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PART 27 MEASUREMENT REPORT

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

Date of Testing:
09/03/2024 - 11/11/2024
Test Report Issue Date:
11/11/2024
Test Site/Location:
Element Lab. Yongin-Si, Gyeonggi-do, South Korea
Test Report Serial No.:
1M2408260066-09.A3L

FCC ID:	**A3LSMS936B**
Applicant Name:	**Samsung Electronics Co., Ltd.**

Application Type:	Certification
Model:	SM-S936B/DS
Additional Model(s):	SM-S936B
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.

Prepared by

Reviewed by

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Antenna-F						
Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	EIRP		Emission Designator
				Max. Power [W]	Max. Power [dBm]	
LTE Band 41(PC2)	20 MHz	QPSK	2506.0 - 2680.0	0.234	23.70	18M0G7D
		16QAM	2506.0 - 2680.0	0.187	22.72	18M0W7D
	15 MHz	QPSK	2503.5 - 2682.5	0.247	23.92	13M5G7D
		16QAM	2503.5 - 2682.5	0.191	22.81	13M5W7D
	10 MHz	QPSK	2501.0 - 2685.0	0.254	24.05	9M03G7D
		16QAM	2501.0 - 2685.0	0.193	22.85	9M01W7D
	5 MHz	QPSK	2498.5 - 2687.5	0.248	23.94	4M50G7D
		16QAM	2498.5 - 2687.5	0.192	22.83	4M51W7D

Antenna-B						
Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	EIRP		Emission Designator
				Max. Power [W]	Max. Power [dBm]	
LTE Band 41(PC2)	20 MHz	QPSK	2506.0 - 2680.0	0.141	21.51	17M9G7D
		16QAM	2506.0 - 2680.0	0.119	20.75	18M0W7D
	15 MHz	QPSK	2503.5 - 2682.5	0.144	21.59	13M5G7D
		16QAM	2503.5 - 2682.5	0.113	20.52	13M5W7D
	10 MHz	QPSK	2501.0 - 2685.0	0.149	21.72	9M04G7D
		16QAM	2501.0 - 2685.0	0.119	20.74	9M01W7D
	5 MHz	QPSK	2498.5 - 2687.5	0.161	22.07	4M50G7D
		16QAM	2498.5 - 2687.5	0.153	21.83	4M53W7D

Antenna-F						
Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	EIRP		Emission Designator
				Max. Power [W]	Max. Power [dBm]	
LTE Band 41(PC3)	20 MHz	QPSK	2506.0 - 2680.0	0.221	23.44	18M0G7D
		16QAM	2506.0 - 2680.0	0.181	22.59	18M0W7D
	15 MHz	QPSK	2503.5 - 2682.5	0.225	23.52	13M5G7D
		16QAM	2503.5 - 2682.5	0.185	22.68	13M5W7D
	10 MHz	QPSK	2501.0 - 2685.0	0.228	23.59	9M04G7D
		16QAM	2501.0 - 2685.0	0.187	22.72	9M01W7D
	5 MHz	QPSK	2498.5 - 2687.5	0.226	23.54	4M53G7D
		16QAM	2498.5 - 2687.5	0.192	22.84	4M51W7D

Antenna-B						
Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	EIRP		Emission Designator
				Max. Power [W]	Max. Power [dBm]	
LTE Band 41(PC3)	20 MHz	QPSK	2506.0 - 2680.0	0.095	19.78	18M0G7D
		16QAM	2506.0 - 2680.0	0.086	19.34	17M9W7D
	15 MHz	QPSK	2503.5 - 2682.5	0.095	19.76	13M5G7D
		16QAM	2503.5 - 2682.5	0.085	19.32	13M5W7D
	10 MHz	QPSK	2501.0 - 2685.0	0.094	19.75	9M00G7D
		16QAM	2501.0 - 2685.0	0.086	19.33	9M03W7D
	5 MHz	QPSK	2498.5 - 2687.5	0.095	19.76	4M52G7D
		16QAM	2498.5 - 2687.5	0.079	18.95	4M50W7D

Antenna-F						
Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	EIRP		Emission Designator
				Max. Power [W]	Max. Power [dBm]	
NR Band n41(PC3) Default	100 MHz	π/2 BPSK	2546.0 - 2640.0	0.231	23.64	96M9G7D
		QPSK	2546.0 - 2640.0	0.201	23.03	97M9G7D
		16QAM	2546.0 - 2640.0	0.174	22.40	97M9W7D
	90 MHz	π/2 BPSK	2541.0 - 2645.0	0.206	23.14	87M2G7D
		QPSK	2541.0 - 2645.0	0.194	22.88	87M9G7D
		16QAM	2541.0 - 2645.0	0.154	21.87	87M8W7D
	80 MHz	π/2 BPSK	2536.0 - 2650.0	0.227	23.56	77M3G7D
		QPSK	2536.0 - 2650.0	0.214	23.30	77M7G7D
		16QAM	2536.0 - 2650.0	0.186	22.70	77M8W7D
	70 MHz	π/2 BPSK	2531.0 - 2655.0	0.240	23.81	65M4G7D
		QPSK	2531.0 - 2655.0	0.280	24.46	68M6G7D
		16QAM	2531.0 - 2655.0	0.197	22.95	68M6W7D
	60 MHz	π/2 BPSK	2526.0 - 2660.0	0.244	23.88	58M0G7D
		QPSK	2526.0 - 2660.0	0.280	24.47	58M1G7D
		16QAM	2526.0 - 2660.0	0.207	23.17	58M1W7D
	50 MHz	π/2 BPSK	2521.0 - 2665.0	0.232	23.65	46M1G7D
		QPSK	2521.0 - 2665.0	0.270	24.31	47M9G7D
		16QAM	2521.0 - 2665.0	0.189	22.76	47M7W7D
	45 MHz	π/2 BPSK	2518.5 - 2667.5	0.219	23.41	38M7G7D
		QPSK	2518.5 - 2667.5	0.278	24.44	42M7G7D
		16QAM	2518.5 - 2667.5	0.203	23.07	42M7W7D
	40 MHz	π/2 BPSK	2516.0 - 2670.0	0.224	23.50	35M9G7D
		QPSK	2516.0 - 2670.0	0.259	24.13	38M1G7D
		16QAM	2516.0 - 2670.0	0.220	23.43	38M1W7D
	35 MHz	π/2 BPSK	2513.5 - 2672.5	0.229	23.60	32M2G7D
		QPSK	2513.5 - 2672.5	0.273	24.36	33M0G7D
		16QAM	2513.5 - 2672.5	0.209	23.21	33M0W7D
	30 MHz	π/2 BPSK	2511.0 - 2675.0	0.228	23.58	27M0G7D
		QPSK	2511.0 - 2675.0	0.268	24.29	28M1G7D
		16QAM	2511.0 - 2675.0	0.219	23.41	28M1W7D
	25 MHz	π/2 BPSK	2508.5 - 2677.5	0.242	23.84	22M9G7D
		QPSK	2508.5 - 2677.5	0.286	24.56	23M3G7D
		16QAM	2508.5 - 2677.5	0.221	23.45	23M4W7D
	20 MHz	π/2 BPSK	2506.0 - 2680.0	0.212	23.27	17M9G7D
		QPSK	2506.0 - 2680.0	0.258	24.11	18M4G7D
		16QAM	2506.0 - 2680.0	0.216	23.35	18M4W7D
	15 MHz	π/2 BPSK	2503.5 - 2682.5	0.231	23.64	13M0G7D
		QPSK	2503.5 - 2682.5	0.279	24.46	13M7G7D
		16QAM	2503.5 - 2682.5	0.218	23.38	13M7W7D
	10 MHz	π/2 BPSK	2501.0 - 2685.0	0.219	23.41	8M69G7D
		QPSK	2501.0 - 2685.0	0.259	24.14	8M71G7D
		16QAM	2501.0 - 2685.0	0.210	23.22	8M71W7D

Antenna-B						
Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	EIRP		Emission Designator
				Max. Power [W]	Max. Power [dBm]	
NR Band n41(PC3) Switching	100 MHz	π/2 BPSK	2546.0 - 2640.0	0.231	23.64	96M8G7D
		QPSK	2546.0 - 2640.0	0.201	23.03	97M8G7D
		16QAM	2546.0 - 2640.0	0.174	22.40	97M8W7D
	90 MHz	π/2 BPSK	2541.0 - 2645.0	0.239	23.79	87M1G7D
		QPSK	2541.0 - 2645.0	0.209	23.21	87M8G7D
		16QAM	2541.0 - 2645.0	0.182	22.61	87M8W7D
	80 MHz	π/2 BPSK	2536.0 - 2650.0	0.240	23.80	77M3G7D
		QPSK	2536.0 - 2650.0	0.212	23.25	77M7G7D
		16QAM	2536.0 - 2650.0	0.184	22.65	77M6W7D
	70 MHz	π/2 BPSK	2531.0 - 2655.0	0.237	23.75	64M6G7D
		QPSK	2531.0 - 2655.0	0.213	23.29	67M7G7D
		16QAM	2531.0 - 2655.0	0.179	22.52	67M6W7D
	60 MHz	π/2 BPSK	2526.0 - 2660.0	0.235	23.70	58M0G7D
		QPSK	2526.0 - 2660.0	0.212	23.26	58M0G7D
		16QAM	2526.0 - 2660.0	0.173	22.39	58M0W7D
	50 MHz	π/2 BPSK	2521.0 - 2665.0	0.254	24.05	46M0G7D
		QPSK	2521.0 - 2665.0	0.226	23.55	47M8G7D
		16QAM	2521.0 - 2665.0	0.187	22.72	47M7W7D
	45 MHz	π/2 BPSK	2518.5 - 2667.5	0.251	24.00	38M7G7D
		QPSK	2518.5 - 2667.5	0.220	23.42	42M6G7D
		16QAM	2518.5 - 2667.5	0.192	22.84	42M6W7D
	40 MHz	π/2 BPSK	2516.0 - 2670.0	0.249	23.97	35M9G7D
		QPSK	2516.0 - 2670.0	0.223	23.48	38M0G7D
		16QAM	2516.0 - 2670.0	0.186	22.69	38M0W7D
	35 MHz	π/2 BPSK	2513.5 - 2672.5	0.249	23.96	32M3G7D
		QPSK	2513.5 - 2672.5	0.225	23.52	33M0G7D
		16QAM	2513.5 - 2672.5	0.187	22.72	33M0W7D
	30 MHz	π/2 BPSK	2511.0 - 2675.0	0.255	24.06	27M0G7D
		QPSK	2511.0 - 2675.0	0.226	23.54	28M0G7D
		16QAM	2511.0 - 2675.0	0.195	22.91	28M0W7D
	25 MHz	π/2 BPSK	2508.5 - 2677.5	0.258	24.12	22M9G7D
		QPSK	2508.5 - 2677.5	0.231	23.63	23M3G7D
		16QAM	2508.5 - 2677.5	0.154	21.88	23M3W7D
	20 MHz	π/2 BPSK	2506.0 - 2680.0	0.256	24.08	18M0G7D
		QPSK	2506.0 - 2680.0	0.228	23.58	18M4G7D
		16QAM	2506.0 - 2680.0	0.182	22.61	18M4W7D
	15 MHz	π/2 BPSK	2503.5 - 2682.5	0.258	24.12	13M0G7D
		QPSK	2503.5 - 2682.5	0.230	23.61	13M7G7D
		16QAM	2503.5 - 2682.5	0.201	23.03	13M7W7D
	10 MHz	π/2 BPSK	2501.0 - 2685.0	0.257	24.10	8M71G7D
		QPSK	2501.0 - 2685.0	0.231	23.64	8M67G7D
		16QAM	2501.0 - 2685.0	0.189	22.76	8M64W7D

Antenna-B						
Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	EIRP		Emission Designator
				Max. Power [W]	Max. Power [dBm]	
NR Band n41(PC3) Default	100 MHz	π/2 BPSK	2546.0 - 2640.0	0.092	19.64	97M8G7D
		QPSK	2546.0 - 2640.0	0.079	19.00	99M0G7D
		16QAM	2546.0 - 2640.0	0.066	18.21	98M8W7D

Antenna-F						
Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	EIRP		Emission Designator
				Max. Power [W]	Max. Power [dBm]	
NR Band n41(PC3) Switching	100 MHz	π/2 BPSK	2546.0 - 2640.0	0.143	21.54	96M6G7D
		QPSK	2546.0 - 2640.0	0.139	21.44	97M5G7D
		16QAM	2546.0 - 2640.0	0.116	20.65	97M7W7D

Antenna-E						
Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	EIRP		Emission Designator
				Max. Power [W]	Max. Power [dBm]	
NR Band n41(PC3) Default	100 MHz	π/2 BPSK	2546.0 - 2640.0	0.073	18.64	96M6G7D
		QPSK	2546.0 - 2640.0	0.064	18.04	97M9G7D
		16QAM	2546.0 - 2640.0	0.051	17.06	97M8W7D

Antenna-D						
Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	EIRP		Emission Designator
				Max. Power [W]	Max. Power [dBm]	
NR Band n41(PC3) Switching	100 MHz	π/2 BPSK	2546.0 - 2640.0	0.043	16.32	97M1G7D
		QPSK	2546.0 - 2640.0	0.041	16.15	98M2G7D
		16QAM	2546.0 - 2640.0	0.036	15.55	98M2W7D

Antenna-D						
Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	EIRP		Emission Designator
				Max. Power [W]	Max. Power [dBm]	
NR Band n41(PC3) Default	100 MHz	π/2 BPSK	2546.0 - 2640.0	0.032	15.03	98M4G7D
		QPSK	2546.0 - 2640.0	0.030	14.76	99M3G7D
		16QAM	2546.0 - 2640.0	0.021	13.29	99M2W7D

Antenna-E						
Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	EIRP		Emission Designator
				Max. Power [W]	Max. Power [dBm]	
NR Band n41(PC3) Switching	100 MHz	π/2 BPSK	2546.0 - 2640.0	0.017	12.37	96M7G7D
		QPSK	2546.0 - 2640.0	0.017	12.35	97M6G7D
		16QAM	2546.0 - 2640.0	0.017	12.29	97M6W7D

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 Suwon Laboratory located at 13, Heungdeok 1-ro, Giheung-gu, Yongin-si, Gyeonggi-do, 16954, South Korea. 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 Materials Technology Suwon, Ltd. located in Yongin-si, Gyeonggi-do, 16954, South Korea.

- Element Materials Technology Suwon, Ltd. is an ISO 17025-2017 accredited test facility under the American Association for Laboratory Accreditation(A2LA) with Certificate number 2041.04 for Specific Absorption Rate (SAR), and Electromagnetic Compatibility (EMC) & Telecommunications testing for FCC and Innovation, Science, and Economic Development Canada rules.

- Element Materials Technology Suwon, Ltd. facility is accredited, designated, and recognized in accordance with the provision of Radio Wave Act and International Standard ISO/IEC 17025:2017 under the National Radio Research Agency.

  - Designation Number / CABID: KR0169
  - Test Firm Registration Number of FCC: 417945
  - Test Firm Registration Number of ISED: 26168

2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **Samsung Portable Handset FCC ID: A3LSMS936B**. 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.: 1374M, 1379M, 0169M, 0162M

2.2 Device Capabilities

This device contains the following capabilities:

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

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

2.3 Test Configuration

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

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 S936BXXU0AQQ2 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 $P_{g\ [dBm]} - \text{cable loss}_{\ [dB]}$.

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:

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

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	1.95
Radiated Disturbance (<1GHz)	4.10
Radiated Disturbance (>1GHz)	4.82
Radiated Disturbance (>18GHz)	4.96

5.0 TEST EQUIPMENT CALIBRATION DATA

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

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Agilent	N9030A	PXA Signal Analyzer	2024-07-08	Annual	2025-07-08	
Anritsu	S820E	Cable and Antenna Analyzer	2024-07-09	Annual	2025-07-08	1839097
Anritsu	MA24106A	USB Power Sensor	2024-07-09	Annual	2025-07-08	1244512
Anritsu	MT8000A	Radio Communication Test Station	2024-09-05	Annual	2025-09-04	6272337405
Com-Power	AL-130	9kHz - 30MHz Loop Antenna	2024-10-07	Biennial	2026-10-06	10160045
Espec	SH-242	Environmental Chamber	2024-07-09	Annual	2025-07-08	93011064
Fairview Microwave	FM2CP1122-10	2.92mm Directional Coupler	2024-07-09	Annual	2025-07-08	1946
Keysight Technologies	N9030B	PXA Signal Analyzer	2024-07-08	Annual	2025-07-08	MY57143278
Mini-Circuits	BW-N10W5+	Attenuator	2024-04-08	Annual	2025-04-07	TEMPNO.01-151
Mini-Circuits	BW-N10W5+	Attenuator	2024-04-08	Annual	2025-04-07	TEMPNO.01-150
NARDA	180-442A-KF	Horn Antenna (small)	2024-01-16	Annual	2025-01-15	T058701-03
Rohde & Schwarz	SMB100A03	Signal Generator	2024-01-11	Annual	2025-01-10	182487
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	2024-01-11	Annual	2025-01-10	171075
Rohde & Schwarz	FSW43	Signal and Spectrum Analyzer	2024-01-11	Annual	2025-01-10	101955
Rohde & Schwarz	SFUNIT-Rx	Shielded Filter Unit	2024-01-11	Annual	2025-01-10	102131
Schwarzbeck	VULB9162	Broadband TRILOG Antenna	2023-06-01	Biennial	2025-05-31	9162-217
Sunol	DRH-118	Horn Antenna	2023-01-26	Biennial	2025-01-25	A060215

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.

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: A3LSMS936B

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

Mode(s): LTE/NR

Test Condition	Test Description	FCC Part Section(s)	Test Limit	Test Result	Reference
CONDUCTED	Transmitter Conducted Output Power*	2.1046(a), 2.1046(c)	N/A	PASS	Section 7.2
	Occupied Bandwidth	2.1049(h)	N/A	PASS	Section 7.3
	Conducted Band Edge / Spurious Emissions (LTE Band 41; NR Band 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 41; NR Band n41)	27.50(h)(2)	≤ 2 Watts max. EIRP	PASS	Section 7.6
	Radiated Spurious Emissions (LTE Band 41; NR Band 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 v1.2.2.

7.2 Conducted Output Power Data

Test Overview

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

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.

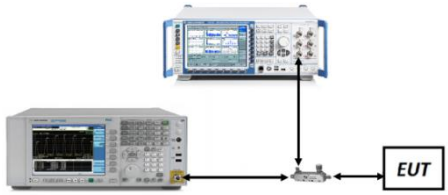


Figure 7-1. Test Instrument & Measurement Setup

Test Notes

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

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

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

Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
20 MHz	QPSK	39750	2506.0	1 / 0	25.45
		40620	2593.0	1 / 50	25.71
		41490	2680.0	1 / 0	25.64
	16-QAM	40620	2593.0	1 / 50	24.50
15 MHz	QPSK	39725	2503.5	1 / 74	25.35
		40620	2593.0	1 / 74	25.94
		41515	2682.5	1 / 0	25.81
	16-QAM	40620	2593.0	1 / 74	24.59
10 MHz	QPSK	39700	2501.0	1 / 49	25.15
		40620	2593.0	1 / 0	26.07
		41540	2685.0	1 / 0	25.45
	16-QAM	40620	2593.0	1 / 0	24.63
5 MHz	QPSK	39675	2498.5	1 / 24	25.23
		40620	2593.0	1 / 24	25.96
		41565	2687.5	1 / 0	25.42
	16-QAM	40620	2593.0	1 / 24	24.61

Table 7-1. Conducted Power Data (LTE Band 41(PC2) – Ant F)

Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
20 MHz	QPSK	39750	2506.0	1 / 50	25.42
		40620	2593.0	1 / 50	25.42
		41490	2680.0	1 / 50	25.37
	16-QAM	39750	2506.0	1 / 50	24.57
15 MHz	QPSK	39725	2503.5	1 / 0	25.24
		40620	2593.0	1 / 37	25.51
		41515	2682.5	1 / 37	25.16
	16-QAM	39725	2503.5	1 / 0	24.24
10 MHz	QPSK	39700	2501.0	1 / 49	25.74
		40620	2593.0	1 / 25	25.64
		41540	2685.0	1 / 49	25.43
	16-QAM	40620	2593.0	1 / 25	24.37
5 MHz	QPSK	39675	2498.5	1 / 0	25.56
		40620	2593.0	1 / 24	25.99
		41565	2687.5	1 / 0	25.46
	16-QAM	40620	2593.0	1 / 24	25.47

Table 7-2. Conducted Power Data (LTE Band 41(PC2) – Ant B)

Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
20 MHz	QPSK	39750	2506.0	1 / 50	24.84
		40620	2593.0	1 / 0	24.90
		41490	2680.0	1 / 99	24.97
	16-QAM	39750	2506.0	1 / 50	24.33
15 MHz	QPSK	39725	2503.5	1 / 0	24.92
		40620	2593.0	1 / 0	24.99
		41515	2682.5	1 / 74	24.79
	16-QAM	40620	2593.0	1 / 0	23.76
10 MHz	QPSK	39700	2501.0	1 / 49	24.99
		40620	2593.0	1 / 25	24.97
		41540	2685.0	1 / 0	24.73
	16-QAM	39700	2501.0	1 / 49	24.36
5 MHz	QPSK	39675	2498.5	1 / 0	24.94
		40620	2593.0	1 / 24	24.97
		41565	2687.5	1 / 24	24.92
	16-QAM	40620	2593.0	1 / 24	24.15

Table 7-3. Conducted Power Data (LTE Band 41(PC3) – Ant F)

Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
20 MHz	QPSK	39750	2506.0	1 / 99	24.98
		40620	2593.0	1 / 0	24.95
		41490	2680.0	1 / 50	24.99
	16-QAM	39750	2506.0	1 / 99	24.34
15 MHz	QPSK	39725	2503.5	1 / 50	24.98
		40620	2593.0	1 / 50	24.94
		41515	2682.5	1 / 50	24.92
	16-QAM	39725	2503.5	1 / 50	24.35
10 MHz	QPSK	39700	2501.0	1 / 99	24.93
		40620	2593.0	1 / 50	24.92
		41540	2685.0	1 / 50	24.92
	16-QAM	40620	2593.0	1 / 50	24.29
5 MHz	QPSK	39675	2498.5	1 / 0	24.79
		40620	2593.0	1 / 99	24.94
		41565	2687.5	1 / 50	24.64
	16-QAM	39675	2498.5	1 / 0	24.22

Table 7-4. Conducted Power Data (LTE Band 41(PC3) – Ant B)

Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
100 MHz	π/2 BPSK	509202	2546.01	1 / 136	24.83
		518598	2592.99	1 / 136	24.83
		528000	2640.00	1 / 136	24.79
	QPSK	509202	2546.01	1 / 136	24.79
		518598	2592.99	1 / 136	24.62
		528000	2640.00	1 / 1	24.42
	16-QAM	518598	2592.99	1 / 136	23.84
90 MHz	π/2 BPSK	508200	2541.00	1 / 122	24.94
		518598	2592.99	1 / 243	24.92
		528996	2644.98	1 / 122	24.77
	QPSK	508200	2541.00	1 / 243	24.74
		518598	2592.99	1 / 1	24.66
		528996	2644.98	1 / 1	24.38
	16-QAM	508200	2541.00	1 / 122	23.83
80 MHz	π/2 BPSK	507204	2536.02	1 / 215	24.82
		518598	2592.99	1 / 215	24.95
		529998	2649.99	1 / 1	24.84
	QPSK	507204	2536.02	1 / 215	24.72
		518598	2592.99	1 / 1	24.88
		529998	2649.99	1 / 1	23.78
	16-QAM	507204	2536.02	1 / 215	23.78
70 MHz	π/2 BPSK	506202	2531.01	1 / 187	24.87
		518598	2592.99	1 / 94	24.93
		531000	2655.00	1 / 1	24.95
	QPSK	506202	2531.01	1 / 187	24.88
		518598	2592.99	1 / 1	24.61
		531000	2655.00	1 / 1	24.58
	16-QAM	506202	2531.01	1 / 187	24.11
60 MHz	π/2 BPSK	505200	2526.00	1 / 160	24.93
		518598	2592.99	1 / 1	24.93
		531996	2659.98	1 / 1	24.83
	QPSK	505200	2526.00	1 / 160	24.94
		518598	2592.99	1 / 160	24.66
		531996	2659.98	1 / 1	24.14
	16-QAM	505200	2526.00	1 / 160	23.99
50 MHz	π/2 BPSK	504204	2521.02	1 / 66	24.81
		518598	2592.99	1 / 1	24.94
		532998	2664.99	1 / 1	24.99
	QPSK	504204	2521.02	1 / 66	24.49
		518598	2592.99	1 / 1	24.69
		532998	2664.99	1 / 1	24.06
	16-QAM	518598	2592.99	1 / 1	23.92
45 MHz	π/2 BPSK	503700	2518.51	1 / 104	24.94
		518598	2592.99	1 / 1	24.94
		533500	2667.50	1 / 1	24.86
	QPSK	503700	2518.51	1 / 104	24.98
		518598	2592.99	1 / 53	24.84
		533500	2667.50	1 / 1	24.29
	16-QAM	518598	2592.99	1 / 1	24.27
40 MHz	π/2 BPSK	503202	2516.01	1 / 104	24.85
		518598	2592.99	1 / 1	24.91
		534000	2670.00	1 / 53	24.96
	QPSK	503202	2516.01	1 / 104	24.98
		518598	2592.99	1 / 104	24.94
		534000	2670.00	1 / 1	24.56
	16-QAM	503202	2516.01	1 / 104	23.97
35 MHz	π/2 BPSK	502700	2513.50	1 / 76	24.42
		518598	2592.99	1 / 39	24.73
		534500	2672.50	1 / 1	24.88
	QPSK	502700	2513.50	1 / 76	24.65
		518598	2592.99	1 / 1	24.72
		534500	2672.50	1 / 39	24.45
	16-QAM	518598	2592.99	1 / 39	24.35
30 MHz	π/2 BPSK	502200	2511.00	1 / 76	24.70
		518598	2592.99	1 / 1	24.83
		534996	2674.98	1 / 1	24.88
	QPSK	502200	2511.00	1 / 76	24.67
		518598	2592.99	1 / 1	24.80
		534996	2674.98	1 / 1	24.48
	16-QAM	518598	2592.99	1 / 1	24.16
25 MHz	π/2 BPSK	501700	2508.50	1 / 63	24.50
		518598	2592.99	1 / 1	24.92
		535500	2677.50	1 / 1	24.83
	QPSK	501700	2508.50	1 / 63	24.44
		518598	2592.99	1 / 63	24.75
		535500	2677.50	1 / 1	24.27
	16-QAM	518598	2592.99	1 / 1	24.15
20 MHz	π/2 BPSK	501204	2506.02	1 / 49	24.27
		518598	2592.99	1 / 25	24.77
		535998	2679.99	1 / 1	24.75
	QPSK	501204	2506.02	1 / 49	24.35
		518598	2592.99	1 / 49	24.83
		535998	2679.99	1 / 1	24.44
	16-QAM	518598	2592.99	1 / 49	24.08
15 MHz	π/2 BPSK	500700	2503.50	1 / 36	24.35
		518598	2592.99	1 / 18	24.91
		536500	2682.50	1 / 18	24.66
	QPSK	500700	2503.50	1 / 36	24.14
		518598	2592.99	1 / 36	24.77
		536500	2682.50	1 / 1	24.25
	16-QAM	518598	2592.99	1 / 18	24.00
10 MHz	π/2 BPSK	500200	2501.00	1 / 22	24.27
		518598	2592.99	1 / 1	24.92
		537000	2685.00	1 / 1	24.55
	QPSK	500200	2501.00	1 / 22	24.02
		518598	2592.99	1 / 1	24.83
		537000	2685.00	1 / 1	23.81
	16-QAM	518598	2592.99	1 / 1	24.15

Table 7-5. Conducted Power Data (NR Band n41 – Default – Ant F)

Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
100 MHz	π/2 BPSK	509202	2546.01	1 / 271	23.26
		518598	2592.99	270 / 0	23.28
		528000	2640.00	270 / 0	23.37
	QPSK	509202	2546.01	1 / 271	22.98
		518598	2592.99	1 / 136	22.86
		528000	2640.00	1 / 1	22.75
	16-QAM	509202	2546.01	1 / 271	22.47

Table 7-6. Conducted Power Data (NR Band n41 – Default – Ant B)

Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
100 MHz	π/2 BPSK	509202	2546.01	1 / 136	22.87
		518598	2592.99	1 / 271	22.83
		528000	2640.00	1 / 136	22.98
	QPSK	509202	2546.01	1 / 136	22.91
		518598	2592.99	270 / 0	22.97
		528000	2640.00	1 / 136	22.99
	16-QAM	528000	2640.00	1 / 136	22.83

Table 7-7. Conducted Power Data (NR Band n41 – Default – Ant E)

Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
100 MHz	π/2 BPSK	509202	2546.01	1 / 271	20.63
		518598	2592.99	1 / 136	20.52
		528000	2640.00	1 / 1	20.07
	QPSK	509202	2546.01	1 / 271	20.30
		518598	2592.99	1 / 136	20.08
		528000	2640.00	1 / 1	19.82
	16-QAM	509202	2546.01	1 / 271	19.74

Table 7-8. Conducted Power Data (NR Band n41 – Default – Ant D)

Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
100 MHz	π/2 BPSK	509202	2546.01	1 / 136	24.86
		518598	2592.99	270 / 0	24.76
		528000	2640.00	1 / 136	24.79
	QPSK	509202	2546.01	1 / 136	24.89
		518598	2592.99	1 / 136	24.79
		528000	2640.00	1 / 136	24.82
	16-QAM	518598	2592.99	1 / 136	24.25
90 MHz	π/2 BPSK	508200	2541.00	1 / 243	24.79
		518598	2592.99	1 / 243	24.83
		528996	2644.98	1 / 122	24.88
	QPSK	508200	2541.00	1 / 243	24.80
		518598	2592.99	1 / 122	24.77
		528996	2644.98	1 / 122	24.94
	16-QAM	508200	2541.00	1 / 243	24.39
80 MHz	π/2 BPSK	507204	2536.02	1 / 215	24.99
		518598	2592.99	1 / 1	24.89
		529998	2649.99	216 / 0	24.81
	QPSK	507204	2536.02	1 / 215	24.92
		518598	2592.99	1 / 1	24.84
		529998	2649.99	1 / 108	24.85
	16-QAM	518598	2592.99	1 / 1	24.34
70 MHz	π/2 BPSK	506202	2531.01	1 / 187	24.94
		518598	2592.99	1 / 187	24.93
		531000	2655.00	1 / 94	24.92
	QPSK	506202	2531.01	1 / 187	24.95
		518598	2592.99	1 / 187	24.96
		531000	2655.00	1 / 94	24.88
	16-QAM	506202	2531.01	1 / 187	24.64
60 MHz	π/2 BPSK	505200	2526.00	1 / 160	24.91
		518598	2592.99	1 / 160	24.97
		531996	2659.98	1 / 81	24.81
	QPSK	505200	2526.00	1 / 160	24.81
		518598	2592.99	1 / 1	24.97
		531996	2659.98	1 / 1	24.82
	16-QAM	505200	2526.00	1 / 160	24.65
50 MHz	π/2 BPSK	504204	2521.02	1 / 131	24.98
		518598	2592.99	1 / 1	24.74
		532998	2664.99	1 / 1	24.83
	QPSK	504204	2521.02	1 / 131	24.88
		518598	2592.99	1 / 1	24.96
		532998	2664.99	1 / 66	24.83
	16-QAM	504204	2521.02	1 / 131	24.45
45 MHz	π/2 BPSK	503700	2518.50	1 / 117	24.84
		518598	2592.99	1 / 1	24.91
		533500	2667.50	1 / 1	24.94
	QPSK	503700	2518.50	1 / 117	24.82
		518598	2592.99	1 / 117	24.79
		533500	2667.50	1 / 53	24.91
	16-QAM	533500	2667.50	1 / 1	24.55
40 MHz	π/2 BPSK	503202	2516.01	1 / 104	24.80
		518598	2592.99	1 / 1	24.84
		534000	2670.00	1 / 53	24.84
	QPSK	503202	2516.01	1 / 104	24.75
		518598	2592.99	1 / 1	24.88
		534000	2670.00	1 / 53	24.98
	16-QAM	518598	2592.99	1 / 1	24.45
35 MHz	π/2 BPSK	502700	2513.50	1 / 90	24.57
		518598	2592.99	1 / 1	24.96
		534500	2672.50	1 / 45	24.98
	QPSK	502700	2513.50	1 / 90	24.72
		518598	2592.99	1 / 1	24.97
		534500	2672.50	1 / 45	24.88
	16-QAM	534500	2672.50	1 / 45	24.40
30 MHz	π/2 BPSK	502200	2511.00	1 / 76	24.83
		518598	2592.99	1 / 76	24.89
		534996	2674.98	1 / 1	24.98
	QPSK	502200	2511.00	1 / 76	24.66
		518598	2592.99	1 / 1	24.96
		534996	2674.98	1 / 1	24.92
	16-QAM	518598	2592.99	1 / 1	24.57
25 MHz	π/2 BPSK	501700	2508.50	1 / 63	24.68
		518598	2592.99	1 / 1	24.98
		535500	2677.50	1 / 1	24.85
	QPSK	501700	2508.50	1 / 63	24.71
		518598	2592.99	1 / 1	24.95
		535500	2677.50	1 / 1	24.92
	16-QAM	518598	2592.99	1 / 1	24.50
20 MHz	π/2 BPSK	501204	2506.02	1 / 49	24.58
		518598	2592.99	1 / 1	24.75
		535998	2679.99	1 / 1	24.98
	QPSK	501204	2506.02	1 / 25	24.44
		518598	2592.99	1 / 1	24.85
		535998	2679.99	1 / 1	24.96
	16-QAM	535998	2679.99	1 / 1	24.38
15 MHz	π/2 BPSK	500700	2503.50	1 / 18	24.34
		518598	2592.99	1 / 18	24.97
		536500	2682.50	1 / 1	24.36
	QPSK	500700	2503.50	1 / 36	24.38
		518598	2592.99	1 / 36	24.96
		536500	2682.50	1 / 36	24.39
	16-QAM	518598	2592.99	1 / 36	24.31
10 MHz	π/2 BPSK	500200	2501.00	1 / 1	23.63
		518598	2592.99	1 / 1	24.54
		537000	2685.00	1 / 1	24.46
	QPSK	500200	2501.00	1 / 22	23.95
		518598	2592.99	1 / 22	24.52
		537000	2685.00	1 / 1	24.52
	16-QAM	518598	2592.99	1 / 1	24.34

Table 7-9. Conducted Power Data (NR Band n41 – Switching – Ant B)

Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
100 MHz	π/2 BPSK	509202	2546.01	1 / 271	21.98
		518598	2592.99	1 / 136	21.96
		528000	2640.00	1 / 1	21.91
	QPSK	509202	2546.01	1 / 271	21.59
		518598	2592.99	1 / 136	21.22
		528000	2640.00	1 / 1	20.88
	16-QAM	509202	2546.01	1 / 271	20.69

Table 7-10. Conducted Power Data (NR Band n41 – Switching – Ant F)

Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
100 MHz	π/2 BPSK	509202	2546.01	1 / 136	21.72
		518598	2592.99	1 / 136	21.65
		528000	2640.00	270 / 0	21.48
	QPSK	509202	2546.01	1 / 136	21.70
		518598	2592.99	270 / 0	21.67
		528000	2640.00	1 / 136	21.53
	16-QAM	518598	2592.99	1 / 136	21.85

Table 7-11. Conducted Power Data (NR Band n41 – Switching – Ant E)

Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
100 MHz	π/2 BPSK	509202	2546.01	1 / 271	19.84
		518598	2592.99	1 / 136	19.76
		528000	2640.00	1 / 1	19.15
	QPSK	509202	2546.01	1 / 271	19.02
		518598	2592.99	1 / 136	18.59
		528000	2640.00	1 / 1	18.20
	16-QAM	509202	2546.01	1 / 271	18.04

Table 7-12. Conducted Power Data (NR Band n41 – Switching – Ant D)

7.3 Occupied Bandwidth

Test Overview

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

Test Procedure Used

ANSI C63.26-2015 – Section 5.4.4

Test Settings

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

Test Setup

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

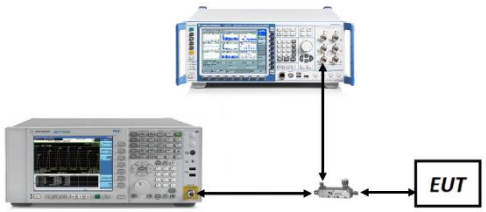


Figure 7-2. Test Instrument & Measurement Setup

Test Notes

None.

Mode	Bandwidth	Modulation	OBW [MHz]
LTE-B41PC2	20MHz	QPSK	17.95
		16QAM	17.96
	15MHz	QPSK	13.52
		16QAM	13.49
	10MHz	QPSK	9.03
		16QAM	9.01
	5MHz	QPSK	4.50
		16QAM	4.51

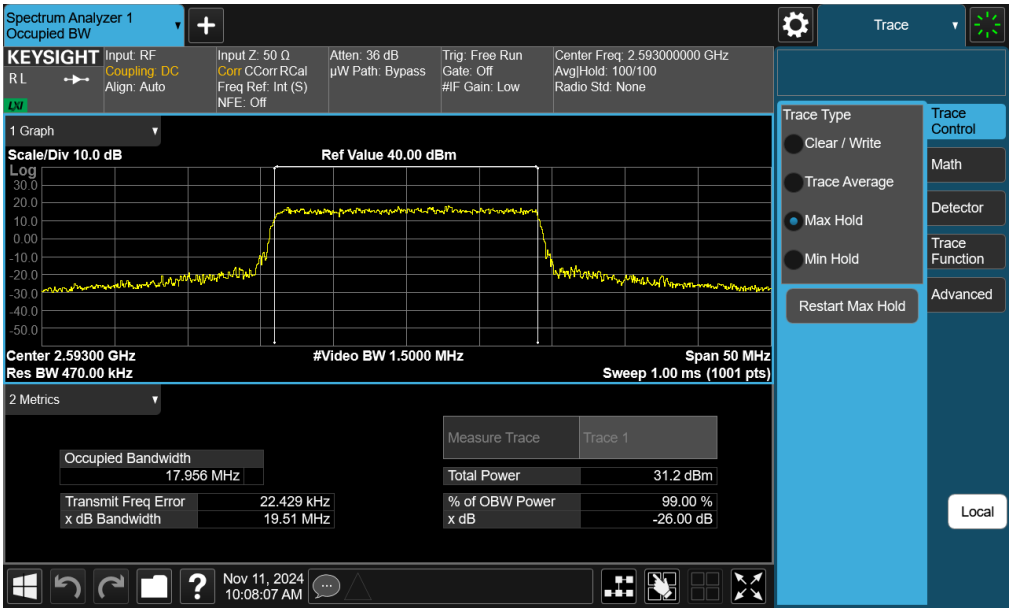
Table 7-2. Occupied Bandwidth Test Results – LTE – Ant F

Mode	Bandwidth	Modulation	OBW [MHz]
LTE-B41PC2	20MHz	QPSK	17.95
		16QAM	18.00
	15MHz	QPSK	13.50
		16QAM	13.48
	10MHz	QPSK	9.04
		16QAM	9.01
	5MHz	QPSK	4.50
		16QAM	4.53

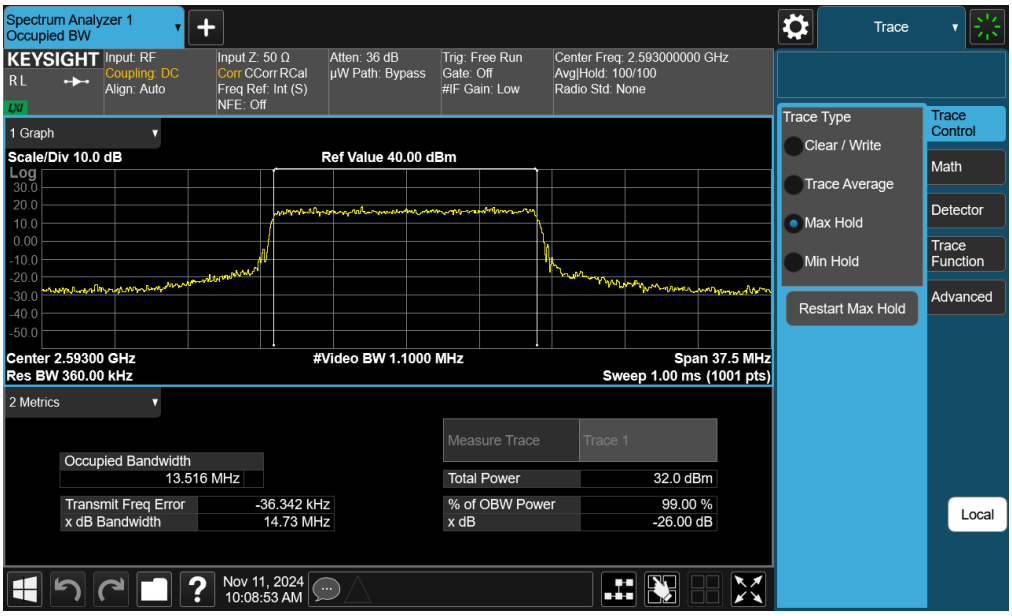
Table 7-3. Occupied Bandwidth Test Results – LTE – Ant B

LTE Band 41(PC2) – Ant F

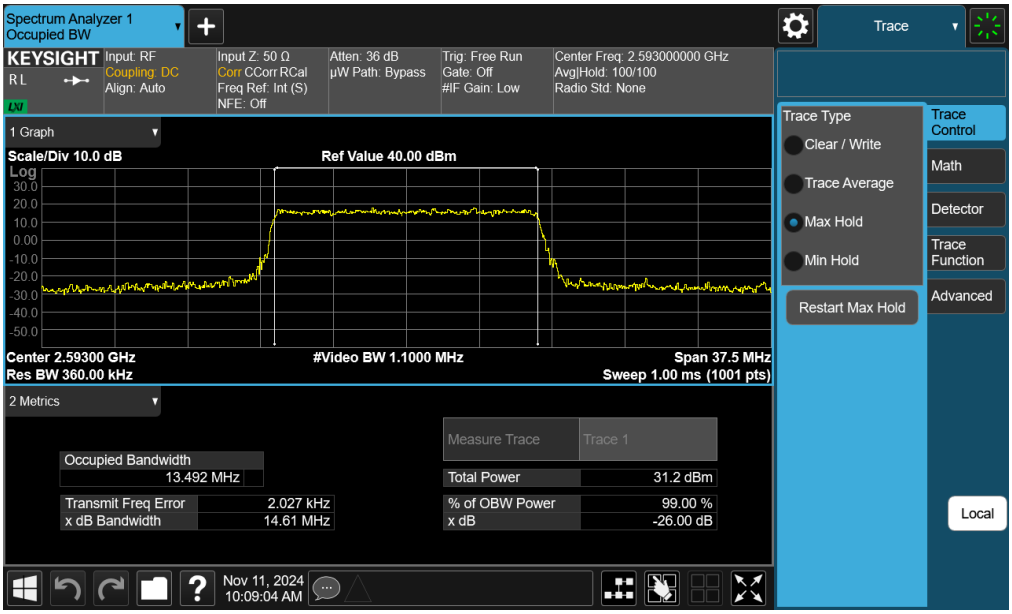
Plot 7-13. Occupied Bandwidth Plot (LTE Band 41(PC2) - 20MHz QPSK - Full RB - Ant F)



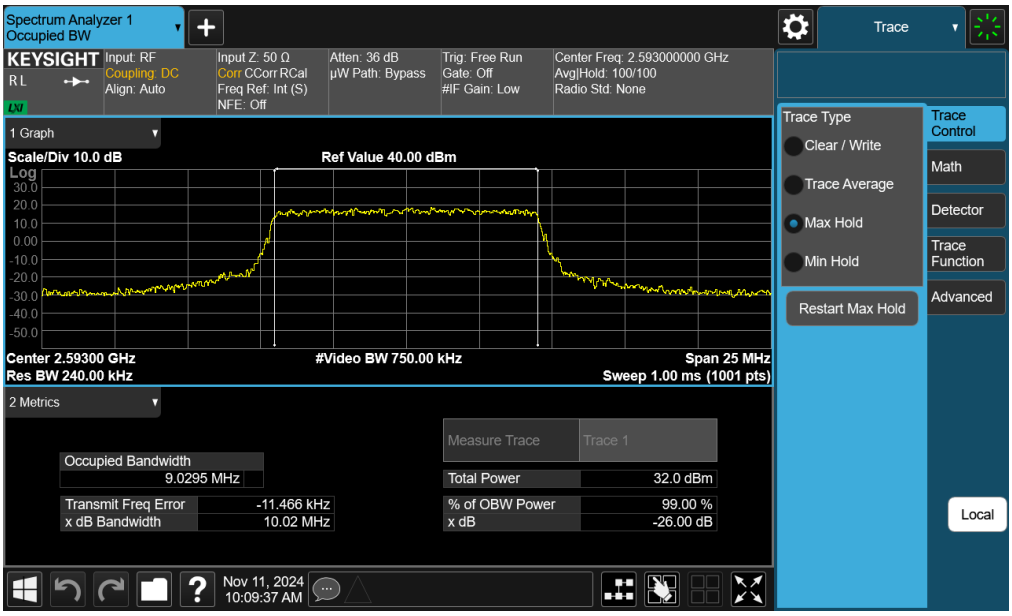
Plot 7-14. Occupied Bandwidth Plot (LTE Band 41(PC2) - 20MHz 16-QAM - Full RB - Ant F)



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

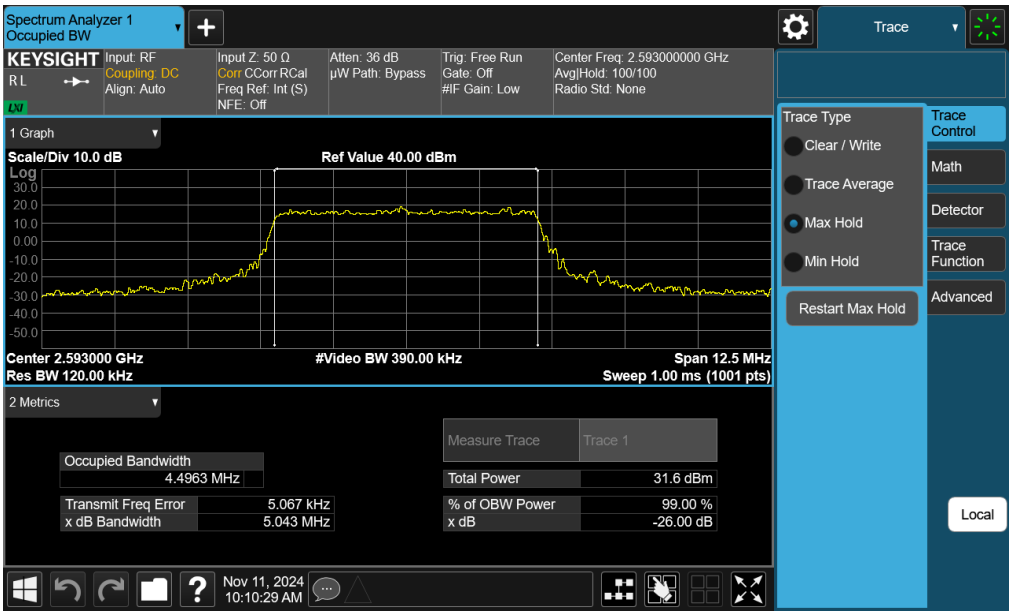


Plot 7-16. Occupied Bandwidth Plot (LTE Band 41(PC2) - 15MHz 16-QAM - Full RB - Ant F)



Plot 7-17. Occupied Bandwidth Plot (LTE Band 41(PC2) - 10MHz QPSK - Full RB - Ant F)

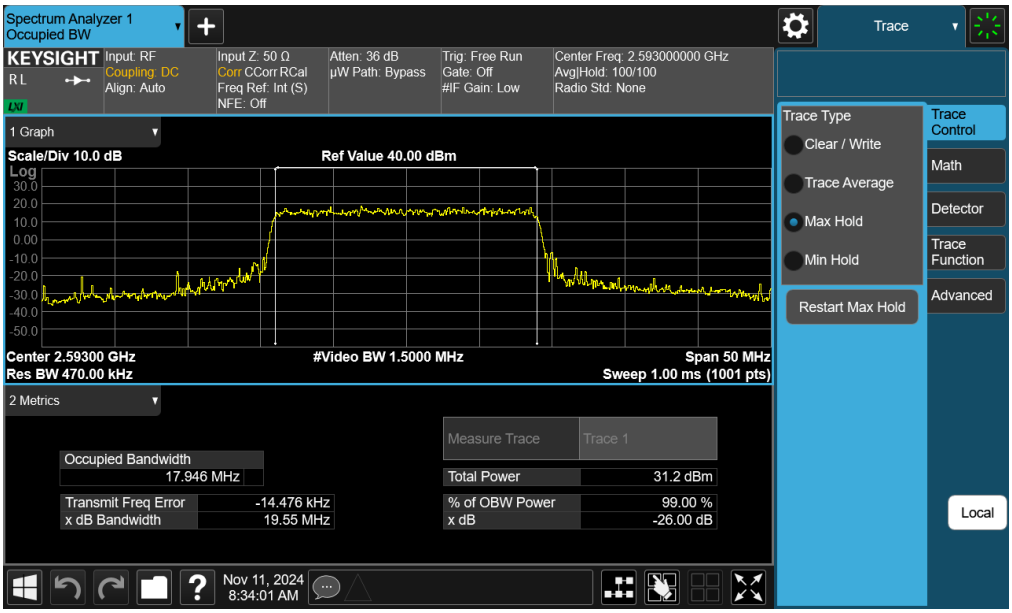
Plot 7-18. Occupied Bandwidth Plot (LTE Band 41(PC2) - 10MHz 16-QAM - Full RB - Ant F)



Plot 7-19. Occupied Bandwidth Plot (LTE Band 41(PC2) - 5MHz QPSK - Full RB - Ant F)

Plot 7-20. Occupied Bandwidth Plot (LTE Band 41(PC2) - 5MHz 16-QAM - Full RB - Ant F)

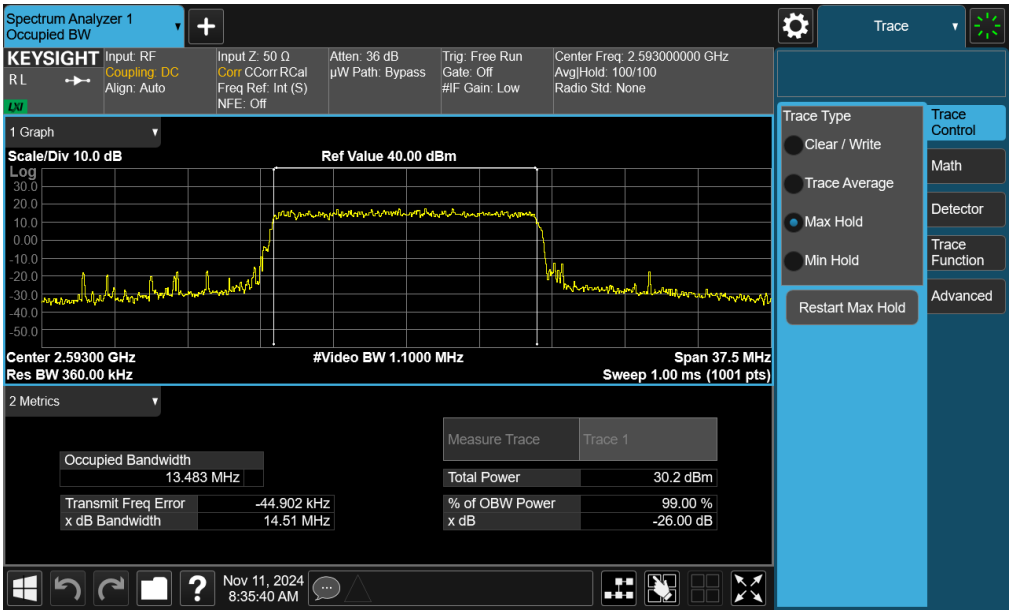
LTE Band 41(PC2) – Ant B



Plot 7-21. Occupied Bandwidth Plot (LTE Band 41(PC2) - 20MHz QPSK - Full RB - Ant B)

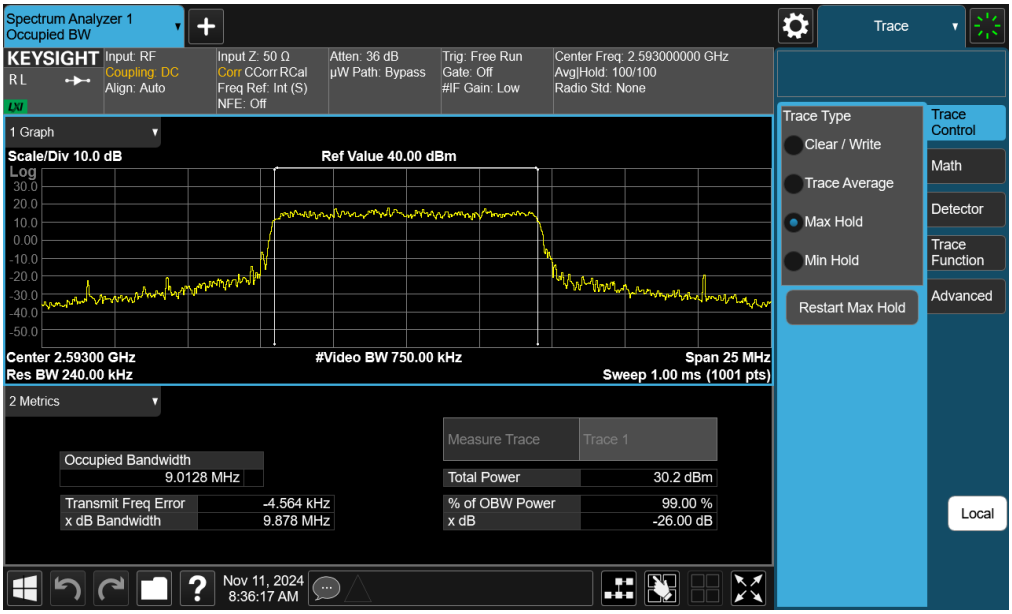
Plot 7-22. Occupied Bandwidth Plot (LTE Band 41(PC2) - 20MHz 16-QAM - Full RB - Ant B)

Plot 7-23. Occupied Bandwidth Plot (LTE Band 41(PC2) - 15MHz QPSK - Full RB - Ant B)

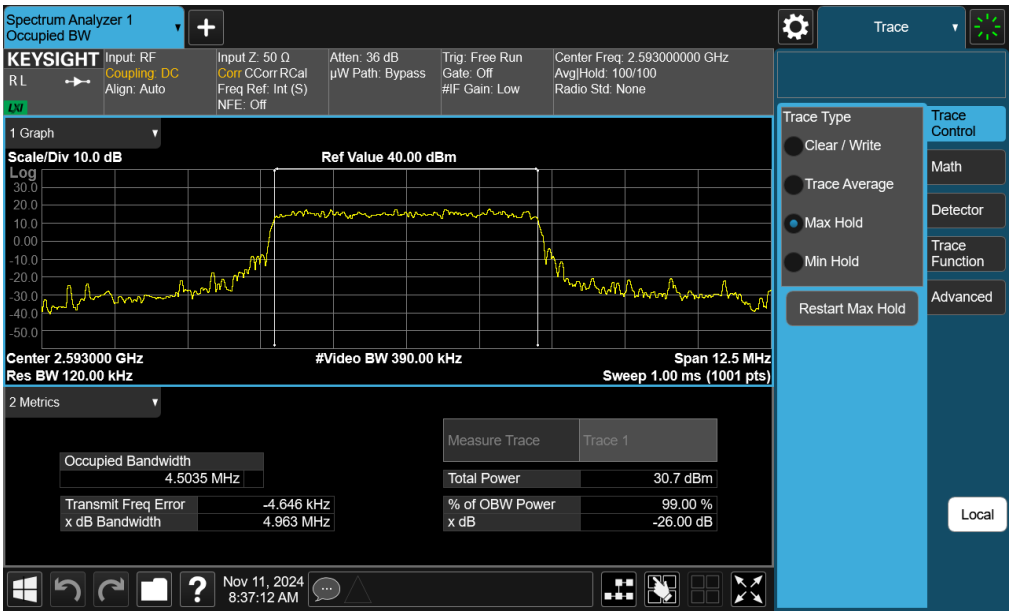


Plot 7-24. Occupied Bandwidth Plot (LTE Band 41(PC2) - 15MHz 16-QAM - Full RB - Ant B)

Plot 7-25. Occupied Bandwidth Plot (LTE Band 41(PC2) - 10MHz QPSK - Full RB - Ant B)



Plot 7-26. Occupied Bandwidth Plot (LTE Band 41(PC2) - 10MHz 16-QAM - Full RB - Ant B)



Plot 7-27. Occupied Bandwidth Plot (LTE Band 41(PC2) - 5MHz QPSK - Full RB - Ant B)

Plot 7-28. Occupied Bandwidth Plot (LTE Band 41(PC2) - 5MHz 16-QAM - Full RB - Ant B)

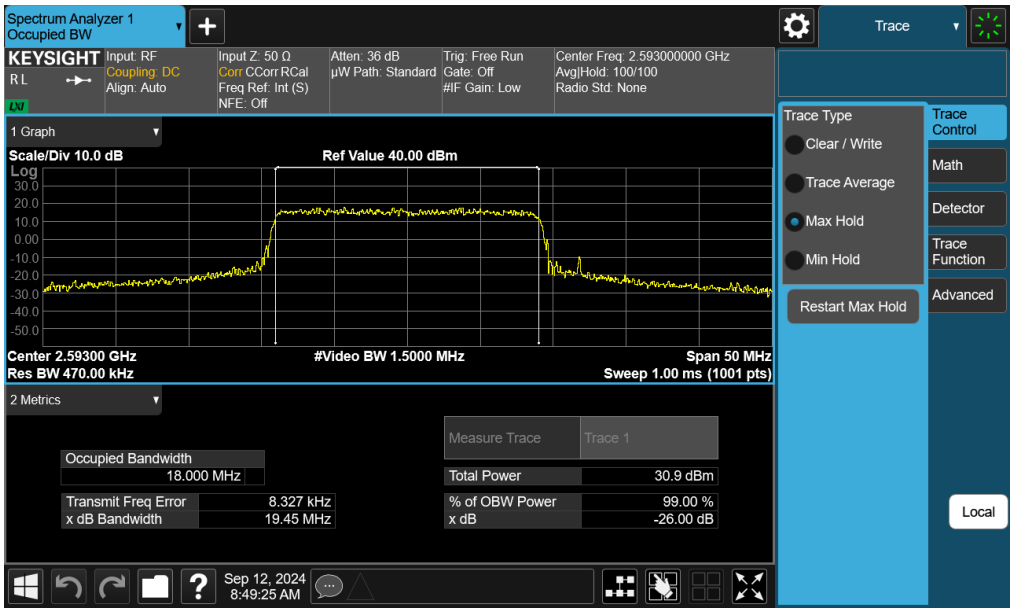
Mode	Bandwidth	Modulation	OBW [MHz]
LTE-B41PC3	20MHz	QPSK	18.00
		16QAM	17.99
	15MHz	QPSK	13.49
		16QAM	13.52
	10MHz	QPSK	9.04
		16QAM	9.01
	5MHz	QPSK	4.53
		16QAM	4.51

Table 7-4. Occupied Bandwidth Test Results – LTE – Ant F

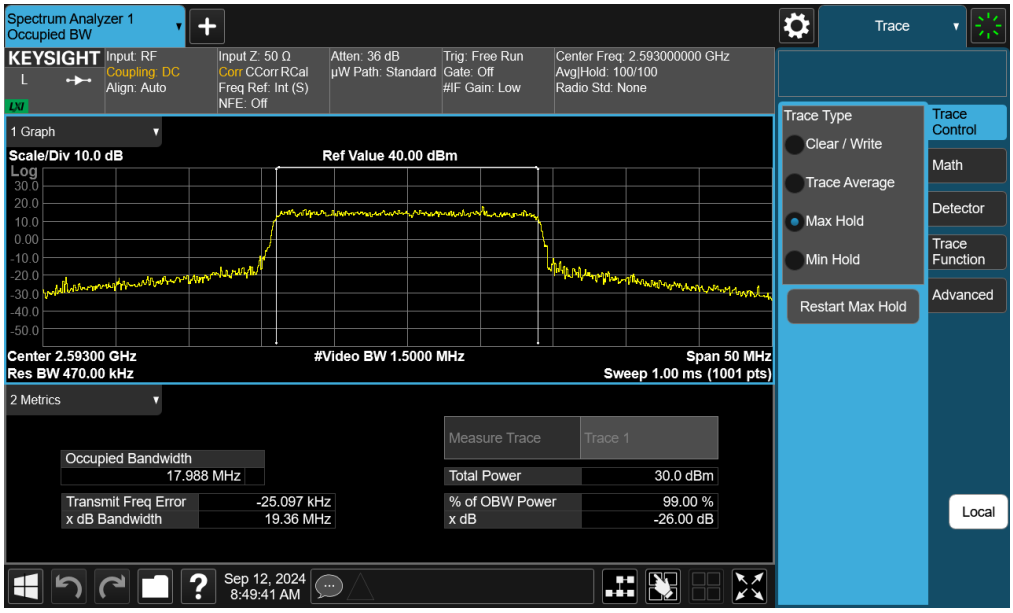
Mode	Bandwidth	Modulation	OBW [MHz]
LTE-B41PC3	20MHz	QPSK	17.98
		16QAM	17.89
	15MHz	QPSK	13.54
		16QAM	13.52
	10MHz	QPSK	9.00
		16QAM	9.03
	5MHz	QPSK	4.52
		16QAM	4.50

Table 7-5. Occupied Bandwidth Test Results – LTE – Ant B

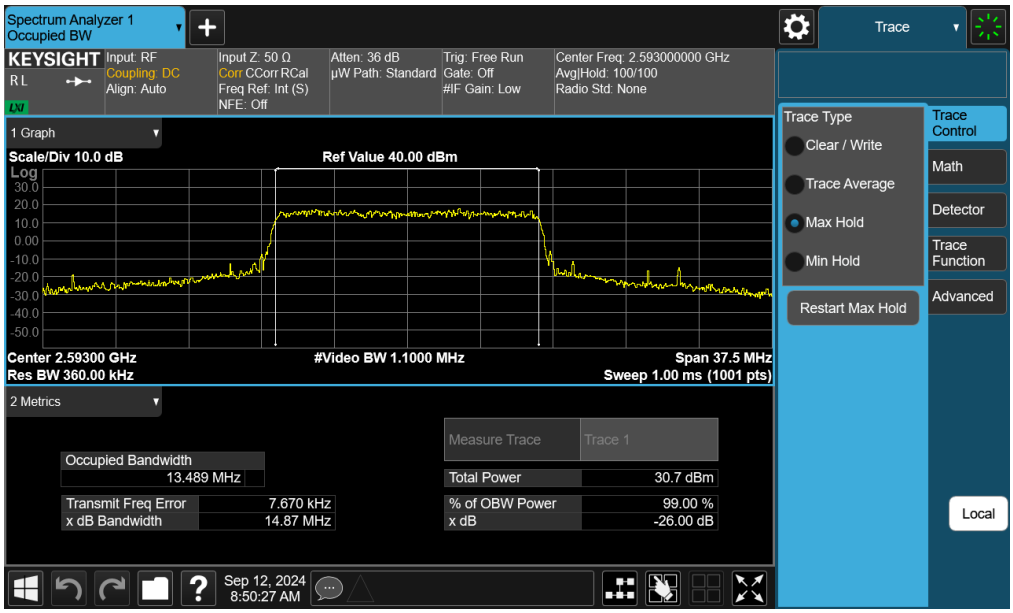
LTE Band 41(PC3) – Ant F



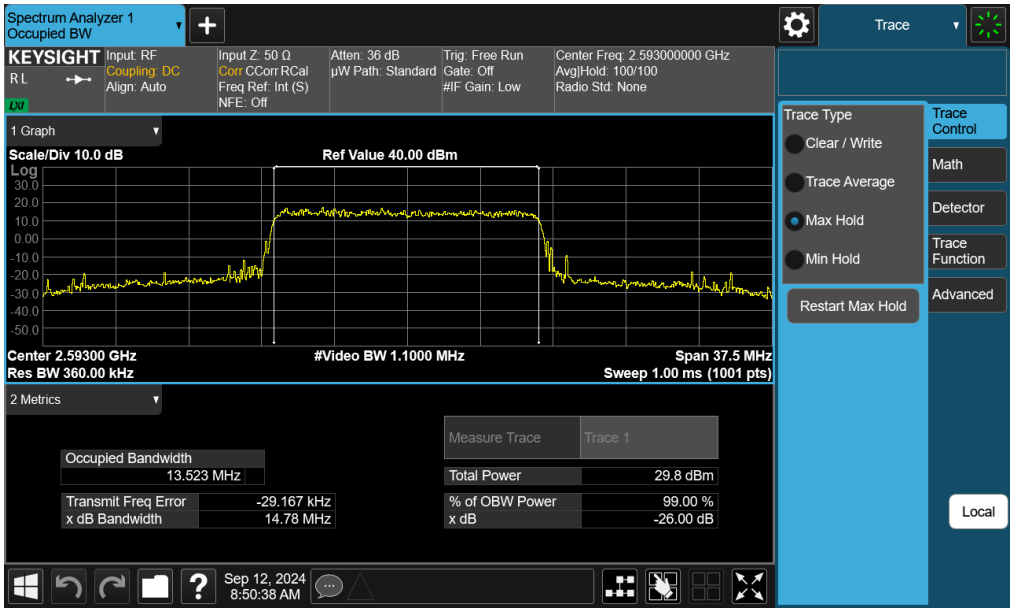
Plot 7-29. Occupied Bandwidth Plot (LTE Band 41(PC3) - 20MHz QPSK - Full RB - Ant F)



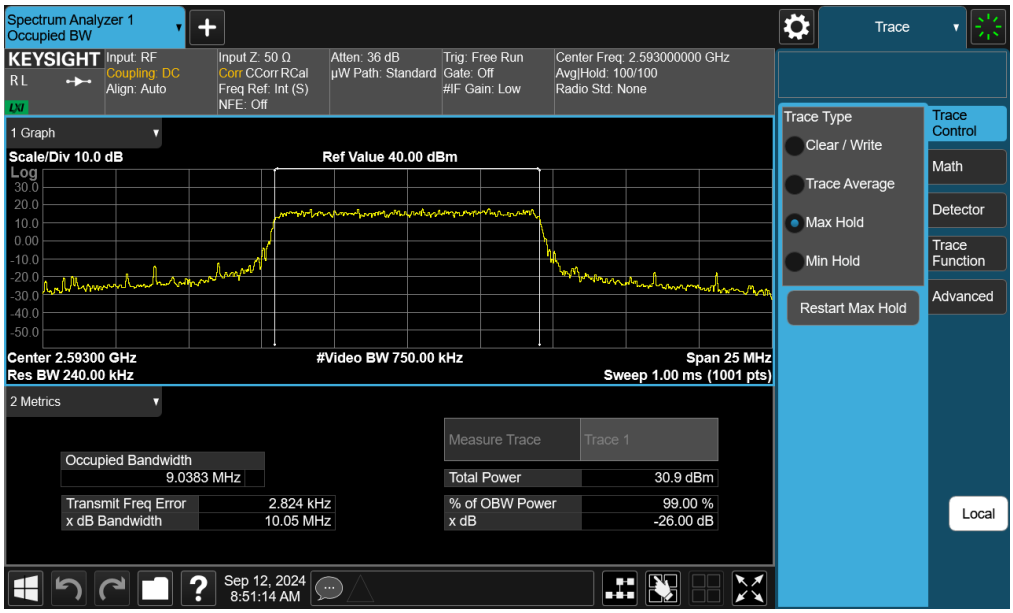
Plot 7-30. Occupied Bandwidth Plot (LTE Band 41(PC3) - 20MHz 16-QAM - Full RB - Ant F)



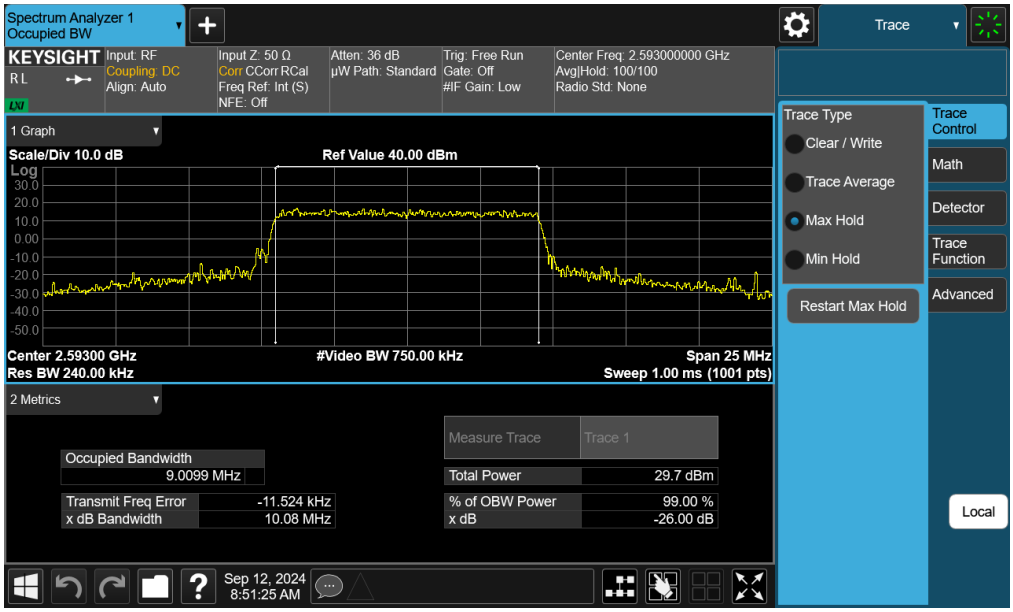
Plot 7-31. Occupied Bandwidth Plot (LTE Band 41(PC3) - 15MHz QPSK - Full RB - Ant F)



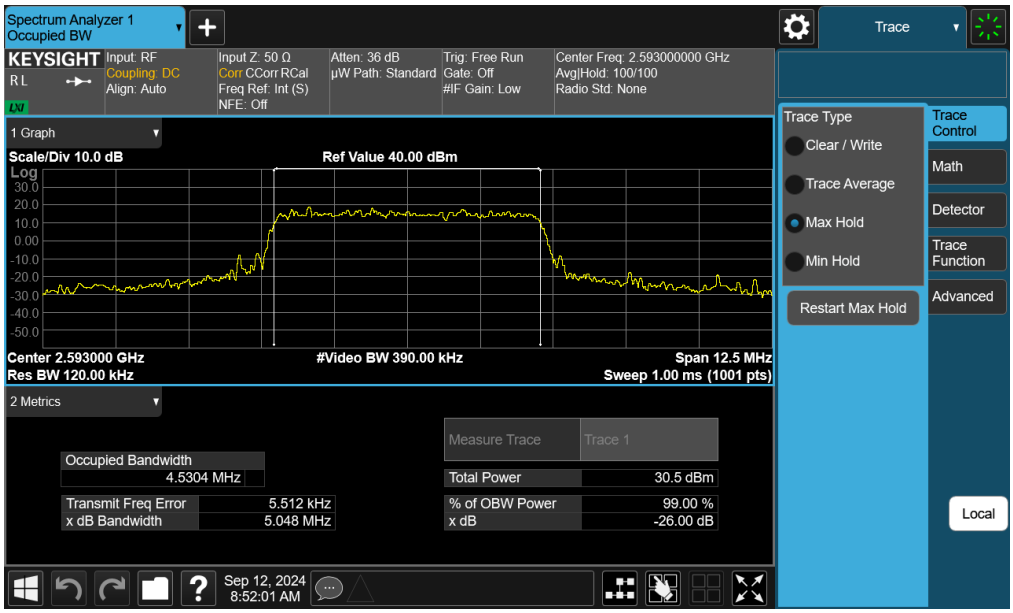
Plot 7-32. Occupied Bandwidth Plot (LTE Band 41(PC3) - 15MHz 16-QAM - Full RB - Ant F)



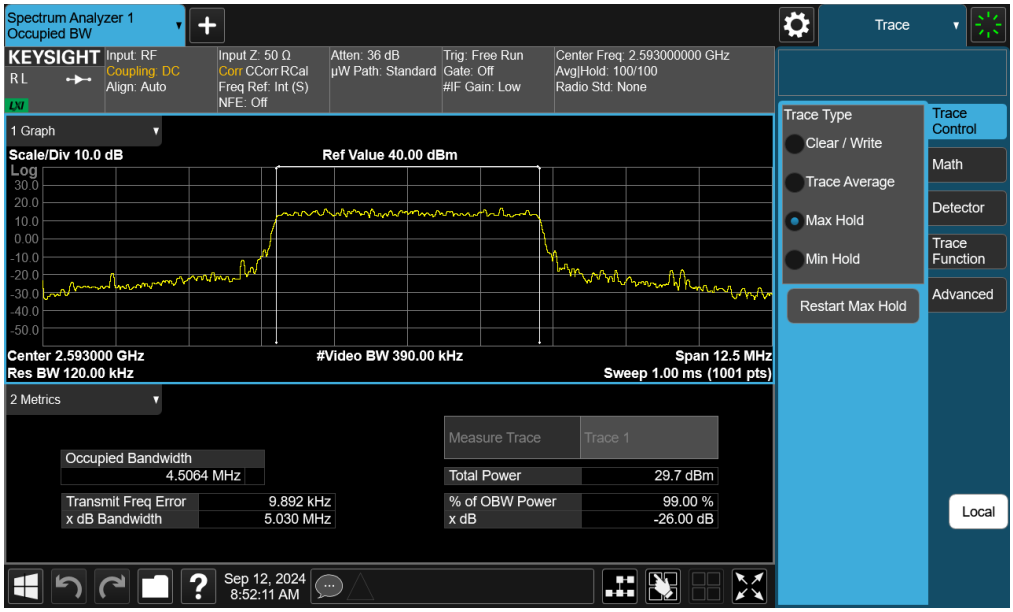
Plot 7-33. Occupied Bandwidth Plot (LTE Band 41(PC3) - 10MHz QPSK - Full RB - Ant F)



Plot 7-34. Occupied Bandwidth Plot (LTE Band 41(PC3) - 10MHz 16-QAM - Full RB - Ant F)

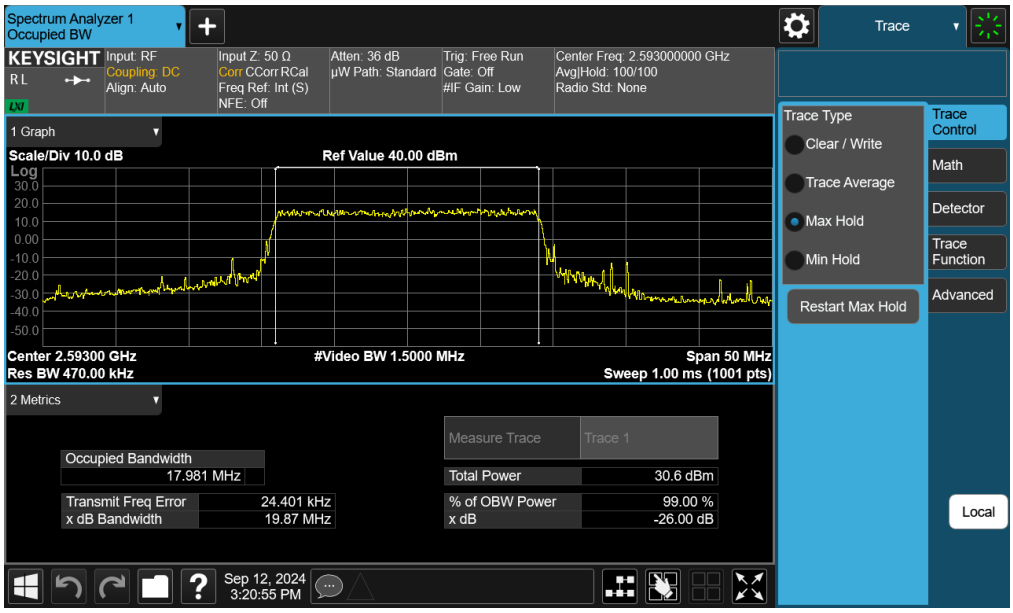


Plot 7-35. Occupied Bandwidth Plot (LTE Band 41(PC3) - 5MHz QPSK - Full RB - Ant F)

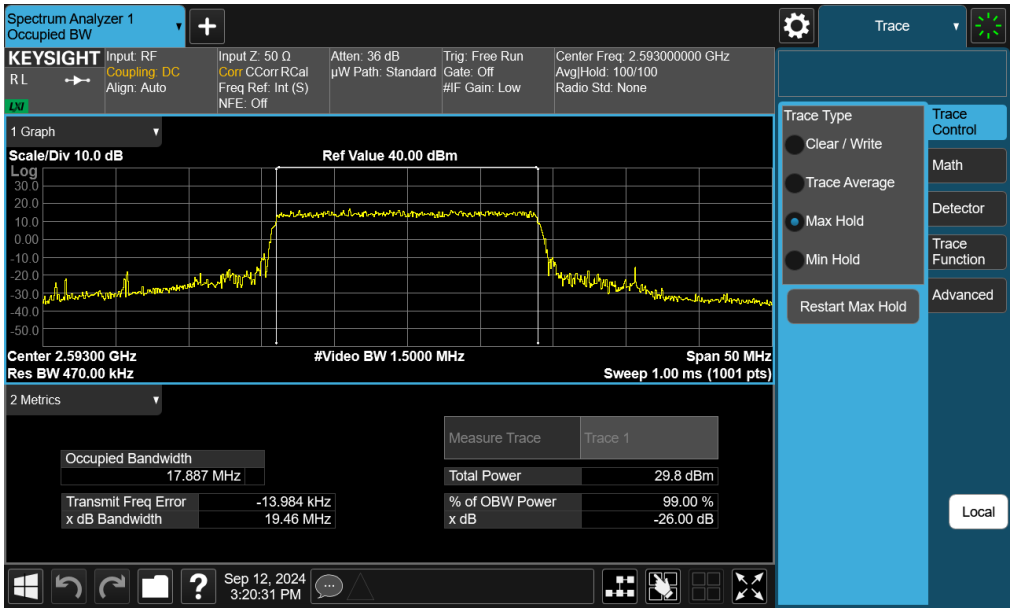


Plot 7-36. Occupied Bandwidth Plot (LTE Band 41(PC3) - 5MHz 16-QAM - Full RB - Ant F)

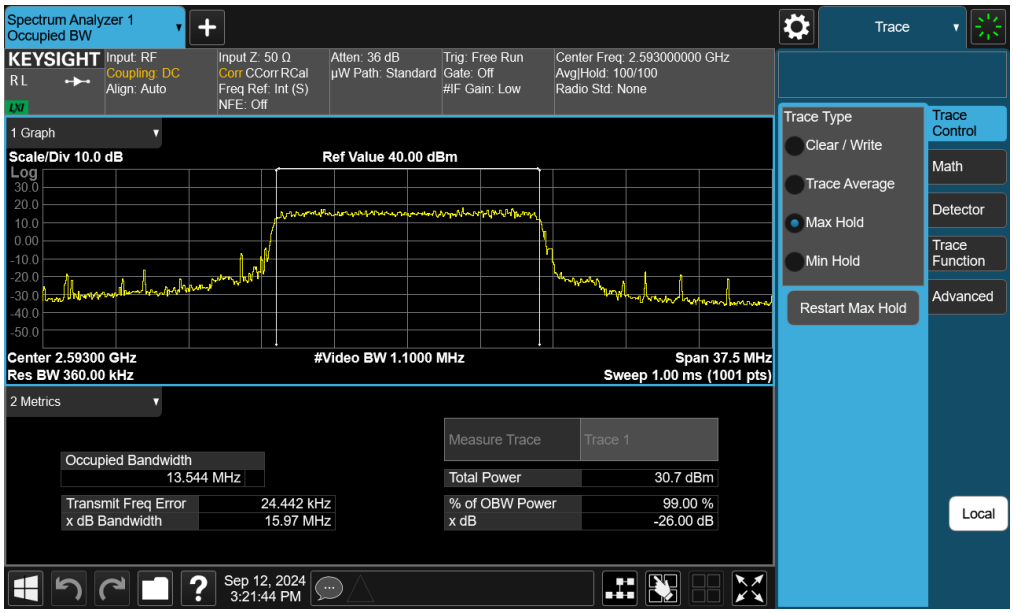
LTE Band 41(PC3) – Ant B



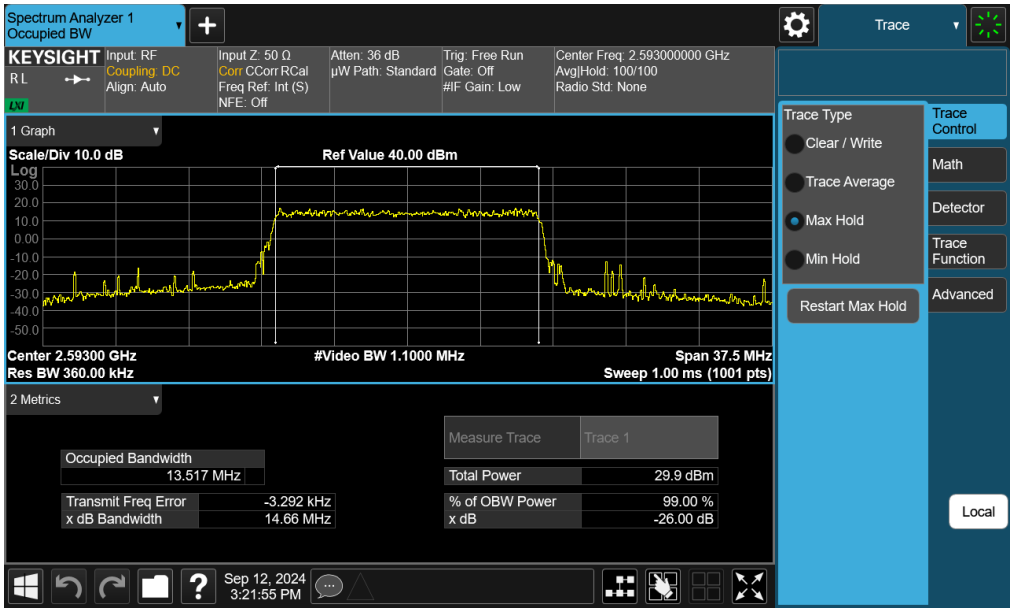
Plot 7-37. Occupied Bandwidth Plot (LTE Band 41(PC3) - 20MHz QPSK - Full RB - Ant B)



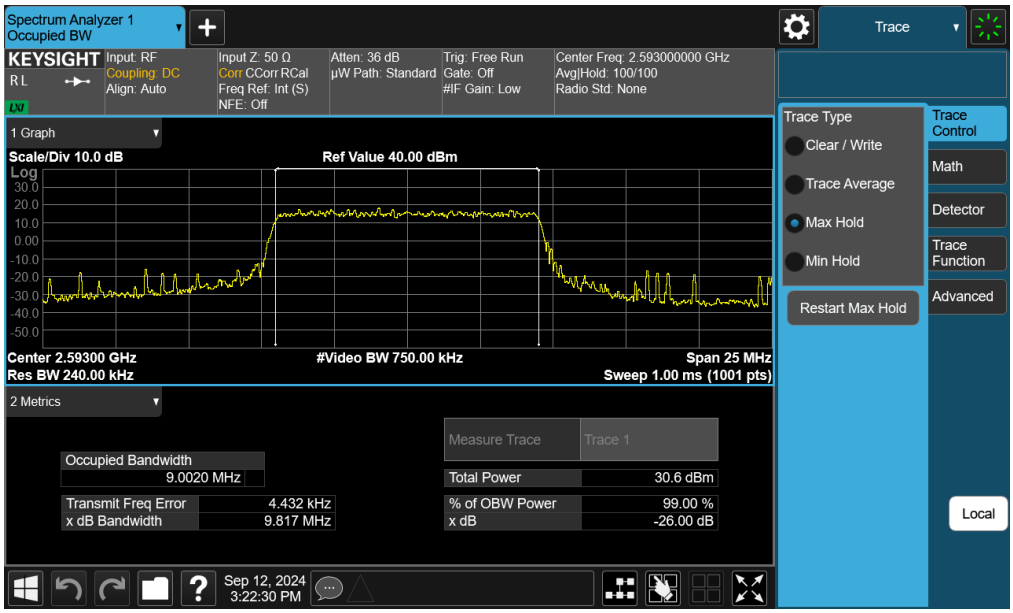
Plot 7-38. Occupied Bandwidth Plot (LTE Band 41(PC3) - 20MHz 16-QAM - Full RB - Ant B)



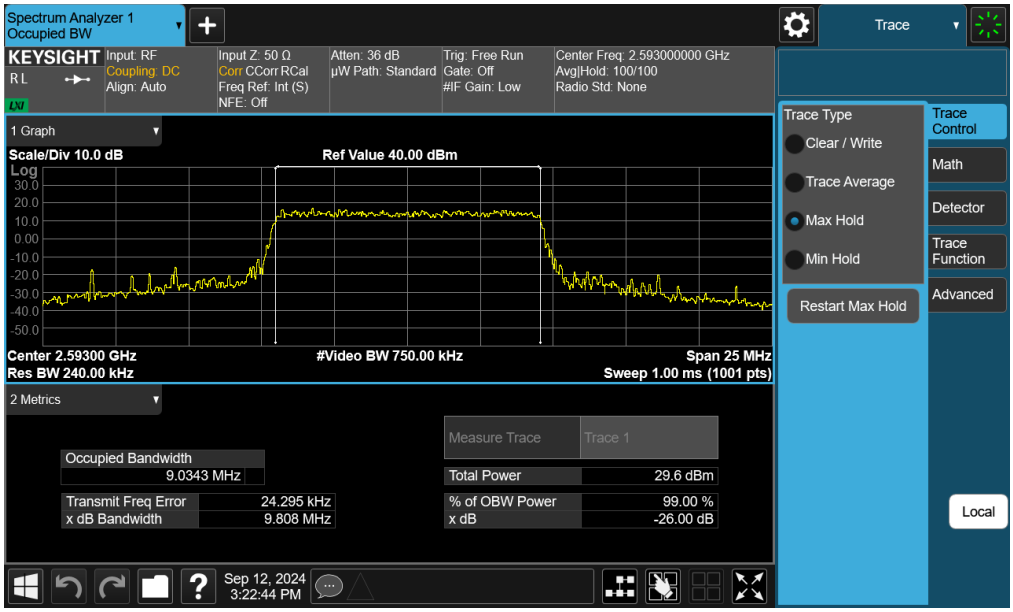
Plot 7-39. Occupied Bandwidth Plot (LTE Band 41(PC3) - 15MHz QPSK - Full RB - Ant B)



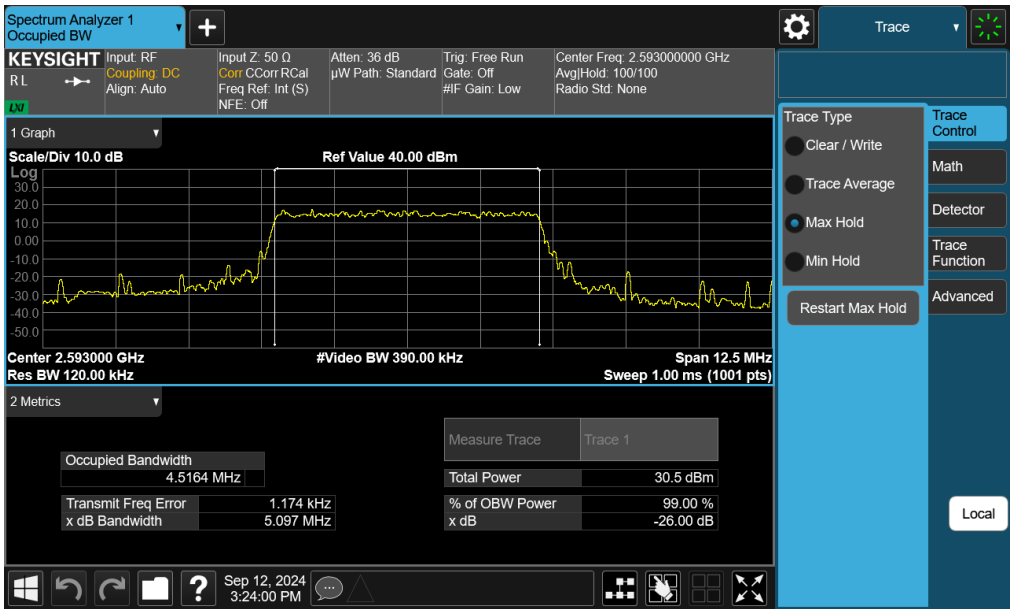
Plot 7-40. Occupied Bandwidth Plot (LTE Band 41(PC3) - 15MHz 16-QAM - Full RB - Ant B)



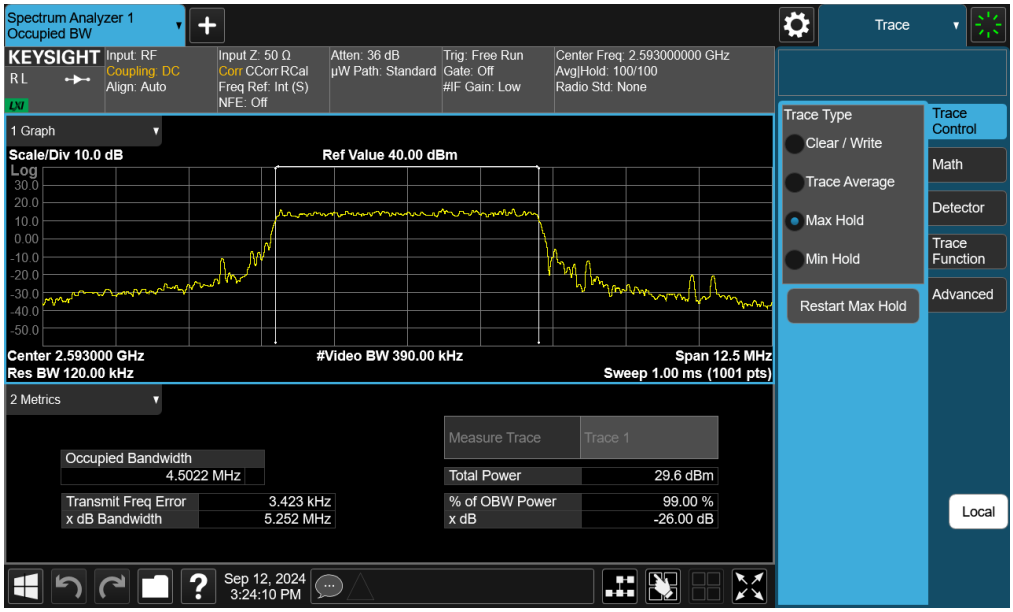
Plot 7-41. Occupied Bandwidth Plot (LTE Band 41(PC3) - 10MHz QPSK - Full RB - Ant B)



Plot 7-42. Occupied Bandwidth Plot (LTE Band 41(PC3) - 10MHz 16-QAM - Full RB - Ant B)



Plot 7-43. Occupied Bandwidth Plot (LTE Band 41(PC3) - 5MHz QPSK - Full RB - Ant B)



Plot 7-44. Occupied Bandwidth Plot (LTE Band 41(PC3) - 5MHz 16-QAM - Full RB - Ant B)

Mode	Bandwidth	Modulation	OBW [MHz]
NR-n41PC3	100MHz	π/2 BPSK	96.86
		QPSK	97.90
		16QAM	97.86
	90MHz	π/2 BPSK	87.24
		QPSK	87.90
		16QAM	87.80
	80MHz	π/2 BPSK	77.29
		QPSK	77.70
		16QAM	77.77
	70MHz	π/2 BPSK	65.36
		QPSK	68.57
		16QAM	68.64
	60MHz	π/2 BPSK	57.98
		QPSK	58.12
		16QAM	58.14
	50MHz	π/2 BPSK	46.09
		QPSK	47.90
		16QAM	47.75
	45MHz	π/2 BPSK	38.71
		QPSK	42.73
		16QAM	42.65
	40MHz	π/2 BPSK	35.90
		QPSK	38.14
		16QAM	38.10
	35MHz	π/2 BPSK	32.25
		QPSK	33.01
		16QAM	32.98
	30MHz	π/2 BPSK	27.00
		QPSK	28.05
		16QAM	28.06
	25MHz	π/2 BPSK	22.88
		QPSK	23.31
		16QAM	23.36
	20MHz	π/2 BPSK	17.94
		QPSK	18.37
		16QAM	18.38
	15MHz	π/2 BPSK	13.00
		QPSK	13.75
		16QAM	13.70
	10MHz	π/2 BPSK	8.69
		QPSK	8.71
		16QAM	8.71

Table 7-6. Occupied Bandwidth Test Results – NR – Ant F – Default

Mode	Bandwidth	Modulation	OBW [MHz]
NR-n41PC3	100MHz	π/2 BPSK	96.79
		QPSK	97.83
		16QAM	97.76
	90MHz	π/2 BPSK	87.14
		QPSK	87.84
		16QAM	87.83
	80MHz	π/2 BPSK	77.31
		QPSK	77.71
		16QAM	77.62
	70MHz	π/2 BPSK	64.56
		QPSK	67.66
		16QAM	67.63
	60MHz	π/2 BPSK	58.01
		QPSK	58.04
		16QAM	58.04
	50MHz	π/2 BPSK	45.97
		QPSK	47.75
		16QAM	47.68
	45MHz	π/2 BPSK	38.66
		QPSK	42.64
		16QAM	42.63
	40MHz	π/2 BPSK	35.92
		QPSK	37.95
		16QAM	38.04
	35MHz	π/2 BPSK	32.26
		QPSK	33.00
		16QAM	32.97
	30MHz	π/2 BPSK	26.95
		QPSK	27.99
		16QAM	27.99
	25MHz	π/2 BPSK	22.93
		QPSK	23.31
		16QAM	23.28
	20MHz	π/2 BPSK	18.00
		QPSK	18.38
		16QAM	18.37
	15MHz	π/2 BPSK	13.03
		QPSK	13.72
		16QAM	13.73
	10MHz	π/2 BPSK	8.71
		QPSK	8.67
		16QAM	8.64

Table 7-7. Occupied Bandwidth Test Results – NR – Ant B – Switching

NR Band n41(PC3) – Ant F – Default

Plot 7-45. Occupied Bandwidth Plot (NR Band n41 - 100MHz π/2 BPSK - Full RB - Ant F)

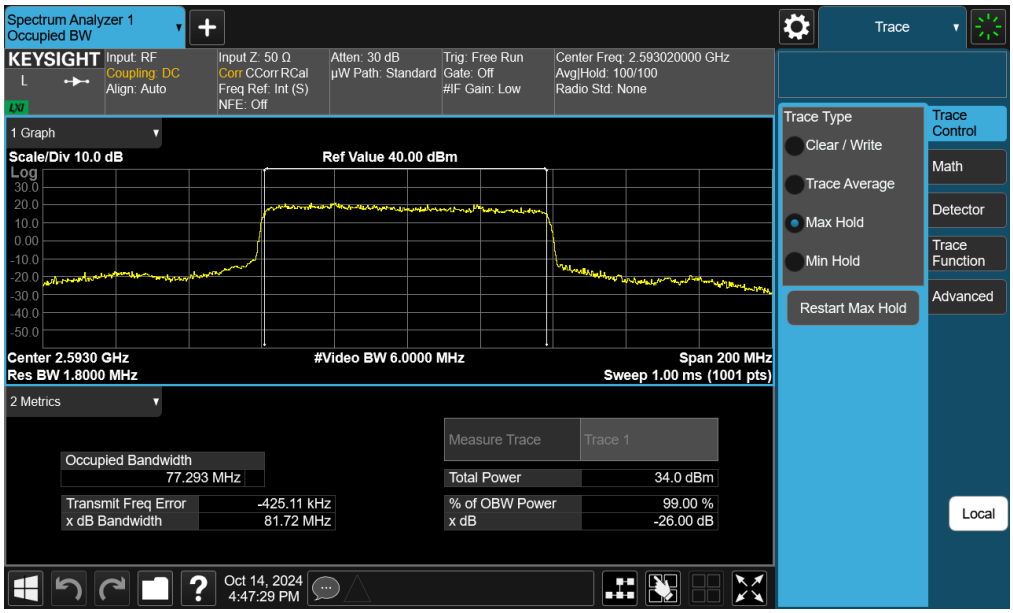
Plot 7-46. Occupied Bandwidth Plot (NR Band n41 - 100MHz QPSK - Full RB - Ant F)

Plot 7-47. Occupied Bandwidth Plot (NR Band n41 - 100MHz 16-QAM - Full RB - Ant F)

Plot 7-48. Occupied Bandwidth Plot (NR Band n41 - 90MHz π/2 BPSK - Full RB - Ant F)

Plot 7-49. Occupied Bandwidth Plot (NR Band n41 - 90MHz QPSK - Full RB - Ant F)

Plot 7-50. Occupied Bandwidth Plot (NR Band n41 - 90MHz 16-QAM - Full RB - Ant F)



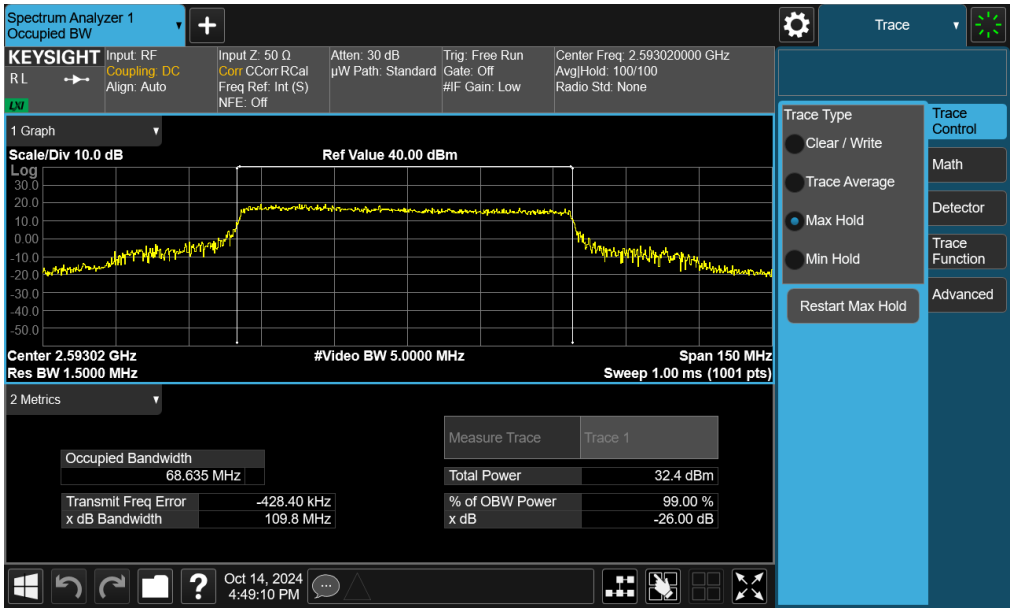
Plot 7-51. Occupied Bandwidth Plot (NR Band n41 - 80MHz π/2 BPSK - Full RB - Ant F)

Plot 7-52. Occupied Bandwidth Plot (NR Band n41 - 80MHz QPSK - Full RB - Ant F)

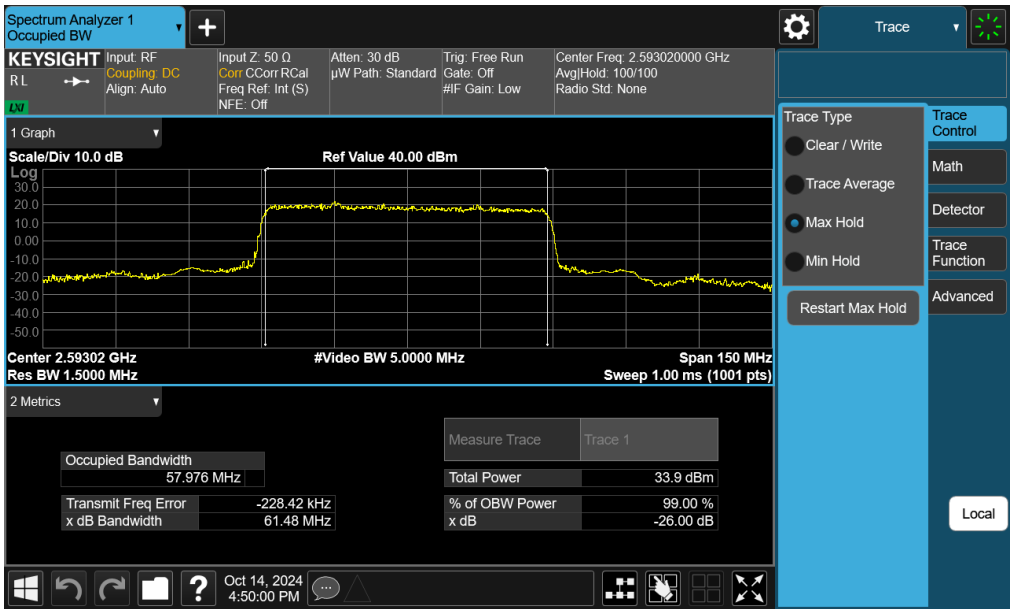
Plot 7-53. Occupied Bandwidth Plot (NR Band n41 - 80MHz 16-QAM - Full RB - Ant F)

Plot 7-54. Occupied Bandwidth Plot (NR Band n41 - 70MHz 7π/2 BPSK - Full RB - Ant F)

Plot 7-55. Occupied Bandwidth Plot (NR Band n41 - 70MHz QPSK - Full RB - Ant F)

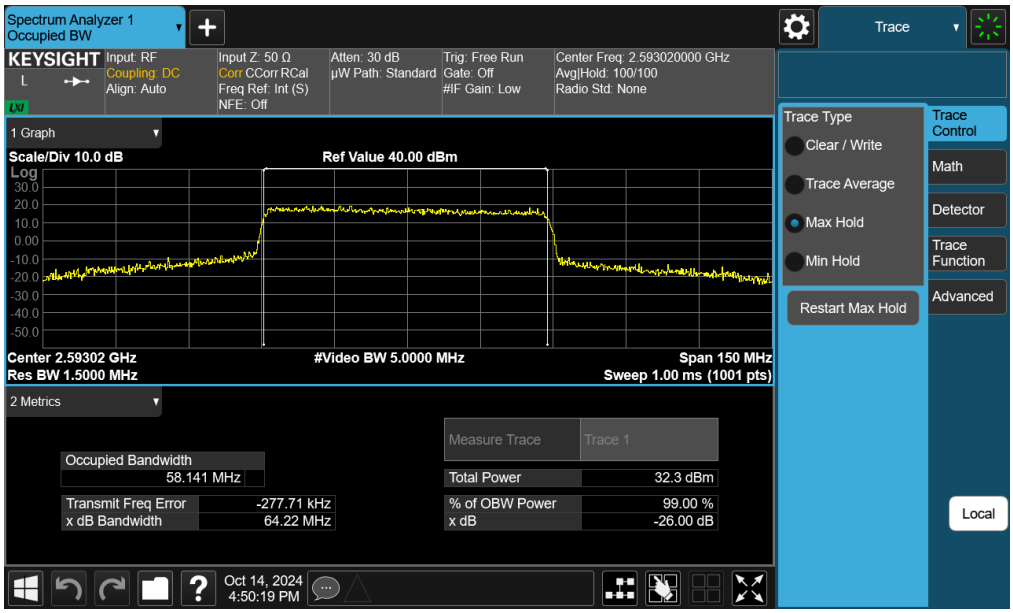


Plot 7-56. Occupied Bandwidth Plot (NR Band n41 - 70MHz 16-QAM - Full RB - Ant F)



Plot 7-57. Occupied Bandwidth Plot (NR Band n41 - 60MHz π/2 BPSK - Full RB - Ant F)

Plot 7-58. Occupied Bandwidth Plot (NR Band n41 - 60MHz QPSK - Full RB - Ant F)

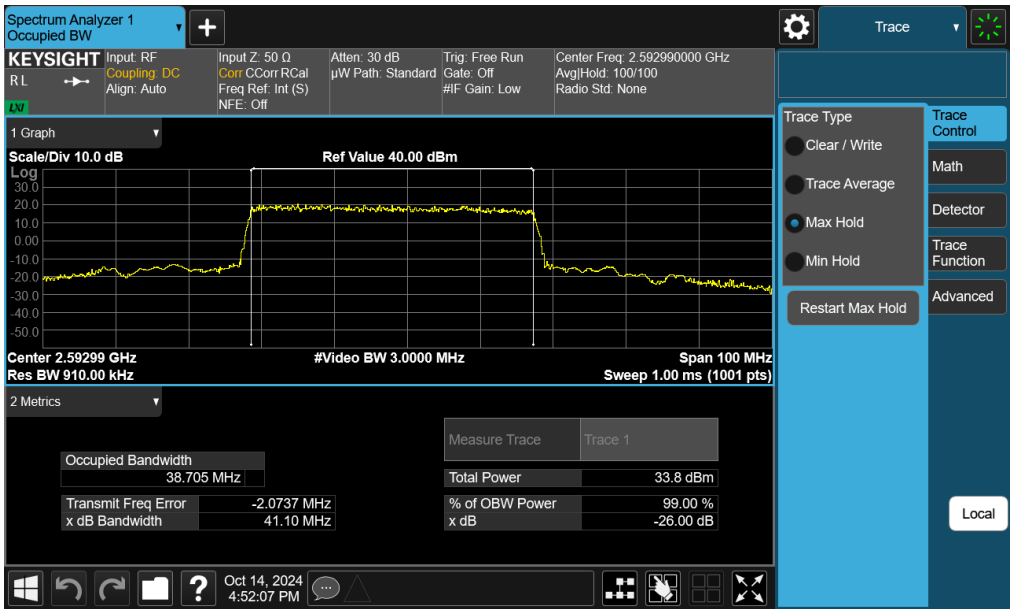


Plot 7-59. Occupied Bandwidth Plot (NR Band n41 - 60MHz 16-QAM - Full RB - Ant F)

Plot 7-60. Occupied Bandwidth Plot (NR Band n41 - 50MHz π/2 BPSK - Full RB - Ant F)

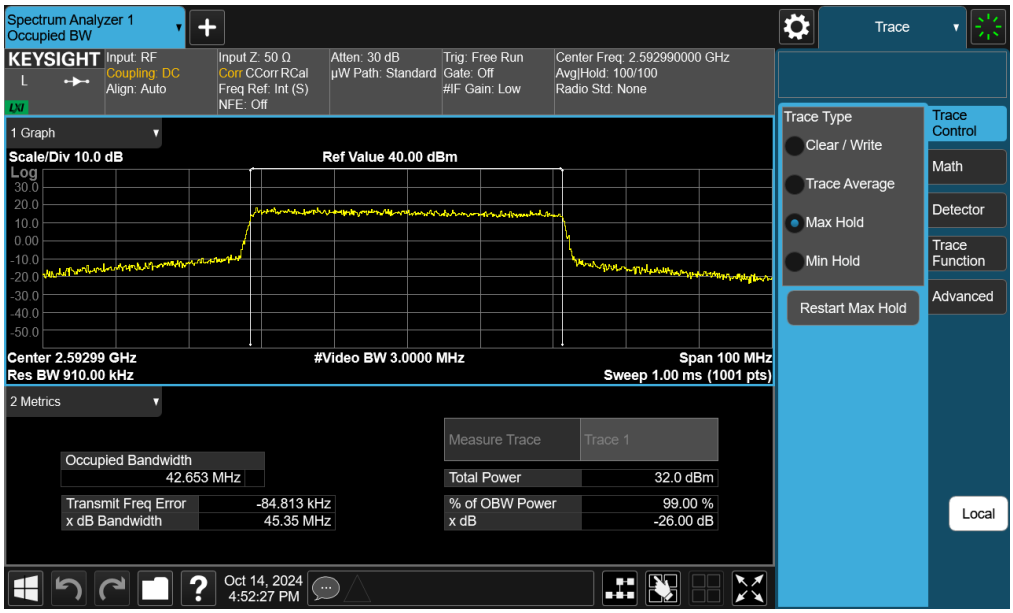
Plot 7-61. Occupied Bandwidth Plot (NR Band n41 - 50MHz QPSK - Full RB - Ant F)

Plot 7-62. Occupied Bandwidth Plot (NR Band n41 - 50MHz 16-QAM - Full RB - Ant F)

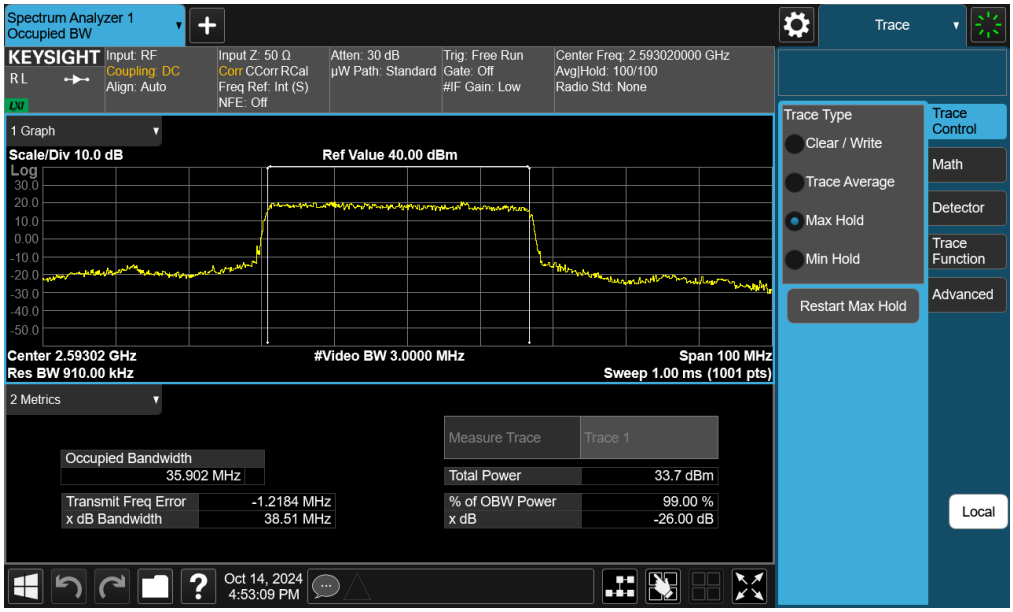


Plot 7-63. Occupied Bandwidth Plot (NR Band n41 - 45MHz π/2 BPSK - Full RB - Ant F)

Plot 7-64. Occupied Bandwidth Plot (NR Band n41 - 45MHz QPSK - Full RB - Ant F)



Plot 7-65. Occupied Bandwidth Plot (NR Band n41 - 45MHz 16-QAM - Full RB - Ant F)



Plot 7-66. Occupied Bandwidth Plot (NR Band n41 - 40MHz π/2 BPSK - Full RB - Ant F)