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PART 24 / RSS- 133 MEASUREMENT REPORT

Applicant Name:
Microsoft Corporation
One Microsoft Way
Redmond, WA 98052
United States

Date of Testing:
1/08/2024 - 3/12/2024
Test Report Issue Date:
3/15/2024
Test Site/Location:
Element lab., Columbia, MD, USA
Test Report Serial No.:
1M2312040120-09.C3K

FCC ID:	**C3K2077**
IC:	**3048A-2077**
Applicant Name:	**Microsoft Corporation**

Application Type:	Certification
Model/HVIN:	2077
EUT Type:	Portable Computing Device
FCC Classification:	PCS Licensed Transmitter (PCB)
FCC Rule Part:	24
ISED Specification	RSS-133 Issue 6 Amendment 1, SRSP-510 Issue 5
Test Procedure(s):	ANSI C63.26-2015

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

PART 24 / RSS-133 MEASUREMENT REPORT

Antenna-1						
Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	EIRP		Emission Designator
				Max. Power [W]	Max. Power [dBm]	
WCDMA	N/A	Spread Spectrum	1852.4 - 1907.6	0.259	24.13	4M19F9W
LTE Band 25/2	20 MHz	QPSK	1860 - 1905	0.245	23.89	18M0G7D
		16QAM	1860 - 1905	0.208	23.18	18M0W7D
	15 MHz	QPSK	1857.5 - 1907.5	0.256	24.08	13M5G7D
		16QAM	1857.5 - 1907.5	0.219	23.40	13M5W7D
	10 MHz	QPSK	1855 - 1910	0.250	23.98	9M02G7D
		16QAM	1855 - 1910	0.217	23.37	9M04W7D
	5 MHz	QPSK	1852.5 - 1912.5	0.258	24.11	4M54G7D
		16QAM	1852.5 - 1912.5	0.221	23.45	4M53W7D
	3 MHz	QPSK	1851.5 - 1913.5	0.254	24.05	2M72G7D
		16QAM	1851.5 - 1913.5	0.228	23.57	2M72W7D
	1.4 MHz	QPSK	1850.7 - 1914.3	0.255	24.06	1M11G7D
		16QAM	1850.7 - 1914.3	0.223	23.48	1M11W7D
NR Band n25	40 MHz	π/2 BPSK	1870 - 1895	0.244	23.88	38M8G7D
		QPSK	1870 - 1895	0.247	23.92	38M7G7D
		16QAM	1870 - 1895	0.185	22.67	38M8W7D
	30 MHz	π/2 BPSK	1865 - 1900	0.250	23.98	28M7G7D
		QPSK	1865 - 1900	0.253	24.02	28M7G7D
		16QAM	1865 - 1900	0.190	22.80	28M7W7D
	25 MHz	π/2 BPSK	1862.5 - 1902.5	0.247	23.92	23M0G7D
		QPSK	1862.5 - 1902.5	0.249	23.97	23M0G7D
		16QAM	1862.5 - 1902.5	0.227	23.55	22M9W7D
NR Band n25/2	20 MHz	π/2 BPSK	1860 - 1905	0.247	23.93	18M0G7D
		QPSK	1860 - 1905	0.246	23.91	18M0G7D
		16QAM	1860 - 1905	0.204	23.09	18M0W7D
	15 MHz	π/2 BPSK	1857.5 - 1907.5	0.249	23.96	13M5G7D
		QPSK	1857.5 - 1907.5	0.248	23.95	13M4G7D
		16QAM	1857.5 - 1907.5	0.200	23.00	13M5W7D
	10 MHz	π/2 BPSK	1855 - 1910	0.240	23.80	8M99G7D
		QPSK	1855 - 1910	0.237	23.75	8M99G7D
		16QAM	1855 - 1910	0.196	22.93	9M00W7D
	5 MHz	π/2 BPSK	1852.5 - 1912.5	0.250	23.97	4M53G7D
		QPSK	1852.5 - 1912.5	0.249	23.96	4M55G7D
		16QAM	1852.5 - 1912.5	0.197	22.94	4M54G7D

EUT Overview – Ant1

Antenna-4						
Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	EIRP		Emission Designator
				Max. Power [W]	Max. Power [dBm]	
NR Band n25	40 MHz	π/2 BPSK	1870 - 1895	0.241	23.83	38M8G7D
		QPSK	1870 - 1895	0.255	24.07	38M8G7D
		16QAM	1870 - 1895	0.206	23.15	38M8W7D
	30 MHz	π/2 BPSK	1865 - 1900	0.243	23.86	28M8G7D
		QPSK	1865 - 1900	0.274	24.37	28M7G7D
		16QAM	1865 - 1900	0.187	22.72	28M8W7D
	25 MHz	π/2 BPSK	1862.5 - 1902.5	0.247	23.92	23M0G7D
		QPSK	1862.5 - 1902.5	0.262	24.18	23M9G7D
		16QAM	1862.5 - 1902.5	0.186	22.69	23M9W7D
NR Band n25/2	20 MHz	π/2 BPSK	1860 - 1905	0.254	24.04	18M0G7D
		QPSK	1860 - 1905	0.261	24.17	19M0G7D
		16QAM	1860 - 1905	0.192	22.83	19M0W7D
	15 MHz	π/2 BPSK	1857.5 - 1907.5	0.247	23.93	13M5G7D
		QPSK	1857.5 - 1907.5	0.271	24.33	14M2G7D
		16QAM	1857.5 - 1907.5	0.194	22.88	14M2W7D
	10 MHz	π/2 BPSK	1855 - 1910	0.244	23.88	9M00G7D
		QPSK	1855 - 1910	0.274	24.37	9M34G7D
		16QAM	1855 - 1910	0.182	22.61	9M36W7D
	5 MHz	π/2 BPSK	1852.5 - 1912.5	0.236	23.74	4M53G7D
		QPSK	1852.5 - 1912.5	0.269	24.30	4M51G7D
		16QAM	1852.5 - 1912.5	0.187	22.72	4M51W7D

EUT Overview – Ant4

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 **Microsoft Corporation Portable Computing Device FCC ID: C3K2077 / IC: 3048A-2077**. 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 24 and RSS-133.

Test Device Serial No.: B44F2, B44T2, B44D2, 7CBC2, B44G2

2.2 Device Capabilities

This device contains the following capabilities:

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)

2.3 Test Configuration

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

2.4 Software and Firmware

Testing was performed on device(s) using software/firmware version 2024.111.46 installed on the EUT.

2.5 EMI Suppression Device(s)/Modifications

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

3.0 DESCRIPTION OF TESTS

3.1 Evaluation Procedure

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

Deviation from Measurement Procedure……..……None

3.2 Radiated Power and Radiated Spurious Emissions

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

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

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

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

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

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

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

And

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

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

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

4.0 MEASUREMENT UNCERTAINTY

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

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

5.0 TEST EQUIPMENT CALIBRATION DATA

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

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
-	AP2-001	EMC Cable and Switch System	11/15/2023	Annual	11/15/2024	AP2-001
-	AP2-002	EMC Cable and Switch System	11/15/2023	Annual	11/15/2024	AP2-002
-	AP1-002	EMC Cable and Switch System	11/15/2023	Annual	11/15/2024	AP1-002
-	LTx3	LIcensed Transmitter Cable Set	11/15/2023	Annual	11/15/2024	LTx3
-	LTx4	Licensed Transmitter Cable Set	11/15/2023	Annual	11/15/2024	LTx4
-	LTx5	LIcensed Transmitter Cable Set	11/15/2023	Annual	11/15/2024	LTx5
Anritsu	MT8821C	Radio Communication Analyzer	7/5/2023	Annual	7/5/2024	6262150000
Espec	SCP-220	Environmental Chamber	5/25/2022	Annual	5/25/2024	OCPS5H0612K05
Keysight Technologies	N9030A	PXA Signal Analyzer (44GHz)	3/15/2023	Annual	3/15/2024	MY52350166
Keysight Technologies	N9020A	MXA Signal Analyzer	3/15/2023	Annual	3/15/2024	MY54500644
Keysight Technologies	N9030A	PXA Signal Analyzer	2/29/2024	Annual	3/1/2025	MY55410501
Keysight Technologies	N9030B	PXA Signal Analyzer, Multi-touch	9/7/2023	Annual	9/7/2024	MY57141001
Keysight Technologies	N9038A	MXE EMI Receiver	8/30/2023	Annual	8/30/2024	MY51210133
Rohde & Schwarz	CMW500	Radio Communication Tester	N/A			100976
Rohde & Schwarz	ESU26	EMI Test Receiver (26.5GHz)	9/25/2023	Annual	9/25/2024	100342
Rohde & Schwarz	ESU40	EMI Test Receiver (40GHz)	9/11/2020	Annual	9/11/2024	100348
Rohde & Schwarz	FSW67	Signal / Spectrum Analyzer	2/15/2024	Annual	2/15/2025	103200
Schwarzbeck	VULB9162	Bilog Antenna	2/21/2023	Biennial	2/21/2025	83706
Rohde & Schwarz	TC-TA18	Vivaldi Antenna	2/23/2023	Biennial	2/23/2025	101072

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

WCDMA Emission Designator

Emission Designator = 4M16F9W
WCDMA BW = 4.16 MHz
F = Frequency Modulation
9 = Composite Digital Info
W = Combination (Audio/Data)

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: Microsoft Corporation

FCC ID: C3K2077

FCC Classification: PCS Licensed Transmitter (PCB)

Mode(s): WCDMA/NR/LTE/UL-CA

Test Condition	Test Description	FCC Part Section(s)	RSS Section(s)	Test Limit	Test Result	Reference
CONDUCTED	Transmitter Conducted Output Power	2.1046(a), 2.1046(c)	RSS-Gen(6.12)	N/A	PASS	Section 7.2
	Occupied Bandwidth	2.1049(h)	RSS-Gen(6.7)	N/A	PASS	Section 7.3
	Conducted Band Edge / Spurious Emissions	2.1051, 24.238(a)	RSS-Gen(6.13), RSS-133(6.5)	> 43 + 10log10(P[Watts]) at Band Edge and for all out-of-band emissions	PASS	Sections 7.4, 7.5
	Peak-to-Average Ratio	24.232(d)	RSS-133(6.4)	≤ 13 dB	PASS	Section 7.6
	Frequency Stability	2.1055, 24.235	RSS-Gen(6.11), RSS-133(6.3)	Fundamental emissions stay within authorized frequency block **Carrier frequency shall not depart from the reference frequency in excess of ±2.5 ppm	PASS	Section 7.9
RADIATED	Equivalent Isotropic Radiated Power	24.232(c)	RSS-Gen(6.12), RSS-133(6.4)	< 2 Watts max. EIRP	PASS	Section 7.7
	Radiated Spurious Emissions	2.1053, 24.238(a)	RSS-Gen(6.13), RSS-133(6.5)	≥ 43 + 10 log (P[Watts]) dB of attenuation below transmitter power **Spurious emissions from receivers shall not exceed the limits detailed in RSS-Gen(7.3)	PASS	Section 7.8

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.

Test Procedure Used

ANSI C63.26-2015 – Section 5.2

Test Settings

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

Test Setup

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

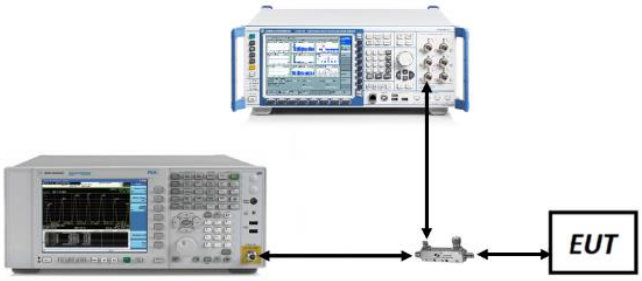


Figure 7-1. Test Instrument & Measurement Setup

Test Notes

1. Uplink carrier aggregation is only supported in this EUT while operating in Power Class 3.

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

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

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

Power State	Band	Bandwidth (PCC + SCC)	PCC					SCC					ULCA Tx. Power [dBm]
			Modulation	UL Channel	UL Frequenc	UL # RB	UL RB Offset	Modulation	UL Channel	UL Frequenc	UL # RB	UL RB Offset	
Max	LTE B2	20MHz + 20MHz	QPSK	18700	1860.0	1	99	QPSK	18898	1879.8	1	0	24.69
				18900	1880.0	1	99		19098	1899.8	1	0	24.71
				19100	1900.0	1	0		18902	1880.2	1	99	24.74
			QPSK	132072	1720	100	0	QPSK	132270	1739.8	100	0	22.90
			16-QAM	132072	1720	100	0	16-QAM	132270	1739.8	100	0	21.88
			64-QAM	132072	1720	100	0	64-QAM	132270	1739.8	100	0	21.85
			256-QAM	132072	1720	100	0	256-QAM	132270	1739.8	100	0	19.88

Table 7-2. Conducted Power Output Data (ULCA LTE Band 2 – Ant1)

7.3 Occupied Bandwidth

Test Overview

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

Test Procedure Used

ANSI C63.26-2015 – Section 5.4.4

Test Settings

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

Test Setup

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

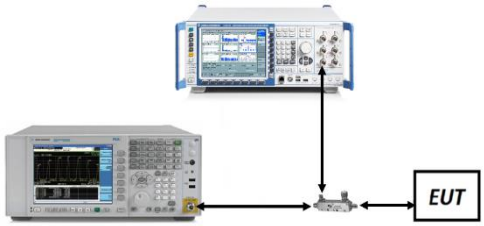


Figure 7-2. Test Instrument & Measurement Setup

Test Notes

None.

Mode	Bandwidth	Modulation	OBW [MHz]
WCDMA-PCS	N/A	Spread Spectrum	4.19
LTE-B25-2	20MHz	QPSK	18.02
		16QAM	18.05
	15MHz	QPSK	13.52
		16QAM	13.54
	10MHz	QPSK	9.02
		16QAM	9.04
	5MHz	QPSK	4.54
		16QAM	4.53
	3MHz	QPSK	2.72
		16QAM	2.72
	1.4MHz	QPSK	1.11
		16QAM	1.11

Table 7-3. Occupied Bandwidth Test Results – Ant1

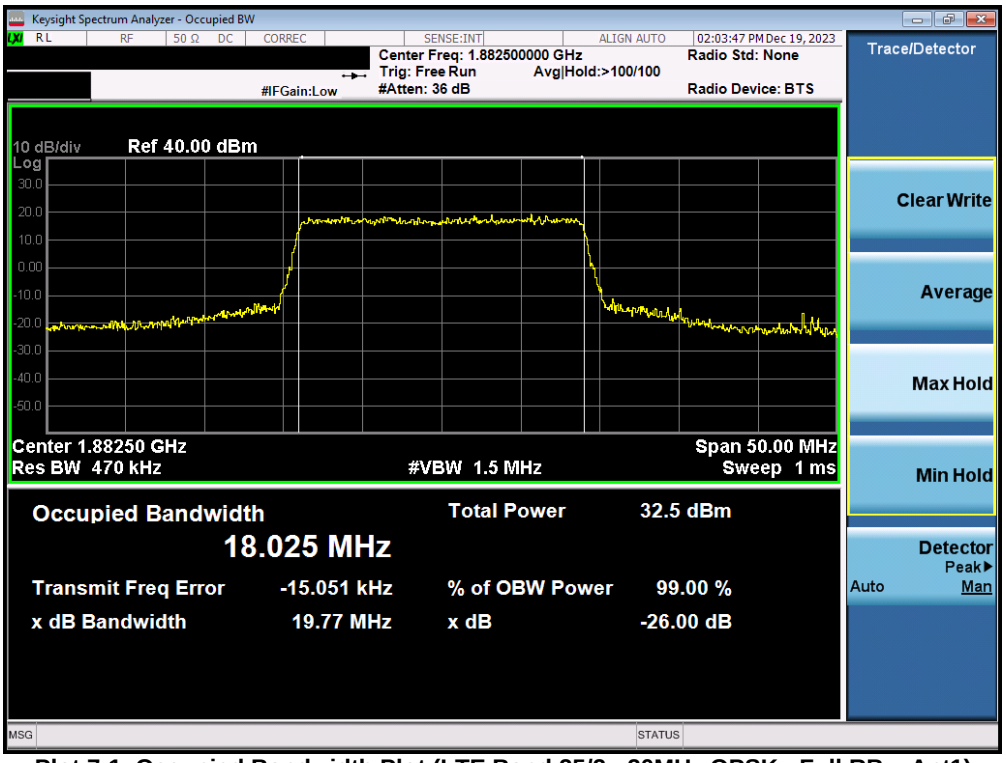
Mode	Bandwidth	Modulation	OBW [MHz]
NR-n25-2	40MHz	BPSK	38.82
		QPSK	38.72
		16QAM	38.79
	30MHz	BPSK	28.73
		QPSK	28.70
		16QAM	28.70
	25MHz	BPSK	22.96
		QPSK	23.03
		16QAM	22.94
	20MHz	BPSK	17.98
		QPSK	17.97
		16QAM	17.96
	15MHz	BPSK	13.46
		QPSK	13.45
		16QAM	13.49
	10MHz	BPSK	8.99
		QPSK	8.99
		16QAM	9.00
	5MHz	BPSK	4.53
		QPSK	4.55
		16QAM	4.54

Table 7-4. Occupied Bandwidth Test Results – Ant1

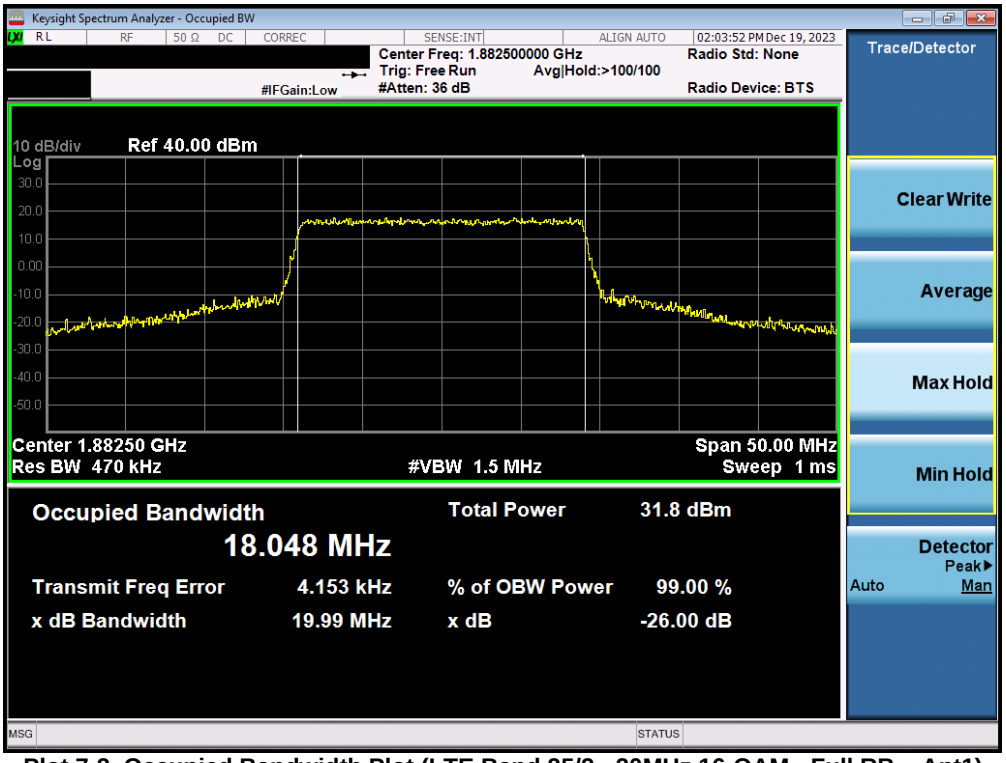
Mode	Bandwidth	Modulation	OBW [MHz]
NR-n25-2	40MHz	BPSK	38.83
		QPSK	38.81
		16QAM	38.82
	30MHz	BPSK	28.80
		QPSK	28.73
		16QAM	28.75
	25MHz	BPSK	23.01
		QPSK	23.89
		16QAM	23.92
	20MHz	BPSK	18.01
		QPSK	19.03
		16QAM	19.04
	15MHz	BPSK	13.49
		QPSK	14.16
		16QAM	14.23
	10MHz	BPSK	9.00
		QPSK	9.34
		16QAM	9.36
	5MHz	BPSK	4.53
		QPSK	4.51
		16QAM	4.51

Table 7-5. Occupied Bandwidth Test Results – Ant4

LTE Band 25/2 – Ant1

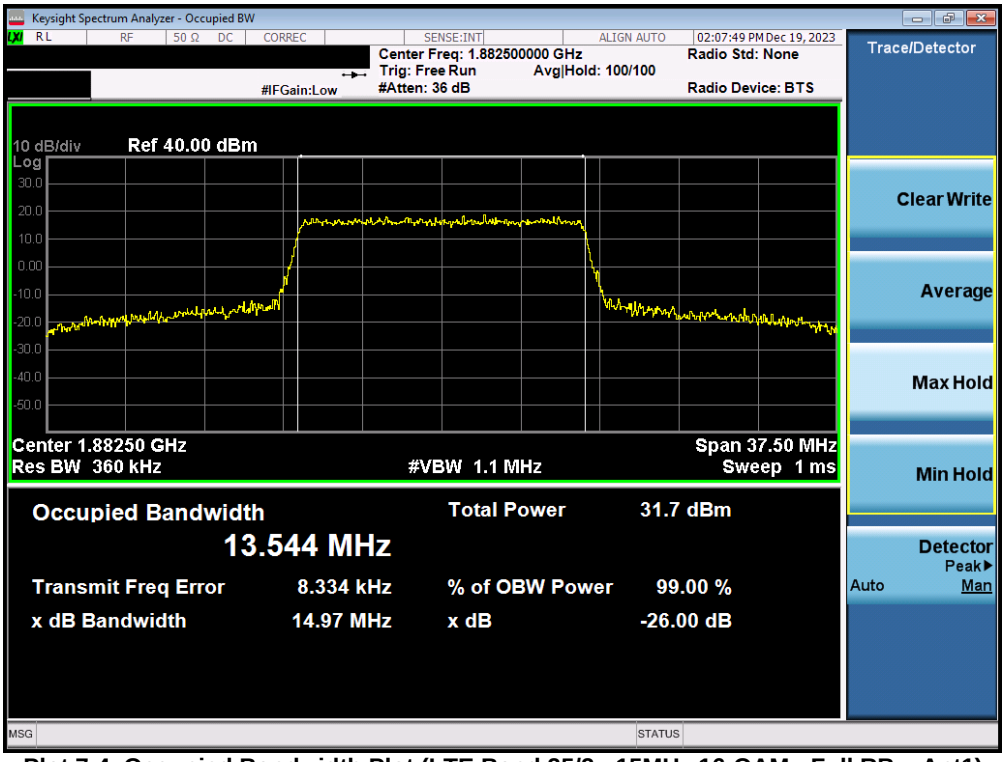


Plot 7-1. Occupied Bandwidth Plot (LTE Band 25/2 - 20MHz QPSK - Full RB – Ant1)

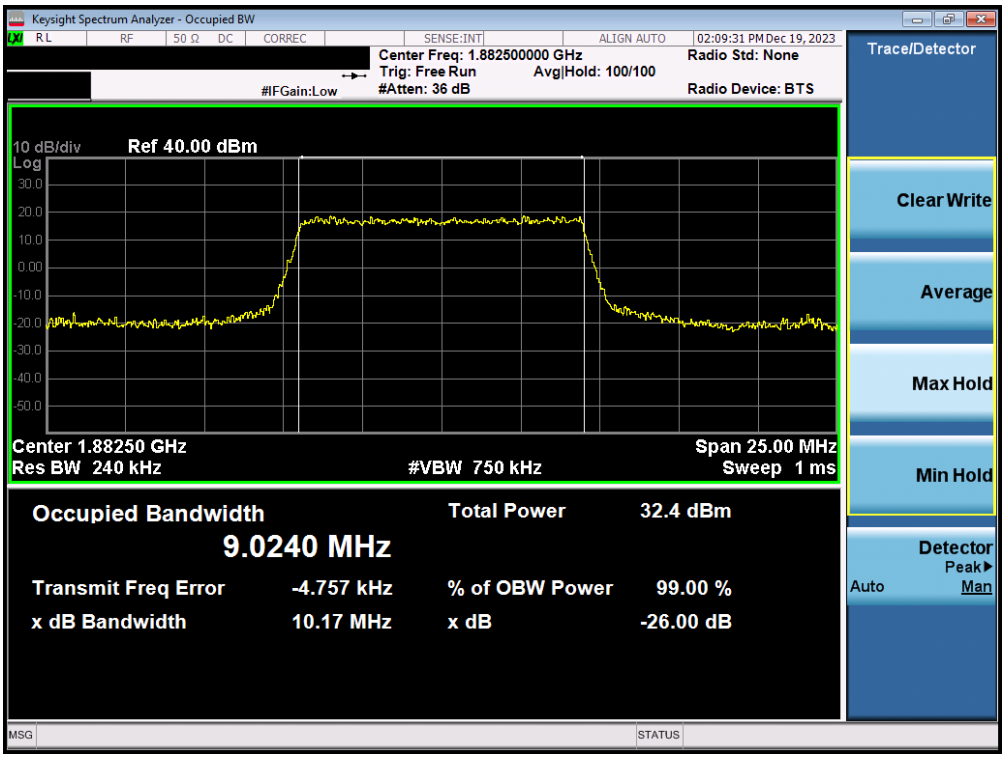


Plot 7-2. Occupied Bandwidth Plot (LTE Band 25/2 - 20MHz 16-QAM - Full RB – Ant1)

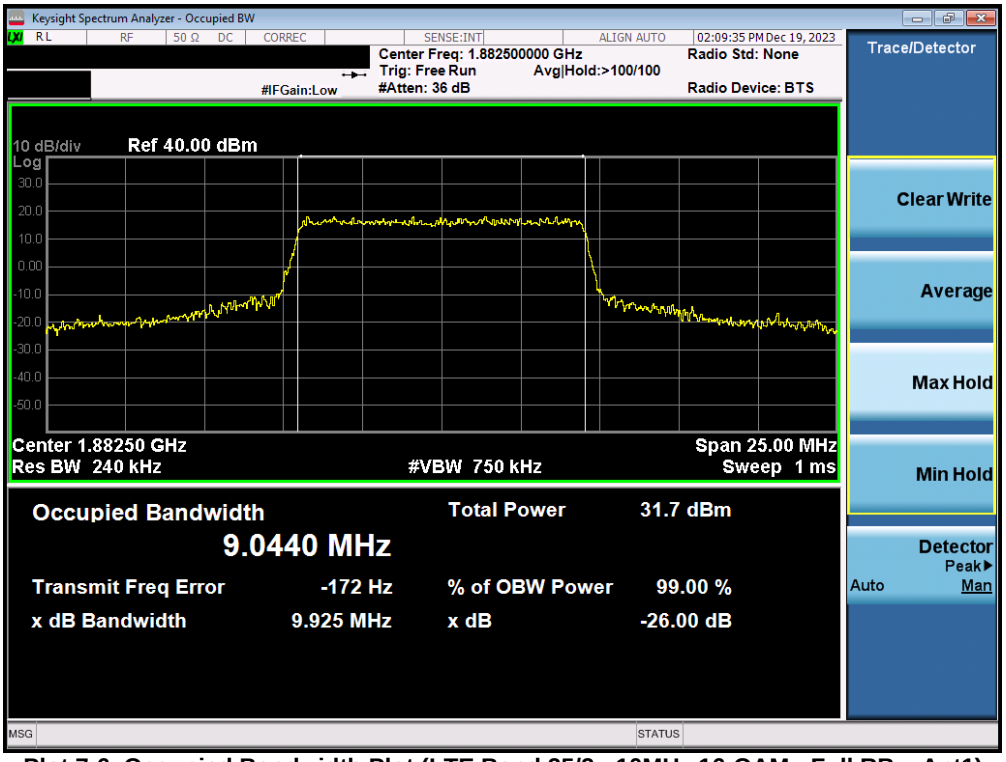
Plot 7-3. Occupied Bandwidth Plot (LTE Band 25/2 - 15MHz QPSK - Full RB – Ant1)



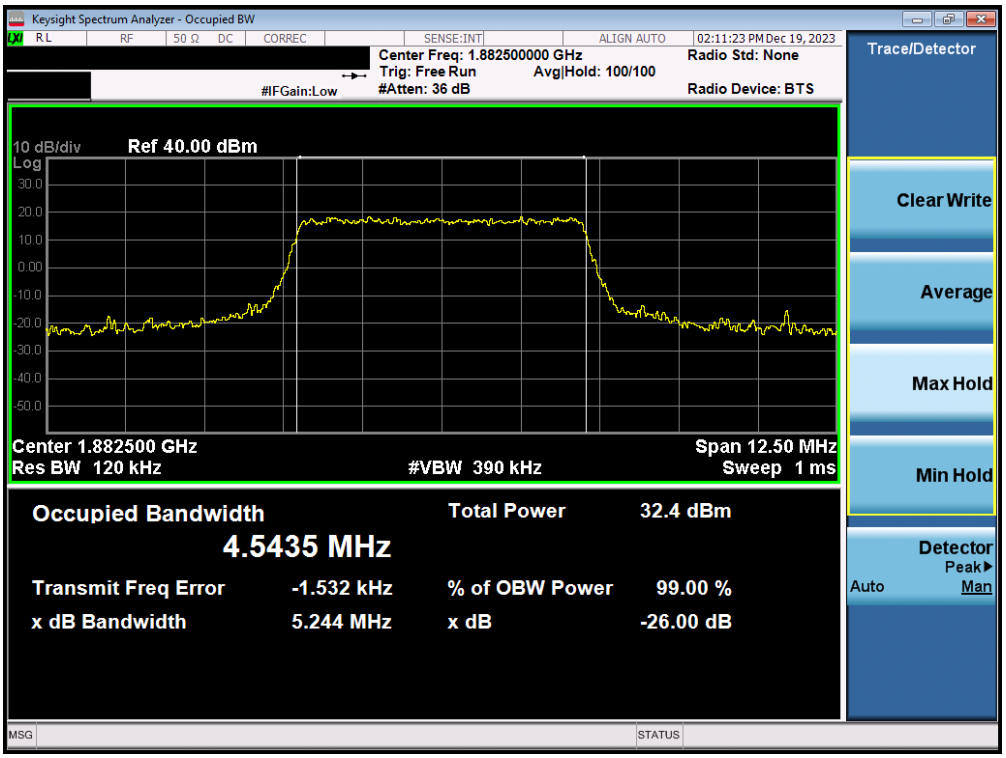
Plot 7-4. Occupied Bandwidth Plot (LTE Band 25/2 - 15MHz 16-QAM - Full RB – Ant1)



Plot 7-5. Occupied Bandwidth Plot (LTE Band 25/2 - 10MHz QPSK - Full RB – Ant1)

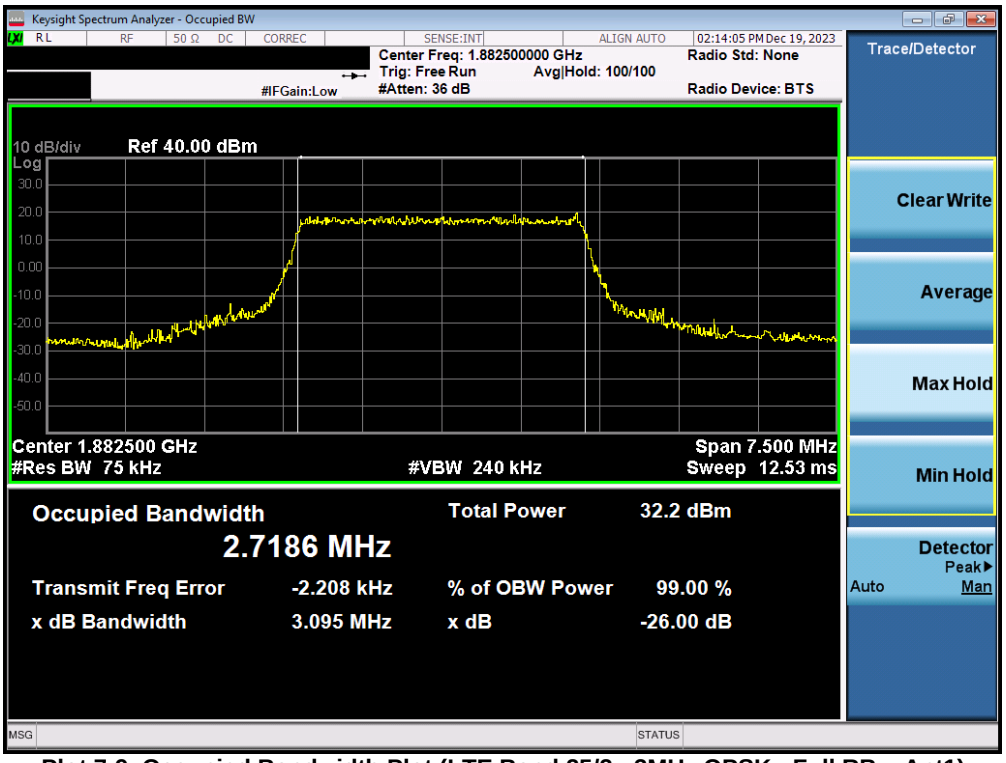


Plot 7-6. Occupied Bandwidth Plot (LTE Band 25/2 - 10MHz 16-QAM - Full RB – Ant1)

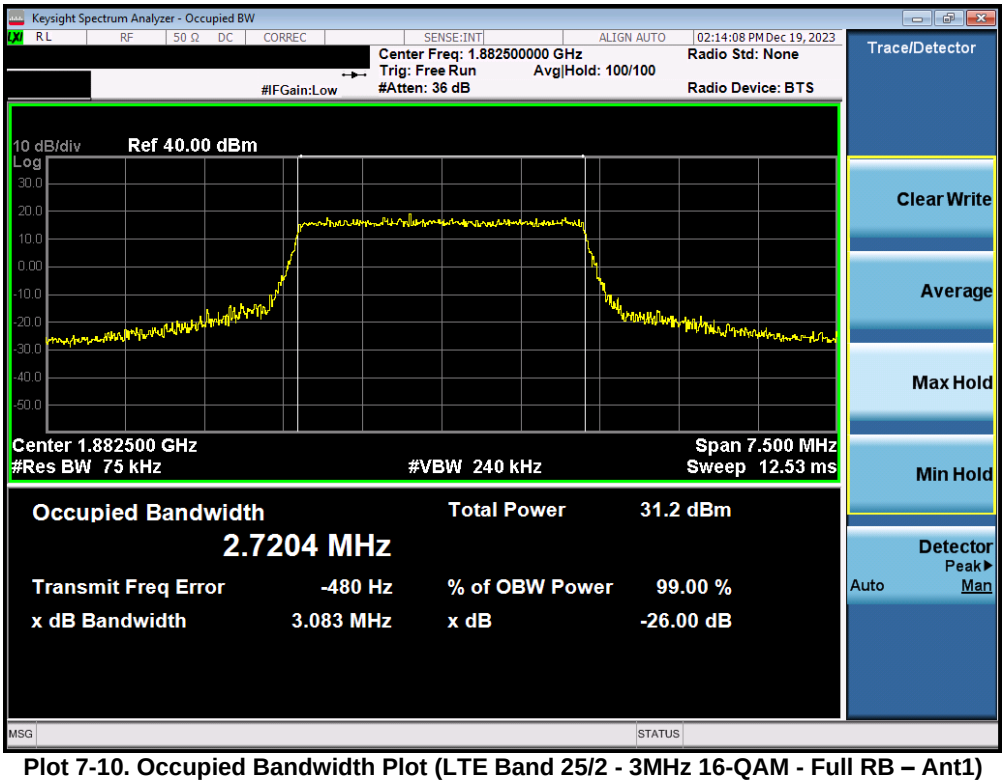


Plot 7-7. Occupied Bandwidth Plot (LTE Band 25/2 - 5MHz QPSK - Full RB – Ant1)

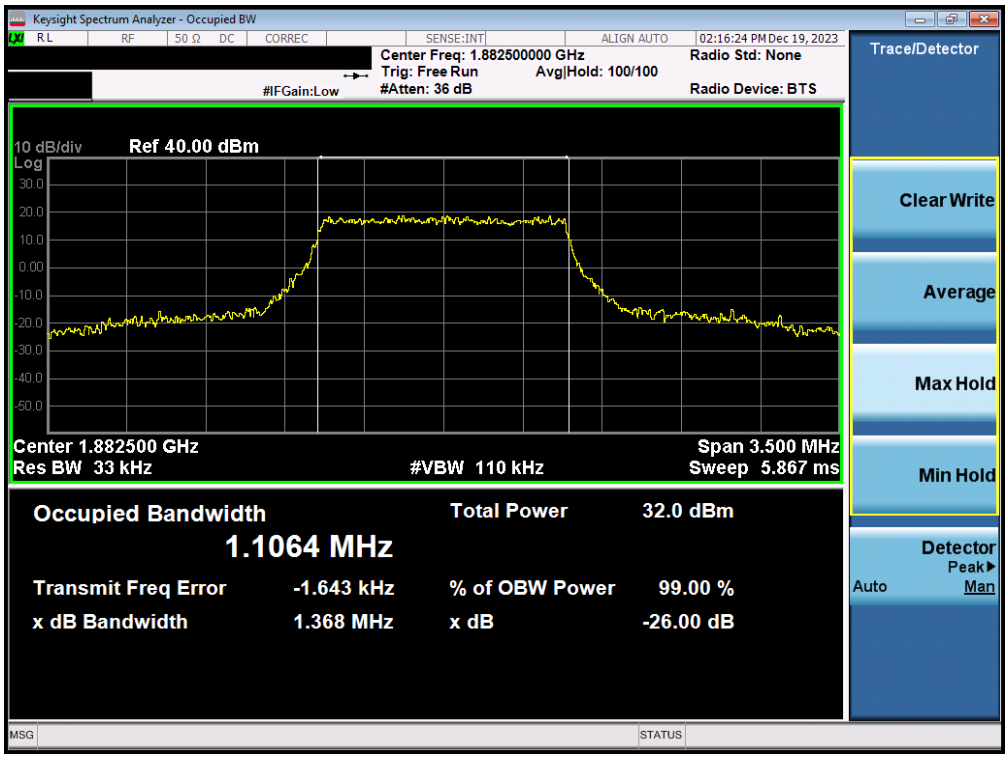
Plot 7-8. Occupied Bandwidth Plot (LTE Band 25/2 - 5MHz 16-QAM - Full RB – Ant1)



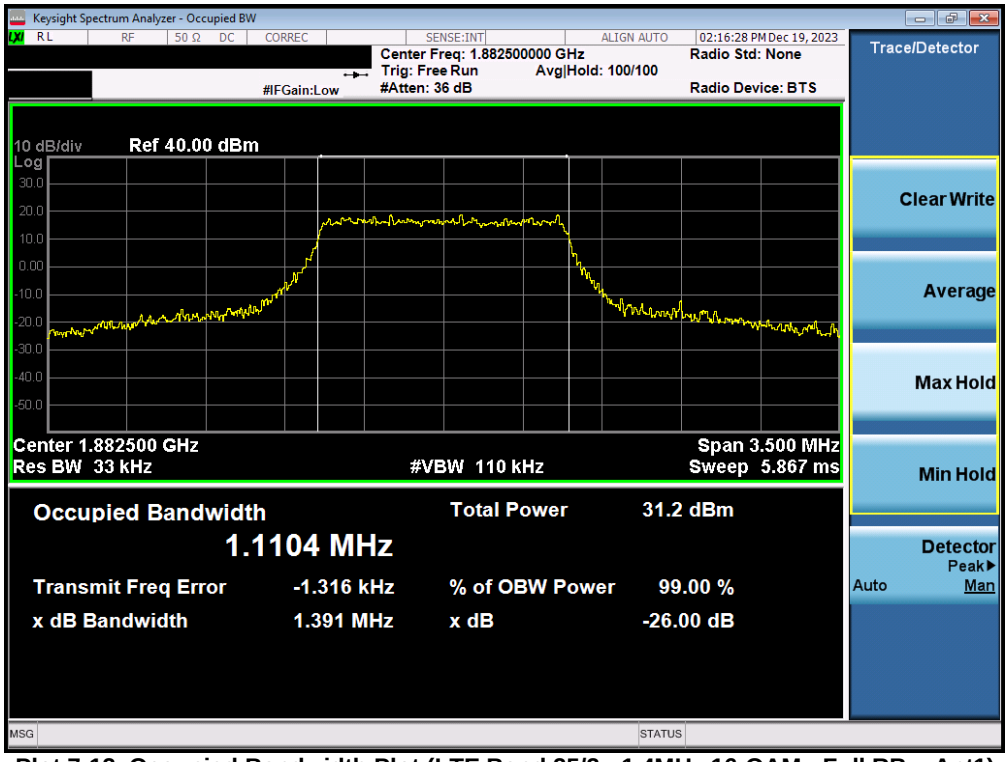
Plot 7-9. Occupied Bandwidth Plot (LTE Band 25/2 - 3MHz QPSK - Full RB – Ant1)



Plot 7-10. Occupied Bandwidth Plot (LTE Band 25/2 - 3MHz 16-QAM - Full RB – Ant1)

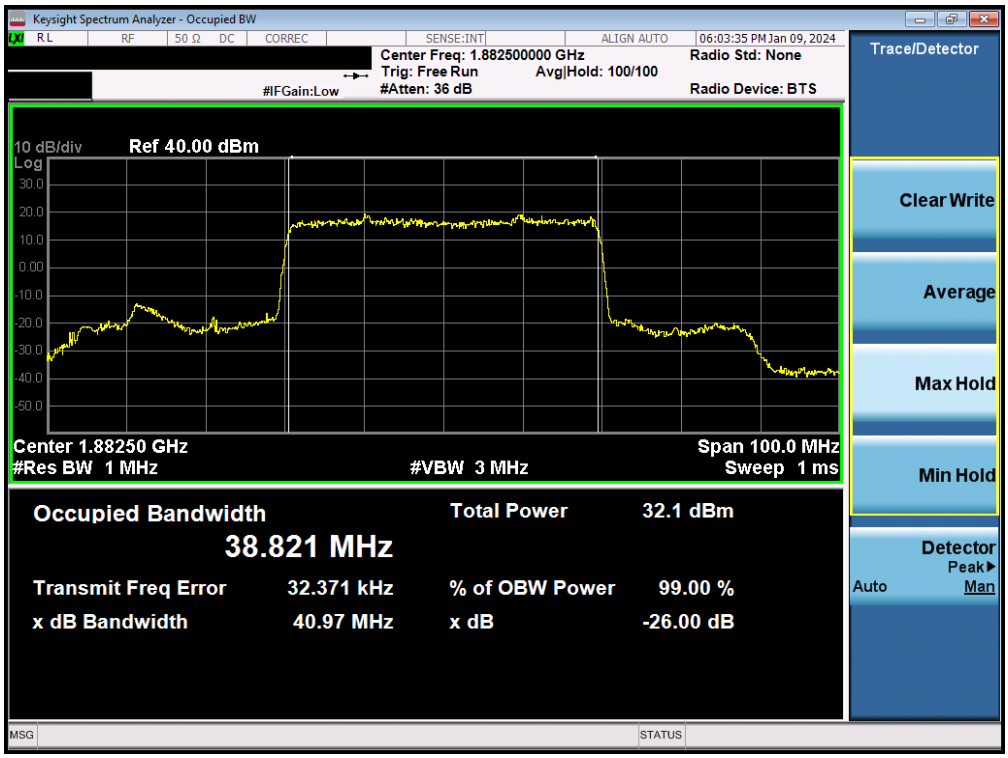


Plot 7-11. Occupied Bandwidth Plot (LTE Band 25/2 - 1.4MHz QPSK - Full RB – Ant1)

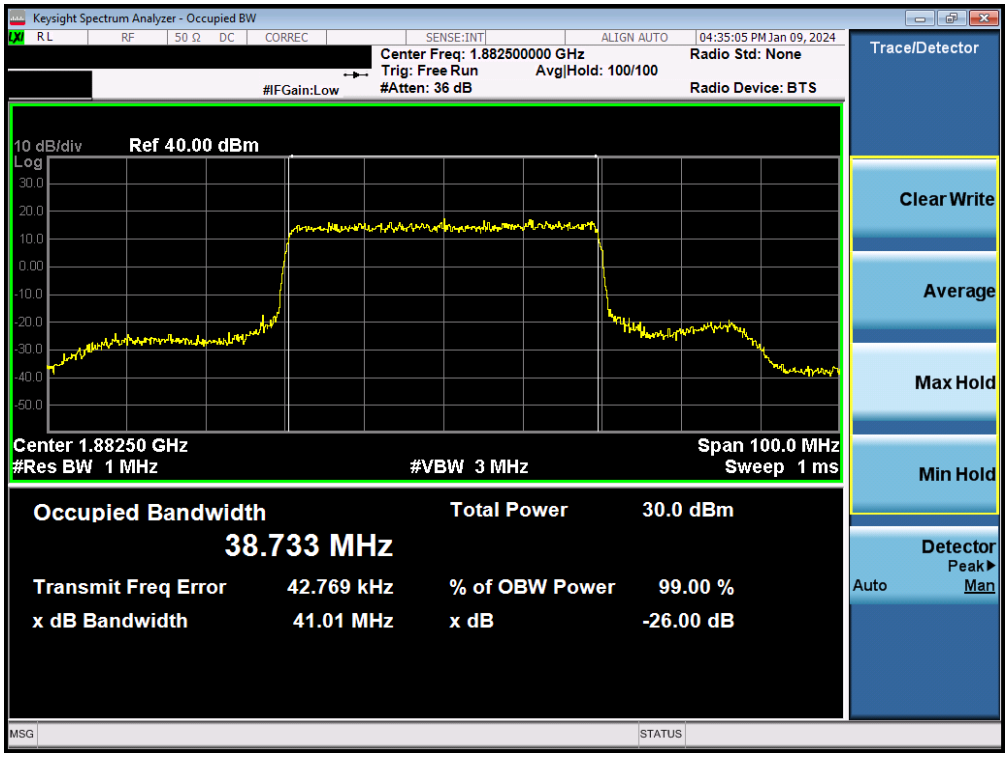


Plot 7-12. Occupied Bandwidth Plot (LTE Band 25/2 - 1.4MHz 16-QAM - Full RB – Ant1)

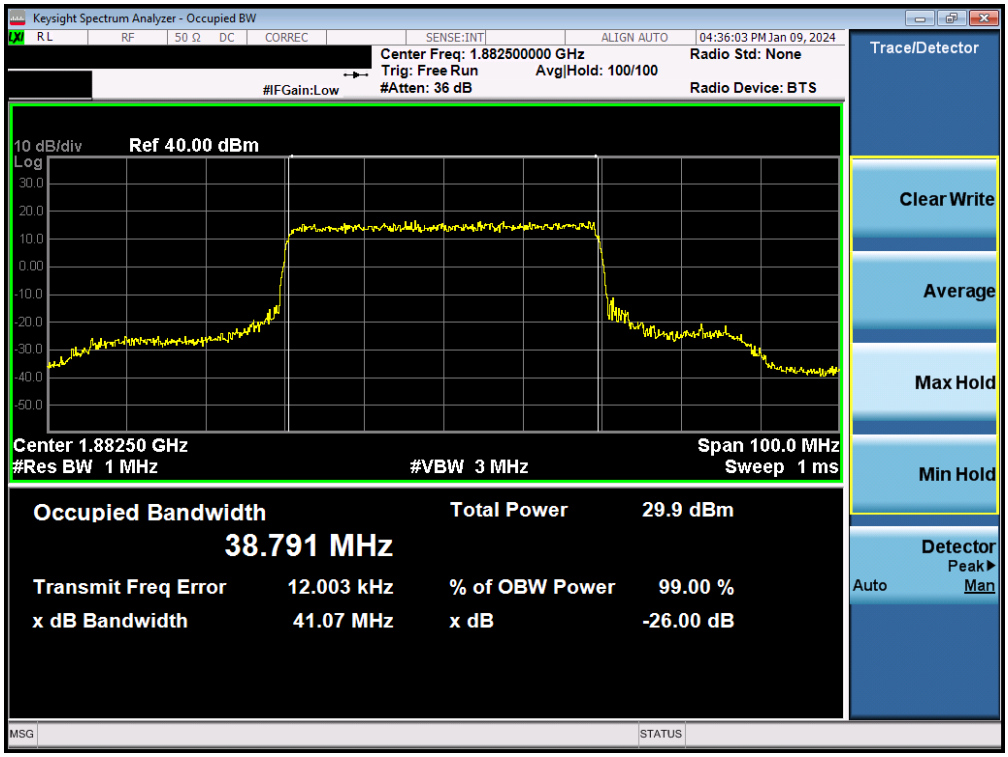
NR Band n25/2 – Ant1



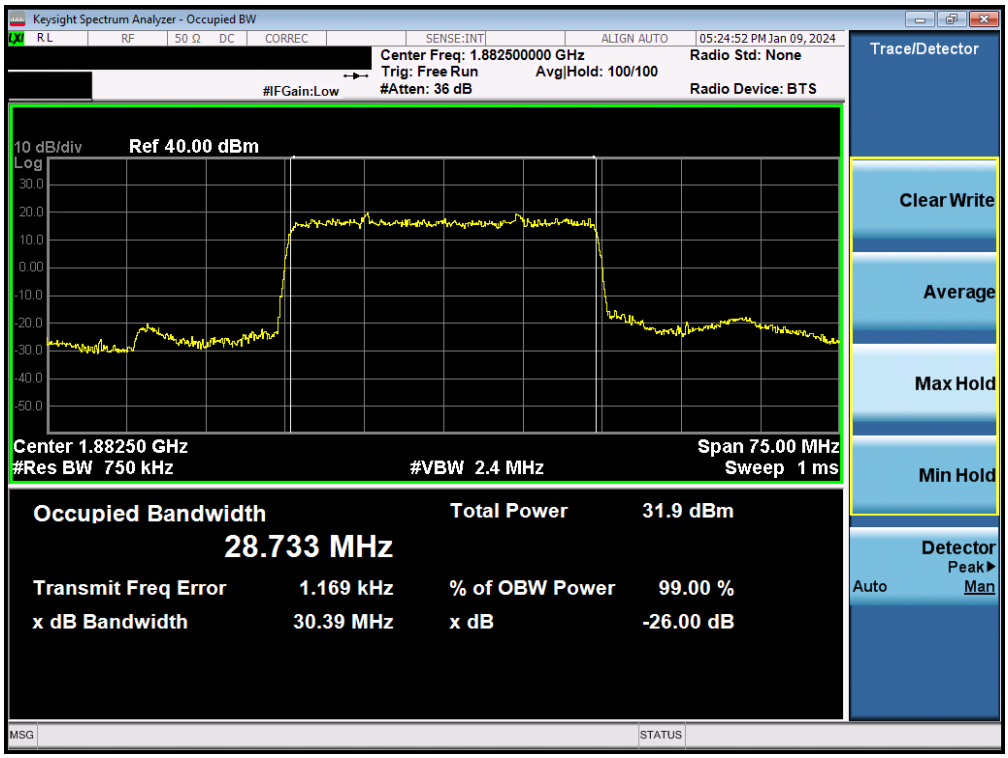
Plot 7-13. Occupied Bandwidth Plot (NR Band n25 - 40.0MHz DFT-s-OFDM BPSK - Full RB – Ant1)



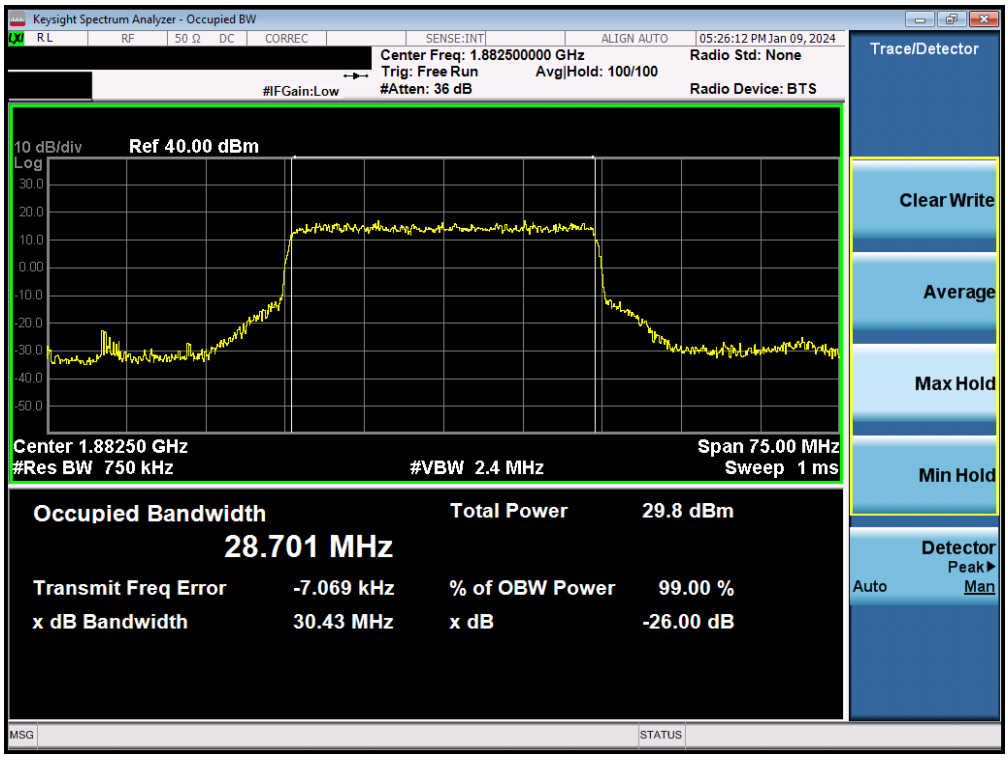
Plot 7-14. Occupied Bandwidth Plot (NR Band n25 - 40.0MHz CP-OFDM QPSK - Full RB – Ant1)



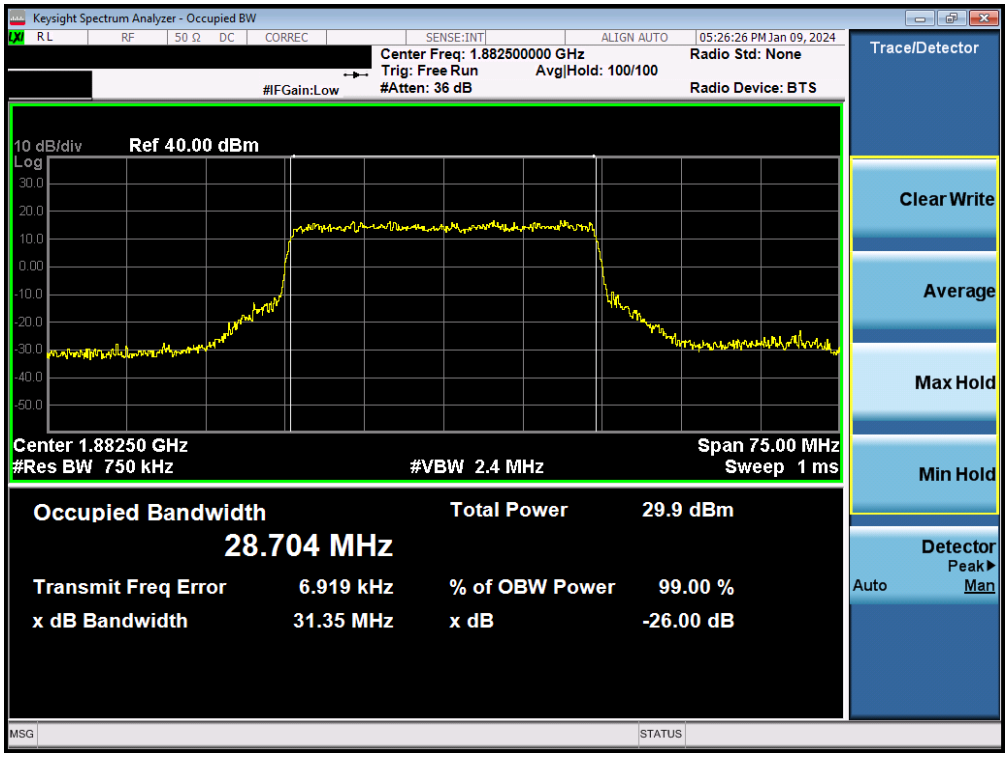
Plot 7-15. Occupied Bandwidth Plot (NR Band n25 - 40.0MHz CP-OFDM 16QAM - Full RB – Ant1)



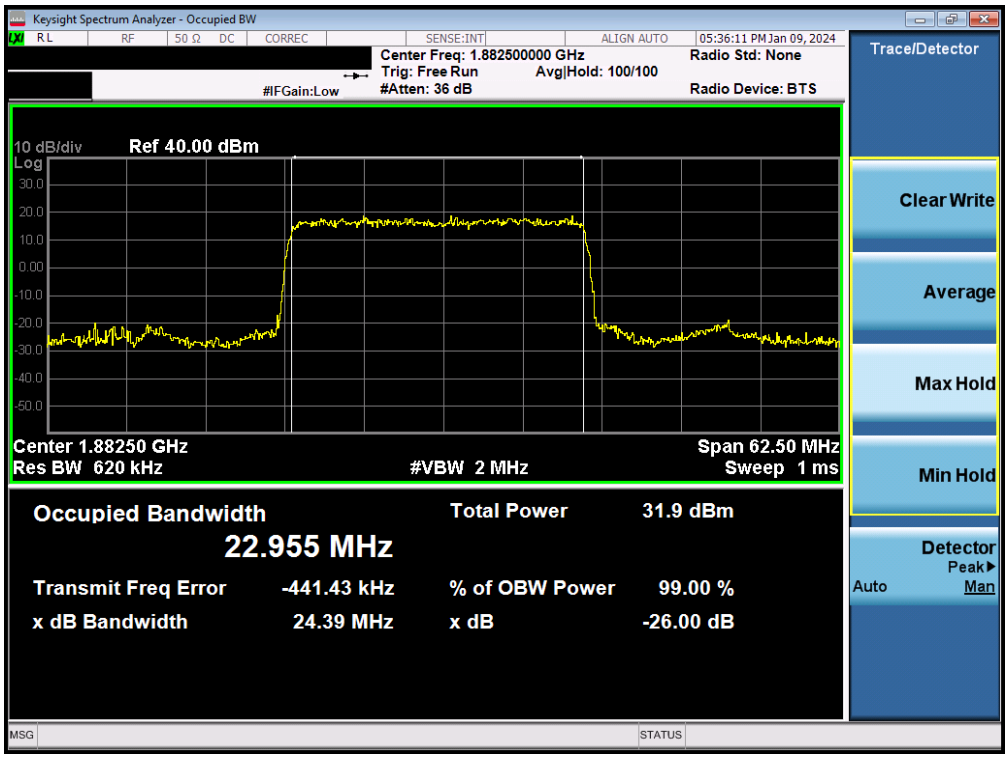
Plot 7-16. Occupied Bandwidth Plot (NR Band n25 - 30.0MHz DFT-s-OFDM BPSK - Full RB – Ant1)



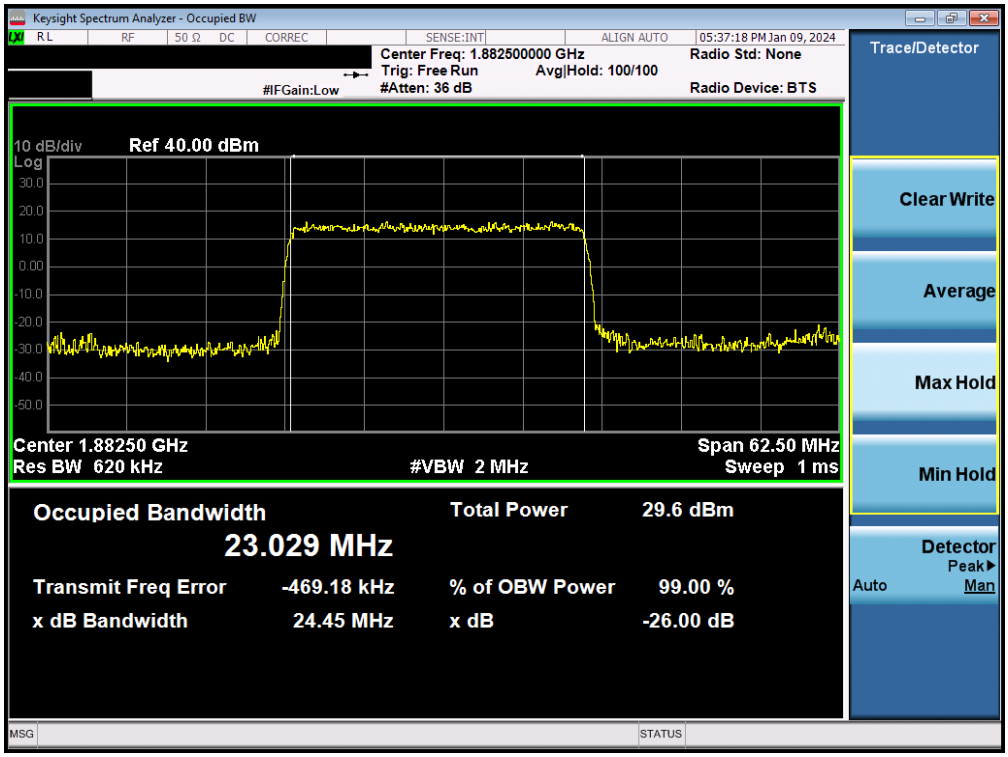
Plot 7-17. Occupied Bandwidth Plot (NR Band n25 - 30.0MHz CP-OFDM QPSK - Full RB – Ant1)



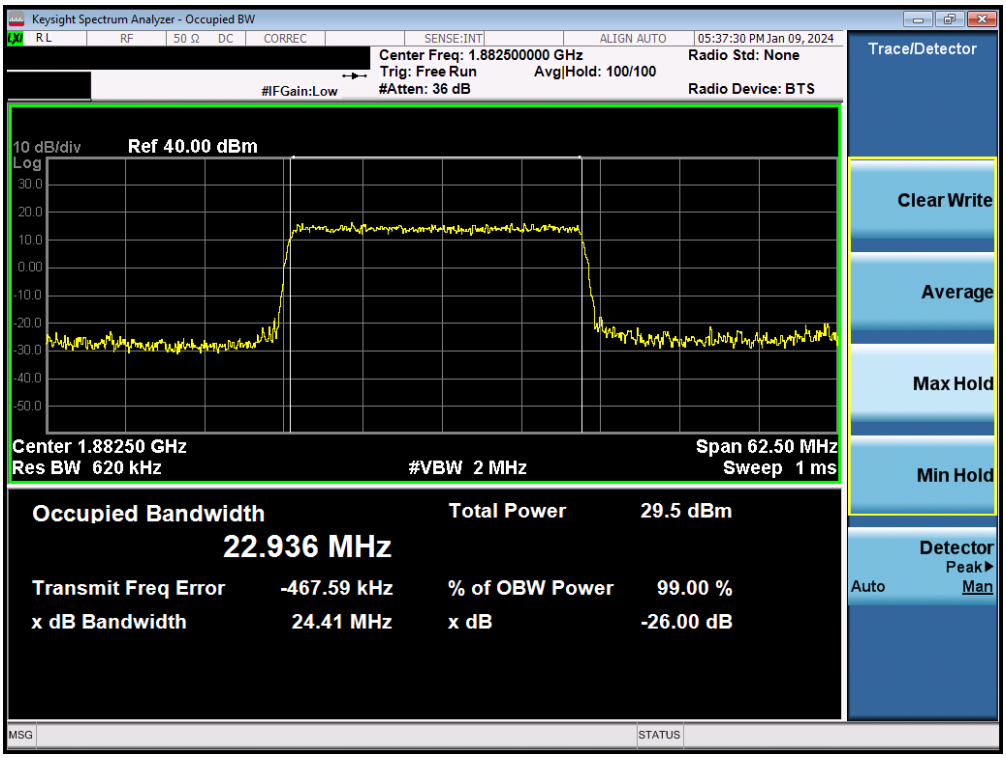
Plot 7-18. Occupied Bandwidth Plot (NR Band n25 - 30.0MHz CP-OFDM 16QAM - Full RB – Ant1)



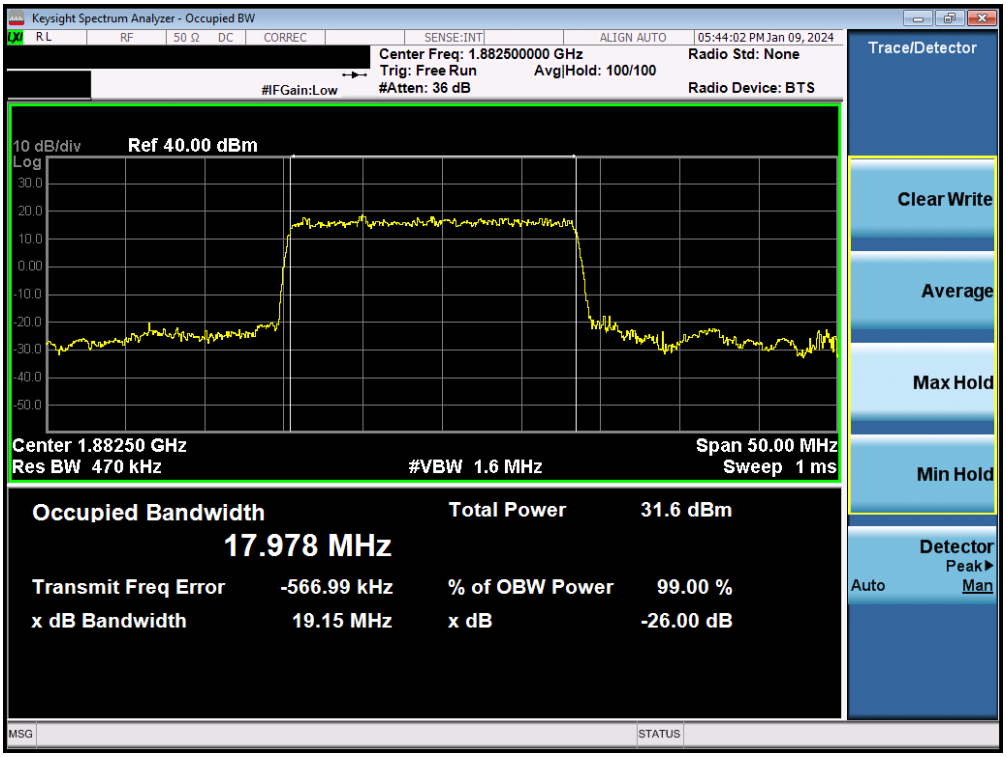
Plot 7-19. Occupied Bandwidth Plot (NR Band n25 - 25.0MHz DFT-s-OFDM BPSK - Full RB – Ant1)



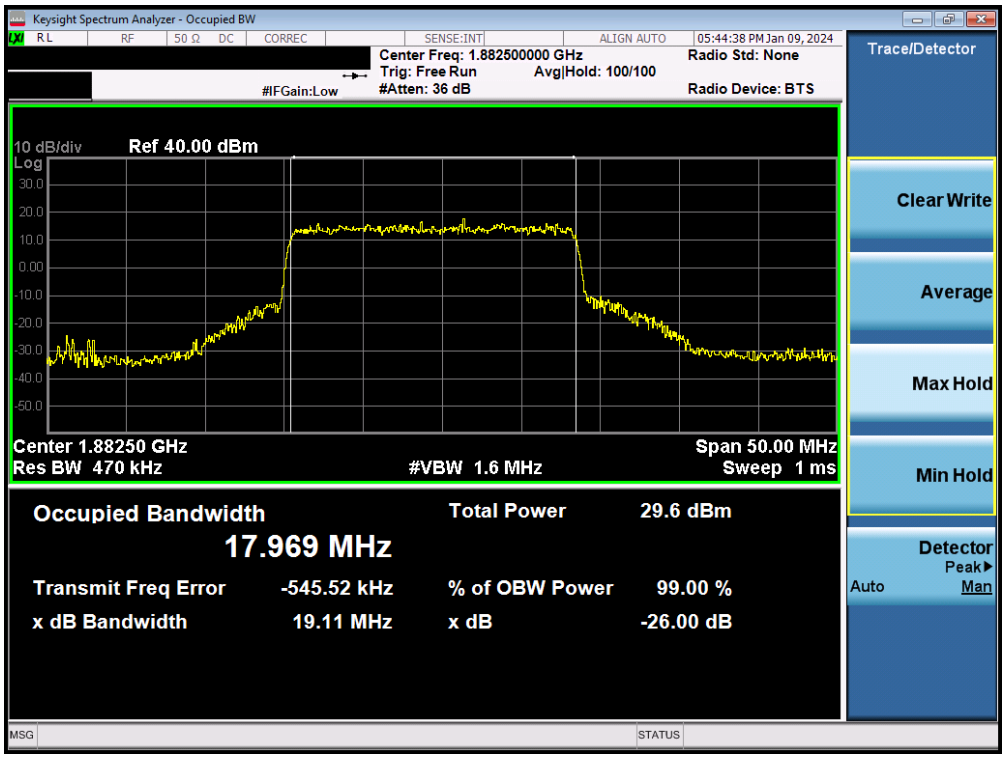
Plot 7-20. Occupied Bandwidth Plot (NR Band n25 - 25.0MHz CP-OFDM QPSK - Full RB – Ant1)



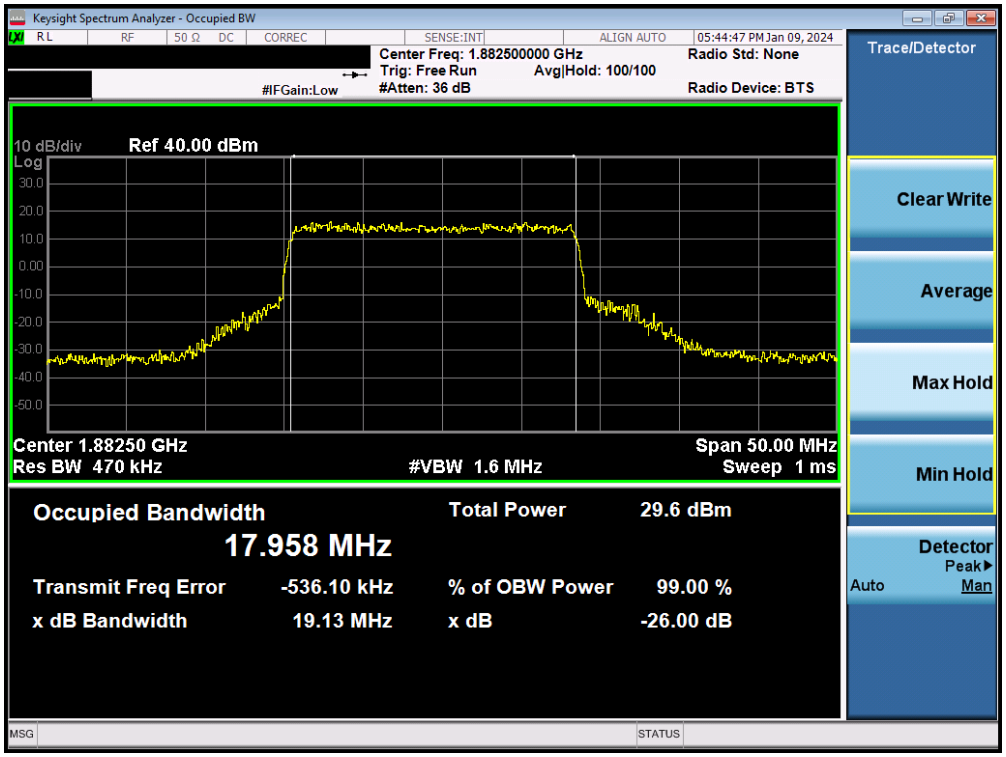
Plot 7-21. Occupied Bandwidth Plot (NR Band n25 - 25.0MHz CP-OFDM 16QAM - Full RB – Ant1)



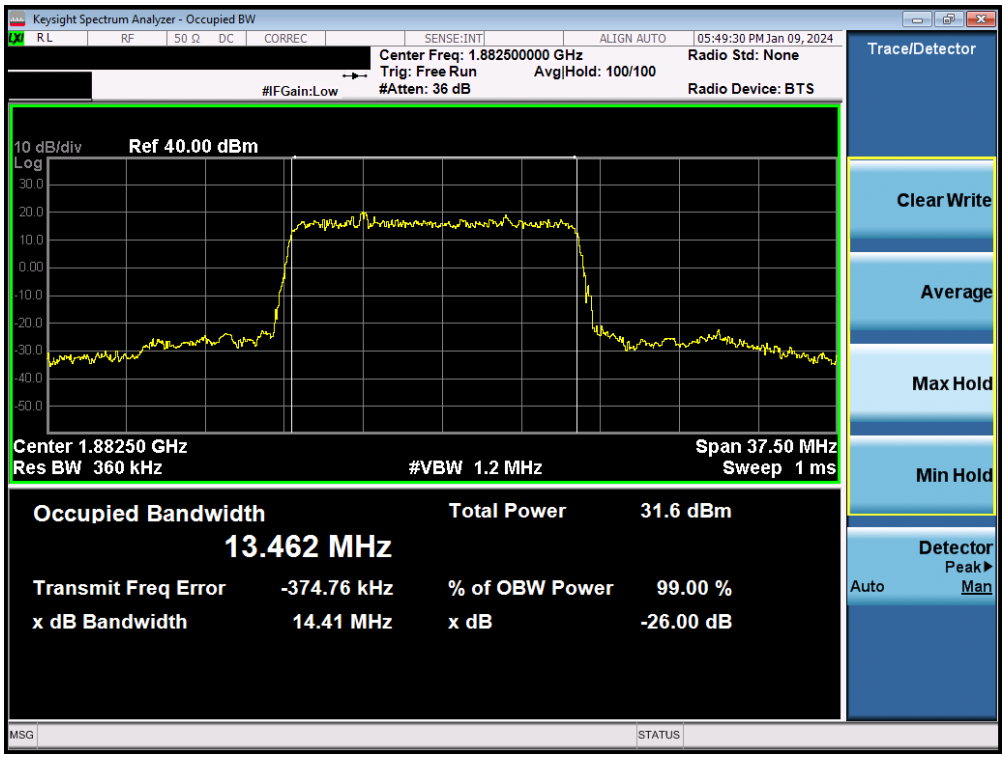
Plot 7-22. Occupied Bandwidth Plot (NR Band n25/2 - 20.0MHz DFT-s-OFDM BPSK - Full RB – Ant1)



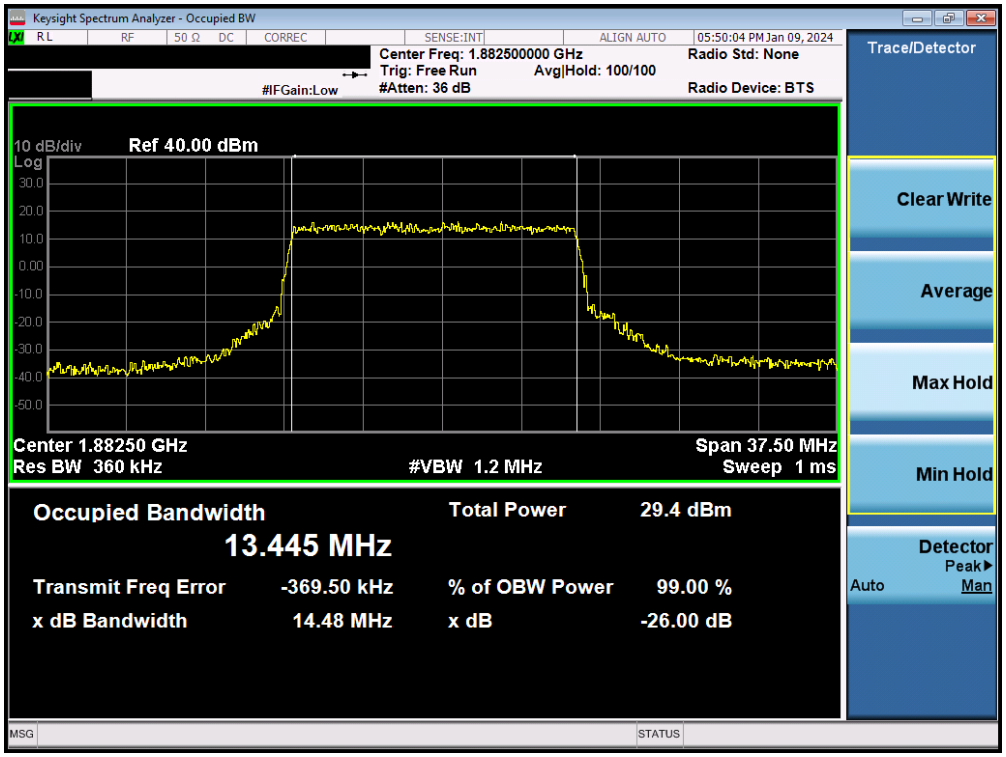
Plot 7-23. Occupied Bandwidth Plot (NR Band n25/2 - 20.0MHz CP-OFDM QPSK - Full RB – Ant1)



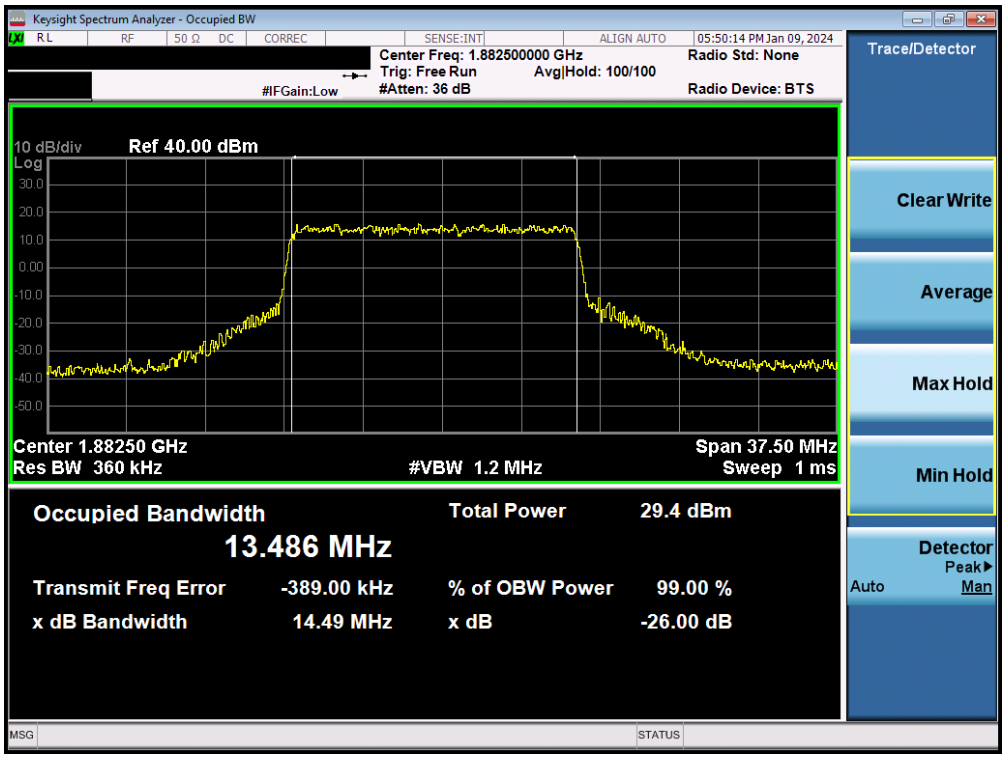
Plot 7-24. Occupied Bandwidth Plot (NR Band n25/2 - 20.0MHz CP-OFDM 16QAM - Full RB – Ant1)



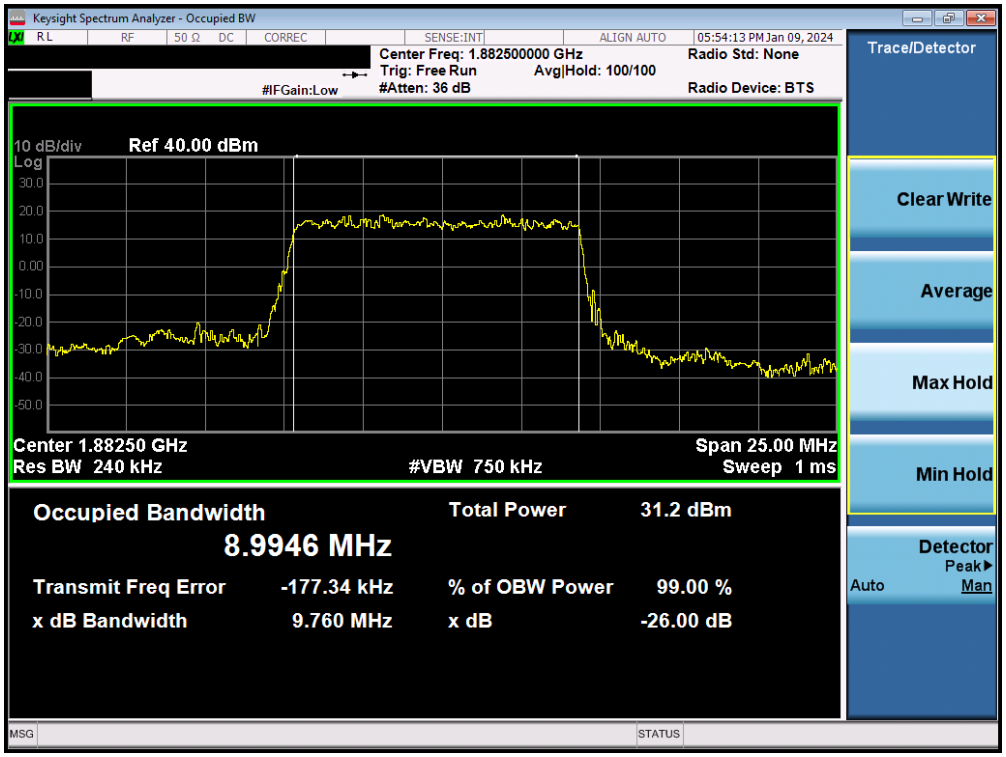
Plot 7-25. Occupied Bandwidth Plot (NR Band n25/2 - 15.0MHz DFT-s-OFDM BPSK - Full RB – Ant1)



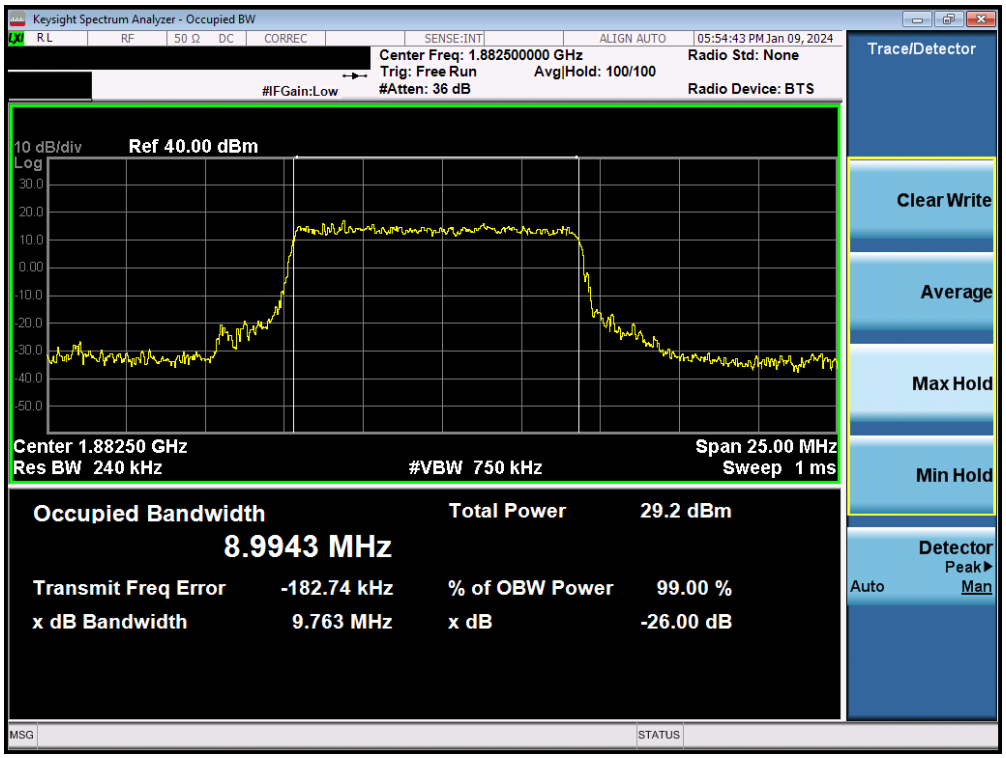
Plot 7-26. Occupied Bandwidth Plot (NR Band n25/2 - 15.0MHz CP-OFDM QPSK - Full RB – Ant1)



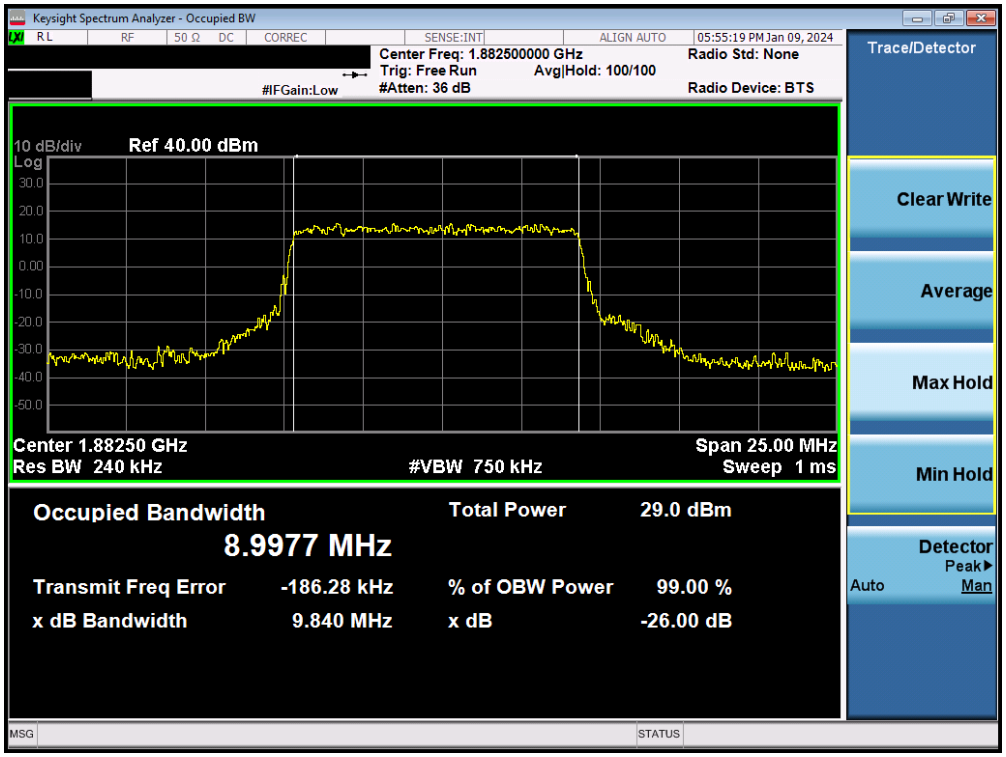
Plot 7-27. Occupied Bandwidth Plot (NR Band n25/2 - 15.0MHz CP-OFDM 16QAM - Full RB – Ant1)



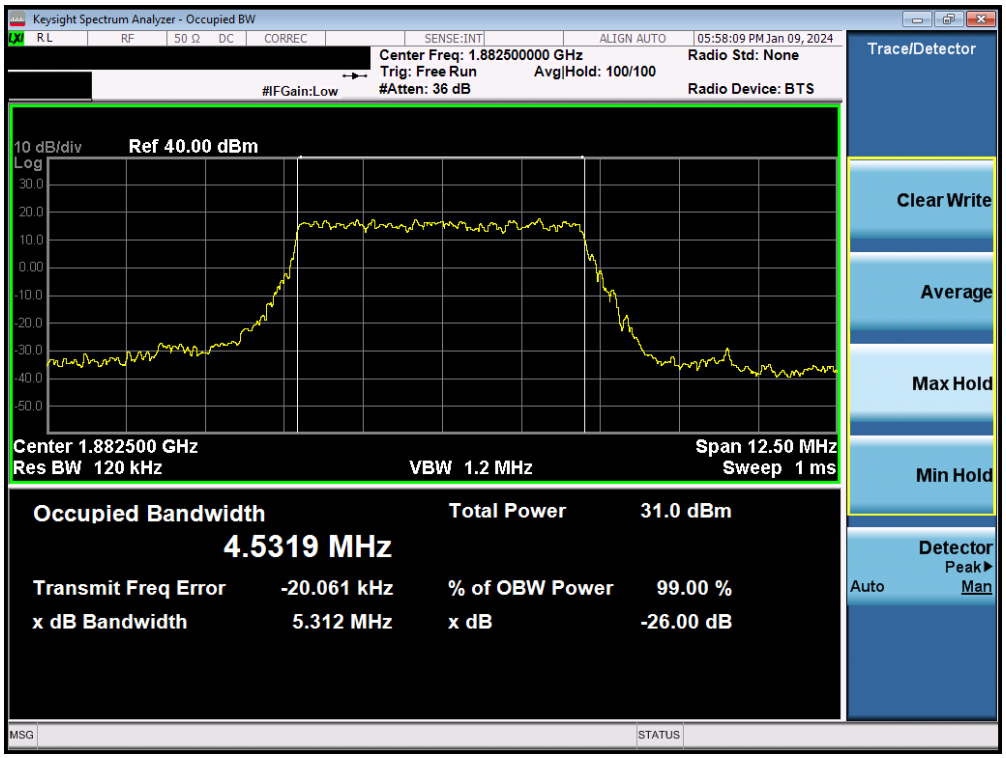
Plot 7-28. Occupied Bandwidth Plot (NR Band n25/2 - 10.0MHz DFT-s-OFDM BPSK - Full RB – Ant1)



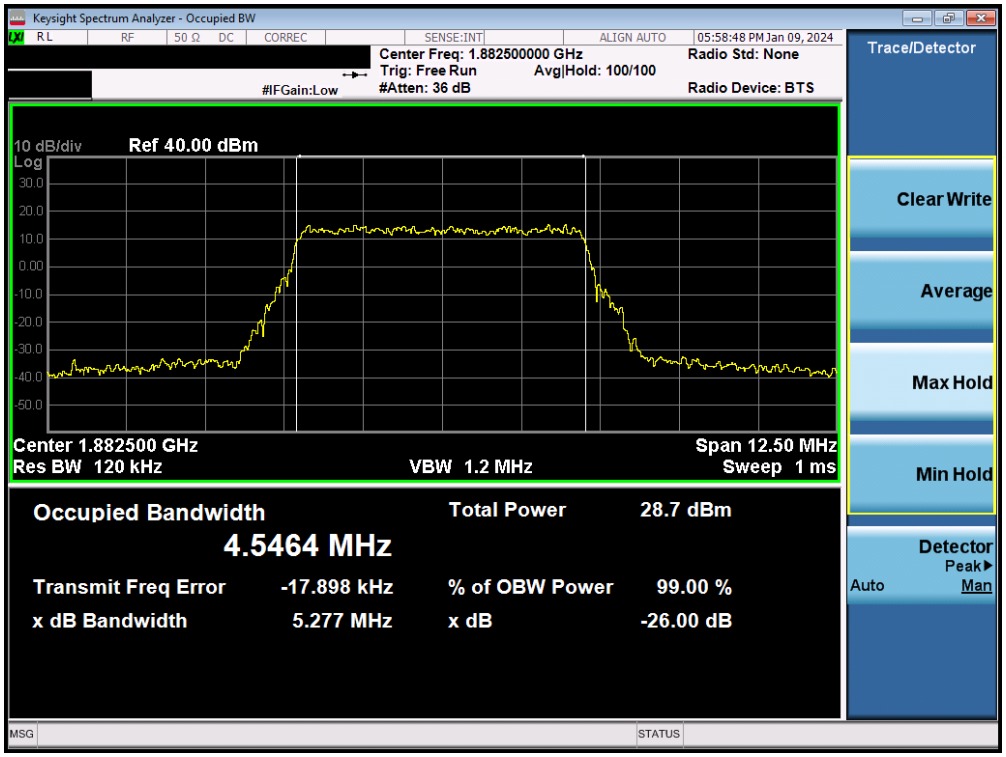
Plot 7-29. Occupied Bandwidth Plot (NR Band n25/2 - 10.0MHz CP-OFDM QPSK - Full RB – Ant1)



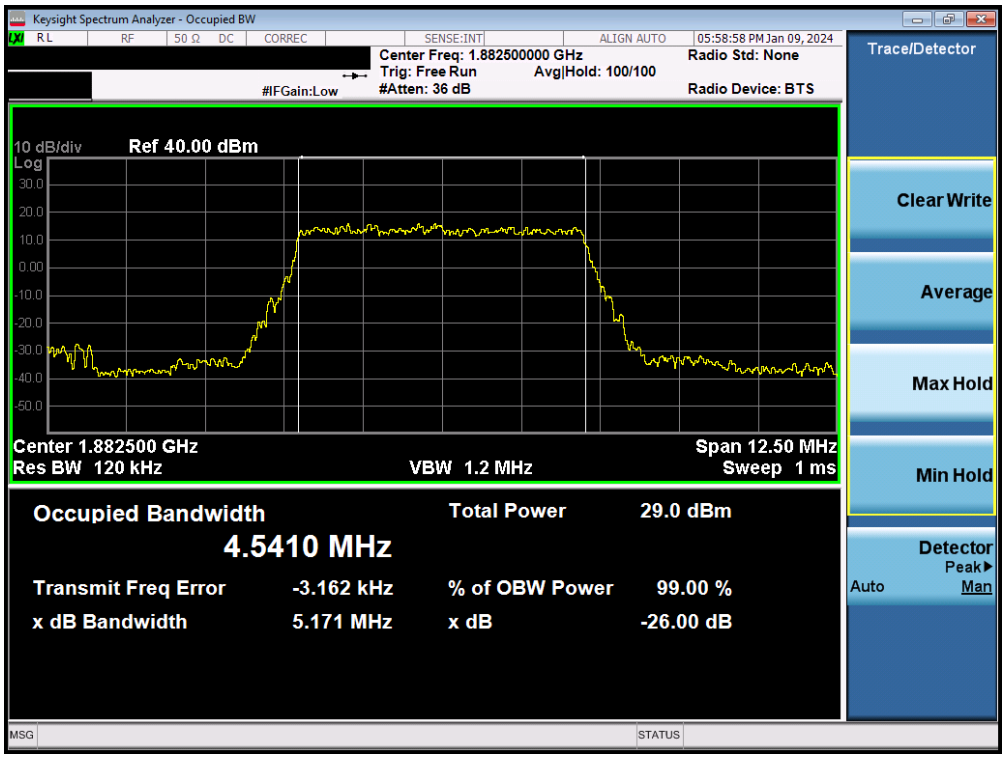
Plot 7-30. Occupied Bandwidth Plot (NR Band n25/2 - 10.0MHz CP-OFDM 16QAM - Full RB – Ant1)



Plot 7-31. Occupied Bandwidth Plot (NR Band n25/2 - 5.0MHz DFT-s-OFDM BPSK - Full RB – Ant1)



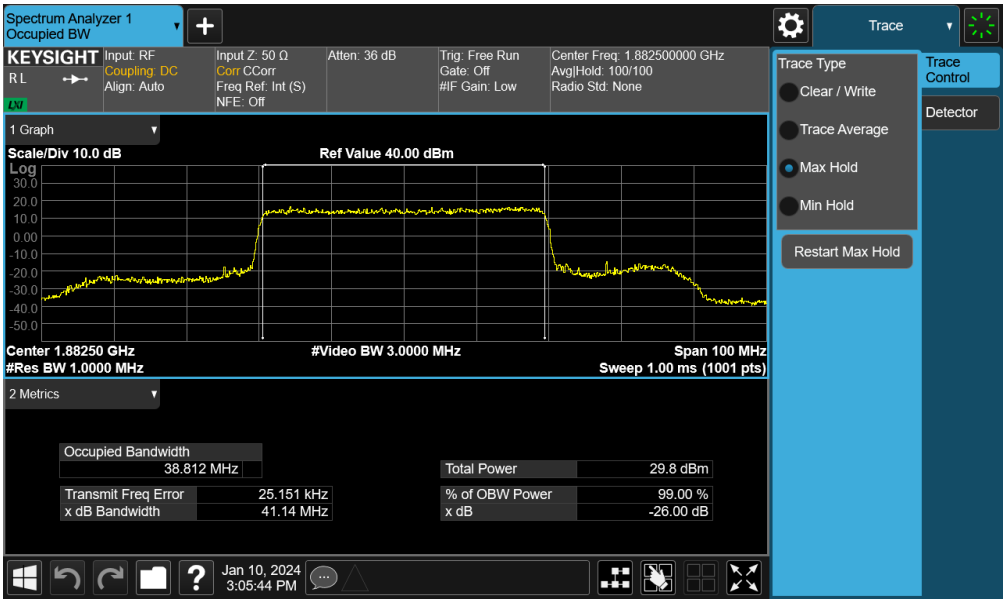
Plot 7-32. Occupied Bandwidth Plot (NR Band n25/2 - 5.0MHz CP-OFDM QPSK - Full RB – Ant1)



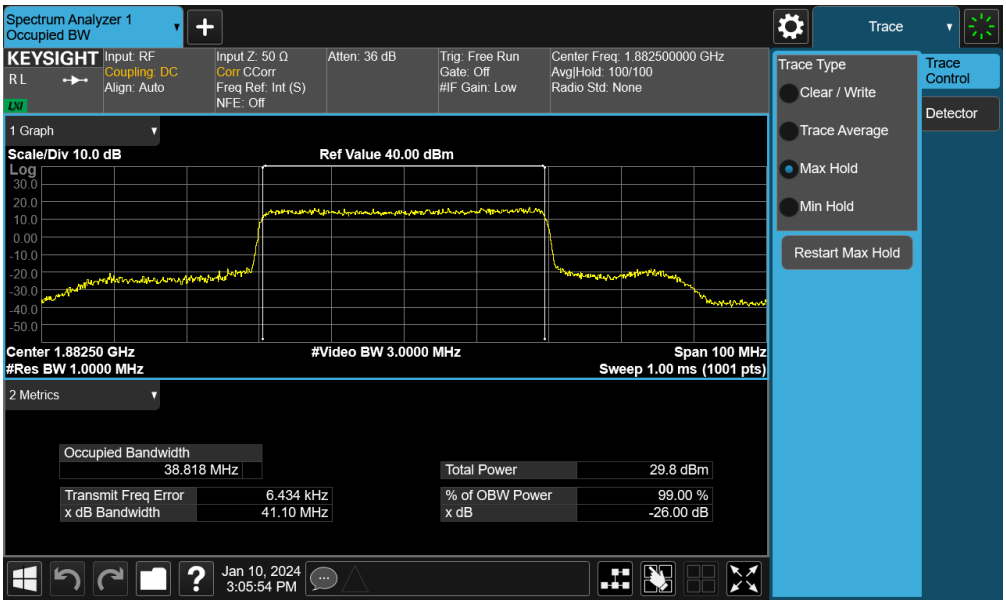
Plot 7-33. Occupied Bandwidth Plot (NR Band n25/2 - 5.0MHz CP-OFDM 16QAM - Full RB – Ant1)

NR Band n25/2 – Ant4

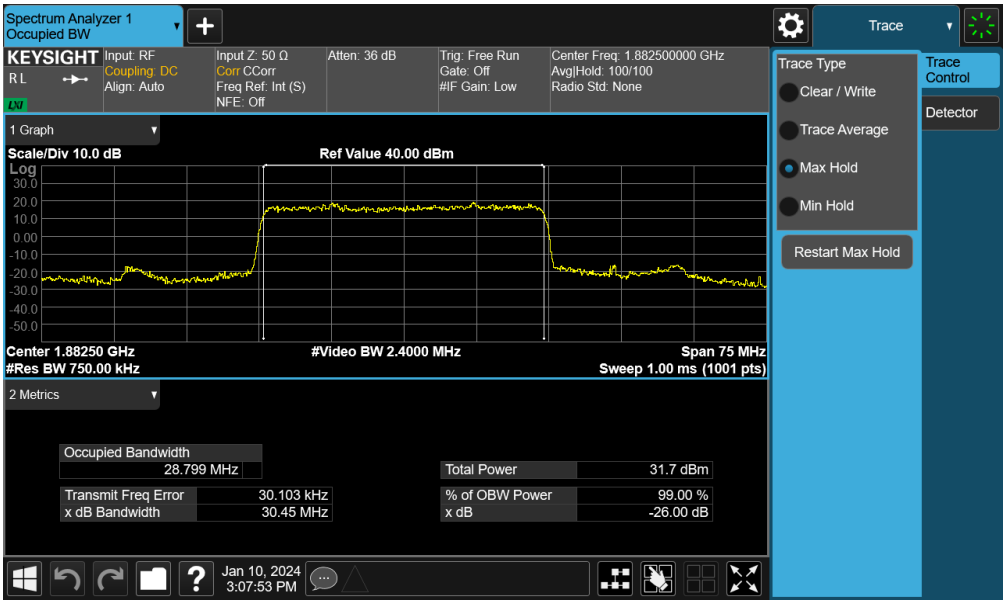
Plot 7-34. Occupied Bandwidth Plot (NR Band n25 - 40.0MHz DFT-s-OFDM BPSK - Full RB – Ant4)



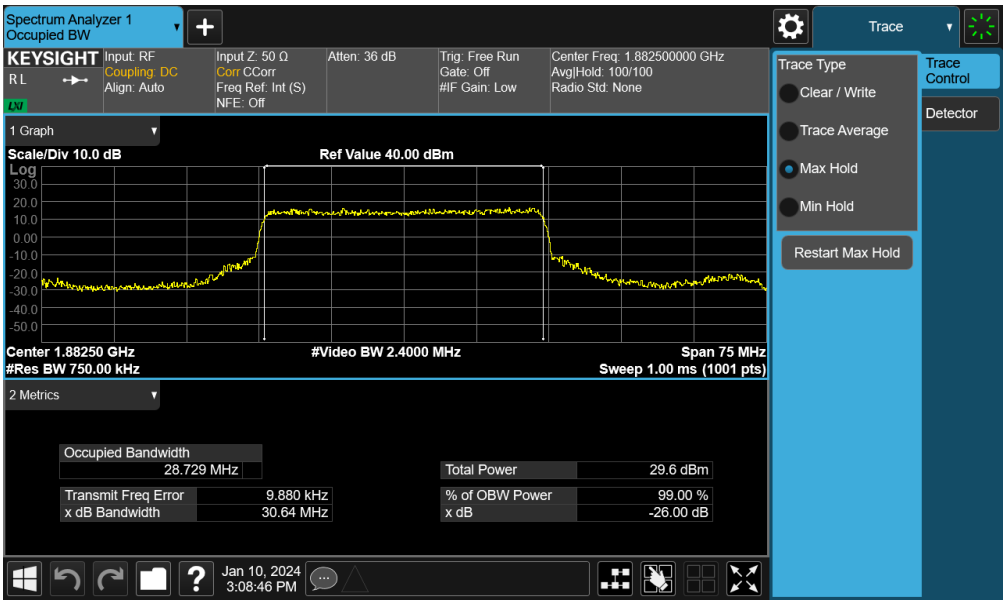
Plot 7-35. Occupied Bandwidth Plot (NR Band n25 - 40.0MHz CP-OFDM QPSK - Full RB – Ant4)



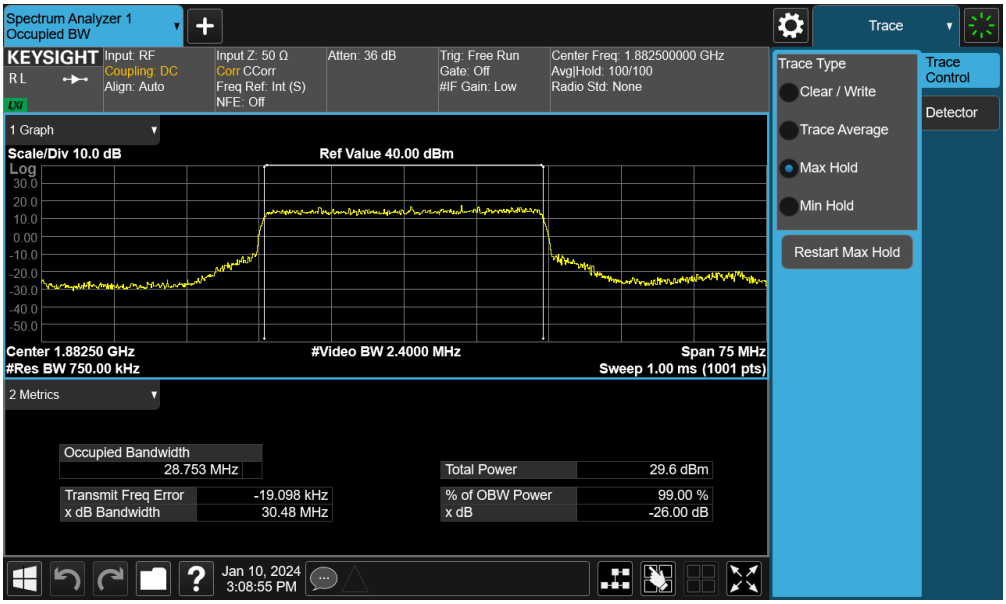
Plot 7-36. Occupied Bandwidth Plot (NR Band n25 - 40.0MHz CP-OFDM 16QAM - Full RB – Ant4)



Plot 7-37. Occupied Bandwidth Plot (NR Band n25 - 30.0MHz DFT-s-OFDM BPSK - Full RB – Ant4)

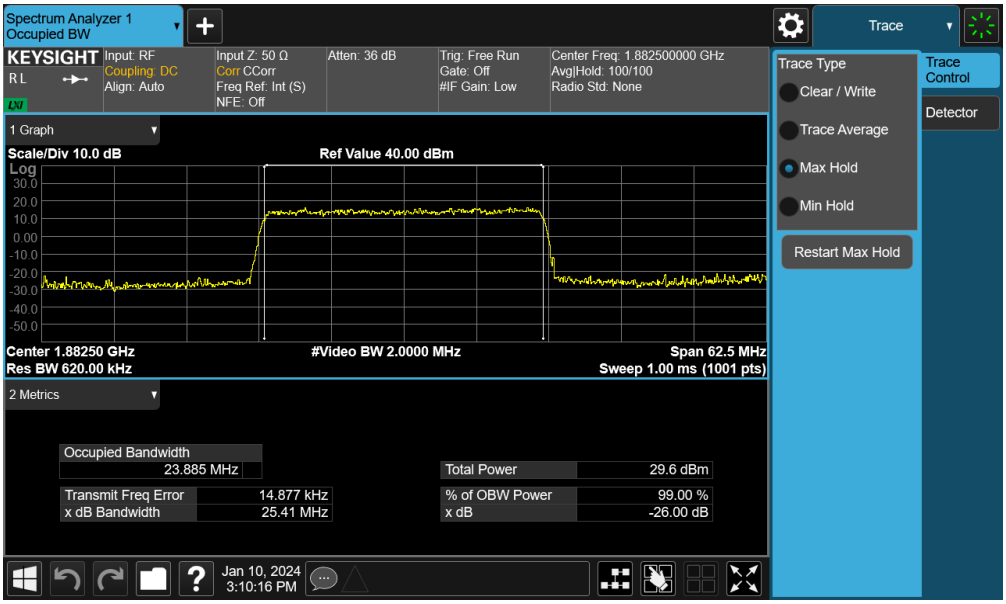


Plot 7-38. Occupied Bandwidth Plot (NR Band n25 - 30.0MHz CP-OFDM QPSK - Full RB – Ant4)

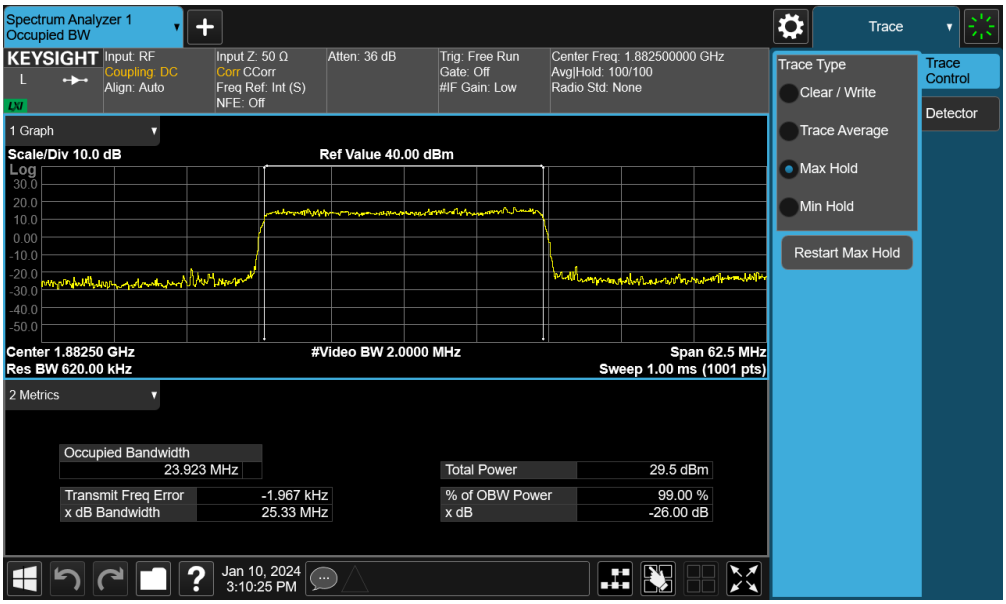


Plot 7-39. Occupied Bandwidth Plot (NR Band n25 - 30.0MHz CP-OFDM 16QAM - Full RB – Ant4)

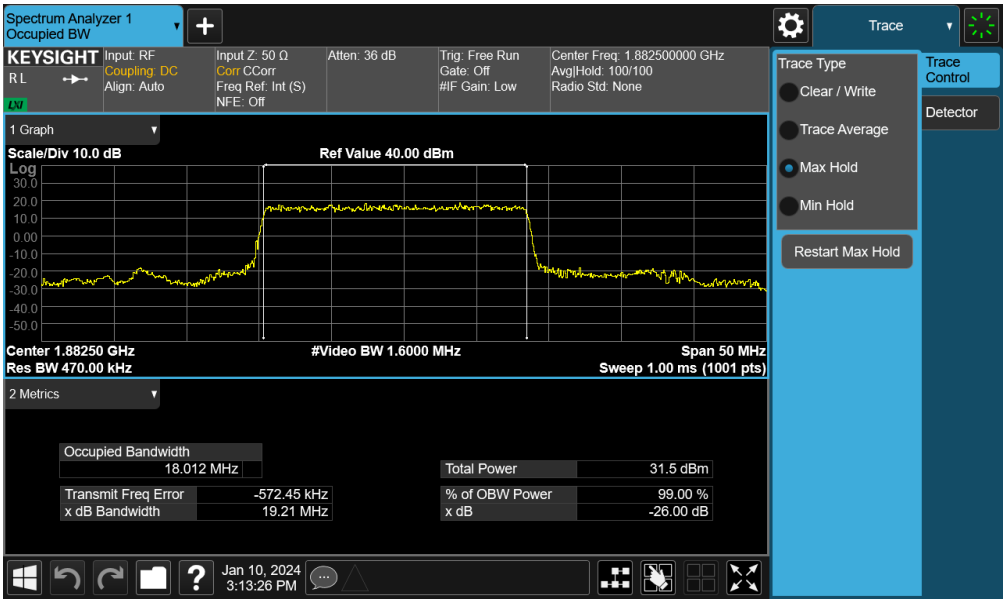
Plot 7-40. Occupied Bandwidth Plot (NR Band n25 - 25.0MHz DFT-s-OFDM BPSK - Full RB – Ant4)



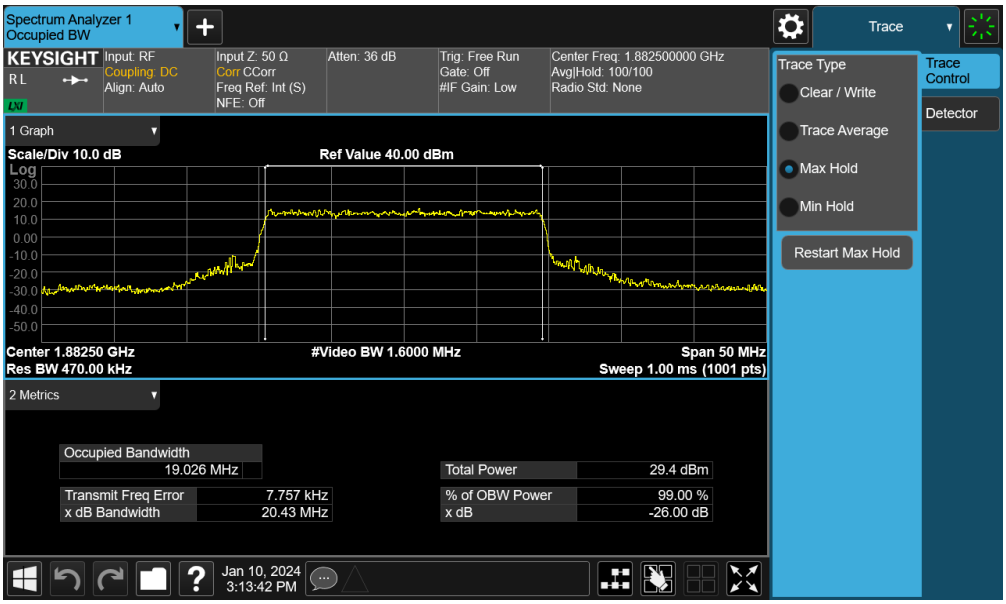
Plot 7-41. Occupied Bandwidth Plot (NR Band n25 - 25.0MHz CP-OFDM QPSK - Full RB – Ant4)



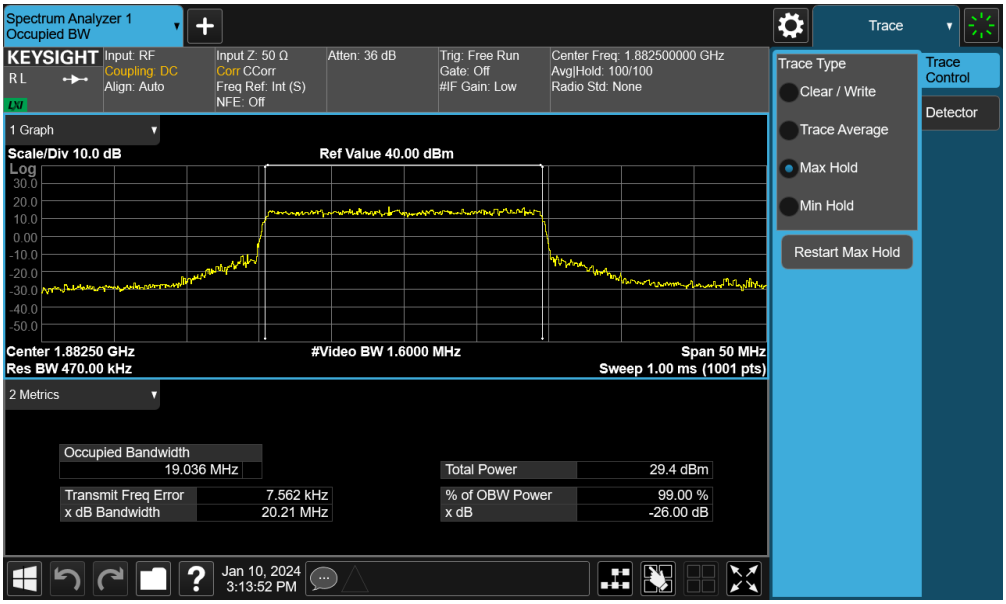
Plot 7-42. Occupied Bandwidth Plot (NR Band n25 - 25.0MHz CP-OFDM 16QAM - Full RB – Ant4)



Plot 7-43. Occupied Bandwidth Plot (NR Band n25/2 - 20.0MHz DFT-s-OFDM BPSK - Full RB – Ant4)

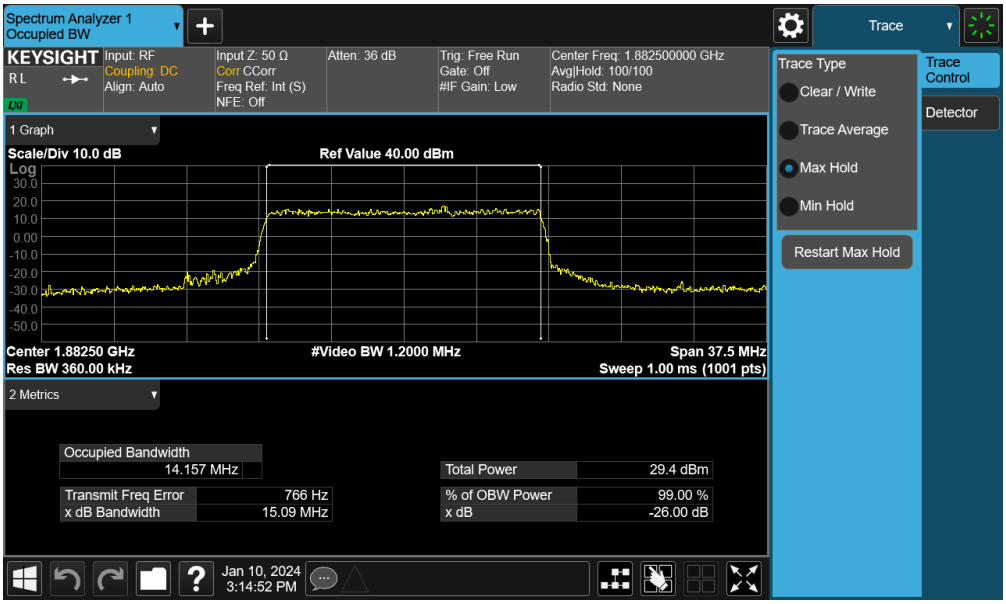


Plot 7-44. Occupied Bandwidth Plot (NR Band n25/2 - 20.0MHz CP-OFDM QPSK - Full RB – Ant4)



Plot 7-45. Occupied Bandwidth Plot (NR Band n25/2 - 20.0MHz CP-OFDM 16QAM - Full RB – Ant4)

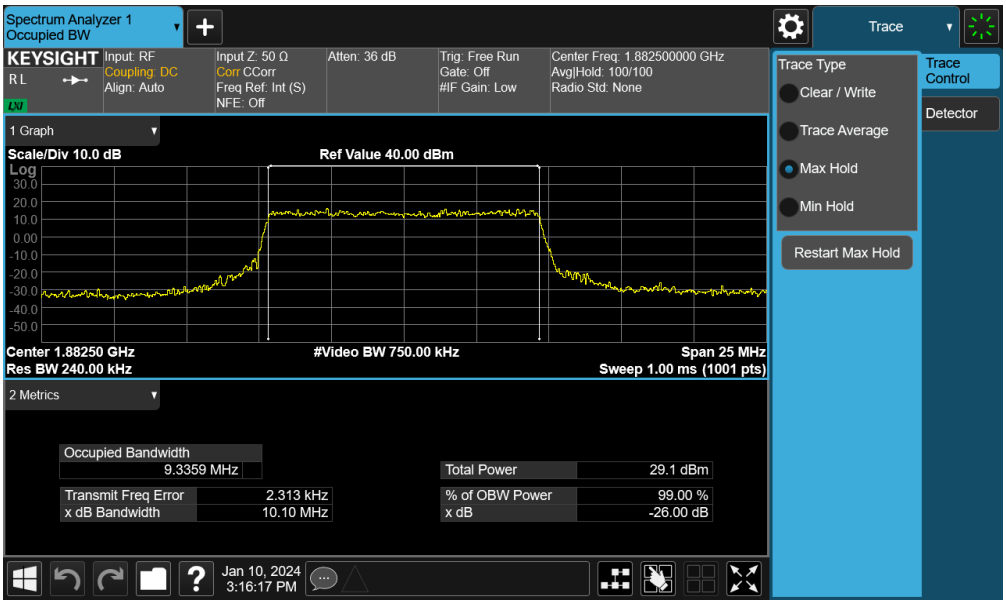
Plot 7-46. Occupied Bandwidth Plot (NR Band n25/2 - 15.0MHz DFT-s-OFDM BPSK - Full RB – Ant4)



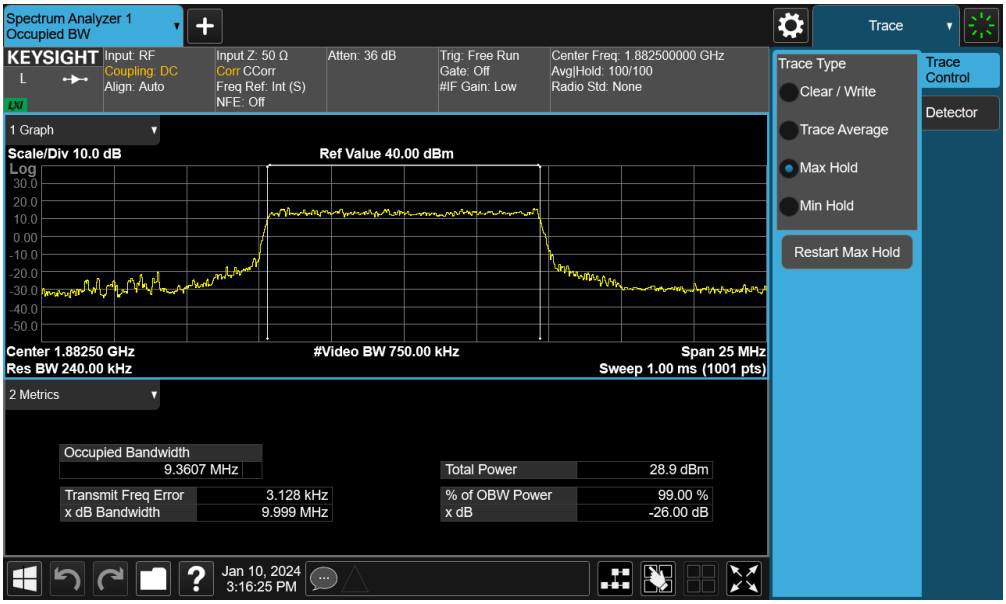
Plot 7-47. Occupied Bandwidth Plot (NR Band n25/2 - 15.0MHz CP-OFDM QPSK - Full RB – Ant4)

Plot 7-48. Occupied Bandwidth Plot (NR Band n25/2 - 15.0MHz CP-OFDM 16QAM - Full RB – Ant4)

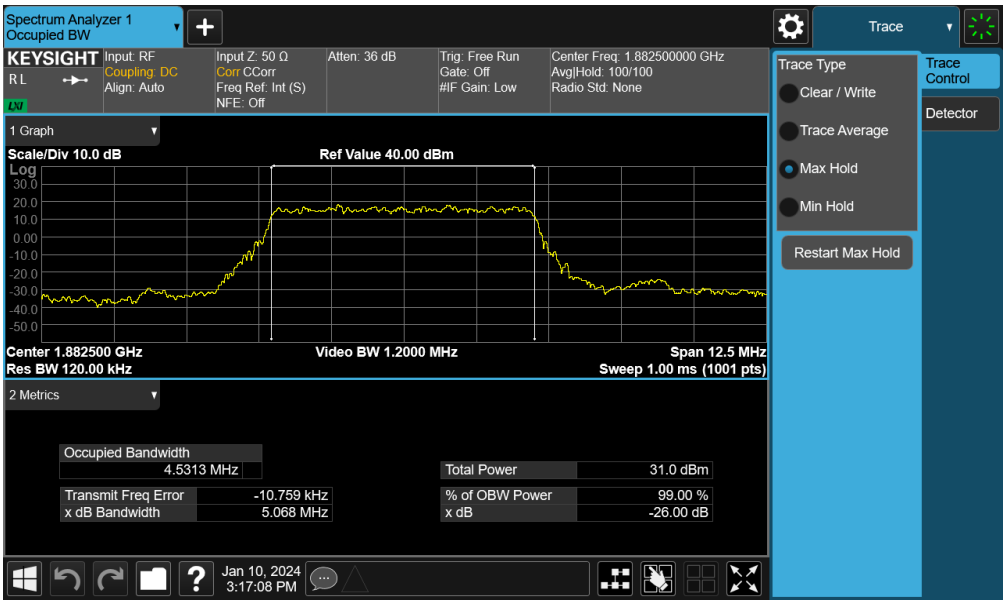
Plot 7-49. Occupied Bandwidth Plot (NR Band n25/2 - 10.0MHz DFT-s-OFDM BPSK - Full RB – Ant4)



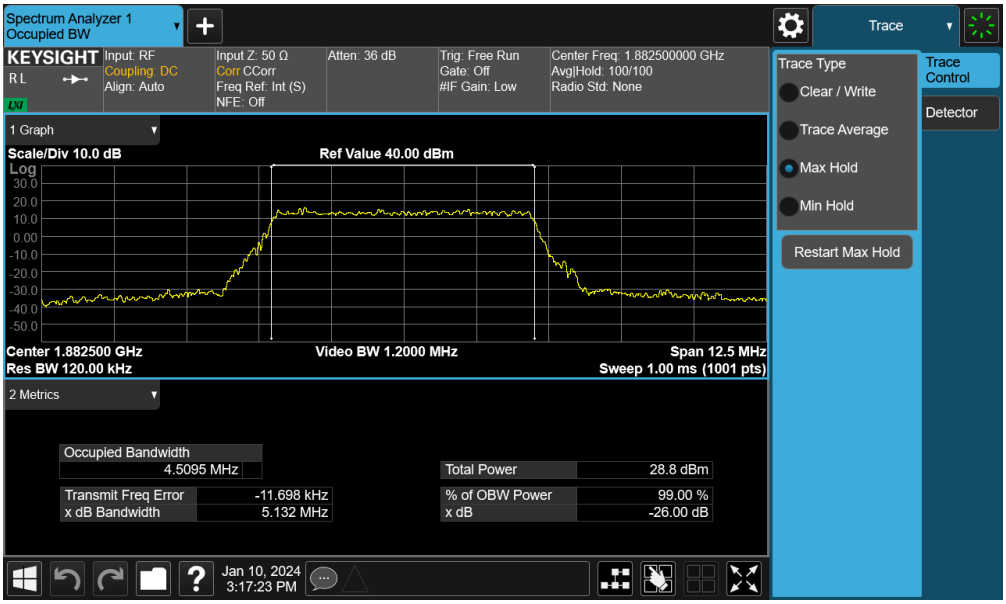
Plot 7-50. Occupied Bandwidth Plot (NR Band n25/2 - 10.0MHz CP-OFDM QPSK - Full RB – Ant4)



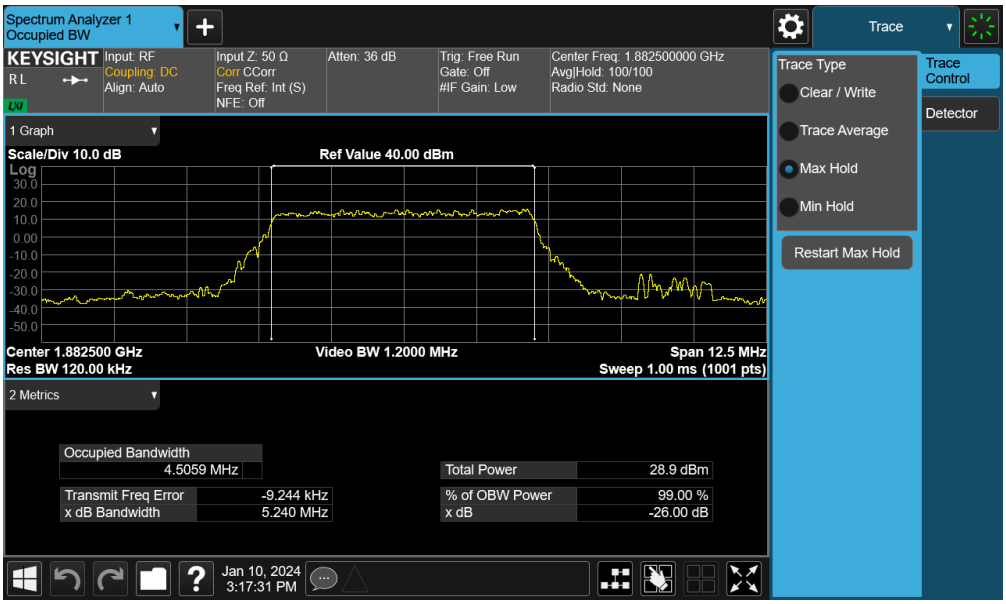
Plot 7-51. Occupied Bandwidth Plot (NR Band n25/2 - 10.0MHz CP-OFDM 16QAM - Full RB – Ant4)



Plot 7-52. Occupied Bandwidth Plot (NR Band n25/2 - 5.0MHz DFT-s-OFDM BPSK - Full RB – Ant4)

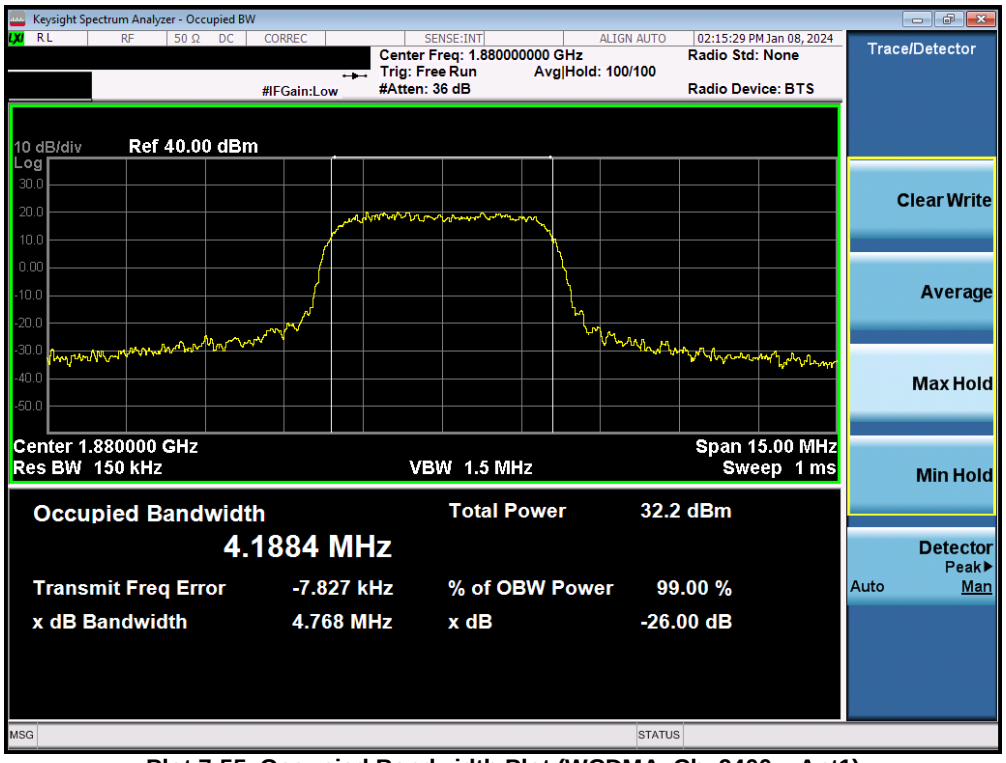


Plot 7-53. Occupied Bandwidth Plot (NR Band n25/2 - 5.0MHz CP-OFDM QPSK - Full RB – Ant4)



Plot 7-54. Occupied Bandwidth Plot (NR Band n25/2 - 5.0MHz CP-OFDM 16QAM - Full RB – Ant4)

WCDMA PCS – Ant1



Plot 7-55. Occupied Bandwidth Plot (WCDMA, Ch. 9400 – Ant1)

7.4 Spurious and Harmonic Emissions at Antenna Terminal

Test Overview

The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic. All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating 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.

The minimum permissible attenuation level of any spurious emission is 43 + 10 $log_{10}(P_{[Watts]})$, where P is the transmitter power in Watts.

Test Procedure Used

ANSI C63.26-2015 – Section 5.7.4

Test Settings

1. Start frequency was set to 30MHz and stop frequency was set to 20GHz (separated into at least two plots per channel)
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.

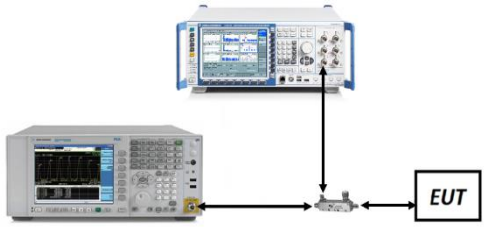


Figure 7-3. Test Instrument & Measurement Setup

Test Notes

1. Per Part 24 and RSS-133, compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz.

2. For NR operation, all subcarrier spacings (SCS) and transmission schemes (e.g. CP-OFDM and DFT-s-OFDM) 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.

Mode	Bandwidth	Channel	Range [MHz]	Level [dBm]	Limit [dBm]	Margin [dB]
WCDMA-PCS	5MHz	Low	30.0 - 1845.0	-31.77	-13	-18.77
		Low	1910.0 - 10000.0	-46.82	-13	-33.82
		Low	10000.0 - 20000.0	-62.39	-13	-49.39
		Mid	30.0 - 1850.0	-52.54	-13	-39.54
		Mid	1910.0 - 10000.0	-46.86	-13	-33.86
		Mid	10000.0 - 20000.0	-62.53	-13	-49.53
		High	30.0 - 1850.0	-53.48	-13	-40.47
		High	1915.0 - 10000.0	-32.18	-13	-19.18
		High	10000.0 - 20000.0	-62.56	-13	-49.56
LTE-B25-2	20MHz	Low	30.0 - 1849.0	-50.94	-13	-37.94
		Low	1915.0 - 10000.0	-46.26	-13	-33.26
		Low	10000.0 - 20000.0	-62.33	-13	-49.33
		Mid	30.0 - 1850.0	-52.73	-13	-39.73
		Mid	1915.0 - 10000.0	-45.90	-13	-32.90
		Mid	10000.0 - 20000.0	-62.22	-13	-49.22
		High	30.0 - 1850.0	-52.75	-13	-39.75
		High	1916.0 - 10000.0	-46.05	-13	-33.05
		High	10000.0 - 20000.0	-62.31	-13	-49.31
LTE-B2	20+20MHz	Low	30.0 - 1849.0	-46.62	-13	-33.62
		Low	1915.0 - 10000.0	-46.80	-13	-33.80
		Low	10000.0 - 20000.0	-62.60	-13	-49.60
		Mid	30.0 - 1850.0	-49.88	-13	-36.88
		Mid	1915.0 - 10000.0	-46.31	-13	-33.31
		Mid	10000.0 - 20000.0	-62.74	-13	-49.74
		High	30.0 - 1850.0	-49.39	-13	-36.39
		High	1916.0 - 10000.0	-46.87	-13	-33.87
		High	10000.0 - 20000.0	-62.43	-13	-49.43

Table 7-6. Conducted Spurious Test Results – Ant1

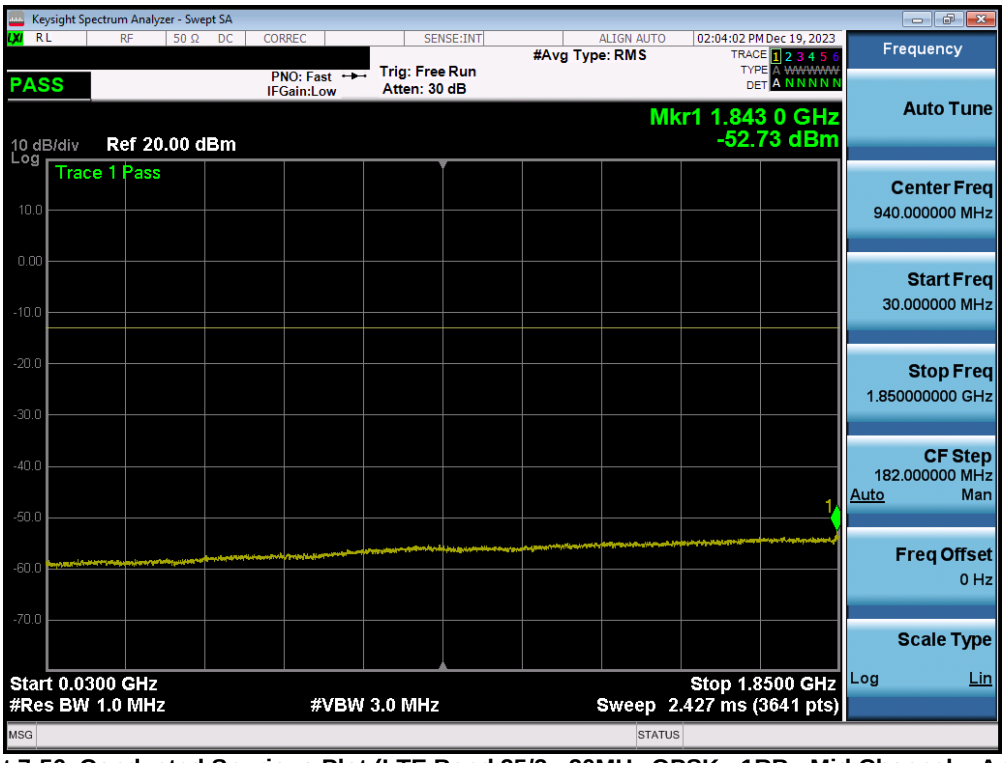
Mode	Bandwidth	Channel	Range [MHz]	Level [dBm]	Limit [dBm]	Margin [dB]
NR-n25-2	20MHz	Low	30.0 - 1849.0	-49.13	-13	-36.13
		Low	1915.0 - 10000.0	-43.01	-13	-30.01
		Low	10000.0 - 20000.0	-59.16	-13	-46.16
		Mid	30.0 - 1850.0	-48.11	-13	-35.11
		Mid	1915.0 - 10000.0	-43.10	-13	-30.10
		Mid	10000.0 - 20000.0	-59.36	-13	-46.36
		High	30.0 - 1850.0	-47.92	-13	-34.92
		High	1916.0 - 10000.0	-43.11	-13	-30.11
		High	10000.0 - 20000.0	-59.24	-13	-46.24

Table 7-7. Conducted Spurious Test Results – Ant1

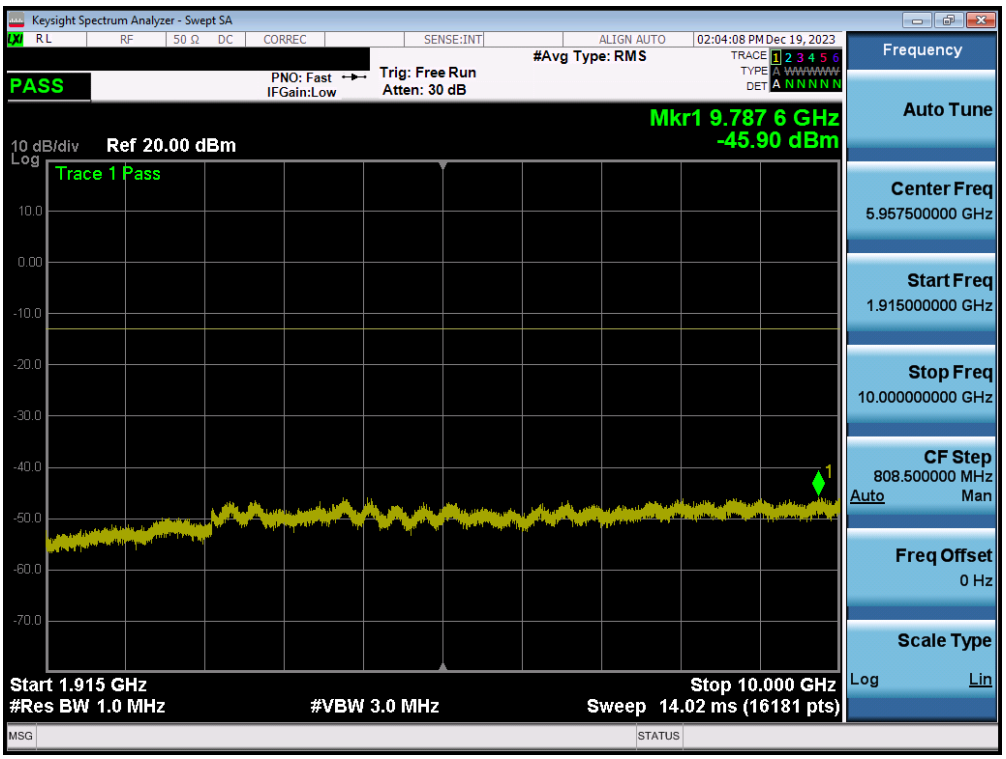
Mode	Bandwidth	Channel	Range [MHz]	Level [dBm]	Limit [dBm]	Margin [dB]
NR-n25-2	20MHz	Low	30.0 - 1849.0	-52.11	-13	-39.11
		Low	1915.0 - 10000.0	-46.63	-13	-33.63
		Low	10000.0 - 20000.0	-62.31	-13	-49.31
		Mid	30.0 - 1850.0	-53.29	-13	-40.29
		Mid	1915.0 - 10000.0	-46.63	-13	-33.63
		Mid	10000.0 - 20000.0	-62.07	-13	-49.07
		High	30.0 - 1850.0	-53.20	-13	-40.20
		High	1916.0 - 10000.0	-46.74	-13	-33.74
		High	10000.0 - 20000.0	-62.56	-13	-49.56

Table 7-8. Conducted Spurious Test Results – Ant4

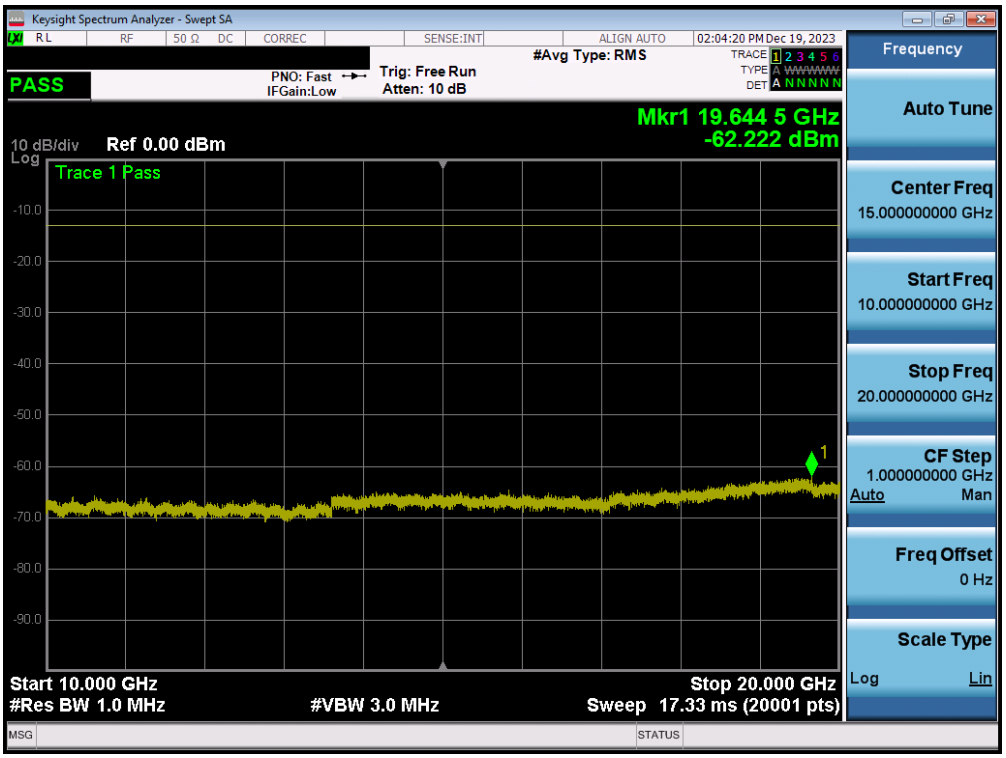
LTE Band 25/2 – Ant1



Plot 7-56. Conducted Spurious Plot (LTE Band 25/2 - 20MHz QPSK - 1RB - Mid Channel – Ant1)

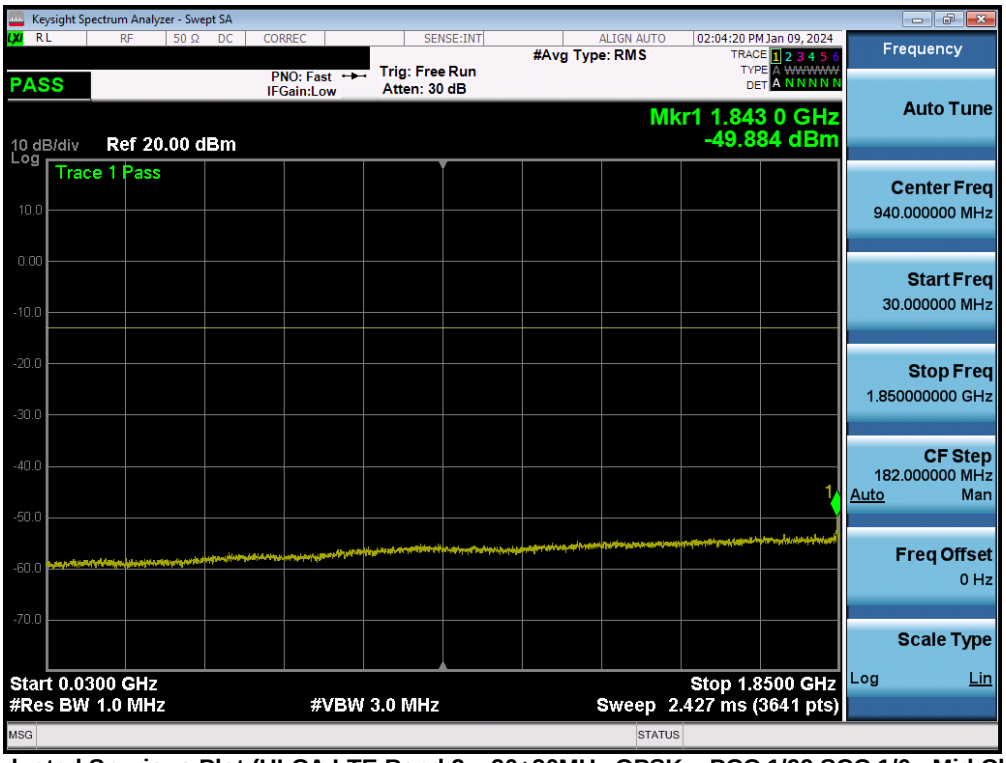


Plot 7-57. Conducted Spurious Plot (LTE Band 25/2 - 20MHz QPSK - 1RB - Mid Channel – Ant1)

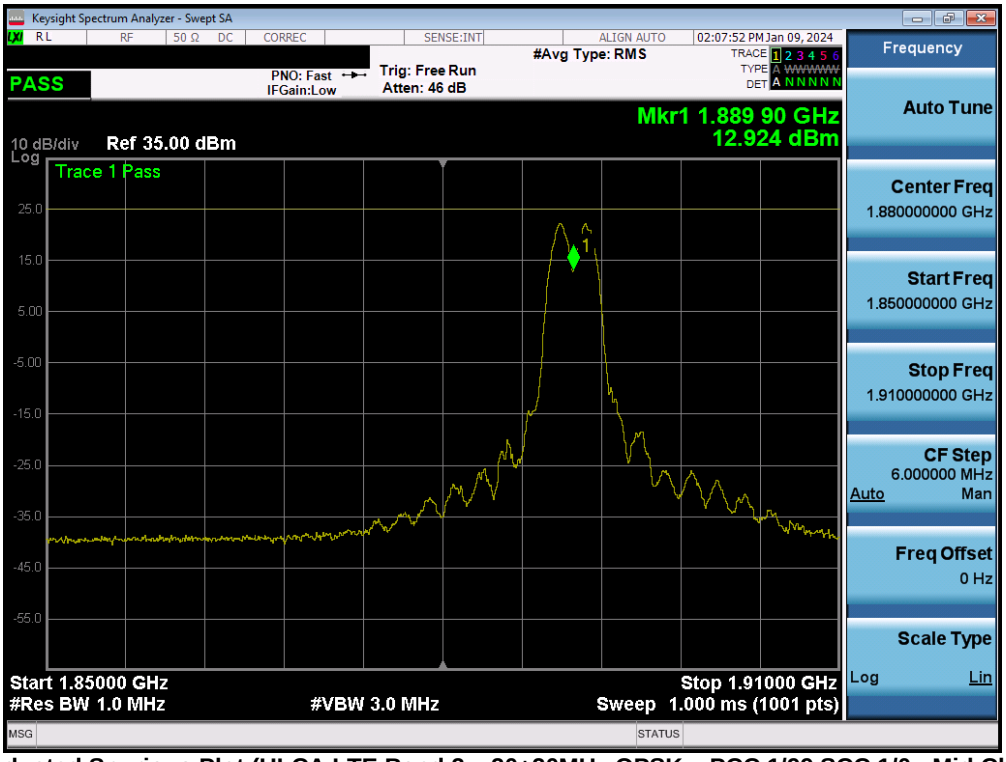


Plot 7-58. Conducted Spurious Plot (LTE Band 25/2 - 20MHz QPSK - 1RB - Mid Channel – Ant1)

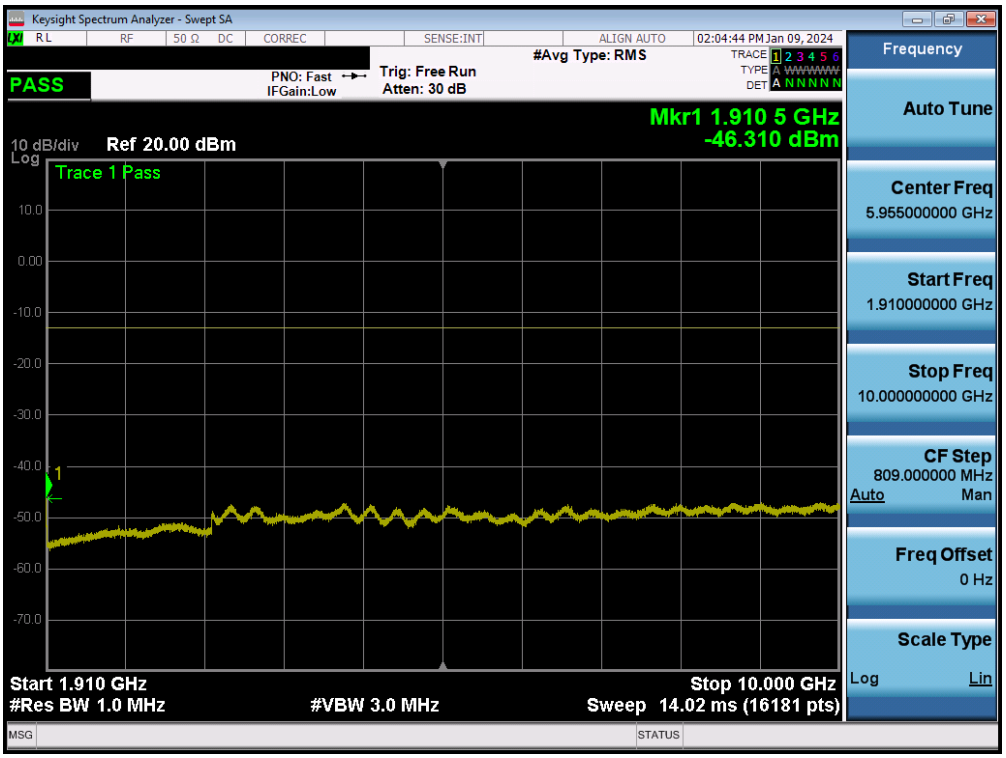
ULCA LTE Band 2 – Ant1



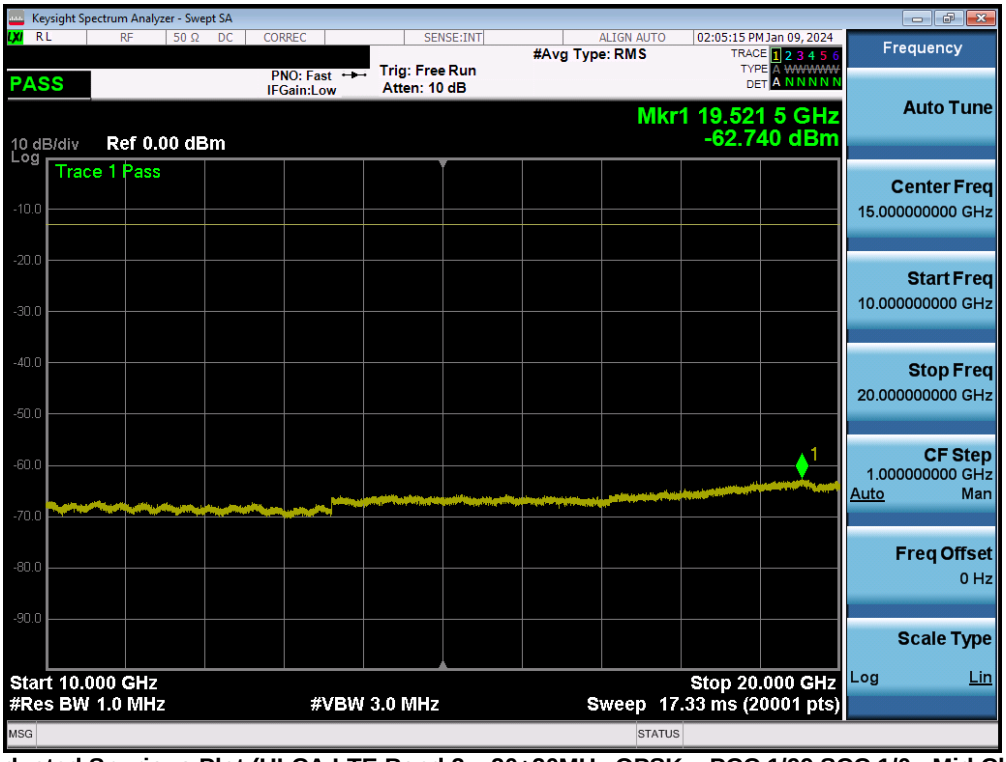
Plot 7-59. Conducted Spurious Plot (ULCA LTE Band 2 – 20+20MHz QPSK – PCC 1/99 SCC 1/0 - Mid Channel – Ant1)



Plot 7-60. Conducted Spurious Plot (ULCA LTE Band 2 – 20+20MHz QPSK – PCC 1/99 SCC 1/0 - Mid Channel – Ant1)

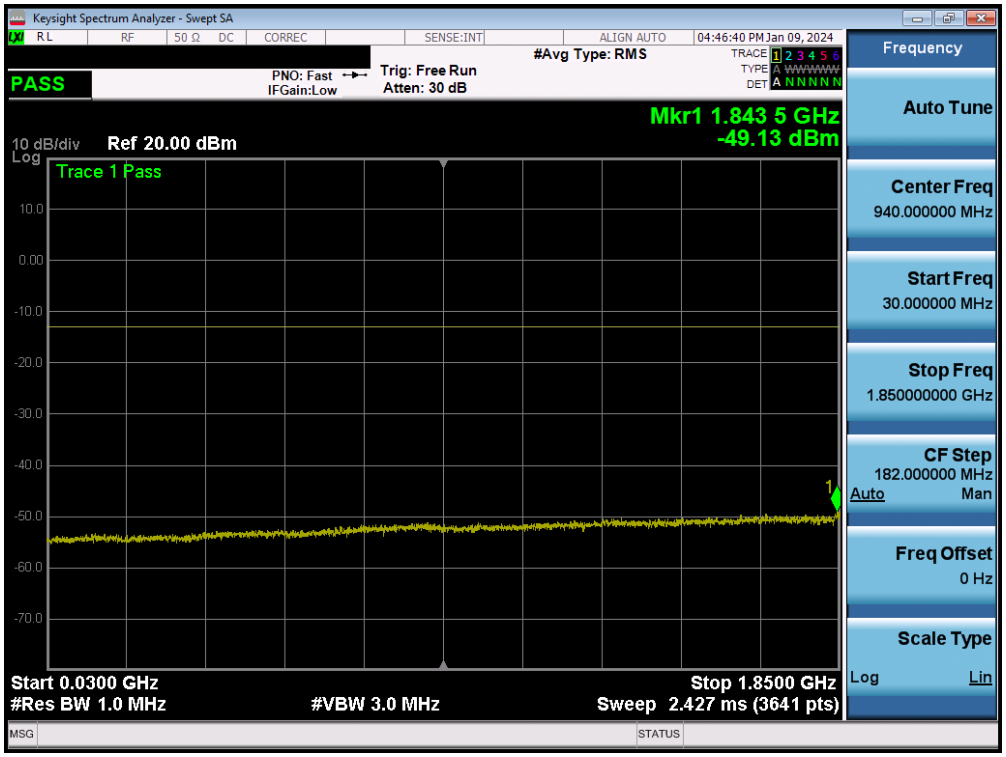


Plot 7-61. Conducted Spurious Plot (ULCA LTE Band 2 – 20+20MHz QPSK – PCC 1/99 SCC 1/0 - Mid Channel – Ant1)

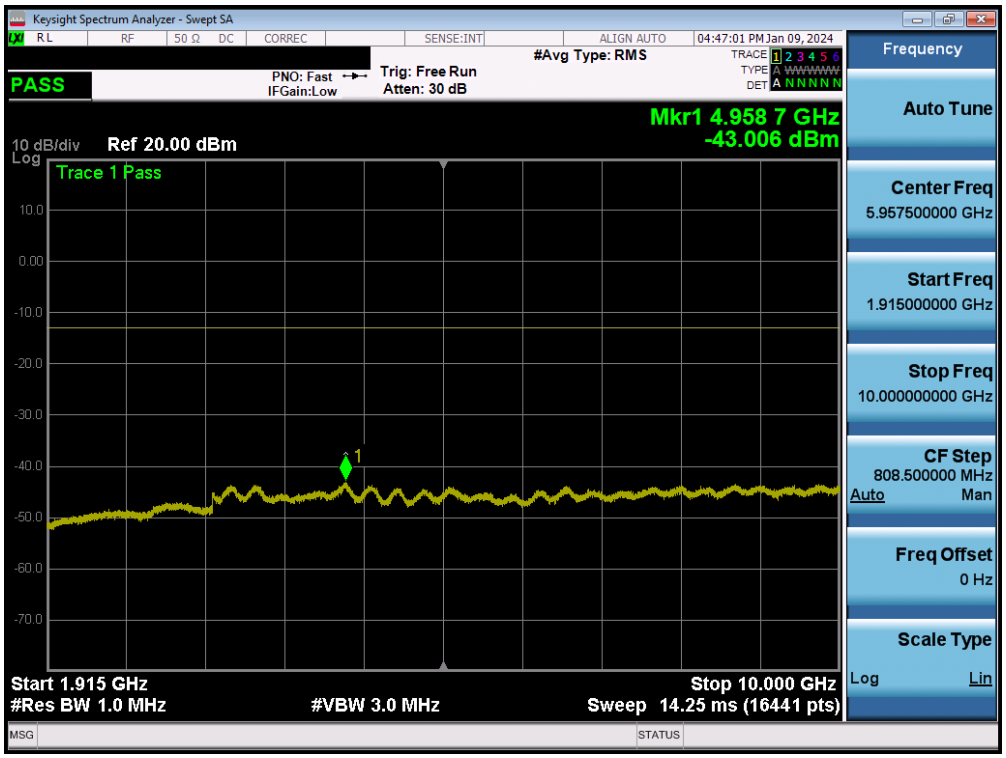


Plot 7-62. Conducted Spurious Plot (ULCA LTE Band 2 – 20+20MHz QPSK – PCC 1/99 SCC 1/0 - Mid Channel – Ant1)

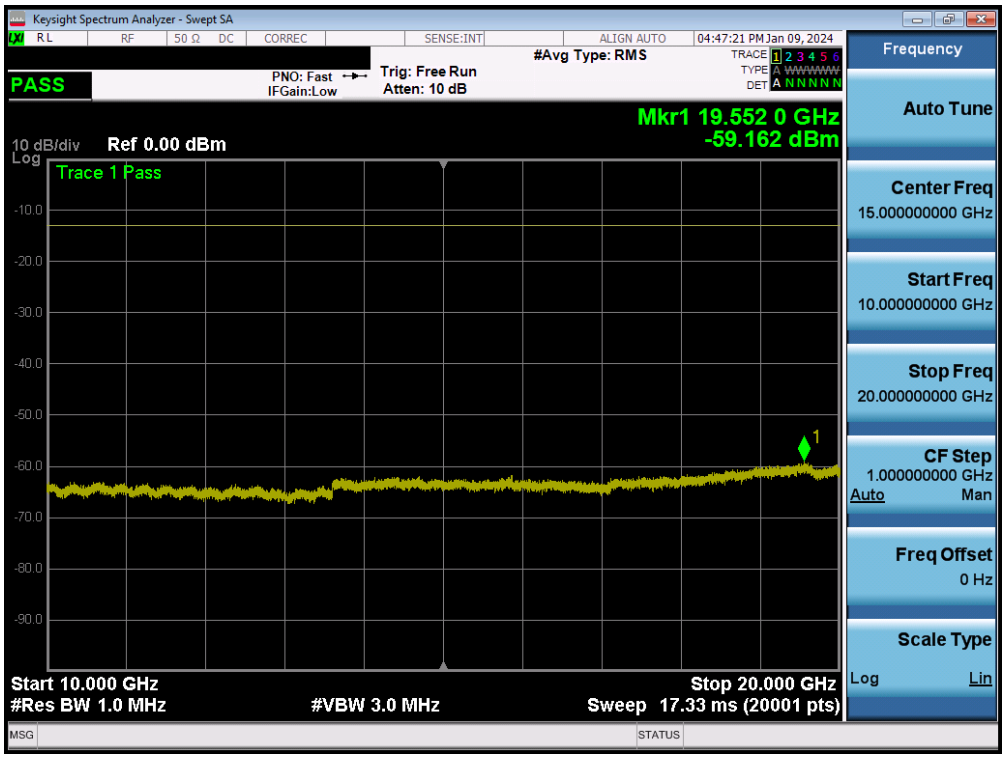
NR Band n25/2 – Ant1



Plot 7-63. Conducted Spurious Plot (NR Band n25/2 - 20.0MHz - 1RB - Low Channel – Ant1)

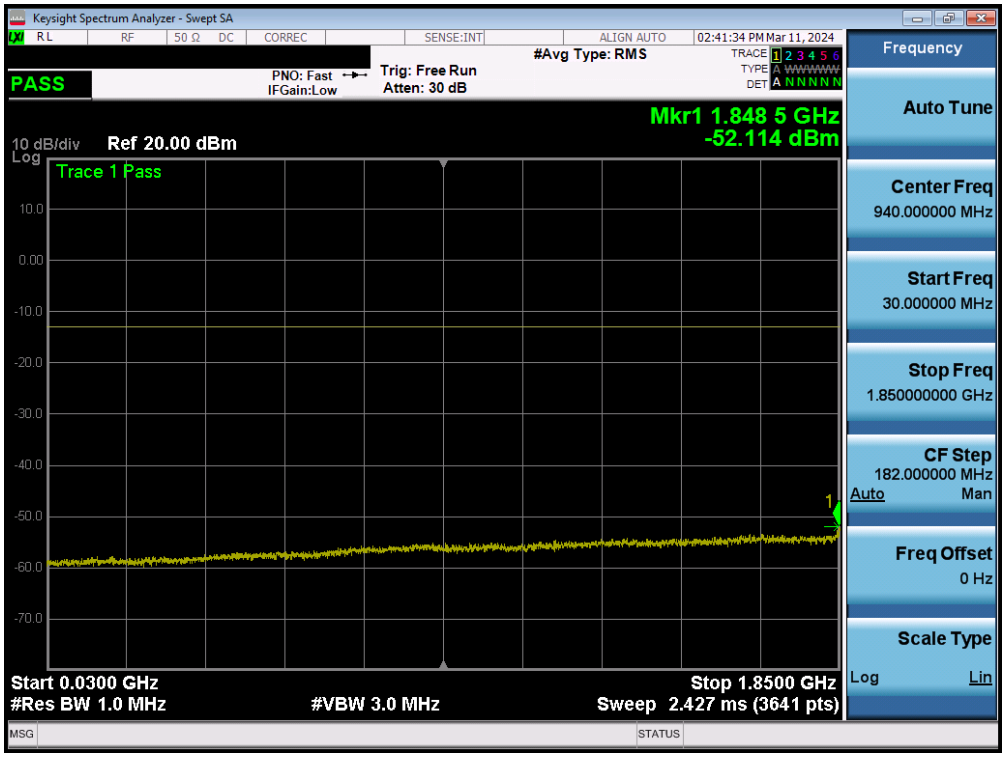


Plot 7-64. Conducted Spurious Plot (NR Band n25/2 - 20.0MHz - 1RB - Low Channel – Ant1)

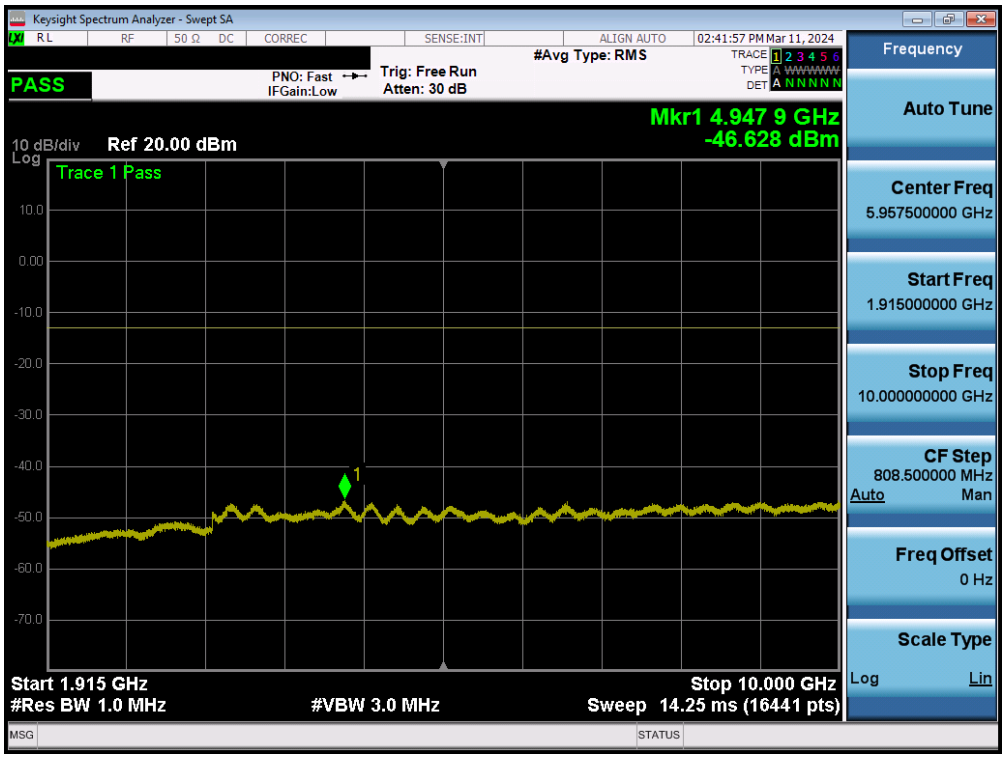


Plot 7-65. Conducted Spurious Plot (NR Band n25/2 - 20.0MHz - 1RB - Low Channel – Ant1)

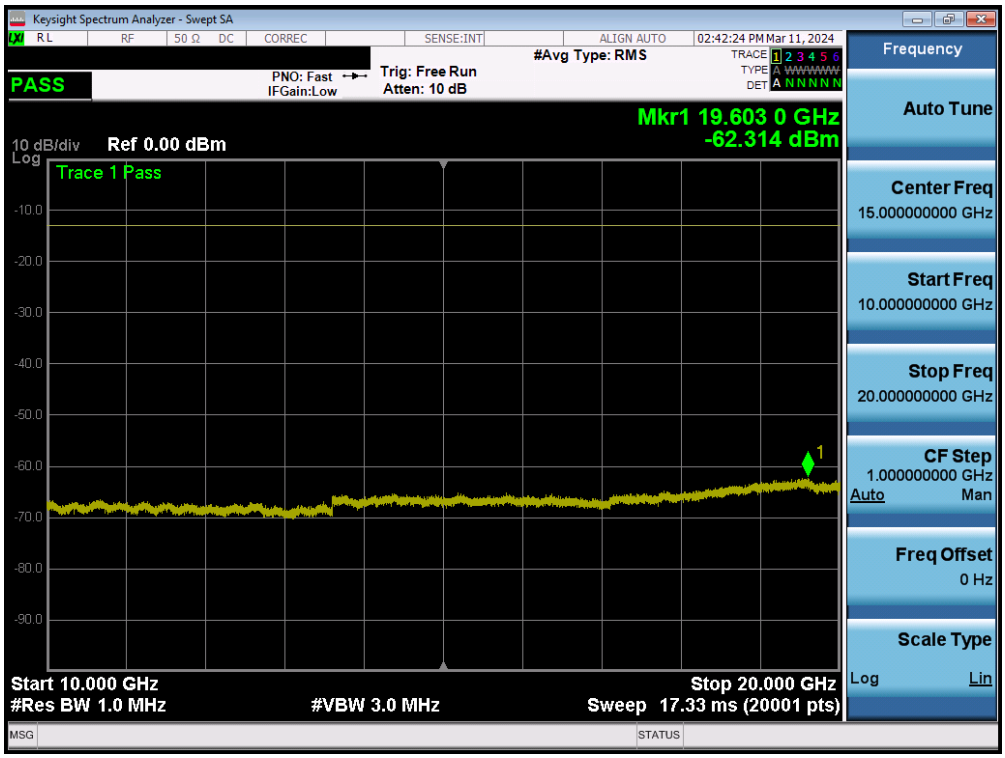
NR Band n25/2 – Ant4



Plot 7-66. Conducted Spurious Plot (NR Band n25/2 -20.0MHz - 1RB - Low Channel – Ant4)

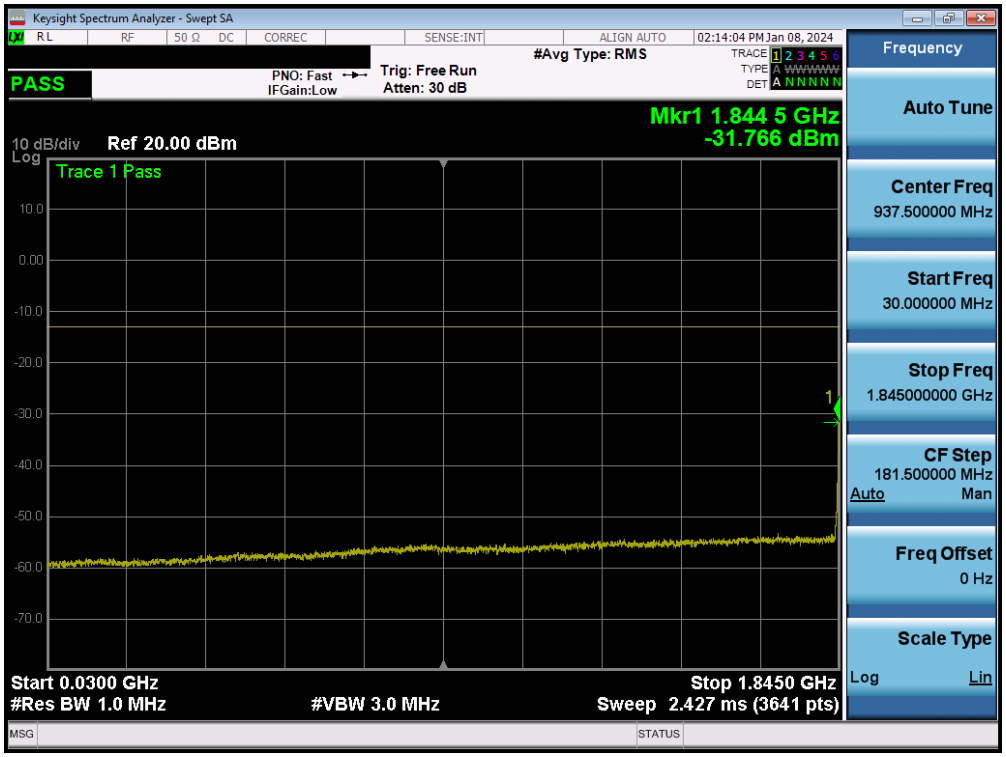


Plot 7-67. Conducted Spurious Plot (NR Band n25/2 - 20.0MHz - 1RB - Low Channel – Ant4)

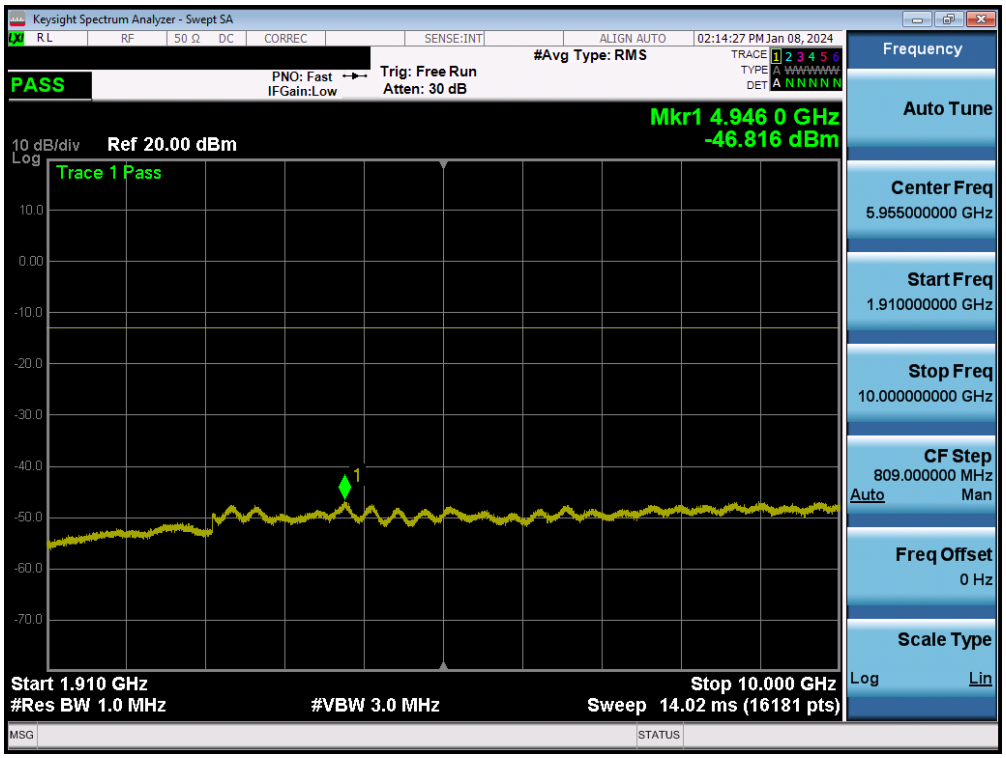


Plot 7-68. Conducted Spurious Plot (NR Band n25/2 - 20.0MHz - 1RB - Low Channel – Ant4)

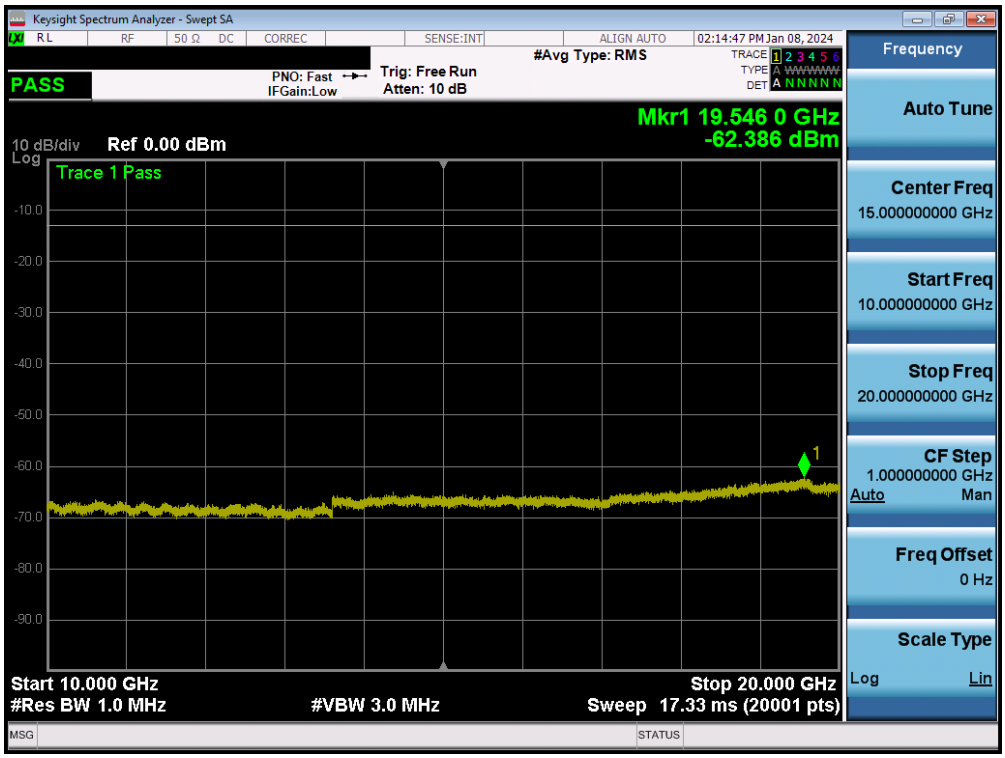
WCDMA PCS – Ant1



Plot 7-69. Conducted Spurious Plot (WCDMA Ch. 9262 – Ant1)



Plot 7-70. Conducted Spurious Plot (WCDMA Ch. 9262 – Ant1)



Plot 7-71. Conducted Spurious Plot (WCDMA Ch. 9262 – Ant1)

7.5 Band Edge Emissions at Antenna Terminal

Test Overview

All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating 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.

The minimum permissible attenuation level of any spurious emission is 43 + 10 $log_{10}(P_{[Watts]})$, where P is the transmitter power in Watts.

Test Procedure Used

ANSI C63.26-2015 – Section 5.7.3

Test Settings

1. Start and stop frequency were set such that the band edge would be placed in the center of the plot
2. Span was set large enough so as to capture all out of band emissions near the band edge
3. RBW ≥ 1% of the emission bandwidth
4. VBW ≥ 3 x RBW
5. Detector = RMS
6. Number of sweep points ≥ 2 x Span/RBW
7. Trace mode = trace average for continuous emissions, max hold for pulse emissions
8. Sweep time = auto couple
9. The trace was allowed to stabilize

Test Setup

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

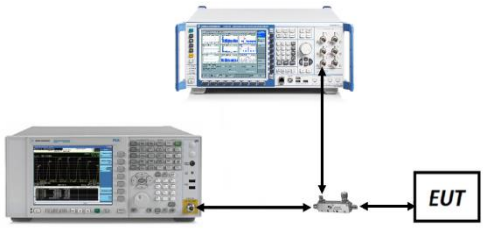


Figure 7-4. Test Instrument & Measurement Setup

Test Notes

1. Per 24.238(b) and RSS-133(6.5), in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to demonstrate compliance with the out-of-band emissions limit. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emission are attenuated at least 26 dB below the transmitter power.

2. For NR operation, all subcarrier spacings (SCS) and transmission schemes (e.g. CP-OFDM and DFT-s-OFDM) 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.

Mode	Bandwidth	Channel	Test Case	Level [dBm]	Limit [dBm]	Margin [dB]
WCDMA-PCS	5MHz	Low	Band Edge	-20.96	-13	-7.96
		Low	Extended	-14.25	-13	-1.25
		High	Band Edge	-20.70	-13	-7.70
		High	Extended	-14.53	-13	-1.53
LTE-B25-2	20MHz	Low	Band Edge	-26.61	-13	-13.61
		Low	Extended	-21.57	-13	-8.57
		High [B2]	Band Edge	-26.38	-13	-13.38
		High [B25]	Band Edge	-29.42	-13	-16.42
		High [B2]	Extended	-21.50	-13	-8.50
		High [B25]	Extended	-24.11	-13	-11.11
	15MHz	Low	Band Edge	-28.02	-13	-15.02
		Low	Extended	-21.10	-13	-8.10
		High [B2]	Band Edge	-26.65	-13	-13.65
		High [B25]	Band Edge	-28.69	-13	-15.69
		High [B2]	Extended	-19.14	-13	-6.14
		High [B25]	Extended	-21.72	-13	-8.72
	10MHz	Low	Band Edge	-27.59	-13	-14.59
		Low	Extended	-20.49	-13	-7.49
		High [B2]	Band Edge	-27.94	-13	-14.94
		High [B25]	Band Edge	-25.78	-13	-12.78
		High [B2]	Extended	-20.98	-13	-7.98
		High [B25]	Extended	-20.98	-13	-7.98
	5MHz	Low	Band Edge	-22.57	-13	-9.57
		Low	Extended	-22.62	-13	-9.62
		High [B2]	Band Edge	-25.08	-13	-12.08
		High [B25]	Band Edge	-23.70	-13	-10.70
		High [B2]	Extended	-23.00	-13	-10.00
		High [B25]	Extended	-21.76	-13	-8.76
	3MHz	Low	Band Edge	-24.59	-13	-11.59
		Low	Extended	-24.18	-13	-11.18
		High [B2]	Band Edge	-23.74	-13	-10.74
		High [B25]	Band Edge	-23.11	-13	-10.11
		High [B2]	Extended	-24.43	-13	-11.43
		High [B25]	Extended	-18.04	-13	-5.04
	1.4MHz	Low	Band Edge	-26.02	-13	-13.02
		Low	Extended	-20.75	-13	-7.75
		High [B2]	Band Edge	-22.93	-13	-9.93
		High [B25]	Band Edge	-24.21	-13	-11.21
		High [B2]	Extended	-20.75	-13	-7.75
		High [B25]	Extended	-19.69	-13	-6.69
LTE-B2	20+20MHz	Low	Band Edge	-30.79	-13	-17.79
		Low	Extended	-24.46	-13	-11.46
		High	Band Edge	-29.60	-13	-16.60
		High	Extended	-24.02	-13	-11.02

Table 7-9. Conducted Spurious Test Results – Ant1

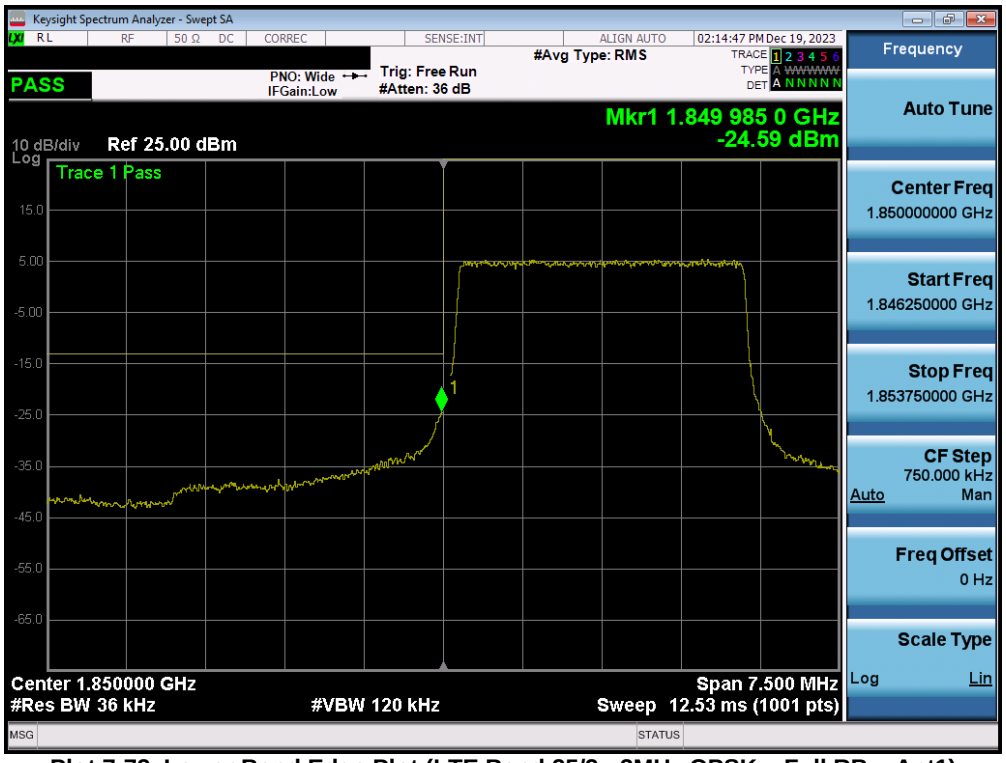
Mode	Bandwidth	Channel	Test Case	Level [dBm]	Limit [dBm]	Margin [dB]
NR-n25-2	40MHz	Low	Band Edge	-25.89	-13	-12.89
		Low	Extended	-28.62	-13	-15.62
		High [n25]	Band Edge	-24.14	-13	-11.14
		High [n25]	Extended	-21.97	-13	-8.97
	30MHz	Low	Band Edge	-27.45	-13	-14.45
		Low	Extended	-24.68	-13	-11.68
		High [n25]	Band Edge	-27.23	-13	-14.23
		High [n25]	Extended	-24.20	-13	-11.20
	25MHz	Low	Band Edge	-28.93	-13	-15.93
		Low	Extended	-25.12	-13	-12.12
		High [n25]	Band Edge	-30.91	-13	-17.91
		High [n25]	Extended	-26.33	-13	-13.33
	20MHz	Low	Band Edge	-27.45	-13	-14.45
		Low	Extended	-21.80	-13	-8.80
		High [n2]	Band Edge	-28.44	-13	-15.44
		High [n25]	Band Edge	-28.60	-13	-15.60
		High [n2]	Extended	-23.16	-13	-10.16
		High [n25]	Extended	-23.13	-13	-10.13
	15MHz	Low	Band Edge	-31.12	-13	-18.12
		Low	Extended	-23.00	-13	-10.00
		High [n2]	Band Edge	-27.85	-13	-14.85
		High [n25]	Band Edge	-29.43	-13	-16.43
		High [n2]	Extended	-23.58	-13	-10.58
		High [n25]	Extended	-23.71	-13	-10.71
	10MHz	Low	Band Edge	-25.82	-13	-12.82
		Low	Extended	-16.60	-13	-3.60
		High [n2]	Band Edge	-27.26	-13	-14.26
		High [n25]	Band Edge	-27.48	-13	-14.48
		High [n2]	Extended	-20.16	-13	-7.16
		High [n25]	Extended	-19.92	-13	-6.92
	5MHz	Low	Band Edge	-23.70	-13	-10.70
		Low	Extended	-30.53	-13	-17.53
		High [n2]	Band Edge	-22.72	-13	-9.72
		High [n25]	Band Edge	-25.98	-13	-12.98
		High [n2]	Extended	-30.20	-13	-17.20
		High [n25]	Extended	-26.49	-13	-13.49

Table 7-10. Conducted Spurious Test Results – Ant1

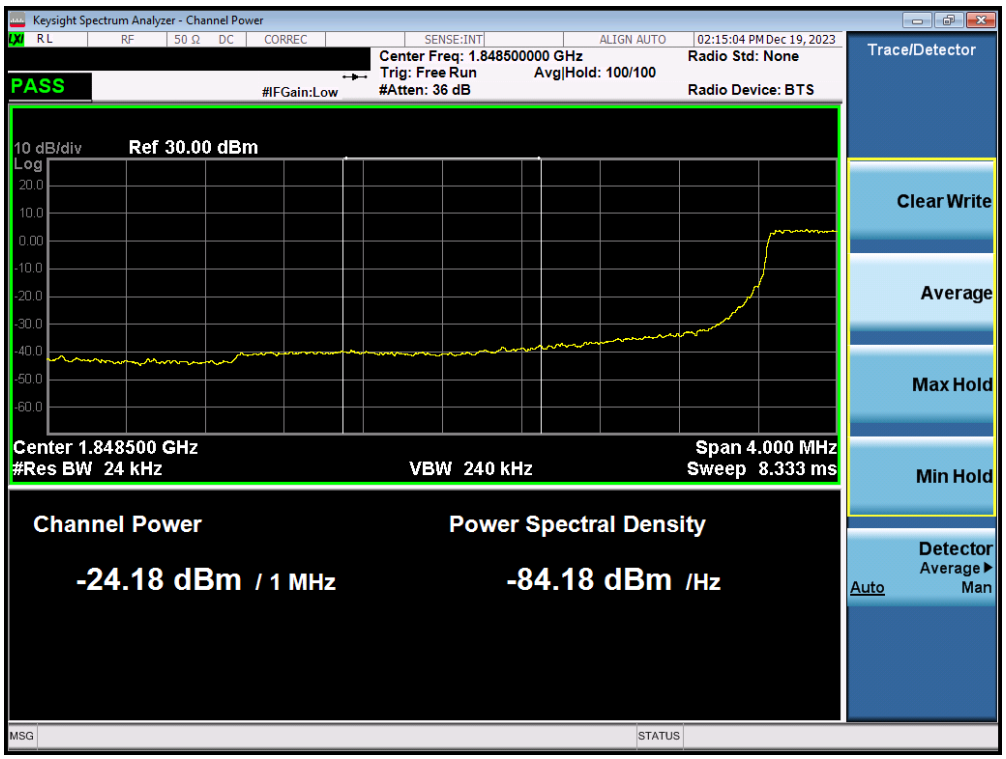
Mode	Bandwidth	Channel	Test Case	Level [dBm]	Limit [dBm]	Margin [dB]
NR-n25-2	40MHz	Low	Band Edge	-25.06	-13	-12.06
		Low	Extended	-24.75	-13	-11.75
		High [n25]	Band Edge	-23.49	-13	-10.49
		High [n25]	Extended	-21.04	-13	-8.04
	30MHz	Low	Band Edge	-27.49	-13	-14.49
		Low	Extended	-23.52	-13	-10.52
		High [n25]	Band Edge	-26.46	-13	-13.46
		High [n25]	Extended	-23.05	-13	-10.05
	25MHz	Low	Band Edge	-27.29	-13	-14.29
		Low	Extended	-23.64	-13	-10.64
		High [n25]	Band Edge	-29.82	-13	-16.82
		High [n25]	Extended	-25.27	-13	-12.27
	20MHz	Low	Band Edge	-24.77	-13	-11.77
		Low	Extended	-19.21	-13	-6.21
		High [n2]	Band Edge	-28.08	-13	-15.08
		High [n25]	Band Edge	-27.67	-13	-14.67
		High [n2]	Extended	-22.98	-13	-9.98
		High [n25]	Extended	-22.41	-13	-9.41
	15MHz	Low	Band Edge	-25.45	-13	-12.45
		Low	Extended	-19.65	-13	-6.65
		High [n2]	Band Edge	-30.26	-13	-17.26
		High [n25]	Band Edge	-28.03	-13	-15.03
		High [n2]	Extended	-22.92	-13	-9.92
		High [n25]	Extended	-23.24	-13	-10.24
	10MHz	Low	Band Edge	-25.88	-13	-12.88
		Low	Extended	-16.94	-13	-3.94
		High [n2]	Band Edge	-27.89	-13	-14.89
		High [n25]	Band Edge	-27.92	-13	-14.92
		High [n2]	Extended	-19.87	-13	-6.87
		High [n25]	Extended	-19.91	-13	-6.91
	5MHz	Low	Band Edge	-24.16	-13	-11.16
		Low	Extended	-29.51	-13	-16.51
		High [n2]	Band Edge	-22.97	-13	-9.97
		High [n25]	Band Edge	-25.11	-13	-12.11
		High [n2]	Extended	-30.01	-13	-17.01
		High [n25]	Extended	-27.23	-13	-14.23

Table 7-11. Conducted Spurious Test Results – Ant4

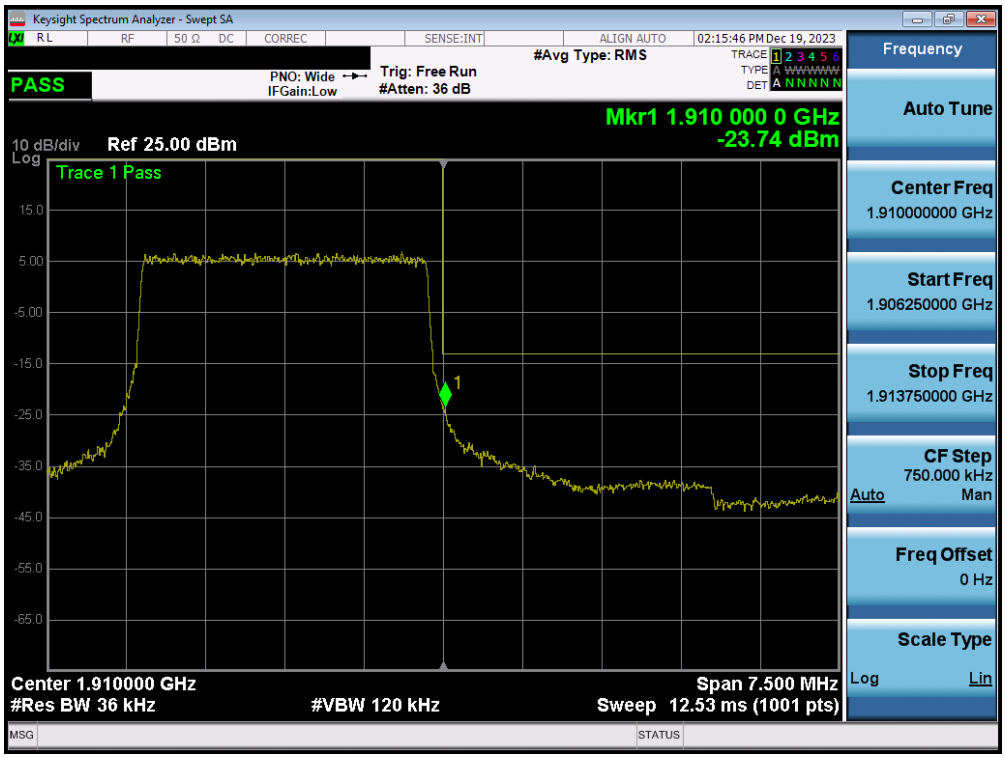
LTE Band 25/2 – Ant1



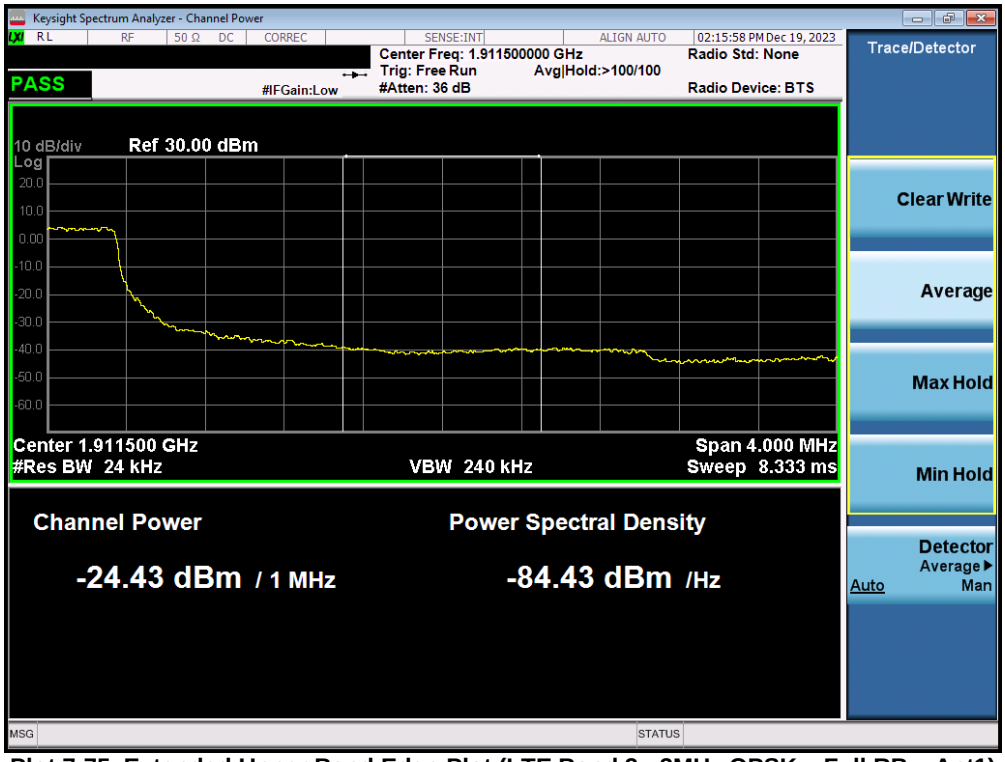
Plot 7-72. Lower Band Edge Plot (LTE Band 25/2 - 3MHz QPSK – Full RB – Ant1)



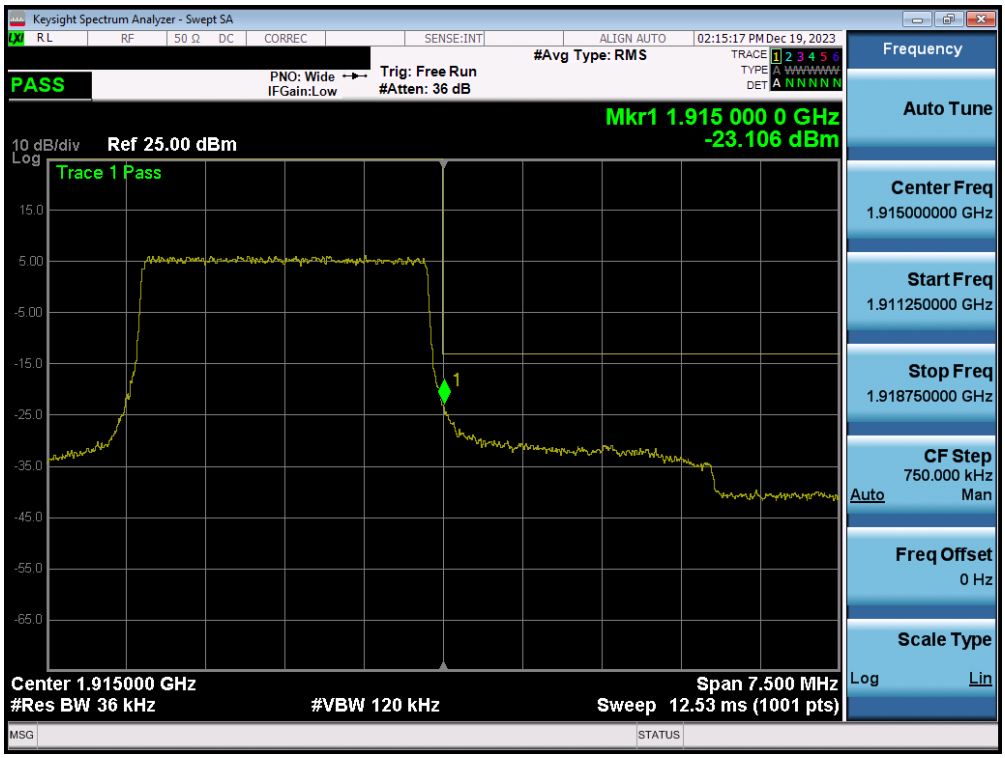
Plot 7-73. Extended Lower Band Edge Plot (LTE Band 25/2 - 3MHz QPSK – Full RB – Ant1)



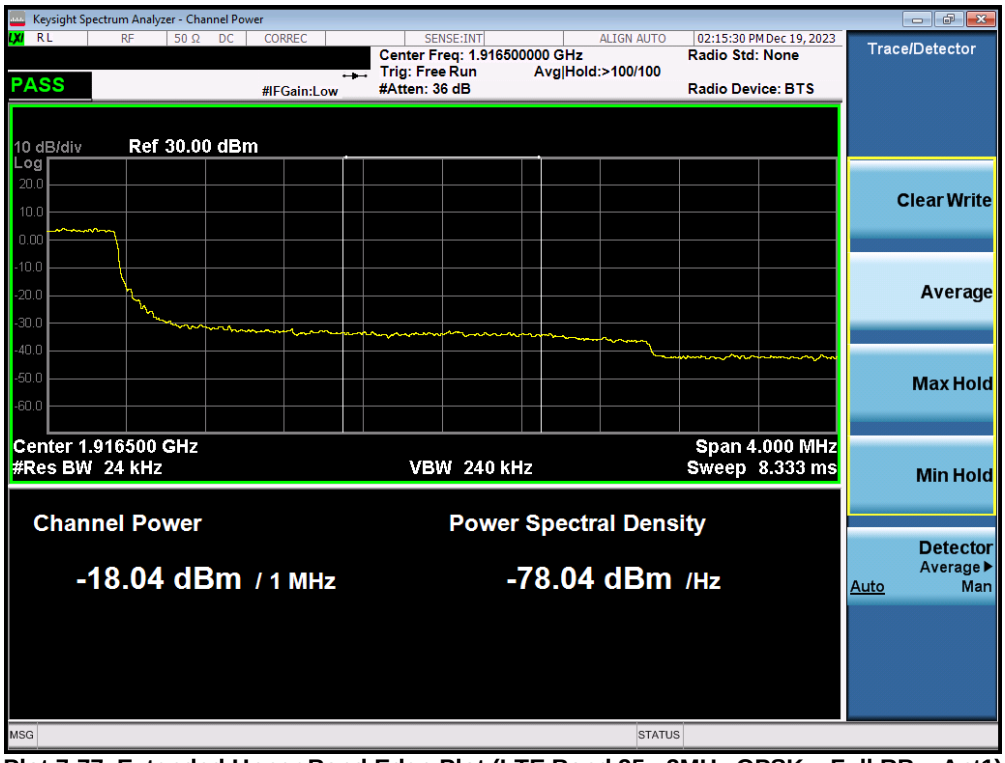
Plot 7-74. Upper Band Edge Plot (LTE Band 2 - 3MHz QPSK – Full RB – Ant1)



Plot 7-75. Extended Upper Band Edge Plot (LTE Band 2 - 3MHz QPSK – Full RB – Ant1)

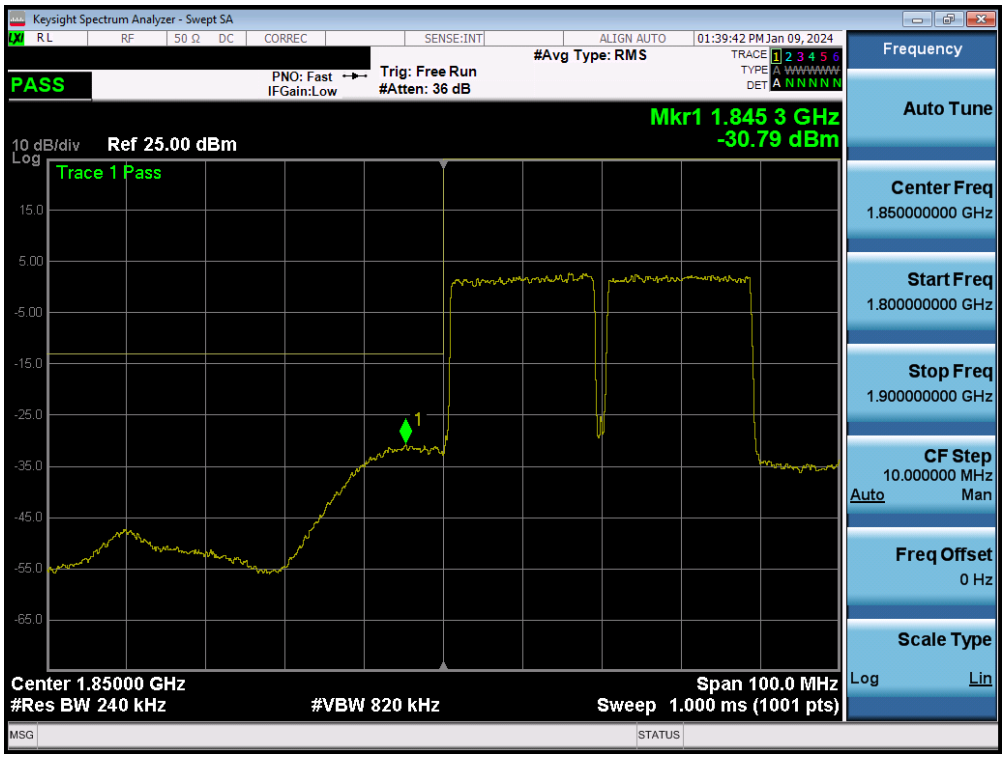


Plot 7-76. Upper Band Edge Plot (LTE Band 25 - 3MHz QPSK – Full RB – Ant1)

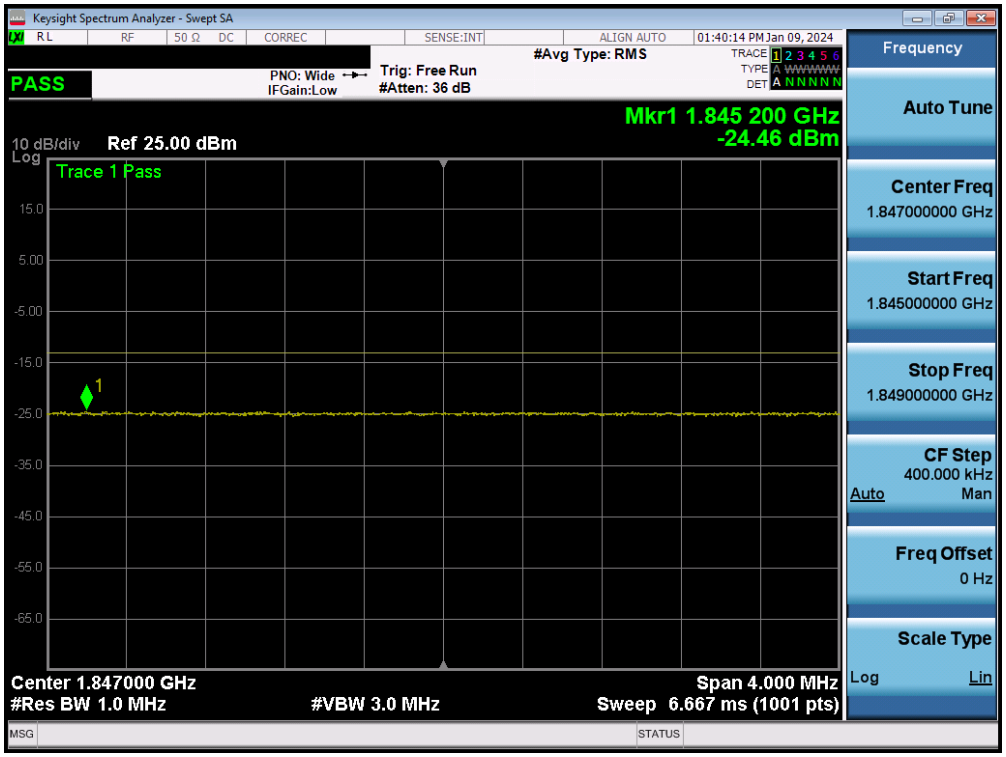


Plot 7-77. Extended Upper Band Edge Plot (LTE Band 25 - 3MHz QPSK – Full RB – Ant1)

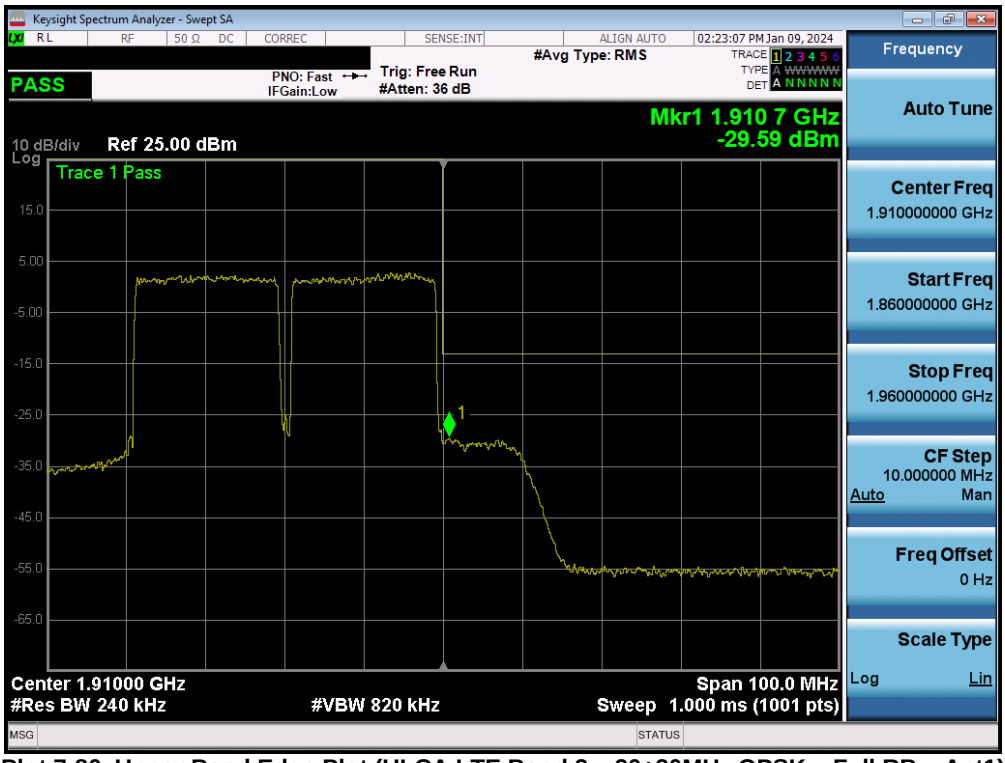
ULCA LTE Band 2 – Ant1



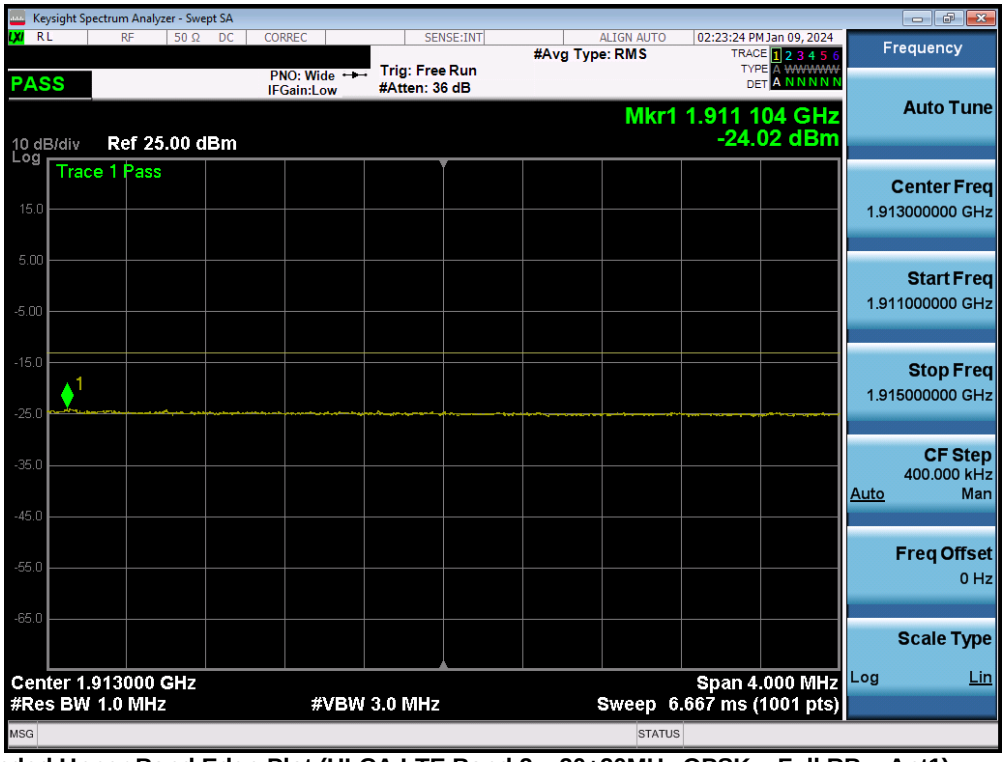
Plot 7-78. Lower Band Edge Plot (ULCA LTE Band 2 – 20+20MHz QPSK – Full RB – Ant1)



Plot 7-79. Extended Lower Band Edge Plot (ULCA LTE Band 2 – 20+20MHz QPSK – Full RB – Ant1)



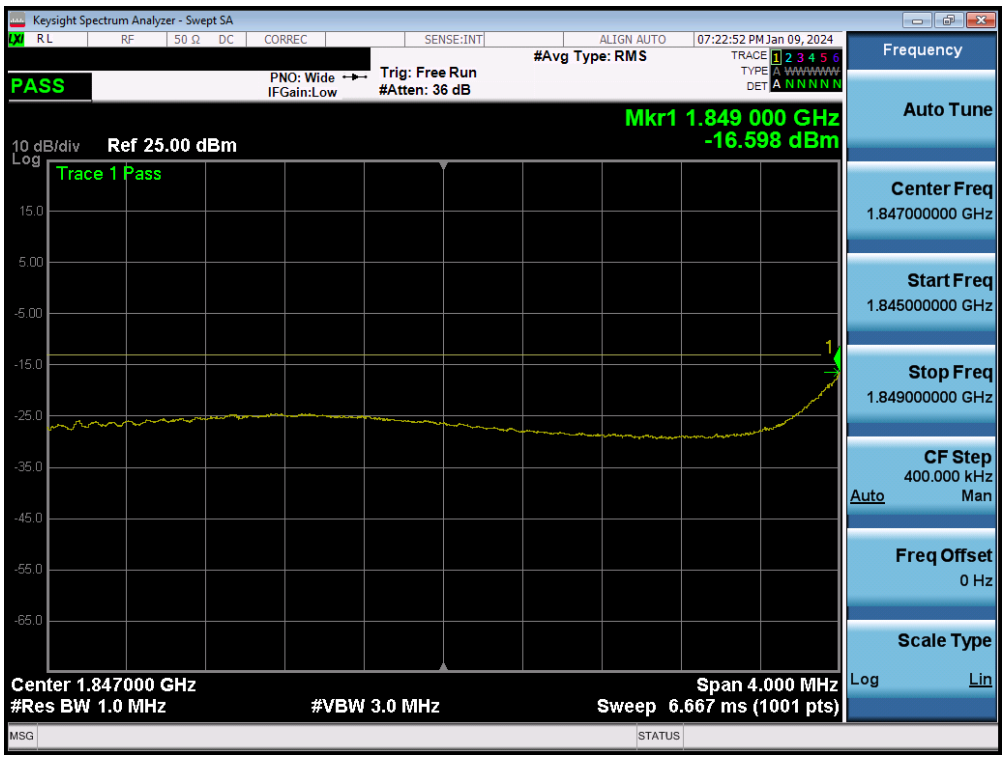
Plot 7-80. Upper Band Edge Plot (ULCA LTE Band 2 – 20+20MHz QPSK – Full RB – Ant1)



Plot 7-81. Extended Upper Band Edge Plot (ULCA LTE Band 2 – 20+20MHz QPSK – Full RB – Ant1)

NR Band n25/2 – Ant1

Plot 7-82. Lower Band Edge Plot (NR Band n25/2 - 10MHz QPSK – Full RB – Ant1)



Plot 7-83. Extended Lower Band Edge Plot (NR Band n25/2 - 10MHz QPSK – Full RB – Ant1)

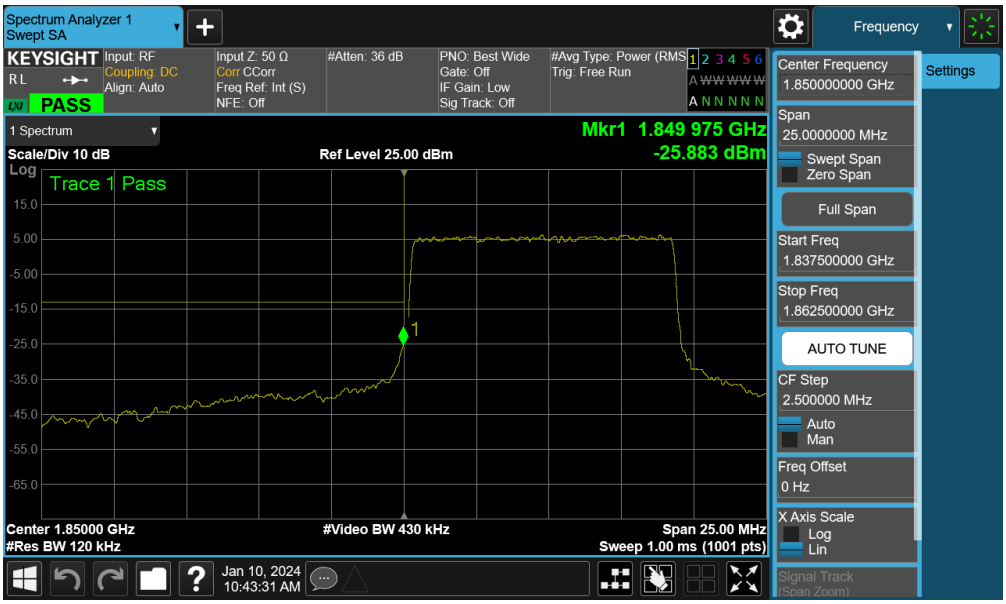
Plot 7-84. Upper Band Edge Plot (NR Band n2 - 10MHz QPSK – Full RB – Ant1)

Plot 7-85. Extended Upper Band Edge Plot (NR Band n2 - 10MHz QPSK – Full RB – Ant1)

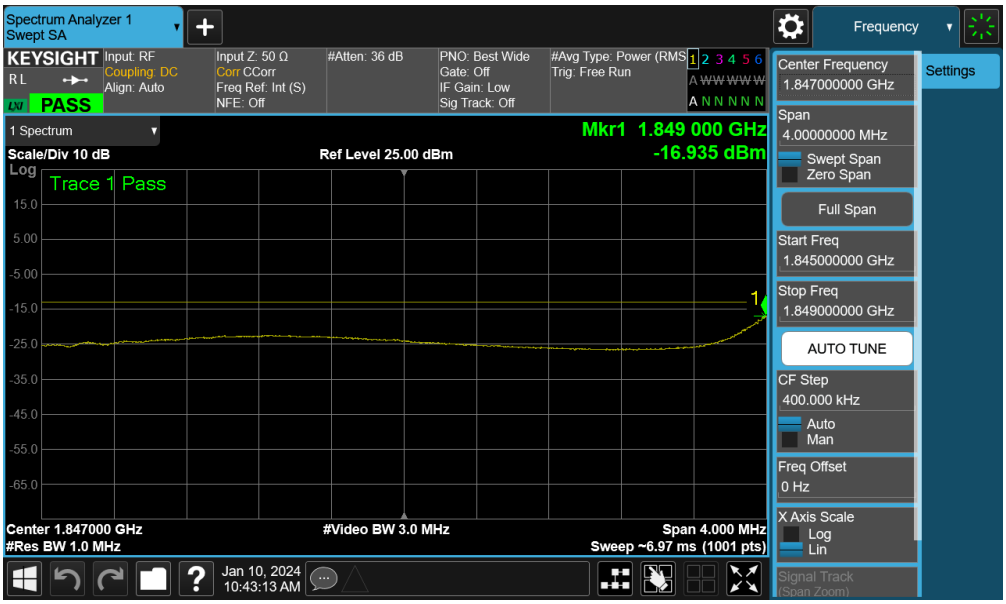
Plot 7-86. Upper Band Edge Plot (NR Band n25 - 10MHz QPSK – Full RB – Ant1)

Plot 7-87. Extended Upper Band Edge Plot (NR Band n25 - 10MHz QPSK – Full RB – Ant1)

NR Band n25/2 – Ant4

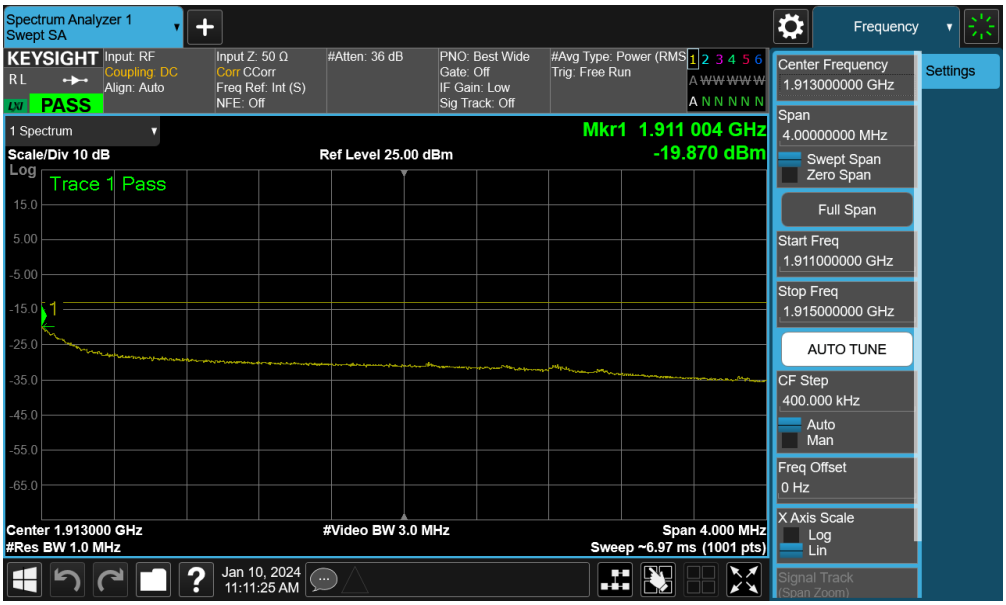


Plot 7-88. Lower Band Edge Plot (NR Band n25/2 - 10MHz QPSK – Full RB – Ant4)



Plot 7-89. Extended Lower Band Edge Plot (NR Band n25/2 - 10MHz QPSK – Full RB – Ant4)

Plot 7-90. Upper Band Edge Plot (NR Band n2 - 10MHz QPSK – Full RB – Ant4)



Plot 7-91. Extended Upper Band Edge Plot (NR Band n2 - 10MHz QPSK – Full RB – Ant4)