

Channel Bandwidth: 15MHz

Channel 20825  
(2507.5MHz)

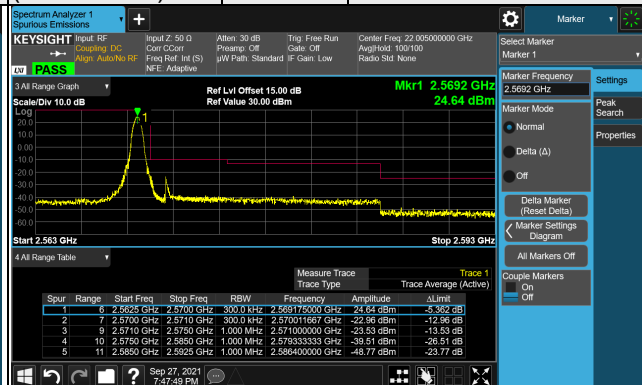
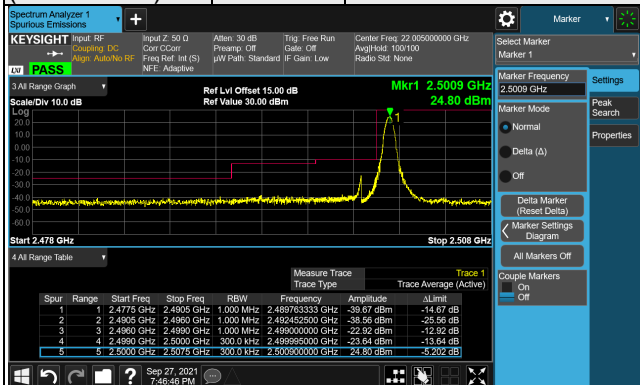
QPSK

1 RB / 0 RB Offset

Channel 21375  
(2562.5MHz)

QPSK

1 RB / 74 RB Offset



Channel 20825  
(2507.5MHz)

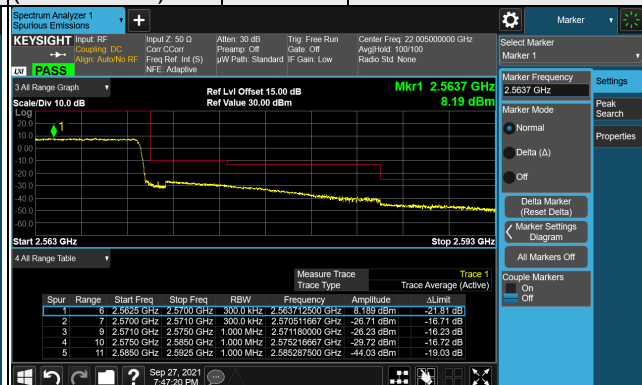
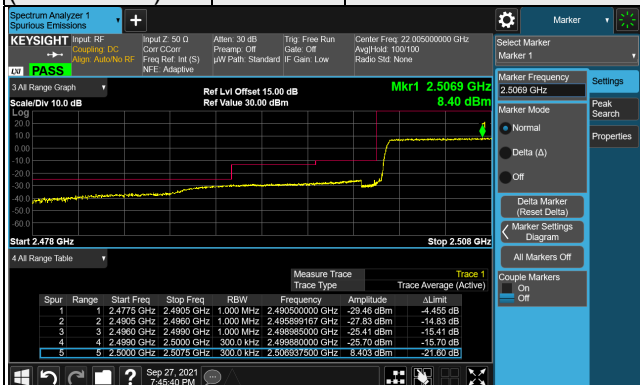
QPSK

75 RB / 0 RB Offset

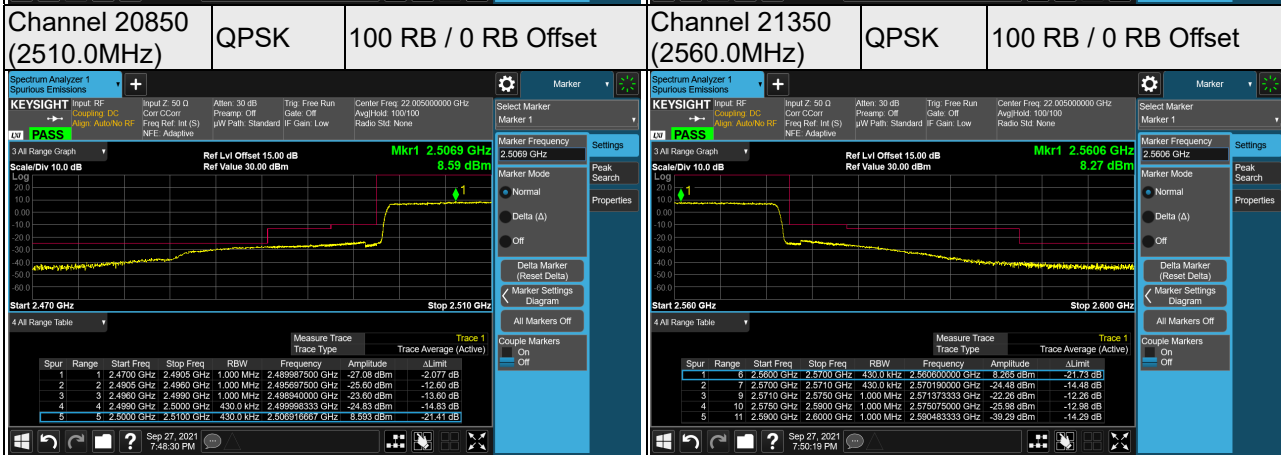
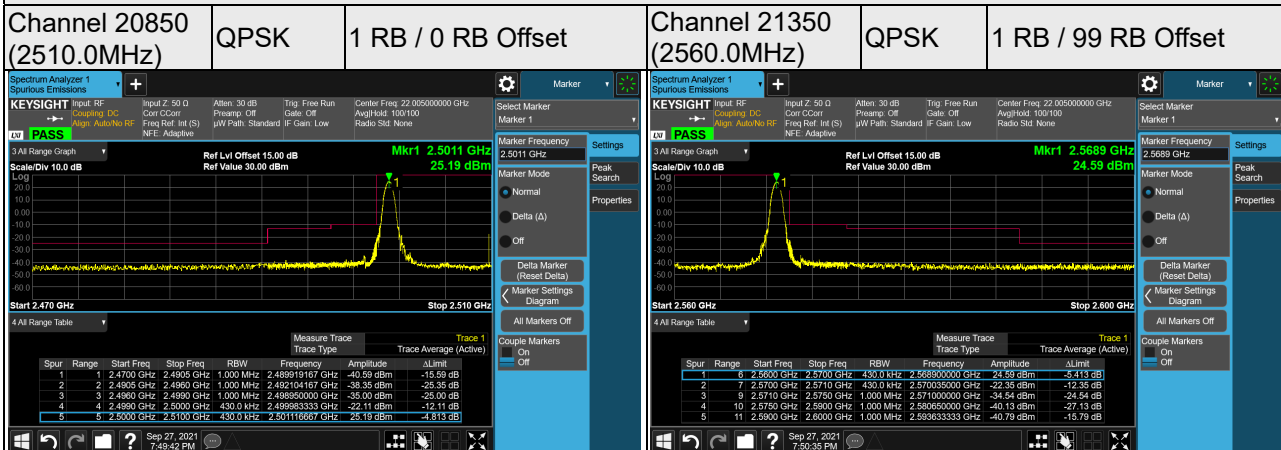
Channel 21375  
(2562.5MHz)

QPSK

75 RB / 0 RB Offset



Channel Bandwidth: 20MHz



LTE Band 12

Channel Bandwidth: 1.4MHz

Channel 23017  
(699.7MHz)

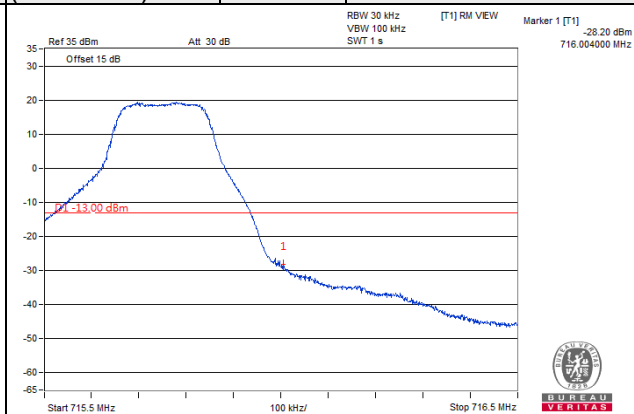
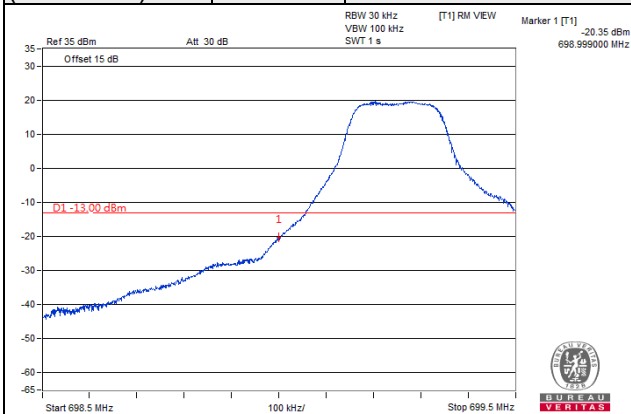
QPSK

1 RB / 0 RB Offset

Channel 23173  
(715.3MHz)

QPSK

1 RB / 5 RB Offset



Channel 23017  
(699.7MHz)

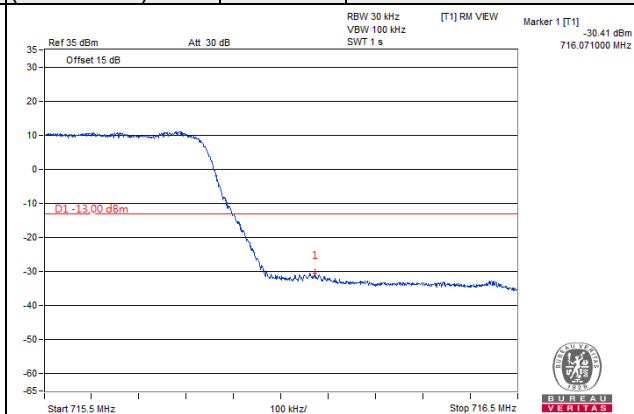
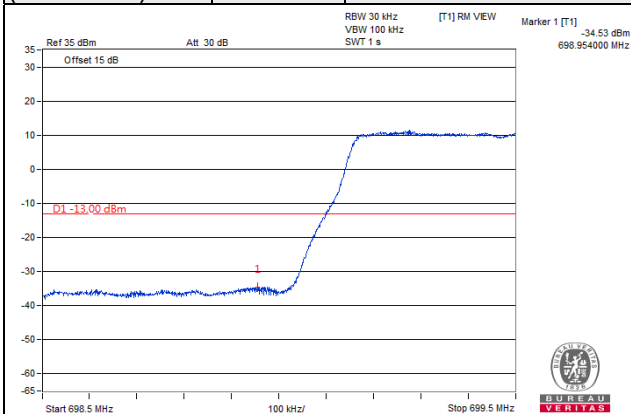
QPSK

6 RB / 0 RB Offset

Channel 23173  
(715.3MHz)

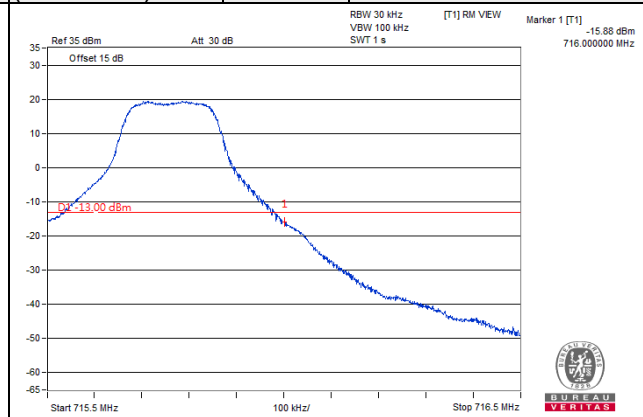
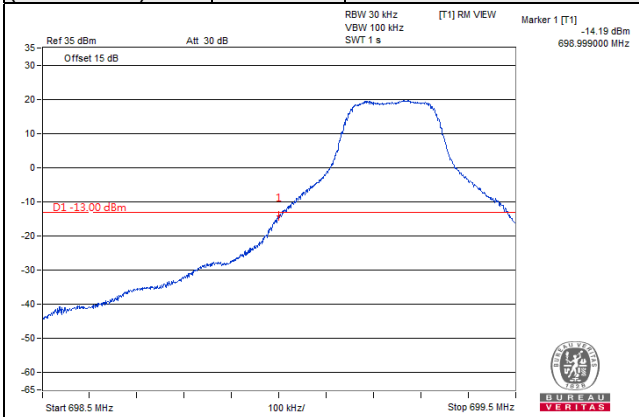
QPSK

6 RB / 0 RB Offset

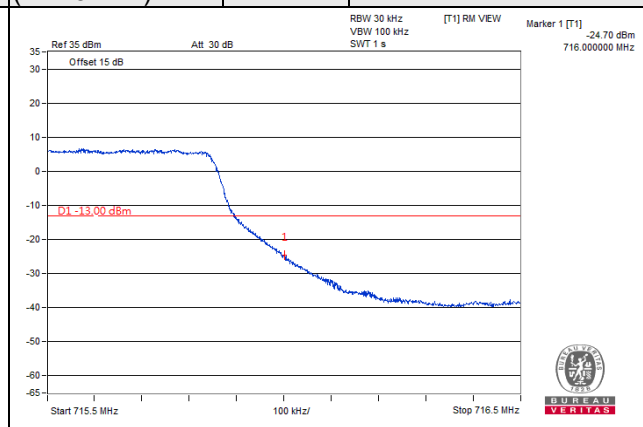
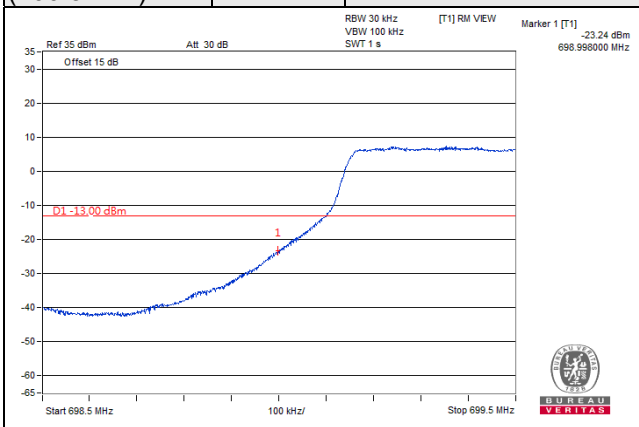


**Channel Bandwidth: 3MHz**

<b>Channel 23025 (700.5MHz)</b>	<b>QPSK</b>	<b>1 RB / 0 RB Offset</b>	<b>Channel 23165 (714.5MHz)</b>	<b>QPSK</b>	<b>1 RB / 14RB Offset</b>
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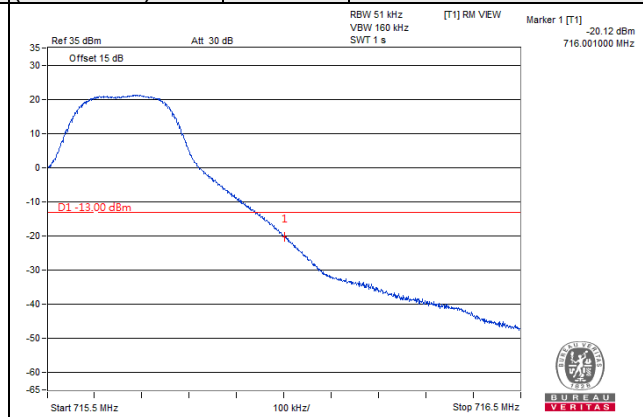
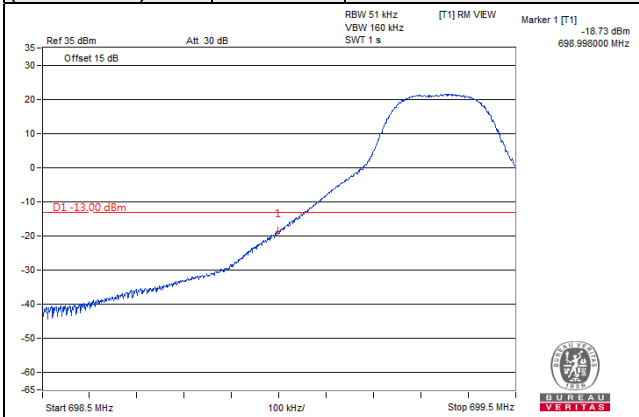


<b>Channel 23025 (700.5MHz)</b>	<b>QPSK</b>	<b>15 RB / 0 RB Offset</b>	<b>Channel 23165 (714.5MHz)</b>	<b>QPSK</b>	<b>15 RB / 0 RB Offset</b>
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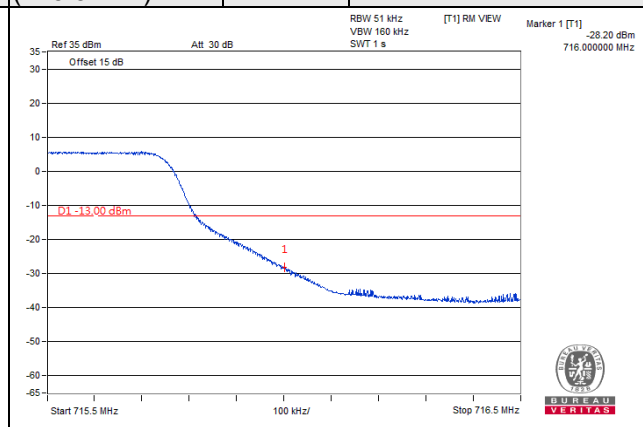
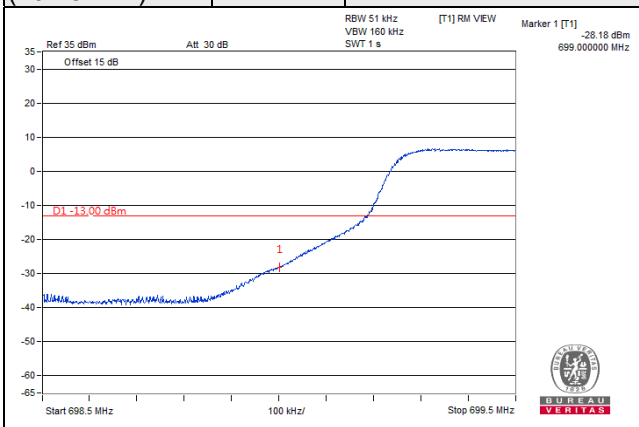


**Channel Bandwidth: 5MHz**

<b>Channel 23035 (701.5MHz)</b>	<b>QPSK</b>	<b>1 RB / 0 RB Offset</b>	<b>Channel 23155 (713.5MHz)</b>	<b>QPSK</b>	<b>1 RB / 24RB Offset</b>
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<b>Channel 23035 (701.5MHz)</b>	<b>QPSK</b>	<b>25 RB / 0 RB Offset</b>	<b>Channel 23155 (713.5MHz)</b>	<b>QPSK</b>	<b>25 RB / 0 RB Offset</b>
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BUREAU VERITAS

Channel Bandwidth: 10MHz

Channel 23060  
(704MHz)

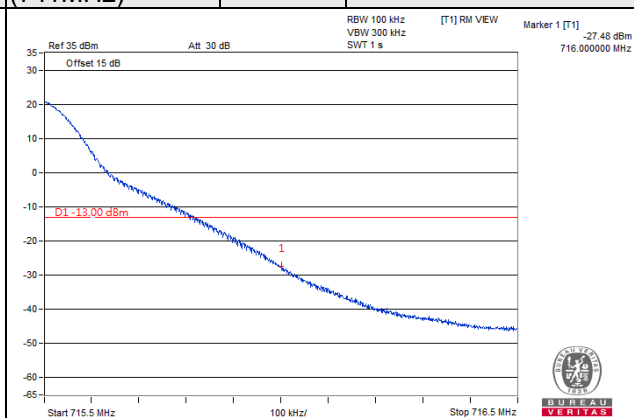
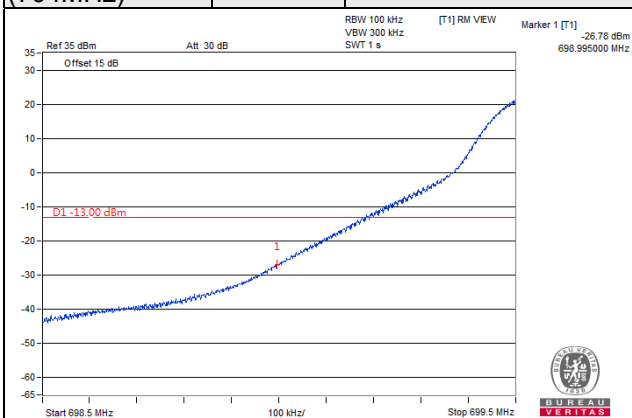
QPSK

1 RB / 0 RB Offset

Channel 23130  
(711MHz)

QPSK

1 RB / 24RB Offset



Channel 23060  
(704MHz)

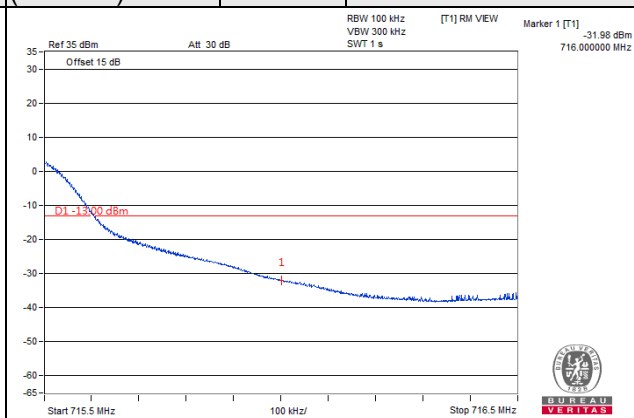
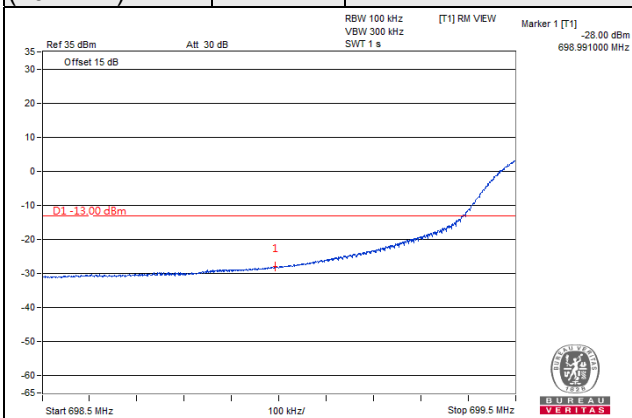
QPSK

50 RB / 0 RB Offset

Channel 23130  
(711MHz)

QPSK

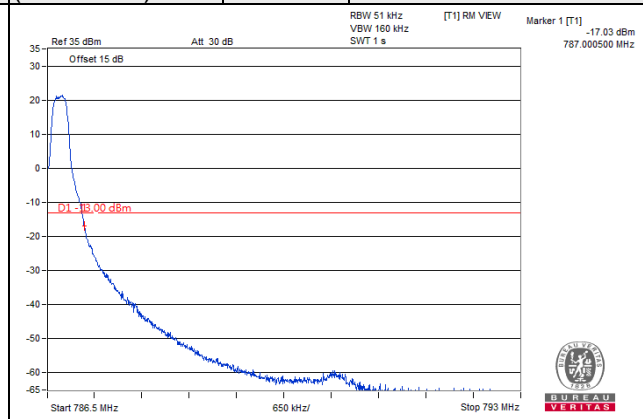
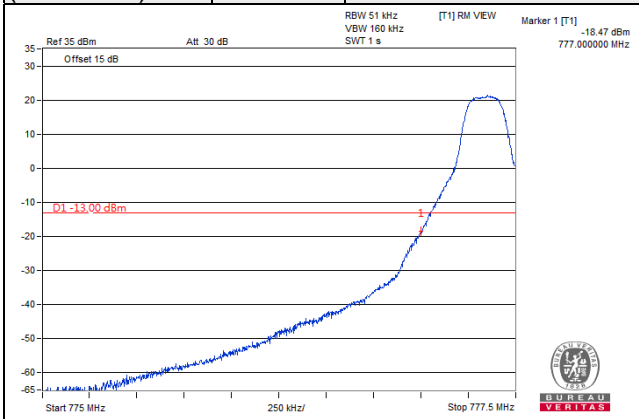
25 RB / 0 RB Offset



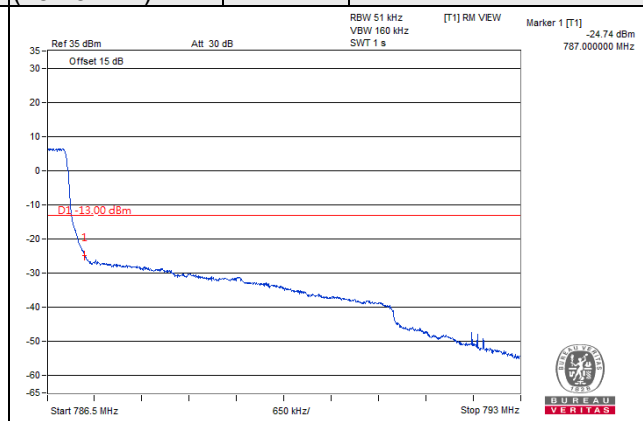
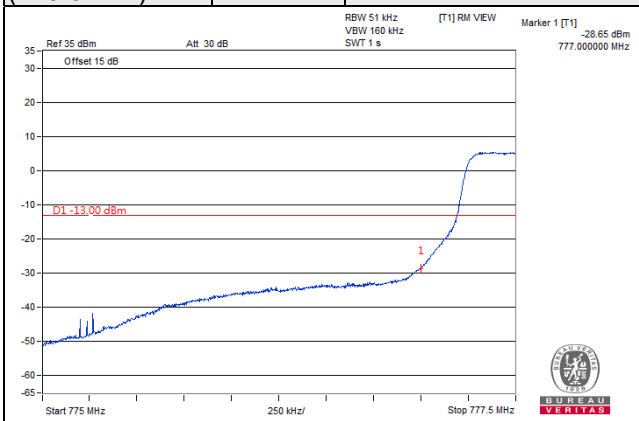
LTE Band 13

Channel Bandwidth: 5MHz

Channel 23205 (779.5MHz)	QPSK	1 RB / 0 RB Offset	Channel 23255 (784.5MHz)	QPSK	1 RB / 24 RB Offset
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Channel 23205 (779.5MHz)	QPSK	25 RB / 0 RB Offset	Channel 23255 (784.5MHz)	QPSK	25 RB / 0 RB Offset
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Channel Bandwidth: 10MHz

Channel 23230  
(782.0MHz)

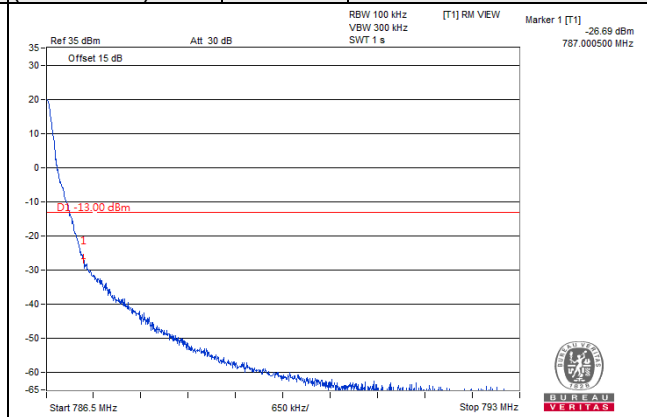
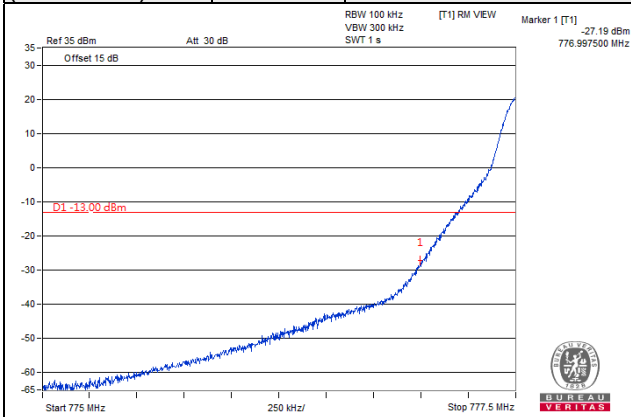
QPSK

1 RB / 0 RB Offset

Channel 23230  
(782.0MHz)

QPSK

1 RB / 49 RB Offset



Channel 23230  
(782.0MHz)

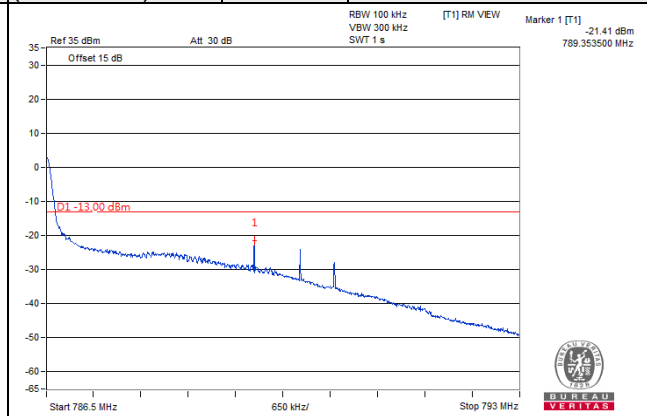
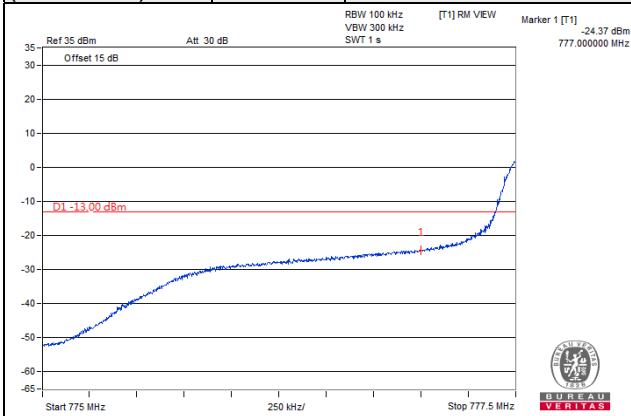
QPSK

50 RB / 0 RB Offset

Channel 23230  
(782.0MHz)

QPSK

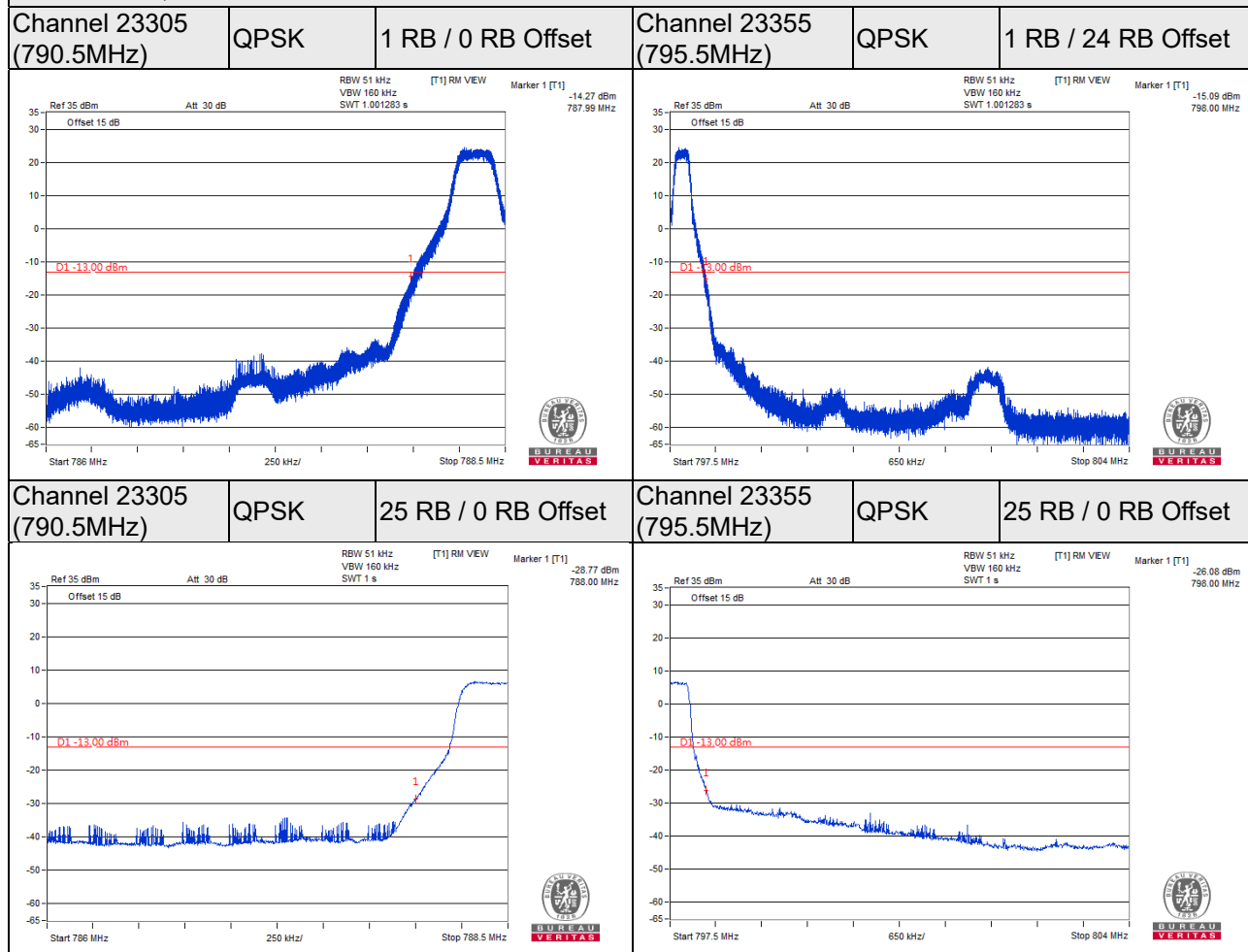
50 RB / 0 RB Offset





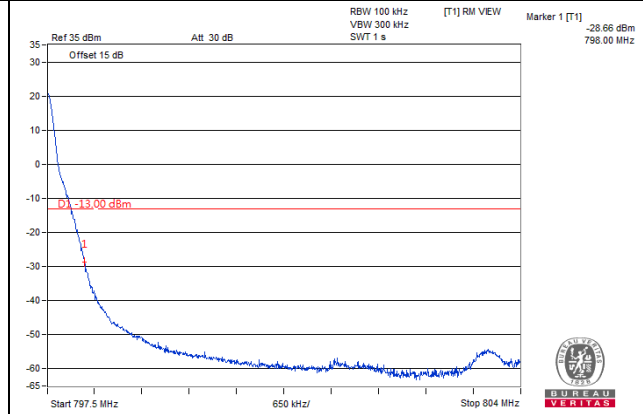
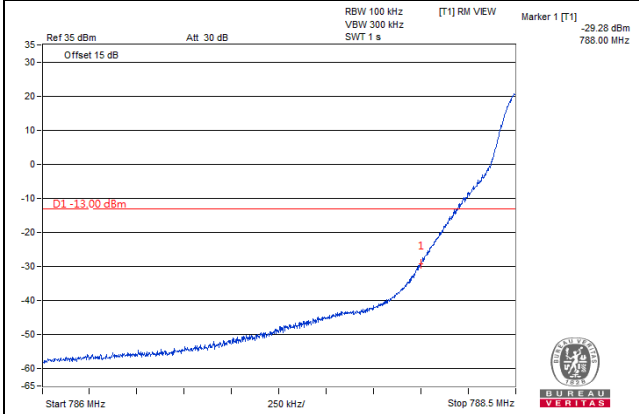
LTE Band 14

LTE Band 14, Channel Bandwidth 5MHz

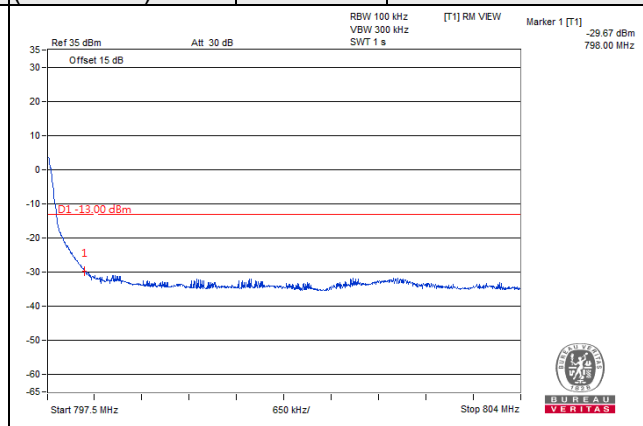
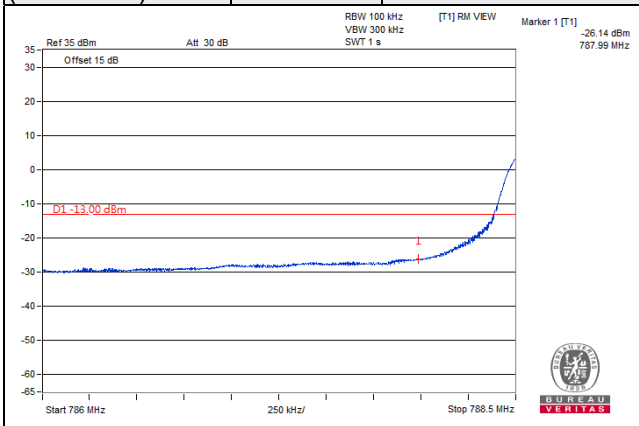


LTE Band 14, Channel Bandwidth 10MHz

Channel 23330 (793.0MHz)	QPSK	1 RB / 0 RB Offset	Channel 23330 (793.0MHz)	QPSK	1 RB / 49 RB Offset
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Channel 23330 (793.0MHz)	QPSK	50 RB / 0 RB Offset	Channel 23330 (793.0MHz)	QPSK	50 RB / 0 RB Offset
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LTE Band 30  
Emission Mask:

Channel Bandwidth: 5MHz

Channel 27685  
(2307.5MHz)

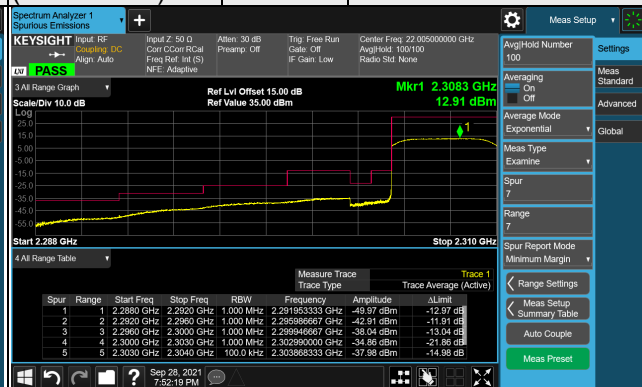
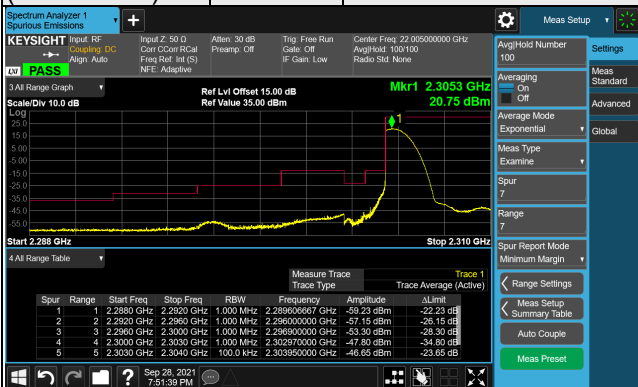
QPSK

1 RB / 0 RB Offset

Channel 27685  
(2307.5MHz)

QPSK

25 RB / 0 RB Offset



Channel 27735  
(2312.5MHz)

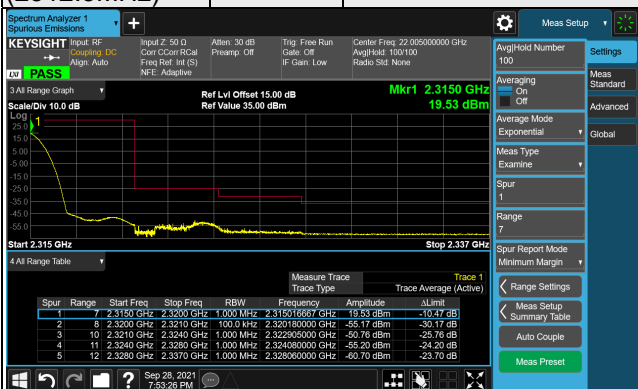
QPSK

1 RB / 24 RB Offset

Channel 27735  
(2312.5MHz)

QPSK

25 RB / 0 RB Offset



Channel Bandwidth: 10MHz

Channel 27710  
(2310.0MHz)

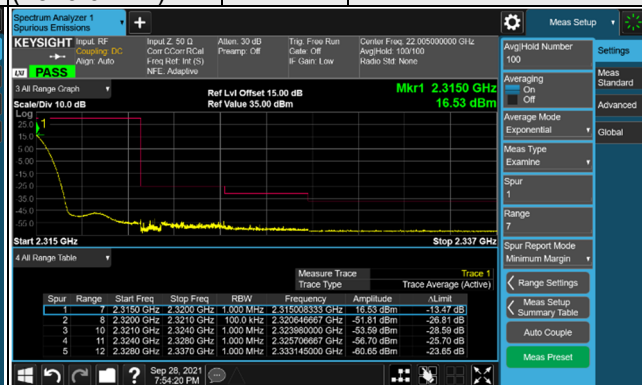
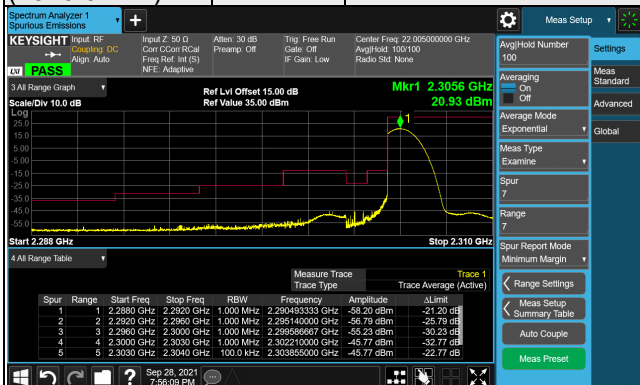
QPSK

1 RB / 0 RB Offset

Channel 27710  
(2310.0MHz)

QPSK

1 RB / 49 RB Offset



Channel 27710  
(2310.0MHz)

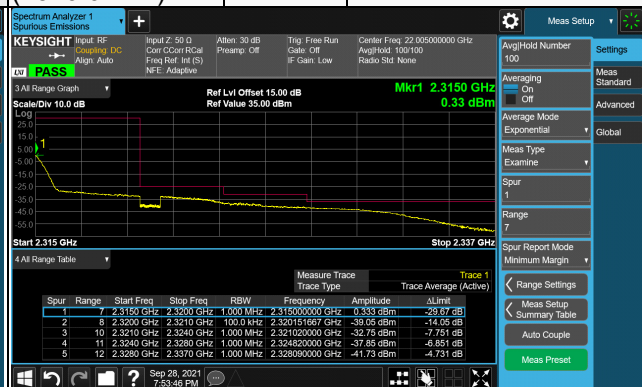
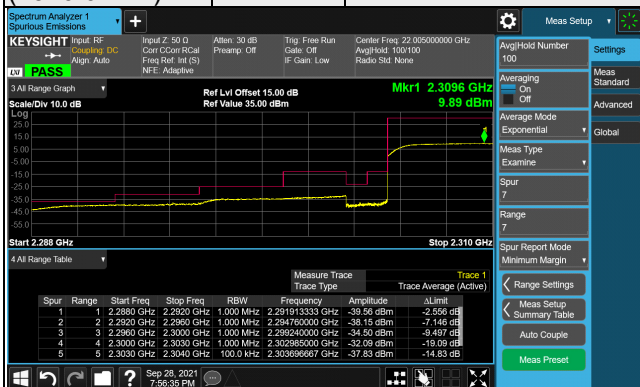
QPSK

50 RB / 0 RB Offset

Channel 27710  
(2310.0MHz)

QPSK

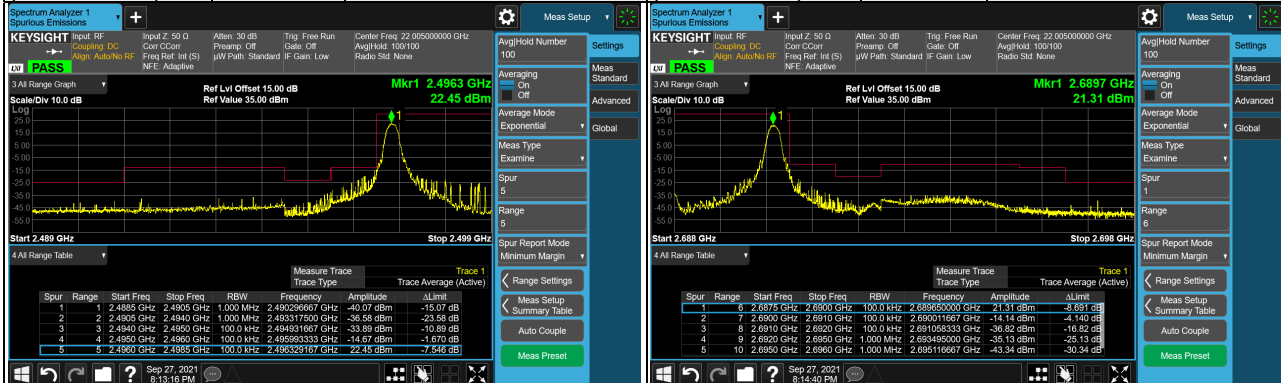
50 RB / 0 RB Offset



LTE Band 41  
Emission Mask:

Channel Bandwidth: 5MHz

Channel 39675 (2498.5MHz)    QPSK    1 RB / 0 RB Offset    Channel 41565 (2687.5MHz)    QPSK    1 RB / 24 RB Offset



Channel 39675 (2498.5MHz)    QPSK    25 RB / 0 RB Offset    Channel 41565 (2687.5MHz)    QPSK    25 RB / 0 RB Offset



LTE Band 41

Channel Bandwidth: 10MHz

Channel 39700  
(2501.0MHz)

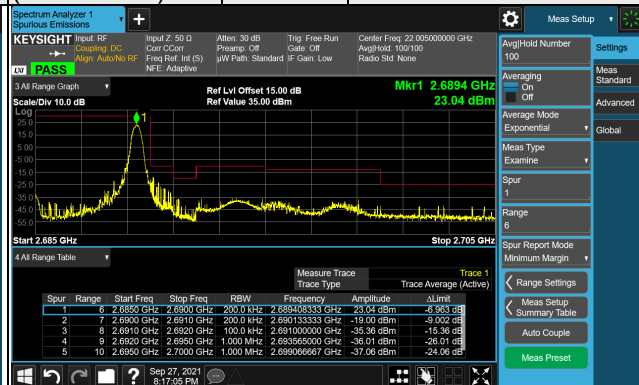
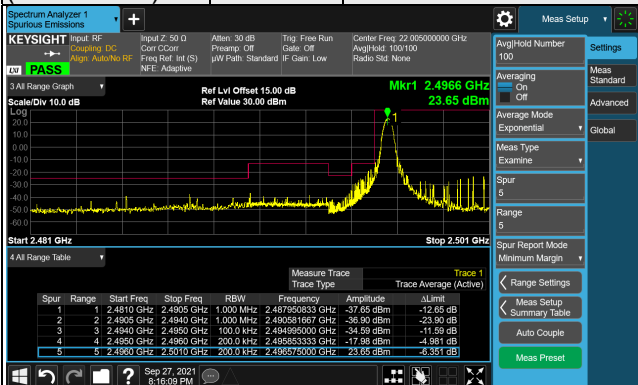
QPSK

1 RB / 0 RB Offset

Channel 41540  
(2685.0MHz)

QPSK

1 RB / 49 RB Offset



Channel 39700  
(2501.0MHz)

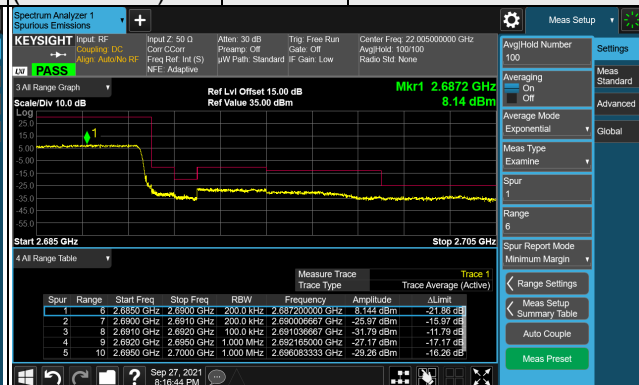
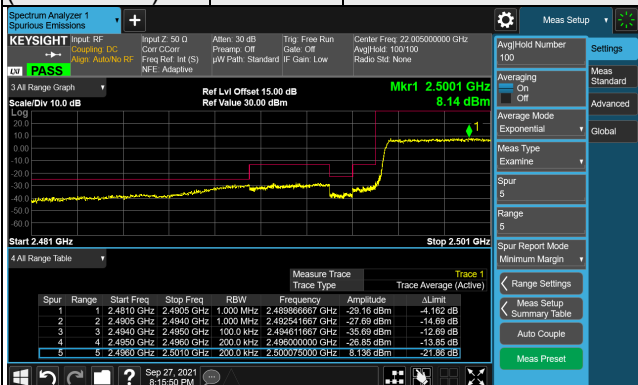
QPSK

50 RB / 0 RB Offset

Channel 41540  
(2685.0MHz)

QPSK

50 RB / 0 RB Offset



LTE Band 41

Channel Bandwidth: 15MHz

Channel 39725  
(2503.5MHz)

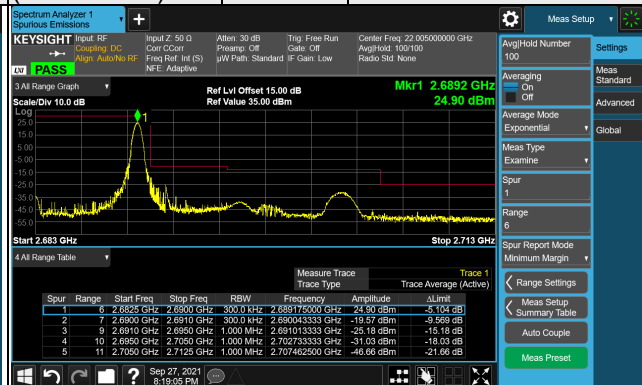
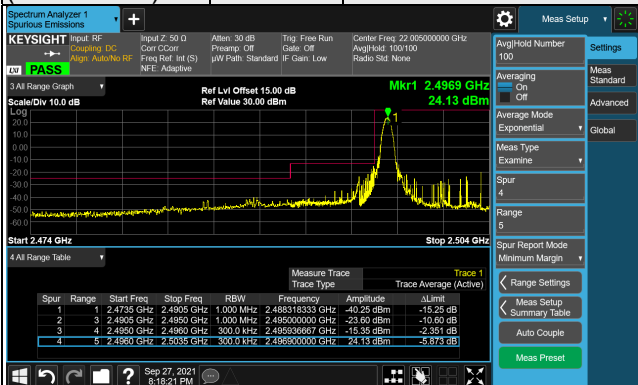
QPSK

1 RB / 0 RB Offset

Channel 41515  
(2682.5MHz)

QPSK

1 RB / 74 RB Offset



Channel 39725  
(2503.5MHz)

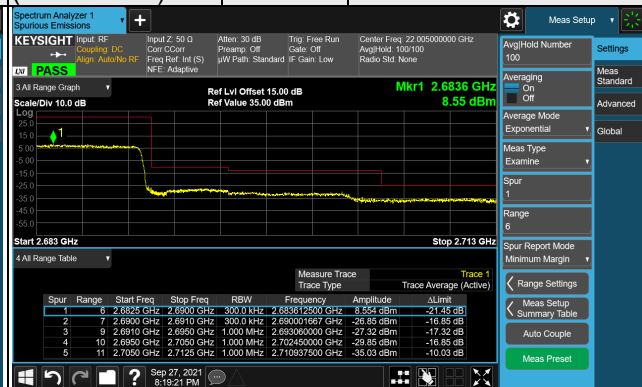
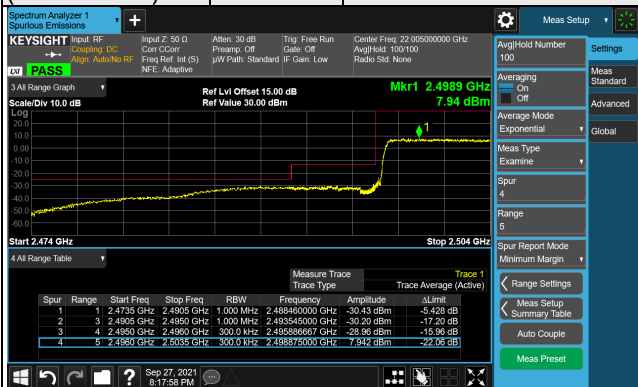
QPSK

75 RB / 0 RB Offset

Channel 41515  
(2682.5MHz)

QPSK

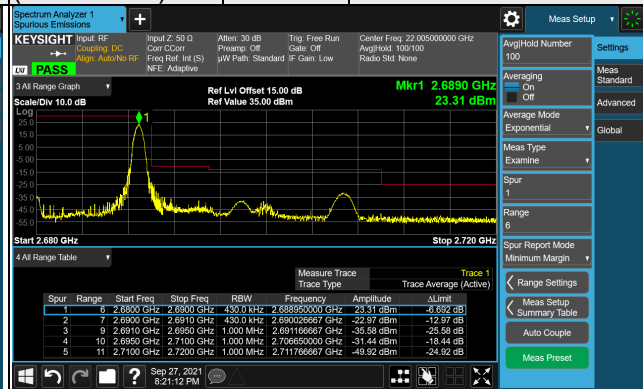
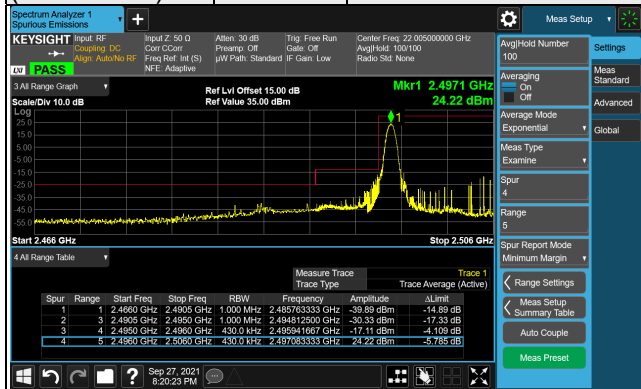
75 RB / 0 RB Offset



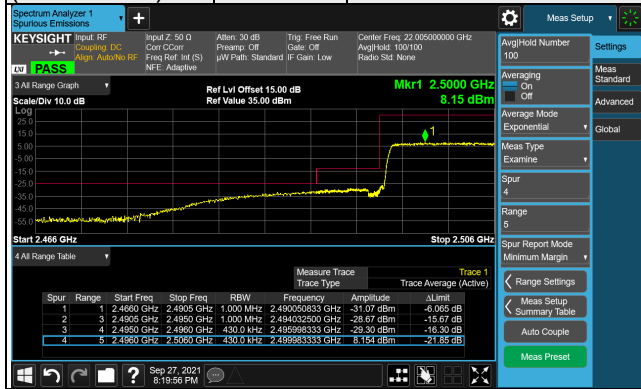
LTE Band 41

Channel Bandwidth: 20MHz

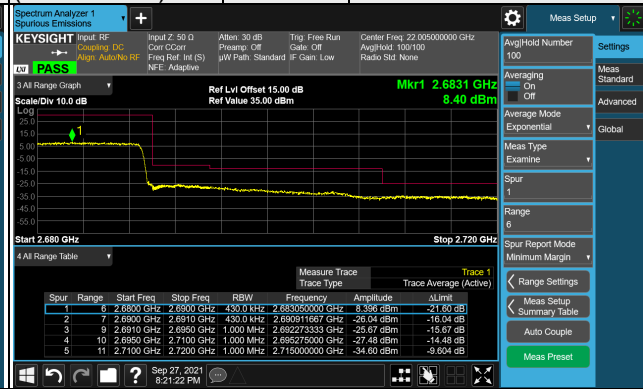
Channel 39750 (2506.0MHz) QPSK 1 RB / 0 RB Offset Channel 41490 (2680.0MHz) QPSK 1 RB / 99 RB Offset



Channel 39750 (2506.0MHz) QPSK 100 RB / 0 RB Offset



Channel 41490 (2680.0MHz) QPSK 100 RB / 0 RB Offset

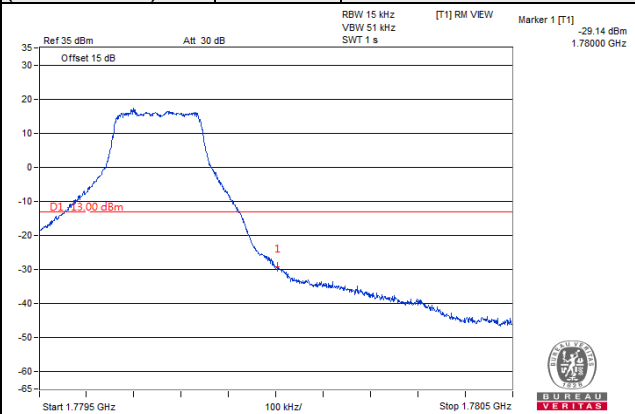
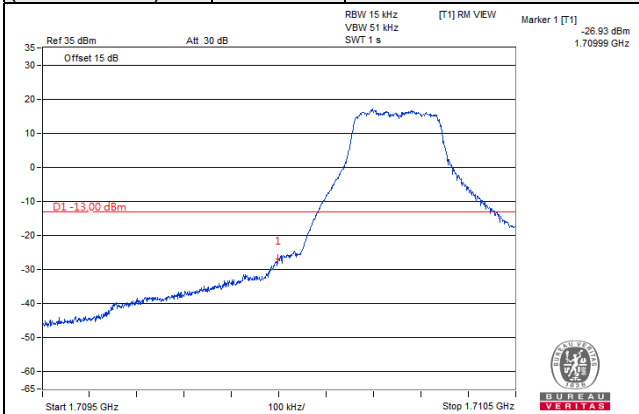




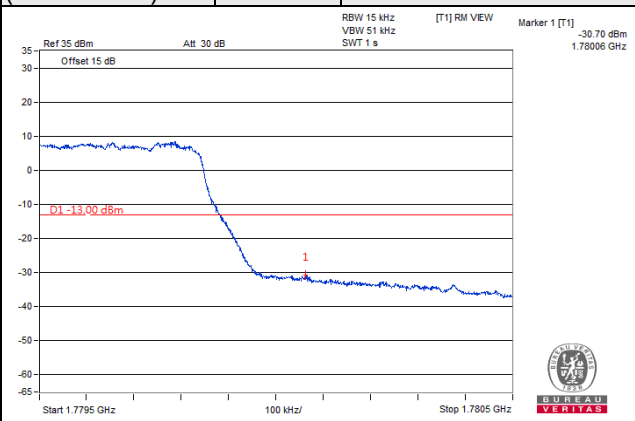
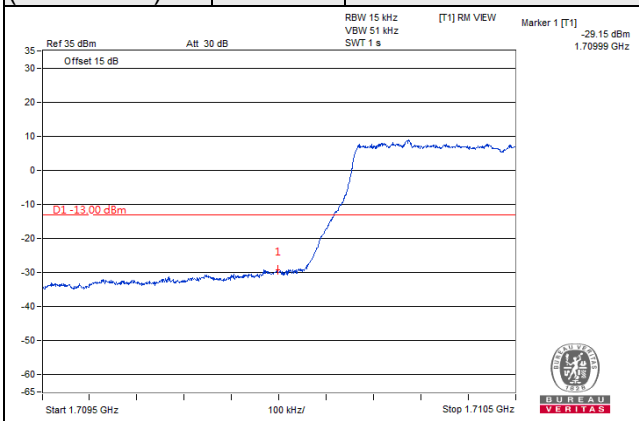
LTE Band 66

Channel Bandwidth: 1.4MHz

Channel 131979 (1710.7MHz)	QPSK	1 RB / 0 RB Offset	Channel 132665 (1779.3MHz)	QPSK	1 RB / 5 RB Offset
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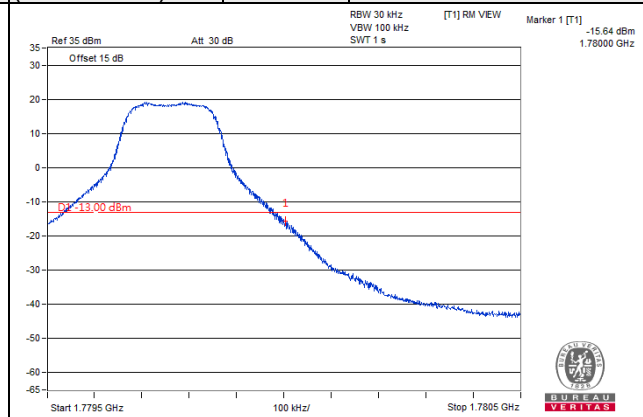
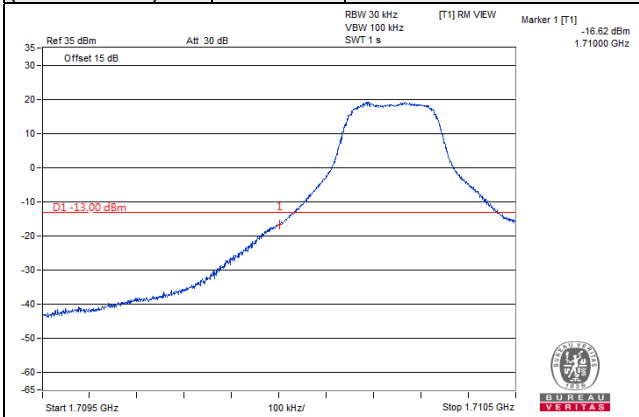


Channel 131979 (1710.7MHz)	QPSK	6 RB / 0 RB Offset	Channel 132665 (1779.3MHz)	QPSK	6 RB / 0 RB Offset
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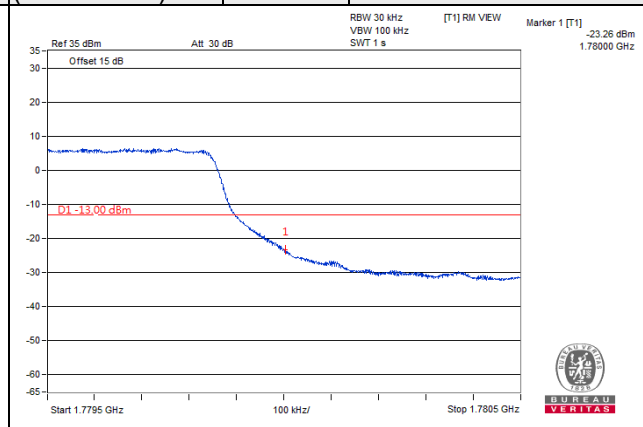
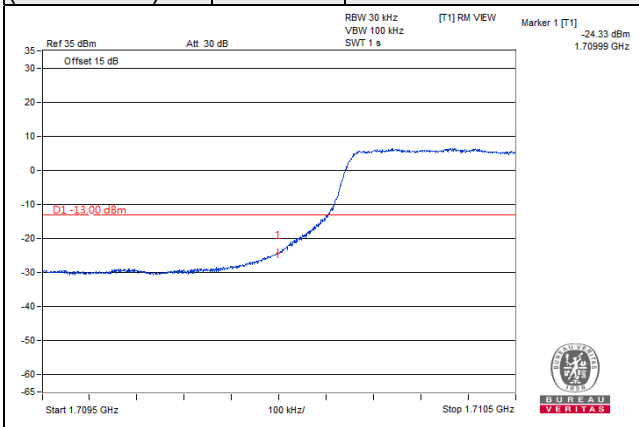


**Channel Bandwidth: 3MHz**

<b>Channel 131987 (1711.5MHz)</b>	<b>QPSK</b>	<b>1 RB / 0 RB Offset</b>	<b>Channel 132657 (1778.5MHz)</b>	<b>QPSK</b>	<b>1 RB / 14 RB Offset</b>
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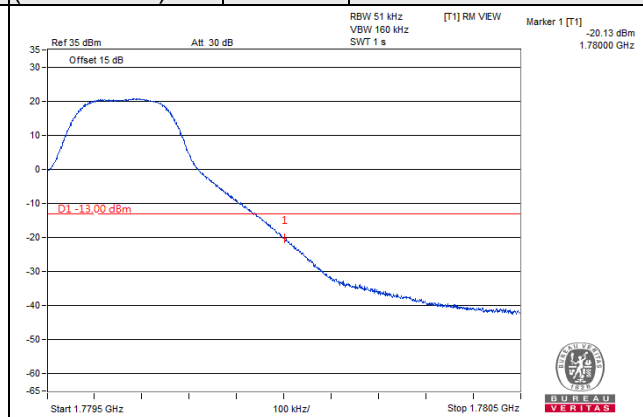
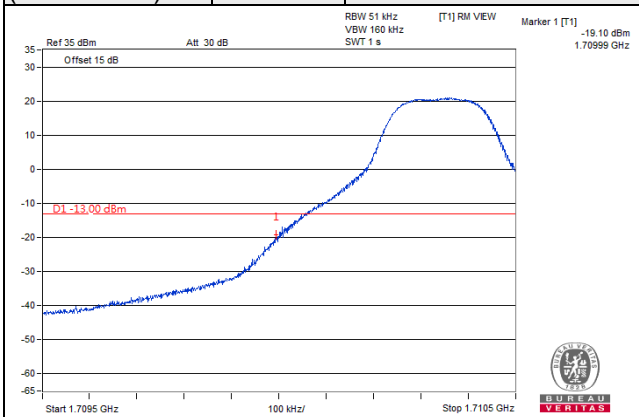


<b>Channel 131987 (1711.5MHz)</b>	<b>QPSK</b>	<b>15 RB / 0 RB Offset</b>	<b>Channel 132657 (1778.5MHz)</b>	<b>QPSK</b>	<b>15 RB / 0 RB Offset</b>
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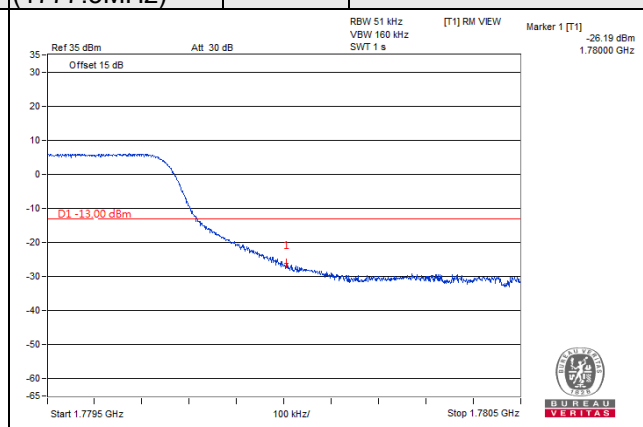
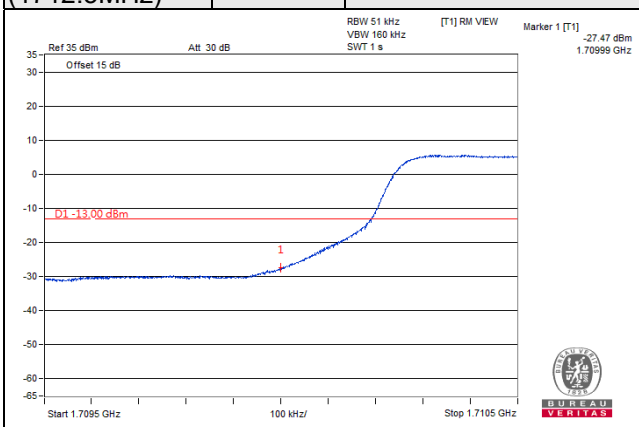


Channel Bandwidth: 5MHz

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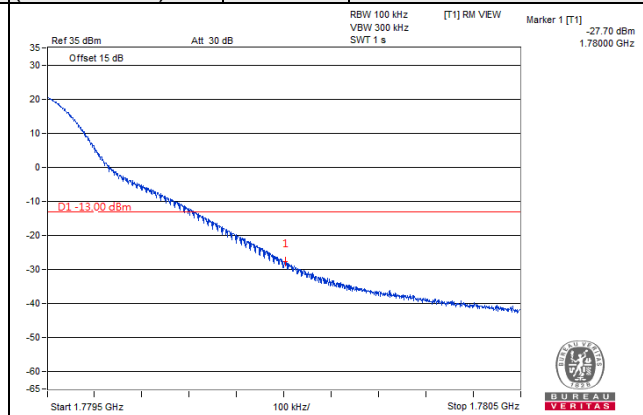
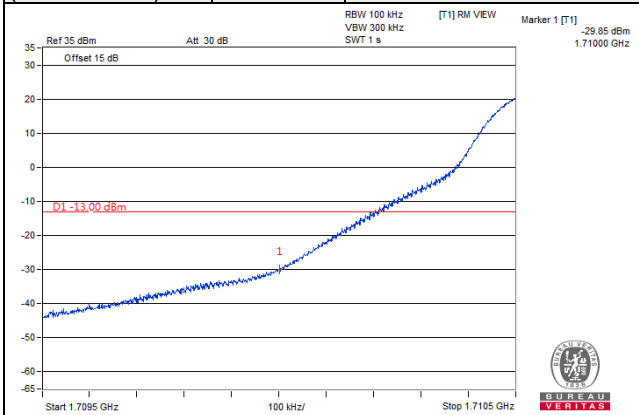


Channel 131997 (1712.5MHz)	QPSK	25 RB / 0 RB Offset	Channel 132647 (1777.5MHz)	QPSK	25 RB / 0 RB Offset
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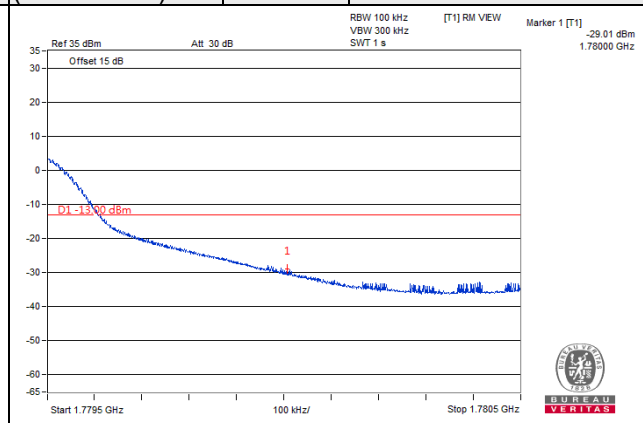
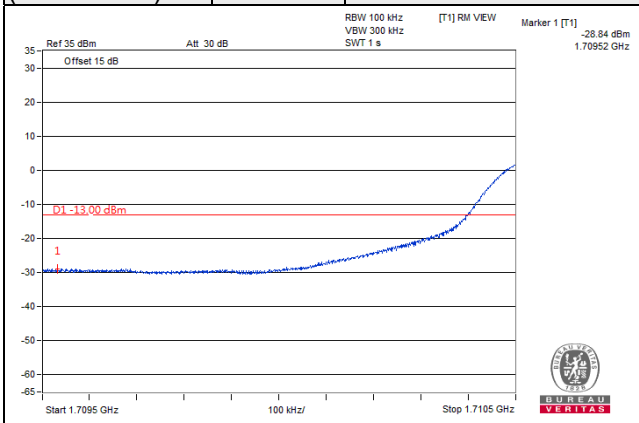


Channel Bandwidth: 10MHz

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)

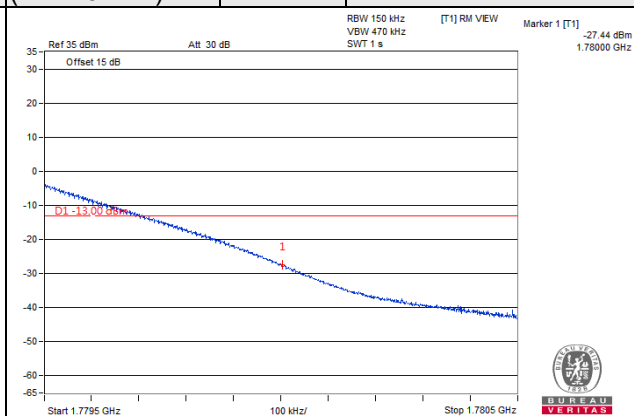
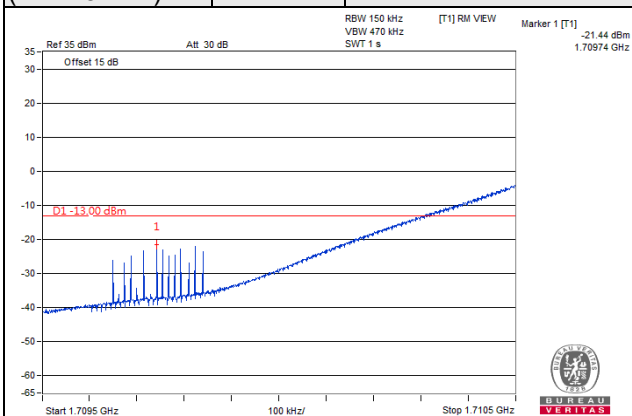
QPSK

1 RB / 0 RB Offset

Channel 132597  
(1772.5MHz)

QPSK

1 RB / 74 RB Offset



Channel 132047  
(1717.5MHz)

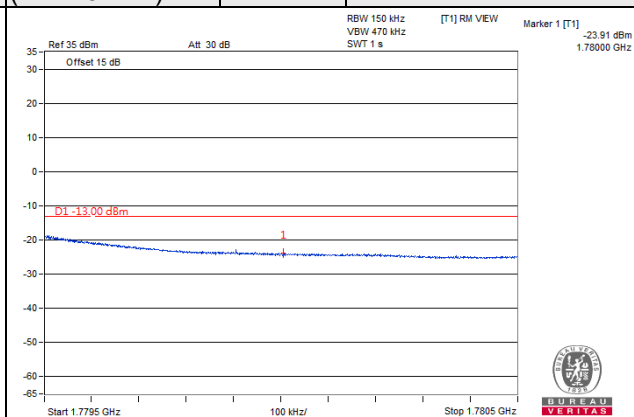
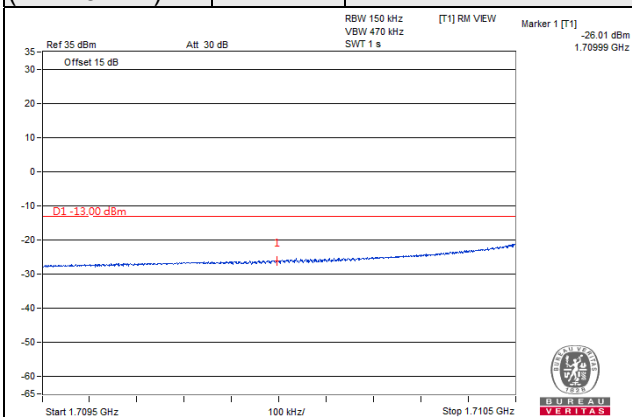
QPSK

75 RB / 0 RB Offset

Channel 132597  
(1772.5MHz)

QPSK

75 RB / 0 RB Offset



Channel Bandwidth: 20MHz

Channel 132072  
(1720.0MHz)

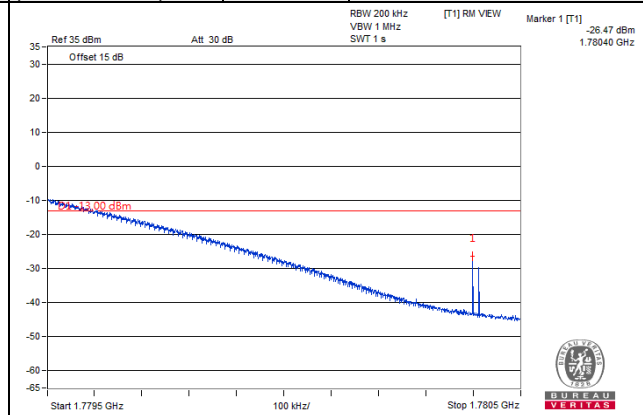
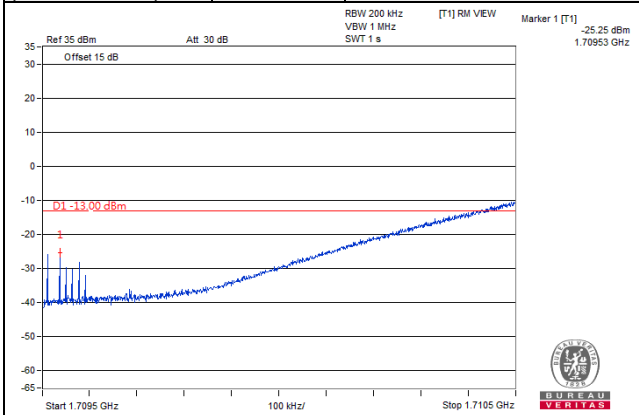
QPSK

1 RB / 0 RB Offset

Channel 132572  
(1770.0MHz)

QPSK

1 RB / 99 RB Offset



Channel 132072  
(1720.0MHz)

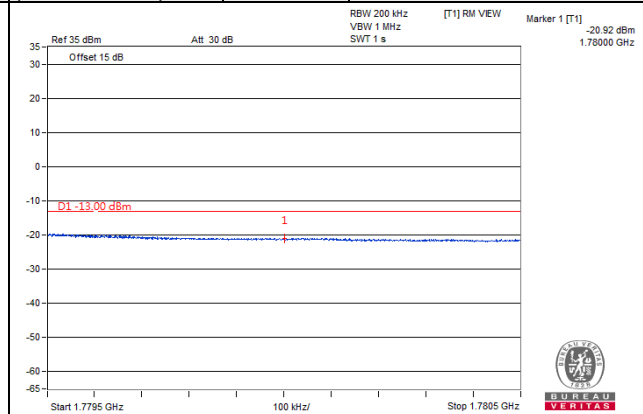
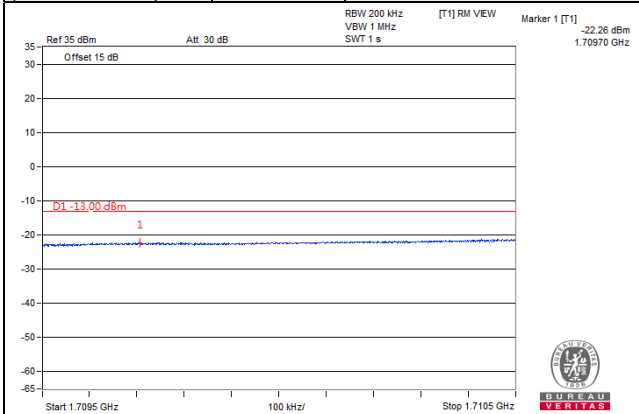
QPSK

100 RB / 0 RB Offset

Channel 132572  
(1770.0MHz)

QPSK

100 RB / 0 RB Offset

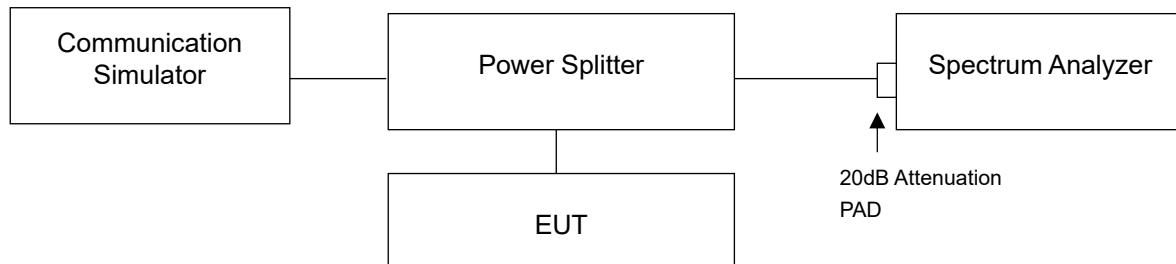


## 4.6 Peak to Average Ratio

### 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):

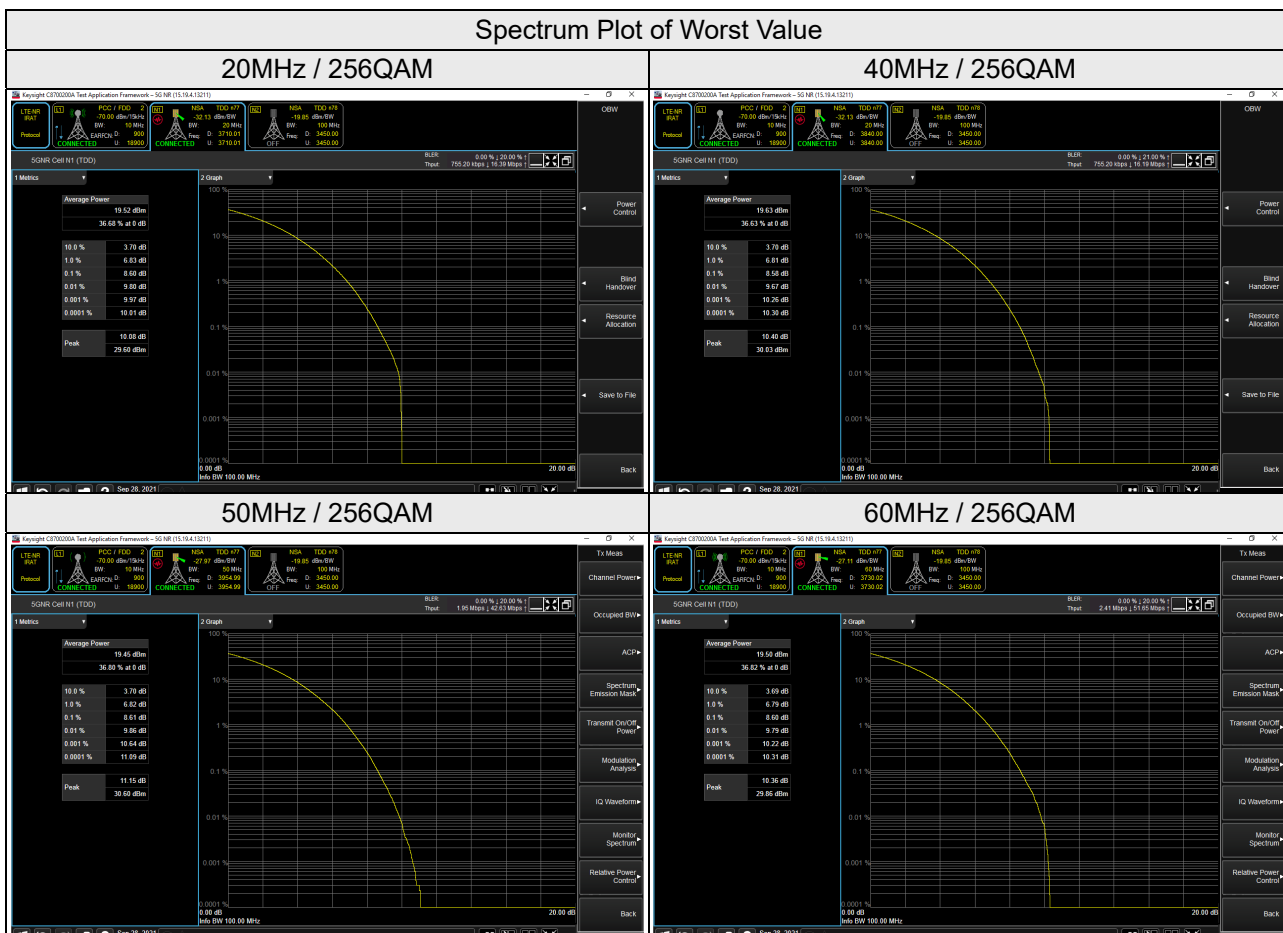
5GNR n77 (Part 270), Channel Bandwidth 20MHz						
Channel	Frequency (MHz)	Peak To Average Ratio (dB)				
		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
647334	3710.01	5.23	6.58	6.57	7.02	8.60
656000	3840	5.18	6.77	6.77	7.22	8.48
664666	3969.99	5.45	7.18	7.19	7.63	8.49
5GNR n77 (Part 270), Channel Bandwidth 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

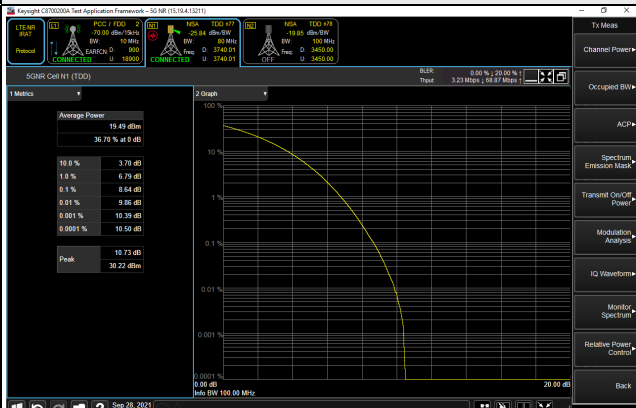
  

5GNR n77 (Part 270), Channel Bandwidth 100MHz						
Channel	Frequency (MHz)	Peak To Average Ratio (dB)				
		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
650000	3750	5.45	6.86	6.89	7.39	8.59
656000	3840	5.22	7.21	7.21	7.72	8.57
662000	3930	6.02	7.57	7.60	8.01	8.57

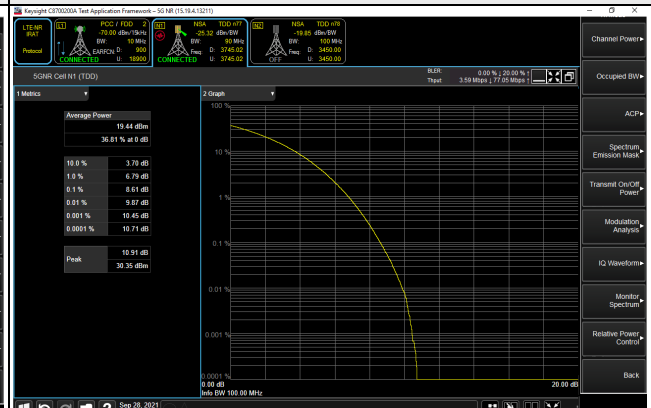


## Spectrum Plot of Worst Value

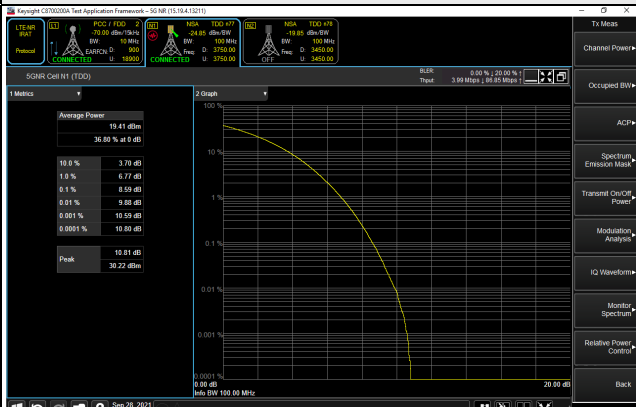
### 80MHz / 256QAM



### 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