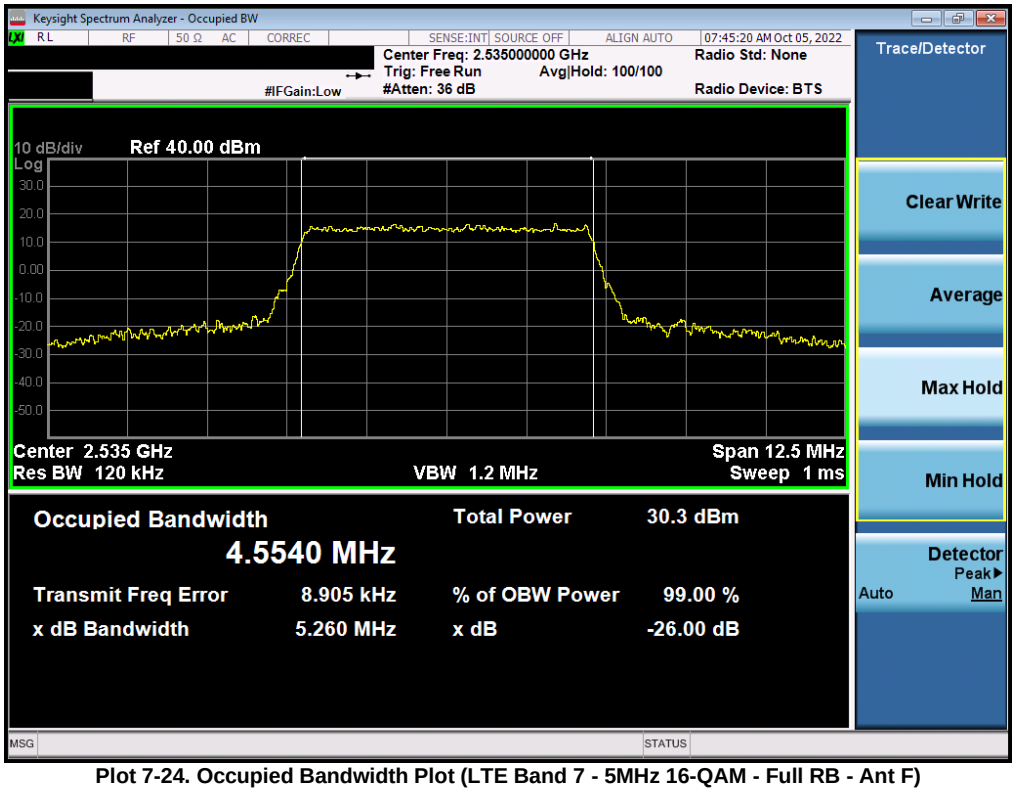
Plot 7-21. Occupied Bandwidth Plot (LTE Band 7 - 10MHz QPSK - Full RB - Ant F)



Plot 7-22. Occupied Bandwidth Plot (LTE Band 7 - 10MHz 16-QAM - Full RB - Ant F)

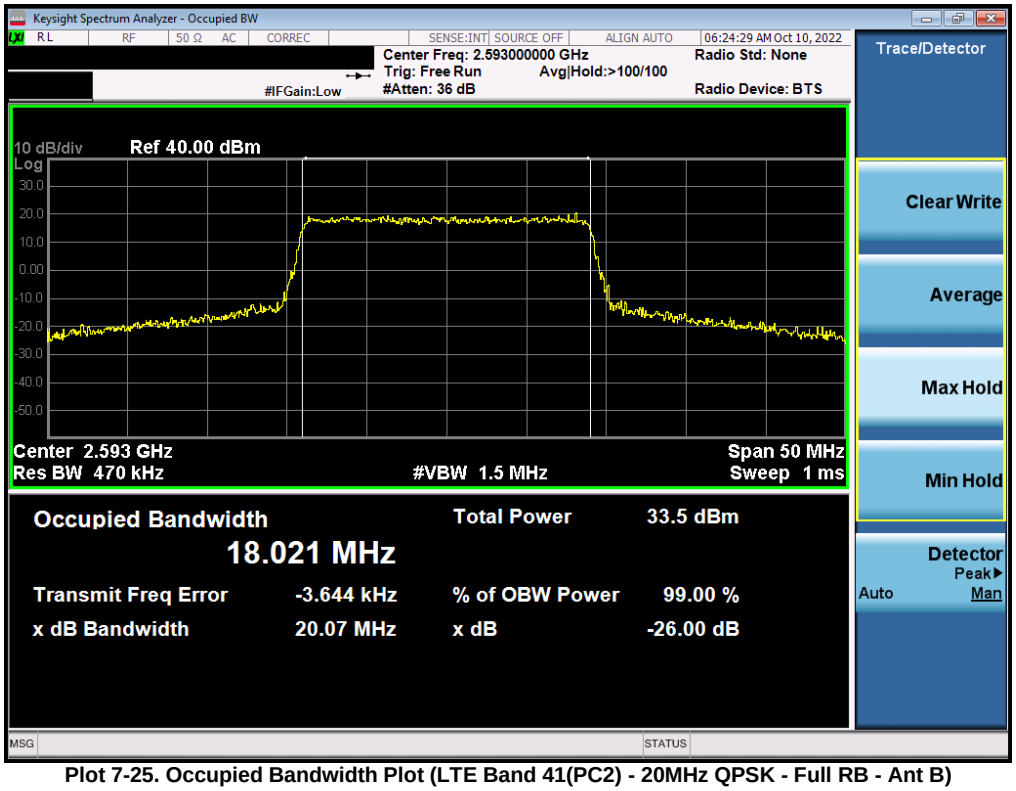


Plot 7-23. Occupied Bandwidth Plot (LTE Band 7 - 5MHz QPSK - Full RB - Ant F)

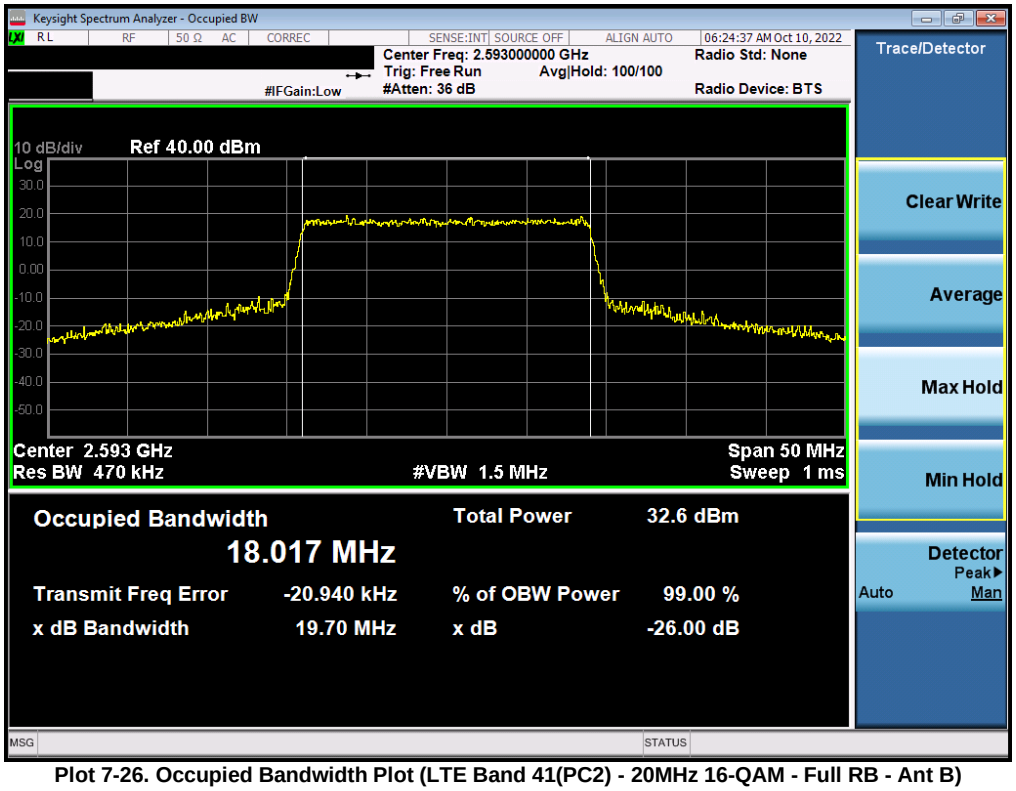


Plot 7-24. Occupied Bandwidth Plot (LTE Band 7 - 5MHz 16-QAM - Full RB - Ant F)

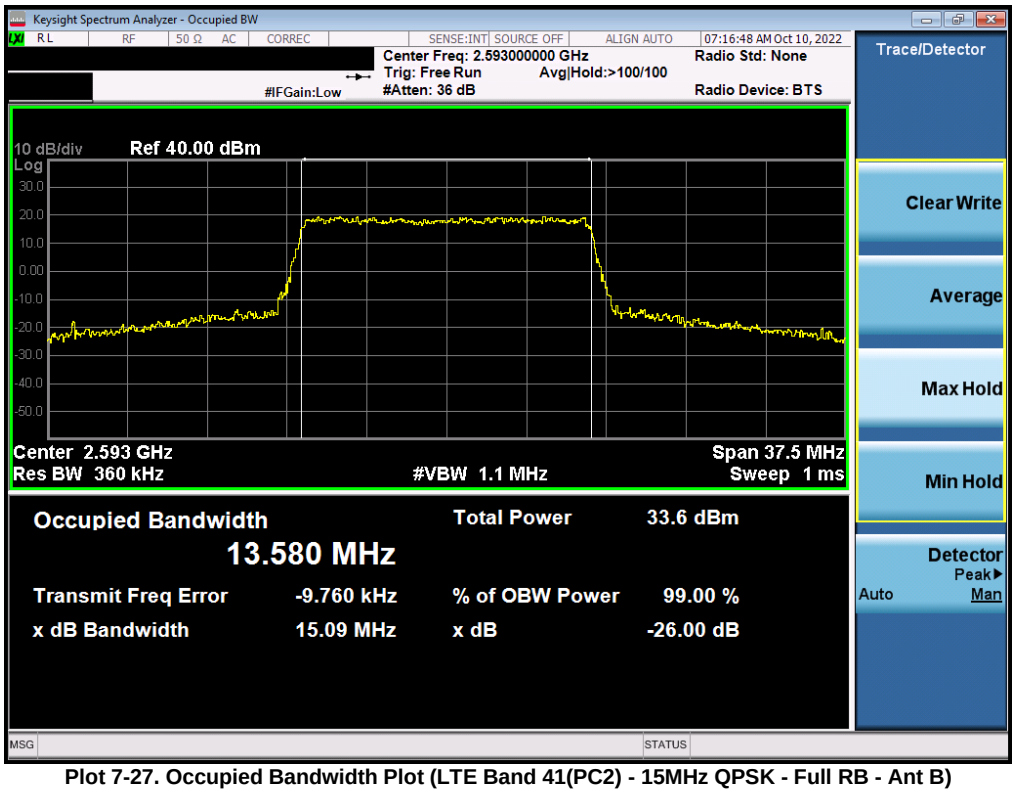
LTE Band 41(PC2) – Ant B



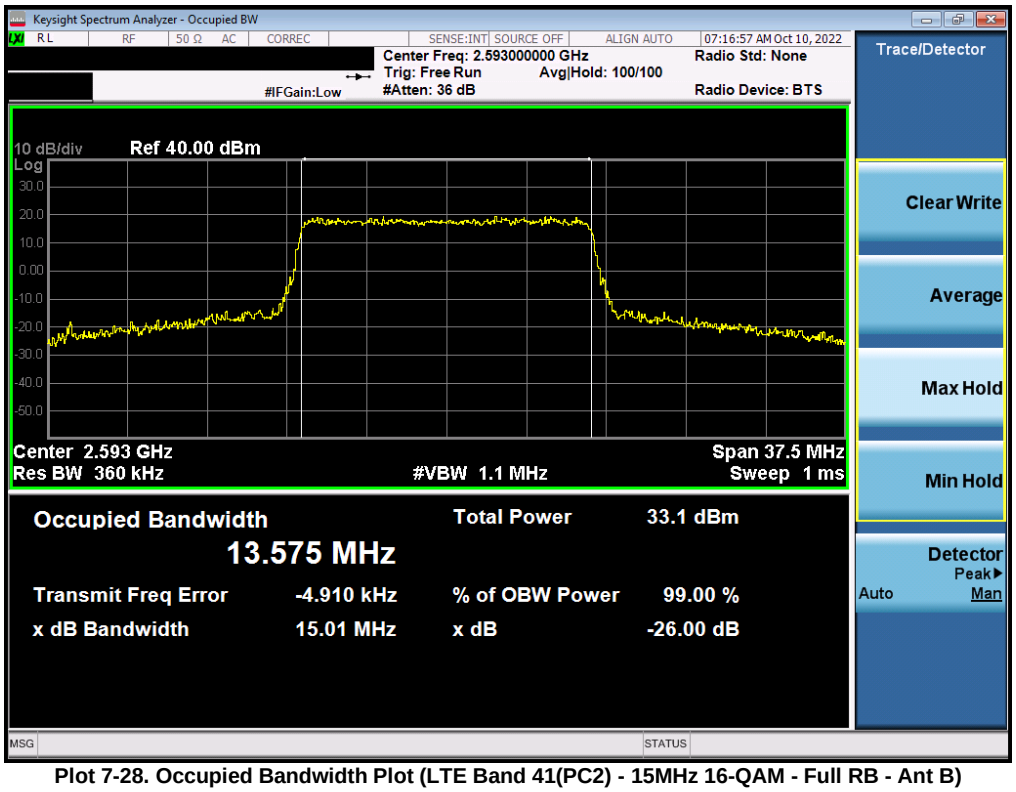
Plot 7-25. Occupied Bandwidth Plot (LTE Band 41(PC2) - 20MHz QPSK - Full RB - Ant B)



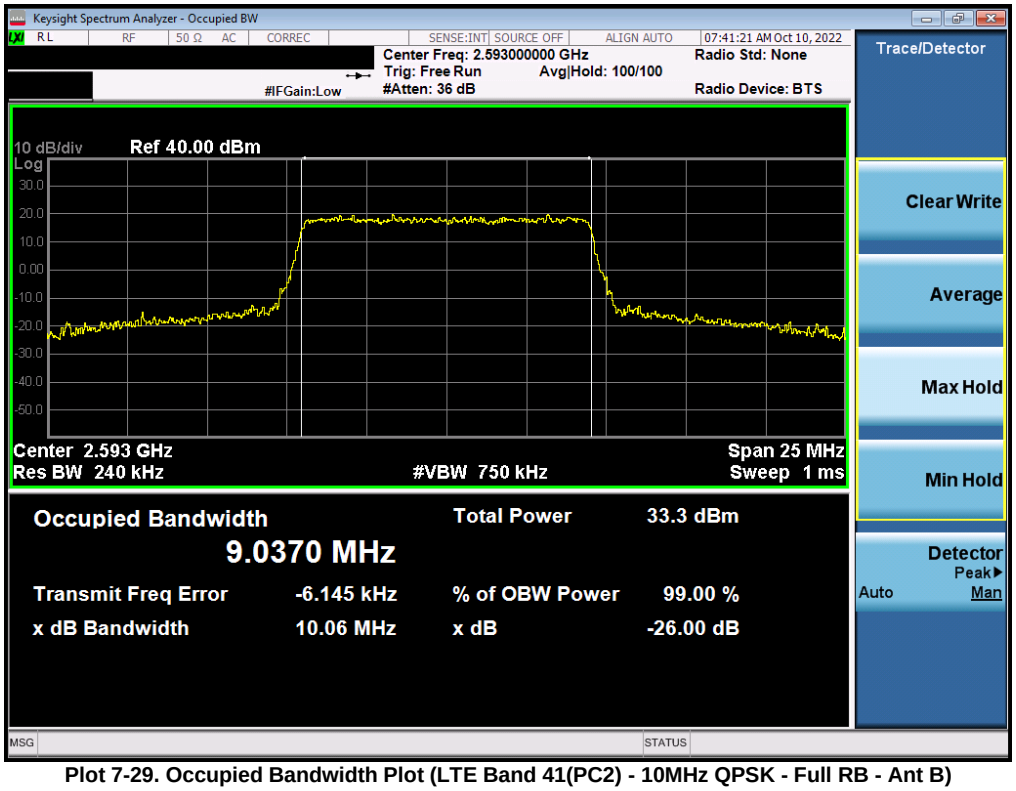
Plot 7-26. Occupied Bandwidth Plot (LTE Band 41(PC2) - 20MHz 16-QAM - Full RB - Ant B)



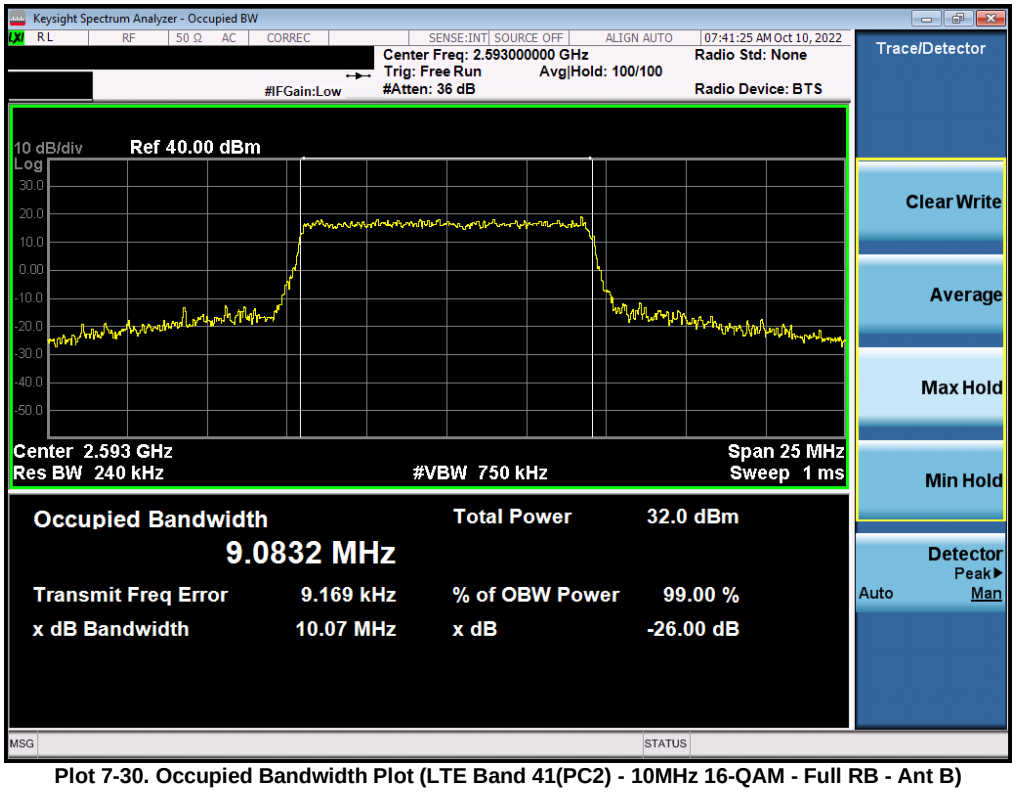
Plot 7-27. Occupied Bandwidth Plot (LTE Band 41(PC2) - 15MHz QPSK - Full RB - Ant B)



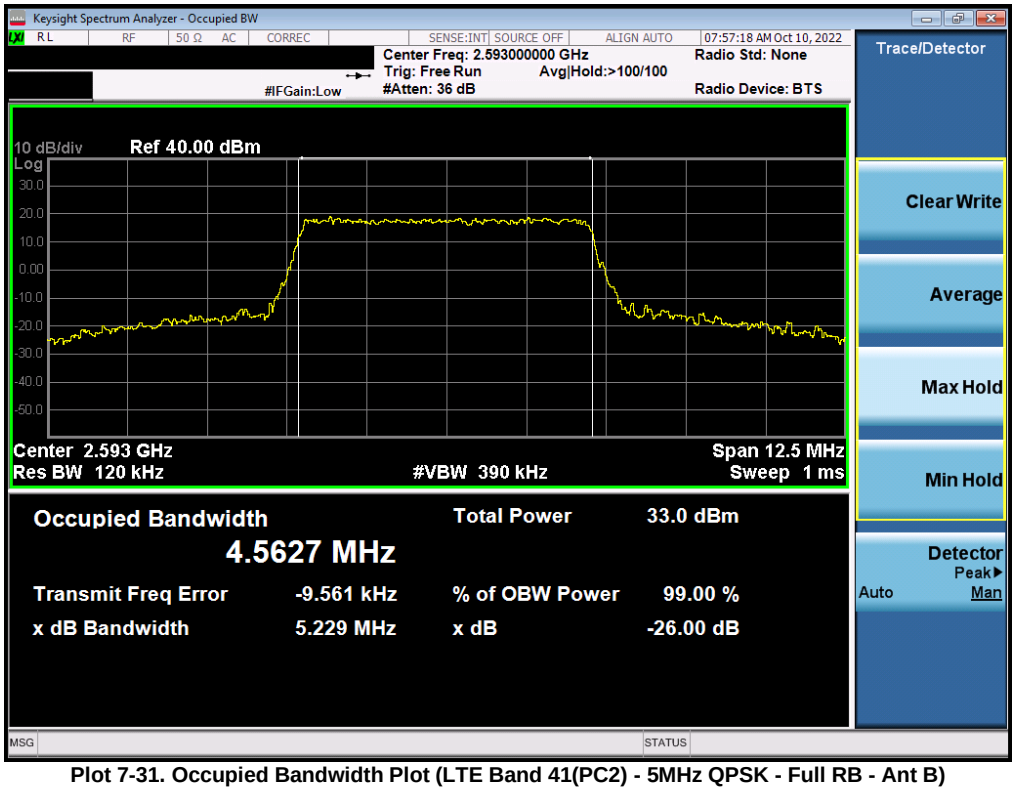
Plot 7-28. Occupied Bandwidth Plot (LTE Band 41(PC2) - 15MHz 16-QAM - Full RB - Ant B)



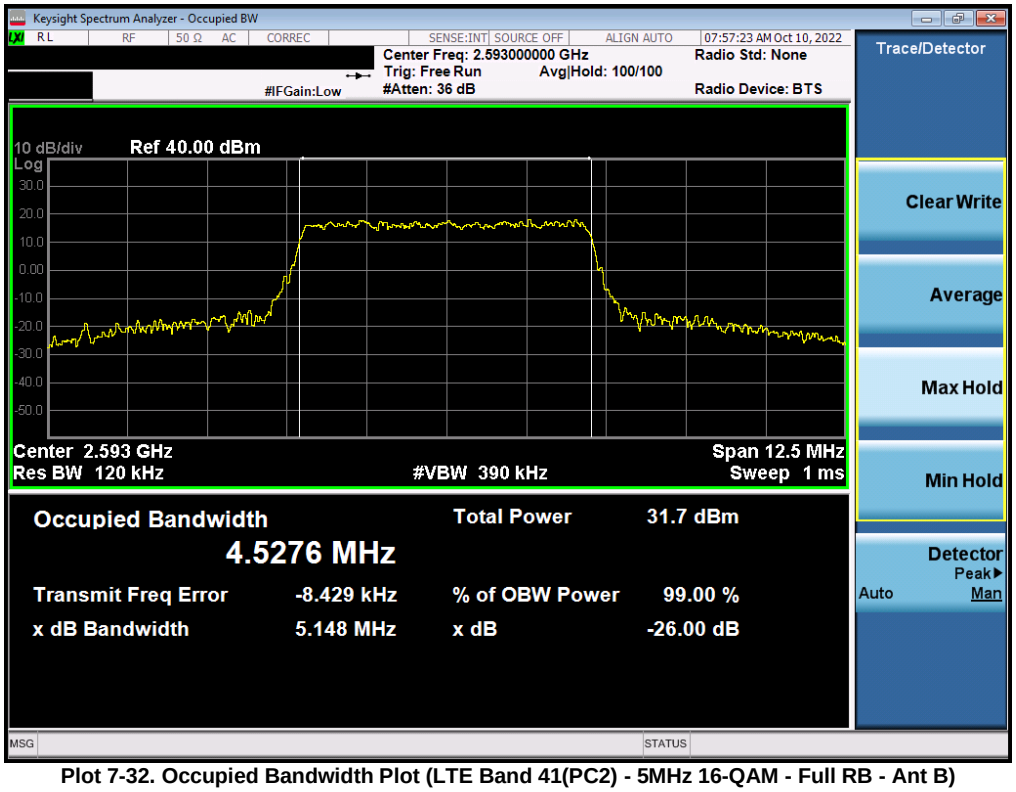
Plot 7-29. Occupied Bandwidth Plot (LTE Band 41(PC2) - 10MHz QPSK - Full RB - Ant B)



Plot 7-30. Occupied Bandwidth Plot (LTE Band 41(PC2) - 10MHz 16-QAM - Full RB - Ant B)

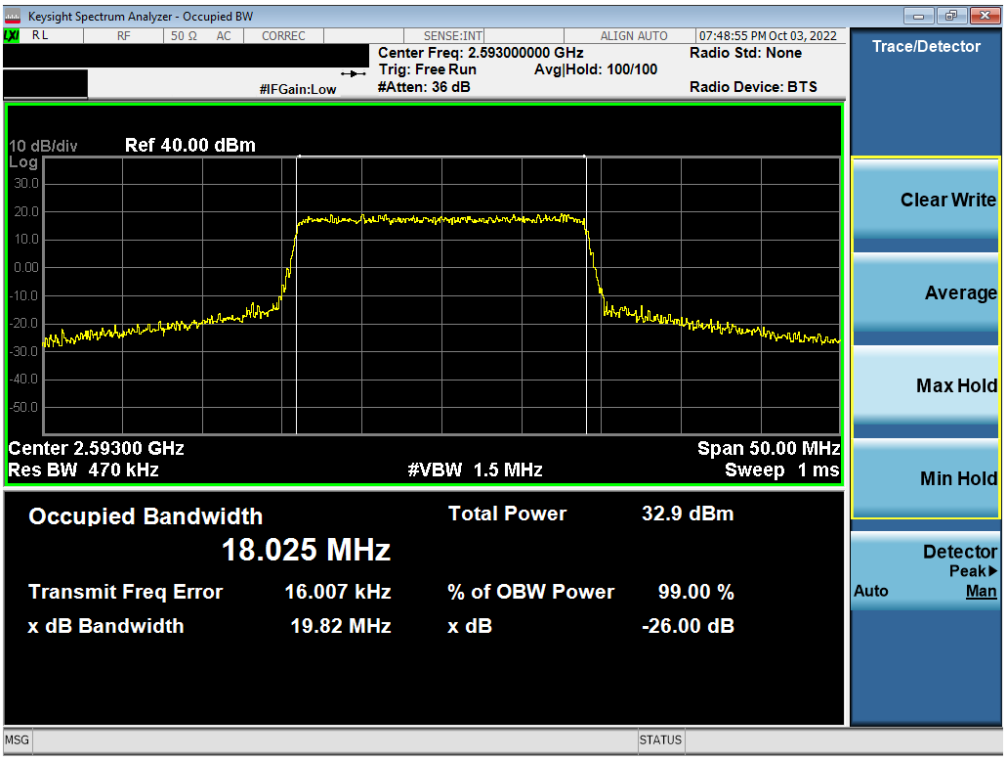


Plot 7-31. Occupied Bandwidth Plot (LTE Band 41(PC2) - 5MHz QPSK - Full RB - Ant B)

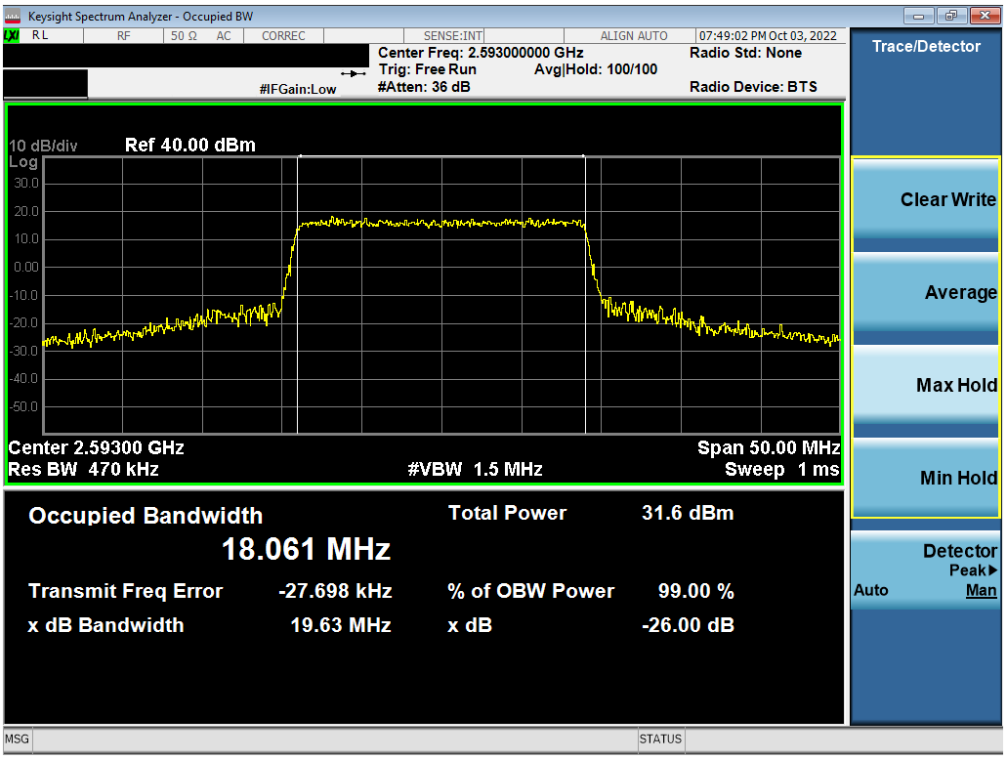


Plot 7-32. Occupied Bandwidth Plot (LTE Band 41(PC2) - 5MHz 16-QAM - Full RB - Ant B)

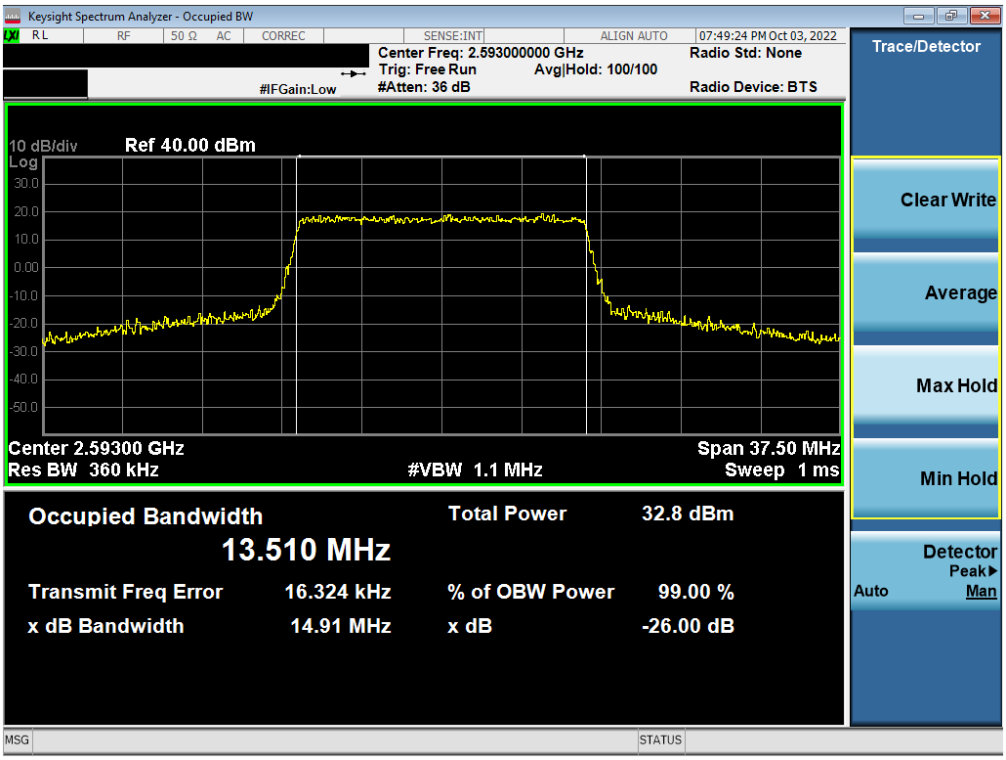
LTE Band 41(PC2) – Ant F



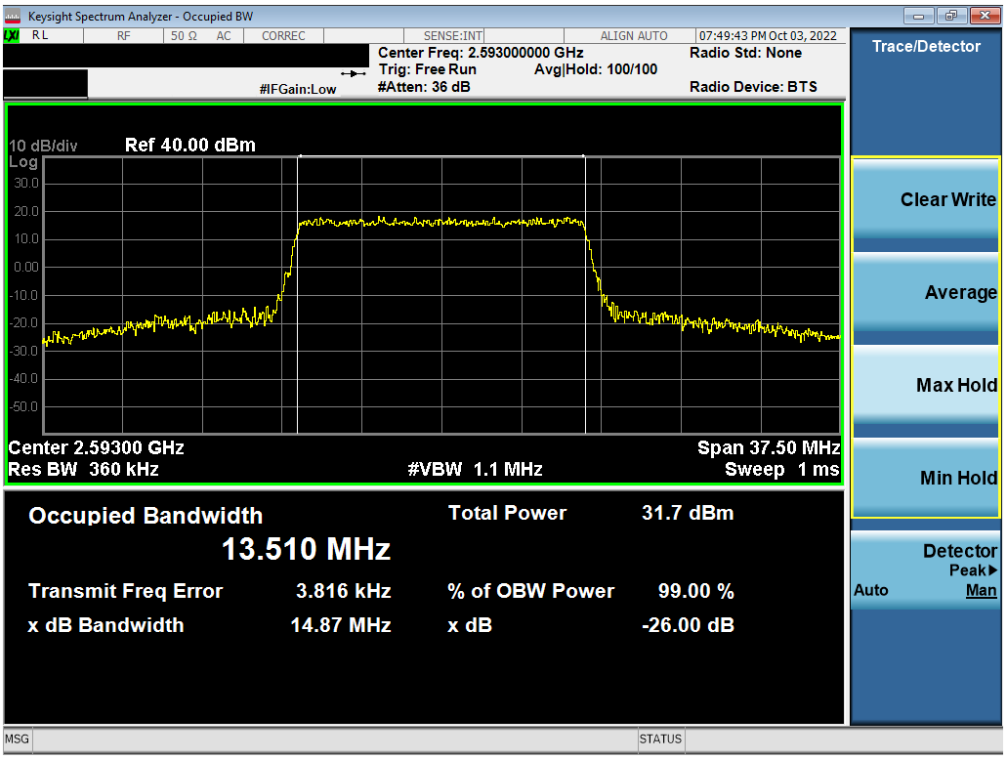
Plot 7-33. Occupied Bandwidth Plot (LTE Band 41(PC2) - 20MHz QPSK - Full RB - Ant F)



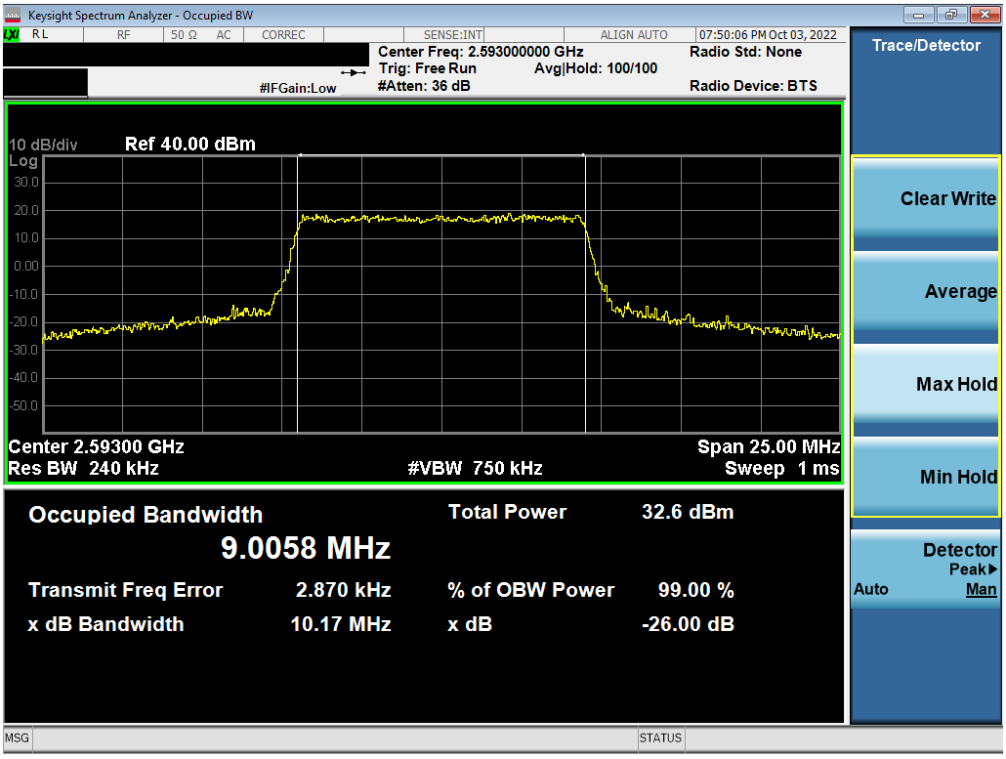
Plot 7-34. Occupied Bandwidth Plot (LTE Band 41(PC2) - 20MHz 16-QAM - Full RB - Ant F)



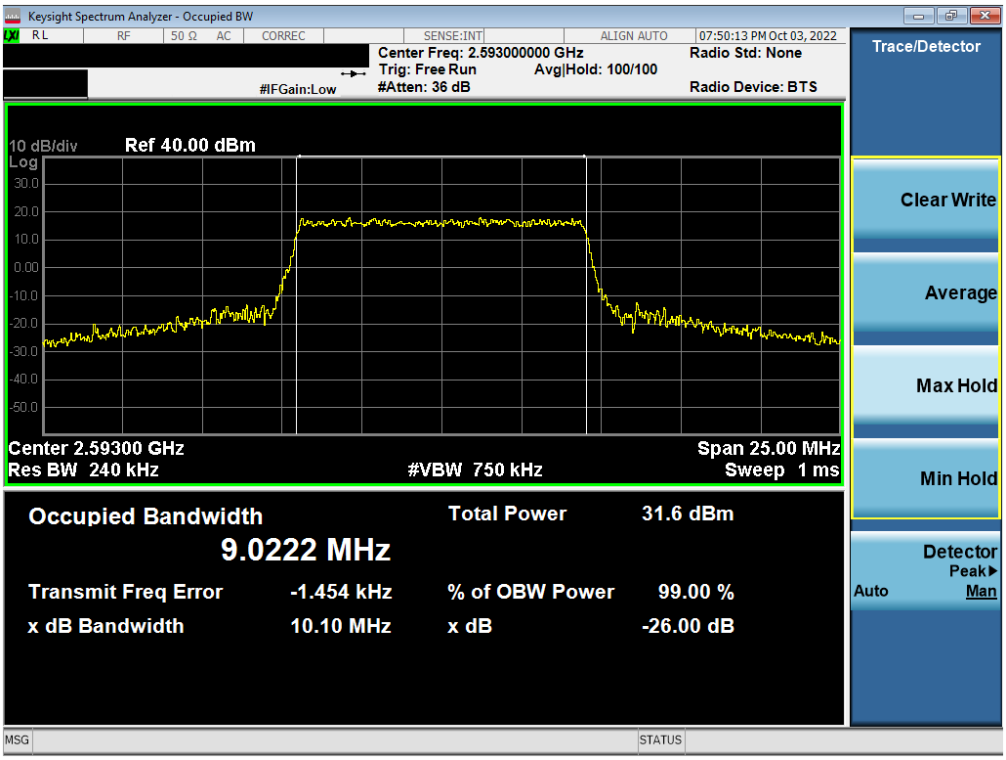
Plot 7-35. Occupied Bandwidth Plot (LTE Band 41(PC2) - 15MHz QPSK - Full RB - Ant F)



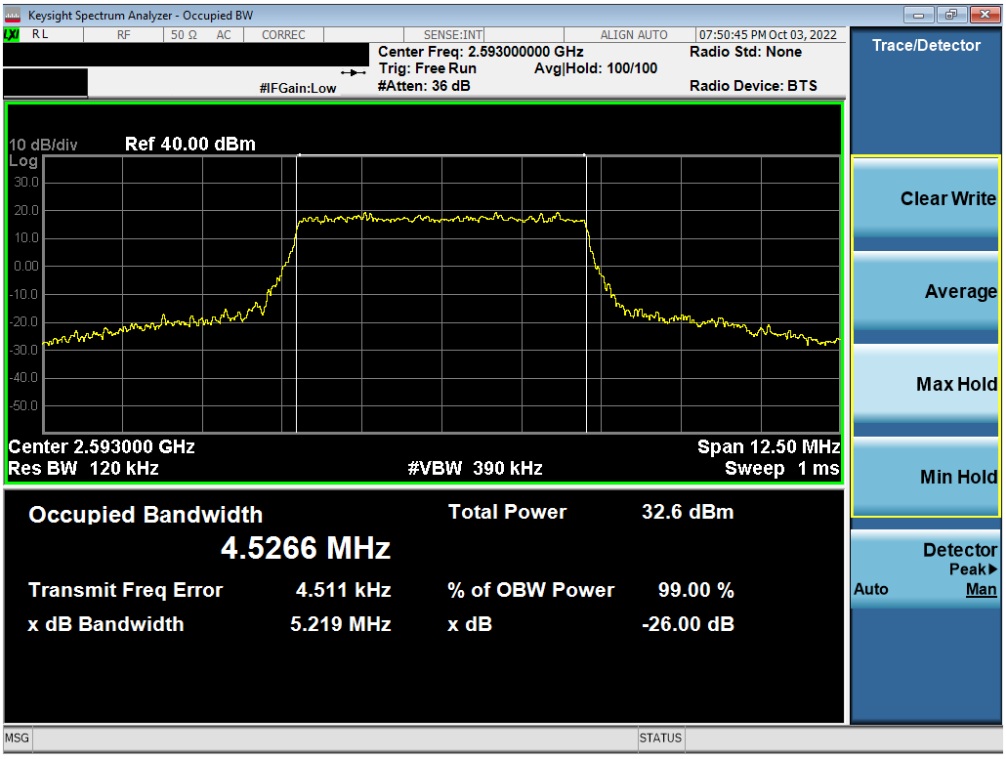
Plot 7-36. Occupied Bandwidth Plot (LTE Band 41(PC2) - 15MHz 16-QAM - Full RB - Ant F)



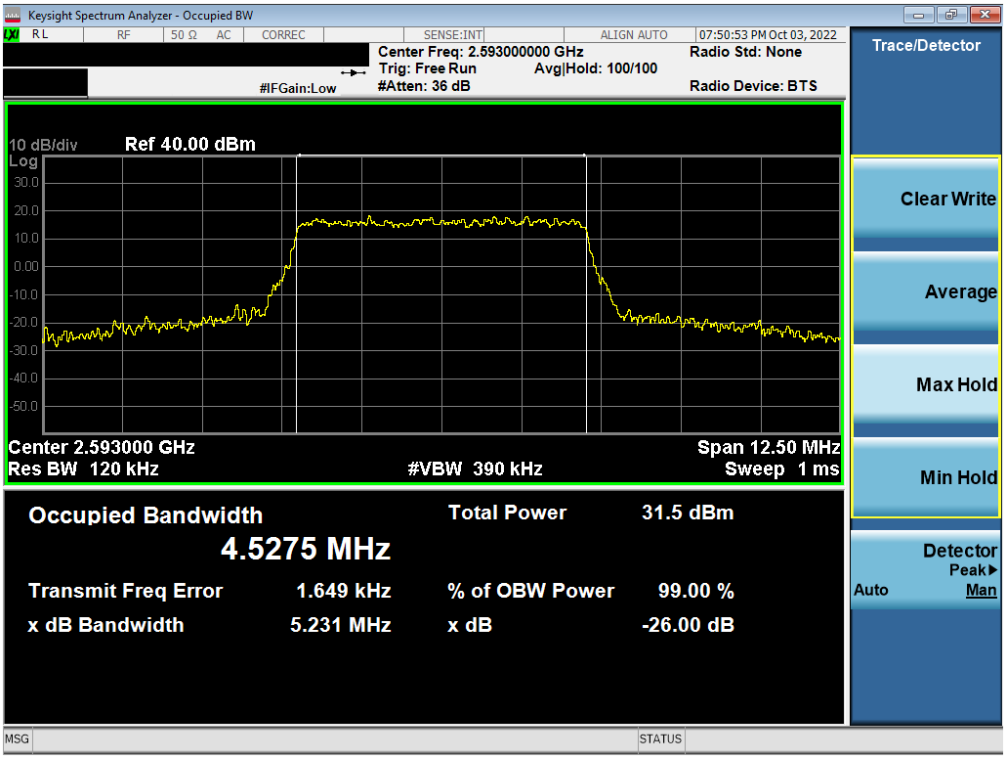
Plot 7-37. Occupied Bandwidth Plot (LTE Band 41(PC2) - 10MHz QPSK - Full RB - Ant F)



Plot 7-38. Occupied Bandwidth Plot (LTE Band 41(PC2) - 10MHz 16-QAM - Full RB - Ant F)

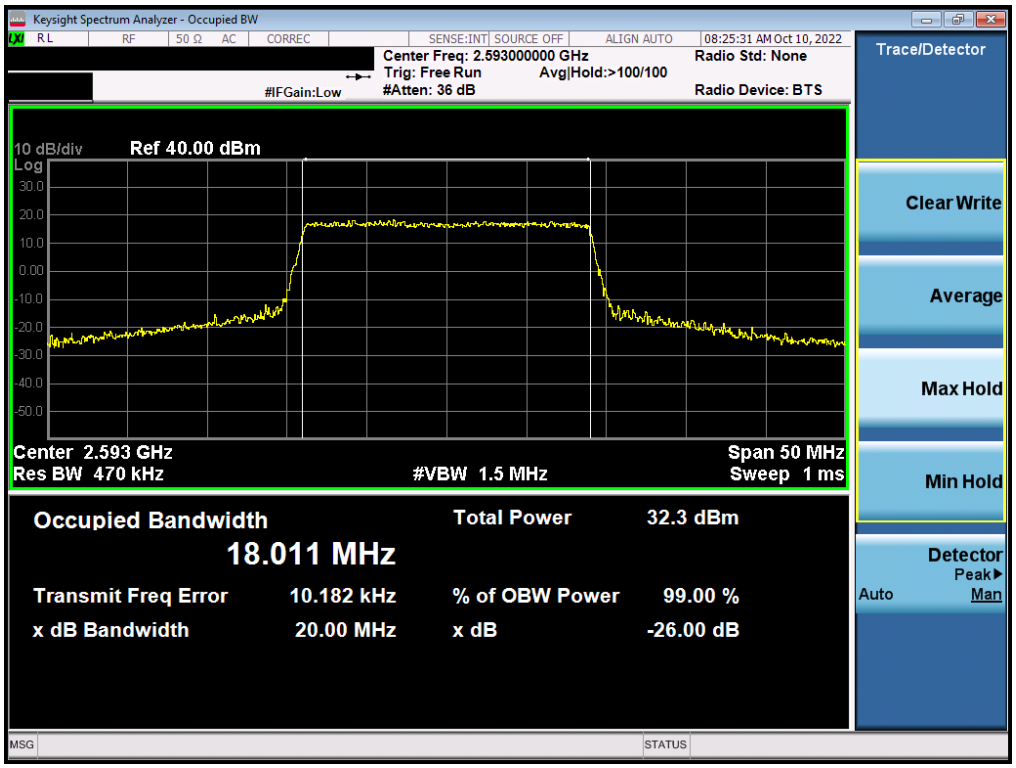


Plot 7-39. Occupied Bandwidth Plot (LTE Band 41(PC2) - 5MHz QPSK - Full RB - Ant F)



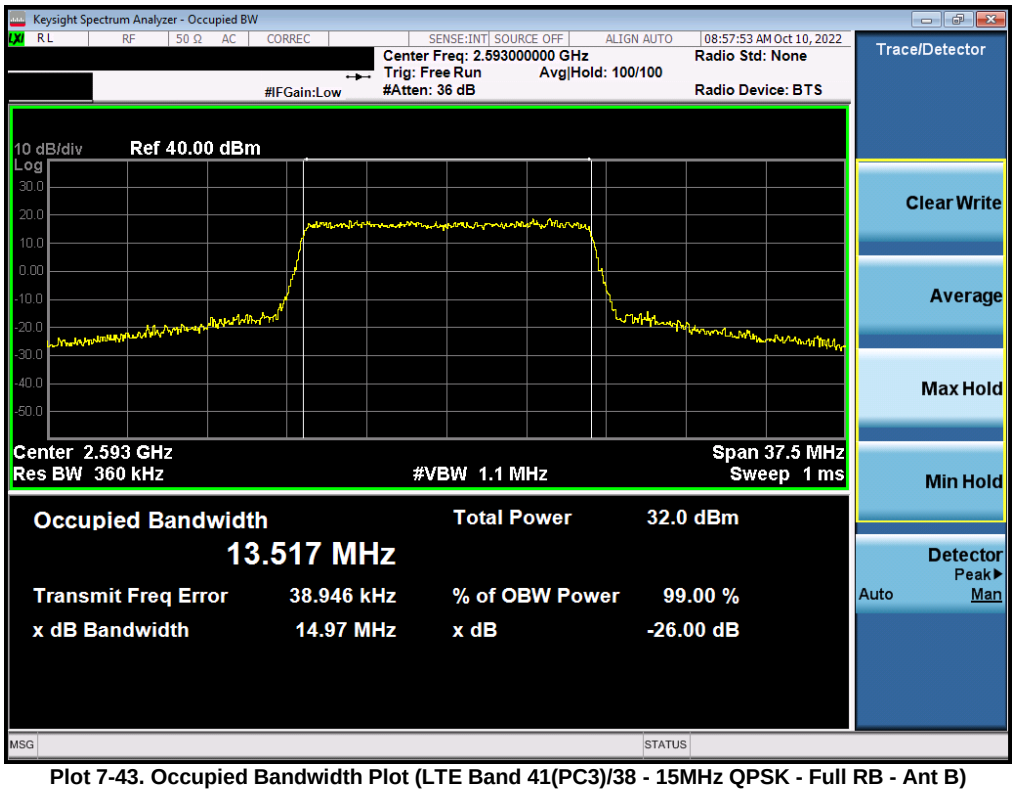
Plot 7-40. Occupied Bandwidth Plot (LTE Band 41(PC2) - 5MHz 16-QAM - Full RB - Ant F)

LTE Band 41(PC3)/38 – ANT B

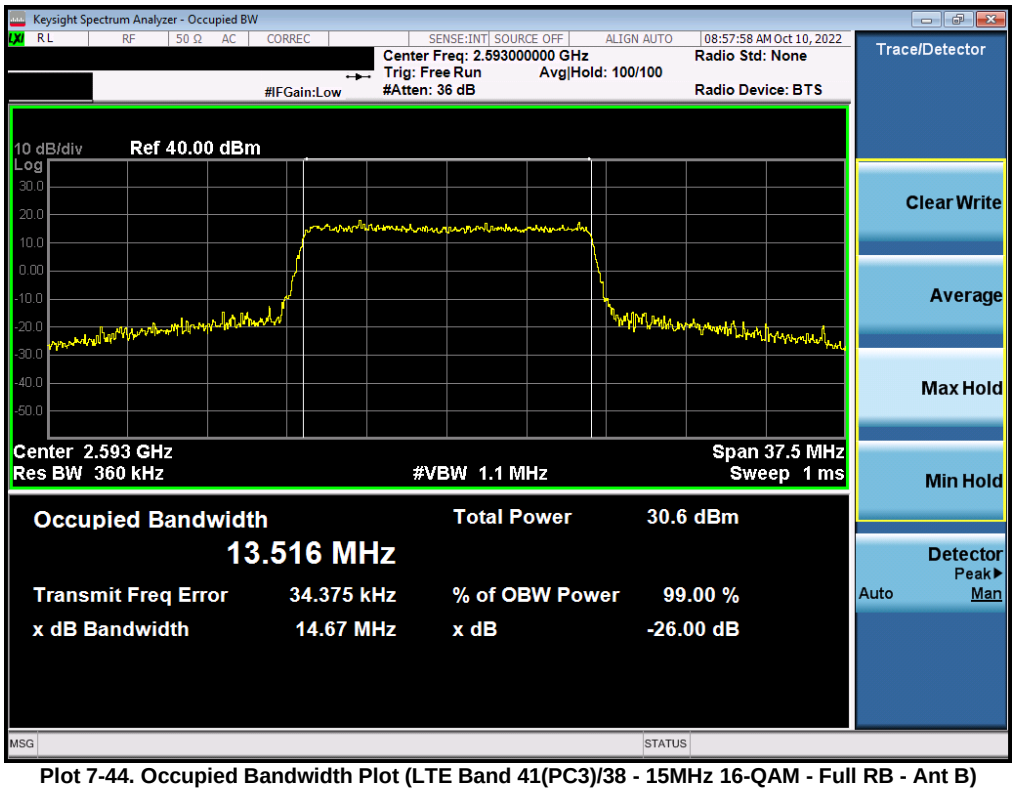


Plot 7-41. Occupied Bandwidth Plot (LTE Band 41(PC3)/38 - 20MHz QPSK - Full RB - Ant B)

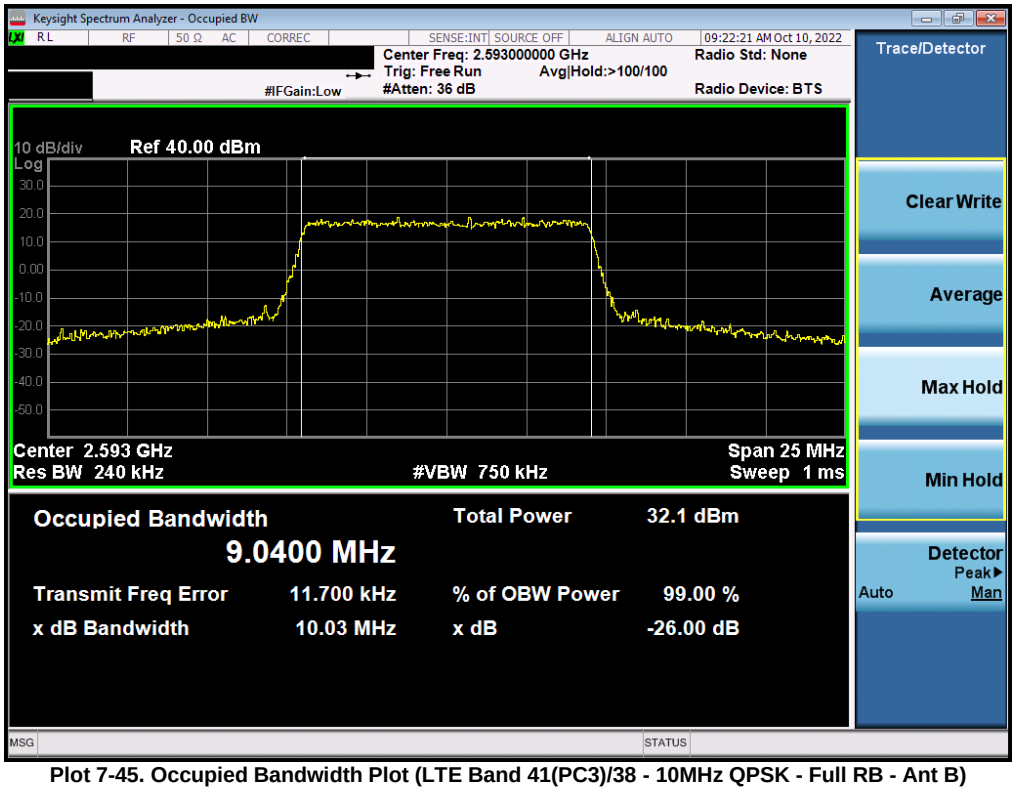
Plot 7-42. Occupied Bandwidth Plot (LTE Band 41(PC3)/38 - 20MHz 16-QAM - Full RB - Ant B)



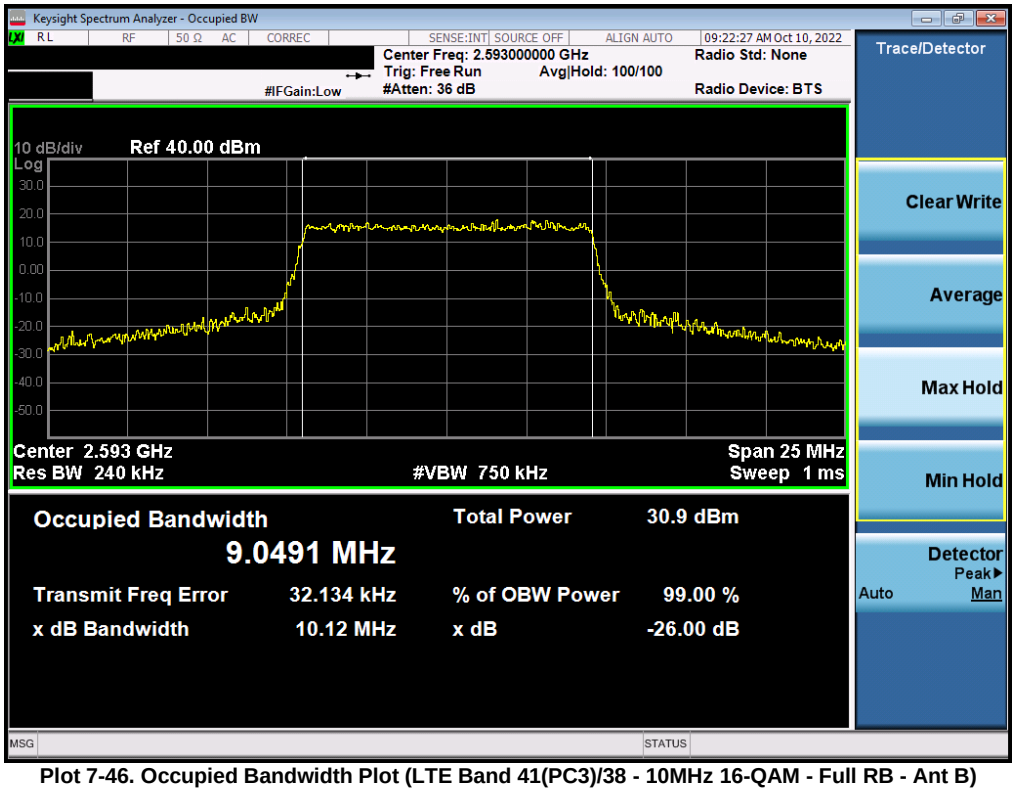
Plot 7-43. Occupied Bandwidth Plot (LTE Band 41(PC3)/38 - 15MHz QPSK - Full RB - Ant B)



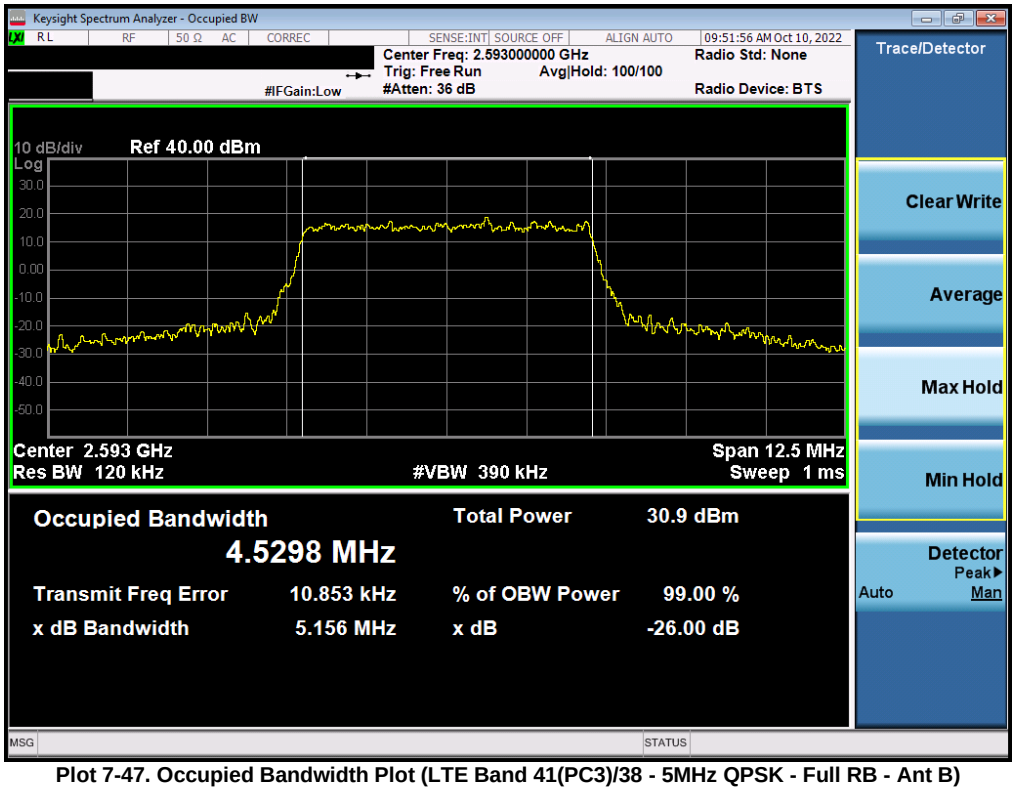
Plot 7-44. Occupied Bandwidth Plot (LTE Band 41(PC3)/38 - 15MHz 16-QAM - Full RB - Ant B)



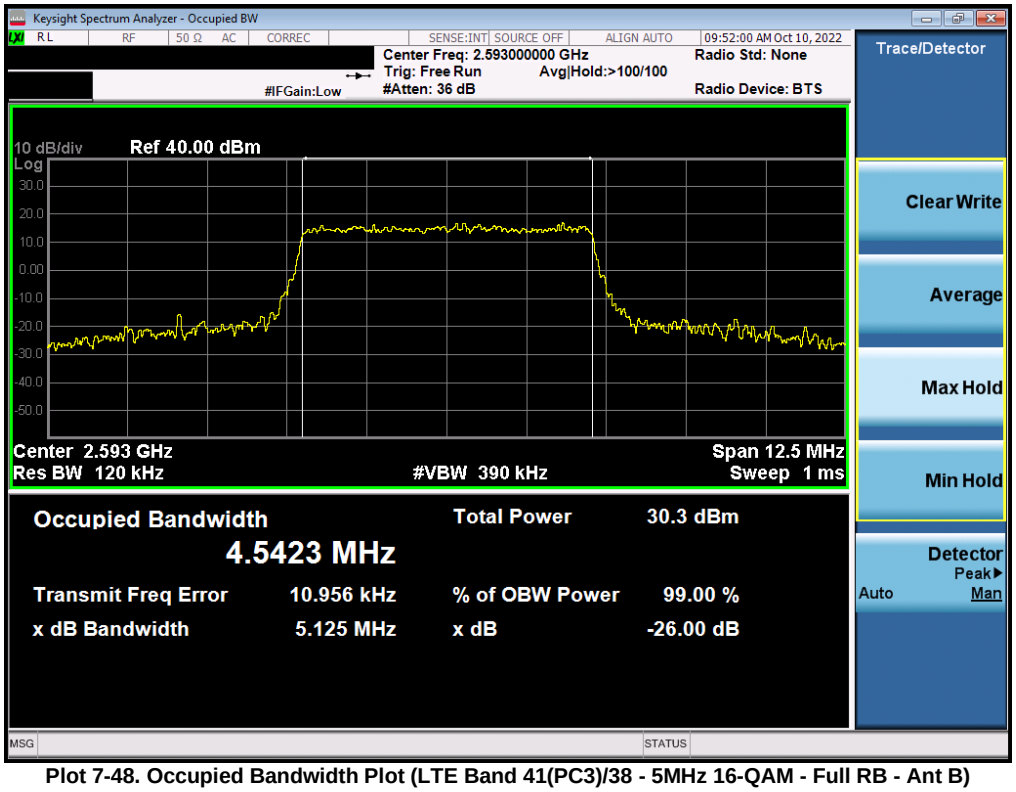
Plot 7-45. Occupied Bandwidth Plot (LTE Band 41(PC3)/38 - 10MHz QPSK - Full RB - Ant B)



Plot 7-46. Occupied Bandwidth Plot (LTE Band 41(PC3)/38 - 10MHz 16-QAM - Full RB - Ant B)

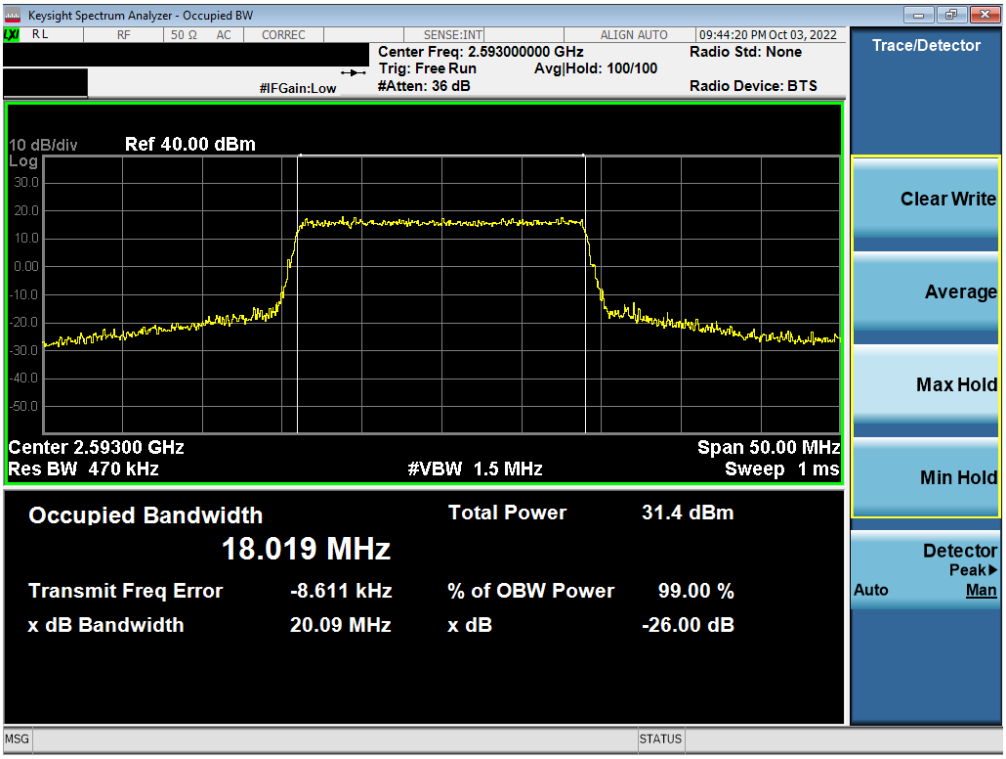


Plot 7-47. Occupied Bandwidth Plot (LTE Band 41(PC3)/38 - 5MHz QPSK - Full RB - Ant B)

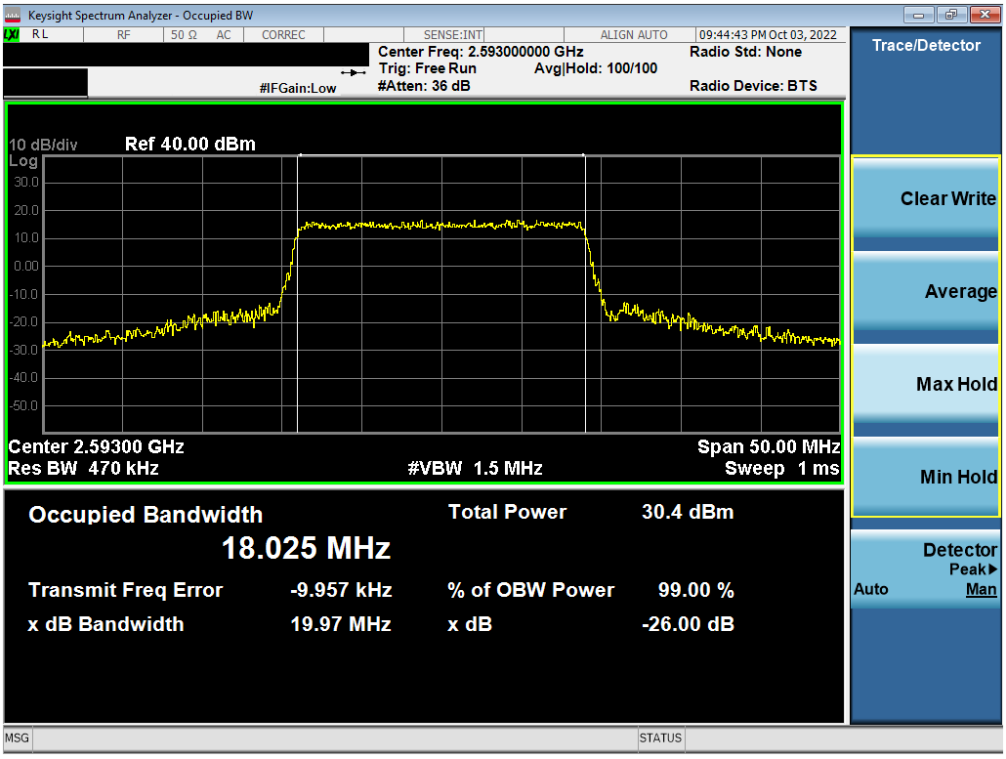


Plot 7-48. Occupied Bandwidth Plot (LTE Band 41(PC3)/38 - 5MHz 16-QAM - Full RB - Ant B)

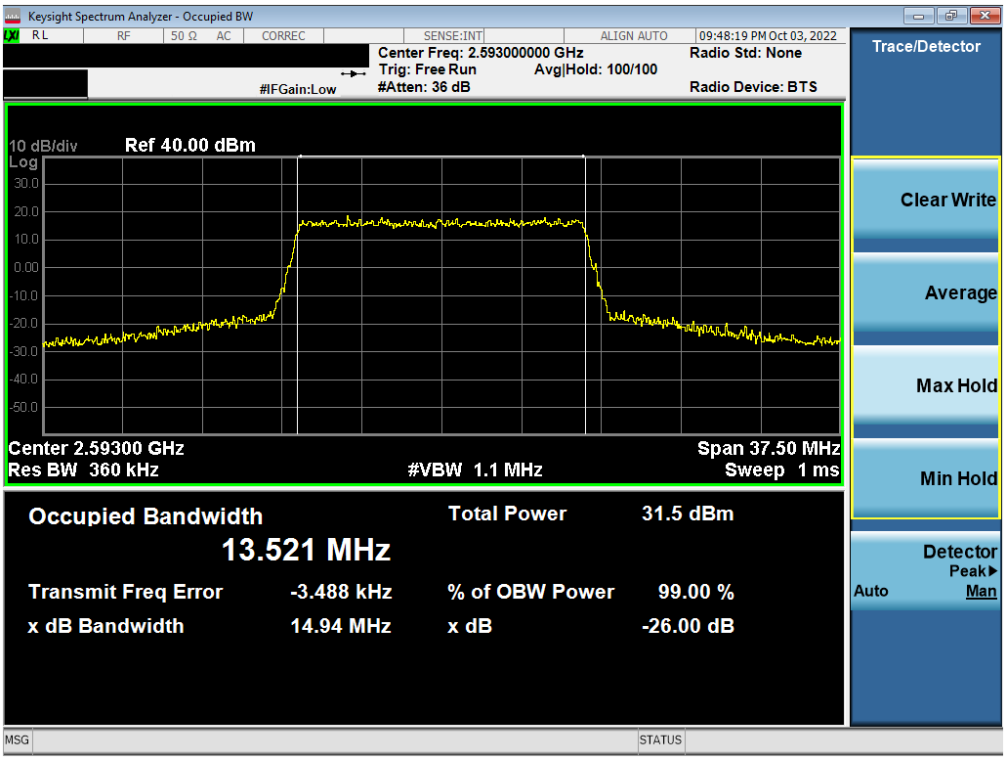
LTE Band 41(PC3)/38 – Ant F



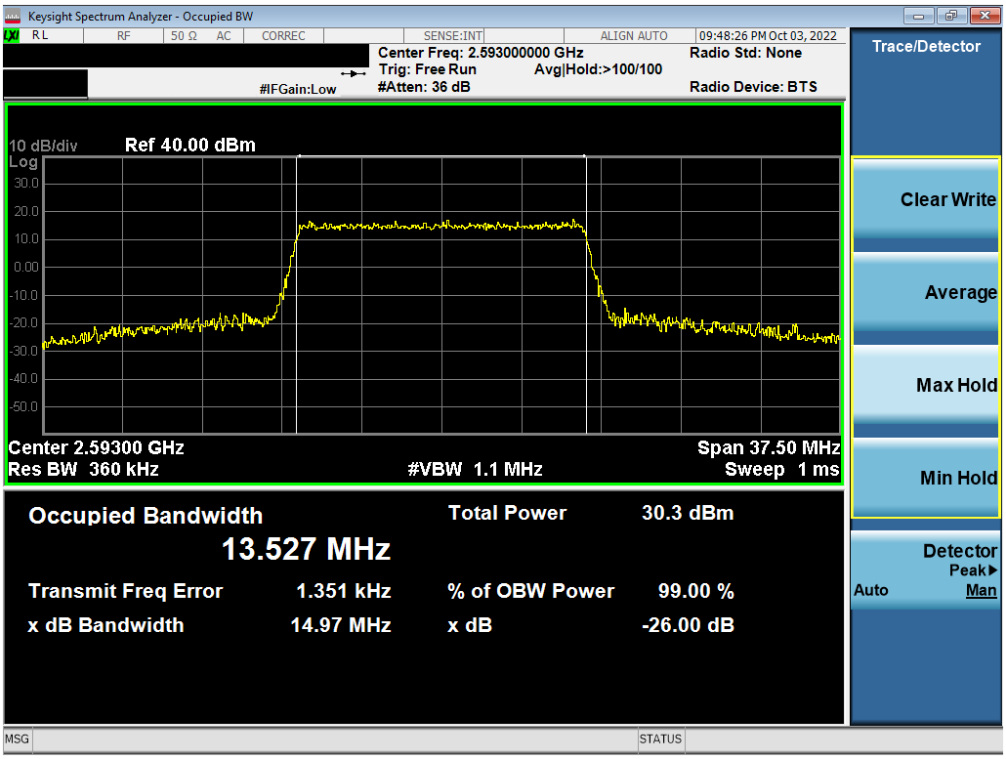
Plot 7-49. Occupied Bandwidth Plot (LTE Band 41(PC3)/38 - 20MHz QPSK - Full RB - Ant F)



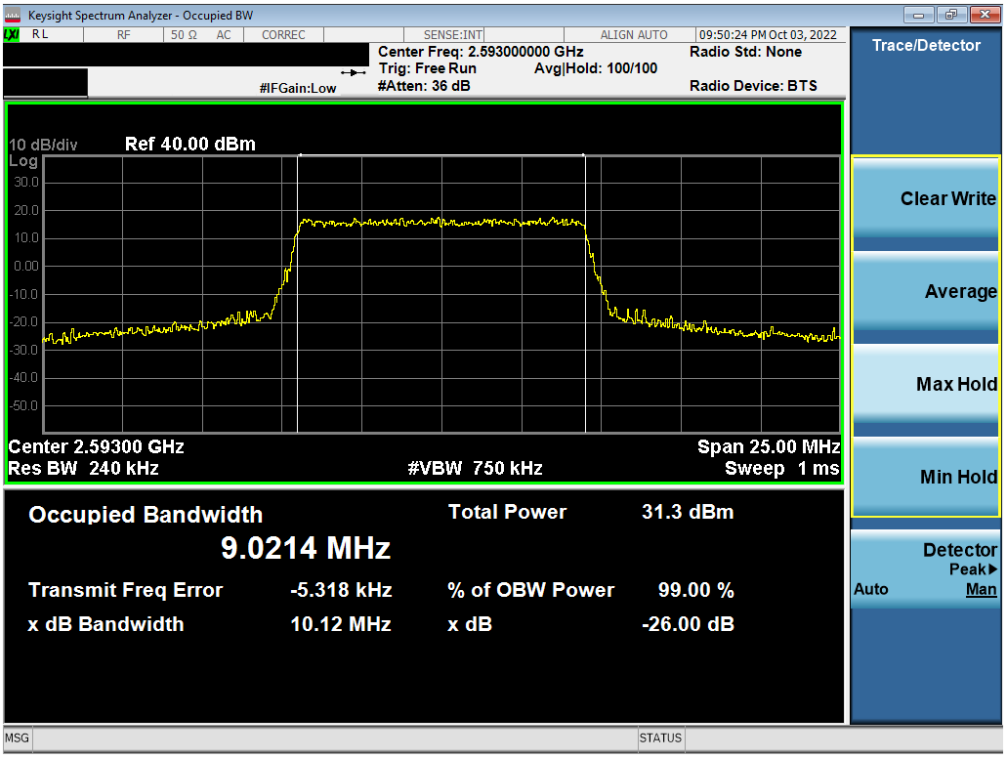
Plot 7-50. Occupied Bandwidth Plot (LTE Band 41(PC3)/38 - 20MHz 16-QAM - Full RB - Ant F)



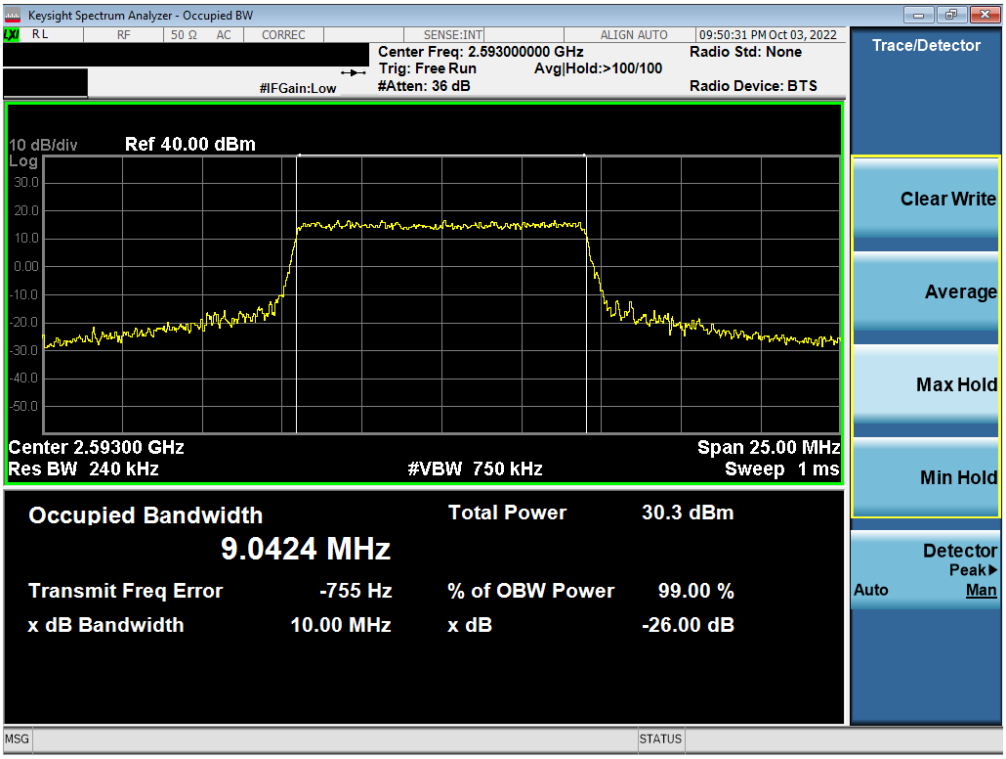
Plot 7-51. Occupied Bandwidth Plot (LTE Band 41(PC3)/38 - 15MHz QPSK - Full RB - Ant F)



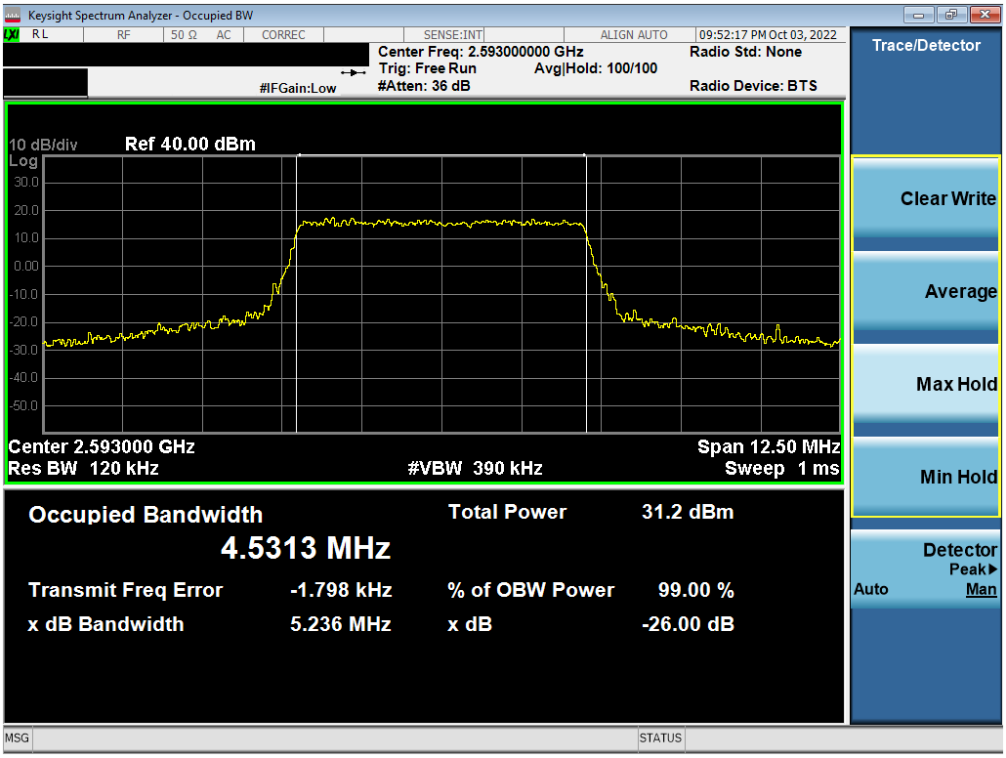
Plot 7-52. Occupied Bandwidth Plot (LTE Band 41(PC3)/38 - 15MHz 16-QAM - Full RB - Ant F)



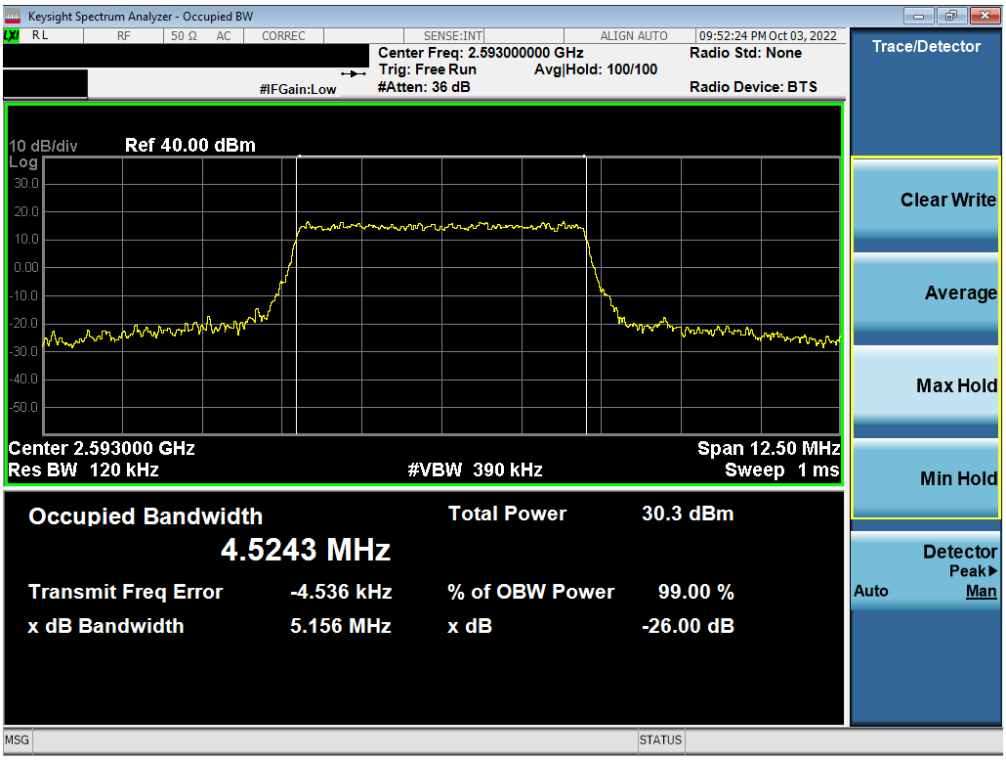
Plot 7-53. Occupied Bandwidth Plot (LTE Band 41(PC3)/38 - 10MHz QPSK - Full RB - Ant F)



Plot 7-54. Occupied Bandwidth Plot (LTE Band 41(PC3)/38 - 10MHz 16-QAM - Full RB - Ant F)

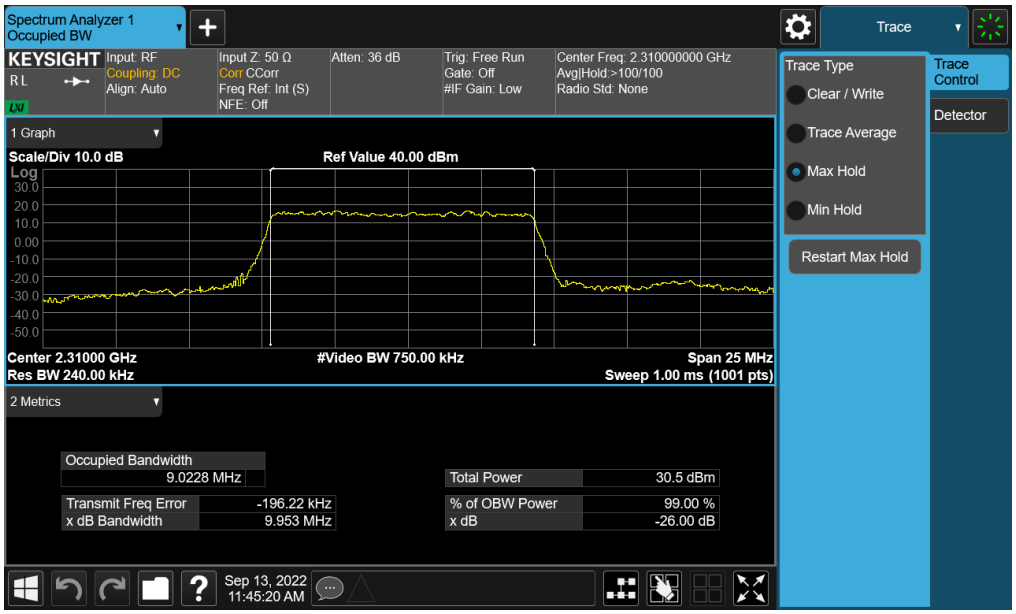


Plot 7-55. Occupied Bandwidth Plot (LTE Band 41(PC3)/38 - 5MHz QPSK - Full RB - Ant F)

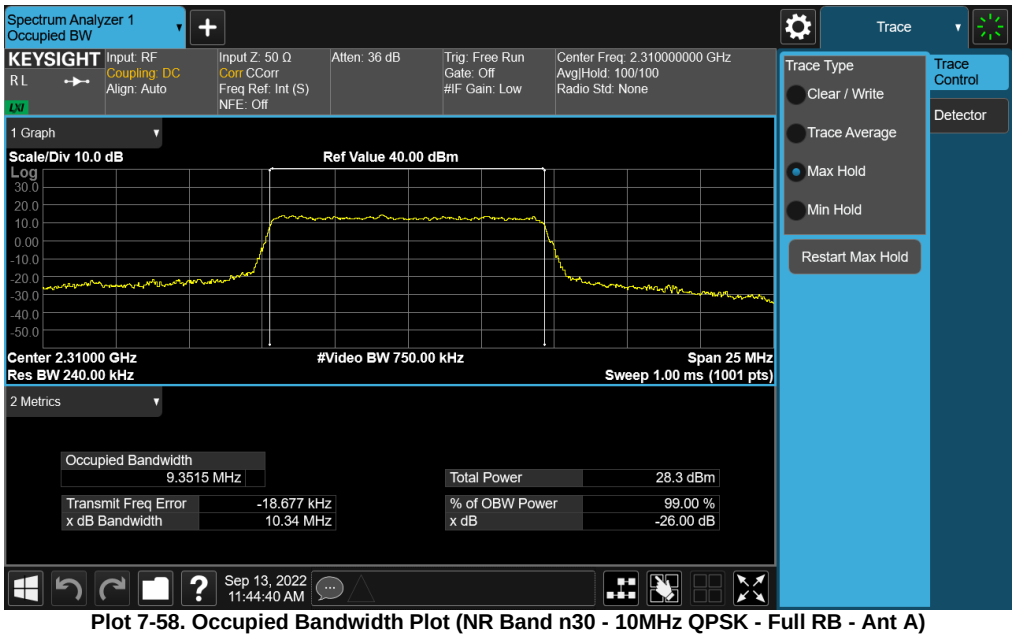


Plot 7-56. Occupied Bandwidth Plot (LTE Band 41(PC3)/38 - 5MHz 16-QAM - Full RB - Ant F)

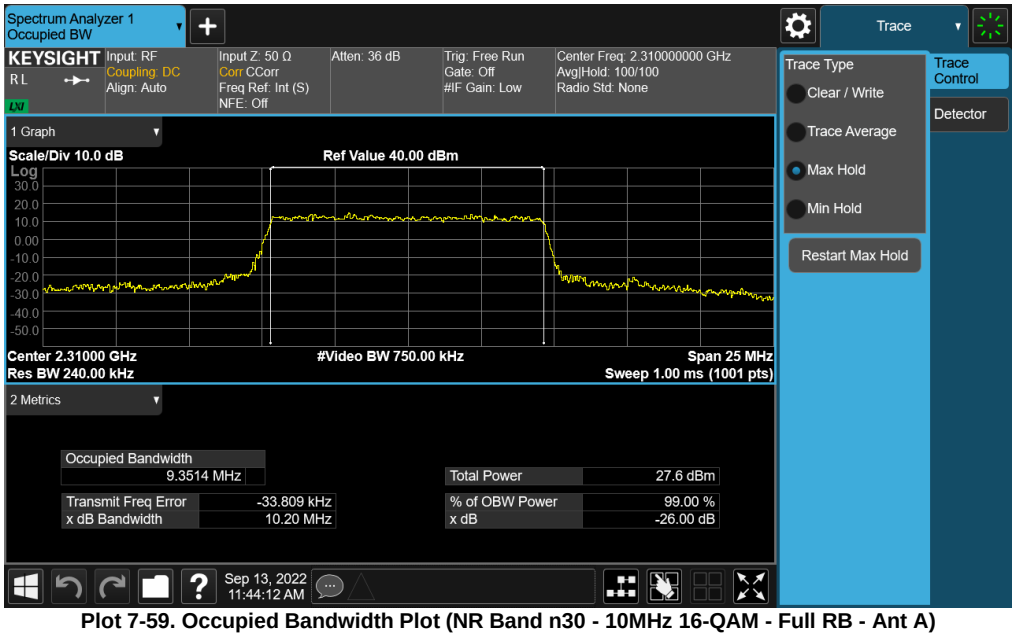
NR Band n30 – ANT A



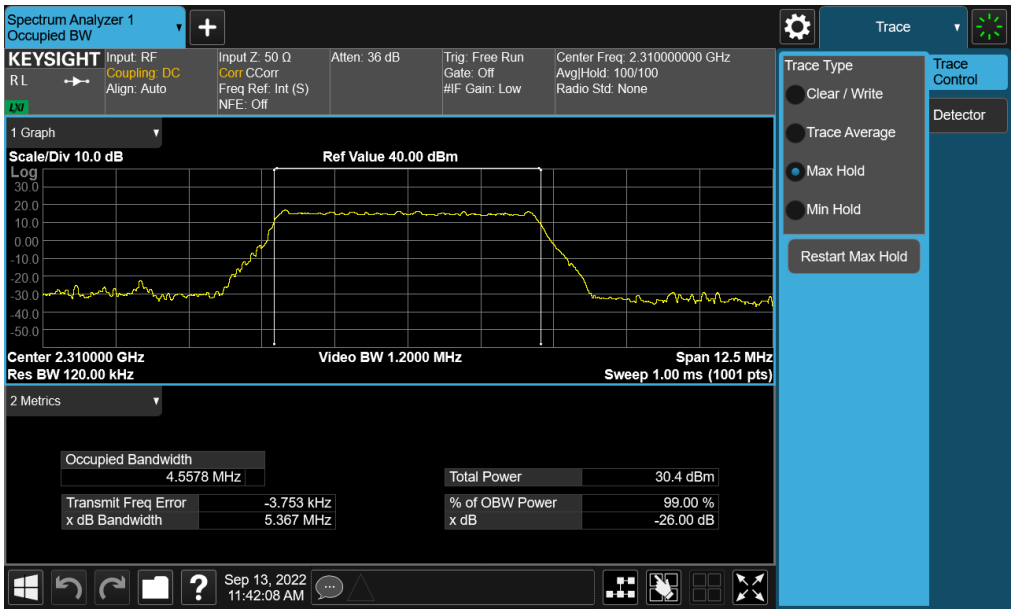
Plot 7-57. Occupied Bandwidth Plot (NR Band n30 - 10MHz π/2 BPSK - Full RB - Ant A)



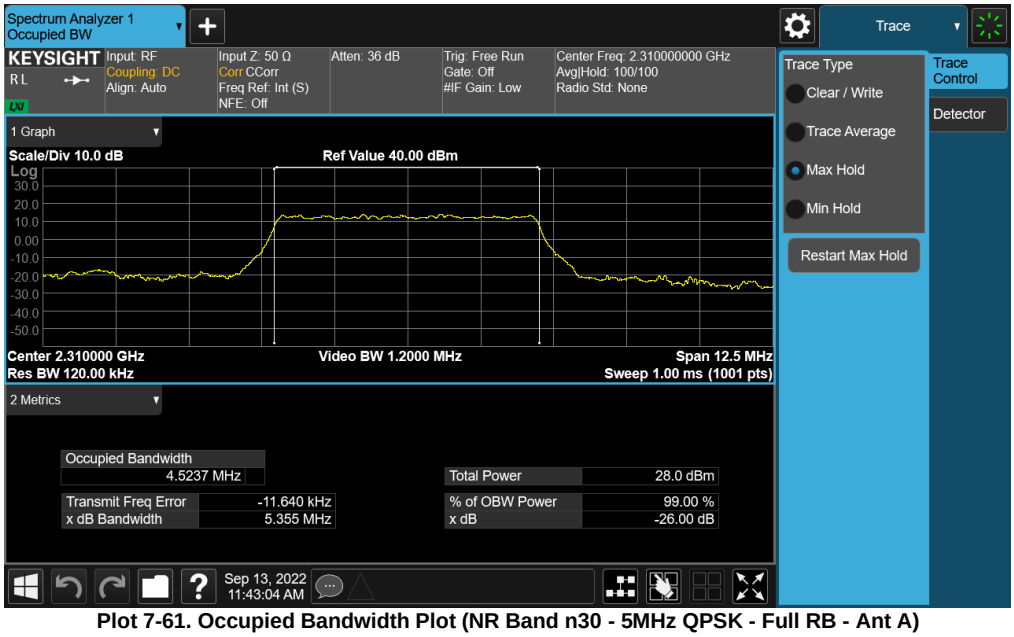
Plot 7-58. Occupied Bandwidth Plot (NR Band n30 - 10MHz QPSK - Full RB - Ant A)



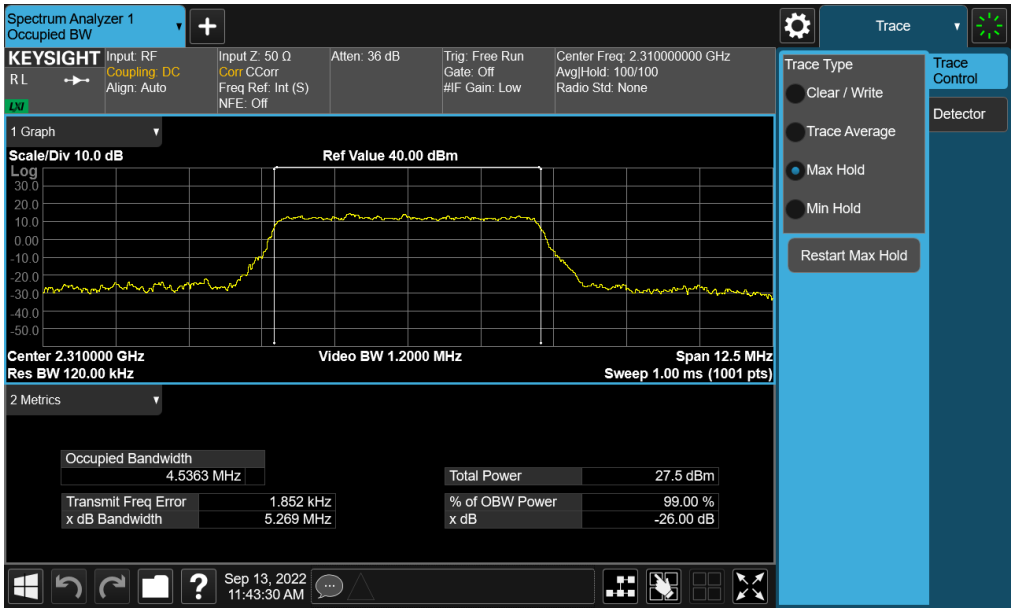
Plot 7-59. Occupied Bandwidth Plot (NR Band n30 - 10MHz 16-QAM - Full RB - Ant A)



Plot 7-60. Occupied Bandwidth Plot (NR Band n30 - 5MHz π/2 BPSK - Full RB - Ant A)

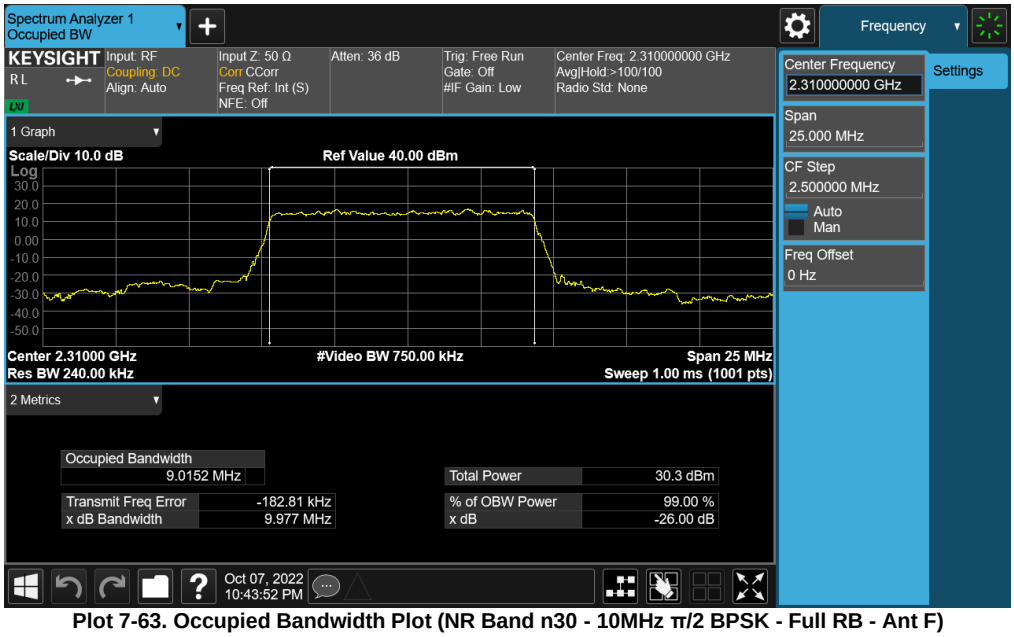


Plot 7-61. Occupied Bandwidth Plot (NR Band n30 - 5MHz QPSK - Full RB - Ant A)

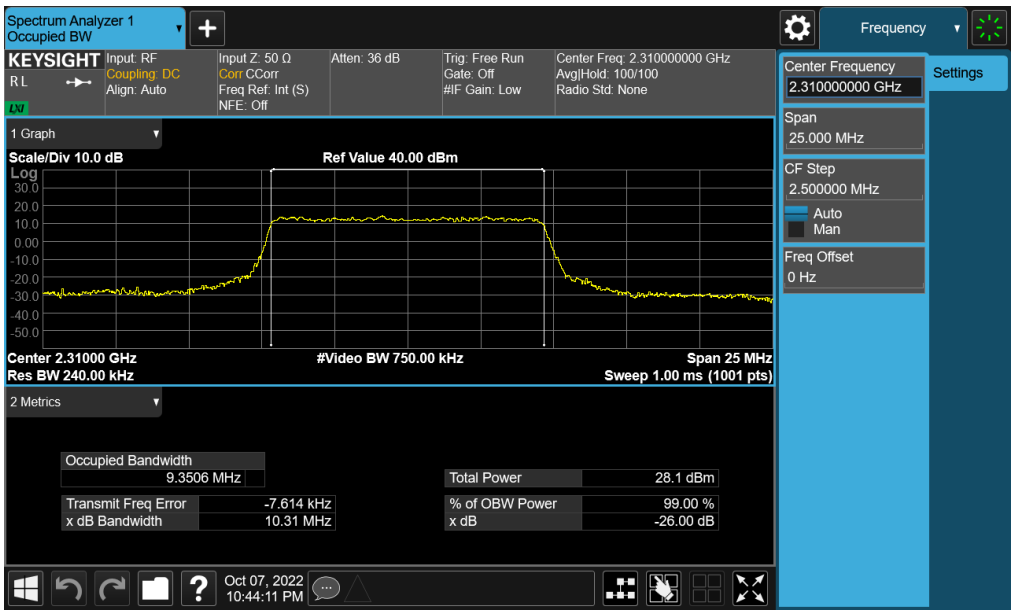


Plot 7-62. Occupied Bandwidth Plot (NR Band n30 - 5MHz 16-QAM - Full RB - Ant A)

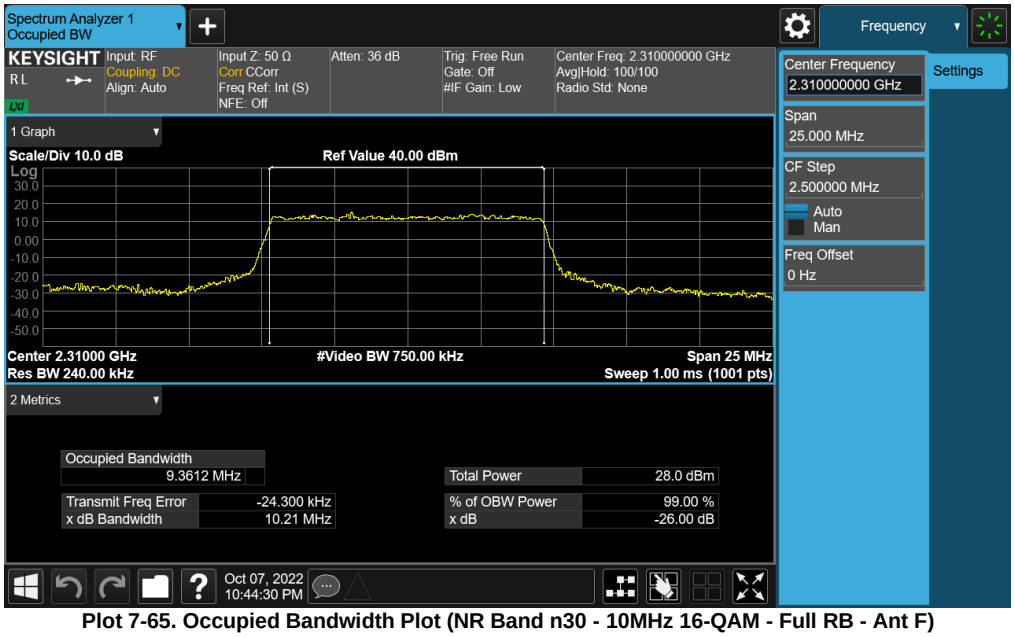
NR Band n30 – Ant F



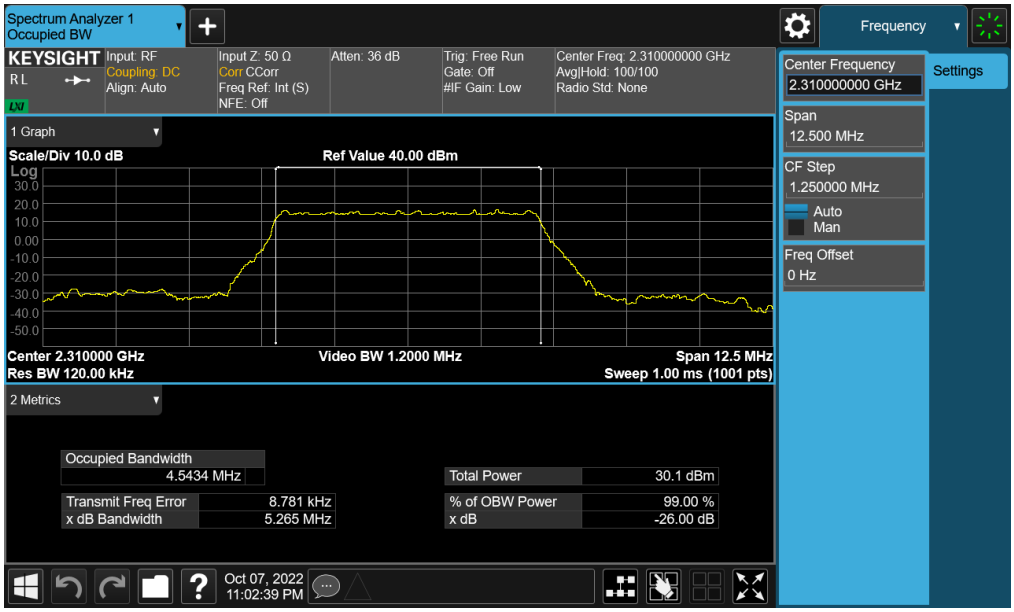
Plot 7-63. Occupied Bandwidth Plot (NR Band n30 - 10MHz π/2 BPSK - Full RB - Ant F)



Plot 7-64. Occupied Bandwidth Plot (NR Band n30 - 10MHz QPSK - Full RB - Ant F)

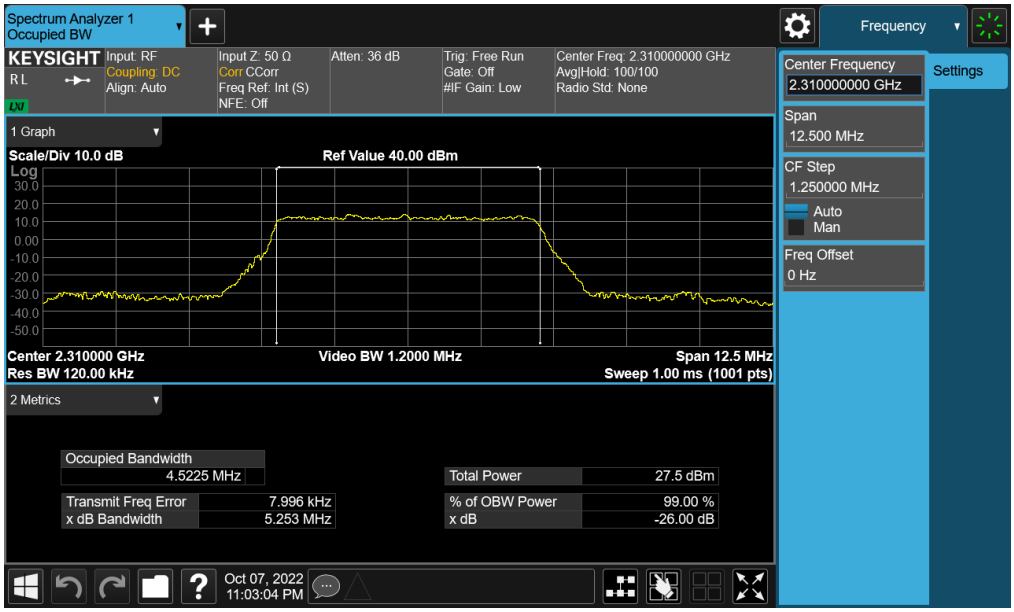


Plot 7-65. Occupied Bandwidth Plot (NR Band n30 - 10MHz 16-QAM - Full RB - Ant F)



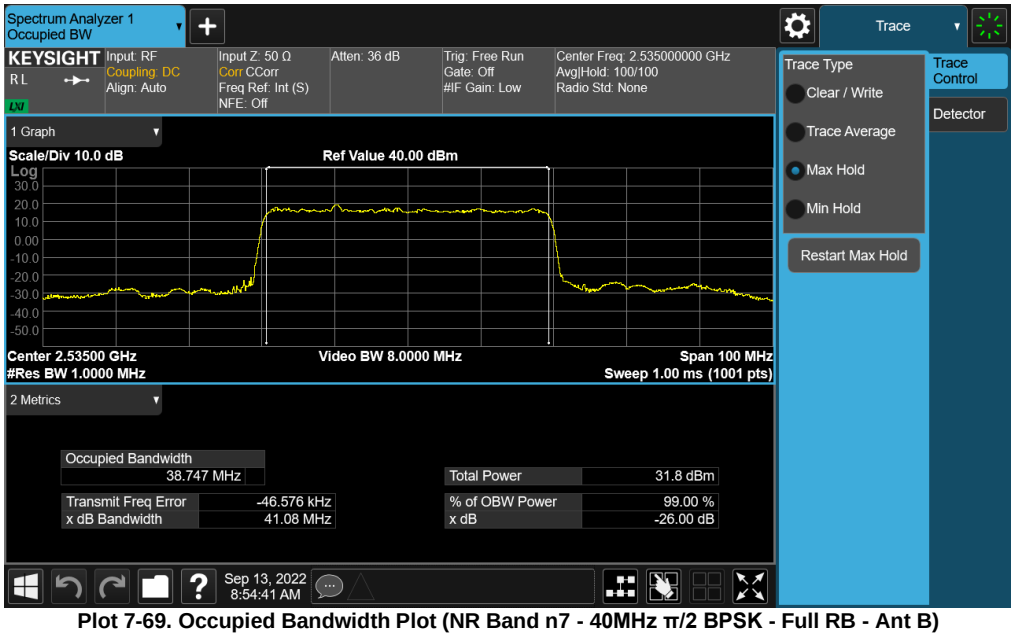
Plot 7-66. Occupied Bandwidth Plot (NR Band n30 - 5MHz π/2 BPSK - Full RB - Ant F)

Plot 7-67. Occupied Bandwidth Plot (NR Band n30 - 5MHz QPSK - Full RB - Ant F)

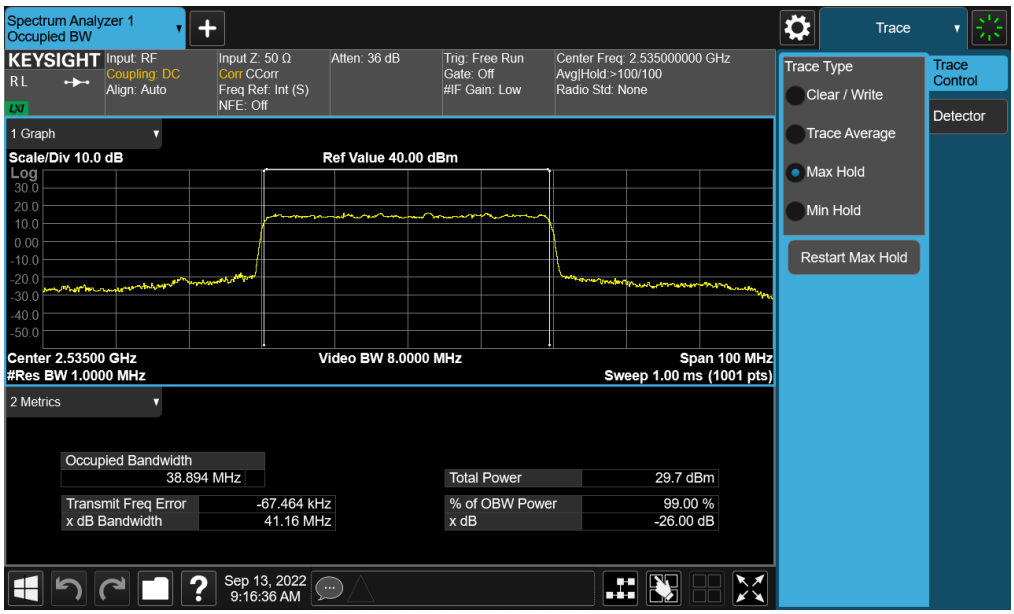


Plot 7-68. Occupied Bandwidth Plot (NR Band n30 - 5MHz 16-QAM - Full RB - Ant F)

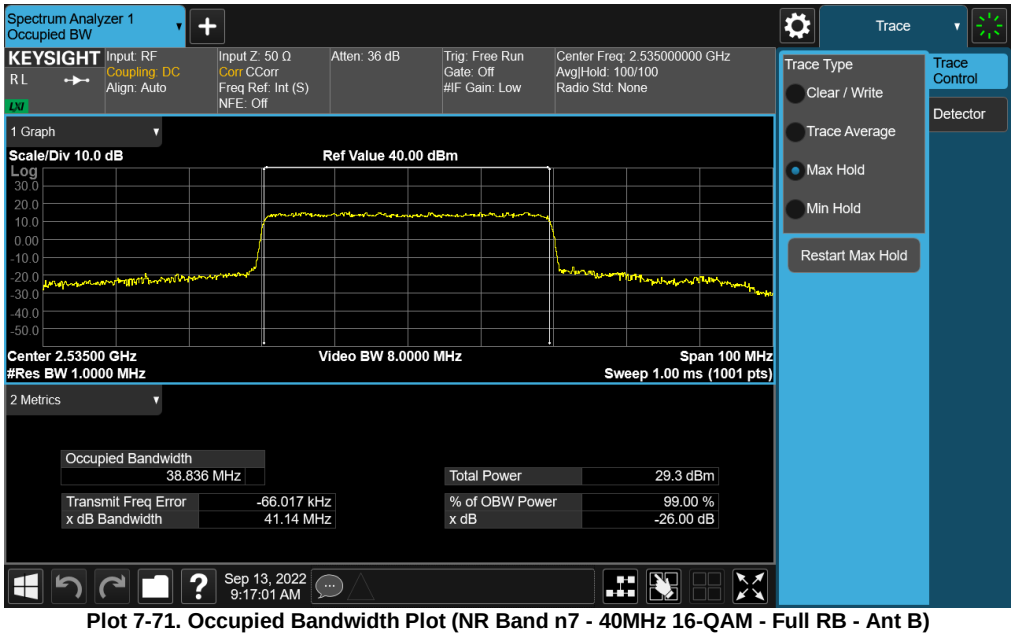
NR Band n7 – ANT B



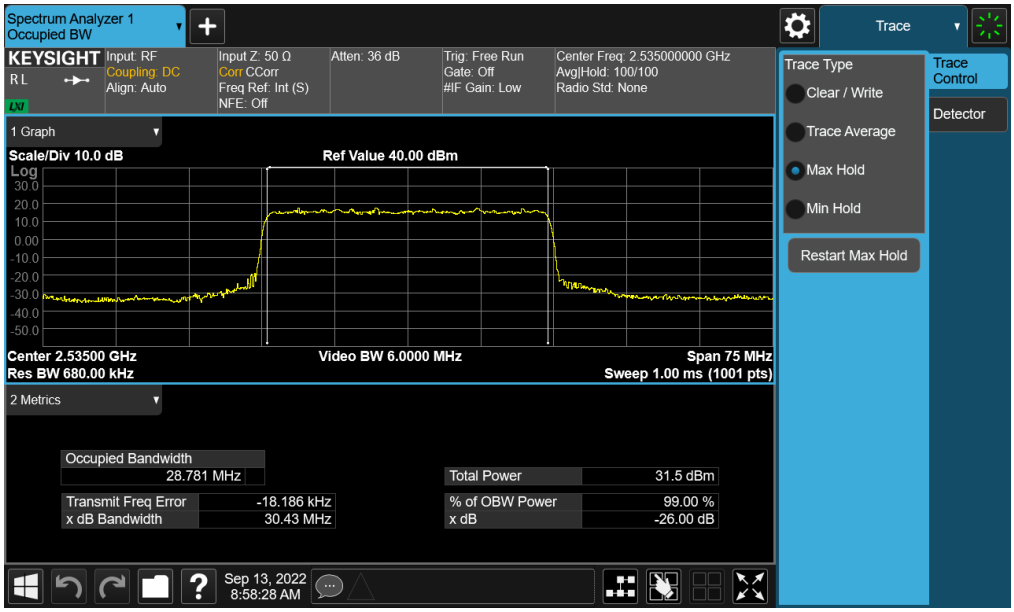
Plot 7-69. Occupied Bandwidth Plot (NR Band n7 - 40MHz π/2 BPSK - Full RB - Ant B)



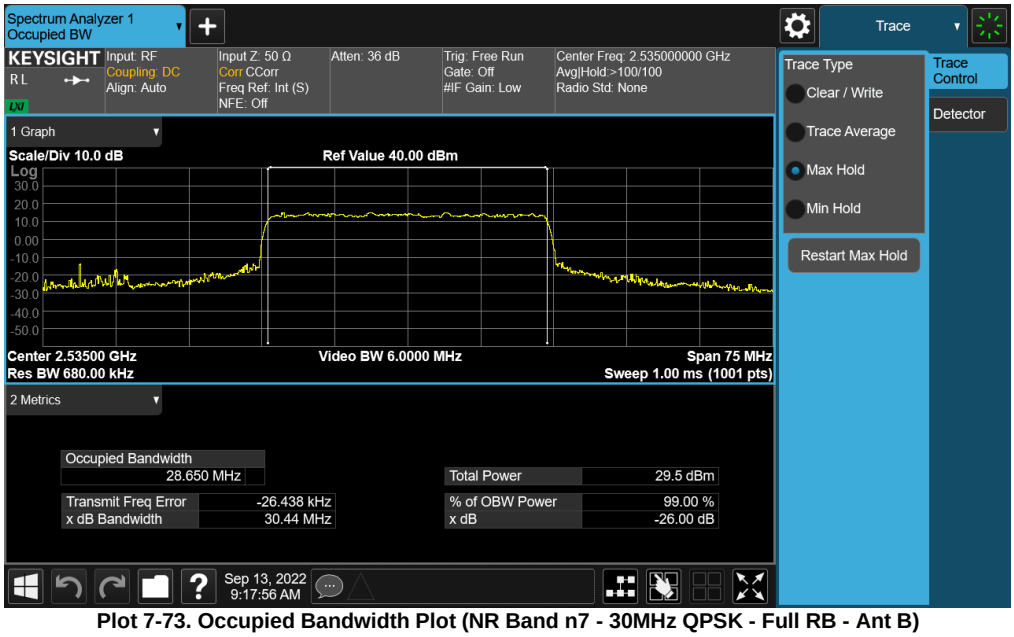
Plot 7-70. Occupied Bandwidth Plot (NR Band n7 - 40MHz QPSK - Full RB - Ant B)



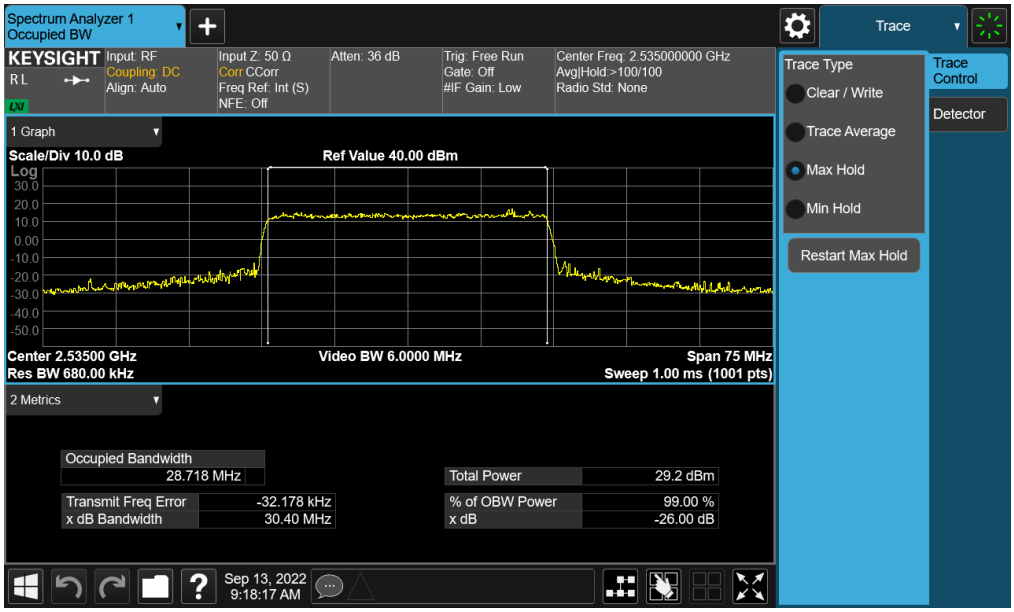
Plot 7-71. Occupied Bandwidth Plot (NR Band n7 - 40MHz 16-QAM - Full RB - Ant B)



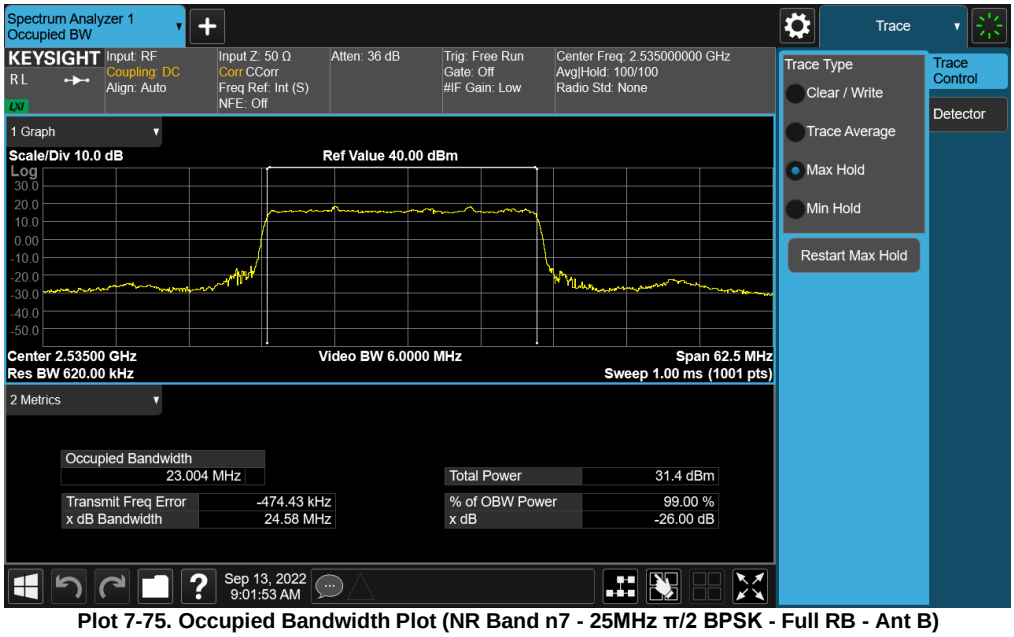
Plot 7-72. Occupied Bandwidth Plot (NR Band n7 - 30MHz π/2 BPSK - Full RB - Ant B)



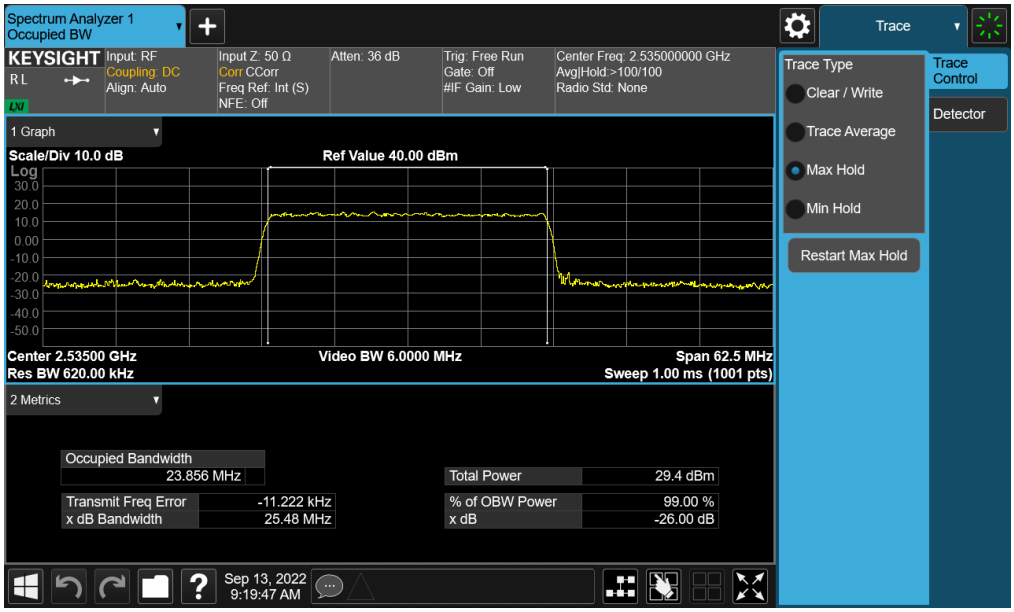
Plot 7-73. Occupied Bandwidth Plot (NR Band n7 - 30MHz QPSK - Full RB - Ant B)



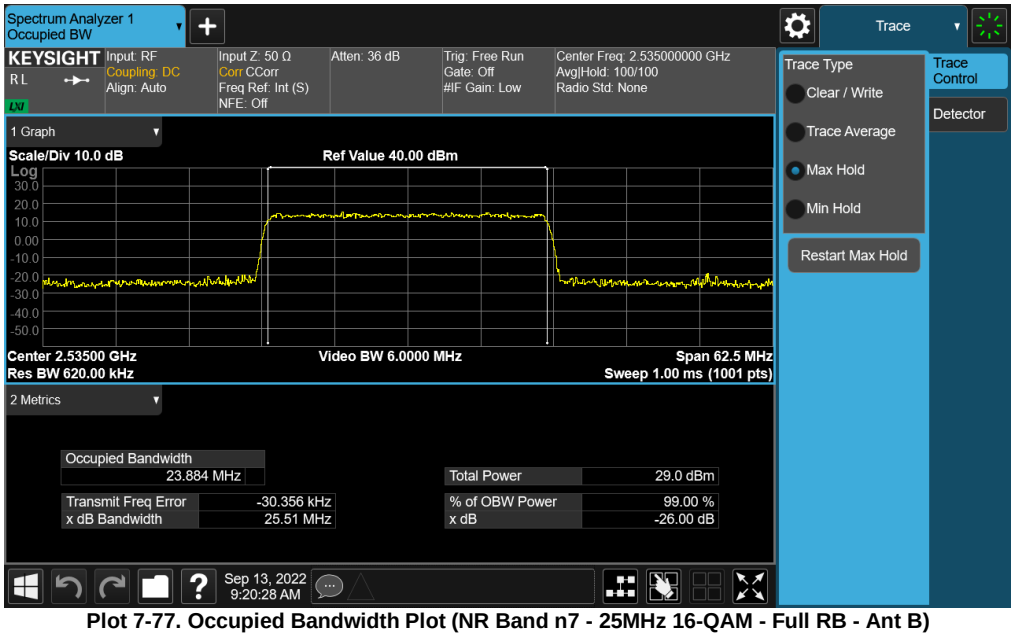
Plot 7-74. Occupied Bandwidth Plot (NR Band n7 - 30MHz 16-QAM - Full RB - Ant B)



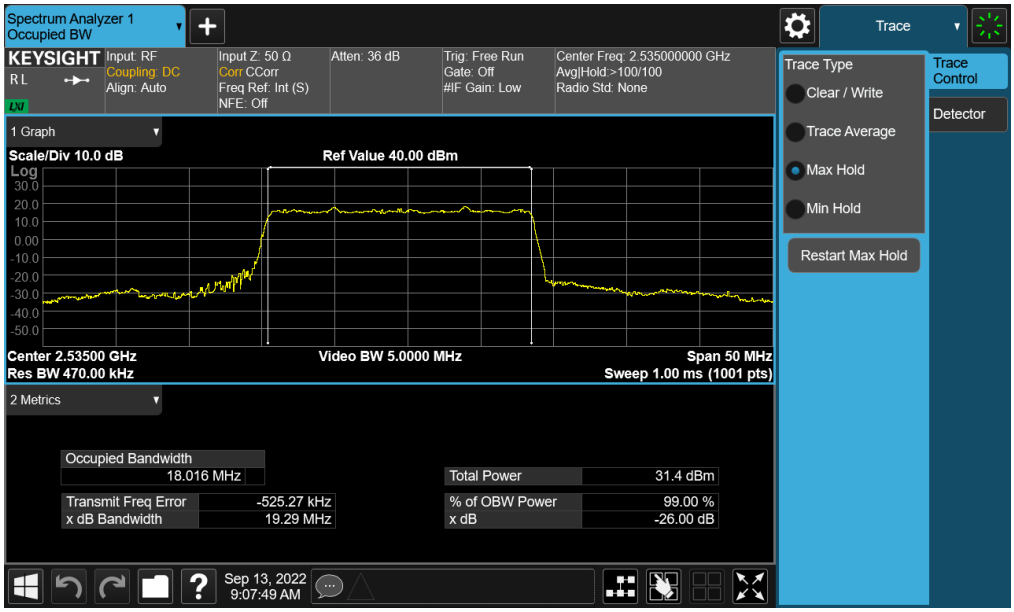
Plot 7-75. Occupied Bandwidth Plot (NR Band n7 - 25MHz π/2 BPSK - Full RB - Ant B)



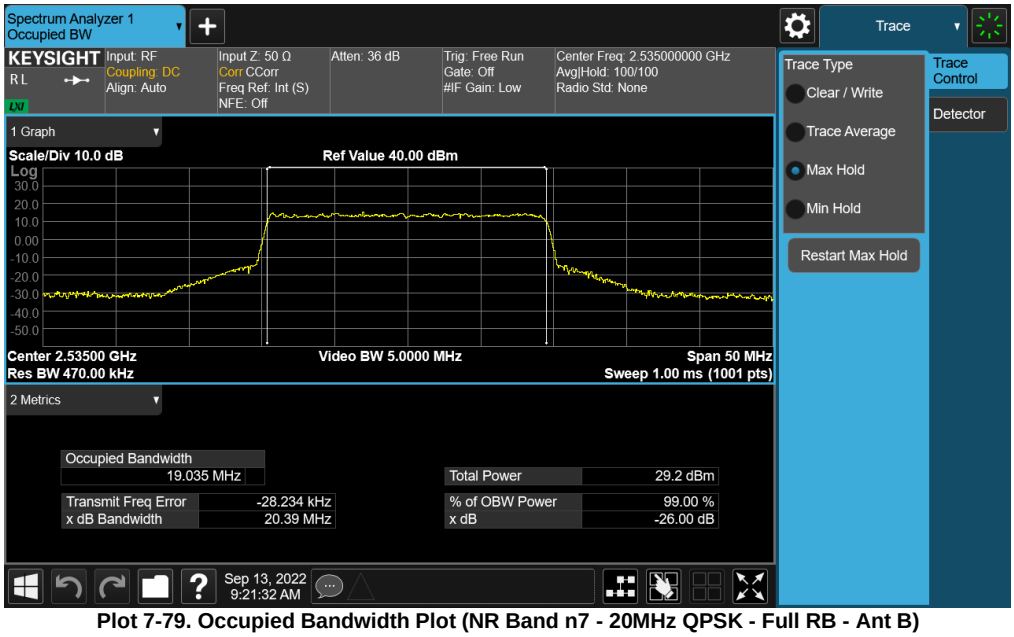
Plot 7-76. Occupied Bandwidth Plot (NR Band n7 - 25MHz QPSK - Full RB - Ant B)



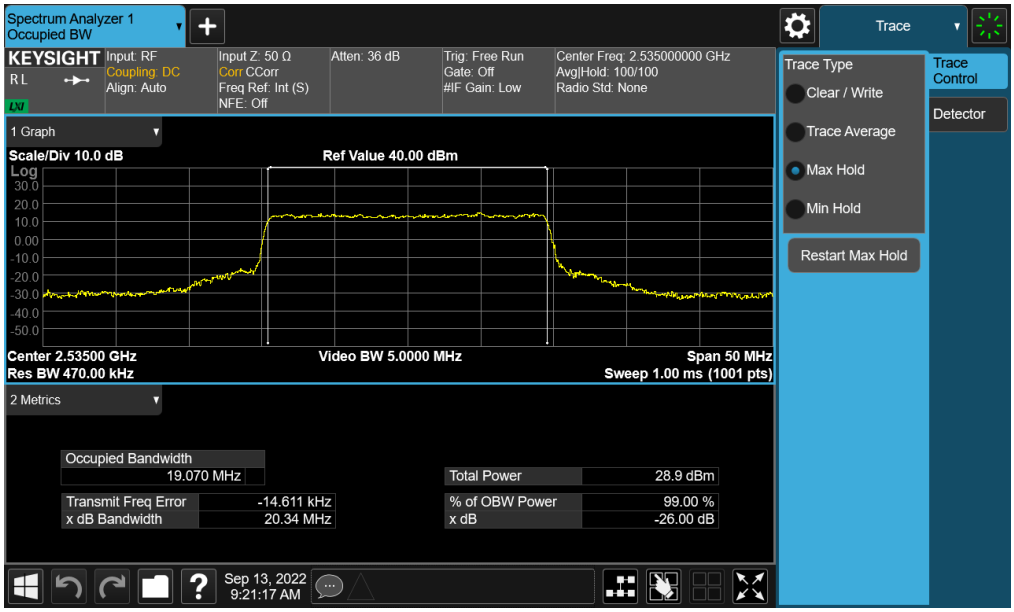
Plot 7-77. Occupied Bandwidth Plot (NR Band n7 - 25MHz 16-QAM - Full RB - Ant B)



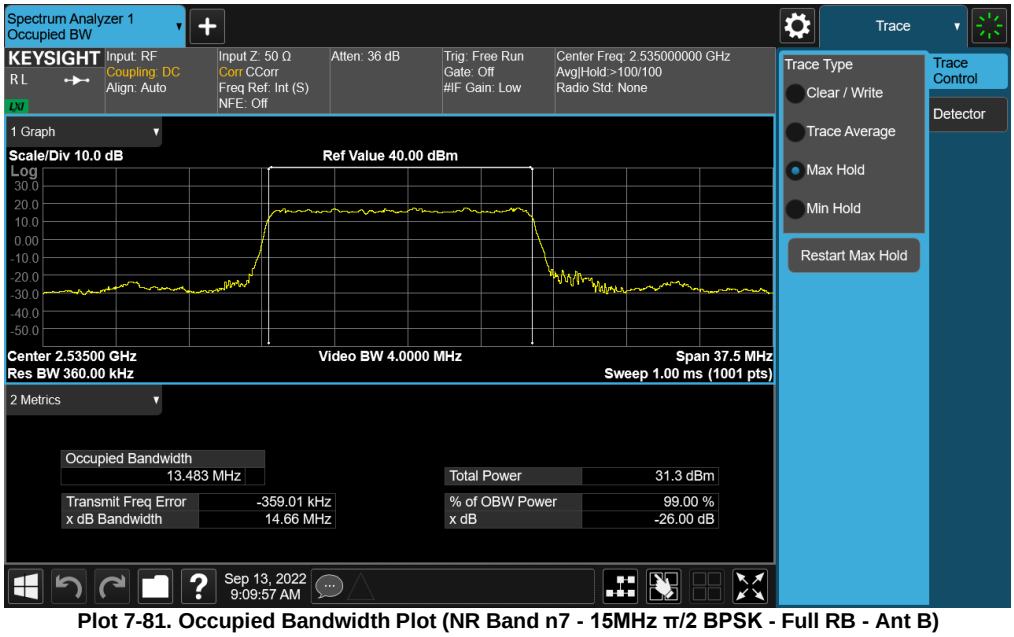
Plot 7-78. Occupied Bandwidth Plot (NR Band n7 - 20MHz π/2 BPSK - Full RB - Ant B)



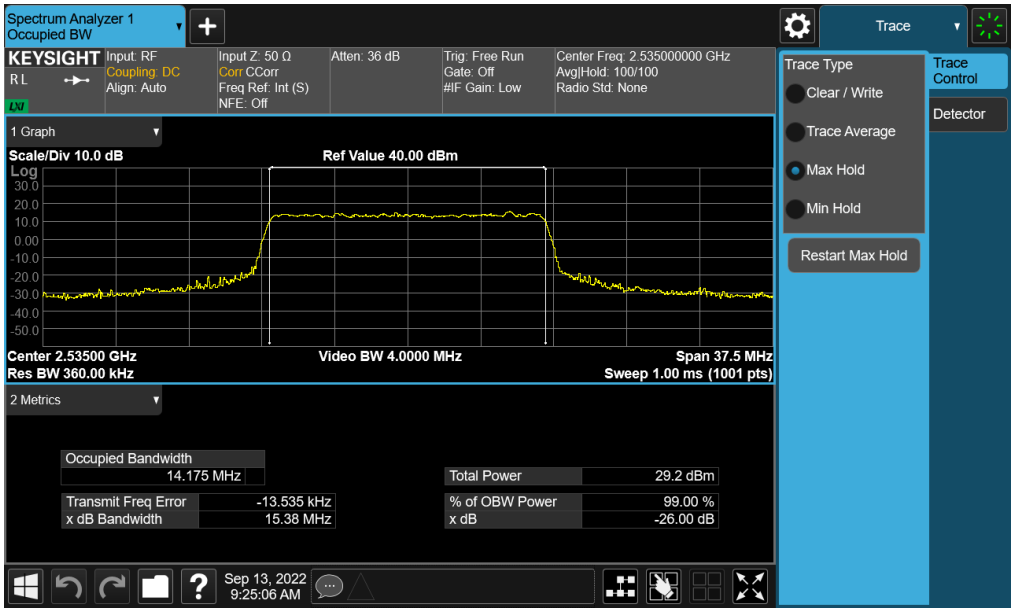
Plot 7-79. Occupied Bandwidth Plot (NR Band n7 - 20MHz QPSK - Full RB - Ant B)



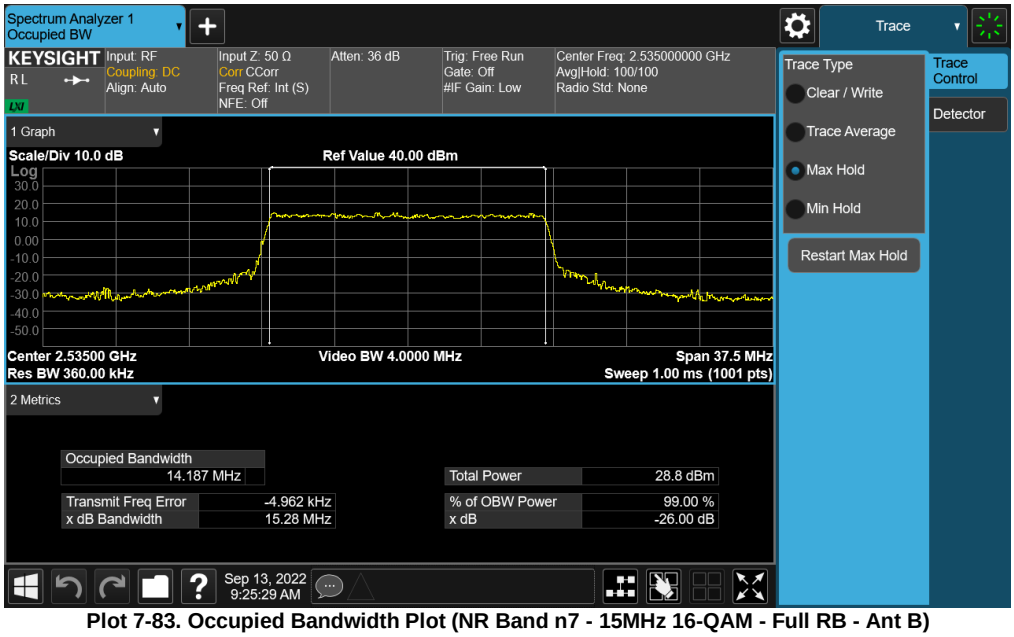
Plot 7-80. Occupied Bandwidth Plot (NR Band n7 - 20MHz 16-QAM - Full RB - Ant B)



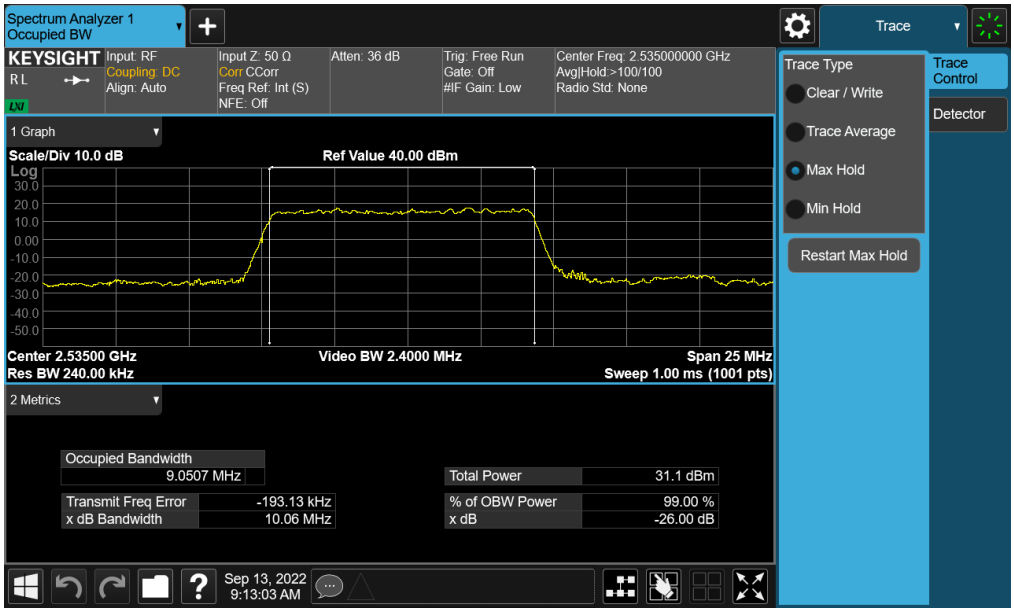
Plot 7-81. Occupied Bandwidth Plot (NR Band n7 - 15MHz π/2 BPSK - Full RB - Ant B)



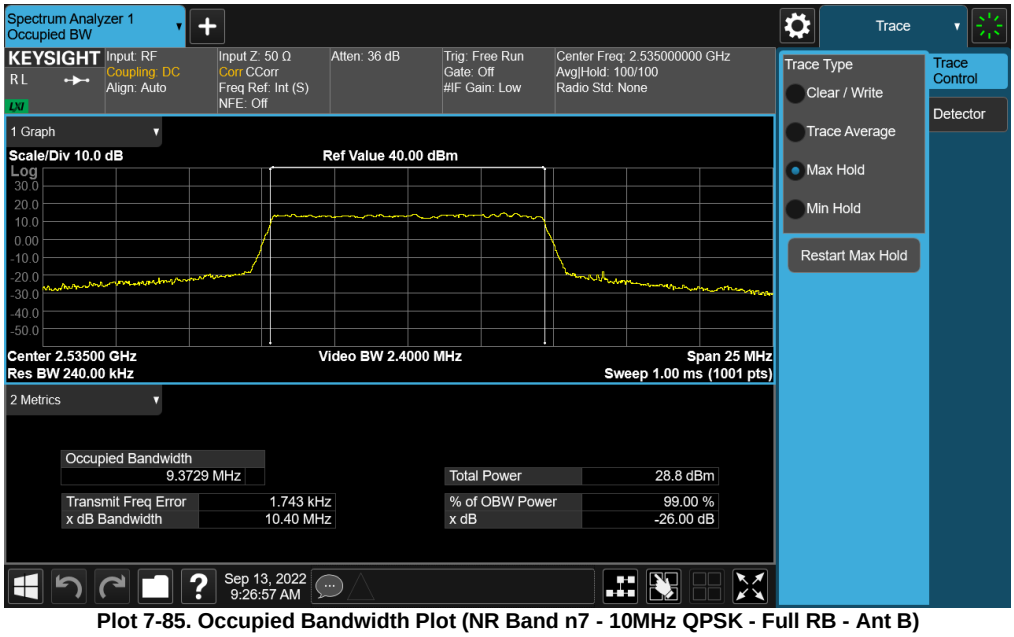
Plot 7-82. Occupied Bandwidth Plot (NR Band n7 - 15MHz QPSK - Full RB - Ant B)



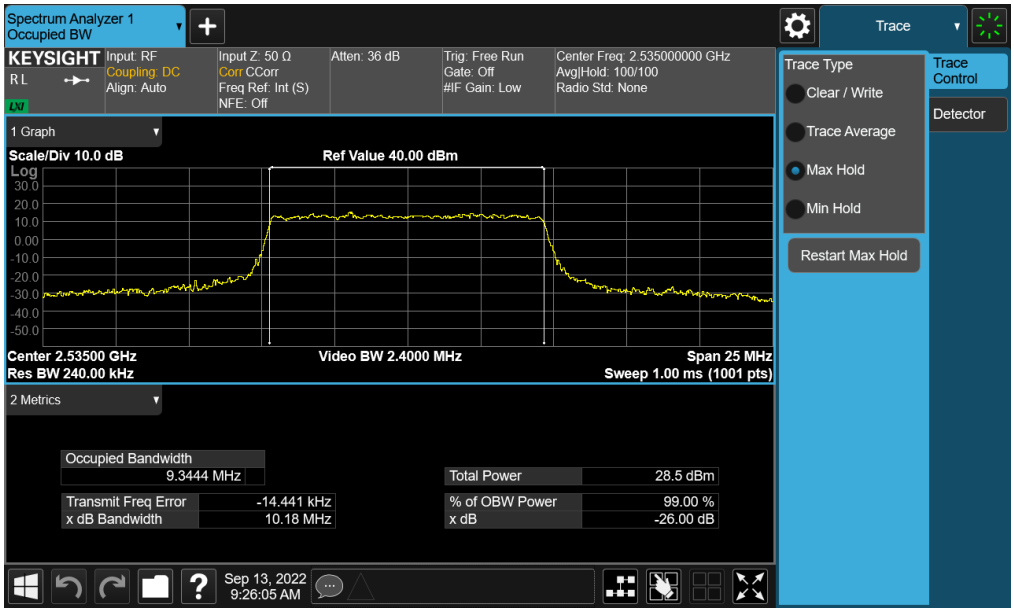
Plot 7-83. Occupied Bandwidth Plot (NR Band n7 - 15MHz 16-QAM - Full RB - Ant B)



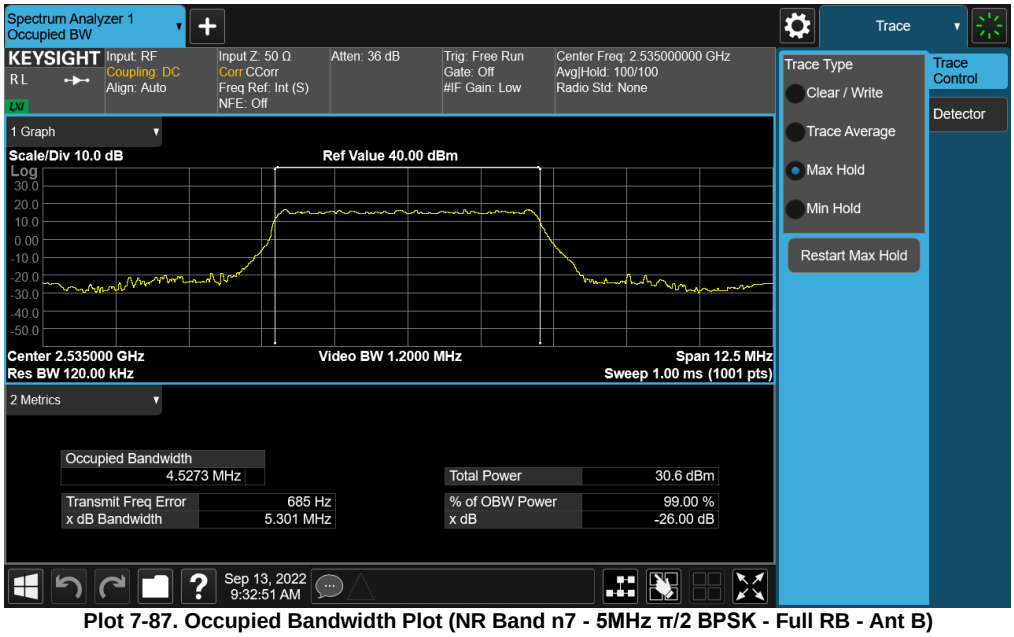
Plot 7-84. Occupied Bandwidth Plot (NR Band n7 - 10MHz π/2 BPSK - Full RB - Ant B)



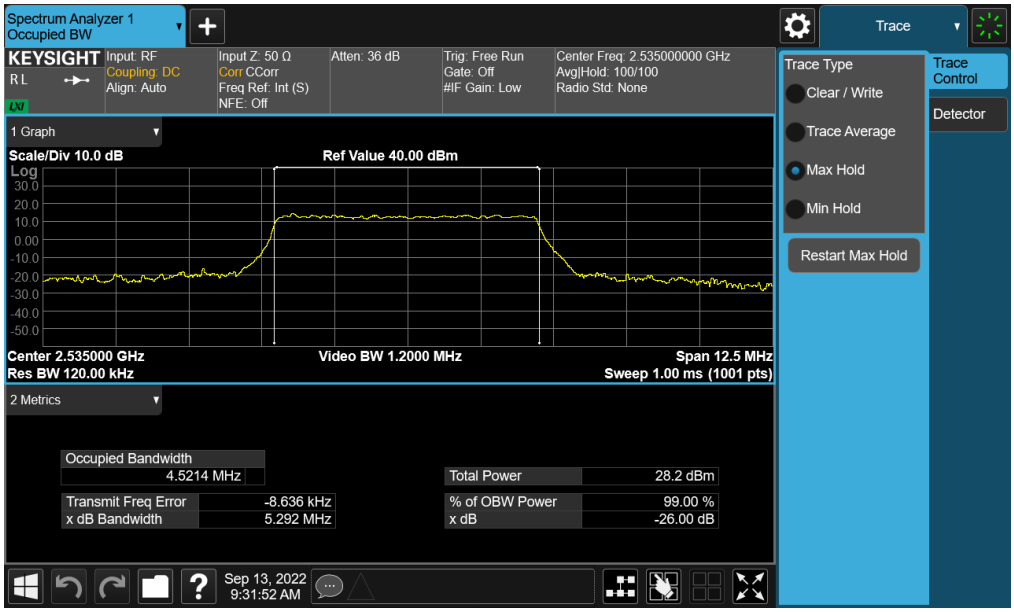
Plot 7-85. Occupied Bandwidth Plot (NR Band n7 - 10MHz QPSK - Full RB - Ant B)



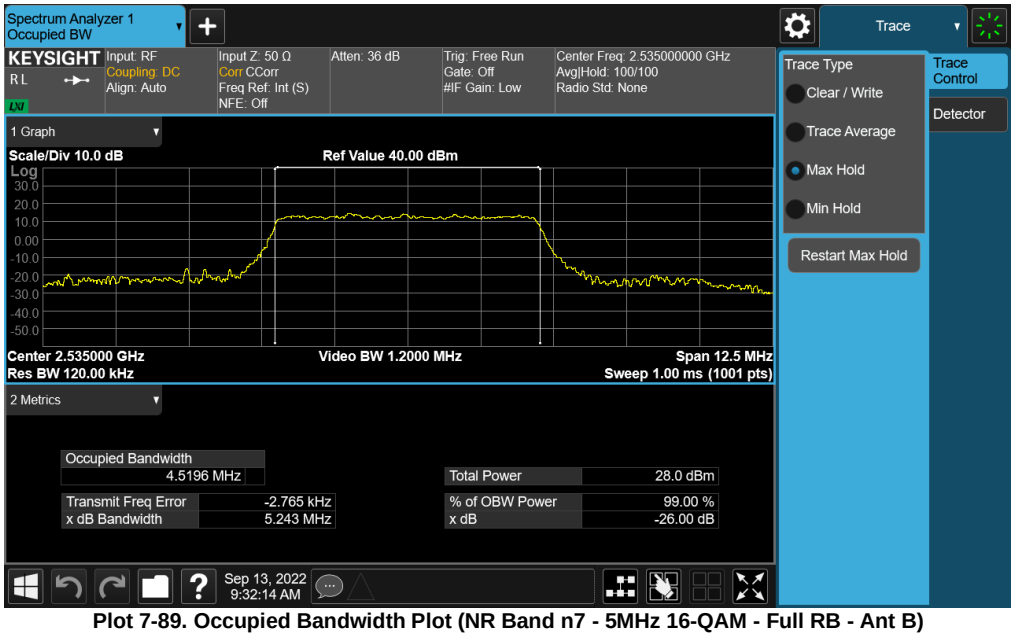
Plot 7-86. Occupied Bandwidth Plot (NR Band n7 - 10MHz 16-QAM - Full RB - Ant B)



Plot 7-87. Occupied Bandwidth Plot (NR Band n7 - 5MHz π/2 BPSK - Full RB - Ant B)



Plot 7-88. Occupied Bandwidth Plot (NR Band n7 - 5MHz QPSK - Full RB - Ant B)



Plot 7-89. Occupied Bandwidth Plot (NR Band n7 - 5MHz 16-QAM - Full RB - Ant B)