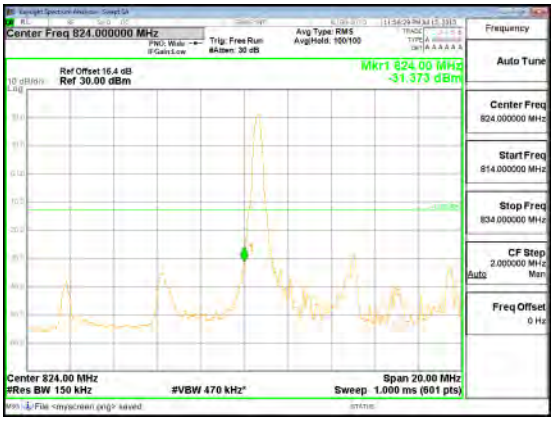
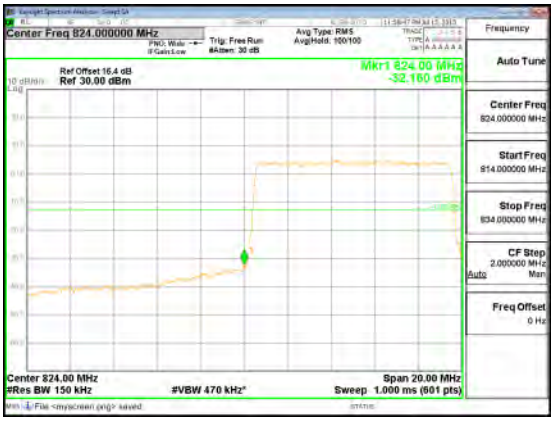
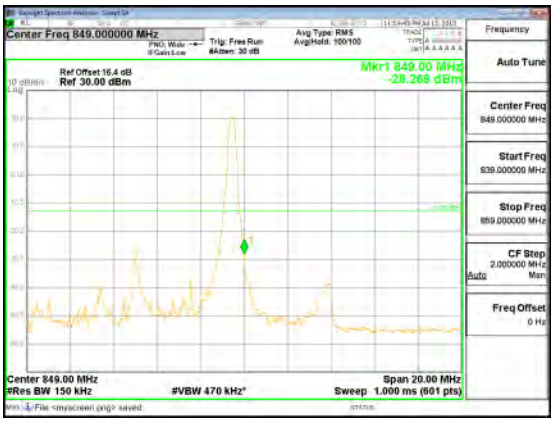
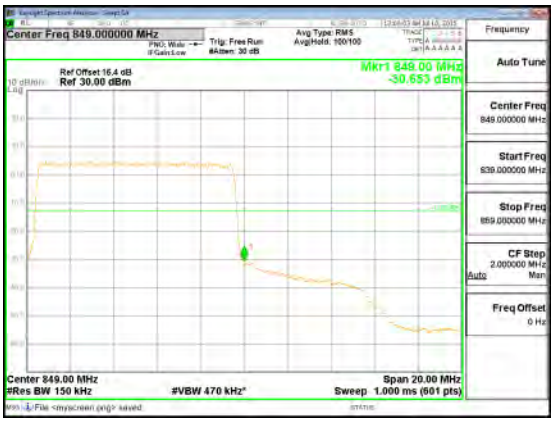
LTE Band 5

Band LTE5 10MHz 16QAM	 Band LTE5 10MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE5 10MHz CBE 16QAM Low Channel FRB.gif
Band LTE5 10MHz 16QAM	 Band LTE5 10MHz CBE 16QAM High Channel 1RB.gif	 Band LTE5 10MHz CBE 16QAM High Channel FRB.gif

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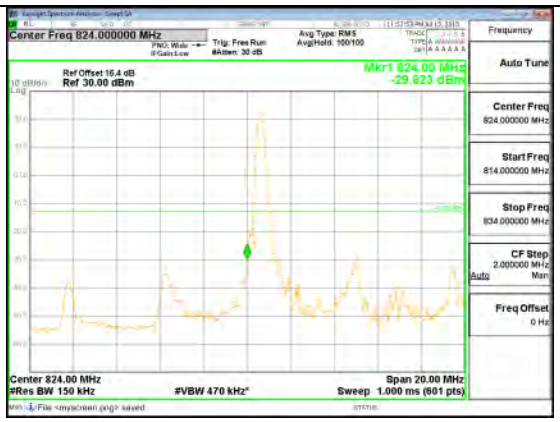
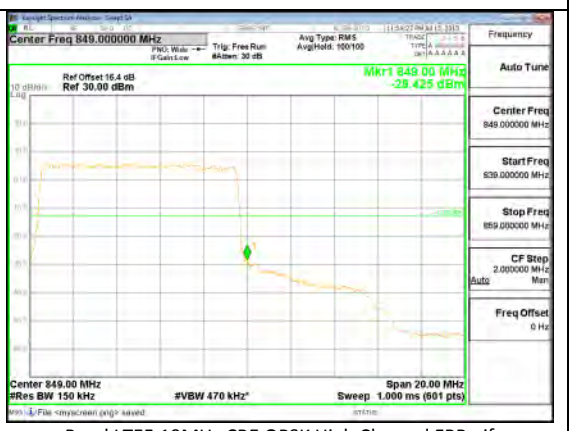
Band LTE5 10MHz QPSK	 Band LTE5 10MHz CBE QPSK Low Channel 1RB.gif	 Band LTE5 10MHz CBE QPSK Low Channel FRB.gif
Band LTE5 10MHz QPSK	 Band LTE5 10MHz CBE QPSK High Channel 1RB.gif	 Band LTE5 10MHz CBE QPSK High Channel FRB.gif

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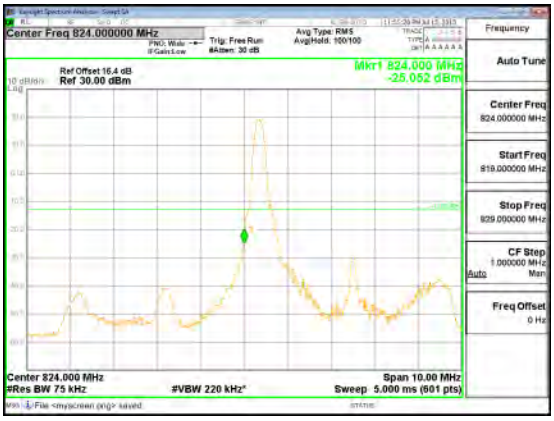
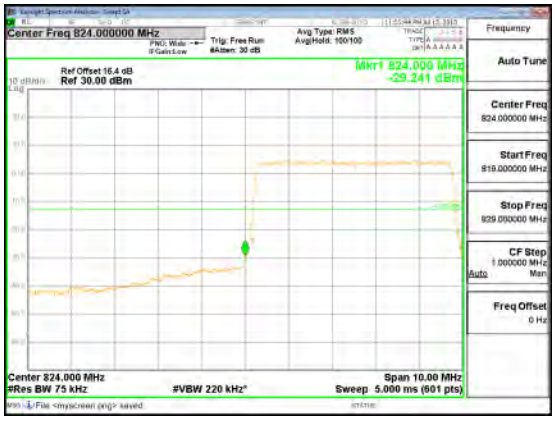
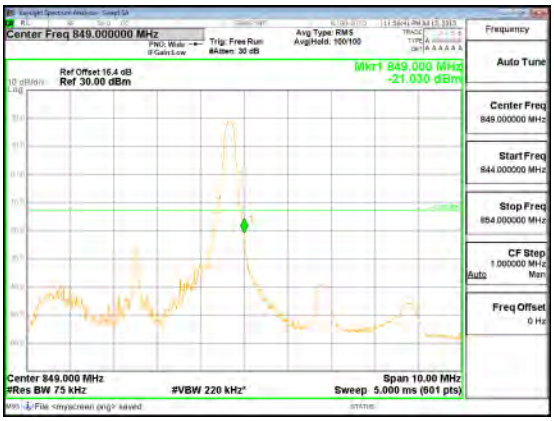
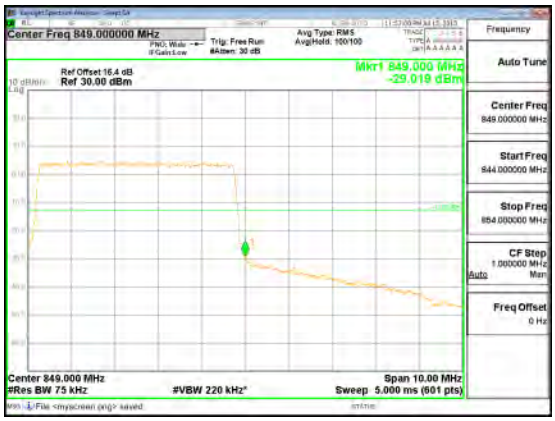
Band LTE5 5MHz 16QAM	 Band LTE5 5MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE5 5MHz CBE 16QAM Low Channel FRB.gif
Band LTE5 5MHz 16QAM	 Band LTE5 5MHz CBE 16QAM High Channel 1RB.gif	 Band LTE5 5MHz CBE 16QAM High Channel FRB.gif

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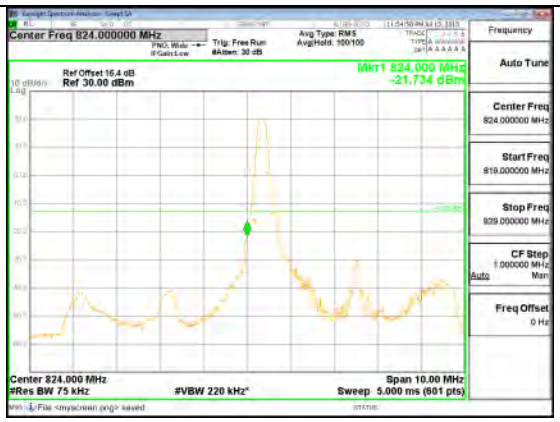
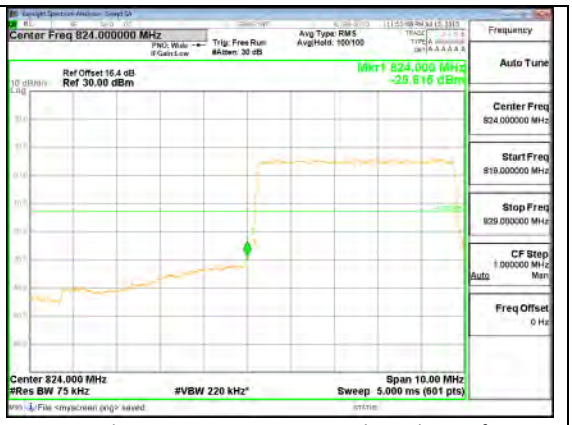
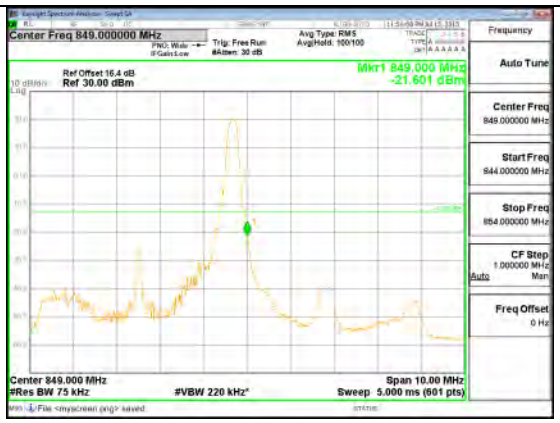
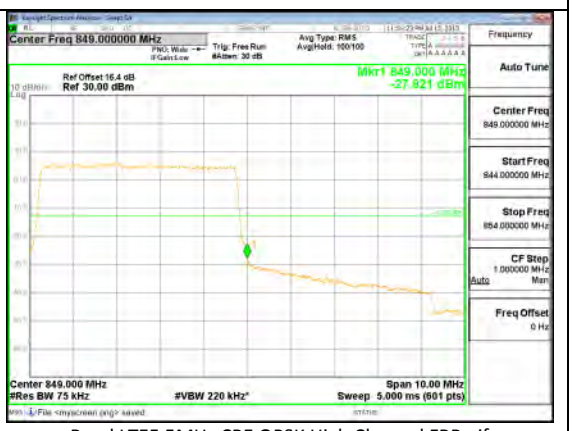
Band LTE5 5MHz QPSK	 Band LTE5 5MHz CBE QPSK Low Channel 1RB.gif	 Band LTE5 5MHz CBE QPSK Low Channel FRB.gif
Band LTE5 5MHz QPSK	 Band LTE5 5MHz CBE QPSK High Channel 1RB.gif	 Band LTE5 5MHz CBE QPSK High Channel FRB.gif

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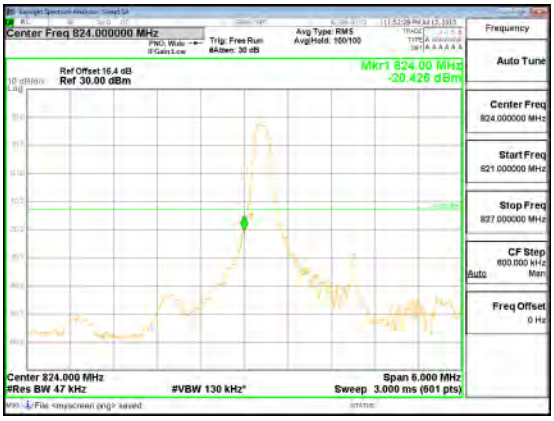
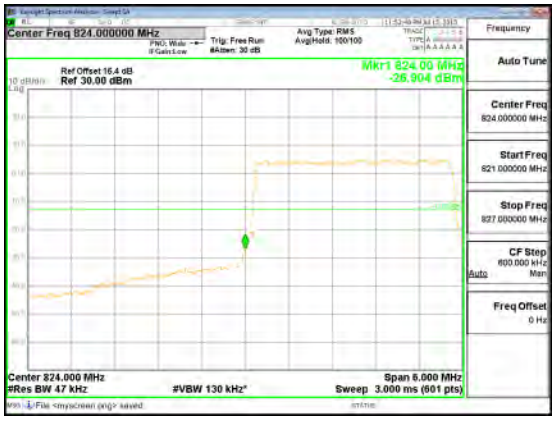
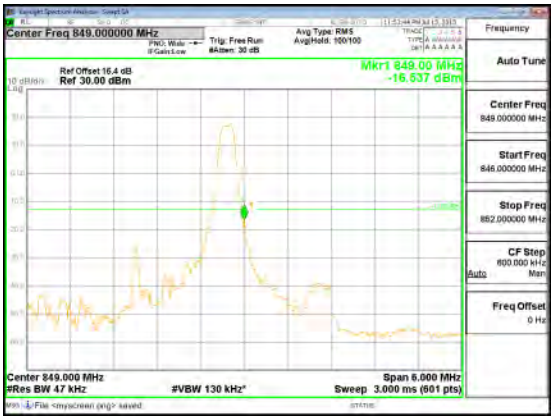
Band LTE5 3MHz 16QAM	 Band LTE5 3MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE5 3MHz CBE 16QAM Low Channel FRB.gif
Band LTE5 3MHz 16QAM	 Band LTE5 3MHz CBE 16QAM High Channel 1RB.gif	 Band LTE5 3MHz CBE 16QAM High Channel FRB.gif

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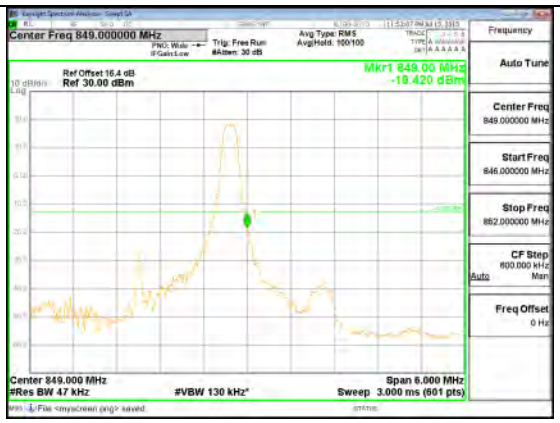
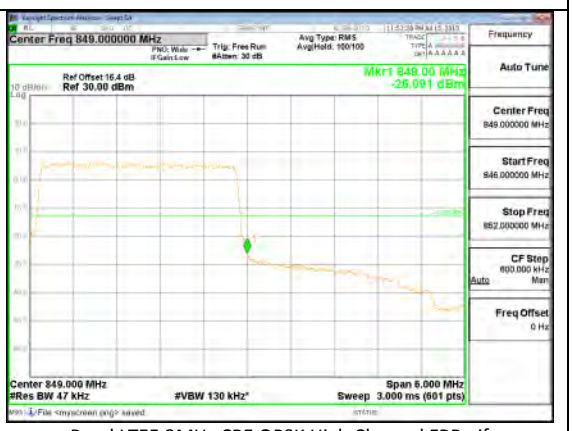
Band LTE5 3MHz QPSK	 Band LTE5 3MHz CBE QPSK Low Channel 1RB.gif	 Band LTE5 3MHz CBE QPSK Low Channel FRB.gif
Band LTE5 3MHz QPSK	 Band LTE5 3MHz CBE QPSK High Channel 1RB.gif	 Band LTE5 3MHz CBE QPSK High Channel FRB.gif

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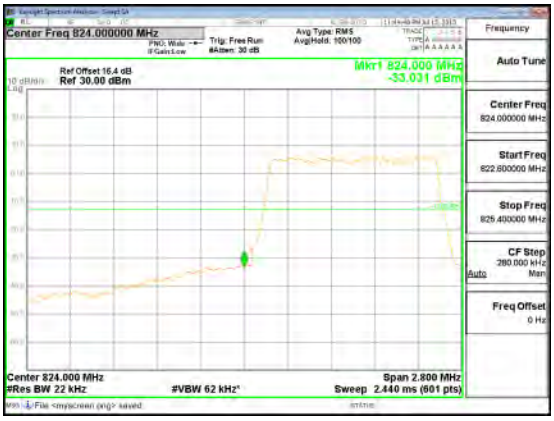
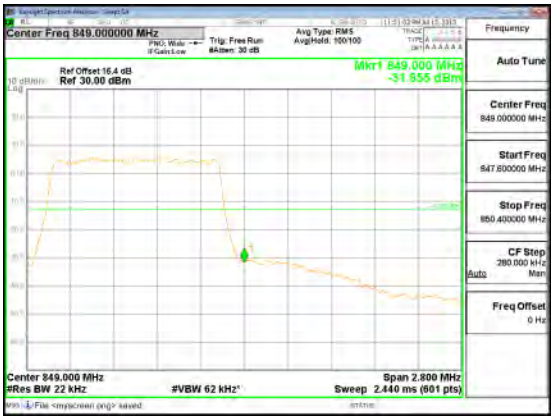
Band LTE5 1.4MHz 16QAM	 Band LTE5 1.4MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE5 1.4MHz CBE 16QAM Low Channel FRB.gif
Band LTE5 1.4MHz 16QAM	 Band LTE5 1.4MHz CBE 16QAM High Channel 1RB.gif	 Band LTE5 1.4MHz CBE 16QAM High Channel FRB.gif

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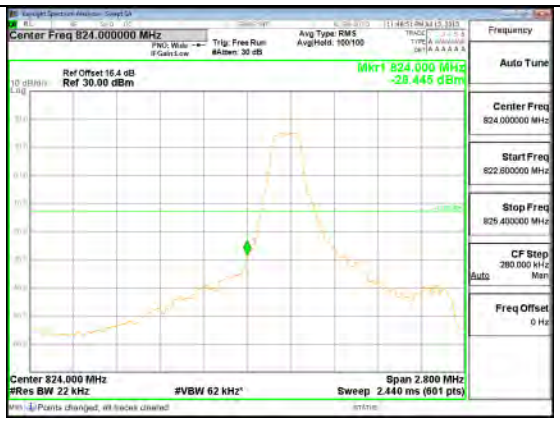
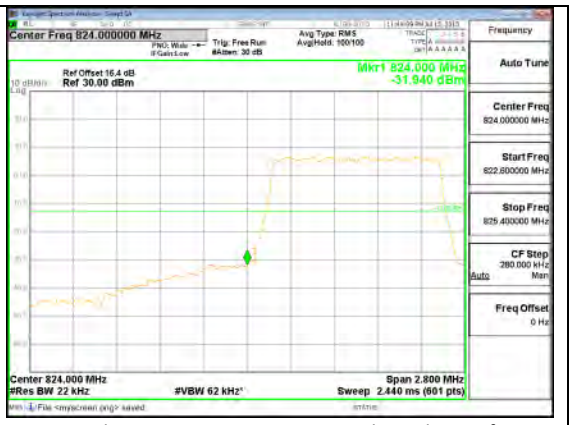
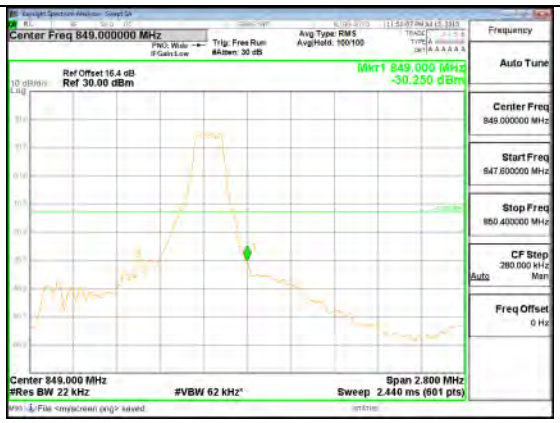
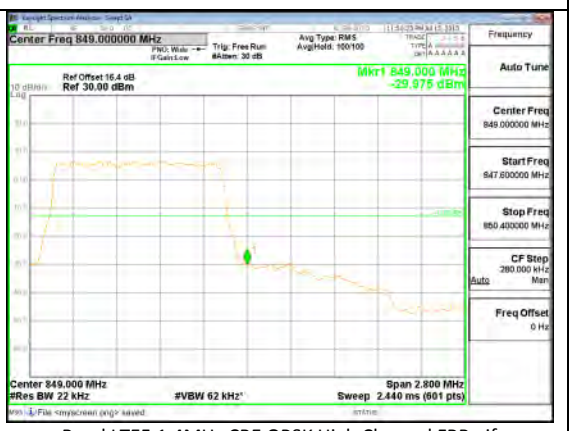
Band LTE5 1.4MHz QPSK	 Band LTE5 1.4MHz CBE QPSK Low Channel 1RB.gif	 Band LTE5 1.4MHz CBE QPSK Low Channel FRB.gif
Band LTE5 1.4MHz QPSK	 Band LTE5 1.4MHz CBE QPSK High Channel 1RB.gif	 Band LTE5 1.4MHz CBE QPSK High Channel FRB.gif

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UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888

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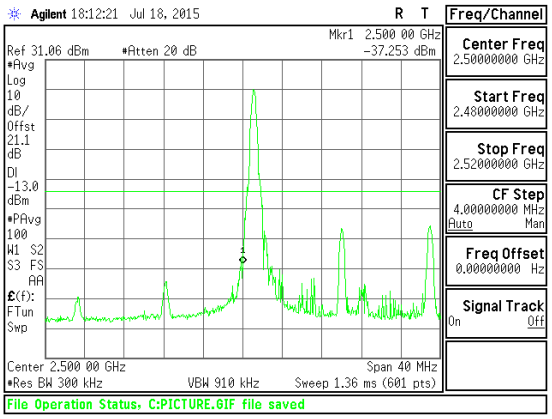
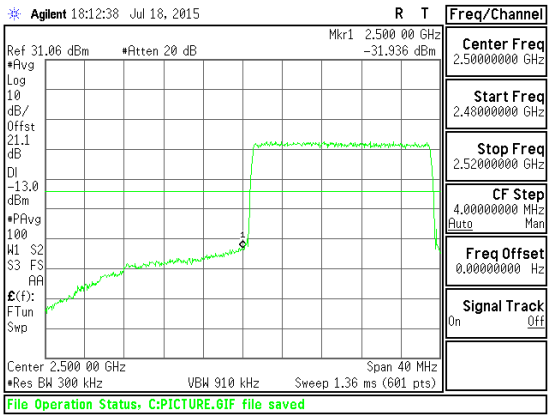
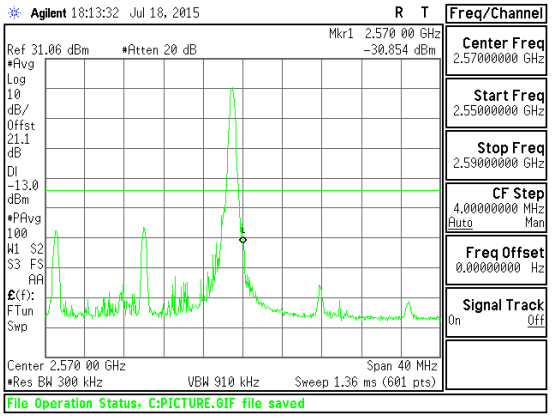
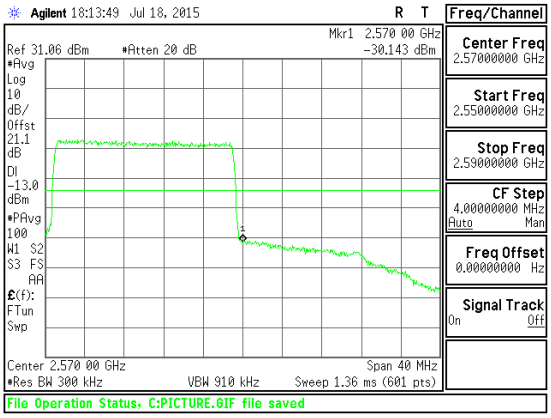
LTE Band 7

Band LTE7 20MHz 16QAM	 Band LTE7 20MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE7 20MHz CBE 16QAM Low Channel FRB.gif
Band LTE7 20MHz 16QAM	 Band LTE7 20MHz CBE 16QAM High Channel 1RB.gif	 Band LTE7 20MHz CBE 16QAM High Channel FRB.gif

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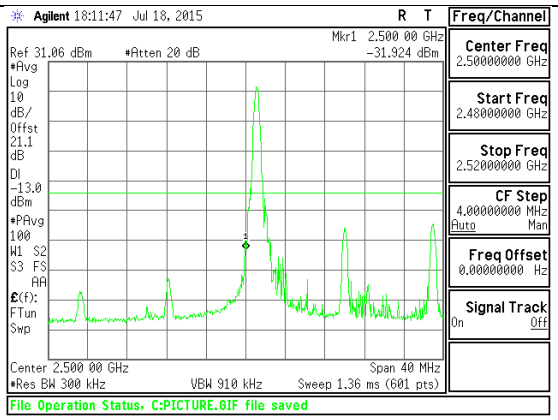
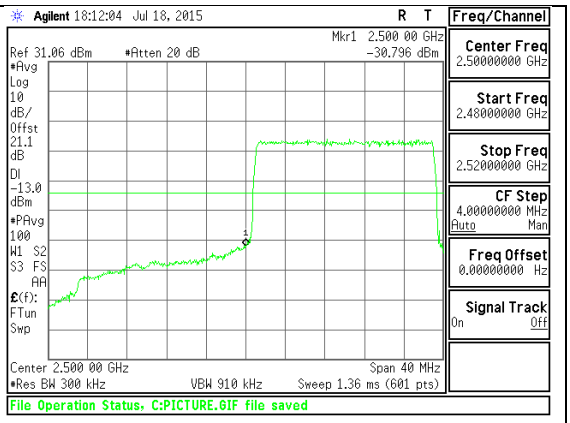
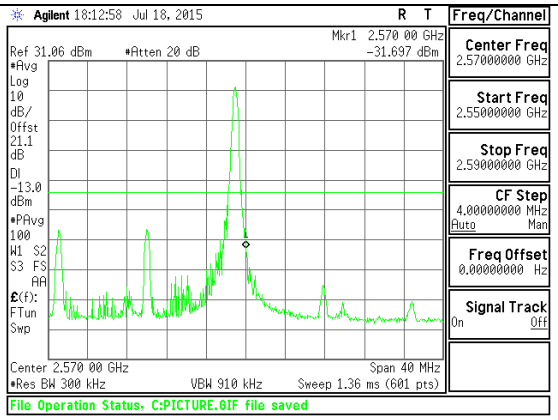
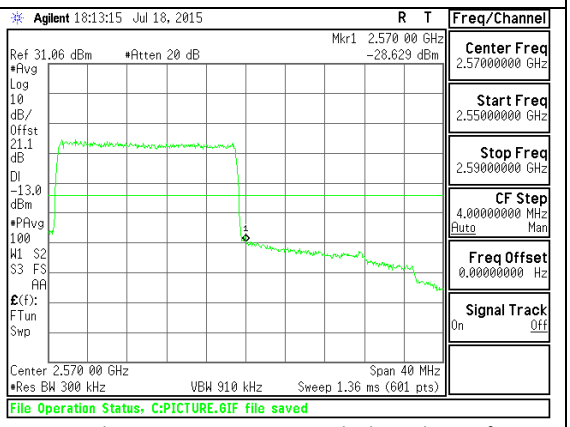
Band LTE7 20MHz QPSK	 Band LTE7 20MHz CBE QPSK Low Channel 1RB.gif	 Band LTE7 20MHz CBE QPSK Low Channel FRB.gif
Band LTE7 20MHz QPSK	 Band LTE7 20MHz CBE QPSK High Channel 1RB.gif	 Band LTE7 20MHz CBE QPSK High Channel FRB.gif

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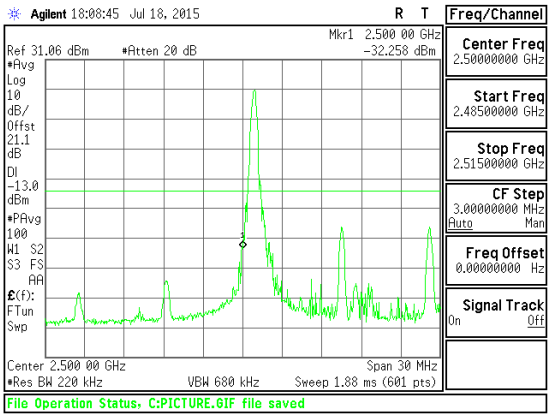
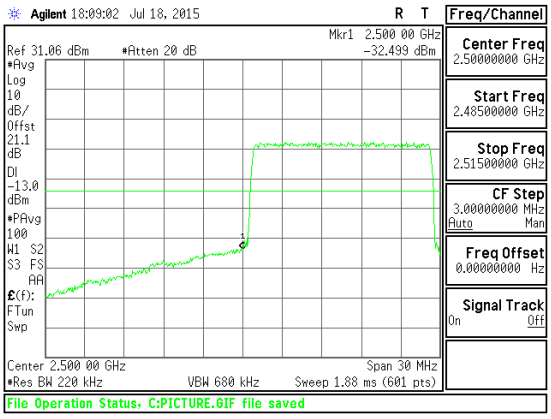
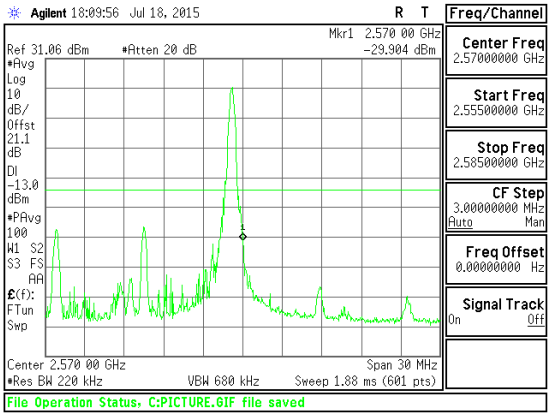
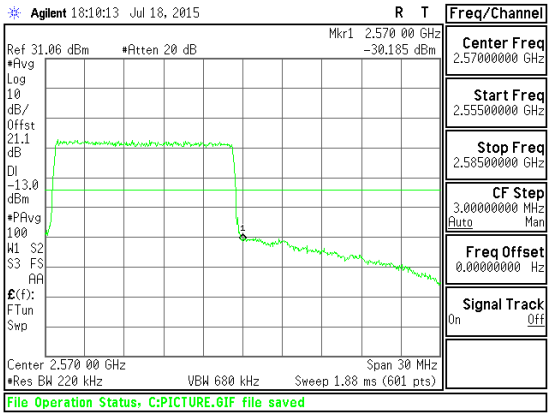
Band LTE7 15MHz 16QAM	 Band LTE7 15MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE7 15MHz CBE 16QAM Low Channel FRB.gif
Band LTE7 15MHz 16QAM	 Band LTE7 15MHz CBE 16QAM High Channel 1RB.gif	 Band LTE7 15MHz CBE 16QAM High Channel FRB.gif

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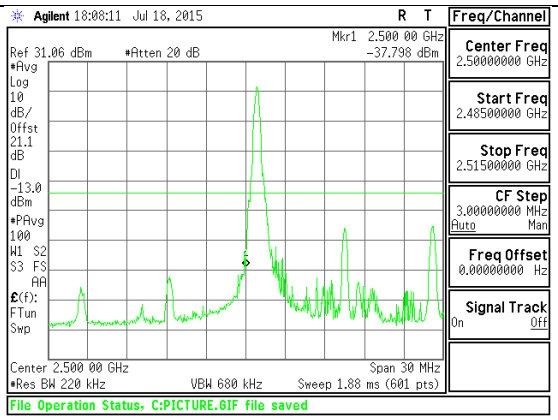
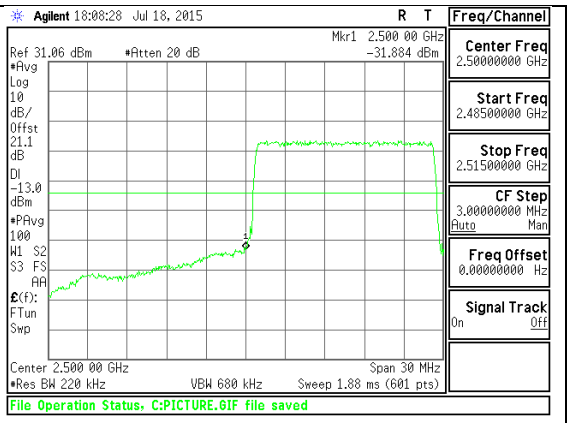
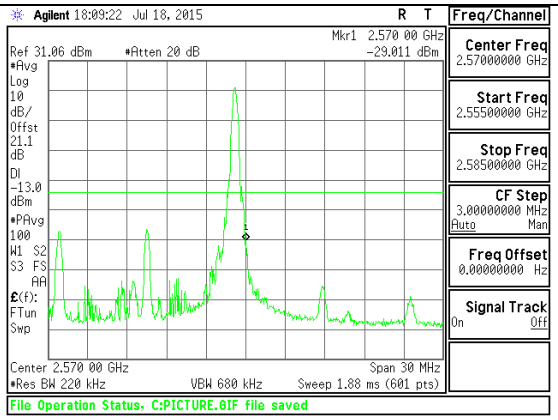
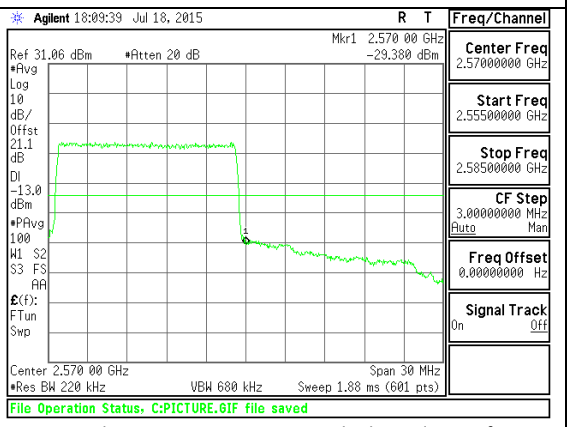
Band LTE7 15MHz QPSK	 Band LTE7 15MHz CBE QPSK Low Channel 1RB.gif	 Band LTE7 15MHz CBE QPSK Low Channel FRB.gif
Band LTE7 15MHz QPSK	 Band LTE7 15MHz CBE QPSK High Channel 1RB.gif	 Band LTE7 15MHz CBE QPSK High Channel FRB.gif

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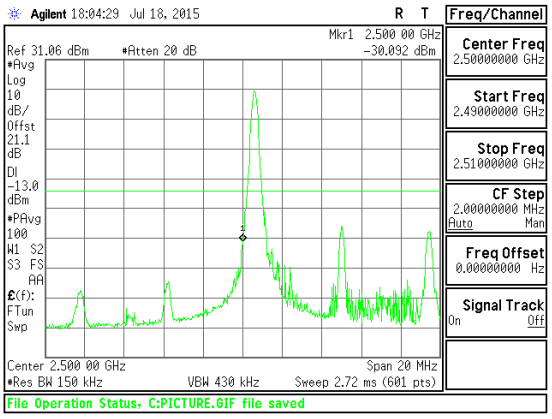
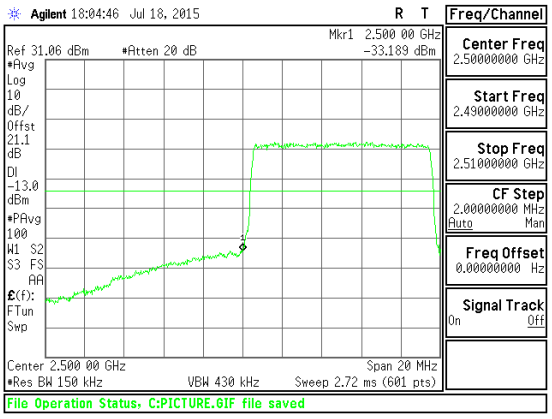
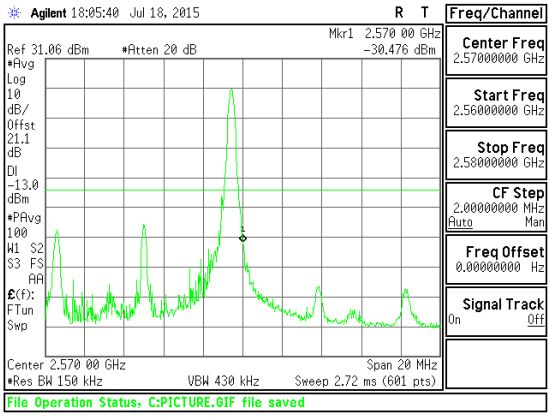
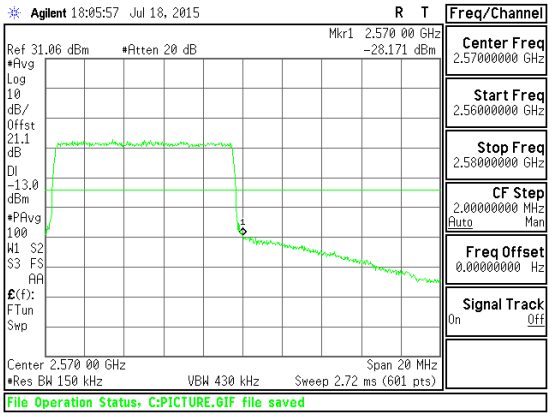
Band LTE7 10MHz 16QAM	 Band LTE7 10MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE7 10MHz CBE 16QAM Low Channel FRB.gif
Band LTE7 10MHz 16QAM	 Band LTE7 10MHz CBE 16QAM High Channel 1RB.gif	 Band LTE7 10MHz CBE 16QAM High Channel FRB.gif

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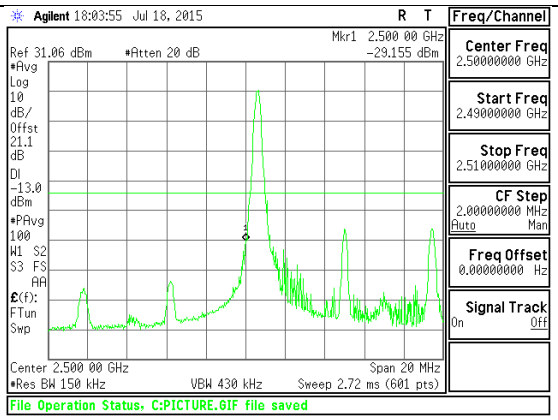
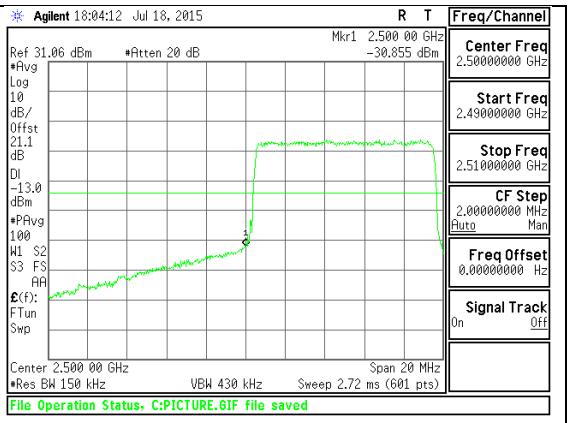
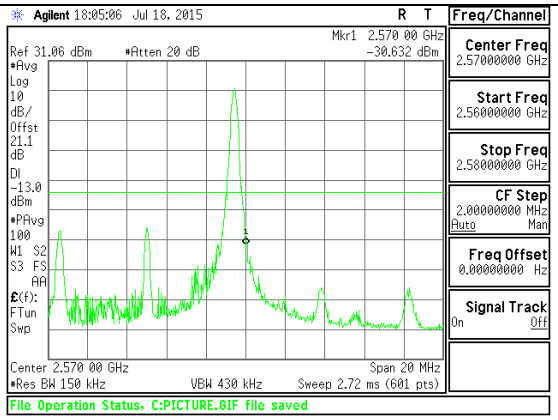
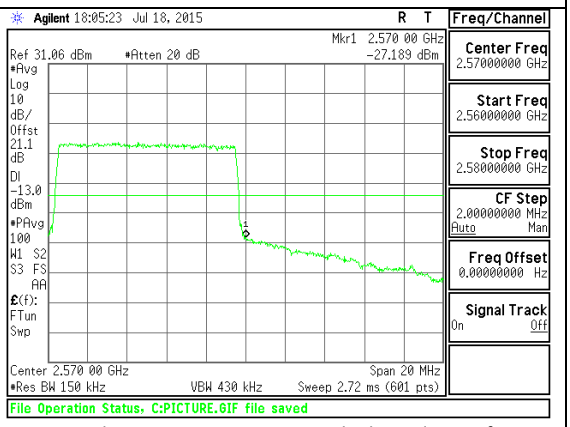
Band LTE7 10MHz QPSK	 Band LTE7 10MHz CBE QPSK Low Channel 1RB.gif	 Band LTE7 10MHz CBE QPSK Low Channel FRB.gif
Band LTE7 10MHz QPSK	 Band LTE7 10MHz CBE QPSK High Channel 1RB.gif	 Band LTE7 10MHz CBE QPSK High Channel FRB.gif

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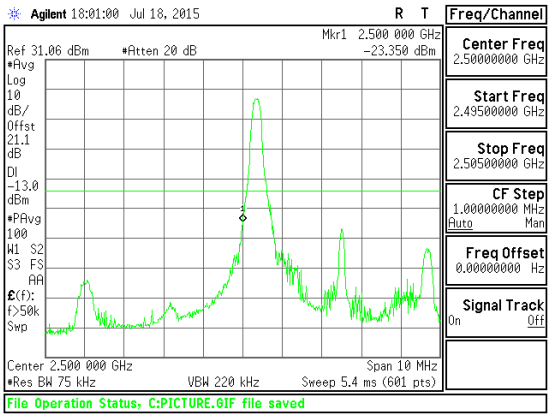
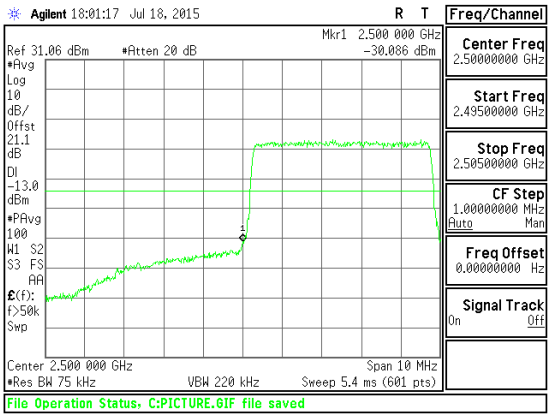
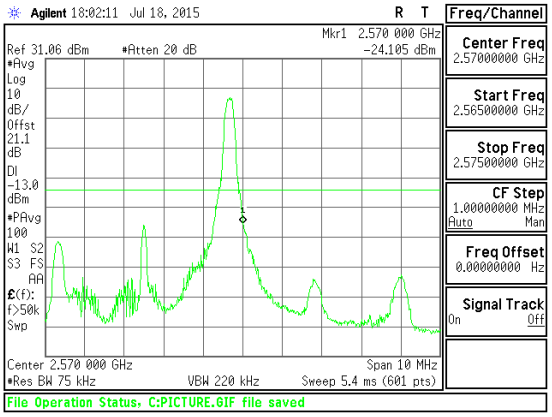
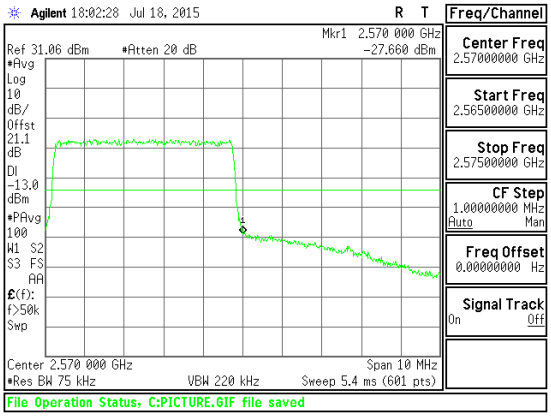
Band LTE7 5MHz 16QAM	 Band LTE7 5MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE7 5MHz CBE 16QAM Low Channel FRB.gif
Band LTE7 5MHz 16QAM	 Band LTE7 5MHz CBE 16QAM High Channel 1RB.gif	 Band LTE7 5MHz CBE 16QAM High Channel FRB.gif

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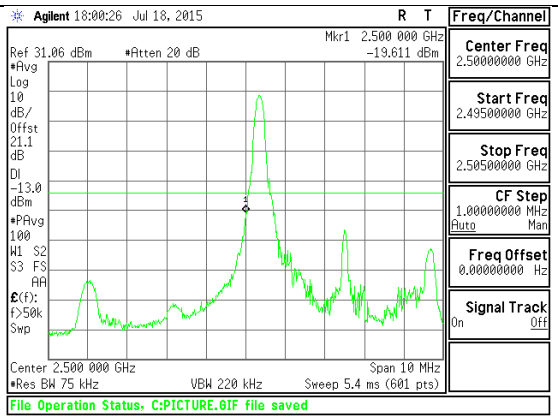
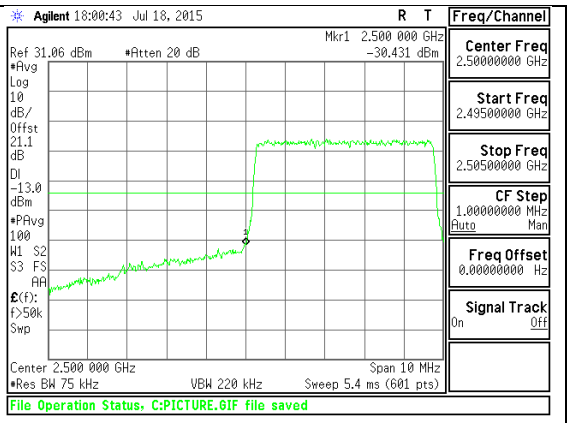
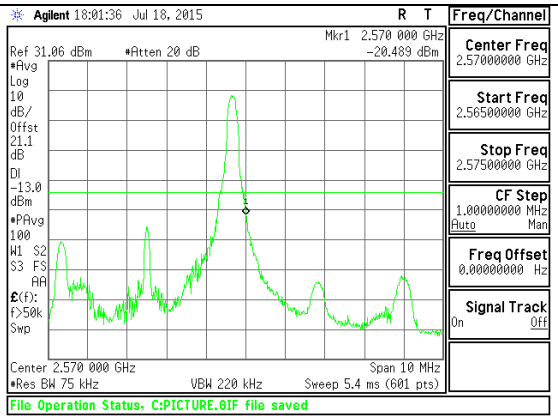
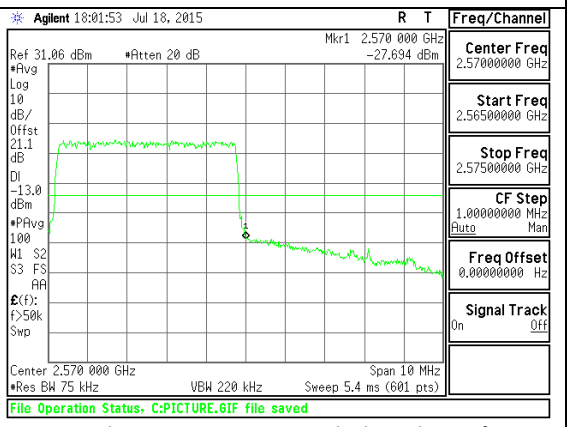
Band LTE7 5MHz QPSK	 Band LTE7 5MHz CBE QPSK Low Channel 1RB.gif	 Band LTE7 5MHz CBE QPSK Low Channel FRB.gif
Band LTE7 5MHz QPSK	 Band LTE7 5MHz CBE QPSK High Channel 1RB.gif	 Band LTE7 5MHz CBE QPSK High Channel FRB.gif

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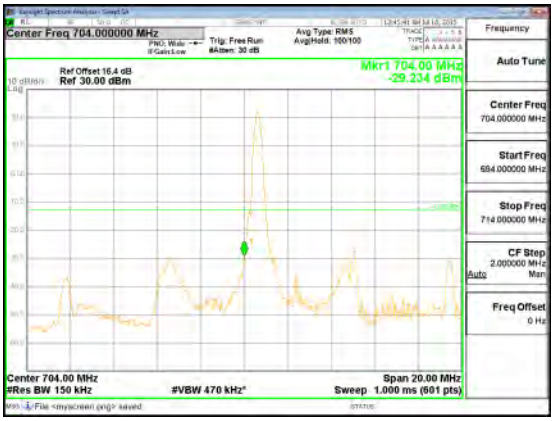
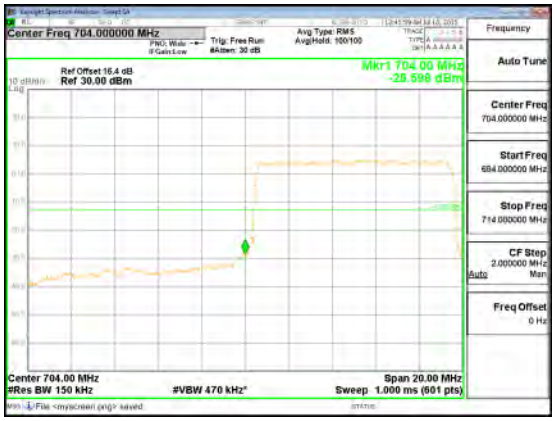
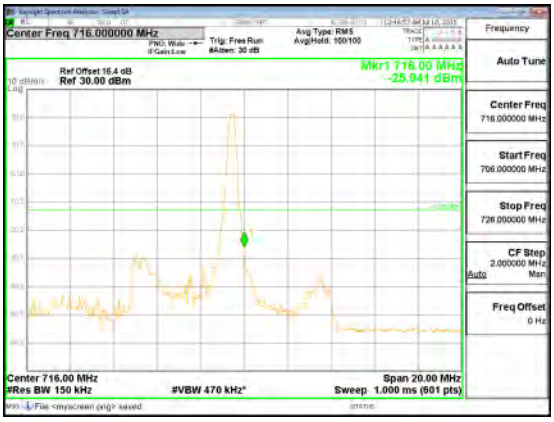
LTE Band 17

Band LTE17 10MHz 16QAM	 Band LTE17 10MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE17 10MHz CBE 16QAM Low Channel FRB.gif
Band LTE17 10MHz 16QAM	 Band LTE17 10MHz CBE 16QAM High Channel 1RB.gif	 Band LTE17 10MHz CBE 16QAM High Channel FRB.gif

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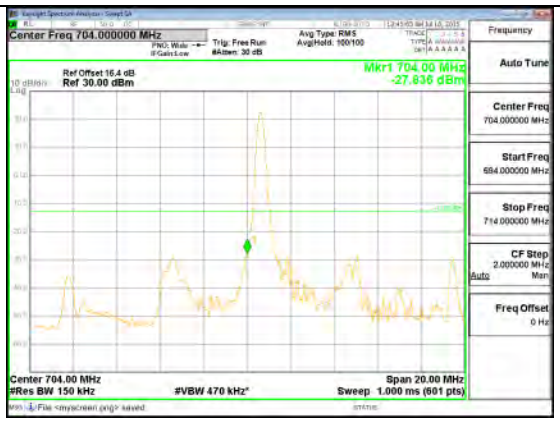
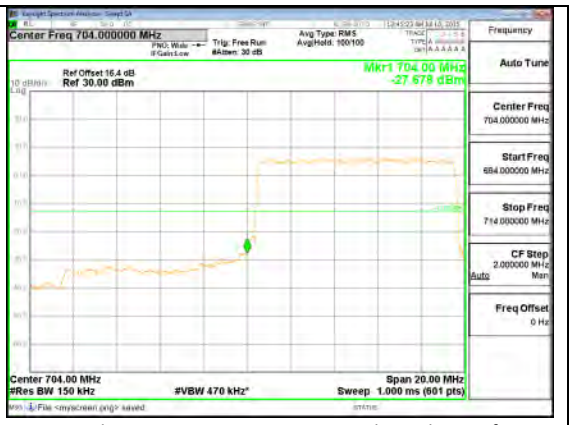
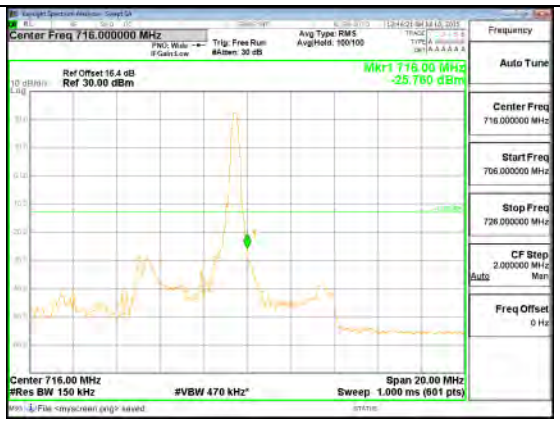
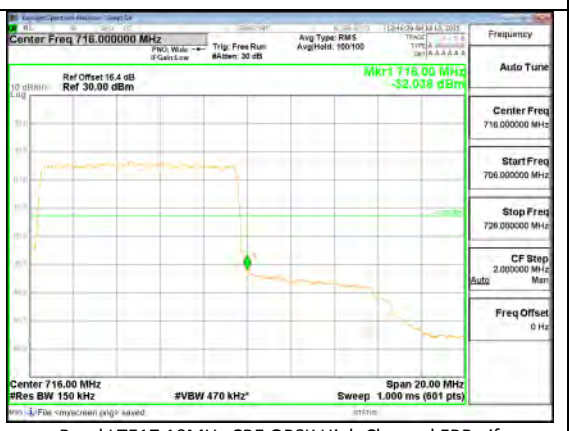
Band LTE17 10MHz QPSK	 Band LTE17 10MHz CBE QPSK Low Channel 1RB.gif	 Band LTE17 10MHz CBE QPSK Low Channel FRB.gif
Band LTE17 10MHz QPSK	 Band LTE17 10MHz CBE QPSK High Channel 1RB.gif	 Band LTE17 10MHz CBE QPSK High Channel FRB.gif

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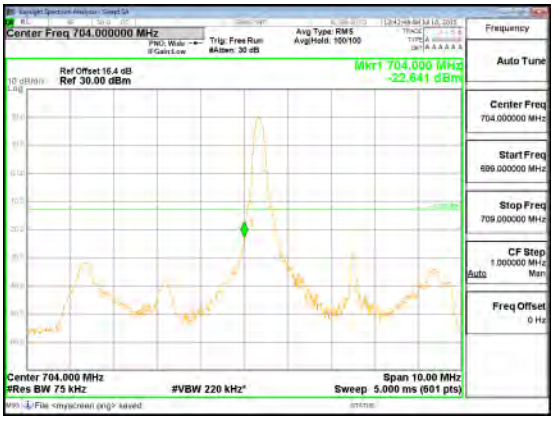
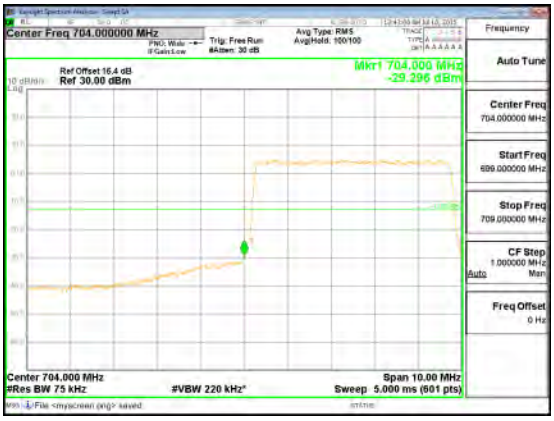
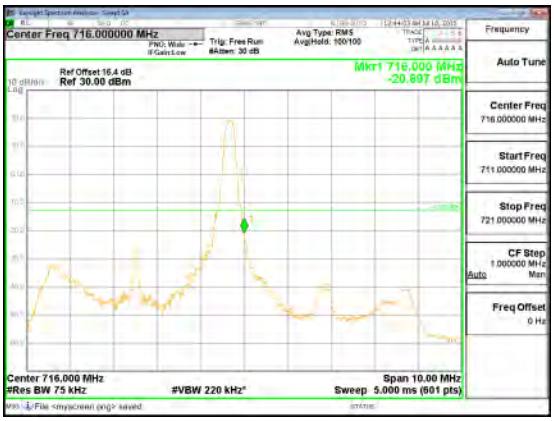
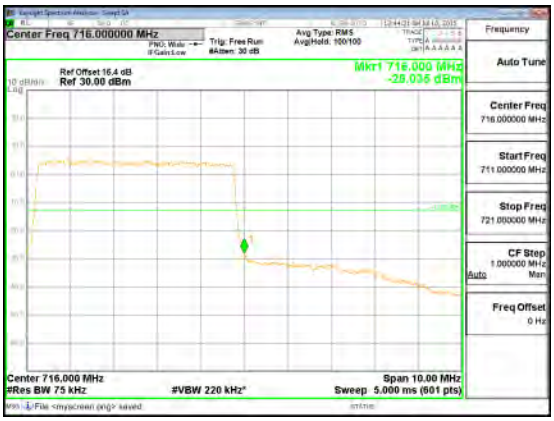
Band LTE17 5MHz 16QAM	 Band LTE17 5MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE17 5MHz CBE 16QAM Low Channel FRB.gif
Band LTE17 5MHz 16QAM	 Band LTE17 5MHz CBE 16QAM High Channel 1RB.gif	 Band LTE17 5MHz CBE 16QAM High Channel FRB.gif

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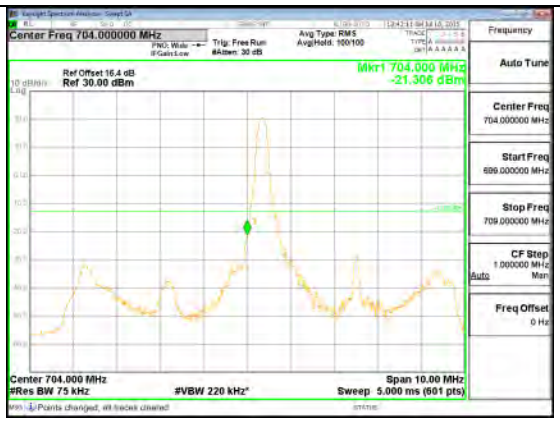
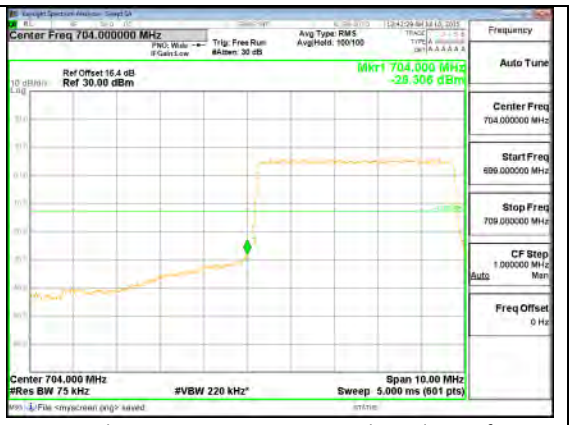
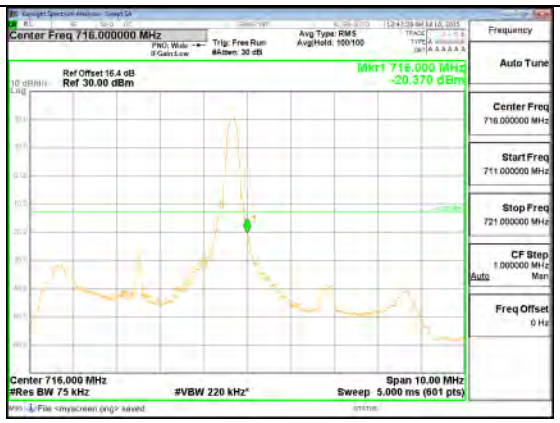
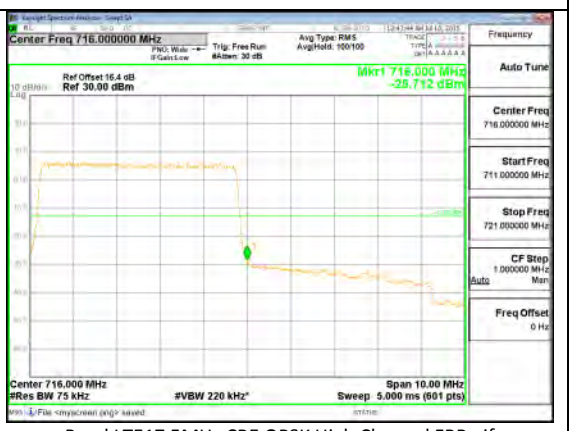
Band LTE17 5MHz QPSK	 Band LTE17 5MHz CBE QPSK Low Channel 1RB.gif	 Band LTE17 5MHz CBE QPSK Low Channel FRB.gif
Band LTE17 5MHz QPSK	 Band LTE17 5MHz CBE QPSK High Channel 1RB.gif	 Band LTE17 5MHz CBE QPSK High Channel FRB.gif

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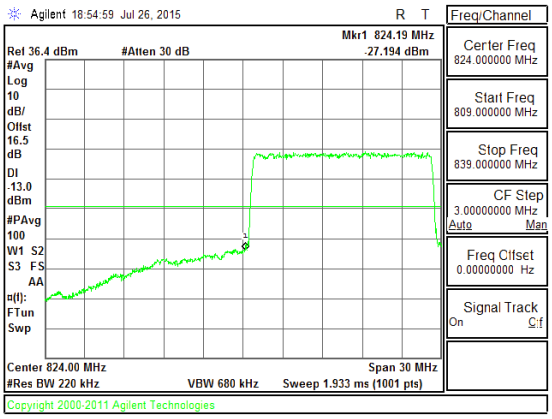
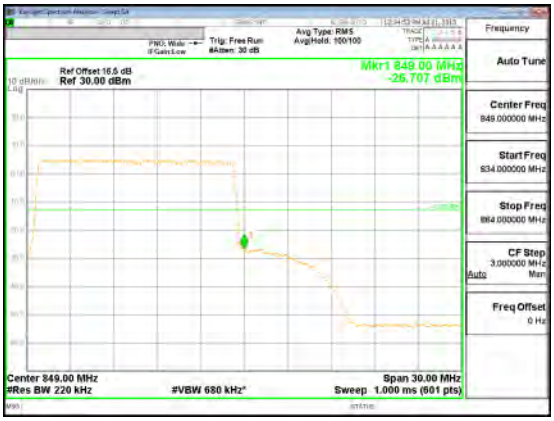
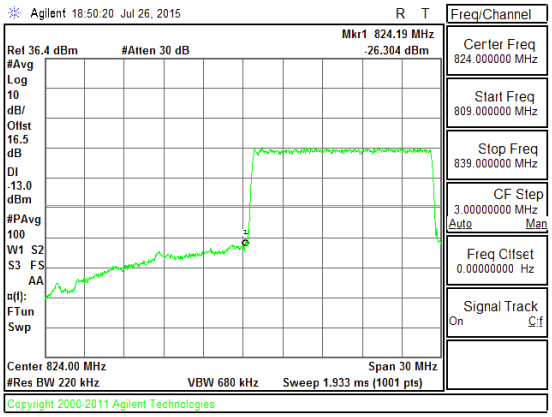
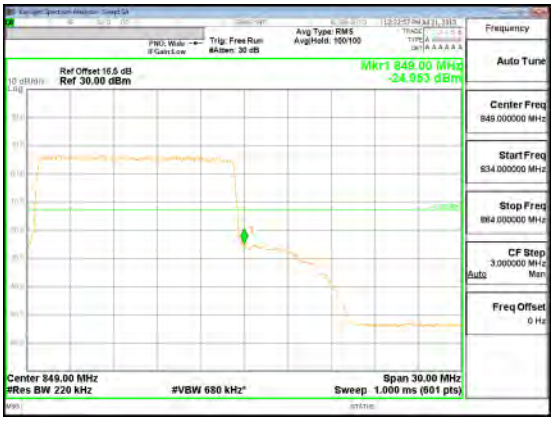
LTE Band 26

Band LTE26 15MHz 16QAM	 Band LTE26 15MHz CBE 16QAM Low Channel FRB.gif	 Band LTE26 15MHz CBE 16QAM High Channel FRB.gif
Band LTE26 15MHz QPSK	 and LTE26 15MHz CBE QPSK Low Channel FRB.gif	 Band LTE26 15MHz CBE QPSK High Channel FRB.gif

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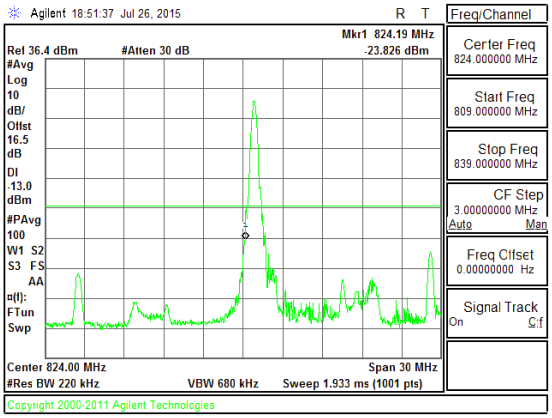
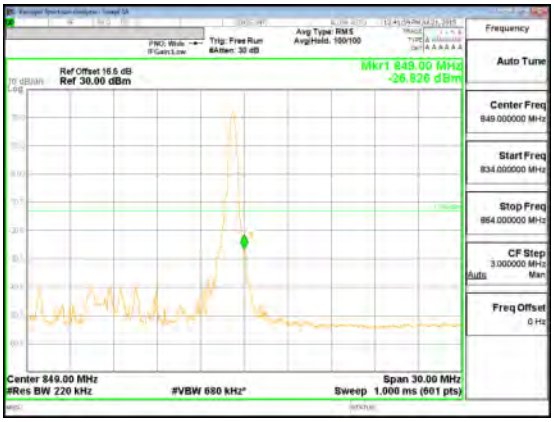
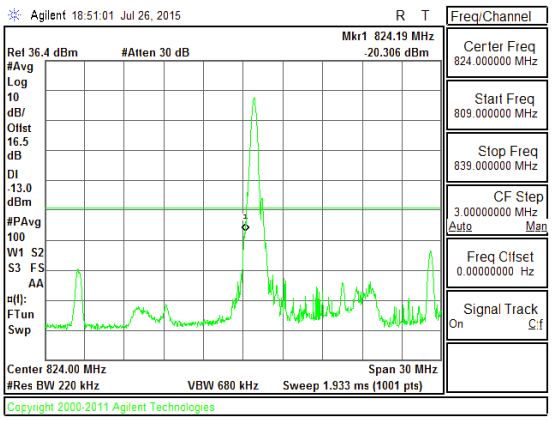
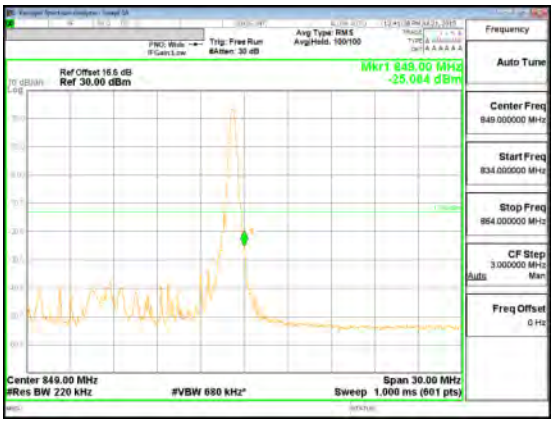
Band LTE26 15MHz 16QAM	 Band LTE26 15MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE26 15MHz CBE 16QAM High Channel 1RB.gif
Band LTE26 15MHz QPSK	 Band LTE26 15MHz CBE QPSK Low Channel 1RB.gif	 Band LTE26 15MHz CBE QPSK High Channel 1RB.gif

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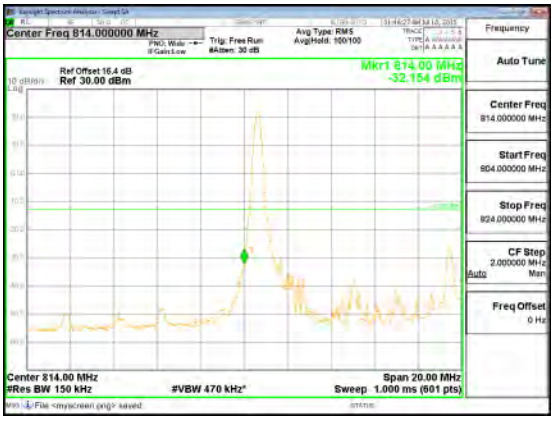
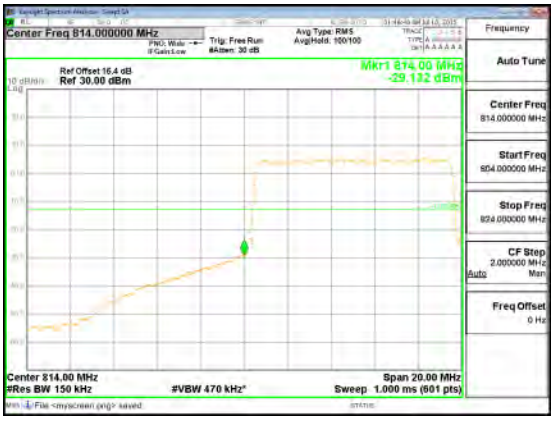
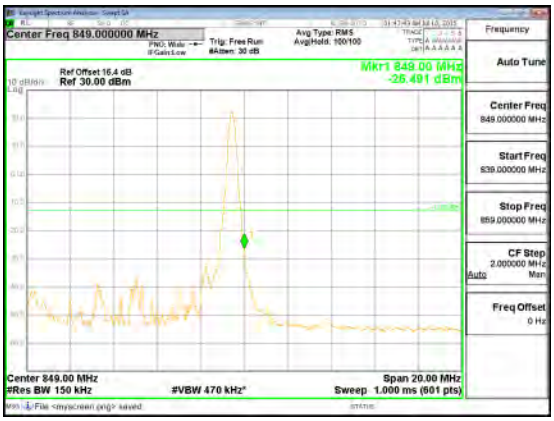
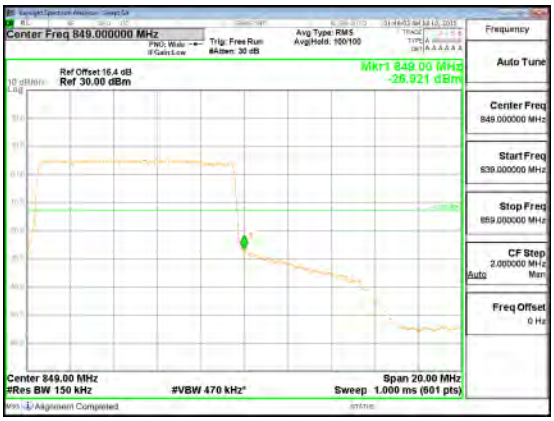
Band LTE26 10MHz 16QAM	 Band LTE26 10MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE26 10MHz CBE 16QAM Low Channel FRB.gif
Band LTE26 10MHz 16QAM	 Band LTE26 10MHz CBE 16QAM High Channel 1RB.gif	 Band LTE26 10MHz CBE 16QAM High Channel FRB.gif

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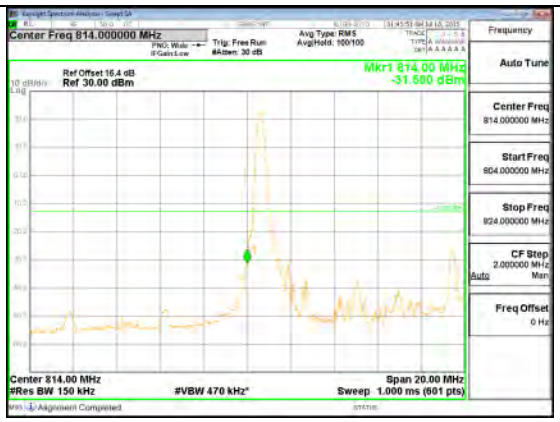
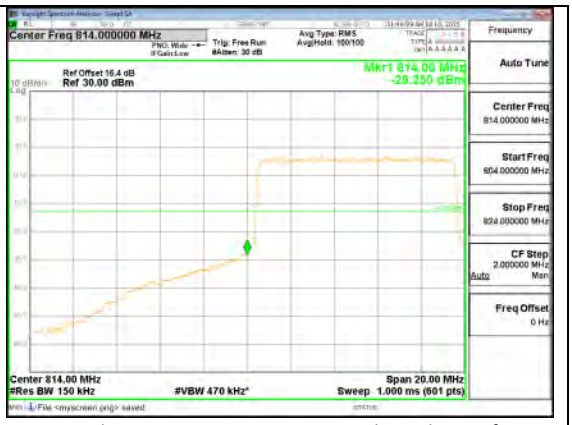
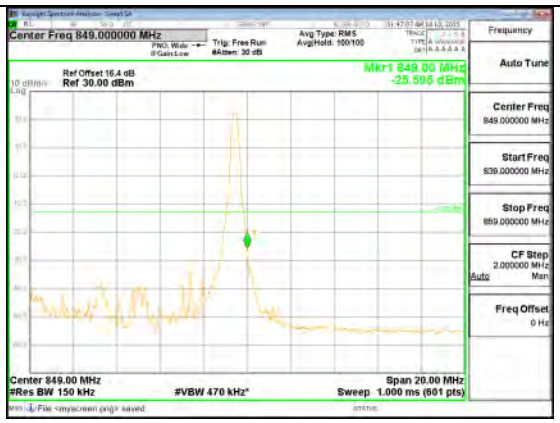
Band LTE26 10MHz QPSK	 Band LTE26 10MHz CBE QPSK Low Channel 1RB.gif	 Band LTE26 10MHz CBE QPSK Low Channel FRB.gif
Band LTE26 10MHz QPSK	 Band LTE26 10MHz CBE QPSK High Channel 1RB.gif	 Band LTE26 10MHz CBE QPSK High Channel FRB.gif

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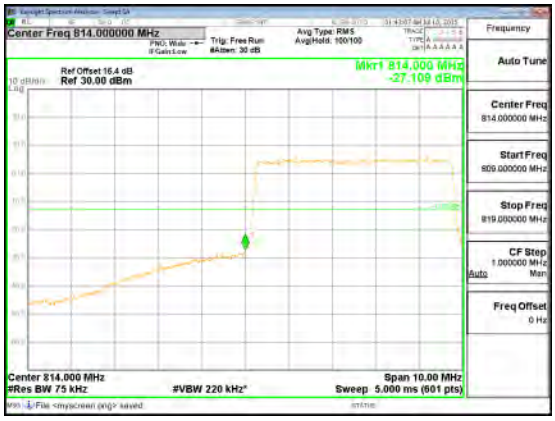
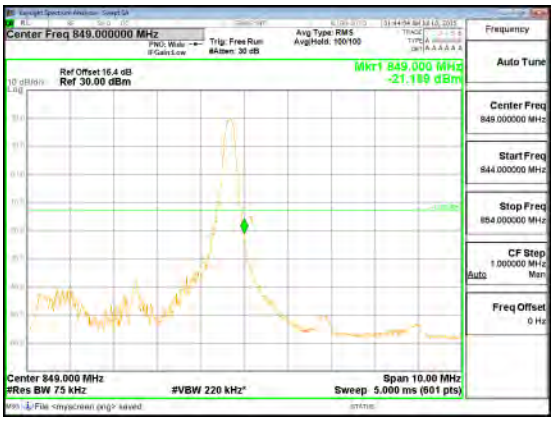
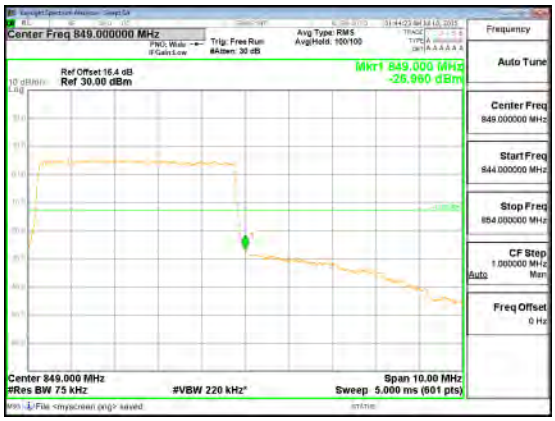
Band LTE26 5MHz 16QAM	 Band LTE26 5MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE26 5MHz CBE 16QAM Low Channel FRB.gif
Band LTE26 5MHz 16QAM	 Band LTE26 5MHz CBE 16QAM High Channel 1RB.gif	 Band LTE26 5MHz CBE 16QAM High Channel FRB.gif

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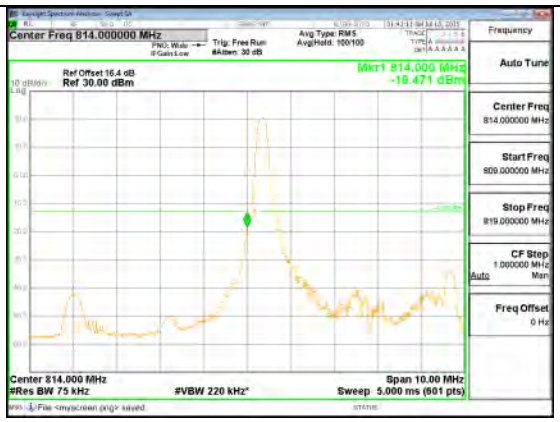
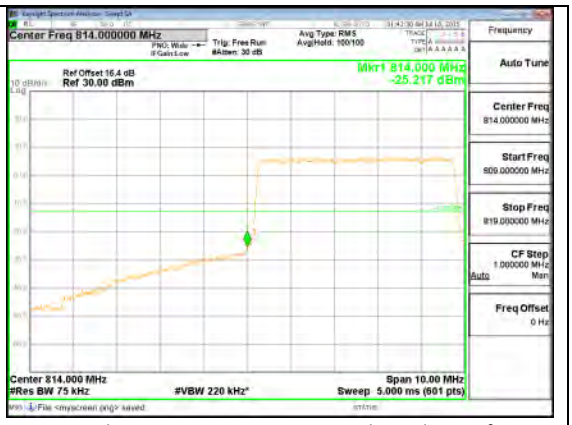
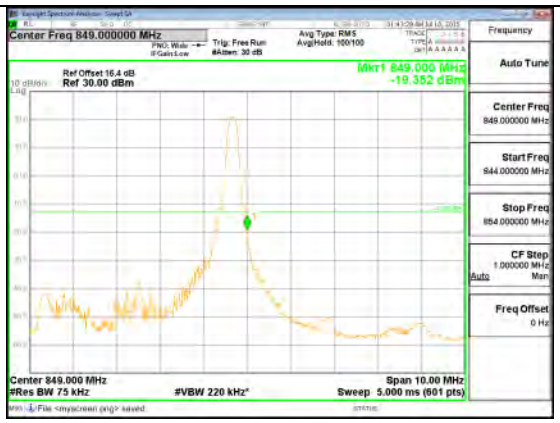
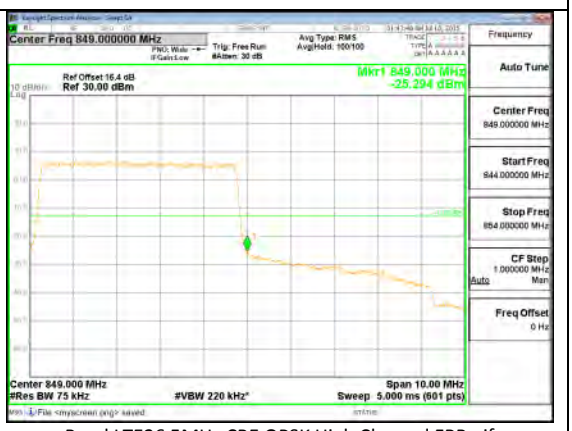
Band LTE26 5MHz QPSK	 Band LTE26 5MHz CBE QPSK Low Channel 1RB.gif	 Band LTE26 5MHz CBE QPSK Low Channel FRB.gif
Band LTE26 5MHz QPSK	 Band LTE26 5MHz CBE QPSK High Channel 1RB.gif	 Band LTE26 5MHz CBE QPSK High Channel FRB.gif

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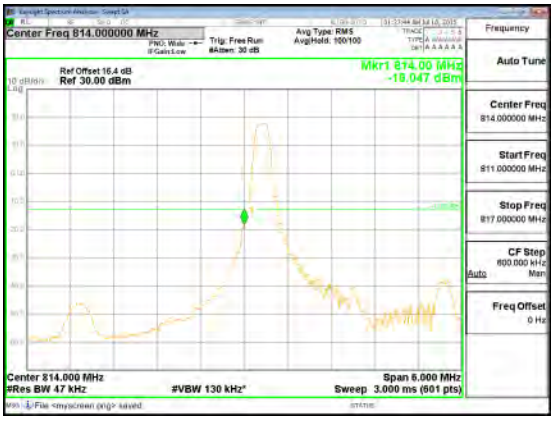
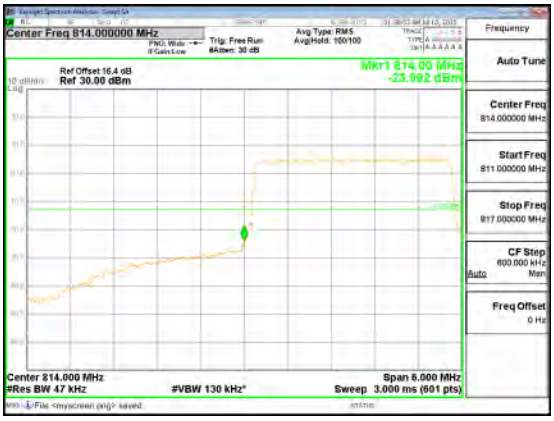
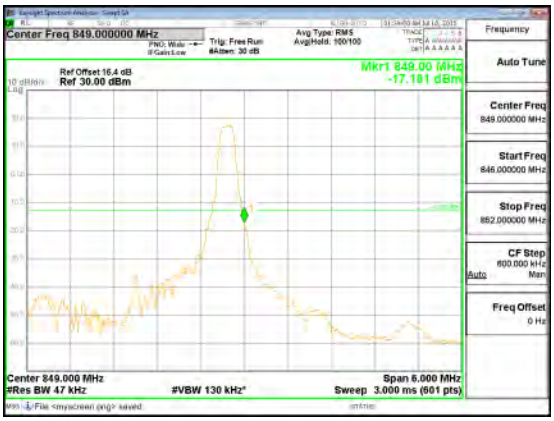
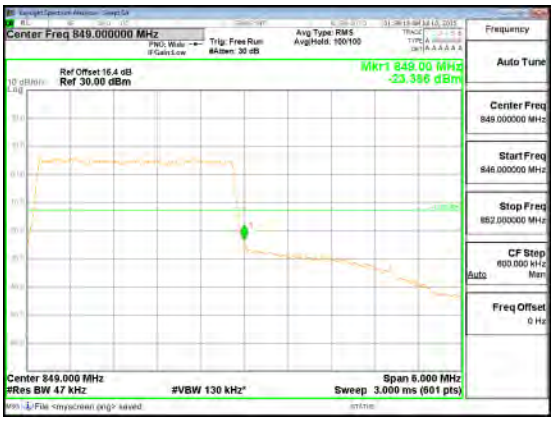
Band LTE26 3MHz 16QAM	 Band LTE26 3MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE26 3MHz CBE 16QAM Low Channel FRB.gif
Band LTE26 3MHz 16QAM	 Band LTE26 3MHz CBE 16QAM High Channel 1RB.gif	 Band LTE26 3MHz CBE 16QAM High Channel FRB.gif

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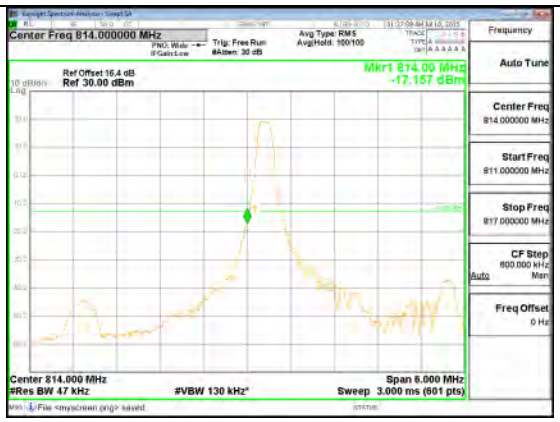
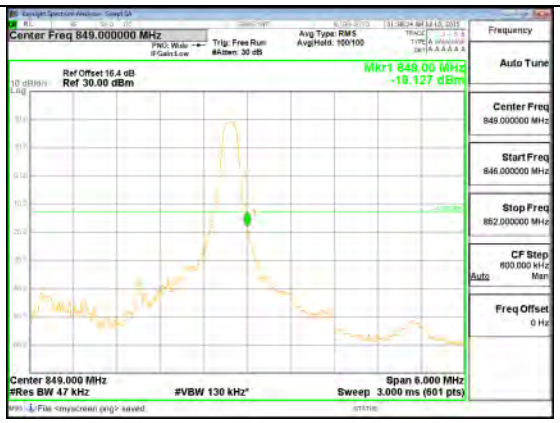
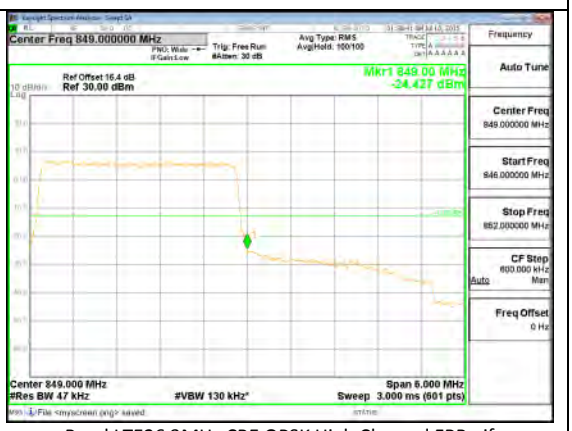
Band LTE26 3MHz QPSK	 Band LTE26 3MHz CBE QPSK Low Channel 1RB.gif	 Band LTE26 3MHz CBE QPSK Low Channel FRB.gif
Band LTE26 3MHz QPSK	 Band LTE26 3MHz CBE QPSK High Channel 1RB.gif	 Band LTE26 3MHz CBE QPSK High Channel FRB.gif

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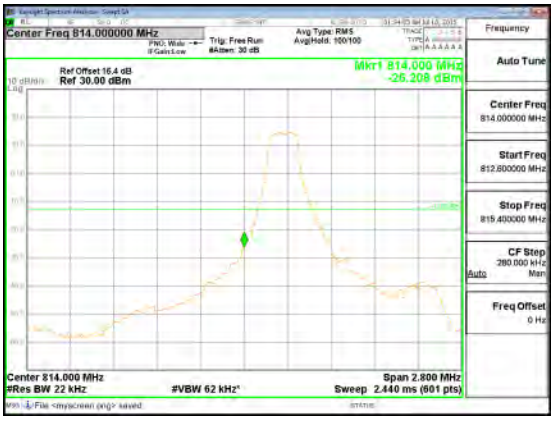
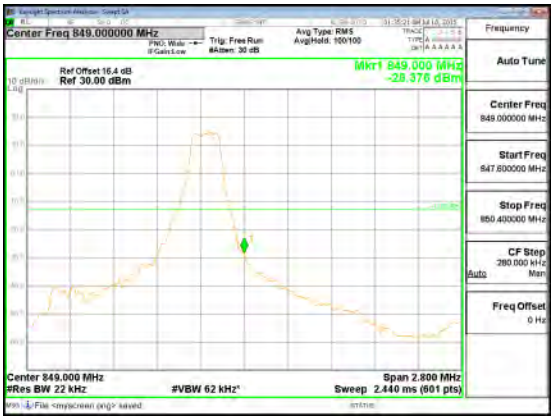
Band LTE26 1.4MHz 16QAM	 Band LTE26 1.4MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE26 1.4MHz CBE 16QAM Low Channel FRB.gif
Band LTE26 1.4MHz 16QAM	 Band LTE26 1.4MHz CBE 16QAM High Channel 1RB.gif	 Band LTE26 1.4MHz CBE 16QAM High Channel FRB.gif

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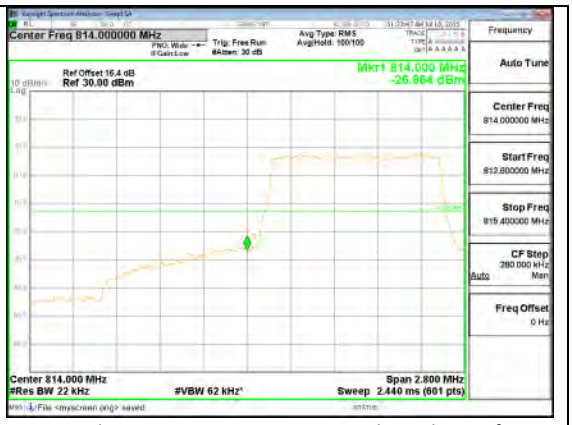
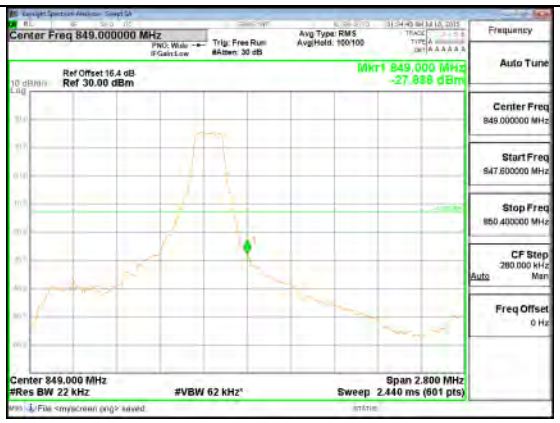
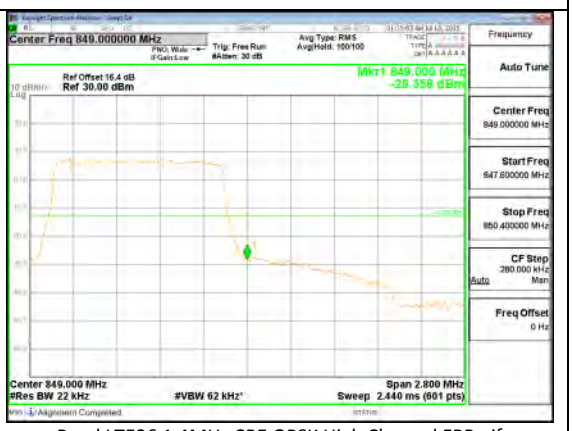
Band LTE26 1.4MHz QPSK	 Band LTE26 1.4MHz CBE QPSK Low Channel 1RB.gif	 Band LTE26 1.4MHz CBE QPSK Low Channel FRB.gif
Band LTE26 1.4MHz QPSK	 Band LTE26 1.4MHz CBE QPSK High Channel 1RB.gif	 Band LTE26 1.4MHz CBE QPSK High Channel FRB.gif

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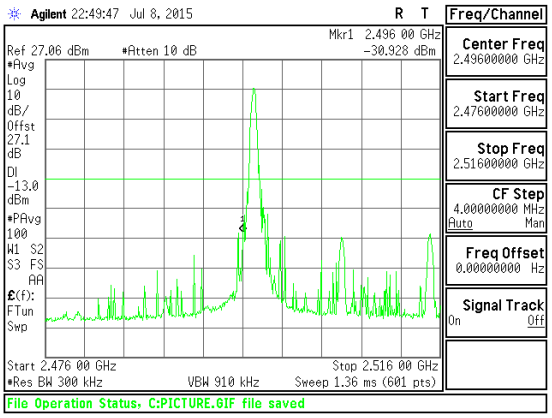
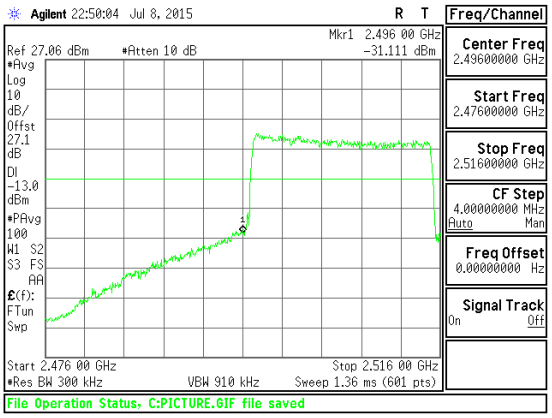
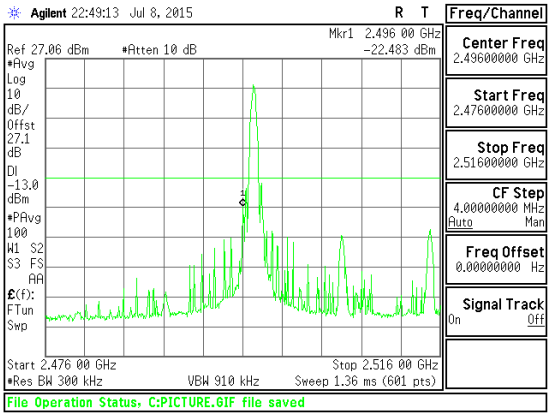
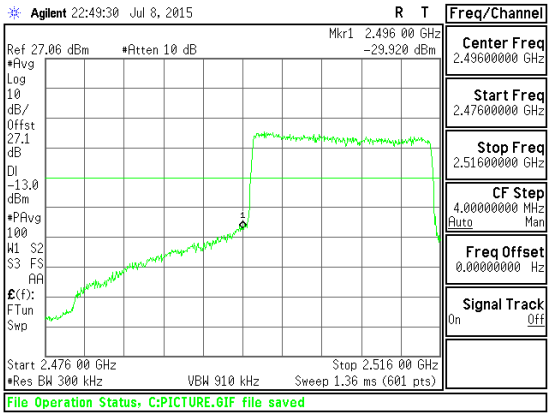
LTE Band 41

Band LTE41 20MHz 16QAM	 Band LTE41 20MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE41 20MHz CBE 16QAM Low Channel FRB.gif
Band LTE41 20MHz QPSK	 Band LTE41 20MHz CBE QPSK Low Channel 1RB.gif	 Band LTE41 20MHz CBE QPSK Low Channel FRB.gif

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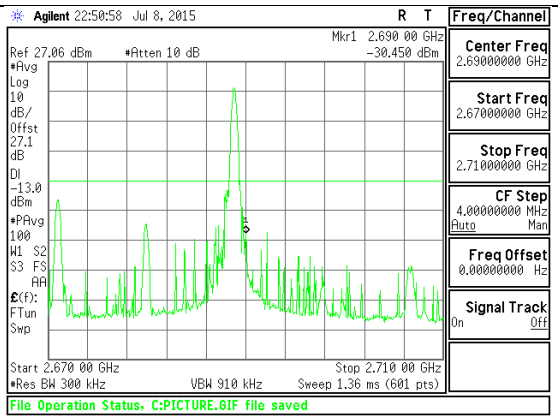
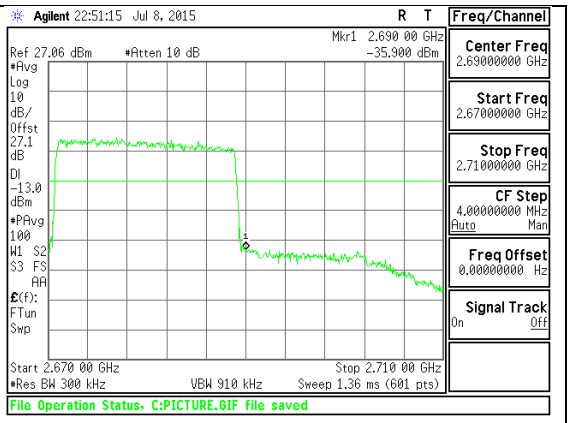
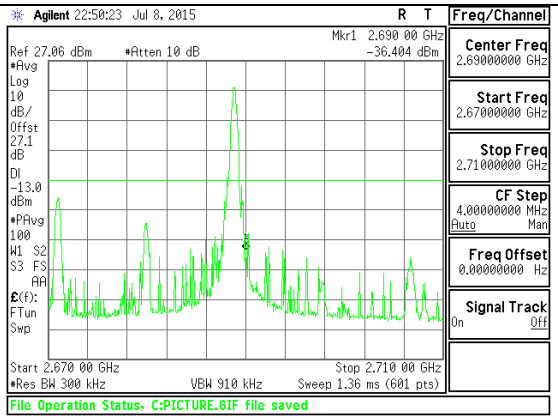
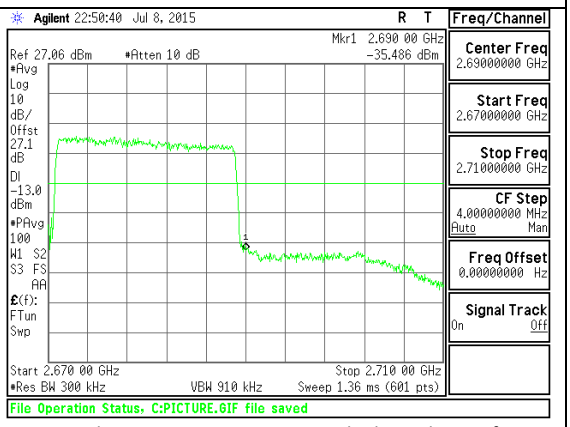
Band LTE41 20MHz 16QAM	 Band LTE41 20MHz CBE 16QAM High Channel 1RB.gif	 Band LTE41 20MHz CBE 16QAM High Channel FRB.gif
Band LTE41 20MHz QPSK	 Band LTE41 20MHz CBE QPSK High Channel 1RB.gif	 Band LTE41 20MHz CBE QPSK High Channel FRB.gif

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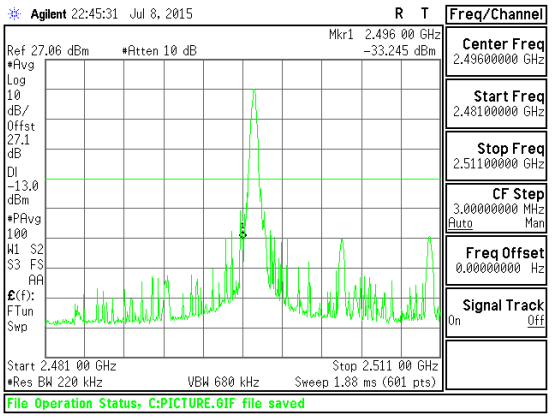
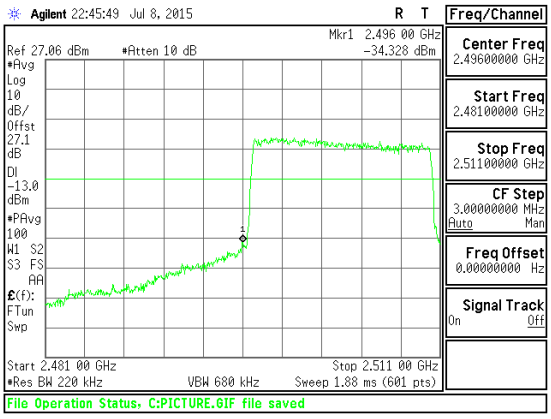
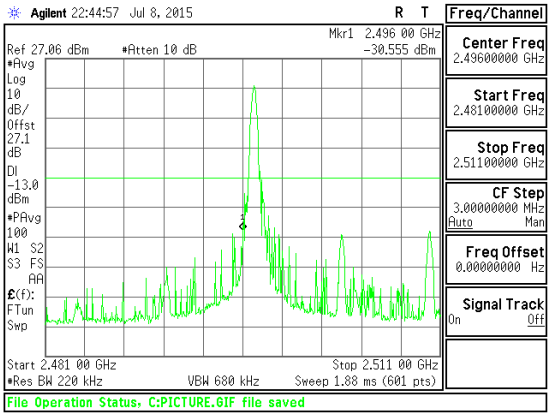
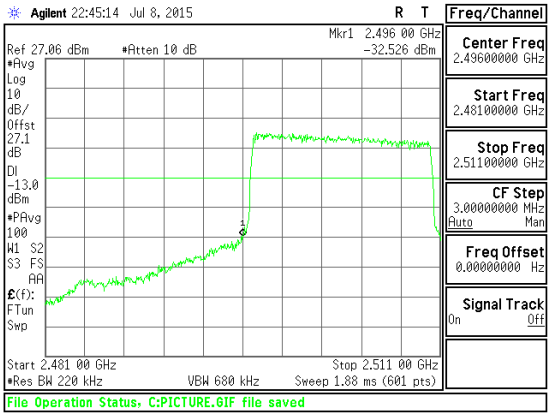
Band LTE41 15MHz 16QAM	 Band LTE41 15MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE41 15MHz CBE 16QAM Low Channel FRB.gif
Band LTE41 15MHz QPSK	 Band LTE41 15MHz CBE QPSK Low Channel 1RB.gif	 Band LTE41 15MHz CBE QPSK Low Channel FRB.gif

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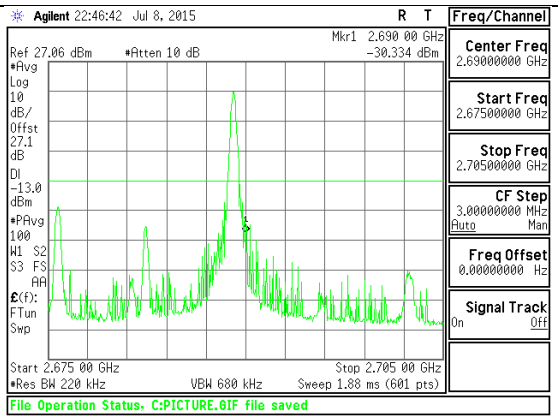
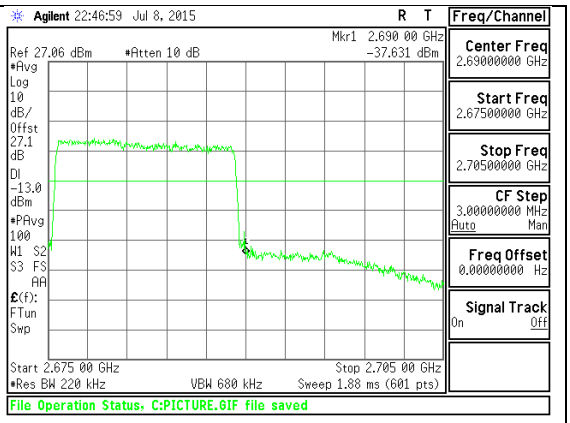
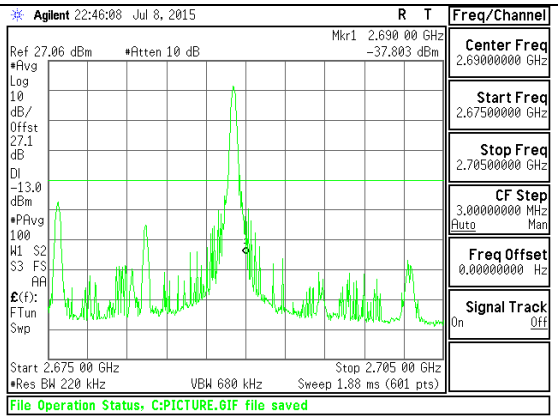
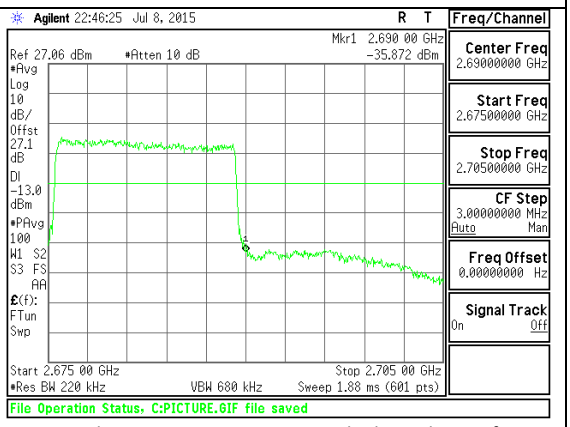
Band LTE41 15MHz 16QAM	 Band LTE41 15MHz CBE 16QAM High Channel 1RB.gif	 Band LTE41 15MHz CBE 16QAM High Channel FRB.gif
Band LTE41 15MHz QPSK	 Band LTE41 15MHz CBE QPSK High Channel 1RB.gif	 Band LTE41 15MHz CBE QPSK High Channel FRB.gif

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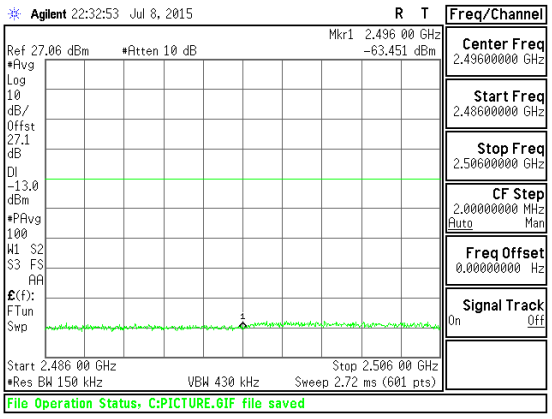
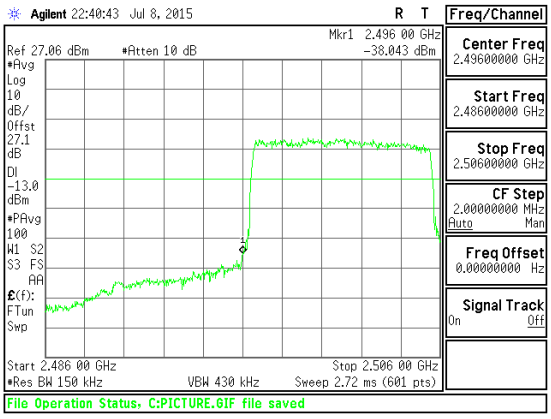
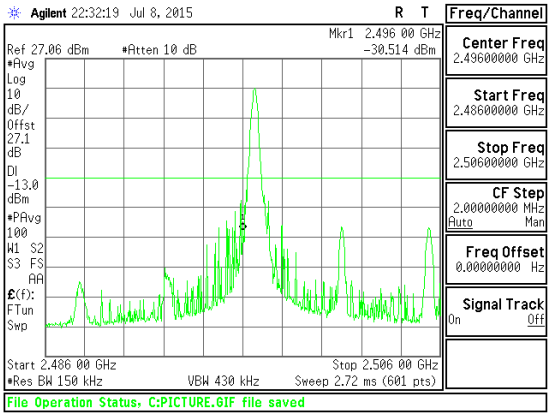
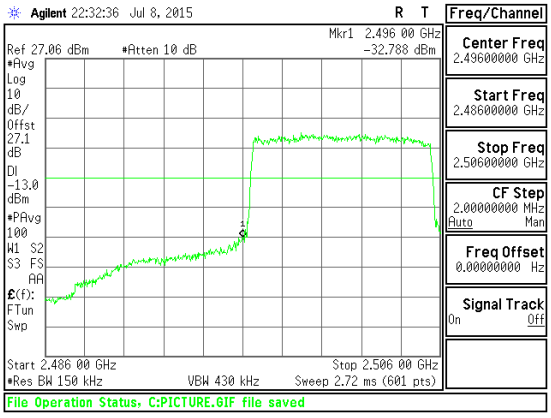
Band LTE41 10MHz 16QAM	 Band LTE41 10MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE41 10MHz CBE 16QAM Low Channel FRB.gif
Band LTE41 10MHz QPSK	 Band LTE41 10MHz CBE QPSK Low Channel 1RB.gif	 Band LTE41 10MHz CBE QPSK Low Channel FRB.gif

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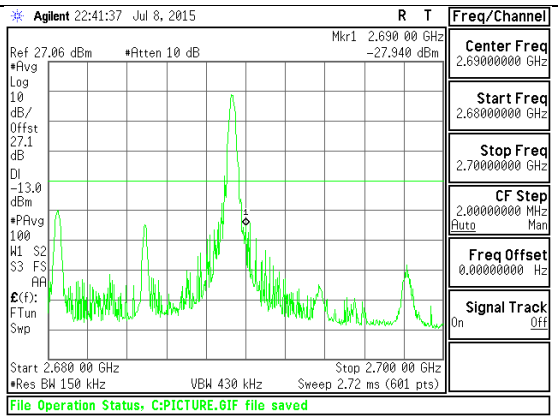
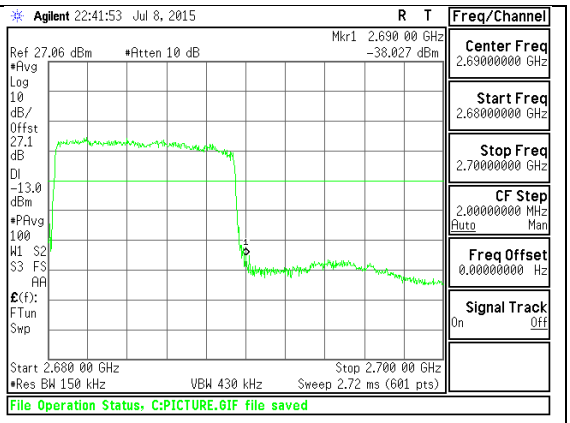
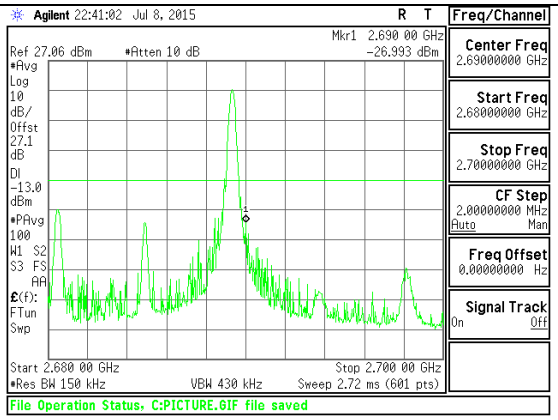
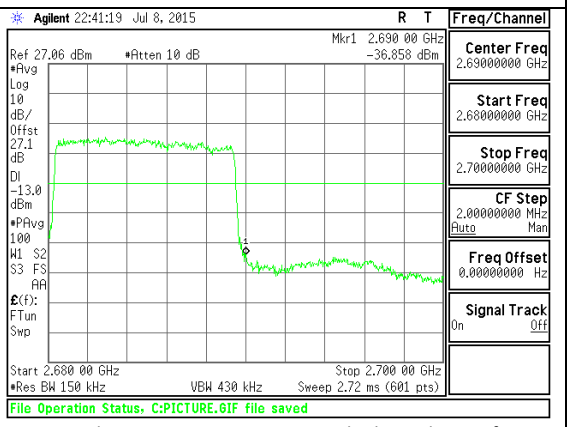
Band LTE41 10MHz 16QAM	 Band LTE41 10MHz CBE 16QAM High Channel 1RB.gif	 Band LTE41 10MHz CBE 16QAM High Channel FRB.gif
Band LTE41 10MHz QPSK	 Band LTE41 10MHz CBE QPSK High Channel 1RB.gif	 Band LTE41 10MHz CBE QPSK High Channel FRB.gif

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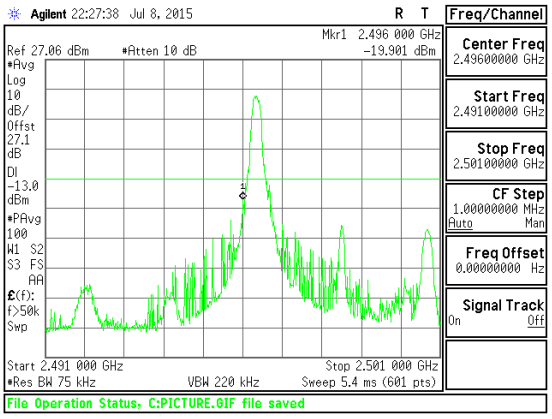
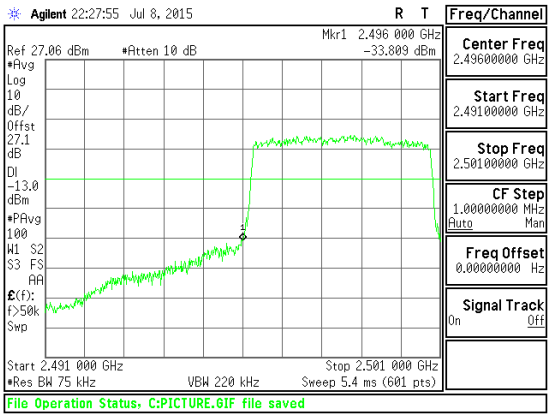
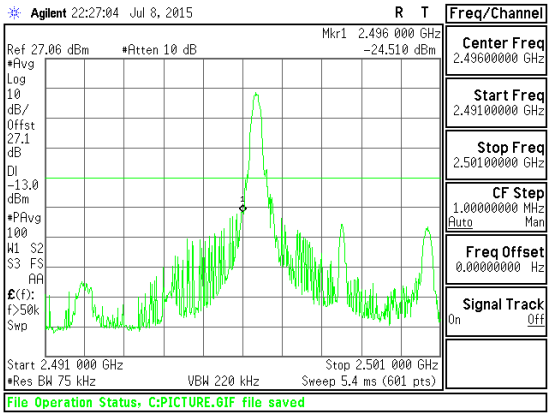
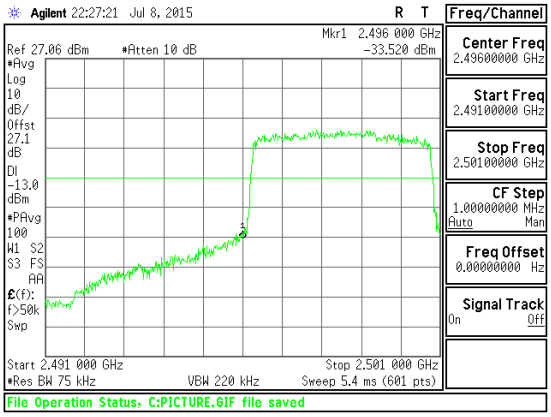
Band LTE41 5MHz 16QAM	 Band LTE41 5MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE41 5MHz CBE 16QAM Low Channel FRB.gif
Band LTE41 5MHz 16QAM	 Band LTE41 5MHz CBE 16QAM High Channel 1RB.gif	 Band LTE41 5MHz CBE 16QAM High Channel FRB.gif

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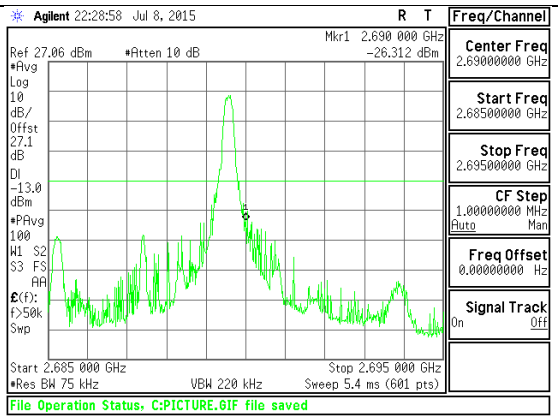
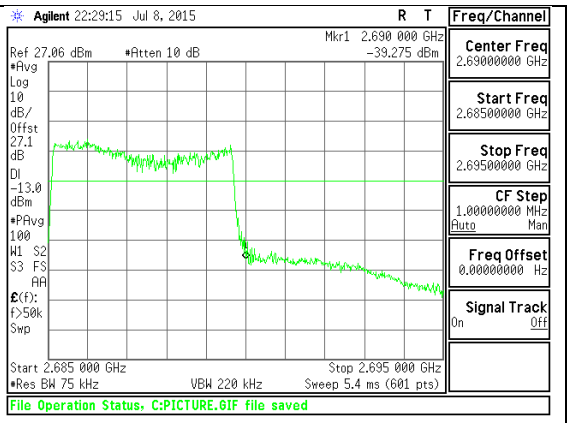
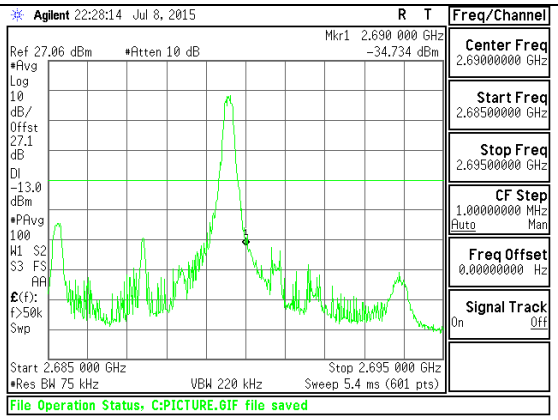
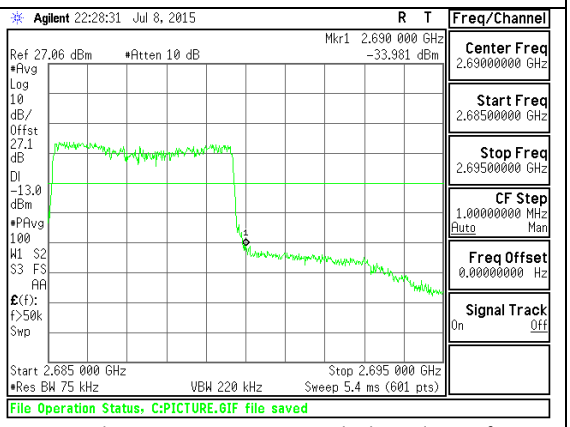
Band LTE41 5MHz QPSK	 Band LTE41 5MHz CBE QPSK Low Channel 1RB.gif	 Band LTE41 5MHz CBE QPSK Low Channel FRB.gif
Band LTE41 5MHz QPSK	 Band LTE41 5MHz CBE QPSK High Channel 1RB.gif	 Band LTE41 5MHz CBE QPSK High Channel FRB.gif

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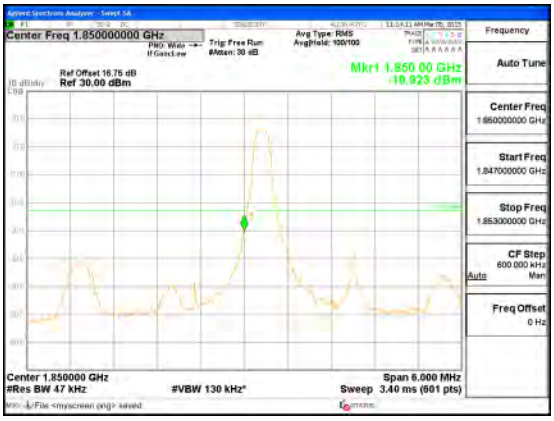
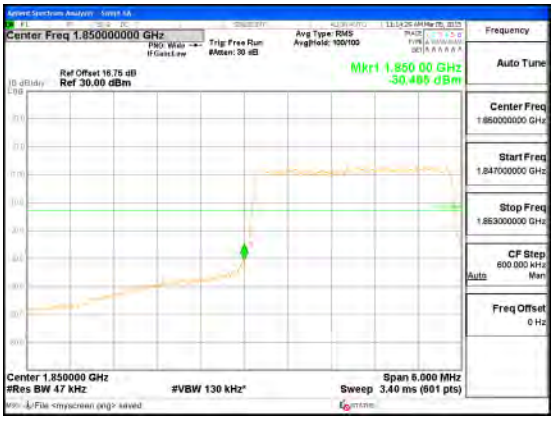
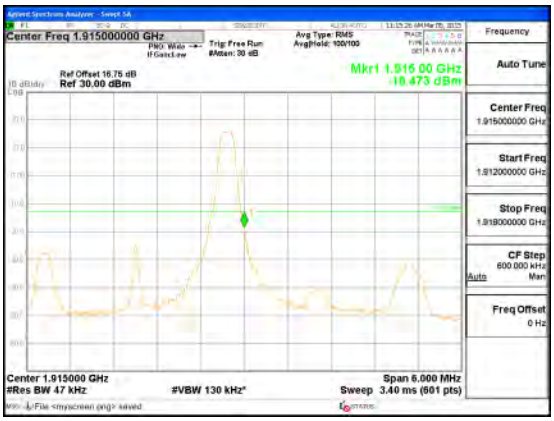
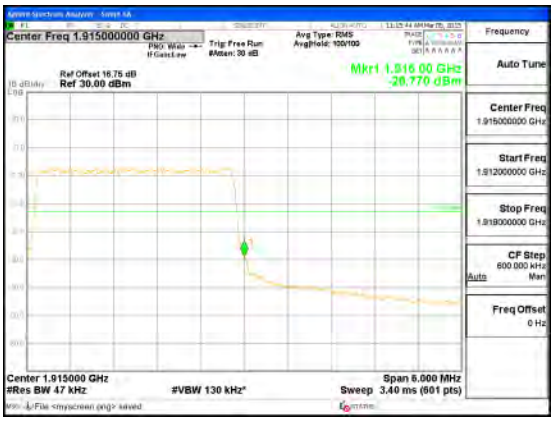
Band LTE41 3MHz 16QAM	 Band LTE41 3MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE41 3MHz CBE 16QAM Low Channel FRB.gif
Band LTE41 3MHz 16QAM	 Band LTE41 3MHz CBE 16QAM High Channel 1RB.gif	 Band LTE41 3MHz CBE 16QAM High Channel FRB.gif

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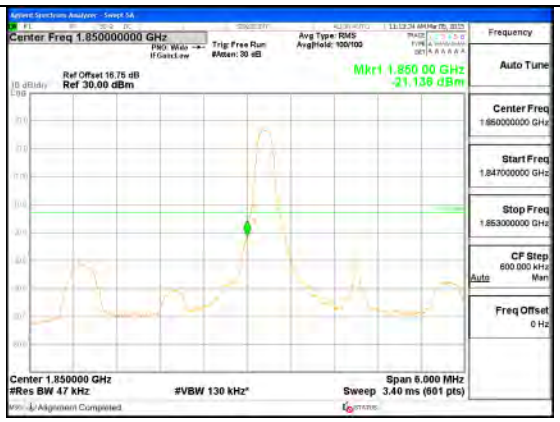
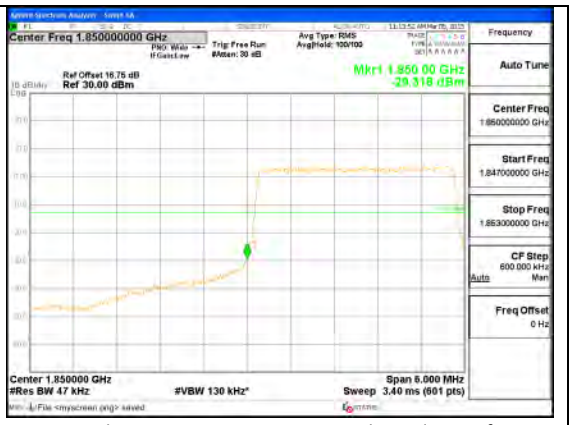
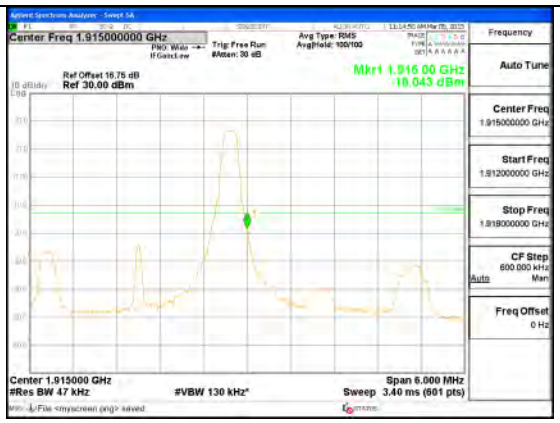
Band LTE41 3MHz QPSK	 Band LTE41 3MHz CBE QPSK Low Channel 1RB.gif	 Band LTE41 3MHz CBE QPSK Low Channel FRB.gif
Band LTE41 3MHz QPSK	 Band LTE41 3MHz CBE QPSK High Channel 1RB.gif	 Band LTE41 3MHz CBE QPSK High Channel FRB.gif

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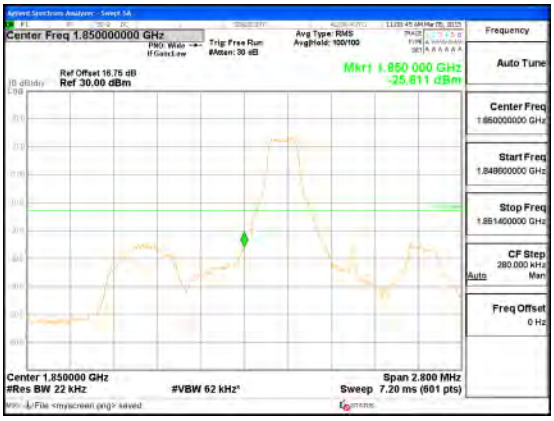
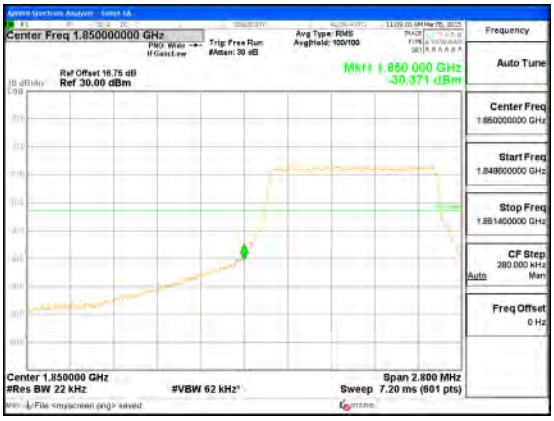
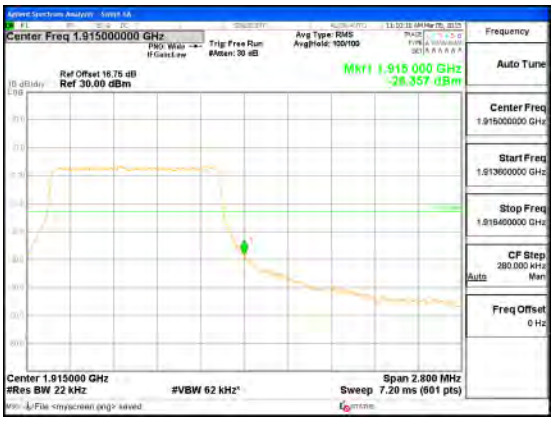
Band LTE41 1.4MHz 16QAM	 Band LTE41 1.4MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE41 1.4MHz CBE 16QAM Low Channel FRB.gif
Band LTE41 1.4MHz 16QAM	 Band LTE41 1.4MHz CBE 16QAM High Channel 1RB.gif	 Band LTE41 1.4MHz CBE 16QAM High Channel FRB.gif

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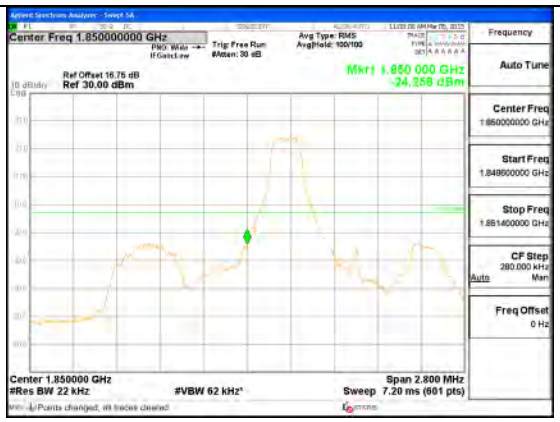
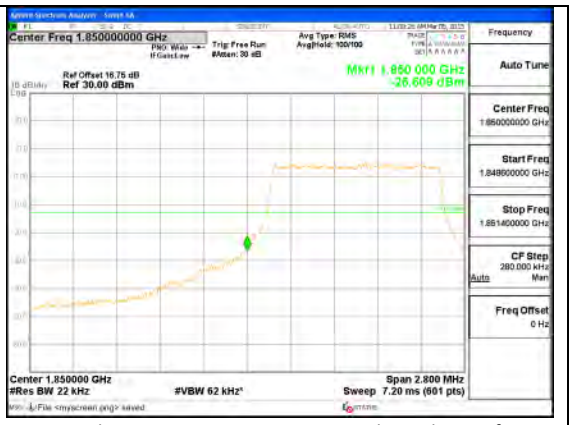
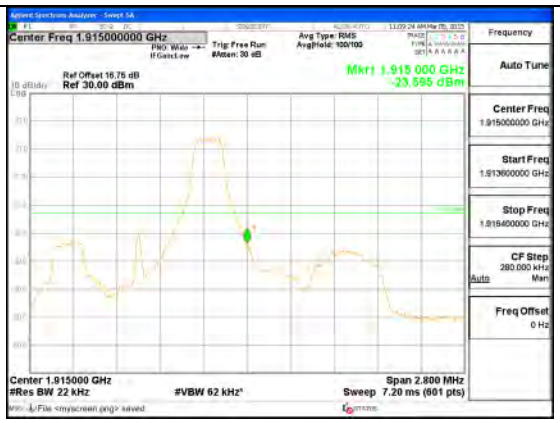
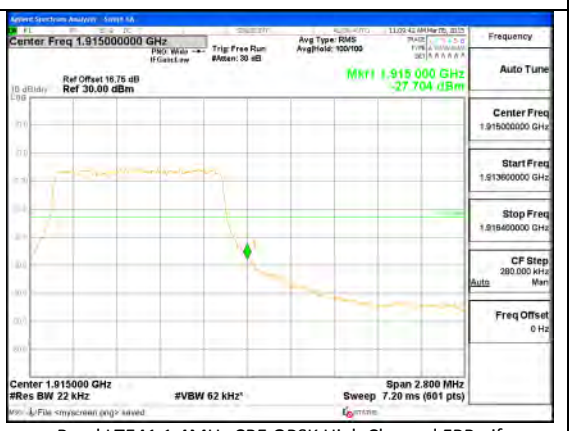
Band LTE41 1.4MHz QPSK	 Band LTE41 1.4MHz CBE QPSK Low Channel 1RB.gif	 Band LTE41 1.4MHz CBE QPSK Low Channel FRB.gif
Band LTE41 1.4MHz QPSK	 Band LTE41 1.4MHz CBE QPSK High Channel 1RB.gif	 Band LTE41 1.4MHz CBE QPSK High Channel FRB.gif

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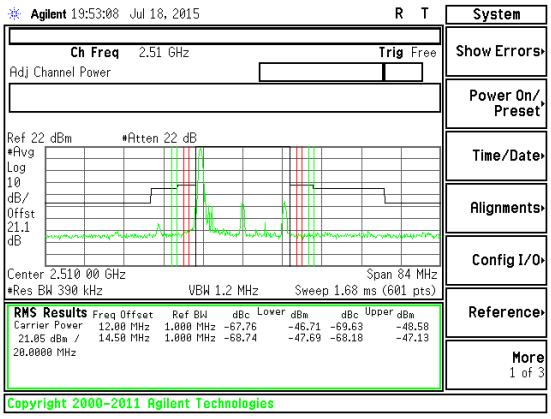
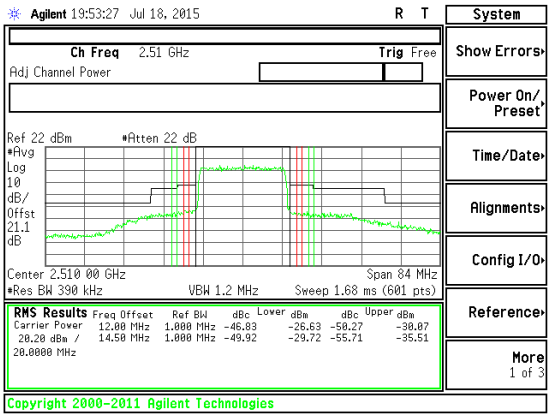
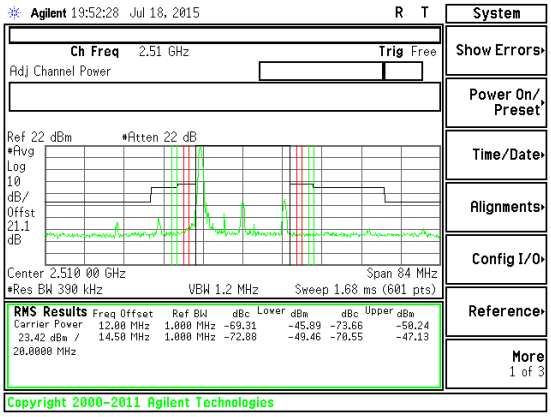
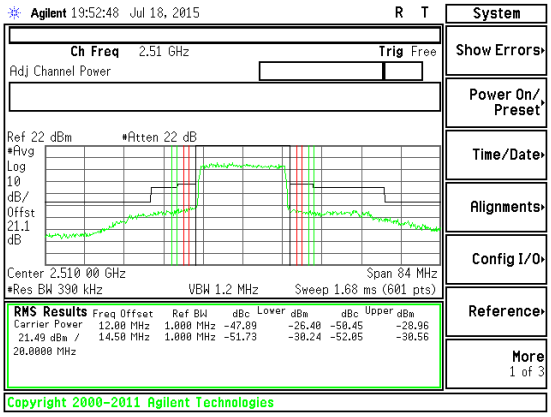
10.2.2. EMISSION MASK PLOTS

LTE Band 7

Band LTE7 20MHz 16QAM	 Band LTE7 20MHz EM 16QAM Low Channel 1RB.gif	 Band LTE7 20MHz EM 16QAM Low Channel FRB.gif
Band LTE7 20MHz QPSK	 Band LTE7 20MHz EM QPSK Low Channel 1RB.gif	 Band LTE7 20MHz EM QPSK Low Channel FRB.gif

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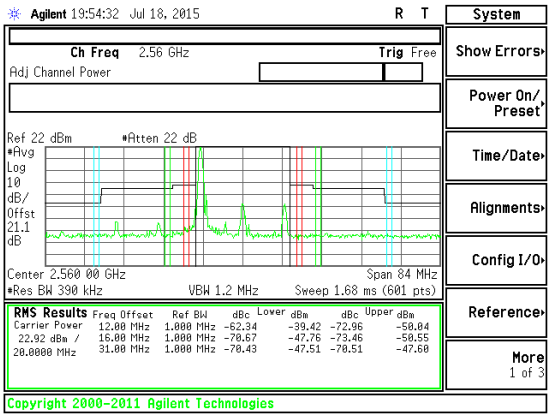
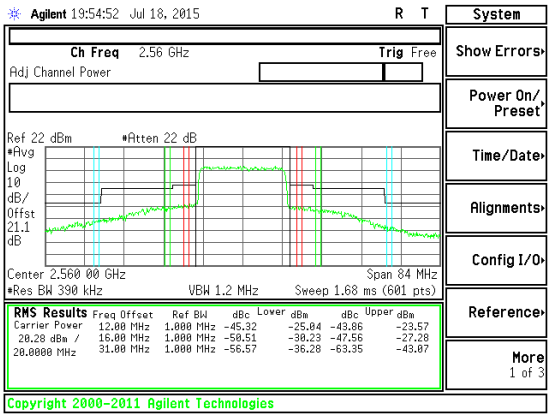
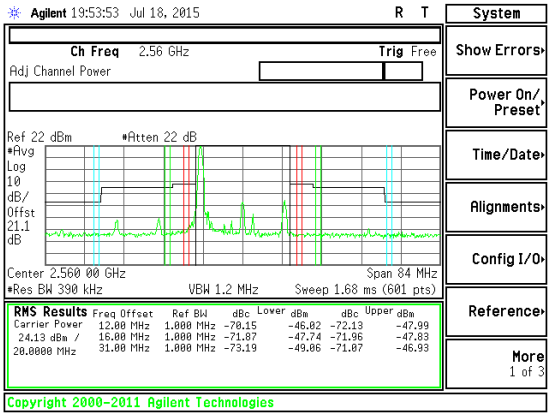
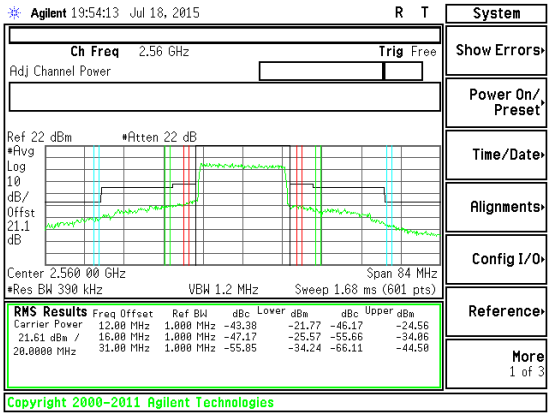
Band LTE7 20MHz 16QAM	 Band LTE7 20MHz EM 16QAM High Channel 1RB.gif	 Band LTE7 20MHz EM 16QAM High Channel FRB.gif
Band LTE7 20MHz QPSK	 Band LTE7 20MHz EM QPSK High Channel 1RB.gif	 Band LTE7 20MHz EM QPSK High Channel FRB.gif

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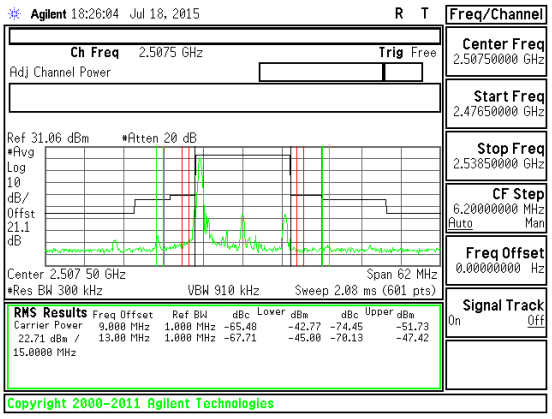
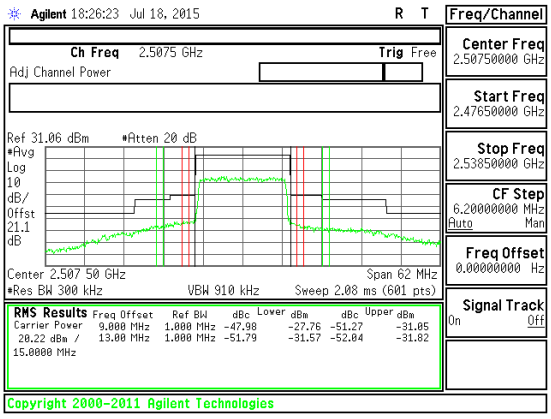
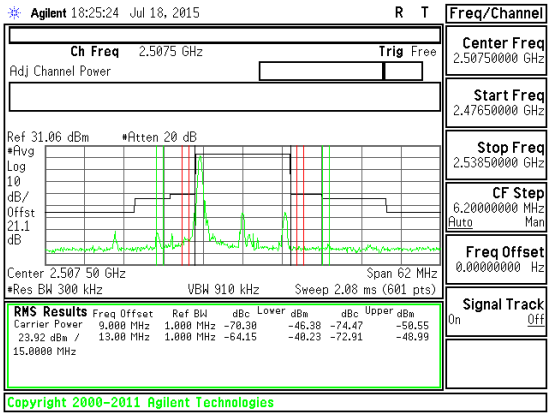
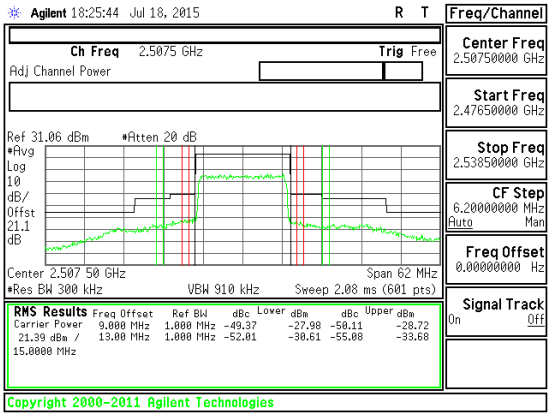
Band LTE7 15MHz 16QAM	 Band LTE7 15MHz EM 16QAM Low Channel 1RB.gif	 Band LTE7 15MHz EM 16QAM Low Channel FRB.gif
Band LTE7 15MHz QPSK	 Band LTE7 15MHz EM QPSK Low Channel 1RB.gif	 Band LTE7 15MHz EM QPSK Low Channel FRB.gif

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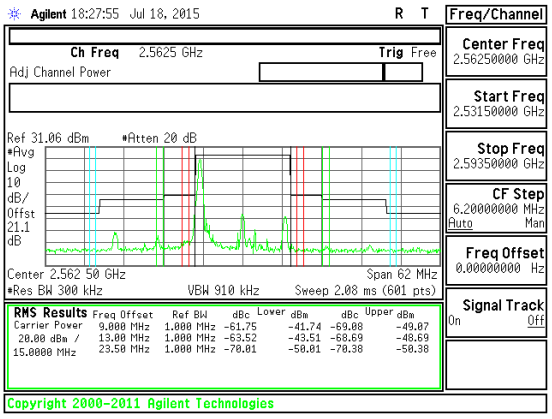
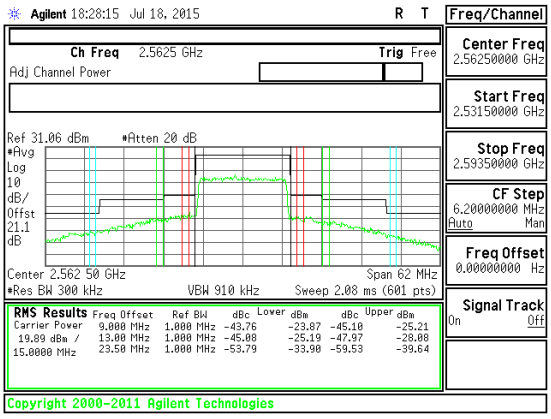
Band LTE7 15MHz 16QAM

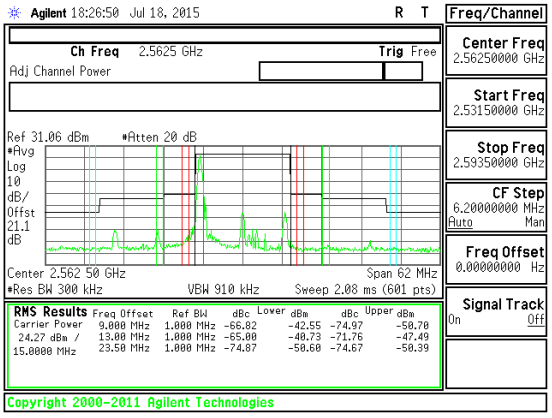


Band LTE7 15MHz EM 16QAM High Channel 1RB.gif

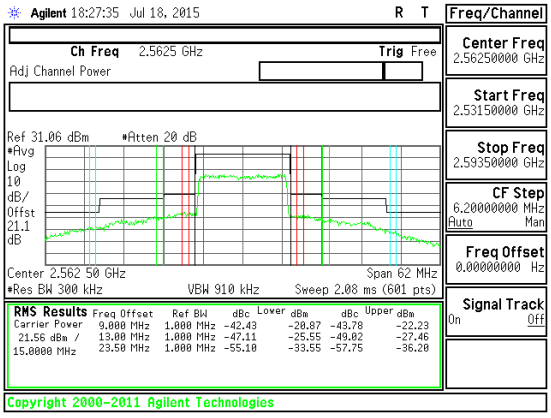


Band LTE7 15MHz EM 16QAM High Channel FRB.gif

Band LTE7 15MHz QPSK



Band LTE7 15MHz EM QPSK High Channel 1RB.gif



Band LTE7 15MHz EM QPSK High Channel FRB.gif

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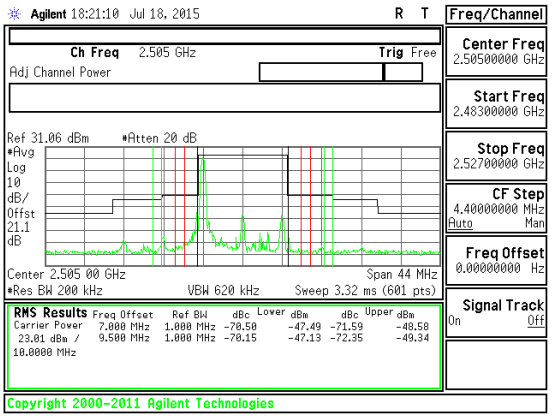
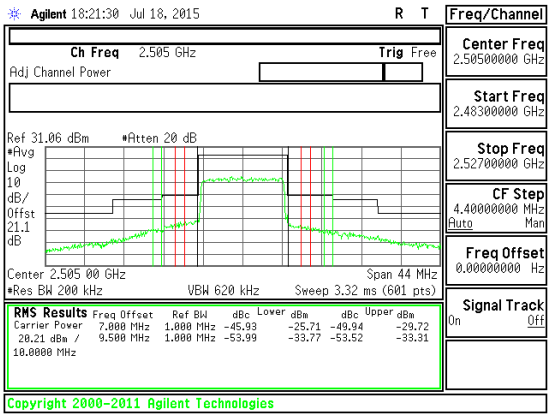
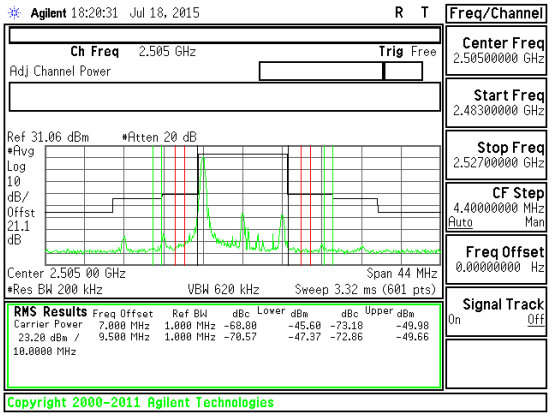
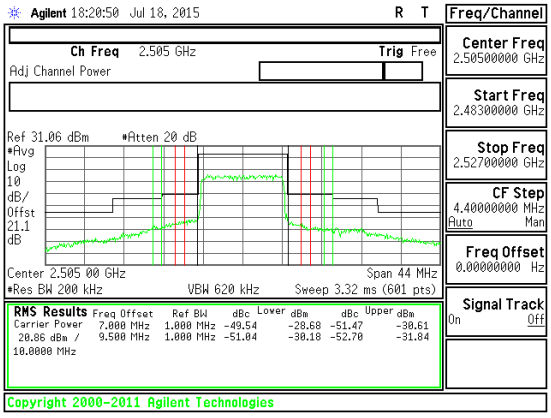
Band LTE7 10MHz 16QAM	 Band LTE7 10MHz EM 16QAM Low Channel 1RB.gif	 Band LTE7 10MHz EM 16QAM Low Channel FRB.gif
Band LTE7 10MHz QPSK	 Band LTE7 10MHz EM QPSK Low Channel 1RB.gif	 Band LTE7 10MHz EM QPSK Low Channel FRB.gif

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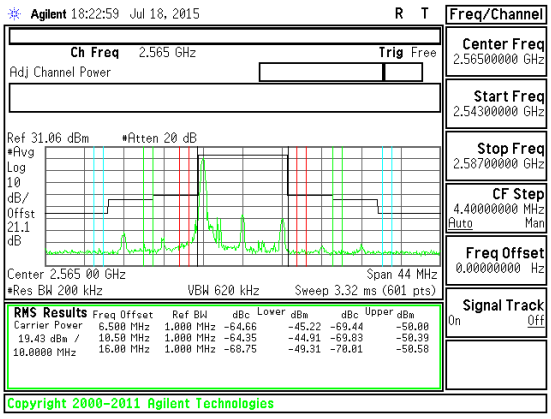
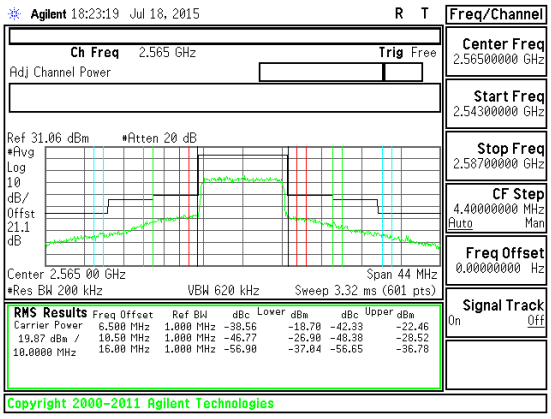
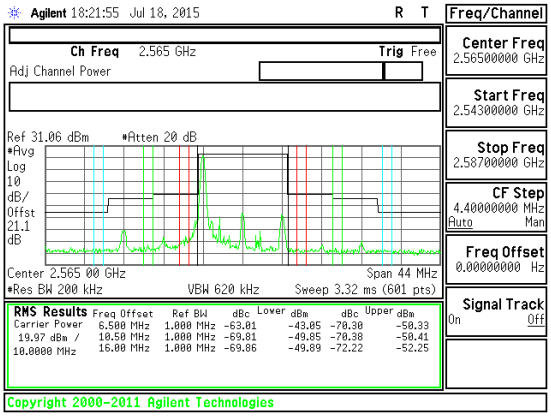
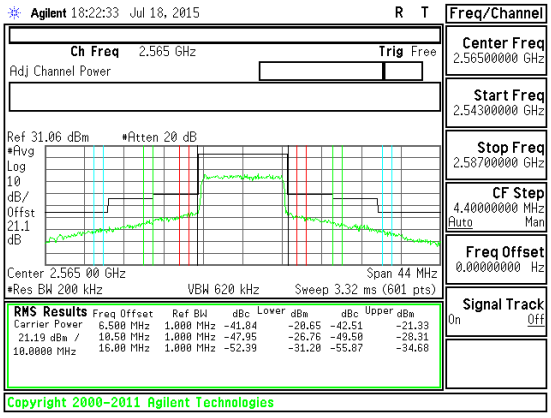
Band LTE7 10MHz 16QAM	 Band LTE7 10MHz EM 16QAM High Channel 1RB.gif	 Band LTE7 10MHz EM 16QAM High Channel FRB.gif
Band LTE7 10MHz QPSK	 Band LTE7 10MHz EM QPSK High Channel 1RB.gif	 Band LTE7 10MHz EM QPSK High Channel FRB.gif

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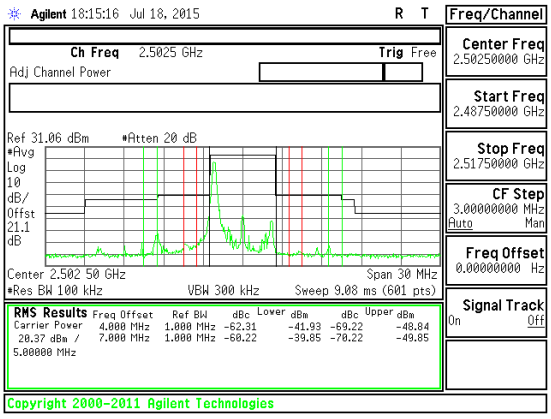
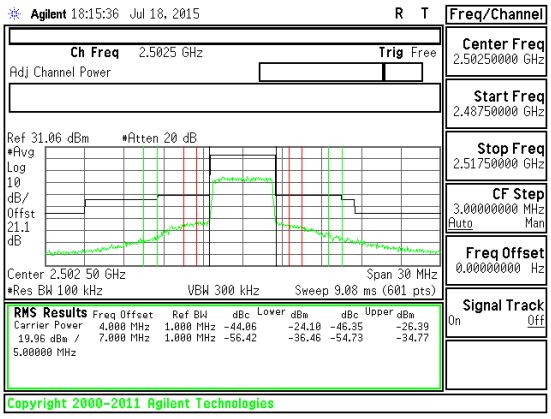
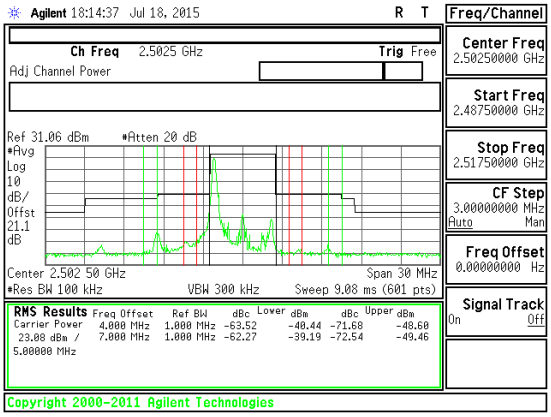
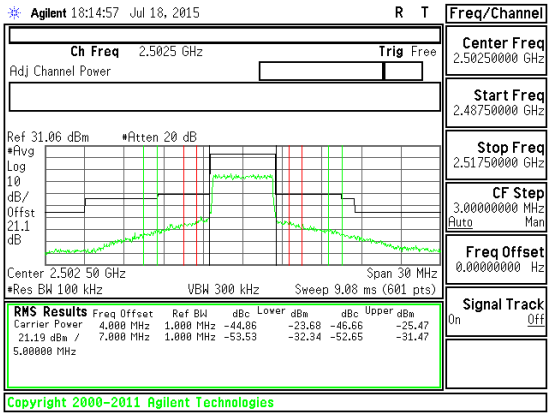
Band LTE7 5MHz 16QAM	 Band LTE7 5MHz EM 16QAM Low Channel 1RB.gif	 Band LTE7 5MHz EM 16QAM Low Channel FRB.gif
Band LTE7 5MHz QPSK	 Band LTE7 5MHz EM QPSK Low Channel 1RB.gif	 Band LTE7 5MHz EM QPSK Low Channel FRB.gif

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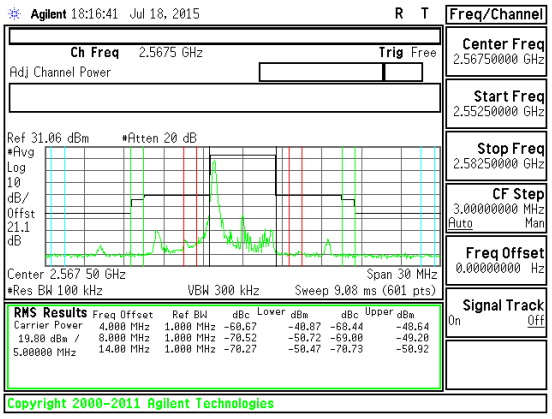
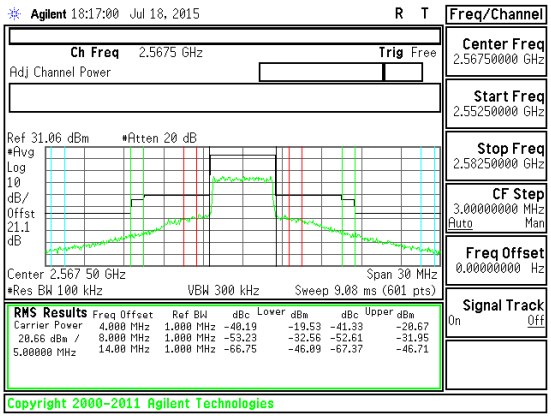
Band LTE7 5MHz 16QAM

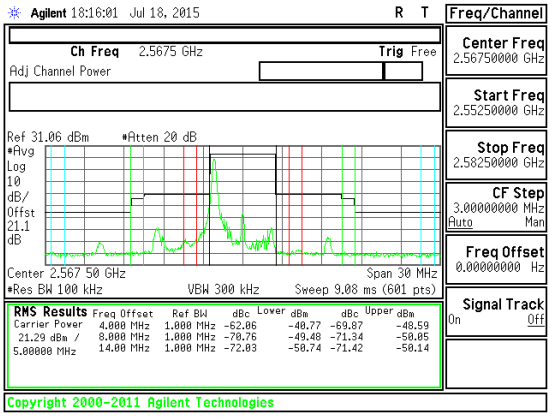


Band LTE7 5MHz EM 16QAM High Channel 1RB.gif

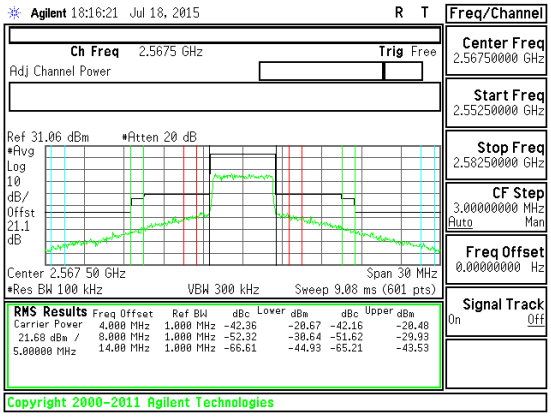


Band LTE7 5MHz EM 16QAM High Channel FRB.gif

Band LTE7 5MHz QPSK



Band LTE7 5MHz EM QPSK High Channel 1RB.gif



Band LTE7 5MHz EM QPSK High Channel FRB.gif

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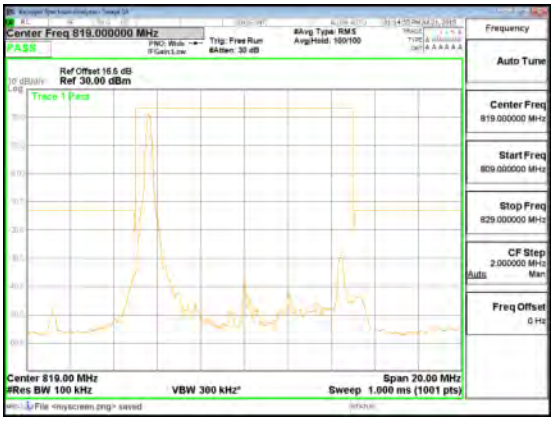
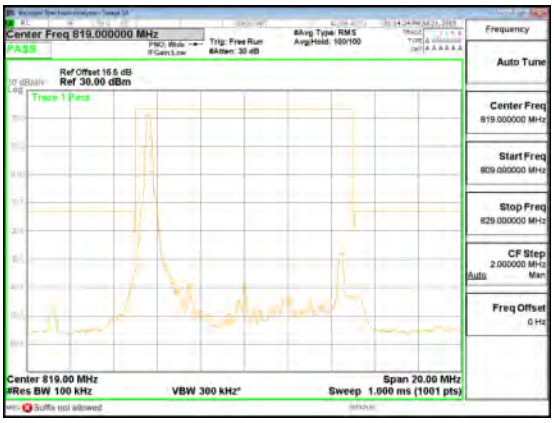
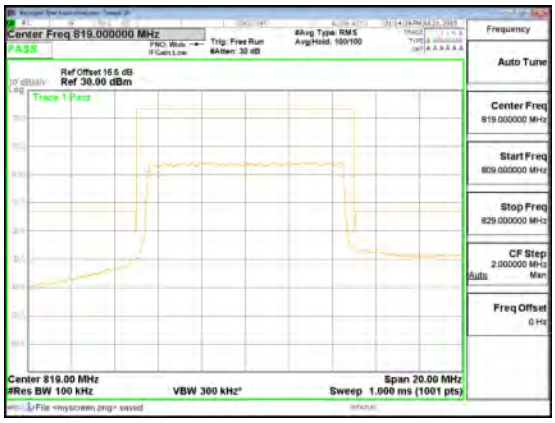
LTE Band 26

Band LTE26 10MHz 16QAM	 Band LTE26 10MHz EM 16QAM Low Channel 1RB.gif	 Band LTE26 10MHz EM 16QAM Low Channel FRB.gif
Band LTE26 10MHz QPSK	 Band LTE26 10MHz EM QPSK Low Channel 1RB.gif	 Band LTE26 10MHz EM QPSK Low Channel FRB.gif

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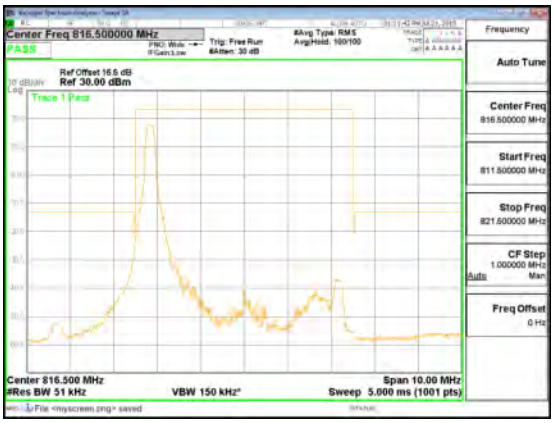
Band LTE26 5MHz 16QAM	 Band LTE26 5MHz EM 16QAM Low Channel 1RB.gif	 Band LTE26 5MHz EM 16QAM Low Channel FRB.gif
Band LTE26 5MHz QPSK	 Band LTE26 5MHz EM QPSK Low Channel 1RB.gif	 Band LTE26 5MHz EM QPSK Low Channel FRB.gif

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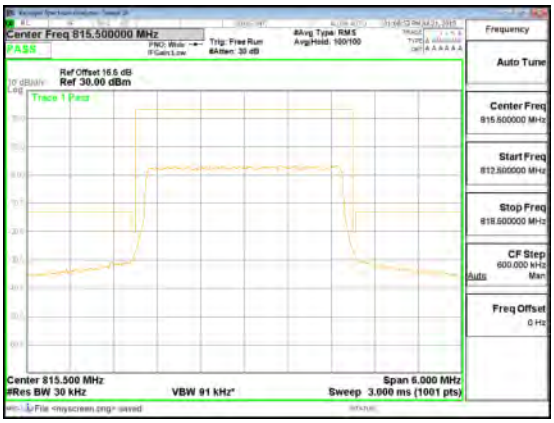
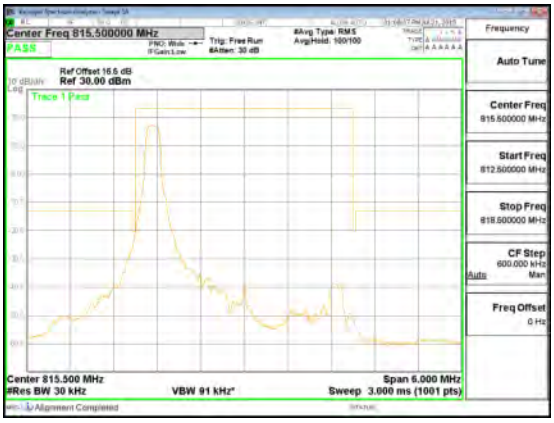
Band LTE26 3MHz 16QAM	 Band LTE26 3MHz EM 16QAM Low Channel 1RB.gif	 Band LTE26 3MHz EM 16QAM Low Channel FRB.gif
Band LTE26 3MHz QPSK	 Band LTE26 5MHz EM QPSK Low Channel 1RB.gif	 Band LTE26 3MHz EM QPSK Low Channel FRB.gif

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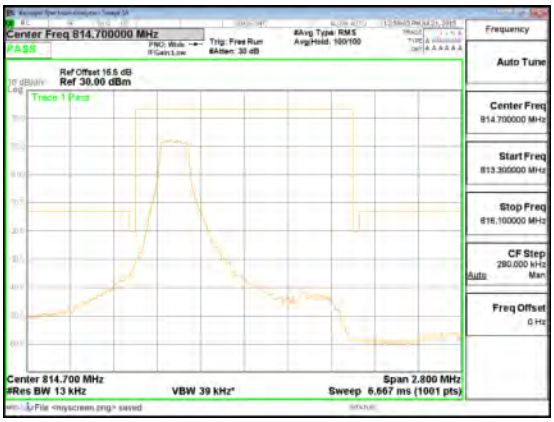
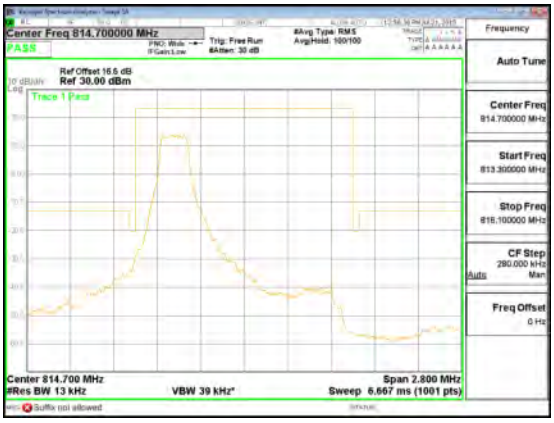
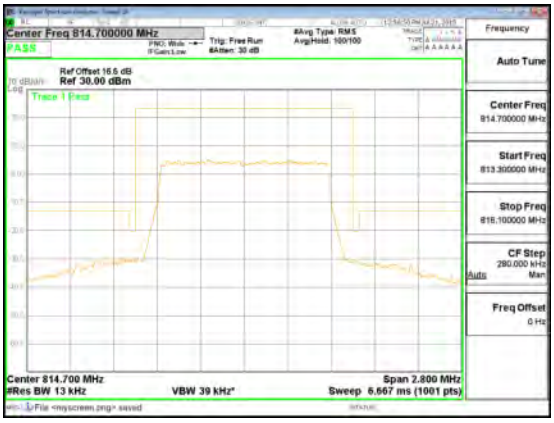
Band LTE26 1.4MHz 16QAM	 Band LTE26 1.4MHz EM 16QAM Low Channel 1RB.gif	 Band LTE26 1.4MHz EM 16QAM Low Channel FRB.gif
Band LTE26 1.4MHz QPSK	 Band LTE26 1.4MHz EM QPSK Low Channel 1RB.gif	 Band LTE26 1.4MHz EM QPSK Low Channel FRB.gif

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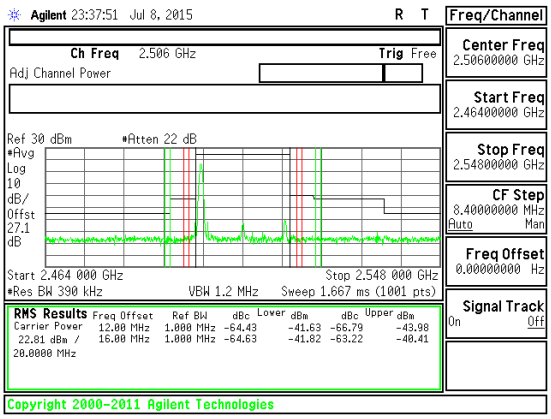
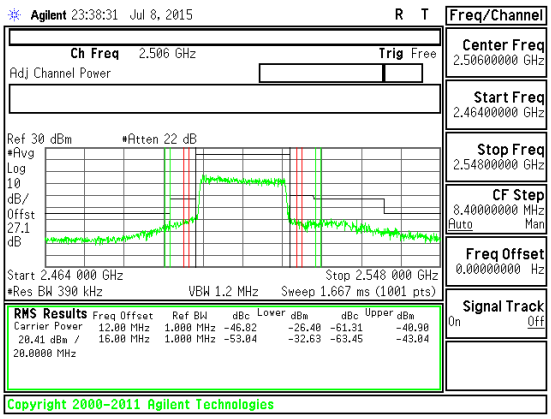
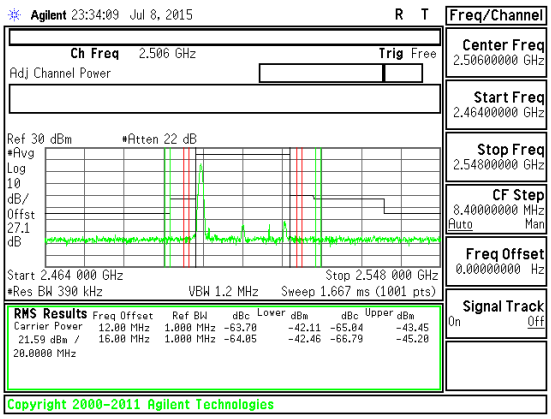
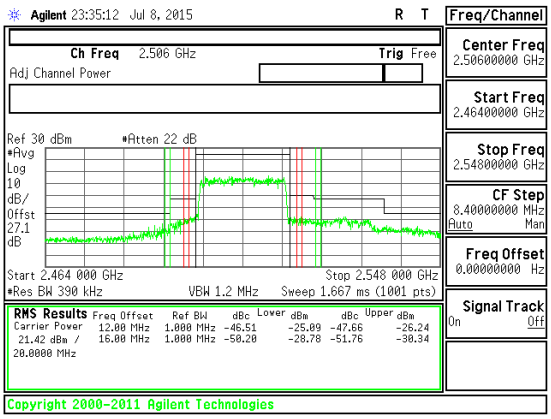
LTE Band 41

Band LTE41 20MHz 16QAM	 Band LTE41 20MHz EM 16QAM Low Channel 1RB.gif	 Band LTE41 20MHz EM 16QAM Low Channel FRB.gif
Band LTE41 20MHz QPSK	 Band LTE41 20MHz EM QPSK Low Channel 1RB.gif	 Band LTE41 20MHz EM QPSK Low Channel FRB.gif

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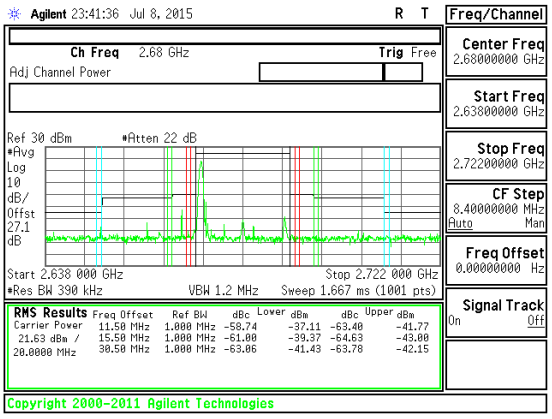
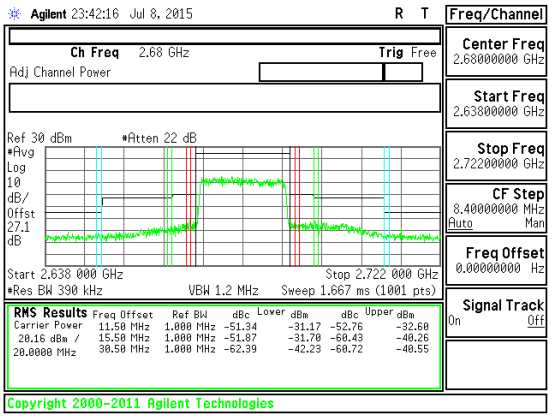
Band LTE41 20MHz 16QAM

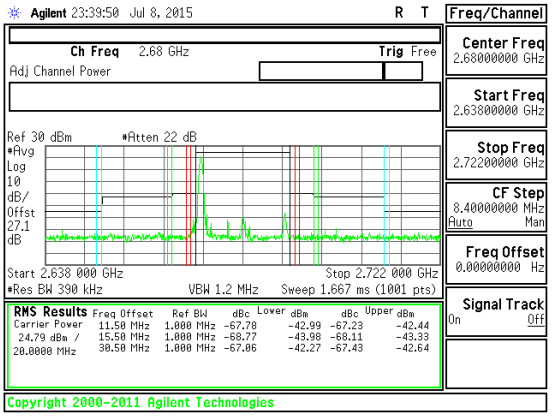


Band LTE41 20MHz EM 16QAM High Channel 1RB.gif

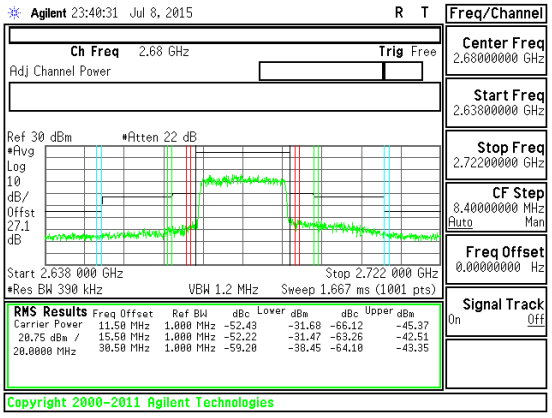


Band LTE41 20MHz EM 16QAM High Channel FRB.gif

Band LTE41 20MHz QPSK



Band LTE41 20MHz EM QPSK High Channel 1RB.gif



Band LTE41 20MHz EM QPSK High Channel FRB.gif

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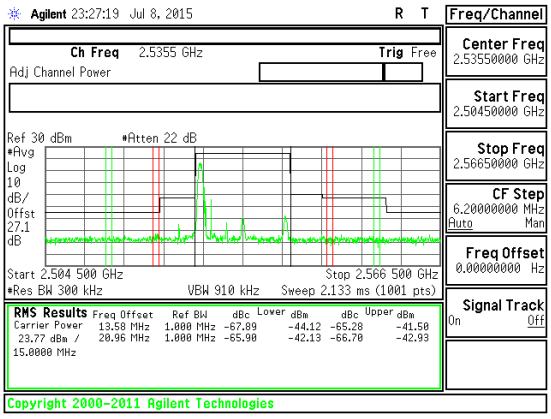
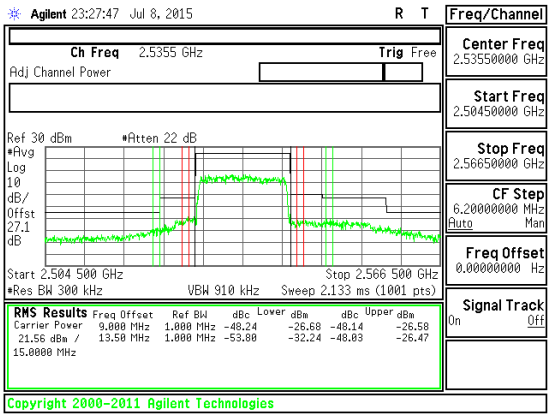
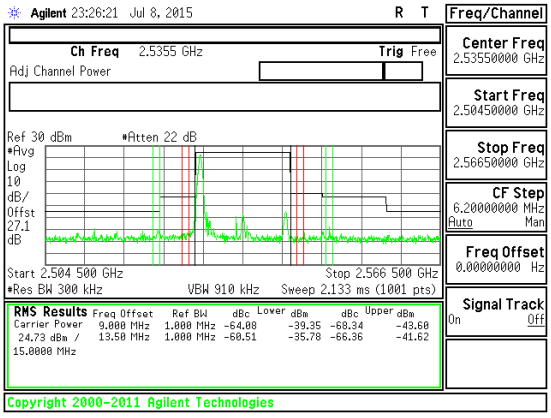
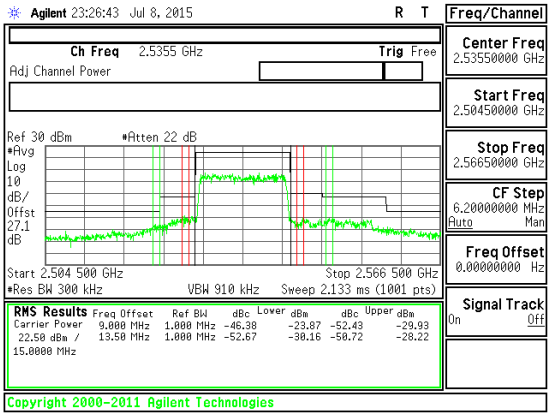
Band LTE41 15MHz 16QAM	 Band LTE41 15MHz EM 16QAM Low Channel 1RB.gif	 Band LTE41 15MHz EM 16QAM Low Channel FRB.gif
Band LTE41 15MHz QPSK	 Band LTE41 15MHz EM QPSK Low Channel 1RB.gif	 Band LTE41 15MHz EM QPSK Low Channel FRB.gif

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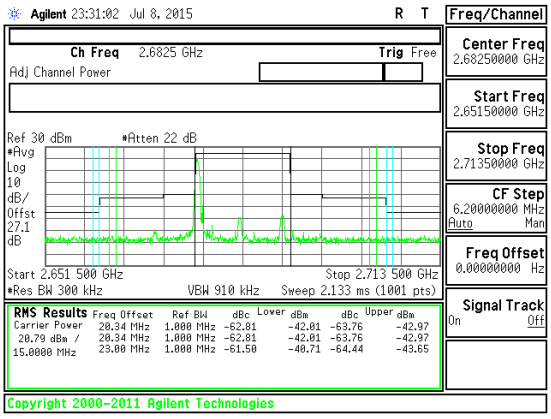
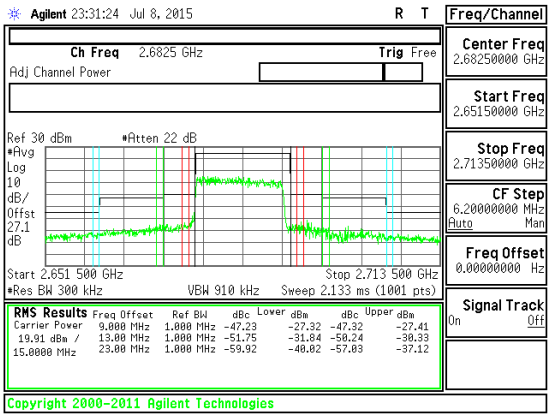
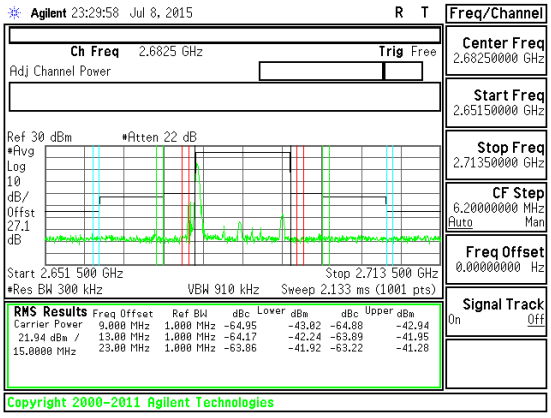
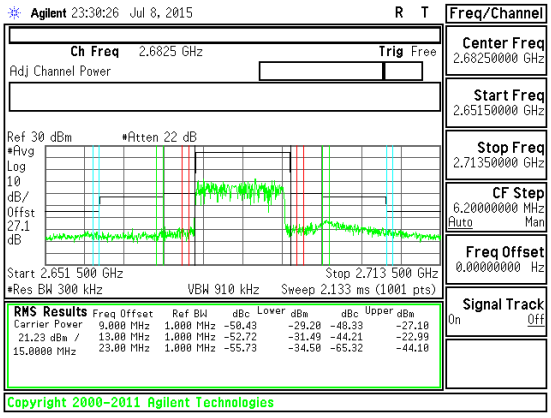
Band LTE41 15MHz 16QAM	 Band LTE41 15MHz EM 16QAM High Channel 1RB.gif	 Band LTE41 15MHz EM 16QAM High Channel FRB.gif
Band LTE41 15MHz QPSK	 Band LTE41 15MHz EM QPSK High Channel 1RB.gif	 Band LTE41 15MHz EM QPSK High Channel FRB.gif

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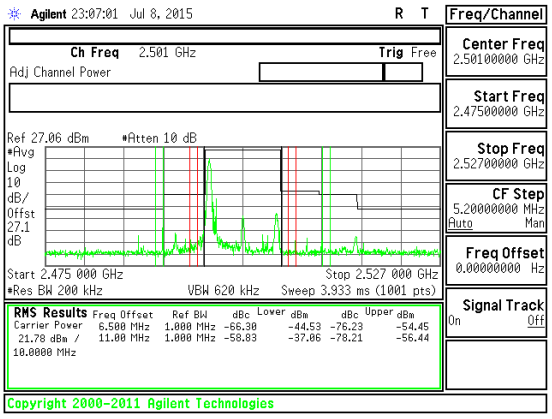
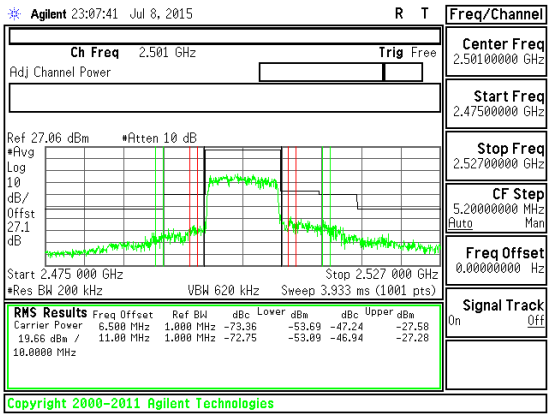
Band LTE41 10MHz 16QAM

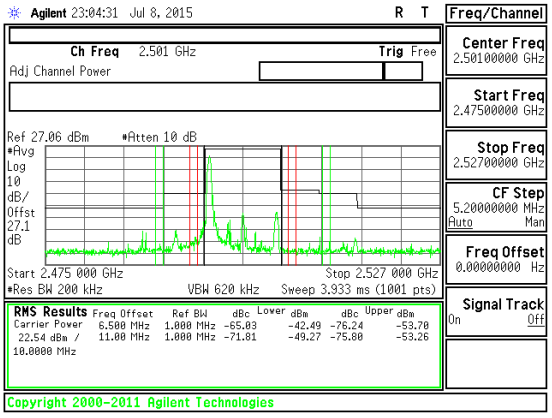


Band LTE41 10MHz EM 16QAM Low Channel 1RB.gif

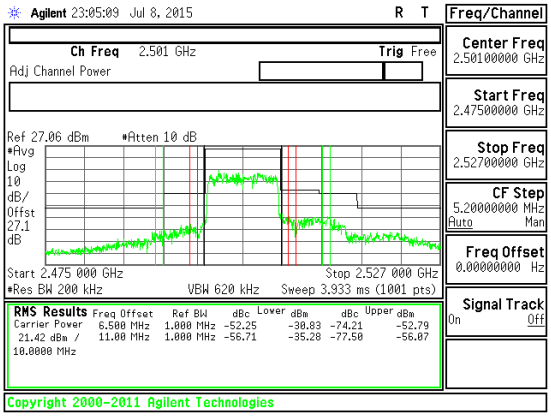


Band LTE41 10MHz EM 16QAM Low Channel FRB.gif

Band LTE41 10MHz QPSK



Band LTE41 10MHz EM QPSK Low Channel 1RB.gif



Band LTE41 10MHz EM QPSK Low Channel FRB.gif

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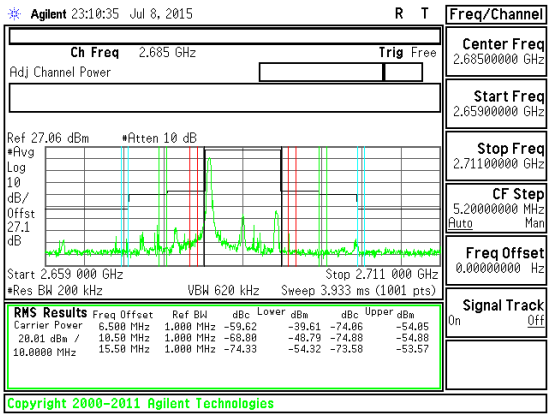
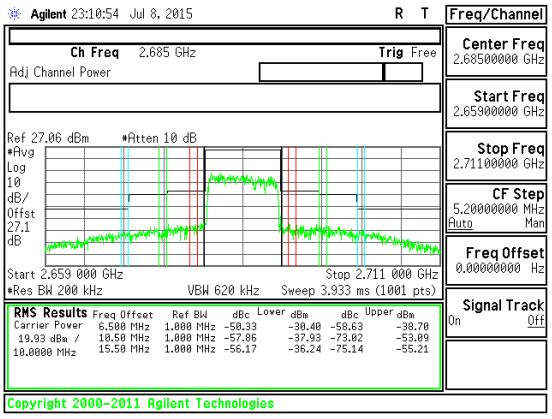
Band LTE41 10MHz 16QAM

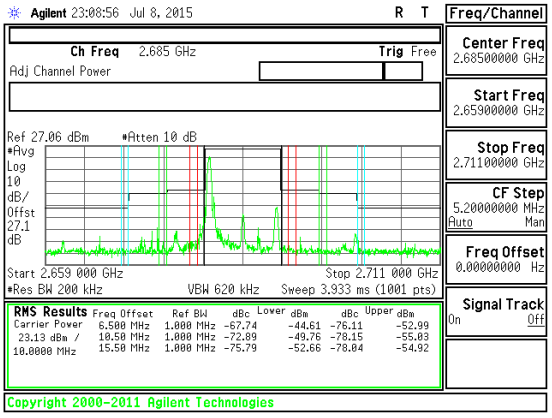


Band LTE41 10MHz EM 16QAM High Channel 1RB.gif

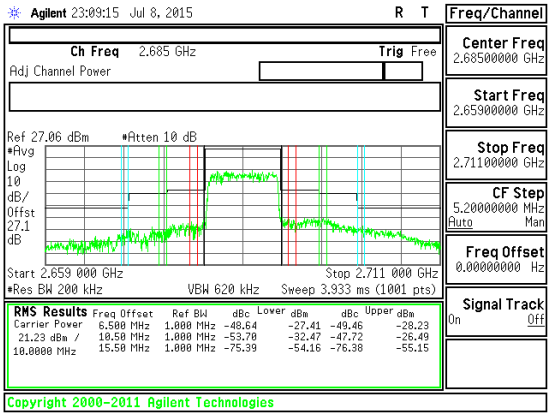


Band LTE41 10MHz EM 16QAM High Channel FRB.gif

Band LTE41 10MHz QPSK



Band LTE41 10MHz EM QPSK High Channel 1RB.gif



Band LTE41 10MHz EM QPSK High Channel FRB.gif

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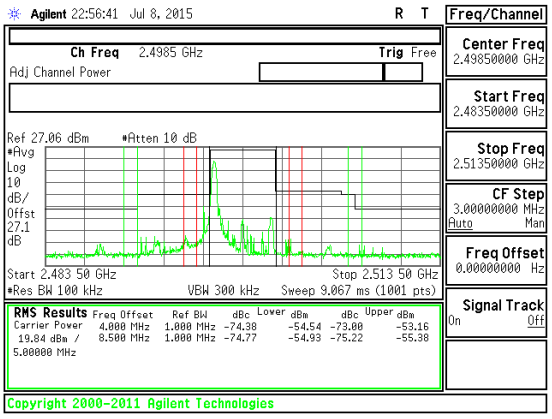
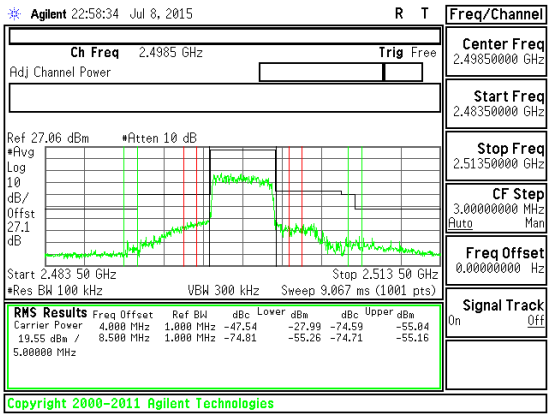
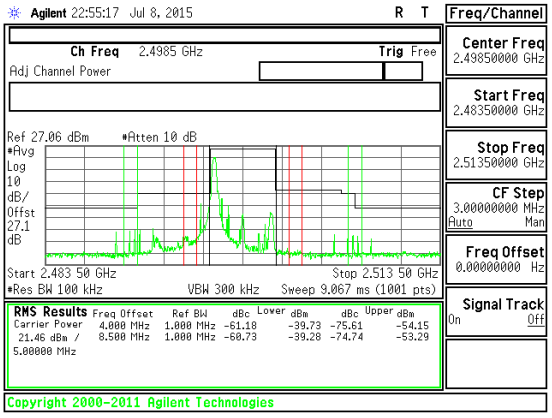
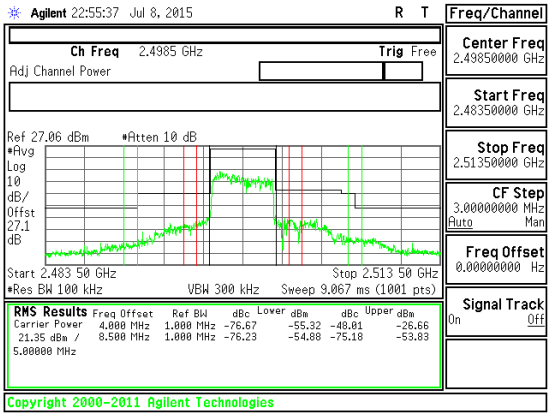
Band LTE41 5MHz 16QAM	 Band LTE41 5MHz EM 16QAM Low Channel 1RB.gif	 Band LTE41 5MHz EM 16QAM Low Channel FRB.gif
Band LTE41 5MHz QPSK	 Band LTE41 5MHz EM QPSK Low Channel 1RB.gif	 Band LTE41 5MHz EM QPSK Low Channel FRB.gif

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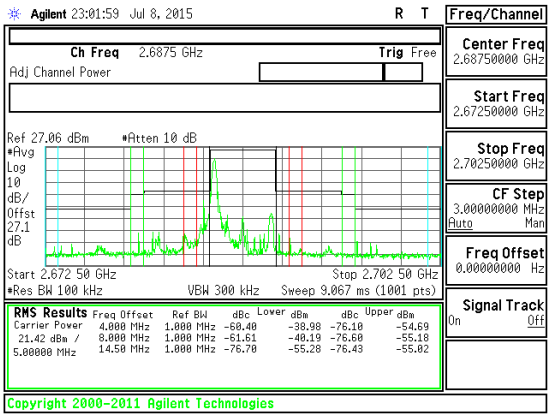
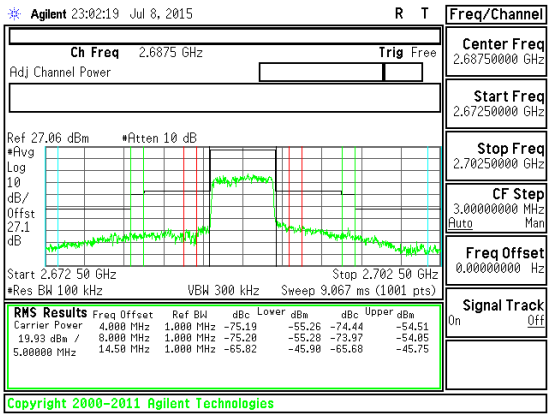
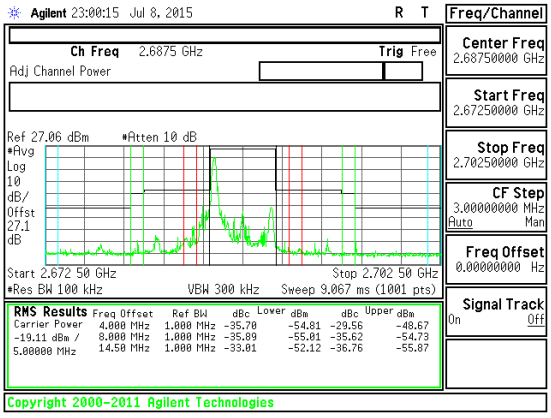
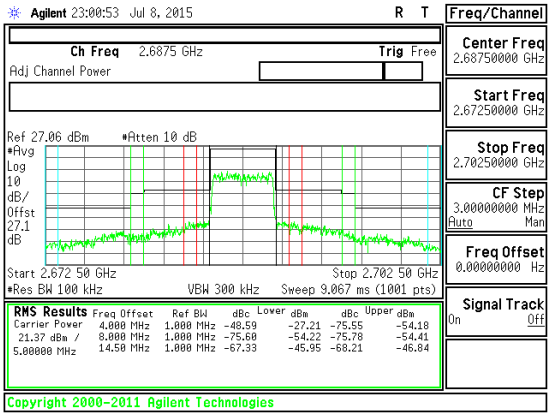
Band LTE41 5MHz 16QAM	 Band LTE41 5MHz EM 16QAM High Channel 1RB.gif	 Band LTE41 5MHz EM 16QAM High Channel FRB.gif
Band LTE41 5MHz QPSK	 Band LTE41 5MHz EM QPSK High Channel 1RB.gif	 Band LTE41 5MHz EM QPSK High Channel FRB.gif

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10.3. 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.

Part 27: (m)(4) (4) 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

Per KDB 971168 D01 Power Meas License Digital Systems v02r02

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.

MODES TESTED

GSM, WCDMA, and LTE

RESULTS

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10.3.1. OUT OF BAND EMISSIONS RESULT

GSM

Band	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
GSM 850	GPRS	824.2	-23.01	-13	-10.01
		836.6	-22.01	-13	-9.01
		848.8	-23.12	-13	-10.12
	EGPRS	824.2	-23.46	-13	-10.46
		836.6	-23.60	-13	-10.60
		848.8	-22.99	-13	-9.99
GSM 1900	GPRS	1850.2	-24.27	-13	-11.27
		1880	-23.97	-13	-10.97
		1909.8	-24.59	-13	-11.59
	EGPRS	1850.2	-23.98	-13	-10.98
		1880	-24.76	-13	-11.76
		1909.8	-24.00	-13	-11.00

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WCDMA

Band	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
Band 5	REL99	826.4	-31.328	-13	-18.328
		836.6	-34.064	-13	-21.064
		846.6	-34.492	-13	-21.492
	HSDPA	826.4	-34.467	-13	-21.467
		836.6	-35.013	-13	-22.013
		846.6	-34.569	-13	-21.569
Band 4	REL99	1712.4	-34.259	-13	-21.259
		1732.6	-33.702	-13	-20.702
		1752.6	-33.798	-13	-20.798
	HSDPA	1712.4	-33.78	-13	-20.78
		1732.6	-34.277	-13	-21.277
		1752.6	-34.444	-13	-21.444
Band 2	REL99	1852.4	-19.364	-13	-6.364
		1880	-21.068	-13	-8.068
		1907.6	-17.385	-13	-4.385
	HSDPA	1852.4	-21.365	-13	-8.365
		1880	-22.260	-13	-9.260
		1907.6	-19.384	-13	-6.384

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LTE Band 2

Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE2	20	16QAM	1860	-14.95	-13	-1.95
			1880	-15.61	-13	-2.61
			1900	-15.02	-13	-2.02
		QPSK	1860	-15.22	-13	-2.22
			1880	-14.62	-13	-1.62
			1900	-16.29	-13	-3.29
	15	16QAM	1857.5	-14.98	-13	-1.98
			1880	-16.52	-13	-3.52
			1902.5	-15.51	-13	-2.51
		QPSK	1857.5	-15.02	-13	-2.02
			1880	-18.05	-13	-5.05
			1902.5	-16.20	-13	-3.20
	10	16QAM	1855	-17.15	-13	-4.15
			1880	-16.93	-13	-3.93
			1905	-15.62	-13	-2.62
		QPSK	1855	-14.68	-13	-1.68
			1880	-18.67	-13	-5.67
			1905	-15.15	-13	-2.15
	5	16QAM	1852.5	-15.14	-13	-2.14
			1880	-17.16	-13	-4.16
			1907.5	-14.33	-13	-1.33
		QPSK	1852.5	-14.38	-13	-1.38
			1880	-18.01	-13	-5.01
			1907.5	-13.70	-13	-0.70

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Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE2	3	16QAM	1851.5	-16.04	-13	-3.04
			1880	-16.36	-13	-3.36
			1908.5	-14.56	-13	-1.56
		QPSK	1851.5	-14.73	-13	-1.73
			1880	-16.85	-13	-3.85
			1908.5	-14.82	-13	-1.82
	1.4	16QAM	1850.7	-16.69	-13	-3.69
			1880	-19.24	-13	-6.24
			1909.3	-15.87	-13	-2.87
		QPSK	1850.7	-14.20	-13	-1.20
			1880	-17.11	-13	-4.11
			1909.3	-14.66	-13	-1.66

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LTE Band 4

Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE4	20	16QAM	1720	-27.55	-13	-14.55
			1732.5	-26.59	-13	-13.59
			1745	-26.84	-13	-13.84
		QPSK	1720	-26.89	-13	-13.89
			1732.5	-27.78	-13	-14.78
			1745	-27.78	-13	-14.78
	15	16QAM	1717.5	-26.89	-13	-13.89
			1732.5	-27.24	-13	-14.24
			1747.5	-27.21	-13	-14.21
		QPSK	1717.5	-27.23	-13	-14.23
			1732.5	-27.63	-13	-14.63
			1747.5	-28.22	-13	-15.22
	10	16QAM	1715	-27.09	-13	-14.09
			1732.5	-27.59	-13	-14.59
			1750	-27.81	-13	-14.81
		QPSK	1715	-27.70	-13	-14.70
			1732.5	-27.60	-13	-14.60
			1750	-27.28	-13	-14.28
	5	16QAM	1712.5	-27.72	-13	-14.72
			1732.5	-27.18	-13	-14.18
			1752.5	-27.77	-13	-14.77
		QPSK	1712.5	-26.84	-13	-13.84
			1732.5	-27.08	-13	-14.08
			1752.5	-27.34	-13	-14.34

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Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE4	3	16QAM	1711.5	-27.55	-13	-14.55
			1732.5	-27.56	-13	-14.56
			1753.5	-26.35	-13	-13.35
		QPSK	1711.5	-27.73	-13	-14.73
			1732.5	-25.35	-13	-12.35
			1753.5	-27.47	-13	-14.47
	1.4	16QAM	1710.7	-26.53	-13	-13.53
			1732.5	-26.89	-13	-13.89
			1754.3	-27.61	-13	-14.61
		QPSK	1710.7	-26.99	-13	-13.99
			1732.5	-26.15	-13	-13.15
			1754.3	-28.24	-13	-15.24

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LTE Band 5

Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE5	10	16QAM	829	-22.19	-13	-9.19
			836.5	-21.51	-13	-8.51
			844	-21.95	-13	-8.95
		QPSK	829	-22.25	-13	-9.25
			836.5	-21.93	-13	-8.93
			844	-22.65	-13	-9.65
	5	16QAM	826.5	-22.44	-13	-9.44
			836.5	-22.04	-13	-9.04
			846.5	-22.24	-13	-9.24
		QPSK	826.5	-21.97	-13	-8.97
			836.5	-20.68	-13	-7.68
			846.5	-22.52	-13	-9.52
	3	16QAM	825.5	-21.95	-13	-8.95
			836.5	-22.33	-13	-9.33
			847.5	-21.87	-13	-8.87
		QPSK	825.5	-22.55	-13	-9.55
			836.5	-22.04	-13	-9.04
			847.5	-22.41	-13	-9.41
	1.4	16QAM	824.7	-22.46	-13	-9.46
			836.5	-22.42	-13	-9.42
			848.3	-22.71	-13	-9.71
		QPSK	824.7	-22.36	-13	-9.36
			836.5	-21.81	-13	-8.81
			848.3	-21.70	-13	-8.70

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LTE Band 7

Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE7	20	16QAM	2510	-29.31	-25	-4.31
			2535	-30.01	-25	-5.01
			2560	-29.71	-25	-4.71
		QPSK	2510	-30.23	-25	-5.23
			2535	-30.20	-25	-5.20
			2560	-29.66	-25	-4.66
	15	16QAM	2507.5	-29.55	-25	-4.55
			2535	-29.62	-25	-4.62
			2562.5	-30.41	-25	-5.41
		QPSK	2507.5	-30.44	-25	-5.44
			2535	-30.07	-25	-5.07
			2562.5	-30.49	-25	-5.49
	10	16QAM	2505	-29.85	-25	-4.85
			2535	-30.01	-25	-5.01
			2565	-30.20	-25	-5.20
		QPSK	2505	-29.56	-25	-4.56
			2535	-29.13	-25	-4.13
			2565	-29.18	-25	-4.18
	5	16QAM	2502.5	-29.43	-25	-4.43
			2535	-29.65	-25	-4.65
			2567.5	-30.21	-25	-5.21
		QPSK	2502.5	-31.32	-25	-6.32
			2535	-30.12	-25	-5.12
			2567.5	-29.49	-25	-4.49

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LTE Band 17

Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE17	10	16QAM	709	-21.59	-13	-8.59
			710	-22.76	-13	-9.76
			711	-22.59	-13	-9.59
		QPSK	709	-22.32	-13	-9.32
			710	-22.18	-13	-9.18
			711	-21.29	-13	-8.29
	5	16QAM	706.5	-20.16	-13	-7.16
			710	-22.2	-13	-9.2
			713.5	-22.06	-13	-9.06
		QPSK	706.5	-22.78	-13	-9.78
			710	-22.07	-13	-9.07
			713.5	-22.19	-13	-9.19

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LTE Band 26

Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE26	15	16QAM	831.5	-21.48	-13	-8.48
			836.5	-26.22	-13	-13.22
			841.5	-22.03	-13	-9.03
		QPSK	831.5	-21.39	-13	-8.39
			836.5	-24.23	-13	-11.23
			841.5	-22.60	-13	-9.60
	10	16QAM	819	-22.09	-13	-9.09
			831.5	-22.13	-13	-9.13
			844	-21.99	-13	-8.99
		QPSK	819	-21.98	-13	-8.98
			831.5	-21.94	-13	-8.94
			844	-21.86	-13	-8.86
	5	16QAM	816.5	-20.72	-13	-7.72
			831.5	-22.89	-13	-9.89
			846.5	-22.10	-13	-9.10
		QPSK	816.5	-22.13	-13	-9.13
			831.5	-20.30	-13	-7.30
			846.5	-22.00	-13	-9.00
	3	16QAM	815.5	-21.77	-13	-8.77
			831.5	-22.15	-13	-9.15
			847.5	-21.76	-13	-8.76
		QPSK	815.5	-22.21	-13	-9.21
			831.5	-22.28	-13	-9.28
			847.5	-22.66	-13	-9.66
	1.4	16QAM	814.7	-21.19	-13	-8.19
			831.5	-22.57	-13	-9.57
			848.3	-22.71	-13	-9.71
		QPSK	814.7	-22.74	-13	-9.74
			831.5	-21.85	-13	-8.85
			848.3	-21.53	-13	-8.53

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LTE Band 41

Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE41	20	16QAM	2506	-33.18	-25	-8.18
			2593	-33.34	-25	-8.34
			2680	-33.76	-25	-8.76
		QPSK	2506	-34.11	-25	-9.11
			2593	-34.30	-25	-9.30
			2680	-34.39	-25	-9.39
	15	16QAM	2503.5	-33.27	-25	-8.27
			2593	-33.81	-25	-8.81
			2682.5	-34.23	-25	-9.23
		QPSK	2503.5	-33.84	-25	-8.84
			2593	-34.10	-25	-9.10
			2682.5	-30.62	-25	-5.62
	10	16QAM	2501	-34.08	-25	-9.08
			2593	-34.09	-25	-9.09
			2685	-34.28	-25	-9.28
		QPSK	2501	-34.08	-25	-9.08
			2593	-33.75	-25	-8.75
			2685	-33.55	-25	-8.55
	5	16QAM	2498.5	-33.65	-25	-8.65
			2593	-33.26	-25	-8.26
			2687.5	-34.75	-25	-9.75
		QPSK	2498.5	-34.10	-25	-9.10
			2593	-34.21	-25	-9.21
			2687.5	-34.24	-25	-9.24

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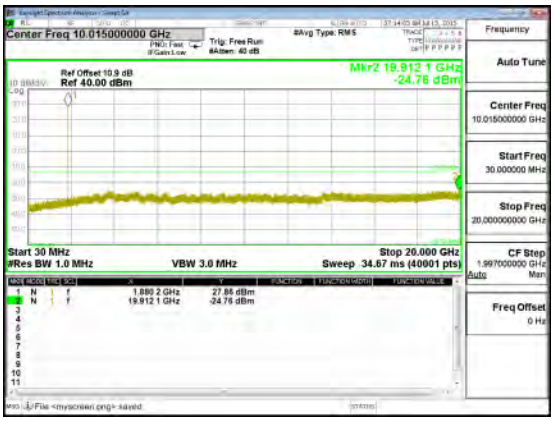
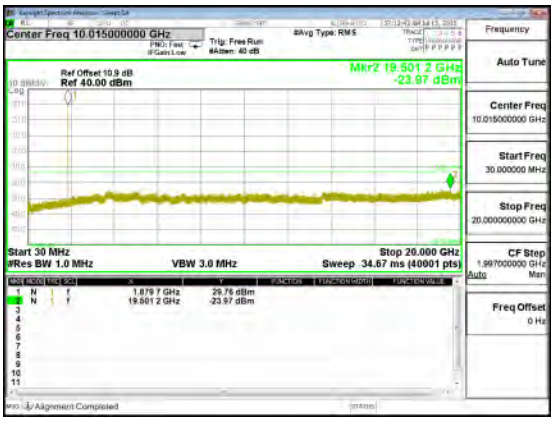
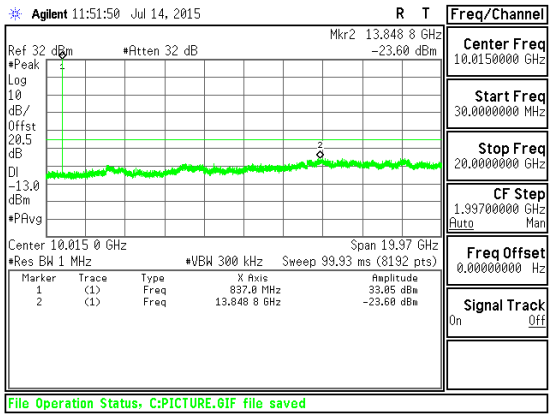
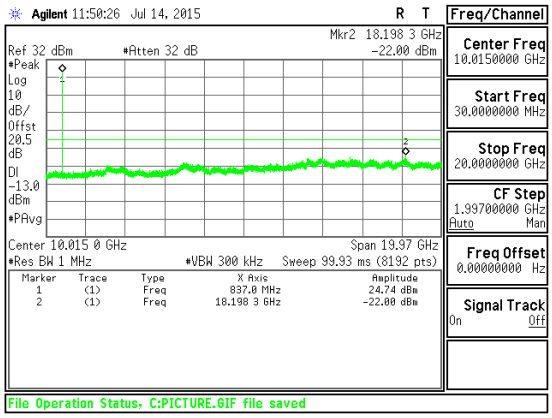
10.3.2. OUT OF BAND EMISSIONS PLOTS

GSM

Band GSM1900 EGPRS	 Band GSM1900 EGPRS CSE Mid channel	 Band GSM1900 GPRS CSE Mid channel
Band GSM850 EGPRS	 Band GSM850 EGPRS CSE Mid channel	 Band GSM850 GPRS CSE Mid channel

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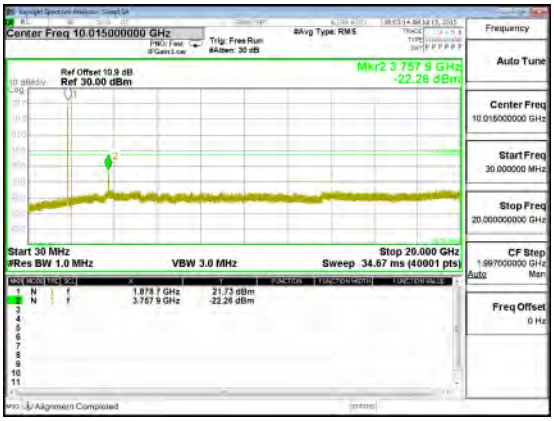
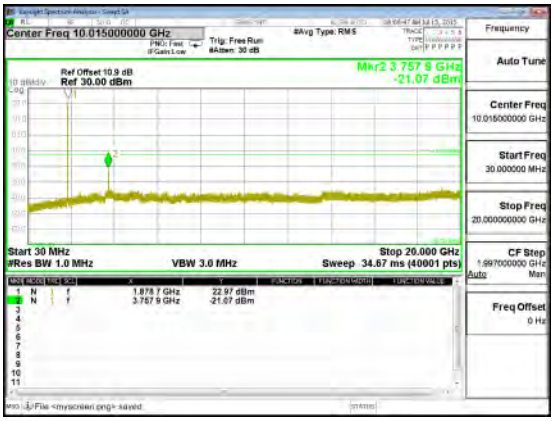
WCDMA

Band Band 2 HSDPA	 Band WCDMA B2 HSDPA CSE	 Band WCDMA B2 REL99 CSE

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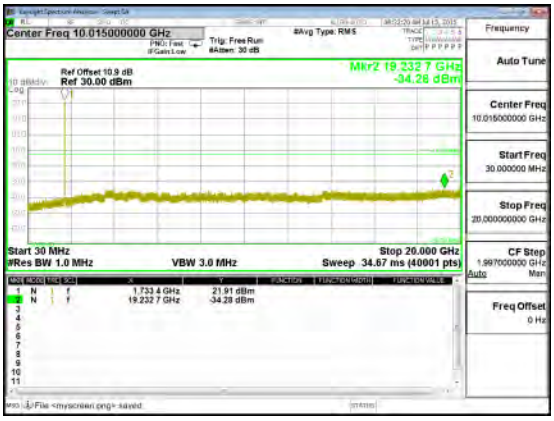
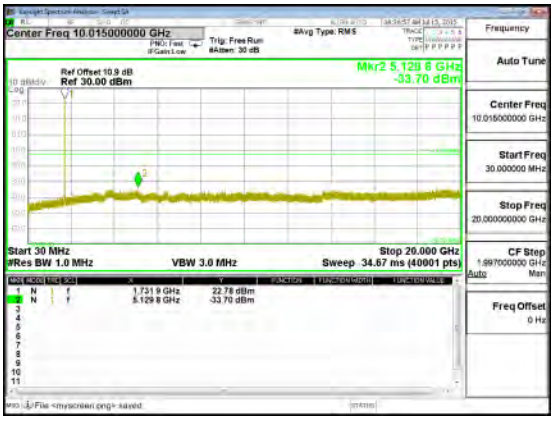
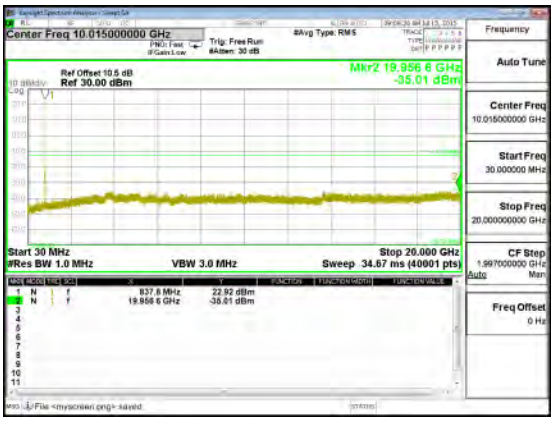
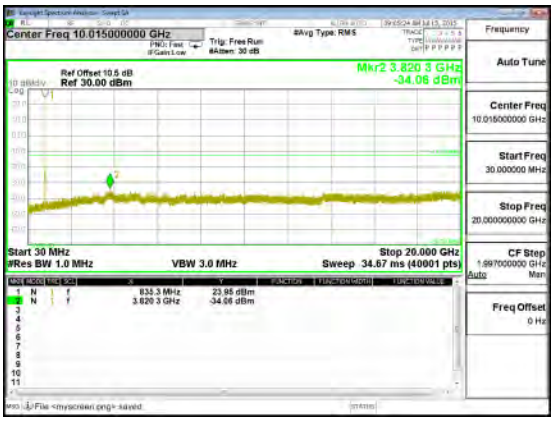
Band Band 4 HSDPA	 Band WCDMA B4 HSDPA CSE	 Band WCDMA B4 REL99 CSE
Band Band 5 HSDPA	 Band WCDMA B5 HSDPA CSE	 Band WCDMA B5 REL99 CSE

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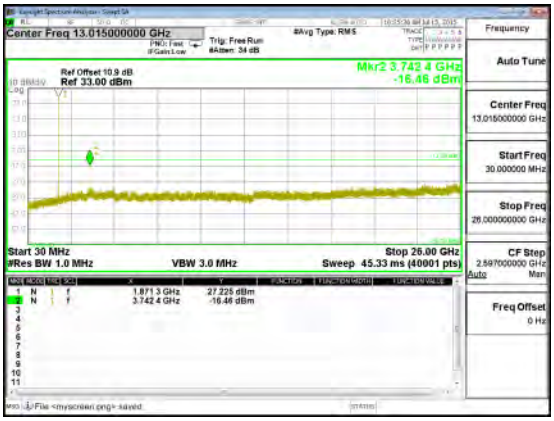
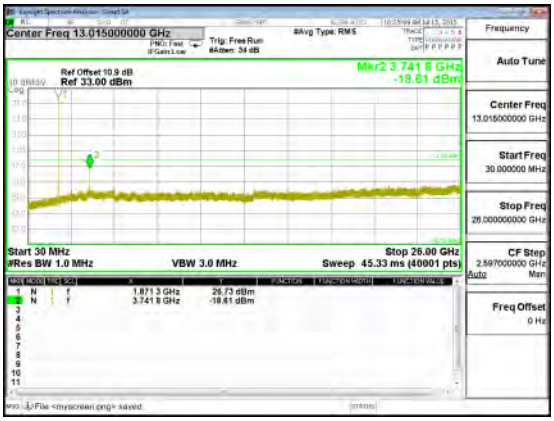
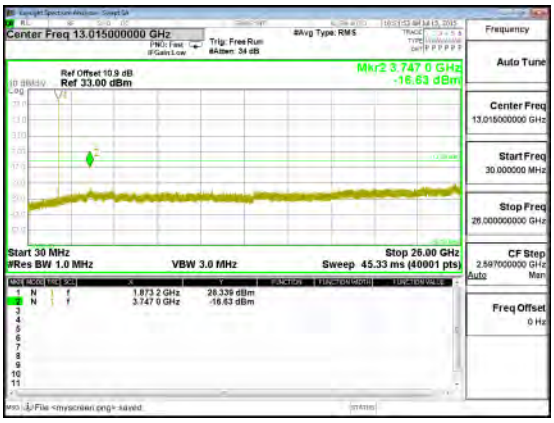
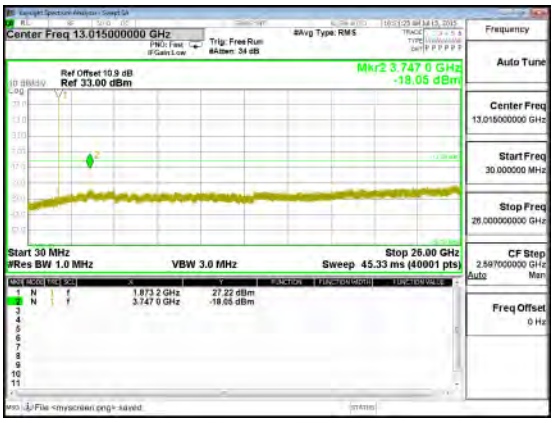
LTE Band 2

Band LTE2 20MHz 16QAM	 Band LTE2 20MHz CSE 16QAM Mid channel	 Band LTE2 20MHz CSE QPSK Mid channel
Band LTE2 15MHz 16QAM	 Band LTE2 15MHz CSE 16QAM Mid channel	 Band LTE2 15MHz CSE QPSK Mid channel

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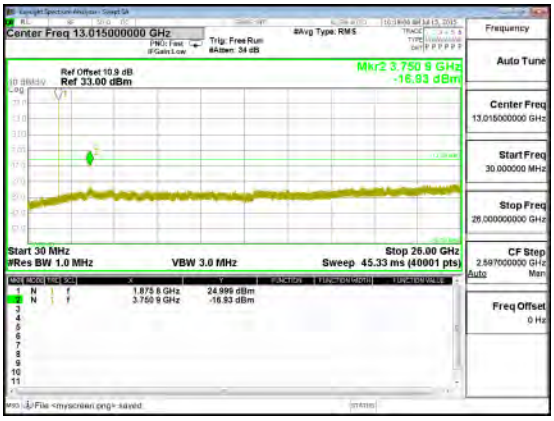
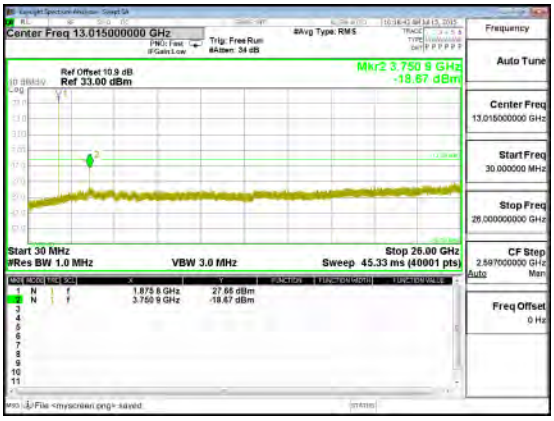
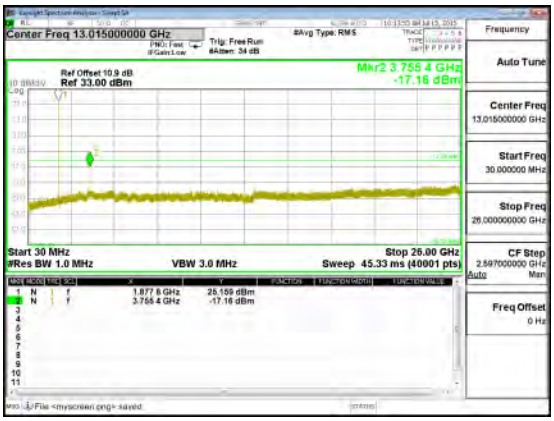
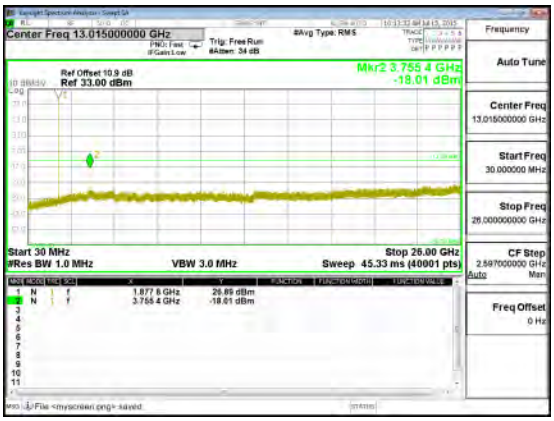
Band LTE2 10MHz 16QAM	 Band LTE2 10MHz CSE 16QAM Mid channel	 Band LTE2 10MHz CSE QPSK Mid channel
Band LTE2 5MHz 16QAM	 Band LTE2 5MHz CSE 16QAM Mid channel	 Band LTE2 5MHz CSE QPSK Mid channel

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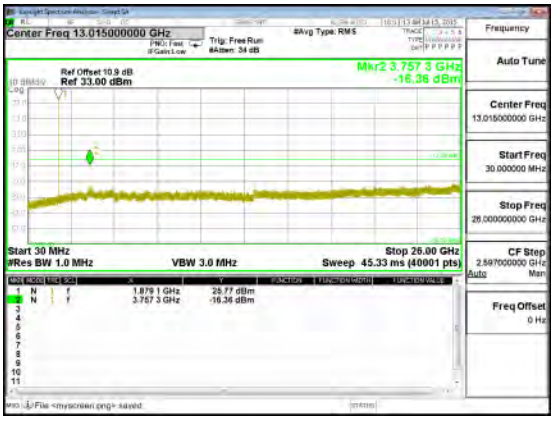
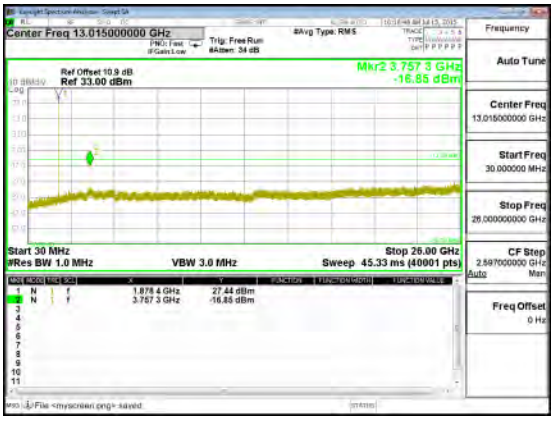
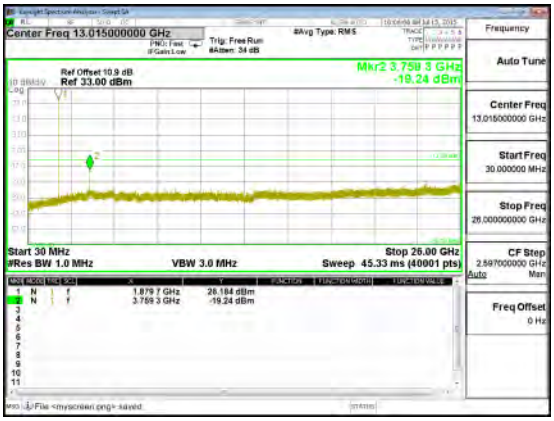
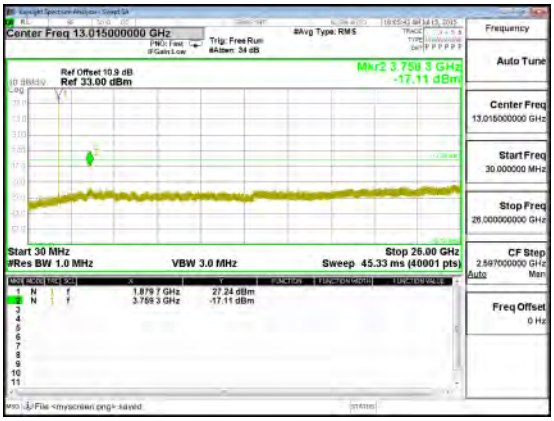
Band LTE2 3MHz 16QAM	 Band LTE2 3MHz CSE 16QAM Mid channel	 Band LTE2 3MHz CSE QPSK Mid channel
Band LTE2 1.4MHz 16QAM	 Band LTE2 1.4MHz CSE 16QAM Mid channel	 Band LTE2 1.4MHz CSE QPSK Mid channel

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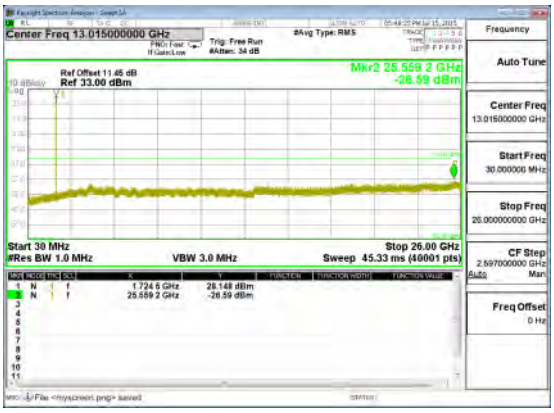
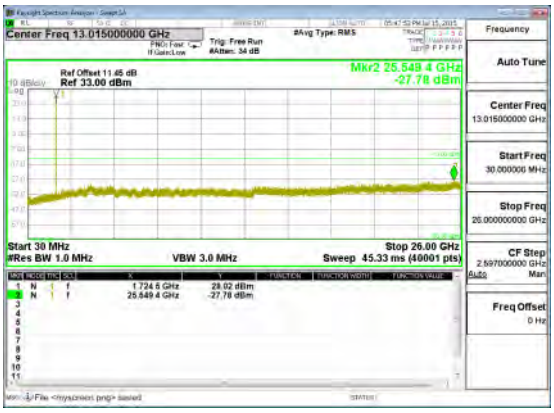
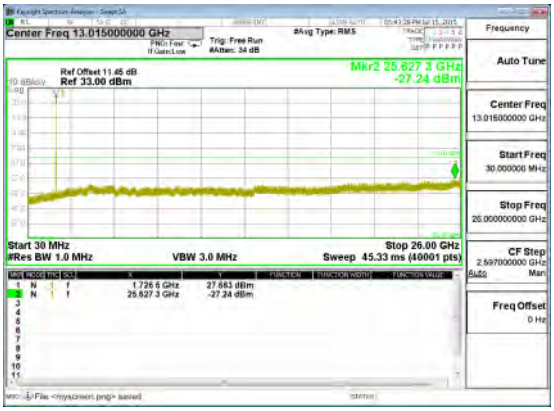
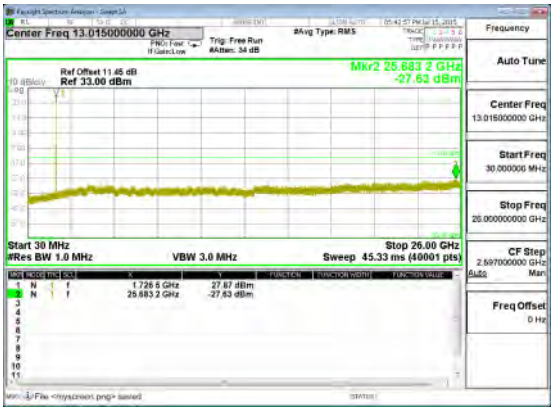
LTE Band 4

Band LTE4 20MHz 16QAM	 Band LTE4 20MHz CSE 16QAM Mid channel	 Band LTE4 20MHz CSE QPSK Mid channel
Band LTE4 15MHz 16QAM	 Band LTE4 15MHz CSE 16QAM Mid channel	 Band LTE4 15MHz CSE QPSK Mid channel

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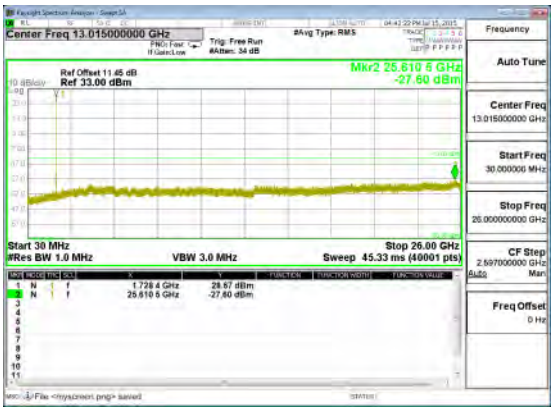
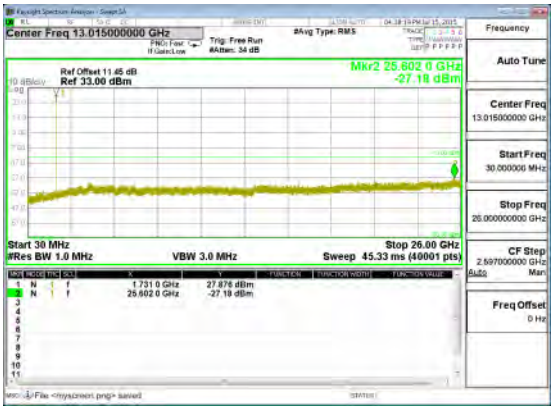
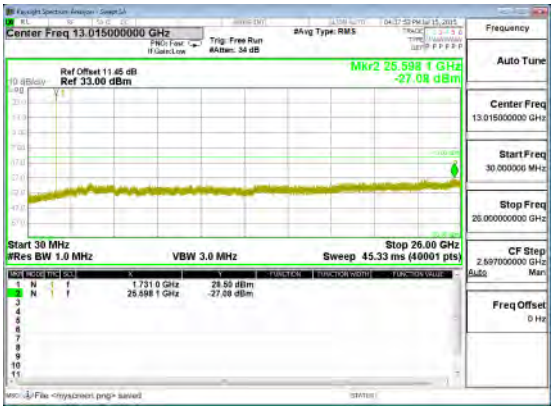
Band LTE4 10MHz 16QAM	 Band LTE4 10MHz CSE 16QAM Mid channel	 Band LTE4 10MHz CSE QPSK Mid channel
Band LTE4 5MHz 16QAM	 Band LTE4 5MHz CSE 16QAM Mid channel	 Band LTE4 5MHz CSE QPSK Mid channel

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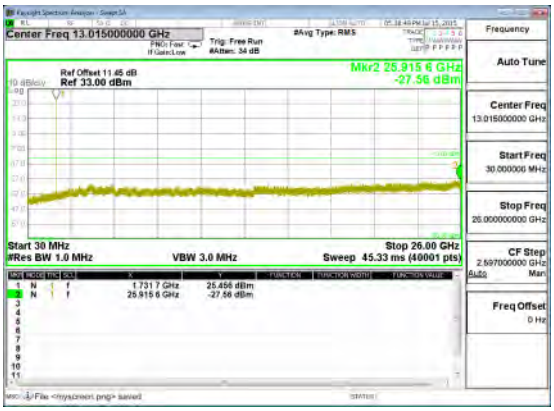
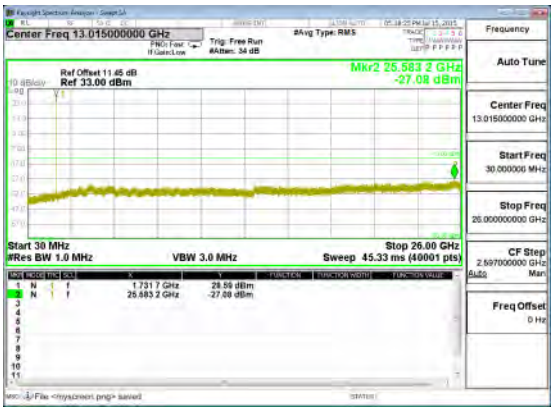
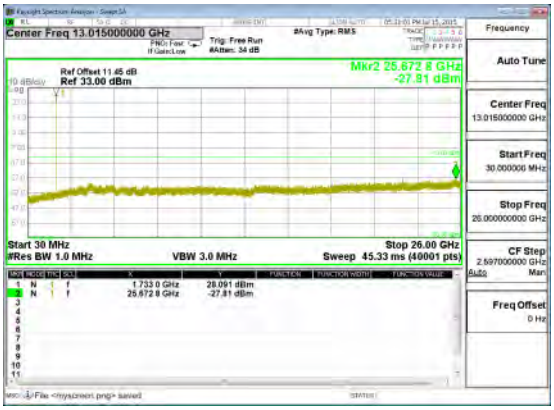
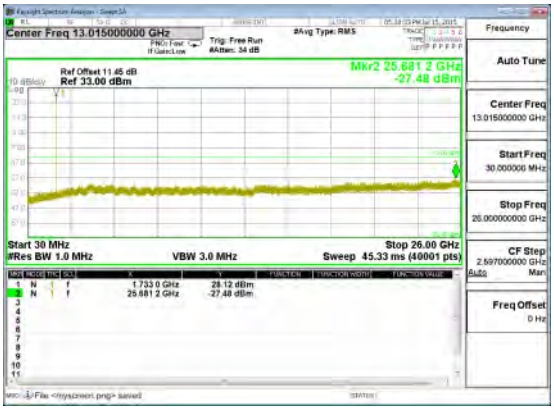
Band LTE4 3MHz 16QAM	 Band LTE4 3MHz CSE 16QAM Mid channel	 Band LTE4 3MHz CSE QPSK Mid channel
Band LTE4 1.4MHz 16QAM	 Band LTE4 1.4MHz CSE 16QAM Mid channel	 Band LTE4 1.4MHz CSE QPSK Mid channel

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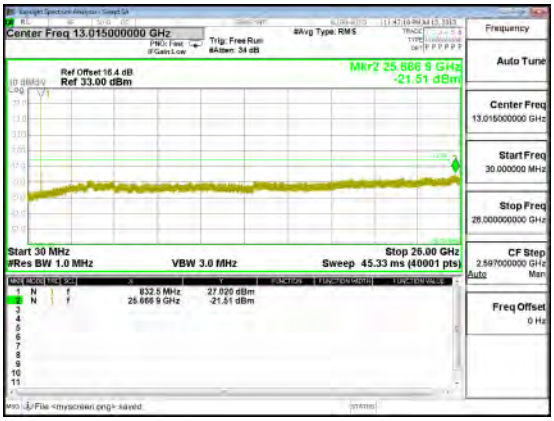
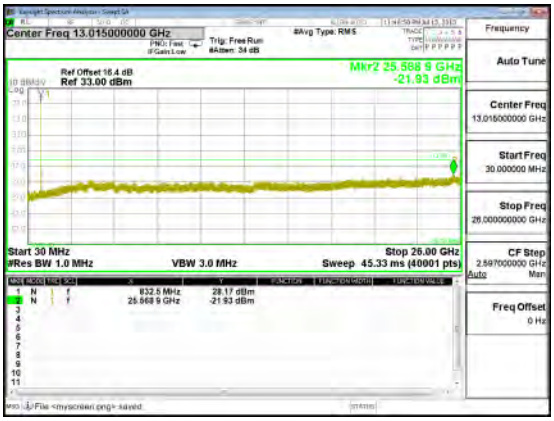
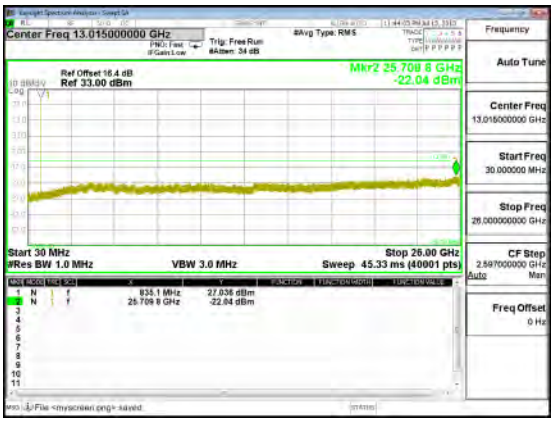
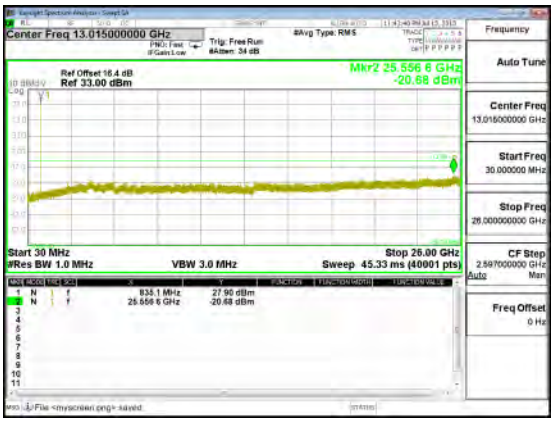
LTE Band 5

Band LTE5 10MHz 16QAM	 Band LTE5 10MHz CSE 16QAM Mid channel	 Band LTE5 10MHz CSE QPSK Mid channel
Band LTE5 5MHz 16QAM	 Band LTE5 5MHz CSE 16QAM Mid channel	 Band LTE5 5MHz CSE QPSK Mid channel

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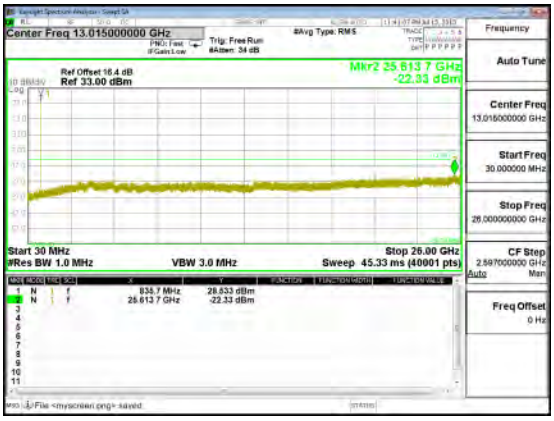
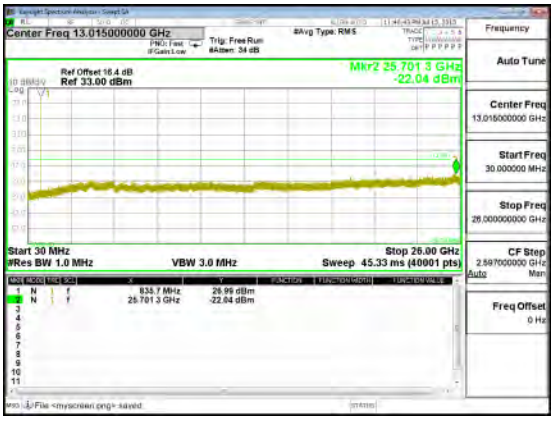
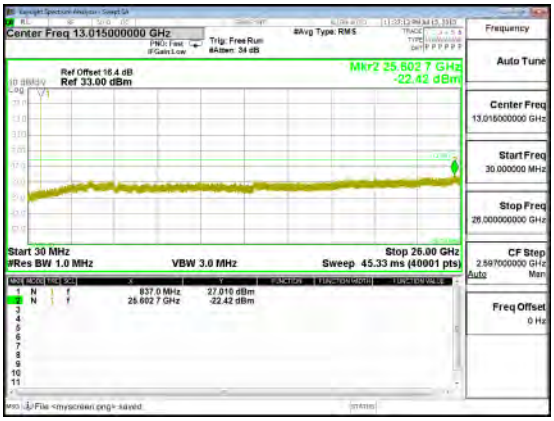
Band LTE5 3MHz 16QAM	 Band LTE5 3MHz CSE 16QAM Mid channel	 Band LTE5 3MHz CSE QPSK Mid channel
Band LTE5 1.4MHz 16QAM	 Band LTE5 1.4MHz CSE 16QAM Mid channel	 Band LTE5 1.4MHz CSE QPSK Mid channel

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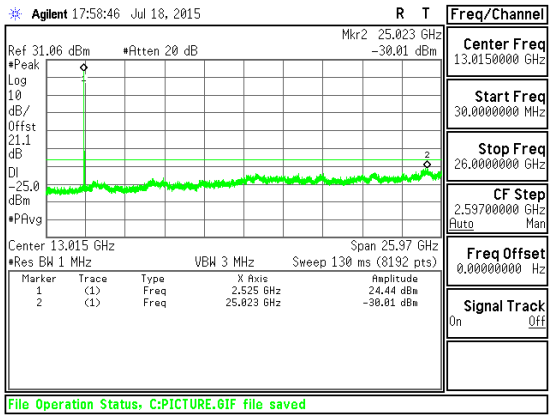
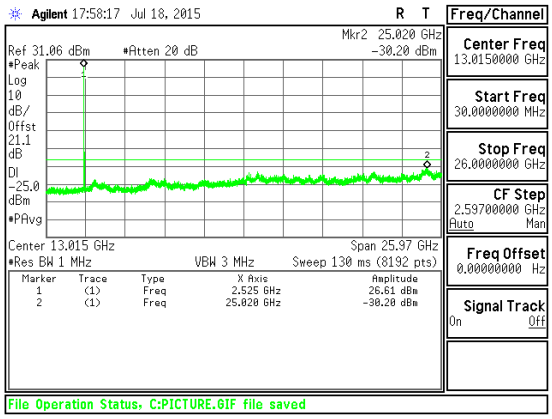
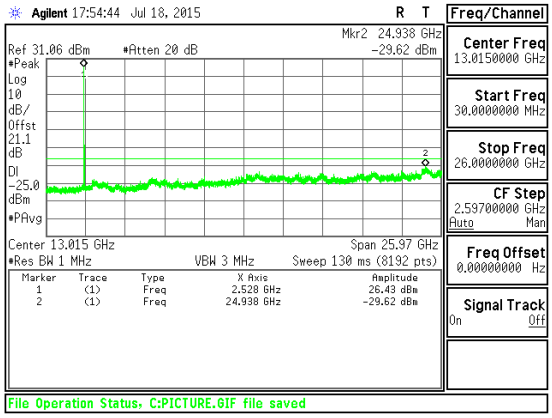
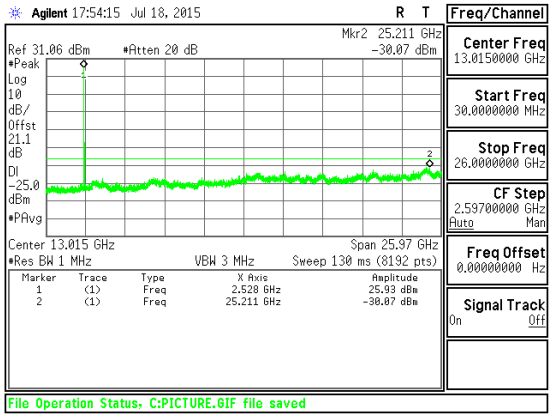
LTE Band 7

Band LTE7 20MHz 16QAM	 Band LTE7 20MHz CSE 16QAM Mid channel	 Band LTE7 20MHz CSE QPSK Mid channel
Band LTE7 15MHz 16QAM	 Band LTE7 15MHz CSE 16QAM Mid channel	 Band LTE7 15MHz CSE QPSK Mid channel

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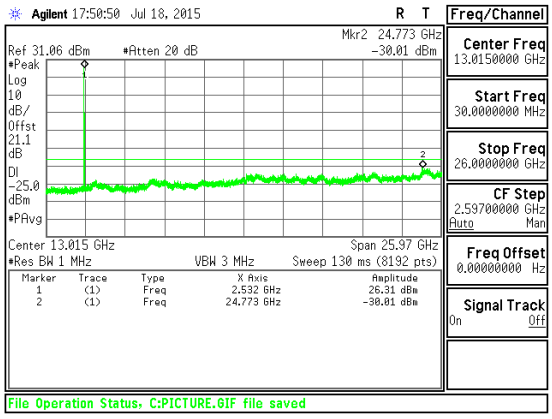
Band

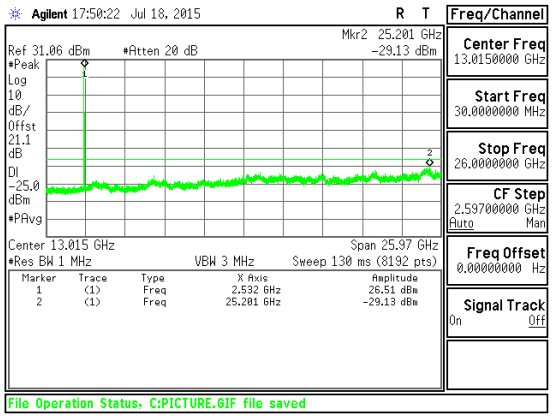
LTE7

10MHz

16QAM



Band LTE7 10MHz CSE 16QAM Mid channel



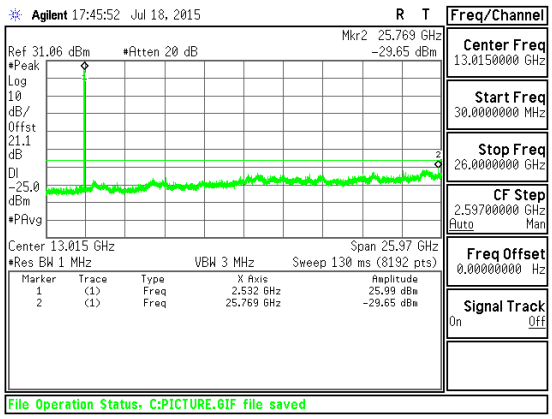
Band LTE7 10MHz CSE QPSK Mid channel

Band

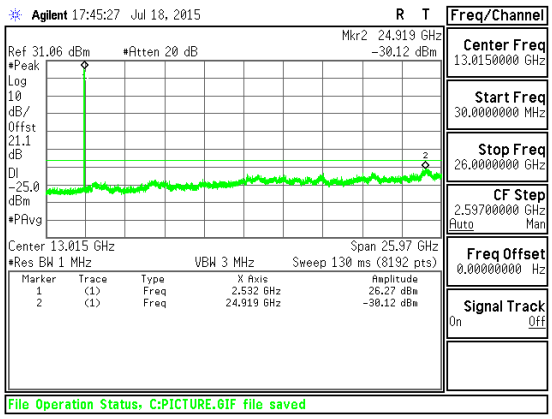
LTE7

5MHz

16QAM



Band LTE7 5MHz CSE 16QAM Mid channel



Band LTE7 5MHz CSE QPSK Mid channel

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888

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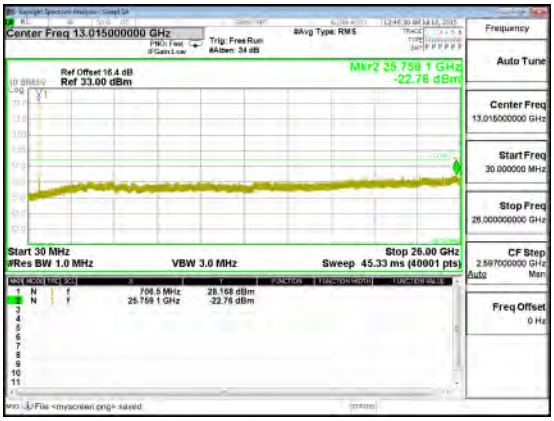
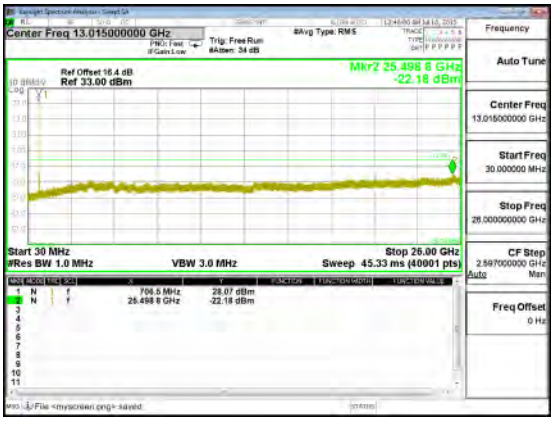
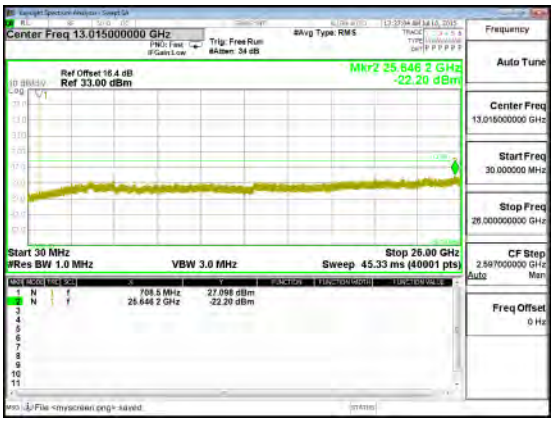
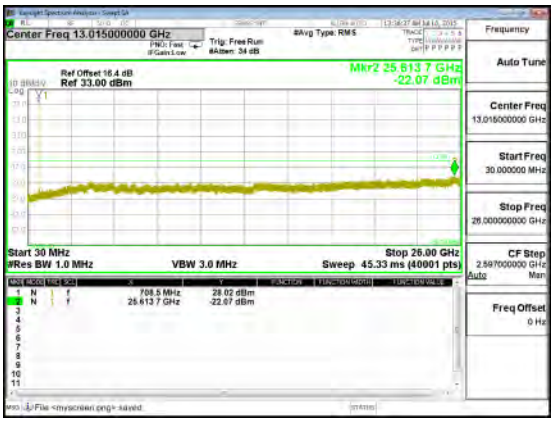
LTE Band 17

Band LTE17 10MHz 16QAM	 Band LTE17 10MHz CSE 16QAM Mid channel	 Band LTE17 10MHz CSE QPSK Mid channel

Band LTE17 5MHz 16QAM	 Band LTE17 5MHz CSE 16QAM Mid channel	 Band LTE17 5MHz CSE QPSK Mid channel

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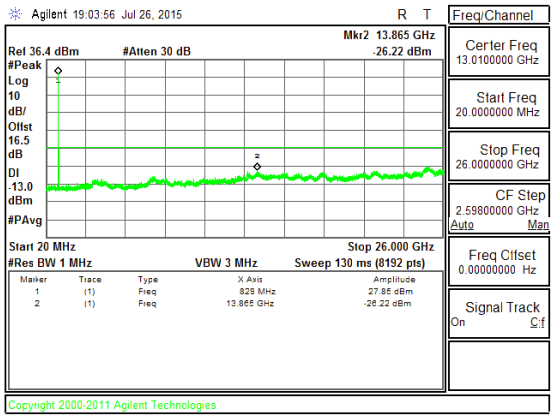
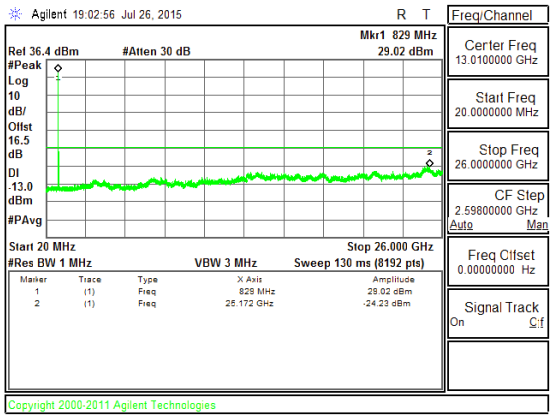
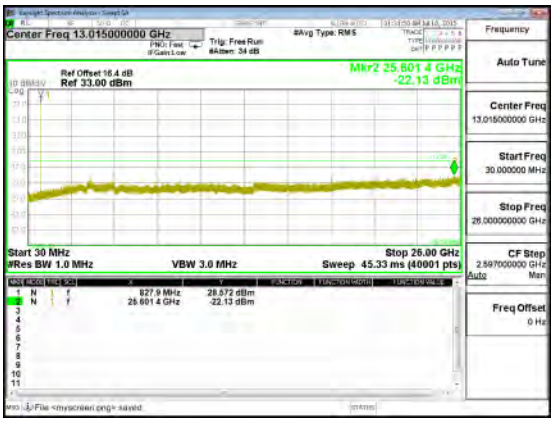
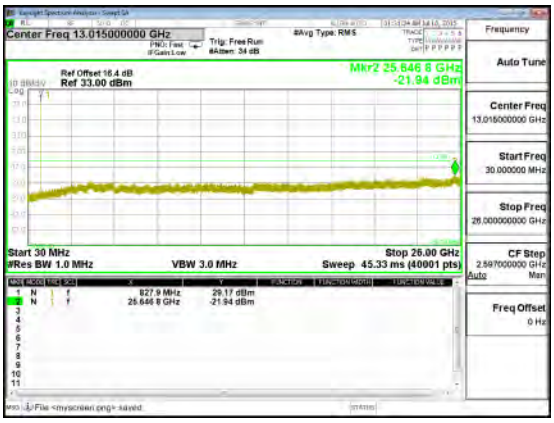
LTE Band 26

Band LTE26 15MHz 16QAM	 Band LTE26 15MHz CSE 16QAM Mid channel	 Band LTE26 15MHz CSE QPSK Mid channel
Band LTE26 10MHz 16QAM	 Band LTE26 10MHz CSE 16QAM Mid channel	 Band LTE26 10MHz CSE QPSK Mid channel

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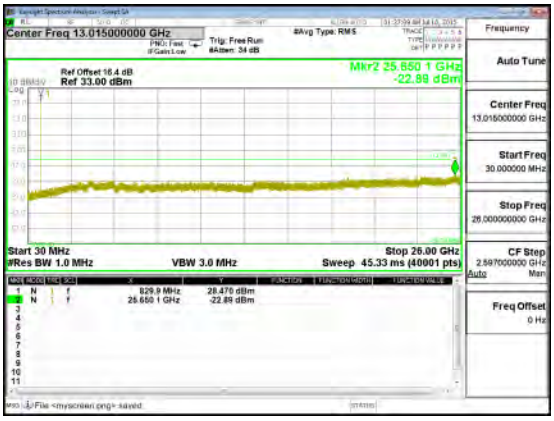
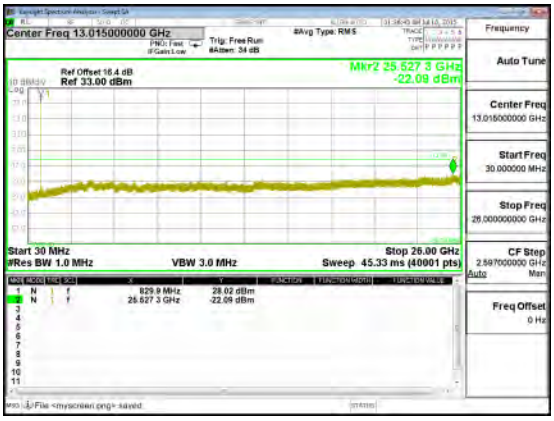
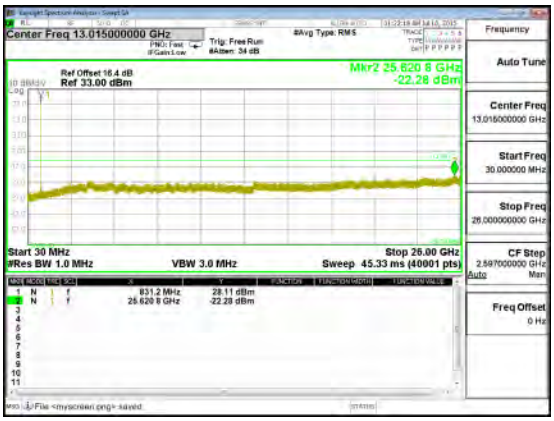
Band LTE26 5MHz 16QAM	 Band LTE26 5MHz CSE 16QAM Mid channel	 Band LTE26 5MHz CSE QPSK Mid channel
Band LTE26 3MHz 16QAM	 Band LTE26 3MHz CSE 16QAM Mid channel	 Band LTE26 3MHz CSE QPSK Mid channel

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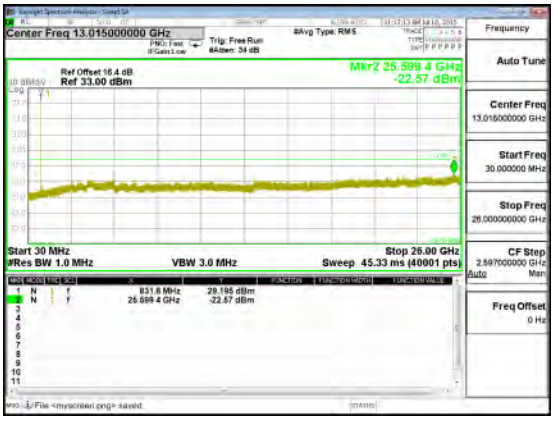
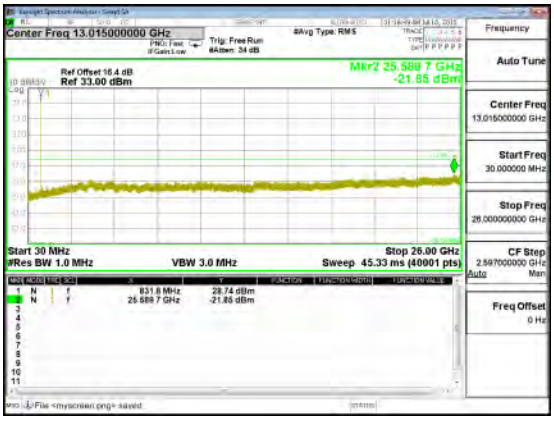
Band LTE26 1.4MHz 16QAM	 Band LTE26 1.4MHz CSE 16QAM Mid channel	 Band LTE26 1.4MHz CSE QPSK Mid channel

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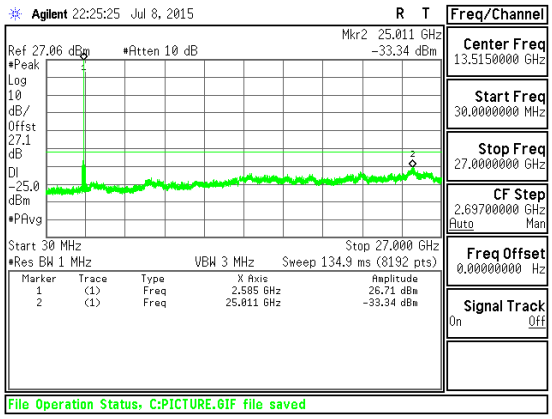
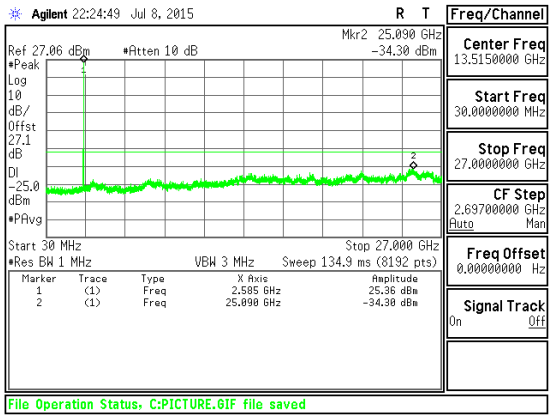
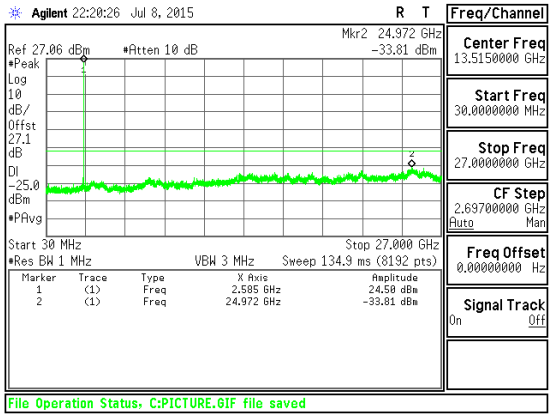
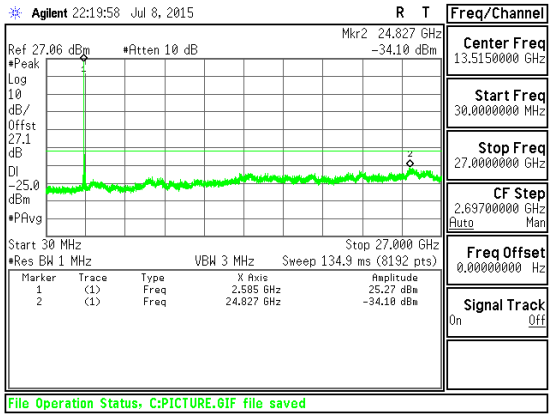
LTE Band 41

Band LTE41 20MHz 16QAM	 Band LTE41 20MHz CSE 16QAM Mid channel	 Band LTE41 20MHz CSE QPSK Mid channel
Band LTE41 15MHz 16QAM	 Band LTE41 15MHz CSE 16QAM Mid channel	 Band LTE41 15MHz CSE QPSK Mid channel

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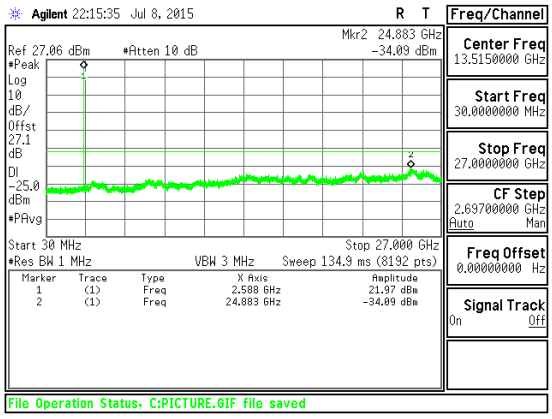
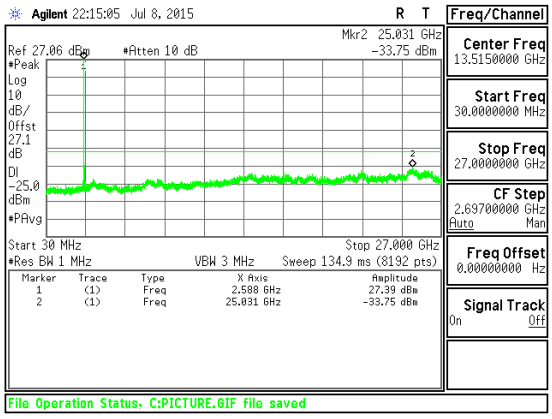
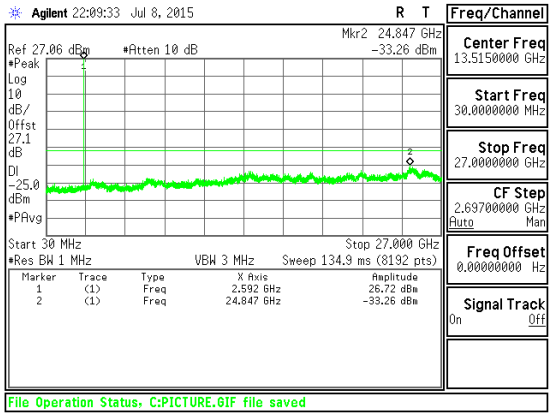
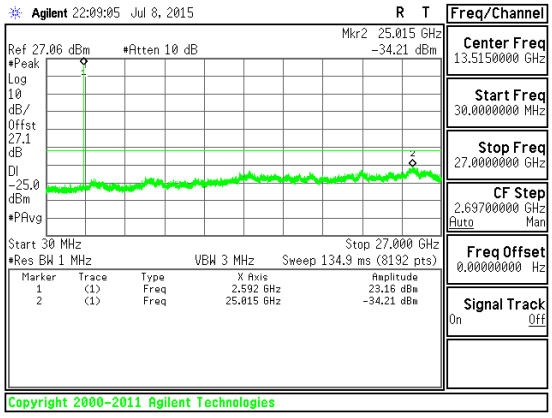
Band LTE41 10MHz 16QAM	 Band LTE41 10MHz CSE 16QAM Mid channel	 Band LTE41 10MHz CSE QPSK Mid channel
Band LTE41 5MHz 16QAM	 Band LTE41 5MHz CSE 16QAM Mid channel	 Band LTE41 5MHz CSE QPSK Mid channel

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10.4. FREQUENCY STABILITY

RULE PART(S)

FCC: §2.1055, §22.355, §24.235, §27.54 and §90.213

LIMITS

§22.355 - The carrier frequency shall not depart from the reference frequency in excess of ±2.5 ppm for mobile stations.

§24.235 - The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

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

§90.213 - The carrier frequency shall not depart from the reference frequency in excess of ±2.5 ppm for mobile stations.

TEST PROCEDURE

Per KDB 971168 D01 Power Meas License Digital Systems v02r02

MODES TESTED

GSM and LTE

RESULTS

See the following pages.

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10.4.1. FREQUENCY STABILITY RESULTS

GSM 850

Reference Frequency: GSM850 Mid Channel		836.6	MHz @ 20°C	
Limit: to stay +- 2.5 ppm =		2091.500	Hz	
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse (MHz)	Delta (ppm)	Limit (ppm)
3.80	50	836.600027	-0.003	2.5
3.80	40	836.600027	-0.003	2.5
3.80	30	836.600026	-0.002	2.5
3.80	***20***	**836.600024**	**0**	***2.5***
3.80	10	836.600027	-0.003	2.5
3.80	0	836.600028	-0.005	2.5
3.80	-10	836.600024	0.000	2.5
3.80	-20	836.600028	-0.004	2.5
3.80	-30	836.600027	-0.003	2.5

Reference Frequency: GSM850 Mid Channel		836.6	MHz @ 20°C	
Limit: to stay +- 2.5 ppm =		2091.500	Hz	
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measured with Time Elapse (MHz)	Delta (ppm)	Limit (ppm)
3.80	***20***	***836.600024***	***0***	***2.5***
4.37	20	836.600023	*0.001*	2.5
3.23	20	836.600032	*-0.009*	2.5

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GSM1900

Reference Frequency: GSM1900 Mid Channel		1880	MHz @ 20°C	
Limit: to stay +- 2.5 ppm =		4700.000	Hz	
Power Supply	Environment	Frequency Deviation Measureed with Time Elapse		
(Vdc)	Temperature (°C)	(MHz)	Delta (ppm)	Limit (ppm)
3.80	50	1880.000039	0.005	2.5
3.80	40	1880.000026	0.012	2.5
3.80	30	1880.000037	0.006	2.5
3.80	***20***	**1880.000049**	**0**	***2.5***
3.80	10	1880.000036	0.007	2.5
3.80	0	1880.000036	0.007	2.5
3.80	-10	1880.000027	0.012	2.5
3.80	-20	1880.000045	0.002	2.5
3.80	-30	1880.000041	0.004	2.5

Reference Frequency: GSM1900 Mid Channel		1880	MHz @ 20°C	
Limit: to stay +- 2.5 ppm =		4700.000	Hz	
Power Supply	Environment	Frequency Deviation Measured with Time Elapse		
(Vdc)	Temperature (°C)	(MHz)	Delta (ppm)	Limit (ppm)
3.80	***20***	***1880.000049***	***0***	***2.5***
4.37	20	1880.000047	*0.001*	2.5
3.23	20	1880.000054	*-0.003*	2.5

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LTE Band 4

Reference Frequency: LTE Band 4 Mid Channel		1732.5	MHz @ 20°C	
Limit: to stay +- 2.5 ppm =		4331.250	Hz	
Power Supply	Environment	Frequency Deviation Measureed with Time Elapse		
(Vdc)	Temperature (°C)	(MHz)	Delta (ppm)	Limit (ppm)
3.80	50	1732.500006	-0.006	2.5
3.80	40	1732.500005	-0.006	2.5
3.80	30	1732.500005	-0.006	2.5
3.80	***20***	**1732.499995**	**0**	***2.5***
3.80	10	1732.500006	-0.006	2.5
3.80	0	1732.500006	-0.006	2.5
3.80	-10	1732.500005	-0.006	2.5
3.80	-20	1732.500007	-0.007	2.5
3.80	-30	1732.500006	-0.006	2.5

Reference Frequency: LTE Band 4 Mid Channel		1732.5	MHz @ 20°C	
Limit: to stay +- 2.5 ppm =		4331.250	Hz	
Power Supply	Environment	Frequency Deviation Measured with Time Elapse		
(Vdc)	Temperature (°C)	(MHz)	Delta (ppm)	Limit (ppm)
3.80	***20***	***1732.499995***	***0***	***2.5***
4.37	20	1732.500006	*-0.006*	2.5
3.23	20	1732.500006	*-0.006*	2.5

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LTE Band 7

Reference Frequency: LTE Band 7 Mid Channel		2535	MHz @ 20°C	
Limit: to stay +- 2.5 ppm =		6337.500	Hz	
Power Supply	Environment	Frequency Deviation Measureed with Time Elapse		
(Vdc)	Temperature (°C)	(MHz)	Delta (ppm)	Limit (ppm)
3.80	50	2534.999989	0.000	2.5
3.80	40	2534.999988	0.000	2.5
3.80	30	2534.999966	0.009	2.5
3.80	***20***	**2534.999989**	**0**	***2.5***
3.80	10	2534.999991	-0.001	2.5
3.80	0	2534.999990	-0.001	2.5
3.80	-10	2534.999989	0.000	2.5
3.80	-20	2534.999990	-0.001	2.5
3.80	-30	2534.999992	-0.001	2.5

Reference Frequency: LTE Band 7 Mid Channel		2535	MHz @ 20°C	
Limit: to stay +- 2.5 ppm =		6337.500	Hz	
Power Supply	Environment	Frequency Deviation Measured with Time Elapse		
(Vdc)	Temperature (°C)	(MHz)	Delta (ppm)	Limit (ppm)
3.80	***20***	***2534.999989***	***0***	***2.5***
4.37	20	2534.999989	*0.000*	2.5
3.23	20	2534.999990	*-0.001*	2.5

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LTE Band 17

Reference Frequency: LTE Band 17 Mid Channel		710	MHz @ 20°C	
Limit: to stay +- 2.5 ppm =		1775.000	Hz	
Power Supply	Environment	Frequency Deviation Measureed with Time Elapse		
(Vdc)	Temperature (°C)	(MHz)	Delta (ppm)	Limit (ppm)
3.80	50	709.999997	0.009	2.5
3.80	40	710.000003	0.000	2.5
3.80	30	709.999997	0.009	2.5
3.80	***20***	**710.000003**	**0**	***2.5***
3.80	10	710.000003	0.000	2.5
3.80	0	710.000003	0.000	2.5
3.80	-10	710.000007	-0.005	2.5
3.80	-20	710.000010	-0.010	2.5
3.80	-30	709.999997	0.009	2.5

Reference Frequency: LTE Band 17 Mid Channel		710	MHz @ 20°C	
Limit: to stay +- 2.5 ppm =		1775.000	Hz	
Power Supply	Environment	Frequency Deviation Measured with Time Elapse		
(Vdc)	Temperature (°C)	(MHz)	Delta (ppm)	Limit (ppm)
3.80	***20***	***710.000003***	***0***	***2.5***
4.37	20	709.999997	*0.009*	2.5
3.23	20	709.999997	*0.009*	2.5

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11. RADIATED TEST RESULTS

11.1. RADIATED POWER (ERP & EIRP)

RULE PART(S)

FCC: §2.1046, §22.913, §24.232, §27 and § 90.635.

LIMITS

22.913(a) - The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

24.232(c) - Mobile/portable stations are limited to 2 watts e.i.r.p. peak power and the equipment must employ means to limit the power to the minimum necessary for successful communications.

27.50(b) - (10) Portable stations (hand-held devices) transmitting in the 746-757 MHz, 776-788 MHz, and 805-806 MHz bands are limited to 3 watts ERP. (LTE B13)

27.50(c) - (10) Portable stations (hand-held devices) are limited to 3 watts ERP; (LTE B17)

27.50(d) - (4) Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP.(Band 4)

27.50(h) - (2) Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.(LTE B41 & 7)

90.635(b) - The maximum output power of the transmitter for mobile stations is 100 watts (20 dBw). (LTE B26)

In addition, when the transmitter power is measured in terms of average value, the peak-to-average ratio of the power shall not exceed 13dB.

TEST PROCEDURE

ANSI / TIA / EIA 603C Clause 2.2.17; PSA setting reference to 971168 D01 v02r02

For peak power measurement with a PSA:

a) Set the RBW ≥ OBW; b) Set VBW ≥ 3 × RBW; c) Set span ≥ 2 x RBW; d) Sweep time = auto couple; e) Detector = peak; f) Ensure that the number of measurement points ≥ span/RBW; g) Trace mode = max hold;

For average power measurement with a PSA:

a) Set span to at least 1.5 times the OBW; b) Set RBW = 1-5% of the OBW, not to exceed 1 MHz; c) Set VBW ≥ 3 x RBW; d) Set number of points in sweep ≥ 2 × span / RBW; e) Sweep time = auto-couple; f) Detector = RMS (power averaging); g) Use free run trigger If burst duty cycle ≥ 98; h) Use trigger to capture bursts If burst duty cycle < 98; i) Trace average at least 100 traces in power averaging (*i.e.*, RMS) mode. j) Compute the power by integrating the spectrum across the OBW of the signal using the instrument's band power measurement function.

MODES TESTED

GSM, WCDMA, and LTE

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TEST RESULTS

11.1.1. ERP/EIRP Results

GSM

Band	Mode	Channel	f(MHz)	ERP / EIRP	
				dBm	mW
GSM1900	GPRS	512	1850.2	30.41	1098.10
		661	1880	30.47	1114.40
		810	1909.8	30.36	1086.58
	EGPRS	512	1850.2	26.44	440.09
		661	1880	26.23	419.70
		810	1909.8	26.32	428.90

Band	Mode	Channel	f(MHz)	ERP / EIRP	
				dBm	mW
GSM850	GPRS	128	824.2	29.45	881.05
		190	836.6	29.35	860.99
		251	848.8	29.15	822.24
	EGPRS	128	824.2	24.45	278.61
		190	836.6	24.35	272.27
		251	848.8	24.38	274.16

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WCDMA

Band	Mode	Channel	f(MHz)	ERP / EIRP	
				dBm	mW
Band 2	REL99	9262	1852.4	26.16	412.80
		9400	1880	25.30	338.80
		9538	1907.6	24.24	265.44
	HSDPA	9262	1852.4	25.39	345.81
		9400	1880	24.02	252.20
		9538	1907.6	23.15	206.52

Band	Mode	Channel	f(MHz)	ERP / EIRP	
				dBm	mW
Band 4	REL99	1312	1712.4	21.71	148.25
		1413	1732.6	21.65	146.22
		1513	1752.6	21.25	133.35
	HSDPA	1312	1712.4	20.11	102.57
		1413	1732.6	20.1	102.33
		1513	1752.6	19.65	92.26

Band	Mode	Channel	f(MHz)	ERP / EIRP	
				dBm	mW
Band 5	REL99	4132	826.4	20.81	120.61
		4183	836.6	20.73	118.33
		4233	846.6	20.52	112.77
	HSDPA	4132	826.4	19.83	96.18
		4183	836.6	19.67	92.70
		4233	846.6	19.52	89.56

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LTE Band 2

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE2	20	QPSK	1/0	1860	25.76	376.48
			1/0	1880	25.76	376.65
			1/0	1900	25.79	379.63
		16QAM	1/0	1860	25.26	335.54
			1/0	1880	24.75	298.50
			1/0	1900	24.59	287.98

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE2	15	QPSK	1/0	1857.5	26.26	422.42
			1/0	1880	25.85	384.54
			1/0	1902.5	25.89	388.47
		16QAM	1/0	1857.5	24.96	313.14
			1/0	1880	24.55	285.06
			1/0	1902.5	24.69	294.69

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE2	10	QPSK	1/0	1855	25.66	367.91
			1/0	1880	25.45	350.70
			1/0	1905	25.79	379.63
		16QAM	1/0	1855	24.66	292.24
			1/0	1880	24.25	266.04
			1/0	1905	24.59	287.98

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Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE2	5	QPSK	1/0	1852.5	25.40	346.53
			1/0	1880	25.15	327.30
			1/0	1907.5	25.19	330.64
		16QAM	1/0	1852.5	24.36	272.73
			1/0	1880	23.85	242.63
			1/0	1907.5	24.09	256.66

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE2	3	QPSK	1/0	1851.5	25.46	351.35
			1/0	1880	25.15	327.30
			1/0	1908.5	25.59	362.54
		16QAM	1/0	1851.5	25.26	335.74
			1/0	1880	24.95	312.56
			1/0	1908.5	25.19	330.37

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE2	1.4	QPSK	1/0	1850.7	24.46	279.09
			1/0	1880	24.25	266.04
			1/0	1909.3	24.69	294.69
		16QAM	1/0	1850.7	24.06	254.53
			1/0	1880	24.53	283.75
			1/0	1909.3	23.29	213.48

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LTE Band 4

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE4	20	QPSK	1/0	1720	25.20	330.89
			1/0	1732.5	25.06	320.70
			1/0	1745	25.69	370.28
		16QAM	1/0	1720	24.60	288.19
			1/0	1732.5	24.41	276.12
			1/0	1745	24.96	312.99

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE4	15	QPSK	1/0	1717.5	25.57	360.24
			1/0	1732.5	24.98	314.85
			1/0	1747.5	25.80	379.85
		16QAM	1/0	1717.5	24.95	312.32
			1/0	1732.5	24.29	268.60
			1/0	1747.5	25.61	363.59

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE4	10	QPSK	1/0	1715	25.22	332.28
			1/0	1732.5	25.21	331.97
			1/0	1750	25.94	392.37
		16QAM	1/0	1715	24.81	302.35
			1/0	1732.5	24.83	304.16
			1/0	1750	25.15	327.11

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Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE4	5	QPSK	1/0	1712.5	24.75	298.83
			1/0	1732.5	24.56	285.83
			1/0	1752.5	26.38	434.30
		16QAM	1/0	1712.5	24.24	265.72
			1/0	1732.5	23.75	237.19
			1/0	1752.5	25.74	374.79

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE4	3	QPSK	1/0	1711.5	24.30	269.02
			1/0	1732.5	25.13	325.92
			1/0	1753.5	26.24	421.13
		16QAM	1/0	1711.5	23.80	239.77
			1/0	1732.5	24.56	285.83
			1/0	1753.5	25.58	361.76

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE4	1.4	QPSK	1/0	1710.7	24.86	306.26
			1/0	1732.5	24.95	312.68
			1/0	1754.3	26.42	438.66
		16QAM	1/0	1710.7	24.01	251.82
			1/0	1732.5	24.08	255.92
			1/0	1754.3	25.55	359.03

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LTE Band 5

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE5	10	QPSK	1/0	829	22.26	168.27
			1/0	836.5	22.29	169.43
			1/0	844	22.01	158.85
		16QAM	1/0	829	22.05	160.32
			1/0	836.5	22.09	161.81
			1/0	844	21.94	156.31

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE5	5	QPSK	1/0	826.5	22.09	161.81
			1/0	836.5	22	158.49
			1/0	846.5	21.58	143.88
		16QAM	1/0	826.5	21.73	148.94
			1/0	836.5	21.67	146.89
			1/0	846.5	21.35	136.46

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE5	3	QPSK	1/0	825.5	22.21	166.34
			1/0	836.5	22.13	163.31
			1/0	847.5	21.64	145.88
		16QAM	1/0	825.5	21.83	152.41
			1/0	836.5	21.7	147.91
			1/0	847.5	21.28	134.28

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Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE5	1.4	QPSK	1/0	824.7	21.75	149.62
			1/0	836.5	21.84	152.76
			1/0	848.3	21.59	144.21
		16QAM	1/0	824.7	22.14	163.68
			1/0	836.5	21.65	146.22
			1/0	848.3	21.1	128.82

LTE Band 7

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP (Peak)	
					dBm	mW
LTE7	20	QPSK	1/0	2510	20.26	106.19
			1/0	2535	22.26	168.21
			1/0	2560	21.89	154.38
		16QAM	1/0	2510	19.75	94.43
			1/0	2535	21.83	152.35
			1/0	2560	20.75	118.74

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP (Peak)	
					dBm	mW
LTE7	15	QPSK	1/0	2507.5	21.17	130.93
			1/0	2535	21.16	130.57
			1/0	2562.5	21.64	145.77
		16QAM	1/0	2507.5	20.66	116.42
			1/0	2535	20.70	117.45
			1/0	2562.5	21.17	130.82

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Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP (Peak)	
					dBm	mW
LTE7	10	QPSK	1/0	2505	21.58	143.86
			1/0	2535	20.85	121.58
			1/0	2565	21.66	146.47
		16QAM	1/0	2505	20.99	125.59
			1/0	2535	20.20	104.68
			1/0	2565	22.39	173.28

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP (Peak)	
					dBm	mW
LTE7	5	QPSK	1/0	2502.5	20.75	118.82
			1/0	2535	21.09	128.48
			1/0	2567.5	21.18	131.17
		16QAM	1/0	2502.5	20.15	103.48
			1/0	2535	20.29	106.87
			1/0	2567.5	20.39	109.35

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LTE Band 17

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE17	10	QPSK	1/0	709	17.31	53.83
			1/0	710	17.07	50.93
			1/0	711	17.34	54.2
		16QAM	1/0	709	16.9	48.98
			1/0	710	16.89	48.87
			1/0	711	17.13	51.64

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE17	5	QPSK	1/0	706.5	17.18	52.24
			1/0	710	17.13	51.64
			1/0	713.5	17.23	52.84
		16QAM	1/0	706.5	16.78	47.64
			1/0	710	16.79	47.75
			1/0	713.5	17.07	50.93

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LTE Band 26

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE26	15	QPSK	1/0	831.5	22.09	161.81
			1/0	836.5	22.09	161.81
			1/0	841.5	22.53	179.06
		16QAM	1/0	831.5	21.69	147.57
			1/0	836.5	21.69	147.57
			1/0	841.5	22.11	162.55

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE26	10	QPSK	1/0	819	22.26	168.27
			1/0	831.5	22.29	169.43
			1/0	844	22.01	158.85
		16QAM	1/0	819	22.05	160.32
			1/0	831.5	22.09	161.81
			1/0	844	21.94	156.31

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE26	5	QPSK	1/0	816.5	22.09	161.81
			1/0	831.5	22	158.49
			1/0	846.5	21.58	143.88
		16QAM	1/0	816.5	21.73	148.94
			1/0	831.5	21.67	146.89
			1/0	846.5	21.35	136.46

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Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE26	3	QPSK	1/0	815.5	22.21	166.34
			1/0	831.5	22.13	163.31
			1/0	847.5	21.64	145.88
		16QAM	1/0	815.5	21.83	152.41
			1/0	831.5	21.7	147.91
			1/0	847.5	21.28	134.28

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE26	1.4	QPSK	1/0	814.7	21.75	149.62
			1/0	831.5	21.84	152.76
			1/0	848.3	21.59	144.21
		16QAM	1/0	814.7	22.14	163.68
			1/0	831.5	21.65	146.22
			1/0	848.3	21.1	128.82

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LTE Band 41

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP (Peak)	
					dBm	mW
LTE41	20	QPSK	1/0	2506	17.63	57.94
			1/0	2593	20.41	109.90
			1/0	2680	19.12	81.66
		16QAM	1/0	2506	16.75	47.32
			1/0	2593	19.2	83.18
			1/0	2680	17.99	62.95

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP (Peak)	
					dBm	mW
LTE41	15	QPSK	1/0	2503.5	17.96	62.52
			1/0	2593	20.62	115.35
			1/0	2682.5	19.56	90.36
		16QAM	1/0	2503.5	16.85	48.42
			1/0	2593	19.42	87.50
			1/0	2682.5	18.41	69.34

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP (Peak)	
					dBm	mW
LTE41	10	QPSK	1/0	2501	18.61	72.61
			1/0	2593	20.59	114.55
			1/0	2685	19.82	95.94
		16QAM	1/0	2501	17.65	58.21
			1/0	2593	19.5	89.13
			1/0	2685	19.33	85.70

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Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP (Peak)	
					dBm	mW
LTE41	5	QPSK	1/0	2498.5	19.11	81.47
			1/0	2593	19.91	97.95
			1/0	2687.5	19.83	96.16
		16QAM	1/0	2498.5	18.35	68.39
			1/0	2593	18.89	77.45
			1/0	2687.5	19.41	87.30

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11.1.2. ERP/EIRP PLOTS

GSM

Band

GSM 1900

EGPRS

High Frequency Substitution Measurement
UL Verification Services, Inc. Chamber A

Company: LG
Project #: 15I21237
Date: 7/15/2015
Test Engineer: D. Mun
Configuration: Y-pos EUT only
Mode: EGPRS 1900

Test Equipment:
Receiving: Horn T136, and Chamber A SMA Cables
Substitution: Horn T59 Substitution, T1096 SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1850.20	18.78	V	0.9	8.5	26.44	33.0	-6.6	
1850.20	16.08	H	0.9	8.5	23.74	33.0	-9.3	
Mid Ch								
1880.00	18.58	V	0.9	8.5	26.23	33.0	-6.8	
1880.00	16.89	H	0.9	8.5	24.54	33.0	-8.5	
High Ch								
1909.80	18.63	V	0.9	8.5	26.32	33.0	-6.7	
1909.80	17.11	H	0.9	8.5	24.80	33.0	-8.2	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
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Band

GSM 1900

GPRS

High Frequency Substitution Measurement
UL Verification Services, Inc. Chamber A

Company: LG
Project #: 15I21237
Date: 7/15/2015
Test Engineer: D. Mun
Configuration: Y-pos EUT only
Mode: GPRS 1900

Test Equipment:
Receiving: Horn T136, and Chamber A SMA Cables
Substitution: Horn T59 Substitution, T1096 SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1850.20	22.75	V	0.9	8.5	30.41	33.0	-2.6	
1850.20	19.93	H	0.9	8.5	27.59	33.0	-5.4	
Mid Ch								
1880.00	22.82	V	0.9	8.5	30.47	33.0	-2.5	
1880.00	20.84	H	0.9	8.5	28.49	33.0	-4.5	
High Ch								
1909.80	22.67	V	0.9	8.5	30.36	33.0	-2.6	
1909.80	20.82	H	0.9	8.5	28.51	33.0	-4.5	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
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Band

GSM 850

EGPRS

High Frequency Substitution Measurement
UL Verification Services, Inc. Chamber A

Company: LG
Project #: 15I21237
Date: 7/14/2015
Test Engineer: D. Mun
Configuration: X-pos EUT only
Mode: EGPRS 850

Test Equipment:
Receiving: Horn T136, and Chamber A SMA Cables
Substitution: Horn T59 Substitution, T1096 SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
824.20	20.58	V	0.9		19.73	38.5	-18.8	
824.20	25.30	H	0.9		24.45	38.5	-14.1	
Mid Ch								
836.60	20.98	V	0.9		20.13	38.5	-18.4	
836.60	25.20	H	0.9		24.35	38.5	-14.2	
High Ch								
848.80	20.68	V	0.9		19.83	38.5	-18.7	
848.80	25.23	H	0.9		24.38	38.5	-14.1	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

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Band

GSM 850

GPRS

High Frequency Substitution Measurement
UL Verification Services, Inc. Chamber A

Company: LG
Project #: 15I21237
Date: 7/14/2015
Test Engineer: D. Mun
Configuration: X-pos EUT only
Mode: GPRS 850

Test Equipment:
Receiving: Horn T136, and Chamber A SMA Cables
Substitution: Horn T59 Substitution, T1096 SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
824.20	21.60	V	0.9		20.75	38.5	-17.8	
824.20	30.30	H	0.9		29.45	38.5	-9.1	
Mid Ch								
836.60	22.00	V	0.9		21.15	38.5	-17.4	
836.60	30.20	H	0.9		29.35	38.5	-9.2	
High Ch								
848.80	21.68	V	0.9		20.83	38.5	-17.7	
848.80	30.00	H	0.9		29.15	38.5	-9.4	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

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WCDMA

Band

Band 2

HSDPA

High Frequency Substitution Measurement
UL Verification Services, Inc. Chamber A

Company: LG
Project #: 15I21237
Date: 07/14/15
Test Engineer: D. Mun
Configuration: EUT Y-Position Only
Mode: WCDMA B2 HSDPA

Test Equipment:
Receiving: Horn T136, and Chamber A SMA Cables
Substitution: Horn T59 Substitution, T1096 SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1852.40	17.73	V	0.9	8.5	25.39	33.0	-7.6	
1852.40	12.50	H	0.9	8.5	20.16	33.0	-12.8	
Mid Ch								
1880.00	16.37	V	0.9	8.5	24.02	33.0	-9.0	
1880.00	12.10	H	0.9	8.5	19.75	33.0	-13.3	
High Ch								
1907.60	15.46	V	0.9	8.5	23.15	33.0	-9.9	
1907.60	11.30	H	0.9	8.5	18.99	33.0	-14.0	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

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Band

Band 2

REL99

High Frequency Substitution Measurement
UL Verification Services, Inc. Chamber A

Company: LG
Project #: 15I21237
Date: 07/14/15
Test Engineer: D. Mun
Configuration: EUT Y-Position Only
Mode: WCDMA B2 REL. 99

Test Equipment:
Receiving: Horn T136, and Chamber A SMA Cables
Substitution: Horn T59 Substitution, T1096 SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1852.40	18.50	V	0.9	8.5	26.16	33.0	-6.8	
1852.40	12.10	H	0.9	8.5	19.76	33.0	-13.2	
Mid Ch								
1880.00	17.65	V	0.9	8.5	25.30	33.0	-7.7	
1880.00	13.28	H	0.9	8.5	20.93	33.0	-12.1	
High Ch								
1907.60	16.55	V	0.9	8.5	24.24	33.0	-8.8	
1907.60	12.30	H	0.9	8.5	19.99	33.0	-13.0	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

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Band

Band 4

HSDPA

High Frequency Substitution Measurement
UL Verification Services, Inc. Chamber A

Company: LG
Project #: 15I21237
Date: 7/24/2015
Test Engineer: Jude Semana
Configuration: EUT Y-Position Only
Mode: WCDMA B4 HSDPA

Test Equipment:
Receiving: Horn T136, and Chamber A SMA Cables
Substitution: Horn T60 Substitution, T1096 SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1712.40	14.10	V	0.9	6.2	19.45	33.0	-13.6	
1712.40	14.76	H	0.9	6.2	20.11	33.0	-12.9	
Mid Ch								
1732.60	13.90	V	0.9	6.2	19.25	33.0	-13.8	
1732.60	14.75	H	0.9	6.2	20.10	33.0	-12.9	
High Ch								
1752.60	13.60	V	0.9	6.2	18.95	33.0	-14.1	
1752.60	14.30	H	0.9	6.2	19.65	33.0	-13.4	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

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Band

Band 4

REL99

High Frequency Substitution Measurement
UL Verification Services, Inc. Chamber A

Company: LG
Project #: 15I21237
Date: 07/24/15
Test Engineer: Jude Semana
Configuration: EUT Y-Position Only
Mode: WCDMA B4 REL. 99

Test Equipment:
Receiving: Horn T136, and Chamber A SMA Cables
Substitution: Horn T60 Substitution, T1096 SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1712.40	15.20	V	0.9	6.2	20.55	33.0	-12.5	
1712.40	16.36	H	0.9	6.2	21.71	33.0	-11.3	
Mid Ch								
1732.60	16.05	V	0.9	6.2	21.40	33.0	-11.6	
1732.60	16.30	H	0.9	6.2	21.65	33.0	-11.4	
High Ch								
1752.60	14.70	V	0.9	6.2	20.05	33.0	-13.0	
1752.60	15.90	H	0.9	6.2	21.25	33.0	-11.8	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

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Band

Band 5

HSDPA

High Frequency Substitution Measurement
UL Verification Services, Inc. Chamber A

Company: LG
Project #: 15I21237
Date: 07/14/15
Test Engineer: D. Mun
Configuration: EUT Only X-Pos
Mode: HSDPA B5 FUND

Test Equipment:
Receiving: Hybrid T130, and Chamber A N-type Cable
Substitution: Dipole T273, 8ft SMA Cable Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
826.40	19.20	V	0.9	0.0	18.30	38.5	-20.1	
826.40	20.73	H	0.9	0.0	19.83	38.5	-18.6	
Mid Ch								
836.60	19.20	V	0.9	0.0	18.30	38.5	-20.1	
836.60	20.57	H	0.9	0.0	19.67	38.5	-18.8	
High Ch								
846.60	19.10	V	0.9	0.0	18.20	38.5	-20.2	
846.60	20.42	H	0.9	0.0	19.52	38.5	-18.9	

Rev. 3.17.11
Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm

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Band

Band 5

REL99

High Frequency Substitution Measurement
UL Verification Services, Inc. Chamber A

Company: LG
Project #: 15I21237
Date: 07/14/15
Test Engineer: D. Mun
Configuration: EUT Only X-Pos
Mode: Rel.99 B5 FUND

Test Equipment:
Receiving: Hybrid T130, and Chamber A N-type Cable
Substitution: Dipole T273, 8ft SMA Cable Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
826.40	14.70	V	0.9	0.0	13.80	38.5	-24.6	
826.40	21.71	H	0.9	0.0	20.81	38.5	-17.6	
Mid Ch								
836.60	15.09	V	0.9	0.0	14.19	38.5	-24.3	
836.60	21.63	H	0.9	0.0	20.73	38.5	-17.7	
High Ch								
846.60	14.70	V	0.9	0.0	13.80	38.5	-24.6	
846.60	21.42	H	0.9	0.0	20.52	38.5	-17.9	

Rev. 3.17.11
Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm

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LTE Band 2

Band

LTE2

20MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc. Chamber A

Company: LG
Project #: 15I21237
Date: 07/14/15
Test Engineer: D. Mun
Configuration: EUT Y-Position Only
Mode: LTE_16QAM Band 2 Fundamental, 20 MHz Bandwidth

Test Equipment:
Receiving: Horn T136, and Chamber A SMA Cables
Substitution: Horn T59 Substitution, T1096 SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1860.00	17.60	V	0.9	8.5	25.26	33.0	-7.7	
1860.00	15.10	H	0.9	8.5	22.76	33.0	-10.2	
Mid Ch								
1880.00	17.10	V	0.9	8.5	24.75	33.0	-8.3	
1880.00	15.20	H	0.9	8.5	22.85	33.0	-10.2	
High Ch								
1900.00	16.90	V	0.9	8.5	24.59	33.0	-8.4	
1900.00	15.10	H	0.9	8.5	22.79	33.0	-10.2	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

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Band

LTE2

20MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc. Chamber A

Company: LG
Project #: 15I21237
Date: 07/14/15
Test Engineer: D. Mun
Configuration: EUT Y-Position Only
Mode: LTE_QPSK Band 2 Fundamental, 20 MHz Bandwidth

Test Equipment:
Receiving: Horn T136, and Chamber A SMA Cables
Substitution: Horn T59 Substitution, T1096 SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1860.00	18.10	V	0.9	8.5	25.76	33.0	-7.2	
1860.00	15.30	H	0.9	8.5	22.96	33.0	-10.0	
Mid Ch								
1880.00	18.11	V	0.9	8.5	25.76	33.0	-7.2	
1880.00	16.40	H	0.9	8.5	24.05	33.0	-9.0	
High Ch								
1900.00	18.10	V	0.9	8.5	25.79	33.0	-7.2	
1900.00	16.30	H	0.9	8.5	23.99	33.0	-9.0	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

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Band

LTE2

15MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc. Chamber A

Company: LG
Project #: 15I21237
Date: 07/14/15
Test Engineer: D. Mun
Configuration: EUT Y-Position Only
Mode: LTE_16QAM Band 2 Fundamental, 15 MHz Bandwidth

Test Equipment:
Receiving: Horn T136, and Chamber A SMA Cables
Substitution: Horn T59 Substitution, T1096 SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1857.50	17.30	V	0.9	8.5	24.96	33.0	-8.0	
1857.50	14.50	H	0.9	8.5	22.16	33.0	-10.8	
Mid Ch								
1880.00	16.90	V	0.9	8.5	24.55	33.0	-8.5	
1880.00	15.00	H	0.9	8.5	22.65	33.0	-10.4	
High Ch								
1902.50	17.00	V	0.9	8.5	24.69	33.0	-8.3	
1902.50	15.20	H	0.9	8.5	22.89	33.0	-10.1	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

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Band

LTE2

15MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc. Chamber A

Company: LG
Project #: 15I21237
Date: 07/14/15
Test Engineer: D. Mun
Configuration: EUT Y-Position Only
Mode: LTE_QPSK Band 2 Fundamental, 15 MHz Bandwidth

Test Equipment:
Receiving: Horn T136, and Chamber A SMA Cables
Substitution: Horn T59 Substitution, T1096 SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1857.50	18.60	V	0.9	8.5	26.26	33.0	-6.7	
1857.50	15.80	H	0.9	8.5	23.46	33.0	-9.5	
Mid Ch								
1880.00	18.20	V	0.9	8.5	25.85	33.0	-7.2	
1880.00	16.30	H	0.9	8.5	23.95	33.0	-9.1	
High Ch								
1902.50	18.20	V	0.9	8.5	25.89	33.0	-7.1	
1902.50	16.40	H	0.9	8.5	24.09	33.0	-8.9	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

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Band

LTE2

10MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc. Chamber A

Company: LG
Project #: 15I21237
Date: 07/14/15
Test Engineer: D. Mun
Configuration: EUT Y-Position Only
Mode: LTE_16QAM Band 2 Fundamental, 10 MHz Bandwidth

Test Equipment:
Receiving: Horn T136, and Chamber A SMA Cables
Substitution: Horn T59 Substitution, T1096 SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1855.00	17.00	V	0.9	8.5	24.66	33.0	-8.3	
1855.00	14.20	H	0.9	8.5	21.86	33.0	-11.1	
Mid Ch								
1880.00	16.60	V	0.9	8.5	24.25	33.0	-8.8	
1880.00	14.70	H	0.9	8.5	22.35	33.0	-10.7	
High Ch								
1905.00	16.90	V	0.9	8.5	24.59	33.0	-8.4	
1905.00	15.10	H	0.9	8.5	22.79	33.0	-10.2	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

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Band

LTE2

10MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc. Chamber A

Company: LG
Project #: 15I21237
Date: 07/14/15
Test Engineer: D. Mun
Configuration: EUT Y-Position Only
Mode: LTE_QPSK Band 2 Fundamental, 10 MHz Bandwidth

Test Equipment:
Receiving: Horn T136, and Chamber A SMA Cables
Substitution: Horn T59 Substitution, T1096 SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1855.00	18.00	V	0.9	8.5	25.66	33.0	-7.3	
1855.00	14.40	H	0.9	8.5	22.06	33.0	-10.9	
Mid Ch								
1880.00	17.80	V	0.9	8.5	25.45	33.0	-7.6	
1880.00	15.90	H	0.9	8.5	23.55	33.0	-9.5	
High Ch								
1905.00	18.10	V	0.9	8.5	25.79	33.0	-7.2	
1905.00	16.40	H	0.9	8.5	24.09	33.0	-8.9	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

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Band

LTE2

5MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc. Chamber A

Company: LG
Project #: 15I21237
Date: 07/14/15
Test Engineer: D. Mun
Configuration: EUT Y-Position Only
Mode: LTE_16QAM Band 2 Fundamental, 5 MHz Bandwidth

Test Equipment:
Receiving: Horn T136, and Chamber A SMA Cables
Substitution: Horn T59 Substitution, T1096 SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1852.50	16.70	V	0.9	8.5	24.36	33.0	-8.6	
1852.50	13.50	H	0.9	8.5	21.16	33.0	-11.8	
Mid Ch								
1880.00	16.20	V	0.9	8.5	23.85	33.0	-9.2	
1880.00	14.30	H	0.9	8.5	21.95	33.0	-11.1	
High Ch								
1907.50	16.40	V	0.9	8.5	24.09	33.0	-8.9	
1907.50	14.60	H	0.9	8.5	22.29	33.0	-10.7	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

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Band

LTE2

5MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc. Chamber A

Company: LG
Project #: 15I21237
Date: 07/14/15
Test Engineer: D. Mun
Configuration: EUT Y-Position Only
Mode: LTE_QPSK Band 2 Fundamental, 5 MHz Bandwidth

Test Equipment:
Receiving: Horn T136, and Chamber A SMA Cables
Substitution: Horn T59 Substitution, T1096 SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1852.50	17.74	V	0.9	8.5	25.40	33.0	-7.6	
1852.50	14.50	H	0.9	8.5	22.16	33.0	-10.8	
Mid Ch								
1880.00	17.50	V	0.9	8.5	25.15	33.0	-7.9	
1880.00	15.60	H	0.9	8.5	23.25	33.0	-9.8	
High Ch								
1907.50	17.50	V	0.9	8.5	25.19	33.0	-7.8	
1907.50	15.70	H	0.9	8.5	23.39	33.0	-9.6	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

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Band

LTE2

3MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc. Chamber A

Company: LG
Project #: 15I21237
Date: 07/14/15
Test Engineer: D. Mun
Configuration: EUT Y-Position Only
Mode: LTE_16QAM Band 2 Fundamental, 3 MHz Bandwidth

Test Equipment:
Receiving: Horn T136, and Chamber A SMA Cables
Substitution: Horn T59 Substitution, T1096 SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1857.50	17.60	V	0.9	8.5	25.26	33.0	-7.7	
1857.50	14.80	H	0.9	8.5	22.46	33.0	-10.5	
Mid Ch								
1880.00	17.30	V	0.9	8.5	24.95	33.0	-8.1	
1880.00	15.40	H	0.9	8.5	23.05	33.0	-10.0	
High Ch								
1902.50	17.50	V	0.9	8.5	25.19	33.0	-7.8	
1902.50	15.70	H	0.9	8.5	23.39	33.0	-9.6	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

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Band

LTE2

3MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc. Chamber A

Company: LG
Project #: 15I21237
Date: 07/14/15
Test Engineer: D. Mun
Configuration: EUT Y-Position Only
Mode: LTE_QPSK Band 2 Fundamental, 3 MHz Bandwidth

Test Equipment:
Receiving: Horn T136, and Chamber A SMA Cables
Substitution: Horn T59 Substitution, T1096 SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1851.50	17.80	V	0.9	8.5	25.46	33.0	-7.5	
1851.50	14.10	H	0.9	8.5	21.76	33.0	-11.2	
Mid Ch								
1880.00	17.50	V	0.9	8.5	25.15	33.0	-7.9	
1880.00	14.90	H	0.9	8.5	22.55	33.0	-10.5	
High Ch								
1908.50	17.90	V	0.9	8.5	25.59	33.0	-7.4	
1908.50	15.10	H	0.9	8.5	22.79	33.0	-10.2	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

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Band

LTE2

1.4MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc. Chamber A

Company: LG
Project #: 15I21237
Date: 07/14/15
Test Engineer: D. Mun
Configuration: EUT Y-Position Only
Mode: LTE_16QAM Band 2 Fundamental, 1.4 MHz Bandwidth

Test Equipment:
Receiving: Horn T136, and Chamber A SMA Cables
Substitution: Horn T59 Substitution, T1096 SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1850.70	16.40	V	0.9	8.5	24.06	33.0	-8.9	
1850.70	13.60	H	0.9	8.5	21.26	33.0	-11.7	
Mid Ch								
1880.00	16.88	V	0.9	8.5	24.53	33.0	-8.5	
1880.00	13.60	H	0.9	8.5	21.25	33.0	-11.8	
High Ch								
1909.30	15.60	V	0.9	8.5	23.29	33.0	-9.7	
1909.30	13.80	H	0.9	8.5	21.49	33.0	-11.5	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

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Band

LTE2

1.4MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc. Chamber A

Company: LG
Project #: 15I21237
Date: 07/14/15
Test Engineer: D. Mun
Configuration: EUT Y-Position Only
Mode: LTE_QPSK Band 2 Fundamental, 1.4 MHz Bandwidth

Test Equipment:
Receiving: Horn T136, and Chamber A SMA Cables
Substitution: Horn T59 Substitution, T1096 SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1850.70	16.80	V	0.9	8.5	24.46	33.0	-8.5	
1850.70	14.00	H	0.9	8.5	21.66	33.0	-11.3	
Mid Ch								
1880.00	16.60	V	0.9	8.5	24.25	33.0	-8.8	
1880.00	14.70	H	0.9	8.5	22.35	33.0	-10.7	
High Ch								
1909.30	17.00	V	0.9	8.5	24.69	33.0	-8.3	
1909.30	15.20	H	0.9	8.5	22.89	33.0	-10.1	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
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LTE Band 4

Band

LTE4

20MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I21237
Date: 7/21/2015
Test Engineer: A. Escamilla
Configuration: Y-Pos, EUT Only
Location: Chamber C
Mode: LTE_16QAM Band 4 Fundamentals, 20MHz Bandwidth

Test Equpment:
Receiving: Horn T119, and Chamber C SMA Cables
Substitution: Horn T59, Xft SMA Cable (SN # 506392) Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1720.00	17.14	V	0.9	8.2	24.46	30.0	-5.5	
1720.00	17.28	H	0.9	8.2	24.60	30.0	-5.4	
Mid Ch								
1732.50	16.55	V	0.9	8.2	23.82	30.0	-6.2	
1732.50	17.14	H	0.9	8.2	24.41	30.0	-5.6	
High Ch								
1745.00	15.95	V	0.9	8.1	23.18	30.0	-6.8	
1745.00	17.73	H	0.9	8.1	24.96	30.0	-5.0	

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Band

LTE4

20MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I21237
Date: 7/21/2015
Test Engineer: A. Escamilla
Configuration: Y-Pos, EUT Only
Location: Chamber C
Mode: LTE_QPSK Band 4 Fundamentals, 20MHz Bandwidth

Test Equpment:
Receiving: Horn T119, and Chamber C SMA Cables
Substitution: Horn T59, Xft SMA Cable (SN # 506392) Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1720.00	17.70	V	0.9	8.2	25.02	30.0	-5.0	
1720.00	17.88	H	0.9	8.2	25.20	30.0	-4.8	
Mid Ch								
1732.50	16.85	V	0.9	8.2	24.12	30.0	-5.9	
1732.50	17.79	H	0.9	8.2	25.06	30.0	-4.9	
High Ch								
1745.00	16.53	V	0.9	8.1	23.76	30.0	-6.2	
1745.00	18.46	H	0.9	8.1	25.69	30.0	-4.3	

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Band

LTE4

15MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I21237
Date: 7/21/2015
Test Engineer: A. Escamilla
Configuration: Y-Pos, EUT Only
Location: Chamber C
Mode: LTE_16QAM Band 4 Fundamentals, 15MHz Bandwidth

Test Equpment:
Receiving: Horn T119, and Chamber C SMA Cables
Substitution: Horn T59, Xft SMA Cable (SN # 506392) Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1717.50	17.25	V	0.9	8.2	24.58	30.0	-5.4	
1717.50	17.62	H	0.9	8.2	24.95	30.0	-5.1	
Mid Ch								
1732.50	15.99	V	0.9	8.2	23.26	30.0	-6.7	
1732.50	17.02	H	0.9	8.2	24.29	30.0	-5.7	
High Ch								
1747.50	15.92	V	0.9	8.1	23.14	30.0	-6.9	
1747.50	18.39	H	0.9	8.1	25.61	30.0	-4.4	

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Band

LTE4

15MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I21237
Date: 7/21/2015
Test Engineer: A. Escamilla
Configuration: Y-Pos, EUT Only
Location: Chamber C
Mode: LTE_QPSK Band 4 Fundamentals, 15MHz Bandwidth

Test Equpment:
Receiving: Horn T119, and Chamber C SMA Cables
Substitution: Horn T59, Xft SMA Cable (SN # 506392) Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1717.50	17.90	V	0.9	8.2	25.23	30.0	-4.8	
1717.50	18.24	H	0.9	8.2	25.57	30.0	-4.4	
Mid Ch								
1732.50	16.70	V	0.9	8.2	23.97	30.0	-6.0	
1732.50	17.71	H	0.9	8.2	24.98	30.0	-5.0	
High Ch								
1747.50	15.95	V	0.9	8.1	23.17	30.0	-6.8	
1747.50	18.58	H	0.9	8.1	25.80	30.0	-4.2	

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Band

LTE4

10MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I21237
Date: 7/21/2015
Test Engineer: A. Escamilla
Configuration: Y-Pos, EUT Only
Location: Chamber C
Mode: LTE_16QAM Band 4 Fundamentals, 10MHz Bandwidth

Test Equpment:
Receiving: Horn T119, and Chamber C SMA Cables
Substitution: Horn T59, Xft SMA Cable (SN # 506392) Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1715.00	17.46	V	0.9	8.2	24.80	30.0	-5.2	
1715.00	17.47	H	0.9	8.2	24.81	30.0	-5.2	
Mid Ch								
1732.50	16.98	V	0.9	8.2	24.25	30.0	-5.7	
1732.50	17.56	H	0.9	8.2	24.83	30.0	-5.2	
High Ch								
1750.00	17.33	V	0.9	8.1	24.54	30.0	-5.5	
1750.00	17.94	H	0.9	8.1	25.15	30.0	-4.9	

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Band

LTE4

10MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I21237
Date: 7/21/2015
Test Engineer: A. Escamilla
Configuration: Y-Pos, EUT Only
Location: Chamber C
Mode: LTE_QPSK Band 4 Fundamentals, 10MHz Bandwidth

Test Equpment:
Receiving: Horn T119, and Chamber C SMA Cables
Substitution: Horn T59, Xft SMA Cable (SN # 506392) Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1715.00	17.88	V	0.9	8.2	25.22	30.0	-4.8	
1715.00	17.85	H	0.9	8.2	25.19	30.0	-4.8	
Mid Ch								
1732.50	17.42	V	0.9	8.2	24.69	30.0	-5.3	
1732.50	17.94	H	0.9	8.2	25.21	30.0	-4.8	
High Ch								
1750.00	17.99	V	0.9	8.1	25.20	30.0	-4.8	
1750.00	18.73	H	0.9	8.1	25.94	30.0	-4.1	

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