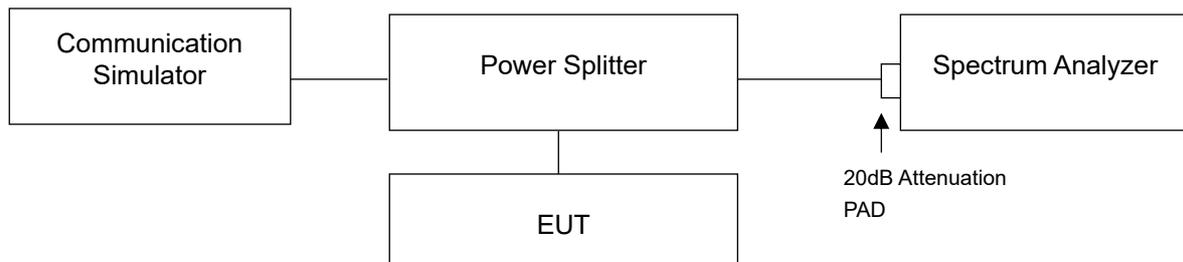


4.6 Peak to Average Ratio

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

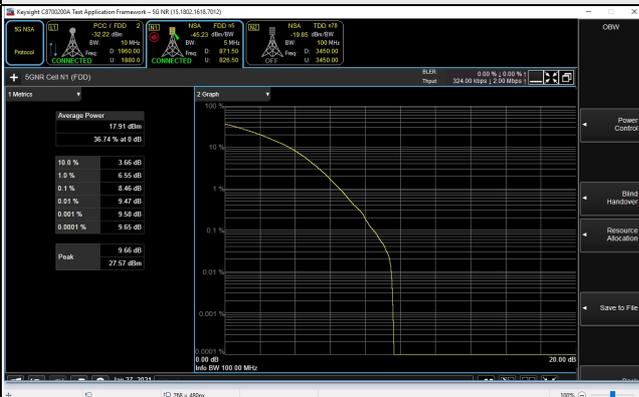
- Set resolution/measurement bandwidth \geq signal's occupied bandwidth;
- Set the number of counts to a value that stabilizes the measured CCDF curve;
- Record the maximum PAPR level associated with a probability of 0.1%.

4.6.4 Test Results

| n5, Channel Bandwidth 5MHz | | | | | | |
|-----------------------------|-----------------|----------------------------|------|-------|-------|--------|
| Channel | Frequency (MHz) | Peak To Average Ratio (dB) | | | | |
| | | $\pi/2$ BPSK | QPSK | 16QAM | 64QAM | 256QAM |
| 165300 | 826.5 | 3.84 | 4.42 | 5.55 | 6.04 | 8.46 |
| 167300 | 836.5 | 3.86 | 6.46 | 6.62 | 7.07 | 8.28 |
| 169300 | 846.5 | 3.82 | 4.42 | 5.60 | 6.08 | 8.24 |
| n5, Channel Bandwidth 10MHz | | | | | | |
| Channel | Frequency (MHz) | Peak To Average Ratio (dB) | | | | |
| | | $\pi/2$ BPSK | QPSK | 16QAM | 64QAM | 256QAM |
| 165800 | 829.0 | 3.90 | 6.50 | 6.23 | 6.95 | 8.09 |
| 167300 | 836.5 | 3.85 | 4.52 | 5.47 | 5.84 | 8.12 |
| 168800 | 844.0 | 3.89 | 4.60 | 5.48 | 5.83 | 8.33 |
| n5, Channel Bandwidth 15MHz | | | | | | |
| Channel | Frequency (MHz) | Peak To Average Ratio (dB) | | | | |
| | | $\pi/2$ BPSK | QPSK | 16QAM | 64QAM | 256QAM |
| 166300 | 831.5 | 3.91 | 6.56 | 6.59 | 6.94 | 8.25 |
| 167300 | 836.5 | 3.87 | 4.57 | 5.59 | 6.05 | 8.38 |
| 168300 | 841.5 | 3.94 | 6.85 | 6.85 | 7.14 | 8.24 |
| n5, Channel Bandwidth 20MHz | | | | | | |
| Channel | Frequency (MHz) | Peak To Average Ratio (dB) | | | | |
| | | $\pi/2$ BPSK | QPSK | 16QAM | 64QAM | 256QAM |
| 166800 | 834.0 | 3.61 | 6.67 | 6.60 | 6.97 | 8.45 |
| 167300 | 836.5 | 3.65 | 4.51 | 5.55 | 5.98 | 8.59 |
| 167800 | 839.0 | 3.84 | 6.86 | 6.92 | 7.20 | 8.47 |

Spectrum Plot of Worst Value

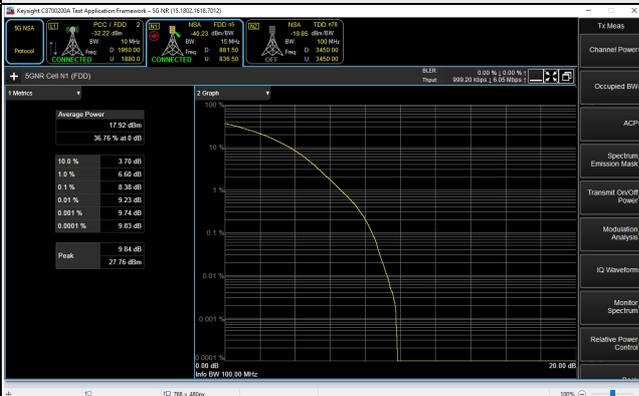
5MHz / 256QAM



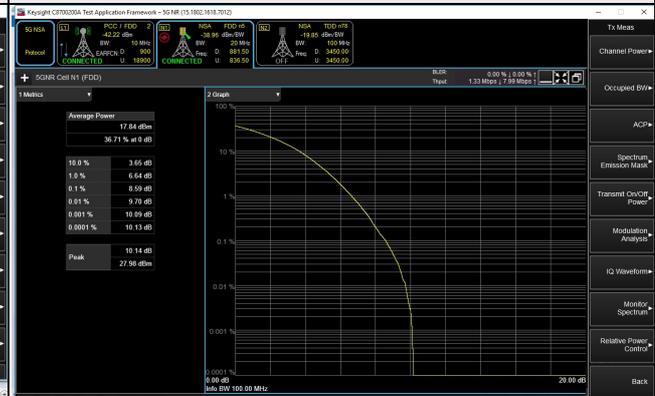
10MHz / 256QAM



15MHz / 256QAM



20MHz / 256QAM



| LTE Band 2, Channel Bandwidth 1.4MHz | | | | | |
|--------------------------------------|-----------------|----------------------------|-------|-------|--------|
| Channel | Frequency (MHz) | Peak To Average Ratio (dB) | | | |
| | | QPSK | 16QAM | 64QAM | 256QAM |
| 18607 | 1850.7 | 2.68 | 5.53 | 7.09 | 7.58 |
| 18900 | 1880.0 | 3.85 | 4.51 | 7.14 | 7.42 |
| 19193 | 1909.3 | 3.36 | 5.58 | 6.91 | 6.81 |
| LTE Band 2, Channel Bandwidth 3MHz | | | | | |
| Channel | Frequency (MHz) | Peak To Average Ratio (dB) | | | |
| | | QPSK | 16QAM | 64QAM | 256QAM |
| 18615 | 1851.5 | 3.66 | 5.39 | 6.46 | 7.58 |
| 18900 | 1880.0 | 3.65 | 4.41 | 6.40 | 7.72 |
| 19185 | 1908.5 | 3.27 | 5.41 | 7.16 | 6.82 |
| LTE Band 2, Channel Bandwidth 5MHz | | | | | |
| Channel | Frequency (MHz) | Peak To Average Ratio (dB) | | | |
| | | QPSK | 16QAM | 64QAM | 256QAM |
| 18625 | 1852.5 | 3.81 | 5.36 | 6.49 | 7.79 |
| 18900 | 1880.0 | 3.59 | 5.85 | 7.43 | 7.45 |
| 19175 | 1907.5 | 3.33 | 5.40 | 7.03 | 7.14 |
| LTE Band 2, Channel Bandwidth 10MHz | | | | | |
| Channel | Frequency (MHz) | Peak To Average Ratio (dB) | | | |
| | | QPSK | 16QAM | 64QAM | 256QAM |
| 18650 | 1855.0 | 3.98 | 5.18 | 7.84 | 8.03 |
| 18900 | 1880.0 | 3.96 | 5.93 | 7.54 | 8.06 |
| 19150 | 1905.0 | 3.60 | 4.34 | 6.97 | 7.72 |
| LTE Band 2, Channel Bandwidth 15MHz | | | | | |
| Channel | Frequency (MHz) | Peak To Average Ratio (dB) | | | |
| | | QPSK | 16QAM | 64QAM | 256QAM |
| 18675 | 1857.5 | 3.81 | 5.34 | 6.83 | 7.75 |
| 18900 | 1880.0 | 3.56 | 4.55 | 7.19 | 7.36 |
| 19125 | 1902.5 | 3.65 | 4.60 | 6.79 | 7.57 |

LTE Band 2, Channel Bandwidth 20MHz

| Channel | Frequency (MHz) | Peak To Average Ratio (dB) | | | |
|---------|-----------------|----------------------------|-------|-------|--------|
| | | QPSK | 16QAM | 64QAM | 256QAM |
| 18700 | 1860.0 | 3.73 | 5.36 | 6.40 | 8.17 |
| 18900 | 1880.0 | 3.56 | 4.63 | 7.05 | 7.80 |
| 19100 | 1900.0 | 3.64 | 4.63 | 6.72 | 7.86 |

Spectrum Plot of Worst Value

1.4MHz / 256QAM



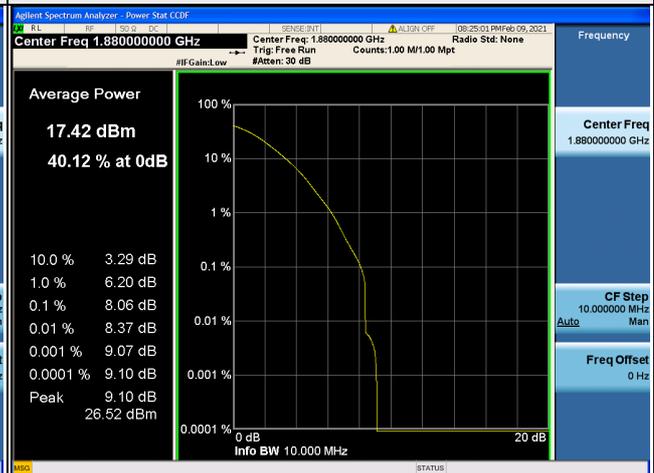
3MHz / 256QAM



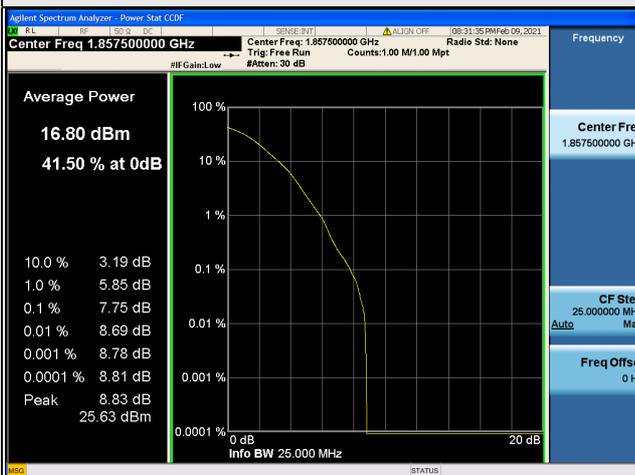
5MHz / 256QAM



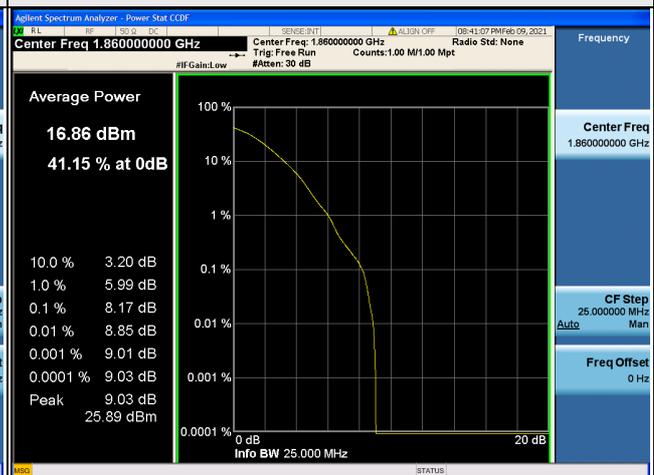
10MHz / 256QAM



15MHz / 256QAM



20MHz / 256QAM



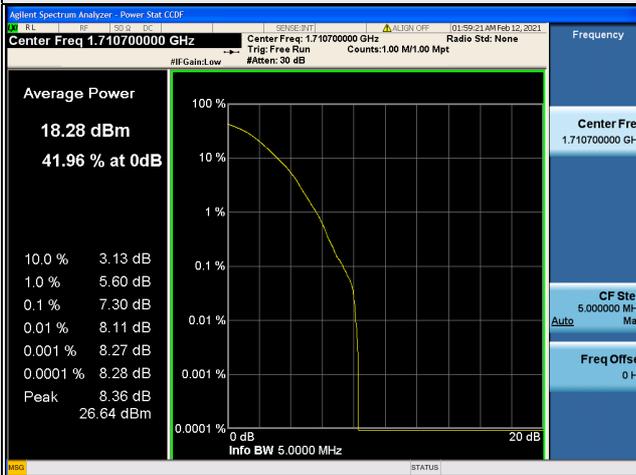
| LTE Band 66, Channel Bandwidth 1.4MHz | | | | | |
|---------------------------------------|-----------------|----------------------------|-------|-------|--------|
| Channel | Frequency (MHz) | Peak To Average Ratio (dB) | | | |
| | | QPSK | 16QAM | 64QAM | 256QAM |
| 131979 | 1710.7 | 3.95 | 4.99 | 6.30 | 7.30 |
| 132322 | 1745.0 | 4.04 | 5.80 | 7.08 | 7.13 |
| 132665 | 1779.3 | 3.89 | 5.52 | 6.73 | 7.08 |
| LTE Band 66, Channel Bandwidth 3MHz | | | | | |
| Channel | Frequency (MHz) | Peak To Average Ratio (dB) | | | |
| | | QPSK | 16QAM | 64QAM | 256QAM |
| 131987 | 1711.5 | 3.68 | 5.13 | 6.22 | 6.95 |
| 132322 | 1745.0 | 3.78 | 5.58 | 7.17 | 7.41 |
| 132657 | 1778.5 | 3.67 | 5.40 | 6.91 | 6.93 |
| LTE Band 66, Channel Bandwidth 5MHz | | | | | |
| Channel | Frequency (MHz) | Peak To Average Ratio (dB) | | | |
| | | QPSK | 16QAM | 64QAM | 256QAM |
| 131997 | 1712.5 | 3.68 | 5.01 | 6.23 | 7.38 |
| 132322 | 1745.0 | 3.81 | 5.64 | 7.11 | 7.72 |
| 132647 | 1777.5 | 3.73 | 5.54 | 6.83 | 7.53 |
| LTE Band 66, Channel Bandwidth 10MHz | | | | | |
| Channel | Frequency (MHz) | Peak To Average Ratio (dB) | | | |
| | | QPSK | 16QAM | 64QAM | 256QAM |
| 132022 | 1715.0 | 3.70 | 4.91 | 6.28 | 7.80 |
| 132322 | 1745.0 | 3.86 | 5.36 | 6.58 | 7.66 |
| 132622 | 1775.0 | 3.87 | 5.33 | 6.37 | 7.62 |
| LTE Band 66, Channel Bandwidth 15MHz | | | | | |
| Channel | Frequency (MHz) | Peak To Average Ratio (dB) | | | |
| | | QPSK | 16QAM | 64QAM | 256QAM |
| 132047 | 1717.5 | 3.57 | 5.19 | 6.56 | 6.55 |
| 132322 | 1745.0 | 3.81 | 5.45 | 6.64 | 7.44 |
| 132597 | 1772.5 | 3.61 | 5.23 | 6.31 | 7.47 |

LTE Band 66, Channel Bandwidth 20MHz

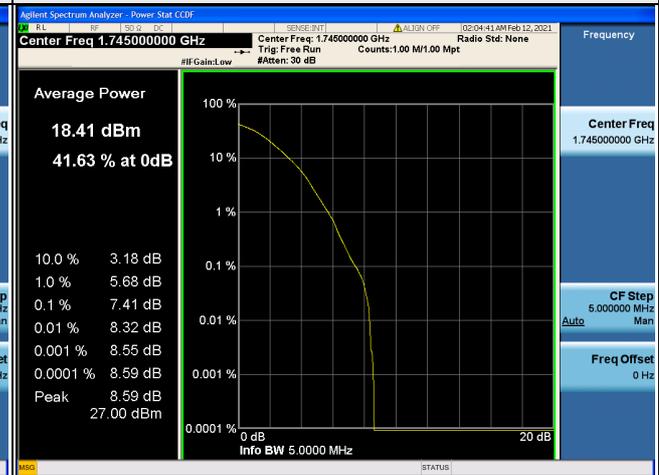
| Channel | Frequency (MHz) | Peak To Average Ratio (dB) | | | |
|---------|-----------------|----------------------------|-------|-------|--------|
| | | QPSK | 16QAM | 64QAM | 256QAM |
| 132072 | 1720.0 | 3.70 | 5.17 | 6.36 | 7.60 |
| 132322 | 1745.0 | 3.80 | 5.14 | 6.45 | 7.51 |
| 132572 | 1770.0 | 3.50 | 5.09 | 6.62 | 7.34 |

Spectrum Plot of Worst Value

1.4MHz / 256QAM



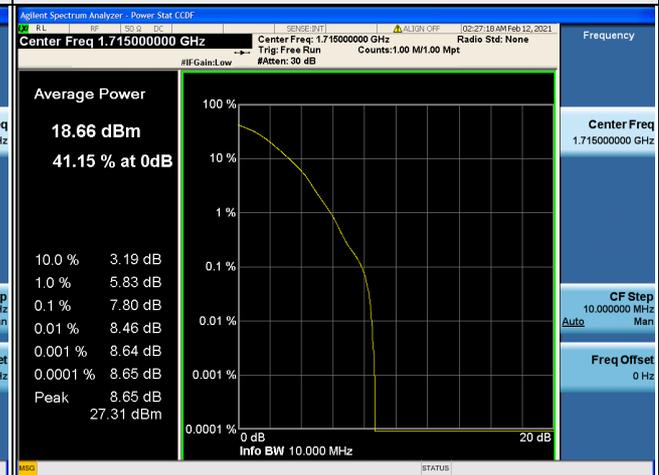
3MHz / 256QAM



5MHz / 256QAM



10MHz / 256QAM



15MHz / 256QAM



20MHz / 256QAM

