

Figure 8.2-49: Conducted spurious emissions within 30–3200 MHz, Port A, 2 carriers: 5 MHz each at the bottom of the band, QPSK

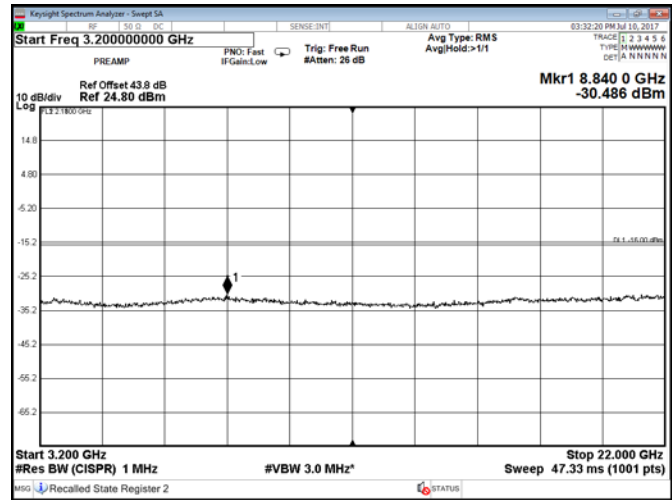


Figure 8.2-50: Conducted spurious emissions within 3200–22000 MHz, Port A, 2 carriers: 5 MHz each at the bottom of the band, QPSK

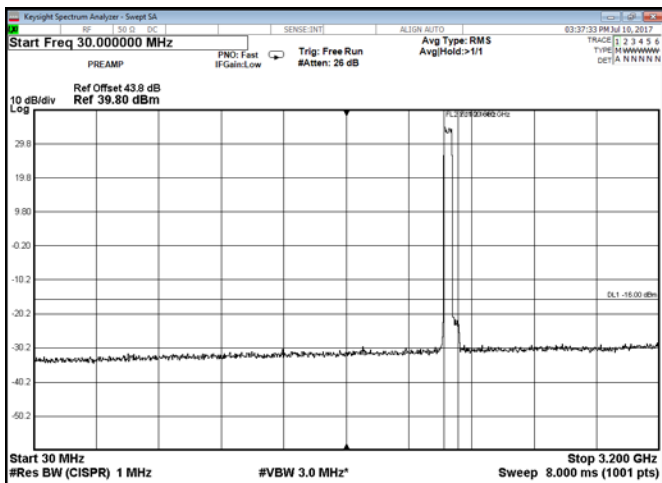


Figure 8.2-51: Conducted spurious emissions within 30–3200 MHz, Port A, 2 carriers: 20 MHz each at the bottom of the band, QPSK

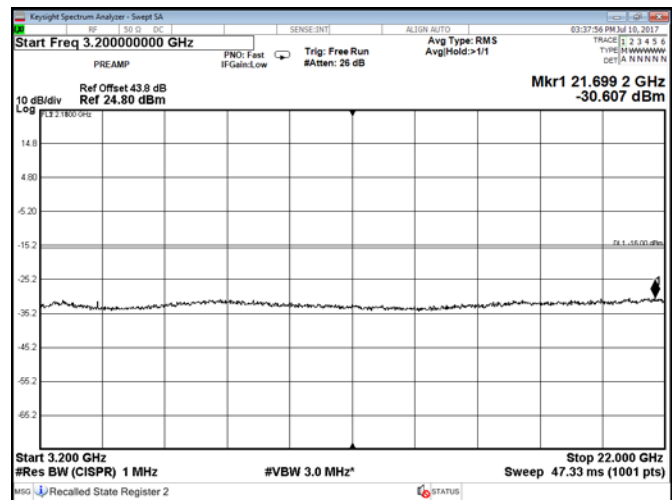


Figure 8.2-52: Conducted spurious emissions within 3200–22000 MHz, Port A, 2 carriers: 20 MHz each at the bottom of the band, QPSK

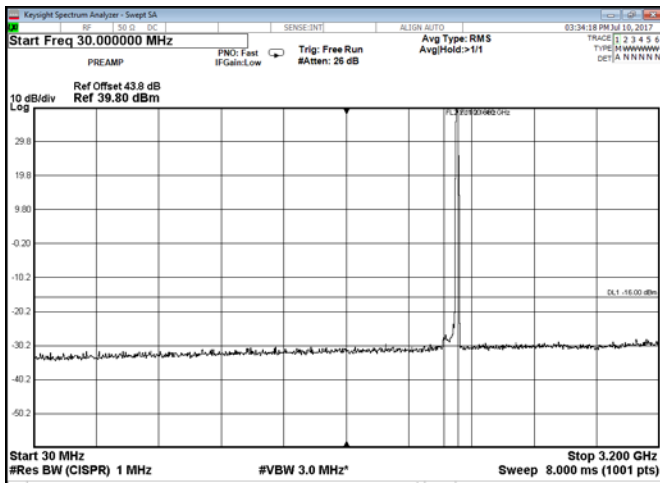


Figure 8.2-53: Conducted spurious emissions within 30–3200 MHz, Port A, 2 carriers: 5 MHz each at the top of the band, QPSK

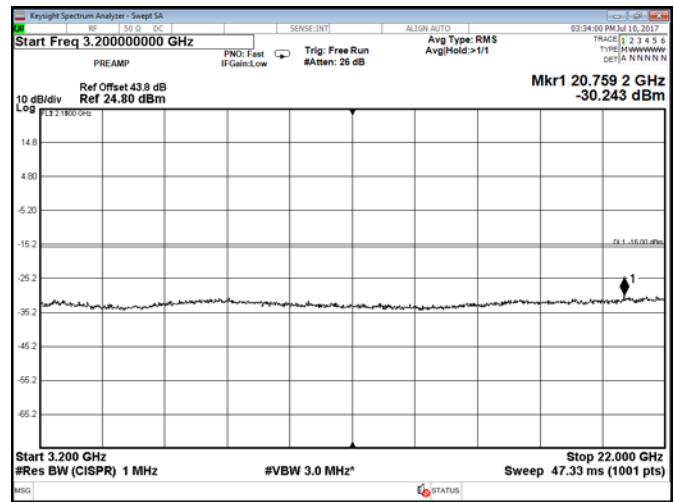


Figure 8.2-54: Conducted spurious emissions within 3200–22000 MHz, Port A, 2 carriers: 5 MHz each at the top of the band, QPSK

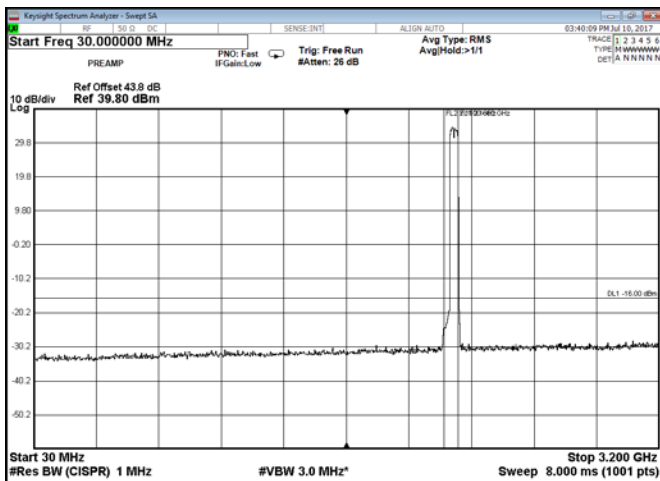


Figure 8.2-55: Conducted spurious emissions within 30–3200 MHz, Port A, 2 carriers: 20 MHz each at the top of the band, QPSK

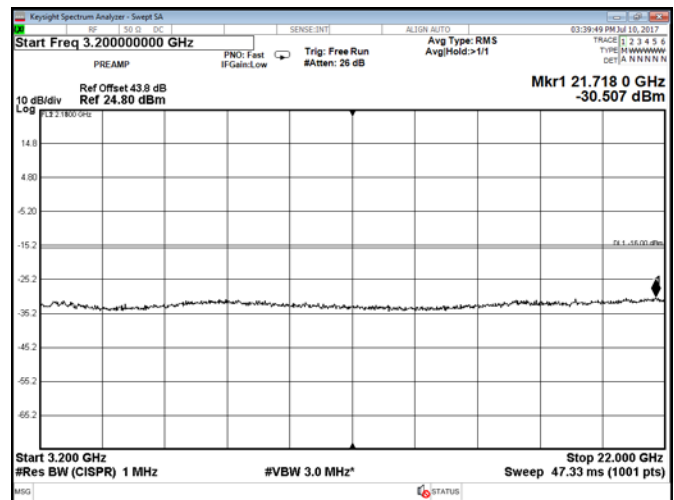


Figure 8.2-56: Conducted spurious emissions within 3200–22000 MHz, Port A, 2 carriers: 20 MHz each at the top of the band, QPSK

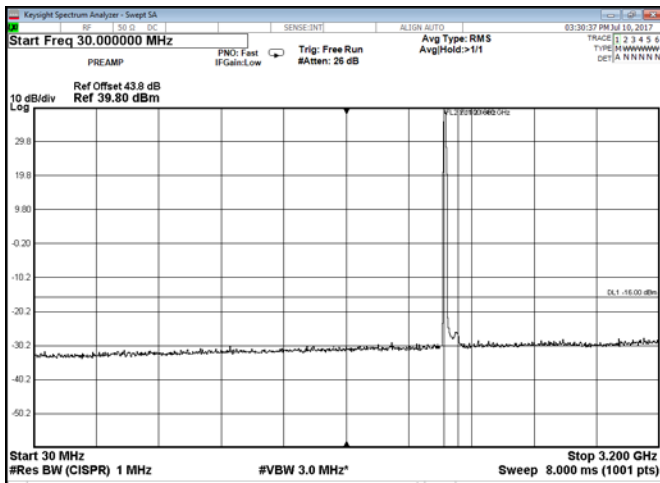


Figure 8.2-57: Conducted spurious emissions within 30–3200 MHz, Port B, 2 carriers: 5 MHz each at the bottom of the band, QPSK

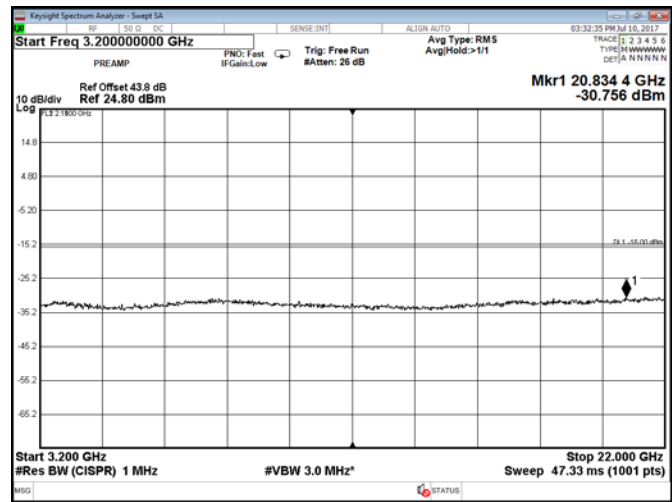


Figure 8.2-58: Conducted spurious emissions within 3200–22000 MHz, Port B, 2 carriers: 5 MHz each at the bottom of the band, QPSK

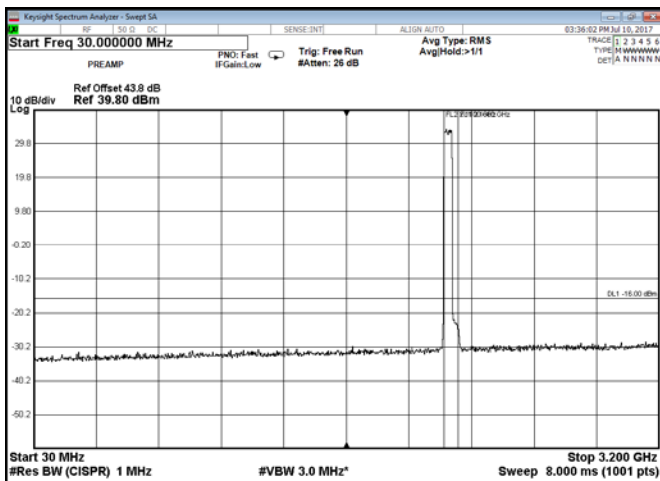


Figure 8.2-59: Conducted spurious emissions within 30–3200 MHz, Port B, 2 carriers: 20 MHz each at the bottom of the band, QPSK

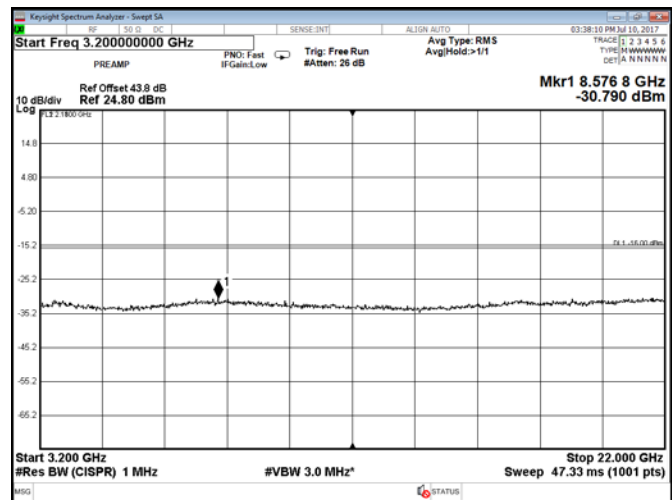


Figure 8.2-60: Conducted spurious emissions within 3200–22000 MHz, Port B, 2 carriers: 20 MHz each at the bottom of the band, QPSK

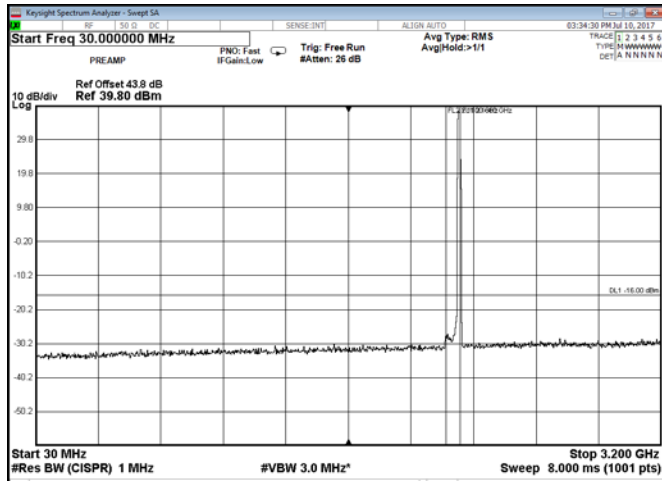


Figure 8.2-61: Conducted spurious emissions within 30–3200 MHz, Port B, 2 carriers: 5 MHz each at the top of the band, QPSK

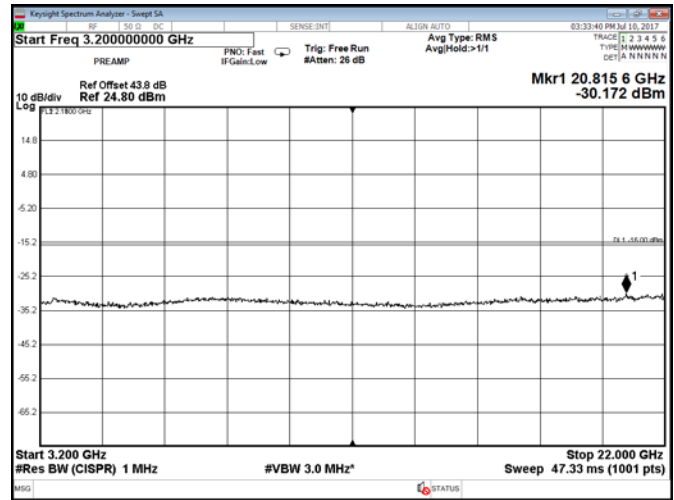


Figure 8.2-62: Conducted spurious emissions within 3200–22000 MHz, Port B, 2 carriers: 5 MHz each at the top of the band, QPSK

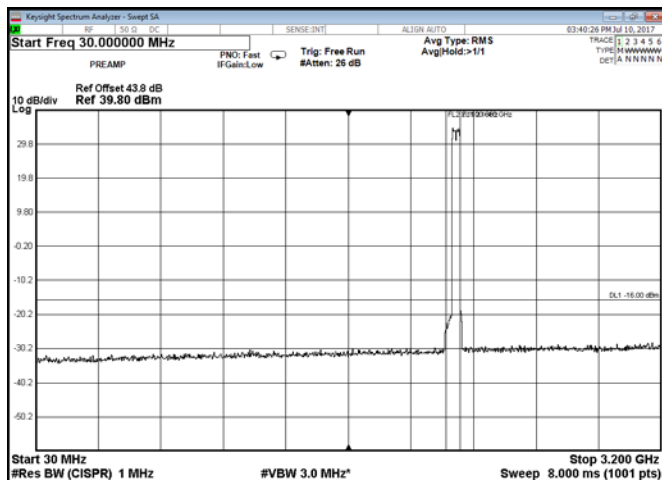


Figure 8.2-63: Conducted spurious emissions within 30–3200 MHz, Port B, 2 carriers: 20 MHz each at the top of the band, QPSK

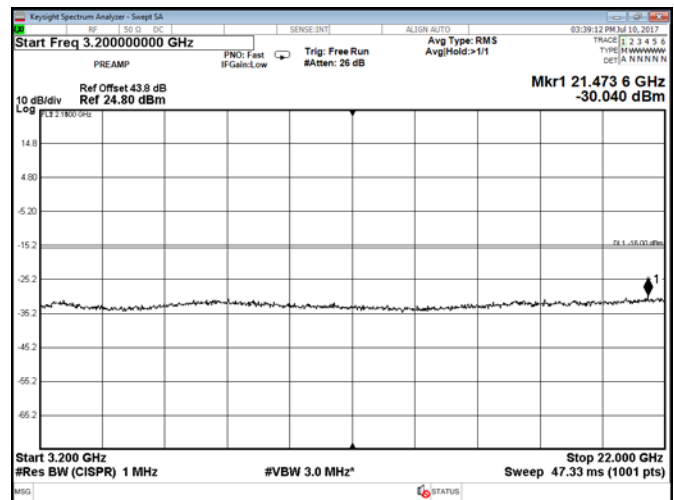


Figure 8.2-64: Conducted spurious emissions within 3200–22000 MHz, Port B, 2 carriers: 20 MHz each at the top of the band, QPSK

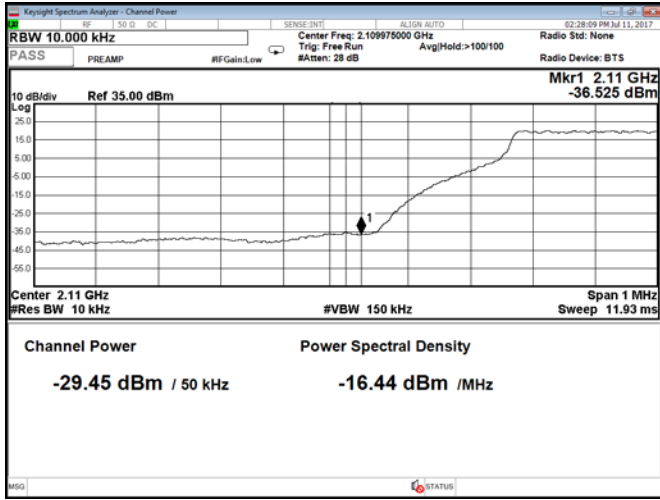


Figure 8.2-65: Conducted band edge emission at 2110 MHz, Port A, 5 MHz channel, QPSK (RBW = 1% of EBW)

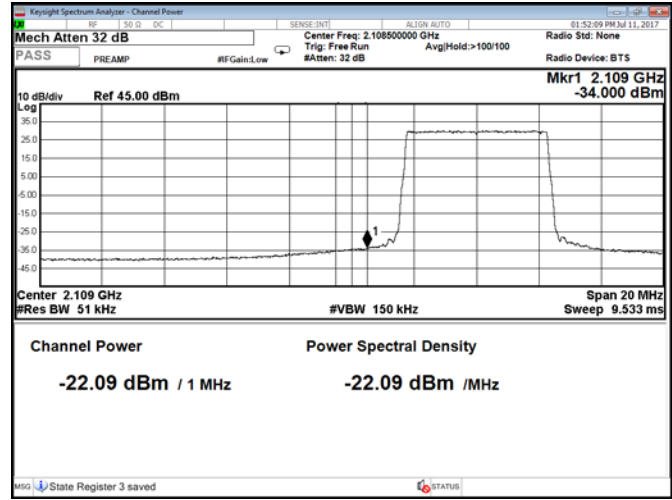


Figure 8.2-66: Conducted band edge emission at 2109 MHz, Port A, 5 MHz channel, QPSK (RBW = 1 MHz)

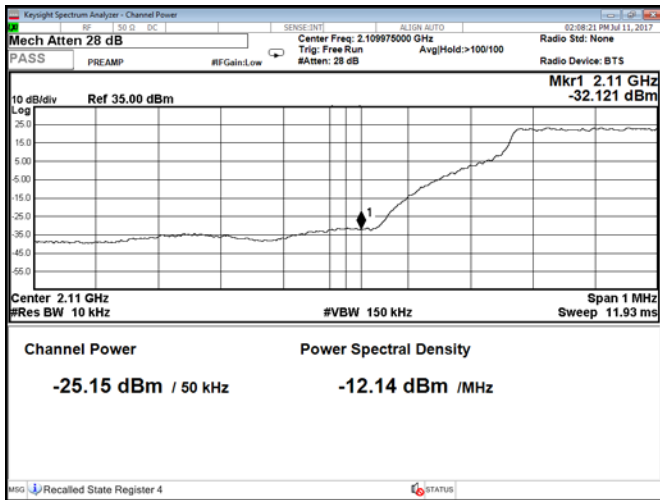


Figure 8.2-67: Conducted band edge emission at 2110 MHz, Port A, 5 MHz channel, 256QAM (RBW = 1% of EBW)

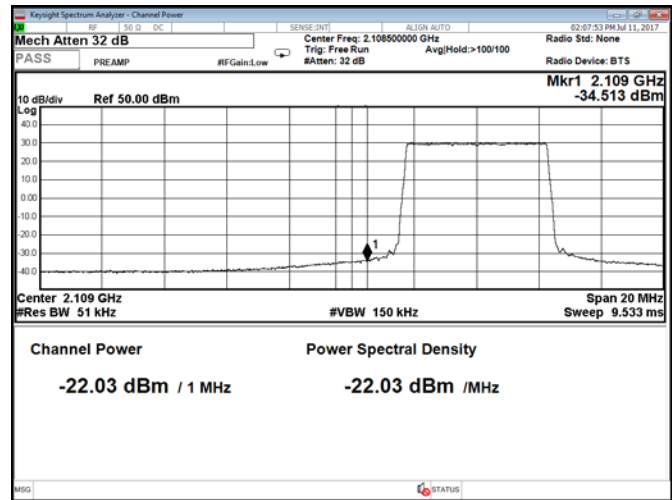


Figure 8.2-68: Conducted band edge emission at 2109 MHz, Port A, 5 MHz channel, 256QAM (RBW = 1 MHz)

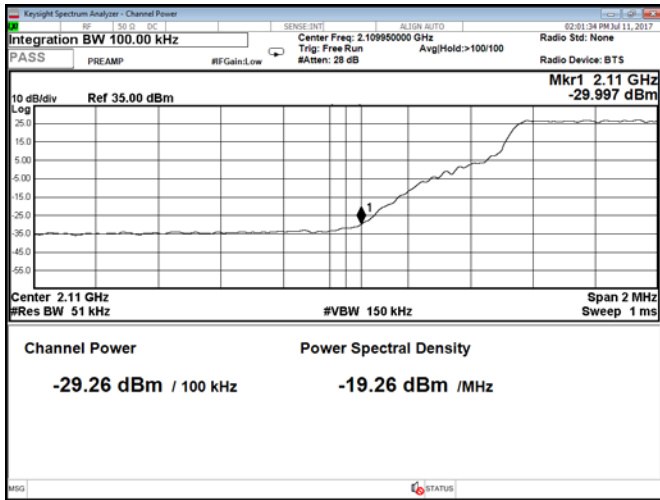


Figure 8.2-69: Conducted band edge emission at 2110 MHz, Port A, 10 MHz channel, QPSK (RBW = 1% of EBW)

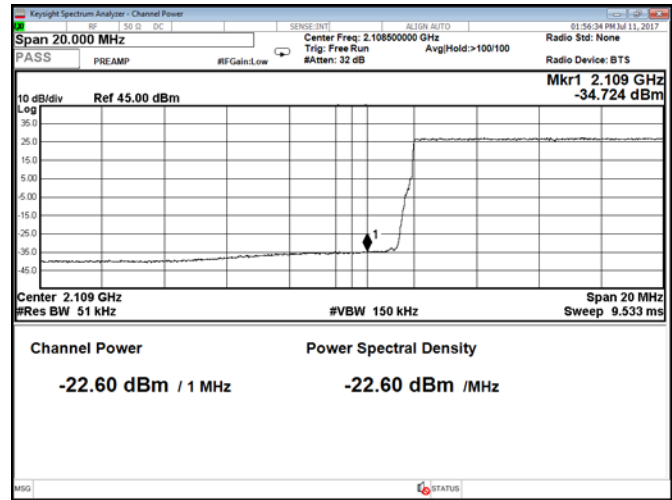


Figure 8.2-70: Conducted band edge emission at 2109 MHz, Port A, 10 MHz channel, QPSK (RBW = 1 MHz)

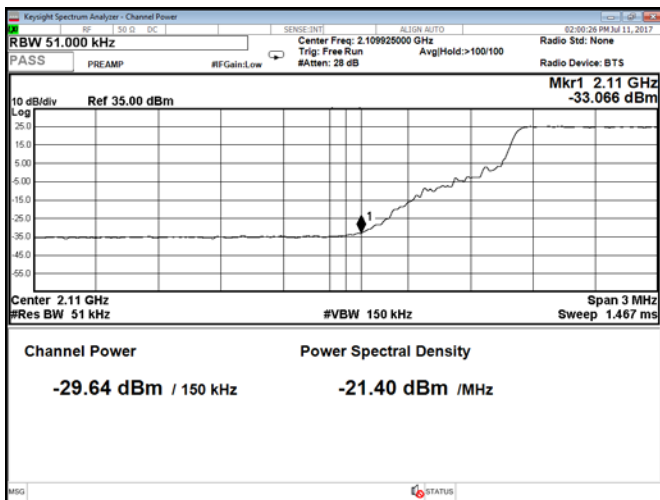


Figure 8.2-71: Conducted band edge emission at 2110 MHz, Port A, 15 MHz channel, QPSK (RBW = 1% of EBW)

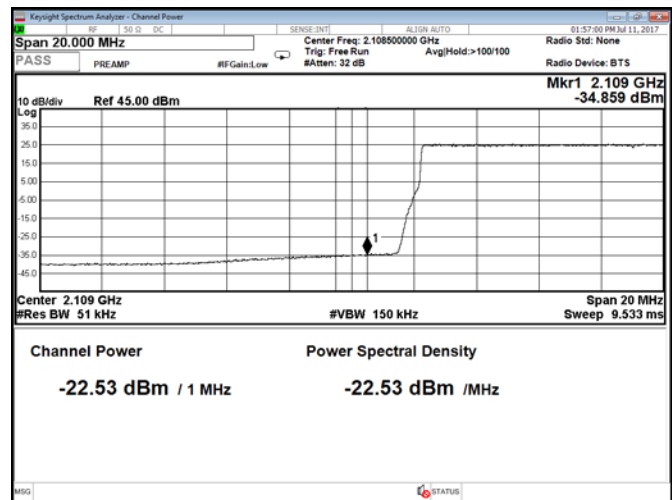


Figure 8.2-72: Conducted band edge emission at 2109 MHz, Port A, 15 MHz channel, QPSK (RBW = 1 MHz)

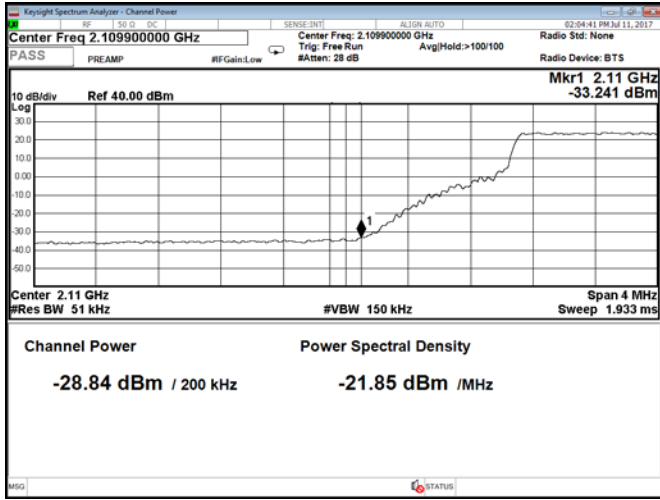


Figure 8.2-73: Conducted band edge emission at 2110 MHz, Port A, 20 MHz channel, QPSK (RBW = 1% of EBW)

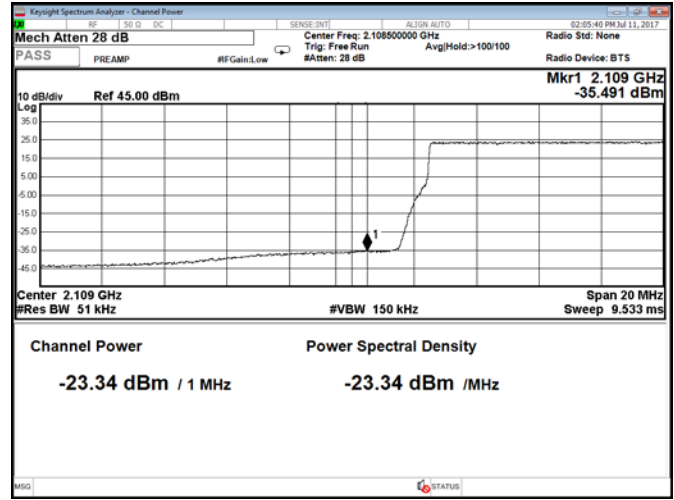


Figure 8.2-74: Conducted band edge emission at 2109 MHz, Port A, 20 MHz channel, QPSK (RBW = 1 MHz)

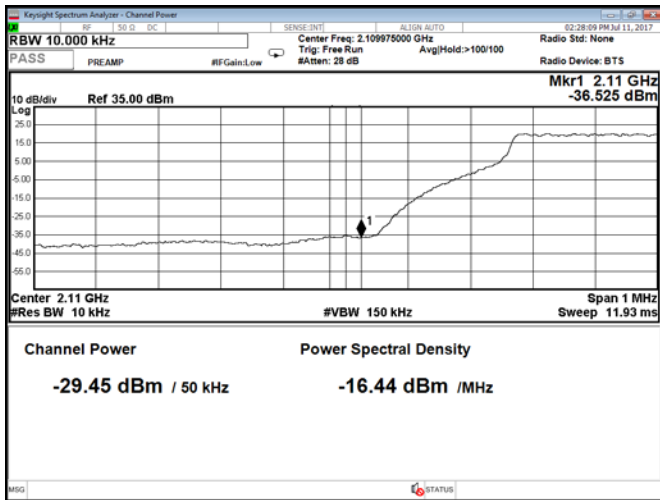


Figure 8.2-75: Conducted band edge emission at 2110 MHz, Port A, 5 MHz channel, 2 carriers, QPSK (RBW = 1% of EBW)

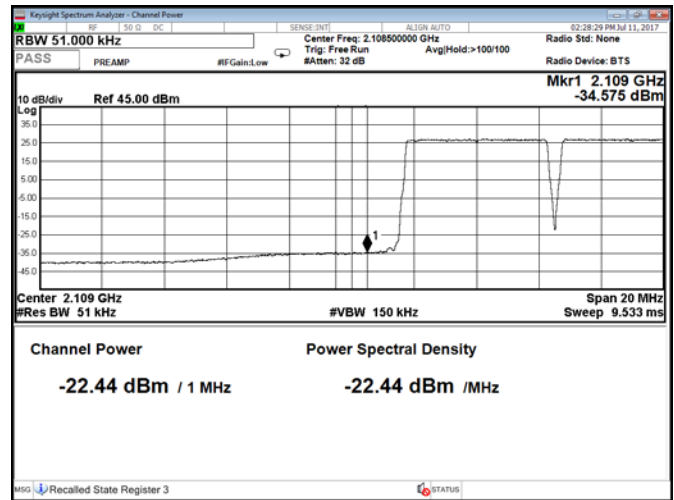


Figure 8.2-76: Conducted band edge emission at 2109 MHz, Port A, 5 MHz channel, 2 carriers, QPSK (RBW = 1 MHz)

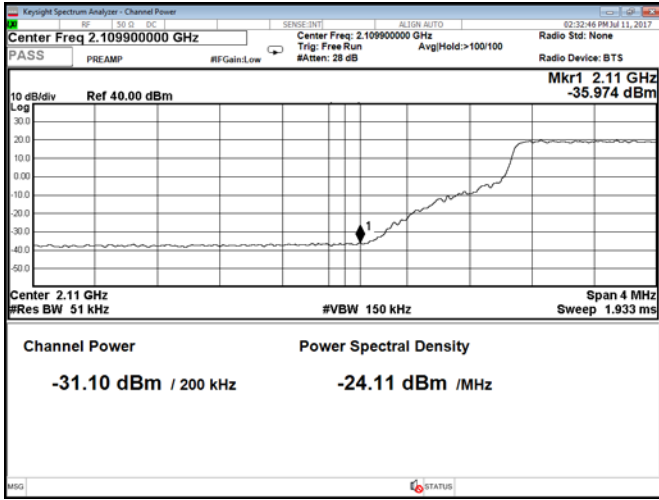


Figure 8.2-77: Conducted band edge emission at 2110 MHz, Port A, 20 MHz channel, 2 carriers, QPSK (RBW = 1% of EBW)

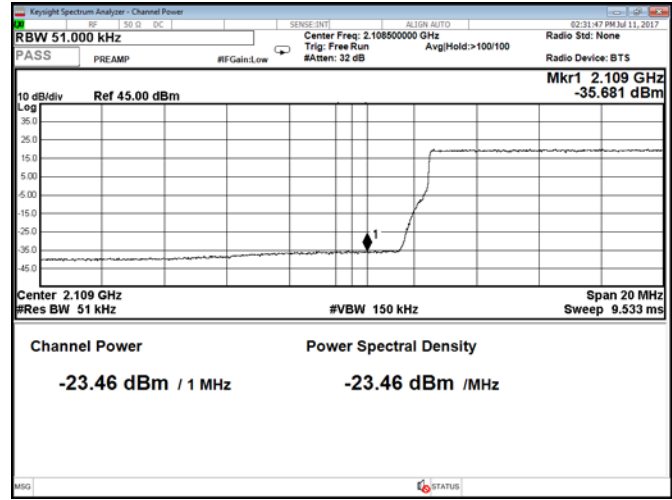


Figure 8.2-78: Conducted band edge emission at 2109 MHz, Port A, 20 MHz channel, 2 carriers, QPSK (RBW = 1 MHz)

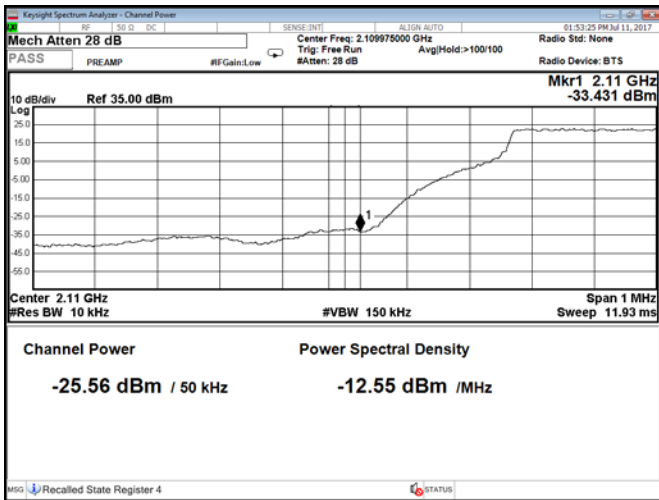


Figure 8.2-79: Conducted band edge emission at 2110 MHz, Port B, 5 MHz channel, QPSK (RBW = 1% of EBW)

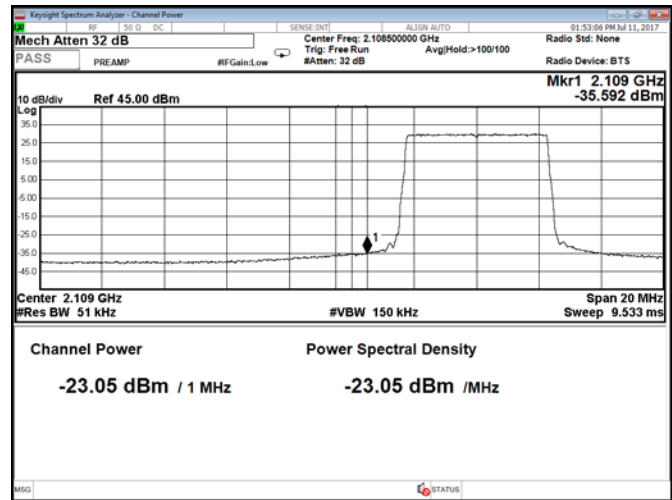


Figure 8.2-80: Conducted band edge emission at 2109 MHz, Port B, 5 MHz channel, QPSK (RBW = 1 MHz)

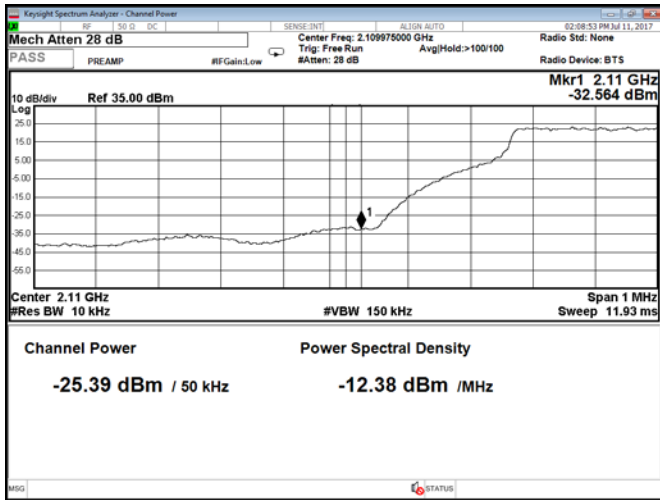


Figure 8.2-81: Conducted band edge emission at 2110 MHz, Port B, 5 MHz channel, 256QAM (RBW = 1% of EBW)

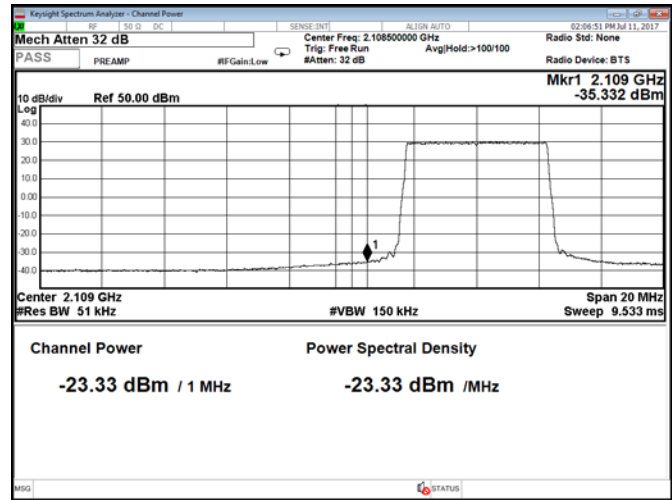


Figure 8.2-82: Conducted band edge emission at 2109 MHz, Port B, 5 MHz channel, 256QAM (RBW = 1 MHz)

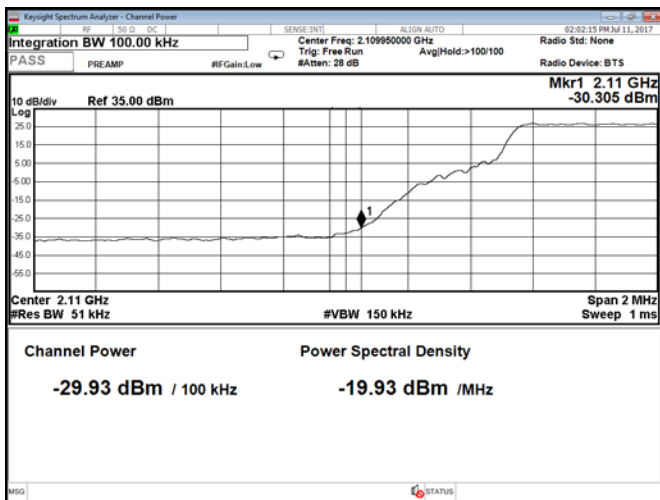


Figure 8.2-83: Conducted band edge emission at 2110 MHz, Port B, 10 MHz channel, QPSK (RBW = 1% of EBW)

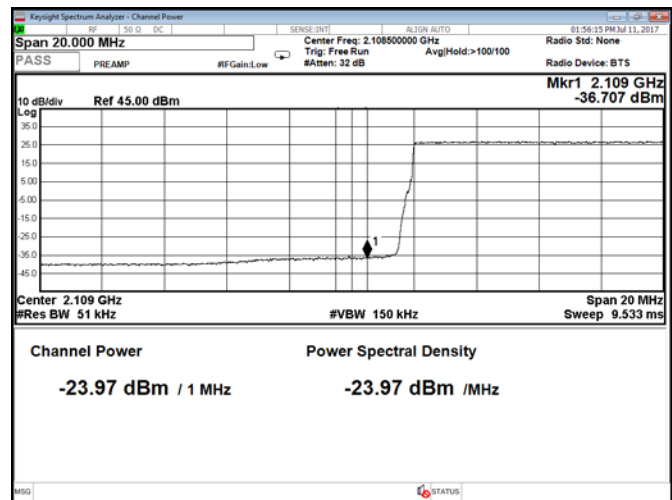


Figure 8.2-84: Conducted band edge emission at 2109 MHz, Port B, 10 MHz channel, QPSK (RBW = 1 MHz)

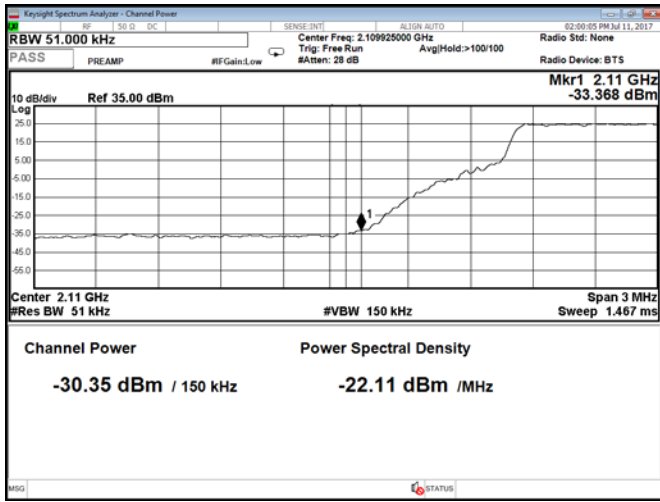


Figure 8.2-85: Conducted band edge emission at 2110 MHz, Port B, 15 MHz channel, QPSK (RBW = 1% of EBW)

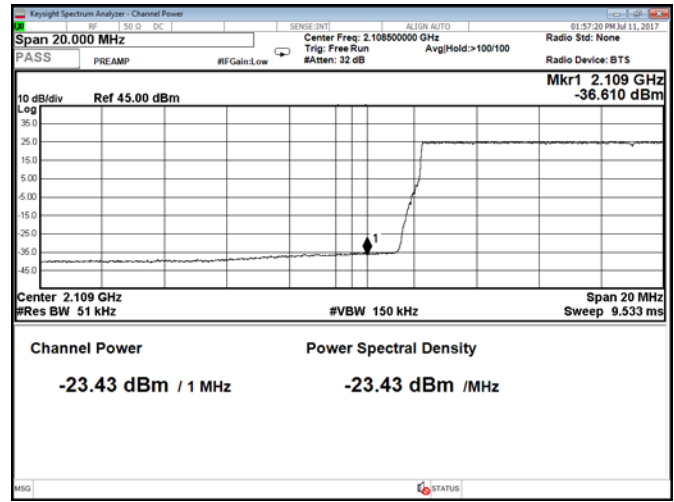


Figure 8.2-86: Conducted band edge emission at 2109 MHz, Port B, 15 MHz channel, QPSK (RBW = 1 MHz)

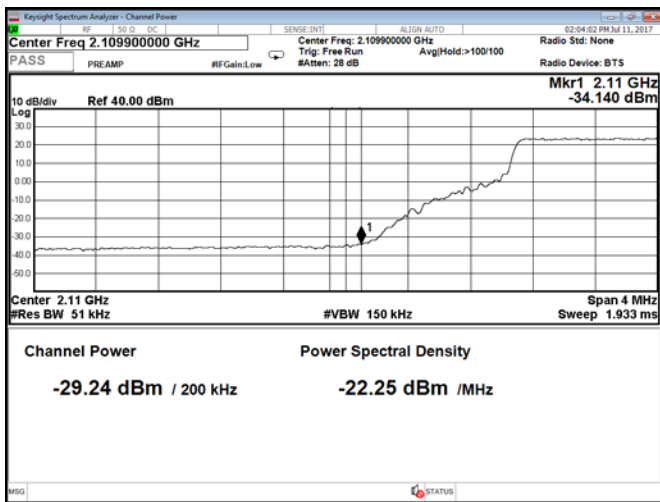


Figure 8.2-87: Conducted band edge emission at 2110 MHz, Port B, 20 MHz channel, QPSK (RBW = 1% of EBW)

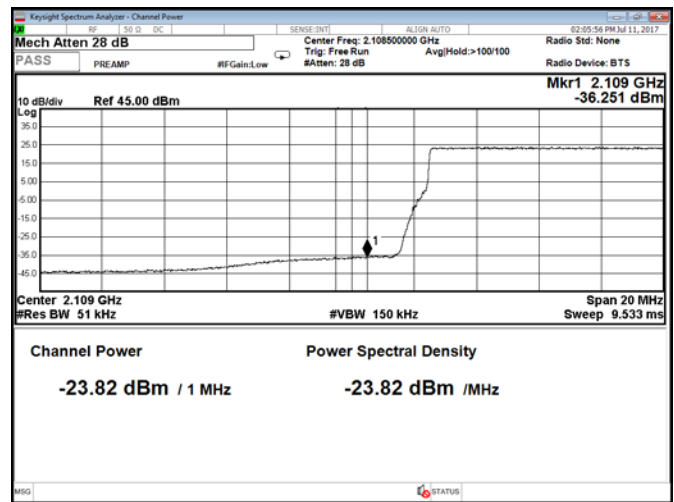


Figure 8.2-88: Conducted band edge emission at 2109 MHz, Port B, 20 MHz channel, QPSK (RBW = 1 MHz)

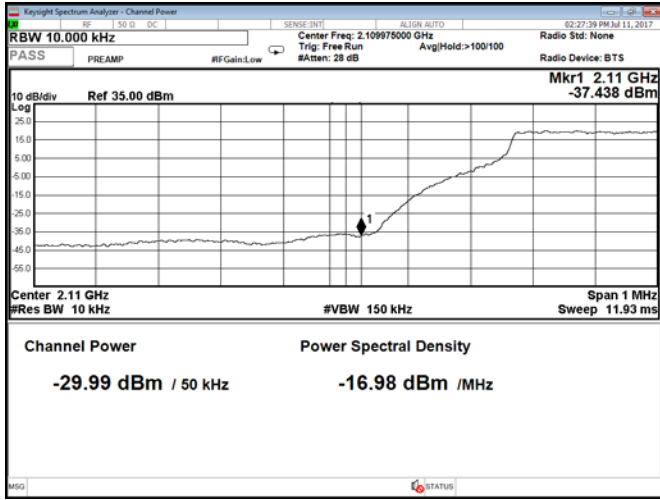


Figure 8.2-89: Conducted band edge emission at 2110 MHz, Port B, 5 MHz channel, 2 carriers, QPSK (RBW = 1% of EBW)

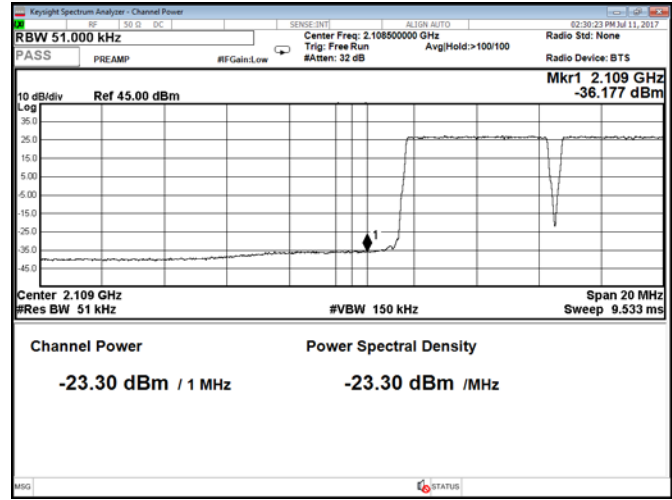


Figure 8.2-90: Conducted band edge emission at 2109 MHz, Port B, 5 MHz channel, 2 carriers, QPSK (RBW = 1 MHz)

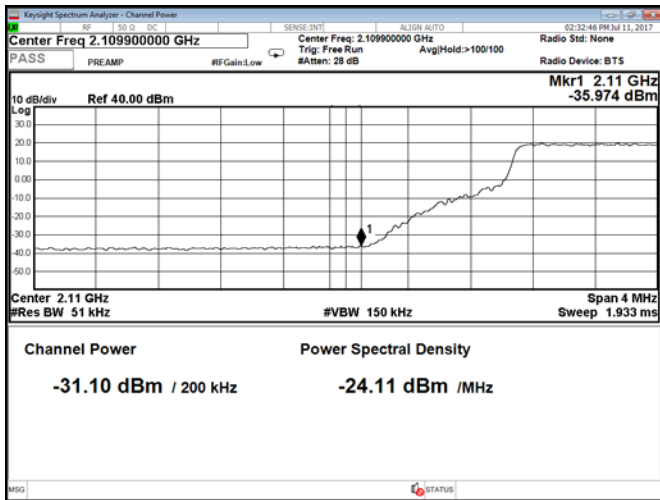


Figure 8.2-91: Conducted band edge emission at 2110 MHz, Port B, 20 MHz channel, 2 carriers, QPSK (RBW = 1% of EBW)

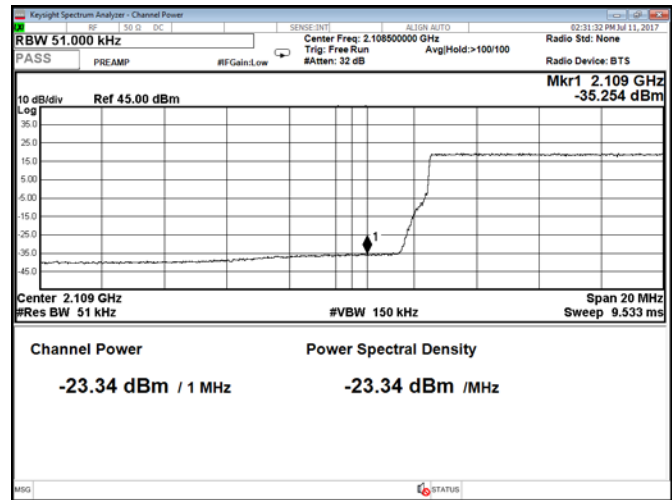


Figure 8.2-92: Conducted band edge emission at 2109 MHz, Port B, 20 MHz channel, 2 carriers, QPSK (RBW = 1 MHz)

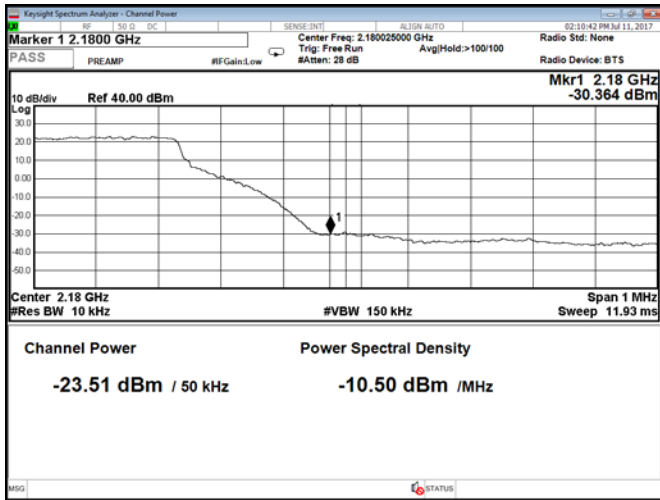


Figure 8.2-93: Conducted band edge emission at 2180 MHz, Port A, 5 MHz channel, QPSK (RBW = 1% of EBW)

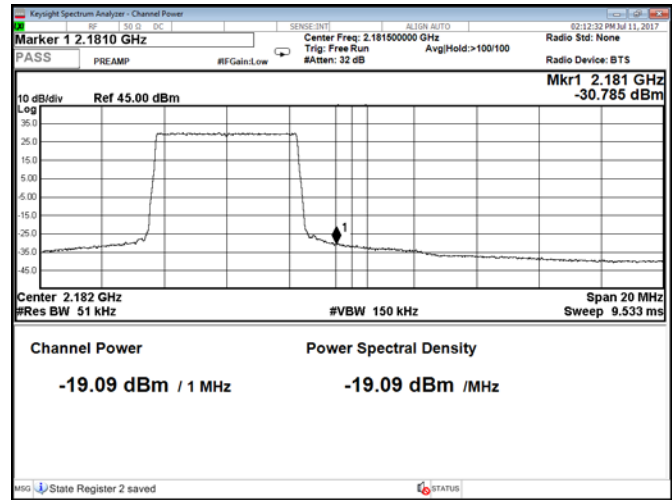


Figure 8.2-94: Conducted band edge emission at 2181 MHz, Port A, 5 MHz channel, QPSK (RBW = 1 MHz)

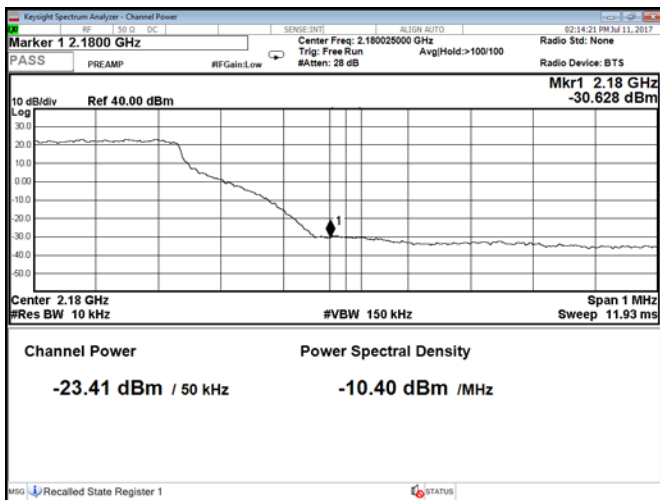


Figure 8.2-95: Conducted band edge emission at 2180 MHz, Port A, 5 MHz channel, 256QAM (RBW = 1% of EBW)

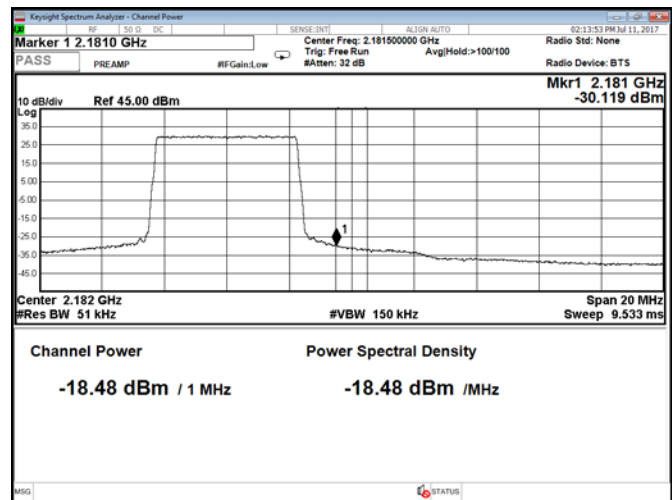


Figure 8.2-96: Conducted band edge emission at 2181 MHz, Port A, 5 MHz channel, 256QAM (RBW = 1 MHz)

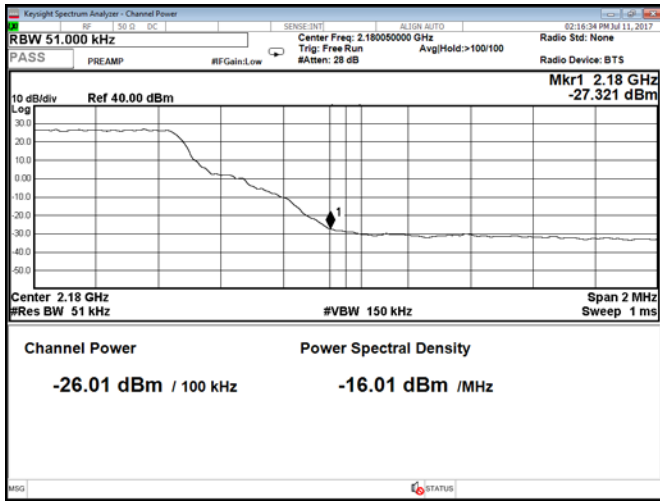


Figure 8.2-97: Conducted band edge emission at 2180 MHz, Port A, 10 MHz channel, QPSK (RBW = 1% of EBW)

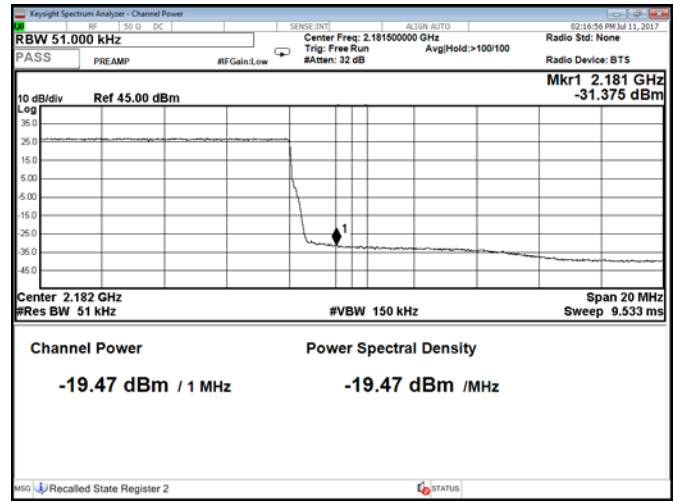


Figure 8.2-98: Conducted band edge emission at 2181 MHz, Port A, 10 MHz channel, QPSK (RBW = 1 MHz)

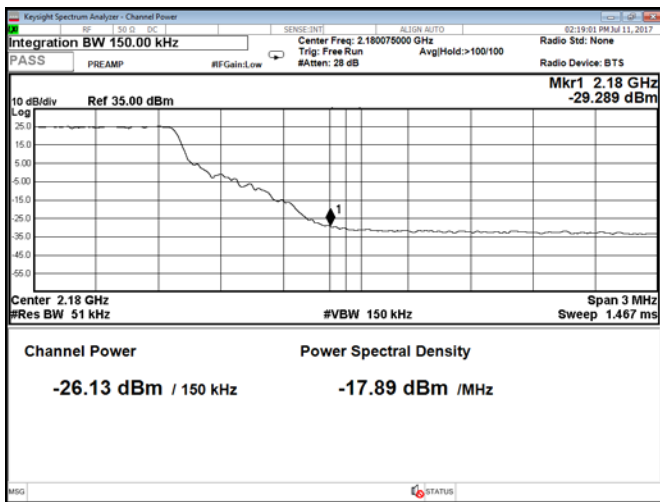


Figure 8.2-99: Conducted band edge emission at 2180 MHz, Port A, 15 MHz channel, QPSK (RBW = 1% of EBW)

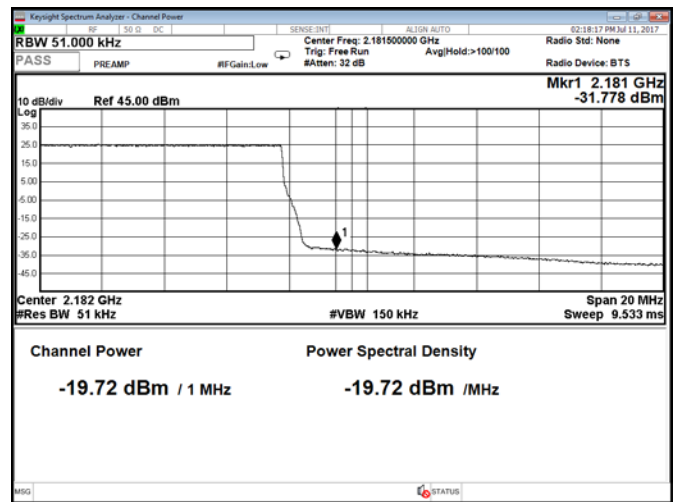


Figure 8.2-100: Conducted band edge emission at 2181 MHz, Port A, 15 MHz channel, QPSK (RBW = 1 MHz)

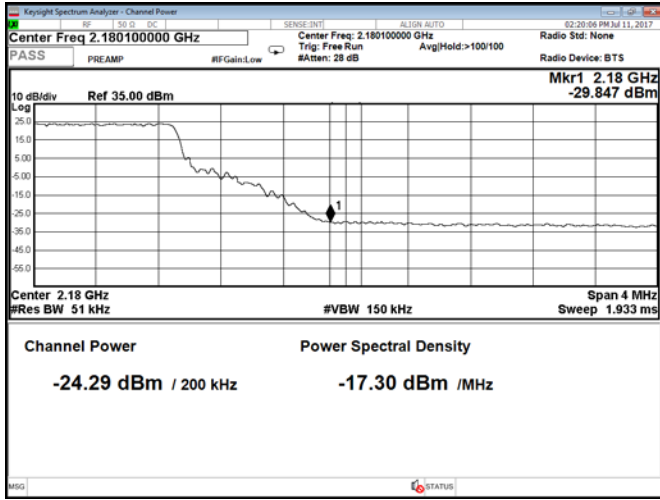


Figure 8.2-101: Conducted band edge emission at 2180 MHz, Port A, 20 MHz channel, QPSK (RBW = 1% of EBW)

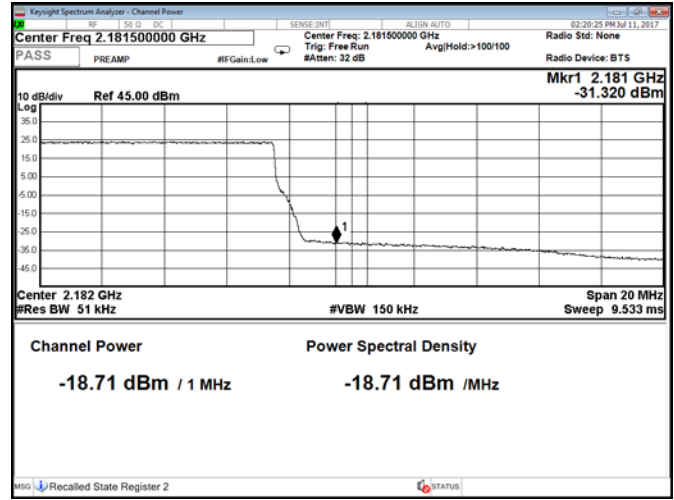


Figure 8.2-102: Conducted band edge emission at 2181 MHz, Port A, 20 MHz channel, QPSK (RBW = 1 MHz)

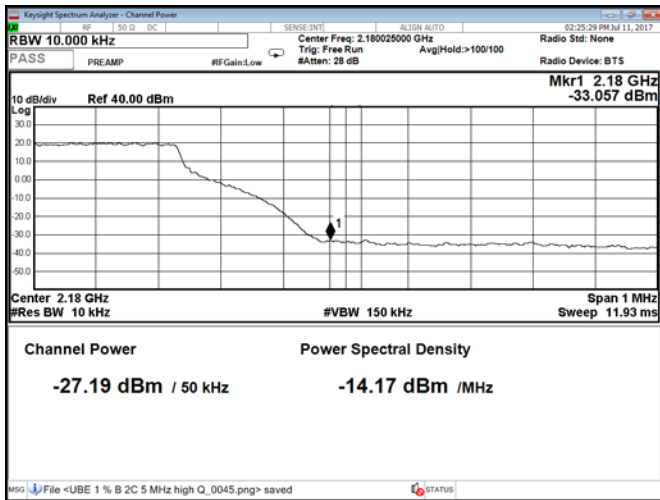


Figure 8.2-103: Conducted band edge emission at 2180 MHz, Port A, 5 MHz channel, 2 carriers, QPSK (RBW = 1% of EBW)

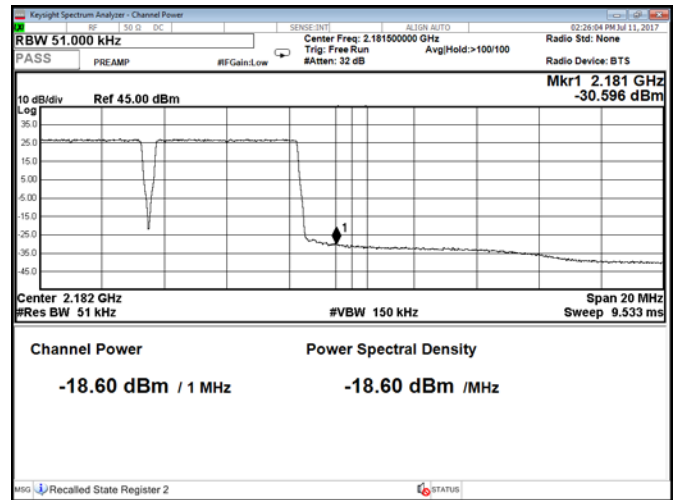


Figure 8.2-104: Conducted band edge emission at 2181 MHz, Port A, 5 MHz channel, 2 carriers, QPSK (RBW = 1 MHz)

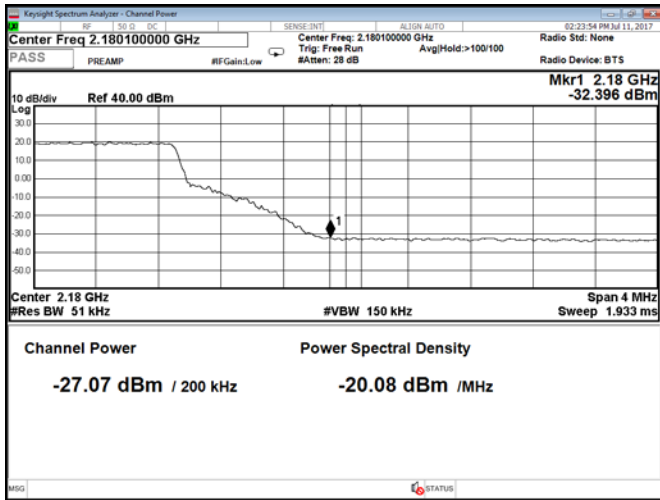


Figure 8.2-105: Conducted band edge emission at 2180 MHz, Port A, 20 MHz channel, 2 carriers, QPSK (RBW = 1% of EBW)

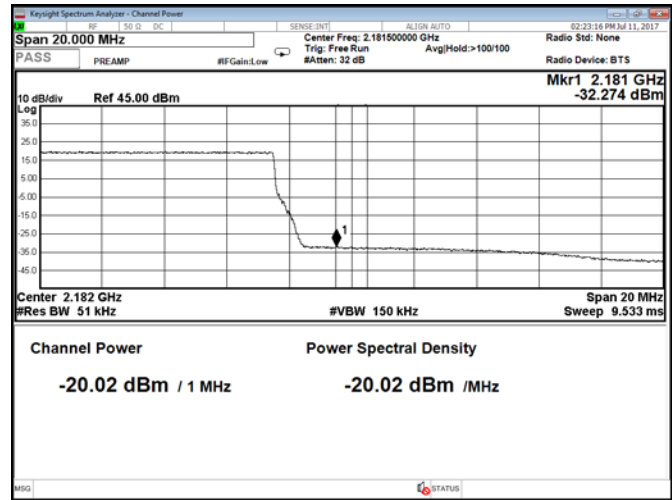


Figure 8.2-106: Conducted band edge emission at 2181 MHz, Port A, 20 MHz channel, 2 carriers, QPSK (RBW = 1 MHz)

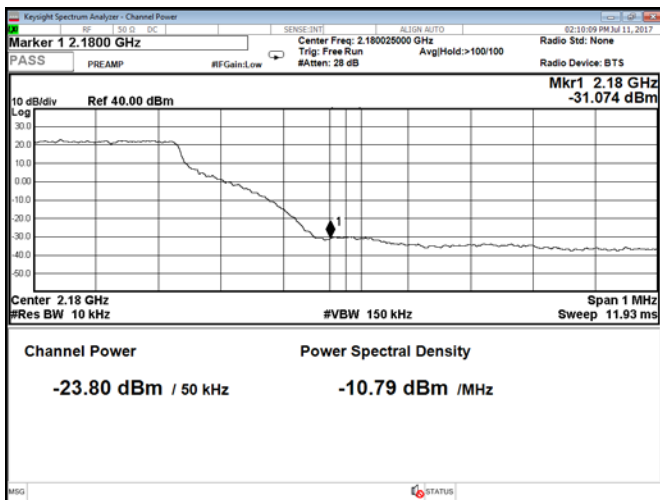


Figure 8.2-107: Conducted band edge emission at 2180 MHz, Port B, 5 MHz channel, QPSK (RBW = 1% of EBW)

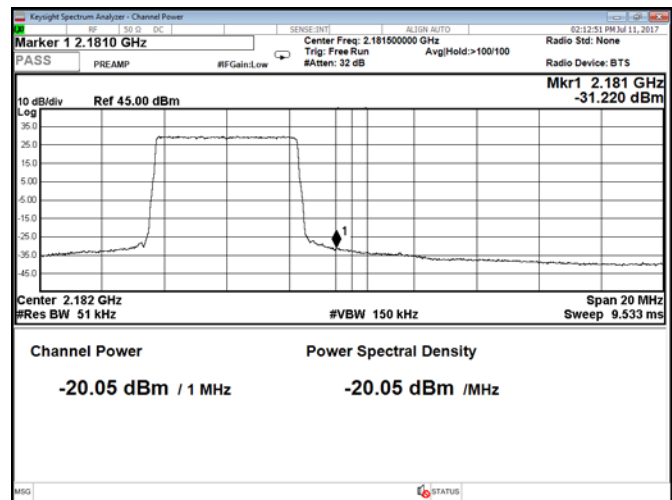


Figure 8.2-108: Conducted band edge emission at 2181 MHz, Port B, 5 MHz channel, QPSK (RBW = 1 MHz)

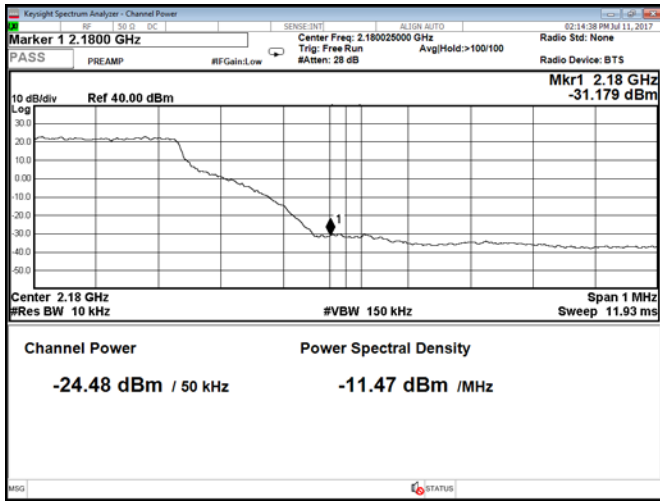


Figure 8.2-109: Conducted band edge emission at 2180 MHz, Port B, 5 MHz channel, 256QAM (RBW = 1% of EBW)

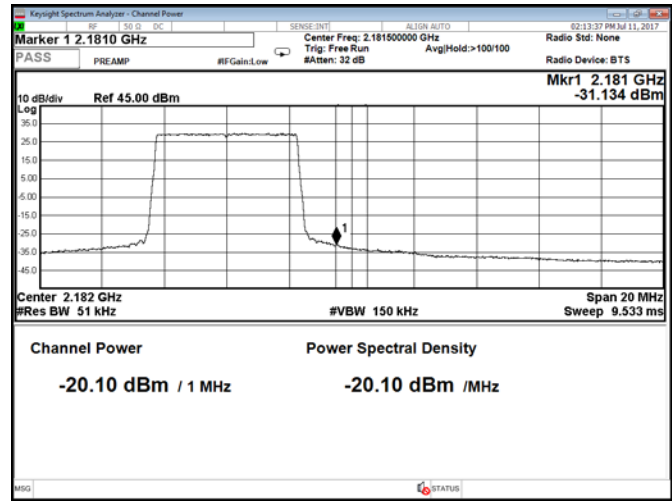


Figure 8.2-110: Conducted band edge emission at 2181 MHz, Port B, 5 MHz channel, 256QAM (RBW = 1 MHz)

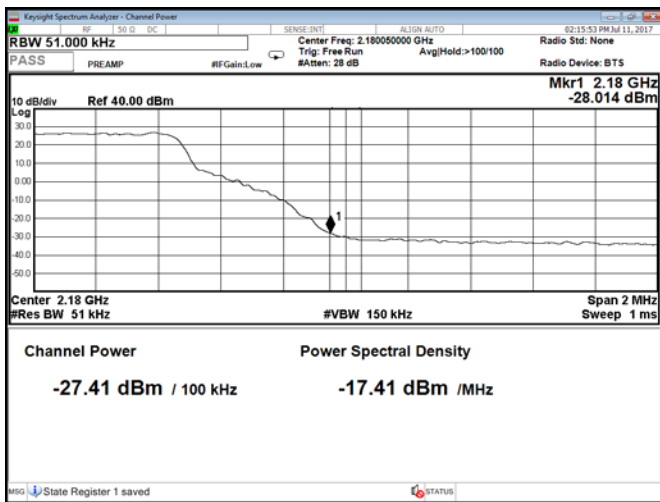


Figure 8.2-111: Conducted band edge emission at 2180 MHz, Port B, 10 MHz channel, QPSK (RBW = 1% of EBW)

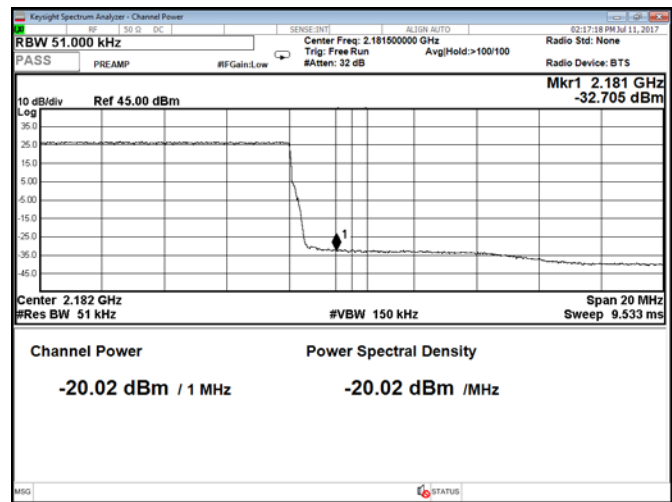


Figure 8.2-112: Conducted band edge emission at 2181 MHz, Port B, 10 MHz channel, QPSK (RBW = 1 MHz)

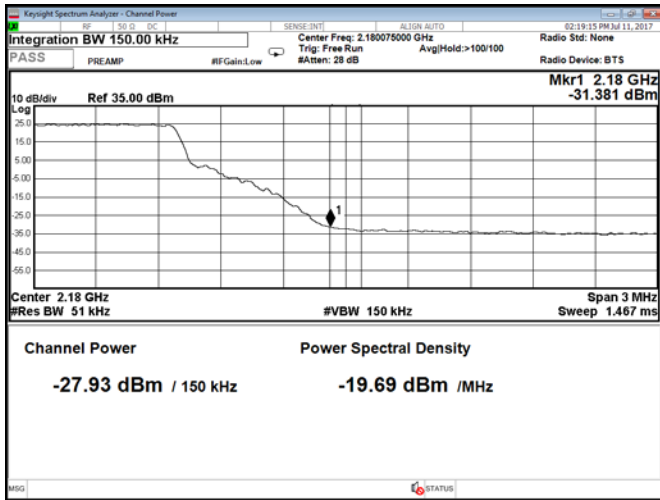


Figure 8.2-113: Conducted band edge emission at 2180 MHz, Port B, 15 MHz channel, QPSK (RBW = 1% of EBW)

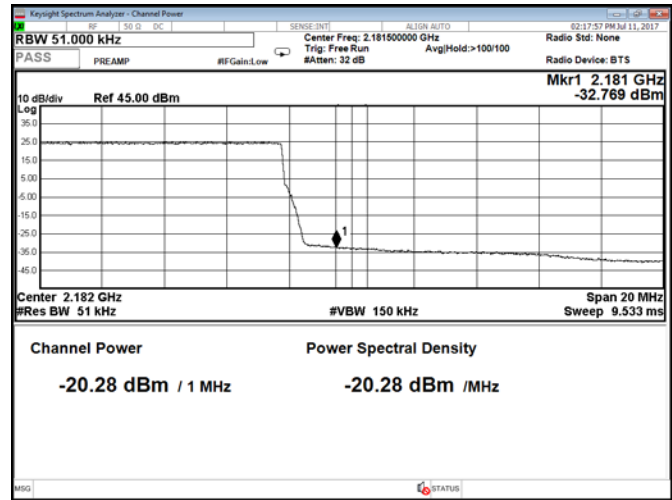


Figure 8.2-114: Conducted band edge emission at 2181 MHz, Port B, 15 MHz channel, QPSK (RBW = 1 MHz)

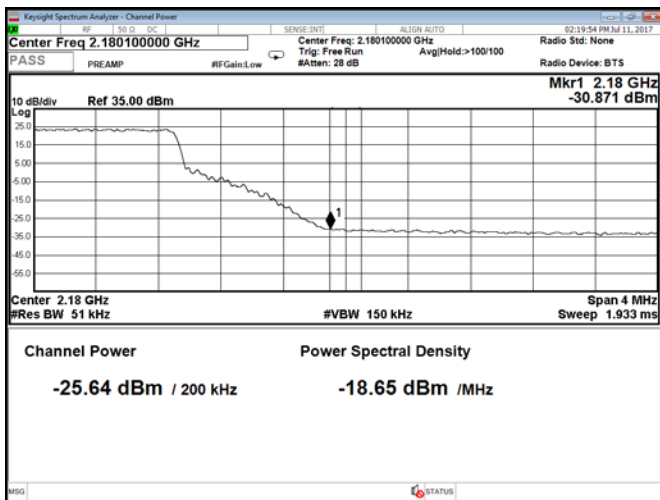


Figure 8.2-115: Conducted band edge emission at 2180 MHz, Port B, 20 MHz channel, QPSK (RBW = 1% of EBW)

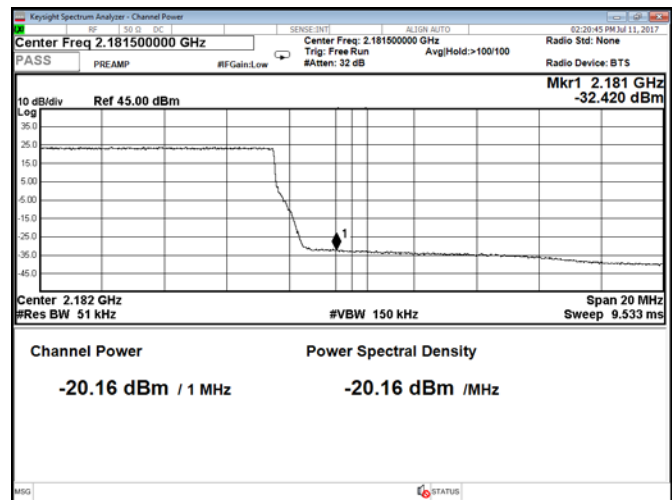


Figure 8.2-116: Conducted band edge emission at 2181 MHz, Port B, 20 MHz channel, QPSK (RBW = 1 MHz)

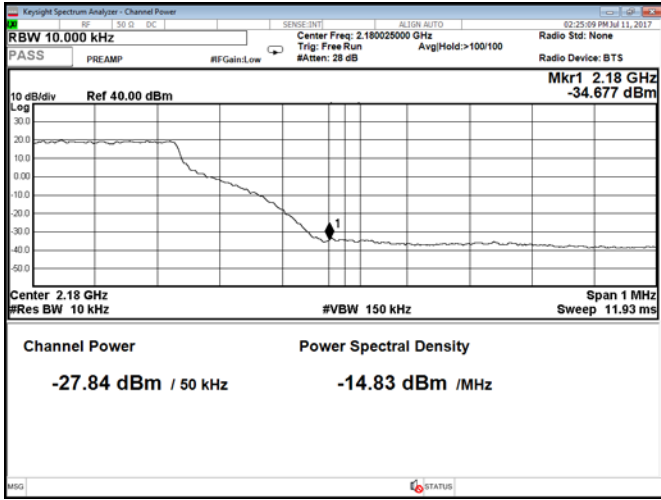


Figure 8.2-117: Conducted band edge emission at 2180 MHz, Port B, 5 MHz channel, 2 carriers, QPSK (RBW = 1% of EBW)

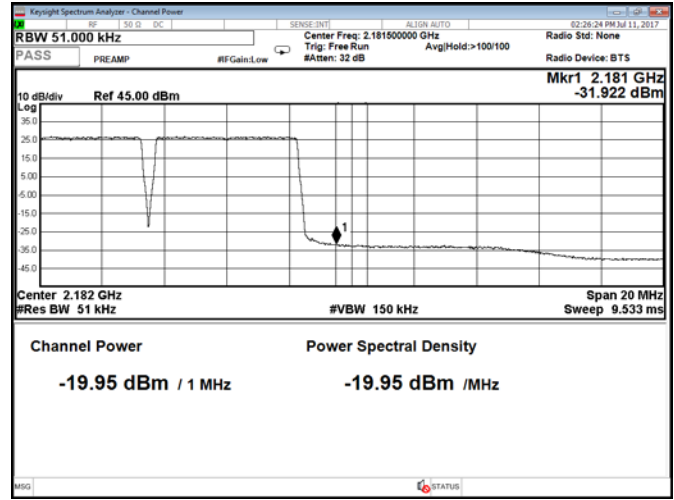


Figure 8.2-118: Conducted band edge emission at 2181 MHz, Port B, 5 MHz channel, 2 carriers, QPSK (RBW = 1 MHz)

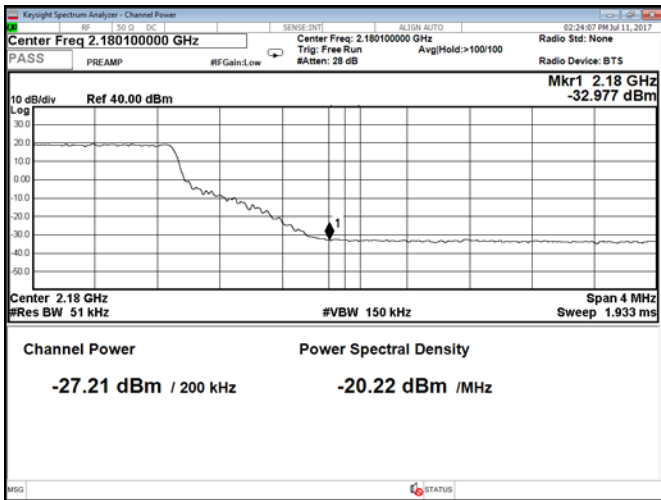


Figure 8.2-119: Conducted band edge emission at 2180 MHz, Port B, 20 MHz channel, 2 carriers, QPSK (RBW = 1% of EBW)

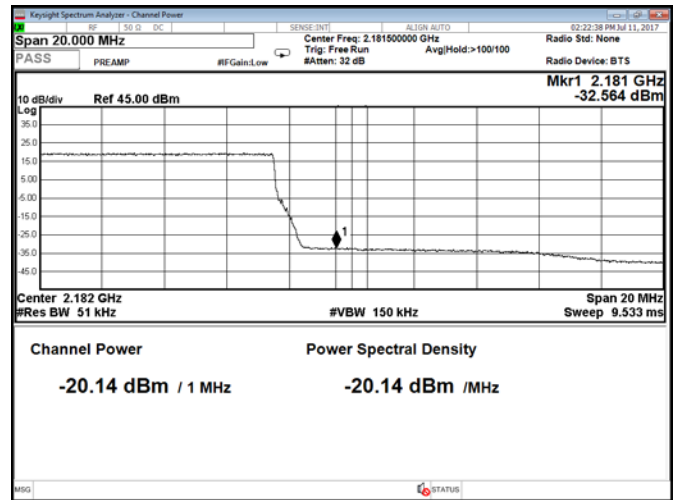


Figure 8.2-120: Conducted band edge emission at 2181 MHz, Port B, 20 MHz channel, 2 carriers, QPSK (RBW = 1 MHz)

Table 8.2-1: Lower band edge measurement results for SISO operation

| Remarks | Frequency, MHz | Emission level, dBm | Limit, dBm | Margin, dB |
|--|----------------|---------------------|------------|------------|
| 5 MHz channel, QPSK, RBW = 1% of EBW, Port A, Single carr. | 2110 | -24.96 | -13.00 | 11.96 |
| 5 MHz channel, QPSK, RBW = 1 MHz, Port A, Single carr. | 2109 | -22.09 | -13.00 | 9.09 |
| 5 MHz channel, 256QAM, RBW = 1% of EBW, Port A, Single carr. | 2110 | -25.15 | -13.00 | 12.15 |
| 5 MHz channel, 256QAM, RBW = 1 MHz, Port A, Single carr. | 2109 | -22.03 | -13.00 | 9.03 |
| 10 MHz channel, QPSK, RBW = 1% of EBW, Port A, Single carr. | 2110 | -29.26 | -13.00 | 16.26 |
| 10 MHz channel, QPSK, RBW = 1 MHz, Port A, Single carr. | 2109 | -22.60 | -13.00 | 9.60 |
| 15 MHz channel, QPSK, RBW = 1% of EBW, Port A, Single carr. | 2110 | -29.64 | -13.00 | 16.64 |
| 15 MHz channel, QPSK, RBW = 1 MHz, Port A, Single carr. | 2109 | -22.53 | -13.00 | 9.53 |
| 20 MHz channel, QPSK, RBW = 1% of EBW, Port A, Single carr. | 2110 | -28.84 | -13.00 | 15.84 |
| 20 MHz channel, QPSK, RBW = 1 MHz, Port A, Single carr. | 2109 | -23.34 | -13.00 | 10.34 |
| 5 MHz channel, QPSK, RBW = 1% of EBW, Port B, Single carr. | 2110 | -25.56 | -13.00 | 12.56 |
| 5 MHz channel, QPSK, RBW = 1 MHz, Port B, Single carr. | 2109 | -23.05 | -13.00 | 10.05 |
| 5 MHz channel, 256QAM, RBW = 1% of EBW, Port B, Single carr. | 2110 | -25.39 | -13.00 | 12.39 |
| 5 MHz channel, 256QAM, RBW = 1 MHz, Port B, Single carr. | 2109 | -23.33 | -13.00 | 10.33 |
| 10 MHz channel, QPSK, RBW = 1% of EBW, Port B, Single carr. | 2110 | -29.93 | -13.00 | 16.93 |
| 10 MHz channel, QPSK, RBW = 1 MHz, Port B, Single carr. | 2109 | -23.97 | -13.00 | 10.97 |
| 15 MHz channel, QPSK, RBW = 1% of EBW, Port B, Single carr. | 2110 | -30.35 | -13.00 | 17.35 |
| 15 MHz channel, QPSK, RBW = 1 MHz, Port B, Single carr. | 2109 | -23.43 | -13.00 | 10.43 |
| 20 MHz channel, QPSK, RBW = 1% of EBW, Port B, Single carr. | 2110 | -29.24 | -13.00 | 16.24 |
| 20 MHz channel, QPSK, RBW = 1 MHz, Port B, Single carr. | 2109 | -23.82 | -13.00 | 10.82 |
| 5 MHz channel, QPSK, RBW = 1% of EBW, Port A, 2 carr. | 2110 | -29.45 | -13.00 | 16.45 |
| 5 MHz channel, QPSK, RBW = 1 MHz, Port A, 2 carr. | 2109 | -22.44 | -13.00 | 9.44 |
| 20 MHz channel, QPSK, RBW = 1% of EBW, Port A, 2 carr. | 2110 | -31.10 | -13.00 | 18.10 |
| 20 MHz channel, QPSK, RBW = 1 MHz, Port A, 2 carr. | 2109 | -23.46 | -13.00 | 10.46 |
| 5 MHz channel, QPSK, RBW = 1% of EBW, Port B, 2 carr. | 2110 | -29.99 | -13.00 | 16.99 |
| 5 MHz channel, QPSK, RBW = 1 MHz, Port B, 2 carr. | 2109 | -23.30 | -13.00 | 10.30 |
| 20 MHz channel, QPSK, RBW = 1% of EBW, Port B, 2 carr. | 2110 | -31.81 | -13.00 | 18.81 |
| 20 MHz channel, QPSK, RBW = 1 MHz, Port B, 2 carr. | 2109 | -23.34 | -13.00 | 10.34 |



Table 8.2-2: Upper band edge measurement results for SISO operation

| Remarks | Frequency, MHz | Emission level, dBm | Limit, dBm | Margin, dB |
|--|----------------|---------------------|------------|------------|
| 5 MHz channel, QPSK, RBW = 1% of EBW, Port A, Single carr. | 2180 | -23.51 | -13.00 | 10.51 |
| 5 MHz channel, QPSK, RBW = 1 MHz, Port A, Single carr. | 2181 | -19.09 | -13.00 | 6.09 |
| 5 MHz channel, 256QAM, RBW = 1% of EBW, Port A, Single carr. | 2180 | -23.41 | -13.00 | 10.41 |
| 5 MHz channel, 256QAM, RBW = 1 MHz, Port A, Single carr. | 2181 | -18.48 | -13.00 | 5.48 |
| 10 MHz channel, QPSK, RBW = 1% of EBW, Port A, Single carr. | 2180 | -26.01 | -13.00 | 13.01 |
| 10 MHz channel, QPSK, RBW = 1 MHz, Port A, Single carr. | 2181 | -19.47 | -13.00 | 6.47 |
| 15 MHz channel, QPSK, RBW = 1% of EBW, Port A, Single carr. | 2180 | -26.13 | -13.00 | 13.13 |
| 15 MHz channel, QPSK, RBW = 1 MHz, Port A, Single carr. | 2181 | -19.72 | -13.00 | 6.72 |
| 20 MHz channel, QPSK, RBW = 1% of EBW, Port A, Single carr. | 2180 | -24.29 | -13.00 | 11.29 |
| 20 MHz channel, QPSK, RBW = 1 MHz, Port A, Single carr. | 2181 | -18.71 | -13.00 | 5.71 |
| 5 MHz channel, QPSK, RBW = 1% of EBW, Port B, Single carr. | 2180 | -23.80 | -13.00 | 10.80 |
| 5 MHz channel, QPSK, RBW = 1 MHz, Port B, Single carr. | 2181 | -20.05 | -13.00 | 7.05 |
| 5 MHz channel, 256QAM, RBW = 1% of EBW, Port B, Single carr. | 2180 | -24.48 | -13.00 | 11.48 |
| 5 MHz channel, 256QAM, RBW = 1 MHz, Port B, Single carr. | 2181 | -20.10 | -13.00 | 7.10 |
| 10 MHz channel, QPSK, RBW = 1% of EBW, Port B, Single carr. | 2180 | -27.41 | -13.00 | 14.41 |
| 10 MHz channel, QPSK, RBW = 1 MHz, Port B, Single carr. | 2181 | -20.02 | -13.00 | 7.02 |
| 15 MHz channel, QPSK, RBW = 1% of EBW, Port B, Single carr. | 2180 | -27.93 | -13.00 | 14.93 |
| 15 MHz channel, QPSK, RBW = 1 MHz, Port B, Single carr. | 2181 | -20.28 | -13.00 | 7.28 |
| 20 MHz channel, QPSK, RBW = 1% of EBW, Port B, Single carr. | 2180 | -25.64 | -13.00 | 12.64 |
| 20 MHz channel, QPSK, RBW = 1 MHz, Port B, Single carr. | 2181 | -20.16 | -13.00 | 7.16 |
| 5 MHz channel, QPSK, RBW = 1% of EBW, Port A, 2 carr. | 2180 | -27.19 | -13.00 | 14.19 |
| 5 MHz channel, QPSK, RBW = 1 MHz, Port A, 2 carr. | 2181 | -18.60 | -13.00 | 5.60 |
| 20 MHz channel, QPSK, RBW = 1% of EBW, Port A, 2 carr. | 2180 | -27.07 | -13.00 | 14.07 |
| 20 MHz channel, QPSK, RBW = 1 MHz, Port A, 2 carr. | 2181 | -20.02 | -13.00 | 7.02 |
| 5 MHz channel, QPSK, RBW = 1% of EBW, Port B, 2 carr. | 2180 | -27.84 | -13.00 | 14.84 |
| 5 MHz channel, QPSK, RBW = 1 MHz, Port B, 2 carr. | 2181 | -19.95 | -13.00 | 6.95 |
| 20 MHz channel, QPSK, RBW = 1% of EBW, Port B, 2 carr. | 2180 | -27.21 | -13.00 | 14.21 |
| 20 MHz channel, QPSK, RBW = 1 MHz, Port B, 2 carr. | 2181 | -20.14 | -13.00 | 7.14 |

Table 8.2-3: Lower band edge measurement results for MIMO 2x2 operation

| Remarks | Frequency, MHz | Emission level, dBm | MIMO 2x2 Limit, dBm | Margin, dB |
|--|----------------|---------------------|---------------------|------------|
| 5 MHz channel, QPSK, RBW = 1% of EBW, Port A, Single carr. | 2110 | -24.96 | -16.00 | 8.96 |
| 5 MHz channel, QPSK, RBW = 1 MHz, Port A, Single carr. | 2109 | -22.09 | -16.00 | 6.09 |
| 5 MHz channel, 256QAM, RBW = 1% of EBW, Port A, Single carr. | 2110 | -25.15 | -16.00 | 9.15 |
| 5 MHz channel, 256QAM, RBW = 1 MHz, Port A, Single carr. | 2109 | -22.03 | -16.00 | 6.03 |
| 10 MHz channel, QPSK, RBW = 1% of EBW, Port A, Single carr. | 2110 | -29.26 | -16.00 | 13.26 |
| 10 MHz channel, QPSK, RBW = 1 MHz, Port A, Single carr. | 2109 | -22.60 | -16.00 | 6.60 |
| 15 MHz channel, QPSK, RBW = 1% of EBW, Port A, Single carr. | 2110 | -29.64 | -16.00 | 13.64 |
| 15 MHz channel, QPSK, RBW = 1 MHz, Port A, Single carr. | 2109 | -22.53 | -16.00 | 6.53 |
| 20 MHz channel, QPSK, RBW = 1% of EBW, Port A, Single carr. | 2110 | -28.84 | -16.00 | 12.84 |
| 20 MHz channel, QPSK, RBW = 1 MHz, Port A, Single carr. | 2109 | -23.34 | -16.00 | 7.34 |
| 5 MHz channel, QPSK, RBW = 1% of EBW, Port B, Single carr. | 2110 | -25.56 | -16.00 | 9.56 |
| 5 MHz channel, QPSK, RBW = 1 MHz, Port B, Single carr. | 2109 | -23.05 | -16.00 | 7.05 |
| 5 MHz channel, 256QAM, RBW = 1% of EBW, Port B, Single carr. | 2110 | -25.39 | -16.00 | 9.39 |
| 5 MHz channel, 256QAM, RBW = 1 MHz, Port B, Single carr. | 2109 | -23.33 | -16.00 | 7.33 |
| 10 MHz channel, QPSK, RBW = 1% of EBW, Port B, Single carr. | 2110 | -29.93 | -16.00 | 13.93 |
| 10 MHz channel, QPSK, RBW = 1 MHz, Port B, Single carr. | 2109 | -23.97 | -16.00 | 7.97 |
| 15 MHz channel, QPSK, RBW = 1% of EBW, Port B, Single carr. | 2110 | -30.35 | -16.00 | 14.35 |
| 15 MHz channel, QPSK, RBW = 1 MHz, Port B, Single carr. | 2109 | -23.43 | -16.00 | 7.43 |
| 20 MHz channel, QPSK, RBW = 1% of EBW, Port B, Single carr. | 2110 | -29.24 | -16.00 | 13.24 |
| 20 MHz channel, QPSK, RBW = 1 MHz, Port B, Single carr. | 2109 | -23.82 | -16.00 | 7.82 |
| 5 MHz channel, QPSK, RBW = 1% of EBW, Port A, 2 carr. | 2110 | -29.45 | -16.00 | 13.45 |
| 5 MHz channel, QPSK, RBW = 1 MHz, Port A, 2 carr. | 2109 | -22.44 | -16.00 | 6.44 |
| 20 MHz channel, QPSK, RBW = 1% of EBW, Port A, 2 carr. | 2110 | -31.10 | -16.00 | 15.10 |
| 20 MHz channel, QPSK, RBW = 1 MHz, Port A, 2 carr. | 2109 | -23.46 | -16.00 | 7.46 |
| 5 MHz channel, QPSK, RBW = 1% of EBW, Port B, 2 carr. | 2110 | -29.99 | -16.00 | 13.99 |
| 5 MHz channel, QPSK, RBW = 1 MHz, Port B, 2 carr. | 2109 | -23.30 | -16.00 | 7.30 |
| 20 MHz channel, QPSK, RBW = 1% of EBW, Port B, 2 carr. | 2110 | -31.81 | -16.00 | 15.81 |
| 20 MHz channel, QPSK, RBW = 1 MHz, Port B, 2 carr. | 2109 | -23.34 | -16.00 | 7.34 |

Note: MIMO 2x2 limit correction was calculated as follows: $10 \times \log_{10}(2) = 3$ dB, therefore limit is -16 dBm.

Table 8.2-4: Upper band edge measurement results for MIMO 2x2 operation

| Remarks | Frequency, MHz | Emission level, dBm | MIMO 2x2 Limit, dBm | Margin, dB |
|--|----------------|---------------------|---------------------|------------|
| 5 MHz channel, QPSK, RBW = 1% of EBW, Port A, Single carr. | 2180 | -23.51 | -16.00 | 7.51 |
| 5 MHz channel, QPSK, RBW = 1 MHz, Port A, Single carr. | 2181 | -19.09 | -16.00 | 3.09 |
| 5 MHz channel, 256QAM, RBW = 1% of EBW, Port A, Single carr. | 2180 | -23.41 | -16.00 | 7.41 |
| 5 MHz channel, 256QAM, RBW = 1 MHz, Port A, Single carr. | 2181 | -18.48 | -16.00 | 2.48 |
| 10 MHz channel, QPSK, RBW = 1% of EBW, Port A, Single carr. | 2180 | -26.01 | -16.00 | 10.01 |
| 10 MHz channel, QPSK, RBW = 1 MHz, Port A, Single carr. | 2181 | -19.47 | -16.00 | 3.47 |
| 15 MHz channel, QPSK, RBW = 1% of EBW, Port A, Single carr. | 2180 | -26.13 | -16.00 | 10.13 |
| 15 MHz channel, QPSK, RBW = 1 MHz, Port A, Single carr. | 2181 | -19.72 | -16.00 | 3.72 |
| 20 MHz channel, QPSK, RBW = 1% of EBW, Port A, Single carr. | 2180 | -24.29 | -16.00 | 8.29 |
| 20 MHz channel, QPSK, RBW = 1 MHz, Port A, Single carr. | 2181 | -18.71 | -16.00 | 2.71 |
| 5 MHz channel, QPSK, RBW = 1% of EBW, Port B, Single carr. | 2180 | -23.80 | -16.00 | 7.80 |
| 5 MHz channel, QPSK, RBW = 1 MHz, Port B, Single carr. | 2181 | -20.05 | -16.00 | 4.05 |
| 5 MHz channel, 256QAM, RBW = 1% of EBW, Port B, Single carr. | 2180 | -24.48 | -16.00 | 8.48 |
| 5 MHz channel, 256QAM, RBW = 1 MHz, Port B, Single carr. | 2181 | -20.10 | -16.00 | 4.10 |
| 10 MHz channel, QPSK, RBW = 1% of EBW, Port B, Single carr. | 2180 | -27.41 | -16.00 | 11.41 |
| 10 MHz channel, QPSK, RBW = 1 MHz, Port B, Single carr. | 2181 | -20.02 | -16.00 | 4.02 |
| 15 MHz channel, QPSK, RBW = 1% of EBW, Port B, Single carr. | 2180 | -27.93 | -16.00 | 11.93 |
| 15 MHz channel, QPSK, RBW = 1 MHz, Port B, Single carr. | 2181 | -20.28 | -16.00 | 4.28 |
| 20 MHz channel, QPSK, RBW = 1% of EBW, Port B, Single carr. | 2180 | -25.64 | -16.00 | 9.64 |
| 20 MHz channel, QPSK, RBW = 1 MHz, Port B, Single carr. | 2181 | -20.16 | -16.00 | 4.16 |
| 5 MHz channel, QPSK, RBW = 1% of EBW, Port A, 2 carr. | 2180 | -27.19 | -16.00 | 11.19 |
| 5 MHz channel, QPSK, RBW = 1 MHz, Port A, 2 carr. | 2181 | -18.60 | -16.00 | 2.60 |
| 20 MHz channel, QPSK, RBW = 1% of EBW, Port A, 2 carr. | 2180 | -27.07 | -16.00 | 11.07 |
| 20 MHz channel, QPSK, RBW = 1 MHz, Port A, 2 carr. | 2181 | -20.02 | -16.00 | 4.02 |
| 5 MHz channel, QPSK, RBW = 1% of EBW, Port B, 2 carr. | 2180 | -27.84 | -16.00 | 11.84 |
| 5 MHz channel, QPSK, RBW = 1 MHz, Port B, 2 carr. | 2181 | -19.95 | -16.00 | 3.95 |
| 20 MHz channel, QPSK, RBW = 1% of EBW, Port B, 2 carr. | 2180 | -27.21 | -16.00 | 11.21 |
| 20 MHz channel, QPSK, RBW = 1 MHz, Port B, 2 carr. | 2181 | -20.14 | -16.00 | 4.14 |

Note: MIMO 2x2 limit correction was calculated as follows: $10 \times \log_{10}(2) = 3$ dB, therefore limit is -16 dBm.

8.3 FCC 27.53 and RSS-139, 4.2 Radiated spurious emissions

8.3.1 Definitions and limits

FCC:

(h) AWS emission limits

(1) General protection levels. Except as otherwise specified below, for operations in the 1695–1710 MHz, 1710–1755 MHz, 1755–1780 MHz, 1915–1920 MHz, 1995–2000 MHz, 2000–2020 MHz, 2110–2155 MHz, 2155–2180 MHz, and 2180–2200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10} (P)$ dB.

(3) Measurement procedure.

(i) Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

(ii) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the licensee's frequency block edges, both upper and lower, as the design permits.

(iii) The measurements of emission power can be expressed in peak or average values, provided they are expressed in the same parameters as the transmitter power.

RSS-139, Section 6.6:

i. In the first 1.0 MHz bands immediately outside and adjacent to the equipment's smallest operating frequency block, which can contain the equipment's occupied bandwidth, the emission power per any 1% of the emission bandwidth shall be attenuated below the transmitter output power P (in dBW) by at least $43 + 10 \log_{10} P$ (watts) dB.

ii. After the first 1.0 MHz outside the equipment's smallest operating frequency block, which can contain the equipment's occupied bandwidth, the emission power in any 1 MHz bandwidth shall be attenuated below the transmitter output power P (in dBW) by at least $43 + 10 \log_{10} P$ (watts) dB.

8.3.2 Test summary

| | | | |
|---------------|---------------|-------------------|-----------|
| Test date | July 13, 2017 | Temperature | 22 °C |
| Test engineer | Shawn He | Air pressure | 1000 mbar |
| Verdict | Pass | Relative humidity | 30 % |

8.3.3 Observations, settings and special notes

The spectrum was searched from 30 MHz to the 10th harmonic.
 All measurements were performed using a peak detector.
 RBW within 30–1000 MHz was 100 kHz and 1 MHz above 1 GHz. VBW was wider than RBW.
 Testing was performed with RF ports terminated with 50 Ohm load.

8.3.4 Test data

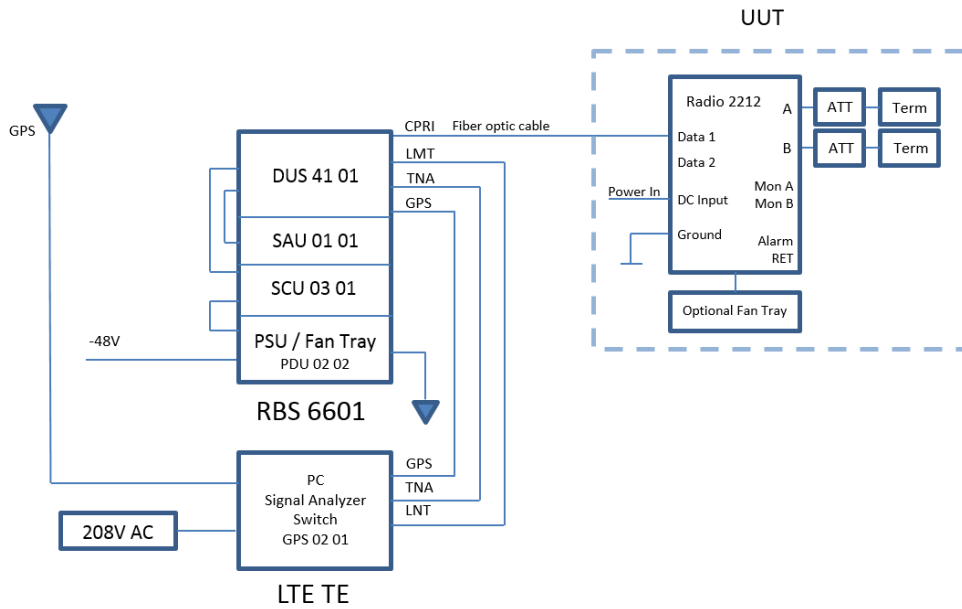
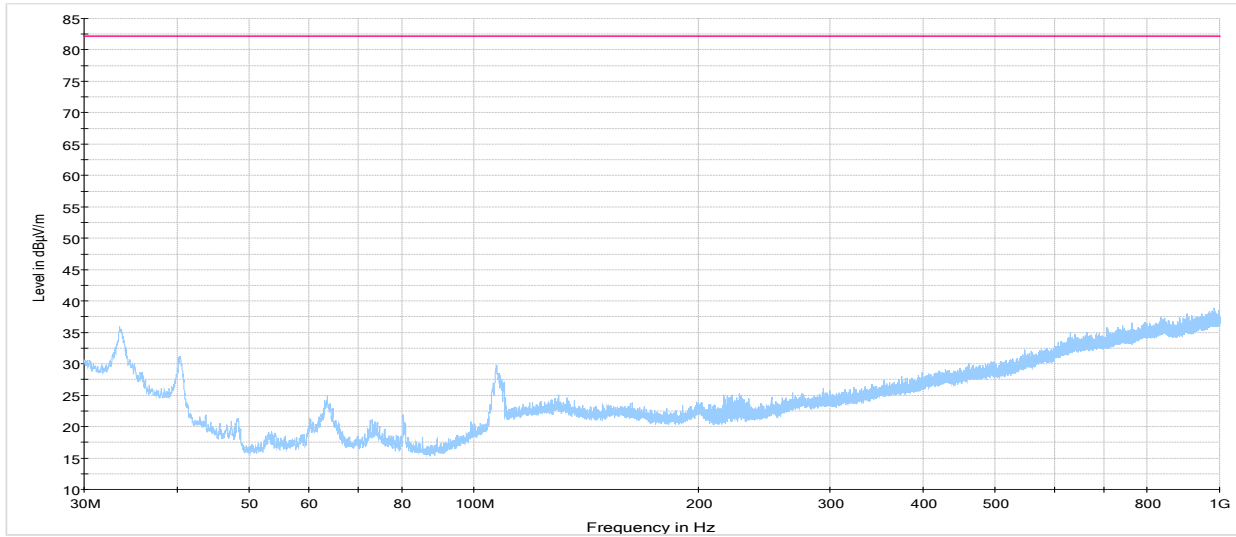


Figure 8.3-1: Set-up Diagram Radiated Spurious Emission

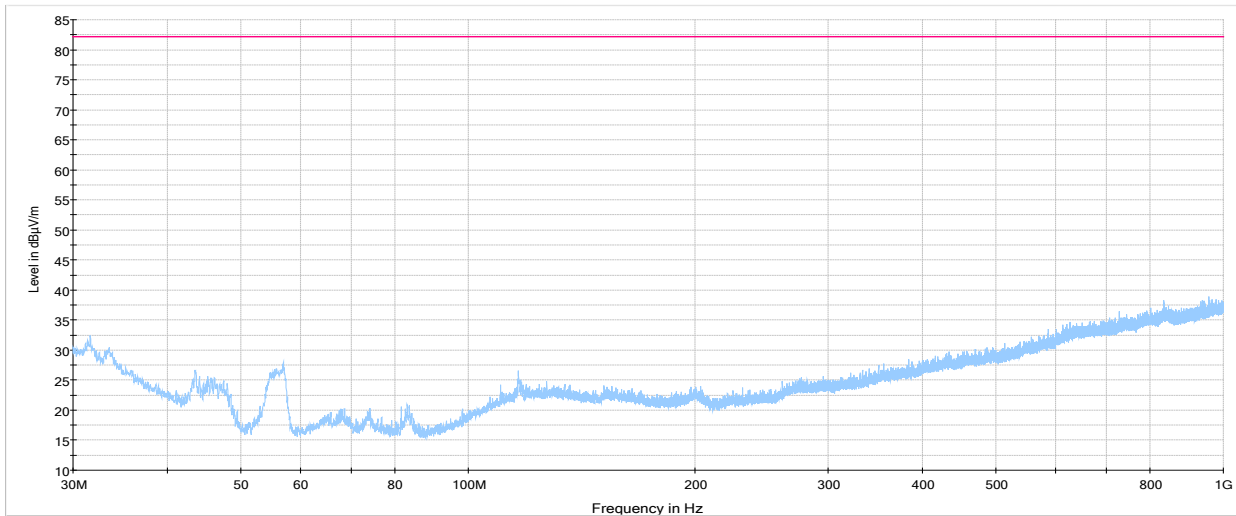


Figure 8.3-2: EUT Set-up for Radiated Compliance Testing



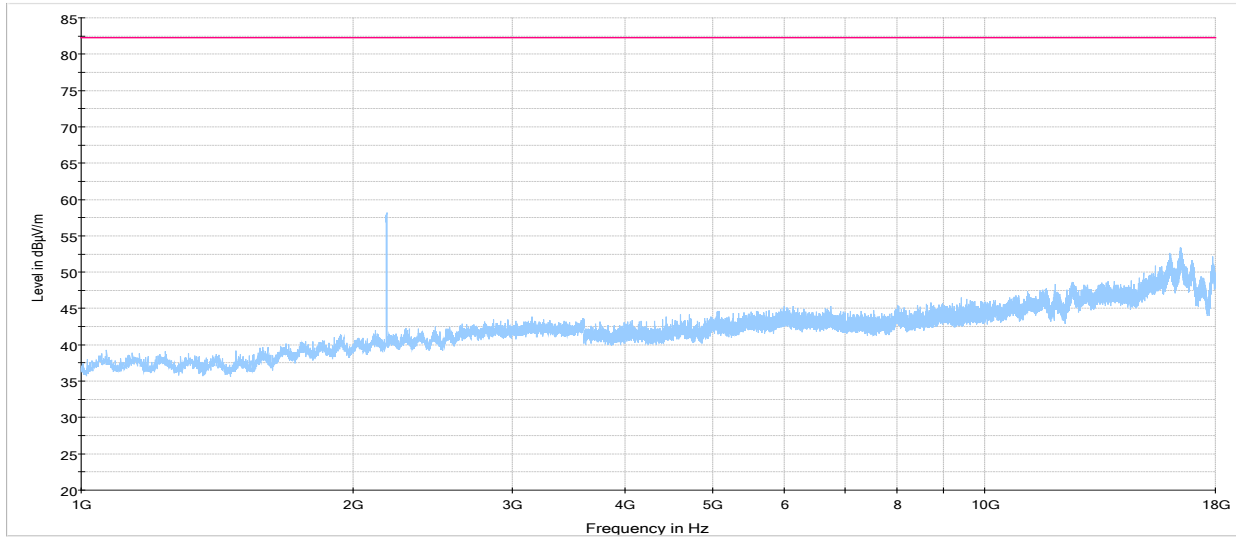
High Channel, Single Carrier
-13dBm (82.23dBµV)
Preview Result 1-PK+

Figure 8.3-3: Radiated spurious emission below 1 GHz for single carrier operation



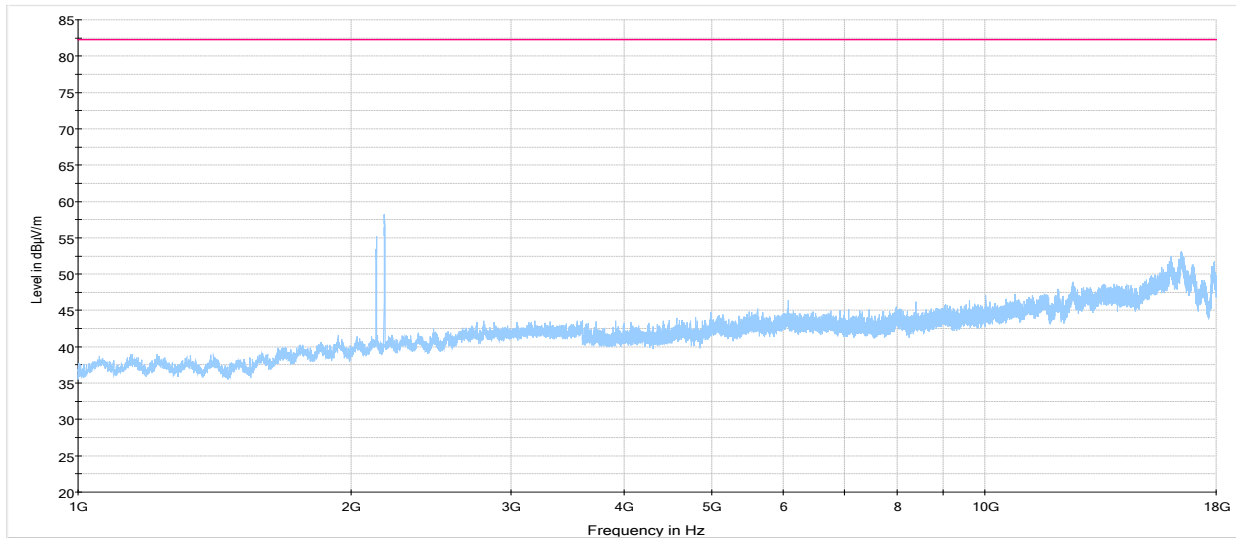
High Channel, Two Carriers
-13dBm (82.23dBµV)
Preview Result 1-PK+

Figure 8.3-4: Radiated spurious emission below 1 GHz for two carriers operation



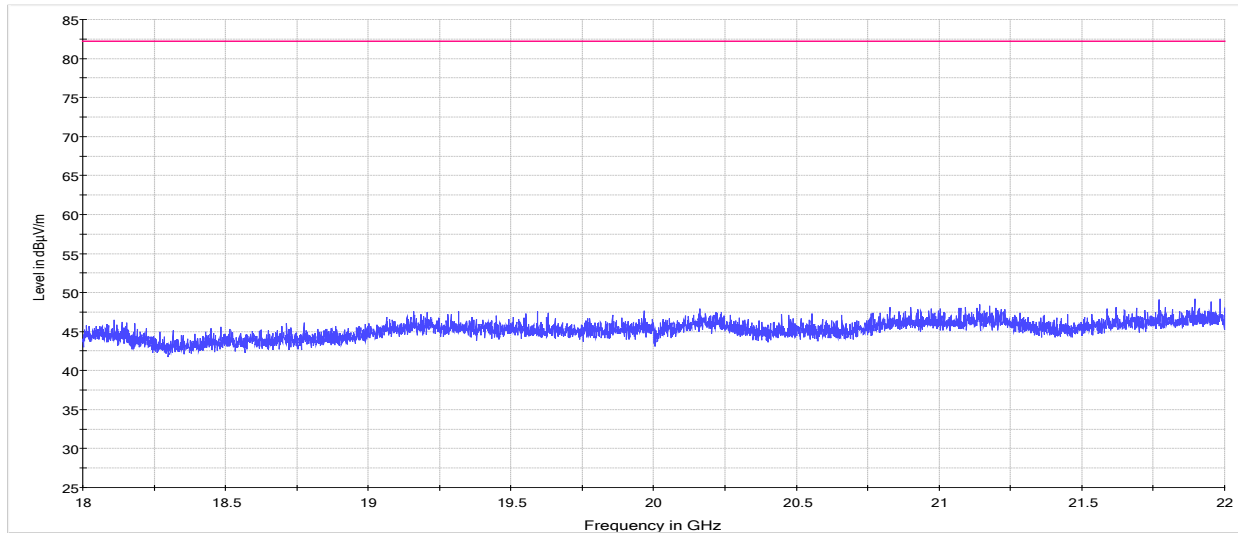
High Channel, Single Carrier
-13dBm (82.23dBuV)
Preview Result 1-PK+

Figure 8.3-5: Radiated spurious emission within 1–18 GHz, for single carrier operation



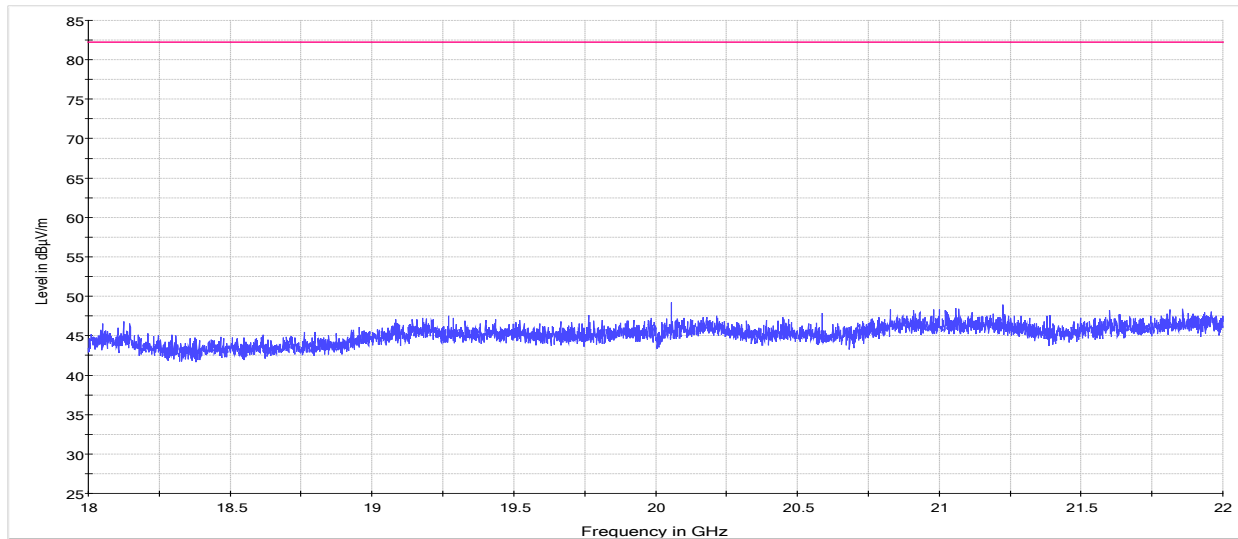
High Channel, Two Carriers
-13dBm (82.23dBuV)
Preview Result 1-PK+

Figure 8.3-6: Radiated spurious emission within 1–18 GHz, for two carriers operation



High Channel, Single Carrier
-13dBm (82.23dBuV)
Preview Result 1-PK+

Figure 8.3-7: Radiated spurious emission within 18–22 GHz, for single carrier operation



High Channel, Two Carriers
-13dBm (82.23dBuV)
Preview Result 1-PK+

Figure 8.3-8: Radiated spurious emission within 18–22 GHz, for two carriers operation

8.4 FCC 27.54 and RSS-139, Section 6.4 Frequency stability

8.4.1 Definitions and limits

FCC:

The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

RSS-139, Section 6.4:

The frequency stability shall be sufficient to ensure that the occupied bandwidth stays within the operating frequency block when tested to the temperature and supply voltage variations specified in RSS-Gen.

8.4.2 Test summary

| | | | |
|---------------|-----------------|-------------------|-----------|
| Test date | July 11, 2017 | Temperature | 23 °C |
| Test engineer | Andrey Adelberg | Air pressure | 1010 mbar |
| Verdict | Pass | Relative humidity | 33 % |

8.4.3 Observations, settings and special notes

26 dBc points including frequency tolerance were assessed to remain within assigned band.

Spectrum analyzer settings:

| | |
|----------------------|----------|
| Detector mode | Peak |
| Resolution bandwidth | 300 Hz |
| Video bandwidth | RBW × 3 |
| Trace mode | Max Hold |

8.4.4 Test data

Table 8.4-1: Frequency error results

| Temperature, °C | Voltage, V _{DC} | Frequency error, Hz |
|-----------------|--------------------------|---------------------|
| +50 | 54 | +3.13 |
| +40 | 54 | +2.54 |
| +30 | 54 | +2.10 |
| +20 | 56* | +2.18 |
| +20 | 48 | +2.52 |
| +20 | 40* | +2.30 |
| +10 | 54 | +2.96 |
| 0 | 54 | +2.98 |
| -10 | 54 | +2.41 |
| -20 | 54 | +3.70 |
| -30 | 54 | +2.18 |

Max negative drift: 0 Hz, Max positive drift: +3.70 Hz

* Extreme voltages were calculated as follows: $48 V_{DC} \pm 15\% = 40.8-55.2 V_{DC}$. Extreme voltages were rounded ($> \pm 15\%$) to 40–56 V_{DC}.



Table 8.4-2: Frequency stability within the authorized bands results

| BW, MHz/ Channel | Port | 26 dB band edge, MHz | Max. drift, Hz | Corrected BE, MHz | Limit, MHz | Margin, kHz |
|---------------------|------|----------------------|----------------|-------------------|------------|-------------|
| 5, Low | A | 2110.1345 | -0.000 | 2110.1345000 | 2110.0000 | 134.5000 |
| 5, High | A | 2179.8645 | +3.700 | 2179.8645037 | 2180.0000 | 135.4963 |
| 5, Low | B | 2110.1285 | -0.000 | 2110.1285000 | 2110.0000 | 128.5000 |
| 5, High | B | 2179.8700 | +3.700 | 2179.8700037 | 2180.0000 | 129.9963 |
| 10, Low | A | 2110.3280 | -0.000 | 2110.3280000 | 2110.0000 | 328.0000 |
| 10, High | A | 2179.6795 | +3.700 | 2179.6795037 | 2180.0000 | 320.4963 |
| 10, Low | B | 2110.3180 | -0.000 | 2110.3180000 | 2110.0000 | 318.0000 |
| 10, High | B | 2179.6655 | +3.700 | 2179.6655037 | 2180.0000 | 334.4963 |
| 15, Low | A | 2110.5400 | -0.000 | 2110.5400000 | 2110.0000 | 540.0000 |
| 15, High | A | 2179.4400 | +3.700 | 2179.4400037 | 2180.0000 | 559.9963 |
| 15, Low | B | 2110.5650 | -0.000 | 2110.5650000 | 2110.0000 | 565.0000 |
| 15, High | B | 2179.4500 | +3.700 | 2179.4500037 | 2180.0000 | 549.9963 |
| 20, Low | A | 2110.7750 | -0.000 | 2110.7750000 | 2110.0000 | 775.0000 |
| 20, High | A | 2179.2450 | +3.700 | 2179.2450037 | 2180.0000 | 754.9963 |
| 20, Low | B | 2110.7650 | -0.000 | 2110.7650000 | 2110.0000 | 765.0000 |
| 20, High | B | 2179.2450 | +3.700 | 2179.2450037 | 2180.0000 | 754.9963 |

8.5 FCC Part 2.1049 and RSS-Gen, 6.6 Occupied bandwidth

8.5.1 Definitions and limits

FCC:

The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

RSS-Gen, 6.6

The emission bandwidth (×dB) is defined as the frequency range between two points, one above and one below the carrier frequency, at which the spectral density of the emission is attenuated × dB below the maximum in-band spectral density of the modulated signal. Spectral density (power per unit bandwidth) is to be measured with a detector of resolution bandwidth in the range of 1% to 5% of the anticipated emission bandwidth, and a video bandwidth at least 3× the resolution bandwidth.

When the occupied bandwidth limit is not stated in the applicable RSS or reference measurement method, the transmitted signal bandwidth shall be reported as the 99% emission bandwidth, as calculated or measured.

The transmitter shall be operated at its maximum carrier power measured under normal test conditions.

The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts.

The resolution bandwidth (RBW) shall be in the range of 1% to 5% of the occupied bandwidth (OBW) and video bandwidth (VBW) shall be approximately 3×RBW.

The trace data points are recovered and are directly summed in linear power level terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached and that frequency recorded. The process is repeated for the highest frequency data points (starting at the highest frequency, at the right side of the span, and going down in frequency). This frequency is then recorded.

The difference between the two recorded frequencies is the 99% occupied bandwidth.

8.5.2 Test summary

| | | | |
|---------------|-----------------|-------------------|-----------|
| Test date | July 10, 2017 | Temperature | 22 °C |
| Test engineer | Andrey Adelberg | Air pressure | 1009 mbar |
| Verdict | Pass | Relative humidity | 33 % |

8.5.3 Observations, settings and special notes

Spectrum analyzer settings:

| | |
|----------------------|--------------|
| Detector mode | Peak |
| Resolution bandwidth | ≥1 % of span |
| Video bandwidth | RBW × 3 |
| Trace mode | Max Hold |

8.5.4 Test data

Table 8.5-1: Occupied bandwidth results

| Remarks | Frequency, MHz | 99% OBW, MHz | 26 dB BW, MHz |
|----------------------|----------------|--------------|---------------|
| 5 MHz, QPSK, Port A | 2112.5 | 2.4775 | 4.731 |
| 5 MHz, QPSK, Port A | 2145.0 | 4.4787 | 4.737 |
| 5 MHz, QPSK, Port A | 2177.5 | 4.4787 | 4.729 |
| 5 MHz, QPSK, Port B | 2112.5 | 4.4779 | 4.743 |
| 5 MHz, QPSK, Port B | 2145.0 | 4.4780 | 4.720 |
| 5 MHz, QPSK, Port B | 2177.5 | 4.4806 | 4.740 |
| 10 MHz, QPSK, Port A | 2115.0 | 8.9349 | 9.344 |
| 10 MHz, QPSK, Port A | 2145.0 | 8.9324 | 9.376 |
| 10 MHz, QPSK, Port A | 2175.0 | 8.9307 | 9.359 |
| 10 MHz, QPSK, Port B | 2115.0 | 8.9335 | 9.364 |
| 10 MHz, QPSK, Port B | 2145.0 | 8.9344 | 9.357 |
| 10 MHz, QPSK, Port B | 2175.0 | 8.9264 | 9.331 |
| 15 MHz, QPSK, Port A | 2117.5 | 13.386 | 13.92 |
| 15 MHz, QPSK, Port A | 2145.0 | 13.389 | 13.91 |
| 15 MHz, QPSK, Port A | 2172.5 | 13.383 | 13.88 |
| 15 MHz, QPSK, Port B | 2117.5 | 13.381 | 13.87 |
| 15 MHz, QPSK, Port B | 2145.0 | 13.385 | 13.89 |
| 15 MHz, QPSK, Port B | 2172.5 | 13.380 | 13.90 |
| 20 MHz, QPSK, Port A | 2120.0 | 17.836 | 18.45 |
| 20 MHz, QPSK, Port A | 2145.0 | 17.831 | 18.46 |
| 20 MHz, QPSK, Port A | 2170.0 | 17.835 | 18.49 |
| 20 MHz, QPSK, Port B | 2120.0 | 17.841 | 18.47 |
| 20 MHz, QPSK, Port B | 2145.0 | 17.843 | 18.45 |
| 20 MHz, QPSK, Port B | 2170.0 | 17.844 | 18.49 |

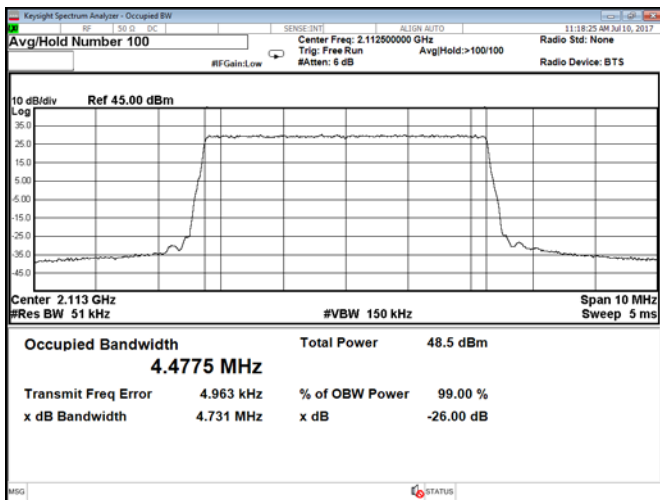


Figure 8.5-1: Occupied bandwidth, QPSK, 5 MHz, Port A, Low channel

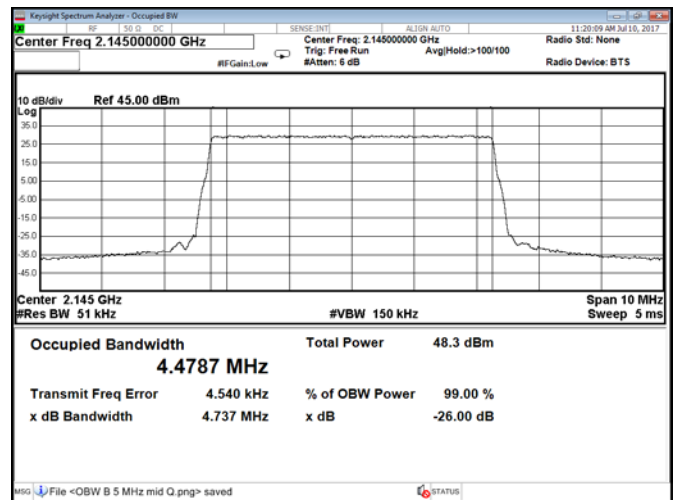


Figure 8.5-2: Occupied bandwidth, QPSK, 5 MHz, Port A, Mid channel

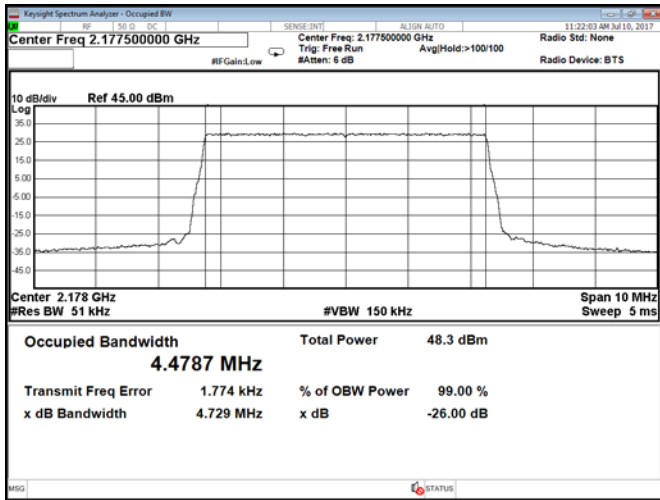


Figure 8.5-3: Occupied bandwidth, QPSK, 5 MHz, Port A, High channel

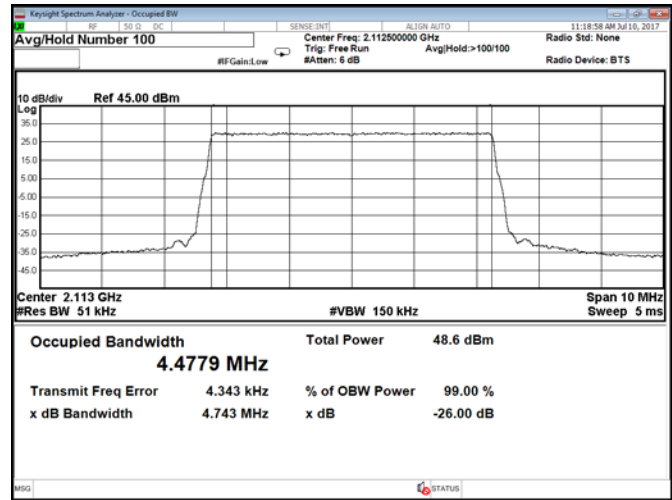


Figure 8.5-4: Occupied bandwidth, QPSK, 5 MHz, Port B, Low channel

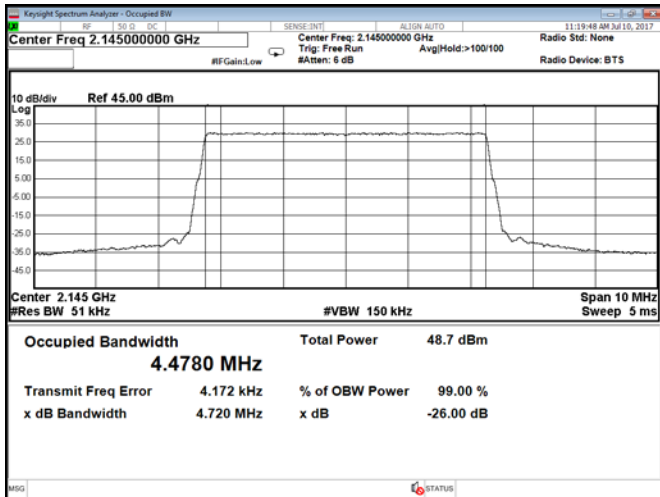


Figure 8.5-5: Occupied bandwidth, QPSK, 5 MHz, Port B, Mid channel

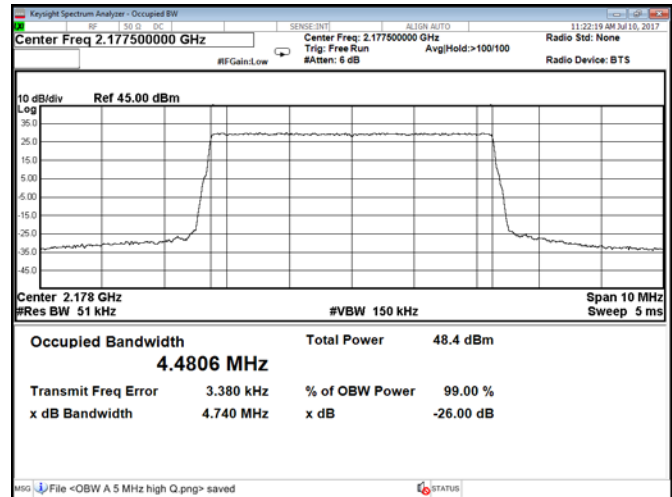


Figure 8.5-6: Occupied bandwidth, QPSK, 5 MHz, Port B, High channel

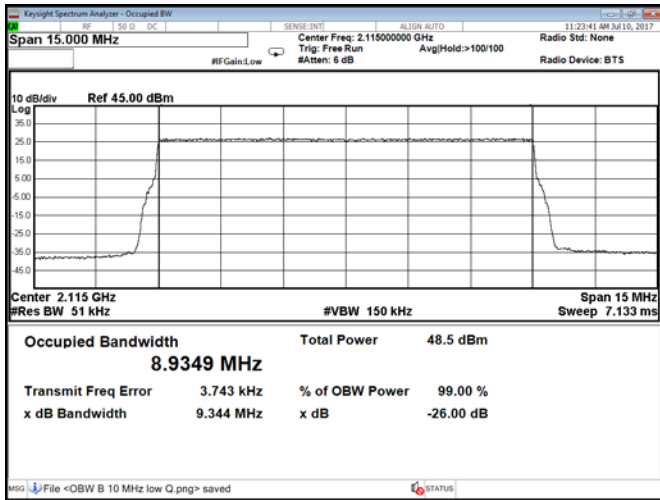


Figure 8.5-7: Occupied bandwidth, QPSK, 10 MHz, Port A, Low channel

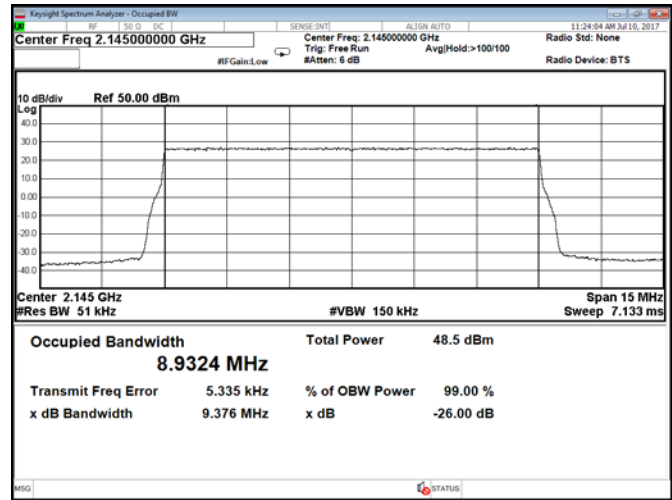


Figure 8.5-8: Occupied bandwidth, QPSK, 10 MHz, Port A, Mid channel

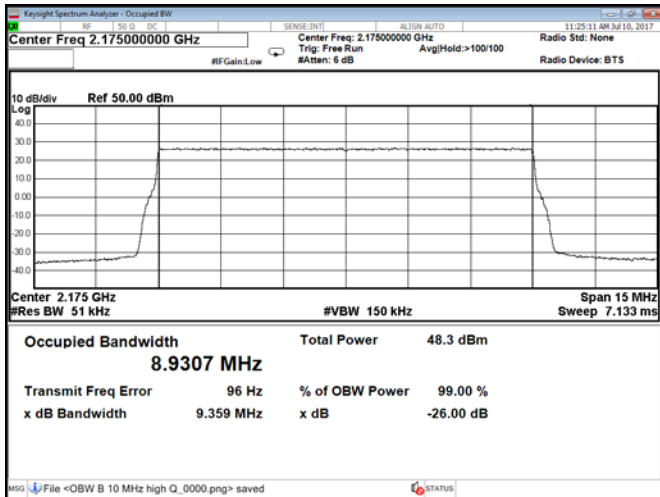


Figure 8.5-9: Occupied bandwidth, QPSK, 10 MHz, Port A, High channel

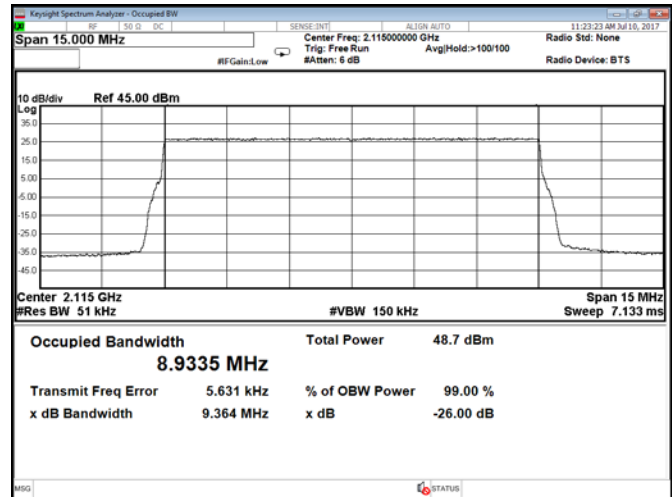


Figure 8.5-10: Occupied bandwidth, QPSK, 10 MHz, Port B, Low channel