

LTE Band 41

Channel Bandwidth: 15MHz

Channel 39725
(2503.5MHz)

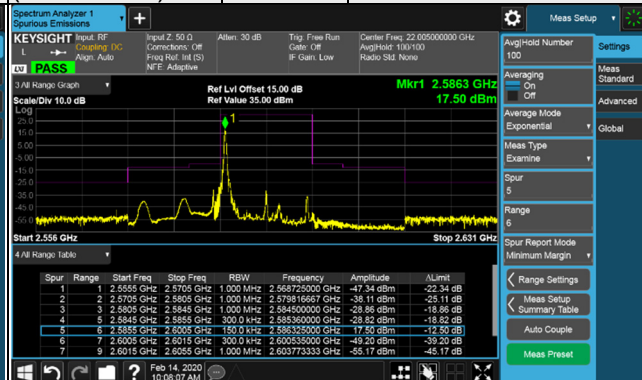
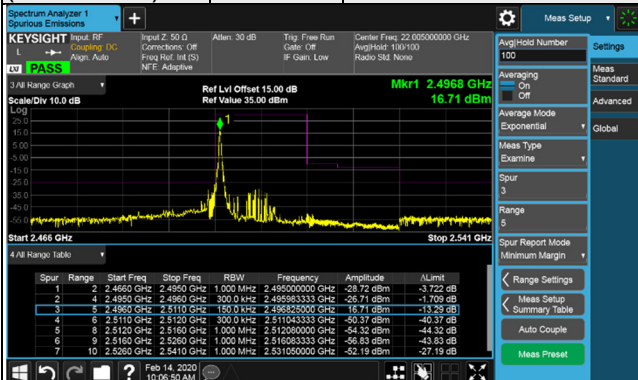
QPSK

1 RB / 0 RB Offset

Channel 40620
(2593.0MHz)

QPSK

1 RB / 0 RB Offset



Channel 39725
(2503.5MHz)

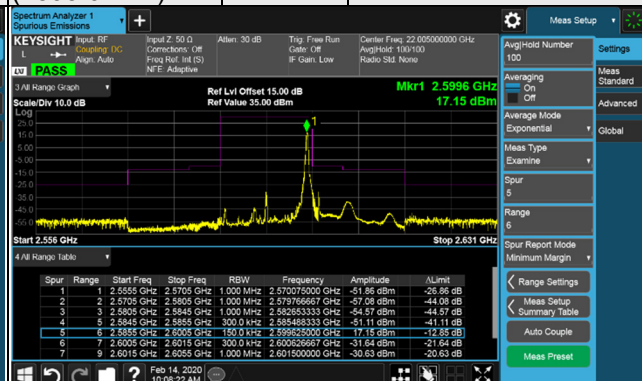
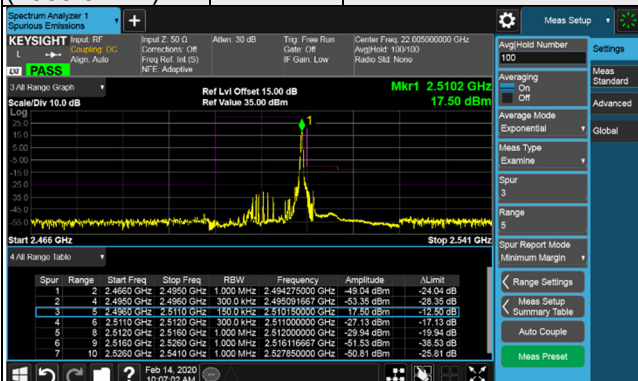
QPSK

1 RB / 74 RB Offset

Channel 40620
(2593.0MHz)

QPSK

1 RB / 74 RB Offset



Channel 39725
(2503.5MHz)

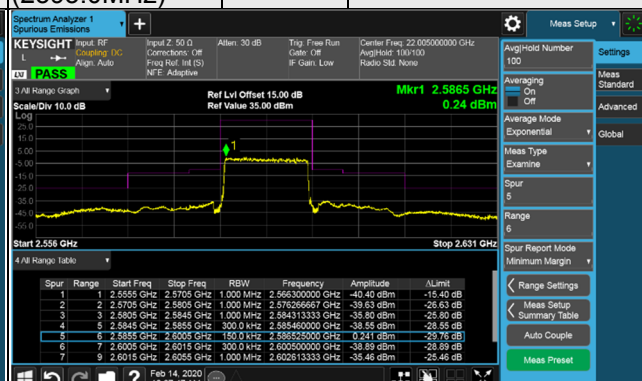
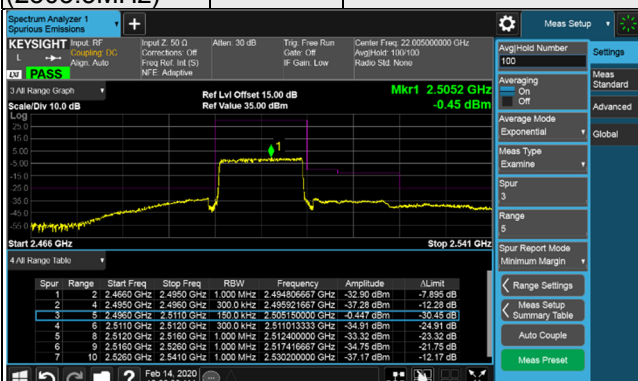
QPSK

75 RB / 0 RB Offset

Channel 40620
(2593.0MHz)

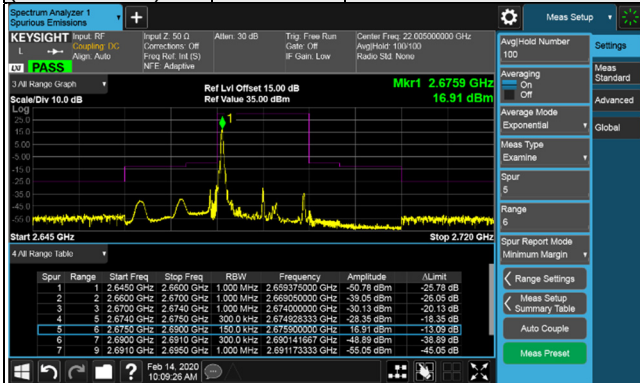
QPSK

75 RB / 0 RB Offset

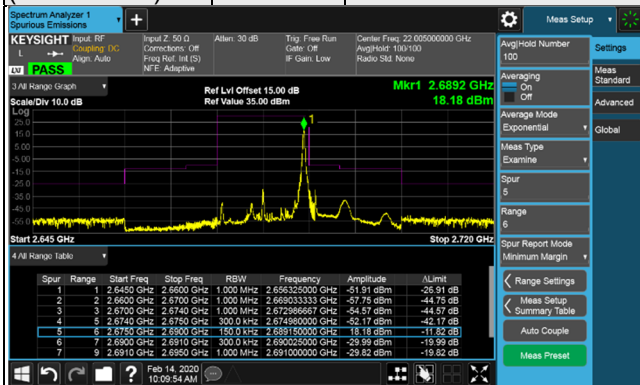


Channel Bandwidth: 15MHz

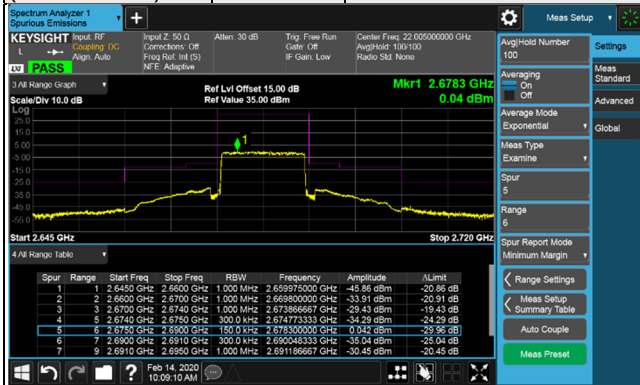
Channel 41515 (2682.5MHz) QPSK 1 RB / 0 RB Offset



Channel 41515 (2682.5MHz) QPSK 1 RB / 74 RB Offset



Channel 41515 (2682.5MHz) QPSK 75 RB / 0 RB Offset



LTE Band 41

Channel Bandwidth: 20MHz

Channel 39750
(2506.0MHz)

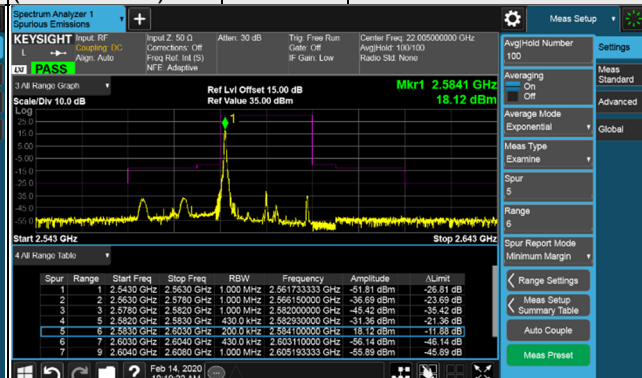
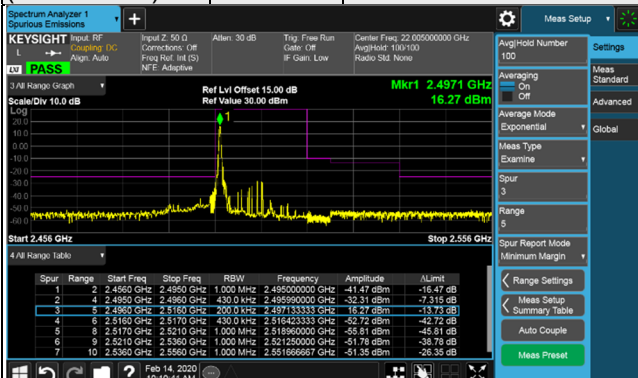
QPSK

1 RB / 0 RB Offset

Channel 40620
(2593.0MHz)

QPSK

1 RB / 0 RB Offset



Channel 39750
(2506.0MHz)

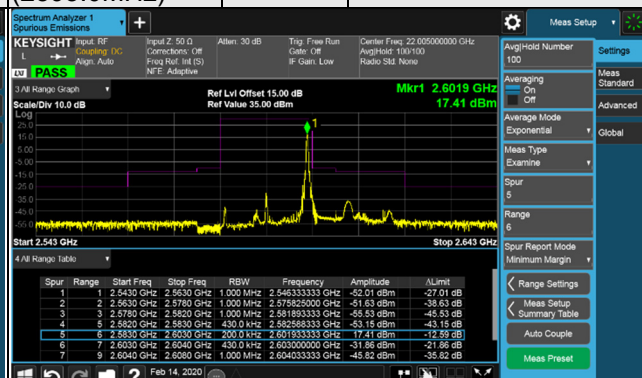
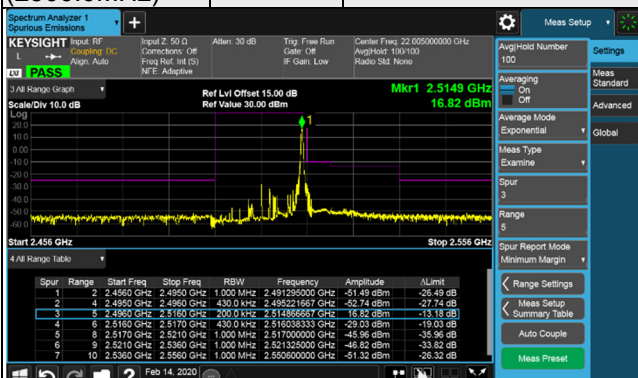
QPSK

1 RB / 99 RB Offset

Channel 40620
(2593.0MHz)

QPSK

1 RB / 99 RB Offset



Channel 39750
(2506.0MHz)

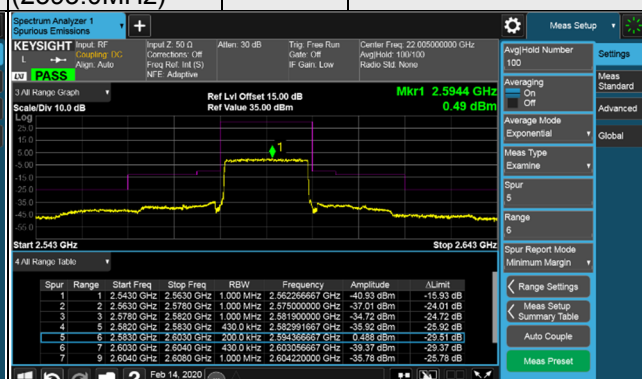
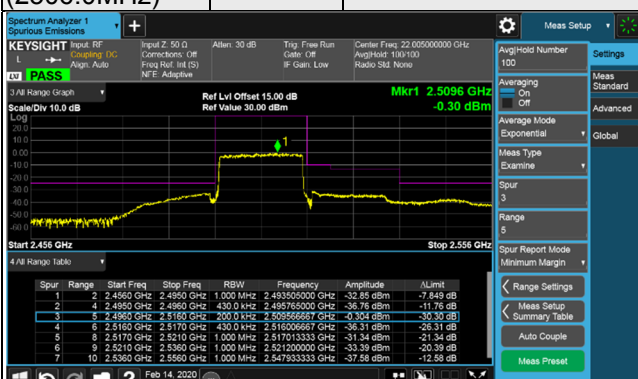
QPSK

100 RB / 0 RB Offset

Channel 40620
(2593.0MHz)

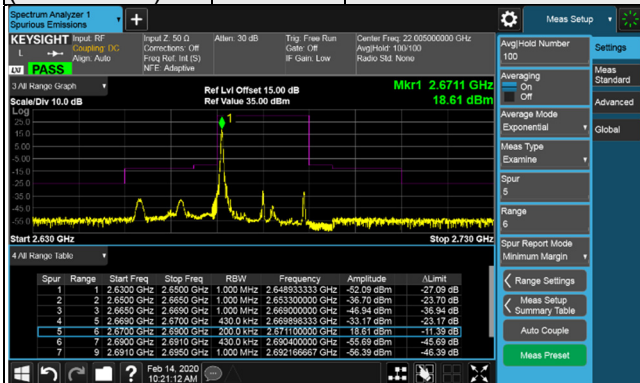
QPSK

100 RB / 0 RB Offset

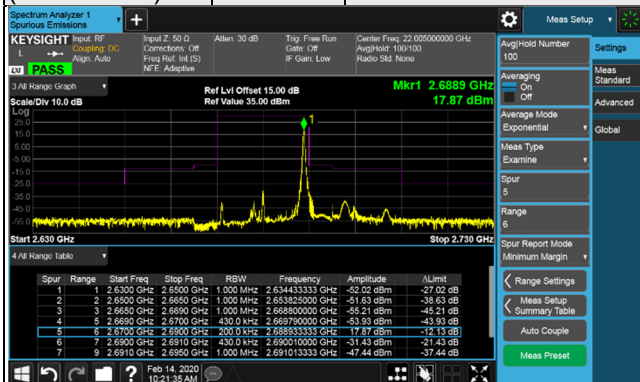


Channel Bandwidth: 20MHz

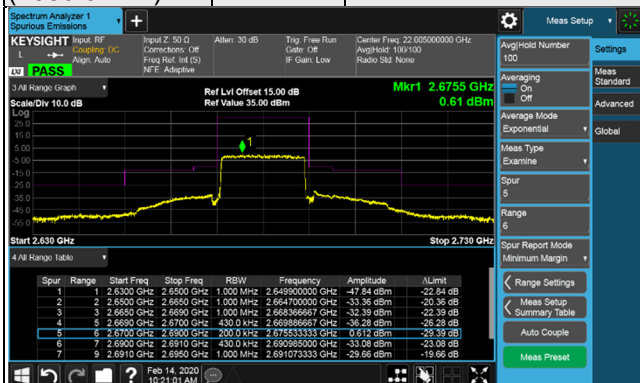
Channel 41490 (2680.0MHz) QPSK 1 RB / 0 RB Offset



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



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



LTE Band 66

Channel Bandwidth: 1.4MHz

Channel 131979
(1710.7MHz)

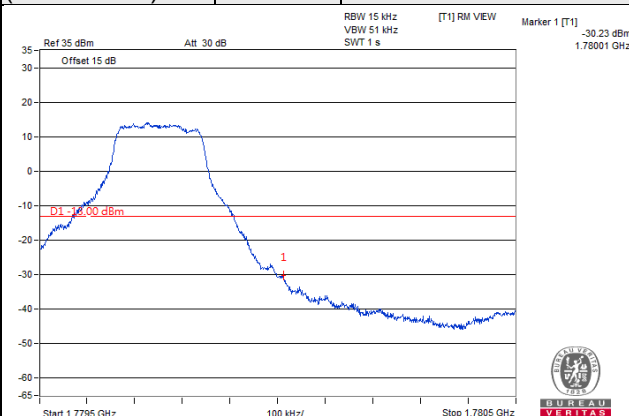
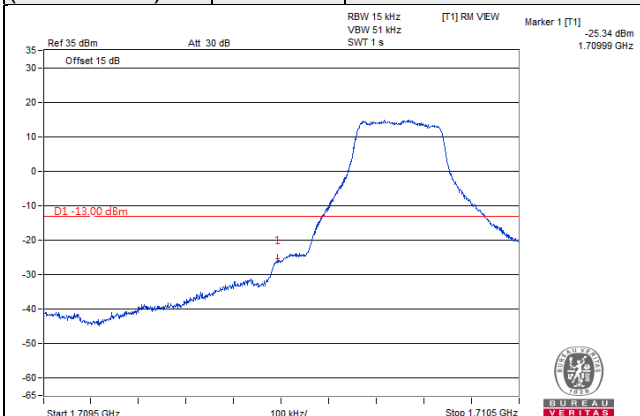
QPSK

1 RB / 0 RB Offset

Channel 132665
(1779.3MHz)

QPSK

1 RB / 5 RB Offset



Channel 131979
(1710.7MHz)

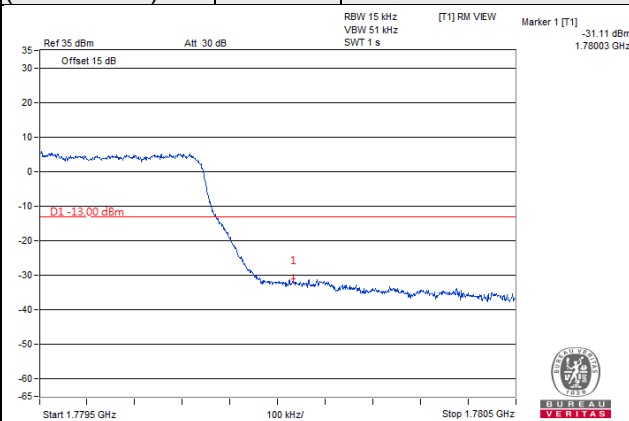
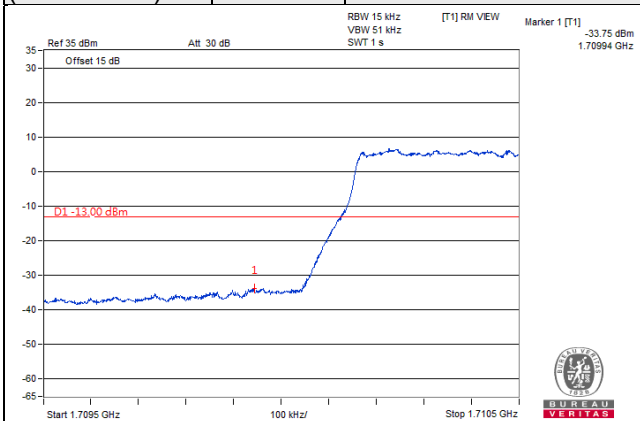
QPSK

6 RB / 0 RB Offset

Channel 132665
(1779.3MHz)

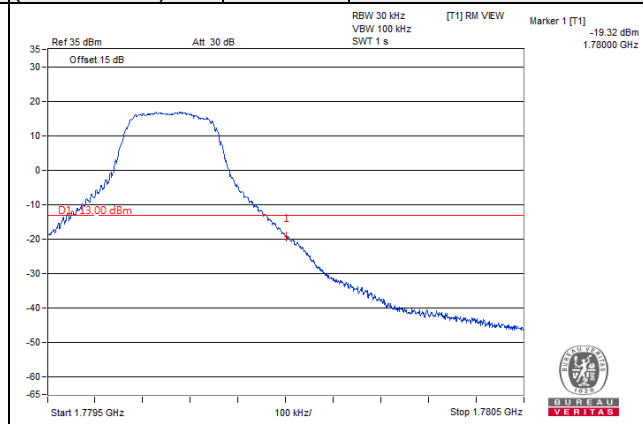
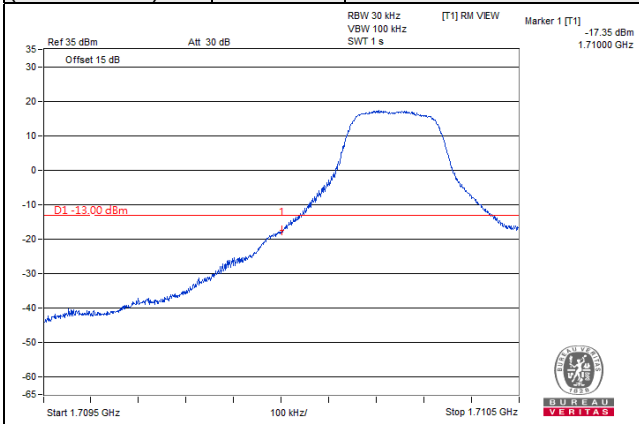
QPSK

6 RB / 0 RB Offset

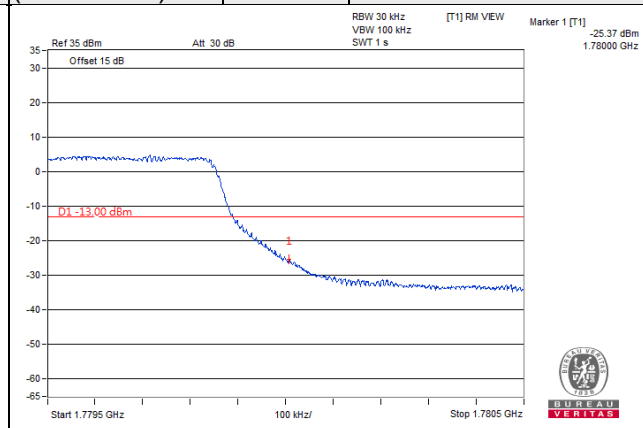
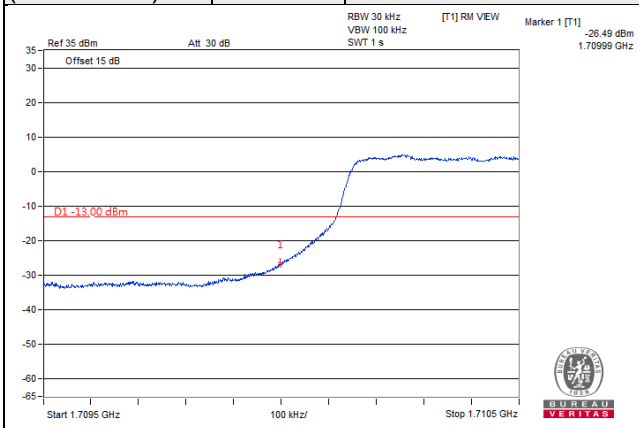


Channel Bandwidth: 3MHz

| | | | | | |
|---------------------------------------|-------------|---------------------------|---------------------------------------|-------------|----------------------------|
| Channel 131987 (1711.5MHz) | QPSK | 1 RB / 0 RB Offset | Channel 132657 (1778.5MHz) | QPSK | 1 RB / 14 RB Offset |
|---------------------------------------|-------------|---------------------------|---------------------------------------|-------------|----------------------------|

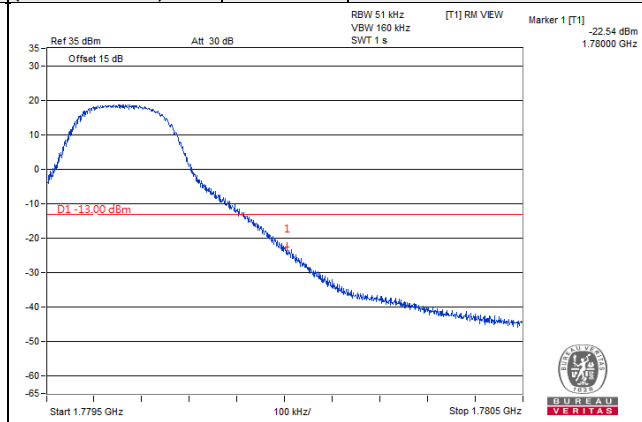
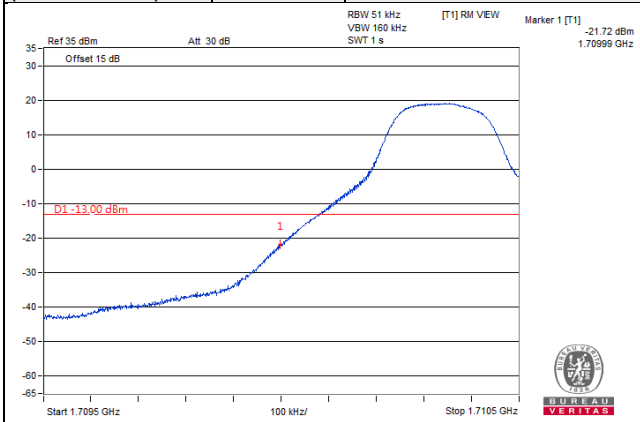


| | | | | | |
|---------------------------------------|-------------|----------------------------|---------------------------------------|-------------|----------------------------|
| Channel 131987 (1711.5MHz) | QPSK | 15 RB / 0 RB Offset | Channel 132657 (1778.5MHz) | QPSK | 15 RB / 0 RB Offset |
|---------------------------------------|-------------|----------------------------|---------------------------------------|-------------|----------------------------|

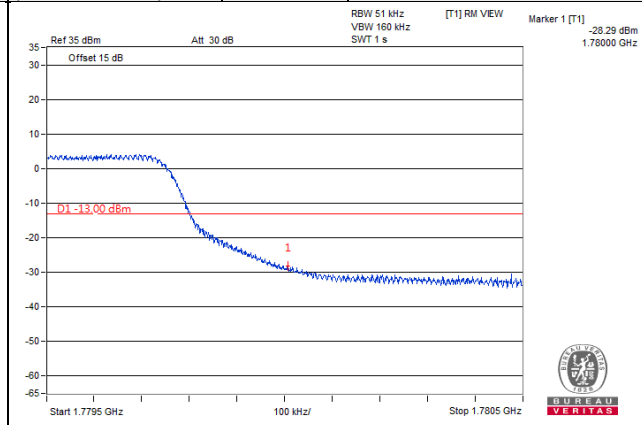
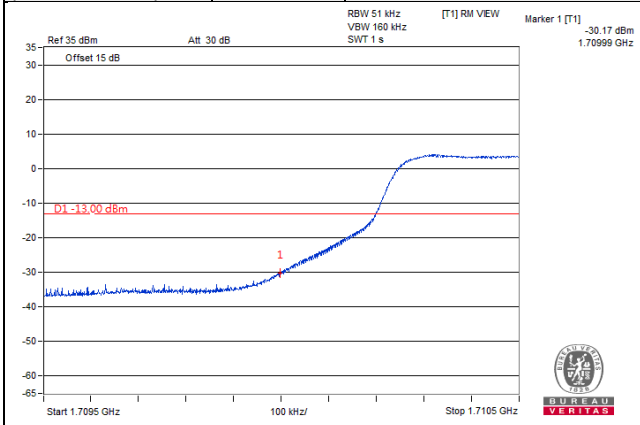


Channel Bandwidth: 5MHz

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



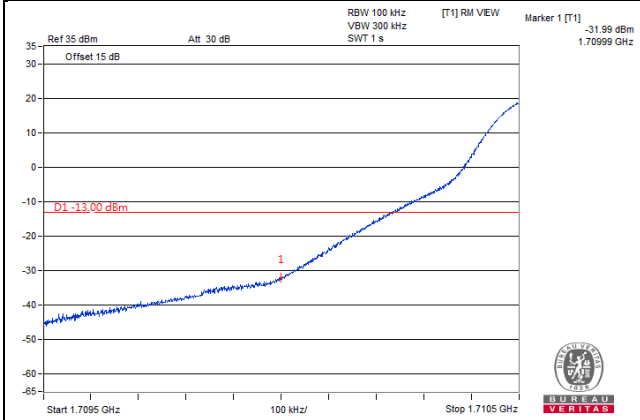
| | | | | | |
|-------------------------------|------|---------------------|-------------------------------|------|---------------------|
| Channel 131997 (1712.5MHz) | QPSK | 25 RB / 0 RB Offset | Channel 132647 (1777.5MHz) | QPSK | 25 RB / 0 RB Offset |
|-------------------------------|------|---------------------|-------------------------------|------|-------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



Channel Bandwidth: 10MHz

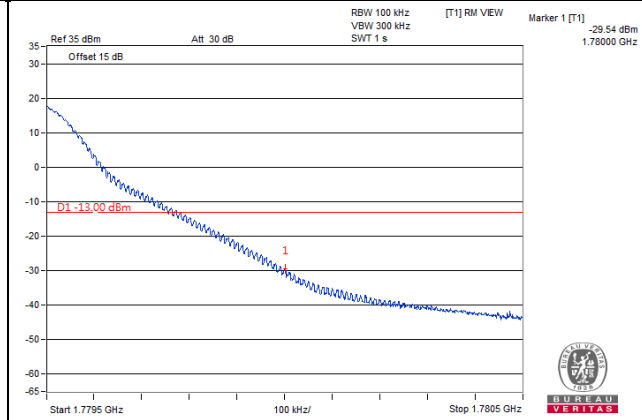
Channel 132022
(1715.0MHz)

QPSK
1 RB / 0 RB Offset



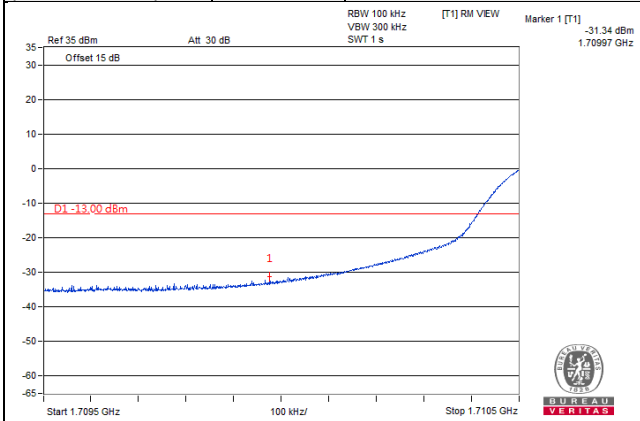
Channel 132622
(1775.0MHz)

QPSK
1 RB / 49 RB Offset



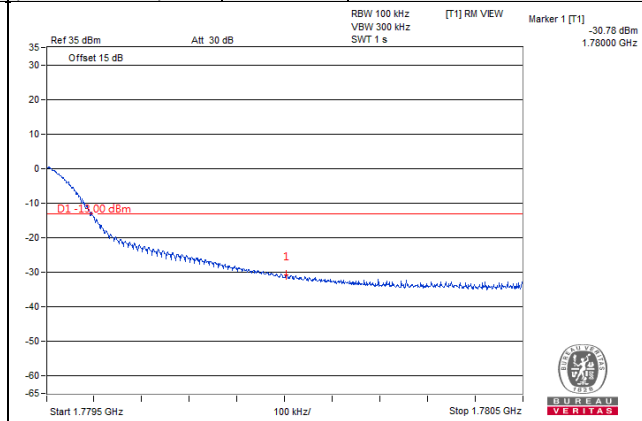
Channel 132022
(1715.0MHz)

QPSK
50 RB / 0 RB Offset



Channel 132622
(1775.0MHz)

QPSK
50 RB / 0 RB Offset



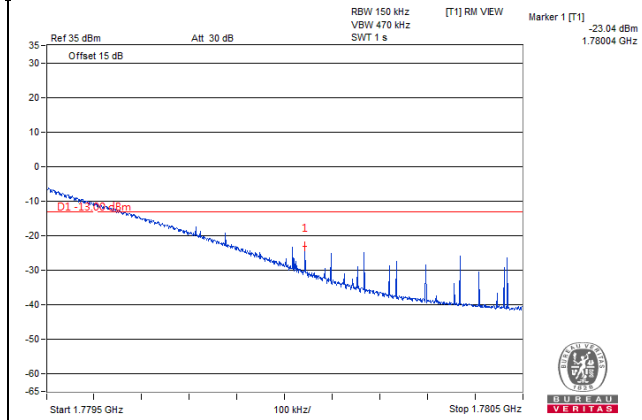
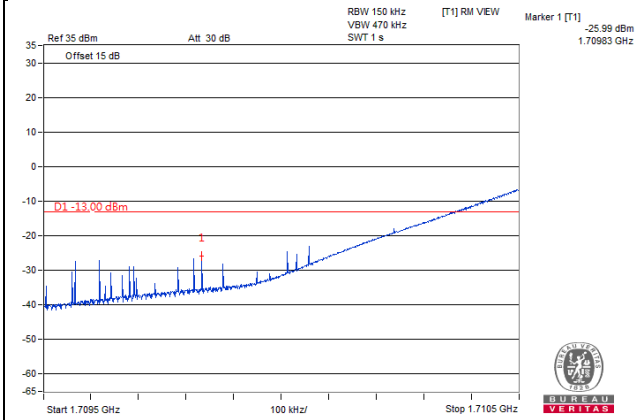
Channel Bandwidth: 15MHz

Channel 132047
(1717.5MHz)

QPSK
1 RB / 0 RB Offset

Channel 132597
(1772.5MHz)

QPSK
1 RB / 74 RB Offset

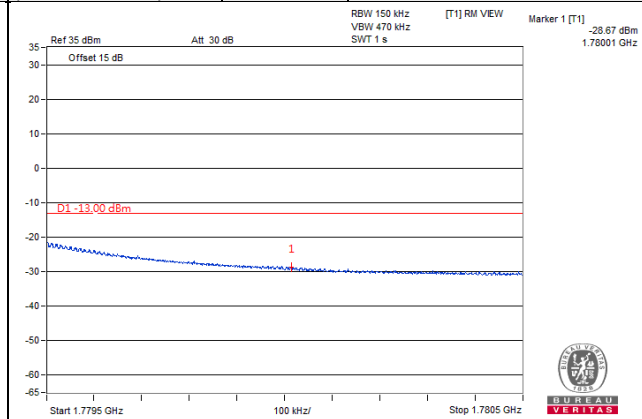
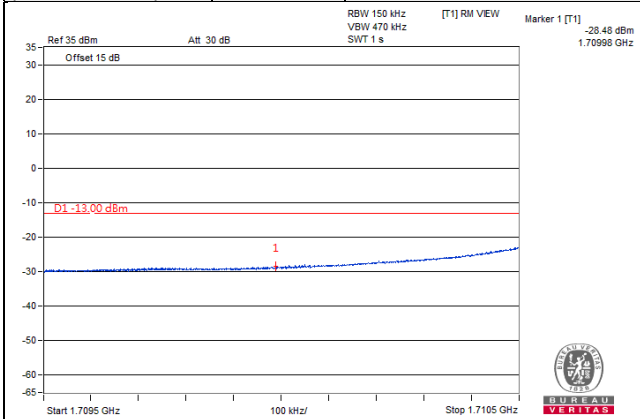


Channel 132047
(1717.5MHz)

QPSK
75 RB / 0 RB Offset

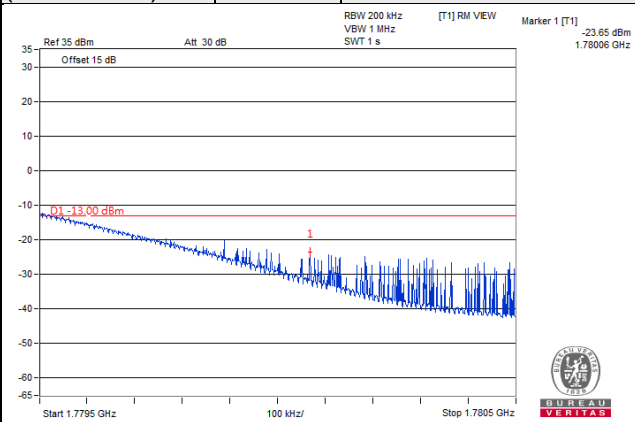
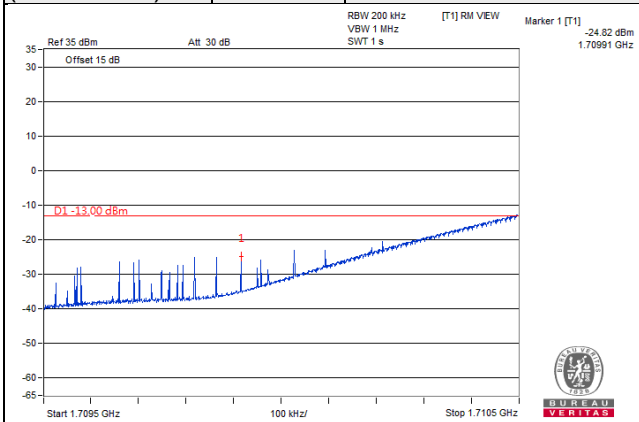
Channel 132597
(1772.5MHz)

QPSK
75 RB / 0 RB Offset

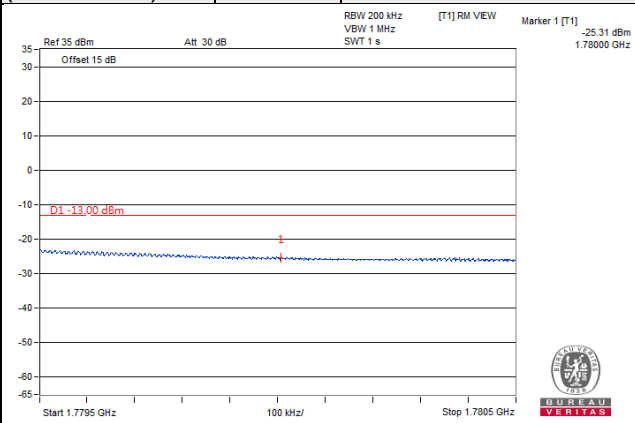
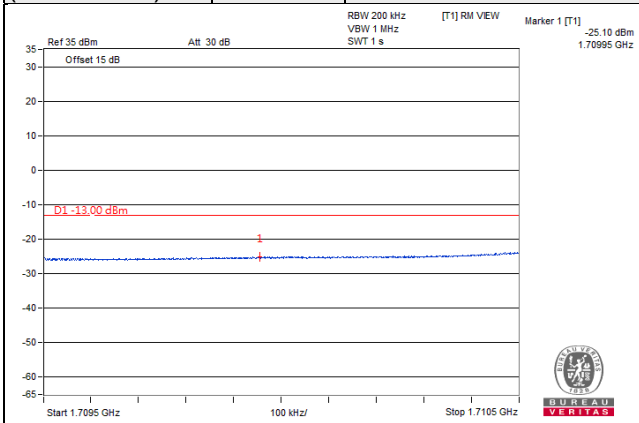


Channel Bandwidth: 20MHz

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



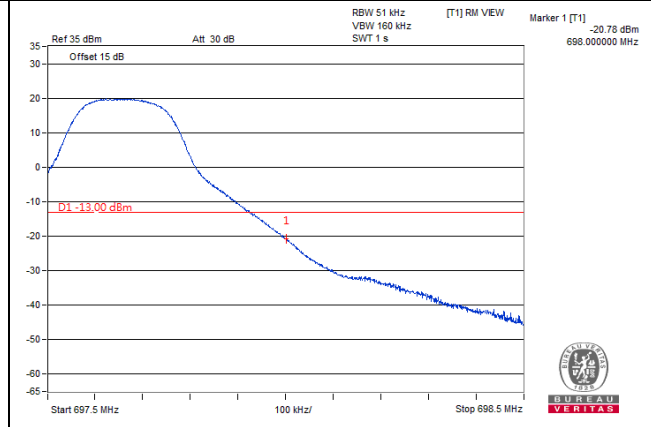
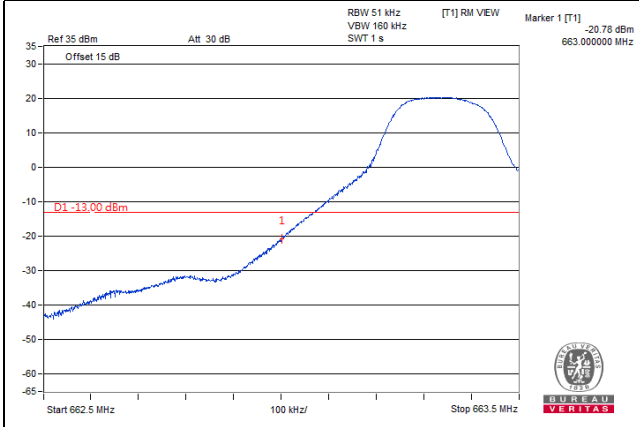
| | | | | | |
|-------------------------------|------|----------------------|-------------------------------|------|----------------------|
| Channel 132072 (1720.0MHz) | QPSK | 100 RB / 0 RB Offset | Channel 132572 (1770.0MHz) | QPSK | 100 RB / 0 RB Offset |
|-------------------------------|------|----------------------|-------------------------------|------|----------------------|



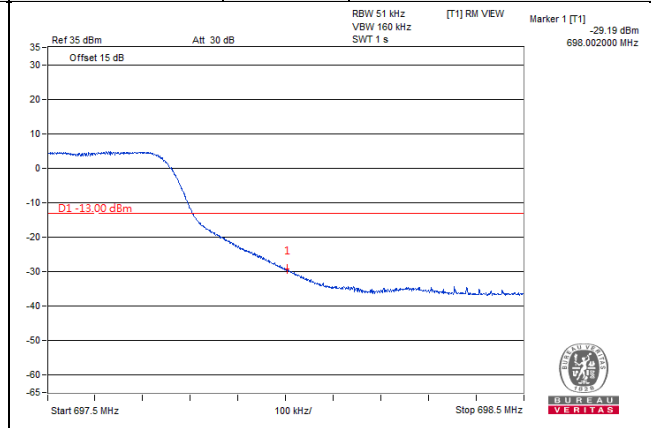
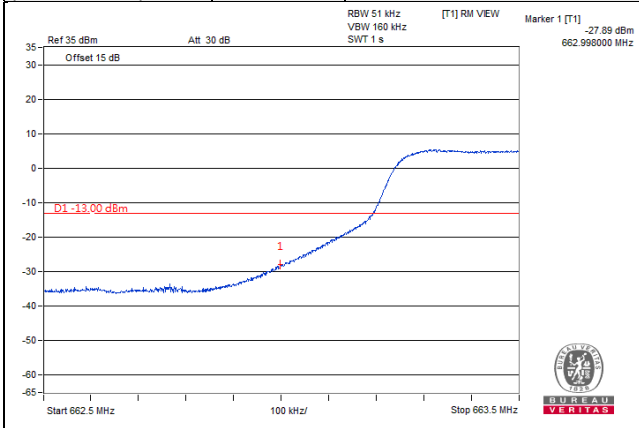
LTE Band 71

Channel Bandwidth: 5MHz

| | | | | | |
|------------------------------|------|--------------------|------------------------------|------|---------------------|
| Channel 133147 (665.5MHz) | QPSK | 1 RB / 0 RB Offset | Channel 133447 (695.5MHz) | QPSK | 1 RB / 24 RB Offset |
|------------------------------|------|--------------------|------------------------------|------|---------------------|



| | | | | | |
|------------------------------|------|---------------------|------------------------------|------|---------------------|
| Channel 133147 (665.5MHz) | QPSK | 25 RB / 0 RB Offset | Channel 133447 (695.5MHz) | QPSK | 25 RB / 0 RB Offset |
|------------------------------|------|---------------------|------------------------------|------|---------------------|



Channel Bandwidth: 10MHz

Channel 133172
(668.0MHz)

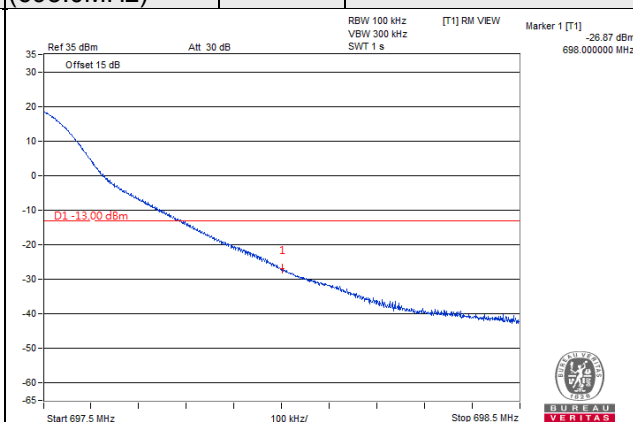
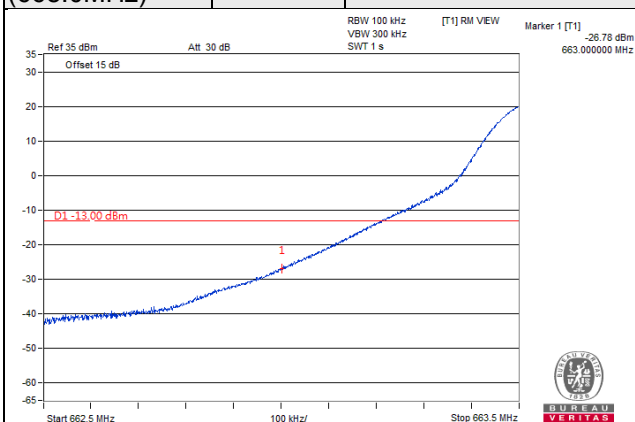
QPSK

1 RB / 0 RB Offset

Channel 133422
(693.0MHz)

QPSK

1 RB / 49 RB Offset



Channel 133172
(668.0MHz)

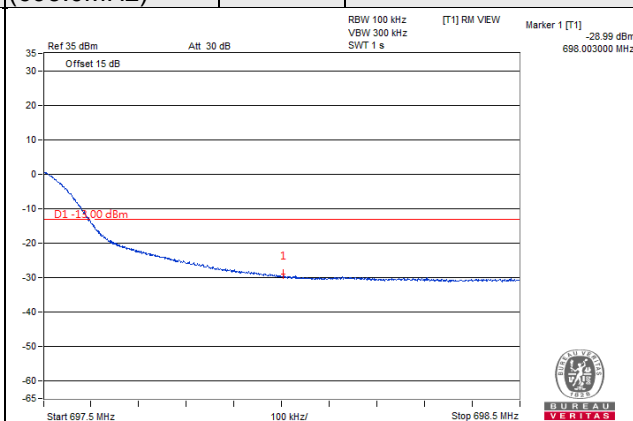
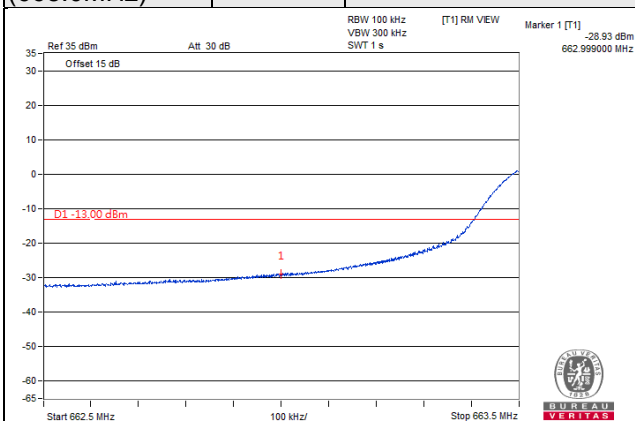
QPSK

50 RB / 0 RB Offse

Channel 133422
(693.0MHz)

QPSK

50 RB / 0 RB Offset





BUREAU
VERITAS

Channel Bandwidth: 15MHz

Channel 133197
(670.5MHz)

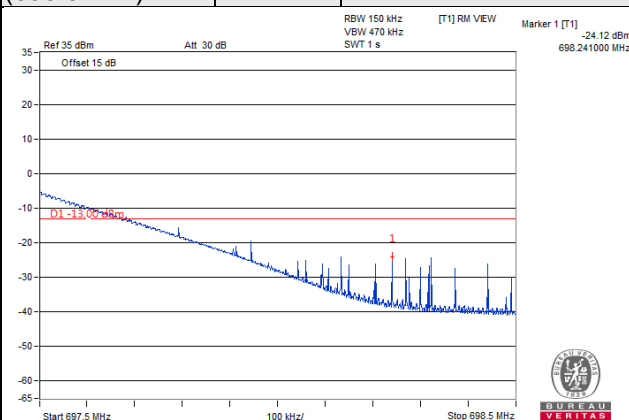
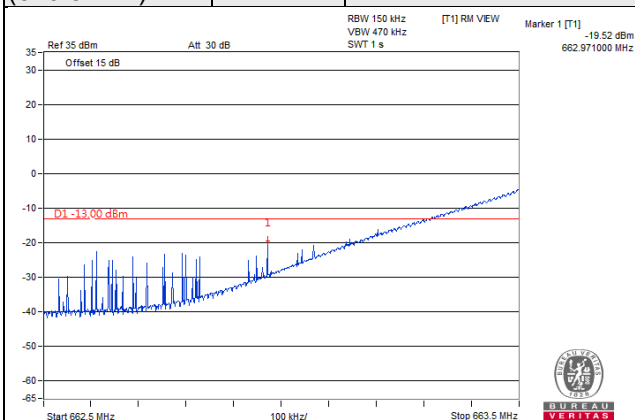
QPSK

1 RB / 0 RB Offset

Channel 133397
(690.5MHz)

QPSK

1 RB / 74 RB Offset



Channel 133197
(670.5MHz)

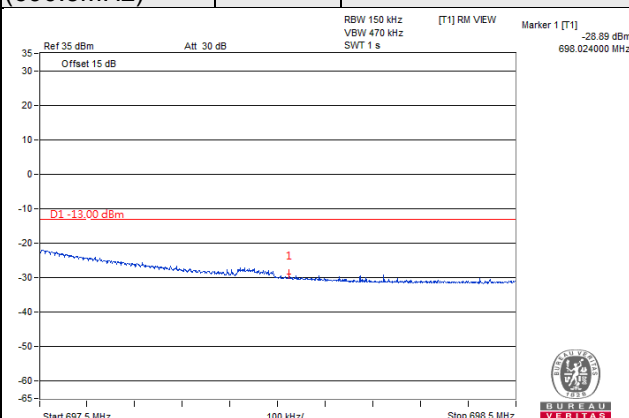
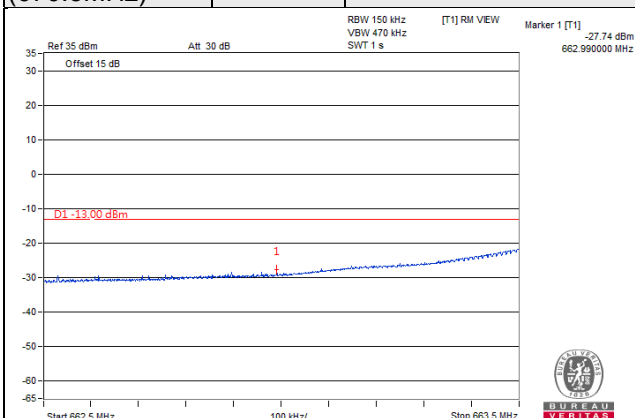
QPSK

75 RB / 0 RB Offset

Channel 133397
(690.5MHz)

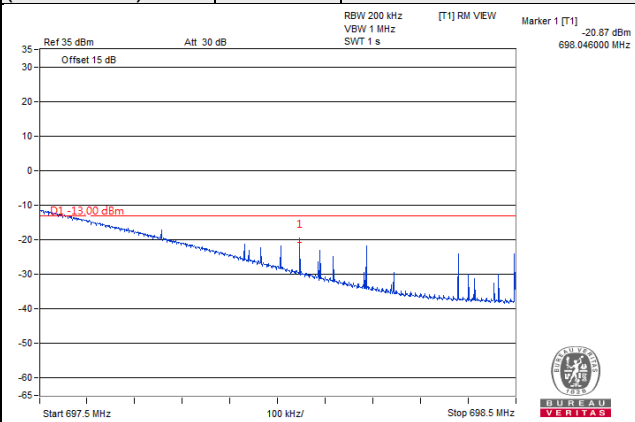
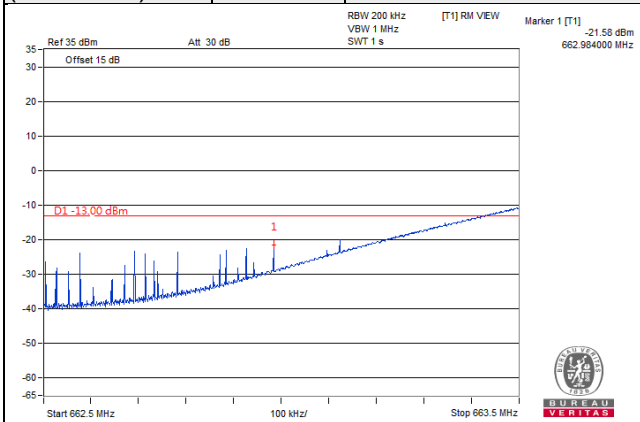
QPSK

75 RB / 0 RB Offset

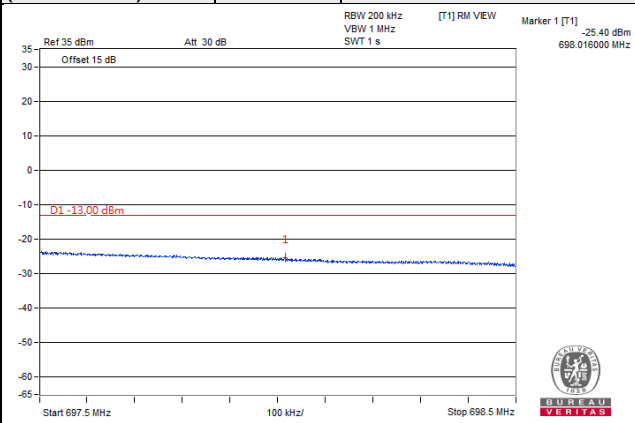
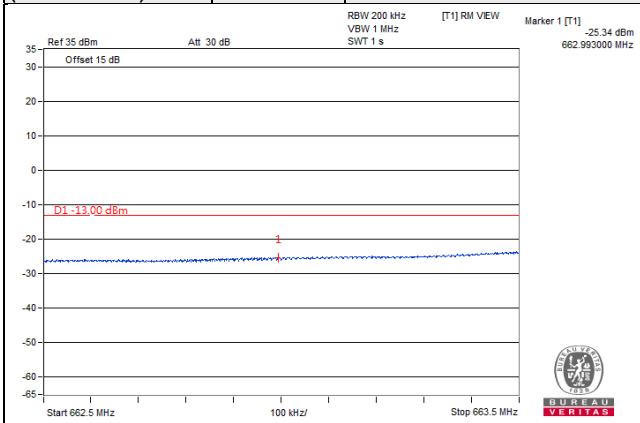


Channel Bandwidth: 20MHz

| | | | | | |
|------------------------------|------|--------------------|------------------------------|------|---------------------|
| Channel 133222 (673.0MHz) | QPSK | 1 RB / 0 RB Offset | Channel 133372 (688.0MHz) | QPSK | 1 RB / 99 RB Offset |
|------------------------------|------|--------------------|------------------------------|------|---------------------|



| | | | | | |
|------------------------------|------|----------------------|------------------------------|------|----------------------|
| Channel 133222 (673.0MHz) | QPSK | 100 RB / 0 RB Offset | Channel 133372 (688.0MHz) | QPSK | 100 RB / 0 RB Offset |
|------------------------------|------|----------------------|------------------------------|------|----------------------|

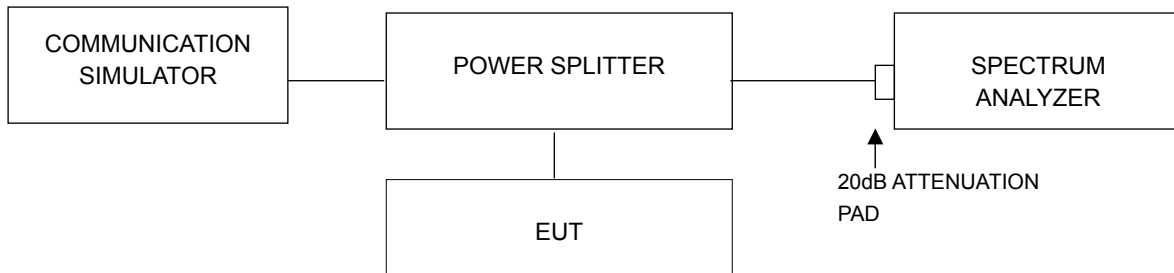


4.6 Peak to Average Ratio

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

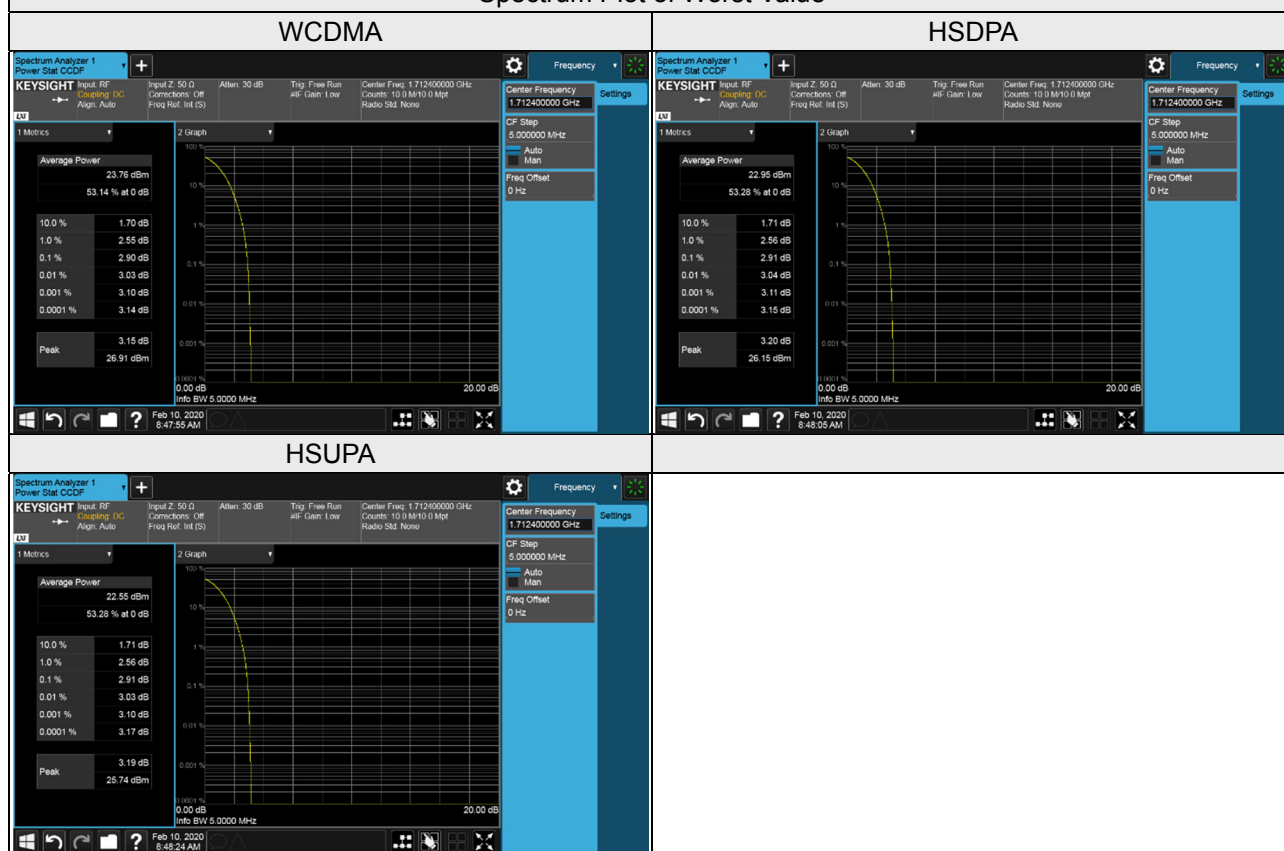
- Set resolution/measurement bandwidth \geq signal's occupied bandwidth;
- Set the number of counts to a value that stabilizes the measured CCDF curve;
- Record the maximum PAPR level associated with a probability of 0.1%.

4.6.4 Test Results

WCDMA Band 4

| Channel | Frequency (MHz) | Peak To Average Ratio (dB) | | |
|---------|-----------------|----------------------------|-------|-------|
| | | WCDMA | HSDPA | HSUPA |
| 1312 | 1712.4 | 2.90 | 2.91 | 2.91 |
| 1413 | 1732.6 | 2.88 | 2.88 | 2.88 |
| 1513 | 1752.6 | 2.90 | 2.90 | 2.89 |

Spectrum Plot of Worst Value



LTE Band 4

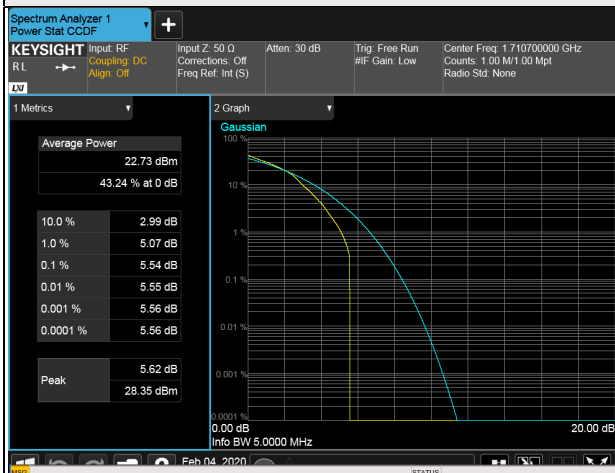
| LTE Band 4, Channel Bandwidth 1.4MHz | | | | |
|--------------------------------------|-----------------|----------------------------|-------|-------|
| Channel | Frequency (MHz) | Peak To Average Ratio (dB) | | |
| | | QPSK | 16QAM | 64QAM |
| 19957 | 1710.7 | 3.87 | 5.50 | 5.54 |
| 20175 | 1732.5 | 3.79 | 5.46 | 5.53 |
| 20393 | 1754.3 | 3.87 | 5.51 | 5.54 |
| LTE Band 4, Channel Bandwidth 3MHz | | | | |
| Channel | Frequency (MHz) | Peak To Average Ratio (dB) | | |
| | | QPSK | 16QAM | 64QAM |
| 19965 | 1711.5 | 3.61 | 5.42 | 5.45 |
| 20175 | 1732.5 | 3.51 | 5.28 | 5.44 |
| 20385 | 1753.5 | 3.66 | 5.39 | 5.50 |
| LTE Band 4, Channel Bandwidth 5MHz | | | | |
| Channel | Frequency (MHz) | Peak To Average Ratio (dB) | | |
| | | QPSK | 16QAM | 64QAM |
| 19975 | 1712.5 | 3.64 | 5.38 | 5.41 |
| 20175 | 1732.5 | 3.66 | 5.44 | 5.51 |
| 20375 | 1752.5 | 3.70 | 5.43 | 5.53 |
| LTE Band 4, Channel Bandwidth 10MHz | | | | |
| Channel | Frequency (MHz) | Peak To Average Ratio (dB) | | |
| | | QPSK | 16QAM | 64QAM |
| 20000 | 1715.0 | 3.79 | 5.58 | 5.06 |
| 20175 | 1732.5 | 3.69 | 5.45 | 5.66 |
| 20350 | 1750.0 | 3.83 | 5.51 | 5.74 |
| LTE Band 4, Channel Bandwidth 15MHz | | | | |
| Channel | Frequency (MHz) | Peak To Average Ratio (dB) | | |
| | | QPSK | 16QAM | 64QAM |
| 20025 | 1717.5 | 3.62 | 5.12 | 5.25 |
| 20175 | 1732.5 | 3.43 | 5.19 | 5.27 |
| 20325 | 1747.5 | 3.73 | 5.39 | 5.55 |

LTE Band 4, Channel Bandwidth 20MHz

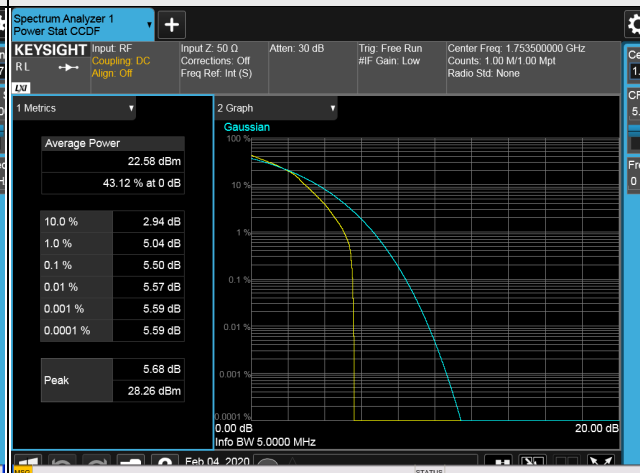
| Channel | Frequency (MHz) | Peak To Average Ratio (dB) | | |
|---------|-----------------|----------------------------|-------|-------|
| | | QPSK | 16QAM | 64QAM |
| 20050 | 1720.0 | 3.93 | 5.30 | 5.35 |
| 20175 | 1732.5 | 3.72 | 8.45 | 5.69 |
| 20300 | 1745.0 | 3.73 | 4.88 | 4.85 |

Spectrum Plot of Worst Value

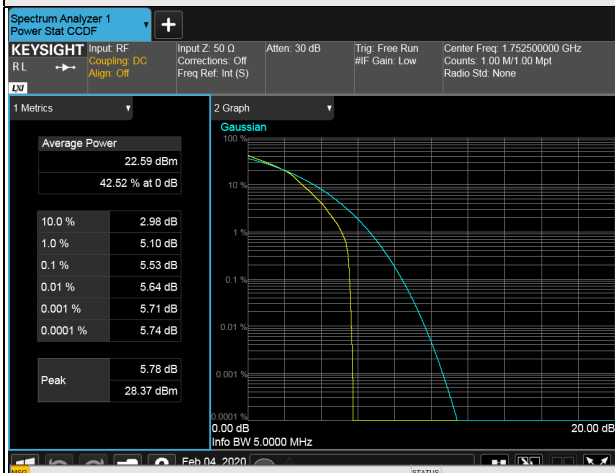
1.4MHz / 64QAM



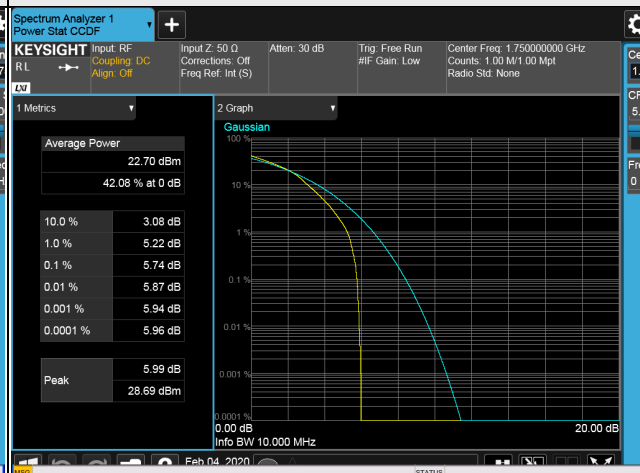
3MHz / 64QAM



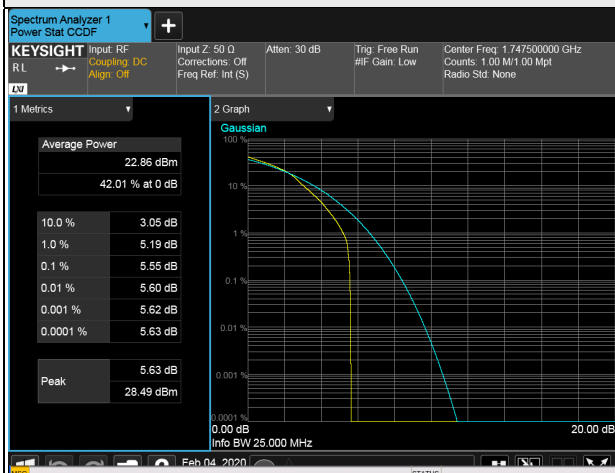
5MHz / 64QAM



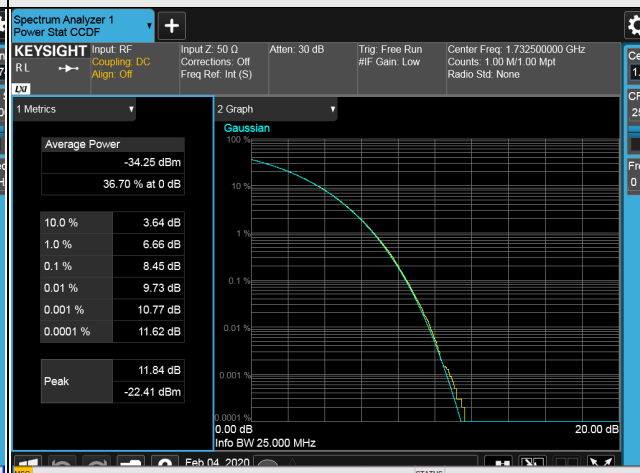
10MHz / 64QAM



15MHz / 64QAM



20MHz / 16QAM



LTE Band 7

| LTE Band 7, Channel Bandwidth 5MHz | | | | |
|-------------------------------------|-----------------|----------------------------|-------|-------|
| Channel | Frequency (MHz) | Peak To Average Ratio (dB) | | |
| | | QPSK | 16QAM | 64QAM |
| 20775 | 2502.5 | 3.58 | 5.41 | 5.46 |
| 21100 | 2535.0 | 3.56 | 5.36 | 5.42 |
| 21425 | 2567.5 | 3.74 | 4.52 | 4.63 |
| LTE Band 7, Channel Bandwidth 10MHz | | | | |
| Channel | Frequency (MHz) | Peak To Average Ratio (dB) | | |
| | | QPSK | 16QAM | 64QAM |
| 20800 | 2505.0 | 3.67 | 5.30 | 5.61 |
| 21100 | 2535.0 | 3.57 | 5.40 | 5.44 |
| 21400 | 2565.0 | 3.69 | 4.77 | 4.76 |
| LTE Band 7, Channel Bandwidth 15MHz | | | | |
| Channel | Frequency (MHz) | Peak To Average Ratio (dB) | | |
| | | QPSK | 16QAM | 64QAM |
| 20825 | 2507.5 | 3.67 | 5.38 | 5.45 |
| 21100 | 2535.0 | 3.45 | 5.04 | 5.05 |
| 21375 | 2562.5 | 3.55 | 4.92 | 4.99 |
| LTE Band 7, Channel Bandwidth 20MHz | | | | |
| Channel | Frequency (MHz) | Peak To Average Ratio (dB) | | |
| | | QPSK | 16QAM | 64QAM |
| 20850 | 2510.0 | 3.90 | 5.84 | 5.94 |
| 21100 | 2535.0 | 3.35 | 4.95 | 5.19 |
| 21350 | 2560.0 | 3.47 | 5.32 | 5.46 |