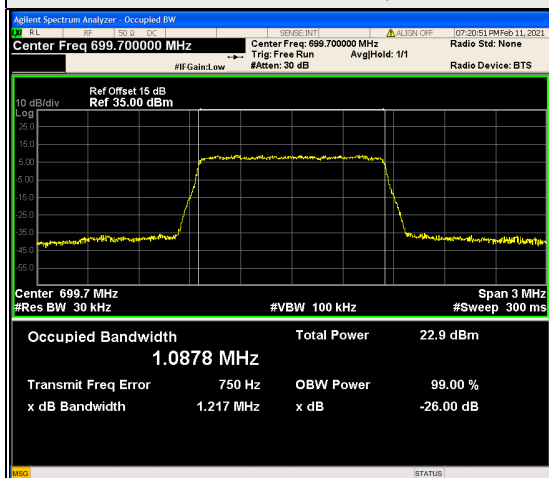


LTE Band 12

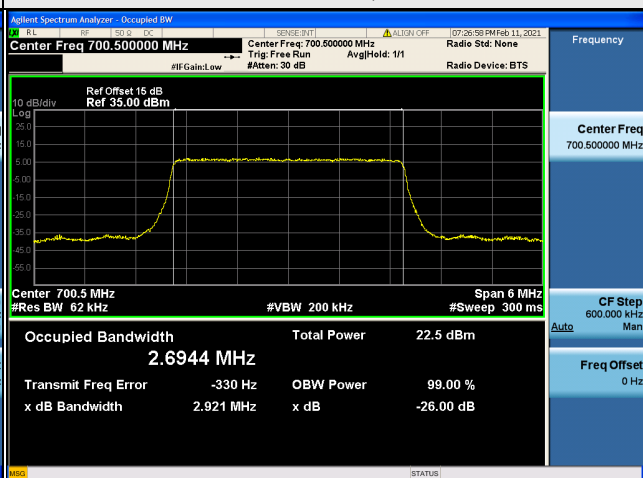
LTE Band 12, Channel Bandwidth 1.4MHz					
Channel	Frequency (MHz)	26dB Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
23017	699.7	1.210	1.217	1.210	1.210
23095	707.5	1.213	1.215	1.217	1.202
23173	715.3	1.209	1.213	1.211	1.209
LTE Band 12, Channel Bandwidth 3MHz					
Channel	Frequency (MHz)	26dB Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
23025	700.5	2.912	2.921	2.906	2.904
23095	707.5	2.919	2.919	2.897	2.908
23165	714.5	2.908	2.917	2.893	2.913
LTE Band 12, Channel Bandwidth 5MHz					
Channel	Frequency (MHz)	26dB Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
23035	701.5	4.799	4.794	4.804	4.799
23095	707.5	4.781	4.785	4.817	4.786
23155	713.5	4.795	4.797	4.841	4.802
LTE Band 12, Channel Bandwidth 10MHz					
Channel	Frequency (MHz)	26dB Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
23060	704.0	9.486	9.496	9.498	9.504
23095	707.5	9.505	9.517	9.496	9.506
23130	711.0	9.503	9.502	9.496	9.501

Spectrum Plot of Worst Value

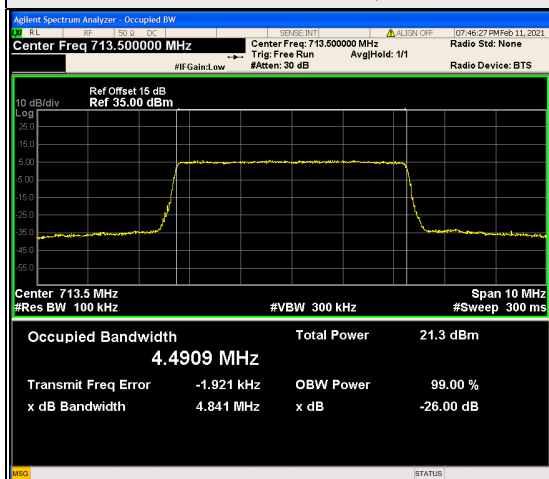
1.4MHz / 16QAM



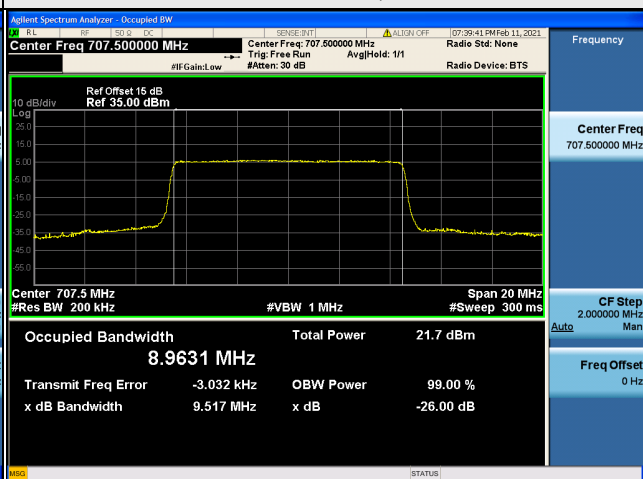
3MHz / 16QAM



5MHz / 64QAM

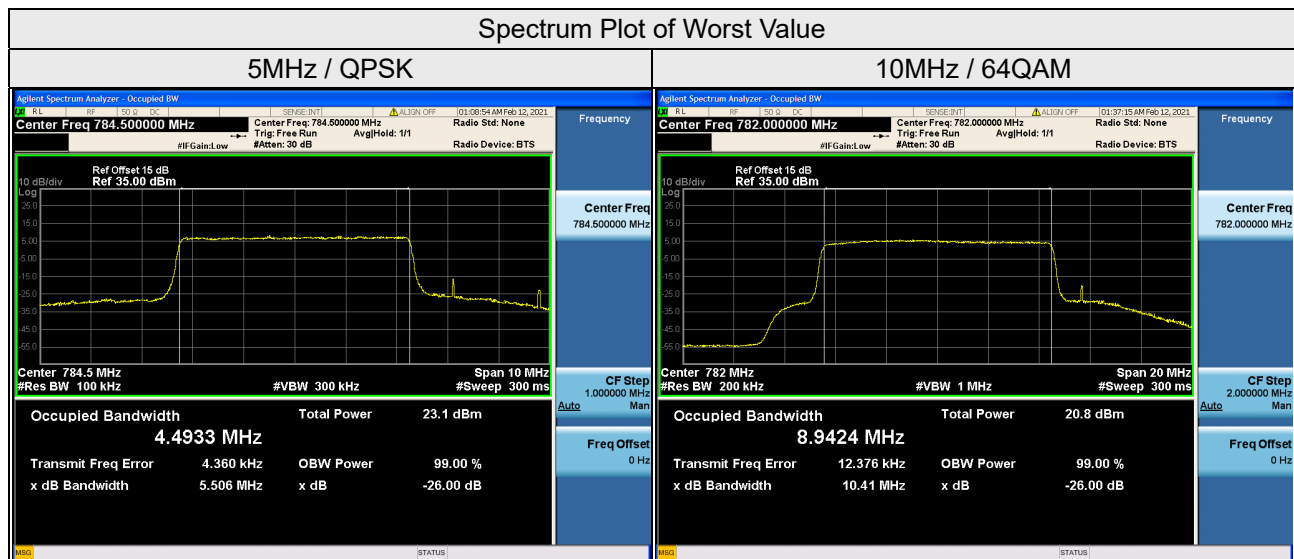


10MHz / 16QAM



LTE Band 13

LTE Band 13, Channel Bandwidth 5MHz					
Channel	Frequency (MHz)	26dB Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
23205	779.5	4.781	4.787	4.812	4.804
23230	782.0	4.821	4.811	4.839	4.791
23255	784.5	5.506	5.349	5.212	4.792
LTE Band 13, Channel Bandwidth 10MHz					
Channel	Frequency (MHz)	26dB Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
23230	782.0	9.505	9.508	10.410	9.482



4.5 Band Edge Measurement

4.5.1 Limits of Band Edge Measurement

For n66, LTE Band 2 and LTE Band 5:

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. 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.

For LTE Band 7:

Equipment shall comply with the following unwanted emission limits:

(a) for base station and fixed subscriber equipment, the power of any unwanted emissions measured as above shall be attenuated (in dB) below the transmitter power, P (dBW), by at least $43 + 10 \log_{10} p$.

(b) for mobile subscriber equipment, the power of any unwanted emissions measured as above shall be attenuated (in dB) below the transmitter power, P (dBW), by at least:

- (i) $40 + 10 \log_{10} p$ from the channel edges to 5 MHz away
- (ii) $43 + 10 \log_{10} p$ between 5 MHz and X MHz from the channel edges, and
- (iii) $55 + 10 \log_{10} p$ at X MHz and beyond from the channel edges

In addition, the attenuation shall not be less than $43 + 10 \log_{10} p$ on all frequencies between 2490.5 MHz and 2496 MHz, and $55 + 10 \log_{10} p$ at or below 2490.5 MHz.

In (a) and (b), p is the transmitter power

For LTE Band 12:

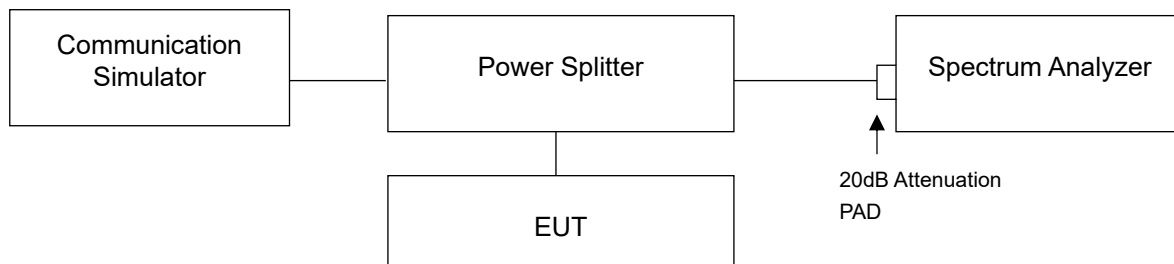
For operations in the 600 MHz and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least $43 + 10 \log(P)$ dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater.

For LTE Band 13:

For on any frequency outside the 746-758 MHz and 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.

Operating in the frequency bands 746-758 MHz and 776-788 MHz, on all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than $65 + 10 \log(P)$ dB in a 6.25 kHz band segment, for mobile and portable stations

4.5.2 Test Setup



4.5.3 Test Procedures

- a. All measurements were done at low and high operational frequency range.
- b. 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 (5GNR Channel Bandwidth 5MHz).
- c. 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 (5GNR Channel Bandwidth 10MHz).
- d. 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 (5GNR Channel Bandwidth 15MHz).
- e. 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 620kHz (5GNR Channel Bandwidth 20MHz).
- f. The center frequency of spectrum is the band edge frequency and span is 1MHz. RB of the spectrum is 300kHz and VB of the spectrum is 910kHz (5GNR Channel Bandwidth 30MHz/40MHz).
- g. The emission operations in the 40 MHz channel BW mode of 5GNR, the 1% range channel edge using a 300 kHz bandwidth on the spectrum analyzer, the correction factor is further improved by $10 \log(400/300) = 1.25\text{dB}$, the spectrum reading value is added with the correction factor to determine whether the limit is met. Measurement method refers to ANSI C63.26 section 5.7.2.
- h. 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 Band: 2, 5: Channel Bandwidth 1.4MHz).
- i. 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 Band 12: Channel Bandwidth 1.4MHz).
- j. 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).
- k. 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).
- l. 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).
- m. 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).
- n. 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).
- o. Record the max trace plot into the test report.

4.5.4 Test Results

n66

Band edge:

Channel Bandwidth: 5MHz

Channel 342500 (1712.5MHz)	$\pi/2$ BPSK	1 RB / 0 RB Offset	Channel 355500 (1777.5MHz)	$\pi/2$ BPSK	1 RB / 23 RB Offset
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Channel 342500 (1712.5MHz)	$\pi/2$ BPSK	25 RB / 0 RB Offset	Channel 355500 (1777.5MHz)	$\pi/2$ BPSK	25 RB / 0 RB Offset
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Channel Bandwidth: 10MHz

Channel 343000
(1715.0MHz)

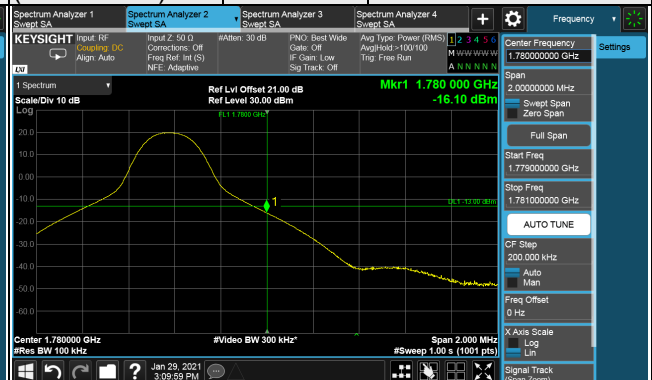
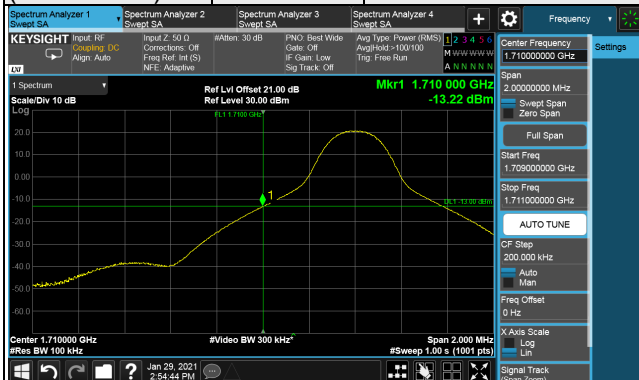
$\pi/2$ BPSK

1 RB / 0 RB Offset

Channel 355000
(1775.0MHz)

$\pi/2$ BPSK

1 RB / 50 RB Offset



Channel 343000
(1715.0MHz)

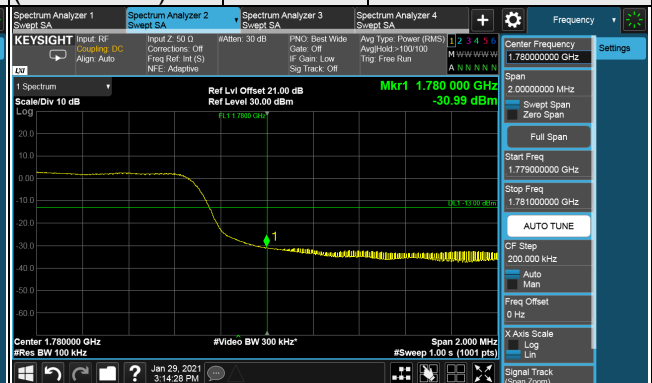
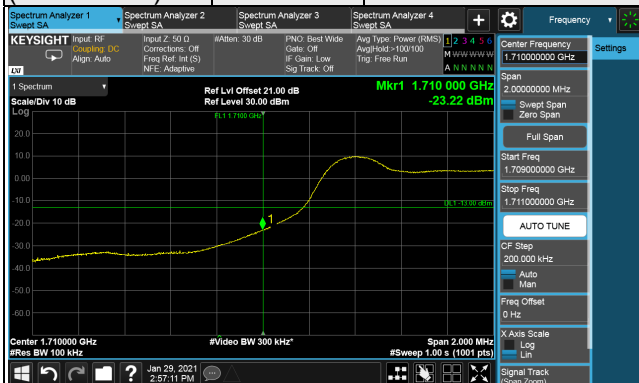
$\pi/2$ BPSK

50 RB / 0 RB Offset

Channel 355000
(1775.0MHz)

$\pi/2$ BPSK

50 RB / 0 RB Offset



Channel Bandwidth: 15MHz

Channel 343500
(1717.5MHz)

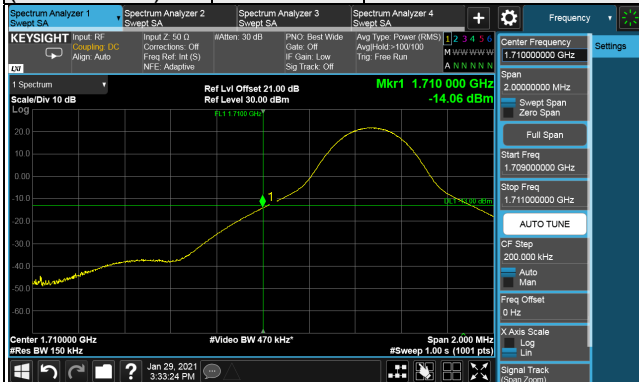
$\pi/2$ BPSK

1 RB / 0 RB Offset

Channel 354500
(1772.5MHz)

$\pi/2$ BPSK

1 RB / 77 RB Offset



Channel 343500
(1717.5MHz)

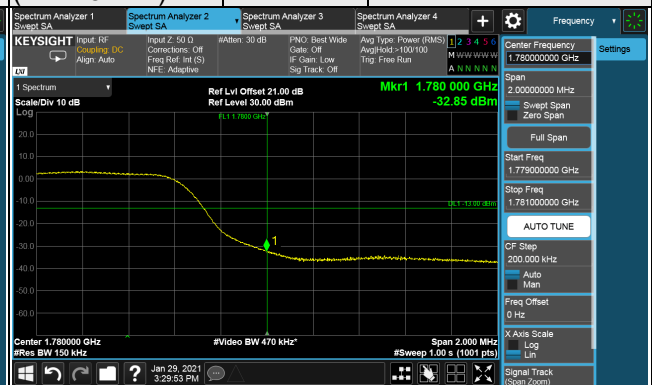
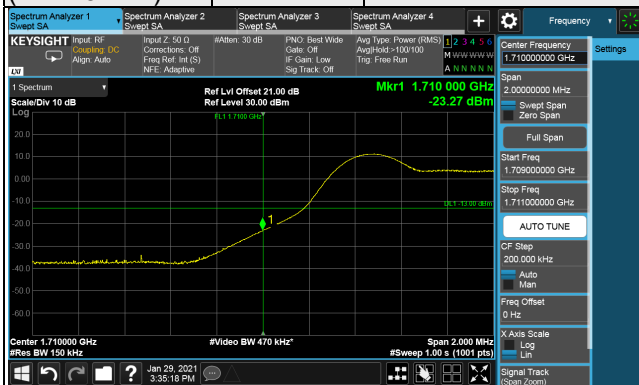
$\pi/2$ BPSK

75 RB / 0 RB Offset

Channel 354500
(1772.5MHz)

$\pi/2$ BPSK

75 RB / 0 RB Offset



Channel Bandwidth: 20MHz

Channel 344000
(1720.0MHz)

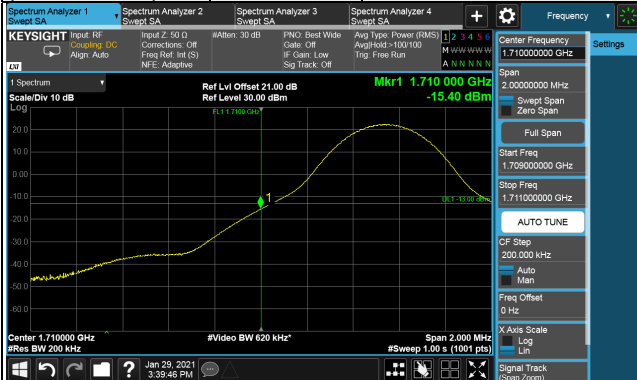
$\pi/2$ BPSK

1 RB / 0 RB Offset

Channel 354000
(1770.0MHz)

$\pi/2$ BPSK

1 RB / 104 RB Offset



Channel 344000
(1720.0MHz)

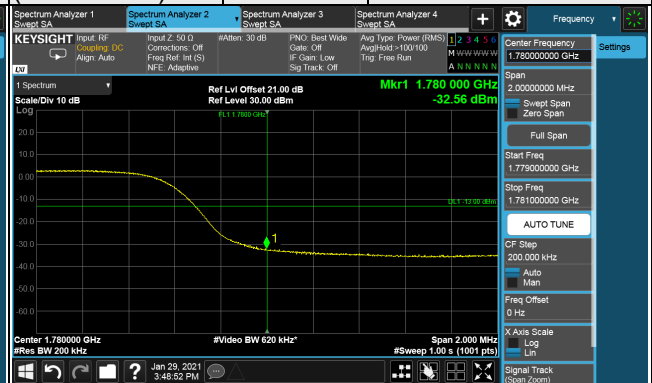
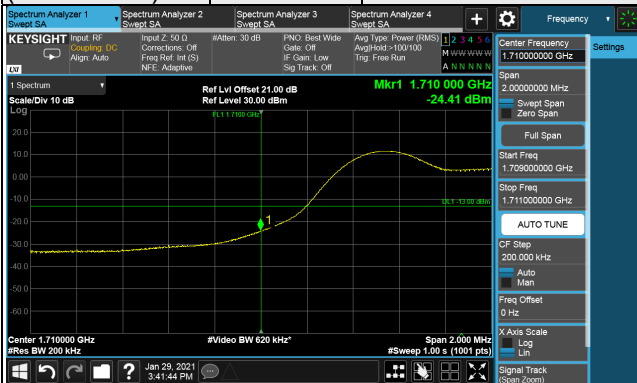
$\pi/2$ BPSK

100 RB / 0 RB Offset

Channel 354000
(1770.0MHz)

$\pi/2$ BPSK

100 RB / 0 RB Offset



Channel Bandwidth: 30MHz

Channel 345000
(1725.0MHz)

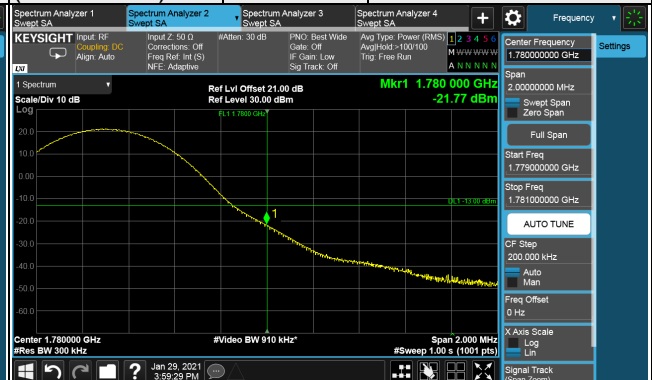
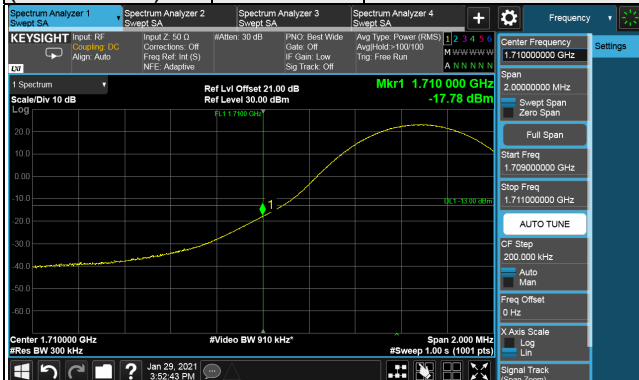
$\pi/2$ BPSK

1 RB / 0 RB Offset

Channel 353000
(1765.0MHz)

$\pi/2$ BPSK

1 RB / 104 RB Offset



Channel 345000
(1725.0MHz)

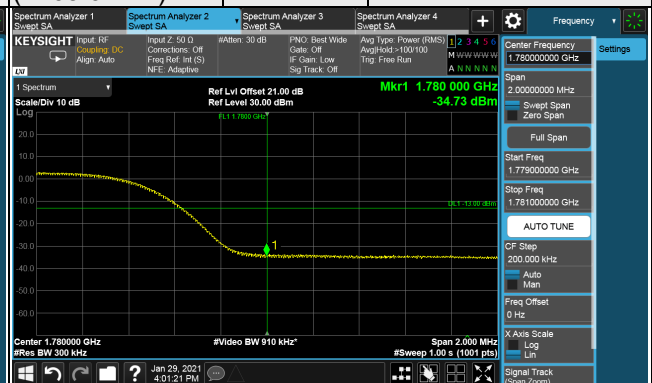
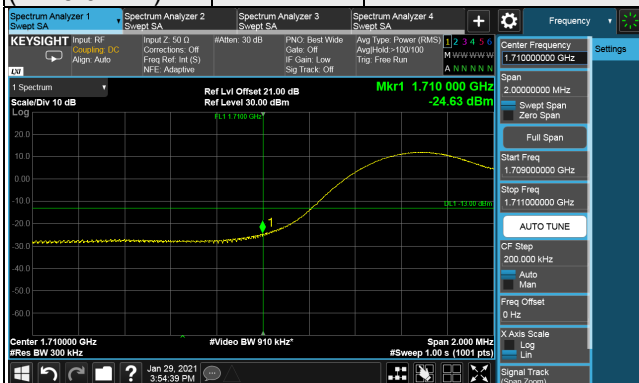
$\pi/2$ BPSK

100 RB / 0 RB Offset

Channel 353000
(1765.0MHz)

$\pi/2$ BPSK

100 RB / 0 RB Offset



Channel Bandwidth: 40MHz

Channel 346000
(1730.0MHz)

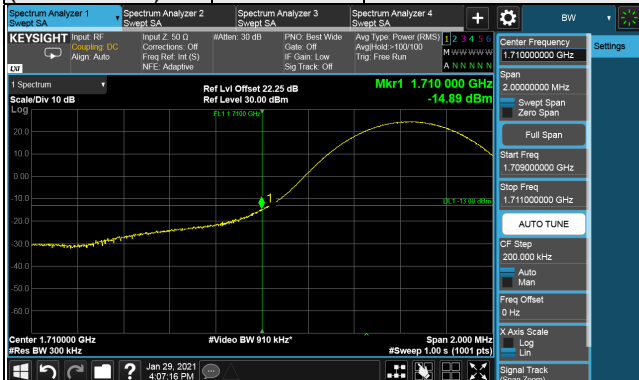
$\pi/2$ BPSK

1 RB / 0 RB Offset

Channel 352000
(1760.0MHz)

$\pi/2$ BPSK

1 RB / 214 RB Offset



Channel 346000
(1730.0MHz)

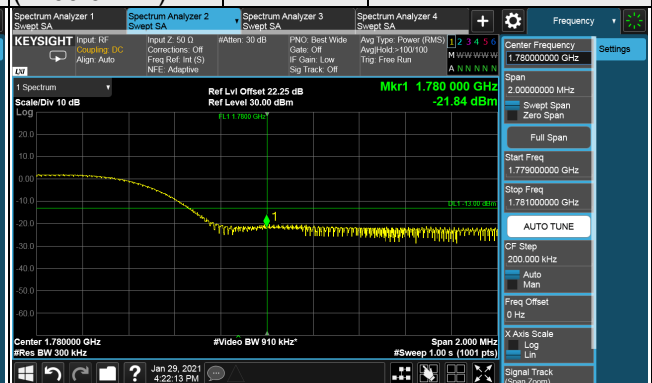
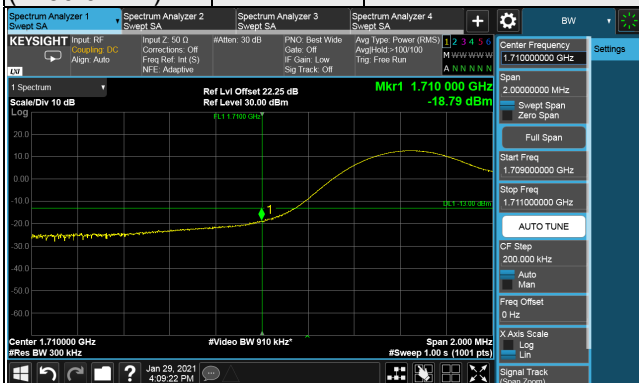
$\pi/2$ BPSK

216 RB / 0 RB Offset

Channel 352000
(1760.0MHz)

$\pi/2$ BPSK

216 RB / 0 RB Offset



LTE Band 2, Channel Bandwidth 1.4MHz

Channel 18607
(1850.70MHz)

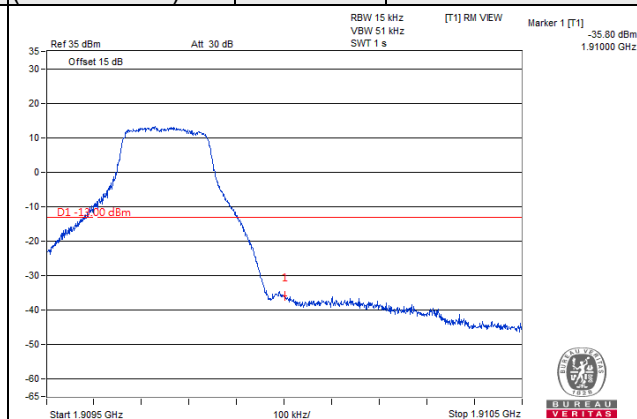
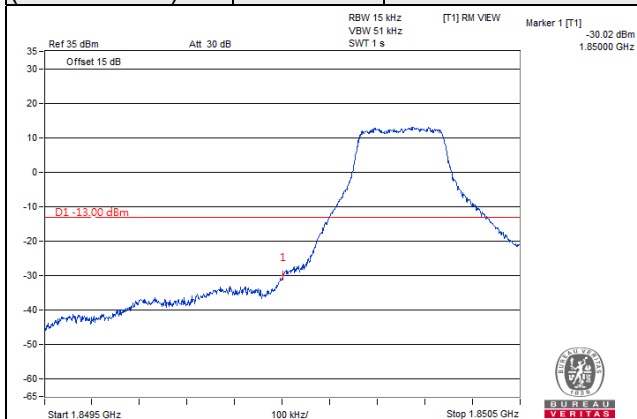
QPSK

1 RB / 0 RB Offset

Channel 19193
(1909.30MHz)

QPSK

1 RB / 5 RB Offset



Channel 18607
(1850.70MHz)

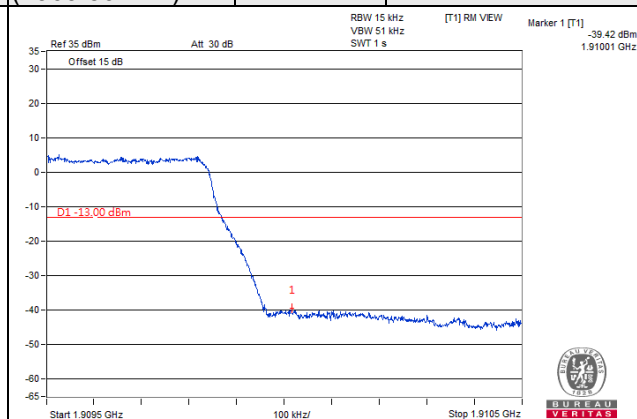
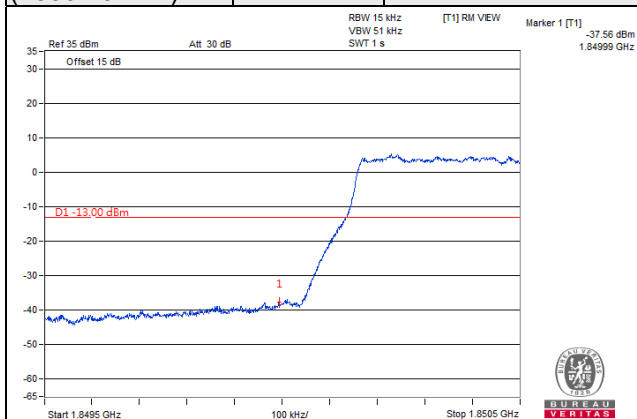
QPSK

6 RB / 0 RB Offset

Channel 19193
(1909.30MHz)

QPSK

6 RB / 0 RB Offset



LTE Band 2, Channel Bandwidth 3MHz

Channel 18615
(1851.50MHz)

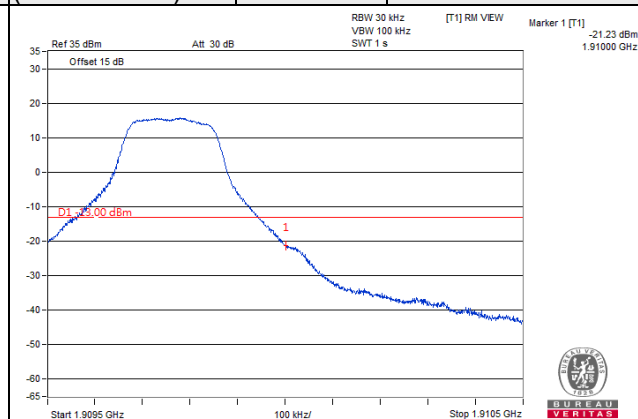
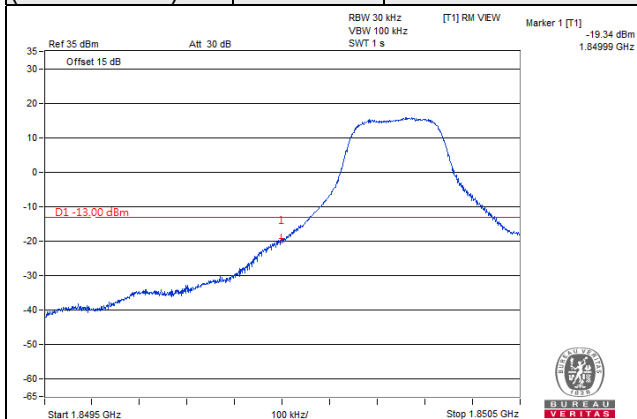
QPSK

1 RB / 0 RB Offset

Channel 19185
(1908.50MHz)

QPSK

1 RB / 14 RB Offset



Channel 18615
(1851.50MHz)

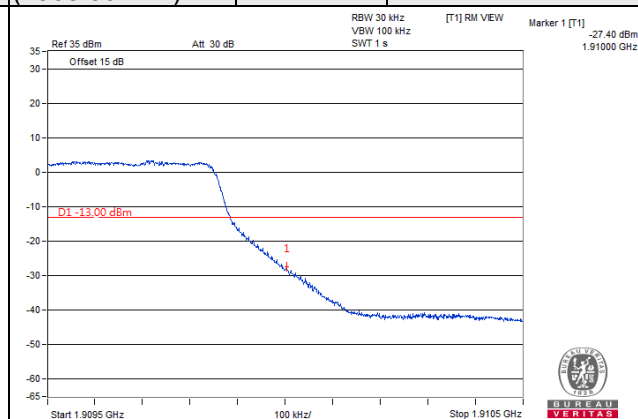
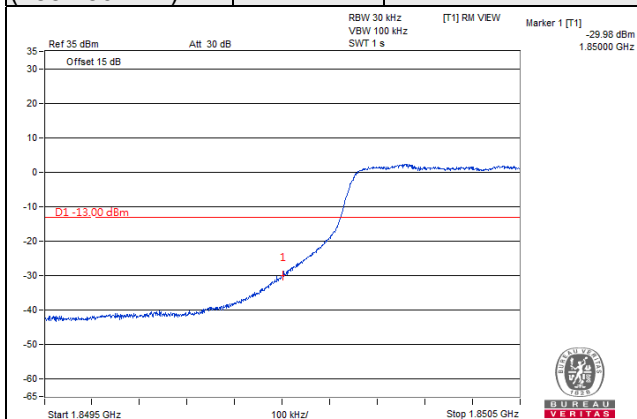
QPSK

15 RB / 0 RB Offset

Channel 19185
(1908.50MHz)

QPSK

15 RB / 0 RB Offset



LTE Band 2, Channel Bandwidth 5MHz

Channel 18625
(1852.50MHz)

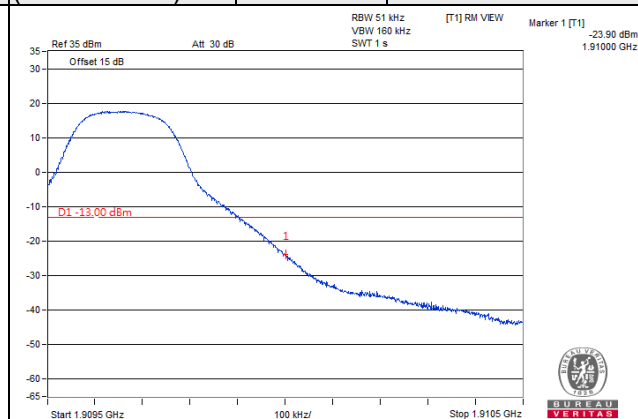
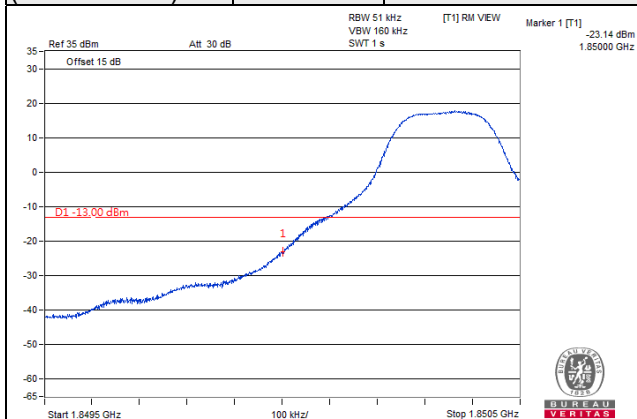
QPSK

1 RB / 0 RB Offset

Channel 19175
(1907.50MHz)

QPSK

1 RB / 24 RB Offset



Channel 18625
(1852.50MHz)

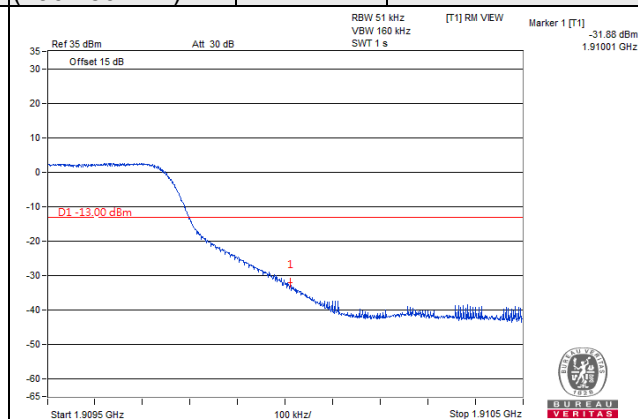
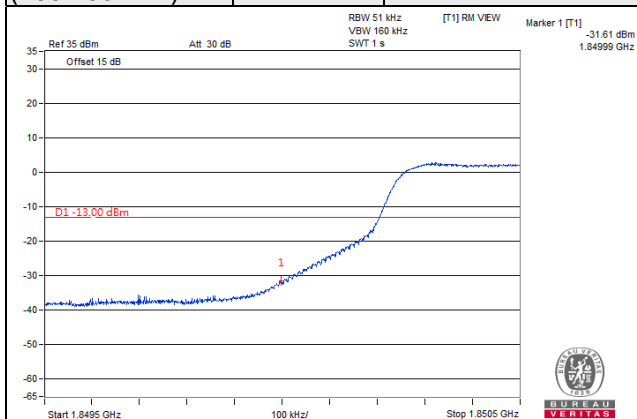
QPSK

25 RB / 0 RB Offset

Channel 19175
(1907.50MHz)

QPSK

25 RB / 0 RB Offset



LTE Band 2, Channel Bandwidth 10MHz

Channel 18650
(1855.00MHz)

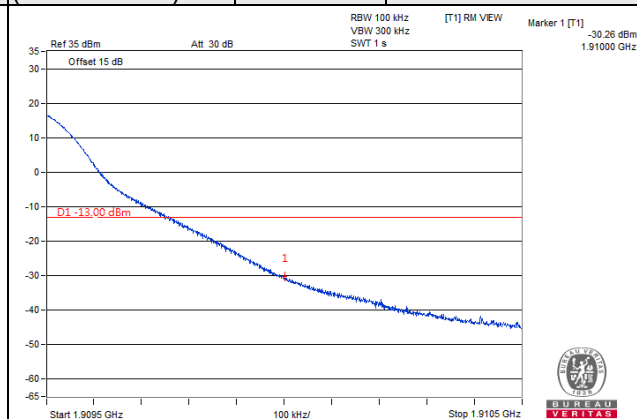
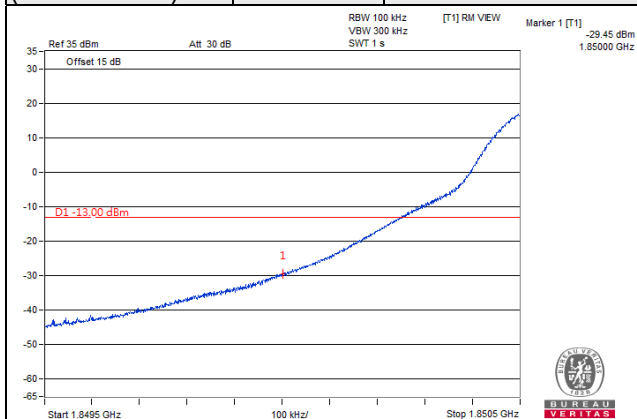
QPSK

1 RB / 0 RB Offset

Channel 19150
(1905.00MHz)

QPSK

1 RB / 49 RB Offset



Channel 18650
(1855.00MHz)

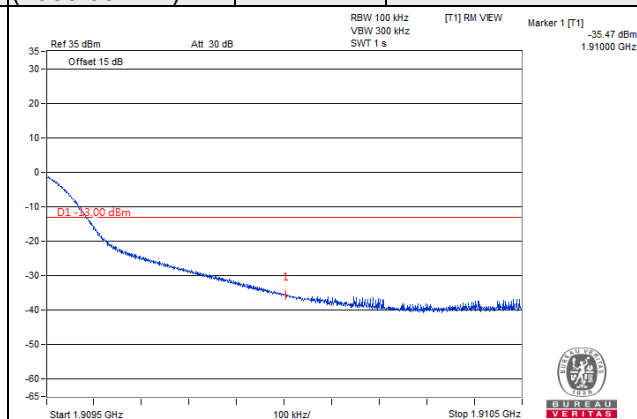
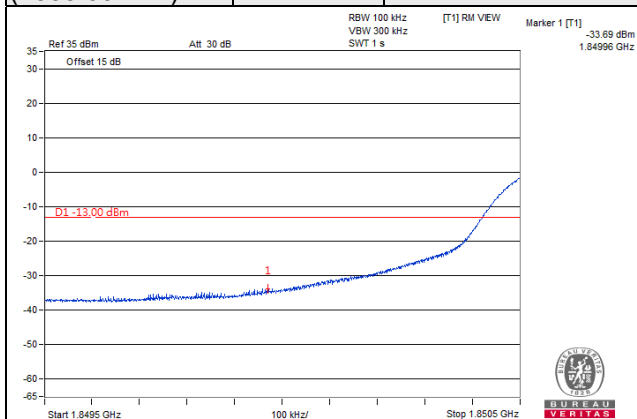
QPSK

50 RB / 0 RB Offset

Channel 19150
(1905.00MHz)

QPSK

50 RB / 0 RB Offset



LTE Band 2, Channel Bandwidth 15MHz

Channel 18675
(1857.50MHz)

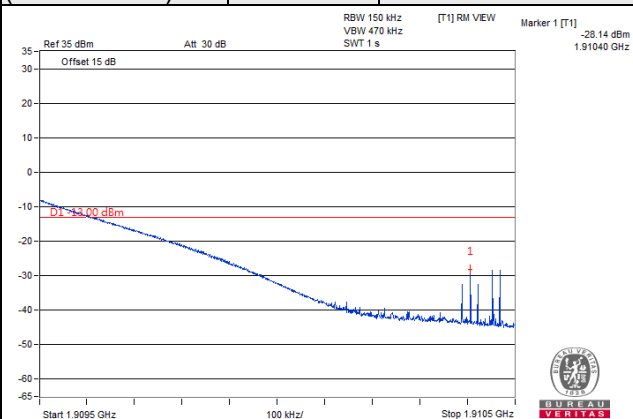
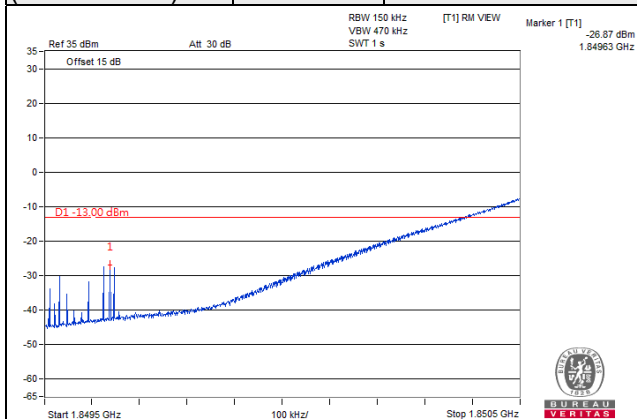
QPSK

1 RB / 0 RB Offset

Channel 19125
(1902.50MHz)

QPSK

1 RB / 74 RB Offset



Channel 18675
(1857.50MHz)

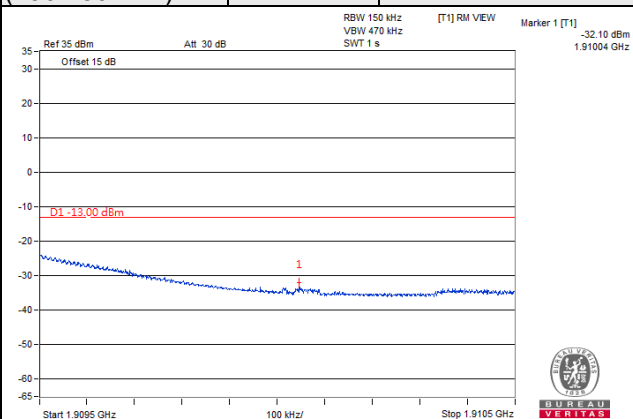
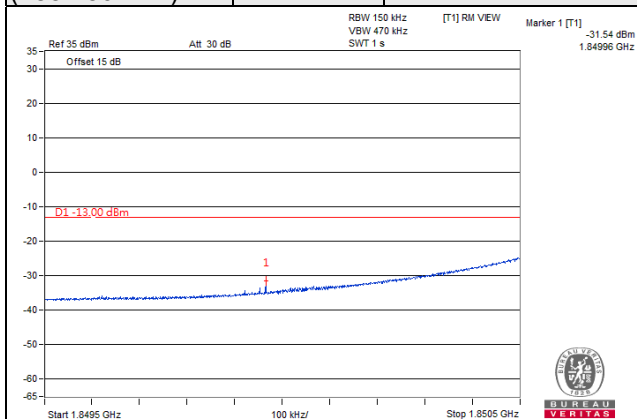
QPSK

75 RB / 0 RB Offset

Channel 19125
(1902.50MHz)

QPSK

75 RB / 0 RB Offset



LTE Band 2, Channel Bandwidth 20MHz

Channel 18700
(1860.00MHz)

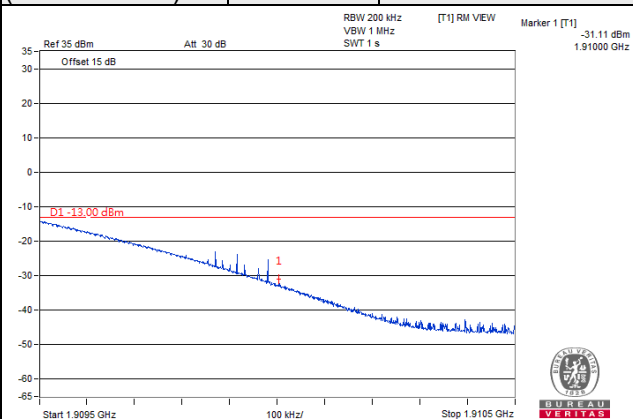
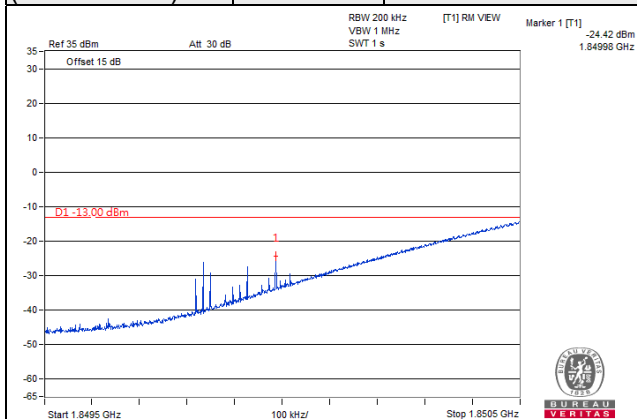
QPSK

1 RB / 0 RB Offset

Channel 19100
(1900.00 MHz)

QPSK

1 RB / 99 RB Offset



Channel 18700
(1860.00MHz)

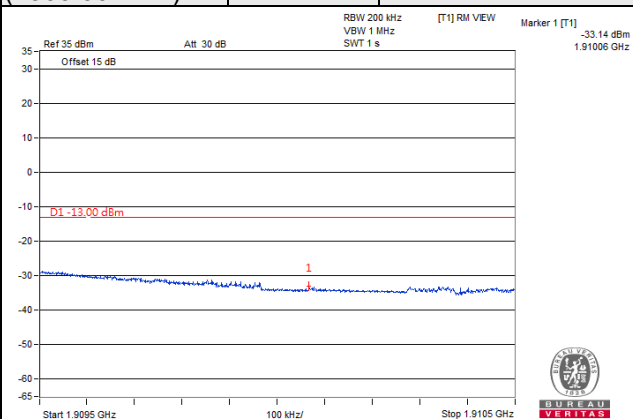
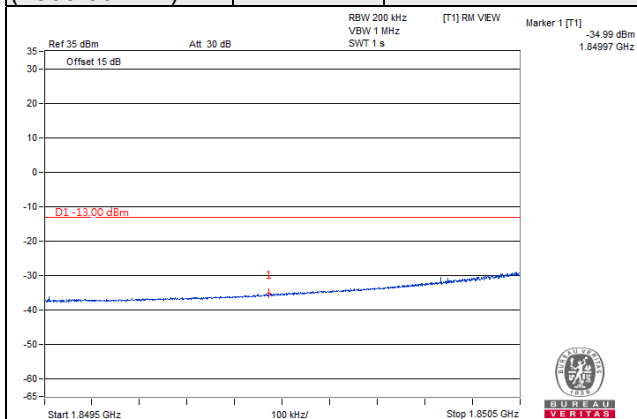
QPSK

100 RB / 0 RB Offset

Channel 19100
(1900.00 MHz)

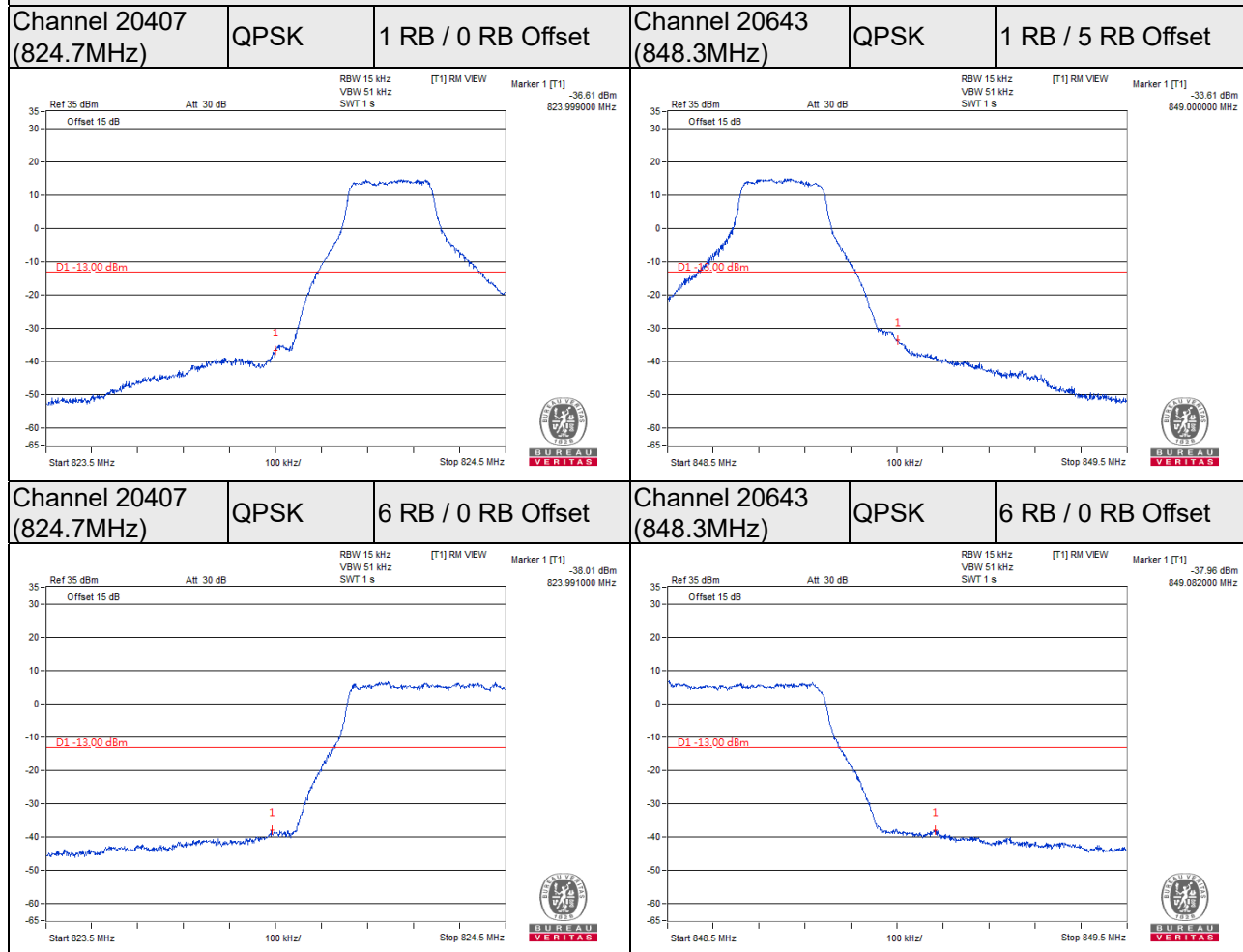
QPSK

100 RB / 0 RB Offset



LTE Band 5

LTE Band 5, Channel Bandwidth 1.4MHz



LTE Band 5, Channel Bandwidth 3MHz

Channel 20415
(825.5MHz)

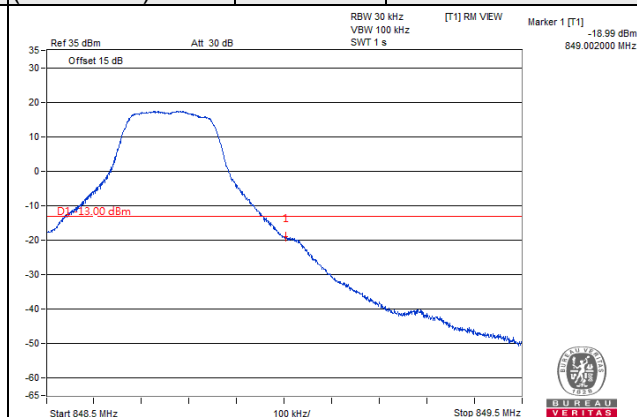
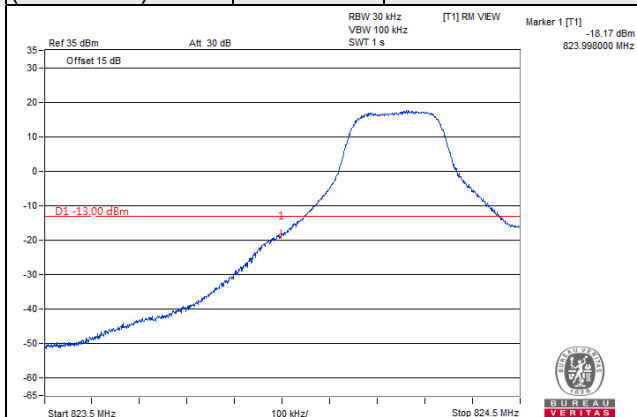
QPSK

1 RB / 0 RB Offset

Channel 20635
(847.5MHz)

QPSK

1 RB / 14 RB Offset



Channel 20415
(825.5MHz)

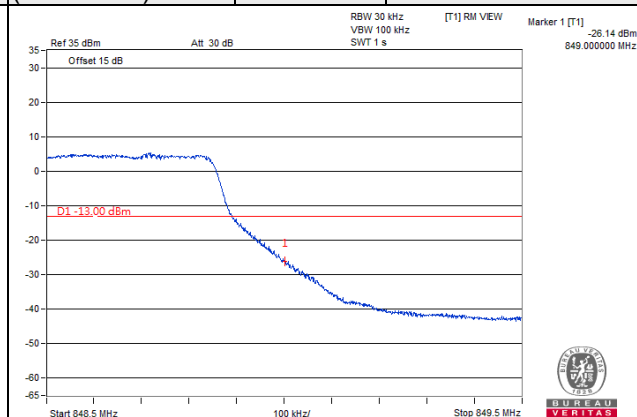
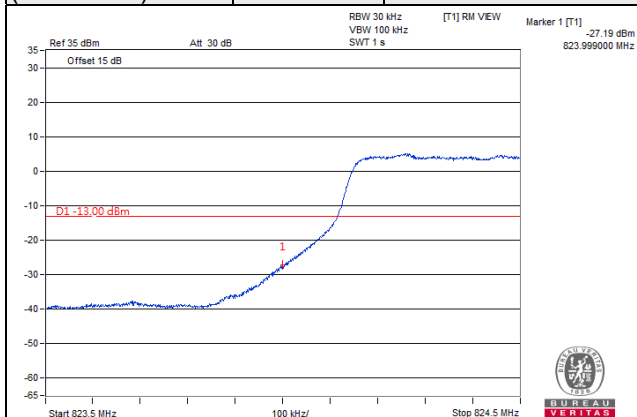
QPSK

15 RB / 0 RB Offset

Channel 20635
(847.5MHz)

QPSK

15 RB / 0 RB Offset



LTE Band 5, Channel Bandwidth 5MHz

Channel 20425
(826.5MHz)

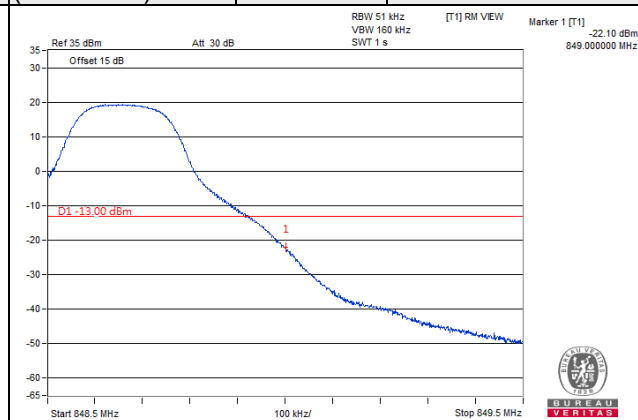
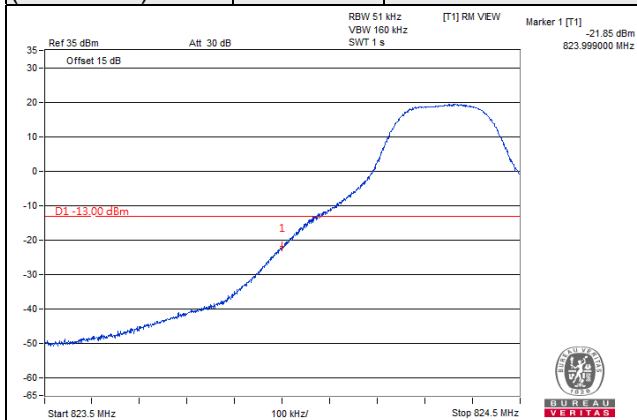
QPSK

1 RB / 0 RB Offset

Channel 20625
(846.5MHz)

QPSK

1 RB / 24 RB Offset



Channel 20425
(826.5MHz)

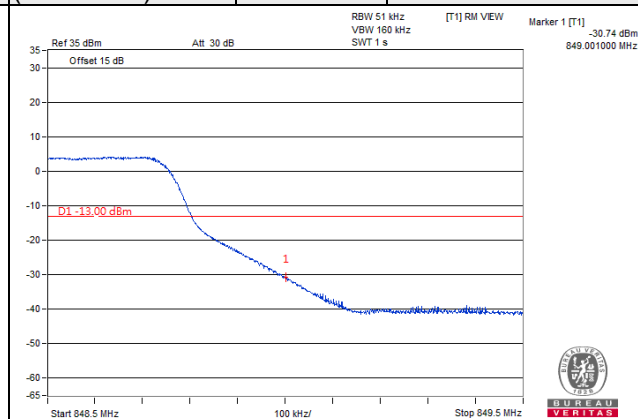
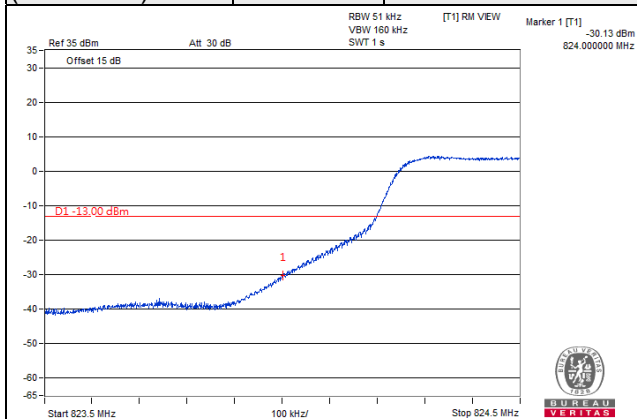
QPSK

25 RB / 0 RB Offset

Channel 20625
(846.5MHz)

QPSK

25 RB / 0 RB Offset



LTE Band 5, Channel Bandwidth 10MHz

Channel 20450
(829.0MHz)

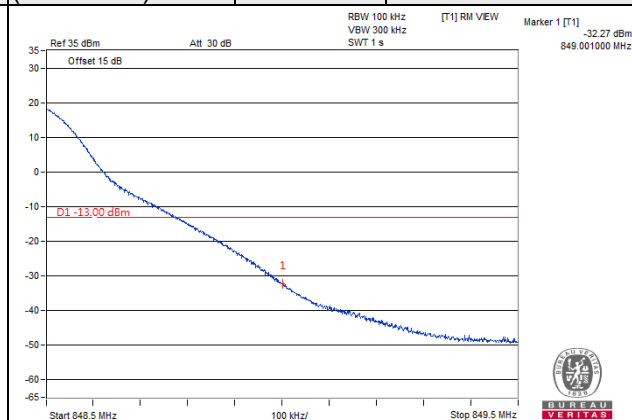
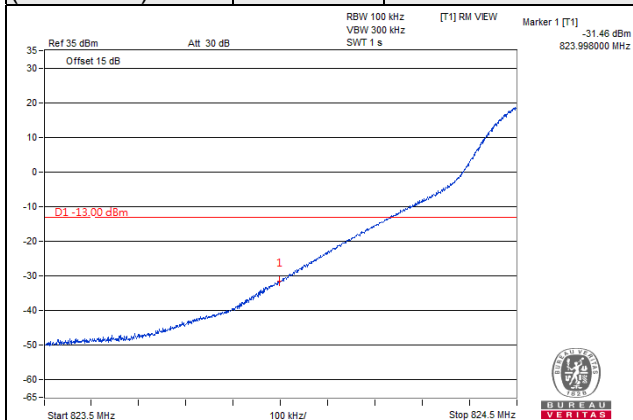
QPSK

1 RB / 0 RB Offset

Channel 20600
(844.0MHz)

QPSK

1 RB / 49 RB Offset



Channel 20450
(829.0MHz)

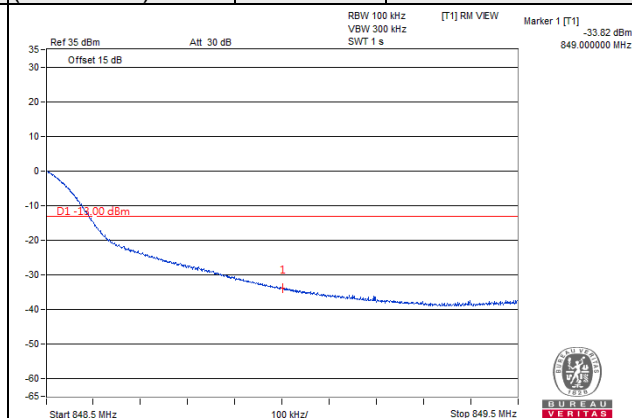
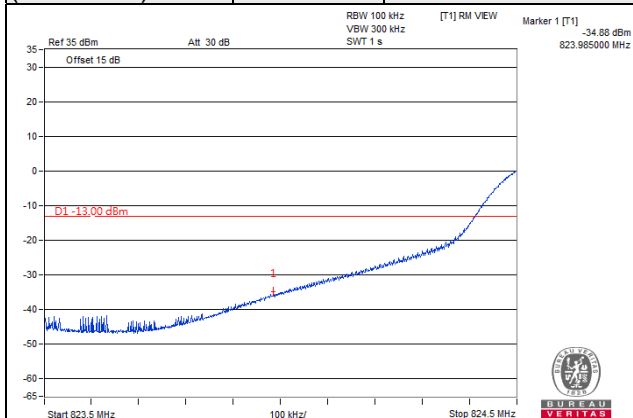
QPSK

50 RB / 0 RB Offset

Channel 20600
(844.0MHz)

QPSK

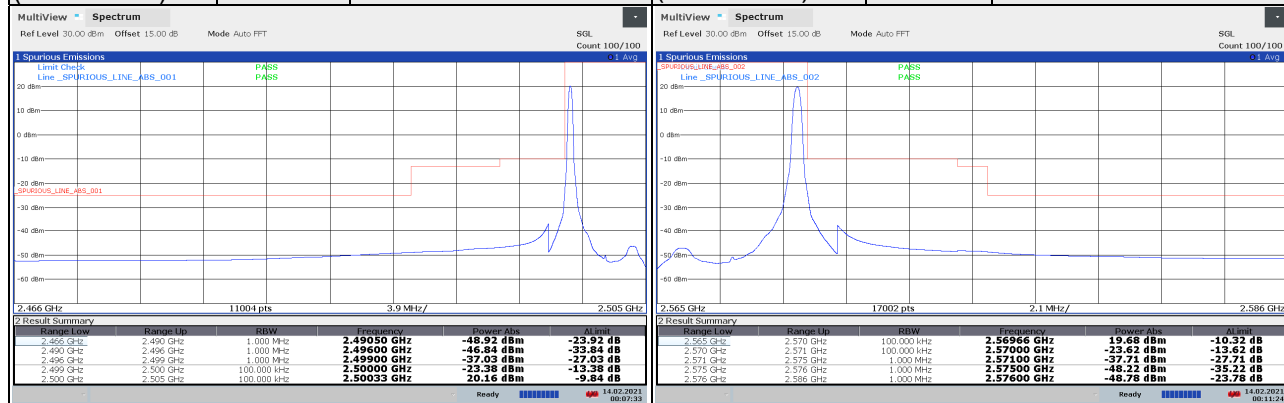
50 RB / 0 RB Offset



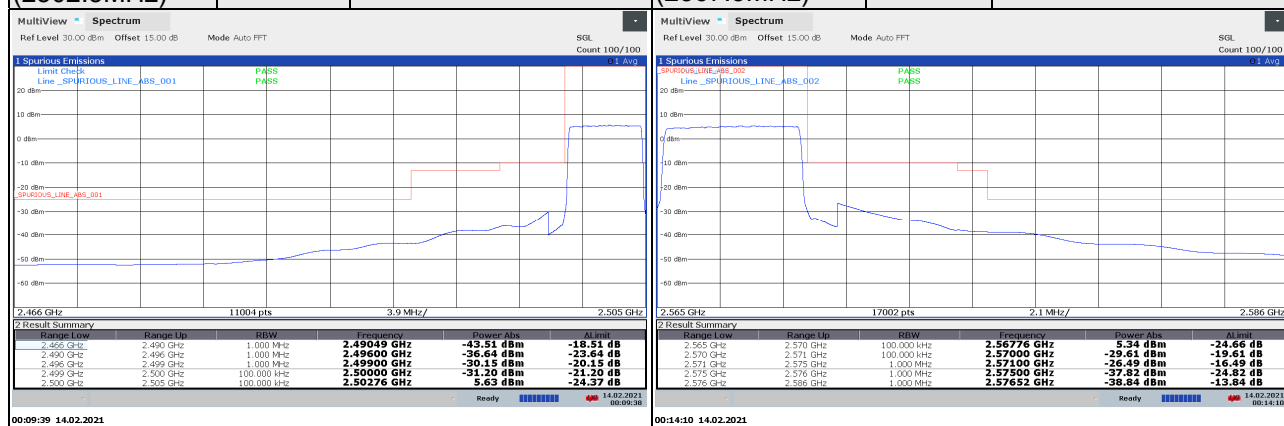
LTE Band 7

LTE Band 7, Channel Bandwidth: 5MHz

Channel 20775 (2502.5MHz)	QPSK	1 RB / 0 RB Offset	Channel 21425 (2567.5MHz)	QPSK	1 RB / 24 RB Offset
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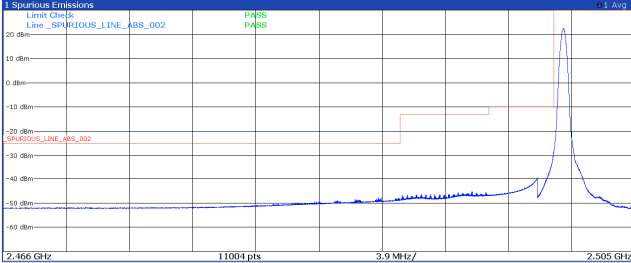
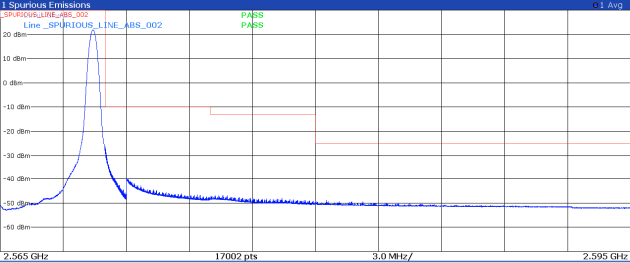
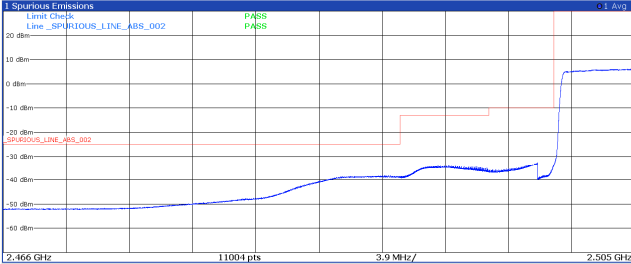
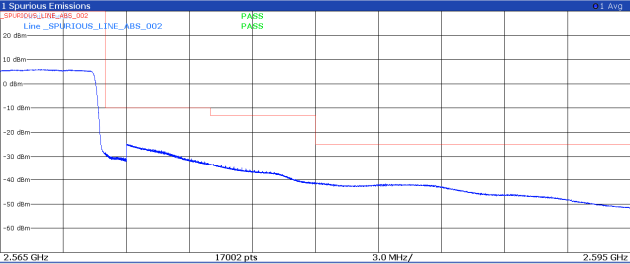
Channel 20775 (2502.5MHz)	QPSK	25 RB / 0 RB Offset	Channel 21425 (2567.5MHz)	QPSK	25 RB / 0 RB Offset
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00:09:39 14.02.2021

00:14:10 14.02.2021

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																																																																								
Multiview Spectrum Ref Level 30.00 dBm Offset 15.00 dB Mode Auto Sweep Count 100/100 1 Spurious Emissions Limit Check Line _SPURIOUS_LINE_ABS_002 PASS PASS  2.466 GHz 11004 pts 3.0 MHz/ 2.505 GHz 2 Result Summary <table><tr><th>Range Low</th><th>Range Up</th><th>RBW</th><th>Frequency</th><th>Power Abs</th><th>Alt</th></tr><tr><td>2.466 GHz</td><td>2.490 GHz</td><td>1.000 MHz</td><td>2.48934 GHz</td><td>-47.71 dBm</td><td>-22.71 dB</td></tr><tr><td>2.490 GHz</td><td>2.495 GHz</td><td>1.000 MHz</td><td>2.49494 GHz</td><td>-45.06 dBm</td><td>-32.06 dB</td></tr><tr><td>2.495 GHz</td><td>2.499 GHz</td><td>1.000 MHz</td><td>2.49899 GHz</td><td>-39.53 dBm</td><td>-29.53 dB</td></tr><tr><td>2.499 GHz</td><td>2.500 GHz</td><td>200.000 kHz</td><td>2.50000 GHz</td><td>-28.49 dBm</td><td>-18.49 dB</td></tr><tr><td>2.500 GHz</td><td>2.505 GHz</td><td>200.000 kHz</td><td>2.50060 GHz</td><td>-23.37 dBm</td><td>-7.63 dB</td></tr></table>				Range Low	Range Up	RBW	Frequency	Power Abs	Alt	2.466 GHz	2.490 GHz	1.000 MHz	2.48934 GHz	-47.71 dBm	-22.71 dB	2.490 GHz	2.495 GHz	1.000 MHz	2.49494 GHz	-45.06 dBm	-32.06 dB	2.495 GHz	2.499 GHz	1.000 MHz	2.49899 GHz	-39.53 dBm	-29.53 dB	2.499 GHz	2.500 GHz	200.000 kHz	2.50000 GHz	-28.49 dBm	-18.49 dB	2.500 GHz	2.505 GHz	200.000 kHz	2.50060 GHz	-23.37 dBm	-7.63 dB	Multiview Spectrum Ref Level 30.00 dBm Offset 15.00 dB Mode Auto Sweep Count 100/100 1 Spurious Emissions Limit Check Line _SPURIOUS_LINE_ABS_002 PASS PASS  2.565 GHz 17002 pts 3.0 MHz/ 2.595 GHz 2 Result Summary <table><tr><th>Range Low</th><th>Range Up</th><th>RBW</th><th>Frequency</th><th>Power Abs</th><th>Alt</th></tr><tr><td>2.565 GHz</td><td>2.570 GHz</td><td>200.000 kHz</td><td>2.56940 GHz</td><td>21.83 dBm</td><td>-8.17 dB</td></tr><tr><td>2.570 GHz</td><td>2.571 GHz</td><td>200.000 kHz</td><td>2.57000 GHz</td><td>-26.46 dBm</td><td>-16.46 dB</td></tr><tr><td>2.571 GHz</td><td>2.575 GHz</td><td>1.000 MHz</td><td>2.57108 GHz</td><td>-39.93 dBm</td><td>-29.93 dB</td></tr><tr><td>2.575 GHz</td><td>2.580 GHz</td><td>1.000 MHz</td><td>2.57559 GHz</td><td>-46.99 dBm</td><td>-33.99 dB</td></tr><tr><td>2.580 GHz</td><td>2.595 GHz</td><td>1.000 MHz</td><td>2.58054 GHz</td><td>-48.71 dBm</td><td>-23.71 dB</td></tr></table>				Range Low	Range Up	RBW	Frequency	Power Abs	Alt	2.565 GHz	2.570 GHz	200.000 kHz	2.56940 GHz	21.83 dBm	-8.17 dB	2.570 GHz	2.571 GHz	200.000 kHz	2.57000 GHz	-26.46 dBm	-16.46 dB	2.571 GHz	2.575 GHz	1.000 MHz	2.57108 GHz	-39.93 dBm	-29.93 dB	2.575 GHz	2.580 GHz	1.000 MHz	2.57559 GHz	-46.99 dBm	-33.99 dB	2.580 GHz	2.595 GHz	1.000 MHz	2.58054 GHz	-48.71 dBm	-23.71 dB
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00:17:21 14.02.2021				00:22:56 14.02.2021																																																																											
Channel 20800 (2505.0MHz)		QPSK	50 RB / 0 RB Offset	Channel 21400 (2565.0MHz)		QPSK	50 RB / 0 RB Offset																																																																								
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Range Low	Range Up	RBW	Frequency	Power Abs	Alt																																																																										
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2.580 GHz	2.595 GHz	1.000 MHz	2.58006 GHz	-41.15 dBm	-16.15 dB																																																																										
00:19:51 14.02.2021				00:28:30 14.02.2021																																																																											

LTE Band 7, Channel Bandwidth: 15MHz

Channel 20825
(2507.5MHz)

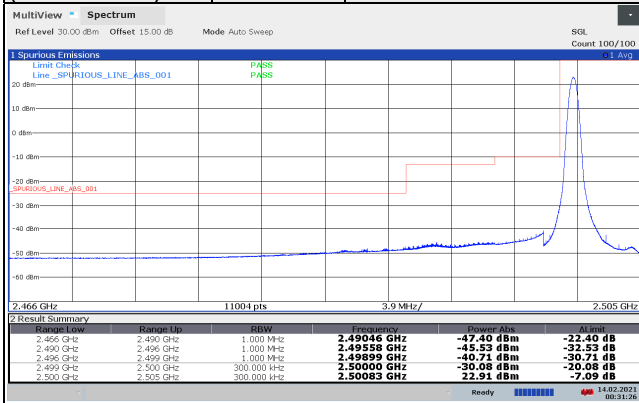
QPSK

1 RB / 0 RB Offset

Channel 21375
(2562.5MHz)

QPSK

1 RB / 74 RB Offset



00:31:26 14.02.2021

Channel 20825
(2507.5MHz)

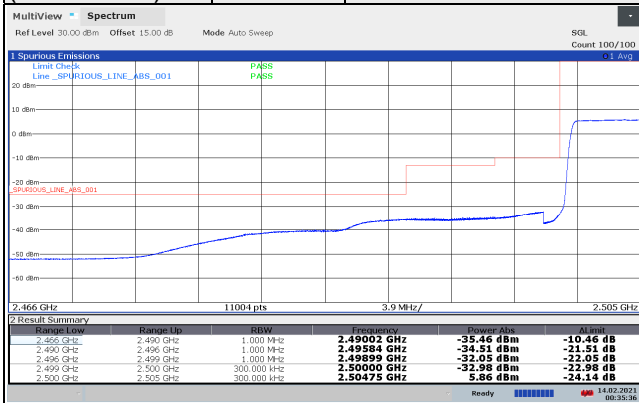
QPSK

75 RB / 0 RB Offset

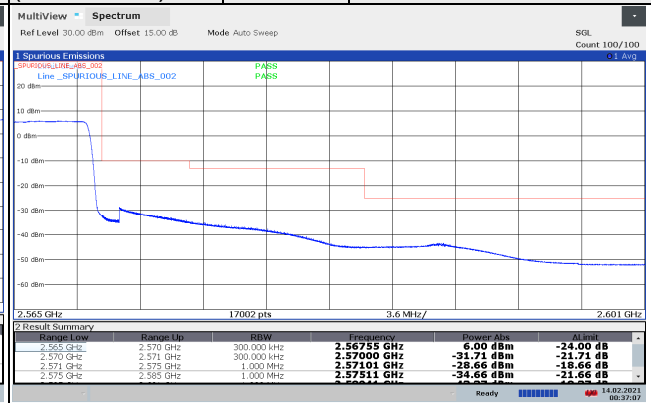
Channel 21375
(2562.5MHz)

QPSK

75 RB / 0 RB Offset



00:35:36 14.02.2021



00:38:58 14.02.2021

LTE Band 7, Channel Bandwidth: 20MHz

Channel 20850
(2510.0MHz)

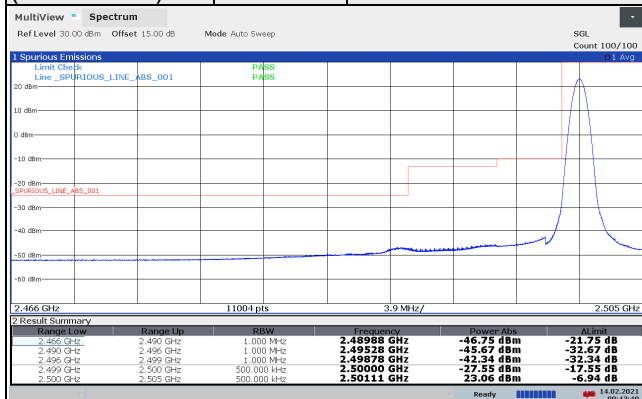
QPSK

1 RB / 0 RB Offset

Channel 21350
(2560.0MHz)

QPSK

1 RB / 99 RB Offset



00:43:50 14.02.2021

Channel 20850
(2510.0MHz)

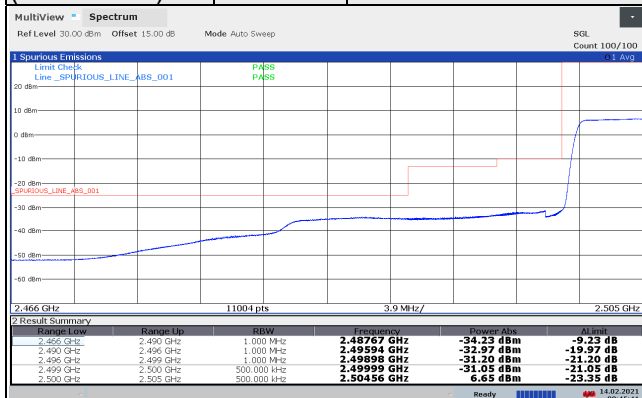
QPSK

100 RB / 0 RB Offset

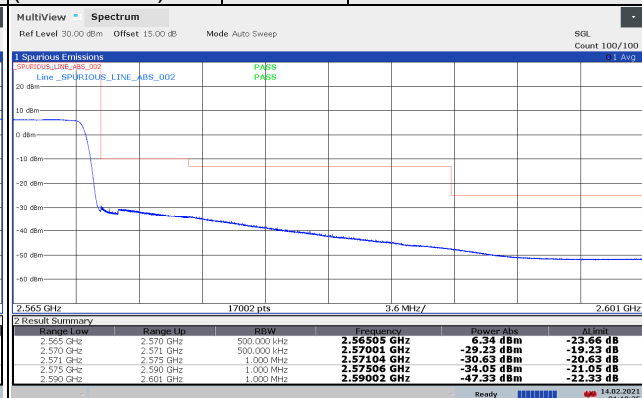
Channel 21350
(2560.0MHz)

QPSK

100 RB / 0 RB Offset



00:45:42 14.02.2021

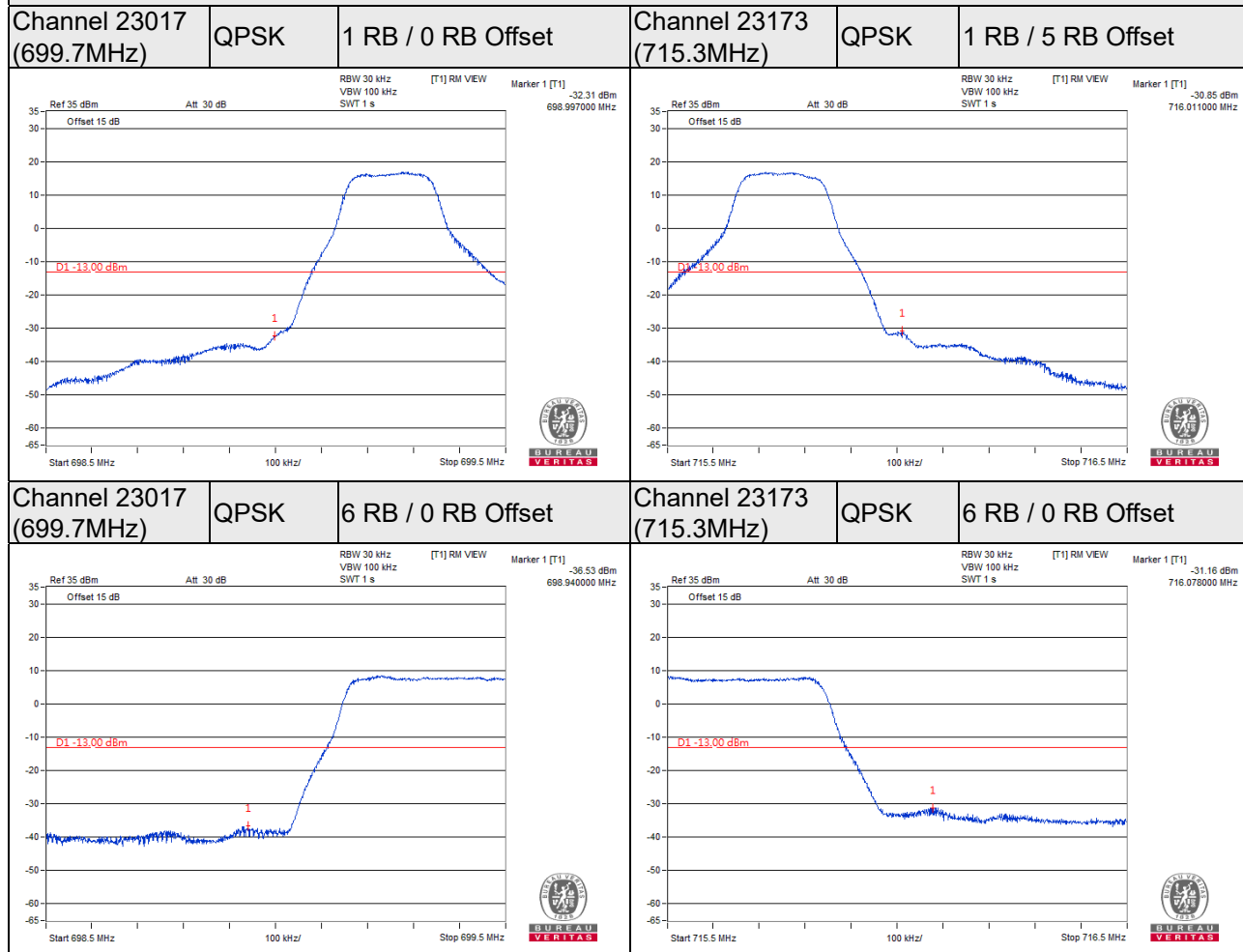


01:22:30 14.02.2021

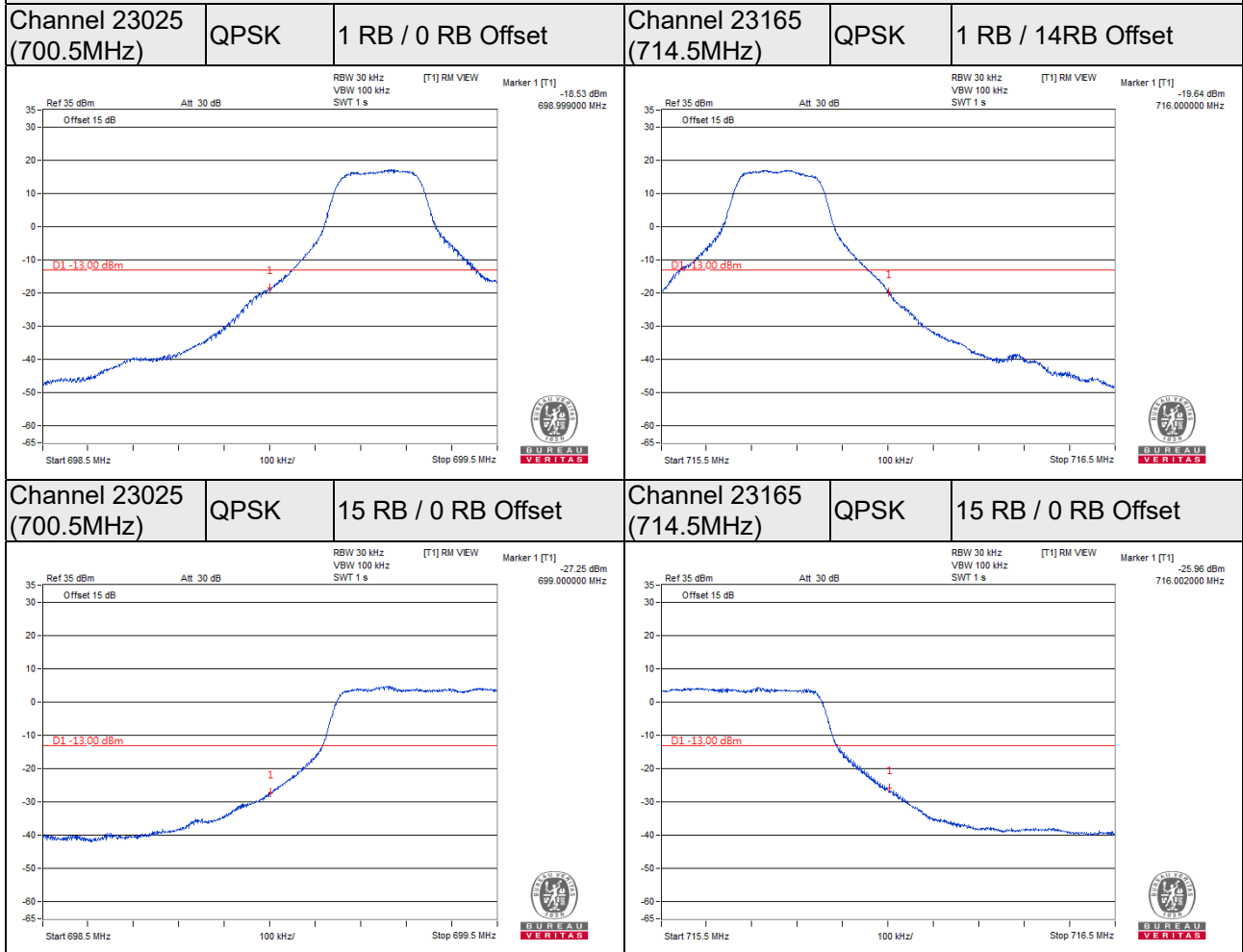
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LTE Band 12

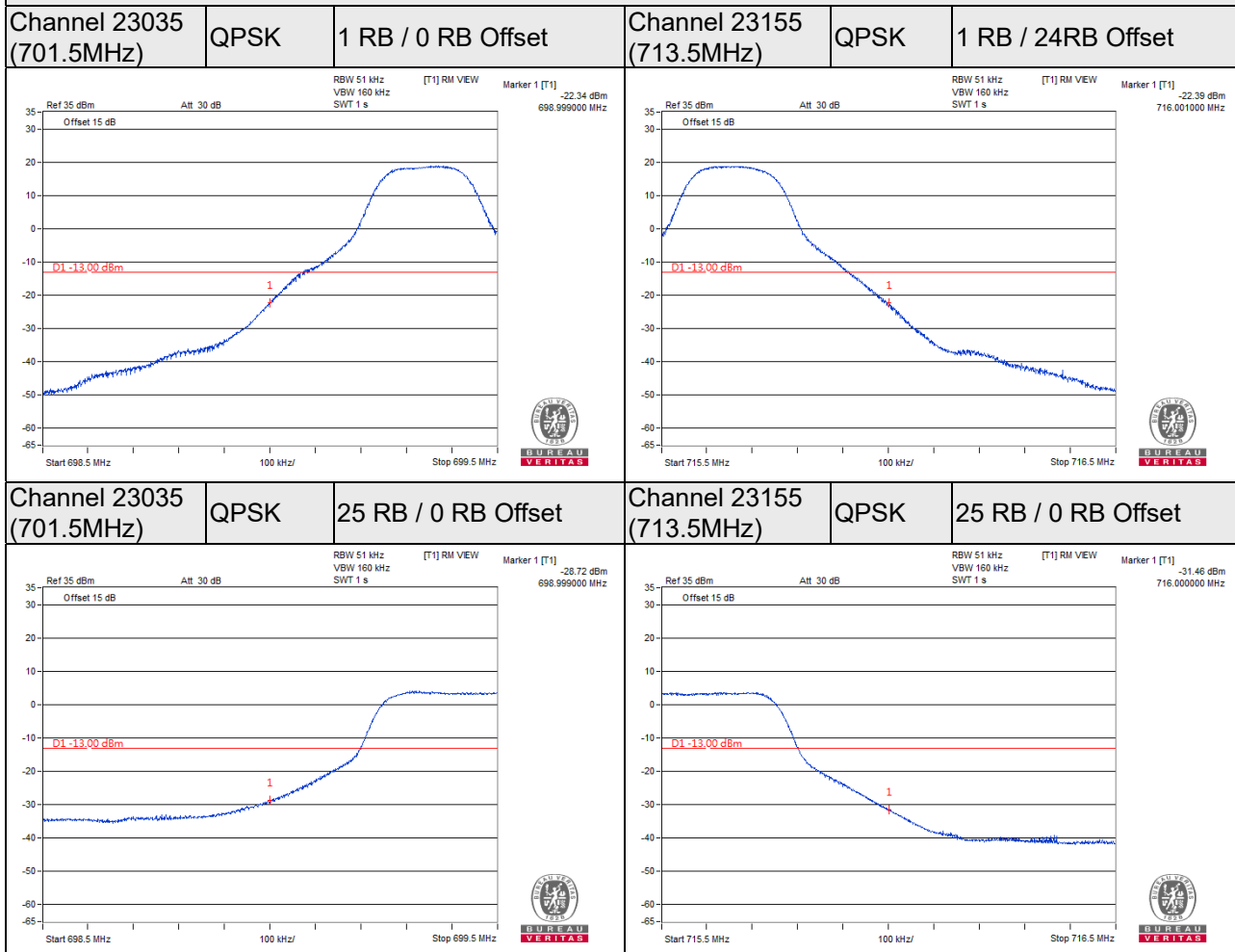
LTE Band 12, Channel Bandwidth: 1.4MHz



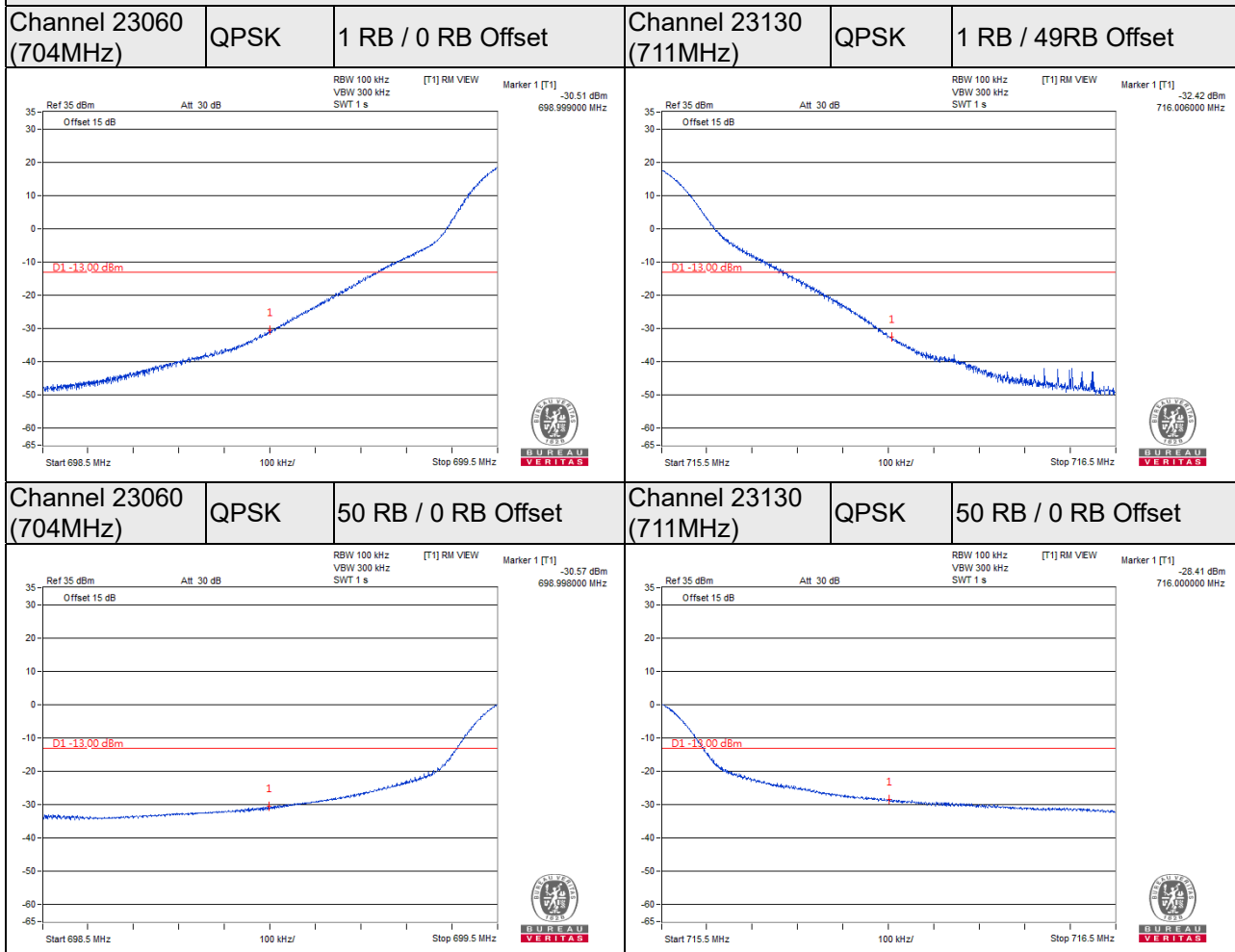
LTE Band 12, Channel Bandwidth: 3MHz



LTE Band 12, Channel Bandwidth: 5MHz

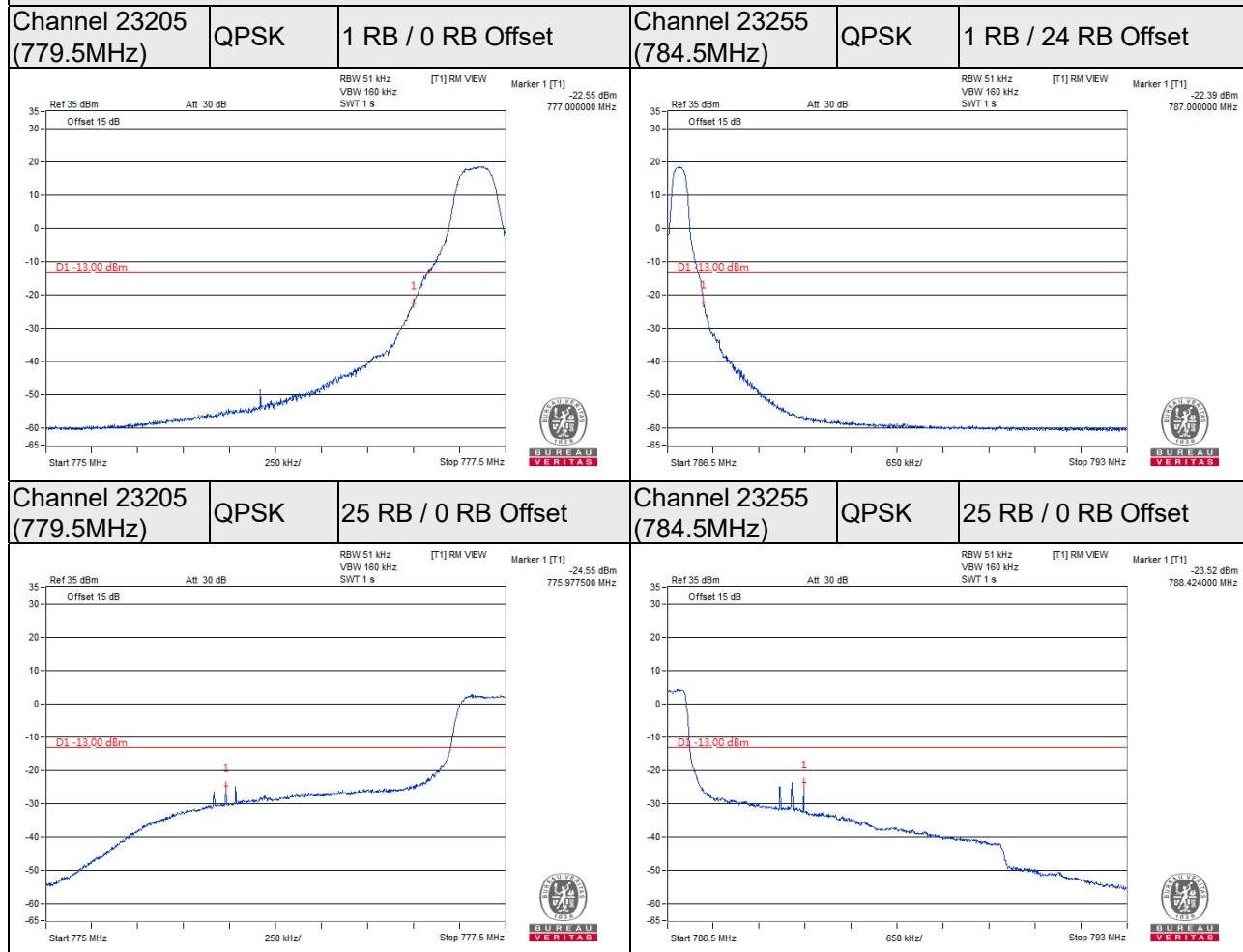


LTE Band 12, Channel Bandwidth: 10MHz

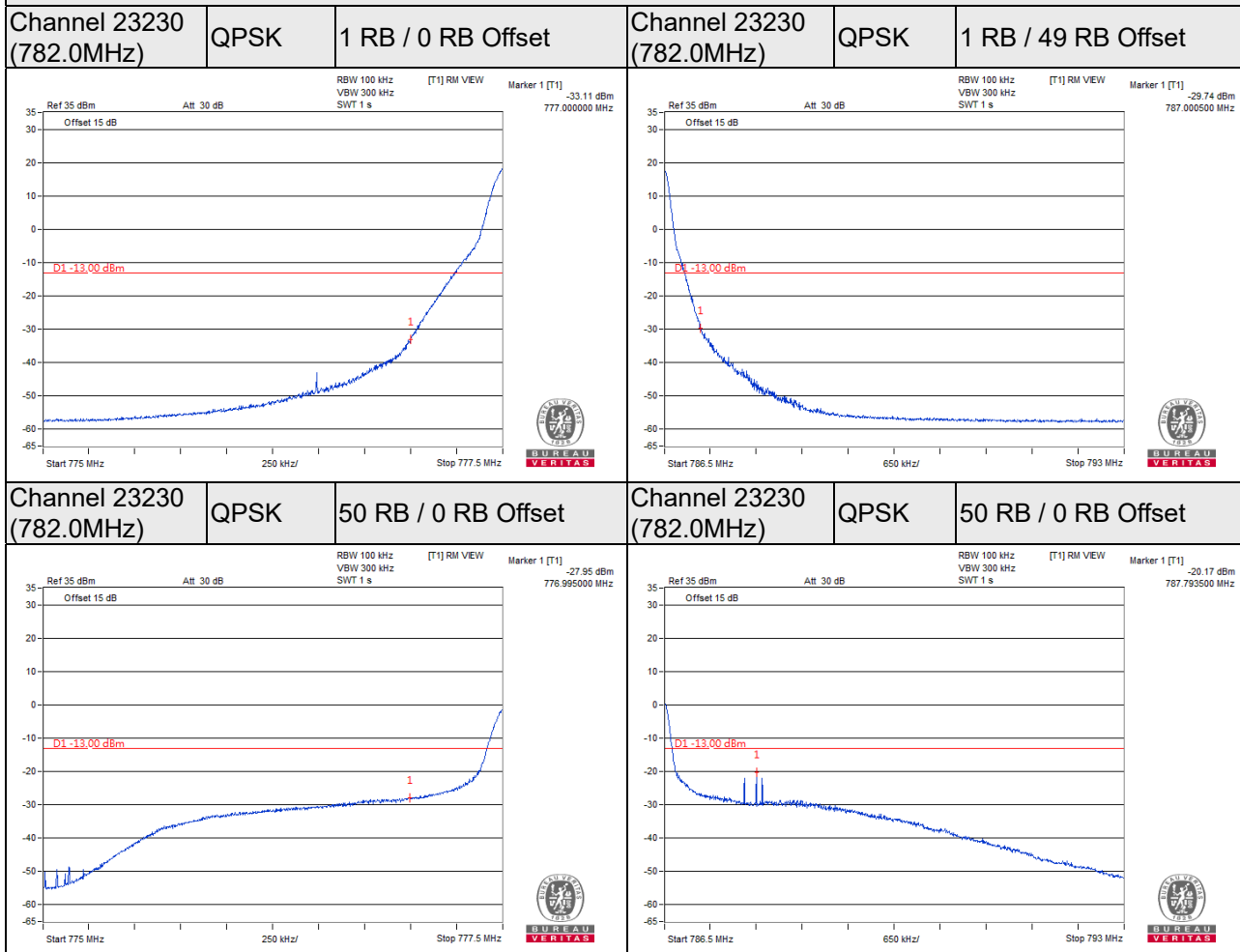


LTE Band 13

LTE Band 13, Channel Bandwidth: 5MHz



LTE Band 13, Channel Bandwidth: 10MHz

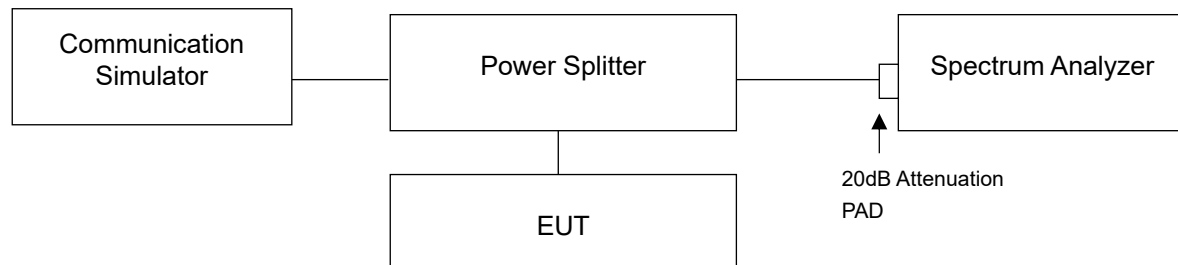


4.6 Peak to Average Ratio

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

n66

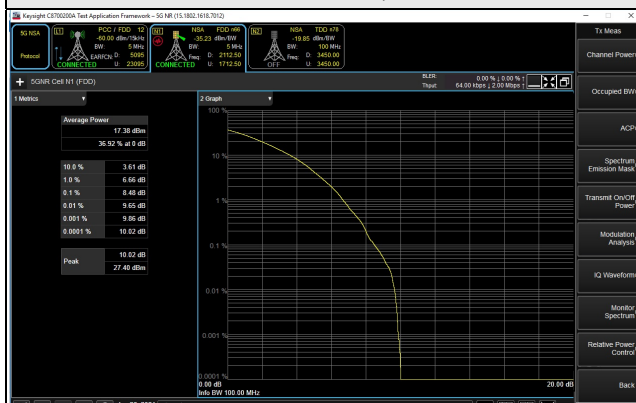
n66, Channel Bandwidth 5MHz						
Channel	Frequency (MHz)	Peak To Average Ratio (dB)				
		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
342500	1712.5	4.00	6.53	6.67	6.97	8.48
349000	1745.0	4.01	6.54	6.68	7.02	8.38
355500	1777.5	3.94	6.16	6.31	6.67	8.21
n66, Channel Bandwidth 10MHz						
Channel	Frequency (MHz)	Peak To Average Ratio (dB)				
		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
343000	1715.0	3.96	6.53	6.33	6.91	8.21
349000	1745.0	4.00	6.57	6.34	6.91	8.28
355000	1775.0	3.93	6.46	6.31	6.85	8.18
n66, Channel Bandwidth 15MHz						
Channel	Frequency (MHz)	Peak To Average Ratio (dB)				
		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
343500	1717.5	4.02	6.58	6.51	6.96	8.64
349000	1745.0	3.98	6.59	6.56	7.00	8.65
354500	1772.5	4.06	6.54	6.51	6.95	8.65
n66, Channel Bandwidth 20MHz						
Channel	Frequency (MHz)	Peak To Average Ratio (dB)				
		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
344000	1720.0	3.76	6.51	6.48	6.91	8.44
349000	1745.0	3.78	6.58	6.56	6.94	8.53
354000	1770.0	3.77	6.61	6.57	6.99	8.54
n66, Channel Bandwidth 30MHz						
Channel	Frequency (MHz)	Peak To Average Ratio (dB)				
		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
345000	1725	3.74	6.49	6.49	7.06	8.44
349000	1745	3.80	6.49	6.51	7.07	8.44
353000	1765	4.24	6.78	6.90	7.31	8.48

n66, Channel Bandwidth 40MHz

Channel	Frequency (MHz)	Peak To Average Ratio (dB)				
		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
346000	1730	3.77	6.54	6.46	7.02	8.43
349000	1745	3.63	6.54	6.51	6.98	8.46
352000	1760	3.67	6.70	6.69	7.05	8.38

Spectrum Plot of Worst Value

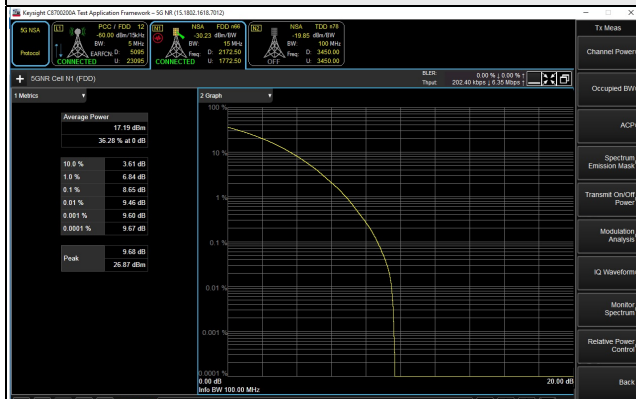
5MHz / 256QAM



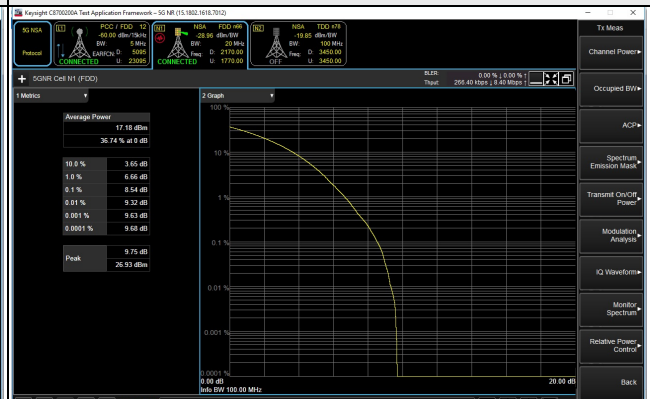
10MHz / 256QAM



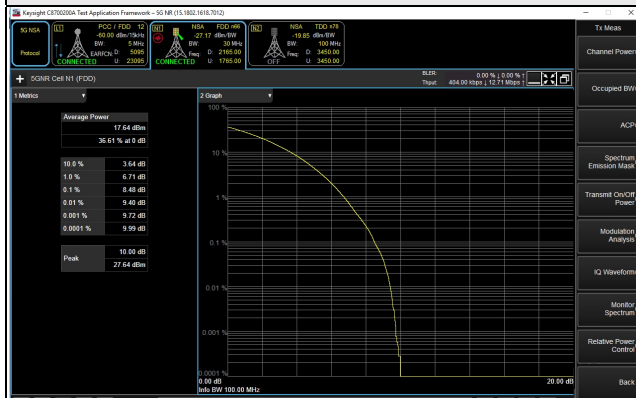
15MHz / 256QAM



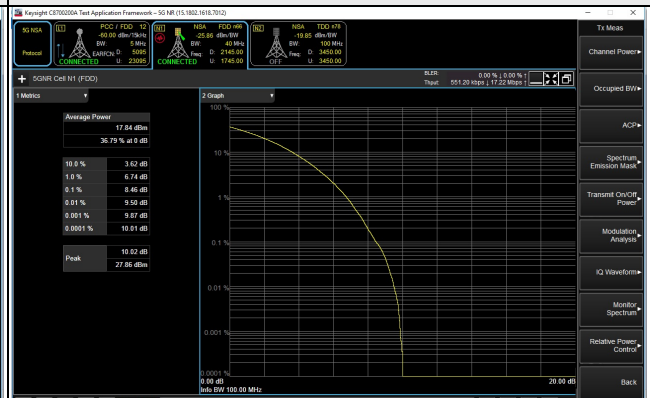
20MHz / 256QAM



30MHz / 256QAM



40MHz / 256QAM



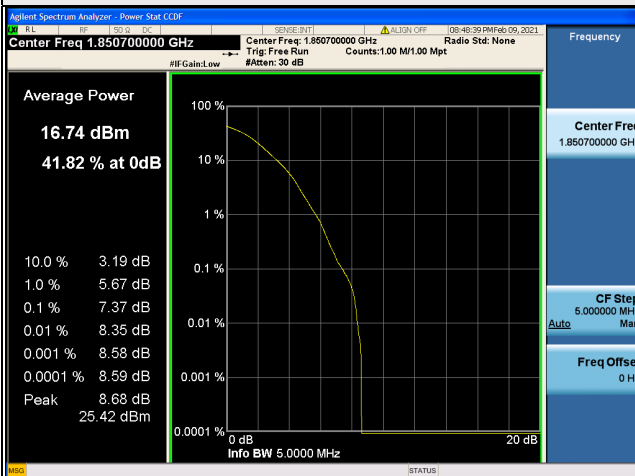
LTE Band 2

LTE Band 2, Channel Bandwidth 1.4MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			
		QPSK	16QAM	64QAM	256QAM
18607	1850.7	4.05	5.35	6.42	7.37
18900	1880.0	3.70	4.40	7.22	7.11
19193	1909.3	3.93	5.58	6.95	7.31
LTE Band 2, Channel Bandwidth 3MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			
		QPSK	16QAM	64QAM	256QAM
18615	1851.5	3.78	5.24	6.43	7.30
18900	1880.0	3.53	5.79	7.30	7.67
19185	1908.5	3.65	5.43	6.99	7.36
LTE Band 2, Channel Bandwidth 5MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			
		QPSK	16QAM	64QAM	256QAM
18625	1852.5	3.83	5.23	6.48	7.82
18900	1880.0	3.46	5.84	7.19	7.46
19175	1907.5	3.69	5.41	6.96	7.42
LTE Band 2, Channel Bandwidth 10MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			
		QPSK	16QAM	64QAM	256QAM
18650	1855.0	3.96	5.12	7.79	7.90
18900	1880.0	3.95	5.90	7.60	8.02
19150	1905.0	3.55	4.23	6.89	7.28
LTE Band 2, Channel Bandwidth 15MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			
		QPSK	16QAM	64QAM	256QAM
18675	1857.5	3.82	5.35	6.59	7.58
18900	1880.0	3.55	4.52	7.12	7.87
19125	1902.5	3.60	4.51	7.10	7.78

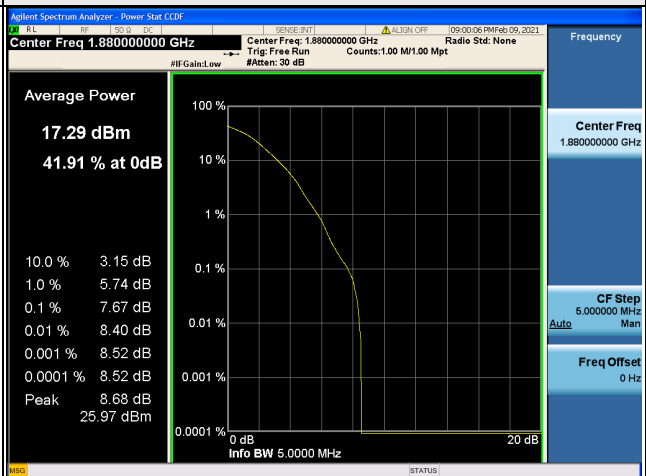
LTE Band 2, Channel Bandwidth 20MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			
		QPSK	16QAM	64QAM	256QAM
18700	1860.0	3.73	5.33	6.79	7.80
18900	1880.0	3.53	4.47	7.21	7.61
19100	1900.0	3.62	4.59	6.83	7.66

Spectrum Plot of Worst Value

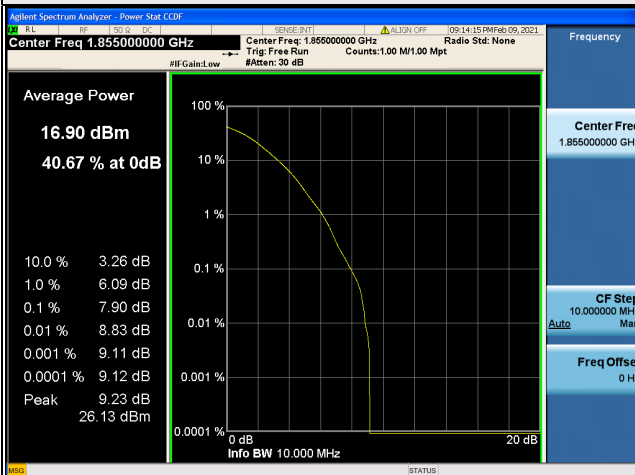
1.4MHz / 256QAM



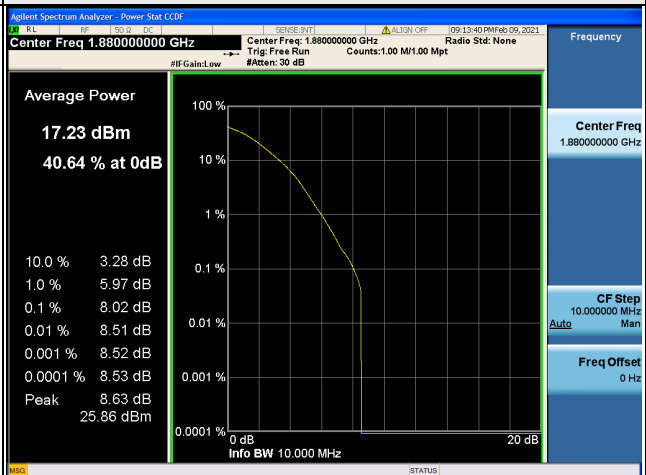
3MHz / 256QAM



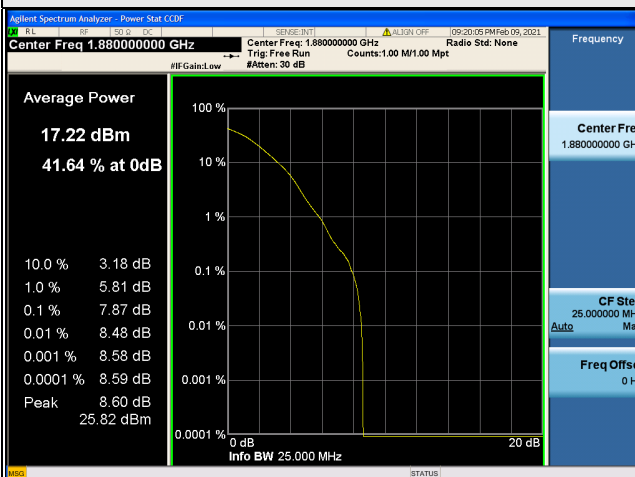
5MHz / 256QAM



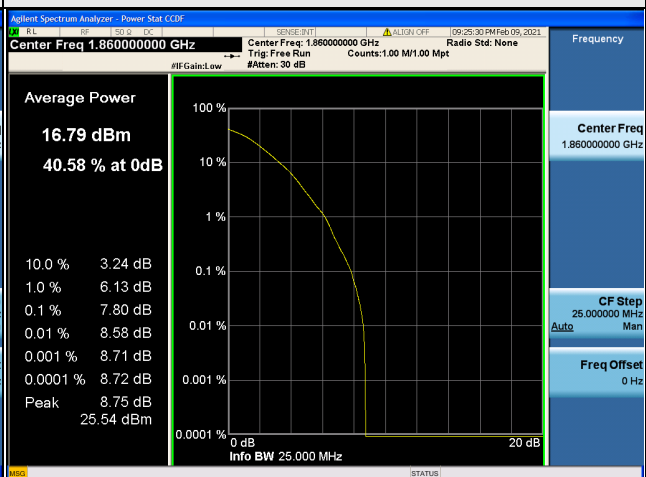
10MHz / 256QAM



15MHz / 256QAM



20MHz / 256QAM

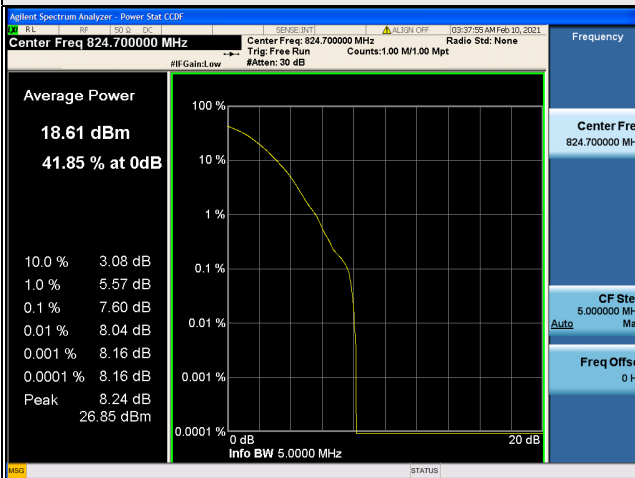


LTE Band 5

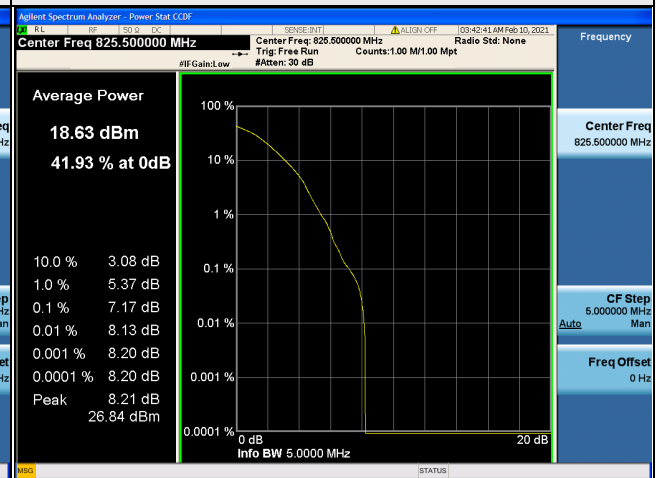
LTE Band 5, Channel Bandwidth 1.4MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			
		QPSK	16QAM	64QAM	256QAM
20407	824.7	3.92	5.67	7.15	7.60
20525	836.5	3.83	5.57	6.86	7.04
20643	848.3	3.82	5.39	6.40	7.14
LTE Band 5, Channel Bandwidth 3MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			
		QPSK	16QAM	64QAM	256QAM
20415	825.5	3.74	5.66	7.13	7.17
20525	836.5	3.62	5.45	7.05	6.75
20635	847.5	3.56	5.25	6.42	6.82
LTE Band 5, Channel Bandwidth 5MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			
		QPSK	16QAM	64QAM	256QAM
20425	826.5	3.73	5.57	7.03	7.23
20525	836.5	3.64	5.46	7.01	6.78
20625	846.5	3.69	5.39	6.75	7.35
LTE Band 5, Channel Bandwidth 10MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			
		QPSK	16QAM	64QAM	256QAM
20450	829.0	3.69	5.62	7.12	7.02
20525	836.5	3.51	4.36	6.92	7.52
20600	844.0	3.76	5.40	7.00	6.97

Spectrum Plot of Worst Value

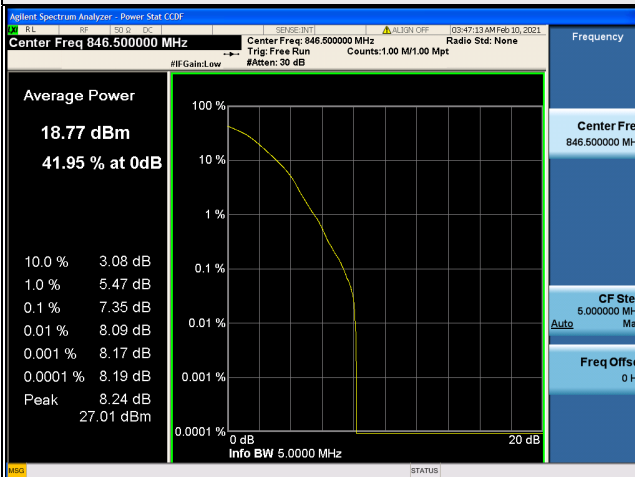
1.4MHz / 256QAM



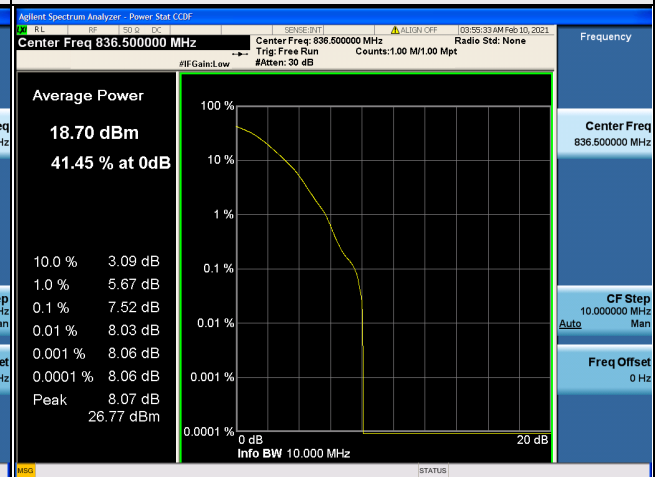
3MHz / 256QAM



5MHz / 256QAM



10MHz / 256QAM

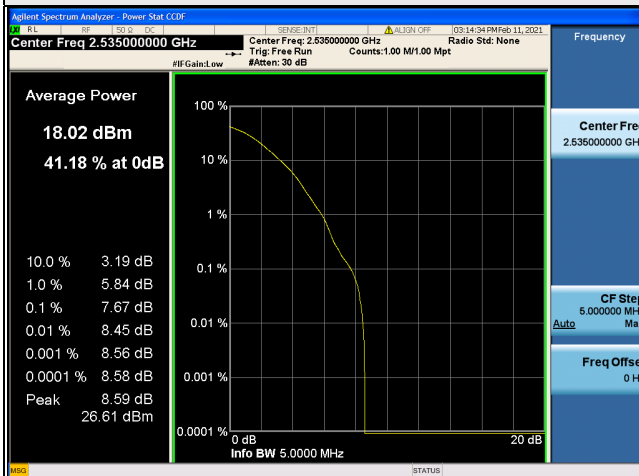


LTE Band 7

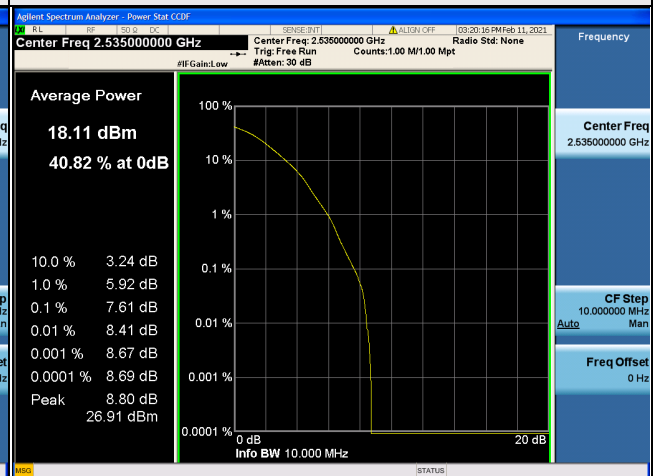
LTE Band 7, Channel Bandwidth 5MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			
		QPSK	16QAM	64QAM	256QAM
20775	2502.5	3.59	5.32	6.46	7.52
21100	2535.0	3.67	5.32	6.86	7.67
21425	2567.5	3.64	5.38	6.77	7.45
LTE Band 7, Channel Bandwidth 10MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			
		QPSK	16QAM	64QAM	256QAM
20800	2505.0	3.75	5.36	6.57	7.48
21100	2535.0	3.66	5.33	6.77	7.61
21400	2565.0	3.74	5.20	6.61	7.39
LTE Band 7, Channel Bandwidth 15MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			
		QPSK	16QAM	64QAM	256QAM
20825	2507.5	3.59	5.27	6.52	7.38
21100	2535.0	3.56	5.25	6.71	7.67
21375	2562.5	3.52	4.98	6.27	7.31
LTE Band 7, Channel Bandwidth 20MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			
		QPSK	16QAM	64QAM	256QAM
20850	2510.0	3.54	5.31	6.55	7.57
21100	2535.0	3.51	5.30	6.65	7.61
21350	2560.0	3.51	5.09	6.45	7.39

Spectrum Plot of Worst Value

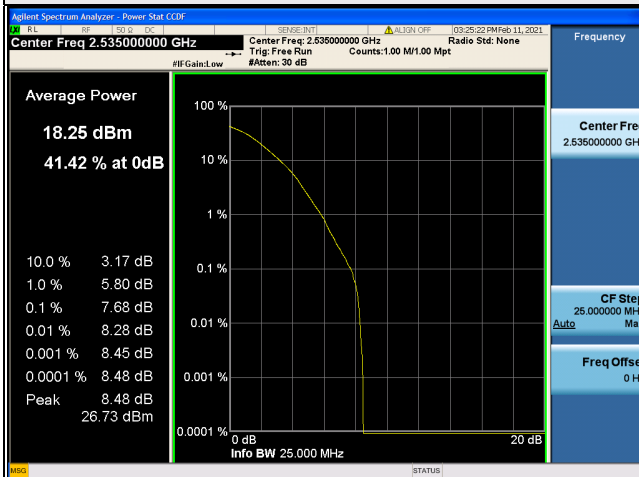
5MHz / 256QAM



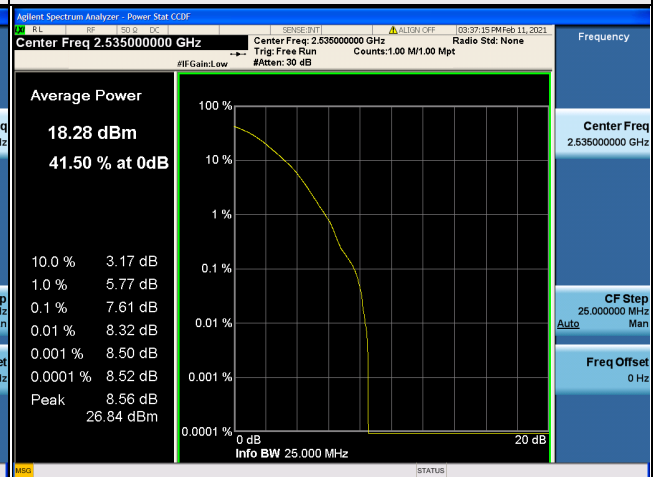
10MHz / 256QAM



15MHz / 256QAM



20MHz / 256QAM

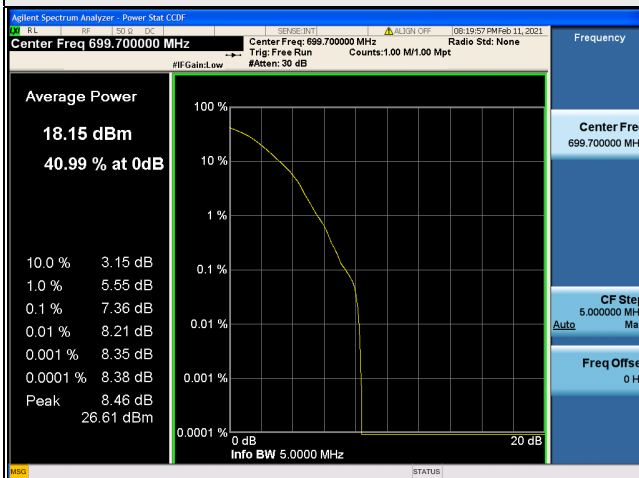


LTE Band 12

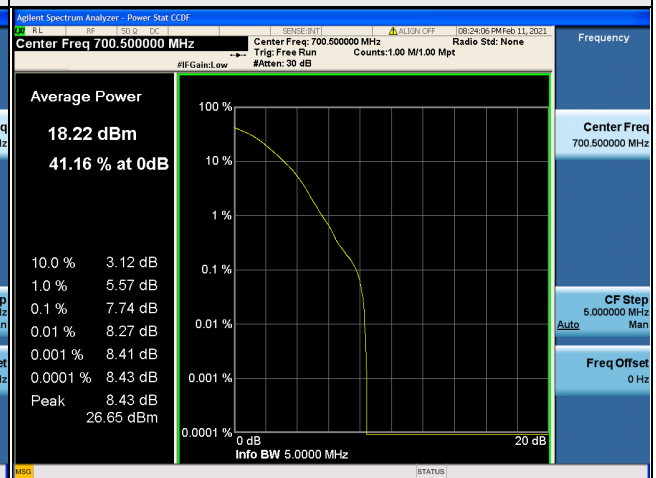
LTE Band 12, Channel Bandwidth 1.4MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			
		QPSK	16QAM	64QAM	256QAM
23017	699.7	3.80	4.76	7.03	7.36
23095	707.5	3.95	5.68	6.98	6.82
23173	715.3	3.72	4.59	6.92	6.98
LTE Band 12, Channel Bandwidth 3MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			
		QPSK	16QAM	64QAM	256QAM
23025	700.5	3.55	4.54	7.08	7.74
23095	707.5	3.71	5.52	7.07	6.99
23165	714.5	3.60	4.97	6.92	7.00
LTE Band 12, Channel Bandwidth 5MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			
		QPSK	16QAM	64QAM	256QAM
23035	701.5	3.61	4.35	7.22	7.02
23095	707.5	3.74	5.48	6.94	7.17
23155	713.5	3.50	4.93	5.99	6.92
LTE Band 12, Channel Bandwidth 10MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			
		QPSK	16QAM	64QAM	256QAM
23060	704.0	3.94	5.84	7.36	7.75
23095	707.5	3.81	5.56	7.13	7.43
23130	711.0	3.34	4.96	6.39	6.79

Spectrum Plot of Worst Value

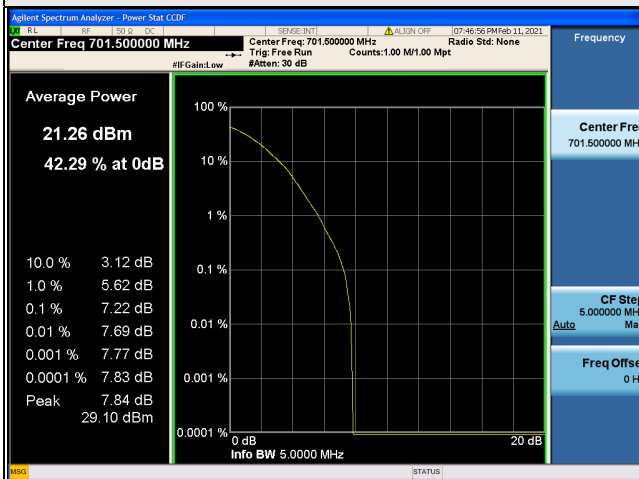
1.4MHz / 256QAM



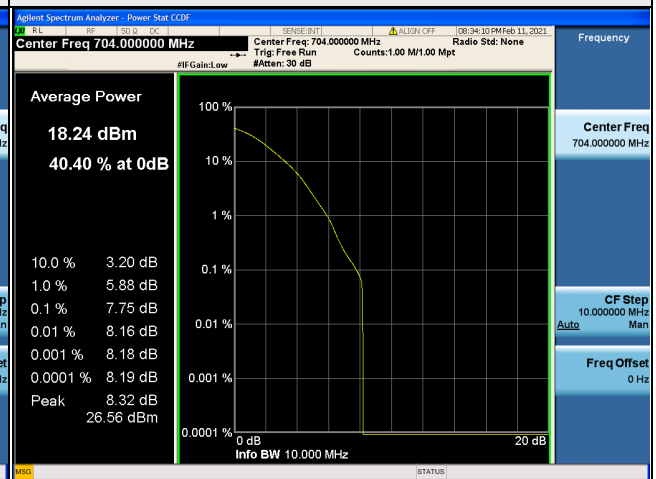
3MHz / 256QAM



5MHz / 64QAM



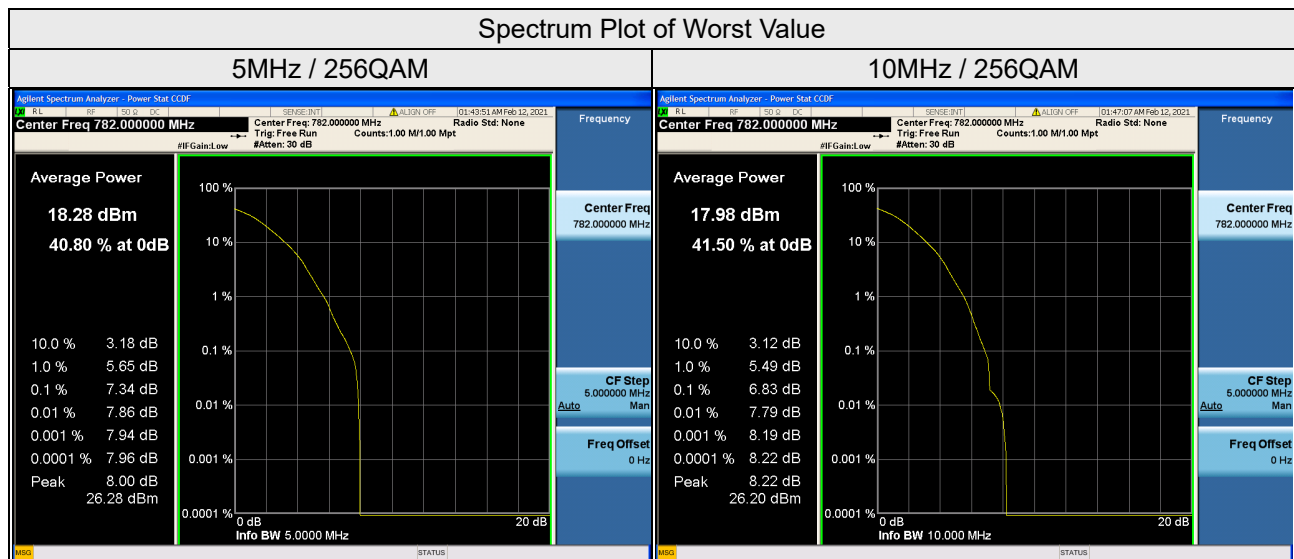
10MHz / 256QAM



LTE Band 13

LTE Band 13, Channel Bandwidth 5MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			
		QPSK	16QAM	64QAM	256QAM
23205	779.5	3.36	4.85	6.34	7.25
23230	782.0	3.98	5.62	6.54	7.34
23255	784.5	3.28	3.50	5.96	6.31

LTE Band 13, Channel Bandwidth 10MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			
		QPSK	16QAM	64QAM	256QAM
23230	782.0	3.59	4.93	6.22	6.83



4.7 Conducted Spurious Emissions

4.7.1 Limits of Conducted Spurious Emissions Measurement

For n66:

In the FCC 27.53(h), 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 $43 + 10 \log (P)$ dB. The emission limit equal to -13dBm .

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 -13dBm .

For LTE Band 7:

In the 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 -25dBm .

For LTE Band 12:

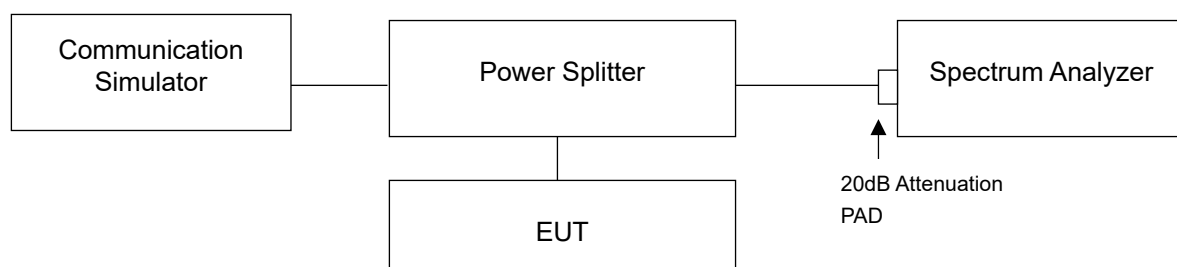
According to FCC 27.53(g) for operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least $43 + 10 \log (P)$ dB. 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 FCC 27.53(f) for operations in the 775-788 MHz, emissions in the band 1559-1610 MHz shall be limited to -70 dBW/MHz . The limit of emissions is equal to -40 dBm

4.7.2 Test Setup



4.7.3 Test Procedure

- The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.
- Measuring frequency range is from 9kHz to 8GHz/9GHz/20GHz/26GHz. 20dB attenuation pad is connected with spectrum. RBW=1MHz and VBW=3MHz from 9kHz to 20GHz/26GHz (5GNR n66, LTE Band 2, 7), RBW=100kHz and VBW=300kHz for 9kHz to 1GHz (Band 5, 12, 13) and RBW=1MHz and VBW=3MHz for 1GHz to 9GHz (Band 5), 1GHz to 8GHz (Band 12, 13) is used for conducted emission measurement.