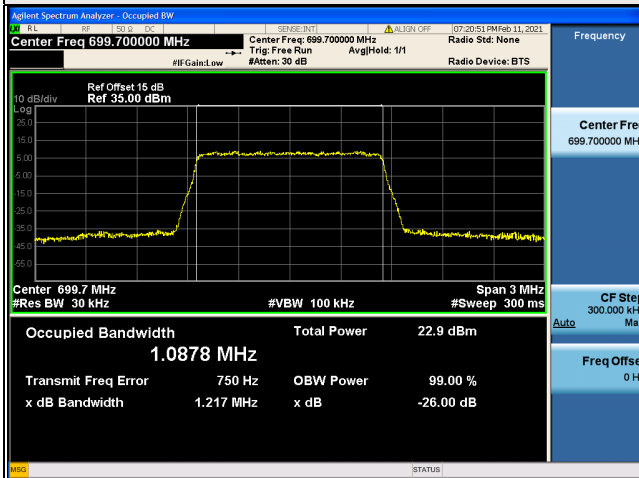


LTE Band 12

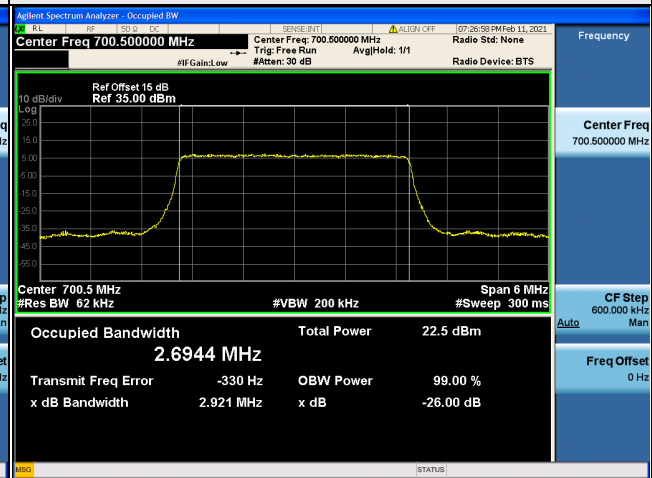
LTE Band 12, Channel Bandwidth 1.4MHz					
Channel	Frequency (MHz)	26dB Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
23017	699.7	1.210	1.217	1.210	1.210
23095	707.5	1.213	1.215	1.217	1.202
23173	715.3	1.209	1.213	1.211	1.209
LTE Band 12, Channel Bandwidth 3MHz					
Channel	Frequency (MHz)	26dB Bandwidth (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

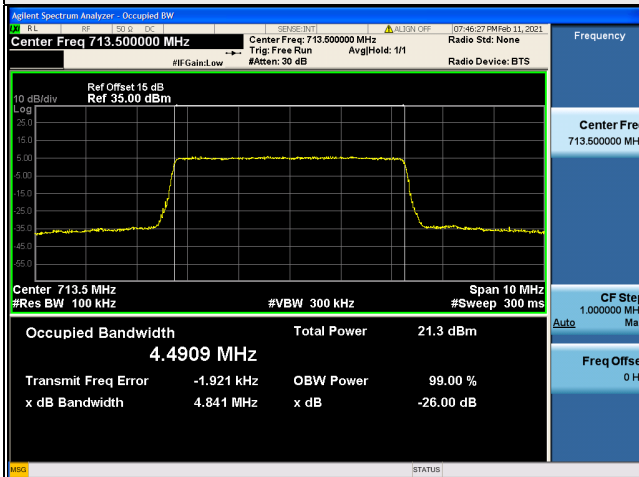
1.4MHz / 16QAM



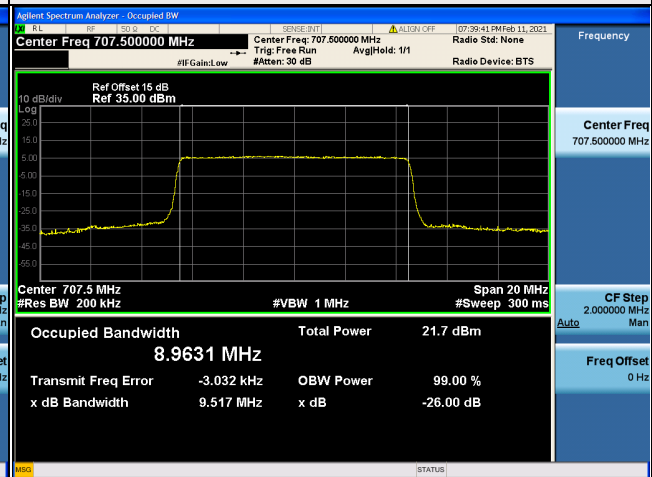
3MHz / 16QAM



5MHz / 64QAM

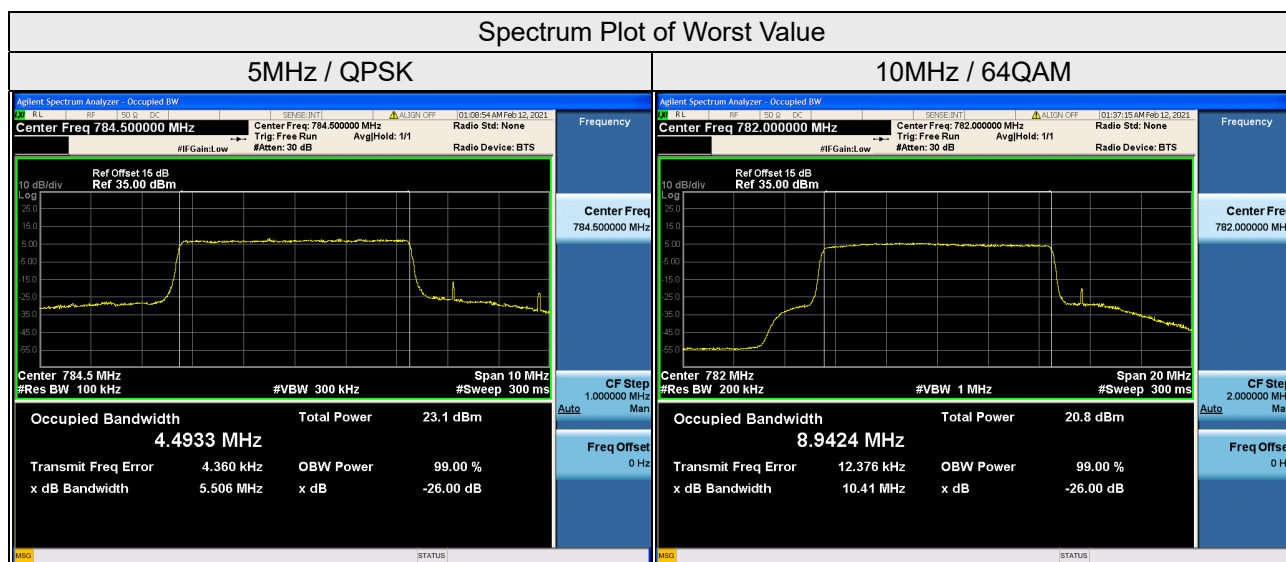


10MHz / 16QAM



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:

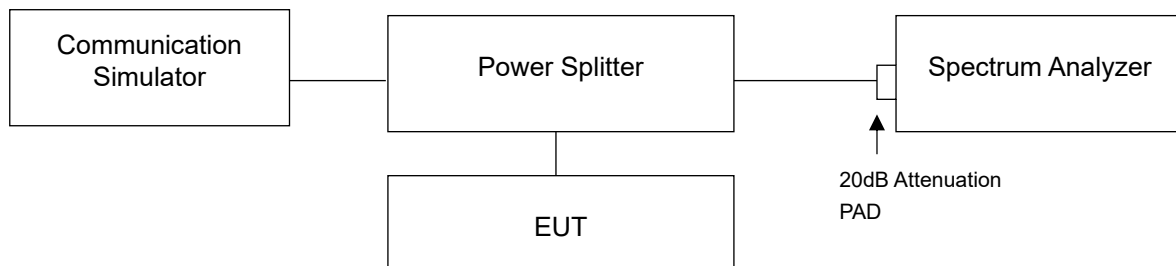
For operations in the 600 MHz and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least $43 + 10 \log(P)$ dB. Compliance with this 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 (5G NR 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 (5G NR 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 (5G NR 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 (5G NR 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 (5G NR Channel Bandwidth 30MHz/40MHz).
- g. The emission operations in the 40 MHz channel BW mode of 5G NR, 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

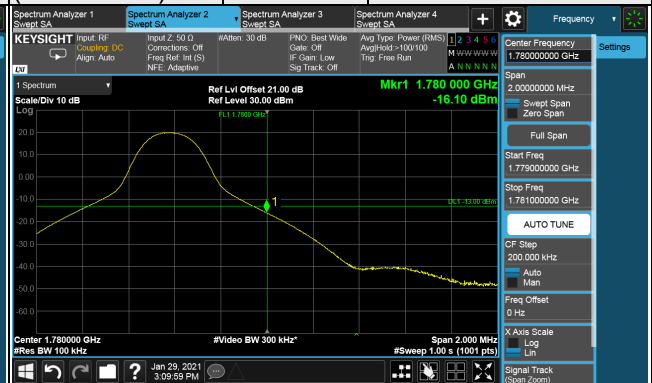
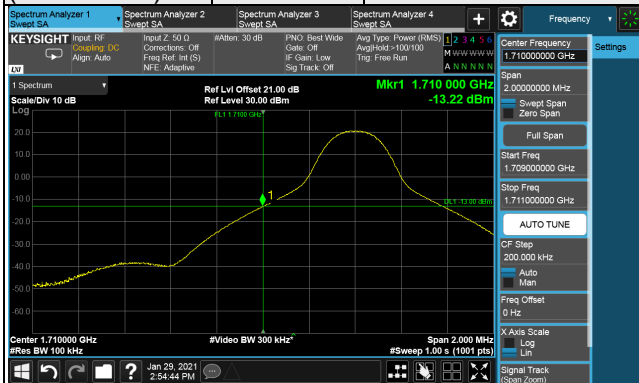
Band edge:



Channel Bandwidth: 10MHz

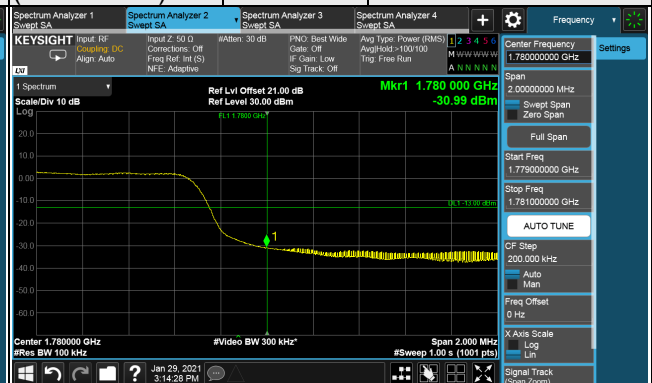
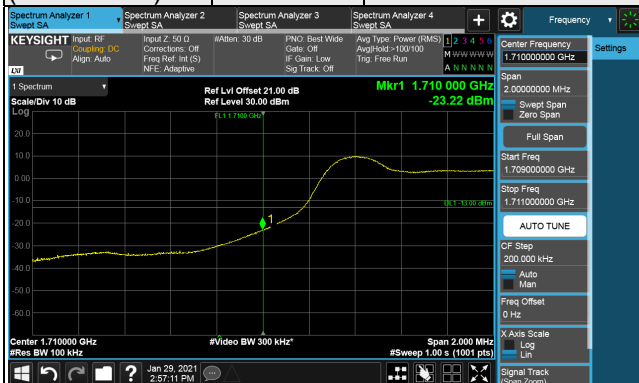
Channel 343000 (1715.0MHz) $\pi/2$ BPSK 1 RB / 0 RB Offset

Channel 355000 (1775.0MHz) $\pi/2$ BPSK 1 RB / 50 RB Offset



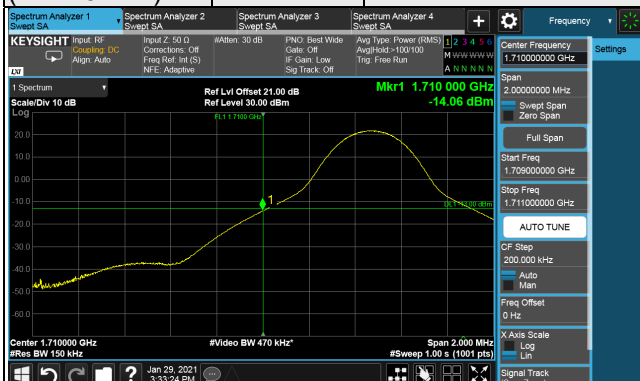
Channel 343000 (1715.0MHz) $\pi/2$ BPSK 50 RB / 0 RB Offset

Channel 355000 (1775.0MHz) $\pi/2$ BPSK 50 RB / 0 RB Offset

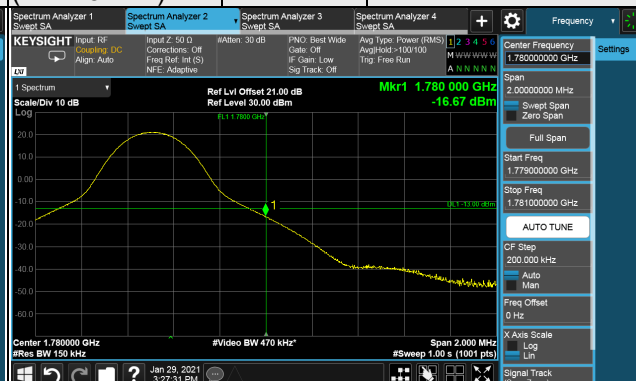


Channel Bandwidth: 15MHz

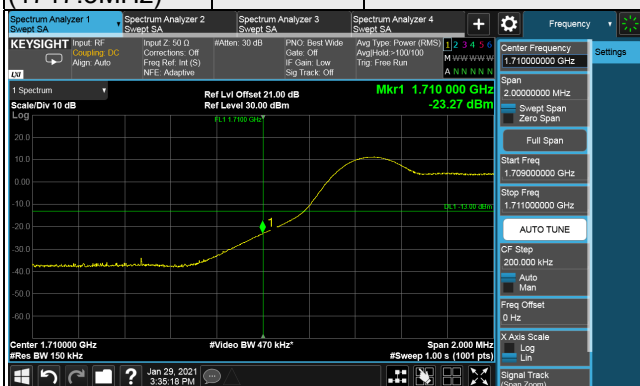
Channel 343500 (1717.5MHz) $\pi/2$ BPSK 1 RB / 0 RB Offset



Channel 354500 (1772.5MHz) $\pi/2$ BPSK 1 RB / 77 RB Offset



Channel 343500 (1717.5MHz) $\pi/2$ BPSK 75 RB / 0 RB Offset

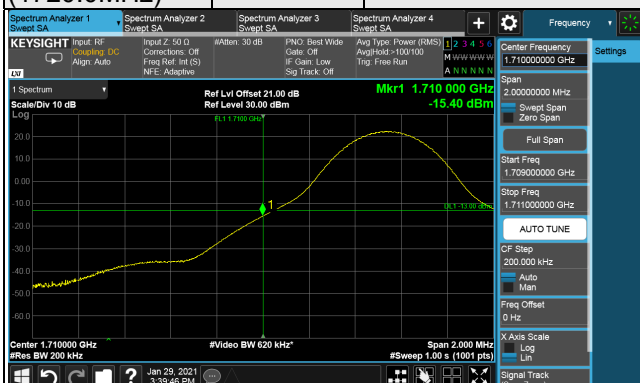


Channel 354500 (1772.5MHz) $\pi/2$ BPSK 75 RB / 0 RB Offset



Channel Bandwidth: 20MHz

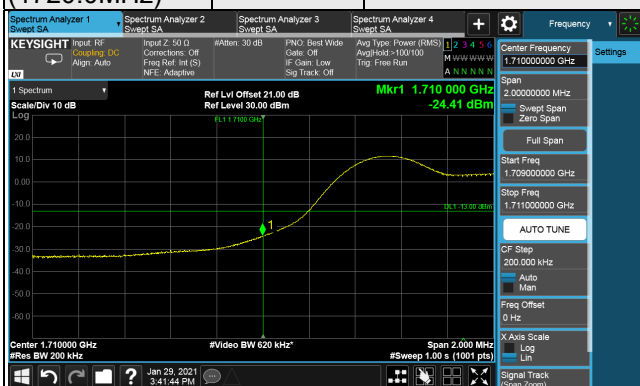
Channel 344000 (1720.0MHz) $\pi/2$ BPSK 1 RB / 0 RB Offset



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)

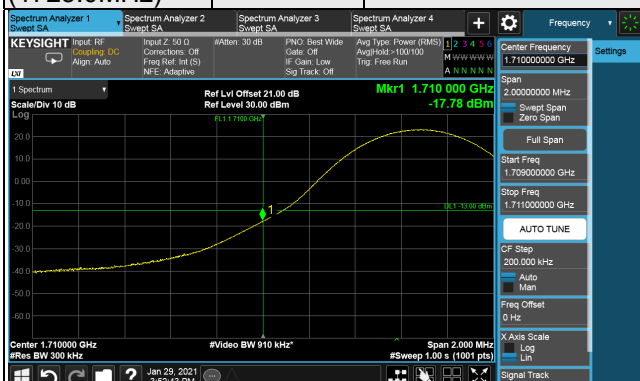
$\pi/2$ BPSK

1 RB / 0 RB Offset

Channel 353000
(1765.0MHz)

$\pi/2$ BPSK

1 RB / 104 RB Offset



Channel 345000
(1725.0MHz)

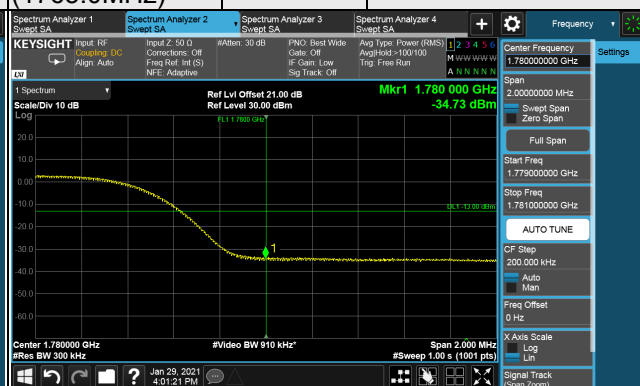
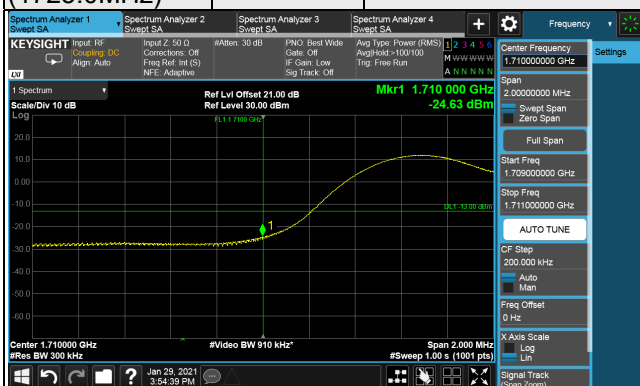
$\pi/2$ BPSK

100 RB / 0 RB Offset

Channel 353000
(1765.0MHz)

$\pi/2$ BPSK

100 RB / 0 RB Offset



Channel Bandwidth: 40MHz

Channel 346000
(1730.0MHz)

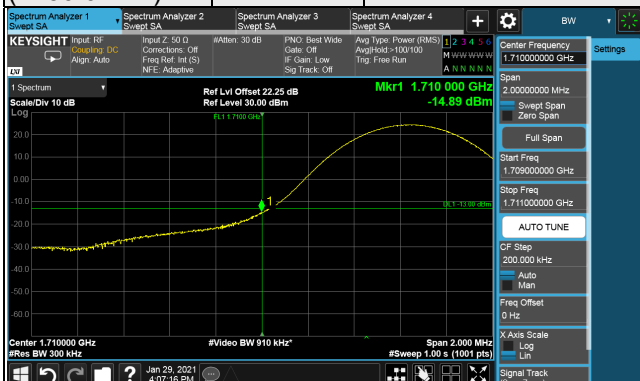
$\pi/2$ BPSK

1 RB / 0 RB Offset

Channel 352000
(1760.0MHz)

$\pi/2$ BPSK

1 RB / 214 RB Offset



Channel 346000
(1730.0MHz)

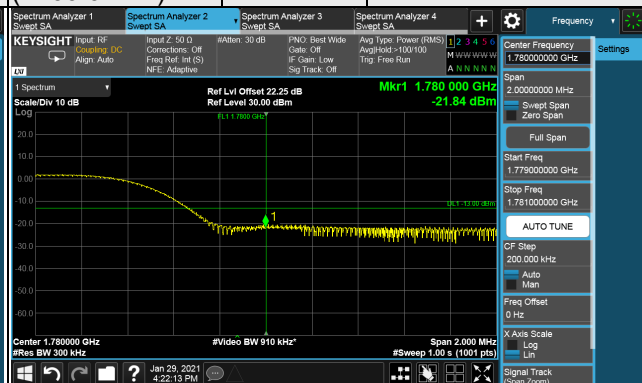
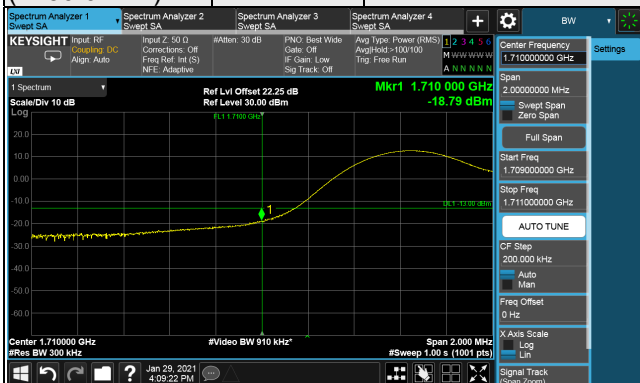
$\pi/2$ BPSK

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)

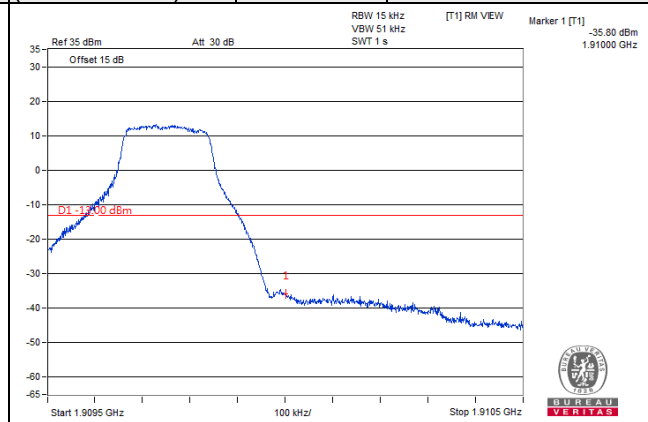
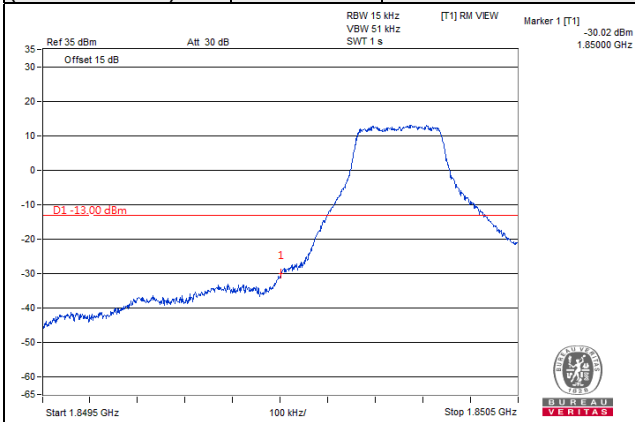
QPSK

1 RB / 0 RB Offset

Channel 19193
(1909.30MHz)

QPSK

1 RB / 5 RB Offset



Channel 18607
(1850.70MHz)

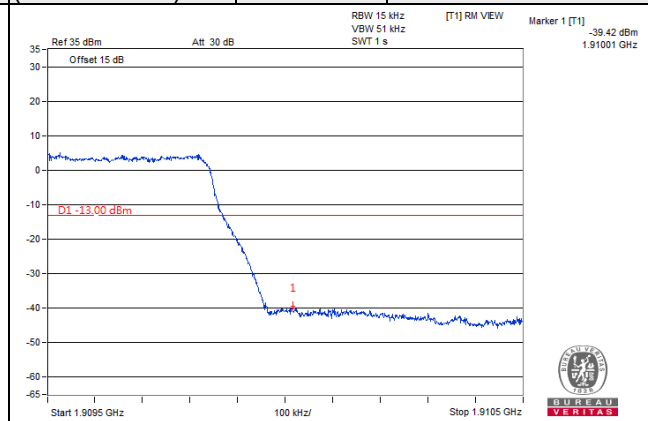
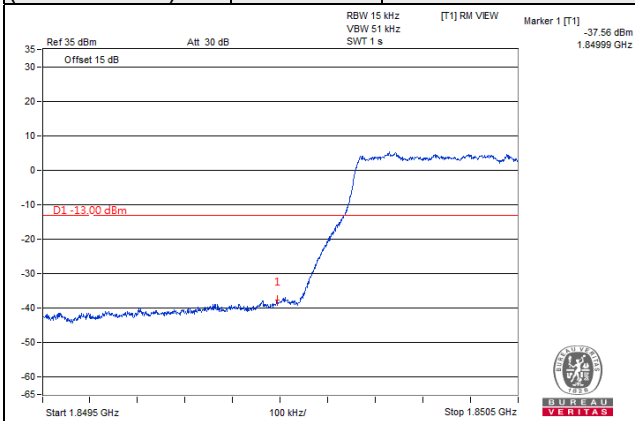
QPSK

6 RB / 0 RB Offset

Channel 19193
(1909.30MHz)

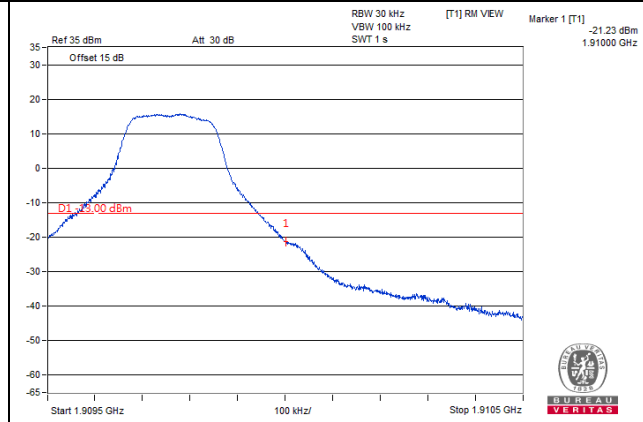
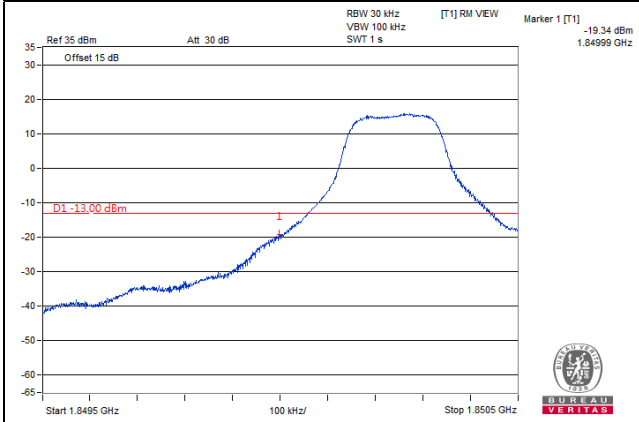
QPSK

6 RB / 0 RB Offset

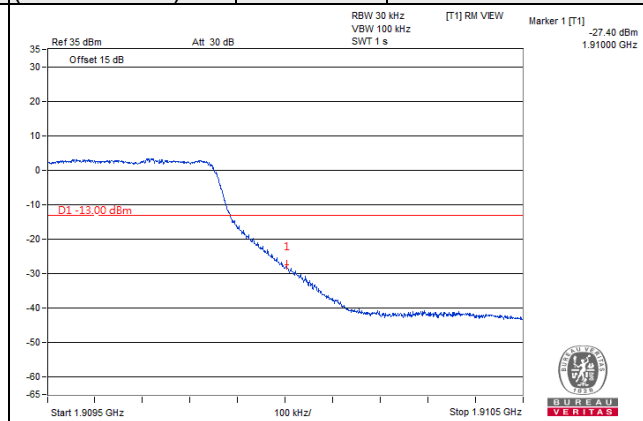
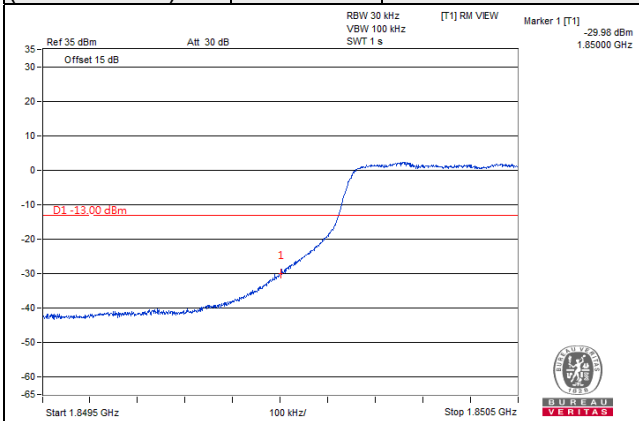


LTE Band 2, Channel Bandwidth 3MHz

Channel 18615 (1851.50MHz)	QPSK	1 RB / 0 RB Offset	Channel 19185 (1908.50MHz)	QPSK	1 RB / 14 RB Offset
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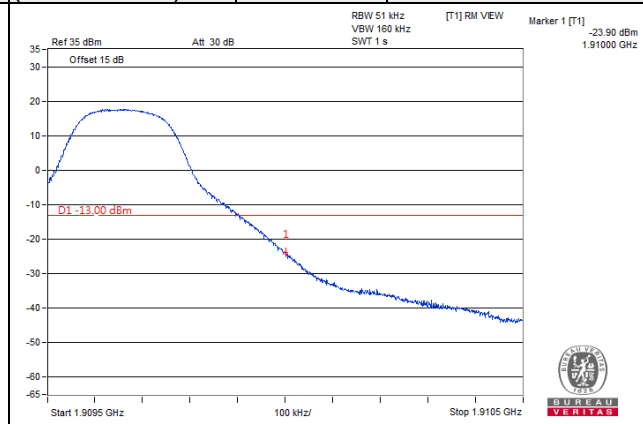
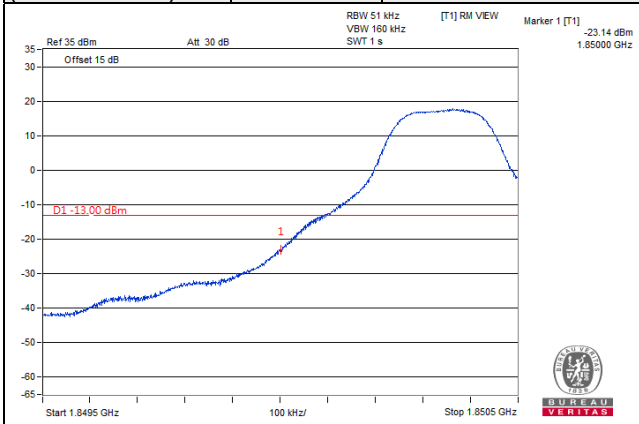


Channel 18615 (1851.50MHz)	QPSK	15 RB / 0 RB Offset	Channel 19185 (1908.50MHz)	QPSK	15 RB / 0 RB Offset
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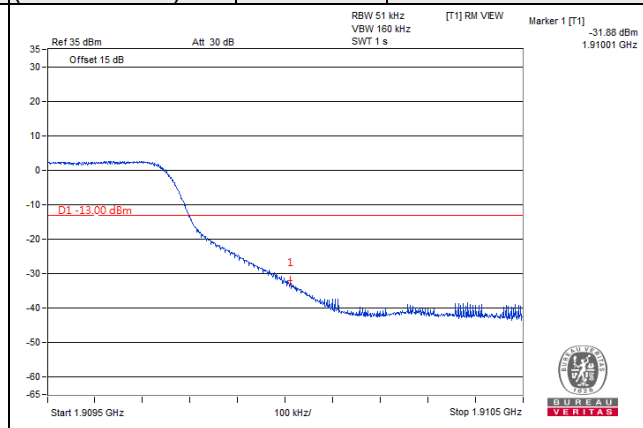
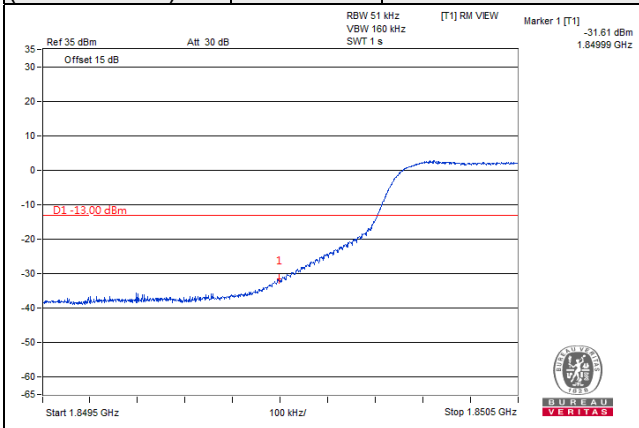


LTE Band 2, Channel Bandwidth 5MHz

Channel 18625 (1852.50MHz)	QPSK	1 RB / 0 RB Offset	Channel 19175 (1907.50MHz)	QPSK	1 RB / 24 RB Offset
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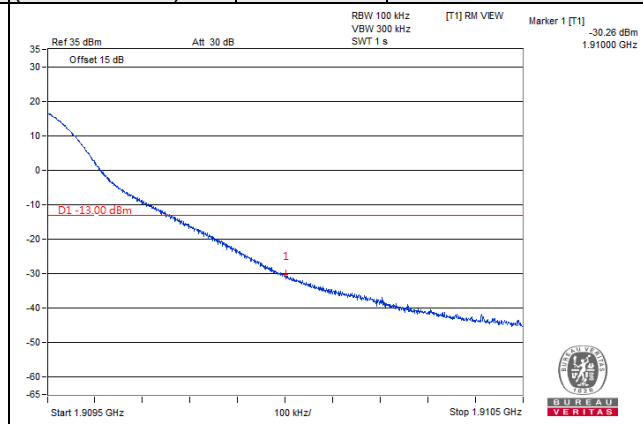
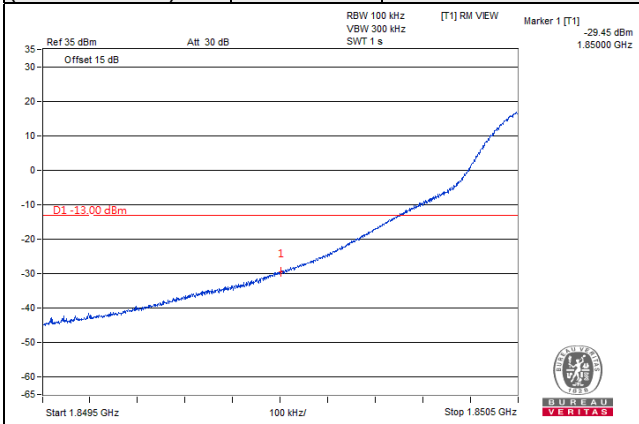


Channel 18625 (1852.50MHz)	QPSK	25 RB / 0 RB Offset	Channel 19175 (1907.50MHz)	QPSK	25 RB / 0 RB Offset
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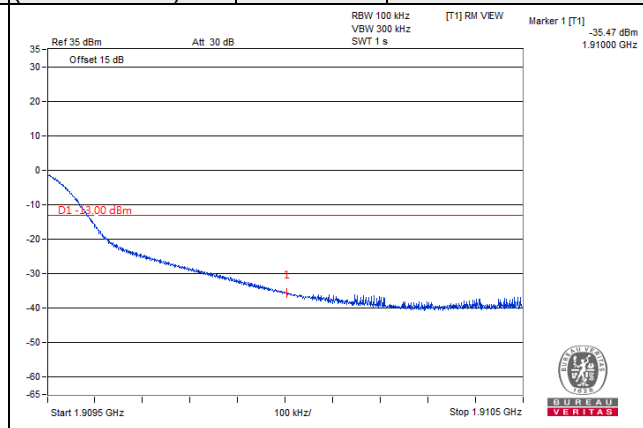
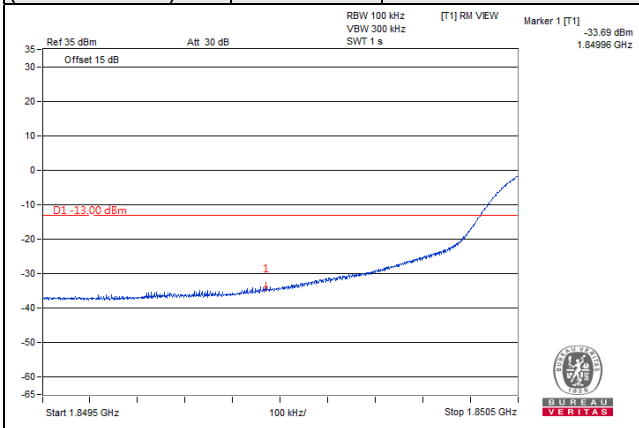


LTE Band 2, Channel Bandwidth 10MHz

Channel 18650 (1855.00MHz)	QPSK	1 RB / 0 RB Offset	Channel 19150 (1905.00MHz)	QPSK	1 RB / 49 RB Offset
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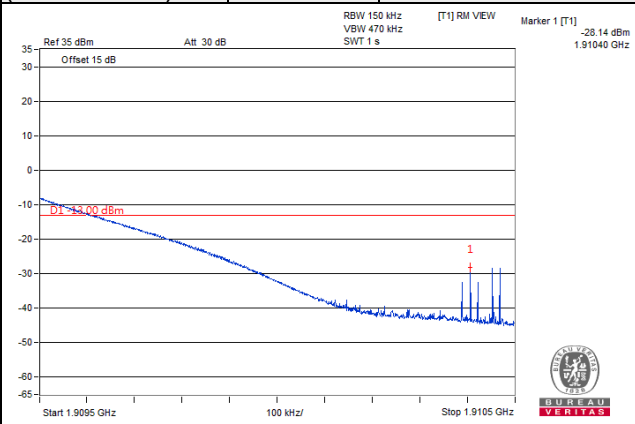
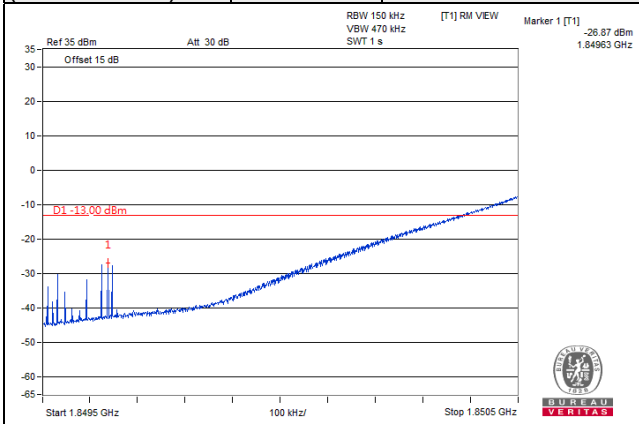


Channel 18650 (1855.00MHz)	QPSK	50 RB / 0 RB Offset	Channel 19150 (1905.00MHz)	QPSK	50 RB / 0 RB Offset
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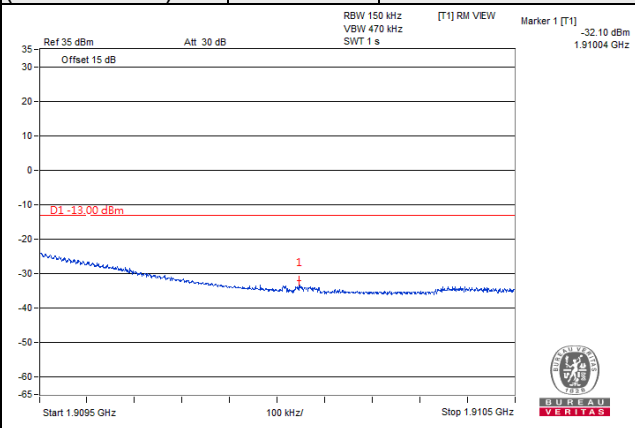
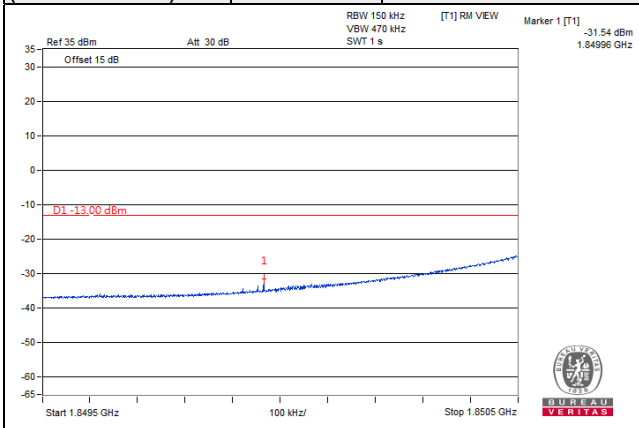


LTE Band 2, Channel Bandwidth 15MHz

Channel 18675 (1857.50MHz)	QPSK	1 RB / 0 RB Offset	Channel 19125 (1902.50MHz)	QPSK	1 RB / 74 RB Offset
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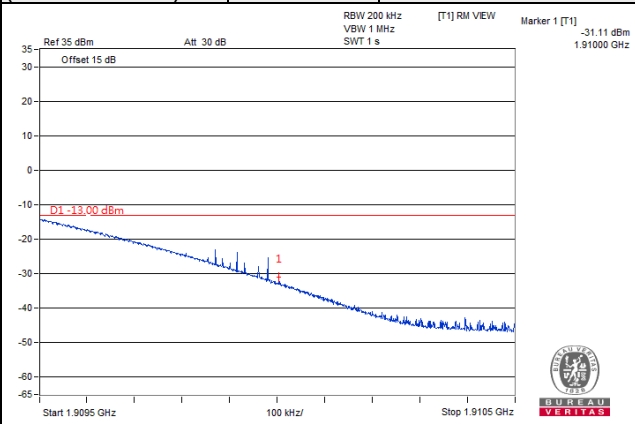
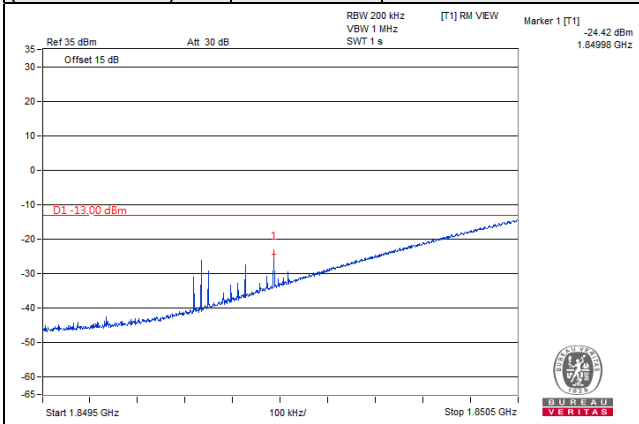


Channel 18675 (1857.50MHz)	QPSK	75 RB / 0 RB Offset	Channel 19125 (1902.50MHz)	QPSK	75 RB / 0 RB Offset
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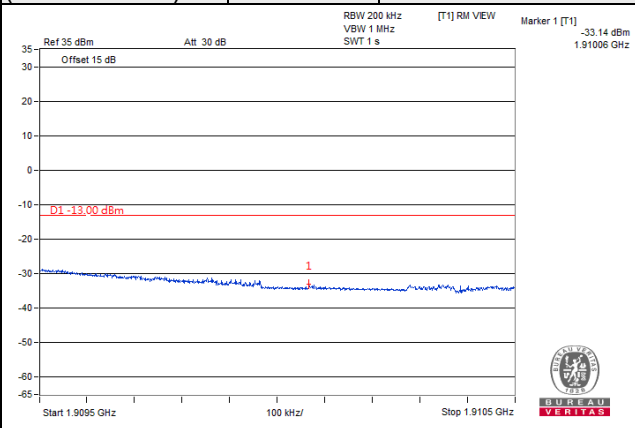
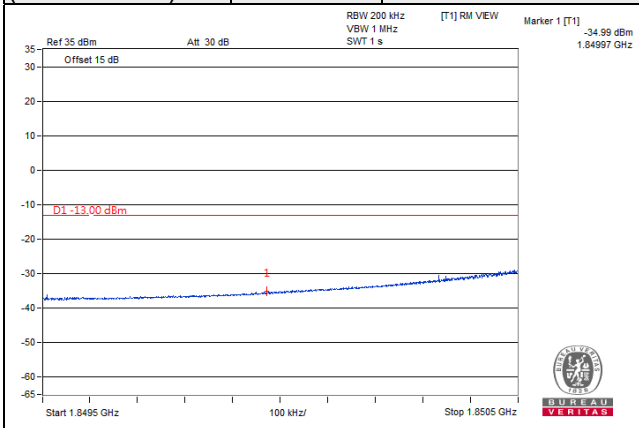


LTE Band 2, Channel Bandwidth 20MHz

Channel 18700 (1860.00MHz)	QPSK	1 RB / 0 RB Offset	Channel 19100 (1900.00 MHz)	QPSK	1 RB / 99 RB Offset
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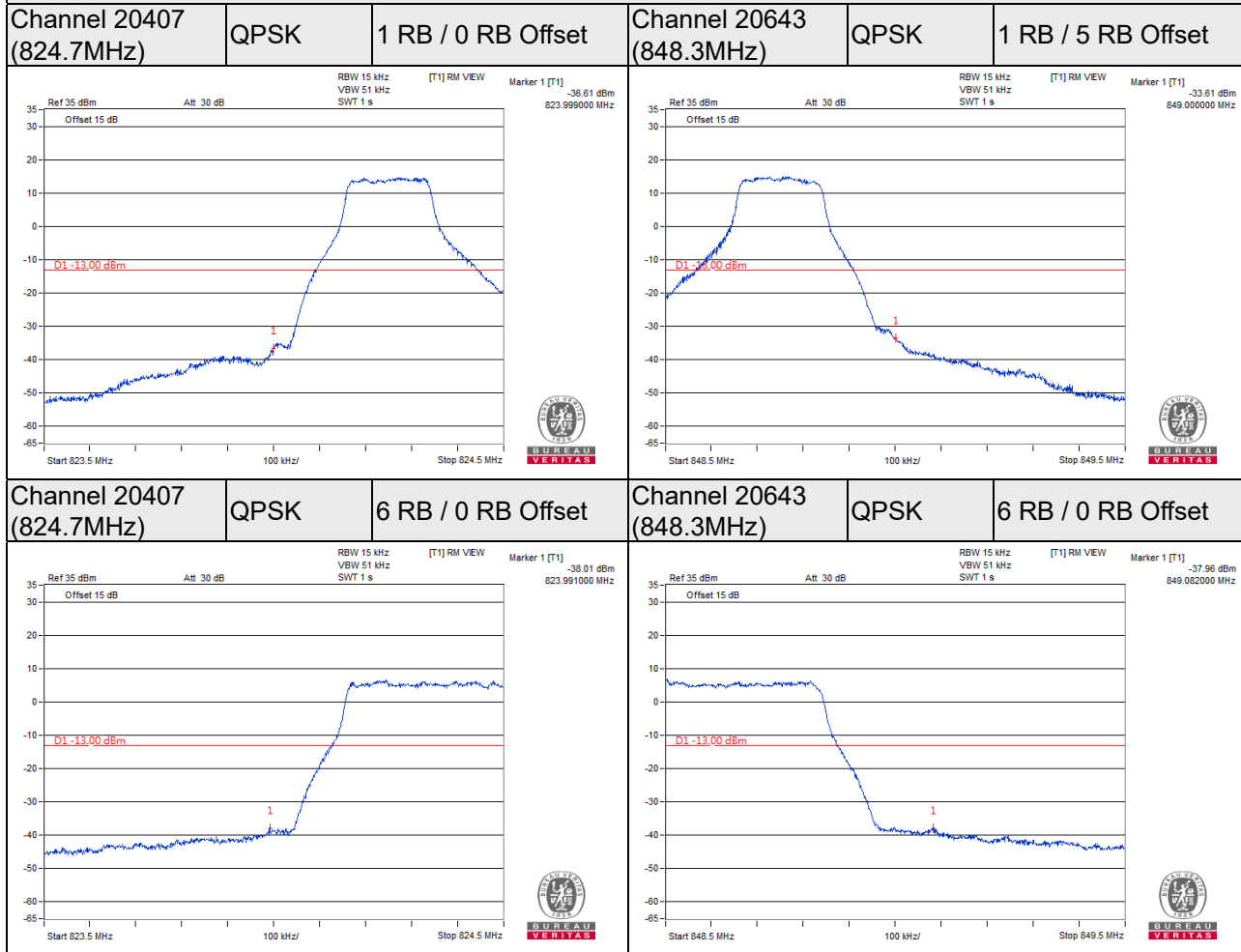


Channel 18700 (1860.00MHz)	QPSK	100 RB / 0 RB Offset	Channel 19100 (1900.00 MHz)	QPSK	100 RB / 0 RB Offset
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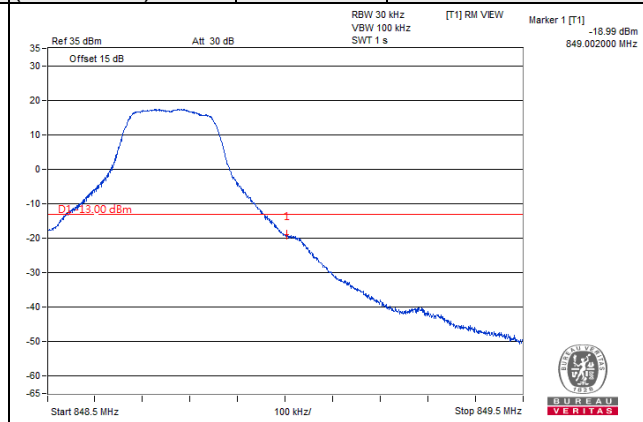
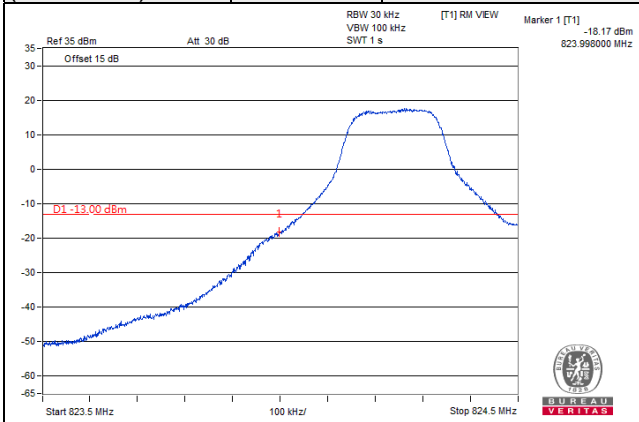
LTE Band 5

LTE Band 5, Channel Bandwidth 1.4MHz

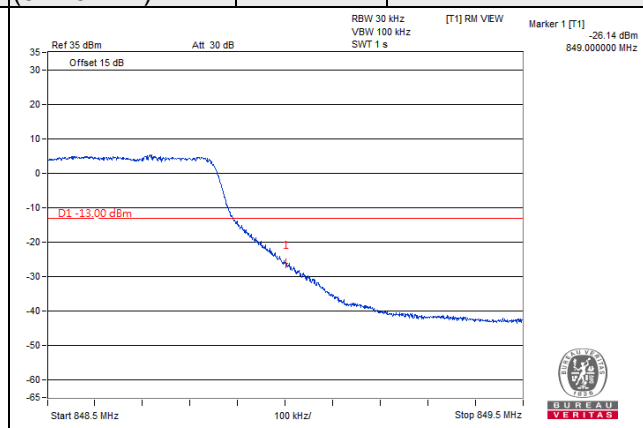
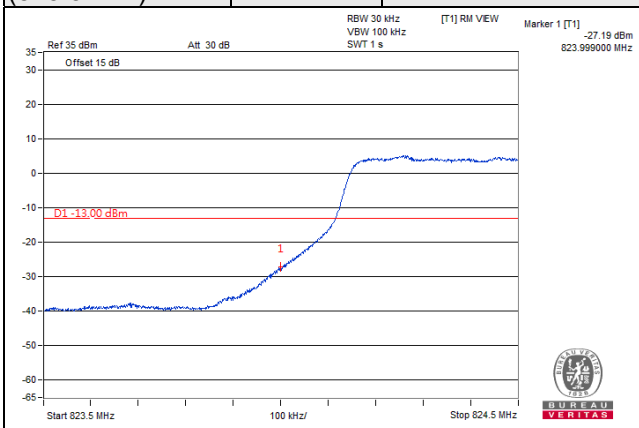


LTE Band 5, Channel Bandwidth 3MHz

Channel 20415 (825.5MHz)	QPSK	1 RB / 0 RB Offset	Channel 20635 (847.5MHz)	QPSK	1 RB / 14 RB Offset
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Channel 20415 (825.5MHz)	QPSK	15 RB / 0 RB Offset	Channel 20635 (847.5MHz)	QPSK	15 RB / 0 RB Offset
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LTE Band 5, Channel Bandwidth 5MHz

Channel 20425
(826.5MHz)

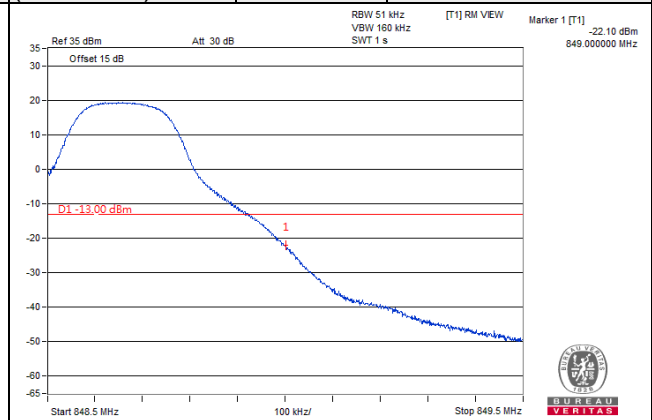
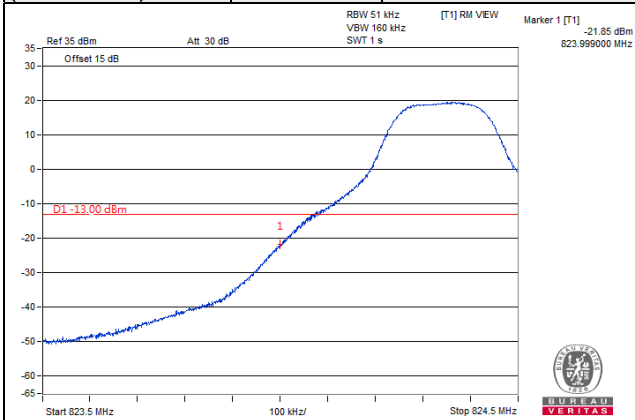
QPSK

1 RB / 0 RB Offset

Channel 20625
(846.5MHz)

QPSK

1 RB / 24 RB Offset



Channel 20425
(826.5MHz)

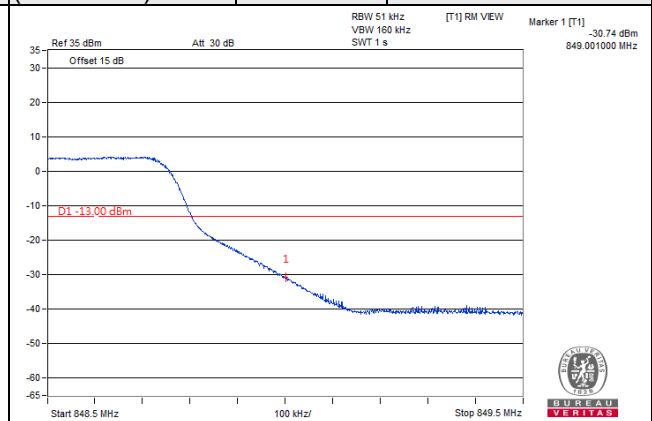
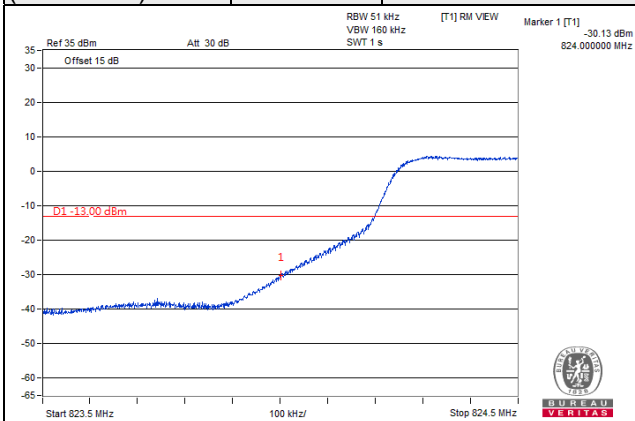
QPSK

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)

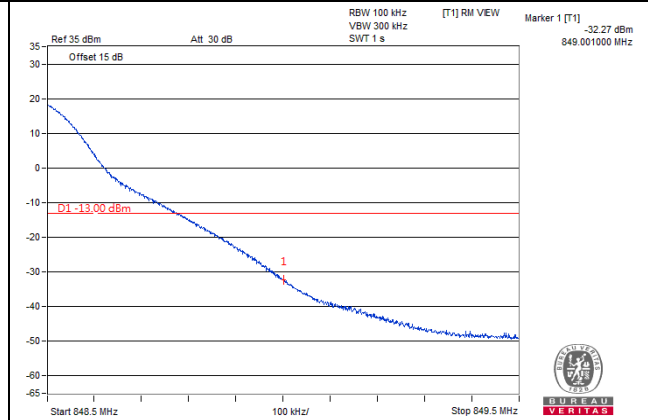
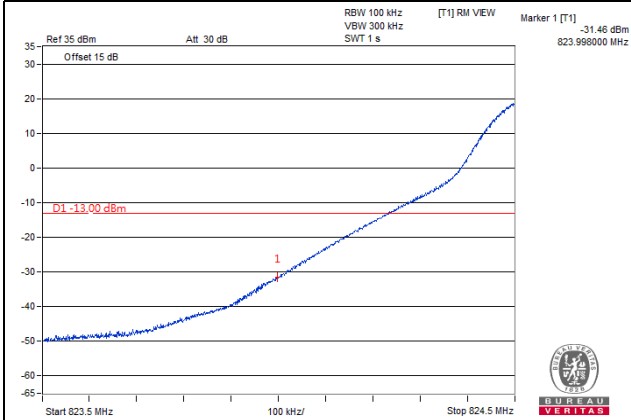
QPSK

1 RB / 0 RB Offset

Channel 20600
(844.0MHz)

QPSK

1 RB / 49 RB Offset



Channel 20450
(829.0MHz)

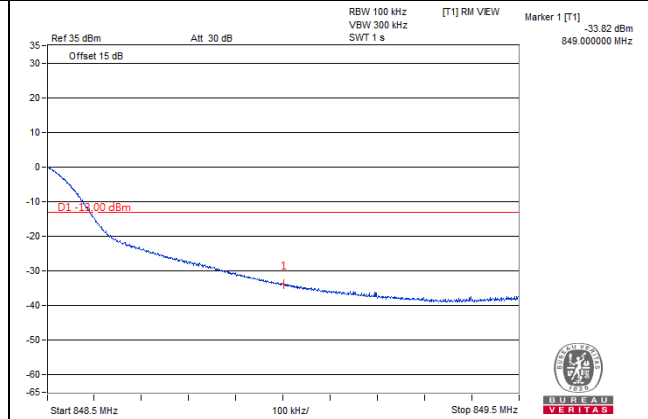
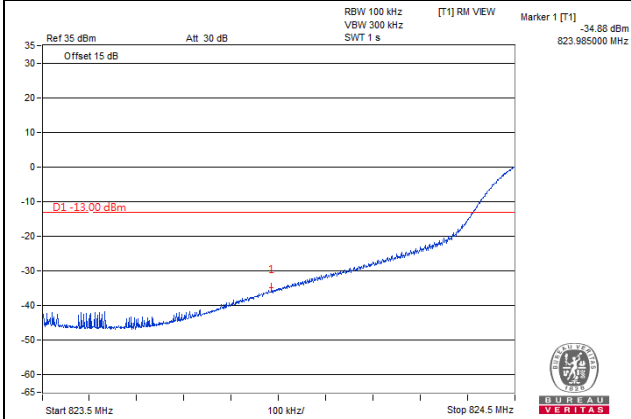
QPSK

50 RB / 0 RB Offset

Channel 20600
(844.0MHz)

QPSK

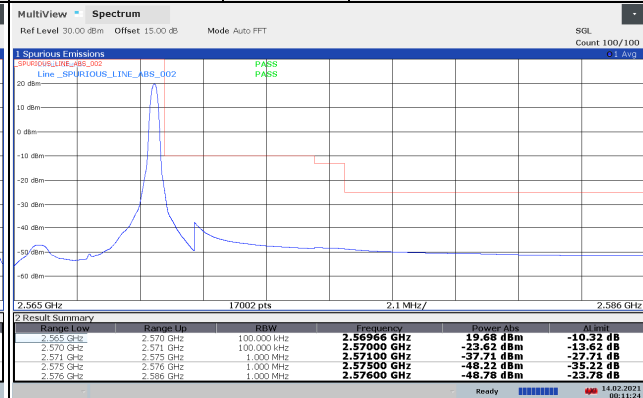
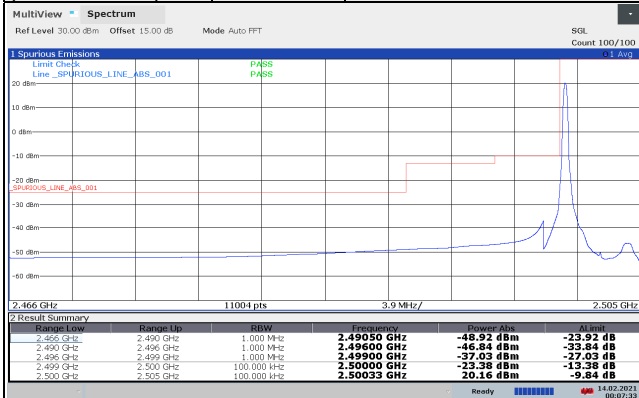
50 RB / 0 RB Offset



LTE Band 7

LTE Band 7, Channel Bandwidth: 5MHz

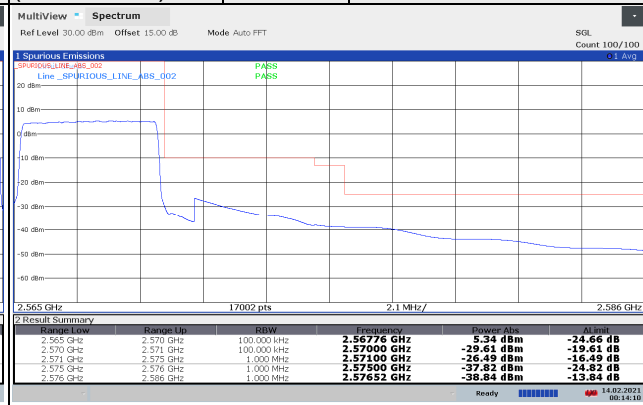
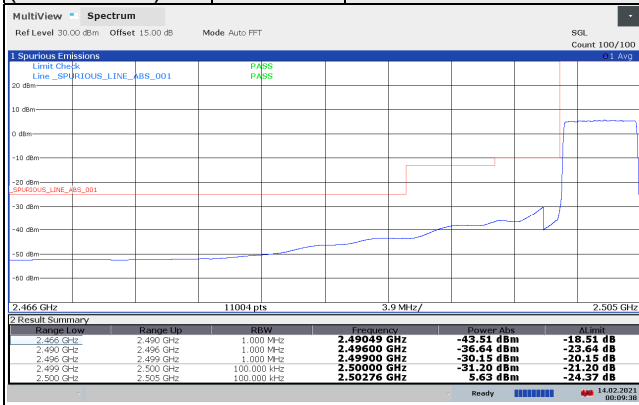
Channel 20775 (2502.5MHz)	QPSK	1 RB / 0 RB Offset	Channel 21425 (2567.5MHz)	QPSK	1 RB / 24 RB Offset
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00:07:33 14.02.2021

00:11:24 14.02.2021

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)

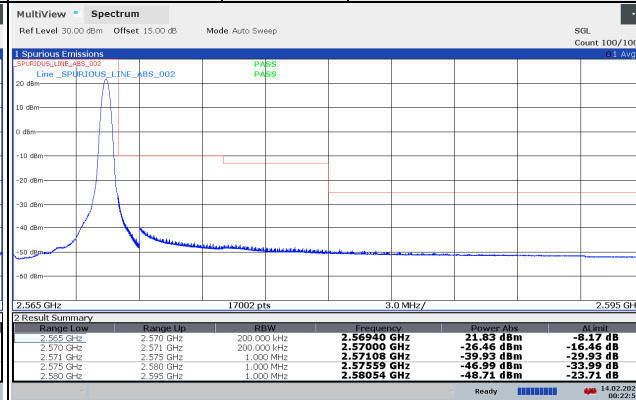
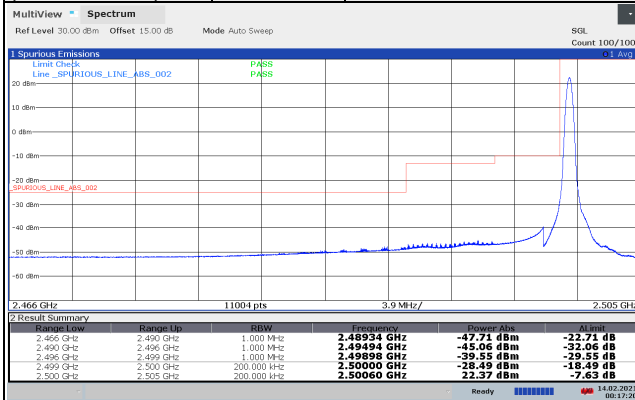
QPSK

1 RB / 0 RB Offset

Channel 21400
(2565.0MHz)

QPSK

1 RB / 49 RB Offset



00:17:21 14.02.2021

00:22:56 14.02.2021

Channel 20800
(2505.0MHz)

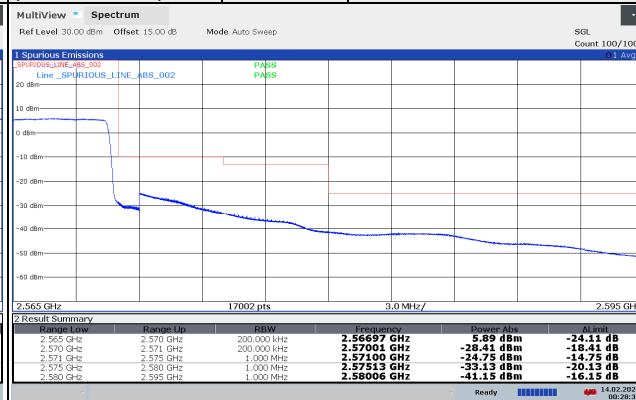
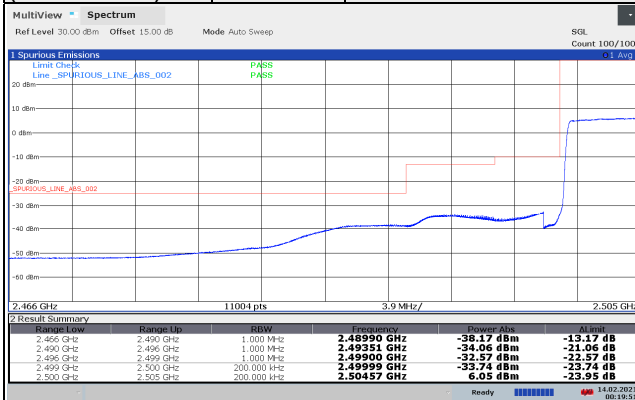
QPSK

50 RB / 0 RB Offset

Channel 21400
(2565.0MHz)

QPSK

50 RB / 0 RB Offset

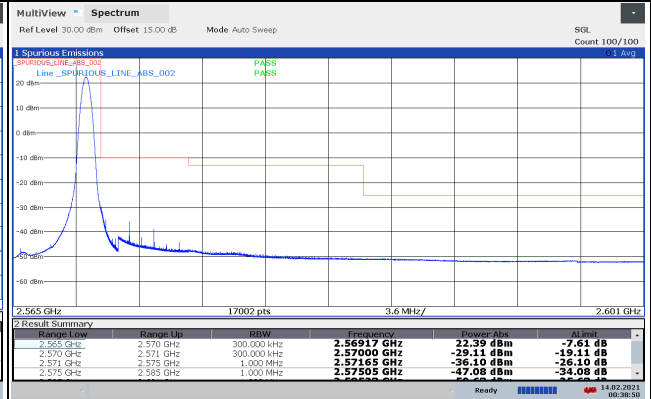
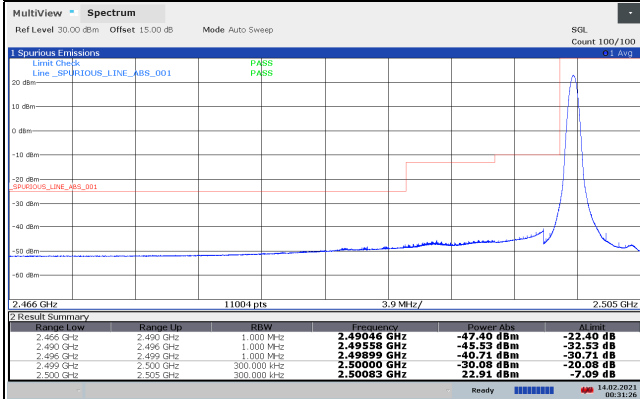


00:19:51 14.02.2021

00:28:30 14.02.2021

LTE Band 7, Channel Bandwidth: 15MHz

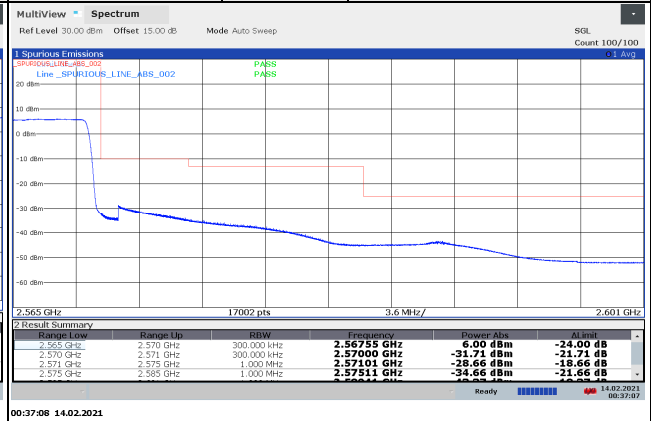
Channel 20825 (2507.5MHz)	QPSK	1 RB / 0 RB Offset	Channel 21375 (2562.5MHz)	QPSK	1 RB / 74 RB Offset
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Channel 20825 (2507.5MHz)	QPSK	75 RB / 0 RB Offset
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Channel 21375 (2562.5MHz)	QPSK	75 RB / 0 RB Offset
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LTE Band 7, Channel Bandwidth: 20MHz

Channel 20850
(2510.0MHz)

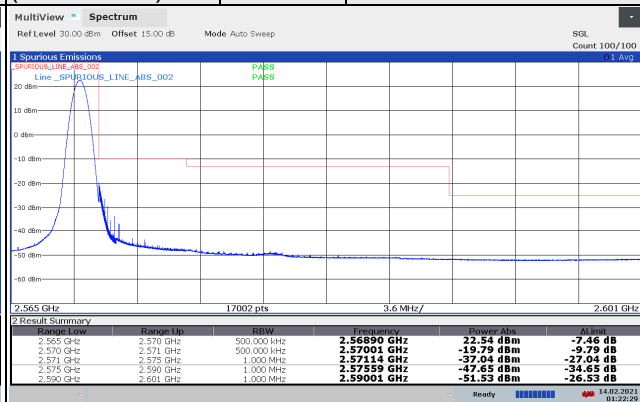
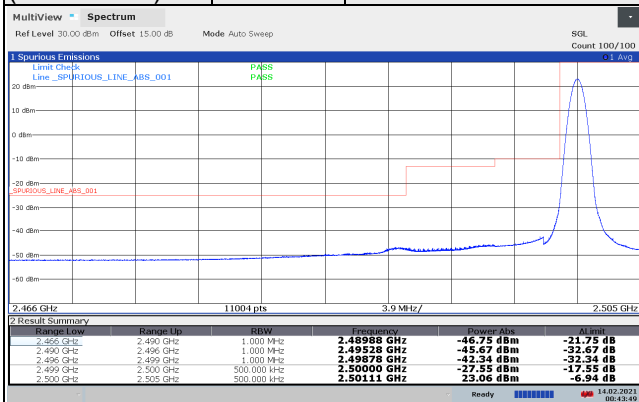
QPSK

1 RB / 0 RB Offset

Channel 21350
(2560.0MHz)

QPSK

1 RB / 99 RB Offset



Channel 20850
(2510.0MHz)

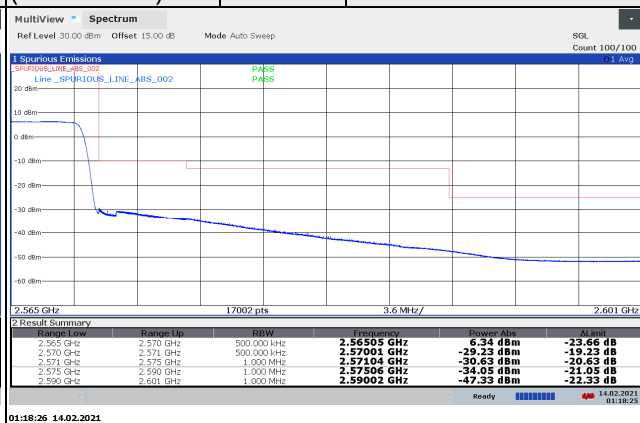
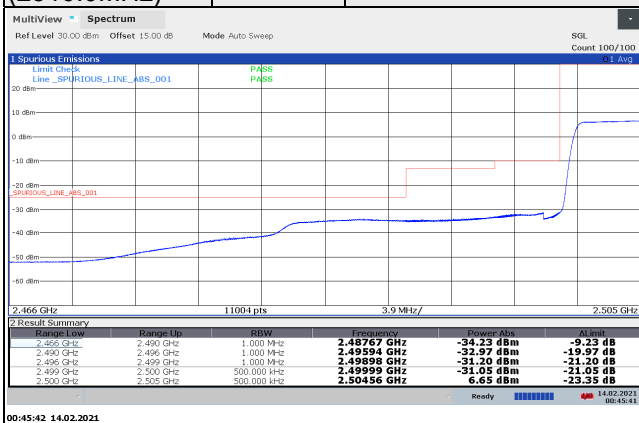
QPSK

100 RB / 0 RB Offset

Channel 21350
(2560.0MHz)

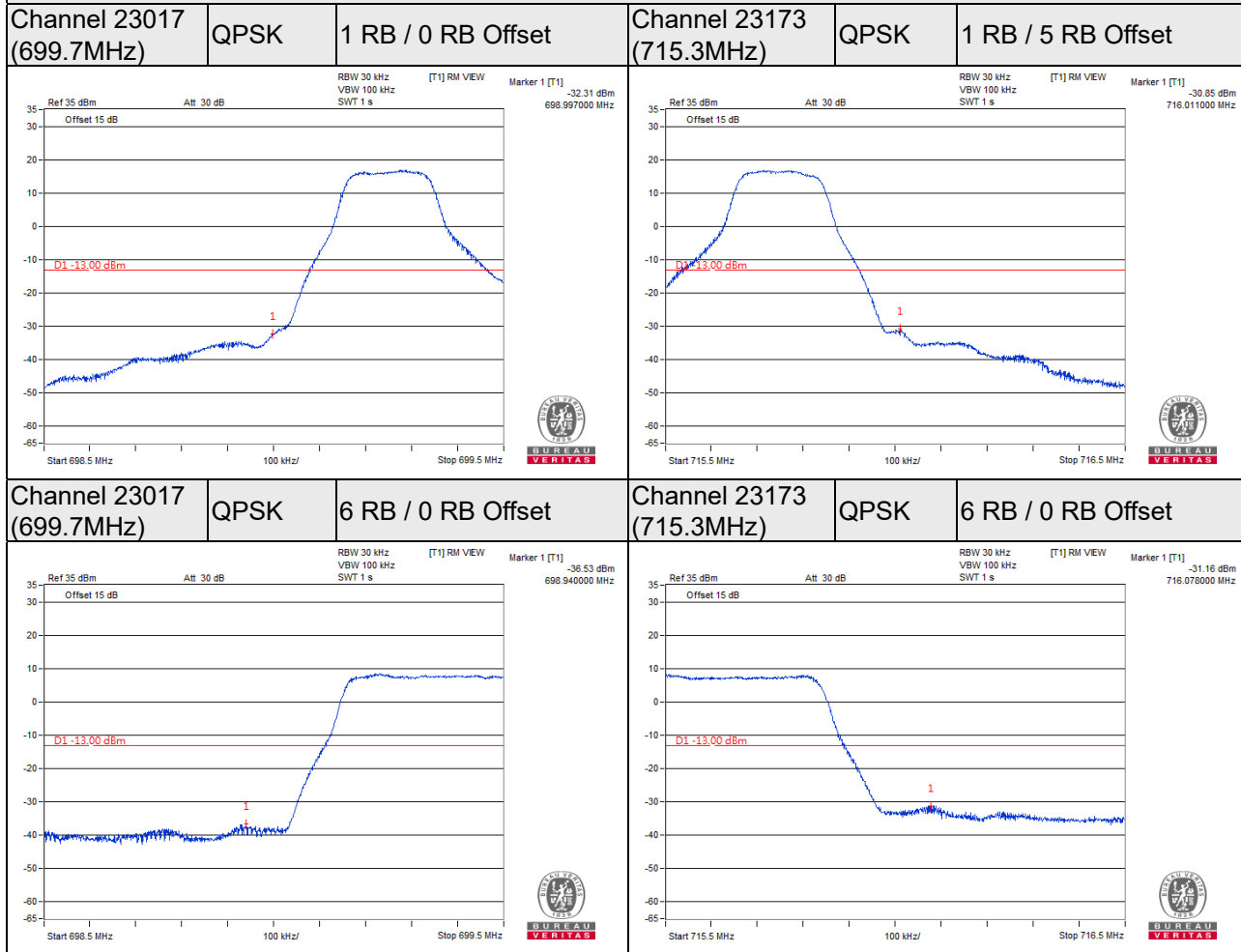
QPSK

100 RB / 0 RB Offset



LTE Band 12

LTE Band 12, Channel Bandwidth: 1.4MHz



LTE Band 12, Channel Bandwidth: 3MHz

Channel 23025
(700.5MHz)

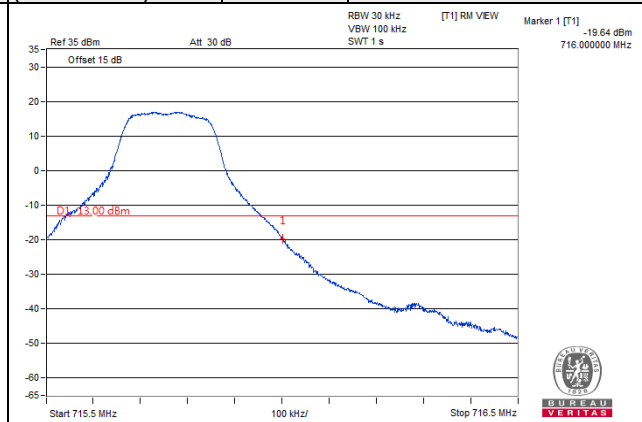
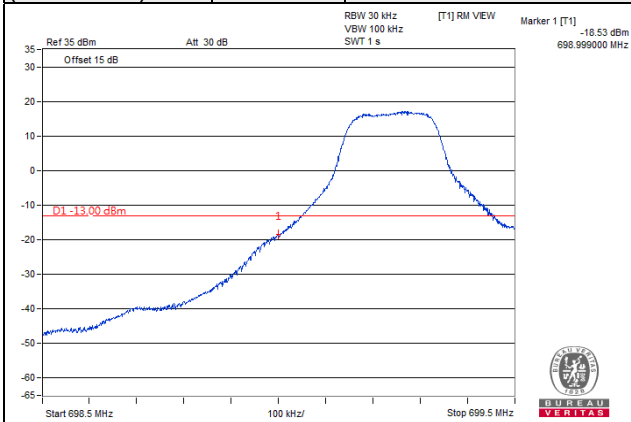
QPSK

1 RB / 0 RB Offset

Channel 23165
(714.5MHz)

QPSK

1 RB / 14RB Offset



Channel 23025
(700.5MHz)

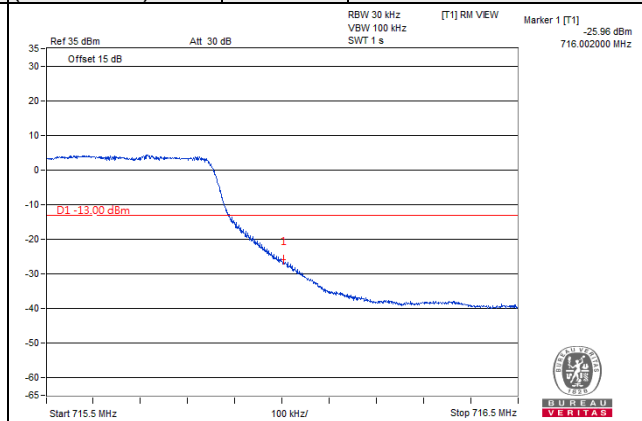
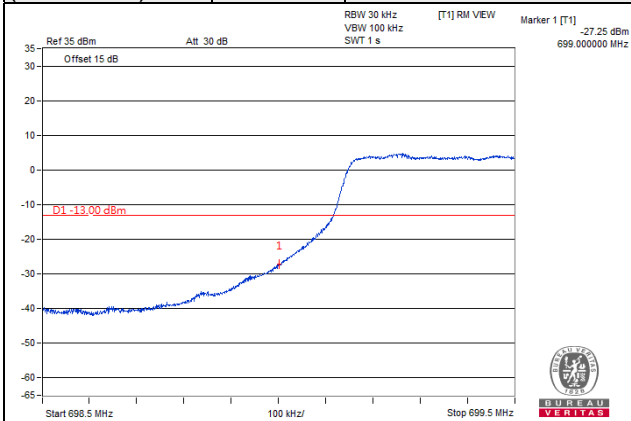
QPSK

15 RB / 0 RB Offset

Channel 23165
(714.5MHz)

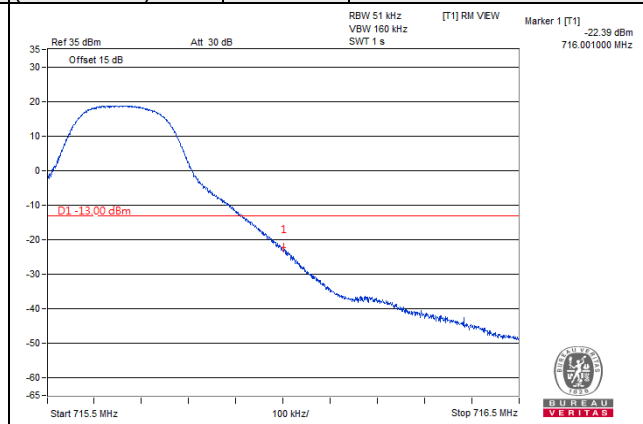
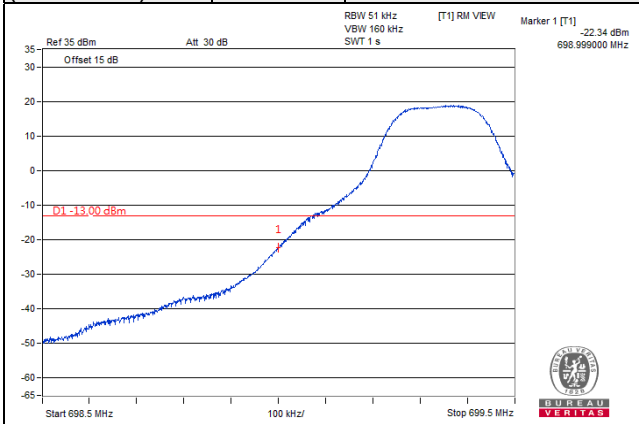
QPSK

15 RB / 0 RB Offset

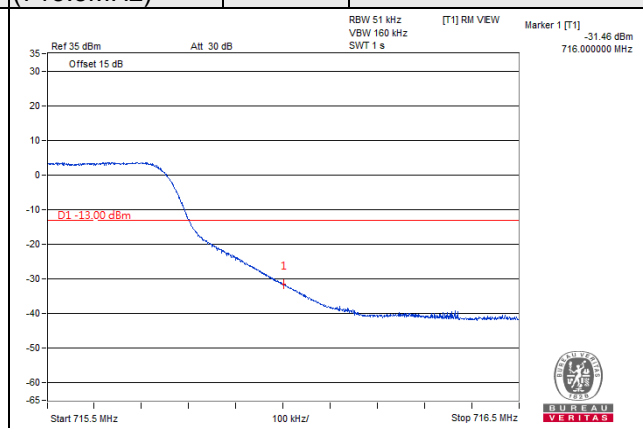
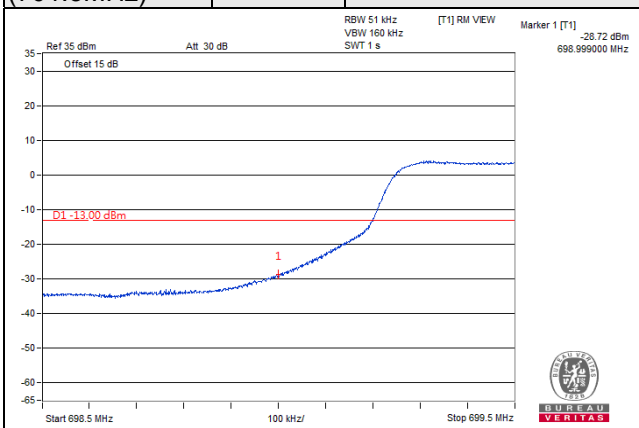


LTE Band 12, Channel Bandwidth: 5MHz

Channel 23035 (701.5MHz)	QPSK	1 RB / 0 RB Offset	Channel 23155 (713.5MHz)	QPSK	1 RB / 24RB Offset
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Channel 23035 (701.5MHz)	QPSK	25 RB / 0 RB Offset	Channel 23155 (713.5MHz)	QPSK	25 RB / 0 RB Offset
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LTE Band 12, Channel Bandwidth: 10MHz

Channel 23060
(704MHz)

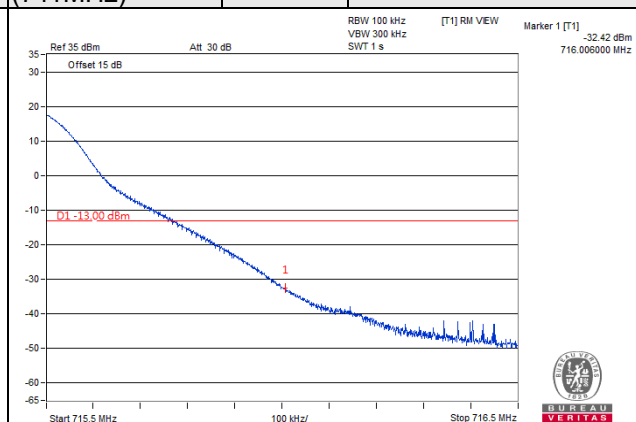
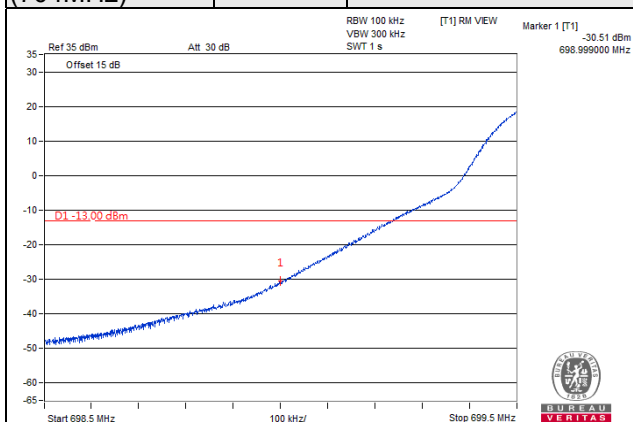
QPSK

1 RB / 0 RB Offset

Channel 23130
(711MHz)

QPSK

1 RB / 49RB Offset



Channel 23060
(704MHz)

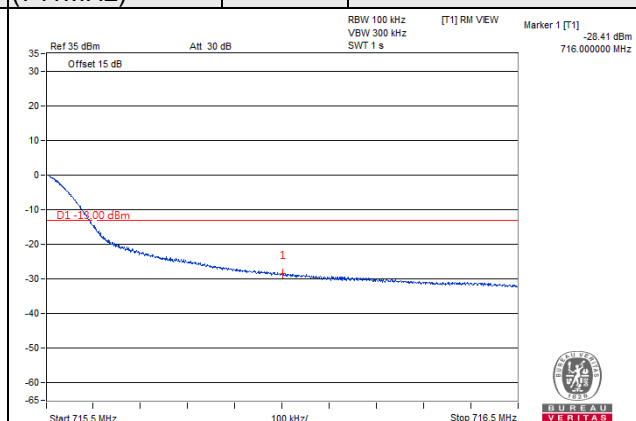
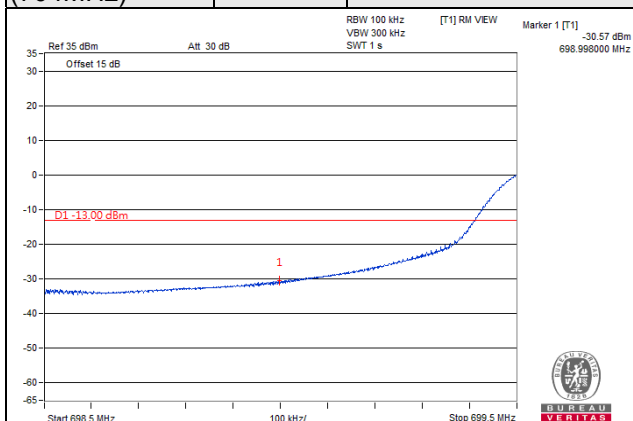
QPSK

50 RB / 0 RB Offset

Channel 23130
(711MHz)

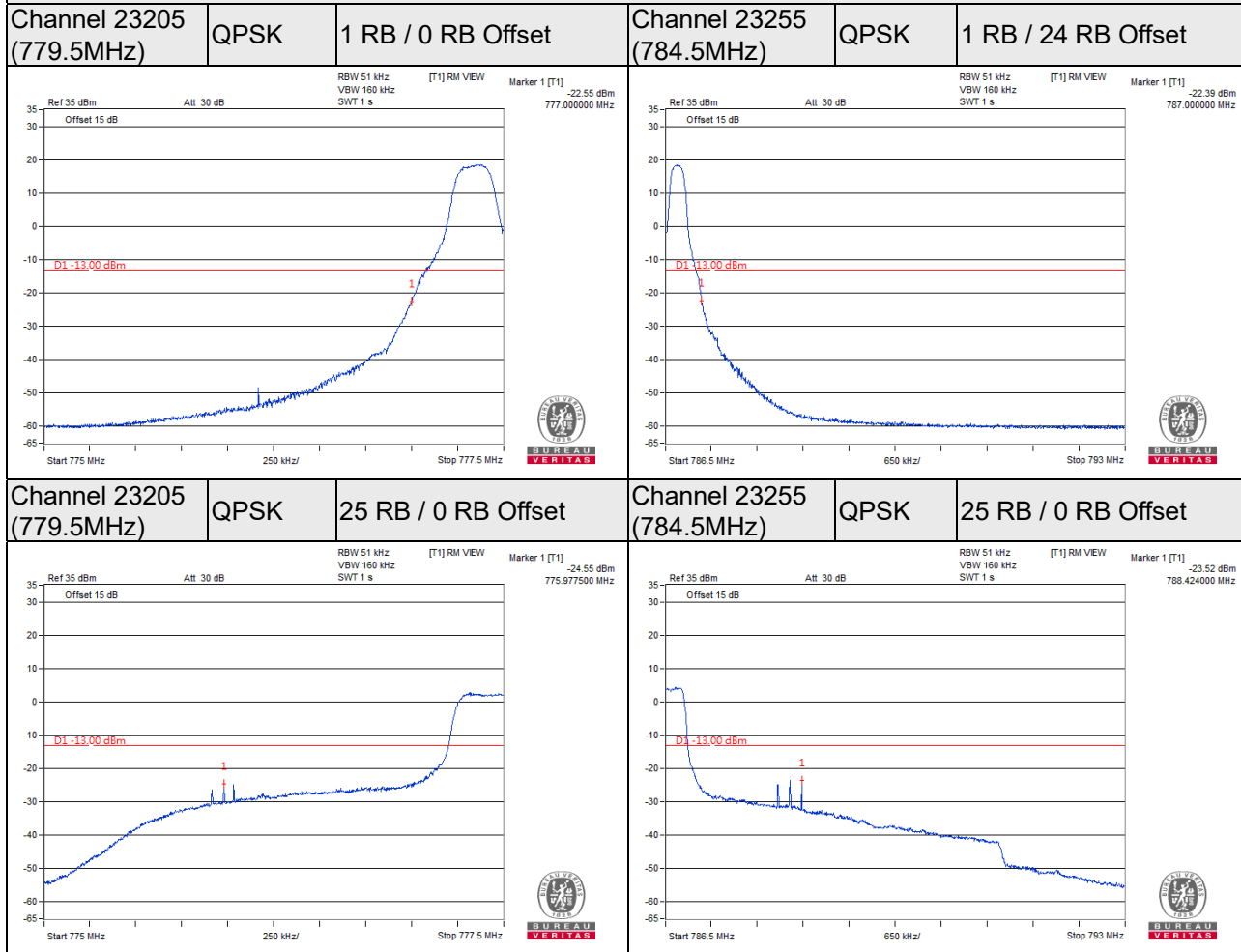
QPSK

50 RB / 0 RB Offset



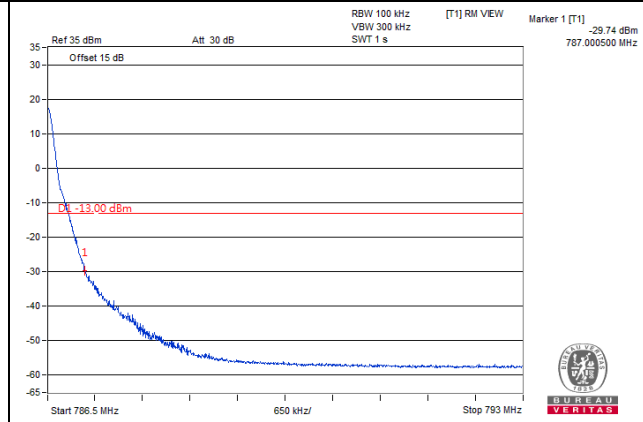
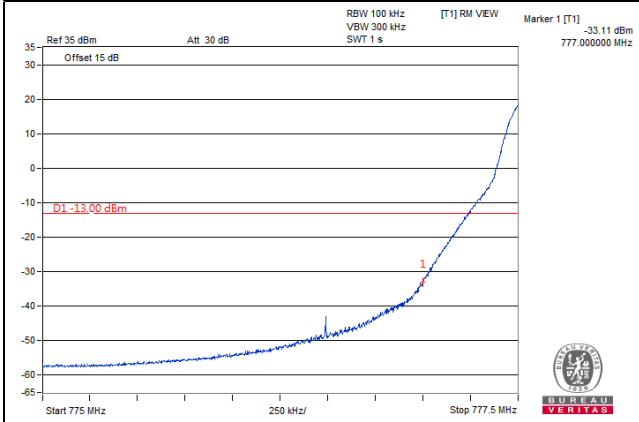
LTE Band 13

LTE Band 13, Channel Bandwidth: 5MHz

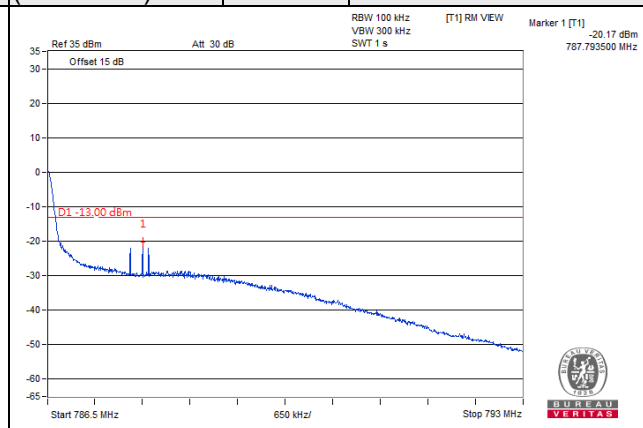
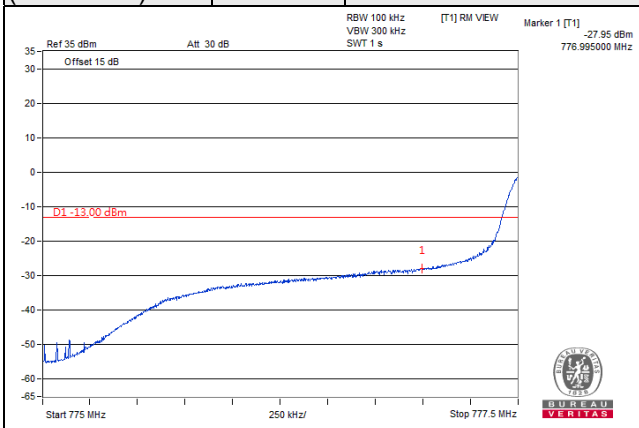


LTE Band 13, Channel Bandwidth: 10MHz

Channel 23230 (782.0MHz)	QPSK	1 RB / 0 RB Offset	Channel 23230 (782.0MHz)	QPSK	1 RB / 49 RB Offset
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Channel 23230 (782.0MHz)	QPSK	50 RB / 0 RB Offset	Channel 23230 (782.0MHz)	QPSK	50 RB / 0 RB Offset
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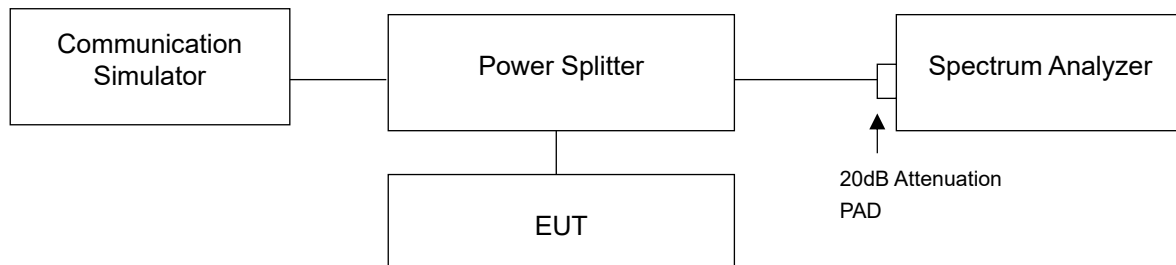


4.6 Peak to Average Ratio

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

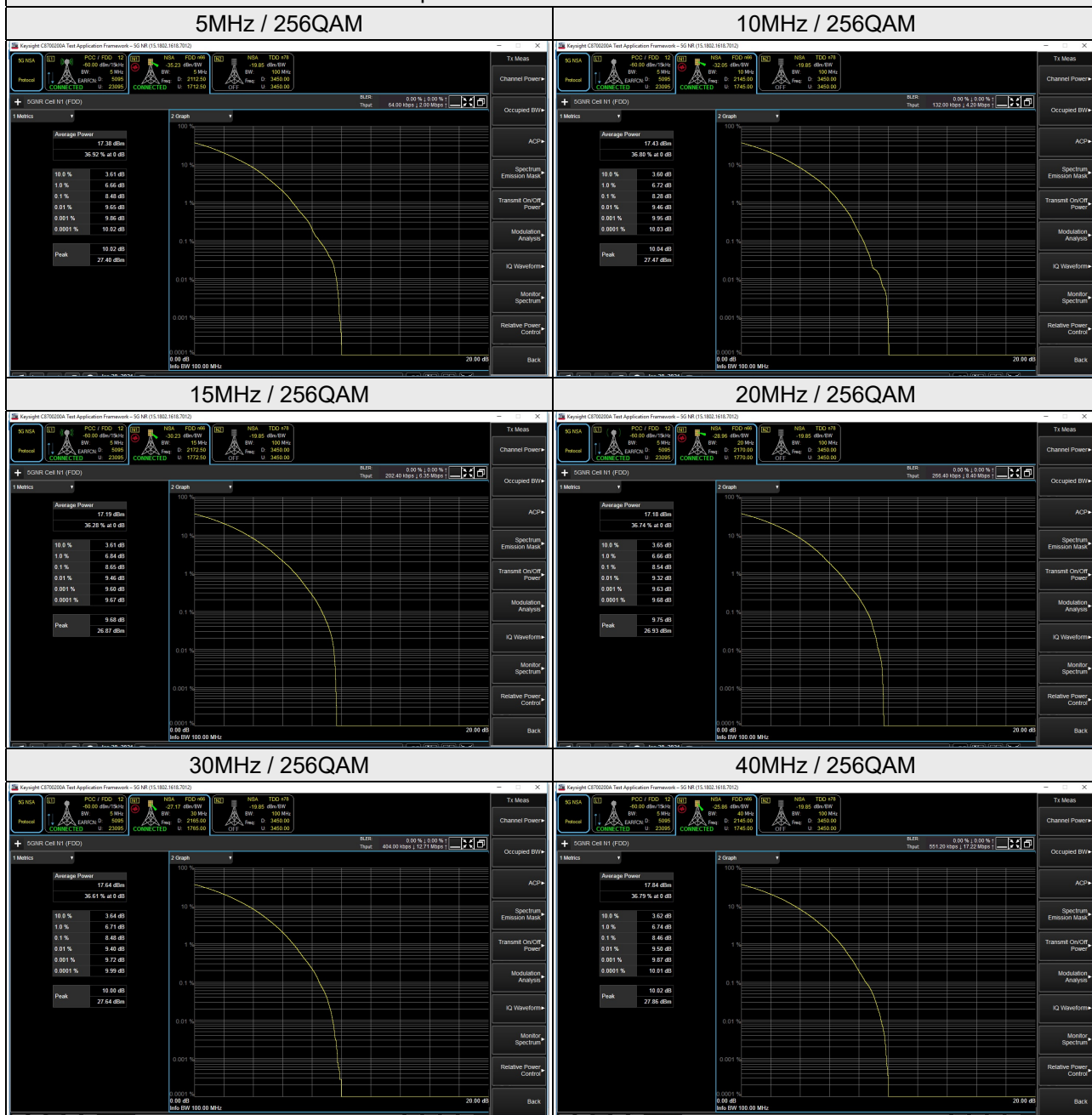
n66

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



LTE Band 2

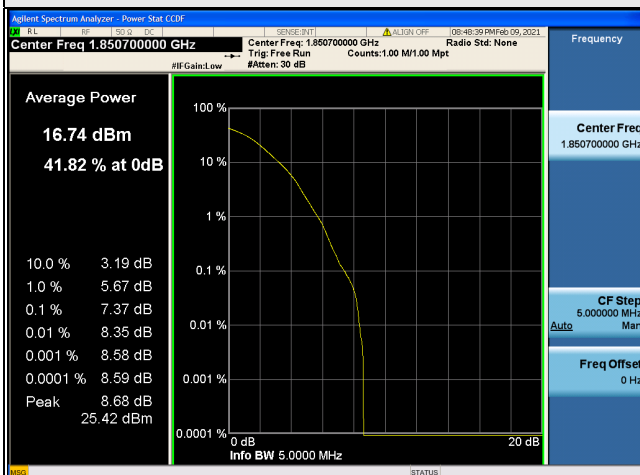
LTE Band 2, Channel Bandwidth 1.4MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			
		QPSK	16QAM	64QAM	256QAM
18607	1850.7	4.05	5.35	6.42	7.37
18900	1880.0	3.70	4.40	7.22	7.11
19193	1909.3	3.93	5.58	6.95	7.31
LTE Band 2, Channel Bandwidth 3MHz					
Channel	Frequency (MHz)	Peak To Average 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

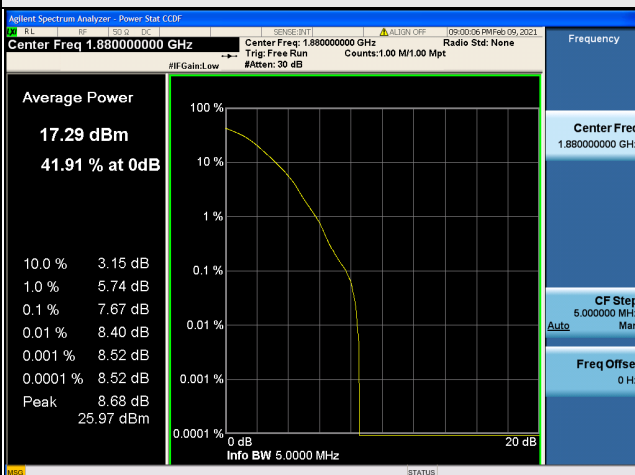
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			
		QPSK	16QAM	64QAM	256QAM
18700	1860.0	3.73	5.33	6.79	7.80
18900	1880.0	3.53	4.47	7.21	7.61
19100	1900.0	3.62	4.59	6.83	7.66

Spectrum Plot of Worst Value

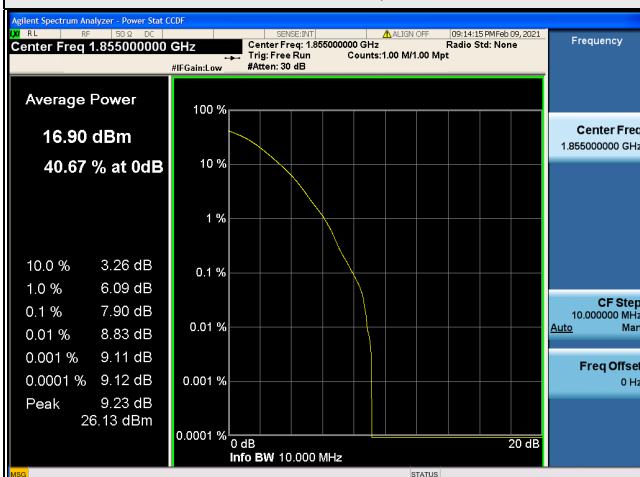
1.4MHz / 256QAM



3MHz / 256QAM



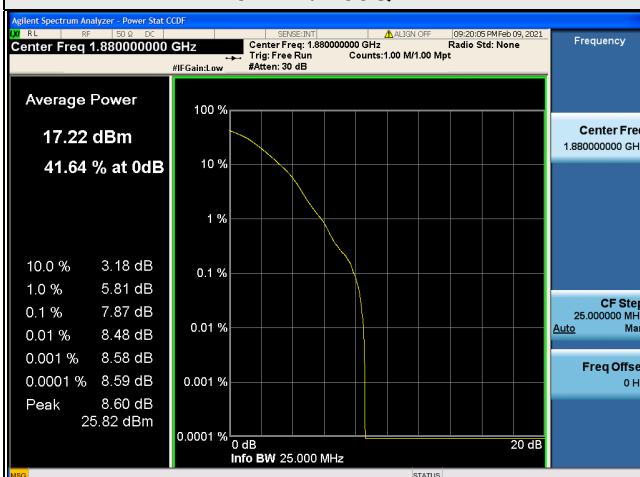
5MHz / 256QAM



10MHz / 256QAM



15MHz / 256QAM



20MHz / 256QAM

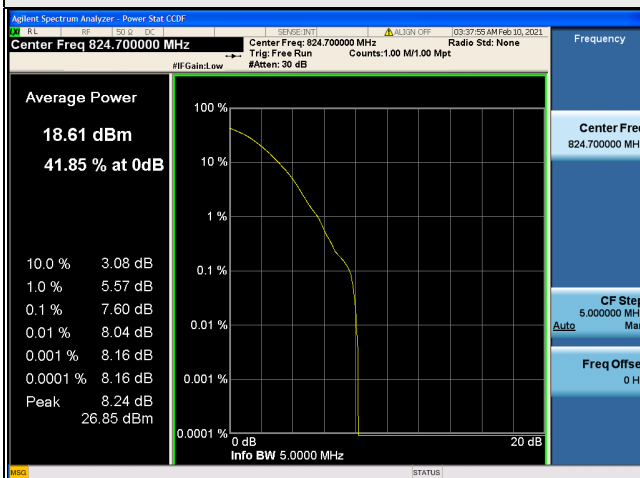


LTE Band 5

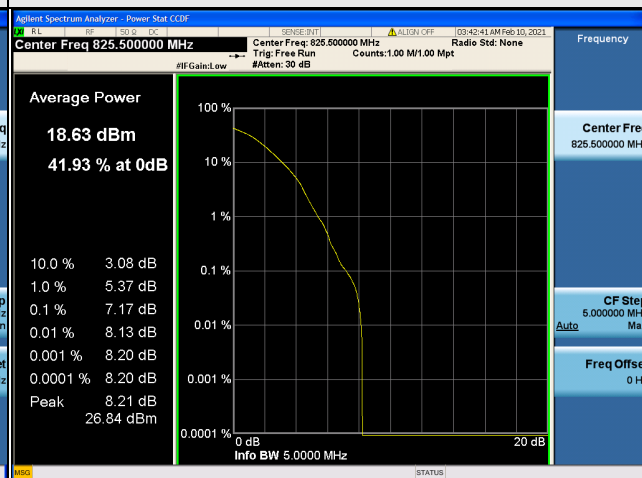
LTE Band 5, Channel Bandwidth 1.4MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			
		QPSK	16QAM	64QAM	256QAM
20407	824.7	3.92	5.67	7.15	7.60
20525	836.5	3.83	5.57	6.86	7.04
20643	848.3	3.82	5.39	6.40	7.14
LTE Band 5, Channel Bandwidth 3MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (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

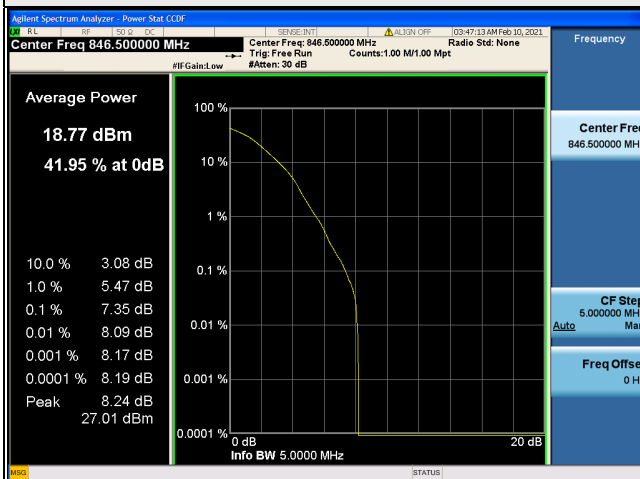
1.4MHz / 256QAM



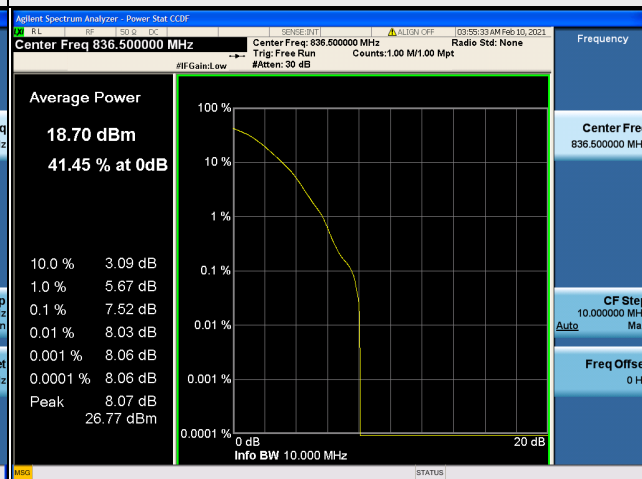
3MHz / 256QAM



5MHz / 256QAM



10MHz / 256QAM

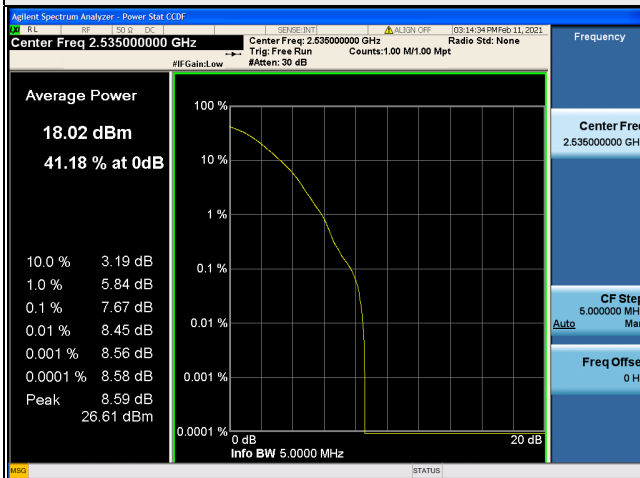


LTE Band 7

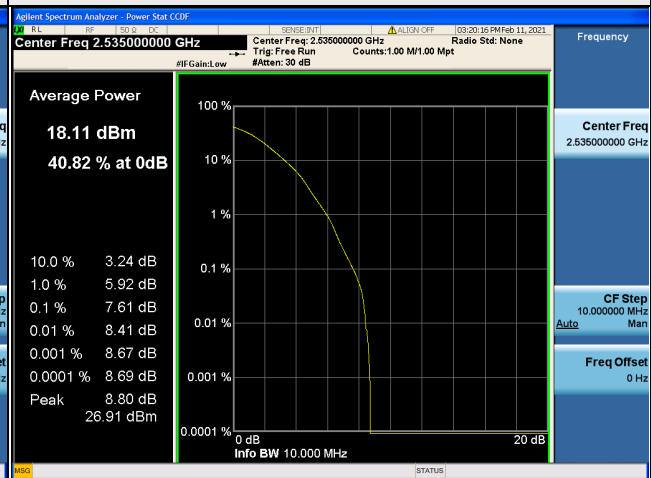
LTE Band 7, Channel Bandwidth 5MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			
		QPSK	16QAM	64QAM	256QAM
20775	2502.5	3.59	5.32	6.46	7.52
21100	2535.0	3.67	5.32	6.86	7.67
21425	2567.5	3.64	5.38	6.77	7.45
LTE Band 7, Channel Bandwidth 10MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (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

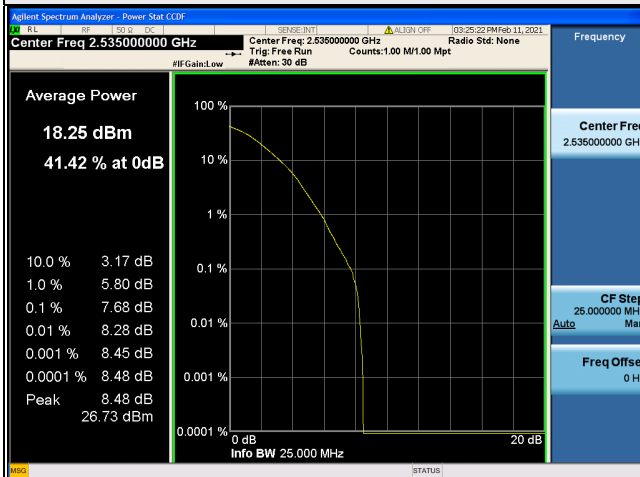
5MHz / 256QAM



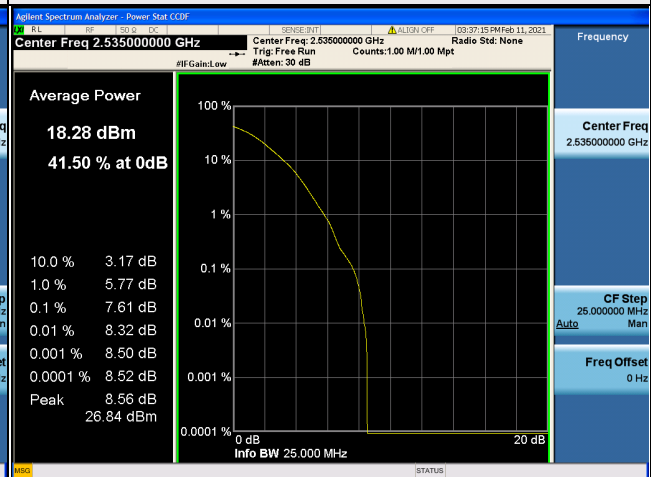
10MHz / 256QAM



15MHz / 256QAM



20MHz / 256QAM

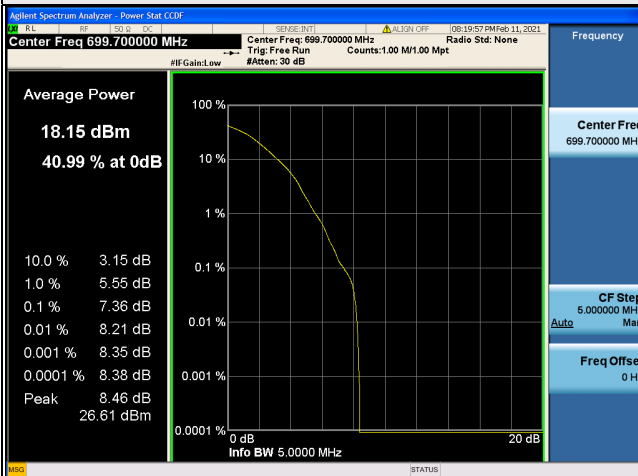


LTE Band 12

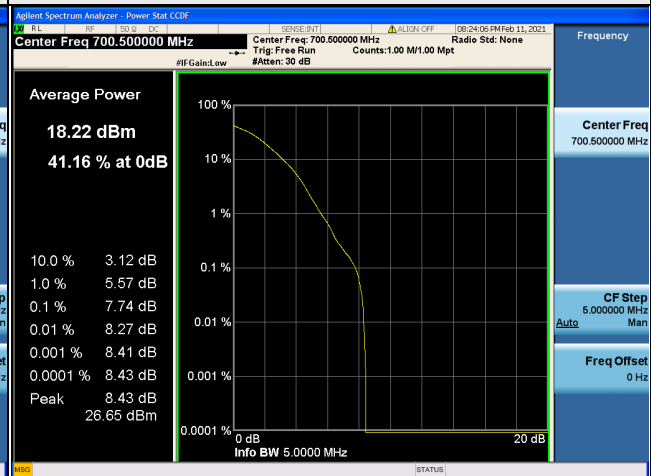
LTE Band 12, Channel Bandwidth 1.4MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			
		QPSK	16QAM	64QAM	256QAM
23017	699.7	3.80	4.76	7.03	7.36
23095	707.5	3.95	5.68	6.98	6.82
23173	715.3	3.72	4.59	6.92	6.98
LTE Band 12, Channel Bandwidth 3MHz					
Channel	Frequency (MHz)	Peak To Average Ratio (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

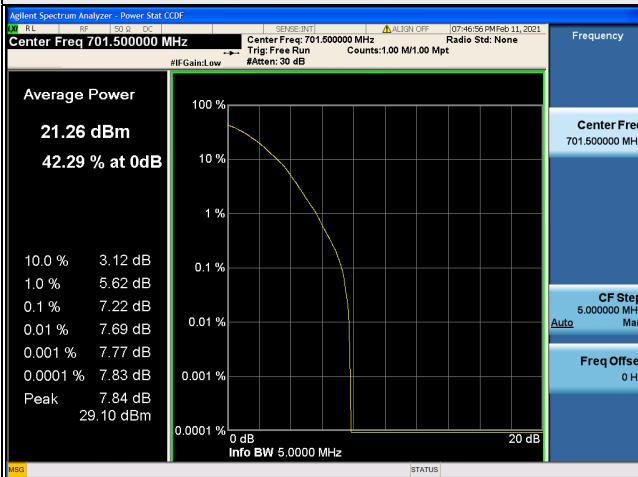
1.4MHz / 256QAM



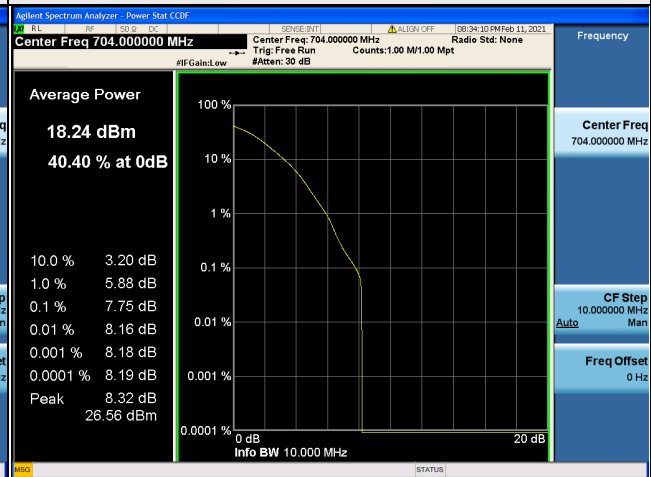
3MHz / 256QAM



5MHz / 64QAM



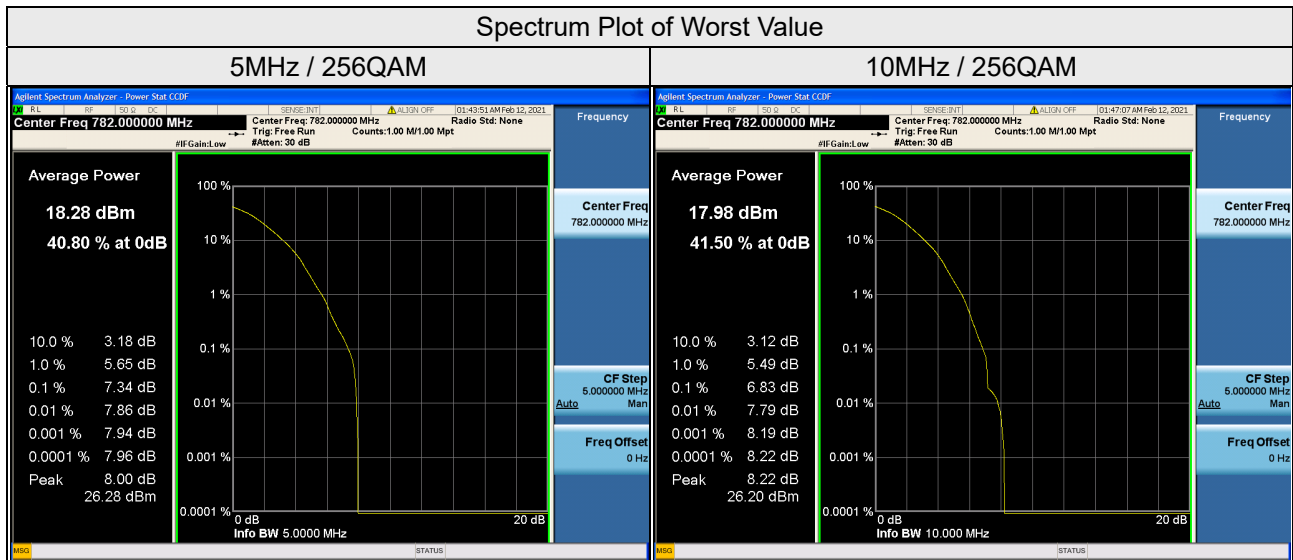
10MHz / 256QAM



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:

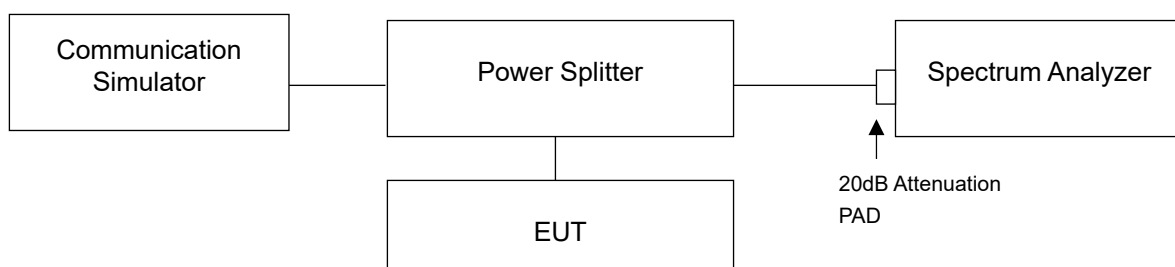
According to FCC 27.53(g) for operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least $43 + 10 \log(P)$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