

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

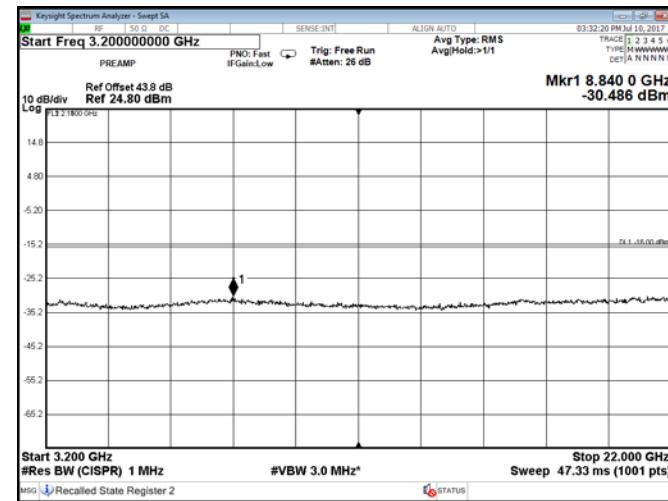


Figure 8.2-50: Conducted spurious emissions within 3200–22000 MHz,
Port A, 2 carriers: 5 MHz each at the bottom of the band, QPSK

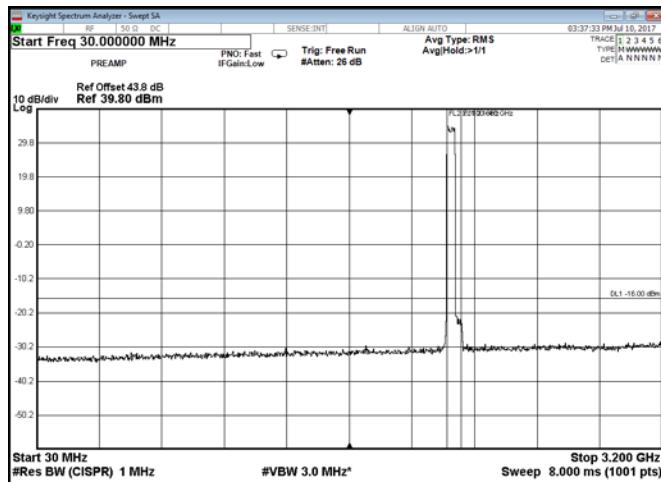


Figure 8.2-51: Conducted spurious emissions within 30–3200 MHz,
Port A, 2 carriers: 20 MHz each at the bottom of the band, QPSK

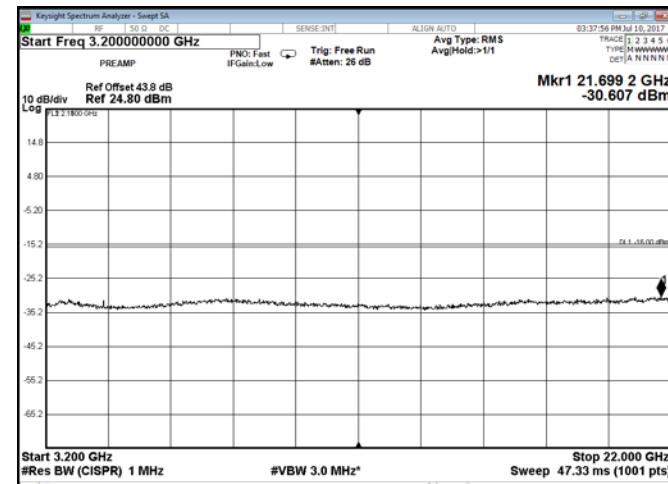


Figure 8.2-52: Conducted spurious emissions within 3200–22000 MHz,
Port A, 2 carriers: 20 MHz each at the bottom of the band, QPSK

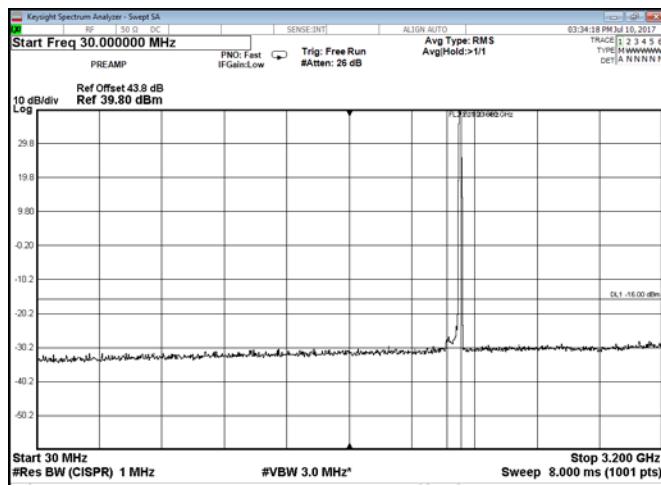


Figure 8.2-53: Conducted spurious emissions within 30–3200 MHz,
Port A, 2 carriers: 5 MHz each at the top of the band, QPSK

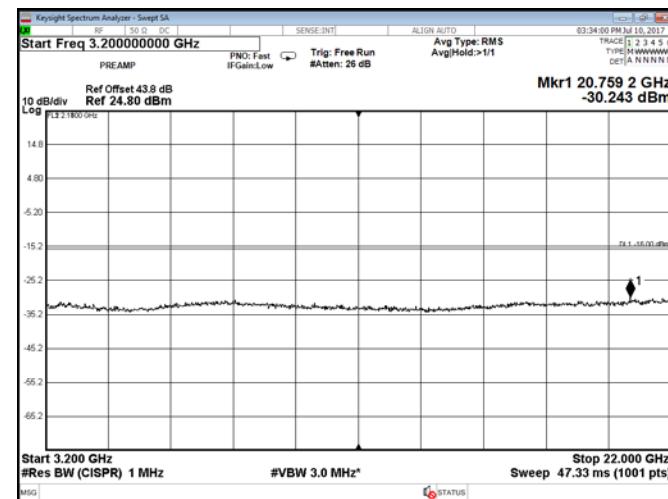


Figure 8.2-54: Conducted spurious emissions within 3200–22000 MHz,
Port A, 2 carriers: 5 MHz each at the top of the band, QPSK

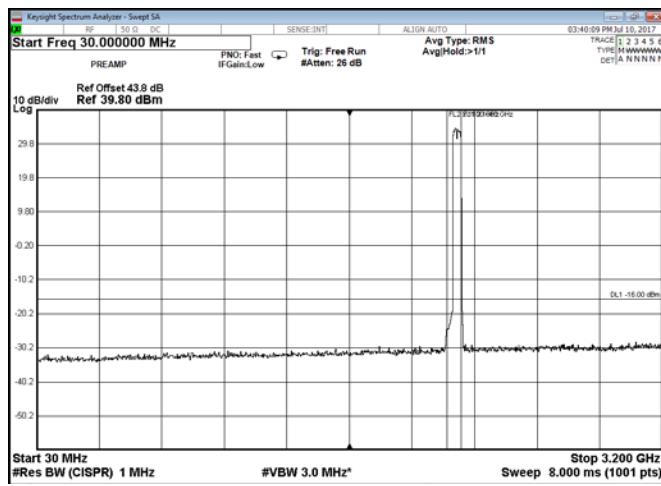


Figure 8.2-55: Conducted spurious emissions within 30–3200 MHz,
Port A, 2 carriers: 20 MHz each at the top of the band, QPSK

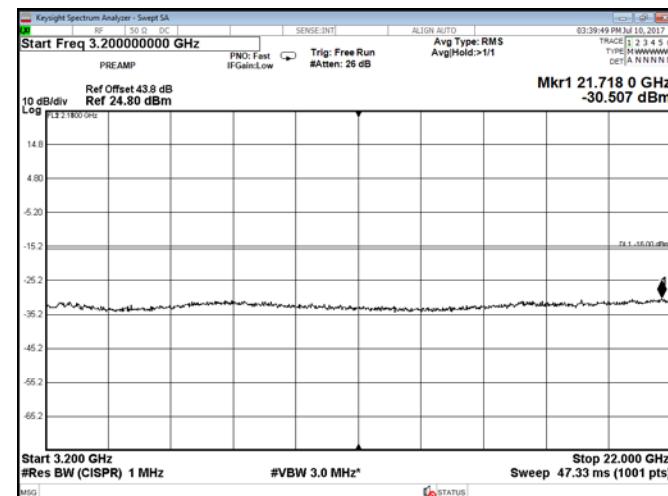


Figure 8.2-56: Conducted spurious emissions within 3200–22000 MHz,
Port A, 2 carriers: 20 MHz each at the top of the band, QPSK

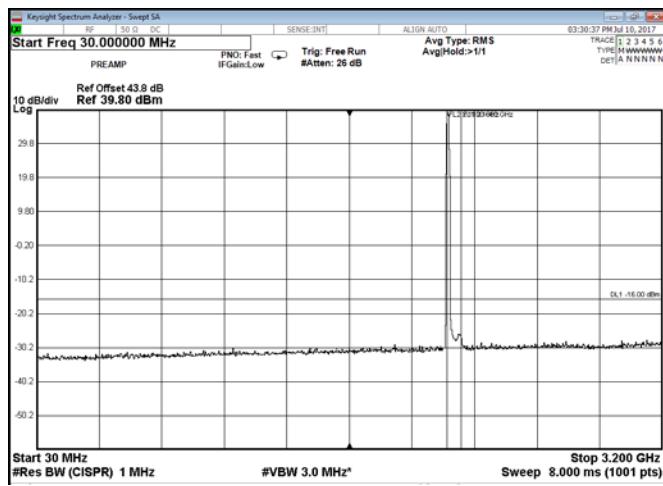


Figure 8.2-57: Conducted spurious emissions within 30–3200 MHz, Port B, 2 carriers: 5 MHz each at the bottom of the band, QPSK

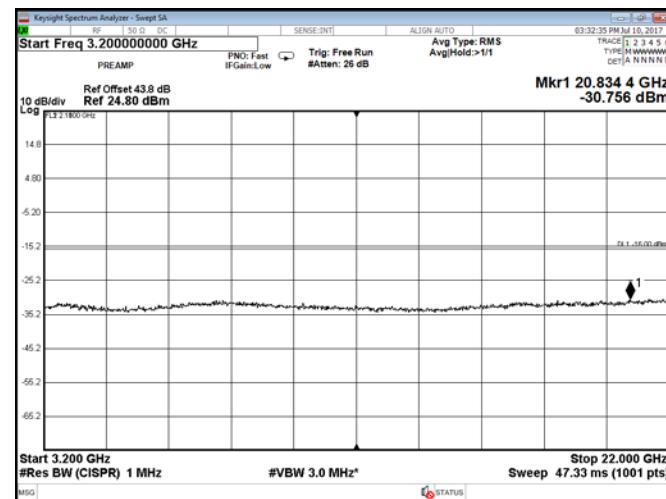


Figure 8.2-58: Conducted spurious emissions within 3200–22000 MHz, Port B, 2 carriers: 5 MHz each at the bottom of the band, QPSK

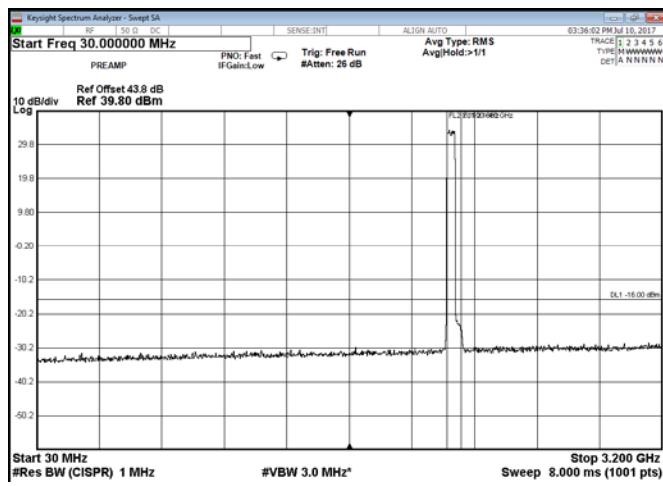


Figure 8.2-59: Conducted spurious emissions within 30–3200 MHz, Port B, 2 carriers: 20 MHz each at the bottom of the band, QPSK

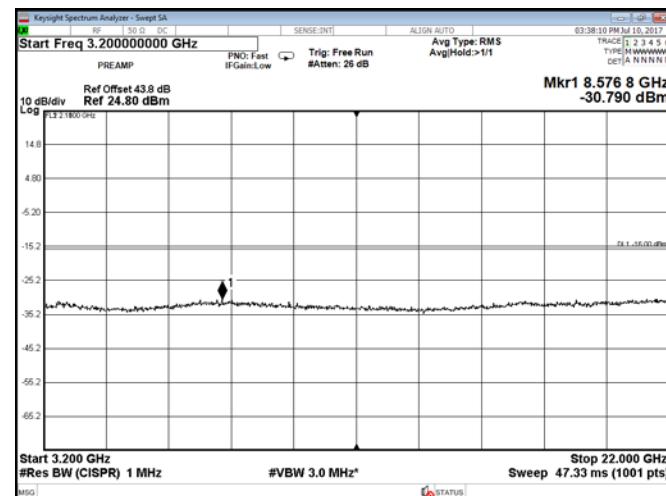


Figure 8.2-60: Conducted spurious emissions within 3200–22000 MHz, Port B, 2 carriers: 20 MHz each at the bottom of the band, QPSK

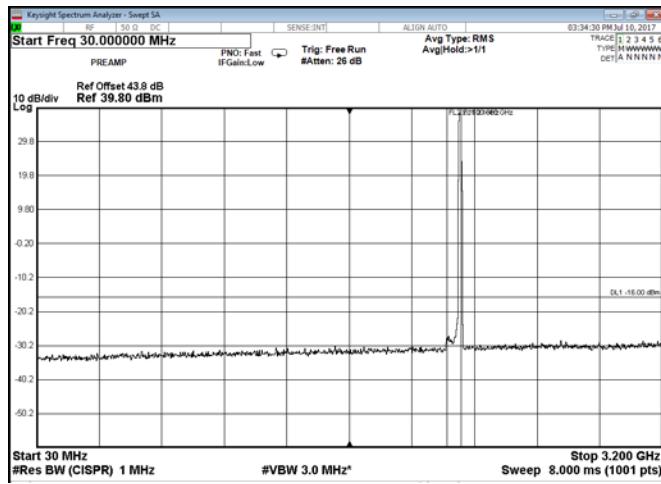


Figure 8.2-61: Conducted spurious emissions within 30–3200 MHz,
Port B, 2 carriers: 5 MHz each at the top of the band, QPSK

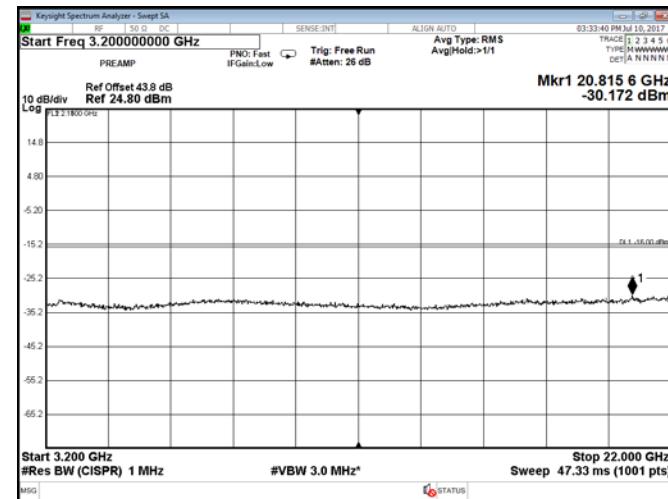


Figure 8.2-62: Conducted spurious emissions within 3200–22000 MHz,
Port B, 2 carriers: 5 MHz each at the top of the band, QPSK

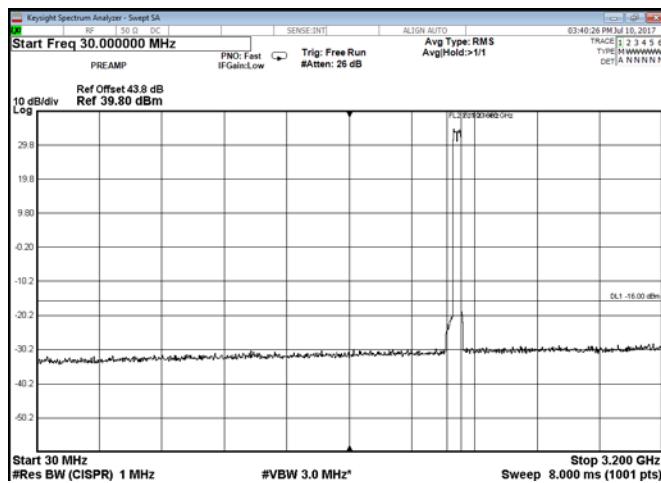


Figure 8.2-63: Conducted spurious emissions within 30–3200 MHz,
Port B, 2 carriers: 20 MHz each at the top of the band, QPSK

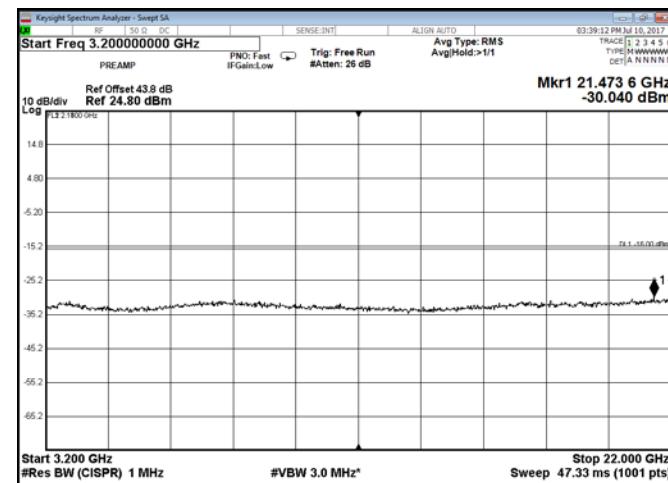
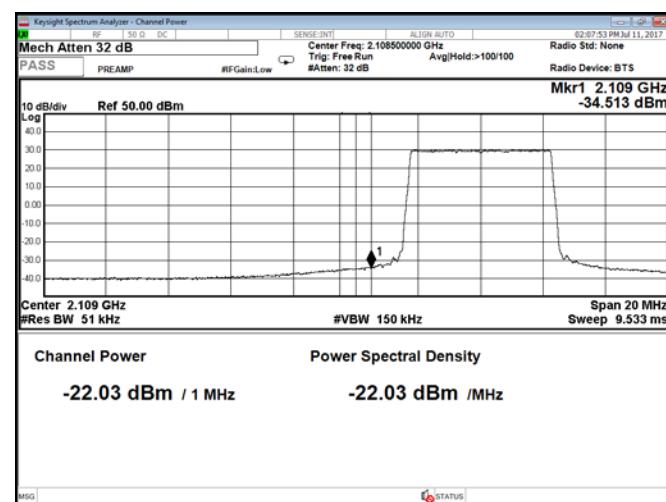
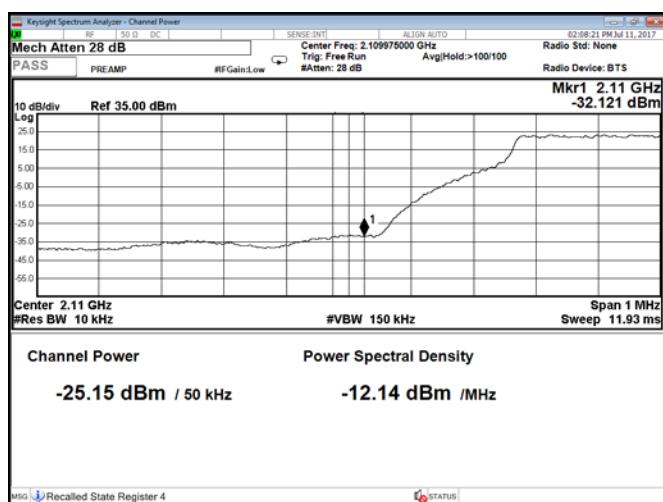
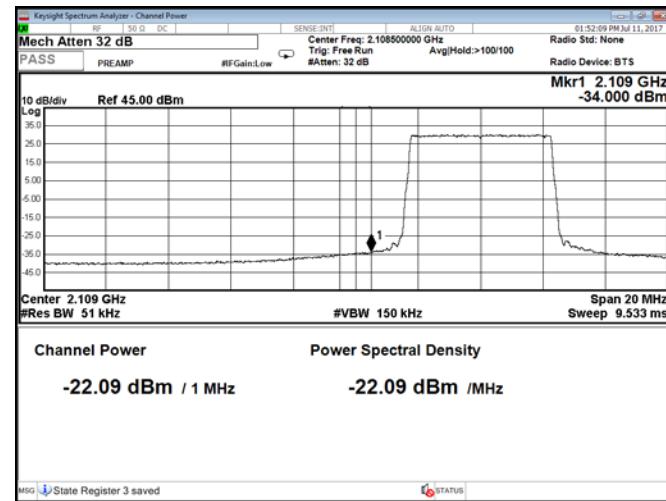
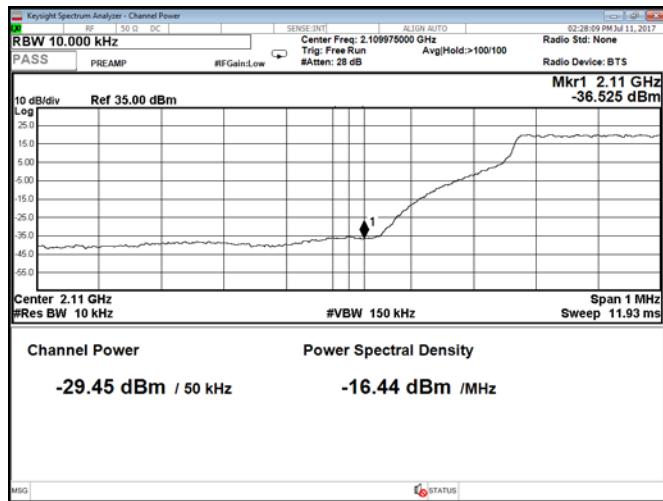
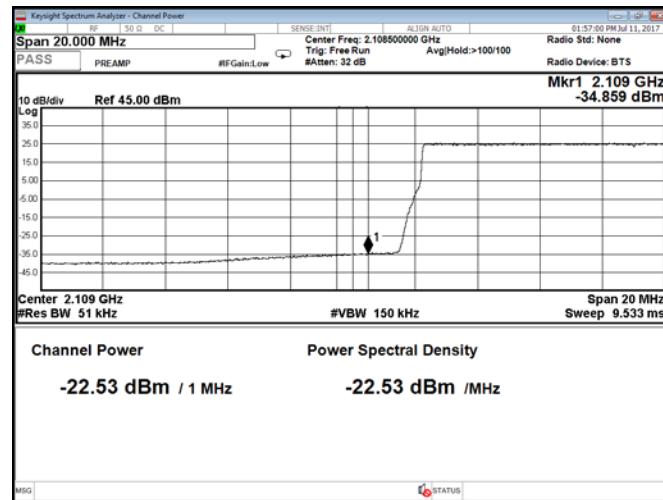
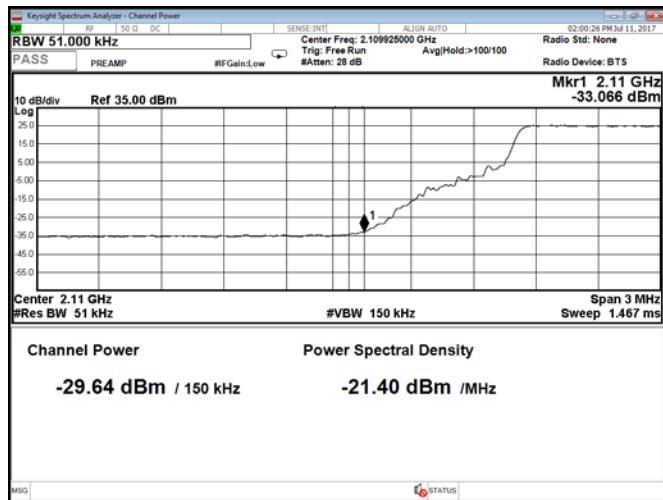
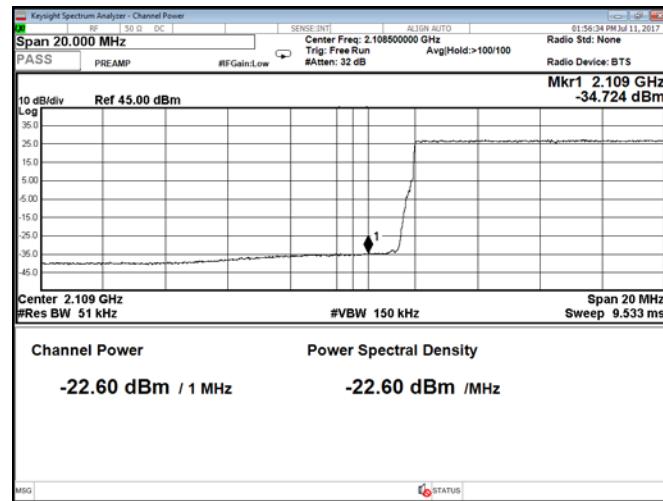
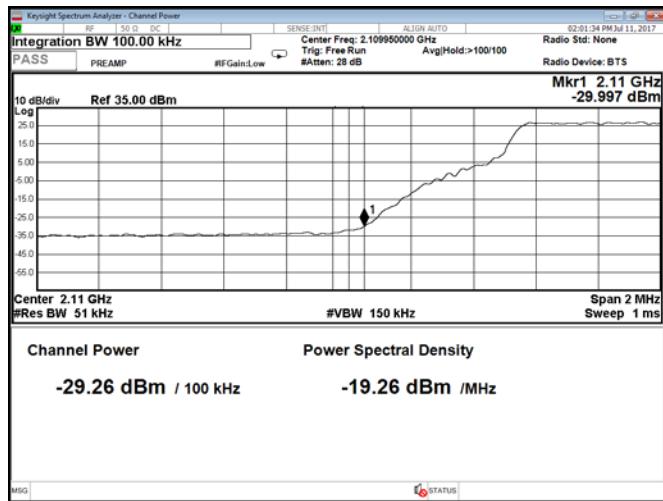
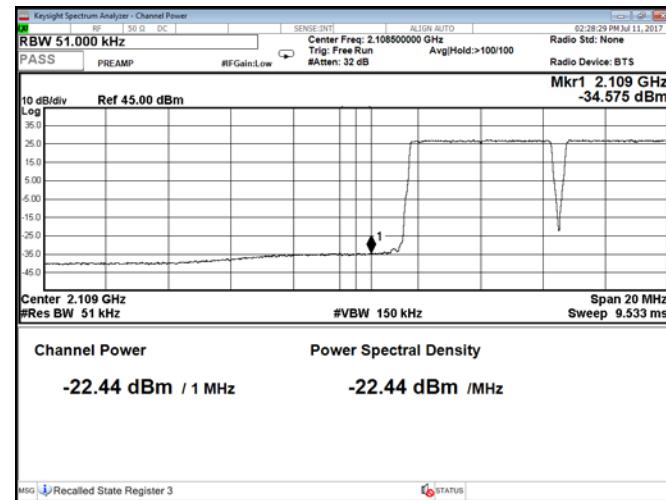
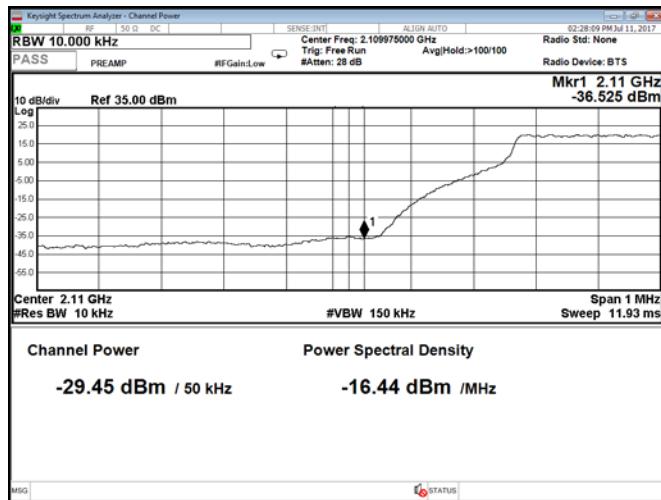
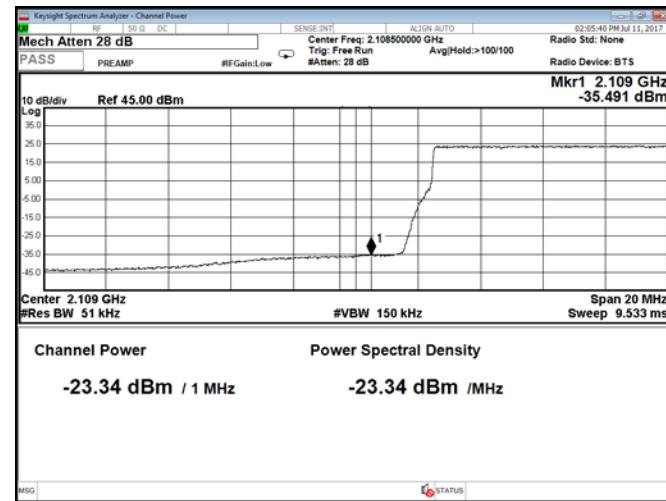
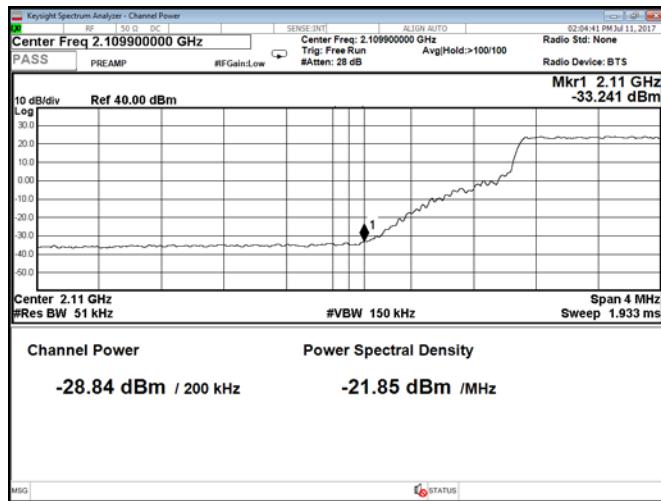
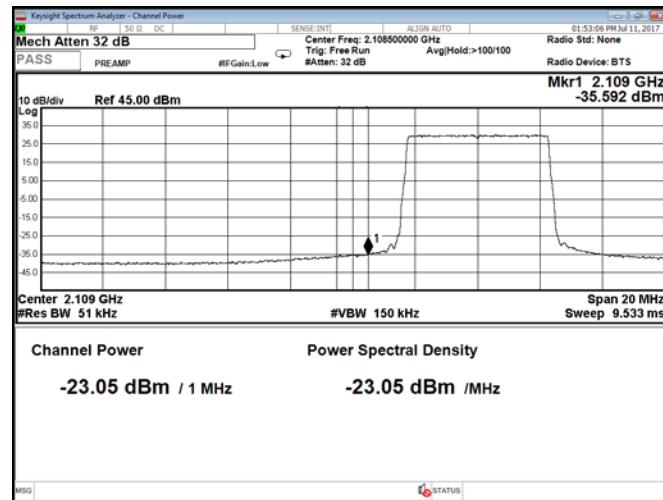
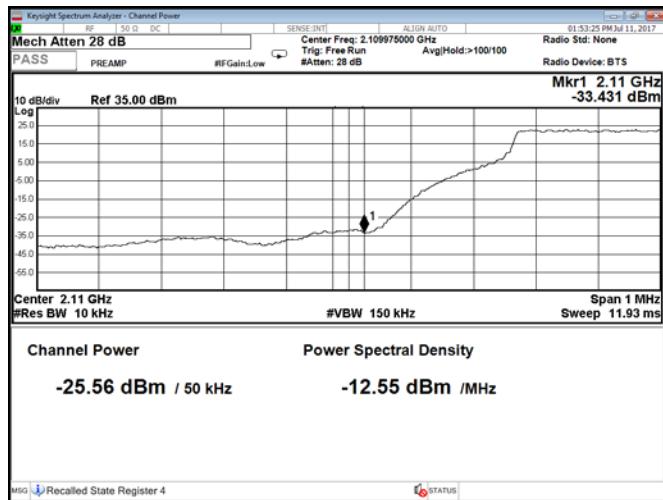
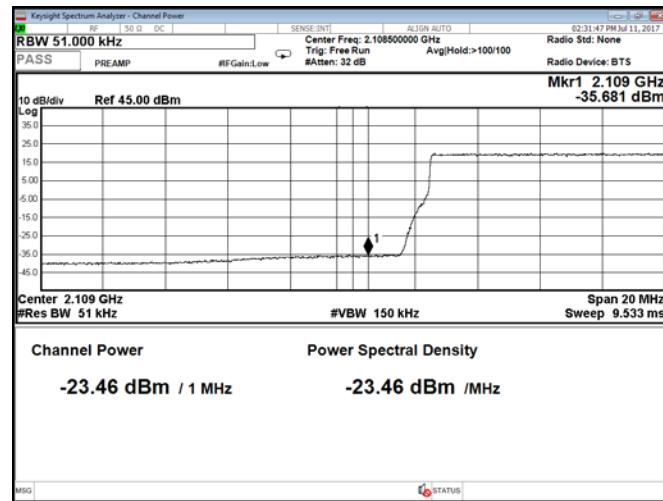
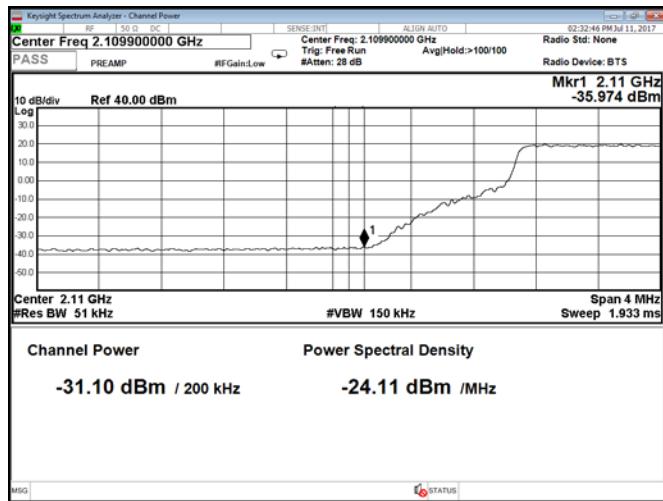


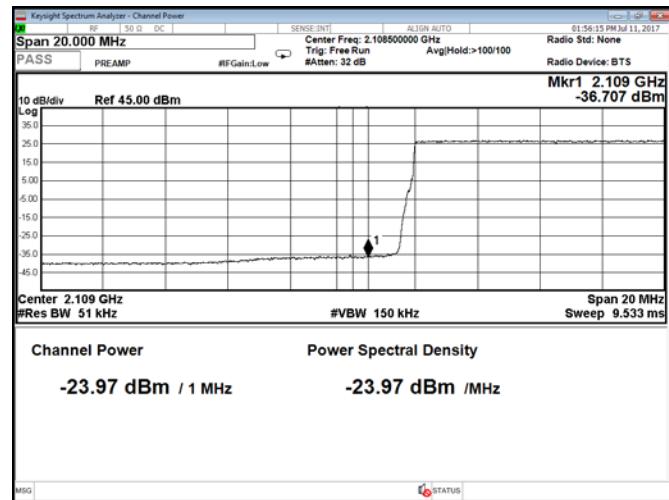
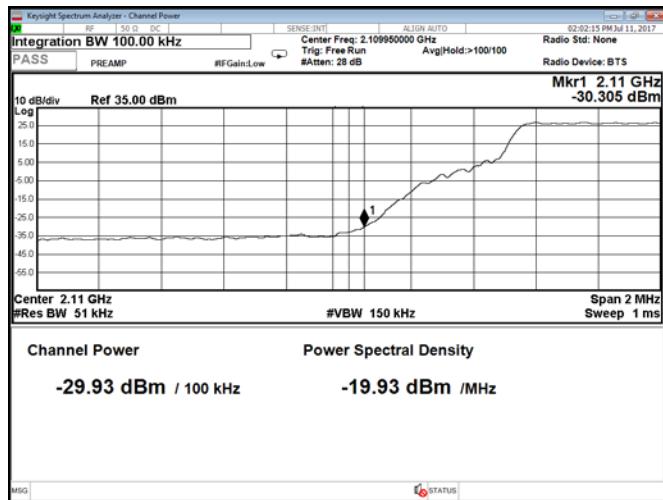
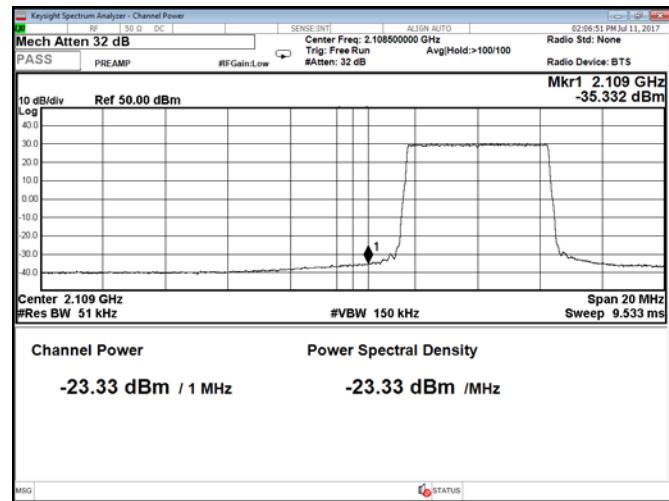
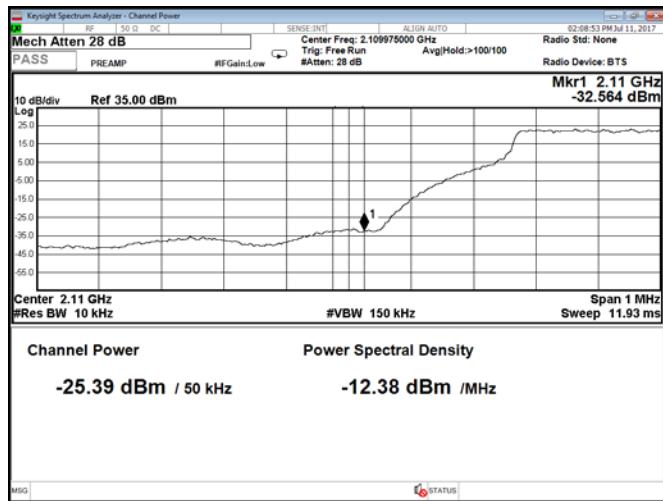
Figure 8.2-64: Conducted spurious emissions within 3200–22000 MHz,
Port B, 2 carriers: 20 MHz each at the top of the band, QPSK

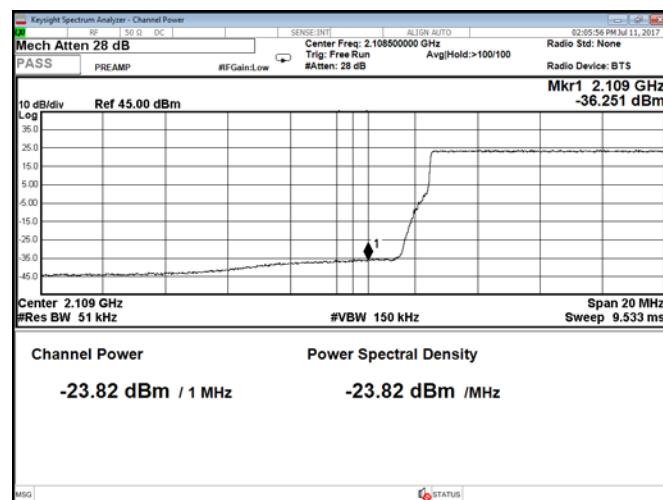
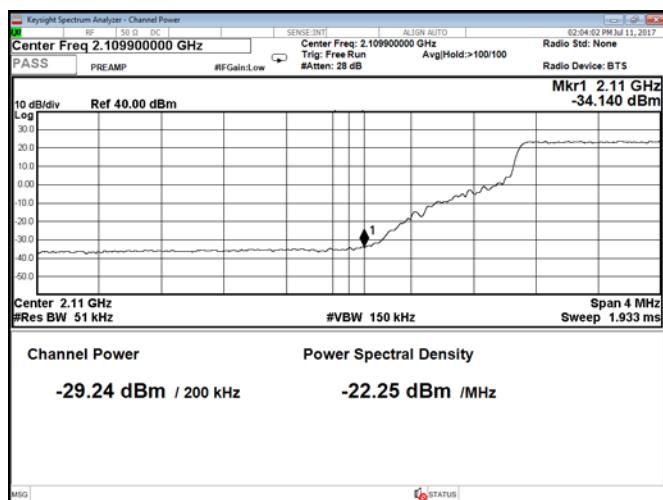
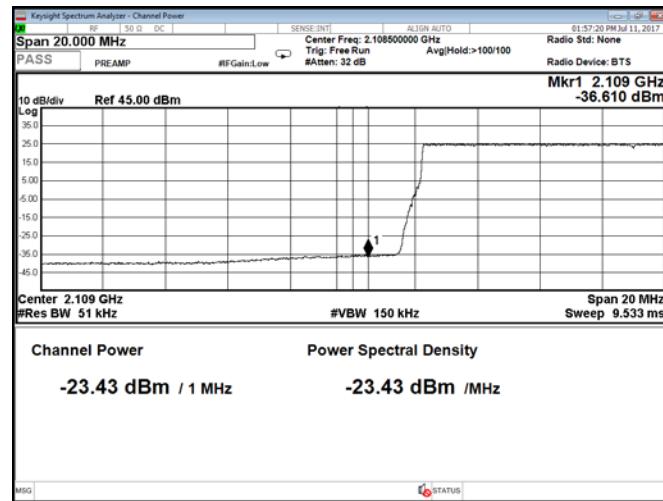
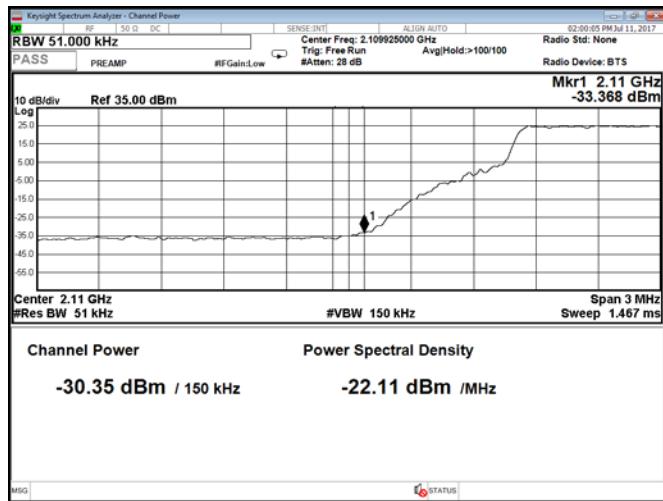












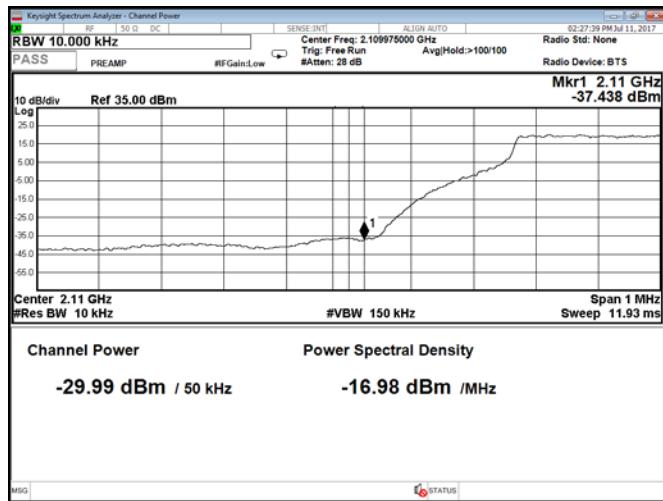


Figure 8.2-89: Conducted band edge emission at 2110 MHz, Port B, 5 MHz channel, 2 carriers, QPSK (RBW = 1% of EBW)

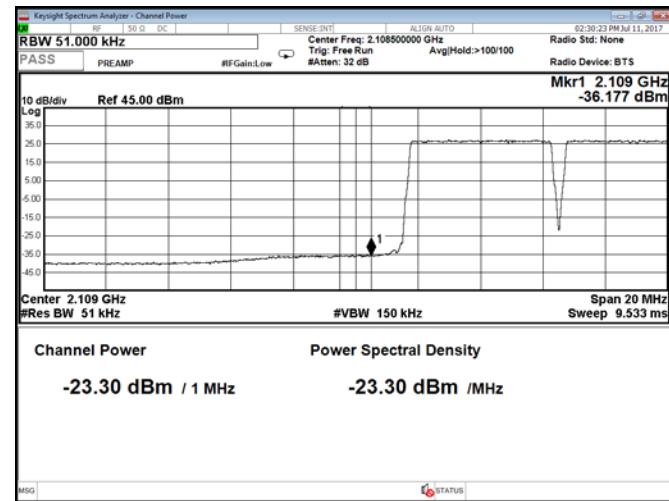


Figure 8.2-90: Conducted band edge emission at 2109 MHz, Port B, 5 MHz channel, 2 carriers, QPSK (RBW = 1 MHz)

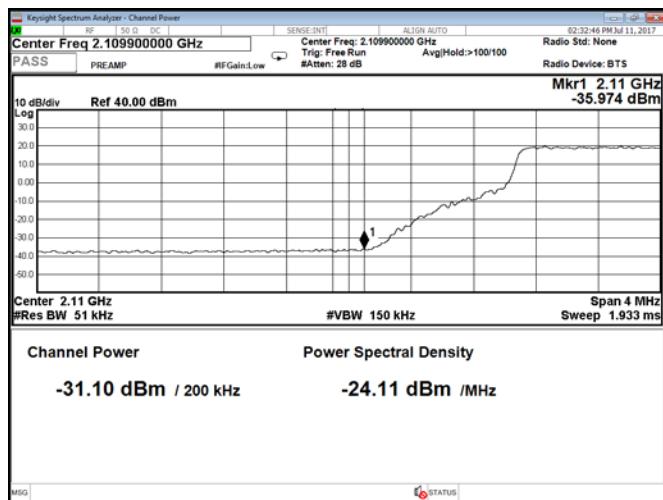


Figure 8.2-91: Conducted band edge emission at 2110 MHz, Port B, 20 MHz channel, 2 carriers, QPSK (RBW = 1% of EBW)

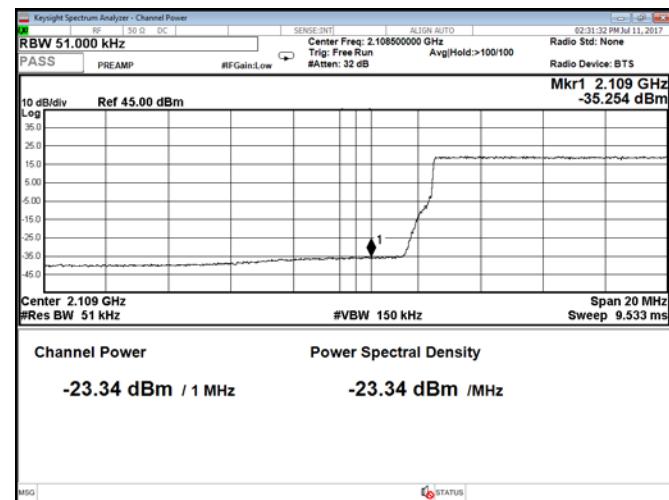


Figure 8.2-92: Conducted band edge emission at 2109 MHz, Port B, 20 MHz channel, 2 carriers, QPSK (RBW = 1 MHz)

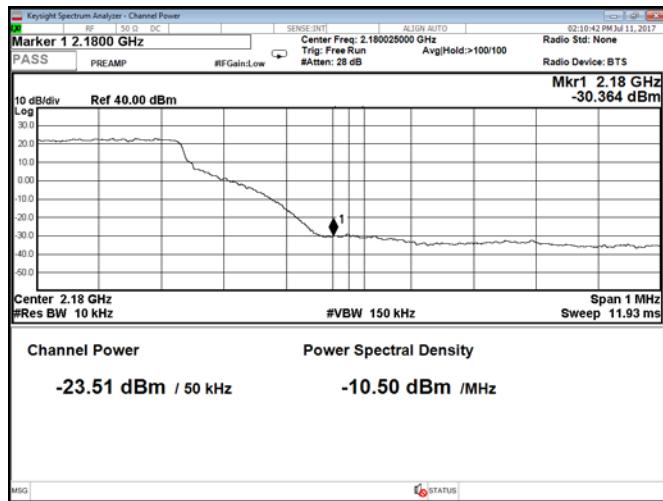


Figure 8.2-93: Conducted band edge emission at 2180 MHz, Port A, 5 MHz channel, QPSK (RBW = 1% of EBW)

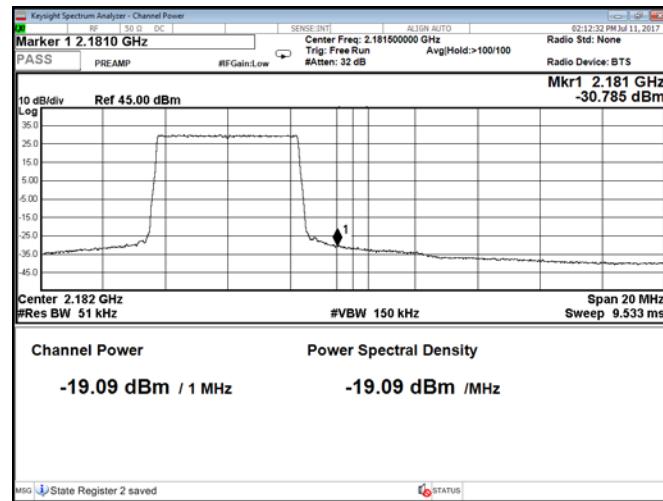


Figure 8.2-94: Conducted band edge emission at 2181 MHz, Port A, 5 MHz channel, QPSK (RBW = 1 MHz)

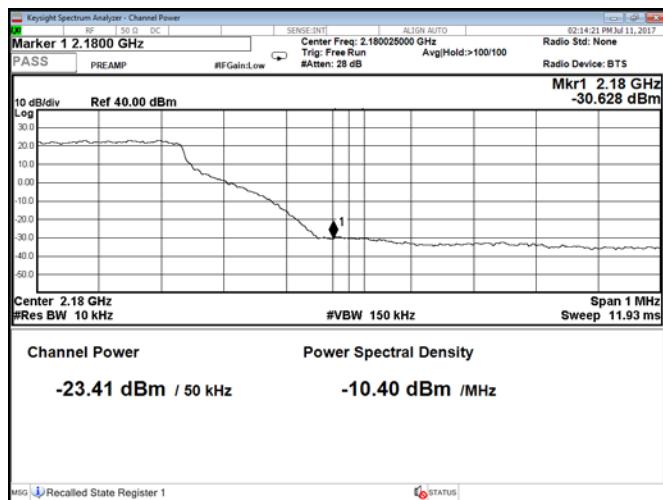


Figure 8.2-95: Conducted band edge emission at 2180 MHz, Port A, 5 MHz channel, 256QAM (RBW = 1% of EBW)

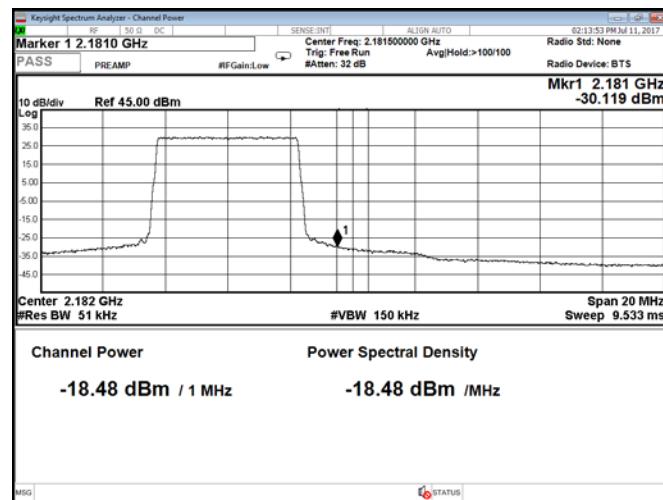


Figure 8.2-96: Conducted band edge emission at 2181 MHz, Port A, 5 MHz channel, 256QAM (RBW = 1 MHz)

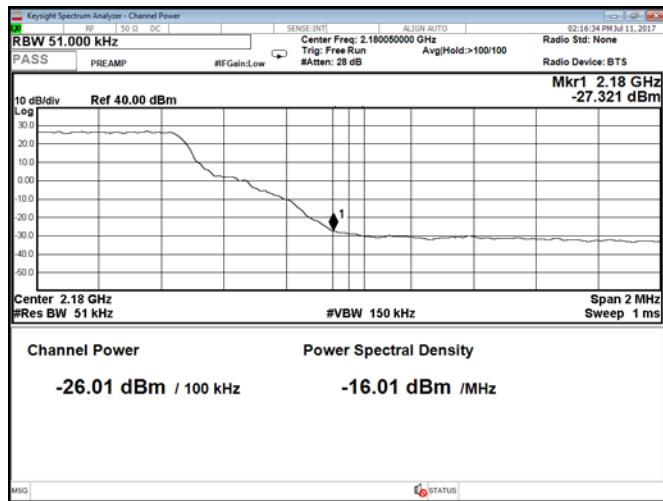


Figure 8.2-97: Conducted band edge emission at 2180 MHz, Port A, 10 MHz channel, QPSK (RBW = 1% of EBW)

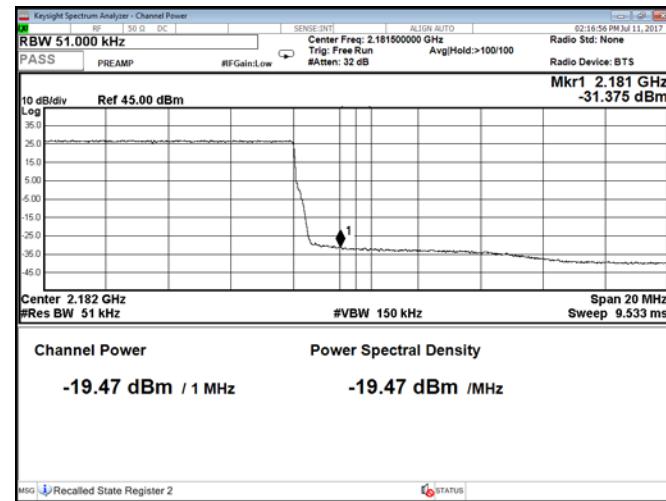


Figure 8.2-98: Conducted band edge emission at 2181 MHz, Port A, 10 MHz channel, QPSK (RBW = 1 MHz)

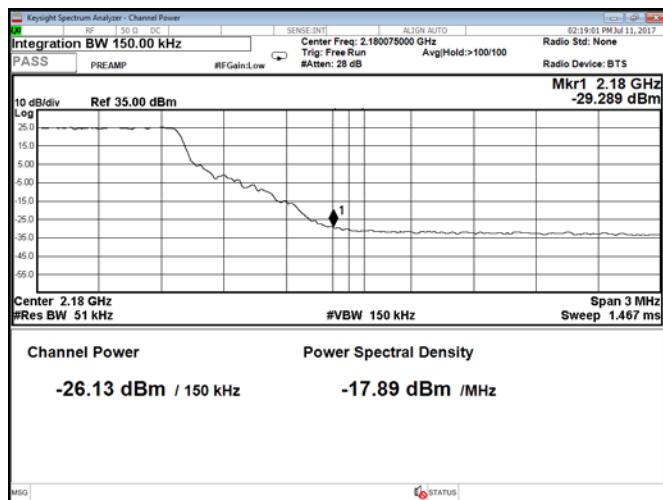


Figure 8.2-99: Conducted band edge emission at 2180 MHz, Port A, 15 MHz channel, QPSK (RBW = 1% of EBW)

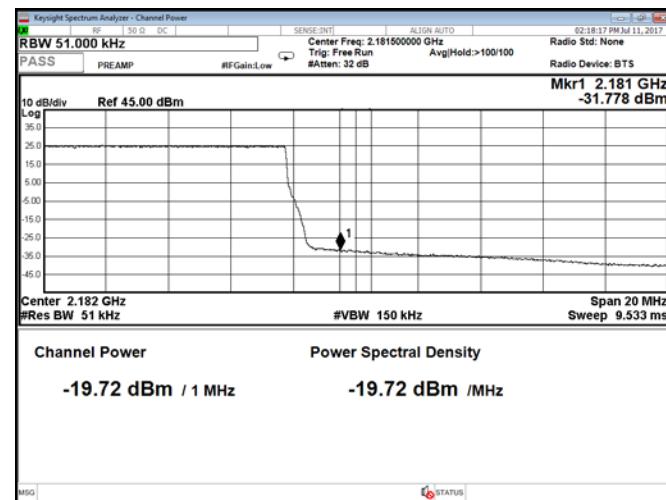


Figure 8.2-100: Conducted band edge emission at 2181 MHz, Port A, 15 MHz channel, QPSK (RBW = 1 MHz)

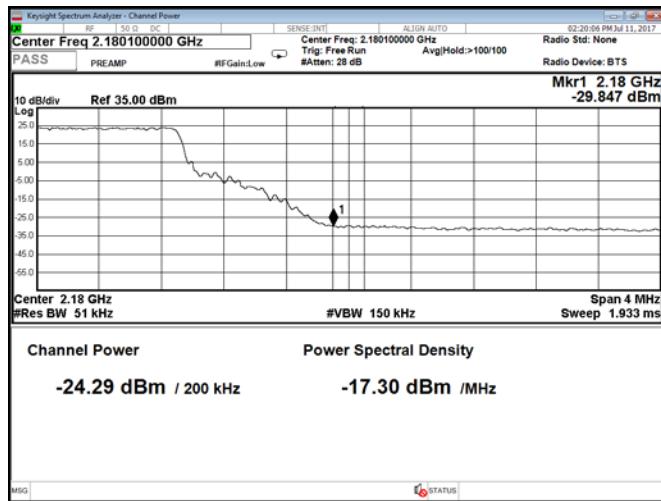


Figure 8.2-101: Conducted band edge emission at 2180 MHz, Port A, 20 MHz channel, QPSK (RBW = 1% of EBW)

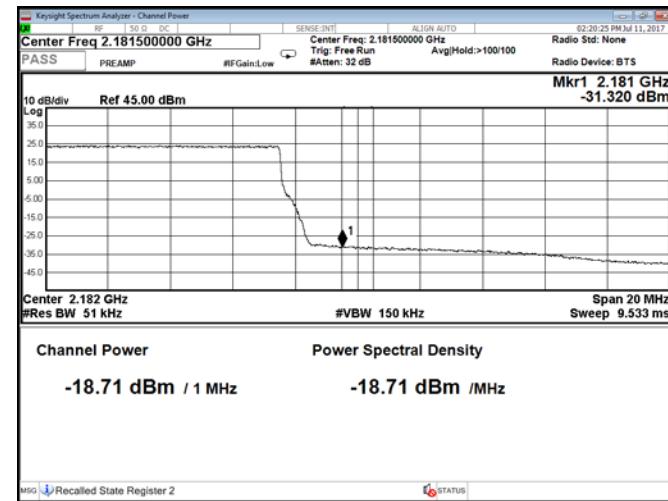


Figure 8.2-102: Conducted band edge emission at 2181 MHz, Port A, 20 MHz channel, QPSK (RBW = 1 MHz)

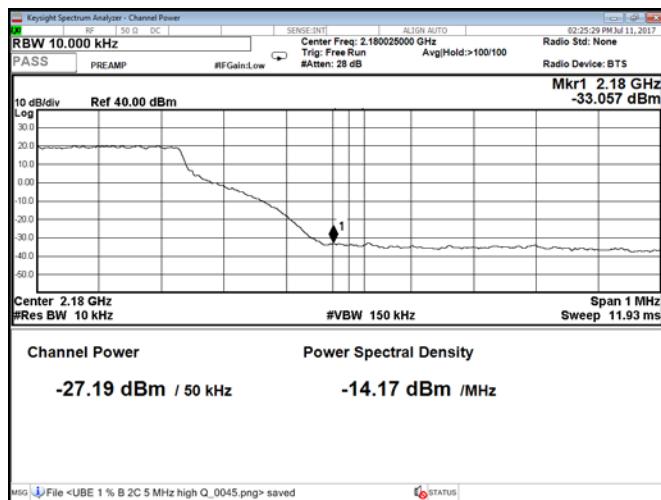


Figure 8.2-103: Conducted band edge emission at 2180 MHz, Port A, 5 MHz channel, 2 carriers, QPSK (RBW = 1% of EBW)

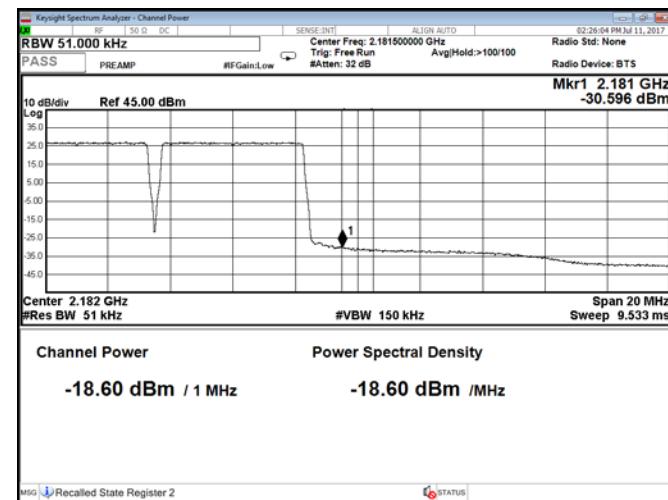


Figure 8.2-104: Conducted band edge emission at 2181 MHz, Port A, 5 MHz channel, 2 carriers, QPSK (RBW = 1 MHz)

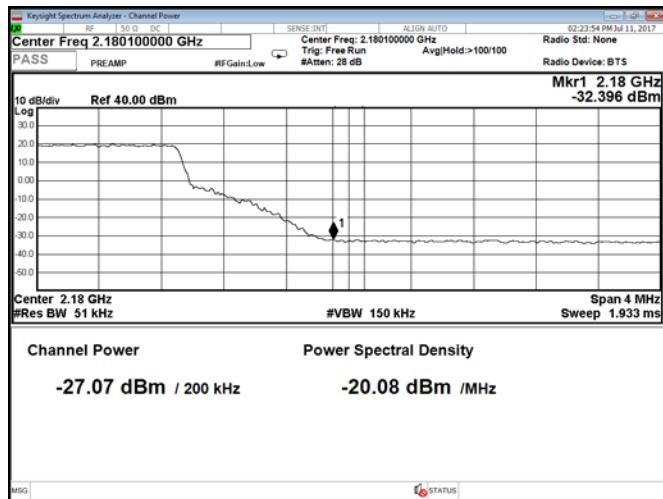


Figure 8.2-105: Conducted band edge emission at 2180 MHz, Port A, 20 MHz channel, 2 carriers, QPSK (RBW = 1% of EBW)

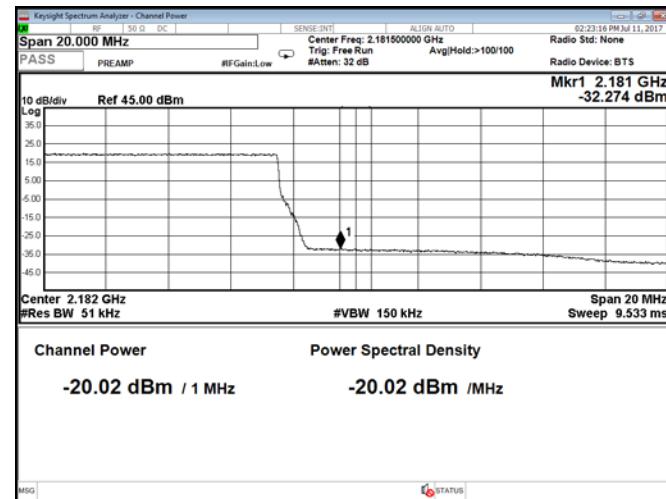


Figure 8.2-106: Conducted band edge emission at 2181 MHz, Port A, 20 MHz channel, 2 carriers, QPSK (RBW = 1 MHz)

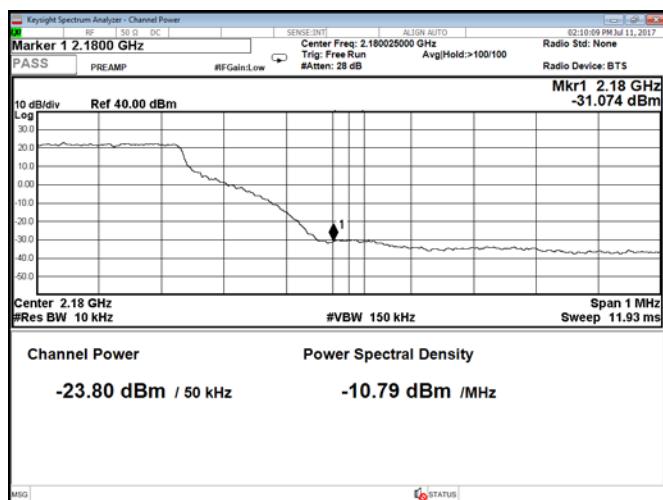


Figure 8.2-107: Conducted band edge emission at 2180 MHz, Port B, 5 MHz channel, QPSK (RBW = 1% of EBW)

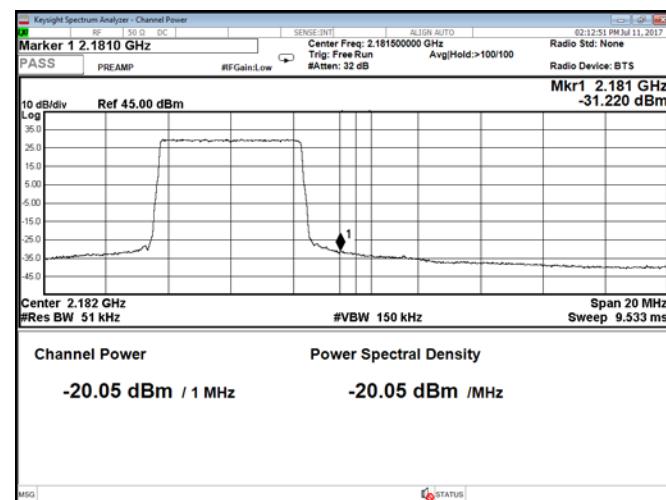


Figure 8.2-108: Conducted band edge emission at 2181 MHz, Port B, 5 MHz channel, QPSK (RBW = 1 MHz)

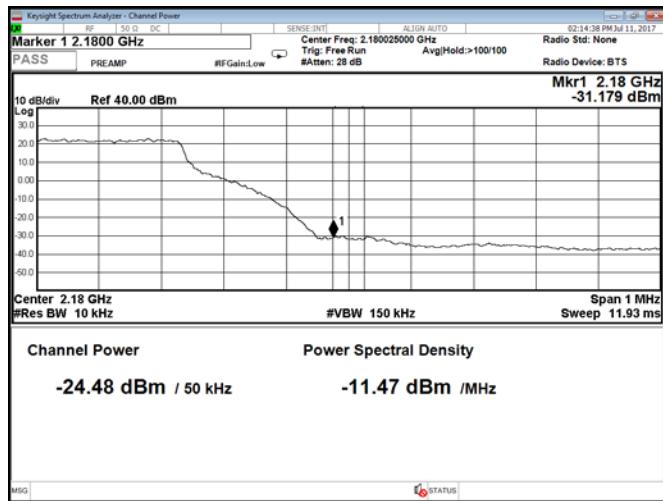


Figure 8.2-109: Conducted band edge emission at 2180 MHz, Port B, 5 MHz channel, 256QAM (RBW = 1% of EBW)

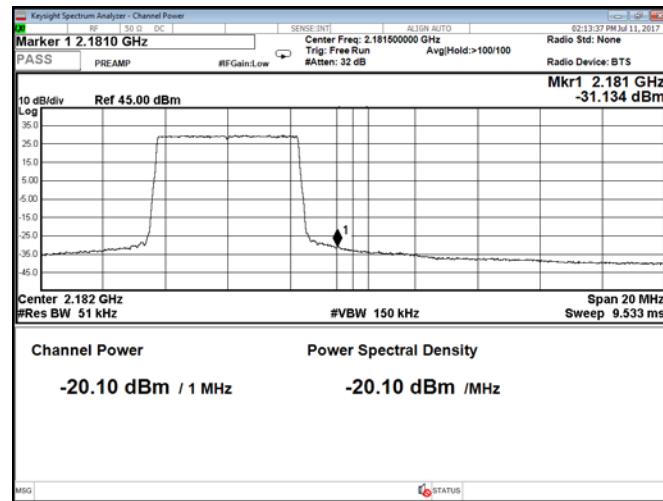


Figure 8.2-110: Conducted band edge emission at 2181 MHz, Port B, 5 MHz channel, 256QAM (RBW = 1 MHz)

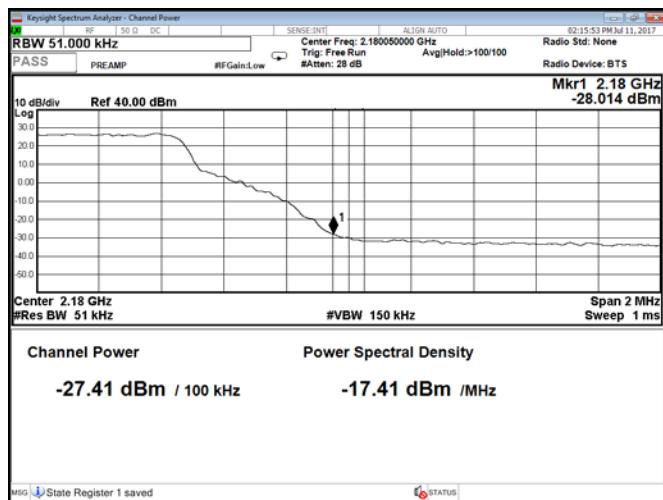


Figure 8.2-111: Conducted band edge emission at 2180 MHz, Port B, 10 MHz channel, QPSK (RBW = 1% of EBW)

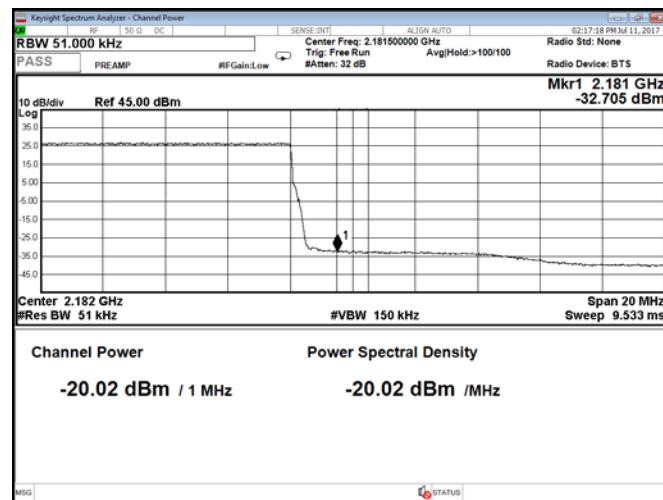


Figure 8.2-112: Conducted band edge emission at 2181 MHz, Port B, 10 MHz channel, QPSK (RBW = 1 MHz)

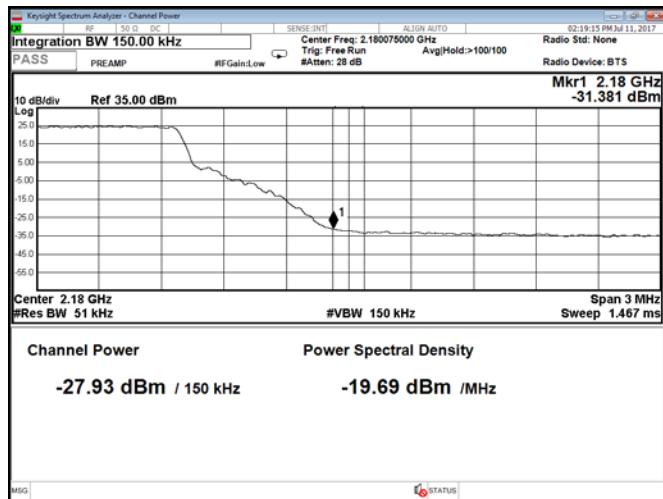


Figure 8.2-113: Conducted band edge emission at 2180 MHz, Port B, 15 MHz channel, QPSK (RBW = 1% of EBW)

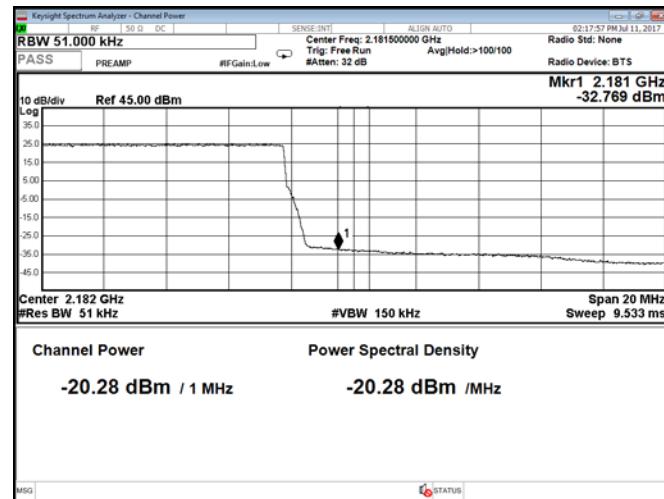


Figure 8.2-114: Conducted band edge emission at 2181 MHz, Port B, 15 MHz channel, QPSK (RBW = 1 MHz)

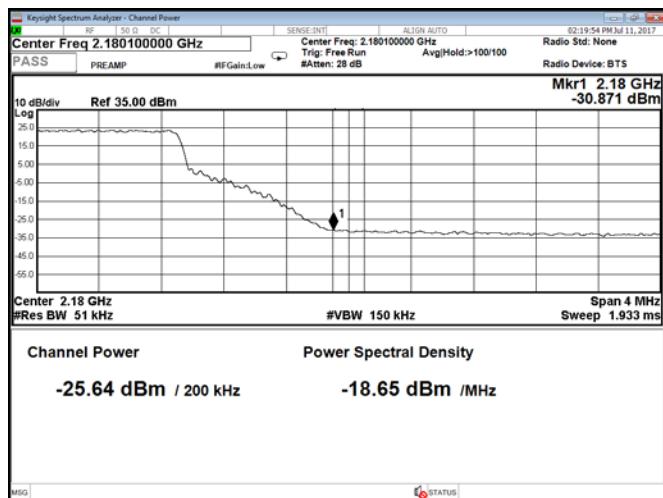


Figure 8.2-115: Conducted band edge emission at 2180 MHz, Port B, 20 MHz channel, QPSK (RBW = 1% of EBW)

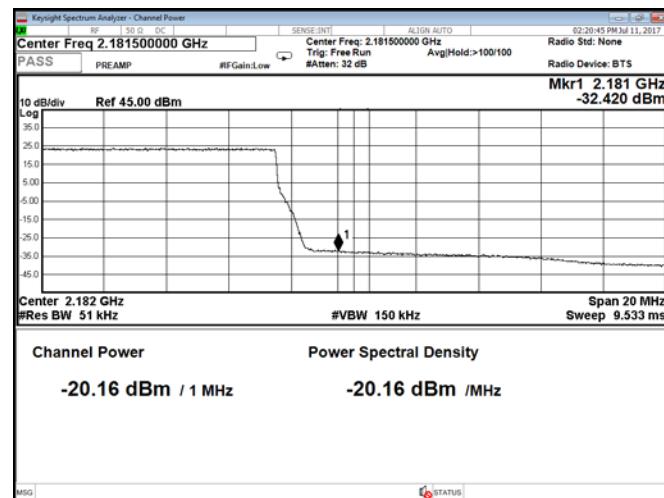


Figure 8.2-116: Conducted band edge emission at 2181 MHz, Port B, 20 MHz channel, QPSK (RBW = 1 MHz)

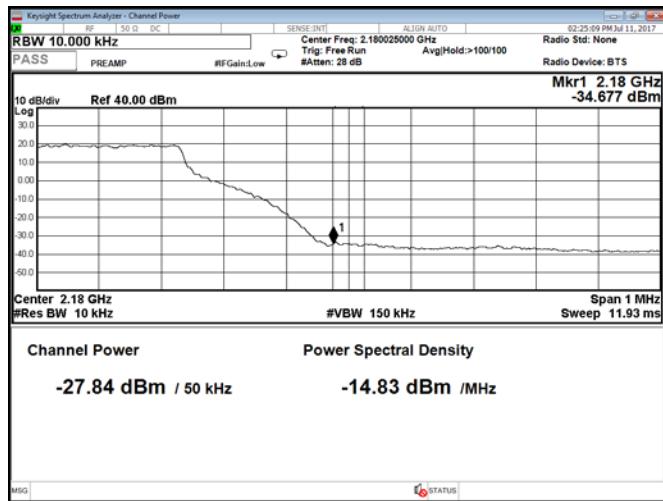


Figure 8.2-117: Conducted band edge emission at 2180 MHz, Port B, 5 MHz channel, 2 carriers, QPSK (RBW = 1% of EBW)

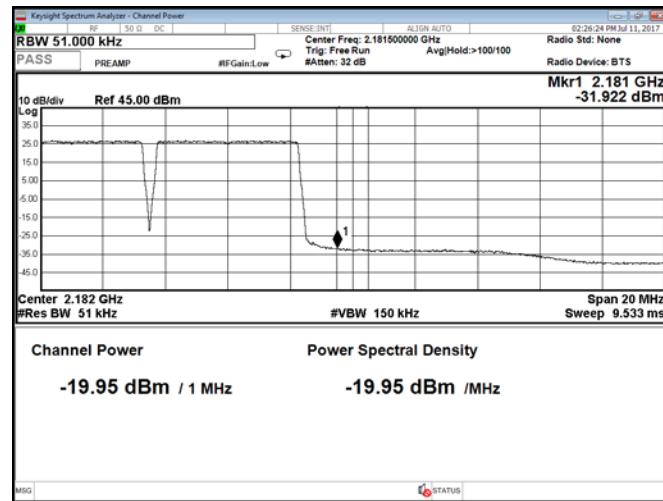


Figure 8.2-118: Conducted band edge emission at 2181 MHz, Port B, 5 MHz channel, 2 carriers, QPSK (RBW = 1 MHz)

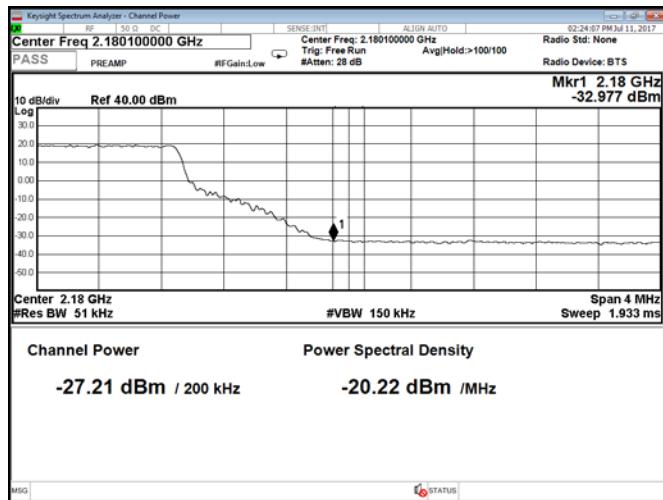


Figure 8.2-119: Conducted band edge emission at 2180 MHz, Port B, 20 MHz channel, 2 carriers, QPSK (RBW = 1% of EBW)

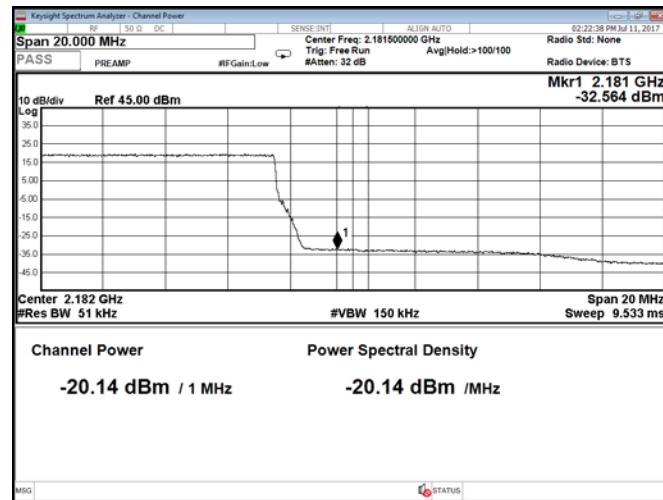


Figure 8.2-120: Conducted band edge emission at 2181 MHz, Port B, 20 MHz channel, 2 carriers, QPSK (RBW = 1 MHz)

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

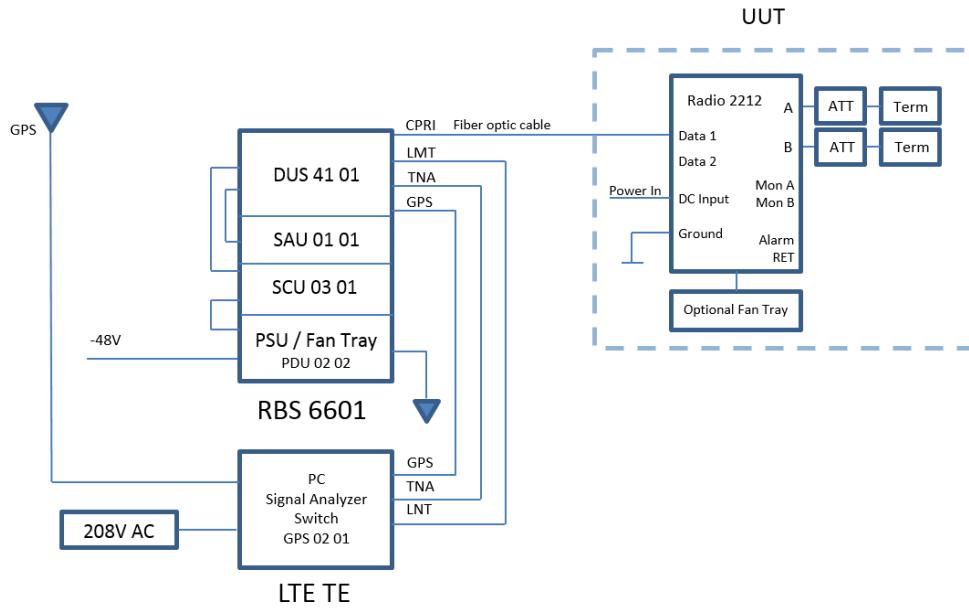


Figure 8.3-1: Set-up Diagram Radiated Spurious Emission



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

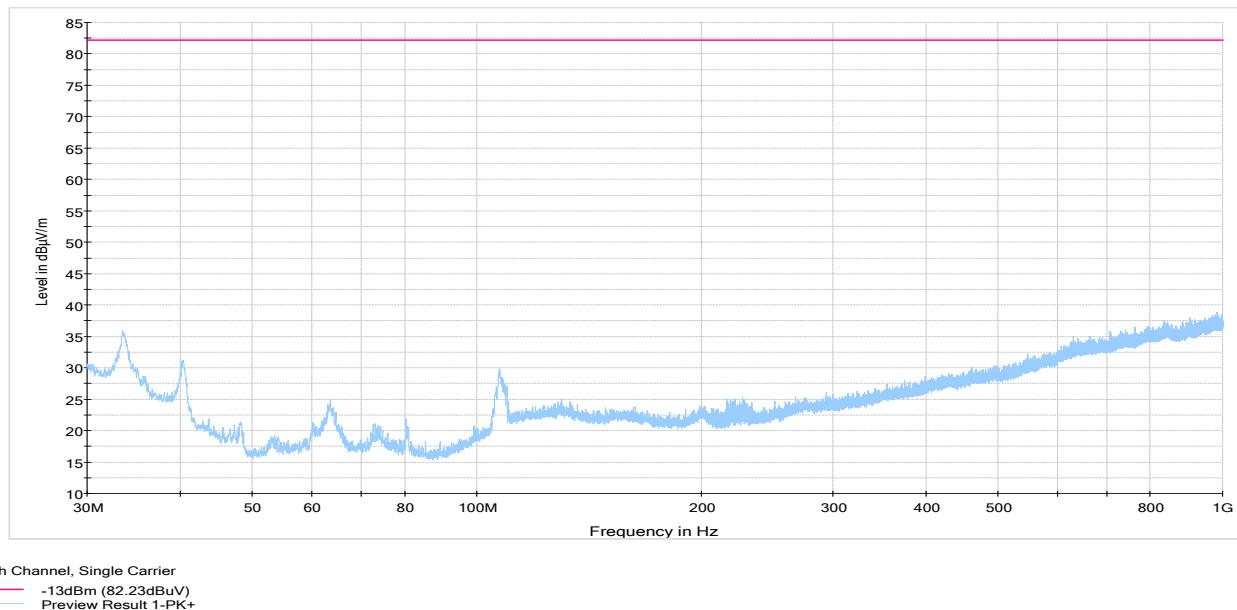


Figure 8.3-3: Radiated spurious emission below 1 GHz for single carrier operation

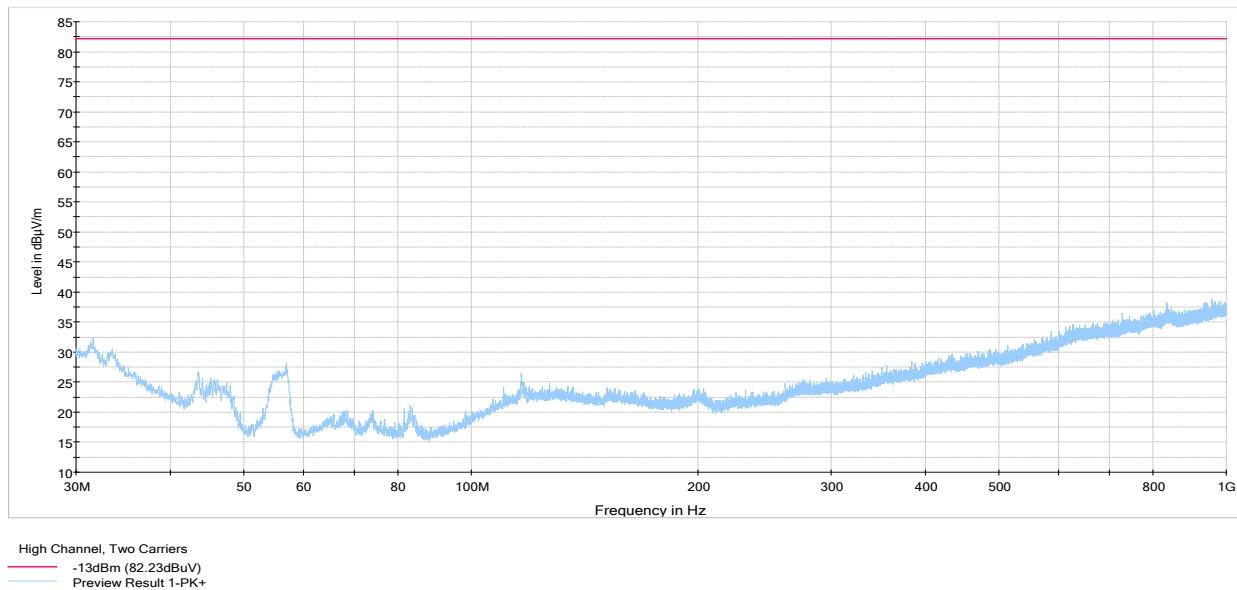


Figure 8.3-4: Radiated spurious emission below 1 GHz for two carriers operation

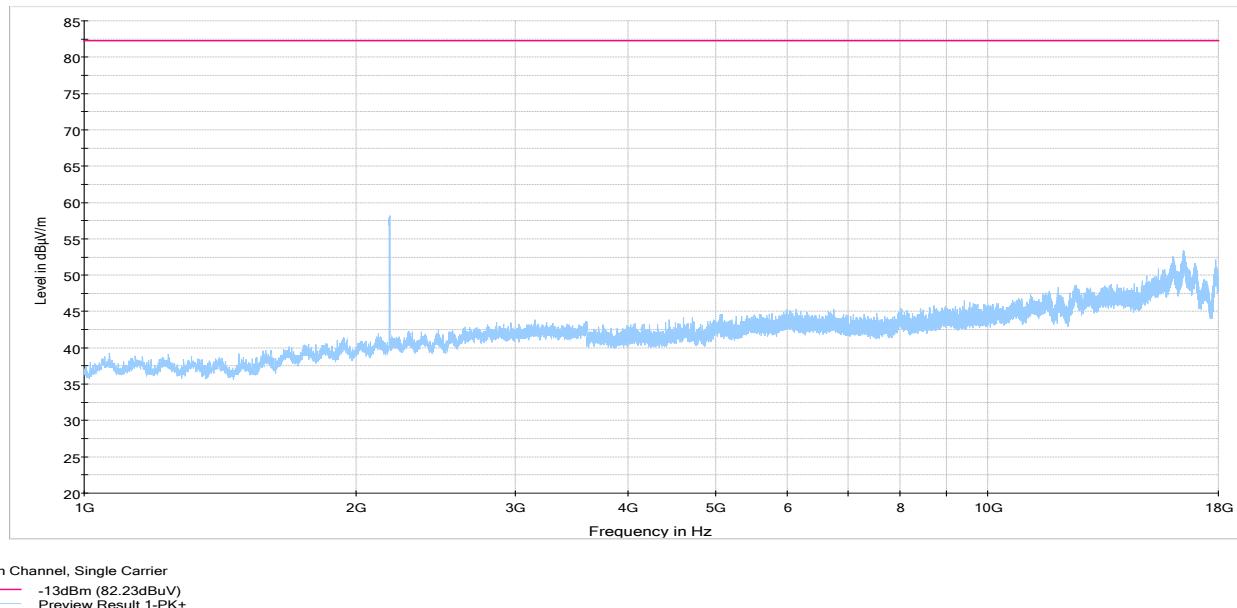


Figure 8.3-5: Radiated spurious emission within 1–18 GHz, for single carrier operation

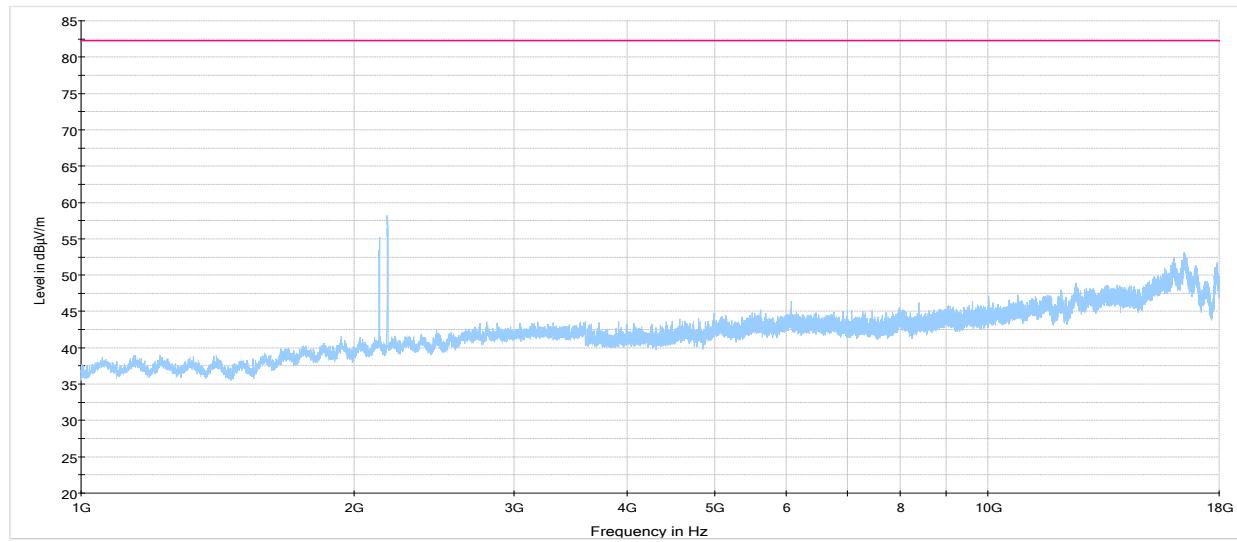
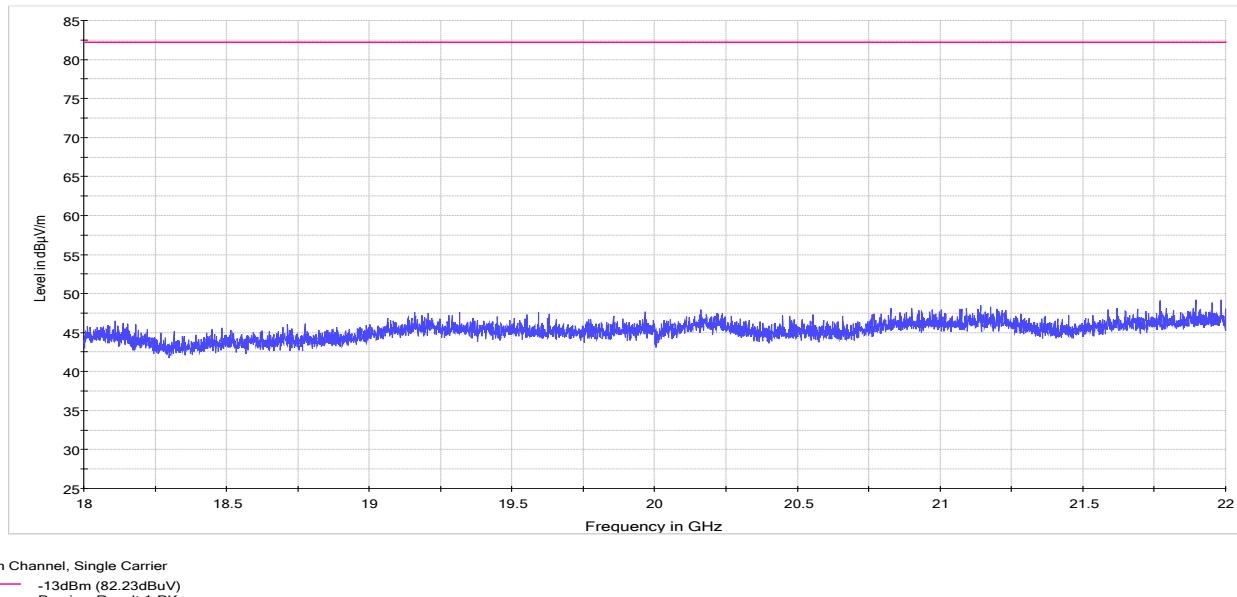
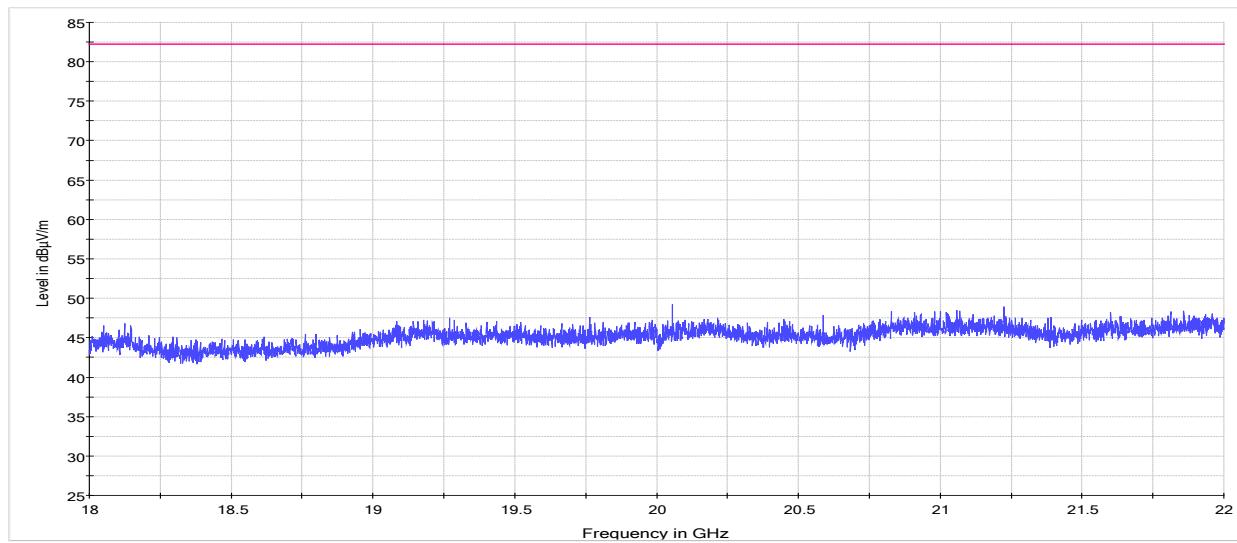


Figure 8.3-6: Radiated spurious emission within 1–18 GHz, for two carriers operation



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

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



High Channel, Two Carriers
-13dBm (82.23dB μ V)
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: $48 \text{ V}_{\text{DC}} \pm 15\% = 40.8\text{--}55.2 \text{ V}_{\text{DC}}$. 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 (\times 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 \times 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 \times 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 \times 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	\geq 1 % of span
Video bandwidth	RBW \times 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

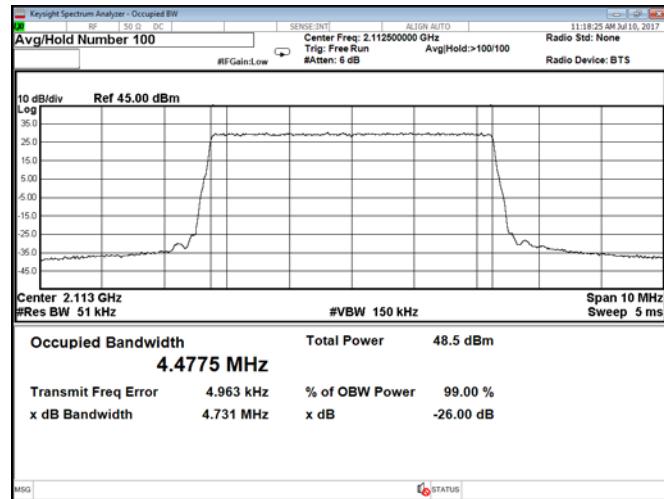


Figure 8.5-1: Occupied bandwidth, QPSK, 5 MHz, Port A, Low channel

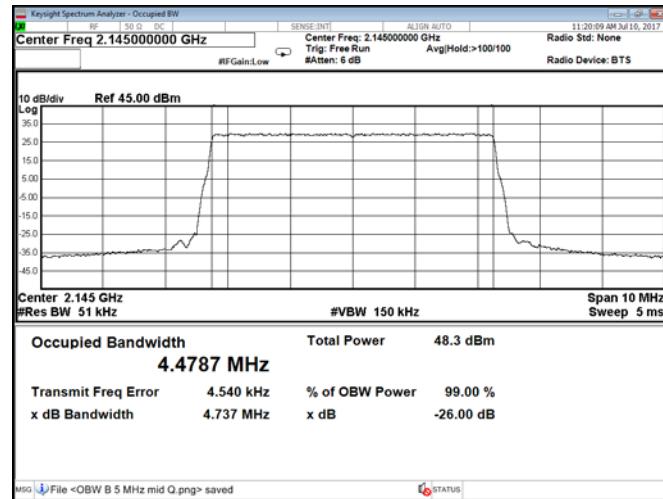


Figure 8.5-2: Occupied bandwidth, QPSK, 5 MHz, Port A, Mid channel

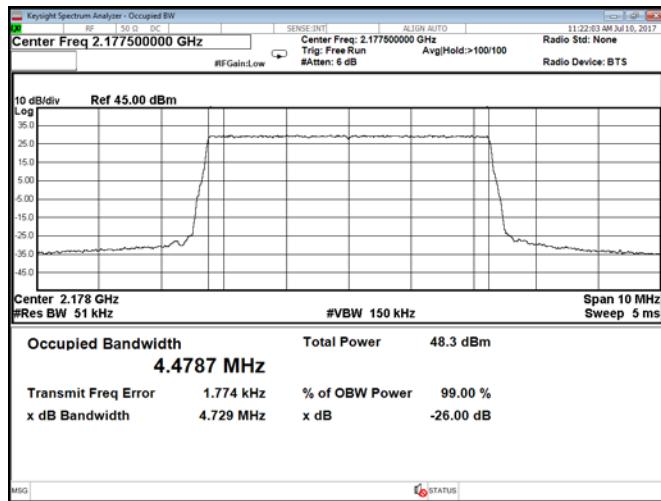


Figure 8.5-3: Occupied bandwidth, QPSK, 5 MHz, Port A, High channel

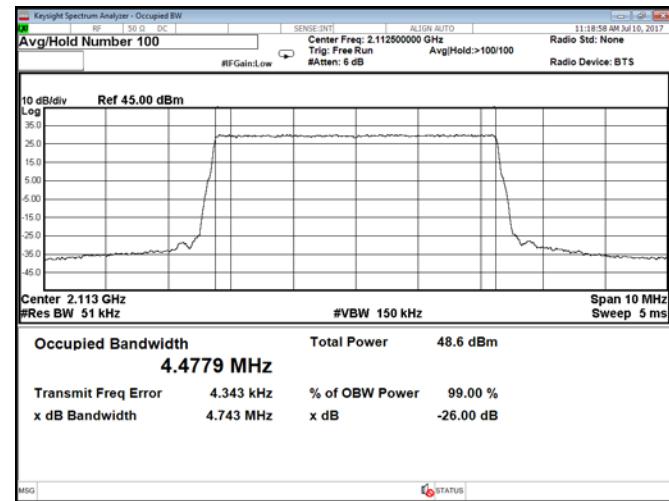


Figure 8.5-4: Occupied bandwidth, QPSK, 5 MHz, Port B, Low channel

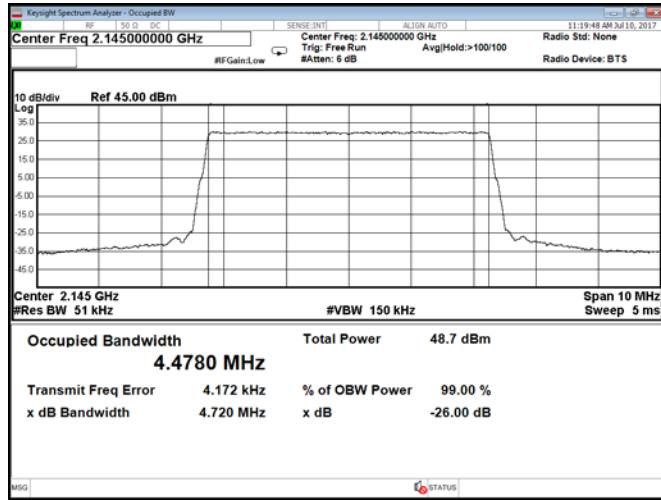


Figure 8.5-5: Occupied bandwidth, QPSK, 5 MHz, Port B, Mid channel

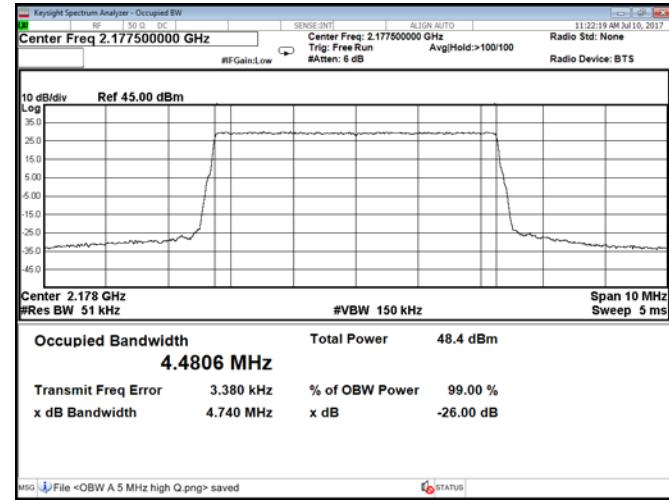


Figure 8.5-6: Occupied bandwidth, QPSK, 5 MHz, Port B, High channel

Section 8
Test name
Specification

Testing data
 FCC Part 2.1049 and RSS-Gen, 6.6 Occupied bandwidth
 FCC Part 2, RSS-Gen, Issue 4

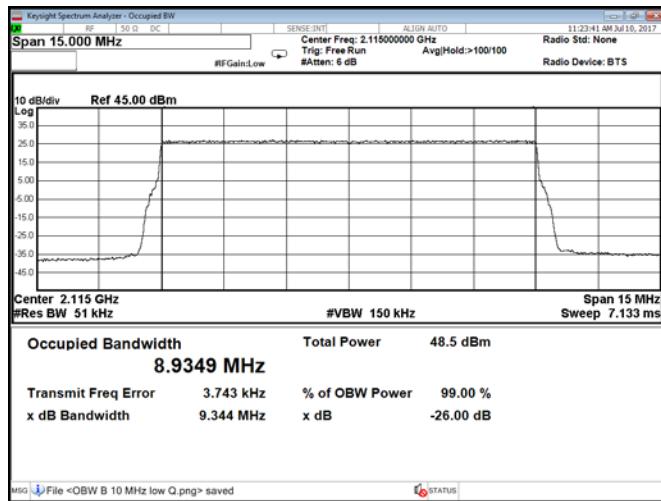


Figure 8.5-7: Occupied bandwidth, QPSK, 10 MHz, Port A, Low channel

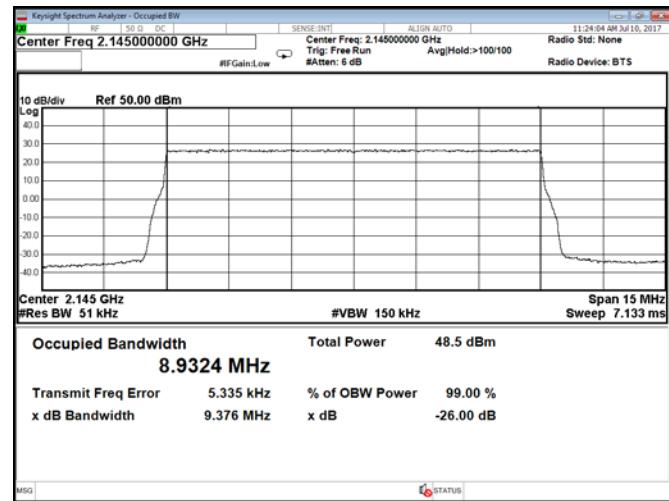


Figure 8.5-8: Occupied bandwidth, QPSK, 10 MHz, Port A, Mid channel

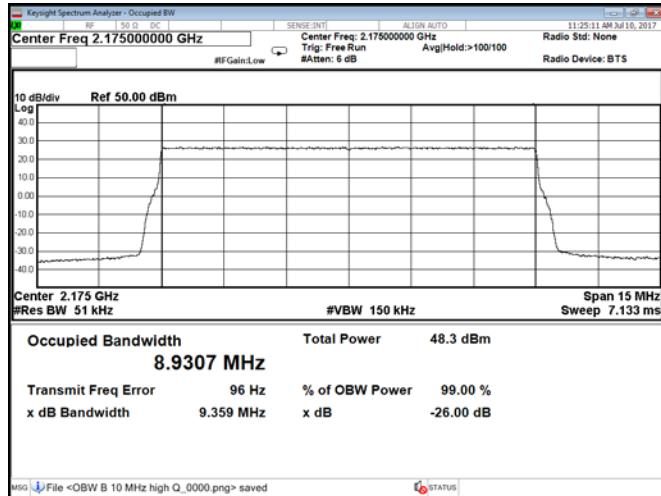


Figure 8.5-9: Occupied bandwidth, QPSK, 10 MHz, Port A, High channel

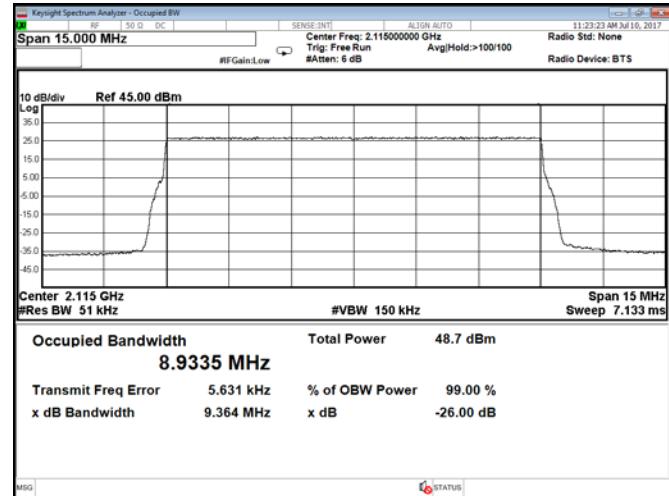


Figure 8.5-10: Occupied bandwidth, QPSK, 10 MHz, Port B, Low channel