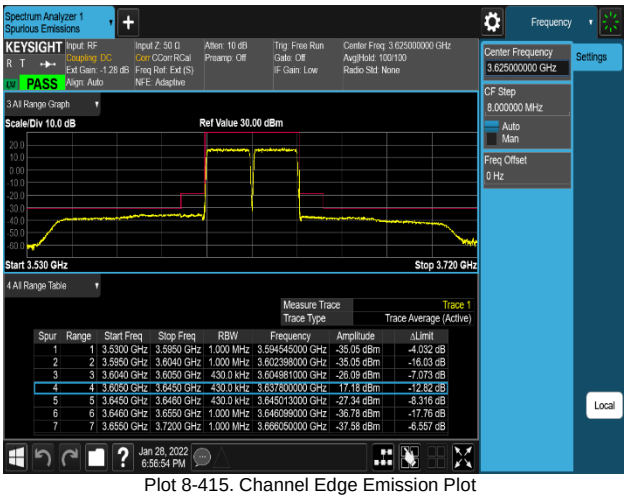
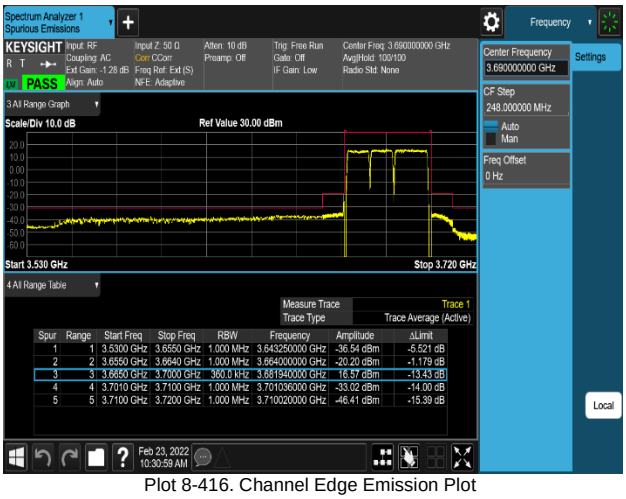
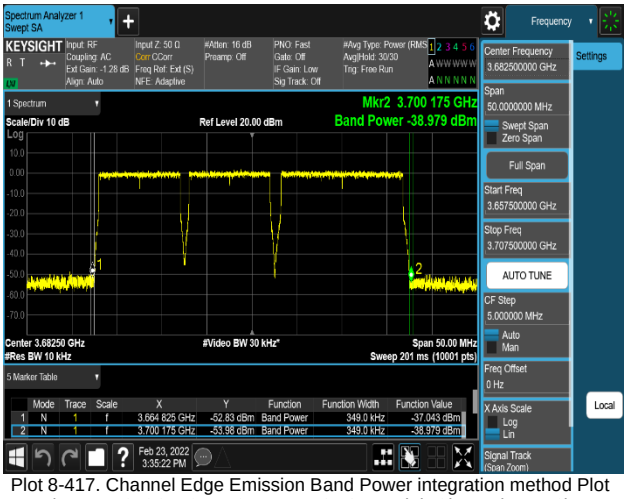


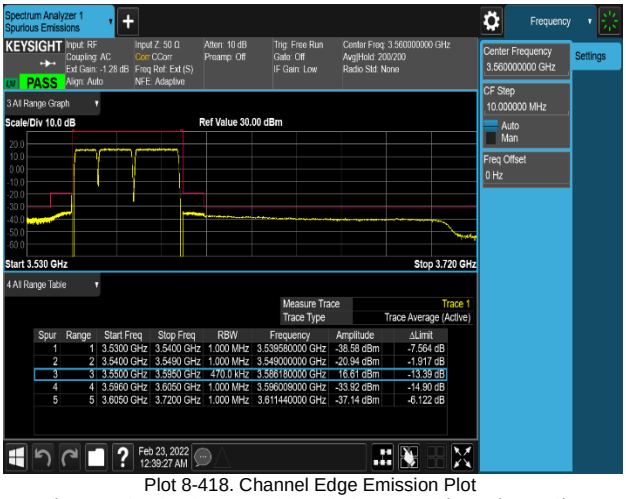
Plot 8-415. Channel Edge Emission Plot
(LTE_B48_2C_20M+20M_QPSK – Mid Channel, Port 0)



Plot 8-416. Channel Edge Emission Plot
(LTE_B48_3C_10M+10M+15M_QPSK – High Channel, Port 0)

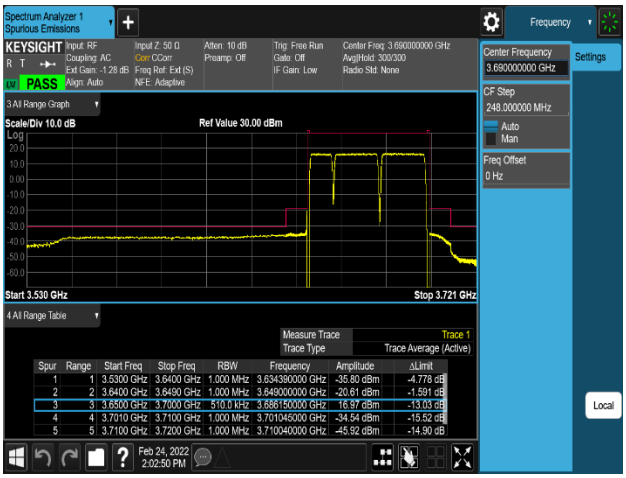


Plot 8-417. Channel Edge Emission Band Power integration method Plot
(LTE_B48_3C_10M+10M+15M_QPSK – High Channel, Port 0)

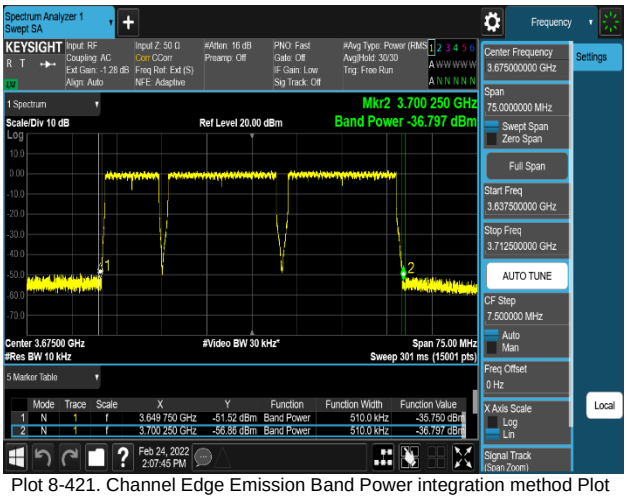


Plot 8-418. Channel Edge Emission Plot
(LTE_B48_3C_10M+15M+20M_QPSK – Low Channel, Port 0)

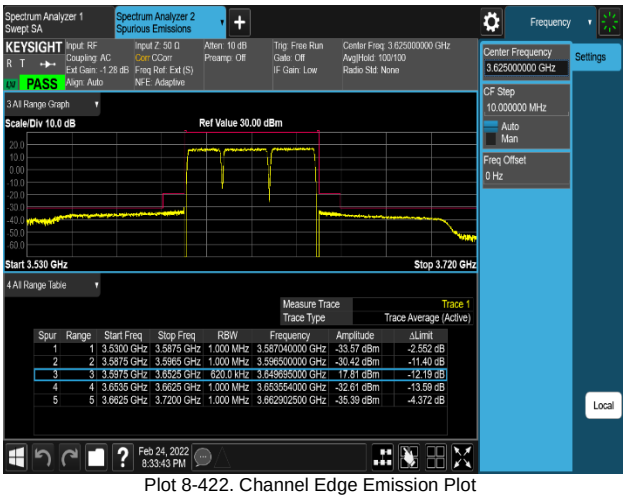
Plot 8-419. Channel Edge Emission Band Power integration method Plot
(LTE_B48_3C_10M+15M+20M_QPSK – Low Channel, Port 0)



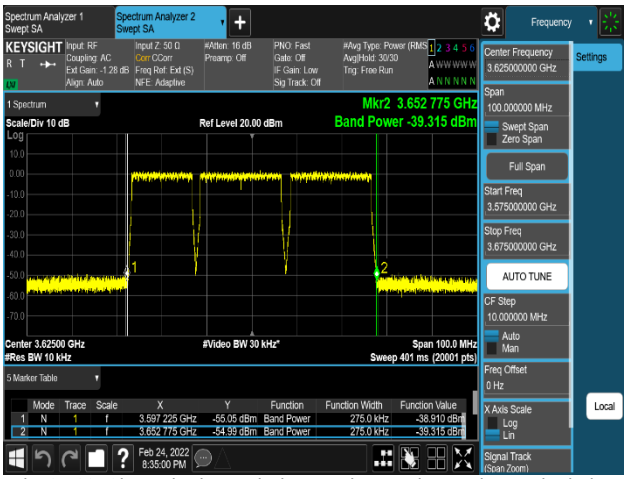
Plot 8-420. Channel Edge Emission Plot
(LTE_B48_3C_10M+20M+20M_QPSK – High Channel, Port 0)



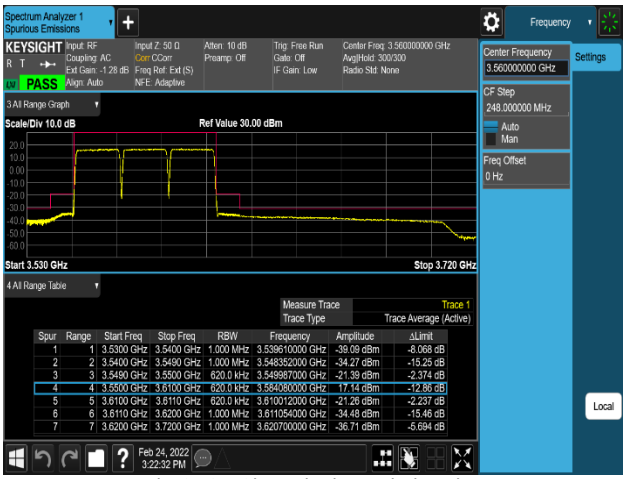
Plot 8-421. Channel Edge Emission Band Power integration method Plot
(LTE_B48_3C_10M+20M+20M_QPSK – High Channel, Port 0)



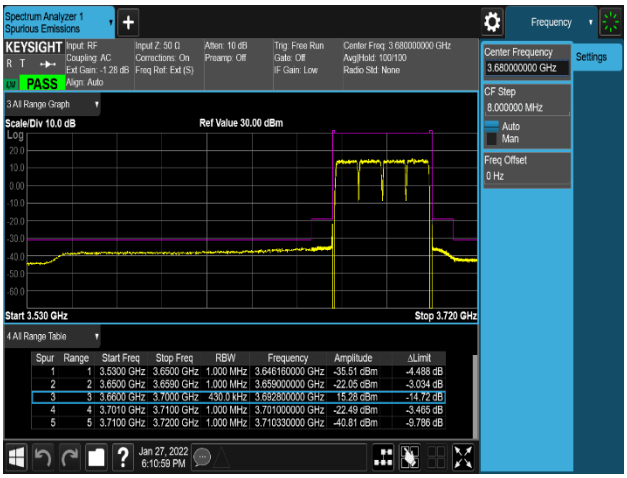
Plot 8-422. Channel Edge Emission Plot
(LTE_B48_3C_15M+20M+20M_QPSK – Mid Channel, Port 0)



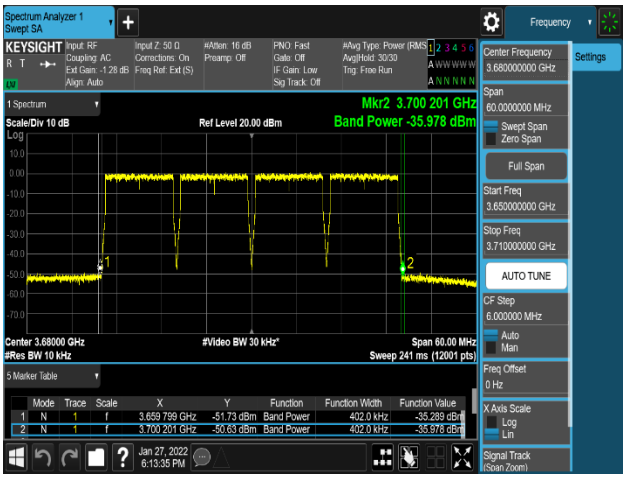
Plot 8-423. Channel Edge Emission Band Power integration method Plot
(LTE_B48_3C_15M+20M+20M_QPSK – Mid Channel, Port 0)



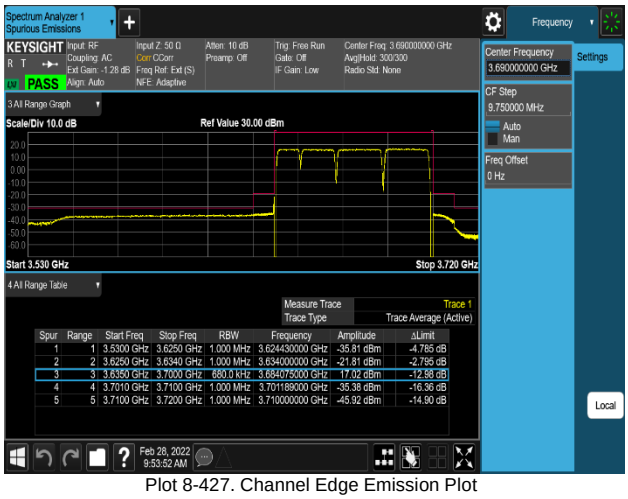
Plot 8-424. Channel Edge Emission Plot
(LTE_B48_3C_20M+20M+20M_QPSK – Low Channel, Port 0)



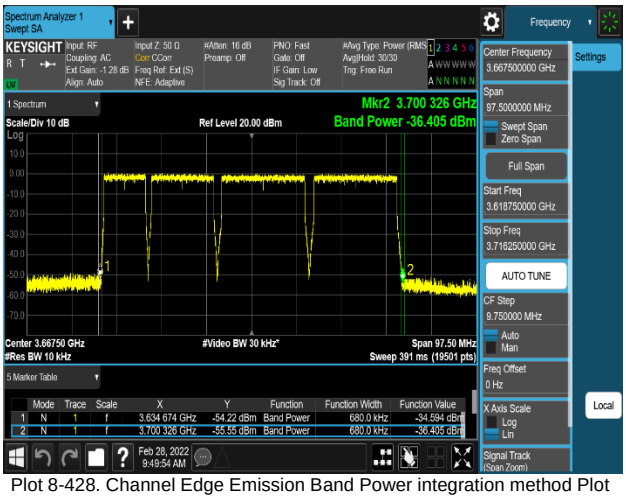
Plot 8-425. Channel Edge Emission Plot
(LTE_B48_4C_10M+10M+10M+10M_QPSK – High Channel, Port 0)



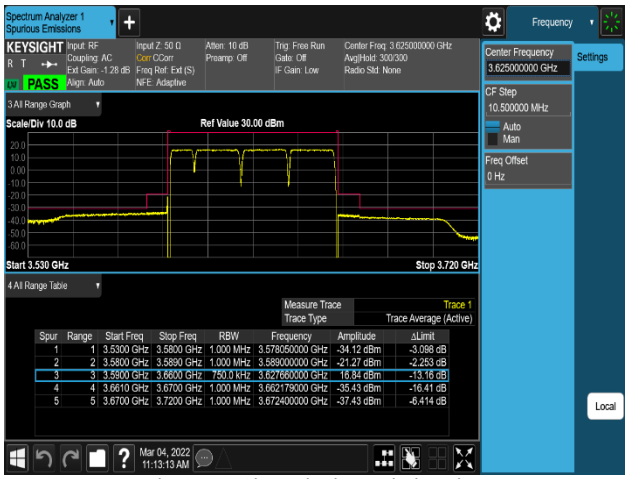
Plot 8-426. Channel Edge Emission Band Power integration method Plot
(LTE_B48_4C_10M+10M+10M+10M_QPSK – High Channel, Port 0)



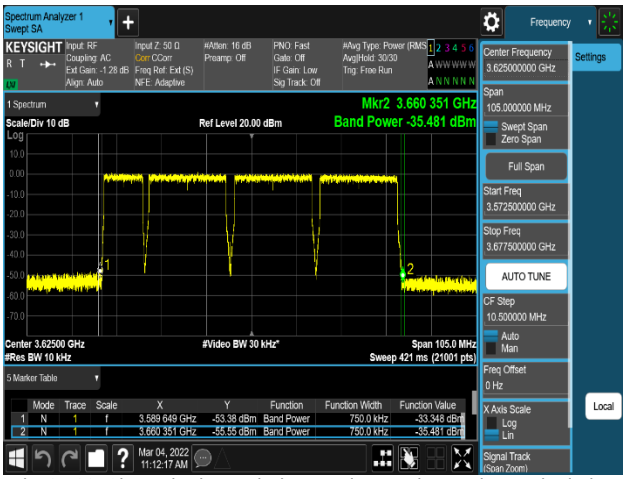
Plot 8-427. Channel Edge Emission Plot
(LTE_B48_4C_10M+15M+20M+20M_QPSK – High Channel, Port 0)



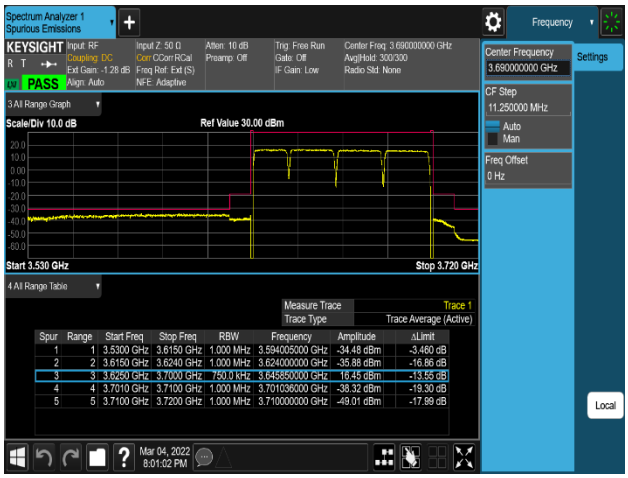
Plot 8-428. Channel Edge Emission Band Power integration method Plot
(LTE_B48_4C_10M+15M+20M+20M_QPSK – High Channel, Port 0)



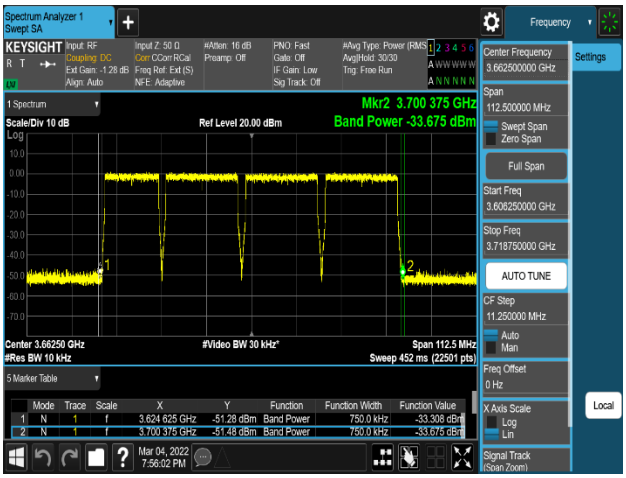
Plot 8-429. Channel Edge Emission Plot
(LTE_B48_4C_10M+20M+20M+20M_QPSK – Mid Channel, Port 0)



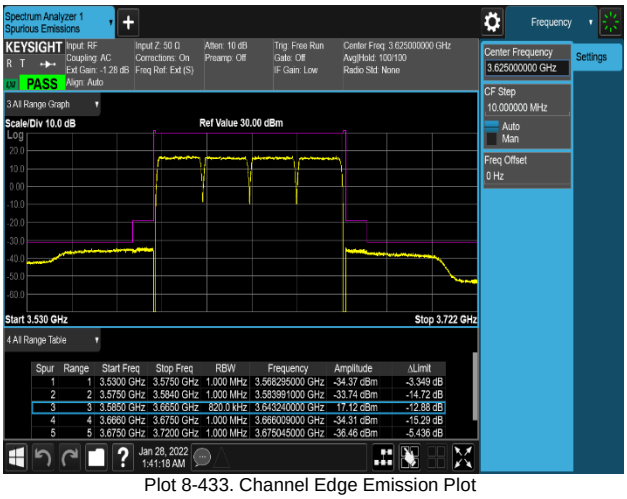
Plot 8-430. Channel Edge Emission Band Power integration method Plot
(LTE_B48_4C_10M+20M+20M+20M_QPSK – Mid Channel, Port 0)



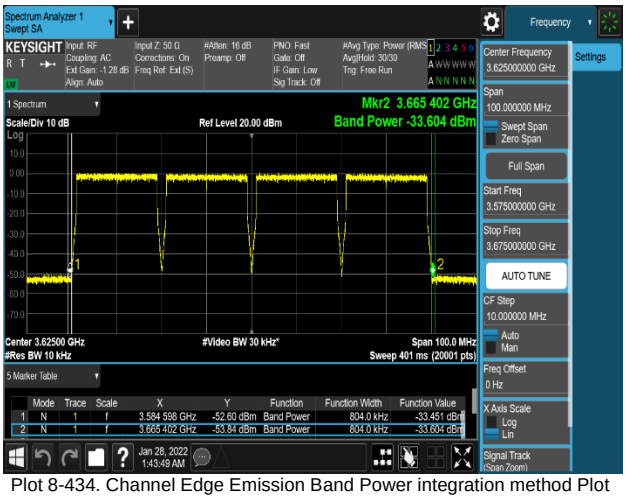
Plot 8-431. Channel Edge Emission Plot
(LTE_B48_4C_15M+20M+20M+20M_QPSK – High Channel, Port 0)



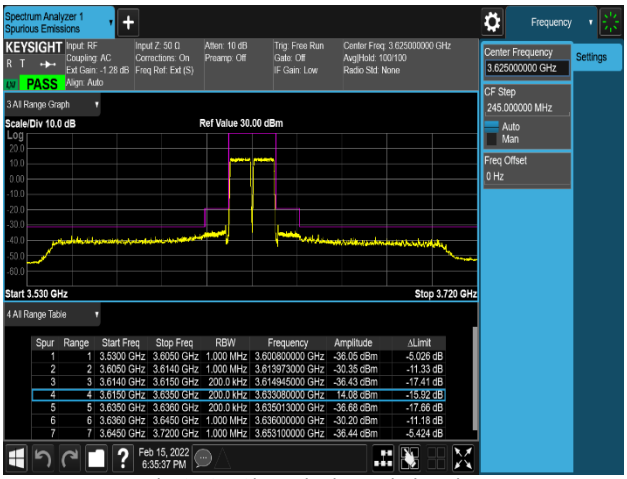
Plot 8-432. Channel Edge Emission Band Power integration method Plot
(LTE_B48_4C_15M+20M+20M+20M_QPSK – High Channel, Port 0)



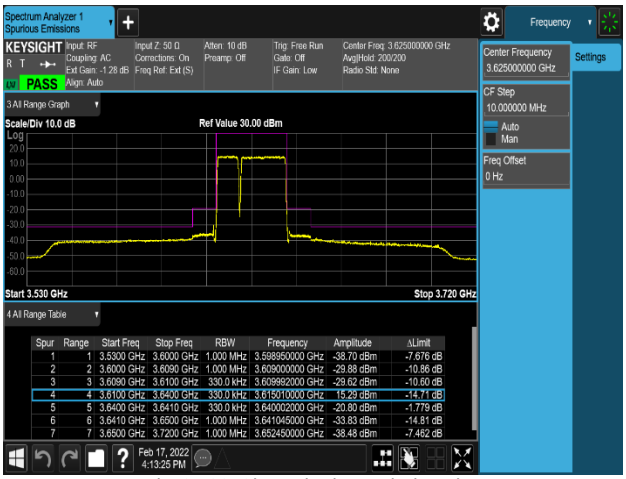
Plot 8-433. Channel Edge Emission Plot
(LTE_B48_4C_20M+20M+20M+20M_QPSK – Mid Channel, Port 0)



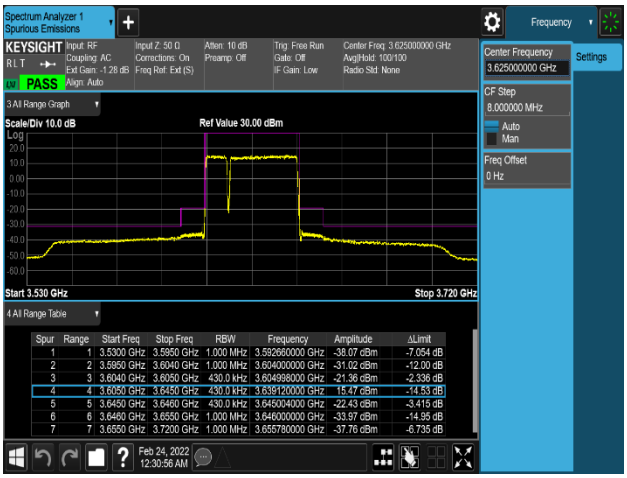
Plot 8-434. Channel Edge Emission Band Power integration method Plot
(LTE_B48_4C_20M+20M+20M+20M_QPSK – Mid Channel, Port 0)



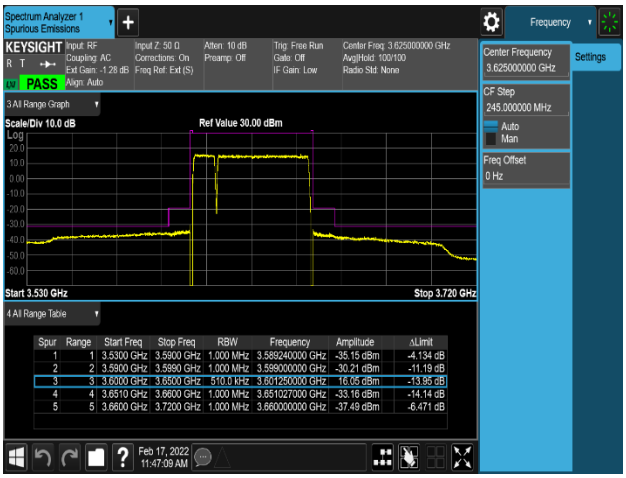
Plot 8-435. Channel Edge Emission Plot
(NR_n48_2C_10M+10M_QPSK – Mid Channel, Port 0)



Plot 8-436. Channel Edge Emission Plot
(NR_n48_2C_10M+20M_QPSK – Mid Channel, Port 0)

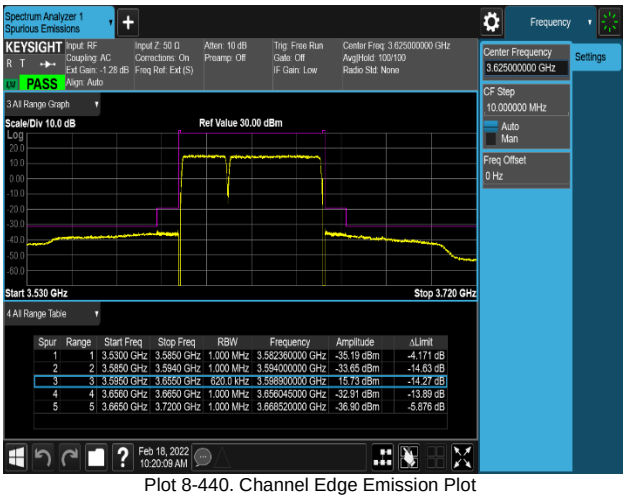


Plot 8-437. Channel Edge Emission Plot
(NR_n48_2C_10M+30M_QPSK – Mid Channel, Port 0)

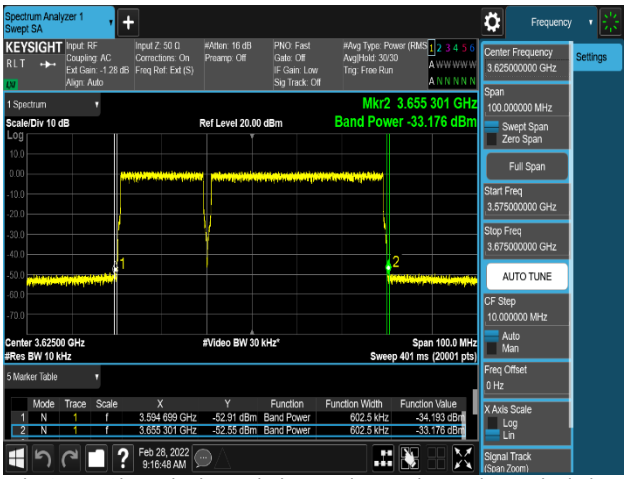


Plot 8-438. Channel Edge Emission Plot
(NR_n48_2C_10M+40M_QPSK – Mid Channel, Port 0)

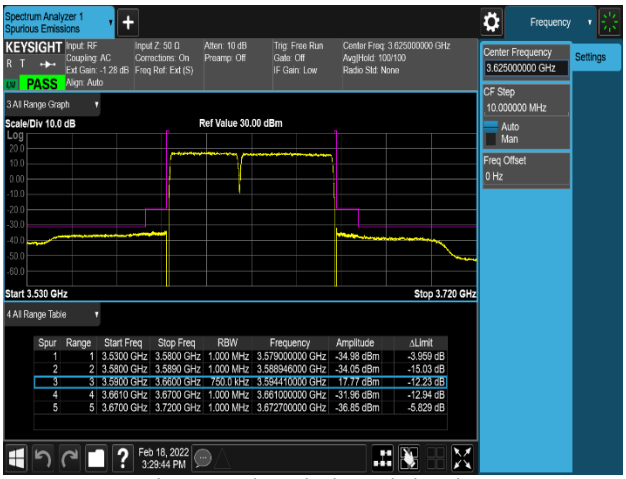
Plot 8-439. Channel Edge Emission Band Power integration method Plot
(NR_n48_2C_10M+40M_QPSK – Mid Channel, Port 0)



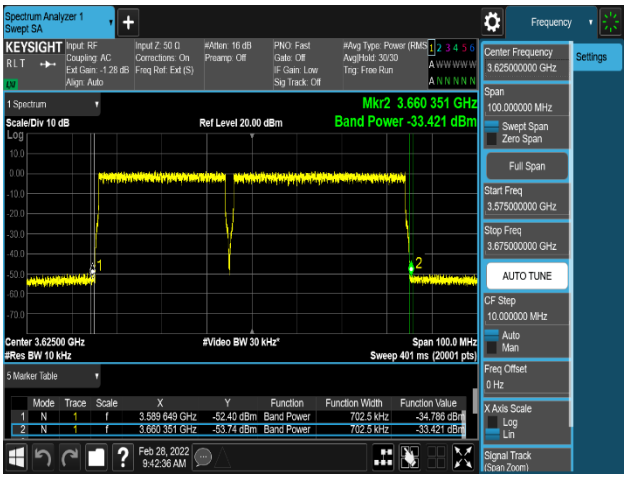
Plot 8-440. Channel Edge Emission Plot
(NR_n48_2C_20M+40M_QPSK – Mid Channel, Port 0)



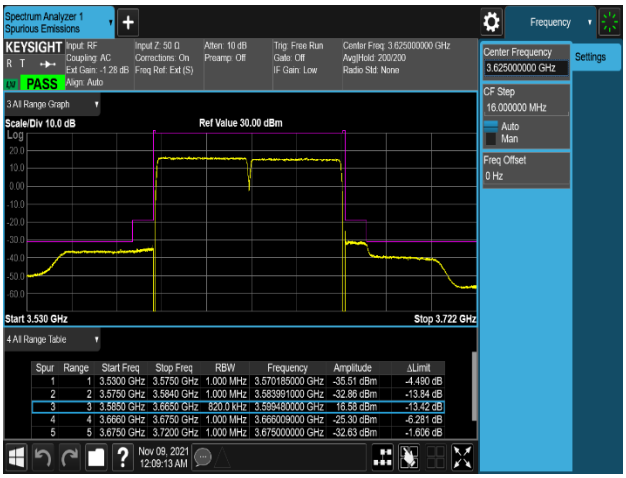
Plot 8-441. Channel Edge Emission Band Power integration method Plot
(NR_n48_2C_20M+40M_QPSK – Mid Channel, Port 0)



Plot 8-442. Channel Edge Emission Plot
(NR_n48_2C_30M+40M_QPSK – Mid Channel, Port 0)

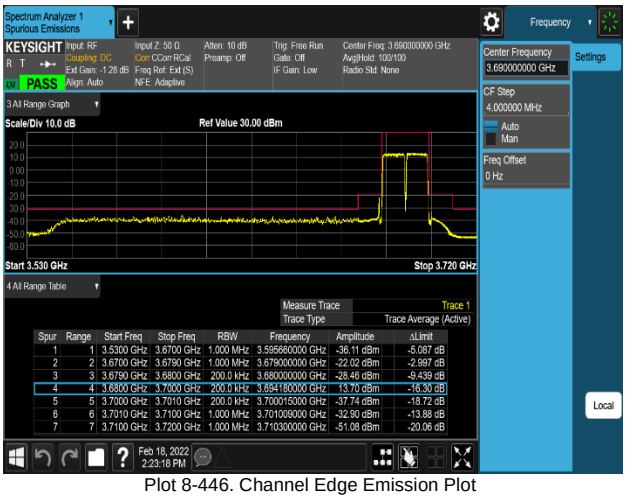


Plot 8-443. Channel Edge Emission Band Power integration method Plot
(NR_n48_2C_30M+40M_QPSK – Mid Channel, Port 0)

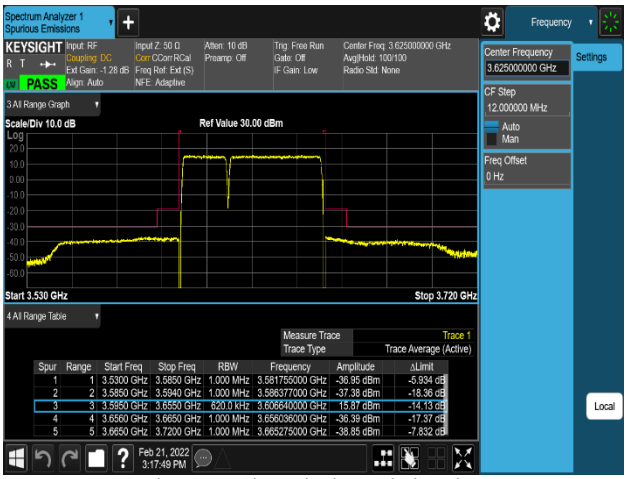


Plot 8-444. Channel Edge Emission Plot
(NR_n48_2C_40M+40M_QPSK – Mid Channel, Port 0)

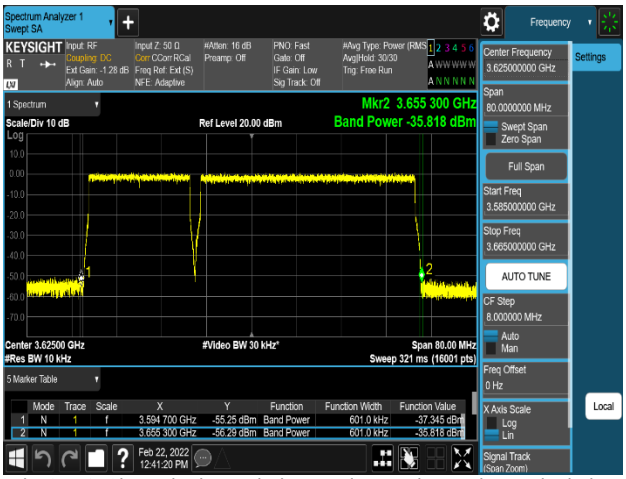
Plot 8-445. Channel Edge Emission Band Power integration method Plot
(NR_n48_2C_40M+40M_QPSK – Mid Channel, Port 0)



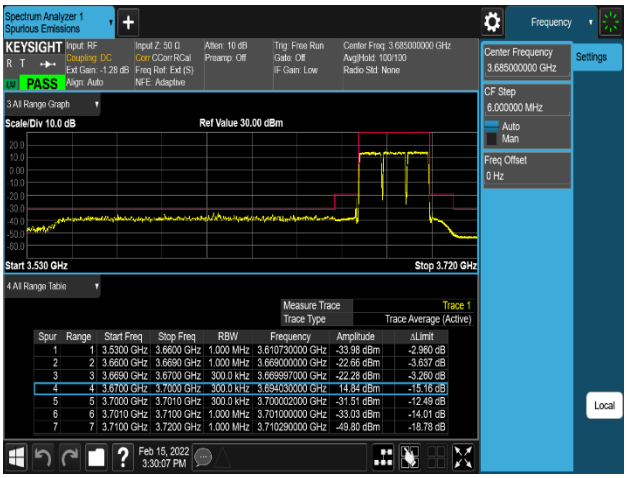
Plot 8-446. Channel Edge Emission Plot
(LTE_1C+NR_1C_10M+10M_QPSK - High Channel, Port 0)



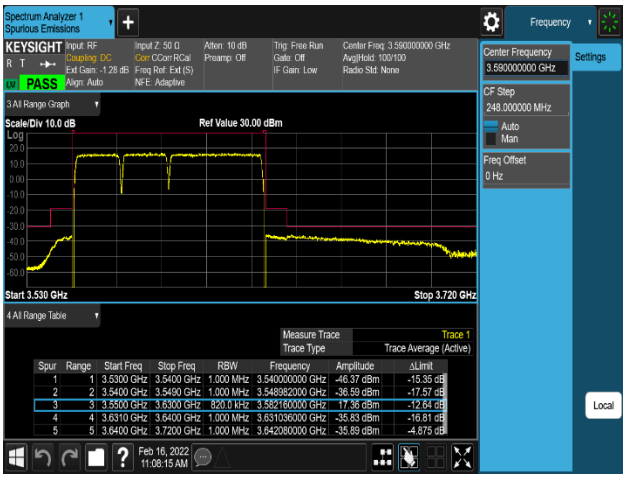
Plot 8-447. Channel Edge Emission Plot
(LTE_1C+NR_1C_20M+40M_QPSK - Mid Channel, Port 0)



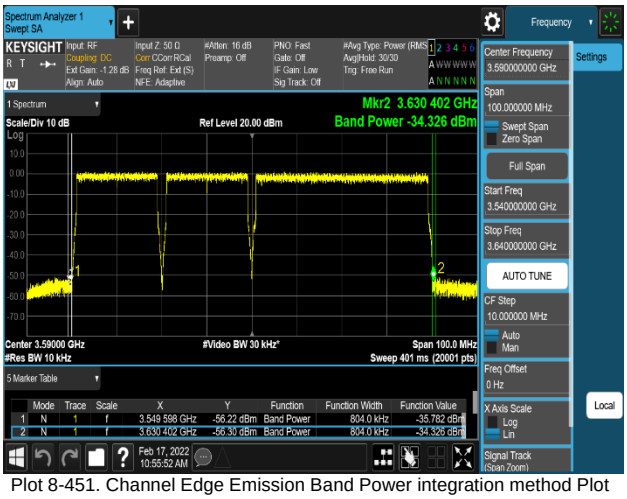
Plot 8-448. Channel Edge Emission Band Power integration method Plot
(LTE_1C+NR_1C_20M+40M_QPSK - Mid Channel, Port 0)



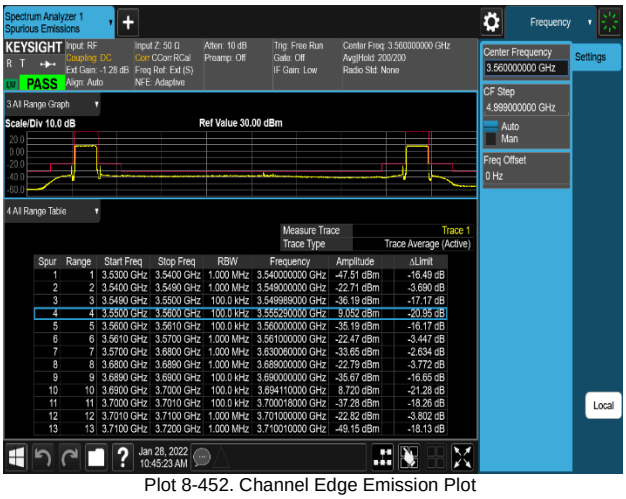
Plot 8-449. Channel Edge Emission Plot
(LTE_2C+NR_1C_10M+10M+10M_QPSK - High Channel, Port 0)



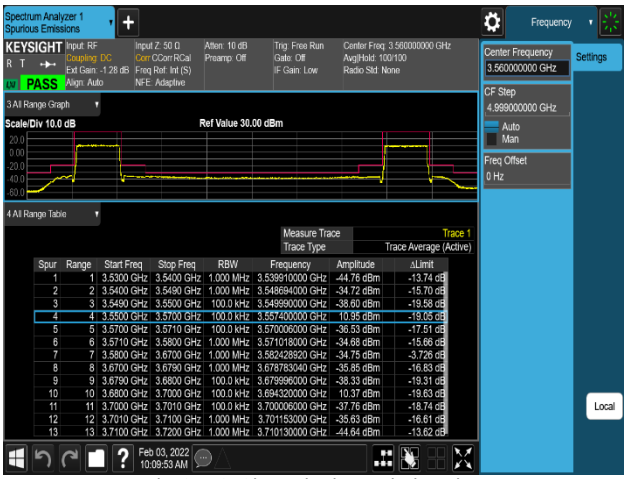
Plot 8-450. Channel Edge Emission Plot
(LTE_2C+NR_1C_20M+20M+40M_QPSK - Low Channel, Port 0)



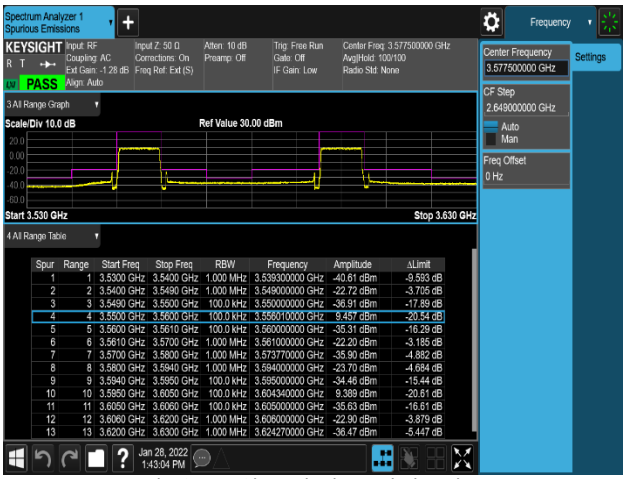
Plot 8-451. Channel Edge Emission Band Power integration method Plot
(LTE_2C+NR_1C_20M+20M+40M_QPSK - High Channel, Port 0)



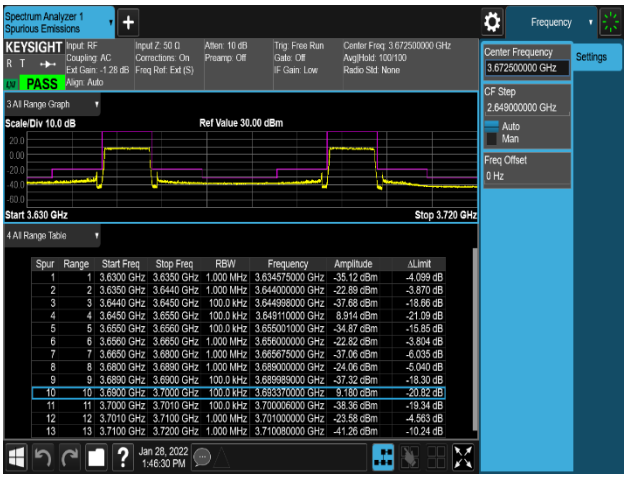
Plot 8-452. Channel Edge Emission Plot
(LTE_B48_2C_10M+10M_QPSK – Non-Contiguous, Port 0)



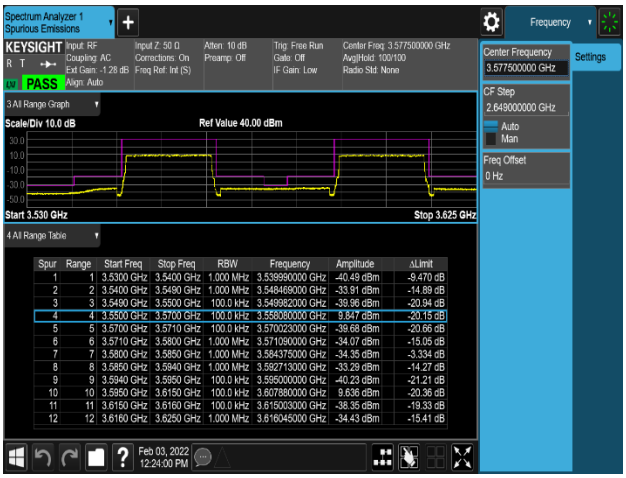
Plot 8-453. Channel Edge Emission Plot
(LTE_B48_2C_20M+20M_QPSK – Non-Contiguous, Port 0)



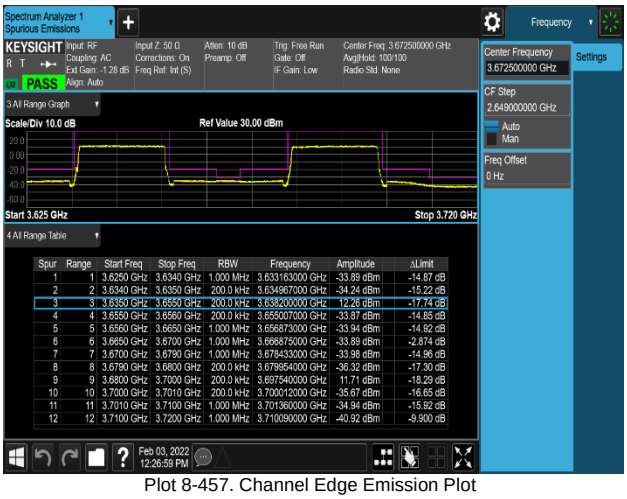
Plot 8-454. Channel Edge Emission Plot
(LTE_B48_4C_10M+10M+10M+10M_QPSK – Non-Contiguous, Port 0)



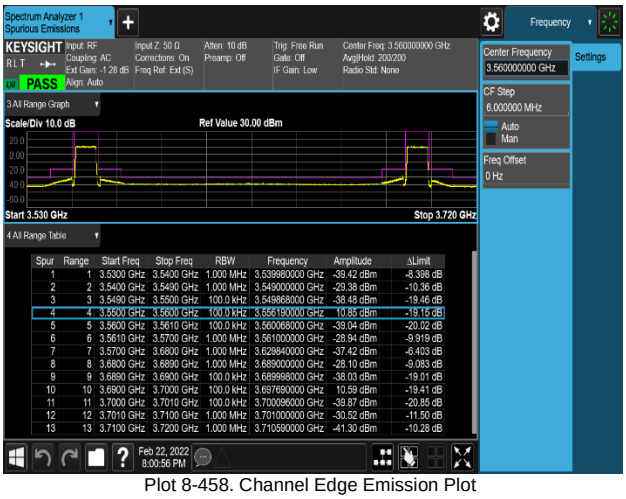
Plot 8-455. Channel Edge Emission Plot
(LTE_B48_4C_10M+10M+10M+10M_QPSK – Non-Contiguous, Port 0)



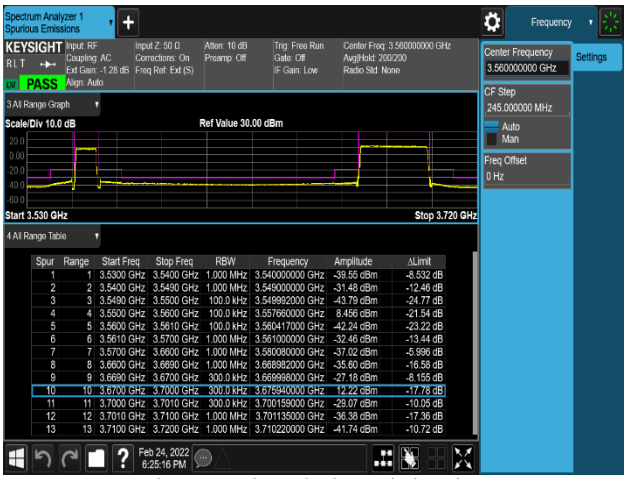
Plot 8-456. Channel Edge Emission Plot
(LTE_B48_4C_20M+20M+20M+20M_QPSK – Non-Contiguous, Port 0)



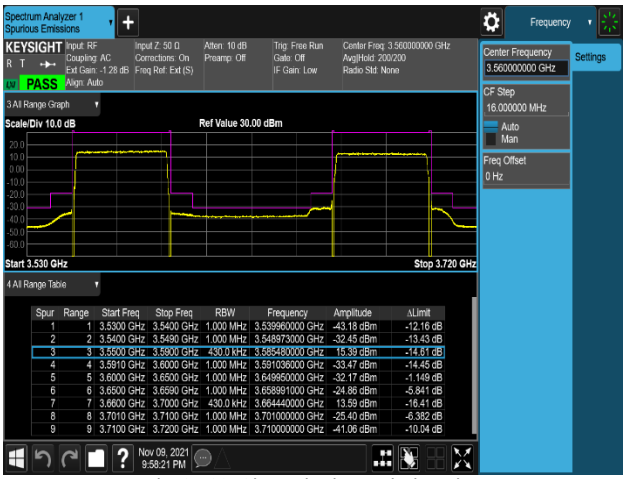
Plot 8-457. Channel Edge Emission Plot
(LTE_B48_4C_20M+20M+20M+20M_QPSK – Non-Contiguous, Port 0)



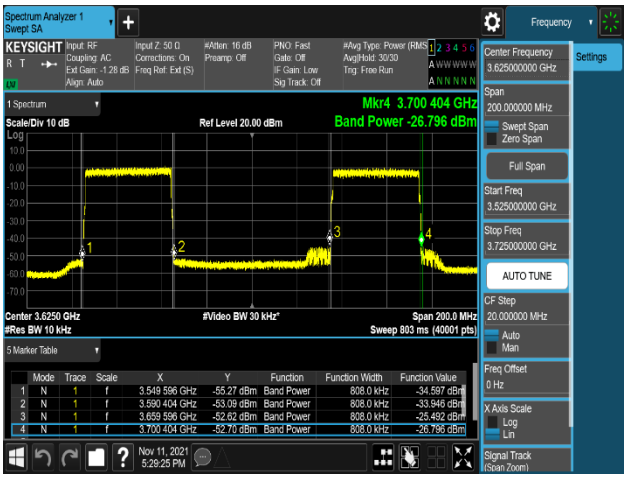
Plot 8-458. Channel Edge Emission Plot
(NR_n48_2C_10M+10M_QPSK – Non-Contiguous, Port 0)



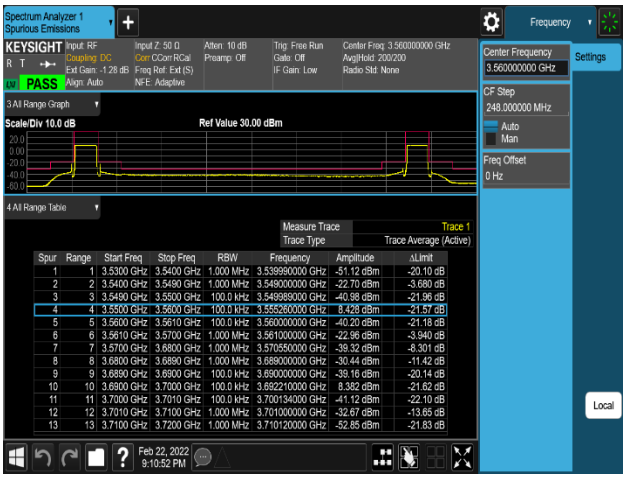
Plot 8-459. Channel Edge Emission Plot
(NR_n48_2C_10M+30M_QPSK – Non-Contiguous, Port 0)



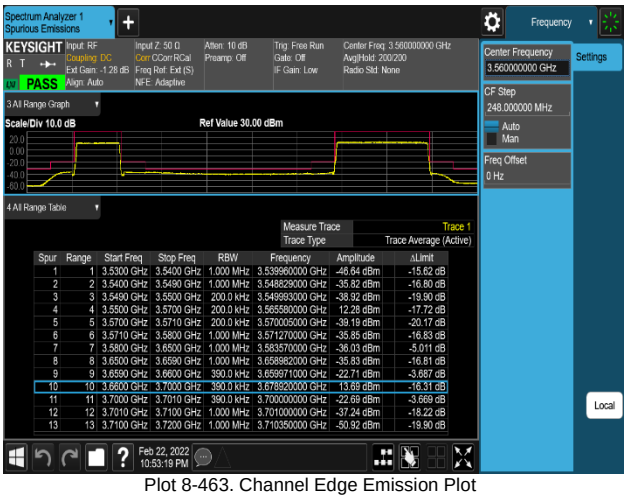
Plot 8-460. Channel Edge Emission Plot
(NR_n48_2C_40M+40M_QPSK – Non-Contiguous, Port 0)



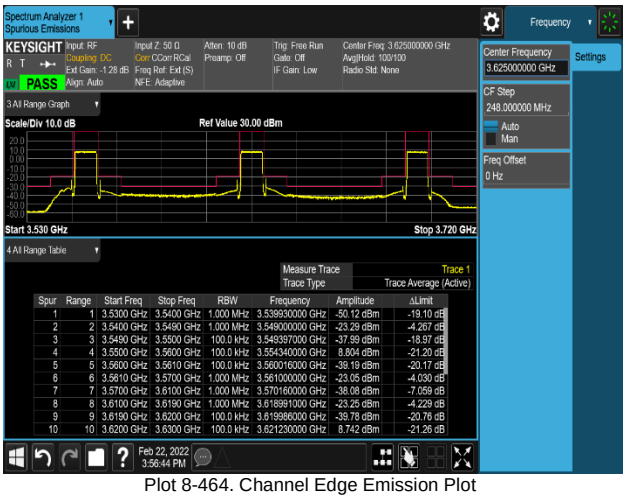
Plot 8-461. Channel Edge Emission Band Power integration method Plot
(NR_n48_2C_40M+40M_QPSK – Non-Contiguous, Port 0)



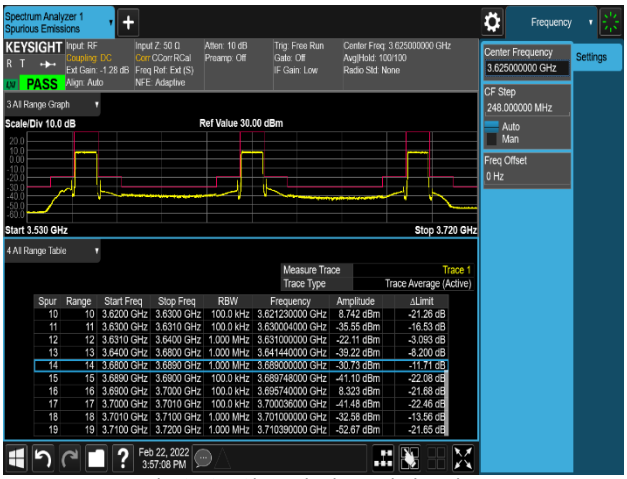
Plot 8-462. Channel Edge Emission Plot
(LTE_1C+NR_1C_10M+10M_QPSK – Non-Contiguous, Port 0)



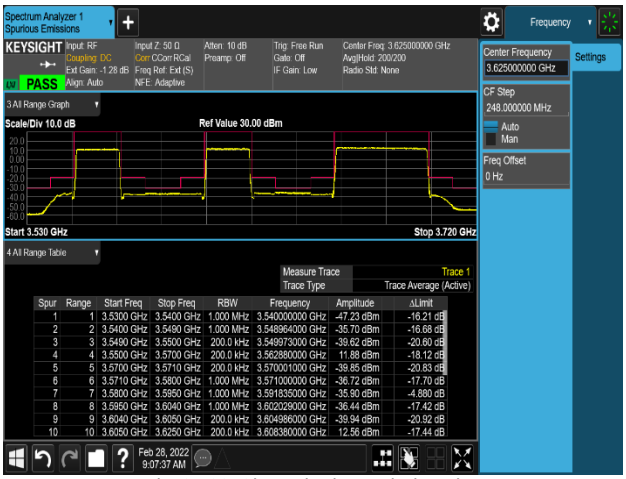
Plot 8-463. Channel Edge Emission Plot
(LTE_1C+NR_1C_20M+40M_QPSK – Non-Contiguous, Port 0)



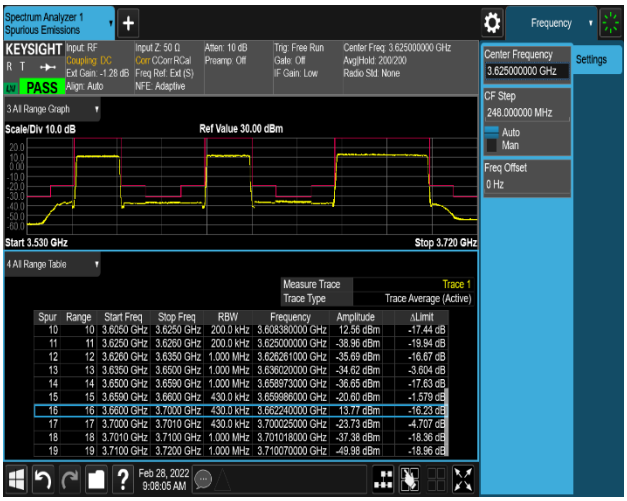
Plot 8-464. Channel Edge Emission Plot
(LTE_2C+NR_1C_10M+10M+10M_QPSK – Non-Contiguous, Port 0)



Plot 8-465. Channel Edge Emission Plot
(LTE_2C+NR_1C_10M+10M+10M_QPSK – Non-Contiguous, Port 0)



Plot 8-466. Channel Edge Emission Plot
(LTE_2C+NR_1C_20M+20M+40M_QPSK – Non-Contiguous, Port 0)



Plot 8-467. Channel Edge Emission Plot
(LTE_2C+NR_1C_20M+20M+40M_QPSK – Non-Contiguous, Port 0)

8.8 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 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 - Section 5.2.3.4.
KDB 971168 D01 v03r01 - Section 6
KDB 662911 D01 v02r01 - Section E)3)

Test Setting

1. Start frequency was set to 30 MHz and stop frequency was set to at least 10 * the fundamental frequency excluding the frequency range of the Channel Edge measurement.
2. RBW: 1 MHz
3. VBW ≥ 3 x RBW
4. Detector = RMS
5. Number of sweep points ≥ 2 x Span/RBW
6. Trace mode = trace average
7. Sweep time = auto couple
8. The trace was allowed to stabilize

Limit

- Any emission below 3530 MHz and above 3720 MHz ≤ −40 dBm/MHz

Test Setup

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

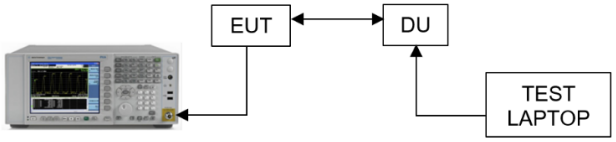


Figure 8-7. Test Instrument & Measurement Setup

Test Notes

1. All the measurement has been tested but test table result, and test plots are referred from the worst of value of each of modulation of each antenna ports.

2. When detected Emission, this value has been applied as reference offset in the spectrum analyzer.
   Duty cycle correction factor was added to spectrum analyzer.
   Duty cycle = transmit on-time / transmitter period = 3.72 ms / 5.00 ms = 0.74
   Duty cycle correction factor = 10*log (1/duty cycle) =10*log (1/0.74) = 1.28 dB

3. The limits were adjusted by a factor of [-10*log (4)] dB to account for the device operation as a 4 port MIMO transmitter, as per FCC KDB 622911. MIMO Factor calculation as below:
   MIMO Factor = 10*log (4) = 6.02 dB

Frequency range	Basic Limit (dBm/MHz)	MIMO Factor (dB)	Adjusted limit (dBm)
below 3530 MHz and above 3720 MHz	-40	6.02	- 46.02
Note: Adjusted limit (dBm/MHz) = Basic limit (dBm/1MHz) - MIMO Factor			

Channel	Port	Measurement Range	Level (dBm)				Limit (dBm)	Worst Margin (dB)
			QPSK	16QAM	64QAM	256QAM		
Low	0	30 MHz to 3.53 GHz	-55.63	-55.49	-55.87	-56.19	-46.02	-9.5
		3.72 GHz to 6.2 GHz	-53.62	-52.77	-52.52	-53.80	-46.02	-6.5
		6.2 GHz to 18 GHz	-53.95	-54.37	-53.90	-53.98	-46.02	-7.9
		18 GHz to 40 GHz	-49.71	-50.72	-50.94	-51.09	-46.02	-3.7
	1	30 MHz to 3.53 GHz	-55.18	-55.97	-54.74	-55.06	-46.02	-8.7
		3.72 GHz to 6.2 GHz	-51.88	-53.44	-52.36	-52.97	-46.02	-5.9
		6.2 GHz to 18 GHz	-51.93	-52.72	-52.22	-51.38	-46.02	-5.4
		18 GHz to 40 GHz	-50.48	-50.02	-50.63	-50.47	-46.02	-4.0
	2	30 MHz to 3.53 GHz	-53.88	-56.05	-54.53	-55.57	-46.02	-7.9
		3.72 GHz to 6.2 GHz	-51.81	-53.96	-52.48	-53.06	-46.02	-5.8
		6.2 GHz to 18 GHz	-53.35	-52.73	-52.51	-52.73	-46.02	-6.5
		18 GHz to 40 GHz	-50.86	-50.13	-50.33	-50.53	-46.02	-4.1
	3	30 MHz to 3.53 GHz	-55.23	-55.28	-55.85	-56.19	-46.02	-9.2
		3.72 GHz to 6.2 GHz	-53.04	-52.93	-53.72	-52.26	-46.02	-6.2
		6.2 GHz to 18 GHz	-52.37	-52.58	-53.18	-53.00	-46.02	-6.4
		18 GHz to 40 GHz	-50.56	-50.55	-51.36	-49.79	-46.02	-3.8
Middle	0	30 MHz to 3.53 GHz	-55.89	-55.57	-55.89	-56.07	-46.02	-9.6
		3.72 GHz to 6.2 GHz	-53.25	-53.44	-52.91	-52.36	-46.02	-6.3
		6.2 GHz to 18 GHz	-54.28	-53.16	-53.79	-53.86	-46.02	-7.1
		18 GHz to 40 GHz	-50.93	-51.43	-50.48	-50.99	-46.02	-4.5
	1	30 MHz to 3.53 GHz	-55.41	-55.05	-55.18	**-55.89**	-46.02	-9.0
		3.72 GHz to 6.2 GHz	-52.64	-51.54	-52.23	**-50.71**	-46.02	-4.7
		6.2 GHz to 18 GHz	-52.75	-52.48	-51.73	**-52.04**	-46.02	-5.7
		18 GHz to 40 GHz	-49.98	-50.62	-49.97	**-48.80**	-46.02	**-2.8**
	2	30 MHz to 3.53 GHz	-54.90	-55.38	-55.33	-55.38	-46.02	-8.9
		3.72 GHz to 6.2 GHz	-52.71	-53.28	-53.18	-52.87	-46.02	-6.7
		6.2 GHz to 18 GHz	-53.32	-52.94	-52.35	-52.64	-46.02	-6.3
		18 GHz to 40 GHz	-50.51	-50.41	-50.85	-49.90	-46.02	-3.9
	3	30 MHz to 3.53 GHz	-55.53	-55.07	-55.61	-55.55	-46.02	-9.0
		3.72 GHz to 6.2 GHz	-52.05	-53.10	-51.64	-52.30	-46.02	-5.6
		6.2 GHz to 18 GHz	-53.02	-53.43	-52.36	-53.13	-46.02	-6.3
		18 GHz to 40 GHz	-50.57	-50.66	-50.63	-50.85	-46.02	-4.6
High	0	30 MHz to 3.53 GHz	-56.34	-56.15	-55.98	-55.70	-46.02	-9.7
		3.72 GHz to 6.2 GHz	-53.15	-52.83	-53.35	-52.14	-46.02	-6.1
		6.2 GHz to 18 GHz	-53.51	-54.23	-53.71	-54.53	-46.02	-7.5
		18 GHz to 40 GHz	-50.92	-50.78	-50.95	-50.09	-46.02	-4.1
	1	30 MHz to 3.53 GHz	-54.95	-55.18	-54.60	-55.26	-46.02	-8.6
		3.72 GHz to 6.2 GHz	-52.11	-51.84	-52.85	-52.63	-46.02	-5.8
		6.2 GHz to 18 GHz	-52.74	-52.48	-52.97	-52.09	-46.02	-6.1
		18 GHz to 40 GHz	-49.95	-50.31	-50.94	-49.53	-46.02	-3.5
	2	30 MHz to 3.53 GHz	-55.67	-54.92	-54.92	-55.89	-46.02	-8.9
		3.72 GHz to 6.2 GHz	-53.44	-52.67	-52.35	-53.07	-46.02	-6.3
		6.2 GHz to 18 GHz	-52.45	-53.08	-53.13	-52.54	-46.02	-6.4
		18 GHz to 40 GHz	-51.00	-50.54	-51.24	-51.08	-46.02	-4.5
	3	30 MHz to 3.53 GHz	-55.35	-55.36	-55.69	-54.71	-46.02	-8.7
		3.72 GHz to 6.2 GHz	-53.29	-53.05	-53.27	-52.74	-46.02	-6.7
		6.2 GHz to 18 GHz	-52.81	-53.56	-52.80	-53.22	-46.02	-6.8
		18 GHz to 40 GHz	-50.70	-50.71	-50.74	-50.72	-46.02	-4.7

Table 8-99. Conducted Spurious Emission Summary Data (LTE_B48_1C_20M)