

Spectrum Plot of Worst Value

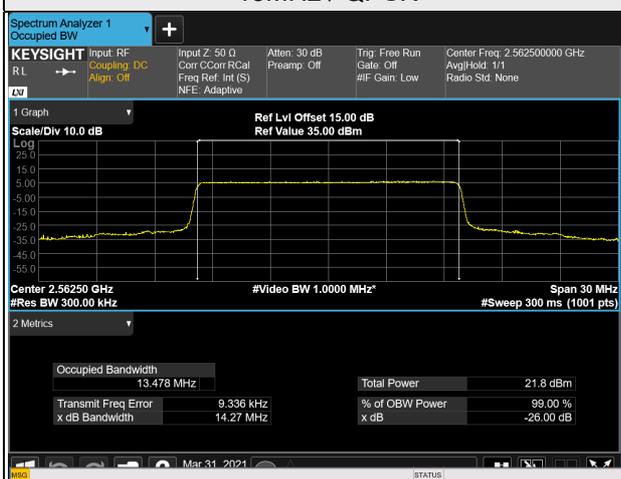
5MHz / 64QAM



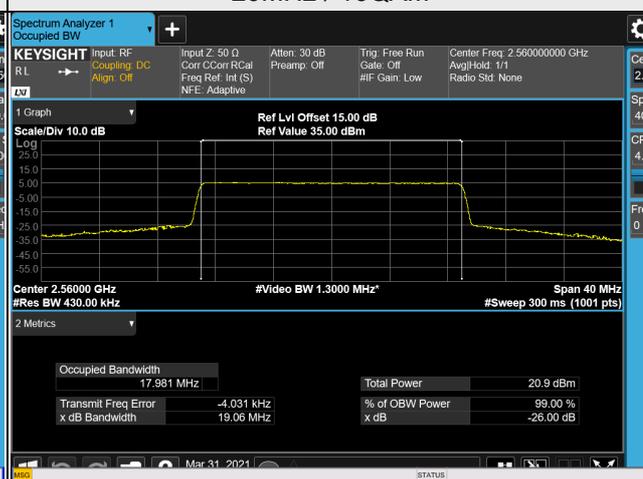
10MHz / 64QAM



15MHz / QPSK



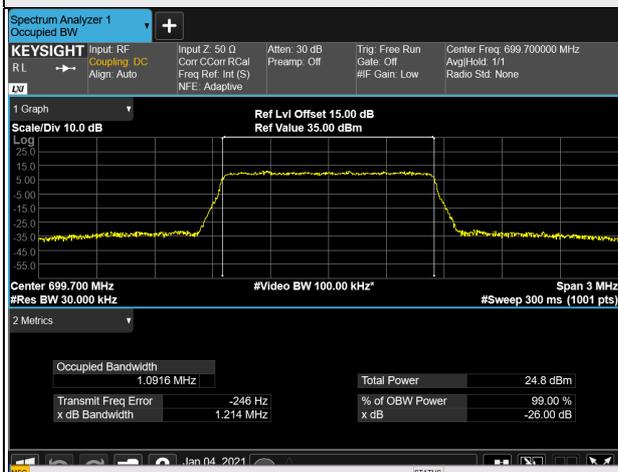
20MHz / 16QAM



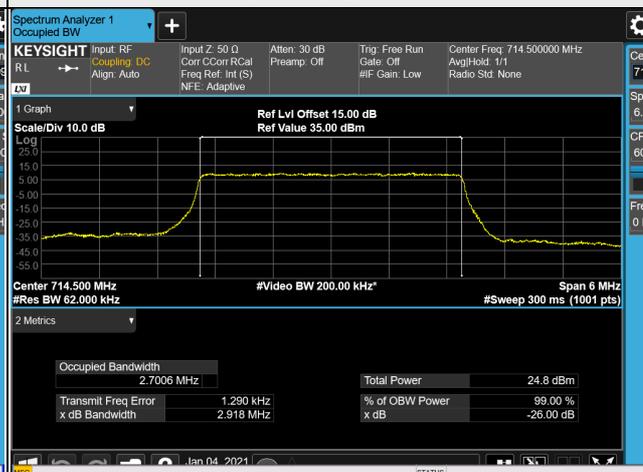
LTE Band 12, Channel Bandwidth 1.4MHz					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
23017	699.7	1.09	1.09	1.09	1.09
23095	707.5	1.09	1.09	1.09	1.08
23173	715.3	1.09	1.09	1.09	1.09
LTE Band 12, Channel Bandwidth 3MHz					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
23025	700.5	2.70	2.69	2.70	2.69
23095	707.5	2.70	2.70	2.70	2.69
23165	714.5	2.70	2.70	2.70	2.69
LTE Band 12, Channel Bandwidth 5MHz					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
23035	701.5	4.48	4.49	4.50	4.48
23095	707.5	4.48	4.48	4.50	4.48
23155	713.5	4.48	4.49	4.50	4.48
LTE Band 12, Channel Bandwidth 10MHz					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
23060	704.0	8.96	8.96	8.96	8.95
23095	707.5	8.96	8.97	8.97	8.95
23130	711.0	8.95	8.96	8.96	8.96

Spectrum Plot of Worst Value

1.4MHz / 16QAM



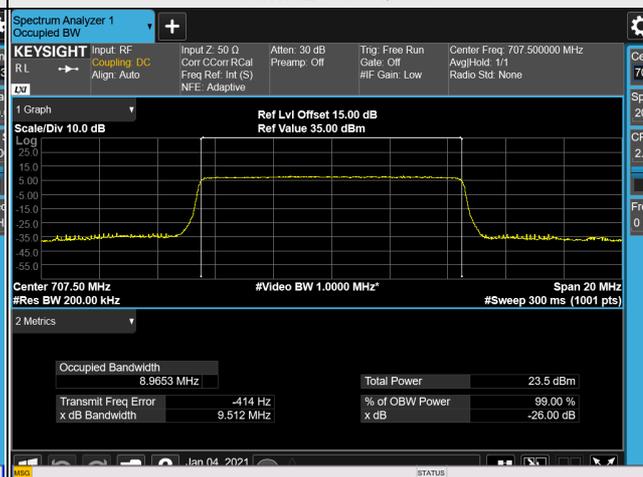
3MHz / QPSK



5MHz / 64QAM

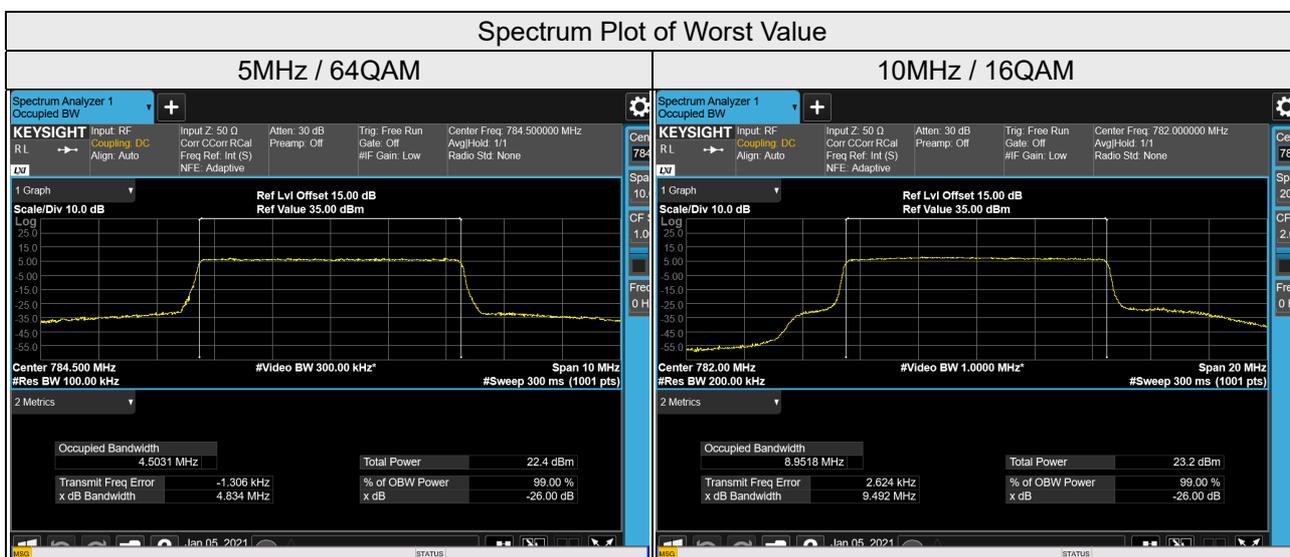


10MHz / 16QAM



LTE Band 13, Channel Bandwidth 5MHz					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
23205	779.5	4.48	4.49	4.50	4.48
23230	782.0	4.49	4.49	4.49	4.48
23255	784.5	4.49	4.49	4.50	4.49

LTE Band 13, Channel Bandwidth 10MHz					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
23230	782.0	8.95	8.95	8.95	8.93



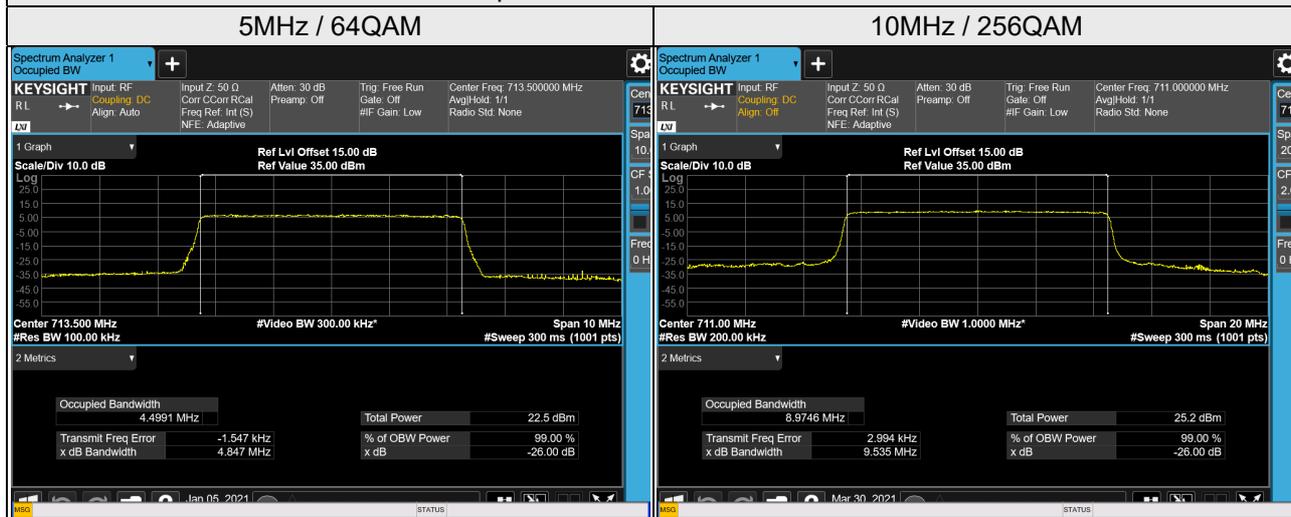
LTE Band 17, Channel Bandwidth 5MHz

Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
23755	706.5	4.48	4.49	4.49	4.49
23790	710.0	4.48	4.49	4.50	4.49
23825	713.5	4.48	4.49	4.50	4.49

LTE Band 17, Channel Bandwidth 10MHz

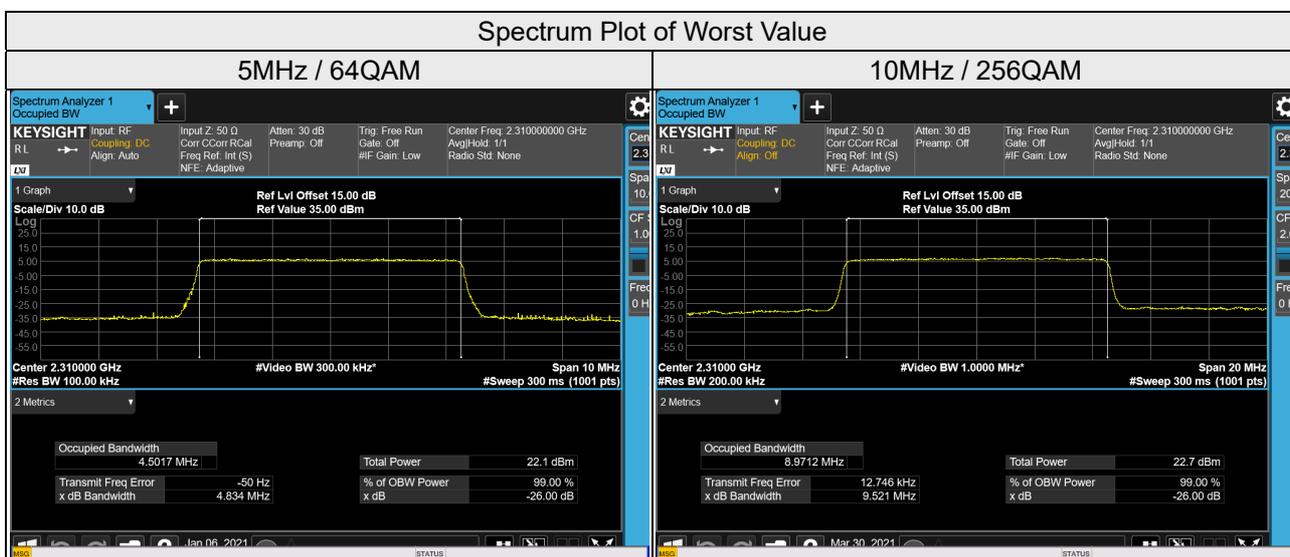
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
23780	709.0	8.95	8.95	8.95	8.97
23790	710.0	8.95	8.96	8.96	8.97
23800	711.0	8.95	8.96	8.96	8.97

Spectrum Plot of Worst Value



LTE Band 30, Channel Bandwidth 5MHz					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
27685	2307.5	4.49	4.49	4.50	4.49
27710	2310.0	4.49	4.49	4.50	4.49
27735	2312.5	4.49	4.49	4.50	4.49

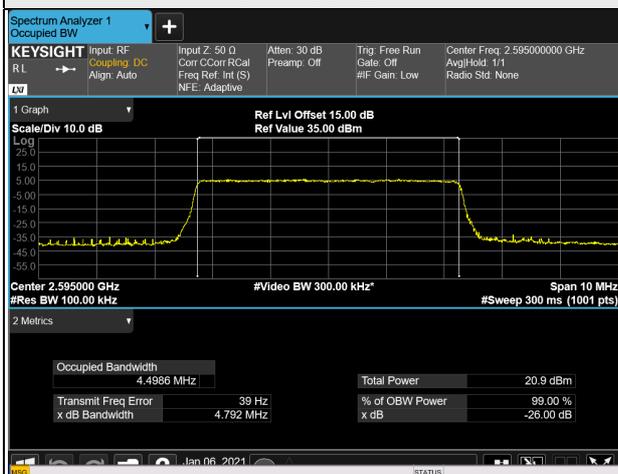
LTE Band 30, Channel Bandwidth 10MHz					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
27710	2310.0	8.96	8.96	8.96	8.97



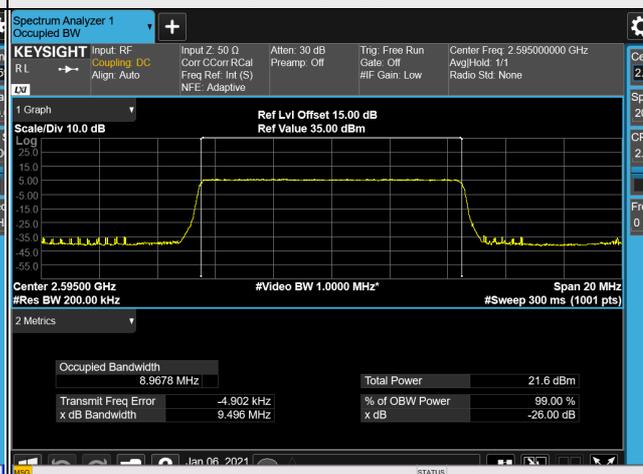
LTE Band 38, Channel Bandwidth 5MHz					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
37775	2572.5	4.49	4.49	4.50	4.48
38000	2595.0	4.49	4.49	4.50	4.48
38225	2617.5	4.49	4.49	4.50	4.48
LTE Band 38, Channel Bandwidth 10MHz					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
37800	2575.0	8.96	8.96	8.96	8.96
38000	2595.0	8.96	8.97	8.97	8.96
38200	2615.0	8.96	8.96	8.96	8.96
LTE Band 38, Channel Bandwidth 15MHz					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
37825	2577.5	13.46	13.44	13.46	13.40
38000	2595.0	13.46	13.45	13.44	13.44
38175	2612.5	13.45	13.44	13.44	13.43
LTE Band 38, Channel Bandwidth 20MHz					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
37850	2580.0	17.92	17.80	17.93	17.91
38000	2595.0	17.90	17.89	17.92	17.91
38150	2610.0	17.91	17.90	17.92	17.90

Spectrum Plot of Worst Value

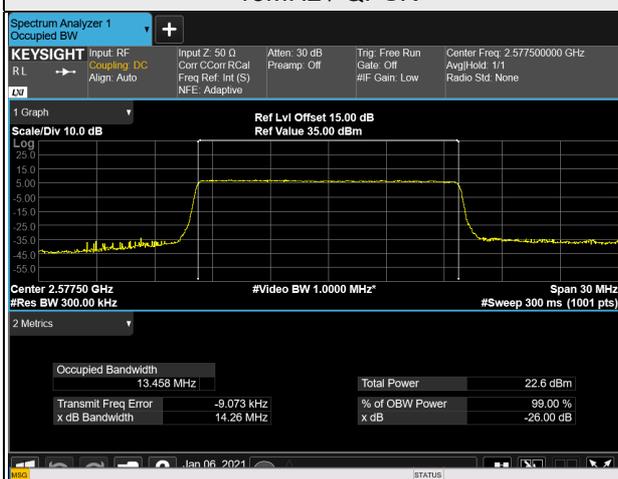
5MHz / 64QAM



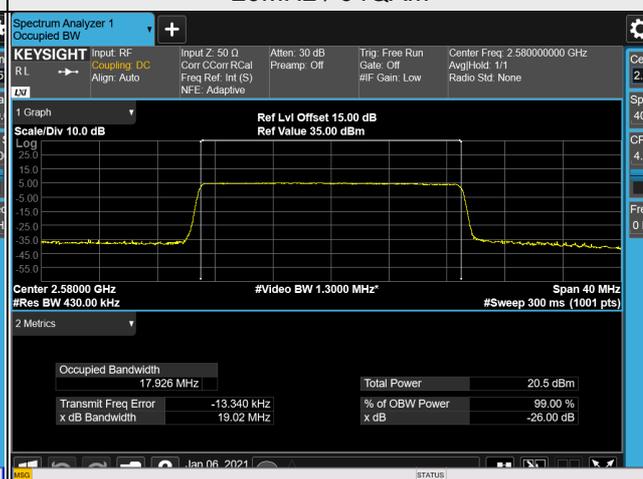
10MHz / 16QAM



15MHz / QPSK



20MHz / 64QAM



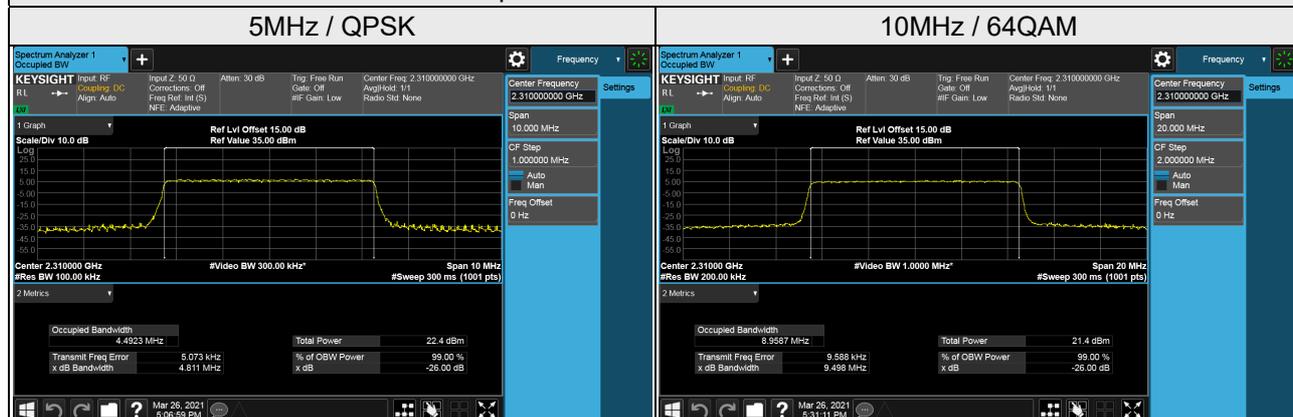
LTE Band 40 (2305MHz ~ 2315MHz), Channel Bandwidth 5MHz

Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
38725	2307.5	4.47	4.47	4.47	4.47
38750	2310.0	4.49	4.48	4.48	4.47
38775	2312.5	4.48	4.48	4.48	4.47

LTE Band 40 (2305MHz ~ 2315MHz), Channel Bandwidth 10MHz

Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
38750	2310.0	8.94	8.93	8.95	8.94

Spectrum Plot of Worst Value



LTE Band 40 (2350MHz ~ 2360MHz), Channel Bandwidth 5MHz

Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
39175	2352.5	4.49	4.48	4.48	4.47
39200	2355.0	4.49	4.47	4.48	4.47
39225	2357.5	4.48	4.48	4.48	4.47

LTE Band 40 (2350MHz ~ 2360MHz), Channel Bandwidth 10MHz

Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
39200	2355.0	8.94	8.95	8.95	8.94

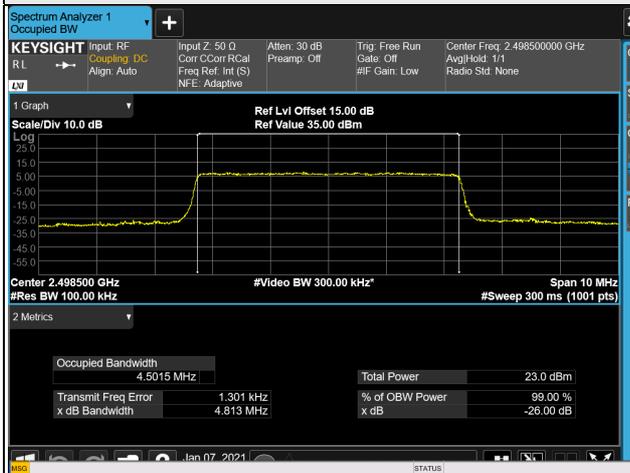
Spectrum Plot of Worst Value



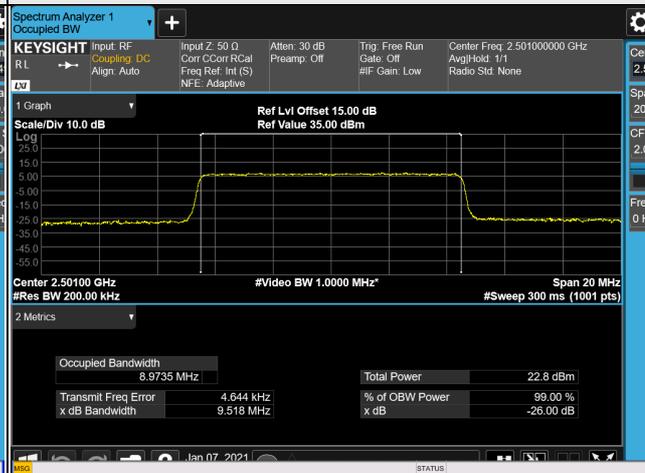
LTE Band 41, Channel Bandwidth 5MHz					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
39675	2498.5	4.49	4.49	4.50	4.48
40620	2593.0	4.49	4.49	4.50	4.48
41565	2687.5	4.49	4.49	4.50	4.48
LTE Band 41, Channel Bandwidth 10MHz					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
39700	2501.0	8.96	8.97	8.97	8.97
40620	2593.0	8.95	8.96	8.97	8.96
41540	2685.0	8.95	8.96	8.95	8.95
LTE Band 41, Channel Bandwidth 15MHz					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
39725	2503.5	13.46	13.46	13.46	13.45
40620	2593.0	13.46	13.44	13.44	13.44
41515	2682.5	13.46	13.44	13.43	13.44
LTE Band 41, Channel Bandwidth 20MHz					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
39750	2506.0	17.93	17.93	17.95	17.92
40620	2593.0	17.91	17.91	17.91	17.91
41490	2680.0	17.90	17.96	17.92	17.91

Spectrum Plot of Worst Value

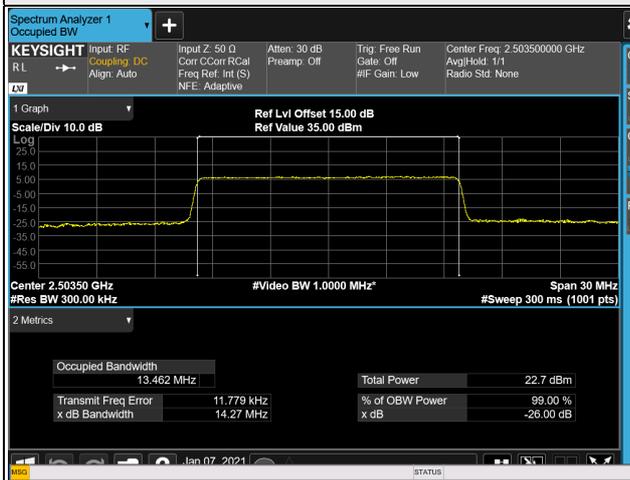
5MHz / 64QAM



10MHz / 64QAM



15MHz / 64QAM



20MHz / 16QAM



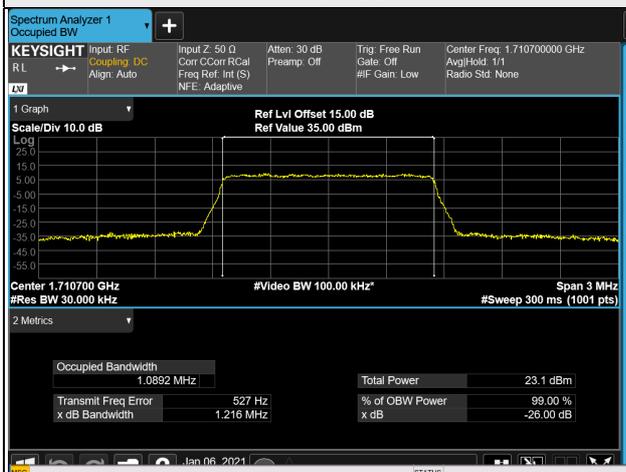
LTE Band 66, Channel Bandwidth 1.4MHz					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
131979	1710.7	1.09	1.09	1.09	1.09
132322	1745.0	1.09	1.09	1.09	1.09
132665	1779.3	1.09	1.09	1.09	1.09
LTE Band 66, Channel Bandwidth 3MHz					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
131987	1711.5	2.70	2.70	2.70	2.70
132322	1745.0	2.70	2.69	2.70	2.70
132657	1778.5	2.70	2.69	2.69	2.70
LTE Band 66, Channel Bandwidth 5MHz					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
131997	1712.5	4.49	4.49	4.50	4.48
132322	1745.0	4.49	4.49	4.50	4.49
132647	1777.5	4.49	4.49	4.50	4.49
LTE Band 66, Channel Bandwidth 10MHz					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
132022	1715.0	8.96	8.96	8.97	8.96
132322	1745.0	8.96	8.96	8.97	8.96
132622	1775.0	8.96	8.96	8.97	8.96
LTE Band 66, Channel Bandwidth 15MHz					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
132047	1717.5	13.50	13.46	13.46	13.46
132322	1745.0	13.46	13.45	13.44	13.44
132597	1772.5	13.48	13.47	13.47	13.46

LTE Band 66, Channel Bandwidth 20MHz

Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
132072	1720.0	17.95	17.96	17.96	17.96
132322	1745.0	17.93	17.94	17.94	17.93
132572	1770.0	18.02	17.98	17.98	17.96

Spectrum Plot of Worst Value

1.4MHz / 16QAM



3MHz / QPSK



5MHz / 64QAM



10MHz / 64QAM



15MHz / QPSK



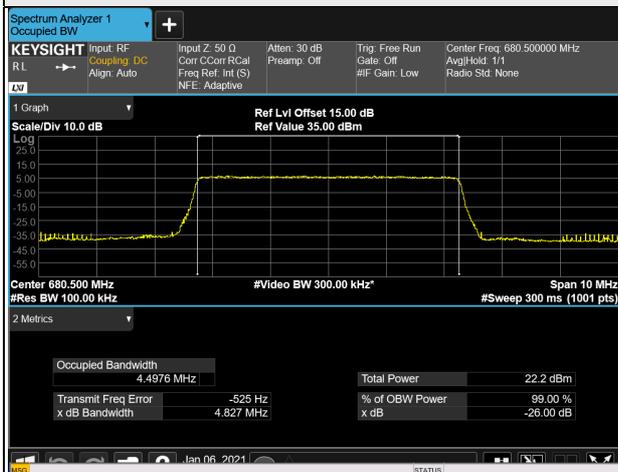
20MHz / QPSK



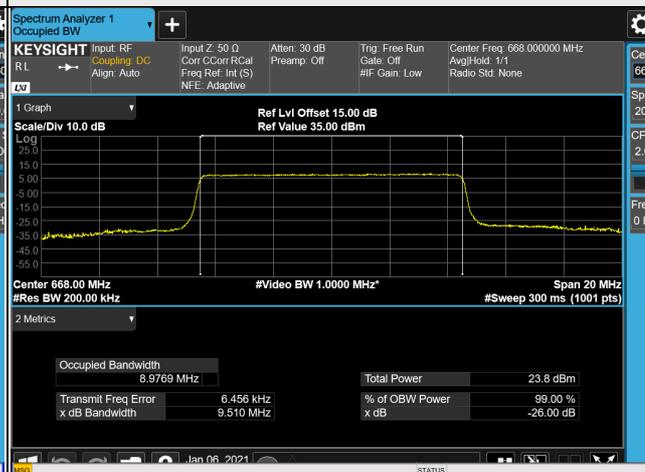
LTE Band 71, Channel Bandwidth 5MHz					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
133147	665.5	4.49	4.49	4.50	4.48
133297	680.5	4.49	4.49	4.50	4.49
133447	695.5	4.49	4.49	4.50	4.49
LTE Band 71, Channel Bandwidth 10MHz					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
133172	668.0	8.97	8.98	8.97	8.96
133297	680.5	8.96	8.97	8.96	8.95
133422	693.0	8.96	8.96	8.96	8.96
LTE Band 71, Channel Bandwidth 15MHz					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
133197	670.5	13.46	13.45	13.44	13.44
133297	680.5	13.46	13.45	13.44	13.43
133397	690.5	13.45	13.44	13.43	13.44
LTE Band 71, Channel Bandwidth 20MHz					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
133222	673.0	17.91	17.92	17.91	17.89
133297	680.5	17.93	17.93	17.93	17.91
133372	688.0	17.92	17.94	17.93	17.93

Spectrum Plot of Worst Value

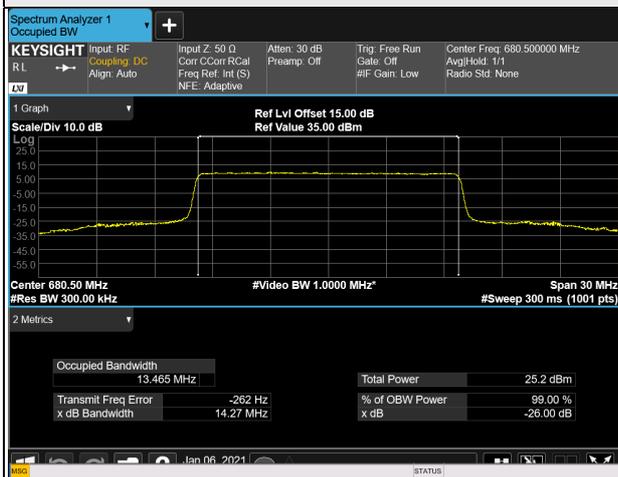
5MHz / 64QAM



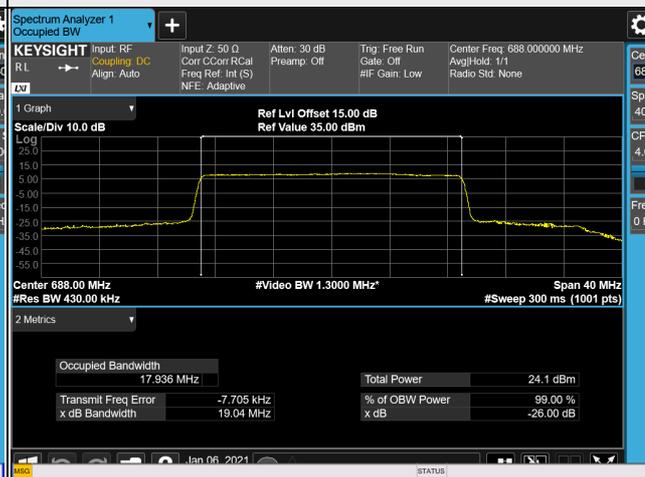
10MHz / 16QAM



15MHz / QPSK



20MHz / 16QAM



26dB Bandwidth

Channel	Frequency (MHz)	26dB Bandwidth (MHz)		
		WCDMA	HSDPA	HSUPA
1312	1712.4	4.72	4.72	4.72
1413	1732.6	4.71	4.71	4.72
1513	1752.6	4.71	4.72	4.72

Spectrum Plot of Worst Value



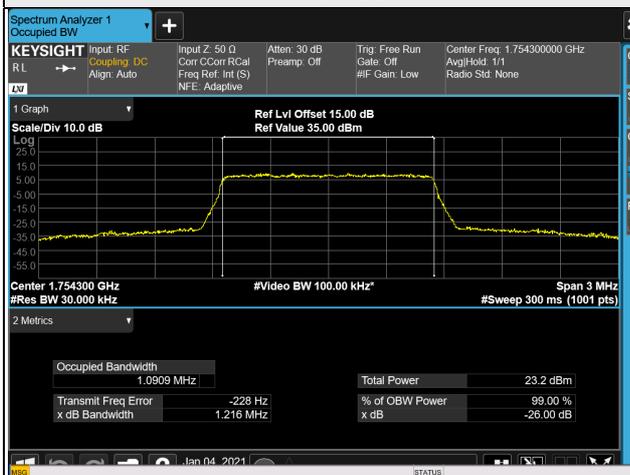
LTE Band 4, Channel Bandwidth 1.4MHz					
Channel	Frequency (MHz)	26dB Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
19957	1710.7	1.17	1.21	1.22	1.21
20175	1732.5	1.17	1.17	1.15	1.21
20393	1754.3	1.21	1.22	1.22	1.21
LTE Band 4, Channel Bandwidth 3MHz					
Channel	Frequency (MHz)	26dB Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
19965	1711.5	2.91	2.80	2.90	2.93
20175	1732.5	2.81	2.92	2.91	2.92
20385	1753.5	2.89	2.84	2.81	2.91
LTE Band 4, Channel Bandwidth 5MHz					
Channel	Frequency (MHz)	26dB Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
19975	1712.5	4.80	4.69	4.82	4.80
20175	1732.5	4.66	4.68	4.82	4.81
20375	1752.5	4.65	4.65	4.82	4.80
LTE Band 4, Channel Bandwidth 10MHz					
Channel	Frequency (MHz)	26dB Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
20000	1715.0	9.26	9.39	9.42	9.51
20175	1732.5	9.49	9.31	9.23	9.51
20350	1750.0	9.23	9.21	9.52	9.51
LTE Band 4, Channel Bandwidth 15MHz					
Channel	Frequency (MHz)	26dB Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
20025	1717.5	13.88	14.26	14.24	14.23
20175	1732.5	14.26	14.24	14.18	14.24
20325	1747.5	14.25	14.26	14.25	14.25

LTE Band 4, Channel Bandwidth 20MHz

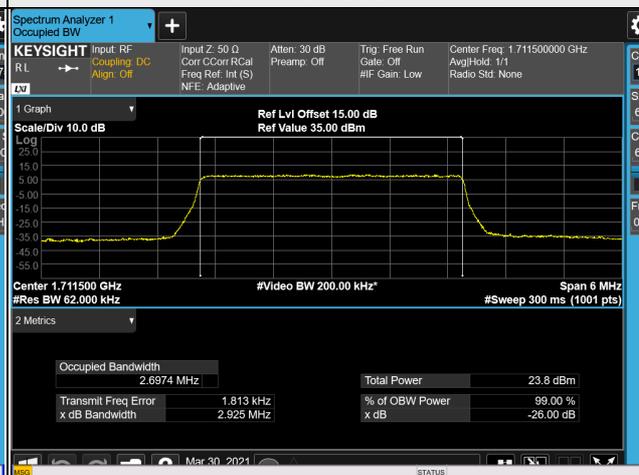
Channel	Frequency (MHz)	26dB Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
20050	1720.0	19.05	19.03	18.78	19.03
20175	1732.5	19.03	19.02	18.83	19.02
20300	1745.0	19.05	18.66	19.04	19.02

Spectrum Plot of Worst Value

1.4MHz / 16QAM



3MHz / 256QAM



5MHz / 64QAM



10MHz / 64QAM



15MHz / QPSK



20MHz / QPSK



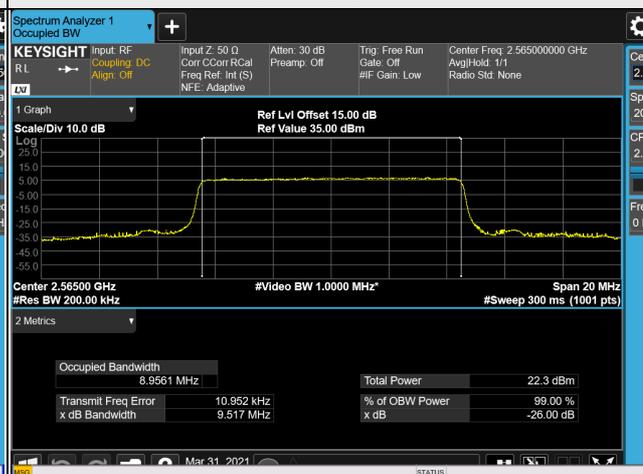
LTE Band 7, Channel Bandwidth 5MHz					
Channel	Frequency (MHz)	26dB Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
20775	2502.5	4.80	4.79	4.83	4.82
21100	2535.0	4.81	4.80	4.81	4.80
21425	2567.5	4.79	4.80	4.84	4.80
LTE Band 7, Channel Bandwidth 10MHz					
Channel	Frequency (MHz)	26dB Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
20800	2505.0	9.51	9.50	9.50	9.51
21100	2535.0	9.50	9.50	9.51	9.51
21400	2565.0	9.52	9.51	9.50	9.51
LTE Band 7, Channel Bandwidth 15MHz					
Channel	Frequency (MHz)	26dB Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
20825	2507.5	14.26	14.26	14.24	14.24
21100	2535.0	14.24	14.25	14.24	14.26
21375	2562.5	14.27	14.26	14.26	14.24
LTE Band 7, Channel Bandwidth 20MHz					
Channel	Frequency (MHz)	26dB Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
20850	2510.0	19.02	19.02	19.02	19.02
21100	2535.0	19.03	19.02	19.03	19.05
21350	2560.0	19.10	19.06	19.06	19.03

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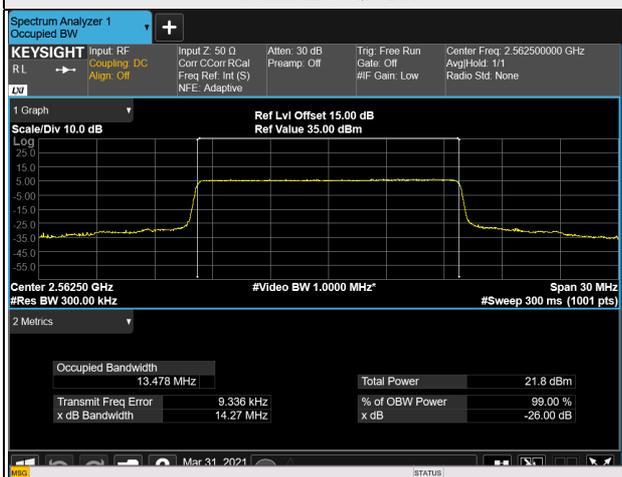
5MHz / 64QAM



10MHz / QPSK



15MHz / QPSK



20MHz / QPSK



LTE Band 12, Channel Bandwidth 1.4MHz					
Channel	Frequency (MHz)	26dB Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
23017	699.7	1.22	1.21	1.21	1.21
23095	707.5	1.21	1.22	1.22	1.20
23173	715.3	1.21	1.22	1.22	1.21
LTE Band 12, Channel Bandwidth 3MHz					
Channel	Frequency (MHz)	26dB Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
23025	700.5	2.92	2.93	2.91	2.92
23095	707.5	2.92	2.92	2.90	2.92
23165	714.5	2.92	2.93	2.90	2.90
LTE Band 12, Channel Bandwidth 5MHz					
Channel	Frequency (MHz)	26dB Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
23035	701.5	4.80	4.80	4.81	4.80
23095	707.5	4.81	4.81	4.82	4.80
23155	713.5	4.80	4.81	4.83	4.81
LTE Band 12, Channel Bandwidth 10MHz					
Channel	Frequency (MHz)	26dB Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
23060	704.0	9.51	9.52	9.51	9.51
23095	707.5	9.49	9.51	9.53	9.51
23130	711.0	9.50	9.50	9.52	9.50

Spectrum Plot of Worst Value

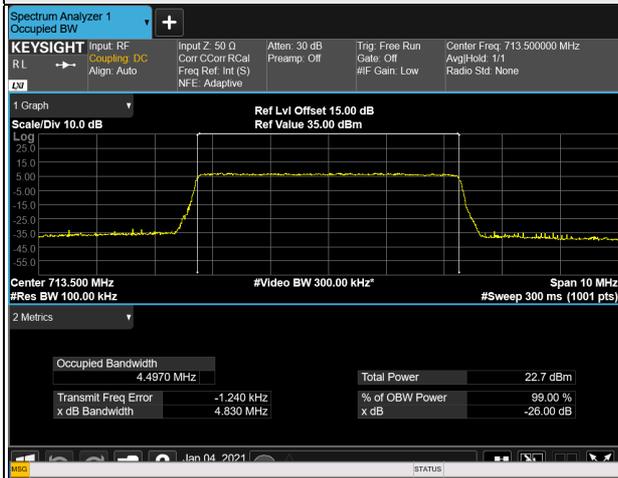
1.4MHz / 16QAM



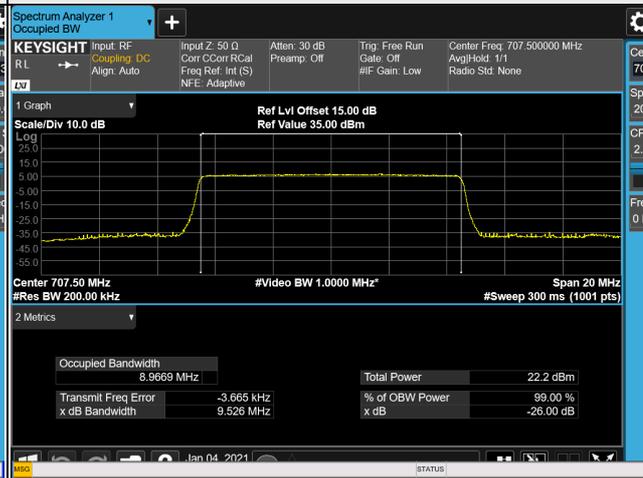
3MHz / 16QAM



5MHz / 64QAM

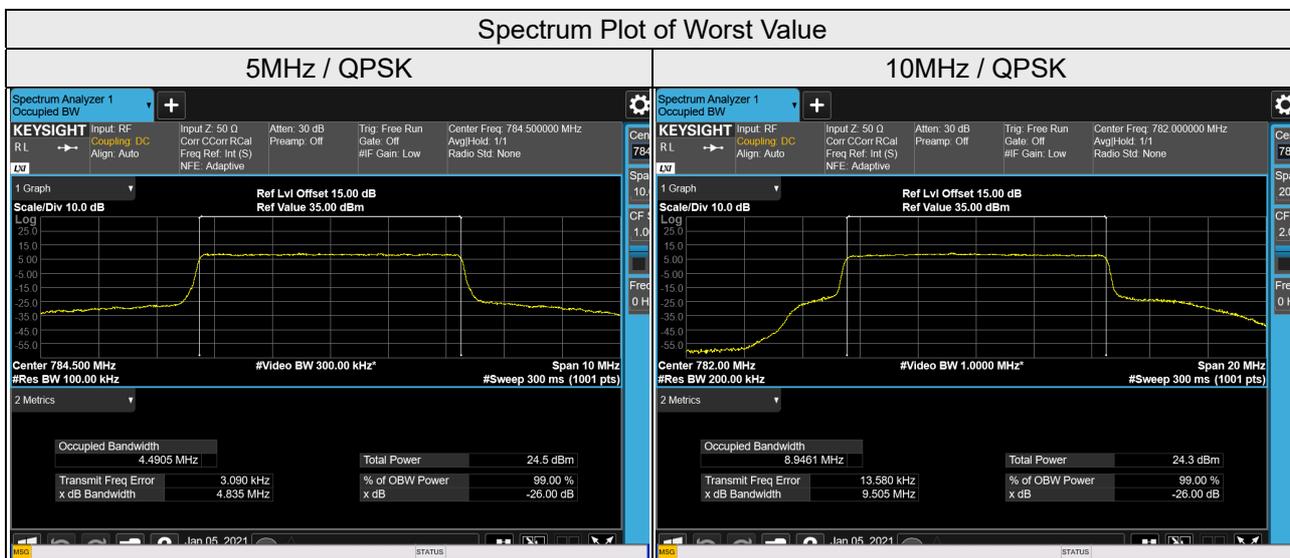


10MHz / 64QAM



LTE Band 13, Channel Bandwidth 5MHz					
Channel	Frequency (MHz)	26dB Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
23205	779.5	4.81	4.82	4.82	4.79
23230	782.0	4.80	4.79	4.82	4.79
23255	784.5	4.84	4.82	4.83	4.81

LTE Band 13, Channel Bandwidth 10MHz					
Channel	Frequency (MHz)	26dB Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
23230	782.0	9.51	9.49	9.49	9.49



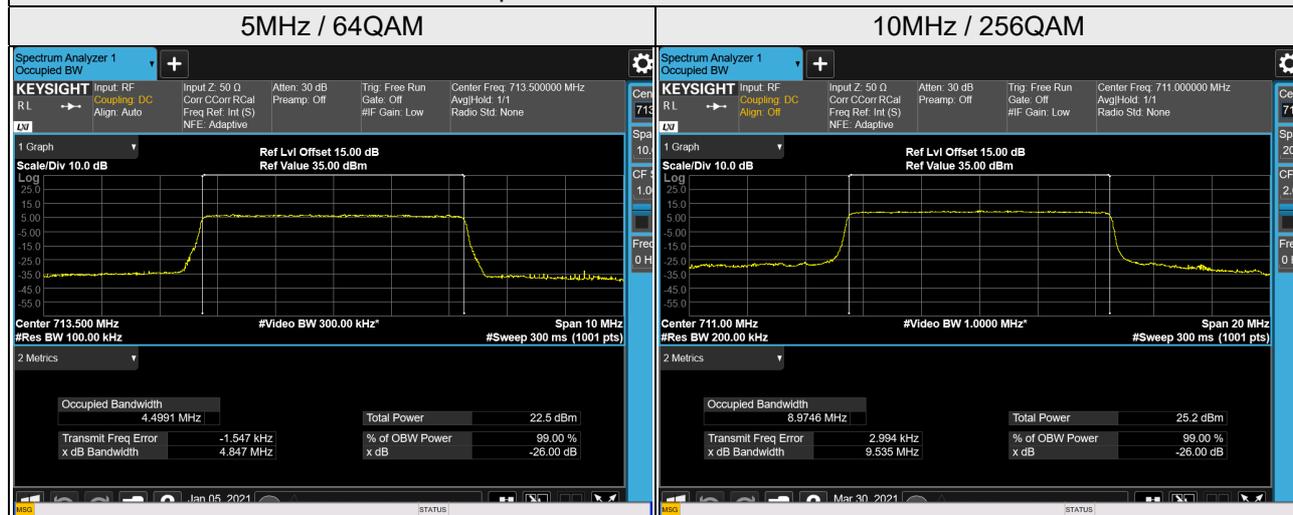
LTE Band 17, Channel Bandwidth 5MHz

Channel	Frequency (MHz)	26dB Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
23755	706.5	4.81	4.80	4.81	4.83
23790	710.0	4.80	4.80	4.83	4.82
23825	713.5	4.81	4.79	4.85	4.81

LTE Band 17, Channel Bandwidth 10MHz

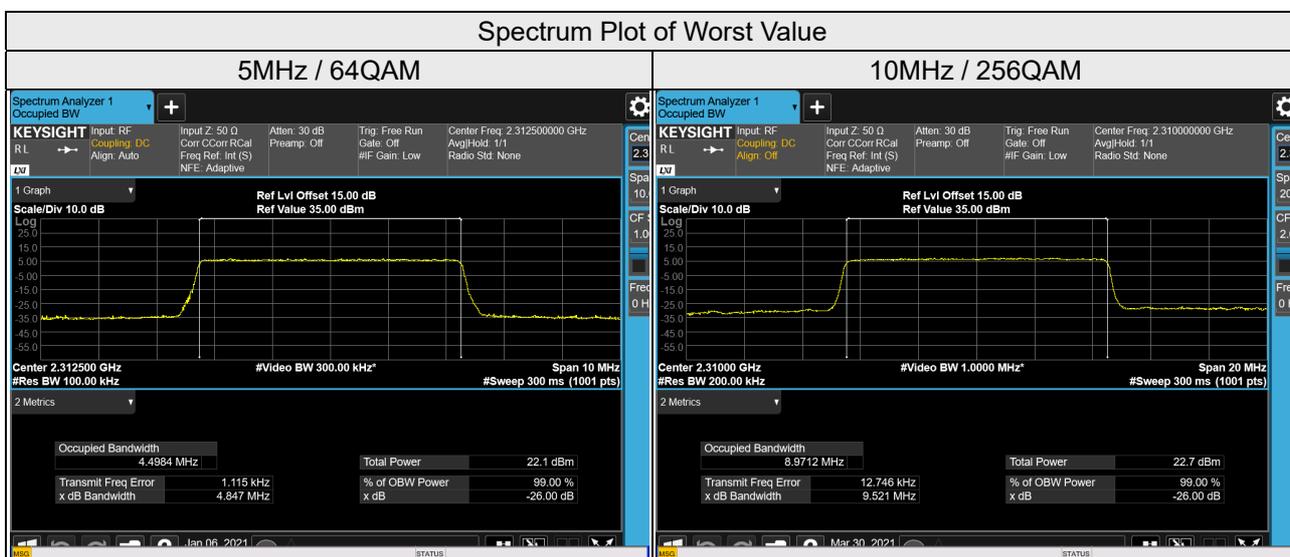
Channel	Frequency (MHz)	26dB Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
23780	709.0	9.49	9.49	9.51	9.53
23790	710.0	9.50	9.51	9.52	9.53
23800	711.0	9.50	9.51	9.50	9.54

Spectrum Plot of Worst Value



LTE Band 30, Channel Bandwidth 5MHz					
Channel	Frequency (MHz)	26dB Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
27685	2307.5	4.79	4.80	4.84	4.81
27710	2310.0	4.80	4.80	4.83	4.82
27735	2312.5	4.80	4.80	4.85	4.79

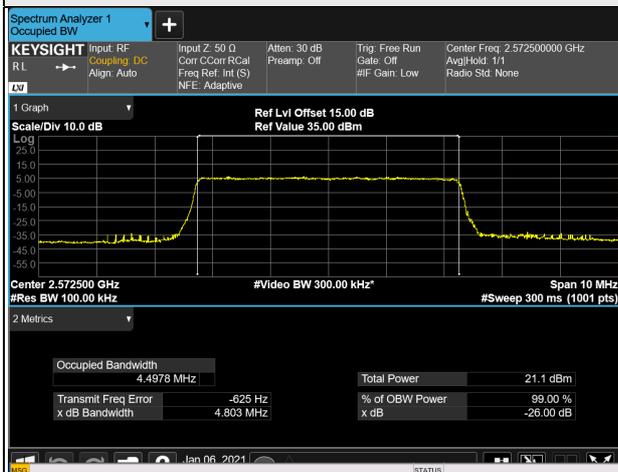
LTE Band 30, Channel Bandwidth 10MHz					
Channel	Frequency (MHz)	26dB Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
27710	2310.0	9.50	9.51	9.51	9.52



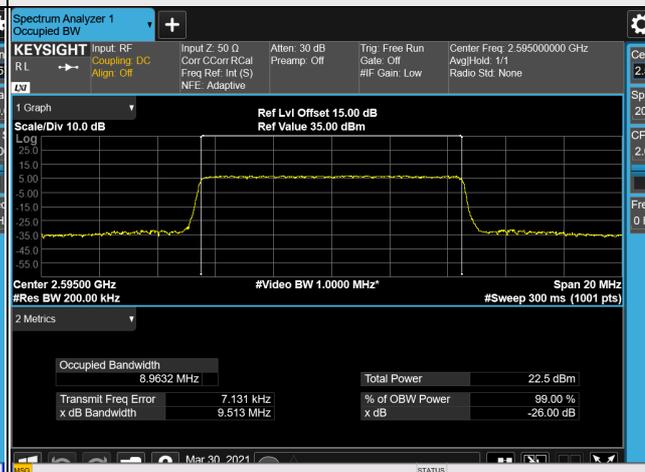
LTE Band 38, Channel Bandwidth 5MHz					
Channel	Frequency (MHz)	26dB Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
37775	2572.5	4.80	4.79	4.80	4.78
38000	2595.0	4.79	4.79	4.79	4.79
38225	2617.5	4.79	4.80	4.79	4.78
LTE Band 38, Channel Bandwidth 10MHz					
Channel	Frequency (MHz)	26dB Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
37800	2575.0	9.49	9.50	9.50	9.51
38000	2595.0	9.49	9.50	9.50	9.51
38200	2615.0	9.48	9.51	9.51	9.50
LTE Band 38, Channel Bandwidth 15MHz					
Channel	Frequency (MHz)	26dB Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
37825	2577.5	14.26	14.24	14.19	14.23
38000	2595.0	14.23	14.23	14.25	14.24
38175	2612.5	14.24	14.24	14.23	14.25
LTE Band 38, Channel Bandwidth 20MHz					
Channel	Frequency (MHz)	26dB Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
37850	2580.0	19.03	19.01	19.02	19.01
38000	2595.0	19.01	19.00	18.99	19.00
38150	2610.0	19.01	19.00	19.01	19.01

Spectrum Plot of Worst Value

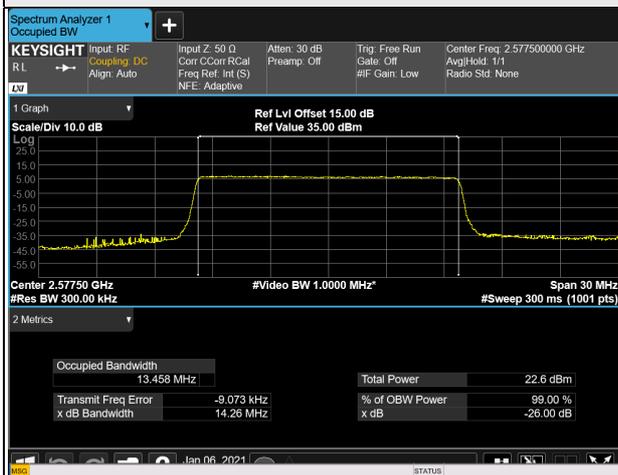
5MHz / 64QAM



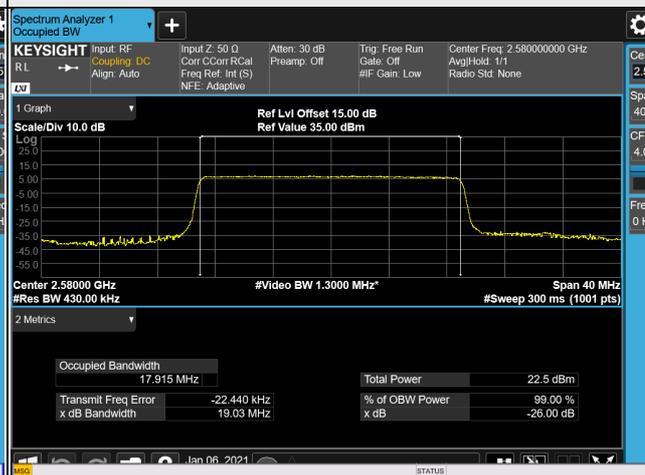
10MHz / 256QAM



15MHz / QPSK



20MHz / QPSK



LTE Band 40 (2305MHz ~ 2315MHz), Channel Bandwidth 5MHz

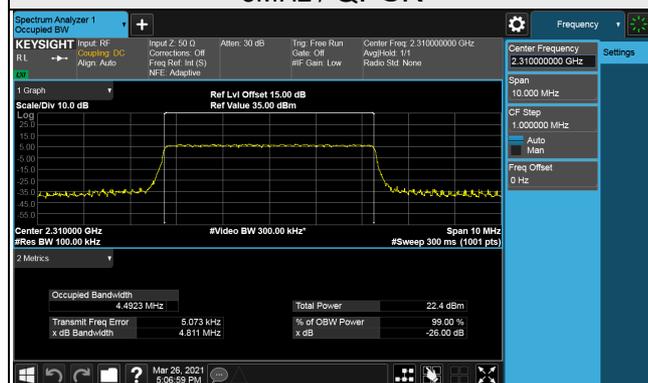
Channel	Frequency (MHz)	26dB Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
38725	2307.5	4.76	4.77	4.77	4.79
38750	2310.0	4.81	4.79	4.76	4.78
38775	2312.5	4.79	4.77	4.78	4.78

LTE Band 40 (2305MHz ~ 2315MHz), Channel Bandwidth 10MHz

Channel	Frequency (MHz)	26dB Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
38750	2310	9.47	9.49	9.49	9.51

Spectrum Plot of Worst Value

5MHz / QPSK



10MHz / 256QAM



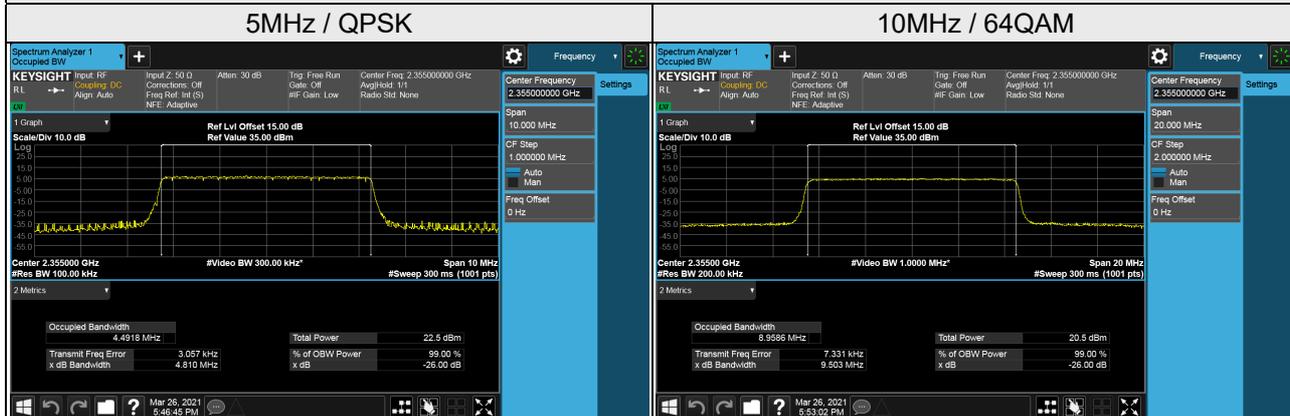
LTE Band 40 (2350MHz ~ 2360MHz), Channel Bandwidth 5MHz

Channel	Frequency (MHz)	26dB Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
39175	2352.5	4.78	4.80	4.77	4.78
39200	2355.0	4.81	4.77	4.77	4.78
39225	2357.5	4.80	4.77	4.77	4.79

LTE Band 40 (2350MHz ~ 2360MHz), Channel Bandwidth 10MHz

Channel	Frequency (MHz)	26dB Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
39200	2355.0	9.48	9.47	9.50	9.49

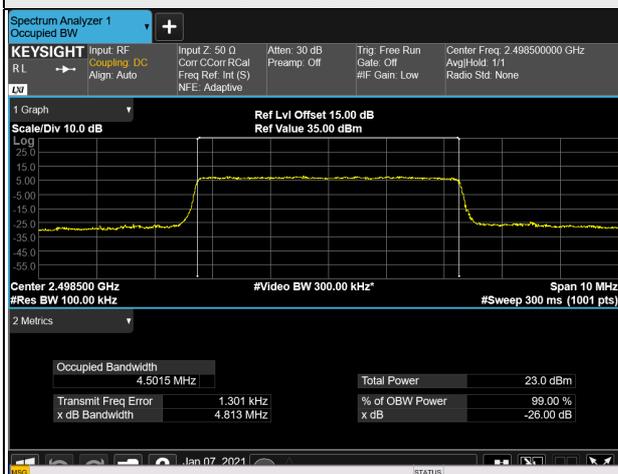
Spectrum Plot of Worst Value



LTE Band 41, Channel Bandwidth 5MHz					
Channel	Frequency (MHz)	26dB Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
39675	2498.5	4.79	4.79	4.81	4.80
40620	2593.0	4.79	4.79	4.80	4.80
41565	2687.5	4.79	4.78	4.80	4.78
LTE Band 41, Channel Bandwidth 10MHz					
Channel	Frequency (MHz)	26dB Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
39700	2501.0	9.49	9.51	9.52	9.52
40620	2593.0	9.48	9.50	9.50	9.52
41540	2685.0	9.49	9.50	9.51	9.50
LTE Band 41, Channel Bandwidth 15MHz					
Channel	Frequency (MHz)	26dB Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
39725	2503.5	14.25	14.28	14.27	14.25
40620	2593.0	14.25	14.24	14.26	14.24
41515	2682.5	14.23	14.24	14.25	14.26
LTE Band 41, Channel Bandwidth 20MHz					
Channel	Frequency (MHz)	26dB Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
39750	2506.0	19.04	19.04	19.04	19.03
40620	2593.0	19.03	19.01	19.02	19.02
41490	2680.0	18.98	18.89	19.03	19.01

Spectrum Plot of Worst Value

5MHz / 64QAM



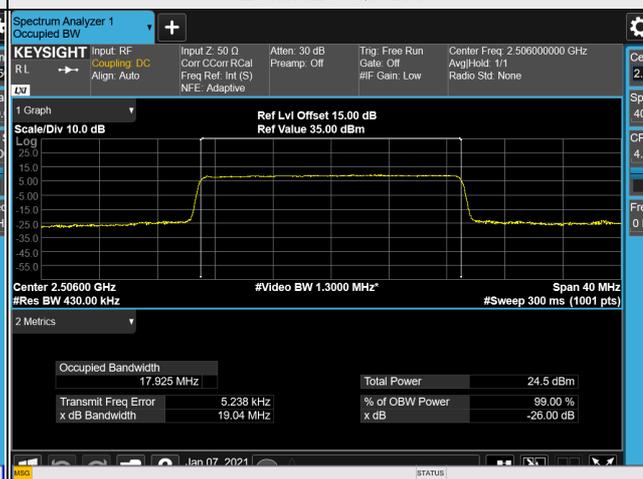
10MHz / 256QAM



15MHz / 16QAM



20MHz / QPSK



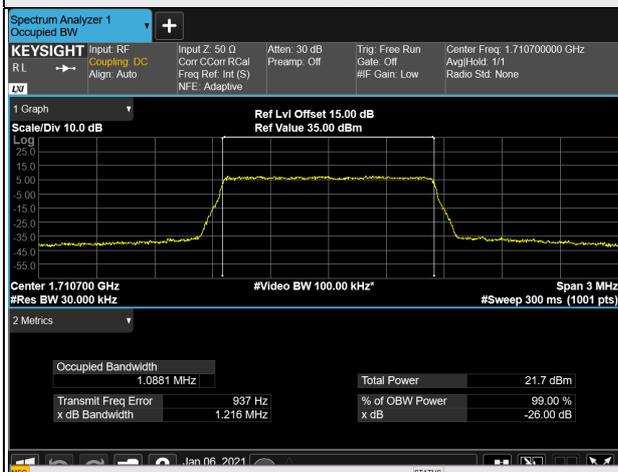
LTE Band 66, Channel Bandwidth 1.4MHz					
Channel	Frequency (MHz)	26dB Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
131979	1710.7	1.21	1.22	1.22	1.21
132322	1745.0	1.21	1.22	1.22	1.21
132665	1779.3	1.22	1.21	1.22	1.21
LTE Band 66, Channel Bandwidth 3MHz					
Channel	Frequency (MHz)	26dB Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
131987	1711.5	2.92	2.93	2.91	2.92
132322	1745.0	2.92	2.93	2.90	2.91
132657	1778.5	2.92	2.93	2.90	2.91
LTE Band 66, Channel Bandwidth 5MHz					
Channel	Frequency (MHz)	26dB Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
131997	1712.5	4.80	4.81	4.83	4.81
132322	1745.0	4.81	4.80	4.85	4.81
132647	1777.5	4.81	4.79	4.84	4.81
LTE Band 66, Channel Bandwidth 10MHz					
Channel	Frequency (MHz)	26dB Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
132022	1715.0	9.52	9.53	9.51	9.51
132322	1745.0	9.50	9.52	9.51	9.50
132622	1775.0	9.52	9.51	9.51	9.51
LTE Band 66, Channel Bandwidth 15MHz					
Channel	Frequency (MHz)	26dB Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
132047	1717.5	14.28	14.27	14.25	14.26
132322	1745.0	14.26	14.27	14.25	14.24
132597	1772.5	14.28	14.26	14.25	14.26

LTE Band 66, Channel Bandwidth 20MHz

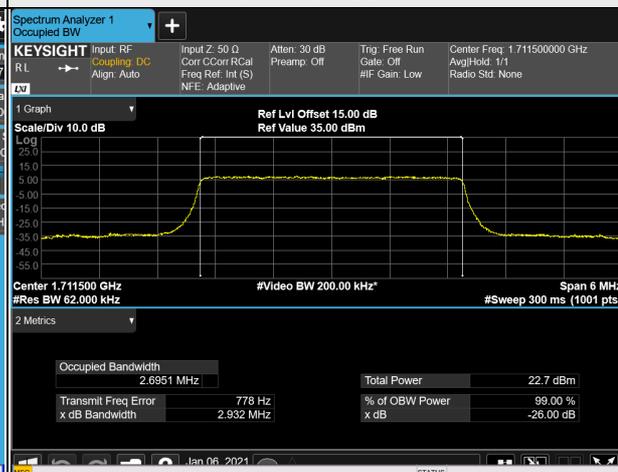
Channel	Frequency (MHz)	26dB Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
132072	1720.0	19.06	19.03	19.04	19.04
132322	1745.0	19.03	19.05	19.03	19.03
132572	1770.0	21.35	19.08	19.05	19.03

Spectrum Plot of Worst Value

1.4MHz / 64QAM



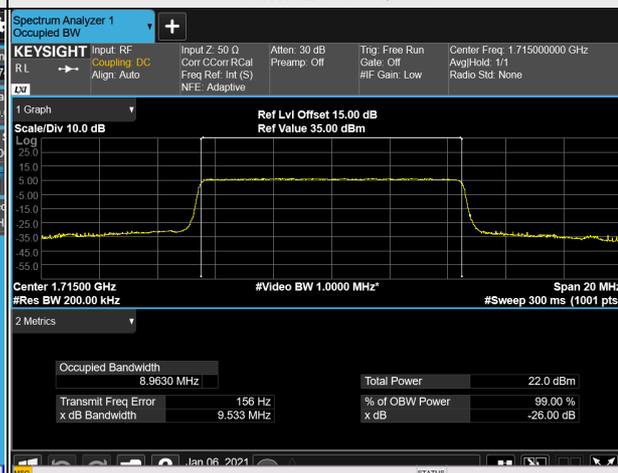
3MHz / 16QAM



5MHz / 64QAM



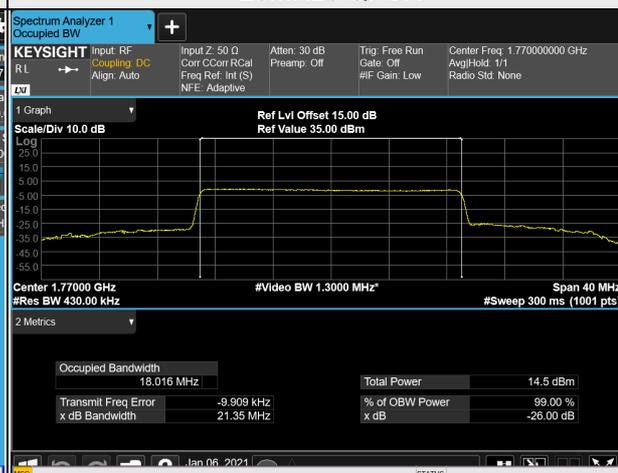
10MHz / 16QAM



15MHz / QPSK



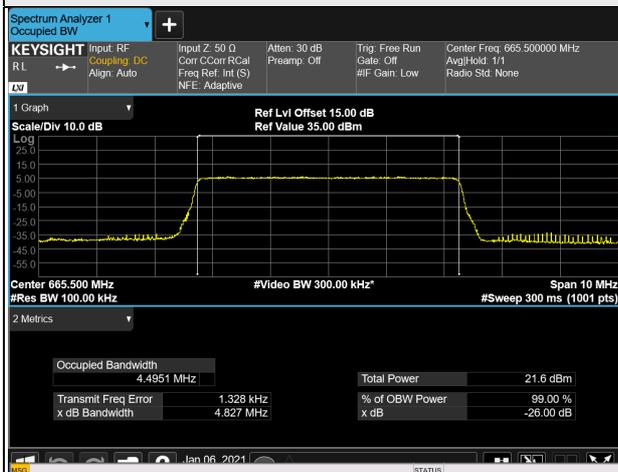
20MHz / QPSK



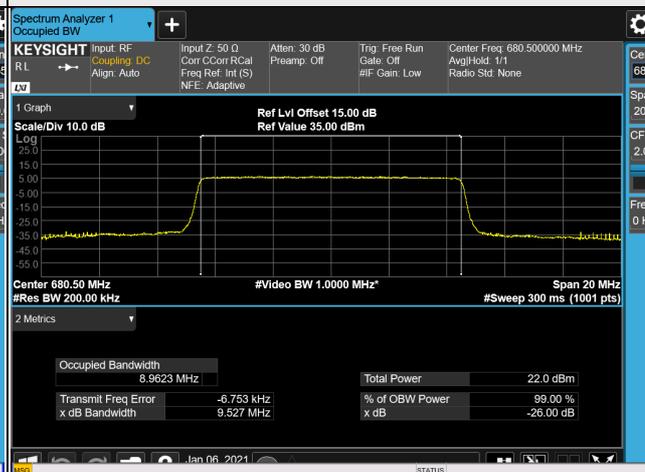
LTE Band 71, Channel Bandwidth 5MHz					
Channel	Frequency (MHz)	26dB Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
133147	665.5	4.79	4.80	4.83	4.80
133297	680.5	4.79	4.80	4.83	4.80
133447	695.5	4.81	4.80	4.83	4.80
LTE Band 71, Channel Bandwidth 10MHz					
Channel	Frequency (MHz)	26dB Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
133172	668.0	9.51	9.51	9.51	9.51
133297	680.5	9.51	9.51	9.53	9.51
133422	693.0	9.51	9.51	9.52	9.51
LTE Band 71, Channel Bandwidth 15MHz					
Channel	Frequency (MHz)	26dB Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
133197	670.5	14.26	14.25	14.23	14.23
133297	680.5	14.27	14.25	14.23	14.24
133397	690.5	14.25	14.24	14.23	14.24
LTE Band 71, Channel Bandwidth 20MHz					
Channel	Frequency (MHz)	26dB Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
133222	673.0	19.02	19.01	19.01	18.99
133297	680.5	19.09	19.04	19.03	19.02
133372	688.0	19.04	19.04	19.02	19.02

Spectrum Plot of Worst Value

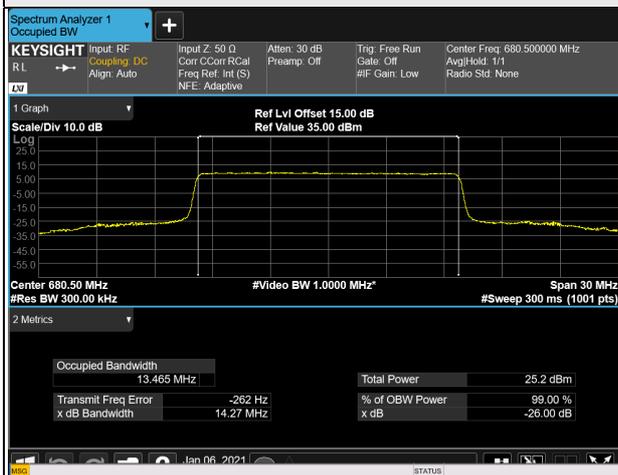
5MHz / 64QAM



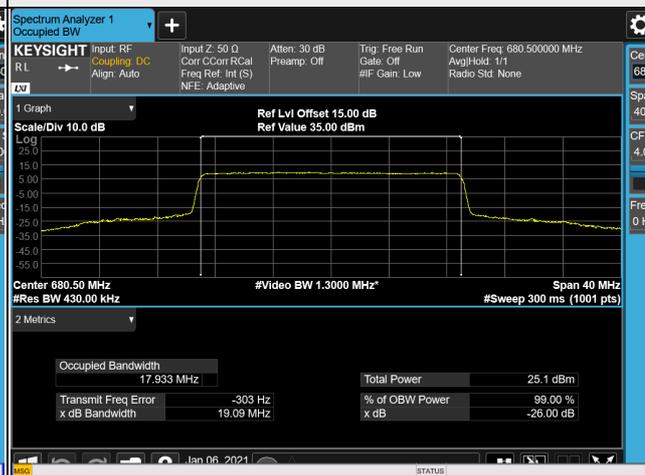
10MHz / 64QAM



15MHz / QPSK



20MHz / QPSK



4.5 Channel Edge / Out-of-Band Emissions Measurement

4.5.1 Limits of Band Edge / Out-of-Band Emissions Measurement

For WCDMA Band 4, LTE Band 4, LTE Band 66:

According to FCC 27.53(h) for operations in the 1695-1710MHz, 1710-1755MHz, 1755-1780 MHz, 1915-1920MHz, 1995-2000 MHz, 2000-2020MHz, 2110-2155MHz, 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 $43 + 10 \log (P)$ dB.

For LTE Band 7, LTE Band 38, LTE Band 41:

According to FCC 27.53(m)(4) specified that power of any emission outside of the channel edge must be attenuated below the transmitting power (P) by a factor shall be not less than $40 + 10 \log (P)$ dB on all frequencies between the channel edge and 5 megahertz from the channel edge, $43 + 10 \log (P)$ dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and $55 + 10 \log (P)$ dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth. In addition, the attenuation factor shall not be less that $43 + 10 \log (P)$ dB on all frequencies between 2490.5MHz and 2496 MHz and $55 + 10 \log (P)$ dB at or below 2490.5MHz. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least two percent may be employed, except when the 1 megahertz band is 2495-2496 MHz, in which case a resolution bandwidth of at least one percent may be employed.

For LTE Band 12, LTE Band 17, LTE Band 71:

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. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater.

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.

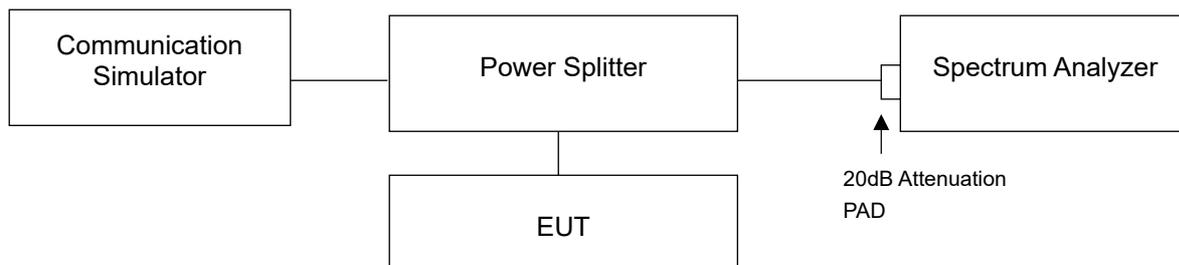
According to 27.53(c)(4) On all frequencies between 763-775MHz and 793-805MHz, by a factor not less than $65 + 10 \log (P)$ dB in a 6.25 kHz band segment, for mobile and portable stations

For LTE Band 30, LTE Band 40:

According to FCC 27.53(a) (4) For mobile and portable stations operating in the 2305-2315MHz and 2350-2360 MHz bands:

- (i) By a factor of not less than: $43 + 10 \log (P)$ dB on all frequencies between 2305 and 2320MHz and on all frequencies between 2345 and 2360 MHz that are outside the licensed band(s) of operation, not less than $55 + 10 \log (P)$ dB on all frequencies between 2320 and 2324 MHz and on all frequencies between 2341 and 2345MHz, not less than $61 + 10 \log (P)$ dB on all frequencies between 2324 and 2328 MHz and on all frequencies between 2337 and 2341 MHz, and not less than $67 + 10 \log (P)$ dB on all frequencies between 2328 and 2337 MHz;
- (ii) By a factor of not less than $43 + 10 \log (P)$ dB on all frequencies between 2300 and 2305MHz, $55 + 10 \log (P)$ dB on all frequencies between 2296 and 2300 MHz, $61 + 10 \log (P)$ dB on all frequencies between 2292 and 2296 MHz, $67 + 10 \log (P)$ dB on all frequencies between 2288 and 2292 MHz, and $70 + 10 \log (P)$ dB below 2288 MHz;
- (iii) By a factor of not less than $43 + 10 \log (P)$ dB on all frequencies between 2360 and 2365MHz, and not less than $70 + 10 \log (P)$ dB above 2365MHz.

4.5.2 Test Setup



4.5.3 Test Procedures

- a. The EUT was set up for the rated peak power. The power was measured with Spectrum Analyzer. Band edge measurements were done at 2 channels: low and high operational frequency range.
- b. The center frequency of spectrum is the band edge frequency and span is 2MHz. RB of the spectrum is 51kHz and VB of the spectrum is 160kHz (WCDMA / HSDPA / HSUPA).
- c. The center frequency of spectrum is the band edge frequency and span is 1MHz. RB of the spectrum is 15kHz and VB of the spectrum is 51kHz (LTE Channel Bandwidth 1.4MHz).
- d. The center frequency of spectrum is the band edge frequency and span is 1MHz. RB of the spectrum is 30kHz and VB of the spectrum is 100kHz (LTE Channel Bandwidth 3MHz).
- e. The center frequency of spectrum is the band edge frequency and span is 1MHz. RB of the spectrum is 51kHz and VB of the spectrum is 160kHz (LTE Channel Bandwidth 5MHz).
- f. The center frequency of spectrum is the band edge frequency and span is 1MHz. RB of the spectrum is 100kHz and VB of the spectrum is 300kHz (LTE Channel Bandwidth 10MHz).
- g. The center frequency of spectrum is the band edge frequency and span is 1MHz. RB of the spectrum is 150kHz and VB of the spectrum is 470kHz (LTE Channel Bandwidth 15MHz).
- h. The center frequency of spectrum is the band edge frequency and span is 1MHz. RB of the spectrum is 200kHz and VB of the spectrum is 1MHz (LTE Channel Bandwidth 20MHz).
- i. Except LTE Band 12 and LTE Band 17 measurement procedure refer 27.53(g).
- j. LTE Band 7, Band 38, Band 41 measurement, for 5 MHz and 10 MHz channel BW mode, extend the 1% range from 1M to 2M above and below the channel edge and then reduce the limit further by 10 log (1000/100)= 10dB (i.e. total -10 + -10= -20dB) to compensate for the integration from 100k to 1M.
- k. Record the max trace plot into the test report.

4.5.4 Test Results

Band Edge

WCDMA Band 4



HSDPA

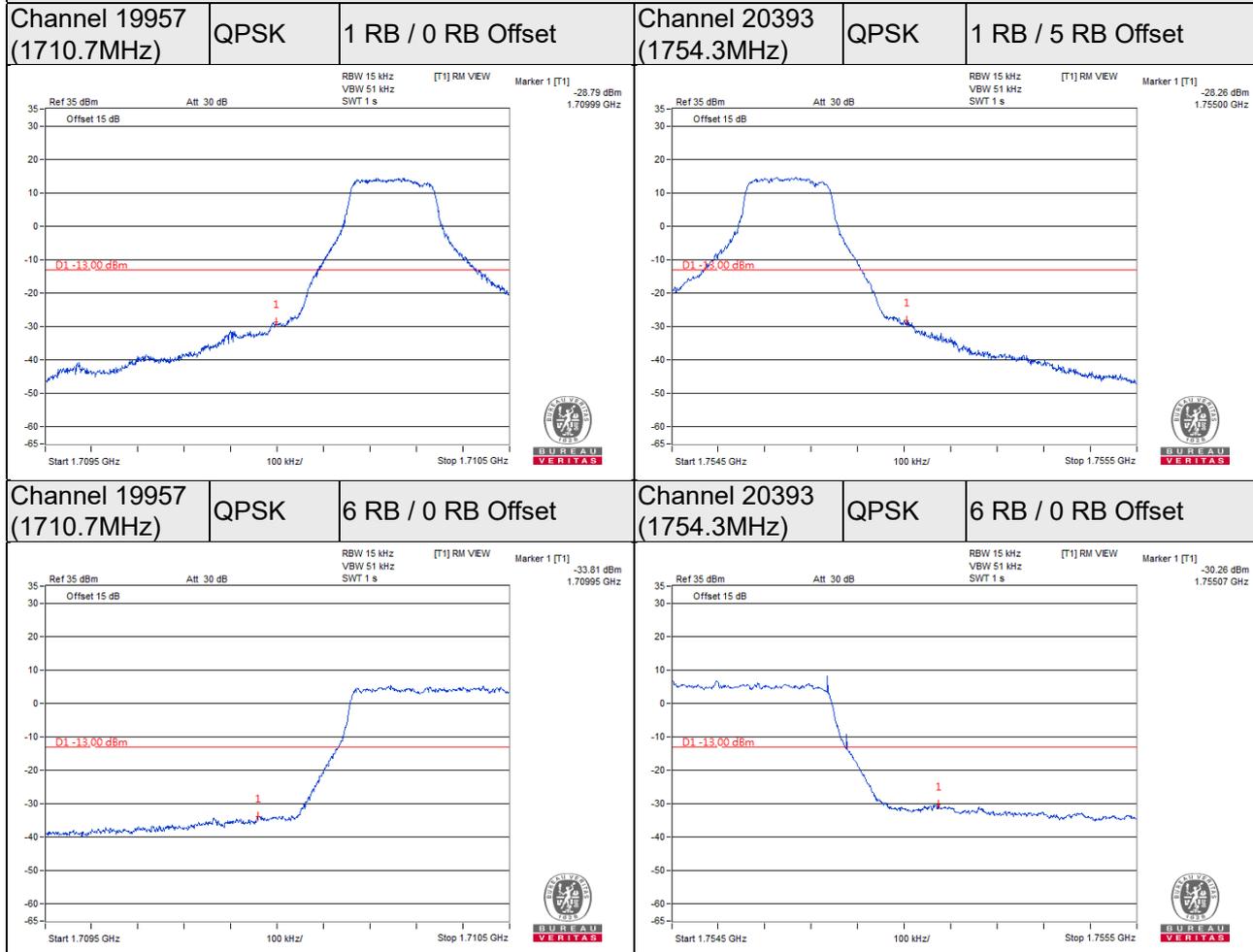


HSUPA



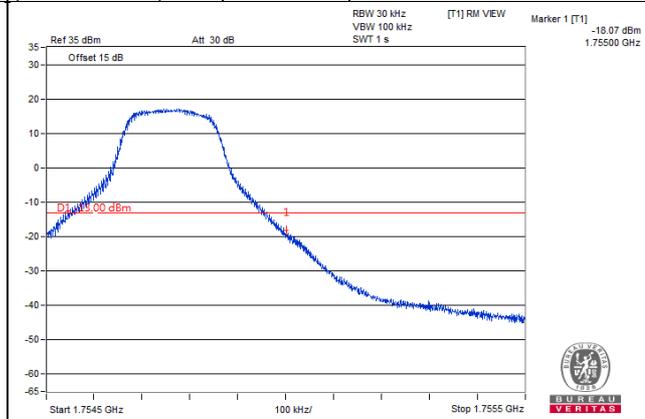
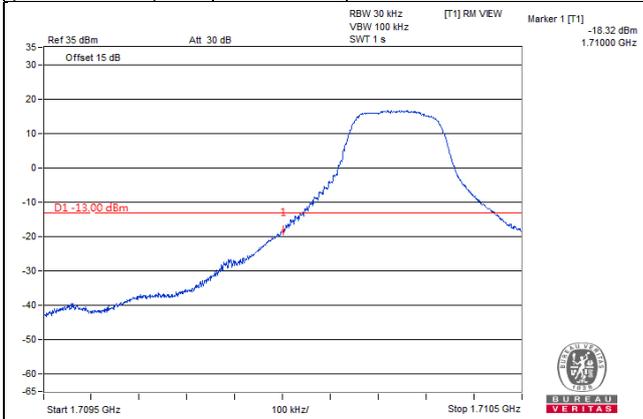
Band Edge

LTE Band 4, Channel Bandwidth 1.4MHz

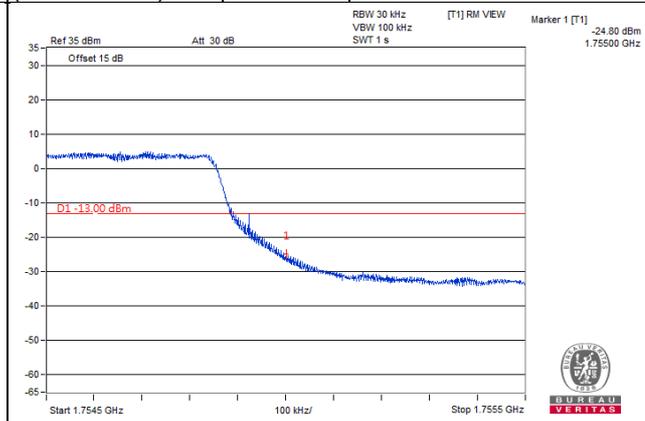
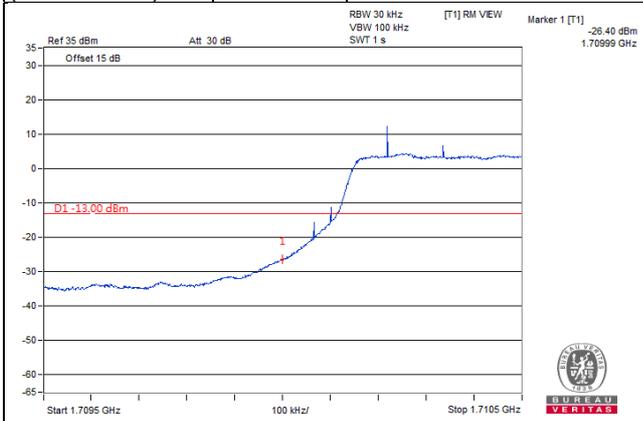


LTE Band 4, Channel Bandwidth 3MHz

Channel 19965 (1711.5MHz)	QPSK	1 RB / 0 RB Offset	Channel 20385 (1753.5MHz)	QPSK	1 RB / 14 RB Offset
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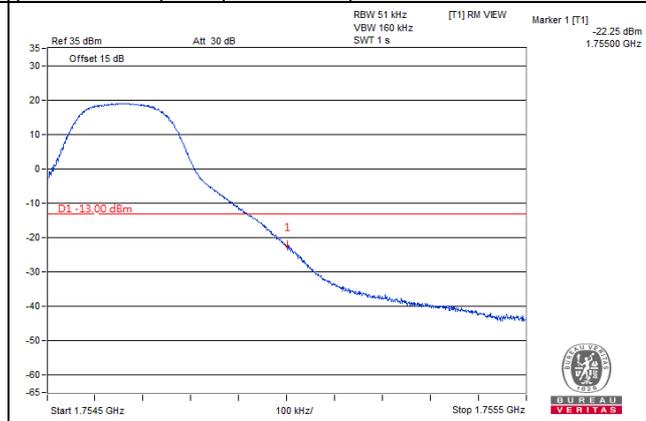
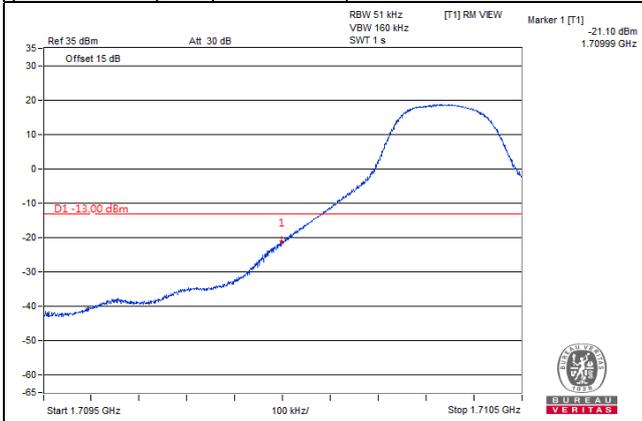


Channel 19965 (1711.5MHz)	QPSK	15 RB / 0 RB Offset	Channel 20385 (1753.5MHz)	QPSK	15 RB / 0 RB Offset
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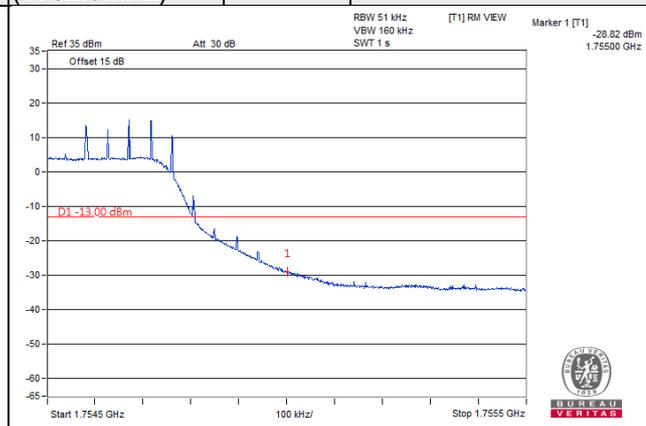
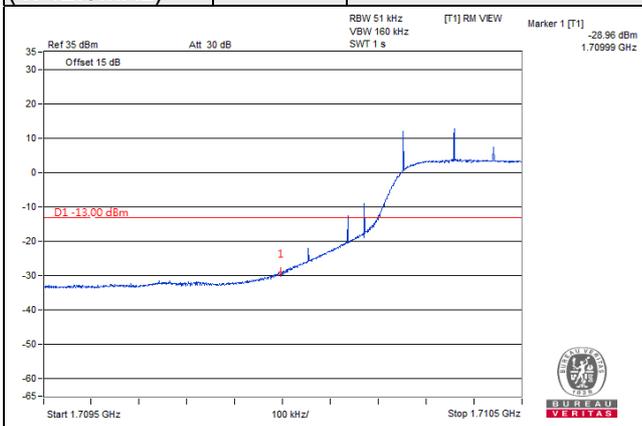


LTE Band 4, Channel Bandwidth 5MHz

Channel 19975 (1712.5MHz)	QPSK	1 RB / 0 RB Offset	Channel 20375 (1752.5MHz)	QPSK	1 RB / 24 RB Offset
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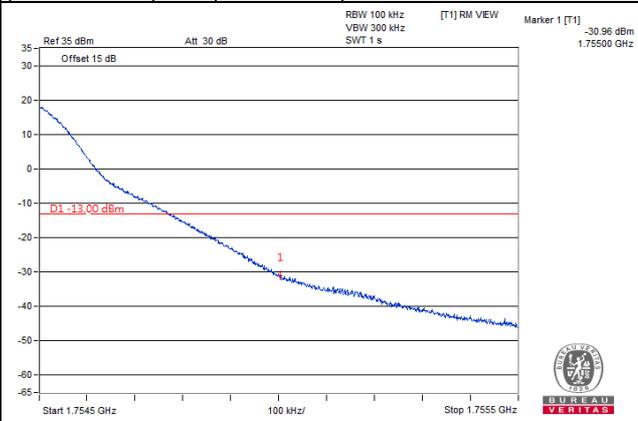
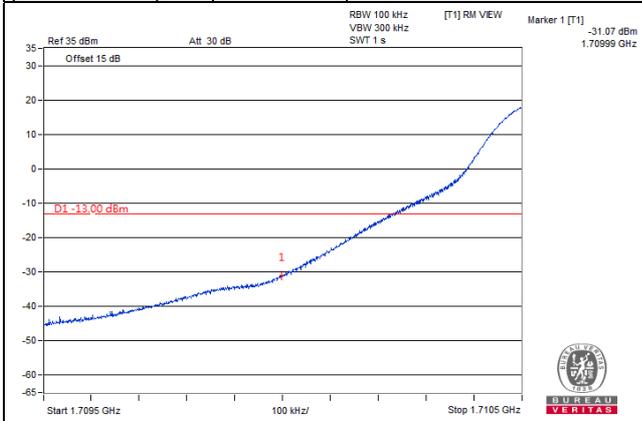


Channel 19975 (1712.5MHz)	QPSK	25 RB / 0 RB Offset	Channel 20375 (1752.5MHz)	QPSK	25 RB / 0 RB Offset
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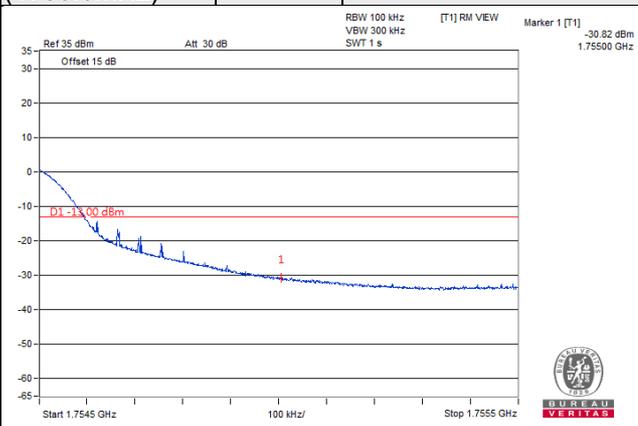
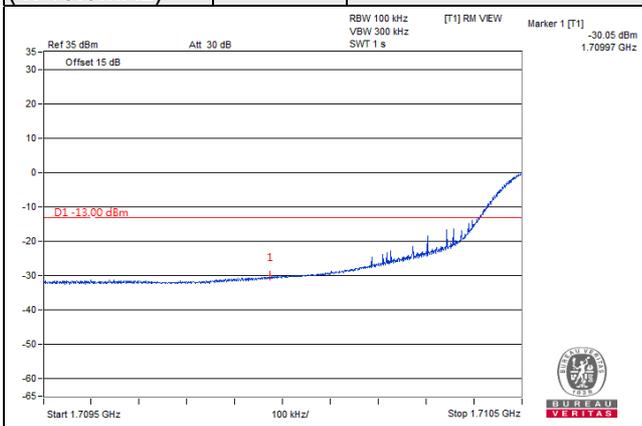


LTE Band 4, Channel Bandwidth 10MHz

Channel 20000 (1715.0MHz)	QPSK	1 RB / 0 RB Offset	Channel 20350 (1750.0MHz)	QPSK	1 RB / 49 RB Offset
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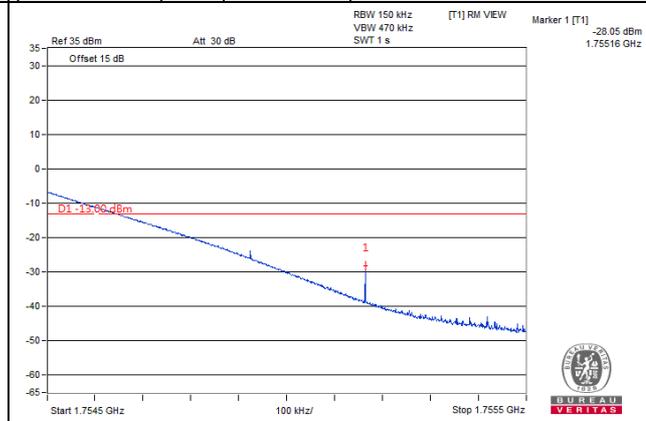
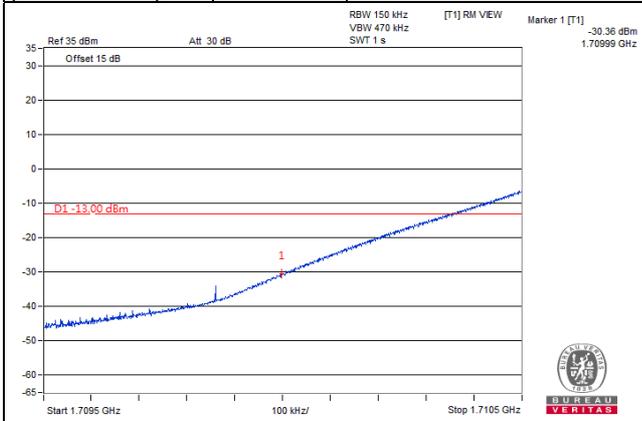


Channel 20000 (1715.0MHz)	QPSK	50 RB / 0 RB Offset	Channel 20350 (1750.0MHz)	QPSK	50 RB / 0 RB Offset
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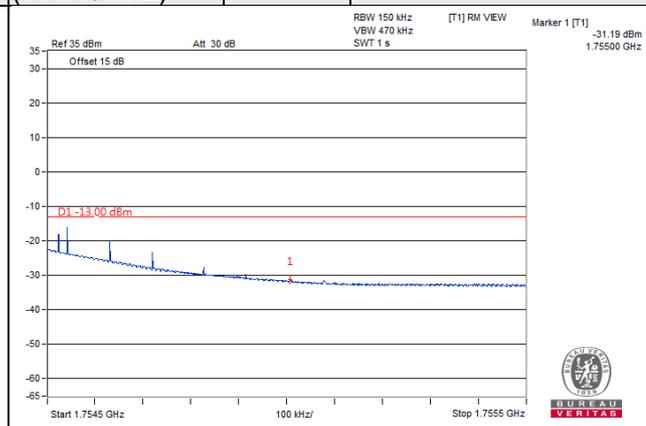
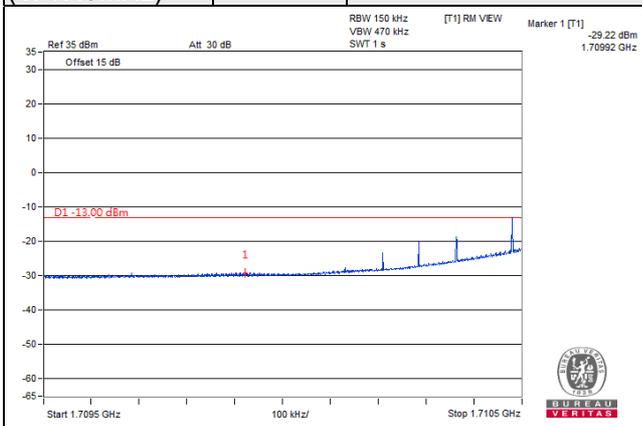


LTE Band 4, Channel Bandwidth 15MHz

Channel 20025 (1717.5MHz)	QPSK	1 RB / 0 RB Offset	Channel 20325 (1747.5MHz)	QPSK	1 RB / 74 RB Offset
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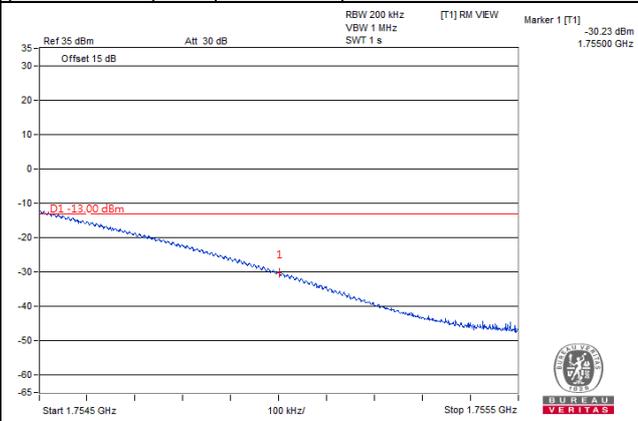
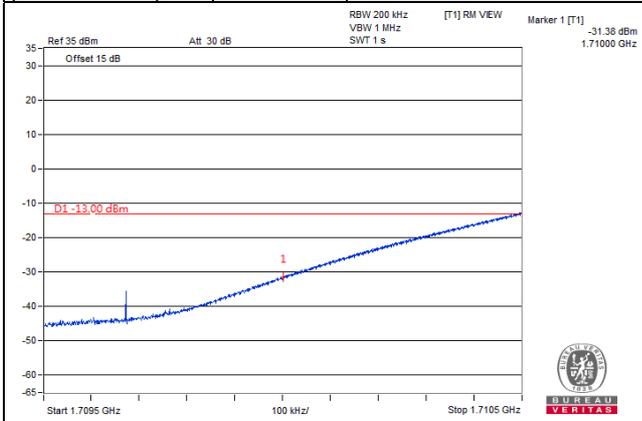


Channel 20025 (1717.5MHz)	QPSK	75 RB / 0 RB Offset	Channel 20325 (1747.5MHz)	QPSK	75 RB / 0 RB Offset
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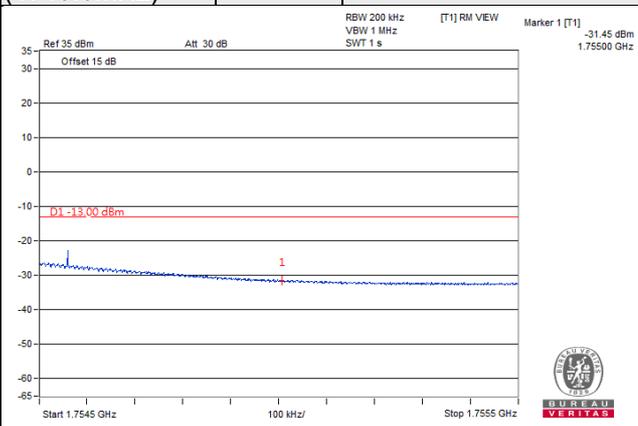
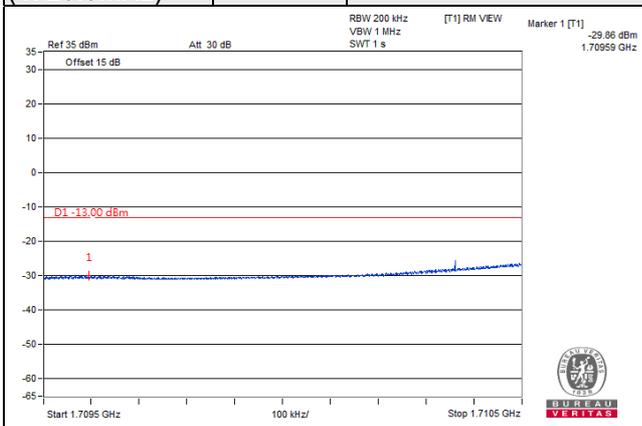


LTE Band 4, Channel Bandwidth 20MHz

Channel 20050 (1720.0MHz)	QPSK	1 RB / 0 RB Offset	Channel 20300 (1745.0MHz)	QPSK	1 RB / 99 RB Offset
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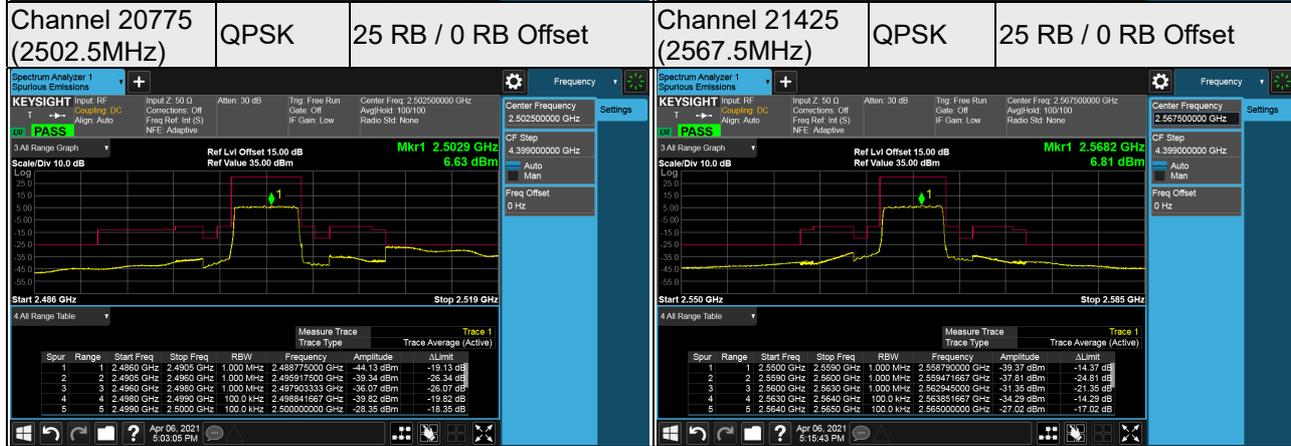
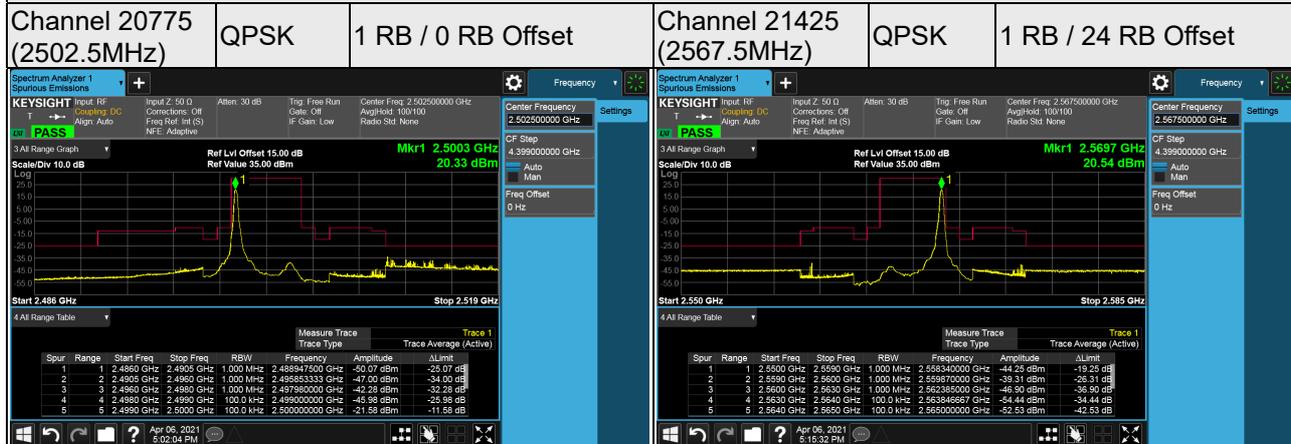


Channel 20050 (1720.0MHz)	QPSK	100 RB / 0 RB Offset	Channel 20300 (1745.0MHz)	QPSK	100 RB / 0 RB Offset
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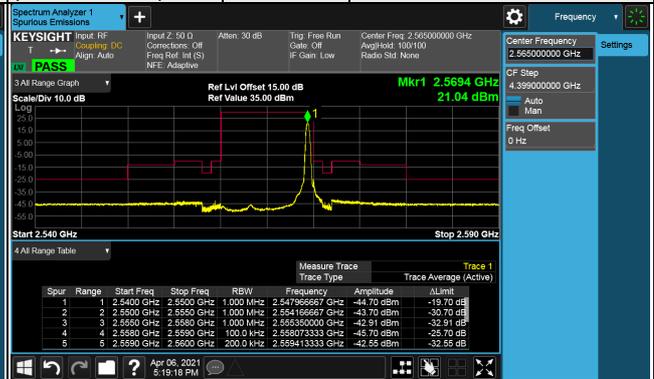
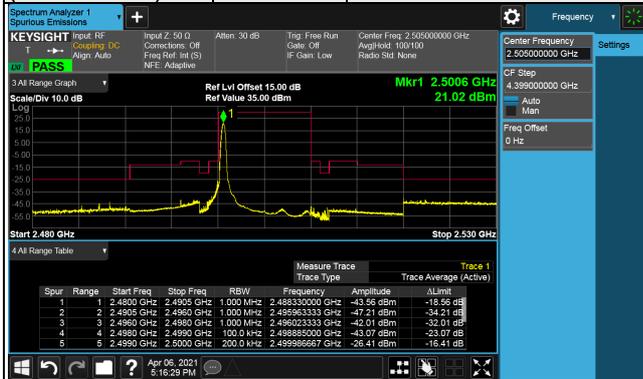
Out-of-Band Emission

LTE Band 7, Channel Bandwidth 5MHz

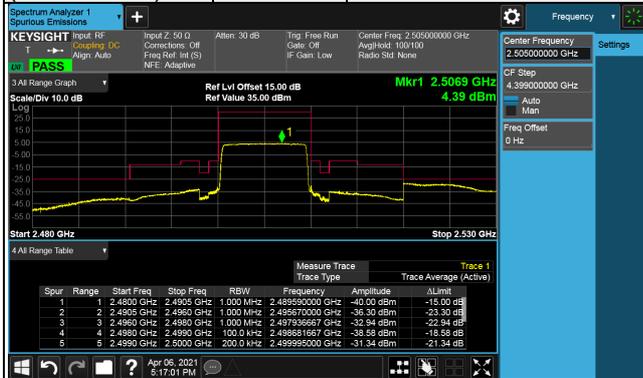


LTE Band 7, Channel Bandwidth 10MHz

Channel 20800 (2505.0MHz)	QPSK	1 RB / 0 RB Offset	Channel 21400 (2565.0MHz)	QPSK	1 RB / 49 RB Offset
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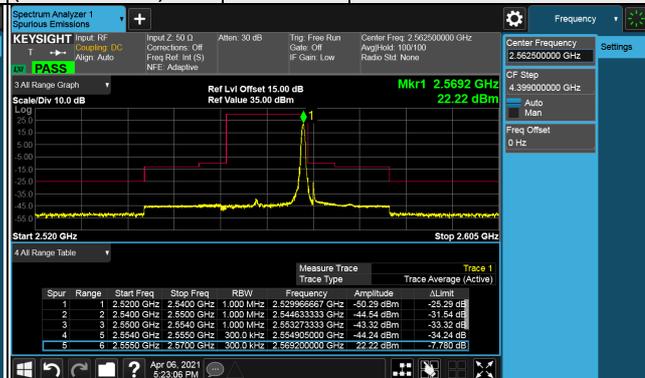
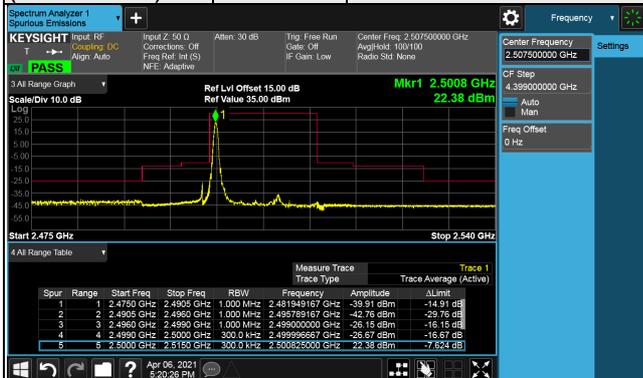


Channel 20800 (2505.0MHz)	QPSK	50 RB / 0 RB Offset	Channel 21400 (2565.0MHz)	QPSK	50 RB / 0 RB Offset
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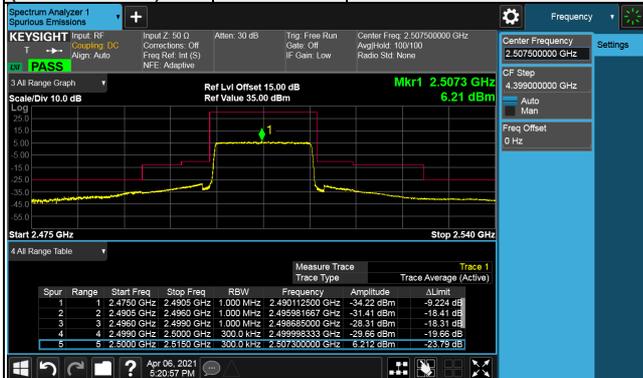


LTE Band 7, Channel Bandwidth 15MHz

Channel 20825 (2507.5MHz)	QPSK	1 RB / 0 RB Offset	Channel 21375 (2562.5MHz)	QPSK	1 RB / 74 RB Offset
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Channel 20825 (2507.5MHz)	QPSK	75 RB / 0 RB Offset
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Channel 21375 (2562.5MHz)	QPSK	75 RB / 0 RB Offset
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