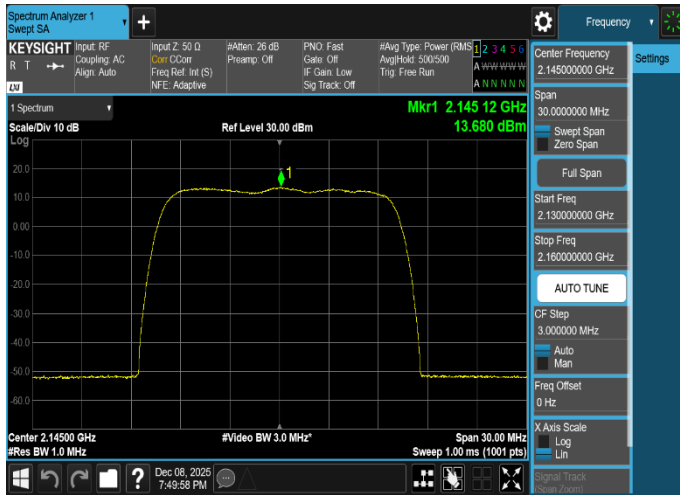




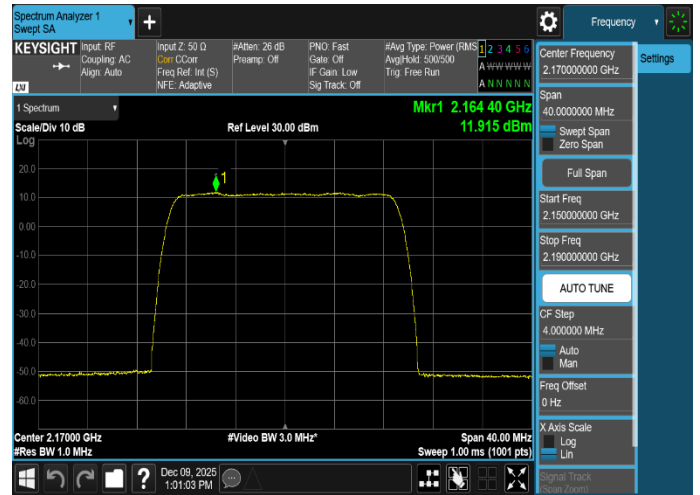
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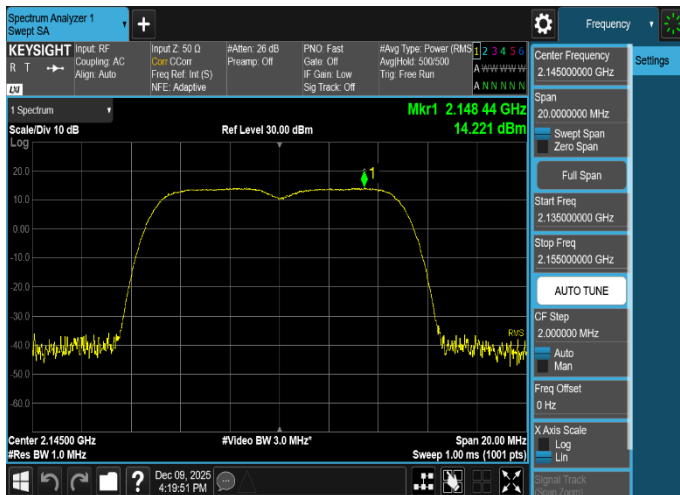
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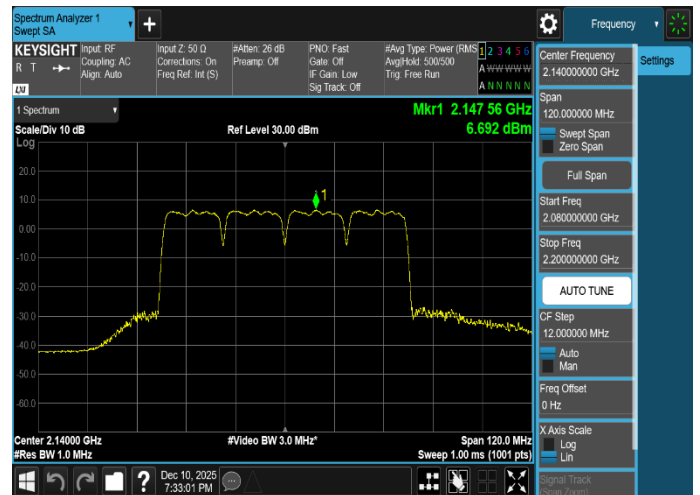
Plot 8-92. Equivalent Isotropically Radiated Power Plot
(LTE_B66_1C_15M_16QAM - Mid Channel, Port 1)



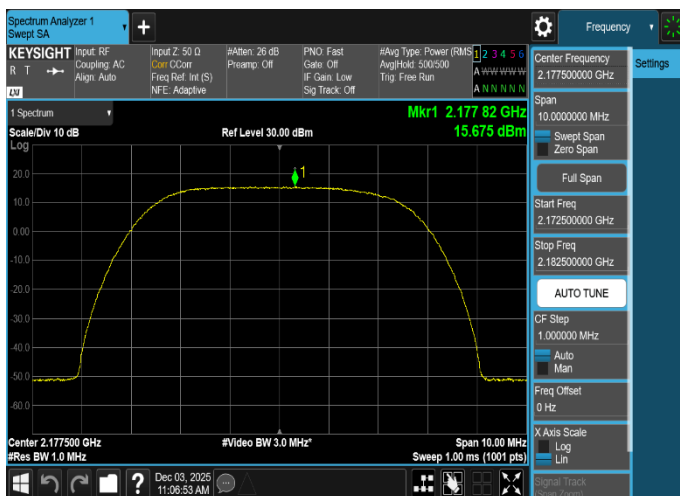
Plot 8-93. Equivalent Isotropically Radiated Power Plot
(LTE_B66_1C_20M_16QAM - High Channel, Port 1)



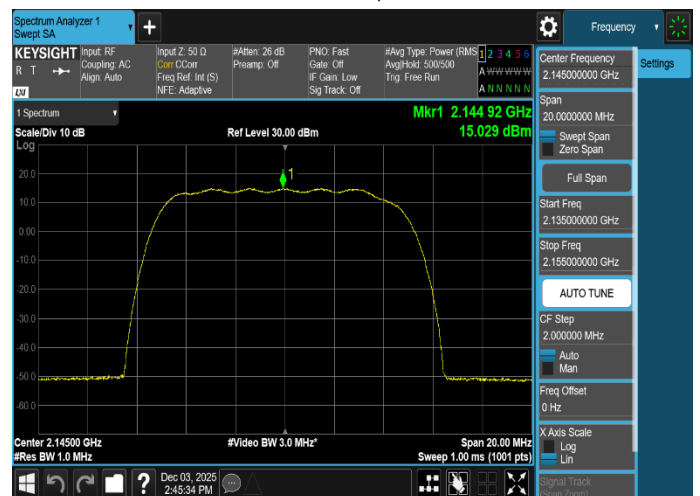
Plot 8-94. Equivalent Isotropically Radiated Power Plot
(LTE_B66_2C_5M+5M_16QAM - Mid Channel, Port 0)



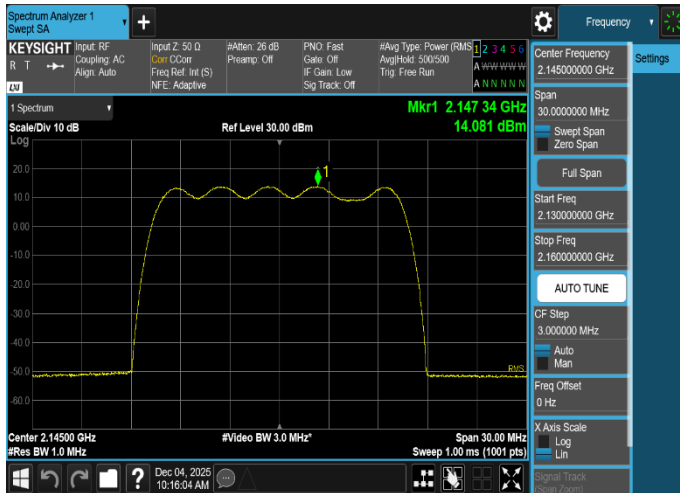
Plot 8-95. Equivalent Isotropically Radiated Power Plot
(LTE_B66_4C_15M+15M+15M_16QAM - Low Channel, Port 1)



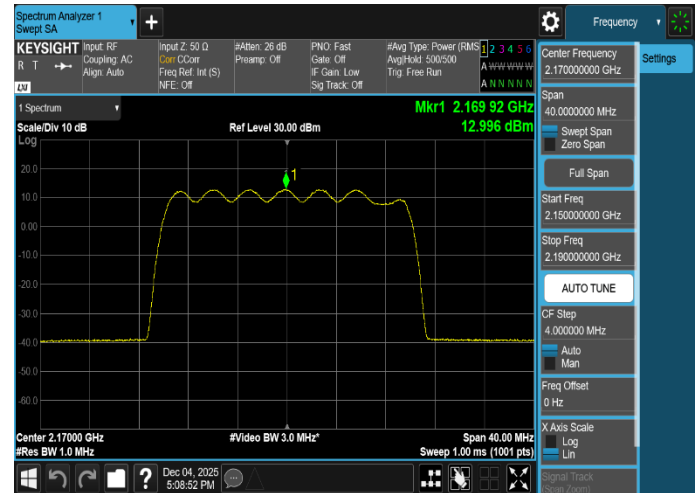
Plot 8-96. Equivalent Isotropically Radiated Power Plot
(NR_n66_1C_5M_16QAM - High Channel, Port 1)



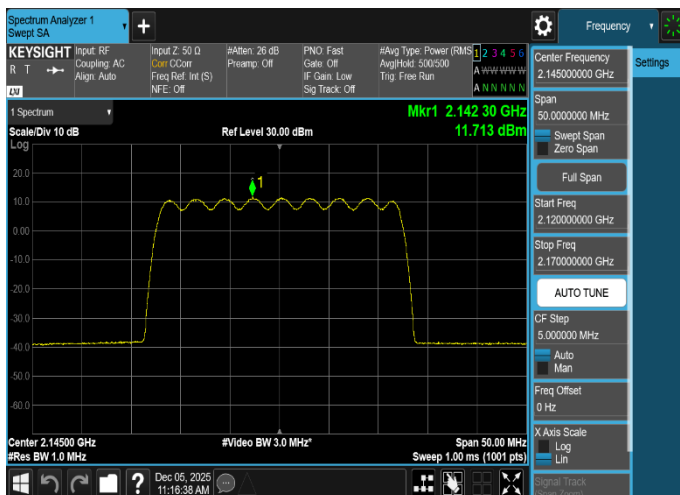
Plot 8-97. Equivalent Isotropically Radiated Power Plot
(NR_n66_1C_10M_16QAM - Mid Channel, Port 0)



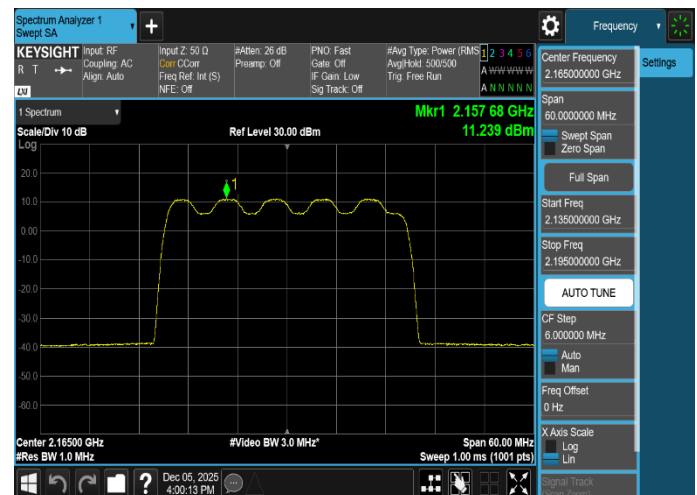
Plot 8-98. Equivalent Isotropically Radiated Power Plot
(NR_n66_1C_15M_16QAM - Mid Channel, Port 0)



Plot 8-99. Equivalent Isotropically Radiated Power Plot
(NR_n66_1C_20M_16QAM - High Channel, Port 1)



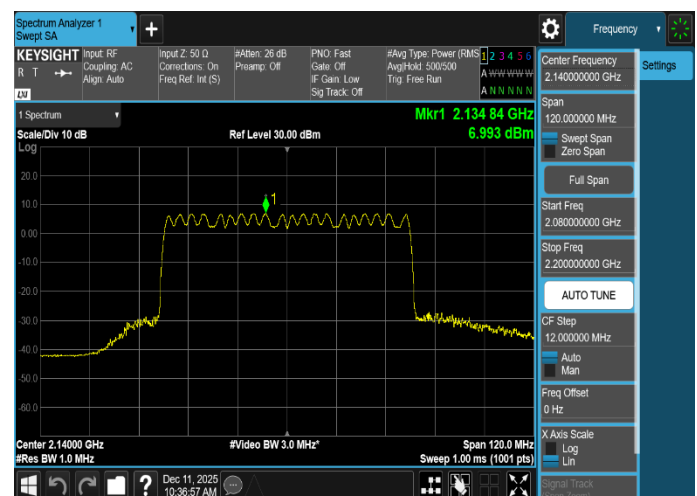
Plot 8-100. Equivalent Isotropically Radiated Power Plot
(NR_n66_1C_25M_16QAM - Mid Channel, Port 0)



Plot 8-101. Equivalent Isotropically Radiated Power Plot
(NR_n66_1C_30M_16QAM - High Channel, Port 1)



Plot 8-102. Equivalent Isotropically Radiated Power Plot
(NR n66 2C 5M+5M 16QAM - Mid Channel, Port 1)



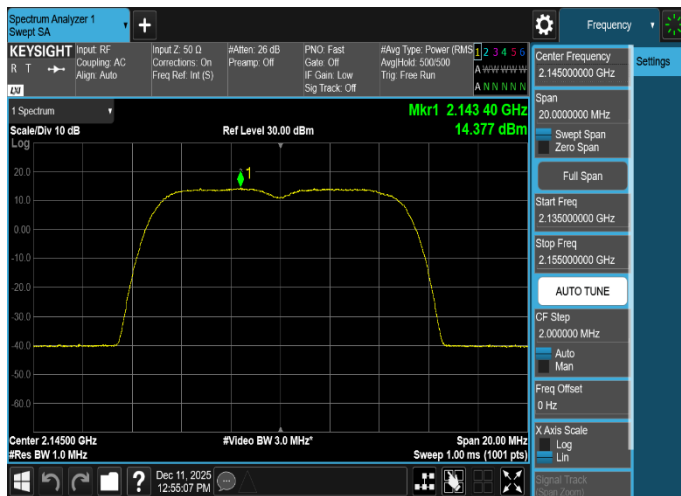
Plot 8-103. Equivalent Isotropically Radiated Power Plot
(NR_n66_4C_15M+15M+15M+15M_16QAM - Low Channel,
Port 1)



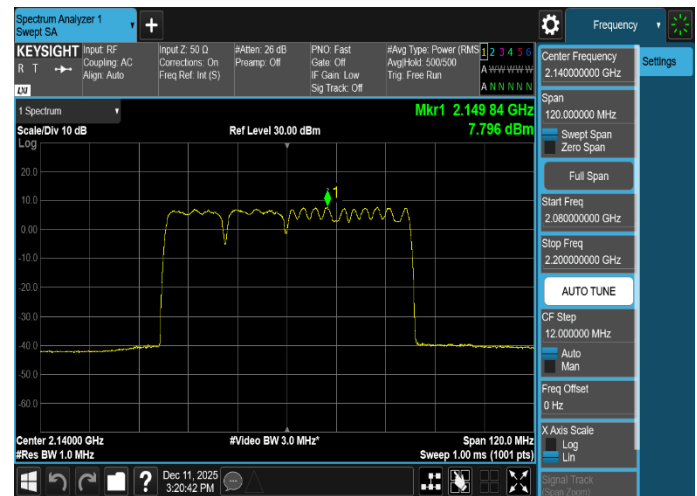
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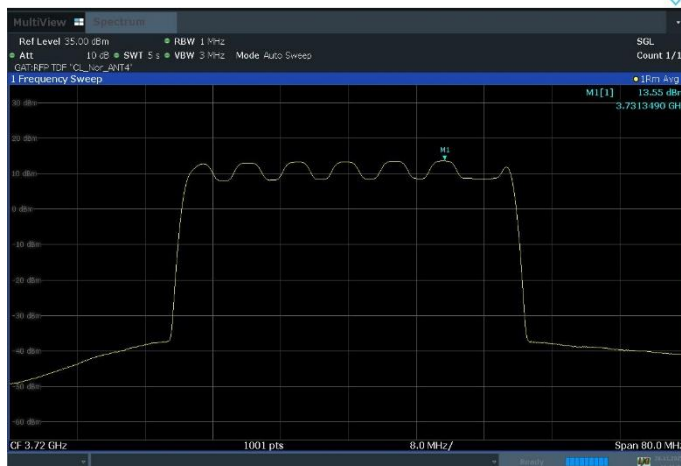
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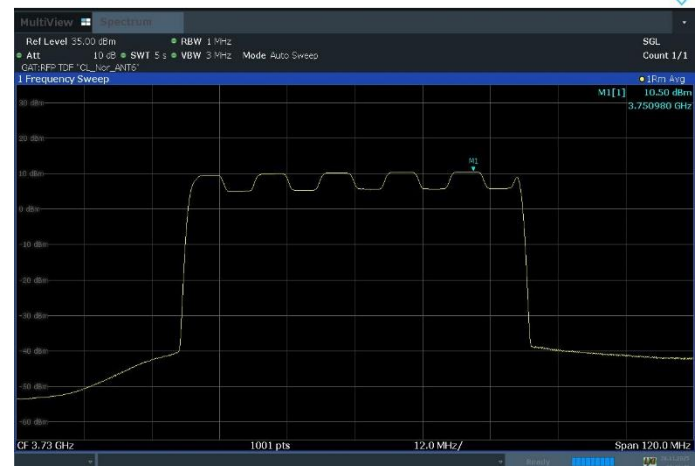
Plot 8-104. Equivalent Isotropically Radiated Power Plot
(MSR(LTE+NR)_B/n66_2C_5M+5M_16QAM – Mid Channel,
Port 0)



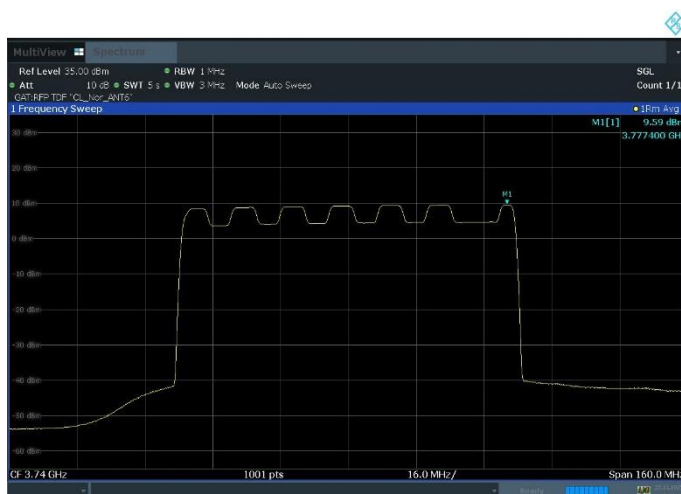
Plot 8-105. Equivalent Isotropically Radiated Power Plot
(MSR(LTE+NR)_B/n66_4C_15M+15M+15M+15M_16QAM –
Low Channel, Port 1)



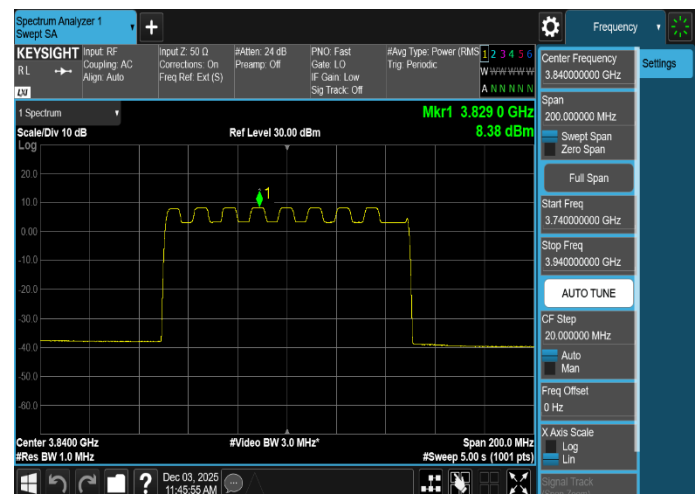
Plot 8-106. Equivalent Isotropically Radiated Power Plot
(NR_n77_1C_40M_16QAM - Low Channel, Port 4)



Plot 8-107. Equivalent Isotropically Radiated Power Plot
(NR_n77_1C_60M_16QAM - Low Channel, Port 6)



Plot 8-108. Equivalent Isotropically Radiated Power Plot
(NR_n77_1C_80M_16QAM – Low Channel, Port 6)



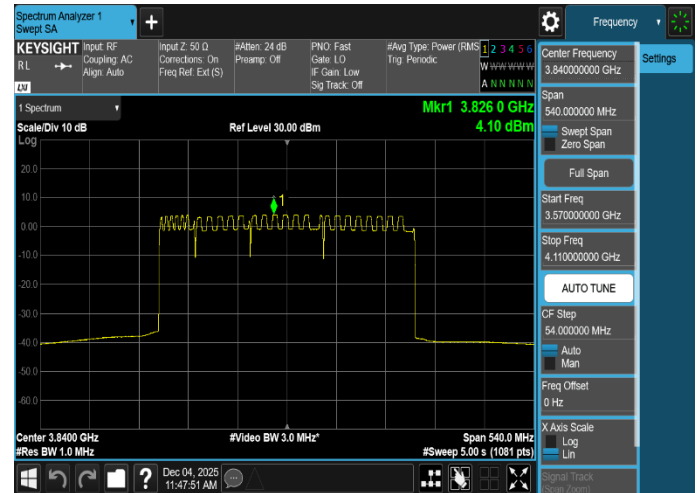
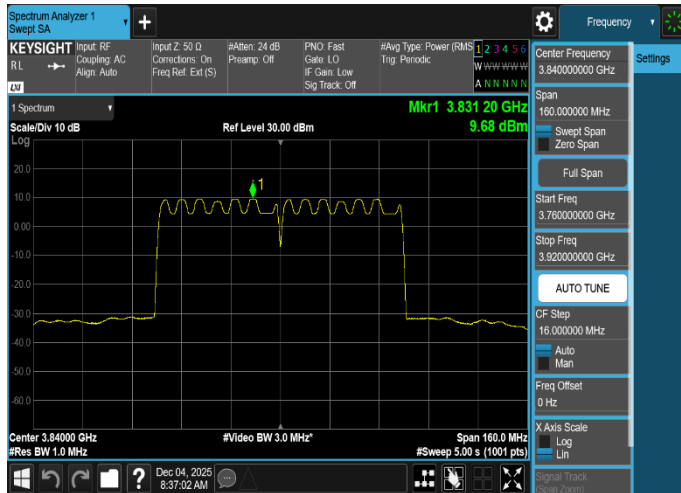
Plot 8-109. Equivalent Isotropically Radiated Power Plot
(NR_n77_1C_100M_16QAM - Mid Channel, Port 6)



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8.4 Peak To Average Ratio

Test Overview

The peak to average ratio measurement is performed at the conducted port of the EUT. The spectrum analyzers Complementary Cumulative Distribution Function (CCDF) measurement profile is used to determine the largest deviation between the average and the peak power of the EUT in a given bandwidth. The CCDF curve shows how much time the peak waveform spends at or above a given average power level. The percent of time the signal spends at or above the level defines the probability for that particular power level.

Test Procedure Used

KDB 971168 D01 v03r01 – Section 5.7

ANSI C63.26-2015 – Section 5.2.3.4

Test Setting

The measurement was made using a direct connection between the RF output of the EUT and the spectrum analyzer. The spectrum analyzer settings were as follows:

1. The signal analyzer's CCDF function is enabled.
2. Frequency = carrier center frequency
3. Measurement BW $\geq$ OBW or specified reference bandwidth
4. The signal analyzer was set to collect one million samples to generate the CCDF curve
5. The measurement interval was set depending on the type of signal analyzed. For continuous signals (>98% duty cycle), the measurement interval was set to 1ms.

Test Setup

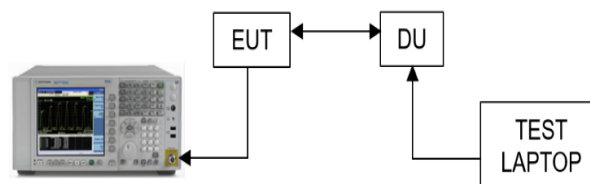


Figure 8-3. Test Instrument & Measurement Setup

Limit

§ 24.232,
 § 27.50(d)
 § 27.50(j)

The peak-to-average power ratio (PAPR) limit shall not exceed 13 dB for more than 0.1% of the time.

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Channel	Port	Peak To Average Power Ratio (PAPR) (dB)			
		QPSK	16QAM	64QAM	256QAM
Low	2	8.03	8.00	7.99	8.11
	3	8.01	7.97	8.04	8.08
Middle	2	8.06	8.02	8.00	8.11
	3	8.02	7.97	8.05	8.07
High	2	8.06	8.05	7.81	8.08
	3	8.06	8.01	7.88	8.10

Table 8-62. Peak To Average Power Ratio Summary Data (LTE_B25_1C_5M)

Channel	Port	Peak To Average Power Ratio (PAPR) (dB)			
		QPSK	16QAM	64QAM	256QAM
Low	2	7.51	7.51	7.51	7.47
	3	7.51	7.50	7.51	7.47
Middle	2	7.49	7.48	7.48	7.46
	3	7.49	7.48	7.48	7.45
High	2	7.49	7.48	7.47	7.49
	3	7.49	7.48	7.46	7.48

Table 8-63. Peak To Average Power Ratio Summary Data (LTE_B25_1C_10M)

Channel	Port	Peak To Average Power Ratio (PAPR) (dB)			
		QPSK	16QAM	64QAM	256QAM
Low	2	7.50	7.54	7.48	7.51
	3	7.48	7.50	7.50	7.51
Middle	2	7.47	7.46	7.50	7.49
	3	7.48	7.48	7.47	7.48
High	2	7.48	7.50	7.48	7.49
	3	7.47	7.47	7.47	7.49

Table 8-64. Peak To Average Power Ratio Summary Data (LTE_B25_1C_15M)

Channel	Port	Peak To Average Power Ratio (PAPR) (dB)			
		QPSK	16QAM	64QAM	256QAM
Low	2	7.53	7.57	7.53	7.51
	3	7.52	7.55	7.52	7.52
Middle	2	7.48	7.50	7.46	7.47
	3	7.47	7.49	7.46	7.46
High	2	7.49	7.49	7.47	7.47
	3	7.47	7.50	7.46	7.46

Table 8-65. Peak To Average Power Ratio Summary Data (LTE_B25_1C_20M)

Channel	Port	Peak To Average Power Ratio (PAPR) (dB)	
		LTE_B25_2C_5M+5M	LTE_B25_4C_15M+15M+15M+15M
		QPSK	QPSK
Low	2	7.21	8.38
	3	7.22	8.55
Middle	2	7.09	9.08
	3	7.08	9.22
High	2	7.16	8.85
	3	7.16	8.80

Table 8-66. Peak To Average Power Ratio Summary Data (LTE_B25_ Multi carrier)

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Channel	Port	Peak To Average Power Ratio (PAPR) (dB)			
		QPSK	16QAM	64QAM	256QAM
Low	2	7.95	8.02	8.04	8.04
	3	8.10	8.09	8.09	8.01
Middle	2	7.89	8.08	7.99	7.96
	3	8.04	8.06	8.07	8.03
High	2	7.94	8.06	8.03	8.03
	3	8.02	8.02	8.09	8.10

Table 8-67. Peak To Average Power Ratio Summary Data (NR_n25_1C_5M)

Channel	Port	Peak To Average Power Ratio (PAPR) (dB)			
		QPSK	16QAM	64QAM	256QAM
Low	2	7.54	7.56	7.55	7.50
	3	7.56	7.56	7.53	7.57
Middle	2	7.55	7.56	7.56	7.54
	3	7.54	7.55	7.53	7.54
High	2	7.55	7.56	7.55	7.59
	3	7.55	7.56	7.54	7.54

Table 8-68. Peak To Average Power Ratio Summary Data (NR_n25_1C_10M)

Channel	Port	Peak To Average Power Ratio (PAPR) (dB)			
		QPSK	16QAM	64QAM	256QAM
Low	2	7.51	7.53	7.55	7.51
	3	7.52	7.51	7.56	7.55
Middle	2	7.48	7.48	7.52	7.49
	3	7.47	7.46	7.52	7.49
High	2	7.48	7.51	7.50	7.48
	3	7.49	7.49	7.52	7.48

Table 8-69. Peak To Average Power Ratio Summary Data (NR_n25_1C_15M)

Channel	Port	Peak To Average Power Ratio (PAPR) (dB)			
		QPSK	16QAM	64QAM	256QAM
Low	2	7.54	7.55	7.55	7.53
	3	7.54	7.55	7.56	7.53
Middle	2	7.45	7.47	7.49	7.47
	3	7.50	7.48	7.48	7.45
High	2	7.48	7.47	7.49	7.46
	3	7.48	7.47	7.47	7.45

Table 8-70. Peak To Average Power Ratio Summary Data (NR_n25_1C_20M)

Channel	Port	Peak To Average Power Ratio (PAPR) (dB)			
		QPSK	16QAM	64QAM	256QAM
Low	2	7.55	7.60	7.57	7.55
	3	7.56	7.56	7.57	7.56
Middle	2	7.45	7.48	7.46	7.45
	3	7.47	7.47	7.46	7.46
High	2	7.48	7.49	7.47	7.46
	3	7.48	7.48	7.46	7.46

Table 8-71. Peak To Average Power Ratio Summary Data (NR_n25_1C_25M)

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Channel	Port	Peak To Average Power Ratio (PAPR) (dB)	
		NR_n25_2C_5M+5M	NR_n25_4C_15M+15M+15M+15M
		QPSK	QPSK
Low	2	7.17	9.13
	3	7.16	9.14
Middle	2	7.12	9.74
	3	7.13	9.84
High	2	7.11	9.80
	3	7.11	9.86

Table 8-72. Peak To Average Power Ratio Summary Data (NR_n25_Multi carrier)

Channel	Port	Peak To Average Power Ratio (PAPR) (dB)	
		MSR_B/n25_2C_LTE_5M+NR_5M	MSR_B/n25_4C_LTE_15M+15M+NR_15M+15M
		QPSK	QPSK
Low	2	6.63	8.60
	3	6.61	8.59
Middle	2	6.50	8.42
	3	6.48	8.41
High	2	6.49	8.33
	3	6.49	8.31

Table 8-73. Peak To Average Power Ratio Summary Data (B/n25_MSR_Multi carrier)

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Channel	Port	Peak To Average Power Ratio (PAPR) (dB)			
		QPSK	16QAM	64QAM	256QAM
Low	0	8.04	8.01	7.99	8.06
	1	8.01	7.96	8.02	8.10
Middle	0	8.05	8.00	8.01	8.07
	1	8.01	7.99	8.01	8.04
High	0	8.01	8.01	8.04	8.04
	1	8.06	8.02	8.05	8.09

Table 8-74. Peak To Average Power Ratio Summary Data (LTE_B66_1C_5M)

Channel	Port	Peak To Average Power Ratio (PAPR) (dB)			
		QPSK	16QAM	64QAM	256QAM
Low	0	7.49	7.48	7.49	7.44
	1	7.47	7.47	7.48	7.45
Middle	0	7.48	7.43	7.48	7.47
	1	7.50	7.49	7.47	7.47
High	0	7.49	7.48	7.48	7.49
	1	7.48	7.47	7.47	7.48

Table 8-75. Peak To Average Power Ratio Summary Data (LTE_B66_1C_10M)

Channel	Port	Peak To Average Power Ratio (PAPR) (dB)			
		QPSK	16QAM	64QAM	256QAM
Low	0	7.46	7.49	7.46	7.48
	1	7.46	7.48	7.46	7.49
Middle	0	7.47	7.49	7.50	7.46
	1	7.47	7.43	7.47	7.44
High	0	7.47	7.50	7.48	7.48
	1	7.47	7.48	7.47	7.48

Table 8-76. Peak To Average Power Ratio Summary Data (LTE_B66_1C_15M)

Channel	Port	Peak To Average Power Ratio (PAPR) (dB)			
		QPSK	16QAM	64QAM	256QAM
Low	0	7.46	7.50	7.47	7.45
	1	7.49	7.48	7.47	7.47
Middle	0	7.48	7.50	7.47	7.47
	1	7.47	7.49	7.47	7.46
High	0	7.48	7.50	7.47	7.48
	1	7.48	7.50	7.46	7.47

Table 8-77. Peak To Average Power Ratio Summary Data (LTE_B66_1C_20M)

Channel	Port	Peak To Average Power Ratio (PAPR) (dB)	
		LTE_B66_2C_5M+5M	LTE_B66_4C_15M+15M+15M+15M
		QPSK	QPSK
Low	0	7.09	8.43
	1	7.13	8.32
Middle	0	7.16	8.76
	1	7.09	9.03
High	0	7.10	8.90
	1	7.08	8.78

Table 8-78. Peak To Average Power Ratio Summary Data (LTE_B66_ Multi carrier)



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Channel	Port	Peak To Average Power Ratio (PAPR) (dB)			
		QPSK	16QAM	64QAM	256QAM
Low	0	8.04	8.89	8.04	8.08
	1	8.08	7.88	8.05	8.01
Middle	0	8.00	8.00	8.03	8.08
	1	8.09	7.97	8.05	8.04
High	0	8.08	8.05	8.02	8.07
	1	8.05	8.02	8.07	8.73

Table 8-79. Peak To Average Power Ratio Summary Data (NR_n66_1C_5M)

Channel	Port	Peak To Average Power Ratio (PAPR) (dB)			
		QPSK	16QAM	64QAM	256QAM
Low	0	7.53	7.55	7.56	7.28
	1	7.53	7.55	7.51	7.52
Middle	0	7.58	7.56	7.55	7.57
	1	7.53	7.56	7.54	7.55
High	0	7.52	7.56	7.56	7.59
	1	7.55	7.55	7.55	7.53

Table 8-80. Peak To Average Power Ratio Summary Data (NR_n66_1C_10M)

Channel	Port	Peak To Average Power Ratio (PAPR) (dB)			
		QPSK	16QAM	64QAM	256QAM
Low	0	7.47	7.49	7.50	7.47
	1	7.47	7.48	7.51	7.48
Middle	0	7.48	7.50	7.50	7.47
	1	7.48	7.48	7.52	7.49
High	0	7.49	7.50	7.52	7.48
	1	7.48	7.47	7.52	7.48

Table 8-81. Peak To Average Power Ratio Summary Data (NR_n66_1C_15M)

Channel	Port	Peak To Average Power Ratio (PAPR) (dB)			
		QPSK	16QAM	64QAM	256QAM
Low	0	7.48	7.47	7.49	7.47
	1	7.49	7.49	7.47	7.48
Middle	0	7.46	7.48	7.49	7.47
	1	7.48	7.48	7.47	7.46
High	0	7.49	7.48	7.47	7.49
	1	7.49	7.48	7.48	7.46

Table 8-82. Peak To Average Power Ratio Summary Data (NR_n66_1C_20M)

Channel	Port	Peak To Average Power Ratio (PAPR) (dB)			
		QPSK	16QAM	64QAM	256QAM
Low	0	7.48	7.51	7.48	7.48
	1	7.48	7.49	7.46	7.47
Middle	0	7.45	7.49	7.45	7.46
	1	7.46	7.48	7.46	7.45
High	0	7.49	7.49	7.46	7.46
	1	7.47	7.49	7.46	7.45

Table 8-83. Peak To Average Power Ratio Summary Data (NR_n66_1C_25M)



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Channel	Port	Peak To Average Power Ratio (PAPR) (dB)			
		QPSK	16QAM	64QAM	256QAM
Low	0	7.57	7.53	7.55	7.56
	1	7.55	7.54	7.54	7.53
Middle	0	7.54	7.52	7.52	7.53
	1	7.53	7.52	7.52	7.52
High	0	7.56	7.52	7.53	7.54
	1	7.53	7.52	7.52	7.51

Table 8-84. Peak To Average Power Ratio Summary Data (NR_n66_1C_30M)

Channel	Port	Peak To Average Power Ratio (PAPR) (dB)	
		NR_n66_2C_5M+5M	NR_n66_4C_15M+15M+15M+15M
		QPSK	QPSK
Low	0	7.14	9.56
	1	7.12	9.56
Middle	0	7.11	9.71
	1	7.10	9.76
High	0	7.11	9.73
	1	7.09	9.81

Table 8-85. Peak To Average Power Ratio Summary Data (NR_n66_ Multi carrier)

Channel	Port	Peak To Average Power Ratio (PAPR) (dB)	
		MSR_B/n66_2C_LTE_5M+NR_5M	MSR_B/n66_4C_LTE_15M+15M+NR_15M+15M
		QPSK	QPSK
Low	0	6.51	8.41
	1	6.50	8.43
Middle	0	6.50	8.36
	1	6.48	8.37
High	0	6.49	8.32
	1	6.49	8.32

Table 8-86. Peak To Average Power Ratio Summary Data (B/n66_MSR_ Multi carrier)

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Channel	Port	Peak To Average Power Ratio (PAPR) (dB)			
		QPSK	16QAM	64QAM	256QAM
Low	4	8.06	8.08	8.08	8.04
	5	8.02	8.02	8.04	8.00
	6	8.02	8.04	8.04	8.02
	7	8.06	8.04	8.04	8.00
Middle	4	8.06	8.06	8.04	8.04
	5	8.04	8.04	8.06	8.02
	6	8.06	8.02	8.04	8.02
	7	8.04	8.06	8.08	8.02
High	4	8.02	8.04	8.02	8.00
	5	8.02	8.02	8.06	8.00
	6	8.04	8.02	8.02	8.02
	7	8.02	8.02	8.02	8.02

Table 8-87. Peak To Average Power Ratio Summary Data (NR_n77_1C_40M)

Channel	Port	Peak To Average Power Ratio (PAPR) (dB)			
		QPSK	16QAM	64QAM	256QAM
Low	4	8.10	8.06	8.10	8.06
	5	8.04	8.06	8.02	8.10
	6	8.06	8.04	8.10	8.06
	7	8.04	8.06	8.04	8.06
Middle	4	8.08	8.06	8.08	8.08
	5	8.10	8.02	8.06	8.06
	6	8.08	8.06	8.08	8.06
	7	8.04	8.04	8.06	8.06
High	4	8.06	8.02	8.02	8.06
	5	8.06	8.06	8.04	8.08
	6	8.06	8.02	8.08	8.02
	7	8.04	8.04	8.02	8.06

Table 8-88. Peak To Average Power Ratio Summary Data (NR_n77_1C_60M)

Channel	Port	Peak To Average Power Ratio (PAPR) (dB)			
		QPSK	16QAM	64QAM	256QAM
Low	4	8.08	8.06	8.08	8.02
	5	8.02	8.08	8.04	8.04
	6	8.08	8.10	8.04	8.02
	7	8.02	8.04	8.04	8.06
Middle	4	8.06	8.08	8.04	8.04
	5	8.04	8.06	8.06	8.06
	6	8.06	8.10	8.06	8.06
	7	8.06	8.06	8.04	8.04
High	4	8.06	8.08	8.02	8.04
	5	8.04	8.04	8.06	8.06
	6	8.06	8.04	8.04	8.06
	7	8.04	8.06	8.04	8.04

Table 8-89. Peak To Average Power Ratio Summary Data (NR_n77_1C_80M)



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Channel	Port	Peak To Average Power Ratio (PAPR) (dB)			
		QPSK	16QAM	64QAM	256QAM
Low	4	8.14	8.17	8.20	8.20
	5	8.27	8.19	8.24	8.20
	6	8.17	8.22	8.21	8.24
	7	8.20	8.18	8.29	8.28
Middle	4	8.18	8.17	8.26	8.26
	5	8.27	8.17	8.20	8.20
	6	8.18	8.16	8.26	8.26
	7	8.22	8.24	8.27	8.27
High	4	8.17	8.18	8.24	8.26
	5	8.22	8.10	8.28	8.20
	6	8.19	8.15	8.20	8.21
	7	8.21	8.20	8.26	8.23

Table 8-90. Peak To Average Power Ratio Summary Data (NR_n77_1C_100M)

Channel	Port	Peak To Average Power Ratio (PAPR) (dB)	
		NR_n77_2C_40M+40M	NR_n77_4C_40M+60M+80M+100M
		QPSK	QPSK
Low	4	8.59	
	5	8.60	
	6	8.56	
	7	8.59	
Middle	4	8.56	8.54
	5	8.58	8.52
	6	8.54	8.54
	7	8.55	8.56
High	4	8.61	
	5	8.59	
	6	8.59	
	7	8.64	

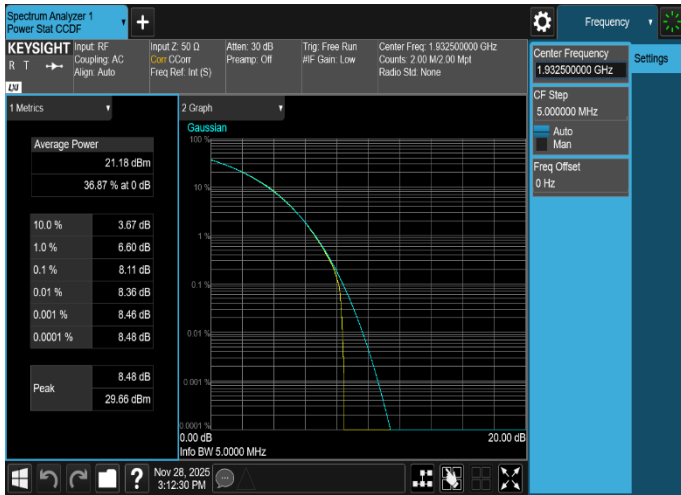
Table 8-91. Peak To Average Power Ratio Summary Data (NR_n77_Multi carrier)



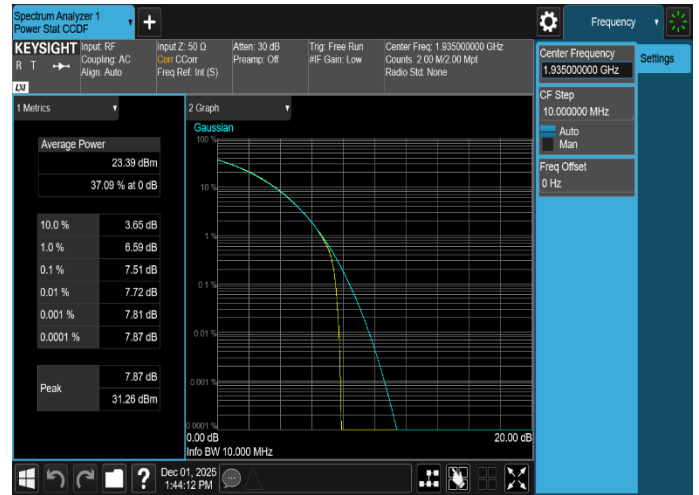
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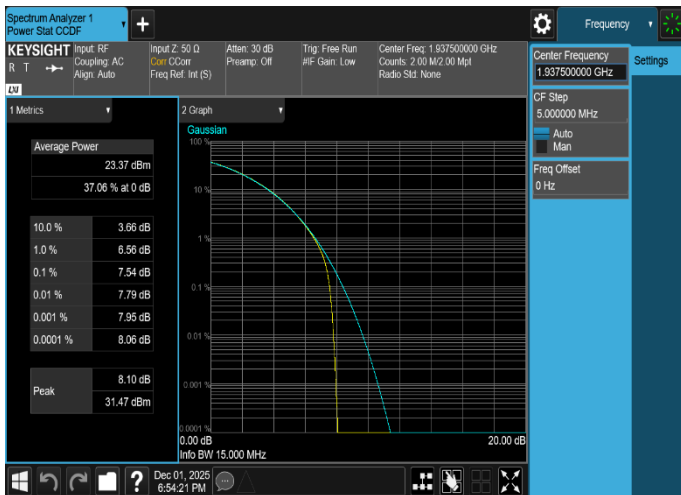
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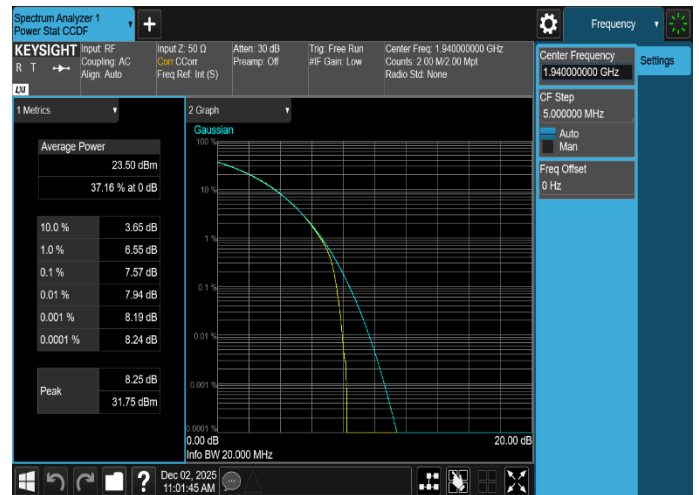
Plot 8-112. Peak To Average Power Ratio Plot
(LTE_B25_1C_5M_256QAM - Low Channel, Port 2)



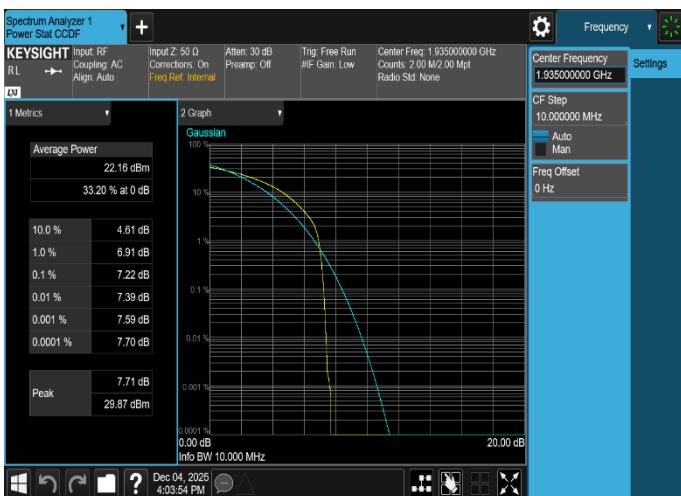
Plot 8-113. Peak To Average Power Ratio Plot
(LTE_B25_1C_10M_QPSK - Low Channel, Port 2)



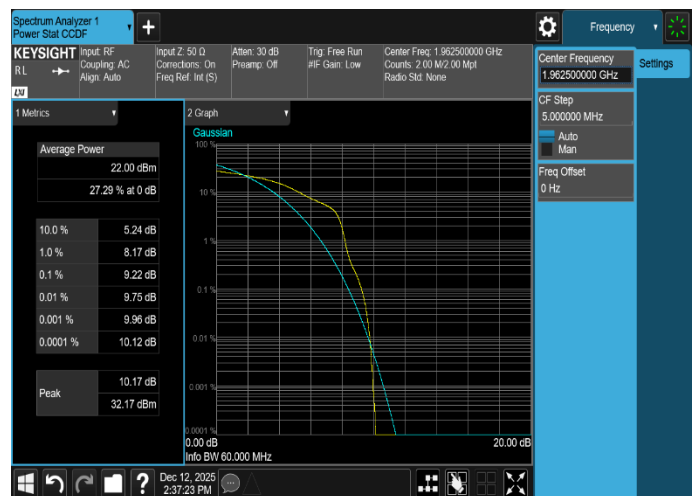
Plot 8-114. Peak To Average Power Ratio Plot
(LTE_B25_1C_15M_16QAM - Low Channel, Port 2)



Plot 8-115. Peak To Average Power Ratio Plot
(LTE_B25_1C_20M_16QAM - Low Channel, Port 2)



Plot 8-116. Peak To Average Power Ratio Plot
(LTE_B25_2C_5M+5M_QPSK - Low Channel, Port 3)



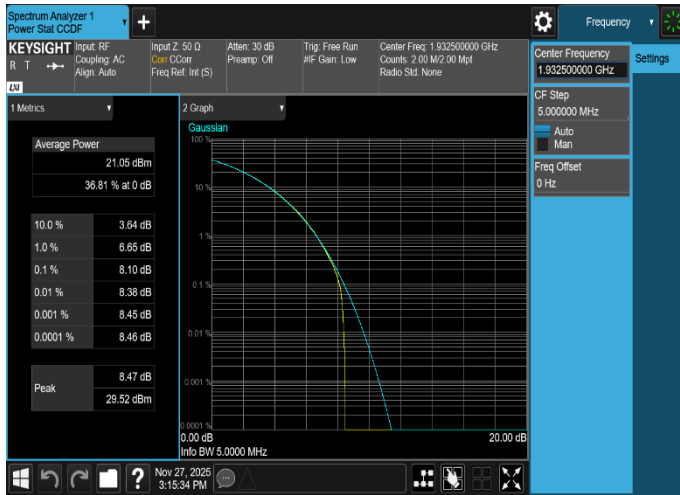
Plot 8-117. Peak To Average Power Ratio Plot
(LTE_B25_2C_15M+15M+15M+15M_QPSK - Mid Channel, Port 3)



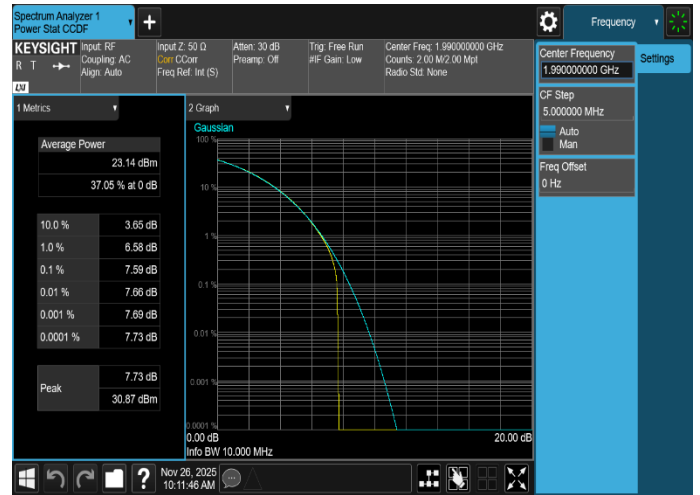
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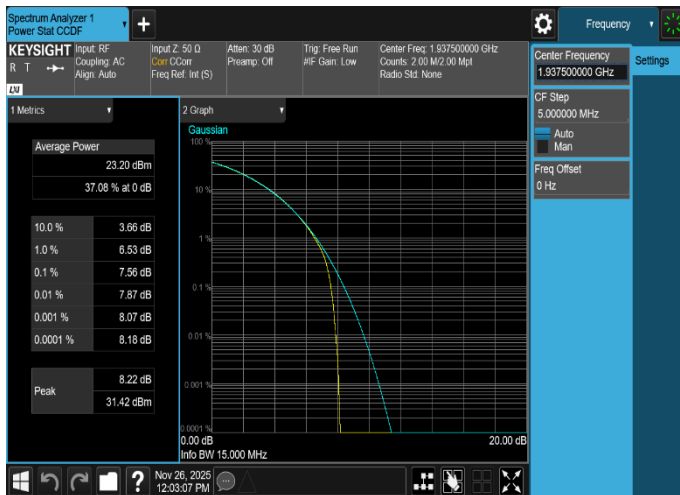
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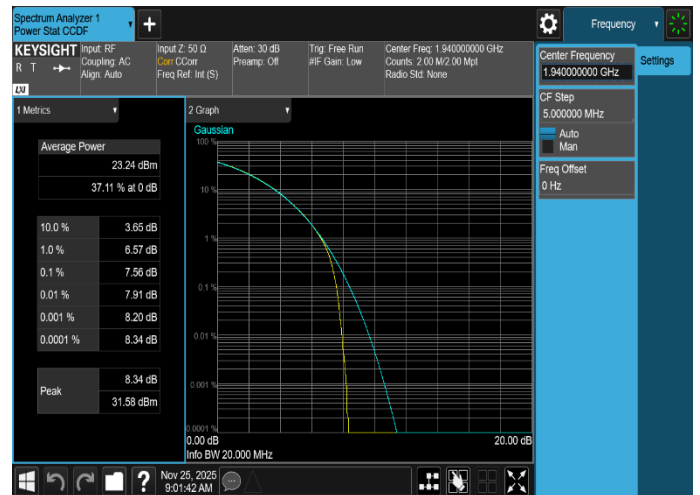
Plot 8-118. Peak To Average Power Ratio Plot
(NR_n25_1C_5M_QPSK - Low Channel, Port 3)



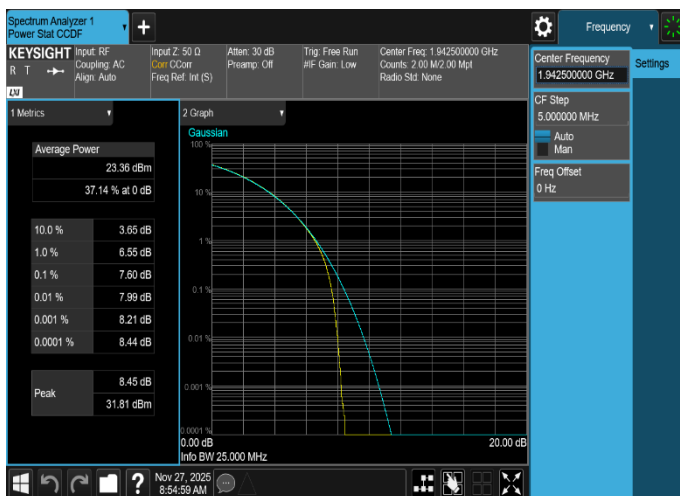
Plot 8-119. Peak To Average Power Ratio Plot
(NR_n25_1C_10M_256QAM - High Channel, Port 2)



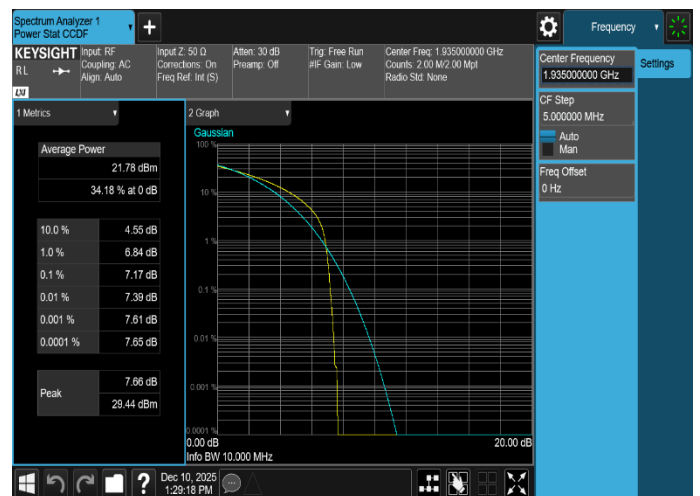
Plot 8-120. Peak To Average Power Ratio Plot
(NR_n25_1C_15M_64QAM - Low Channel, Port 3)



Plot 8-121. Peak To Average Power Ratio Plot
(NR_n25_1C_20M_64QAM - Low Channel, Port 3)



Plot 8-122. Peak To Average Power Ratio Plot
(NR_n25_1C_25M_16QAM - Low Channel, Port 2)



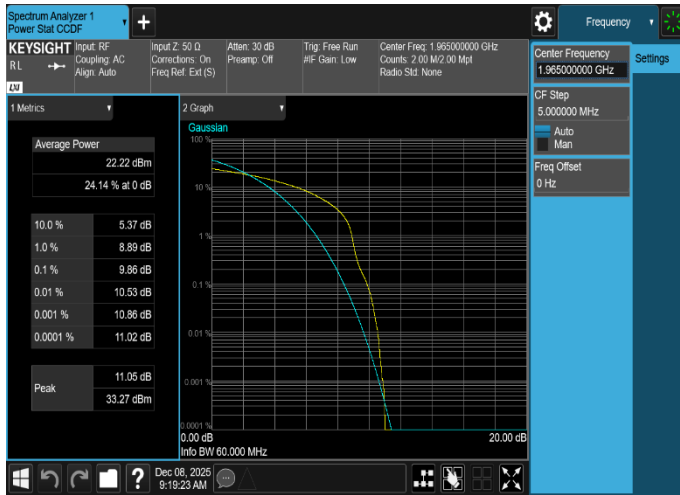
Plot 8-123. Peak To Average Power Ratio Plot
(NR_n25_2C_5M+5M_QPSK - Low Channel, Port 2)



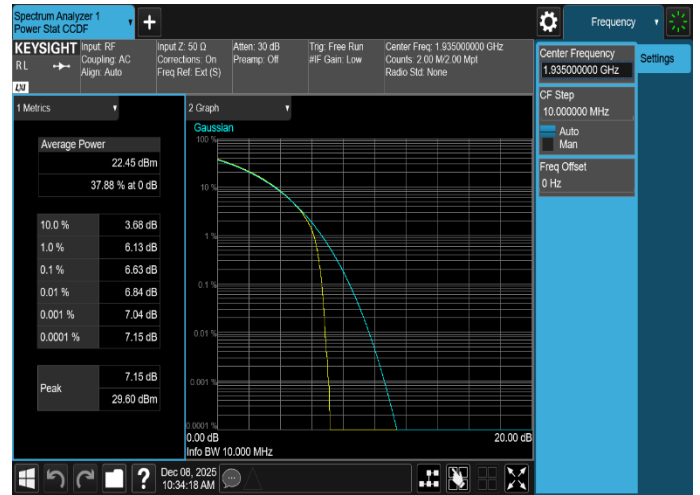
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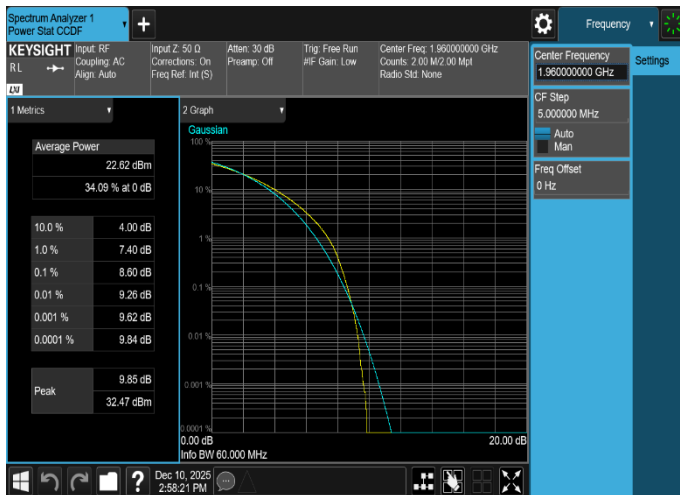
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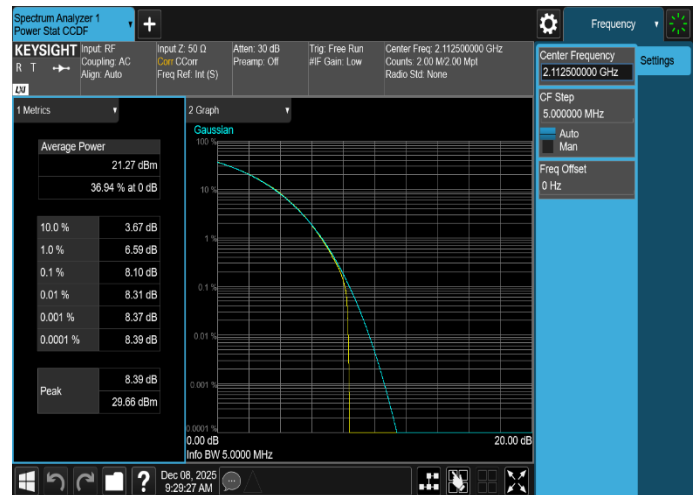
Plot 8-124. Peak To Average Power Ratio Plot
(NR_n25_4C_15M+15M+15M+15M_QPSK - High Channel,
Port 3)



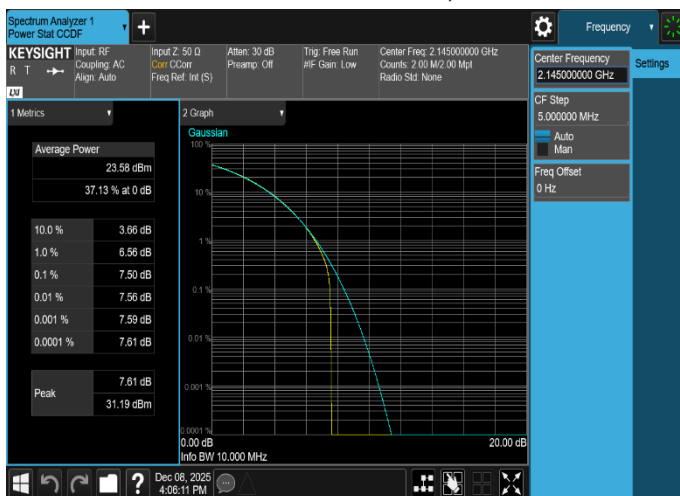
Plot 8-125. Peak To Average Power Ratio Plot
(MSR_B/n25_2C_LTE_5M+NR_5M_QPSK - Low Channel,
Port 2)



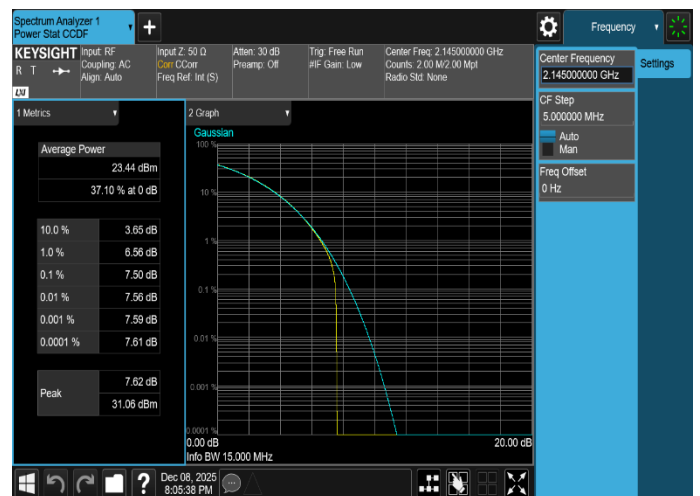
Plot 8-126. Peak To Average Power Ratio Plot
(MSR_B/n25_4C_LTE_15M+15M+NR_15M_QPSK -
Low Channel, Port 2)



Plot 8-127. Peak To Average Power Ratio Plot
(LTE_B66_1C_5M_256QAM - Low Channel, Port 1)



Plot 8-128. Peak To Average Power Ratio Plot
(LTE_B66_1C_10M_QPSK - Mid Channel, Port 1)



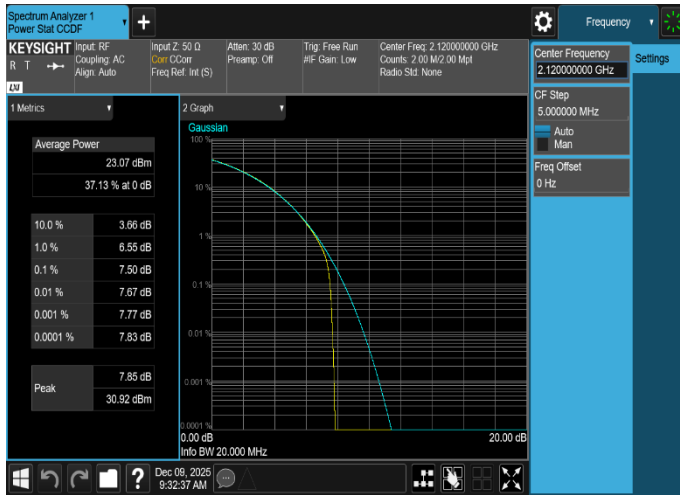
Plot 8-129. Peak To Average Power Ratio Plot
(LTE_B66_1C_15M_64QAM - Mid Channel, Port 0)



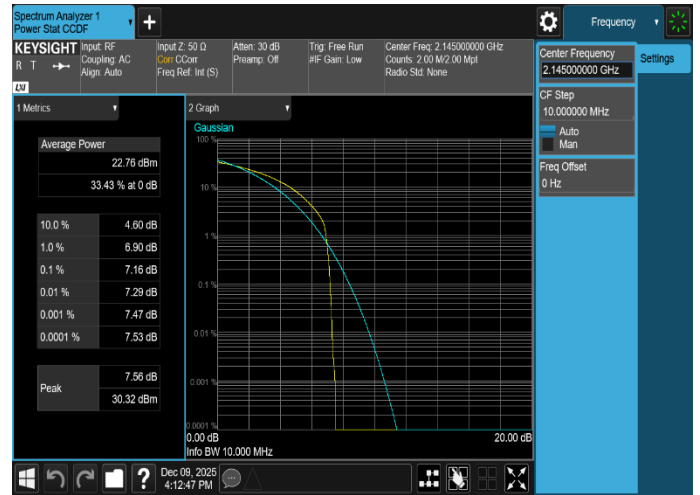
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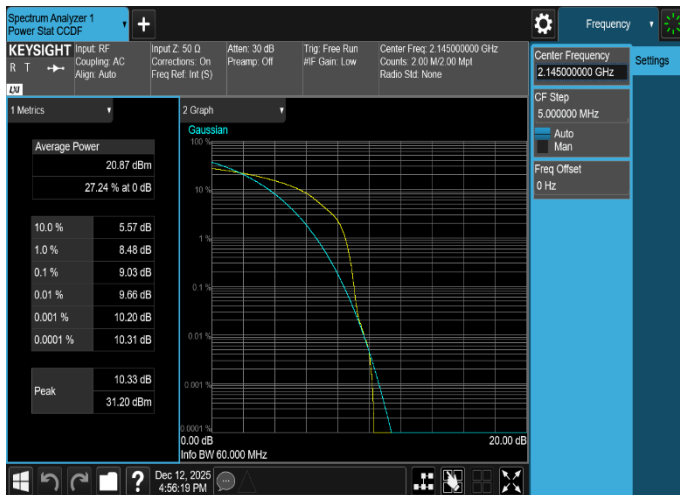
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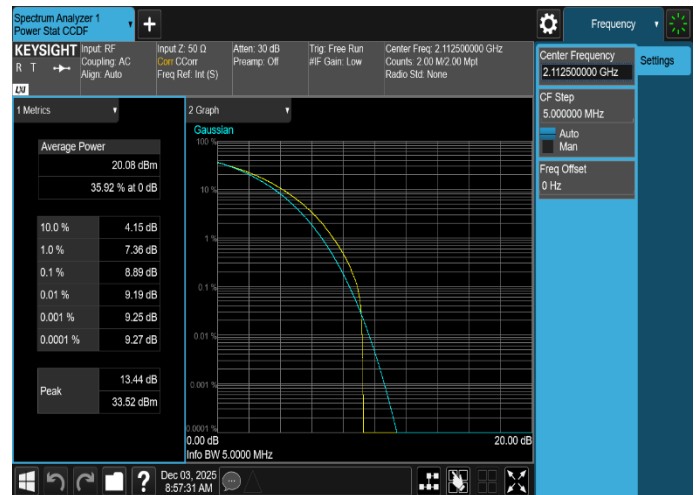
Plot 8-130. Peak To Average Power Ratio Plot
(LTE_B66_1C_20M_16QAM - Low Channel, Port 0)



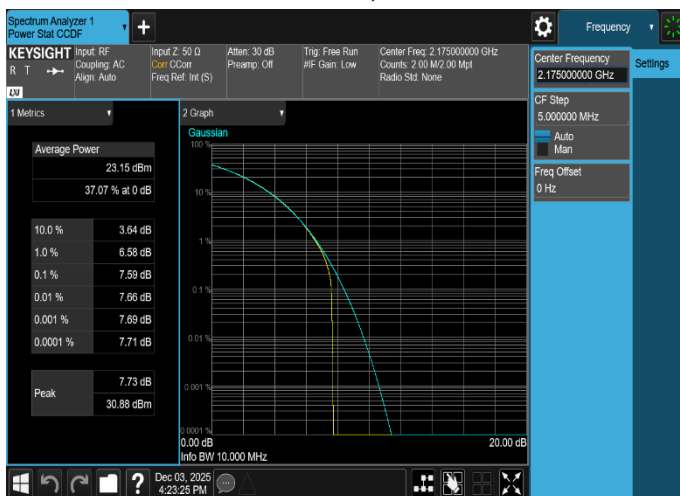
Plot 8-131. Peak To Average Power Ratio Plot
(LTE_B66_2C_5M+5M_QPSK - Mid Channel, Port 0)



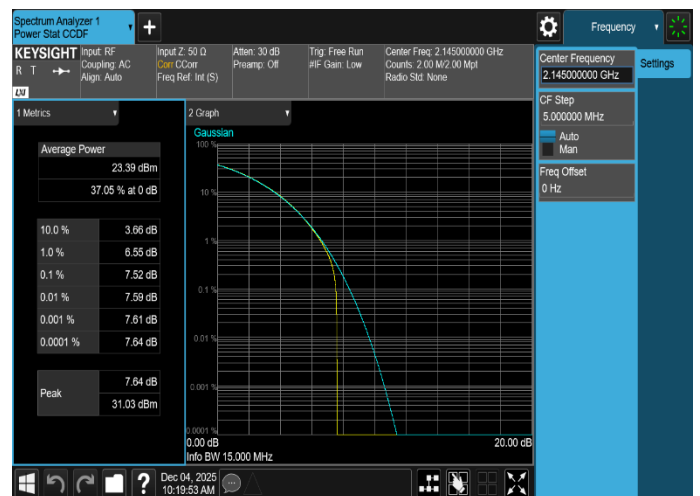
Plot 8-132. Peak To Average Power Ratio Plot
(LTE_B66_2C_15M+15M+15M+15M_QPSK - Mid Channel, Port 1)



Plot 8-133. Peak To Average Power Ratio Plot
(NR_n66_1C_5M_16QAM - Low Channel, Port 0)



Plot 8-134. Peak To Average Power Ratio Plot
(NR_n66_1C_10M_256QAM - High Channel, Port 0)



Plot 8-135. Peak To Average Power Ratio Plot
(NR_n66_1C_15M_64QAM - Mid Channel, Port 1)



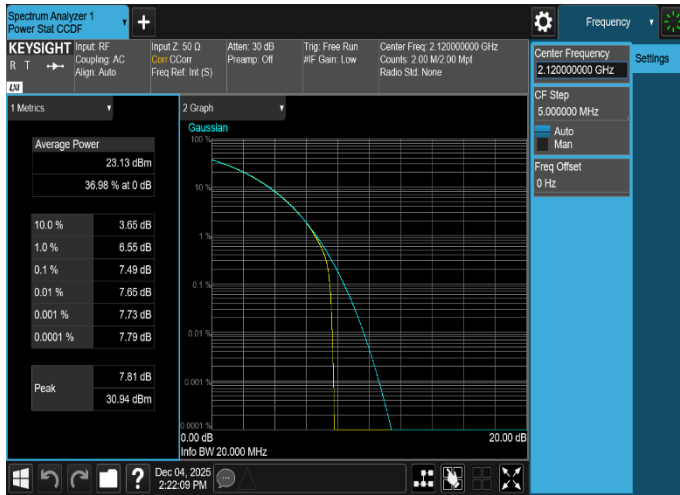
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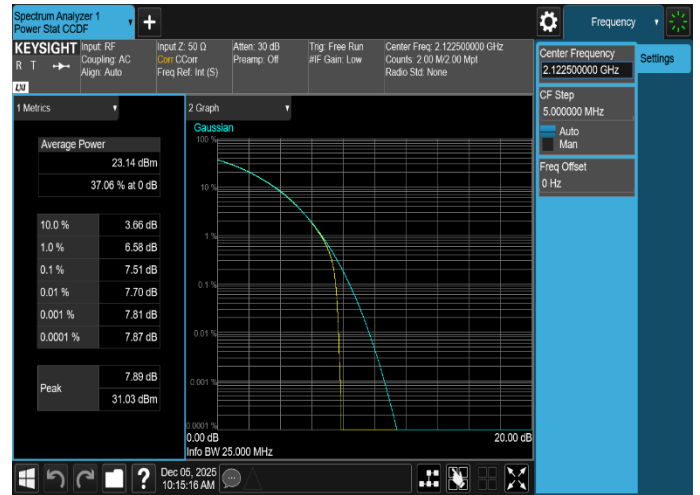
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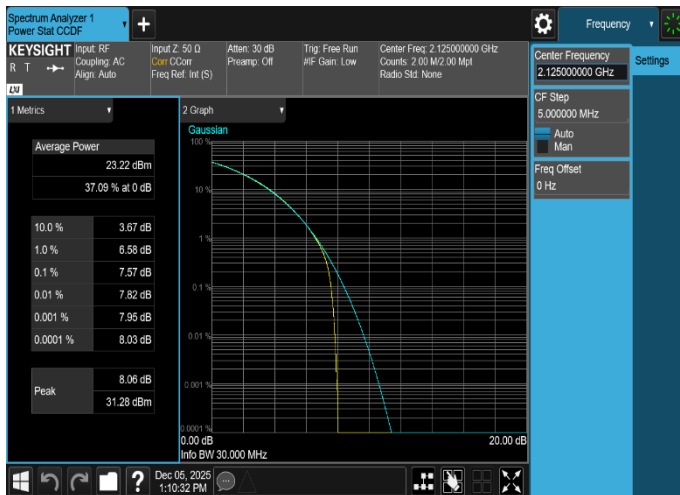
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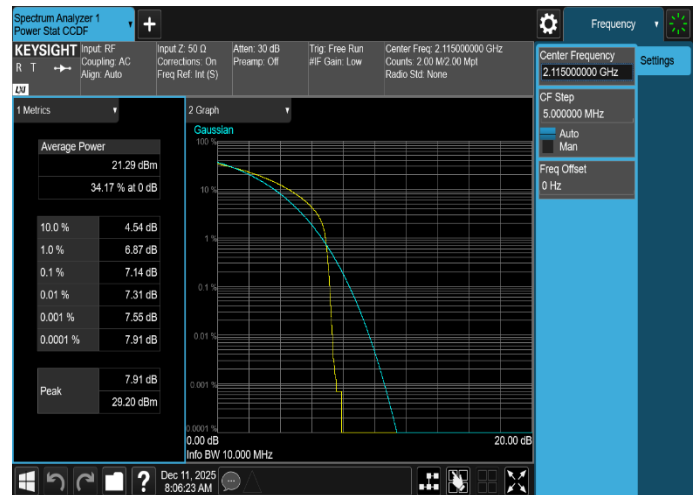
Plot 8-136. Peak To Average Power Ratio Plot
(NR_n66_1C_20M_64QAM - Low Channel, Port 0)



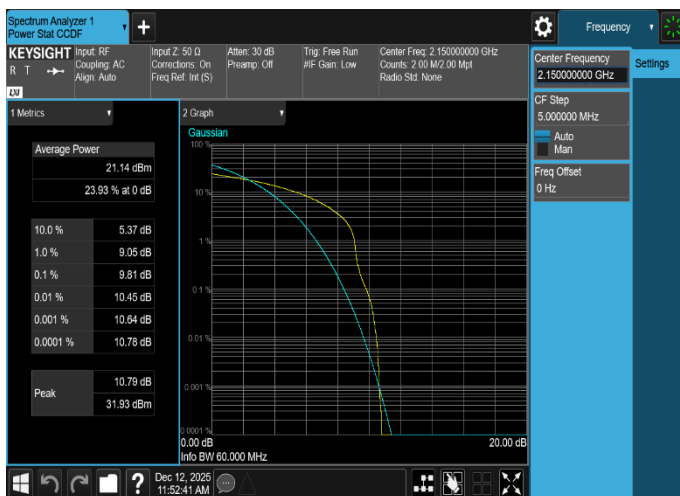
Plot 8-137. Peak To Average Power Ratio Plot
(NR_n66_1C_25M_16QAM - Low Channel, Port 0)



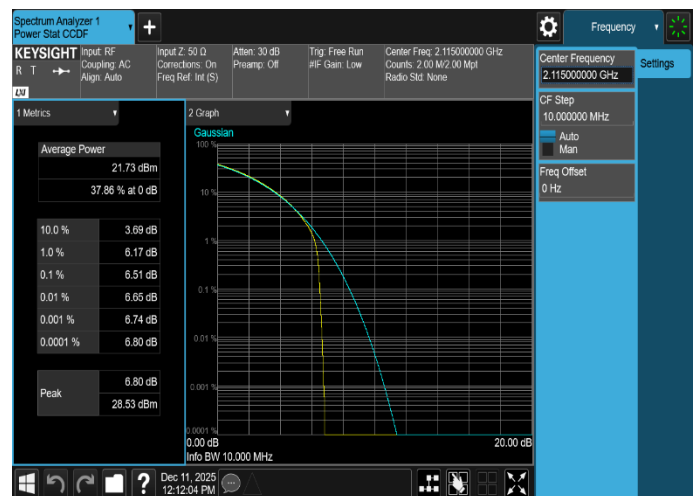
Plot 8-138. Peak To Average Power Ratio Plot
(NR_n66_1C_30M_QPSK - Low Channel, Port 0)



Plot 8-139. Peak To Average Power Ratio Plot
(NR_n66_2C_5M+5M_QPSK - Low Channel, Port 0)



Plot 8-140. Peak To Average Power Ratio Plot
(NR_n66_4C_15M+15M+15M+15M_QPSK - High Channel,
Port 1)



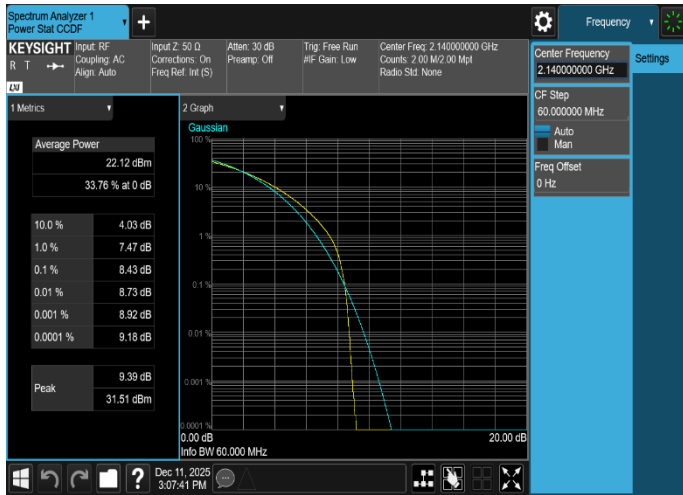
Plot 8-141. Peak To Average Power Ratio Plot
(MSR_B/n66_2C_LTE_5M+NR_5M_QPSK - Low Channel,
Port 0)



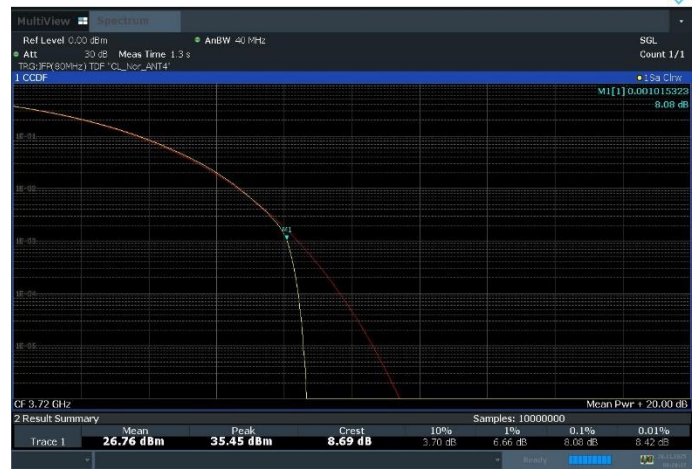
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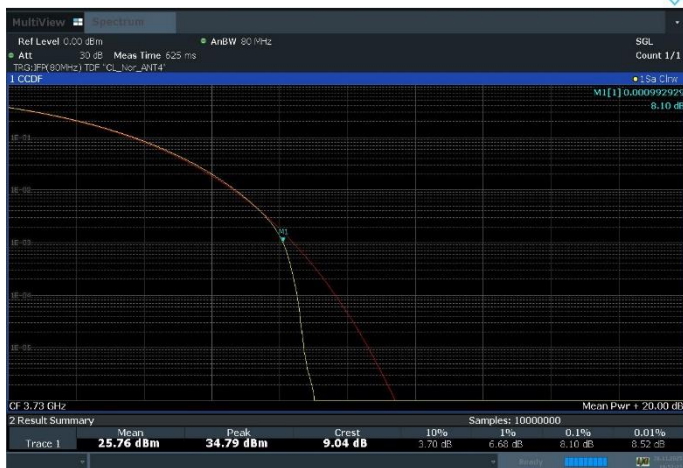
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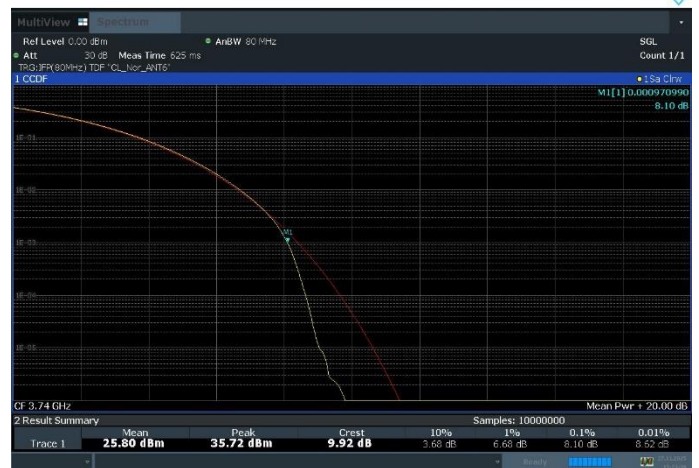
Plot 8-142. Peak To Average Power Ratio Plot
(MSR_B/n66_4C_LTE_15M+15M+NR_15M+15M_QPSK -
Low Channel, Port 1)



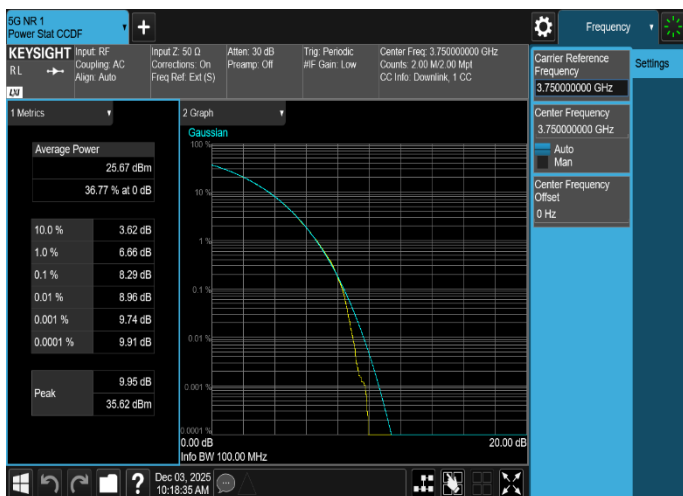
Plot 8-143. Peak To Average Power Ratio Plot
(NR_n77_1C_40M_16QAM - Low Channel, Port 4)



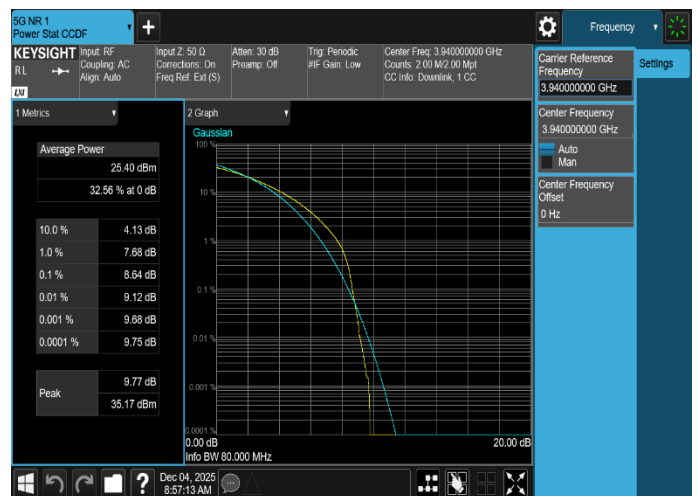
Plot 8-144. Peak To Average Power Ratio Plot
(NR_n77_1C_60M_QPSK - Low Channel, Port 4)



Plot 8-145. Peak To Average Power Ratio Plot
(NR_n77_1C_80M_16QAM - Low Channel, Port 6)



Plot 8-146. Peak To Average Power Ratio Plot
(NR_n77_1C_100M_64QAM - Low Channel, Port 7)



Plot 8-147. Peak To Average Power Ratio Plot
(NR_n77_2C_40M+40M_QPSK - High Channel, Port 7)



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Plot 8-148. Peak To Average Power Ratio Plot
(NR_n77_4C_40M+60M+80M+100M_QPSK - Mid Channel,
Port 7)

8.5 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 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

KDB 971168 D01 v03r01 – Section 6

KDB 662911 D01 v02r01 – Section E)3) Out-of-Band and Spurious Emission Measurements

a) Absolute Emission Limits

iii) Measure and add $10 \log(N_{ANT})$ dB

ANSI C63.26-2015 – Section 5.7.3

Test Setting

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: Please see test notes below.
4. VBW $\geq 3 \times$ RBW
5. Detector = RMS
6. Number of sweep points $\geq 2 \times$ Span/RBW
7. Trace mode = trace average
8. Sweep time = auto couple
9. The trace was allowed to stabilize

Test Setup

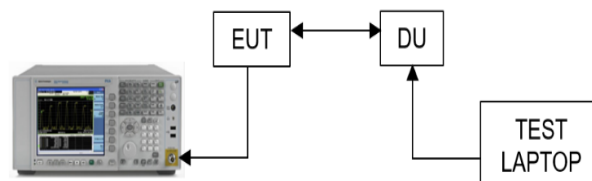


Figure 8-4. Test Instrument & Measurement Setup

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Limit**§ 24.238**

(a) Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

§ 27.53

(h) General protection levels. Except as otherwise specified below, for operations in the 1695–1710 MHz, 1710–1755 MHz, 1755–1780 MHz, 1915–1920 MHz, 1995–2000 MHz, 2000–2020 MHz, 2110–2155 MHz, 2155–2180 MHz, and 2180–2200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}(P)$ dB.

§ 27.53

(l)(1) For base station operations in the 3700-3980 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed -13 dBm/MHz. Compliance with this paragraph (l)(1) is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. 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 emissions are attenuated at least 26 dB below the transmitter power.

Test Notes

1. Per Part 24(b), Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, 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. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 1 MHz or 1 percent of emission bandwidth, as specified). 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 emissions are attenuated at least 26 dB below the transmitter power.
2. Per Part 27(h), Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. 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 emissions are attenuated at least 26 dB below the transmitter power.
3. Compliance with this paragraph (l)(1) is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. 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 emissions are attenuated at least 26 dB below the transmitter power.
4. Detect with a margin of under 1dB to limit, the integration method was performed using the spectrum analyzer's band power functions according to ANSI C63.26-2015 – Section 5.7 and using the method KDB 971168 D01 v03r01 - Section E) 3) ii). The integration value was set to a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter.

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5. The limits were adjusted by a factor of $[-10 \cdot \log(4)]$ dB to account for the device operation as a 4 port MIMO transmitter, and factor of $[-10 \cdot \log(2)]$ dB to account for the device operation as a 2 port MIMO transmitter as per FCC KDB 622911. MIMO Factor calculation as below:

MIMO Factor = $10 \cdot \log(4) = 6.02$ dB

MIMO Factor = $10 \cdot \log(2) = 3.01$ dB

Frequency range	Basic Limit (dBm/MHz)	MIMO Factor (dB)	RBW Factor (dB)	Adjusted limit (dBm)
4T_Low band edge – 1MHz	-13.00	6.02	0	-19.02
4T_High band edge + 1MHz	-13.00	6.02	0	-19.02
2T_Low band edge – 1MHz	-13.00	3.01	0	-16.01
2T_High band edge + 1MHz	-13.00	3.01	0	-16.01

Note: Adjusted limit (dBm/MHz) = Basic limit (dBm/1MHz) - MIMO Factor - RBW Factor



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Mode	Measured Range	Port	Max. Value (dBm)				Limit (dBm)	Worst Margin (dB)
			QPSK	16QAM	64QAM	256QAM		
LTE_B25_1C_5M	1 MHz Outside Low Edge	2	-51.73	-51.07	-50.79	-50.70	-16.01	-34.69
		3	-52.30	-51.60	-50.46	-51.65	-16.01	-34.45
	1 MHz Outside High Edge	2	-42.39	-52.14	-44.48	-51.54	-16.01	-26.38
		3	-41.50	-51.91	-44.22	-51.85	-16.01	-25.49
LTE_B25_1C_10M	1 MHz Outside Low Edge	2	-49.30	-50.43	-50.15	-48.77	-16.01	-32.76
		3	-51.17	-51.00	-50.79	-49.21	-16.01	-33.20
	1 MHz Outside High Edge	2	-51.14	-50.50	-50.46	-50.73	-16.01	-34.45
		3	-51.23	-51.28	-50.21	-50.19	-16.01	-34.17
LTE_B25_1C_15M	1 MHz Outside Low Edge	2	-49.63	-52.09	-52.75	-55.00	-16.01	-33.62
		3	-53.04	-52.59	-52.89	-51.76	-16.01	-35.75
	1 MHz Outside High Edge	2	-51.72	-51.74	-51.68	-51.82	-16.01	-35.67
		3	-52.22	-51.57	-54.71	-51.40	-16.01	-35.39
LTE_B25_1C_20M	1 MHz Outside Low Edge	2	-50.67	-50.01	-50.94	-50.12	-16.01	-34.00
		3	-50.91	-53.32	-50.36	-51.27	-16.01	-34.35
	1 MHz Outside High Edge	2	-53.81	-50.81	-50.12	-50.94	-16.01	-34.10
		3	-51.57	-52.43	-52.02	-50.10	-16.01	-34.09

Table 8-92. Band Edge Emission Summary Data (LTE_B25_Singel carrier)

Mode	Measured Range	Port	Max. Value (dBm)	Limit (dBm)	Worst Margin (dB)
			QPSK		
LTE_B25_2C_5M+5M	1 MHz Outside Low Edge	2	-40.94	-16.01	-24.93
		3	-40.72	-16.01	-24.71
	1 MHz Outside High Edge	2	-39.74	-16.01	-23.73
		3	-38.98	-16.01	-22.96
LTE_B25_2NC_5M+5M	1 MHz Outside Low Edge	2	-41.24	-16.01	-25.23
		3	-40.97	-16.01	-24.96
	1 MHz Outside High Edge	2	-38.48	-16.01	-22.46
		3	-39.09	-16.01	-23.08
LTE_B25_4C_15M+15M+15M+15M	1 MHz Outside Low Edge	2	-24.23	-16.01	-8.21
		3	-24.70	-16.01	-8.69
	1 MHz Outside High Edge	2	-21.95	-16.01	-5.94
		3	-21.68	-16.01	-5.67
LTE_B25_4NC_15M+15M+15M+15M	1 MHz Outside Low Edge	2	-23.18	-16.01	-7.17
		3	-23.87	-16.01	-7.86
	1 MHz Outside High Edge	2	-22.31	-16.01	-6.30
		3	-22.28	-16.01	-6.27

Table 8-93. Band Edge Emission Summary Data (LTE_B25_Multi-carrier)