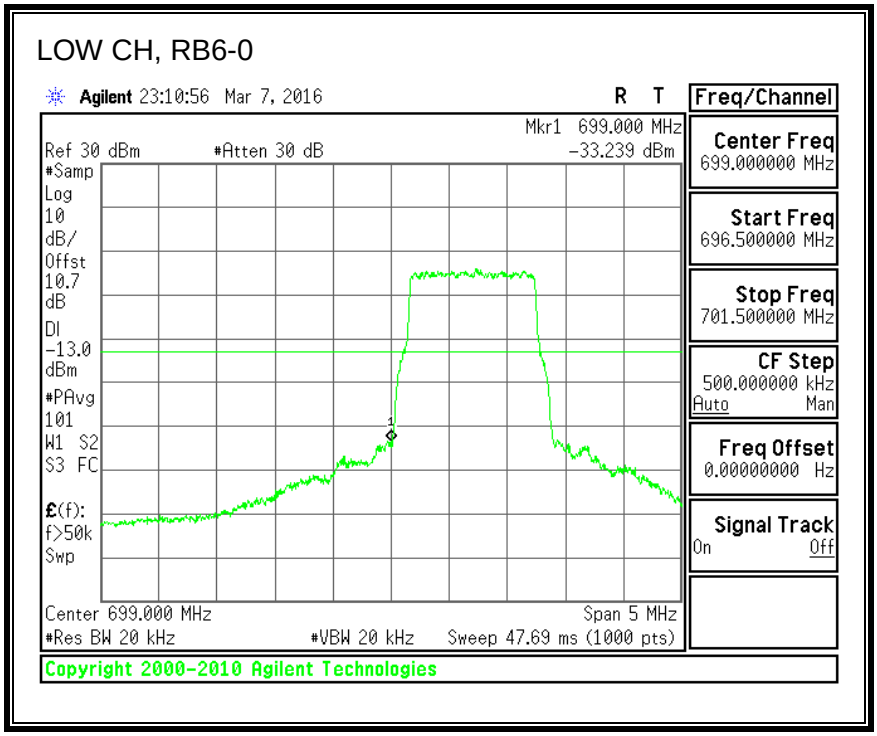
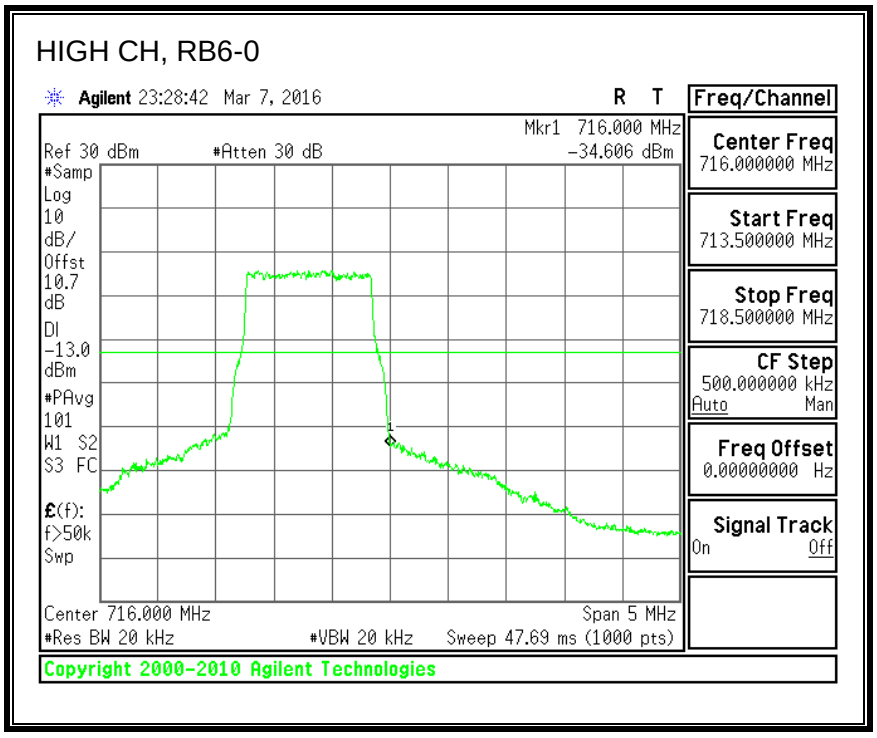
LOW CH, RB6-0



HIGH CH, RB6-0



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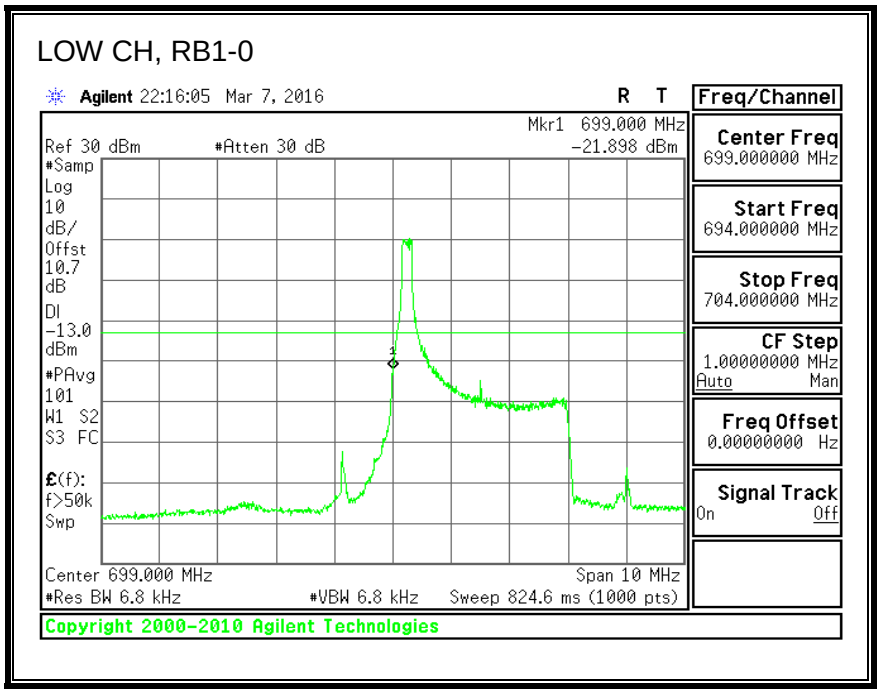
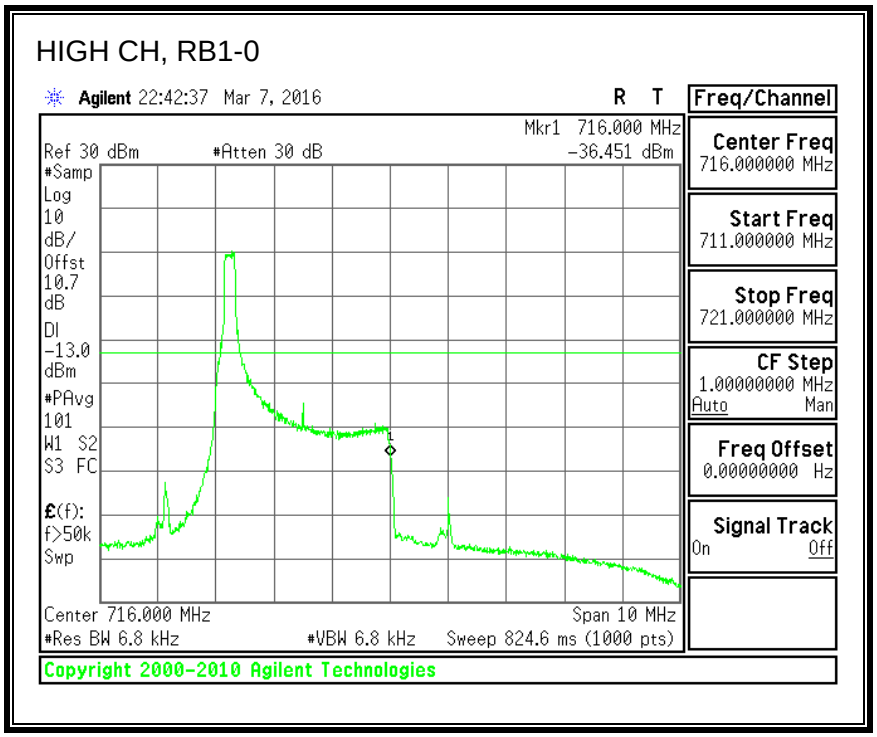
QPSK, (3.0 MHz BAND WIDTH)

LOW CH, RB1-0



HIGH CH, RB1-0



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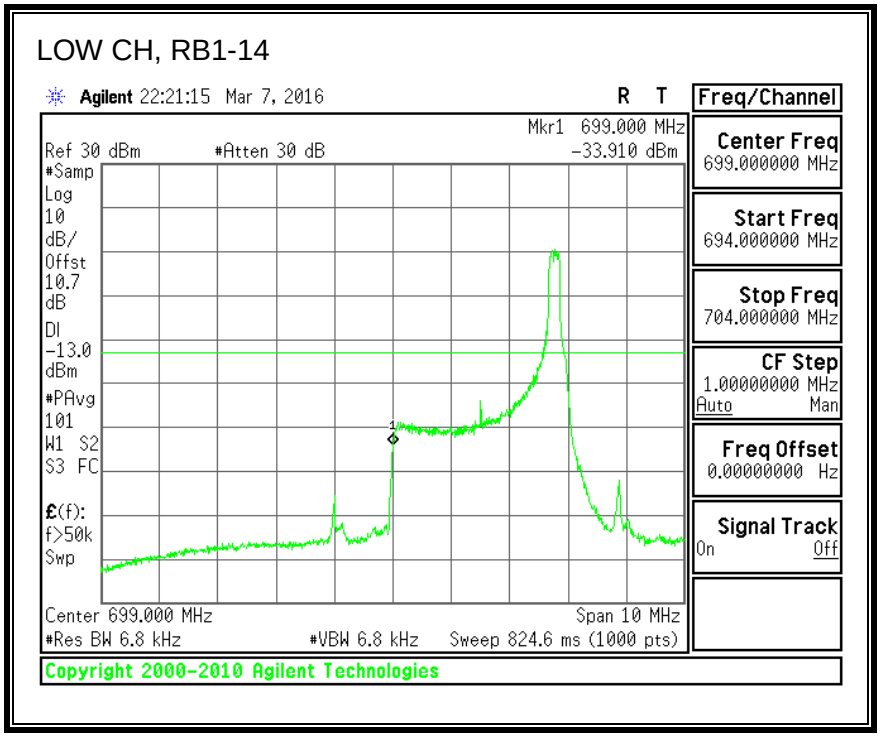
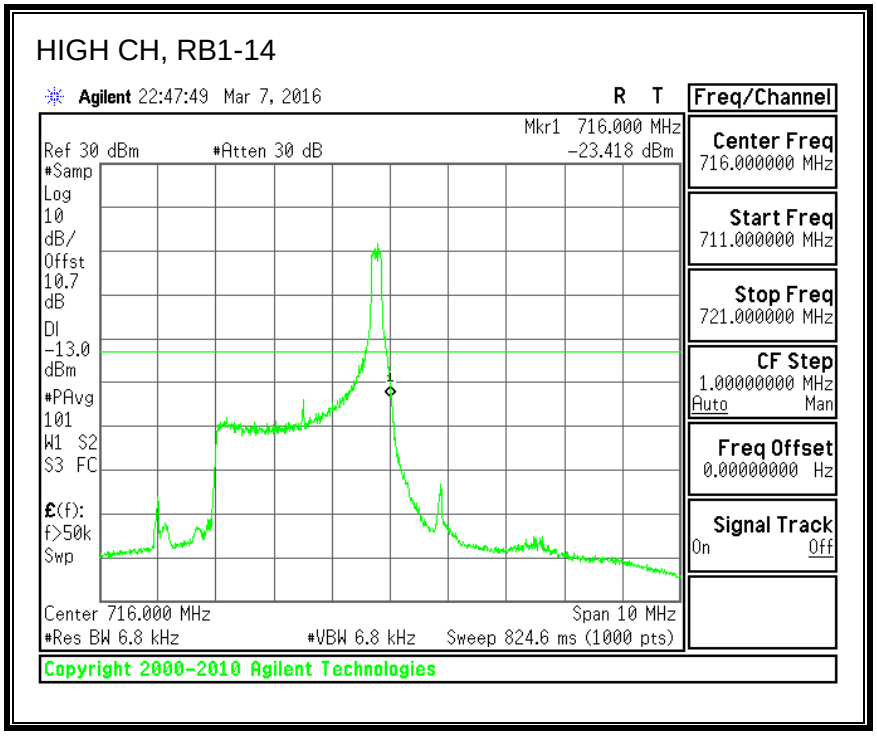
LOW CH, RB1-14



HIGH CH, RB1-14



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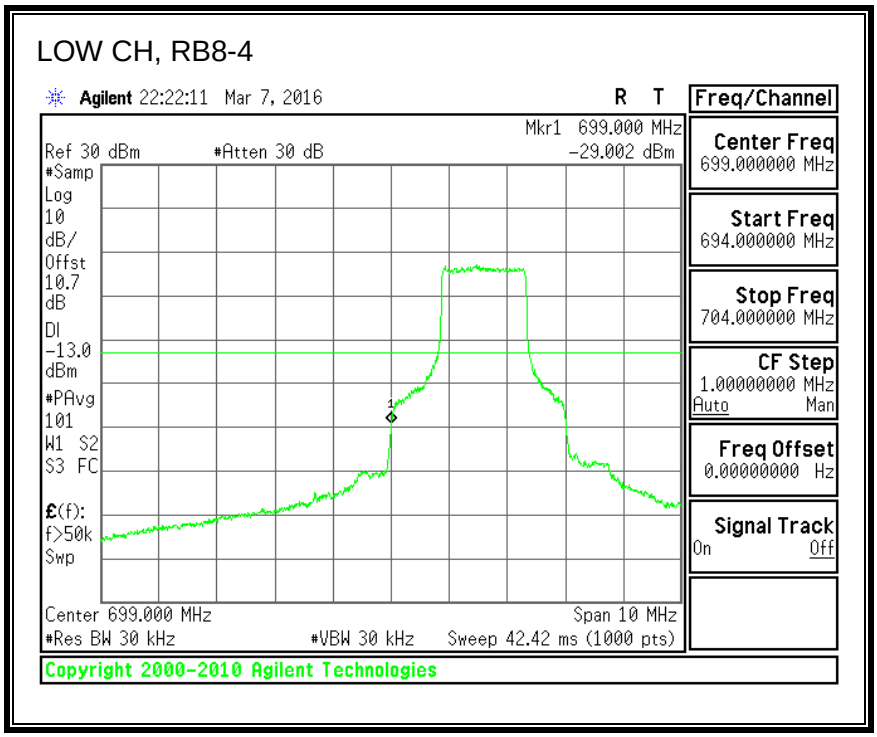
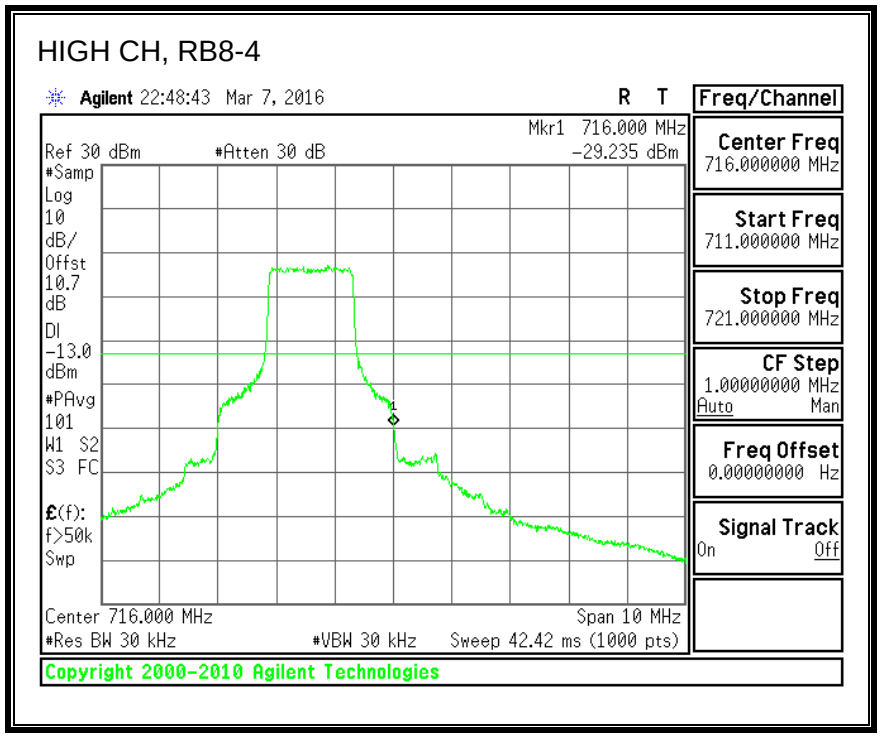
LOW CH, RB8-4



HIGH CH, RB8-4



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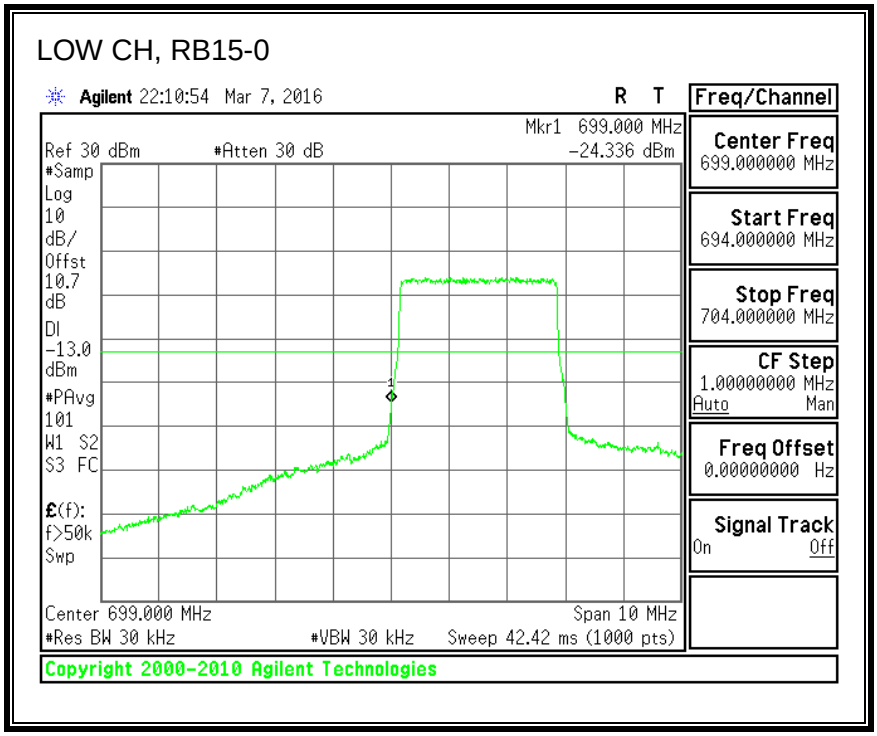
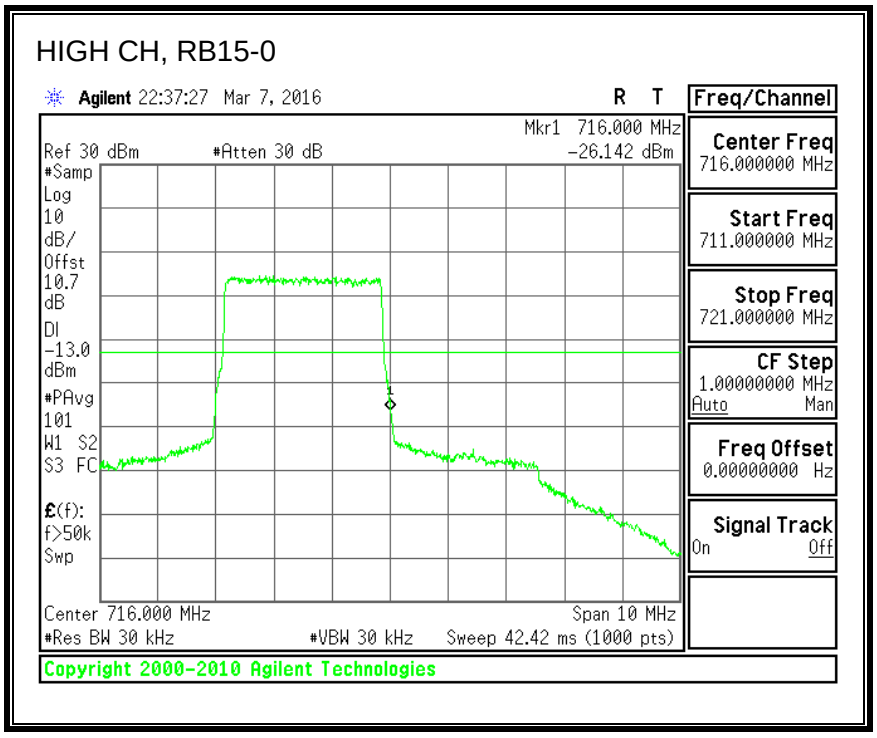
LOW CH, RB15-0



HIGH CH, RB15-0



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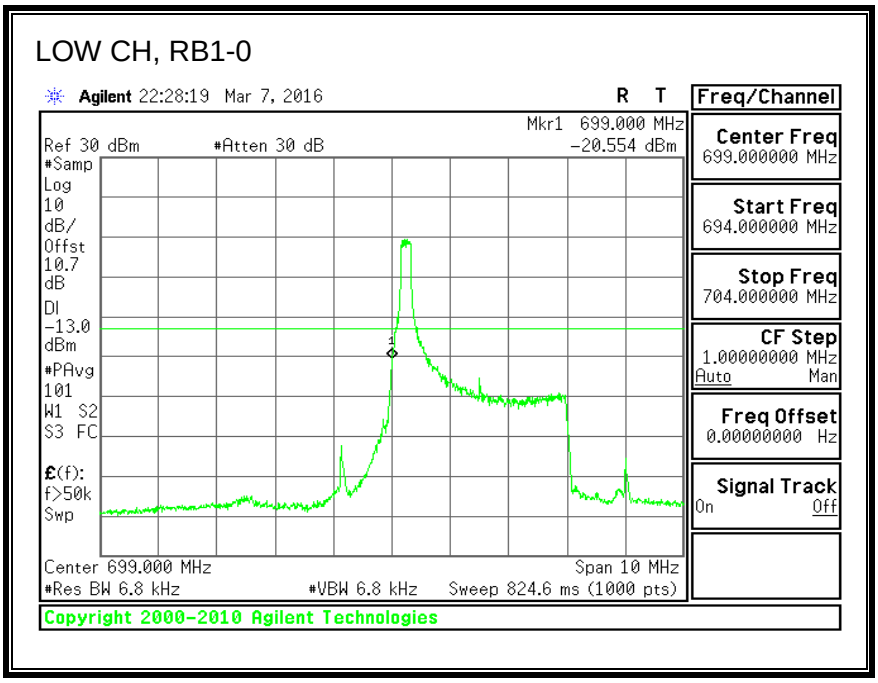
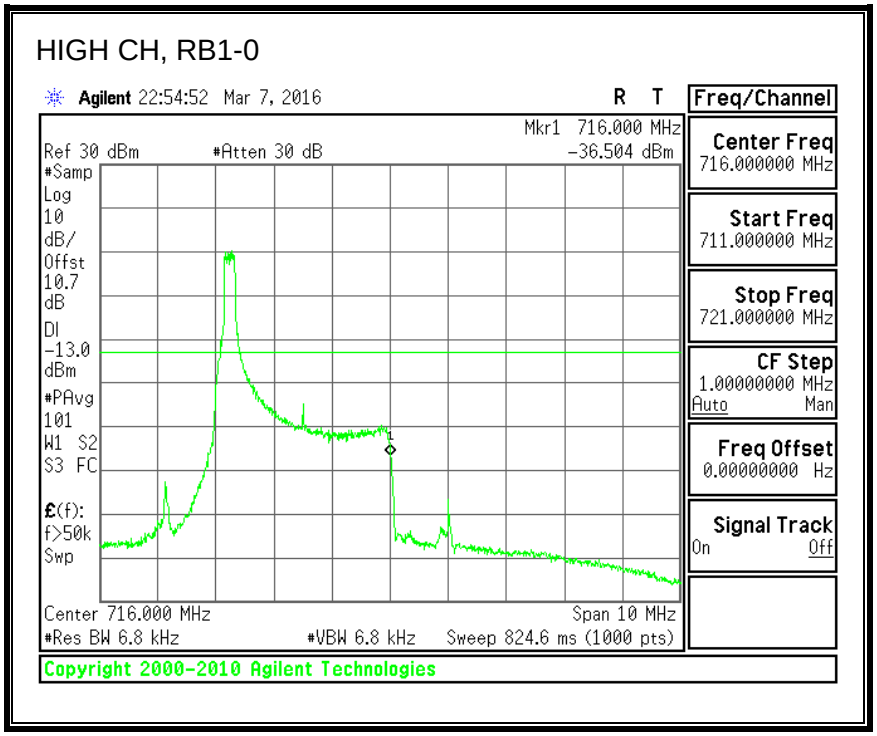
16QAM, (3.0 MHz BAND WIDTH)

LOW CH, RB1-0



HIGH CH, RB1-0



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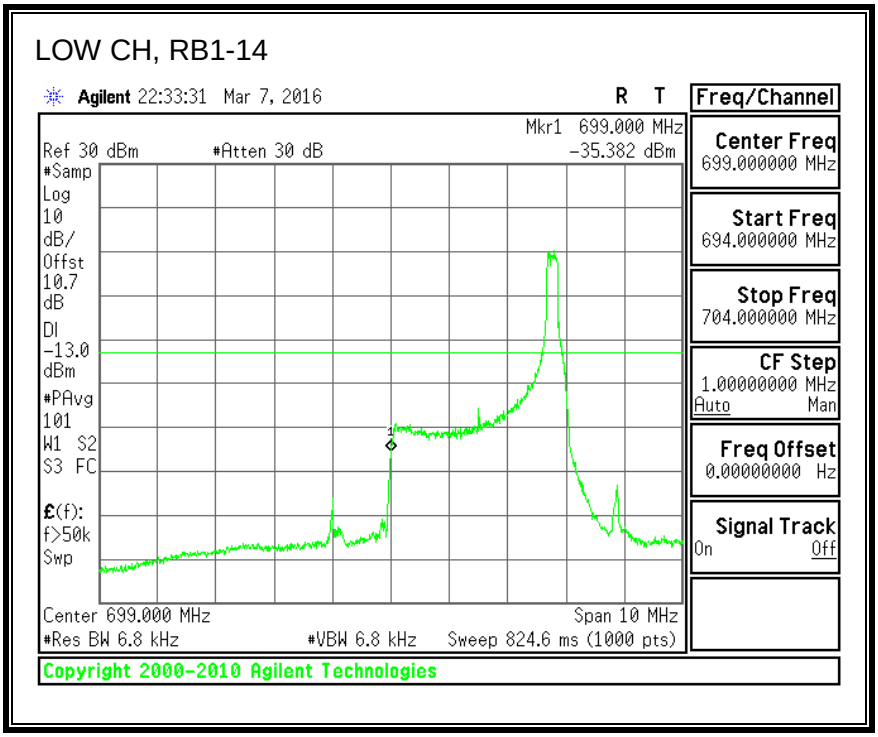
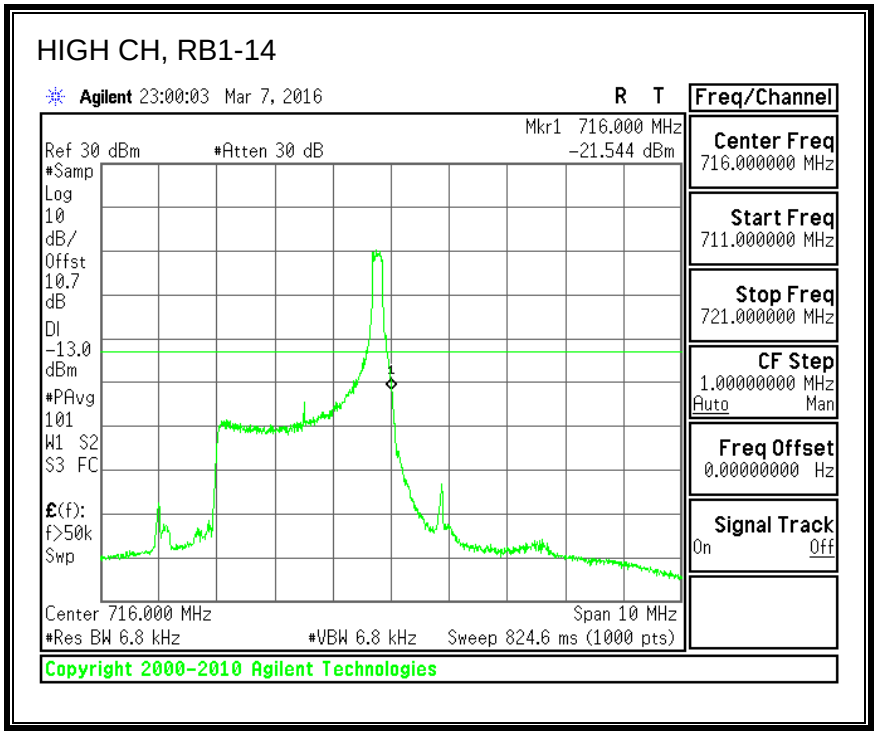
LOW CH, RB1-14



HIGH CH, RB1-14



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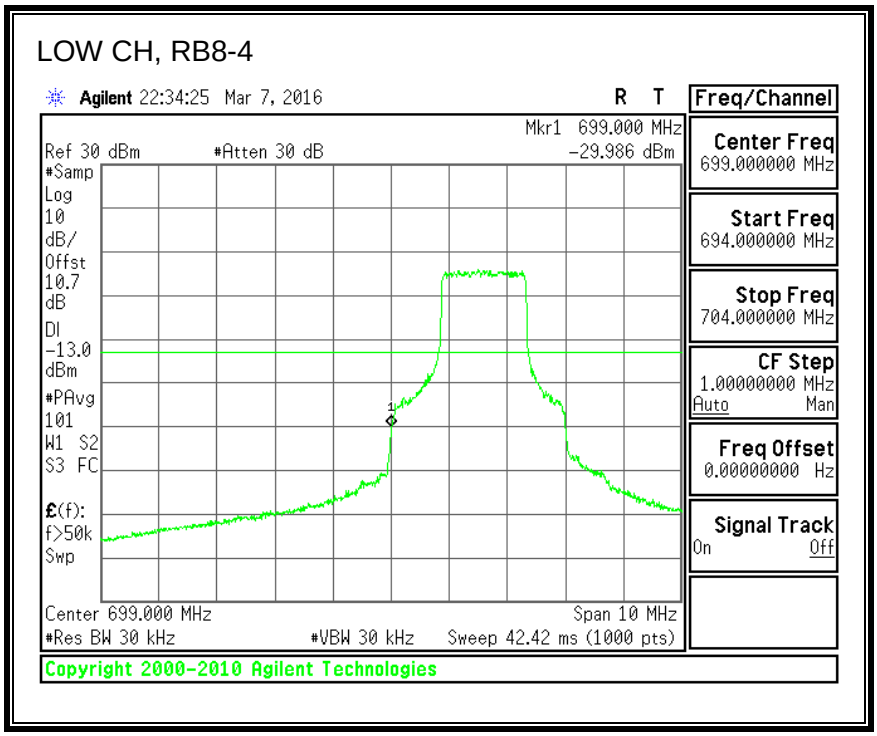
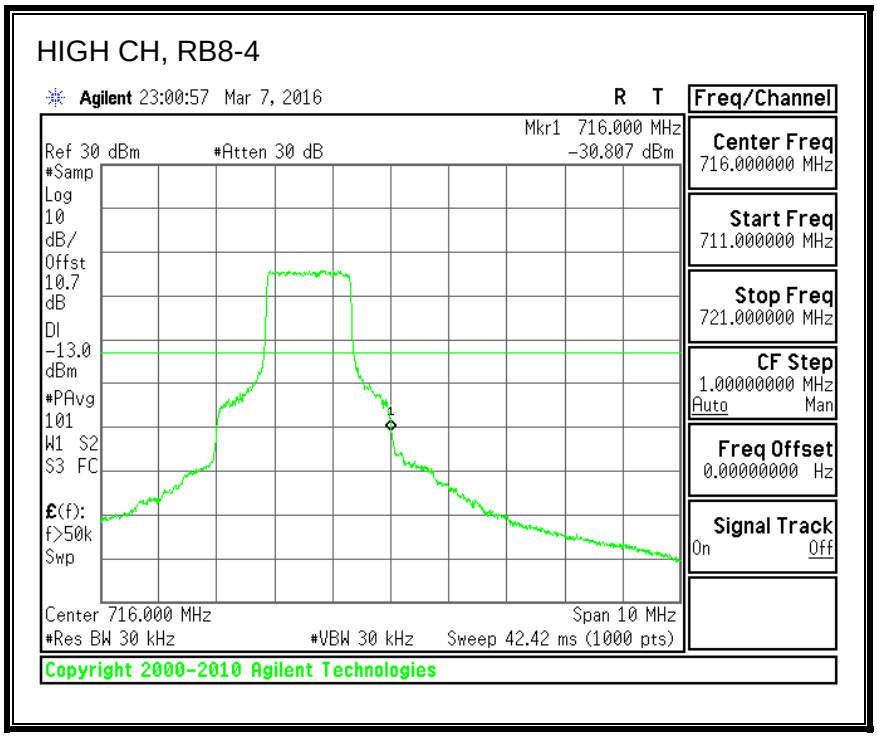
LOW CH, RB8-4



HIGH CH, RB8-4



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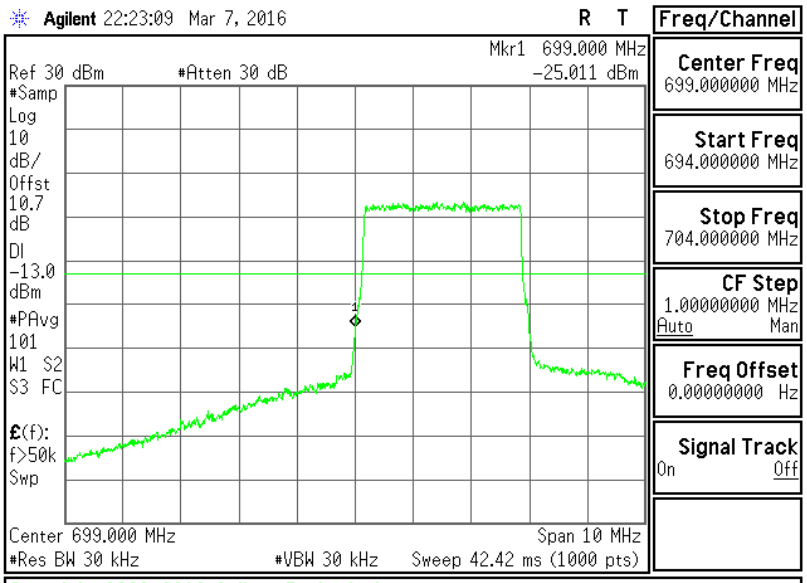
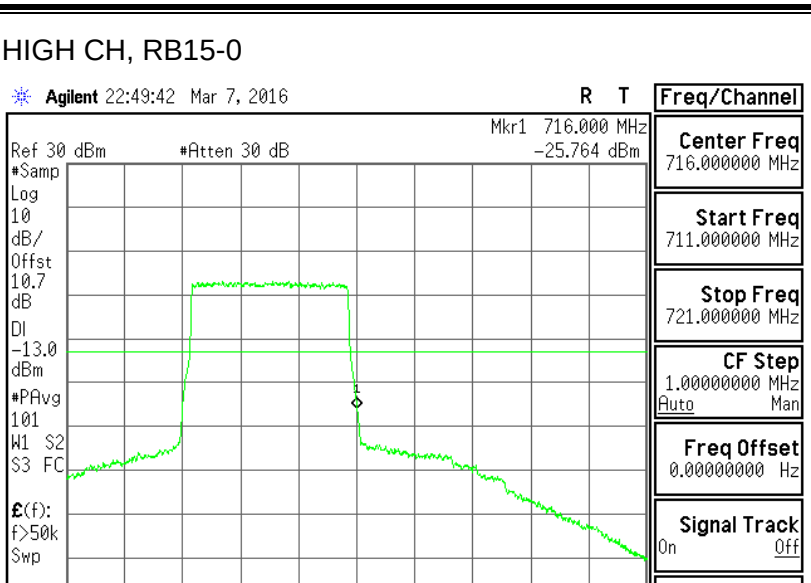
LOW CH, RB15-0



HIGH CH, RB15-0



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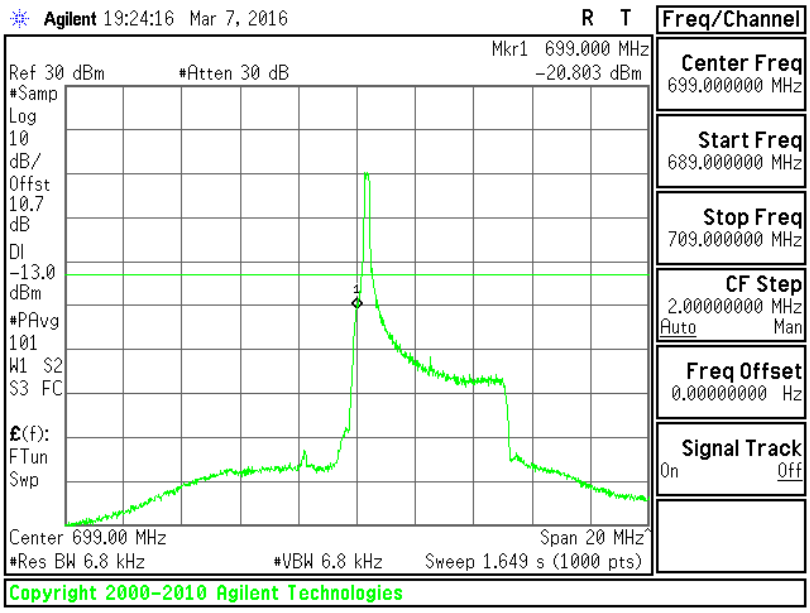
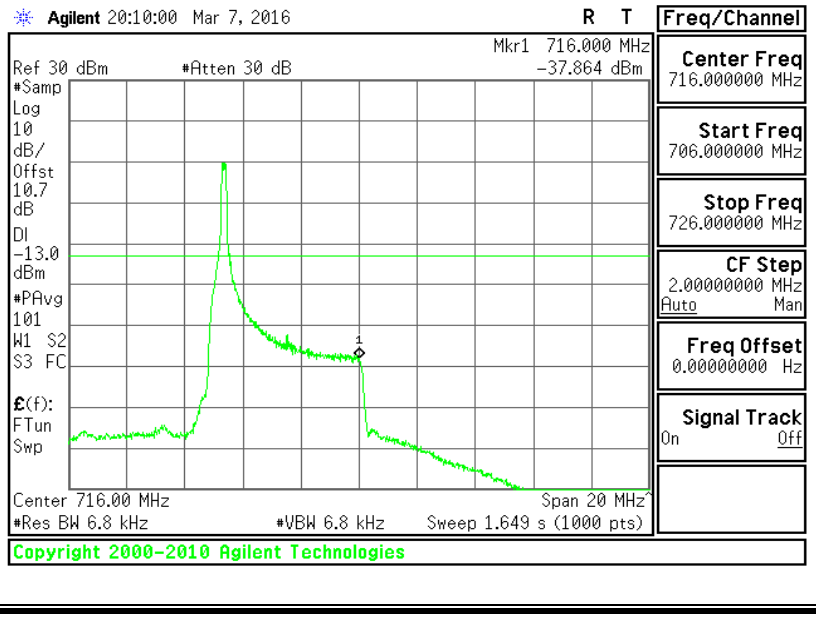
QPSK, (5.0 MHz BAND WIDTH)

LOW CH, RB1-0



HIGH CH, RB1-0



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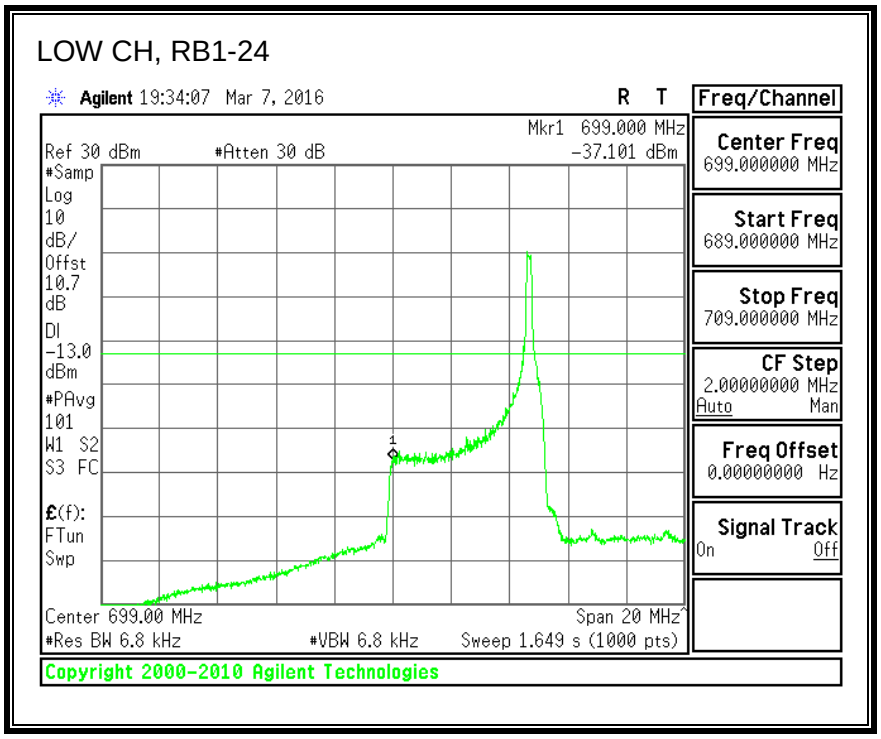
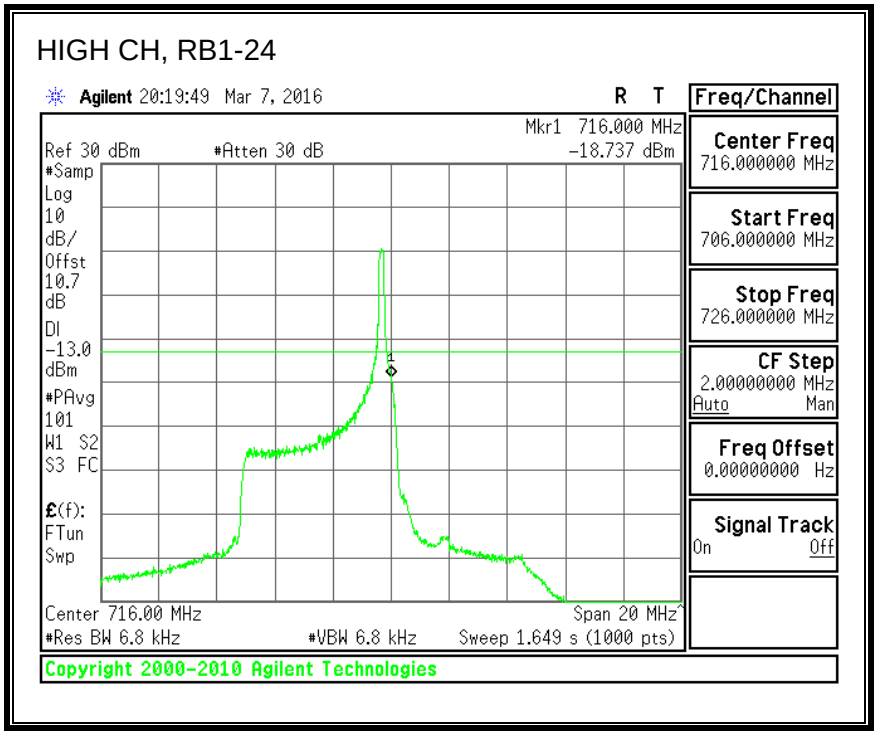
LOW CH, RB1-24



HIGH CH, RB1-24



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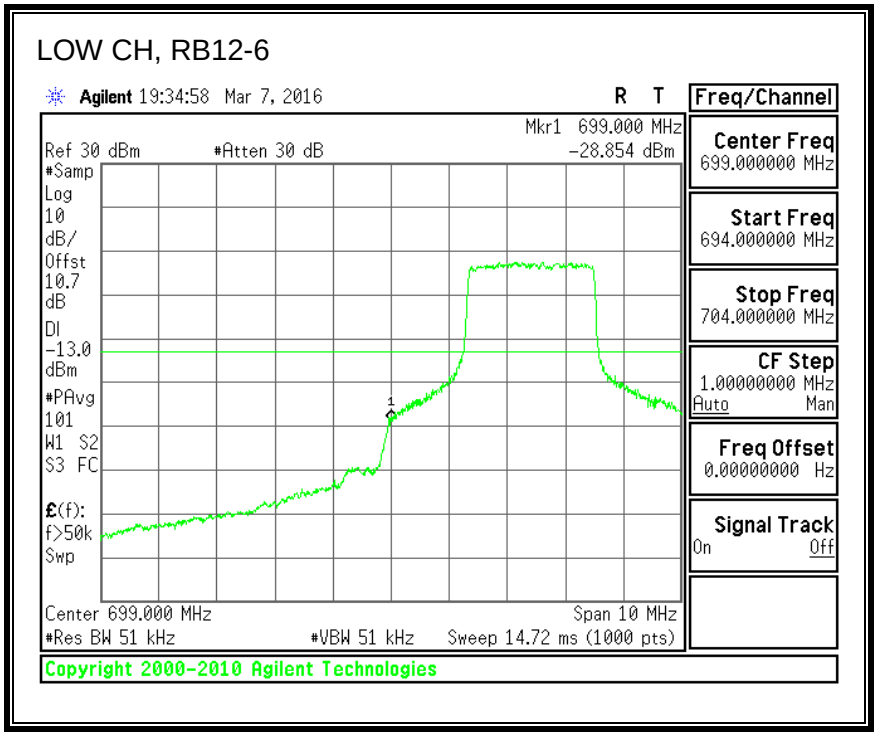
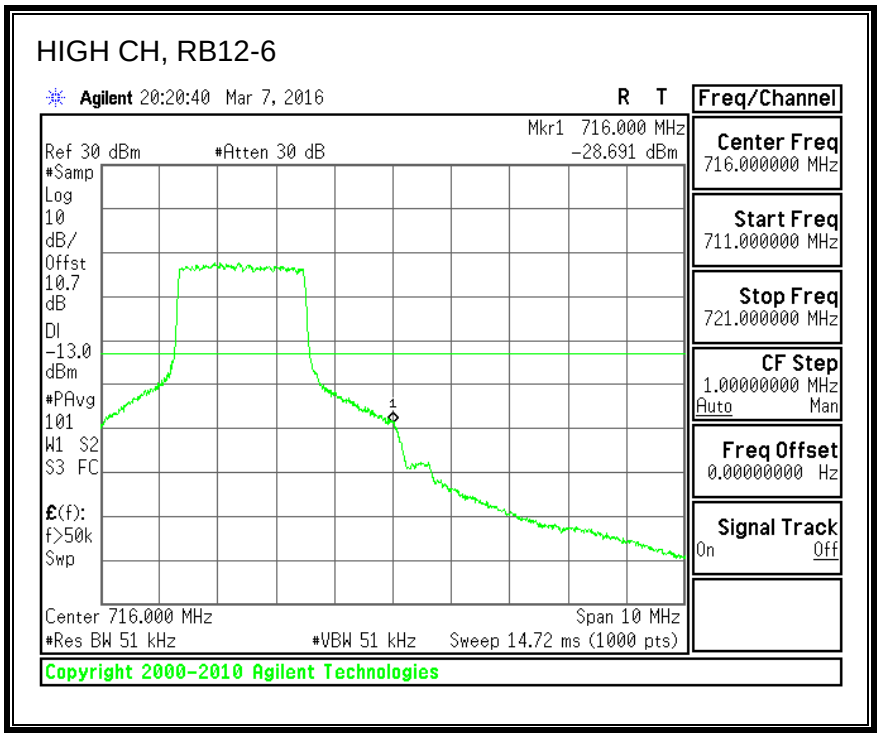
LOW CH, RB12-6



HIGH CH, RB12-6



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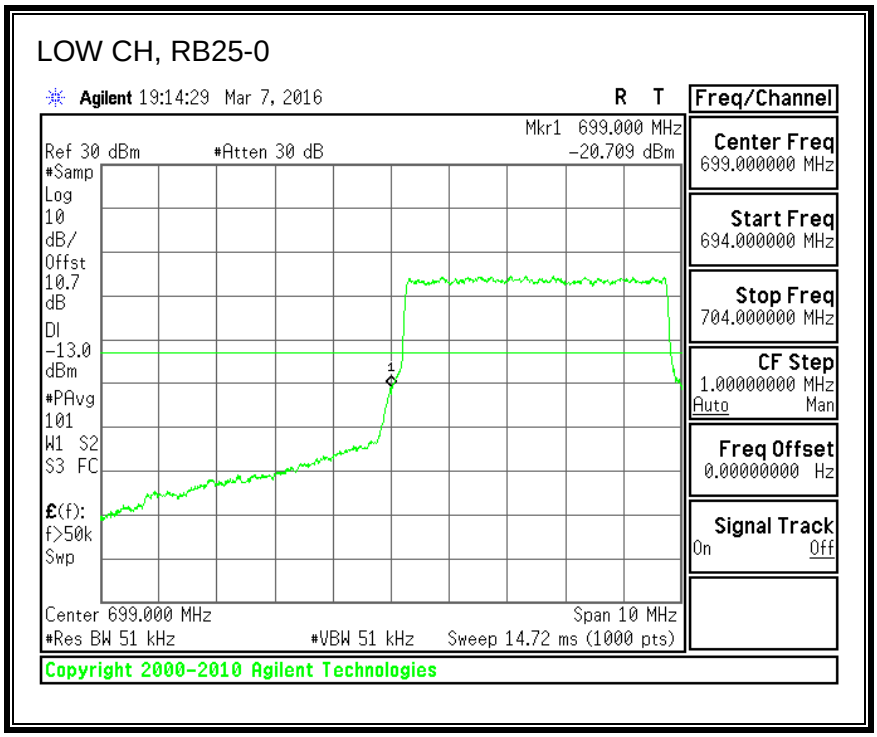
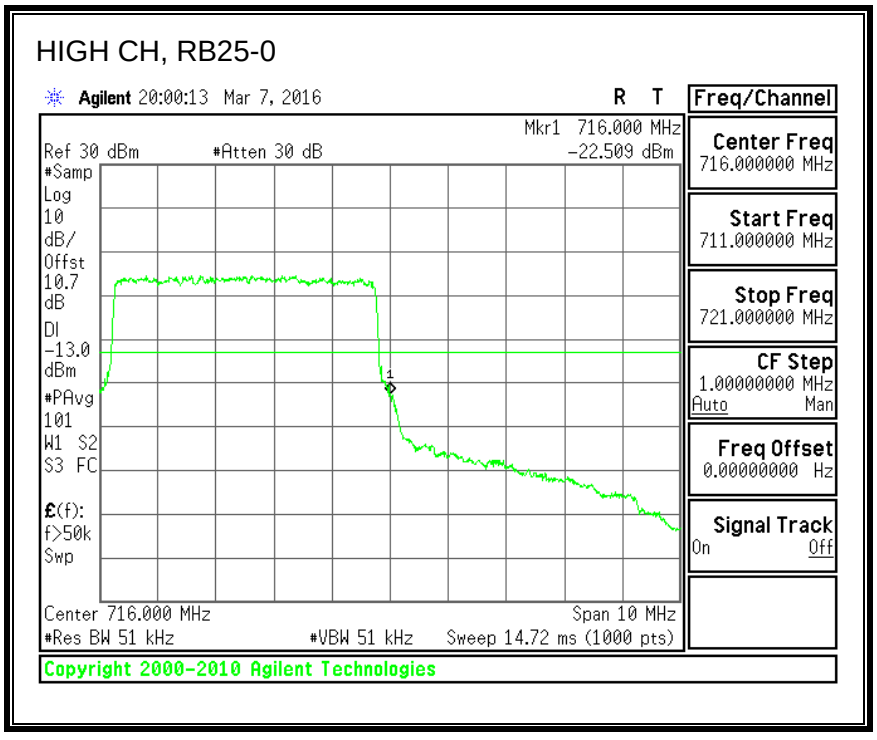
LOW CH, RB25-0



HIGH CH, RB25-0



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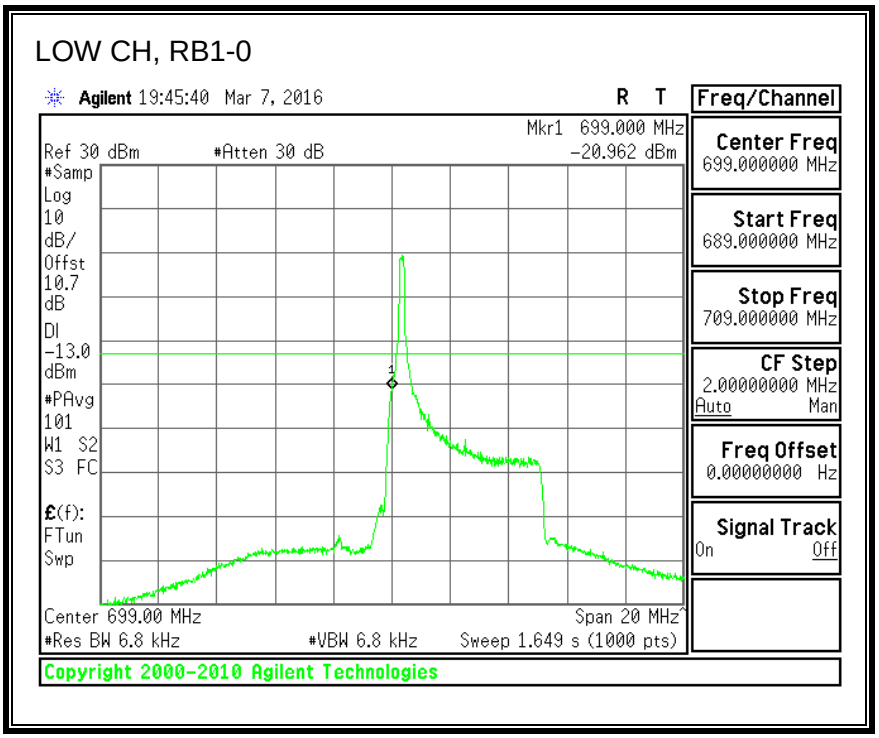
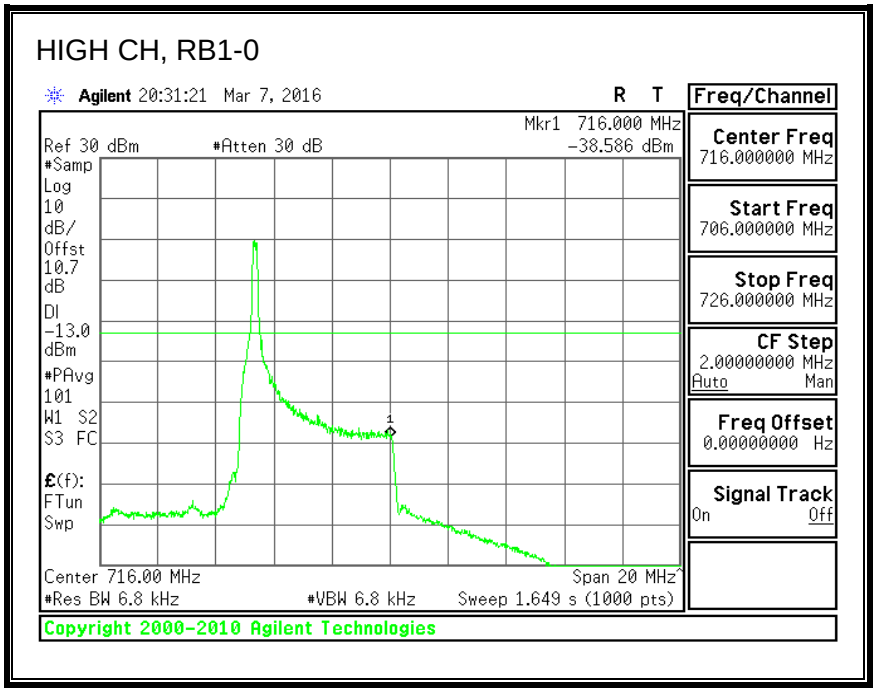
16QAM, (5.0 MHz BAND WIDTH)

LOW CH, RB1-0



HIGH CH, RB1-0



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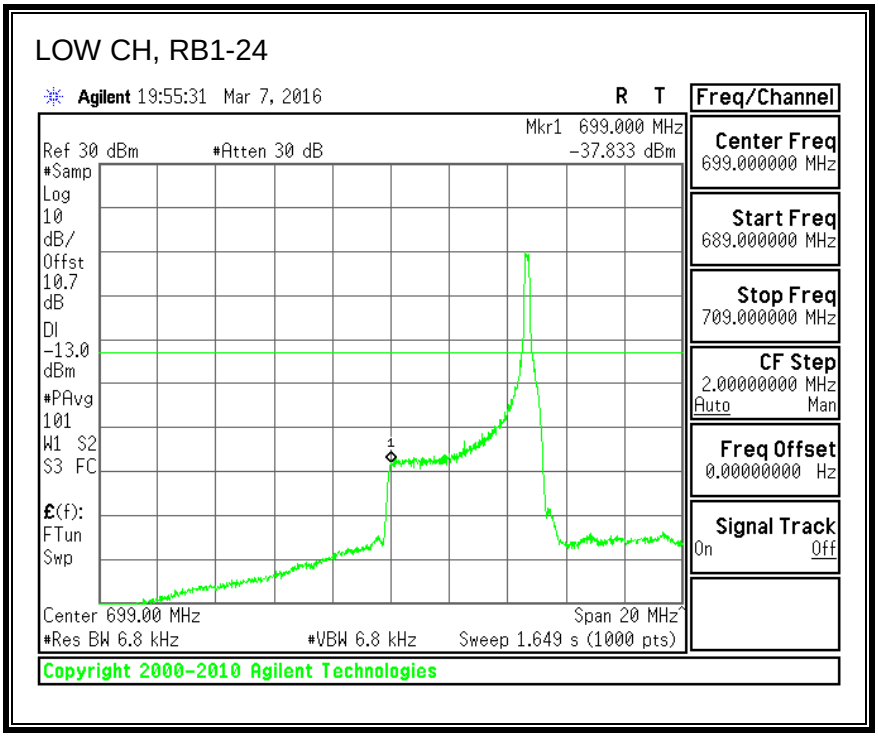
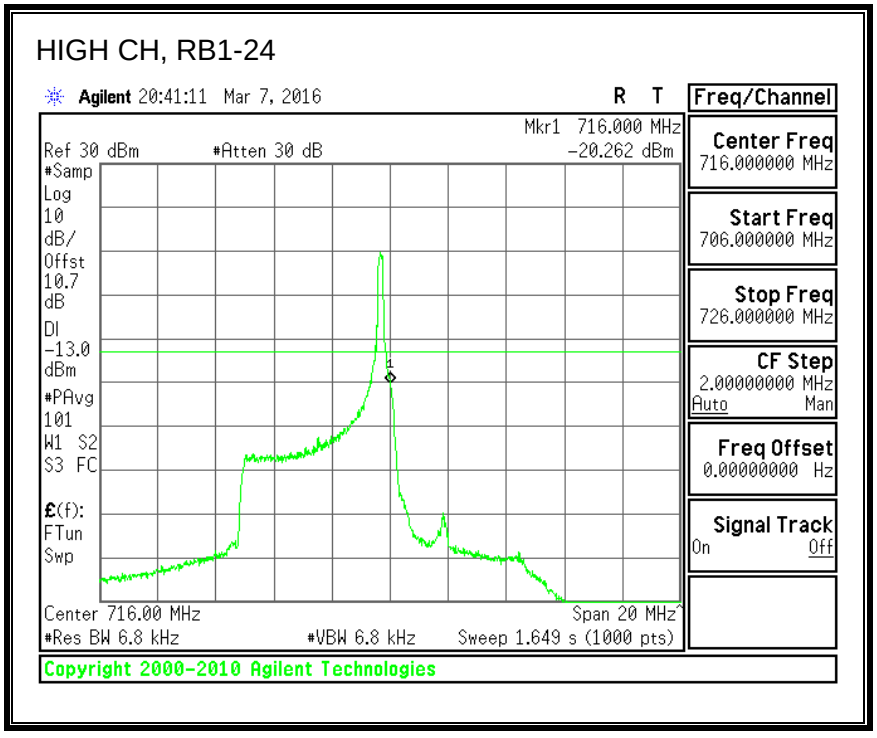
LOW CH, RB1-24



HIGH CH, RB1-24



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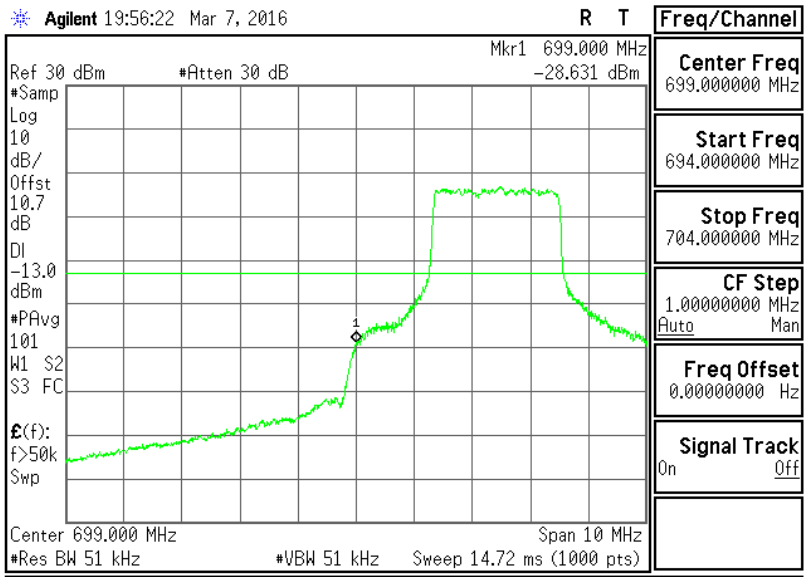
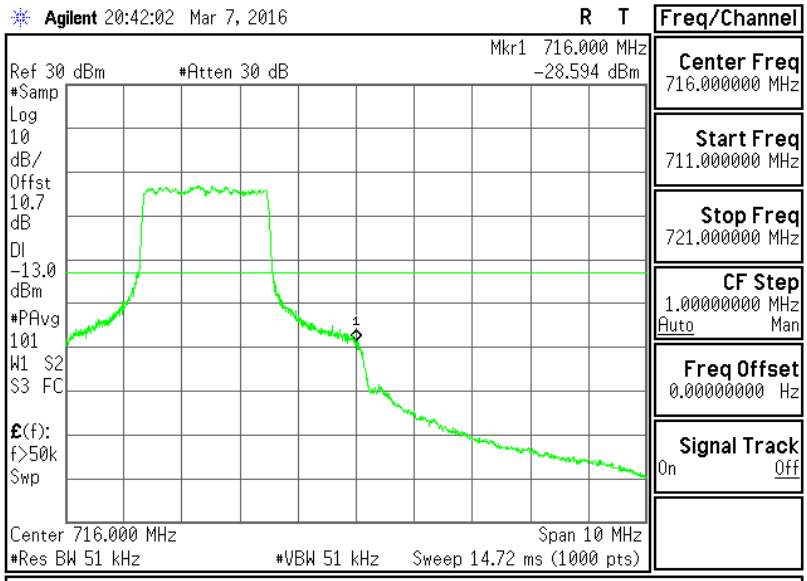
LOW CH, RB12-6



HIGH CH, RB12-6



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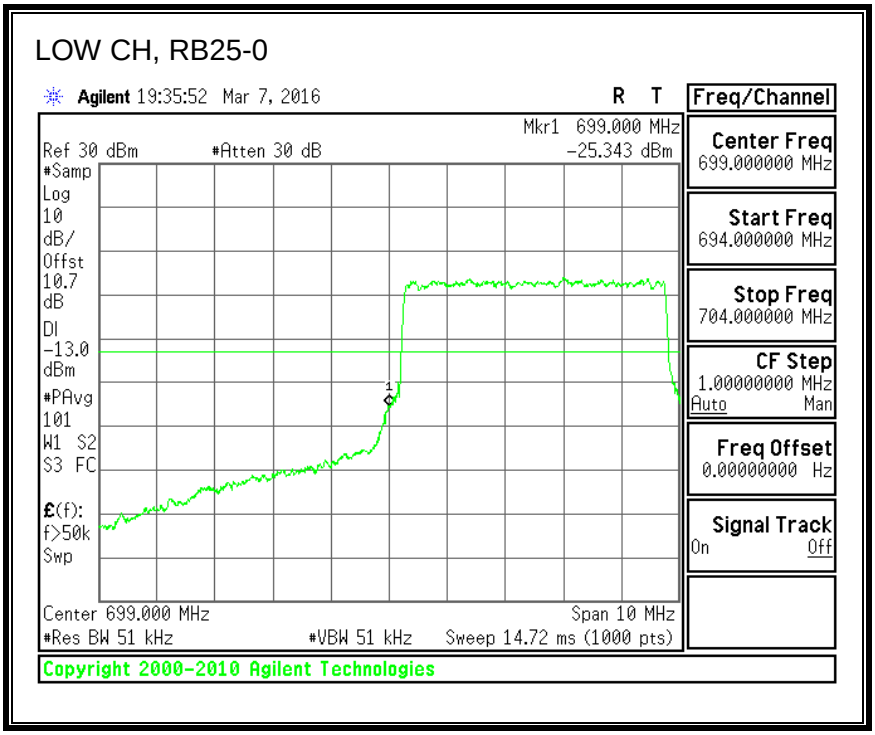
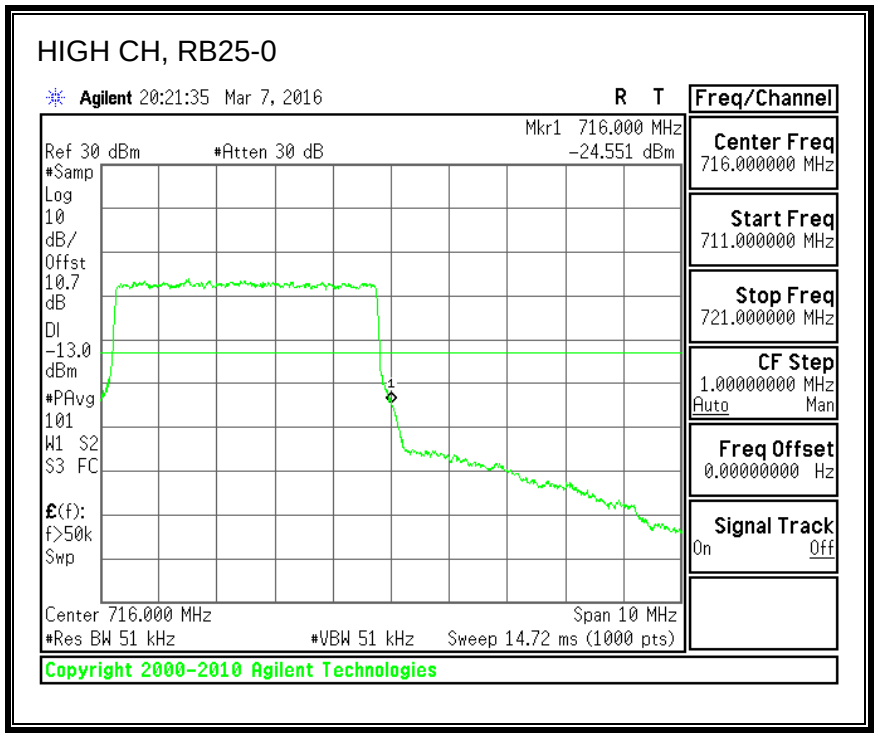
LOW CH, RB25-0



HIGH CH, RB25-0



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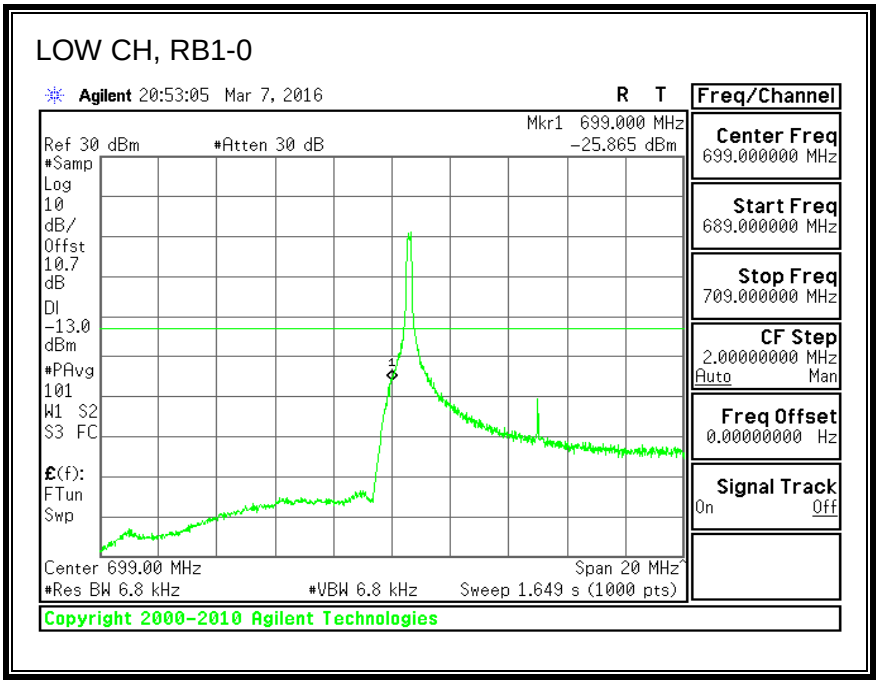
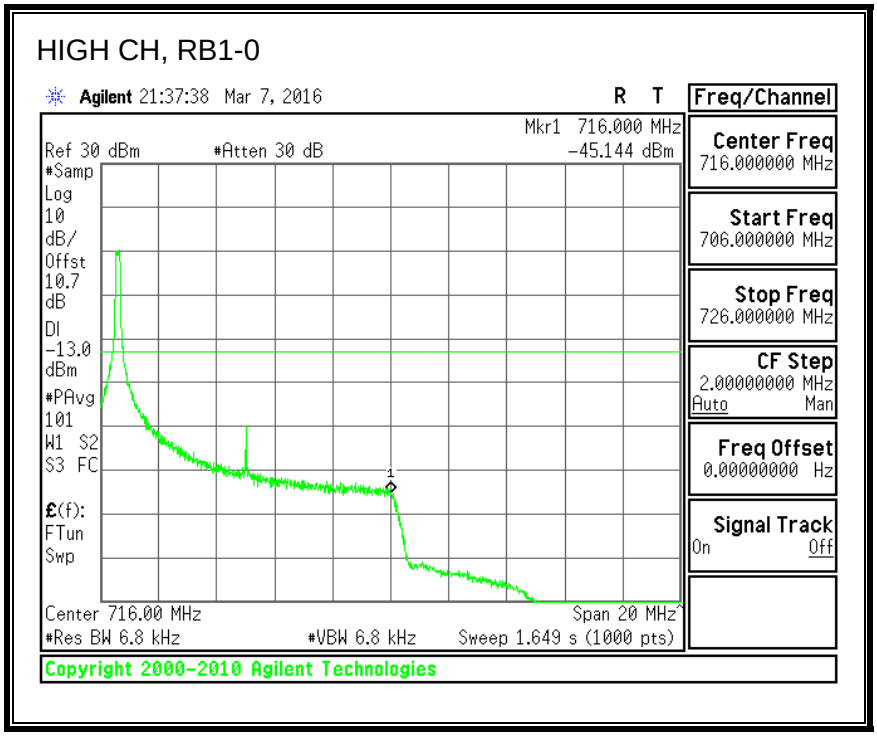
QPSK, (10.0 MHz BAND WIDTH)

LOW CH, RB1-0



HIGH CH, RB1-0



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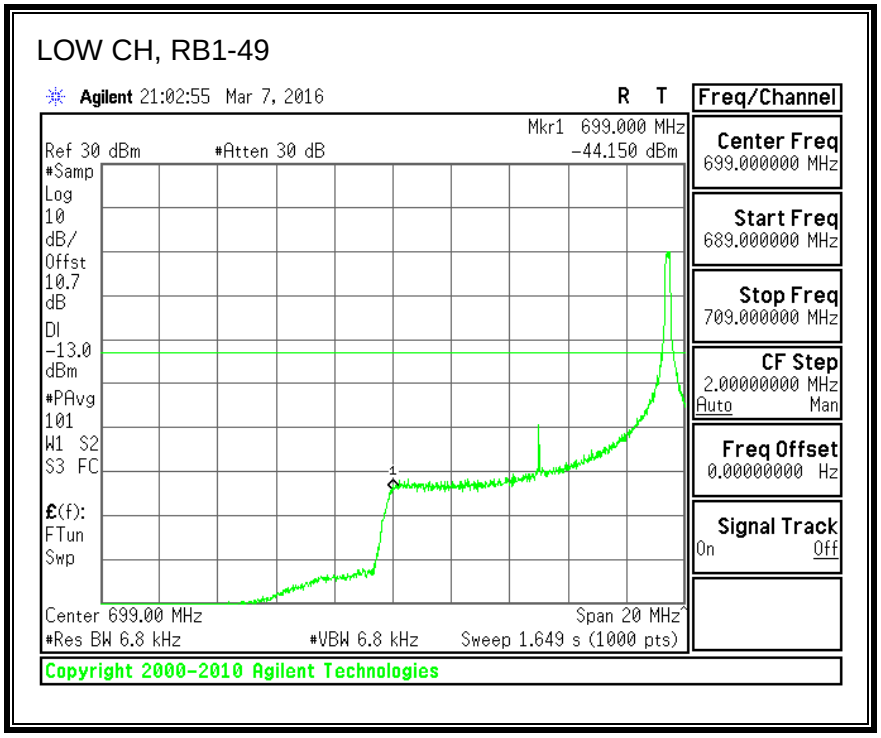
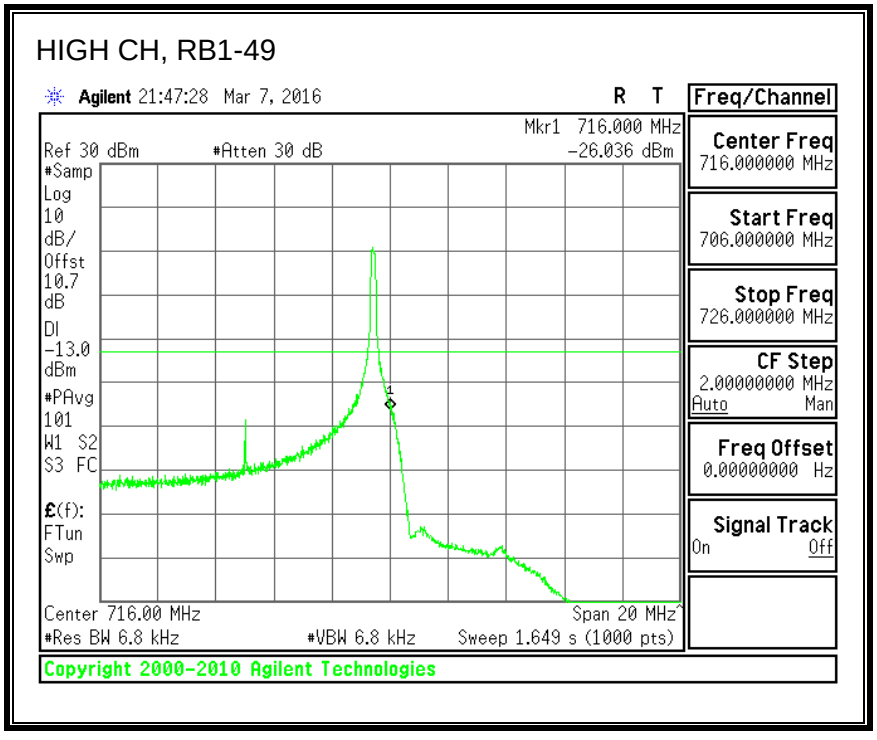
LOW CH, RB1-49



HIGH CH, RB1-49



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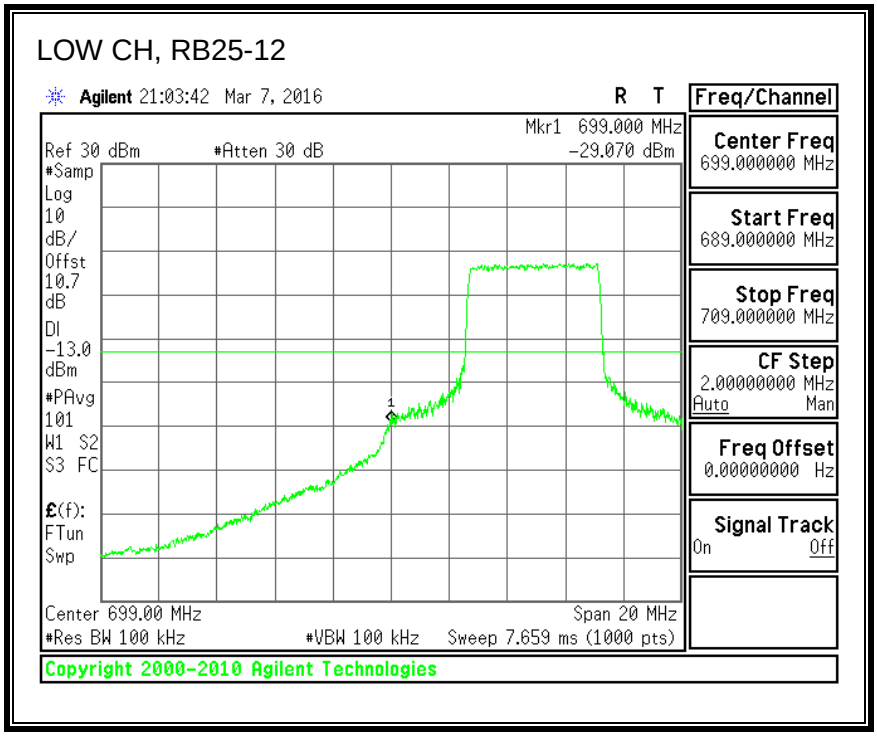
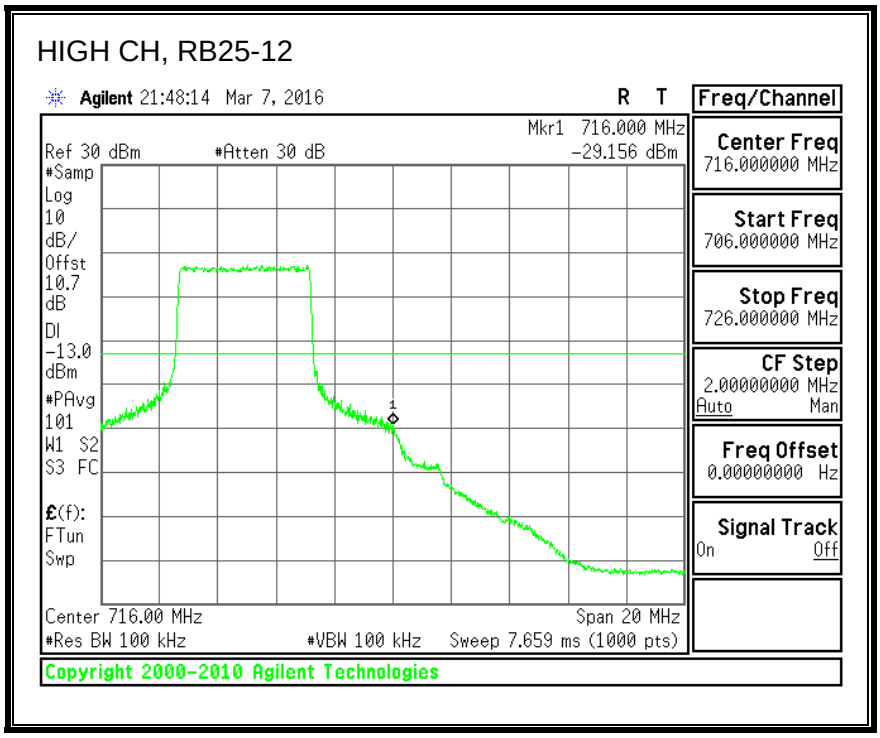
LOW CH, RB25-12



HIGH CH, RB25-12



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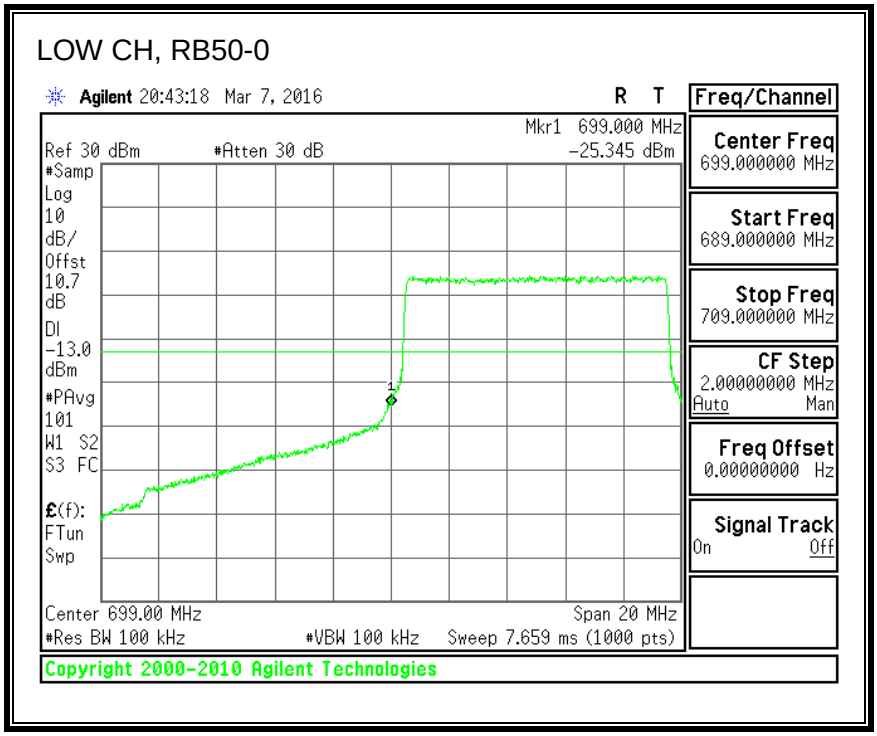
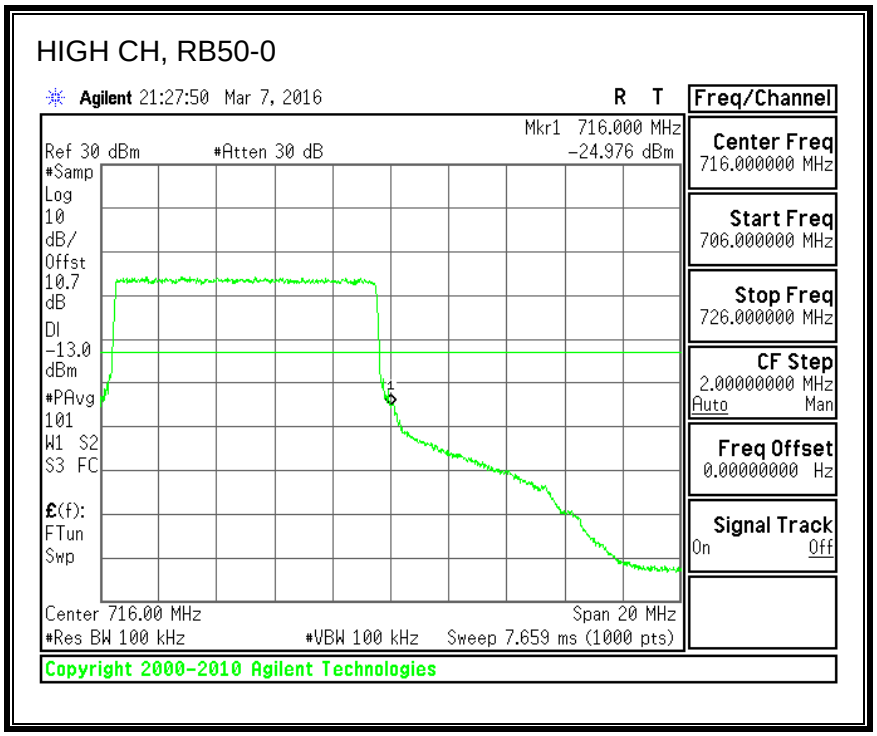
LOW CH, RB50-0



HIGH CH, RB50-0



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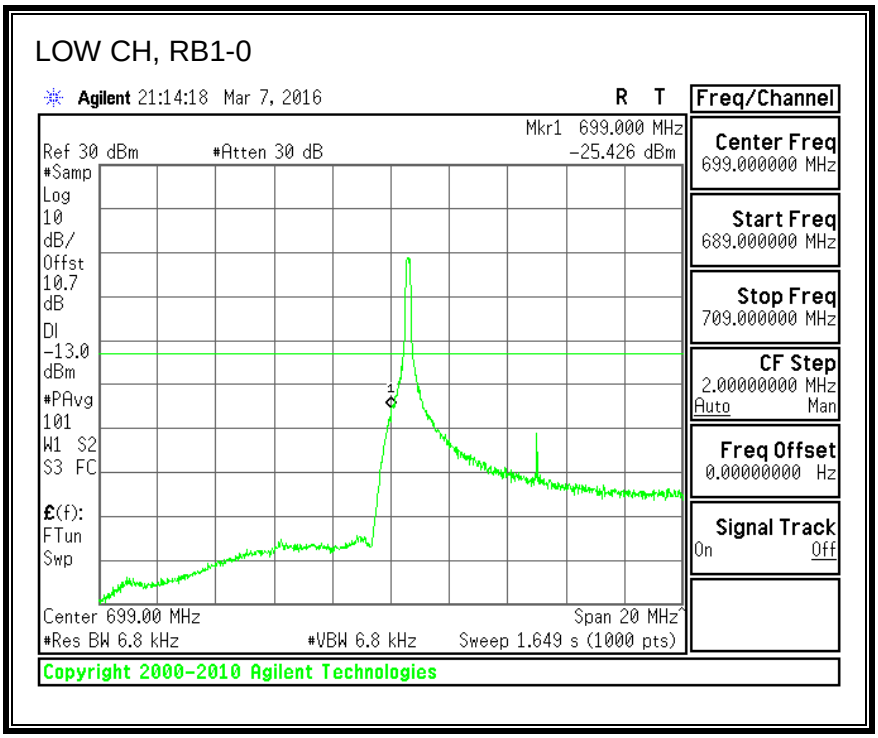
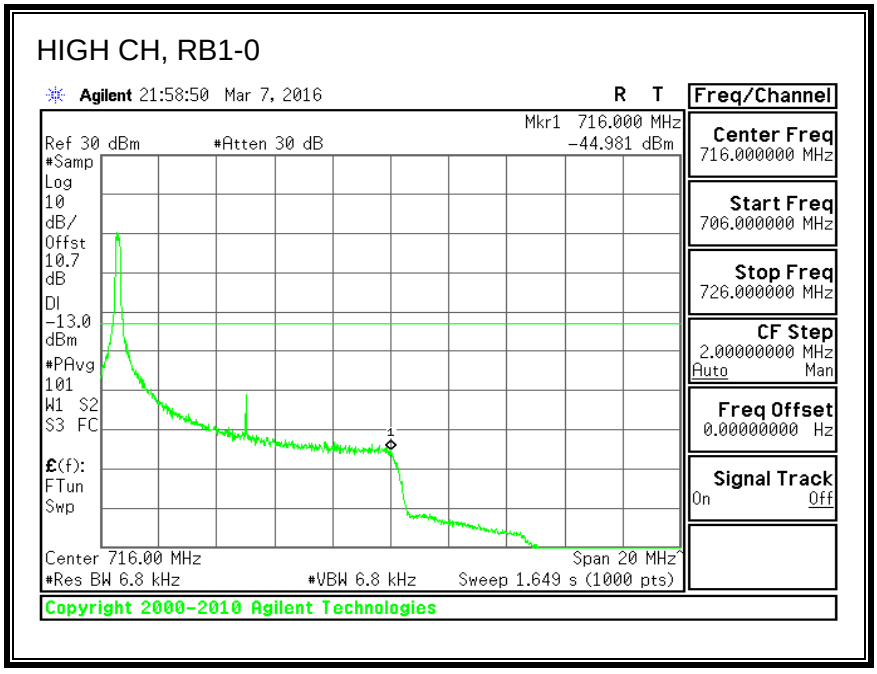
16QAM, (10.0 MHz BAND WIDTH)

LOW CH, RB1-0



HIGH CH, RB1-0



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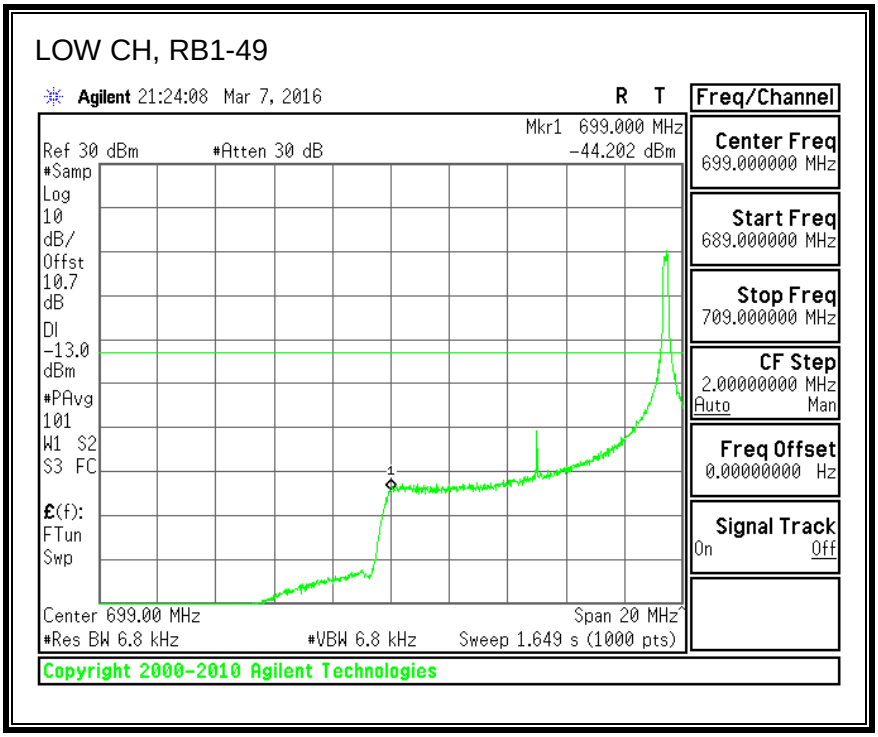
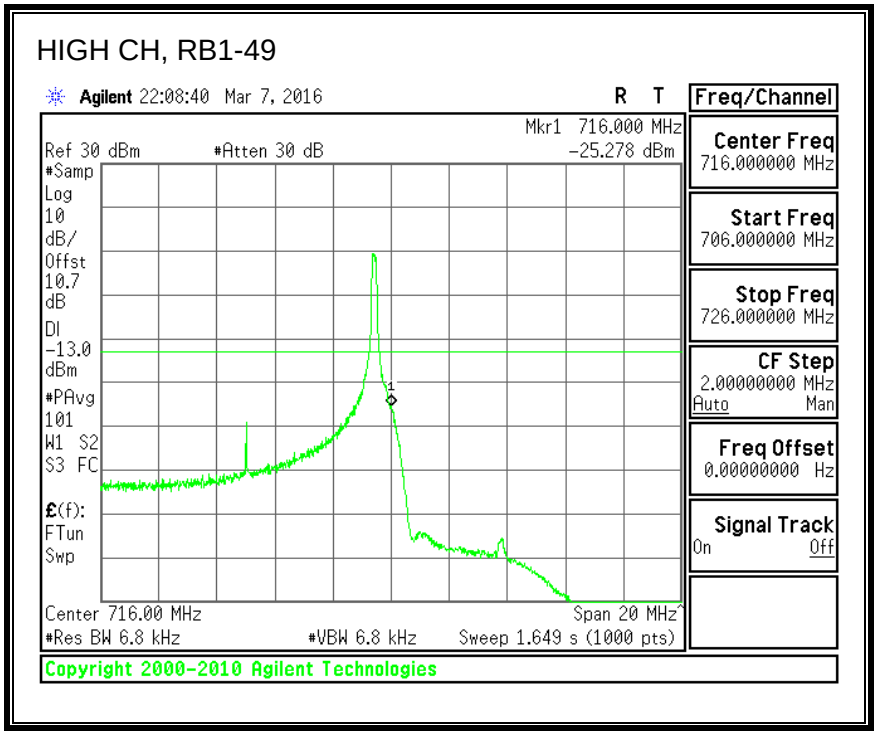
LOW CH, RB1-49



HIGH CH, RB1-49



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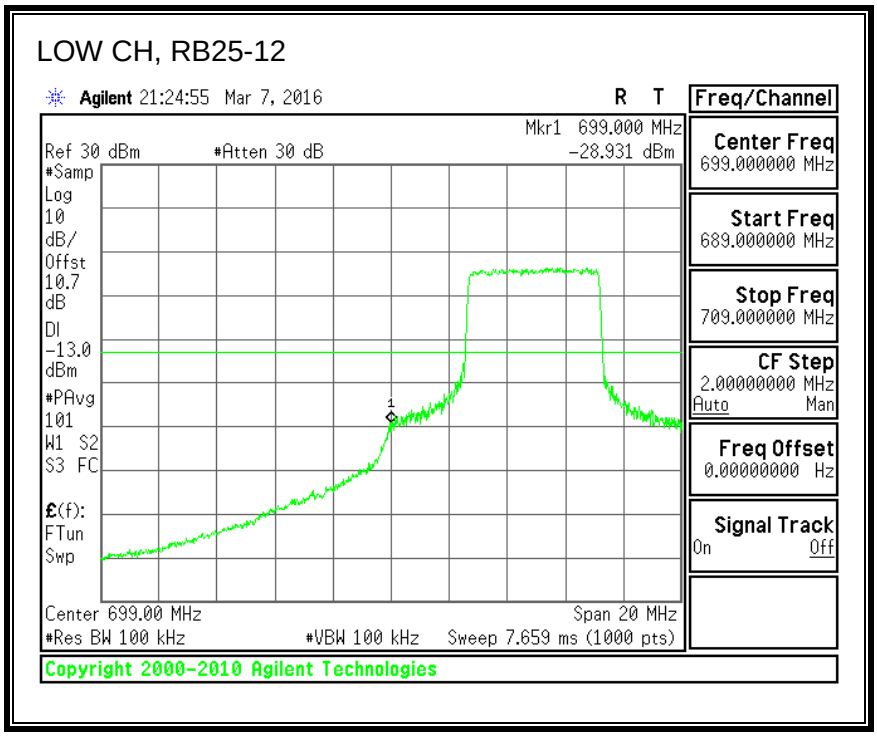
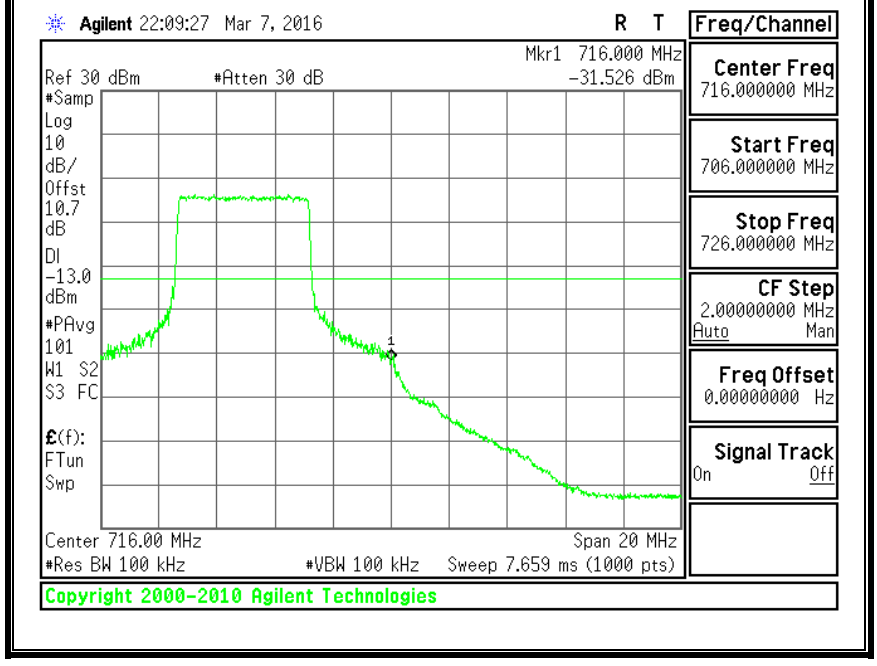
LOW CH, RB25-12



HIGH CH, RB25-12



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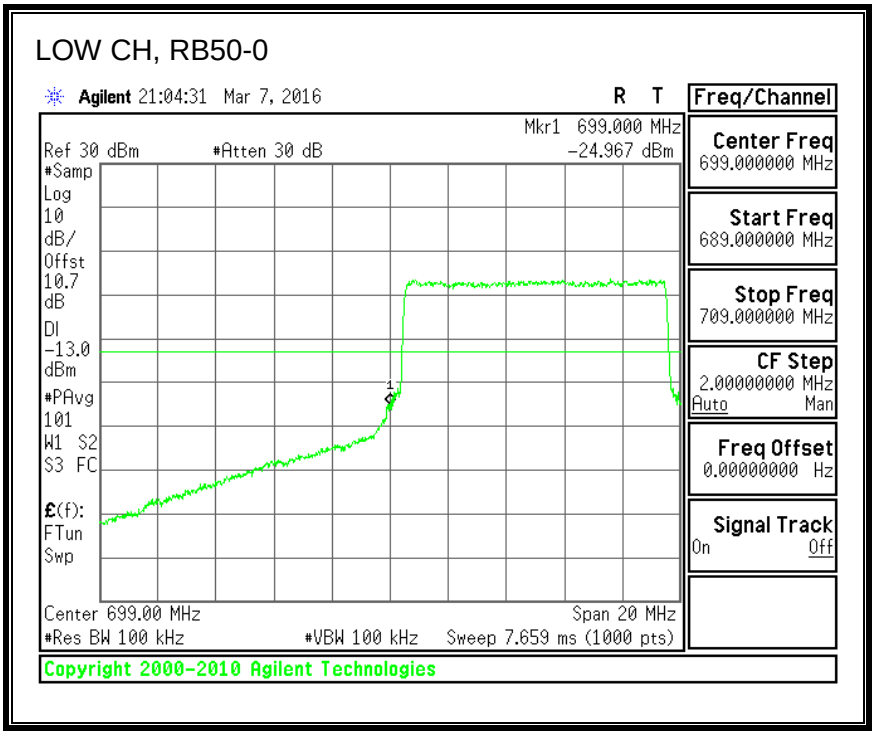
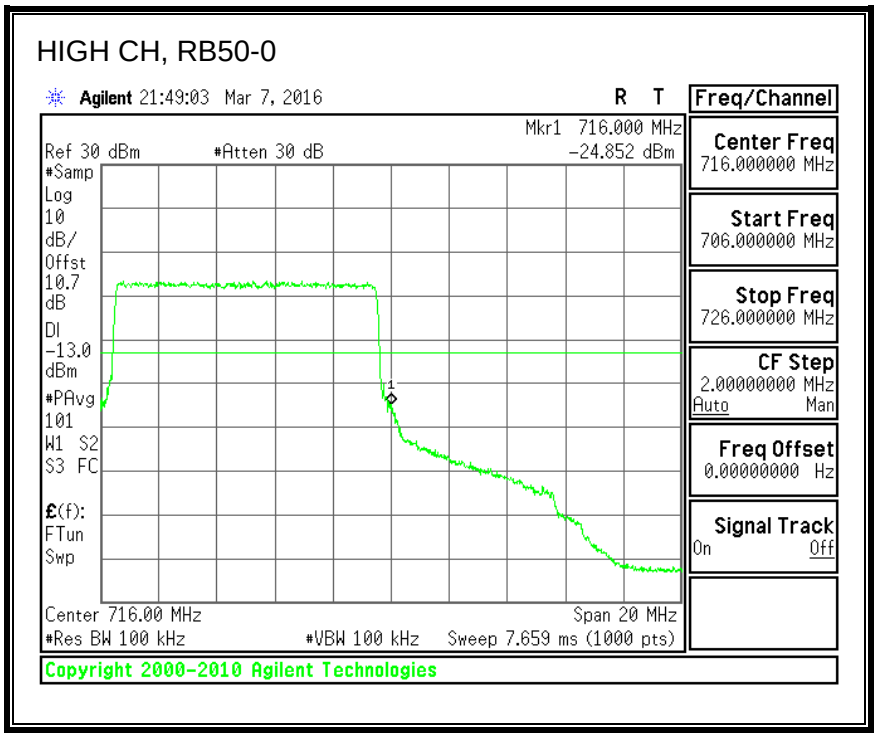
LOW CH, RB50-0



HIGH CH, RB50-0



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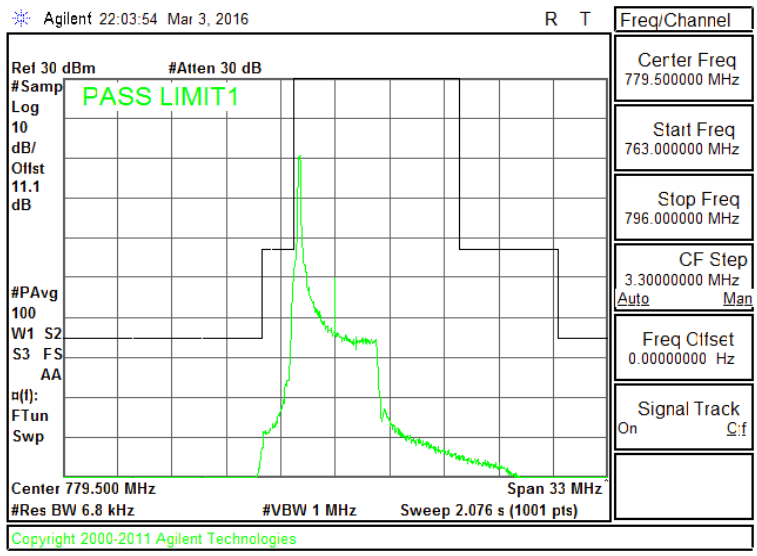
8.2.6. LTE BAND 13 EMISSION MASK

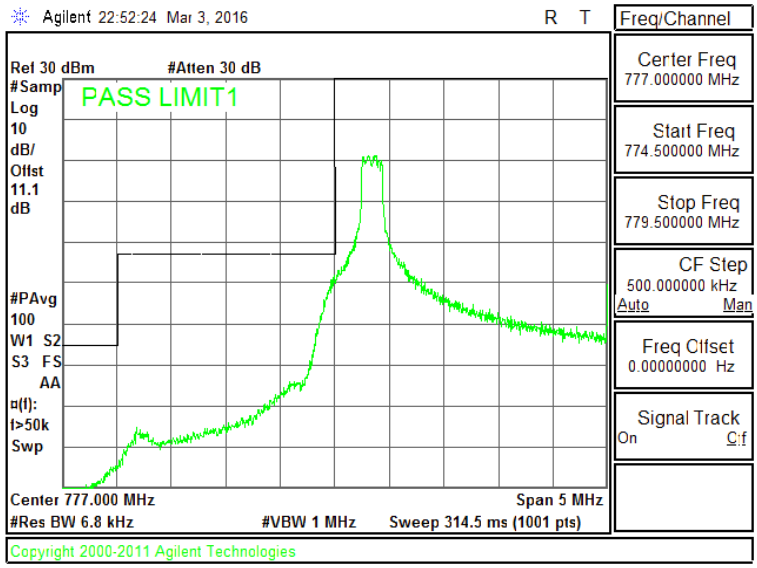
ID:	38806	Date:	3/3/16

QPSK, (5.0 MHz BAND WIDTH)

RB1-0



LOW CH, RB1-0 Zoom in



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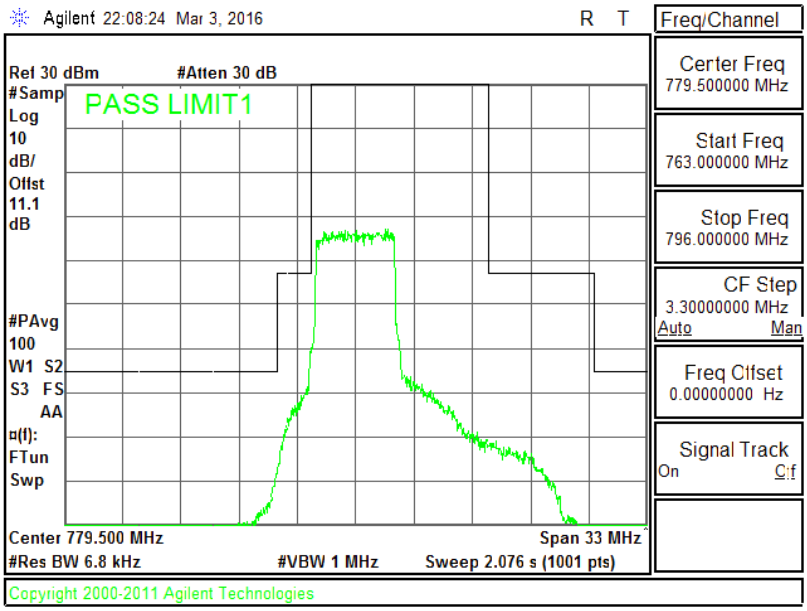
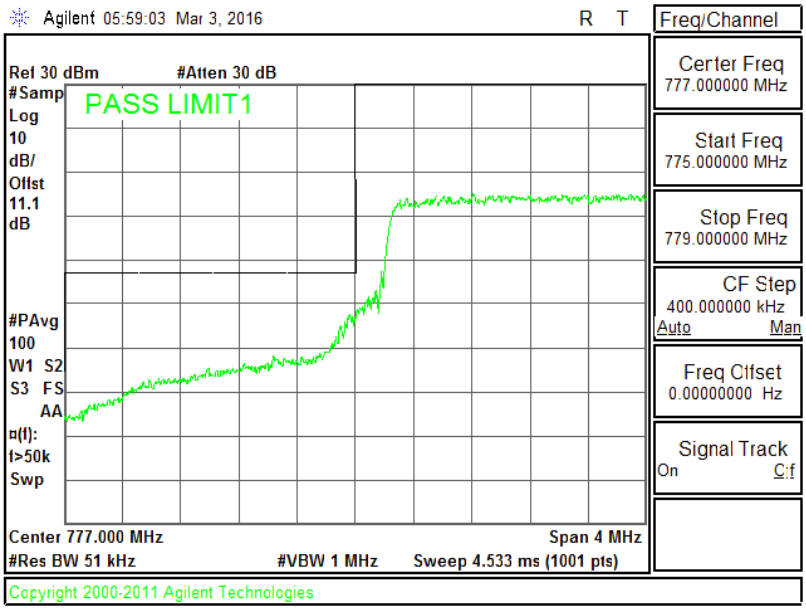
LOW CH, RB25-0



LOW CH, RB25-0 Zoom in



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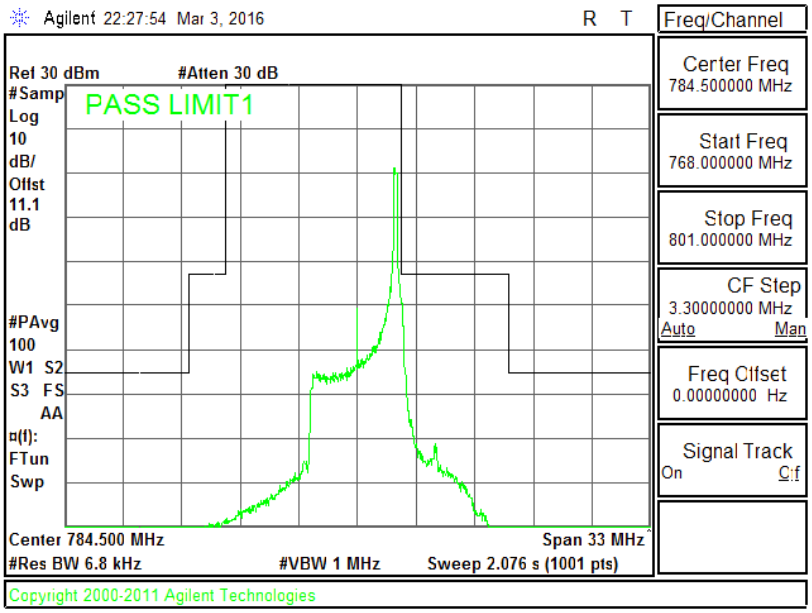
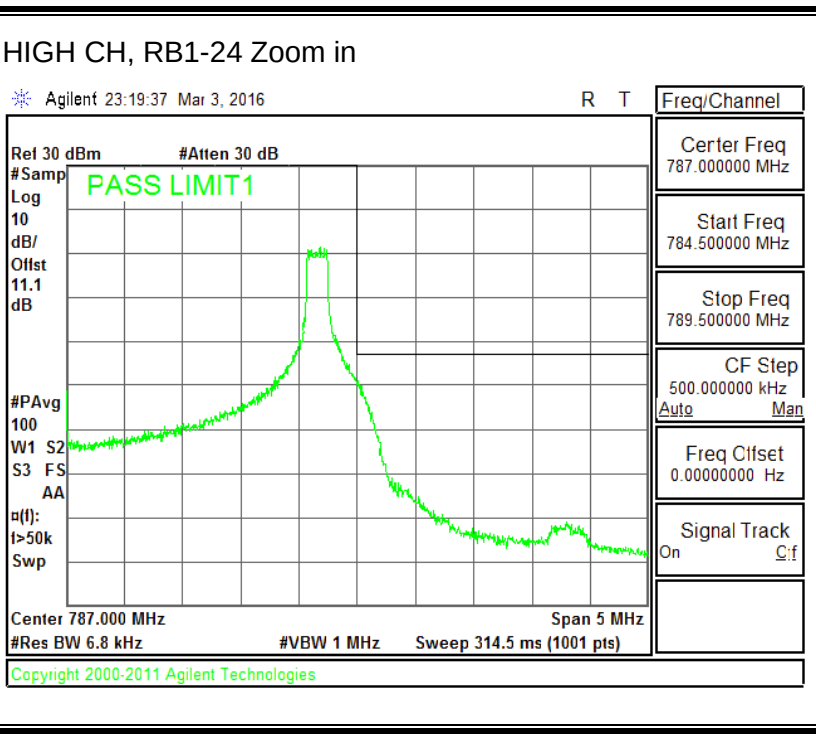
HIGH CH, RB1-24



HIGH CH, RB1-24 Zoom in



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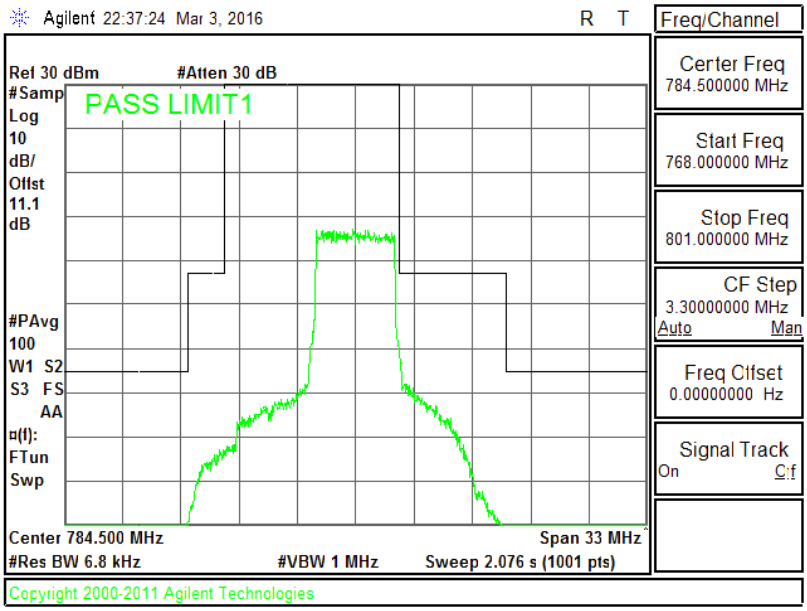
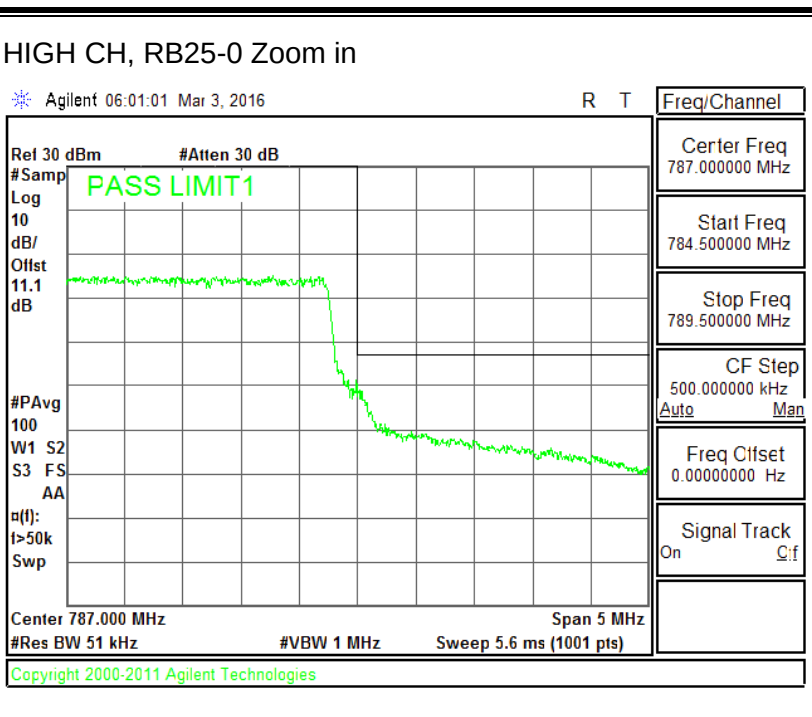
HIGH CH, RB25-0



HIGH CH, RB25-0 Zoom in



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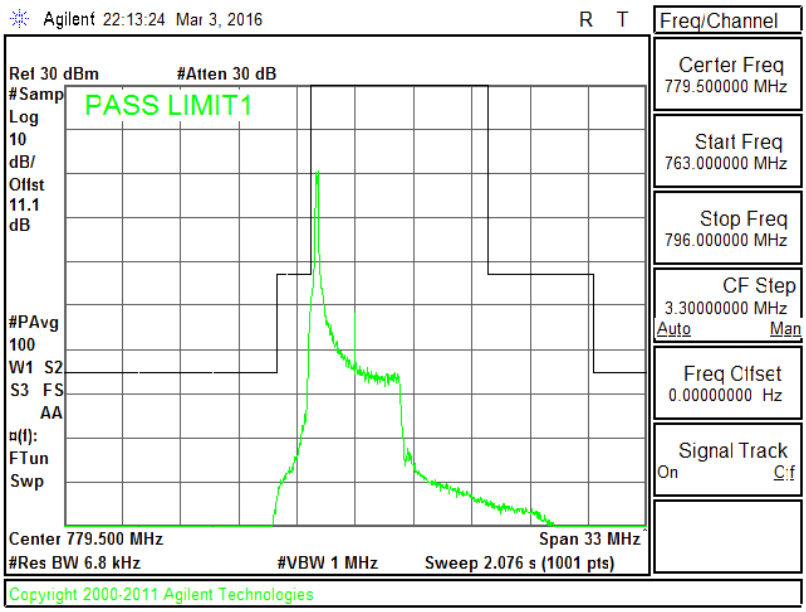
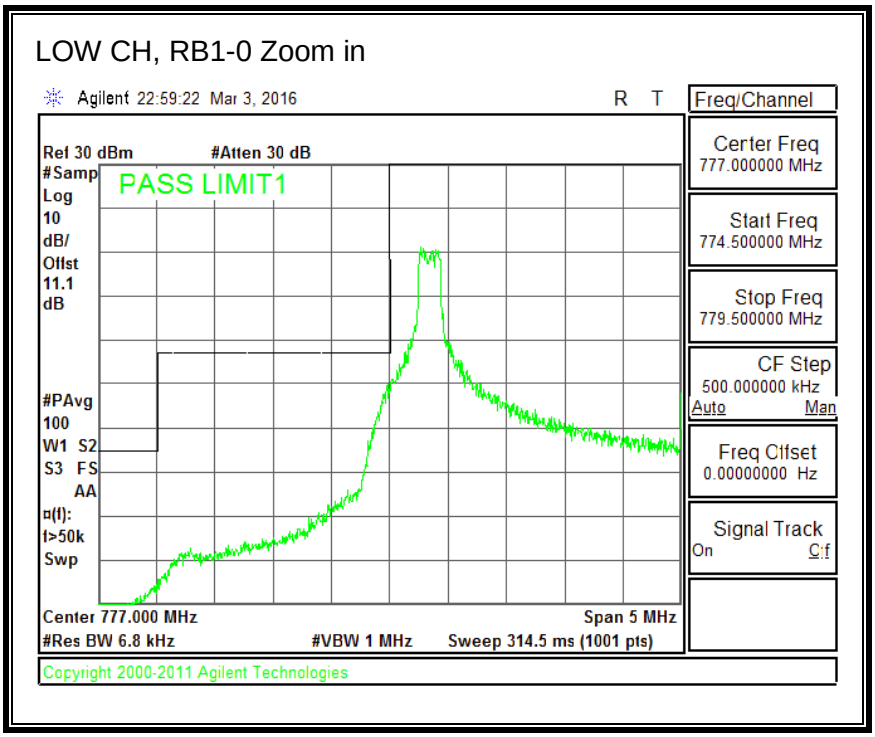
16QAM, (5.0 MHz BAND WIDTH)

LOW CH, RB1-0



LOW CH, RB1-0 Zoom in



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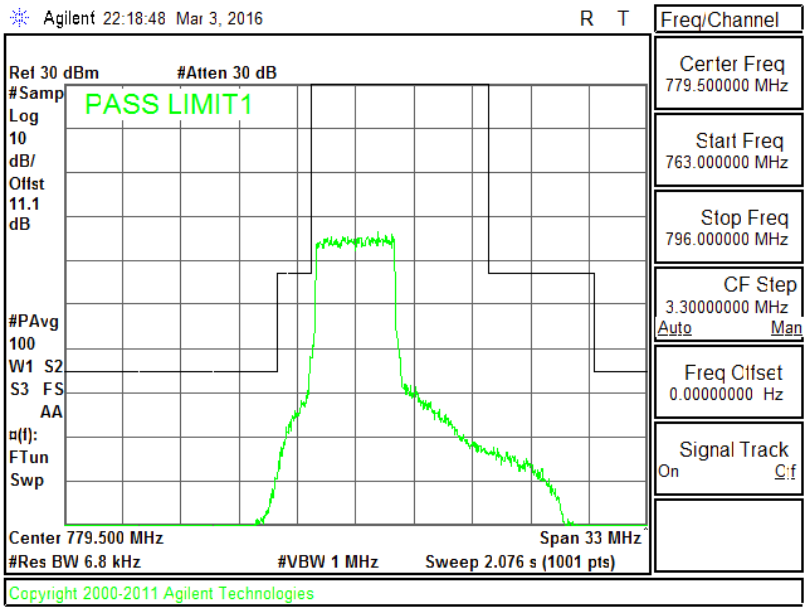
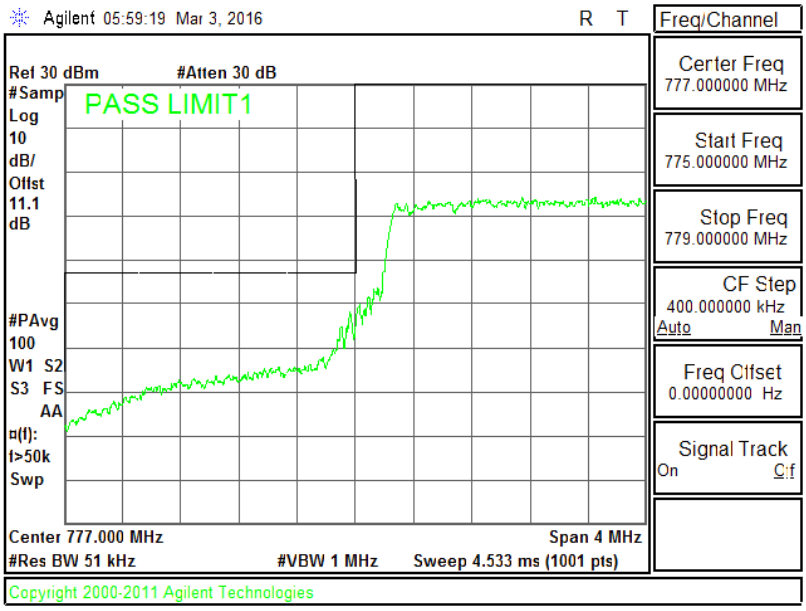
LOW CH, RB25-0



LOW CH, RB25-0 Zoom in



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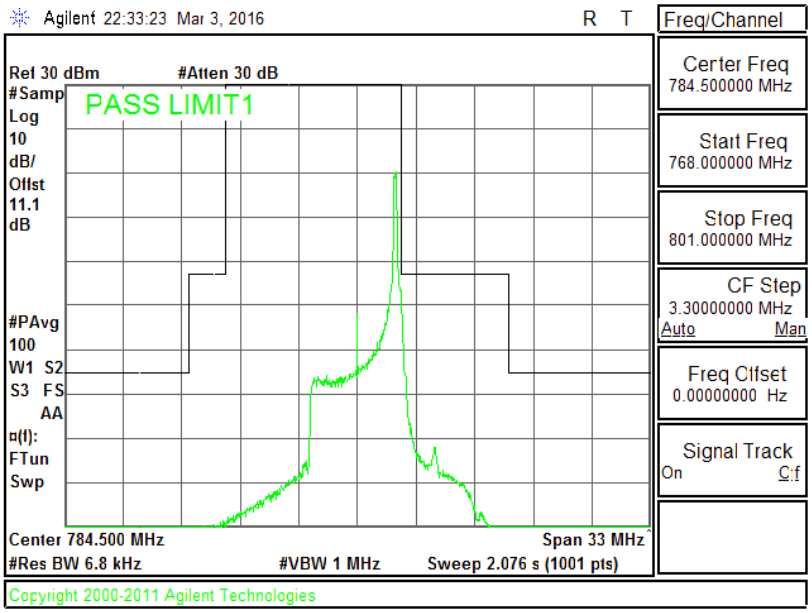
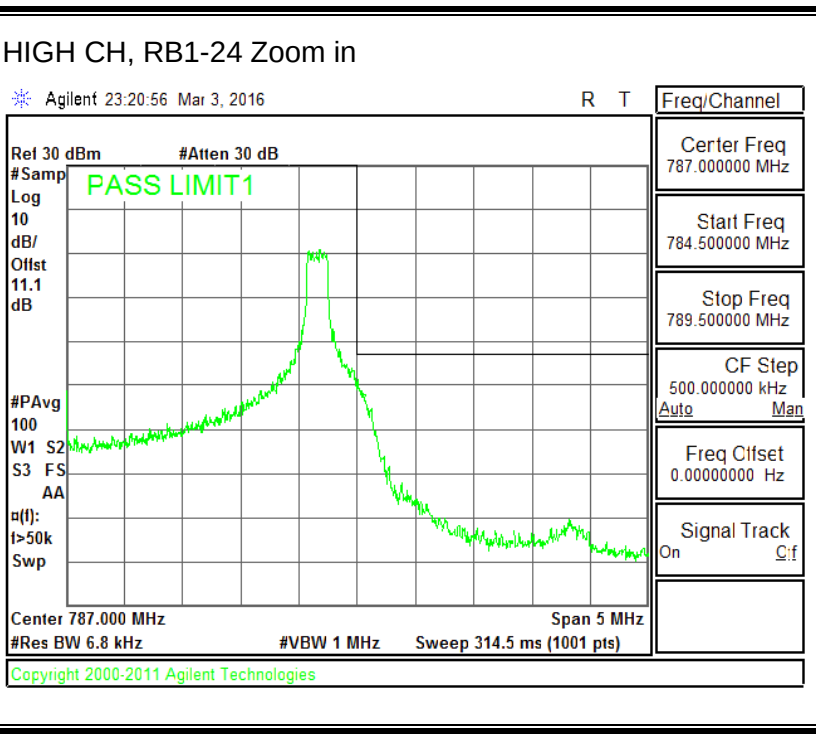
HIGH CH, RB1-24



HIGH CH, RB1-24 Zoom in



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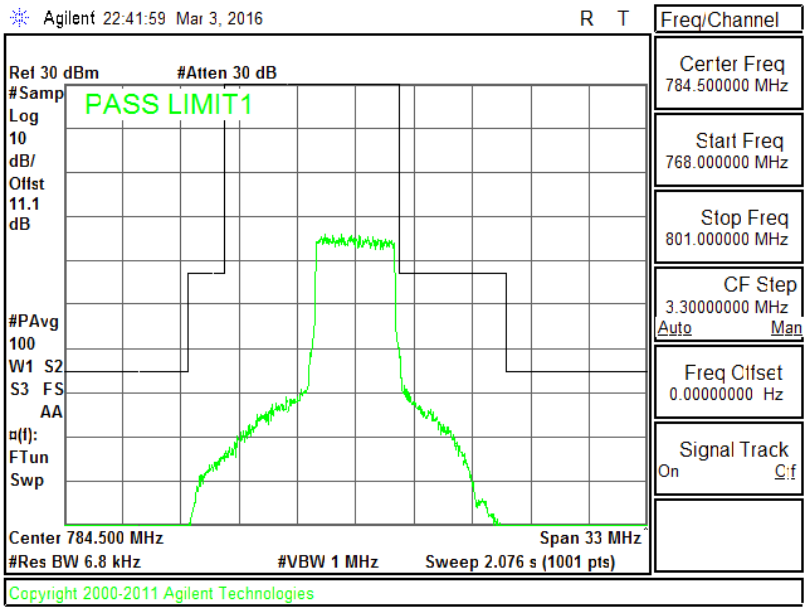
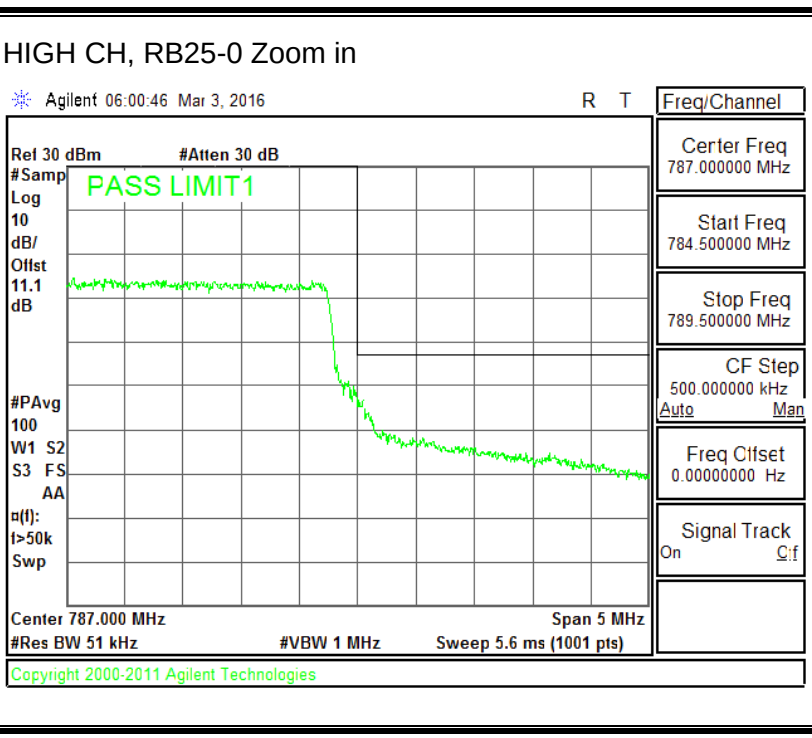
HIGH CH, RB25-0



HIGH CH, RB25-0 Zoom in



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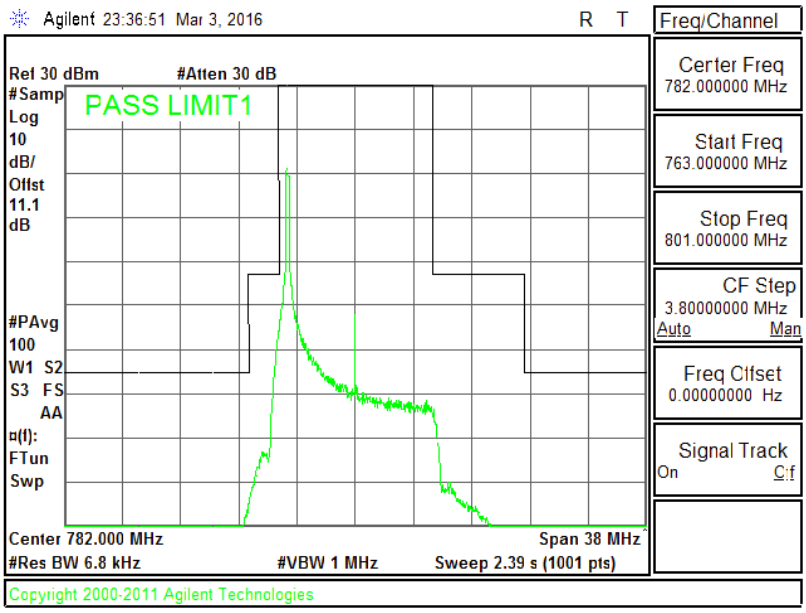
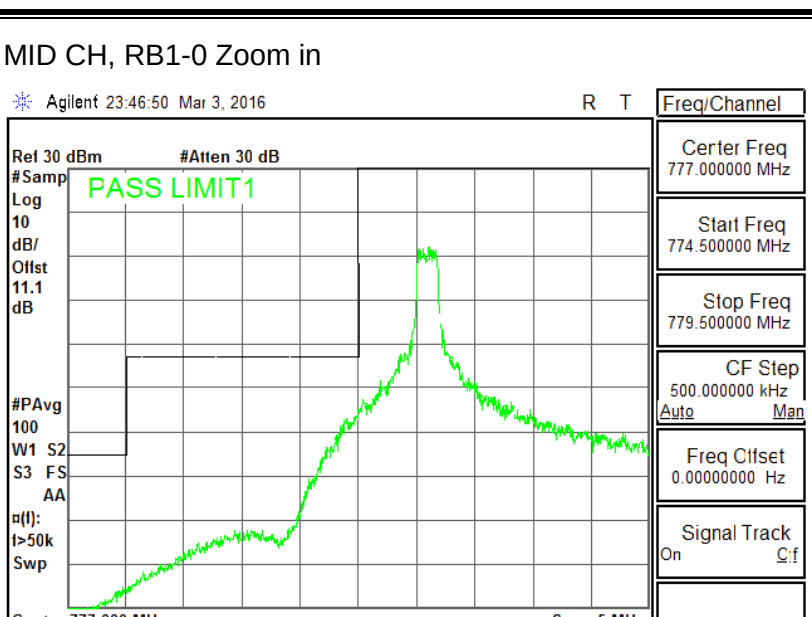
QPSK, (10.0 MHz BAND WIDTH)

MID CH, RB1-0



MID CH, RB1-0 Zoom in



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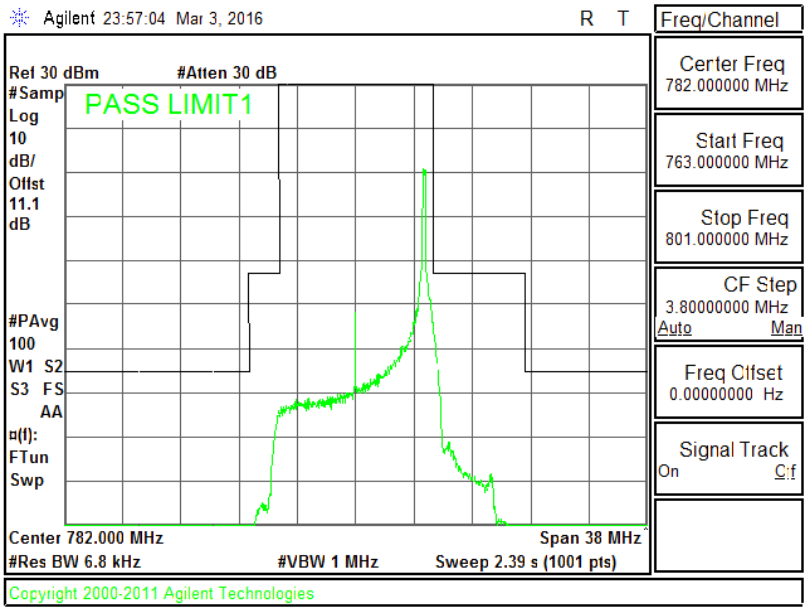
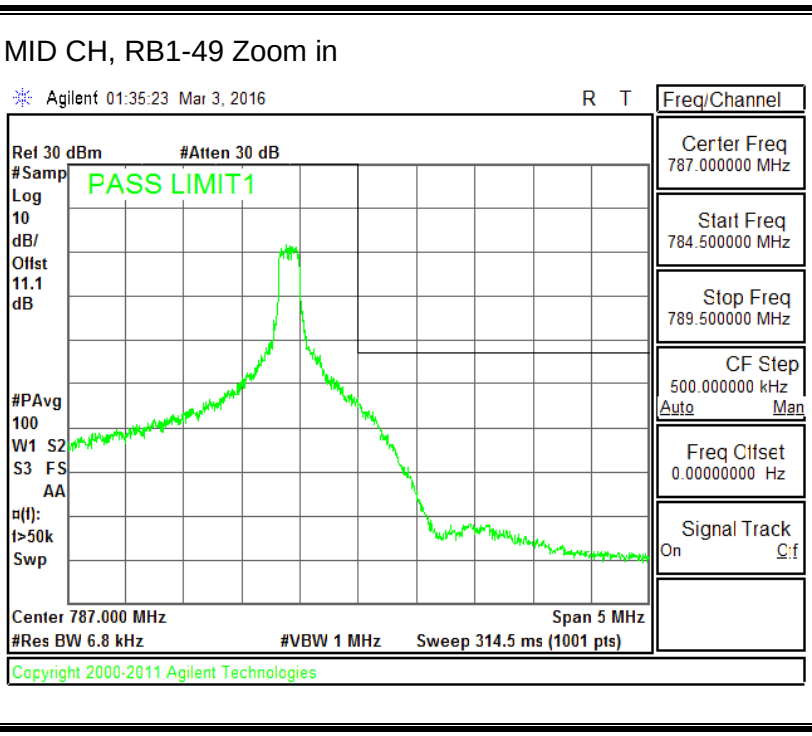
MID CH, RB1-49



MID CH, RB1-49 Zoom in



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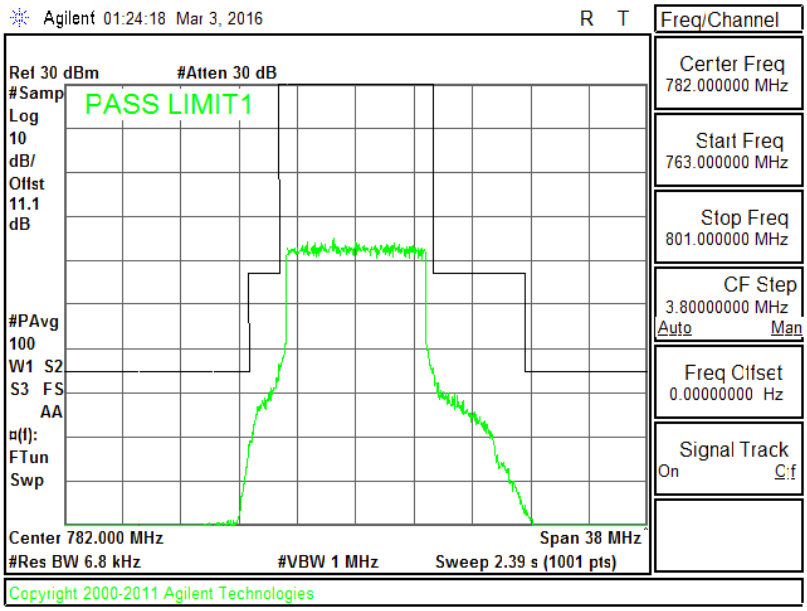
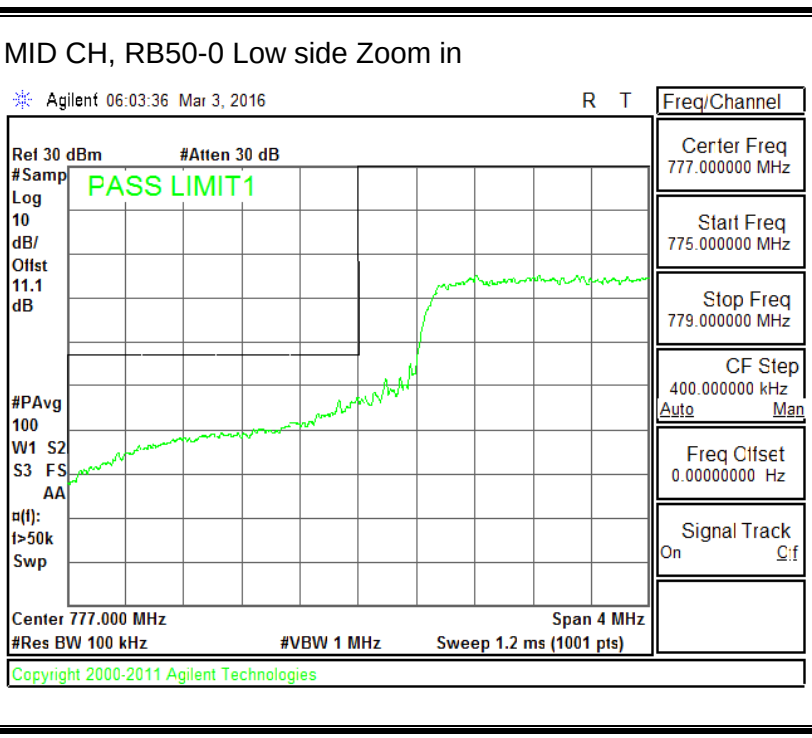
MID CH, RB50-0



MID CH, RB50-0 Low side Zoom in



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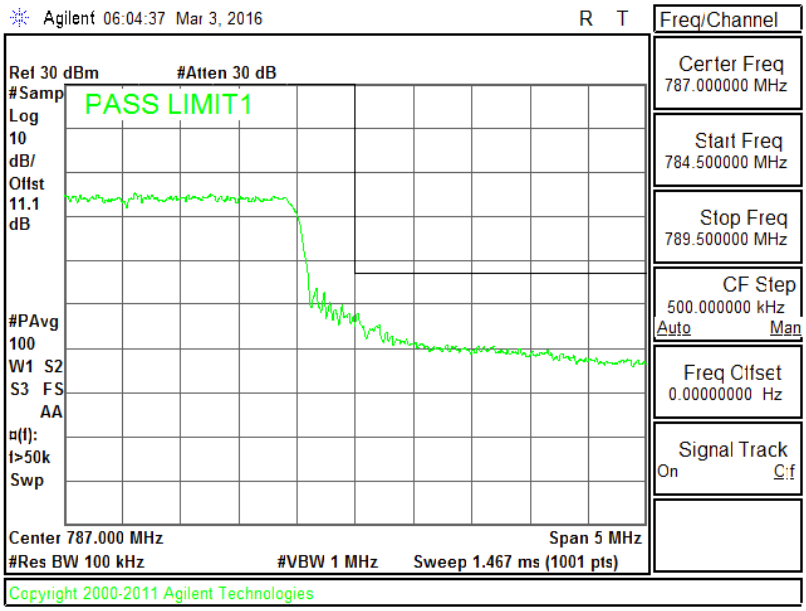
MID CH, RB50-0 High side Zoom in



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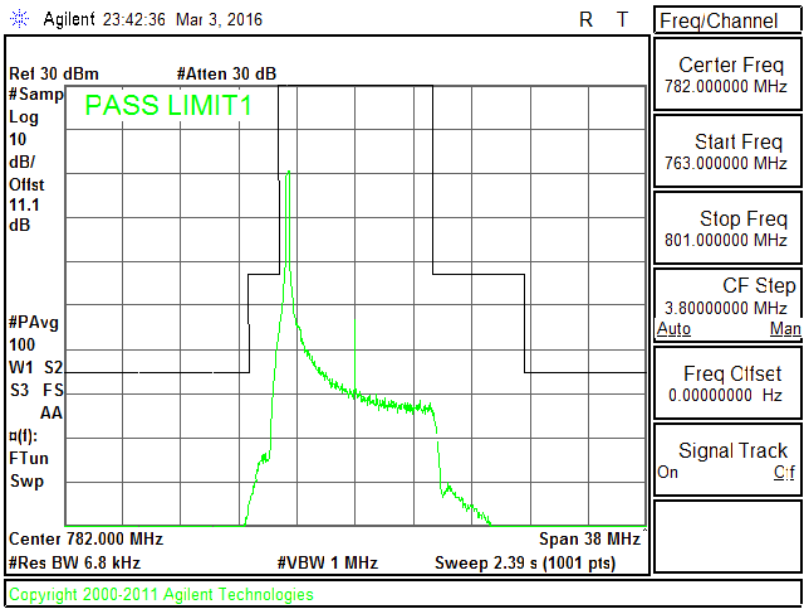
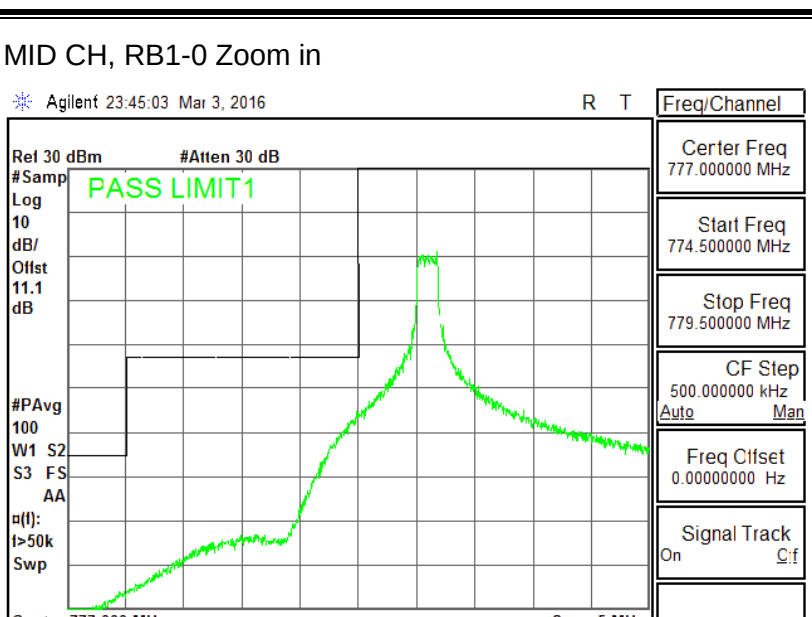
16QAM, (10.0 MHz BAND WIDTH)

MID CH, RB1-0



MID CH, RB1-0 Zoom in



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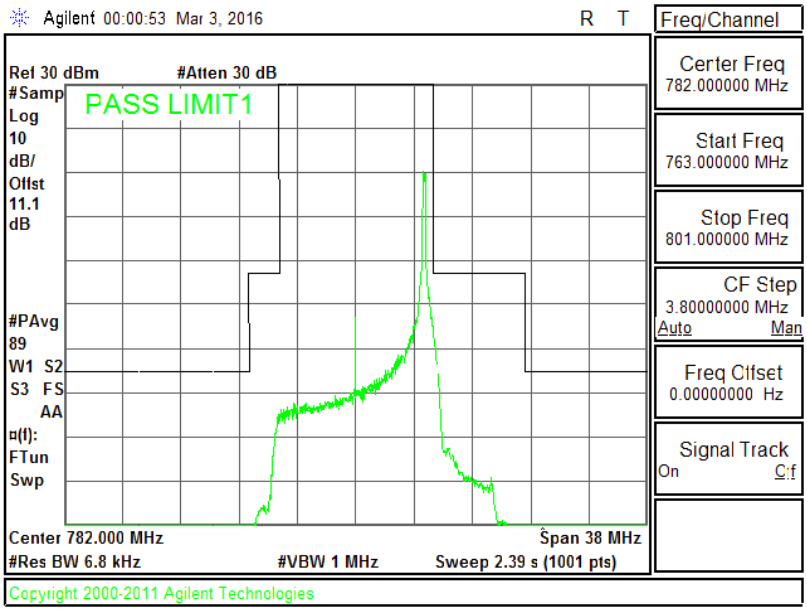
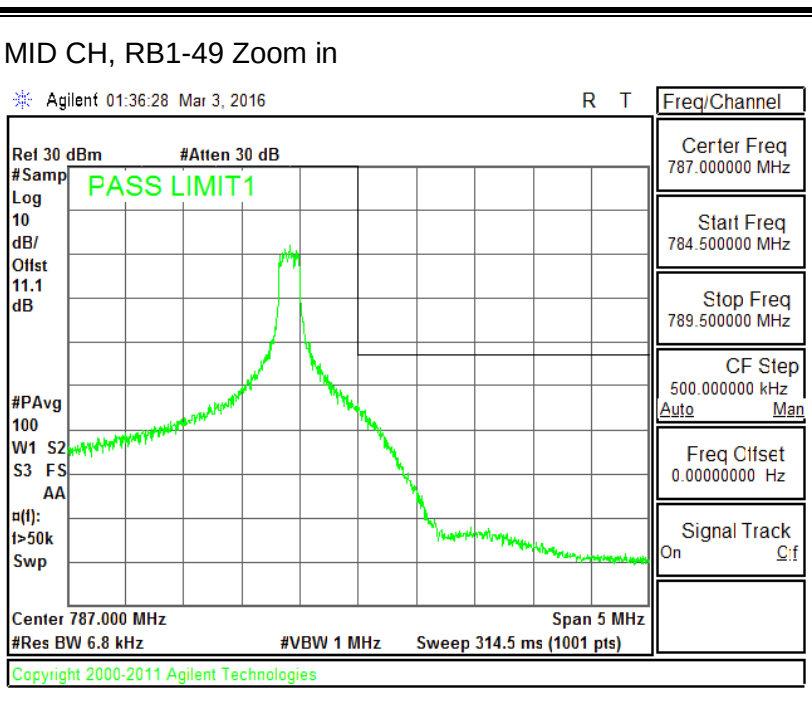
MID CH, RB1-49



MID CH, RB1-49 Zoom in



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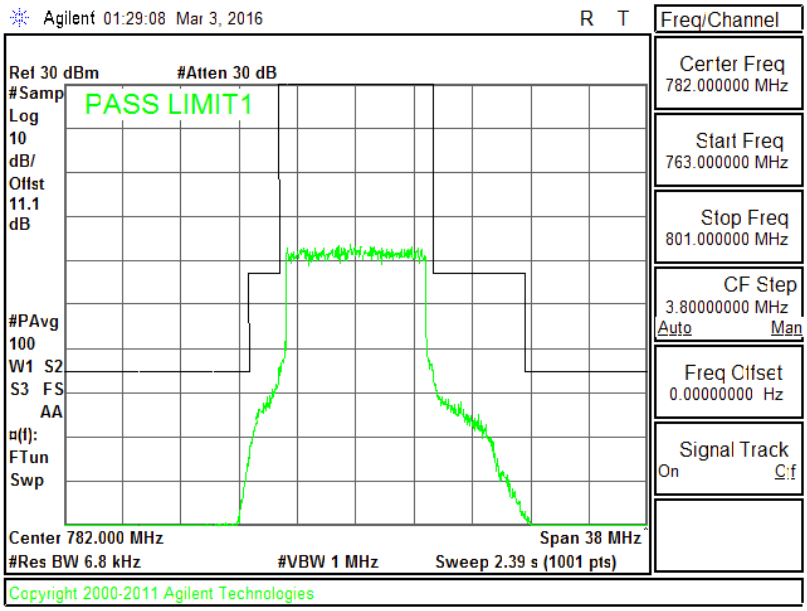
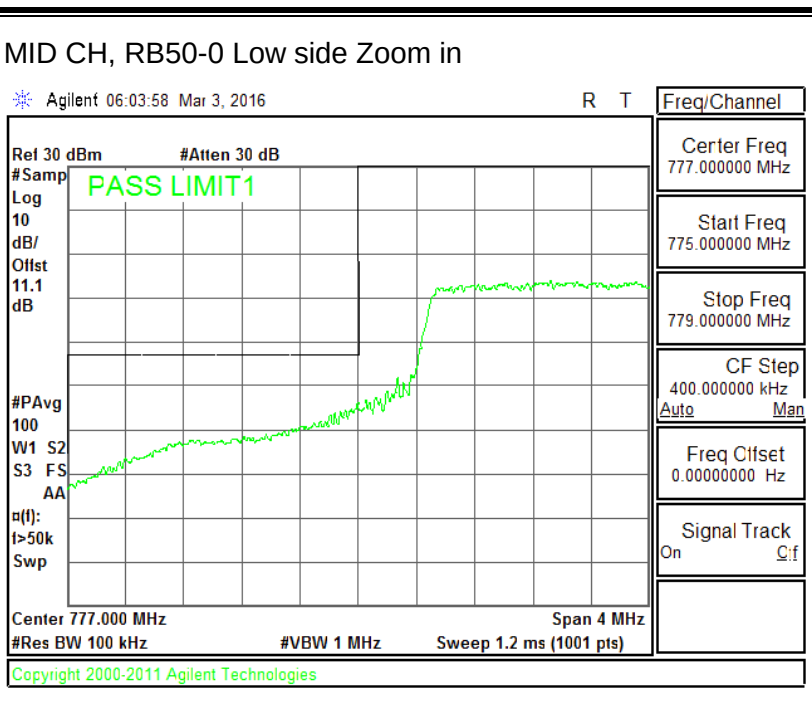
MID CH, RB50-0



MID CH, RB50-0 Low side Zoom in



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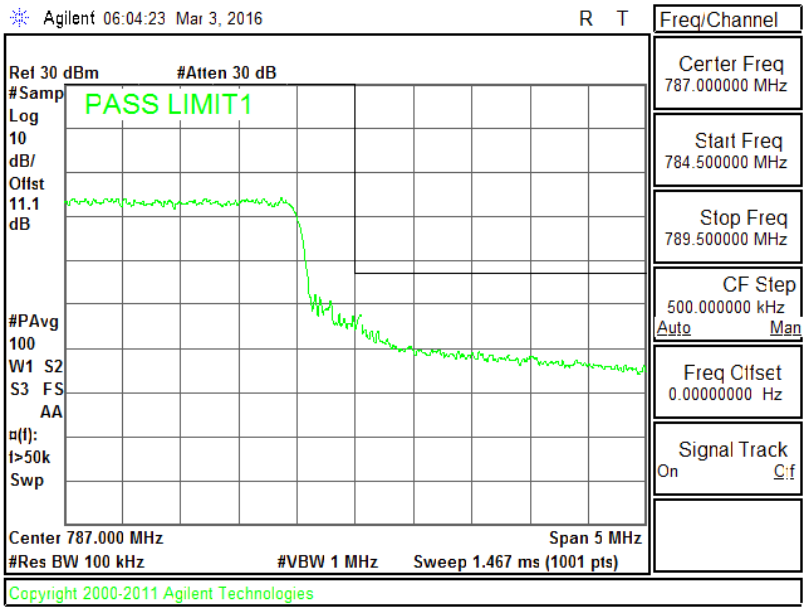
MID CH, RB50-0 High side Zoom in



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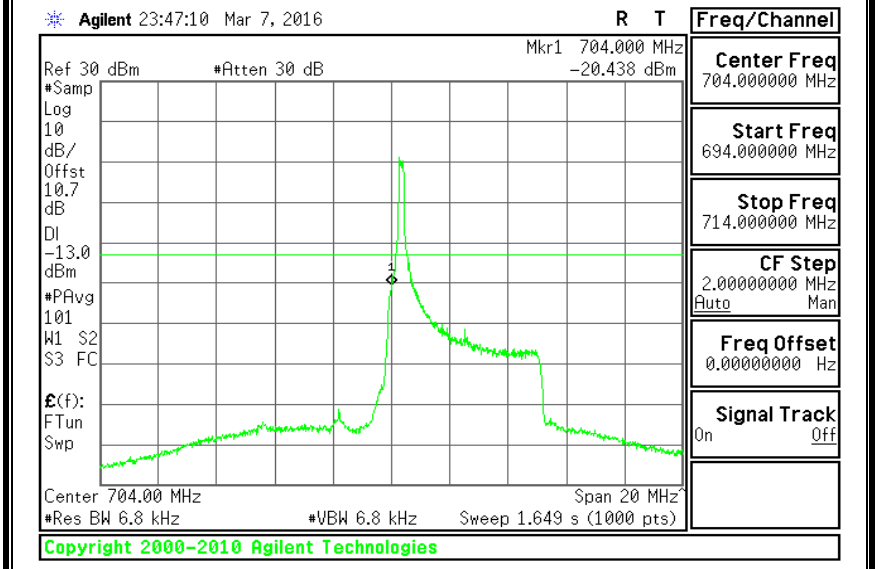
8.2.7. LTE BAND 17 BANDEDGE

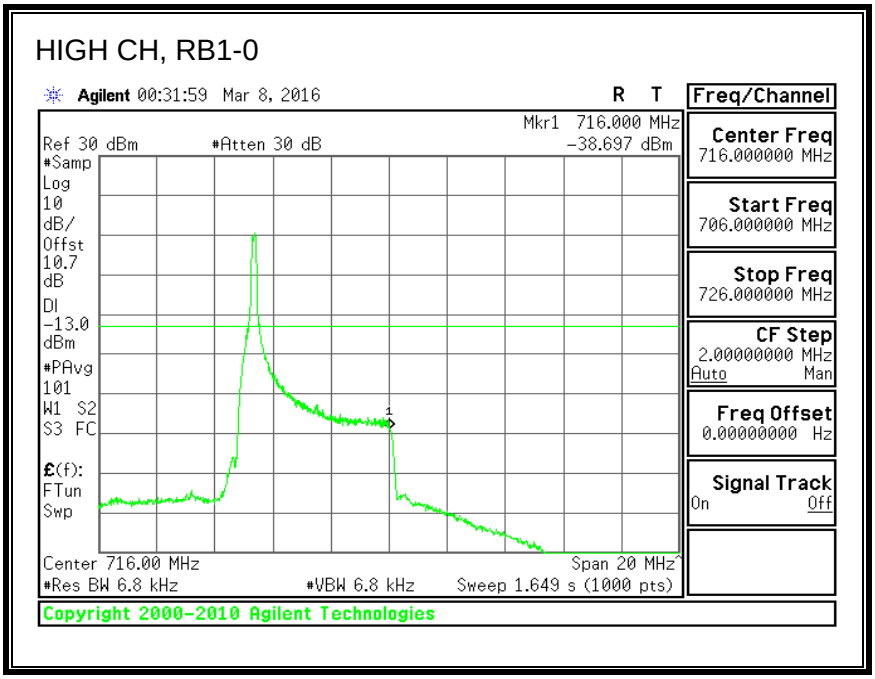
ID:	38806	Date:	3/7/16

QPSK, (5.0 MHz BAND WIDTH)

LOW CH, RB1-0



HIGH CH, RB1-0



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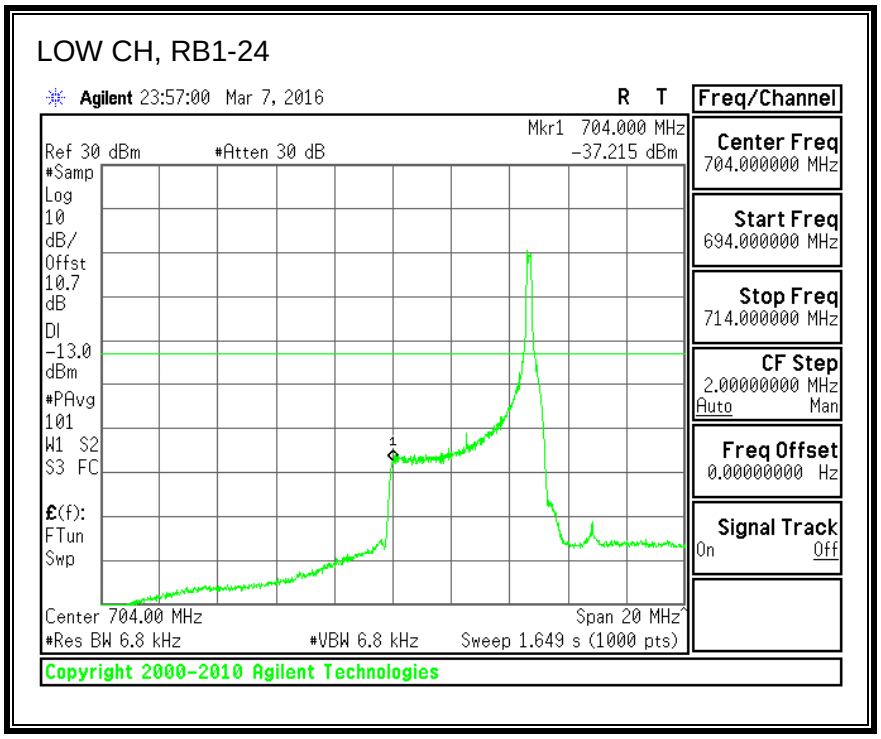
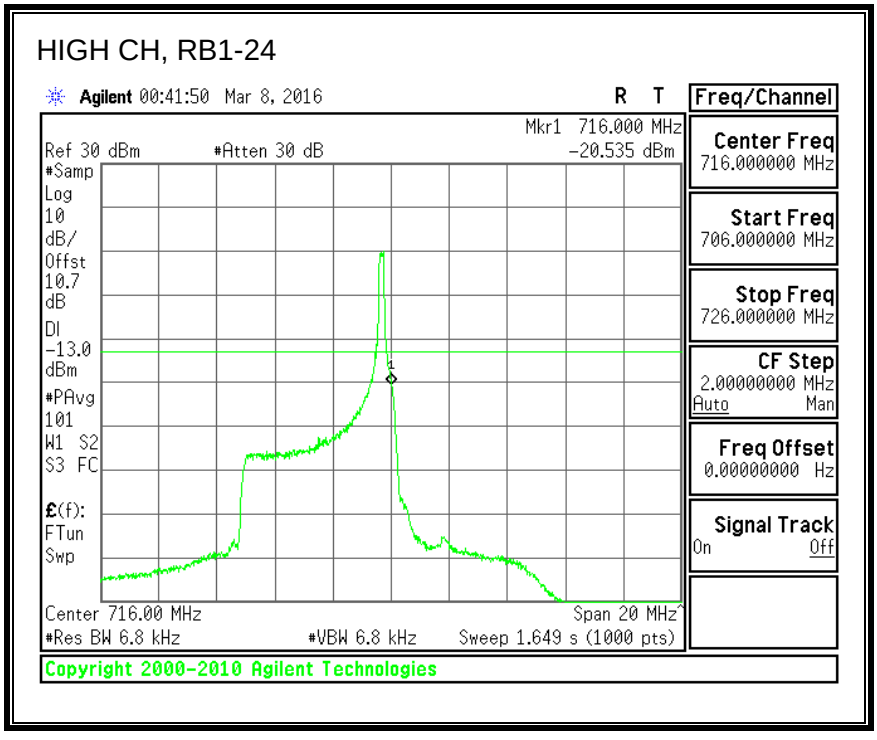
LOW CH, RB1-24



HIGH CH, RB1-24



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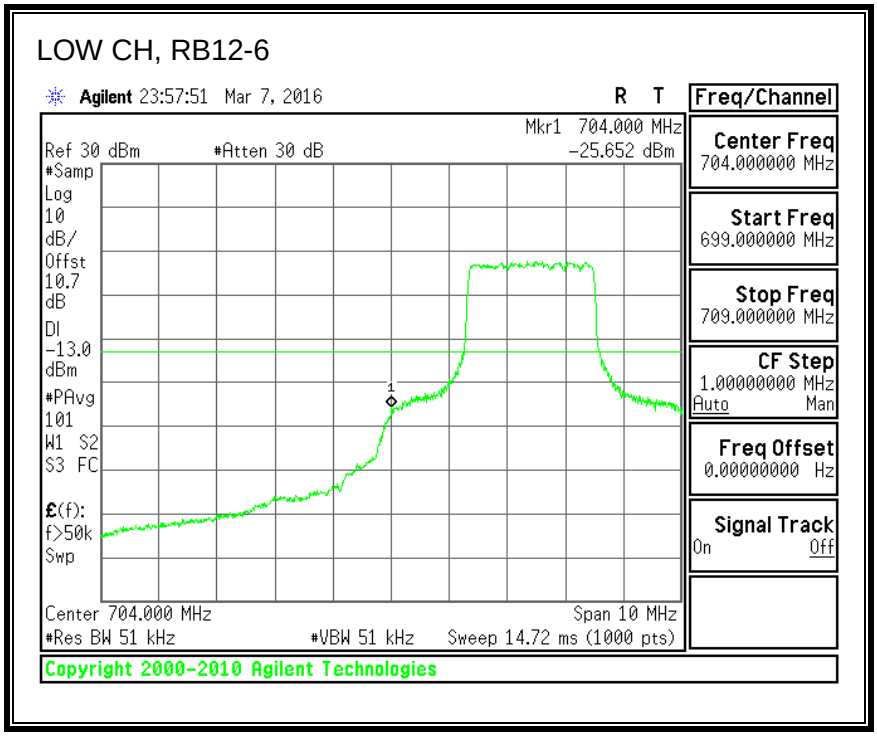
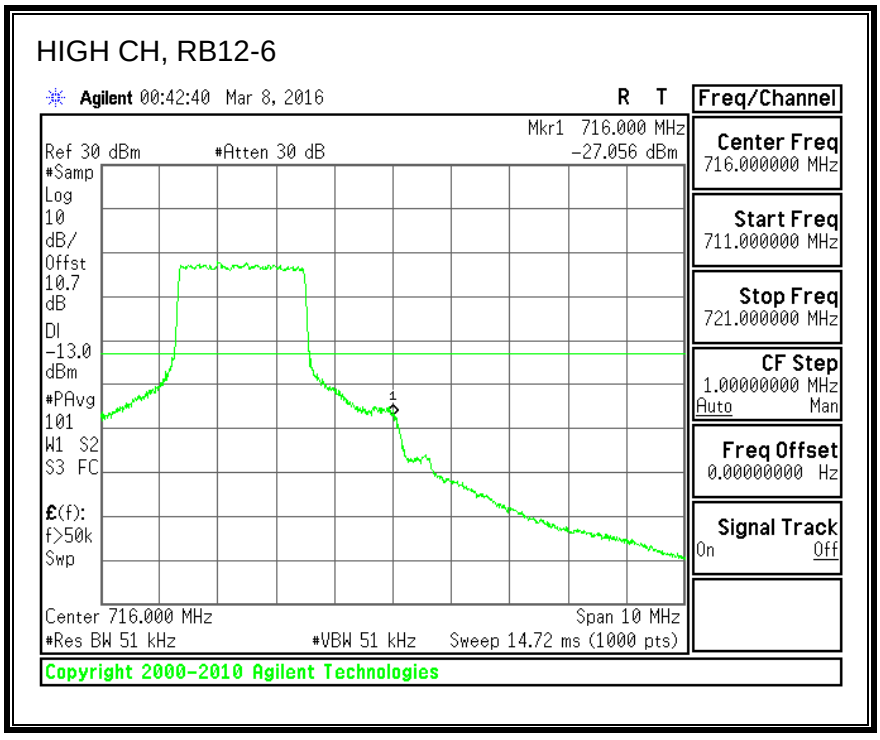
LOW CH, RB12-6



HIGH CH, RB12-6



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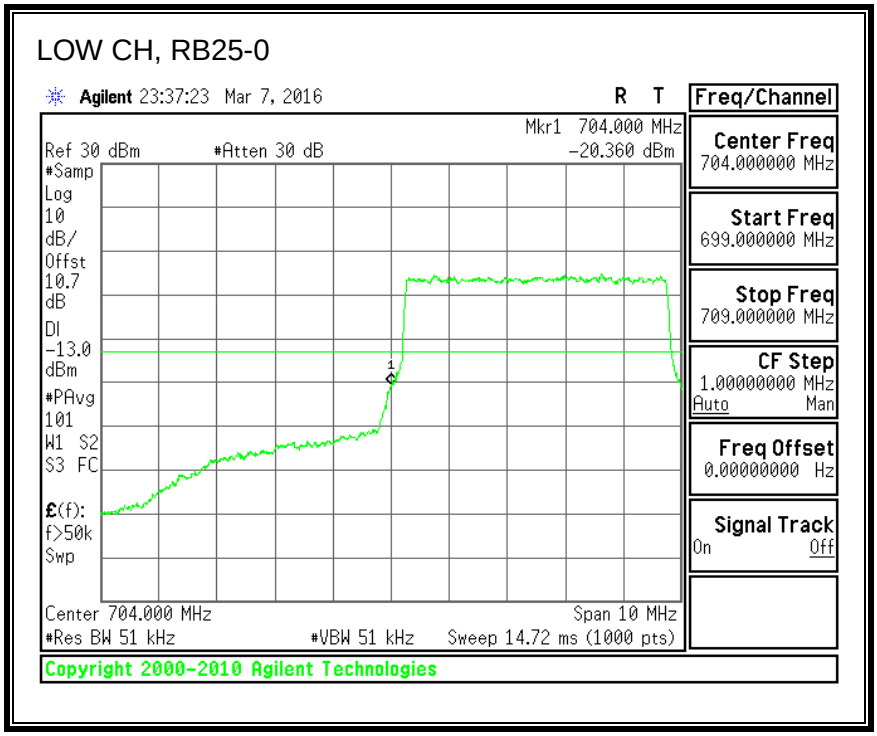
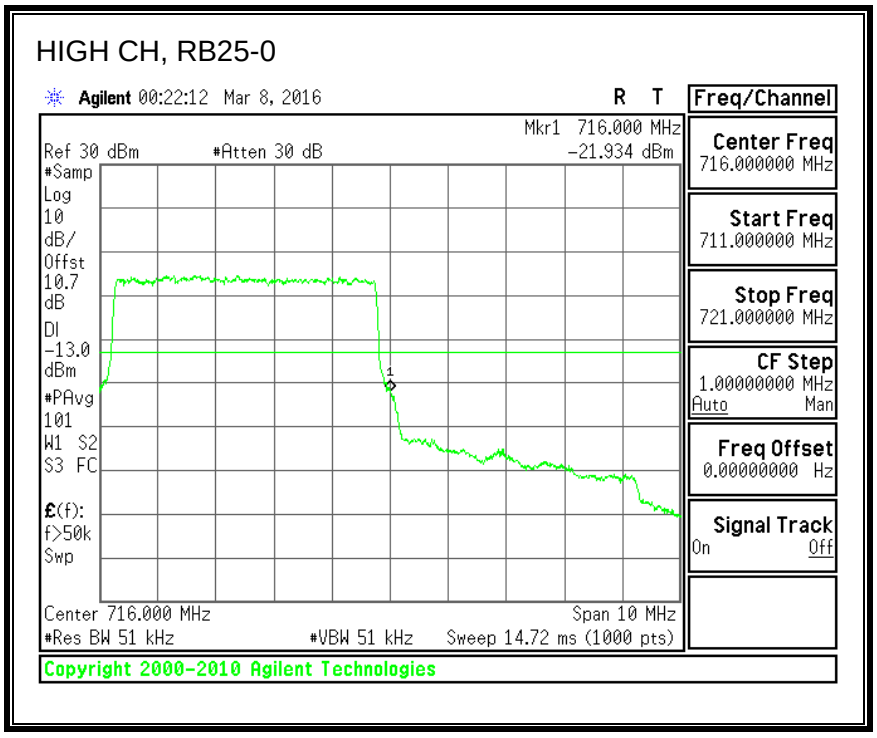
LOW CH, RB25-0



HIGH CH, RB25-0



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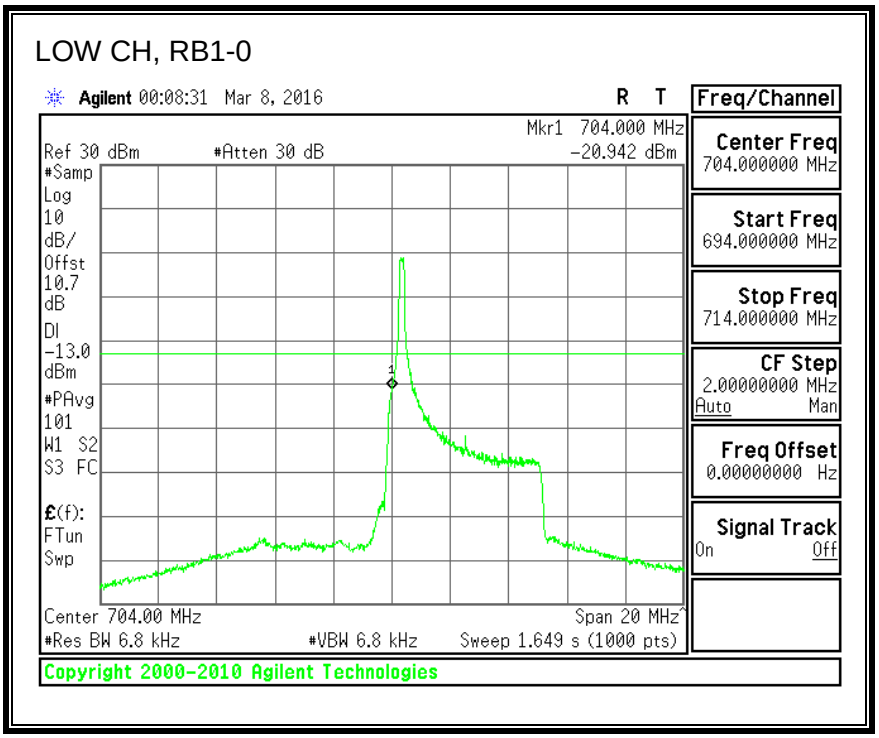
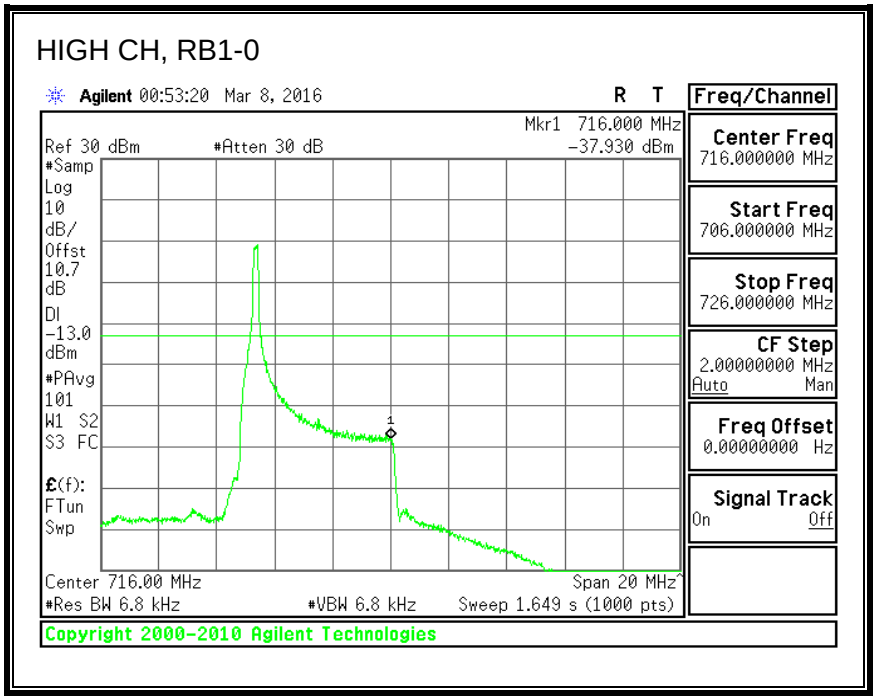
16QAM, (5.0 MHz BAND WIDTH)

LOW CH, RB1-0



HIGH CH, RB1-0



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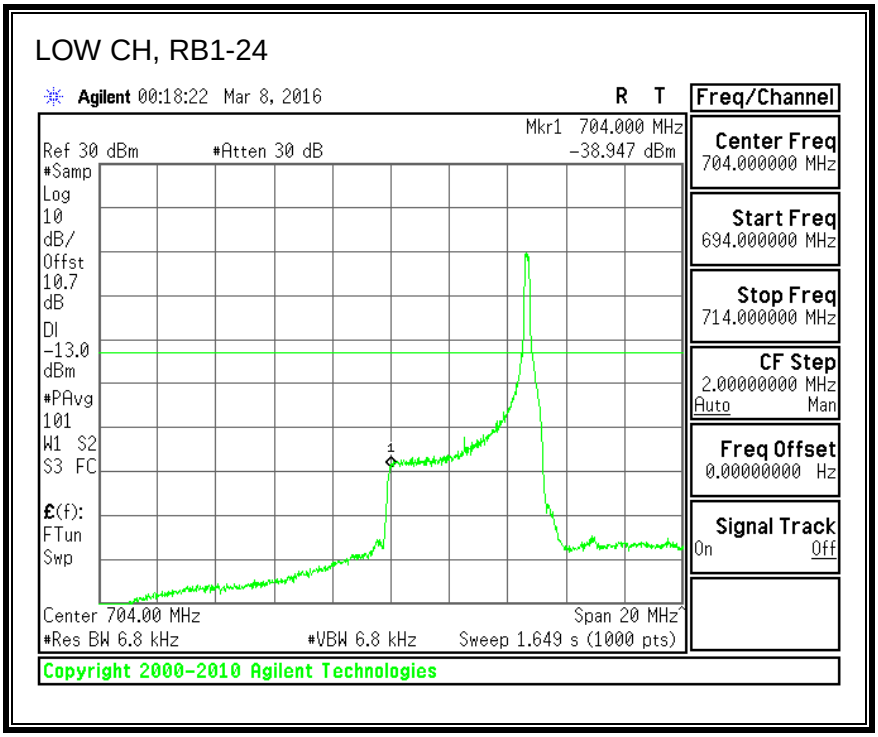
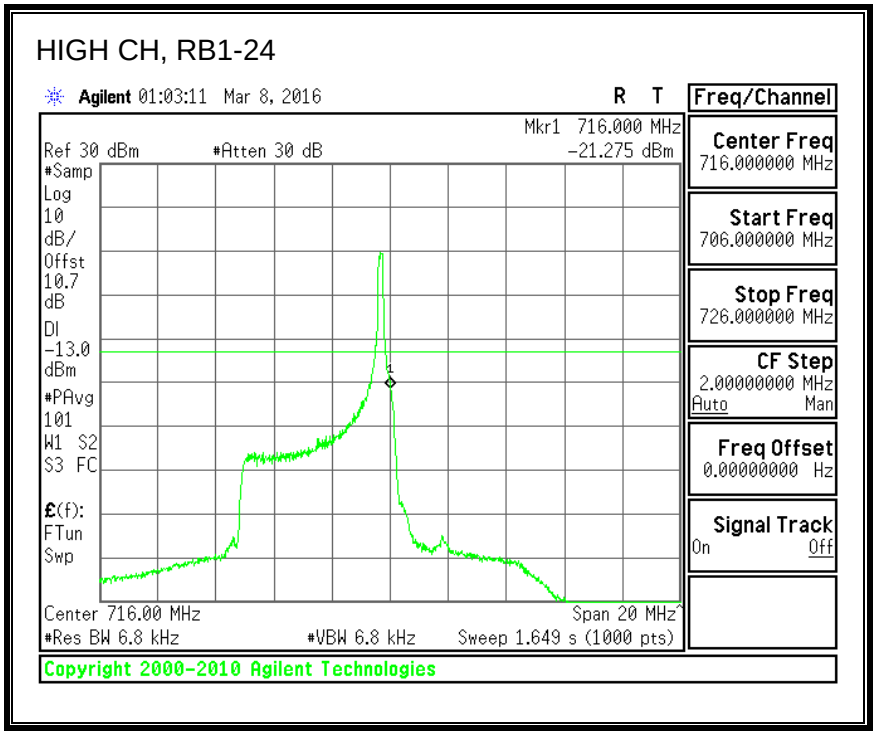
LOW CH, RB1-24



HIGH CH, RB1-24



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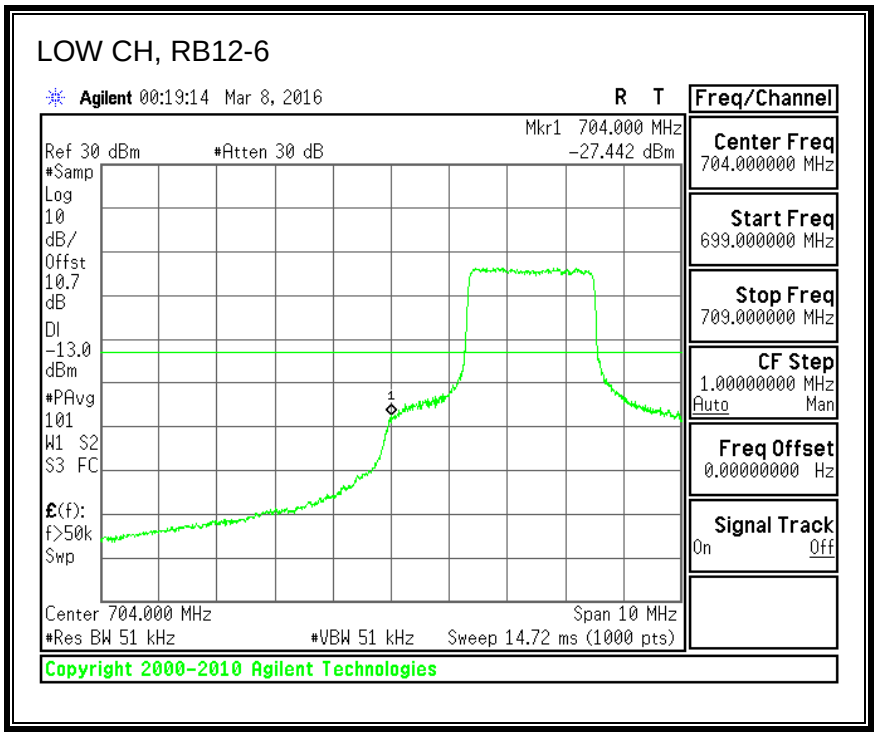
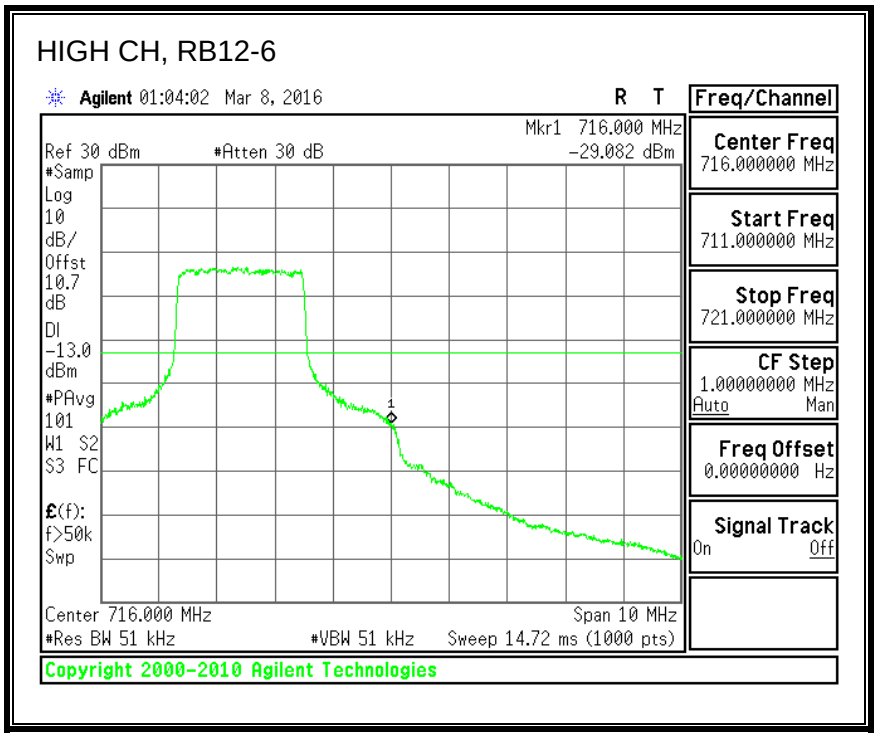
LOW CH, RB12-6



HIGH CH, RB12-6



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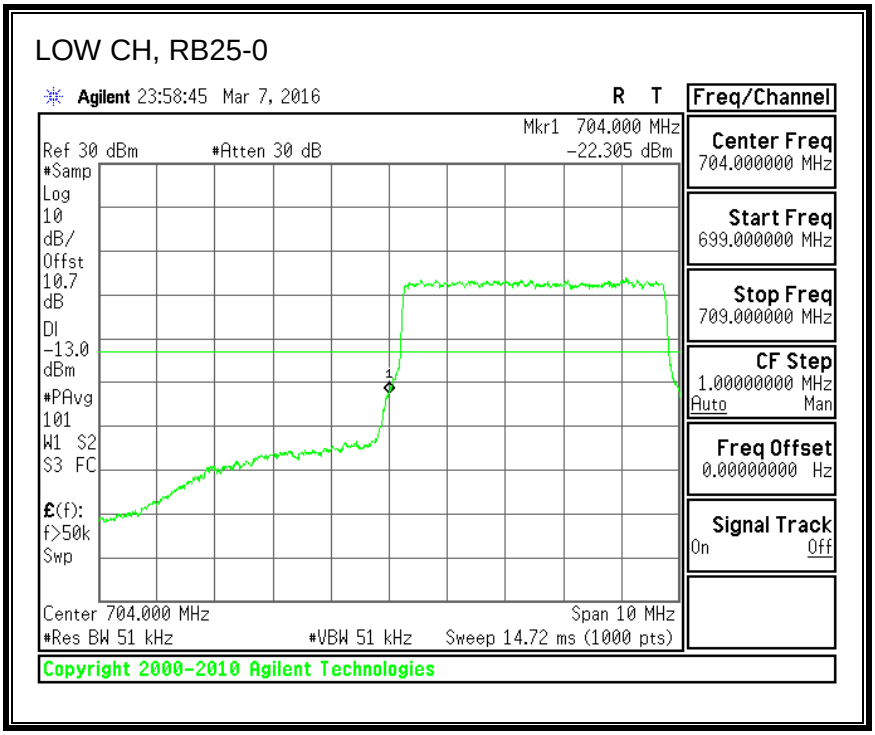
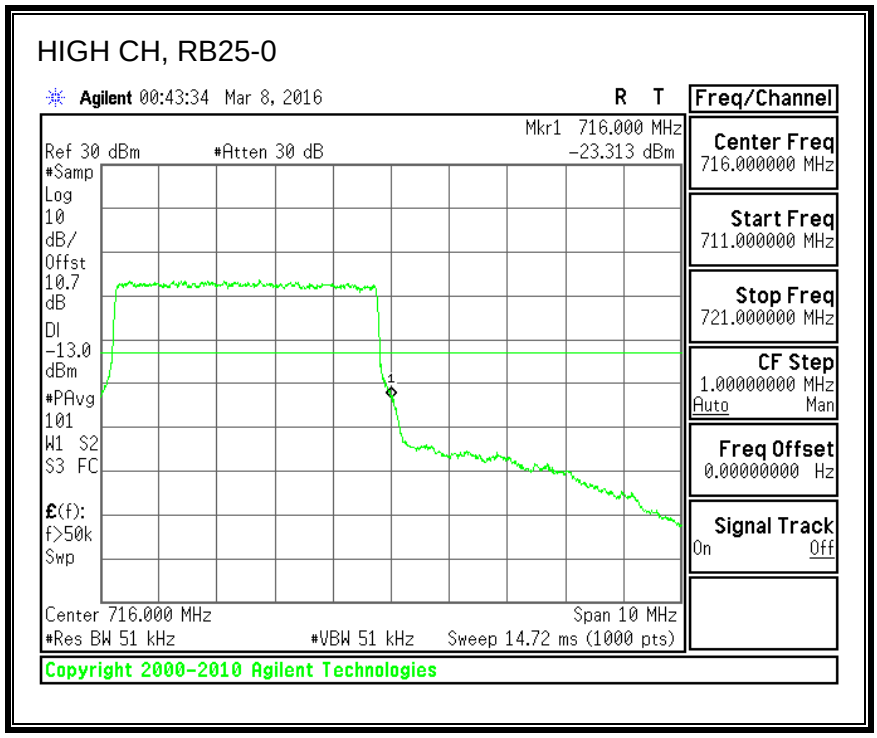
LOW CH, RB25-0



HIGH CH, RB25-0



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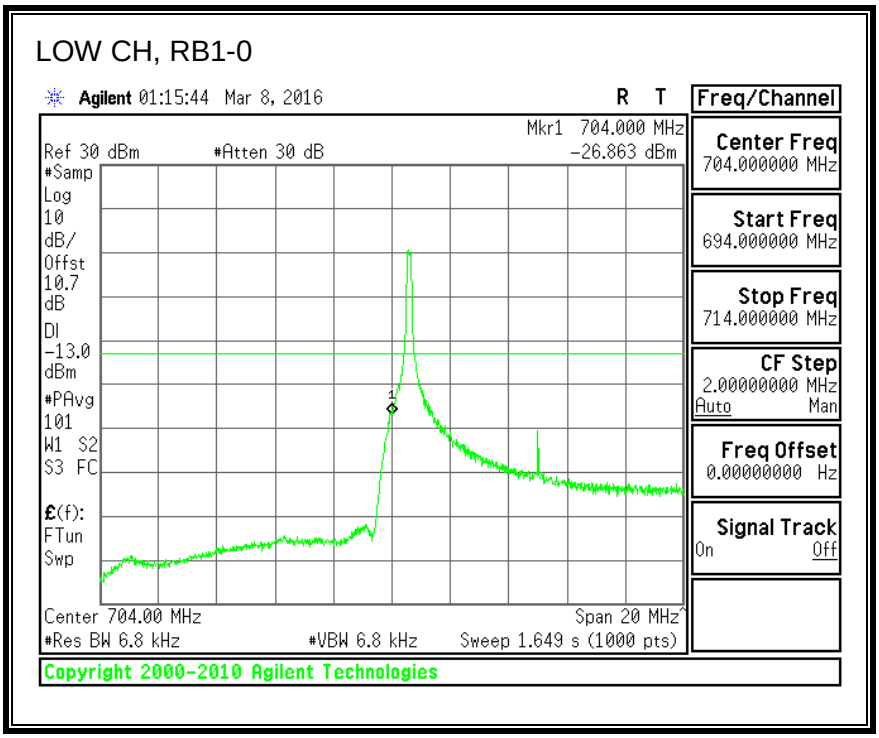
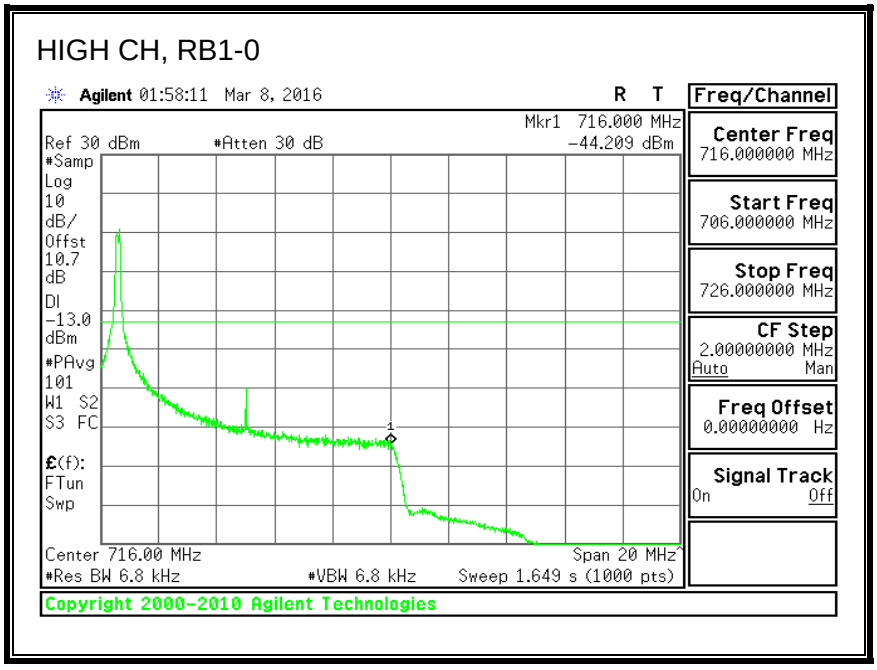
QPSK, (10.0 MHz BAND WIDTH)

LOW CH, RB1-0



HIGH CH, RB1-0



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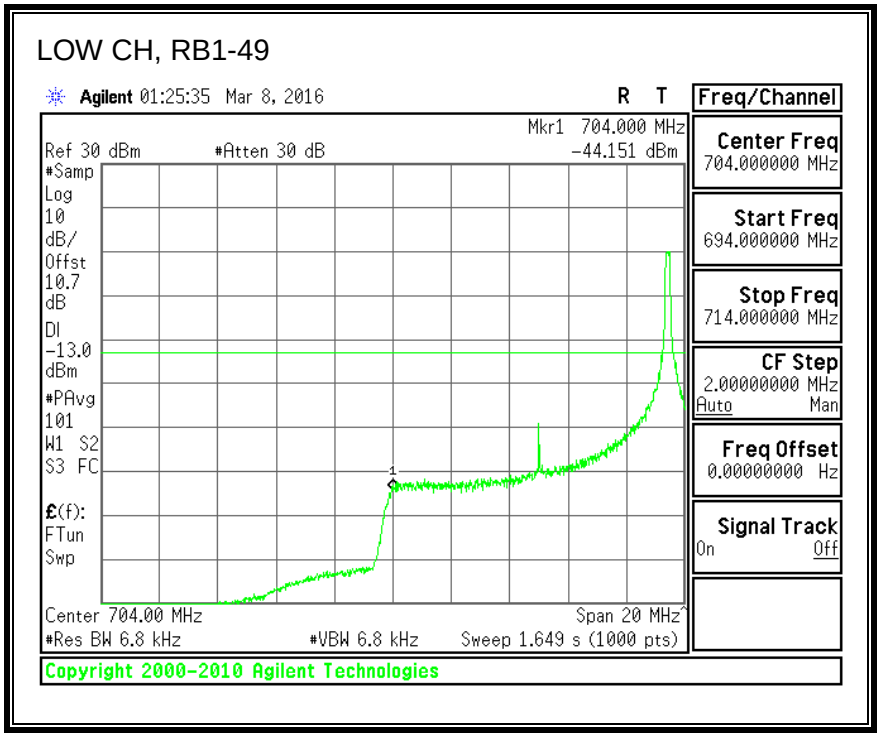
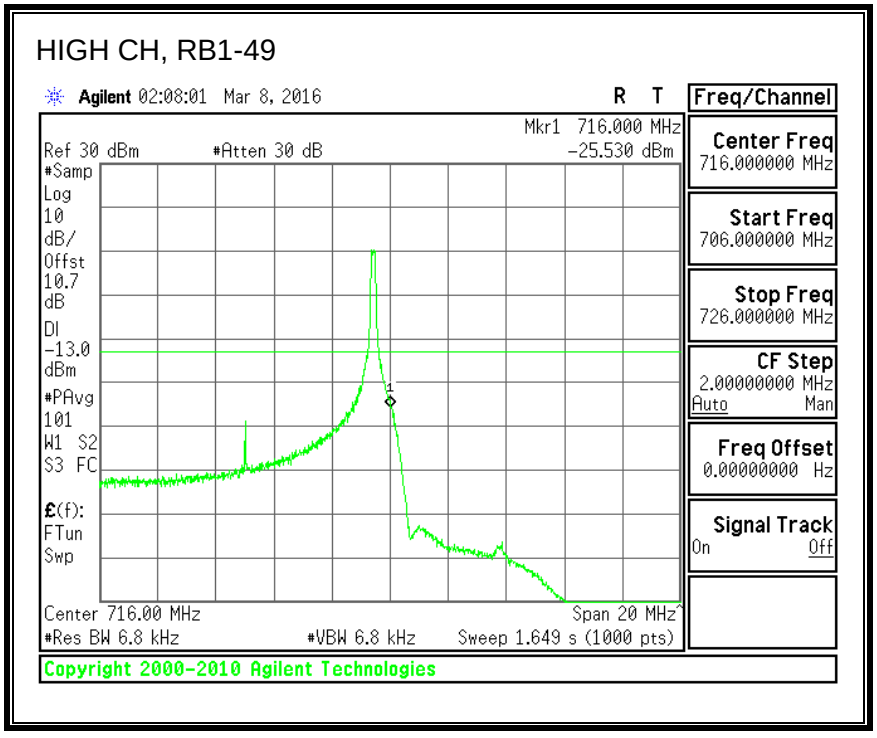
LOW CH, RB1-49



HIGH CH, RB1-49



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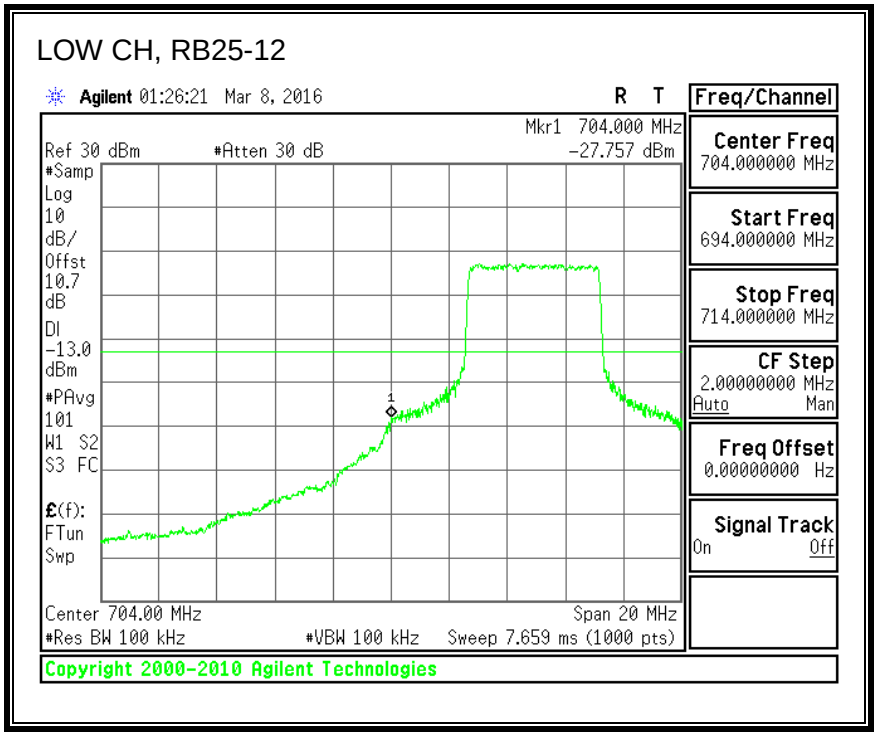
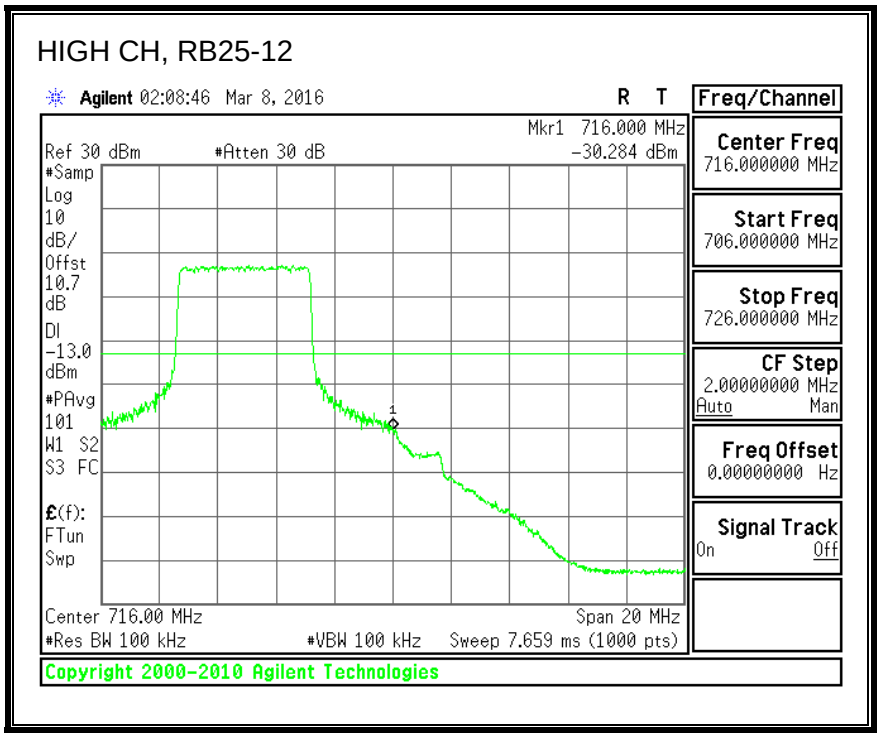
LOW CH, RB25-12



HIGH CH, RB25-12



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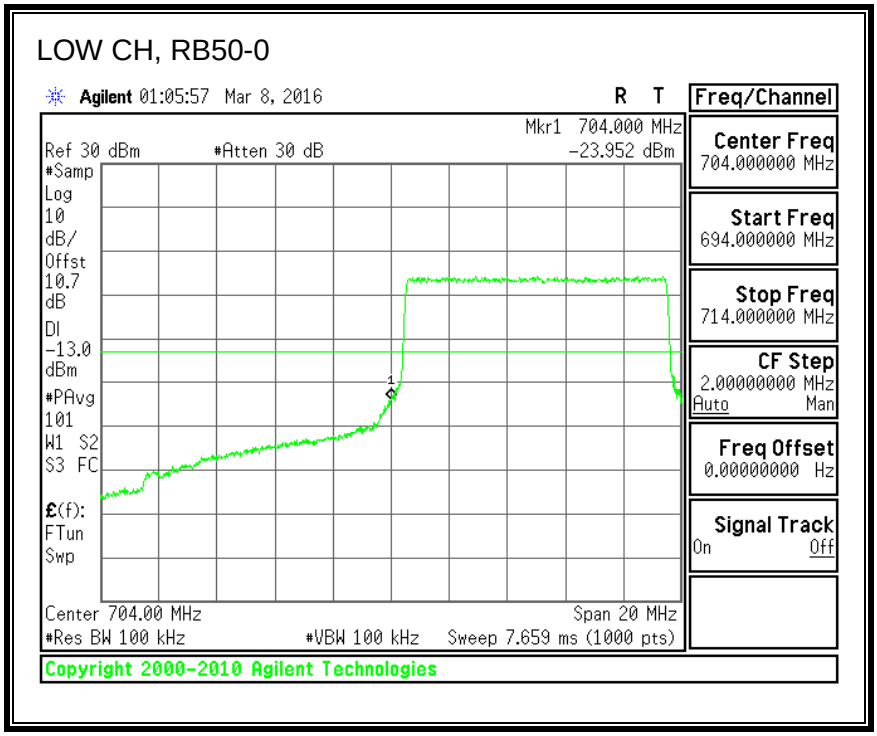
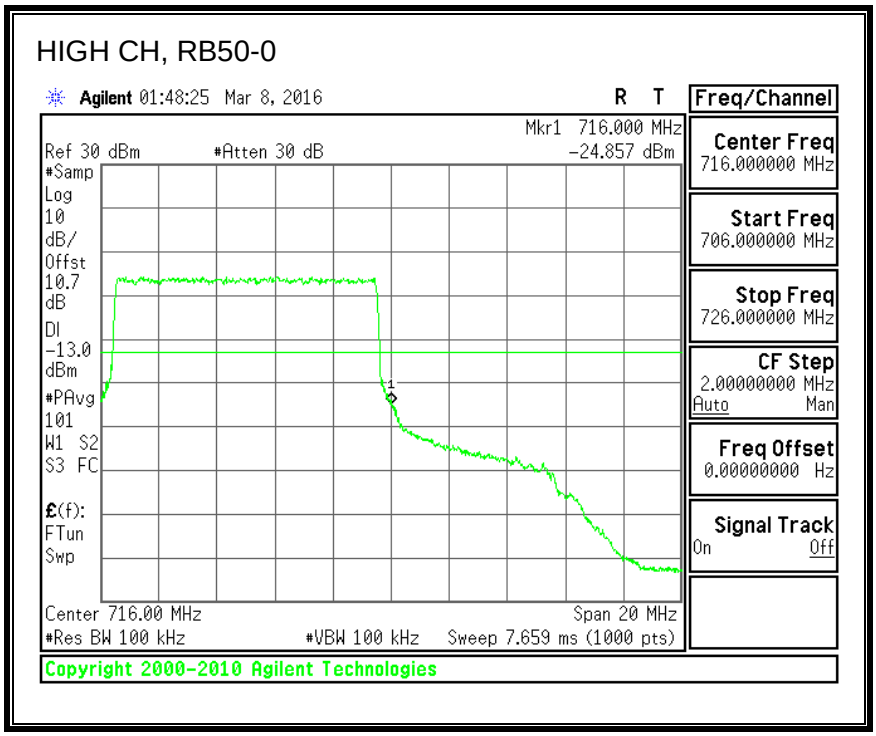
LOW CH, RB50-0



HIGH CH, RB50-0



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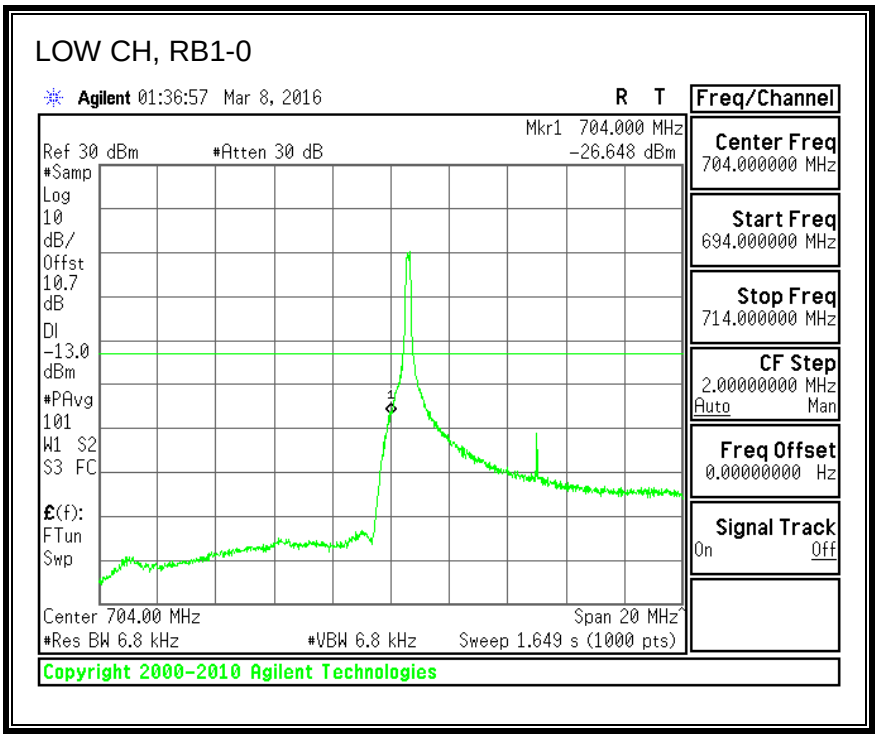
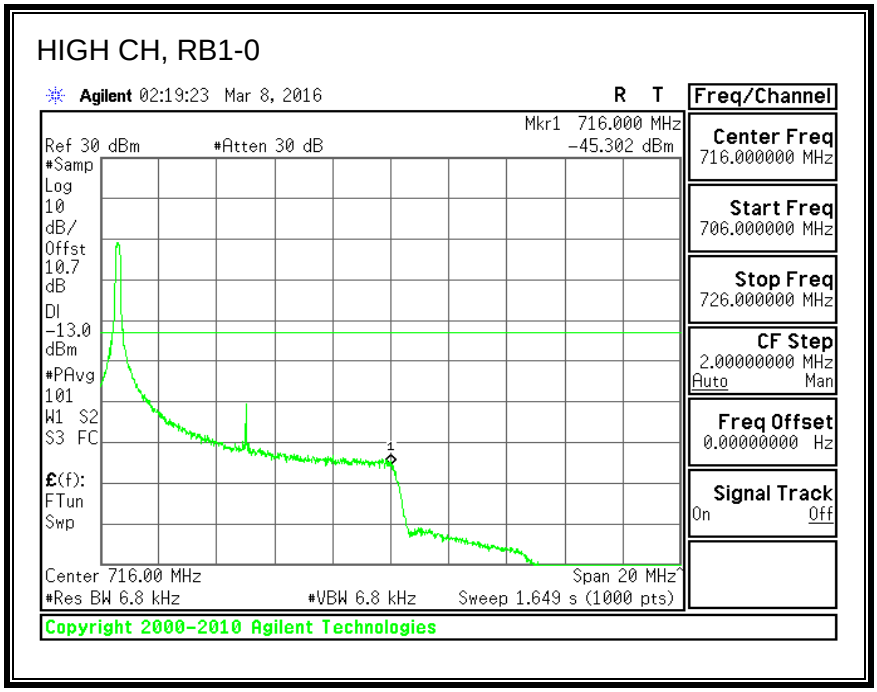
16QAM, (10.0 MHz BAND WIDTH)

LOW CH, RB1-0



HIGH CH, RB1-0



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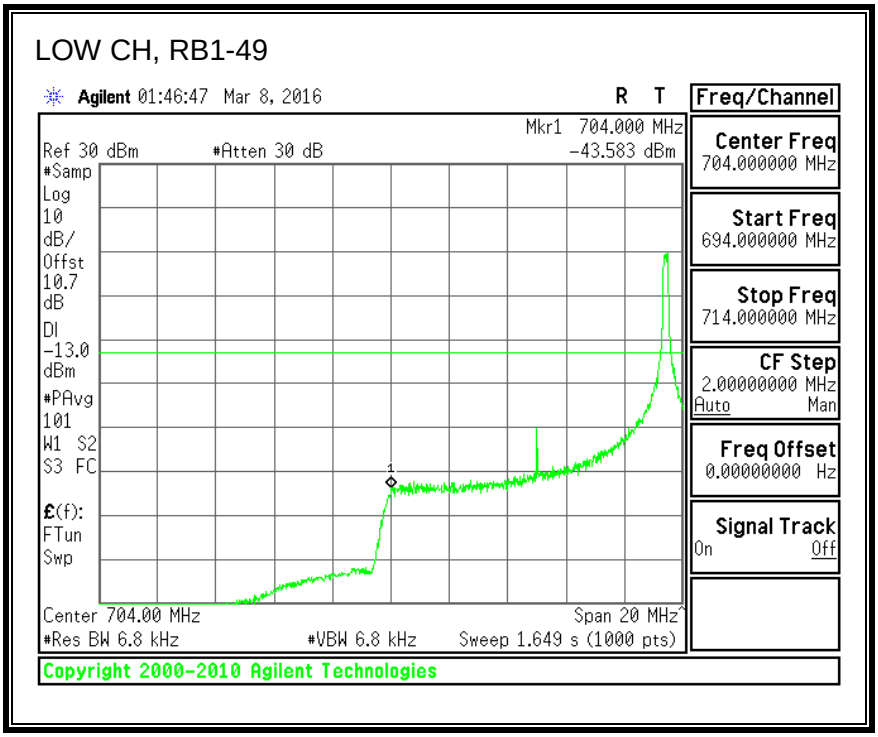
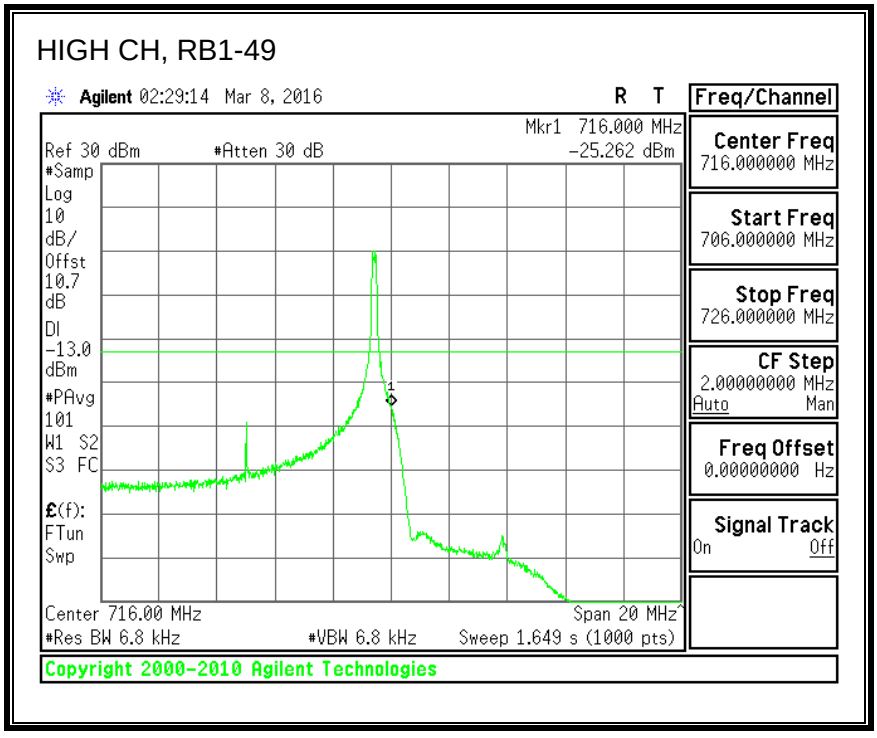
LOW CH, RB1-49



HIGH CH, RB1-49



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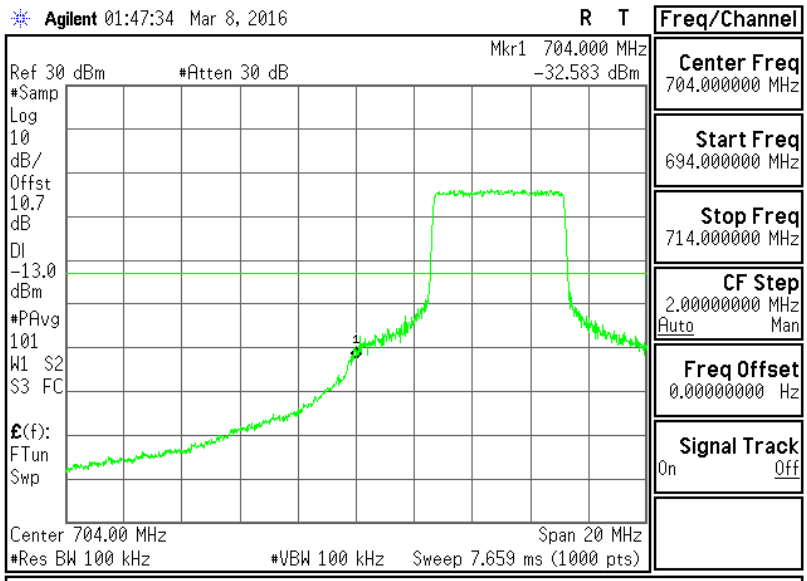
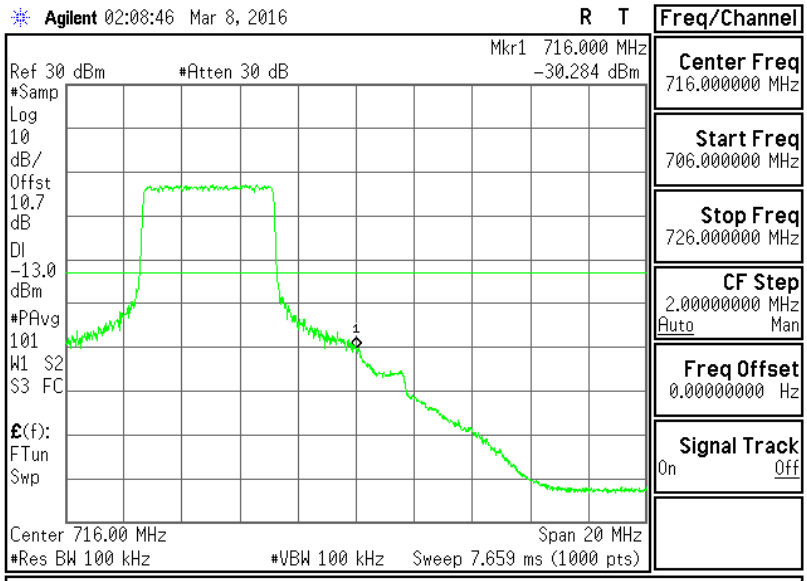
LOW CH, RB25-12



HIGH CH, RB25-12



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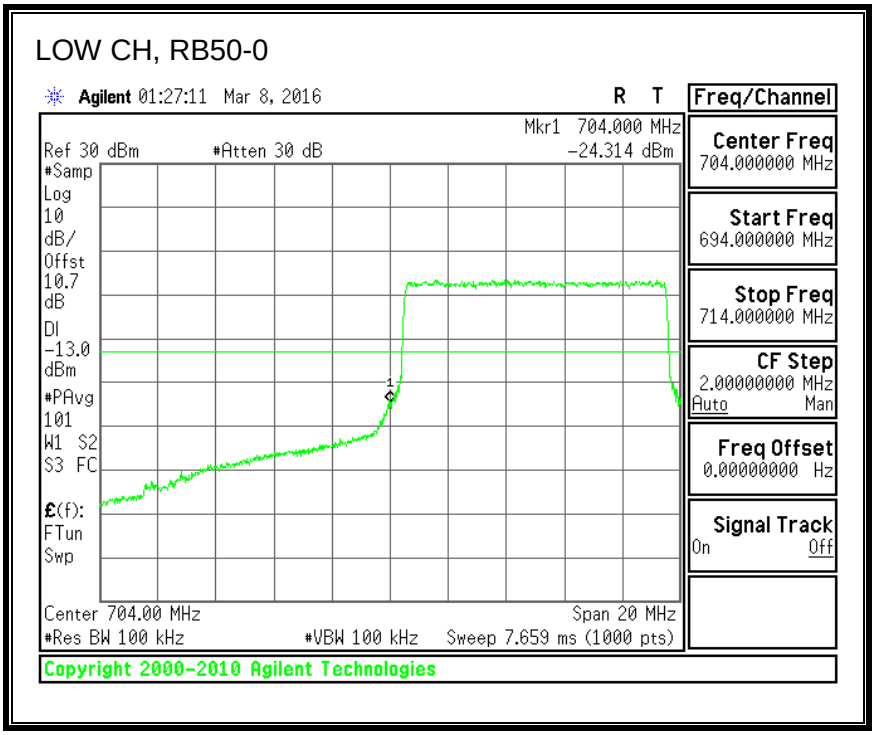
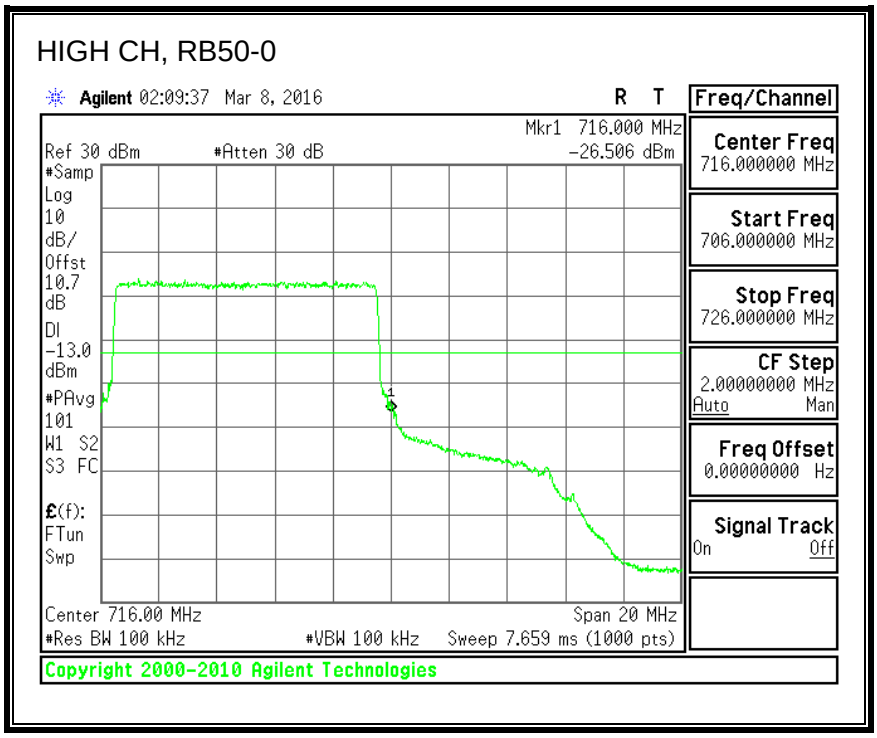
LOW CH, RB50-0



HIGH CH, RB50-0



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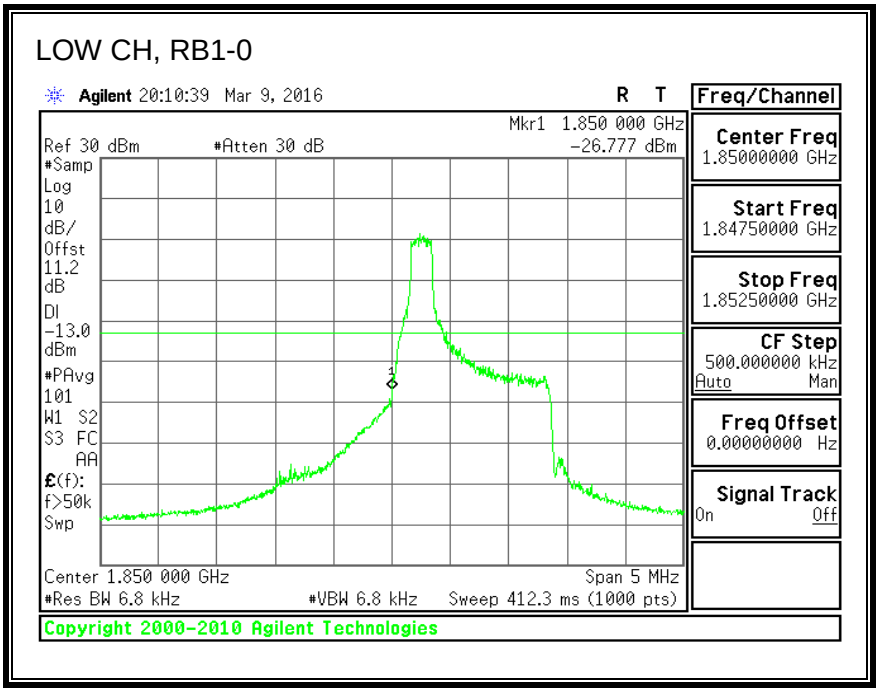
8.2.8. LTE BAND 25 BANDEDGE

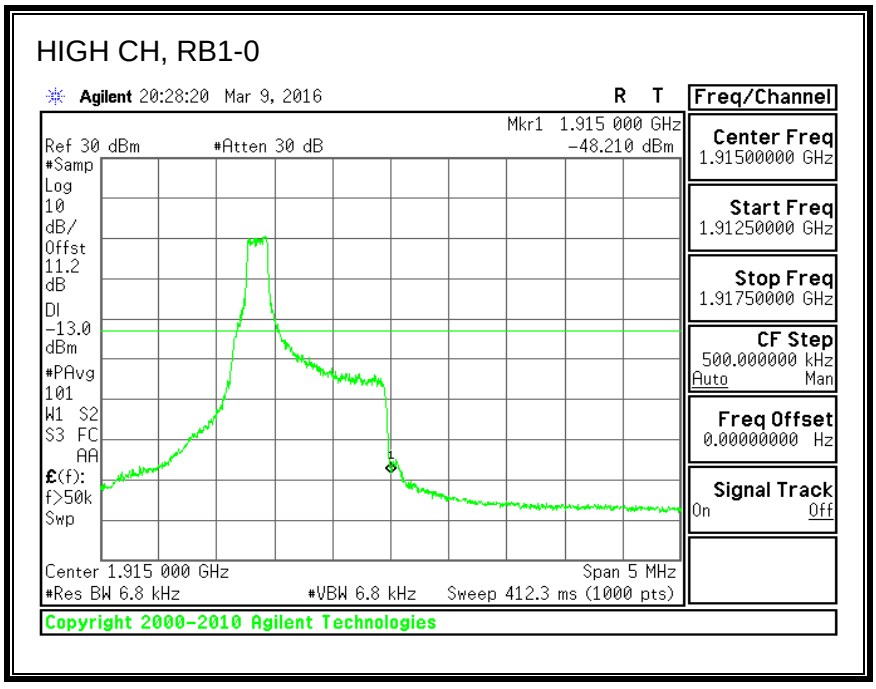
ID:	38806	Date:	3/9/16

QPSK, (1.4 MHz BAND WIDTH)

LOW CH, RB1-0



HIGH CH, RB1-0



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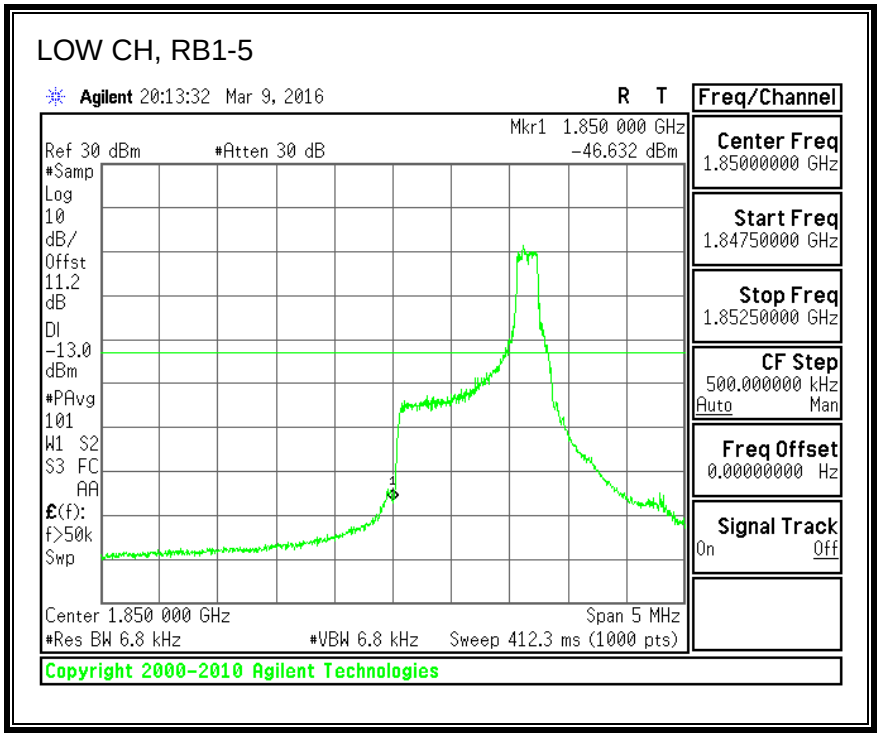
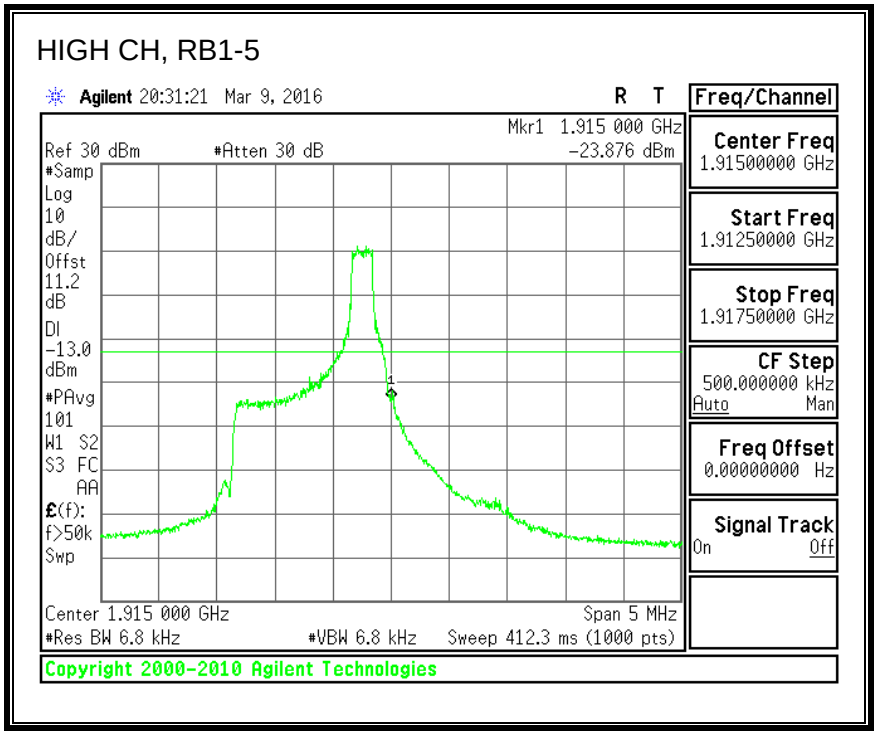
LOW CH, RB1-5



HIGH CH, RB1-5



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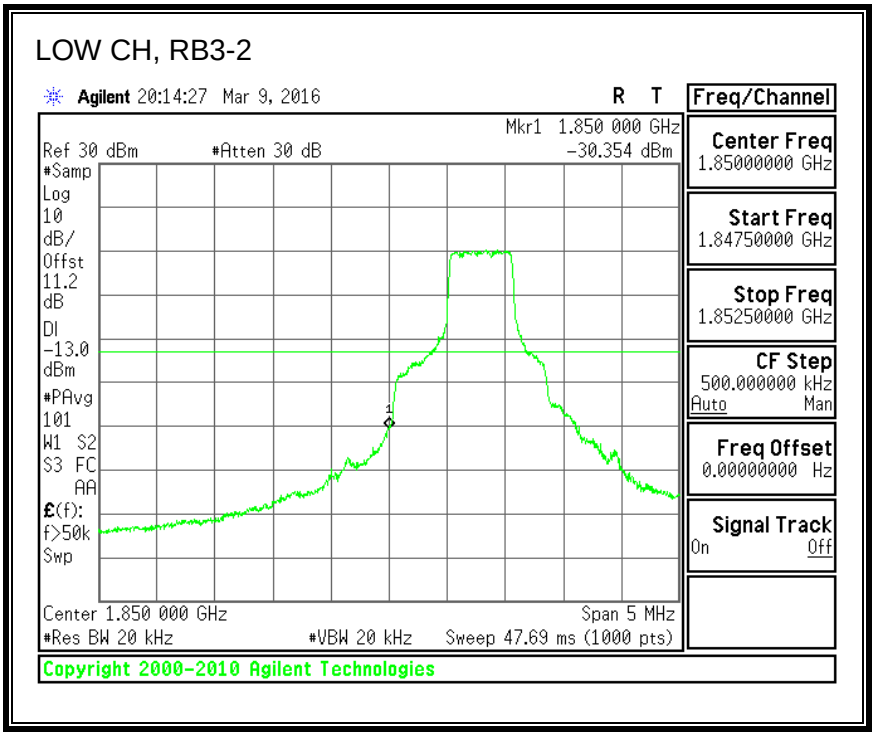
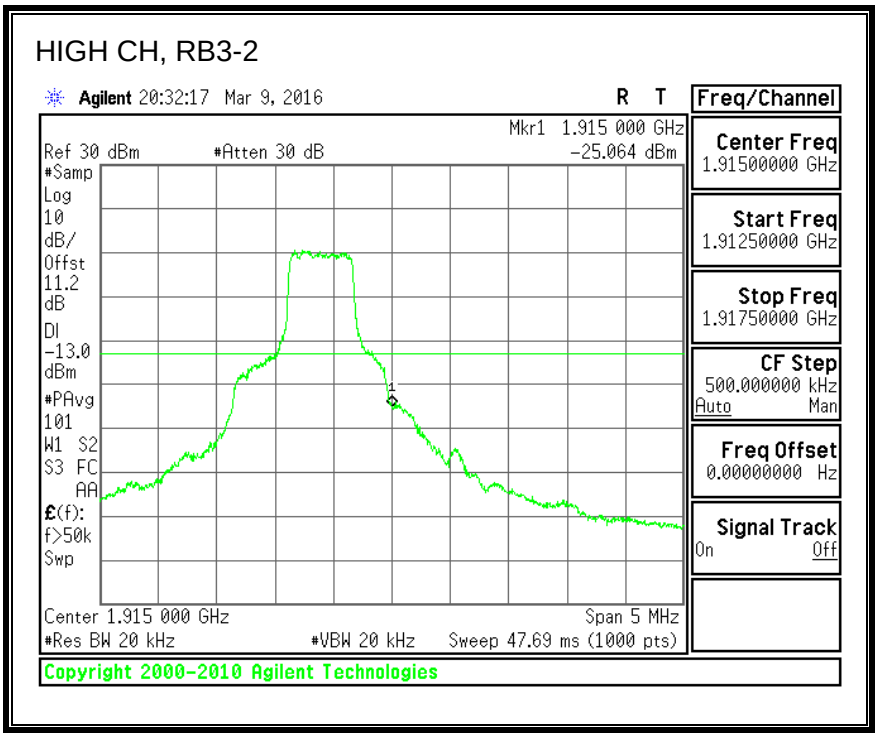
LOW CH, RB3-2



HIGH CH, RB3-2



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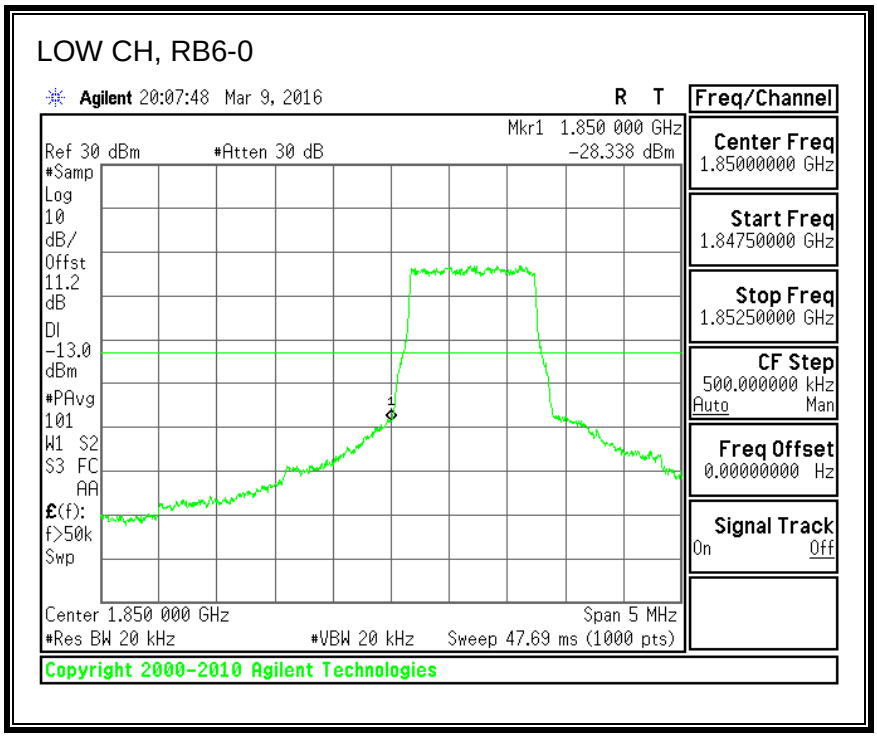
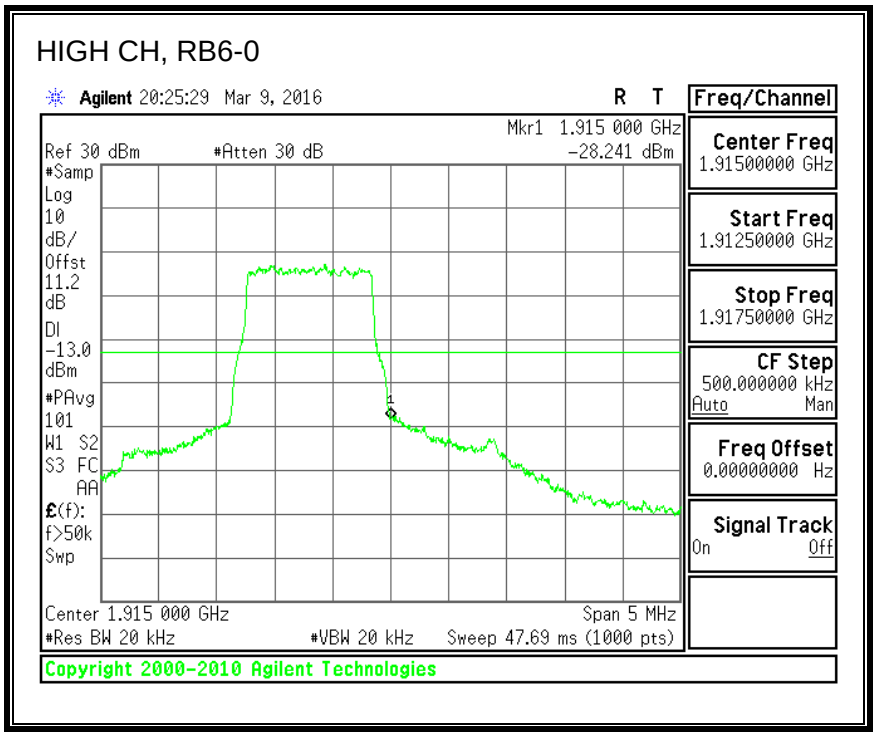
LOW CH, RB6-0



HIGH CH, RB6-0



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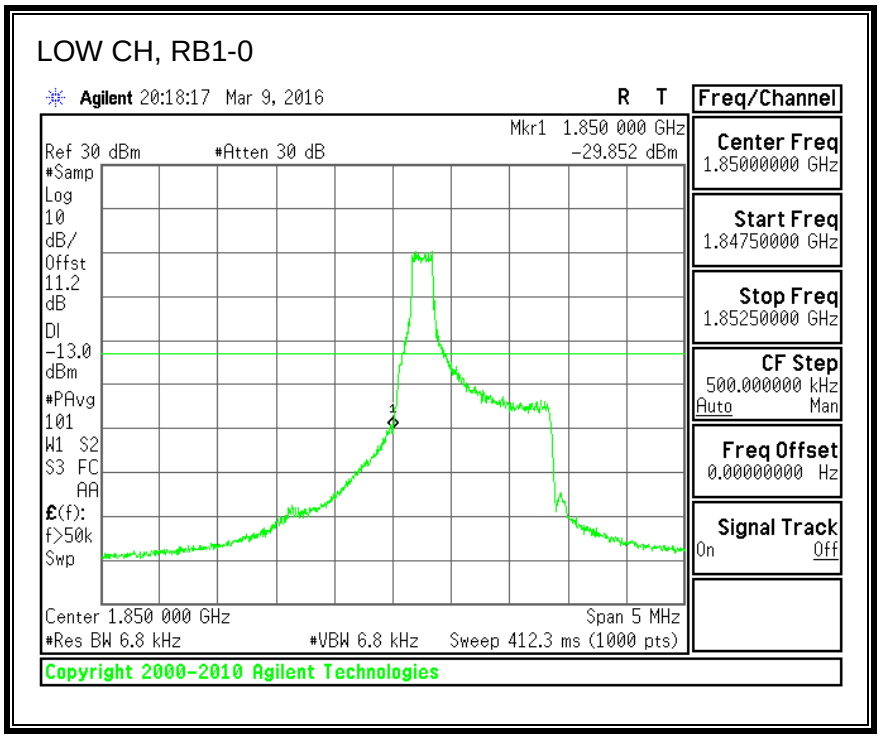
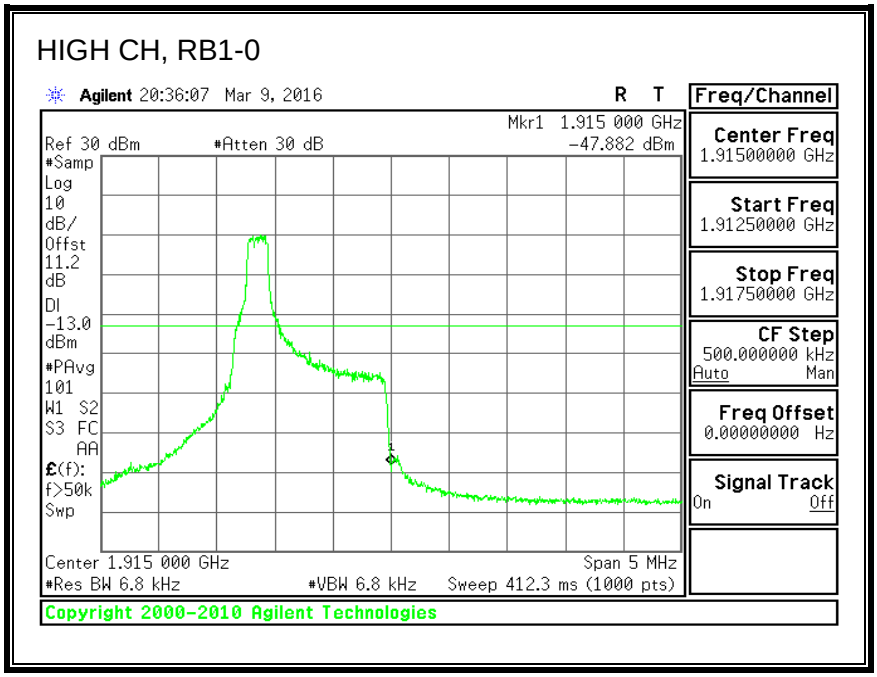
16QAM, (1.4 MHz BAND WIDTH)

LOW CH, RB1-0



HIGH CH, RB1-0



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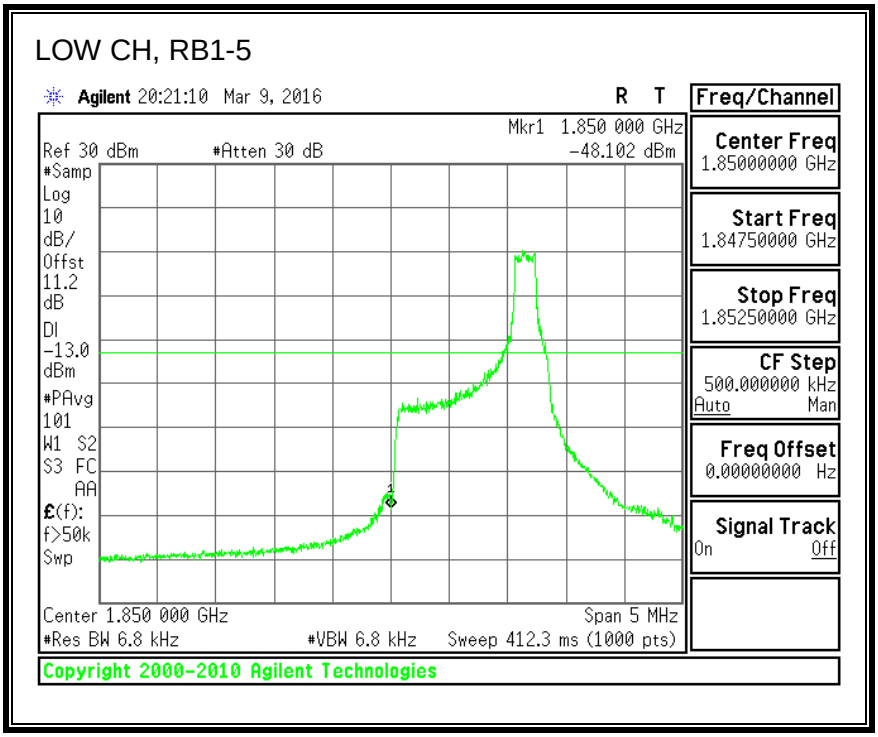
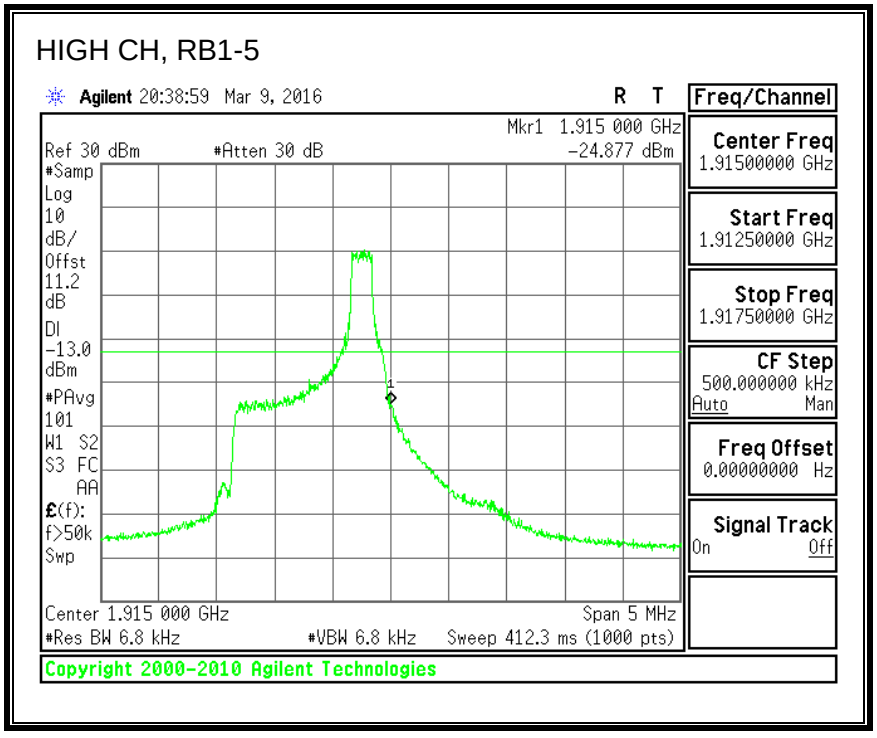
LOW CH, RB1-5



HIGH CH, RB1-5



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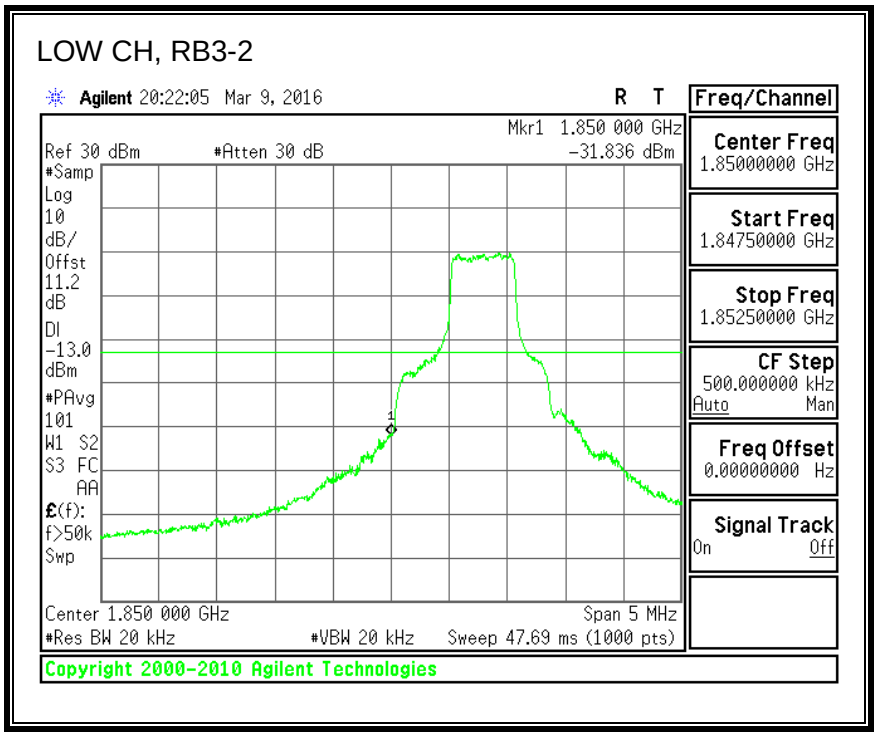
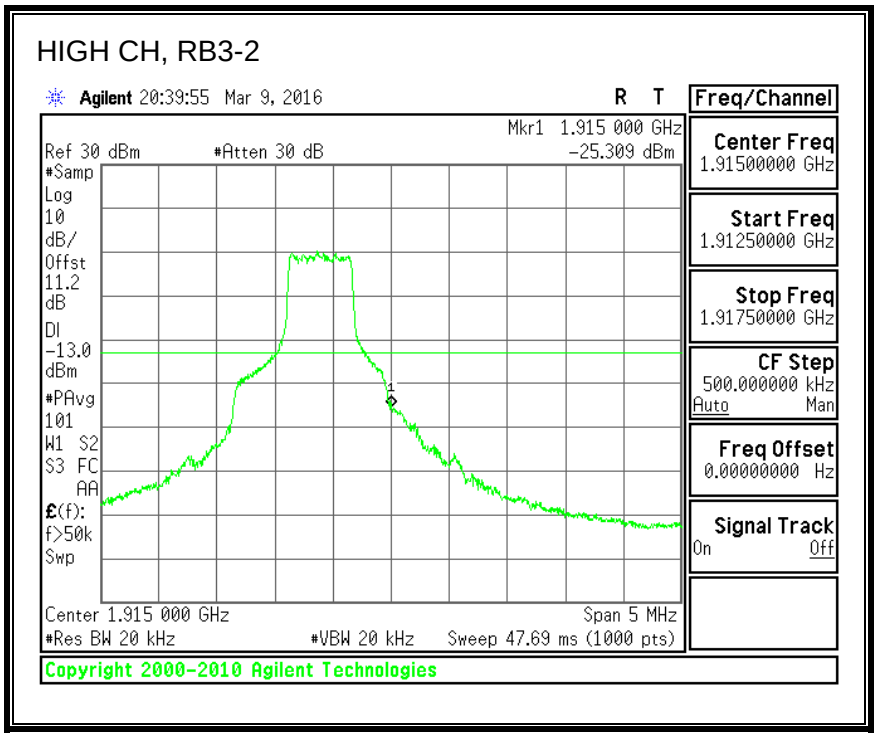
LOW CH, RB3-2



HIGH CH, RB3-2



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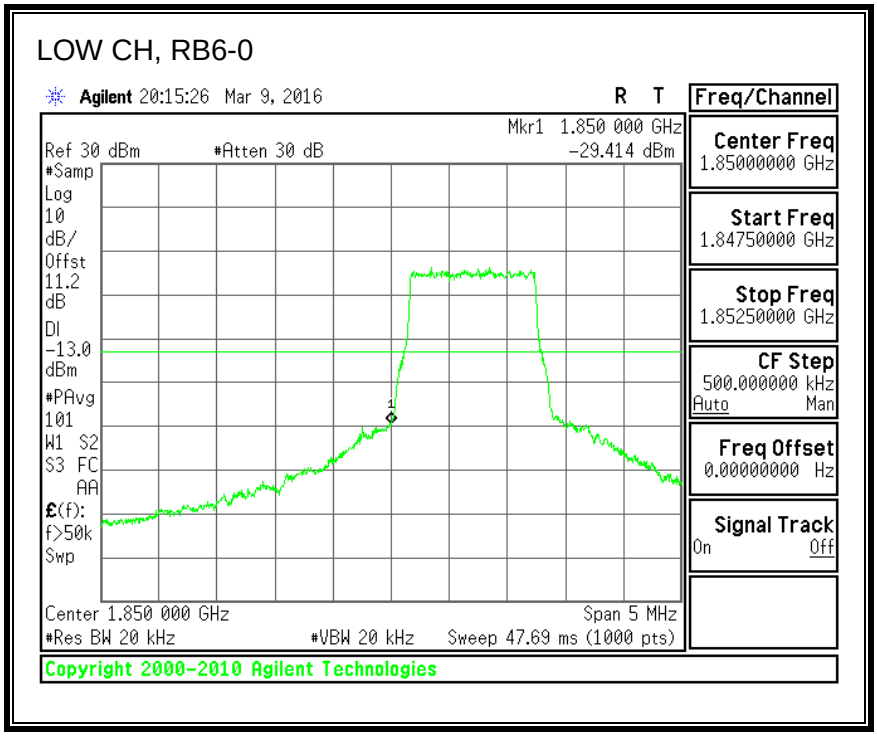
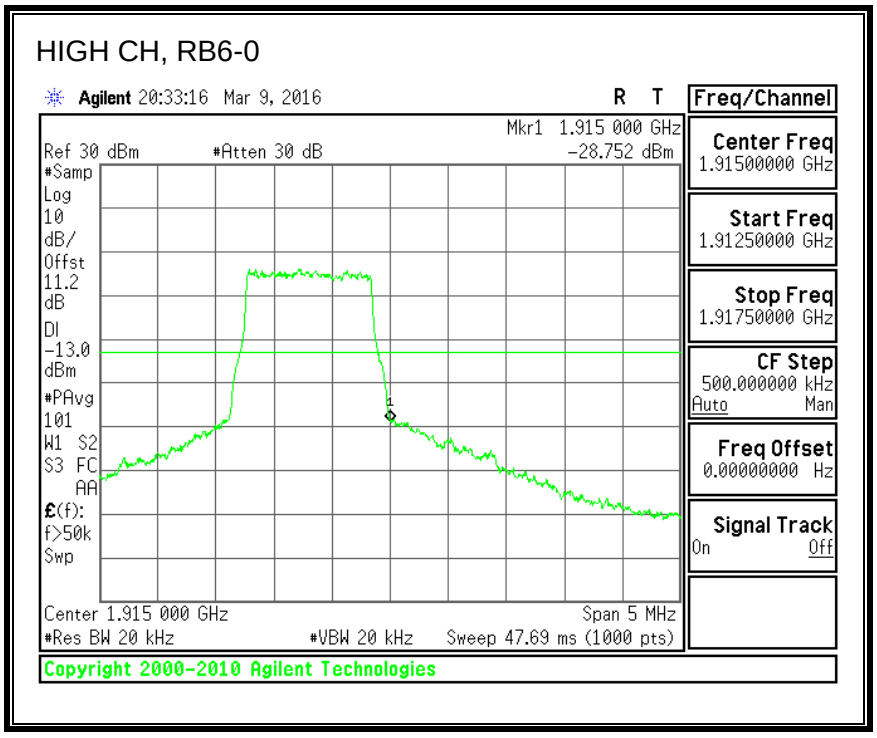
LOW CH, RB6-0



HIGH CH, RB6-0



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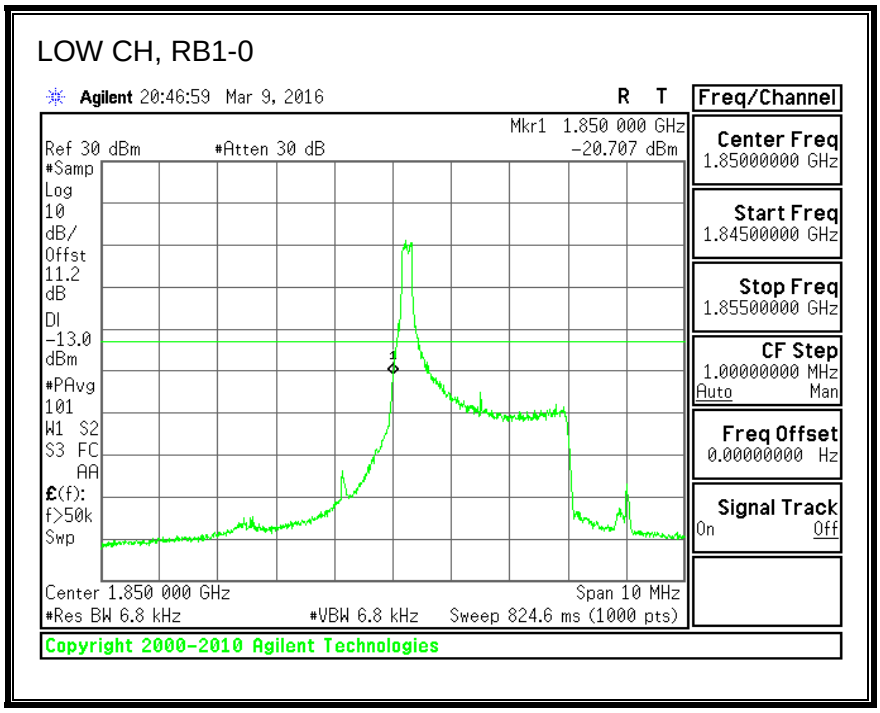
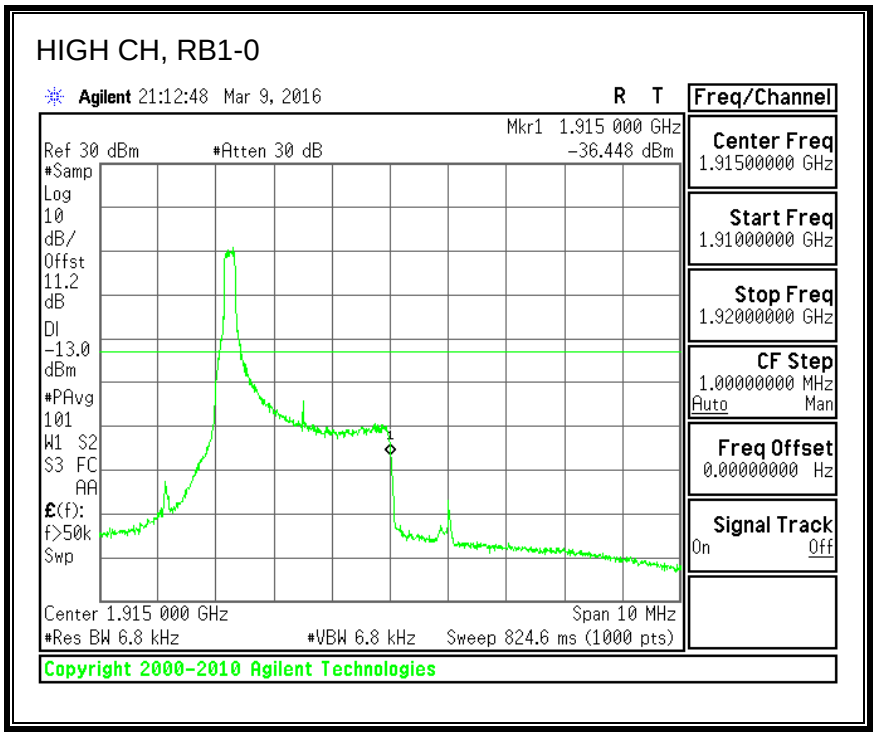
QPSK, (3.0 MHz BAND WIDTH)

LOW CH, RB1-0



HIGH CH, RB1-0



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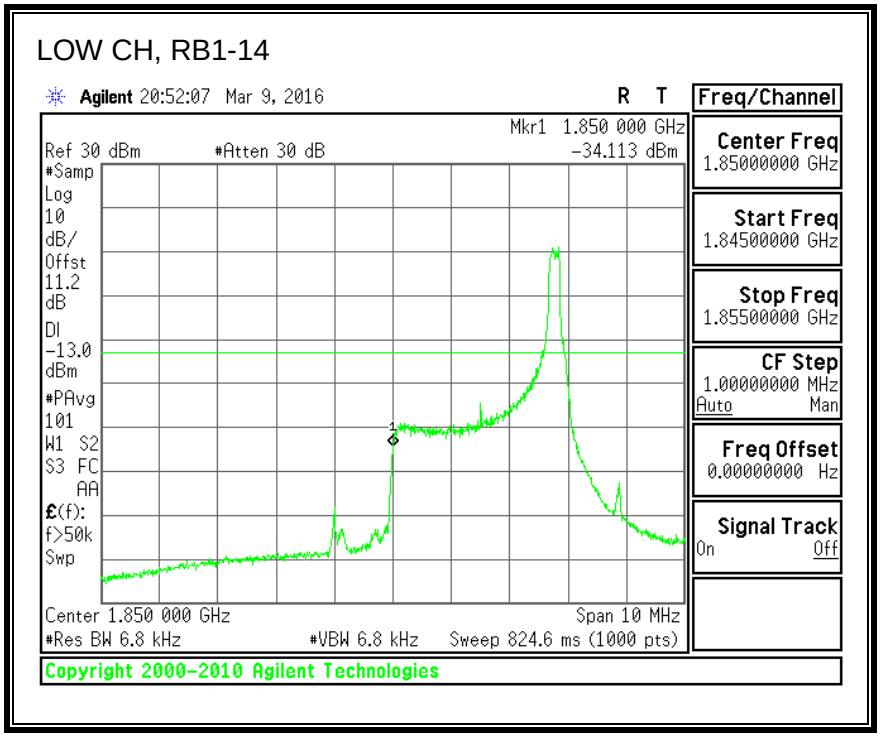
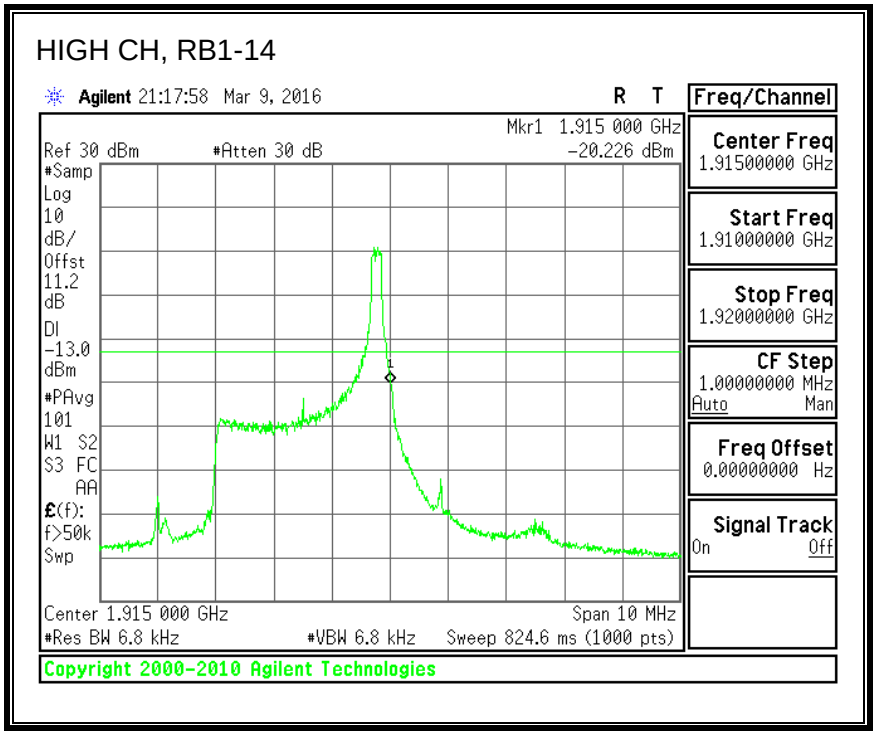
LOW CH, RB1-14



HIGH CH, RB1-14



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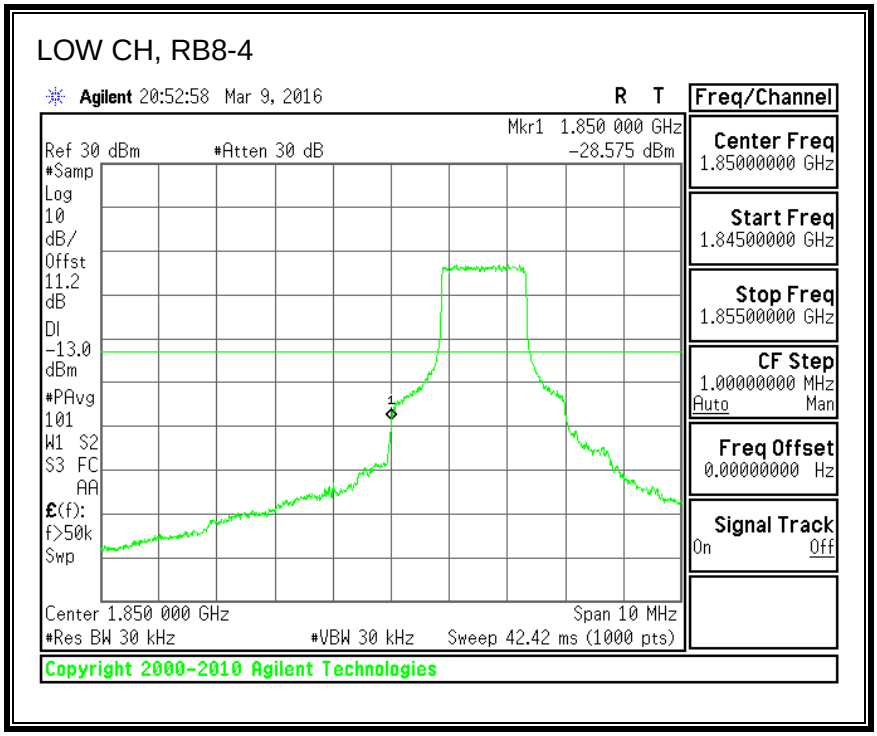
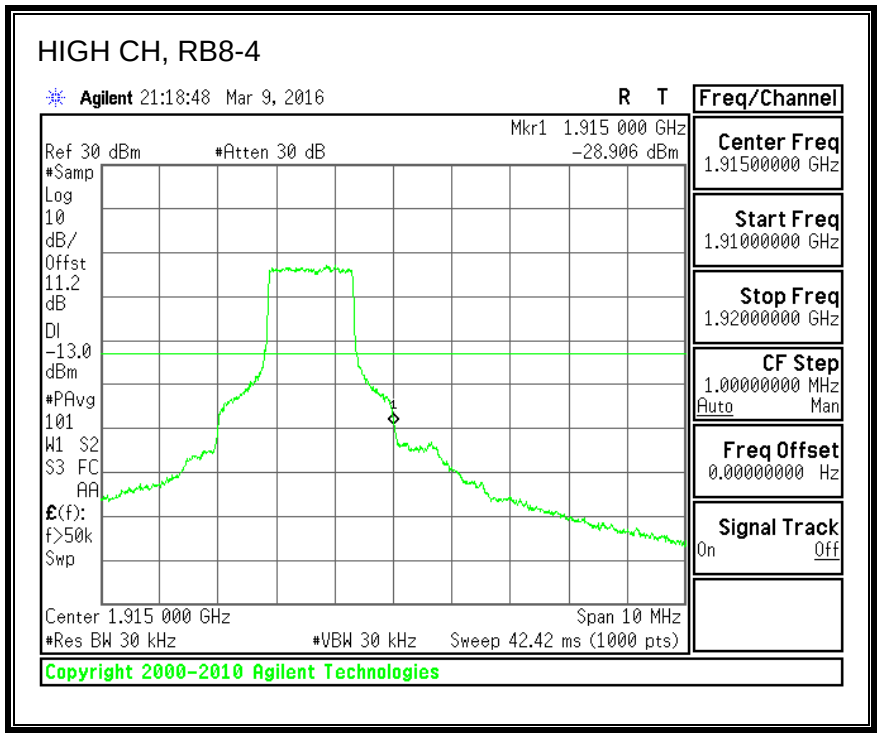
LOW CH, RB8-4



HIGH CH, RB8-4



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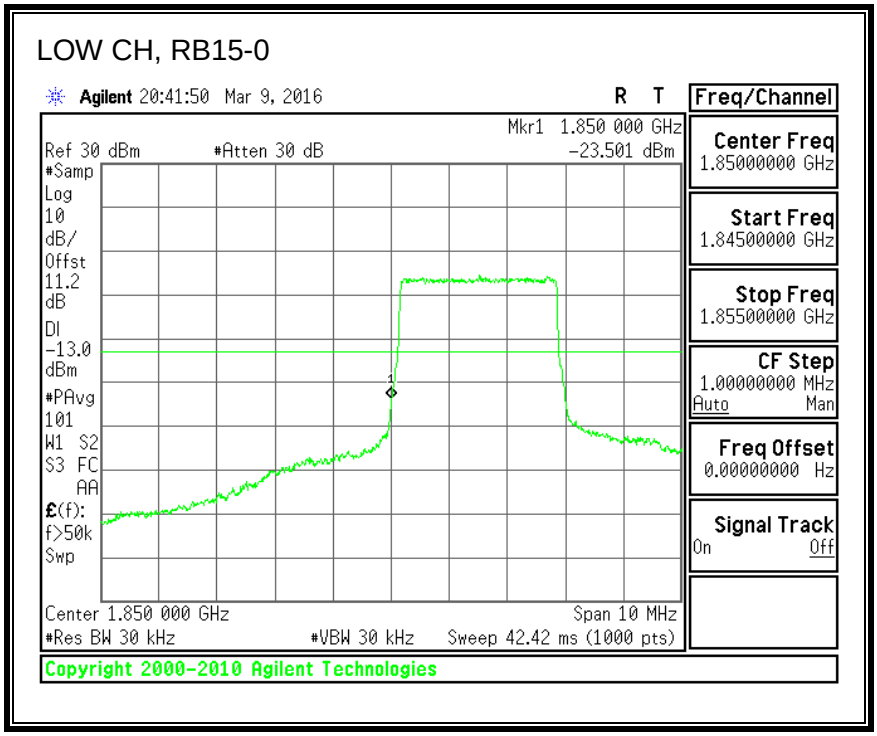
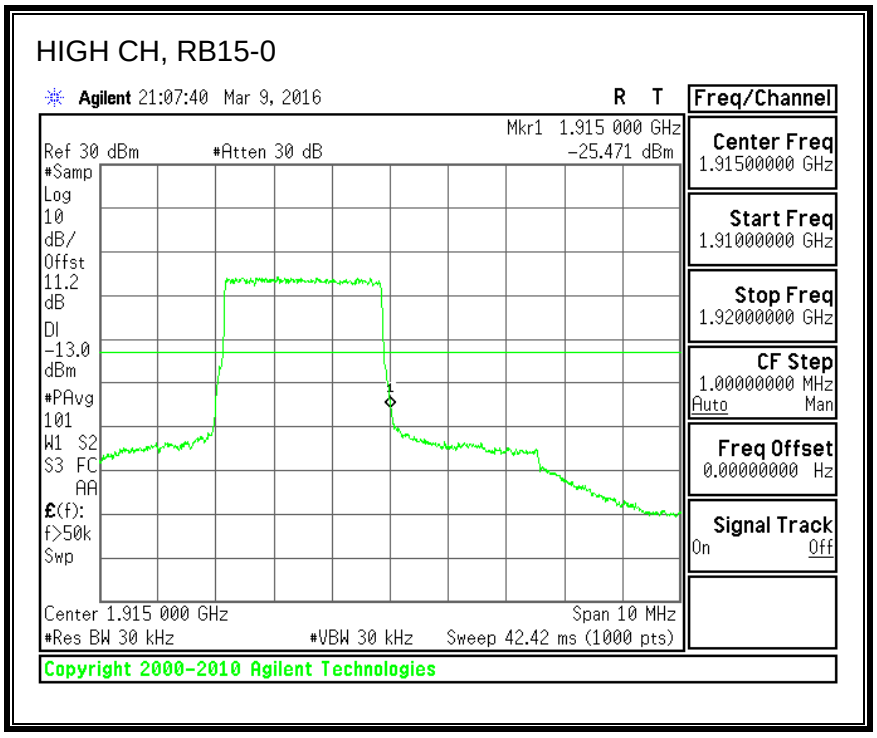
LOW CH, RB15-0



HIGH CH, RB15-0



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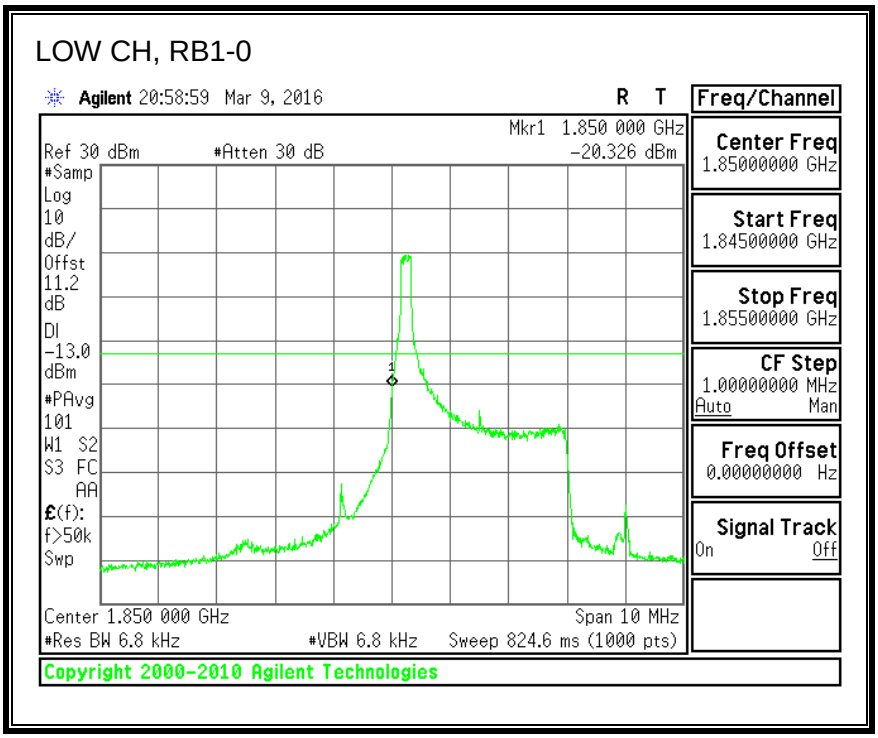
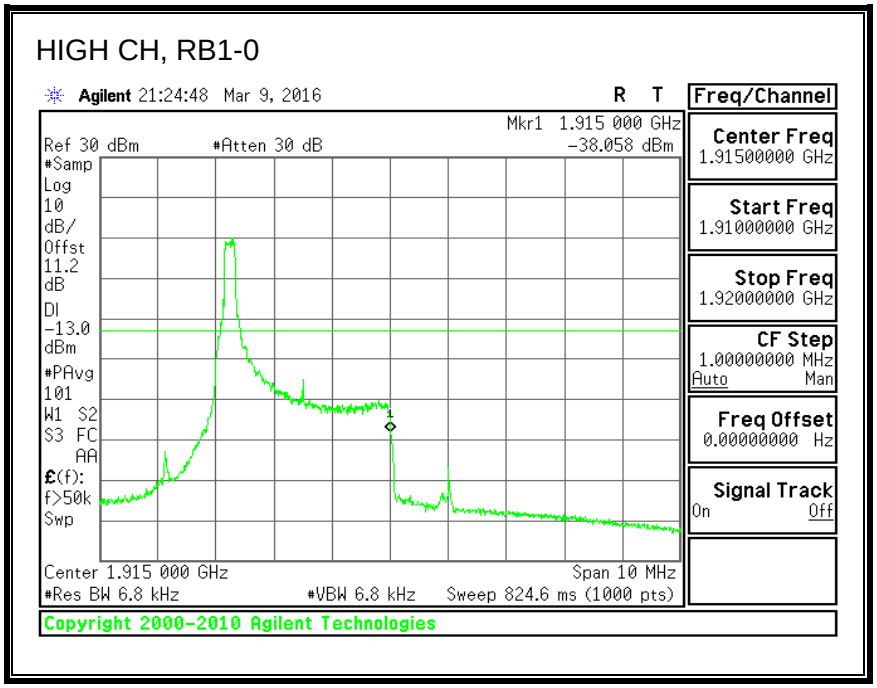
16QAM, (3.0 MHz BAND WIDTH)

LOW CH, RB1-0



HIGH CH, RB1-0



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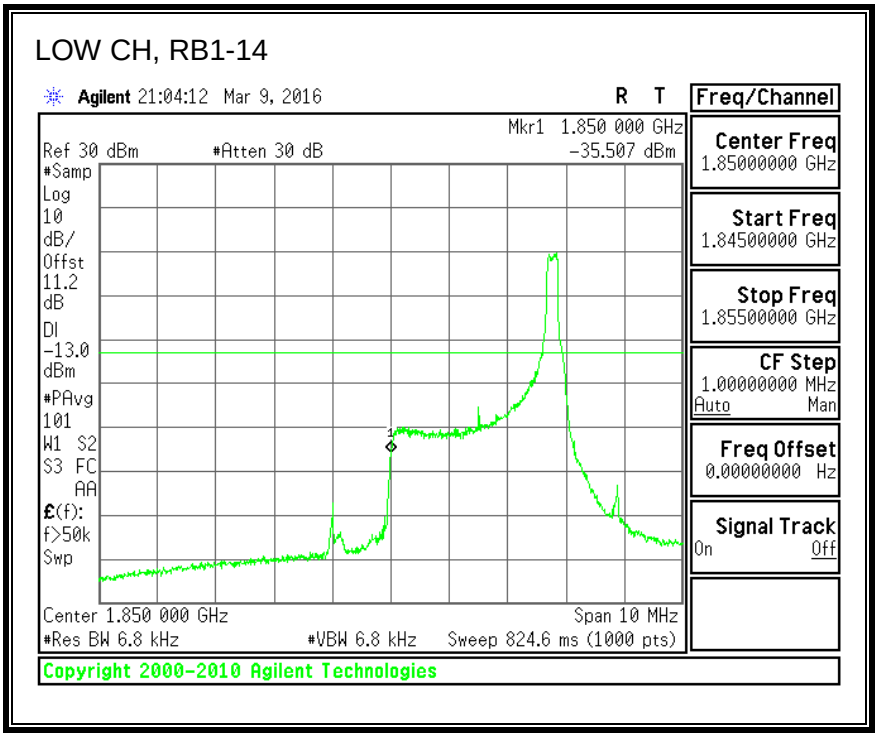
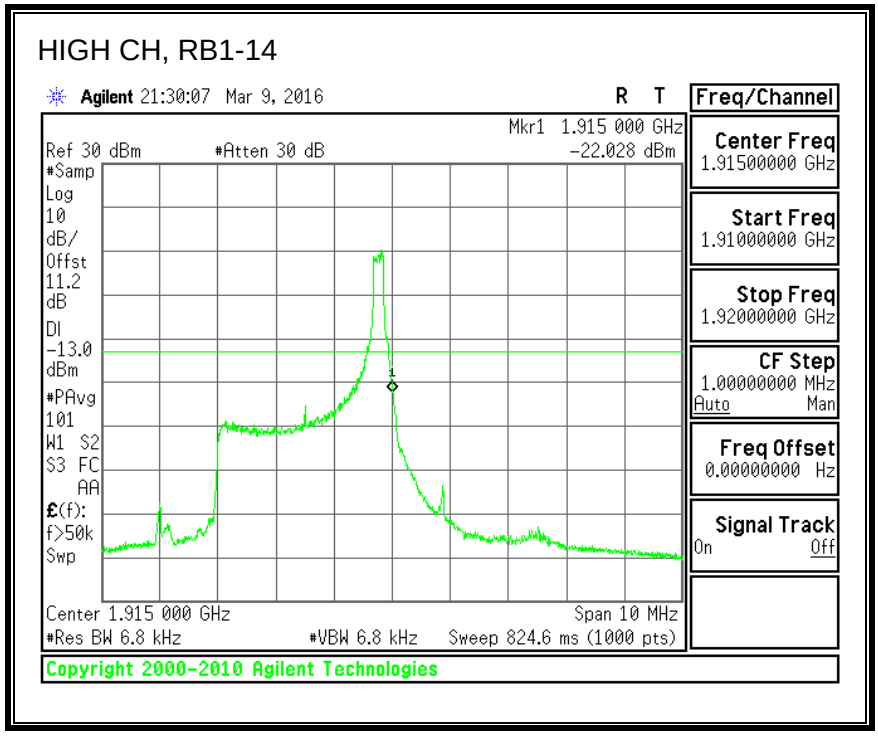
LOW CH, RB1-14



HIGH CH, RB1-14



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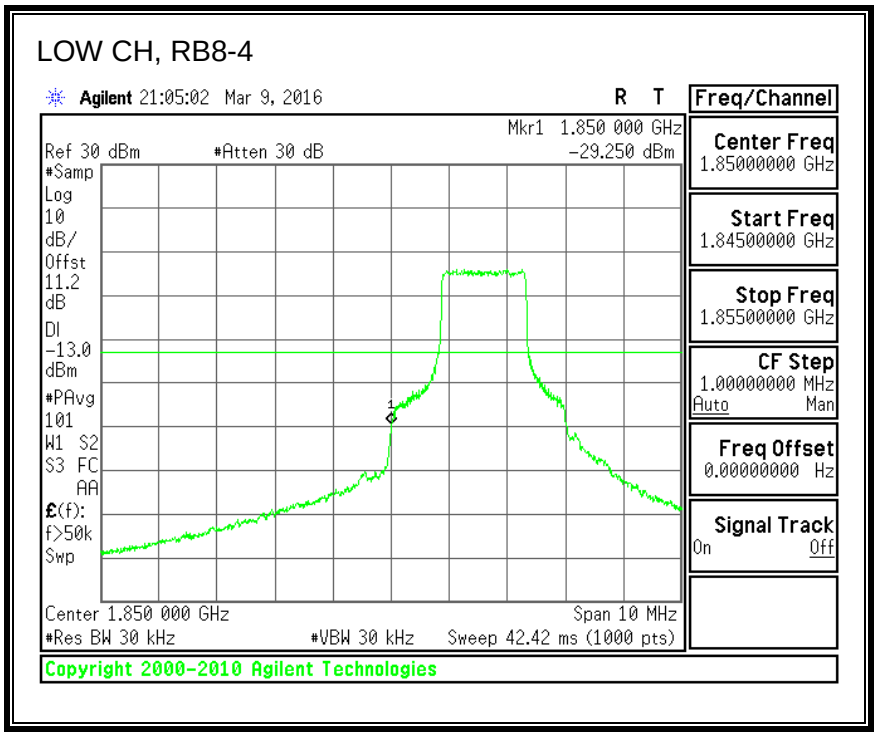
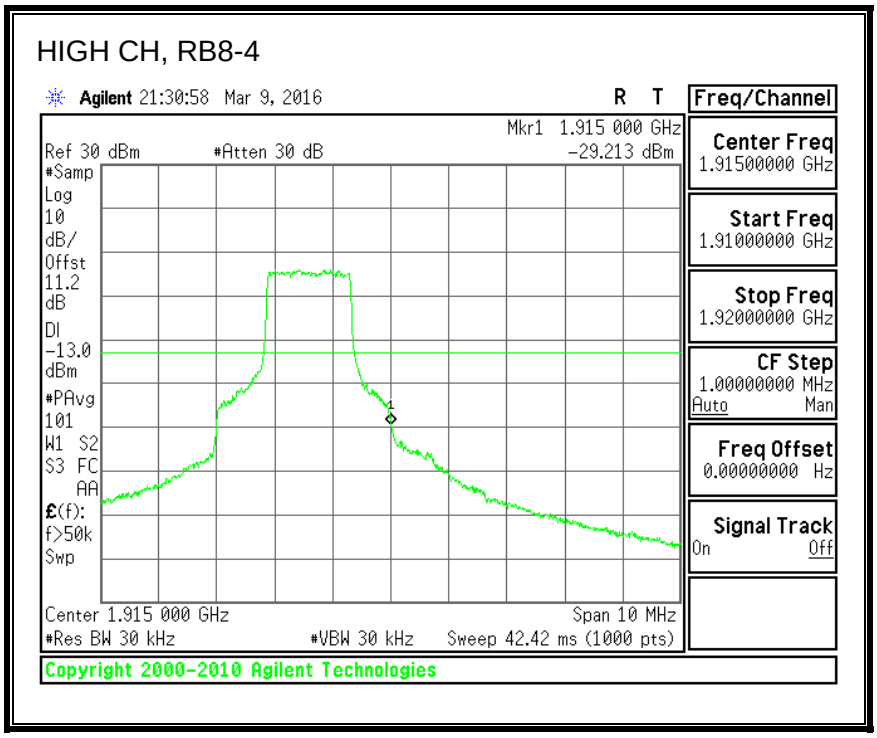
LOW CH, RB8-4



HIGH CH, RB8-4



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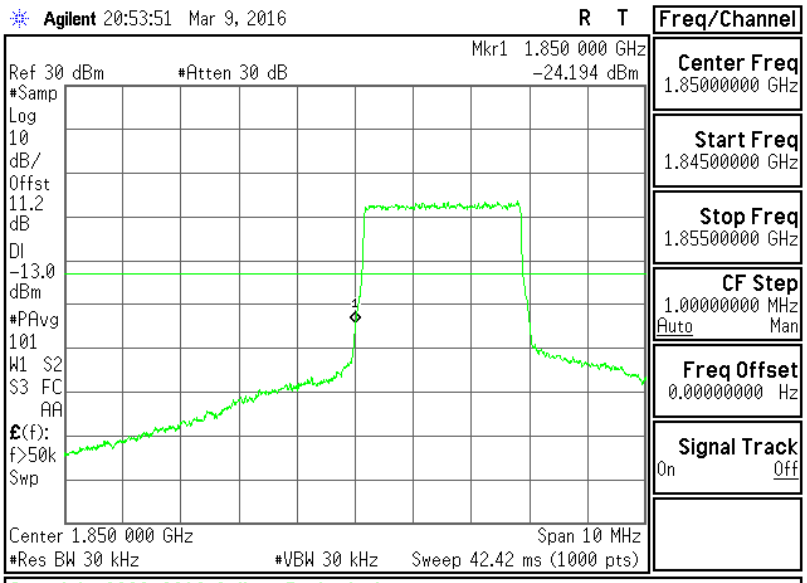
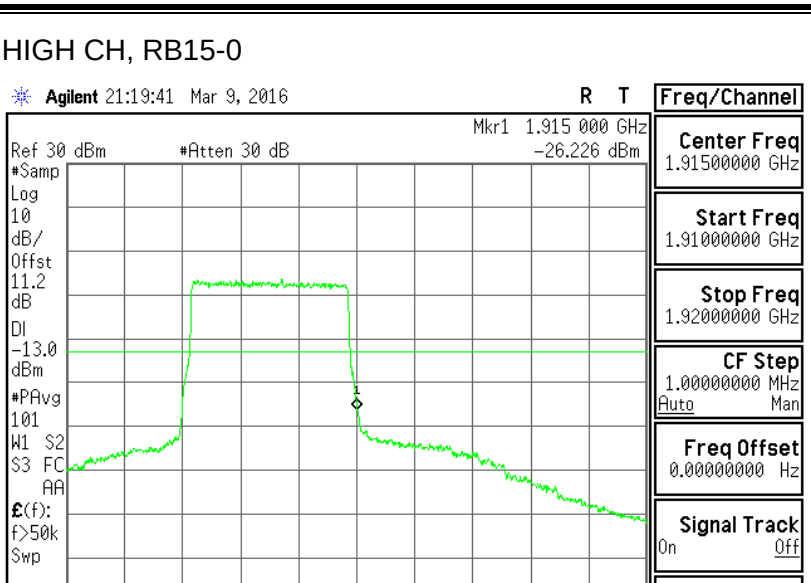
LOW CH, RB15-0



HIGH CH, RB15-0



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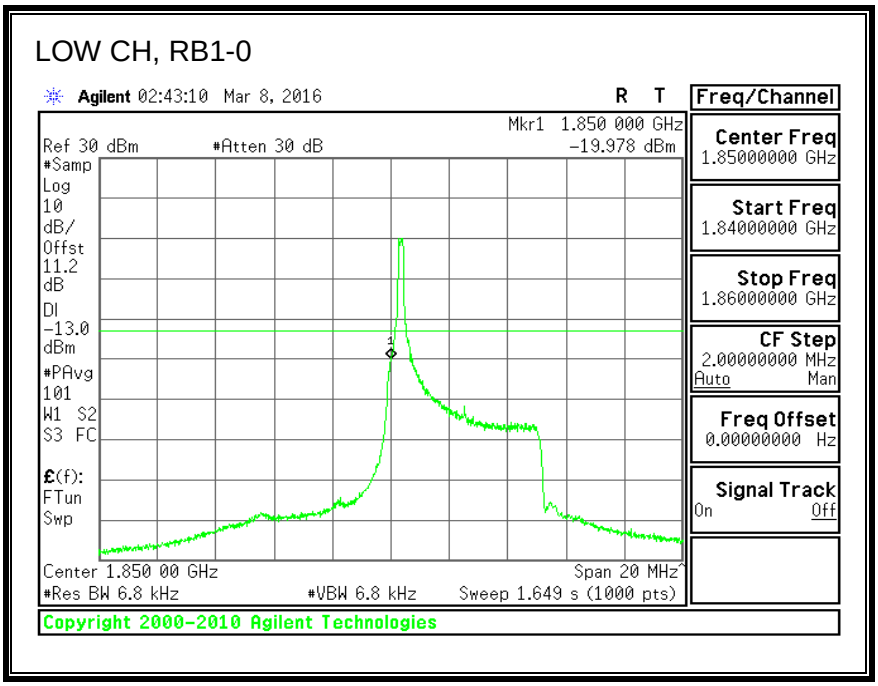
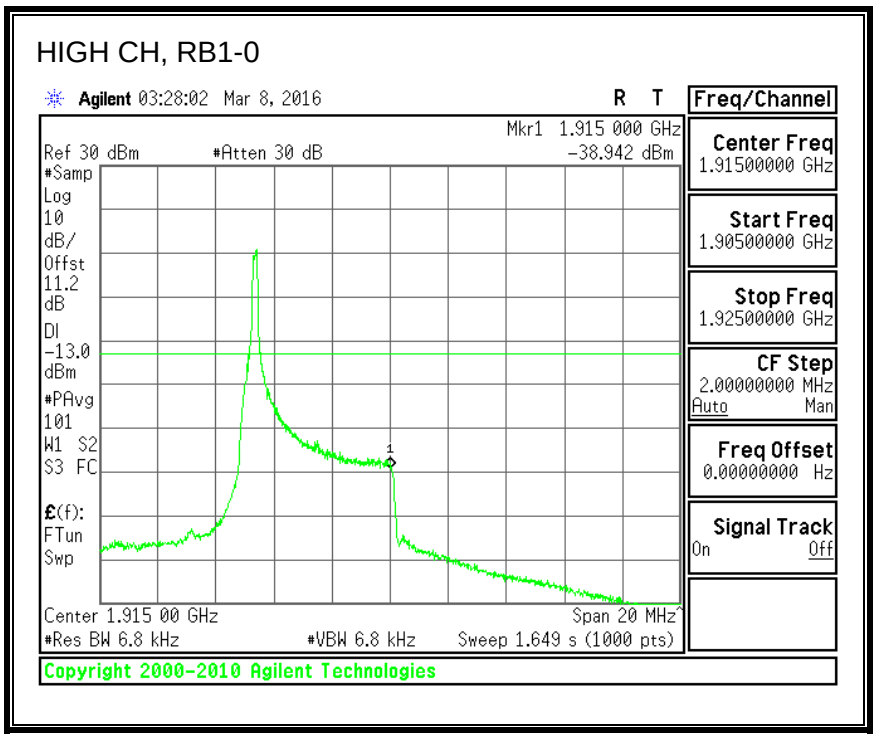
QPSK, (5.0 MHz BAND WIDTH)

LOW CH, RB1-0



HIGH CH, RB1-0



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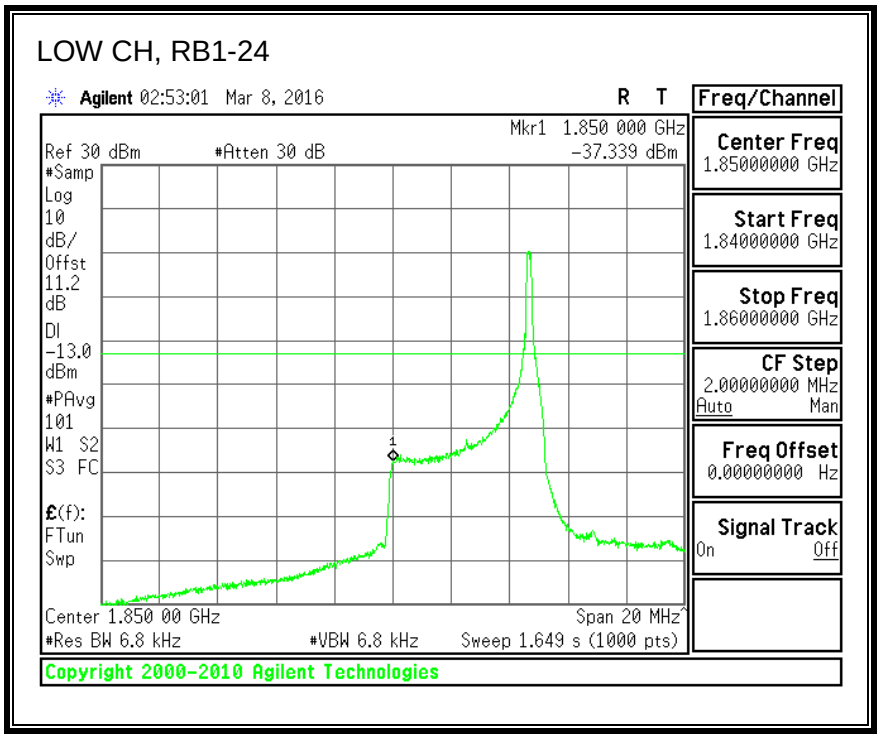
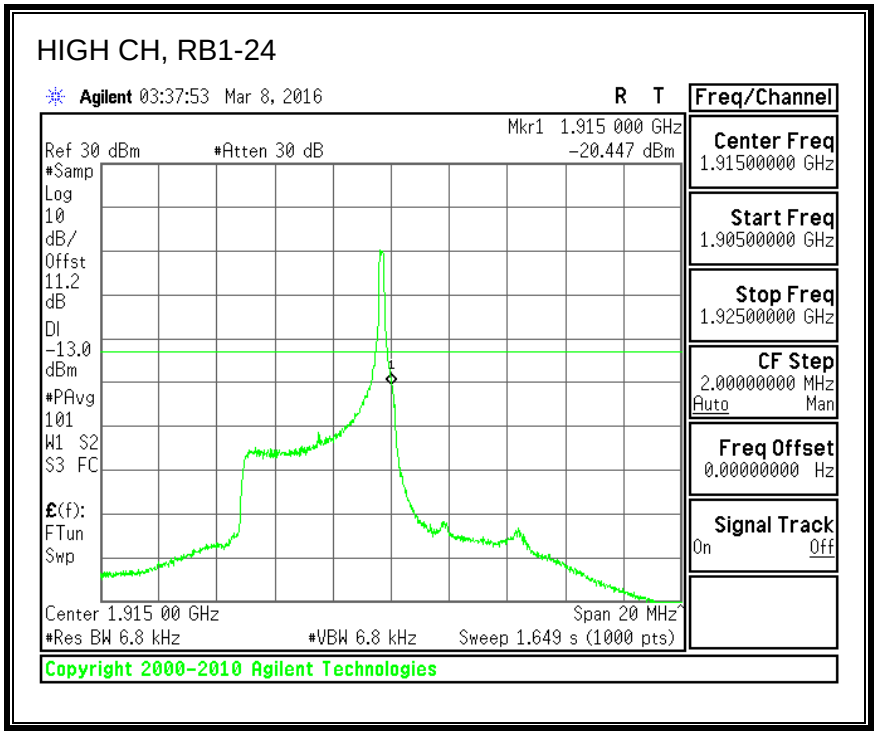
LOW CH, RB1-24



HIGH CH, RB1-24



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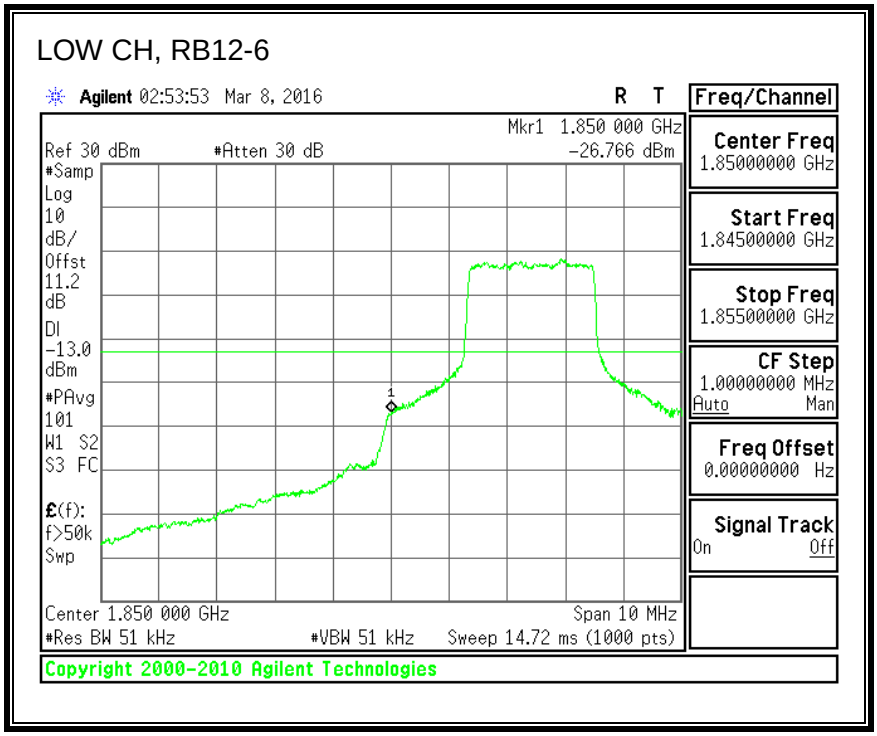
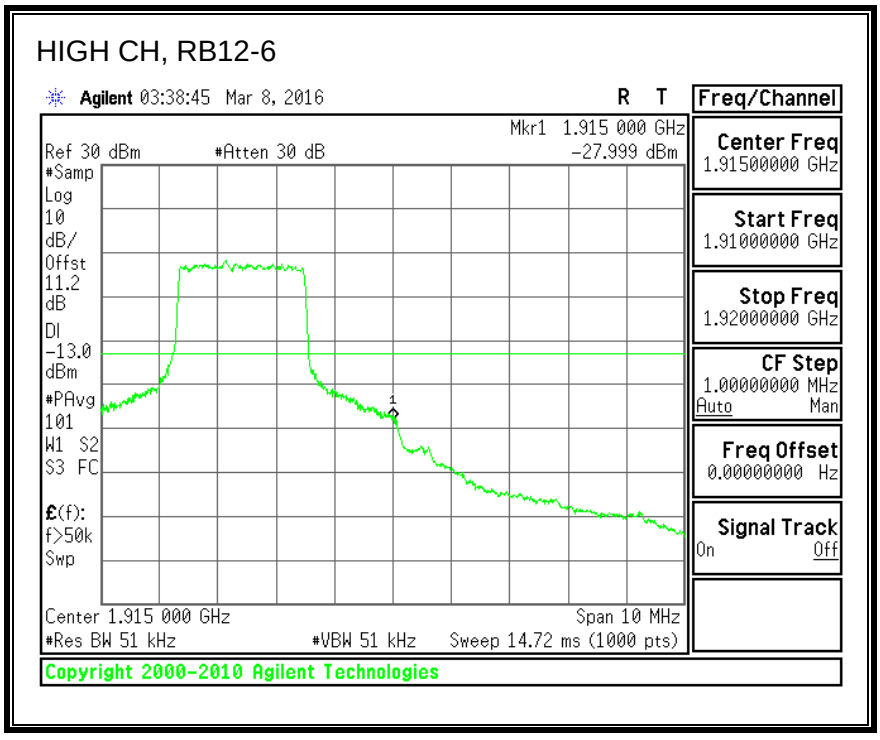
LOW CH, RB12-6



HIGH CH, RB12-6



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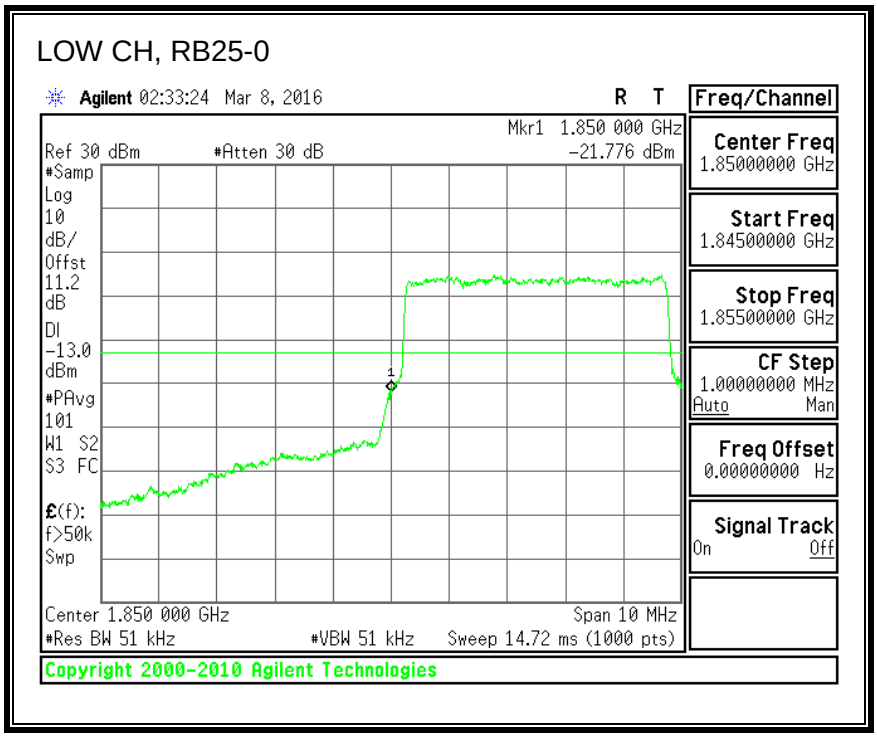
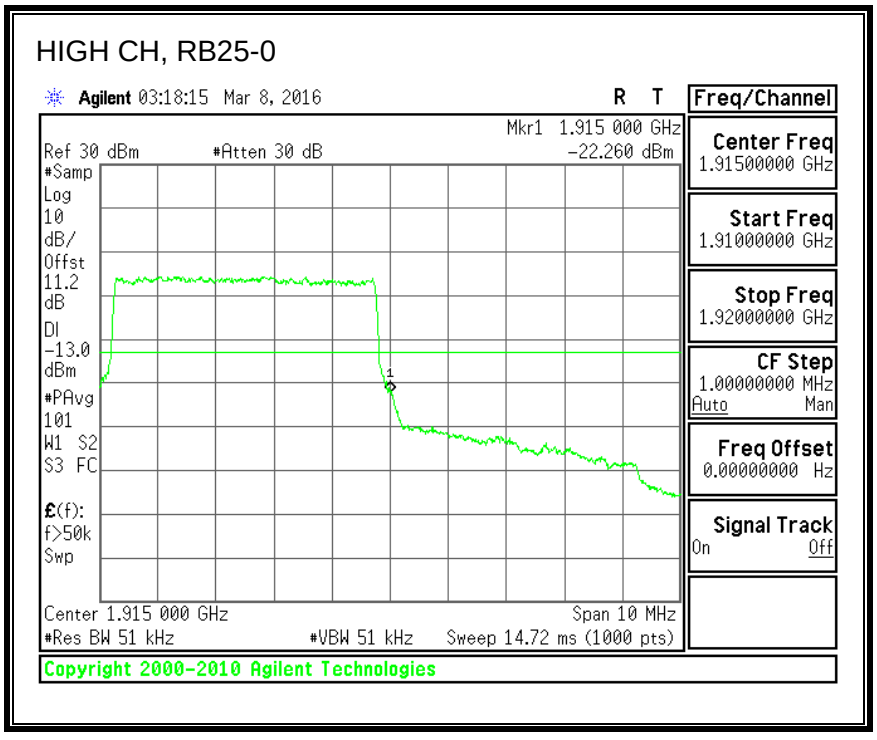
LOW CH, RB25-0



HIGH CH, RB25-0



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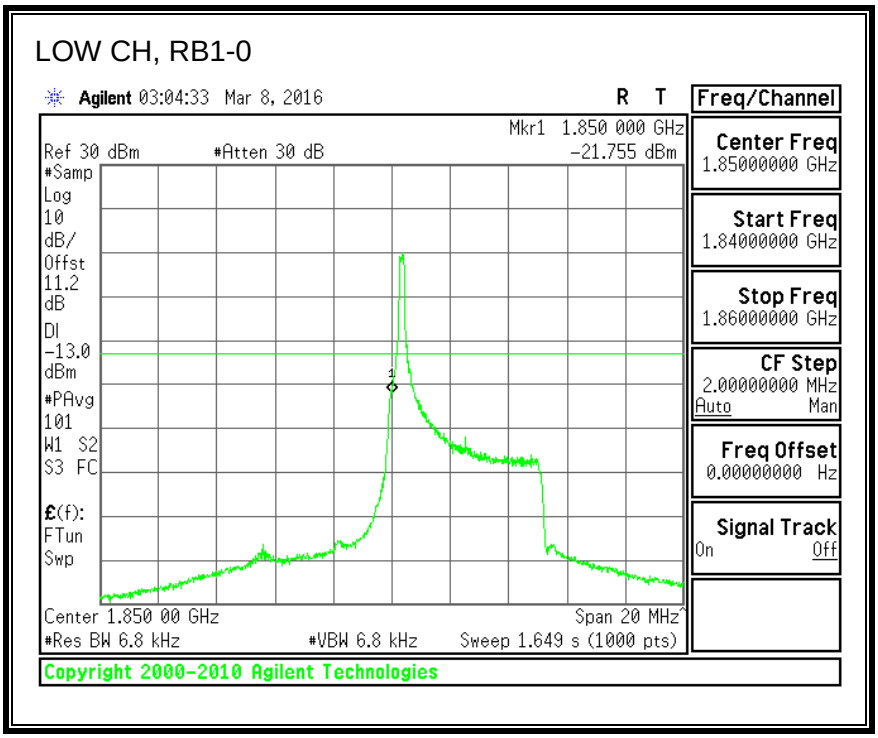
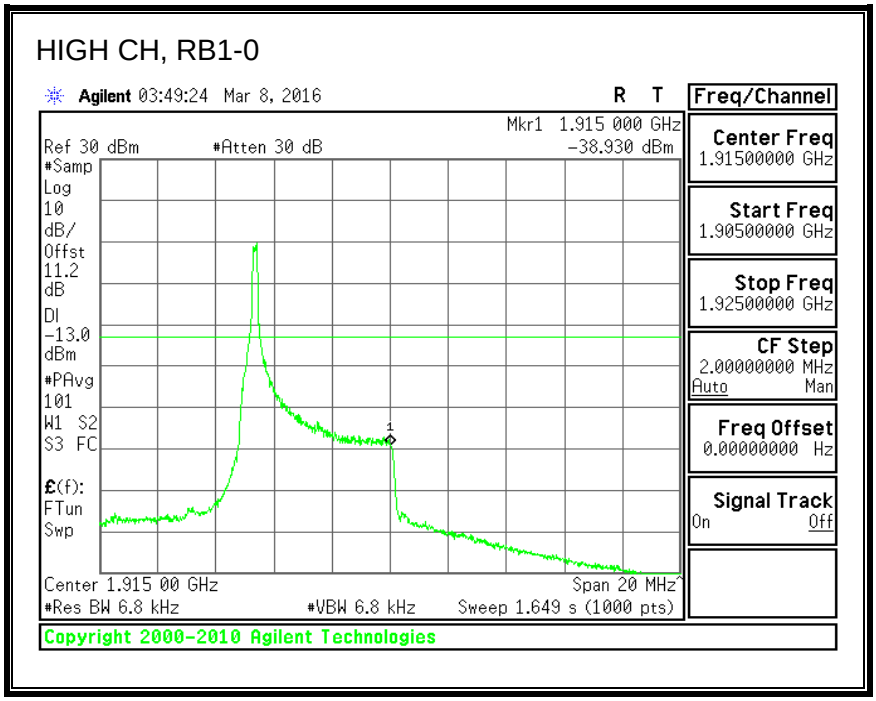
16QAM, (5.0 MHz BAND WIDTH)

LOW CH, RB1-0



HIGH CH, RB1-0



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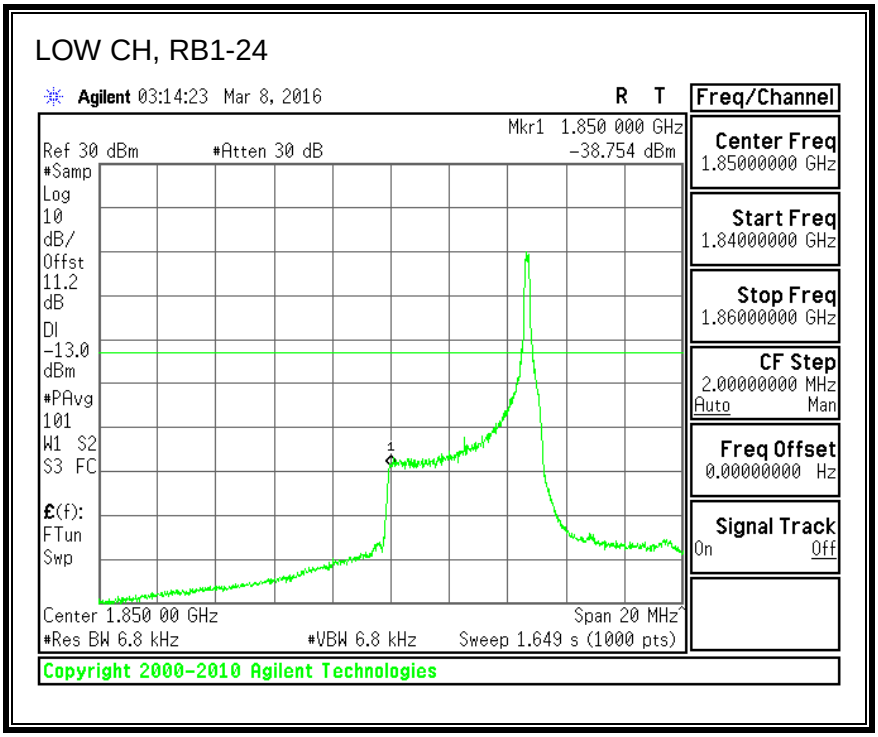
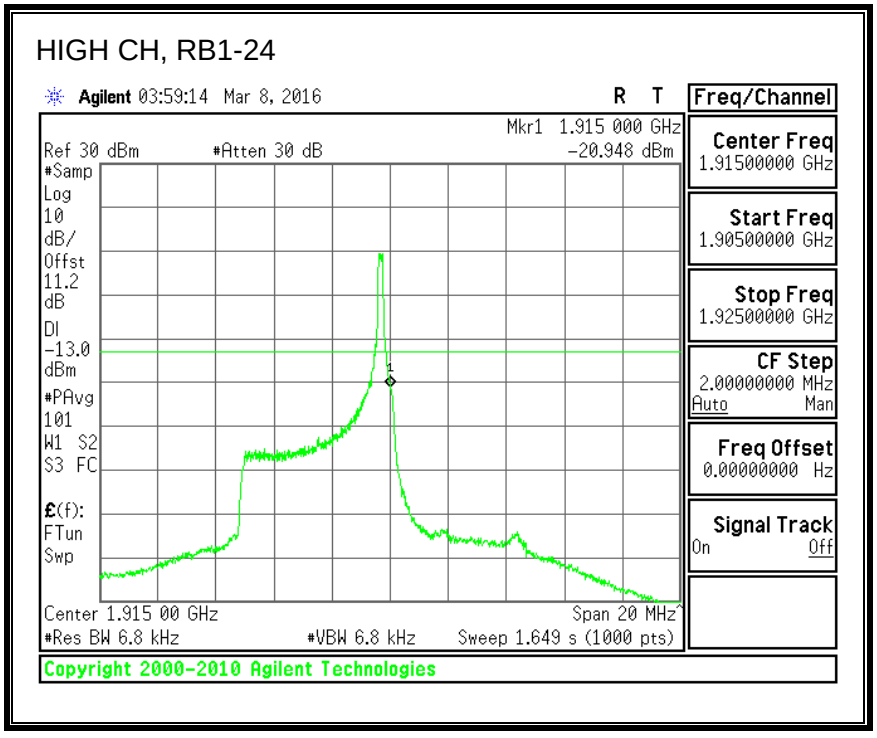
LOW CH, RB1-24



HIGH CH, RB1-24



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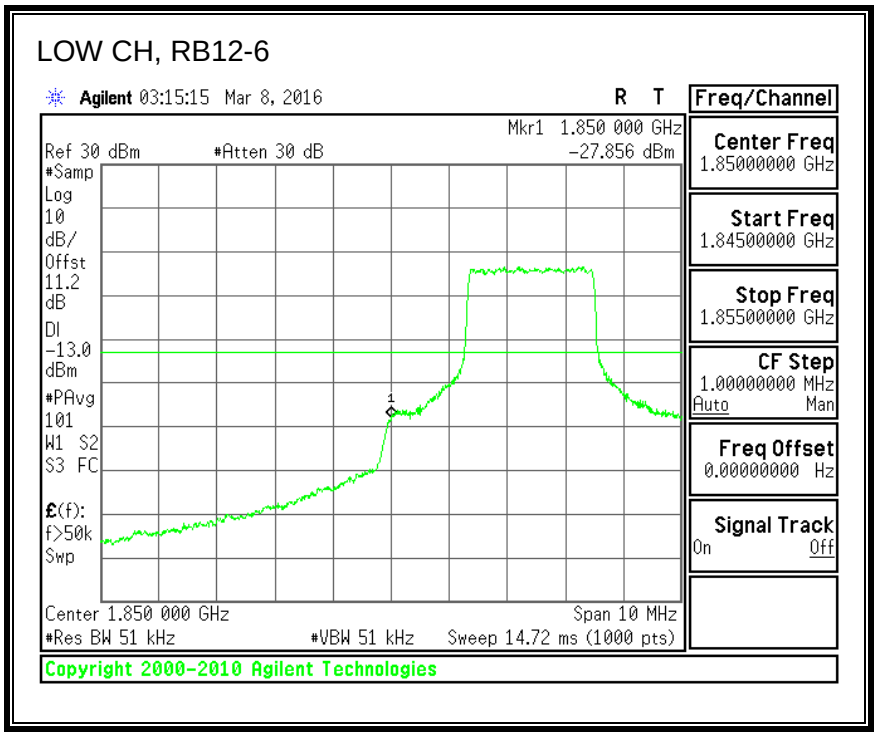
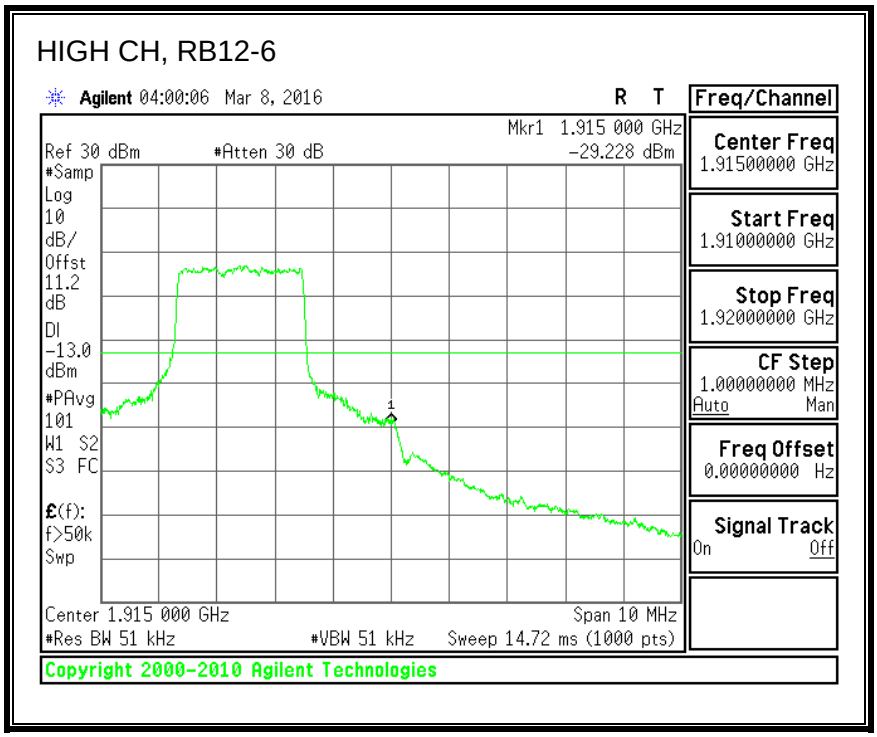
LOW CH, RB12-6



HIGH CH, RB12-6



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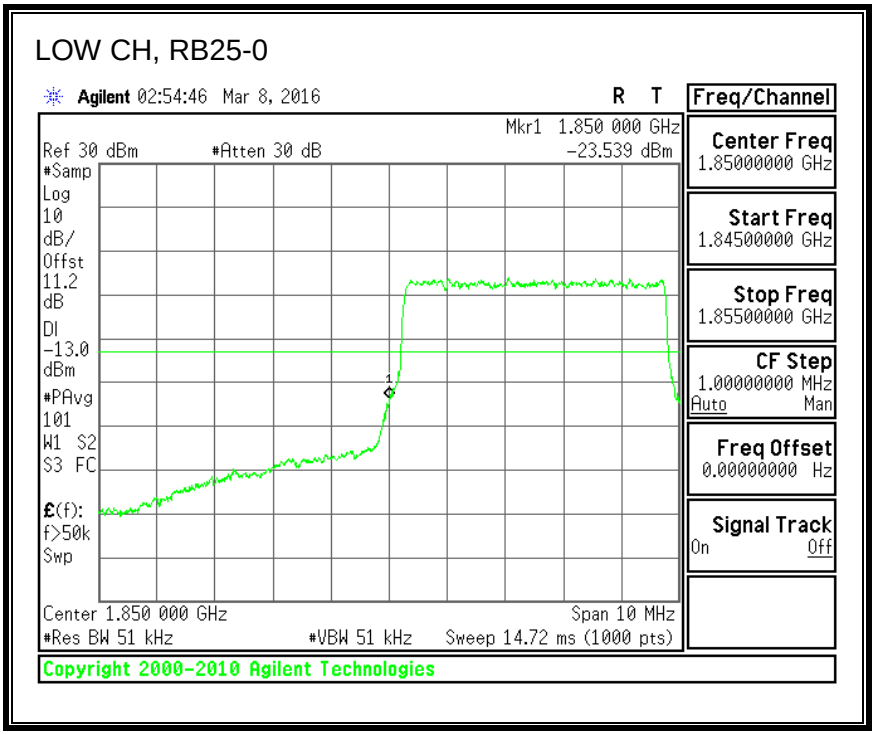
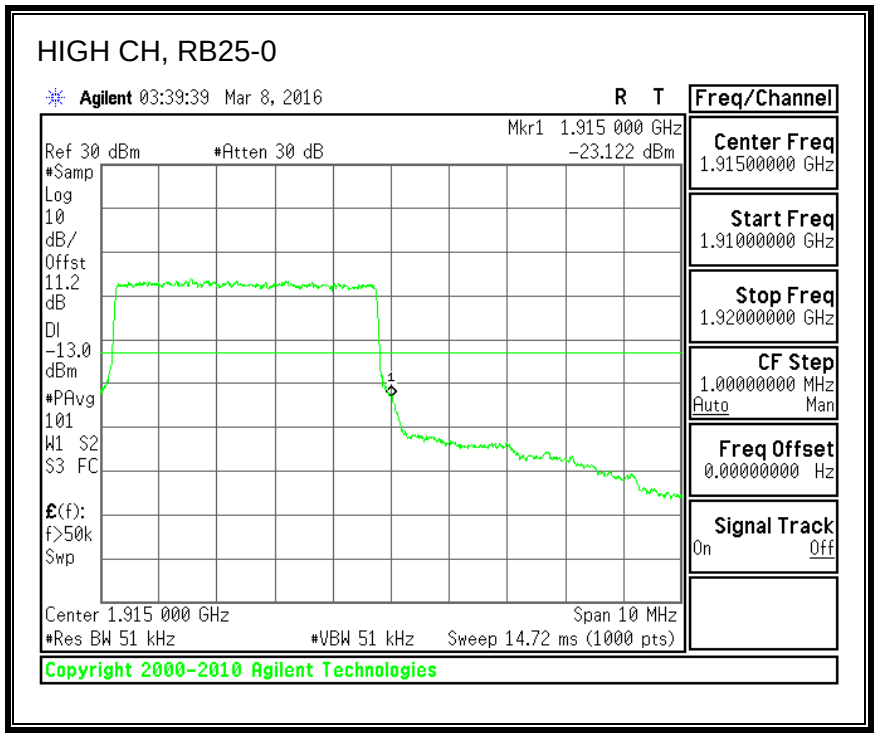
LOW CH, RB25-0



HIGH CH, RB25-0



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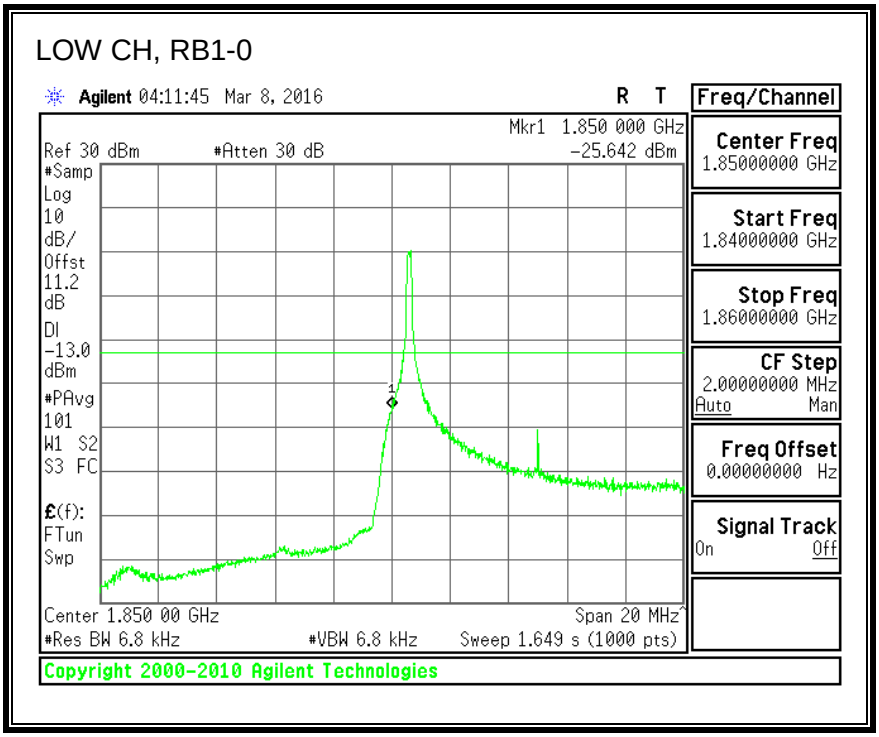
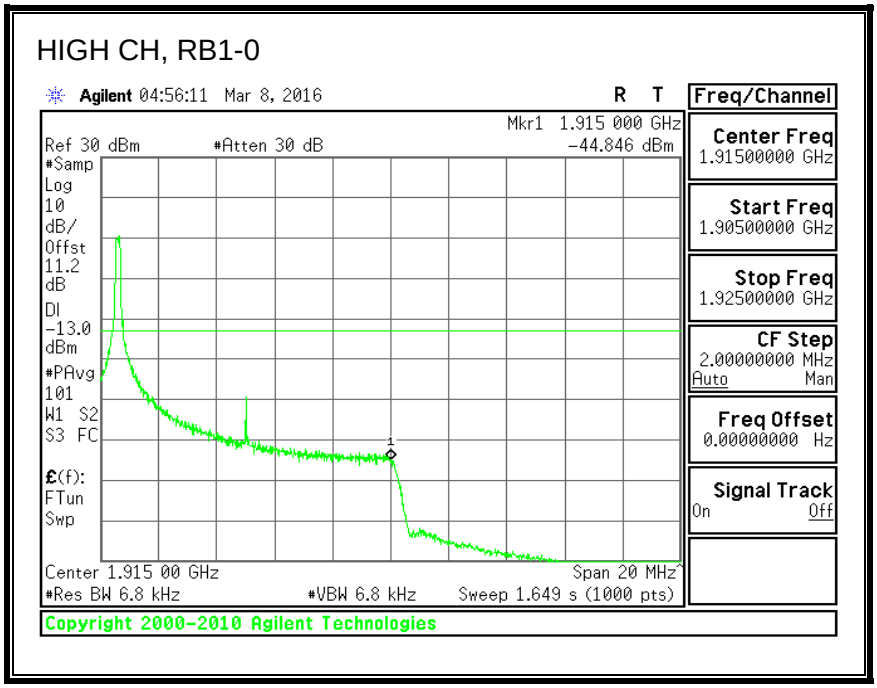
QPSK, (10.0 MHz BAND WIDTH)

LOW CH, RB1-0



HIGH CH, RB1-0



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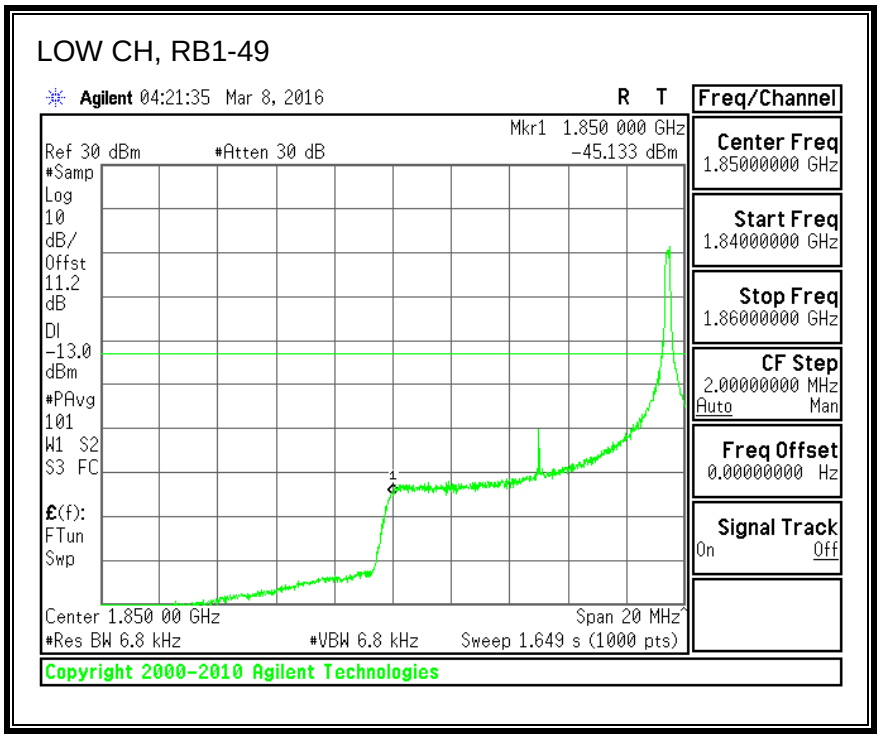
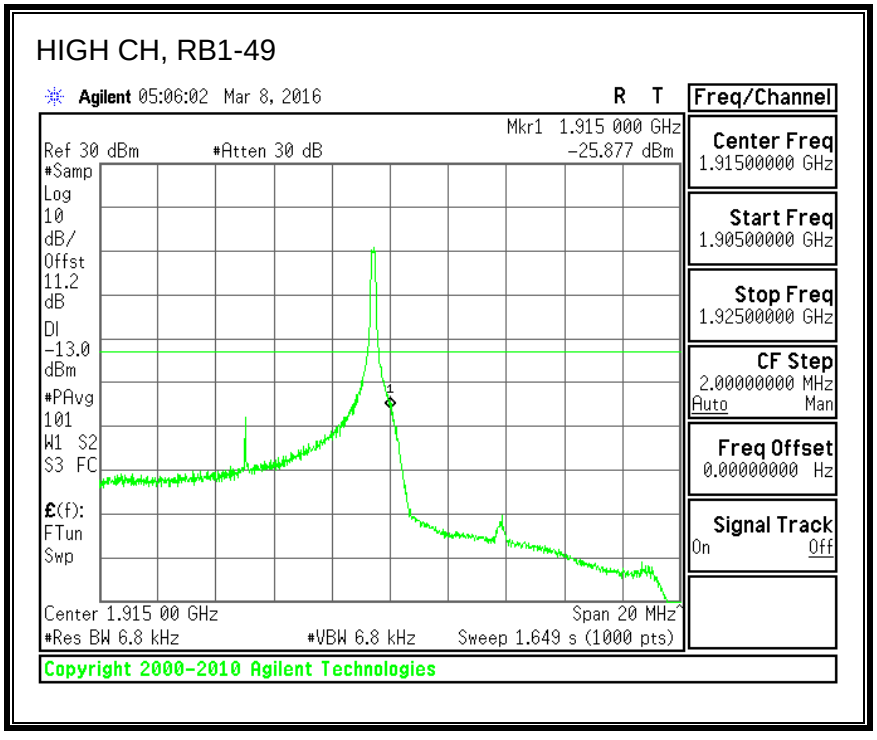
LOW CH, RB1-49



HIGH CH, RB1-49



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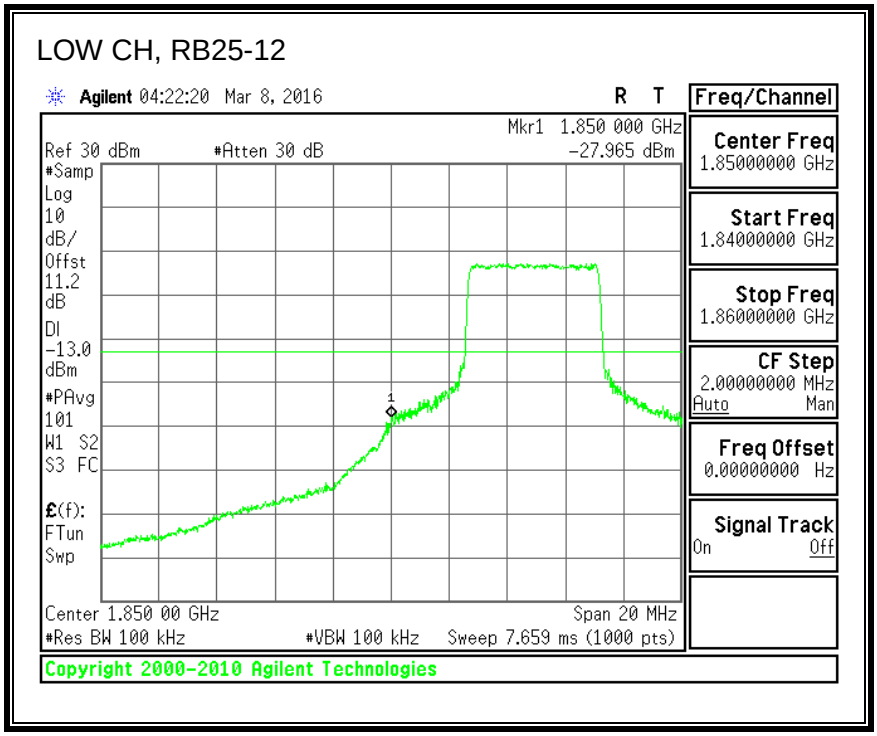
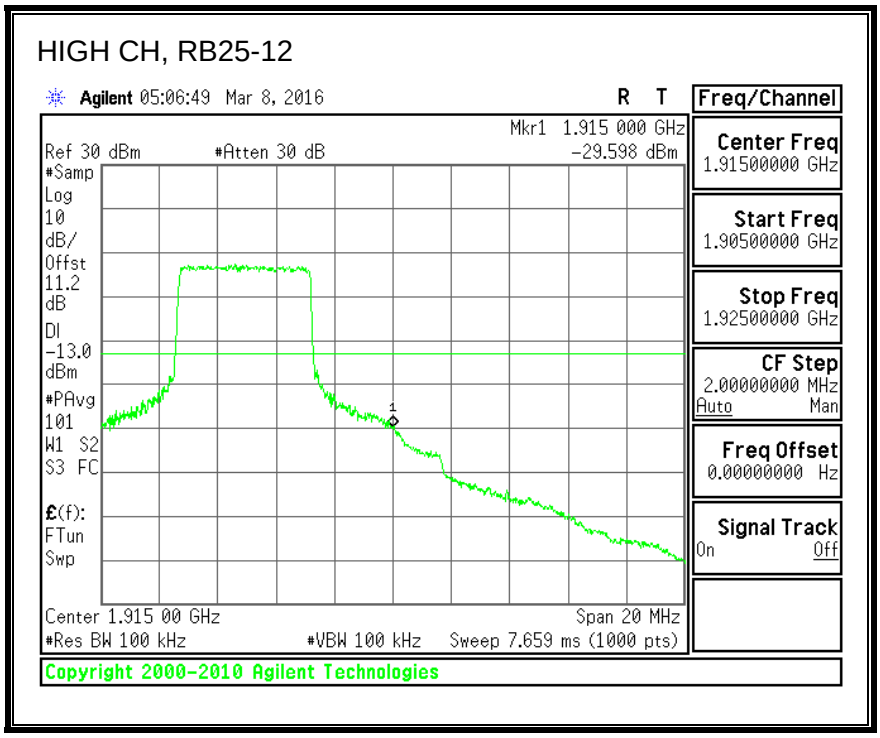
LOW CH, RB25-12



HIGH CH, RB25-12



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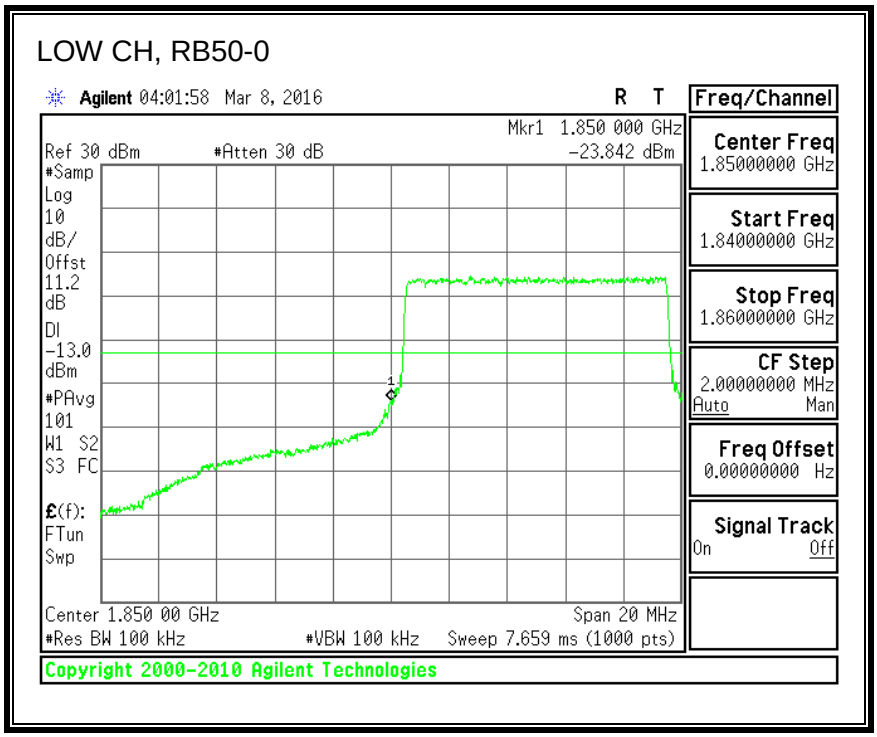
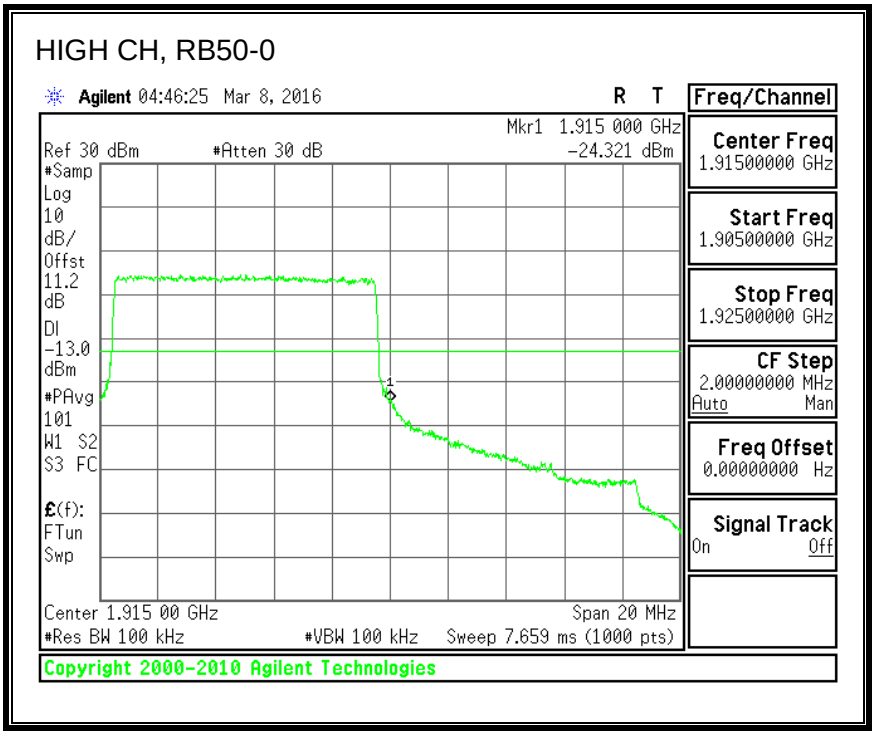
LOW CH, RB50-0



HIGH CH, RB50-0



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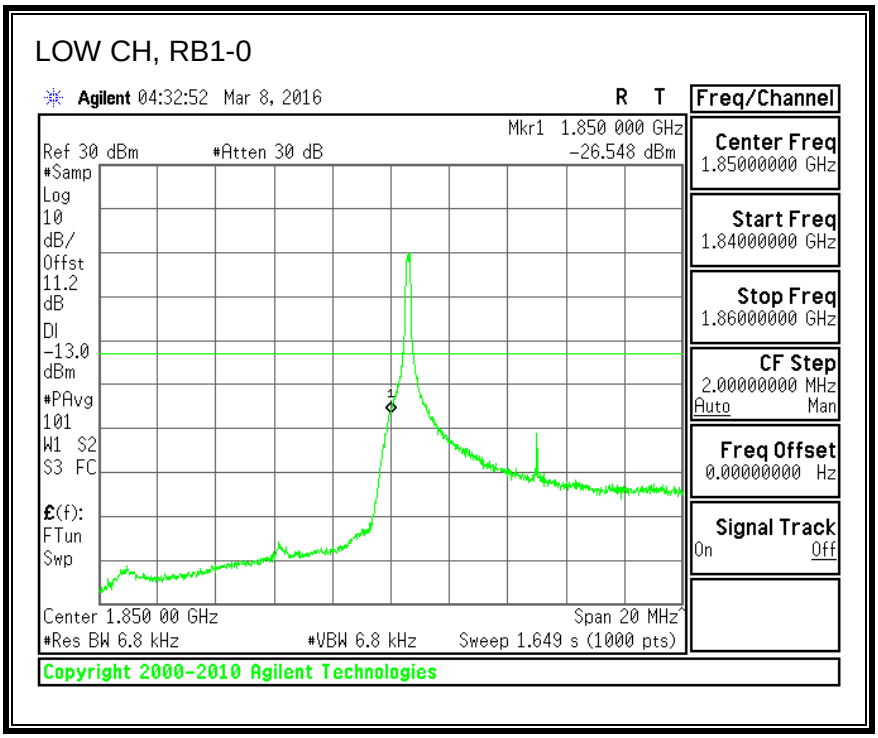
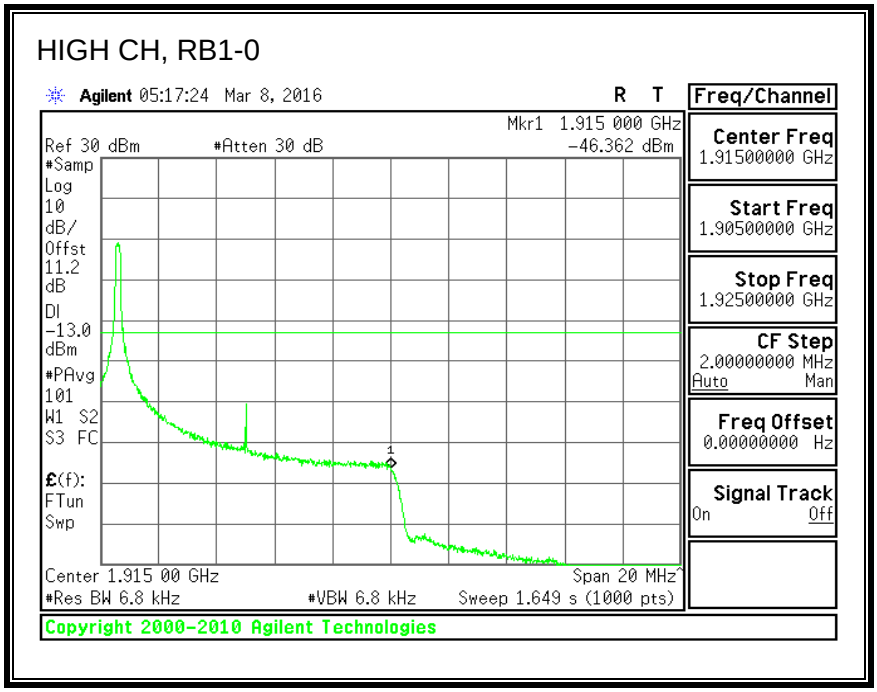
16QAM, (10.0 MHz BAND WIDTH)

LOW CH, RB1-0



HIGH CH, RB1-0



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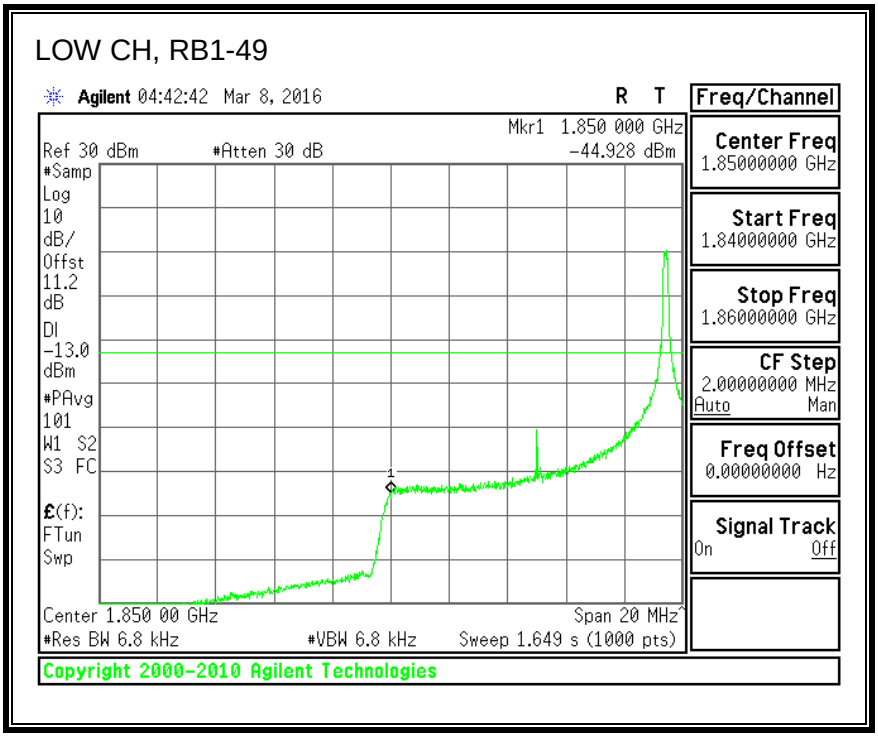
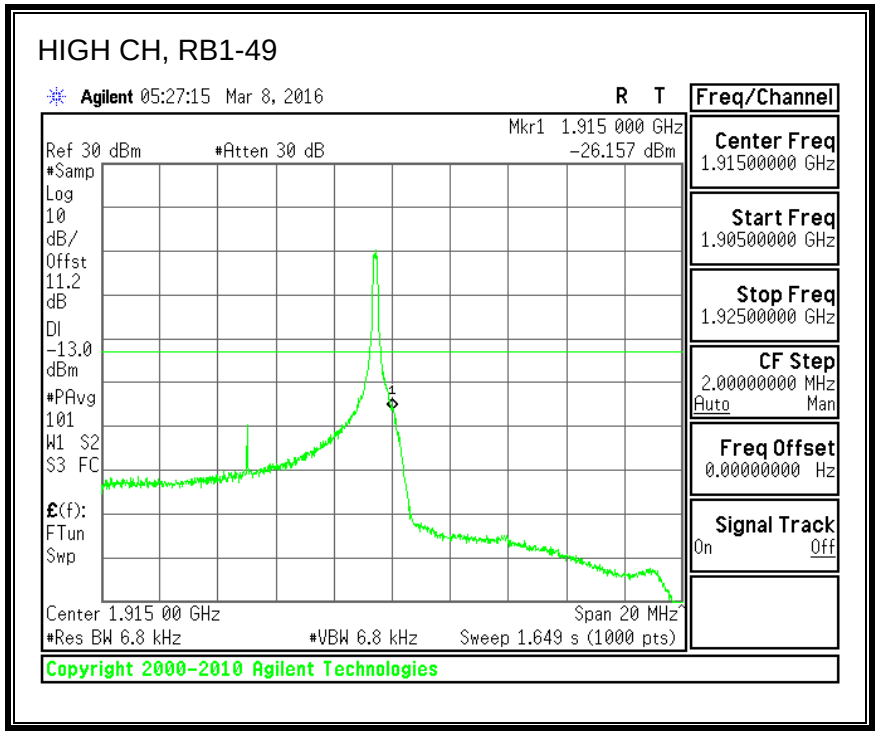
LOW CH, RB1-49



HIGH CH, RB1-49



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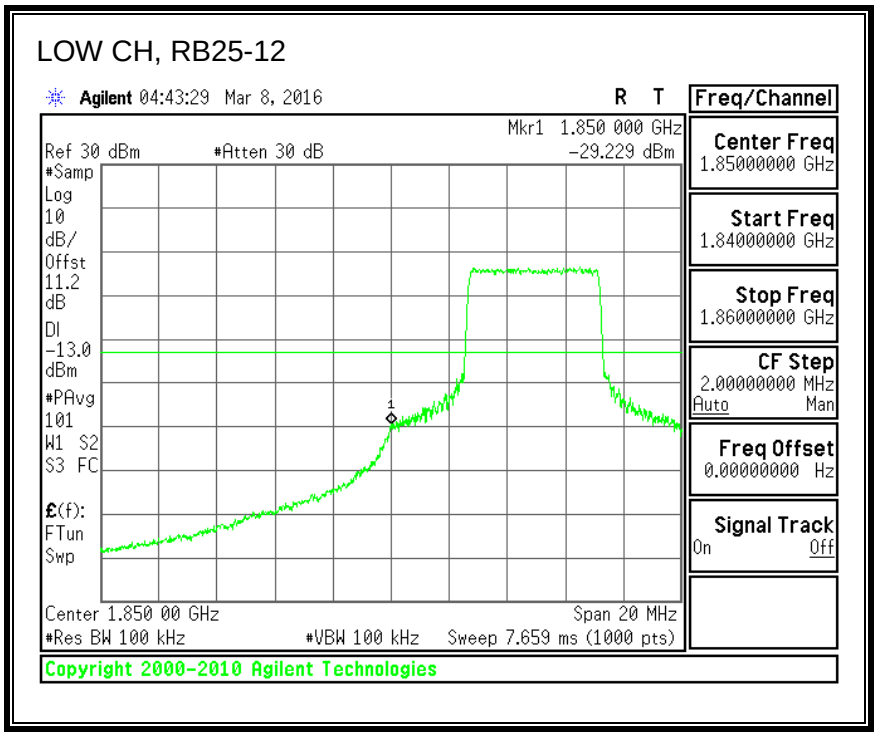
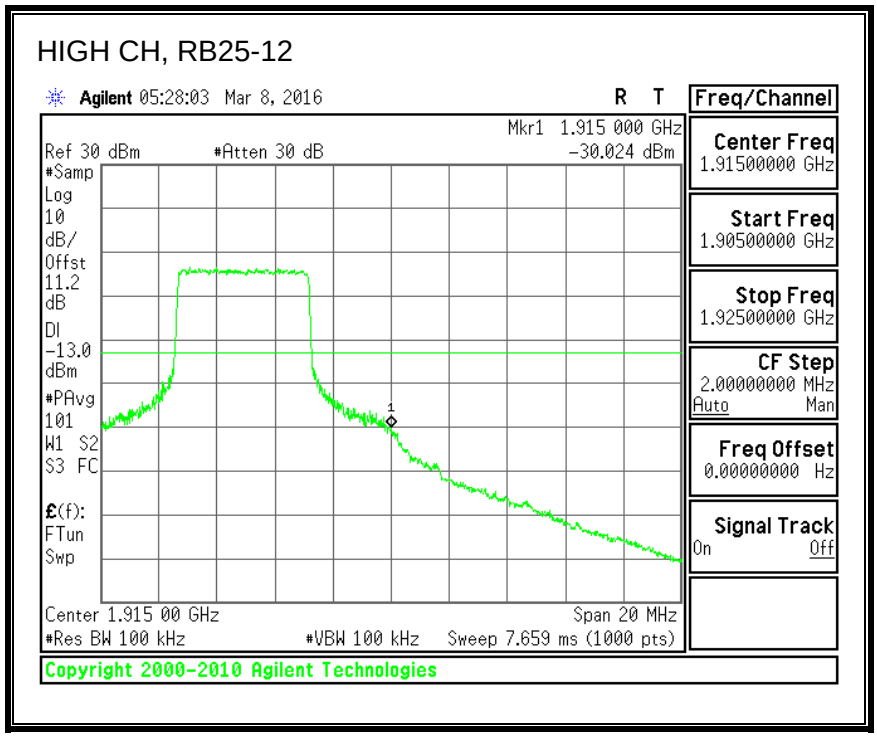
LOW CH, RB25-12



HIGH CH, RB25-12



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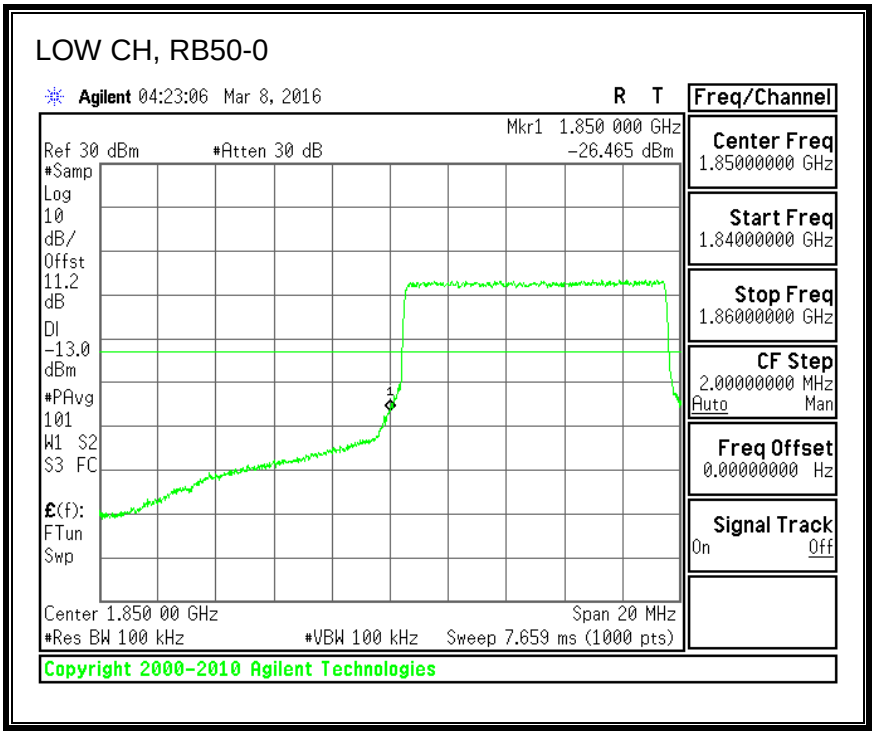
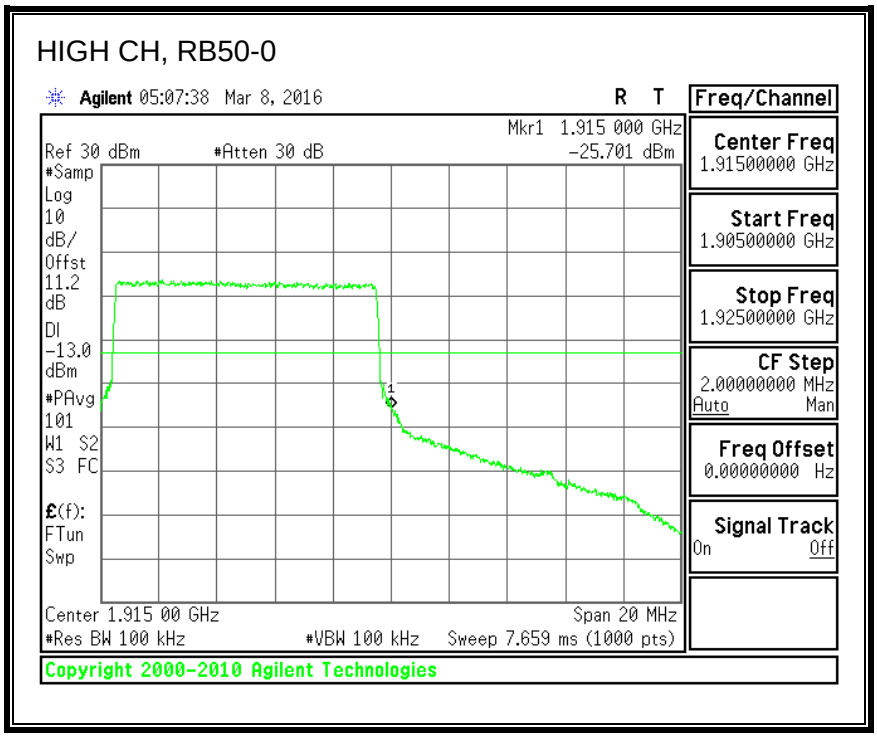
LOW CH, RB50-0



HIGH CH, RB50-0



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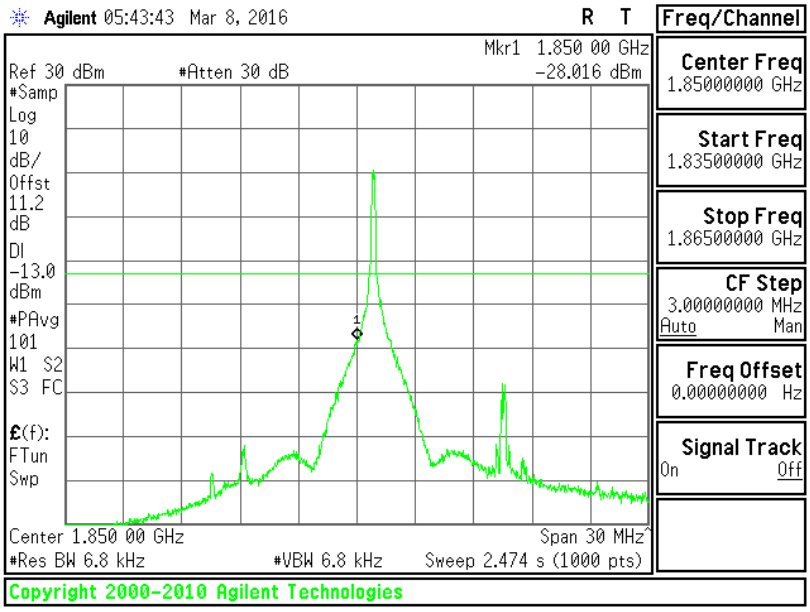
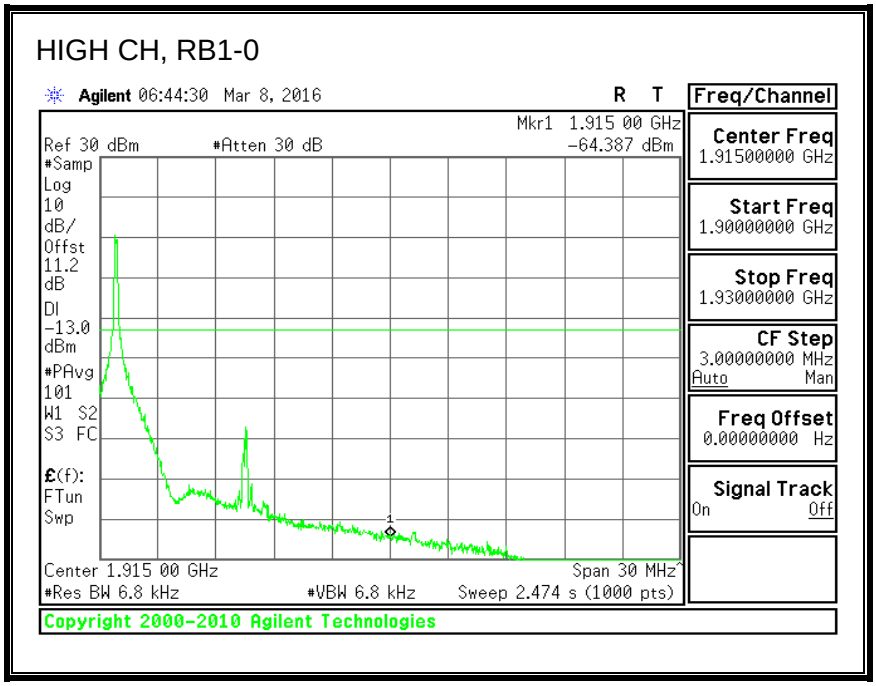
QPSK, (15.0 MHz BAND WIDTH)

LOW CH, RB1-0



HIGH CH, RB1-0



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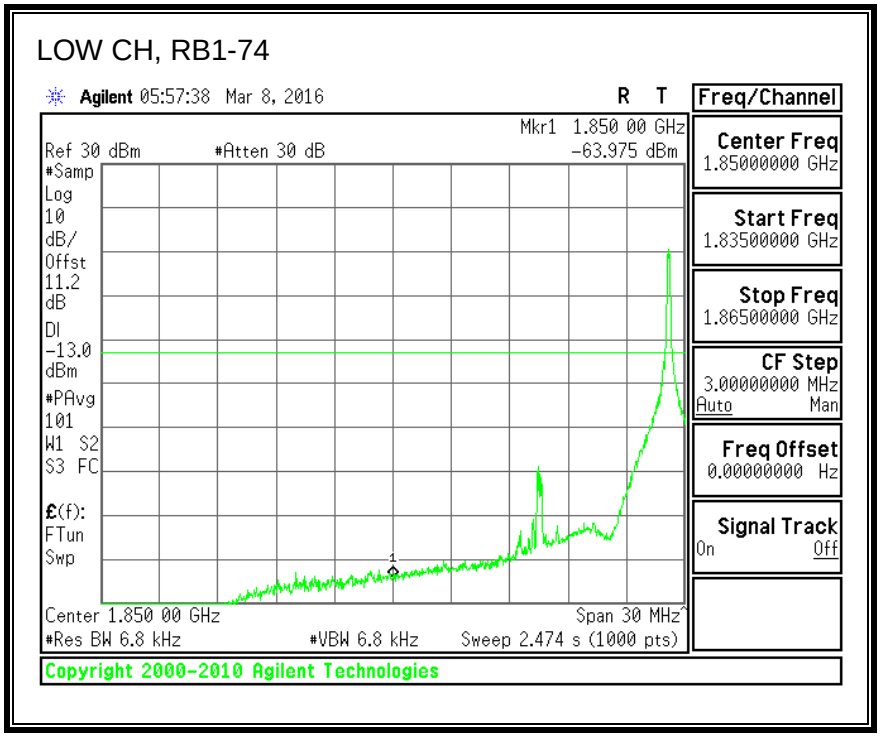
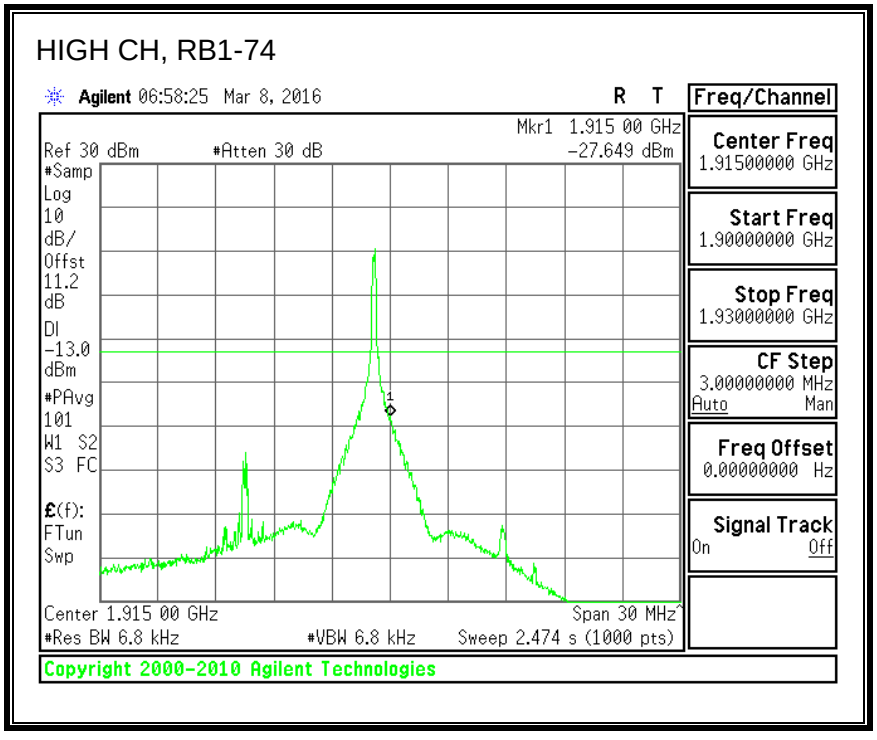
LOW CH, RB1-74



HIGH CH, RB1-74



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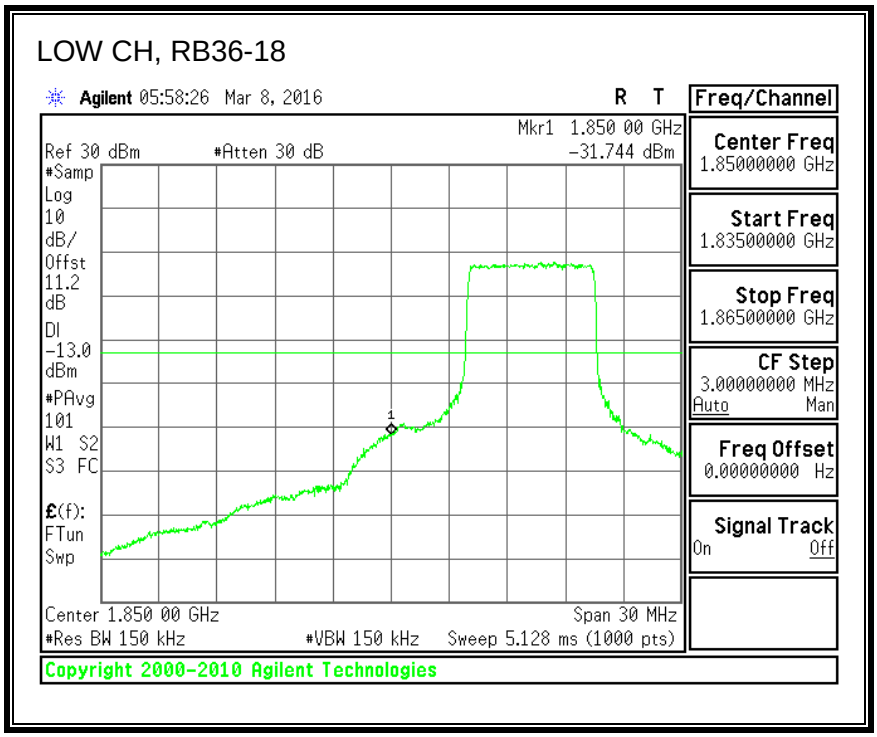
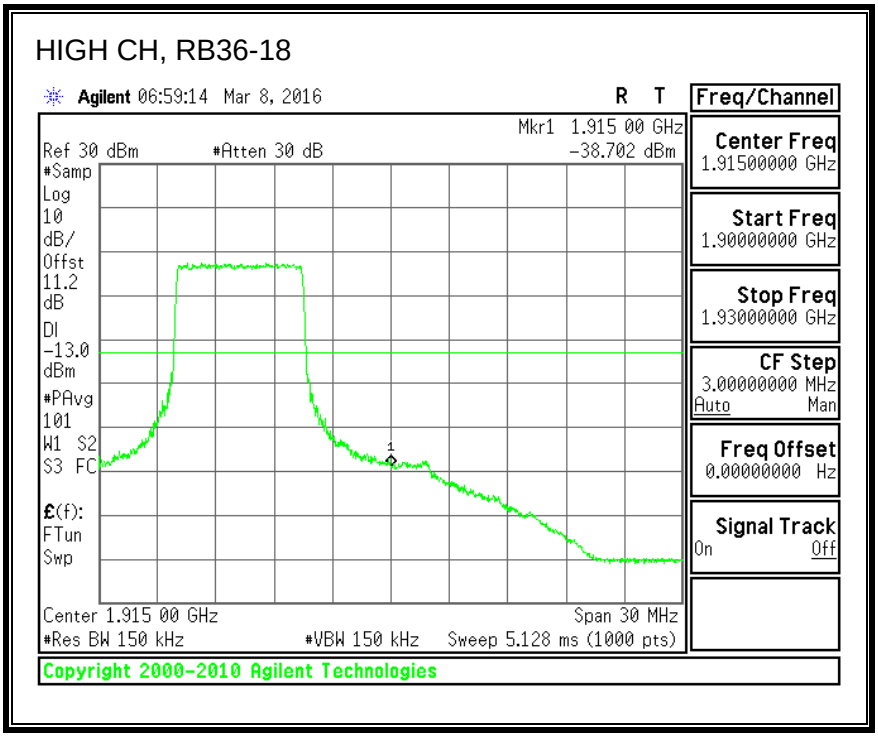
LOW CH, RB36-18



HIGH CH, RB36-18



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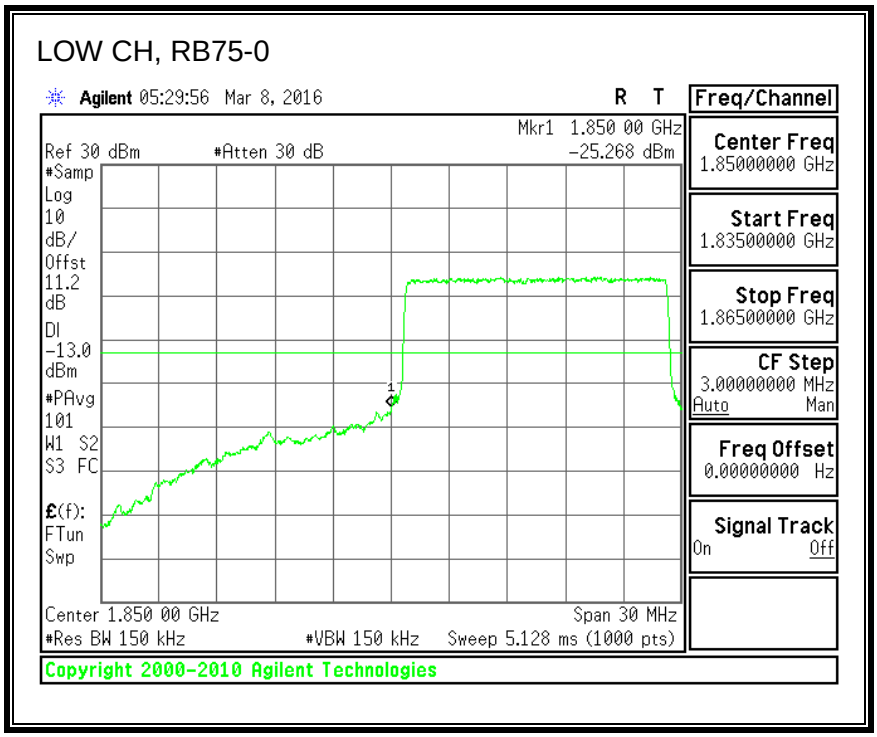
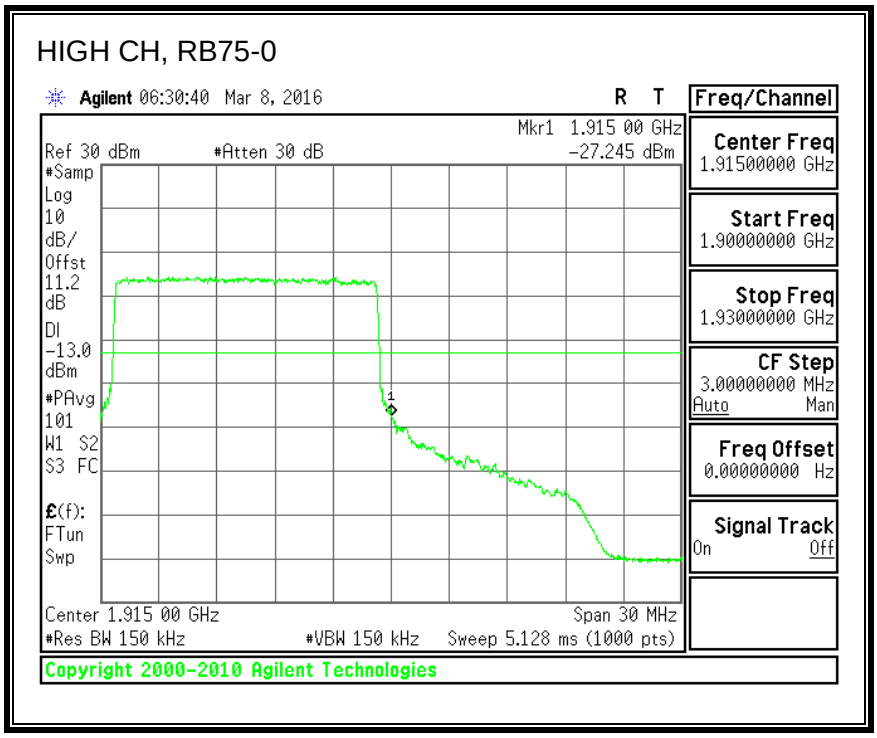
LOW CH, RB75-0



HIGH CH, RB75-0



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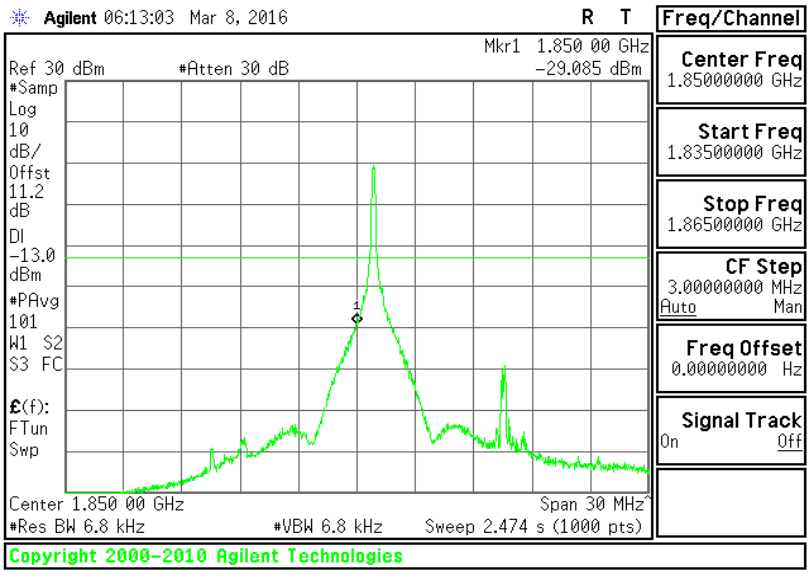
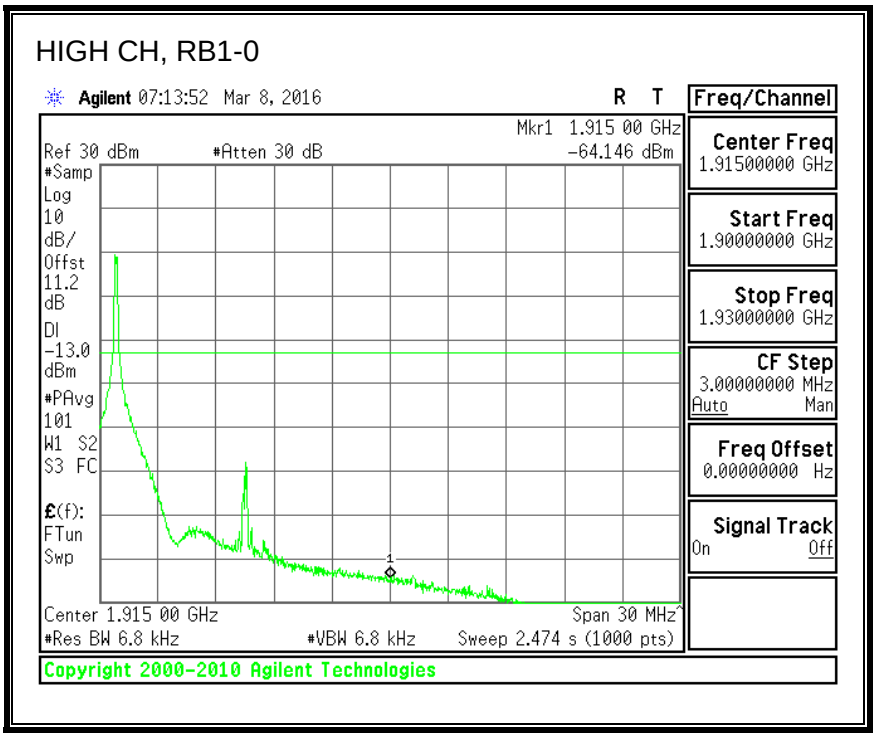
16QAM, (15.0 MHz BAND WIDTH)

LOW CH, RB1-0



HIGH CH, RB1-0



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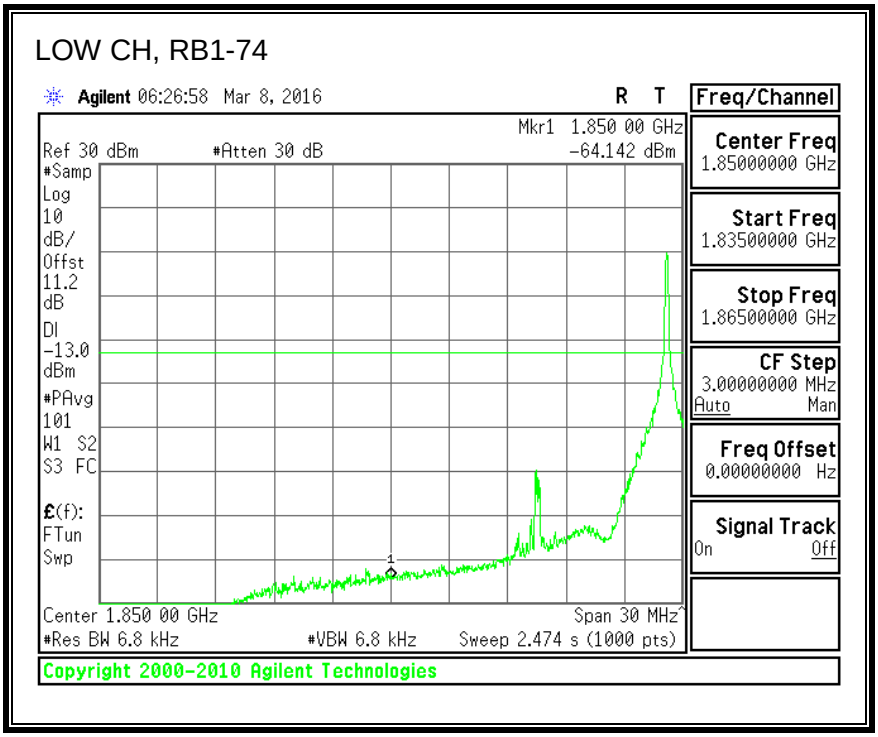
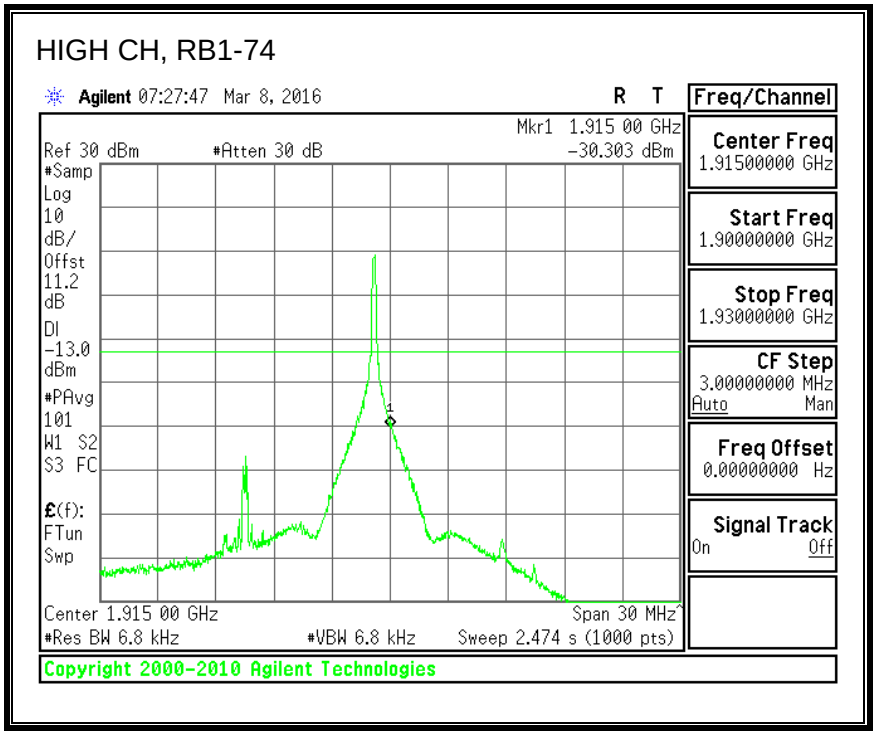
LOW CH, RB1-74



HIGH CH, RB1-74



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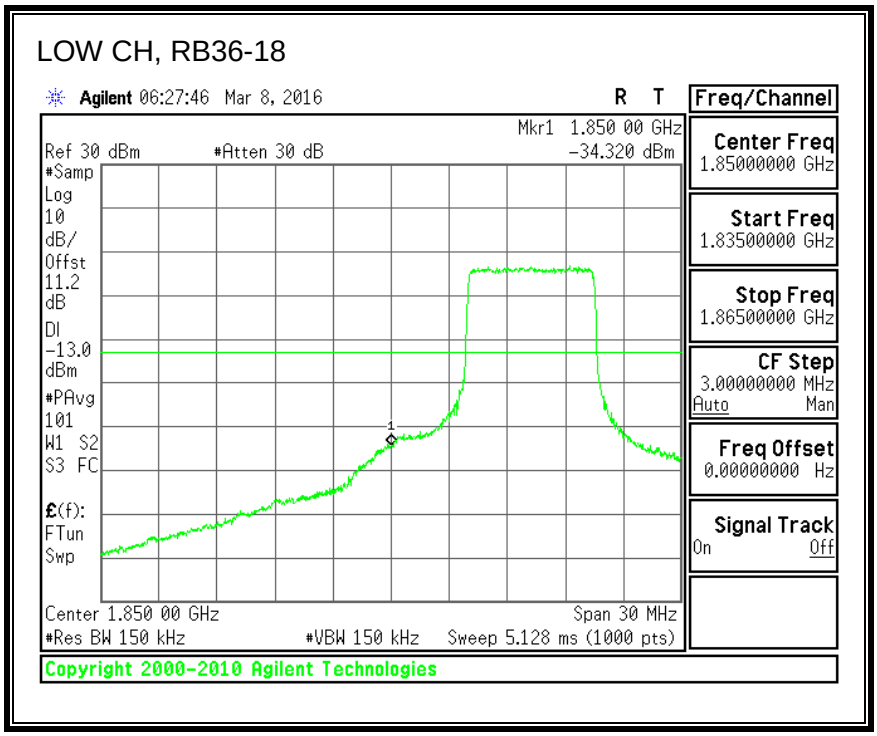
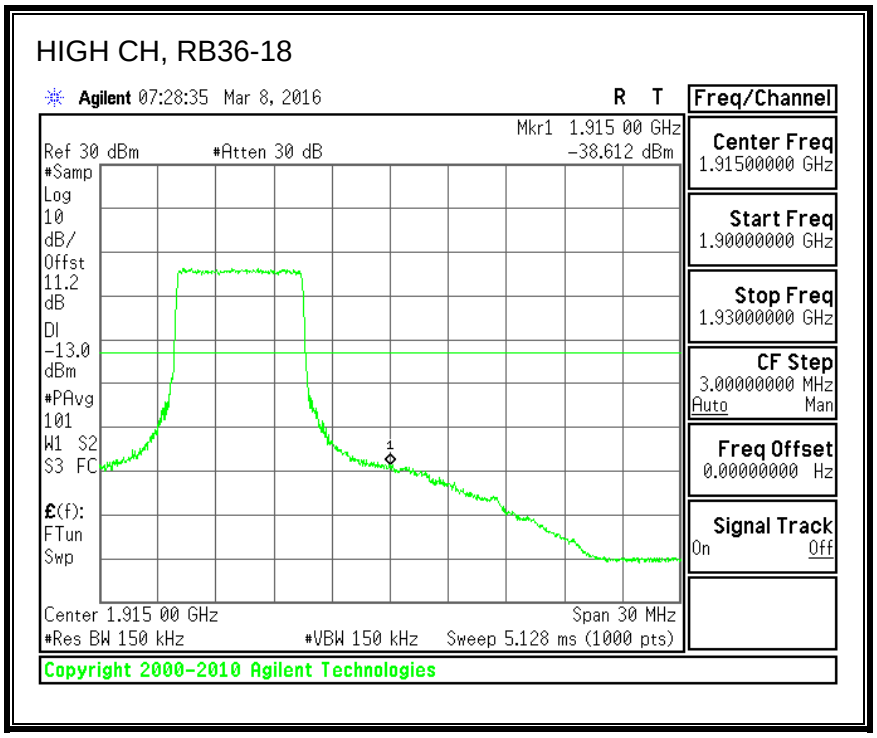
LOW CH, RB36-18



HIGH CH, RB36-18



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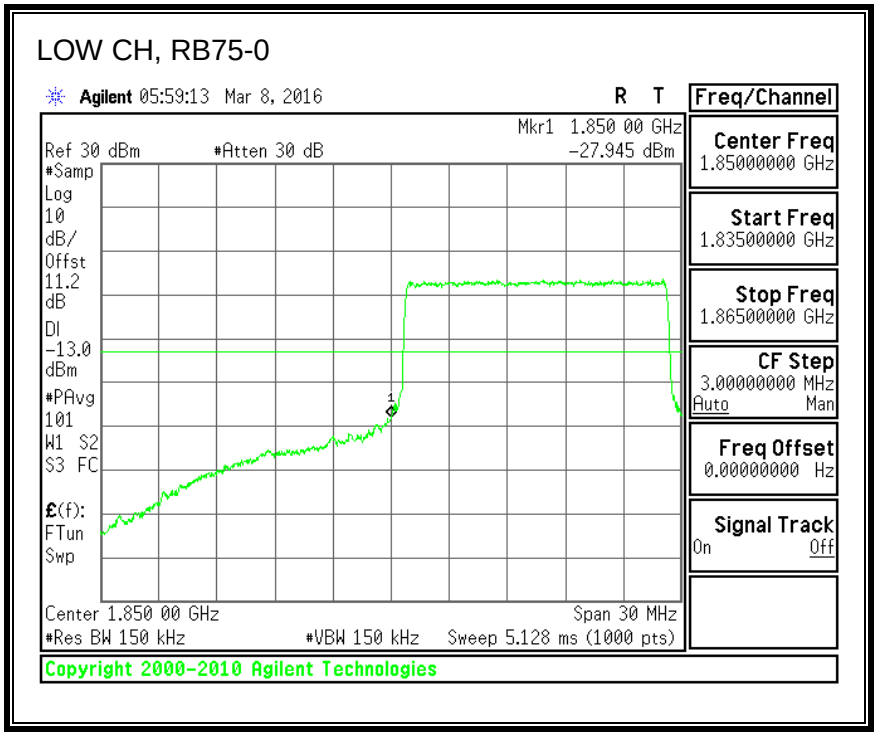
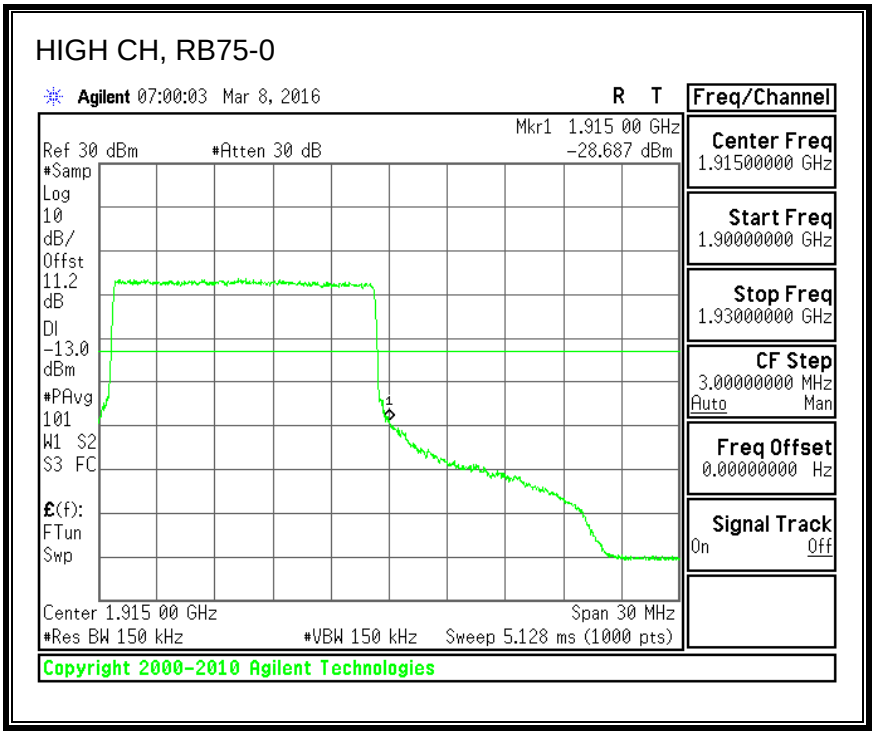
LOW CH, RB75-0



HIGH CH, RB75-0



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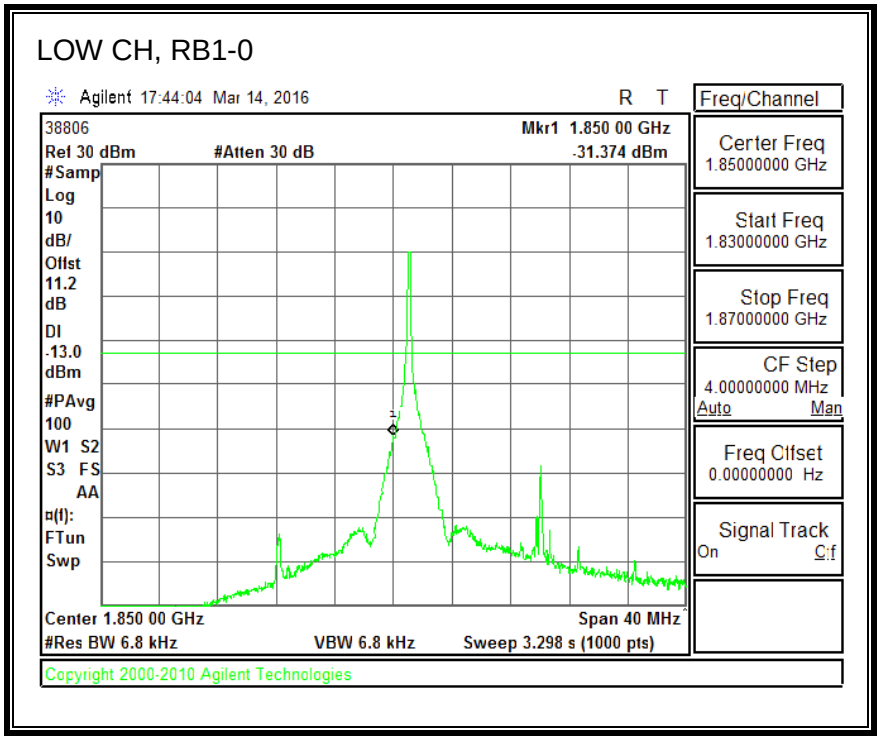
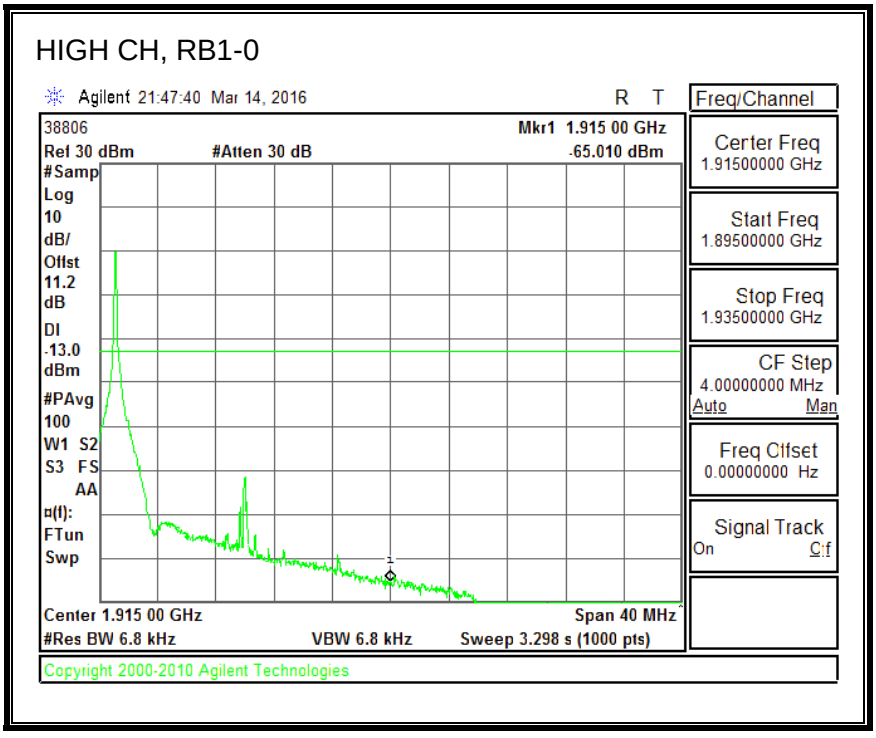
QPSK, (20.0 MHz BAND WIDTH)

LOW CH, RB1-0



HIGH CH, RB1-0



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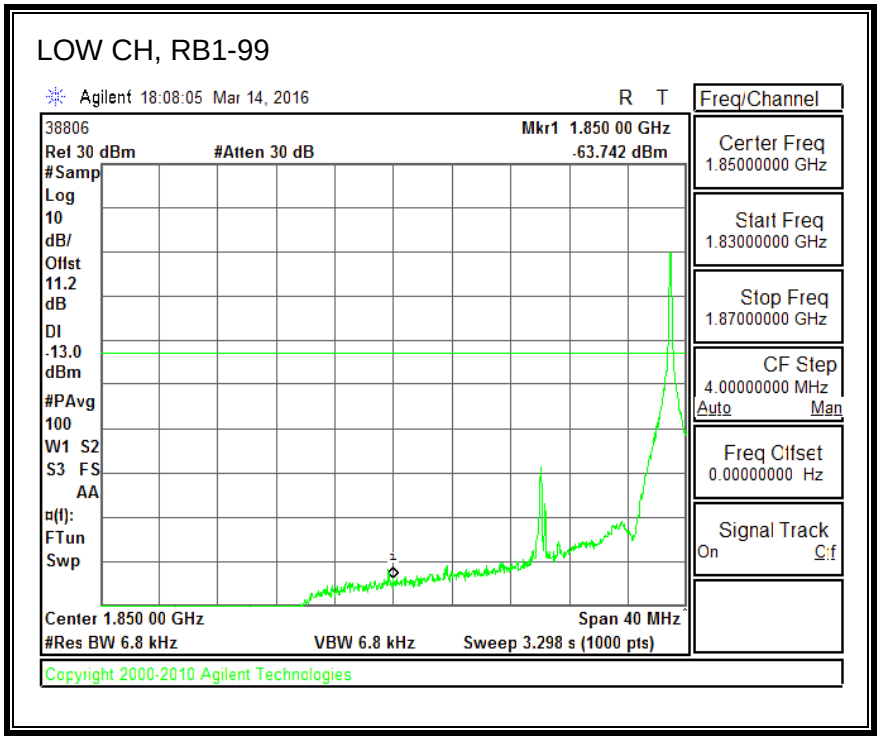
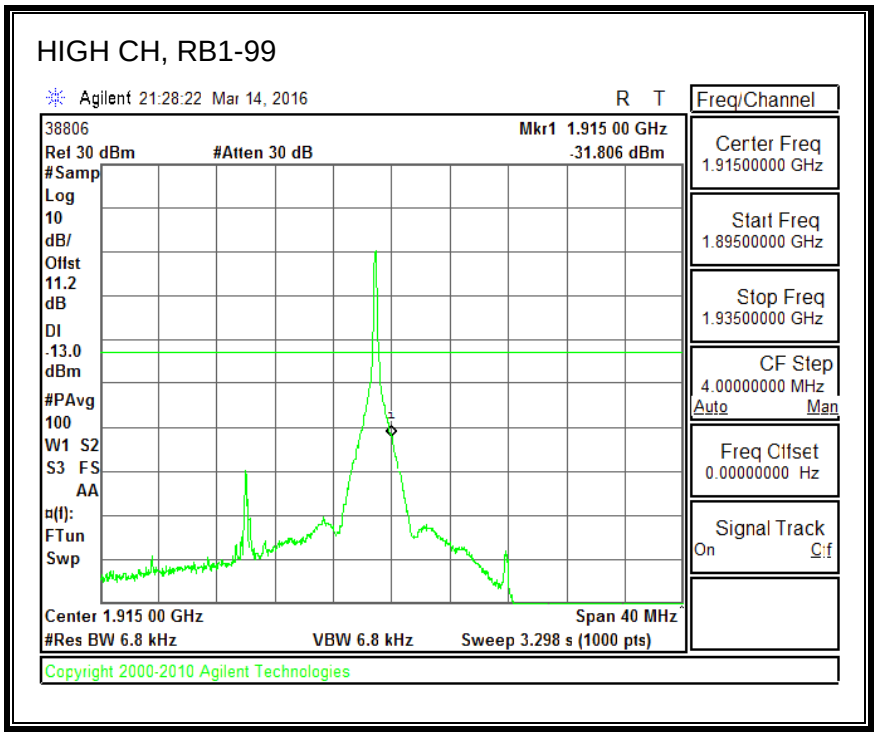
LOW CH, RB1-99



HIGH CH, RB1-99



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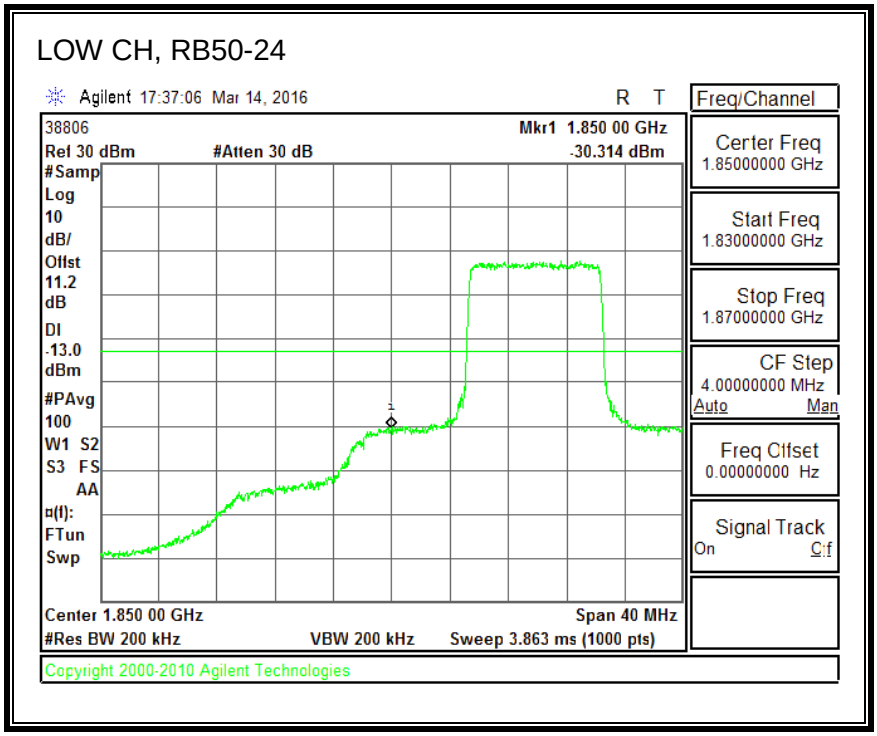
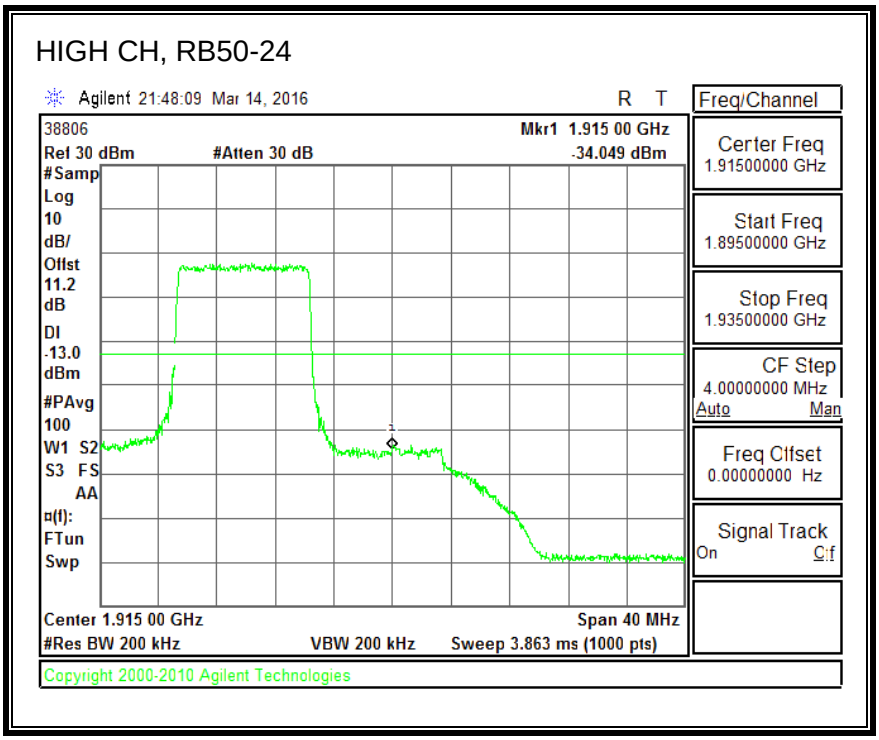
LOW CH, RB50-24



HIGH CH, RB50-24



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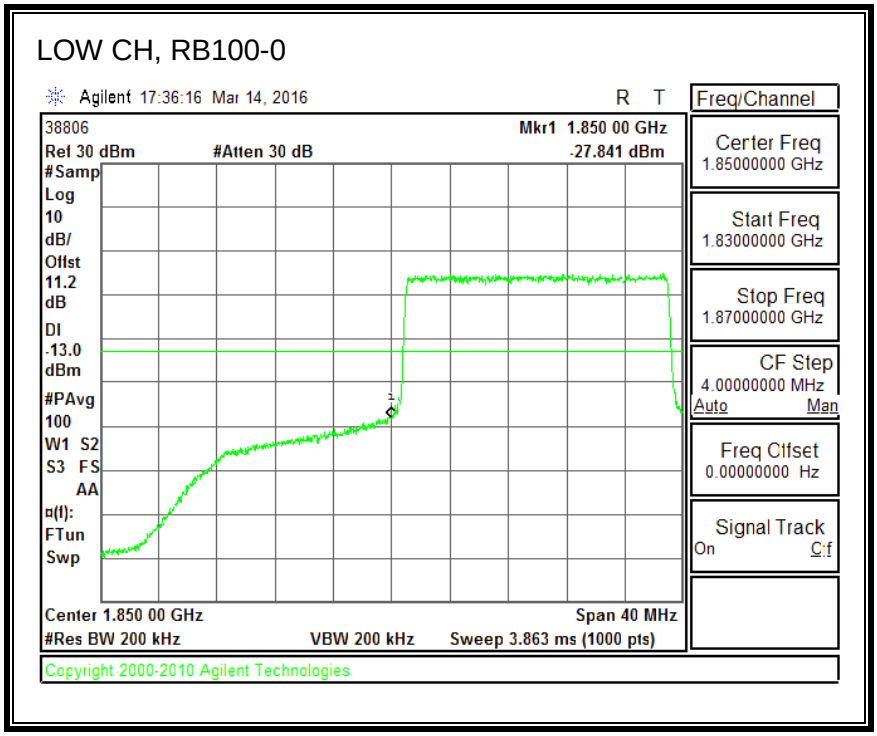
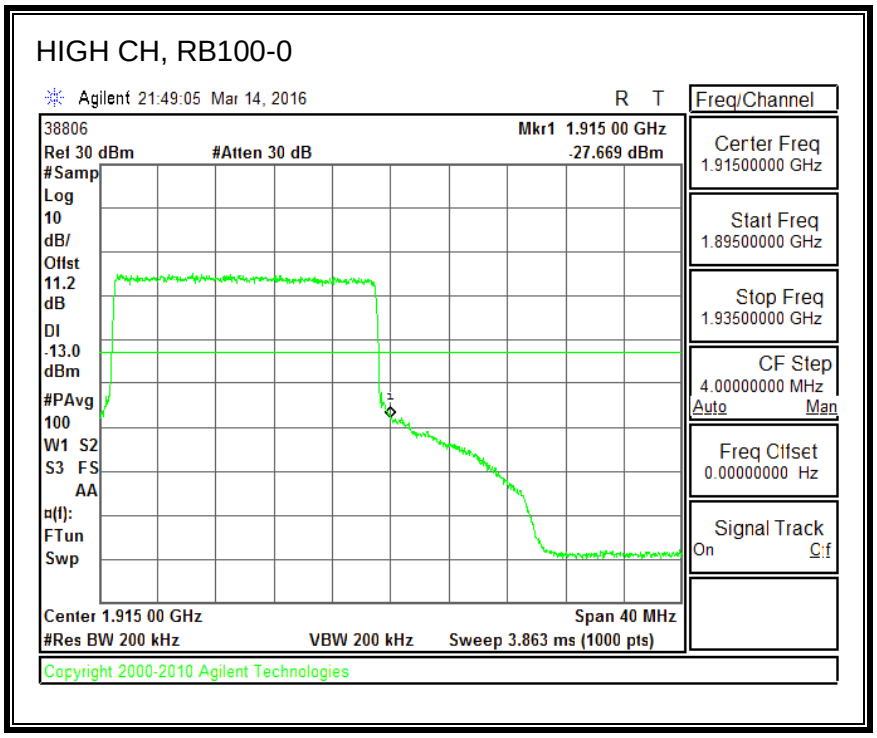
LOW CH, RB100-0



HIGH CH, RB100-0



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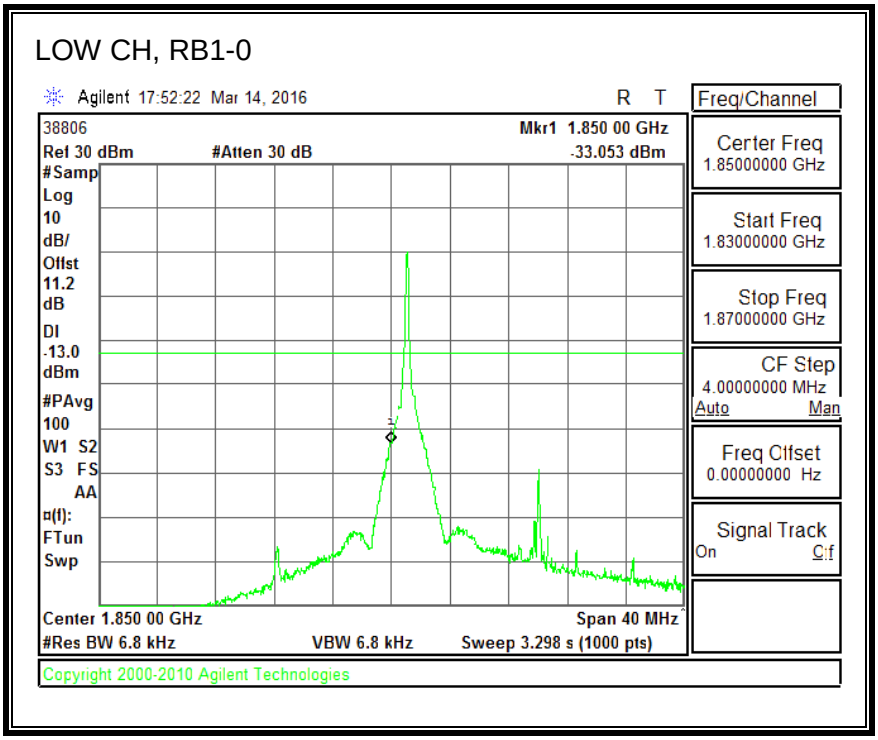
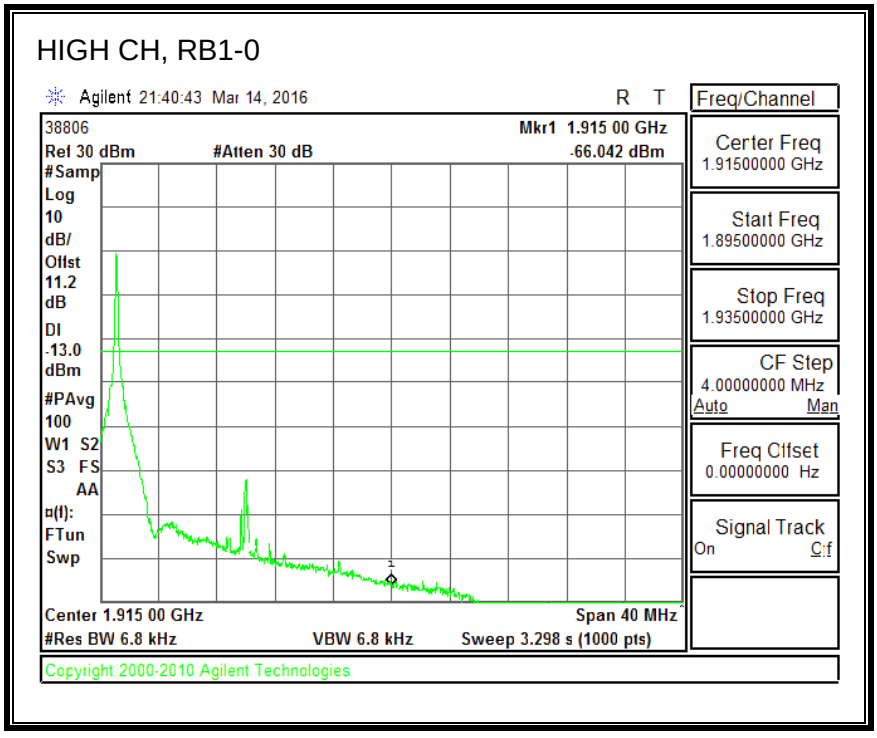
16QAM, (20.0 MHz BAND WIDTH)

LOW CH, RB1-0



HIGH CH, RB1-0



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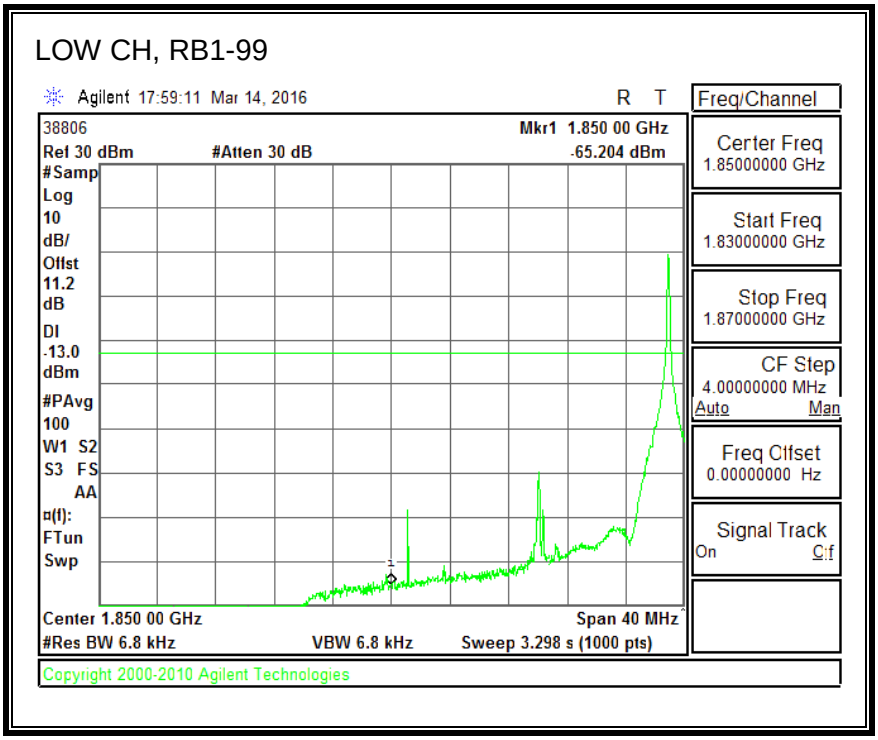
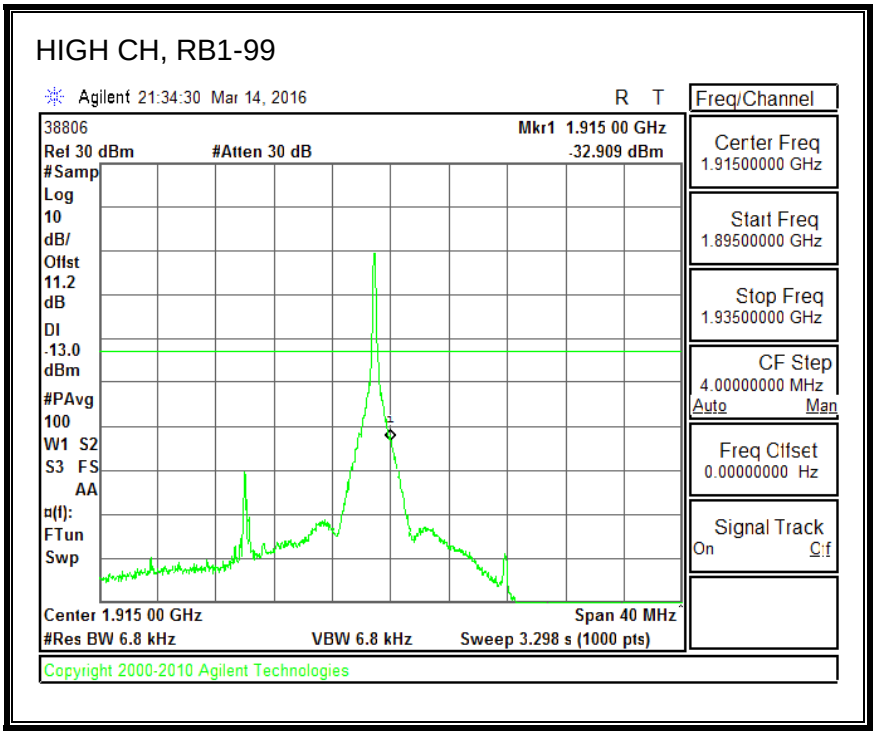
LOW CH, RB1-99



HIGH CH, RB1-99



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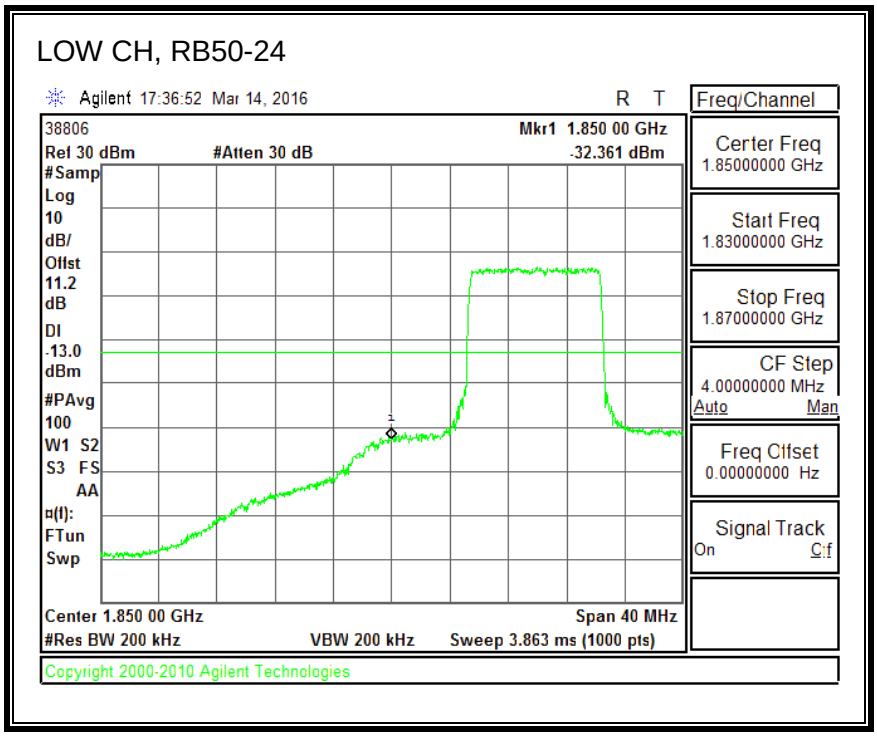
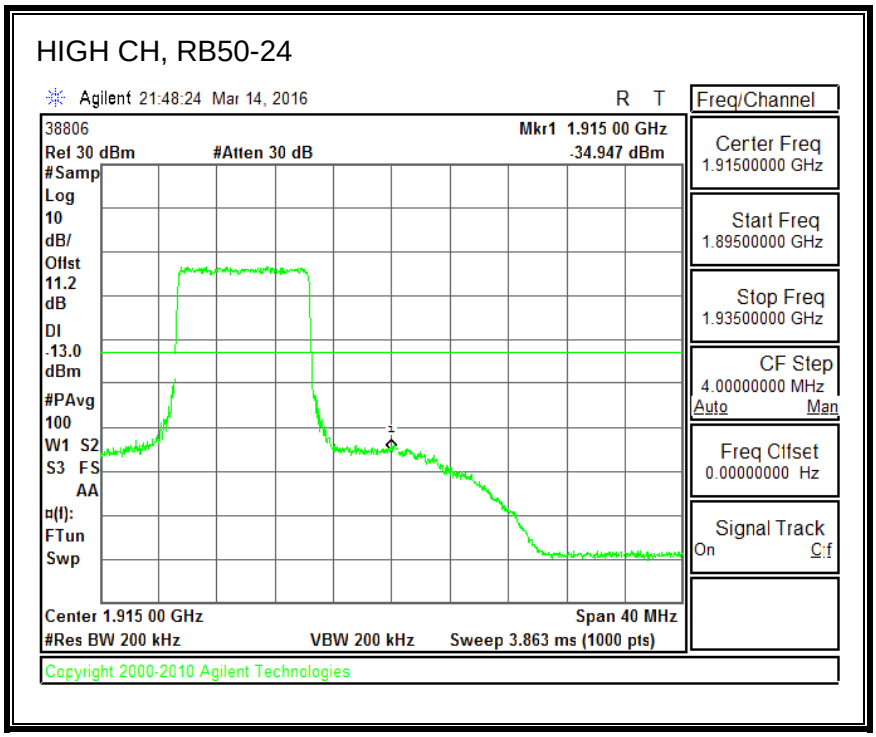
LOW CH, RB50-24



HIGH CH, RB50-24



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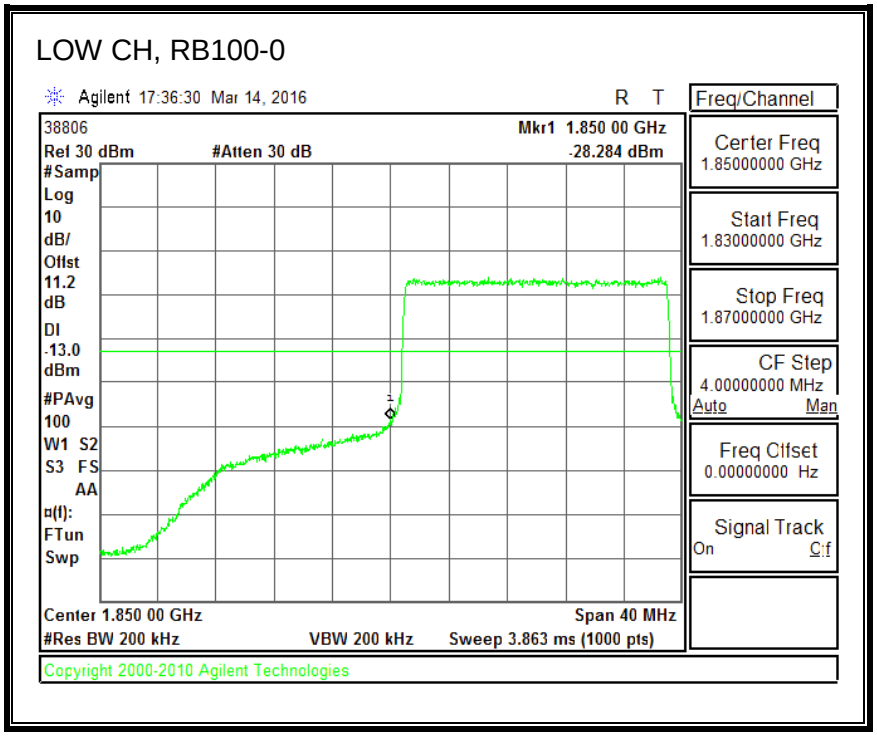
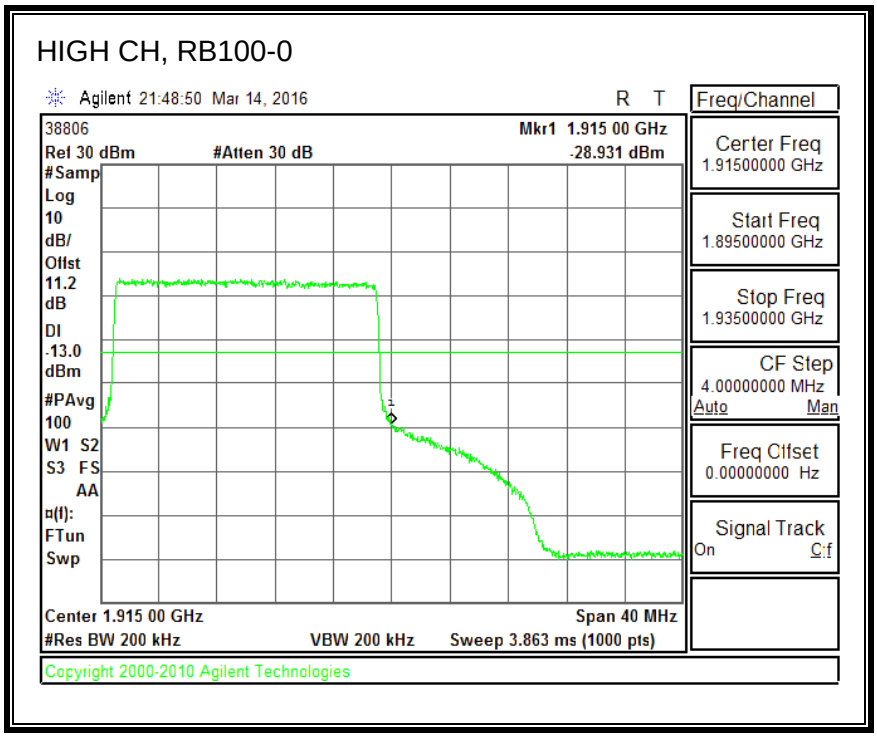
LOW CH, RB100-0



HIGH CH, RB100-0



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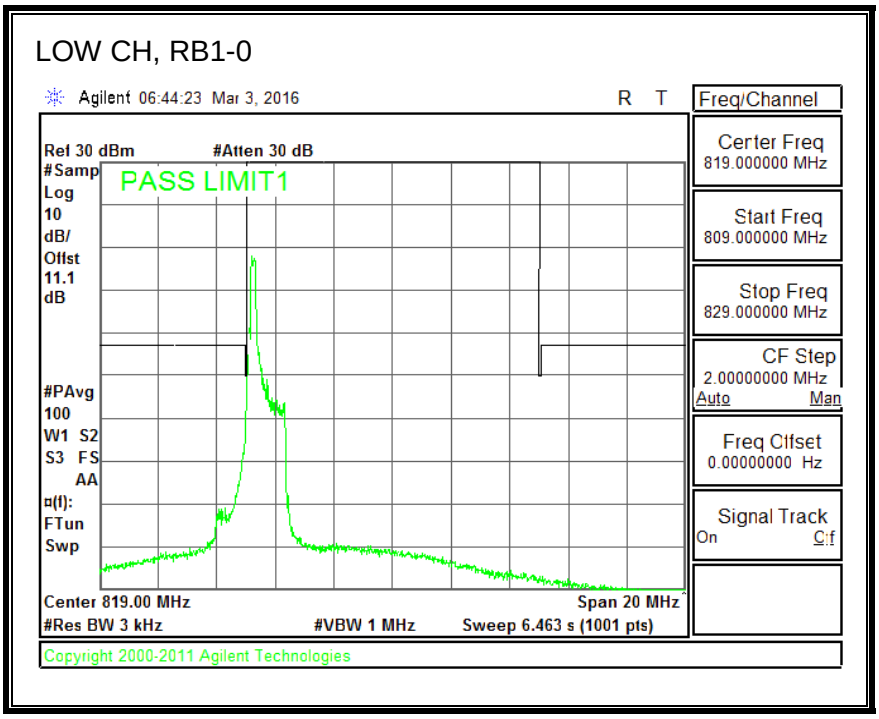
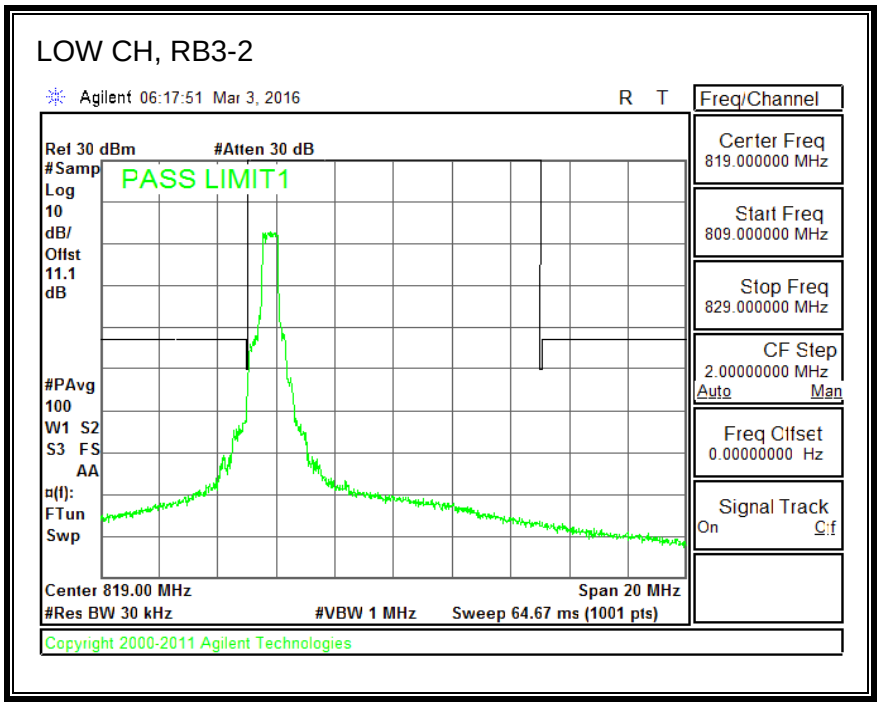
8.2.9. LTE BAND 26 EMISSION MASK

ID:	38806	Date:	3/3/16

QPSK, (1.4 MHz BAND WIDTH)





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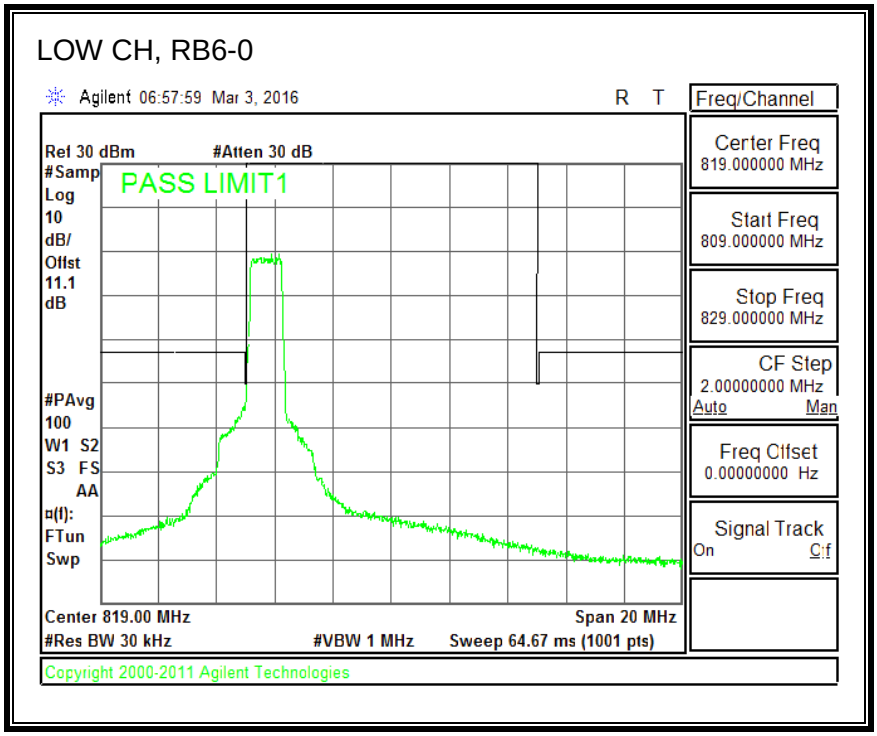
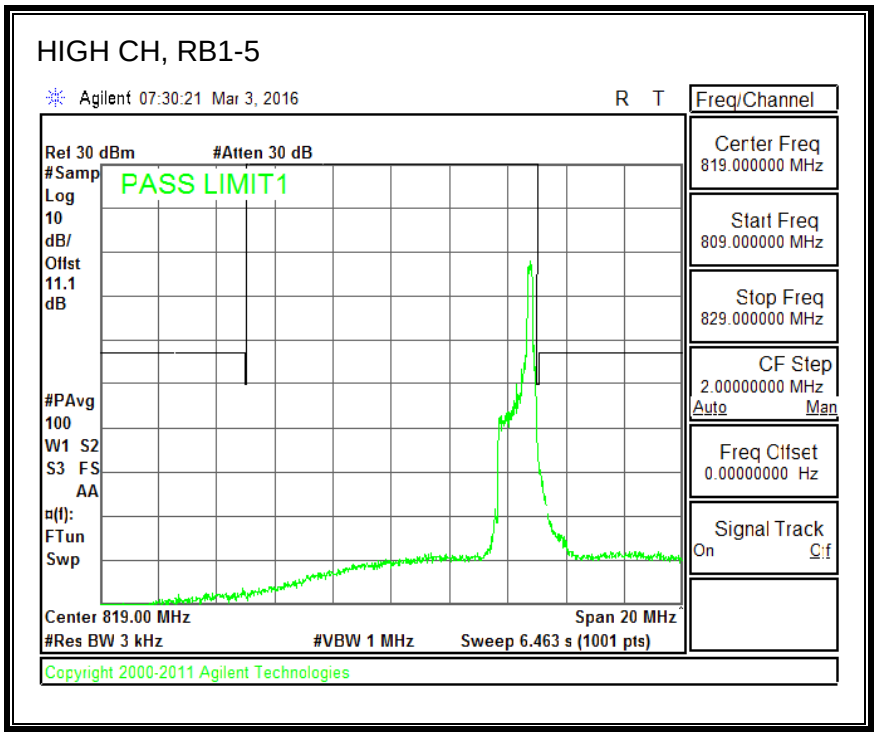
LOW CH, RB6-0



HIGH CH, RB1-5



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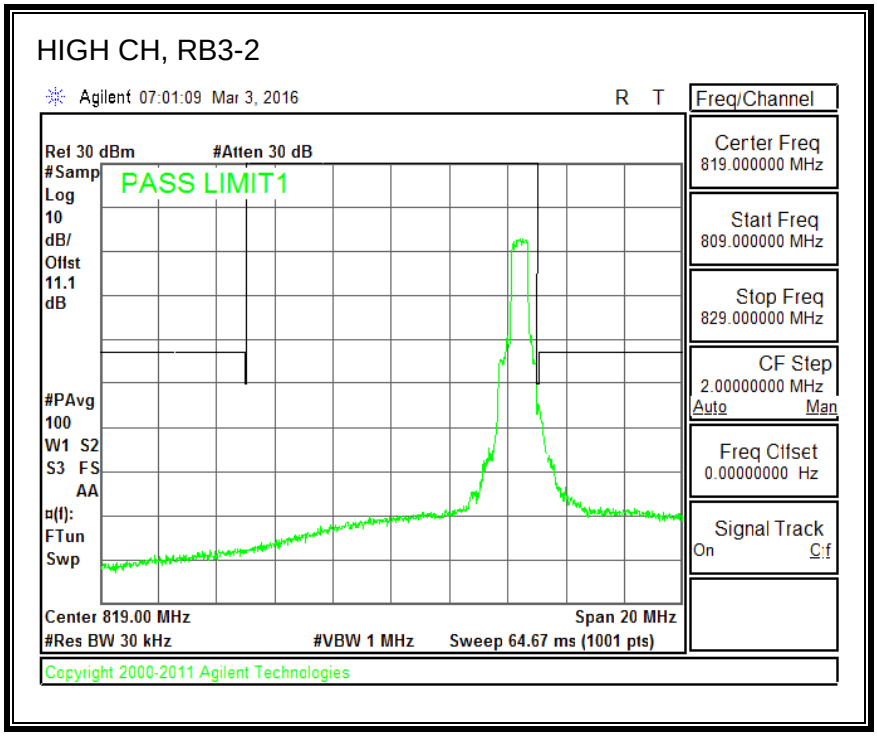
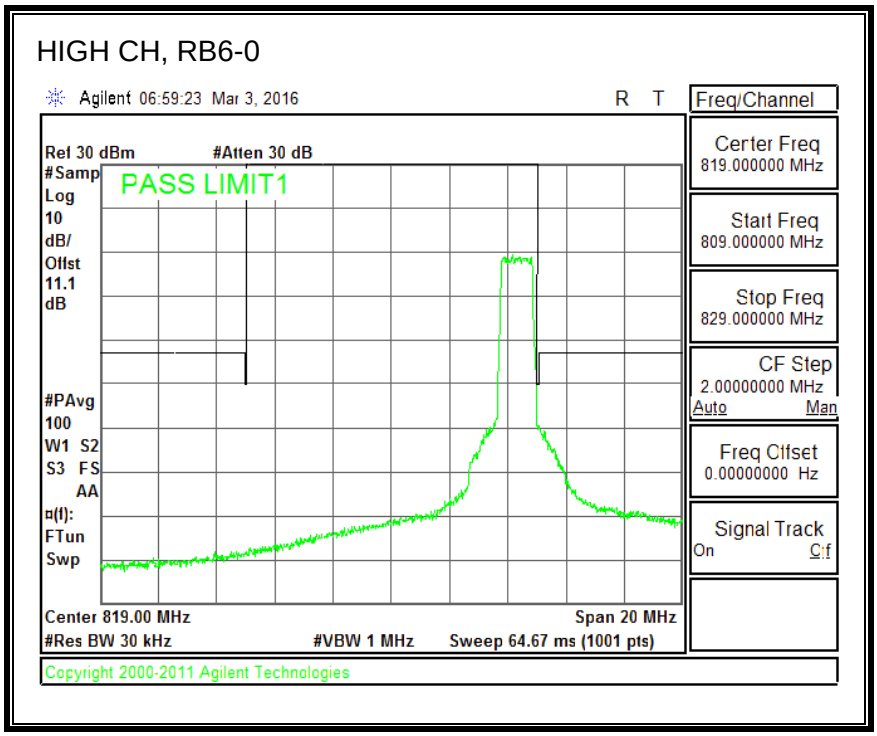
HIGH CH, RB3-2



HIGH CH, RB6-0



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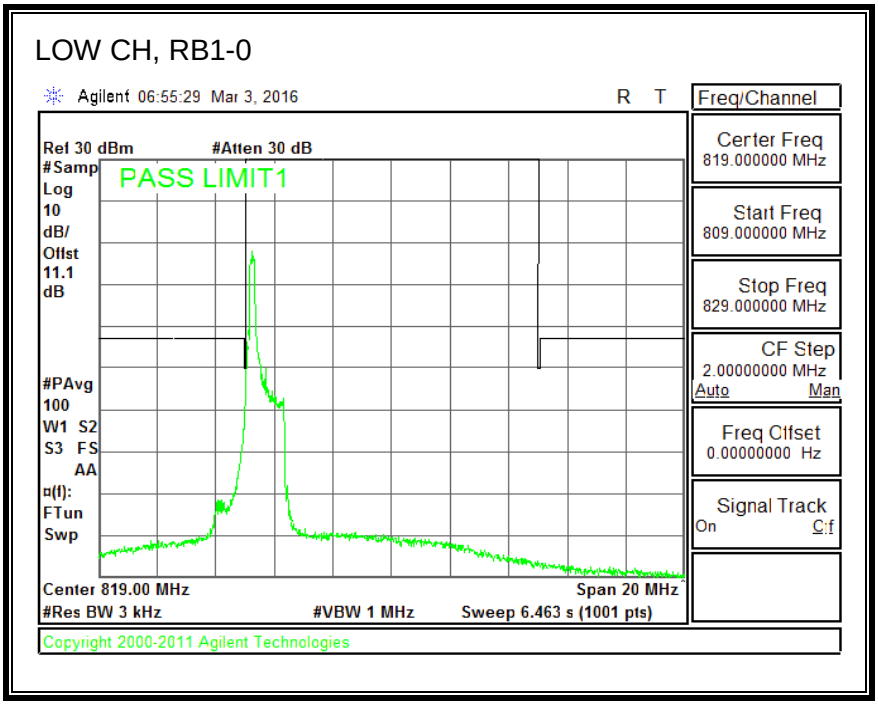
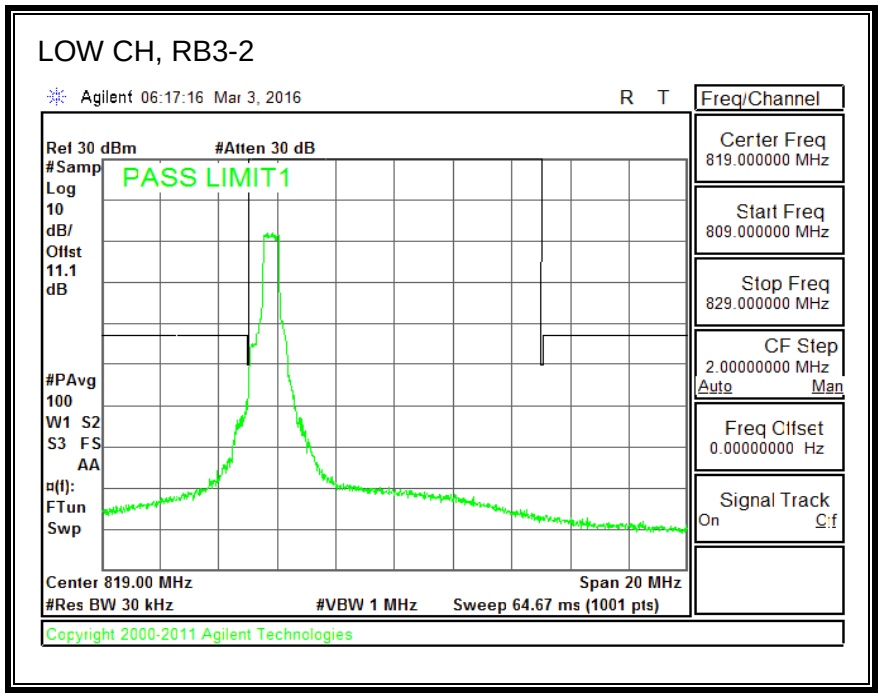
16QAM, (1.4 MHz BAND WIDTH)

LOW CH, RB1-0



LOW CH, RB3-2



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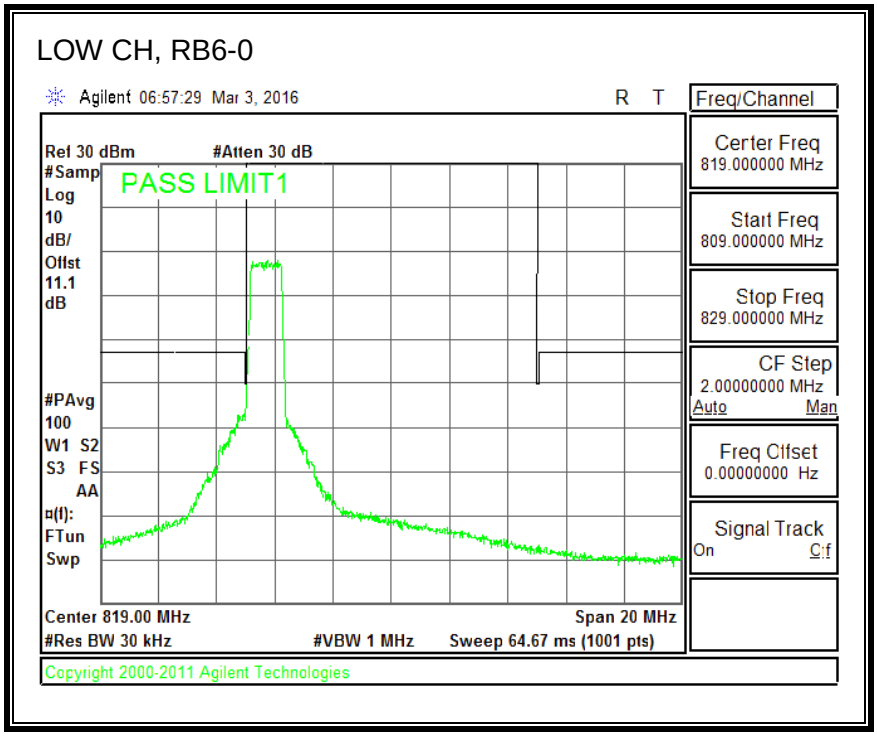
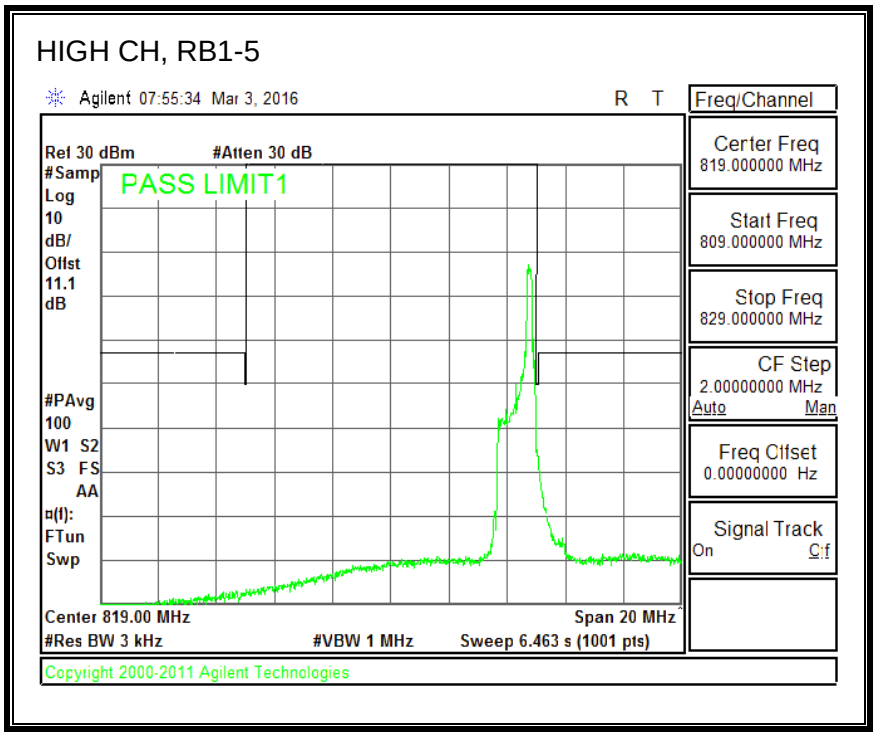
LOW CH, RB6-0



HIGH CH, RB1-5



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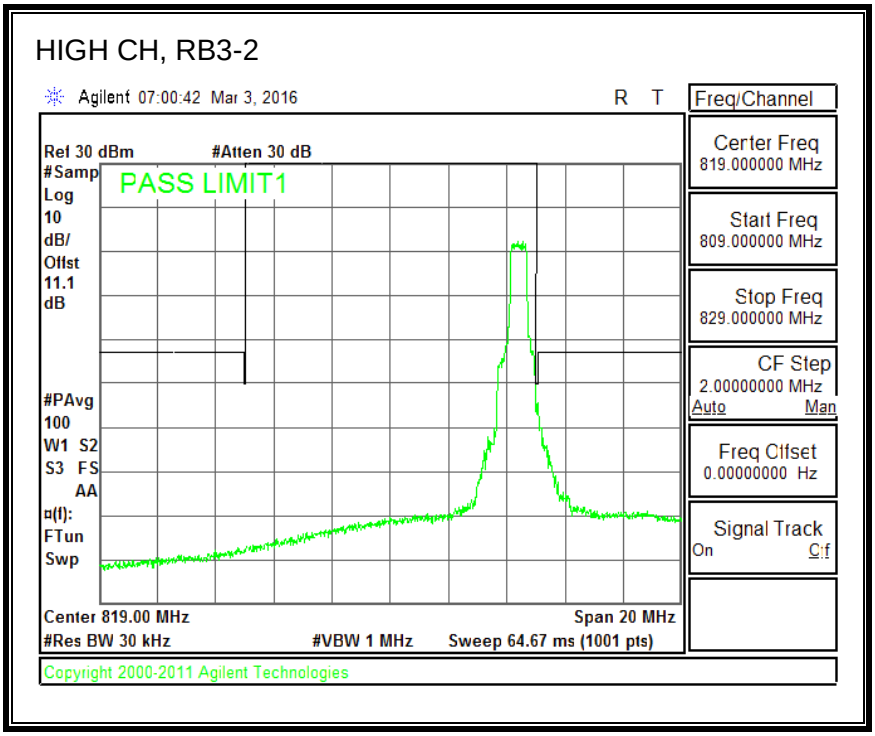
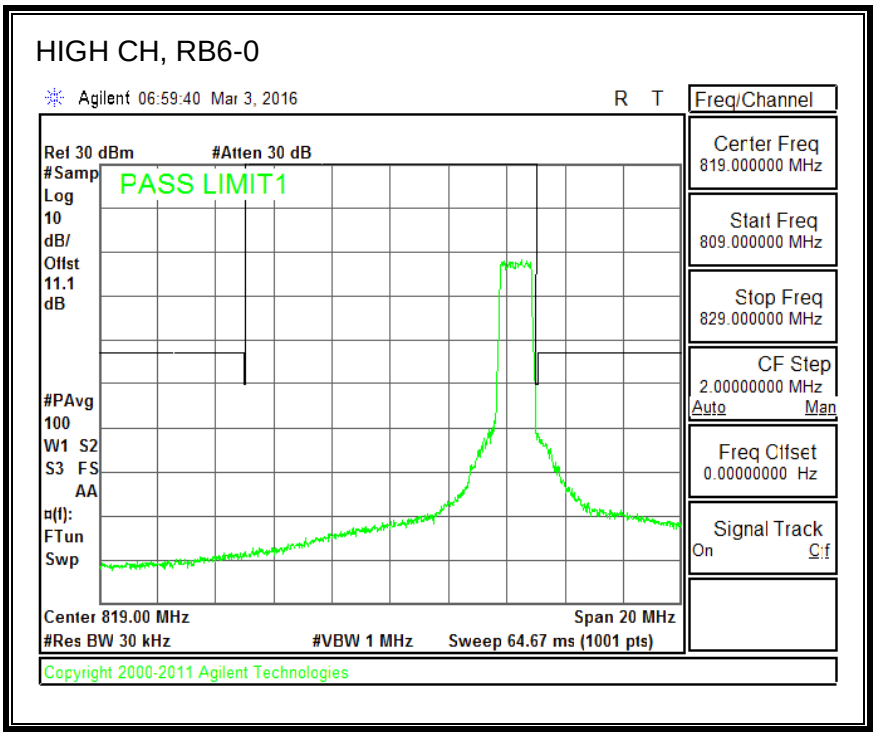
HIGH CH, RB3-2



HIGH CH, RB6-0



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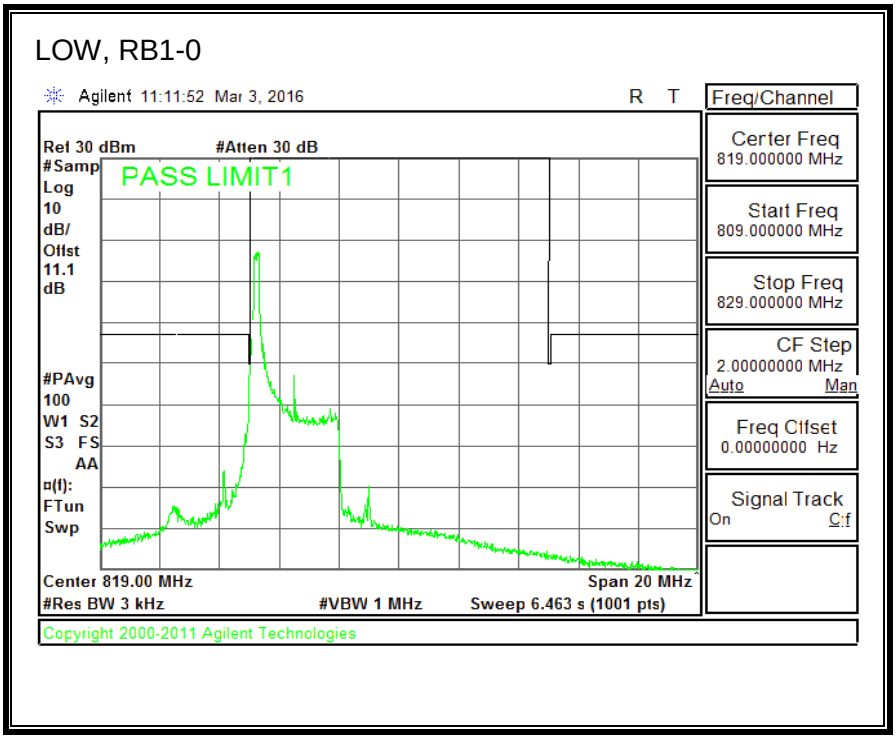
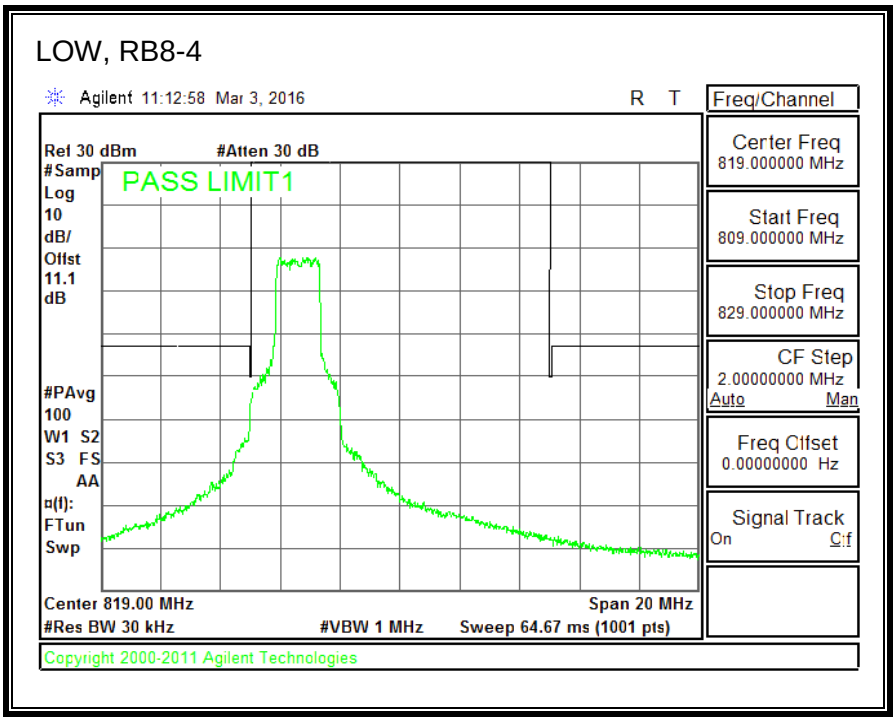
QPSK, (3.0 MHz BAND WIDTH)

LOW, RB1-0



LOW, RB8-4



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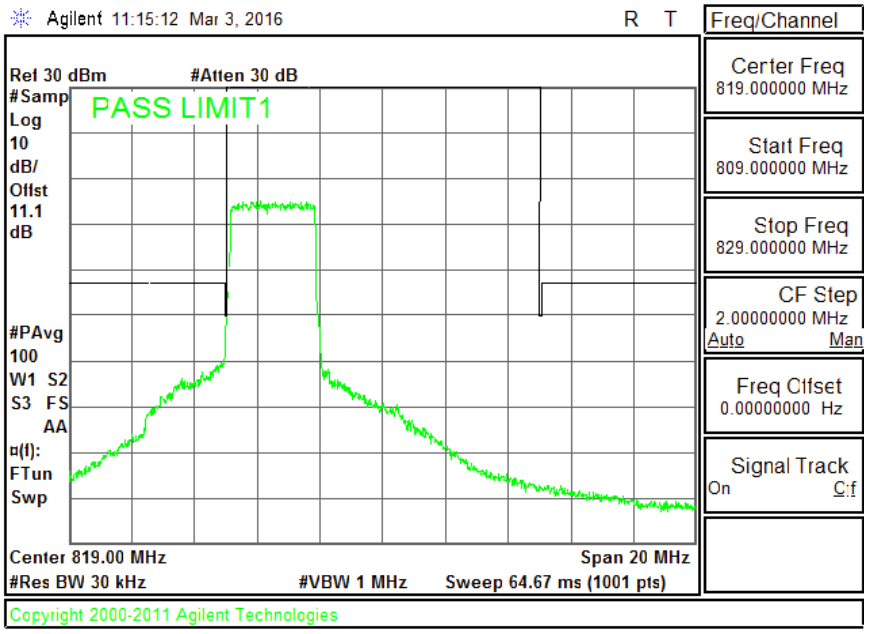
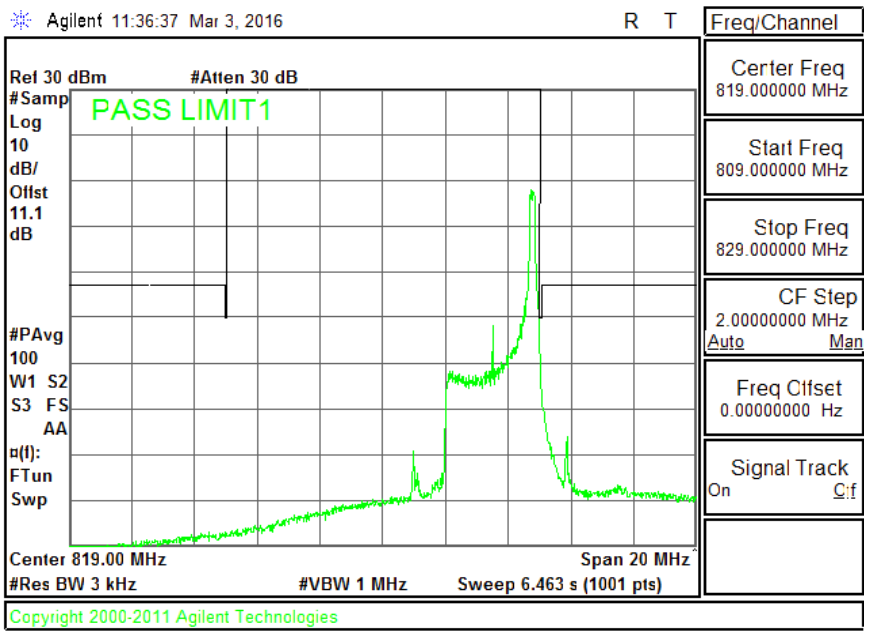
LOW CH, RB15-0



HIGH CH, RB1-14



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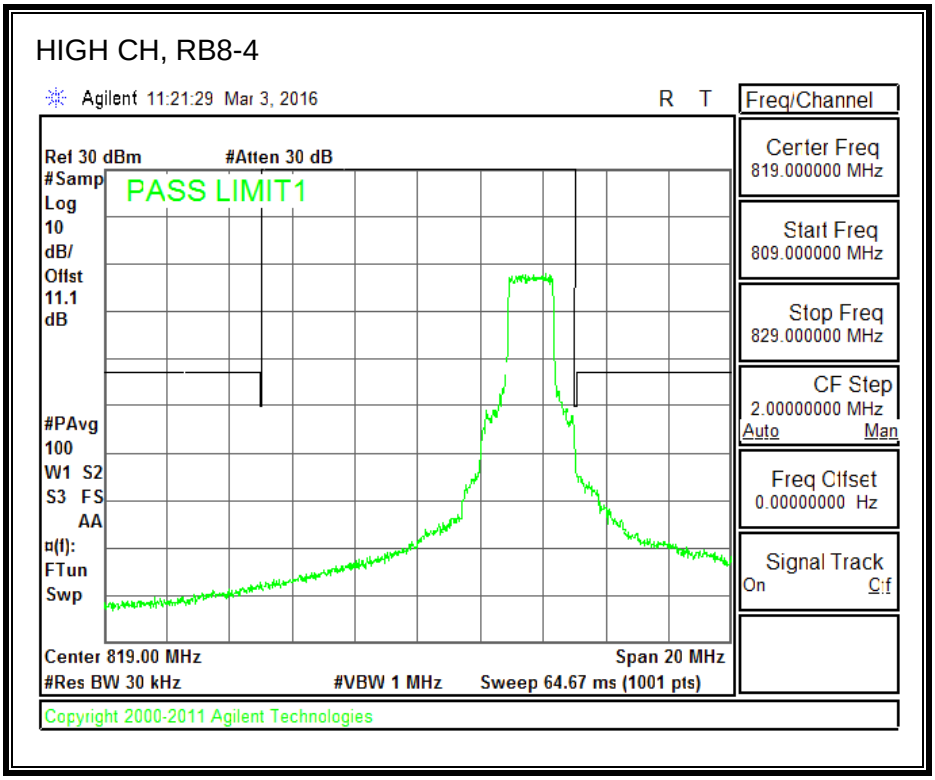
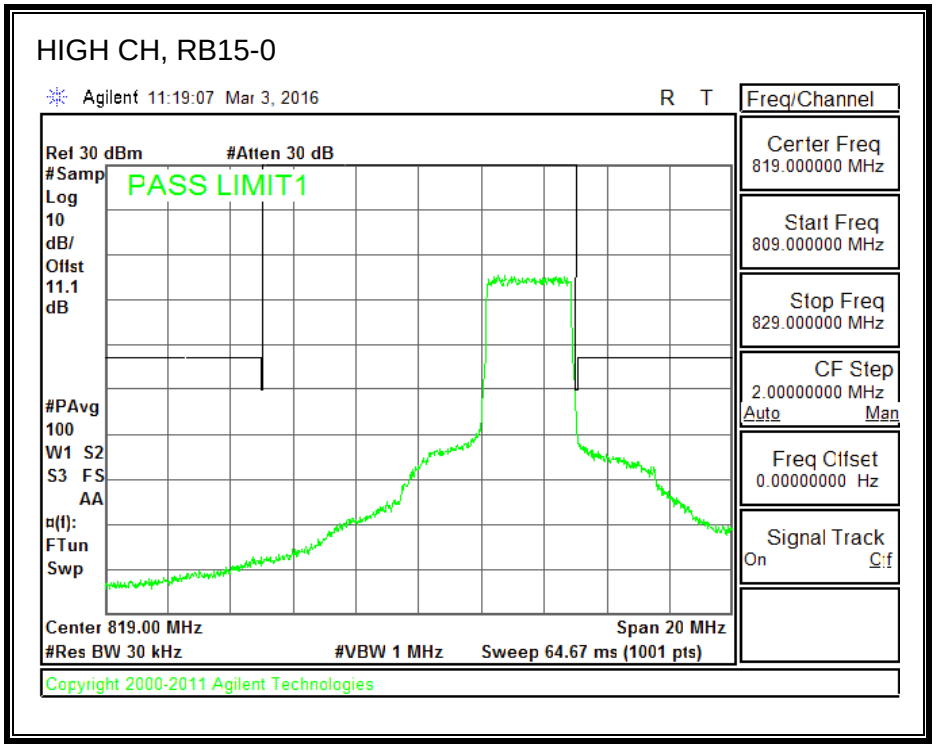
HIGH CH, RB8-4



HIGH CH, RB15-0



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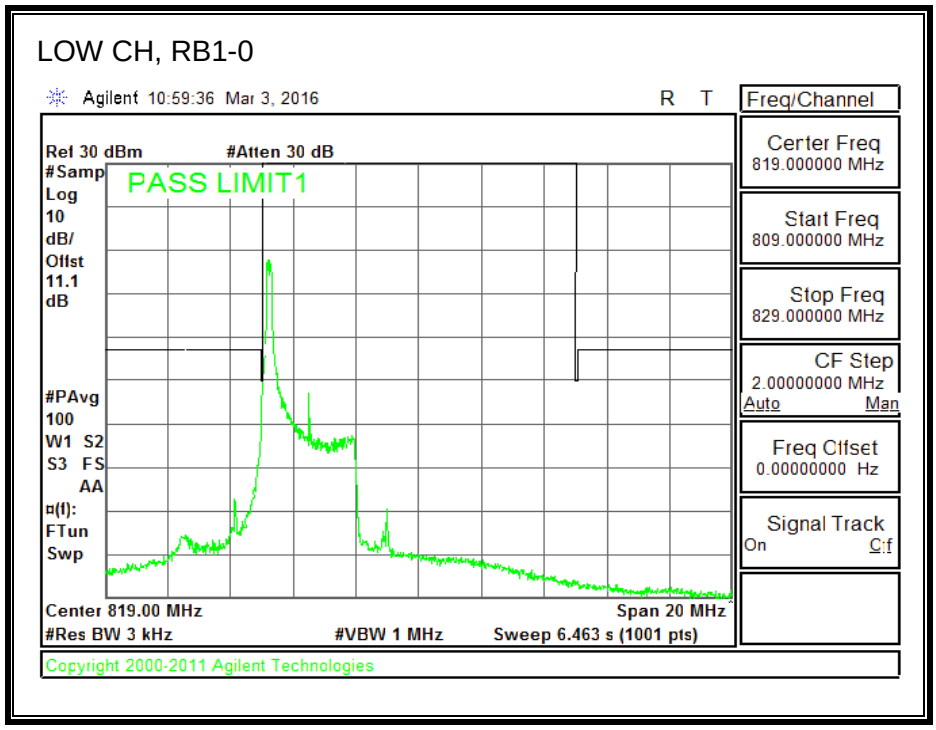
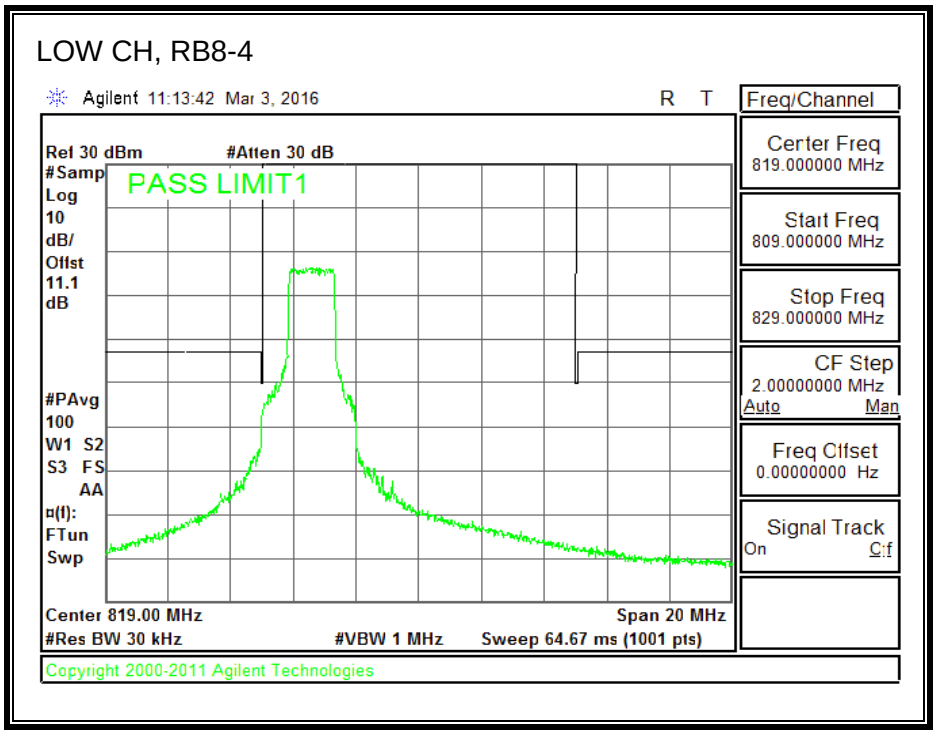
16QAM, (3.0 MHz BAND WIDTH)

LOW CH, RB1-0



LOW CH, RB8-4



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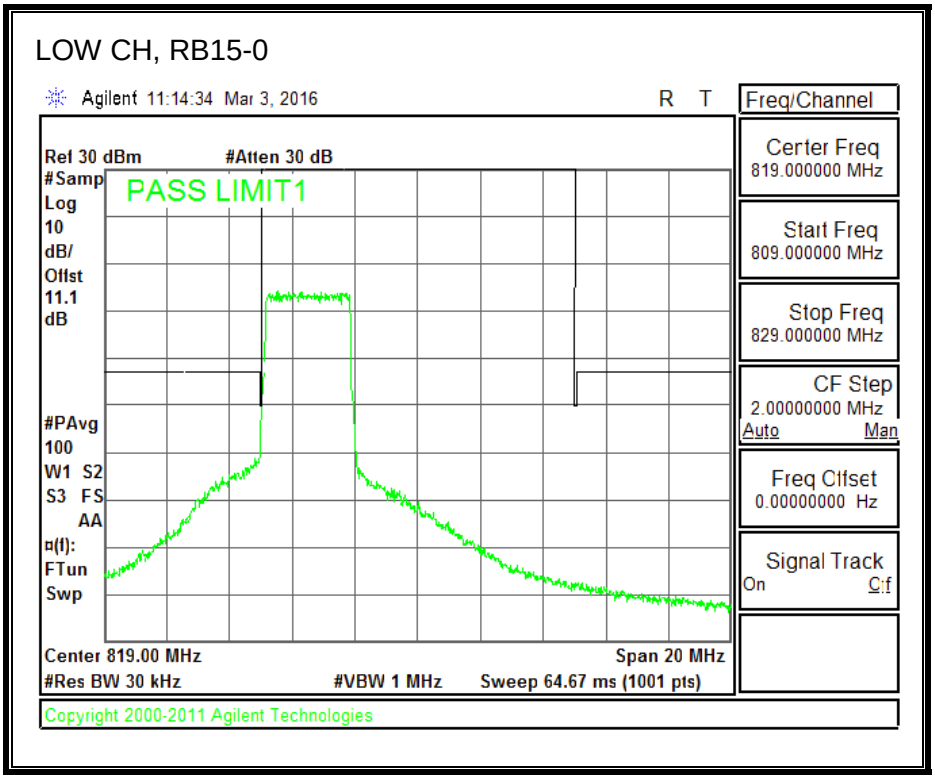
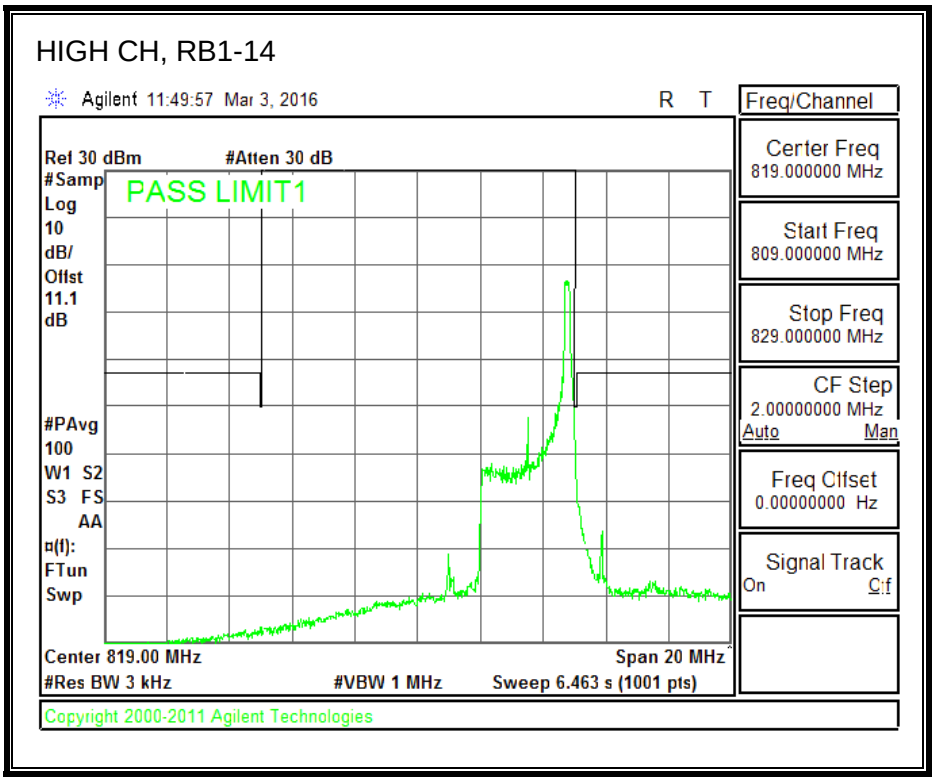
LOW CH, RB15-0



HIGH CH, RB1-14



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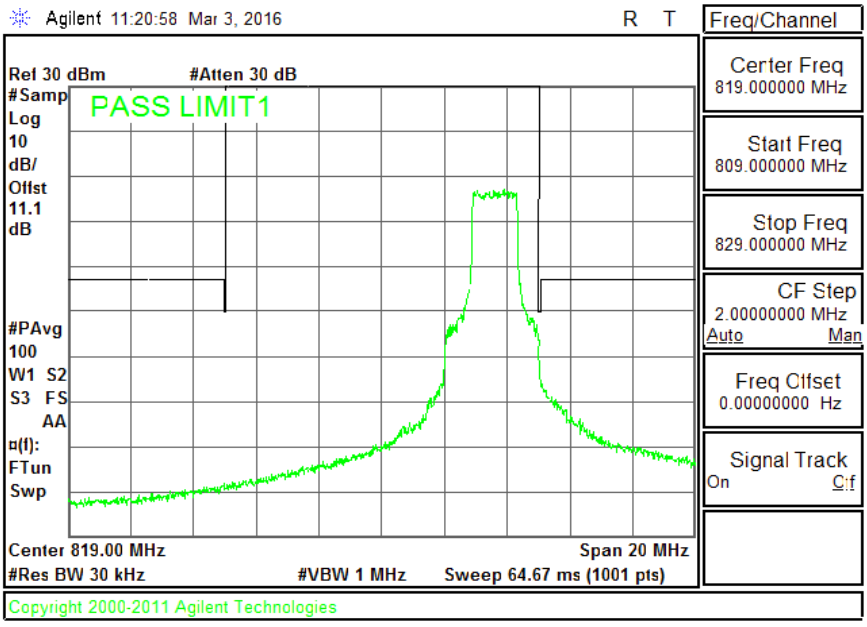
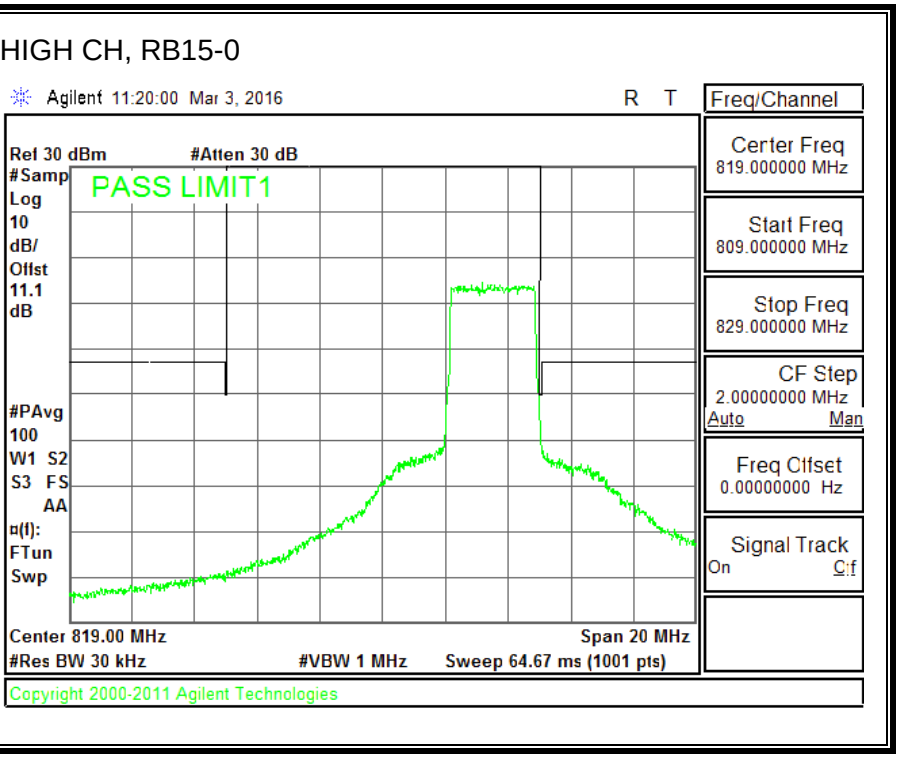
HIGH CH, RB8-4



HIGH CH, RB15-0



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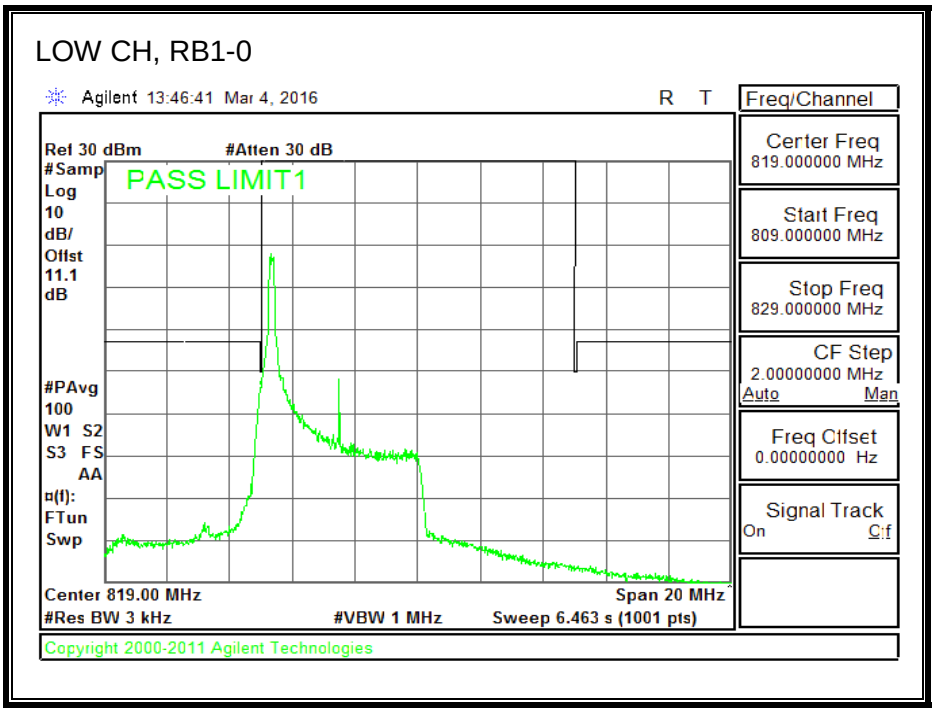
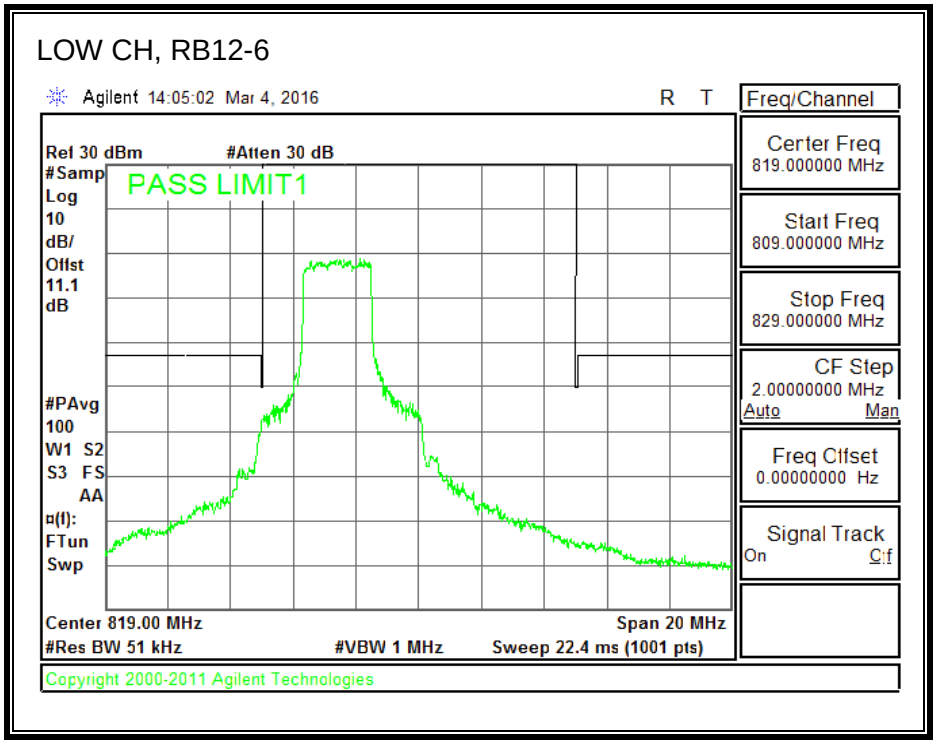
QPSK, (5.0 MHz BAND WIDTH)

LOW CH, RB1-0



LOW CH, RB12-6



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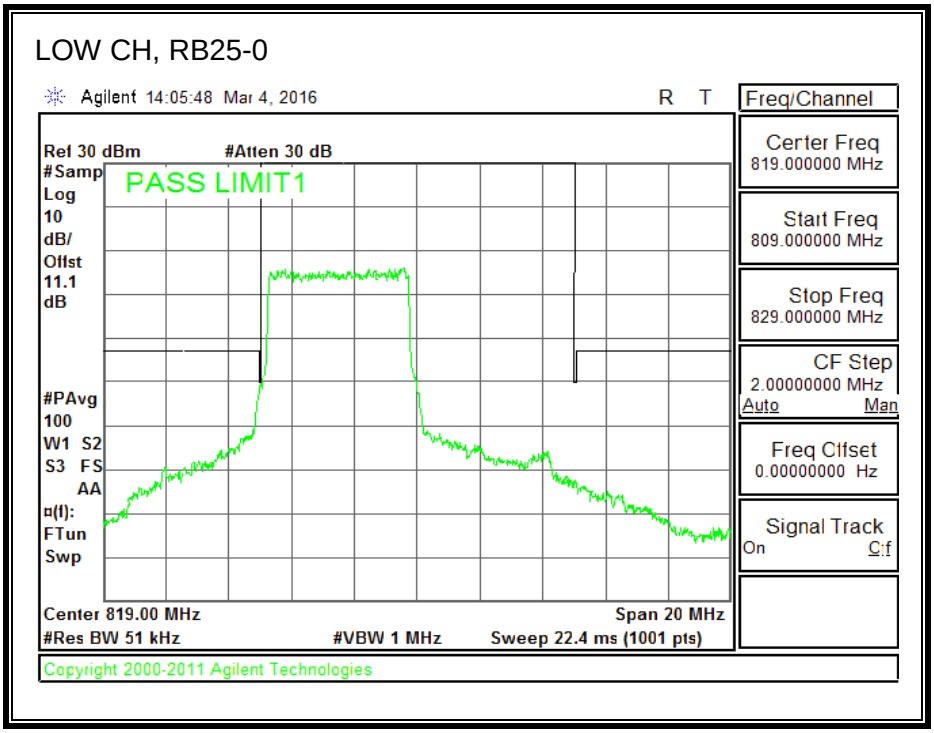
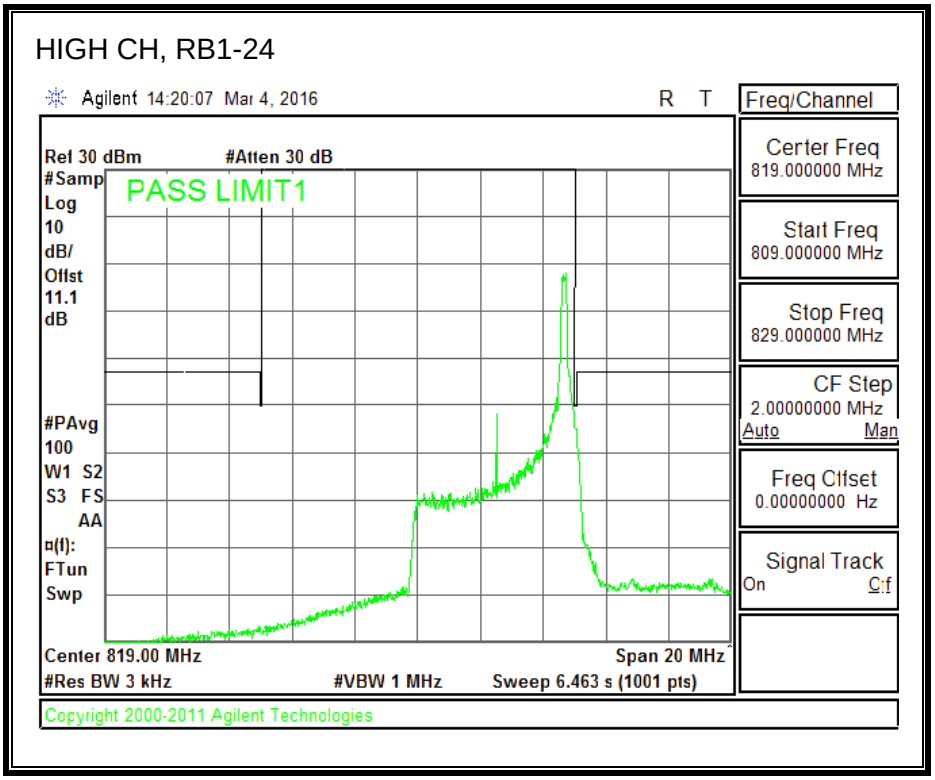
LOW CH, RB25-0



HIGH CH, RB1-24



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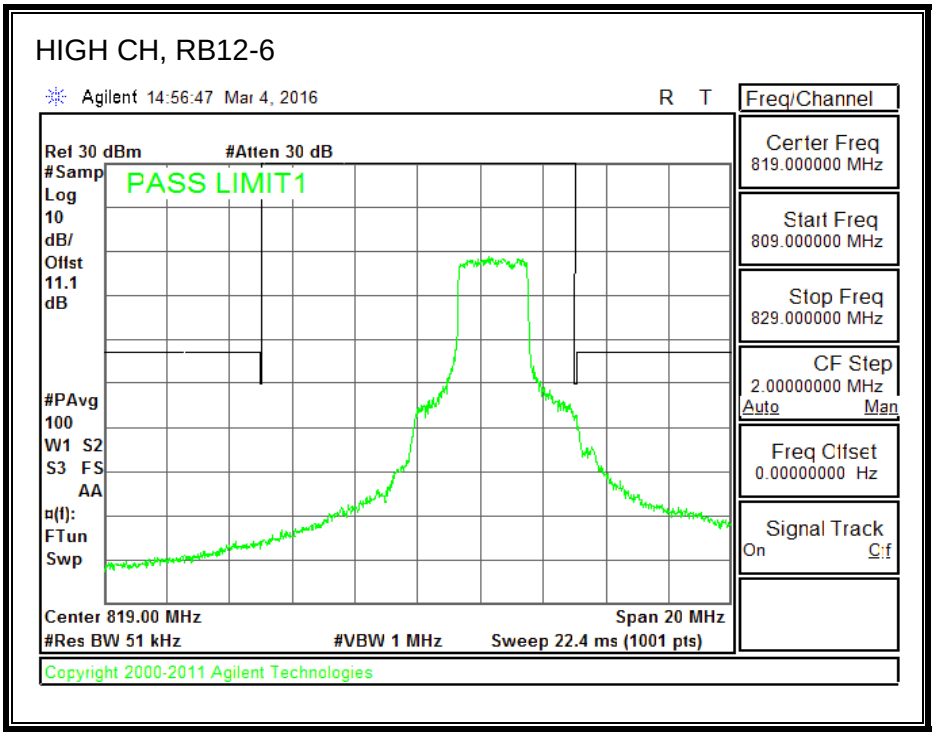
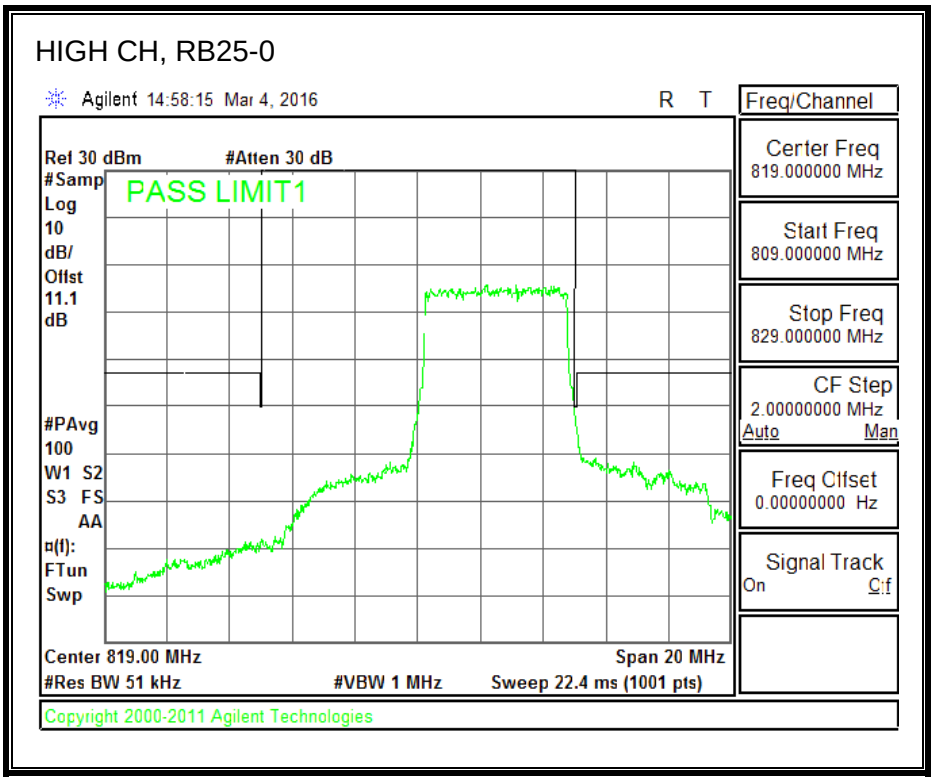
HIGH CH, RB12-6



HIGH CH, RB25-0



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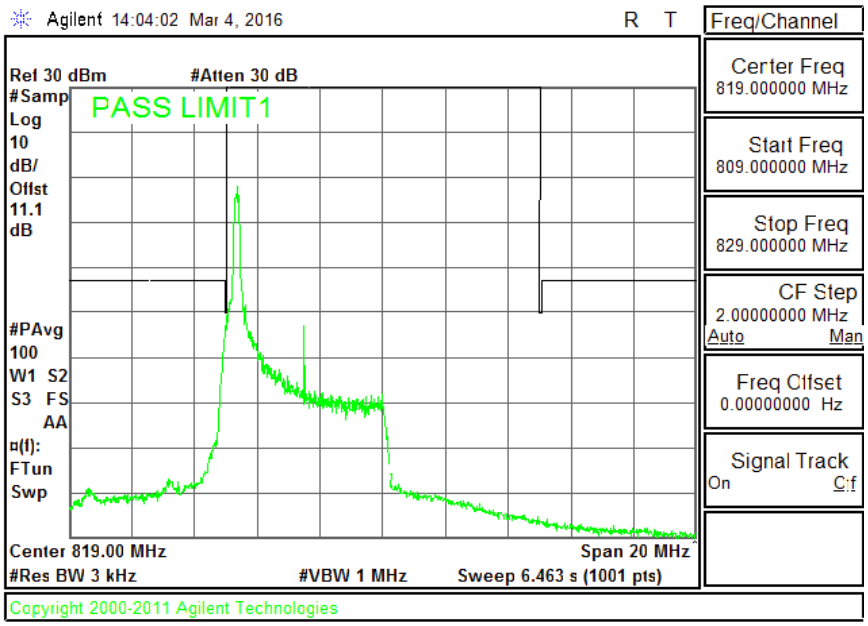
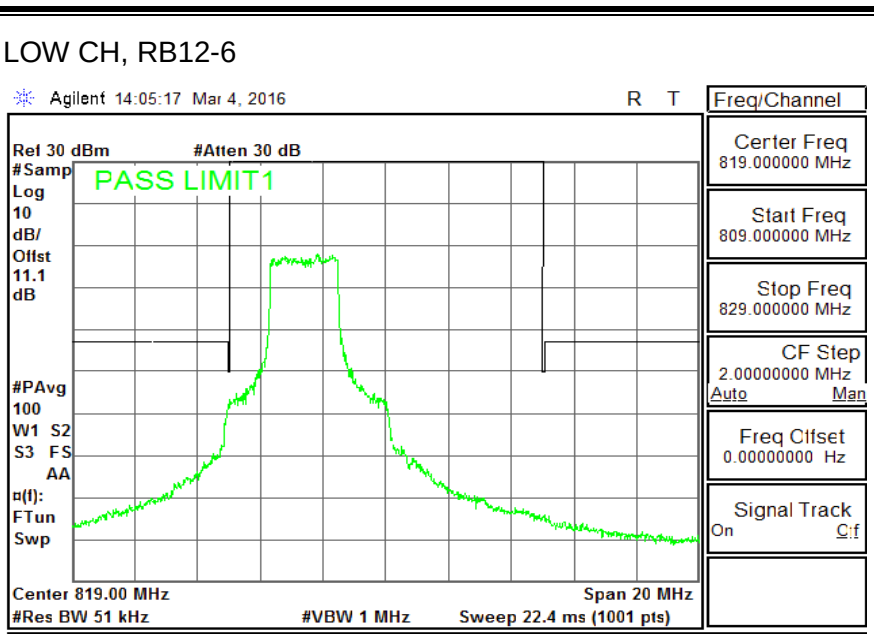
16QAM, (5.0 MHz BAND WIDTH)

LOW CH, RB1-0



LOW CH, RB12-6



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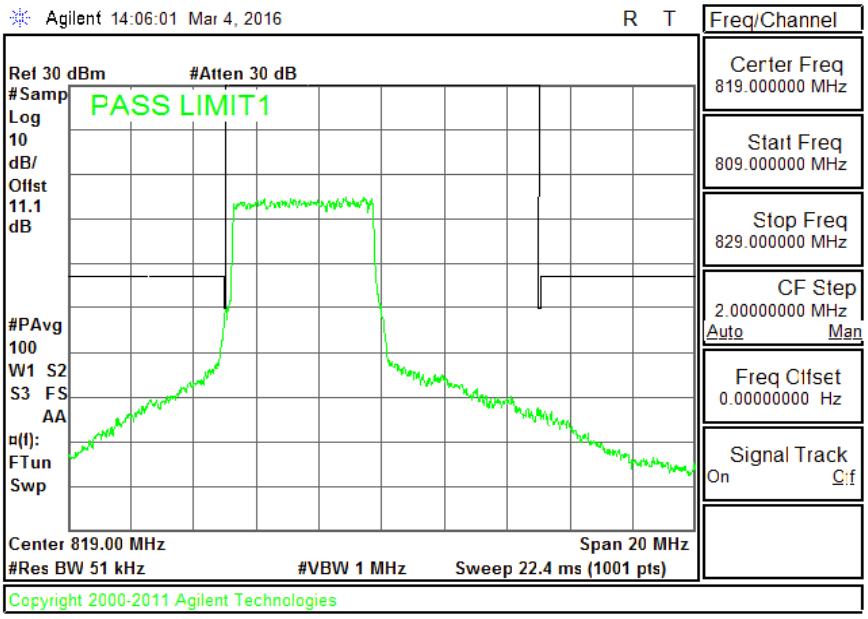
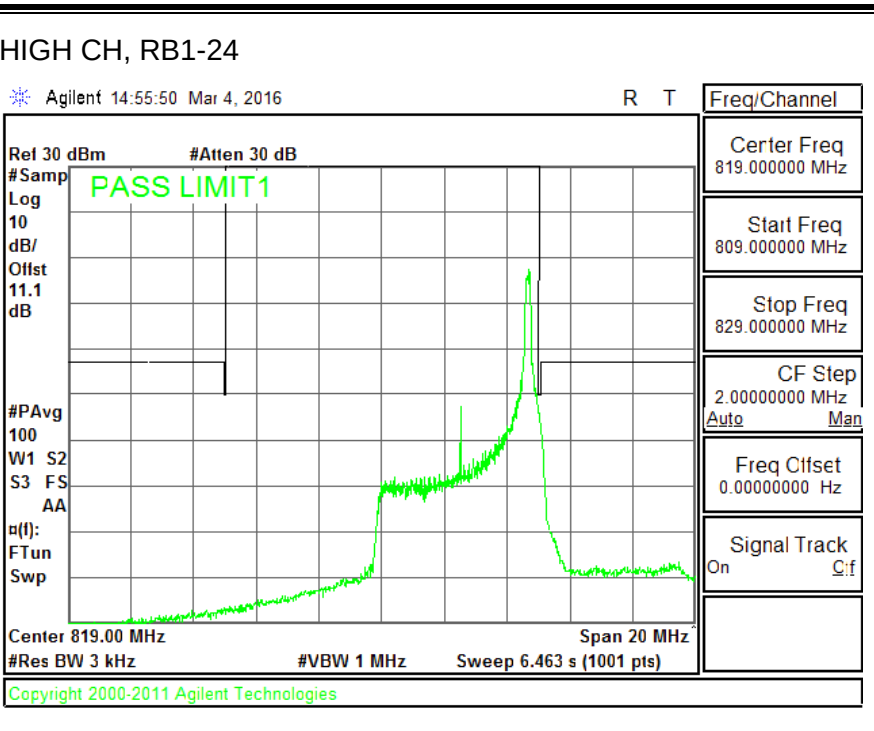
LOW CH, RB25-0



HIGH CH, RB1-24



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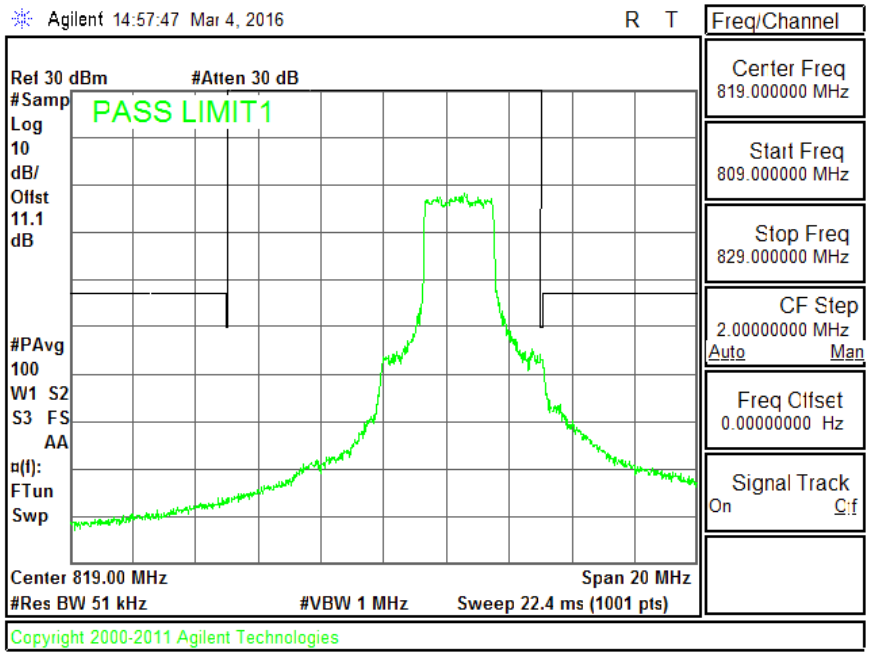
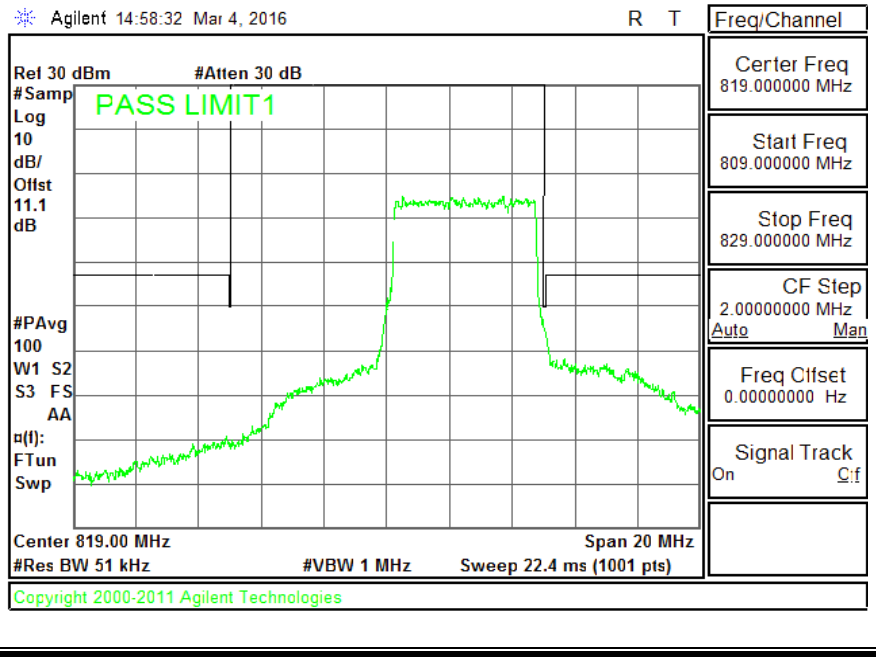
HIGH CH, RB12-6



HIGH CH, RB25-0



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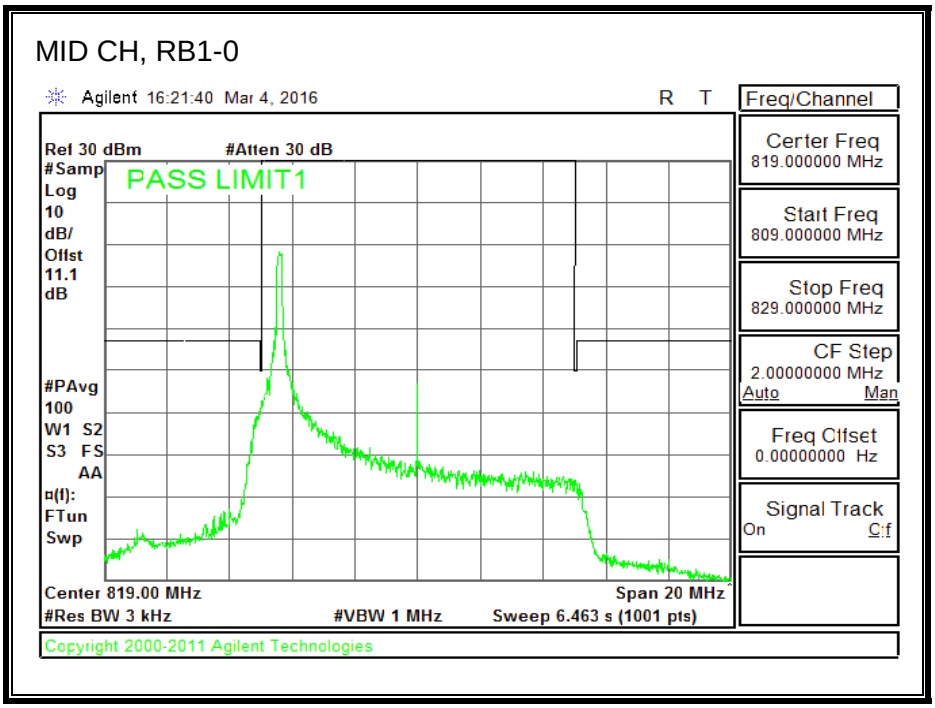
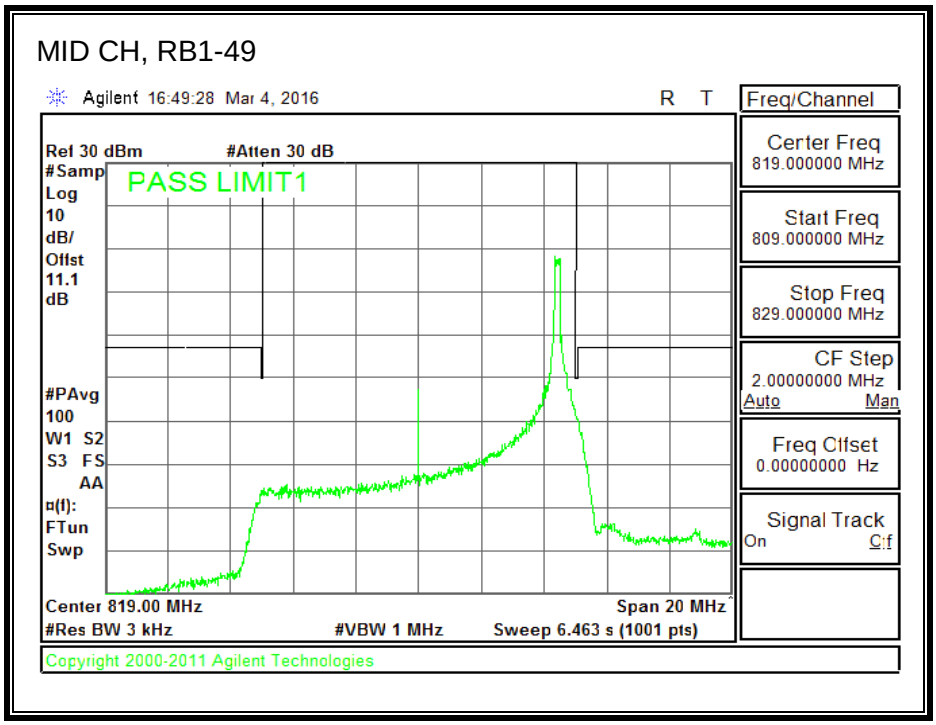
QPSK, (10.0 MHz BAND WIDTH)

MID CH, RB1-0



MID CH, RB1-49



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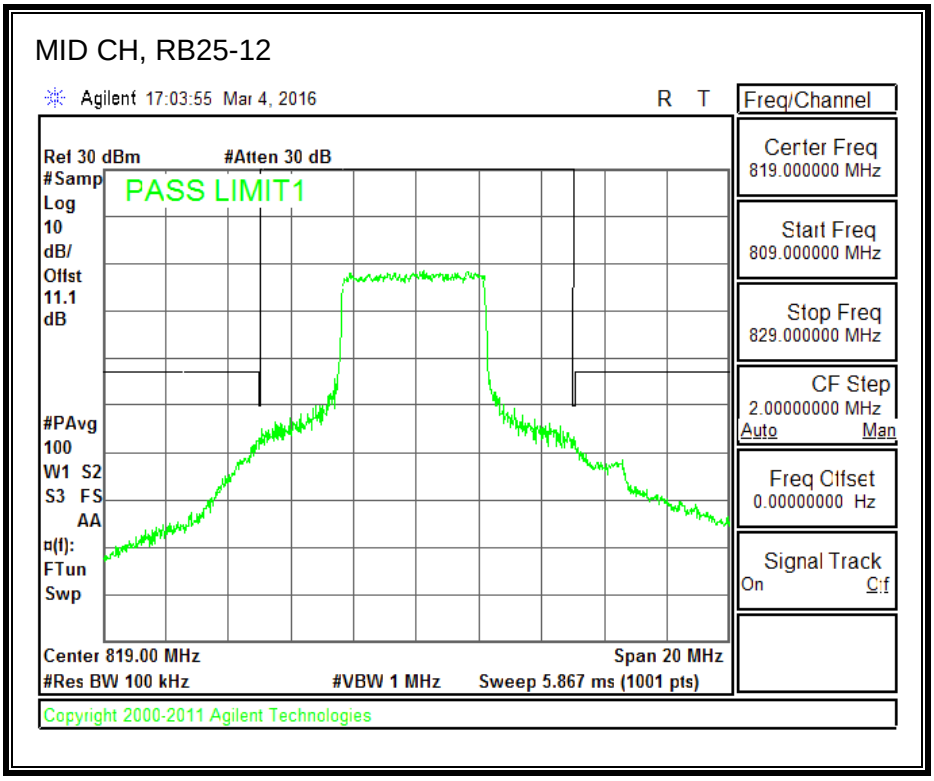
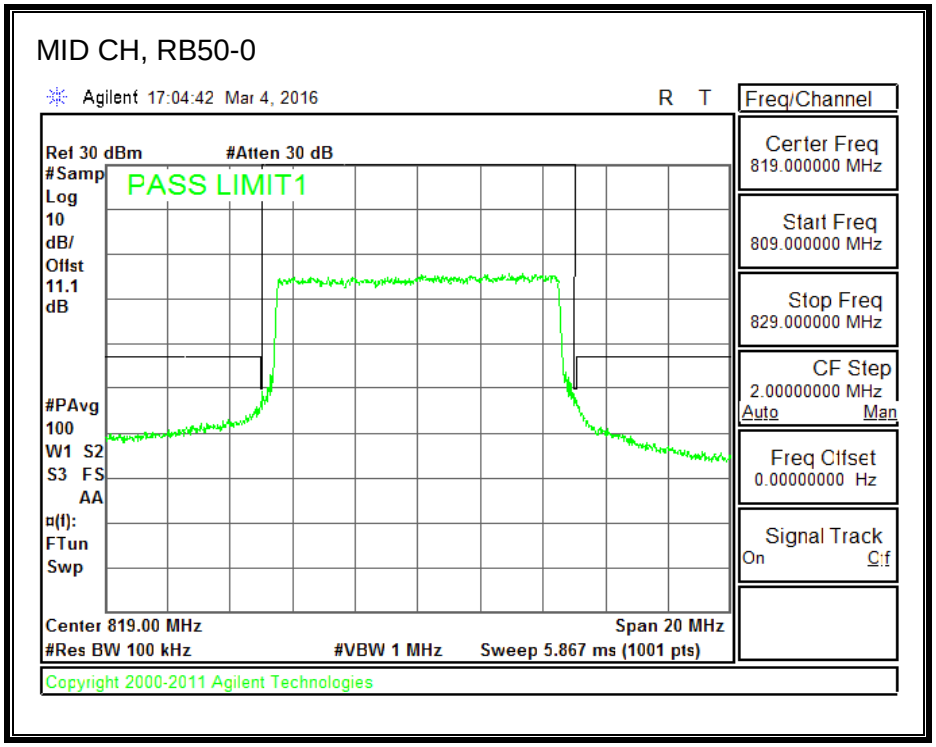
MID CH, RB25-12



MID CH, RB50-0



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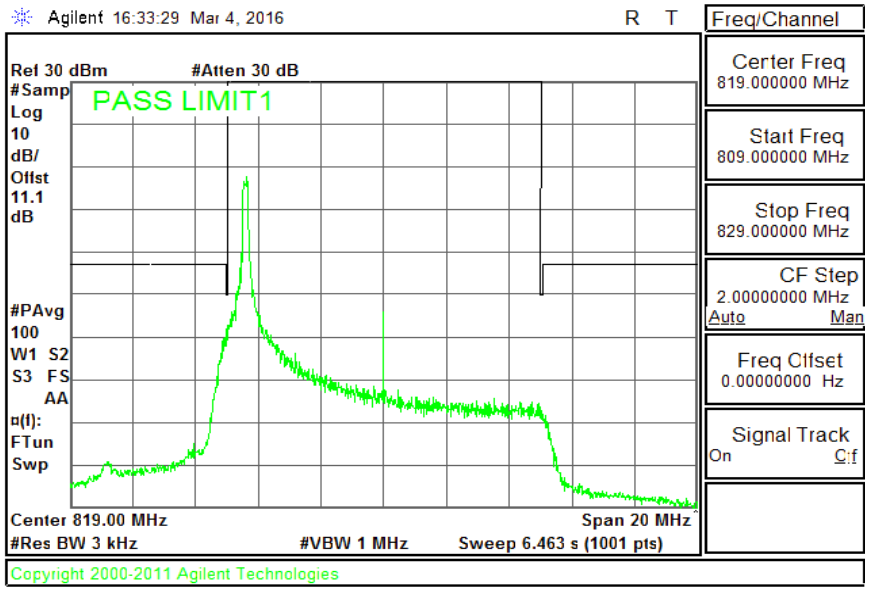
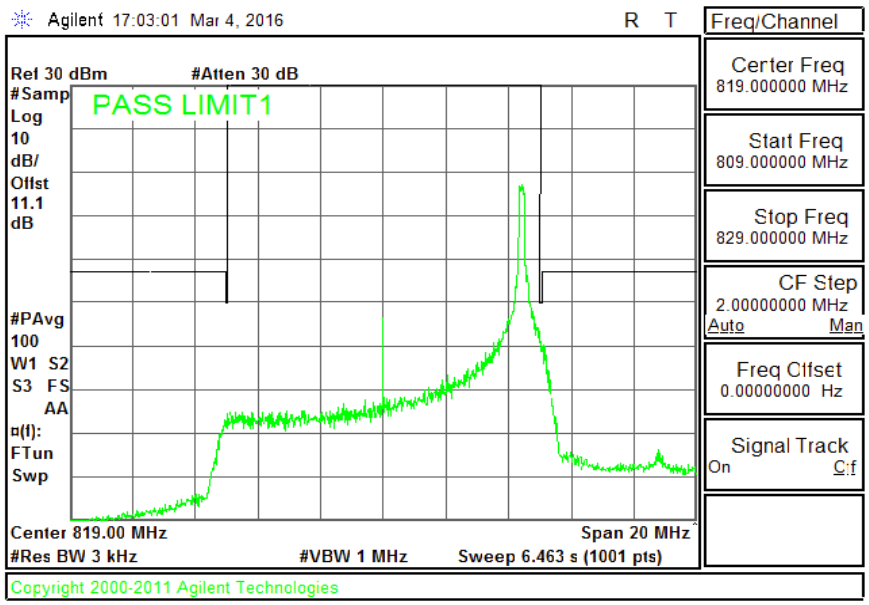
16QAM, (10.0 MHz BAND WIDTH)

MID CH, RB1-0



MID CH, RB1-49



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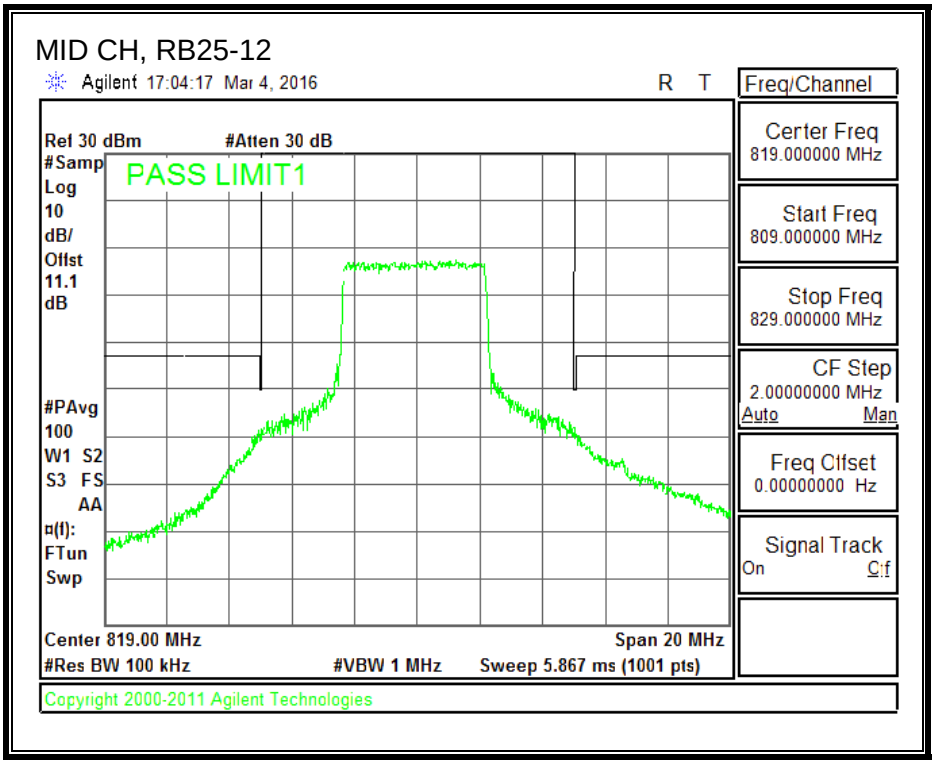
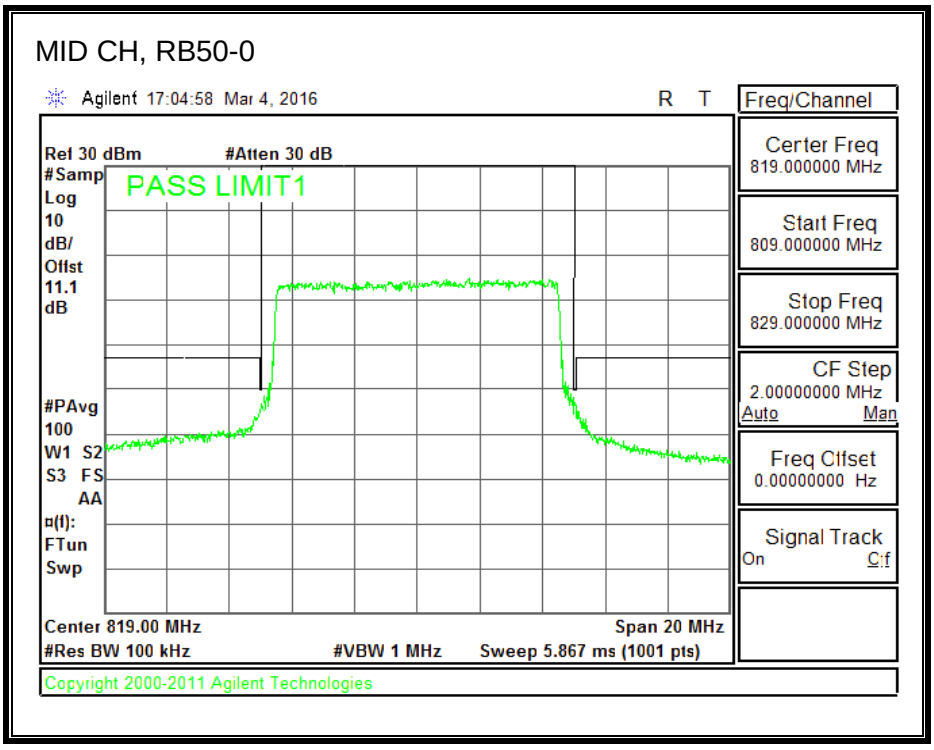
MID CH, RB25-12



MID CH, RB50-0



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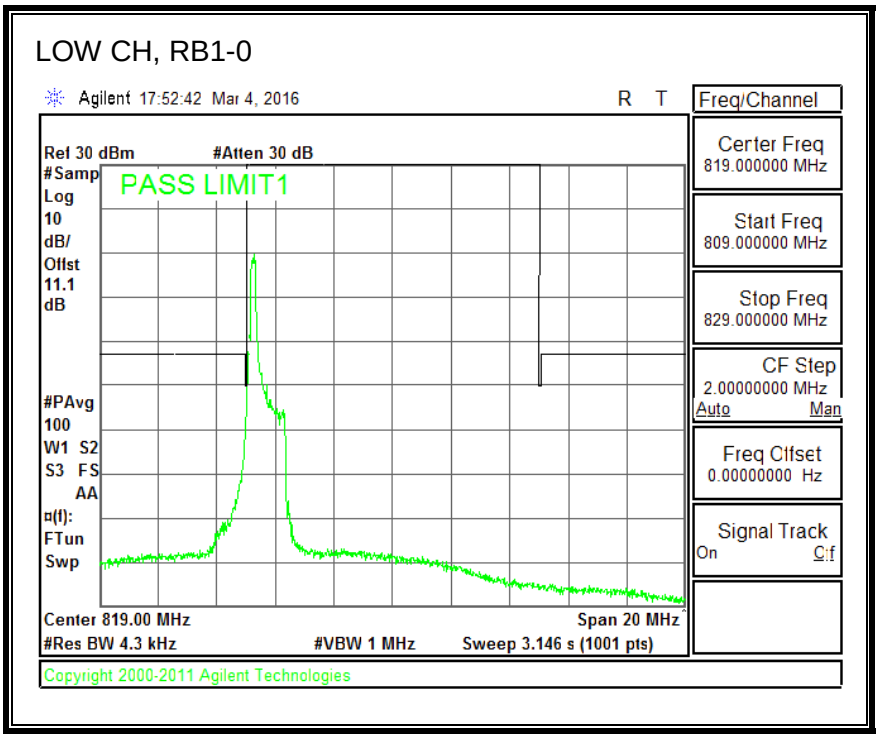
8.2.10. LTE BAND 27 EMISSION MASK

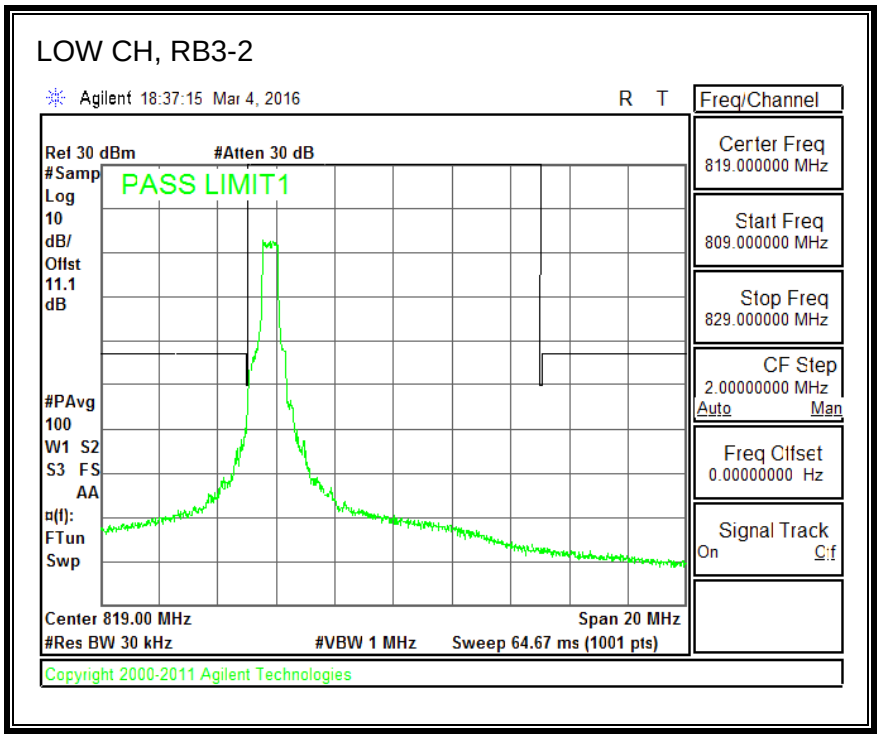
ID:	38806	Date:	3/4/16

QPSK, (1.4 MHz BAND WIDTH)

LOW CH, RB1-0



LOW CH, RB3-2



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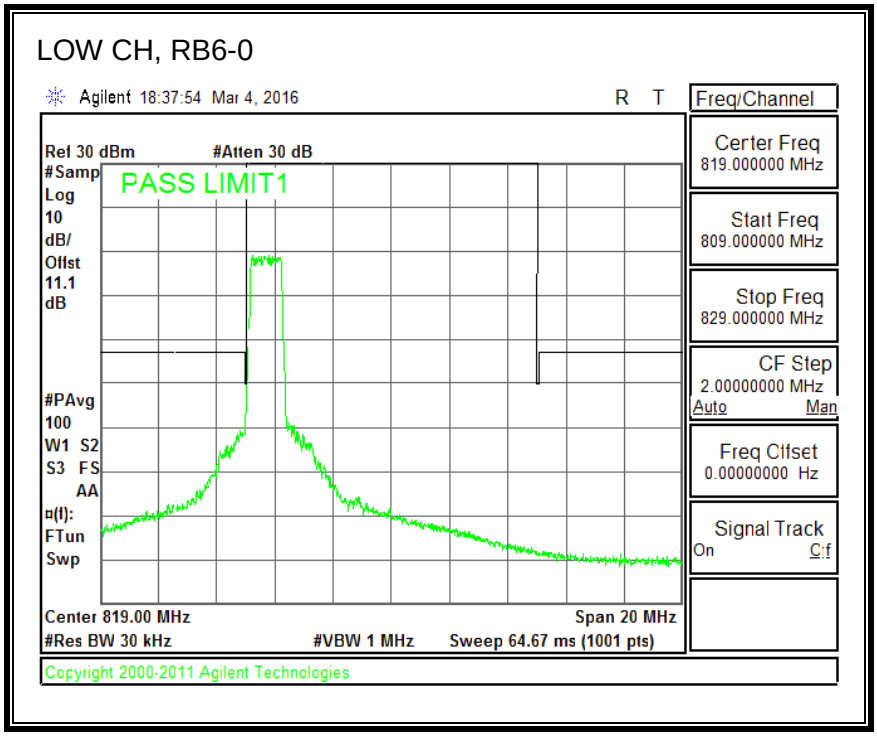
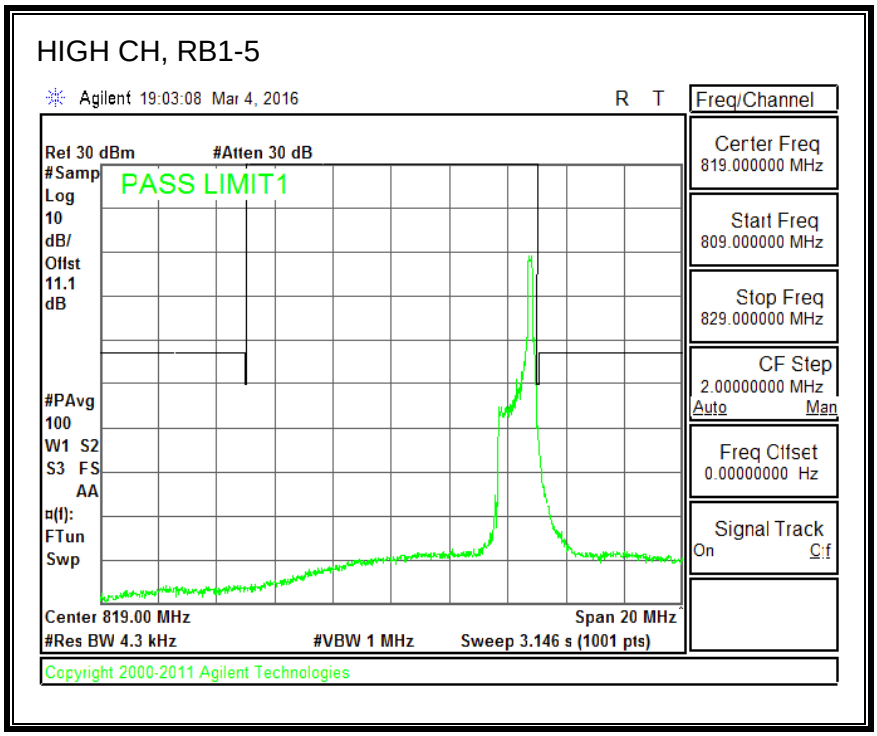
LOW CH, RB6-0



HIGH CH, RB1-5



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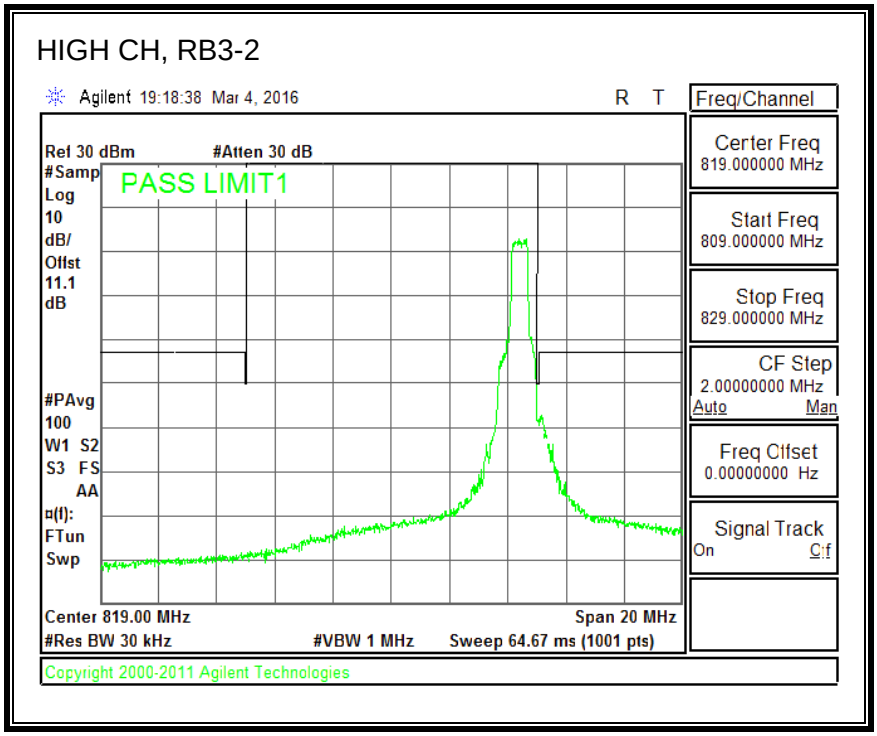
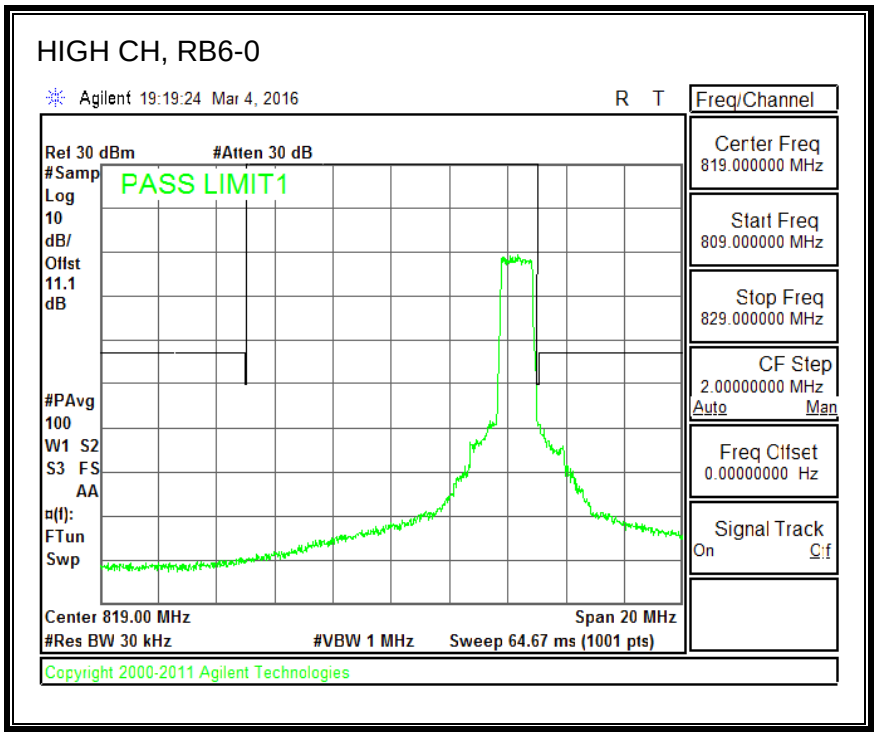
HIGH CH, RB3-2



HIGH CH, RB6-0



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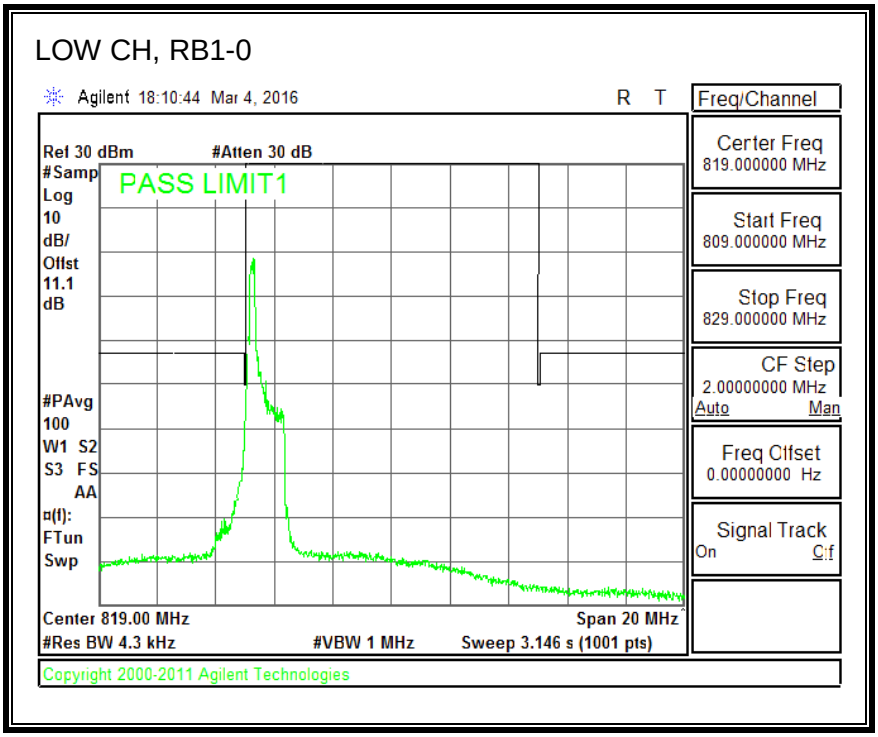
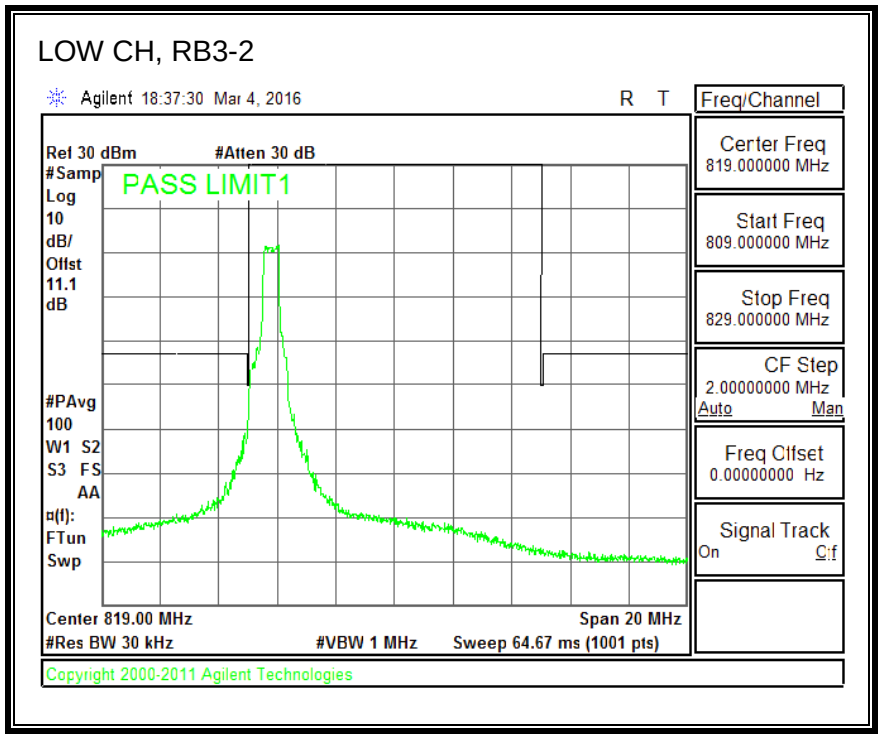
16QAM, (1.4 MHz BAND WIDTH)

LOW CH, RB1-0



LOW CH, RB3-2



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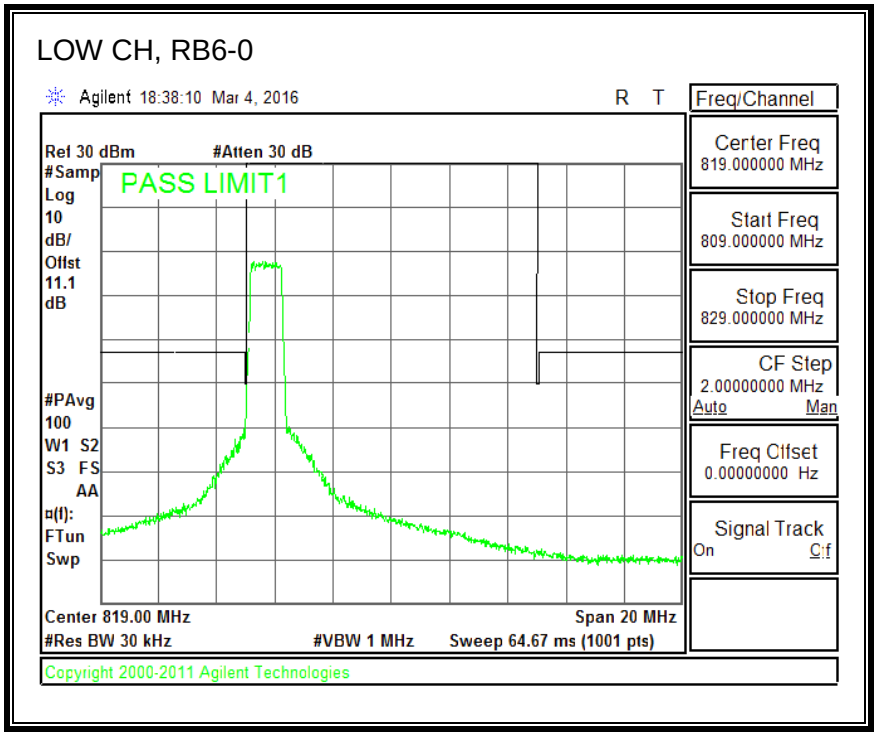
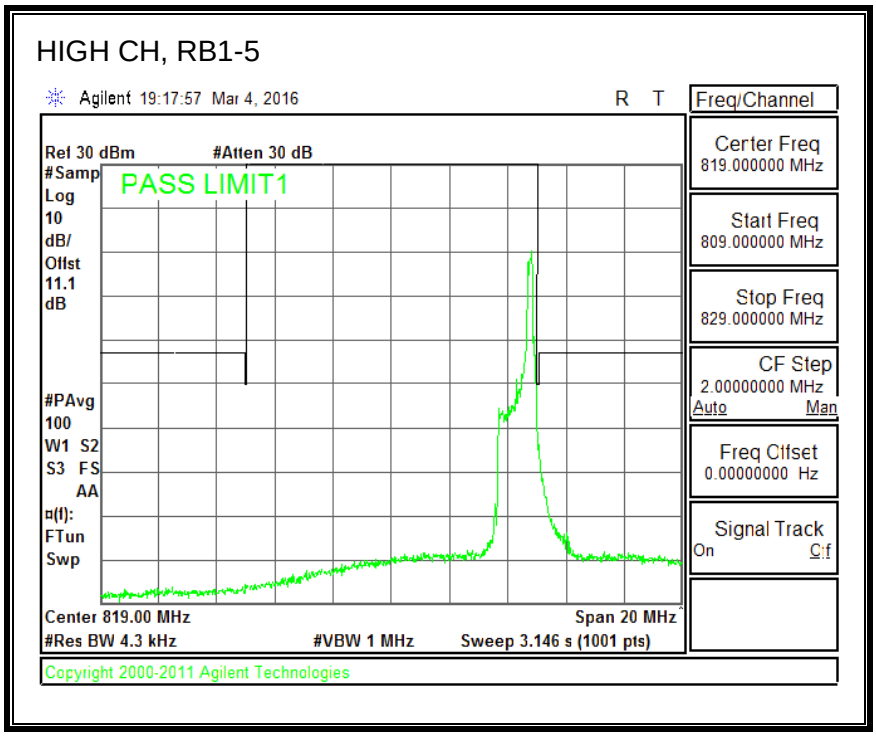
LOW CH, RB6-0



HIGH CH, RB1-5



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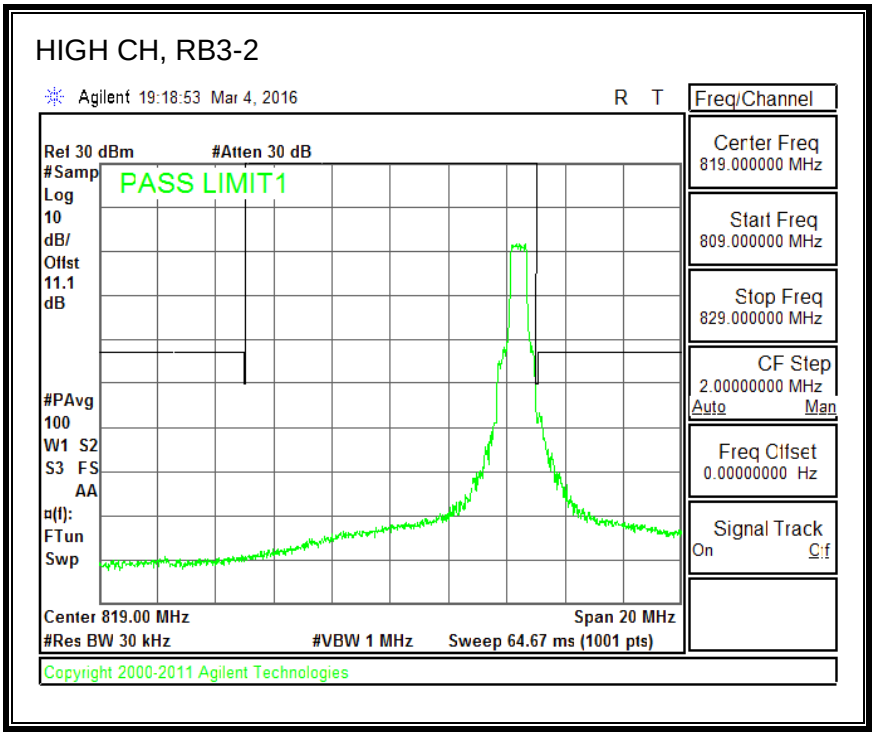
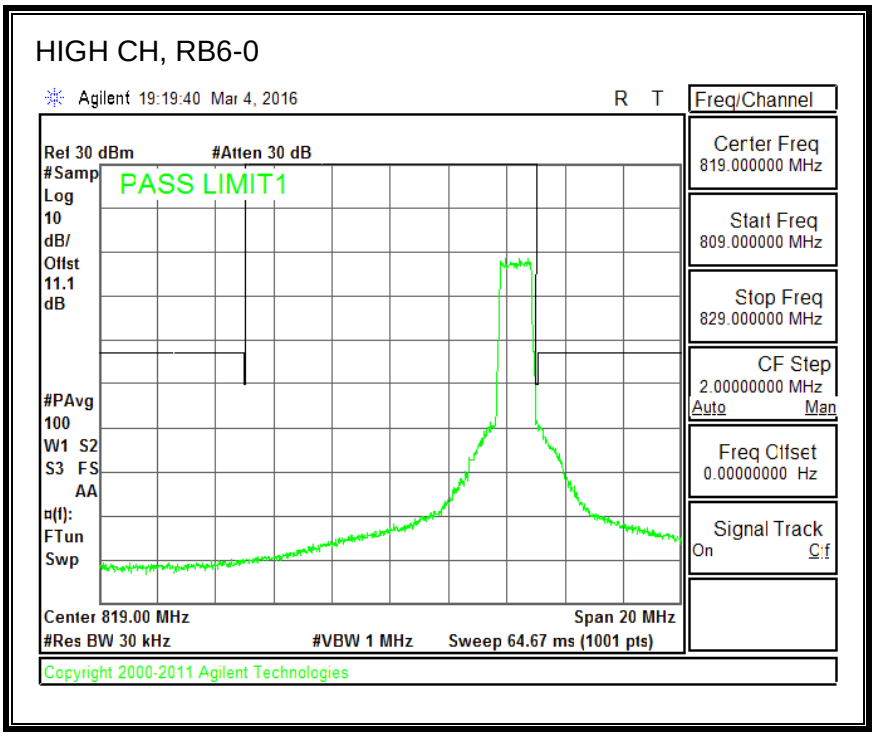
HIGH CH, RB3-2



HIGH CH, RB6-0



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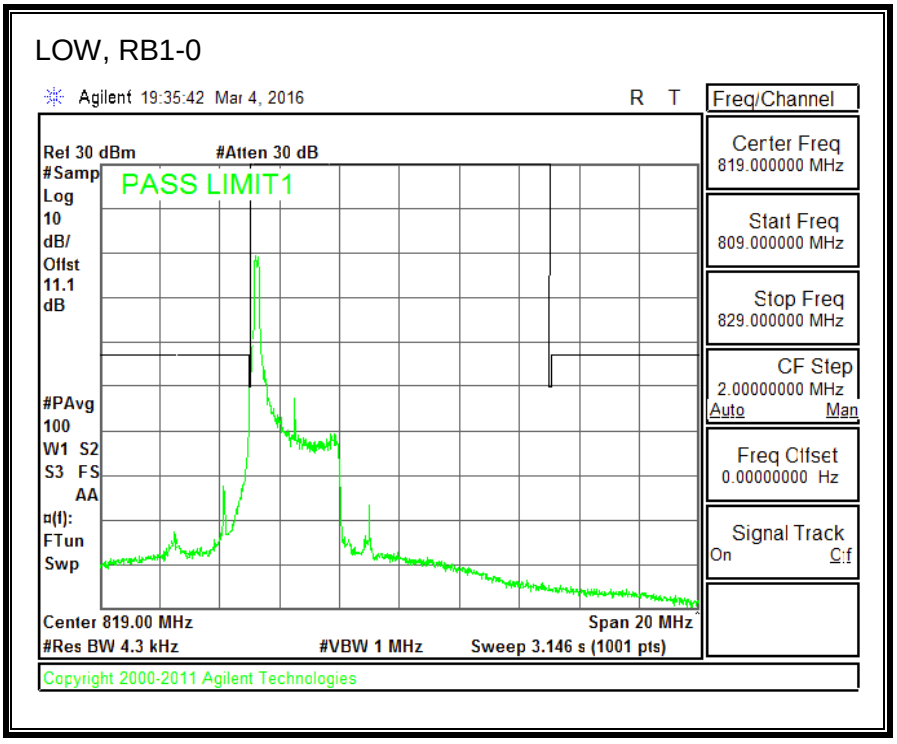
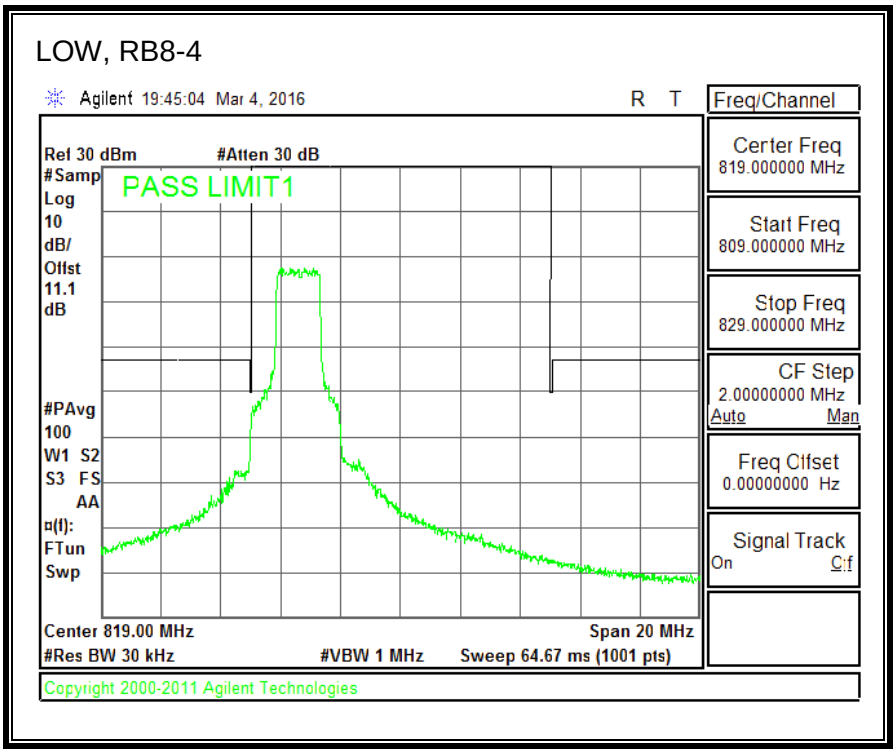
QPSK, (3.0 MHz BAND WIDTH)

LOW, RB1-0



LOW, RB8-4



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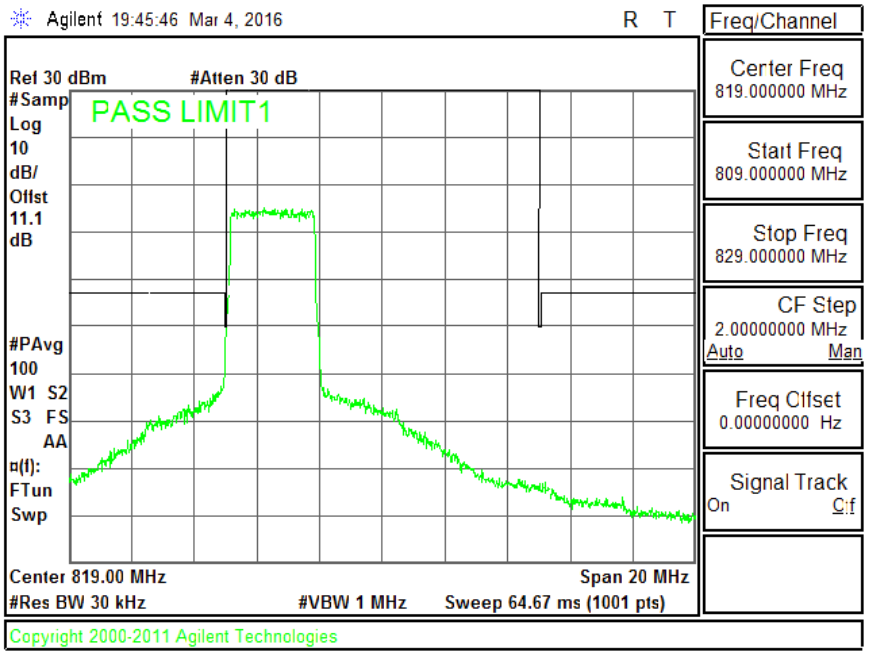
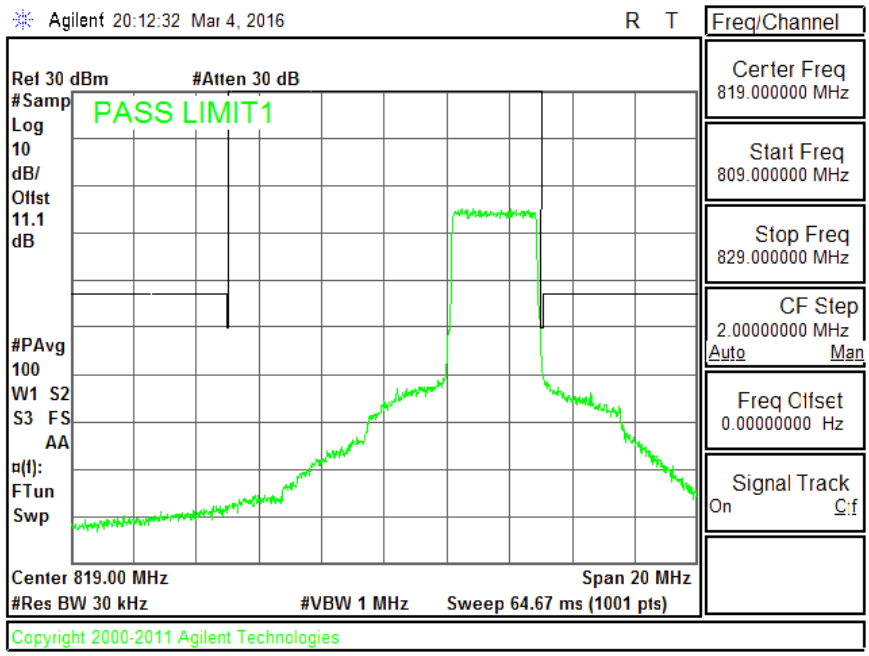
LOW CH, RB15-0



HIGH CH, RB1-14



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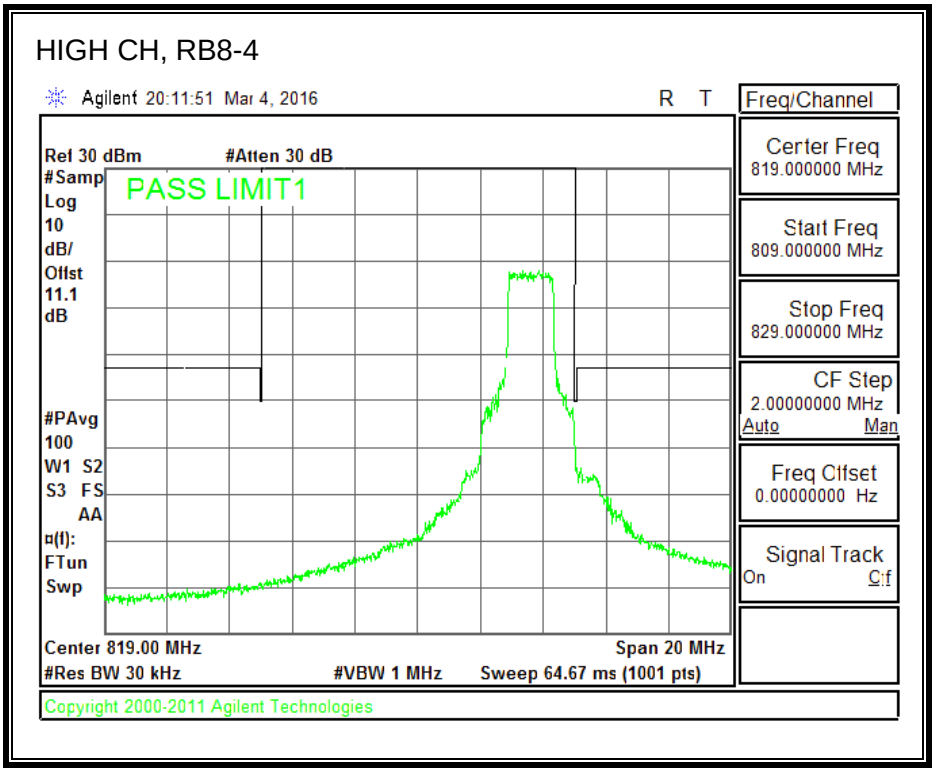
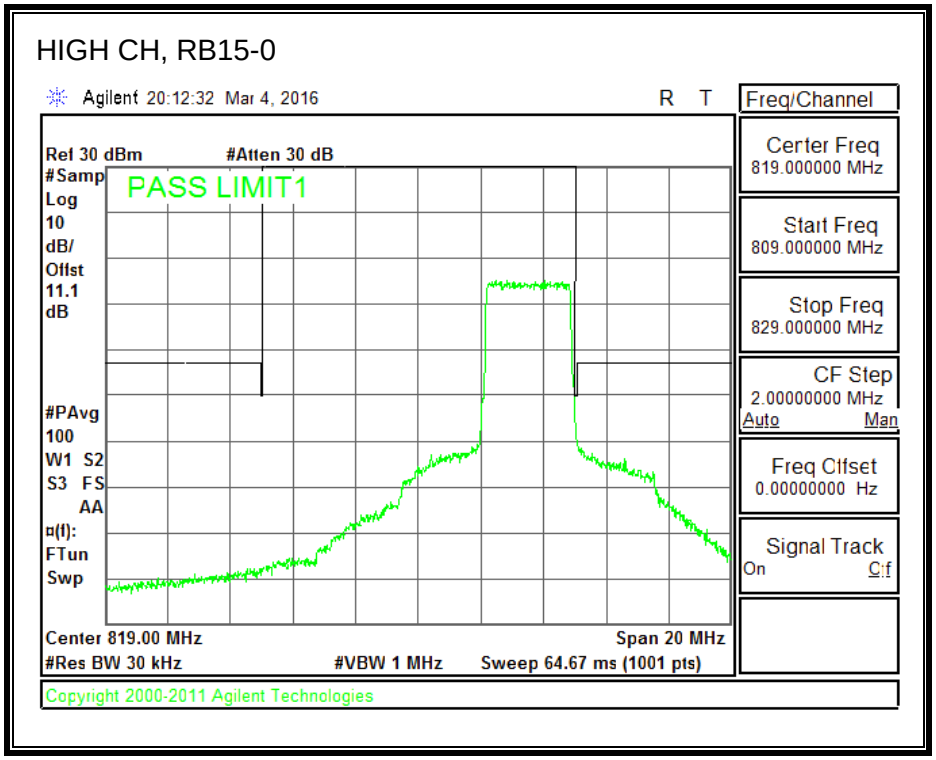
HIGH CH, RB8-4



HIGH CH, RB15-0



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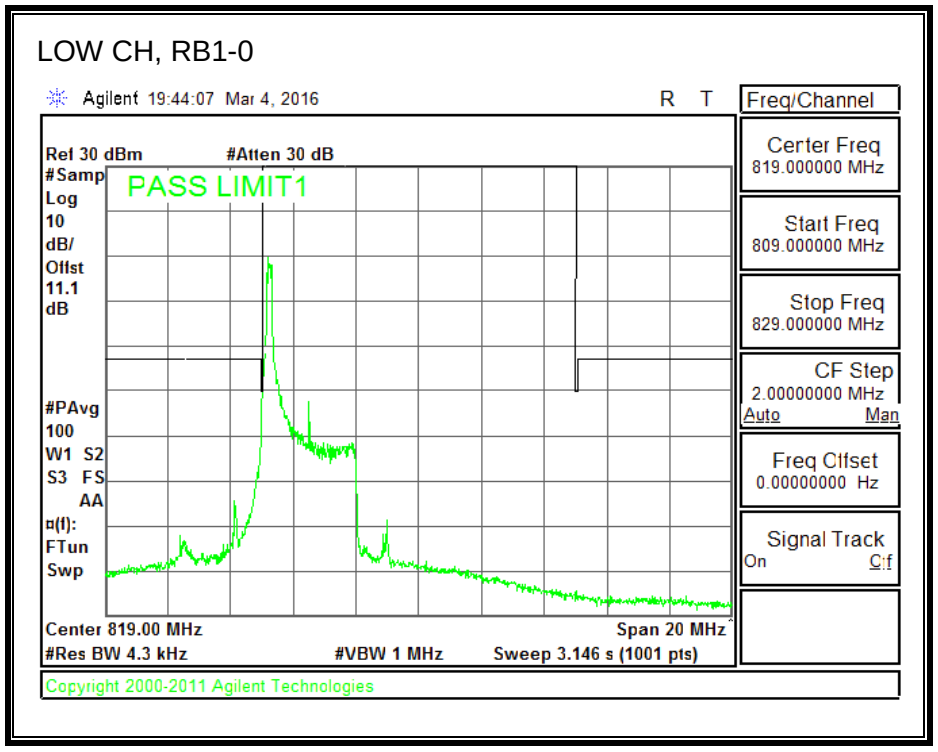
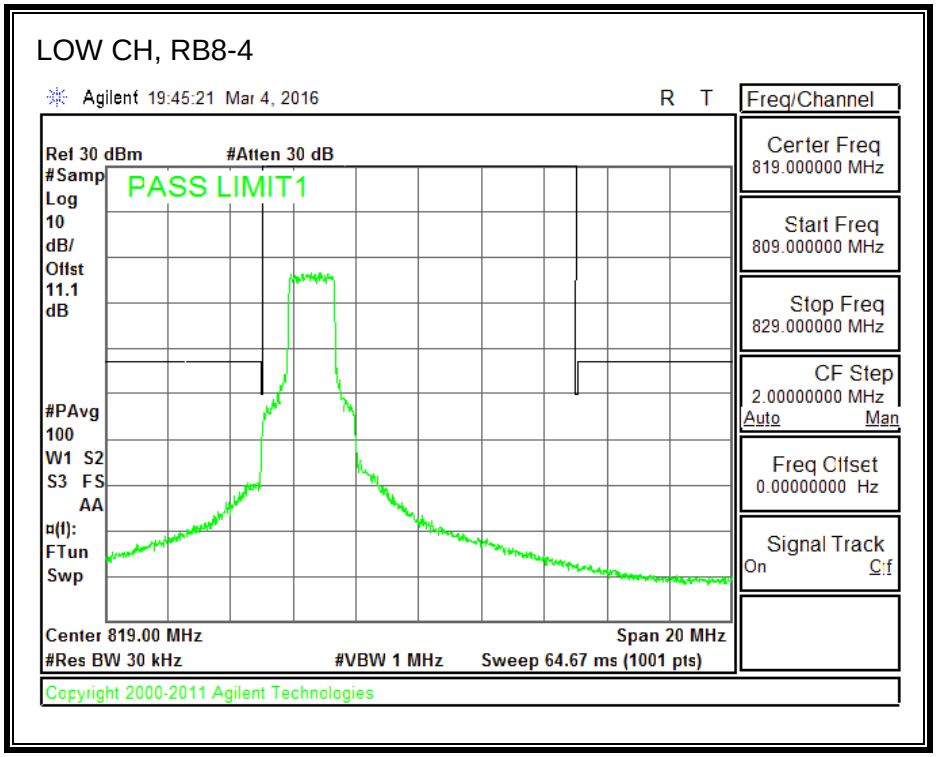
16QAM, (3.0 MHz BAND WIDTH)

LOW CH, RB1-0



LOW CH, RB8-4



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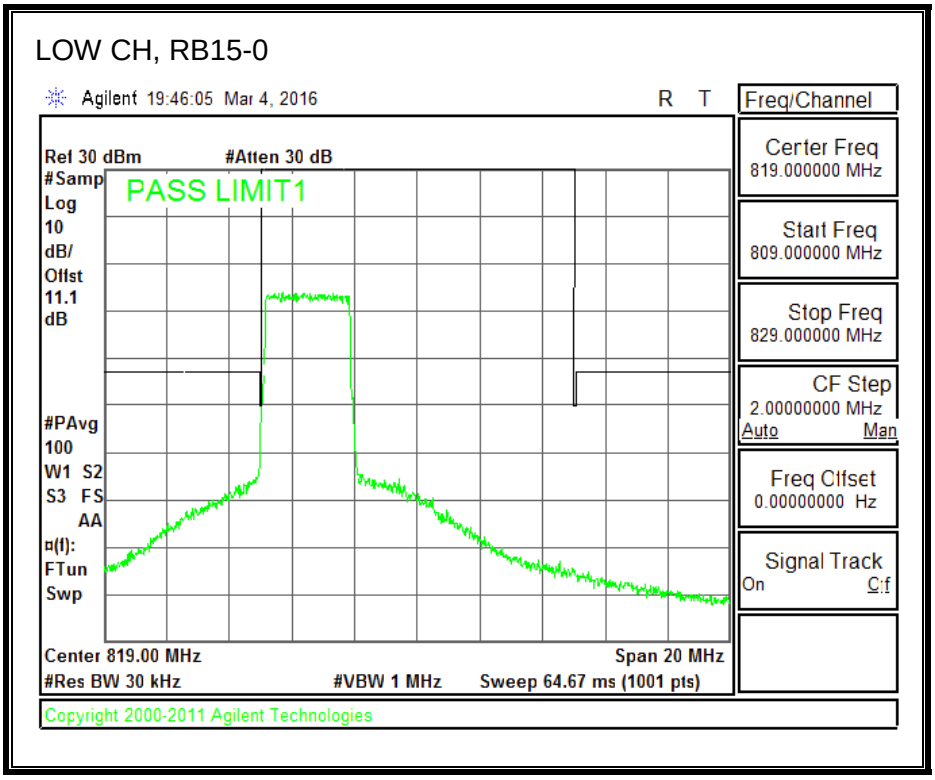
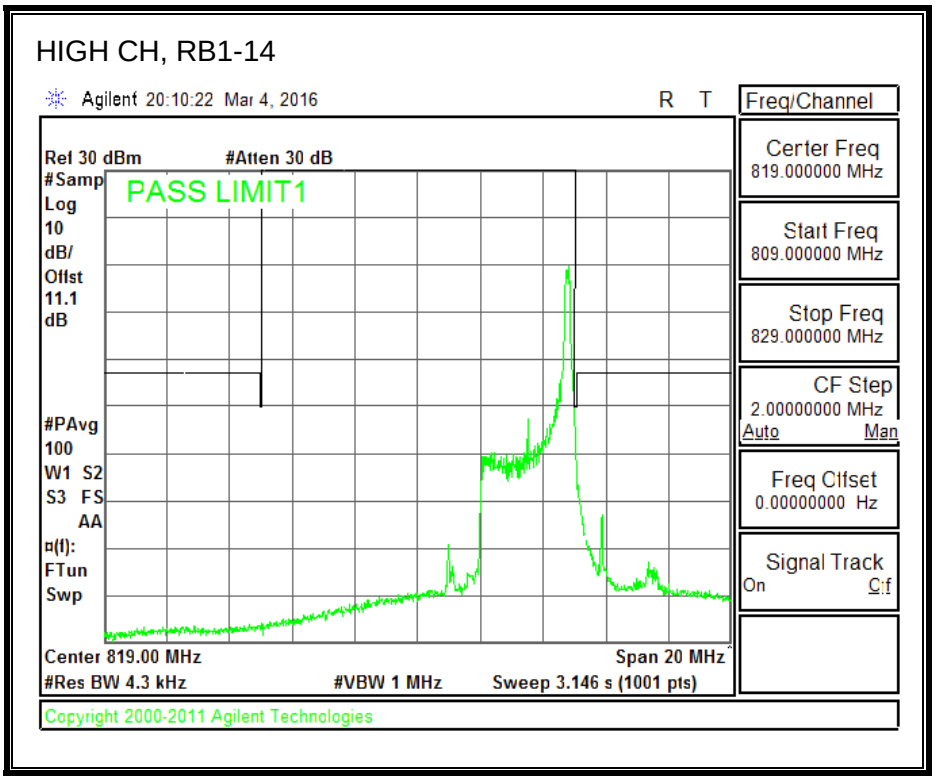
LOW CH, RB15-0



HIGH CH, RB1-14



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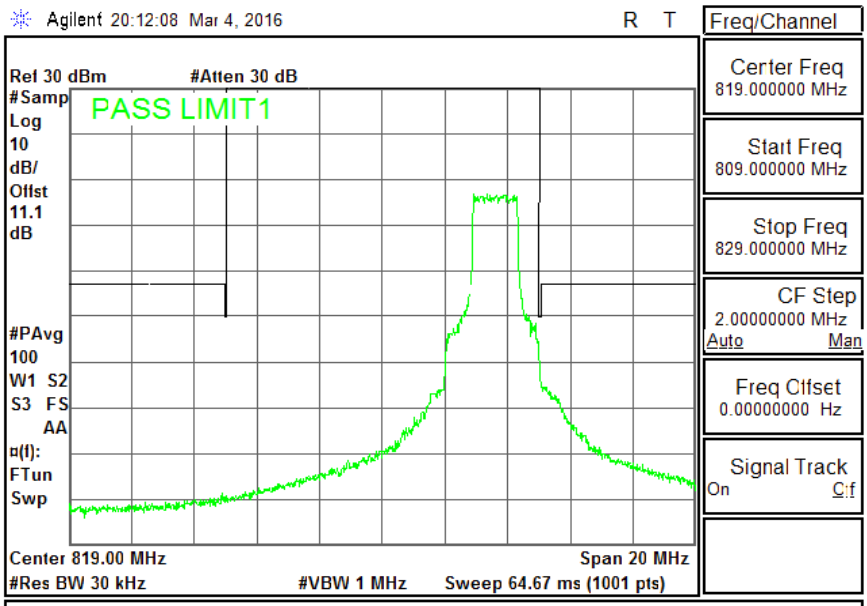
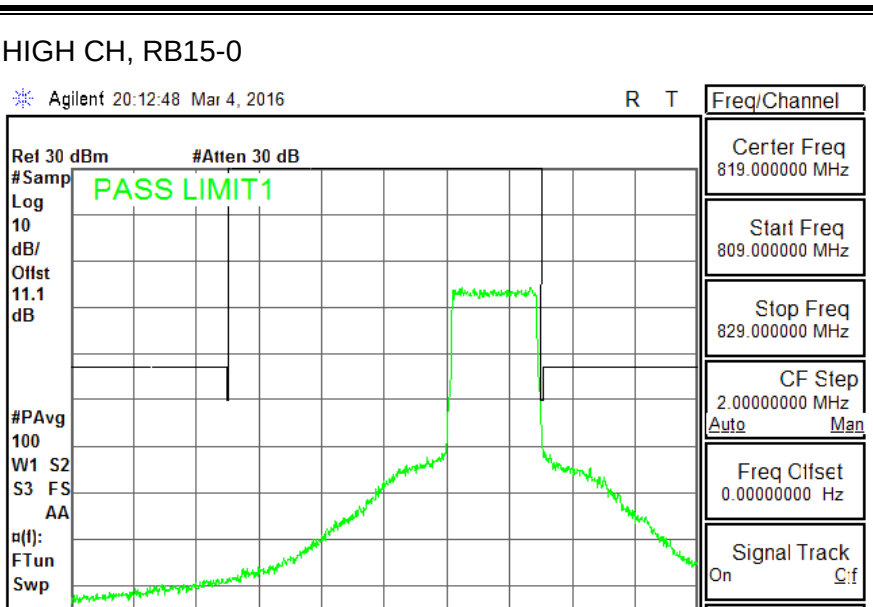
HIGH CH, RB8-4



HIGH CH, RB15-0



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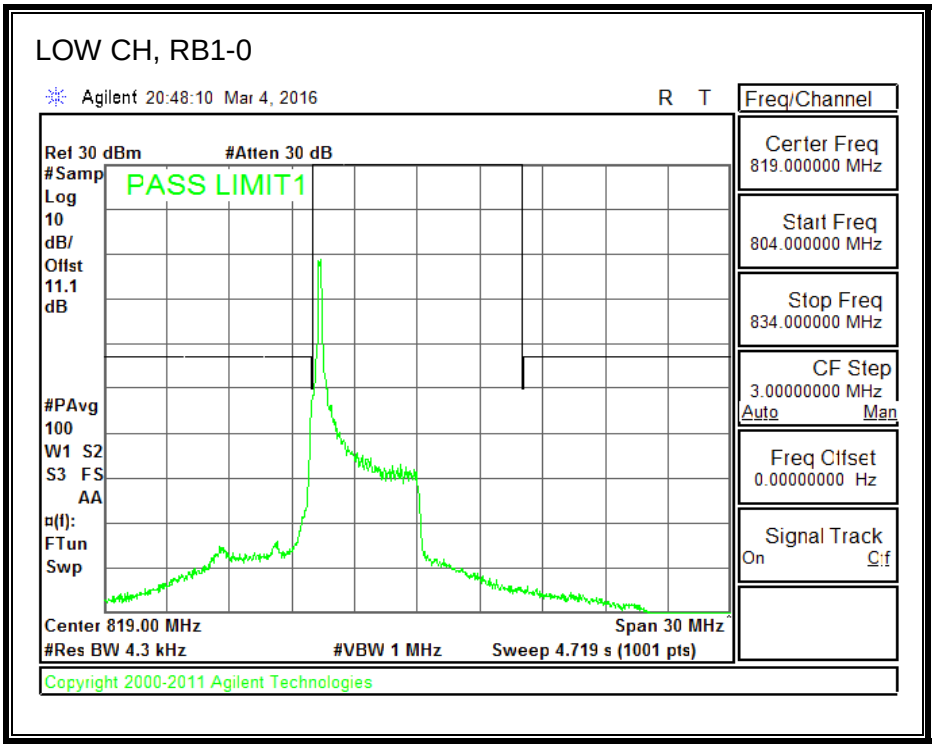
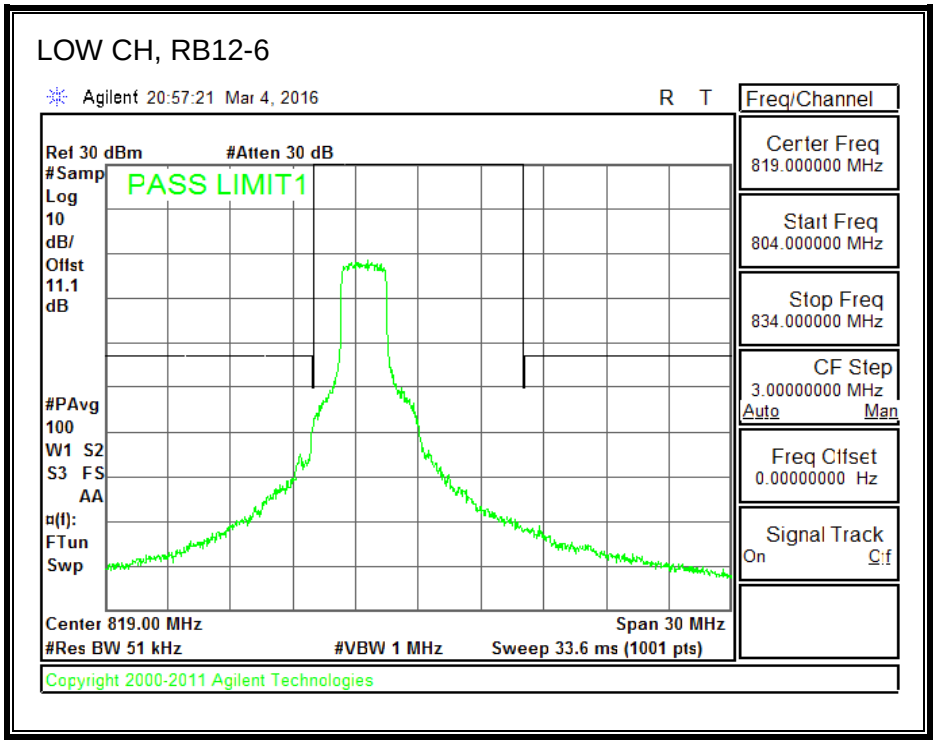
QPSK, (5.0 MHz BAND WIDTH)

LOW CH, RB1-0



LOW CH, RB12-6



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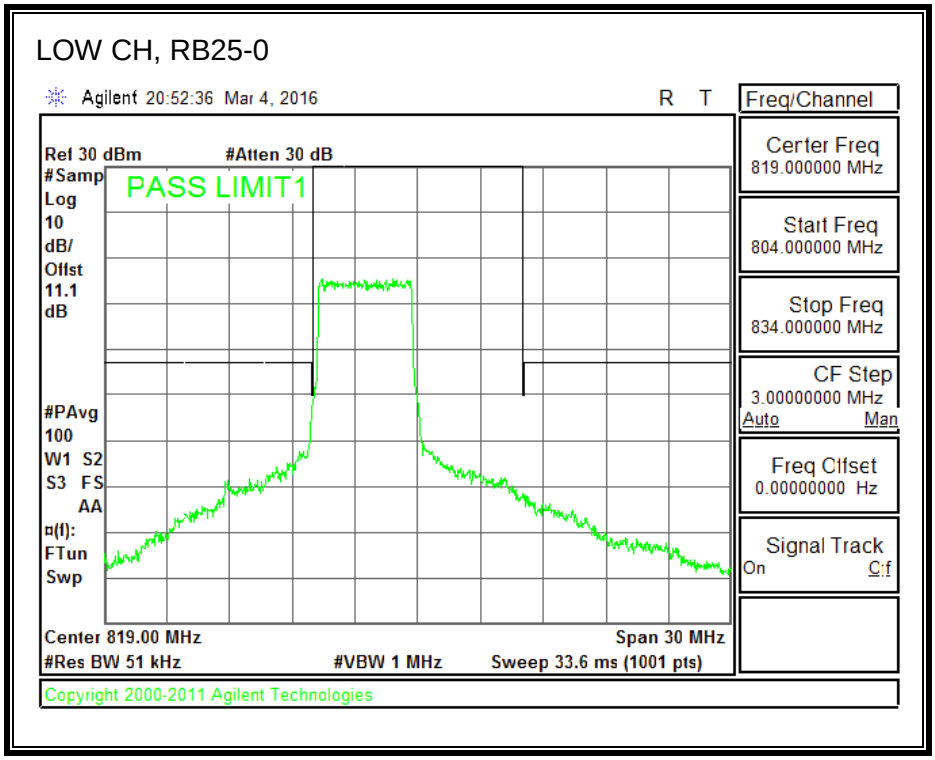
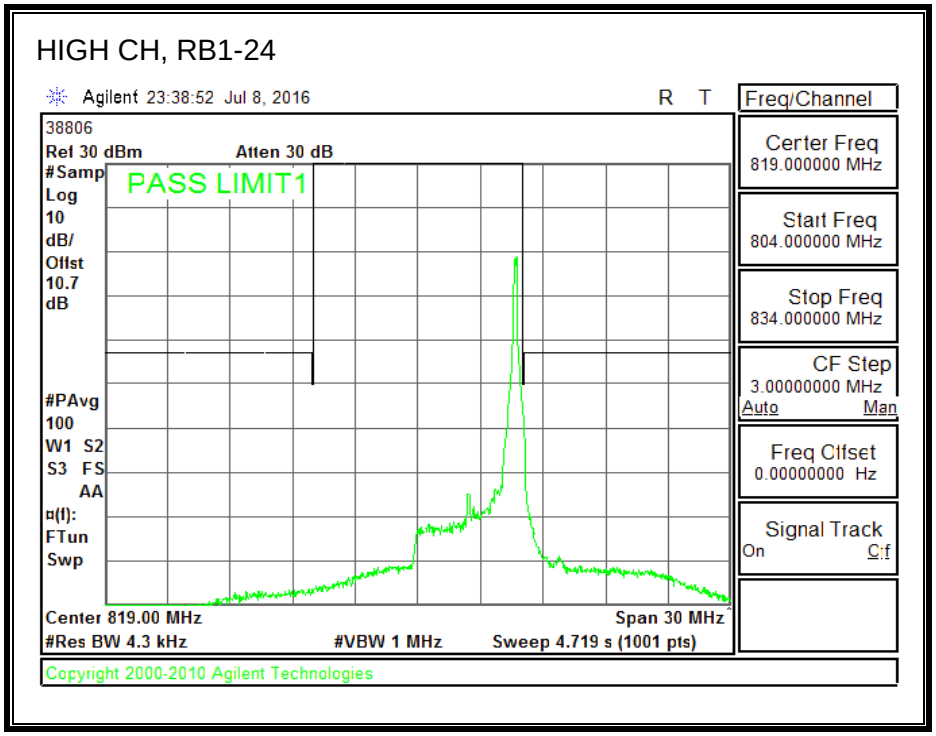
LOW CH, RB25-0



HIGH CH, RB1-24



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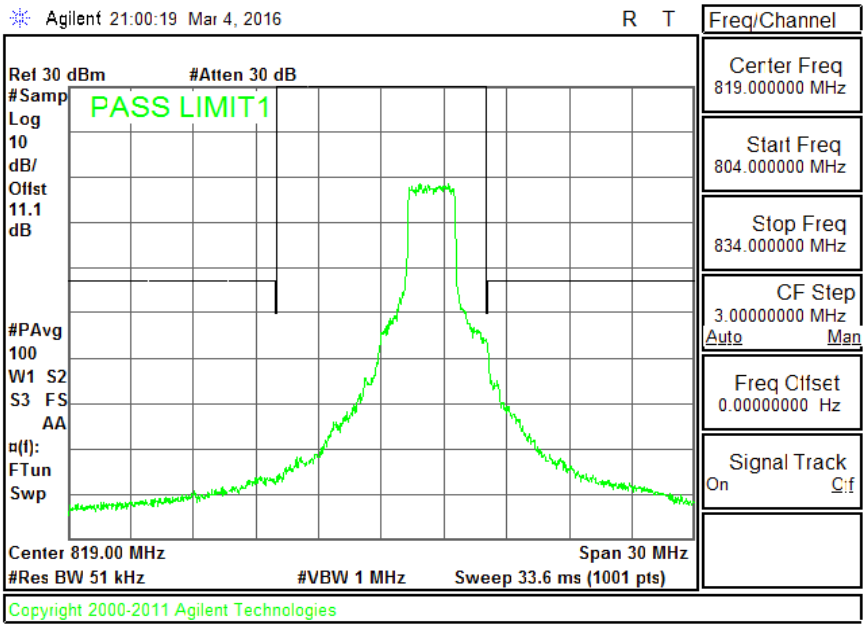
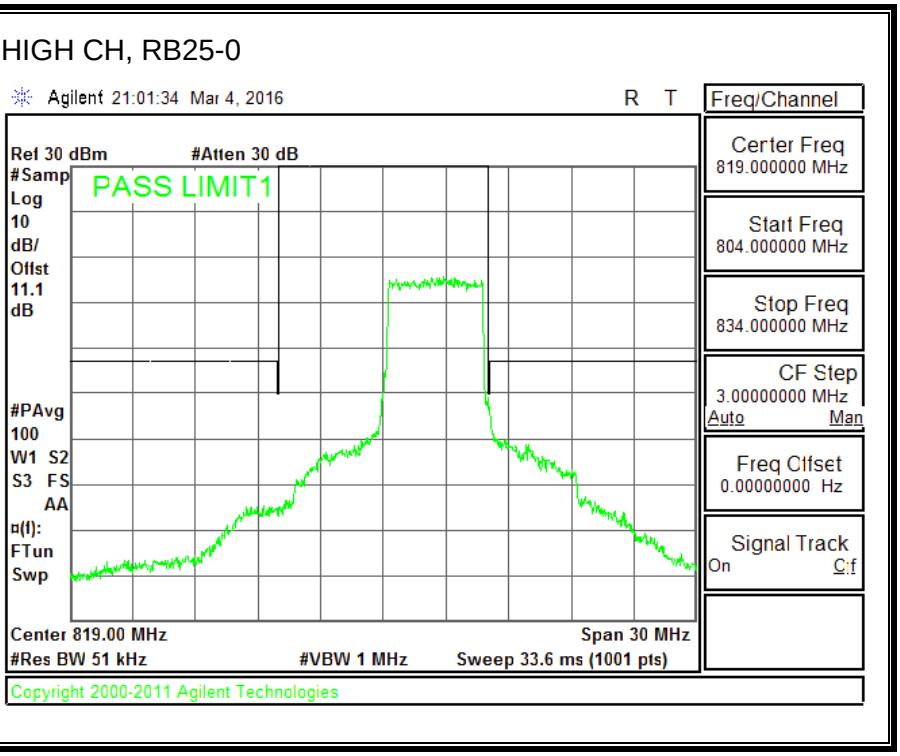
HIGH CH, RB12-6



HIGH CH, RB25-0



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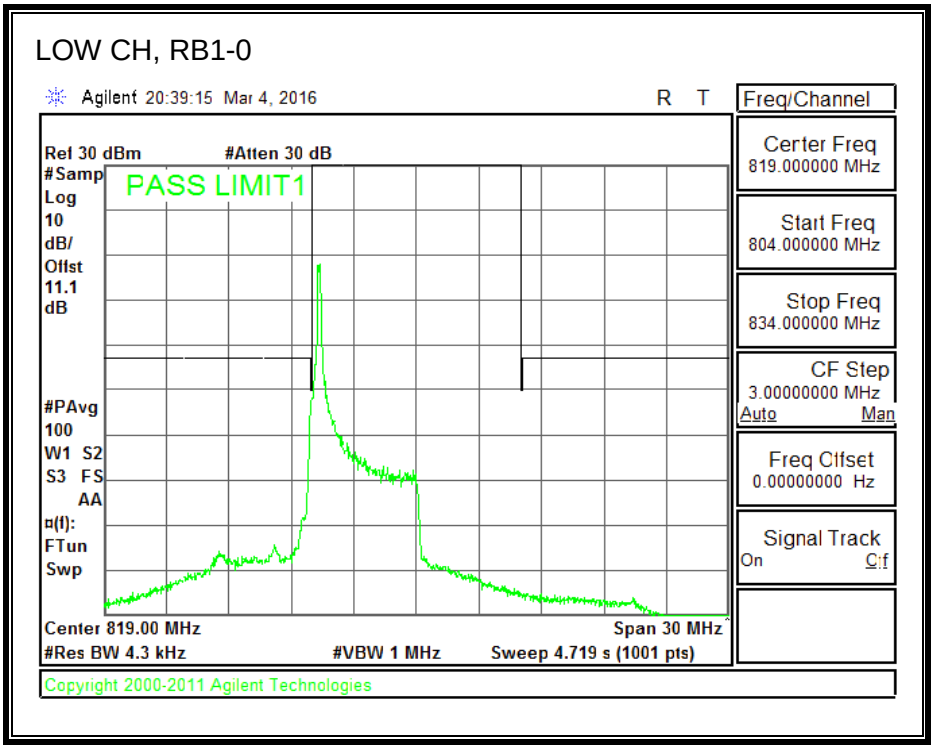
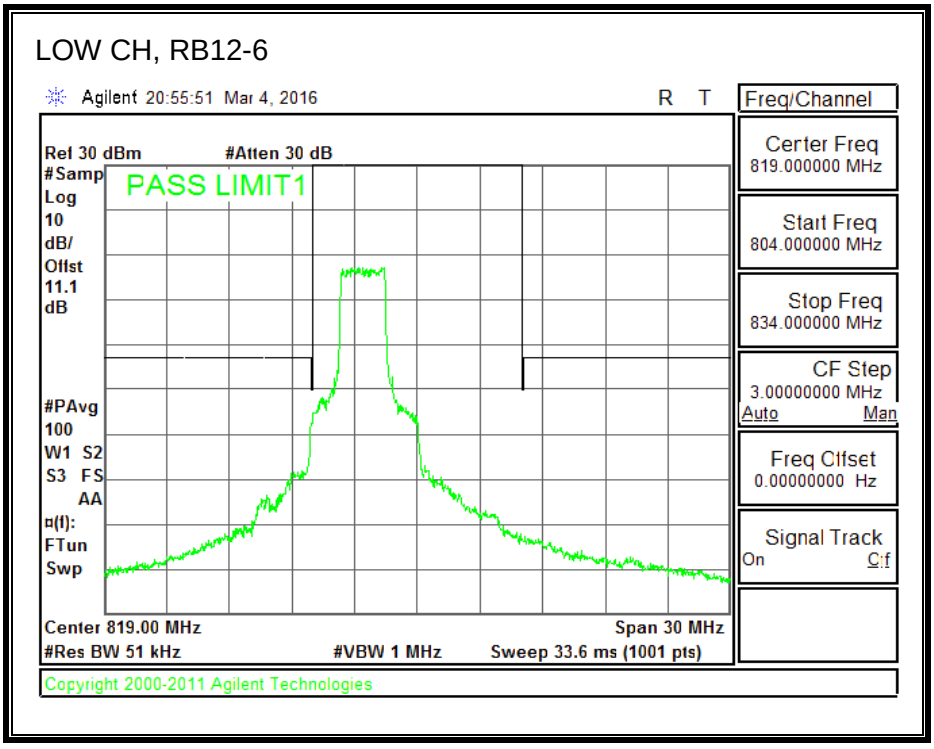
16QAM, (5.0 MHz BAND WIDTH)

LOW CH, RB1-0



LOW CH, RB12-6



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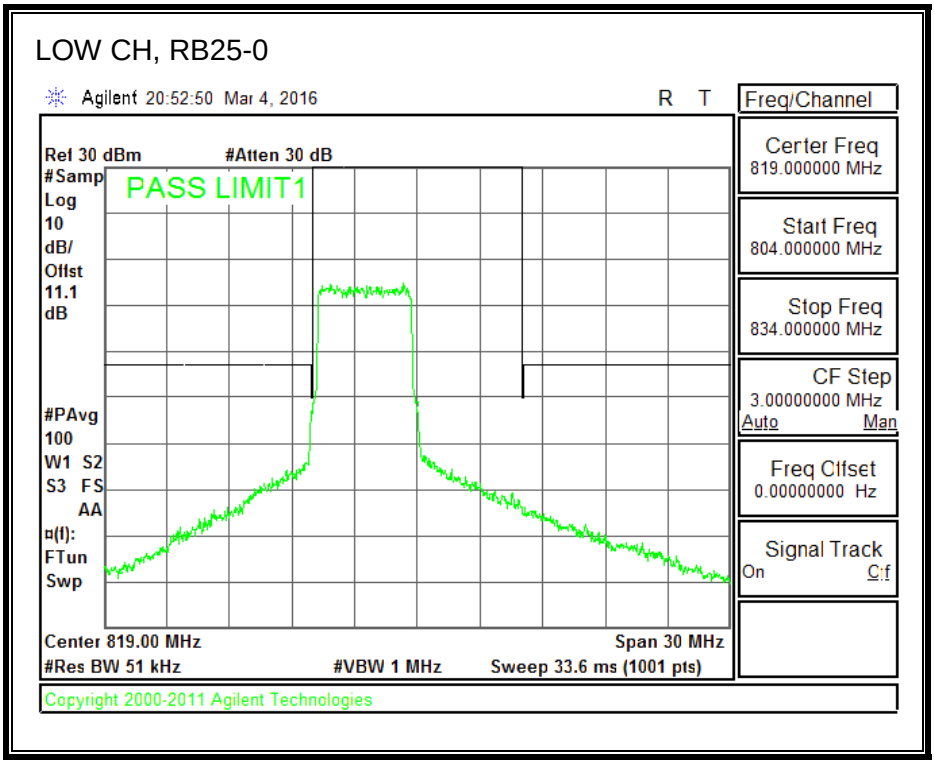
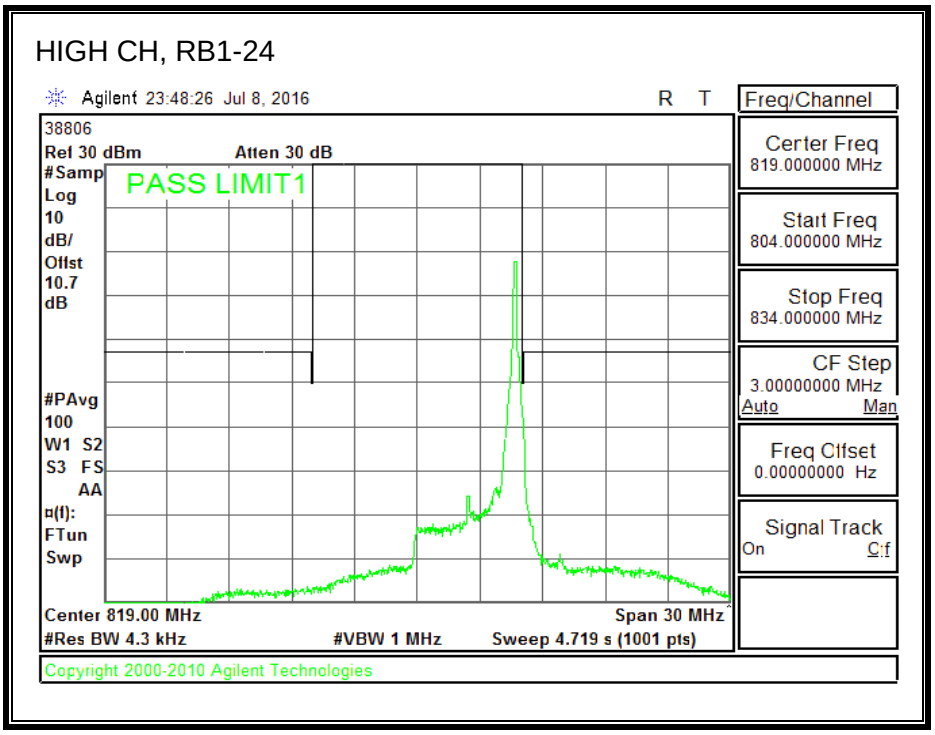
LOW CH, RB25-0



HIGH CH, RB1-24



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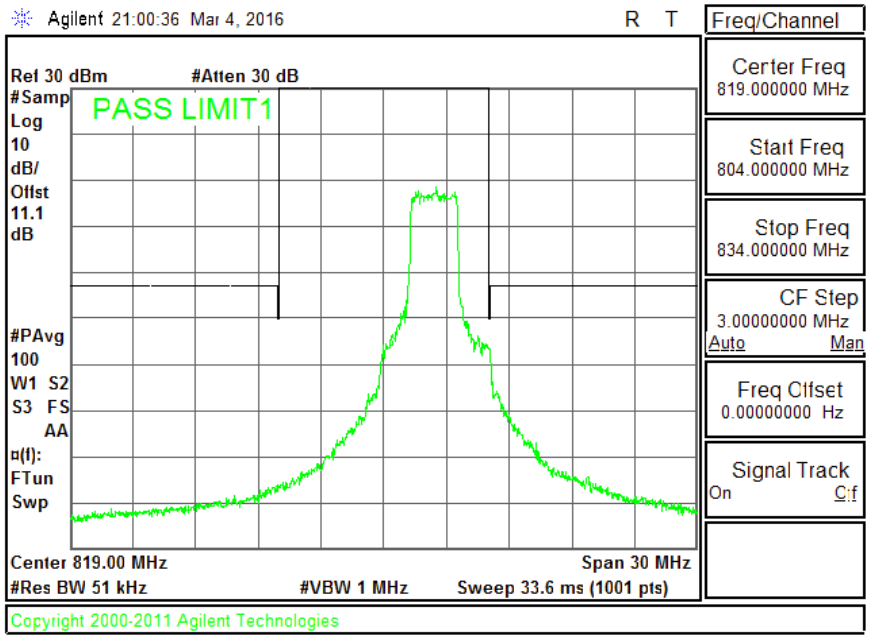
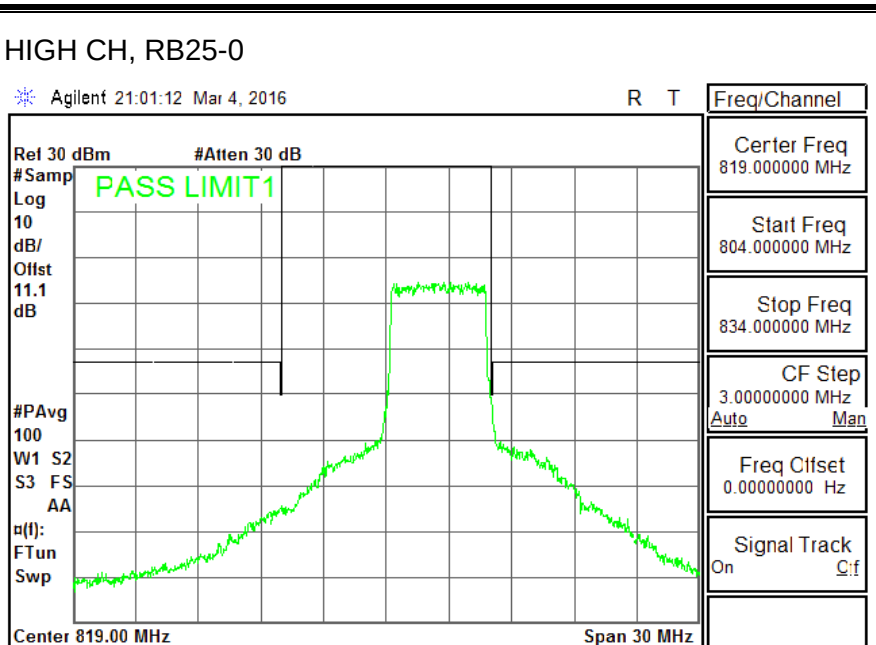
HIGH CH, RB12-6



HIGH CH, RB25-0



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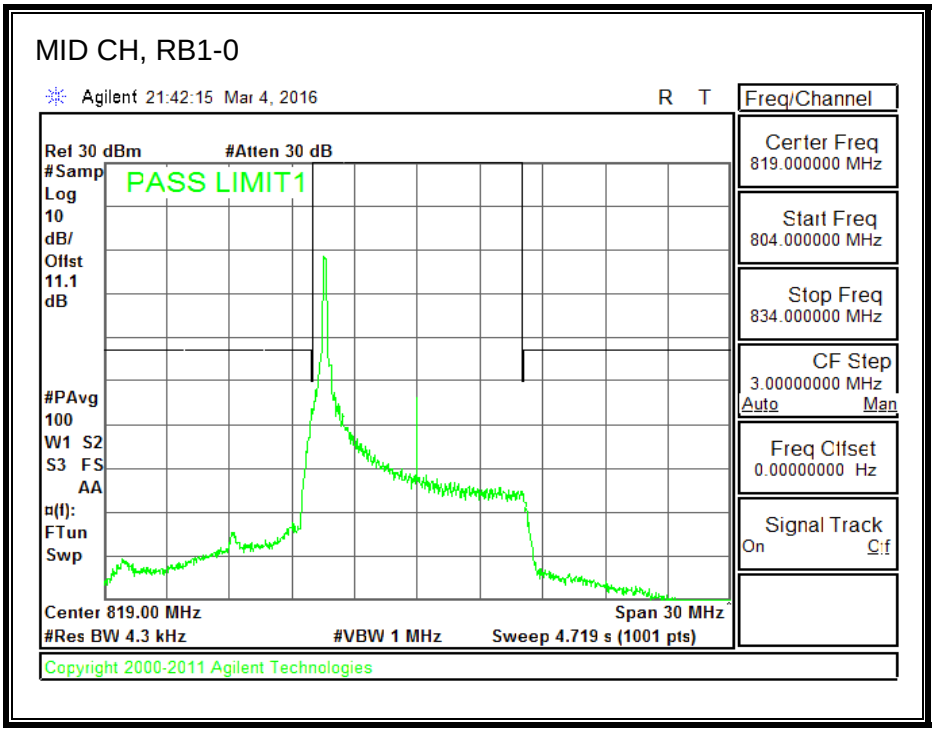
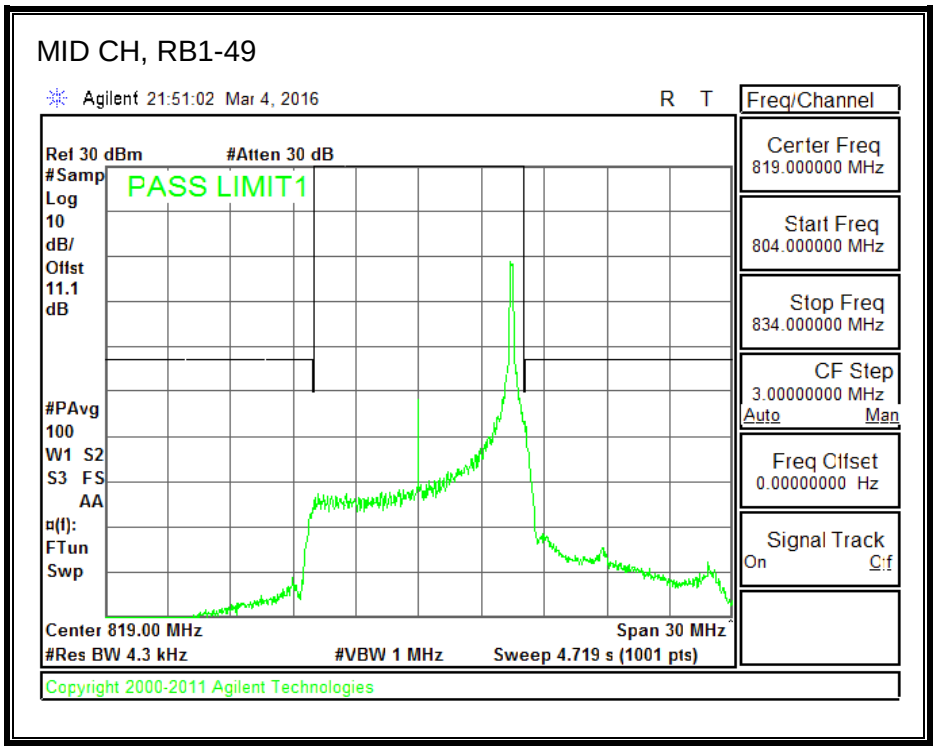
QPSK, (10.0 MHz BAND WIDTH)

MID CH, RB1-0



MID CH, RB1-49



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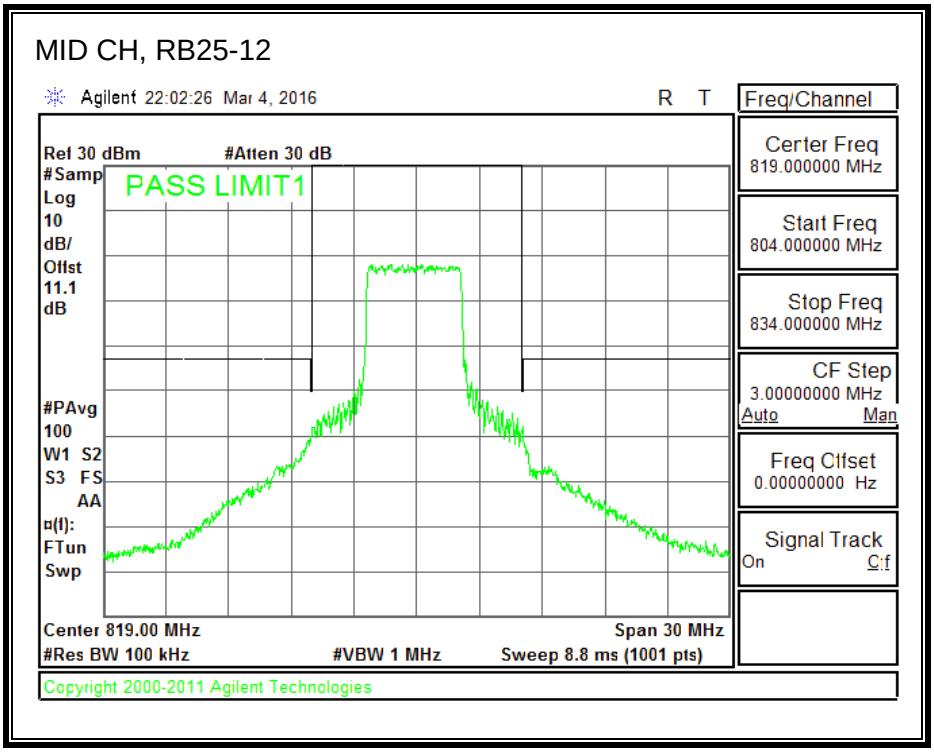
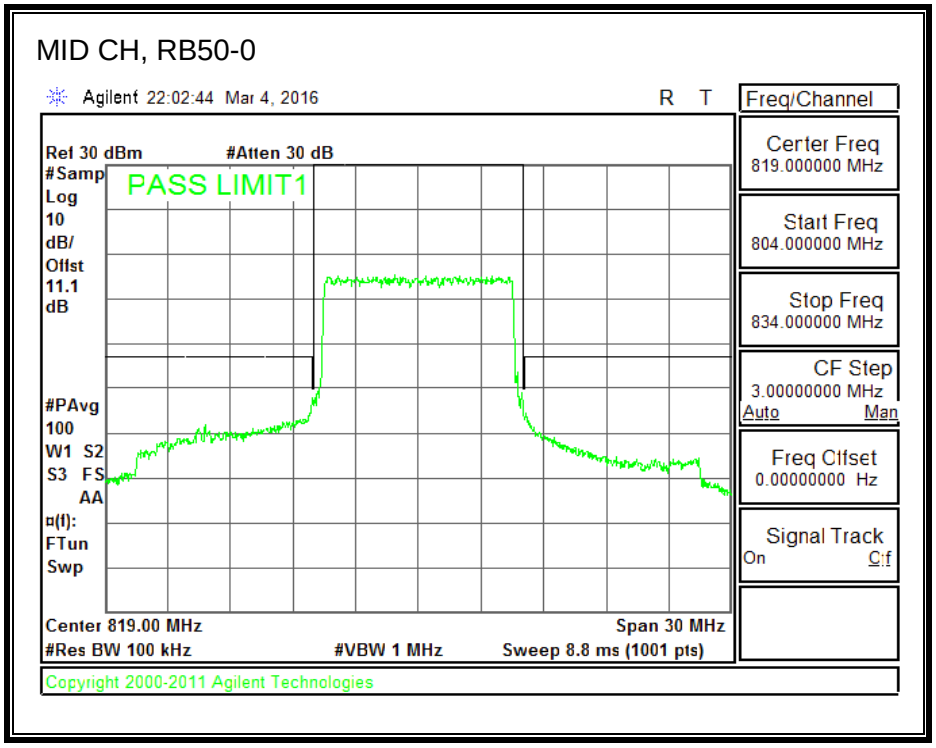
MID CH, RB25-12



MID CH, RB50-0



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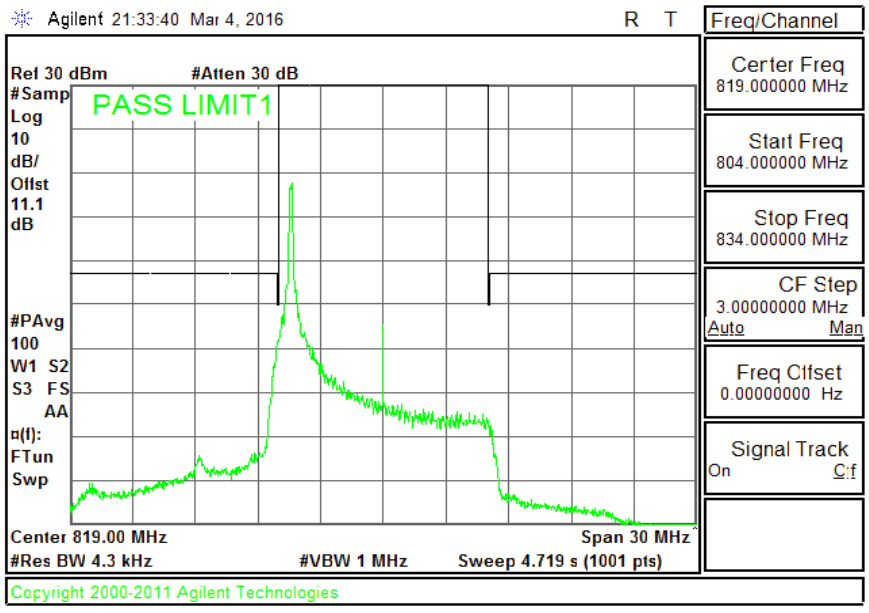
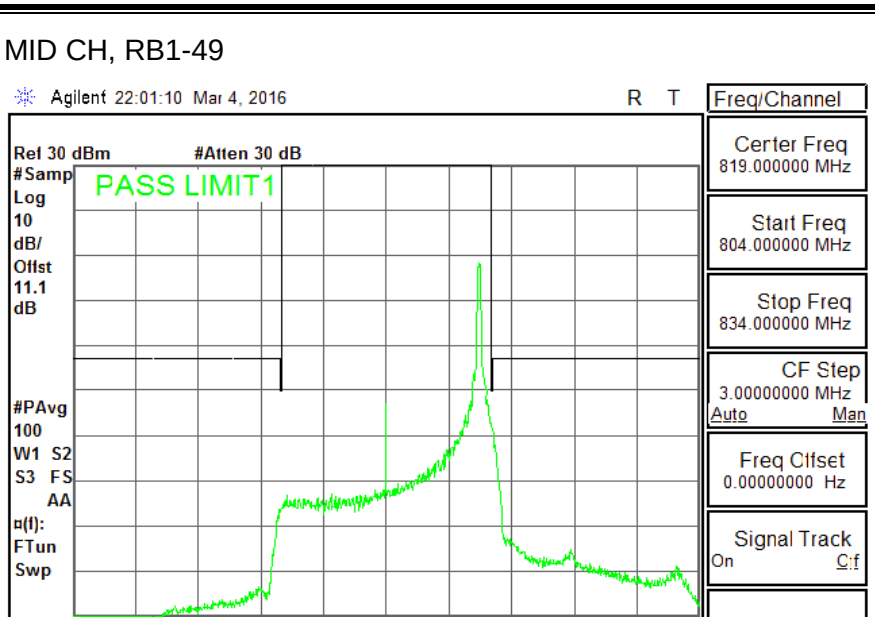
16QAM, (10.0 MHz BAND WIDTH)

MID CH, RB1-0



MID CH, RB1-49



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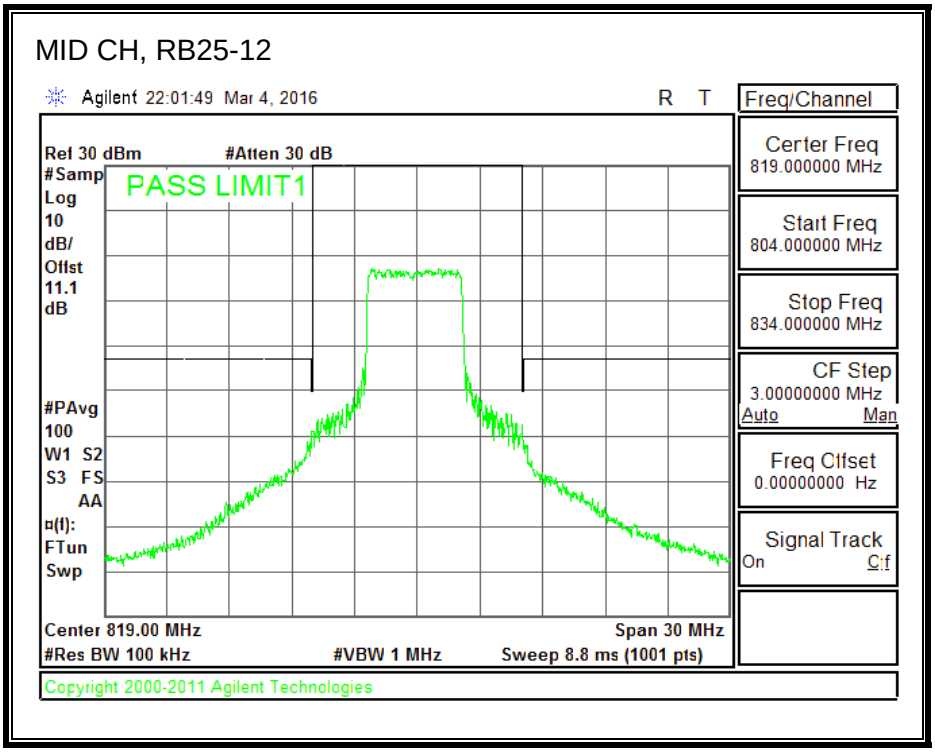
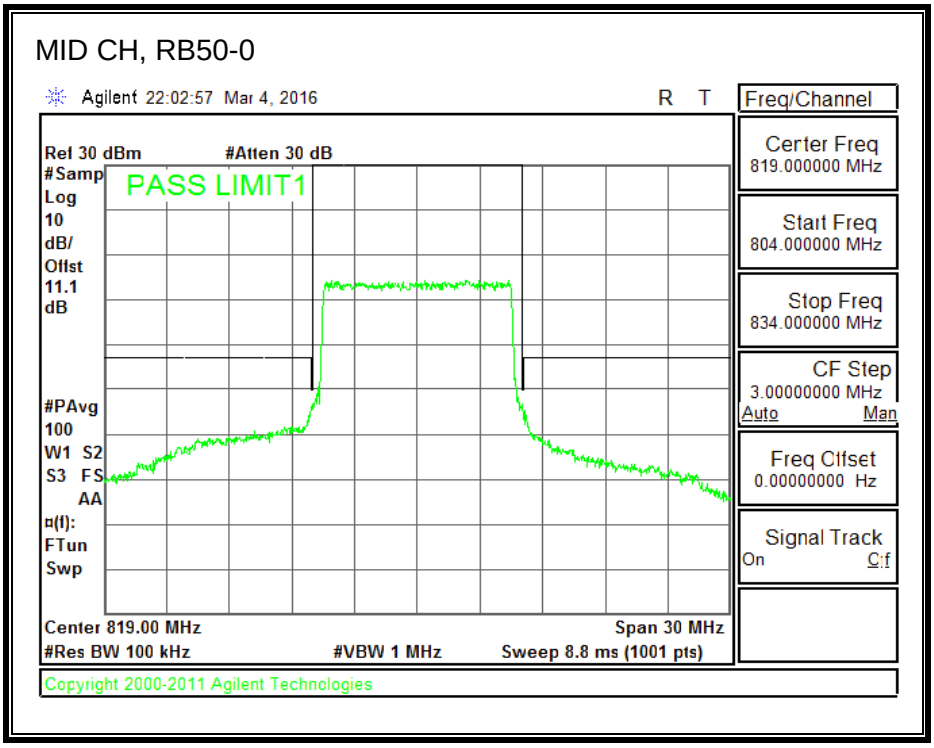
MID CH, RB25-12



MID CH, RB50-0



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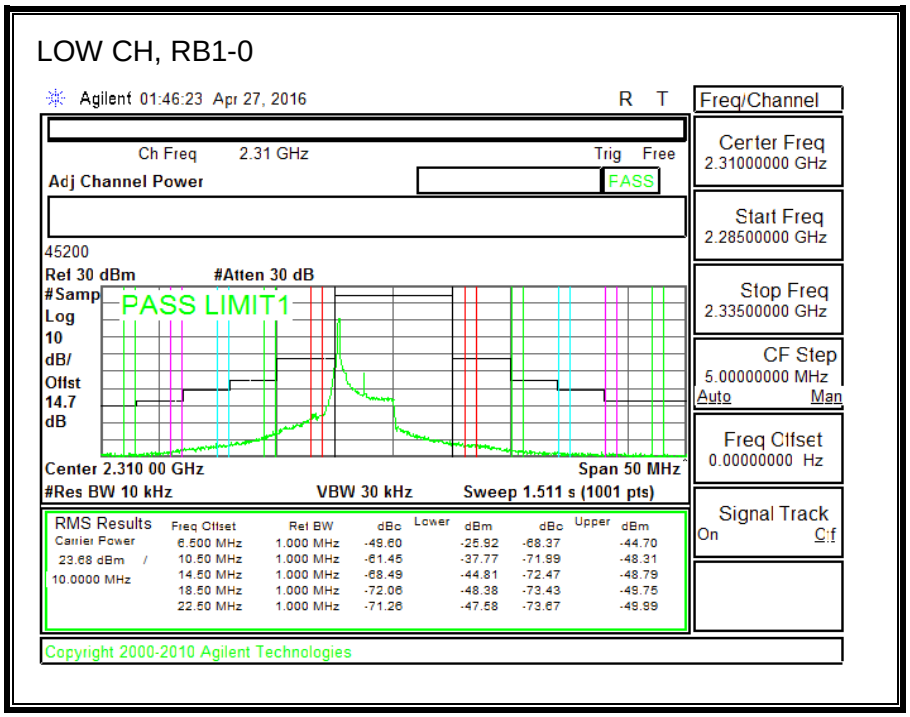
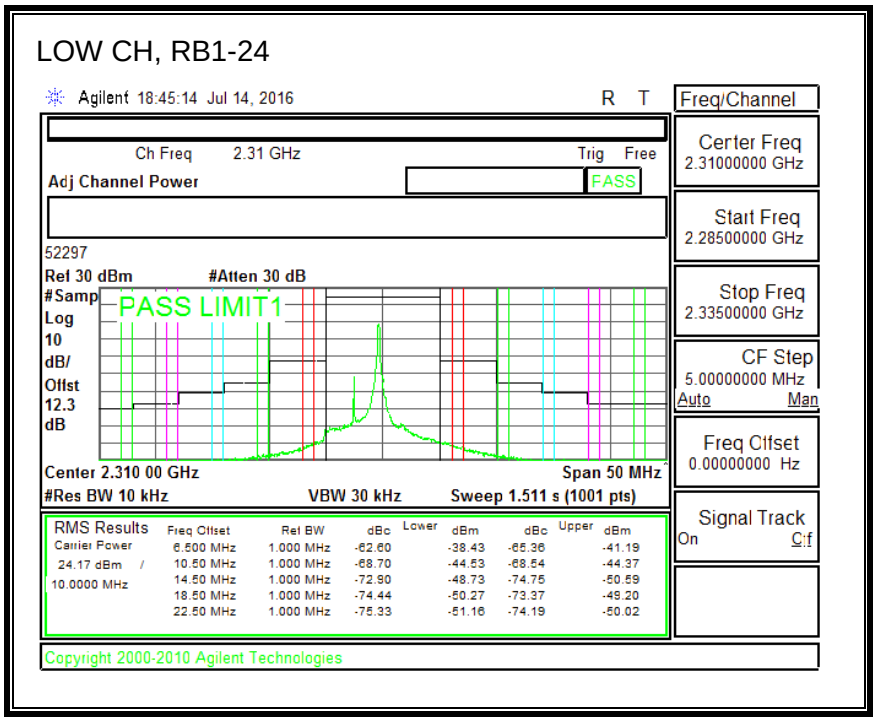
8.2.11. LTE BAND 30 ADJACENT CHANNEL POWER

QPSK, (5.0 MHz BAND WIDTH)





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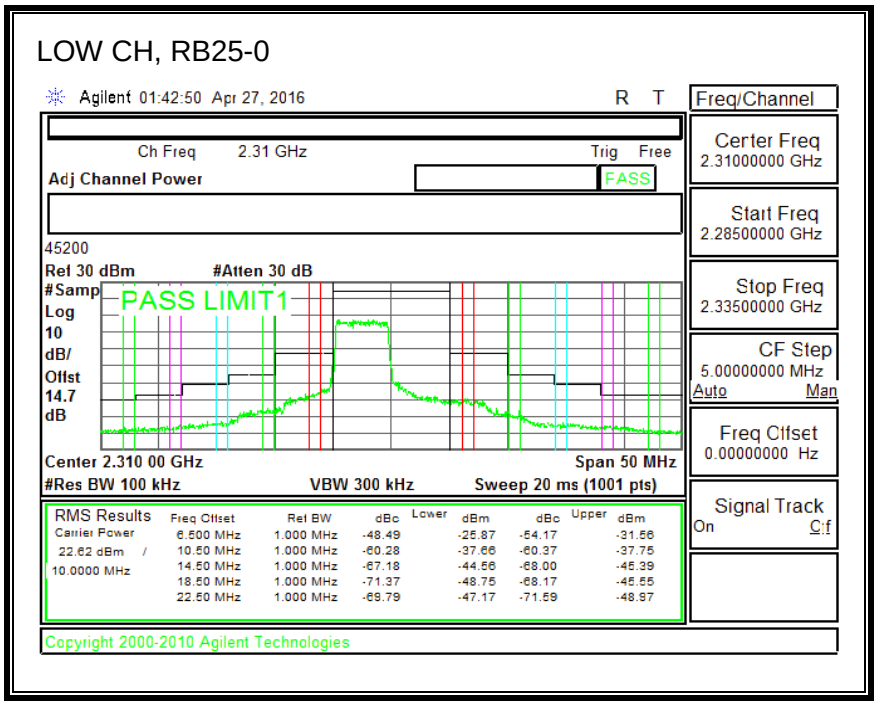
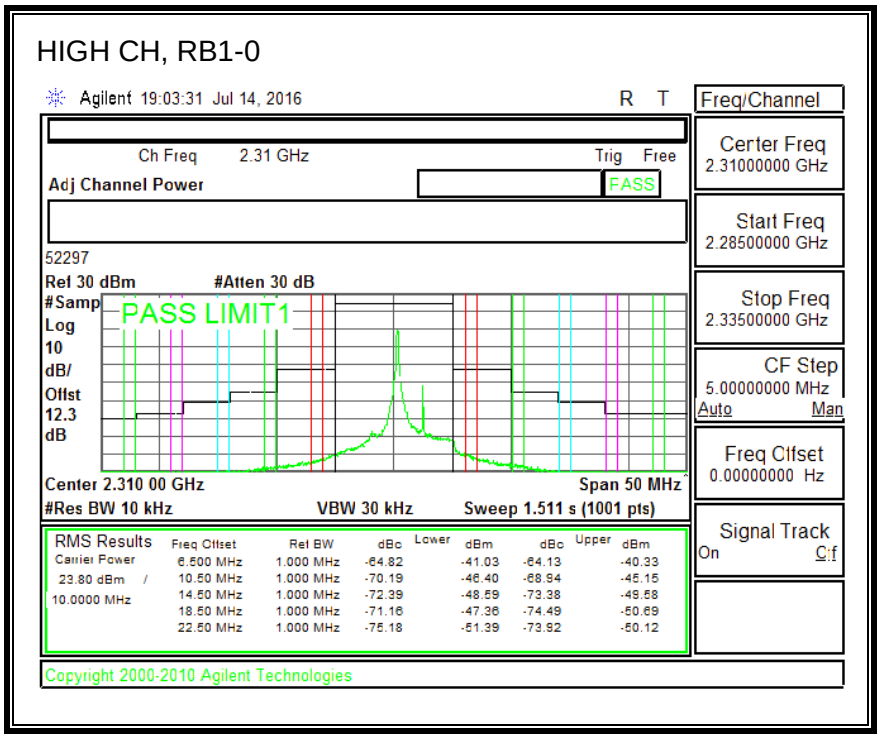
LOW CH, RB25-0



HIGH CH, RB1-0



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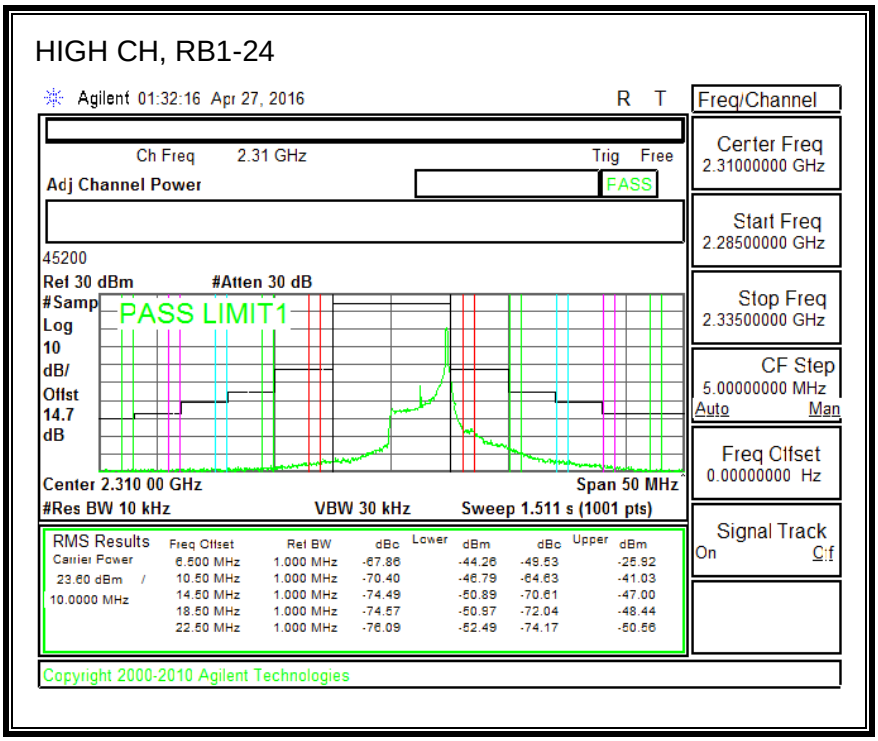
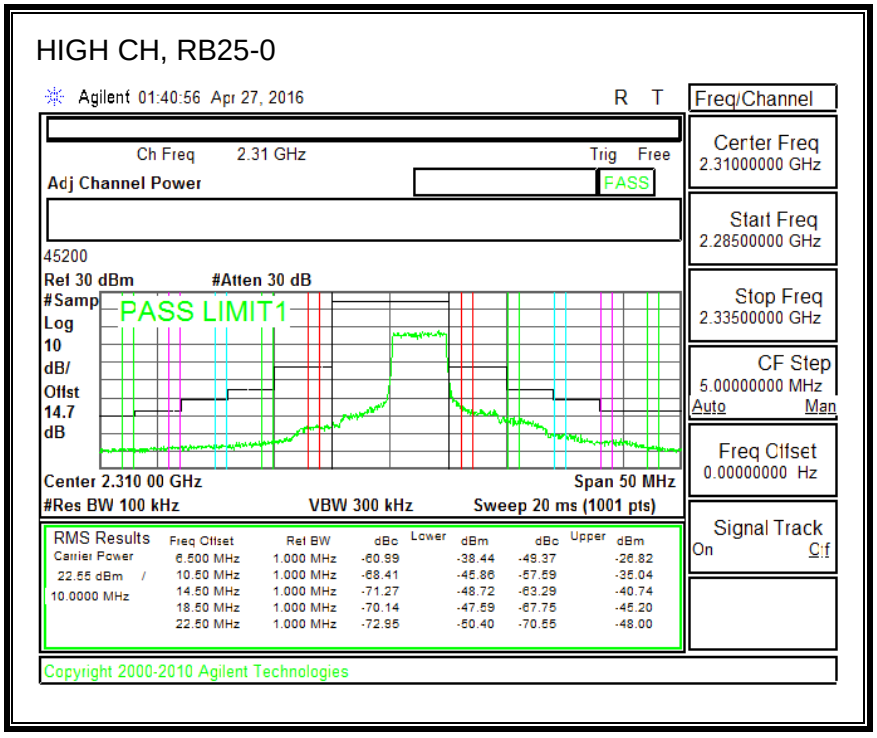
HIGH CH, RB1-24



HIGH CH, RB25-0



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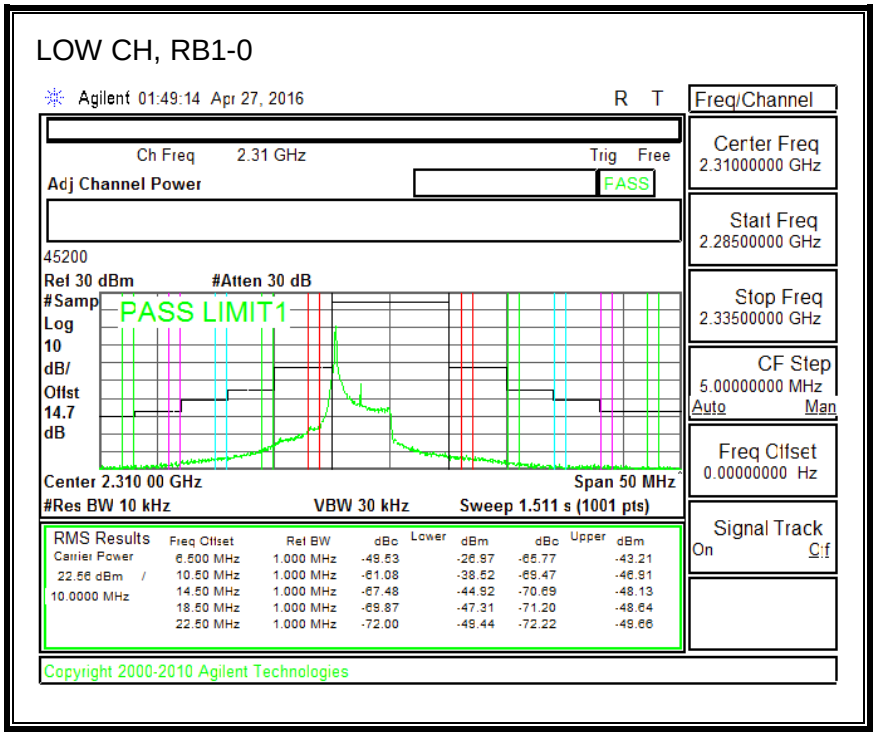
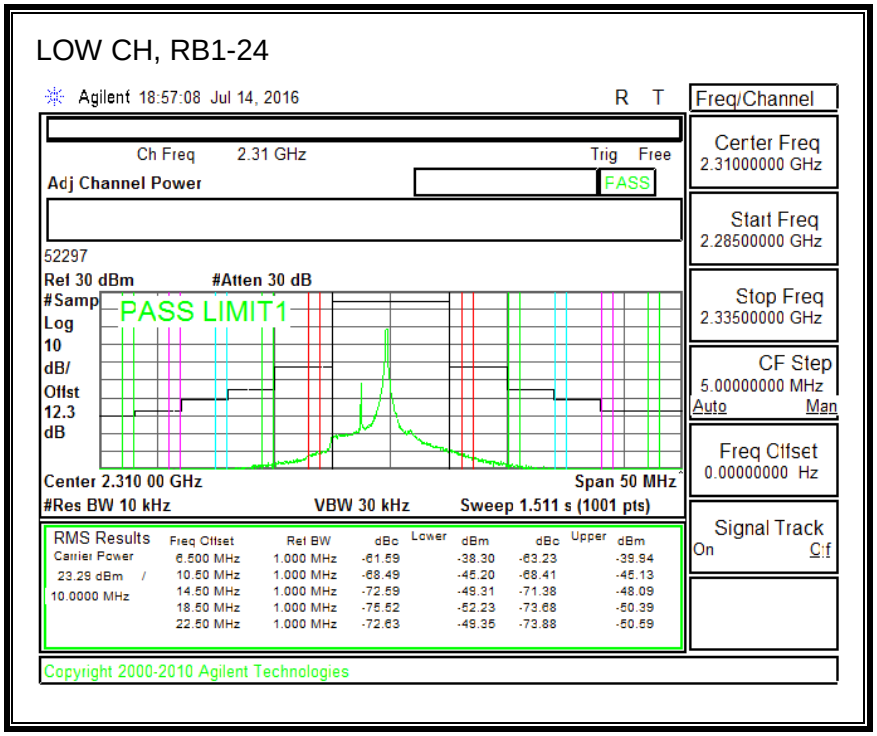
16QAM, (5.0 MHz BAND WIDTH)

LOW CH, RB1-0



LOW CH, RB1-24



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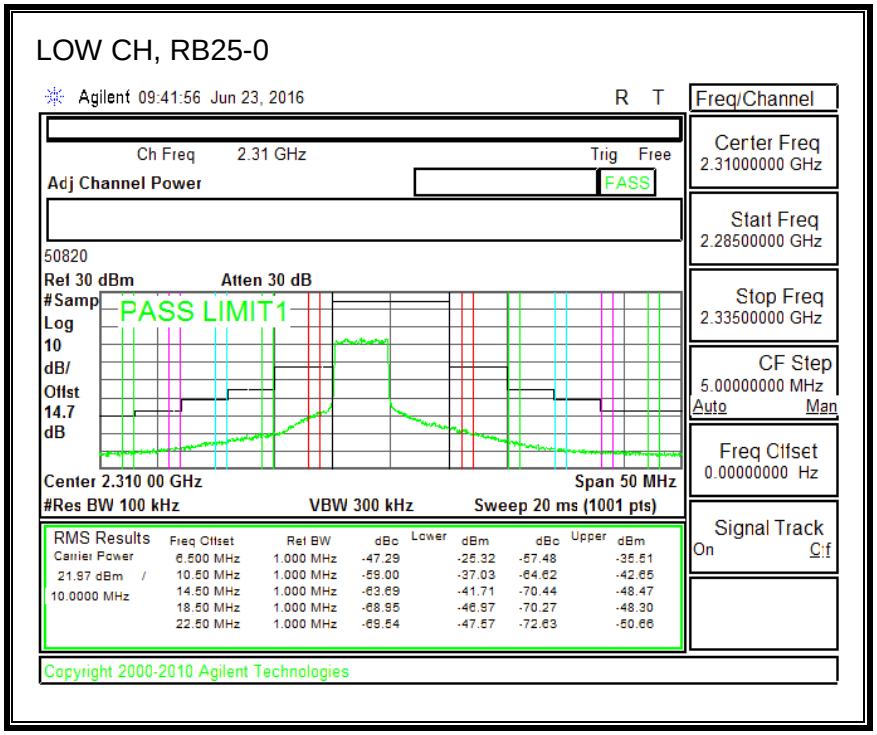
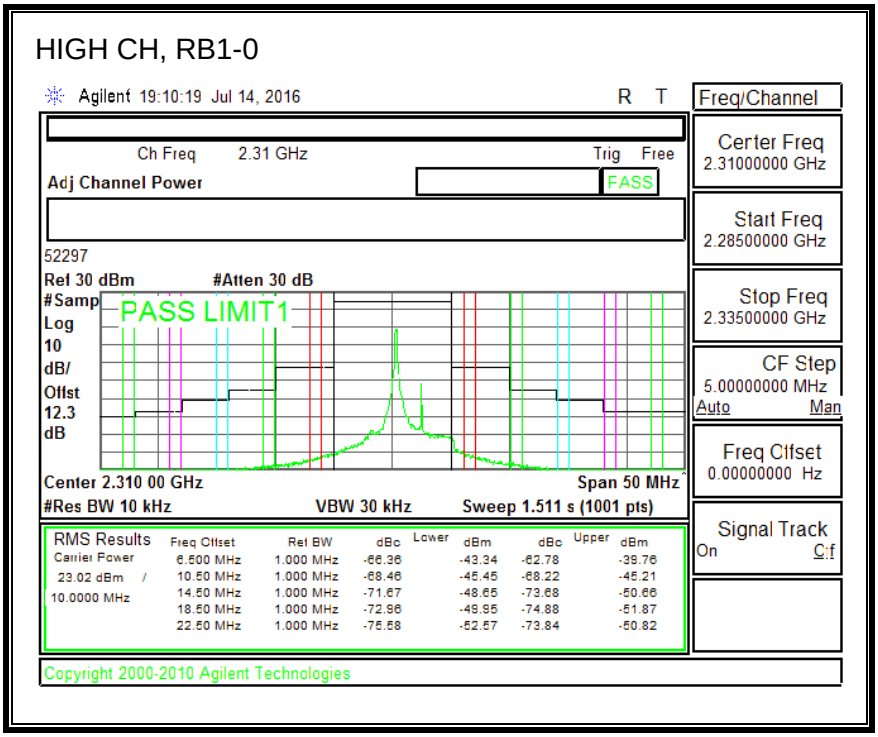
LOW CH, RB25-0



HIGH CH, RB1-0



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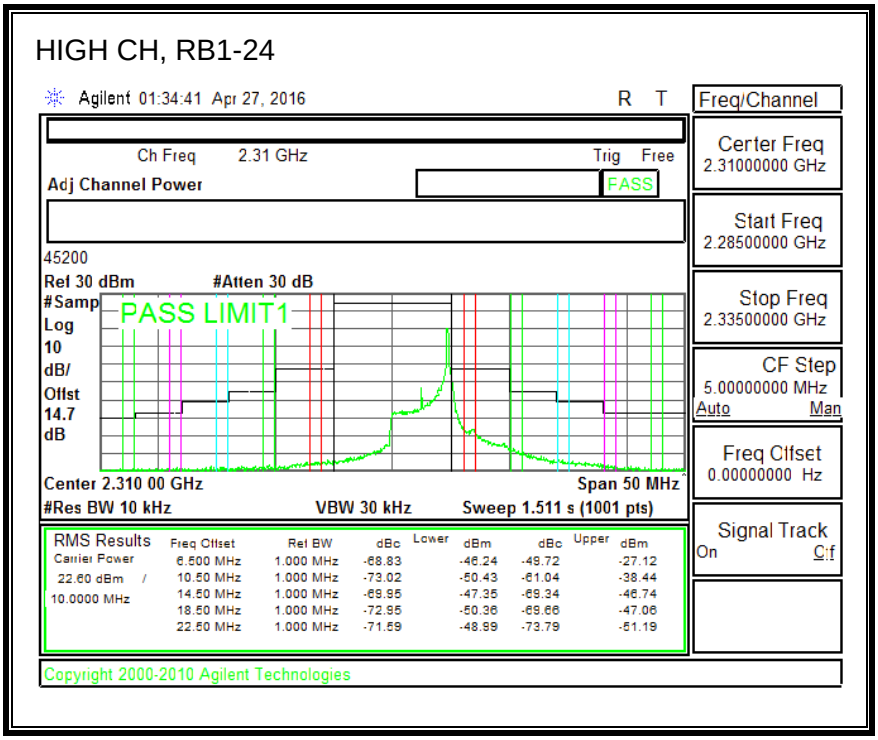
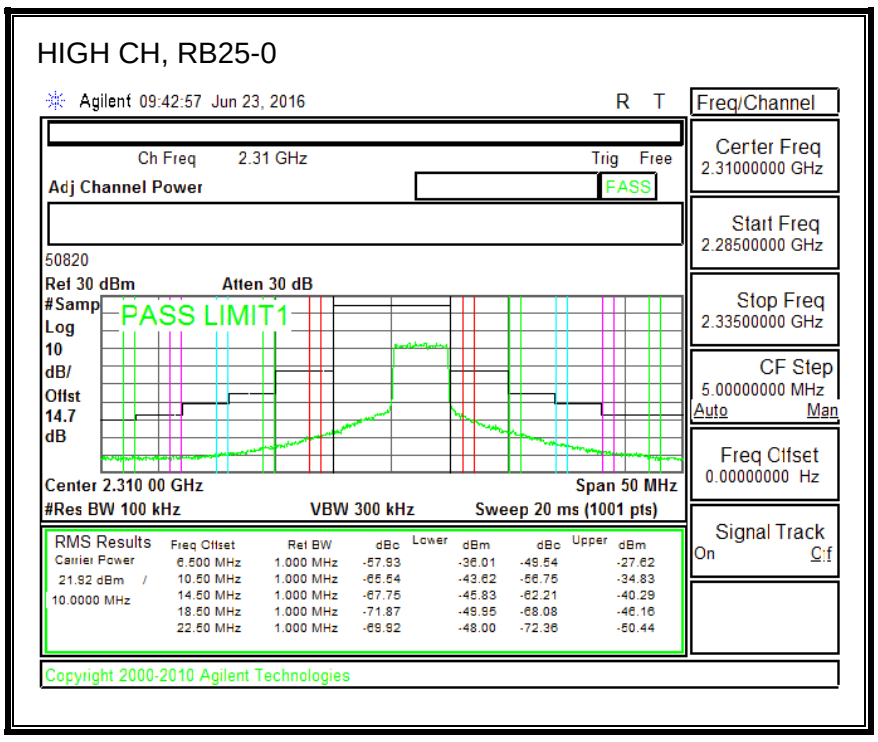
HIGH CH, RB1-24



HIGH CH, RB25-0



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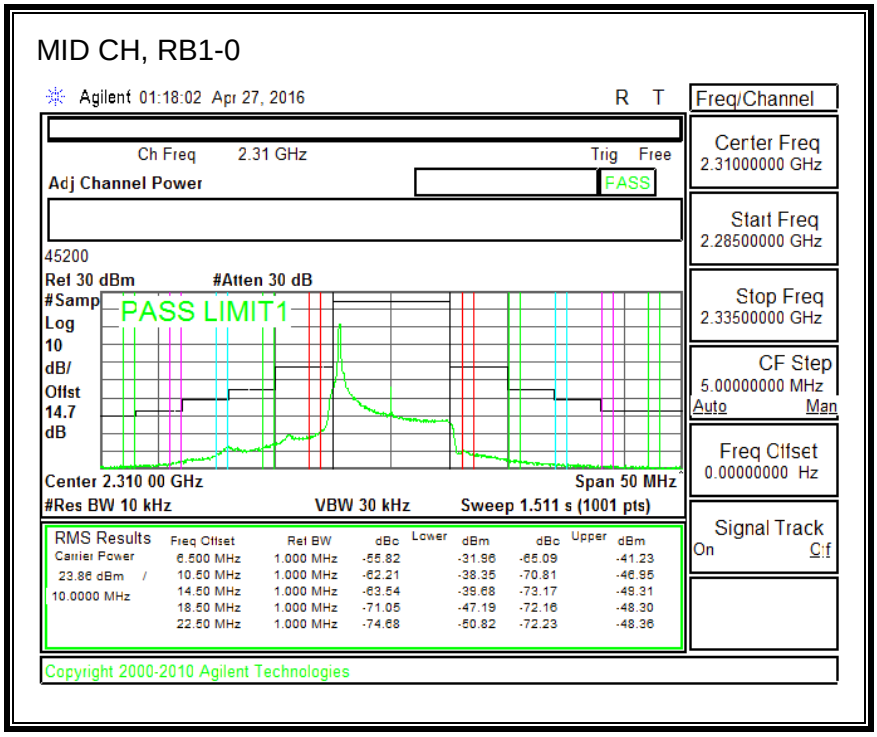
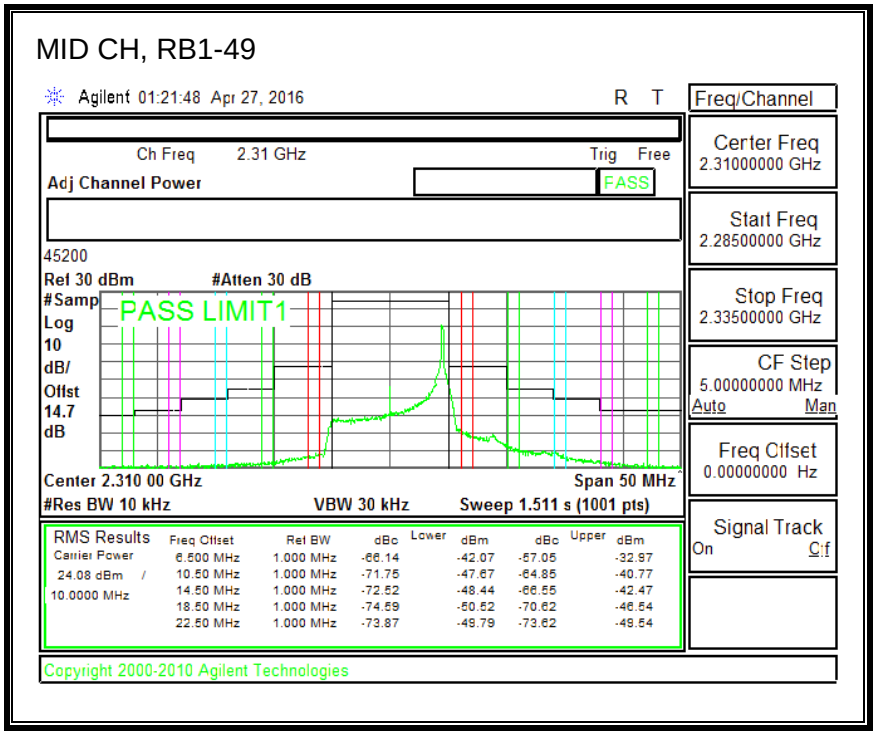
QPSK, (10.0 MHz BAND WIDTH)

MID CH, RB1-0



MID CH, RB1-49



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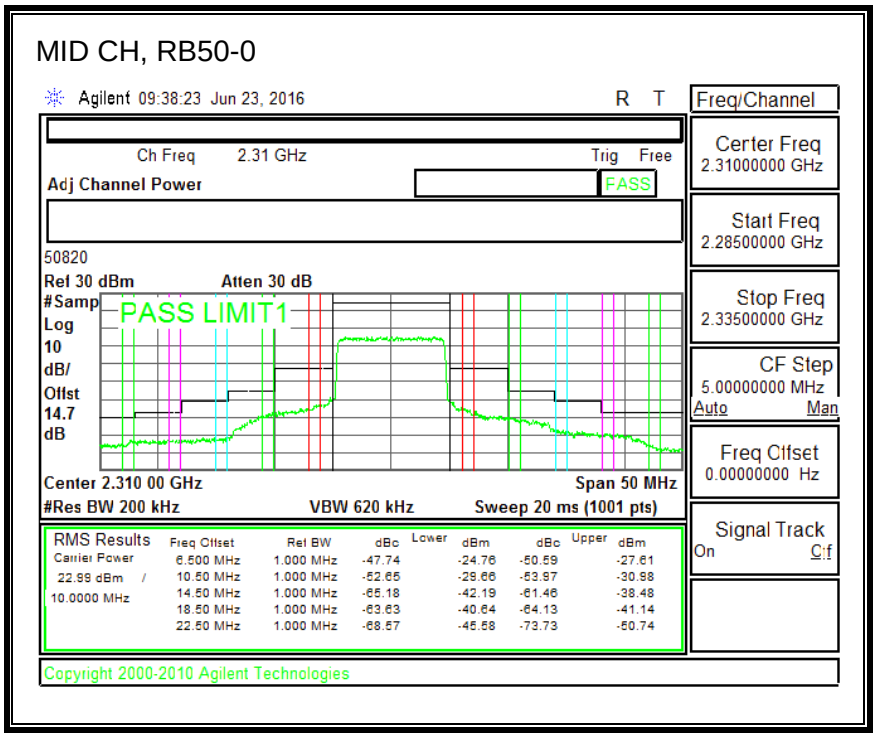
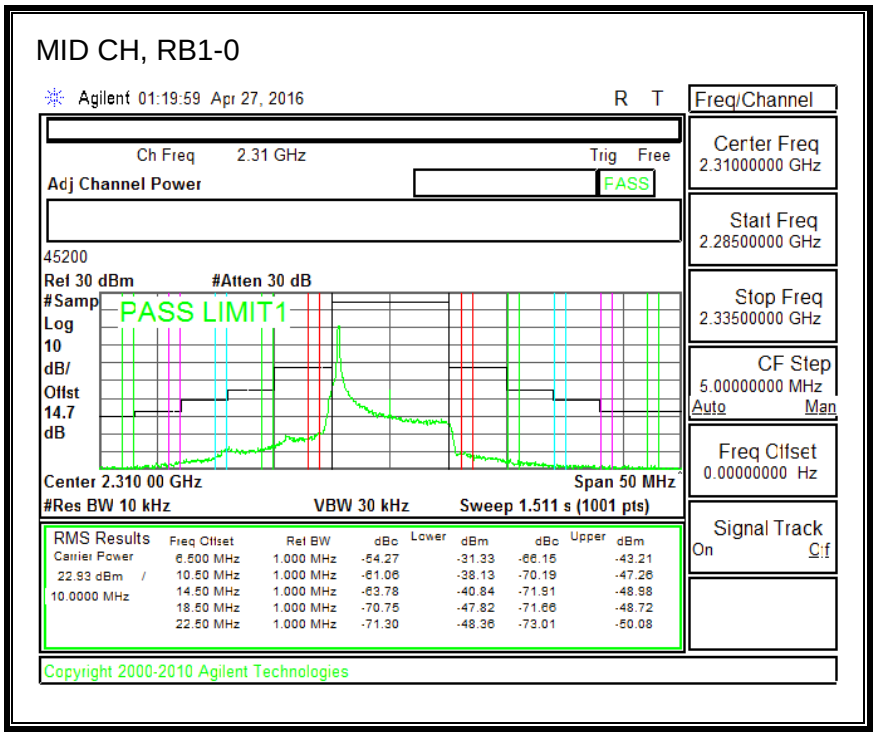


16QAM, (10.0 MHz BAND WIDTH)



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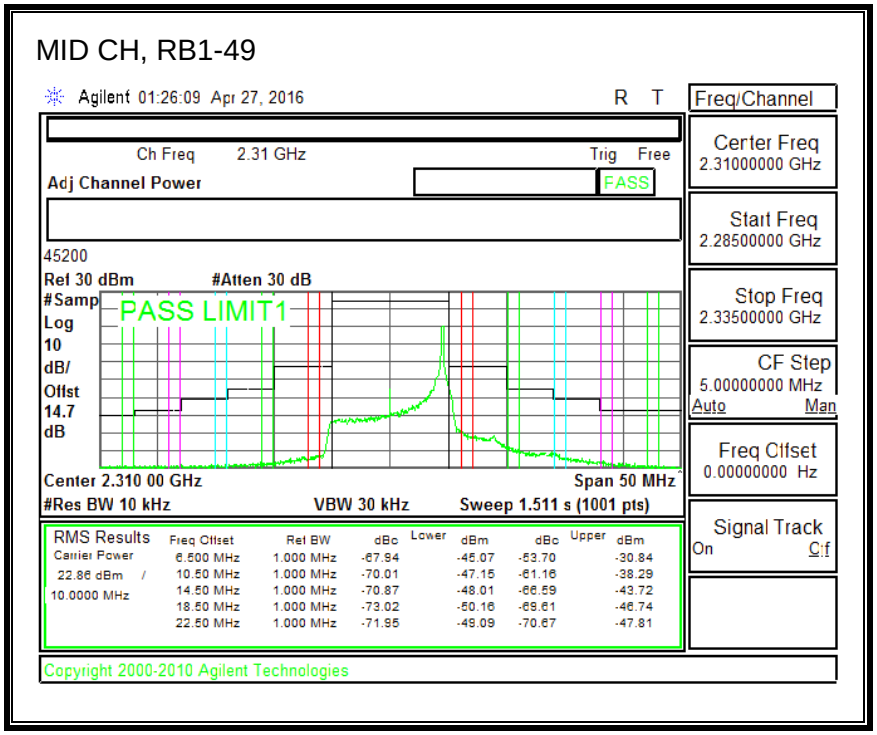
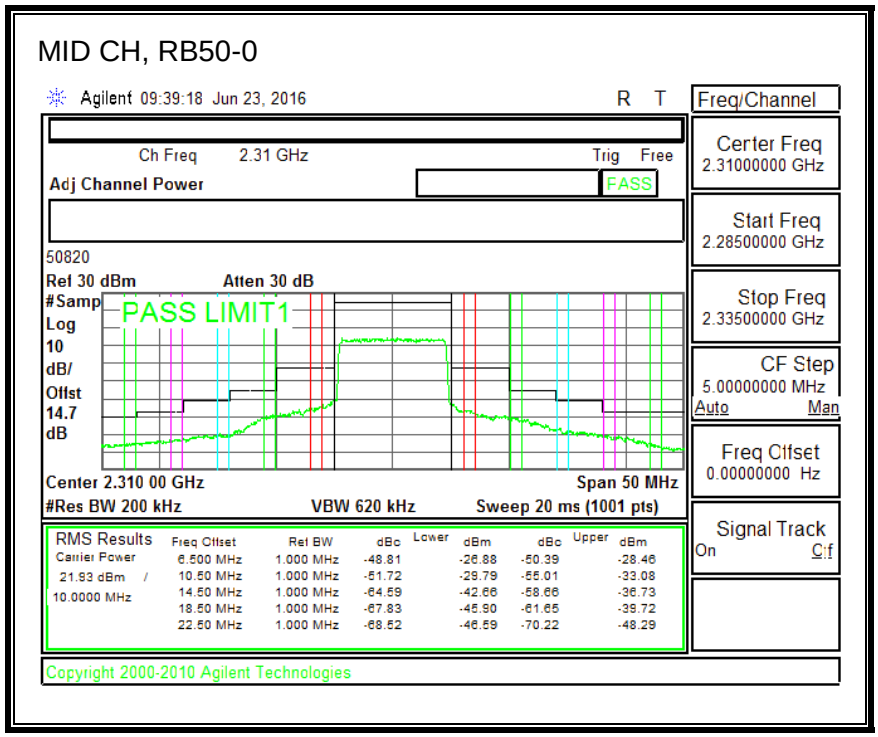
MID CH, RB1-49



MID CH, RB50-0



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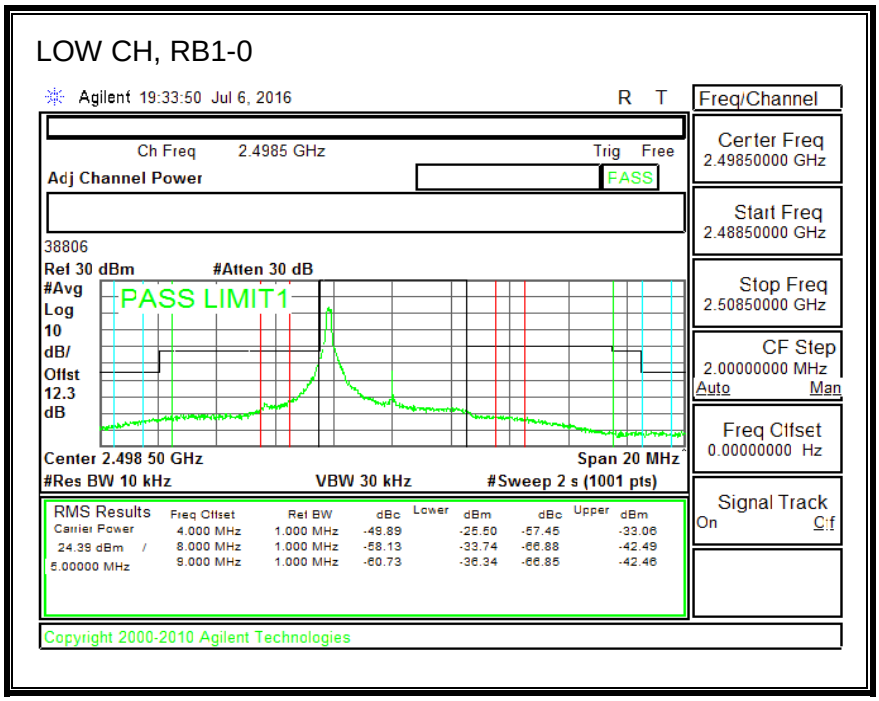
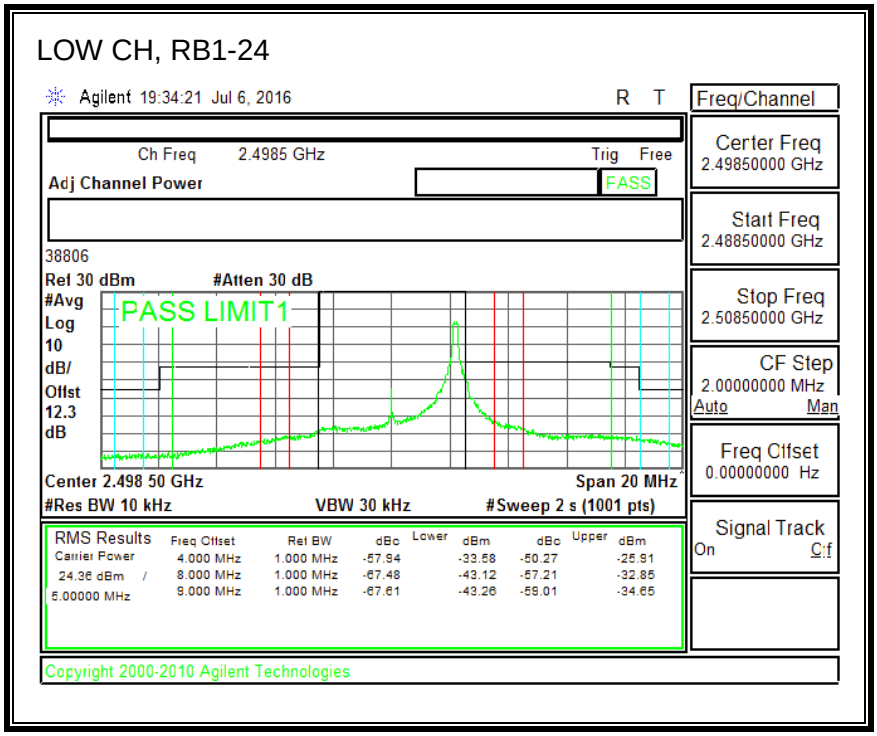
8.2.12. LTE BAND 41 ADJACENT CHANNEL POWER

QPSK, (5.0 MHz BAND WIDTH)

LOW CH, RB1-0



LOW CH, RB1-24



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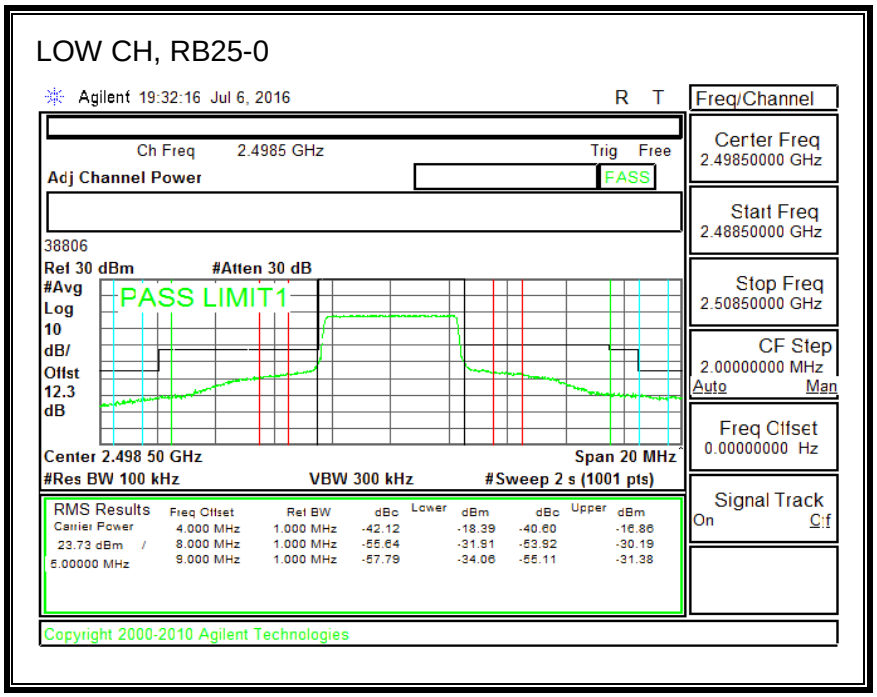
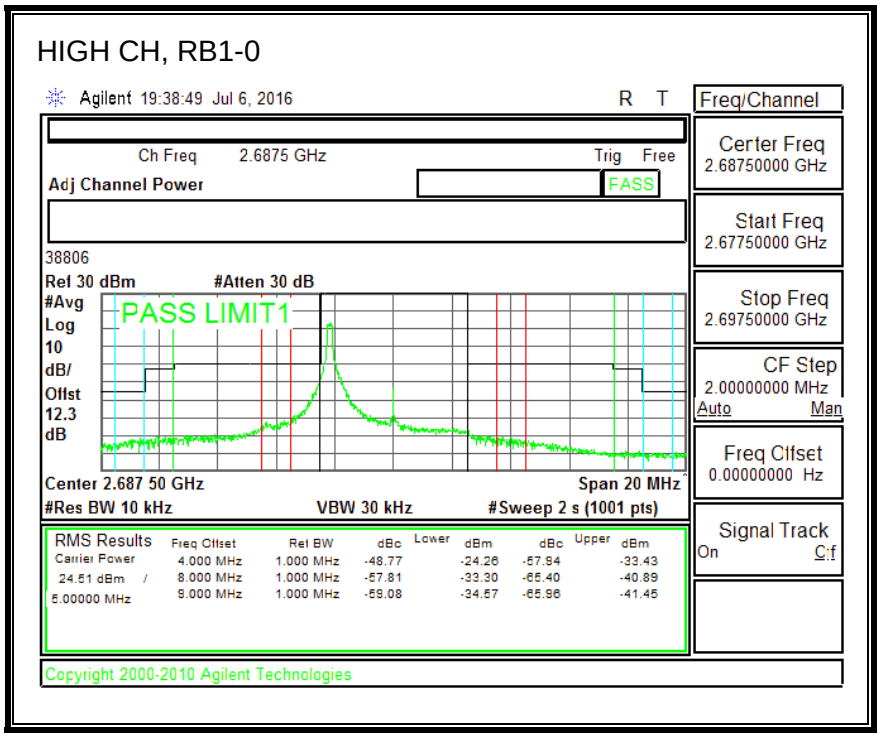
LOW CH, RB25-0



HIGH CH, RB1-0



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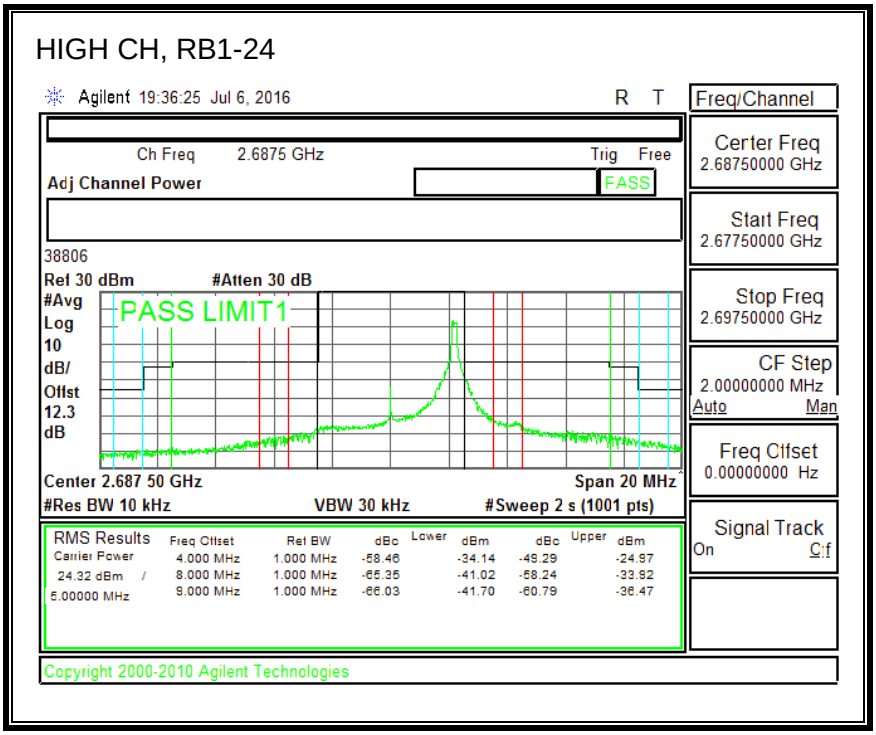
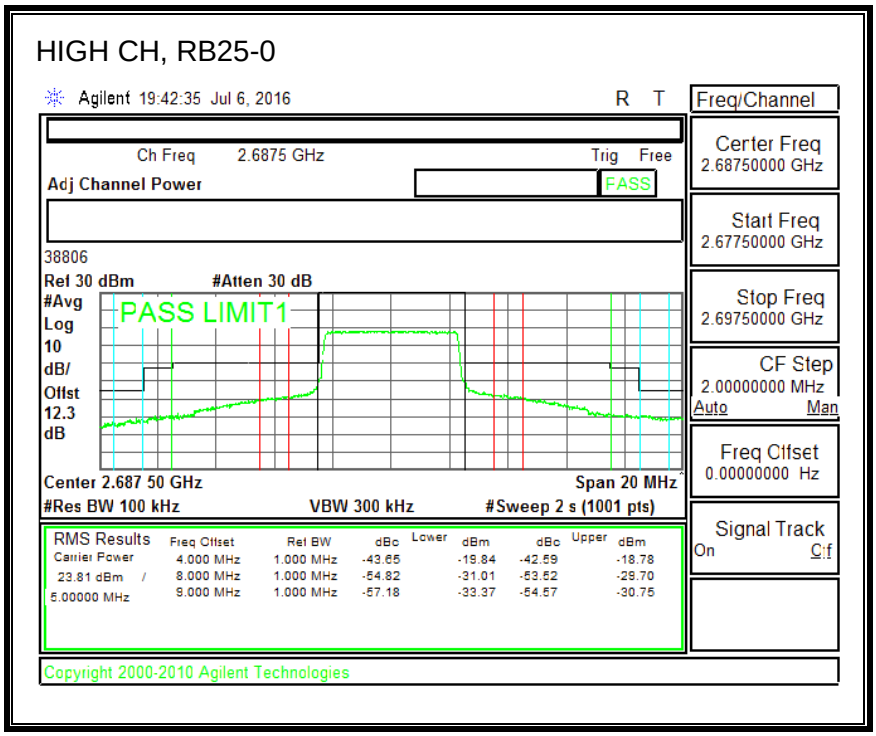
HIGH CH, RB1-24



HIGH CH, RB25-0



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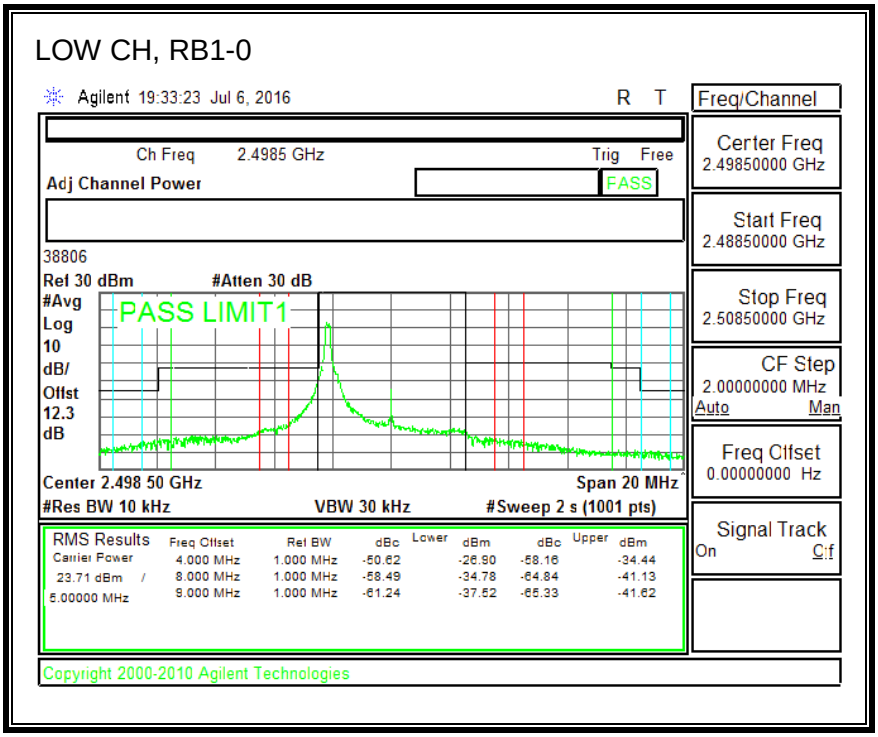
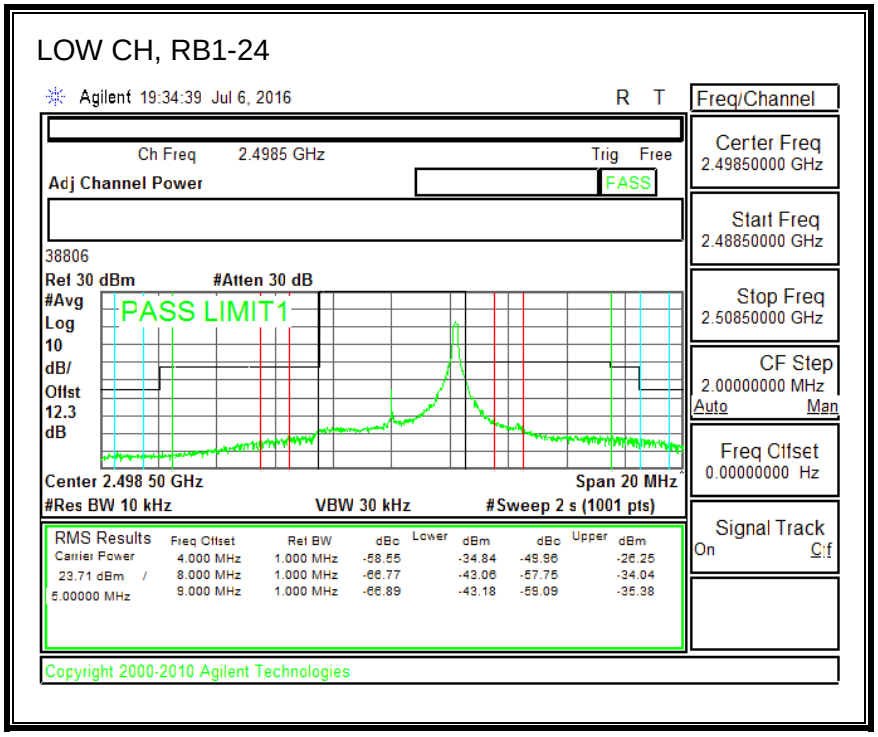
16QAM, (5.0 MHz BAND WIDTH)

LOW CH, RB1-0



LOW CH, RB1-24



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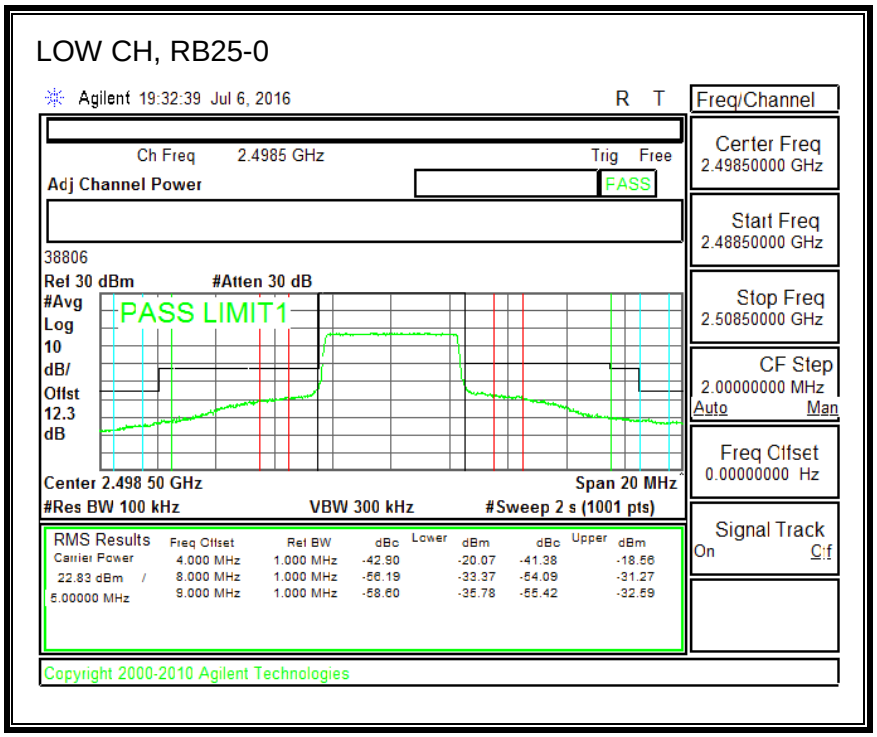
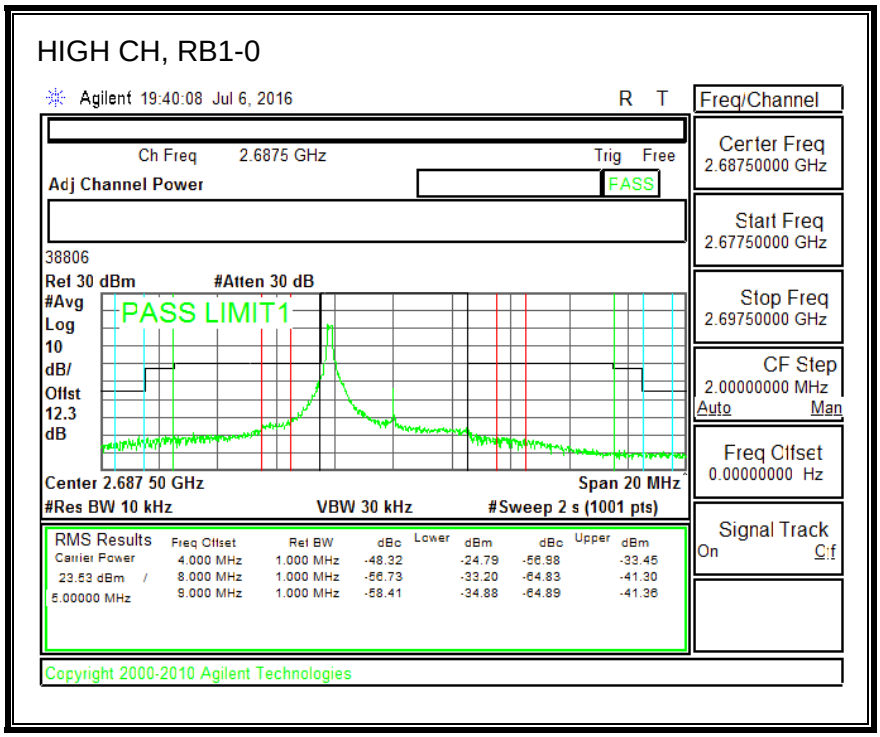
LOW CH, RB25-0



HIGH CH, RB1-0



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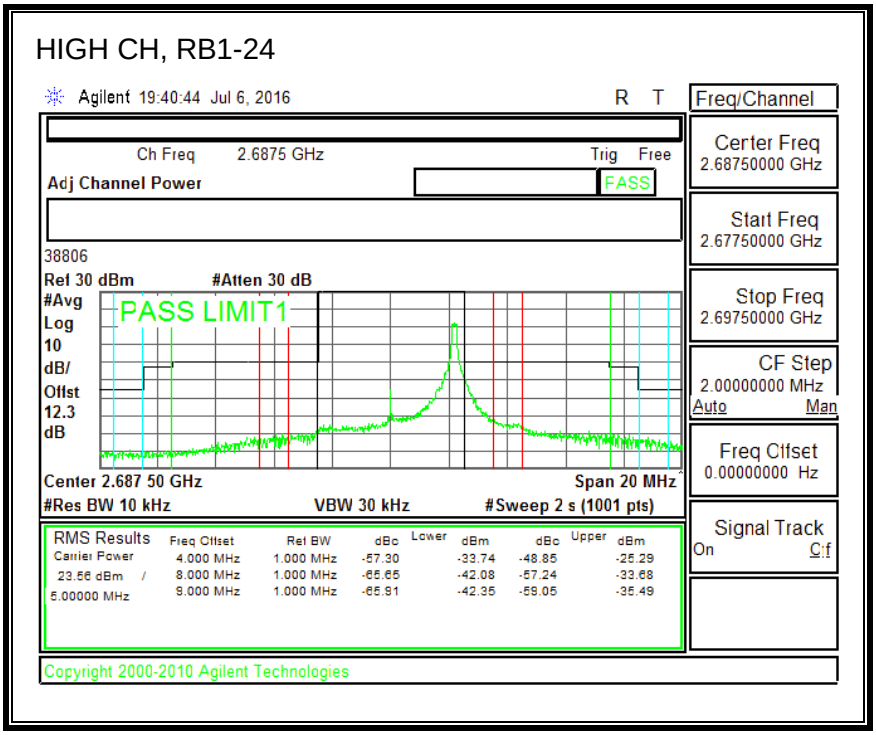
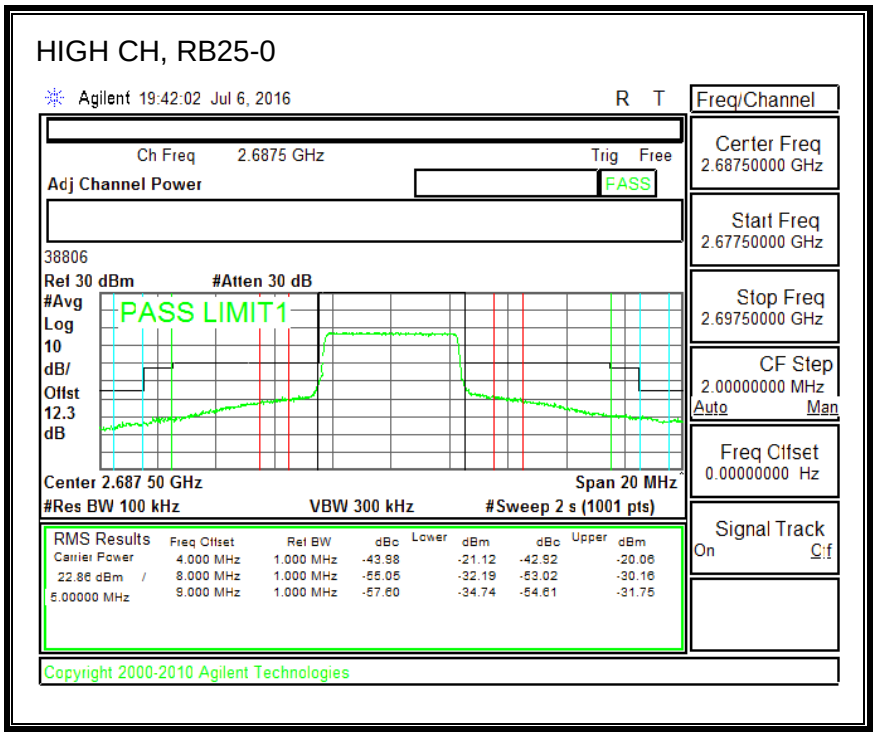
HIGH CH, RB1-24



HIGH CH, RB25-0



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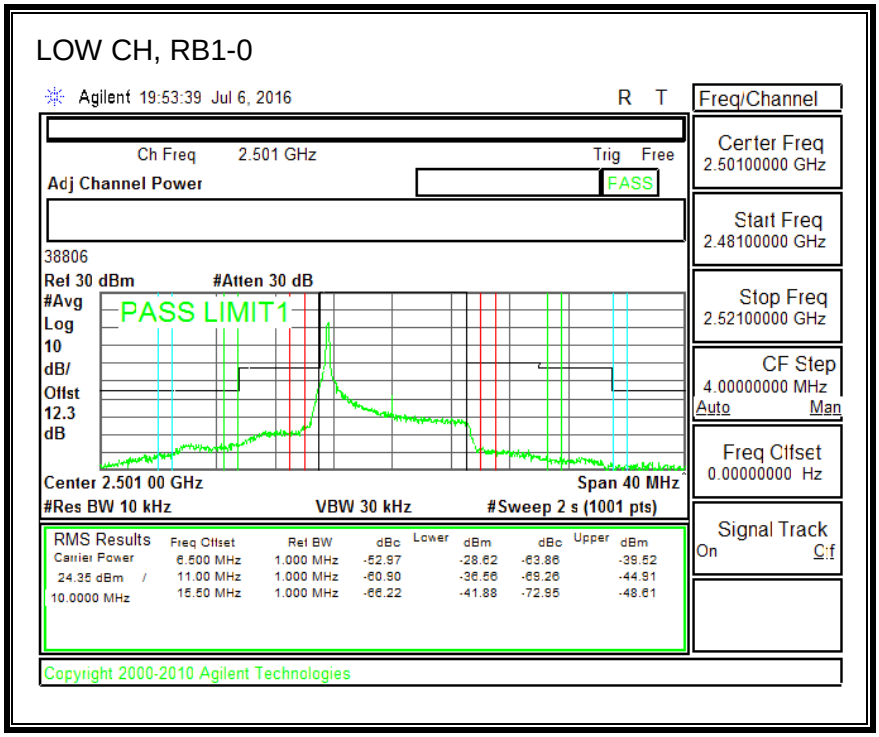
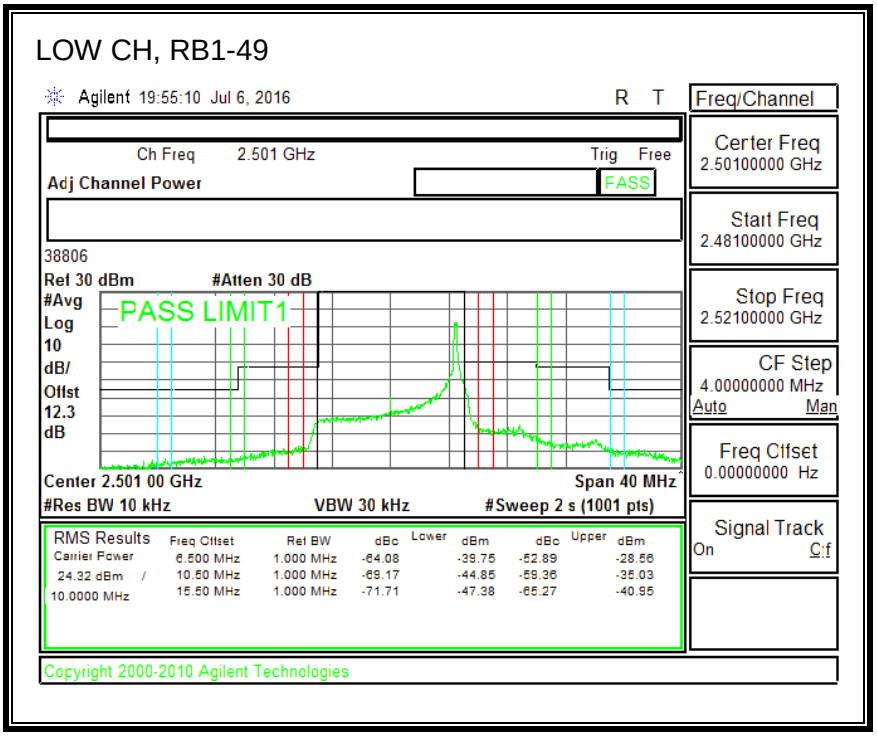
QPSK, (10.0 MHz BAND WIDTH)





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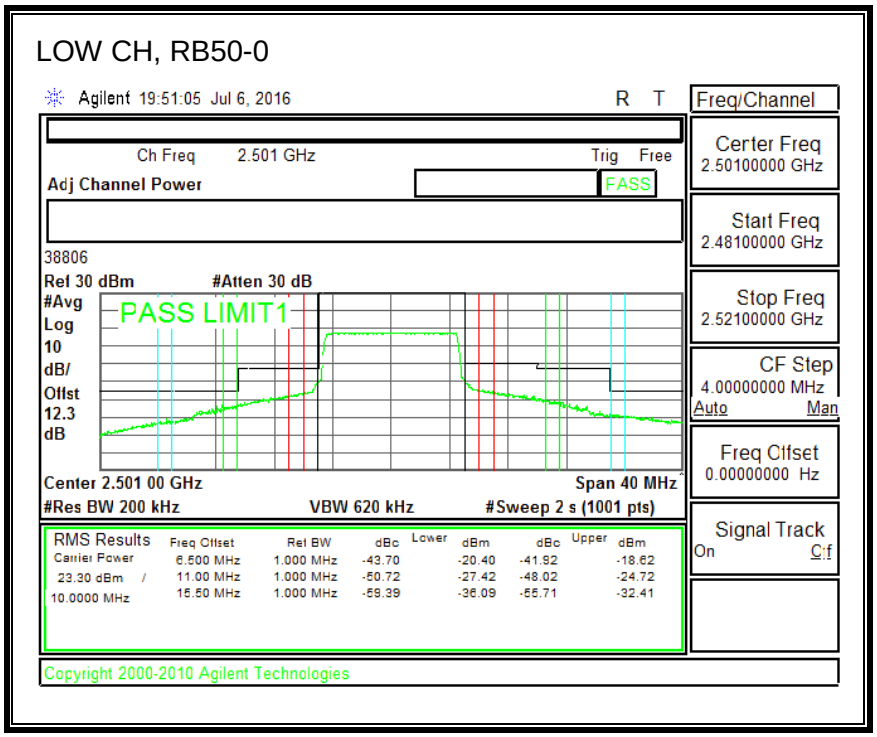
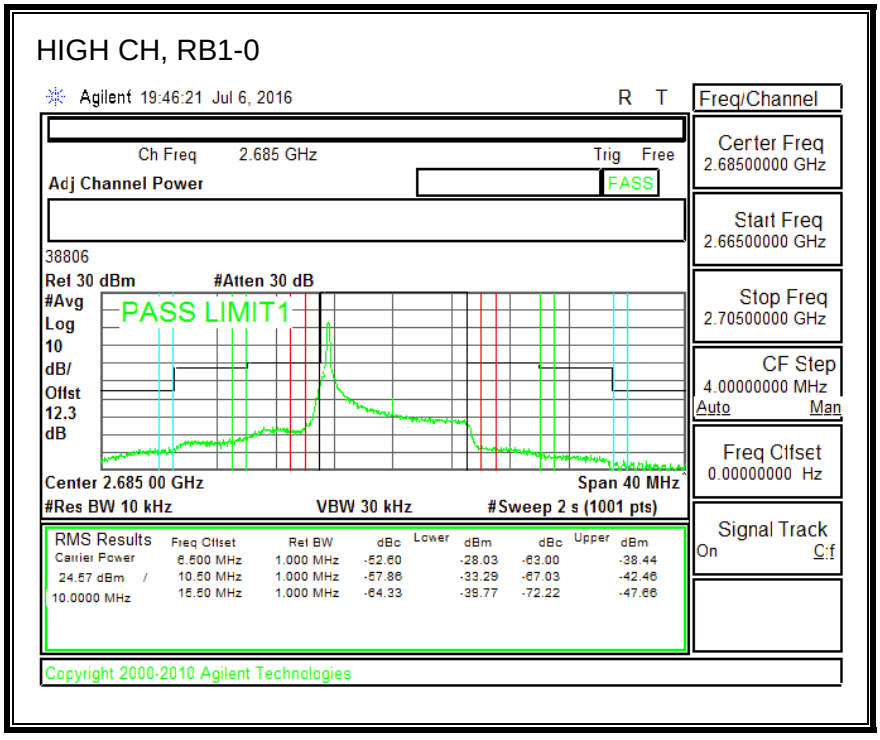
LOW CH, RB50-0



HIGH CH, RB1-0



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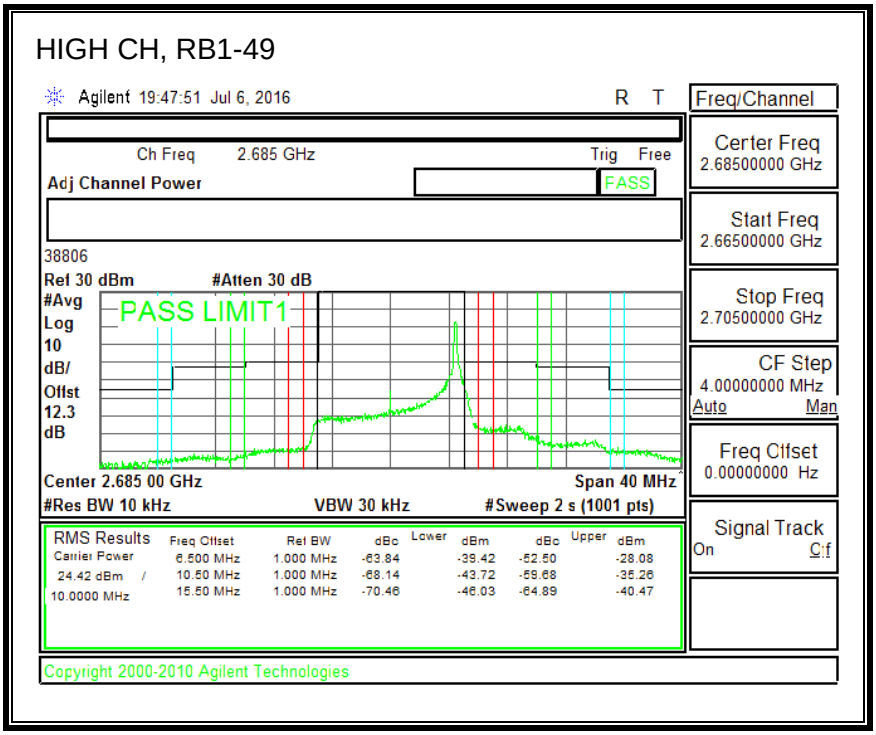
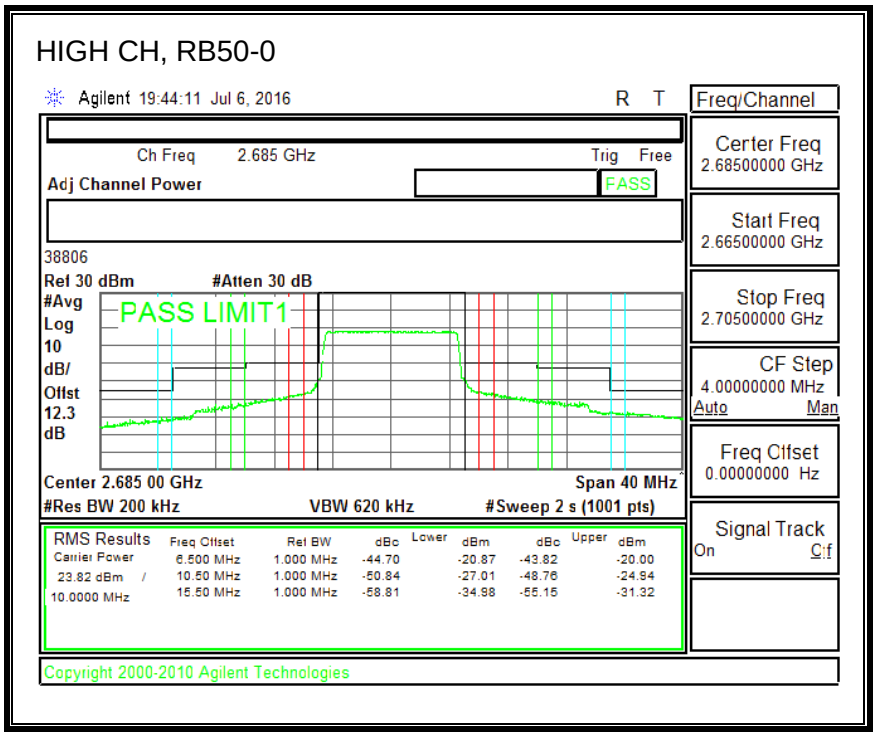
HIGH CH, RB1-49



HIGH CH, RB50-0



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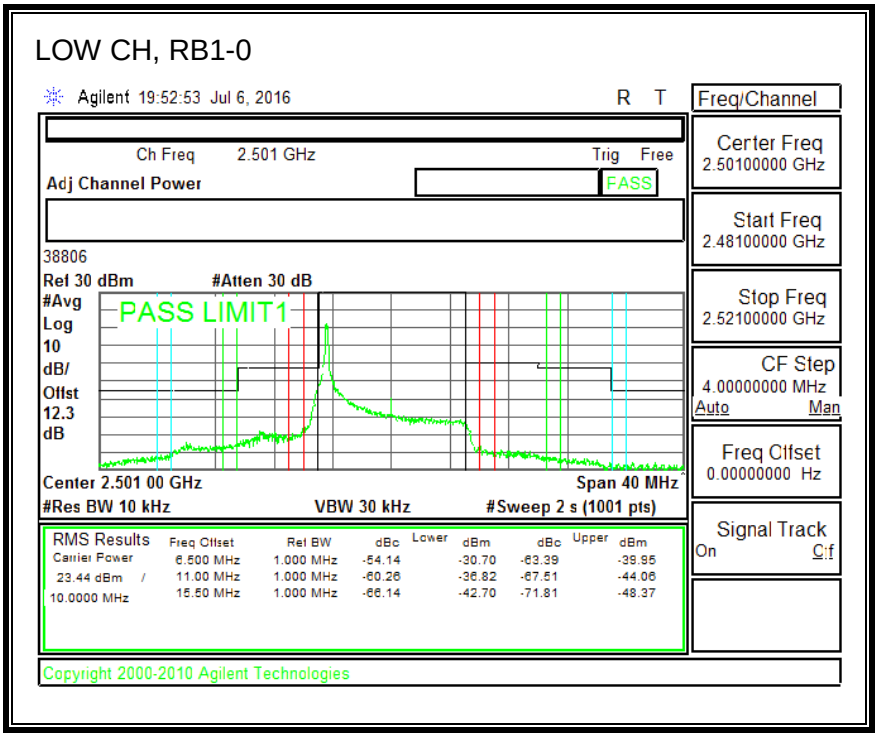
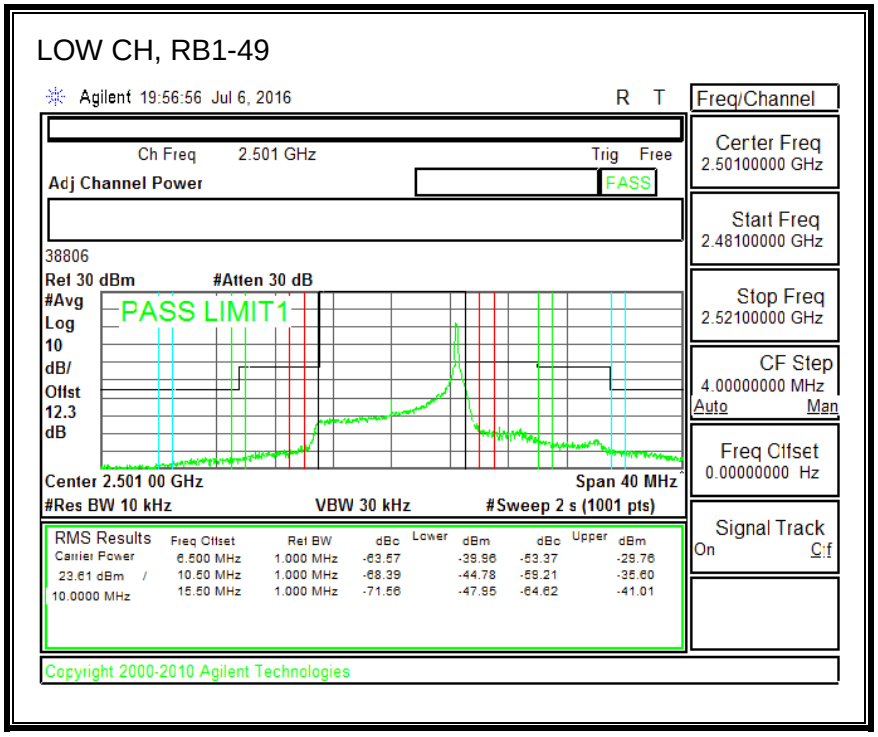
16QAM, (10.0 MHz BAND WIDTH)

LOW CH, RB1-0



LOW CH, RB1-49



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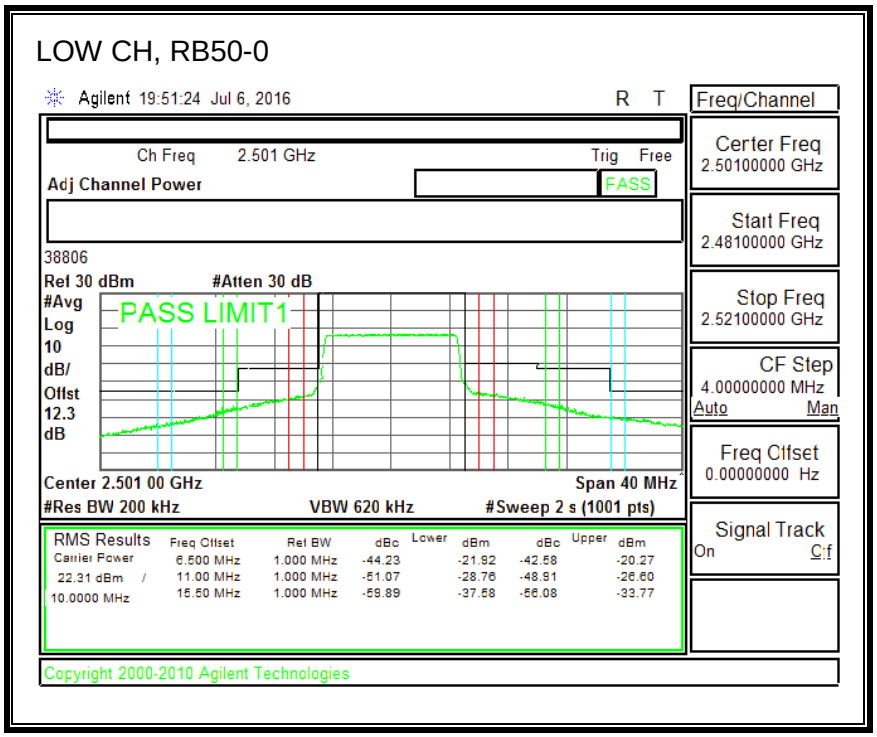
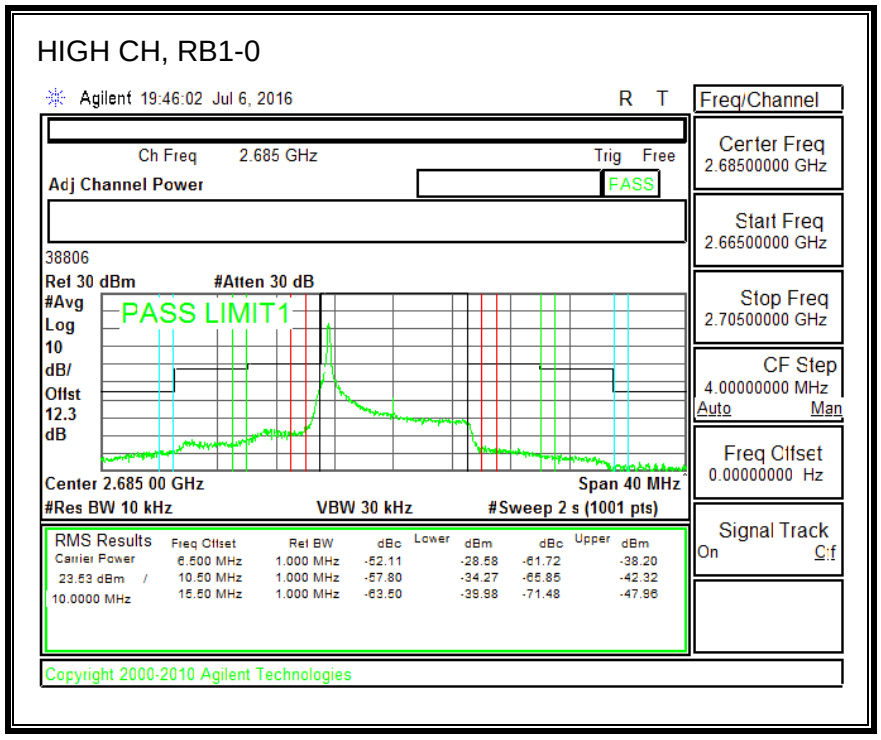
LOW CH, RB50-0



HIGH CH, RB1-0



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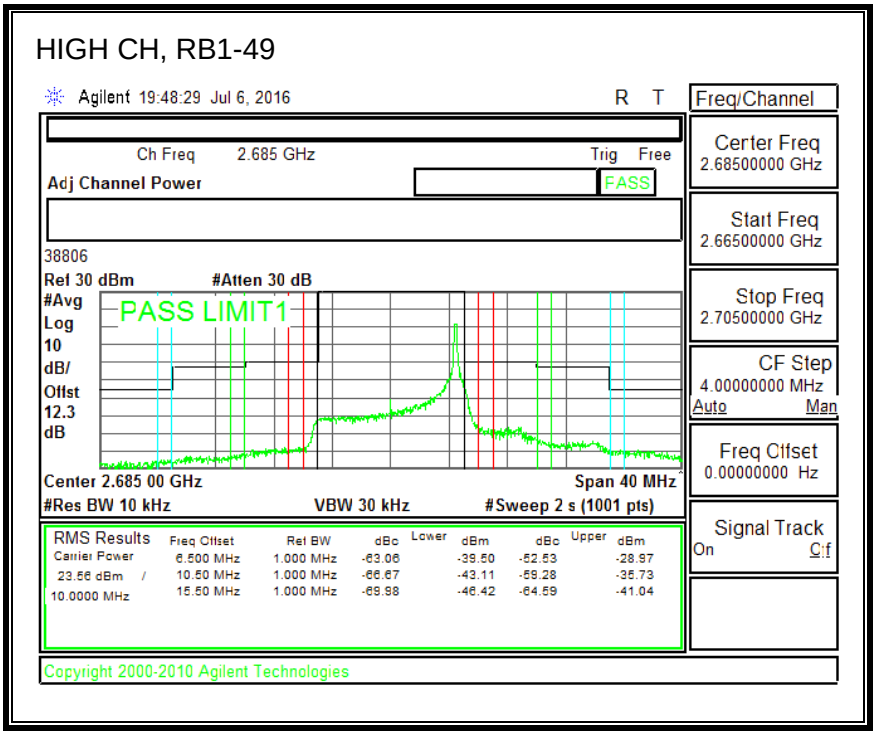
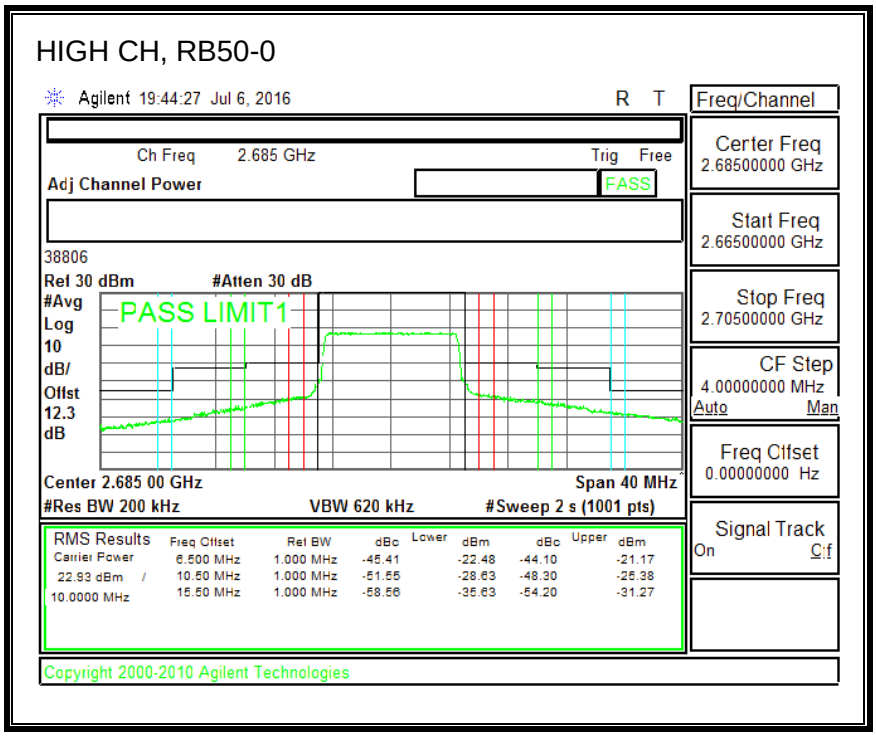
HIGH CH, RB1-49



HIGH CH, RB50-0



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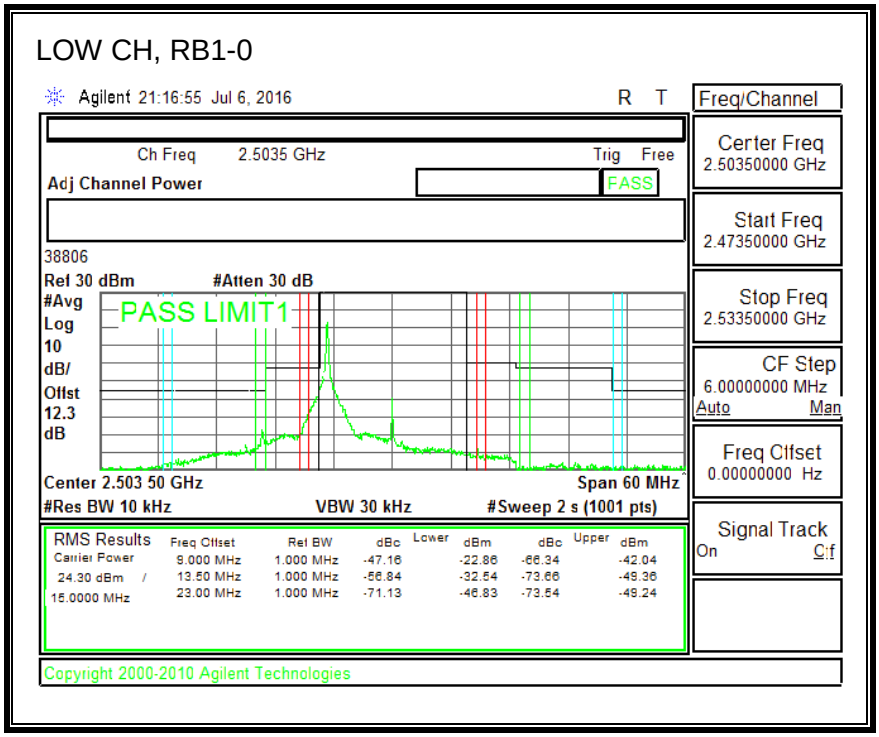
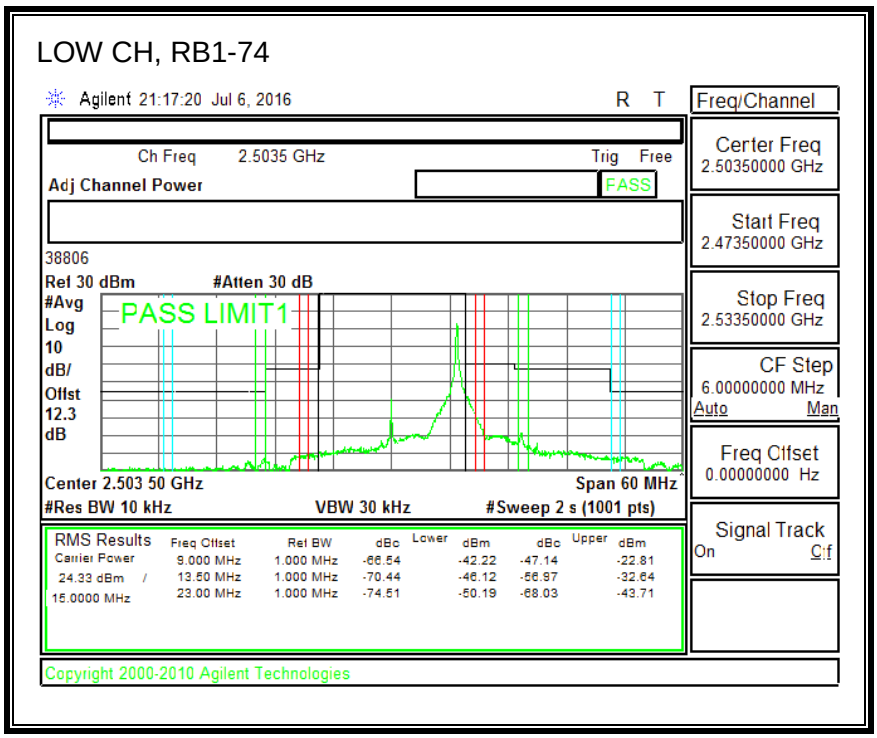
QPSK, (15.0 MHz BAND WIDTH)

LOW CH, RB1-0



LOW CH, RB1-74



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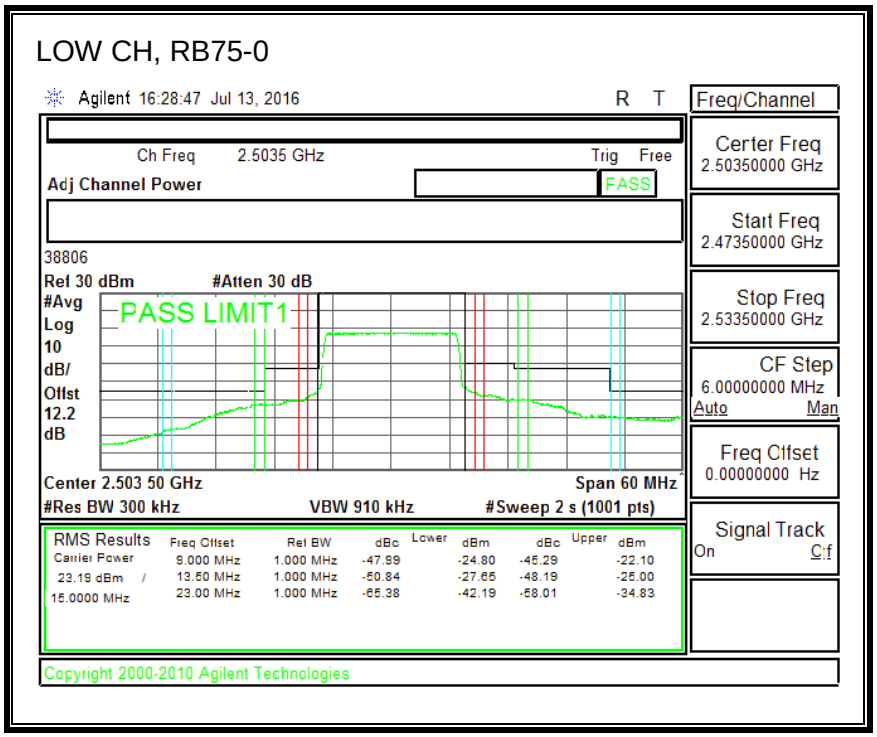
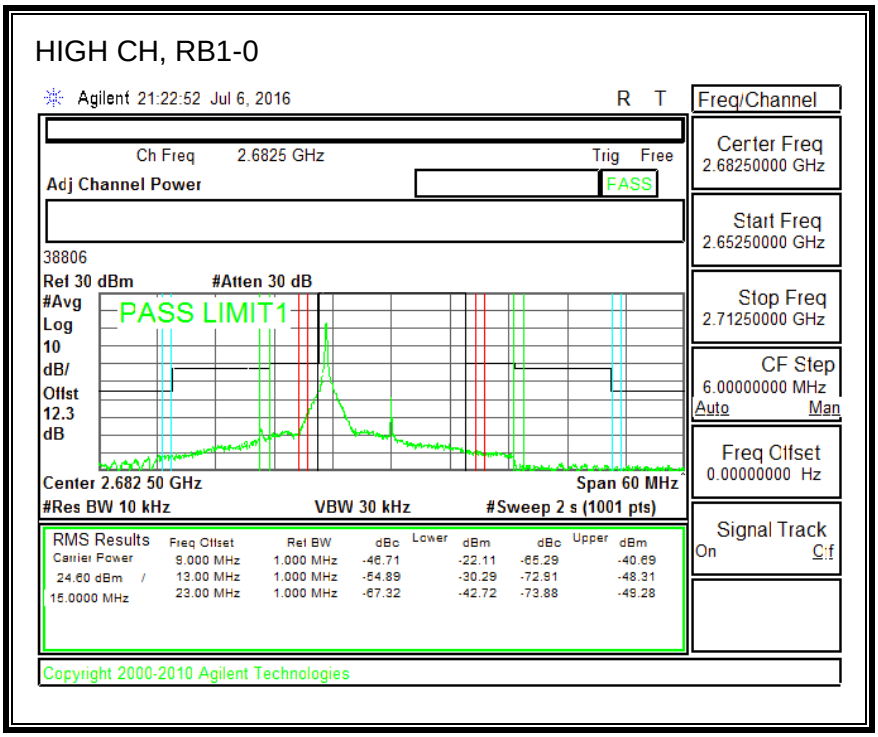
LOW CH, RB75-0



HIGH CH, RB1-0



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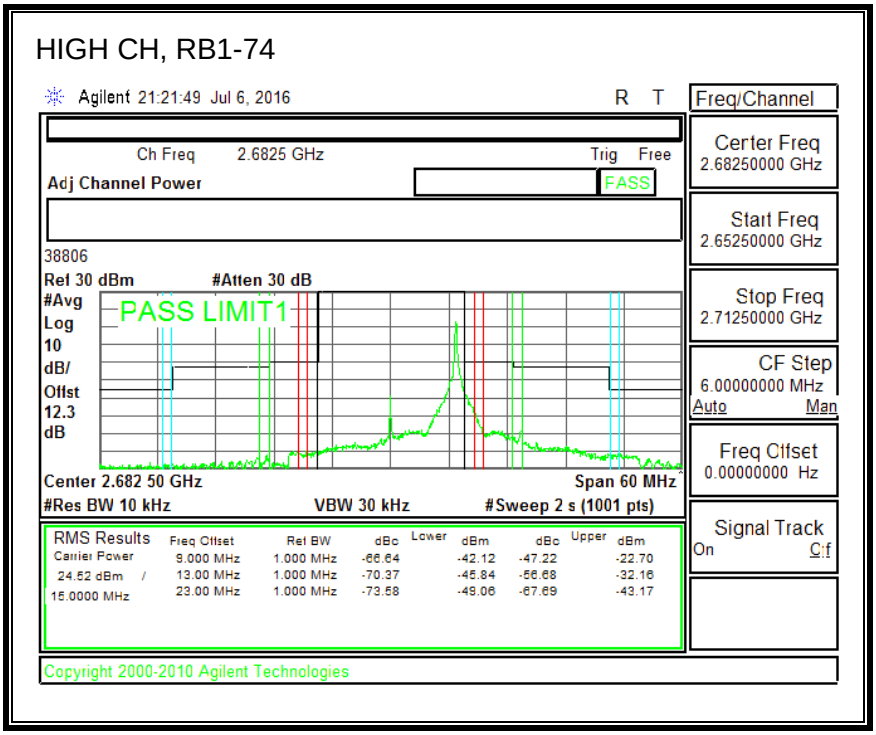
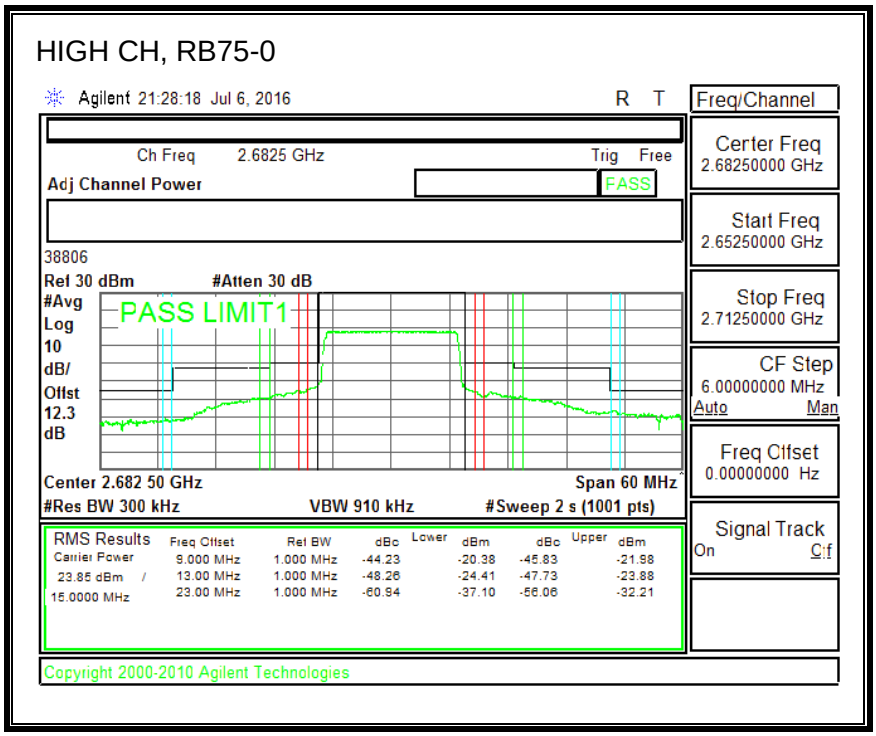
HIGH CH, RB1-74



HIGH CH, RB75-0



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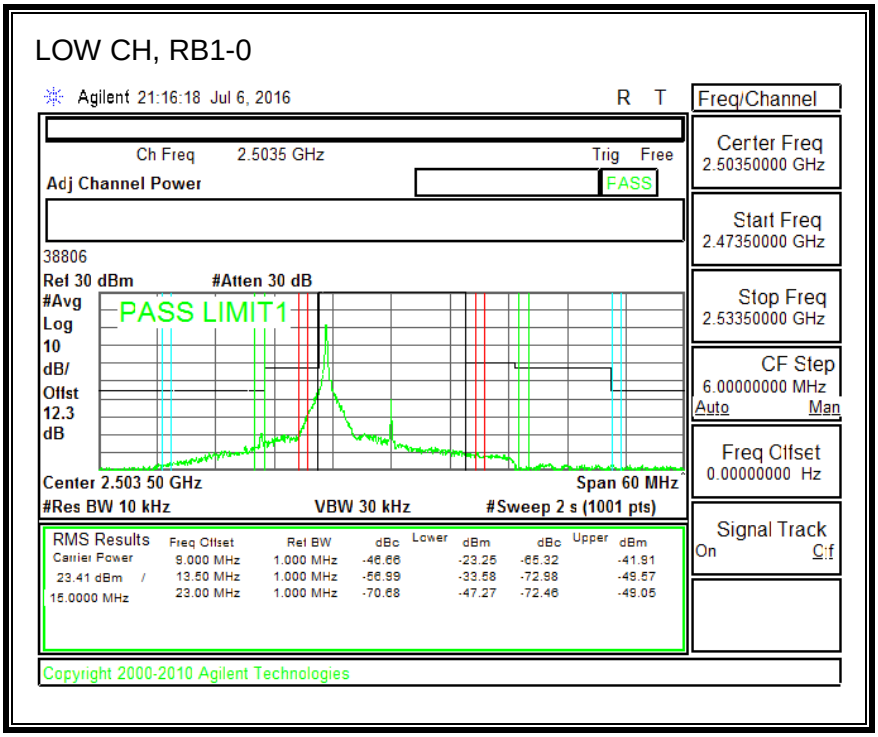
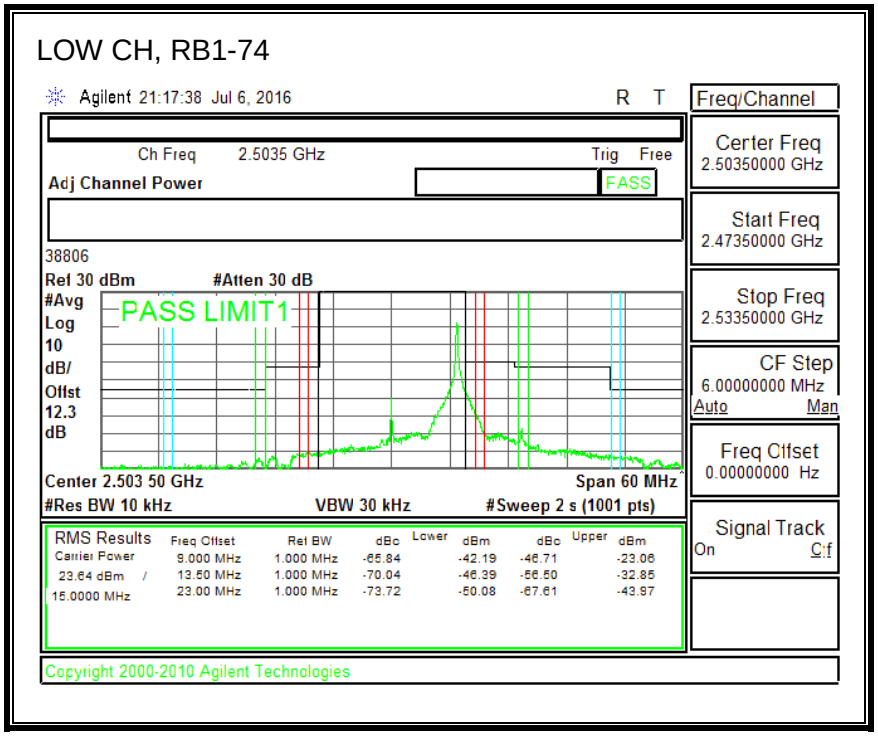
16QAM, (15.0 MHz BAND WIDTH)

LOW CH, RB1-0



LOW CH, RB1-74



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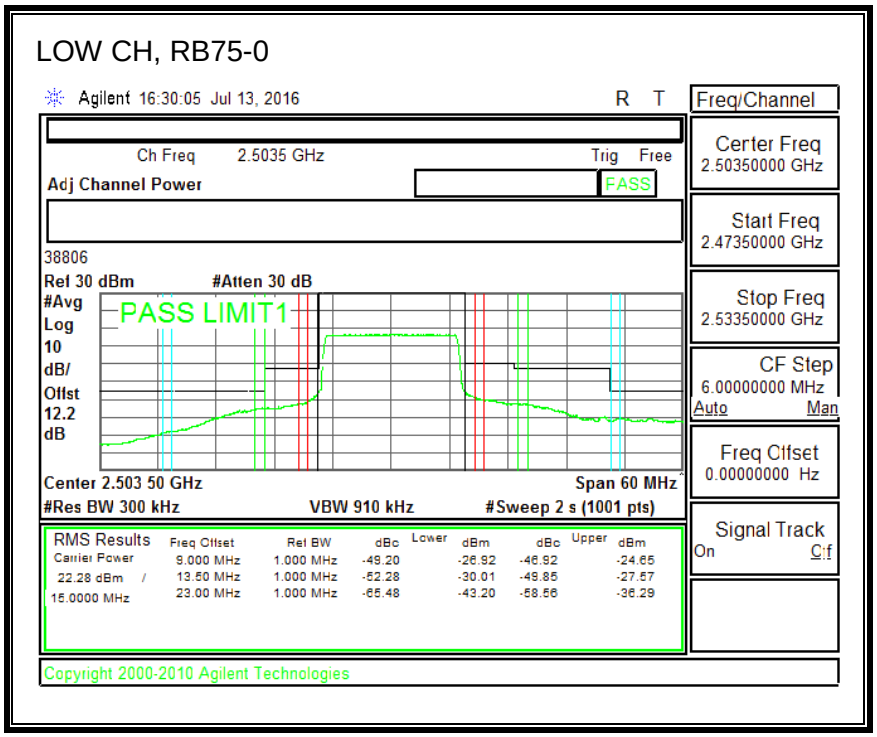
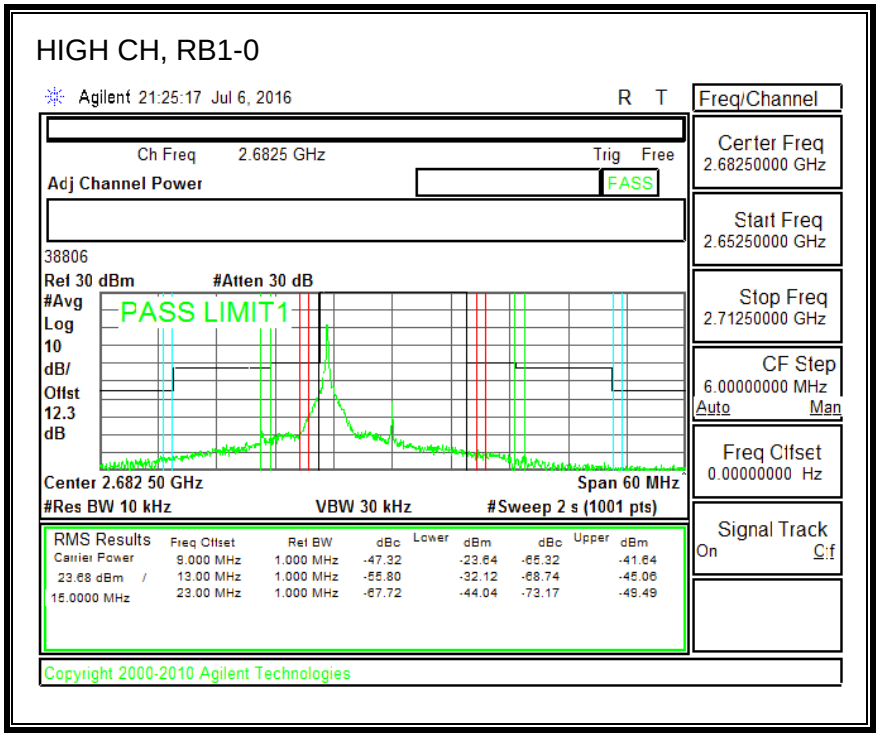
LOW CH, RB75-0



HIGH CH, RB1-0



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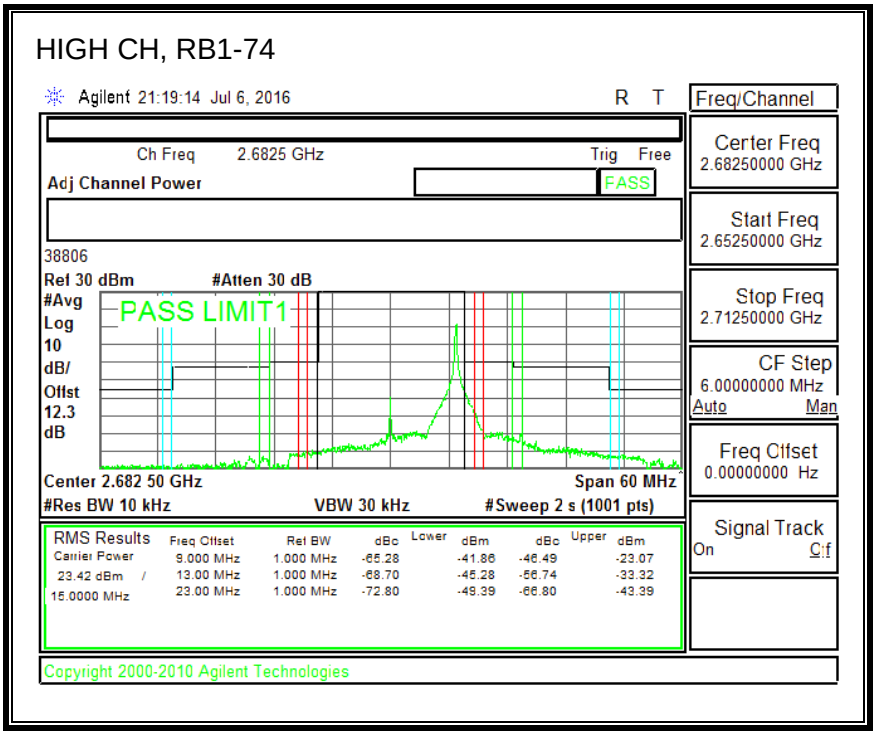
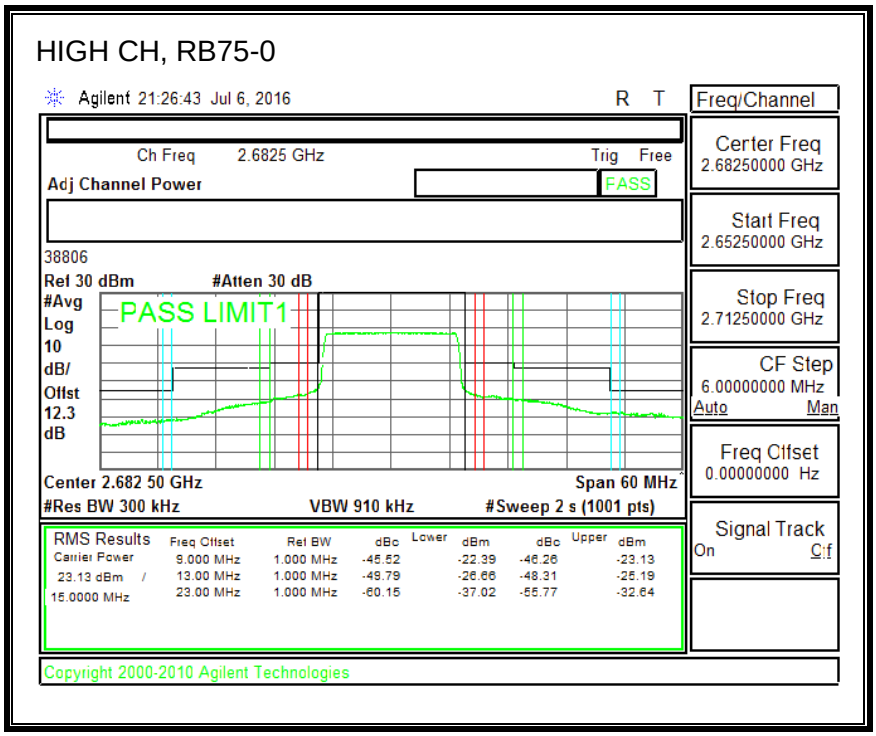
HIGH CH, RB1-74



HIGH CH, RB75-0



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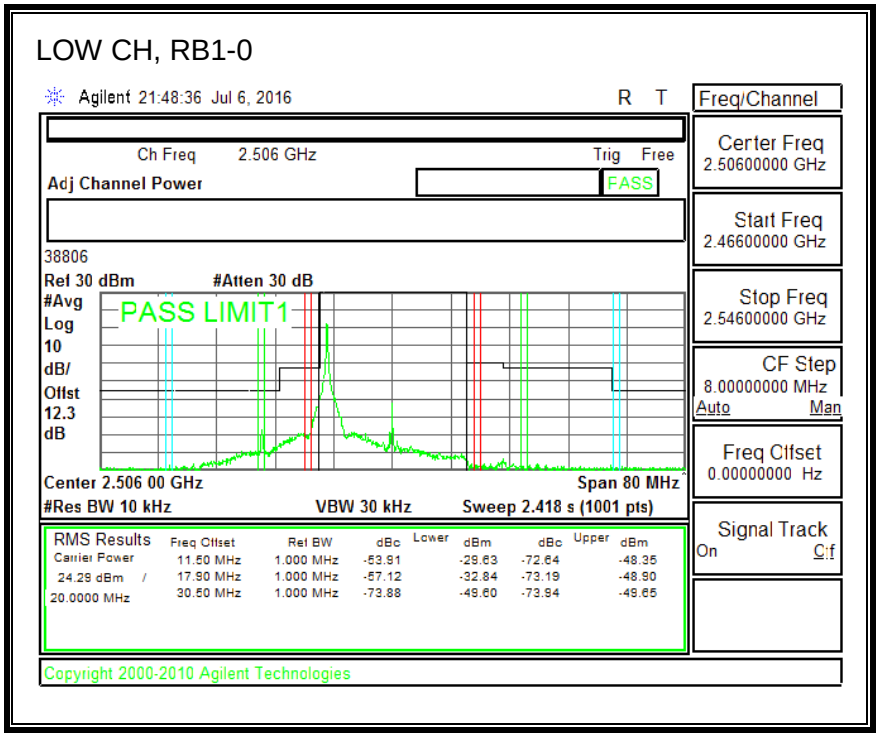
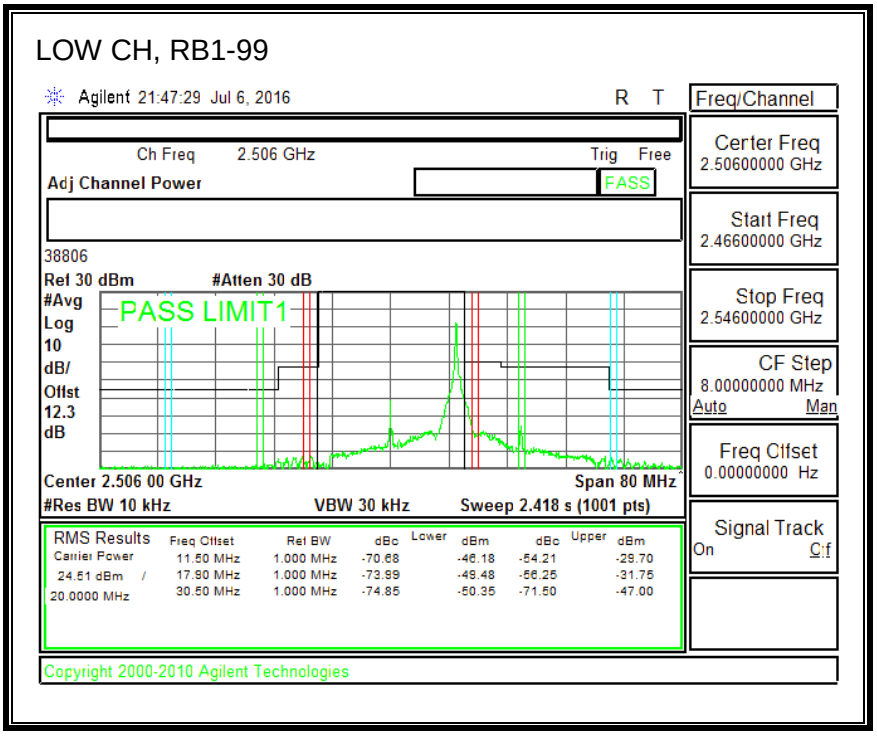
QPSK, (20.0 MHz BAND WIDTH)

LOW CH, RB1-0



LOW CH, RB1-99



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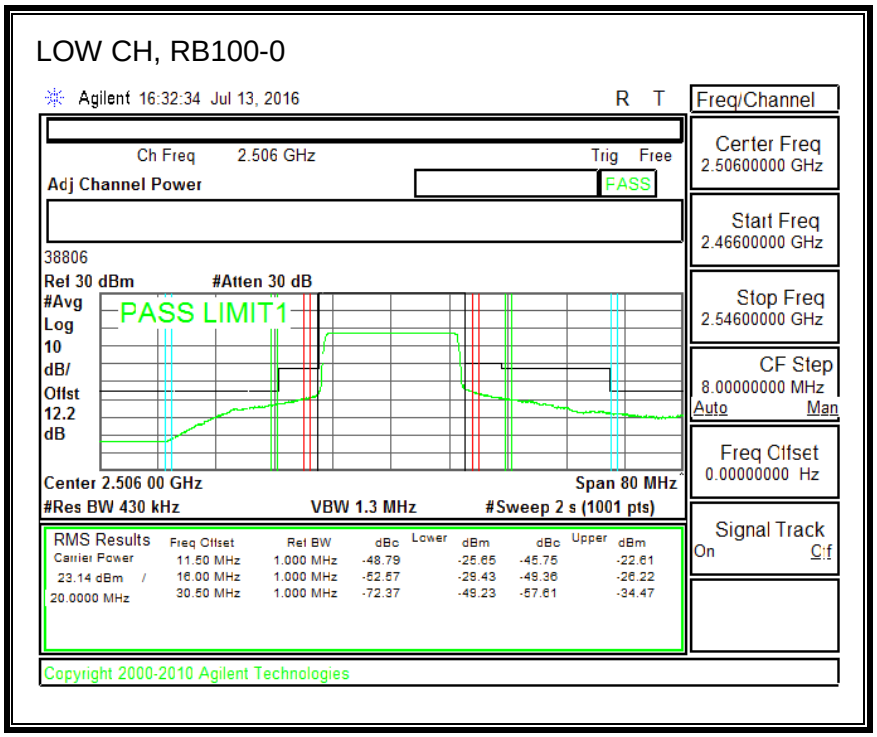
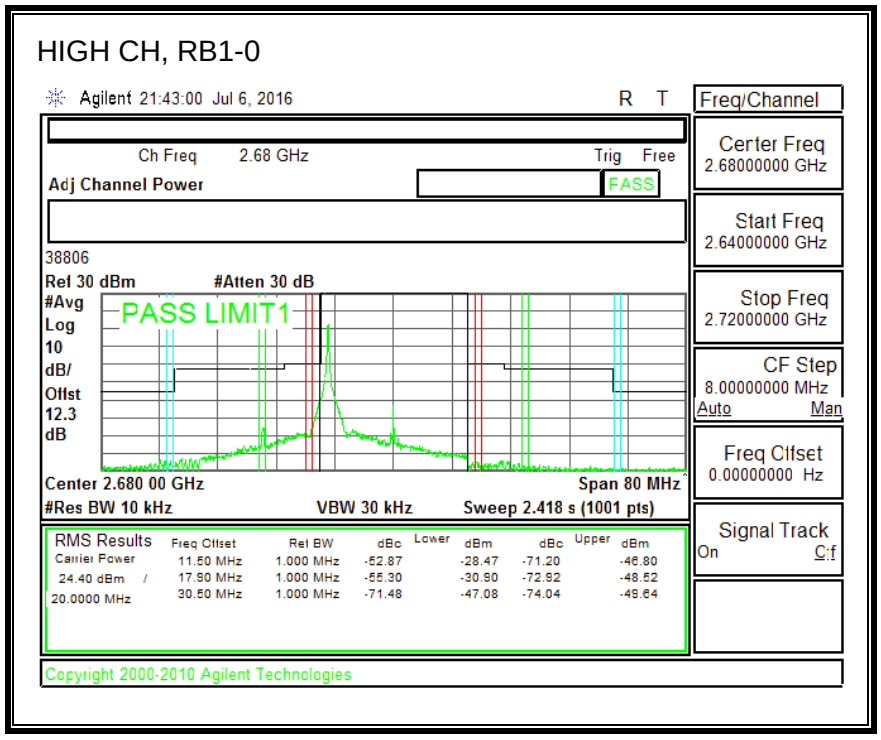
LOW CH, RB100-0



HIGH CH, RB1-0



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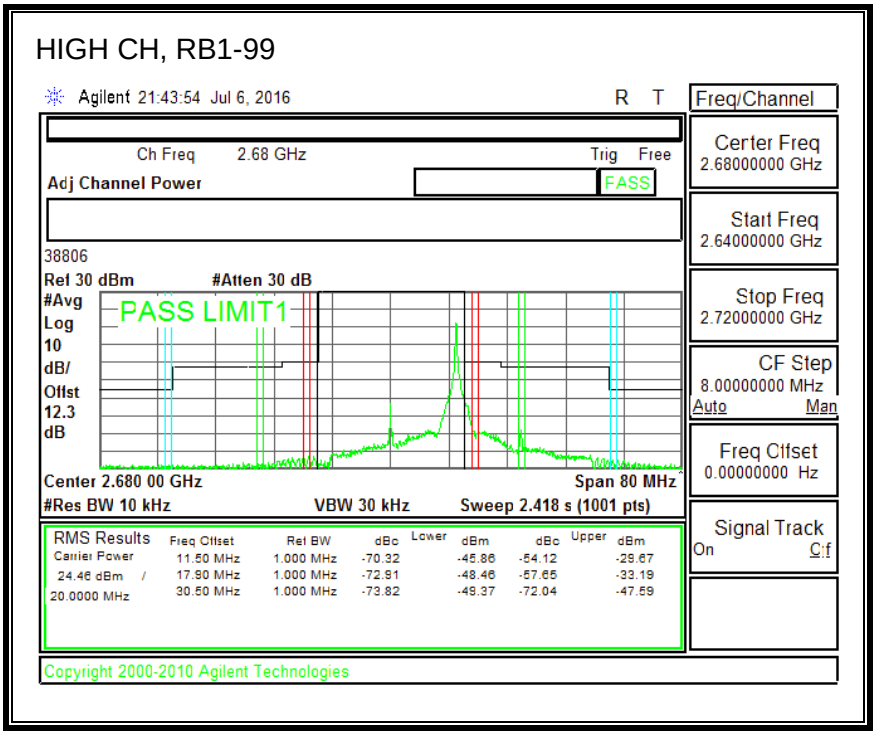
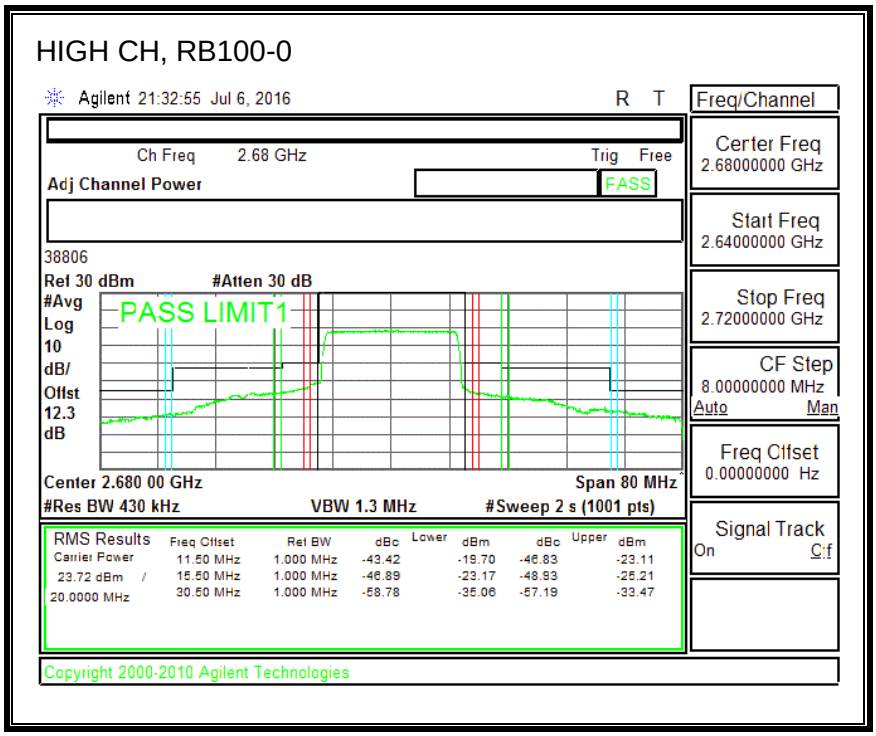
HIGH CH, RB1-99



HIGH CH, RB100-0



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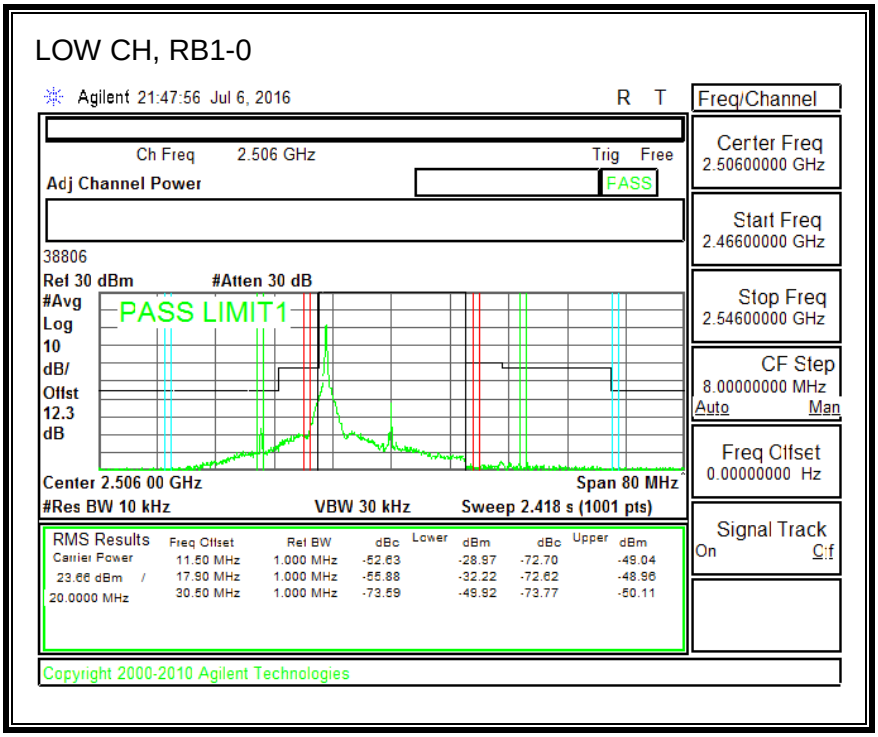
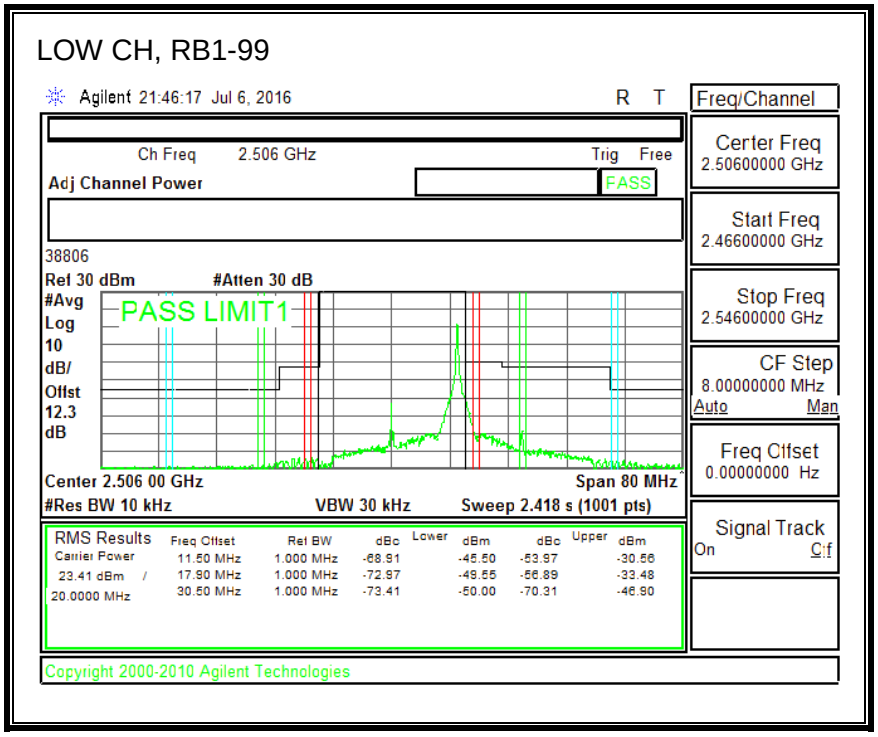
16QAM, (20.0 MHz BAND WIDTH)

LOW CH, RB1-0



LOW CH, RB1-99



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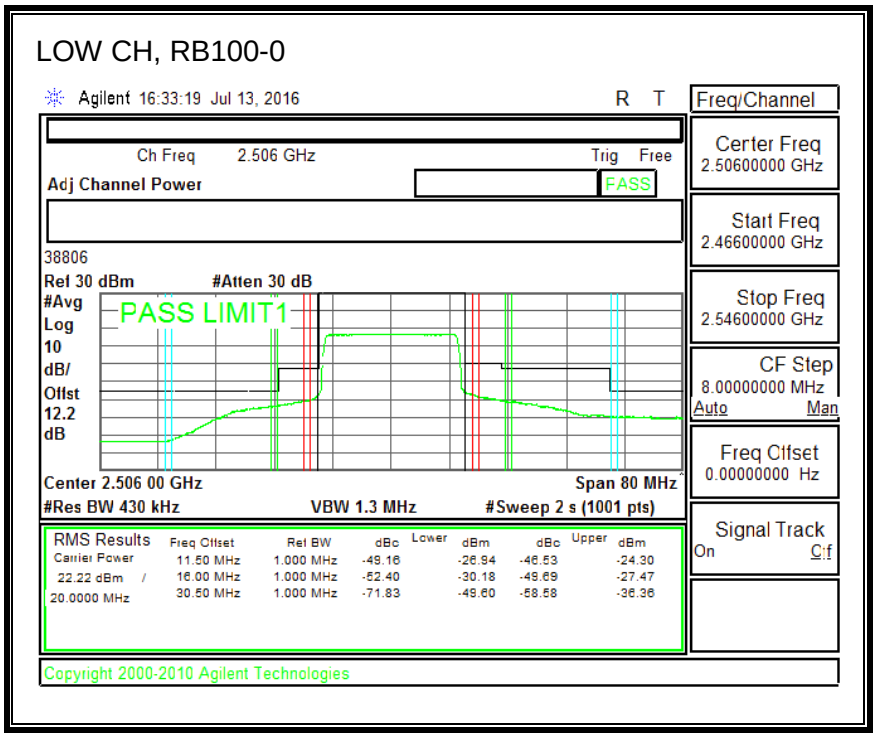
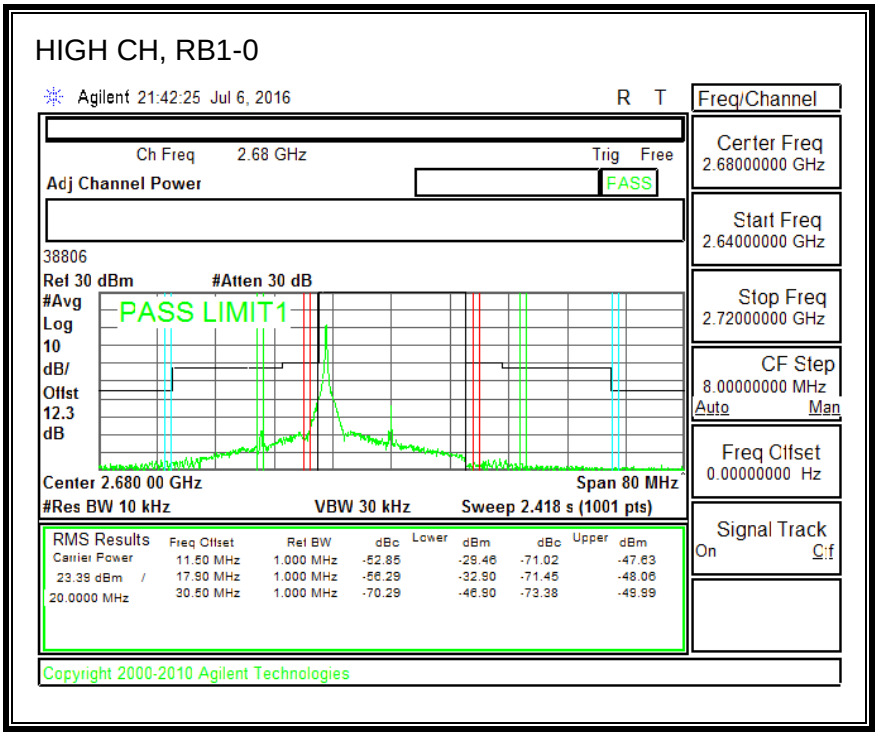
LOW CH, RB100-0



HIGH CH, RB1-0



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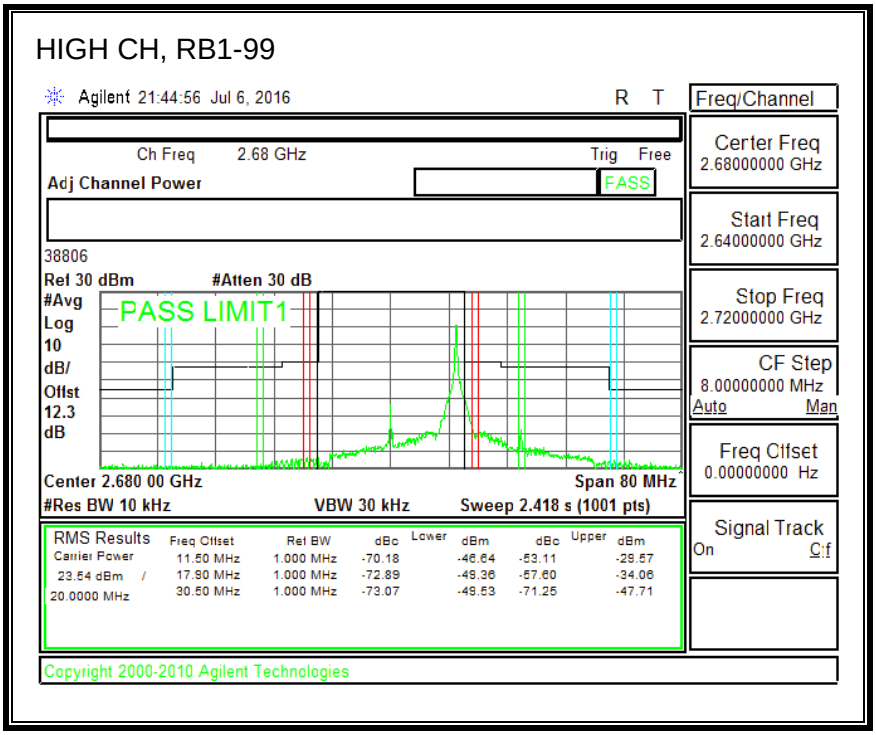
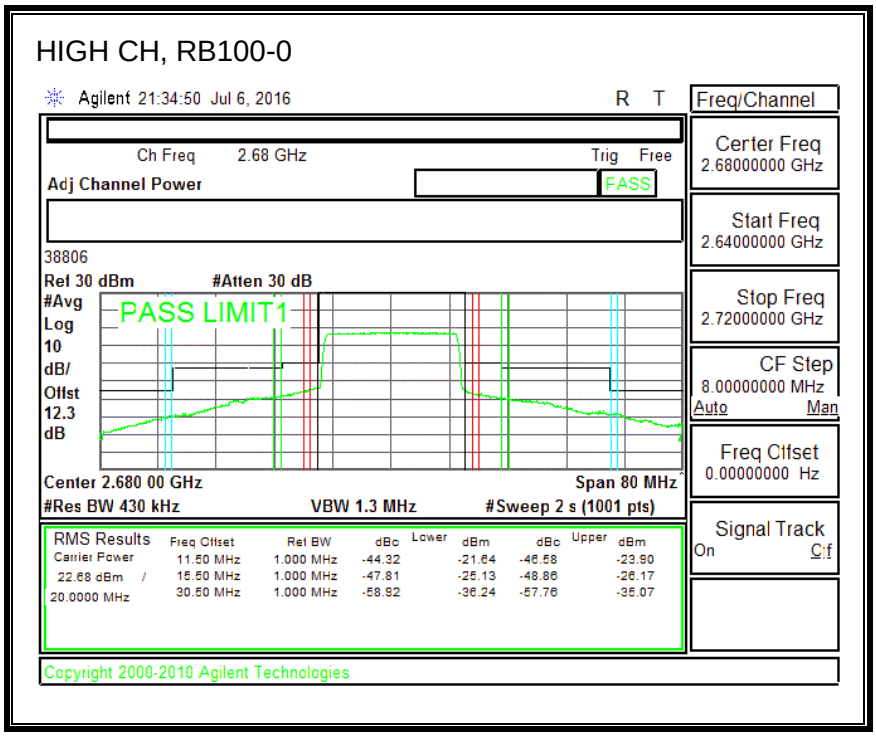
HIGH CH, RB1-99



HIGH CH, RB100-0



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8.3. OUT OF BAND EMISSIONS

RULE PART(S)

FCC: §2.1051, §22.901, §22.917, §24.238, §27.53 and §90.691

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.

For mobile and portable stations operating in the 2305-2315 MHz: by a factor of not less than 43 + 10 log (P) dB on all frequencies between 2360 and 2365 MHz, and not less than 70 + 10 log (P) dB above 2365 MHz

For mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

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, -25dBm and -40dBm according to the band Limit
- 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 27
- LTE Band 30
- LTE Band 41

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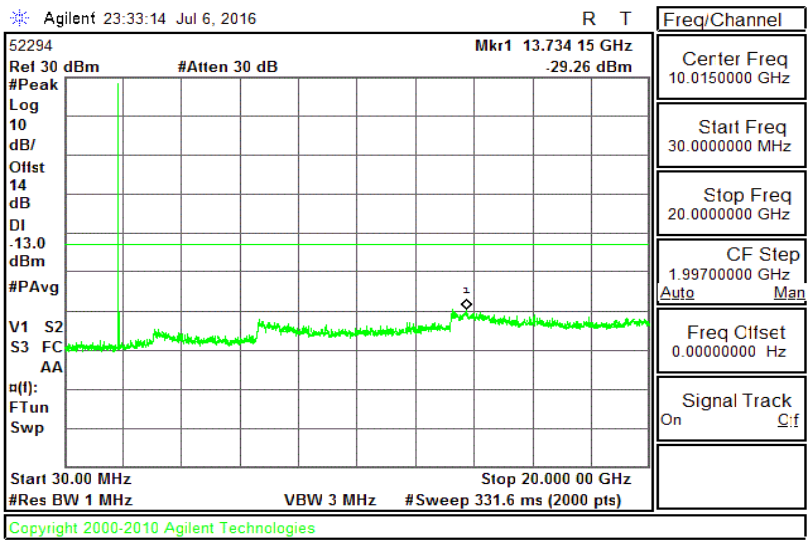
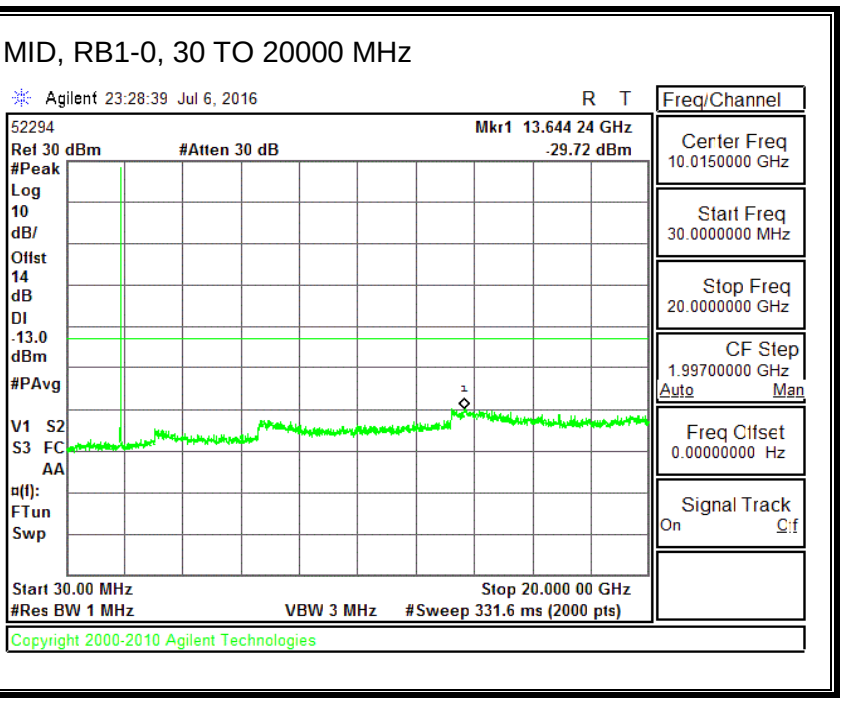
8.3.1. LTE BAND 2

QPSK, (1.4 MHz BAND WIDTH)

LOW, RB1-0, 30 TO 20000 MHz



MID, RB1-0, 30 TO 20000 MHz



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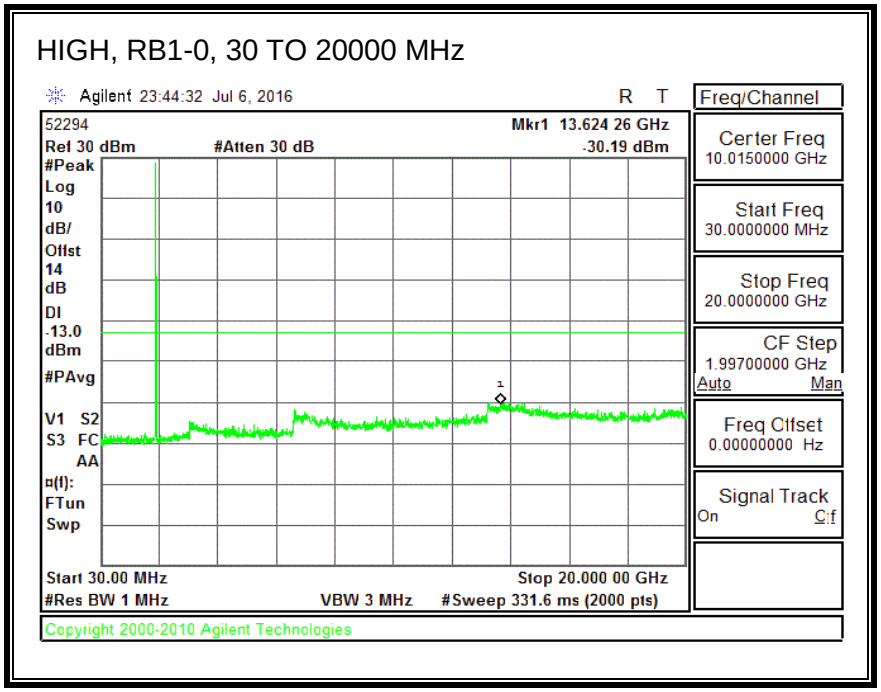
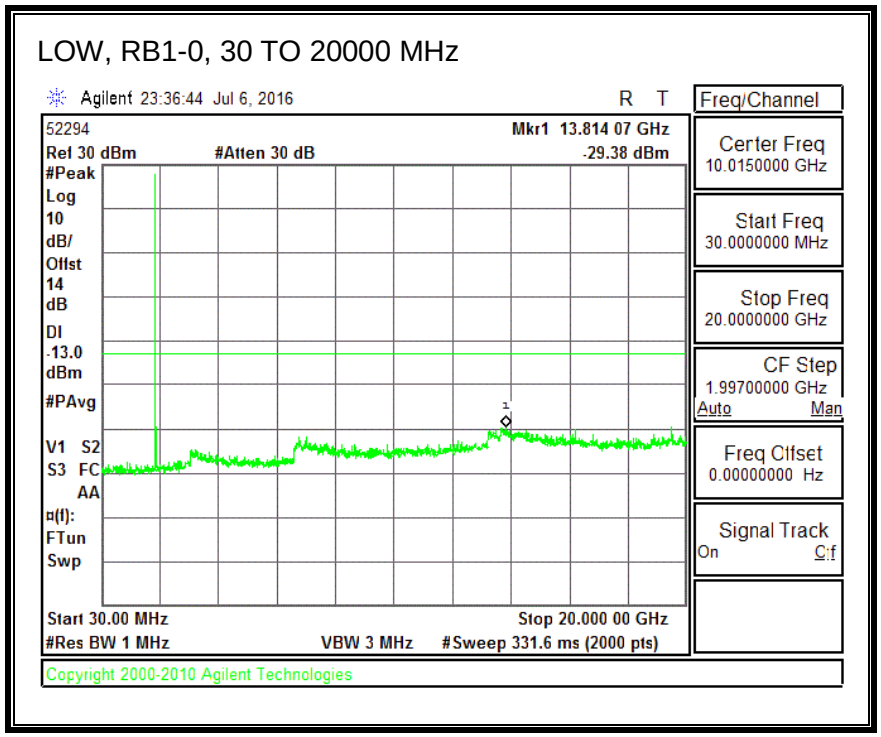
HIGH, RB1-0, 30 TO 20000 MHz



16QAM, (1.4 MHz BAND WIDTH)

LOW, RB1-0, 30 TO 20000 MHz



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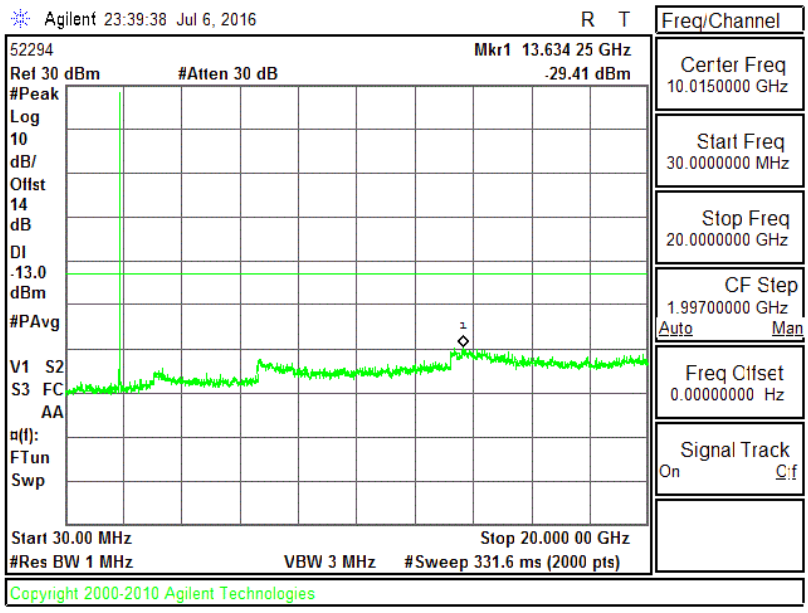
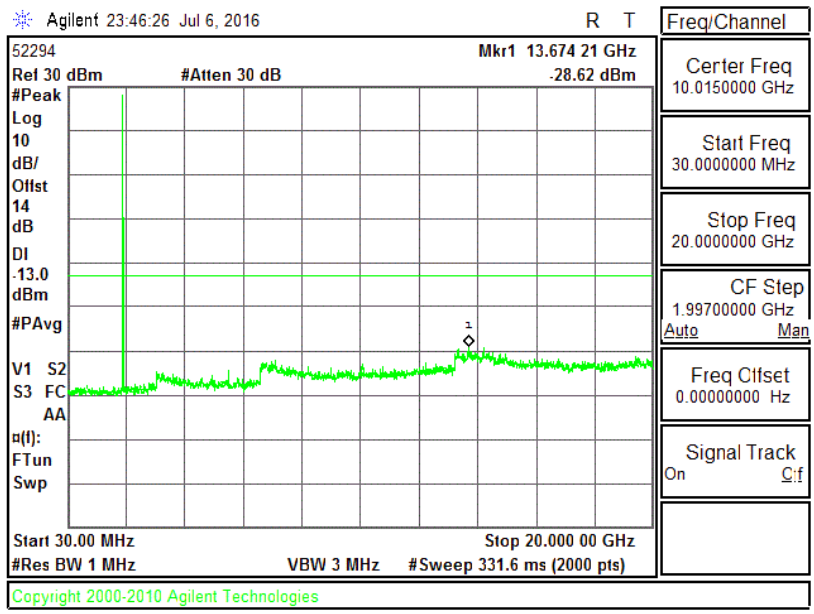
MID, RB1-0, 30 TO 20000 MHz



HIGH, RB1-0, 30 TO 20000 MHz



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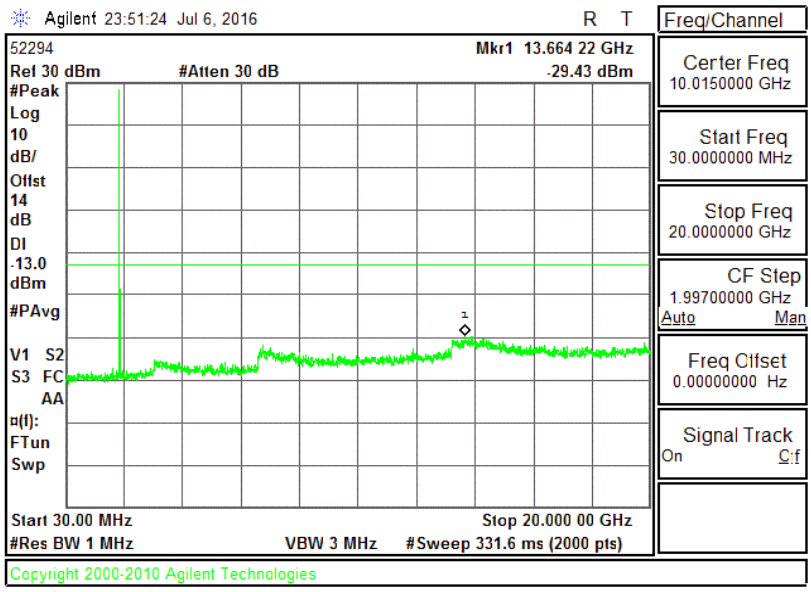
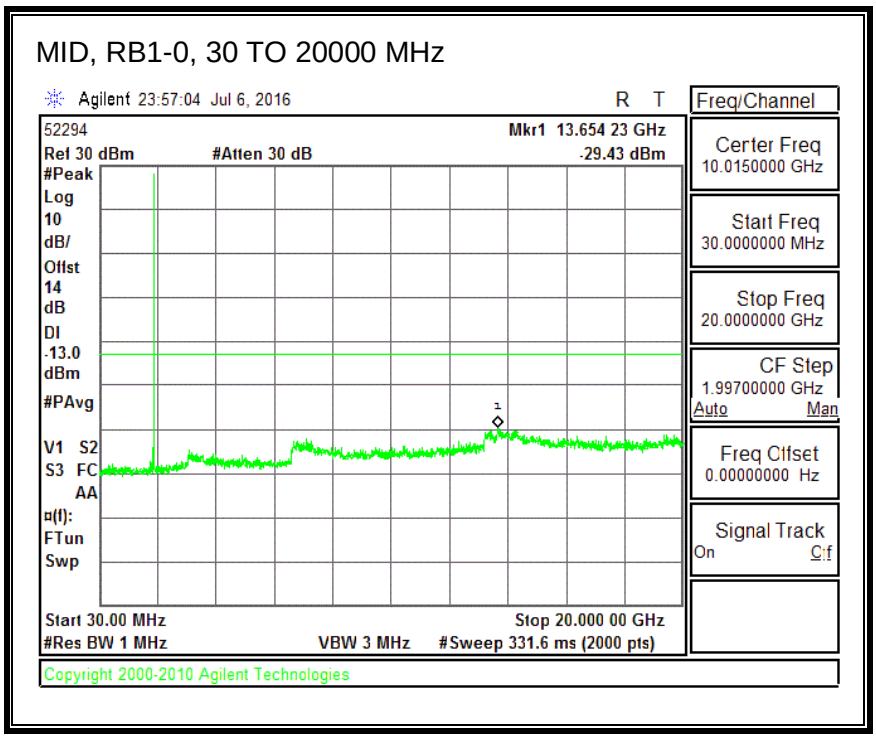
QPSK, (3.0 MHz BAND WIDTH)

LOW, RB1-0, 30 TO 20000 MHz



MID, RB1-0, 30 TO 20000 MHz



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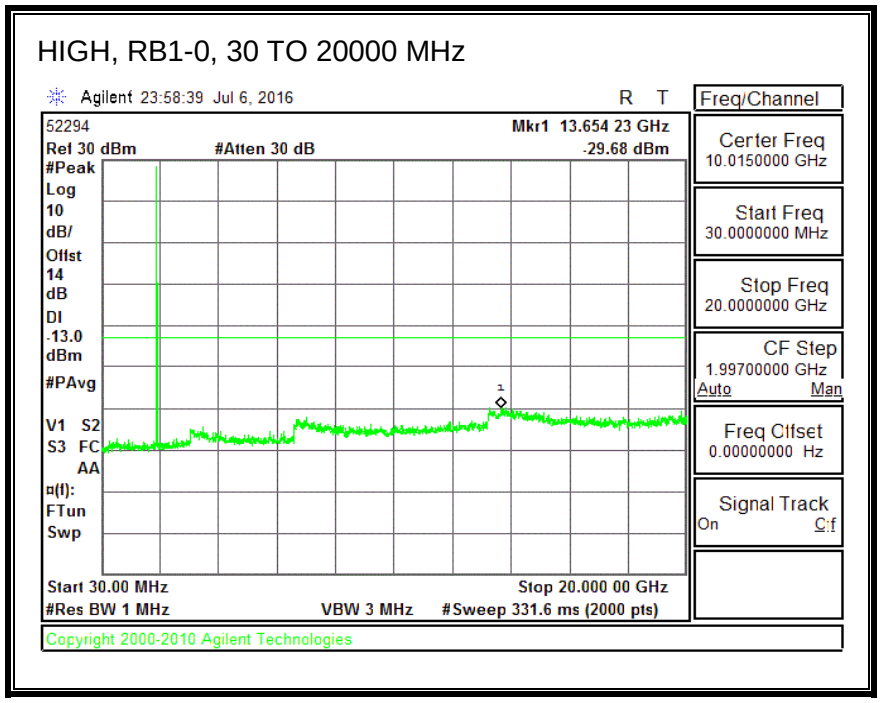
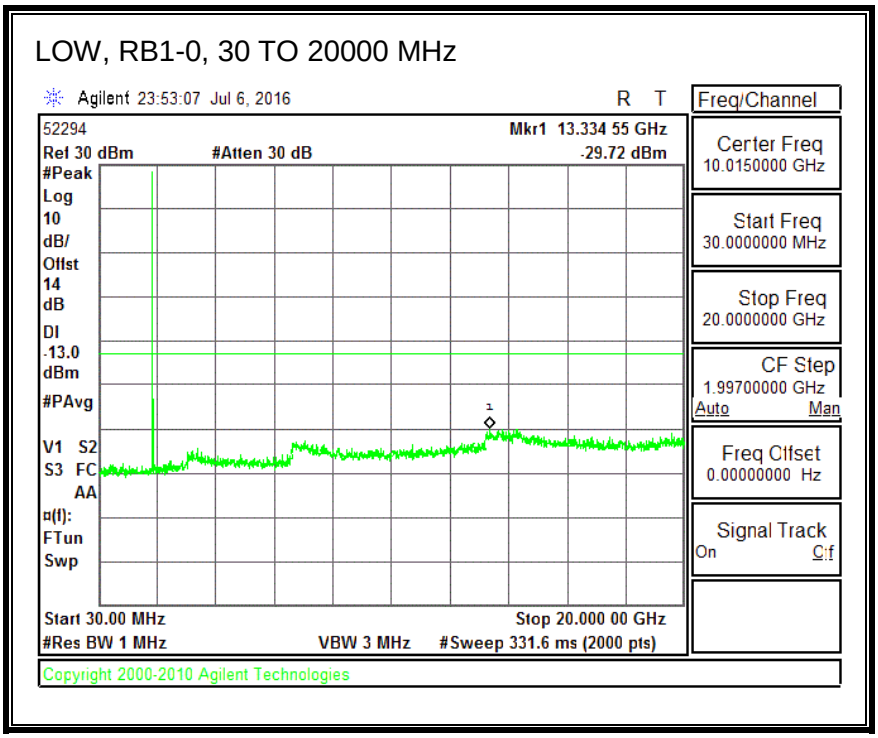


16QAM, (3.0 MHz BAND WIDTH)



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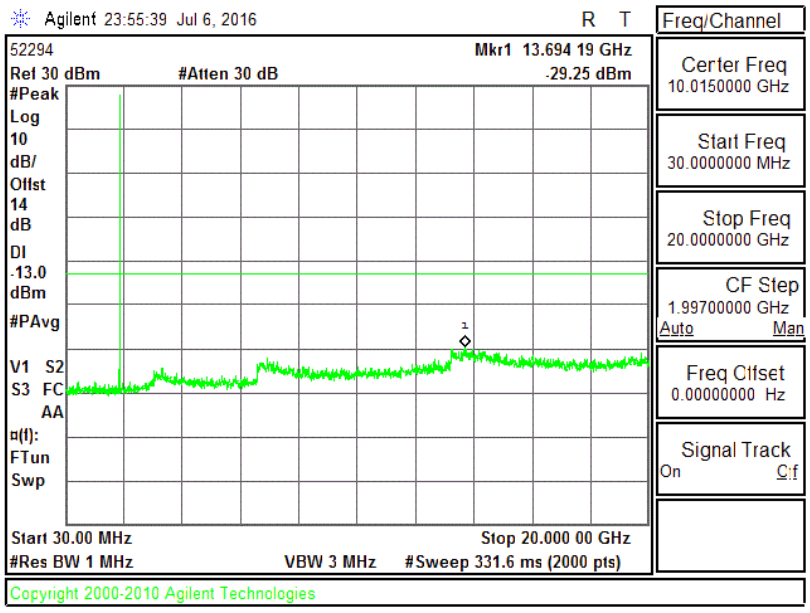
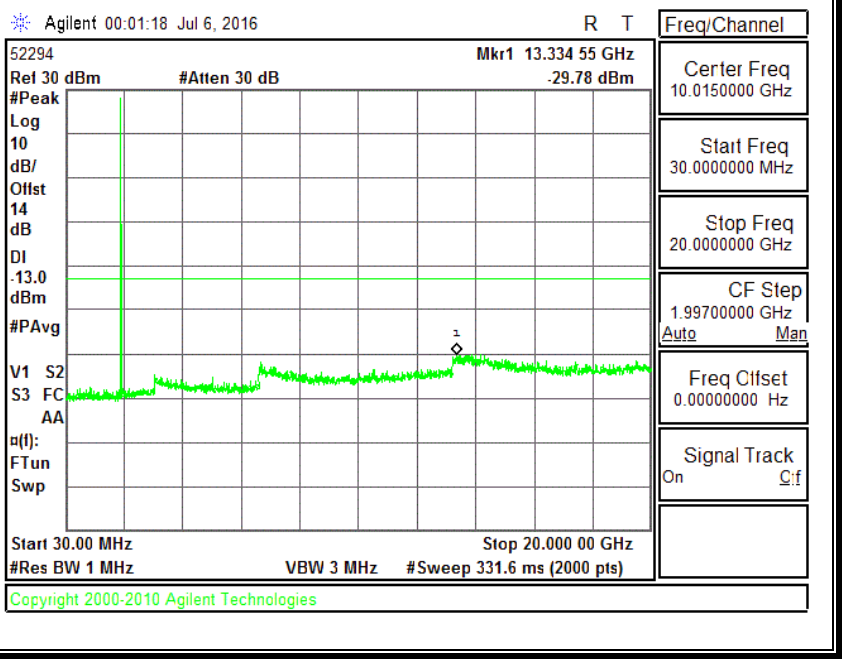
MID, RB1-0, 30 TO 20000 MHz



HIGH, RB1-0, 30 TO 20000 MHz



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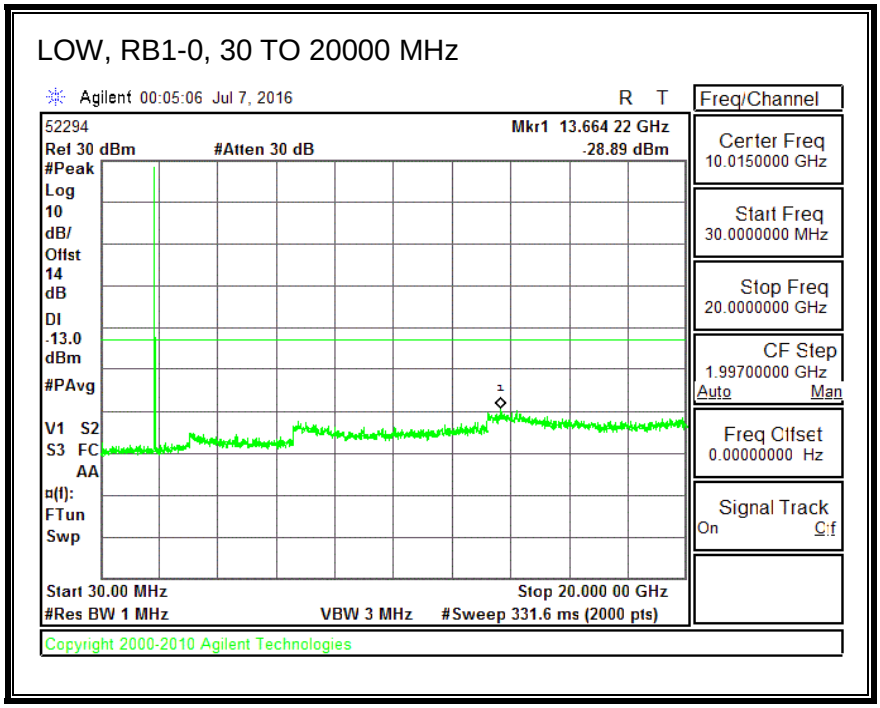
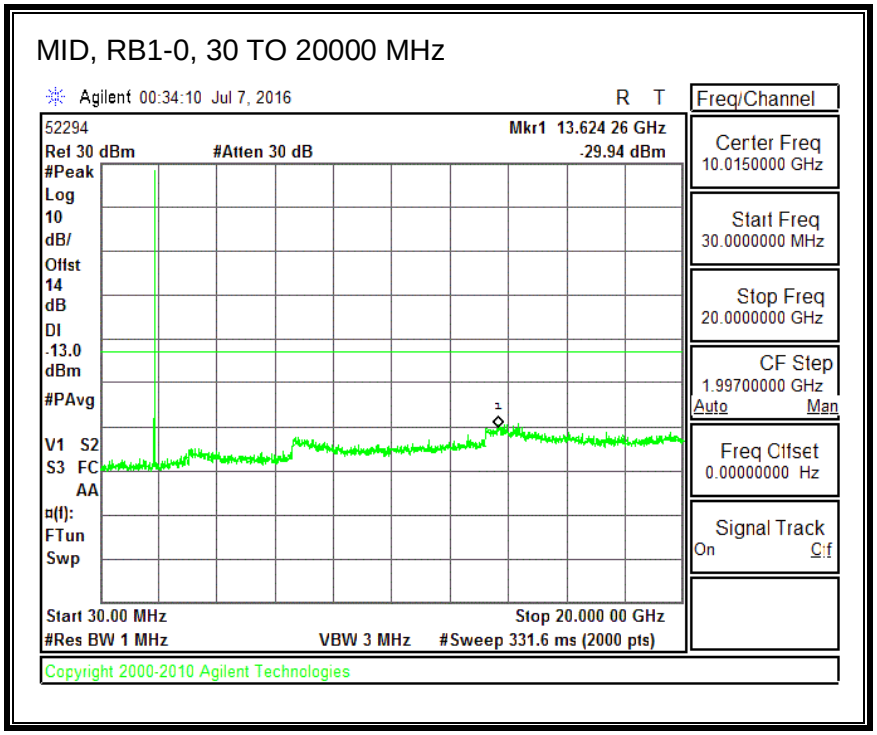
QPSK, (5.0 MHz BAND WIDTH)

LOW, RB1-0, 30 TO 20000 MHz



MID, RB1-0, 30 TO 20000 MHz



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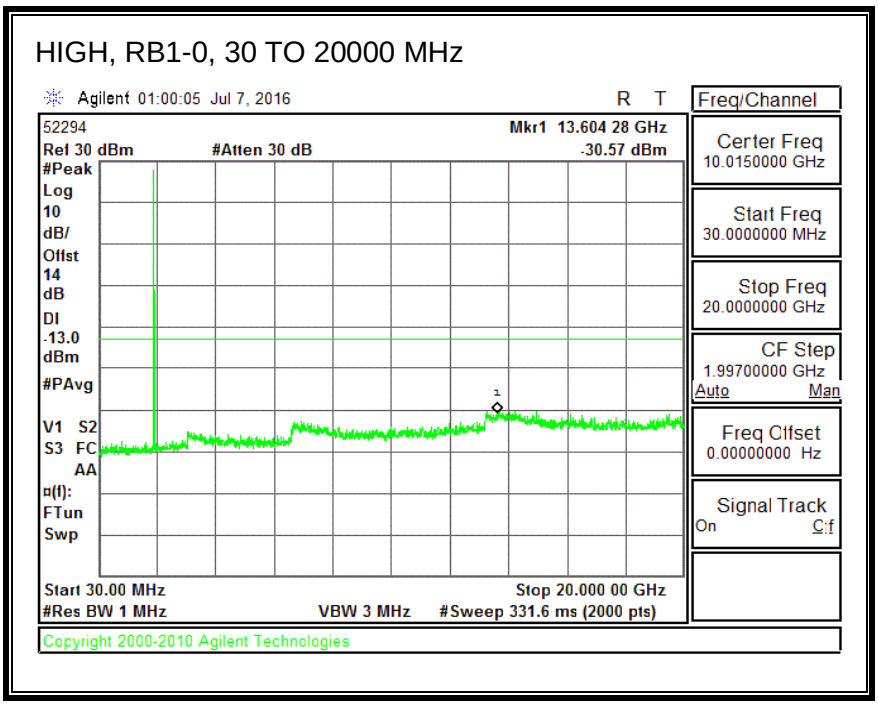
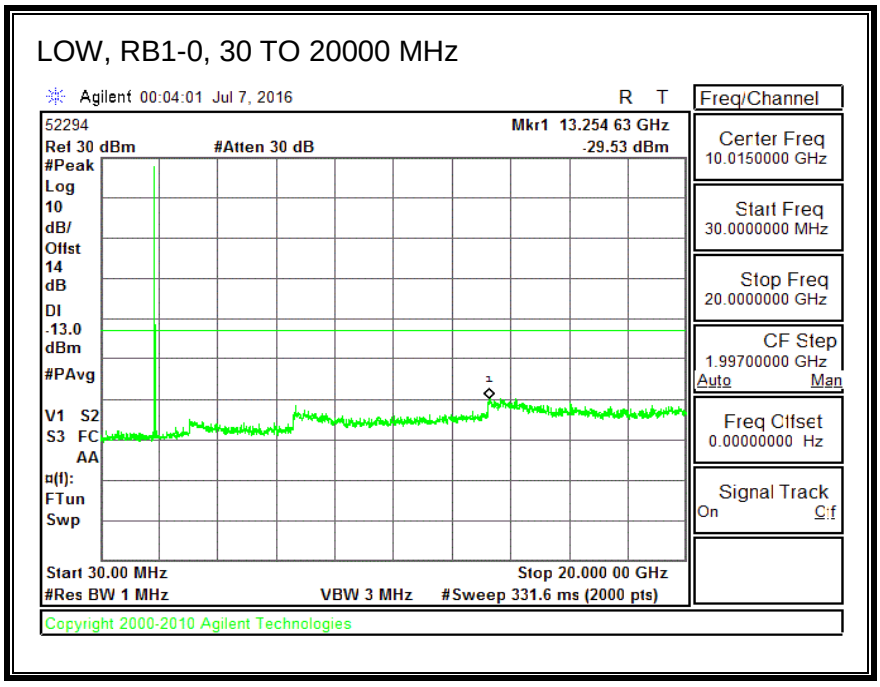


16QAM, (5.0 MHz BAND WIDTH)



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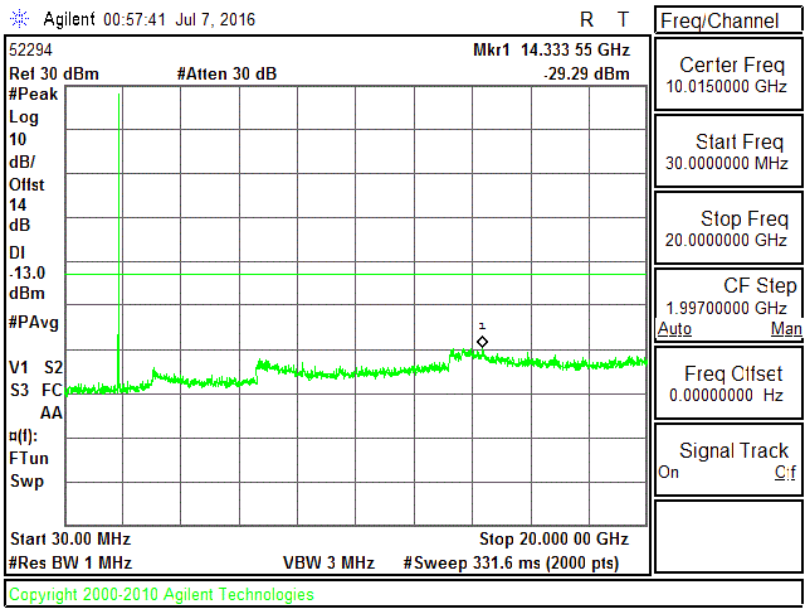
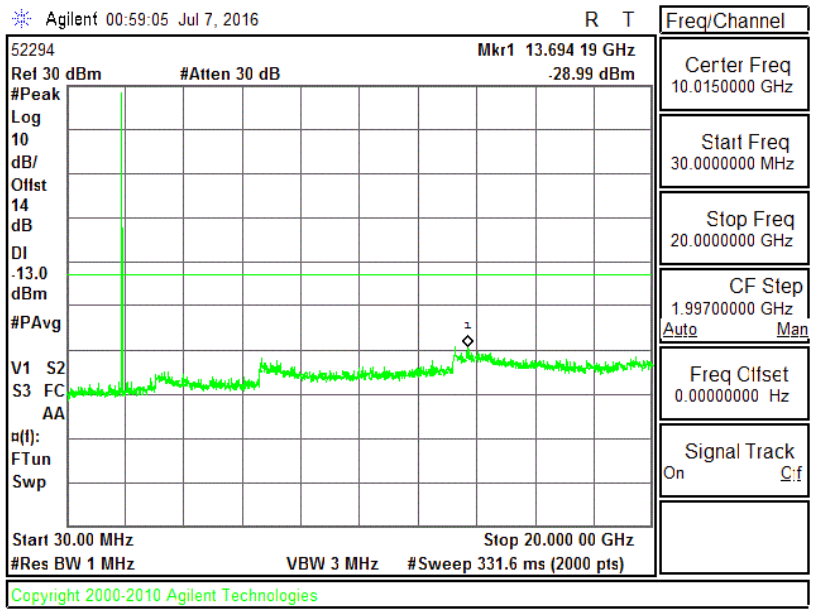
MID, RB1-0, 30 TO 20000 MHz



HIGH, RB1-0, 30 TO 20000 MHz



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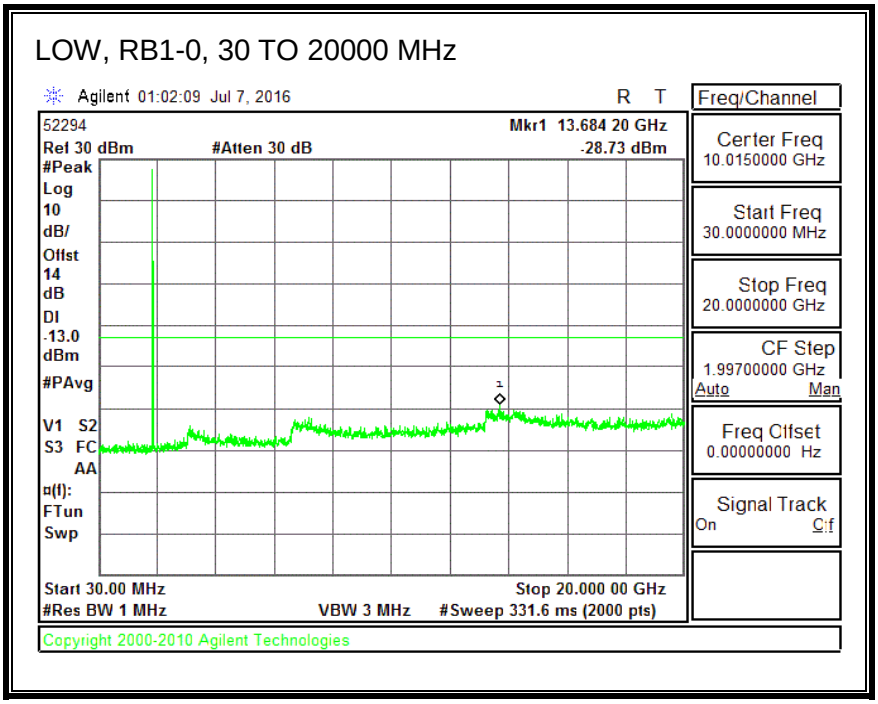
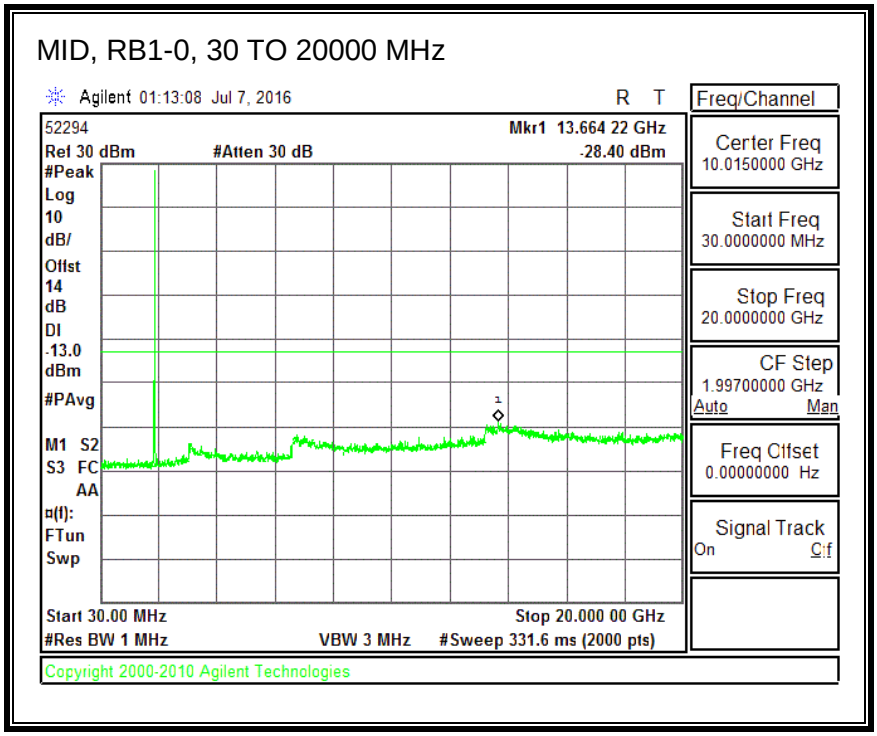
QPSK, (10.0 MHz BAND WIDTH)

LOW, RB1-0, 30 TO 20000 MHz



MID, RB1-0, 30 TO 20000 MHz



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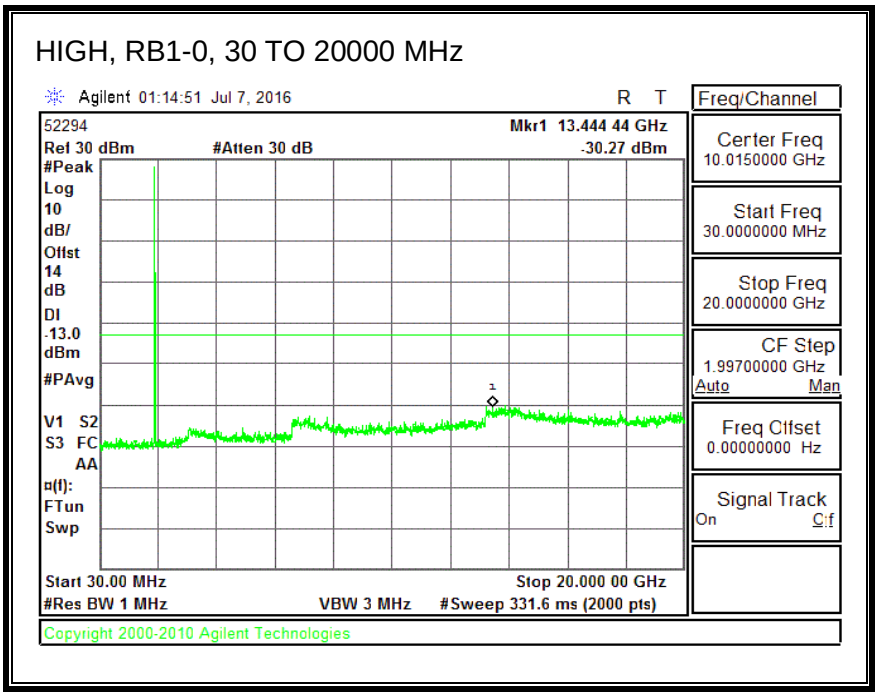
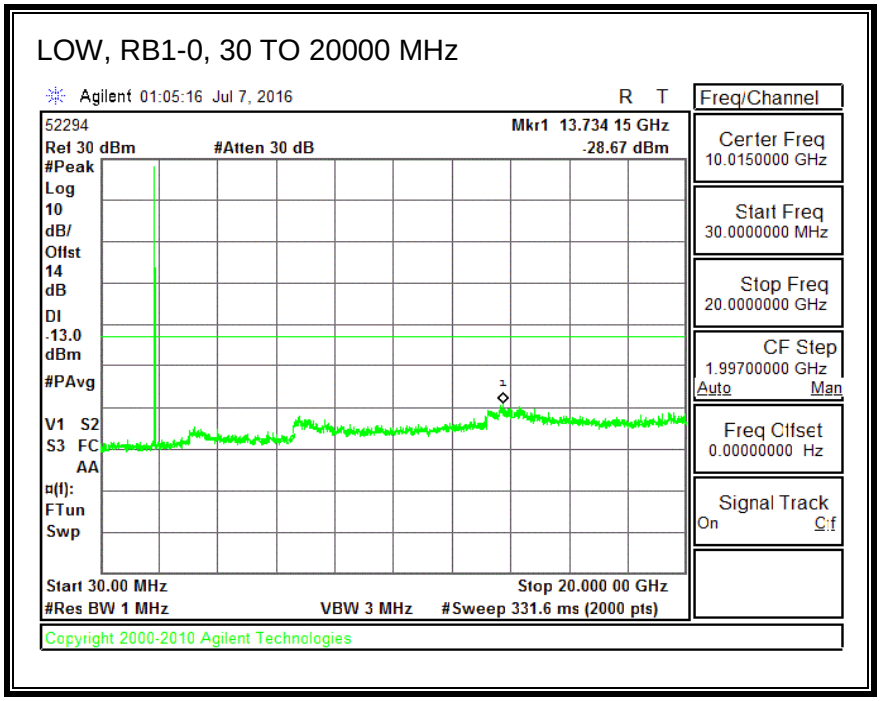


16QAM, (10.0 MHz BAND WIDTH)



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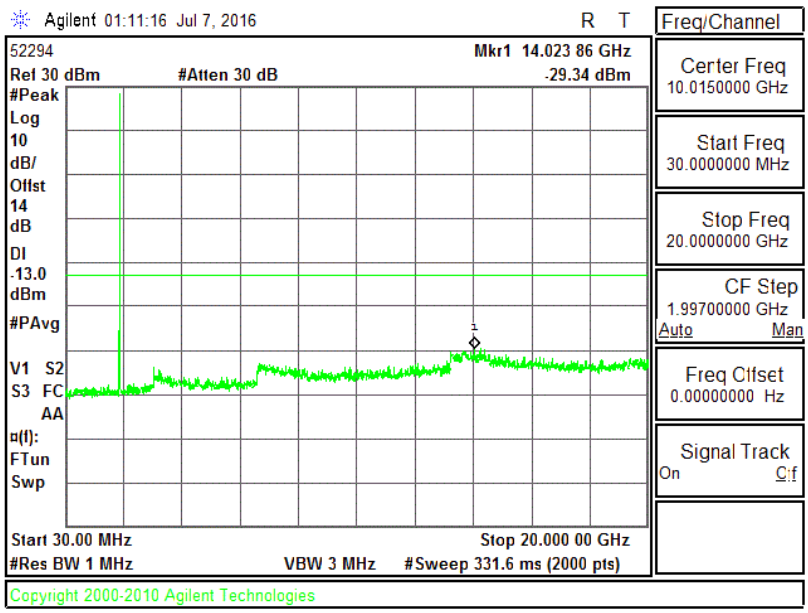
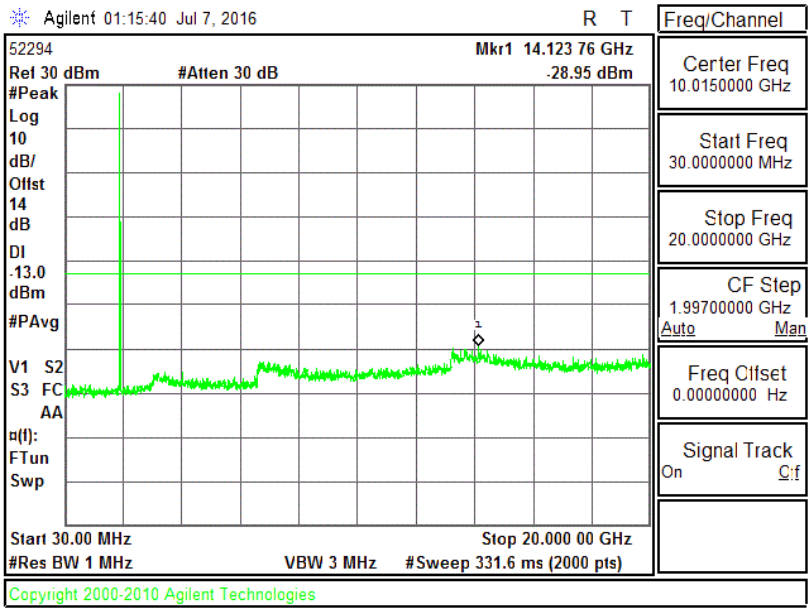
MID, RB1-0, 30 TO 20000 MHz



HIGH, RB1-0, 30 TO 20000 MHz



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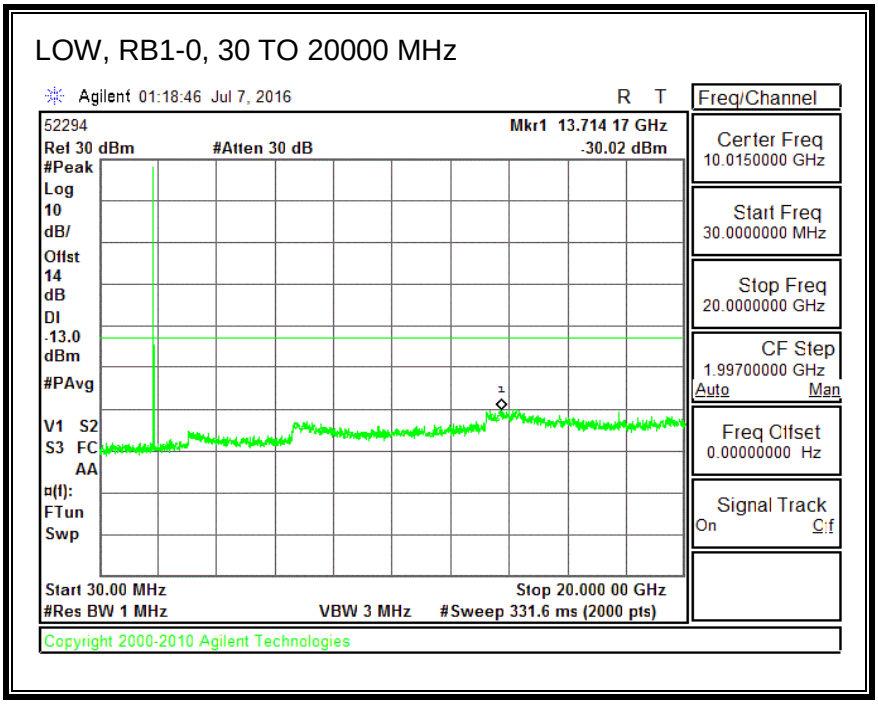
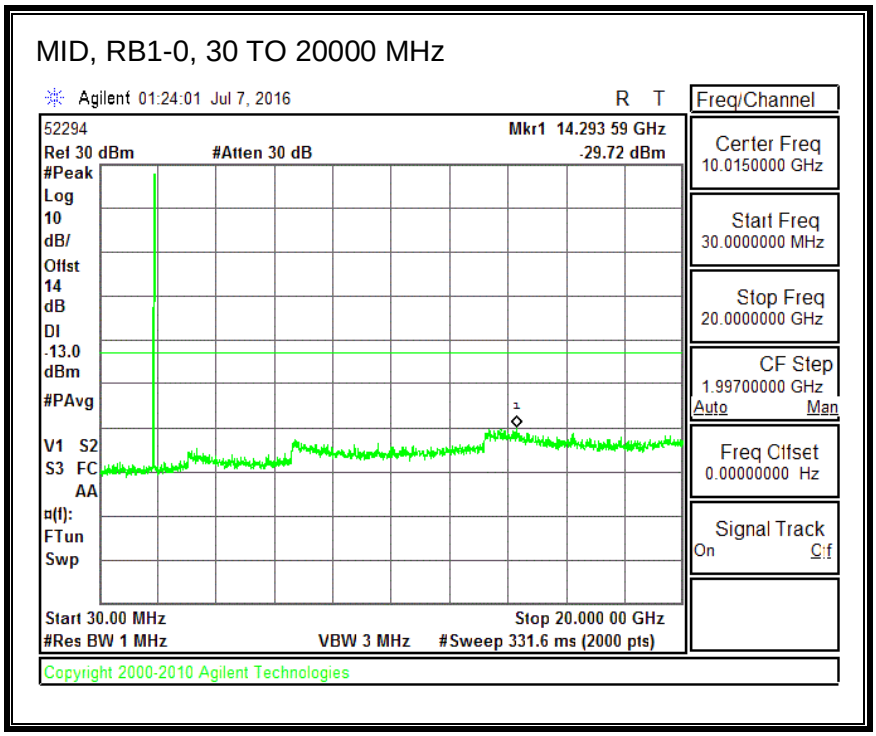
QPSK, (15.0 MHz BAND WIDTH)

LOW, RB1-0, 30 TO 20000 MHz



MID, RB1-0, 30 TO 20000 MHz



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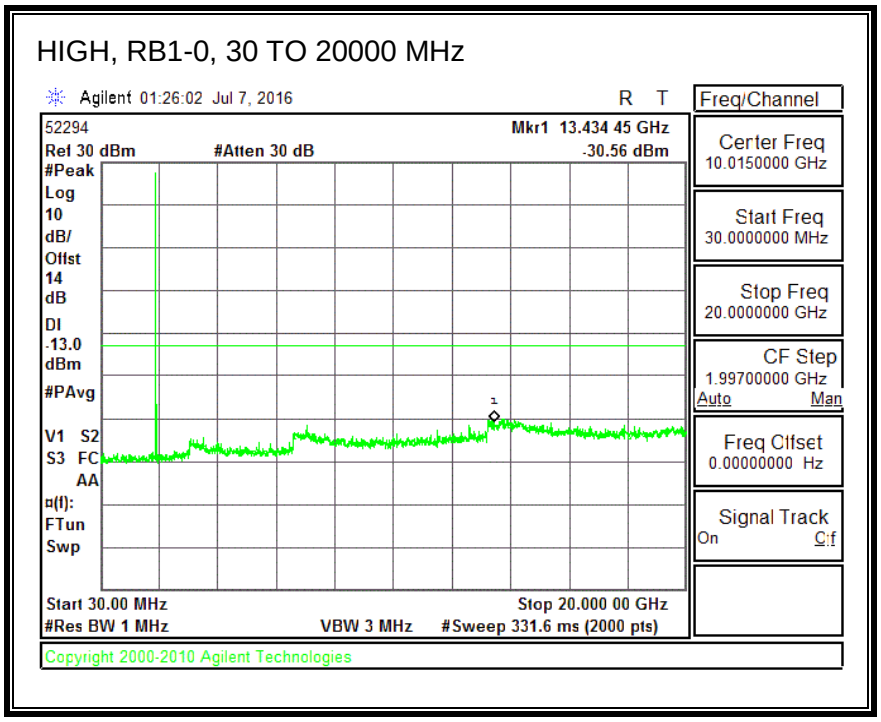
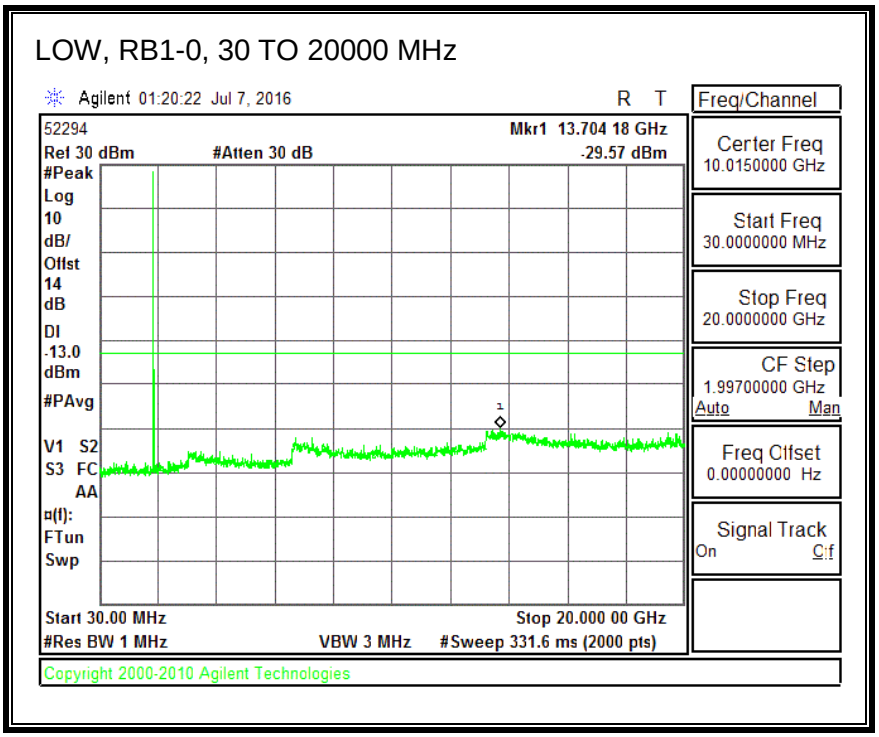


16QAM, (15.0 MHz BAND WIDTH)



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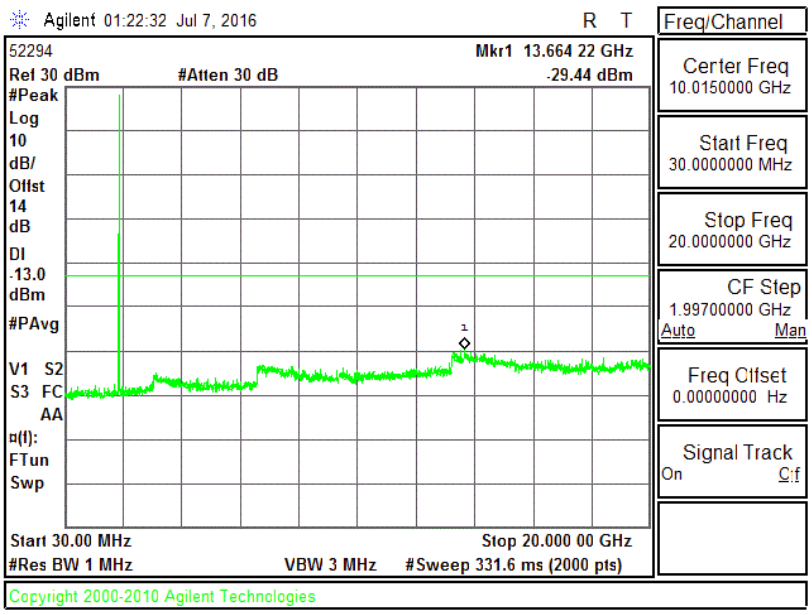
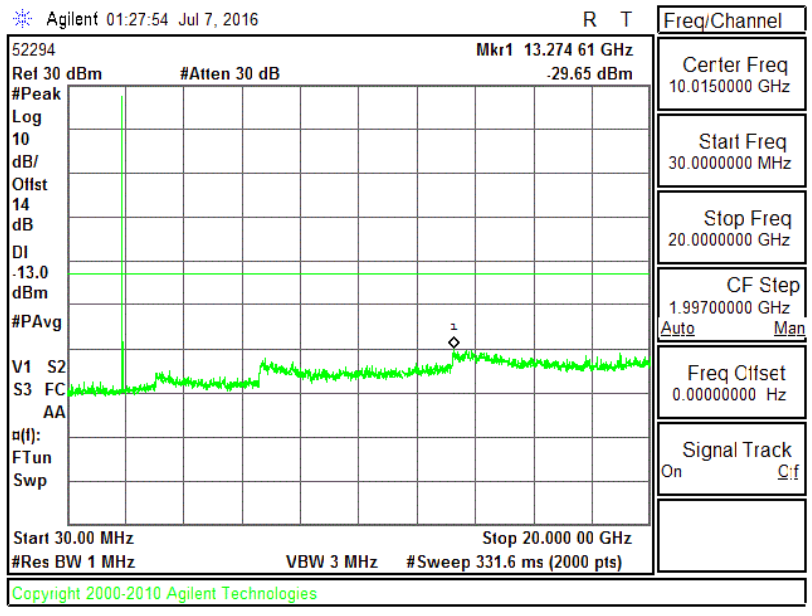
MID, RB1-0, 30 TO 20000 MHz



HIGH, RB1-0, 30 TO 20000 MHz



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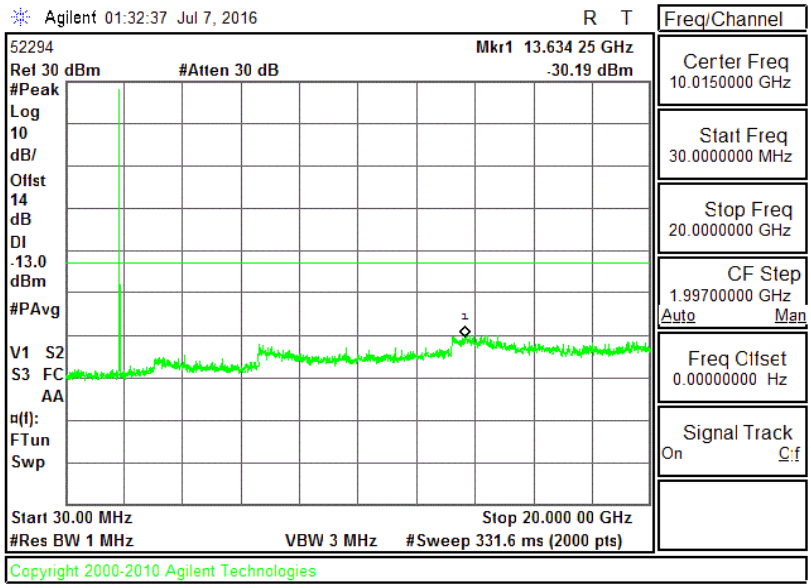
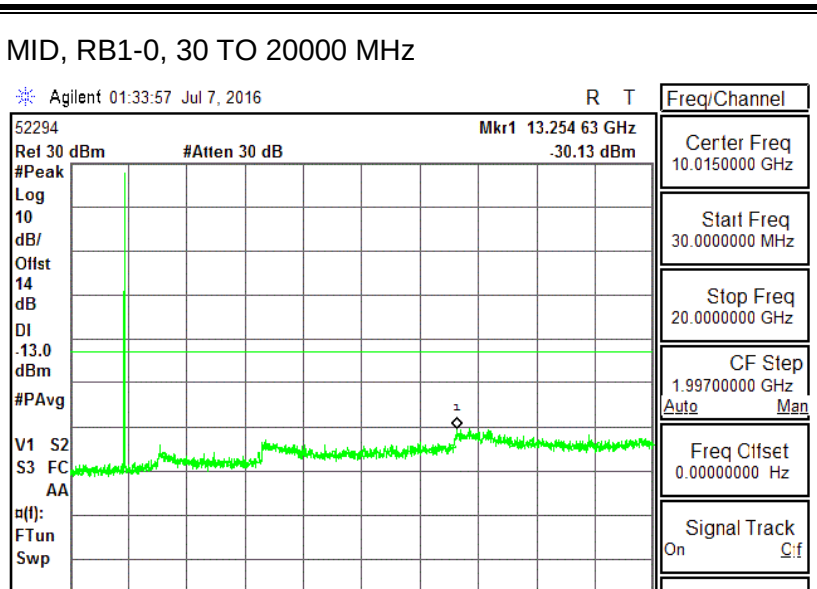
QPSK, (20.0 MHz BAND WIDTH)

LOW, RB1-0, 30 TO 20000 MHz



MID, RB1-0, 30 TO 20000 MHz



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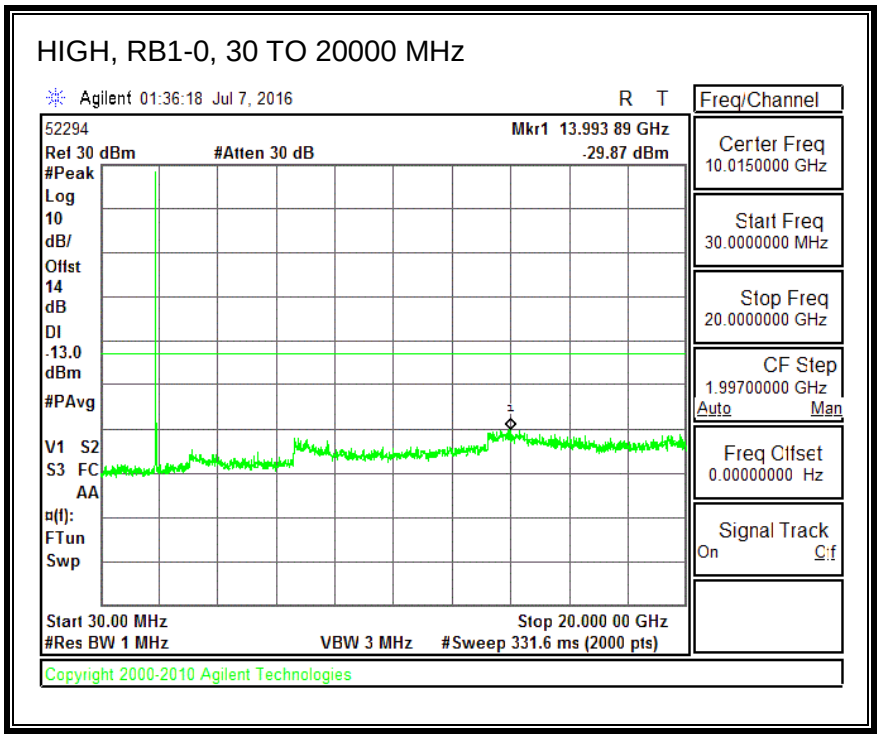
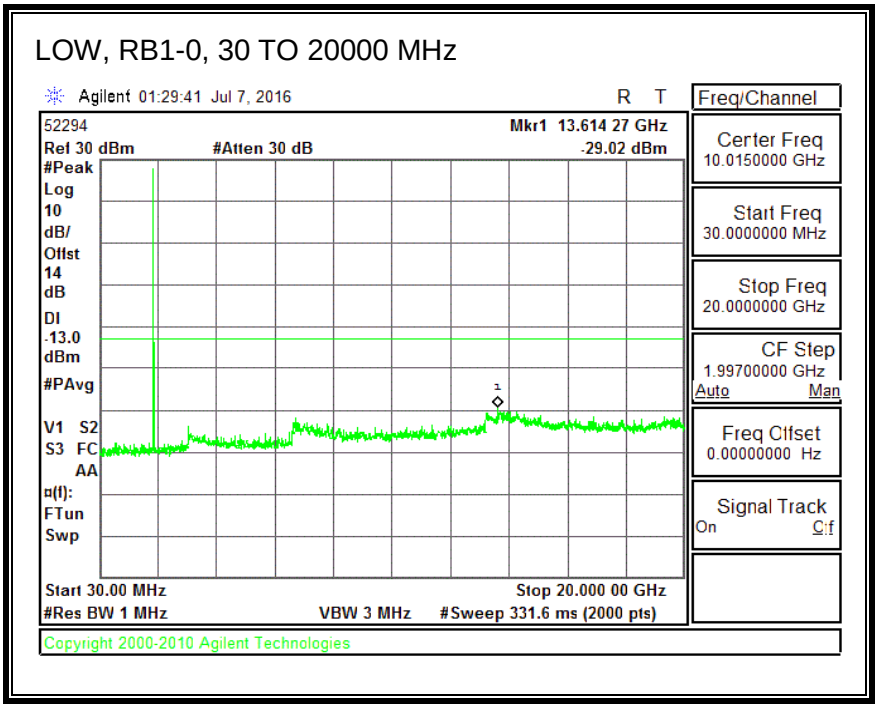


16QAM, (20.0 MHz BAND WIDTH)



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