

LTE Band 41

Channel Bandwidth: 15MHz

Channel 39725
(2503.5MHz)

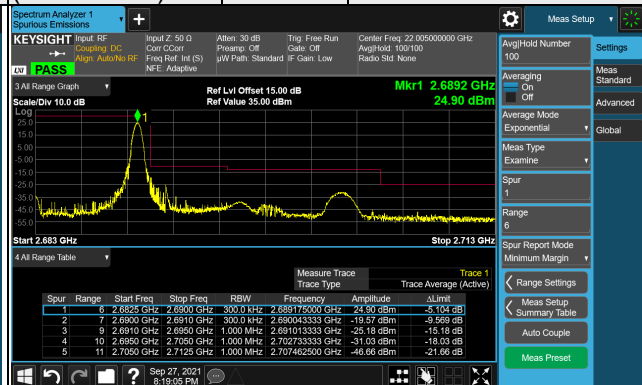
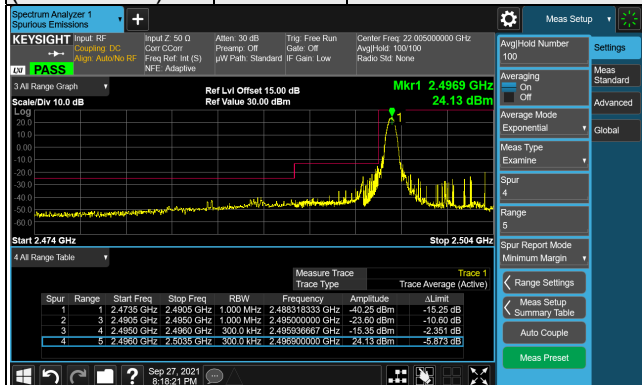
QPSK

1 RB / 0 RB Offset

Channel 41515
(2682.5MHz)

QPSK

1 RB / 74 RB Offset



Channel 39725
(2503.5MHz)

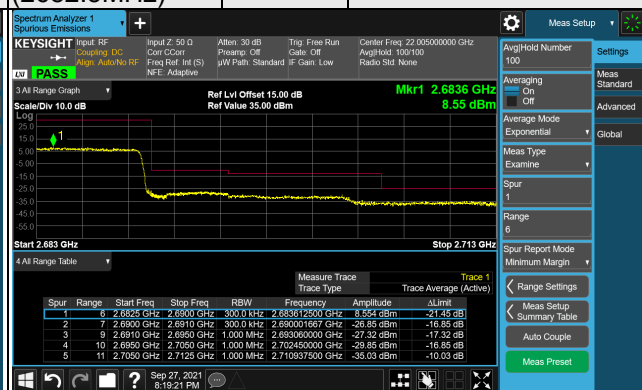
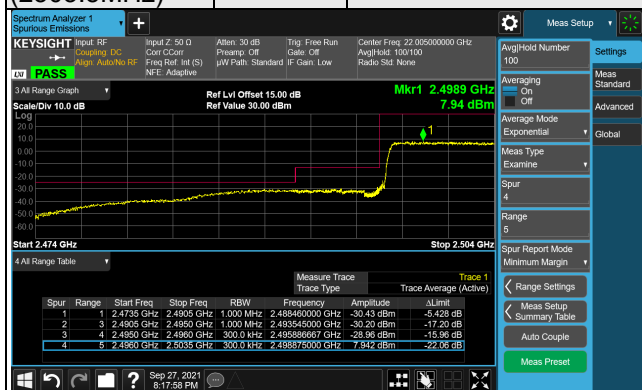
QPSK

75 RB / 0 RB Offset

Channel 41515
(2682.5MHz)

QPSK

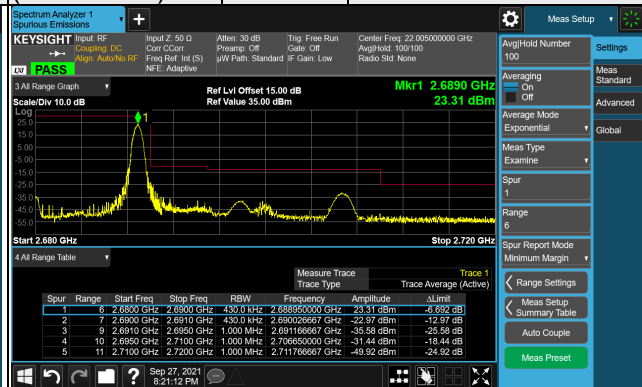
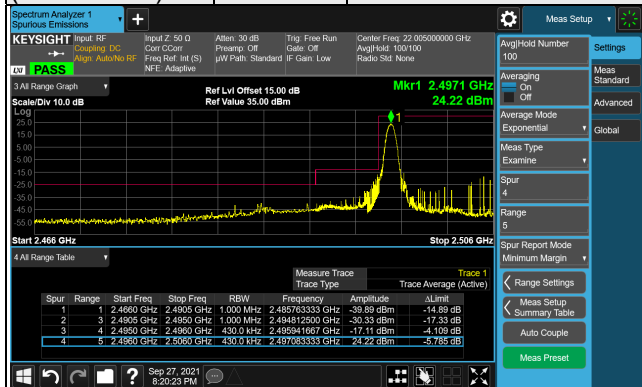
75 RB / 0 RB Offset



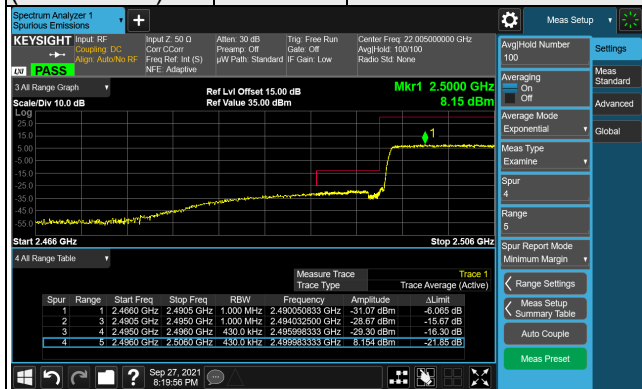
LTE Band 41

Channel Bandwidth: 20MHz

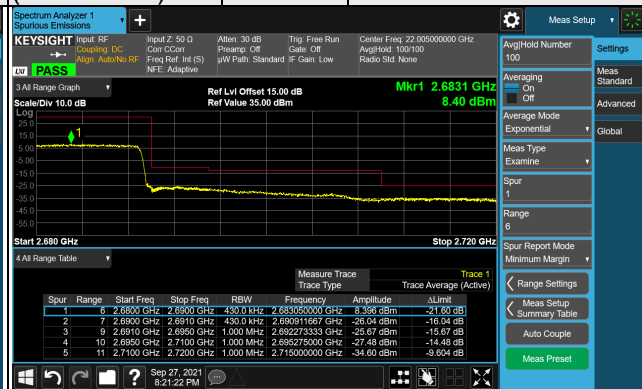
Channel 39750 (2506.0MHz)	QPSK	1 RB / 0 RB Offset	Channel 41490 (2680.0MHz)	QPSK	1 RB / 99 RB Offset
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Channel 39750 (2506.0MHz)	QPSK	100 RB / 0 RB Offset
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Channel 41490 (2680.0MHz)	QPSK	100 RB / 0 RB Offset
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LTE Band 66

Channel Bandwidth: 1.4MHz

Channel 131979
(1710.7MHz)

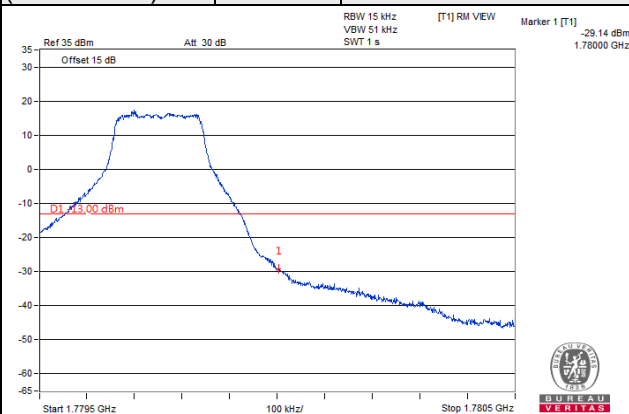
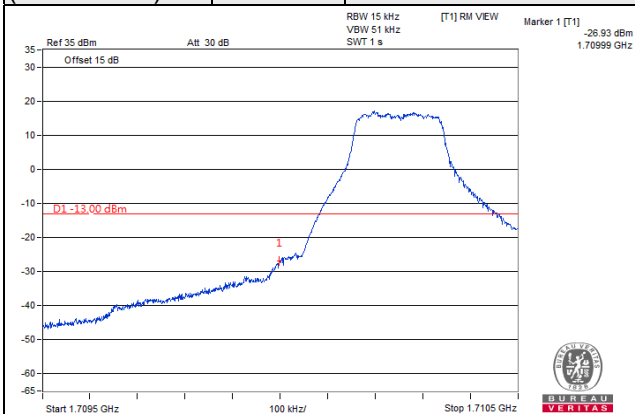
QPSK

1 RB / 0 RB Offset

Channel 132665
(1779.3MHz)

QPSK

1 RB / 5 RB Offset



Channel 131979
(1710.7MHz)

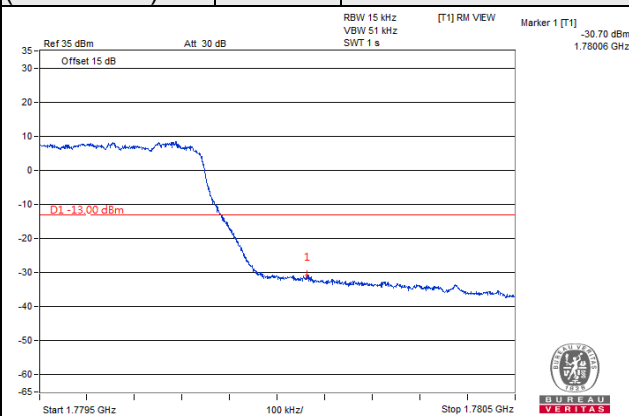
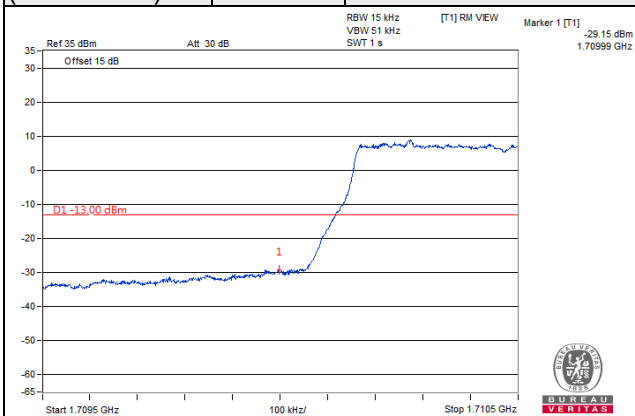
QPSK

6 RB / 0 RB Offset

Channel 132665
(1779.3MHz)

QPSK

6 RB / 0 RB Offset



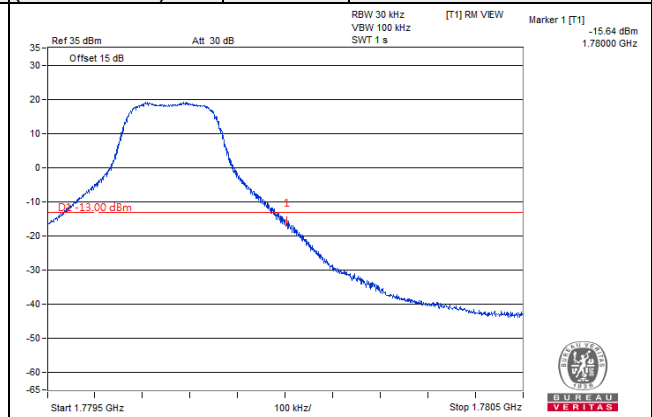
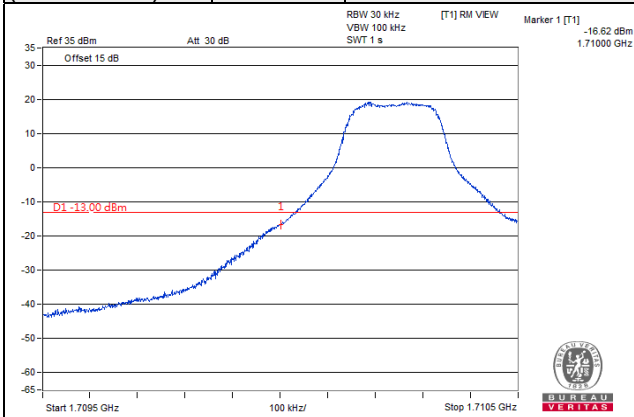
Channel Bandwidth: 3MHz

Channel 131987
(1711.5MHz)

QPSK
1 RB / 0 RB Offset

Channel 132657
(1778.5MHz)

QPSK
1 RB / 14 RB Offset

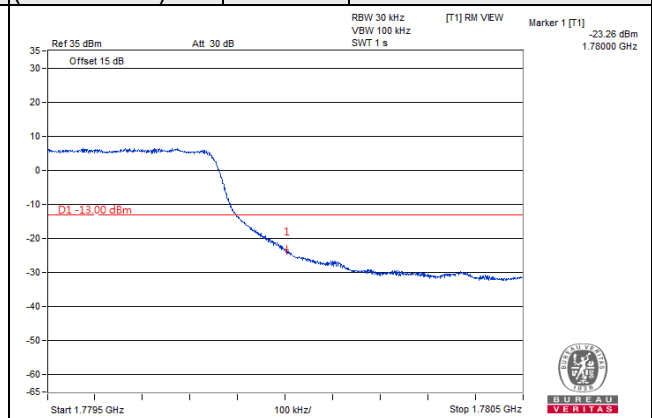
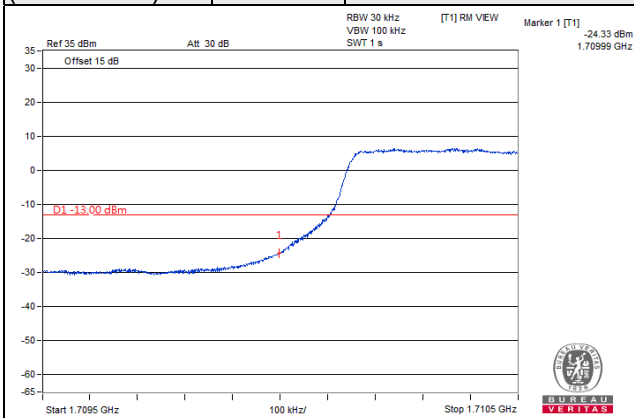


Channel 131987
(1711.5MHz)

QPSK
15 RB / 0 RB Offset

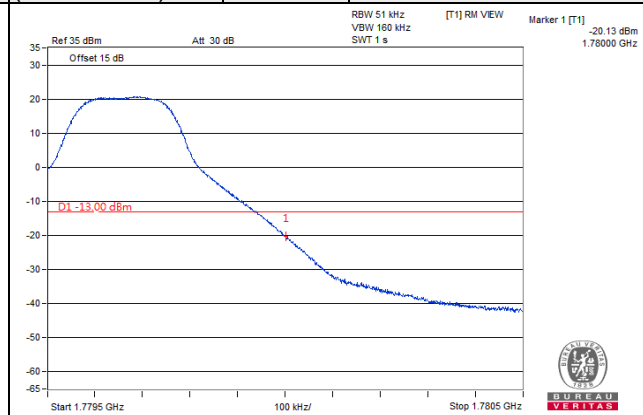
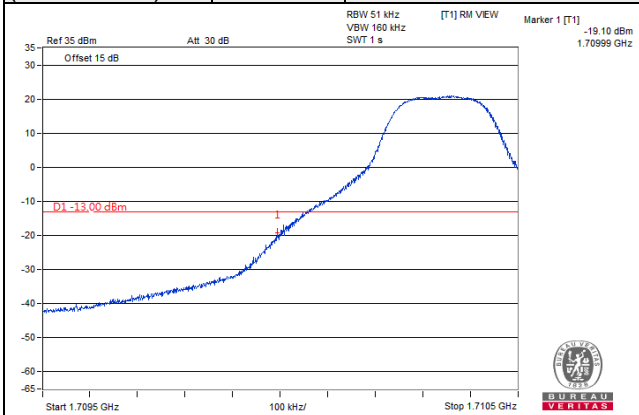
Channel 132657
(1778.5MHz)

QPSK
15 RB / 0 RB Offset

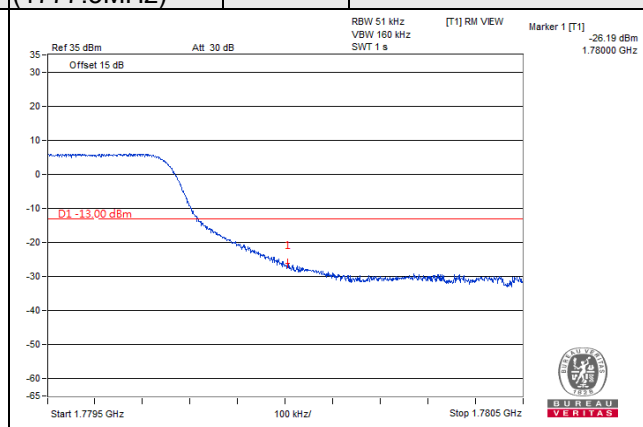
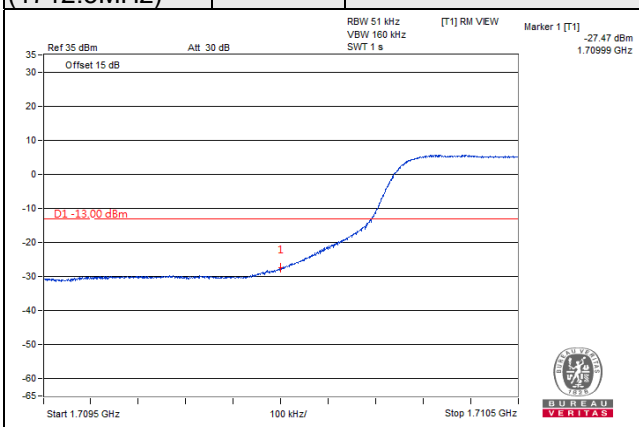


Channel Bandwidth: 5MHz

Channel 131997 (1712.5MHz)	QPSK	1 RB / 0 RB Offset	Channel 132647 (1777.5MHz)	QPSK	1 RB / 24 RB Offset
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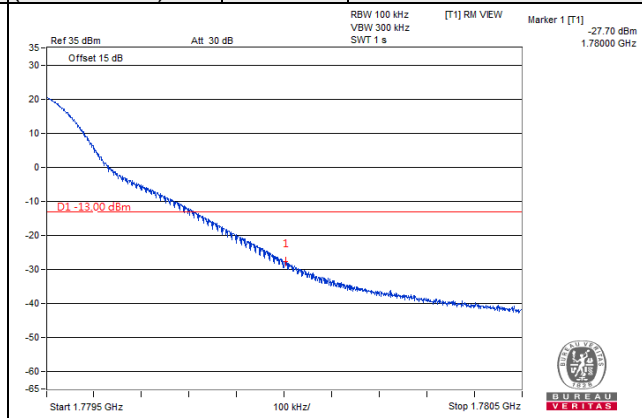
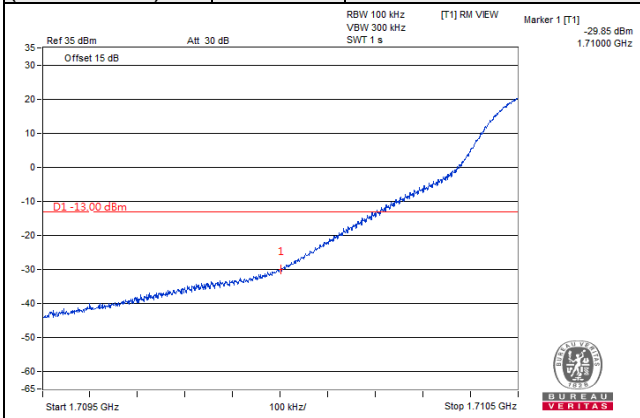


Channel 131997 (1712.5MHz)	QPSK	25 RB / 0 RB Offset	Channel 132647 (1777.5MHz)	QPSK	25 RB / 0 RB Offset
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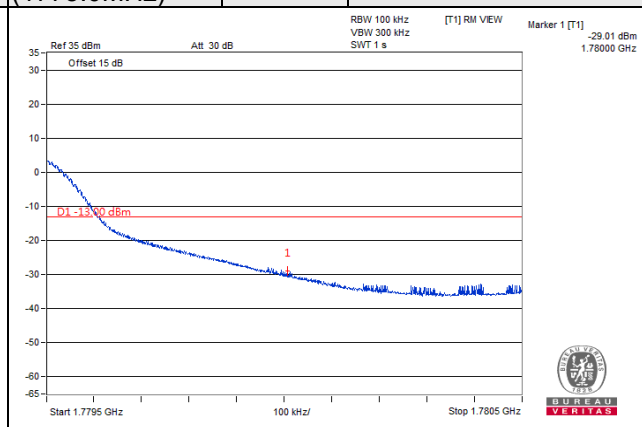
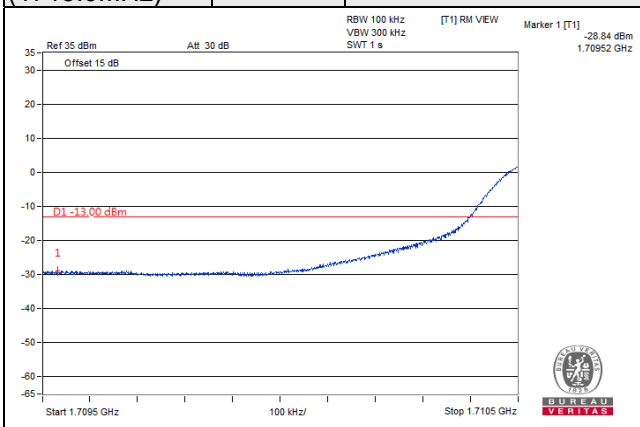


Channel Bandwidth: 10MHz

Channel 132022 (1715.0MHz)	QPSK	1 RB / 0 RB Offset	Channel 132622 (1775.0MHz)	QPSK	1 RB / 49 RB Offset
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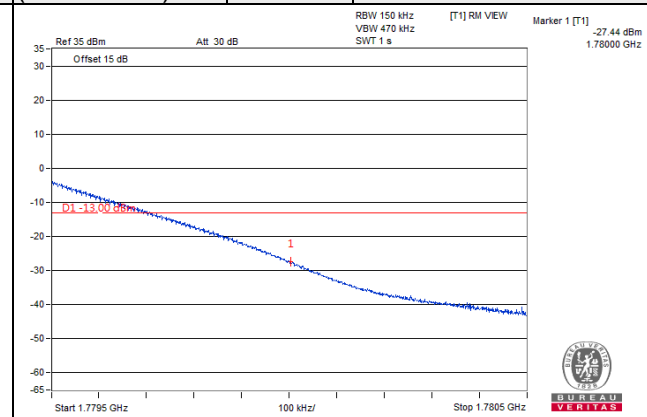
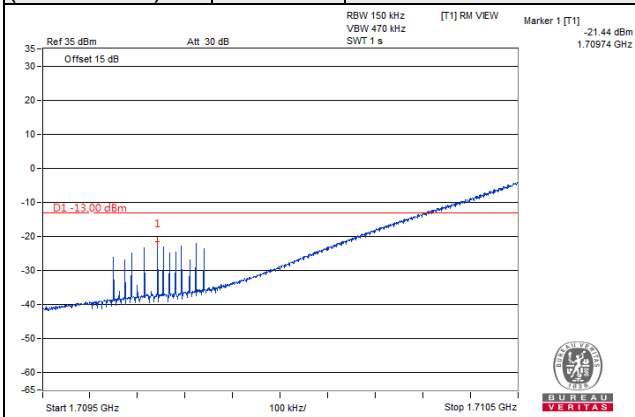


Channel 132022 (1715.0MHz)	QPSK	50 RB / 0 RB Offset	Channel 132622 (1775.0MHz)	QPSK	50 RB / 0 RB Offset
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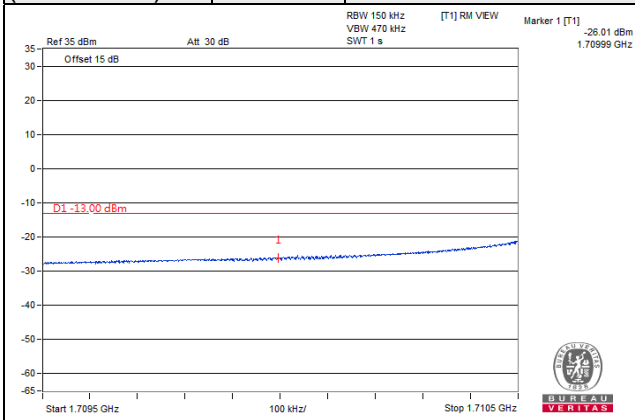


Channel Bandwidth: 15MHz

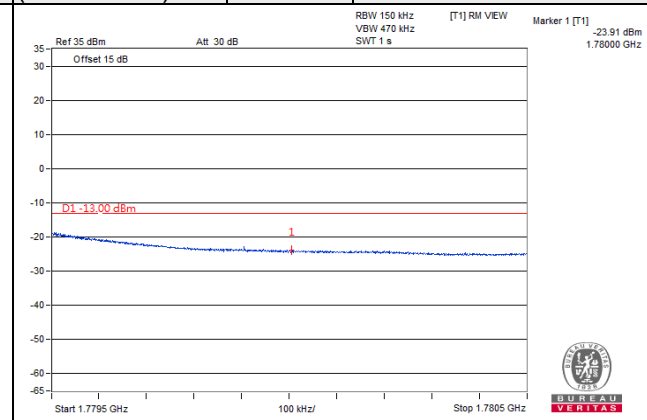
Channel 132047 (1717.5MHz)	QPSK	1 RB / 0 RB Offset	Channel 132597 (1772.5MHz)	QPSK	1 RB / 74 RB Offset
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Channel 132047 (1717.5MHz)	QPSK	75 RB / 0 RB Offset
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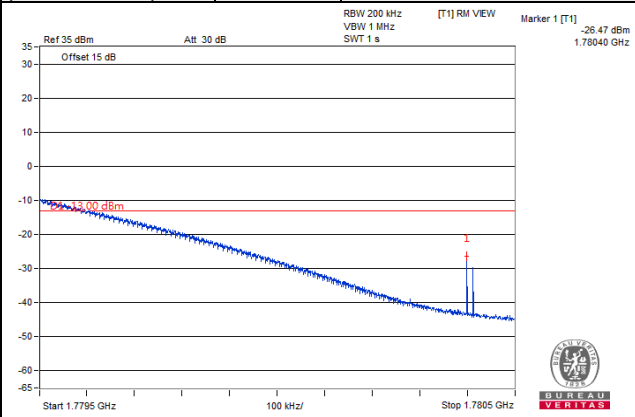
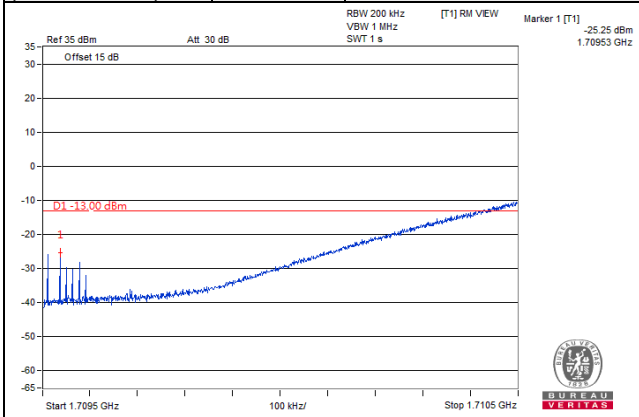


Channel 132597 (1772.5MHz)	QPSK	75 RB / 0 RB Offset
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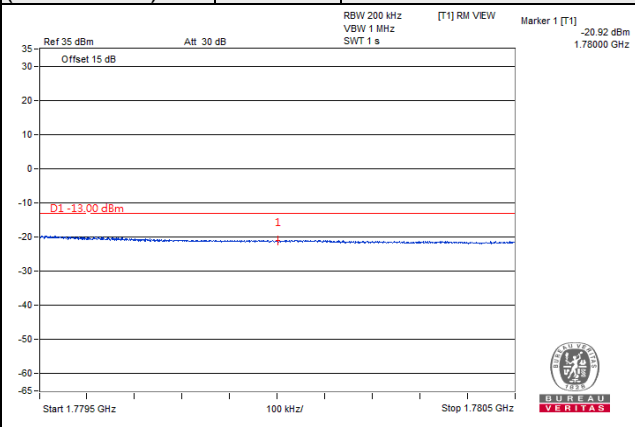
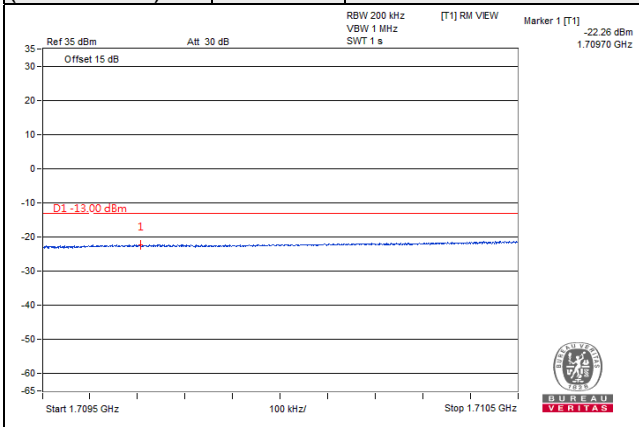


Channel Bandwidth: 20MHz

Channel 132072 (1720.0MHz)	QPSK	1 RB / 0 RB Offset	Channel 132572 (1770.0MHz)	QPSK	1 RB / 99 RB Offset
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Channel 132072 (1720.0MHz)	QPSK	100 RB / 0 RB Offset	Channel 132572 (1770.0MHz)	QPSK	100 RB / 0 RB Offset
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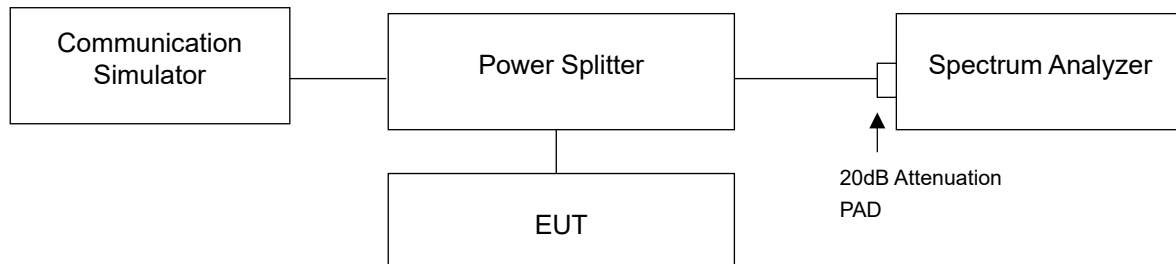


4.6 Peak to Average Ratio

4.6.1 Limits of Peak to Average Ratio Measurement

In measuring transmissions in this band using an average power technique, the peak to-average ratio (PAR) of the transmission may not exceed 13 dB

4.6.2 Test Setup



4.6.3 Test Procedures

- Set resolution/measurement bandwidth \geq signal's occupied bandwidth;
- Set the number of counts to a value that stabilizes the measured CCDF curve;
- Record the maximum PAPR level associated with a probability of 0.1%.

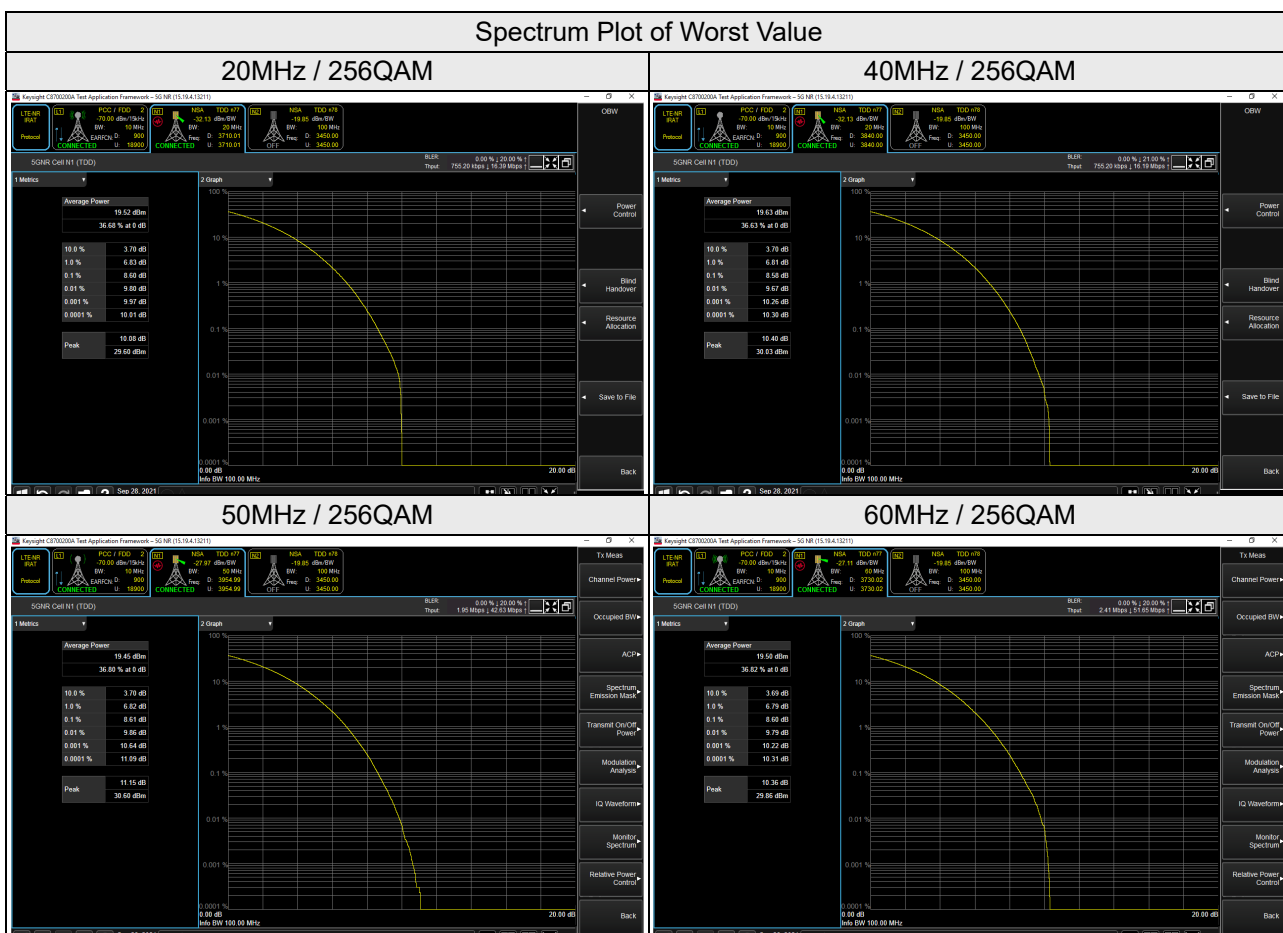
4.6.4 Test Results

5GNR n77 (Part 270):

5GNR n77 (Part 270), Channel Bandwidth 20MHz						
Channel	Frequency (MHz)	Peak To Average Ratio (dB)				
		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
647334	3710.01	5.23	6.58	6.57	7.02	8.60
656000	3840	5.18	6.77	6.77	7.22	8.48
664666	3969.99	5.45	7.18	7.19	7.63	8.49
5GNR n77 (Part 270), Channel Bandwidth 40MHz						
Channel	Frequency (MHz)	Peak To Average Ratio (dB)				
		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
648000	3720	4.82	6.57	6.58	6.98	8.54
656000	3840	5.39	6.78	6.79	7.25	8.58
664000	3960	4.79	7.26	7.29	7.76	8.54
5GNR n77 (Part 270) Channel Bandwidth 50MHz						
Channel	Frequency (MHz)	Peak To Average Ratio (dB)				
		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
648334	3725.01	5.45	6.66	6.79	7.21	7.27
656000	3840	4.85	6.89	6.88	7.43	8.58
663666	3954.99	5.74	7.37	7.30	7.90	8.61
5GNR n77 (Part 270) Channel Bandwidth 60MHz						
Channel	Frequency (MHz)	Peak To Average Ratio (dB)				
		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
648668	3730.02	4.56	6.82	6.72	7.17	8.60
656000	3840	5.36	6.98	6.98	7.38	8.57
663332	3949.98	4.56	7.53	7.47	7.89	8.55
5GNR n77 (Part 270), Channel Bandwidth 80MHz						
Channel	Frequency (MHz)	Peak To Average Ratio (dB)				
		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
649334	3740.01	5.38	6.75	6.75	7.30	8.64
656000	3840	5.17	7.41	7.04	7.51	8.54
662666	3939.99	5.83	7.53	7.55	7.98	8.54

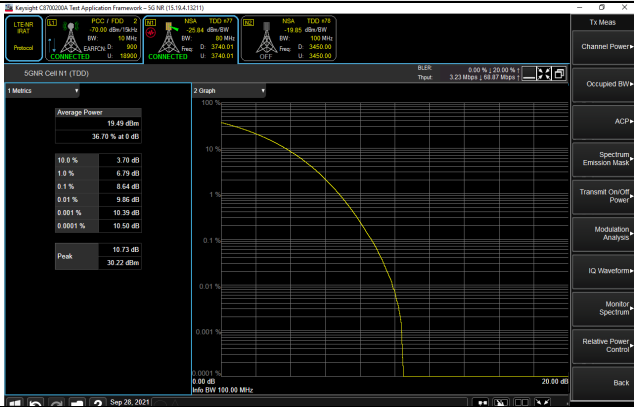
5GNR n77 (Part 270), Channel Bandwidth 90MHz						
Channel	Frequency (MHz)	Peak To Average Ratio (dB)				
		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
649558	3745.02	4.56	6.81	6.86	7.25	8.61
656000	3840	5.47	7.08	7.07	7.48	8.55
662332	3934.98	4.50	7.61	7.56	7.98	8.54

5GNR n77 (Part 270), Channel Bandwidth 100MHz						
Channel	Frequency (MHz)	Peak To Average Ratio (dB)				
		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
650000	3750	5.45	6.86	6.89	7.39	8.59
656000	3840	5.22	7.21	7.21	7.72	8.57
662000	3930	6.02	7.57	7.60	8.01	8.57

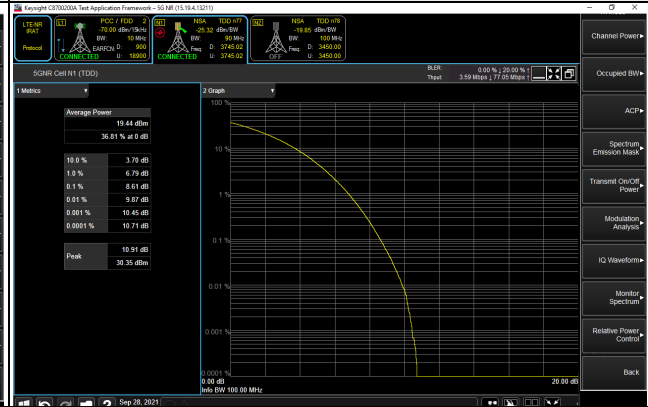


Spectrum Plot of Worst Value

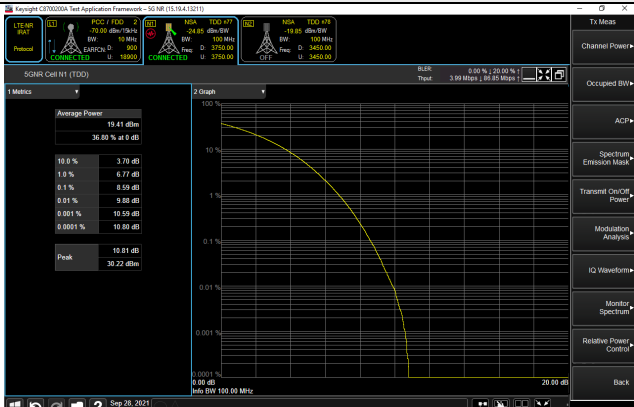
80MHz / 256QAM



90MHz / 256QAM



100MHz / 256QAM



5GNR n77 (Part 27Q):

5GNR n77 (Part 27Q), Channel Bandwidth 20MHz						
Channel	Frequency (MHz)	Peak To Average Ratio (dB)				
		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
630668	3460.02	4.59	7.67	7.71	8.16	8.71
633334	3500.01	4.39	6.64	6.58	7.08	8.70
636000	3540	4.20	7.23	7.14	7.68	8.72
5GNR n77 (Part 27Q), Channel Bandwidth 40MHz						
Channel	Frequency (MHz)	Peak To Average Ratio (dB)				
		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
631334	3470.01	4.02	6.61	6.57	6.99	8.67
633334	3500.01	3.87	7.18	7.15	7.65	8.64
635332	3529.98	4.08	6.62	6.63	7.04	8.65
5GNR n77 (Part 27Q) Channel Bandwidth 50MHz						
Channel	Frequency (MHz)	Peak To Average Ratio (dB)				
		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
631668	3475.02	4.57	6.56	6.58	7.08	8.64
633334	3500.01	4.74	6.53	6.56	7.01	8.64
635000	3525	4.36	7.40	7.40	7.88	8.66
5GNR n77 (Part 27Q) Channel Bandwidth 60MHz						
Channel	Frequency (MHz)	Peak To Average Ratio (dB)				
		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
632000	3480	4.39	6.63	6.62	7.02	8.66
633334	3500.01	4.34	7.61	7.57	8.04	8.71
634666	3519.99	4.26	6.62	6.59	6.99	8.64
5GNR n77 (Part 27Q), Channel Bandwidth 80MHz						
Channel	Frequency (MHz)	Peak To Average Ratio (dB)				
		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
632668	3490.02	4.48	6.61	6.62	7.13	8.59
633334	3500.01	4.84	6.61	6.61	7.13	8.64
634000	3510	4.42	6.60	6.61	7.13	8.64

5GNR n77 (Part 27Q), Channel Bandwidth 90MHz

Channel	Frequency (MHz)	Peak To Average Ratio (dB)				
		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
633000	3495	4.39	6.69	6.68	7.10	8.65
633334	3500.01	4.38	7.65	7.60	8.04	8.62
633666	3504.99	4.37	6.66	6.70	7.10	8.59

5GNR n77 (Part 27Q), Channel Bandwidth 100MHz

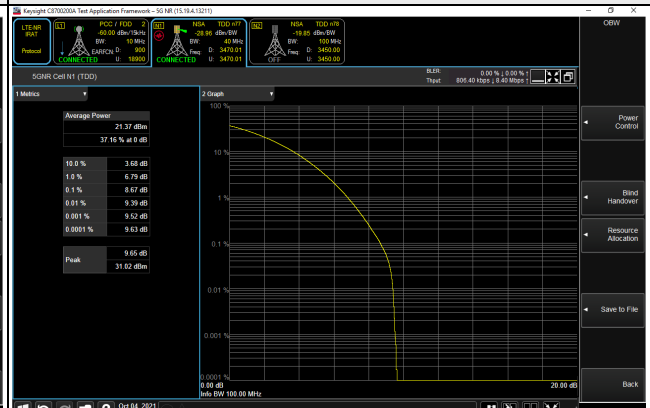
Channel	Frequency (MHz)	Peak To Average Ratio (dB)				
		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
633334	3500.01	4.52	6.72	6.75	7.20	8.61

Spectrum Plot of Worst Value

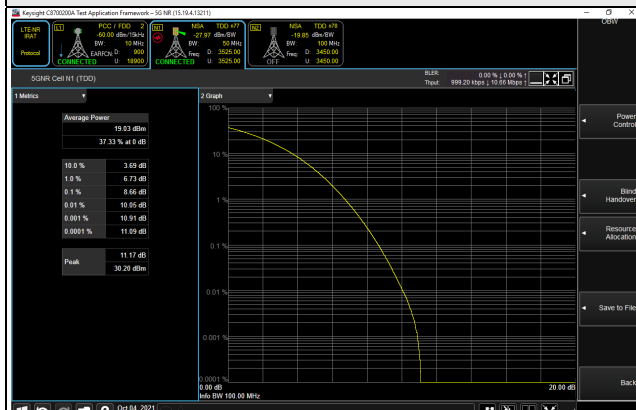
20MHz / 256QAM



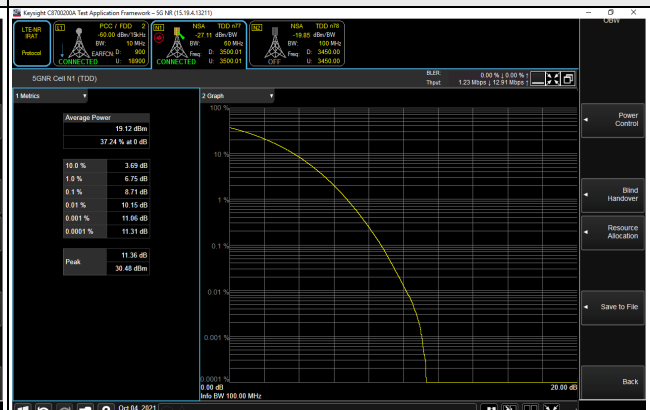
40MHz / 256QAM



50MHz / 256QAM

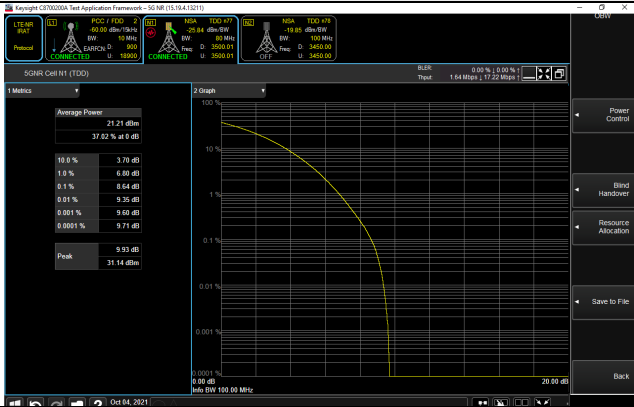


60MHz / 256QAM

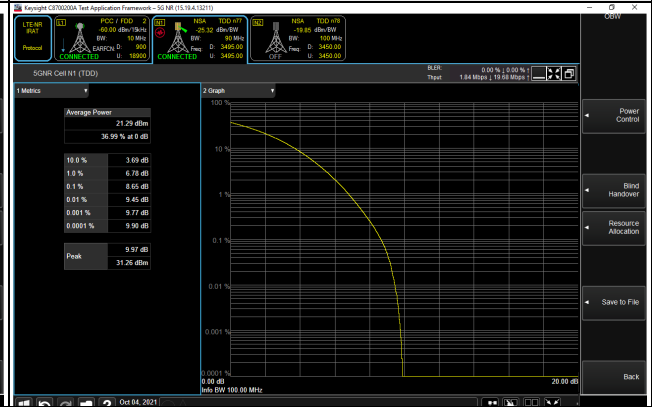


Spectrum Plot of Worst Value

80MHz / 256QAM



90MHz / 256QAM



100MHz / 256QAM

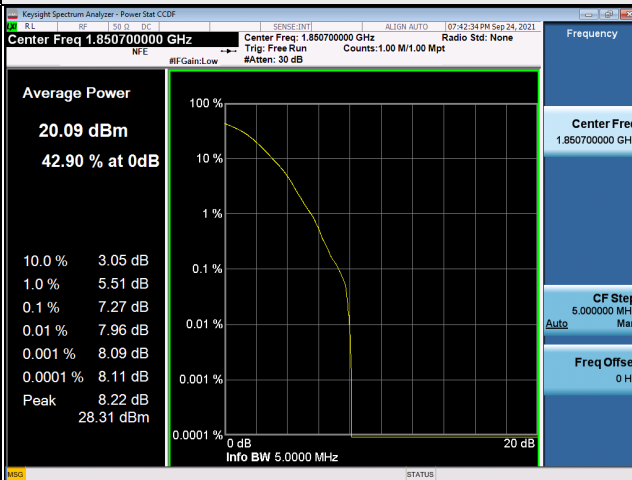


LTE Band 2

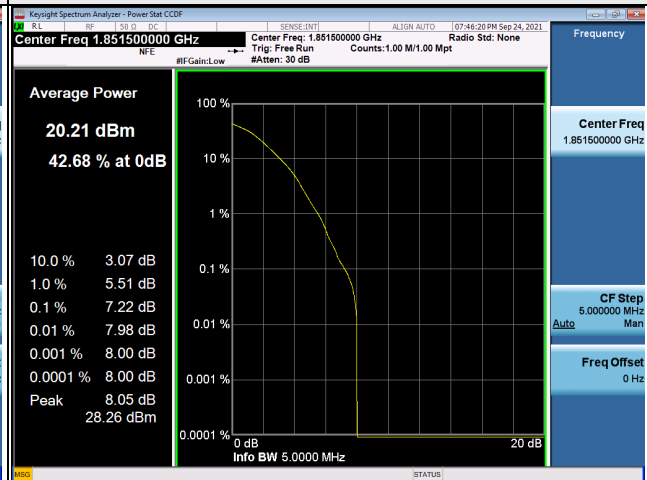
LTE Band 2, Channel Bandwidth 1.4MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			
		QPSK	16QAM	64QAM	256QAM
18607	1850.7	4.02	5.83	6.91	7.27
18900	1880.0	3.99	5.79	6.98	7.15
19193	1909.3	3.87	5.29	6.59	7.03
LTE Band 2, Channel Bandwidth 3MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			
		QPSK	16QAM	64QAM	256QAM
18615	1851.5	3.72	5.62	6.95	7.22
18900	1880.0	3.78	5.72	6.91	7.14
19185	1908.5	3.65	5.52	6.78	7.11
LTE Band 2, Channel Bandwidth 5MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			
		QPSK	16QAM	64QAM	256QAM
18625	1852.5	3.76	5.67	7.09	7.38
18900	1880.0	3.78	5.86	7.17	7.32
19175	1907.5	3.72	5.58	6.86	7.29
LTE Band 2, Channel Bandwidth 10MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			
		QPSK	16QAM	64QAM	256QAM
18650	1855.0	3.92	5.87	7.15	7.66
18900	1880.0	4.02	5.75	7.11	7.95
19150	1905.0	3.67	5.02	6.33	7.46
LTE Band 2, Channel Bandwidth 15MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			
		QPSK	16QAM	64QAM	256QAM
18675	1857.5	3.68	5.53	7.18	7.45
18900	1880.0	3.66	5.64	6.98	7.37
19125	1902.5	3.49	4.62	6.17	7.28
LTE Band 2, Channel Bandwidth 20MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			
		QPSK	16QAM	64QAM	256QAM
18700	1860.0	3.60	5.49	6.80	7.42
18900	1880.0	3.62	5.54	7.08	7.65
19100	1900.0	3.47	5.03	6.24	7.17

Spectrum Plot of Worst Value

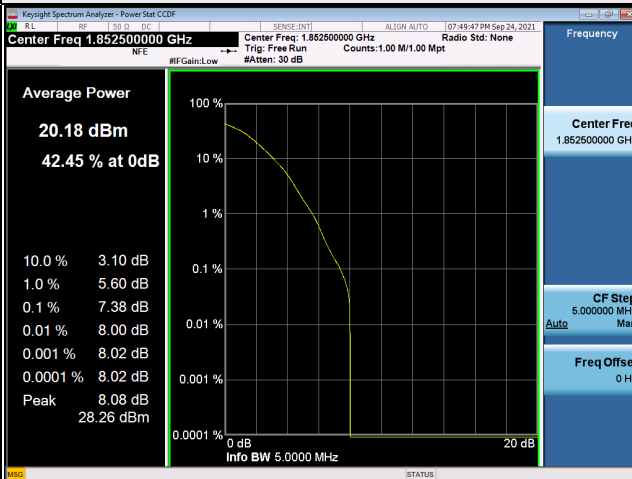
1.4MHz / 256QAM



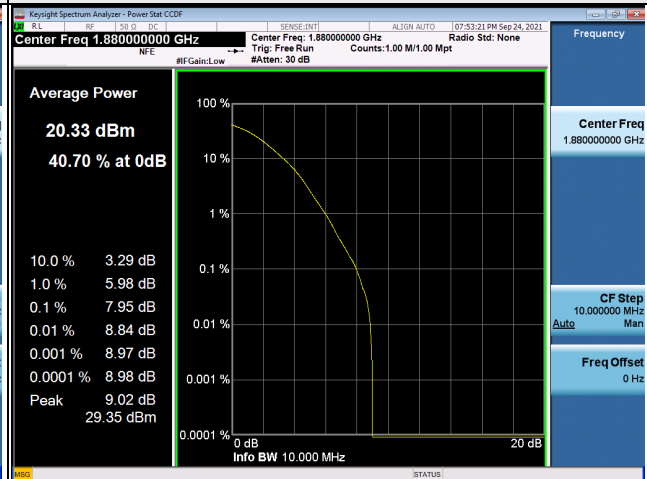
3MHz / 256QAM



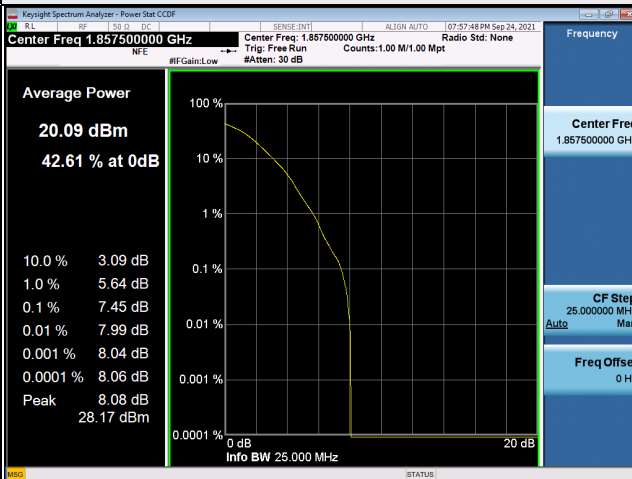
5MHz / 256QAM



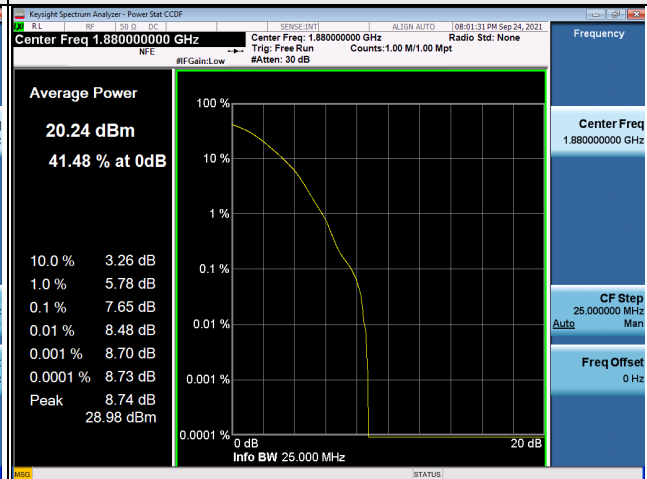
10MHz / 256QAM



15MHz / 256QAM



20MHz / 256QAM

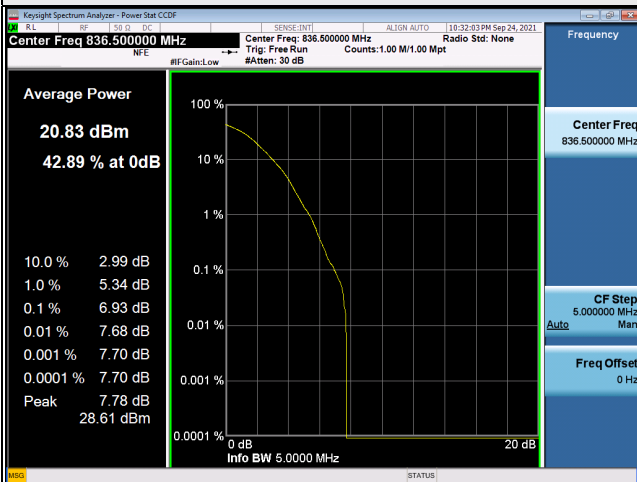


LTE Band 5

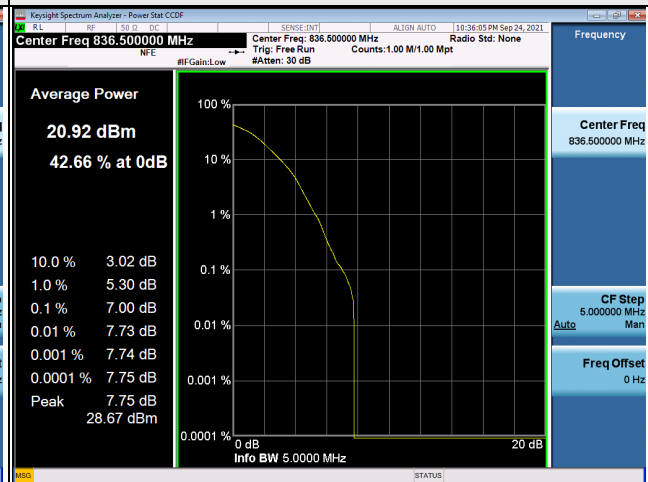
LTE Band 5, Channel Bandwidth 1.4MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			
		QPSK	16QAM	64QAM	256QAM
20407	824.7	3.90	5.64	6.71	6.67
20525	836.5	3.88	5.58	6.73	6.93
20643	848.3	3.78	4.91	6.08	6.78
LTE Band 5, Channel Bandwidth 3MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			
		QPSK	16QAM	64QAM	256QAM
20415	825.5	3.57	5.45	6.72	6.90
20525	836.5	3.62	5.54	6.95	7.00
20635	847.5	3.53	5.20	6.26	6.81
LTE Band 5, Channel Bandwidth 5MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			
		QPSK	16QAM	64QAM	256QAM
20425	826.5	3.59	5.46	6.71	6.80
20525	836.5	3.68	5.57	6.86	6.87
20625	846.5	3.57	5.19	6.20	6.99
LTE Band 5, Channel Bandwidth 10MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			
		QPSK	16QAM	64QAM	256QAM
20450	829.0	3.64	5.53	6.61	7.07
20525	836.5	3.75	5.53	6.73	7.78
20600	844.0	3.48	5.36	6.34	6.83

Spectrum Plot of Worst Value

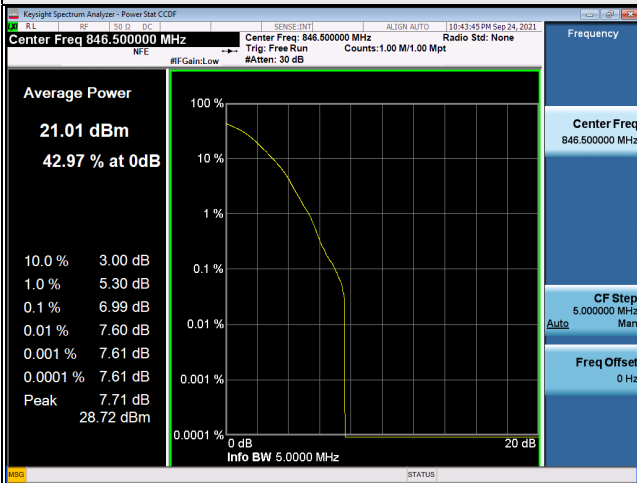
1.4MHz / 256QAM



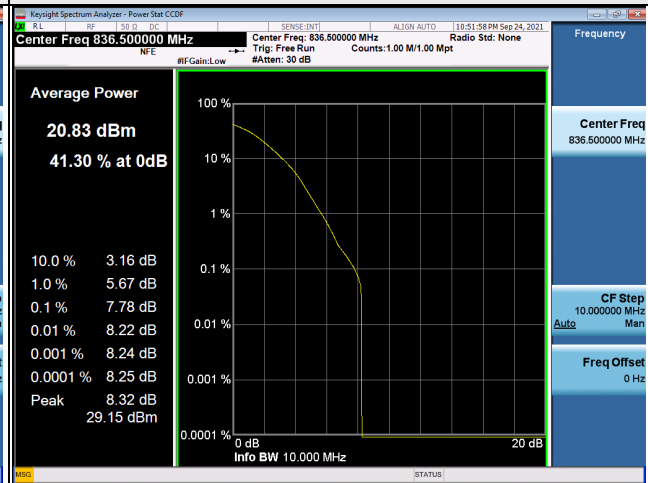
3MHz / 256QAM



5MHz / 256QAM



10MHz / 256QAM

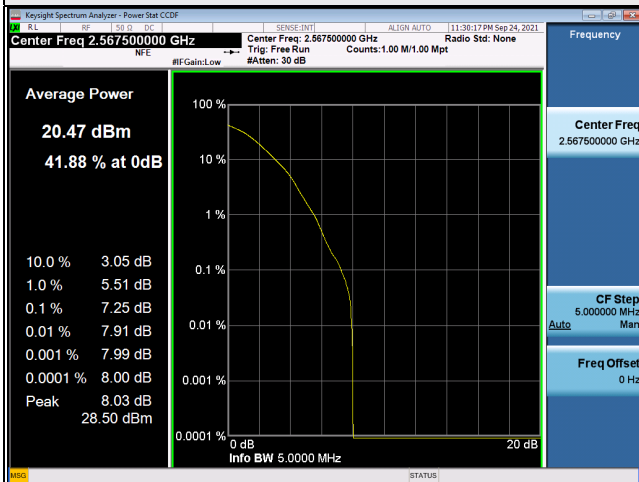


LTE Band 7

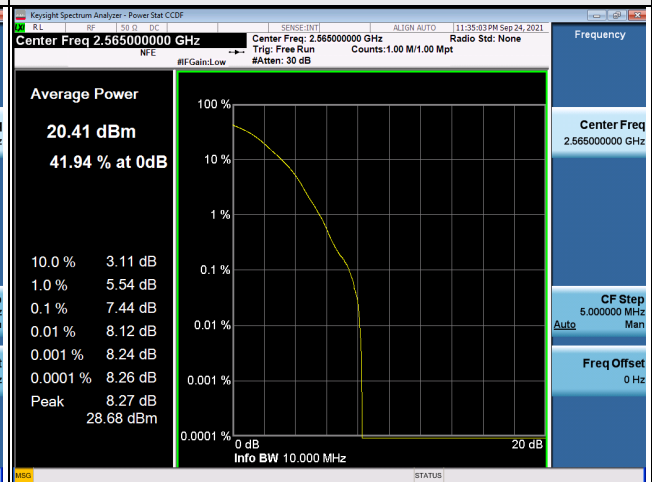
LTE Band 7, Channel Bandwidth 5MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			
		QPSK	16QAM	64QAM	256QAM
20775	2502.5	3.51	5.29	6.49	6.82
21100	2535.0	3.58	5.04	6.22	7.01
21425	2567.5	3.56	4.72	6.18	7.25
LTE Band 7, Channel Bandwidth 10MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			
		QPSK	16QAM	64QAM	256QAM
20800	2505.0	3.54	5.34	6.49	7.23
21100	2535.0	3.57	4.85	6.13	7.26
21400	2565.0	3.55	4.84	6.15	7.44
LTE Band 7, Channel Bandwidth 15MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			
		QPSK	16QAM	64QAM	256QAM
20825	2507.5	3.43	5.23	6.31	6.86
21100	2535.0	3.39	4.75	6.02	6.83
21375	2562.5	3.50	5.24	6.61	7.39
LTE Band 7, Channel Bandwidth 20MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			
		QPSK	16QAM	64QAM	256QAM
20850	2510.0	3.41	5.26	5.97	6.98
21100	2535.0	3.35	4.83	6.05	6.97
21350	2560.0	3.49	5.32	6.78	7.29

Spectrum Plot of Worst Value

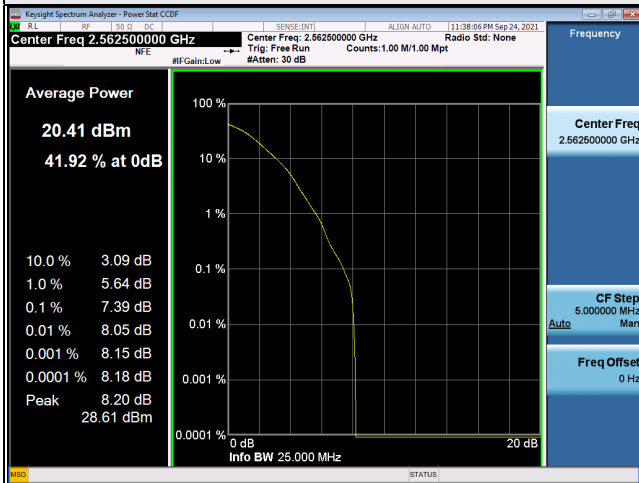
5MHz / 256QAM



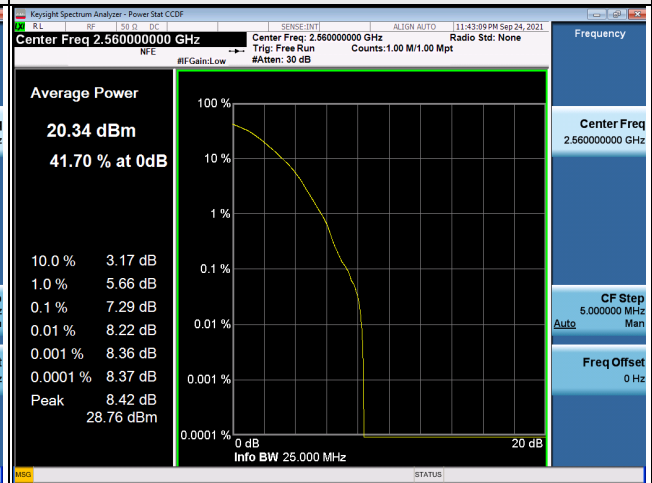
10MHz / 256QAM



15MHz / 256QAM



20MHz / 256QAM

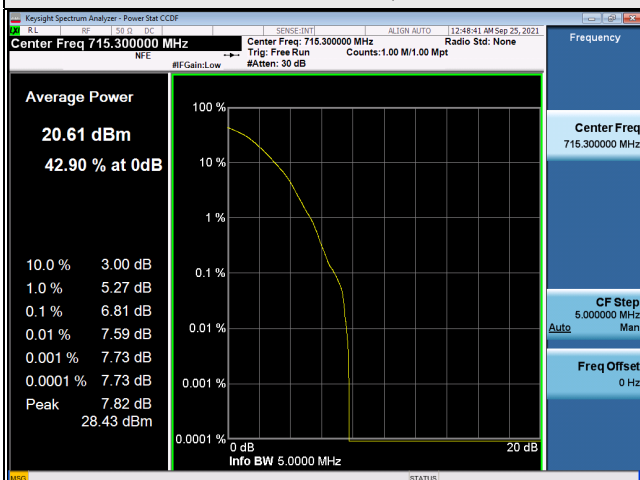


LTE Band 12

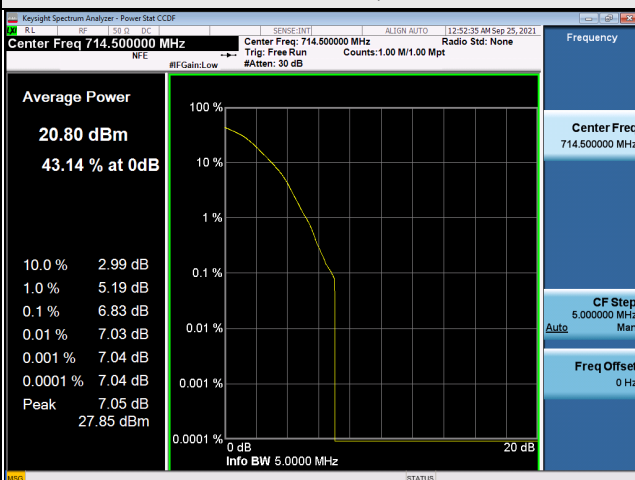
LTE Band 12, Channel Bandwidth 1.4MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			
		QPSK	16QAM	64QAM	256QAM
23017	699.7	3.36	4.87	5.86	6.11
23095	707.5	3.78	5.34	6.40	6.81
23173	715.3	3.64	4.87	5.97	6.81
LTE Band 12, Channel Bandwidth 3MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			
		QPSK	16QAM	64QAM	256QAM
23025	700.5	3.15	4.69	5.73	6.22
23095	707.5	3.49	5.12	6.32	6.82
23165	714.5	3.49	5.12	6.25	6.83
LTE Band 12, Channel Bandwidth 5MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			
		QPSK	16QAM	64QAM	256QAM
23035	701.5	3.19	4.79	5.73	6.39
23095	707.5	3.42	5.01	6.00	6.90
23155	713.5	3.56	5.26	6.48	7.09
LTE Band 12, Channel Bandwidth 10MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			
		QPSK	16QAM	64QAM	256QAM
23060	704.0	3.17	4.68	5.79	6.59
23095	707.5	3.22	4.59	5.76	6.58
23130	711.0	3.48	5.02	6.13	7.21

Spectrum Plot of Worst Value

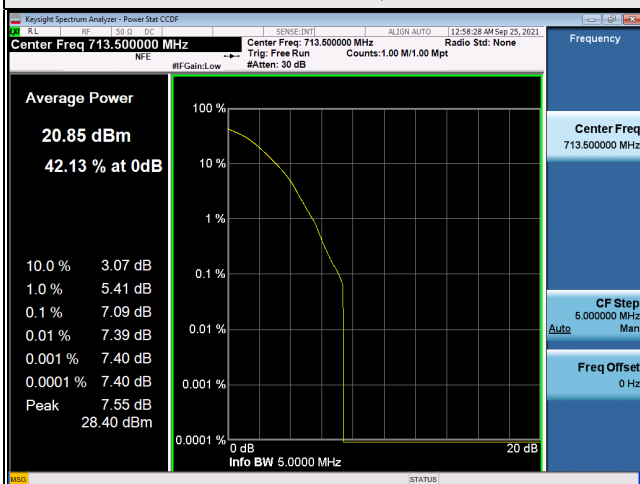
1.4MHz / 256QAM



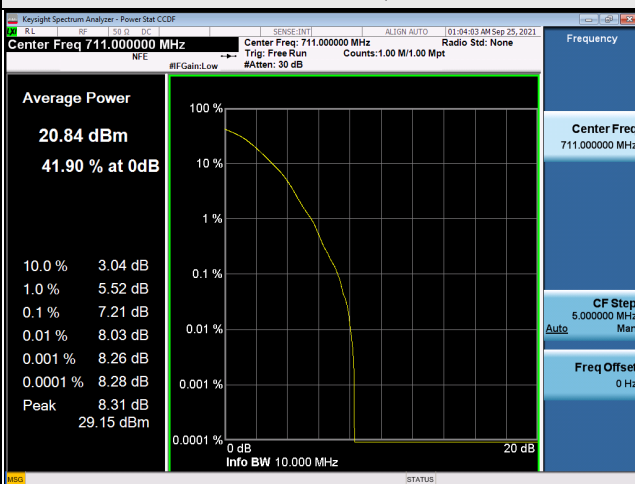
3MHz / 256QAM



5MHz / 256QAM



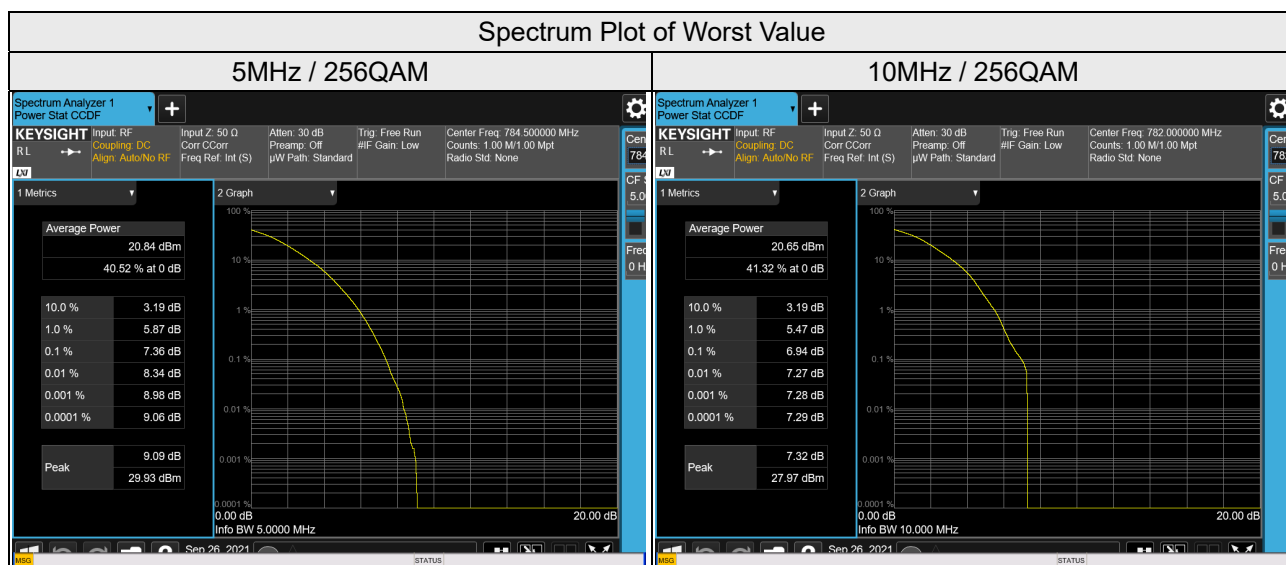
10MHz / 256QAM



LTE Band 13

LTE Band 13, Channel Bandwidth 5MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			
		QPSK	16QAM	64QAM	256QAM
23205	779.5	2.84	3.62	4.76	6.49
23230	782.0	2.86	4.13	6.12	6.52
23255	784.5	3.61	5.39	6.56	7.36

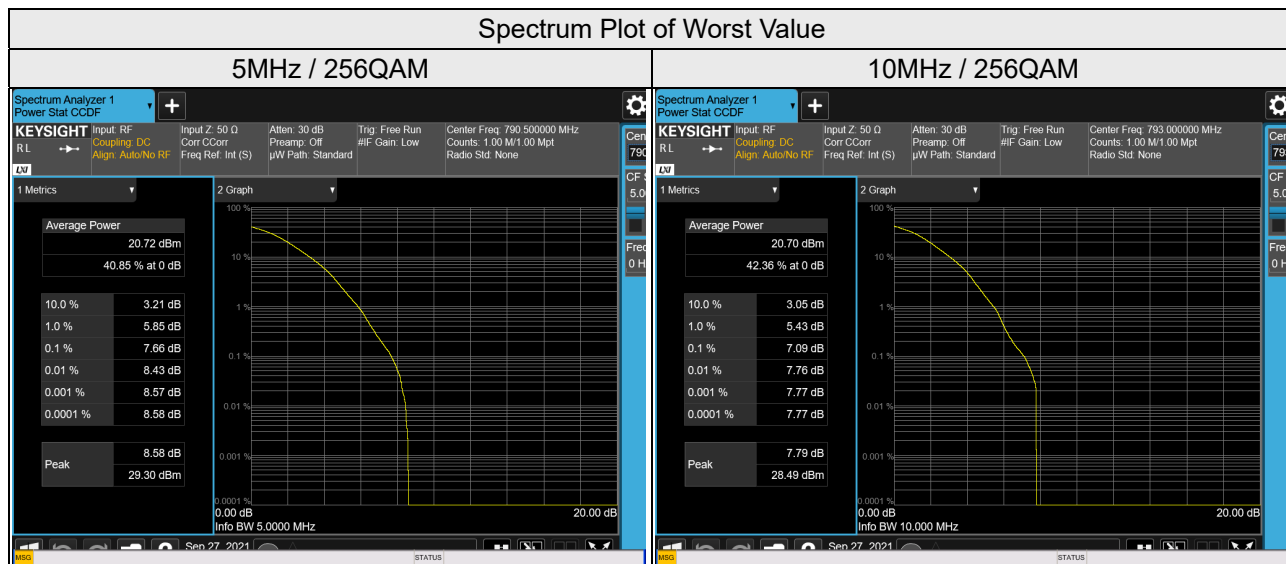
LTE Band 13, Channel Bandwidth 10MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			
		QPSK	16QAM	64QAM	256QAM
23230	782.0	2.88	3.72	4.82	6.94



LTE Band 14

LTE Band 14, Channel Bandwidth 5MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			
		QPSK	16QAM	64QAM	256QAM
23305	790.5	3.59	5.35	6.61	7.66
23330	793	3.58	5.29	6.52	7.63
23355	795.5	3.57	5.32	6.64	7.08

LTE Band 14, Channel Bandwidth 10MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			
		QPSK	16QAM	64QAM	256QAM
23330	793	3.62	5.35	6.72	7.09

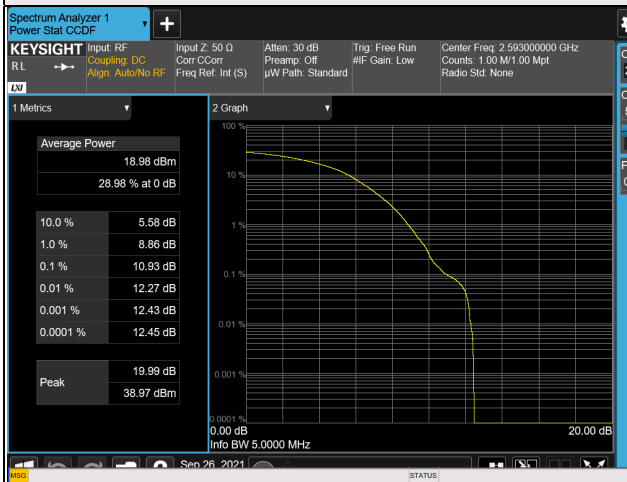


LTE Band 41

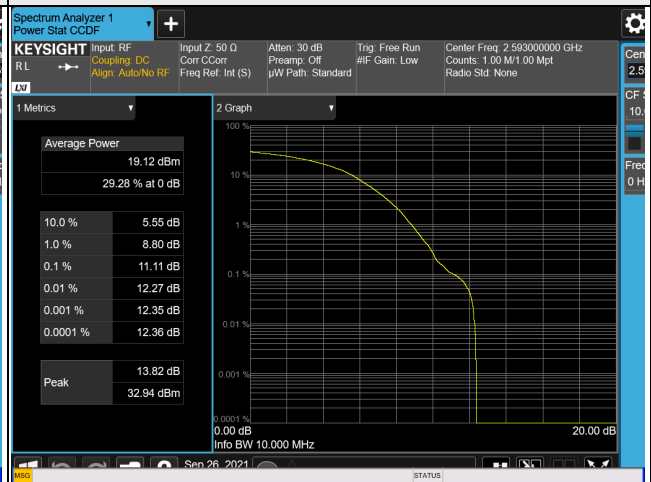
LTE Band 41, Channel Bandwidth 5MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			
		QPSK	16QAM	64QAM	256QAM
39675	2498.5	7.79	8.05	10.17	10.41
40620	2593	7.81	8.43	10.32	10.93
41565	2687.5	7.42	8.64	10.31	10.73
LTE Band 41, Channel Bandwidth 10MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			
		QPSK	16QAM	64QAM	256QAM
39700	2501	7.42	8.37	10.49	10.13
40620	2593	7.69	8.13	10.33	11.11
41540	2685	7.62	8.08	10.54	9.72
LTE Band 41, Channel Bandwidth 15MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			
		QPSK	16QAM	64QAM	256QAM
39725	2503.5	8.64	9.01	9.62	11.87
40620	2593	6.79	7.76	10.38	11.55
41515	2682.5	6.63	8.66	11.18	9.62
LTE Band 41, Channel Bandwidth 20MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			
		QPSK	16QAM	64QAM	256QAM
39750	2506	7.02	9.46	9.74	11.13
40620	2593	6.85	8.54	11.41	10.20
41490	2680	8.40	8.24	11.48	10.19

Spectrum Plot of Worst Value

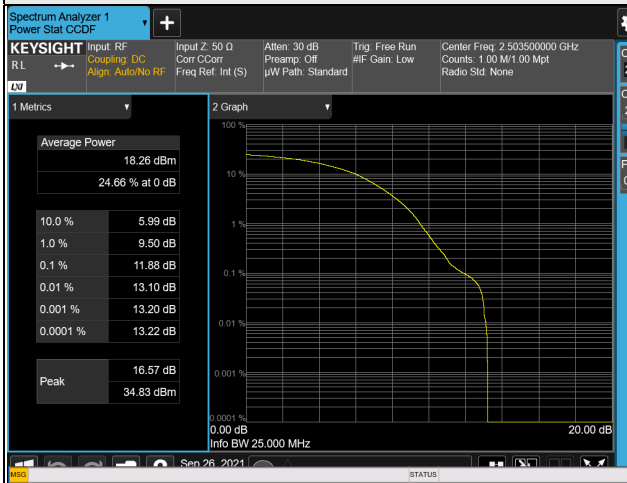
5MHz / 256QAM



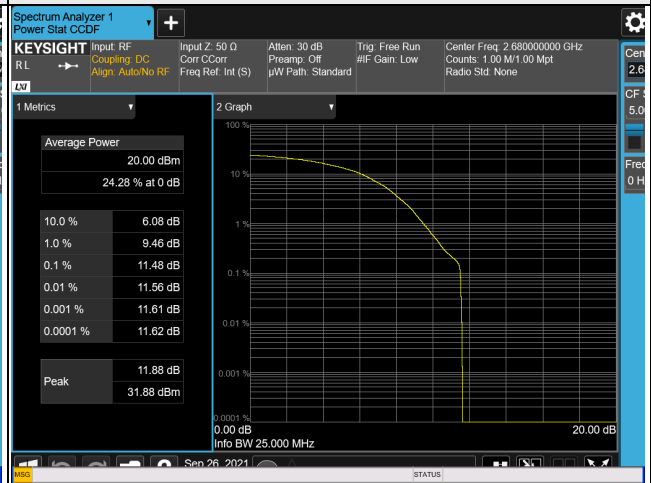
10MHz / 256QAM



15MHz / 256QAM



20MHz / 64QAM



LTE Band 66

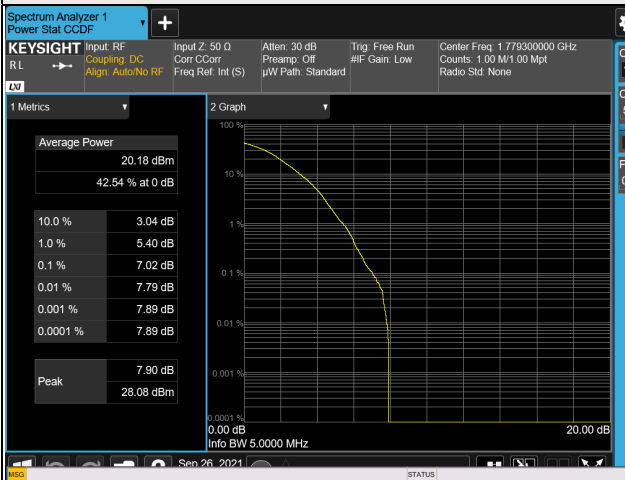
LTE Band 66, Channel Bandwidth 1.4MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			
		QPSK	16QAM	64QAM	256QAM
131979	1710.7	3.82	5.57	6.71	6.90
132322	1745.0	3.87	5.56	6.72	6.86
132665	1779.3	3.85	5.61	6.78	7.02
LTE Band 66, Channel Bandwidth 3MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			
		QPSK	16QAM	64QAM	256QAM
131987	1711.5	3.55	5.43	6.66	6.76
132322	1745.0	3.58	5.42	6.67	6.87
132657	1778.5	3.48	5.45	6.80	7.17
LTE Band 66, Channel Bandwidth 5MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			
		QPSK	16QAM	64QAM	256QAM
131997	1712.5	3.63	5.47	6.73	6.73
132322	1745.0	3.63	5.39	6.80	6.98
132647	1777.5	3.71	5.56	6.91	7.42
LTE Band 66, Channel Bandwidth 10MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			
		QPSK	16QAM	64QAM	256QAM
132022	1715.0	3.70	5.40	6.67	7.22
132322	1745.0	3.69	5.24	6.58	7.18
132622	1775.0	3.65	5.28	6.65	7.58
LTE Band 66, Channel Bandwidth 15MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			
		QPSK	16QAM	64QAM	256QAM
132047	1717.5	3.56	5.35	6.67	6.73
132322	1745.0	3.52	5.36	6.56	7.01
132597	1772.5	3.40	5.33	6.75	7.30

LTE Band 66, Channel Bandwidth 20MHz

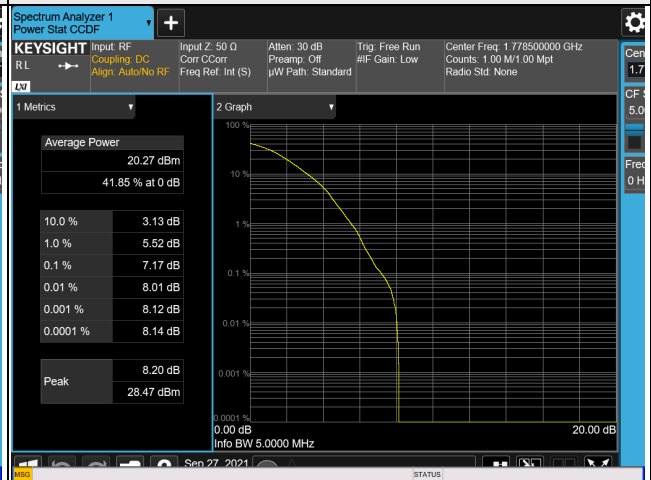
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			
		QPSK	16QAM	64QAM	256QAM
132072	1720.0	3.57	5.41	6.90	7.08
132322	1745.0	3.52	5.05	6.29	6.84
132572	1770.0	3.39	4.29	6.66	6.77

Spectrum Plot of Worst Value

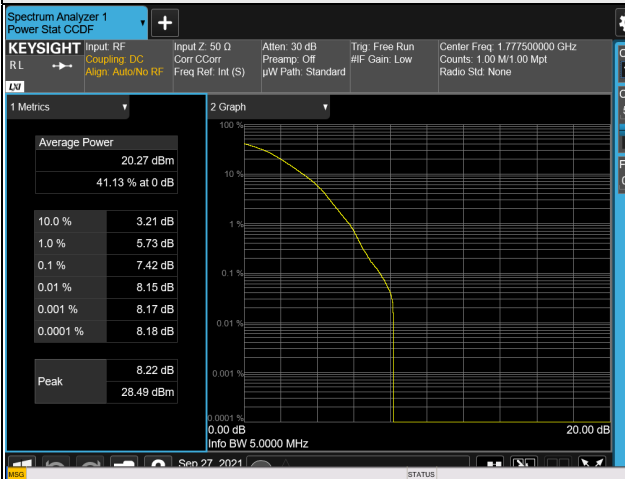
1.4MHz / 256QAM



3MHz / 256QAM



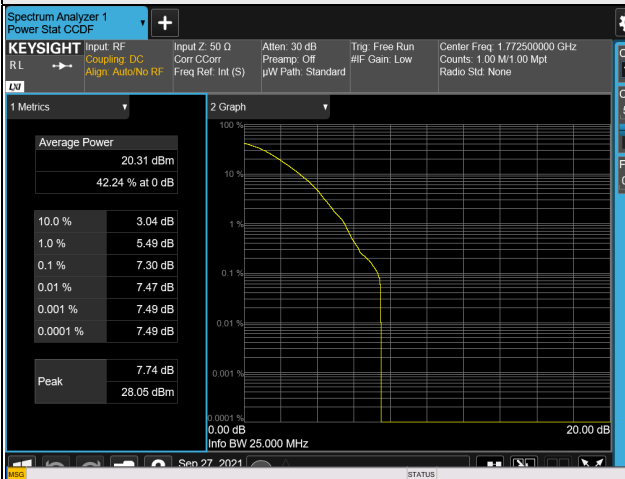
5MHz / 256QAM



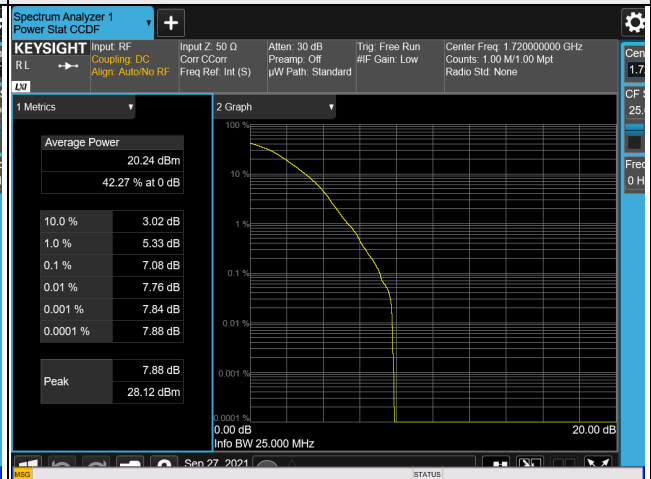
10MHz / 256QAM



15MHz / 256QAM



20MHz / 256QAM



4.7 Conducted Spurious Emissions

4.7.1 Limits of Conducted Spurious Emissions Measurement

For 5G NR n77 (Part 27O):

According to FCC 27.53(l), for 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.

For 5G NR n77 (Part 27Q):

According to FCC 27.53(n), for operations in the 3450-3550 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed -13 dBm/MHz.

For LTE Band 2, 5:

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. The emission limit equal to -13 dBm.

For LTE Band 7, 41:

According to FCC 27.53(m)(4), on any frequency outside a licensee's frequency block, The power of any emission shall be attenuated below the transmitter power (P) by at least $55 + 10 \log(P)$ dB. The emission limit equal to -25 dBm.

For LTE Band 12:

According to FCC 27.53(g), for operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least $43 + 10 \log(P)$ dB. The limit of emissions is equal to -13 dBm.

For LTE Band 13:

According to FCC 27.53(c)(2), for on any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log(P)$ dB. The limit of emissions is equal to -13 dBm.

According to FCC 27.53(f), for operations in the 775-788 MHz, emissions in the band 1559-1610MHz shall be limited to -70 dBW/MHz (EIRP). The limit of emissions is equal to -40 dBm.

For LTE Band 14:

The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least $43 + 10 \log_{10}(P)$ dB. The limit of emission equal to -13 dBm.

For operations in the 758-775 MHz and 788-805 MHz bands, all emissions including harmonics in the band 1559-1610 MHz shall be limited to -70 dBW/MHz. The limit of emissions is equal to -40 dBm.

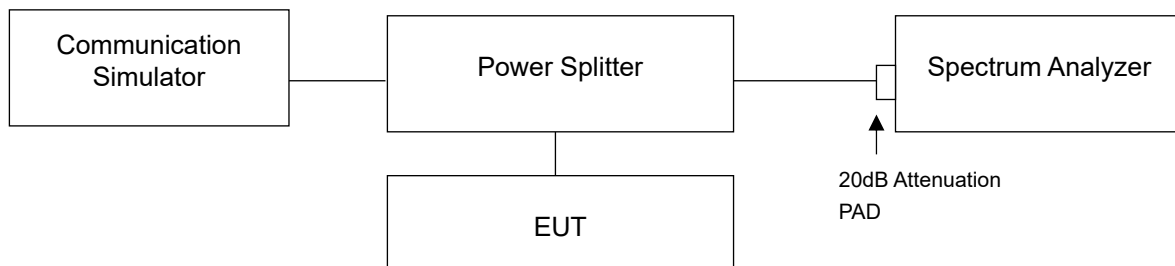
For LTE Band 30:

According to FCC 27.53(a)(4)(ii)(iii), the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least $70 + 10 \log(P)$ dB. The limit of emission is equal to -40 dBm.

For LTE Band 66:

According to FCC 27.53(h), for operations in the 1695-1710MHz, 1710-1755MHz, 1755-1780 MHz 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 $43 + 10 \log(P)$ dB.

4.7.2 Test Setup



4.7.3 Test Procedure

For 5GNR n77, LTE Band 7, 12, 13, 30, 41, 66:

- a. All measurements were done at 3 channels: low, middle and high operational frequency range.
- b. Measuring frequency range is from 9 kHz up to the tenth harmonic of the highest fundamental frequency or to 40GHz, whichever is lower. 20dB attenuation pad is connected with spectrum.
- c. The fundamental frequency above 1GHz, the spectrum set RBW = 1MHz, VBW = 3MHz.
- d. The fundamental frequency below 1GHz, the spectrum set RBW \geq 100 kHz, VBW \geq 3 x RBW.
- e. Measurement refer to ANSI C63.26 section 5.7.3.

For LTE Band 2:

- f. The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.
- g. Measuring frequency range is from 9kHz to 20GHz. 20dB attenuation pad is connected with spectrum. RBW=1MHz and VBW=3MHz are used for conducted emission measurement.

For LTE Band 5:

- h. The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.
- i. Measuring frequency range is from 9kHz to 9GHz. 20dB attenuation pad is connected with spectrum. RBW=100kHz and VBW=300kHz for 9kHz to 1GHz and RBW=1MHz and VBW=3MHz for 1 GHz to 9GHz are used for LTE band conducted emission measurement.

For LTE Band 14:

- j. Measuring frequency range is from 9kHz to 8GHz. 20dB attenuation pad is connected with spectrum. RBW=100kHz and VBW=300kHz for 9kHz to 1GHz and RBW=1MHz and VBW=3MHz for 1 GHz to 9GHz are used for LTE band conducted emission measurement.

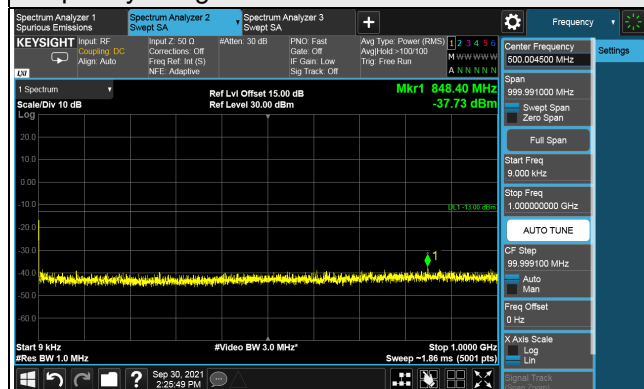
4.7.4 Test Results

5G NR n77 (Part 270):

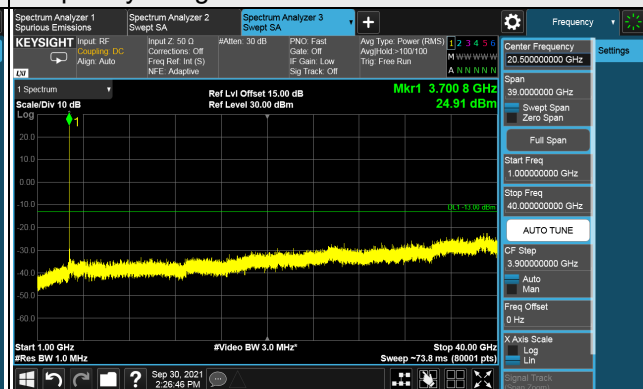
5G NR n77 (Part 270), Channel Bandwidth 20MHz

Channel 647334 (3710.01MHz)

Frequency Range : 9kHz ~ 1GHz

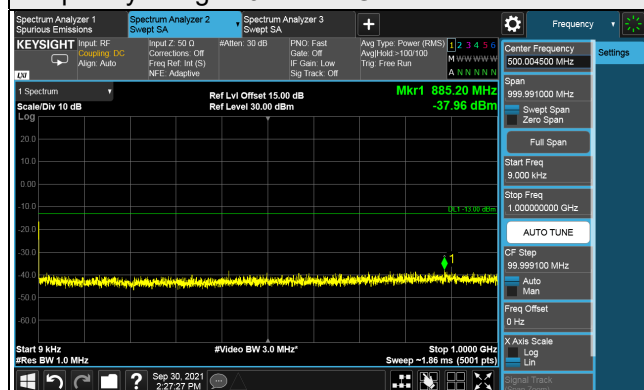


Frequency Range : 1GHz ~ 40GHz

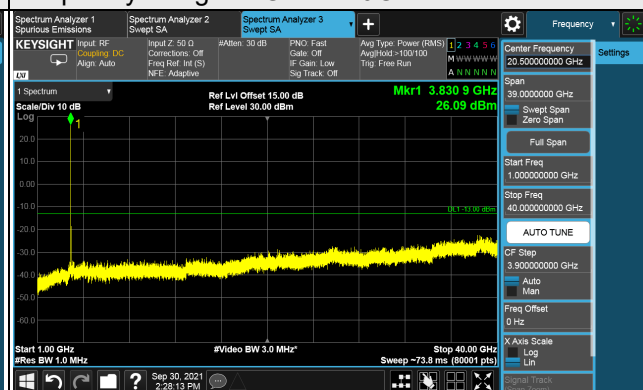


Channel 656000 (3840.00MHz)

Frequency Range : 9kHz ~ 1GHz

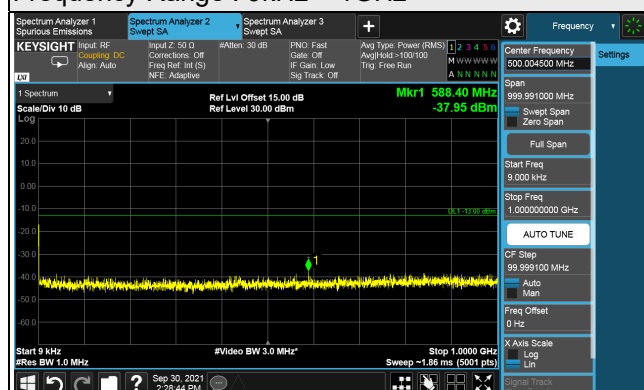


Frequency Range : 1GHz ~ 40GHz

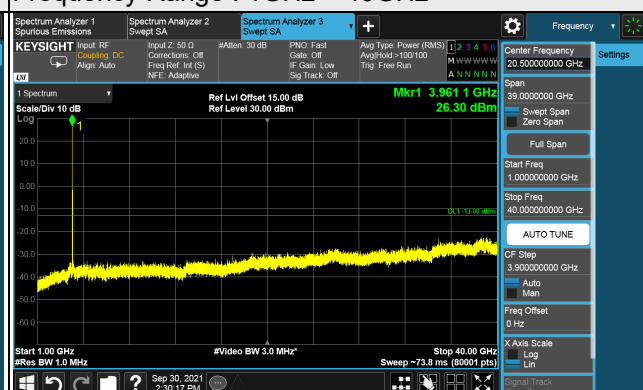


Channel 665666 (3969.99MHz)

Frequency Range : 9kHz ~ 1GHz



Frequency Range : 1GHz ~ 40GHz

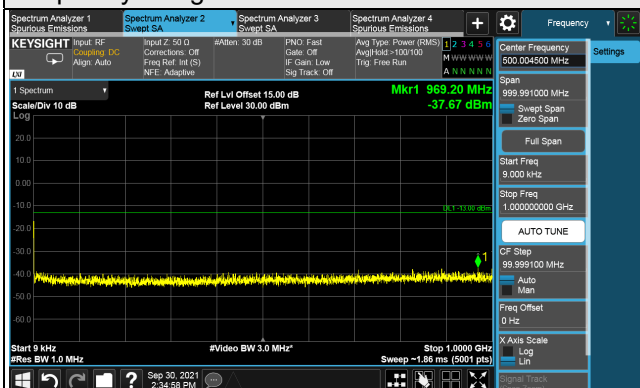


*The 9 kHz tone is from the spectrum analyzer.

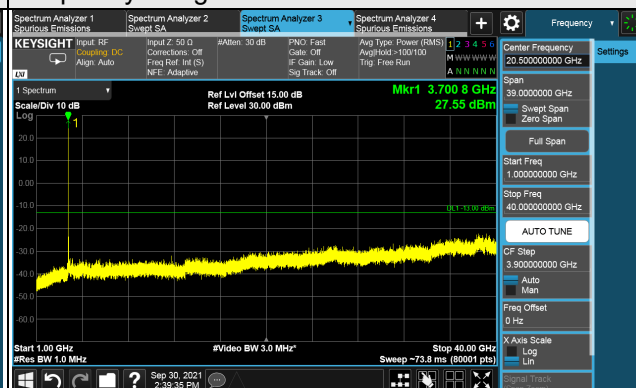
5G NR n77 (Part 270), Channel Bandwidth 40MHz

Channel 648000 (3720.00MHz)

Frequency Range : 9kHz ~ 1GHz

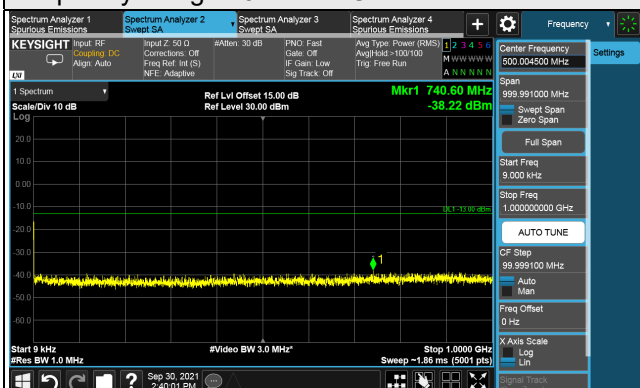


Frequency Range : 1GHz ~ 40GHz

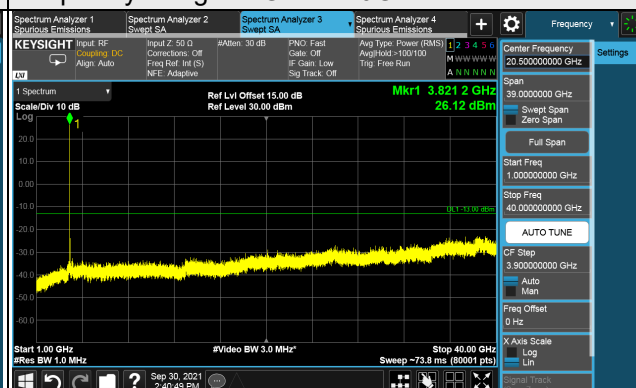


Channel 656000 (3840.00MHz)

Frequency Range : 9kHz ~ 1GHz

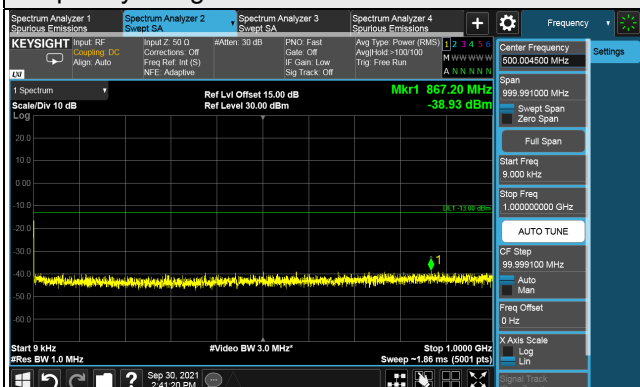


Frequency Range : 1GHz ~ 40GHz

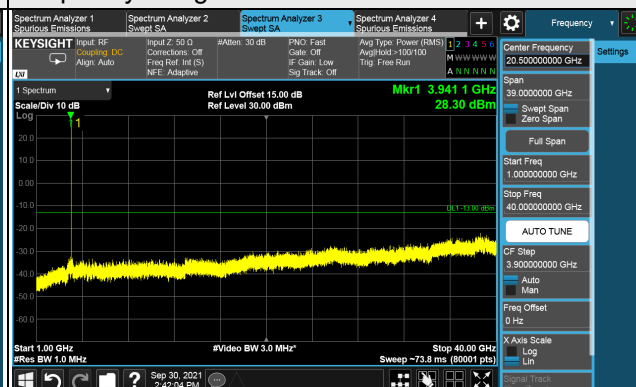


Channel 664000 (3960.00MHz)

Frequency Range : 9kHz ~ 1GHz



Frequency Range : 1GHz ~ 40GHz

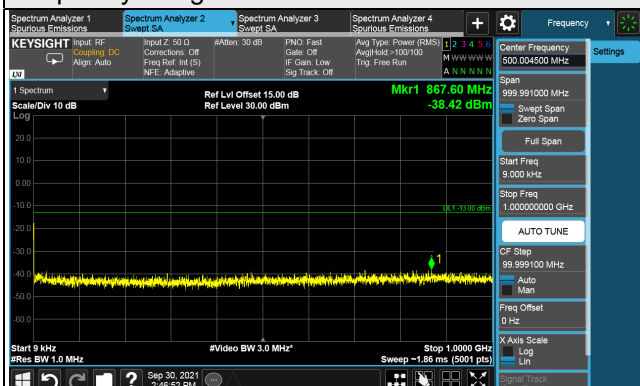


*The 9 kHz tone is from the spectrum analyzer.

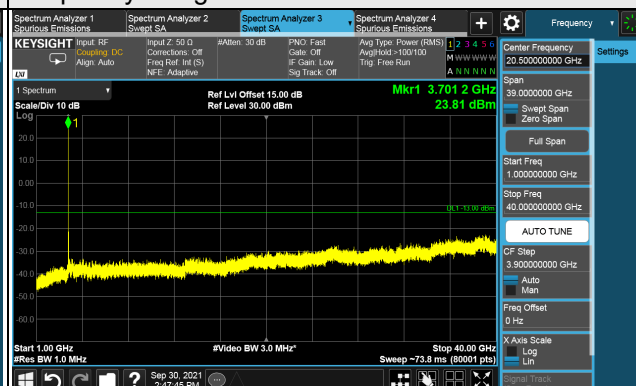
5G NR n77 (Part 270), Channel Bandwidth 50MHz

Channel 648334 (3725.01MHz)

Frequency Range : 9kHz ~ 1GHz

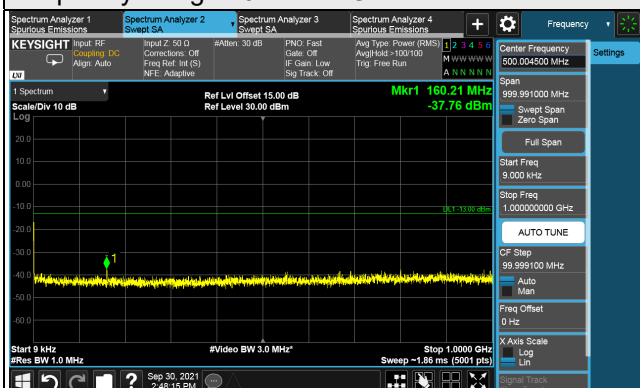


Frequency Range : 1GHz ~ 40GHz

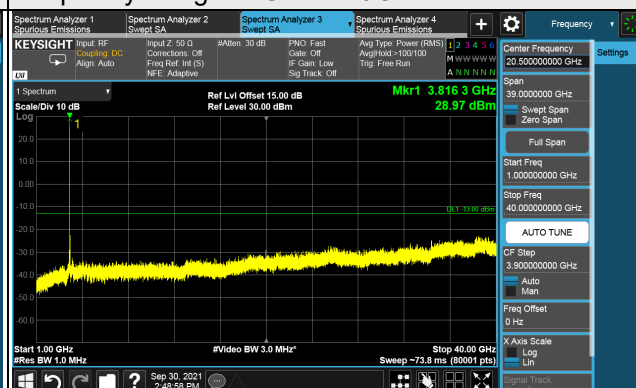


Channel 656000 (3840.00MHz)

Frequency Range : 9kHz ~ 1GHz

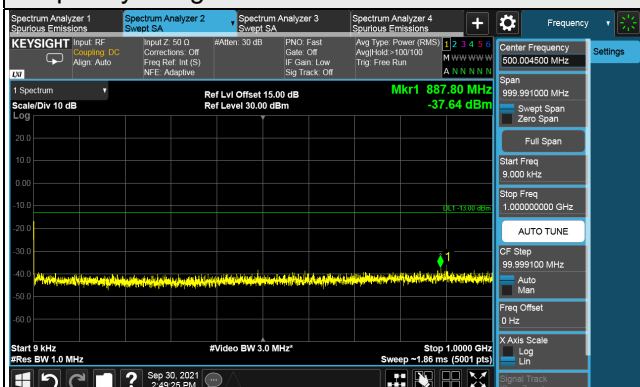


Frequency Range : 1GHz ~ 40GHz

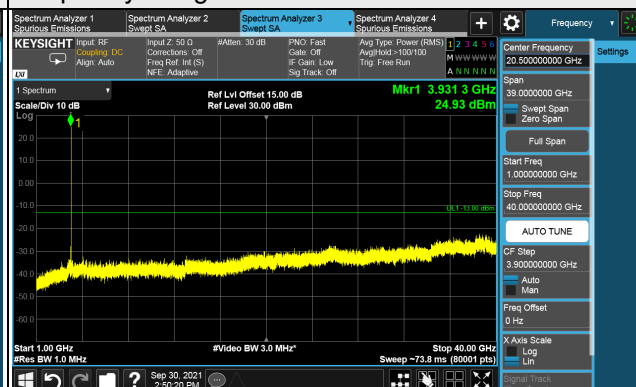


Channel 663666 (3954.99MHz)

Frequency Range : 9kHz ~ 1GHz



Frequency Range : 1GHz ~ 40GHz

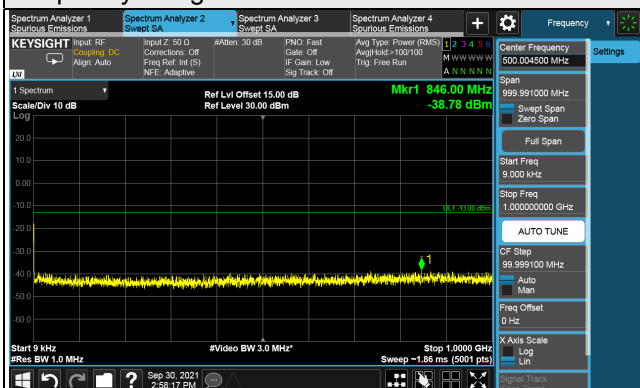


*The 9 kHz tone is from the spectrum analyzer.

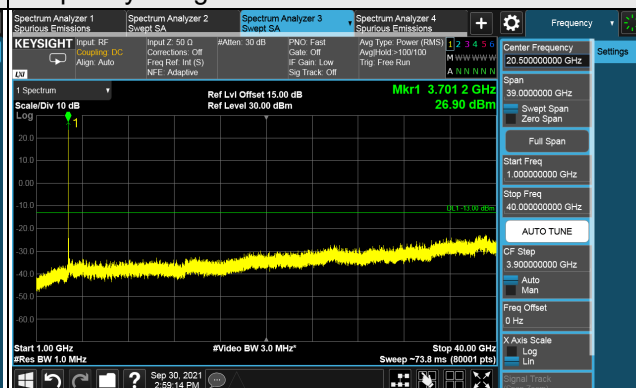
5G NR n77 (Part 270), Channel Bandwidth 60MHz

Channel 648668 (3730.02MHz)

Frequency Range : 9kHz ~ 1GHz

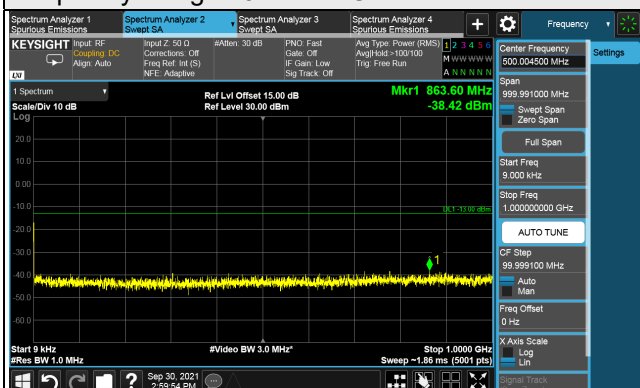


Frequency Range : 1GHz ~ 40GHz

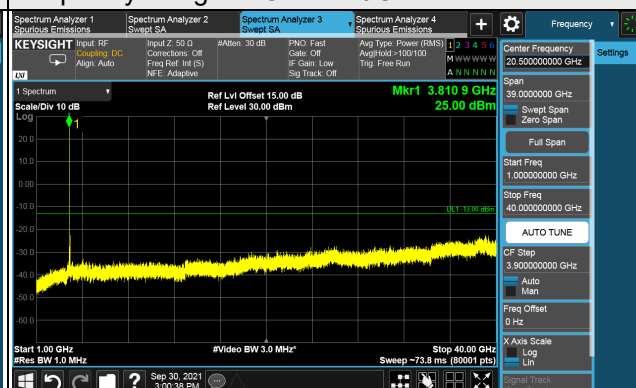


Channel 656000 (3840.00MHz)

Frequency Range : 9kHz ~ 1GHz

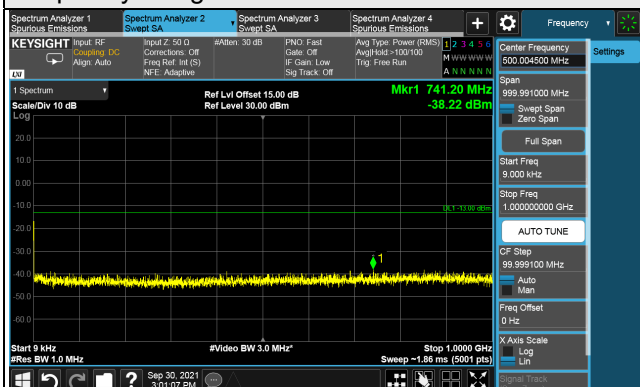


Frequency Range : 1GHz ~ 40GHz

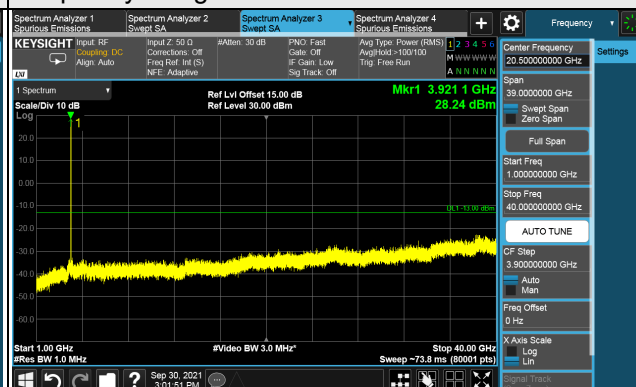


Channel 663332 (3949.98MHz)

Frequency Range : 9kHz ~ 1GHz



Frequency Range : 1GHz ~ 40GHz



*The 9 kHz tone is from the spectrum analyzer.