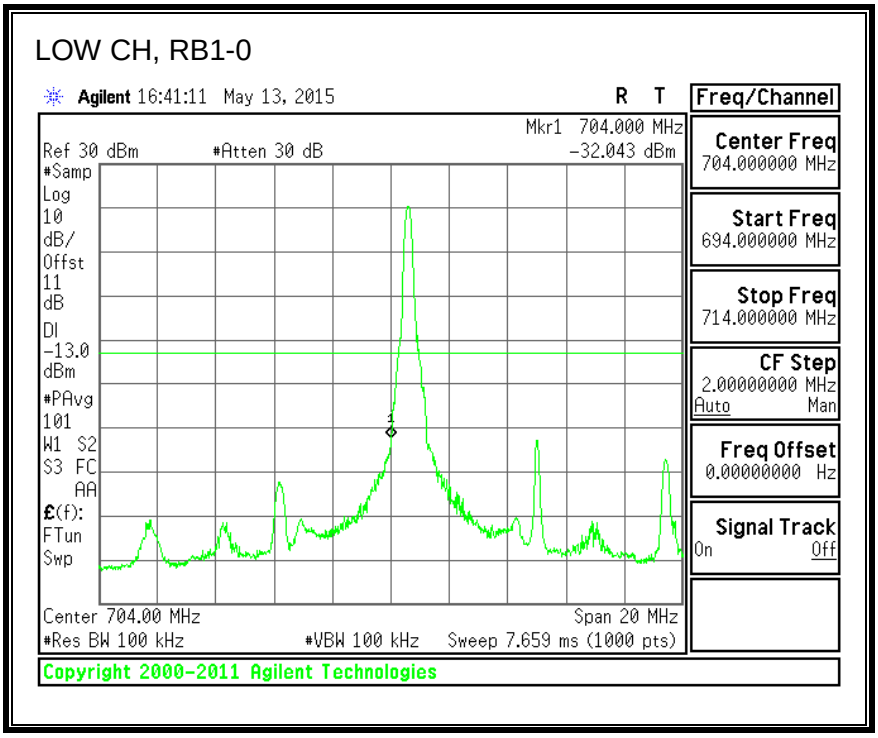
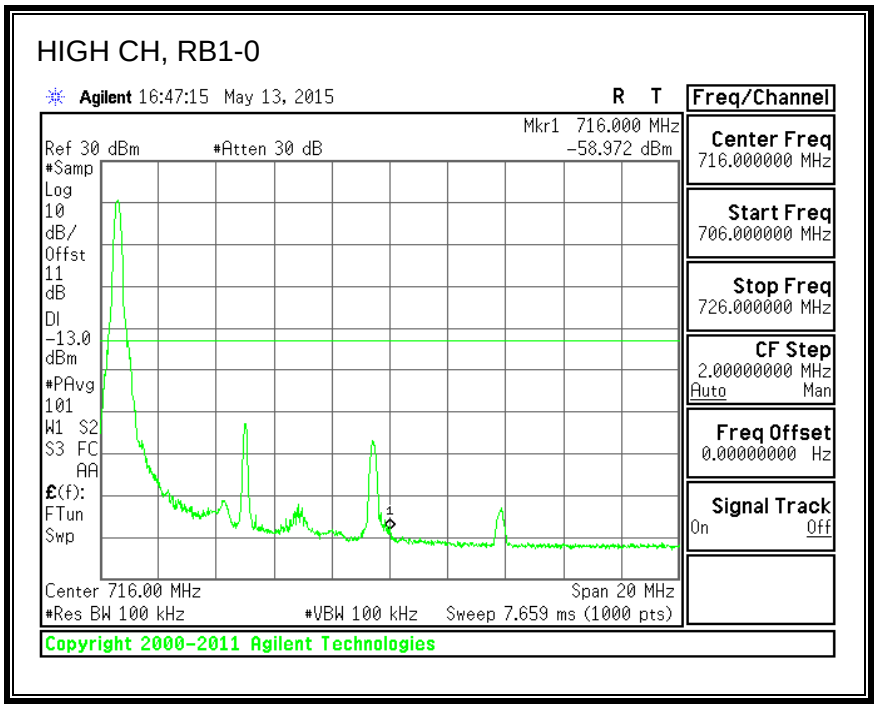
16QAM, (10.0 MHz BAND WIDTH)

LOW CH, RB1-0



HIGH CH, RB1-0



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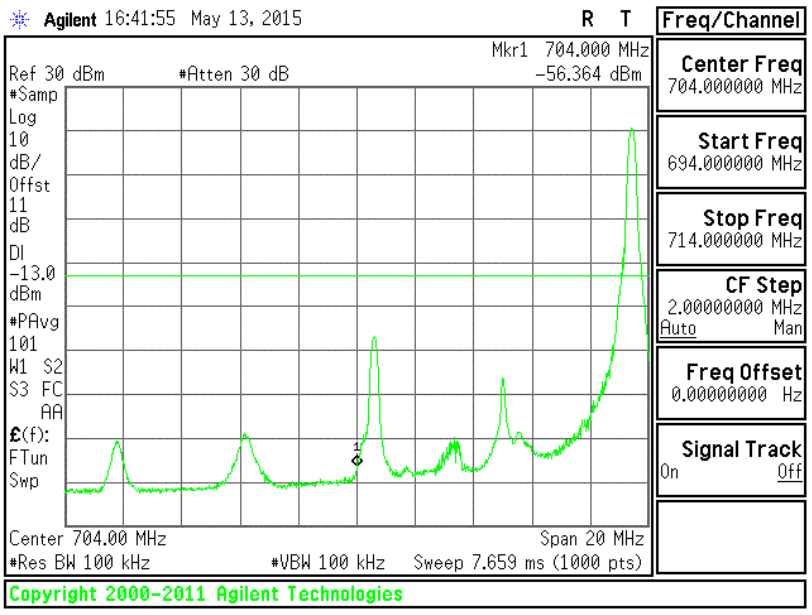
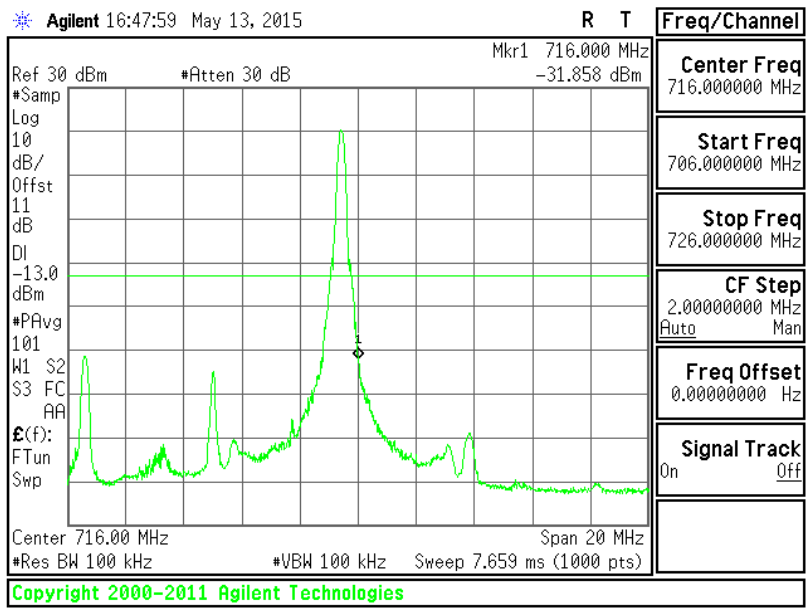
LOW CH, RB1-49



HIGH CH, RB1-49



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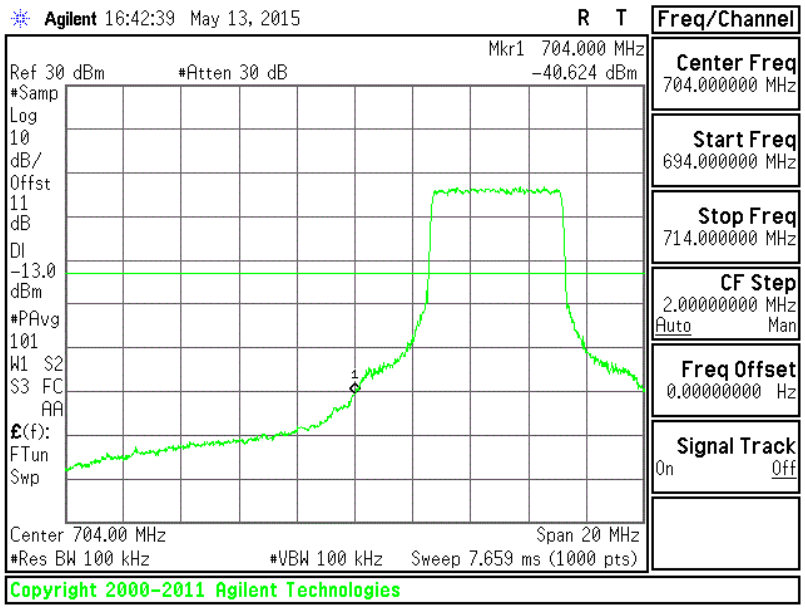
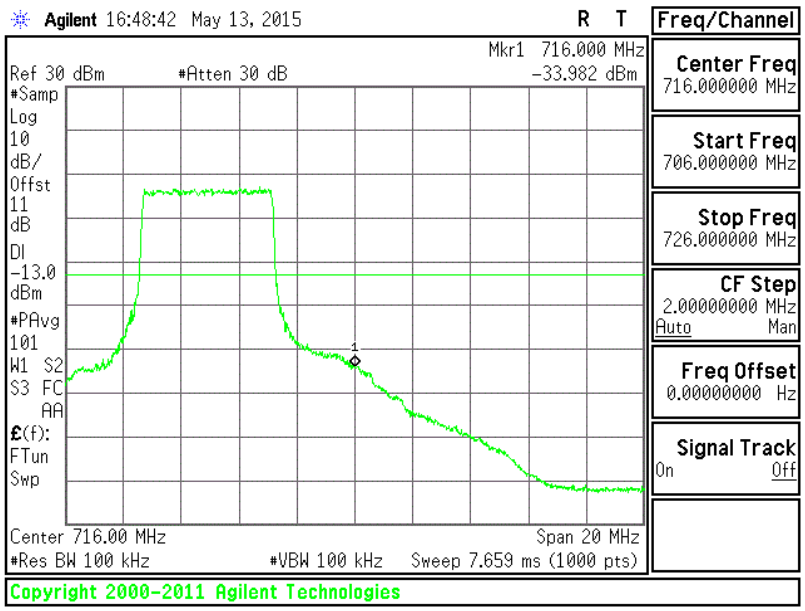
LOW CH, RB25-12



HIGH CH, RB25-12



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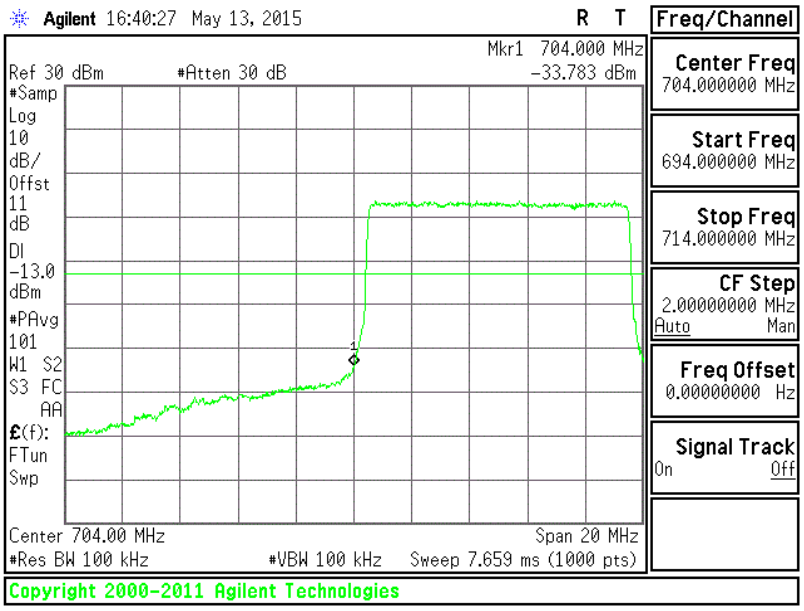
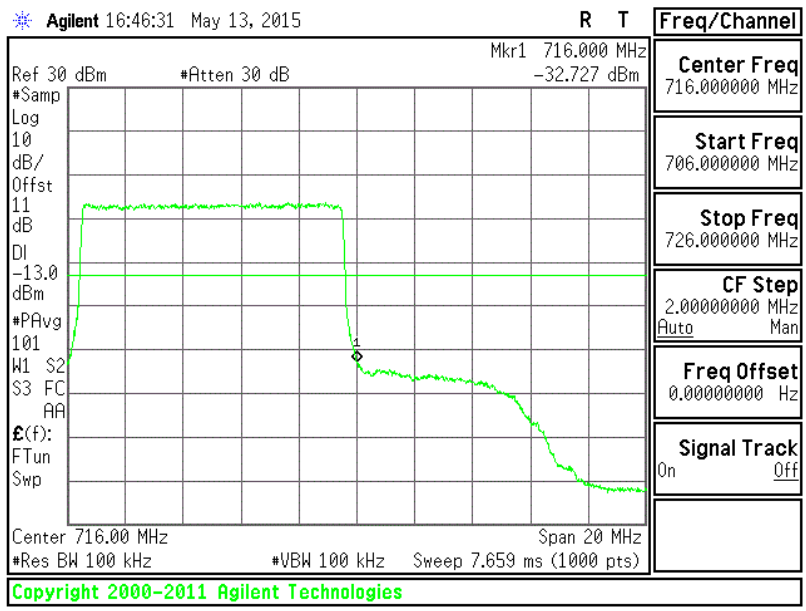
LOW CH, RB50-0



HIGH CH, RB50-0



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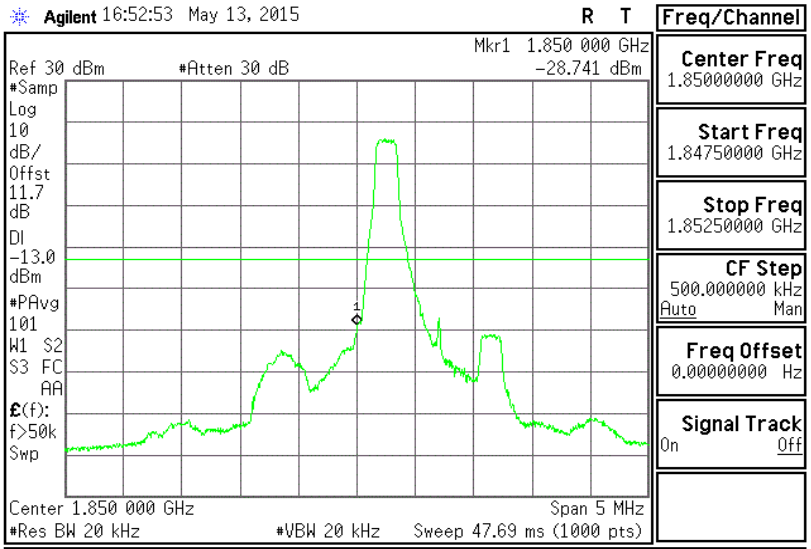
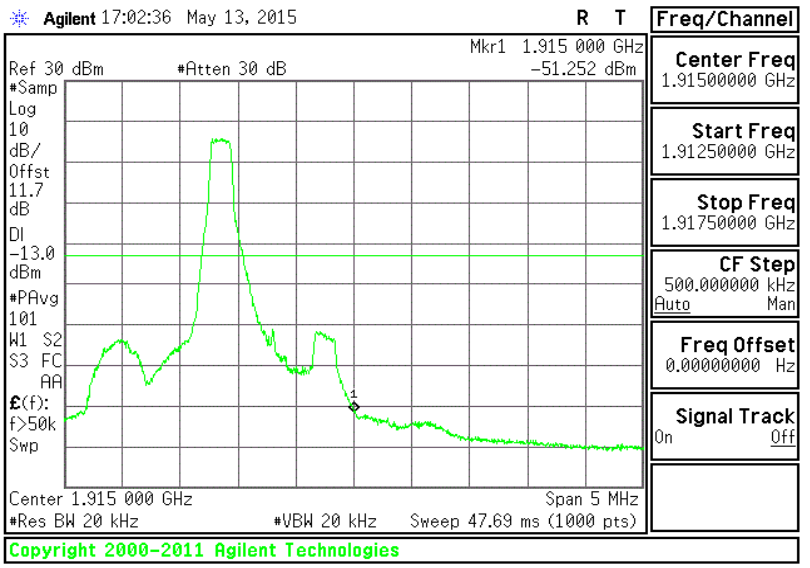
8.4.8. LTE BAND 25 BANDEDGE

QPSK, (1.4 MHz BAND WIDTH)

LOW CH, RB1-0



HIGH CH, RB1-0



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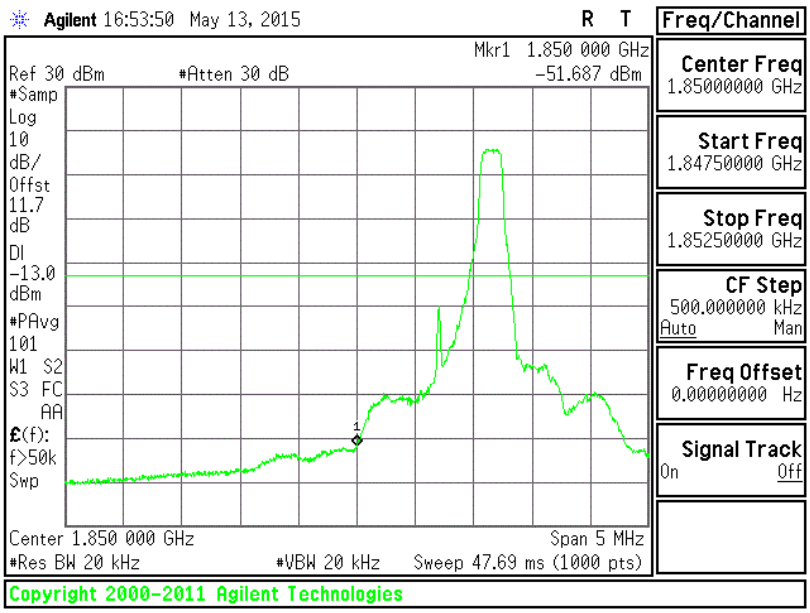
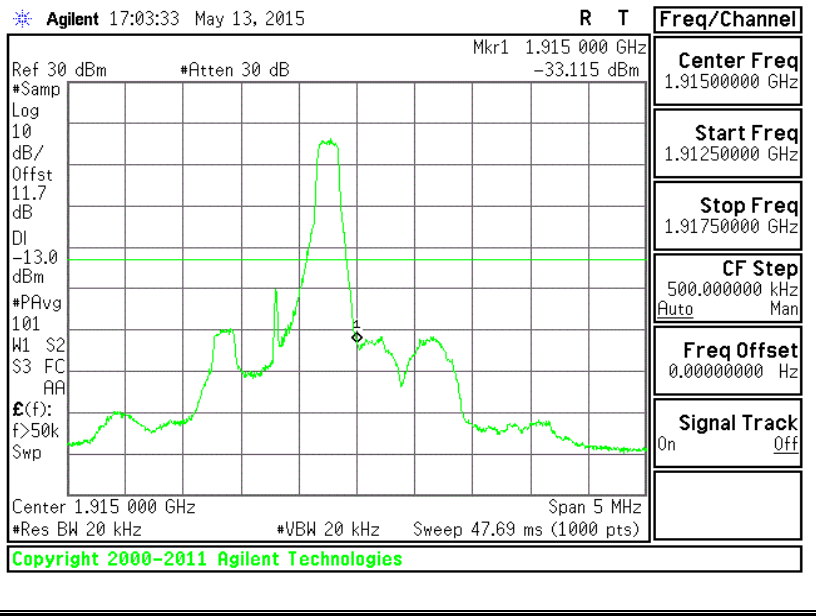
LOW CH, RB1-5



HIGH CH, RB1-5



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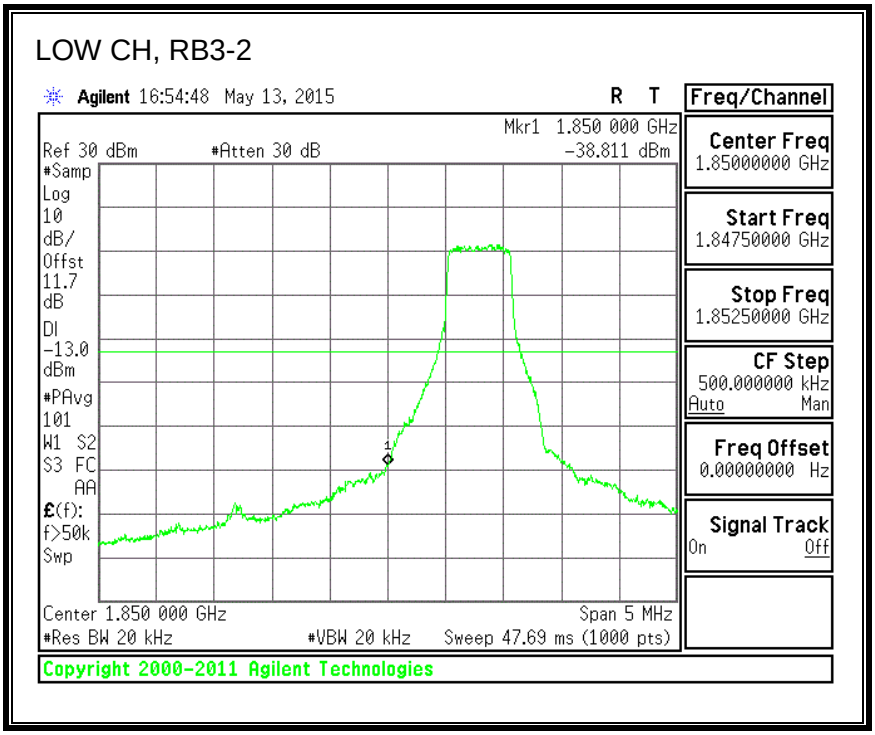
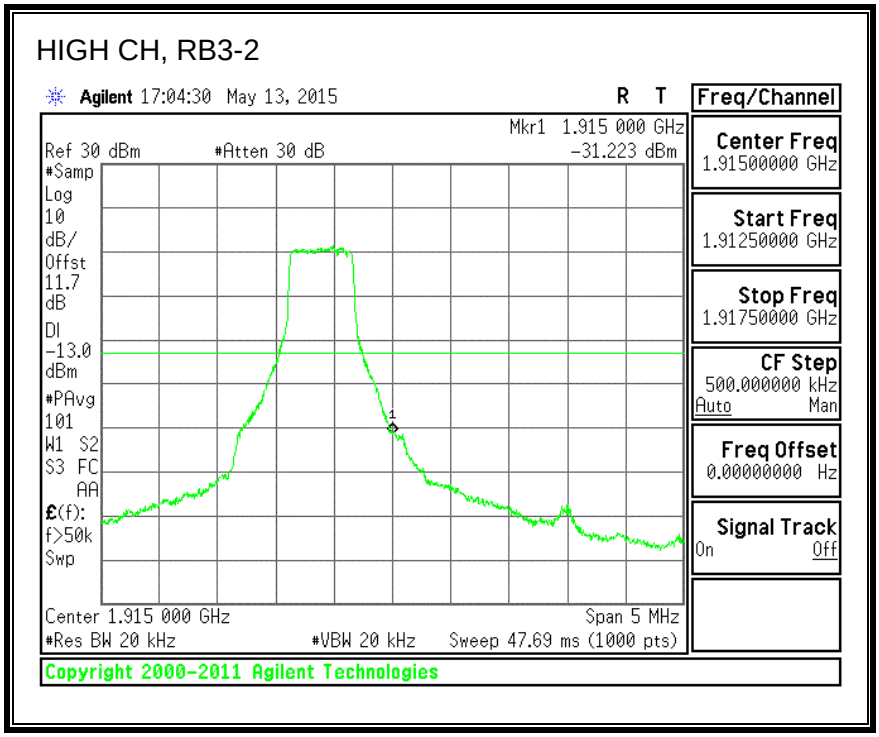
LOW CH, RB3-2



HIGH CH, RB3-2



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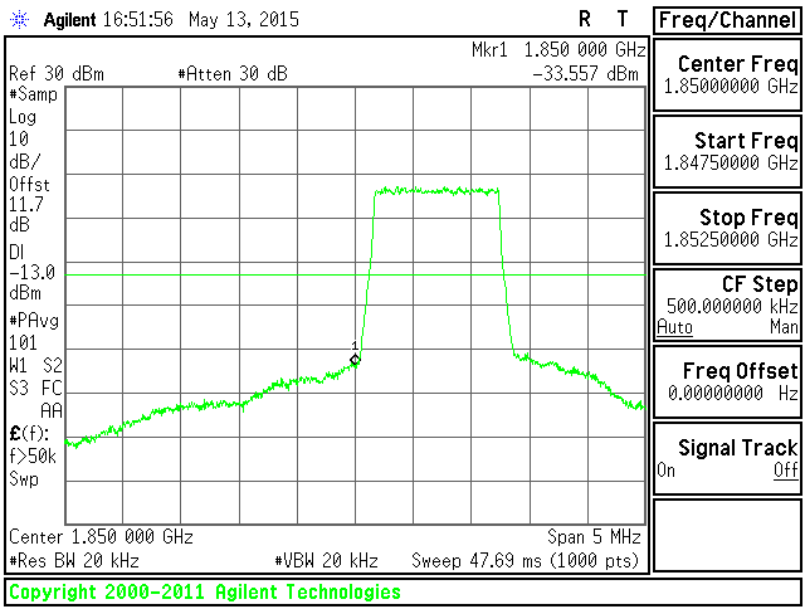
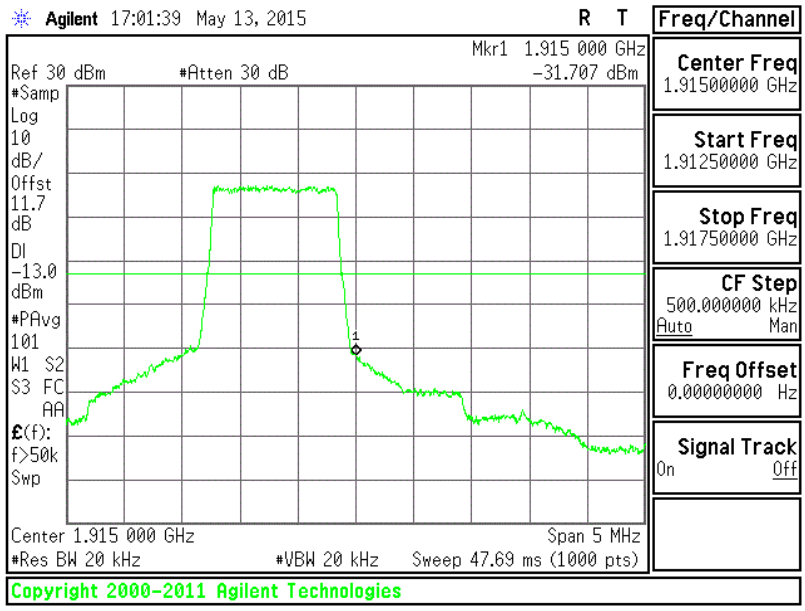
LOW CH, RB6-0



HIGH CH, RB6-0



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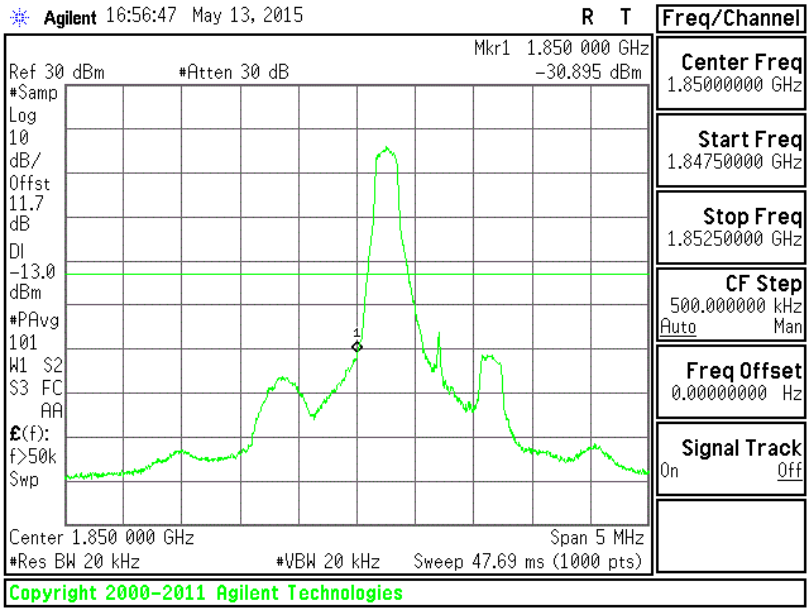
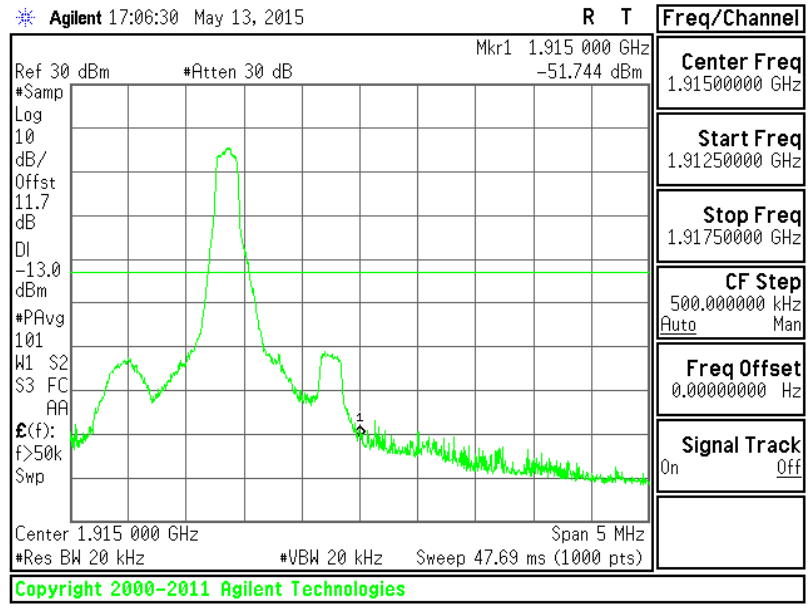
16QAM, (1.4 MHz BAND WIDTH)

LOW CH, RB1-0



HIGH CH, RB1-0



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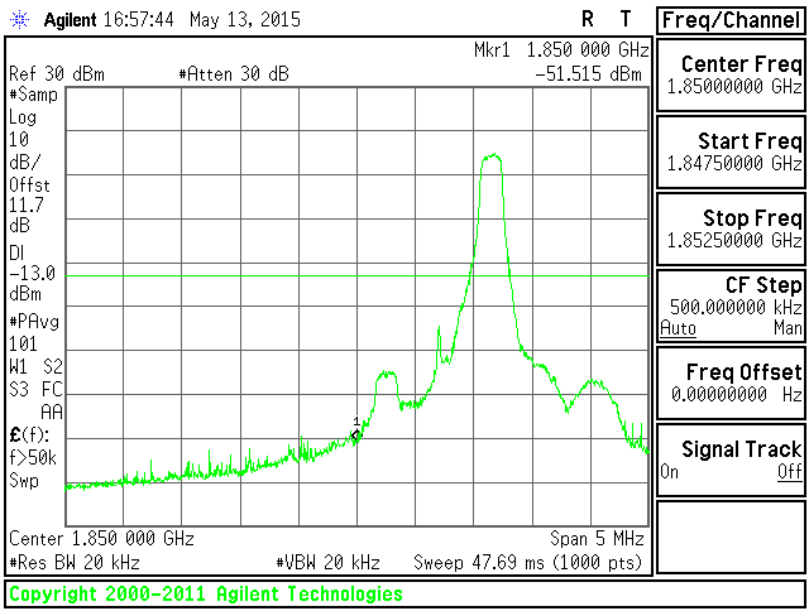
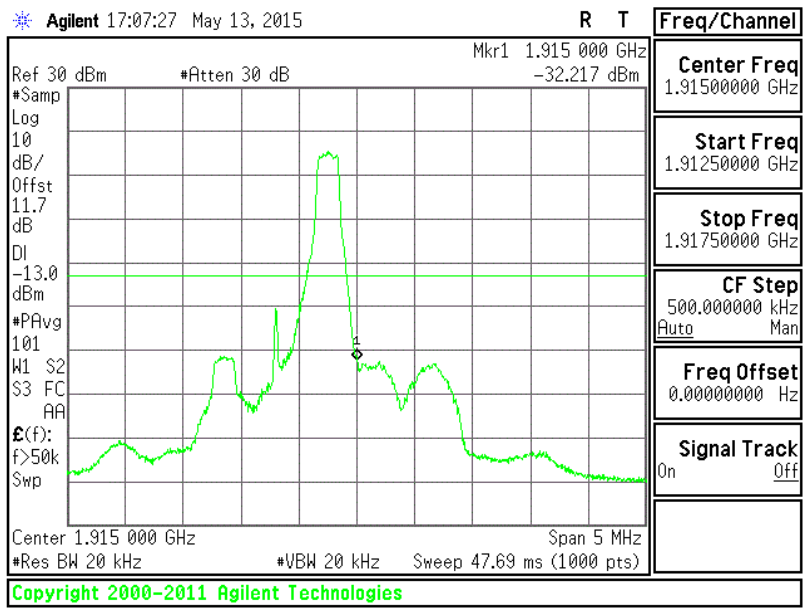
LOW CH, RB1-5



HIGH CH, RB1-5



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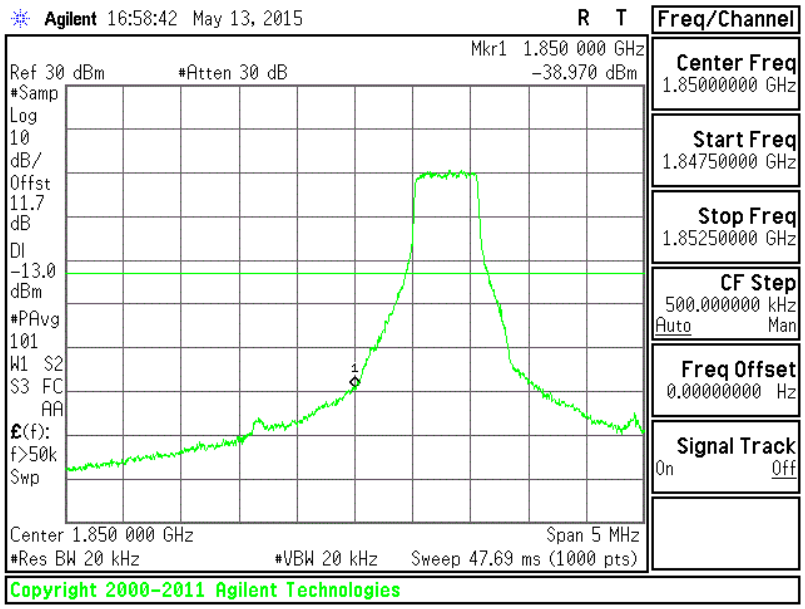
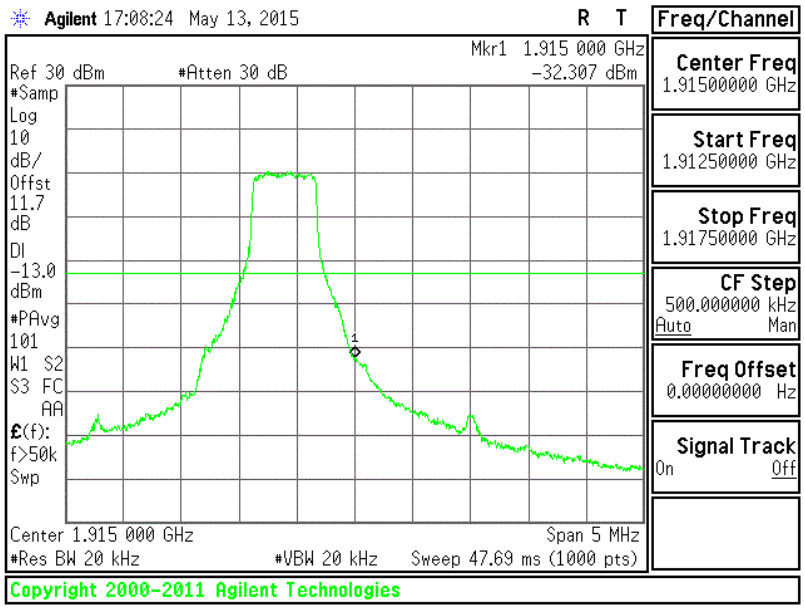
LOW CH, RB3-2



HIGH CH, RB3-2



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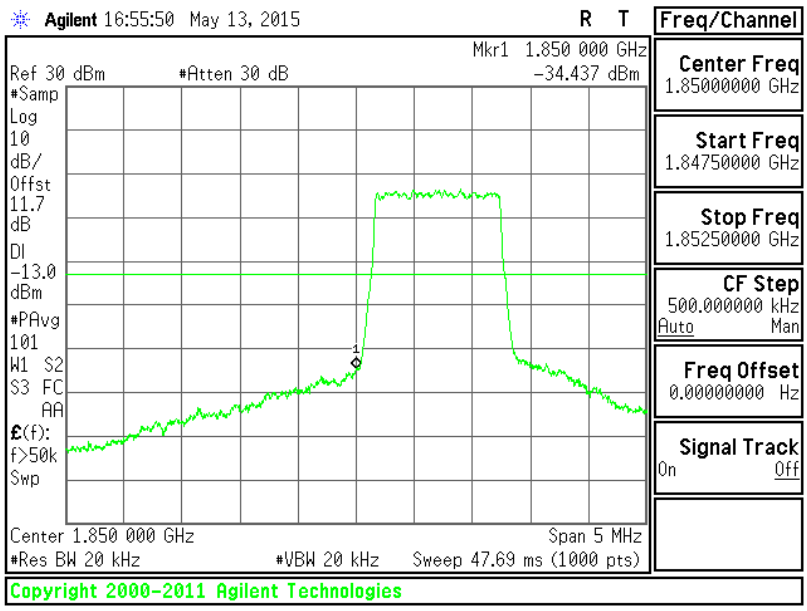
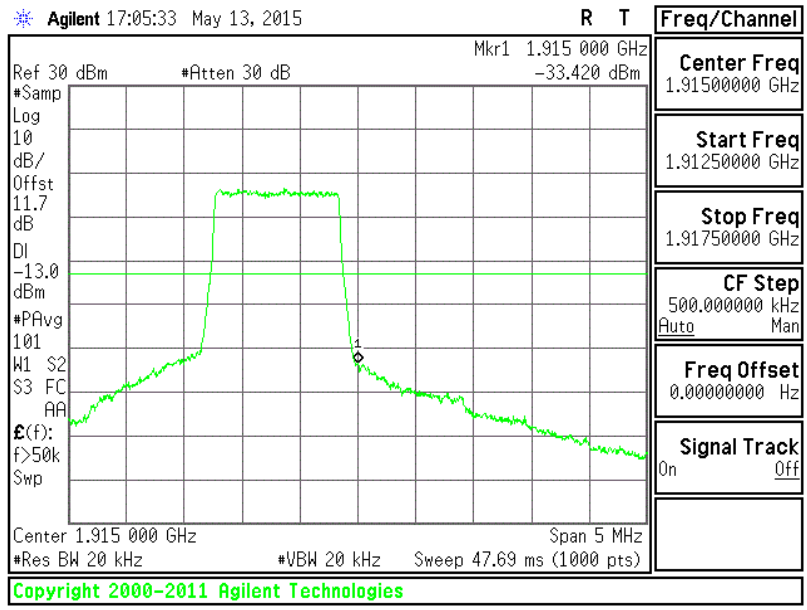
LOW CH, RB6-0



HIGH CH, RB6-0



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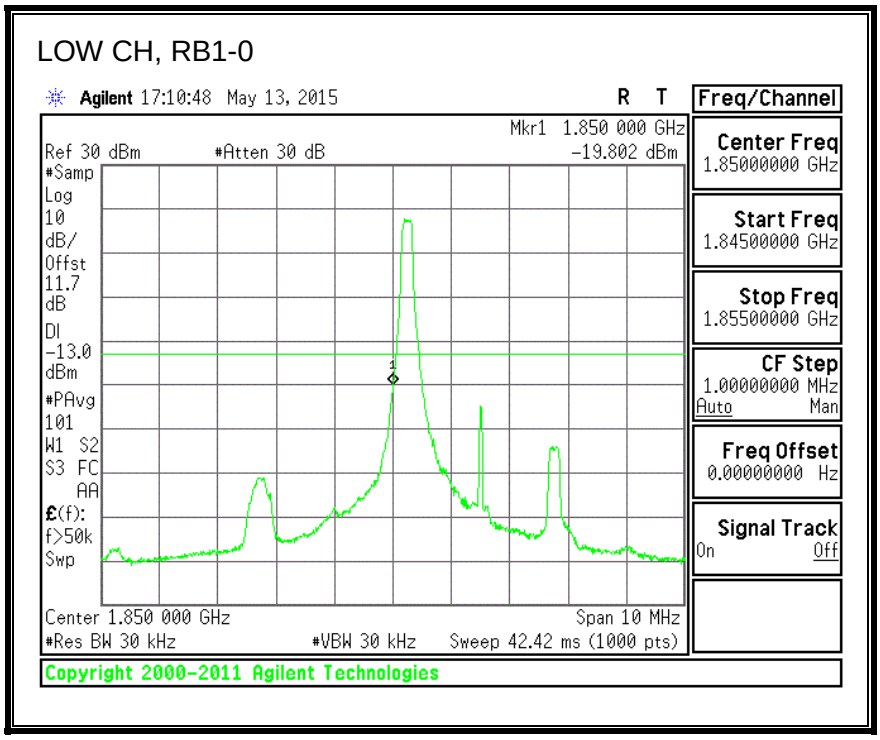
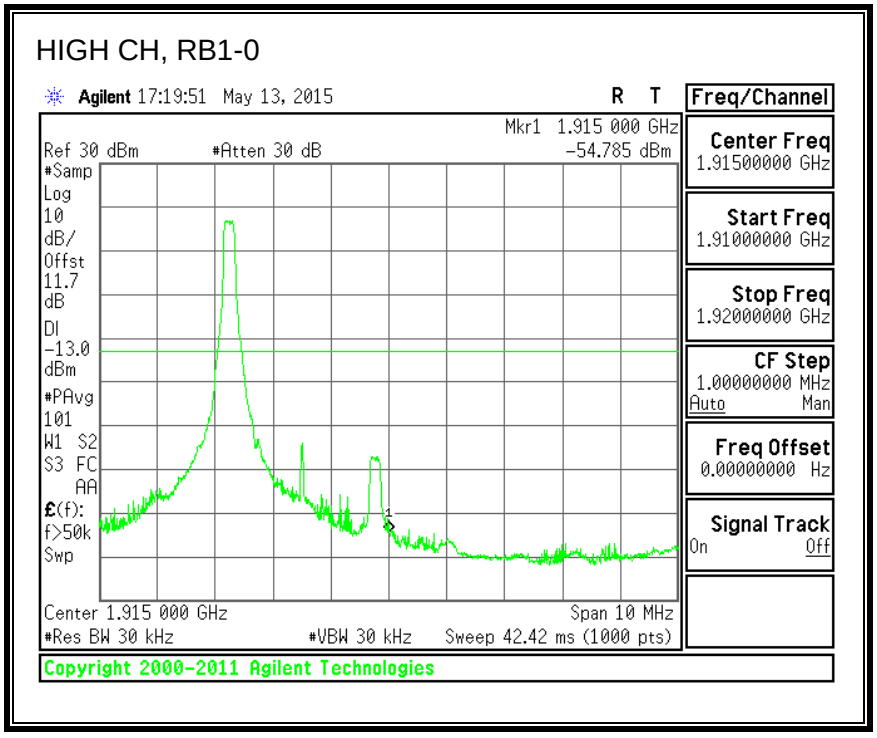
QPSK, (3.0 MHz BAND WIDTH)

LOW CH, RB1-0



HIGH CH, RB1-0



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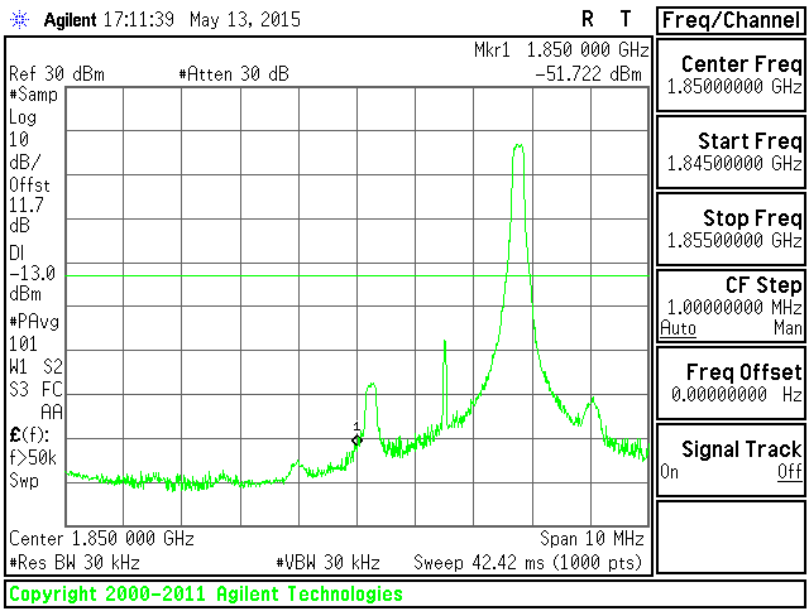
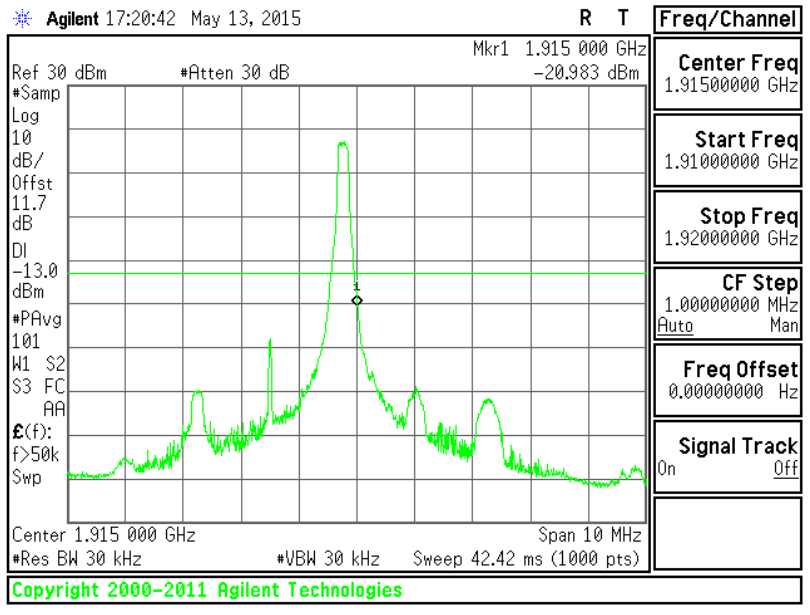
LOW CH, RB1-14



HIGH CH, RB1-14



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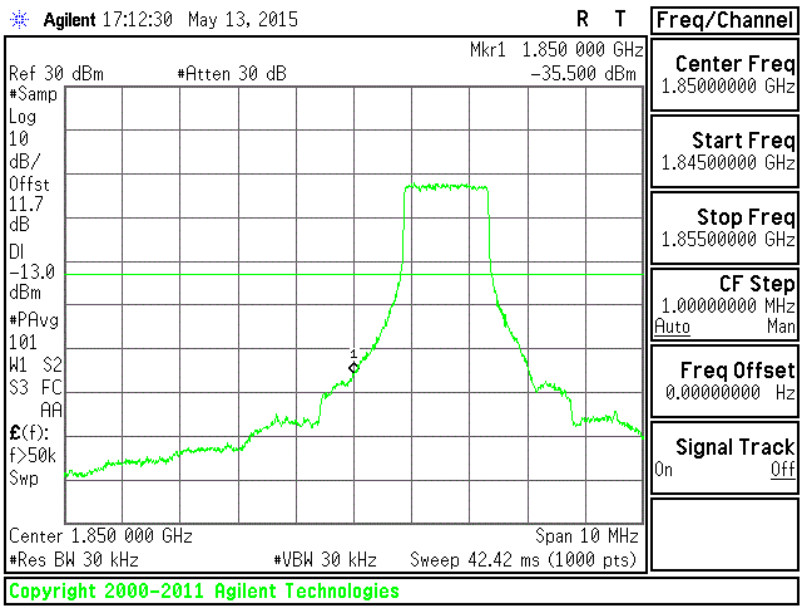
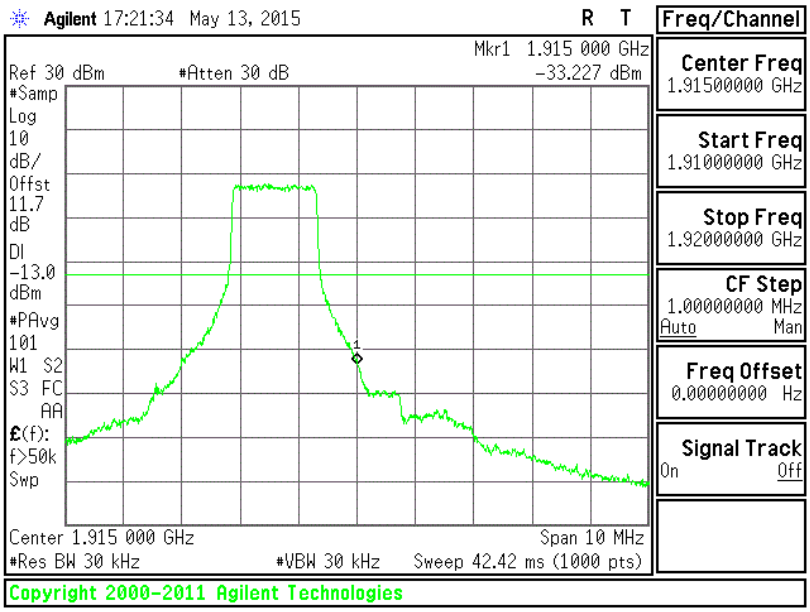
LOW CH, RB8-4



HIGH CH, RB8-4



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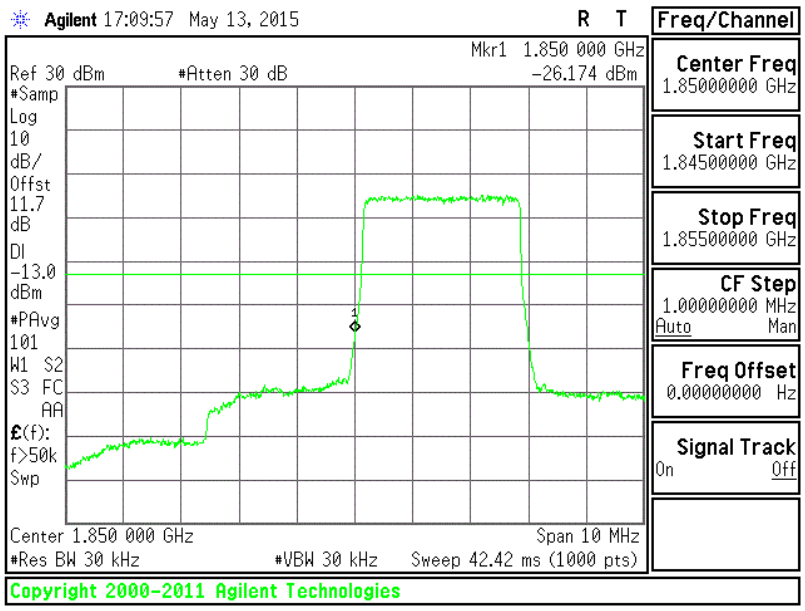
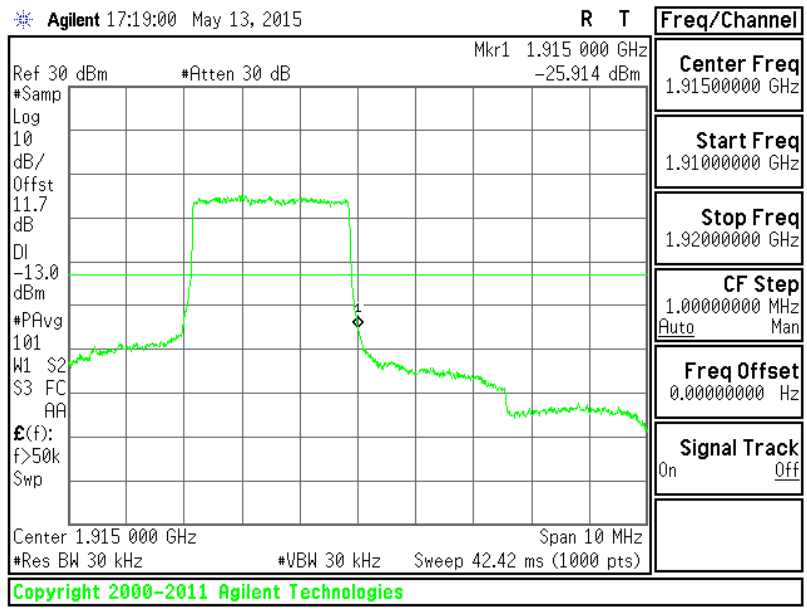
LOW CH, RB15-0



HIGH CH, RB15-0



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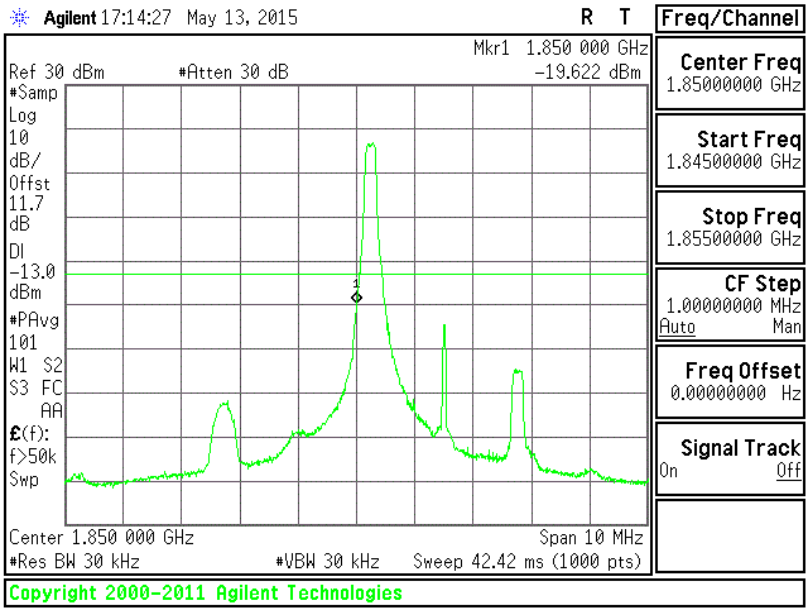
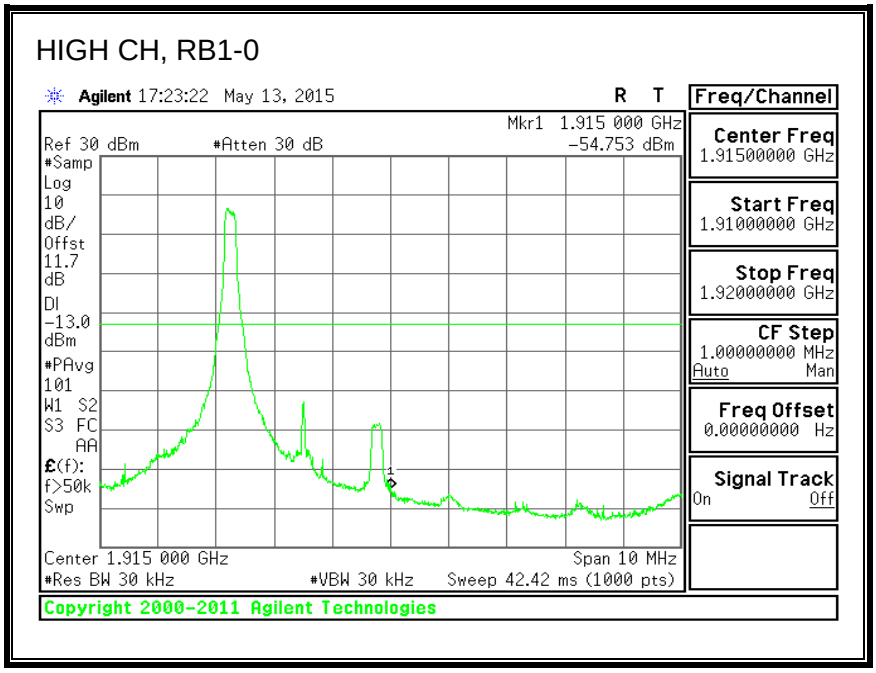
16QAM, (3.0 MHz BAND WIDTH)

LOW CH, RB1-0



HIGH CH, RB1-0



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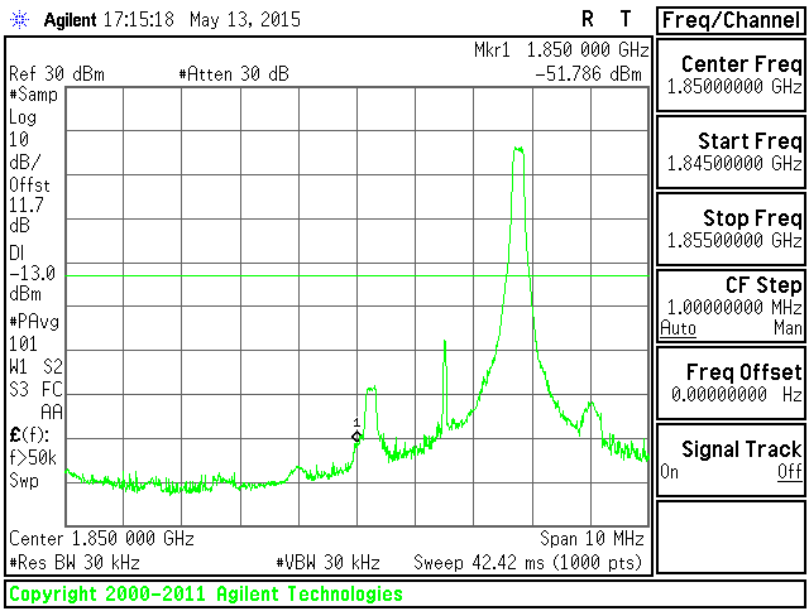
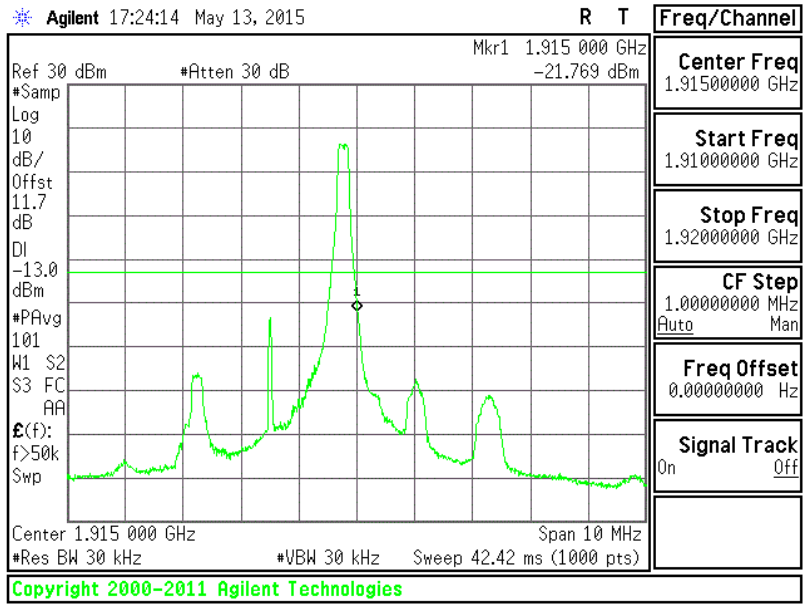
LOW CH, RB1-14



HIGH CH, RB1-14



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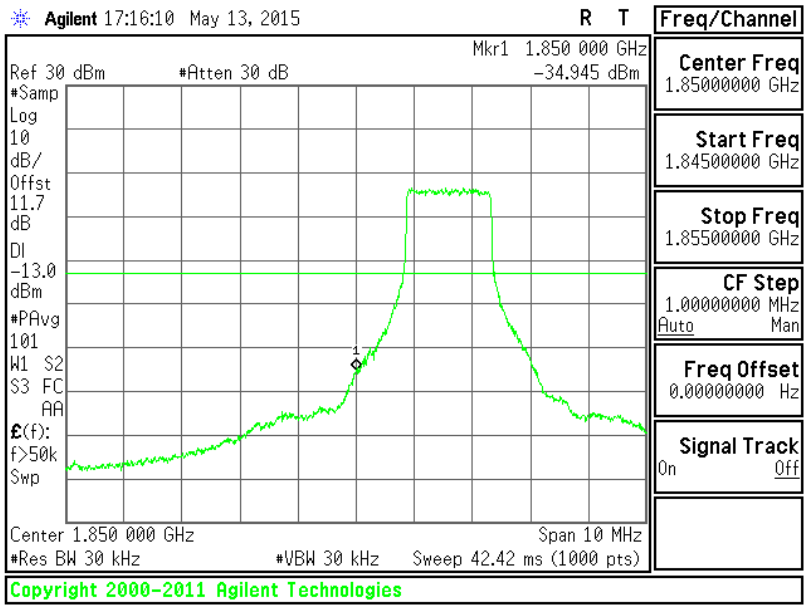
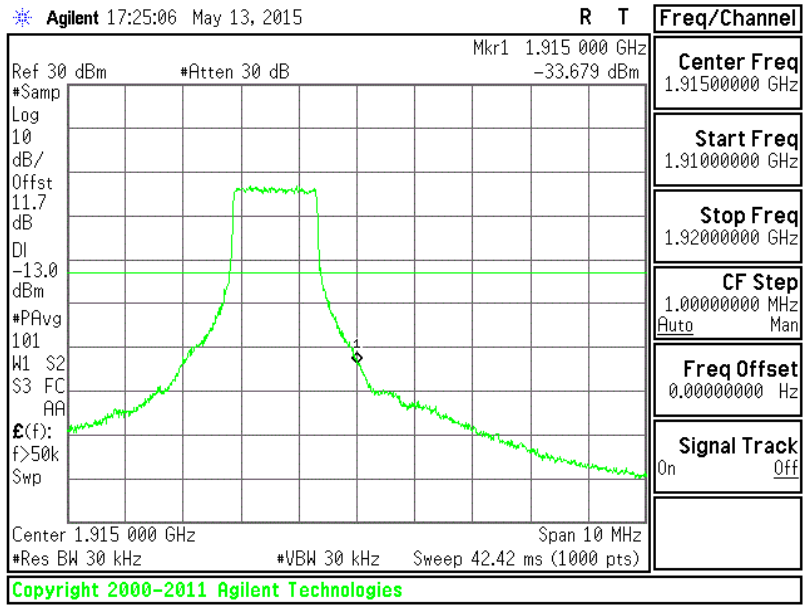
LOW CH, RB8-4



HIGH CH, RB8-4



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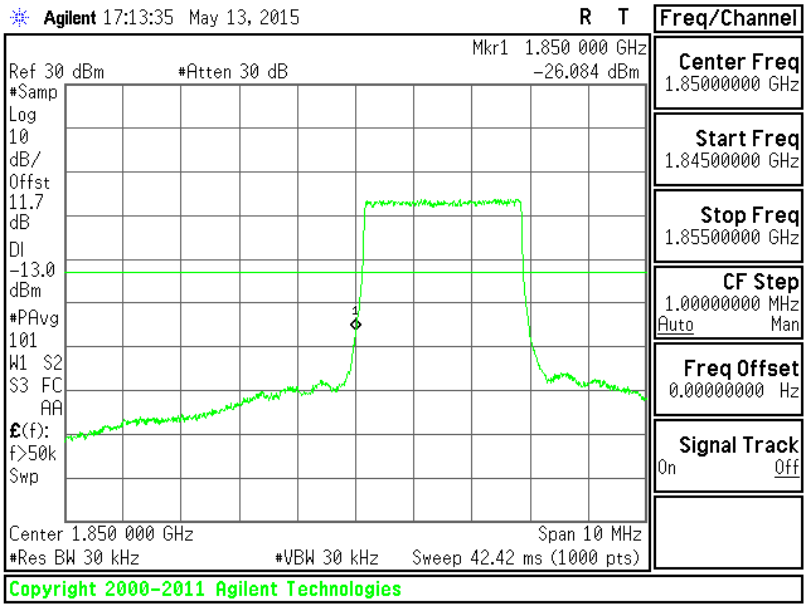
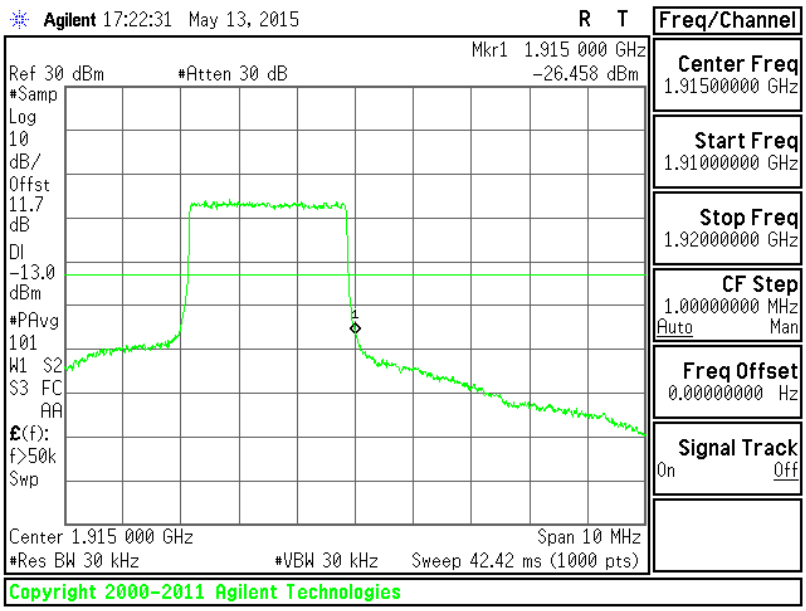
LOW CH, RB15-0



HIGH CH, RB15-0



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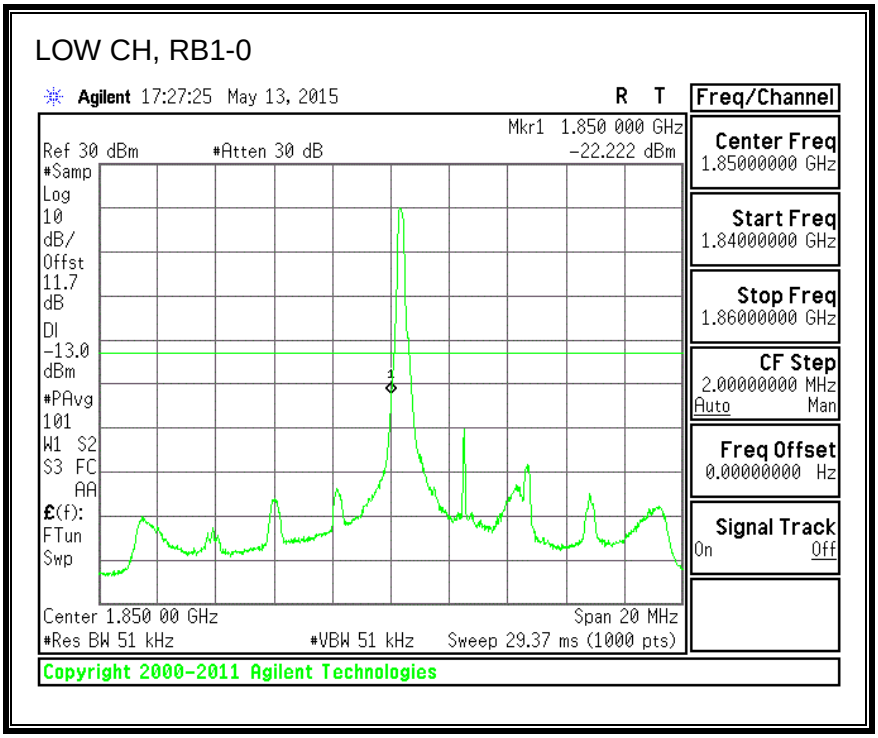
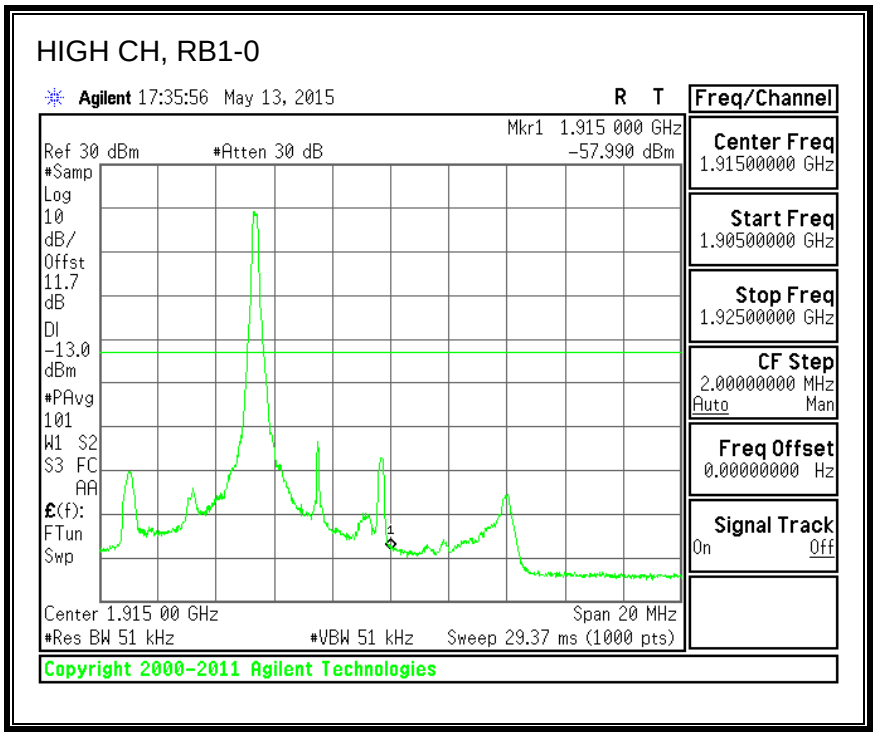
QPSK, (5.0 MHz BAND WIDTH)

LOW CH, RB1-0



HIGH CH, RB1-0



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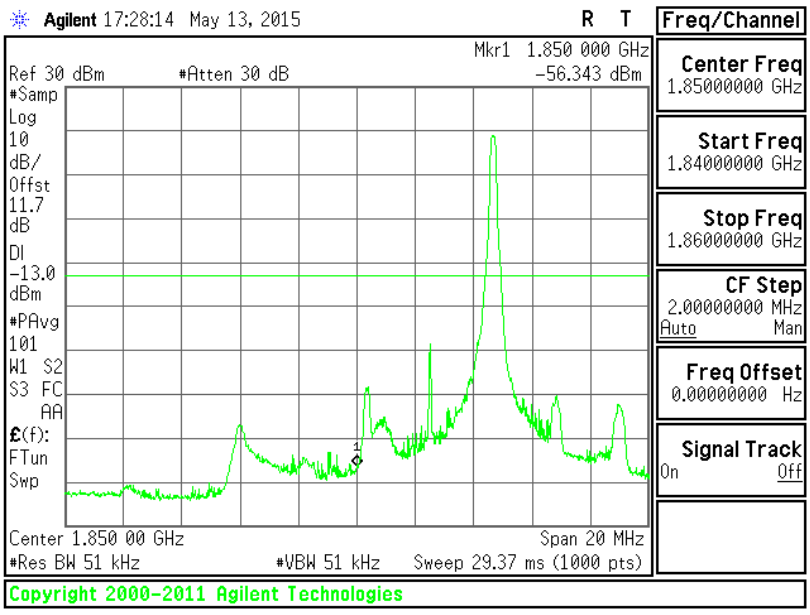
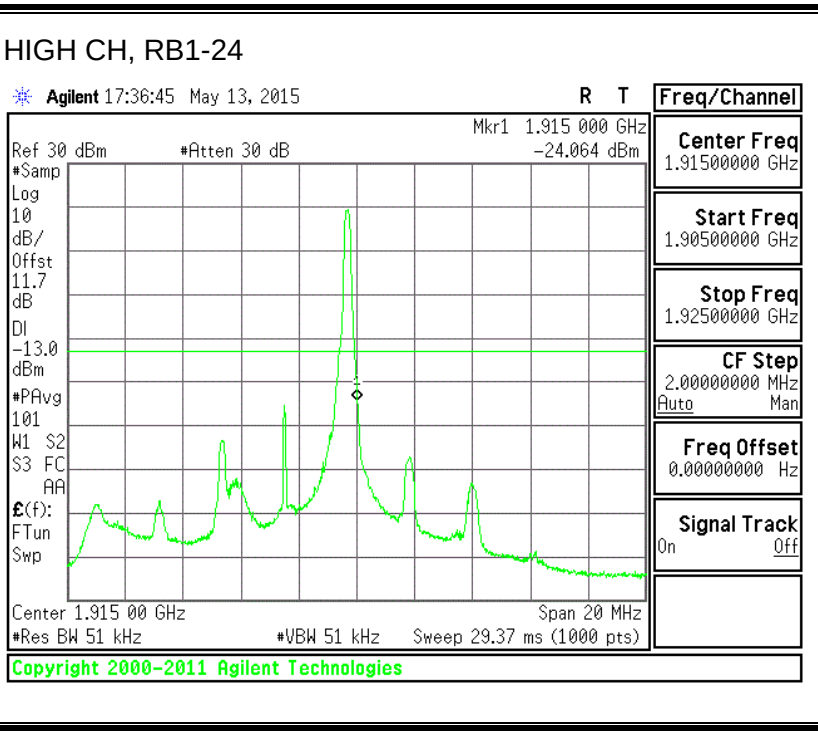
LOW CH, RB1-24



HIGH CH, RB1-24



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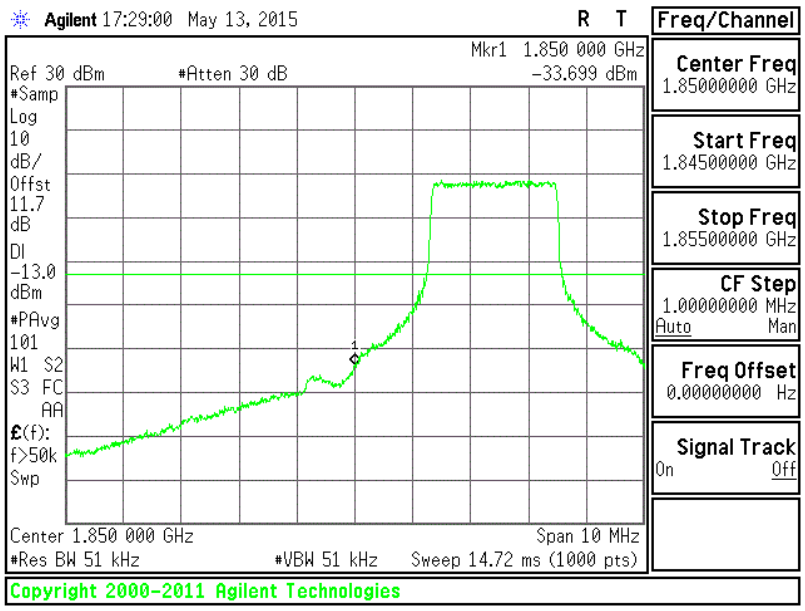
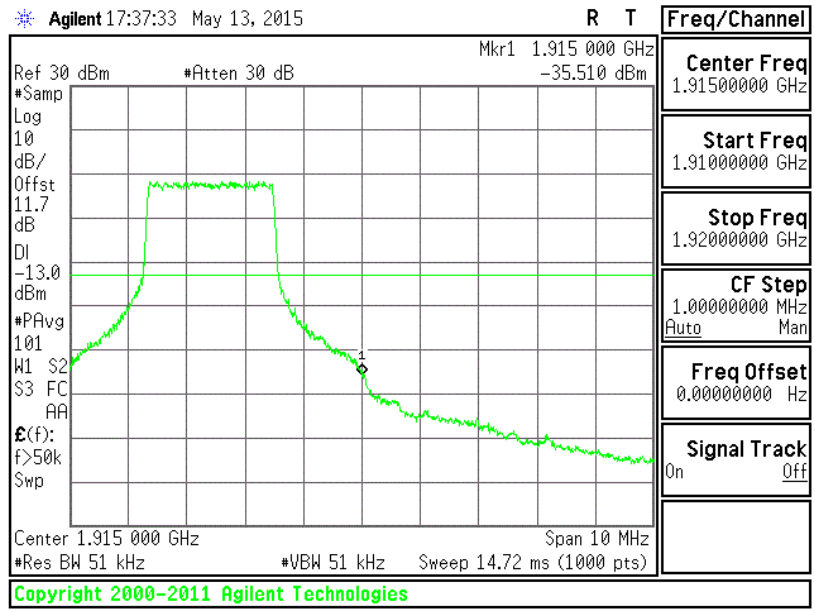
LOW CH, RB12-6



HIGH CH, RB12-6



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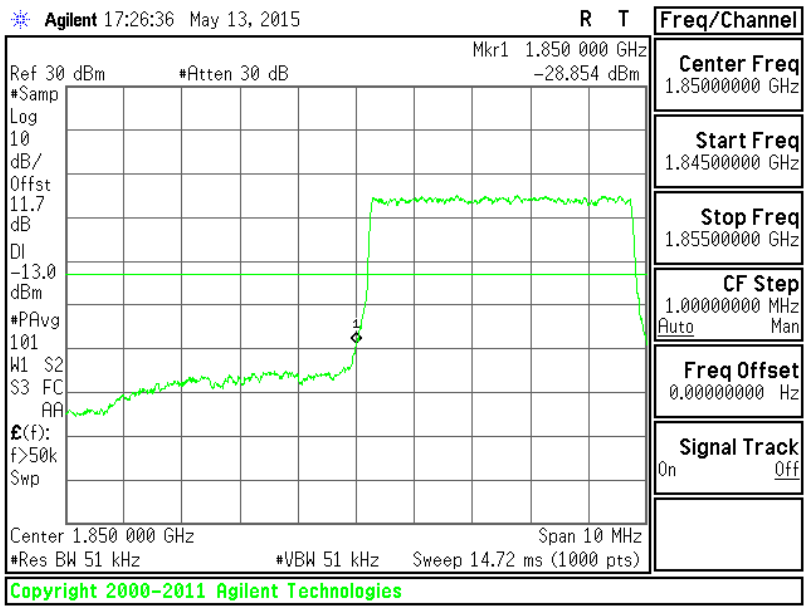
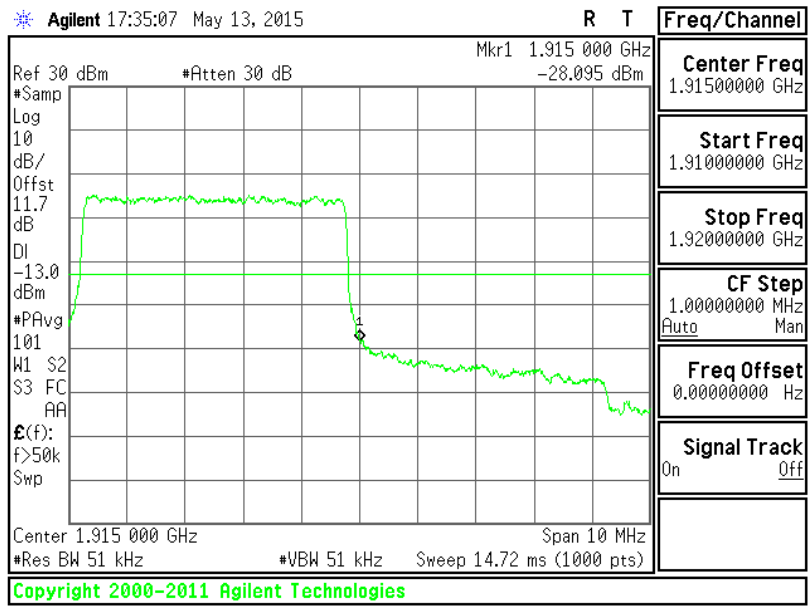
LOW CH, RB25-0



HIGH CH, RB25-0



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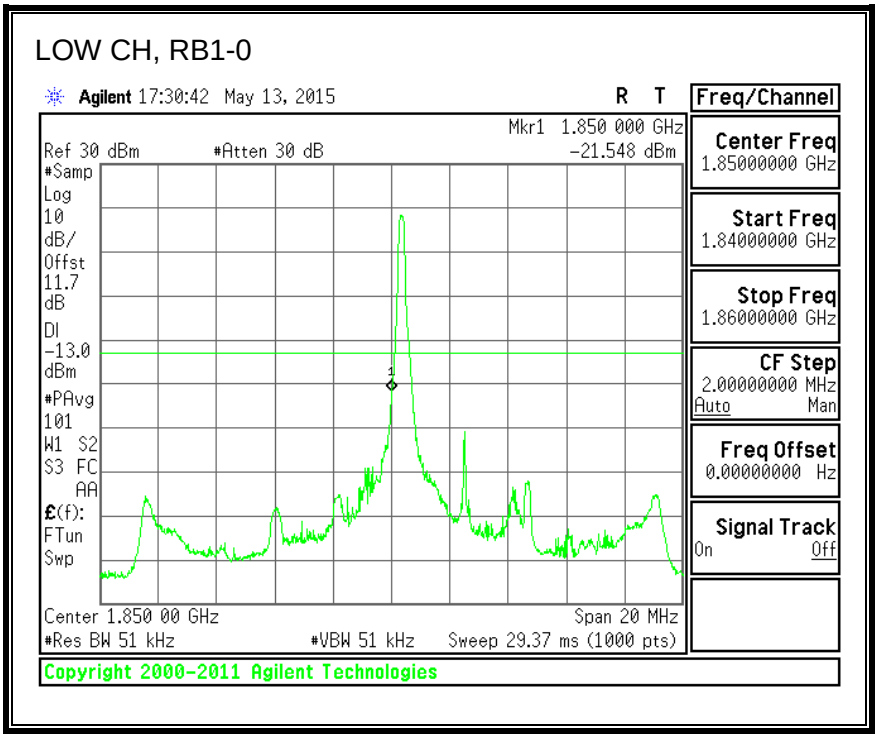
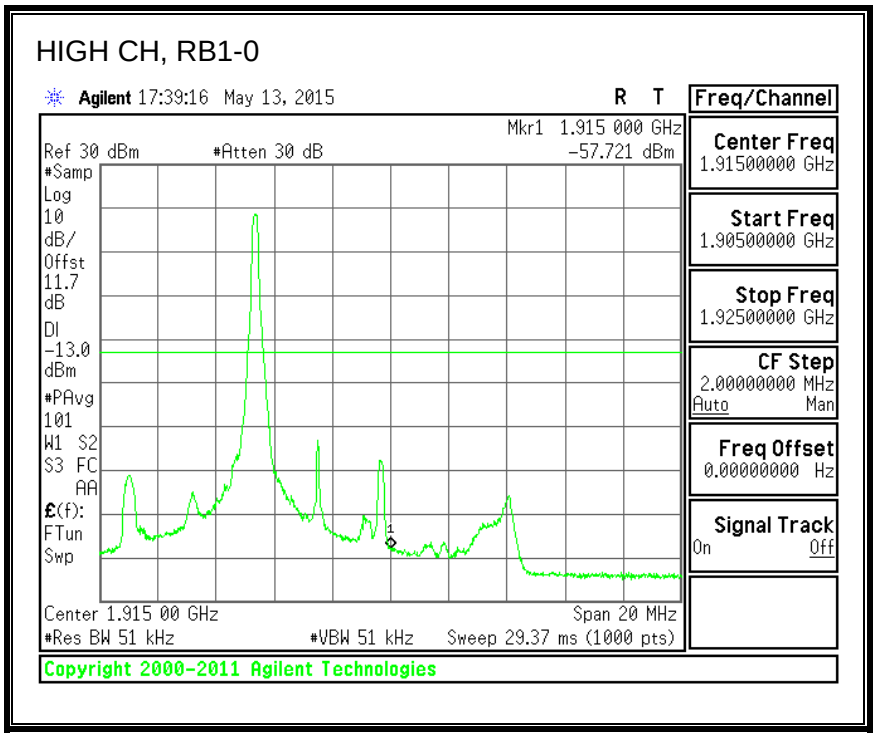
16QAM, (5.0 MHz BAND WIDTH)

LOW CH, RB1-0



HIGH CH, RB1-0



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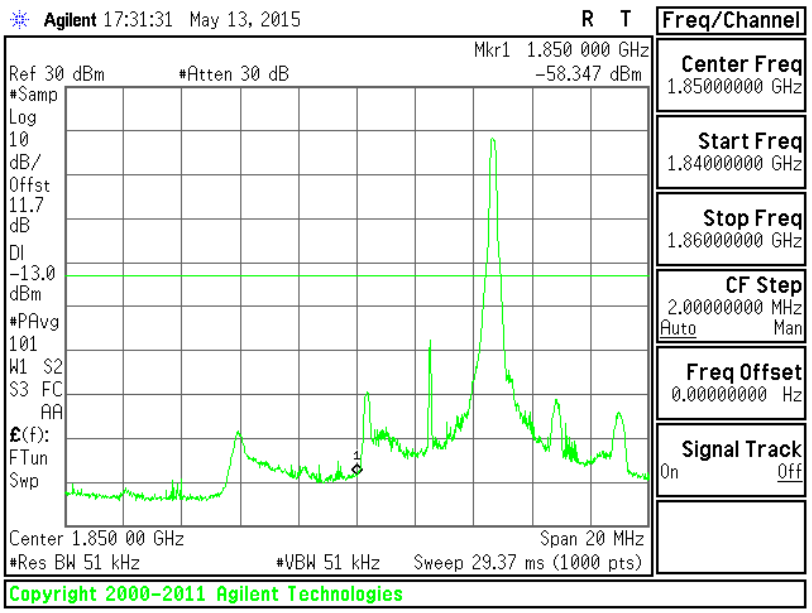
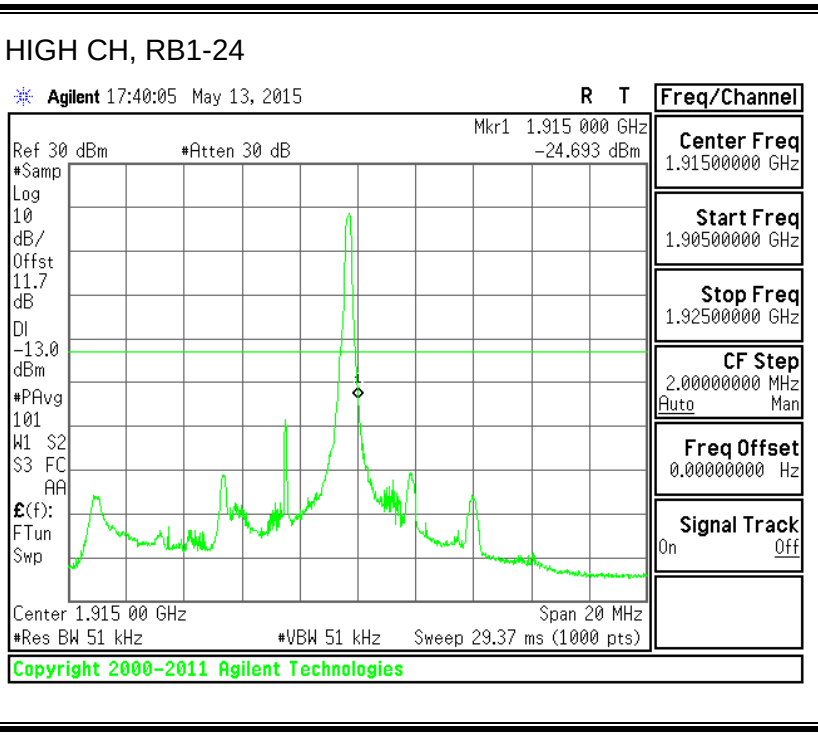
LOW CH, RB1-24



HIGH CH, RB1-24



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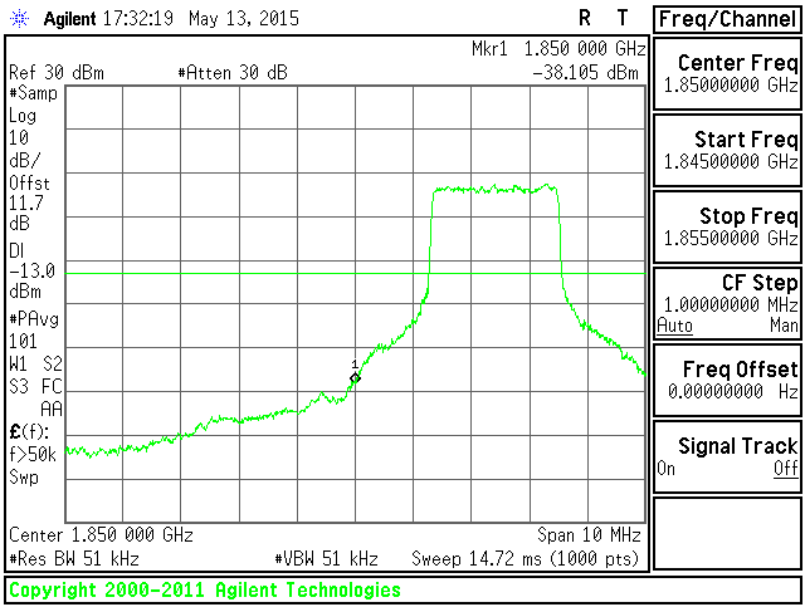
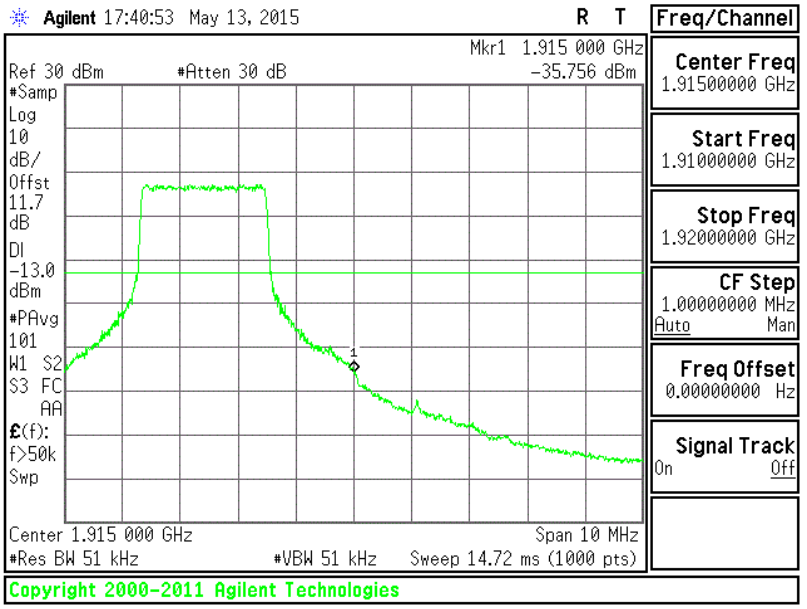
LOW CH, RB12-6



HIGH CH, RB12-6



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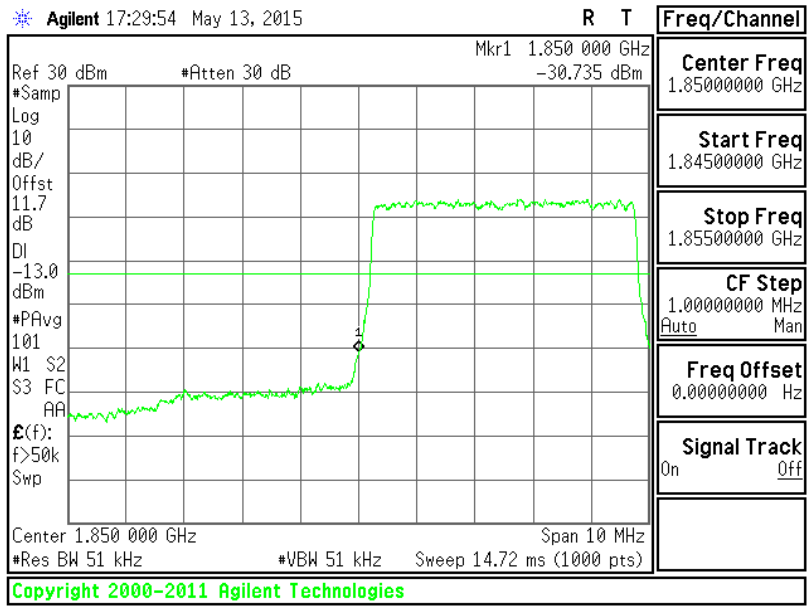
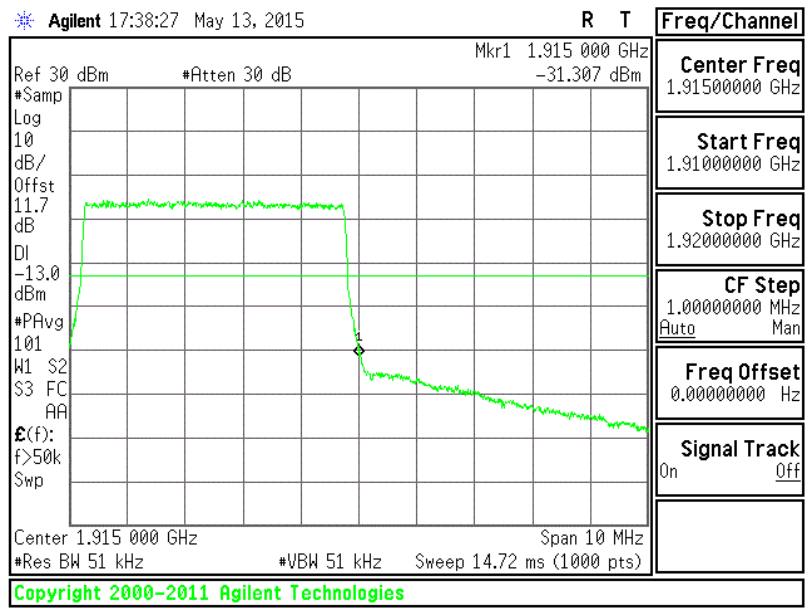
LOW CH, RB25-0



HIGH CH, RB25-0



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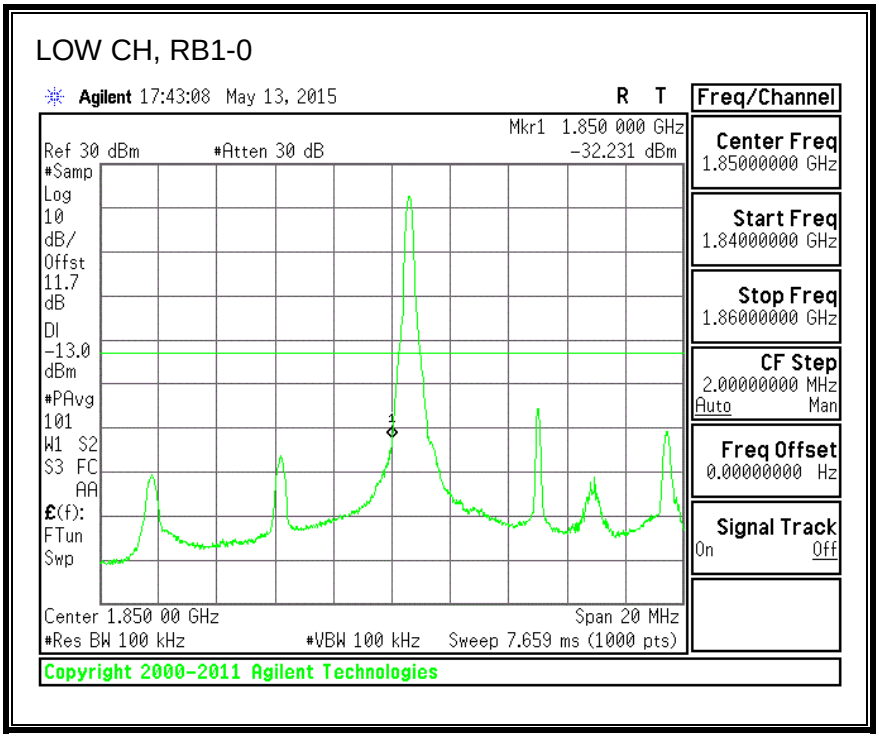
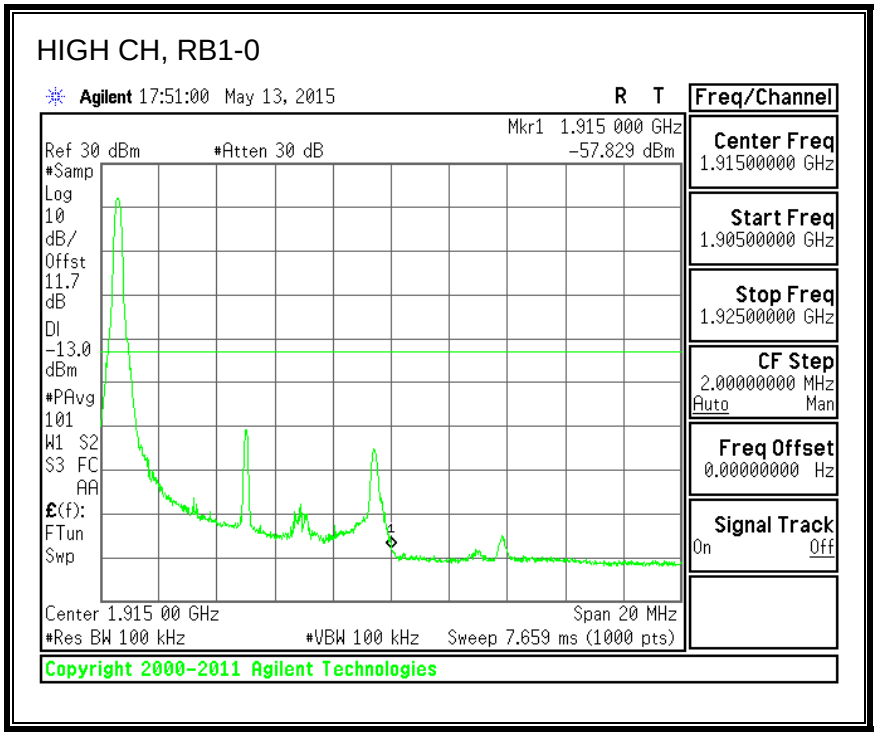
QPSK, (10.0 MHz BAND WIDTH)

LOW CH, RB1-0



HIGH CH, RB1-0



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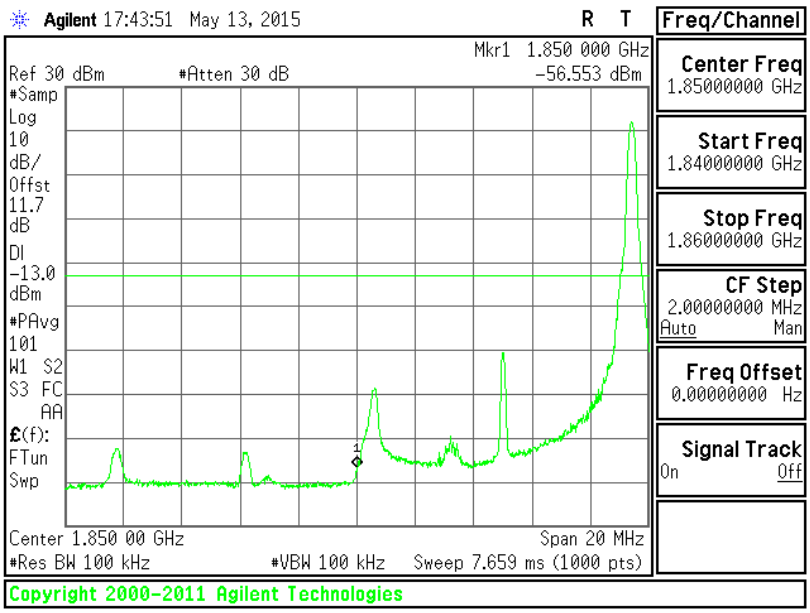
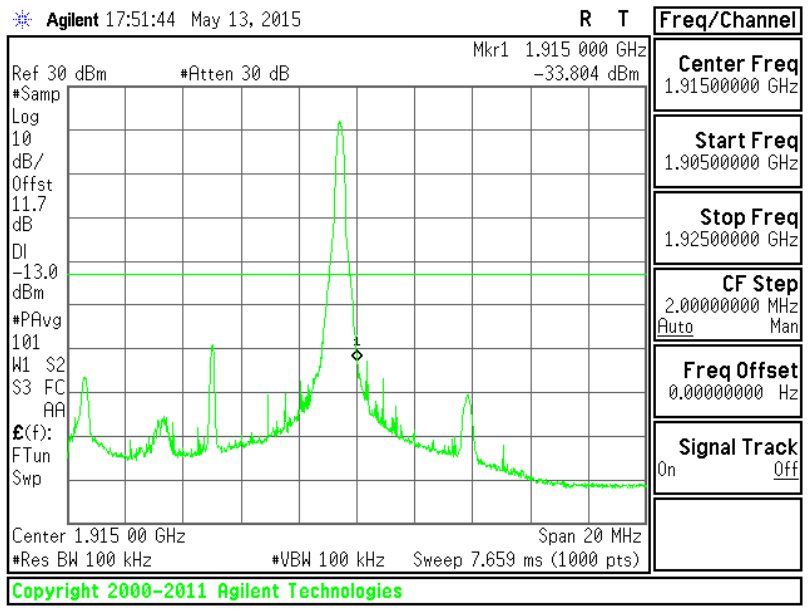
LOW CH, RB1-49



HIGH CH, RB1-49



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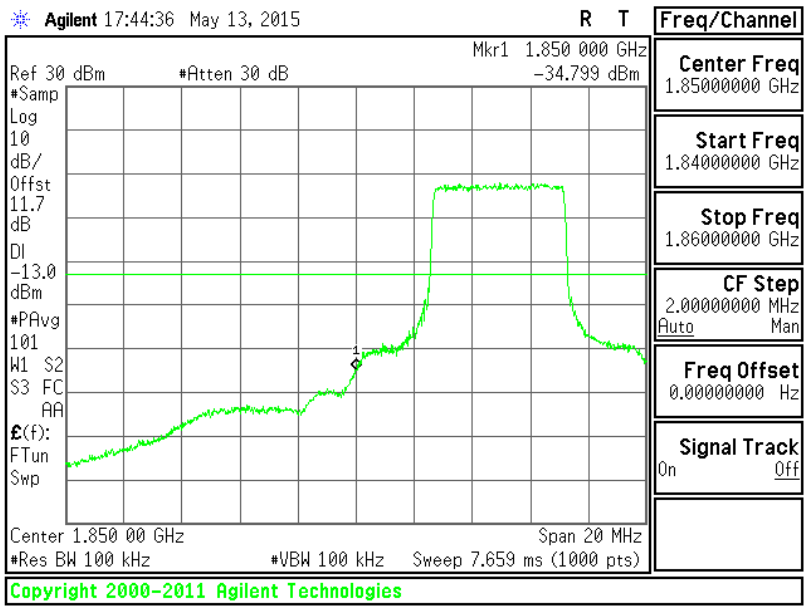
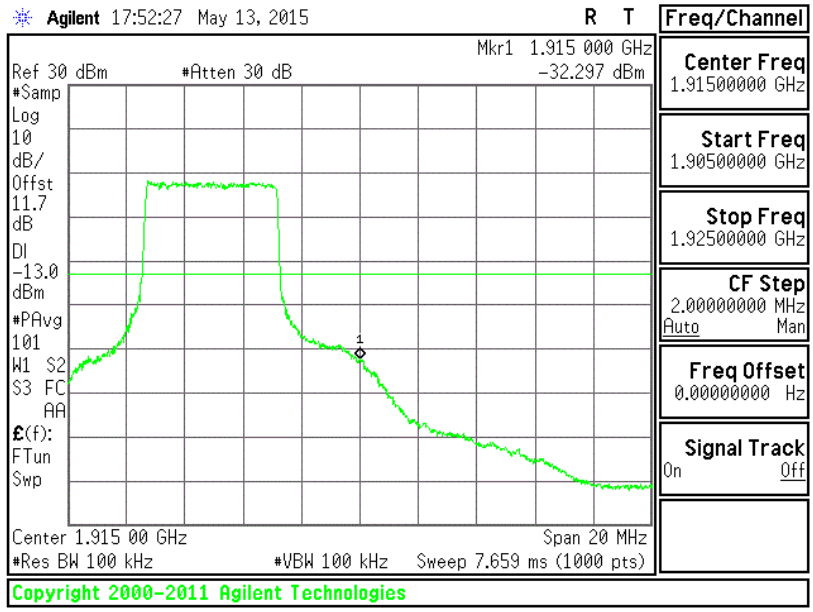
LOW CH, RB25-12



HIGH CH, RB25-12



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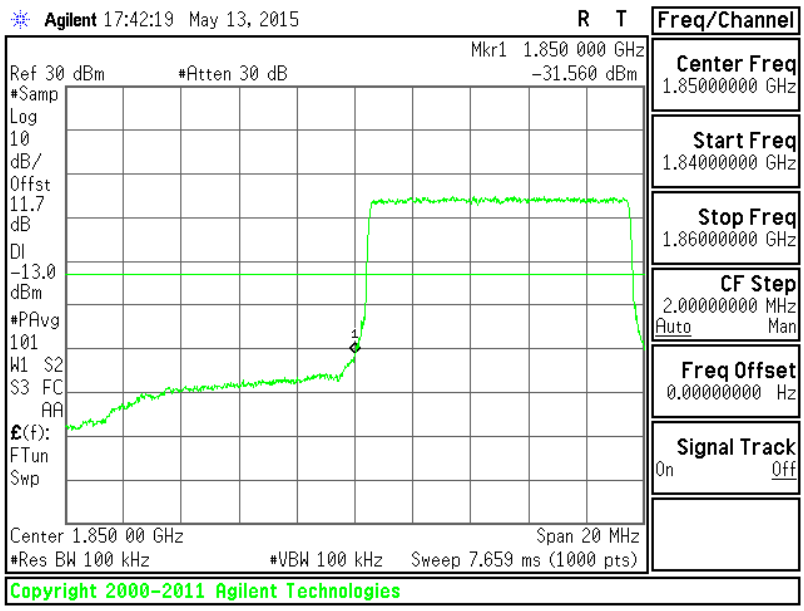
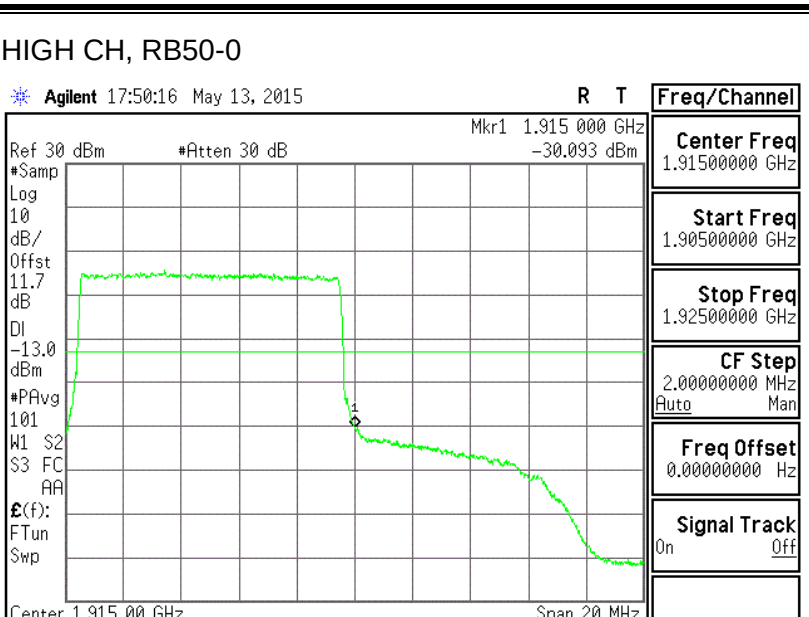
LOW CH, RB50-0



HIGH CH, RB50-0



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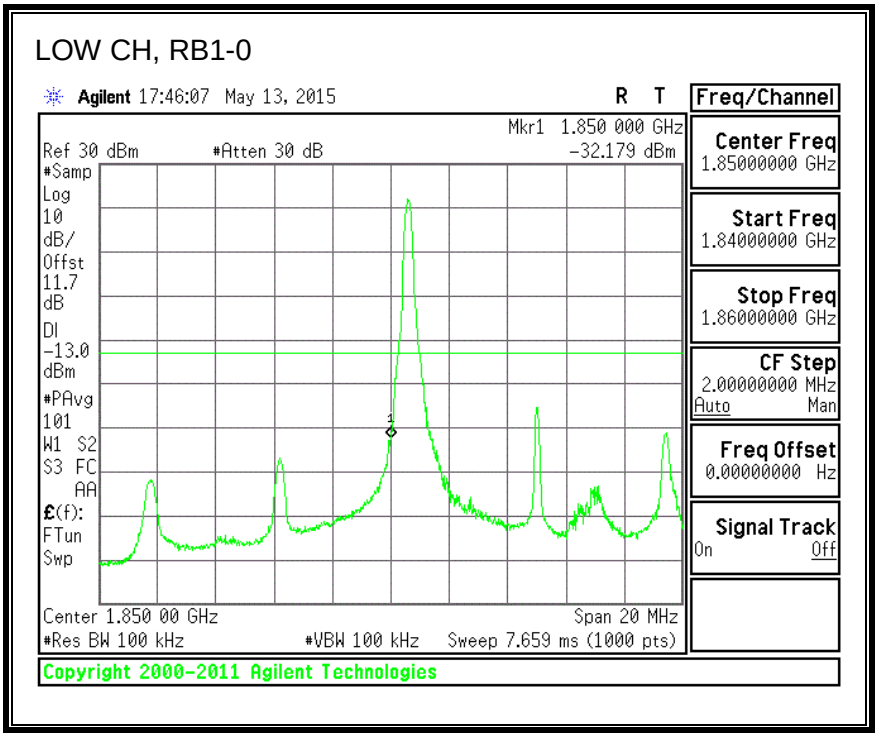
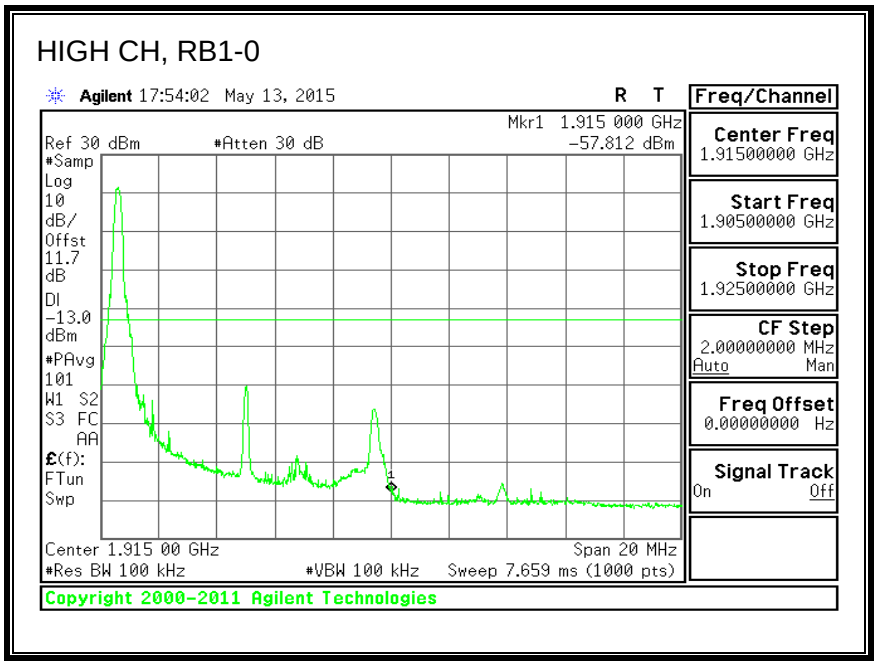
16QAM, (10.0 MHz BAND WIDTH)

LOW CH, RB1-0



HIGH CH, RB1-0



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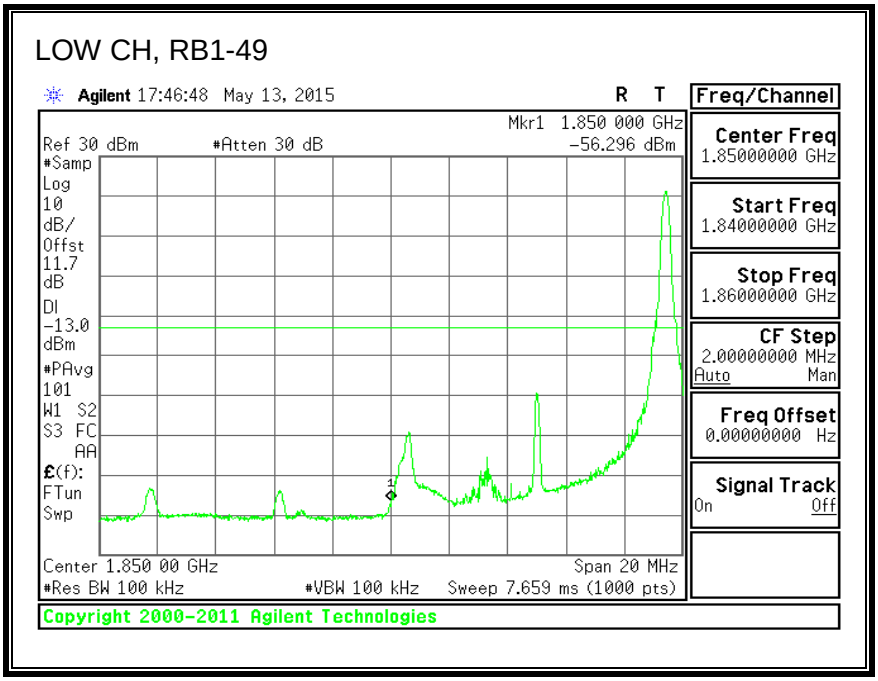
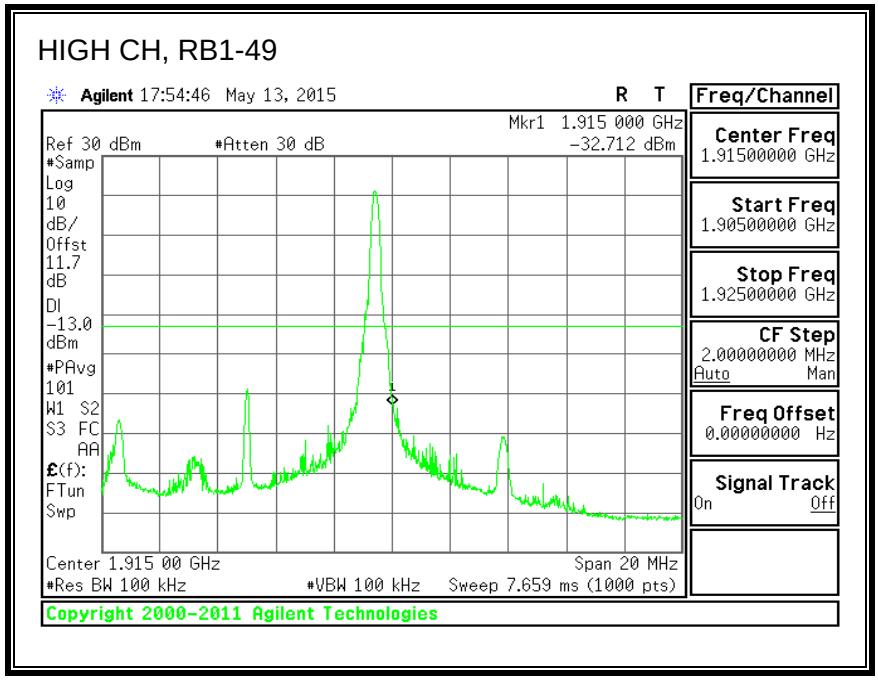
LOW CH, RB1-49



HIGH CH, RB1-49



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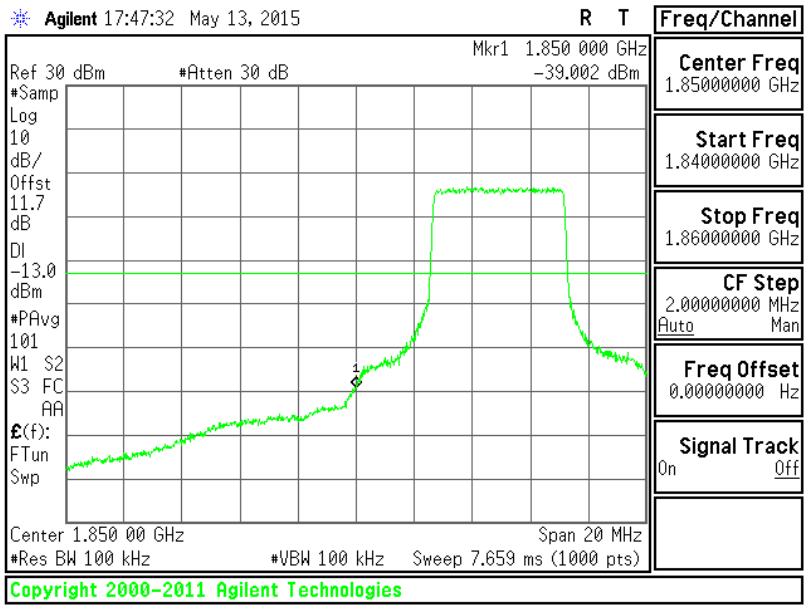
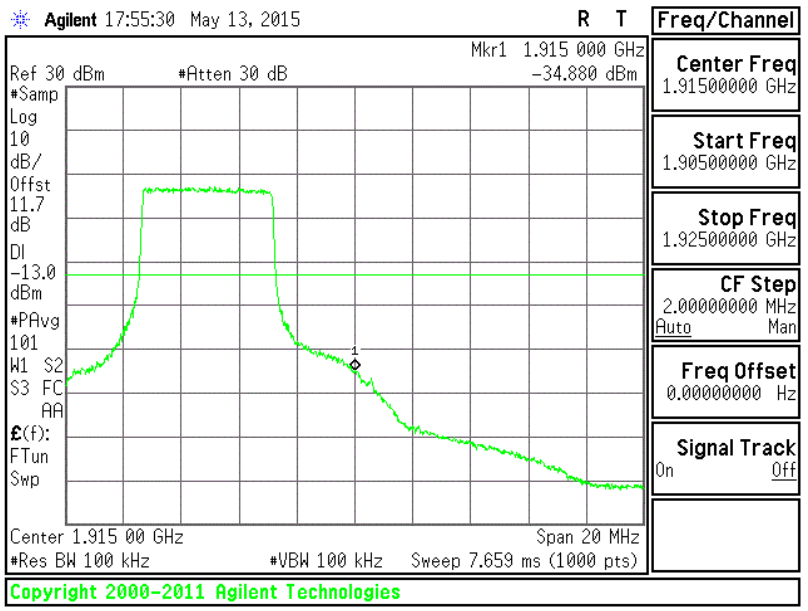
LOW CH, RB25-12



HIGH CH, RB25-12



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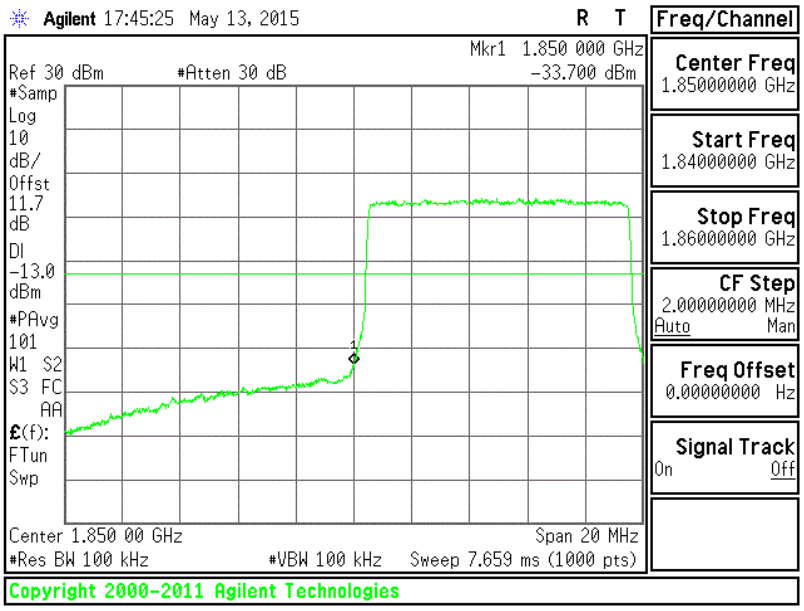
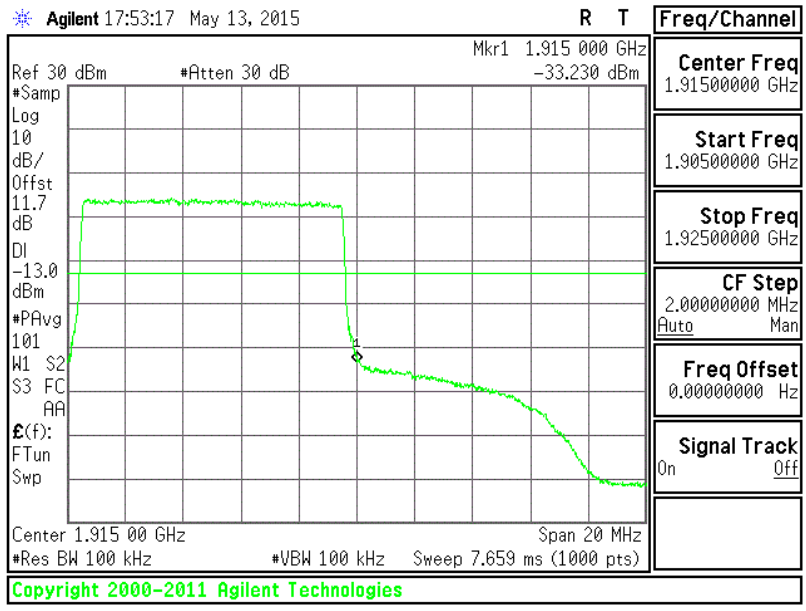
LOW CH, RB50-0



HIGH CH, RB50-0



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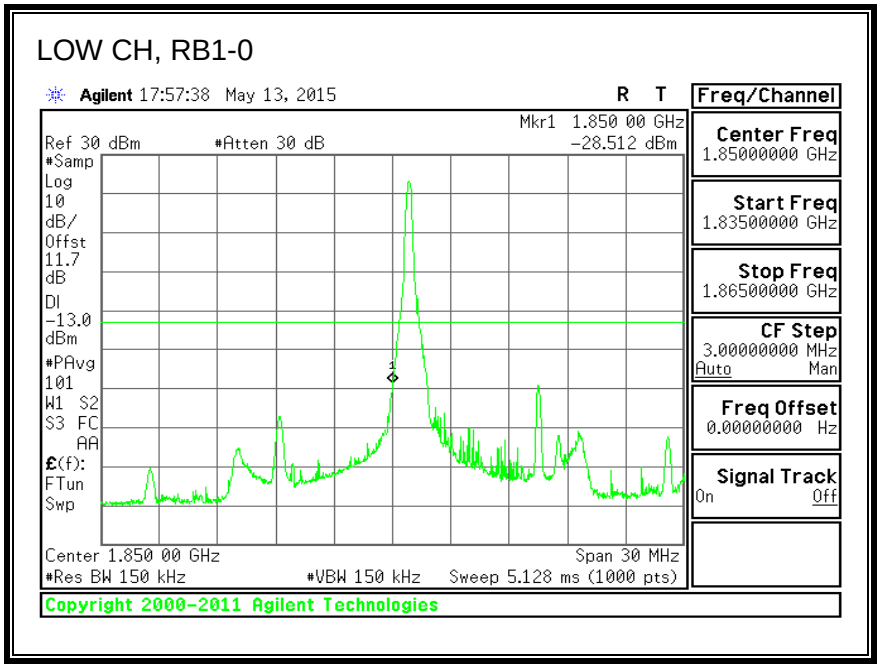
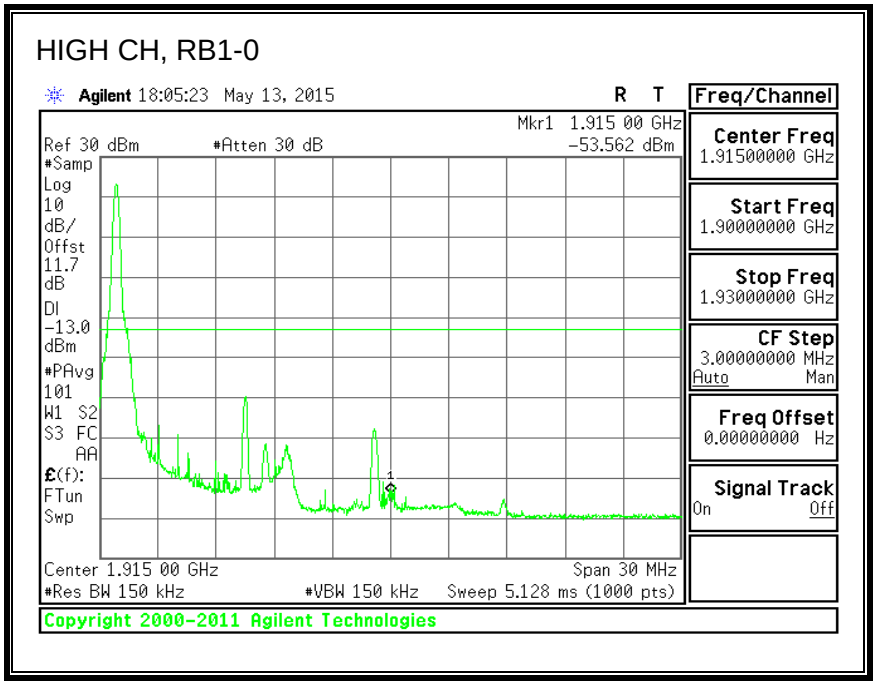
QPSK, (15.0 MHz BAND WIDTH)

LOW CH, RB1-0



HIGH CH, RB1-0



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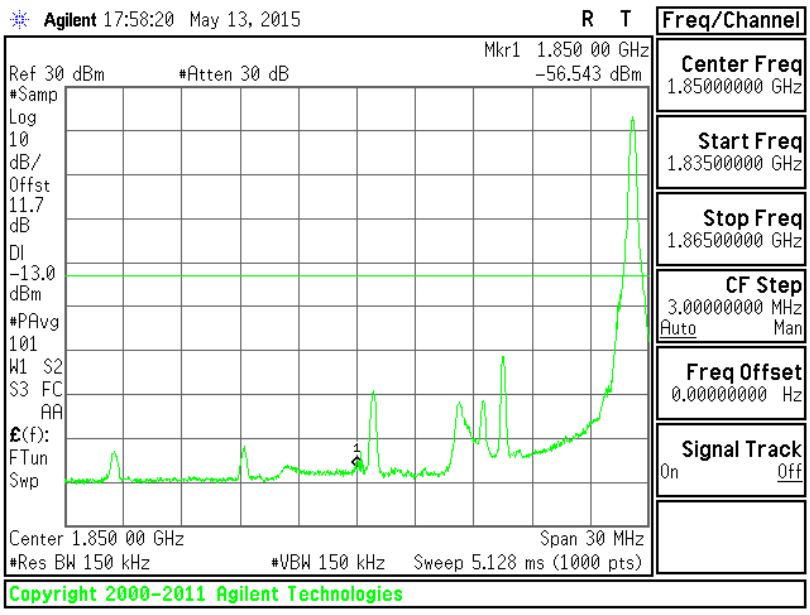
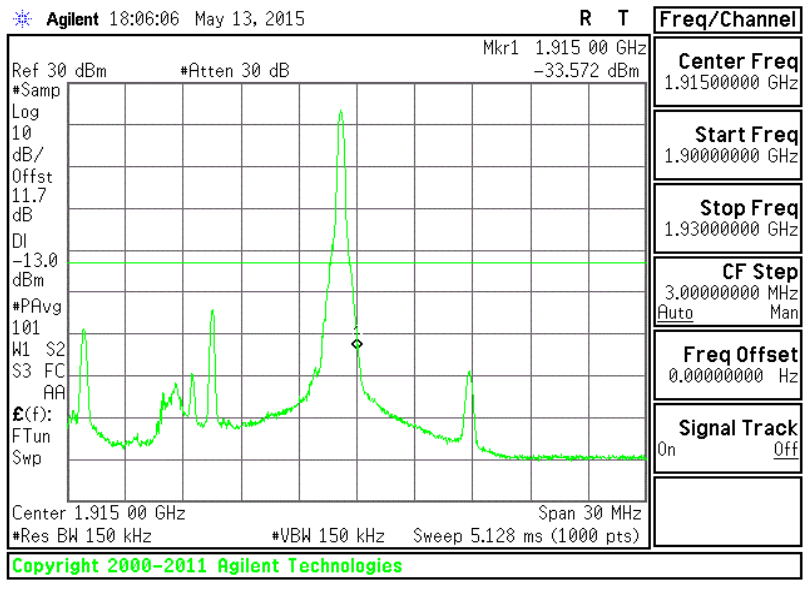
LOW CH, RB1-74



HIGH CH, RB1-74



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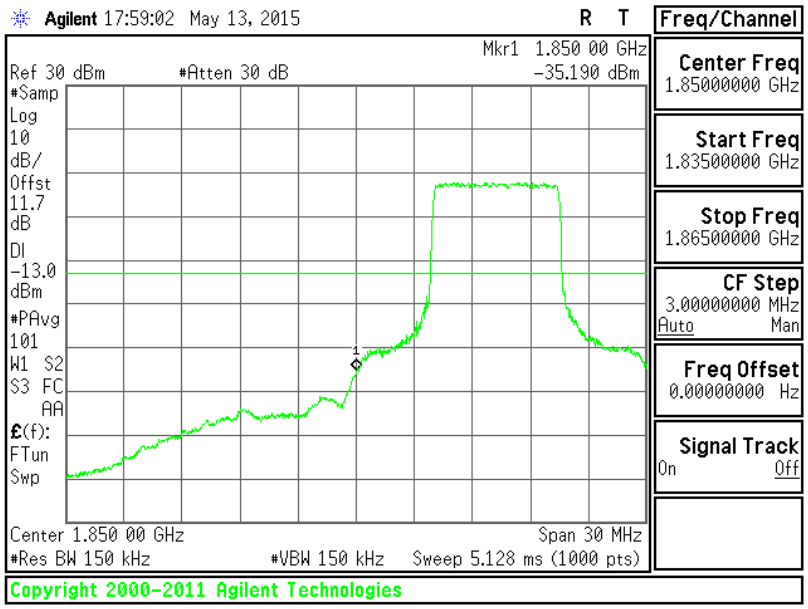
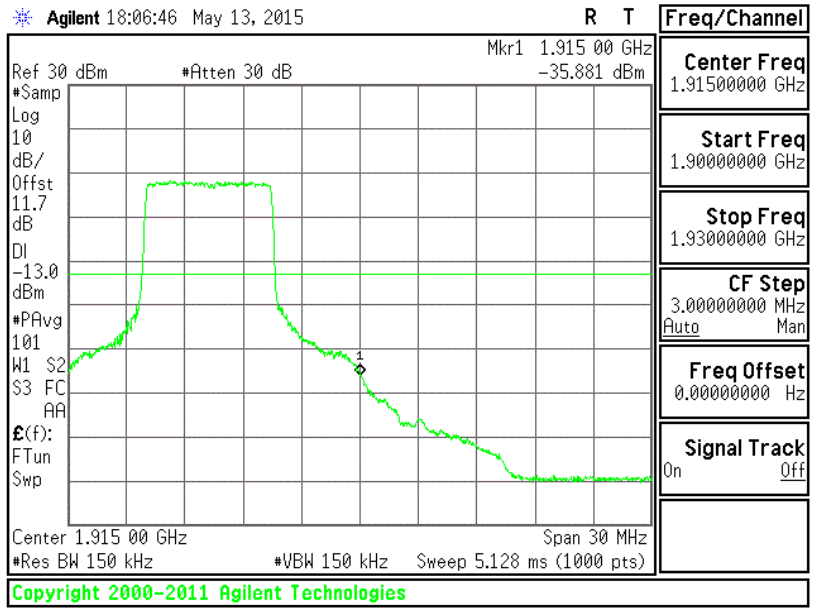
LOW CH, RB36-18



HIGH CH, RB36-18



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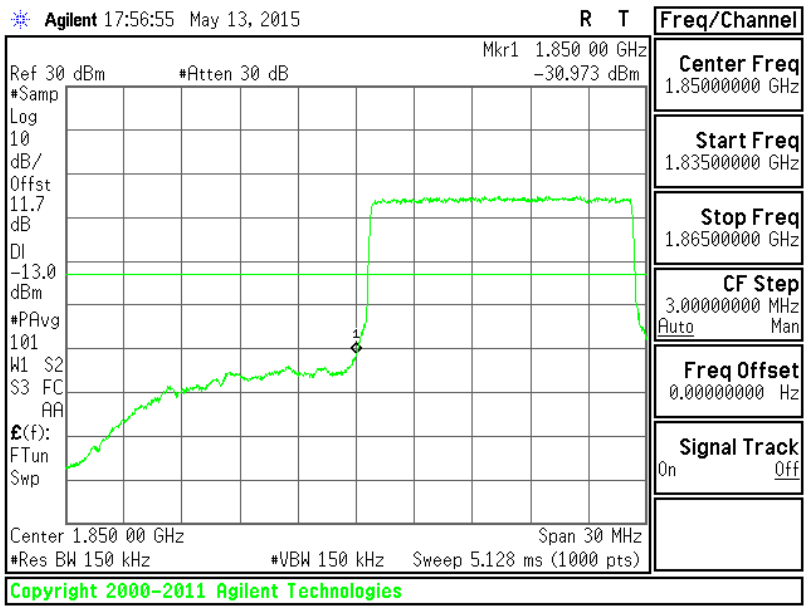
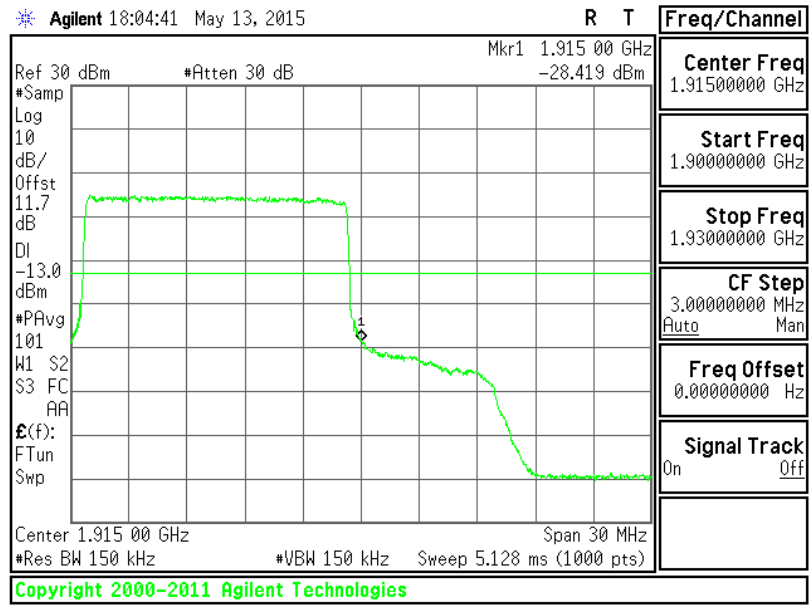
LOW CH, RB75-0



HIGH CH, RB75-0



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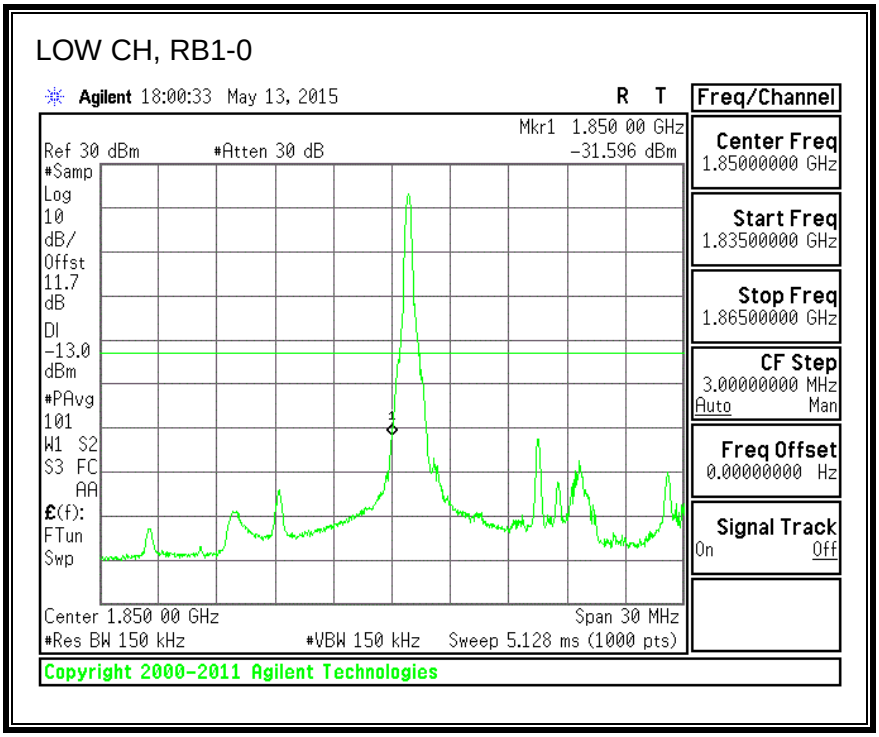
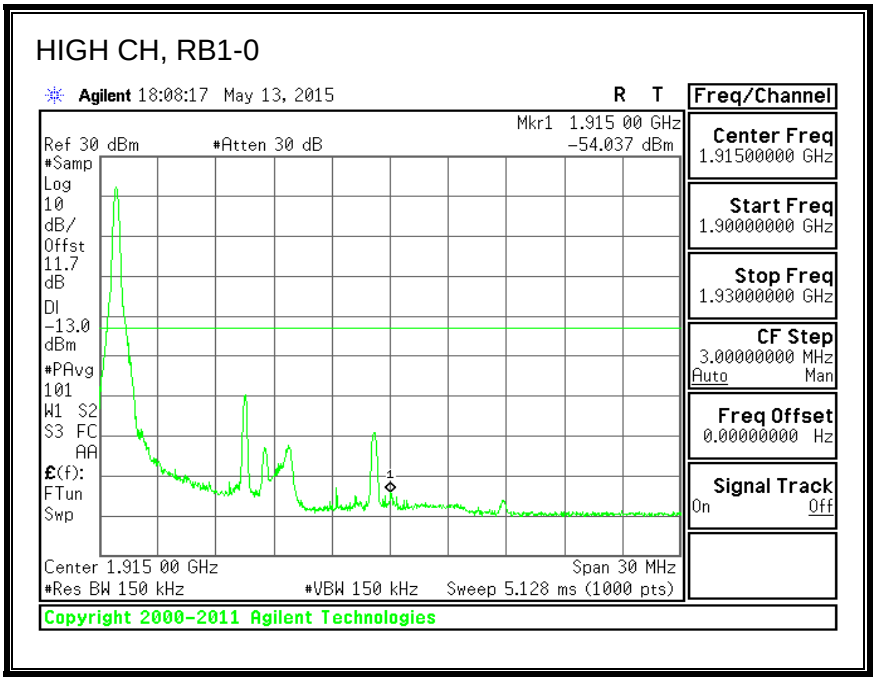
16QAM, (15.0 MHz BAND WIDTH)

LOW CH, RB1-0



HIGH CH, RB1-0



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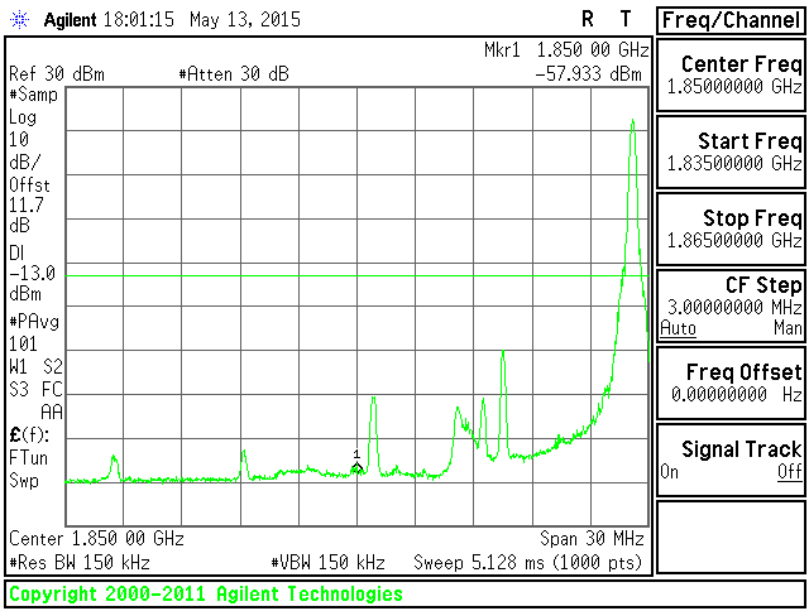
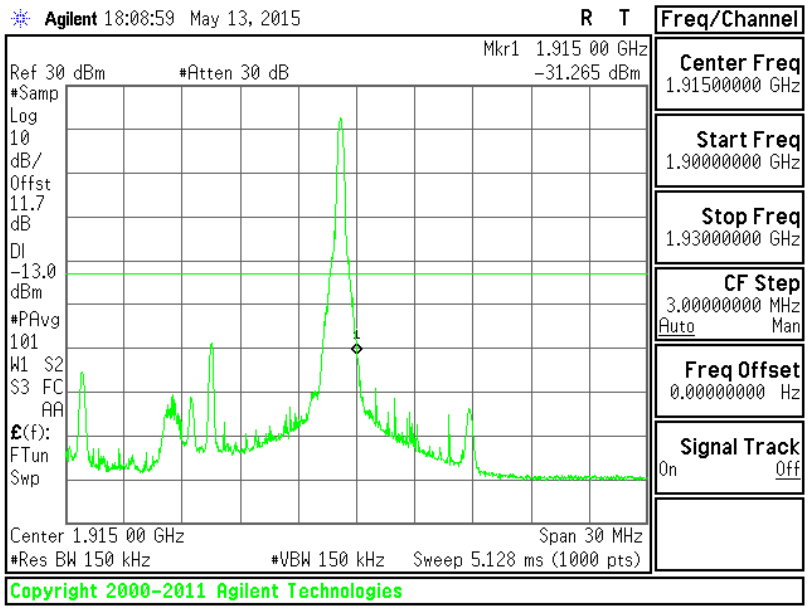
LOW CH, RB1-74



HIGH CH, RB1-74



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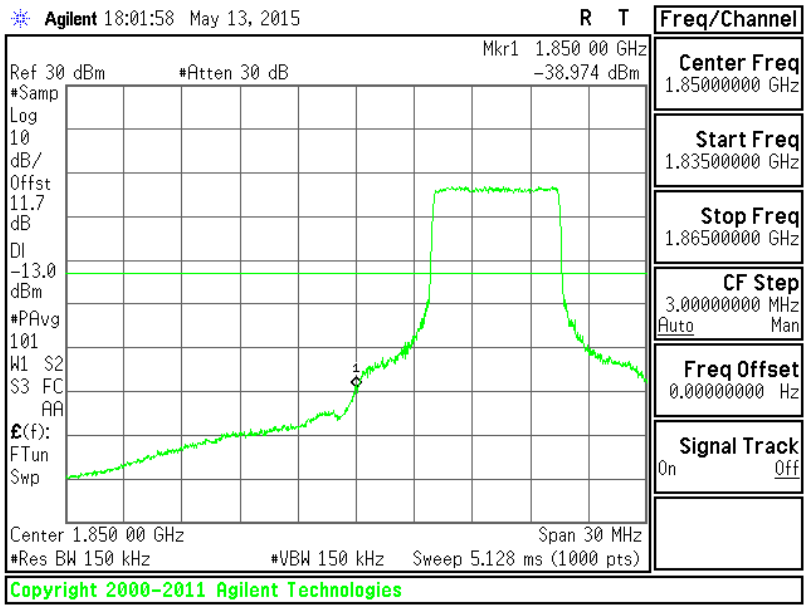
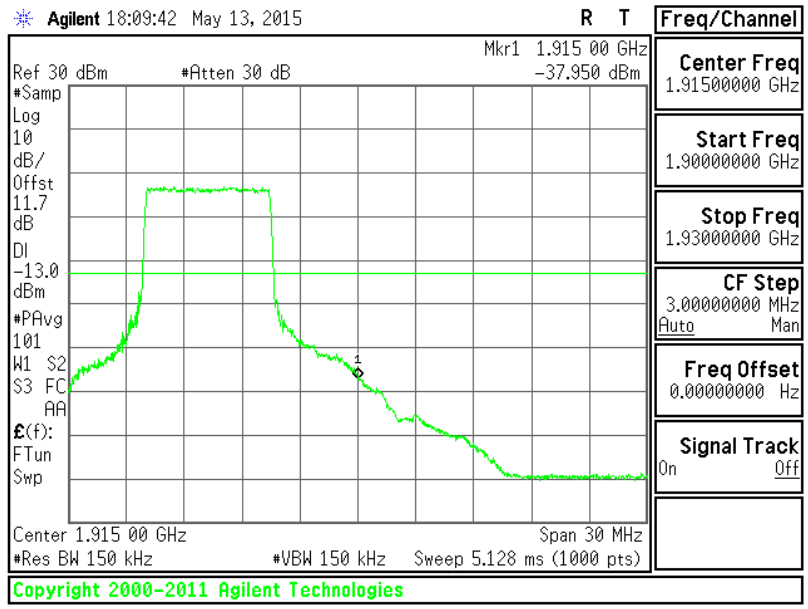
LOW CH, RB36-18



HIGH CH, RB36-18



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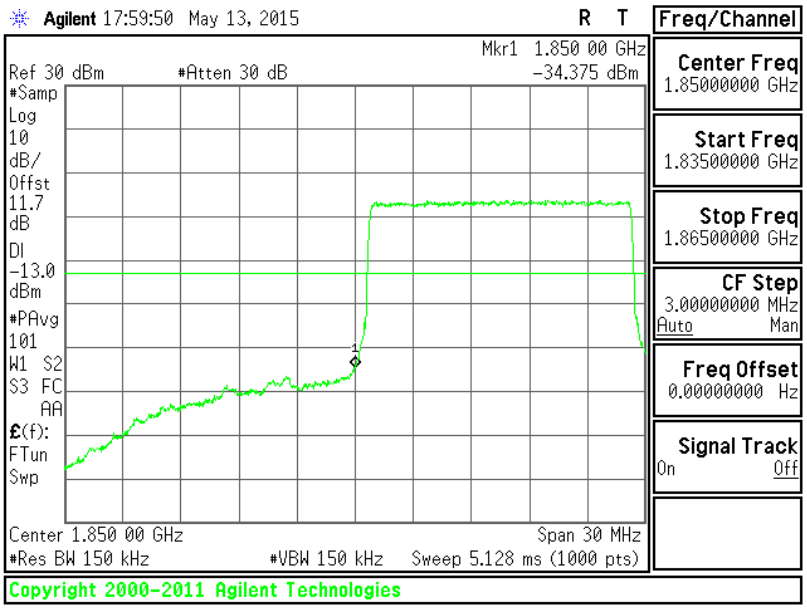
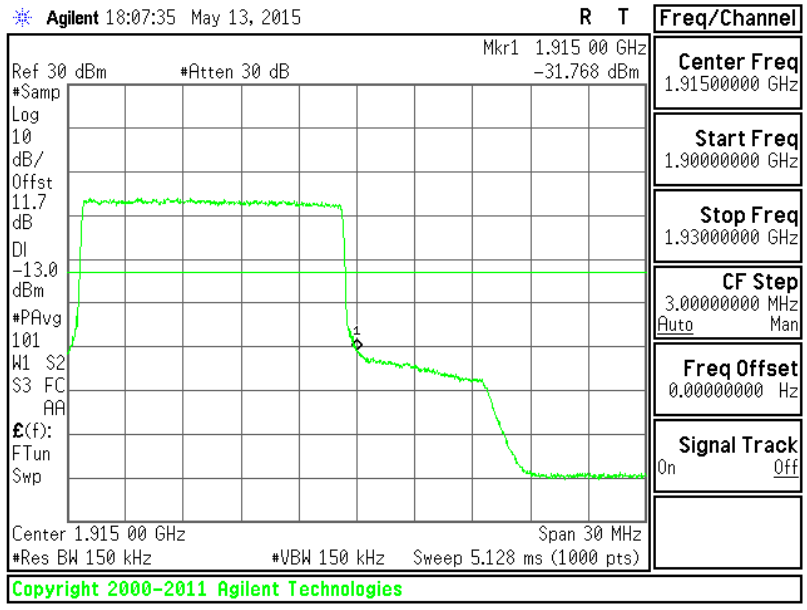
LOW CH, RB75-0



HIGH CH, RB75-0



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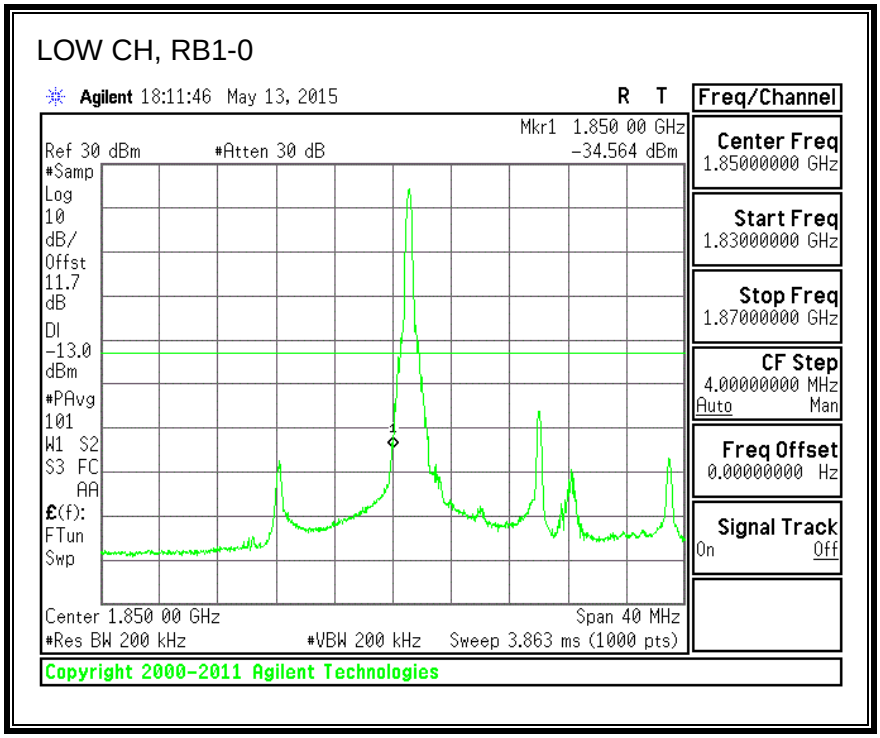
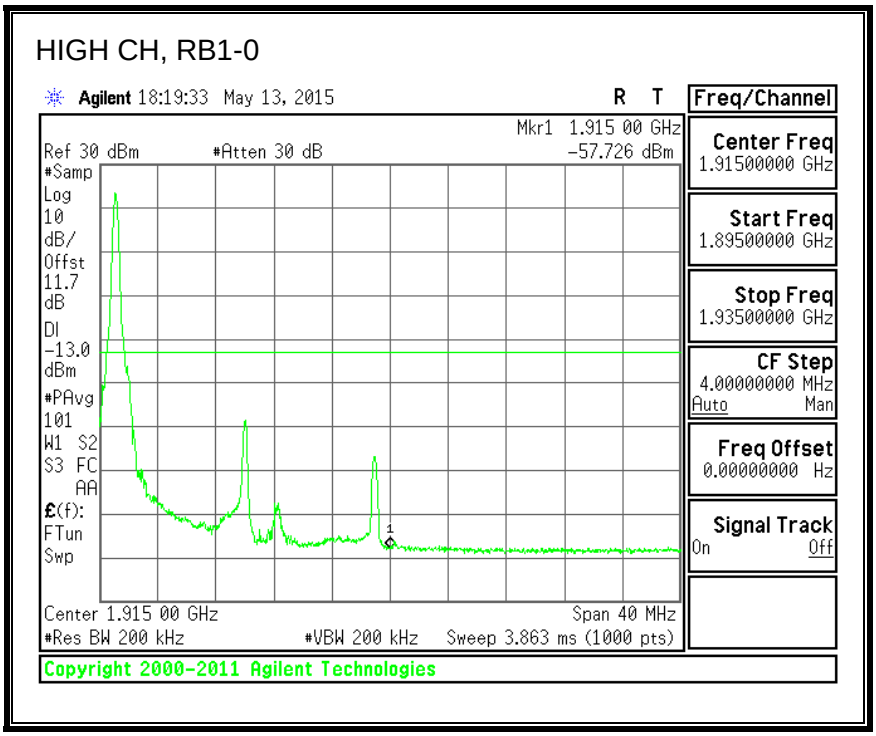
QPSK, (20.0 MHz BAND WIDTH)

LOW CH, RB1-0



HIGH CH, RB1-0



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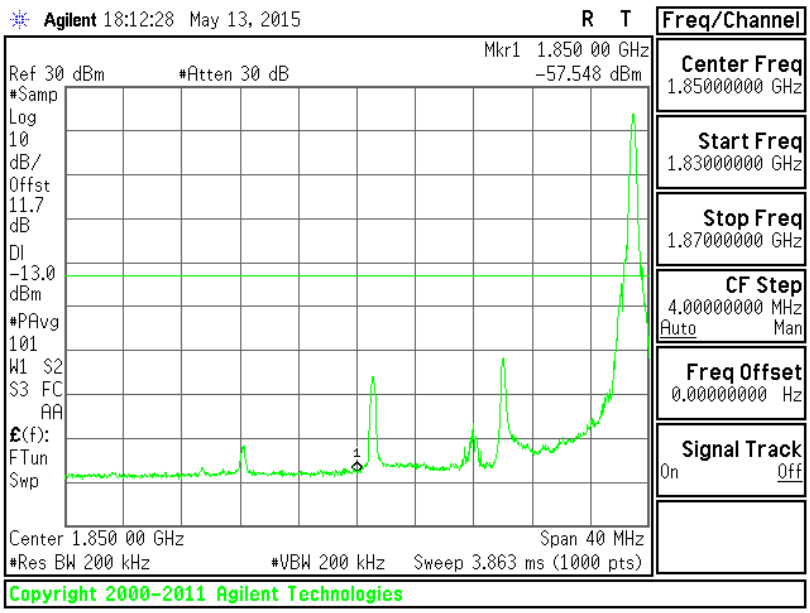
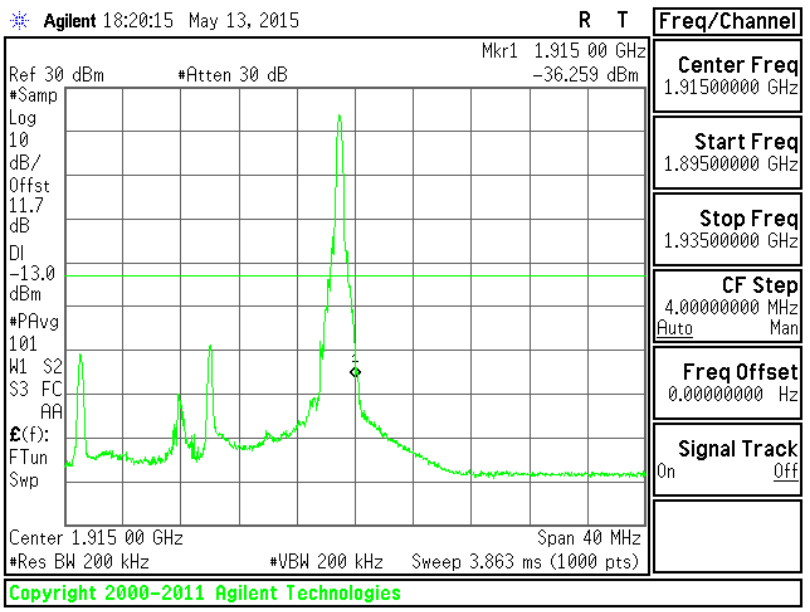
LOW CH, RB1-99



HIGH CH, RB1-99



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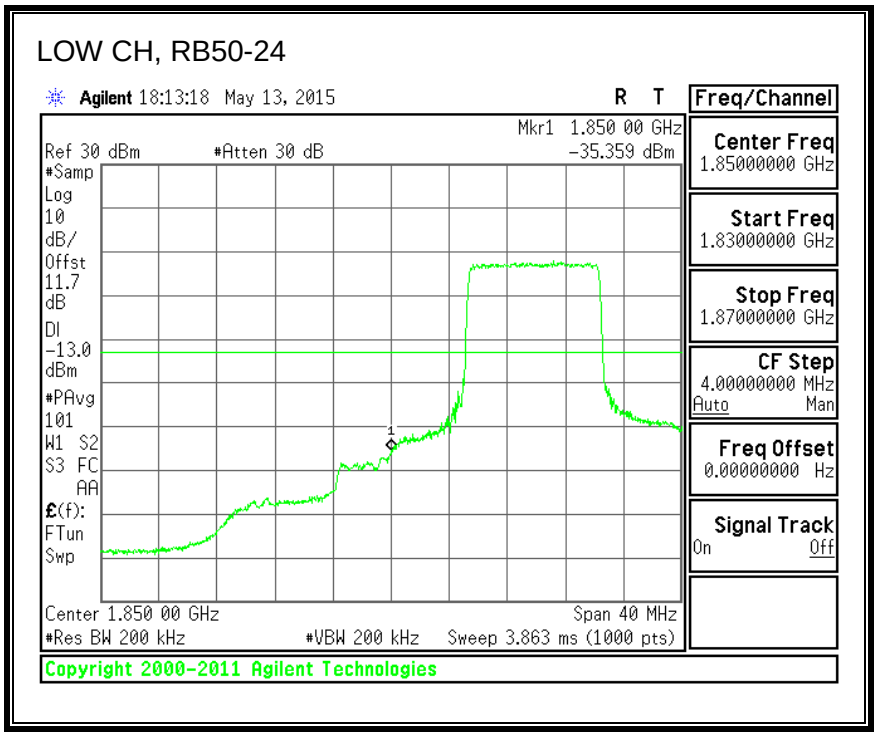
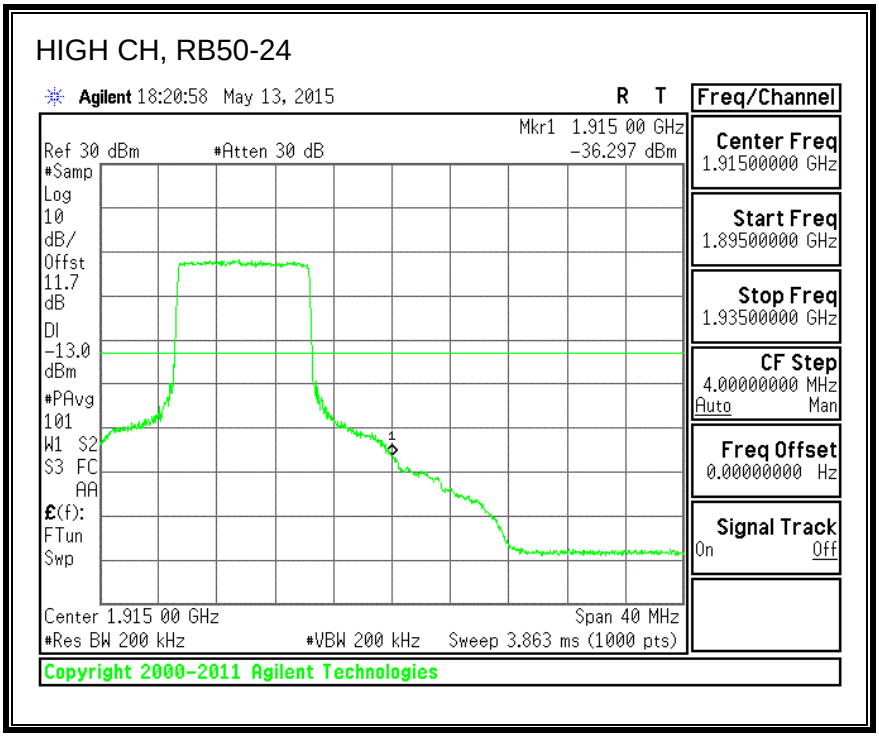
LOW CH, RB50-24



HIGH CH, RB50-24



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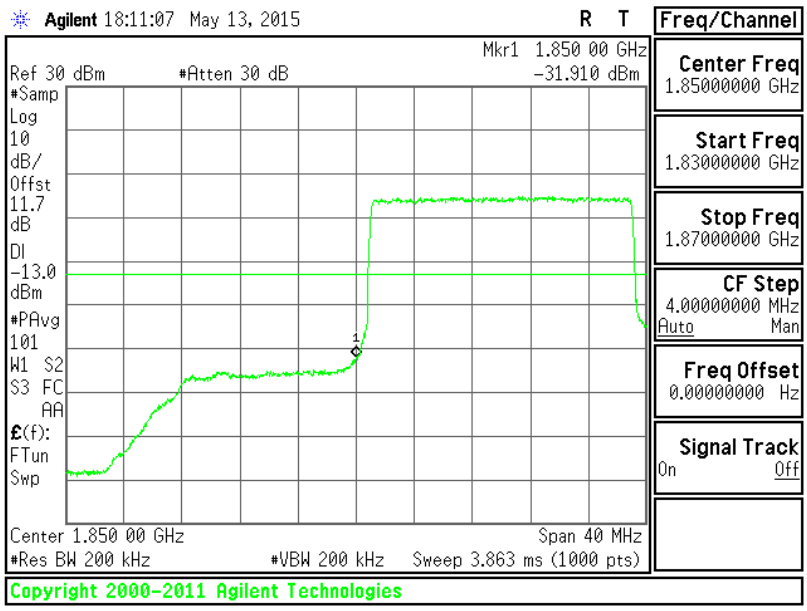
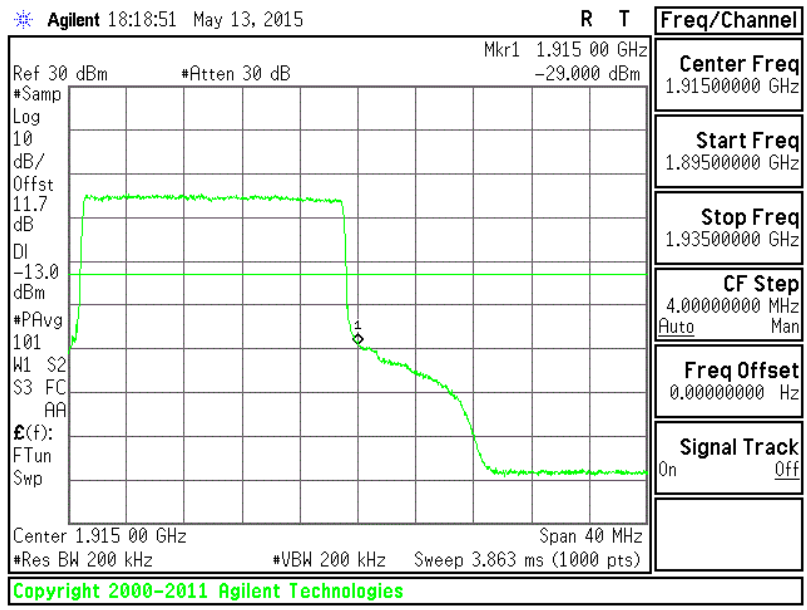
LOW CH, RB100-0



HIGH CH, RB100-0



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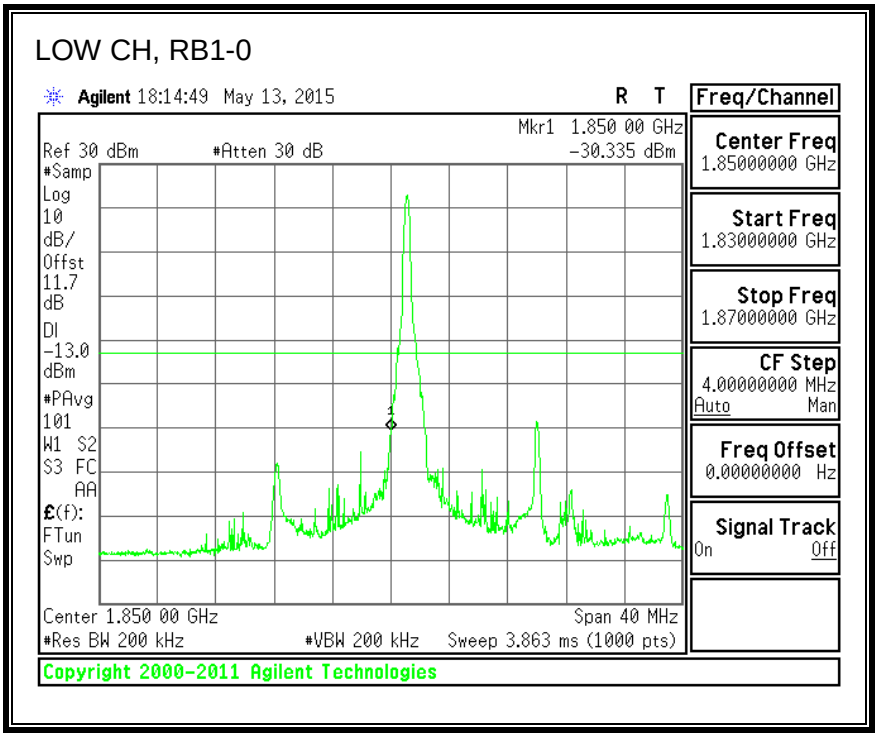
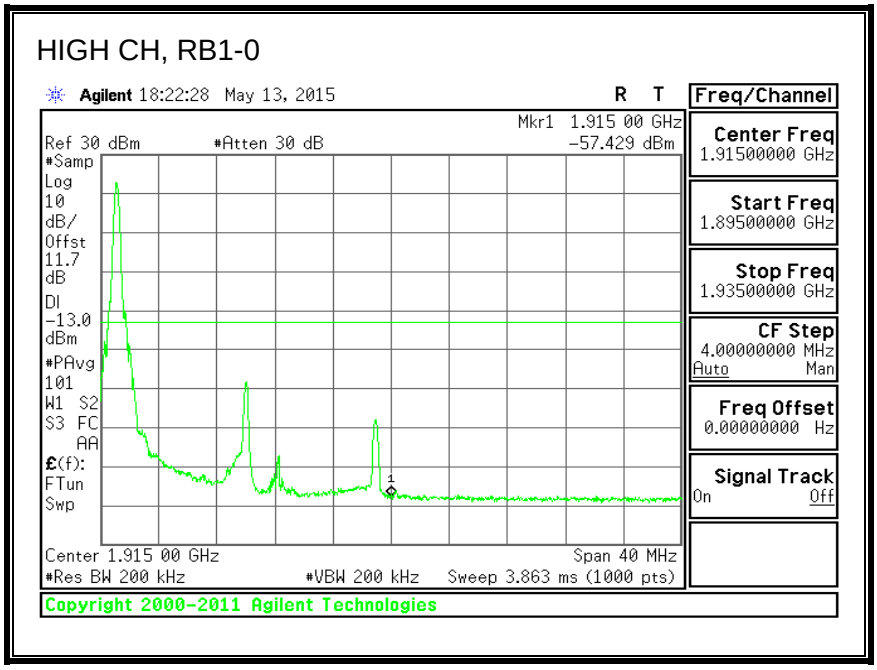
16QAM, (20.0 MHz BAND WIDTH)

LOW CH, RB1-0



HIGH CH, RB1-0



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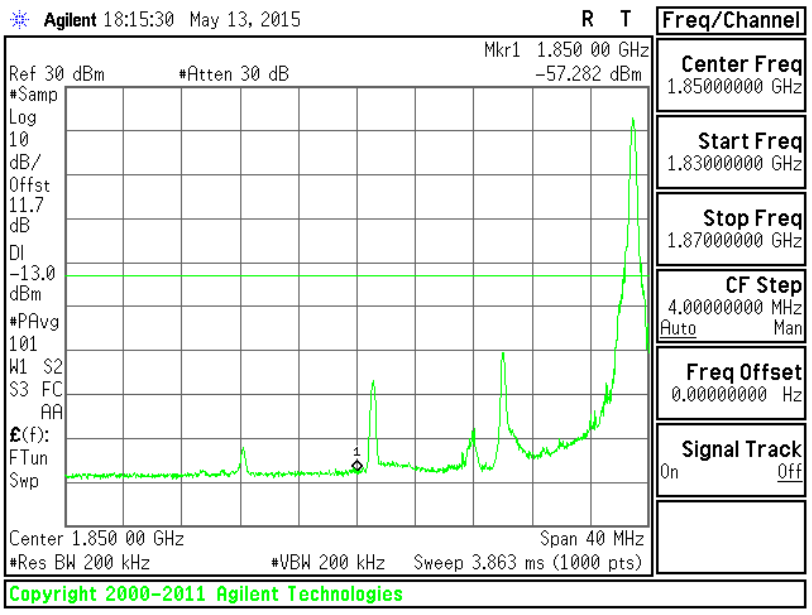
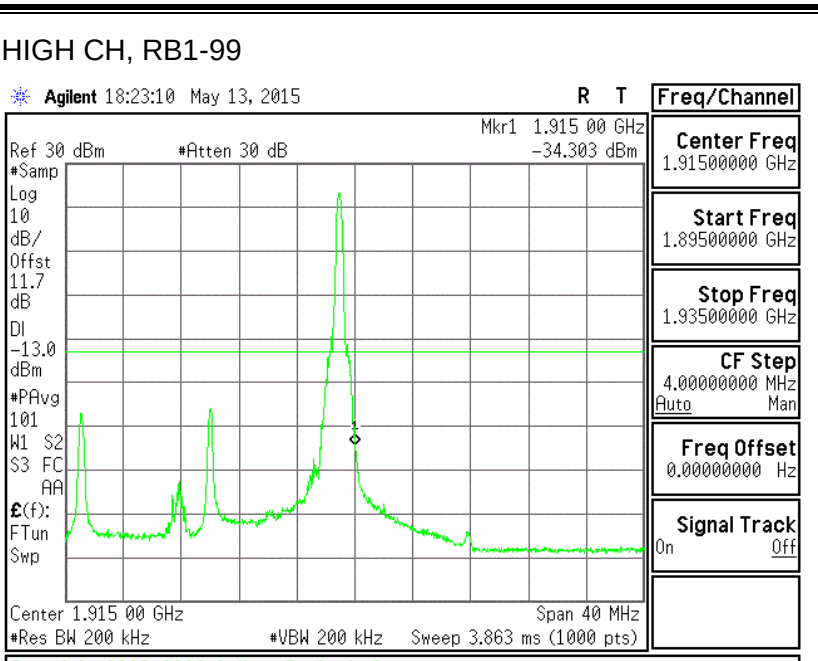
LOW CH, RB1-99



HIGH CH, RB1-99



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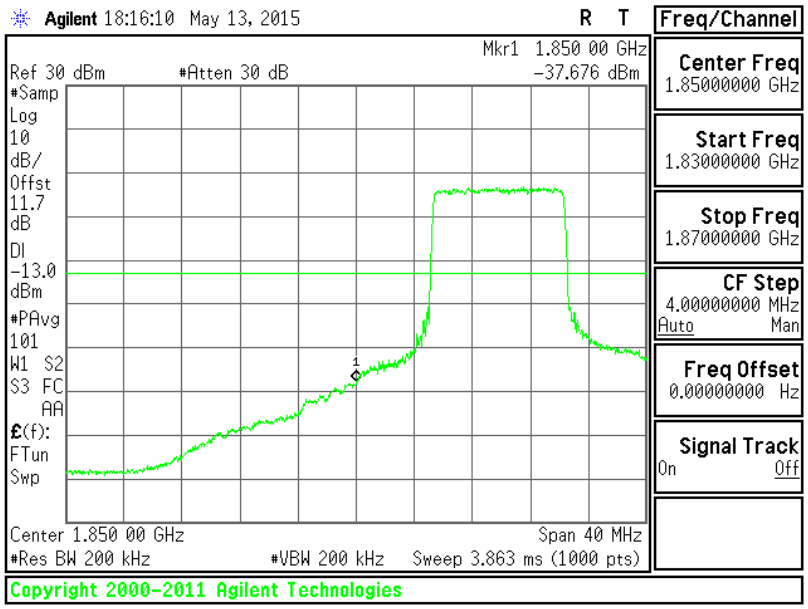
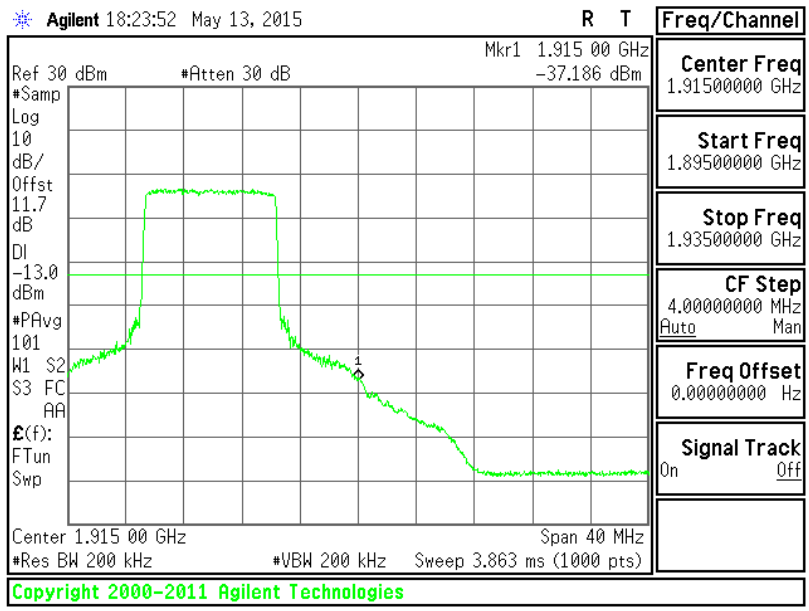
LOW CH, RB50-24



HIGH CH, RB50-24



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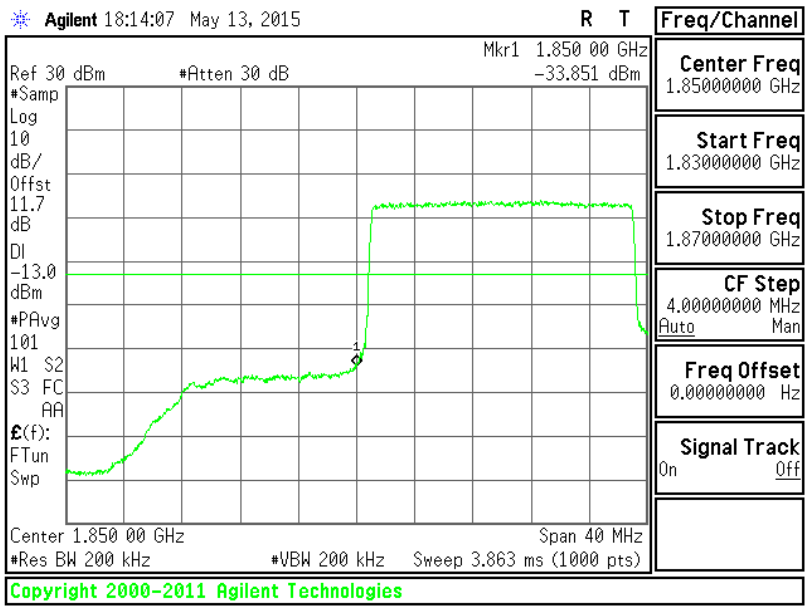
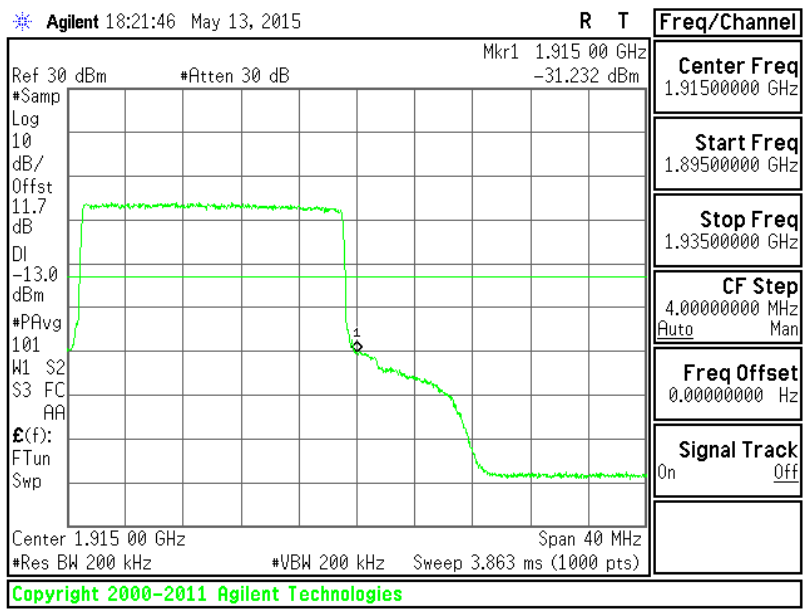
LOW CH, RB100-0



HIGH CH, RB100-0



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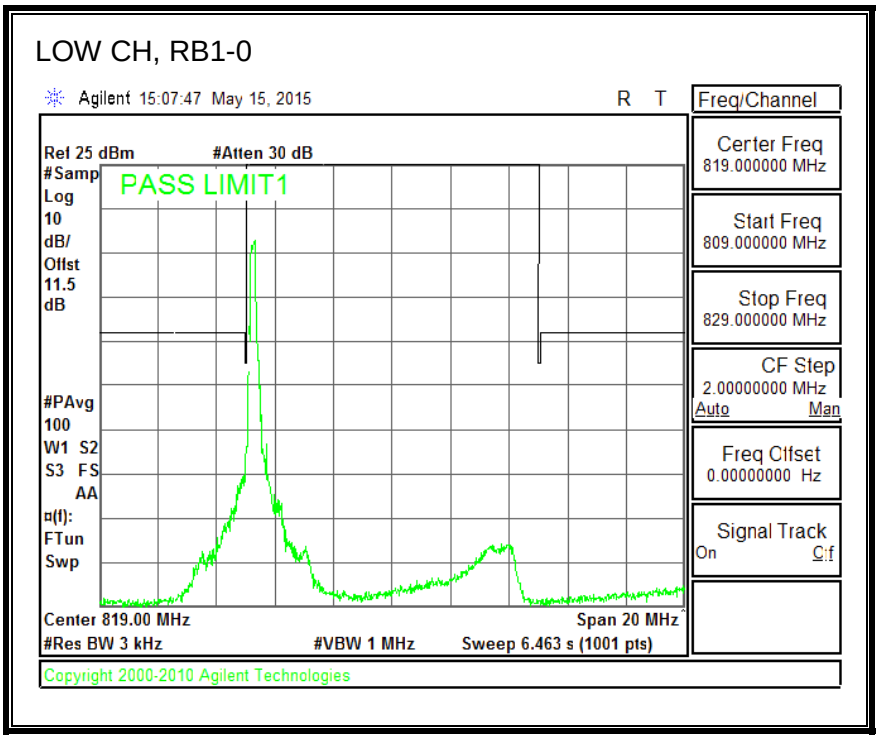
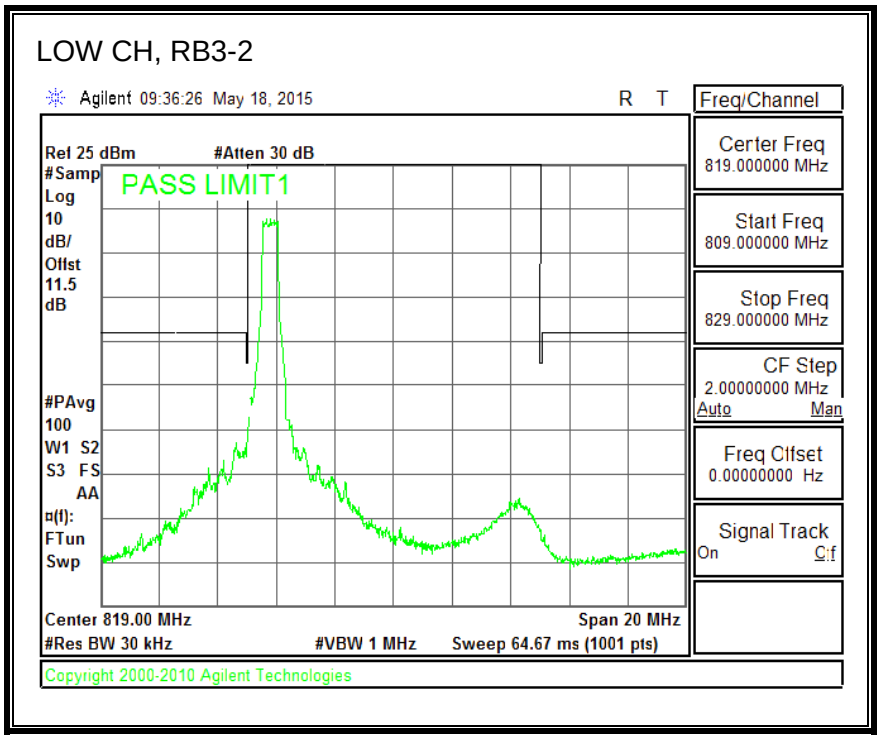
8.4.9. LTE BAND 26 EMISSION MASK

QPSK, (1.4 MHz BAND WIDTH)

LOW CH, RB1-0



LOW CH, RB3-2



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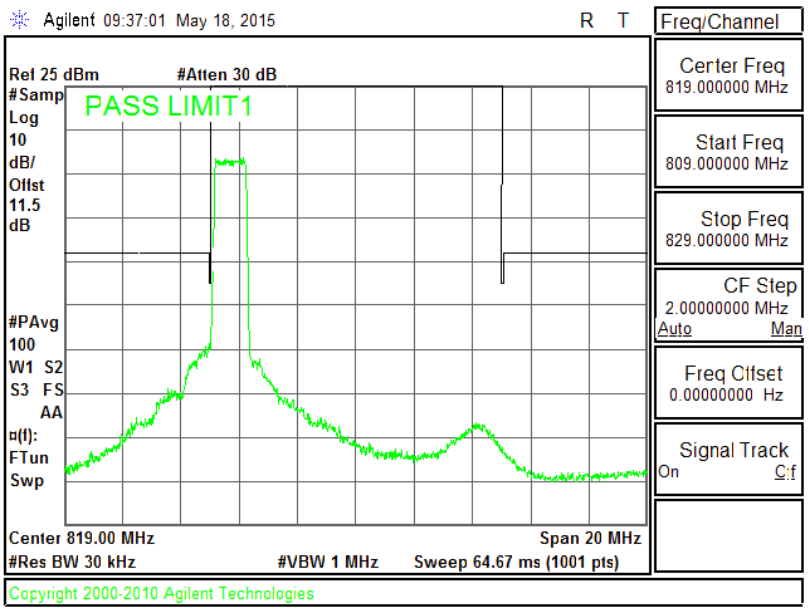
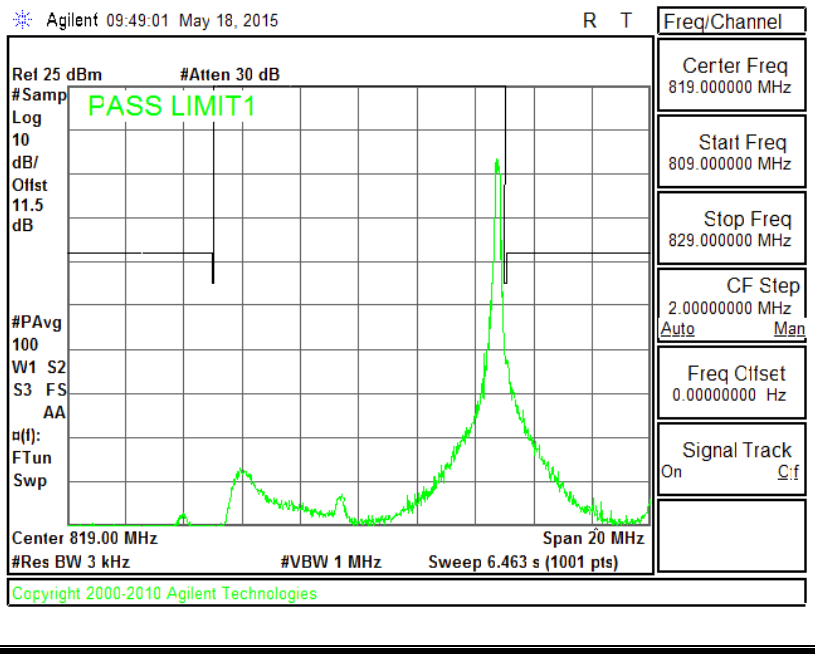
LOW CH, RB6-0



HIGH CH, RB1-5



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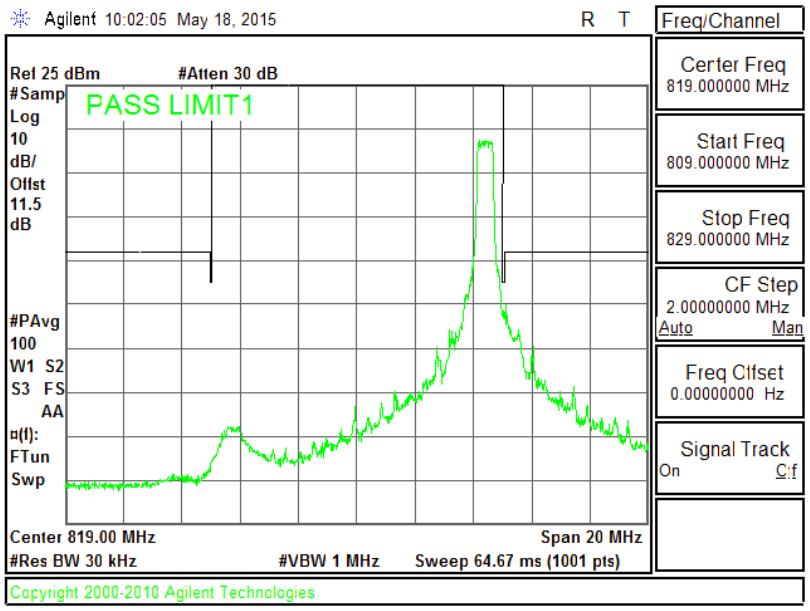
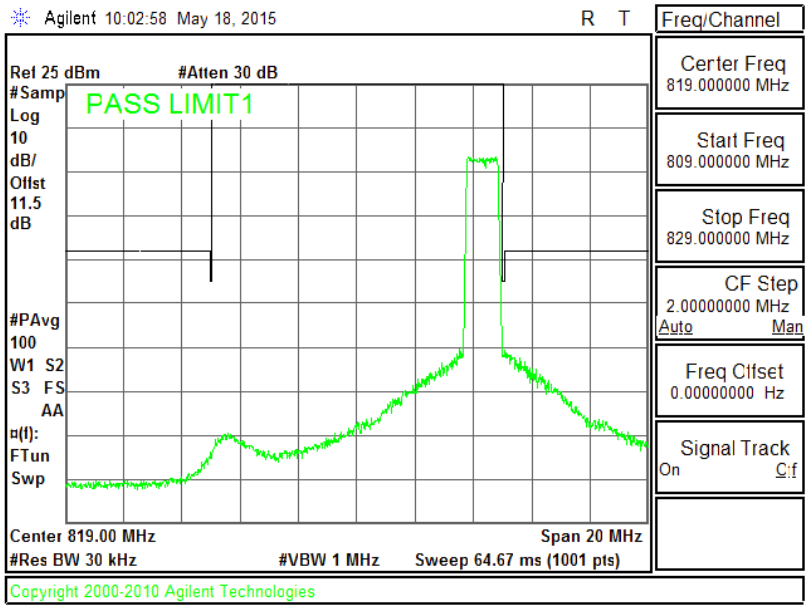
HIGH CH, RB3-2



HIGH CH, RB6-0



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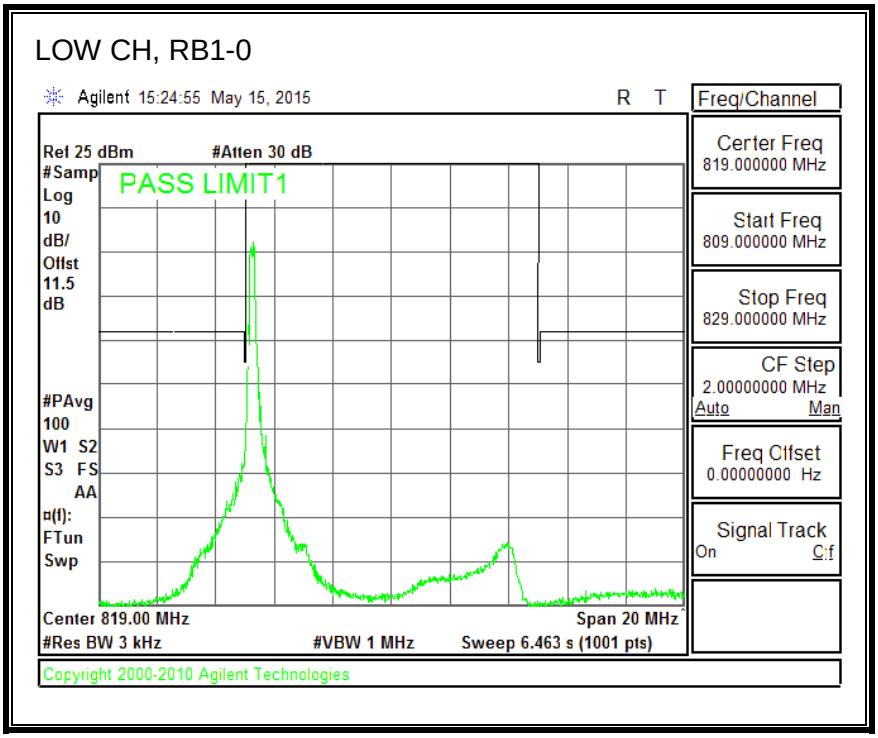
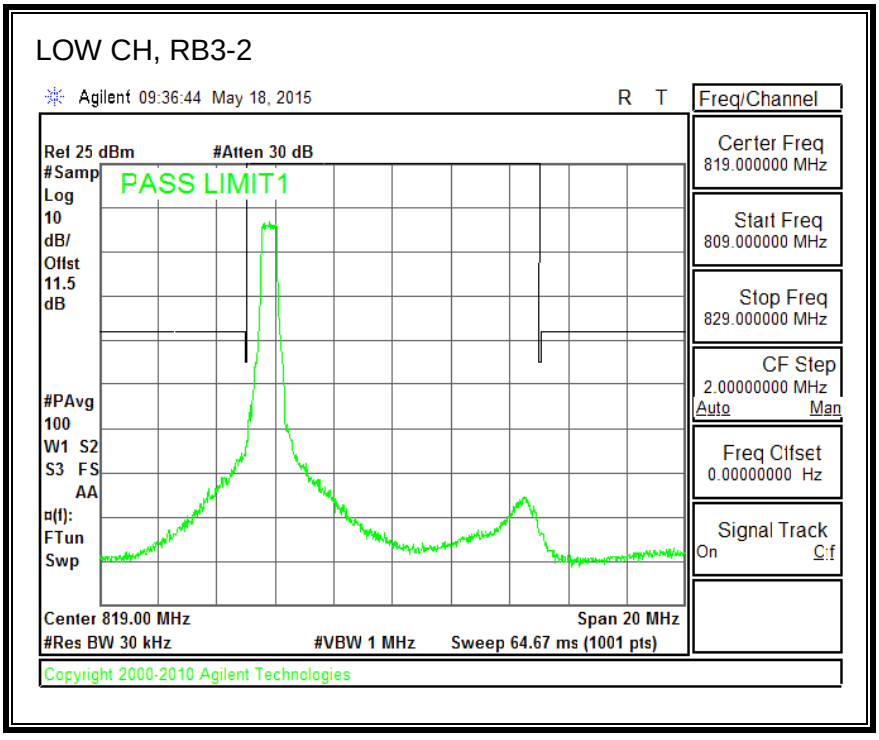
16QAM, (1.4 MHz BAND WIDTH)

LOW CH, RB1-0



LOW CH, RB3-2



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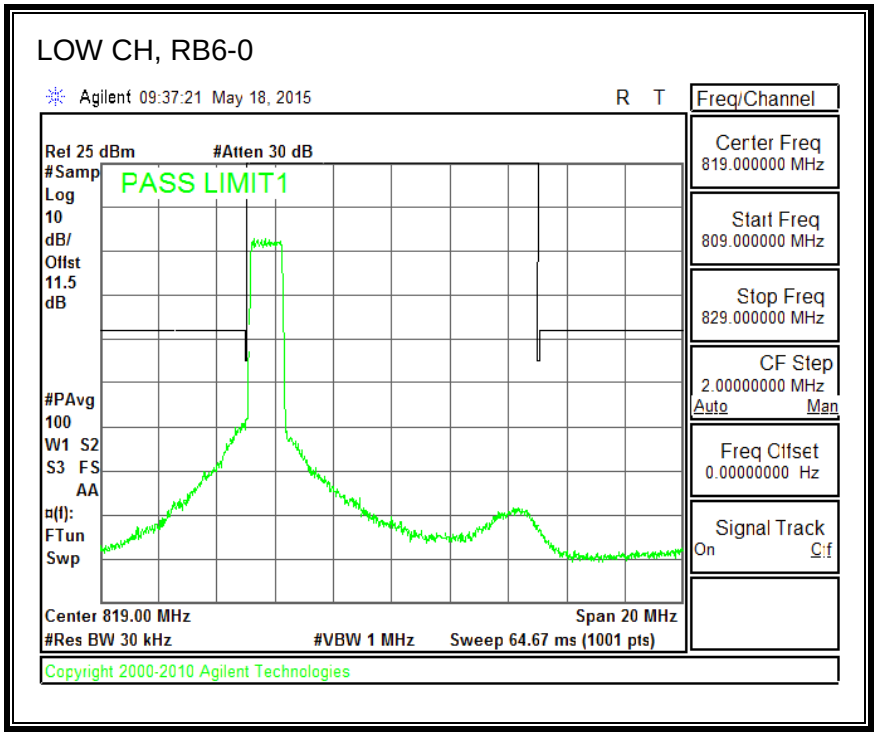
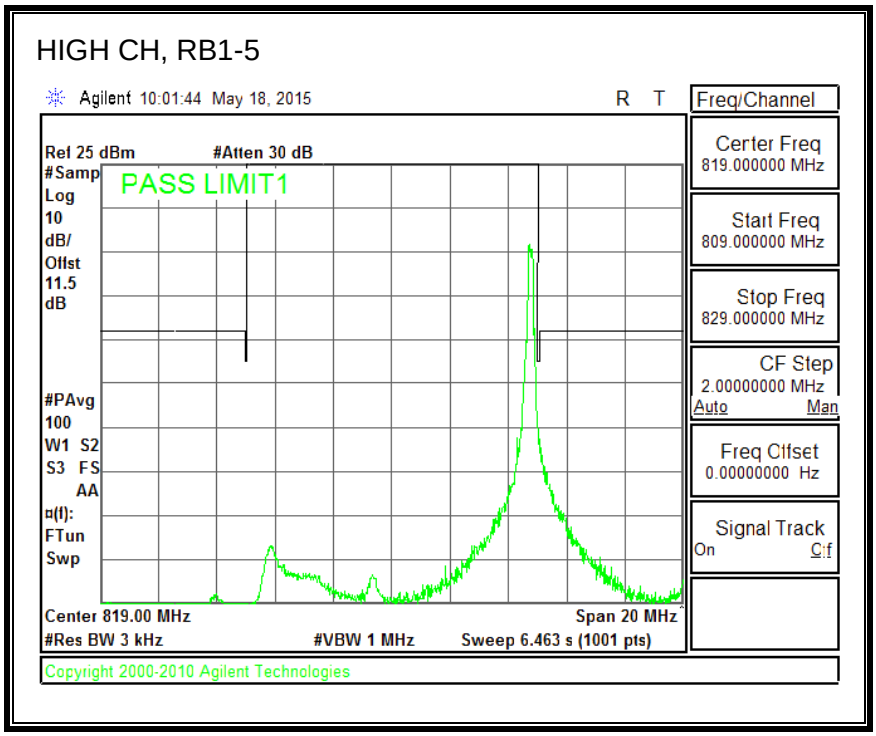
LOW CH, RB6-0



HIGH CH, RB1-5



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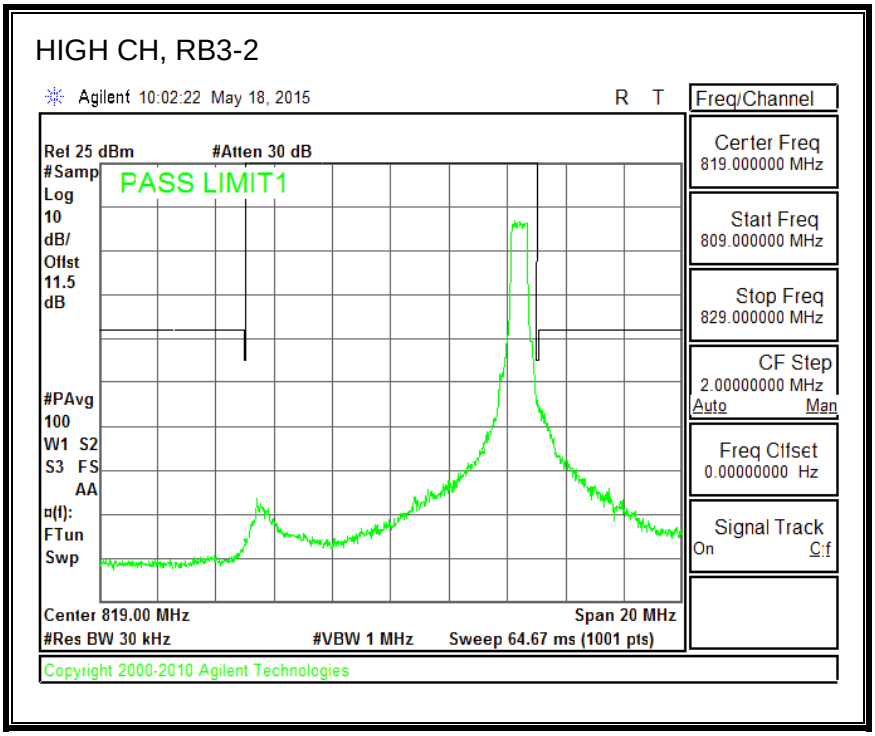
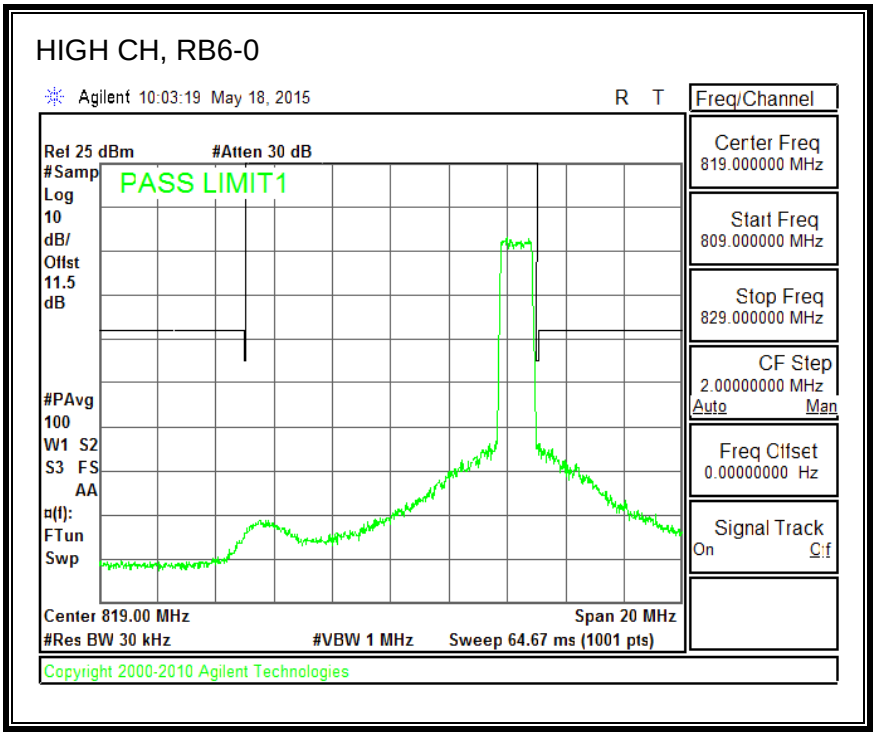
HIGH CH, RB3-2



HIGH CH, RB6-0



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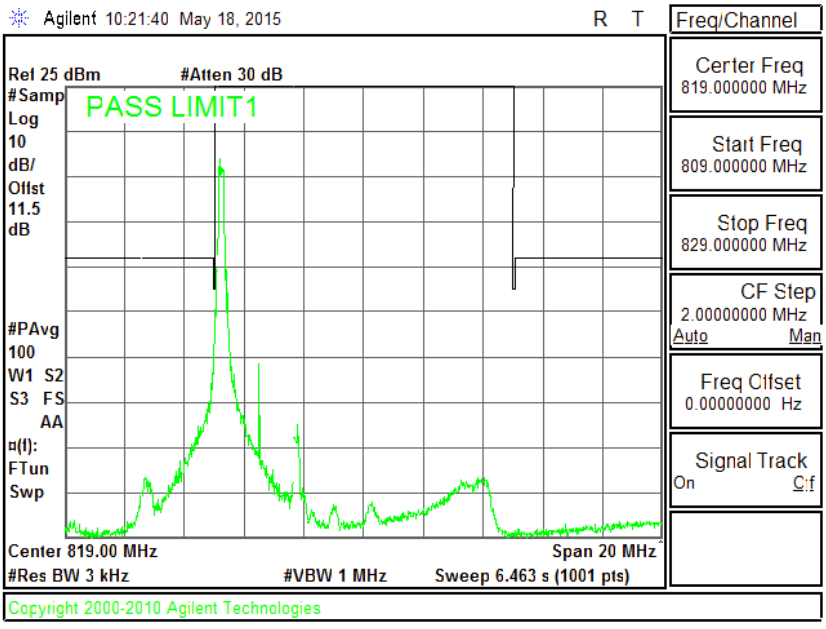
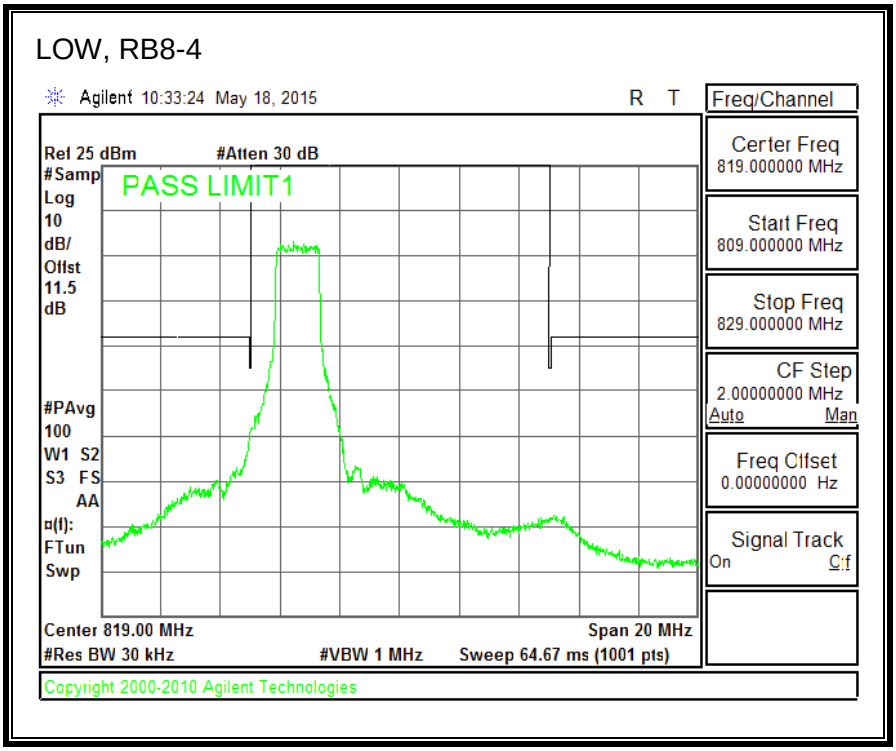
QPSK, (3.0 MHz BAND WIDTH)

LOW, RB1-0



LOW, RB8-4



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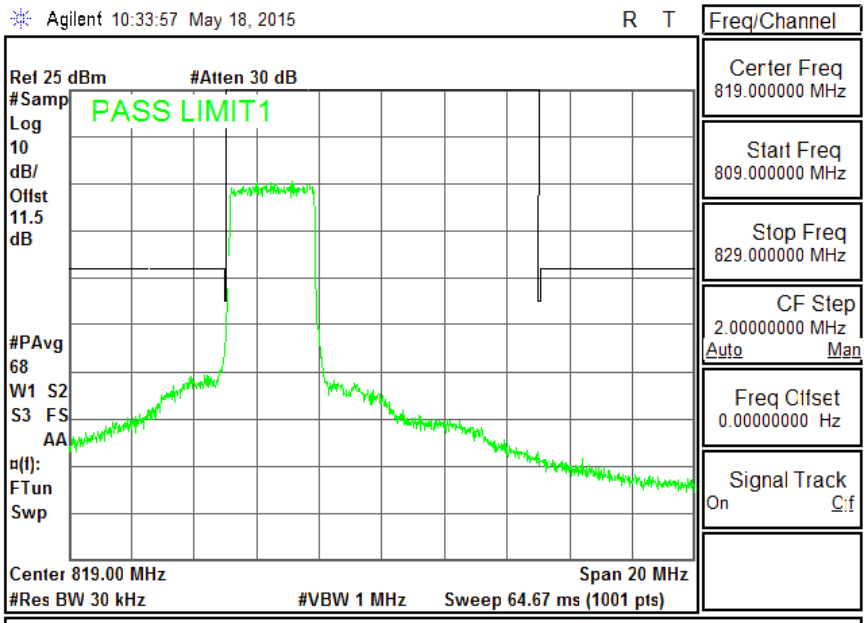
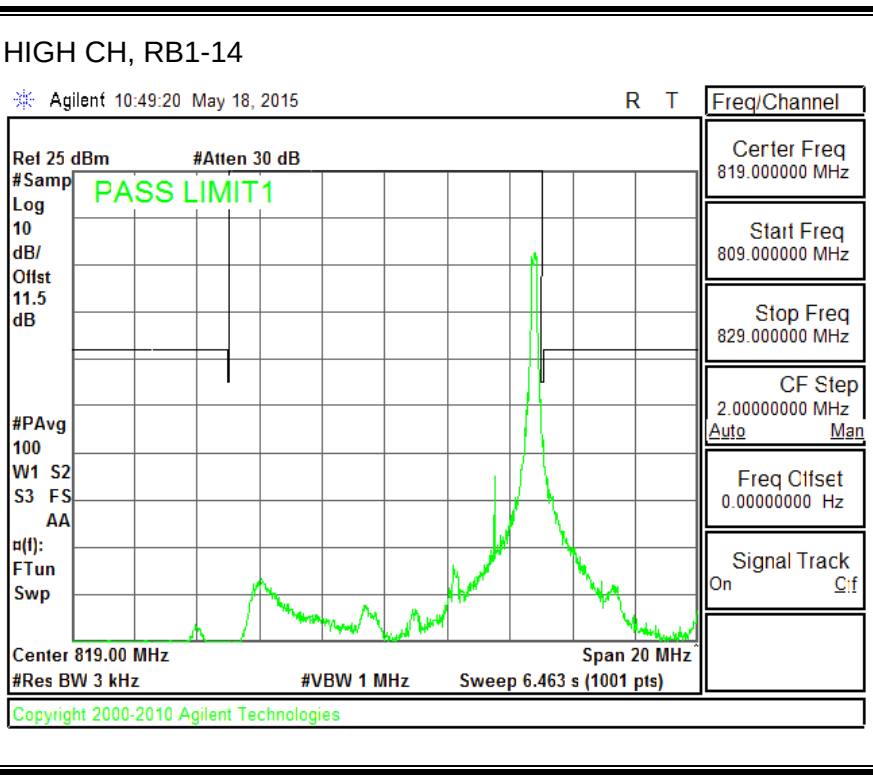
LOW CH, RB15-0



HIGH CH, RB1-14



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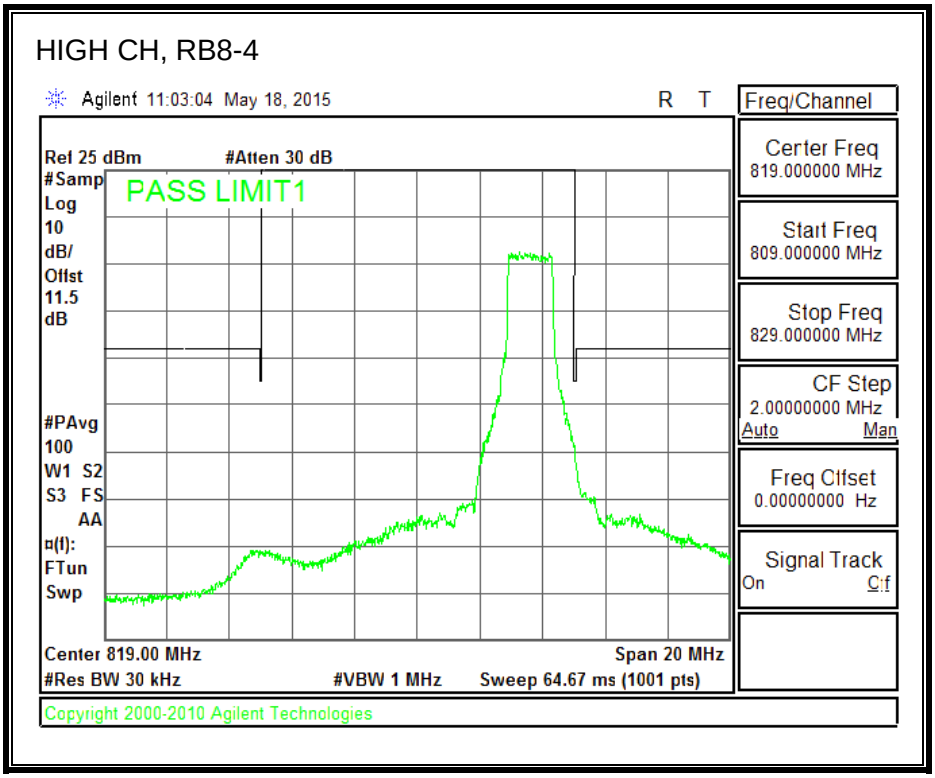
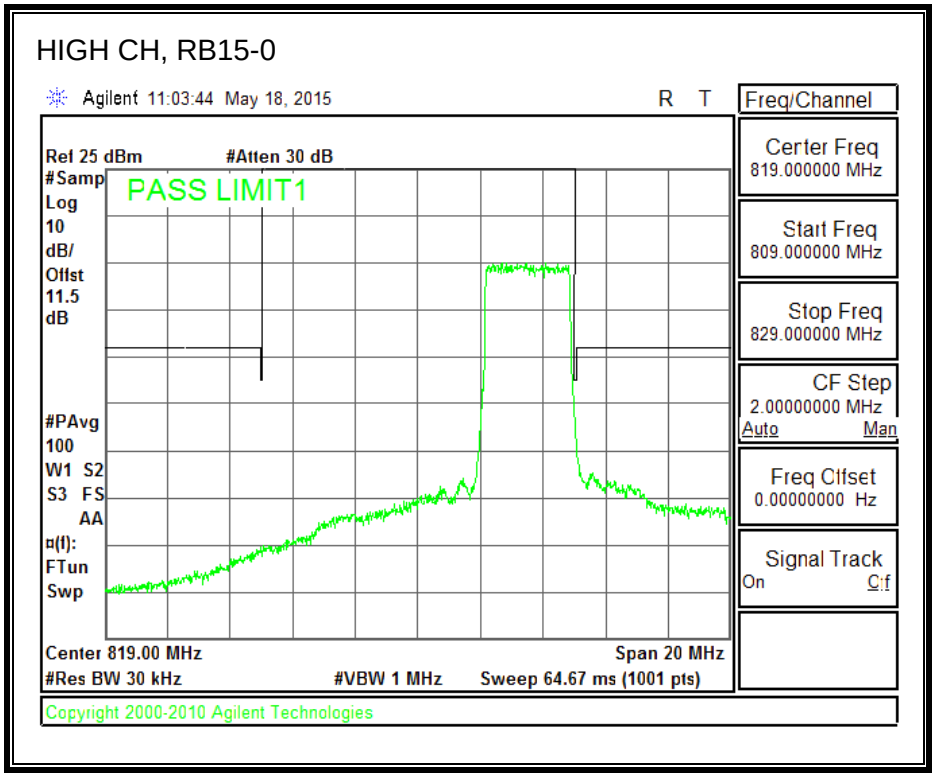
HIGH CH, RB8-4



HIGH CH, RB15-0



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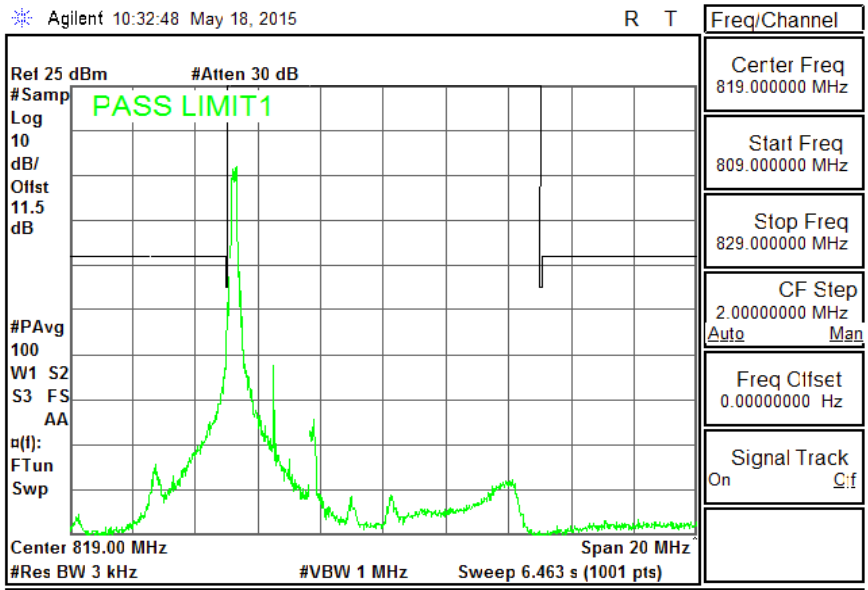
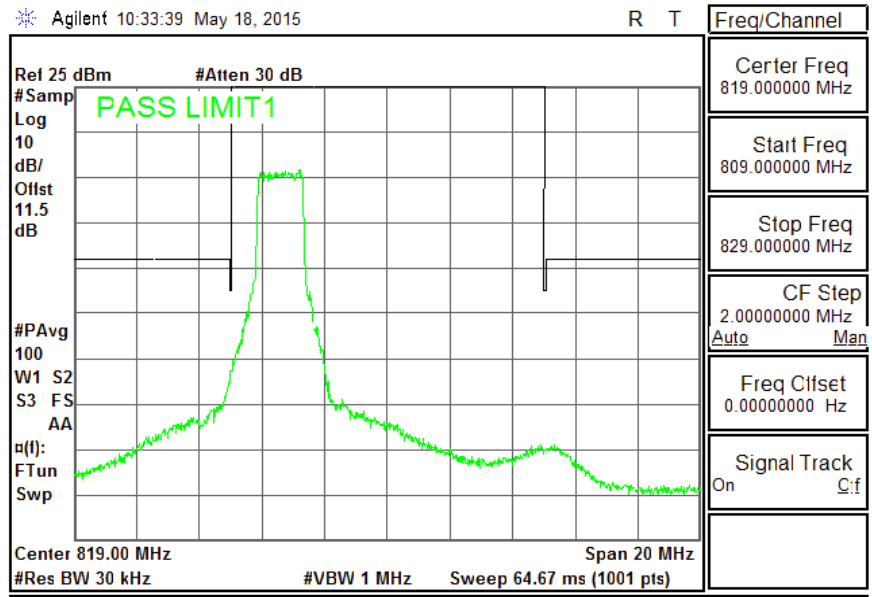
16QAM, (3.0 MHz BAND WIDTH)

LOW CH, RB1-0



LOW CH, RB8-4



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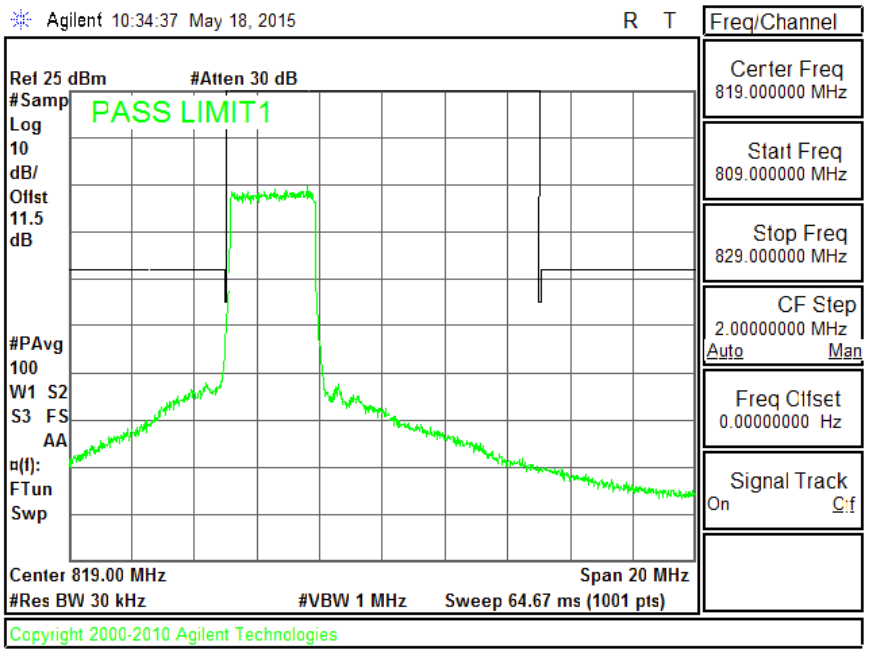
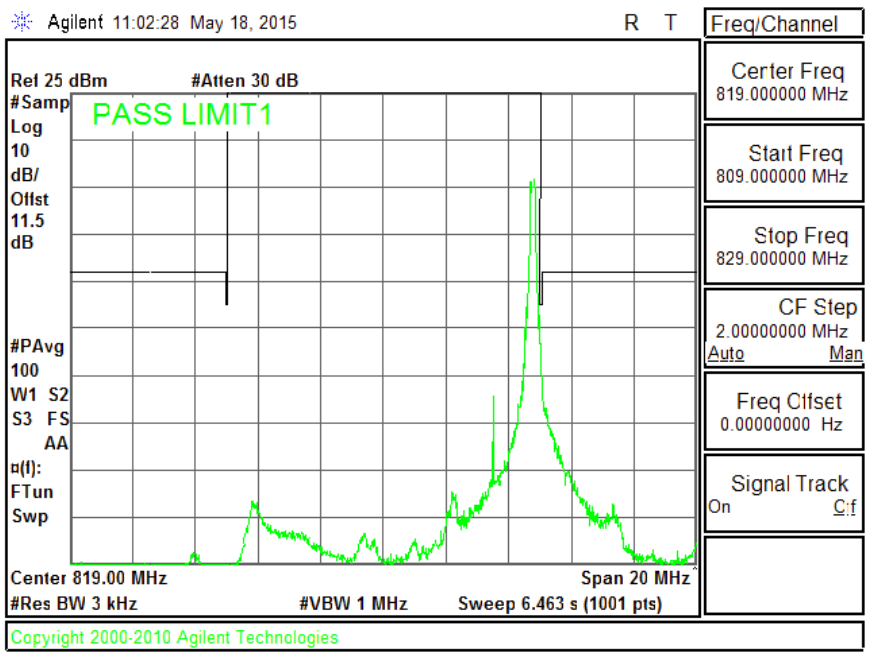
LOW CH, RB15-0



HIGH CH, RB1-14



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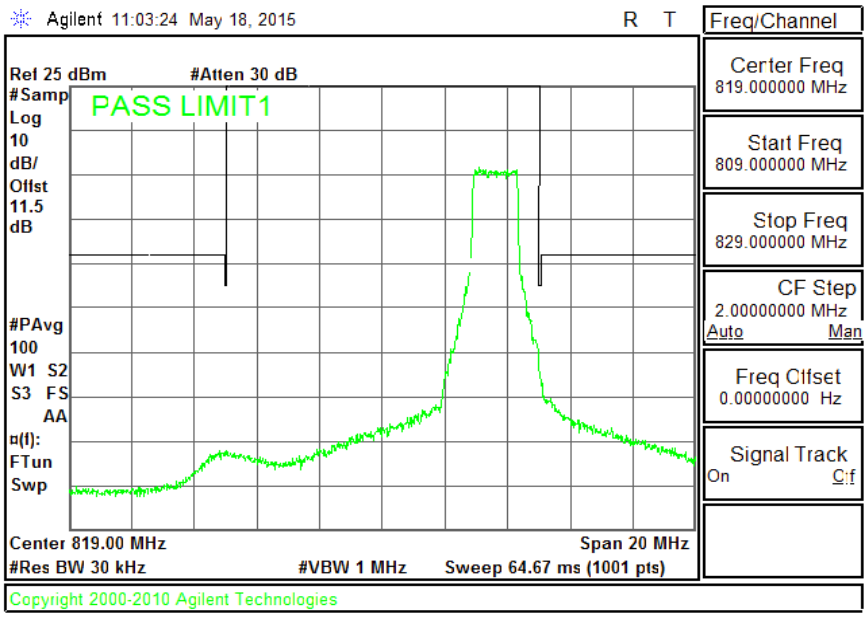
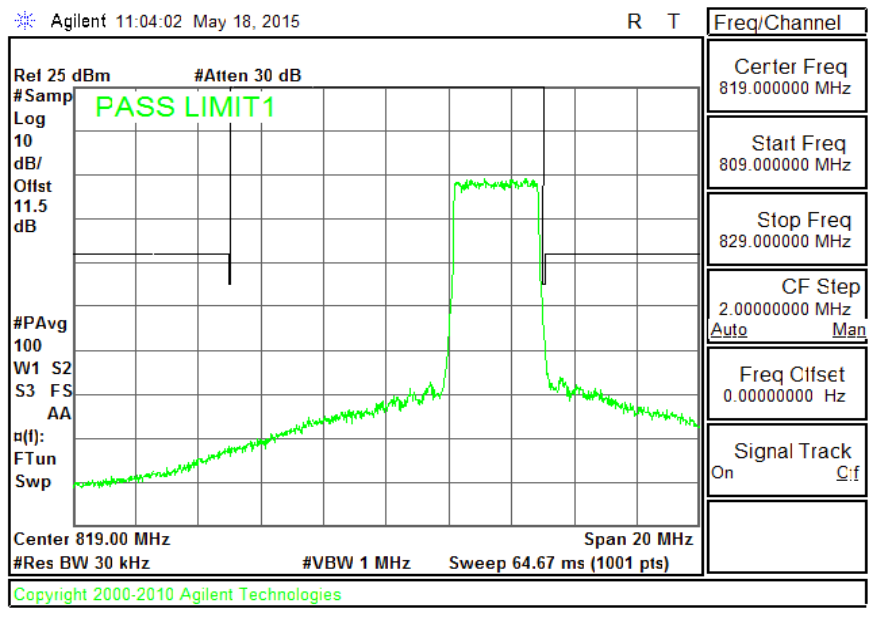
HIGH CH, RB8-4



HIGH CH, RB15-0



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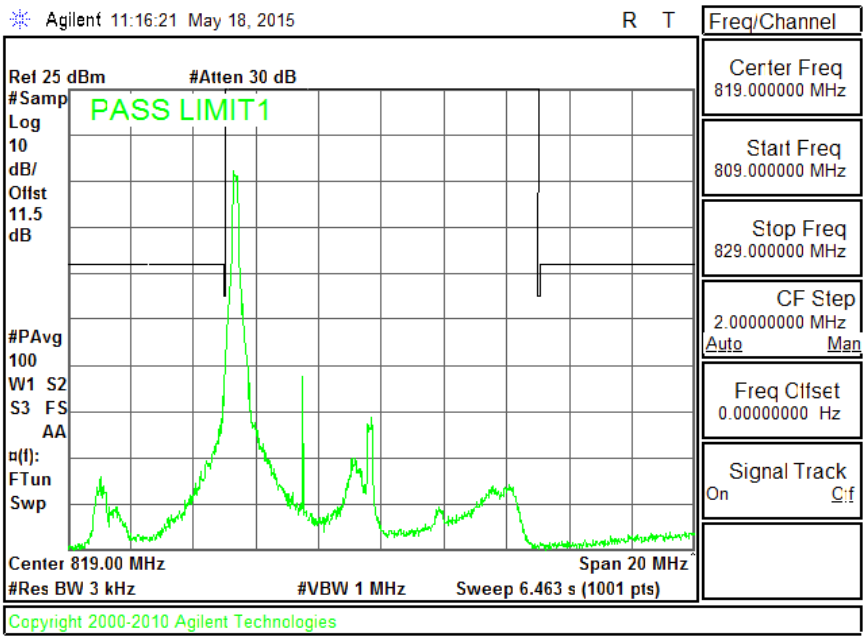
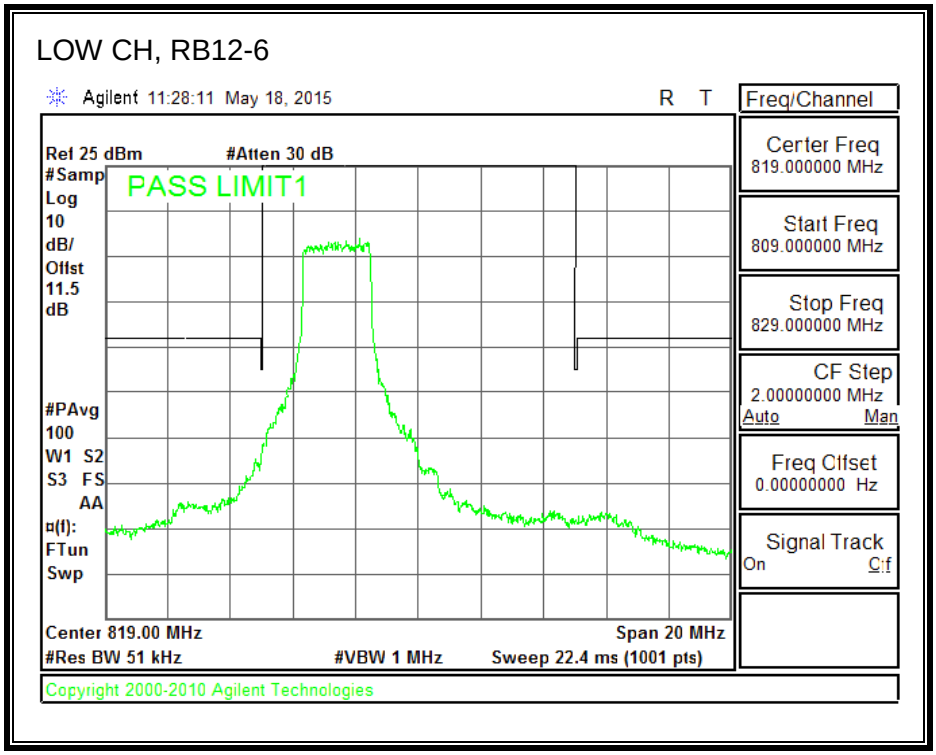
QPSK, (5.0 MHz BAND WIDTH)

LOW CH, RB1-0



LOW CH, RB12-6



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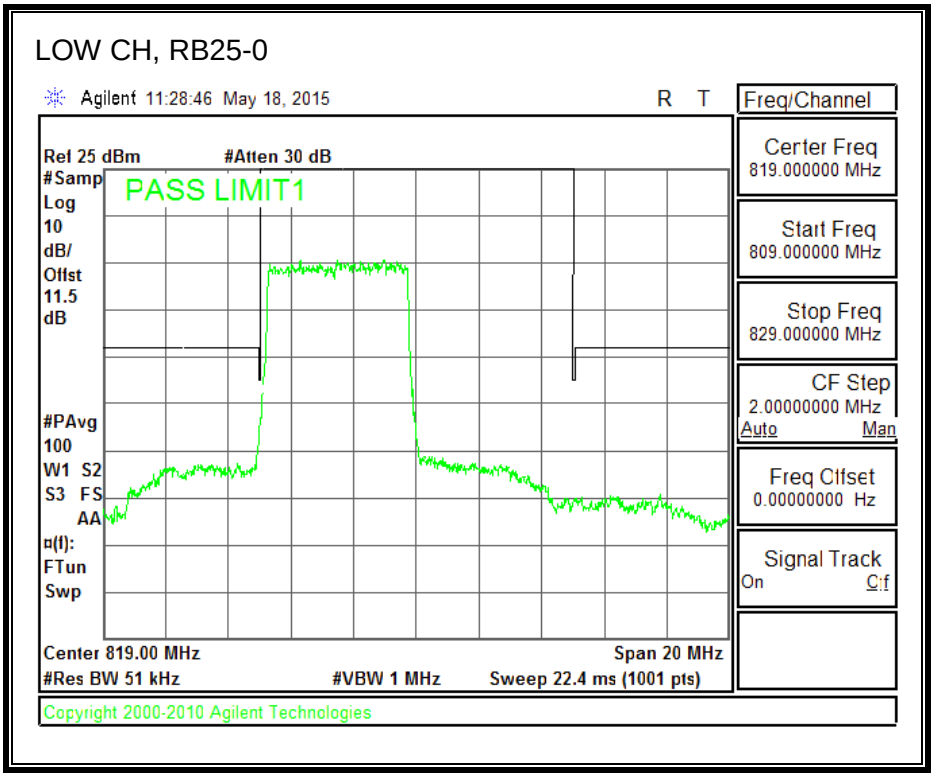
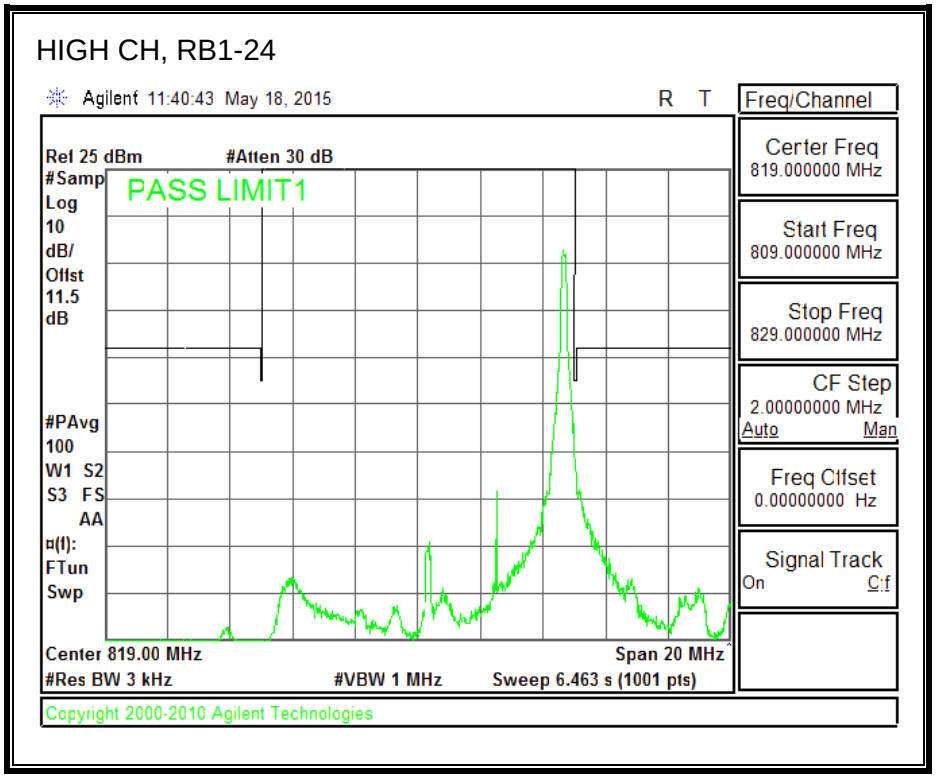
LOW CH, RB25-0



HIGH CH, RB1-24



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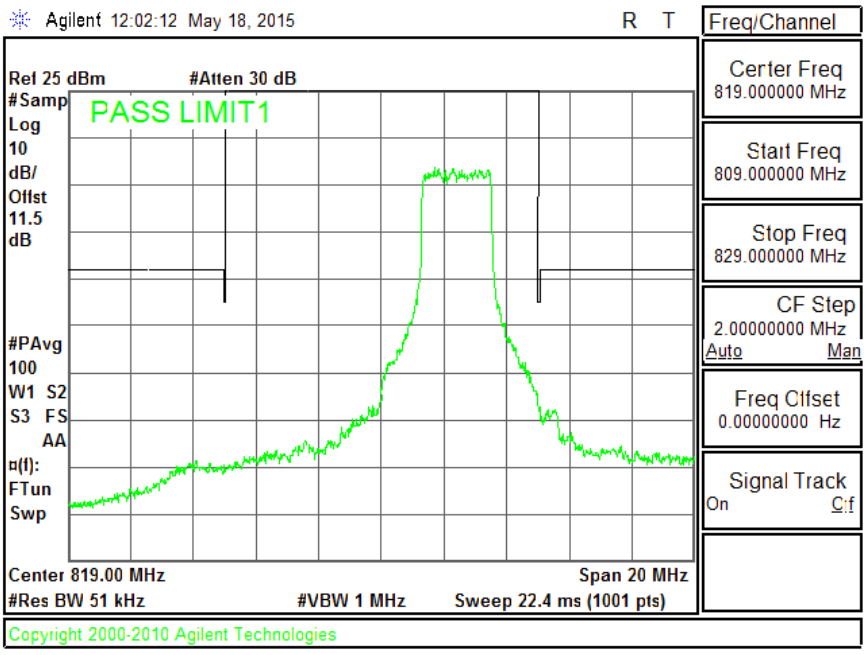
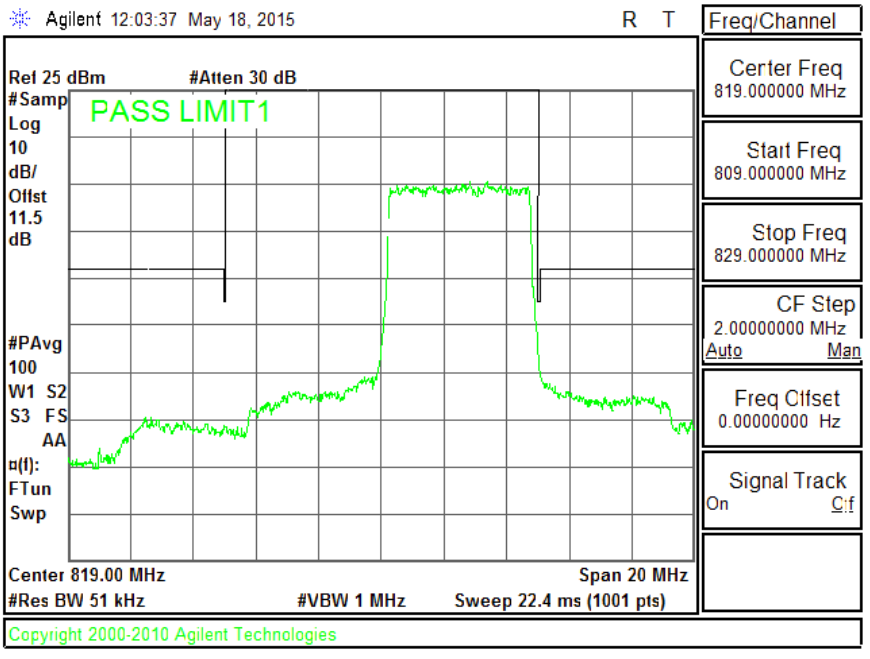
HIGH CH, RB12-6



HIGH CH, RB25-0



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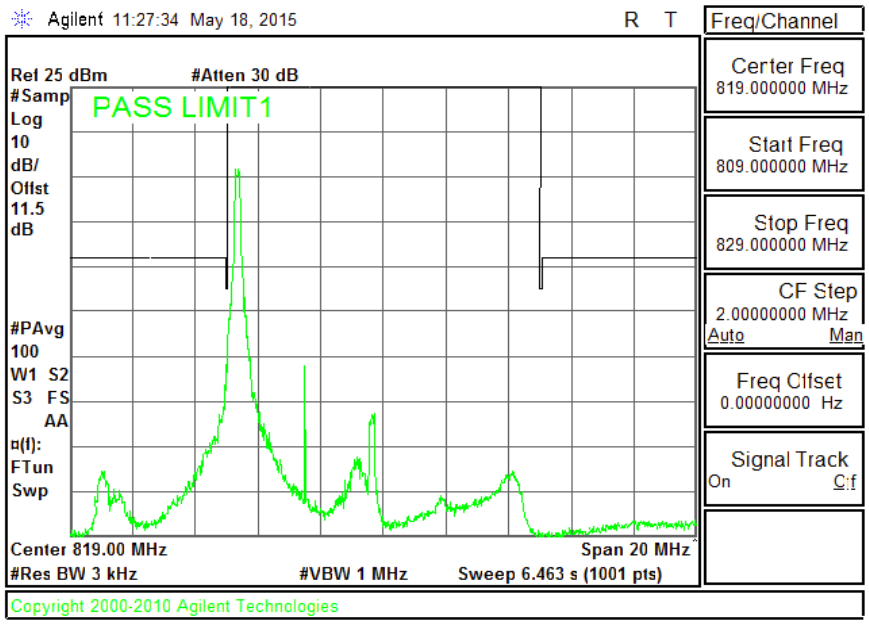
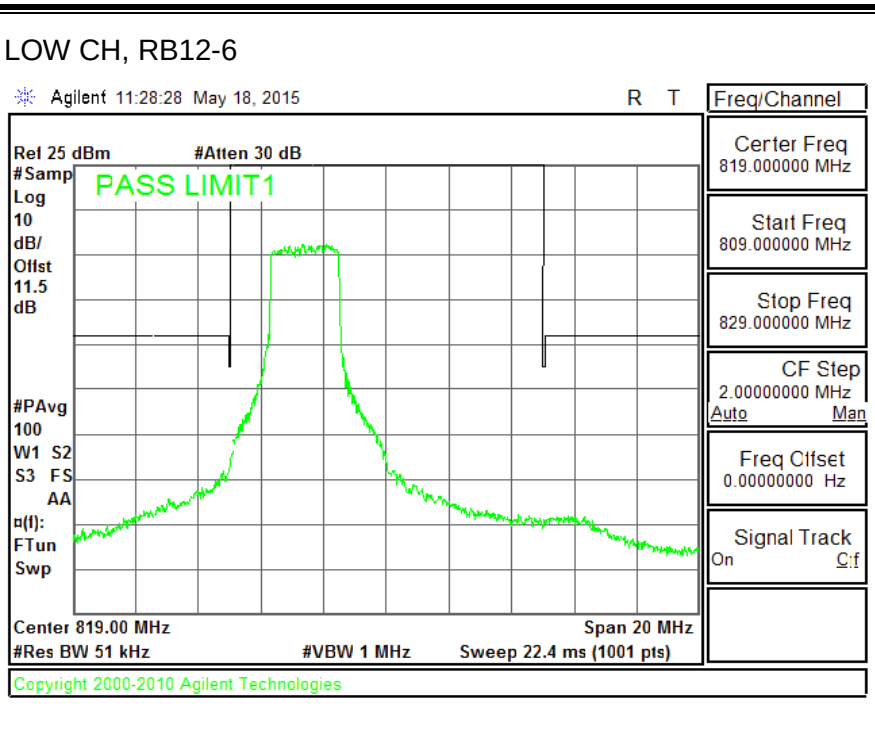
16QAM, (5.0 MHz BAND WIDTH)

LOW CH, RB1-0



LOW CH, RB12-6



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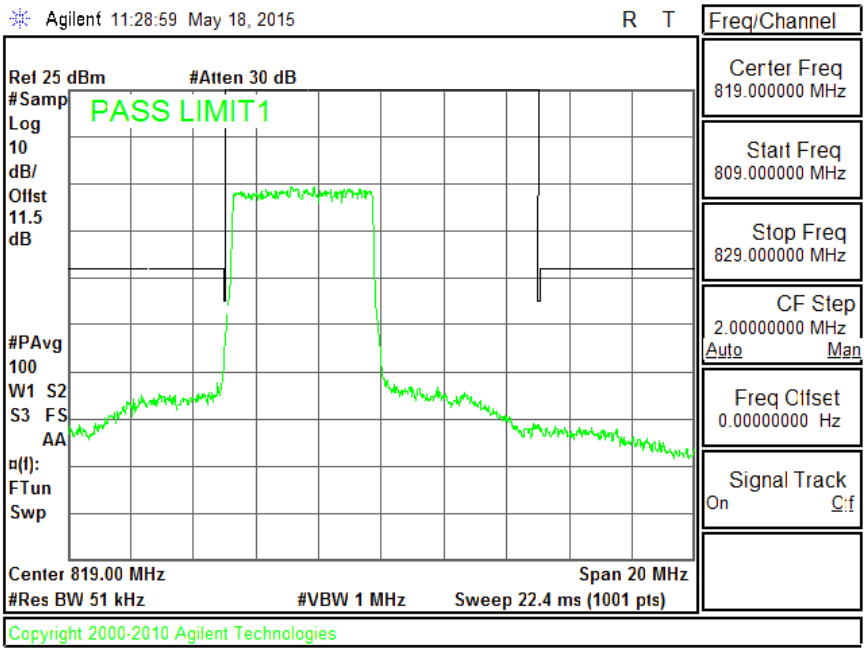
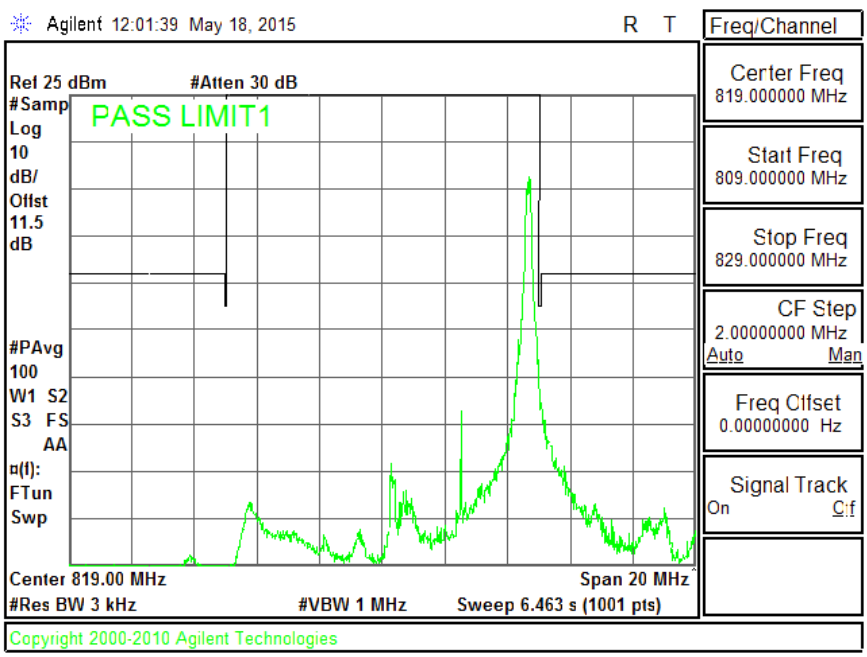
LOW CH, RB25-0



HIGH CH, RB1-24



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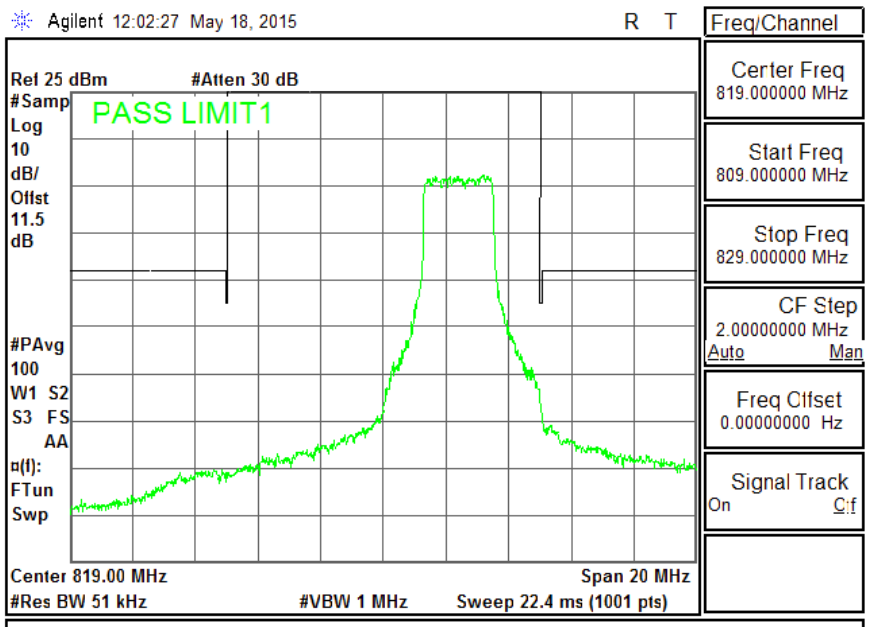
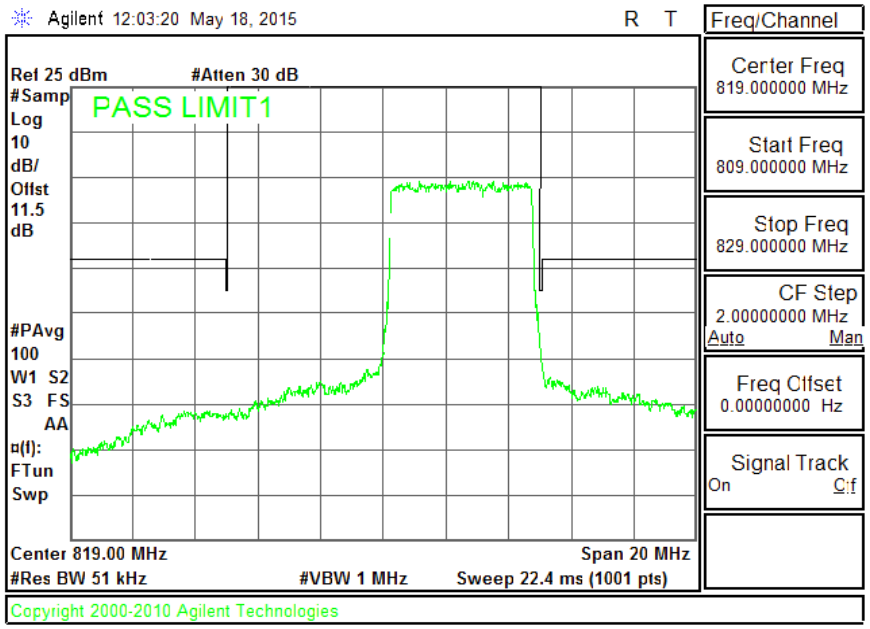
HIGH CH, RB12-6



HIGH CH, RB25-0



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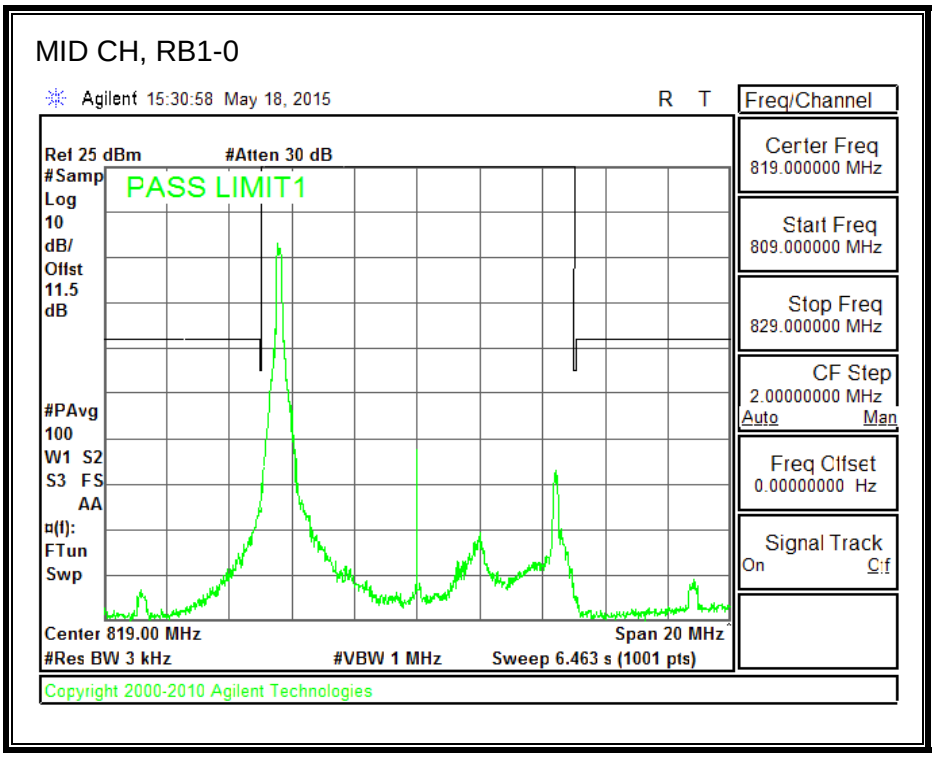
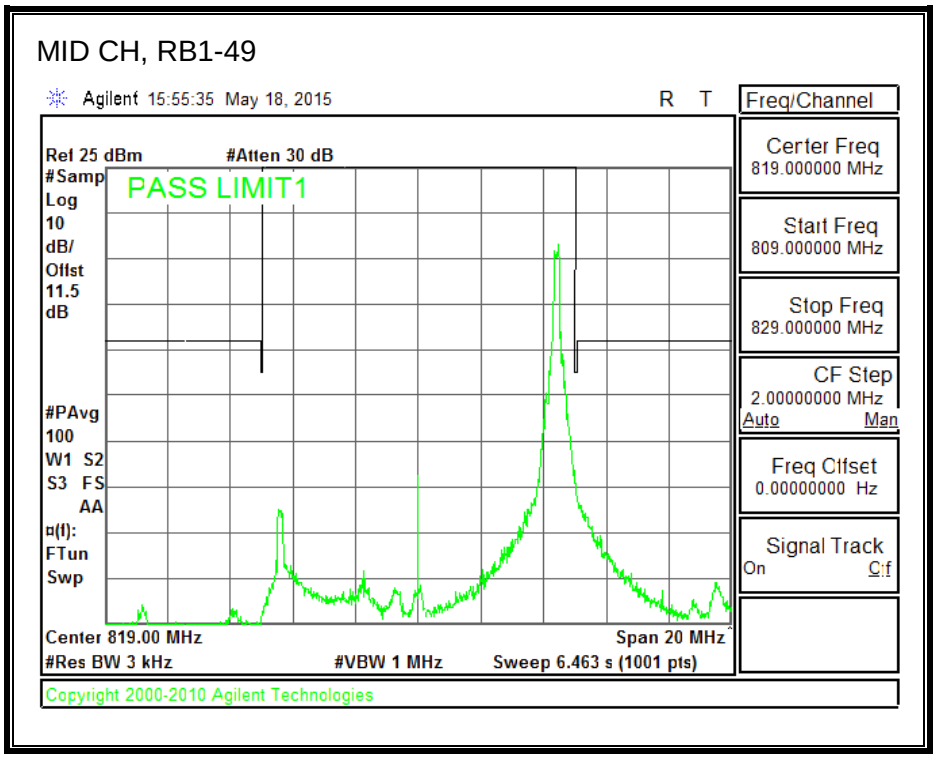
QPSK, (10.0 MHz BAND WIDTH)

MID CH, RB1-0



MID CH, RB1-49



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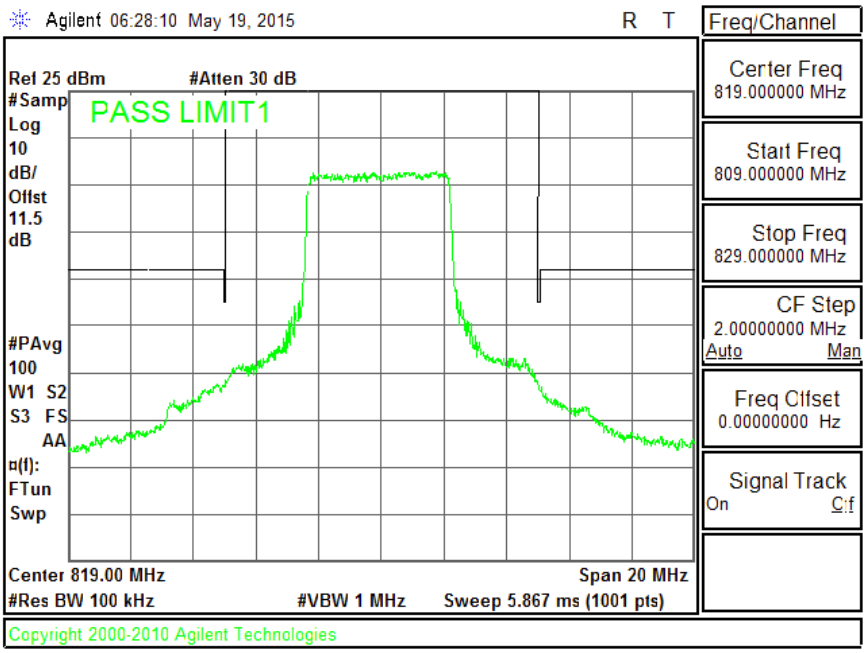
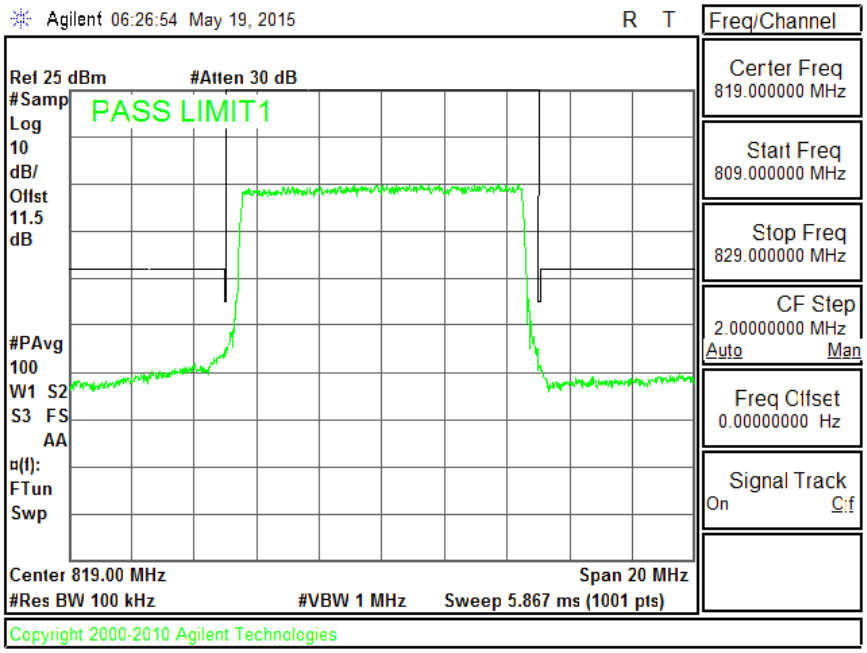
MID CH, RB25-12



MID CH, RB50-0



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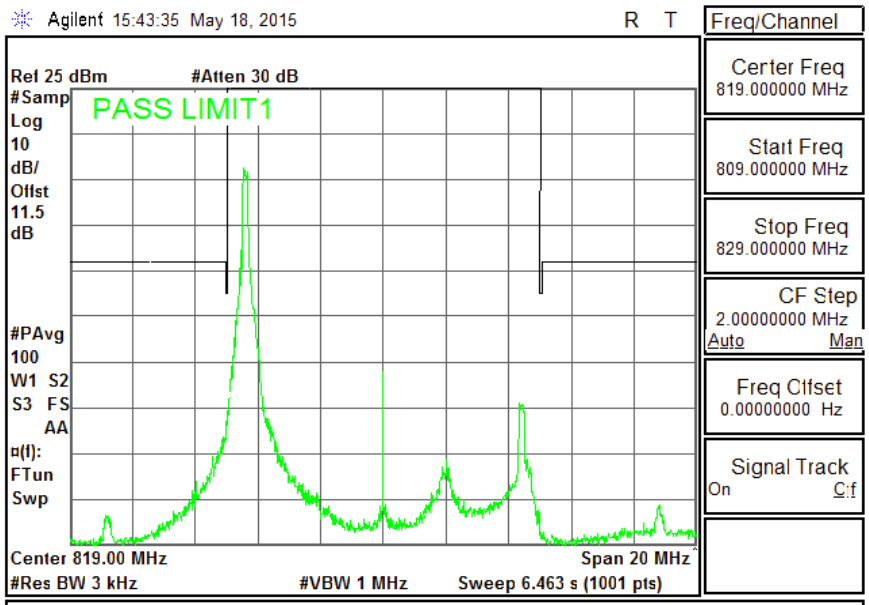
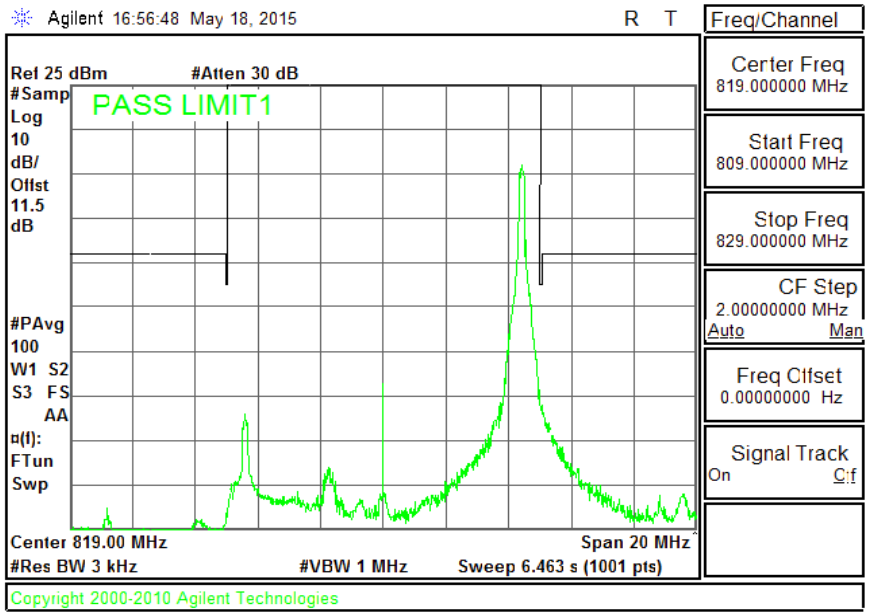
16QAM, (10.0 MHz BAND WIDTH)

MID CH, RB1-0



MID CH, RB1-49



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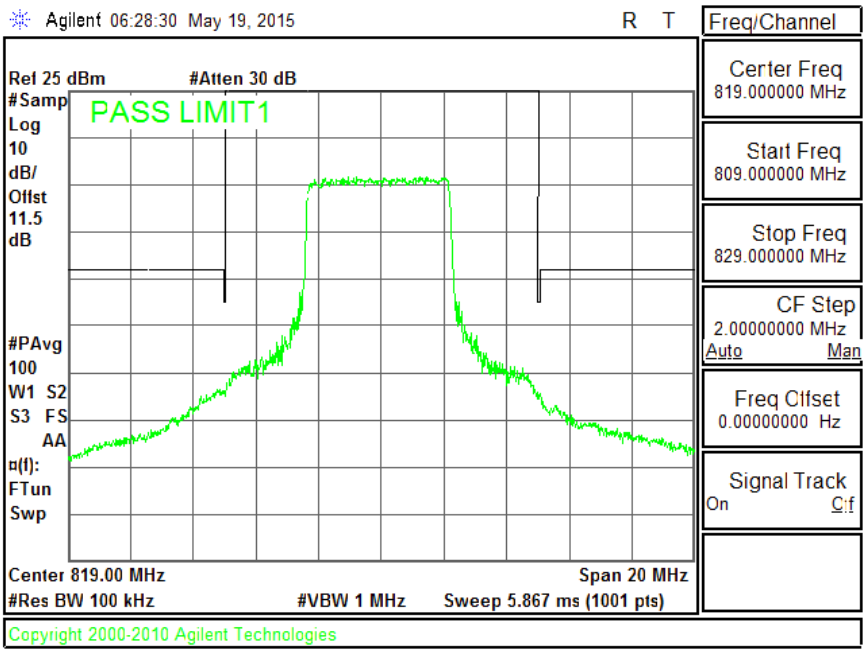
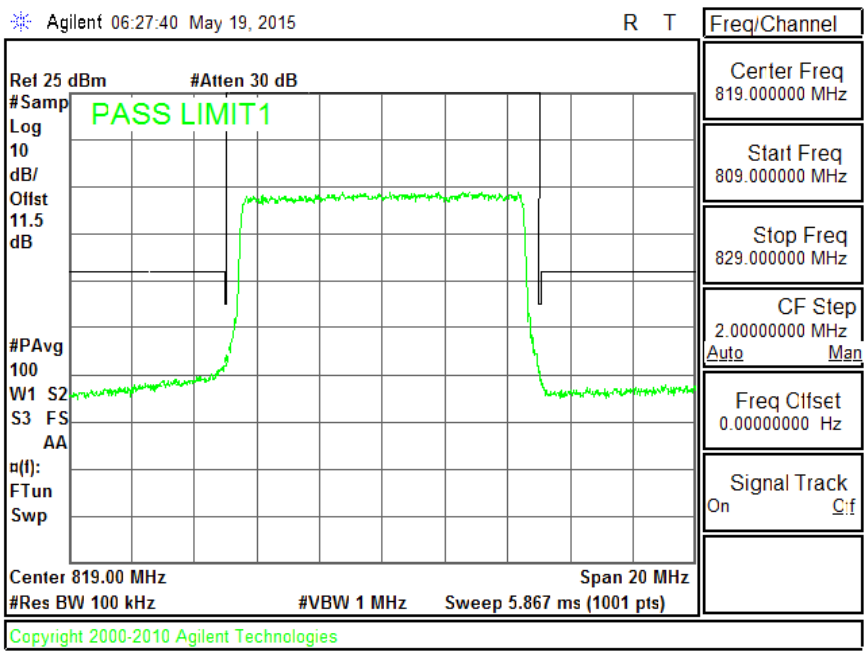
MID CH, RB25-12



MID CH, RB50-0



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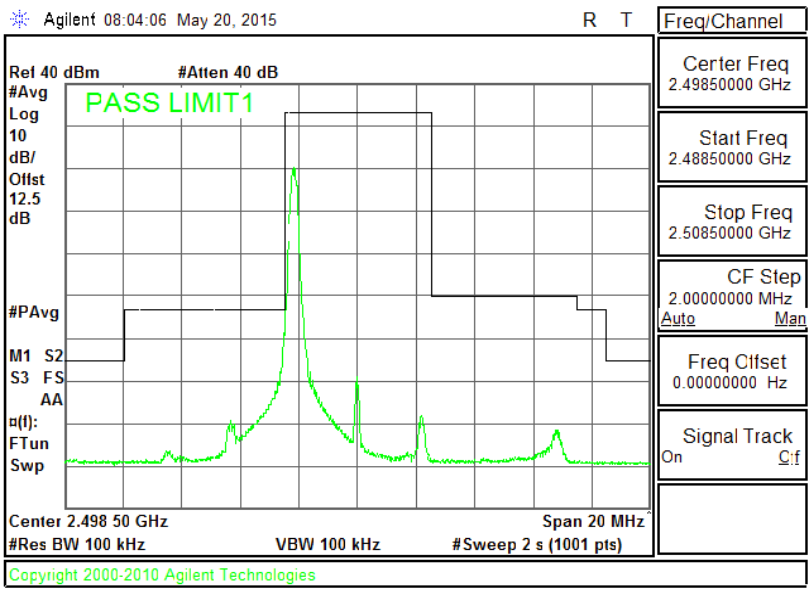
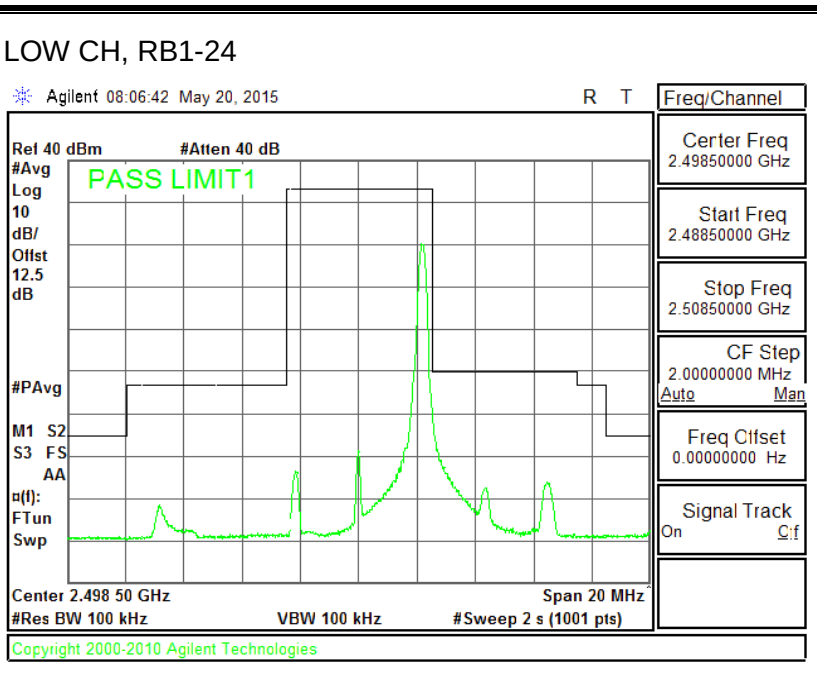
8.4.10. LTE BAND 41 EMISSION MASK

QPSK, (5.0 MHz BAND WIDTH)

LOW CH, RB1-0



LOW CH, RB1-24



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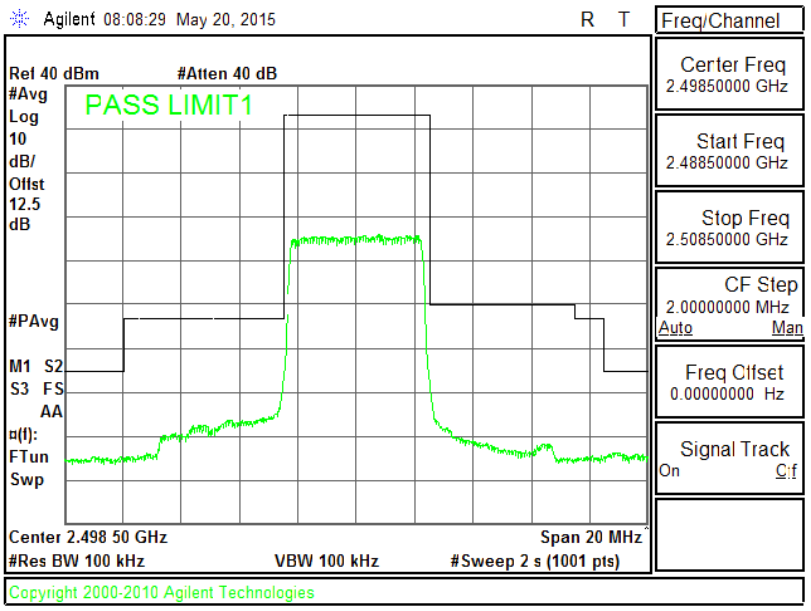
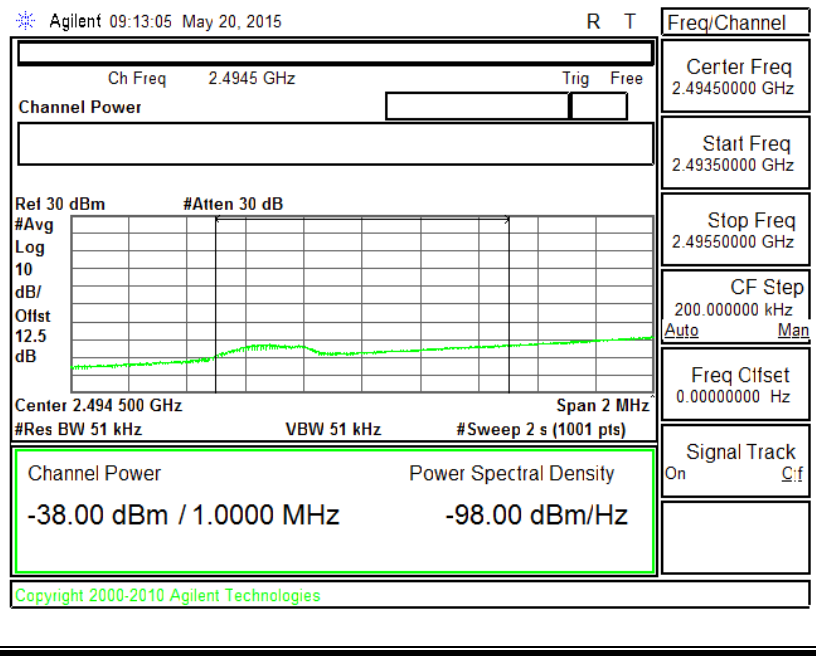
LOW CH, RB25-0



LOW CH, LOW SIDE, (RB=VB= 1%EBW, 2494–2495MHz)



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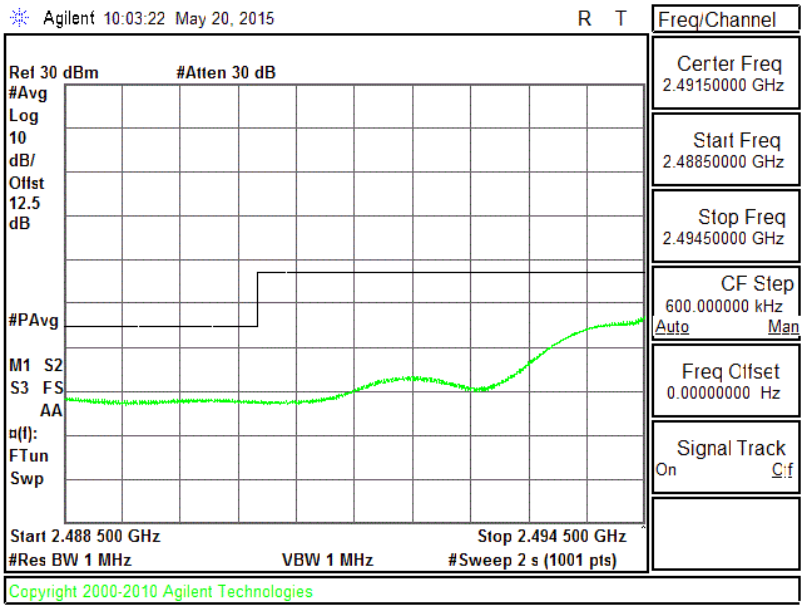
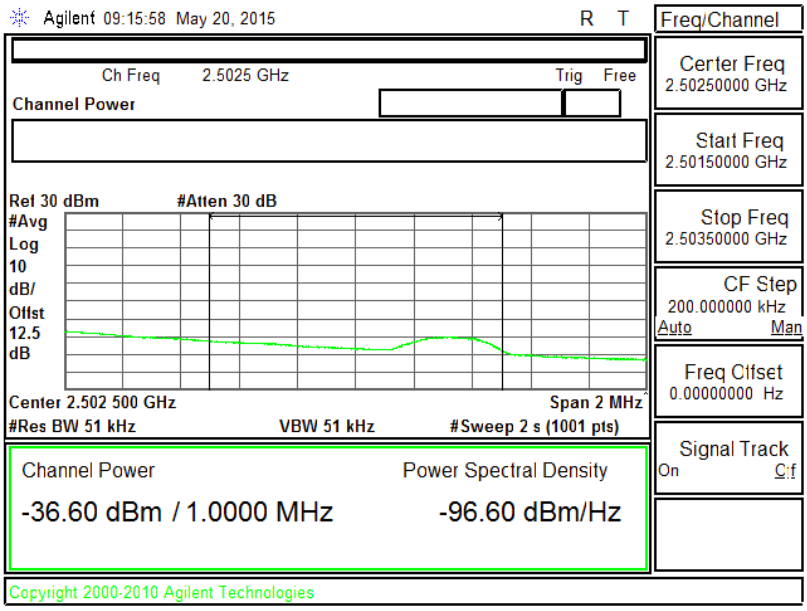
LOW CH, LOW SIDE, (RB=VB= 1MHz, 2488.5-2494.5MHz)



LOW CH, HIGH SIDE, (RB=VB= 1%EBW, 2502–2503MHz)



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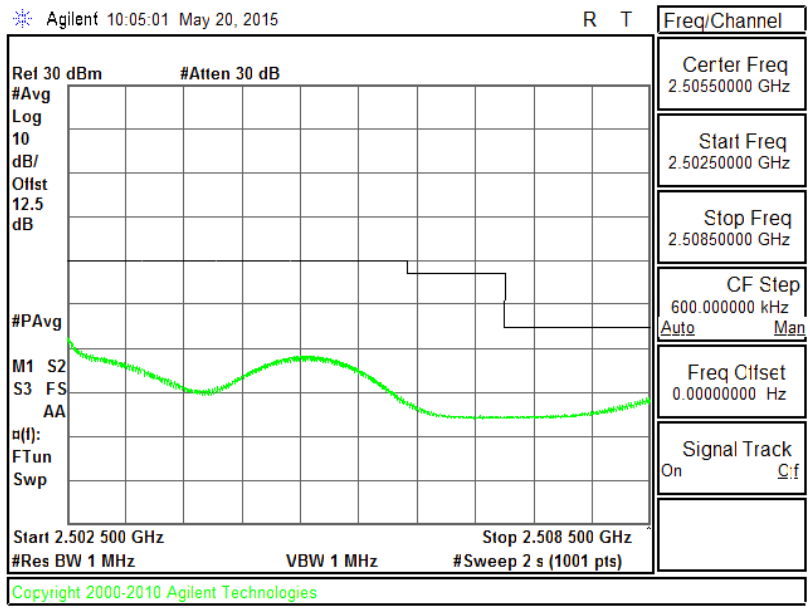
LOW CH, HIGH SIDE, (RB=VB= 1MHz, 2502.5–2508.5MHz)



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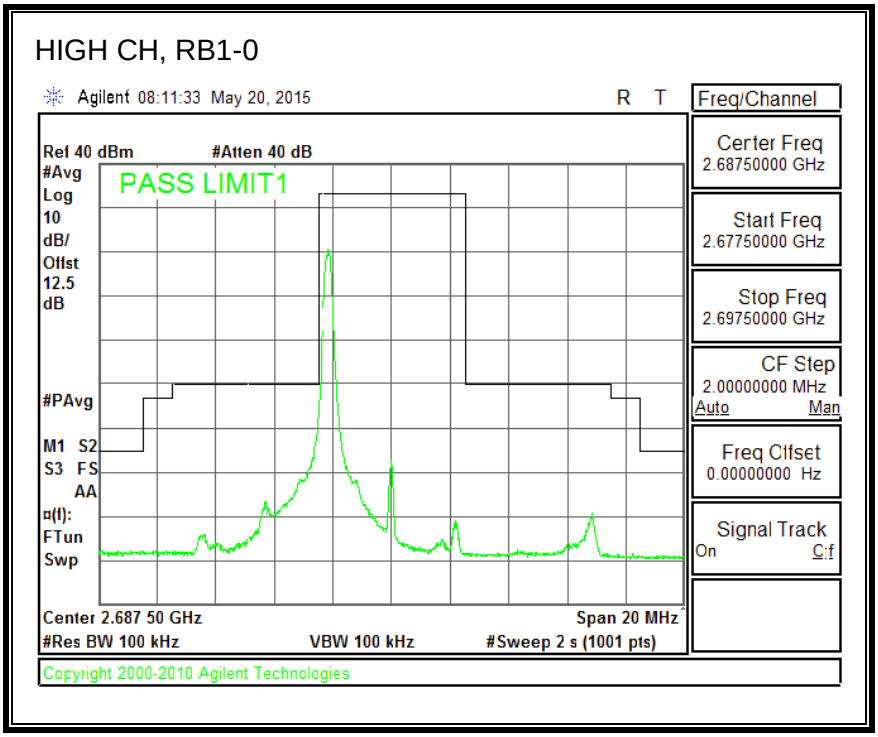
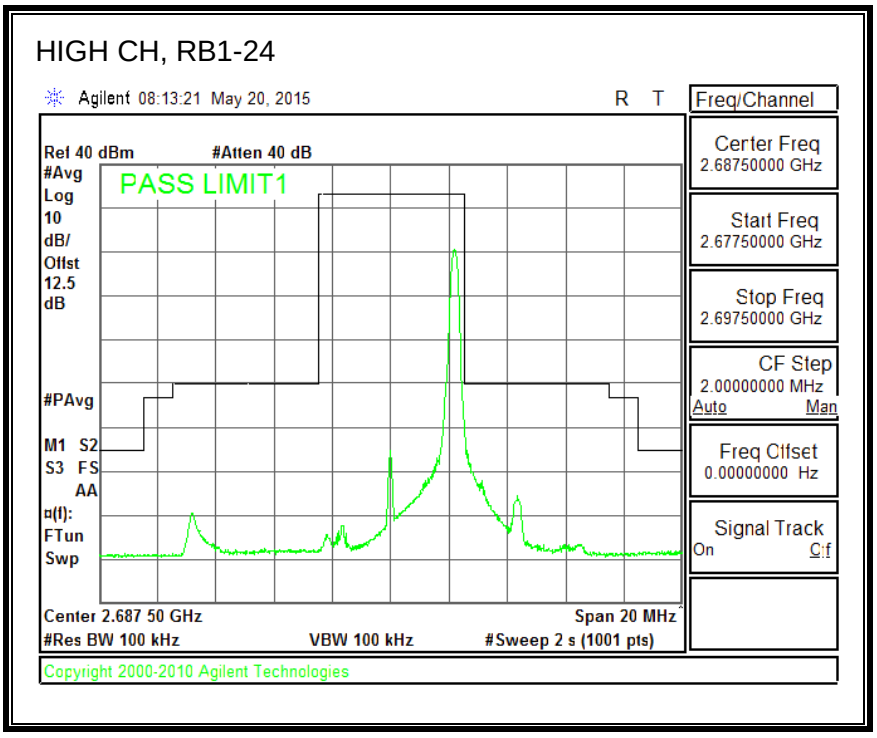
HIGH CH, RB1-0



HIGH CH, RB1-24



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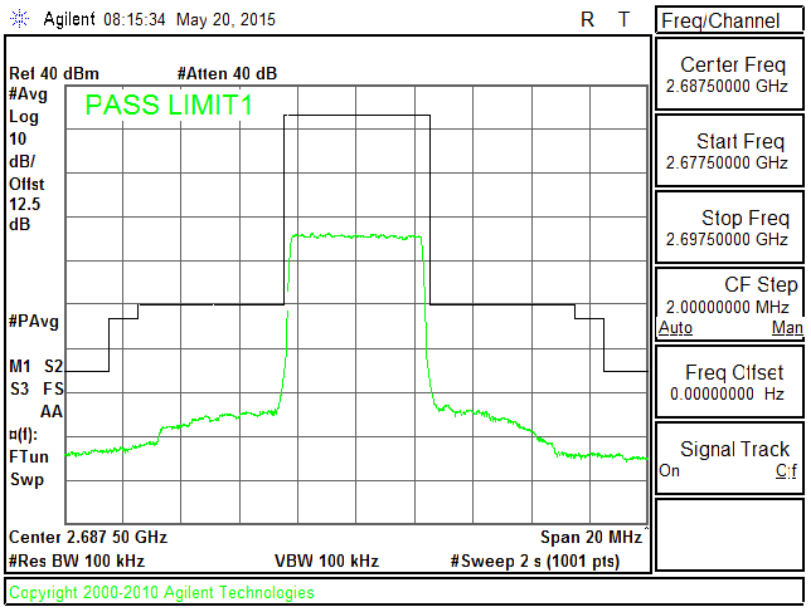
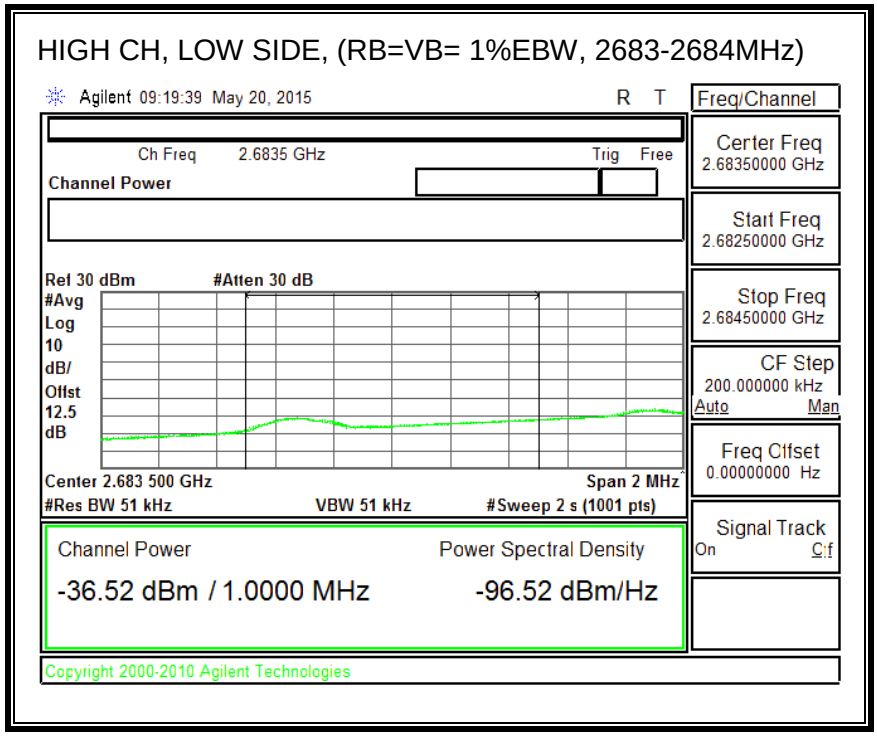
HIGH CH, RB25-0



HIGH CH, LOW SIDE, (RB=VB= 1%EBW, 2683-2684MHz)



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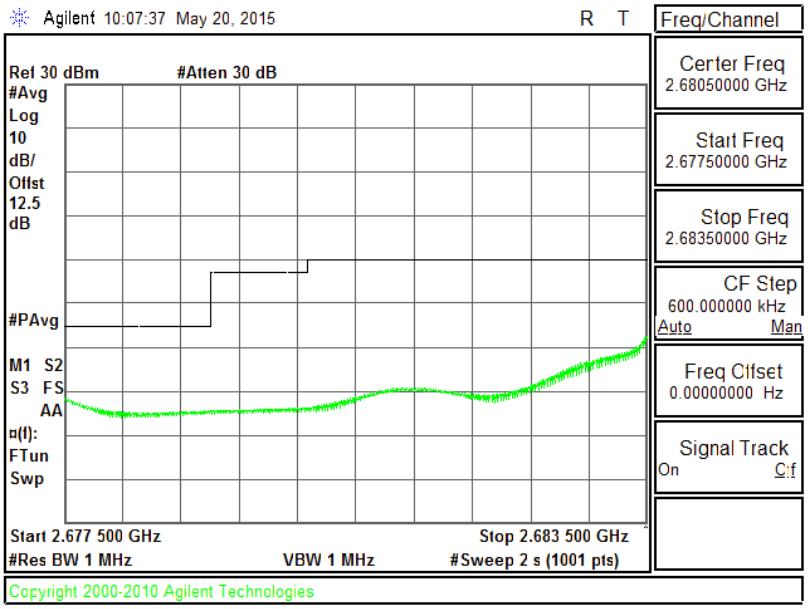
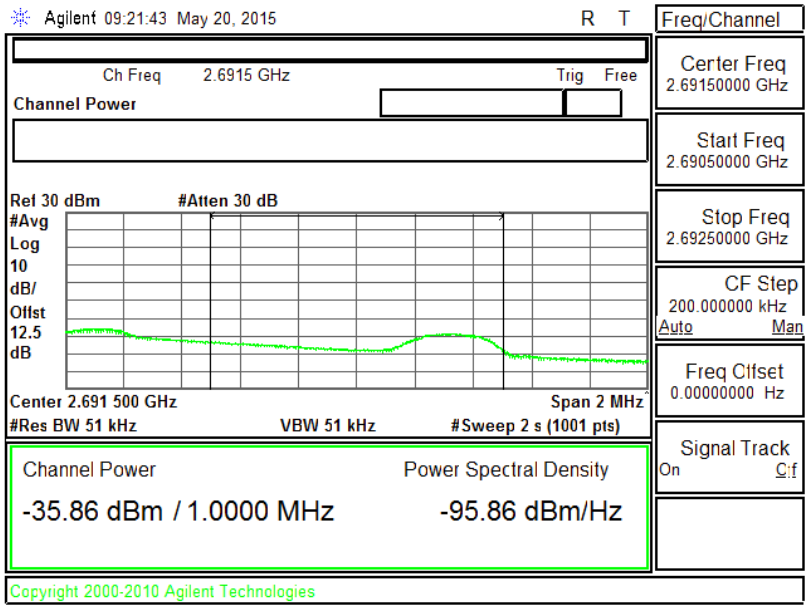
HIGH CH, LOW SIDE, (RB=VB= 1MHz, 2677.5-2683.5MHz)



HIGH CH, HIGH SIDE, (RB=VB= 1%EBW, 2691-2692MHz)



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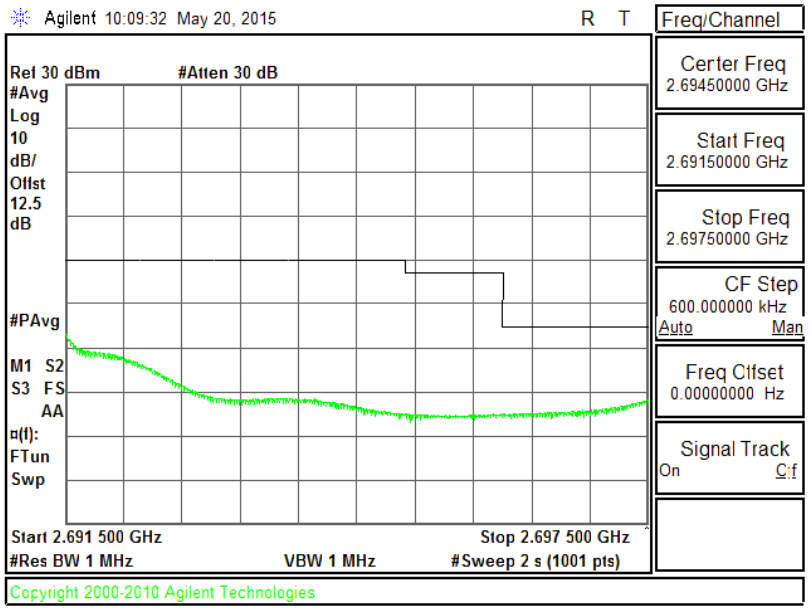
HIGH CH, HIGH SIDE, (RB=VB= 1MHz, 2691.5–2697.5MHz)



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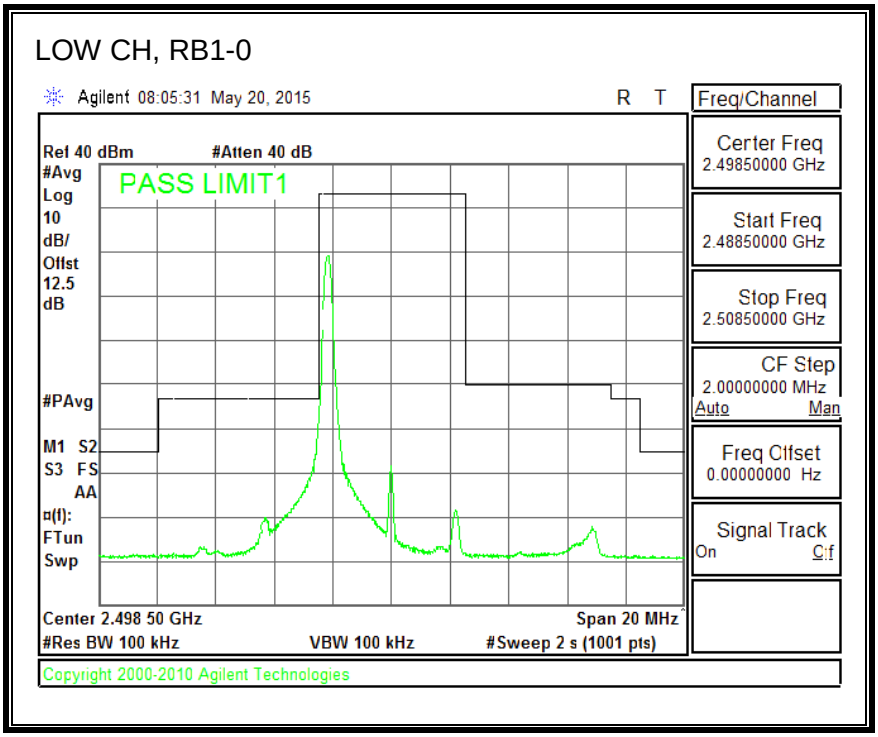
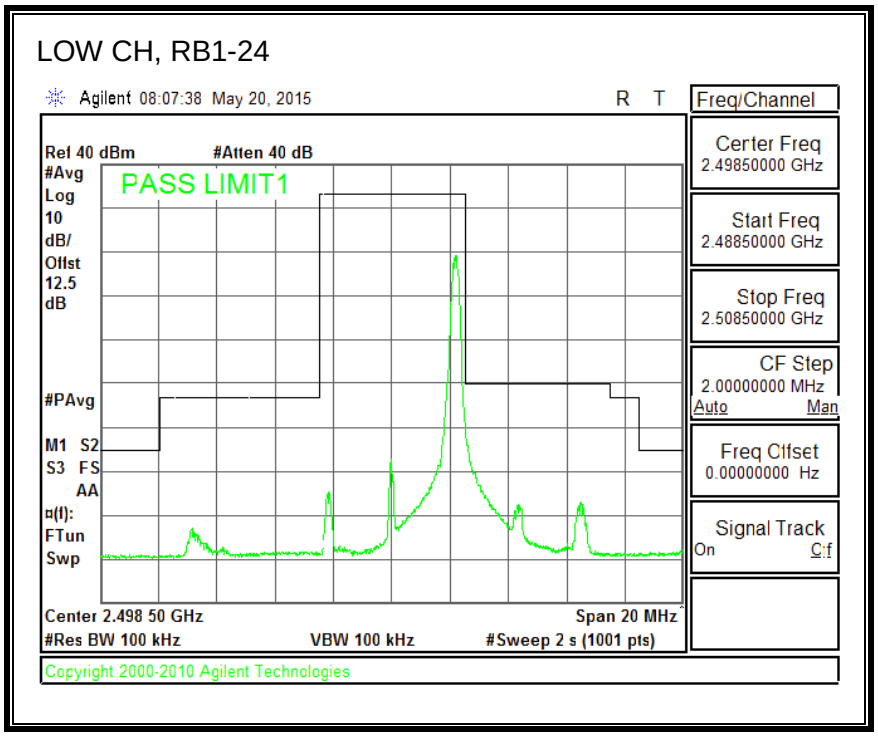
16QAM, (5.0 MHz BAND WIDTH)

LOW CH, RB1-0



LOW CH, RB1-24



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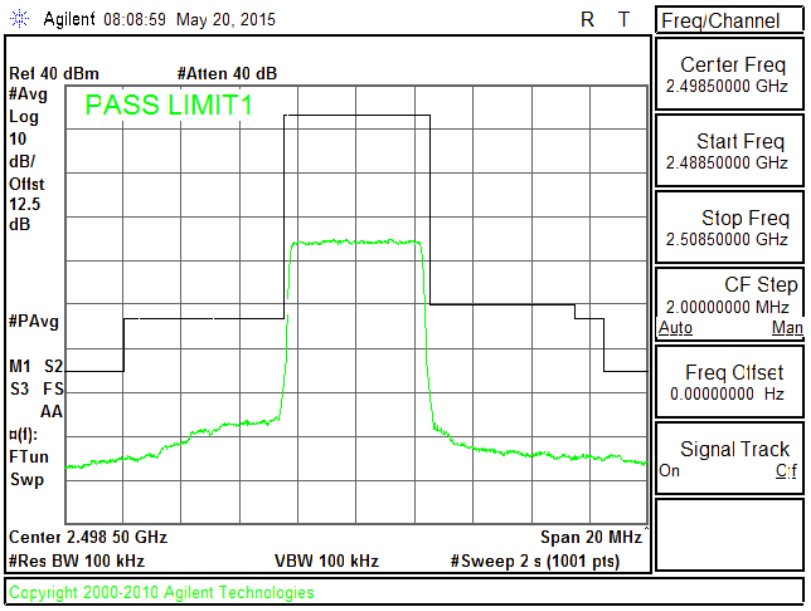
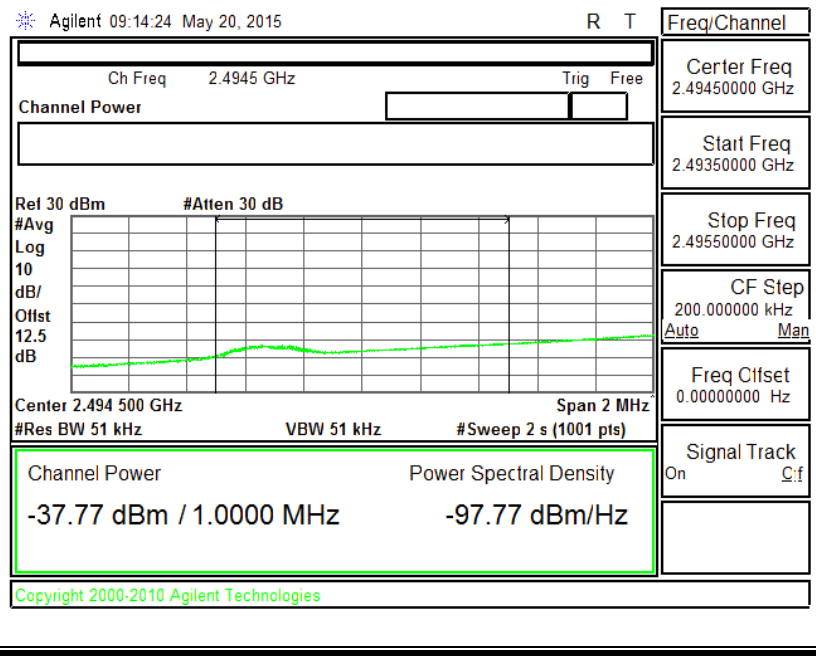
LOW CH, RB25-0



LOW CH, LOW SIDE, (RB=VB= 1%EBW, 2494–2495MHz)



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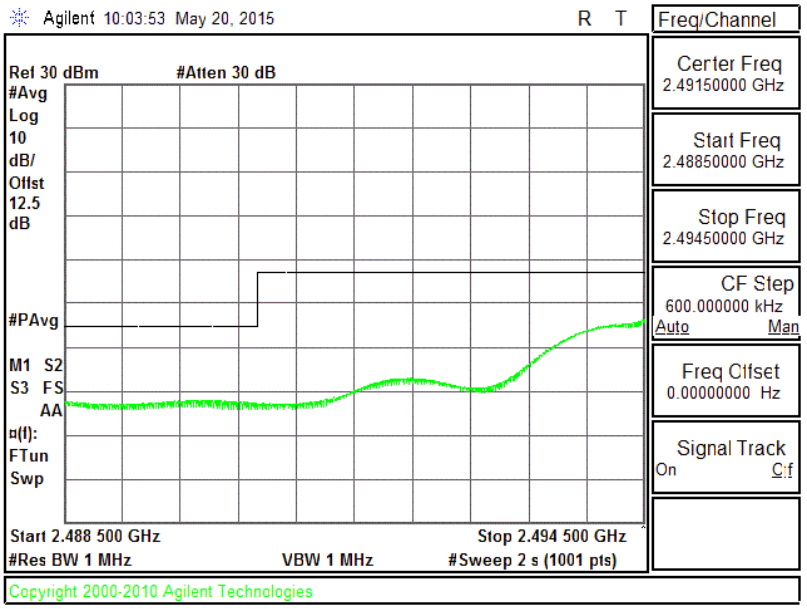
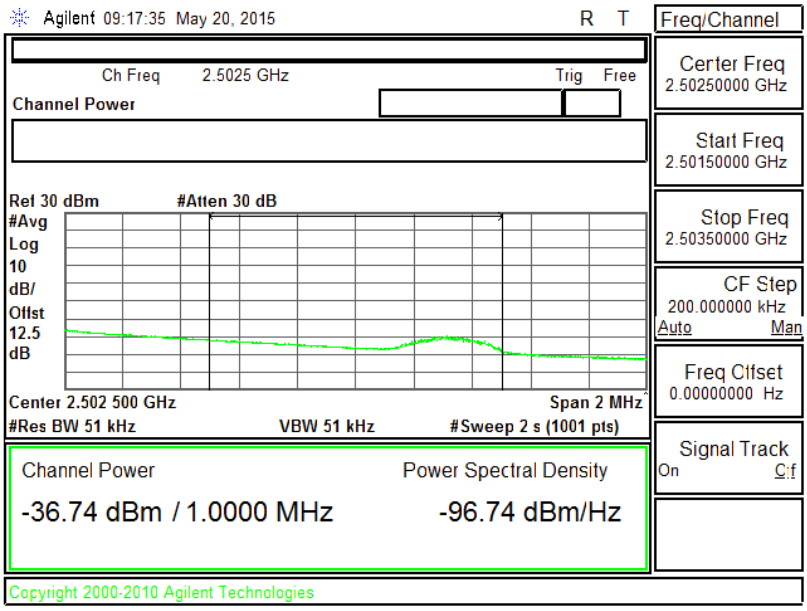
LOW CH, LOW SIDE, (RB=VB= 1MHz, 2488.5-2494.5MHz)



LOW CH, HIGH SIDE, (RB=VB= 1%EBW, 2502–2503MHz)



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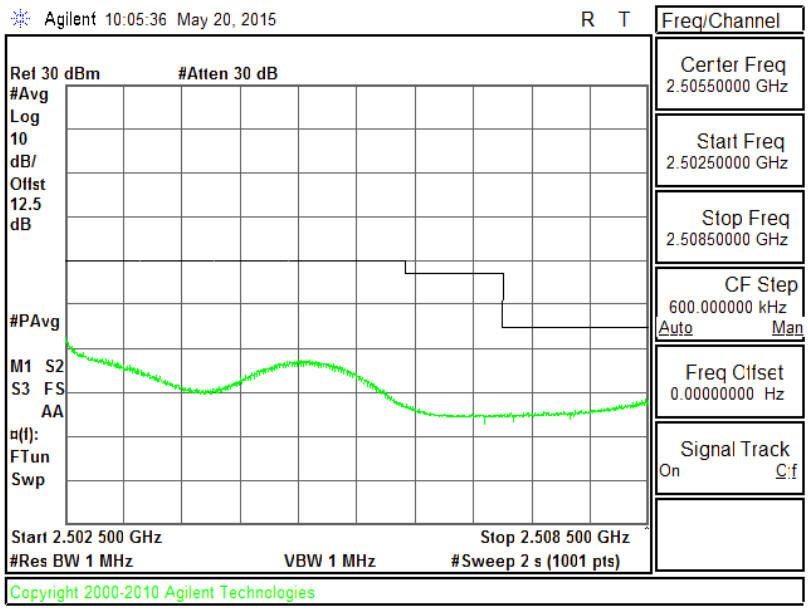
LOW CH, HIGH SIDE, (RB=VB= 1MHz, 2502.5-2508.5MHz)



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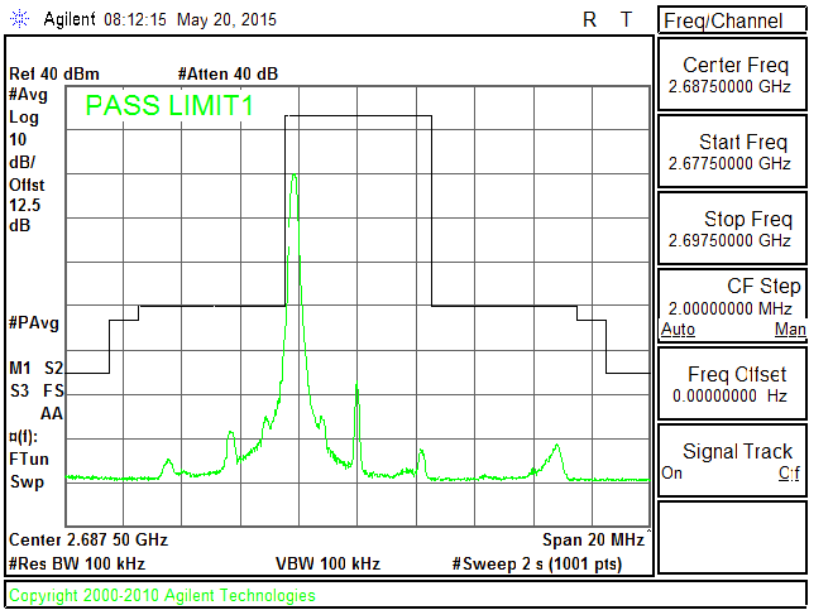
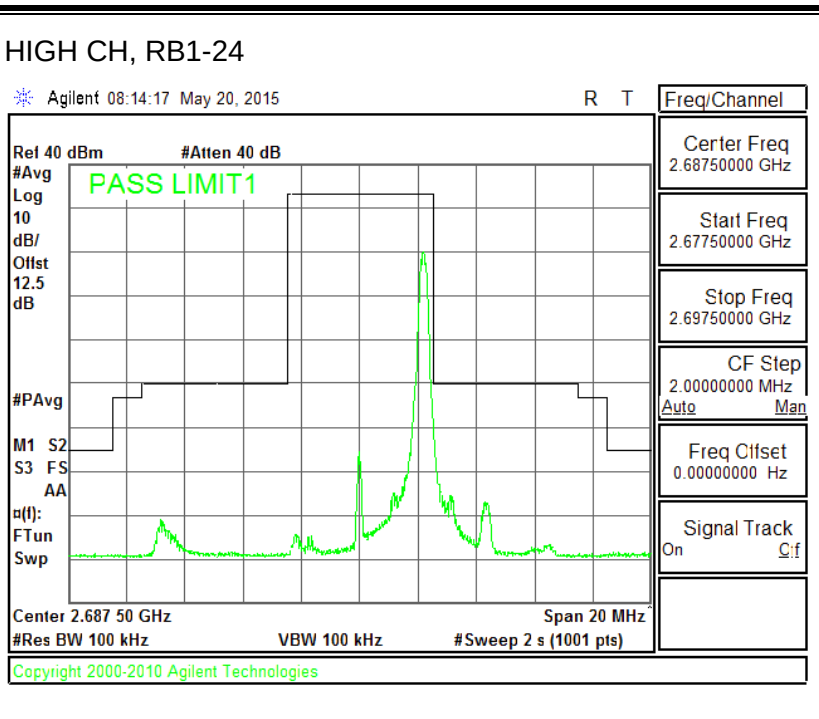
HIGH CH, RB1-0



HIGH CH, RB1-24



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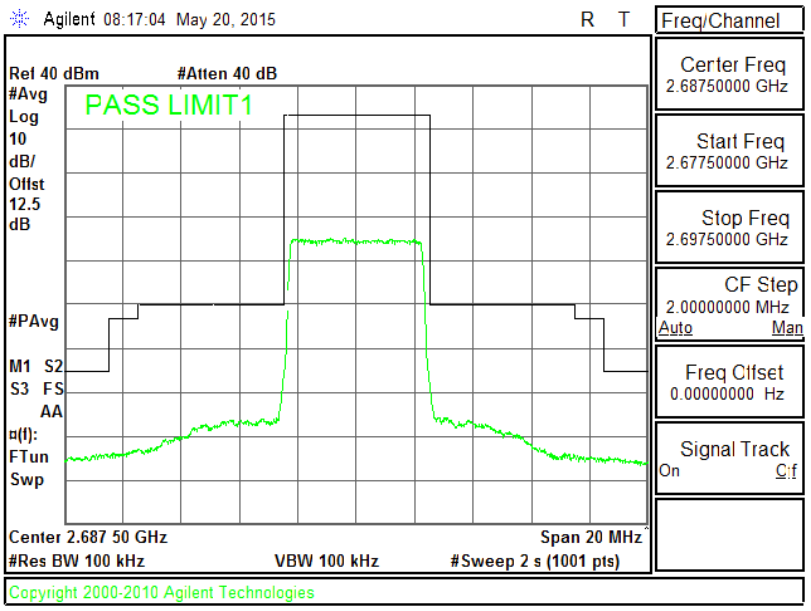
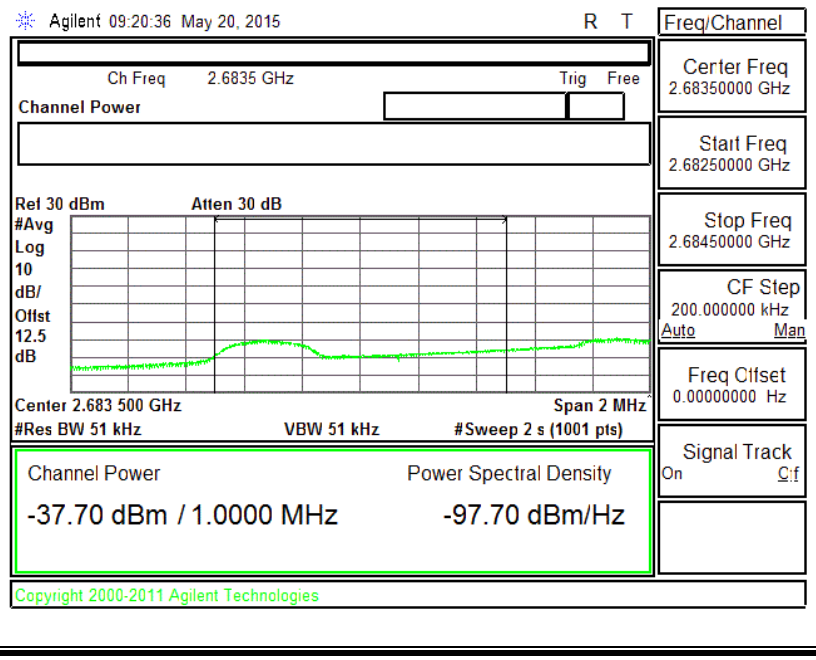
HIGH CH, RB25-0



HIGH CH, LOW SIDE, (RB=VB= 1%EBW, 2683-2684MHz)



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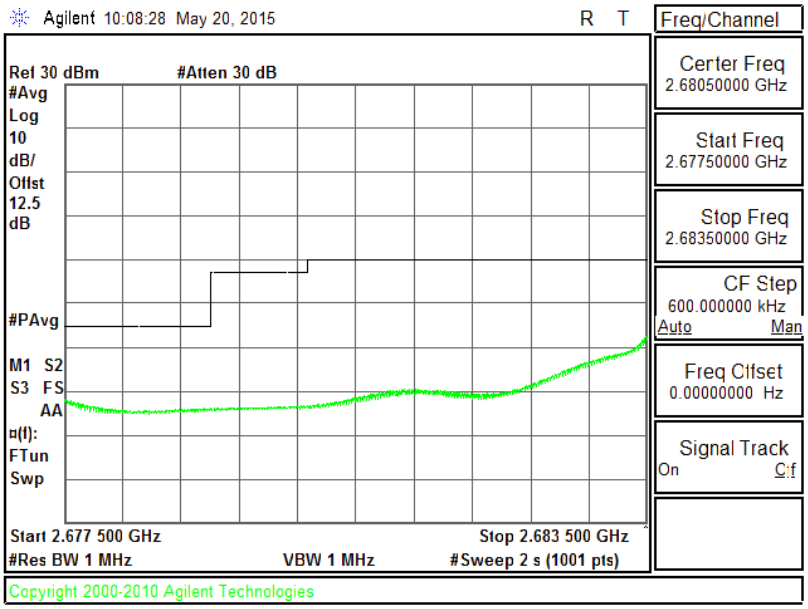
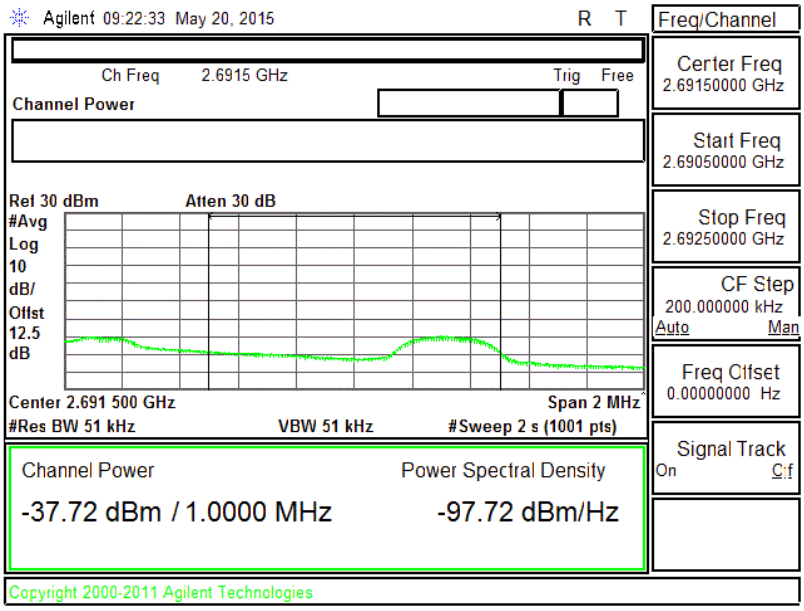
HIGH CH, LOW SIDE, (RB=VB= 1MHz, 2677.5-2683.5MHz)



HIGH CH, HIGH SIDE, (RB=VB= 1%EBW, 2691-2692MHz)



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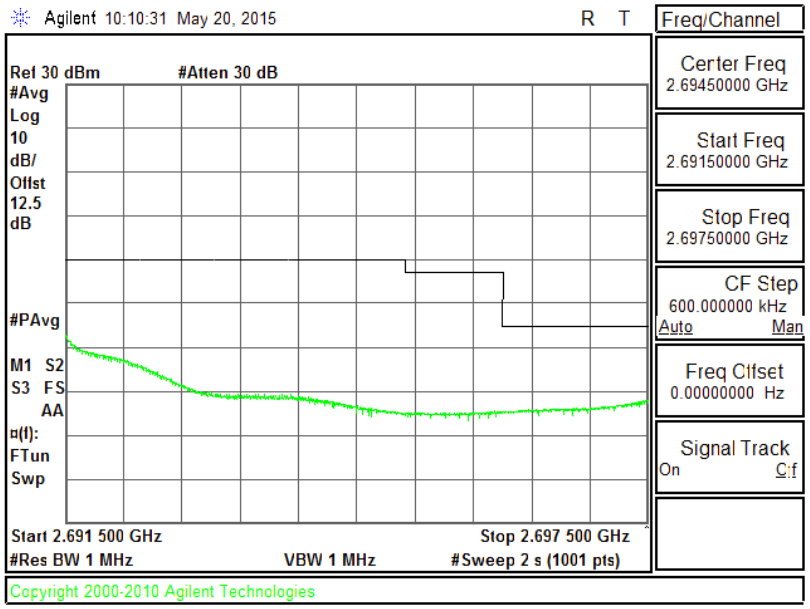
HIGH CH, HIGH SIDE, (RB=VB= 1MHz, 2691.5–2697.5MHz)



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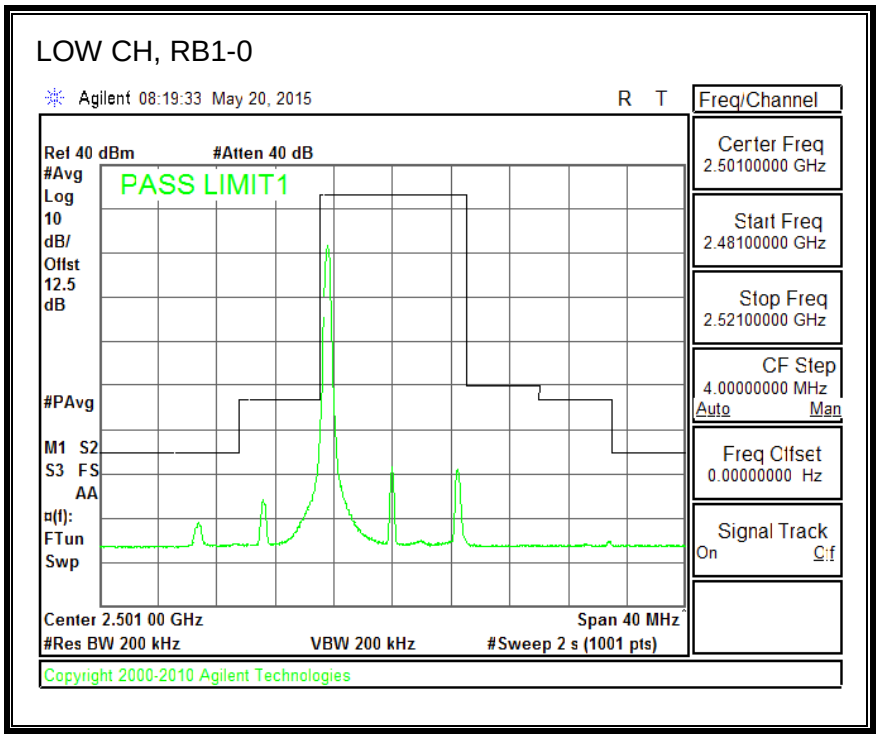
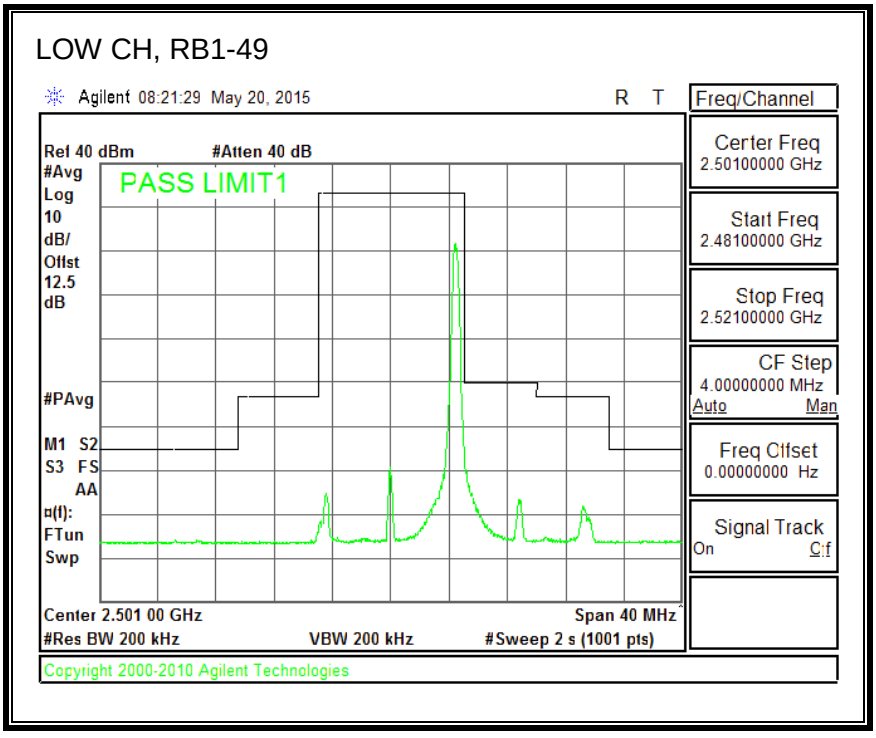
QPSK, (10.0 MHz BAND WIDTH)

LOW CH, RB1-0



LOW CH, RB1-49



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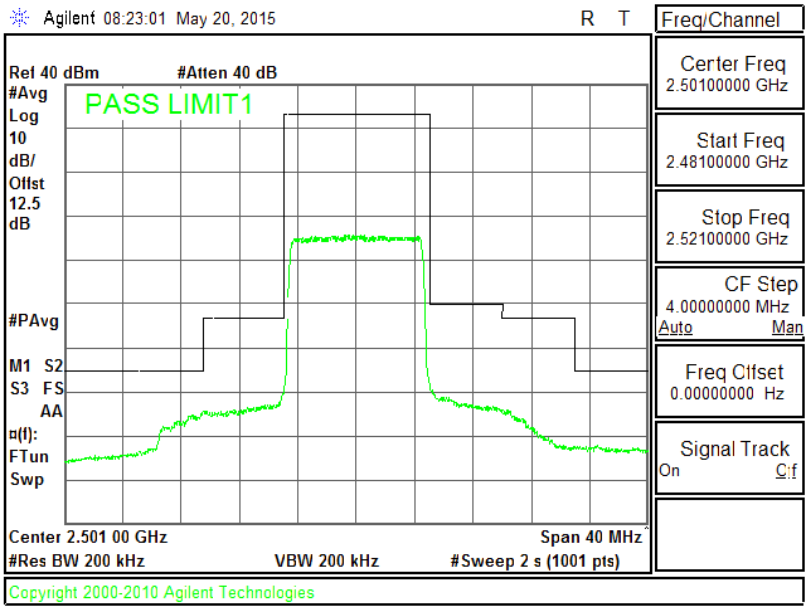
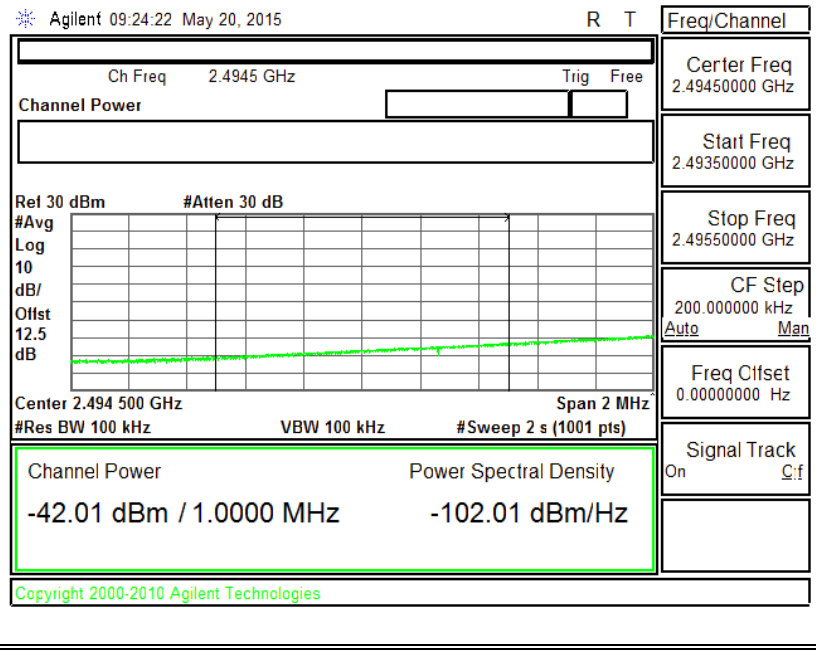
LOW CH, RB50-0



LOW CH, LOW SIDE, (RB=VB= 1%EBW, 2494–2495MHz)



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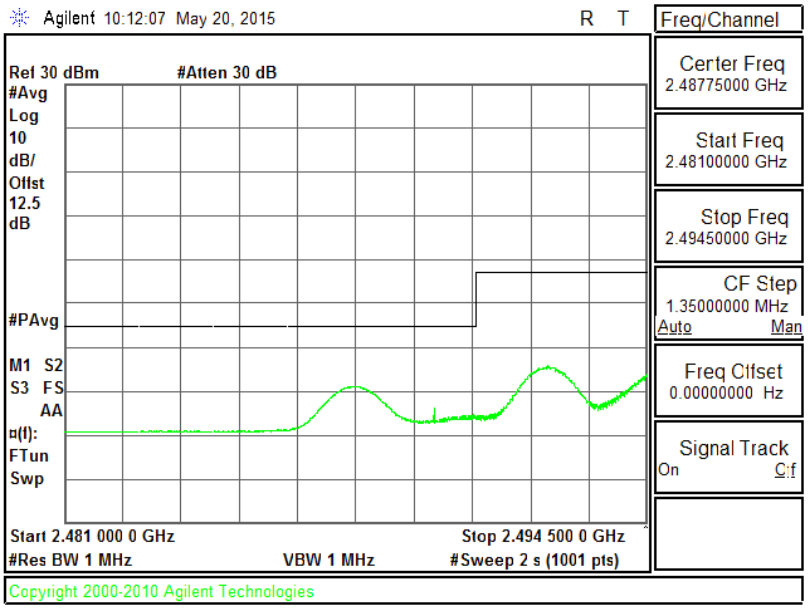
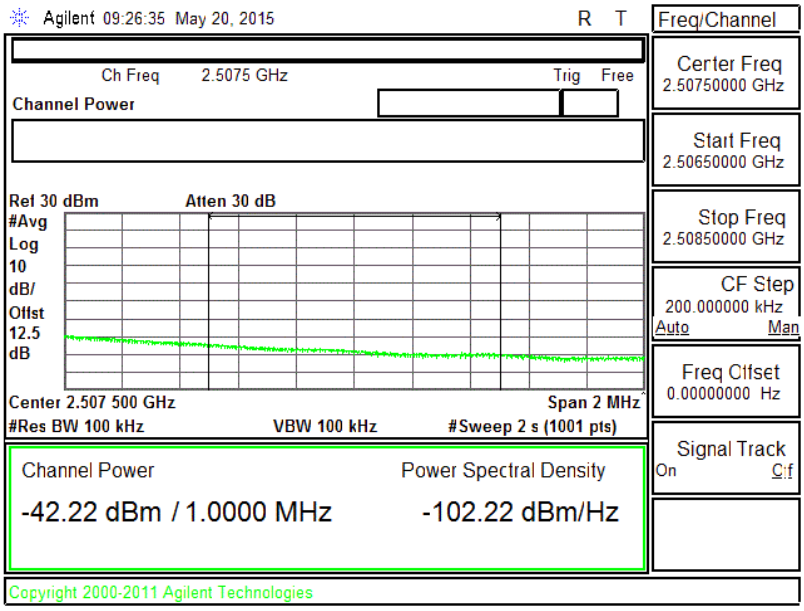
LOW CH, LOW SIDE, (RB=VB= 1MHz, 2481-2494.5MHz)



LOW CH, HIGH SIDE, (RB=VB= 1%EBW, 2507-2508MHz)



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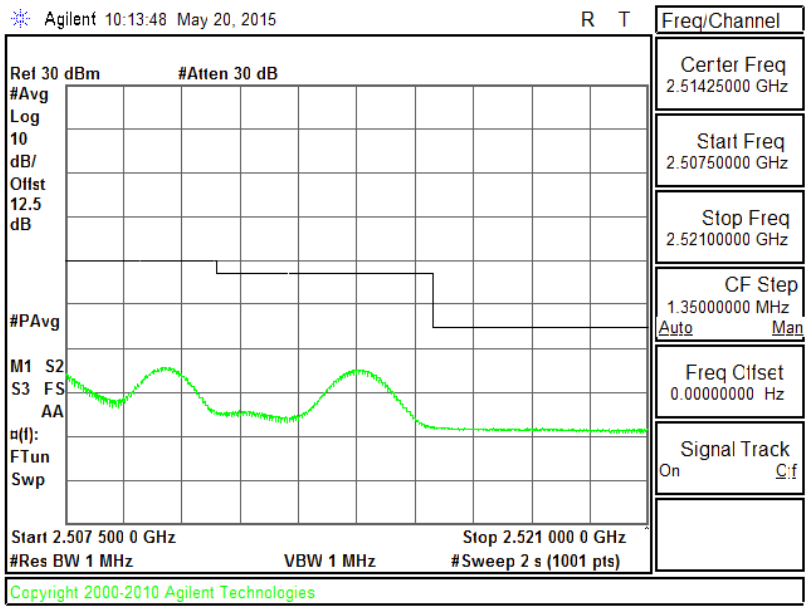
LOW CH, HIGH SIDE, (RB=VB= 1MHz, 2507.5-2521MHz)



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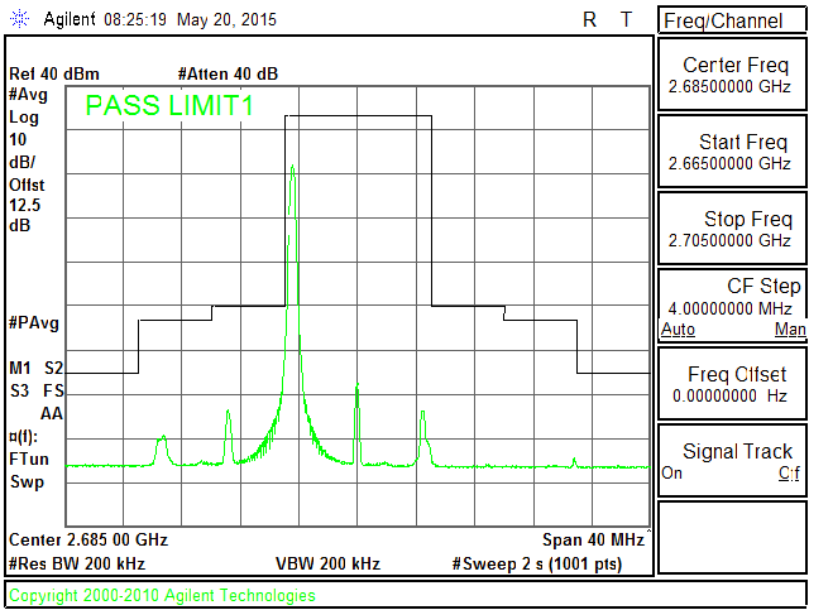
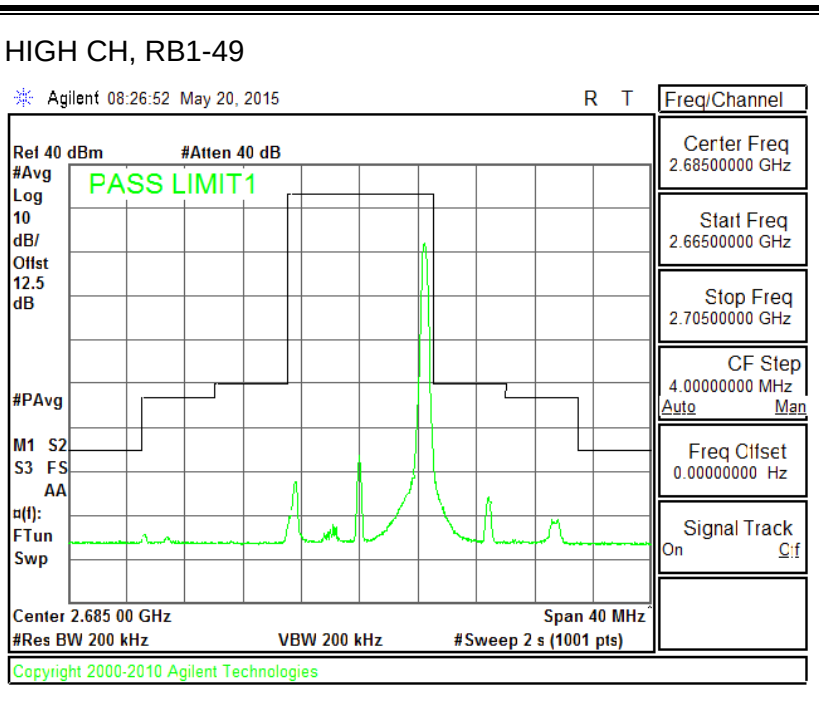
HIGH CH, RB1-0



HIGH CH, RB1-49



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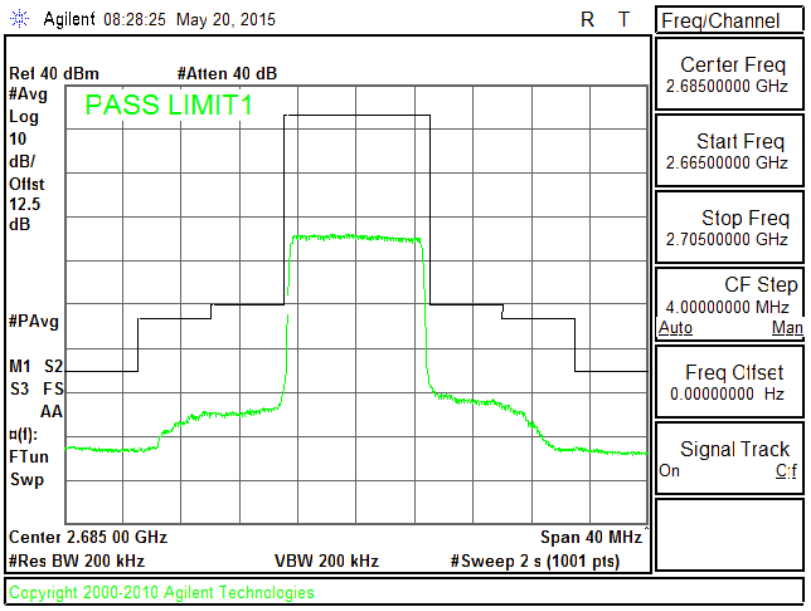
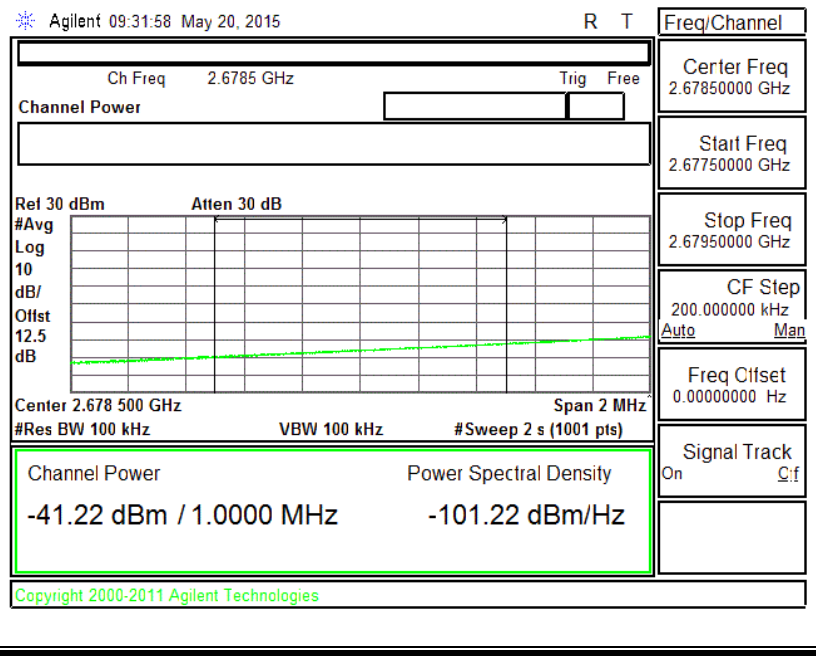
HIGH CH, RB50-0



HIGH CH, LOW SIDE, (RB=VB= 1%EBW, 2678-2679MHz)



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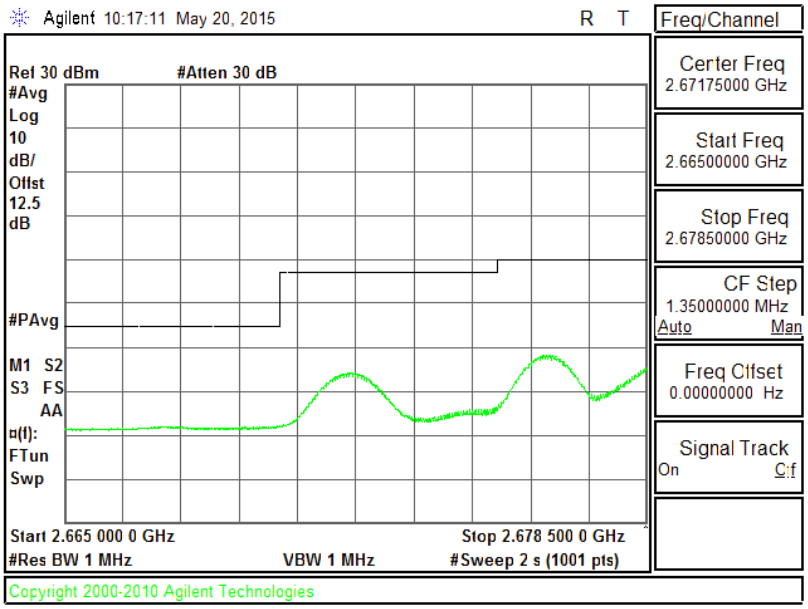
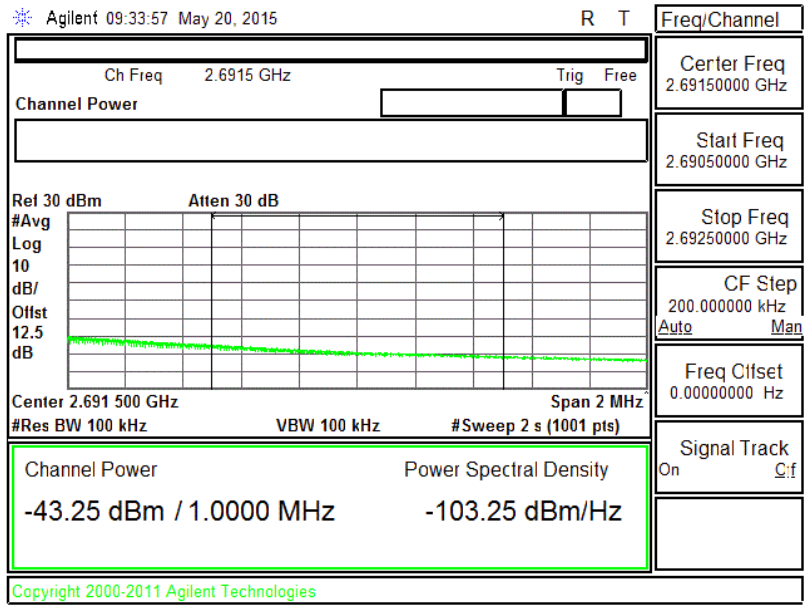
HIGH CH, LOW SIDE, (RB=VB= 1MHz, 2665-2678.5MHz)



HIGH CH, HIGH SIDE, (RB=VB= 1%EBW, 2691-2692MHz)



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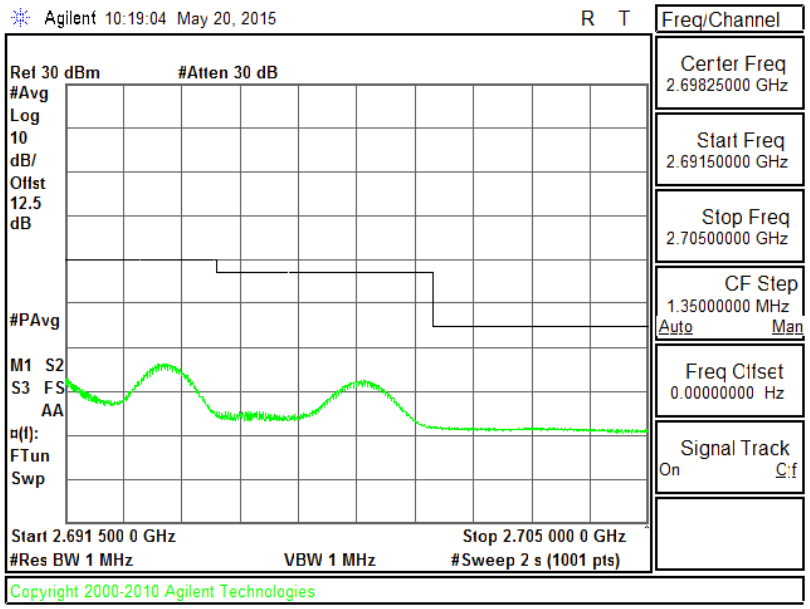
HIGH CH, HIGH SIDE, (RB=VB= 1MHz, 2691.5–2705MHz)



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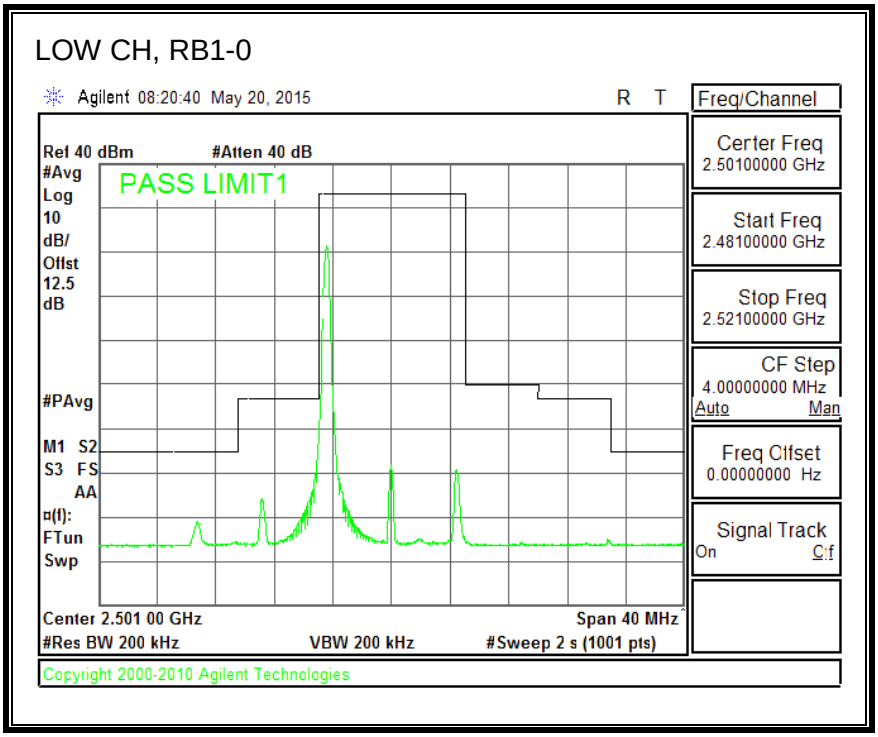
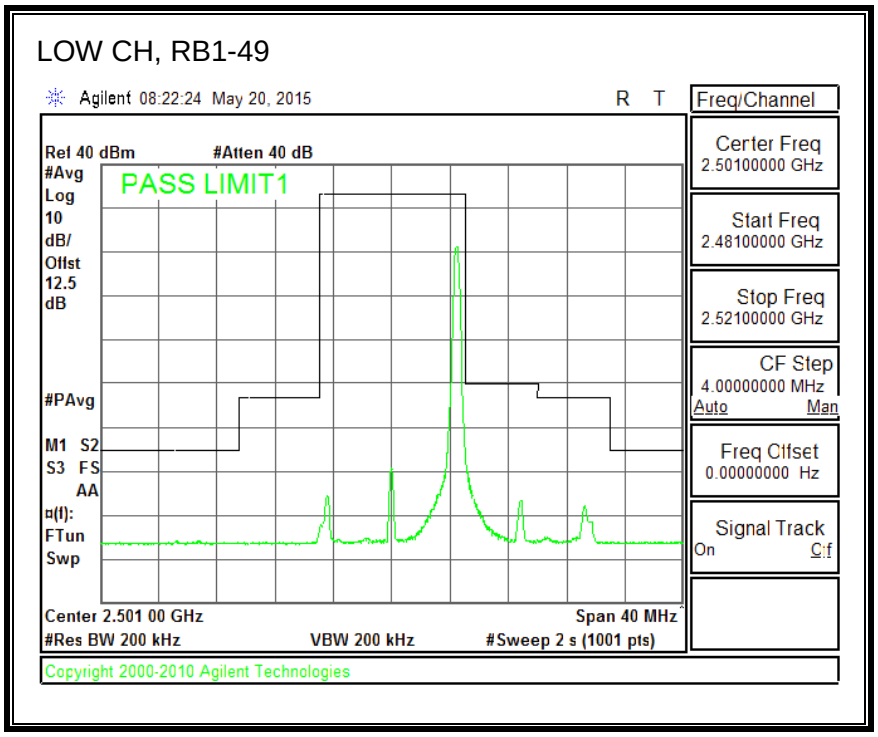
16QAM, (10.0 MHz BAND WIDTH)

LOW CH, RB1-0



LOW CH, RB1-49



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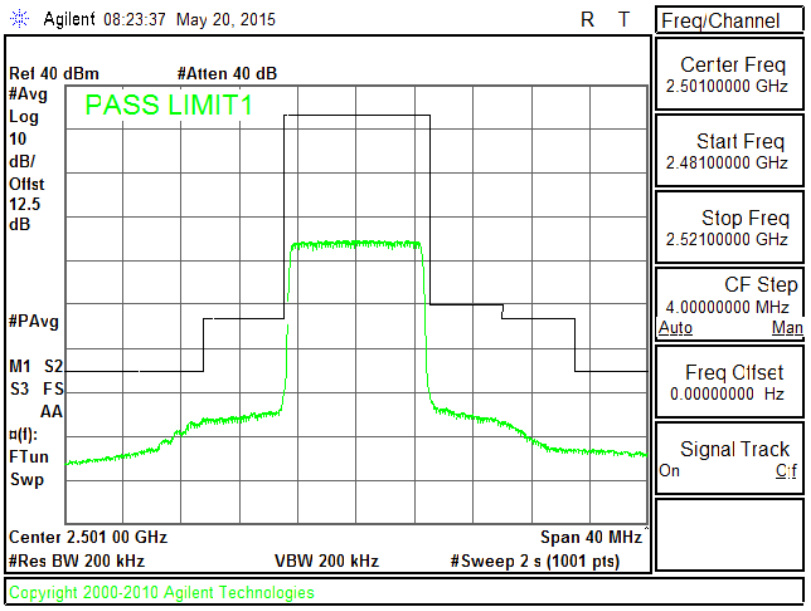
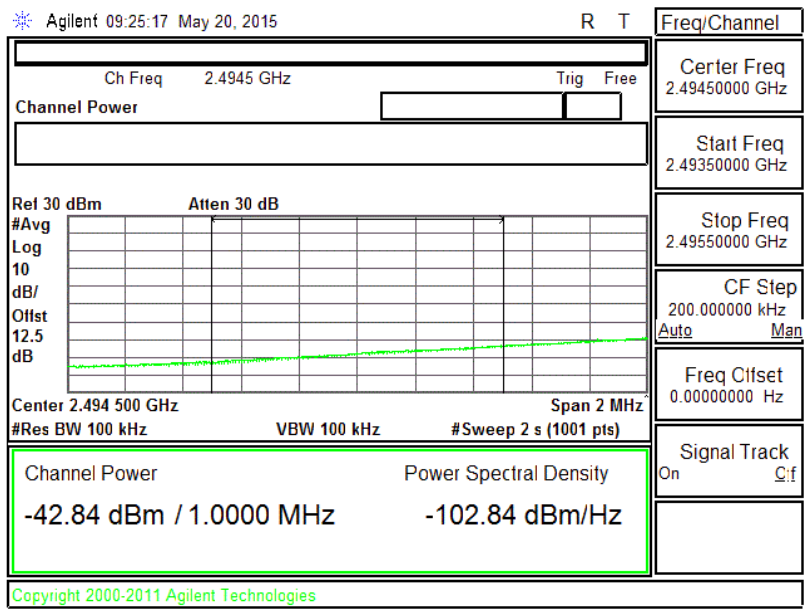
LOW CH, RB50-0



LOW CH, LOW SIDE, (RB=VB= 1%EBW, 2494–2495MHz)



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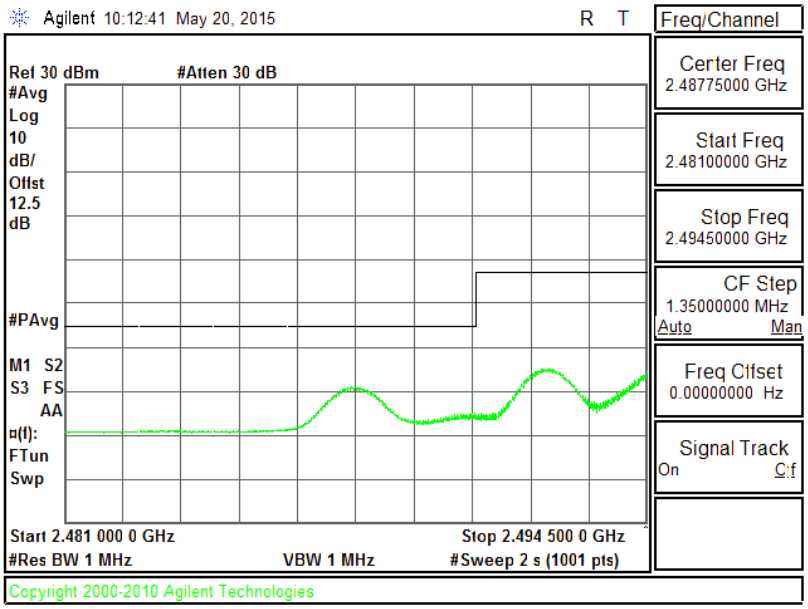
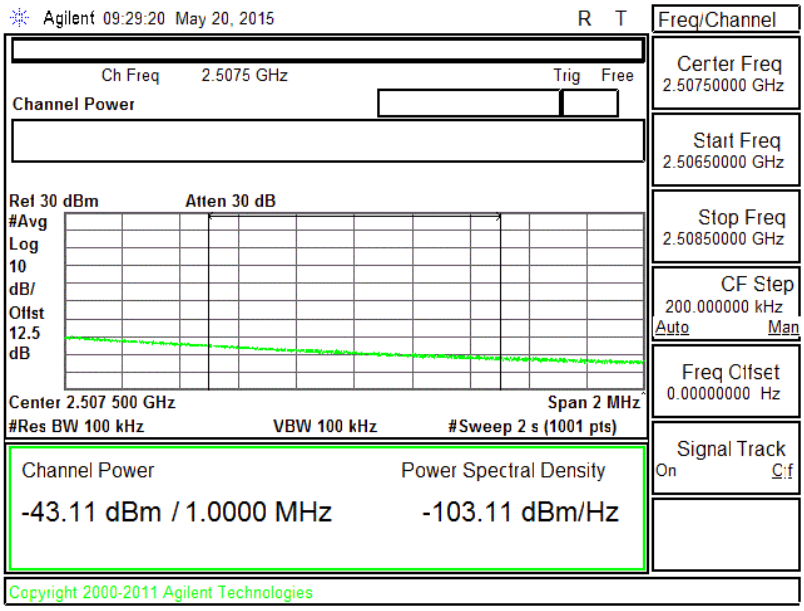
LOW CH, LOW SIDE, (RB=VB= 1MHz, 2481-2494.5MHz)



LOW CH, HIGH SIDE, (RB=VB= 1%EBW, 2507-2508MHz)



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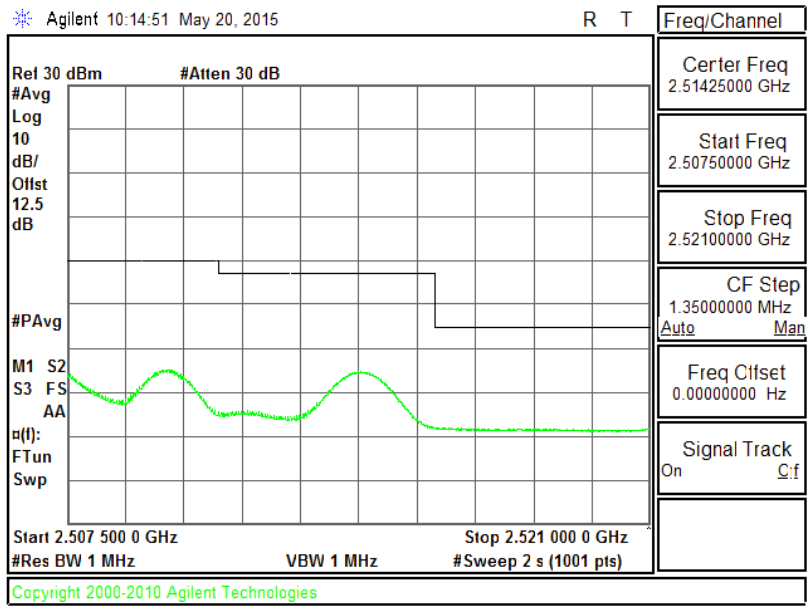
LOW CH, HIGH SIDE, (RB=VB= 1MHz, 2507.5-2521MHz)



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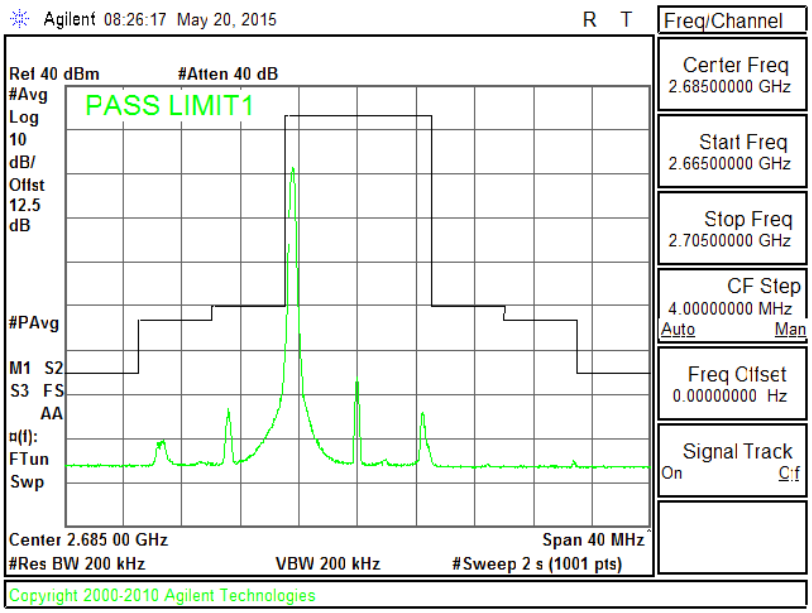
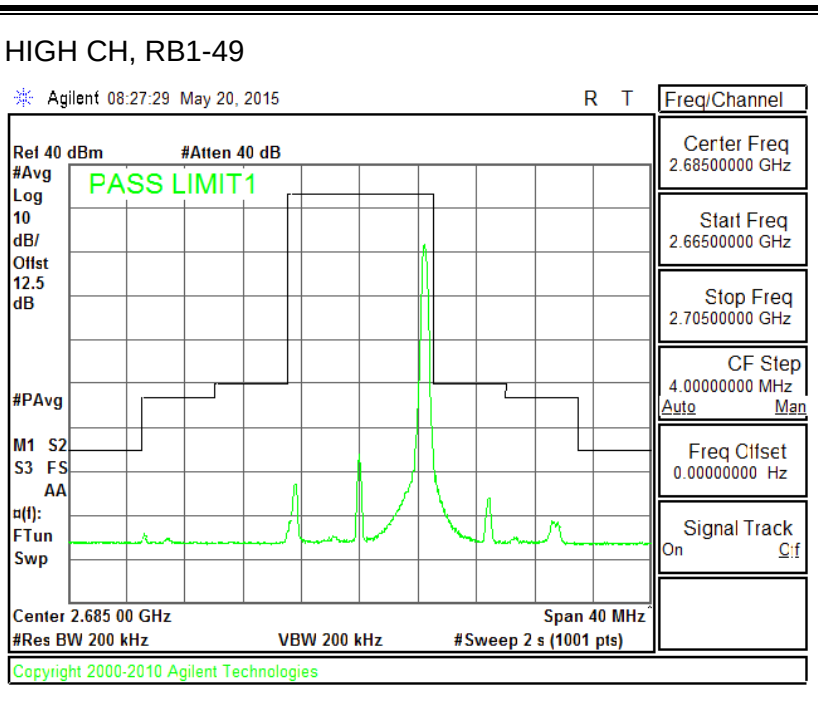
HIGH CH, RB1-0



HIGH CH, RB1-49



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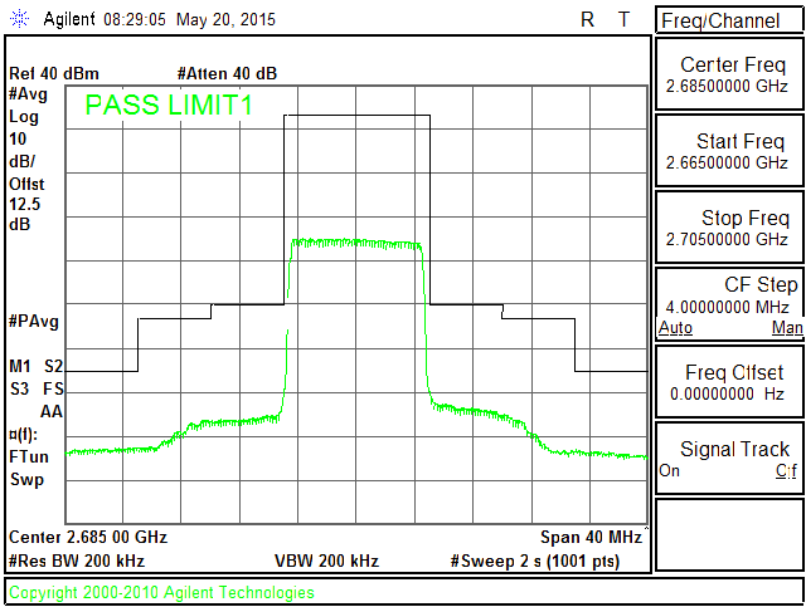
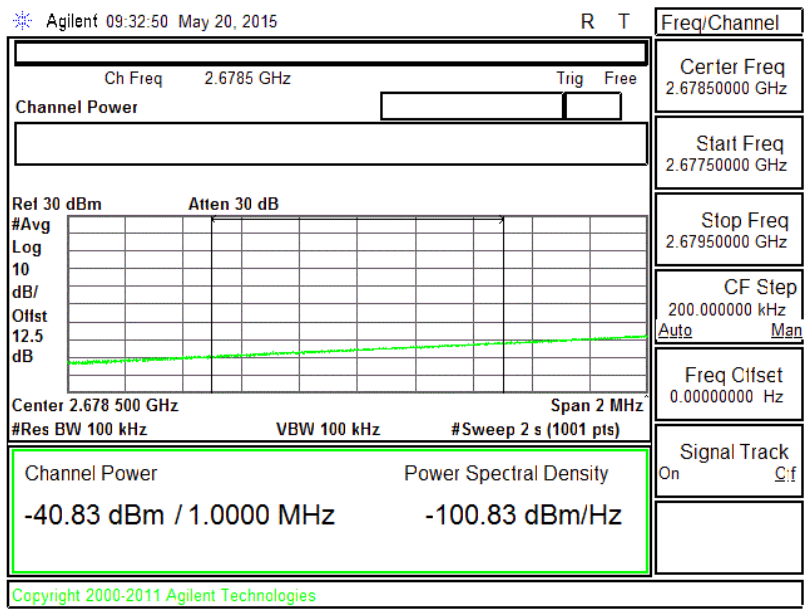
HIGH CH, RB50-0



HIGH CH, LOW SIDE, (RB=VB= 1%EBW, 2678-2679MHz)



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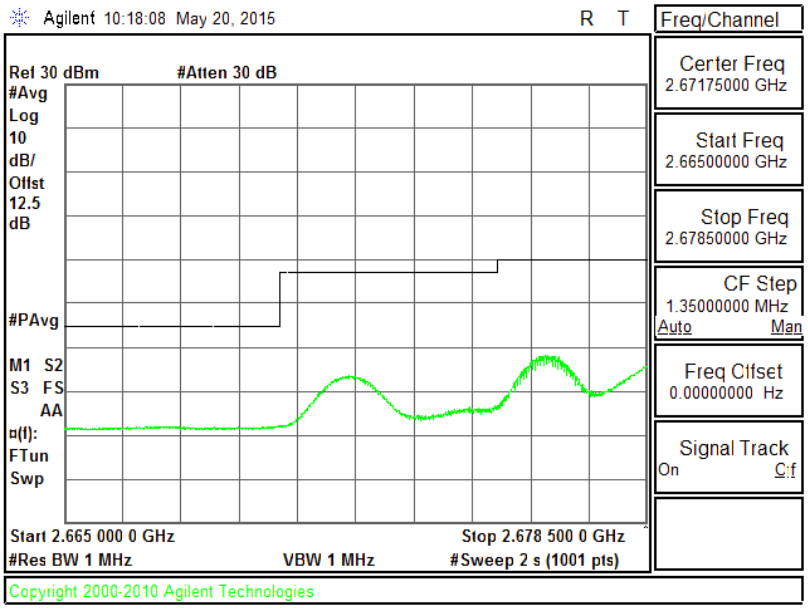
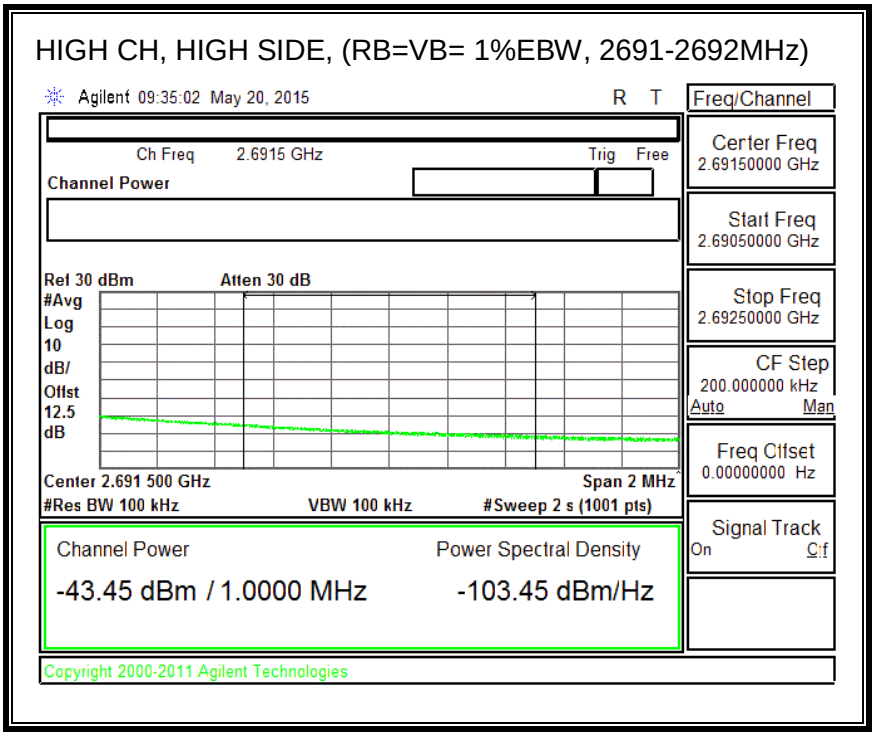
HIGH CH, LOW SIDE, (RB=VB= 1MHz, 2665-2678.5MHz)



HIGH CH, HIGH SIDE, (RB=VB= 1%EBW, 2691-2692MHz)



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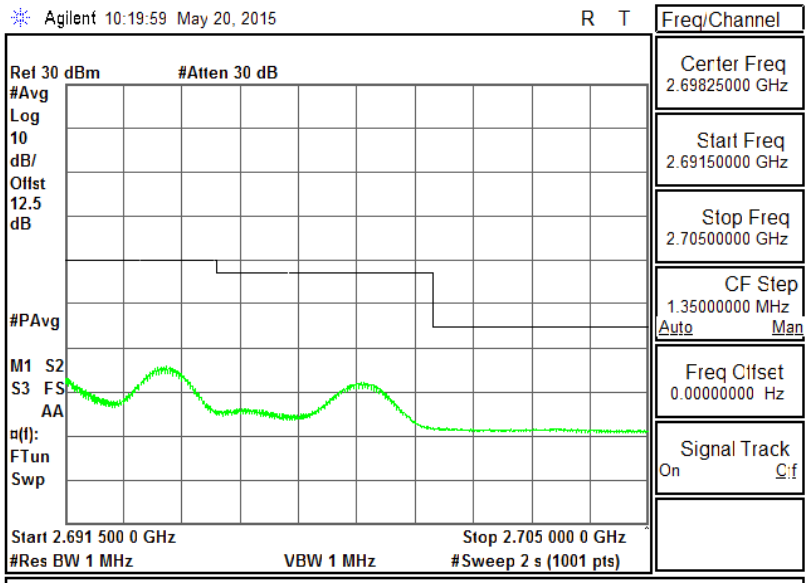
HIGH CH, HIGH SIDE, (RB=VB= 1MHz, 2691.5–2705MHz)



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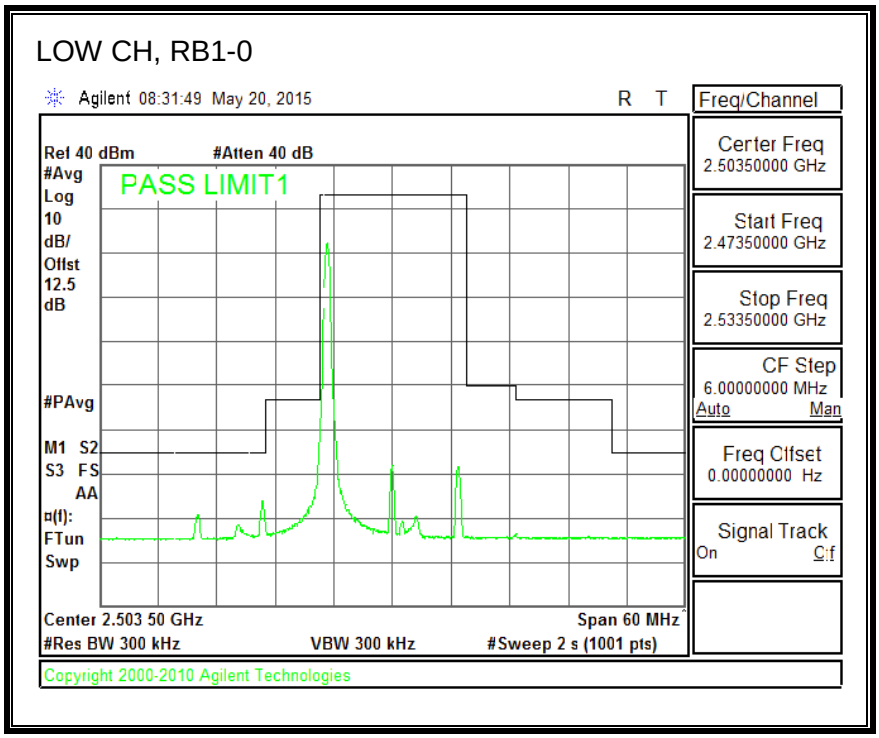
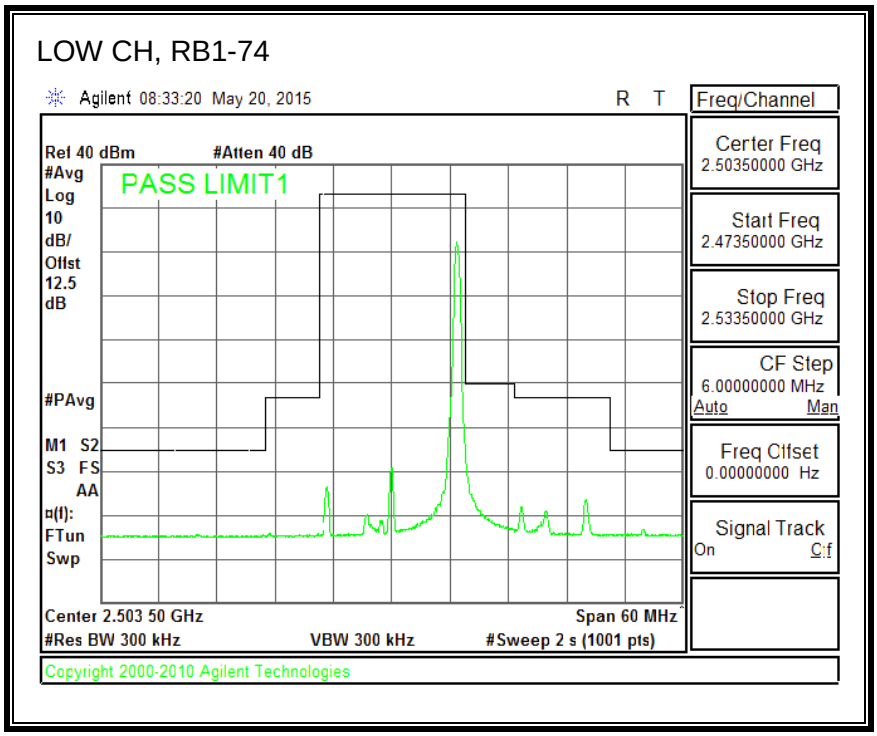
QPSK, (15.0 MHz BAND WIDTH)

LOW CH, RB1-0



LOW CH, RB1-74



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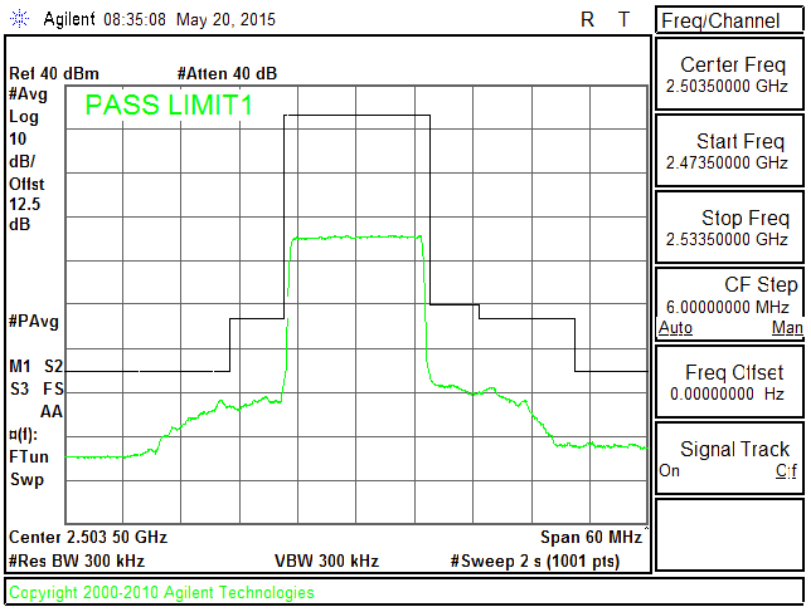
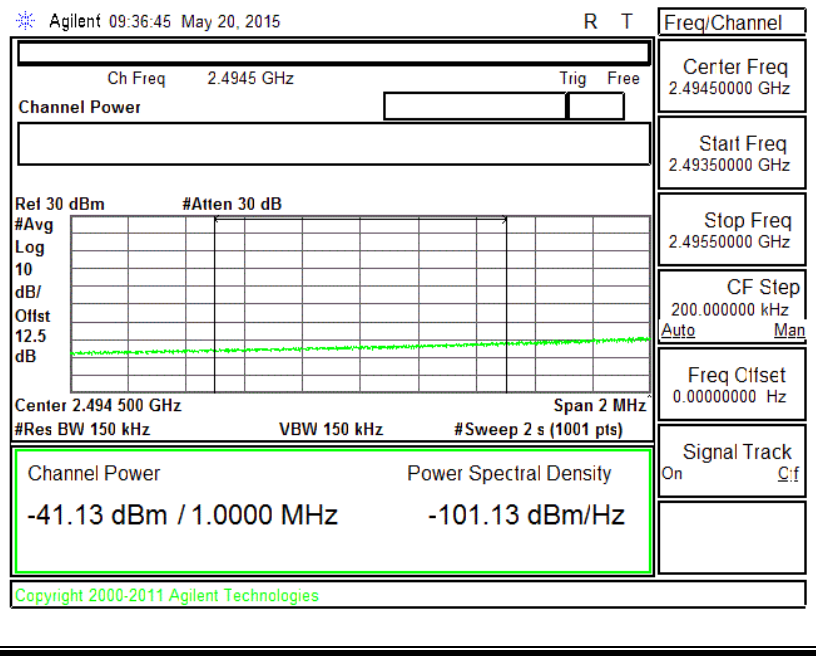
LOW CH, RB75-0



LOW CH, LOW SIDE, (RB=VB= 1%EBW, 2494–2495MHz)



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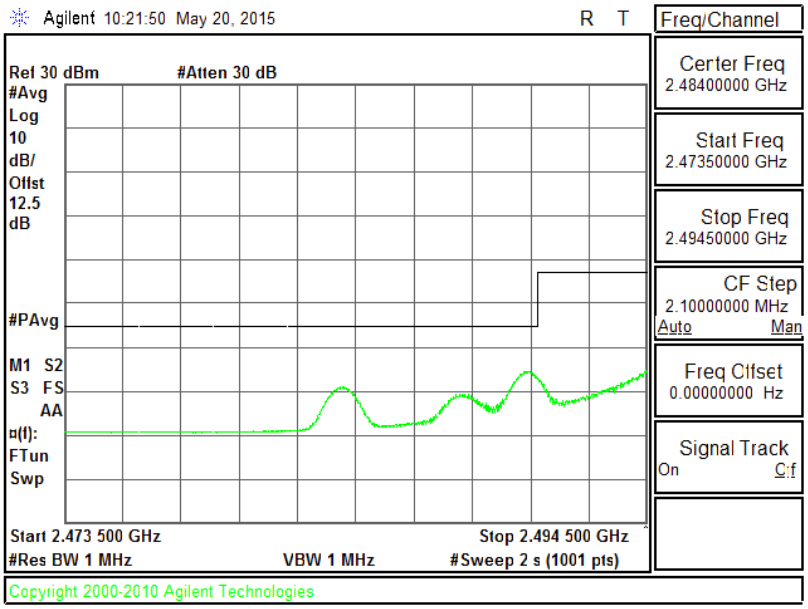
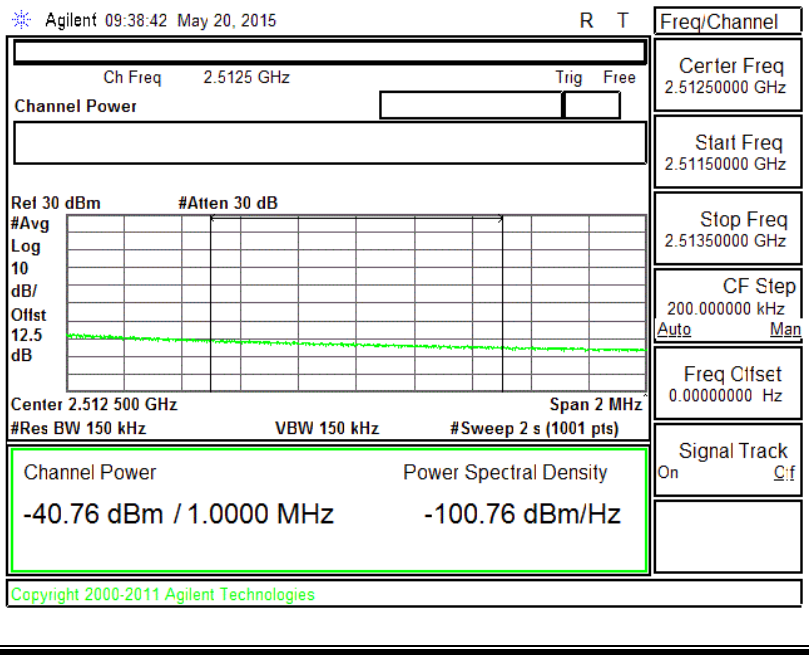
LOW CH, LOW SIDE, (RB=VB= 1MHz, 2473.5-2494.5MHz)



LOW CH, HIGH SIDE, (RB=VB= 1%EBW, 2512-2513MHz)



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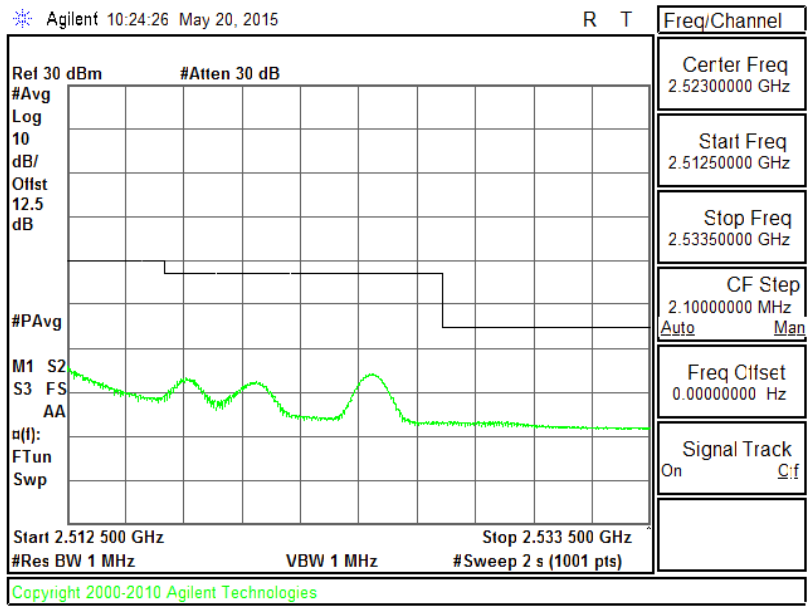
LOW CH, HIGH SIDE, (RB=VB= 1MHz, 2512.5-2533.5MHz)



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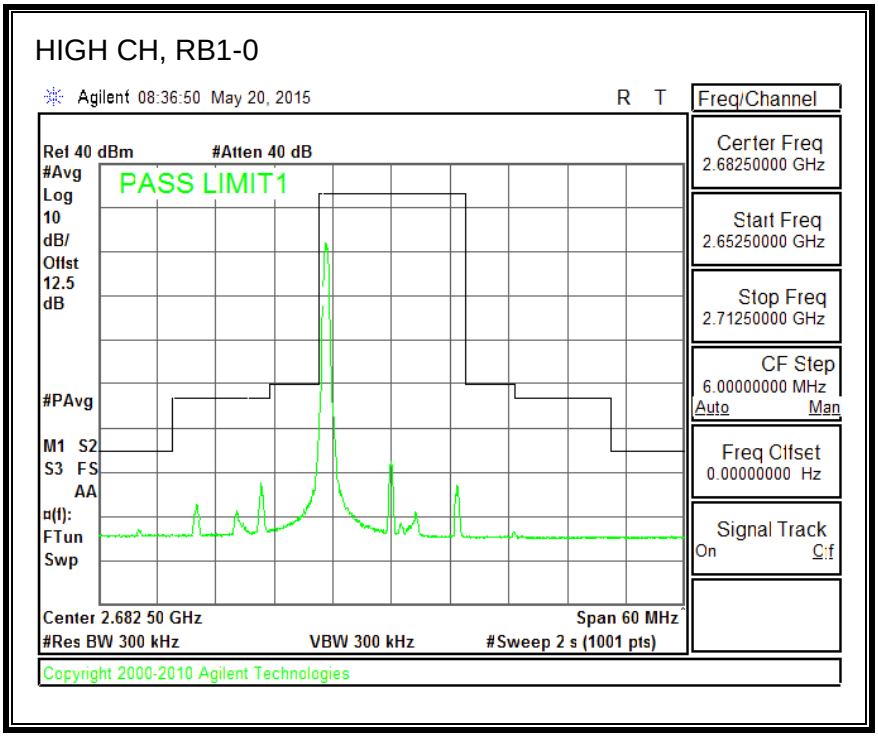
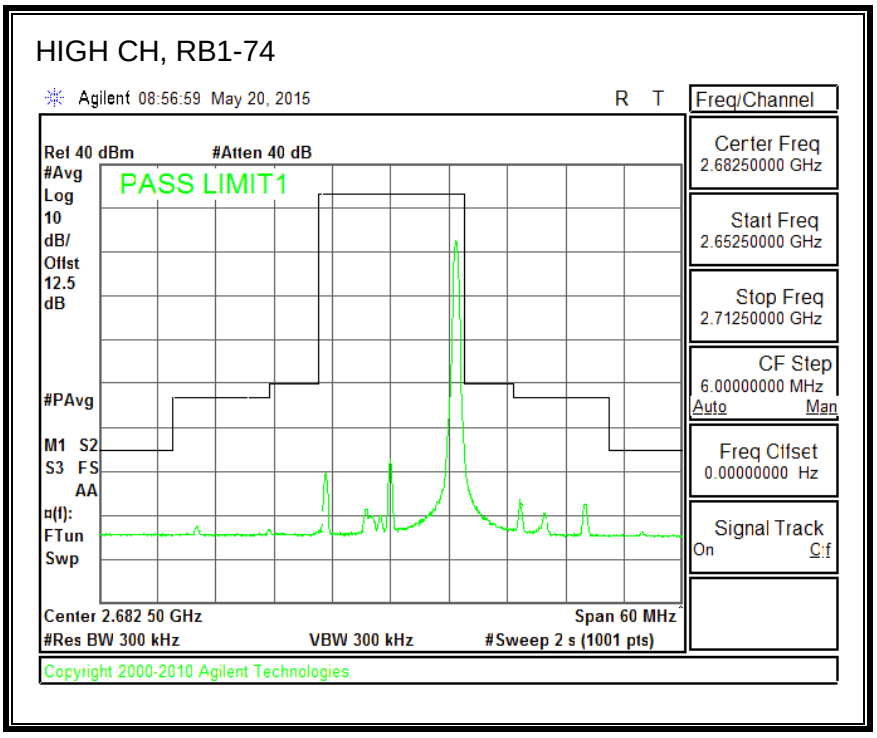
HIGH CH, RB1-0



HIGH CH, RB1-74



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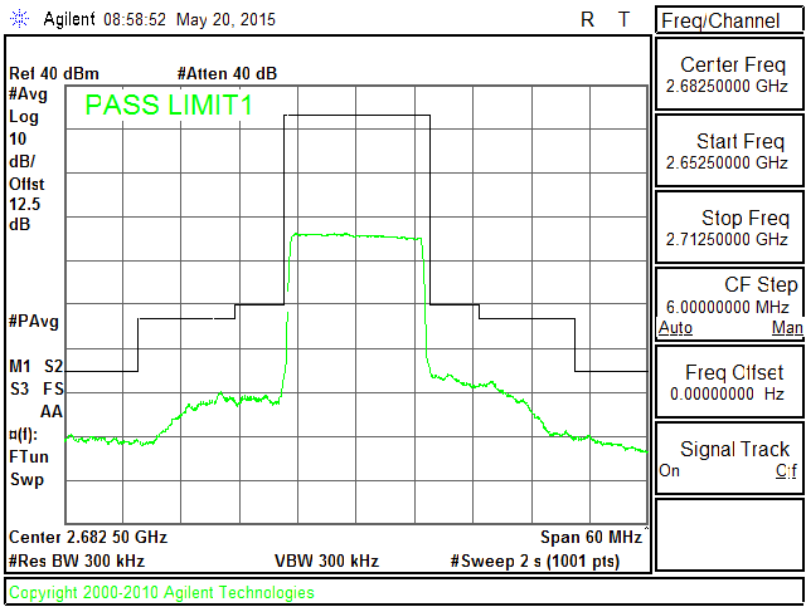
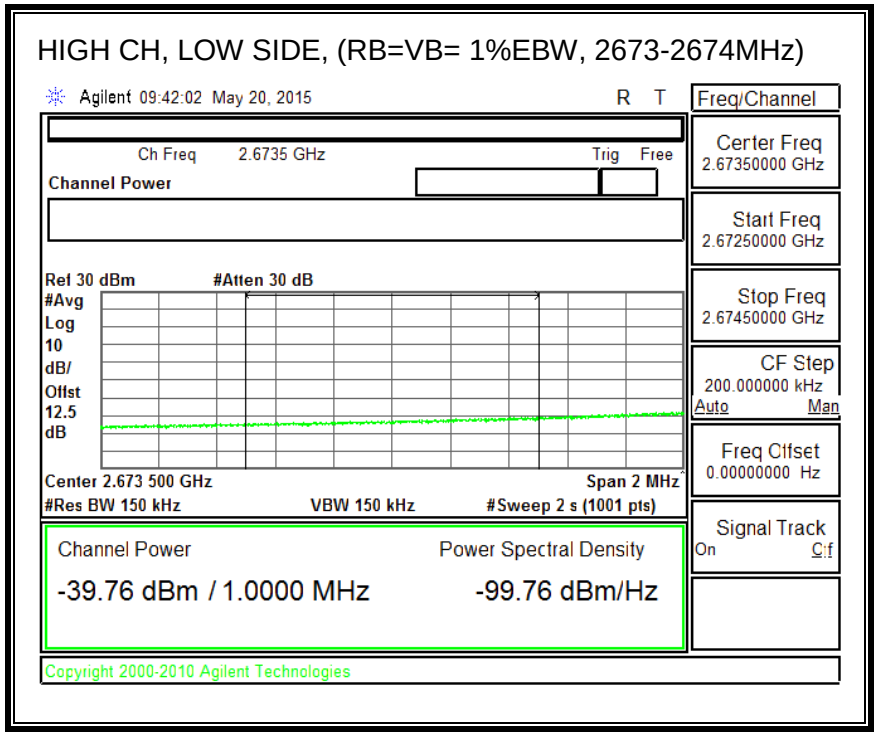
HIGH CH, RB75-0



HIGH CH, LOW SIDE, (RB=VB= 1%EBW, 2673-2674MHz)



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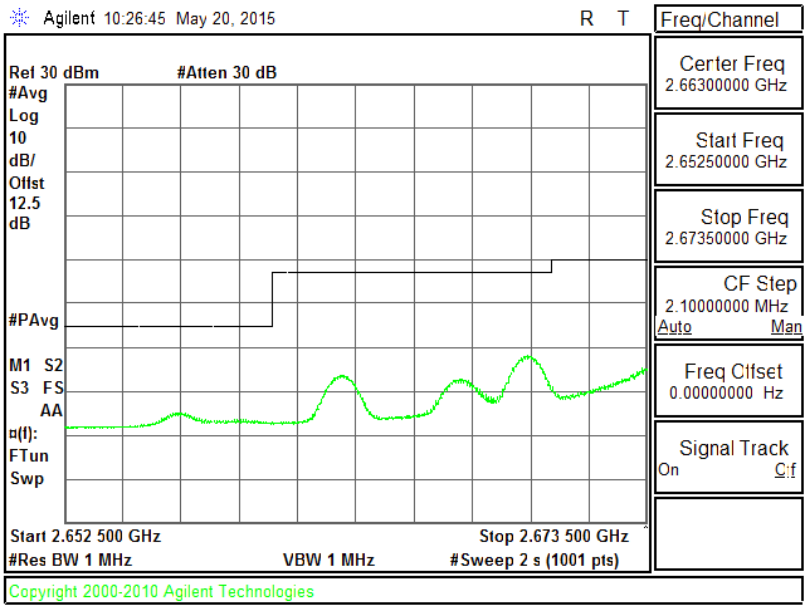
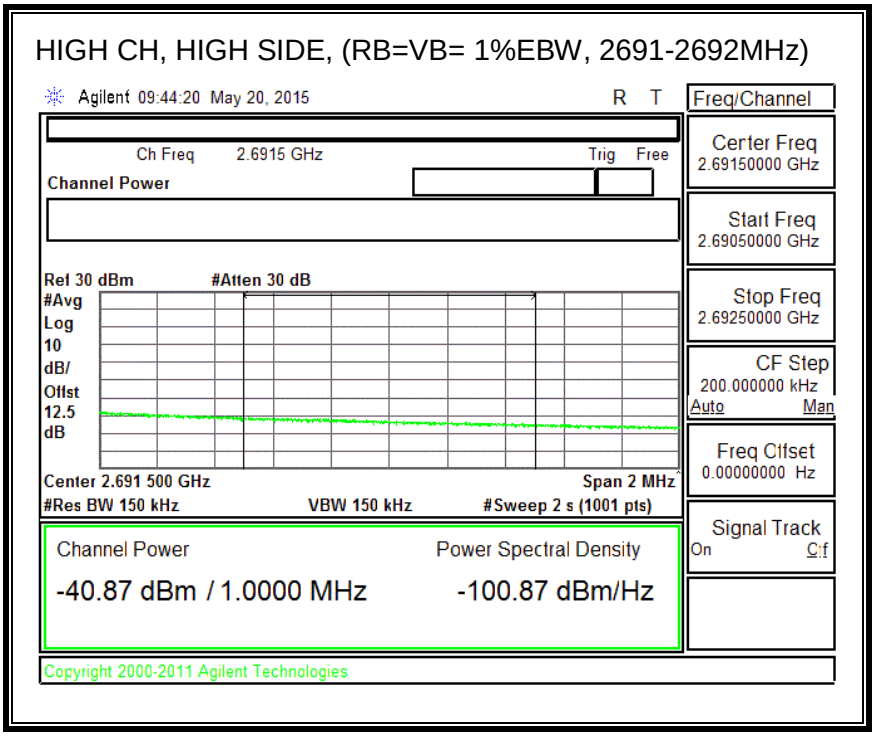
HIGH CH, LOW SIDE, (RB=VB= 1MHz, 2652.5-2673.5MHz)



HIGH CH, HIGH SIDE, (RB=VB= 1%EBW, 2691-2692MHz)



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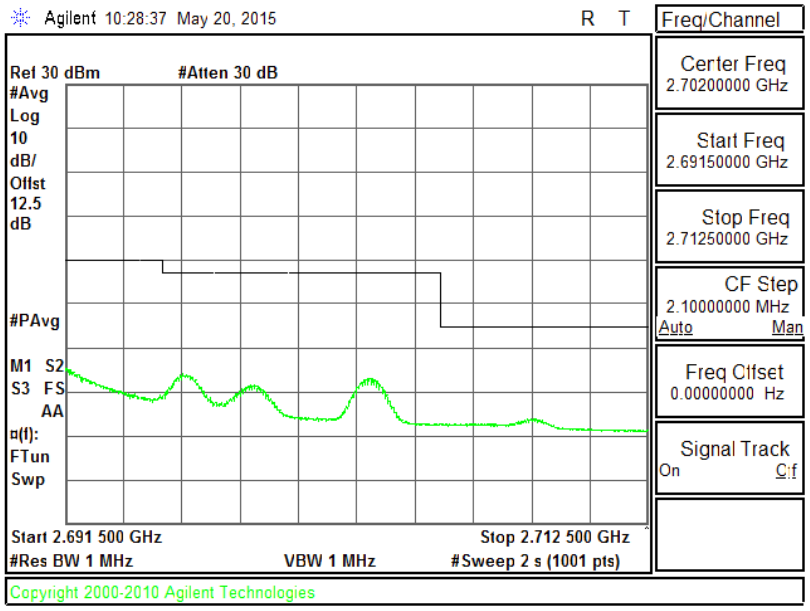
HIGH CH, HIGH SIDE, (RB=VB= 1MHz, 2691.5–2712.5MHz)



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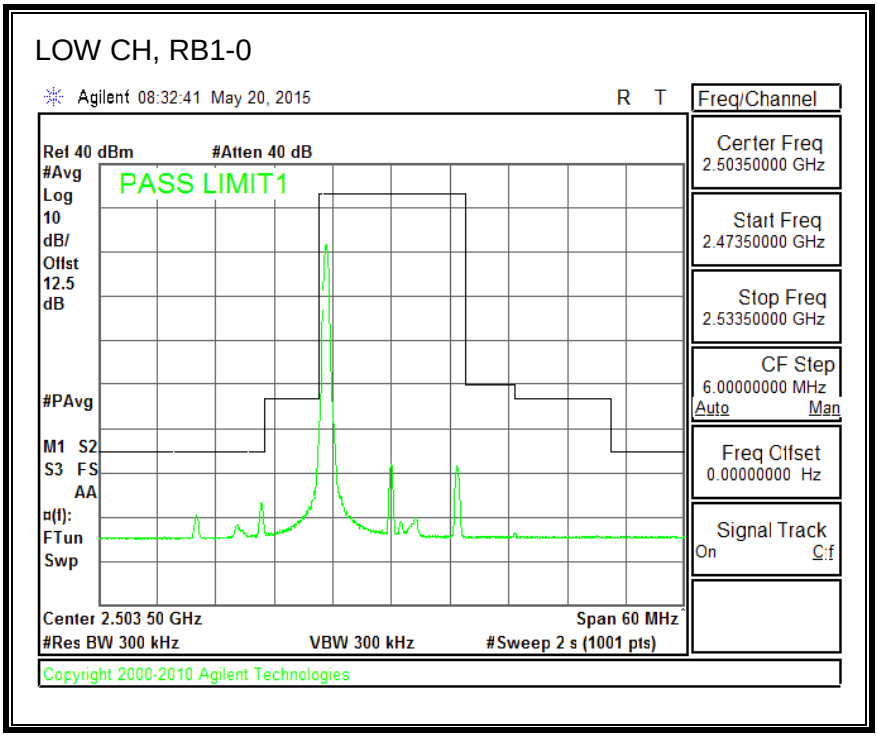
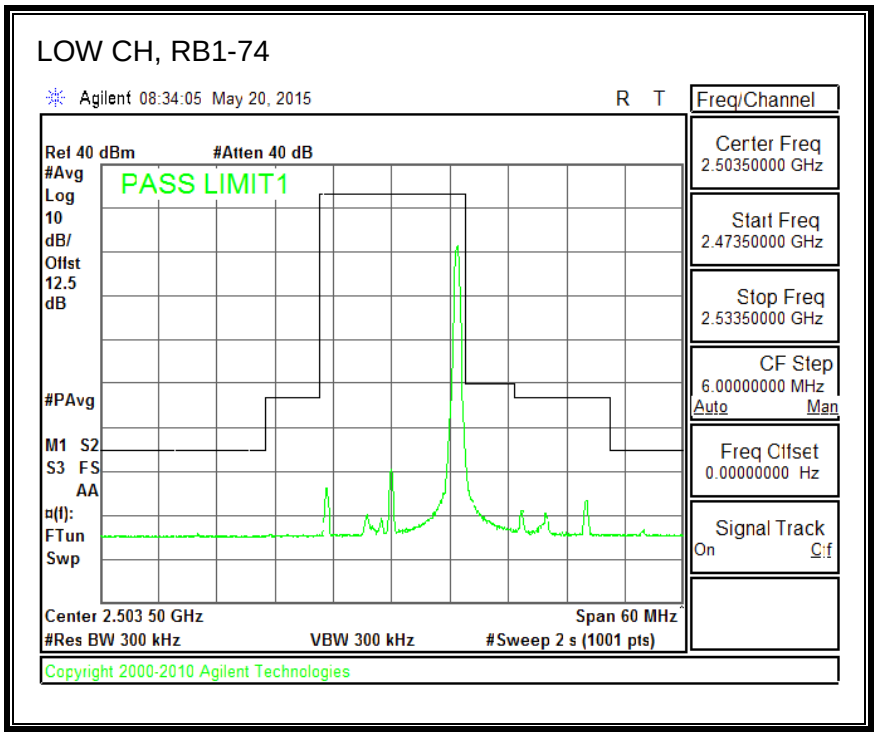
16QAM, (15.0 MHz BAND WIDTH)

LOW CH, RB1-0



LOW CH, RB1-74



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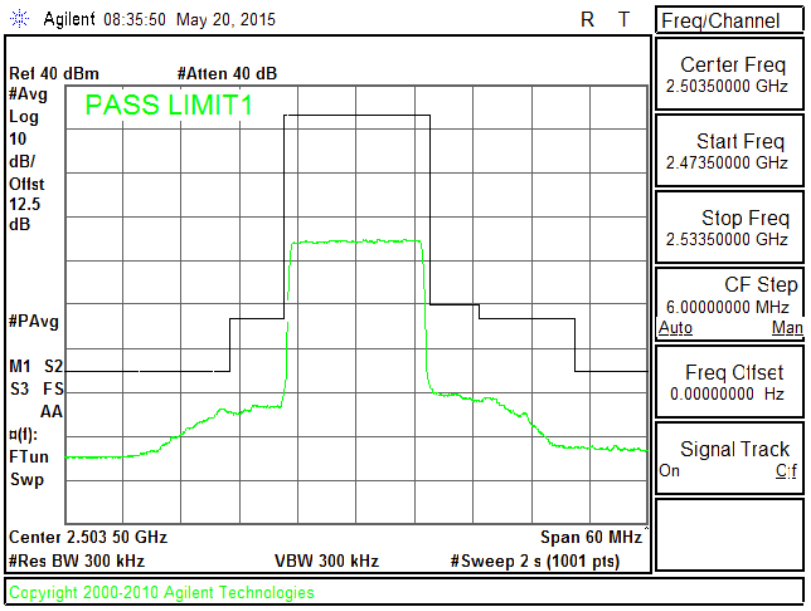
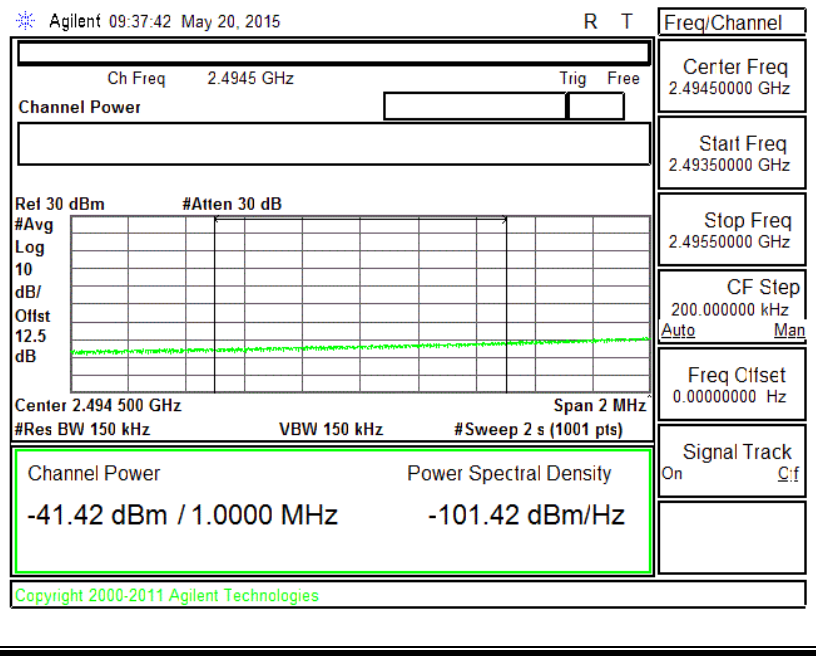
LOW CH, RB75-0



LOW CH, LOW SIDE, (RB=VB= 1%EBW, 2494–2495MHz)



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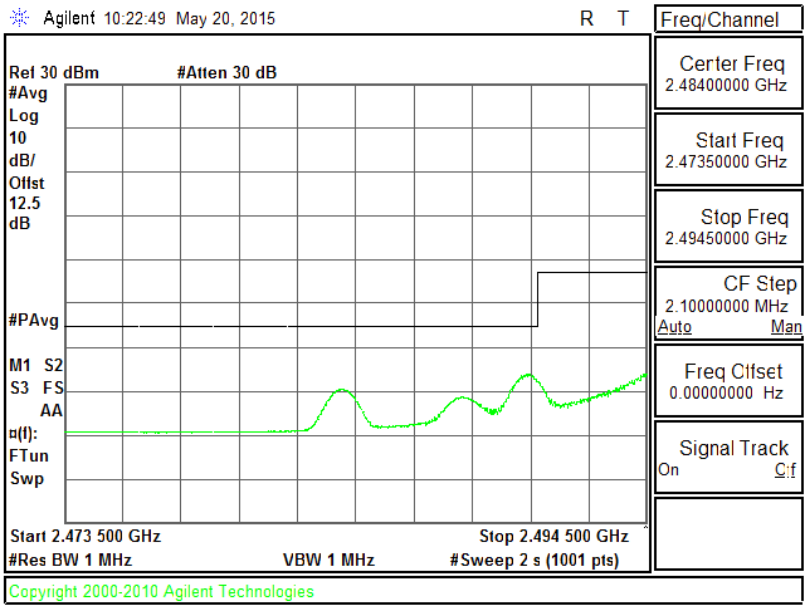
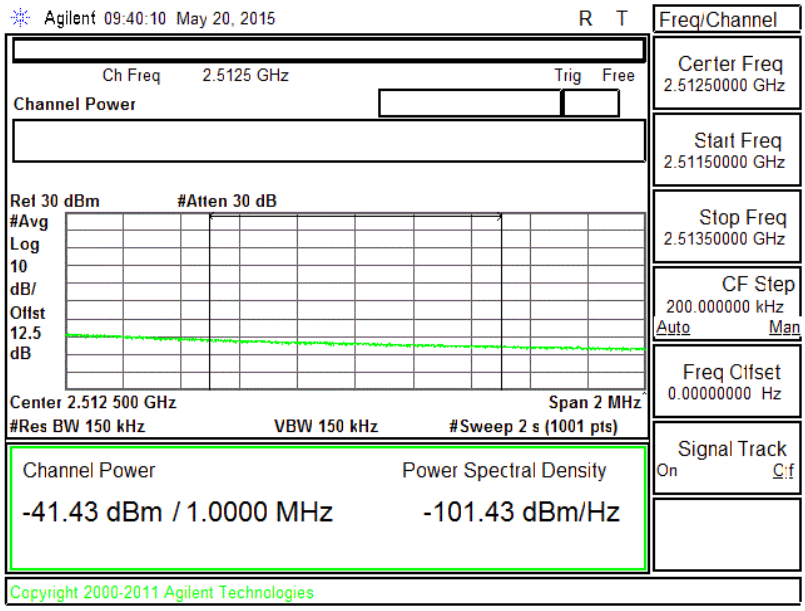
LOW CH, LOW SIDE, (RB=VB= 1MHz, 2473.5-2494.5MHz)



LOW CH, HIGH SIDE, (RB=VB= 1%EBW, 2512-2513MHz)



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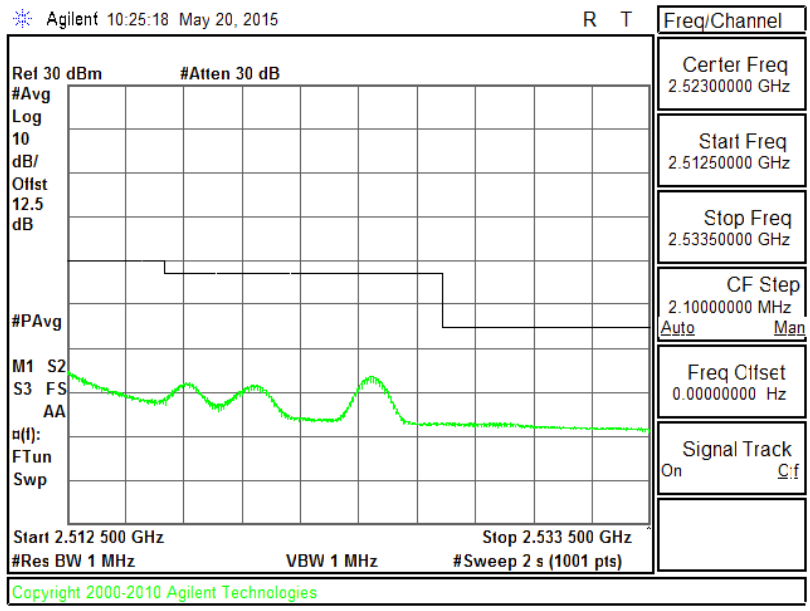
LOW CH, HIGH SIDE, (RB=VB= 1MHz, 2512.5-2533.5MHz)



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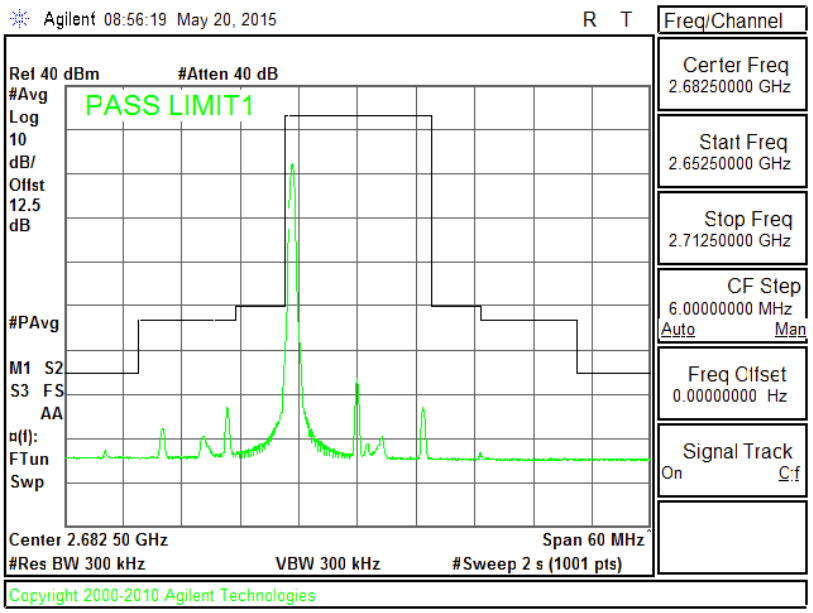
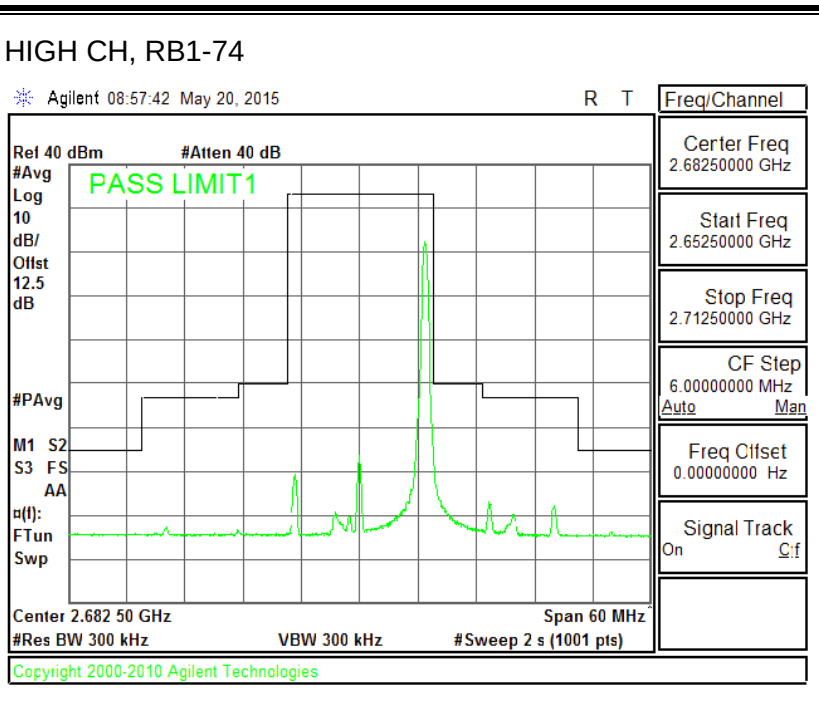
HIGH CH, RB1-0



HIGH CH, RB1-74



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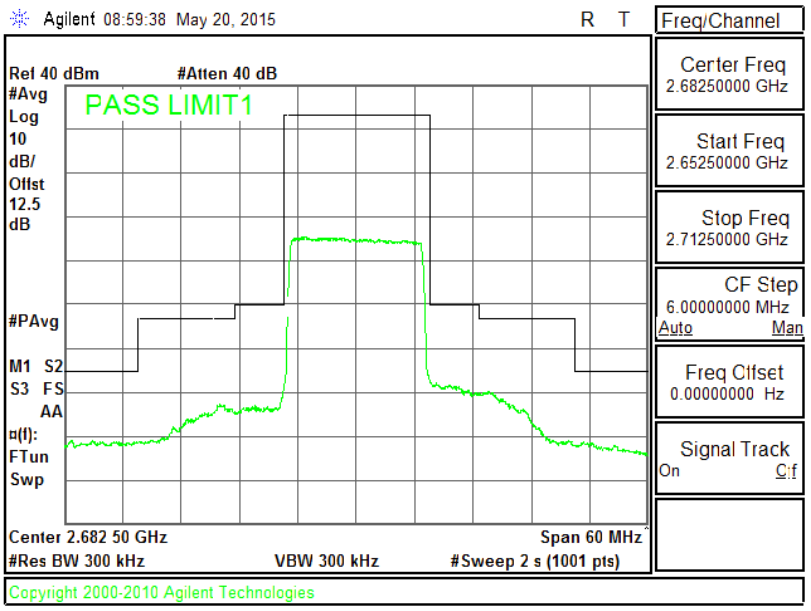
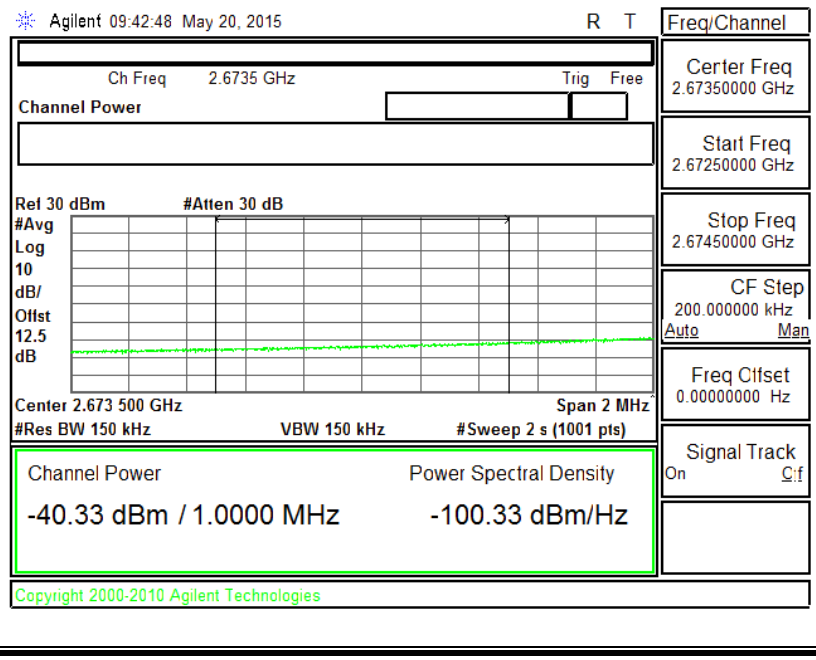
HIGH CH, RB75-0



HIGH CH, LOW SIDE, (RB=VB= 1%EBW, 2673-2674MHz)



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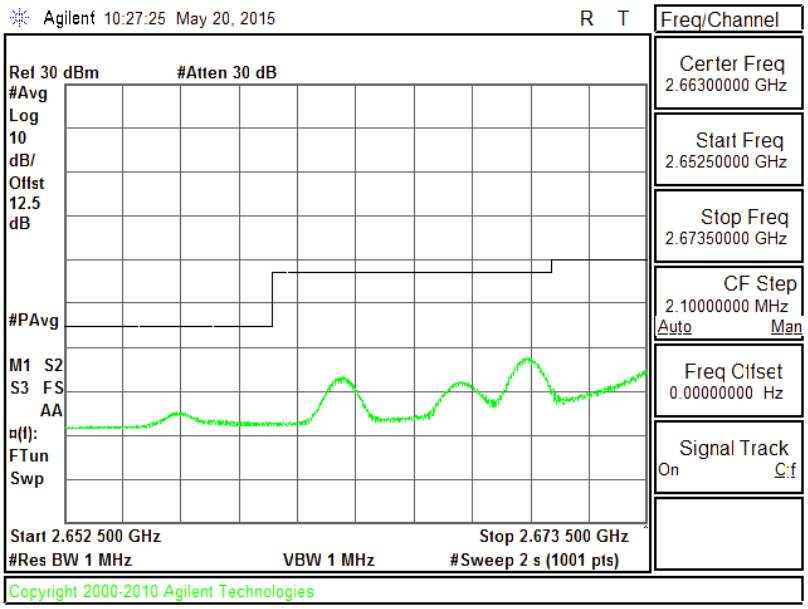
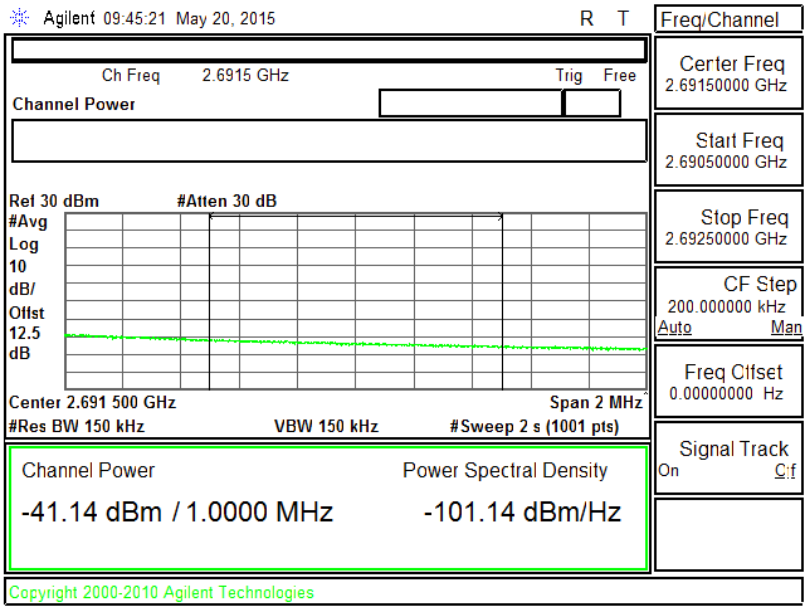
HIGH CH, LOW SIDE, (RB=VB= 1MHz, 2652.5-2673.5MHz)



HIGH CH, HIGH SIDE, (RB=VB= 1%EBW, 2691-2692MHz)



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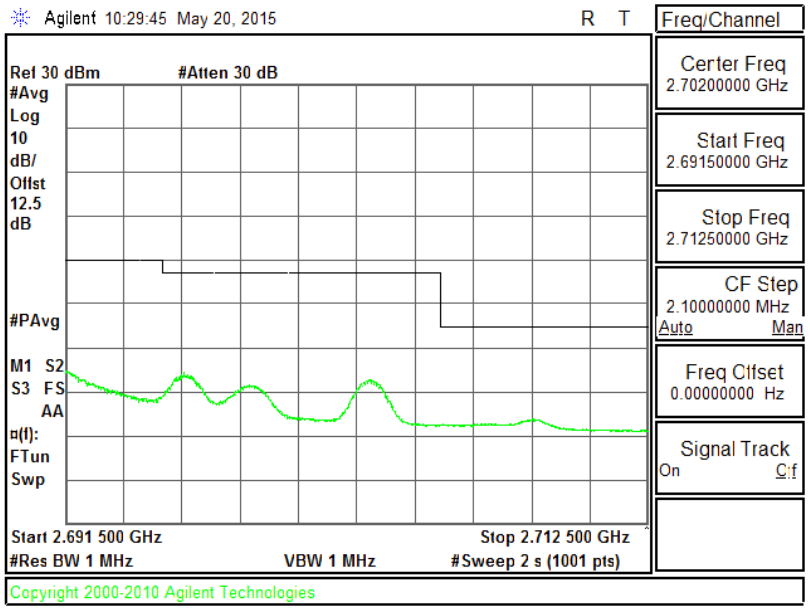
HIGH CH, HIGH SIDE, (RB=VB= 1MHz, 2691.5–2712.5MHz)



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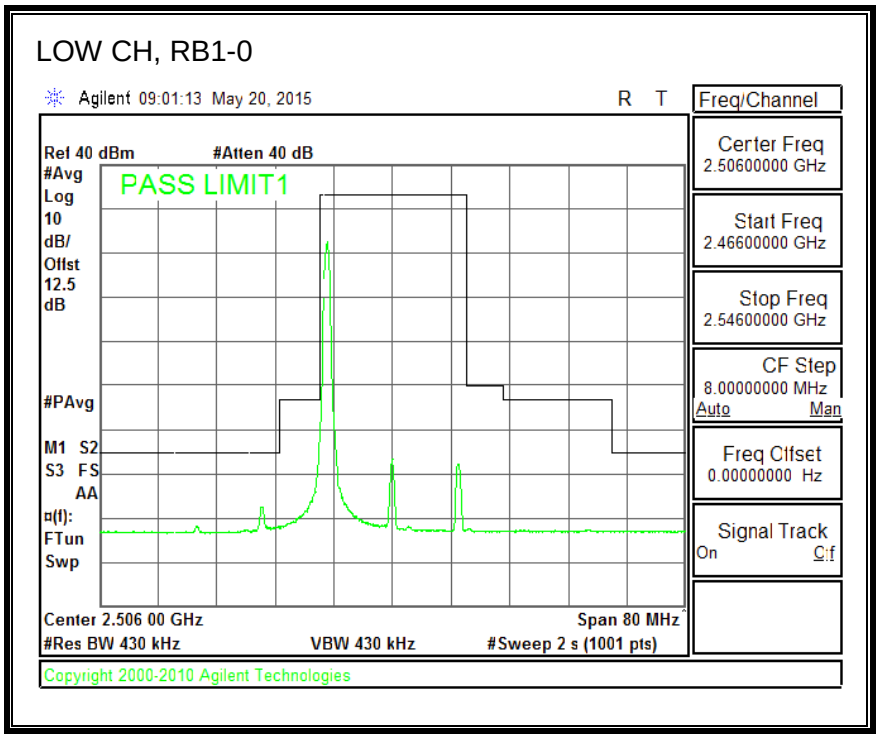
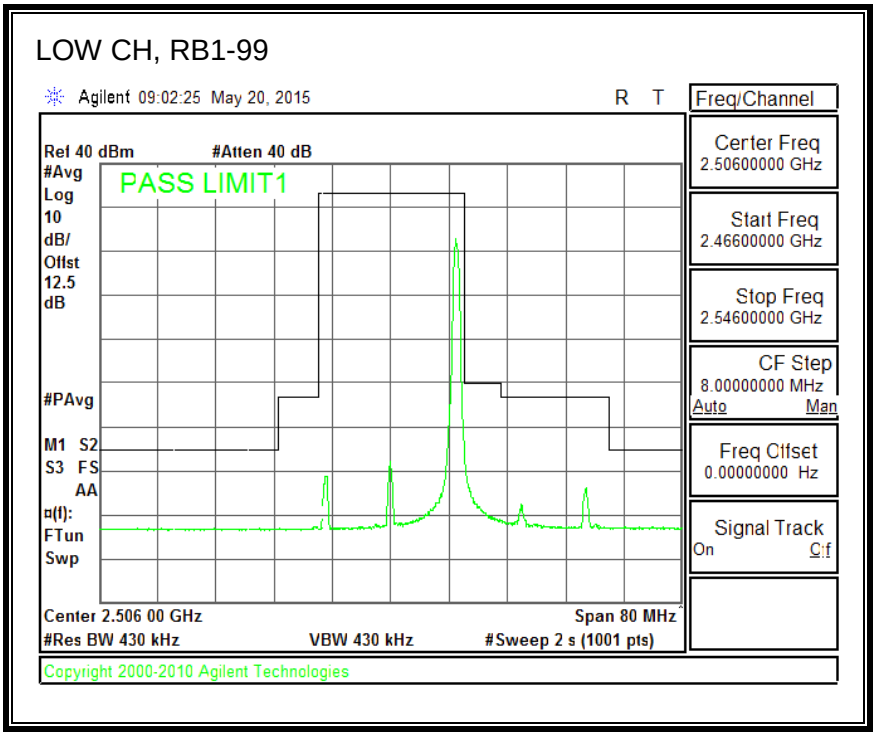
QPSK, (20.0 MHz BAND WIDTH)

LOW CH, RB1-0



LOW CH, RB1-99



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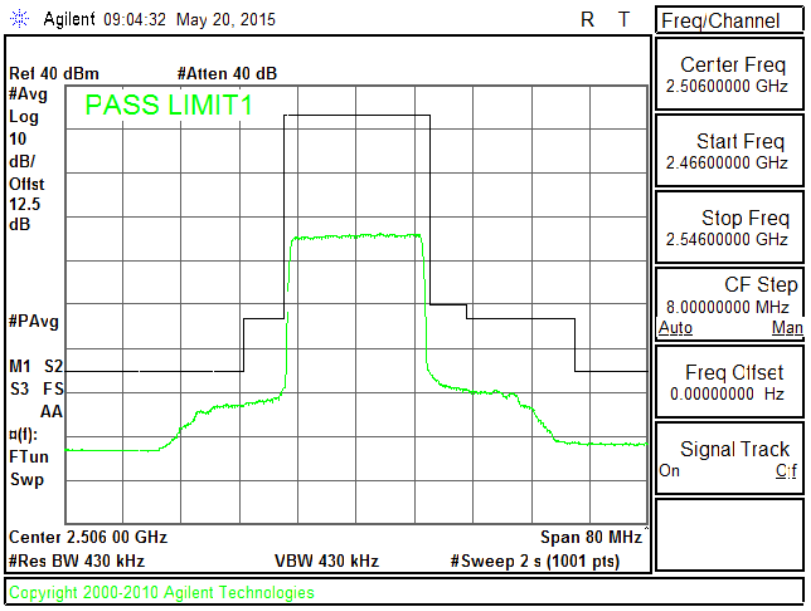
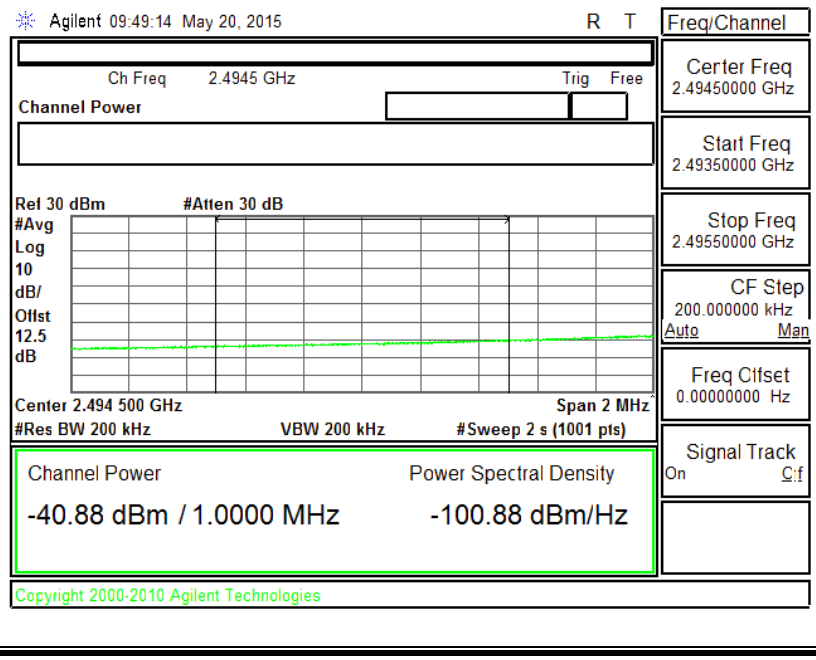
LOW CH, RB100-0



LOW CH, LOW SIDE, (RB=VB= 1%EBW, 2494–2495MHz)



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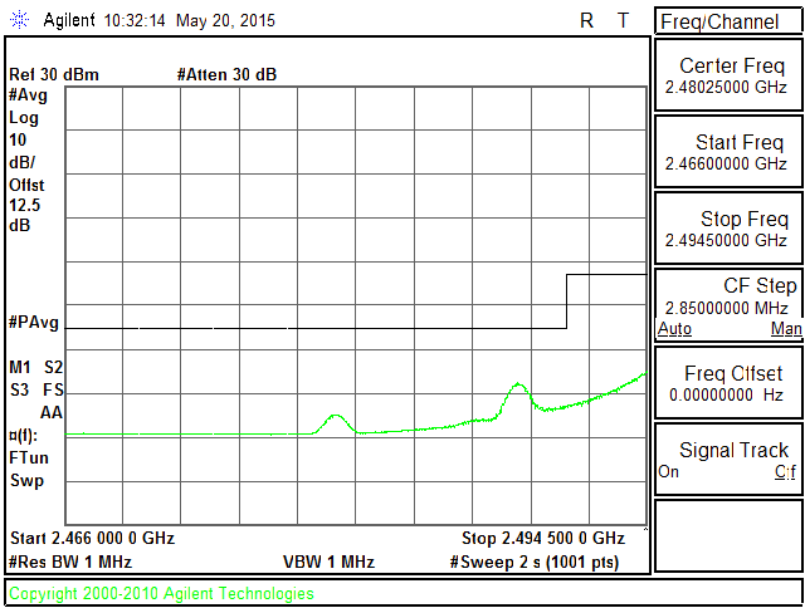
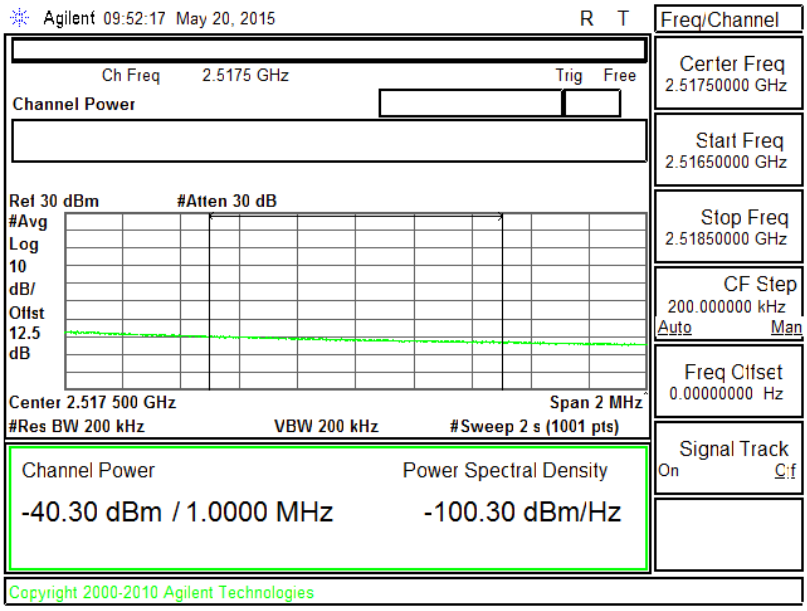
LOW CH, LOW SIDE, (RB=VB= 1MHz, 2466-2494.5MHz)



LOW CH, HIGH SIDE, (RB=VB= 1%EBW, 2517-2518MHz)



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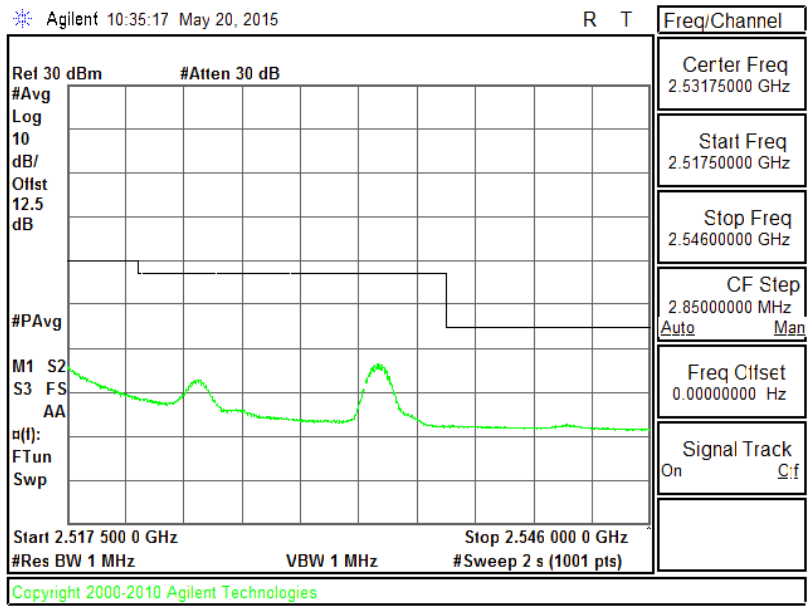
LOW CH, HIGH SIDE, (RB=VB= 1MHz, 2517.5-2546MHz)



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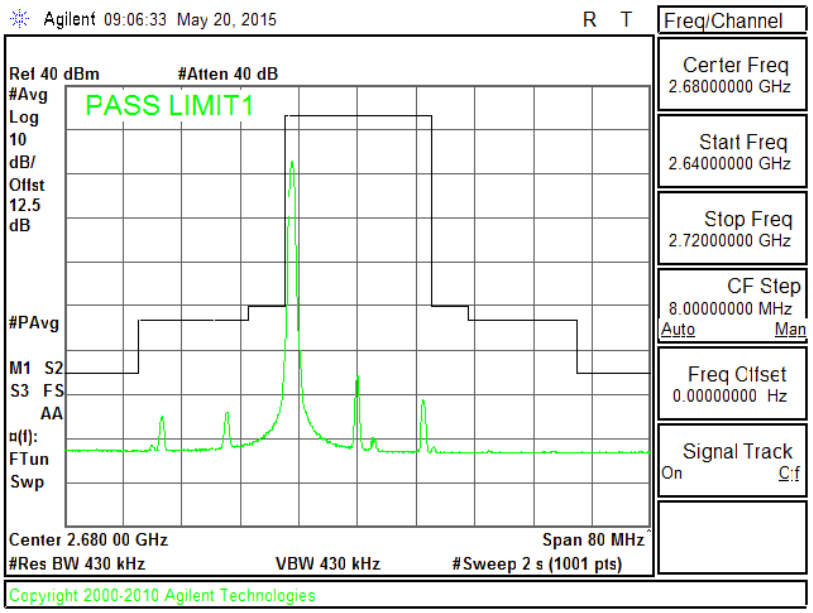
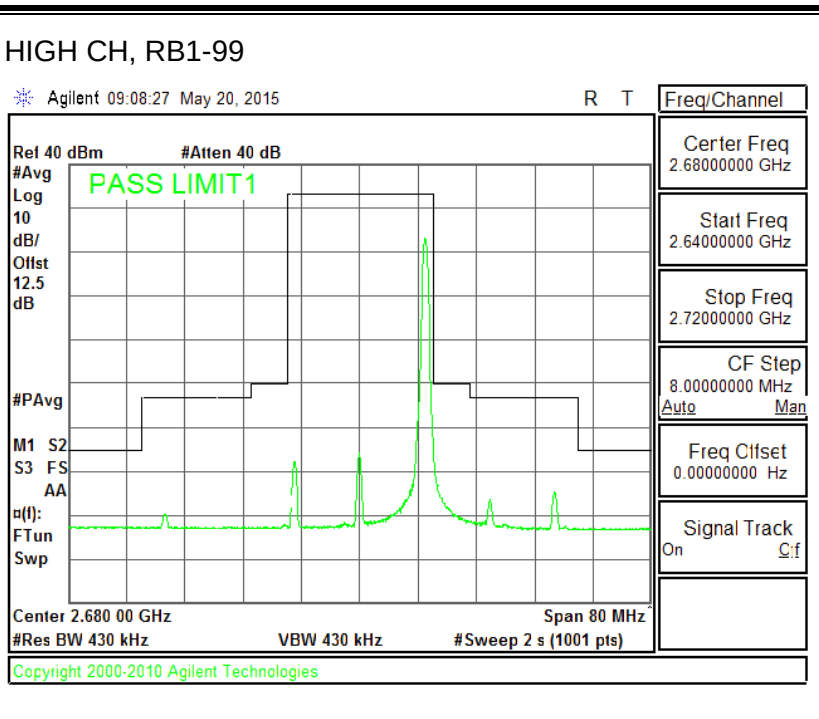
HIGH CH, RB1-0



HIGH CH, RB1-99



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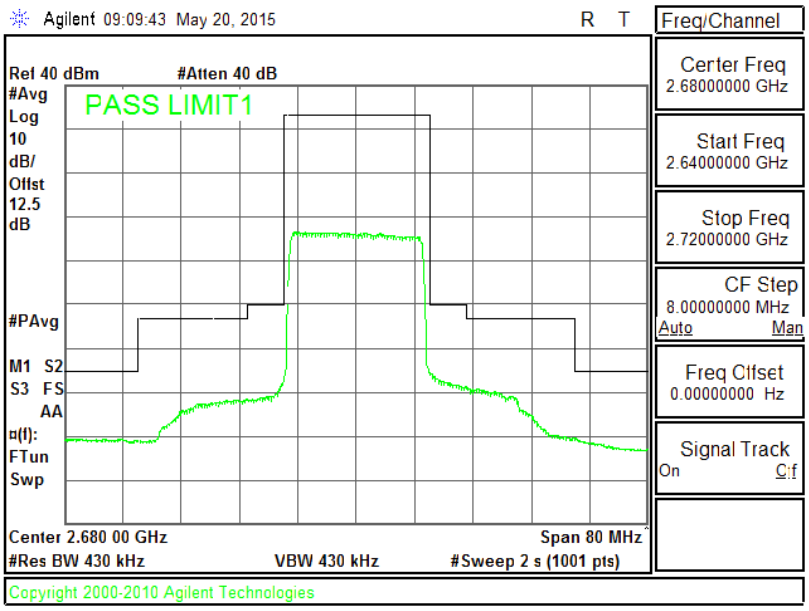
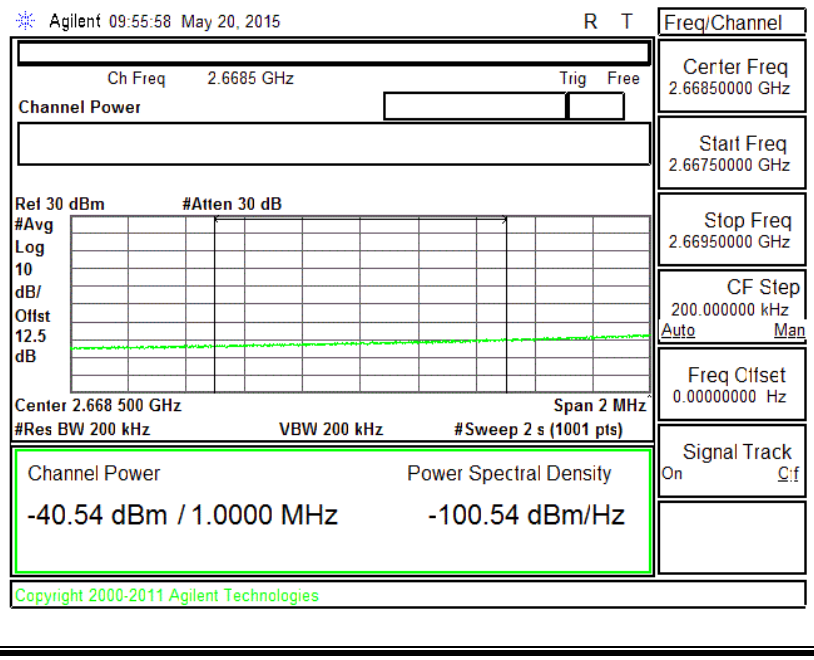
HIGH CH, RB100-0



HIGH CH, LOW SIDE, (RB=VB= 1%EBW, 2668-2669MHz)



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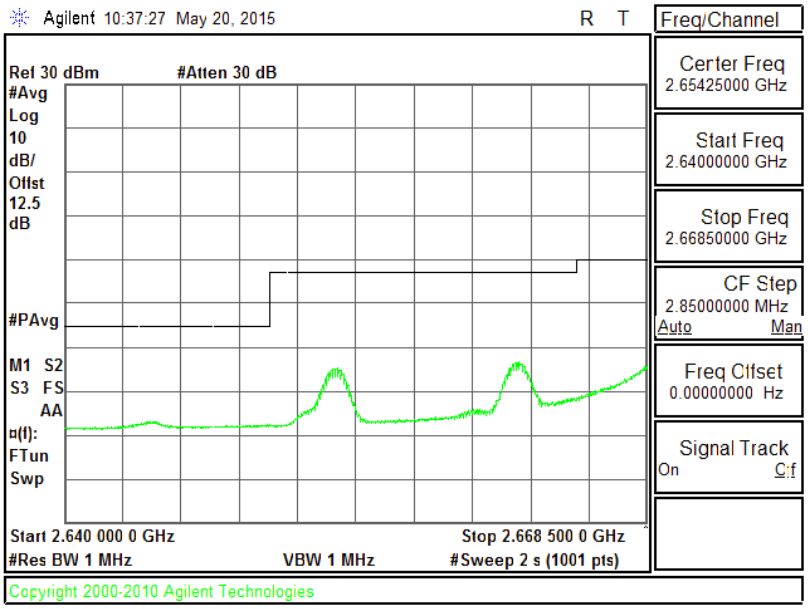
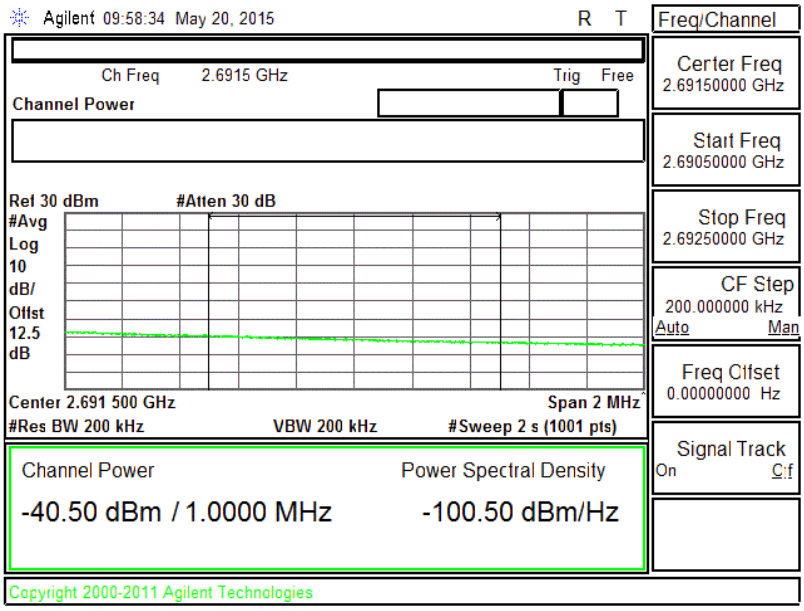
HIGH CH, LOW SIDE, (RB=VB= 1MHz, 2640-2668.5MHz)



HIGH CH, HIGH SIDE, (RB=VB= 1%EBW, 2691-2692MHz)



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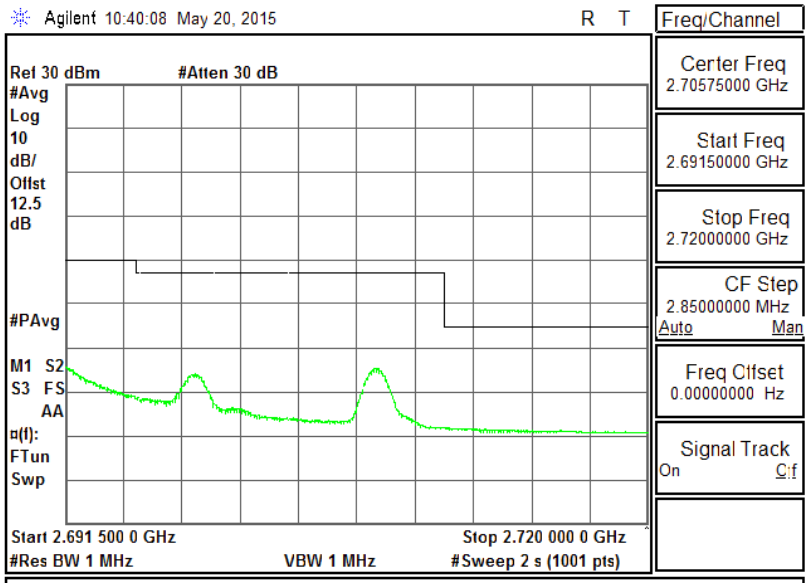
HIGH CH, HIGH SIDE, (RB=VB= 1MHz, 2691.5–2720MHz)



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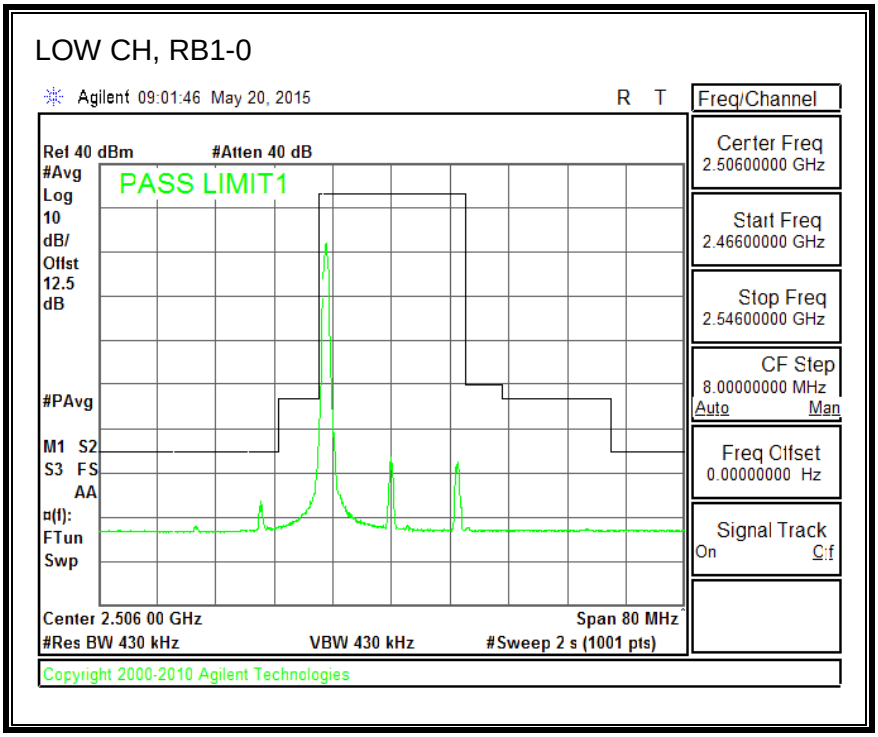
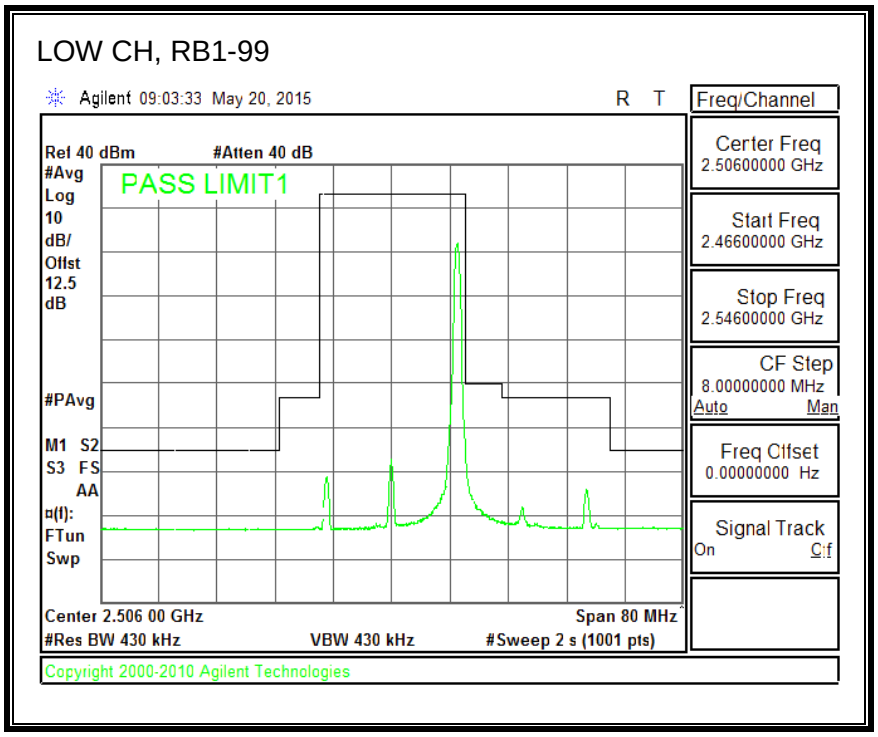
16QAM, (20.0 MHz BAND WIDTH)

LOW CH, RB1-0



LOW CH, RB1-99



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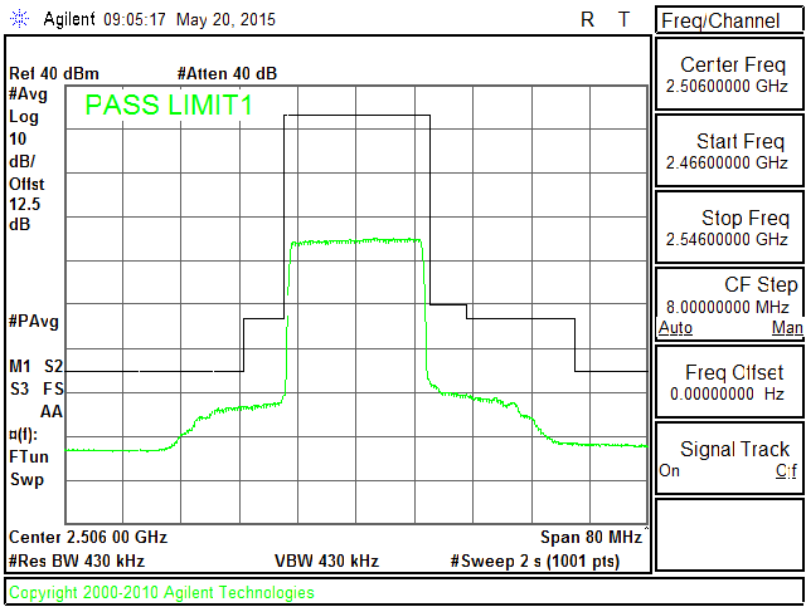
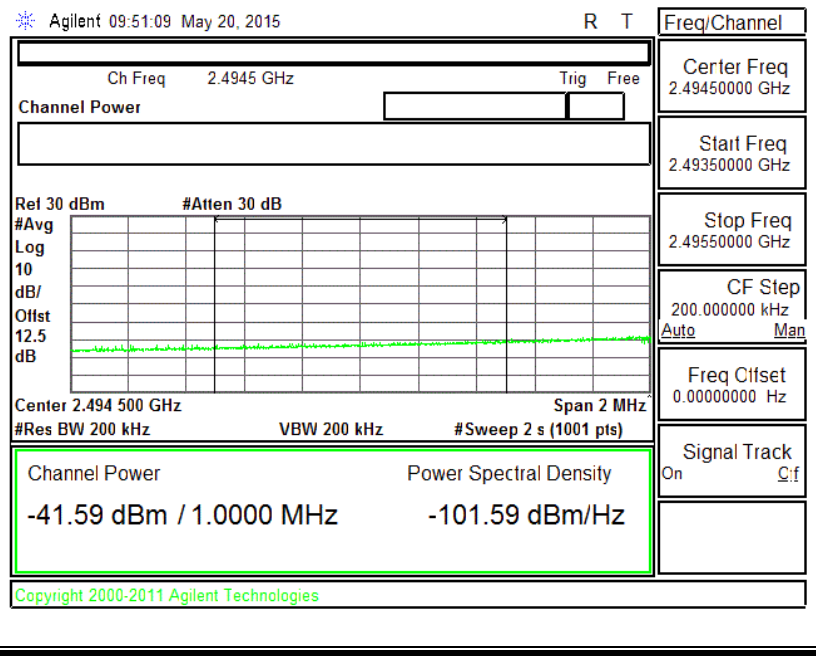
LOW CH, RB100-0



LOW CH, LOW SIDE, (RB=VB= 1%EBW, 2494–2495MHz)



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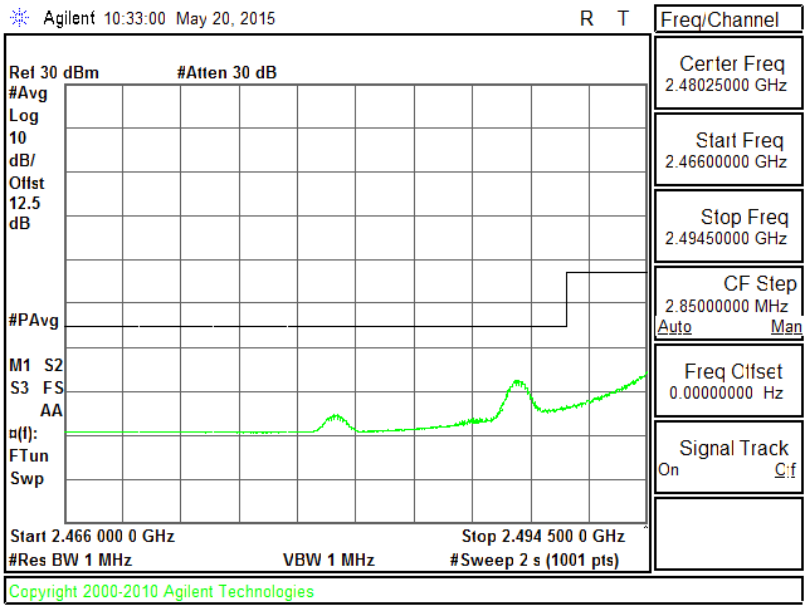
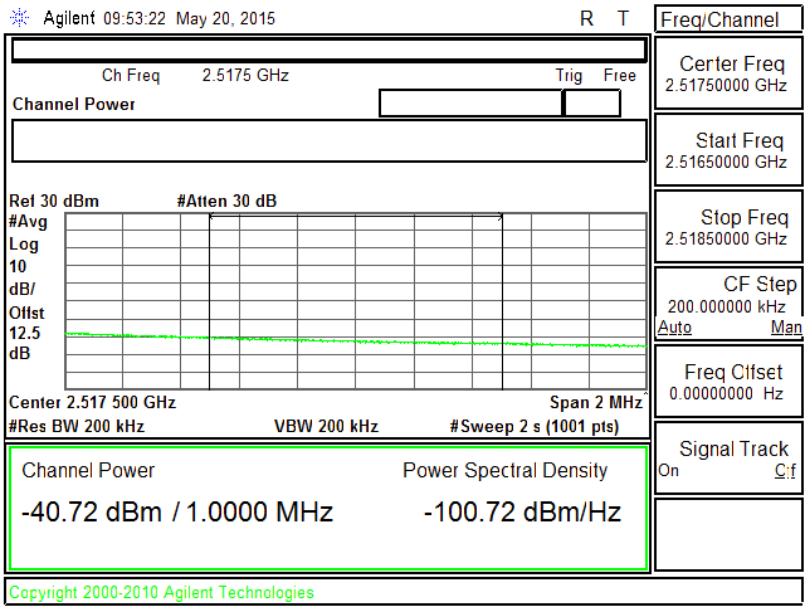
LOW CH, LOW SIDE, (RB=VB= 1MHz, 2466-2494.5MHz)



LOW CH, HIGH SIDE, (RB=VB= 1%EBW, 2517-2518MHz)



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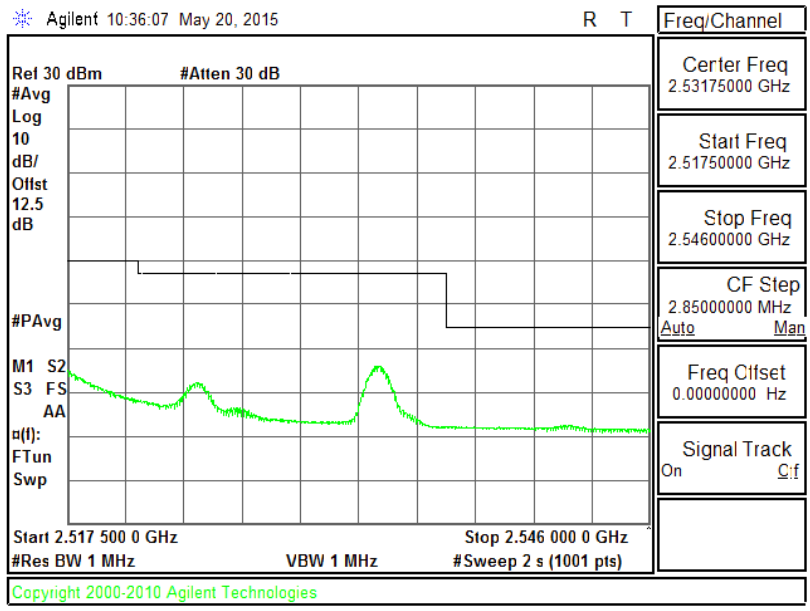
LOW CH, HIGH SIDE, (RB=VB= 1MHz, 2517.5-2546MHz)



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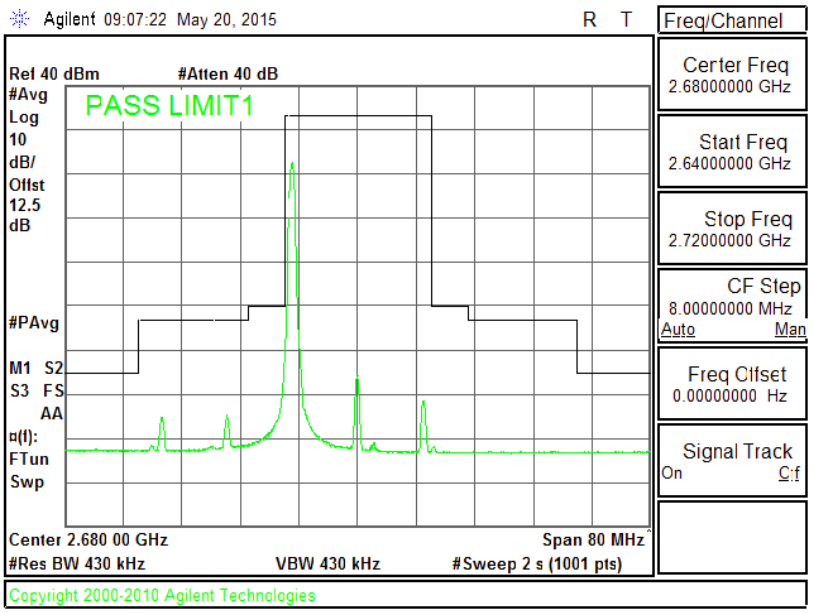
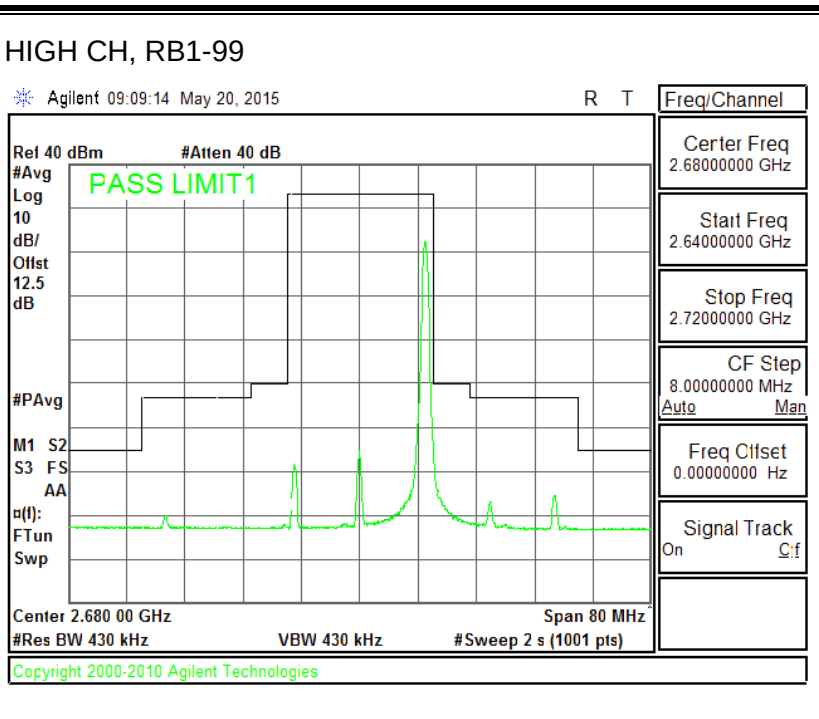
HIGH CH, RB1-0



HIGH CH, RB1-99



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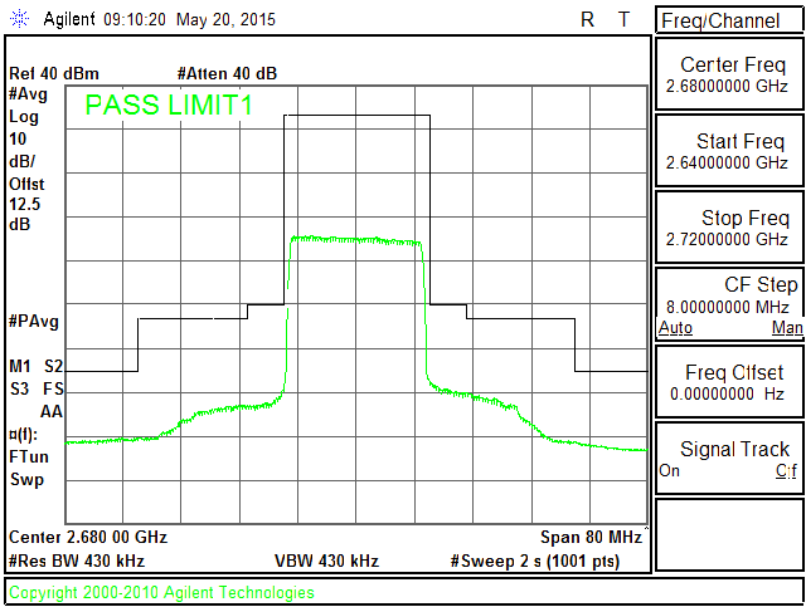
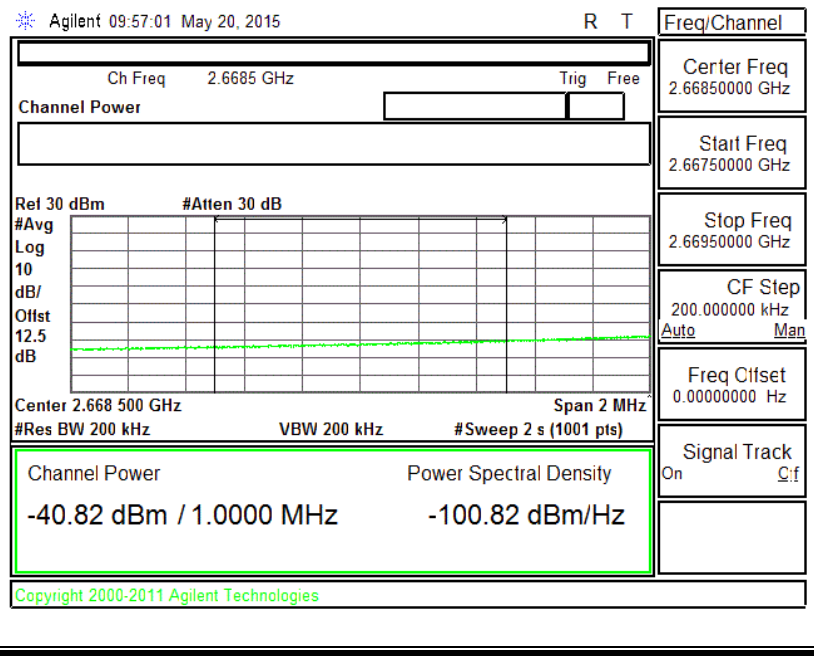
HIGH CH, RB100-0



HIGH CH, LOW SIDE, (RB=VB= 1%EBW, 2668-2669MHz)



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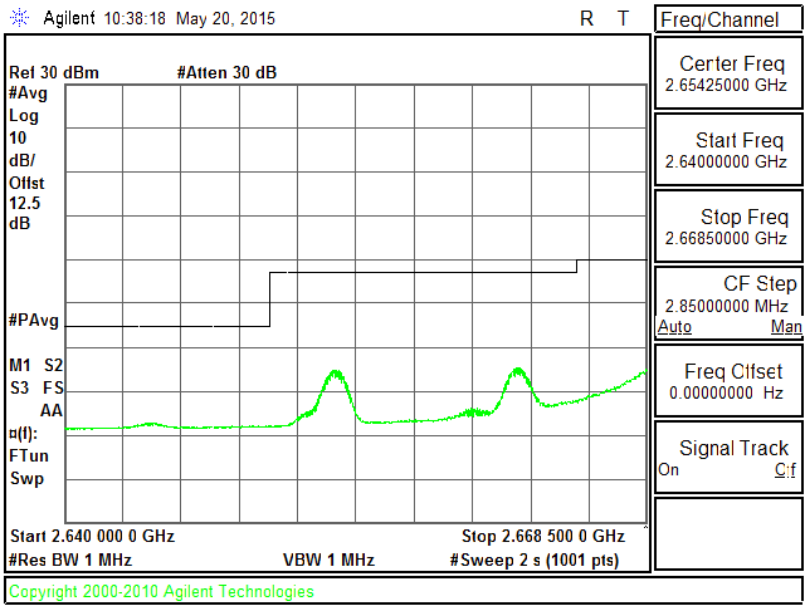
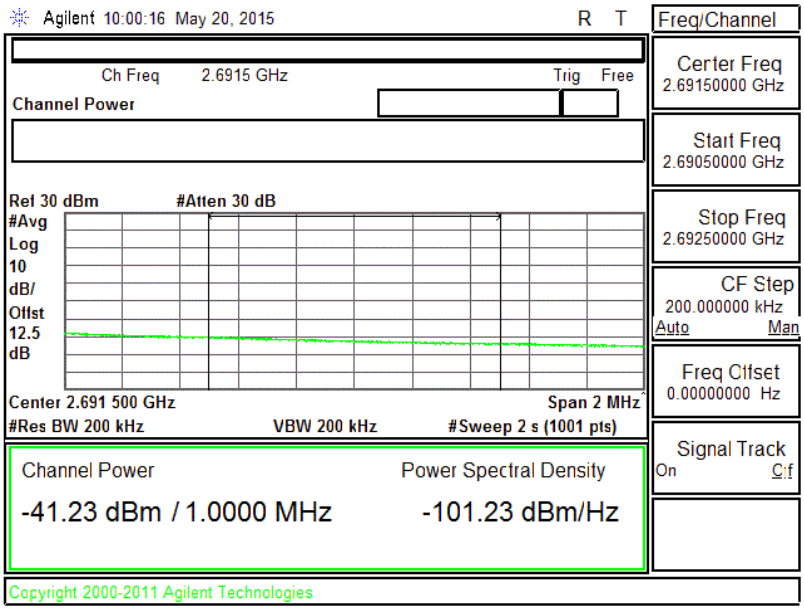
HIGH CH, LOW SIDE, (RB=VB= 1MHz, 2640-2668.5MHz)



HIGH CH, HIGH SIDE, (RB=VB= 1%EBW, 2691-2692MHz)



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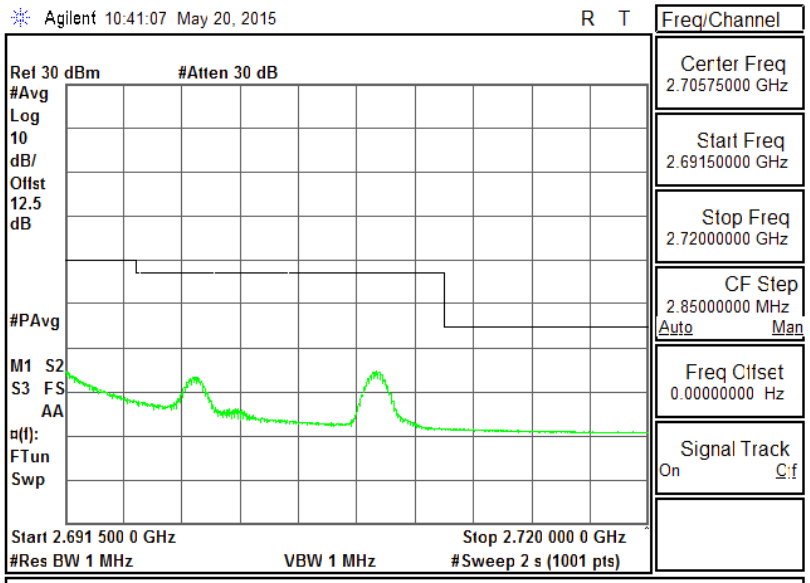
HIGH CH, HIGH SIDE, (RB=VB= 1MHz, 2691.5–2720MHz)



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8.5. OUT OF BAND EMISSIONS (MODEL: A1633)

RULE PART(S)

FCC: §2.1051, §22.901, §22.917, §24.238 and §27.53

LIMITS

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log (P) dB.

TEST PROCEDURE

The RF output of the transmitter was connected to a spectrum analyzer through a calibrated coaxial cable. Sufficient scans were taken to show the out-of-band Emissions, if any, up to 10th harmonic. Multiple sweeps were recorded in maximum hold mode using a peak detector to ensure that the worst-case emissions were caught.

For each out of band emissions measurement:

- Set display line at -13 dBm
- Set RBW & VBW to 100 kHz for the measurement below 1 GHz, and 1 MHz for the measurement above 1 GHz.

MODES TESTED

- LTE Band 2
- LTE Band 4
- LTE Band 5
- LTE Band 7
- LTE Band 12
- LTE Band 13
- LTE Band 17
- LTE Band 25
- LTE Band 26
- LTE Band 30
- LTE Band 41

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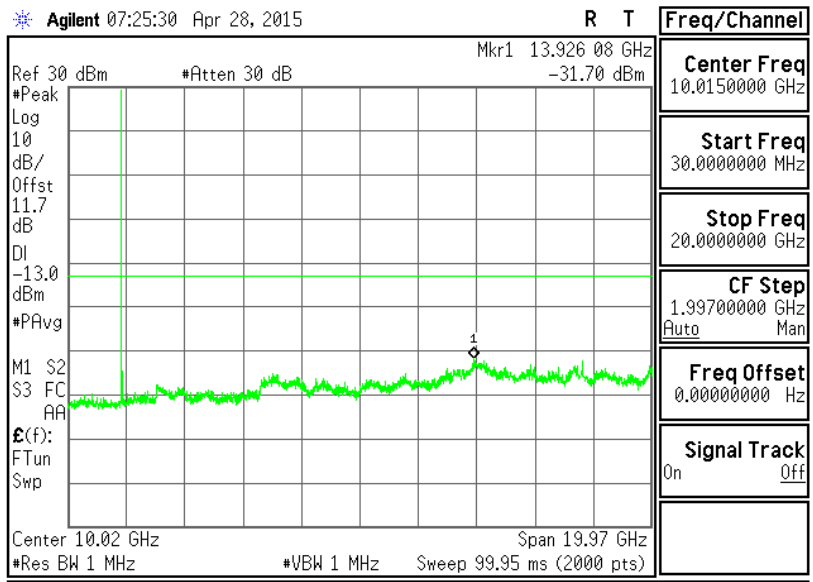
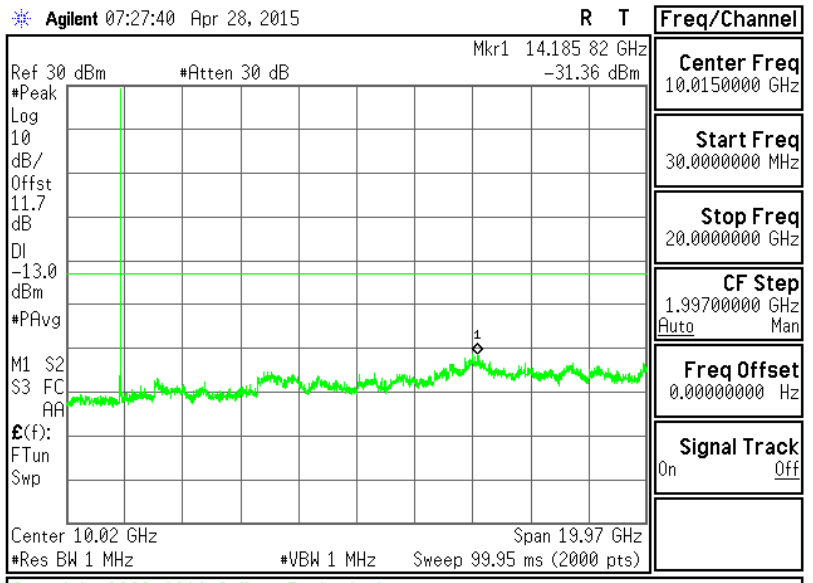
8.5.1. LTE BAND 2

QPSK, (1.4 MHz BAND WIDTH)

LOW, RB1-0, 30 TO 20000 MHz



MID, RB1-0, 30 TO 20000 MHz



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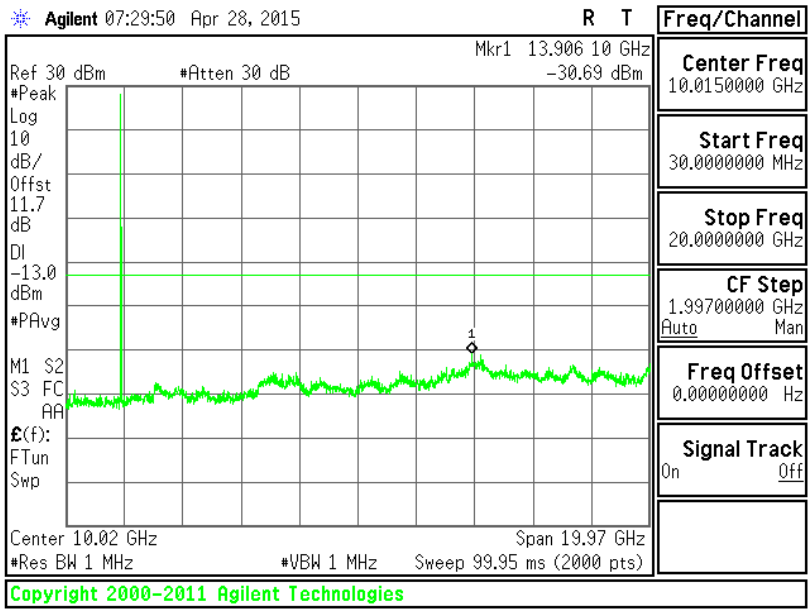
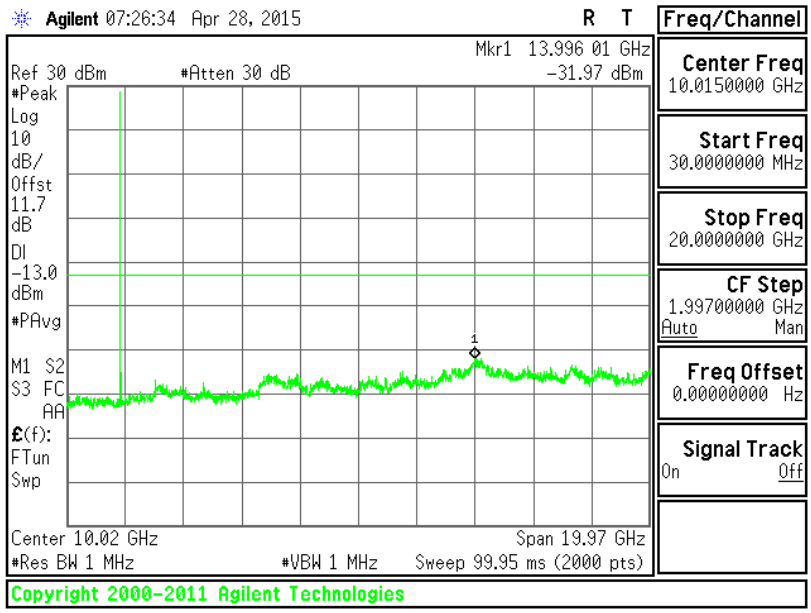
HIGH, RB1-0, 30 TO 20000 MHz



16QAM, (1.4 MHz BAND WIDTH)

LOW, RB1-0, 30 TO 20000 MHz



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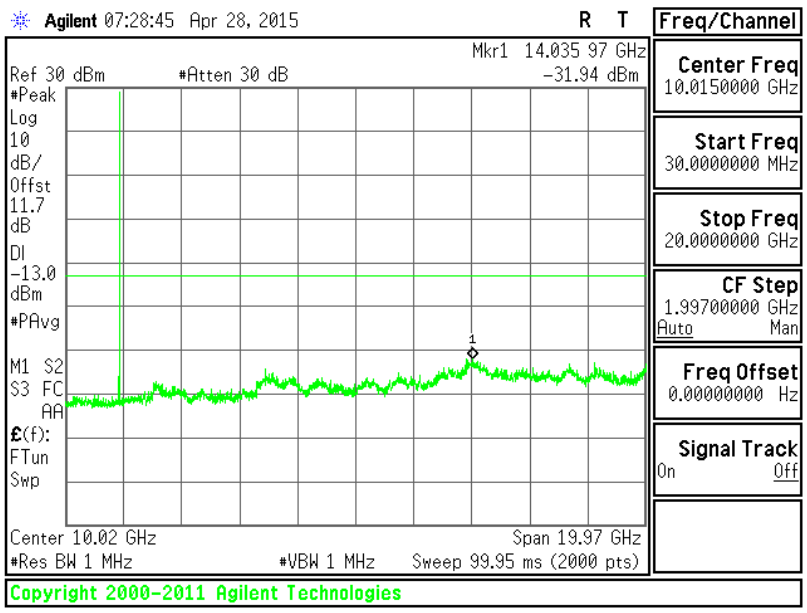
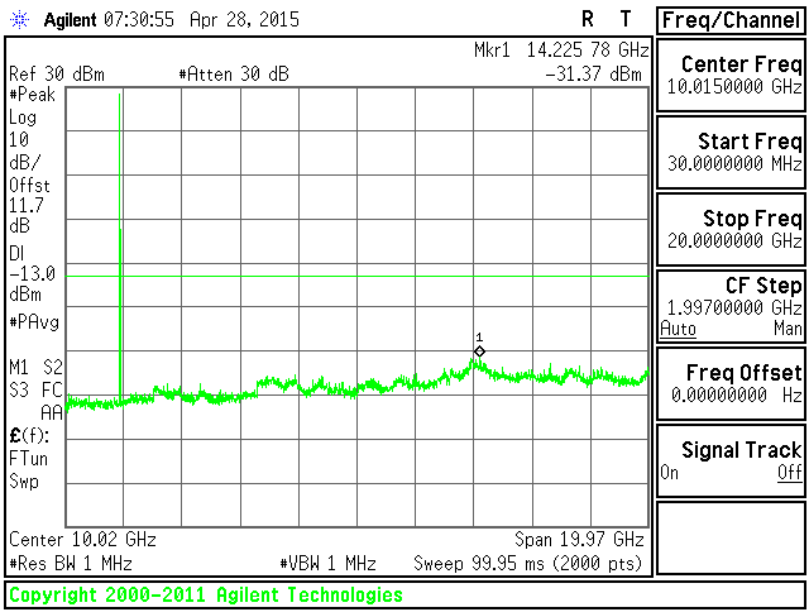
MID, RB1-0, 30 TO 20000 MHz



HIGH, RB1-0, 30 TO 20000 MHz



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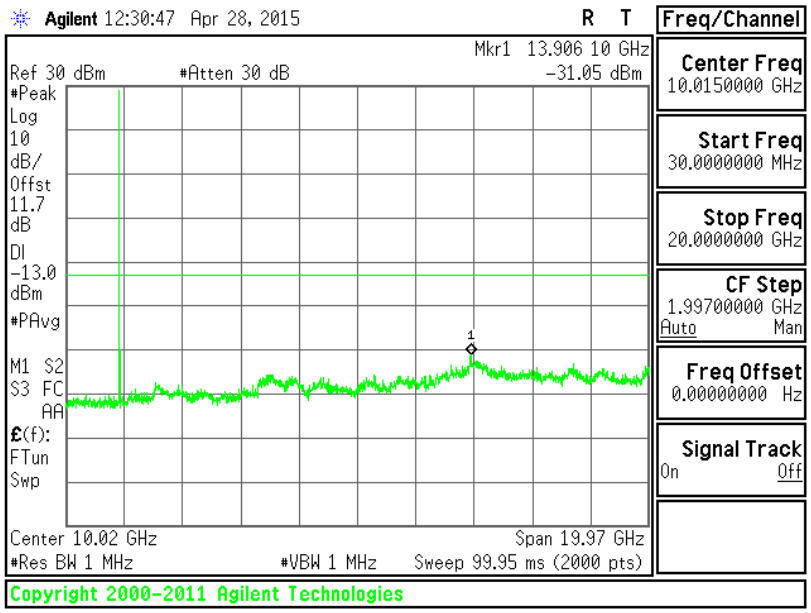
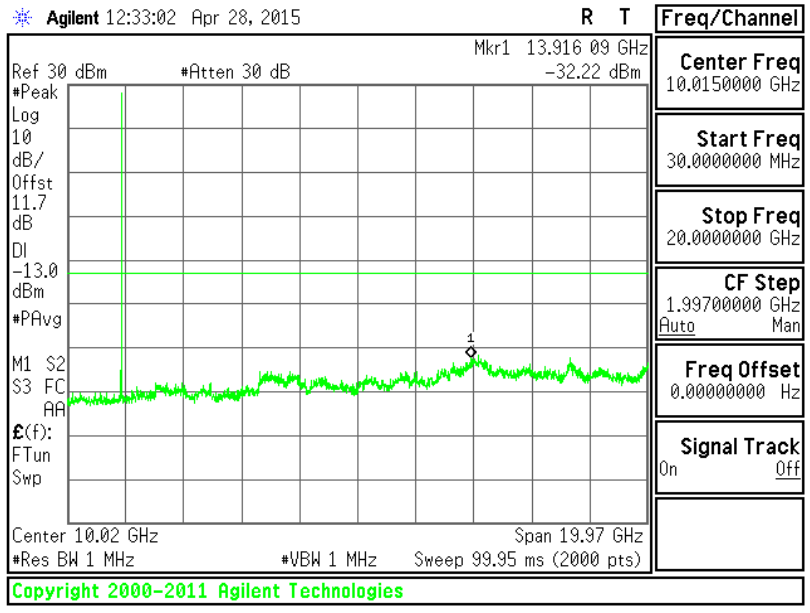
QPSK, (3.0 MHz BAND WIDTH)

LOW, RB1-0, 30 TO 20000 MHz



MID, RB1-0, 30 TO 20000 MHz



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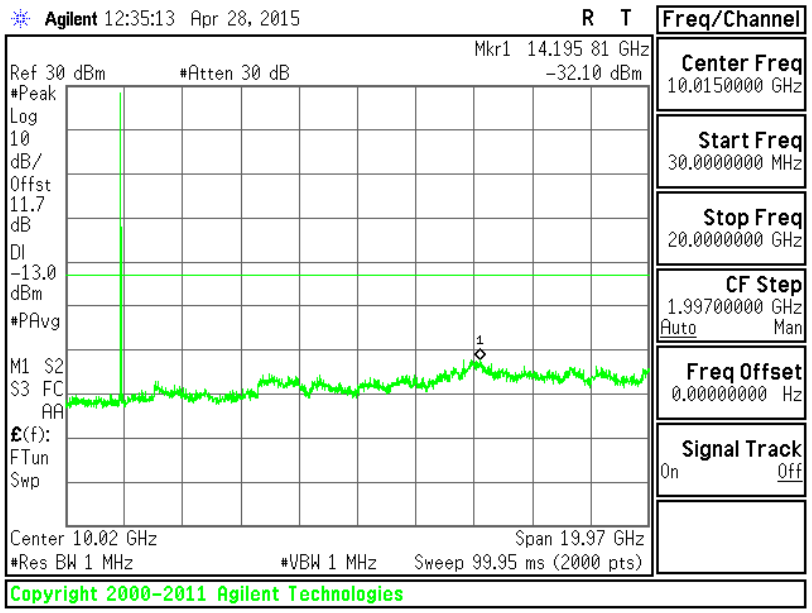
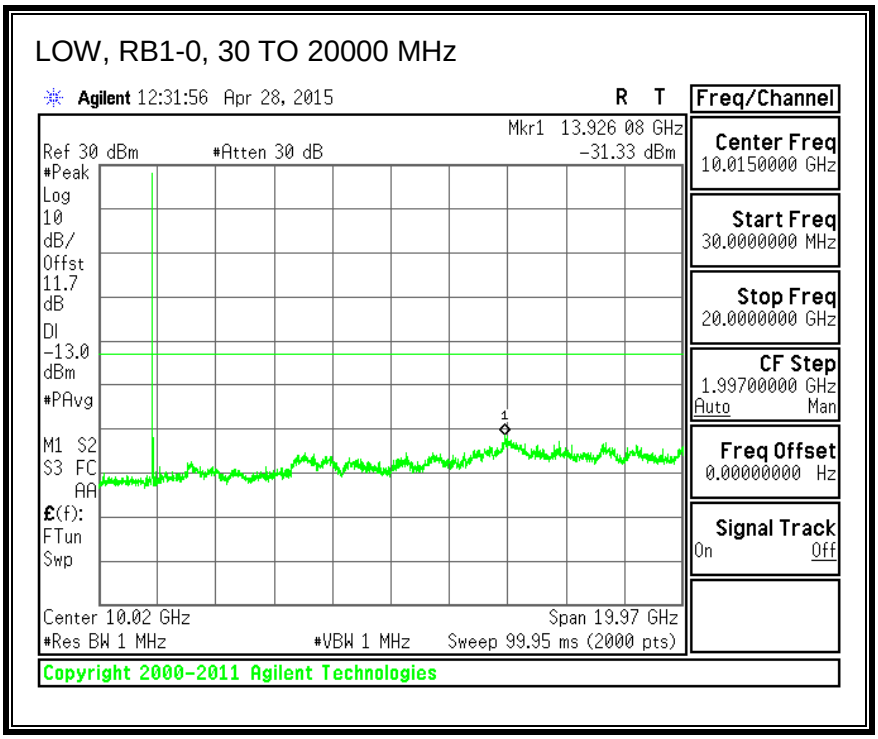
HIGH, RB1-0, 30 TO 20000 MHz



16QAM, (3.0 MHz BAND WIDTH)

LOW, RB1-0, 30 TO 20000 MHz



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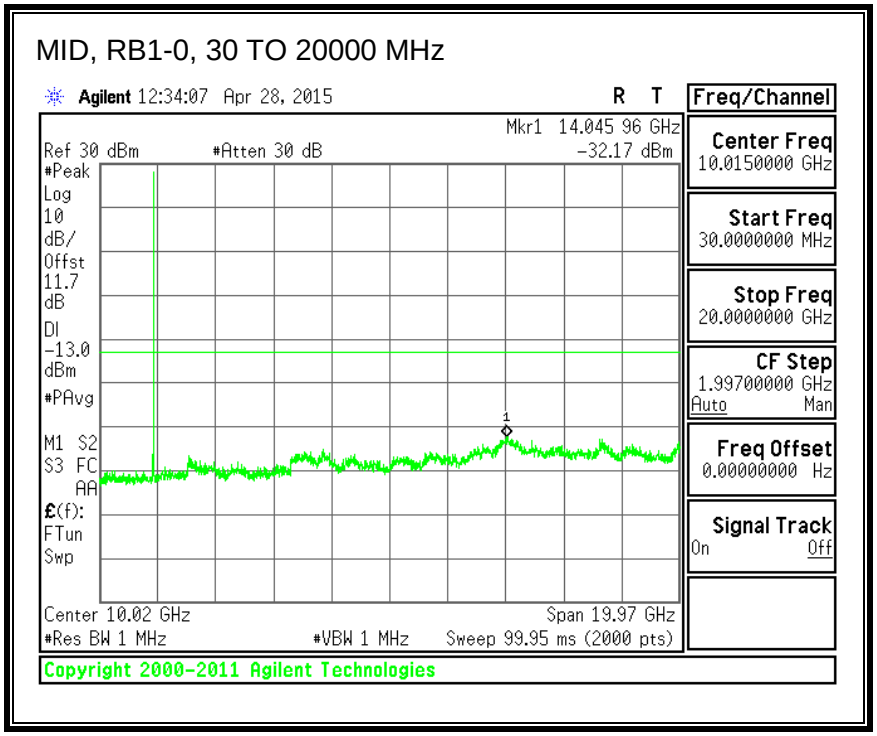
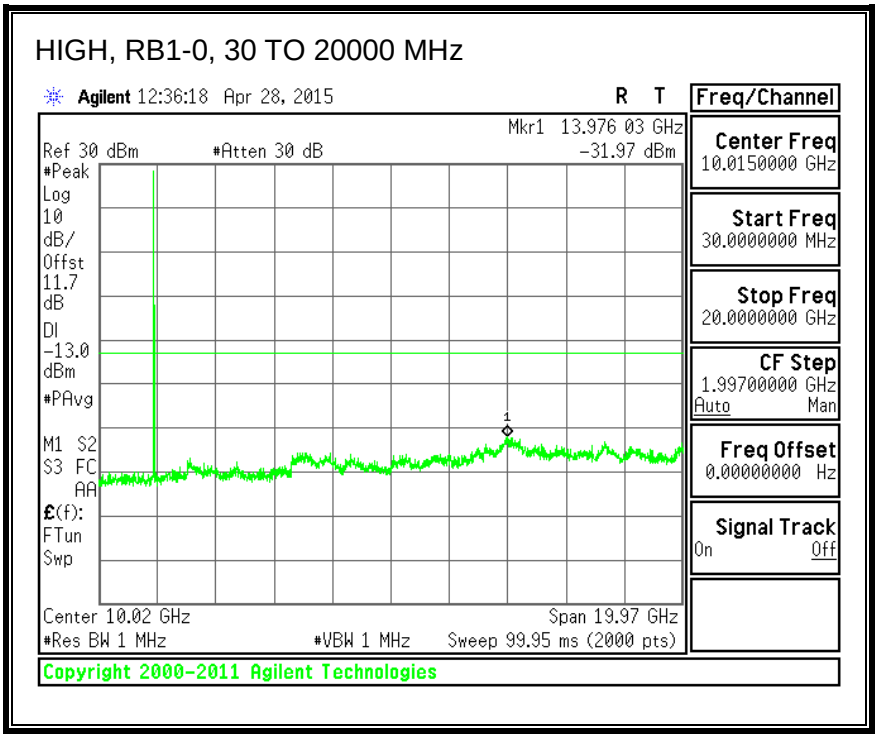
MID, RB1-0, 30 TO 20000 MHz



HIGH, RB1-0, 30 TO 20000 MHz



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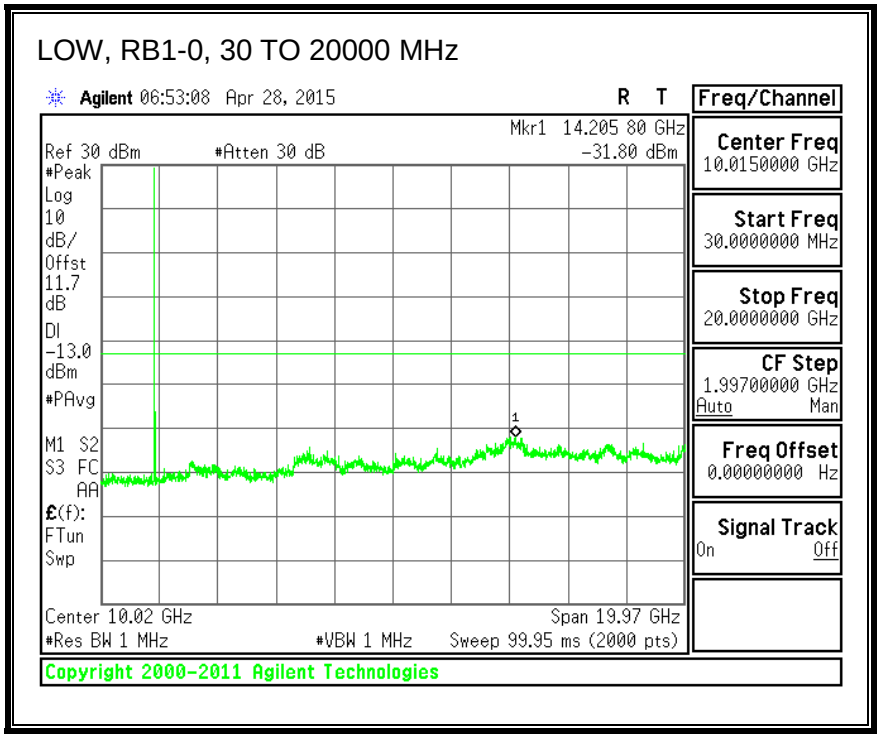
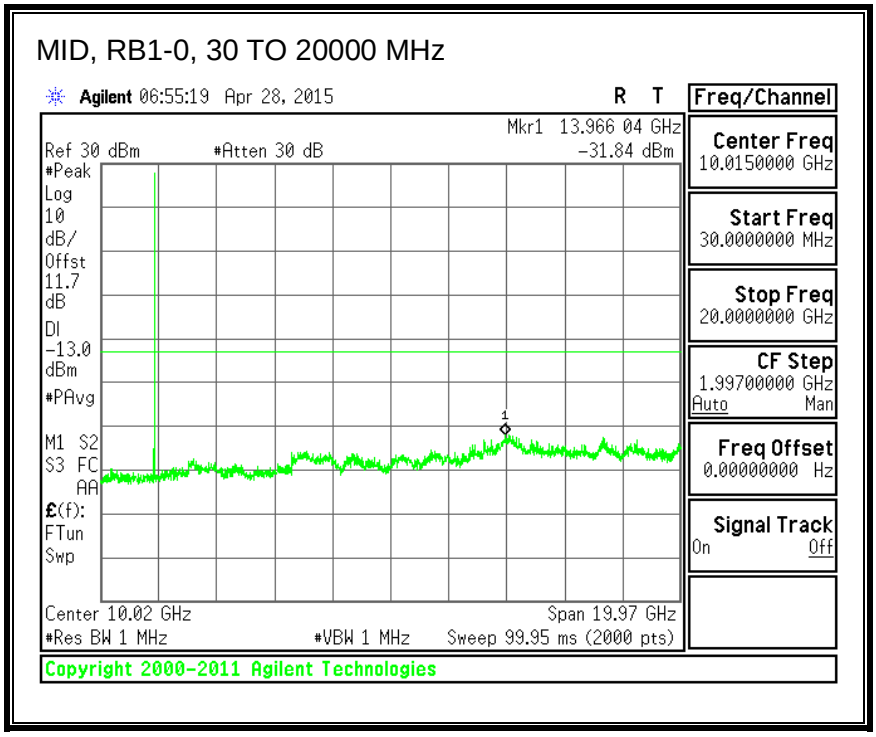
QPSK, (5.0 MHz BAND WIDTH)

LOW, RB1-0, 30 TO 20000 MHz



MID, RB1-0, 30 TO 20000 MHz



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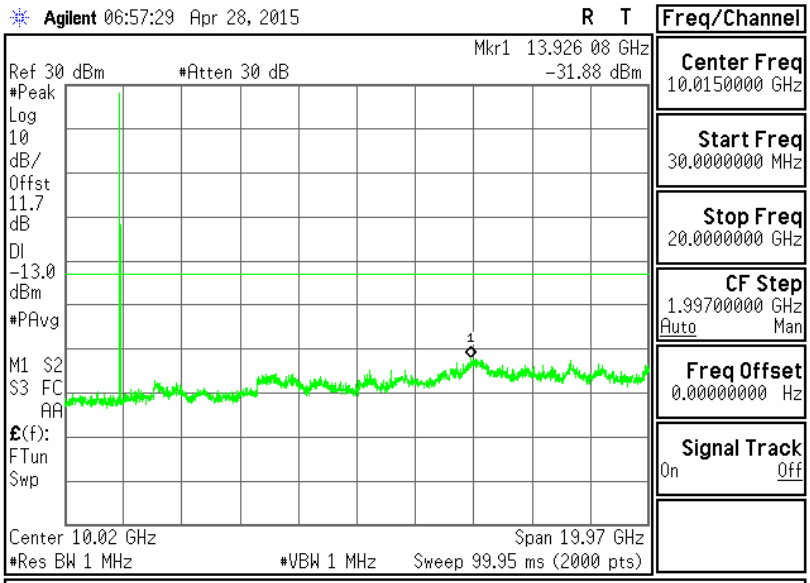
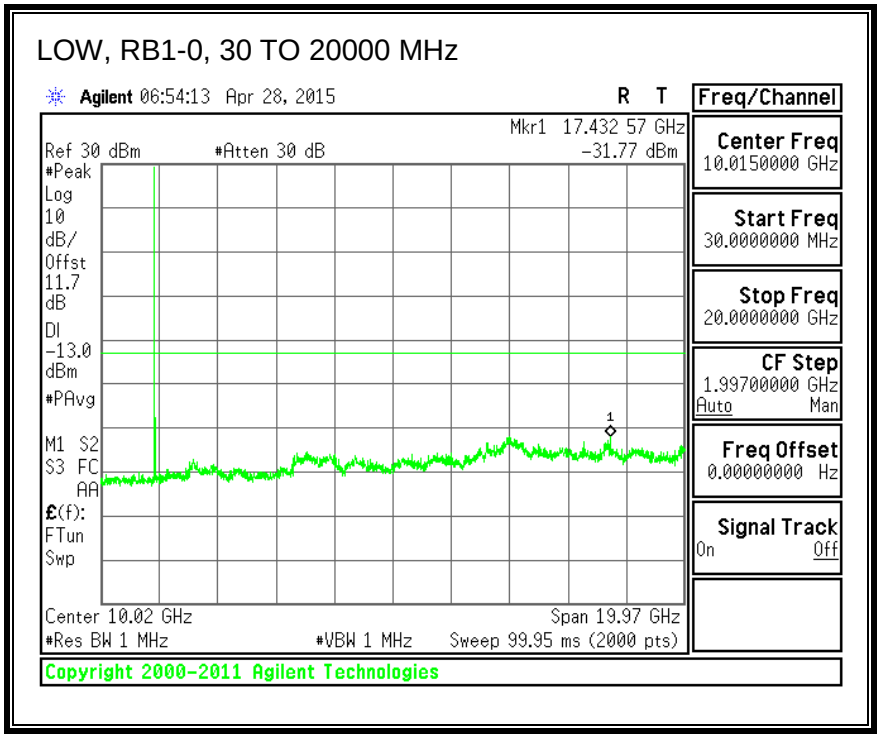
HIGH, RB1-0, 30 TO 20000 MHz



16QAM, (5.0 MHz BAND WIDTH)

LOW, RB1-0, 30 TO 20000 MHz



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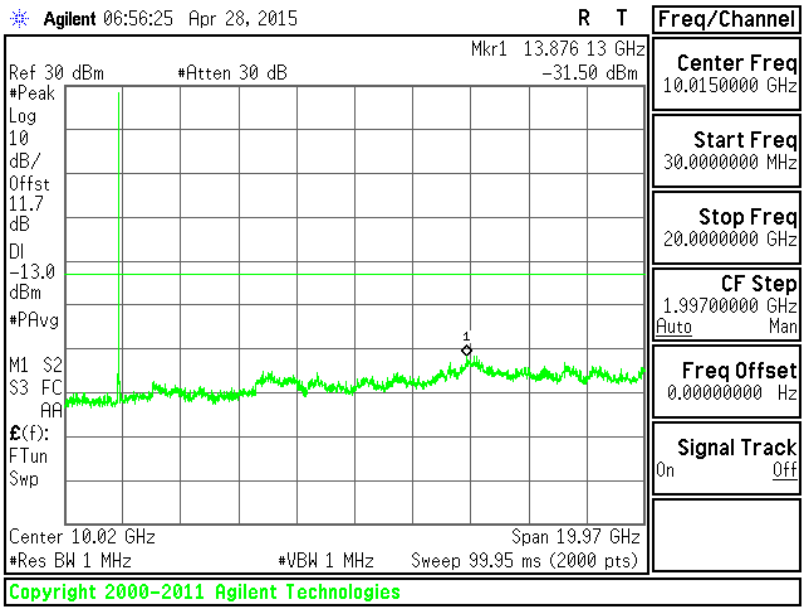
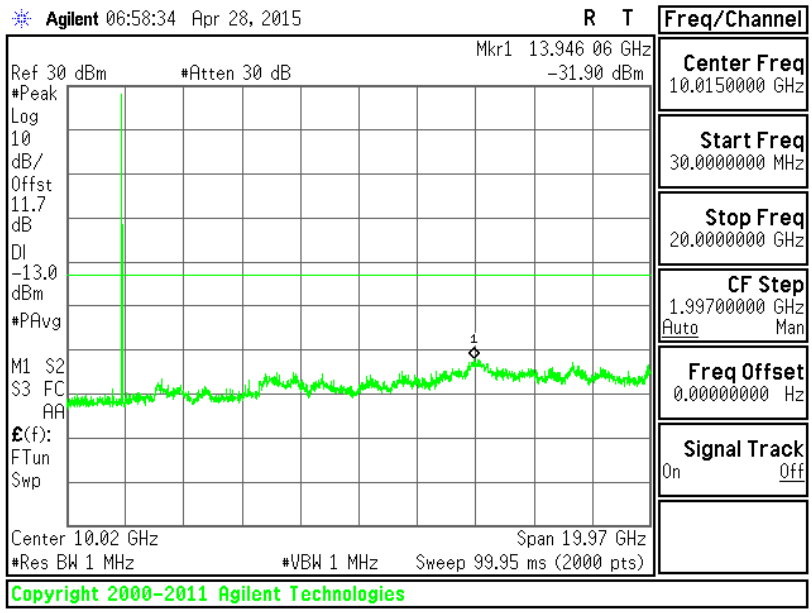
MID, RB1-0, 30 TO 20000 MHz



HIGH, RB1-0, 30 TO 20000 MHz



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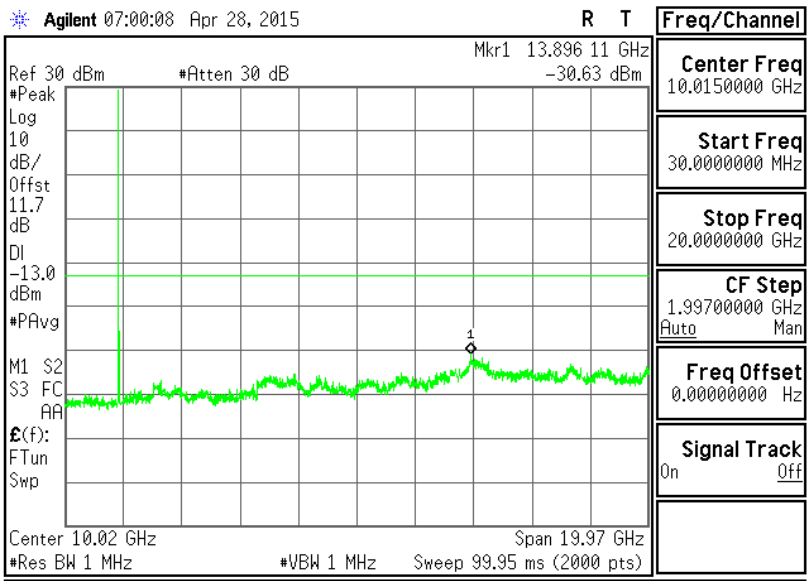
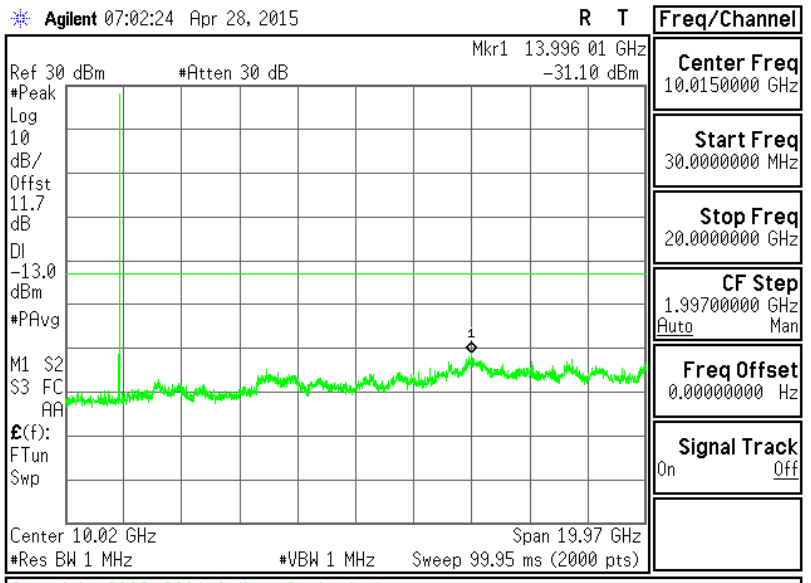
QPSK, (10.0 MHz BAND WIDTH)

LOW, RB1-0, 30 TO 20000 MHz



MID, RB1-0, 30 TO 20000 MHz



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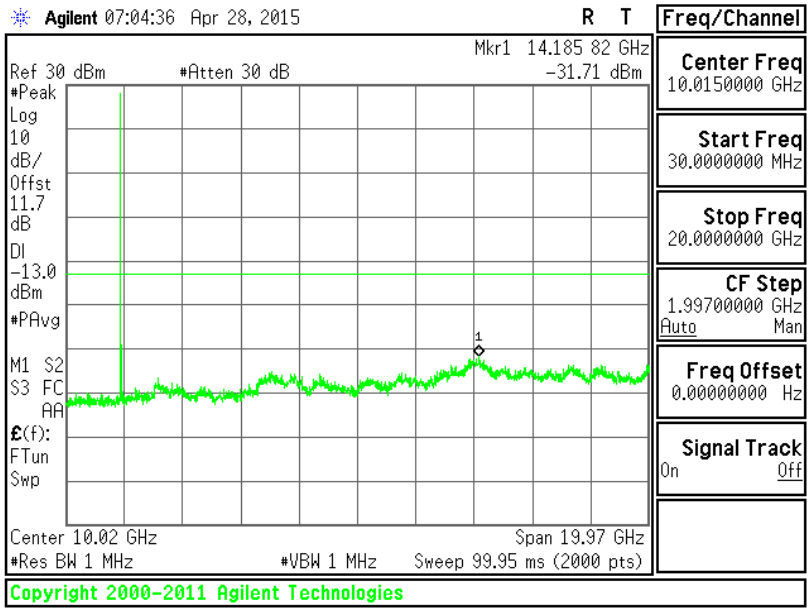
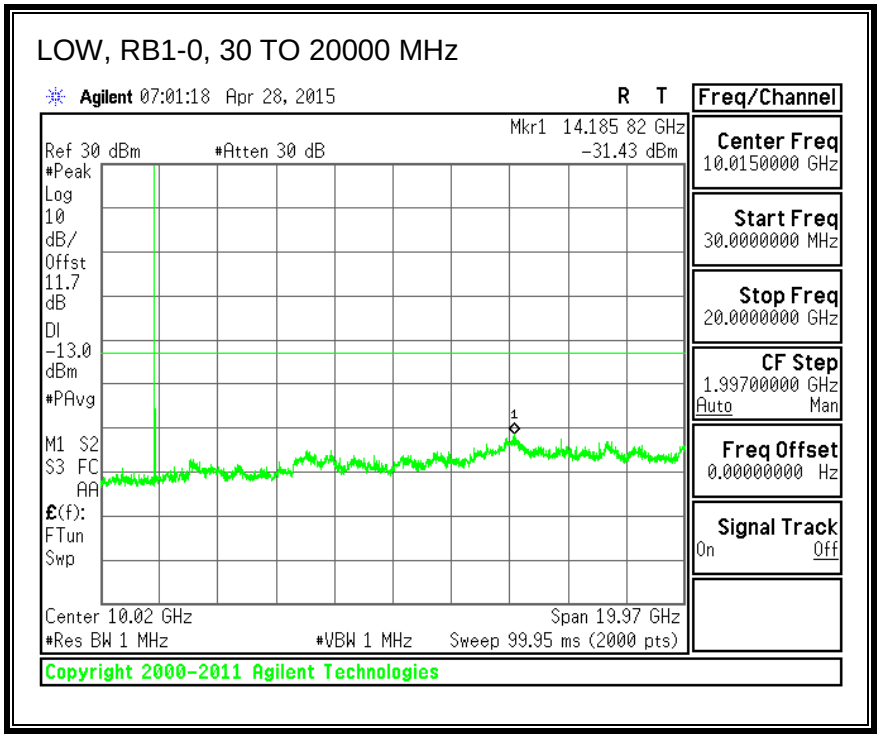
HIGH, RB1-0, 30 TO 20000 MHz



16QAM, (10.0 MHz BAND WIDTH)

LOW, RB1-0, 30 TO 20000 MHz



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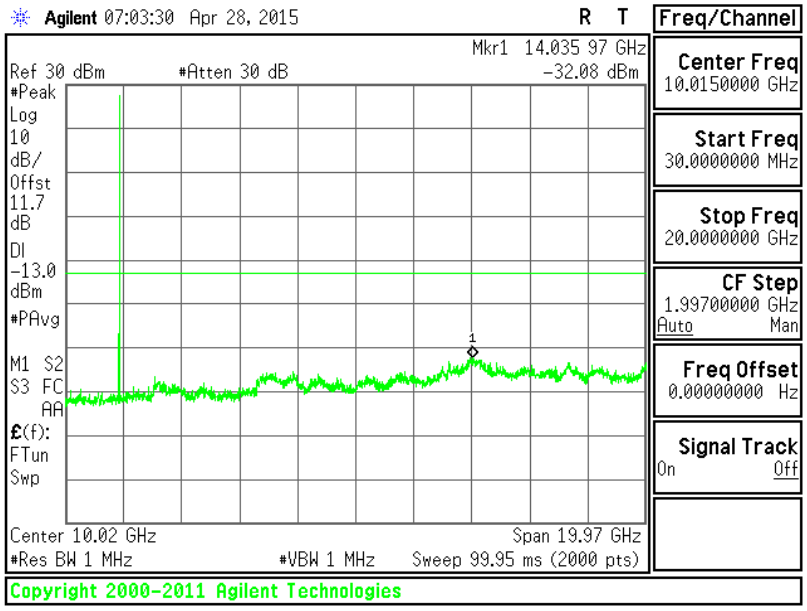
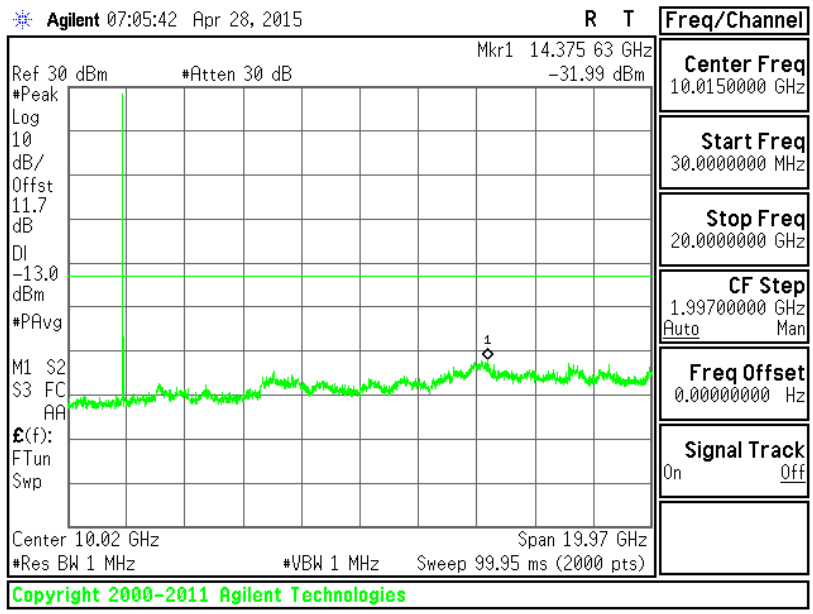
MID, RB1-0, 30 TO 20000 MHz



HIGH, RB1-0, 30 TO 20000 MHz



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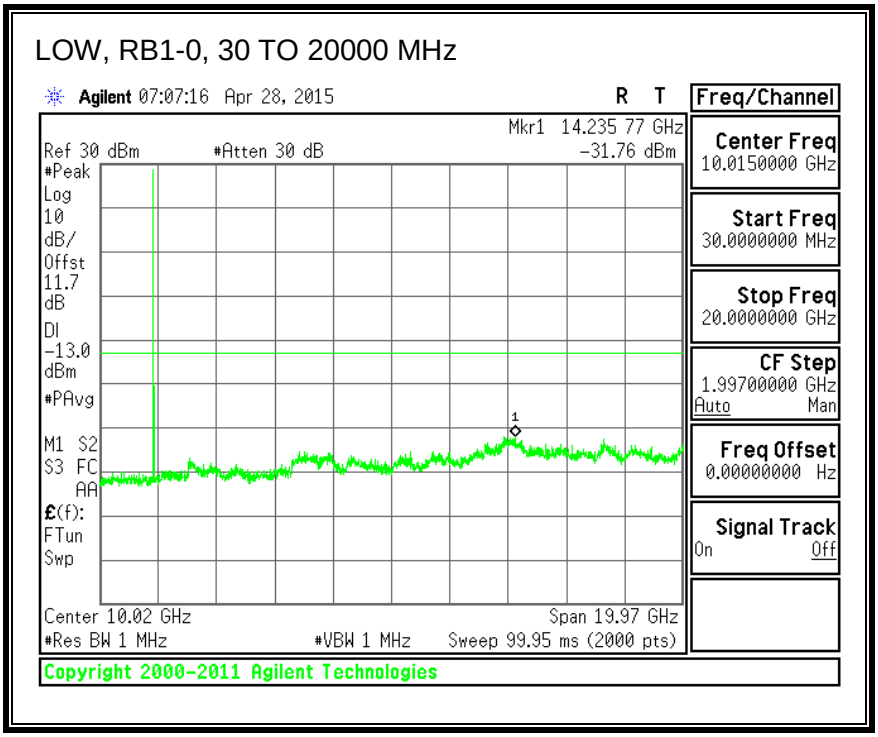
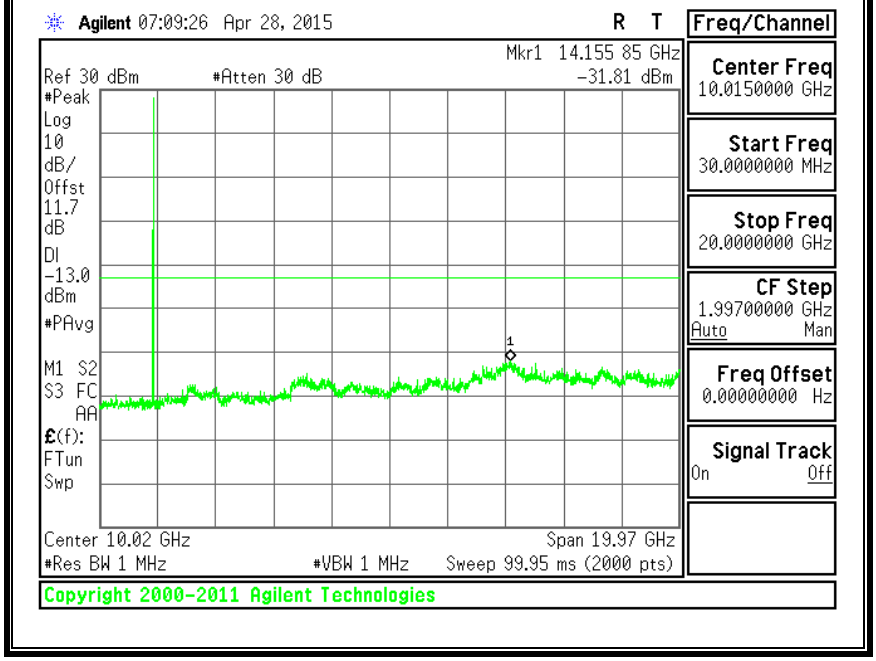
QPSK, (15.0 MHz BAND WIDTH)

LOW, RB1-0, 30 TO 20000 MHz



MID, RB1-0, 30 TO 20000 MHz



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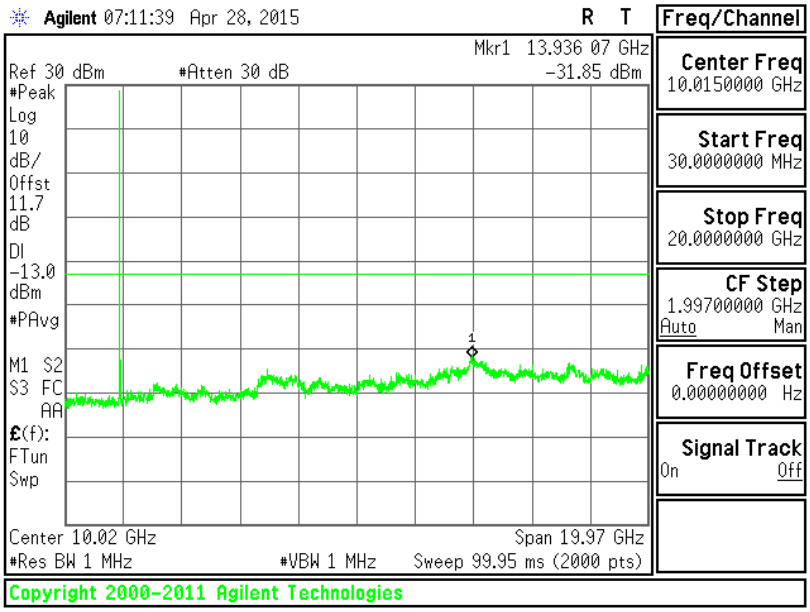
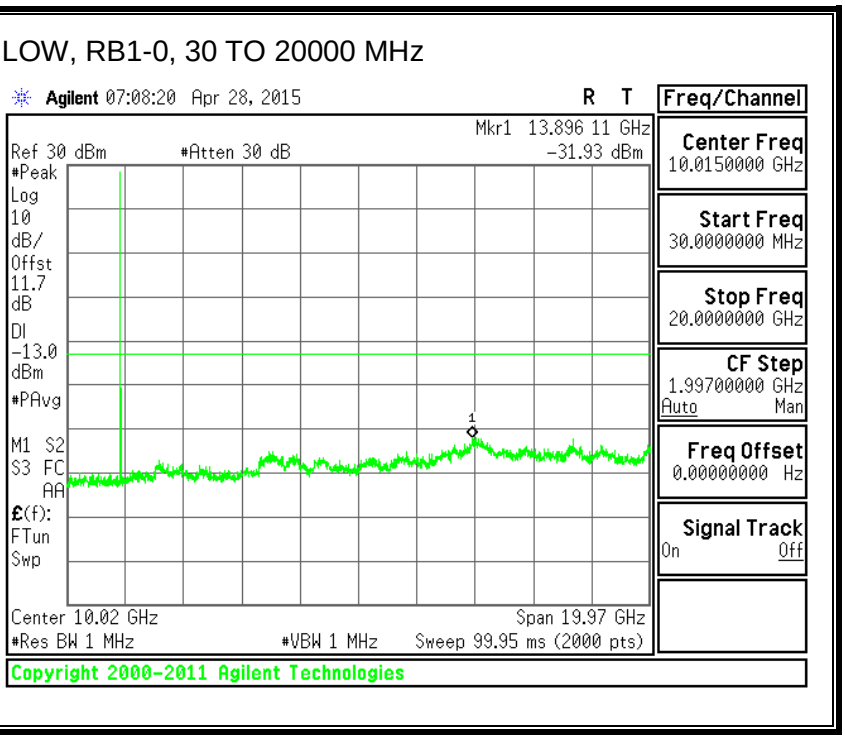
HIGH, RB1-0, 30 TO 20000 MHz



16QAM, (15.0 MHz BAND WIDTH)

LOW, RB1-0, 30 TO 20000 MHz



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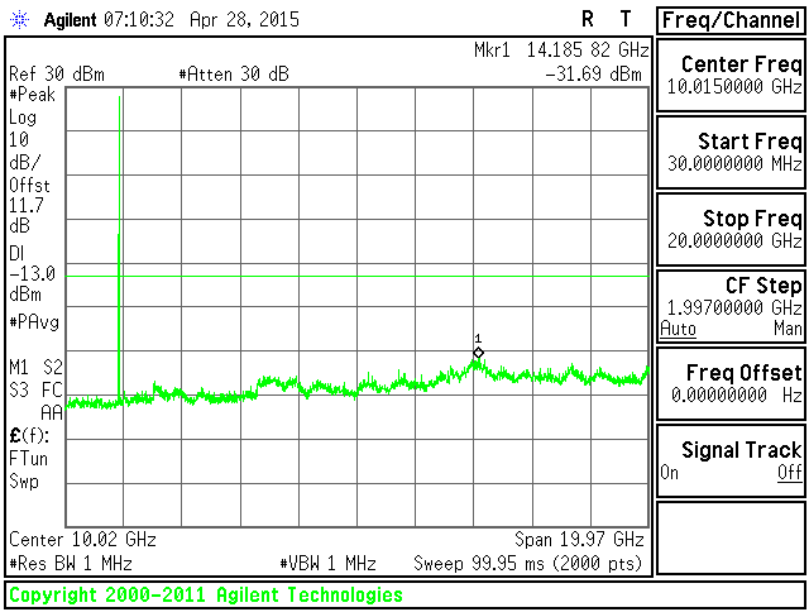
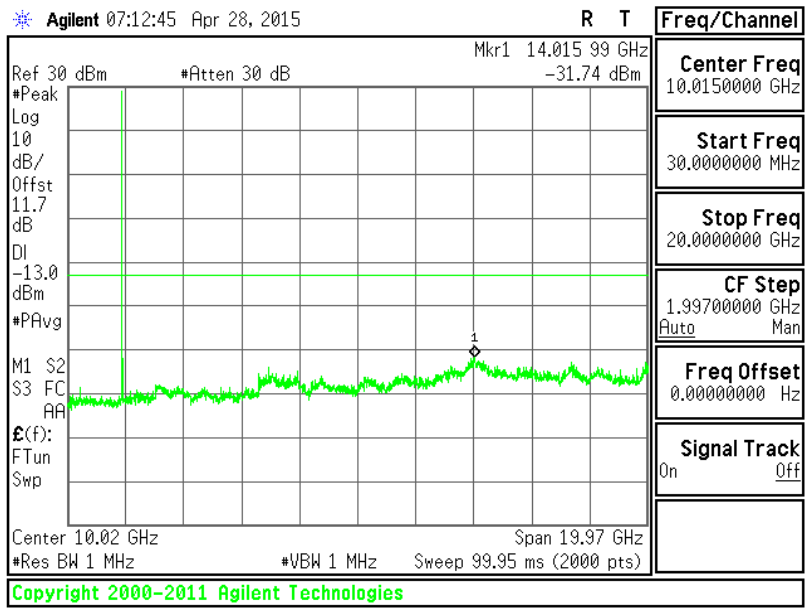
MID, RB1-0, 30 TO 20000 MHz



HIGH, RB1-0, 30 TO 20000 MHz



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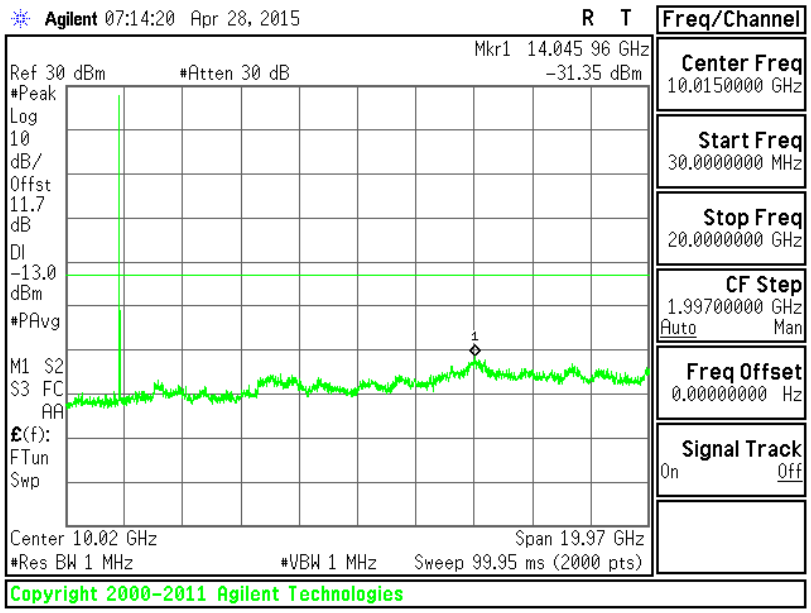
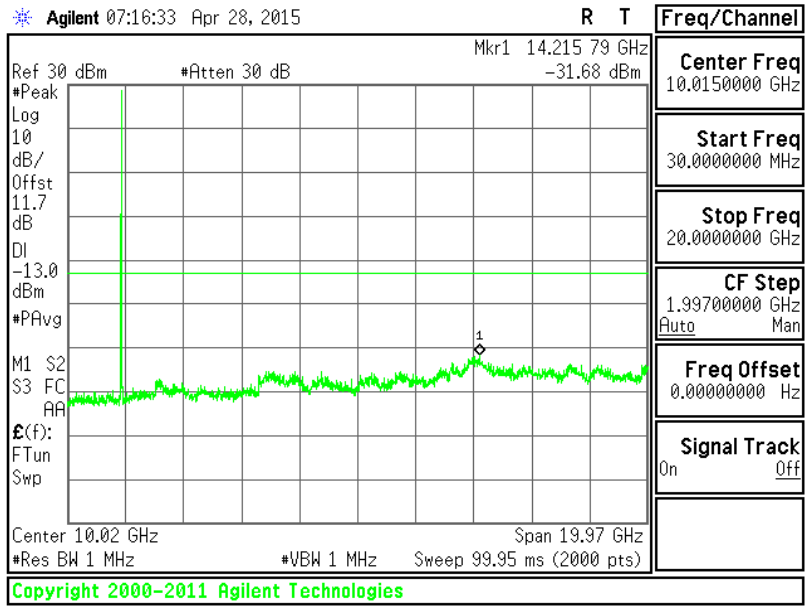
QPSK, (20.0 MHz BAND WIDTH)

LOW, RB1-0, 30 TO 20000 MHz



MID, RB1-0, 30 TO 20000 MHz



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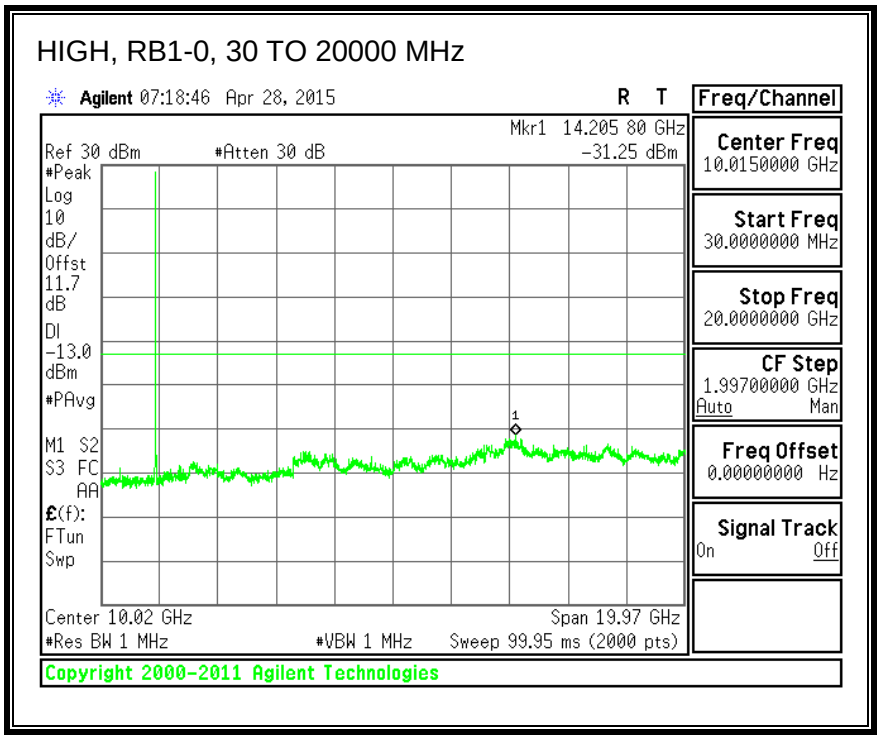
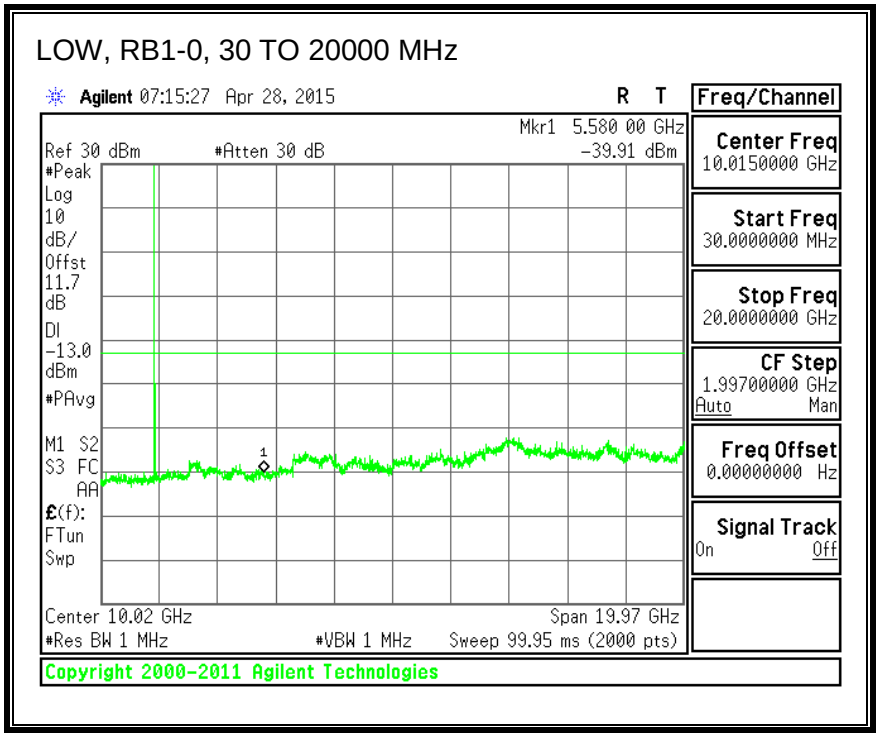


16QAM, (20.0 MHz BAND WIDTH)



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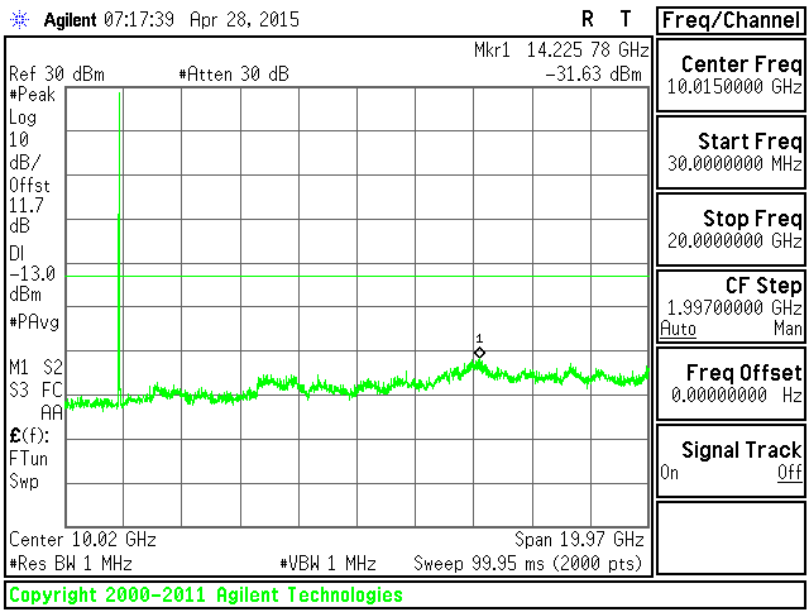
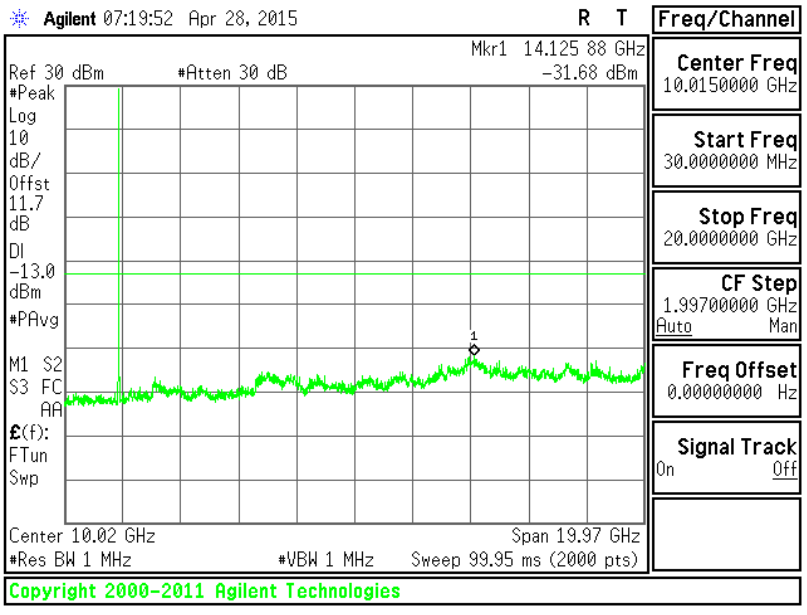
MID, RB1-0, 30 TO 20000 MHz



HIGH, RB1-0, 30 TO 20000 MHz



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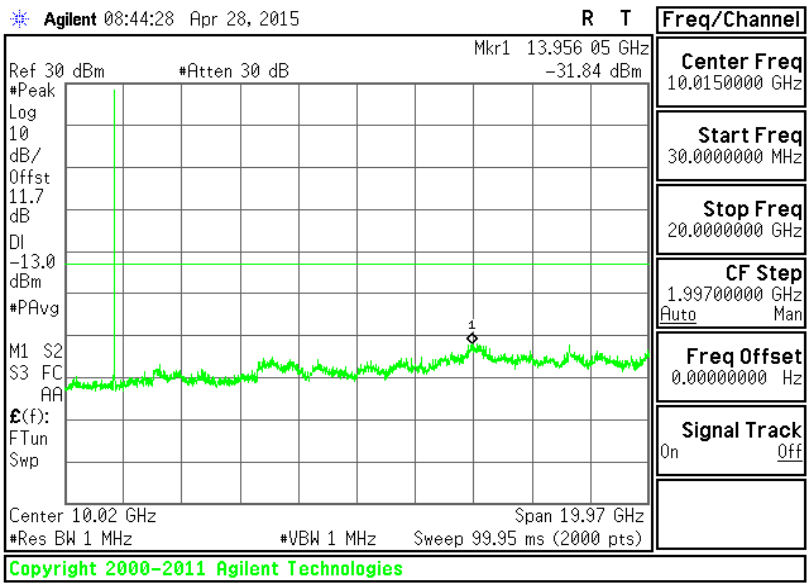
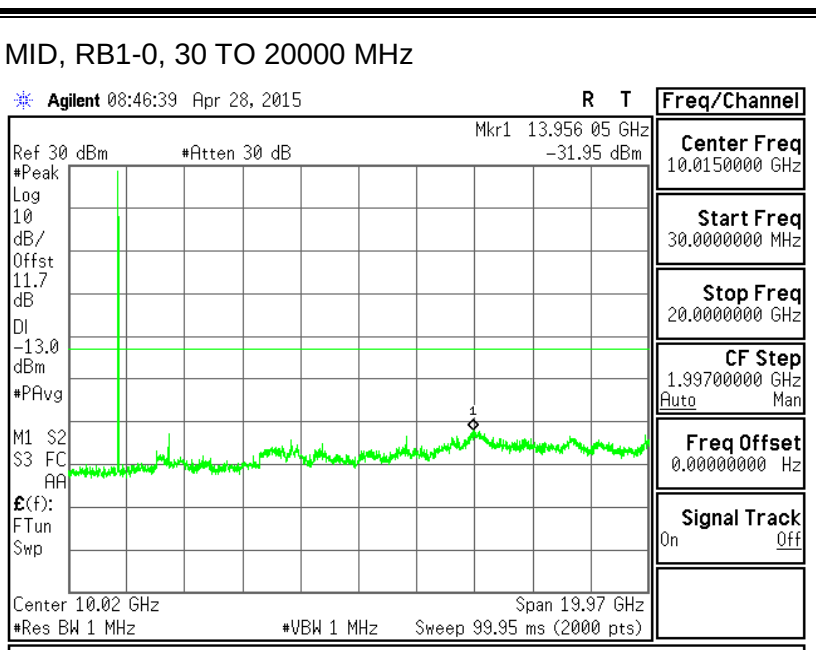
8.5.2. LTE BAND 4

QPSK, (1.4 MHz BAND WIDTH)

LOW, RB1-0, 30 TO 20000 MHz



MID, RB1-0, 30 TO 20000 MHz



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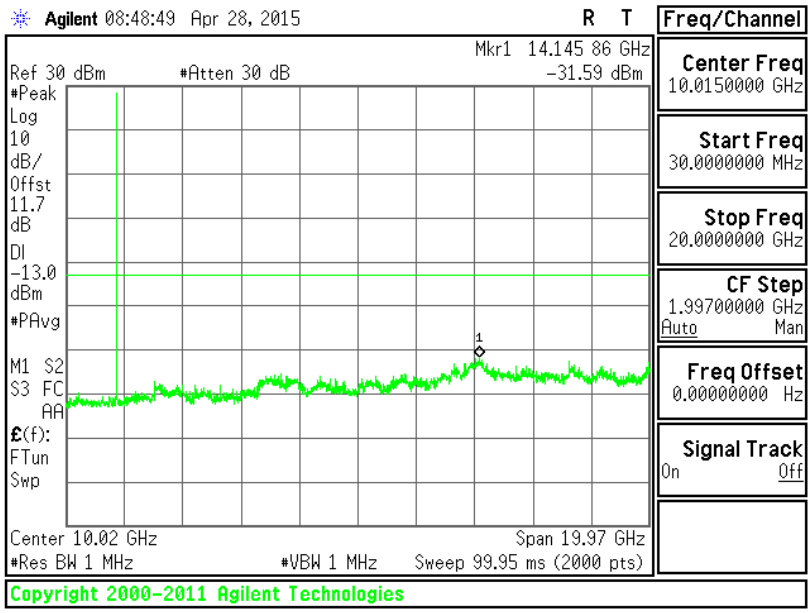
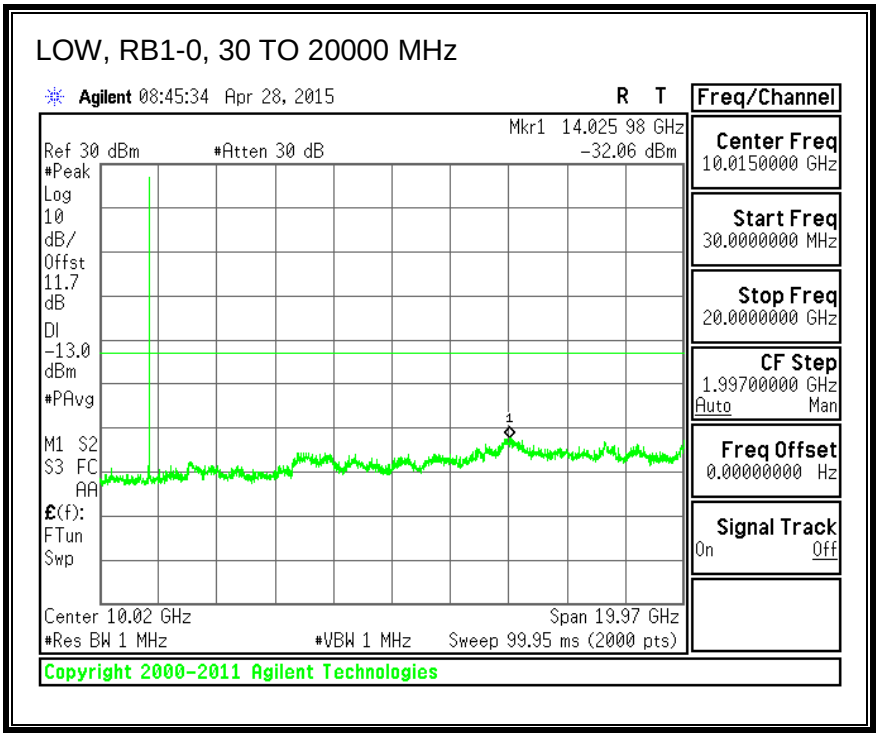
HIGH, RB1-0, 30 TO 20000 MHz



16QAM, (1.4 MHz BAND WIDTH)

LOW, RB1-0, 30 TO 20000 MHz



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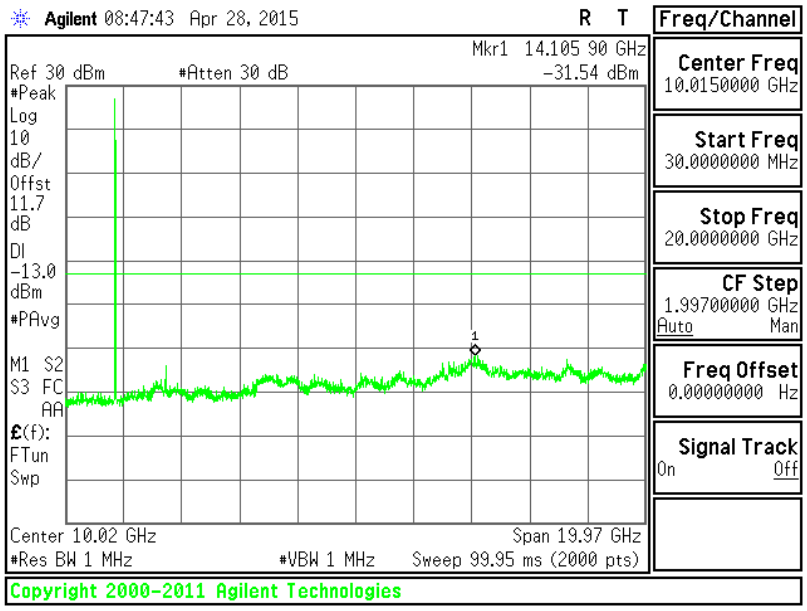
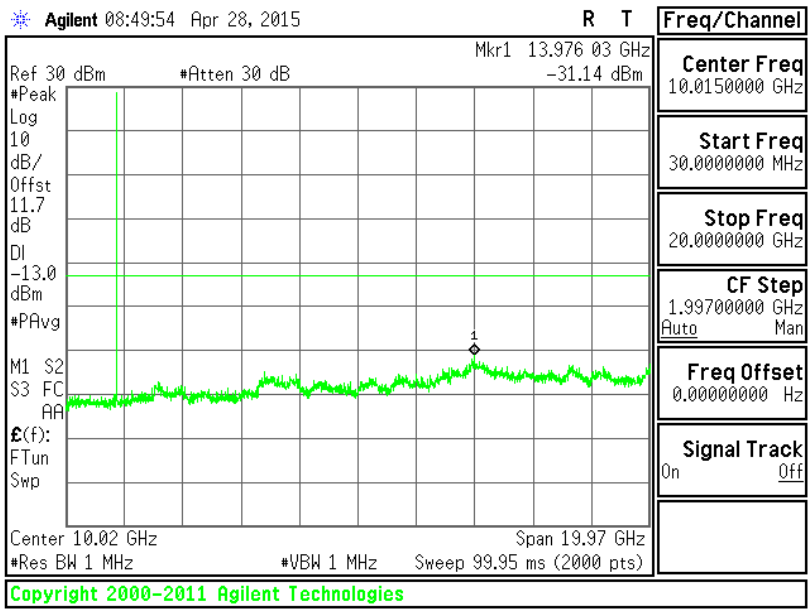
MID, RB1-0, 30 TO 20000 MHz



HIGH, RB1-0, 30 TO 20000 MHz



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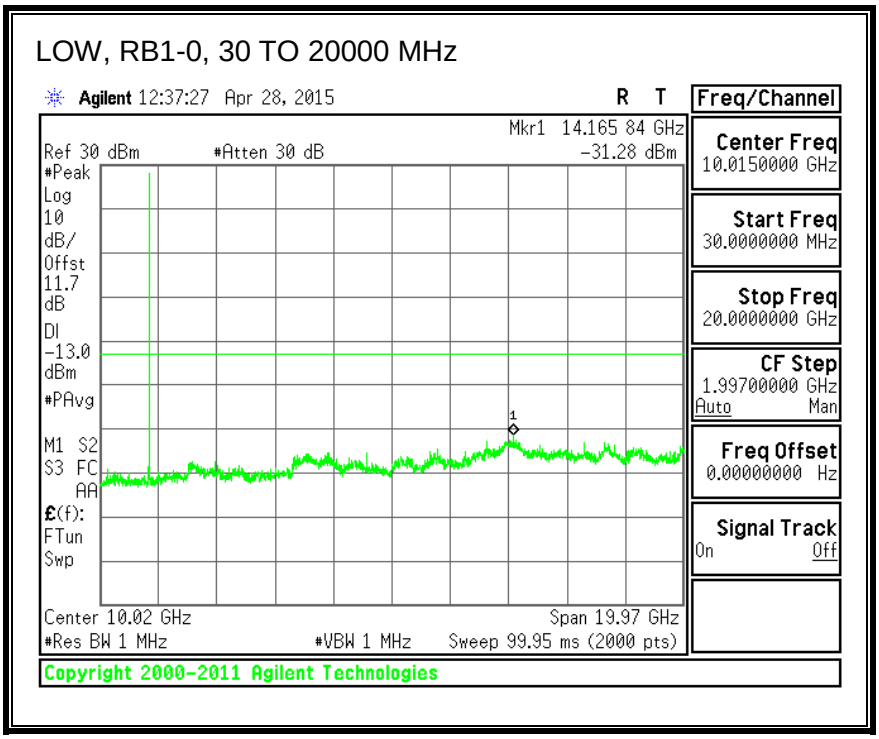
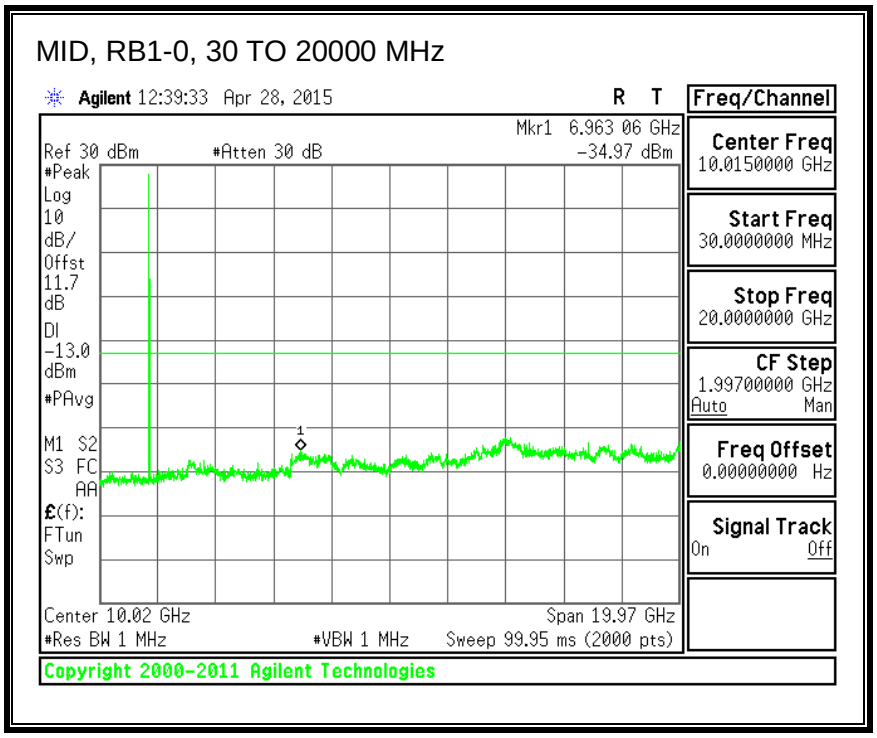
QPSK, (3.0 MHz BAND WIDTH)

LOW, RB1-0, 30 TO 20000 MHz



MID, RB1-0, 30 TO 20000 MHz



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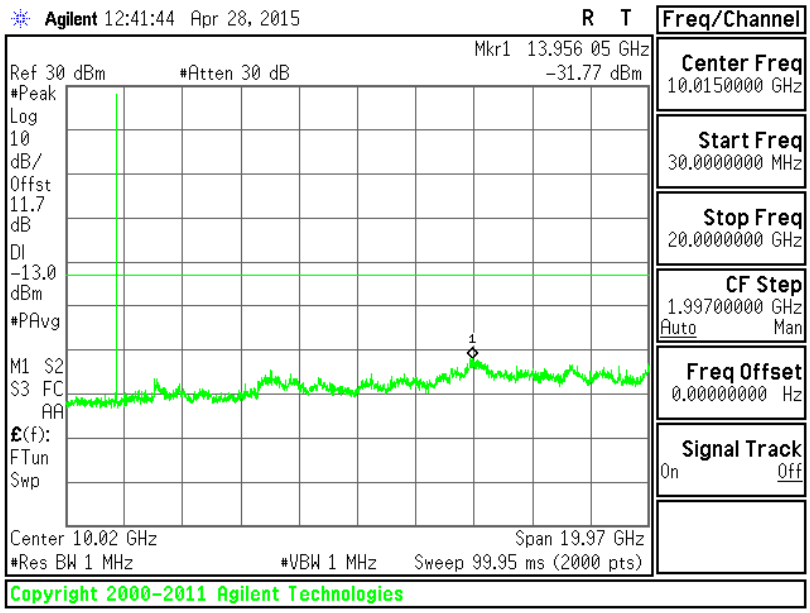
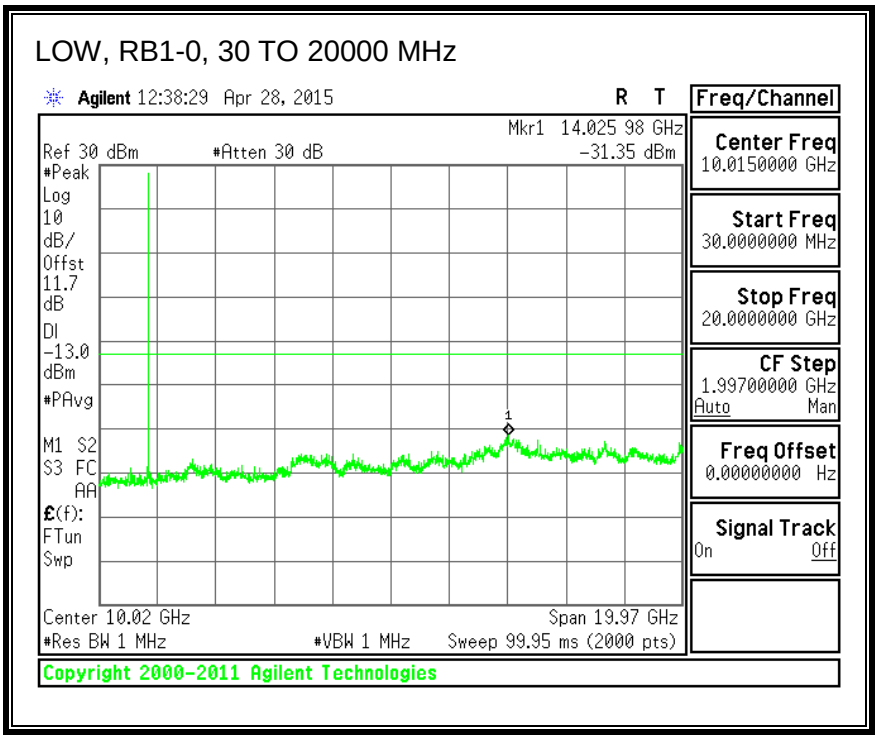
HIGH, RB1-0, 30 TO 20000 MHz



16QAM, (3.0 MHz BAND WIDTH)

LOW, RB1-0, 30 TO 20000 MHz



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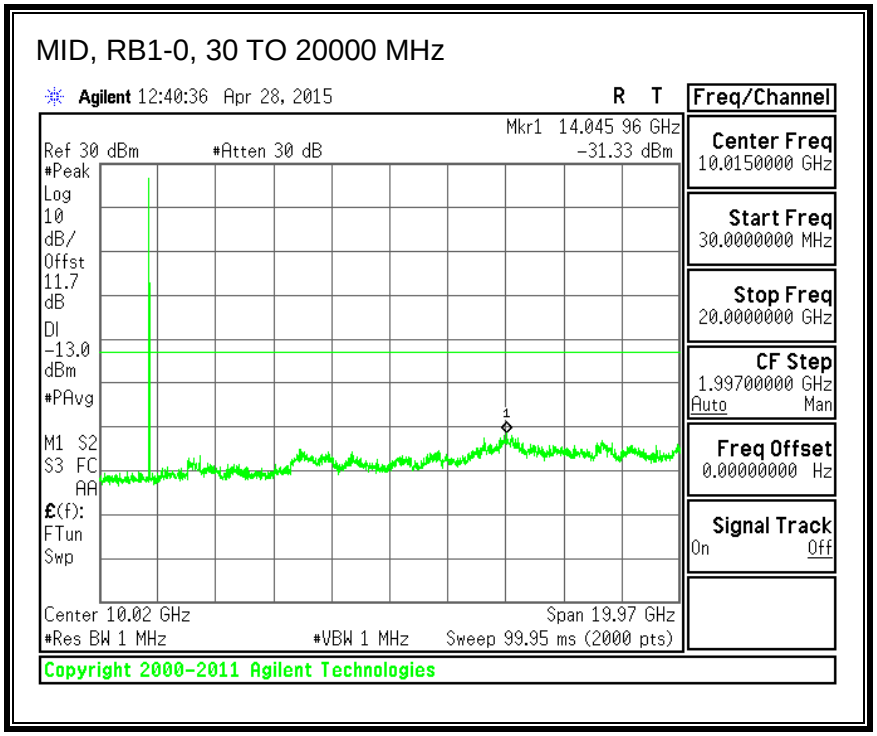
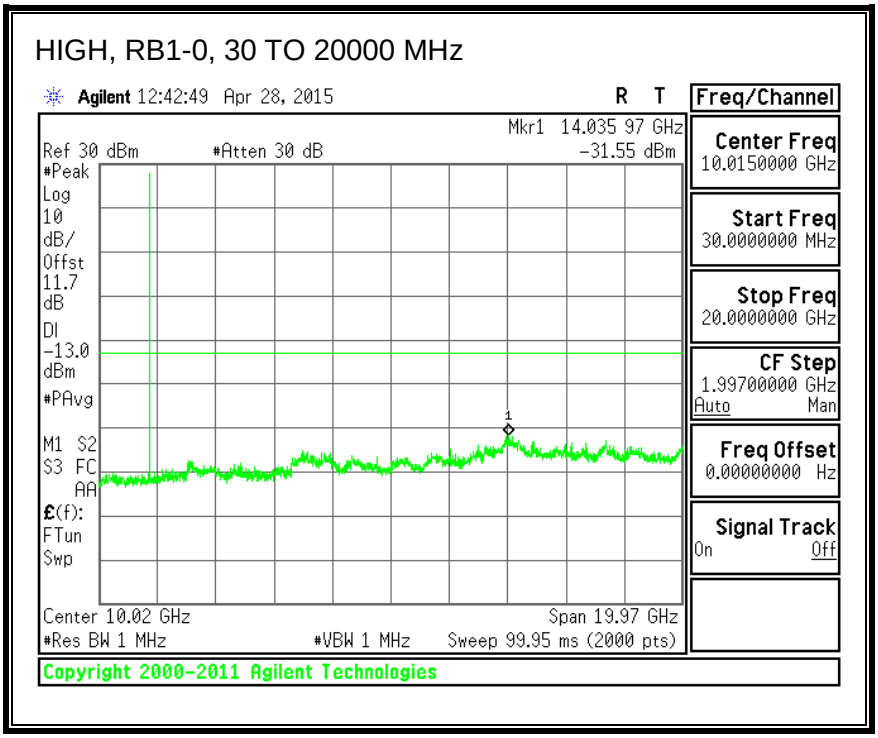
MID, RB1-0, 30 TO 20000 MHz



HIGH, RB1-0, 30 TO 20000 MHz



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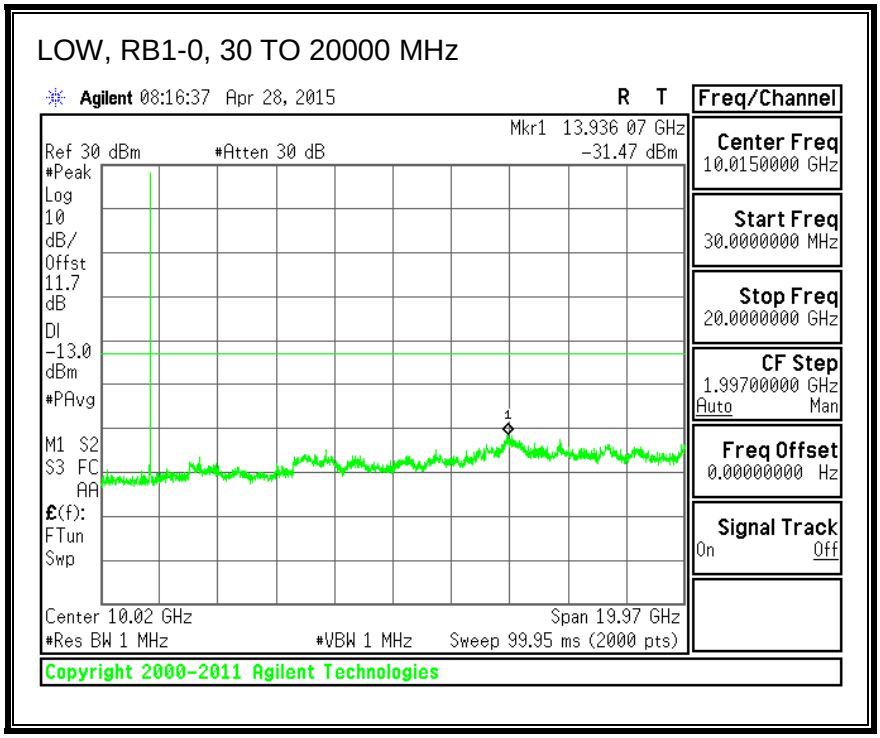
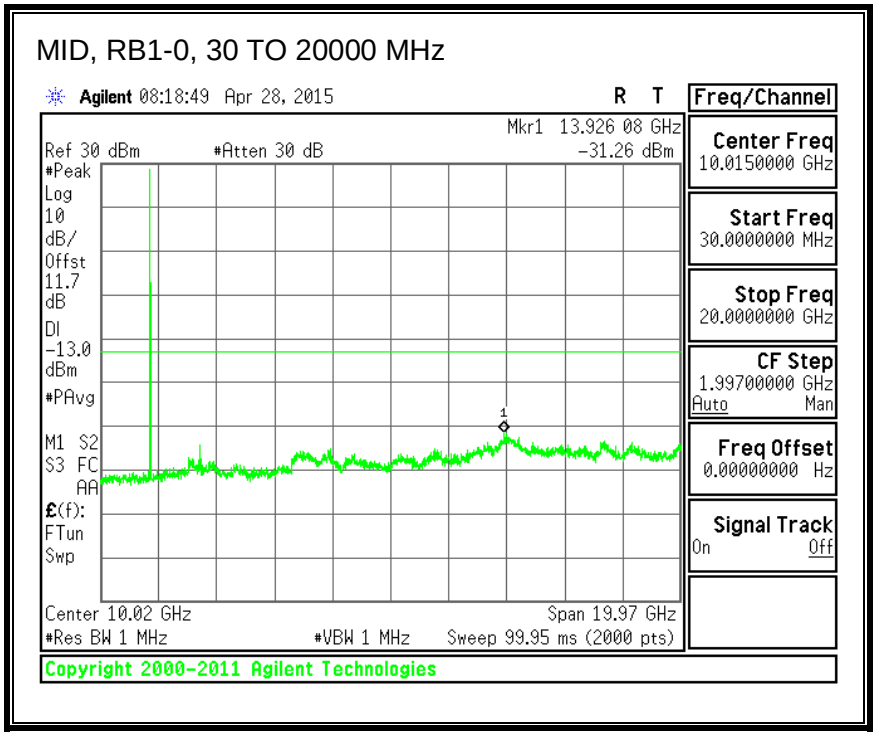
QPSK, (5.0 MHz BAND WIDTH)

LOW, RB1-0, 30 TO 20000 MHz



MID, RB1-0, 30 TO 20000 MHz



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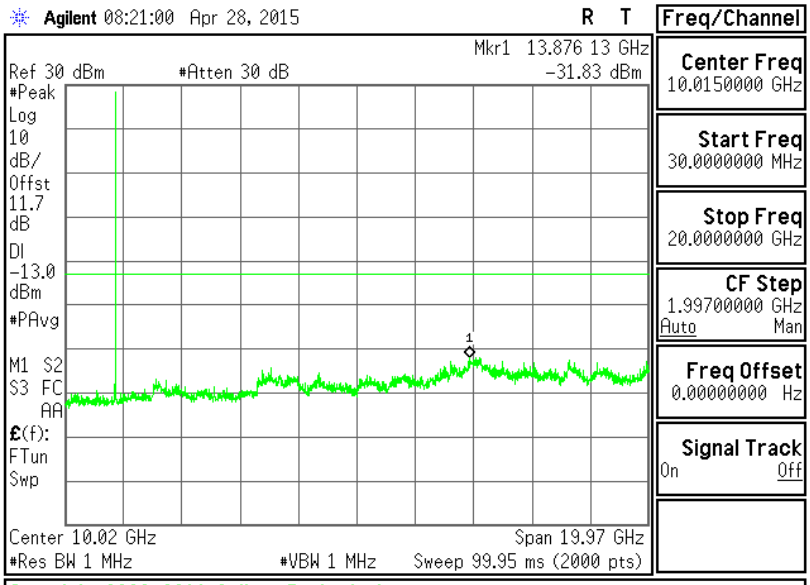
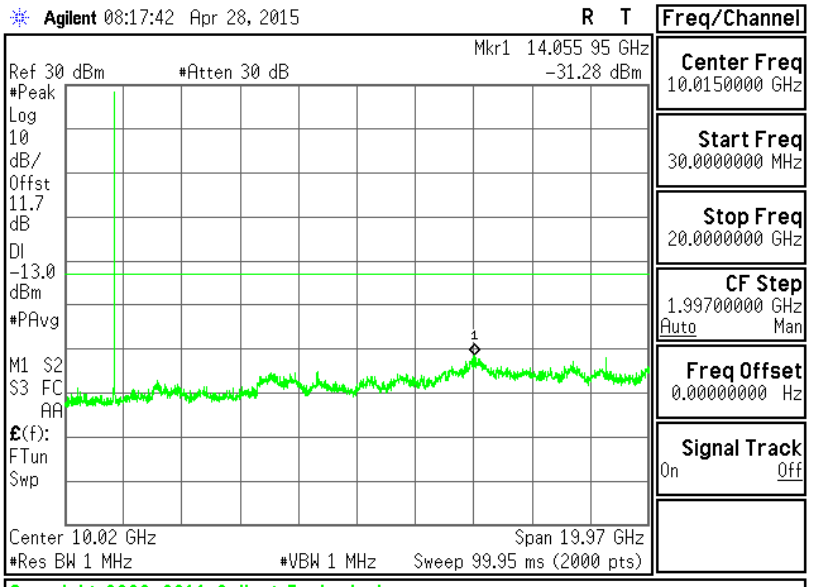
HIGH, RB1-0, 30 TO 20000 MHz



16QAM, (5.0 MHz BAND WIDTH)

LOW, RB1-0, 30 TO 20000 MHz



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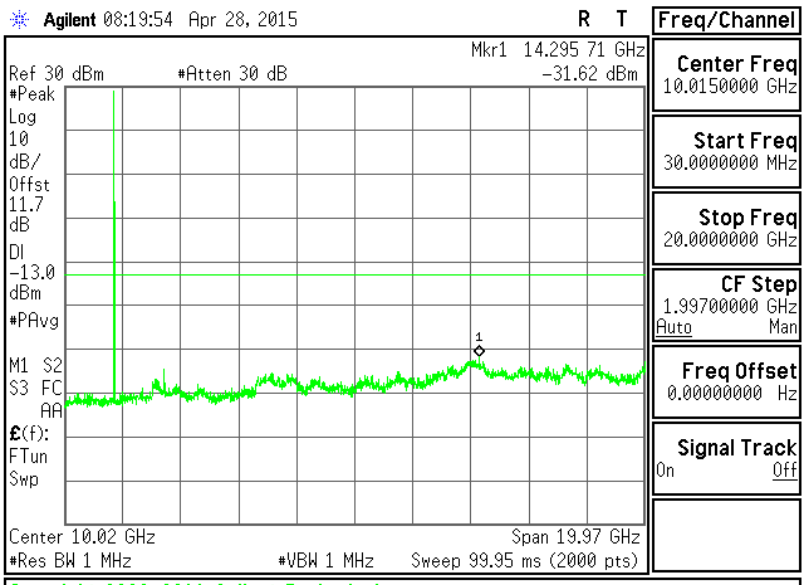
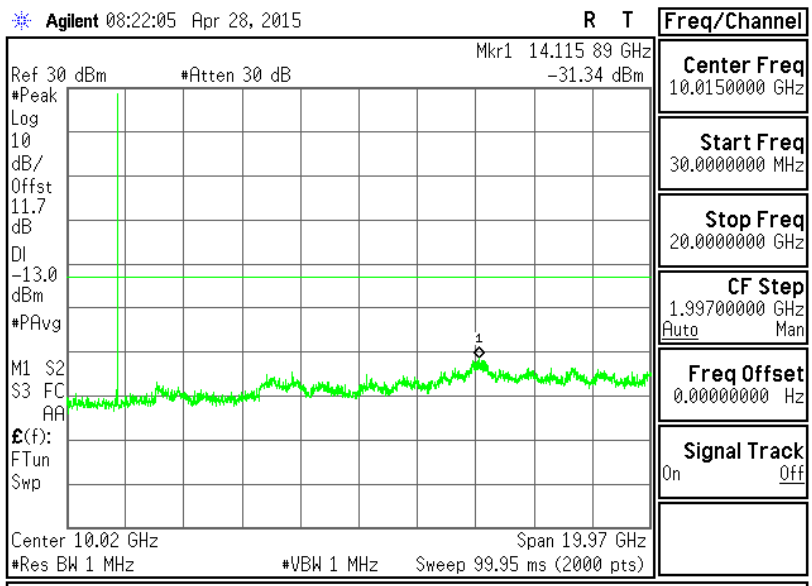
MID, RB1-0, 30 TO 20000 MHz



HIGH, RB1-0, 30 TO 20000 MHz



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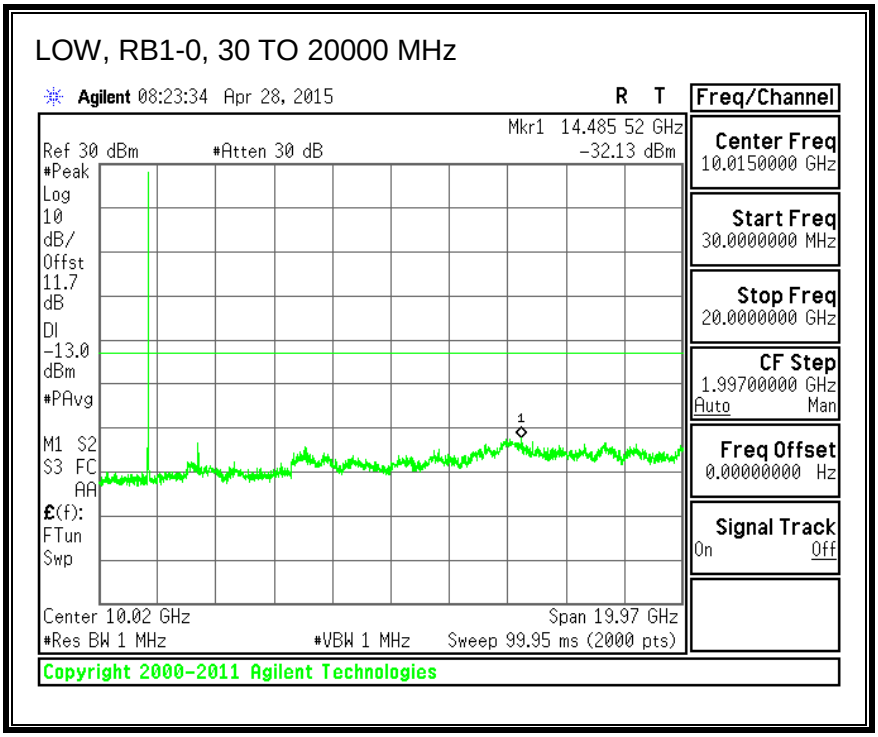
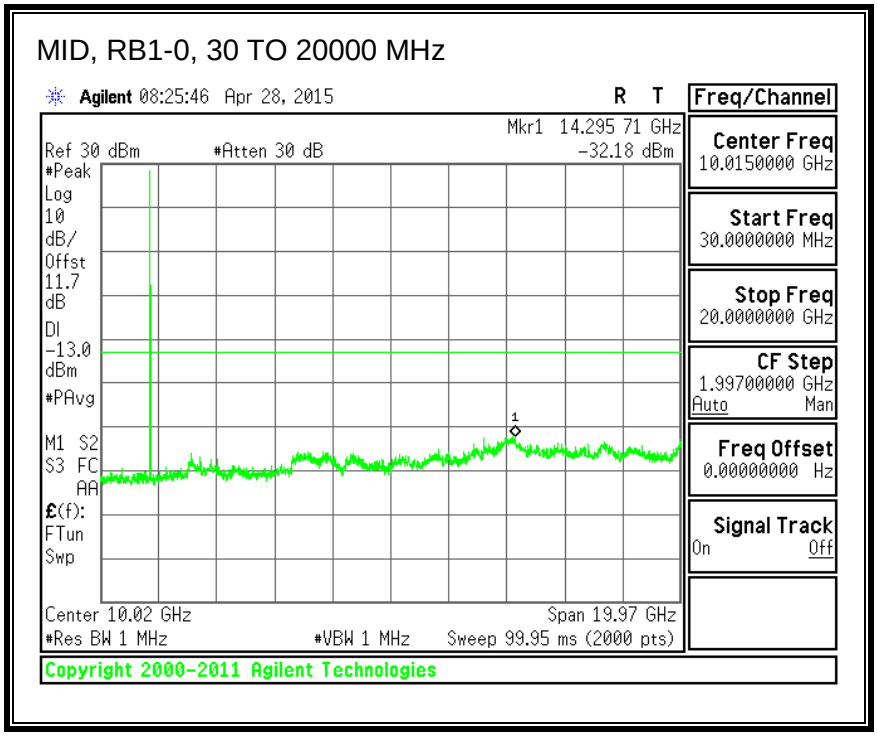
QPSK, (10.0 MHz BAND WIDTH)

LOW, RB1-0, 30 TO 20000 MHz



MID, RB1-0, 30 TO 20000 MHz



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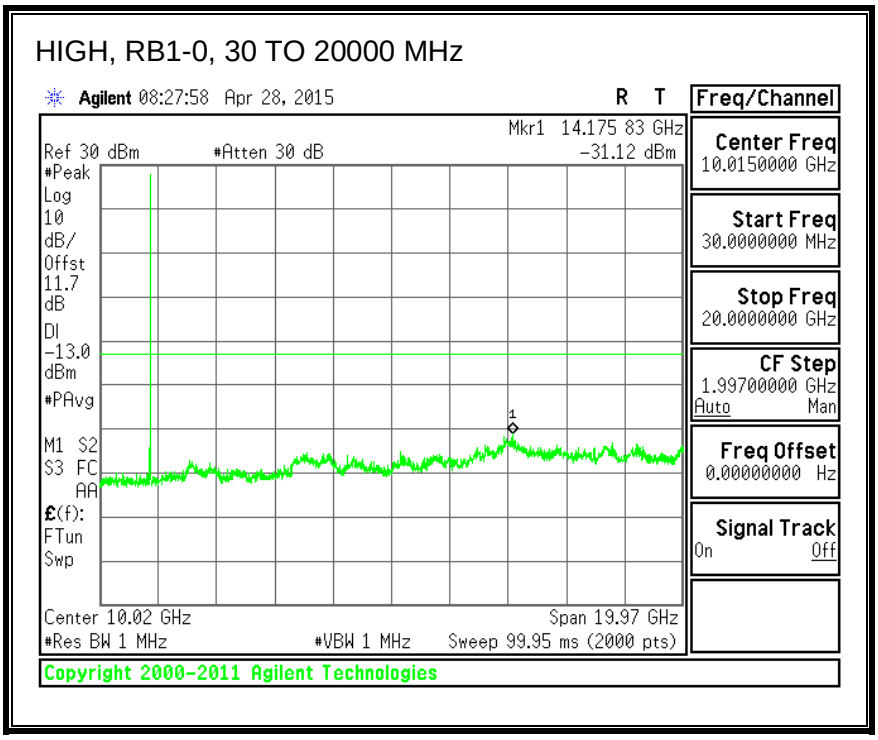
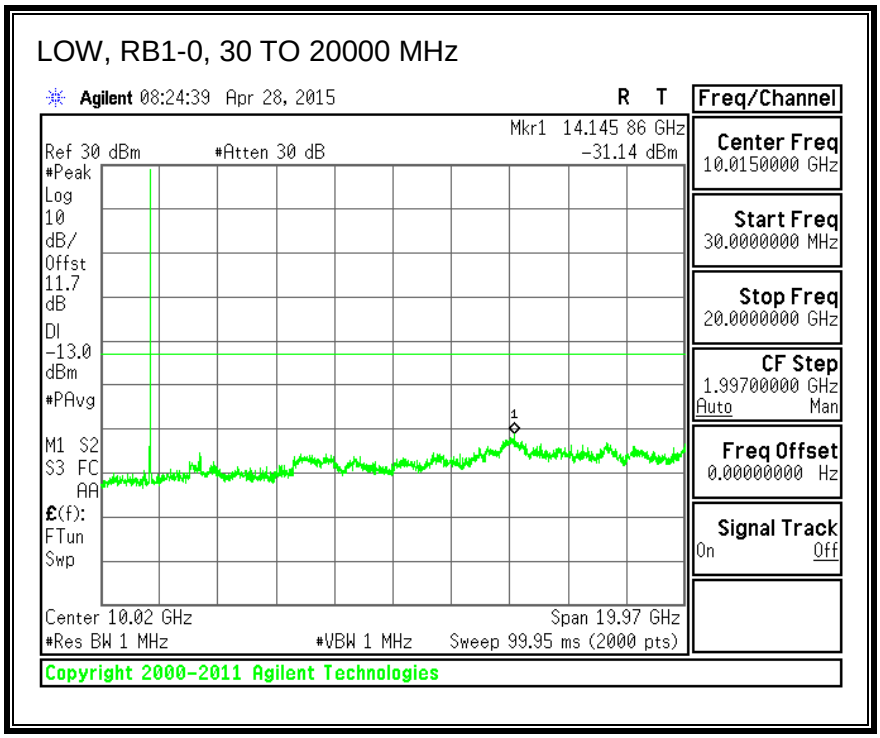


16QAM, (10.0 MHz BAND WIDTH)



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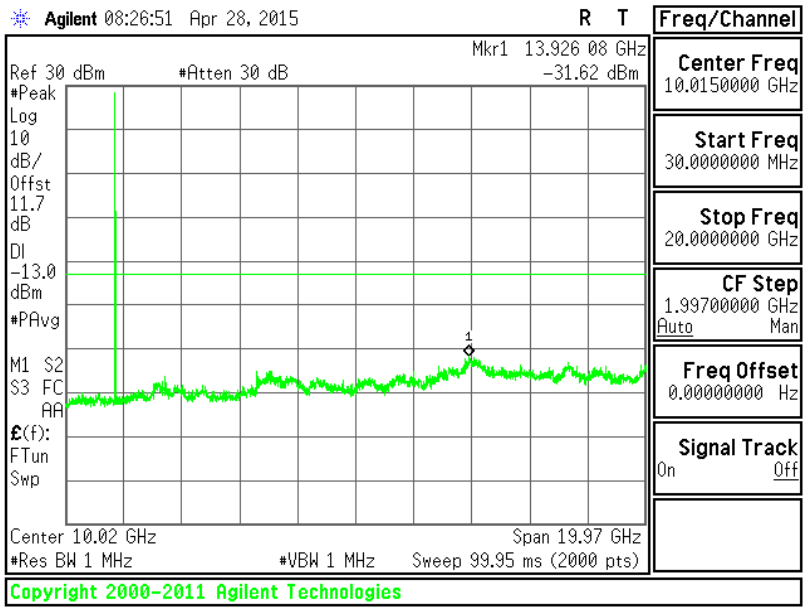
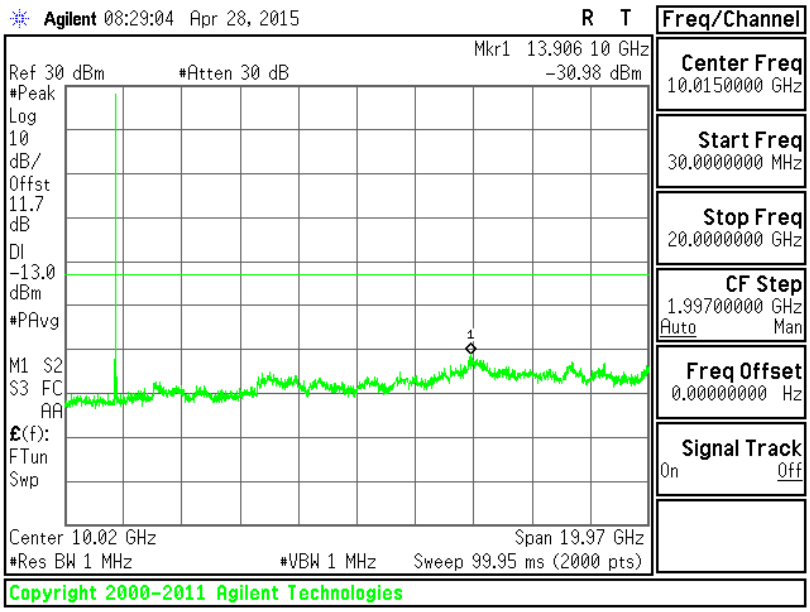
MID, RB1-0, 30 TO 20000 MHz



HIGH, RB1-0, 30 TO 20000 MHz



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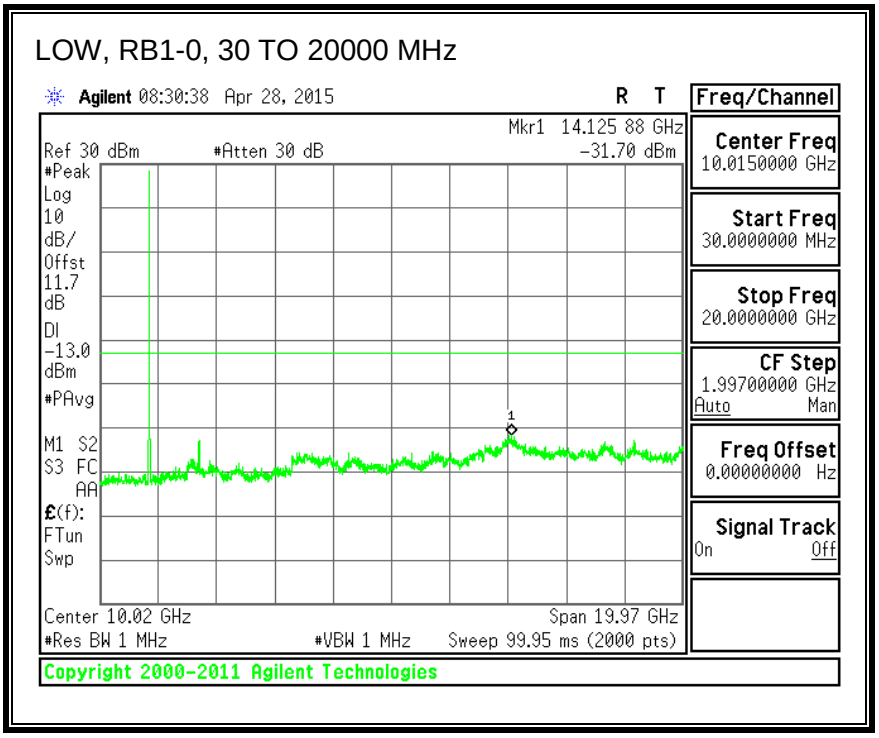
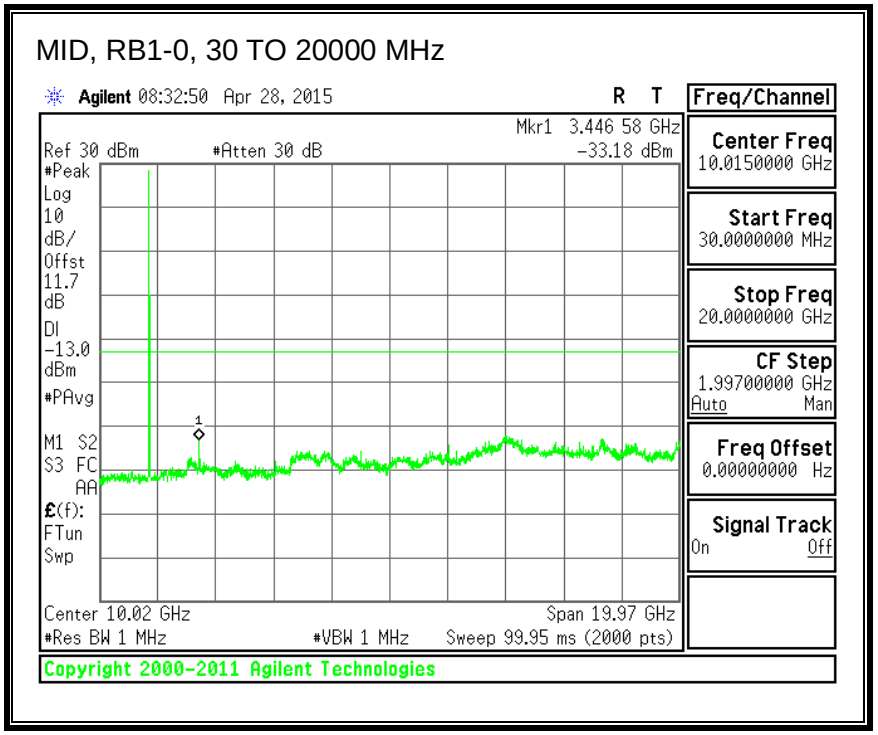
QPSK, (15.0 MHz BAND WIDTH)

LOW, RB1-0, 30 TO 20000 MHz



MID, RB1-0, 30 TO 20000 MHz



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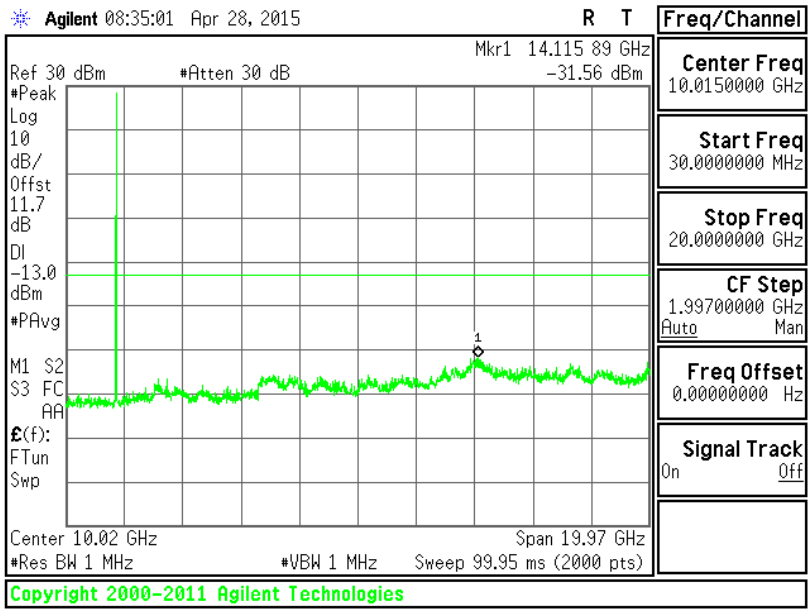
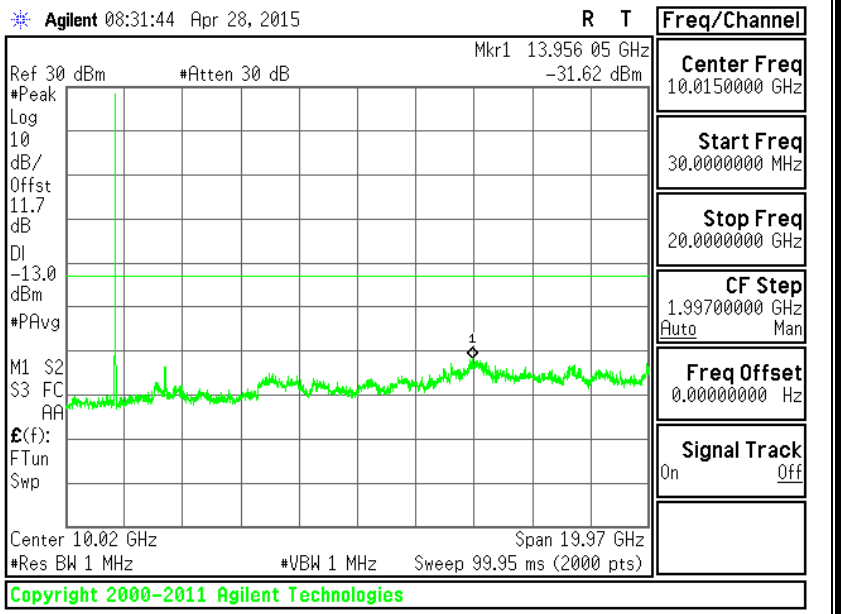
HIGH, RB1-0, 30 TO 20000 MHz



16QAM, (15.0 MHz BAND WIDTH)

LOW, RB1-0, 30 TO 20000 MHz



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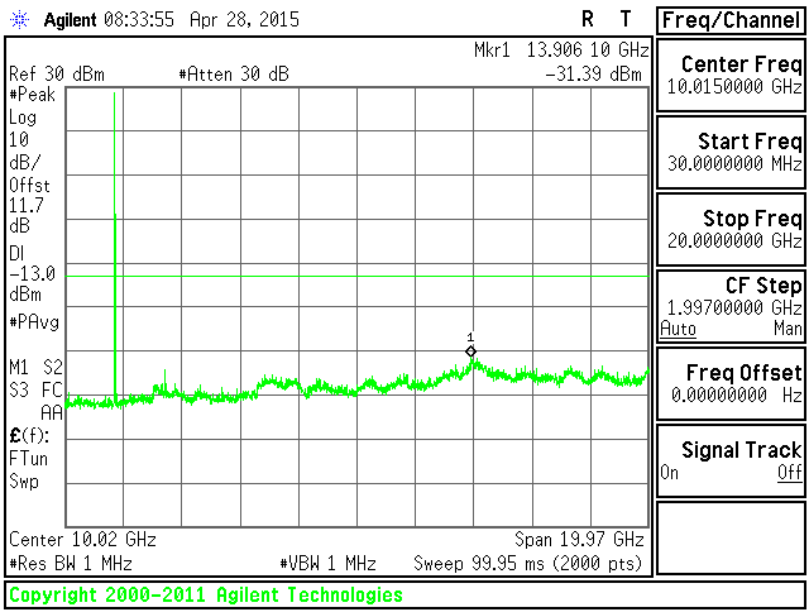
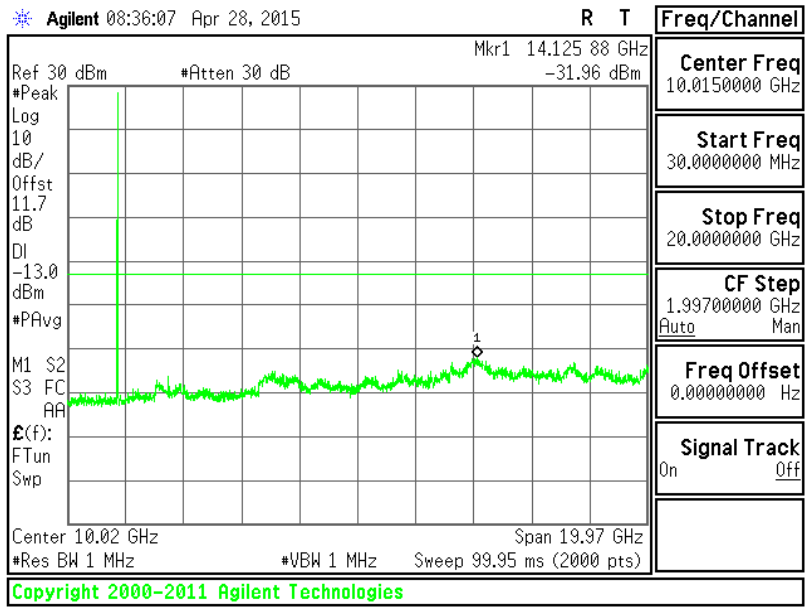
MID, RB1-0, 30 TO 20000 MHz



HIGH, RB1-0, 30 TO 20000 MHz



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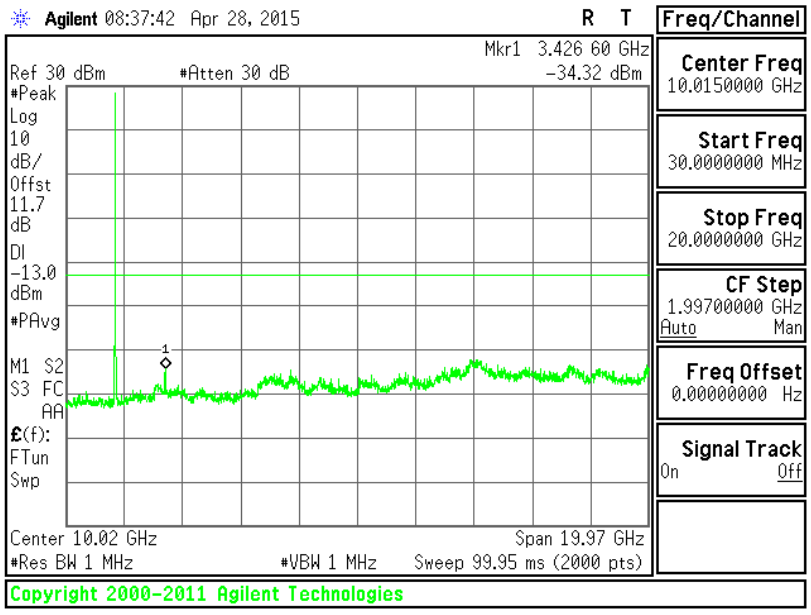
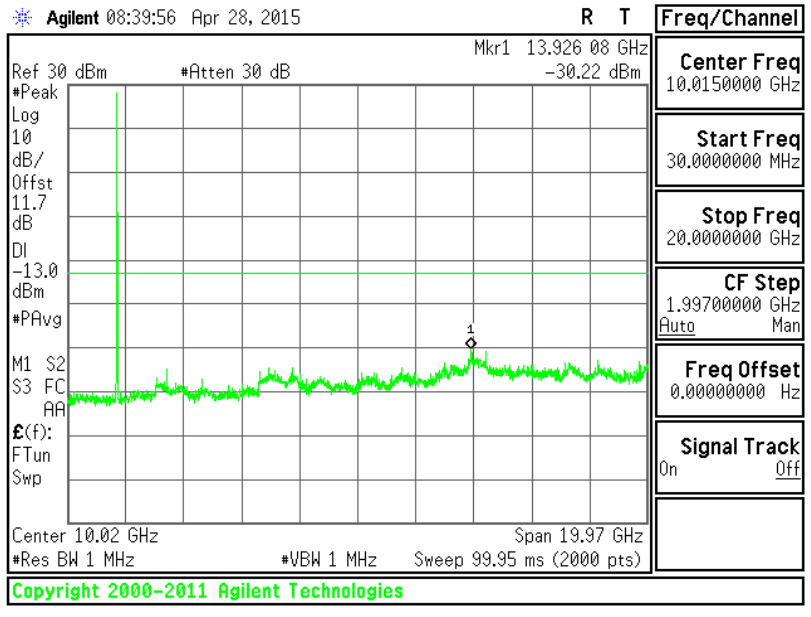
QPSK, (20.0 MHz BAND WIDTH)

LOW, RB1-0, 30 TO 20000 MHz



MID, RB1-0, 30 TO 20000 MHz



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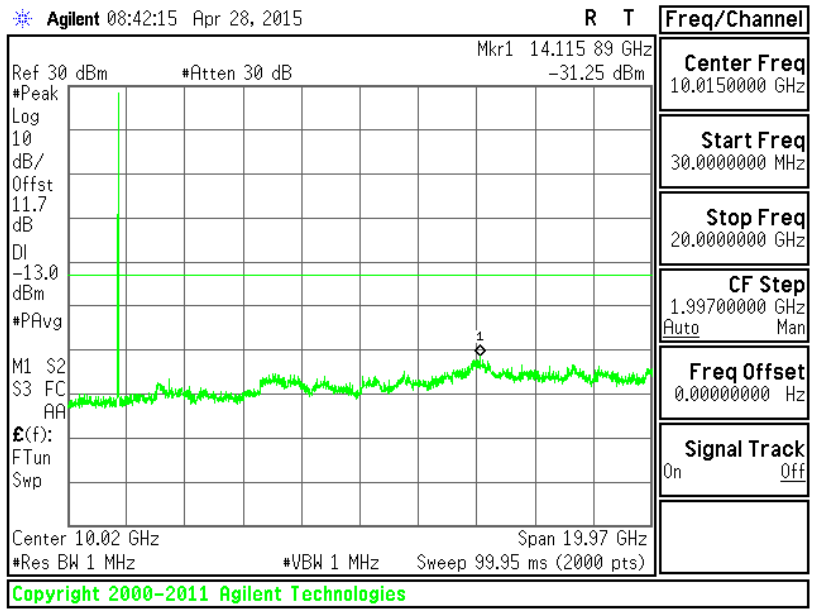
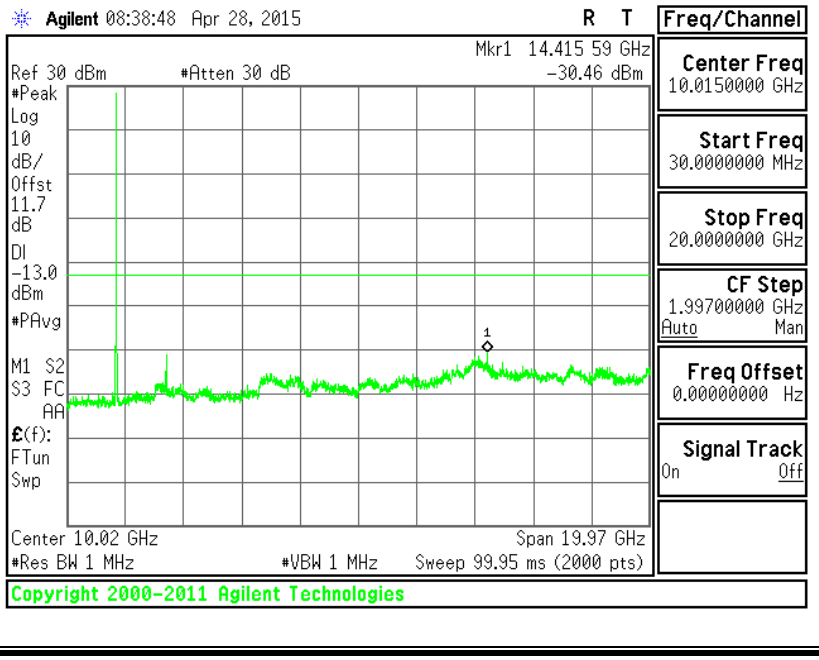
HIGH, RB1-0, 30 TO 20000 MHz



16QAM, (20.0 MHz BAND WIDTH)

LOW, RB1-0, 30 TO 20000 MHz



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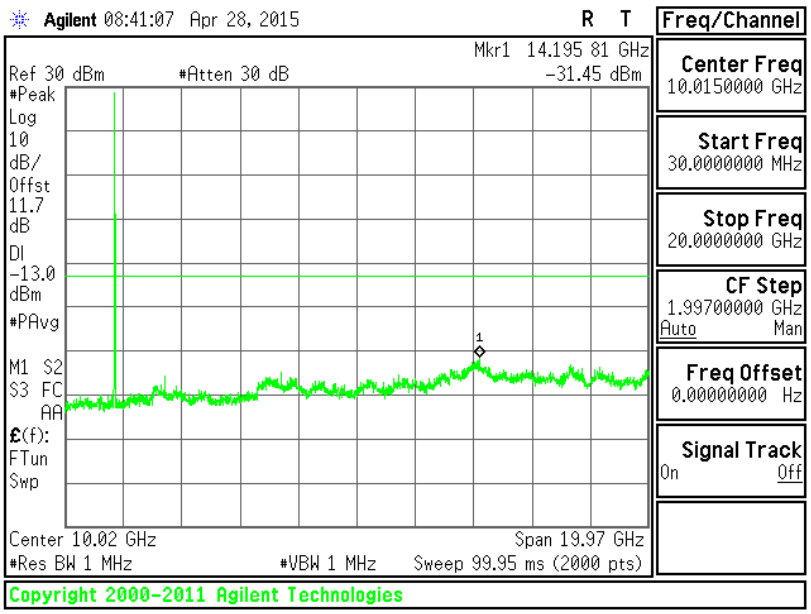
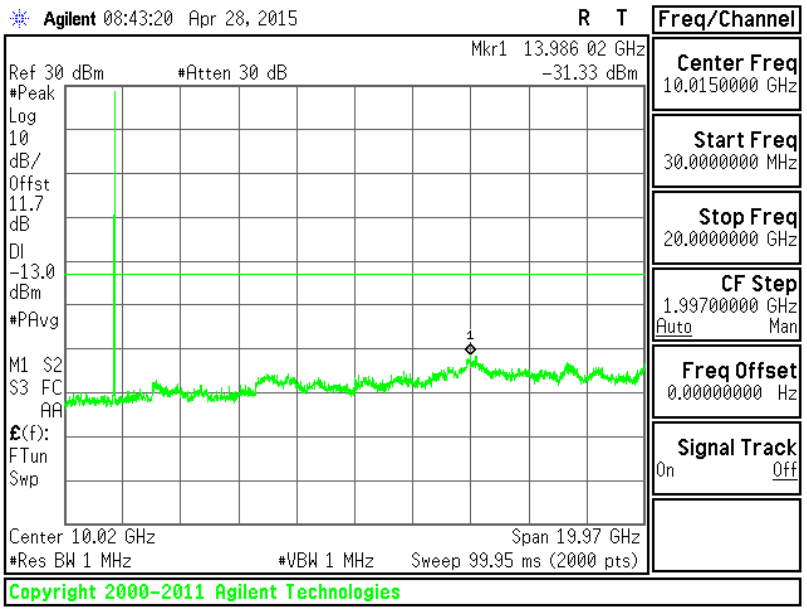
MID, RB1-0, 30 TO 20000 MHz



HIGH, RB1-0, 30 TO 20000 MHz



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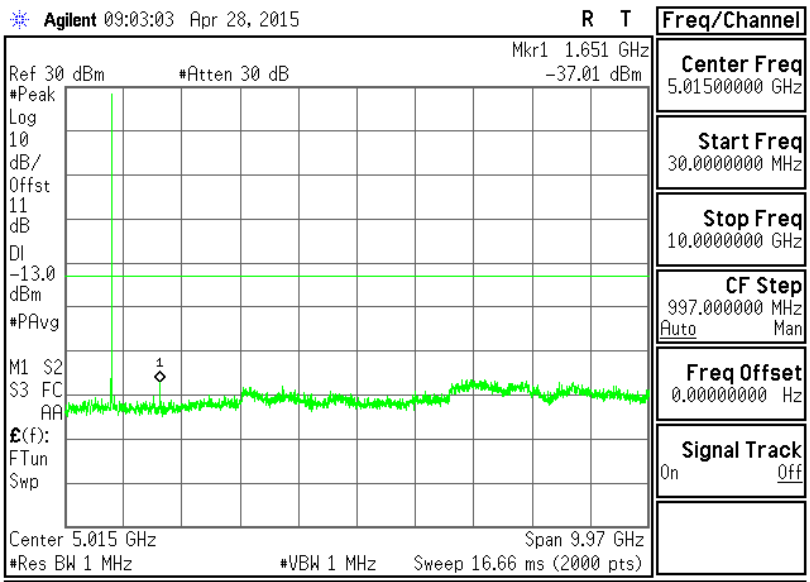
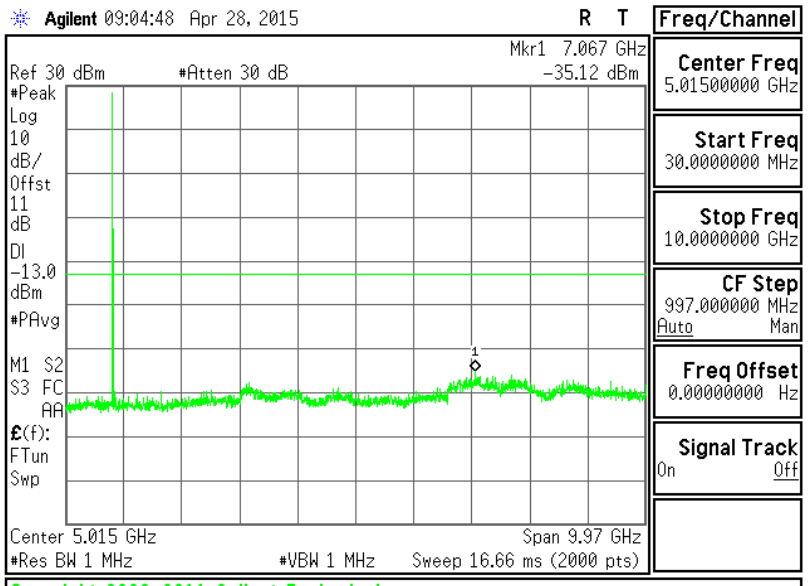
8.5.3. LTE BAND 5

QPSK, (1.4 MHz BAND WIDTH)

LOW, RB1-0, 30 TO 10000 MHz



MID, RB1-0, 30 TO 10000 MHz



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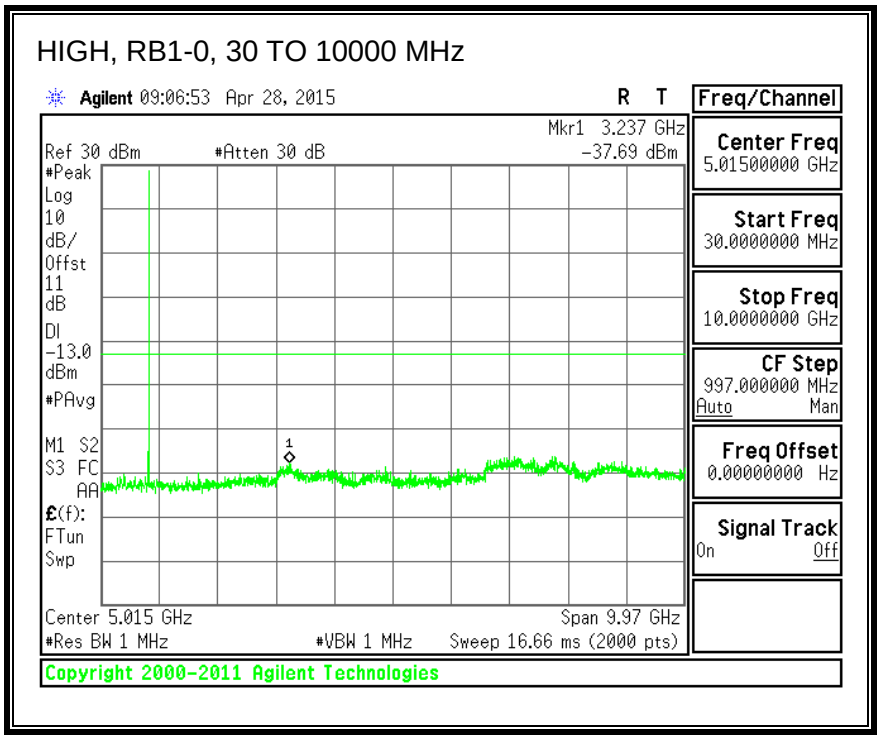
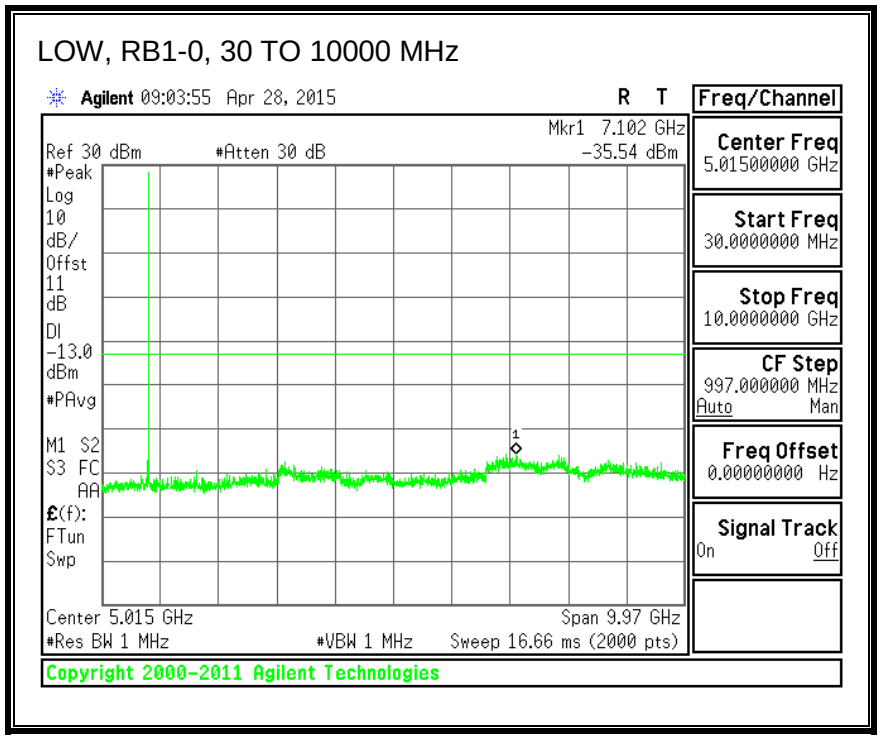


16QAM, (1.4 MHz BAND WIDTH)



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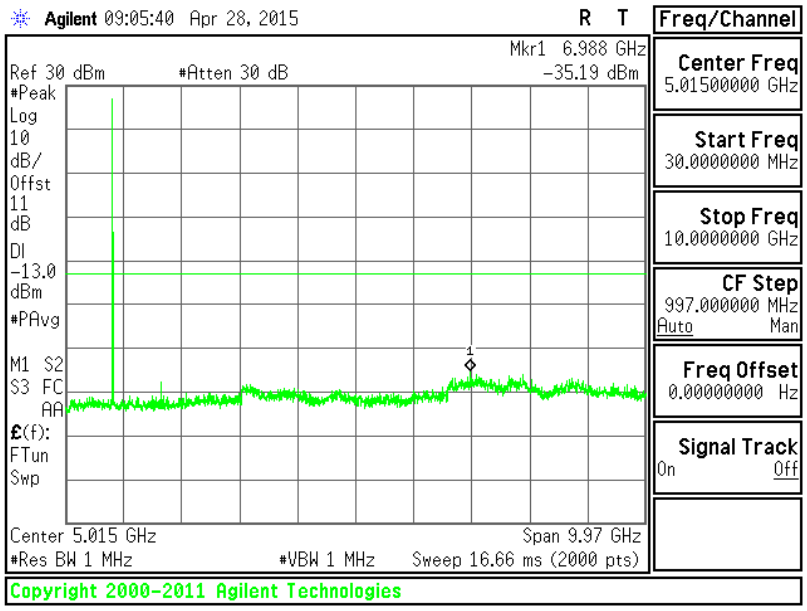
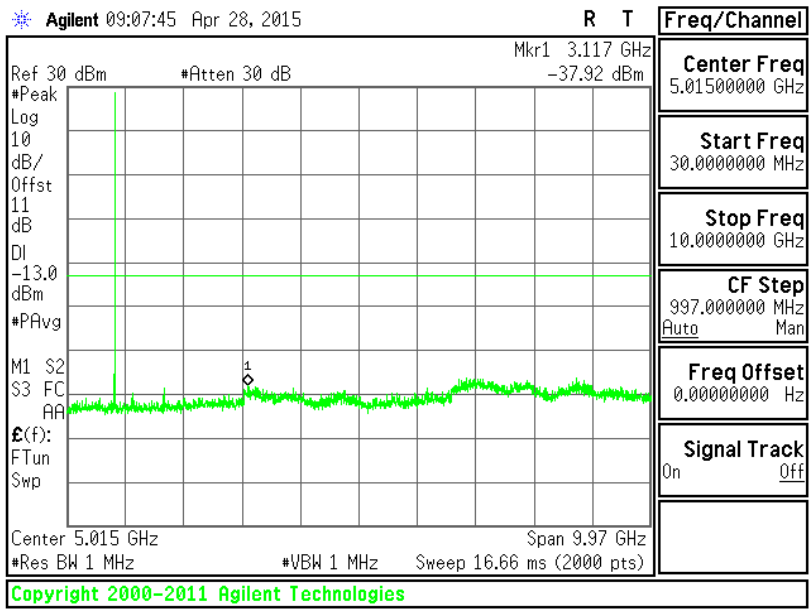
MID, RB1-0, 30 TO 10000 MHz



HIGH, RB1-0, 30 TO 10000 MHz



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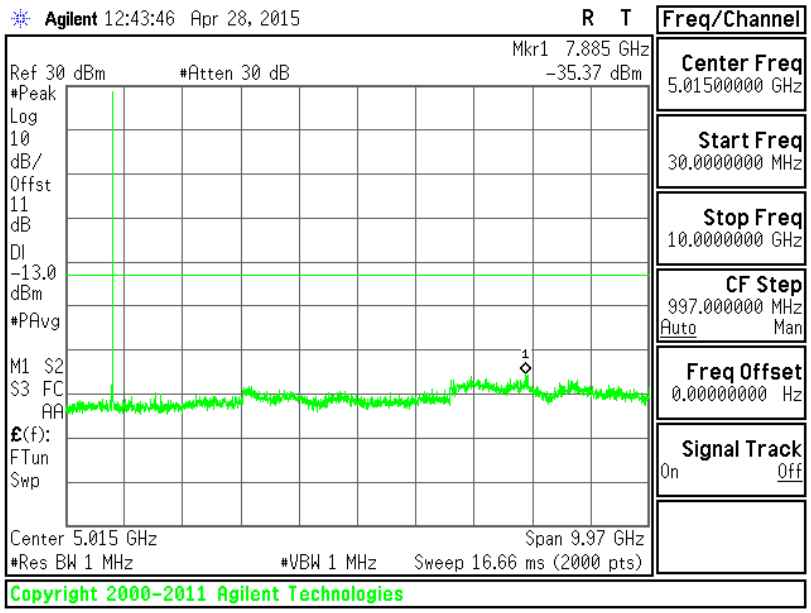
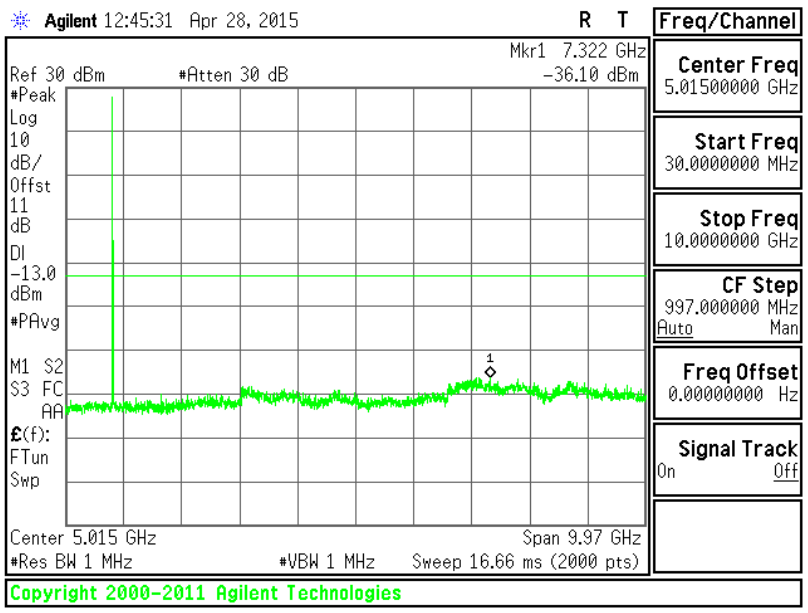
QPSK, (3.0 MHz BAND WIDTH)

LOW, RB1-0, 30 TO 10000 MHz



MID, RB1-0, 30 TO 10000 MHz



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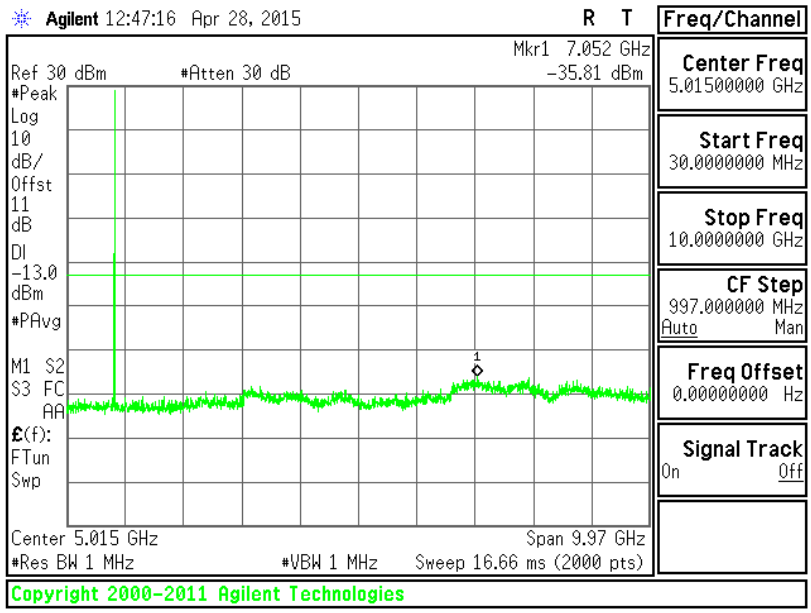
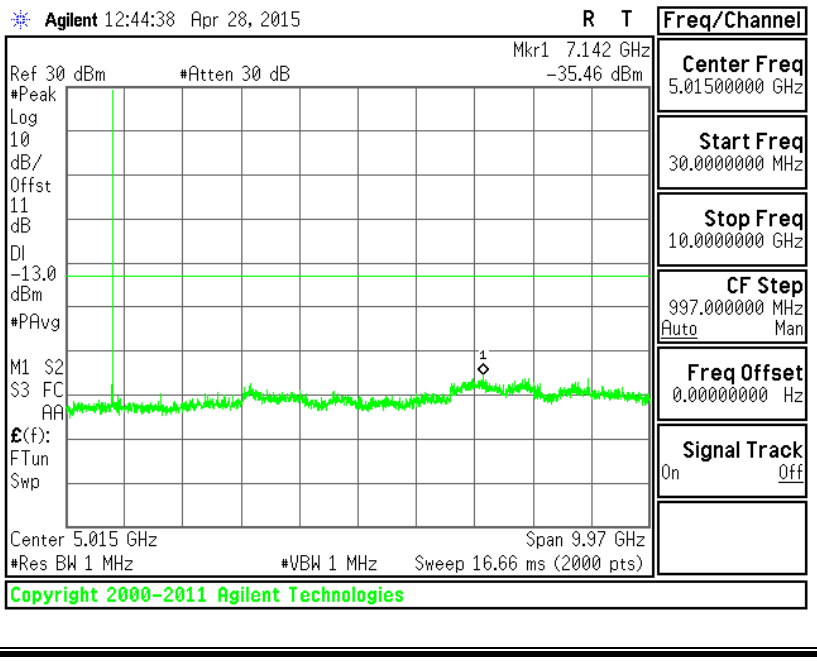
HIGH, RB1-0, 30 TO 10000 MHz



16QAM, (3.0 MHz BAND WIDTH)

LOW, RB1-0, 30 TO 10000 MHz



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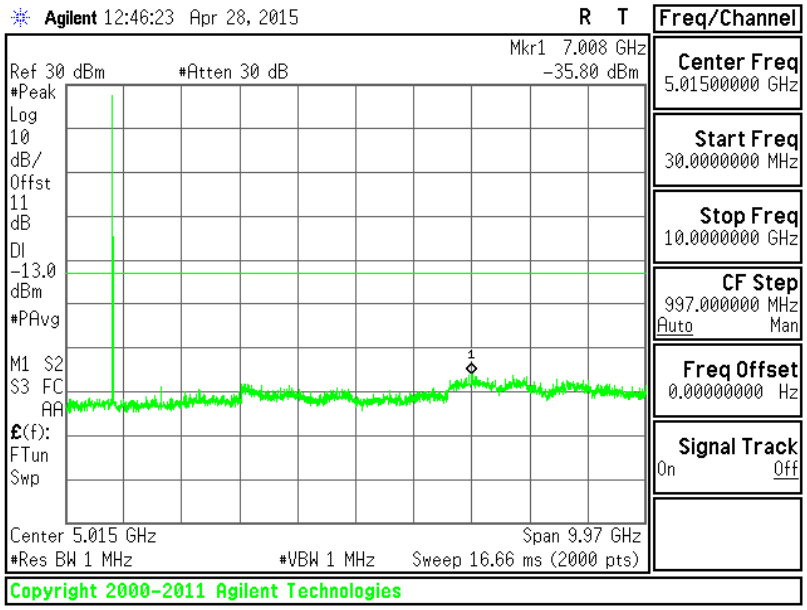
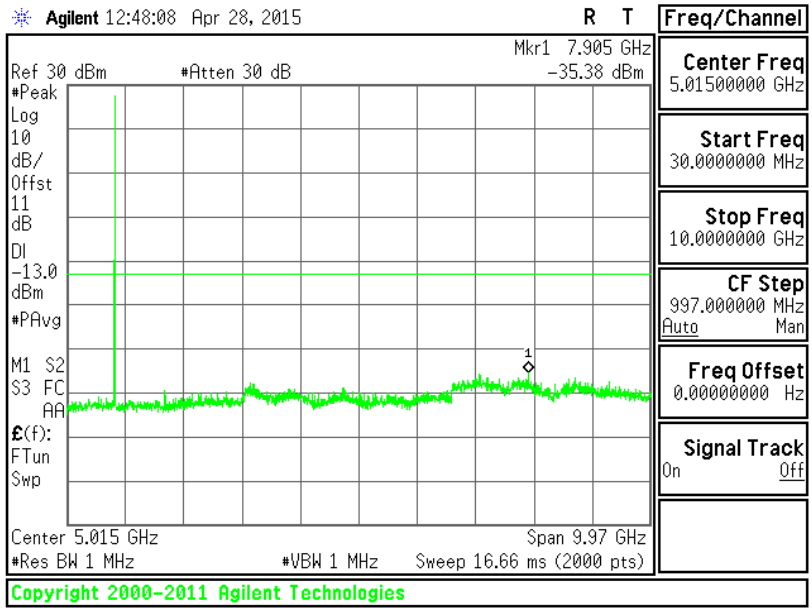
MID, RB1-0, 30 TO 10000 MHz



HIGH, RB1-0, 30 TO 10000 MHz



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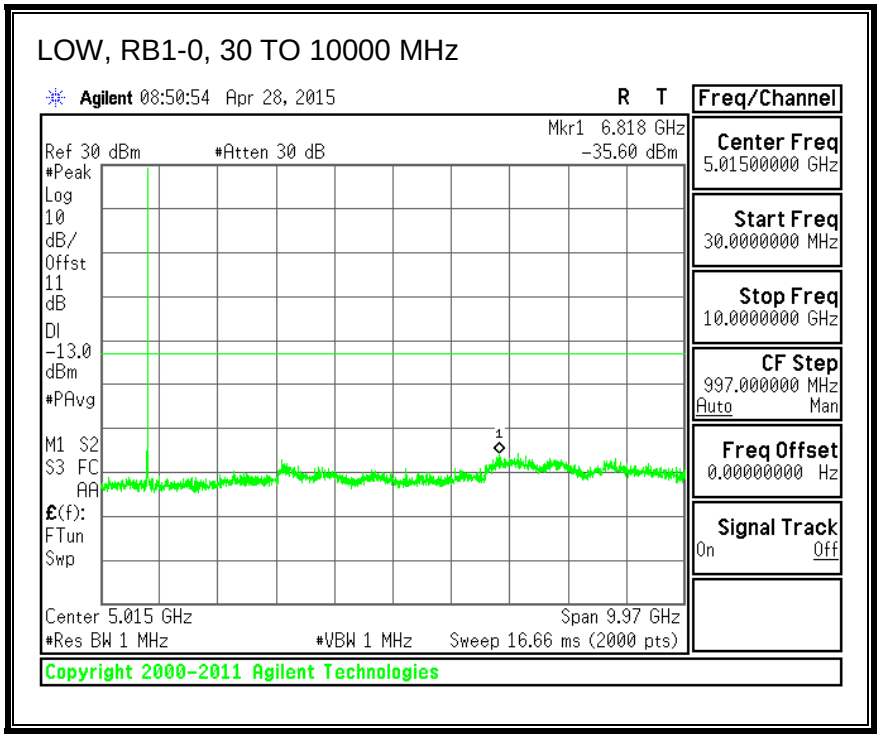
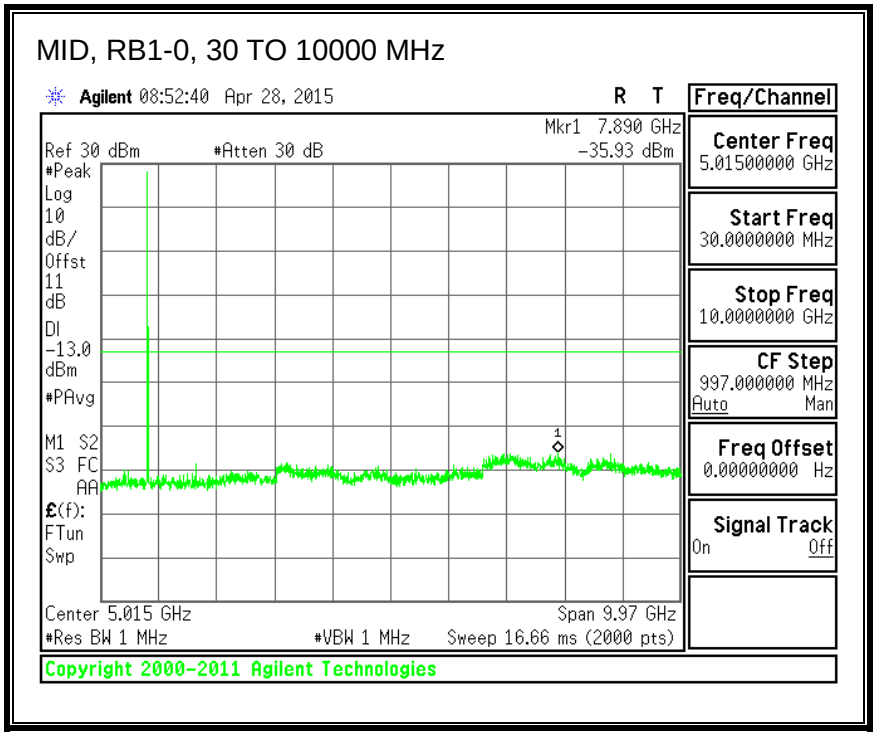
QPSK, (5.0 MHz BAND WIDTH)

LOW, RB1-0, 30 TO 10000 MHz



MID, RB1-0, 30 TO 10000 MHz



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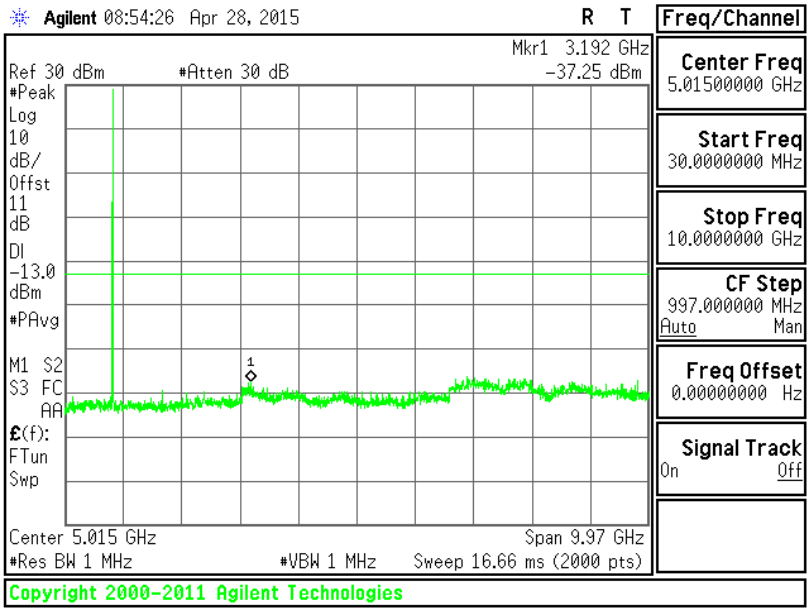
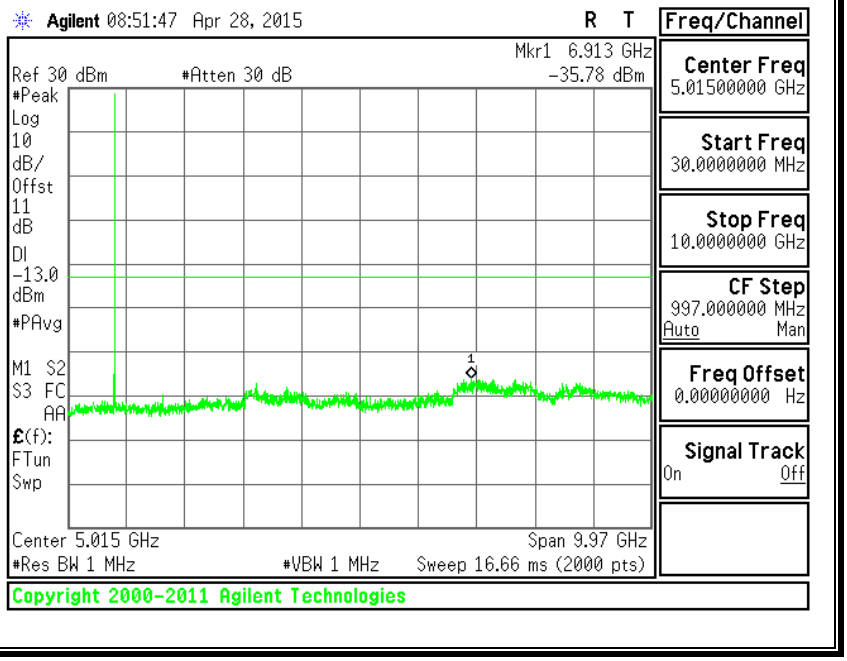
HIGH, RB1-0, 30 TO 10000 MHz



16QAM, (5.0 MHz BAND WIDTH)

LOW, RB1-0, 30 TO 10000 MHz



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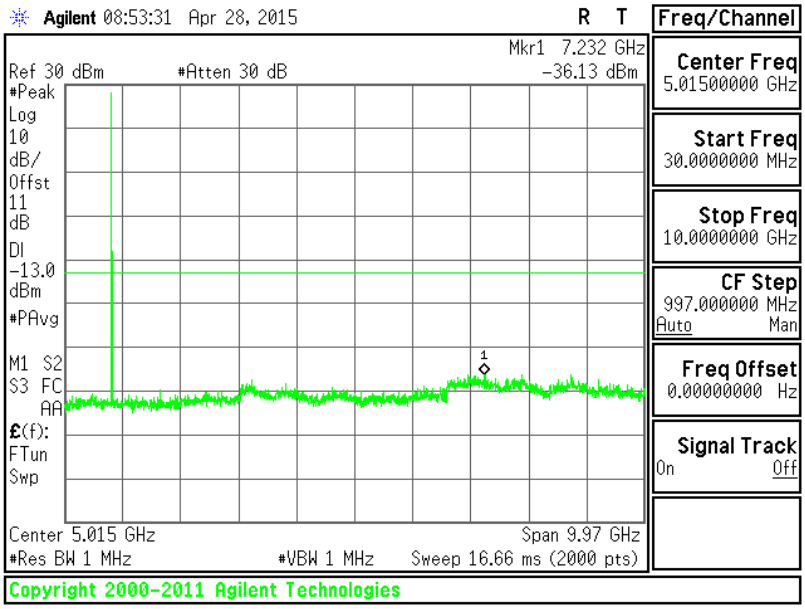
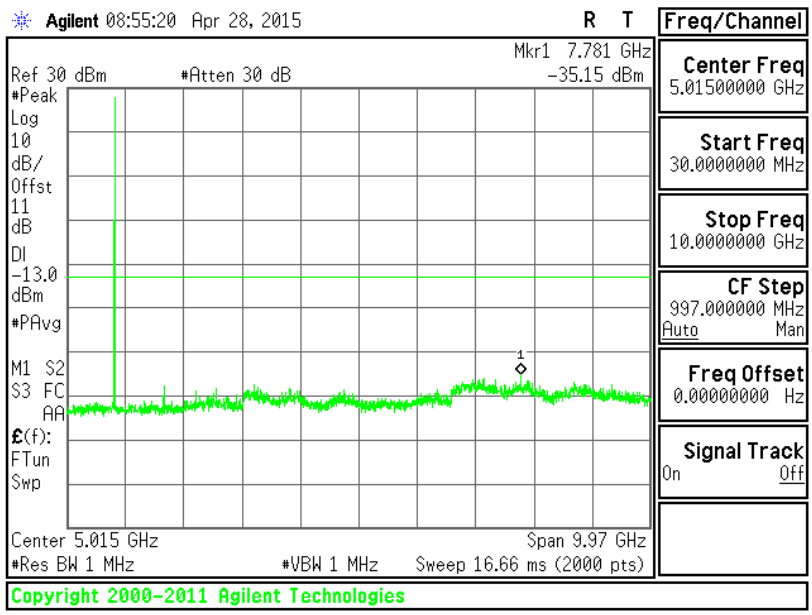
MID, RB1-0, 30 TO 10000 MHz



HIGH, RB1-0, 30 TO 10000 MHz



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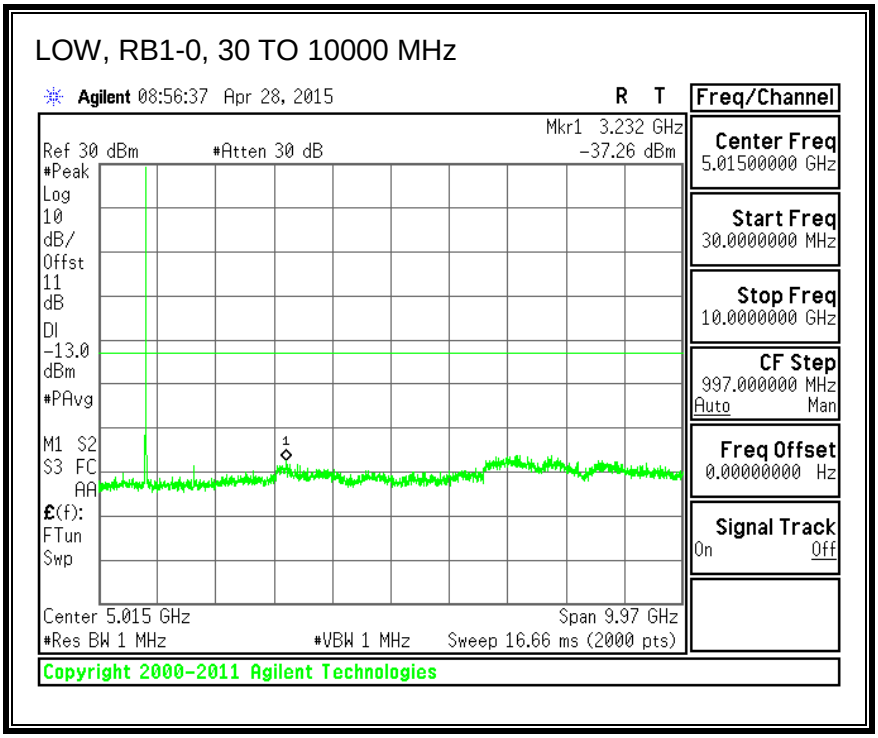
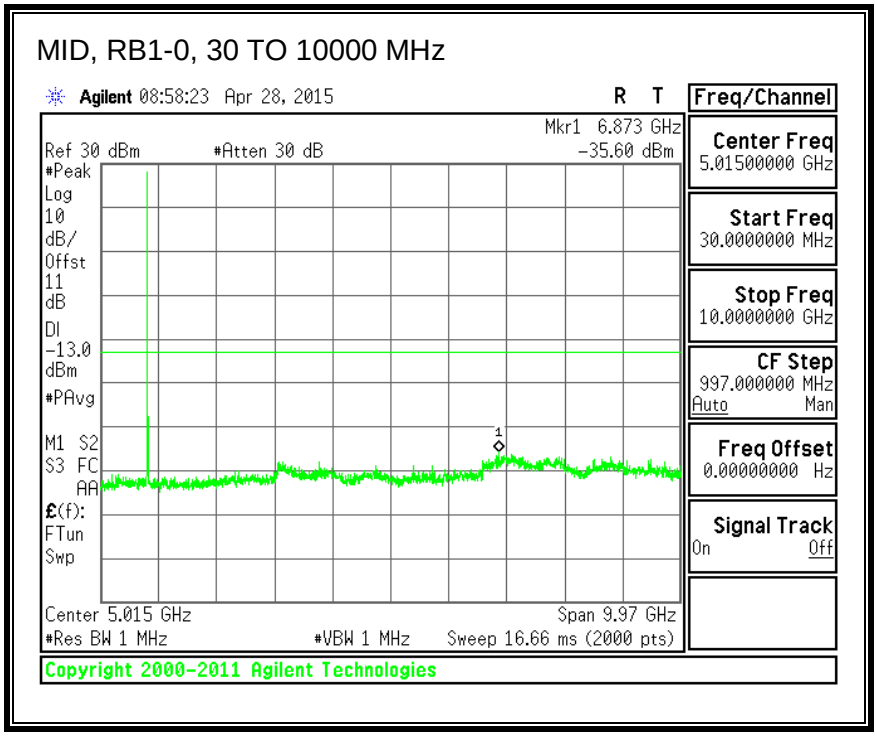
QPSK, (10.0 MHz BAND WIDTH)

LOW, RB1-0, 30 TO 10000 MHz



MID, RB1-0, 30 TO 10000 MHz



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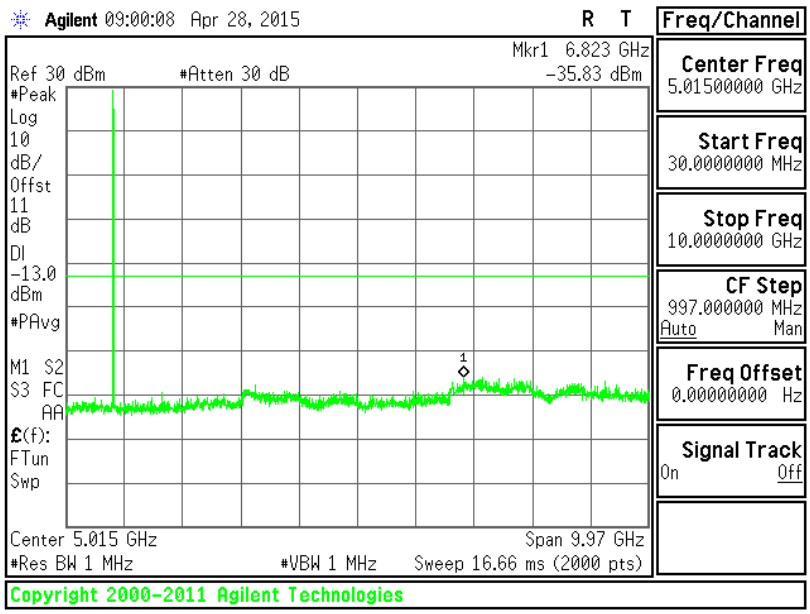
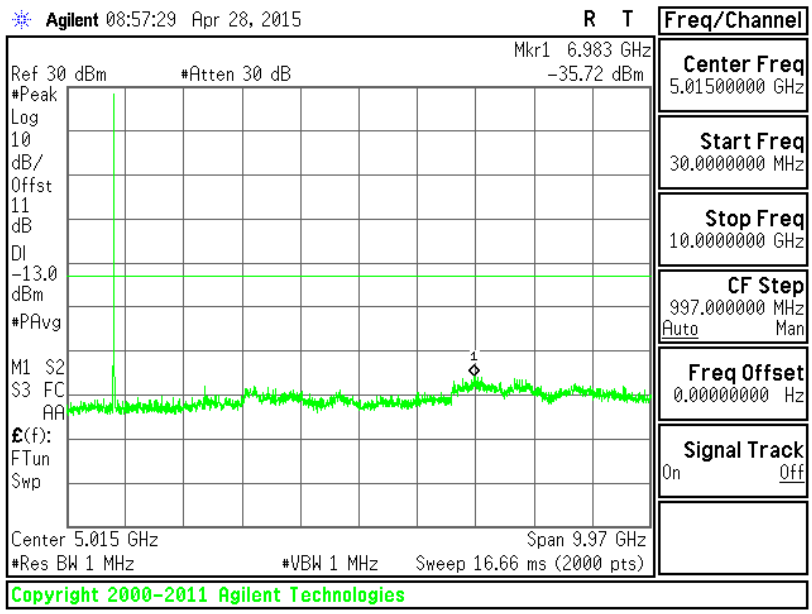
HIGH, RB1-0, 30 TO 10000 MHz



16QAM, (10.0 MHz BAND WIDTH)

LOW, RB1-0, 30 TO 10000 MHz



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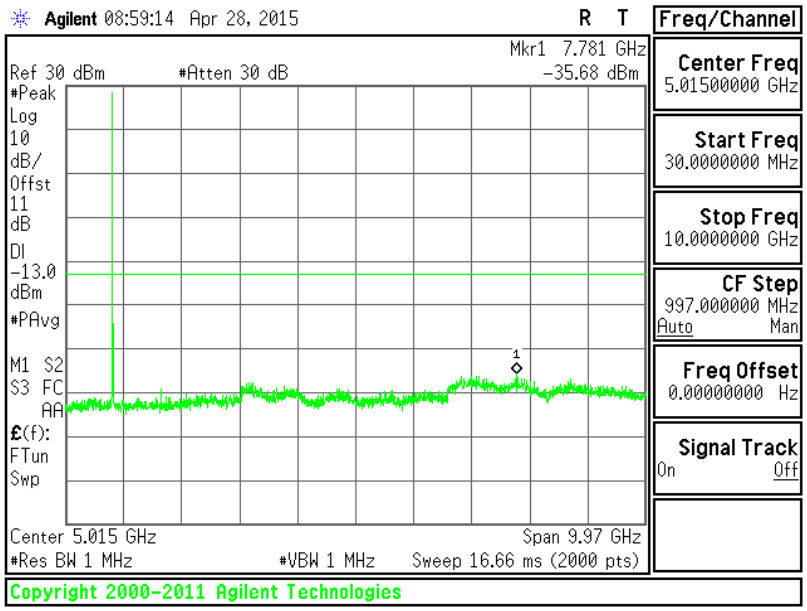
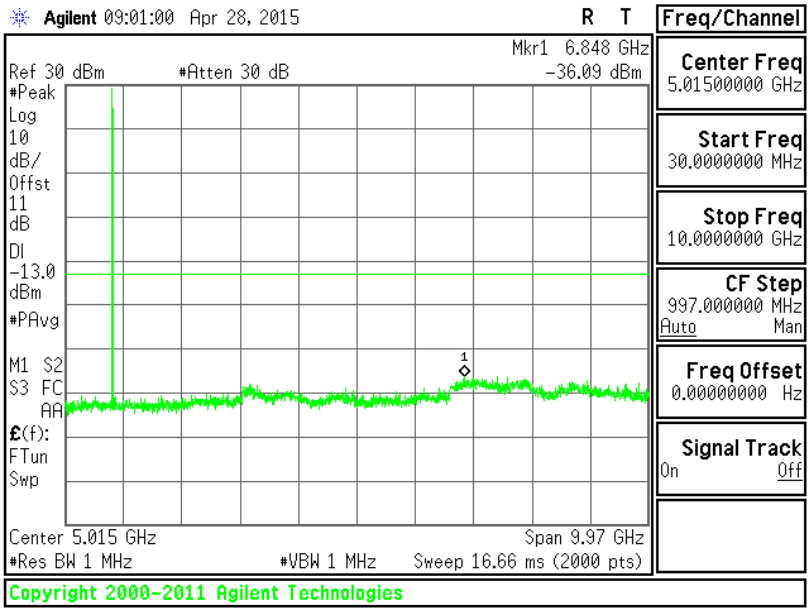
MID, RB1-0, 30 TO 10000 MHz



HIGH, RB1-0, 30 TO 10000 MHz



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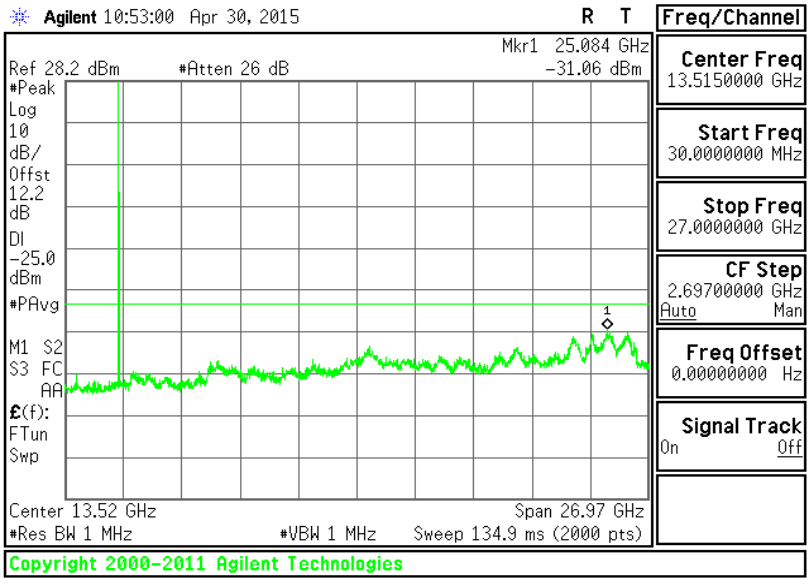
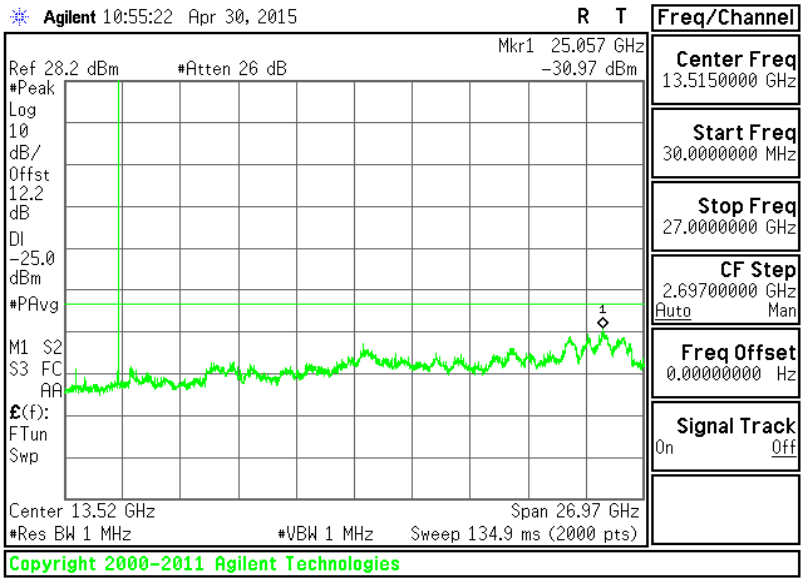
8.5.4. LTE BAND 7

QPSK, (5.0 MHz BAND WIDTH)

LOW, RB1-0, 30 TO 26000 MHz



MID, RB1-0, 30 TO 26000 MHz



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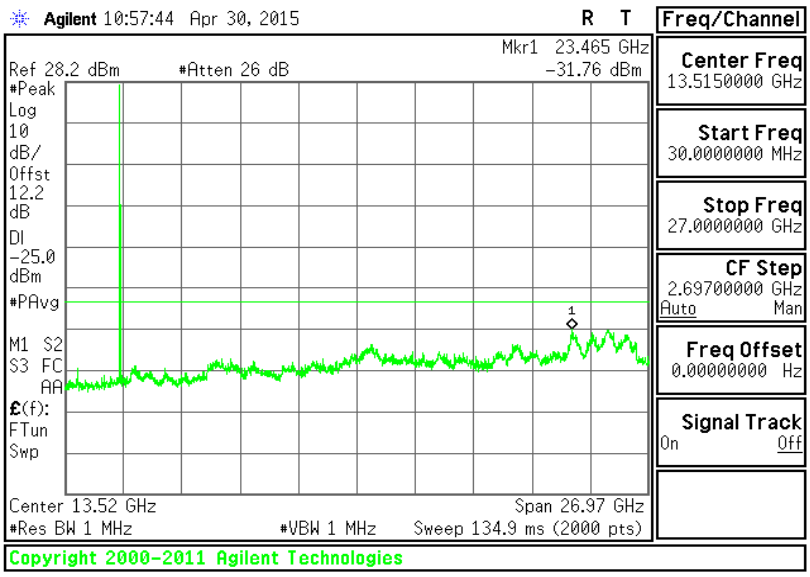
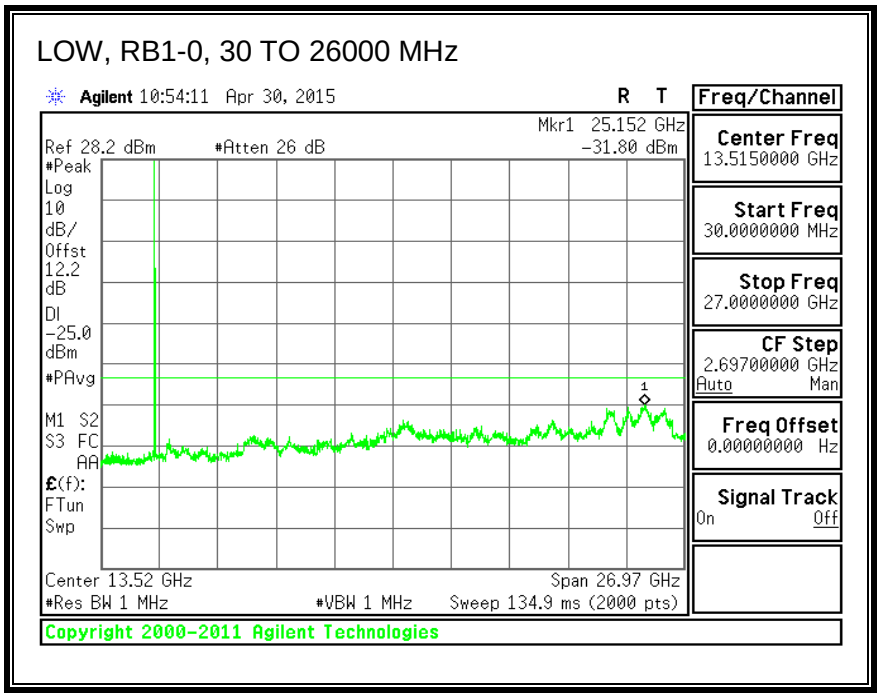
HIGH, RB1-0, 30 TO 26000 MHz



16QAM, (5.0 MHz BAND WIDTH)

LOW, RB1-0, 30 TO 26000 MHz



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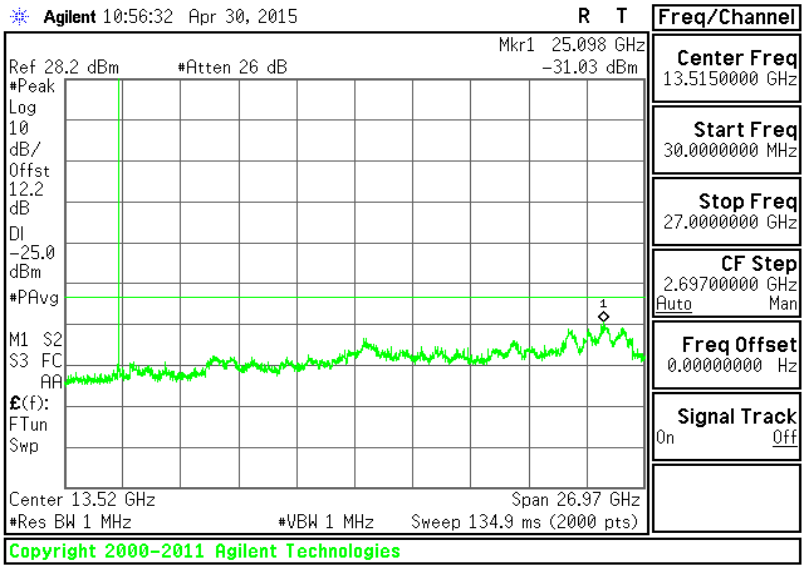
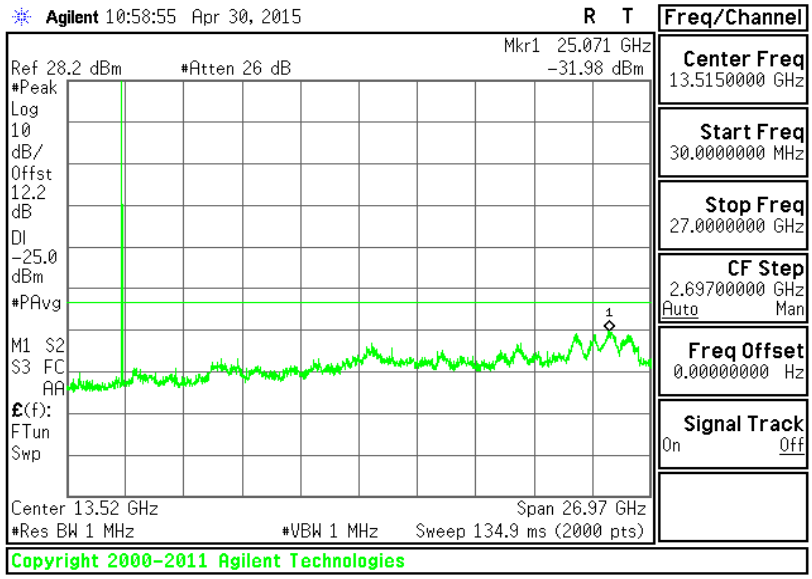
MID, RB1-0, 30 TO 26000 MHz



HIGH, RB1-0, 30 TO 26000 MHz



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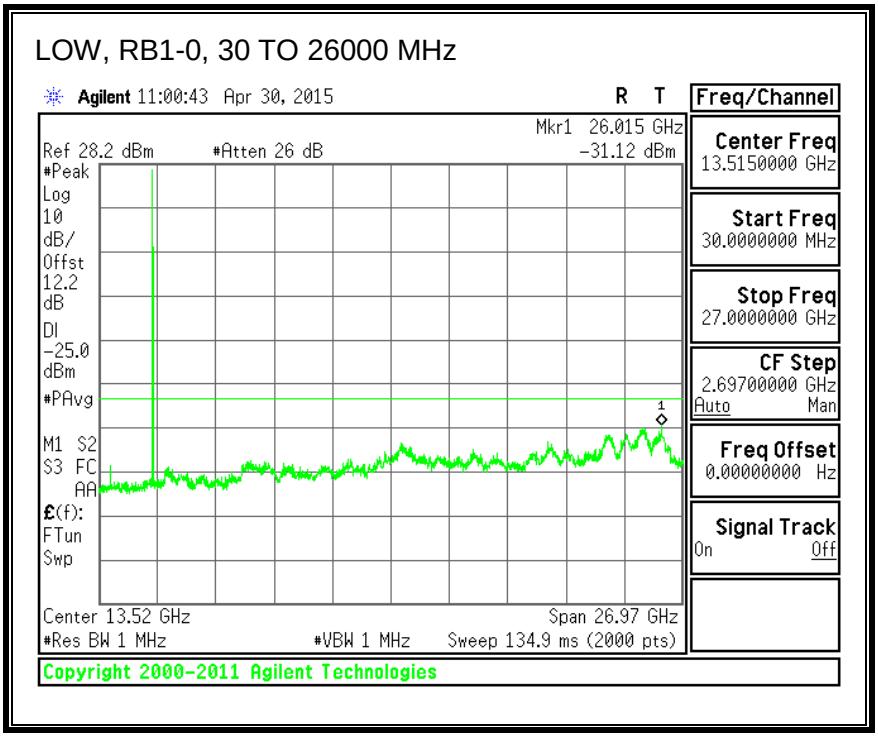
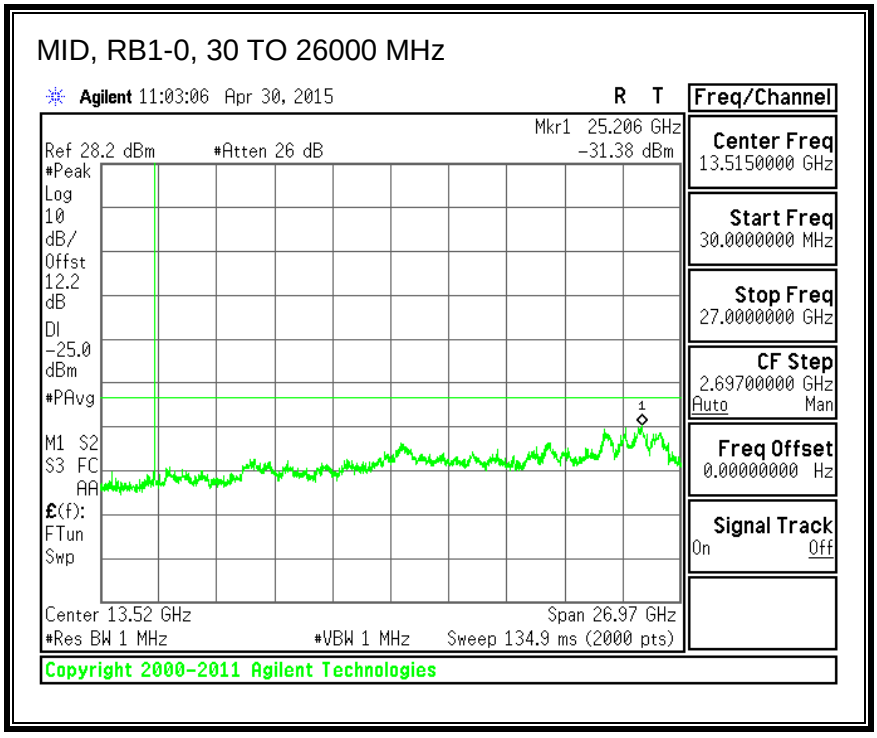
QPSK, (10.0 MHz BAND WIDTH)

LOW, RB1-0, 30 TO 26000 MHz



MID, RB1-0, 30 TO 26000 MHz



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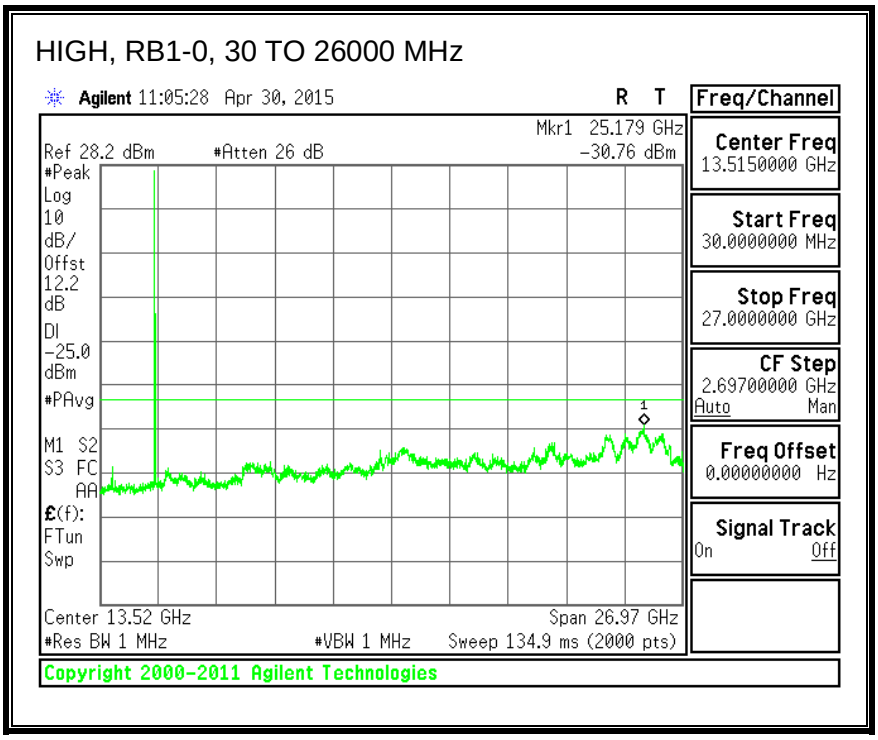
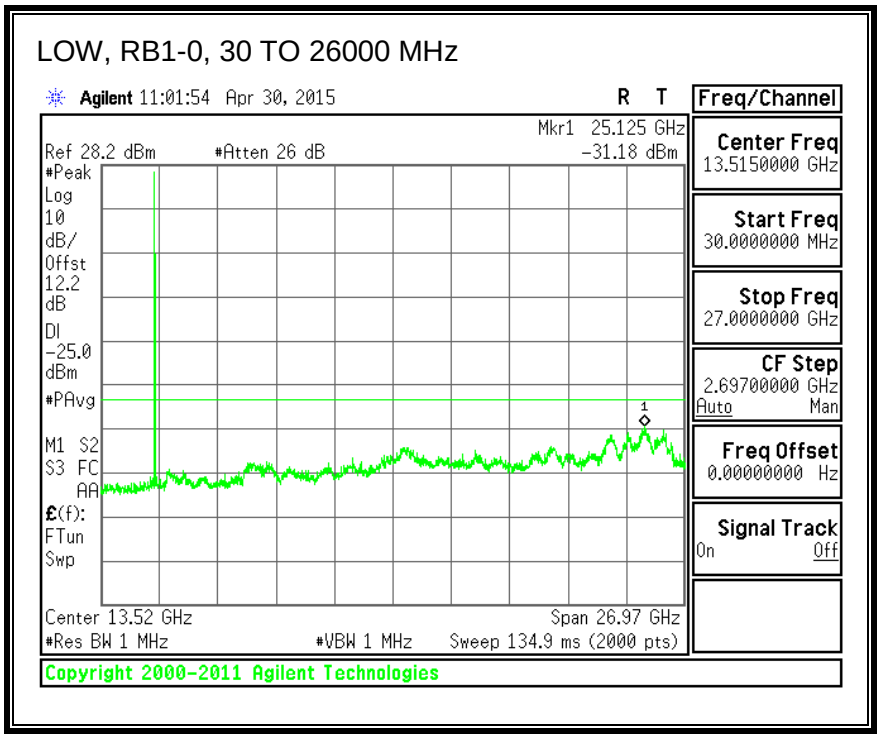


16QAM, (10.0 MHz BAND WIDTH)



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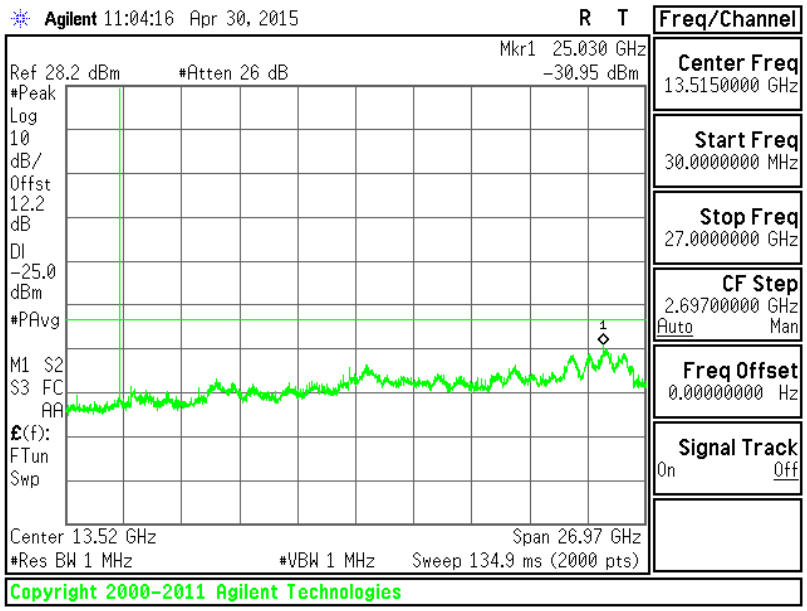
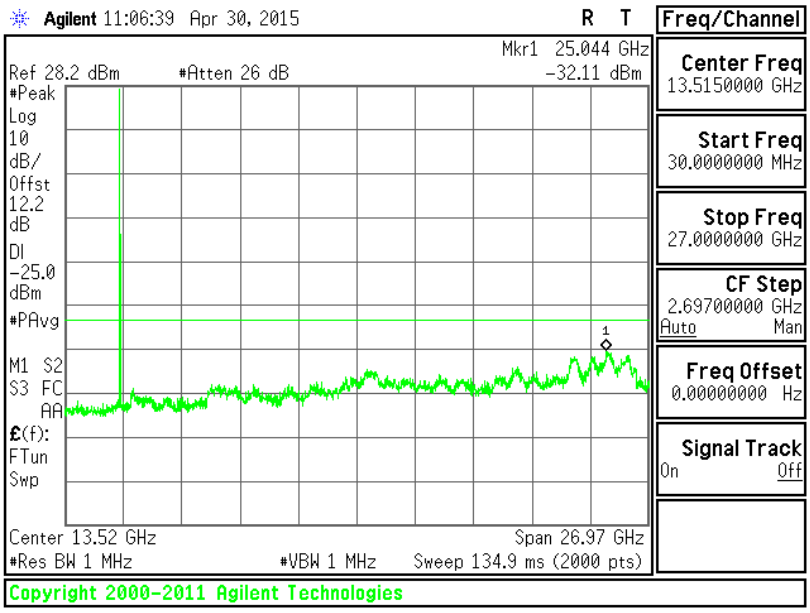
MID, RB1-0, 30 TO 26000 MHz



HIGH, RB1-0, 30 TO 26000 MHz



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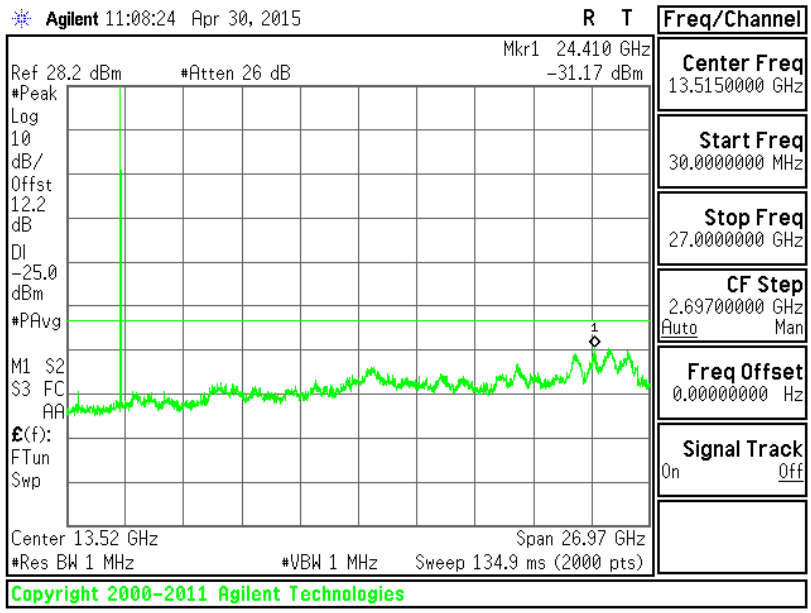
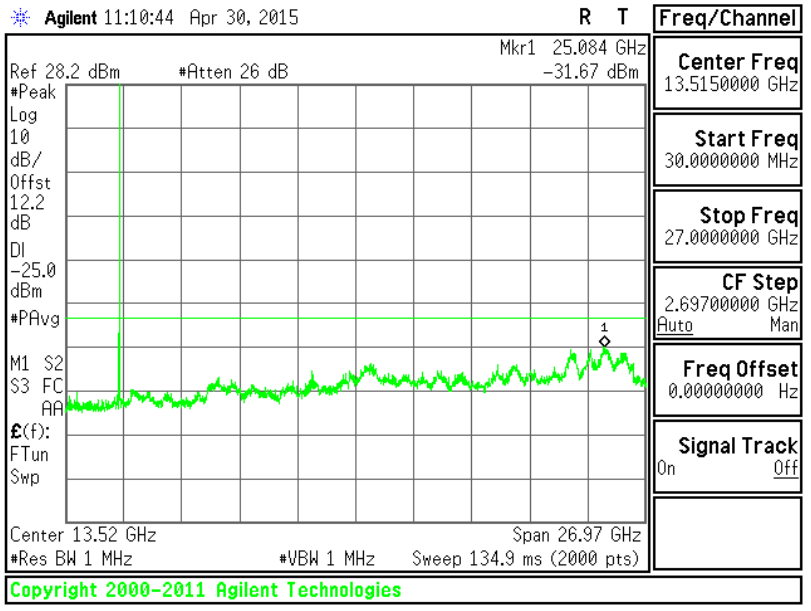
QPSK, (15.0 MHz BAND WIDTH)

LOW, RB1-0, 30 TO 26000 MHz



MID, RB1-0, 30 TO 26000 MHz



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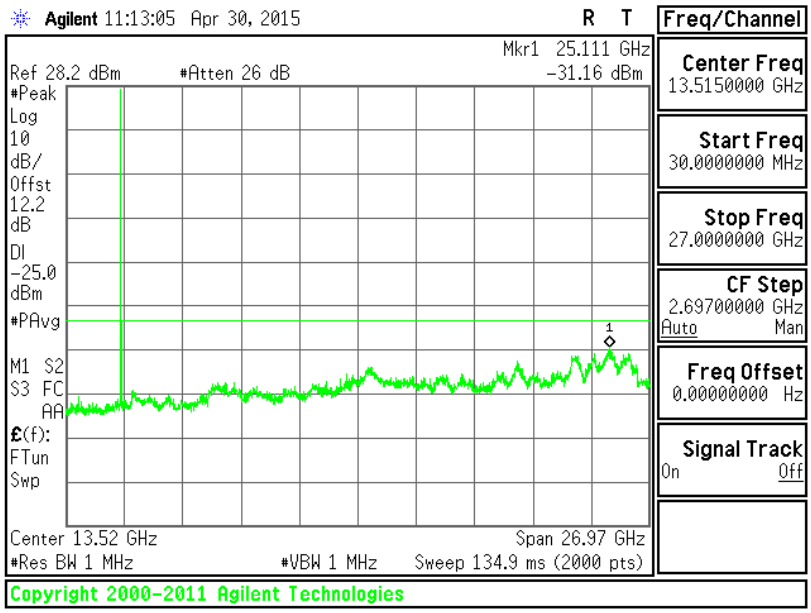
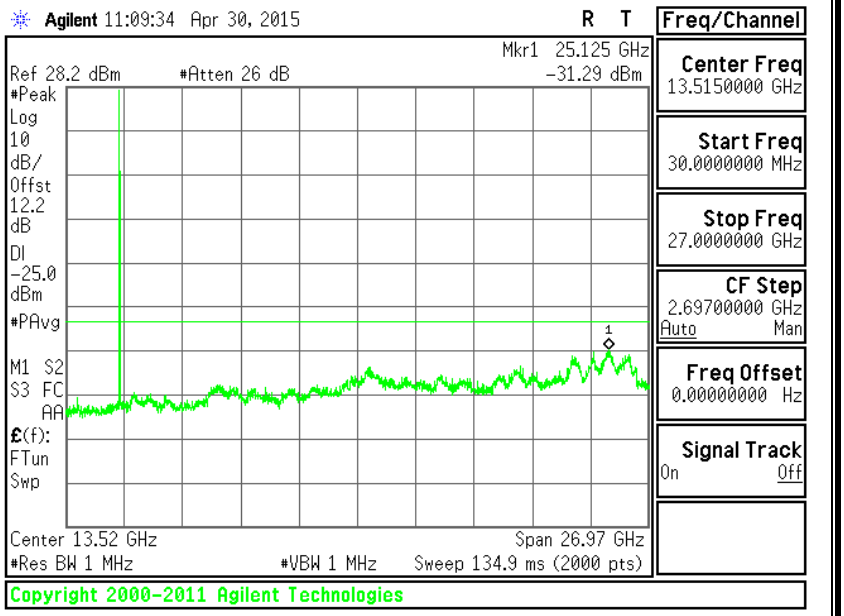
HIGH, RB1-0, 30 TO 26000 MHz



16QAM, (15.0 MHz BAND WIDTH)

LOW, RB1-0, 30 TO 26000 MHz



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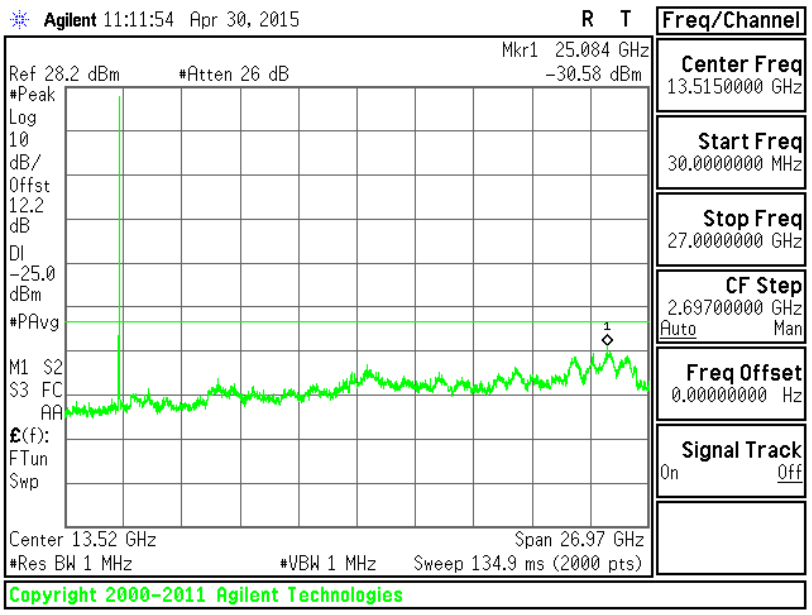
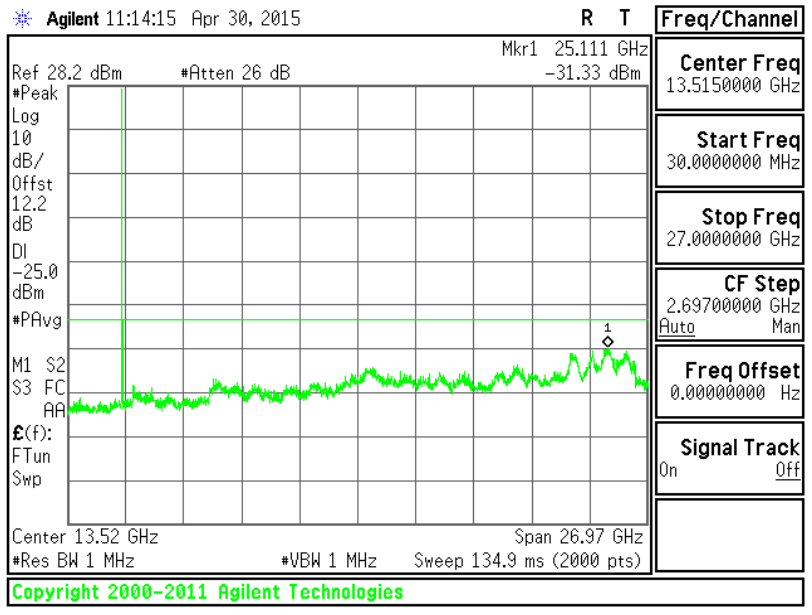
MID, RB1-0, 30 TO 26000 MHz



HIGH, RB1-0, 30 TO 26000 MHz



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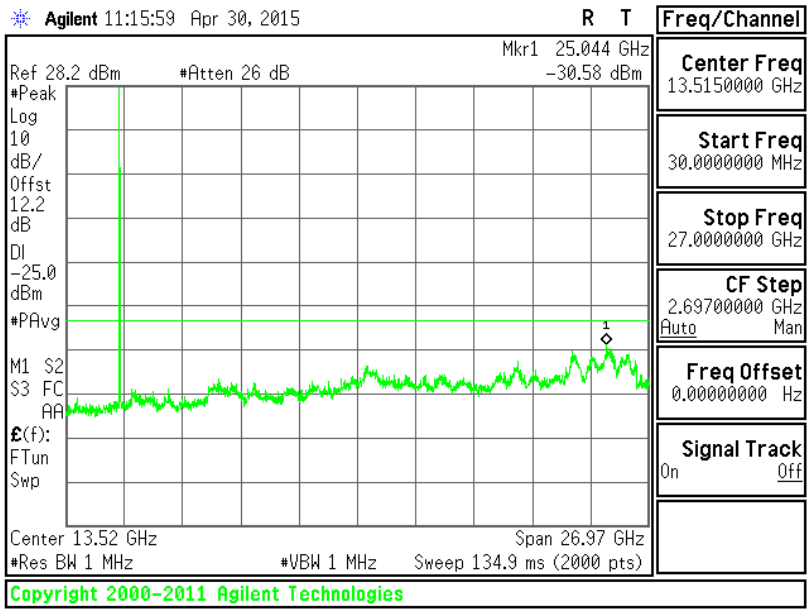
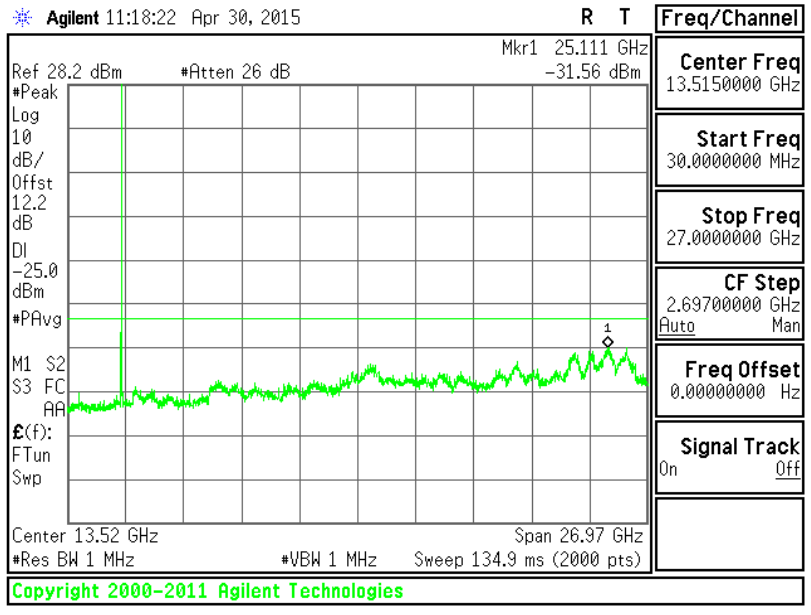
QPSK, (20.0 MHz BAND WIDTH)

LOW, RB1-0, 30 TO 26000 MHz



MID, RB1-0, 30 TO 26000 MHz



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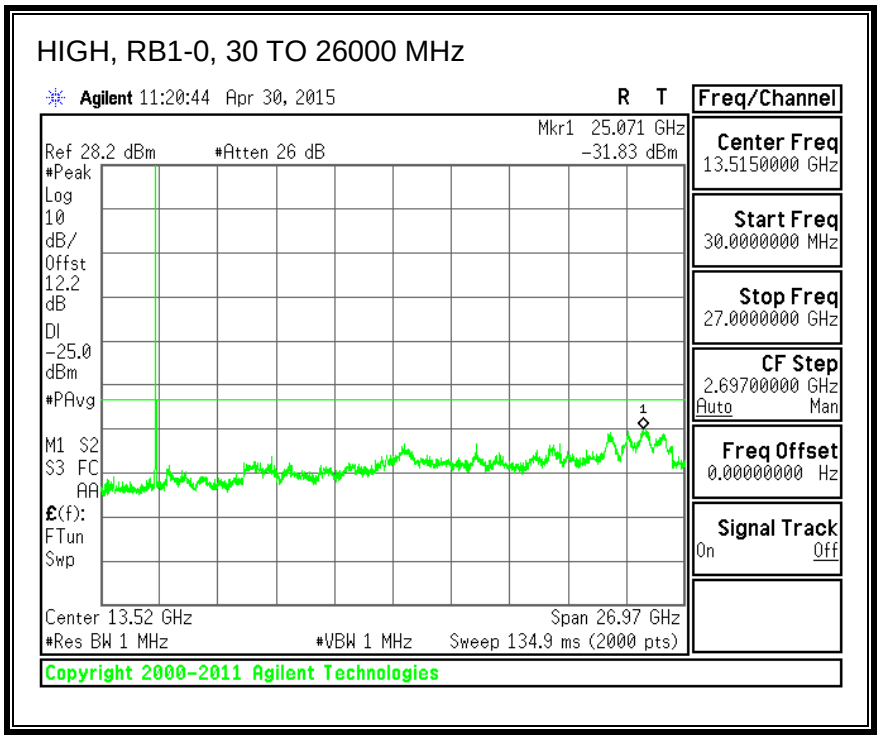
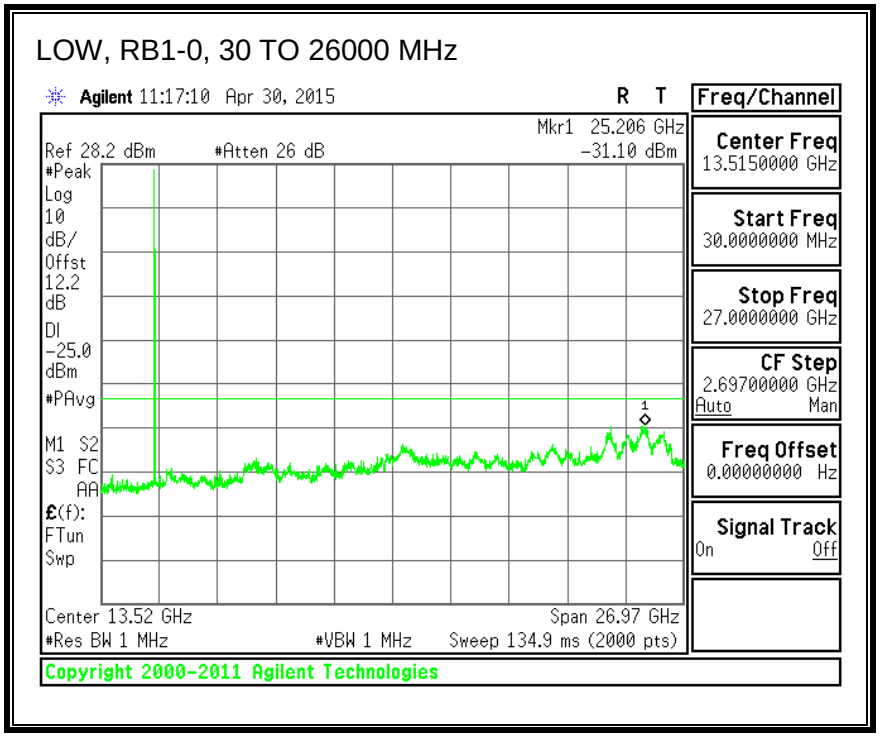


16QAM, (20.0 MHz BAND WIDTH)



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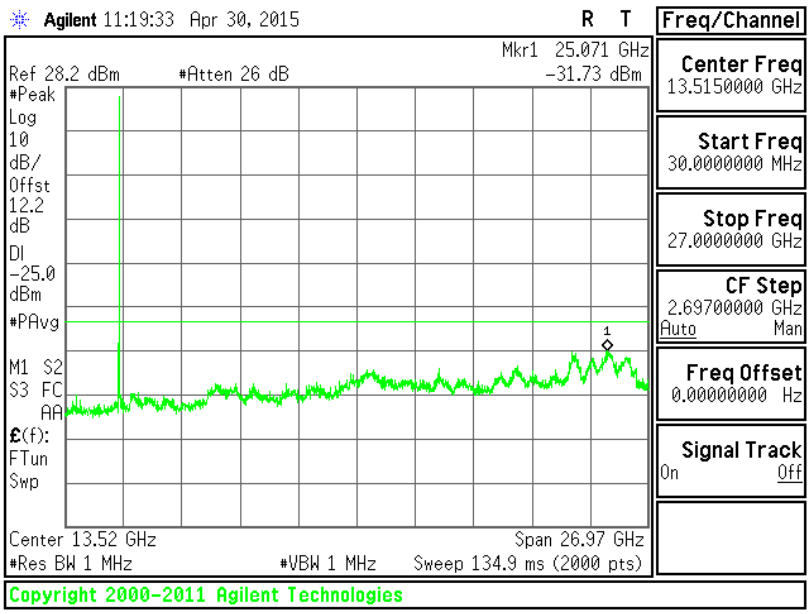
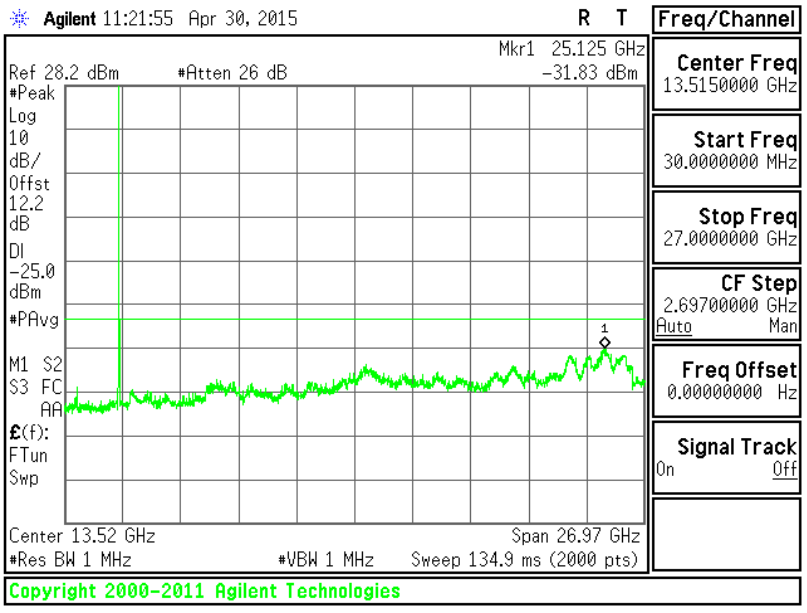
MID, RB1-0, 30 TO 26000 MHz



HIGH, RB1-0, 30 TO 26000 MHz



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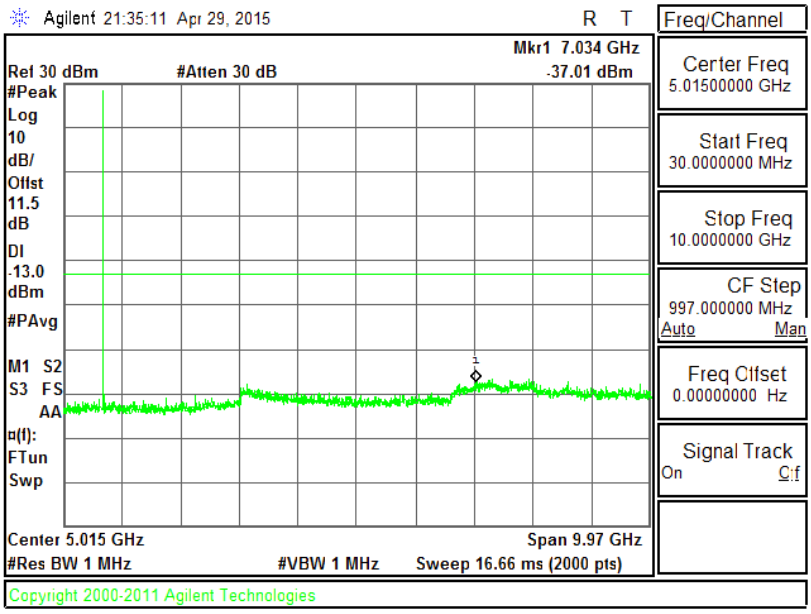
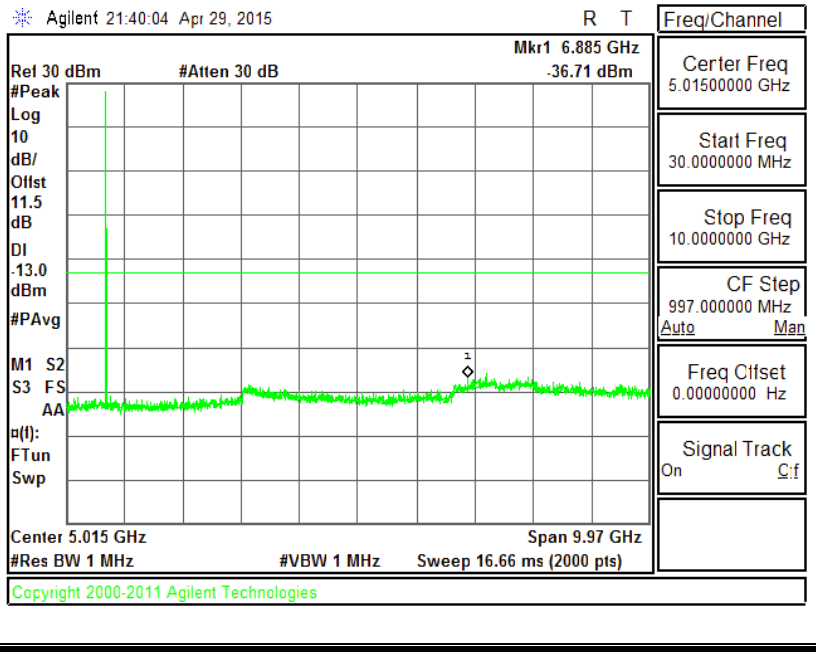
8.5.5. LTE BAND 12

QPSK, (1.4 MHz BAND WIDTH)

LOW, RB1-0, 30 TO 10000 MHz



MID, RB1-0, 30 TO 10000 MHz



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