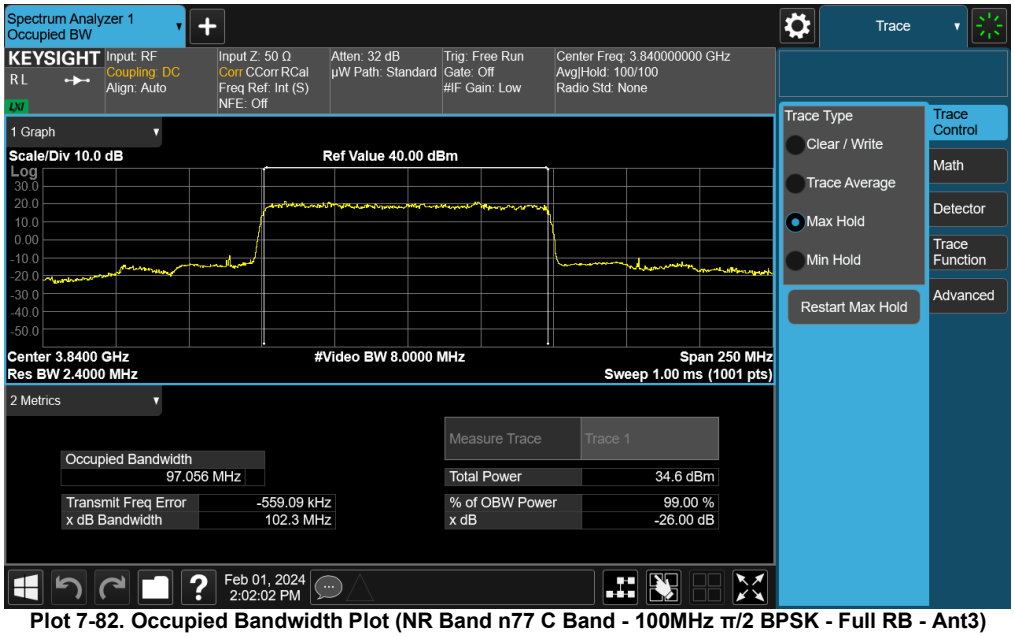
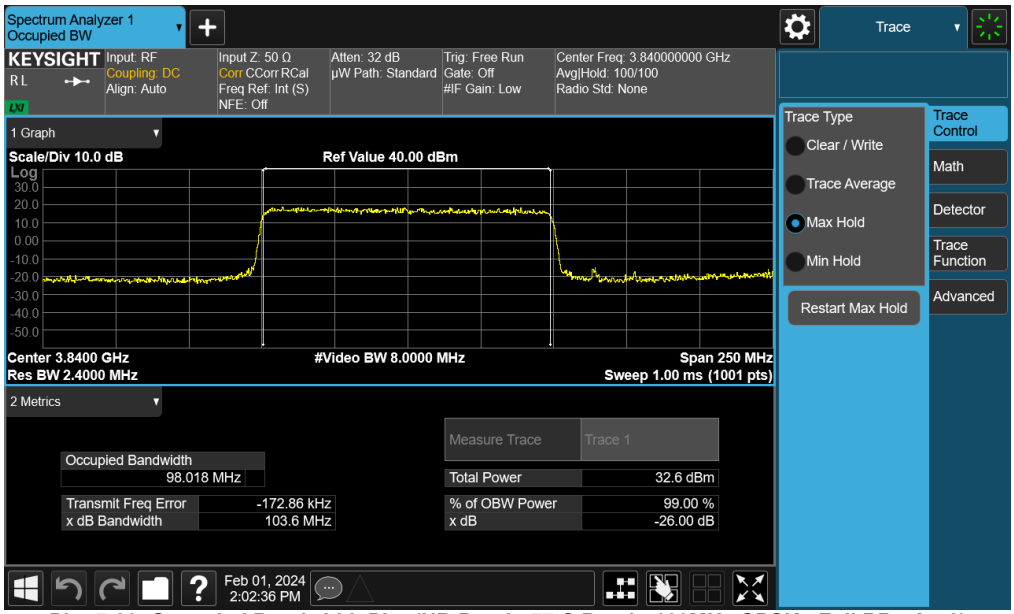
Mode	Bandwidth	Modulation	OBW [MHz]
NR-n77PC2	100MHz	π/2 BPSK	97.06
		QPSK	98.02
		16QAM	97.92
	90MHz	π/2 BPSK	87.39
		QPSK	87.75
		16QAM	87.83
	80MHz	π/2 BPSK	77.52
		QPSK	77.99
		16QAM	77.74
	70MHz	π/2 BPSK	64.65
		QPSK	67.82
		16QAM	67.65
	60MHz	π/2 BPSK	58.08
		QPSK	58.18
		16QAM	58.14
	50MHz	π/2 BPSK	46.00
		QPSK	47.66
		16QAM	47.67
	40MHz	π/2 BPSK	35.75
		QPSK	37.98
		16QAM	37.95
	30MHz	π/2 BPSK	26.92
		QPSK	27.92
		16QAM	27.96
	20MHz	π/2 BPSK	18.02
		QPSK	18.32
		16QAM	18.35

Table 7-9. Occupied Bandwidth Test Results – Ant3

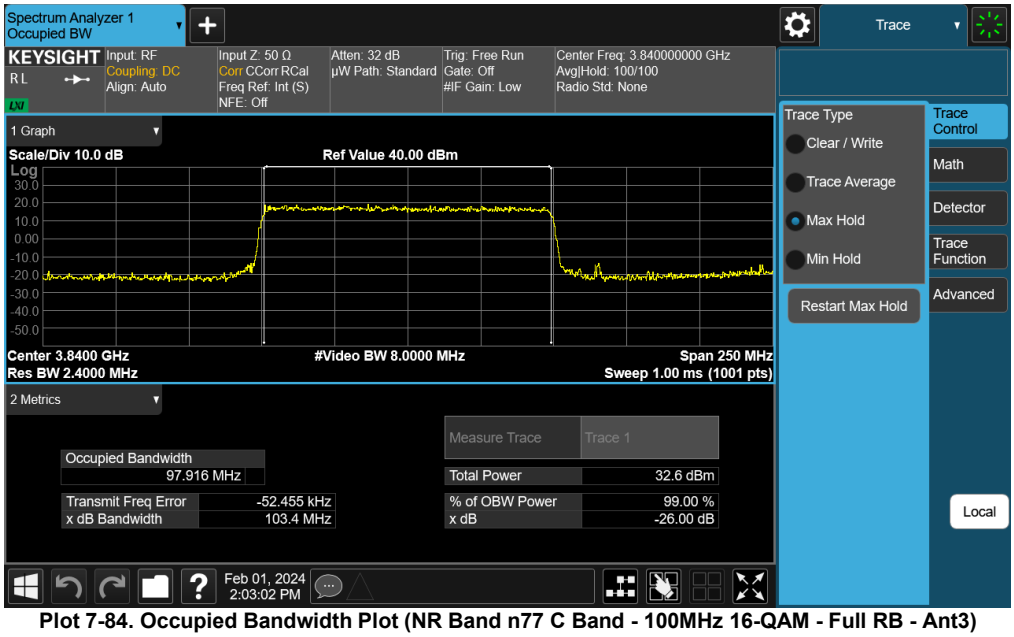
NR Band n77 C Band – Ant3



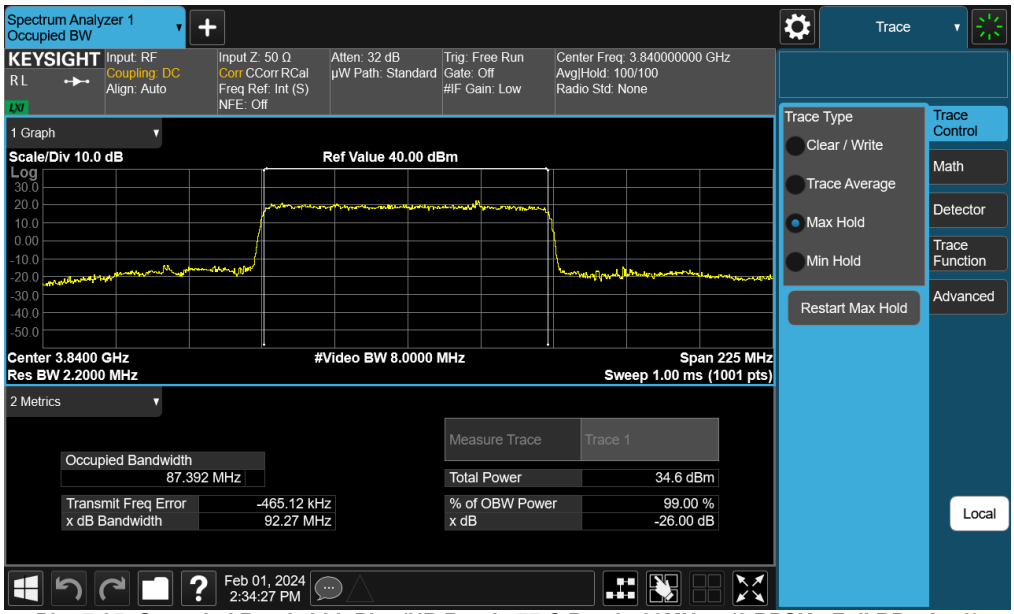
Plot 7-82. Occupied Bandwidth Plot (NR Band n77 C Band - 100MHz π/2 BPSK - Full RB - Ant3)



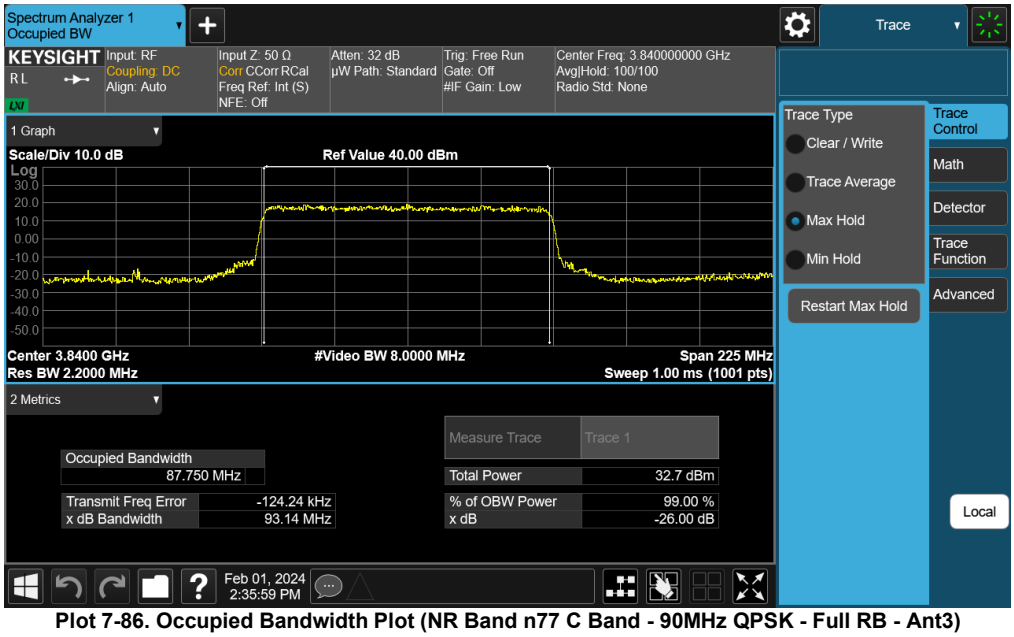
Plot 7-83. Occupied Bandwidth Plot (NR Band n77 C Band - 100MHz QPSK - Full RB - Ant3)



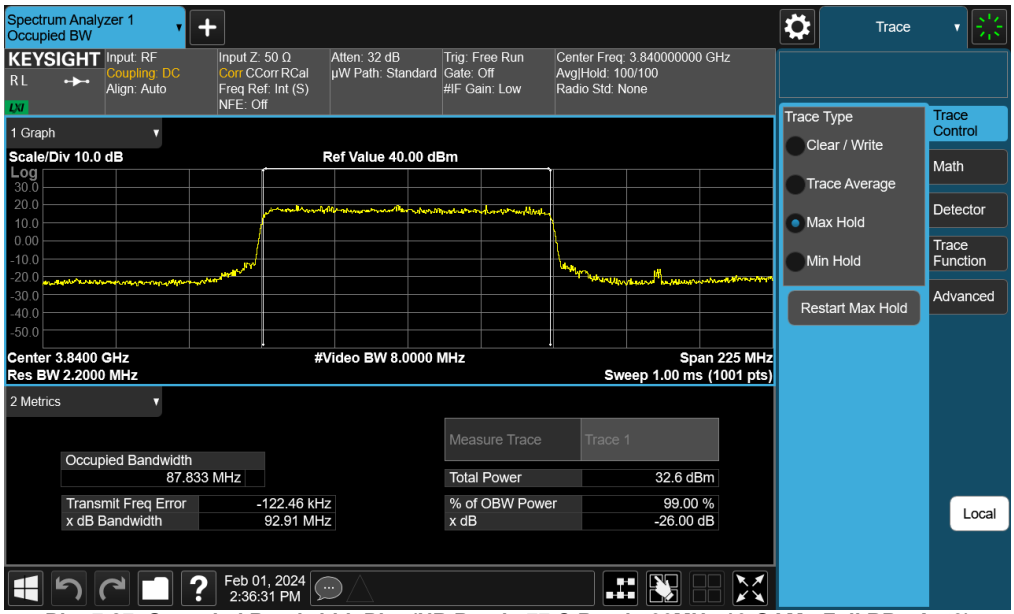
Plot 7-84. Occupied Bandwidth Plot (NR Band n77 C Band - 100MHz 16-QAM - Full RB - Ant3)



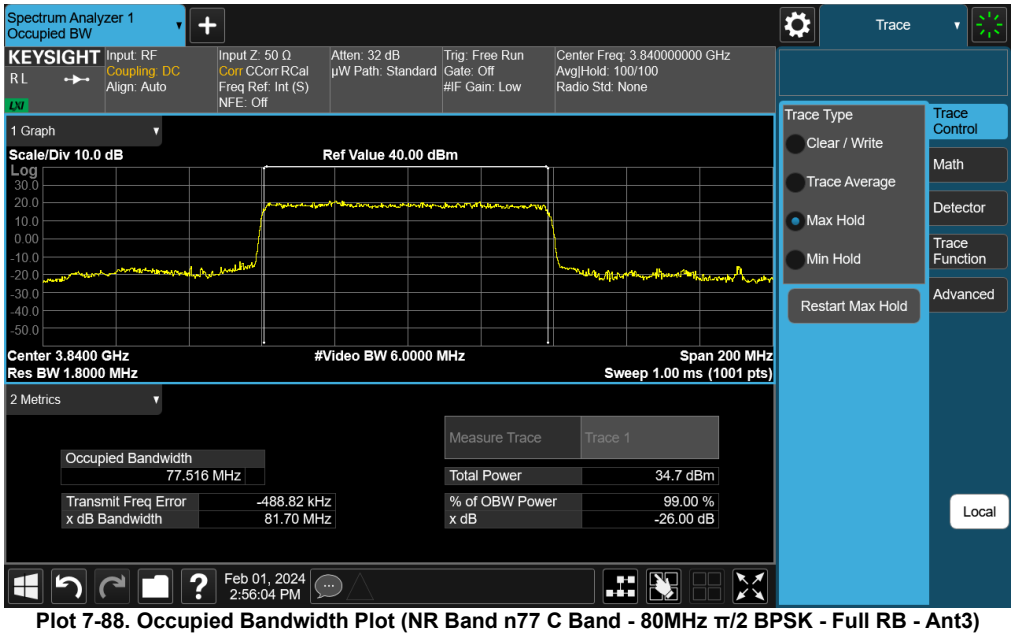
Plot 7-85. Occupied Bandwidth Plot (NR Band n77 C Band - 90MHz π/2 BPSK - Full RB - Ant3)



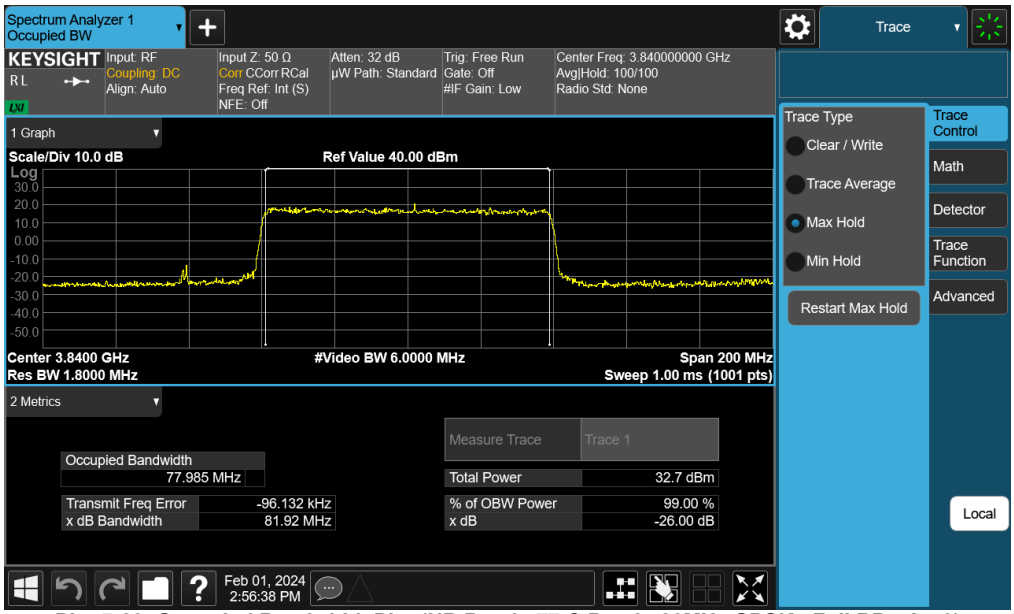
Plot 7-86. Occupied Bandwidth Plot (NR Band n77 C Band - 90MHz QPSK - Full RB - Ant3)



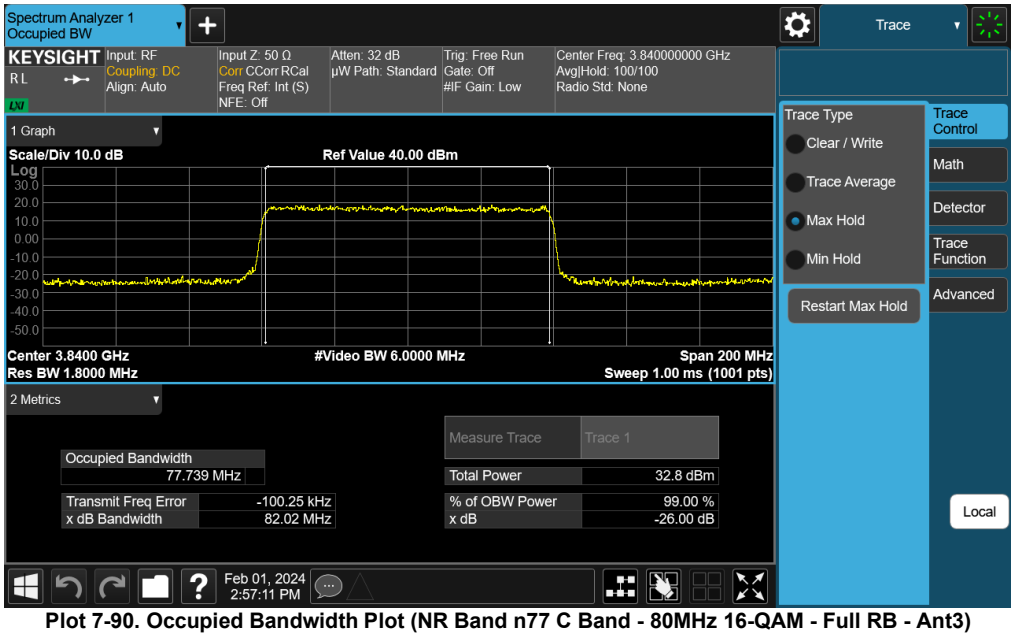
Plot 7-87. Occupied Bandwidth Plot (NR Band n77 C Band - 90MHz 16-QAM - Full RB - Ant3)



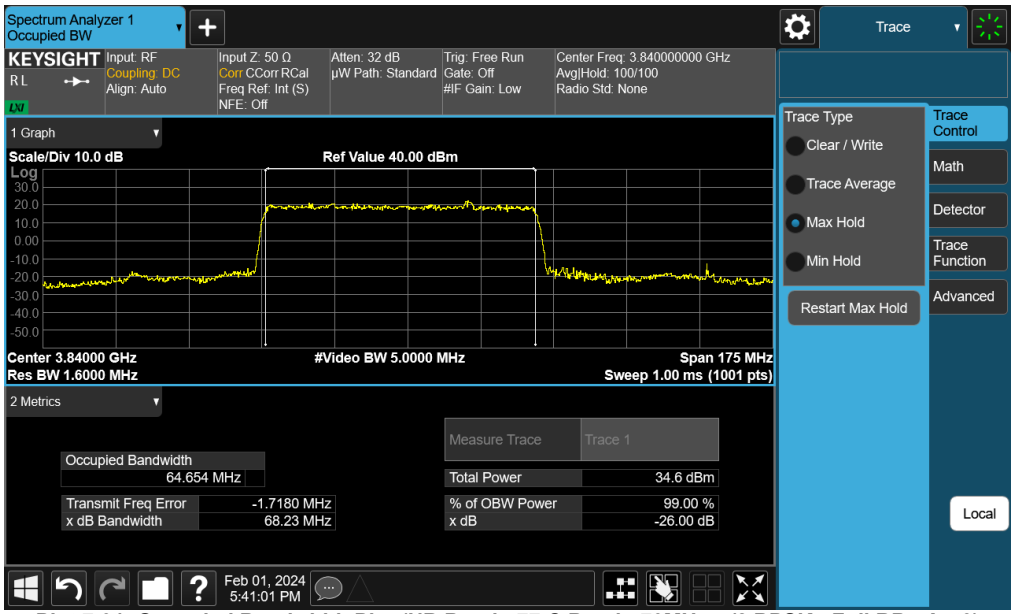
Plot 7-88. Occupied Bandwidth Plot (NR Band n77 C Band - 80MHz π/2 BPSK - Full RB - Ant3)



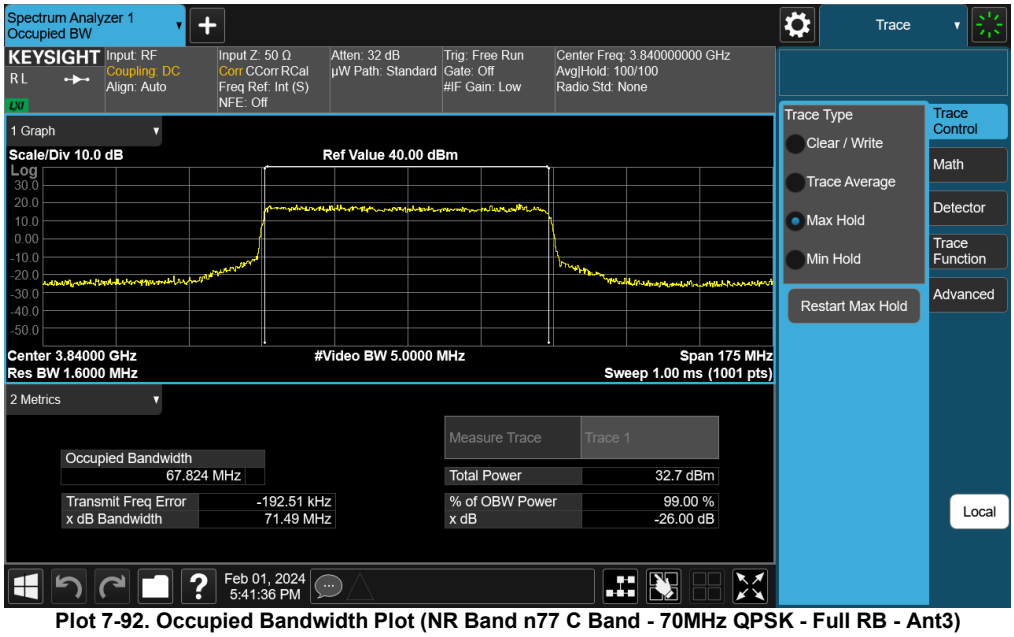
Plot 7-89. Occupied Bandwidth Plot (NR Band n77 C Band - 80MHz QPSK - Full RB - Ant3)



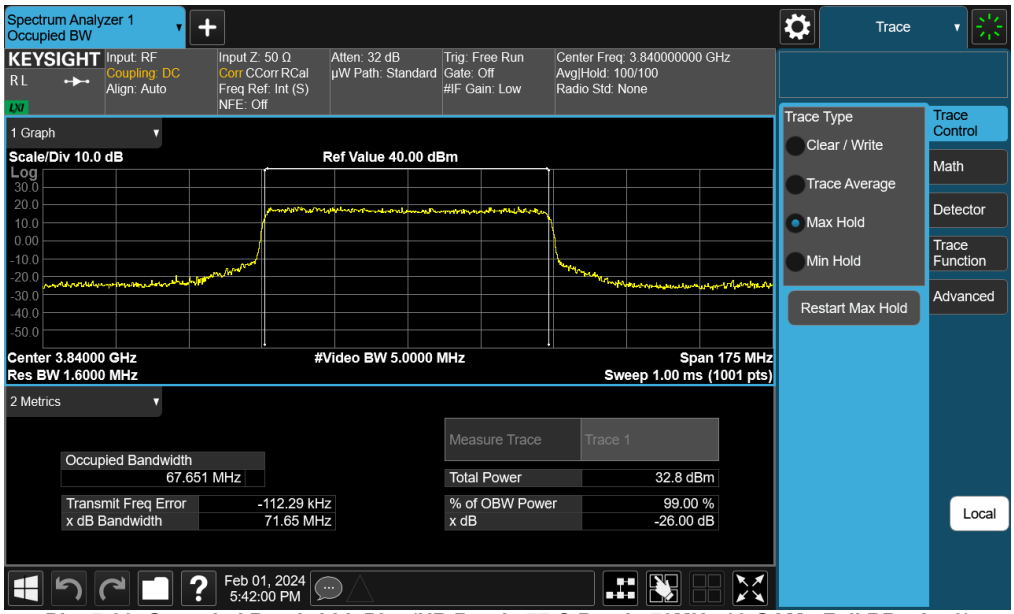
Plot 7-90. Occupied Bandwidth Plot (NR Band n77 C Band - 80MHz 16-QAM - Full RB - Ant3)



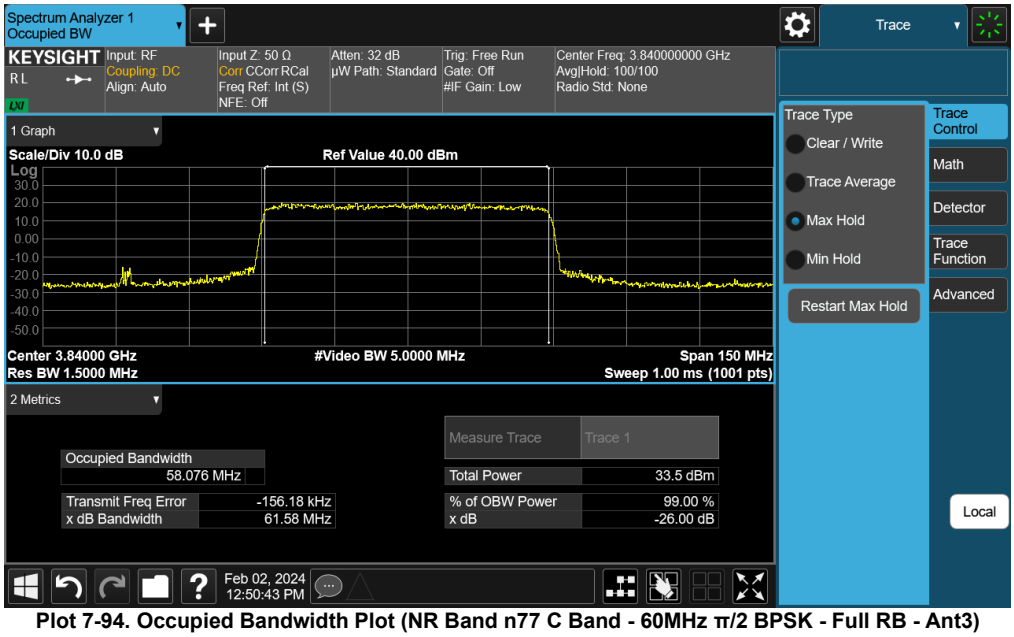
Plot 7-91. Occupied Bandwidth Plot (NR Band n77 C Band - 70MHz π/2 BPSK - Full RB - Ant3)



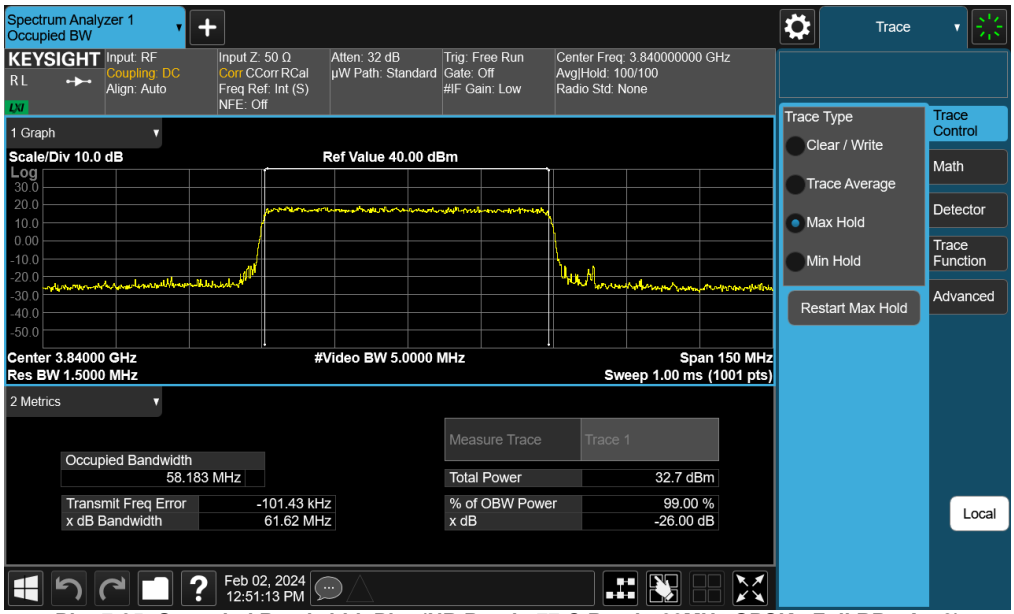
Plot 7-92. Occupied Bandwidth Plot (NR Band n77 C Band - 70MHz QPSK - Full RB - Ant3)



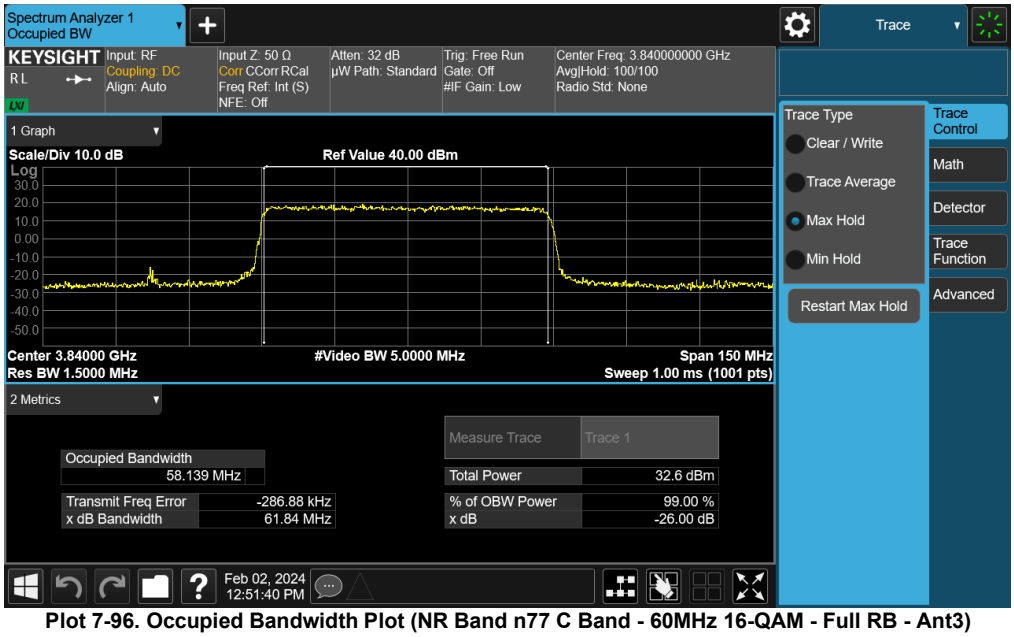
Plot 7-93. Occupied Bandwidth Plot (NR Band n77 C Band - 70MHz 16-QAM - Full RB - Ant3)



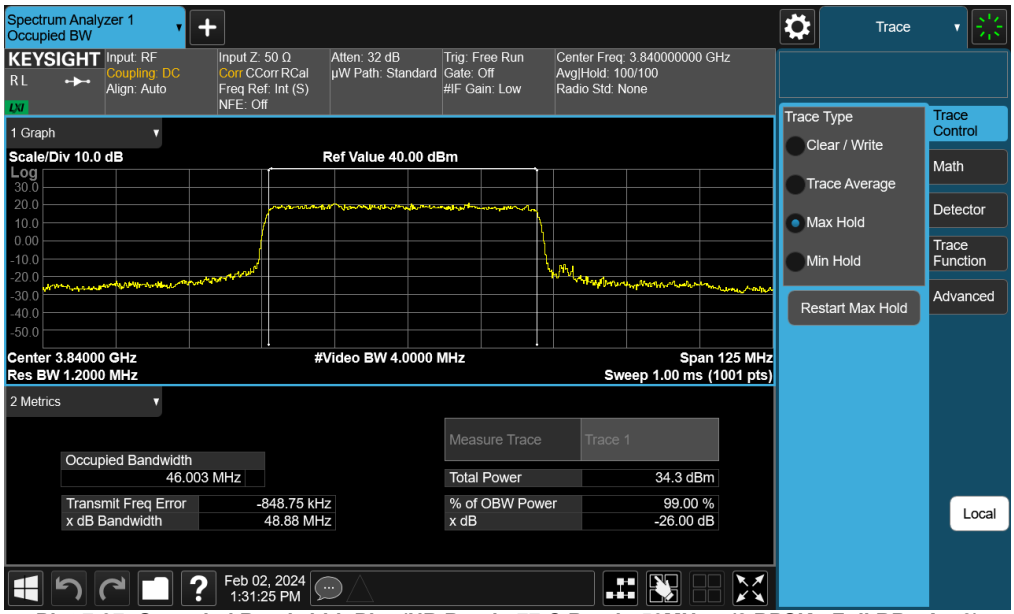
Plot 7-94. Occupied Bandwidth Plot (NR Band n77 C Band - 60MHz π/2 BPSK - Full RB - Ant3)



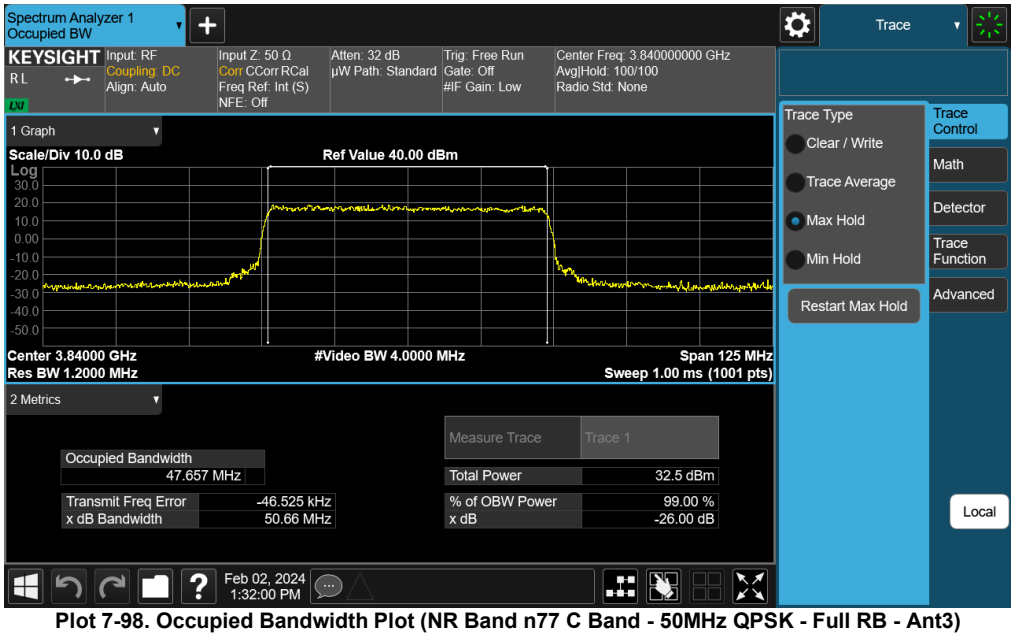
Plot 7-95. Occupied Bandwidth Plot (NR Band n77 C Band - 60MHz QPSK - Full RB - Ant3)



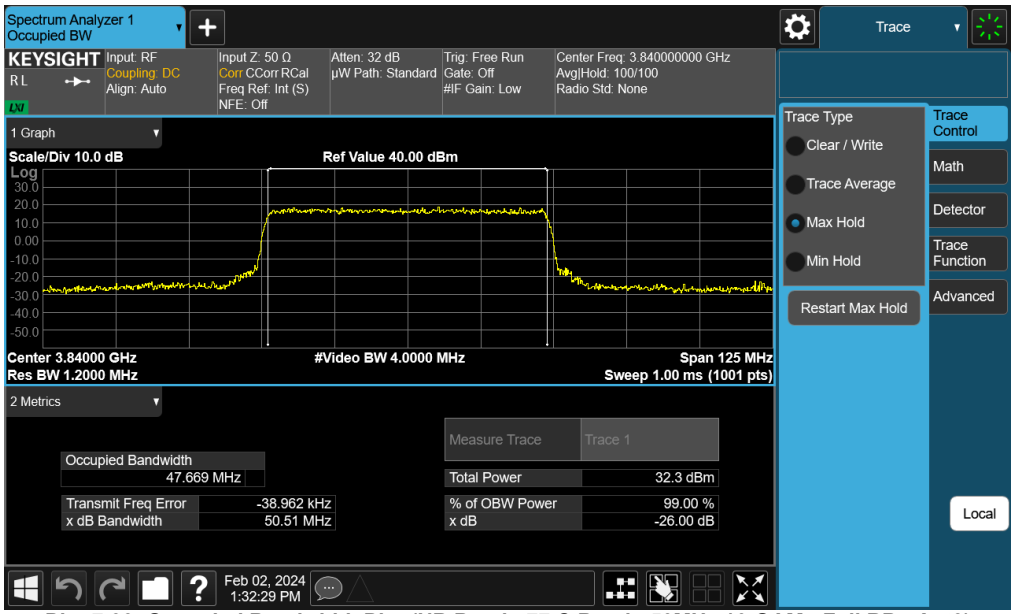
Plot 7-96. Occupied Bandwidth Plot (NR Band n77 C Band - 60MHz 16-QAM - Full RB - Ant3)



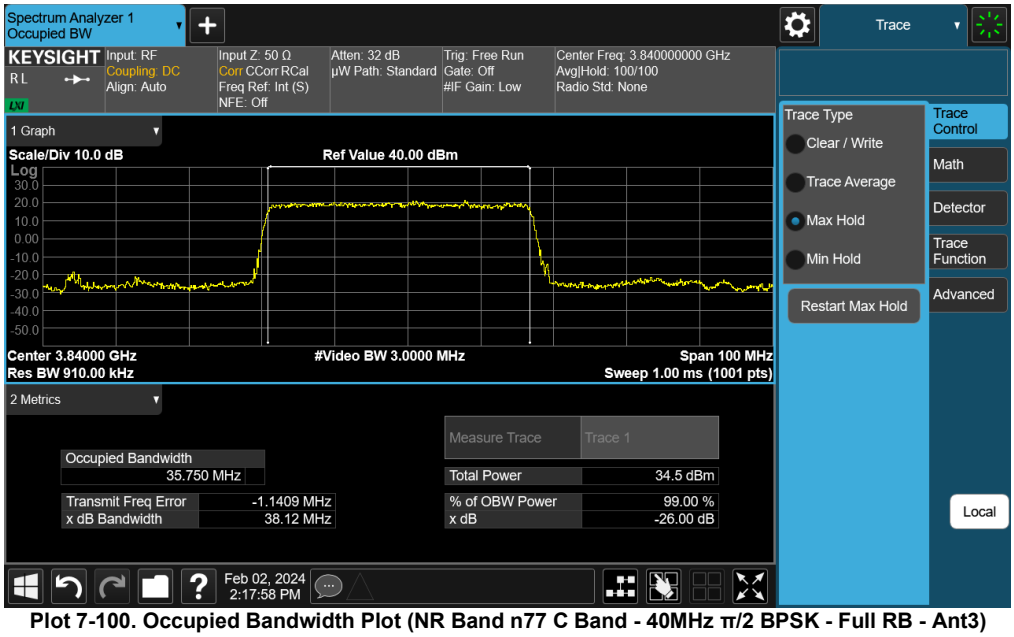
Plot 7-97. Occupied Bandwidth Plot (NR Band n77 C Band - 50MHz π/2 BPSK - Full RB - Ant3)



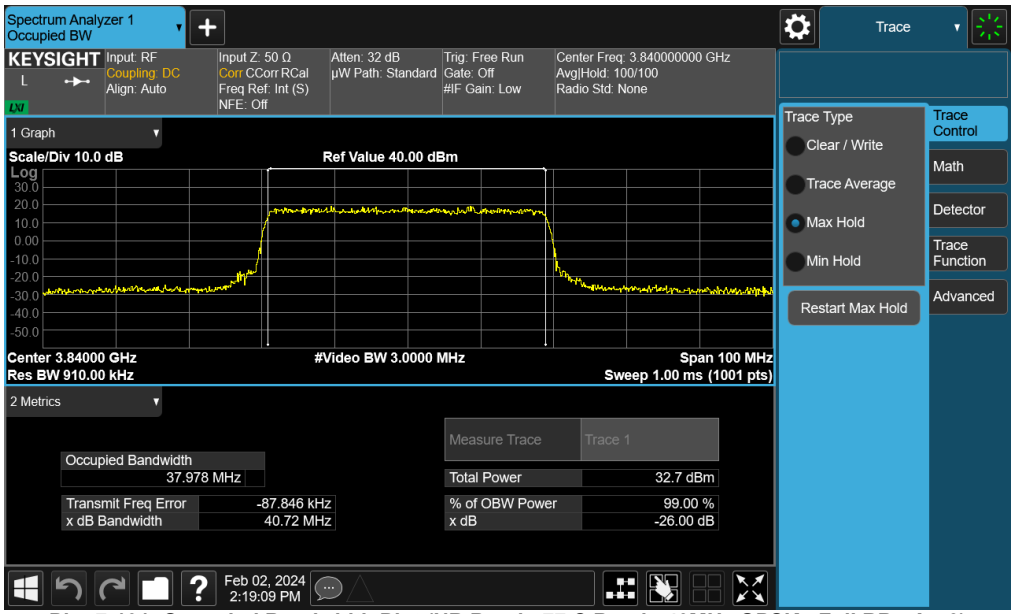
Plot 7-98. Occupied Bandwidth Plot (NR Band n77 C Band - 50MHz QPSK - Full RB - Ant3)



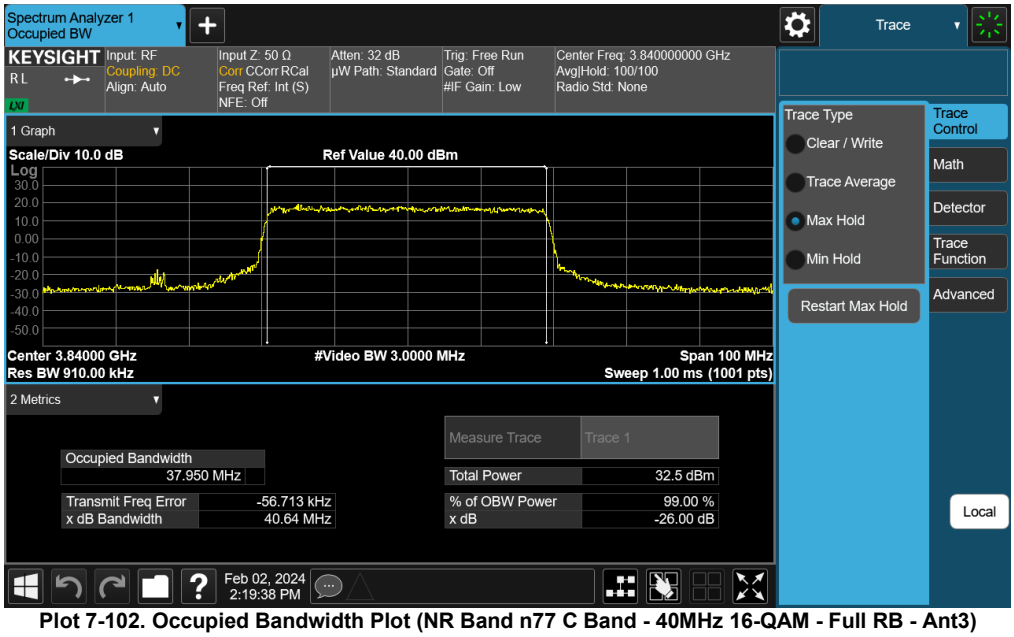
Plot 7-99. Occupied Bandwidth Plot (NR Band n77 C Band - 50MHz 16-QAM - Full RB - Ant3)



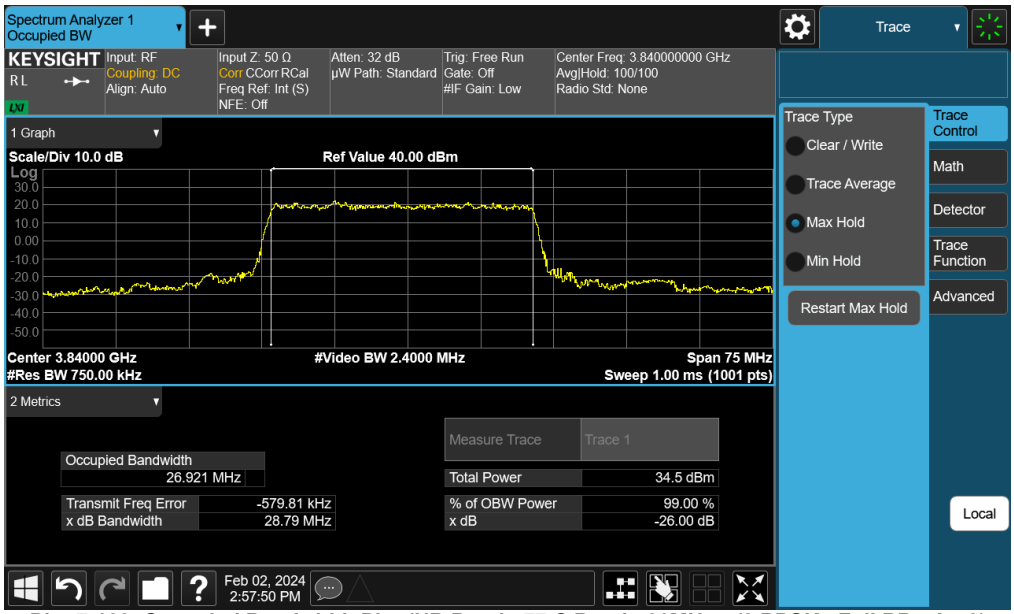
Plot 7-100. Occupied Bandwidth Plot (NR Band n77 C Band - 40MHz π/2 BPSK - Full RB - Ant3)



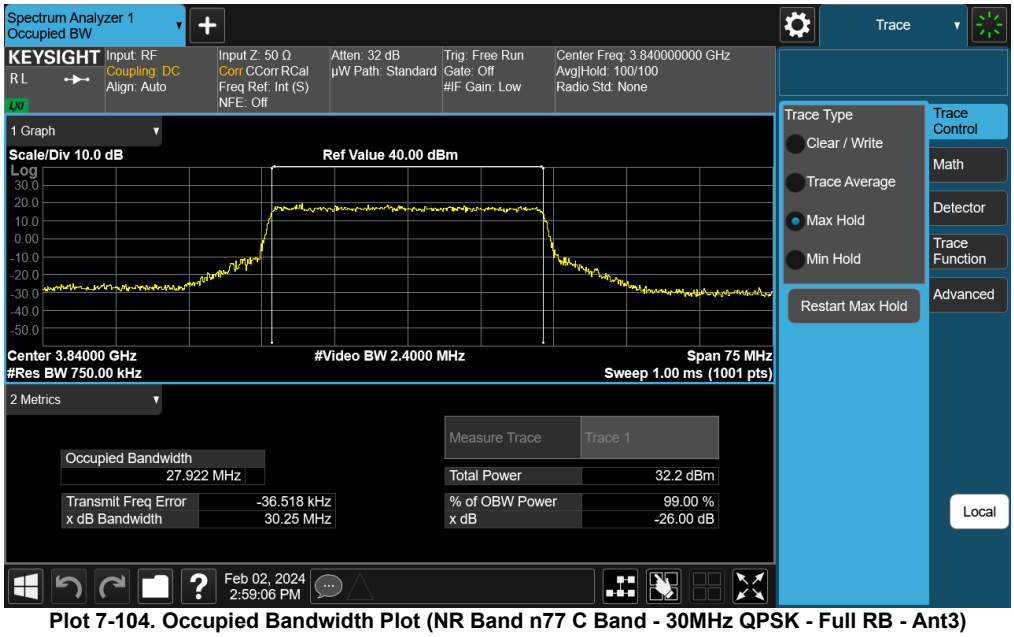
Plot 7-101. Occupied Bandwidth Plot (NR Band n77 C Band - 40MHz QPSK - Full RB - Ant3)



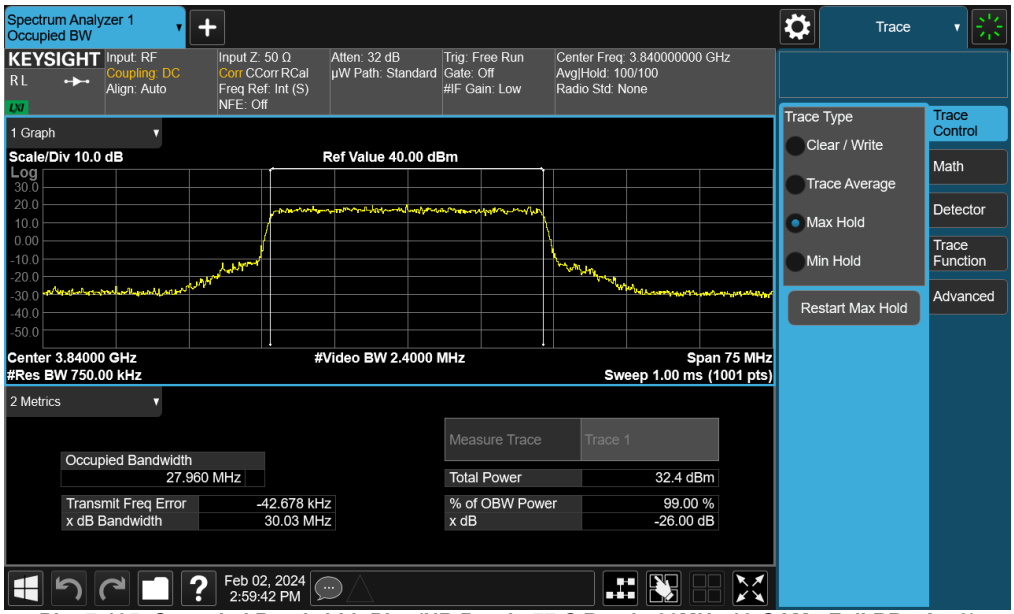
Plot 7-102. Occupied Bandwidth Plot (NR Band n77 C Band - 40MHz 16-QAM - Full RB - Ant3)



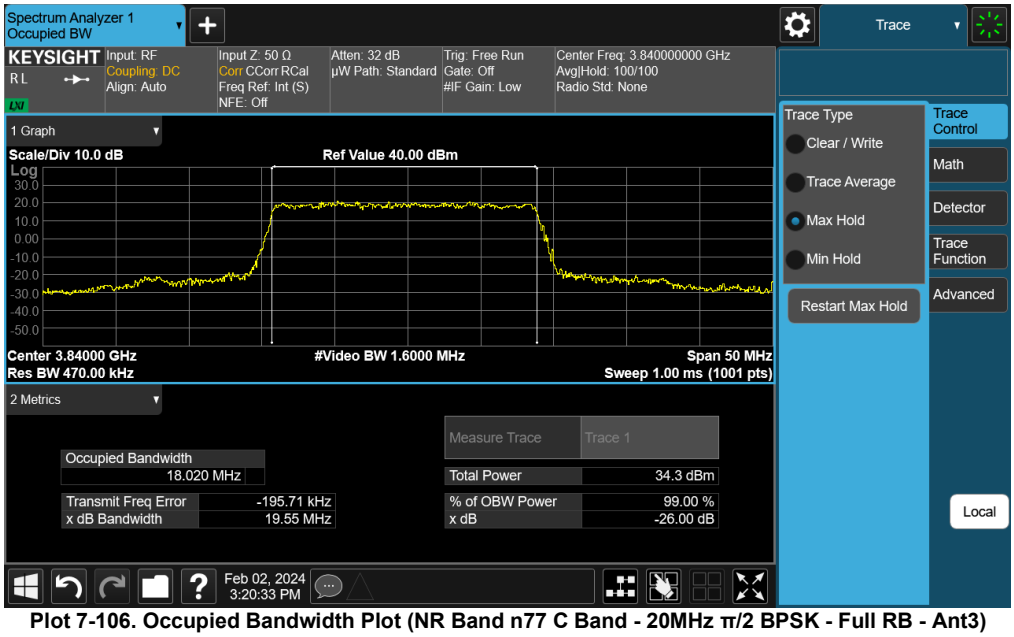
Plot 7-103. Occupied Bandwidth Plot (NR Band n77 C Band - 30MHz π/2 BPSK - Full RB - Ant3)



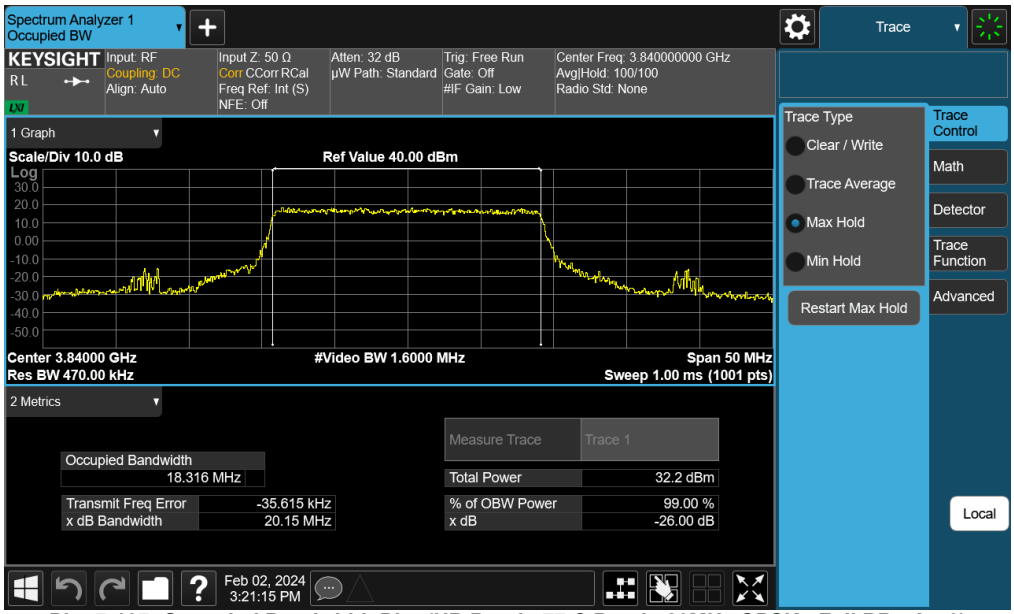
Plot 7-104. Occupied Bandwidth Plot (NR Band n77 C Band - 30MHz QPSK - Full RB - Ant3)



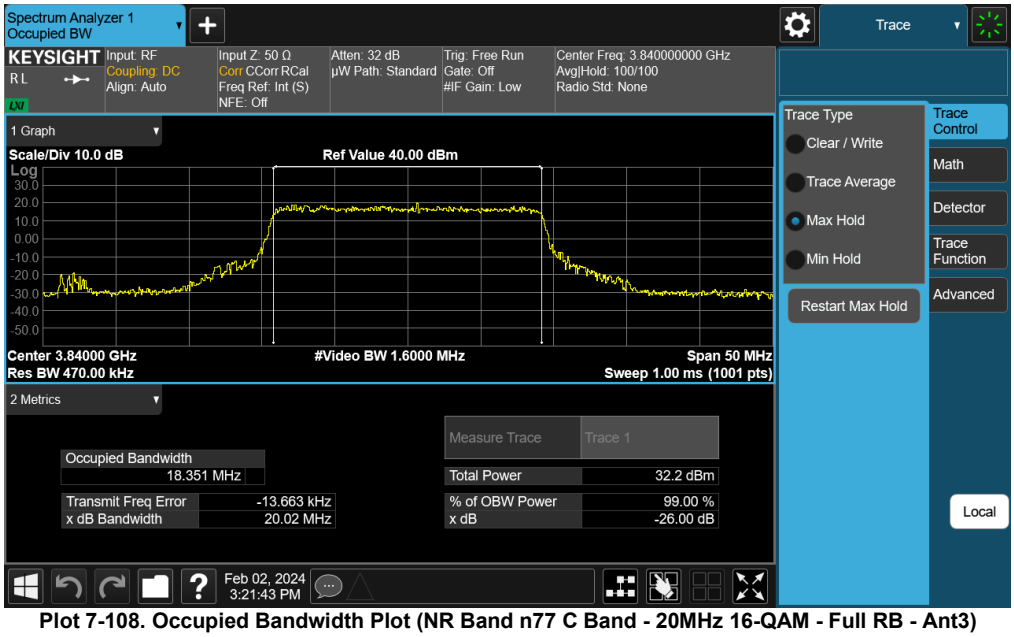
Plot 7-105. Occupied Bandwidth Plot (NR Band n77 C Band - 30MHz 16-QAM - Full RB - Ant3)



Plot 7-106. Occupied Bandwidth Plot (NR Band n77 C Band - 20MHz π/2 BPSK - Full RB - Ant3)



Plot 7-107. Occupied Bandwidth Plot (NR Band n77 C Band - 20MHz QPSK - Full RB - Ant3)



Plot 7-108. Occupied Bandwidth Plot (NR Band n77 C Band - 20MHz 16-QAM - Full RB - Ant3)

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.

For operations in the 3700 – 3980MHz band and the 3450 – 3550MHz band, the maximum permissible conducted power level of any spurious emission is -13dBm/MHz.

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 the tenth harmonic of the highest transmit frequency (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.

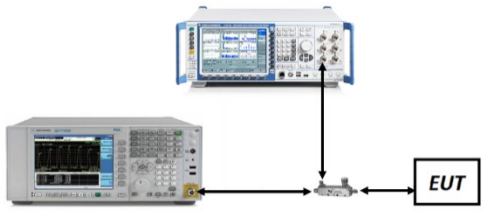


Figure 7-3. Test Instrument & Measurement Setup

Test Notes

1. Per Part 27.53(l), Part 27.53(n), and RSS-199, compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz.

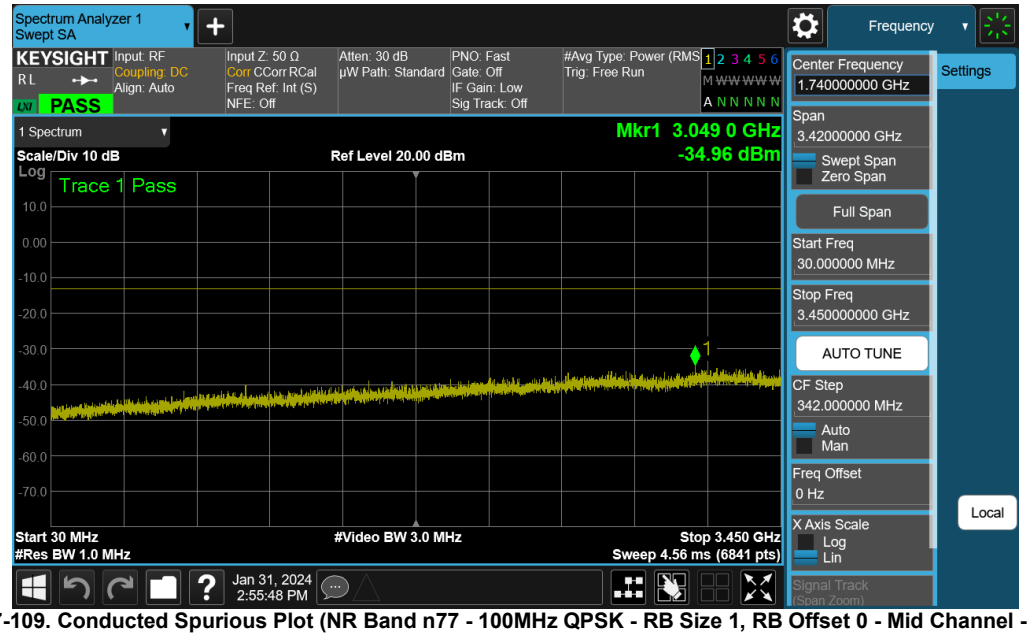
2. For NR operation, all subcarrier spacings (SCS) and transmission schemes (e.g. CP-OFDM and DFT-s-OFDM) were investigated to determine the worst case configuration. All modes of operation were investigated and the worst-case configuration results are reported in this section.

3. Since standalone targets of Ant2 and Ant3 have higher targets than UL-MIMO n77 data is not included in the report. Also, UL-MIMO n77 conducted spurious emissions has been checked and was found not to be worst case.

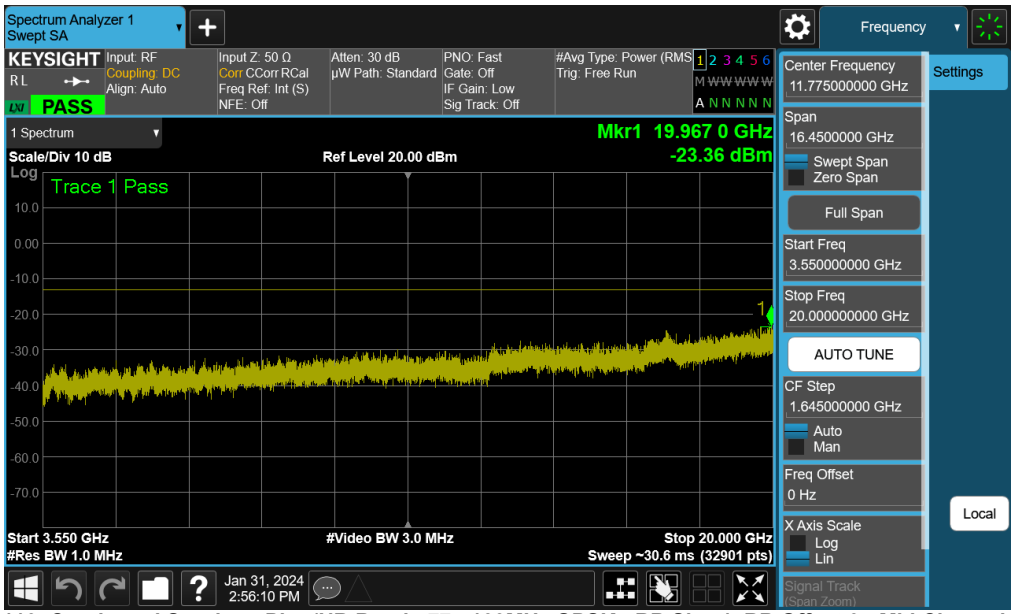
Mode	Bandwidth	Channel	Range [MHz]	Level [dBm]	Limit [dBm]	Margin [dB]
NR-n77 PC2 DoD Band	100MHz	Mid	30.0 - 3450.0	-34.96	-13	-21.96
		Mid	3550.0 - 20000.0	-23.36	-13	-10.36
		Mid	20000.0 - 40000.0	-31.58	-13	-18.58
NR-n77 PC2 C Band	100MHz	Low	30.0 - 3700.0	-35.68	-13	-22.68
		Low	3980.0 - 20000.0	-22.87	-13	-9.87
		Low	20000.0 - 40000.0	-30.61	-13	-17.61
		Mid	30.0 - 3700.0	-34.49	-13	-21.49
		Mid	3980.0 - 20000.0	-22.47	-13	-9.47
		Mid	20000.0 - 40000.0	-30.74	-13	-17.74
		High	30.0 - 3700.0	-34.91	-13	-21.91
		High	3980.0 - 20000.0	-23.63	-13	-10.63
		High	20000.0 - 40000.0	-30.10	-13	-17.10

Table 7-10. Conducted Emission Test Results – Ant2

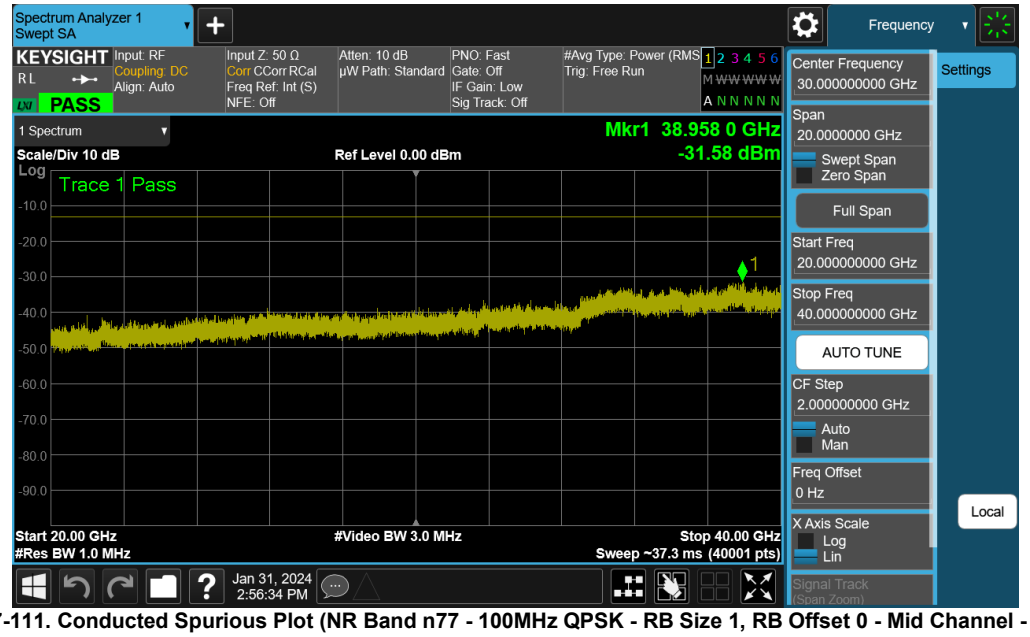
NR Band n77 DoD Band – Ant2



Plot 7-109. Conducted Spurious Plot (NR Band n77 - 100MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel - Ant2)

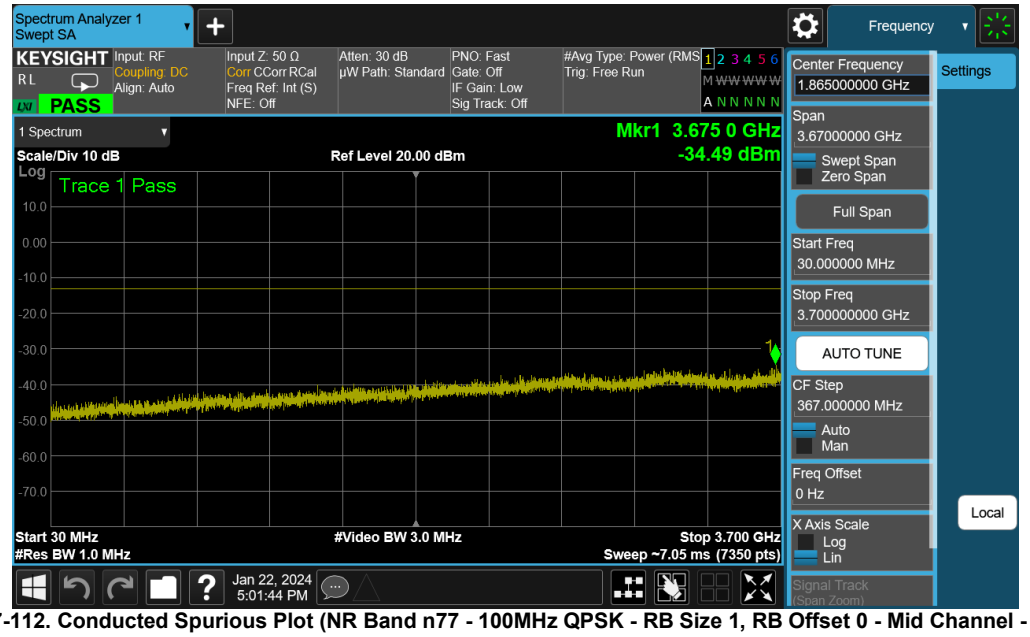


Plot 7-110. Conducted Spurious Plot (NR Band n77 - 100MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel - Ant2)

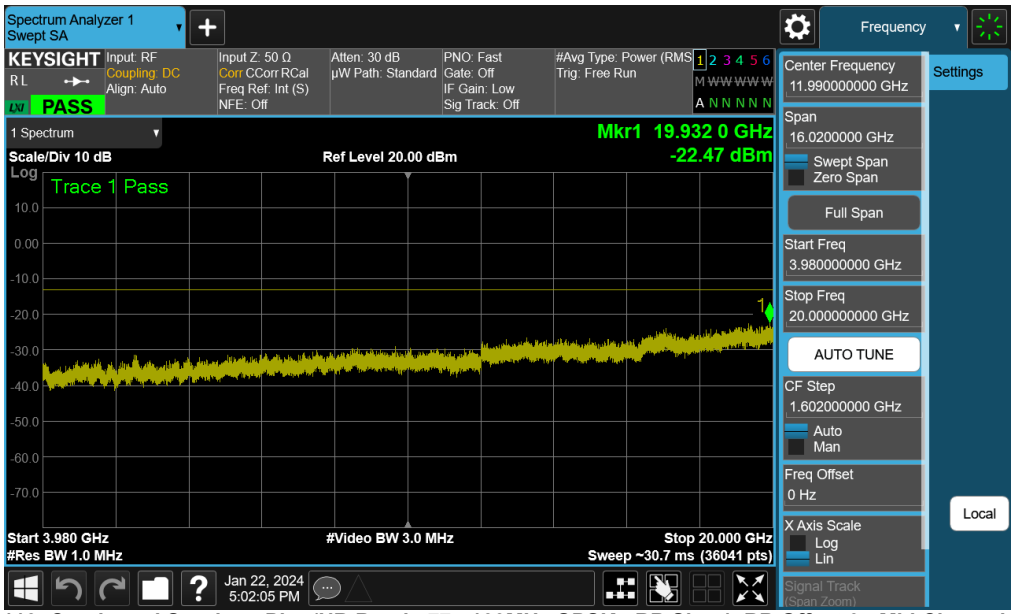


Plot 7-111. Conducted Spurious Plot (NR Band n77 - 100MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel - Ant2)

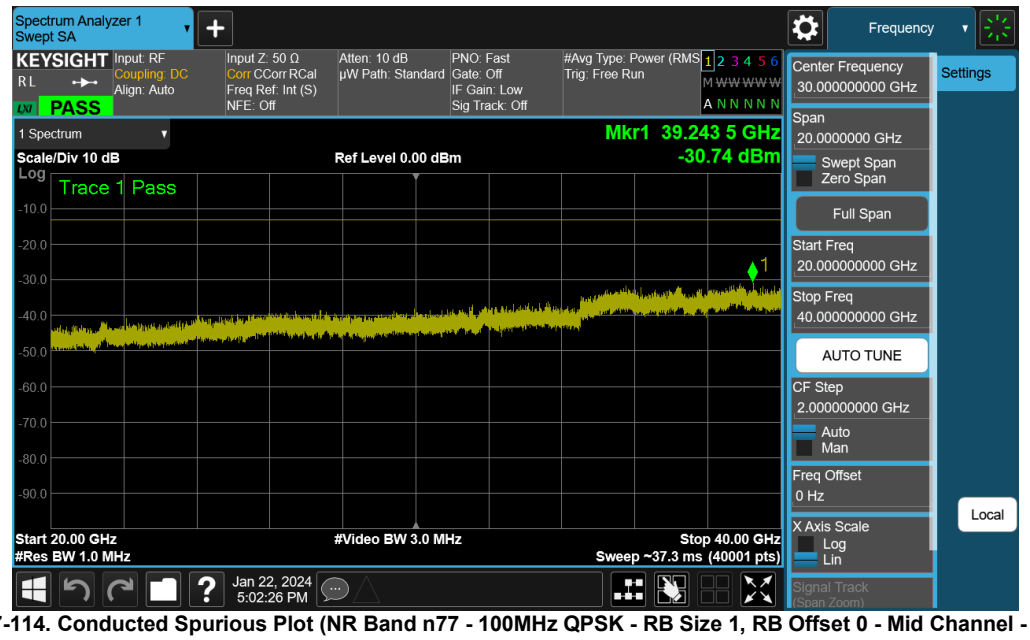
NR Band n77 C Band – Ant2



Plot 7-112. Conducted Spurious Plot (NR Band n77 - 100MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel - Ant2)



Plot 7-113. Conducted Spurious Plot (NR Band n77 - 100MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel - Ant2)

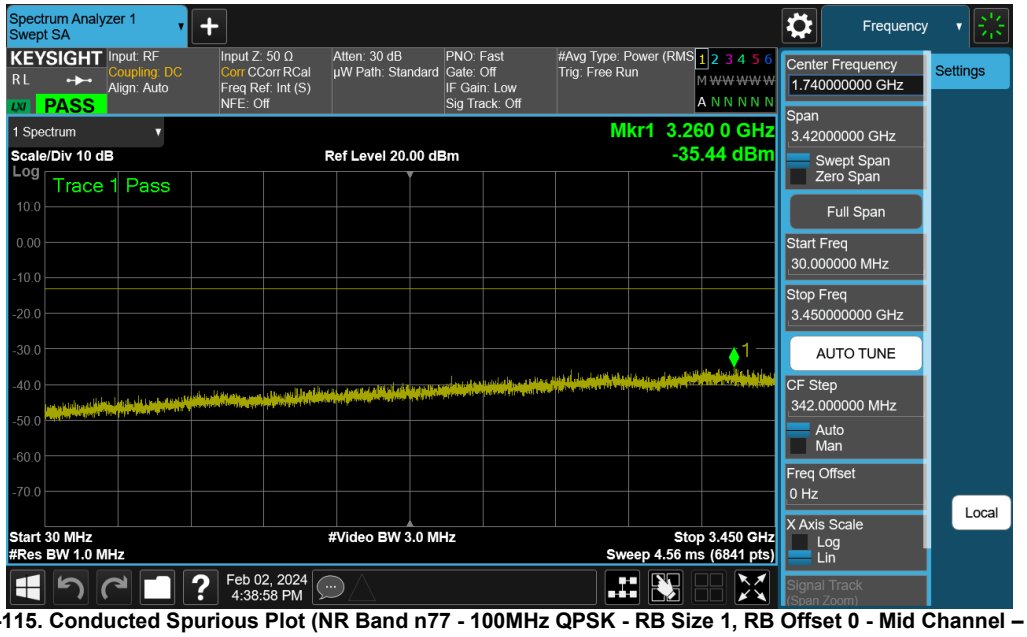


Plot 7-114. Conducted Spurious Plot (NR Band n77 - 100MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel - Ant2)

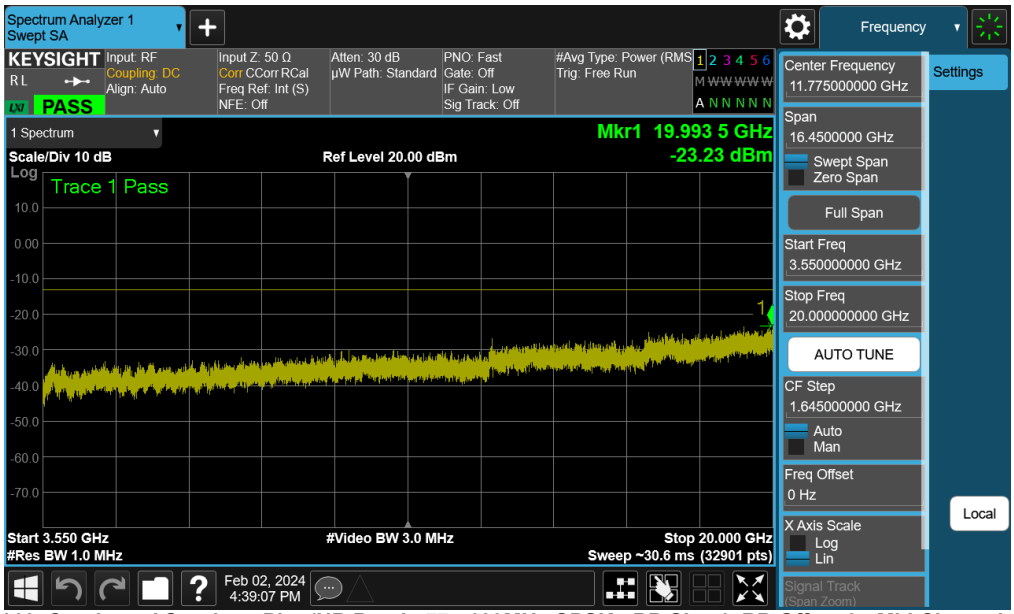
Mode	Bandwidth	Channel	Range [MHz]	Level [dBm]	Limit [dBm]	Margin [dB]
NR-n77 PC2 DoD Band	100MHz	Mid	30.0 - 3450.0	-35.44	-13	-22.44
		Mid	3550.0 - 20000.0	-23.23	-13	-10.23
		Mid	20000.0 - 40000.0	-30.93	-13	-17.93
NR-n77 PC2 C Band	100MHz	Low	30.0 - 3700.0	-34.73	-13	-21.73
		Low	3980.0 - 20000.0	-22.07	-13	-9.07
		Low	20000.0 - 40000.0	-31.05	-13	-18.05
		Mid	30.0 - 3700.0	-35.46	-13	-22.46
		Mid	3980.0 - 20000.0	-23.26	-13	-10.26
		Mid	20000.0 - 40000.0	-30.74	-13	-17.73
		High	30.0 - 3700.0	-35.34	-13	-22.34
		High	3980.0 - 20000.0	-23.47	-13	-10.47
		High	20000.0 - 40000.0	-31.43	-13	-18.43

Table 7-11. Conducted Emission Test Results – Ant3

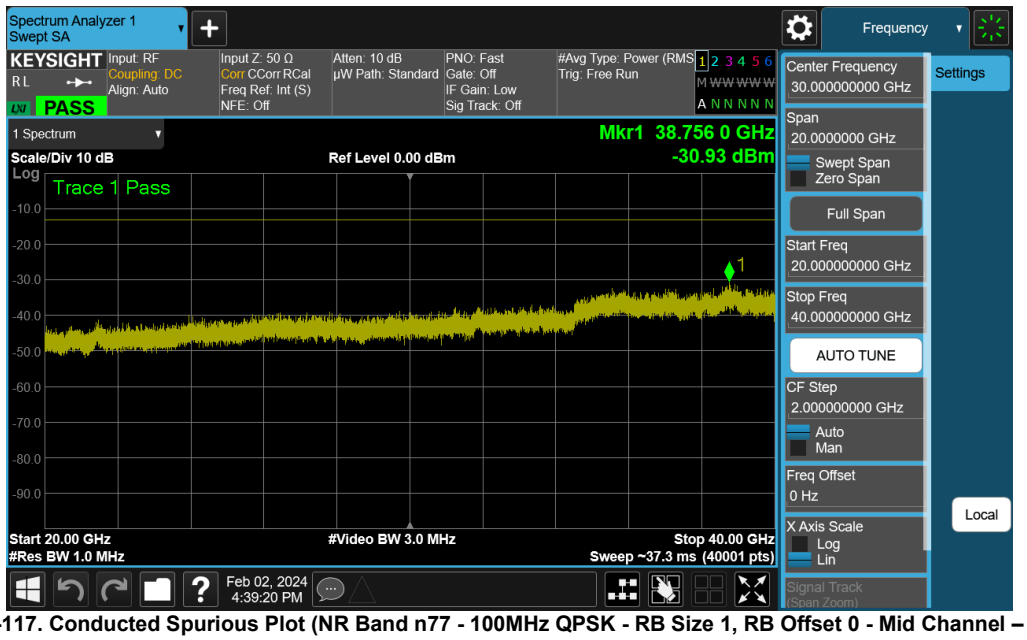
NR Band n77 DoD Band – Ant3



Plot 7-115. Conducted Spurious Plot (NR Band n77 - 100MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel – Ant3)

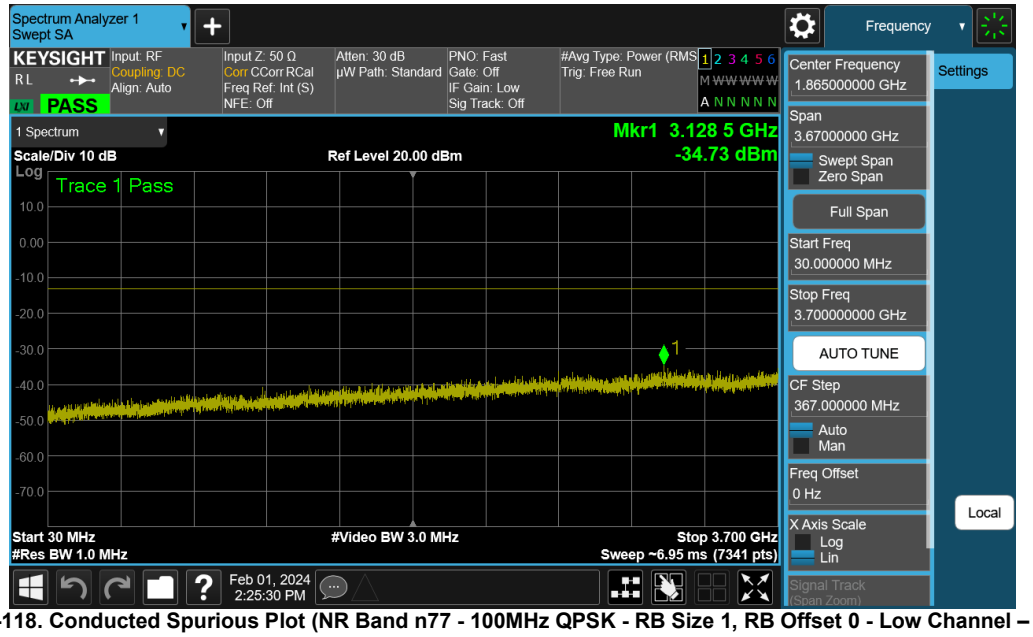


Plot 7-116. Conducted Spurious Plot (NR Band n77 - 100MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel – Ant3)

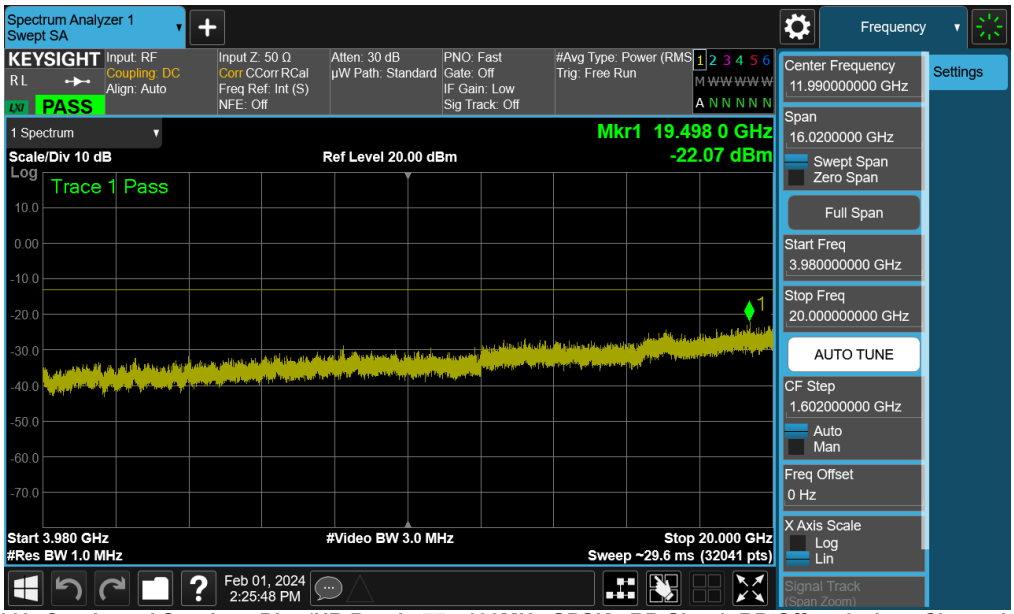


Plot 7-117. Conducted Spurious Plot (NR Band n77 - 100MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel – Ant3)

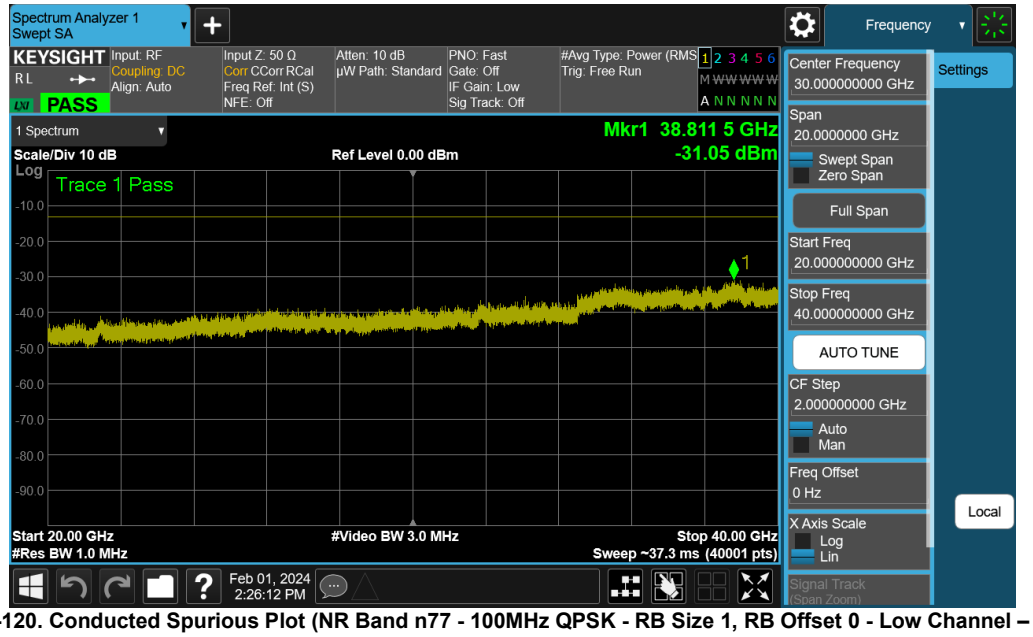
NR Band n77 C Band – Ant3



Plot 7-118. Conducted Spurious Plot (NR Band n77 - 100MHz QPSK - RB Size 1, RB Offset 0 - Low Channel – Ant3)



Plot 7-119. Conducted Spurious Plot (NR Band n77 - 100MHz QPSK - RB Size 1, RB Offset 0 - Low Channel – Ant3)

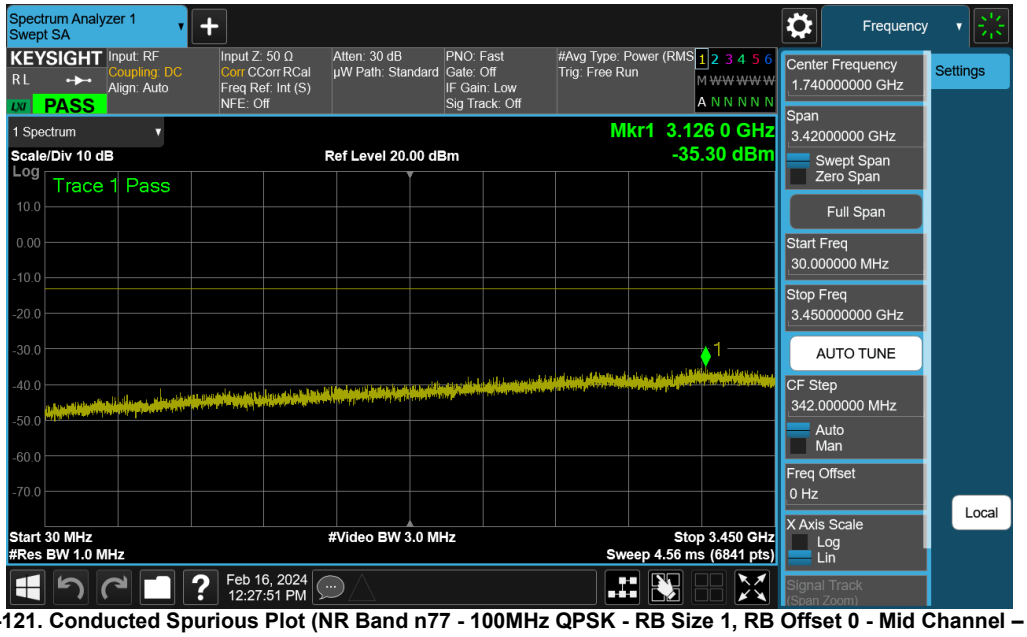


Plot 7-120. Conducted Spurious Plot (NR Band n77 - 100MHz QPSK - RB Size 1, RB Offset 0 - Low Channel – Ant3)

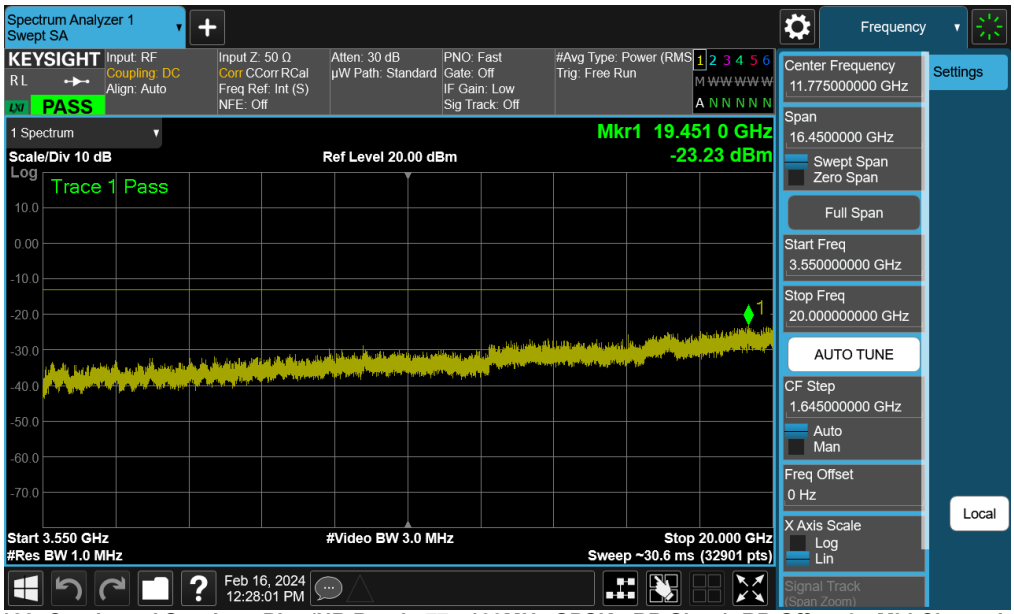
Mode	Bandwidth	Channel	Range [MHz]	Level [dBm]	Limit [dBm]	Margin [dB]
NR-n77 PC2 DoD Band	100MHz	Mid	30.0 - 3450.0	-35.30	-13	-22.30
		Mid	3550.0 - 20000.0	-23.23	-13	-10.23
		Mid	20000.0 - 40000.0	-30.55	-13	-17.55
NR-n77 PC2 C Band	100MHz	Low	30.0 - 3700.0	-34.87	-13	-21.87
		Low	3980.0 - 20000.0	-23.48	-13	-10.48
		Low	20000.0 - 40000.0	-30.30	-13	-17.29
		Mid	30.0 - 3700.0	-35.49	-13	-22.49
		Mid	3980.0 - 20000.0	-22.25	-13	-9.25
		Mid	20000.0 - 40000.0	-31.03	-13	-18.03
		High	30.0 - 3700.0	-35.50	-13	-22.50
		High	3980.0 - 20000.0	-22.25	-13	-9.25
		High	20000.0 - 40000.0	-30.56	-13	-17.56

Table 7-12. Conducted Emission Test Results – Ant5

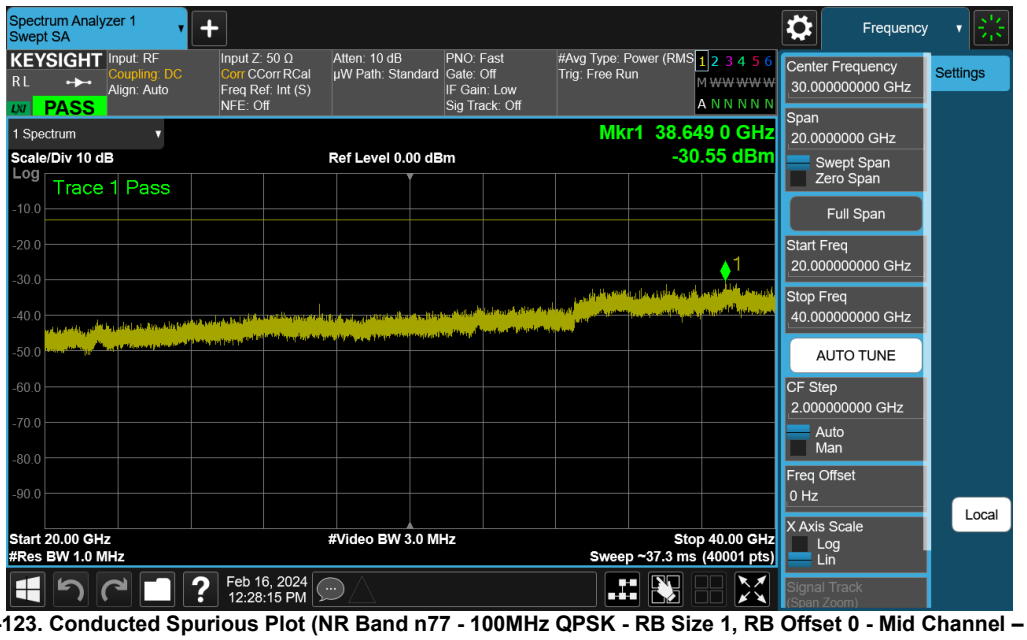
NR Band n77 DoD Band – Ant5



Plot 7-121. Conducted Spurious Plot (NR Band n77 - 100MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel – Ant5)

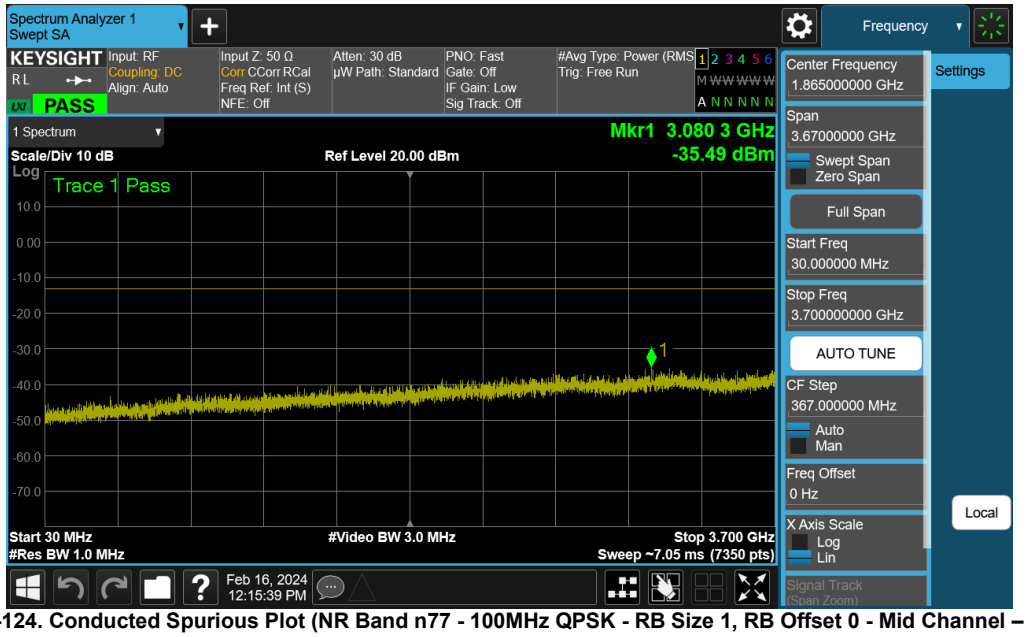


Plot 7-122. Conducted Spurious Plot (NR Band n77 - 100MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel – Ant5)

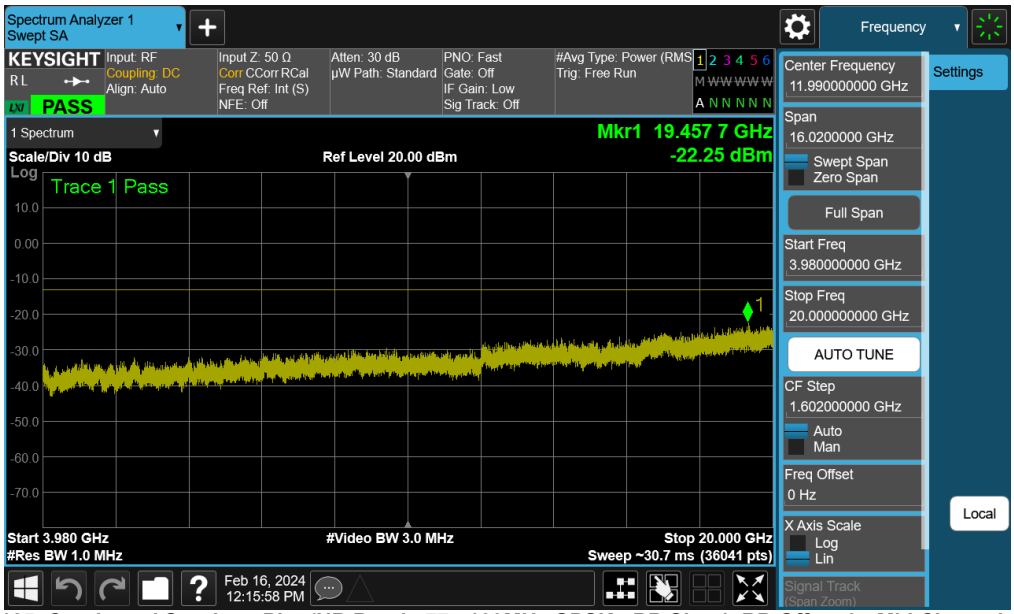


Plot 7-123. Conducted Spurious Plot (NR Band n77 - 100MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel – Ant5)

NR Band n77 C Band – Ant5



Plot 7-124. Conducted Spurious Plot (NR Band n77 - 100MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel – Ant5)



Plot 7-125. Conducted Spurious Plot (NR Band n77 - 100MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel – Ant5)