


Channel Bandwidth: 20MHz

Channel 20850 (2510.0MHz)	QPSK	1 RB / 0 RB Offset	Channel 21100 (2535.0MHz)	QPSK	1 RB / 0 RB Offset
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Channel 20850 (2510.0MHz) Spurious Emissions Table:

Spur	1	2	3	4	5	6	7	8	9	10
1	2.4600 GHz	2.4960 GHz	1.000 MHz	2.492220000 GHz	-40.81 dBm	-16.81 dB				
2	2.4960 GHz	2.4960 GHz	1.000 MHz	2.498990000 GHz	-40.11 dBm	-30.11 dB				
3	2.4960 GHz	2.5000 GHz	430.0 kHz	2.499986667 GHz	-24.72 dBm	-14.72 dB				
4	2.5000 GHz	2.5200 GHz	430.0 kHz	2.501133333 GHz	-23.18 dBm	-6.83 dB				
5	2.5000 GHz	2.5210 GHz	430.0 kHz	2.502180000 GHz	-44.41 dBm	-34.41 dB				
6	2.5210 GHz	2.5250 GHz	1.000 MHz	2.523873333 GHz	-46.53 dBm	-36.53 dB				
7	2.5250 GHz	2.5400 GHz	1.000 MHz	2.525350000 GHz	-41.68 dBm	-28.68 dB				
8	2.5400 GHz	2.5600 GHz	1.000 MHz	2.544633333 GHz	-51.45 dBm	-35.45 dB				

Channel 21100 (2535.0MHz) Spurious Emissions Table:

Spur	1	2	3	4	5	6	7	8	9	10	11
1	2.5050 GHz	2.5200 GHz	1.000 MHz	2.519650000 GHz	-36.90 dBm	-23.90 dB					
2	2.5200 GHz	2.5240 GHz	1.000 MHz	2.524000000 GHz	-39.82 dBm	-29.82 dB					
3	2.5240 GHz	2.5250 GHz	430.0 kHz	2.524896667 GHz	-24.38 dBm	-14.38 dB					
4	2.5250 GHz	2.5400 GHz	430.0 kHz	2.526383333 GHz	-23.44 dBm	-6.89 dB					
5	2.5400 GHz	2.5450 GHz	430.0 kHz	2.543816667 GHz	-43.93 dBm	-33.93 dB					
6	2.5450 GHz	2.5500 GHz	1.000 MHz	2.548486667 GHz	-46.99 dBm	-36.99 dB					
7	2.5500 GHz	2.5550 GHz	1.000 MHz	2.553780000 GHz	-41.34 dBm	-28.34 dB					
8	2.5550 GHz	2.5650 GHz	1.000 MHz	2.561000000 GHz	-41.29 dBm	-16.29 dB					
9	2.5650 GHz	2.5650 GHz	1.000 MHz	2.567000000 GHz	-41.29 dBm	-16.29 dB					
10	2.5650 GHz	2.5650 GHz	1.000 MHz	2.567000000 GHz	-41.29 dBm	-16.29 dB					
11	2.5650 GHz	2.5650 GHz	1.000 MHz	2.567000000 GHz	-41.29 dBm	-16.29 dB					

Channel 20850 (2510.0MHz)	QPSK	1 RB / 99 RB Offset	Channel 21100 (2535.0MHz)	QPSK	1 RB / 99 RB Offset
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Channel 20850 (2510.0MHz) Spurious Emissions Table:

Spur	1	2	3	4	5	6	7	8	9	10
1	2.4600 GHz	2.4960 GHz	1.000 MHz	2.487240000 GHz	-41.61 dBm	-16.61 dB				
2	2.4960 GHz	2.4960 GHz	1.000 MHz	2.497100000 GHz	-46.21 dBm	-36.21 dB				
3	2.4960 GHz	2.5000 GHz	430.0 kHz	2.498700000 GHz	-39.22 dBm	-29.22 dB				
4	2.5000 GHz	2.5200 GHz	430.0 kHz	2.518900000 GHz	-23.64 dBm	-6.33 dB				
5	2.5000 GHz	2.5210 GHz	430.0 kHz	2.520300000 GHz	-25.37 dBm	-15.37 dB				
6	2.5210 GHz	2.5250 GHz	1.000 MHz	2.521000000 GHz	-39.64 dBm	-29.64 dB				
7	2.5250 GHz	2.5400 GHz	1.000 MHz	2.525750000 GHz	-38.17 dBm	-26.17 dB				
8	2.5400 GHz	2.5600 GHz	1.000 MHz	2.541133333 GHz	-50.19 dBm	-35.19 dB				

Channel 21100 (2535.0MHz) Spurious Emissions Table:

Spur	1	2	3	4	5	6	7	8	9	10	11
1	2.5050 GHz	2.5200 GHz	1.000 MHz	2.514325000 GHz	-41.73 dBm	-28.73 dB					
2	2.5200 GHz	2.5240 GHz	1.000 MHz	2.522873333 GHz	-47.14 dBm	-37.14 dB					
3	2.5240 GHz	2.5250 GHz	430.0 kHz	2.524816667 GHz	-33.87 dBm	-23.87 dB					
4	2.5250 GHz	2.5400 GHz	430.0 kHz	2.523000000 GHz	-23.89 dBm	-6.11 dB					
5	2.5400 GHz	2.5450 GHz	430.0 kHz	2.540500000 GHz	-53.88 dBm	-43.88 dB					
6	2.5450 GHz	2.5500 GHz	1.000 MHz	2.548086667 GHz	-39.37 dBm	-29.37 dB					
7	2.5500 GHz	2.5550 GHz	1.000 MHz	2.550325000 GHz	-40.37 dBm	-27.37 dB					
8	2.5550 GHz	2.5650 GHz	1.000 MHz	2.560666667 GHz	-41.93 dBm	-16.93 dB					
9	2.5650 GHz	2.5650 GHz	1.000 MHz	2.566666667 GHz	-41.93 dBm	-16.93 dB					
10	2.5650 GHz	2.5650 GHz	1.000 MHz	2.566666667 GHz	-41.93 dBm	-16.93 dB					
11	2.5650 GHz	2.5650 GHz	1.000 MHz	2.566666667 GHz	-41.93 dBm	-16.93 dB					

Channel 20850 (2510.0MHz)	QPSK	100 RB / 0 RB Offset	Channel 21100 (2535.0MHz)	QPSK	100 RB / 0 RB Offset
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Channel 20850 (2510.0MHz) Spurious Emissions Table:

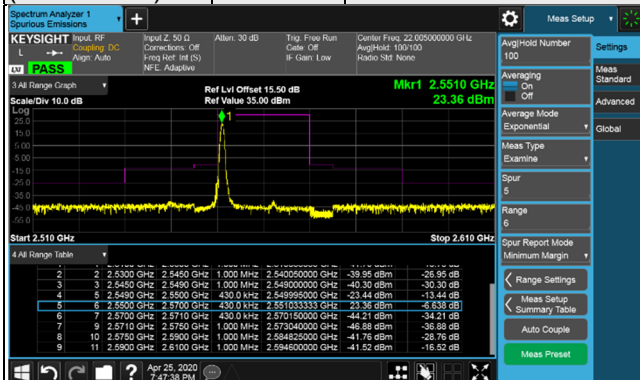
Spur	1	2	3	4	5	6	7	8	9	10
1	2.4600 GHz	2.4960 GHz	1.000 MHz	2.495500000 GHz	-28.47 dBm	-4.47 dB				
2	2.4960 GHz	2.4990 GHz	1.000 MHz	2.498870000 GHz	-29.02 dBm	-10.02 dB				
3	2.4990 GHz	2.5000 GHz	430.0 kHz	2.499950000 GHz	-23.15 dBm	-18.15 dB				
4	2.5000 GHz	2.5200 GHz	430.0 kHz	2.511500000 GHz	-7.10 dBm	-22.29 dB				
5	2.5200 GHz	2.5210 GHz	430.0 kHz	2.520016667 GHz	-28.39 dBm	-18.39 dB				
6	2.5210 GHz	2.5250 GHz	1.000 MHz	2.521033333 GHz	-28.04 dBm	-18.04 dB				
7	2.5250 GHz	2.5400 GHz	1.000 MHz	2.525180000 GHz	-30.51 dBm	-17.51 dB				
8	2.5400 GHz	2.5600 GHz	1.000 MHz	2.550300000 GHz	-40.45 dBm	-15.45 dB				

Channel 21100 (2535.0MHz) Spurious Emissions Table:

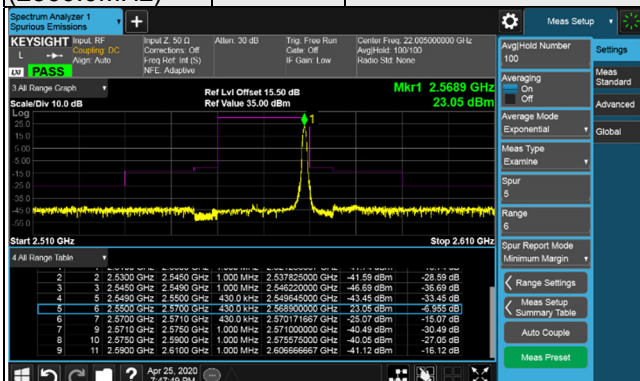
Spur	1	2	3	4	5	6	7	8	9	10	11
1	2.5050 GHz	2.5200 GHz	1.000 MHz	2.515400000 GHz	-32.02 dBm	-19.02 dB					
2	2.5200 GHz	2.5240 GHz	1.000 MHz	2.524000000 GHz	-32.91 dBm	-22.91 dB					
3	2.5240 GHz	2.5250 GHz	430.0 kHz	2.525000000 GHz	-31.13 dBm	-21.13 dB					
4	2.5250 GHz	2.5400 GHz	430.0 kHz	2.536100000 GHz	-7.26 dBm	-22.74 dB					
5	2.5400 GHz	2.5450 GHz	430.0 kHz	2.540166667 GHz	-30.74 dBm	-20.74 dB					
6	2.5450 GHz	2.5500 GHz	1.000 MHz	2.548166667 GHz	-36.93 dBm	-26.93 dB					
7	2.5500 GHz	2.5550 GHz	1.000 MHz	2.551700000 GHz	-40.34 dBm	-21.34 dB					
8	2.5550 GHz	2.5650 GHz	1.000 MHz	2.562333333 GHz	-38.16 dBm	-16.16 dB					
9	2.5650 GHz	2.5650 GHz	1.000 MHz	2.562333333 GHz	-38.16 dBm	-16.16 dB					
10	2.5650 GHz	2.5650 GHz	1.000 MHz	2.562333333 GHz	-38.16 dBm	-16.16 dB					
11	2.5650 GHz	2.5650 GHz	1.000 MHz	2.562333333 GHz	-38.16 dBm	-16.16 dB					

Channel Bandwidth: 20MHz

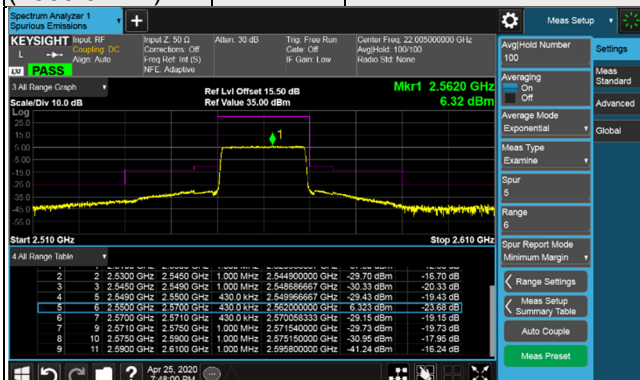
Channel 21350 (2560.0MHz) QPSK 1 RB / 0 RB Offset



Channel 21350 (2560.0MHz) QPSK 1 RB / 99 RB Offset



Channel 21350 (2560.0MHz) QPSK 100 RB / 0 RB Offset



LTE Band 66

Channel Bandwidth: 1.4MHz

Channel 131979
(1710.7MHz)

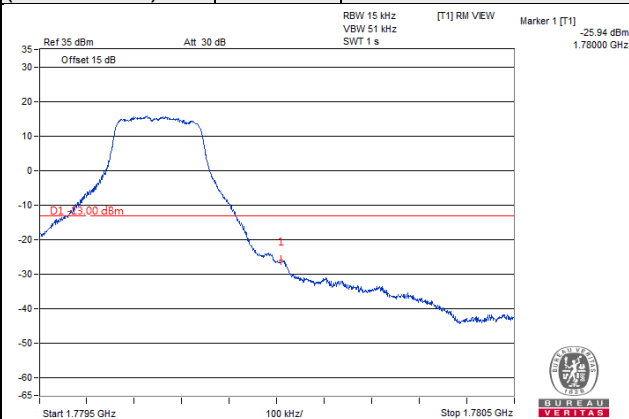
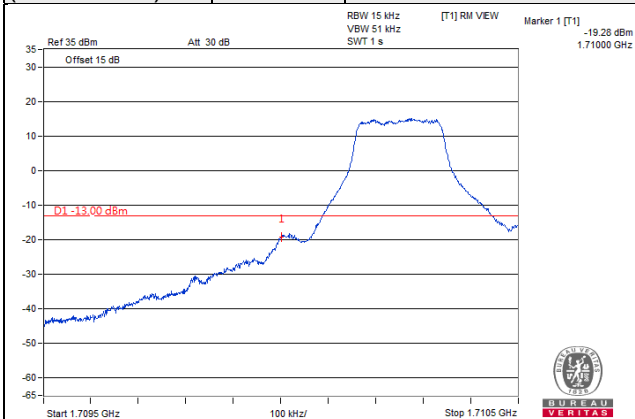
QPSK

1 RB / 0 RB Offset

Channel 132665
(1779.3MHz)

QPSK

1 RB / 5 RB Offset



Channel 131979
(1710.7MHz)

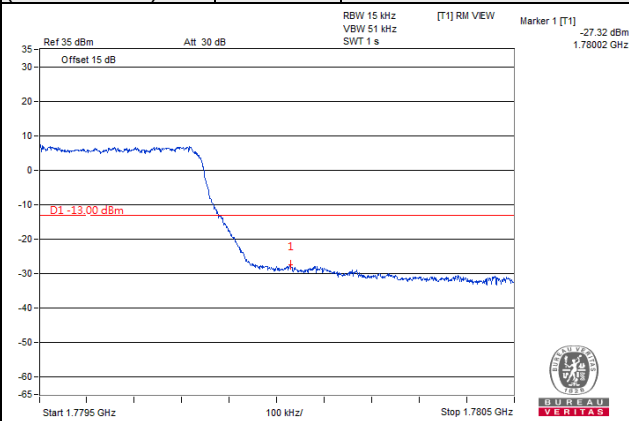
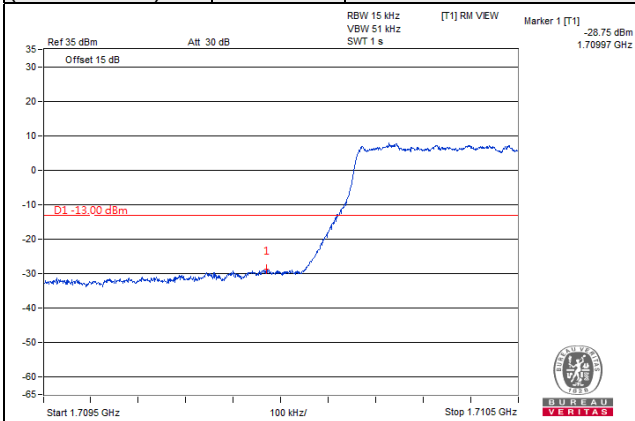
QPSK

6 RB / 0 RB Offset

Channel 132665
(1779.3MHz)

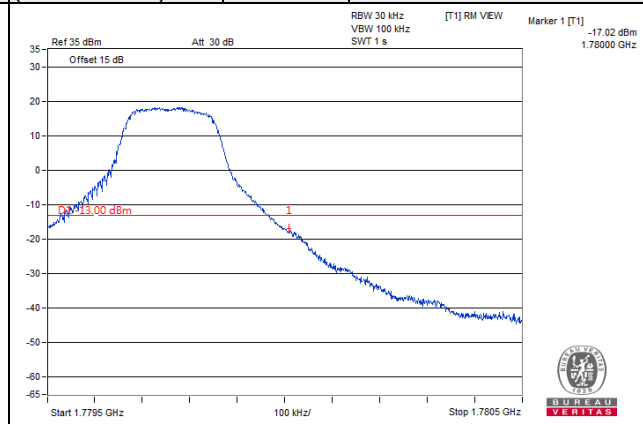
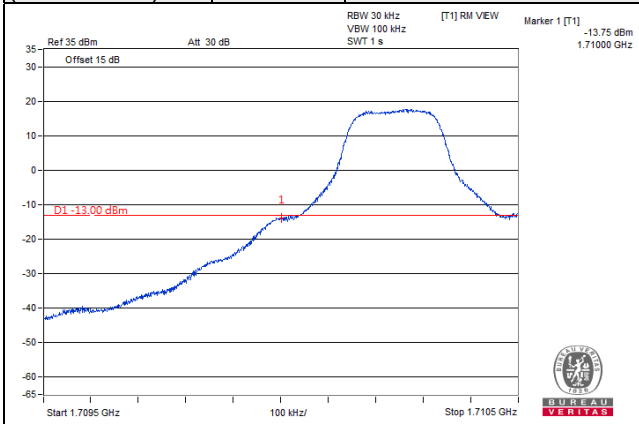
QPSK

6 RB / 0 RB Offset

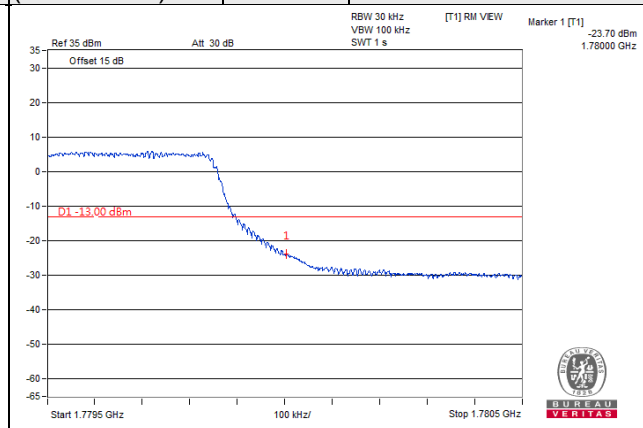
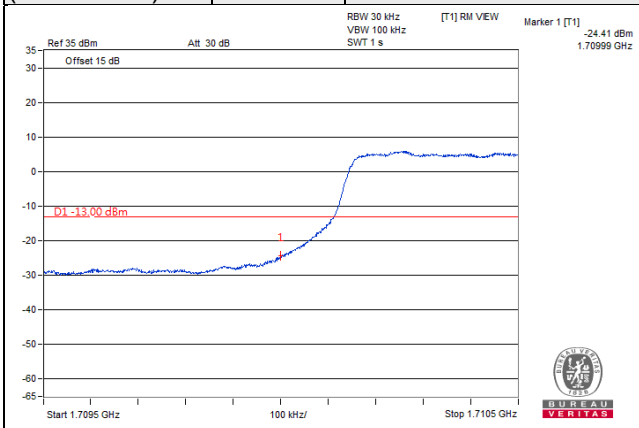


Channel Bandwidth: 3MHz

Channel 131987 (1711.5MHz)	QPSK	1 RB / 0 RB Offset	Channel 132657 (1778.5MHz)	QPSK	1 RB / 14 RB Offset
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Channel 131987 (1711.5MHz)	QPSK	15 RB / 0 RB Offset	Channel 132657 (1778.5MHz)	QPSK	15 RB / 0 RB Offset
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Channel Bandwidth: 5MHz

Channel 131997
(1712.5MHz)

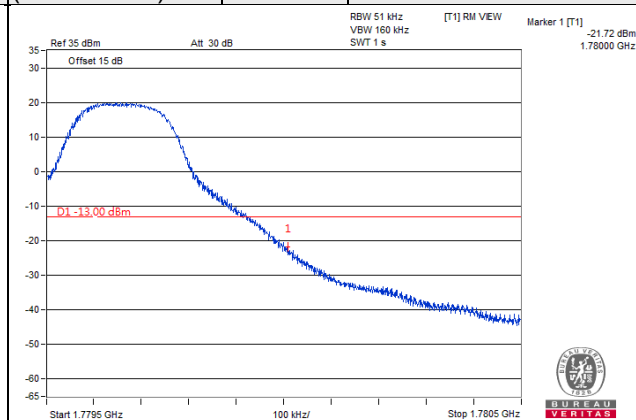
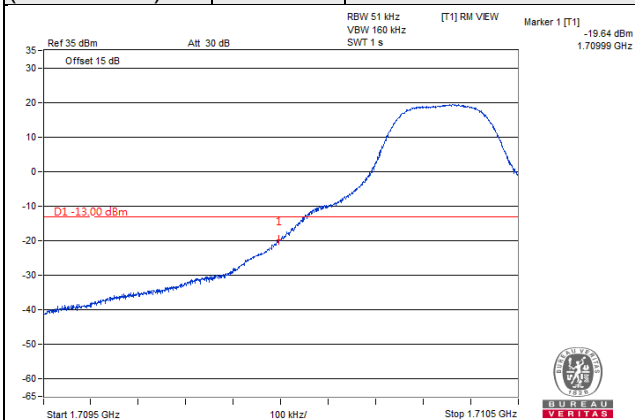
QPSK

1 RB / 0 RB Offset

Channel 132647
(1777.5MHz)

QPSK

1 RB / 24 RB Offset



Channel 131997
(1712.5MHz)

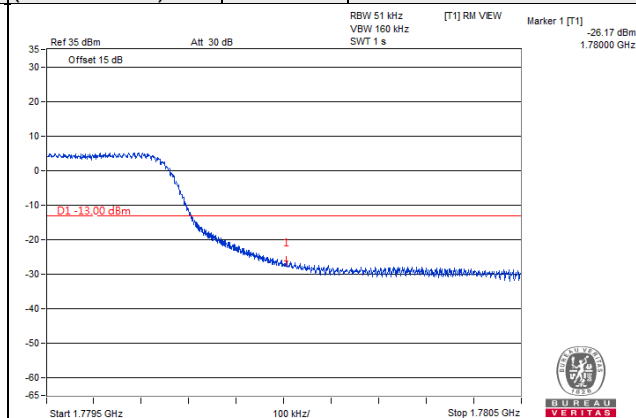
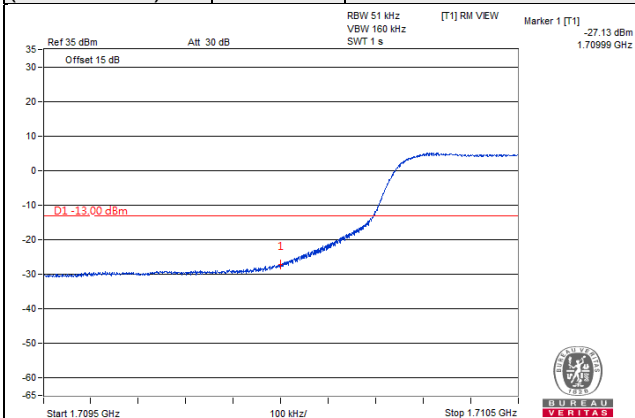
QPSK

25 RB / 0 RB Offset

Channel 132647
(1777.5MHz)

QPSK

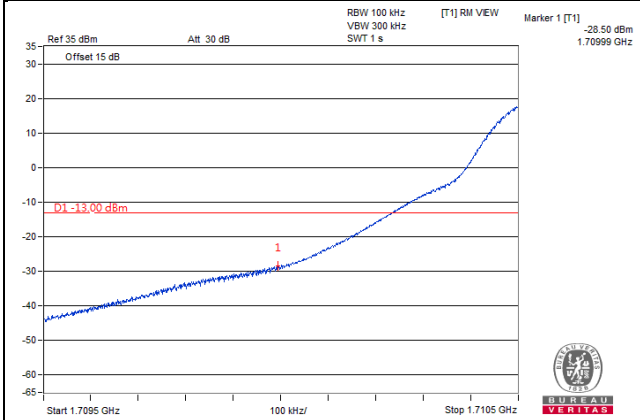
25 RB / 0 RB Offset



Channel Bandwidth: 10MHz

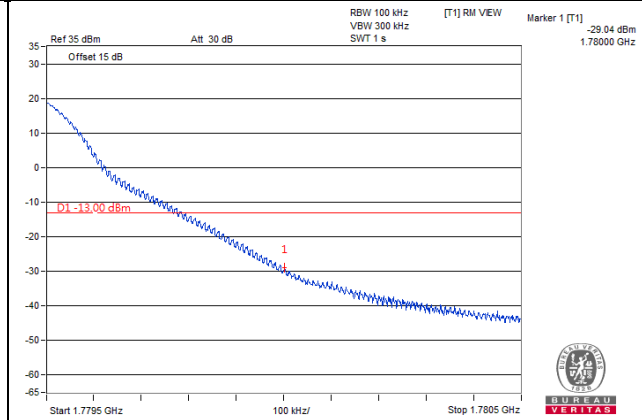
**Channel 132022
(1715.0MHz)**

QPSK 1 RB / 0 RB Offset



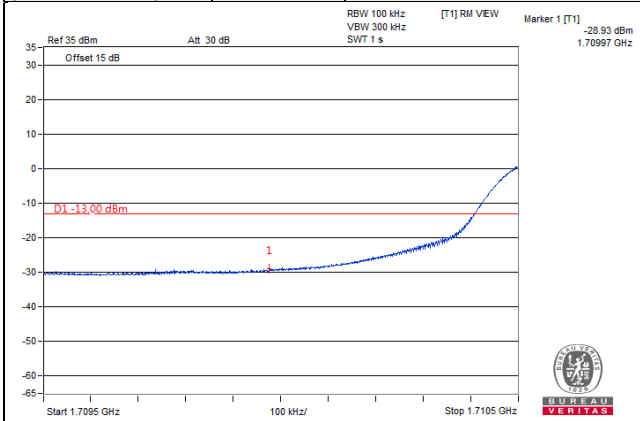
**Channel 132622
(1775.0MHz)**

QPSK 1 RB / 49 RB Offset



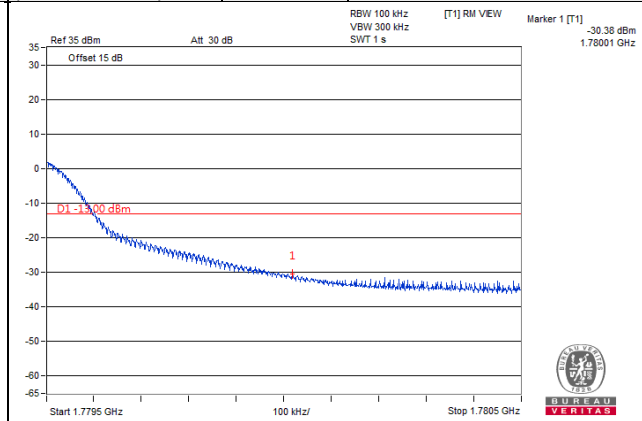
**Channel 132022
(1715.0MHz)**

QPSK 50 RB / 0 RB Offset



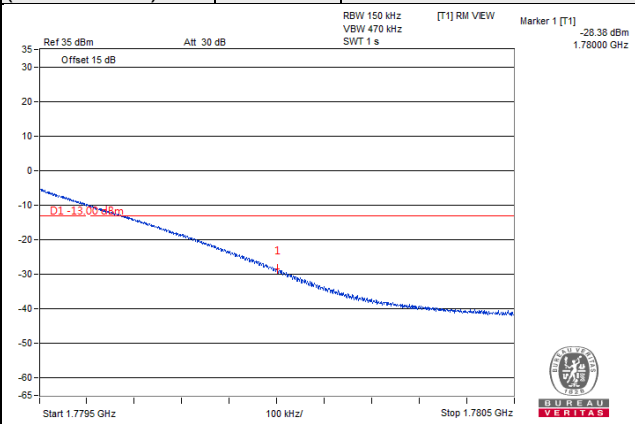
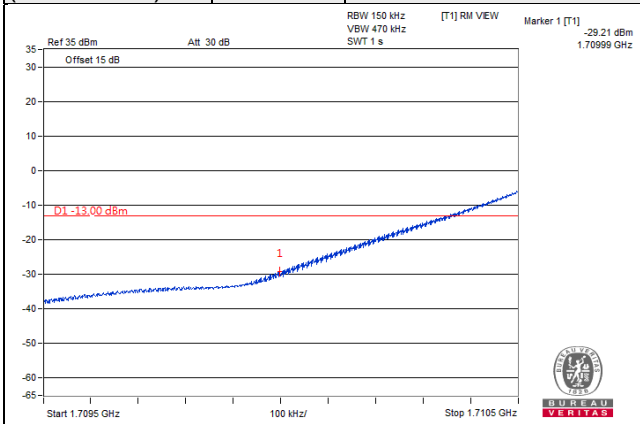
**Channel 132622
(1775.0MHz)**

QPSK 50 RB / 0 RB Offset

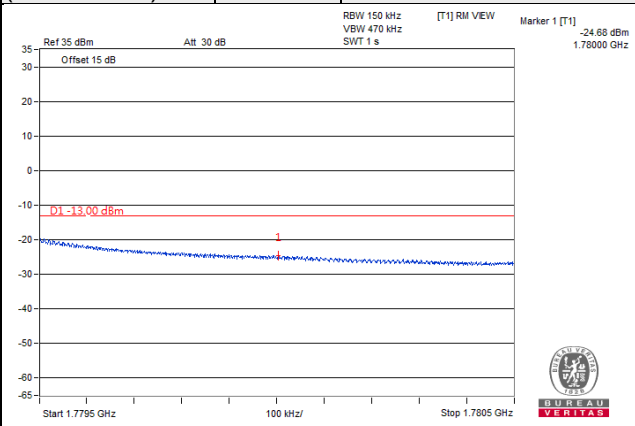
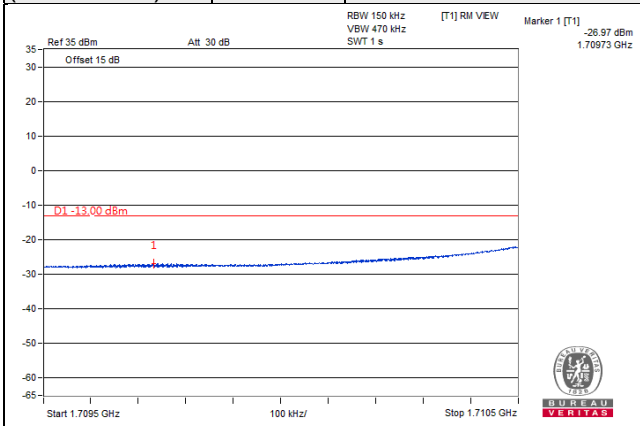


Channel Bandwidth: 15MHz

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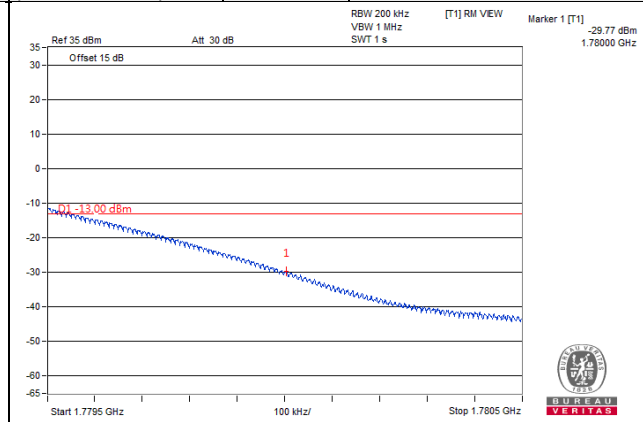
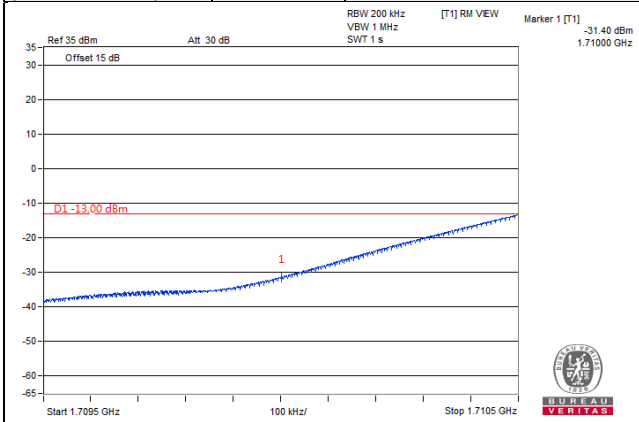


Channel 132047 (1717.5MHz)	QPSK	75 RB / 0 RB Offset	Channel 132597 (1772.5MHz)	QPSK	75 RB / 0 RB Offset
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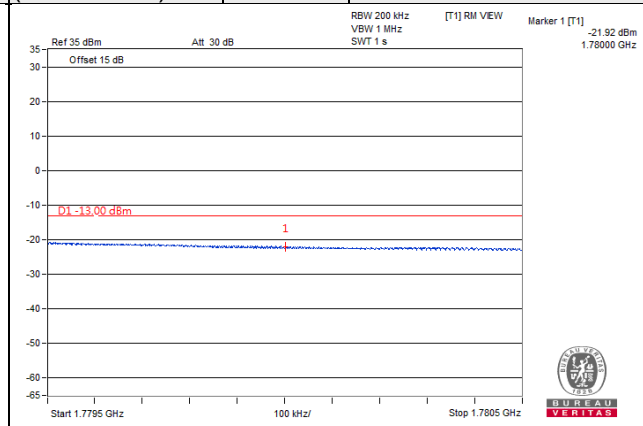
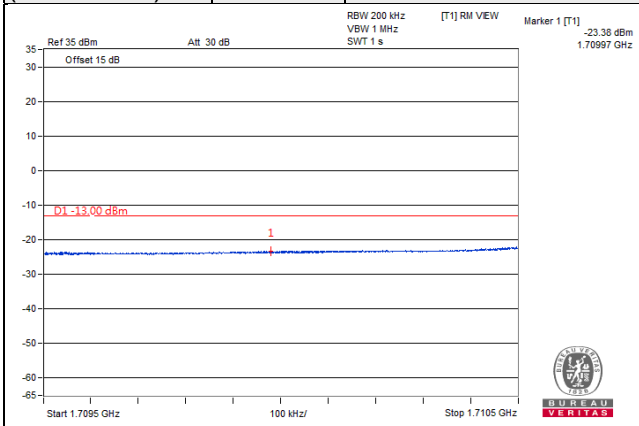


Channel Bandwidth: 20MHz

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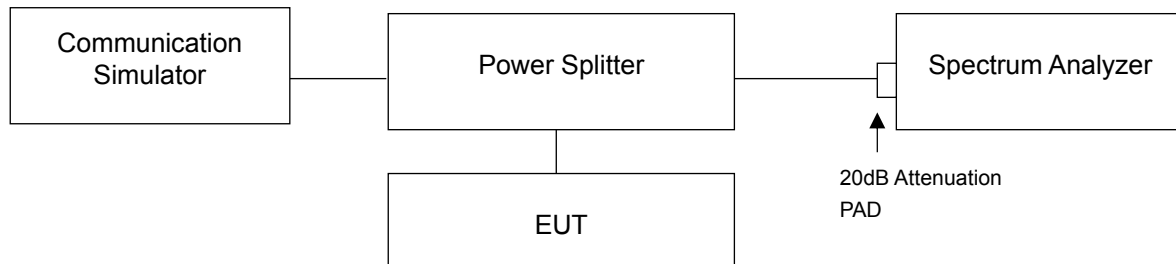


4.6 Peak to Average Ratio

4.6.1 Limits of Peak to Average Ratio Measurement

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

4.6.2 Test Setup



4.6.3 Test Procedures

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

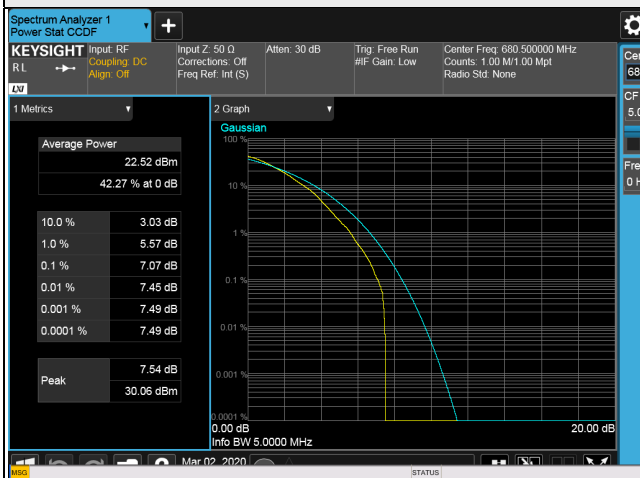
4.6.4 Test Results

n71

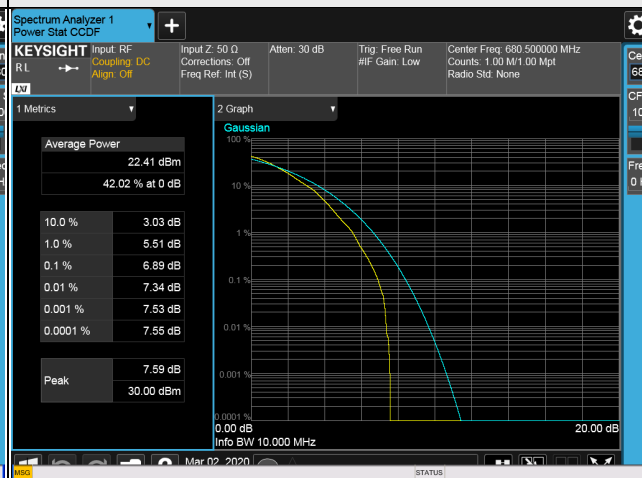
n71, Channel Bandwidth 5MHz						
Channel	Frequency (MHz)	Peak To Average Ratio (dB)				
		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
133100	665.5	3.50	3.53	5.19	6.73	4.27
136100	680.5	3.70	3.53	4.40	7.07	4.78
139100	695.5	3.67	3.59	4.72	6.83	5.24
n71, Channel Bandwidth 10MHz						
Channel	Frequency (MHz)	Peak To Average Ratio (dB)				
		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
133600	668	3.45	3.59	5.11	6.66	4.49
136100	680.5	3.85	3.63	5.01	6.89	5.21
138600	693	3.78	3.78	4.94	6.78	5.62
n71, Channel Bandwidth 15MHz						
Channel	Frequency (MHz)	Peak To Average Ratio (dB)				
		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
134100	670.5	3.42	3.32	5.06	6.49	4.15
136100	680.5	3.64	3.52	4.91	6.94	5.35
138100	690.5	3.61	3.48	5.35	6.97	4.56
n71, Channel Bandwidth 20MHz						
Channel	Frequency (MHz)	Peak To Average Ratio (dB)				
		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
134600	673	3.44	3.45	5.04	6.54	4.20
136100	680.5	3.77	3.65	5.31	6.92	4.55
137600	688	3.49	3.34	4.58	6.79	5.18

Spectrum Plot of Worst Value

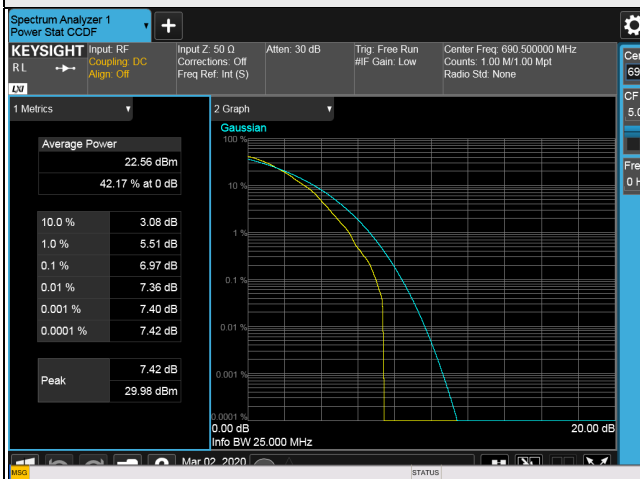
5MHz / 64QAM



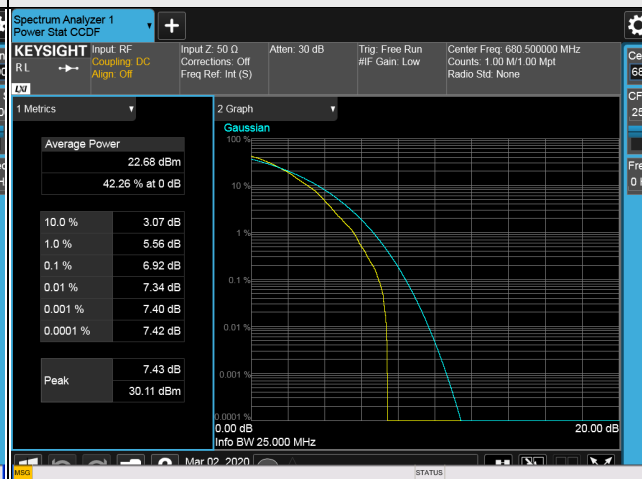
10MHz / 64QAM



15MHz / 64QAM



20MHz / 64QAM



LTE Band 2, Channel Bandwidth 1.4MHz				
Channel	Frequency (MHz)	Peak To Average Ratio (dB)		
		QPSK	16QAM	64QAM
18607	1850.7	4.05	5.01	6.44
18900	1880.0	3.83	4.92	6.47
19193	1909.3	3.59	4.34	6.39

LTE Band 2, Channel Bandwidth 3MHz				
Channel	Frequency (MHz)	Peak To Average Ratio (dB)		
		QPSK	16QAM	64QAM
18615	1851.5	3.83	4.86	6.38
18900	1880.0	3.83	4.73	6.56
19185	1908.5	3.55	4.29	6.40

LTE Band 2, Channel Bandwidth 5MHz				
Channel	Frequency (MHz)	Peak To Average Ratio (dB)		
		QPSK	16QAM	64QAM
18625	1852.5	3.82	4.84	6.97
18900	1880.0	3.78	4.49	6.84
19175	1907.5	3.62	4.37	6.49

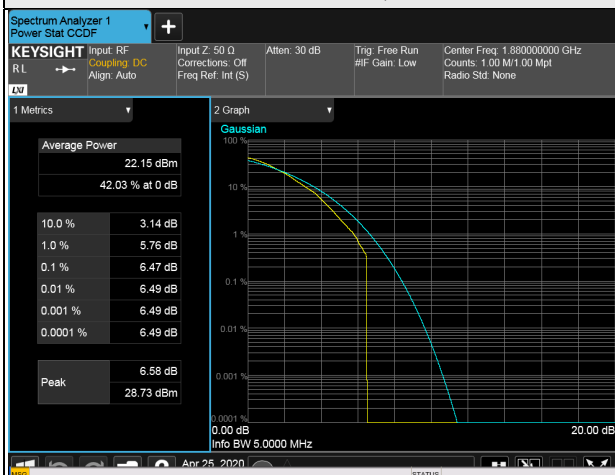
LTE Band 2, Channel Bandwidth 10MHz				
Channel	Frequency (MHz)	Peak To Average Ratio (dB)		
		QPSK	16QAM	64QAM
18650	1855.0	3.97	4.75	7.27
18900	1880.0	3.65	4.70	7.05
19150	1905.0	3.54	4.23	6.31

LTE Band 2, Channel Bandwidth 15MHz				
Channel	Frequency (MHz)	Peak To Average Ratio (dB)		
		QPSK	16QAM	64QAM
18675	1857.5	3.89	4.75	7.11
18900	1880.0	3.90	4.76	7.49
19125	1902.5	3.52	4.16	6.18

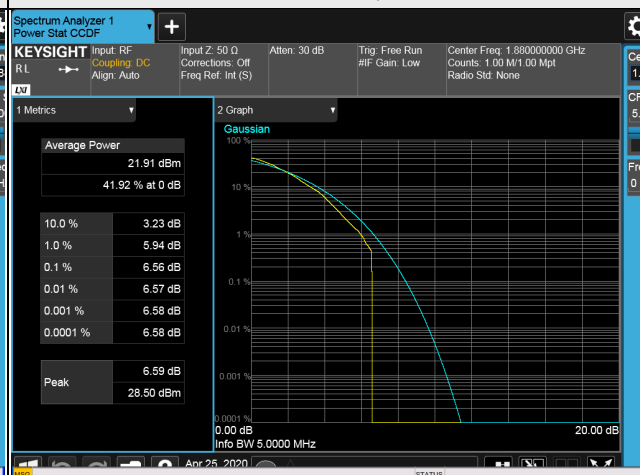
LTE Band 2, Channel Bandwidth 20MHz				
Channel	Frequency (MHz)	Peak To Average Ratio (dB)		
		QPSK	16QAM	64QAM
18700	1860.0	3.81	4.64	6.96
18900	1880.0	3.85	4.67	6.79
19100	1900.0	3.61	4.16	6.20

Spectrum Plot of Worst Value

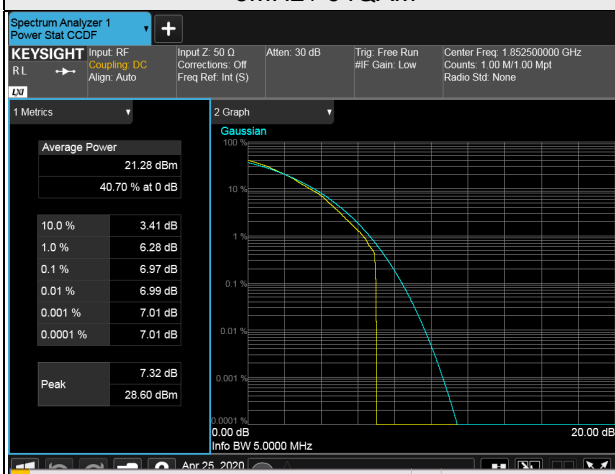
1.4MHz / 64QAM



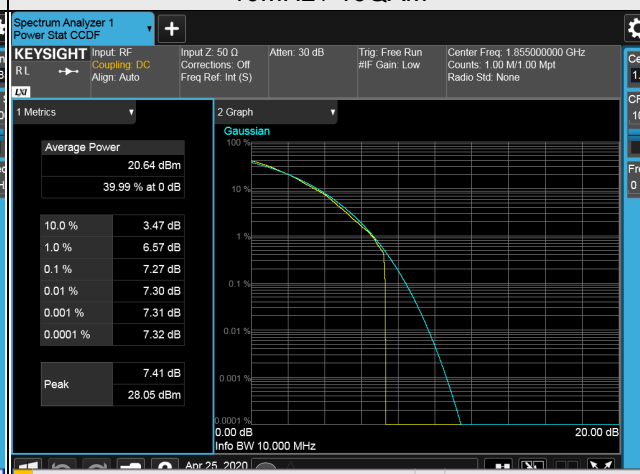
3MHz / 64QAM



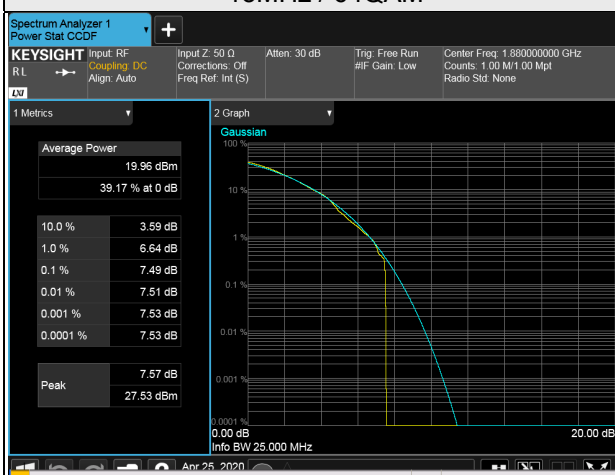
5MHz / 64QAM



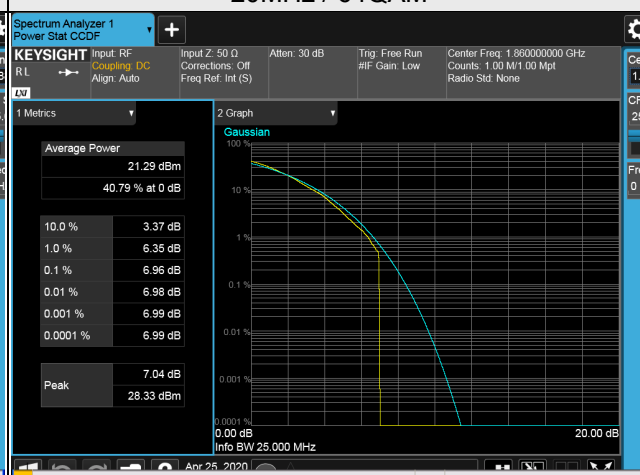
10MHz / 16QAM



15MHz / 64QAM



20MHz / 64QAM

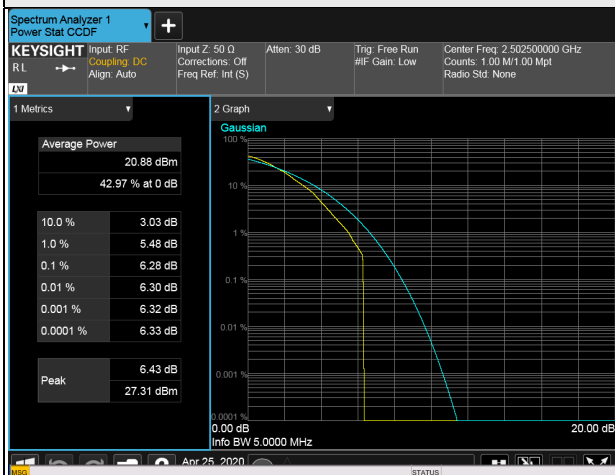


LTE Band 7

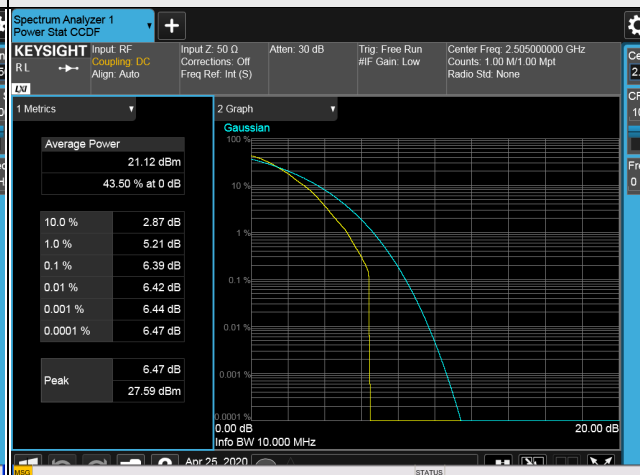
LTE Band 7, Channel Bandwidth 5MHz				
Channel	Frequency (MHz)	Peak To Average Ratio (dB)		
		QPSK	16QAM	64QAM
20775	2502.5	3.57	5.08	6.28
21100	2535.0	3.57	5.02	6.10
21425	2567.5	3.41	4.12	6.12
LTE Band 7, Channel Bandwidth 10MHz				
Channel	Frequency (MHz)	Peak To Average Ratio (dB)		
		QPSK	16QAM	64QAM
20800	2505.0	3.69	5.02	6.39
21100	2535.0	3.73	4.81	6.15
21400	2565.0	3.39	4.08	6.08
LTE Band 7, Channel Bandwidth 15MHz				
Channel	Frequency (MHz)	Peak To Average Ratio (dB)		
		QPSK	16QAM	64QAM
20825	2507.5	3.48	4.87	6.14
21100	2535.0	3.34	4.79	5.99
21375	2562.5	3.35	4.06	6.03
LTE Band 7, Channel Bandwidth 20MHz				
Channel	Frequency (MHz)	Peak To Average Ratio (dB)		
		QPSK	16QAM	64QAM
20850	2510.0	4.05	5.20	6.86
21100	2535.0	3.30	4.78	6.00
21350	2560.0	3.37	4.16	6.01

Spectrum Plot of Worst Value

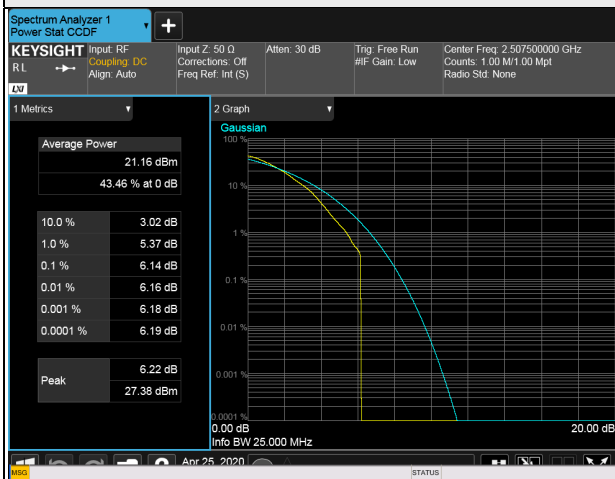
5MHz / 64QAM



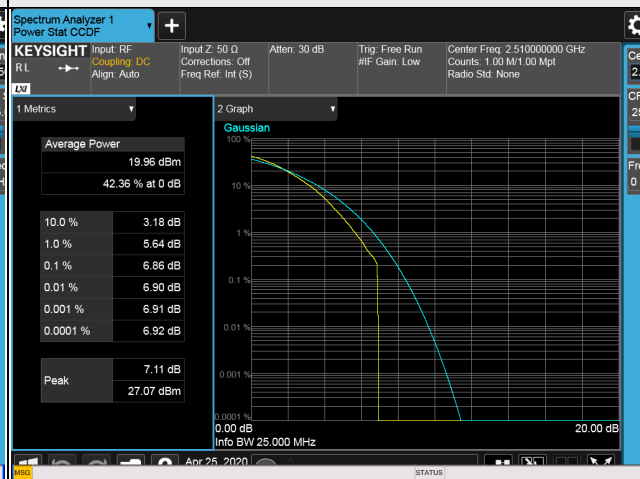
10MHz / 64QAM



15MHz / 64QAM



20MHz / 64QAM



LTE Band 66

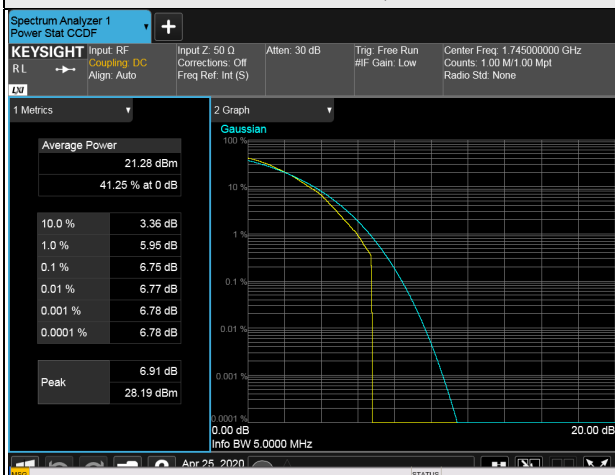
LTE Band 66, Channel Bandwidth 1.4MHz				
Channel	Frequency (MHz)	Peak To Average Ratio (dB)		
		QPSK	16QAM	64QAM
131979	1710.7	3.73	4.49	6.68
132322	1745.0	3.66	4.45	6.75
132665	1779.3	3.94	5.10	6.37
LTE Band 66, Channel Bandwidth 3MHz				
Channel	Frequency (MHz)	Peak To Average Ratio (dB)		
		QPSK	16QAM	64QAM
131987	1711.5	3.62	4.42	6.54
132322	1745.0	3.60	4.42	6.59
132657	1778.5	3.74	5.15	6.40
LTE Band 66, Channel Bandwidth 5MHz				
Channel	Frequency (MHz)	Peak To Average Ratio (dB)		
		QPSK	16QAM	64QAM
131997	1712.5	3.65	4.43	6.59
132322	1745.0	3.68	4.43	6.65
132647	1777.5	3.75	4.85	6.44
LTE Band 66, Channel Bandwidth 10MHz				
Channel	Frequency (MHz)	Peak To Average Ratio (dB)		
		QPSK	16QAM	64QAM
132022	1715.0	3.79	4.61	6.85
132322	1745.0	3.73	4.56	6.86
132622	1775.0	3.59	4.35	6.62
LTE Band 66, Channel Bandwidth 15MHz				
Channel	Frequency (MHz)	Peak To Average Ratio (dB)		
		QPSK	16QAM	64QAM
132047	1717.5	3.74	4.38	6.64
132322	1745.0	3.69	4.48	6.71
132597	1772.5	3.46	4.19	6.28

LTE Band 66, Channel Bandwidth 20MHz

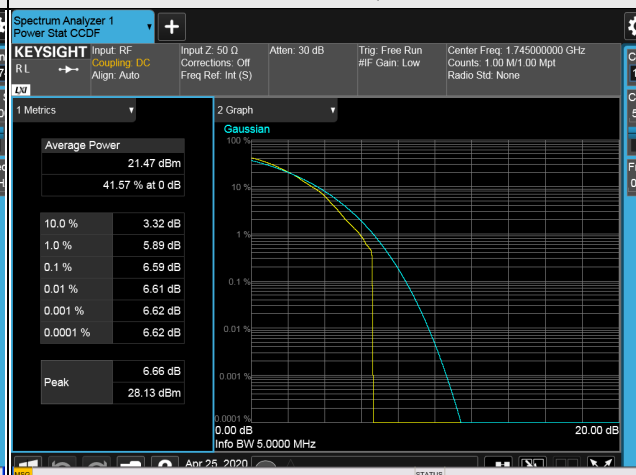
Channel	Frequency (MHz)	Peak To Average Ratio (dB)		
		QPSK	16QAM	64QAM
132072	1720.0	3.78	4.55	6.90
132322	1745.0	3.74	4.60	6.82
132572	1770.0	3.54	4.85	6.24

Spectrum Plot of Worst Value

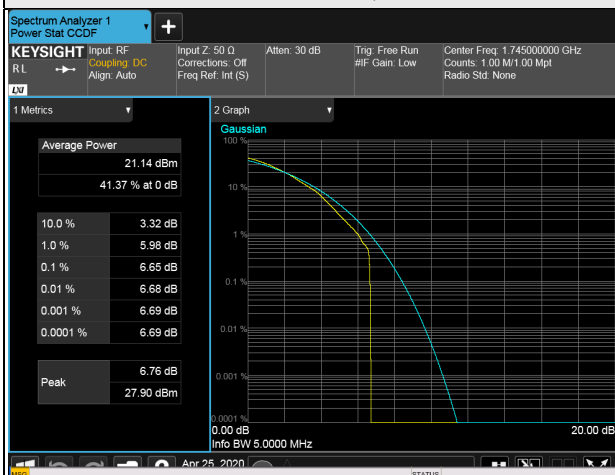
1.4MHz / 64QAM



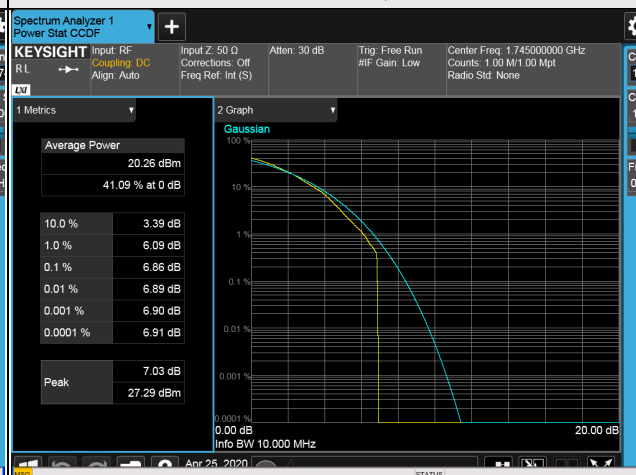
3MHz / 64QAM



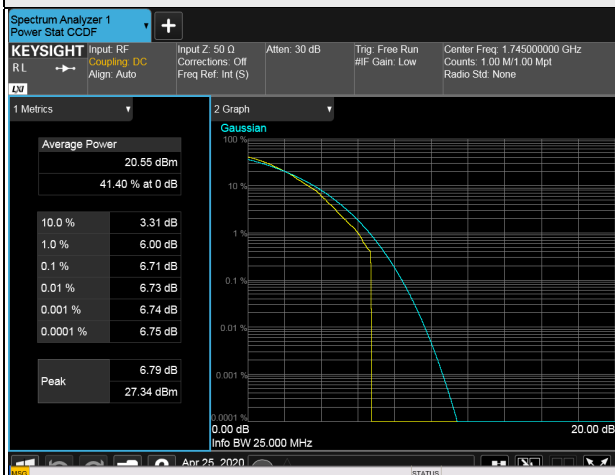
5MHz / 64QAM



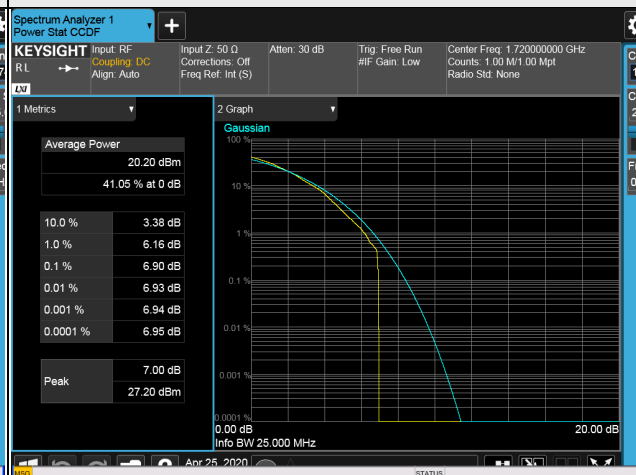
10MHz / 64QAM



15MHz / 64QAM



20MHz / 64QAM



4.7 Conducted Spurious Emissions

4.7.1 Limits of Conducted Spurious Emissions Measurement

For LTE Band 2

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 .

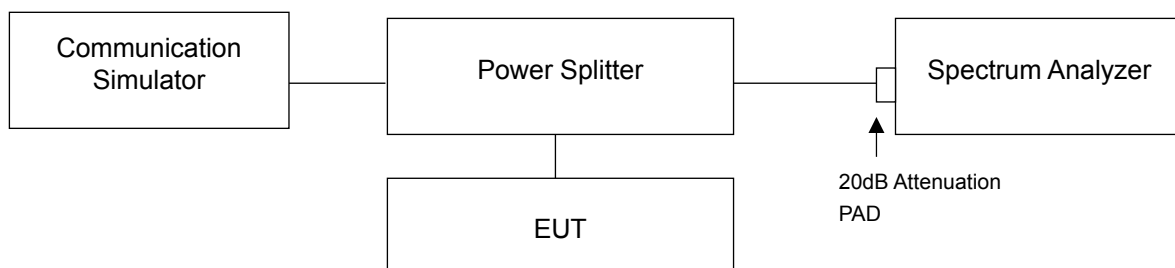
For LTE Band 7

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 66

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 .

4.7.2 Test Setup



4.7.3 Test Procedure

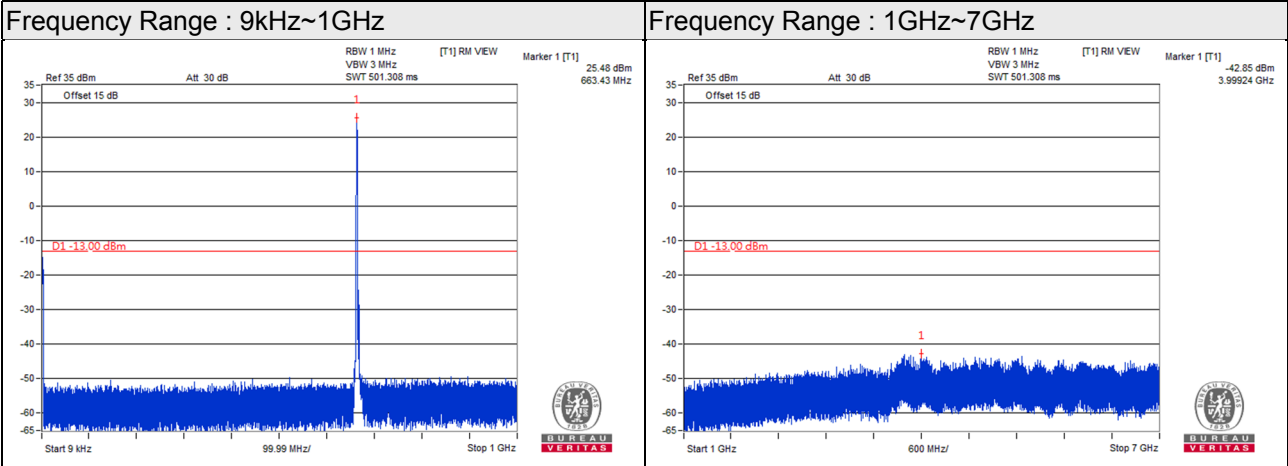
- The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.
- Measuring frequency range is from 9kHz to 9GHz. 20dB attenuation pad is connected with spectrum. RBW=1MHz and VBW=3MHz is used for conducted emission measurement.

4.7.4 Test Results

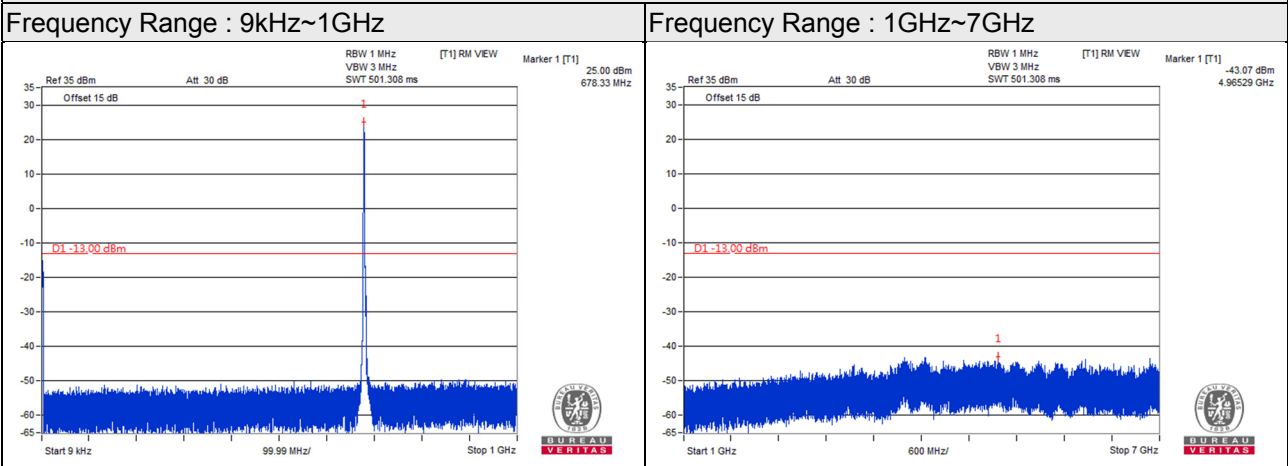
n71

Channel Bandwidth: 5MHz

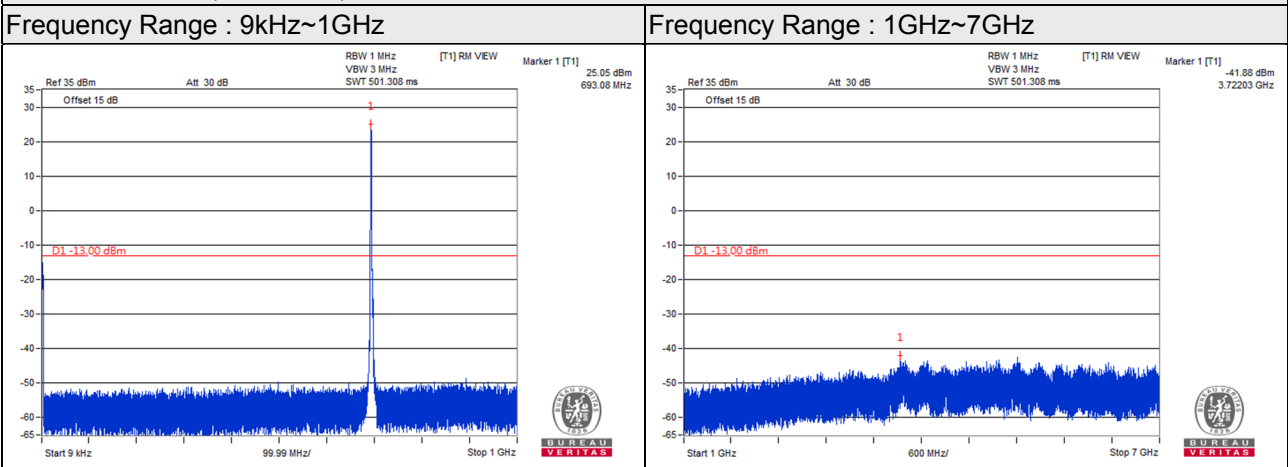
Channel 133100 (665.5MHz)



Channel 136100 (680.5MHz)



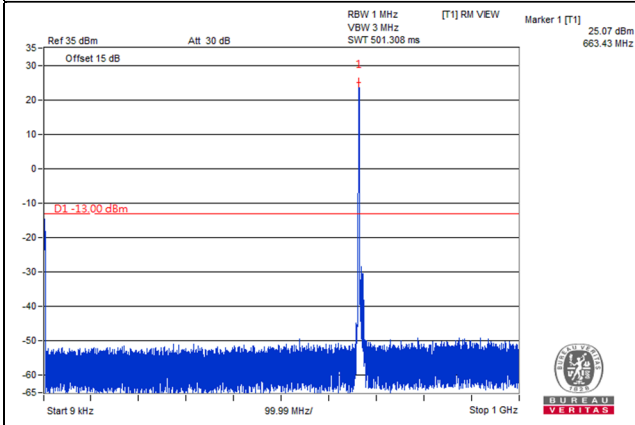
Channel 139100 (695.5MHz)



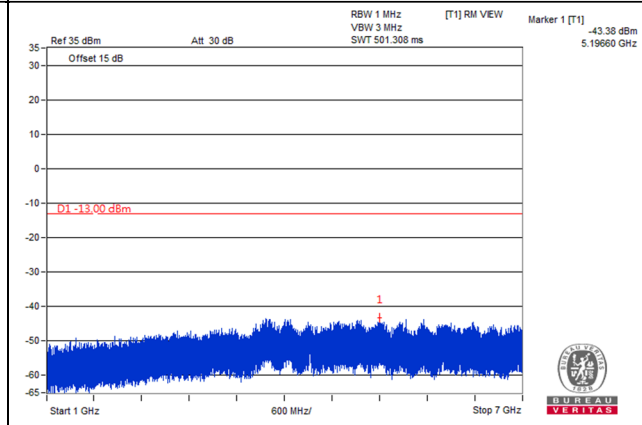
Channel Bandwidth: 10MHz

Channel 133600 (668.0MHz)

Frequency Range : 9kHz~1GHz

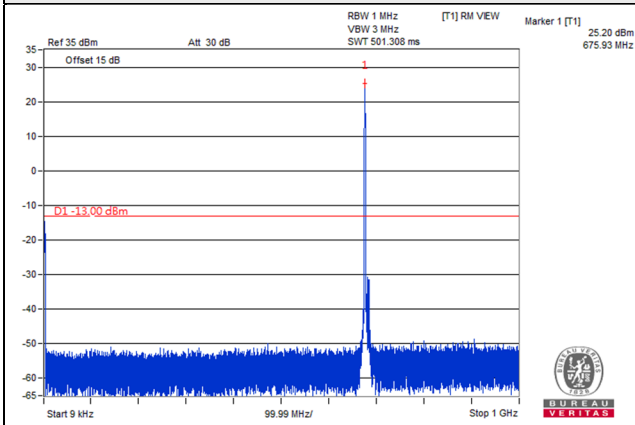


Frequency Range : 1GHz~7GHz

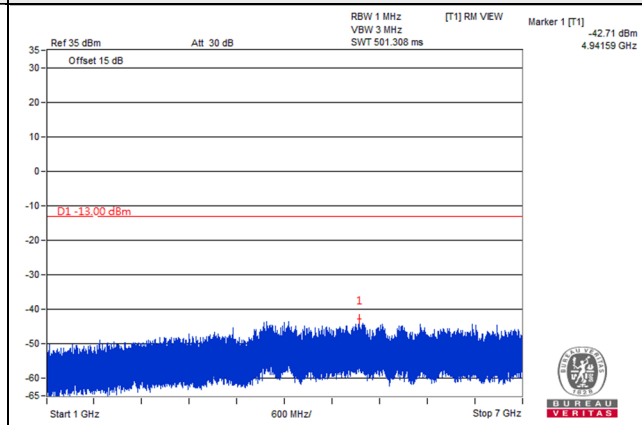


Channel 136100 (680.5MHz)

Frequency Range : 9kHz~1GHz

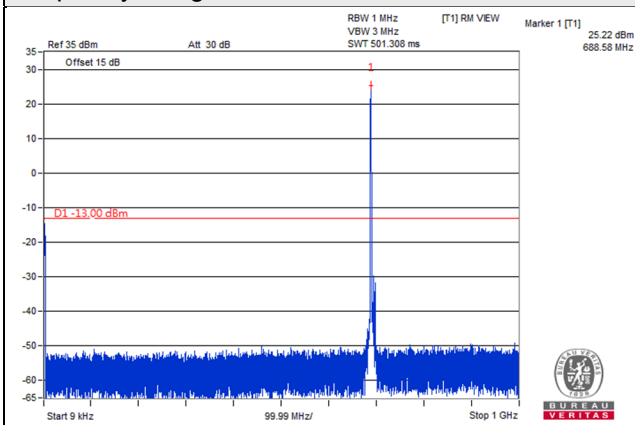


Frequency Range : 1GHz~7GHz

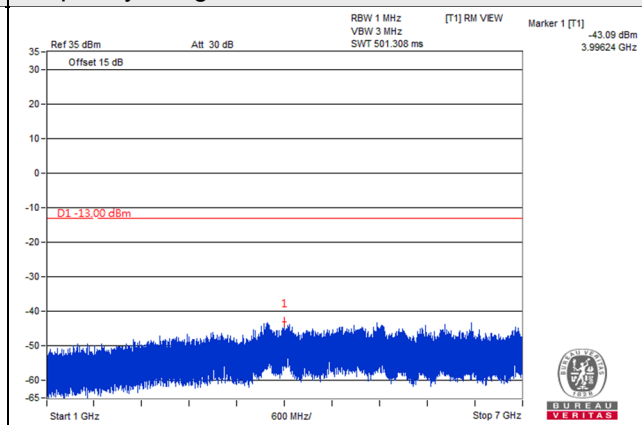


Channel 138600 (693.0MHz)

Frequency Range : 9kHz~1GHz



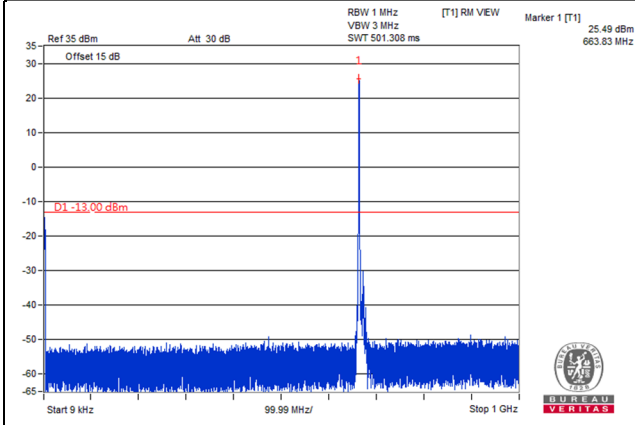
Frequency Range : 1GHz~7GHz



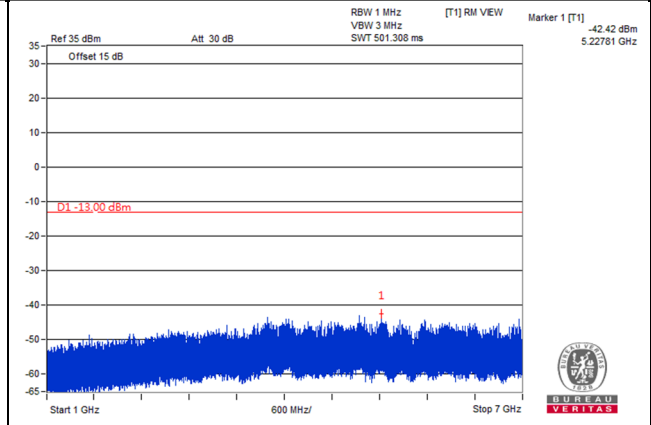
Channel Bandwidth: 15MHz

Channel 134100 (670.5MHz)

Frequency Range : 9kHz~1GHz

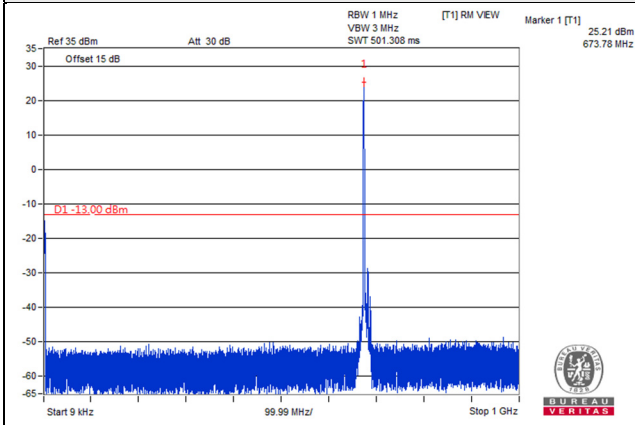


Frequency Range : 1GHz~7GHz

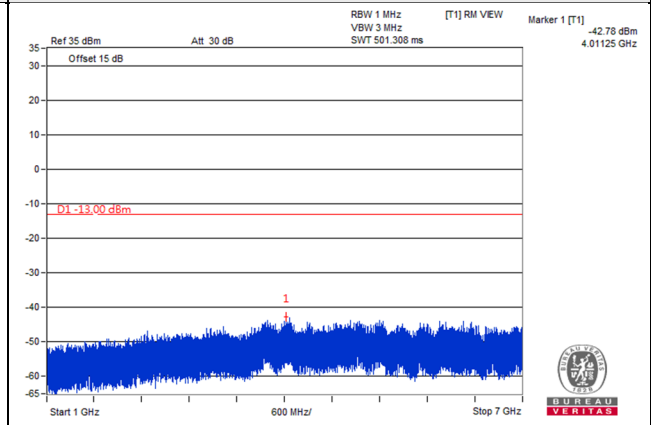


Channel 136100 (680.5MHz)

Frequency Range : 9kHz~1GHz

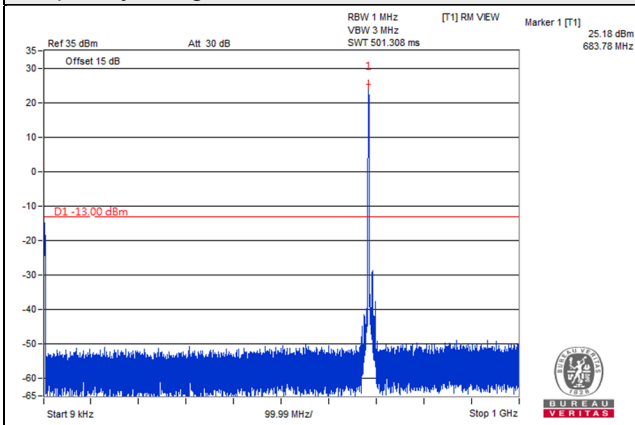


Frequency Range : 1GHz~7GHz



Channel 138100 (690.5MHz)

Frequency Range : 9kHz~1GHz



Frequency Range : 1GHz~7GHz

