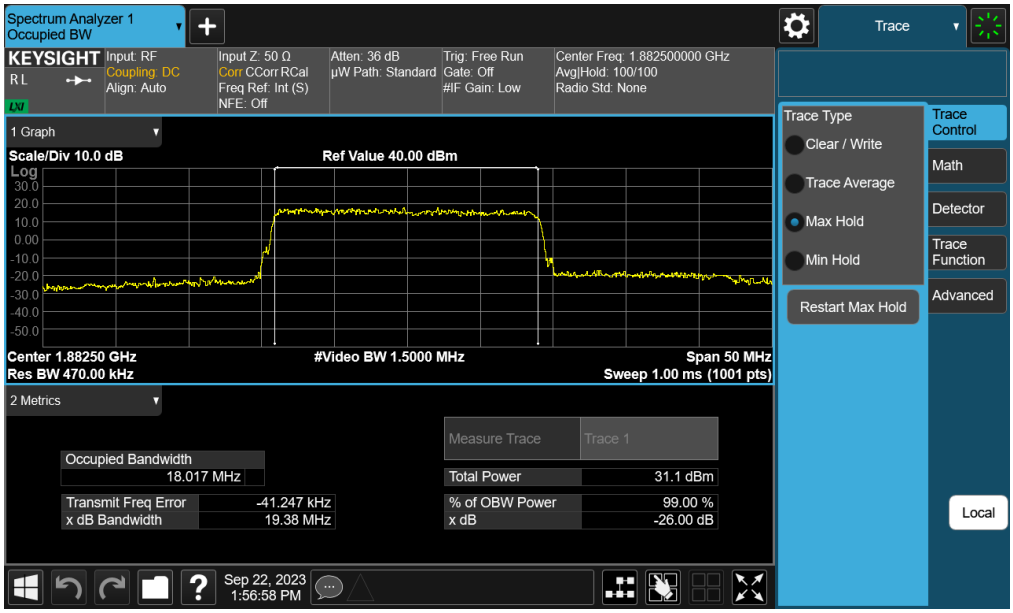
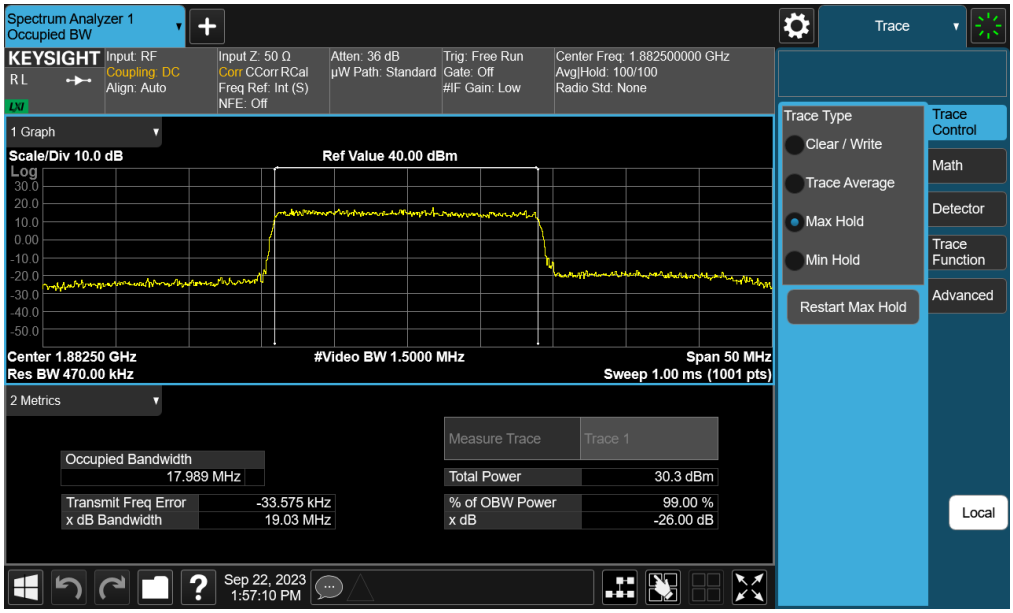
LTE Band 25/2 – Ant M3



Plot 7-37. Occupied Bandwidth Plot (LTE Band 25/2 - 20MHz QPSK - Full RB - Ant M3)



Plot 7-38. Occupied Bandwidth Plot (LTE Band 25/2 - 20MHz 16-QAM - Full RB - Ant M3)

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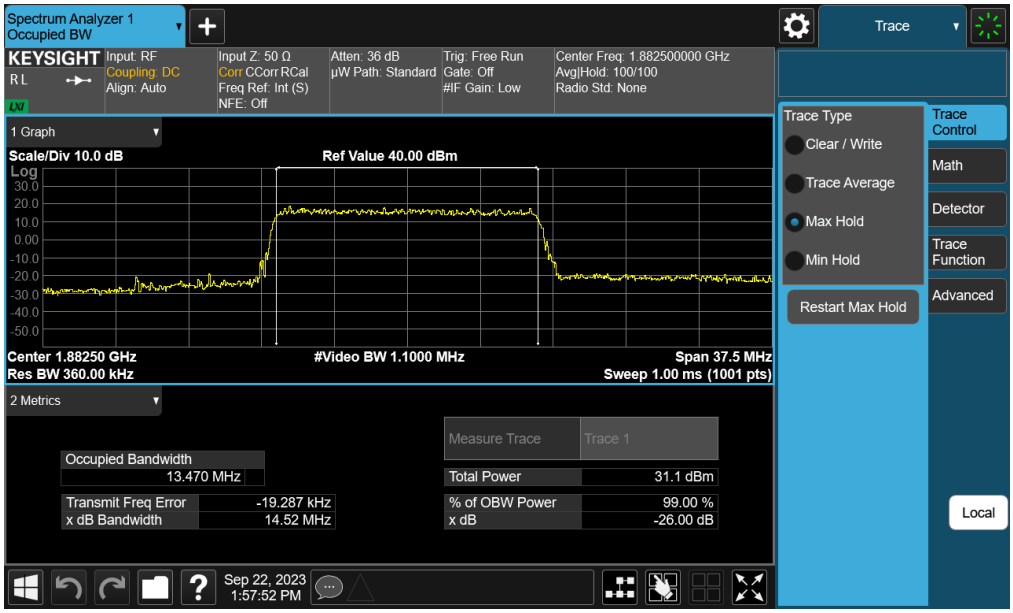
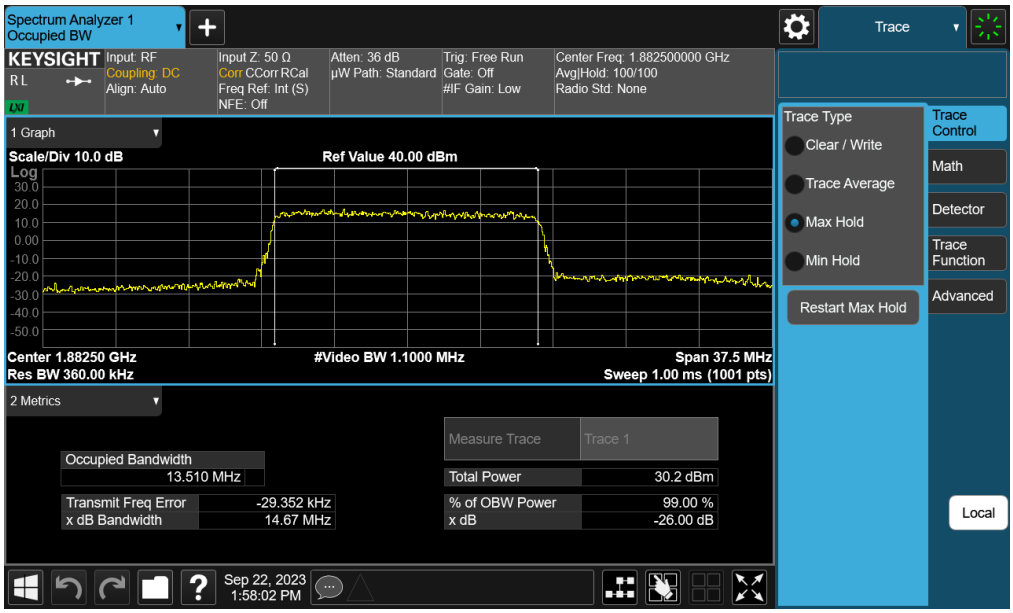


Plot 7-39. Occupied Bandwidth Plot (LTE Band 25/2 - 15MHz QPSK - Full RB - Ant M3)



Plot 7-40. Occupied Bandwidth Plot (LTE Band 25/2 - 15MHz 16-QAM - Full RB - Ant M3)

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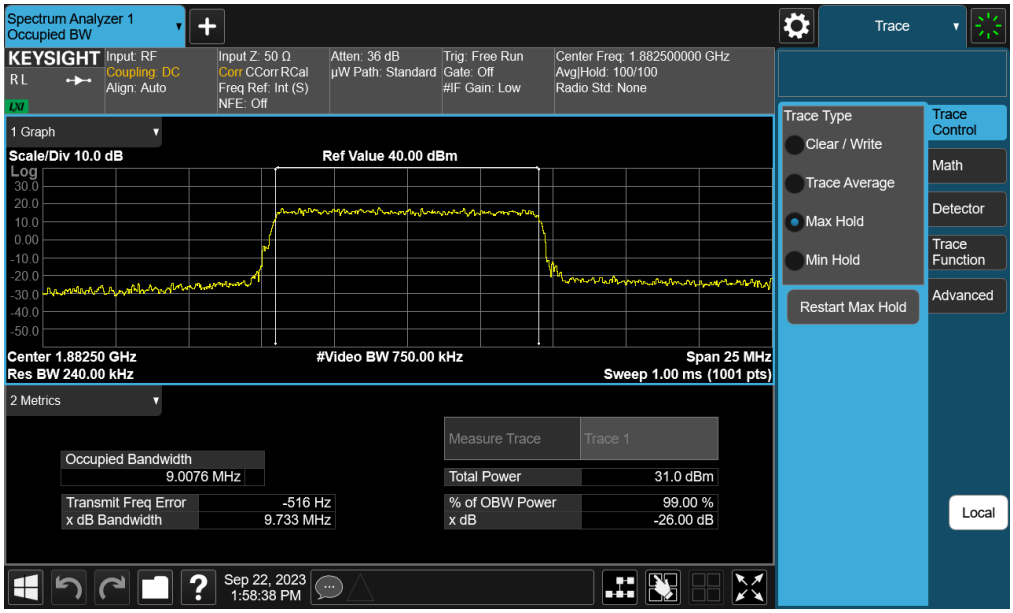
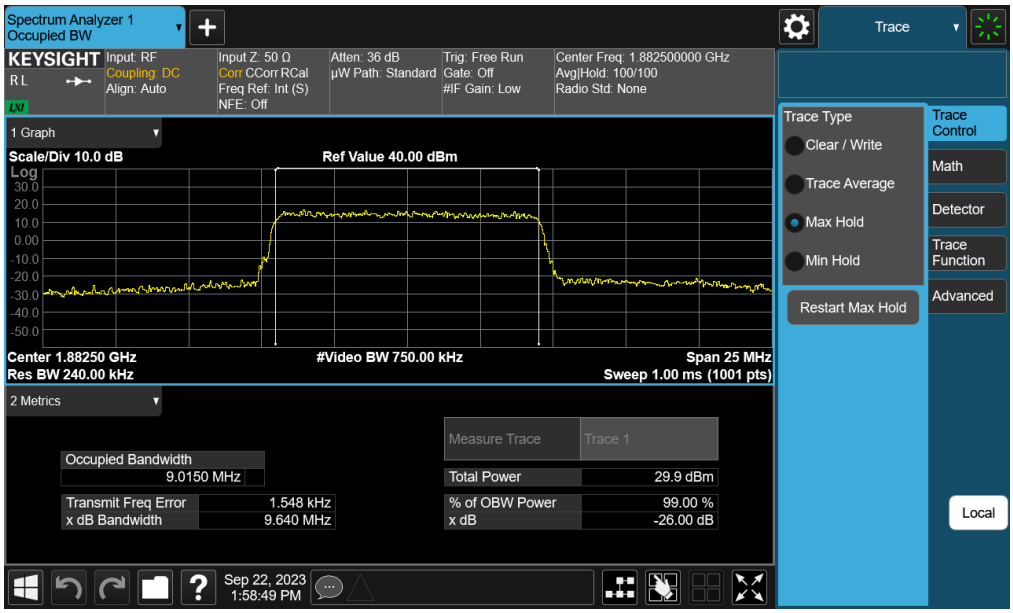


Plot 7-41. Occupied Bandwidth Plot (LTE Band 25/2 - 10MHz QPSK - Full RB - Ant M3)



Plot 7-42. Occupied Bandwidth Plot (LTE Band 25/2 - 10MHz 16-QAM - Full RB - Ant M3)

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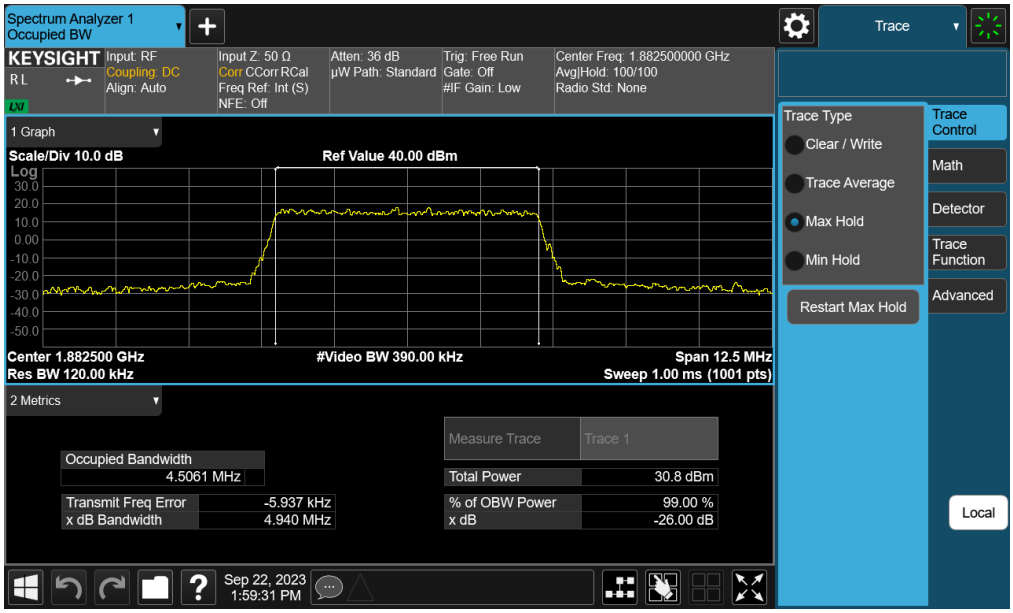
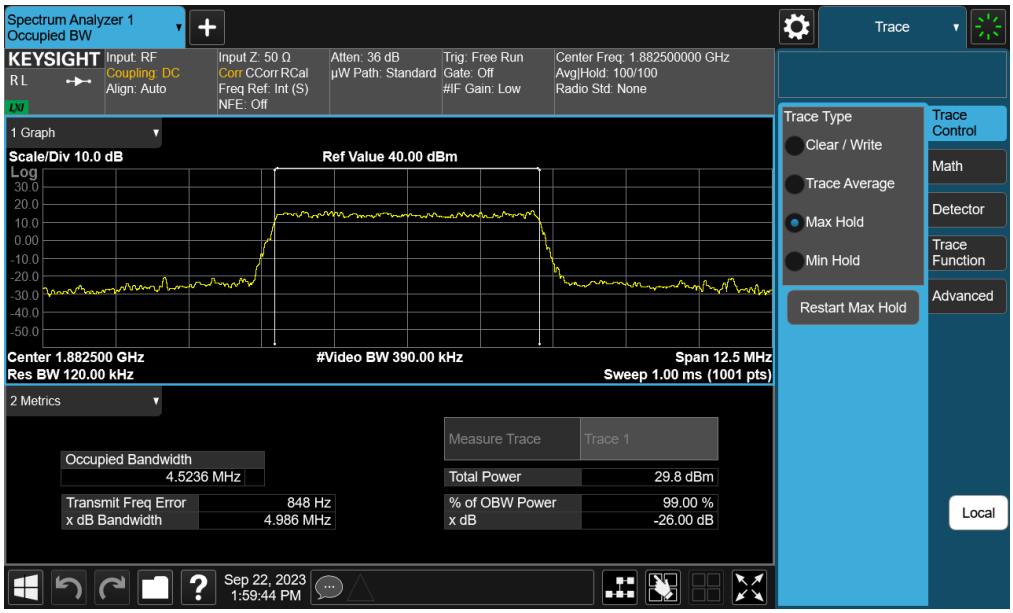


Plot 7-43. Occupied Bandwidth Plot (LTE Band 25/2 - 5MHz QPSK - Full RB - Ant M3)



Plot 7-44. Occupied Bandwidth Plot (LTE Band 25/2 - 5MHz 16-QAM - Full RB - Ant M3)

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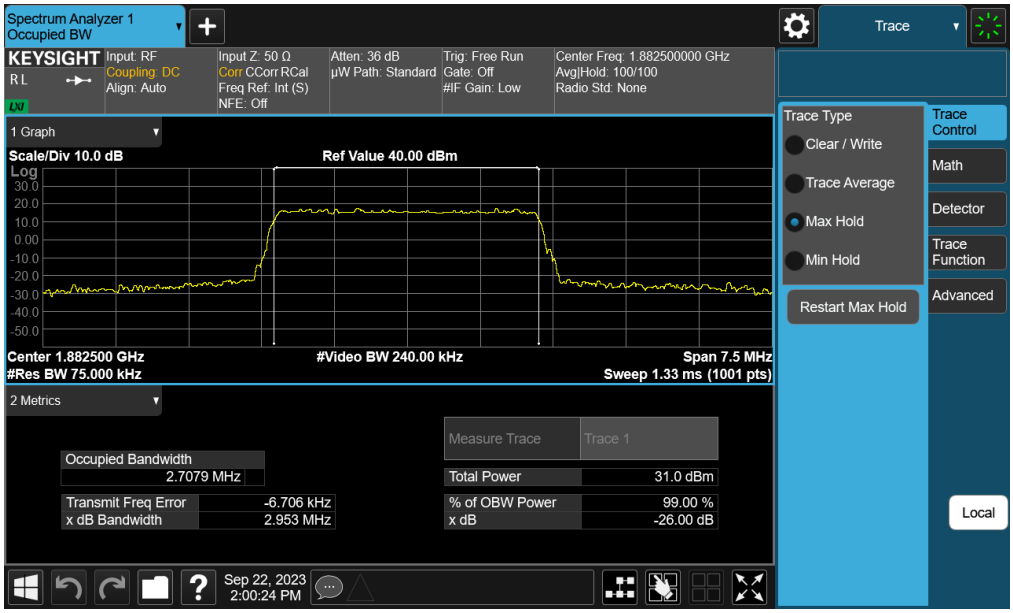
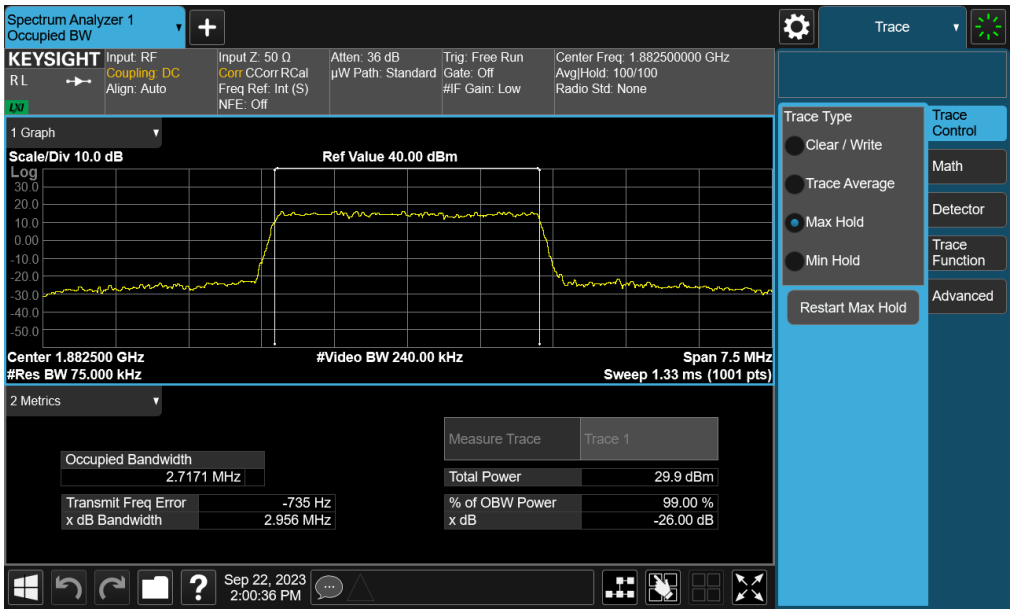


Plot 7-45. Occupied Bandwidth Plot (LTE Band 25/2 - 3MHz QPSK - Full RB - Ant M3)



Plot 7-46. Occupied Bandwidth Plot (LTE Band 25/2 - 3MHz 16-QAM - Full RB - Ant M3)

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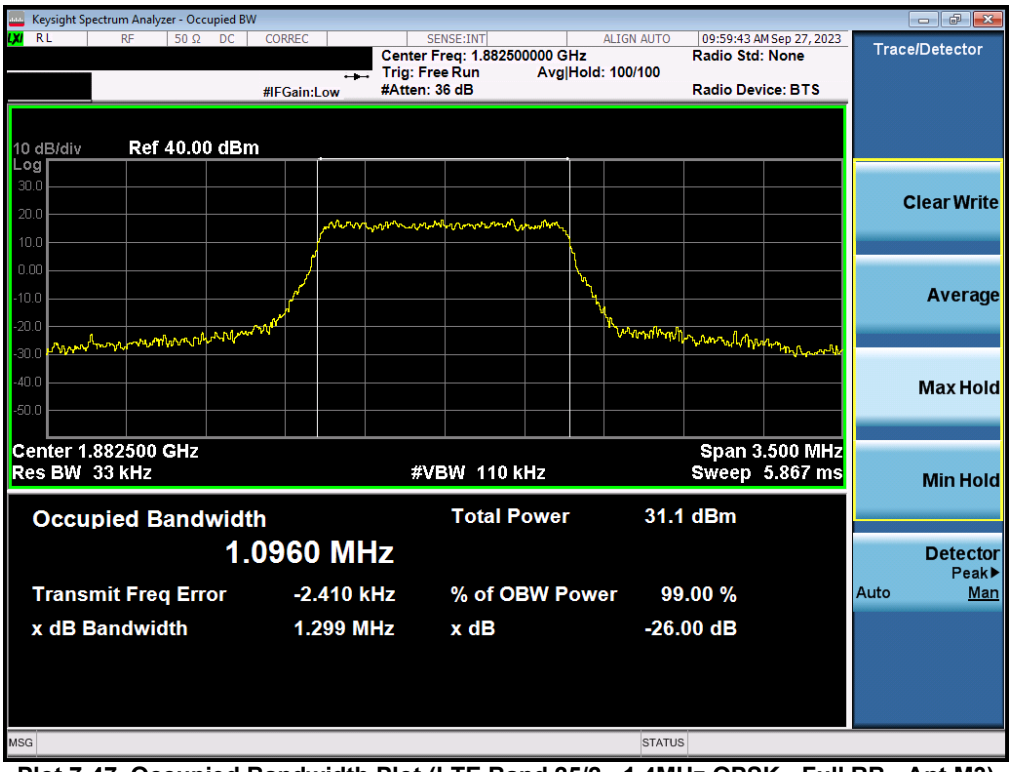

Plot 7-47. Occupied Bandwidth Plot (LTE Band 25/2 - 1.4MHz QPSK - Full RB - Ant M3)

Plot 7-48. Occupied Bandwidth Plot (LTE Band 25/2 - 1.4MHz 16-QAM - Full RB - Ant M3)

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NR Band n2 – Ant M3

Plot 7-49. Occupied Bandwidth Plot (NR Band n2 - 40.0MHz DFT-s-OFDM BPSK - Full RB - ANT M3)

Plot 7-50. Occupied Bandwidth Plot (NR Band n2 - 40.0MHz CP-OFDM QPSK - Full RB - ANT M3)

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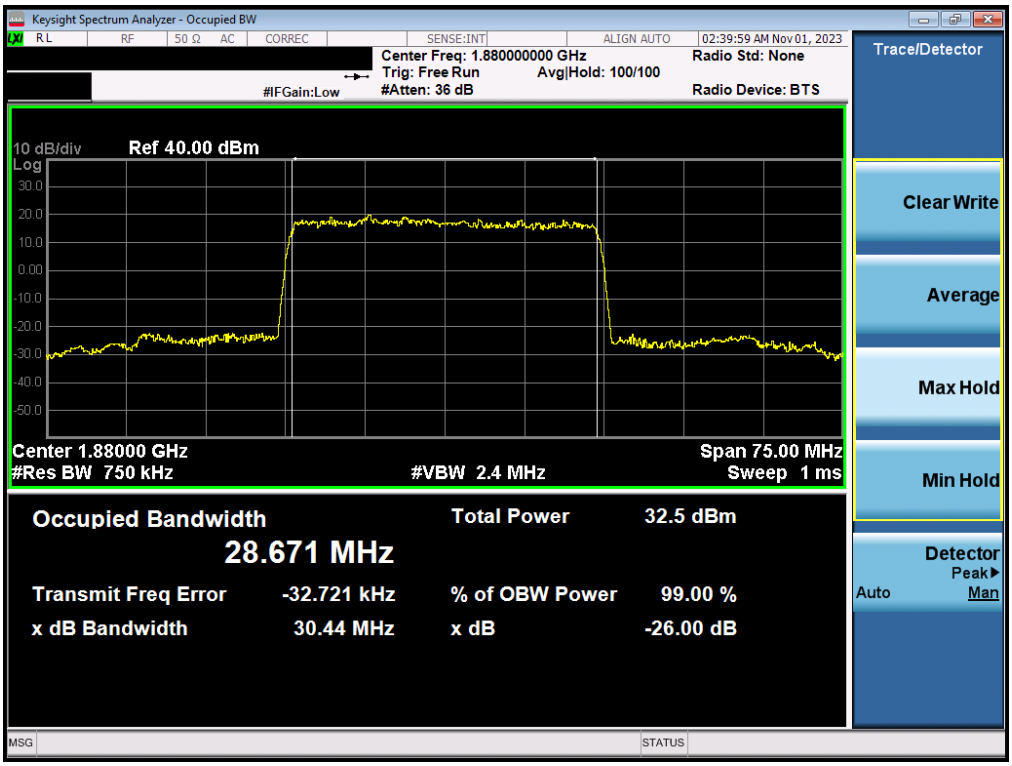
Plot 7-51. Occupied Bandwidth Plot (NR Band n2 - 40.0MHz CP-OFDM 16QAM - Full RB - ANT M3)



Plot 7-52. Occupied Bandwidth Plot (NR Band n2 - 30.0MHz DFT-s-OFDM BPSK - Full RB - ANT M3)

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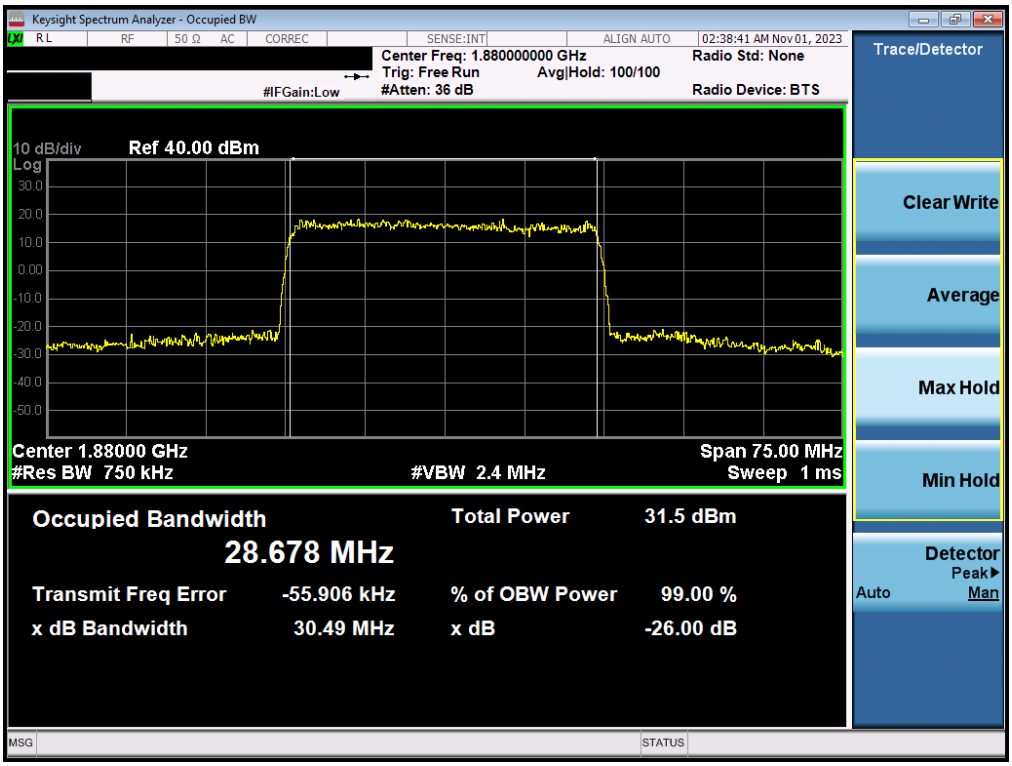

Plot 7-53. Occupied Bandwidth Plot (NR Band n2 - 30.0MHz CP-OFDM QPSK - Full RB - ANT M3)

Plot 7-54. Occupied Bandwidth Plot (NR Band n2 - 30.0MHz CP-OFDM 16QAM - Full RB - ANT M3)

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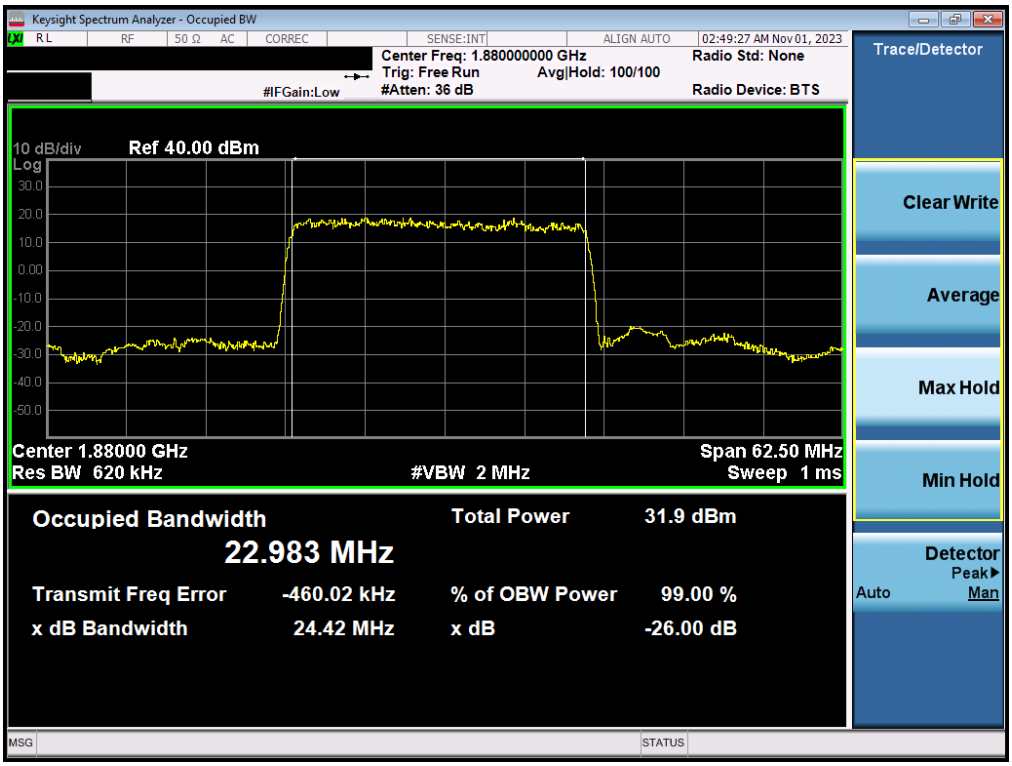
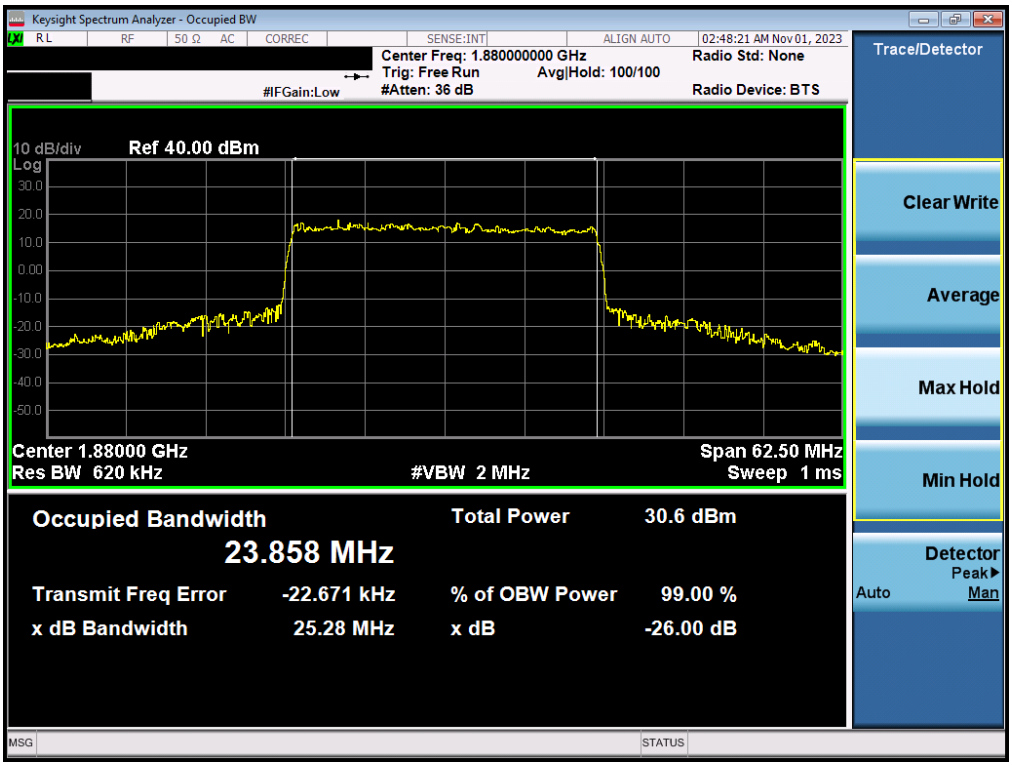


Plot 7-55. Occupied Bandwidth Plot (NR Band n2 - 25.0MHz DFT-s-OFDM BPSK - Full RB - ANT M3)



Plot 7-56. Occupied Bandwidth Plot (NR Band n2 - 25.0MHz CP-OFDM QPSK - Full RB - ANT M3)

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Plot 7-57. Occupied Bandwidth Plot (NR Band n2 - 25.0MHz CP-OFDM 16QAM - Full RB - ANT M3)

Plot 7-58. Occupied Bandwidth Plot (NR Band n2 - 20.0MHz DFT-s-OFDM BPSK - Full RB - Ant M3)

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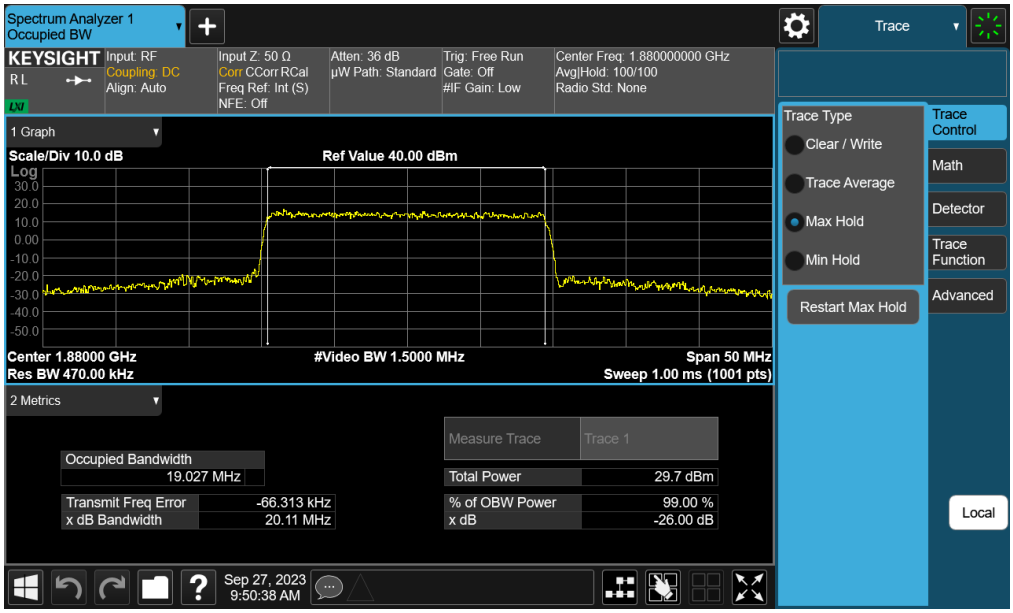
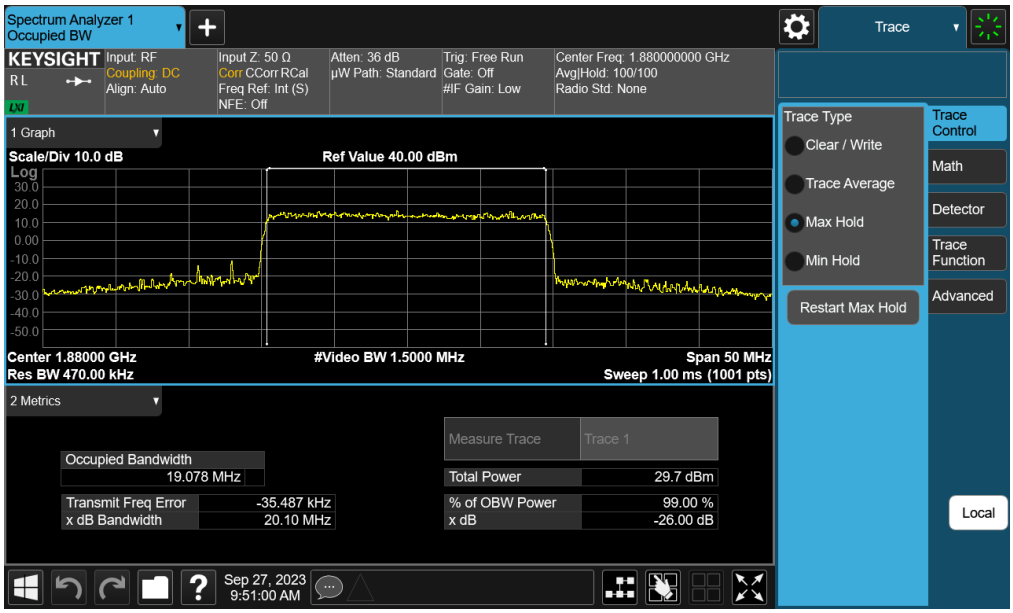


Plot 7-59. Occupied Bandwidth Plot (NR Band n2 - 20.0MHz CP-OFDM QPSK - Full RB - Ant M3)



Plot 7-60. Occupied Bandwidth Plot (NR Band n2 - 20.0MHz CP-OFDM 16QAM - Full RB - Ant M3)

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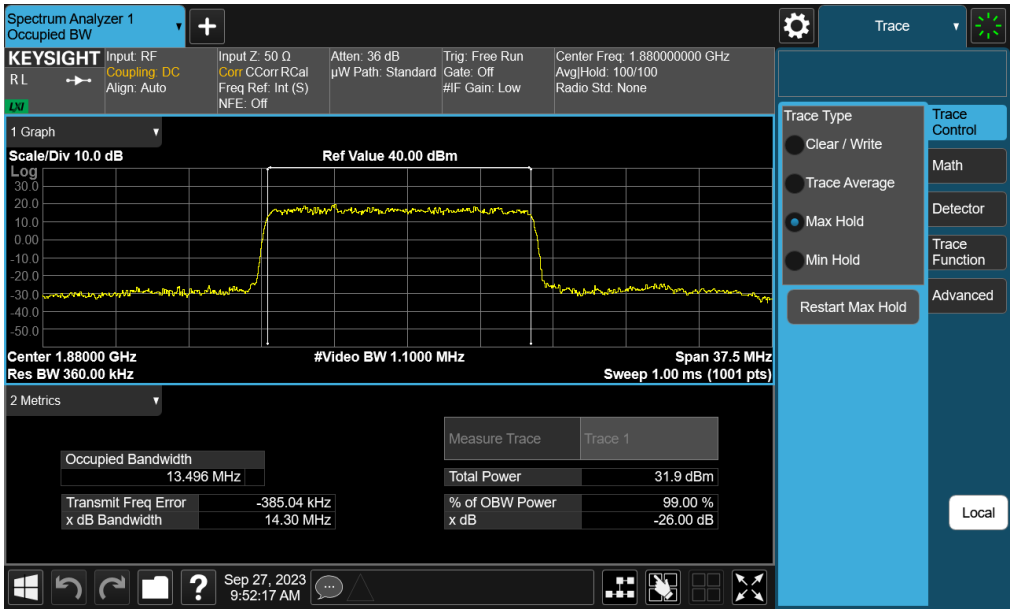
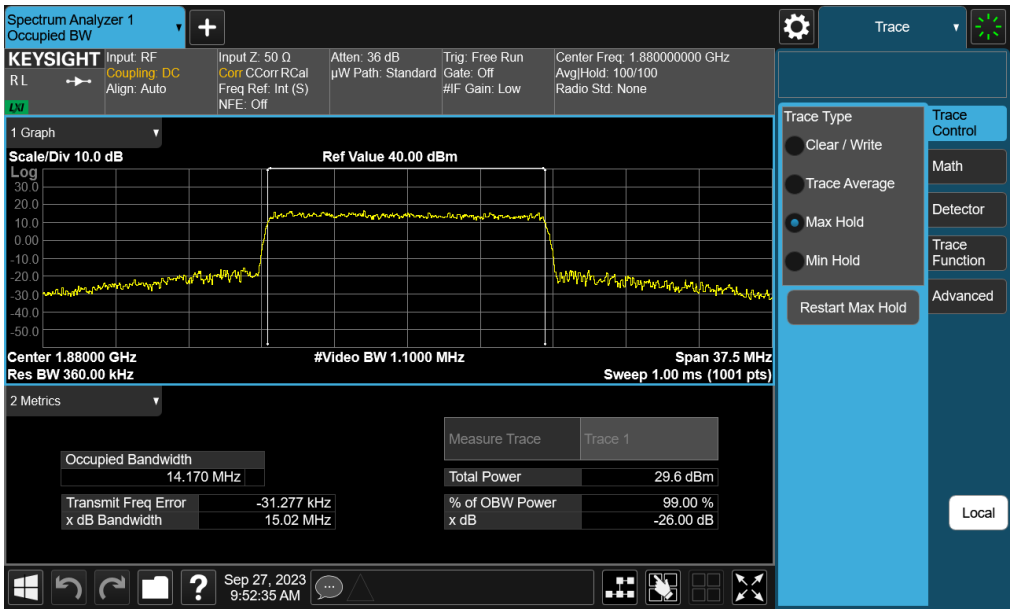


Plot 7-61. Occupied Bandwidth Plot (NR Band n2 - 15.0MHz DFT-s-OFDM BPSK - Full RB - Ant M3)



Plot 7-62. Occupied Bandwidth Plot (NR Band n2 - 15.0MHz CP-OFDM QPSK - Full RB - Ant M3)

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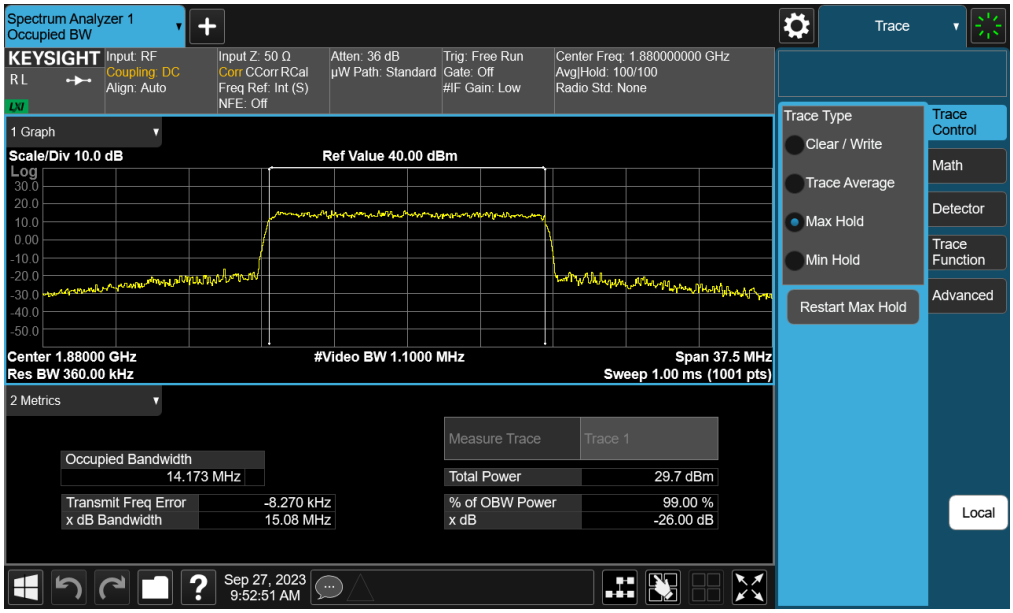
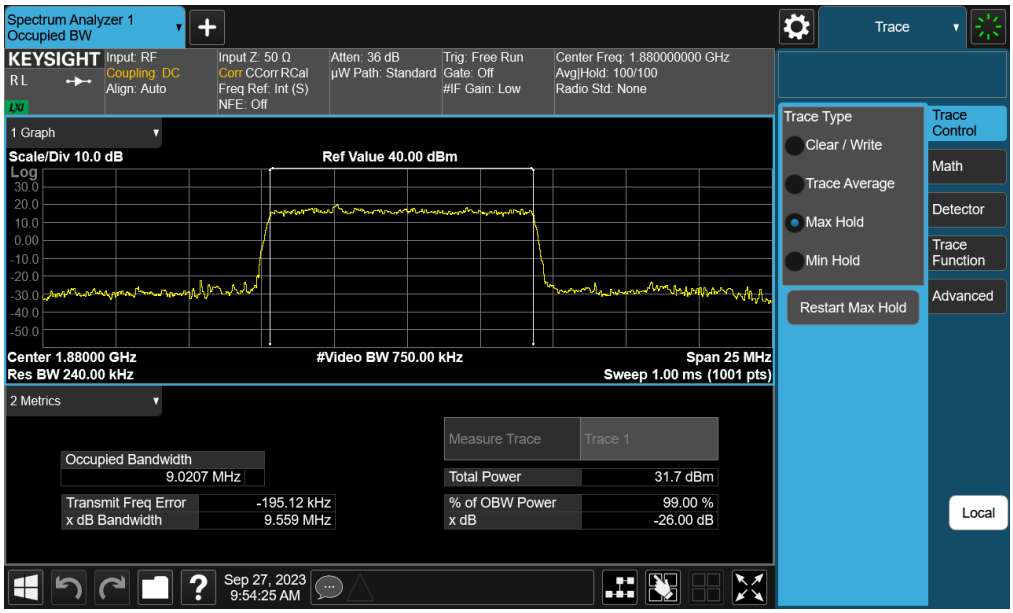


Plot 7-63. Occupied Bandwidth Plot (NR Band n2 - 15.0MHz CP-OFDM 16QAM - Full RB - Ant M3)



Plot 7-64. Occupied Bandwidth Plot (NR Band n2 - 10.0MHz DFT-s-OFDM BPSK - Full RB - Ant M3)

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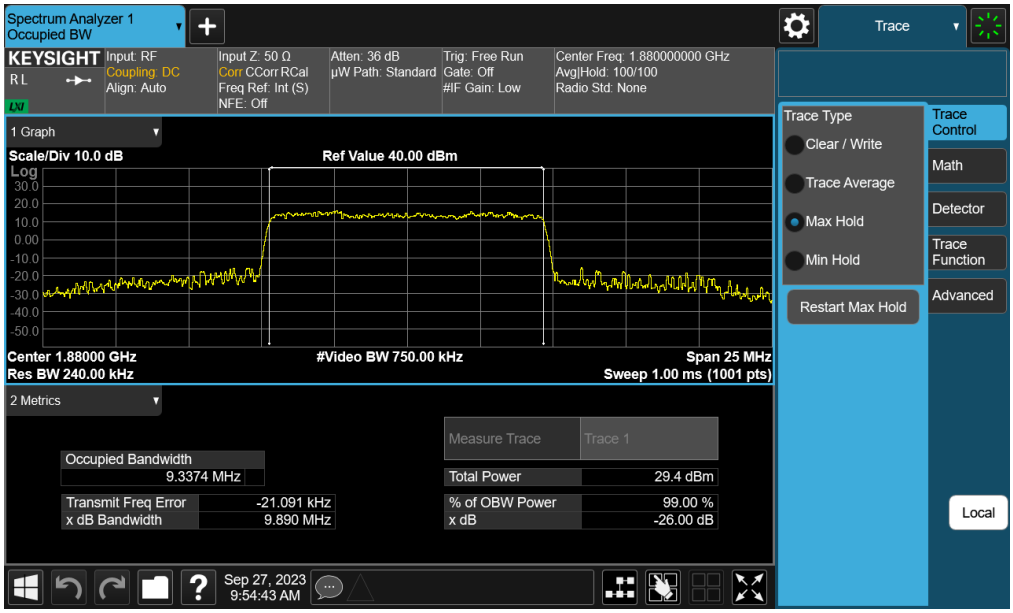
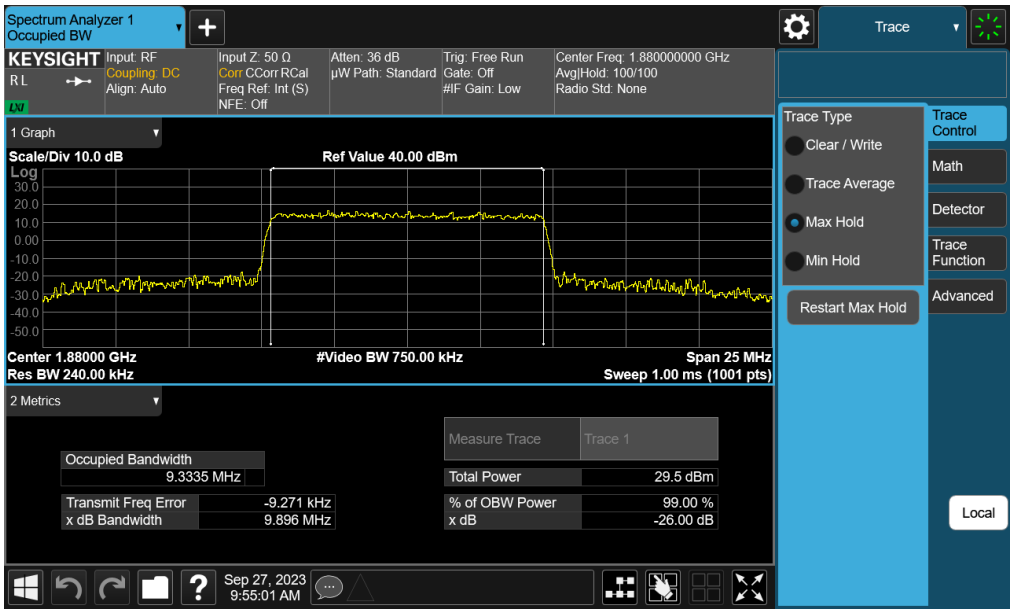


Plot 7-65. Occupied Bandwidth Plot (NR Band n2 - 10.0MHz CP-OFDM QPSK - Full RB - Ant M3)



Plot 7-66. Occupied Bandwidth Plot (NR Band n2 - 10.0MHz CP-OFDM 16QAM - Full RB - Ant M3)

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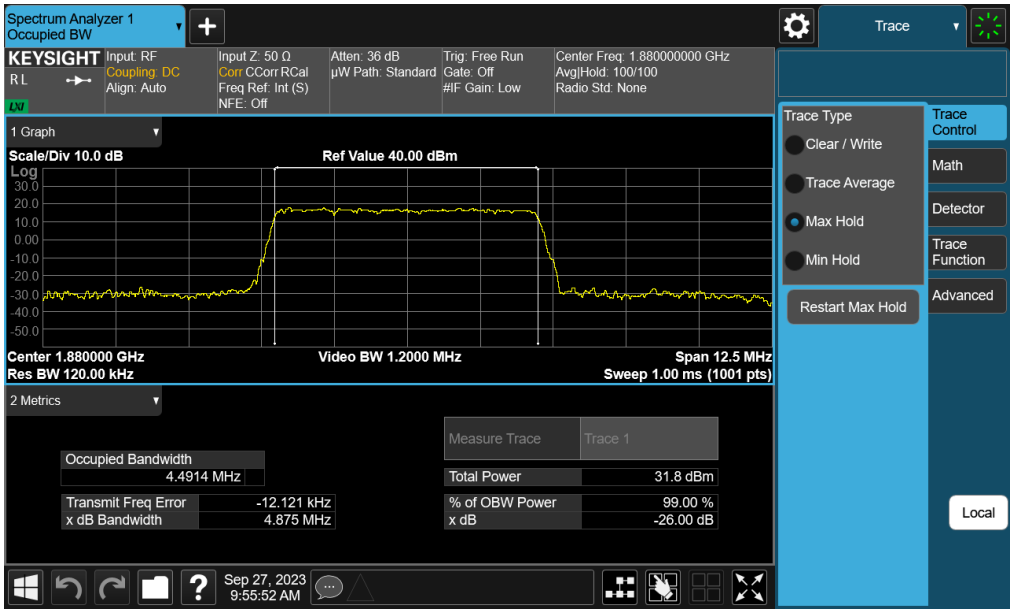
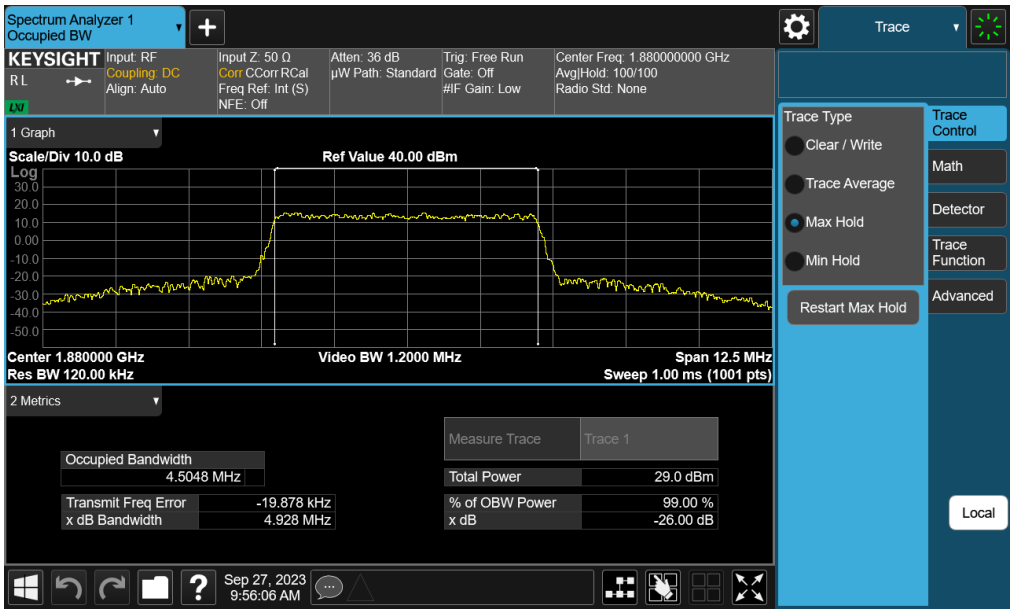


Plot 7-67. Occupied Bandwidth Plot (NR Band n2 - 5.0MHz DFT-s-OFDM BPSK - Full RB - Ant M3)



Plot 7-68. Occupied Bandwidth Plot (NR Band n2 - 5.0MHz CP-OFDM QPSK - Full RB - Ant M3)

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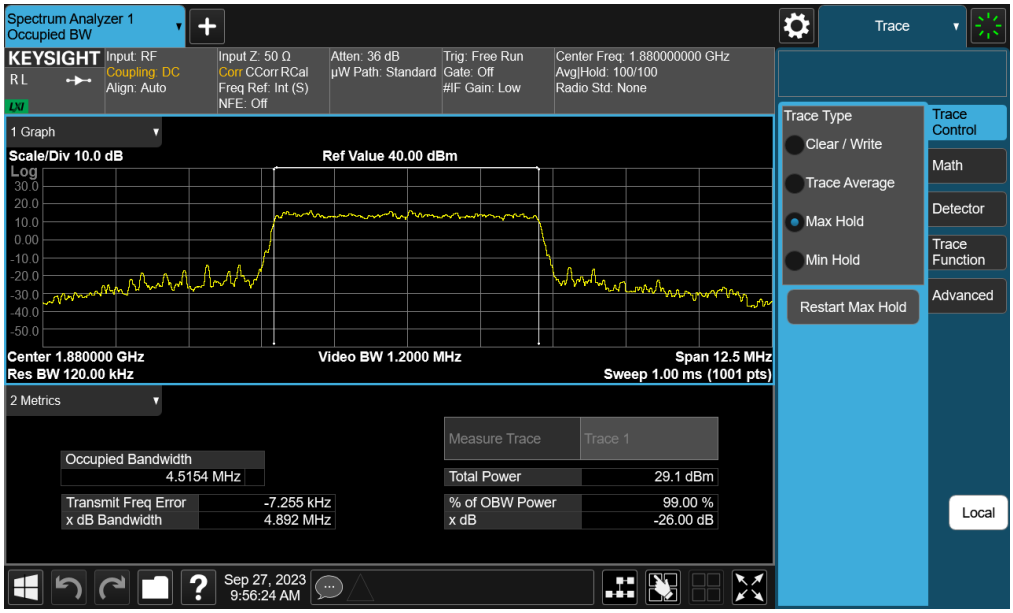

Plot 7-69. Occupied Bandwidth Plot (NR Band n2 - 5.0MHz CP-OFDM 16QAM - Full RB - Ant M3)

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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.

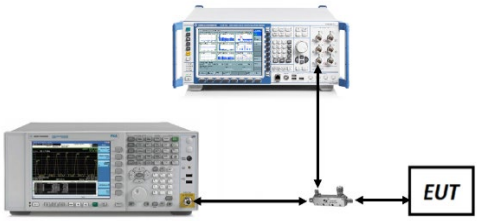

Figure 7-3. Test Instrument & Measurement Setup

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.

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Mode	Bandwidth	Channel	Range [MHz]	Level [dBm]	Limit [dBm]	Margin [dB]
GSM-PCS	250 kHz	Low	30.0 - 1845.0	-39.15	-13	-26.15
		Low	1910.0 - 10000.0	-31.90	-13	-18.90
		Low	10000.0 - 20000.0	-45.49	-13	-32.49
		Mid	30.0 - 1850.0	-39.25	-13	-26.25
		Mid	1910.0 - 10000.0	-30.79	-13	-17.79
		Mid	10000.0 - 20000.0	-46.26	-13	-33.25
		High	30.0 - 1850.0	-39.86	-13	-26.86
		High	1915.0 - 10000.0	-31.27	-13	-18.27
		High	10000.0 - 20000.0	-46.01	-13	-33.01
WCDMA-PCS	5 MHz	Low	30.0 - 1845.0	-45.02	-13	-32.02
		Low	1910.0 - 10000.0	-39.22	-13	-26.22
		Low	10000.0 - 20000.0	-52.62	-13	-39.62
		Mid	30.0 - 1850.0	-47.72	-13	-34.72
		Mid	1910.0 - 10000.0	-39.43	-13	-26.43
		Mid	10000.0 - 20000.0	-53.31	-13	-40.31
		High	30.0 - 1850.0	-47.96	-13	-34.96
		High	1915.0 - 10000.0	-39.69	-13	-26.68
		High	10000.0 - 20000.0	-53.18	-13	-40.18
LTE-B25-2	20 MHz	Low	30.0 - 1849.0	-40.85	-13	-27.85
		Low	1915.0 - 10000.0	-39.17	-13	-26.17
		Low	10000.0 - 20000.0	-52.89	-13	-39.89
		Mid	30.0 - 1850.0	-47.29	-13	-34.29
		Mid	1915.0 - 10000.0	-39.33	-13	-26.33
		Mid	10000.0 - 20000.0	-52.94	-13	-39.94
		High	30.0 - 1850.0	-47.50	-13	-34.50
		High	1916.0 - 10000.0	-39.39	-13	-26.39
		High	10000.0 - 20000.0	-52.40	-13	-39.40
NR-n25-2	40 MHz	Low	30.0 - 1850.0	-43.33	-13	-30.33
		Low	1915.0 - 10000.0	-39.60	-13	-26.60
		Low	10000.0 - 20000.0	-52.82	-13	-39.82
		Mid	30.0 - 1850.0	-47.26	-13	-34.26
		Mid	1915.0 - 10000.0	-39.22	-13	-26.22
		Mid	10000.0 - 20000.0	-52.57	-13	-39.57
		High	30.0 - 1850.0	-47.80	-13	-34.80
		High	1915.0 - 10000.0	-39.37	-13	-26.37
		High	10000.0 - 20000.0	-52.61	-13	-39.61

Table 7-7. Conducted Spurious Emission Results – Ant M2

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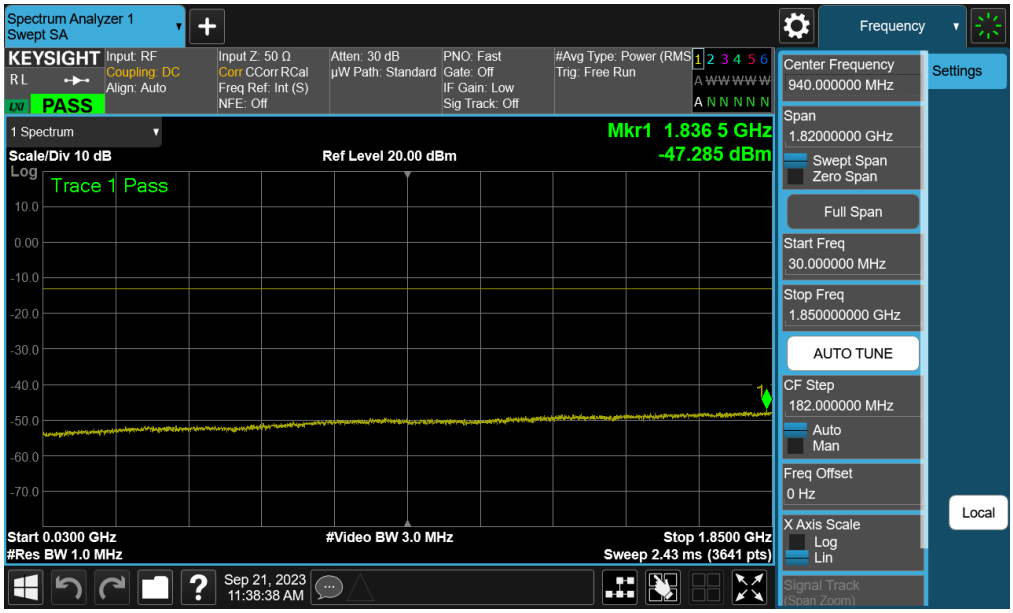
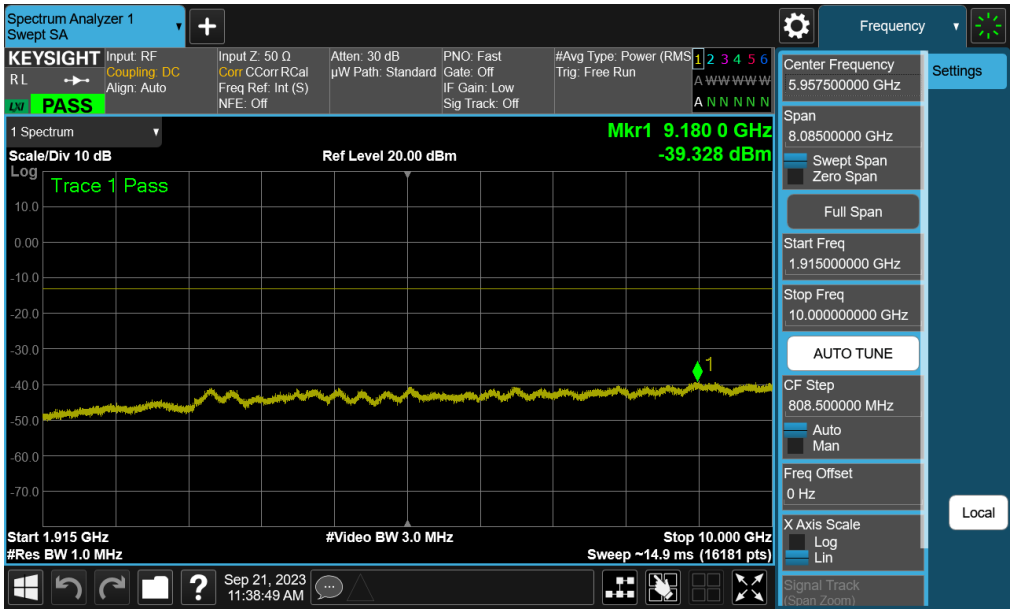
LTE Band 25/2 – Ant M2



Plot 7-70. Conducted Spurious Plot (LTE Band 25/2 - 20MHz QPSK - 1RB - Mid Channel - Ant M2)



Plot 7-71. Conducted Spurious Plot (LTE Band 25/2 - 20MHz QPSK - 1RB - Mid Channel - Ant M2)

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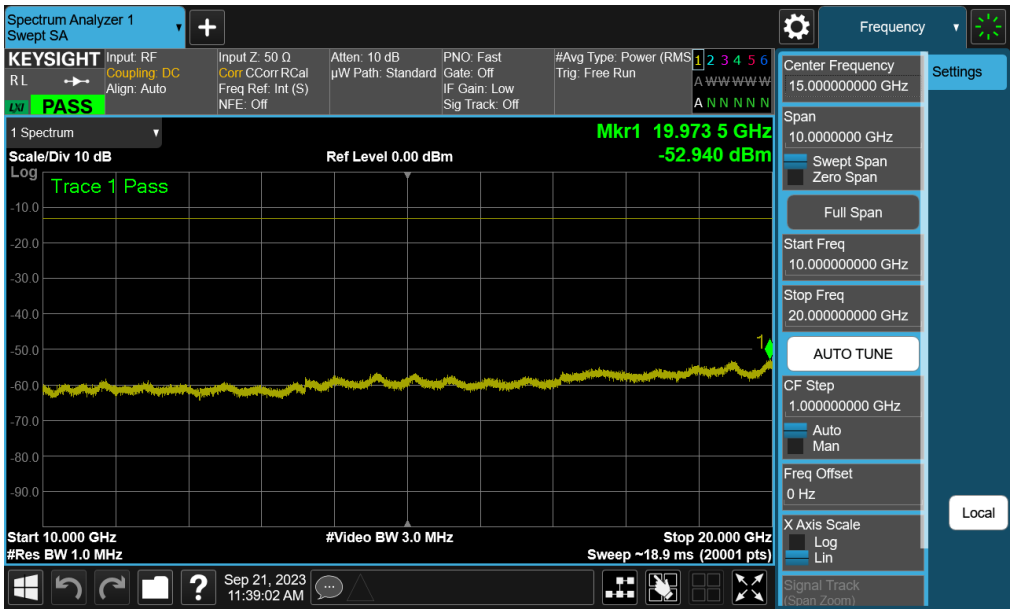

Plot 7-72. Conducted Spurious Plot (LTE Band 25/2 - 20MHz QPSK - 1RB - Mid Channel - Ant M2)

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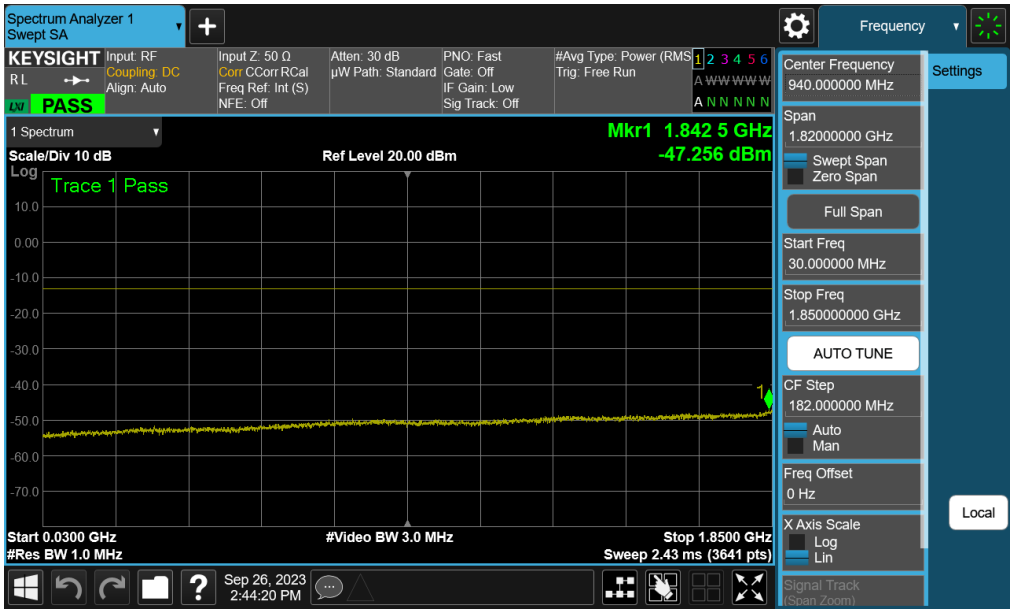
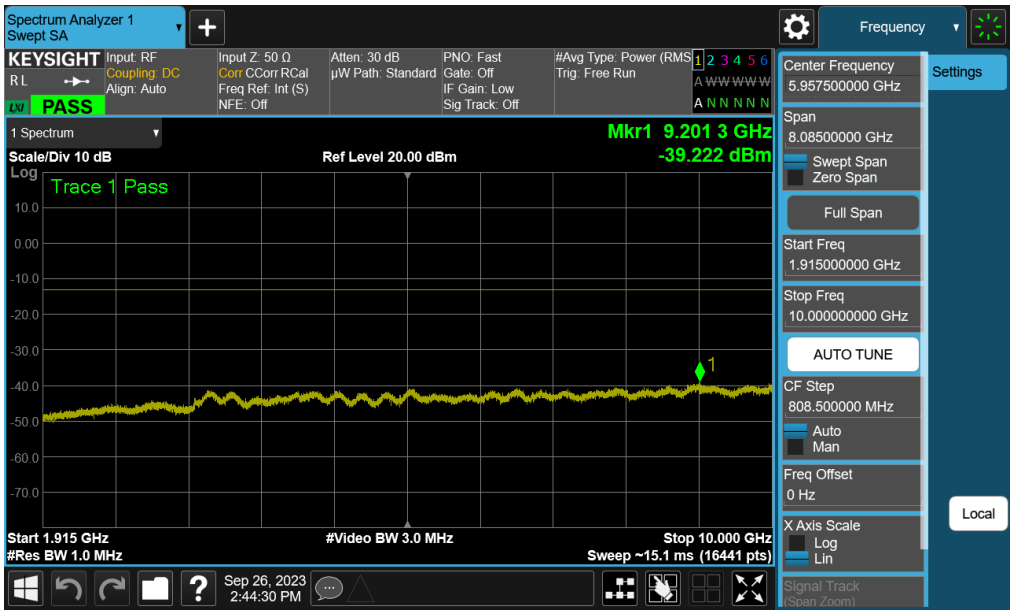
NR Band n25/2 – Ant M2



Plot 7-73. Conducted Spurious Plot (NR Band n25/2 - 40.0MHz - 1RB - Mid Channel - Ant M2)



Plot 7-74. Conducted Spurious Plot (NR Band n25/2 - 40.0MHz - 1RB - Mid Channel - Ant M2)

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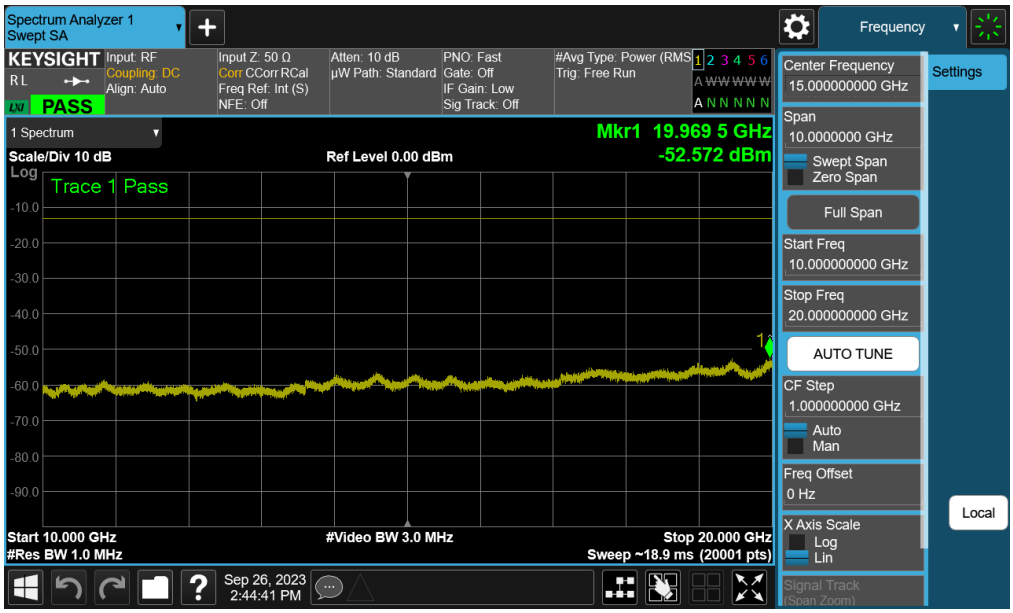

Plot 7-75. Conducted Spurious Plot (NR Band n25/2 - 40.0MHz - 1RB - Mid Channel - Ant M2)

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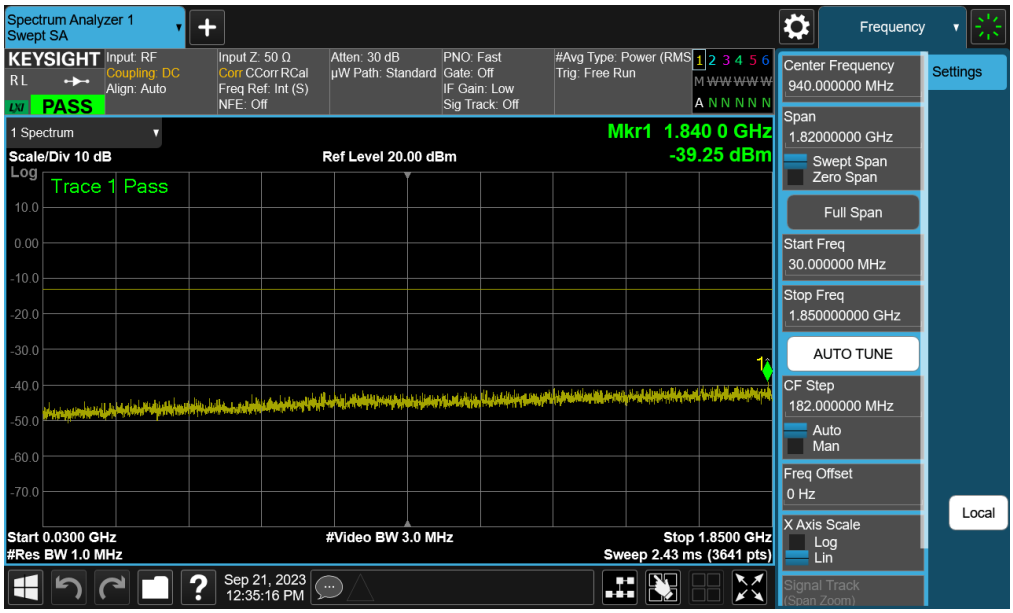
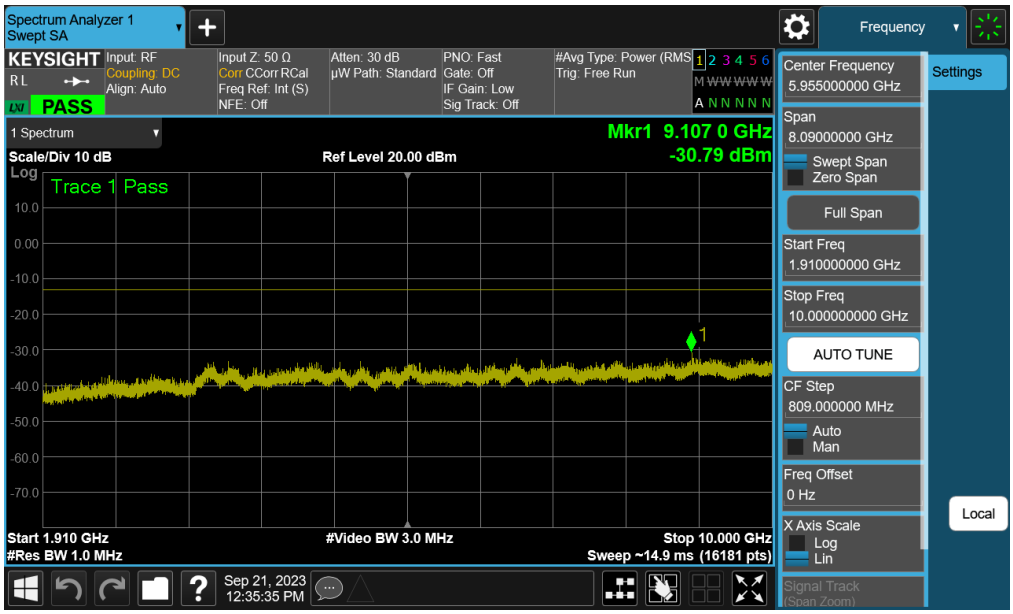
GSM/GPRS PCS – Ant M2



Plot 7-76. Conducted Spurious Plot (GPRS Ch. 661 - Ant M2)



Plot 7-77. Conducted Spurious Plot (GPRS Ch. 661 - Ant M2)

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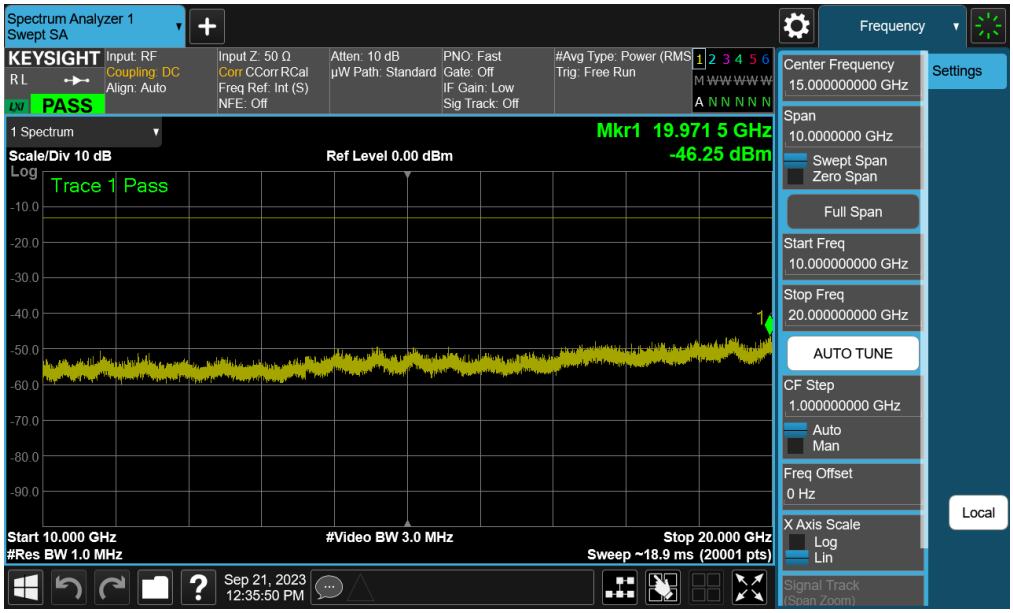

Plot 7-78. Conducted Spurious Plot (GPRS Ch. 661 - Ant M2)

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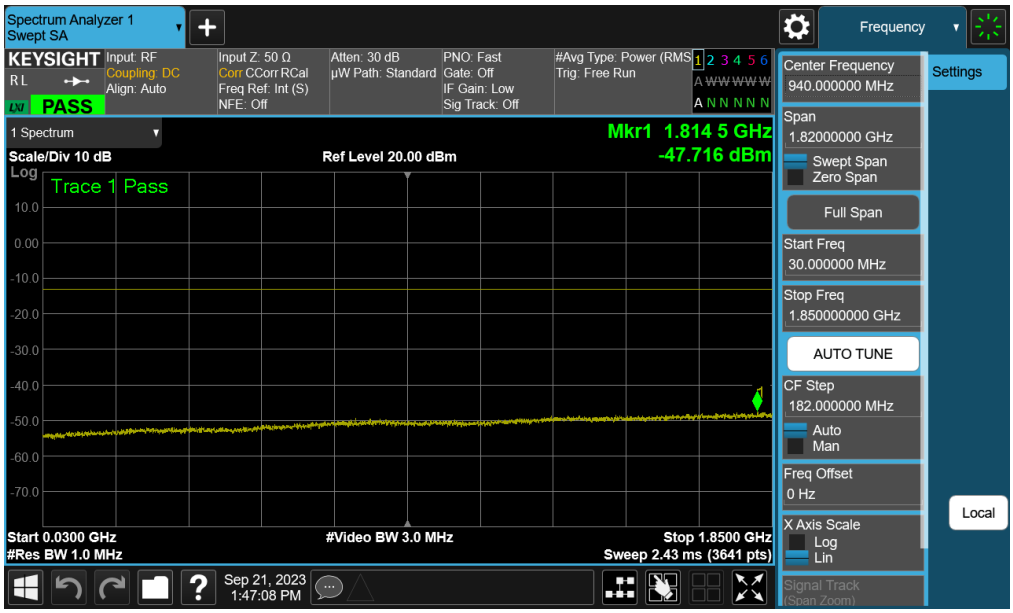
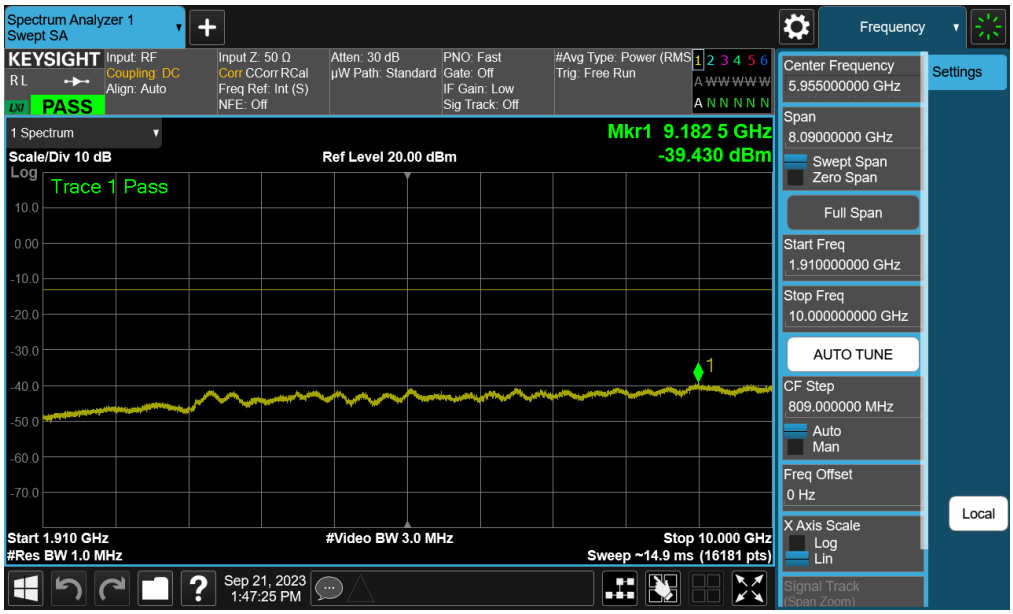
WCDMA PCS – Ant M2



Plot 7-79. Conducted Spurious Plot (WCDMA Ch. 9400 - Ant M2)



Plot 7-80. Conducted Spurious Plot (WCDMA Ch. 9400 - Ant M2)

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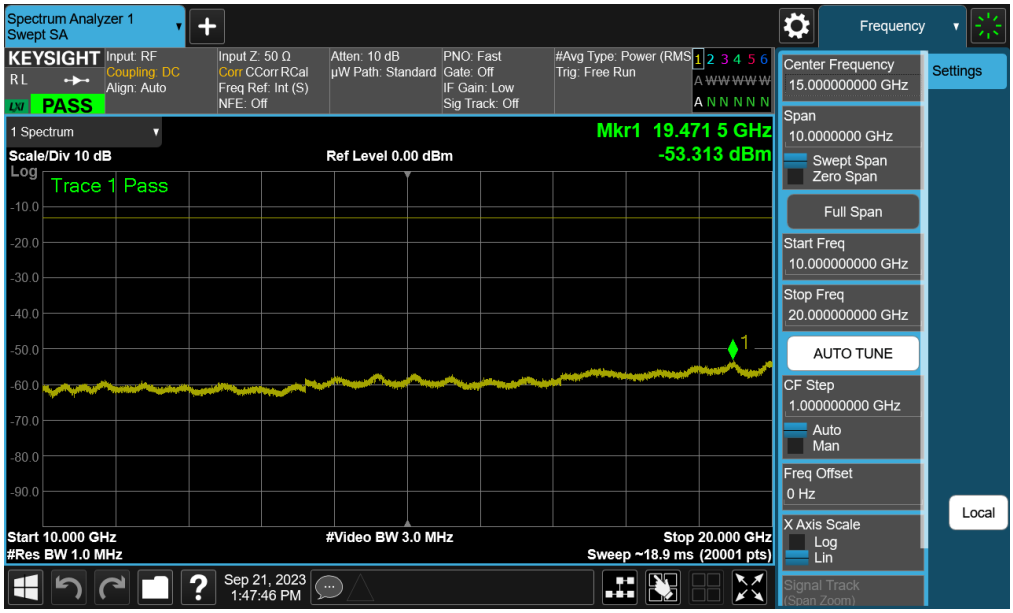

Plot 7-81. Conducted Spurious Plot (WCDMA Ch. 9400 - Ant M2)

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Mode	Bandwidth	Channel	Range [MHz]	Level [dBm]	Limit [dBm]	Margin [dB]
LTE-B25-2	20 MHz	Low	30.0 - 1849.0	-40.89	-13	-27.89
		Low	1915.0 - 10000.0	-38.62	-13	-25.62
		Low	10000.0 - 20000.0	-51.67	-13	-38.67
		Mid	30.0 - 1850.0	-47.56	-13	-34.55
		Mid	1915.0 - 10000.0	-38.29	-13	-25.29
		Mid	10000.0 - 20000.0	-51.83	-13	-38.83
		High	30.0 - 1850.0	-47.83	-13	-34.83
		High	1916.0 - 10000.0	-38.36	-13	-25.36
		High	10000.0 - 20000.0	-51.94	-13	-38.94
NR-n2	20 MHz	Low	30.0 - 1849.0	-38.74	-13	-25.74
		Low	1915.0 - 10000.0	-37.66	-13	-24.66
		Low	10000.0 - 20000.0	-46.75	-13	-33.75
		Mid	30.0 - 1850.0	-46.68	-13	-33.68
		Mid	1915.0 - 10000.0	-38.04	-13	-25.04
		Mid	10000.0 - 20000.0	-51.63	-13	-38.63
		High	30.0 - 1850.0	-46.67	-13	-33.67
		High	1916.0 - 10000.0	-37.66	-13	-24.66
		High	10000.0 - 20000.0	-52.26	-13	-39.26

Table 7-8. Conducted Spurious Emission Results – Ant M3

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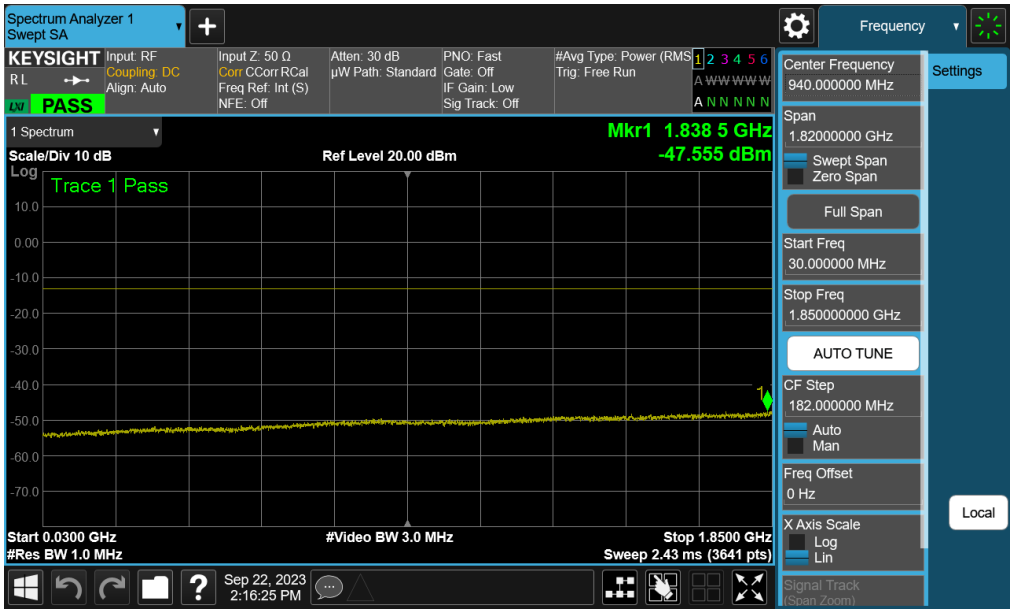
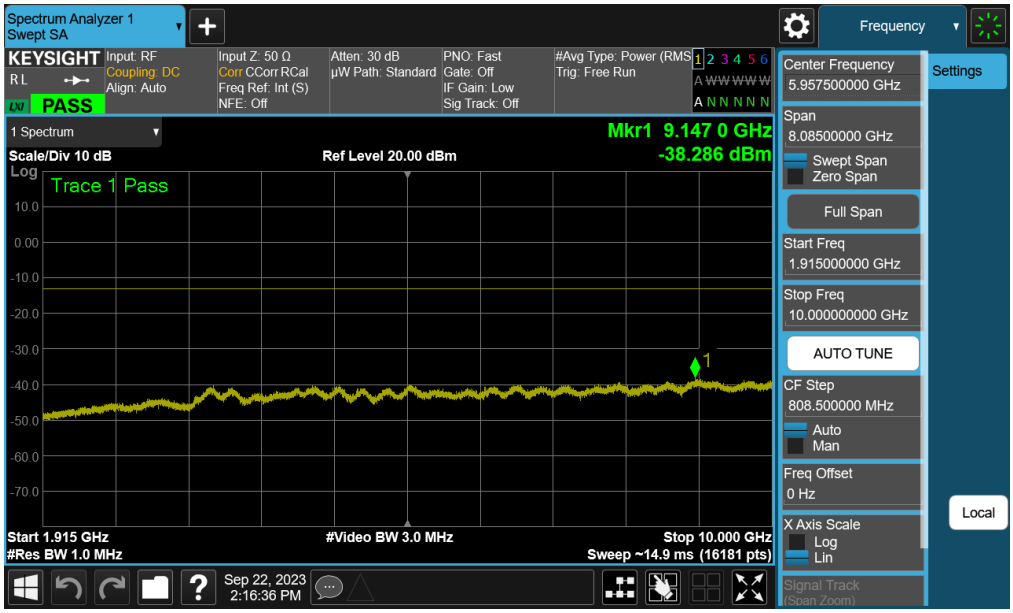
LTE Band 25/2 – Ant M3



Plot 7-82. Conducted Spurious Plot (LTE Band 25/2 - 20MHz QPSK - 1RB - Mid Channel - Ant M3)



Plot 7-83. Conducted Spurious Plot (LTE Band 25/2 - 20MHz QPSK - 1RB - Mid Channel - Ant M3)

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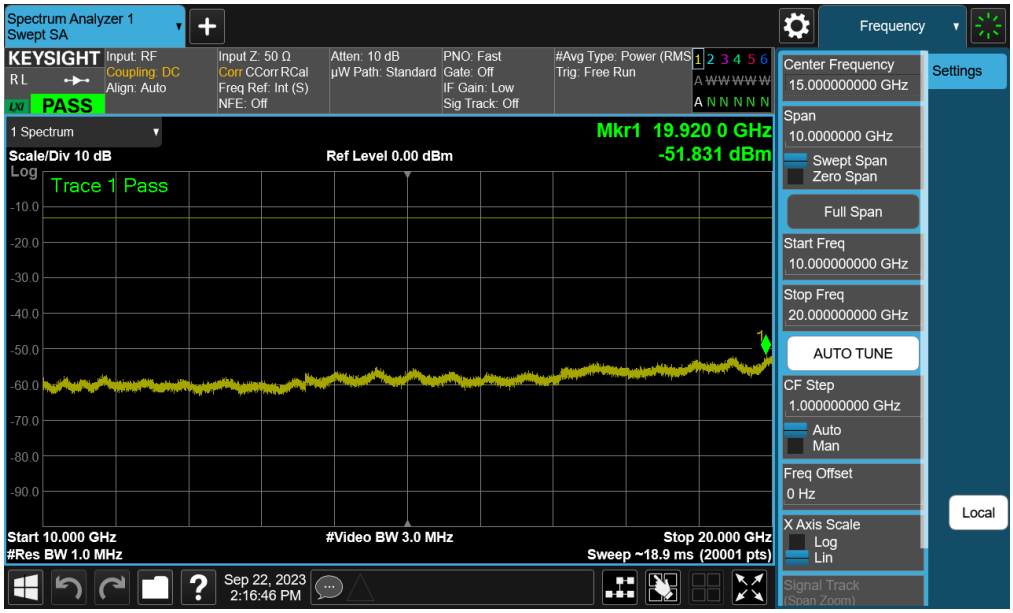

Plot 7-84. Conducted Spurious Plot (LTE Band 25/2 - 20MHz QPSK - 1RB - Mid Channel - Ant M3)

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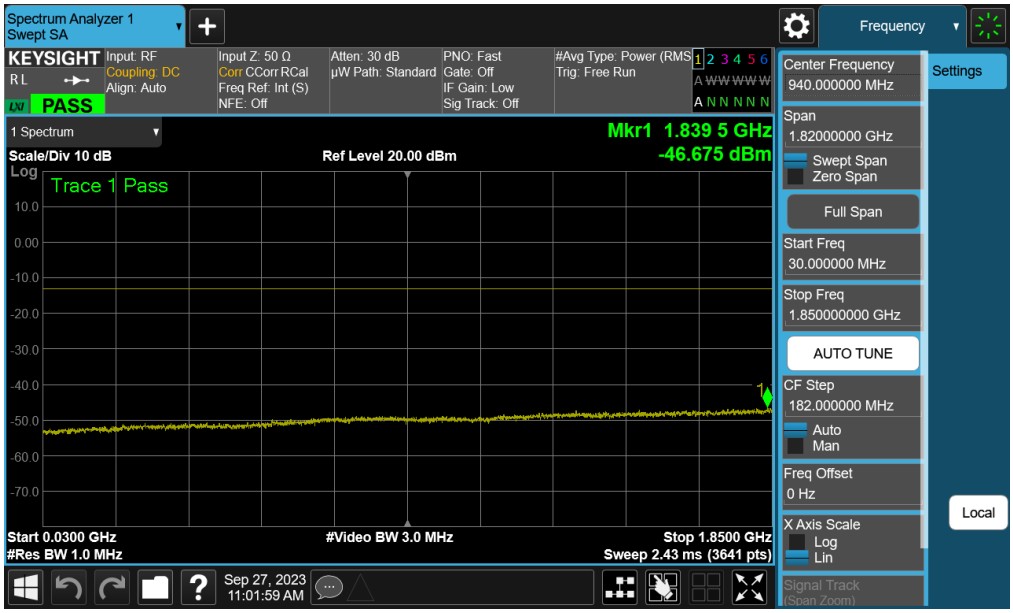
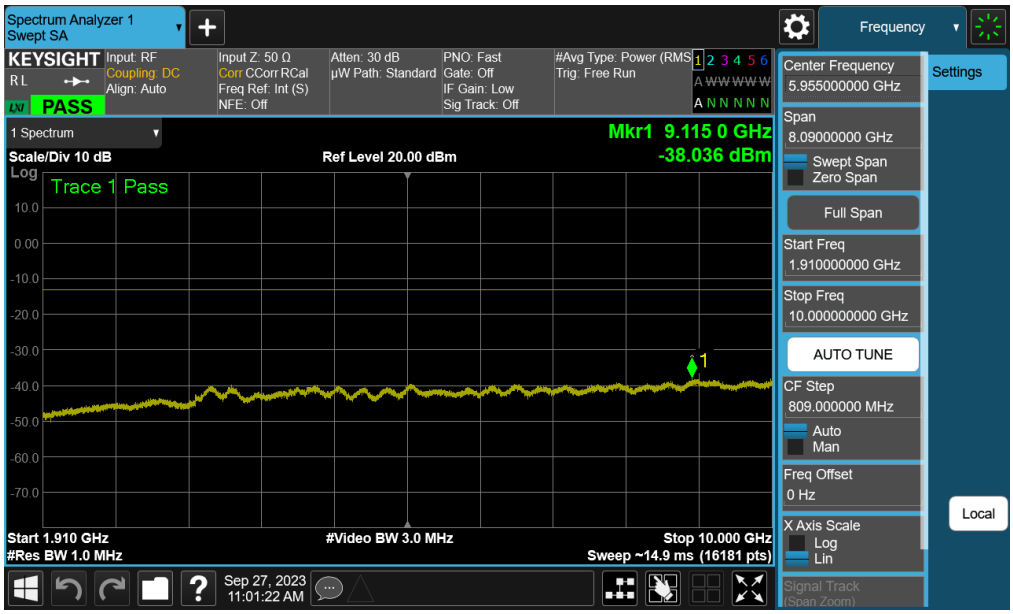
NR Band n2 – Ant M3



Plot 7-85. Conducted Spurious Plot (NR Band n2 - 20.0MHz - 1RB - Mid Channel - Ant M3)



Plot 7-86. Conducted Spurious Plot (NR Band n2 - 20.0MHz - 1RB - Mid Channel - Ant M3)

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