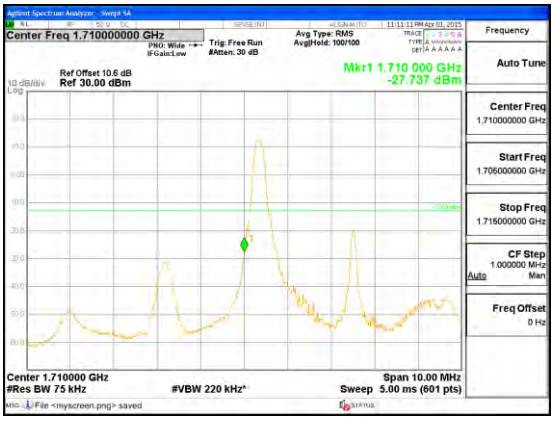
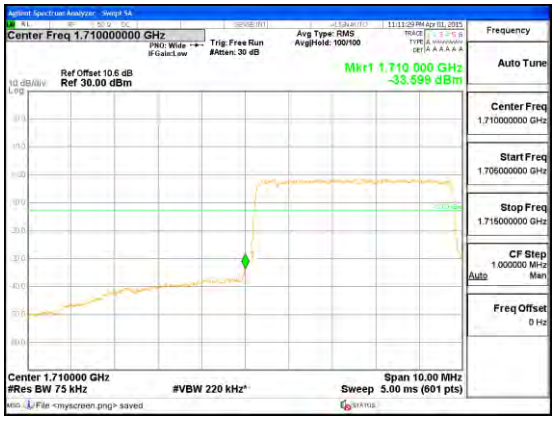
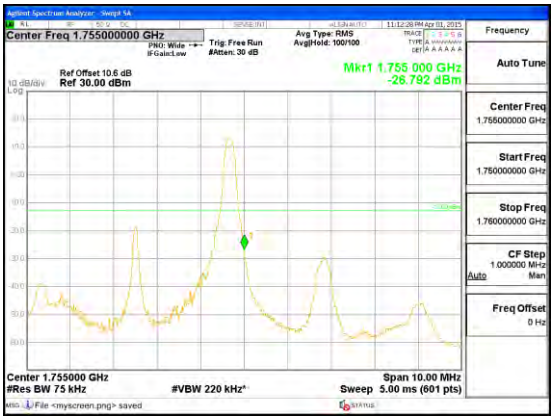
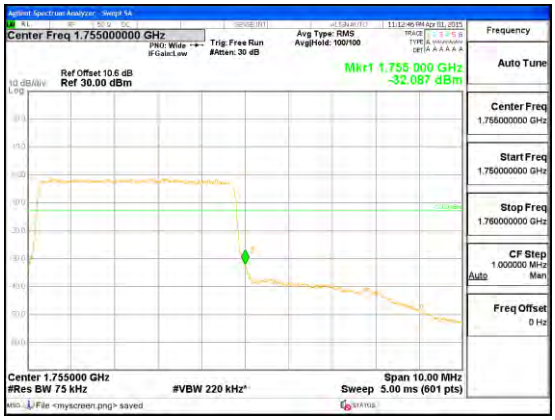
Band LTE4 5MHz 16QAM	 Band LTE4 5MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE4 5MHz CBE 16QAM Low Channel FRB.gif
Band LTE4 5MHz 16QAM	 Band LTE4 5MHz CBE 16QAM High Channel 1RB.gif	 Band LTE4 5MHz CBE 16QAM High Channel FRB.gif

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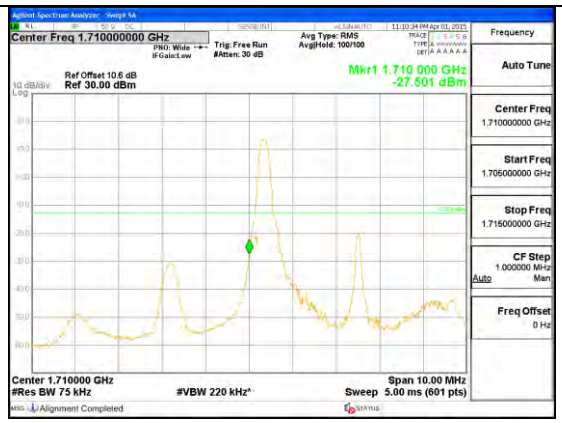
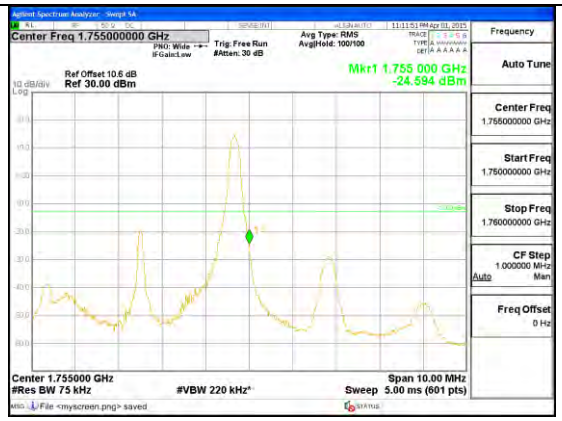
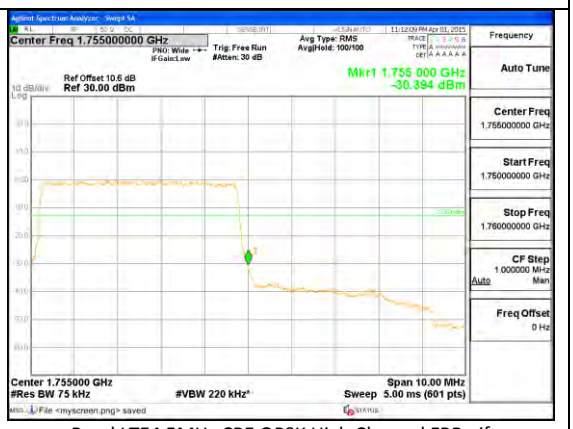
Band LTE4 5MHz QPSK	 Band LTE4 5MHz CBE QPSK Low Channel 1RB.gif	 Band LTE4 5MHz CBE QPSK Low Channel FRB.gif
Band LTE4 5MHz QPSK	 Band LTE4 5MHz CBE QPSK High Channel 1RB.gif	 Band LTE4 5MHz CBE QPSK High Channel FRB.gif

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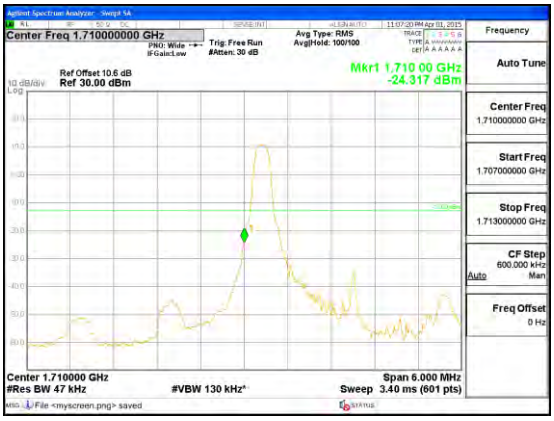
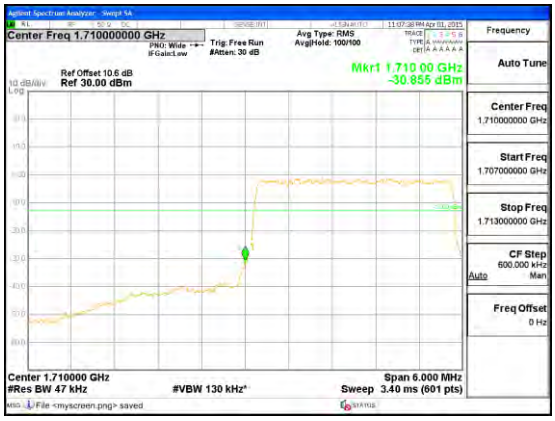
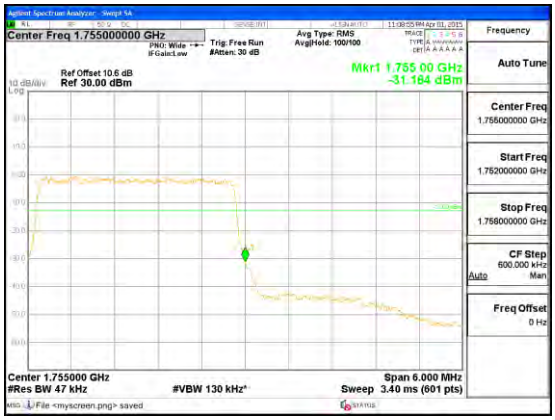
Band LTE4 3MHz 16QAM	 Band LTE4 3MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE4 3MHz CBE 16QAM Low Channel FRB.gif
Band LTE4 3MHz 16QAM	 Band LTE4 3MHz CBE 16QAM High Channel 1RB.gif	 Band LTE4 3MHz CBE 16QAM High Channel FRB.gif

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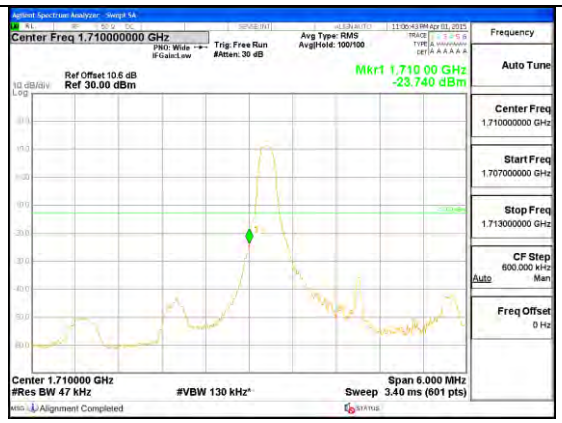
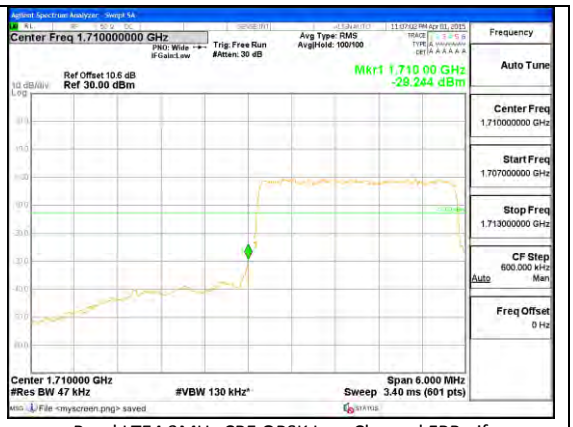
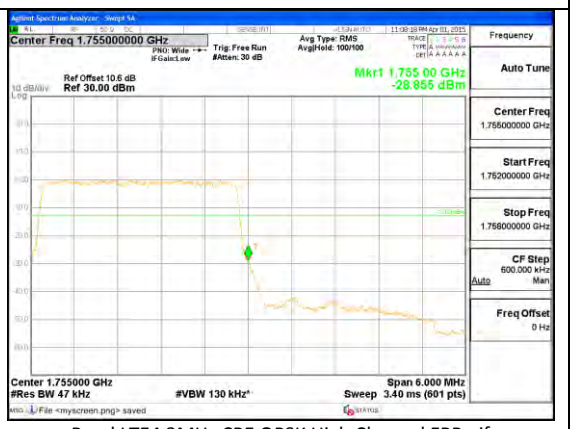
Band LTE4 3MHz QPSK	 Band LTE4 3MHz CBE QPSK Low Channel 1RB.gif	 Band LTE4 3MHz CBE QPSK Low Channel FRB.gif
Band LTE4 3MHz QPSK	 Band LTE4 3MHz CBE QPSK High Channel 1RB.gif	 Band LTE4 3MHz CBE QPSK High Channel FRB.gif

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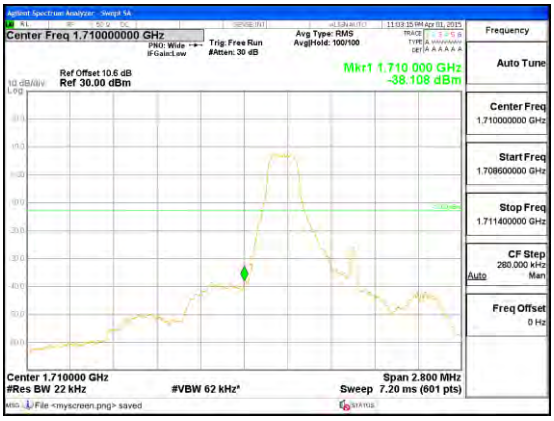
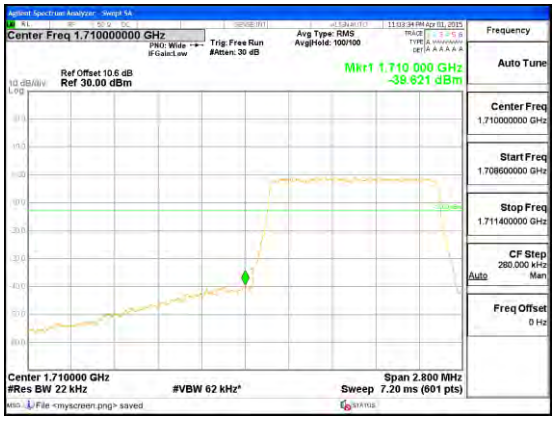
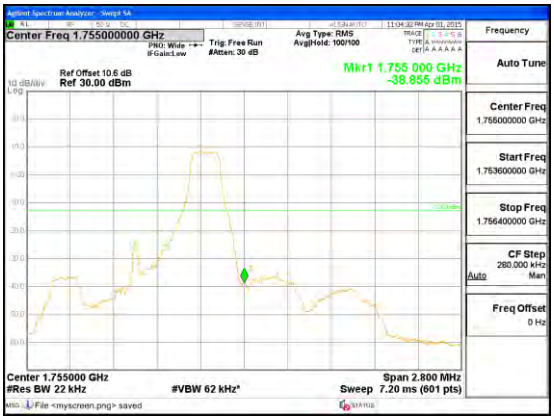
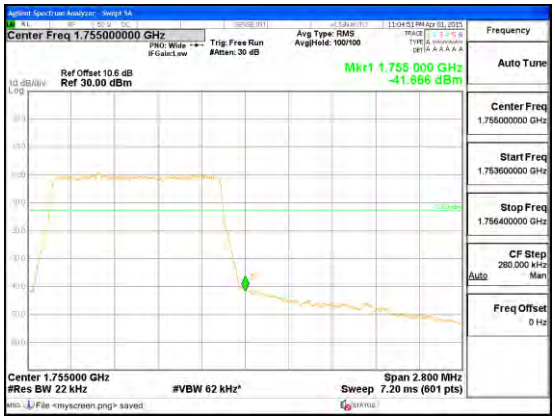
Band LTE4 1.4MHz 16QAM	 Band LTE4 1.4MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE4 1.4MHz CBE 16QAM Low Channel FRB.gif
Band LTE4 1.4MHz 16QAM	 Band LTE4 1.4MHz CBE 16QAM High Channel 1RB.gif	 Band LTE4 1.4MHz CBE 16QAM High Channel FRB.gif

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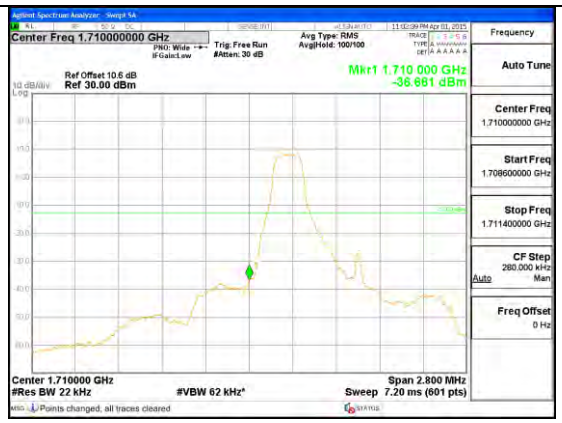
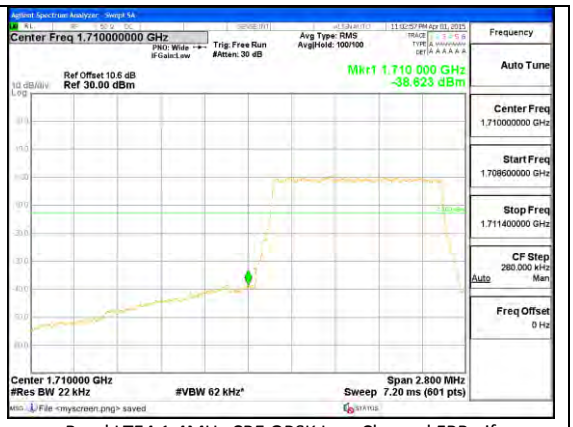
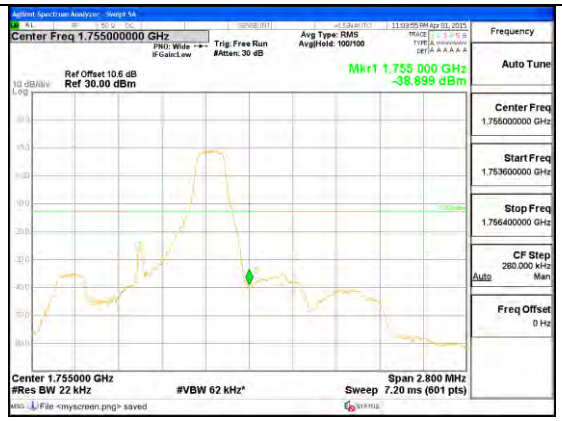
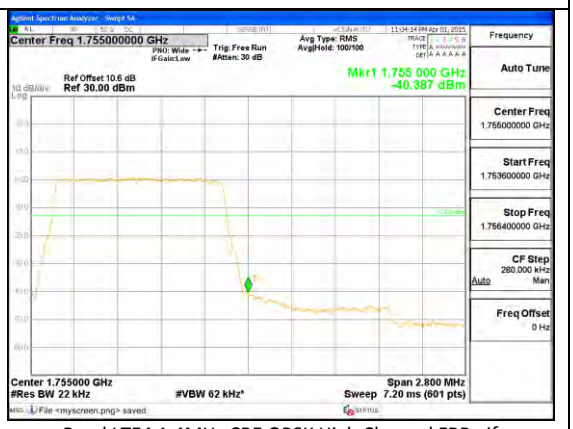
Band LTE4 1.4MHz QPSK	 Band LTE4 1.4MHz CBE QPSK Low Channel 1RB.gif	 Band LTE4 1.4MHz CBE QPSK Low Channel FRB.gif
Band LTE4 1.4MHz QPSK	 Band LTE4 1.4MHz CBE QPSK High Channel 1RB.gif	 Band LTE4 1.4MHz CBE QPSK High Channel FRB.gif

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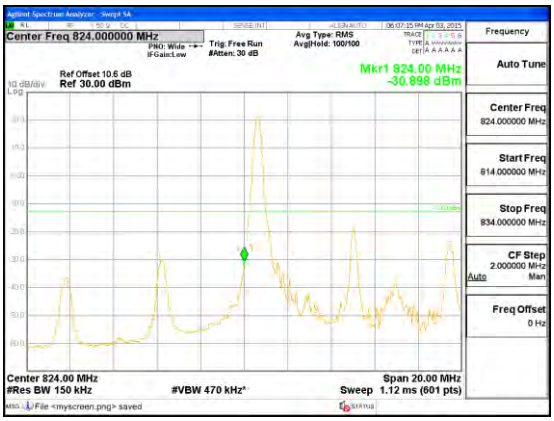
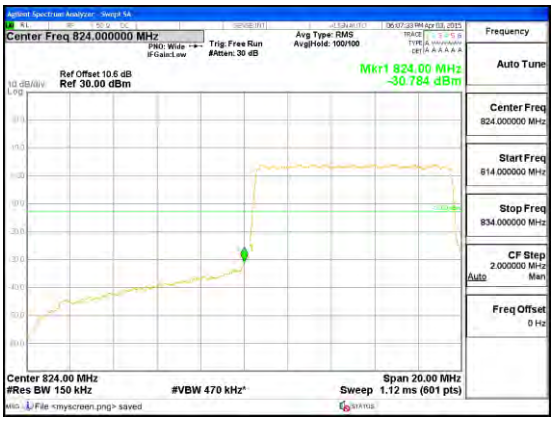
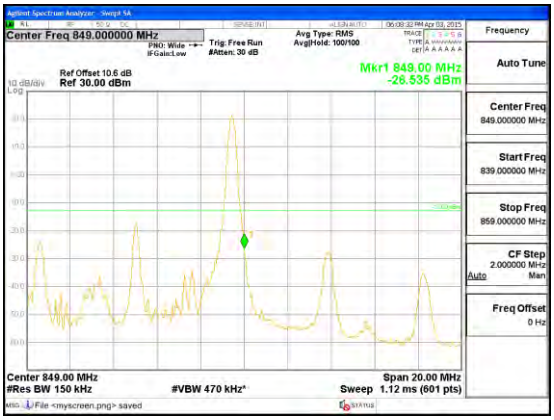
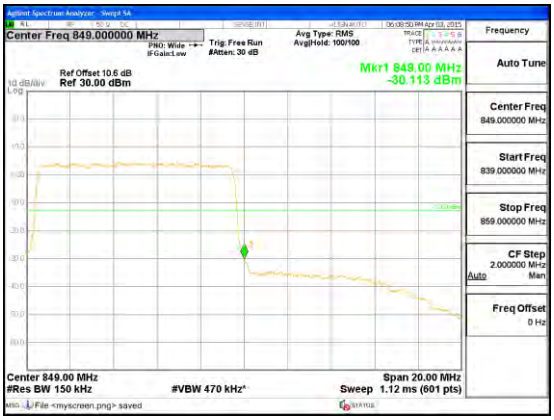
LTE Band 5

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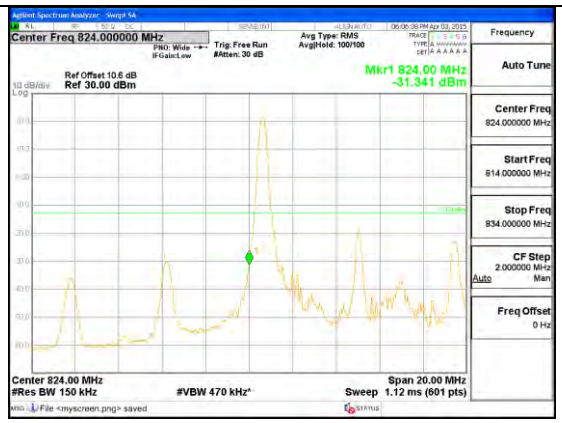
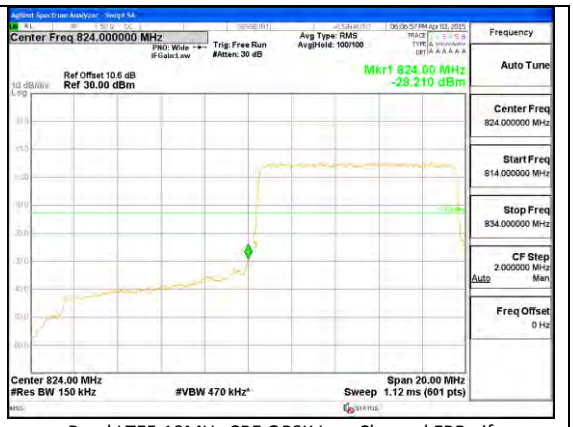
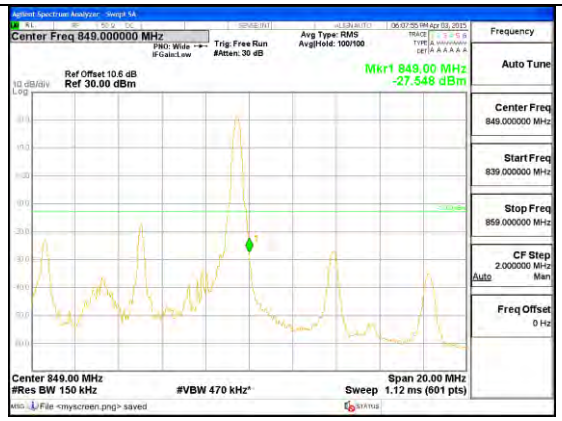
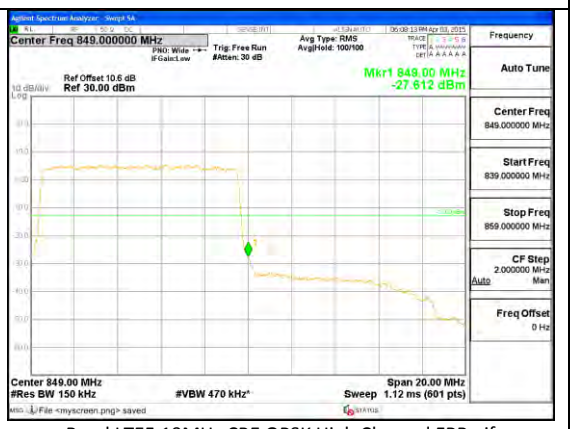
Band LTE5 10MHz QPSK	 Band LTE5 10MHz CBE QPSK Low Channel 1RB.gif	 Band LTE5 10MHz CBE QPSK Low Channel FRB.gif
Band LTE5 10MHz QPSK	 Band LTE5 10MHz CBE QPSK High Channel 1RB.gif	 Band LTE5 10MHz CBE QPSK High Channel FRB.gif

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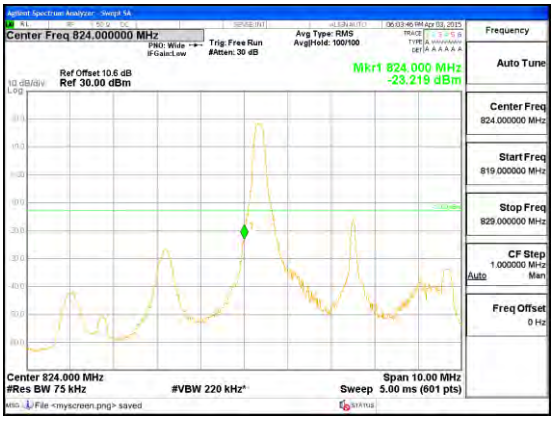
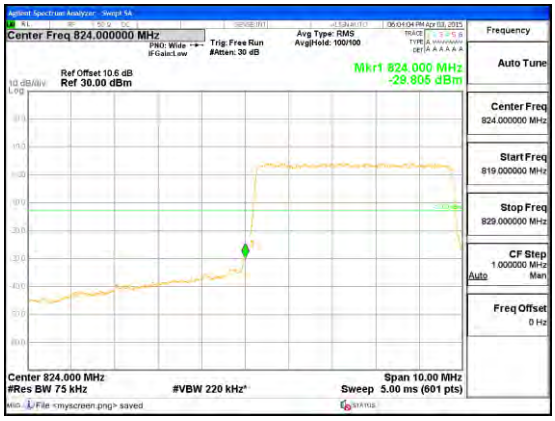
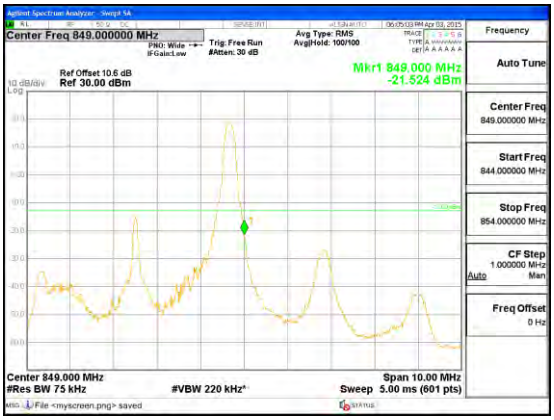
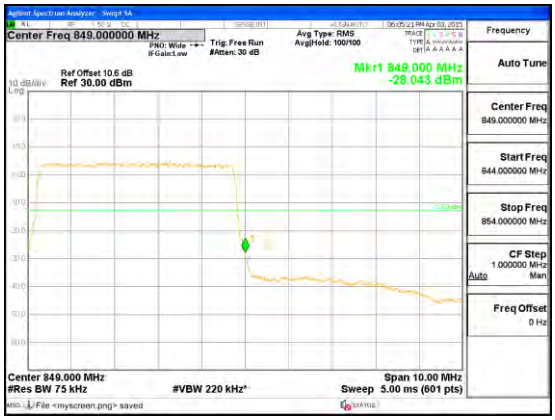
Band LTE5 5MHz 16QAM	 Band LTE5 5MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE5 5MHz CBE 16QAM Low Channel FRB.gif
Band LTE5 5MHz 16QAM	 Band LTE5 5MHz CBE 16QAM High Channel 1RB.gif	 Band LTE5 5MHz CBE 16QAM High Channel FRB.gif

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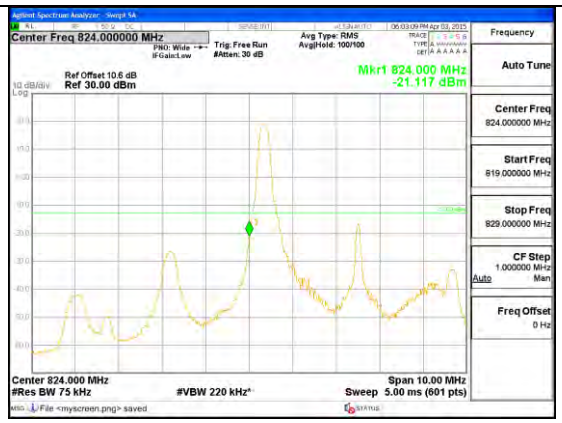
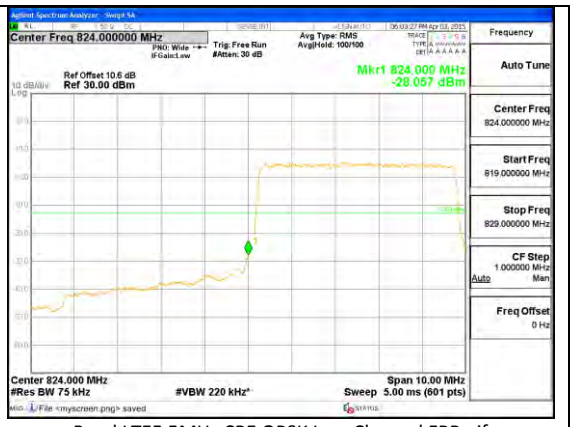
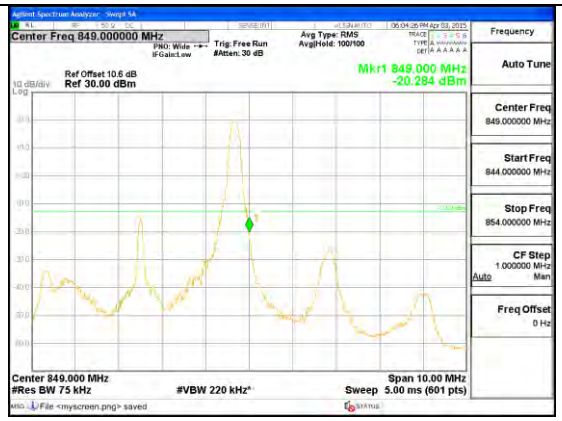
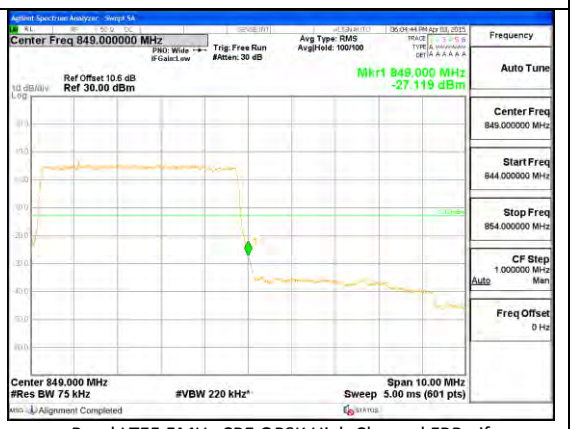
Band LTE5 5MHz QPSK	 Band LTE5 5MHz CBE QPSK Low Channel 1RB.gif	 Band LTE5 5MHz CBE QPSK Low Channel FRB.gif
Band LTE5 5MHz QPSK	 Band LTE5 5MHz CBE QPSK High Channel 1RB.gif	 Band LTE5 5MHz CBE QPSK High Channel FRB.gif

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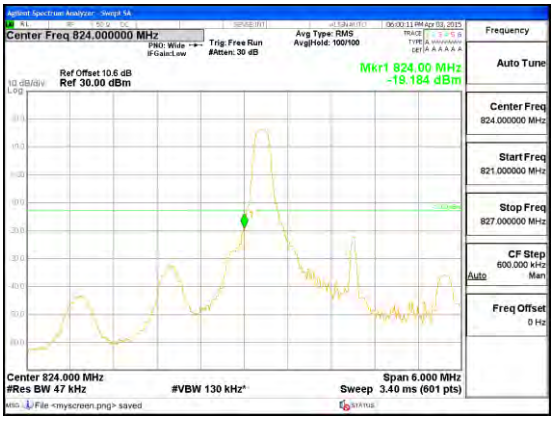
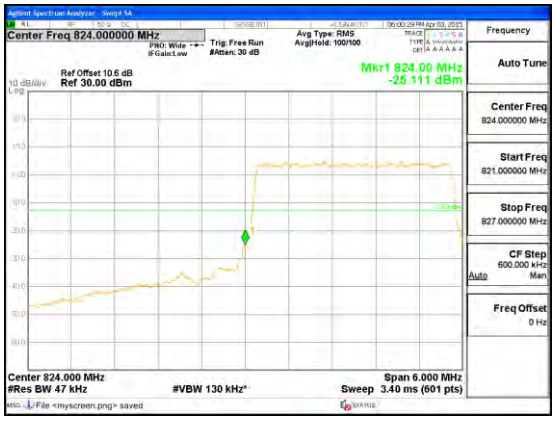
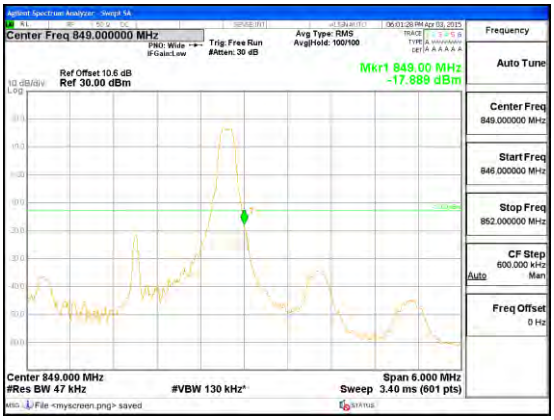
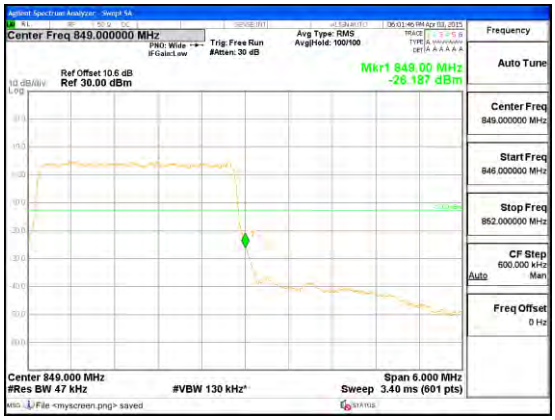
Band LTE5 3MHz 16QAM	 Band LTE5 3MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE5 3MHz CBE 16QAM Low Channel FRB.gif
Band LTE5 3MHz 16QAM	 Band LTE5 3MHz CBE 16QAM High Channel 1RB.gif	 Band LTE5 3MHz CBE 16QAM High Channel FRB.gif

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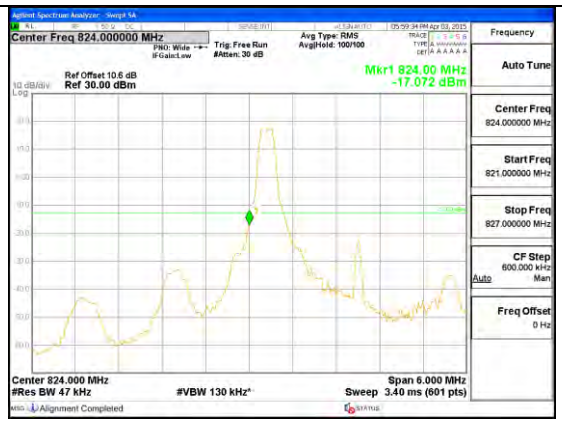
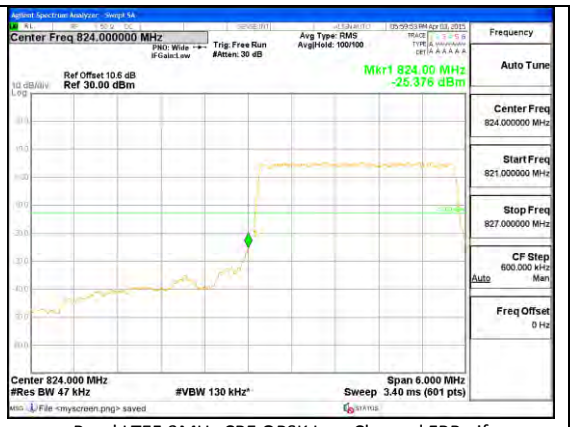
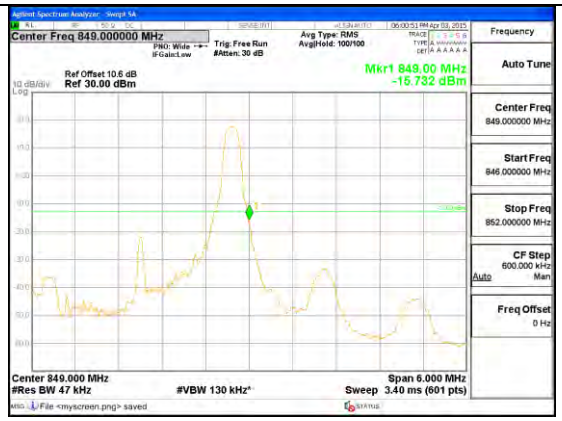
Band LTE5 3MHz QPSK	 Band LTE5 3MHz CBE QPSK Low Channel 1RB.gif	 Band LTE5 3MHz CBE QPSK Low Channel FRB.gif
Band LTE5 3MHz QPSK	 Band LTE5 3MHz CBE QPSK High Channel 1RB.gif	 Band LTE5 3MHz CBE QPSK High Channel FRB.gif

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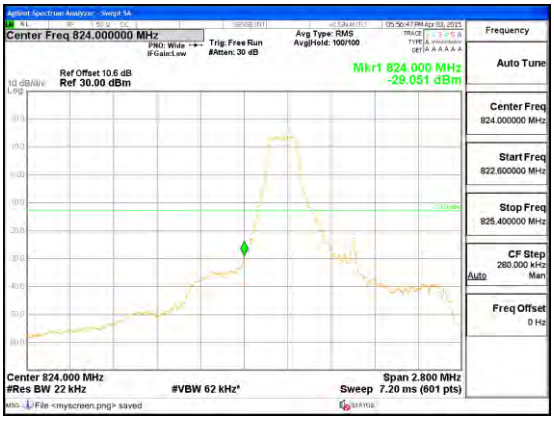
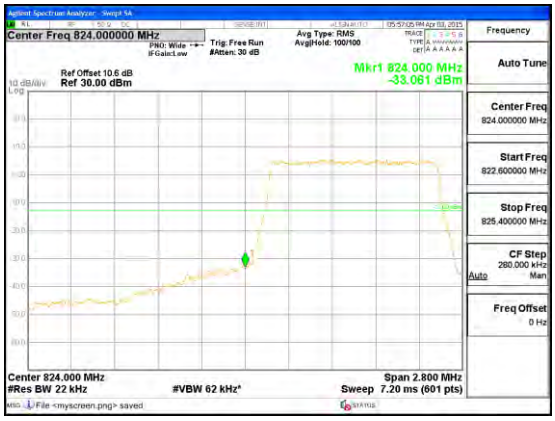
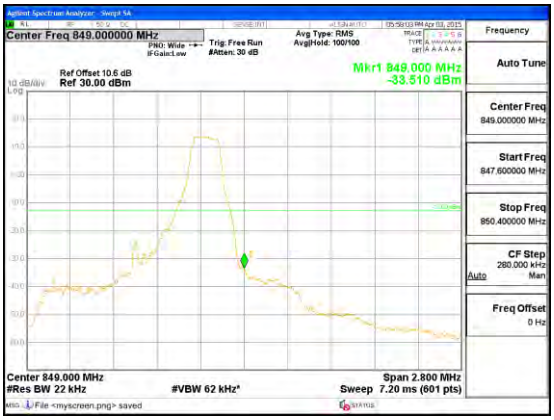
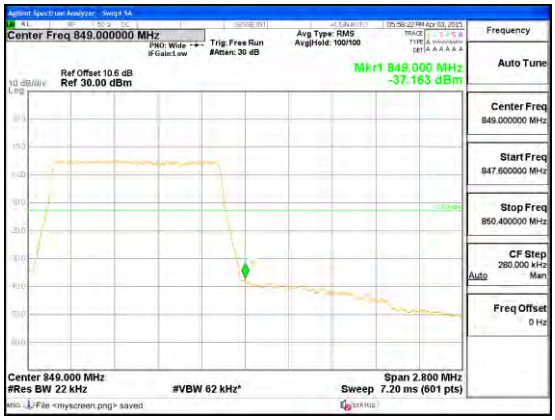
Band LTE5 1.4MHz 16QAM	 Band LTE5 1.4MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE5 1.4MHz CBE 16QAM Low Channel FRB.gif
Band LTE5 1.4MHz 16QAM	 Band LTE5 1.4MHz CBE 16QAM High Channel 1RB.gif	 Band LTE5 1.4MHz CBE 16QAM High Channel FRB.gif

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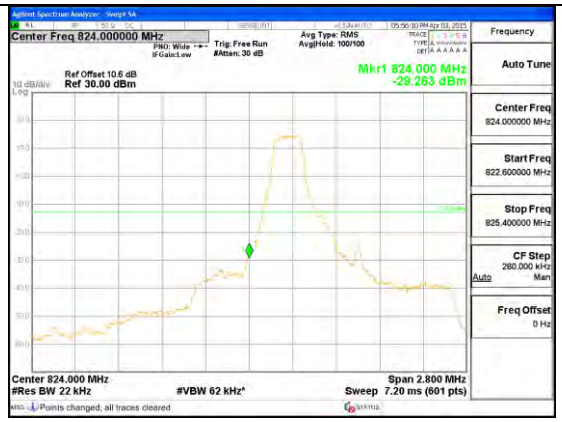
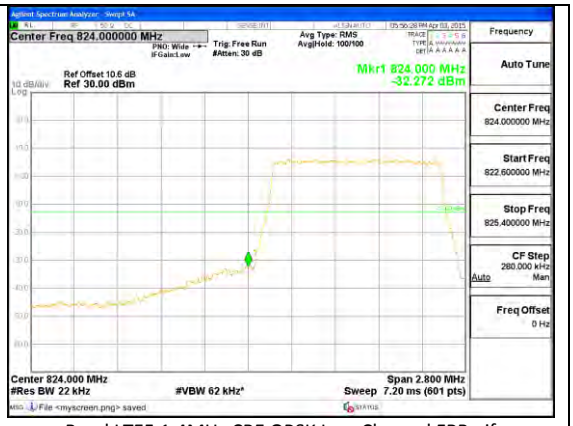
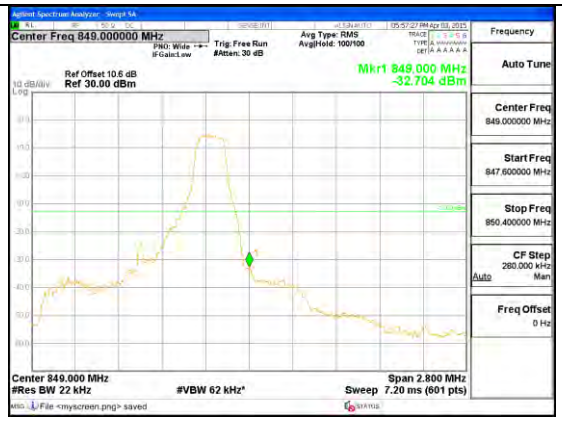
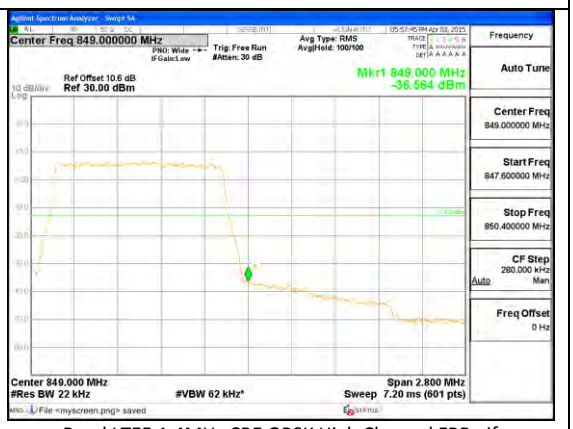
Band LTE5 1.4MHz QPSK	 Band LTE5 1.4MHz CBE QPSK Low Channel 1RB.gif	 Band LTE5 1.4MHz CBE QPSK Low Channel FRB.gif
Band LTE5 1.4MHz QPSK	 Band LTE5 1.4MHz CBE QPSK High Channel 1RB.gif	 Band LTE5 1.4MHz CBE QPSK High Channel FRB.gif

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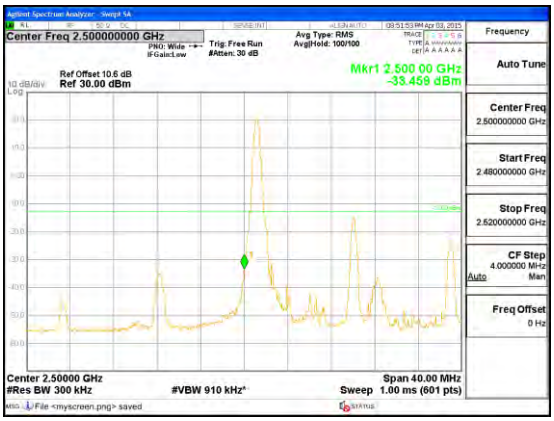
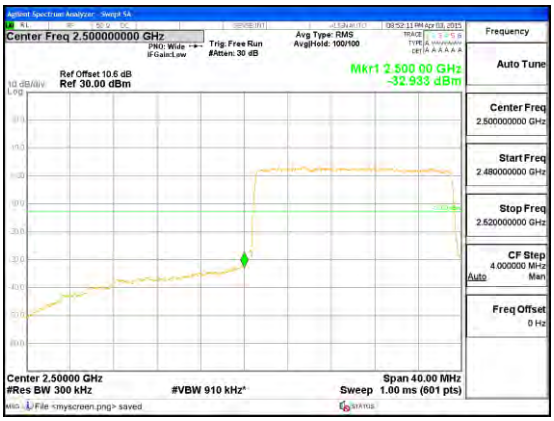
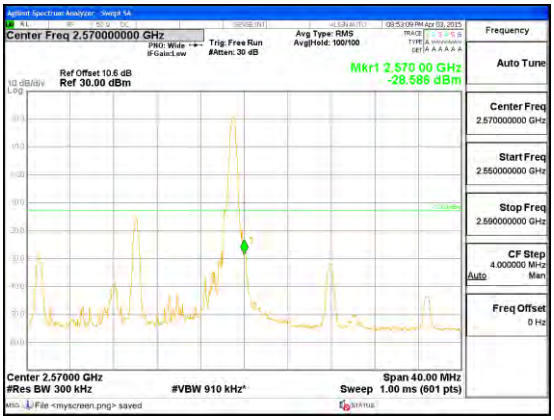
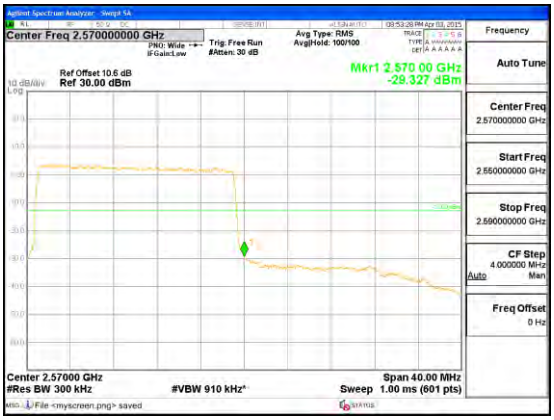
LTE Band 7

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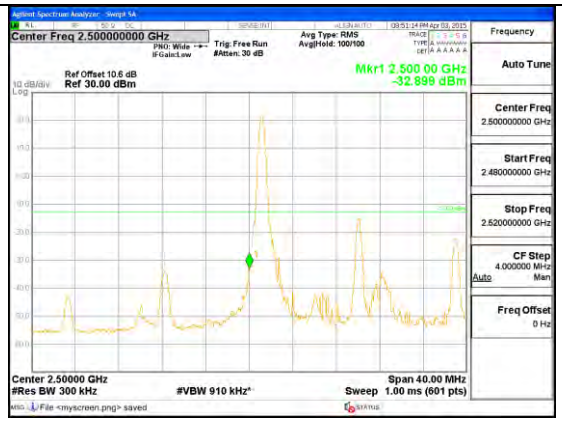
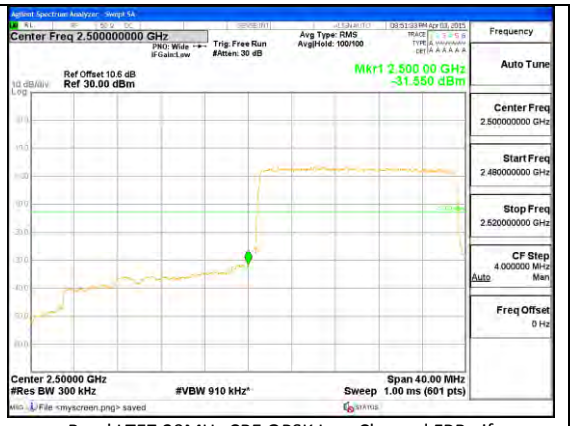
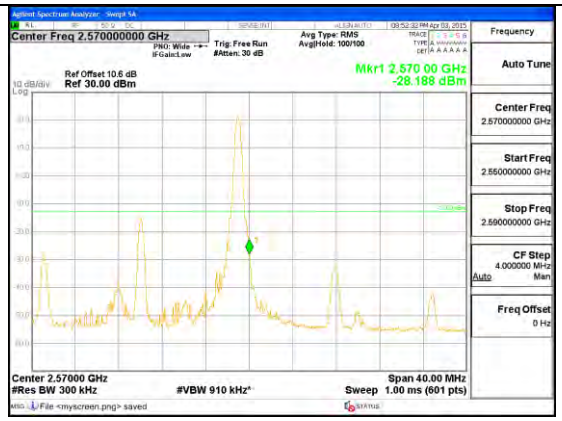
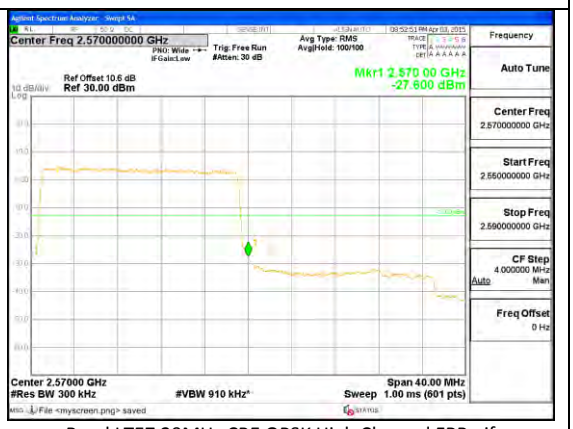
Band LTE7 20MHz QPSK	 Band LTE7 20MHz CBE QPSK Low Channel 1RB.gif	 Band LTE7 20MHz CBE QPSK Low Channel FRB.gif
Band LTE7 20MHz QPSK	 Band LTE7 20MHz CBE QPSK High Channel 1RB.gif	 Band LTE7 20MHz CBE QPSK High Channel FRB.gif

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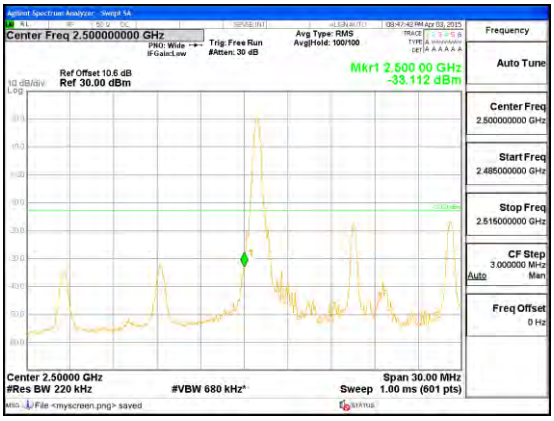
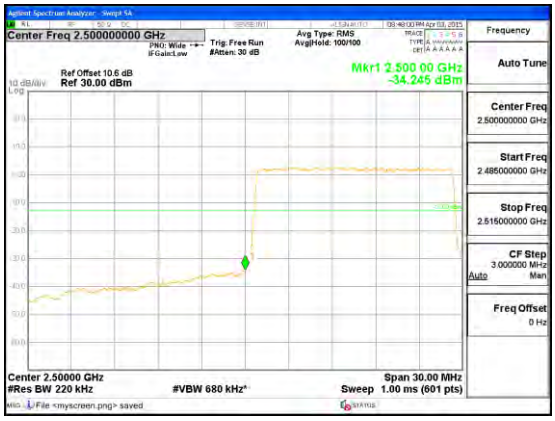
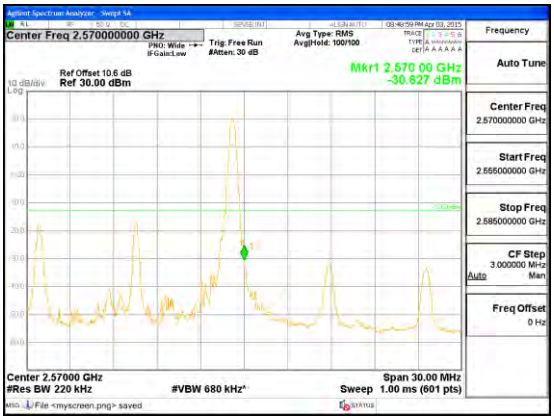
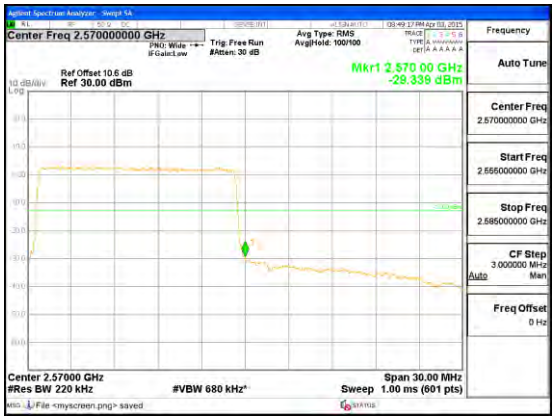
Band LTE7 15MHz 16QAM	 Band LTE7 15MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE7 15MHz CBE 16QAM Low Channel FRB.gif
Band LTE7 15MHz 16QAM	 Band LTE7 15MHz CBE 16QAM High Channel 1RB.gif	 Band LTE7 15MHz CBE 16QAM High Channel FRB.gif

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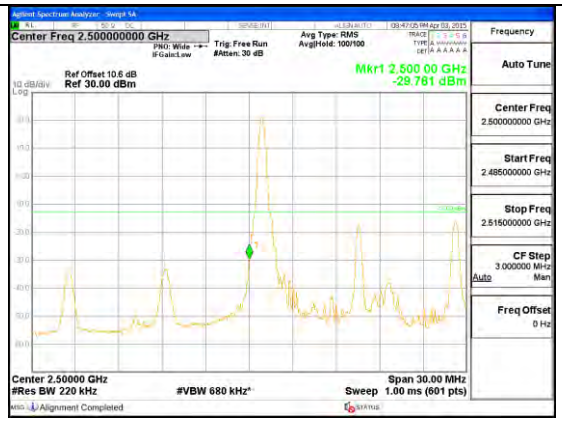
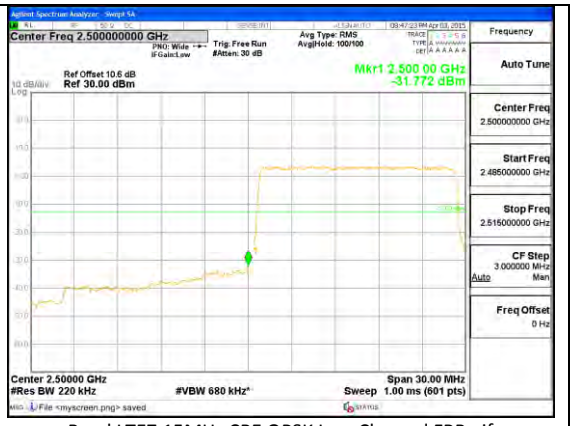
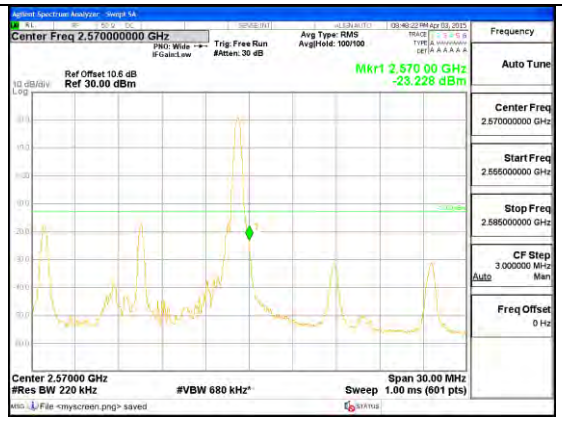
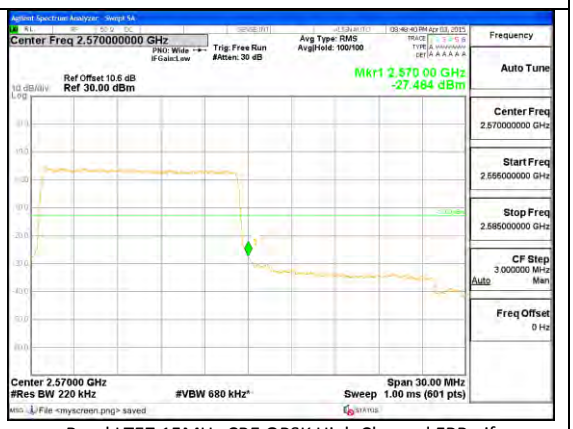
Band LTE7 15MHz QPSK	 Band LTE7 15MHz CBE QPSK Low Channel 1RB.gif	 Band LTE7 15MHz CBE QPSK Low Channel FRB.gif
Band LTE7 15MHz QPSK	 Band LTE7 15MHz CBE QPSK High Channel 1RB.gif	 Band LTE7 15MHz CBE QPSK High Channel FRB.gif

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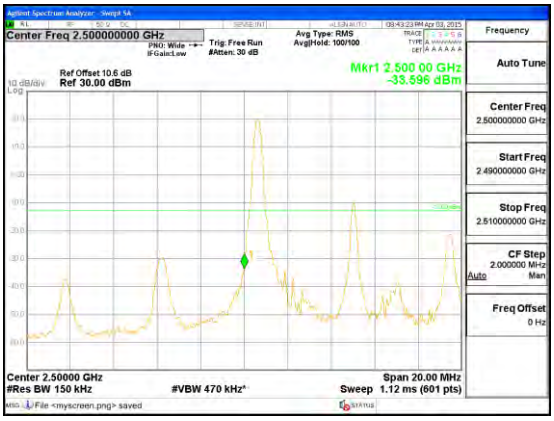
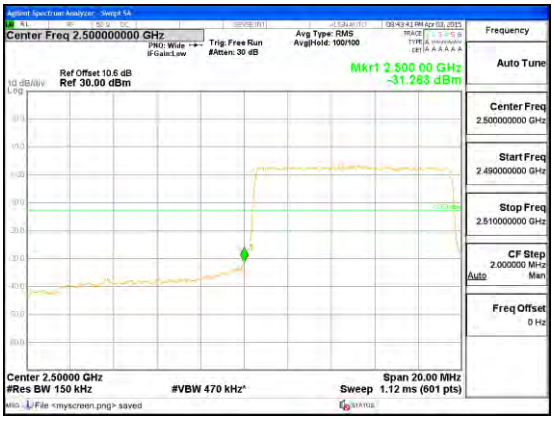
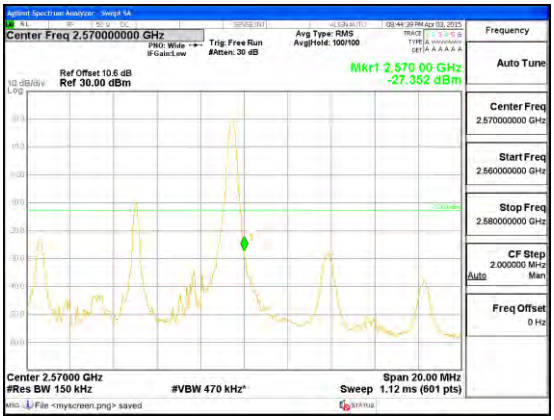
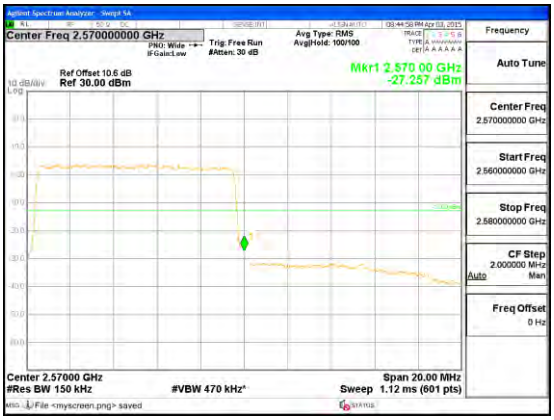
Band LTE7 10MHz 16QAM	 Band LTE7 10MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE7 10MHz CBE 16QAM Low Channel FRB.gif
Band LTE7 10MHz 16QAM	 Band LTE7 10MHz CBE 16QAM High Channel 1RB.gif	 Band LTE7 10MHz CBE 16QAM High Channel FRB.gif

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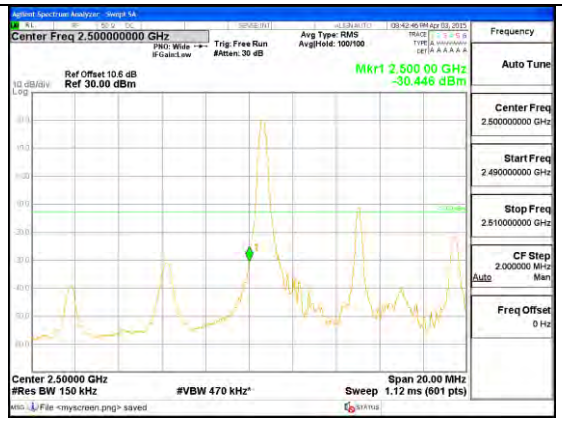
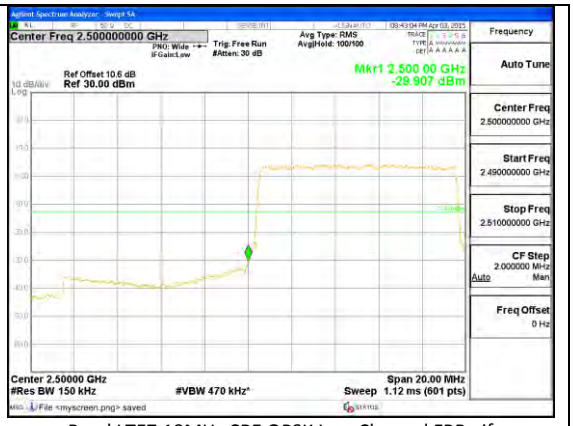
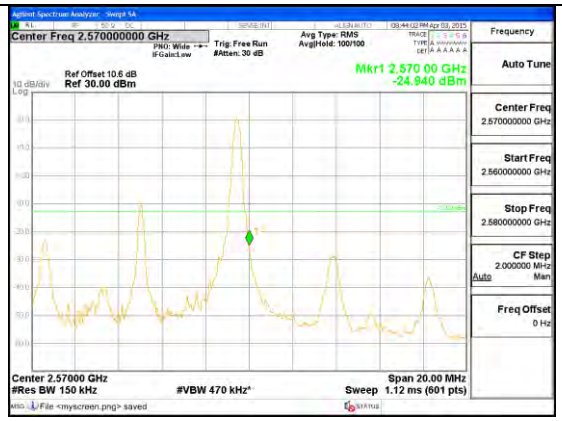
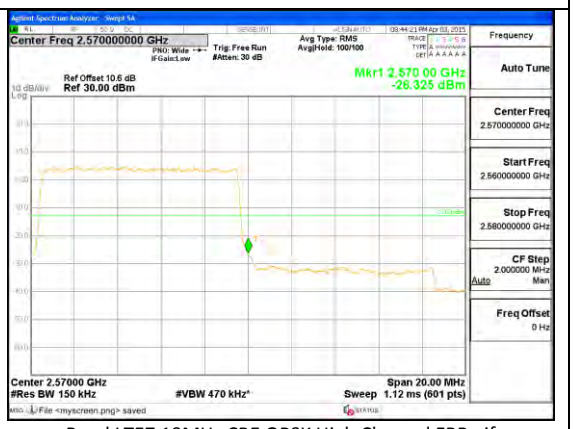
Band LTE7 10MHz QPSK	 Band LTE7 10MHz CBE QPSK Low Channel 1RB.gif	 Band LTE7 10MHz CBE QPSK Low Channel FRB.gif
Band LTE7 10MHz QPSK	 Band LTE7 10MHz CBE QPSK High Channel 1RB.gif	 Band LTE7 10MHz CBE QPSK High Channel FRB.gif

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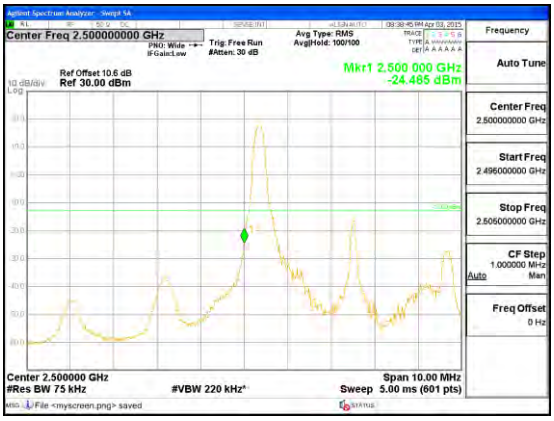
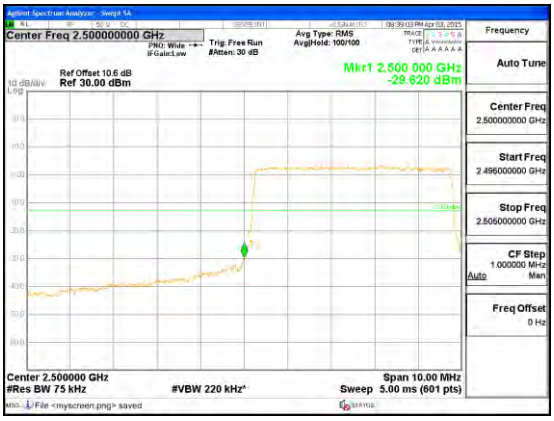
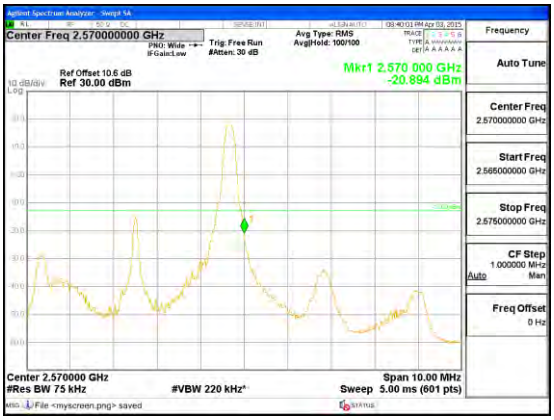
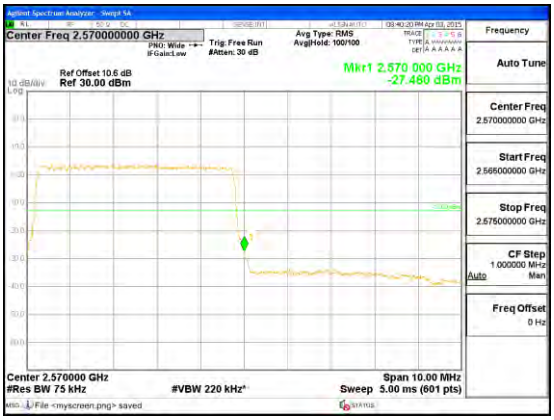
Band LTE7 5MHz 16QAM	 Band LTE7 5MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE7 5MHz CBE 16QAM Low Channel FRB.gif
Band LTE7 5MHz 16QAM	 Band LTE7 5MHz CBE 16QAM High Channel 1RB.gif	 Band LTE7 5MHz CBE 16QAM High Channel FRB.gif

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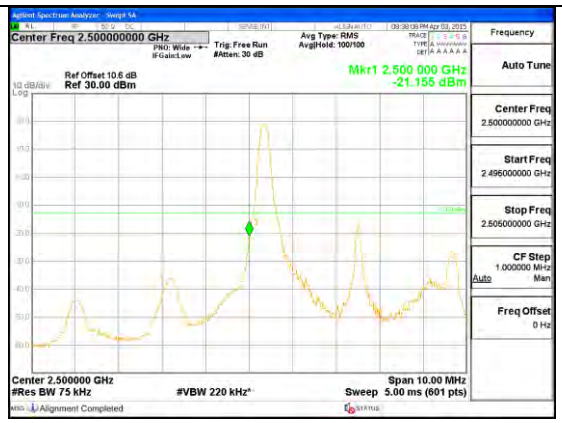
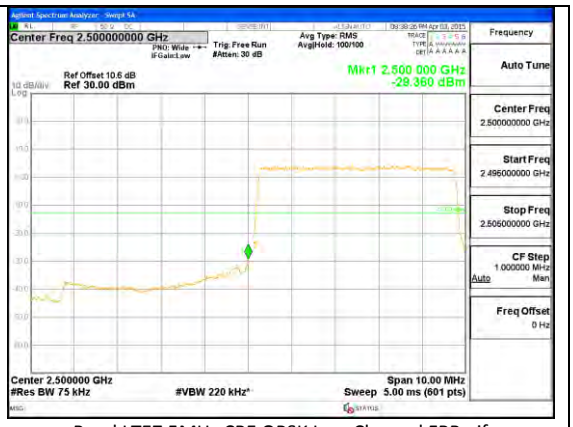
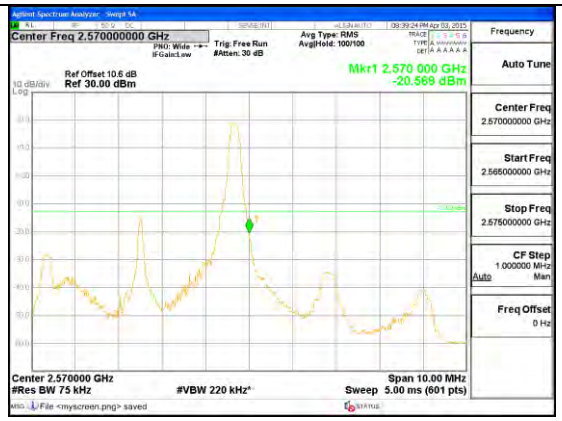
Band LTE7 5MHz QPSK	 Band LTE7 5MHz CBE QPSK Low Channel 1RB.gif	 Band LTE7 5MHz CBE QPSK Low Channel FRB.gif
Band LTE7 5MHz QPSK	 Band LTE7 5MHz CBE QPSK High Channel 1RB.gif	 Band LTE7 5MHz CBE QPSK High Channel FRB.gif

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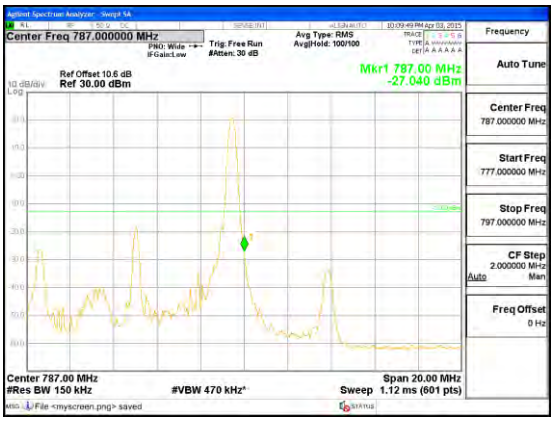
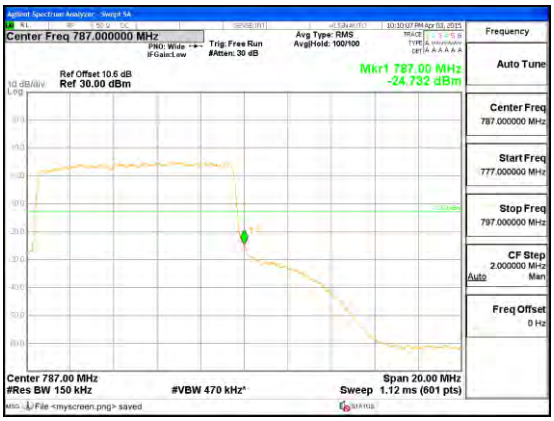
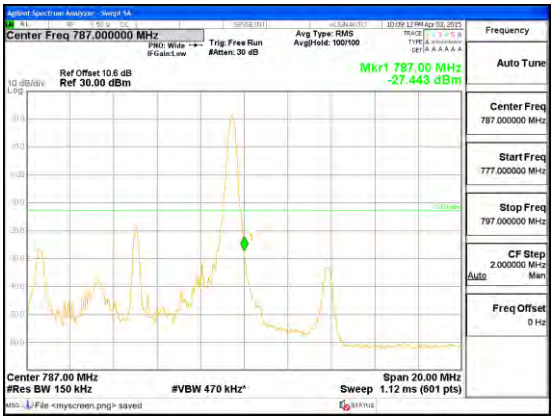
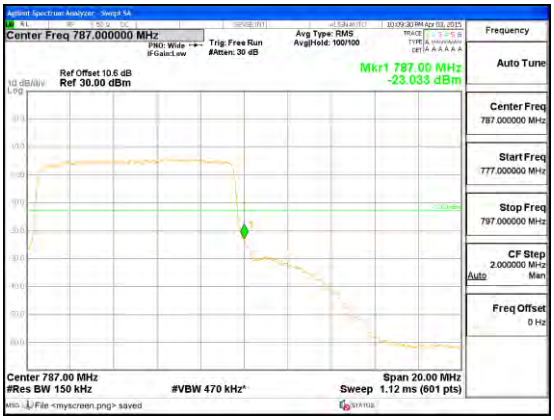
LTE Band 13

Band LTE13 10MHz 16QAM	 Band LTE13 10MHz CBE 16QAM High Channel 1RB.gif	 Band LTE13 10MHz CBE 16QAM High Channel FRB.gif
Band LTE13 10MHz QPSK	 Band LTE13 10MHz CBE QPSK High Channel 1RB.gif	 Band LTE13 10MHz CBE QPSK High Channel FRB.gif

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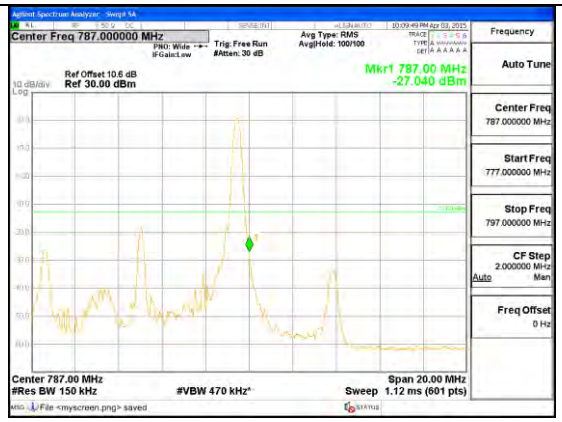
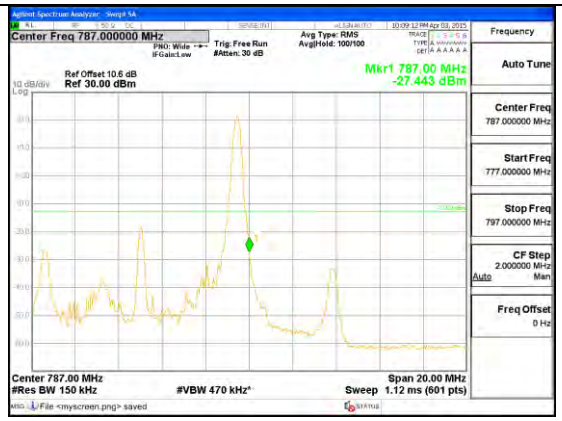
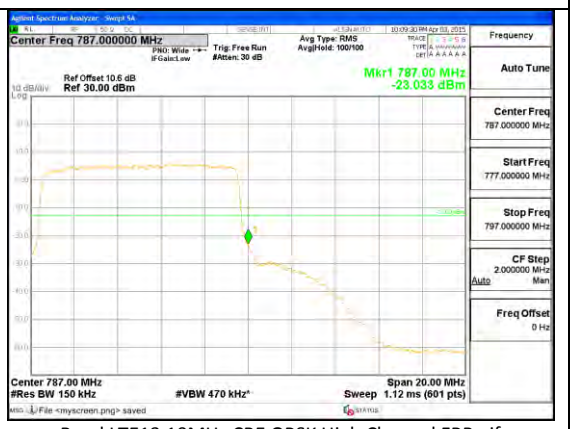
Band LTE13 10MHz 16QAM	 Band LTE13 10MHz CBE 16QAM High Channel 1RB.gif	 Band LTE13 10MHz CBE 16QAM High Channel FRB.gif
Band LTE13 10MHz QPSK	 Band LTE13 10MHz CBE QPSK High Channel 1RB.gif	 Band LTE13 10MHz CBE QPSK High Channel FRB.gif

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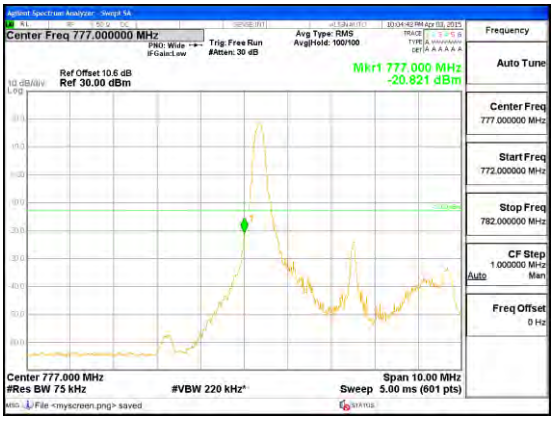
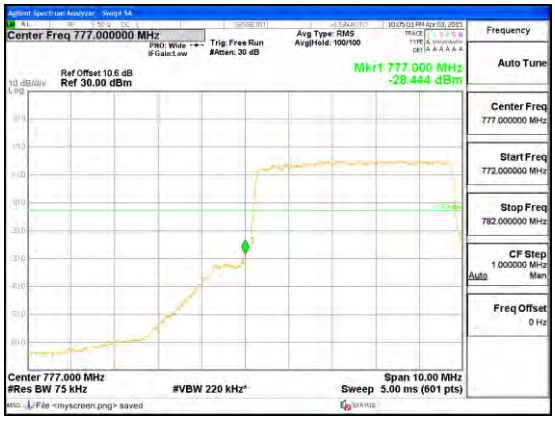
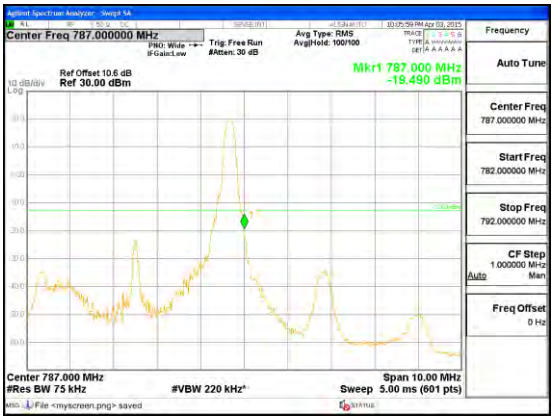
Band LTE13 5MHz 16QAM	 Band LTE13 5MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE13 5MHz CBE 16QAM Low Channel FRB.gif
Band LTE13 5MHz 16QAM	 Band LTE13 5MHz CBE 16QAM High Channel 1RB.gif	 Band LTE13 5MHz CBE 16QAM High Channel FRB.gif

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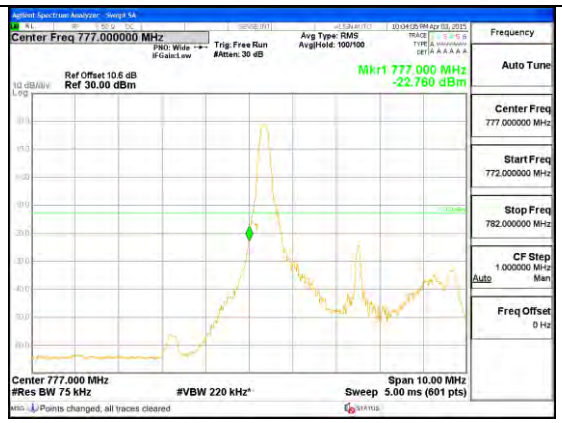
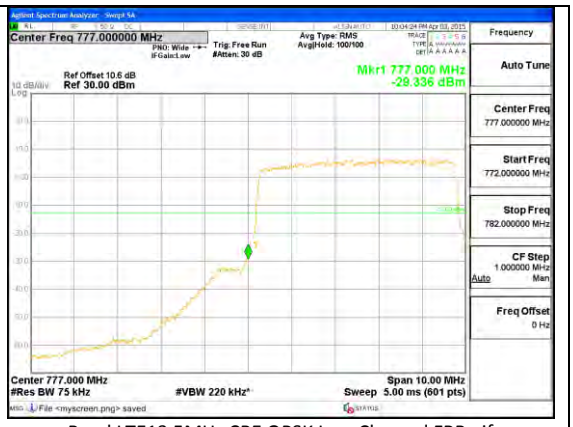
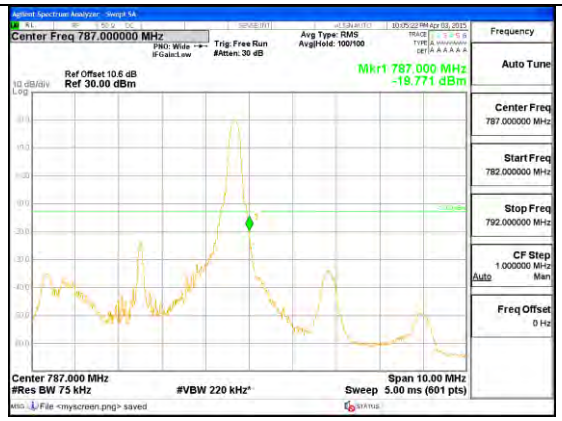
Band LTE13 5MHz QPSK	 Band LTE13 5MHz CBE QPSK Low Channel 1RB.gif	 Band LTE13 5MHz CBE QPSK Low Channel FRB.gif
Band LTE13 5MHz QPSK	 Band LTE13 5MHz CBE QPSK High Channel 1RB.gif	 Band LTE13 5MHz CBE QPSK High Channel FRB.gif

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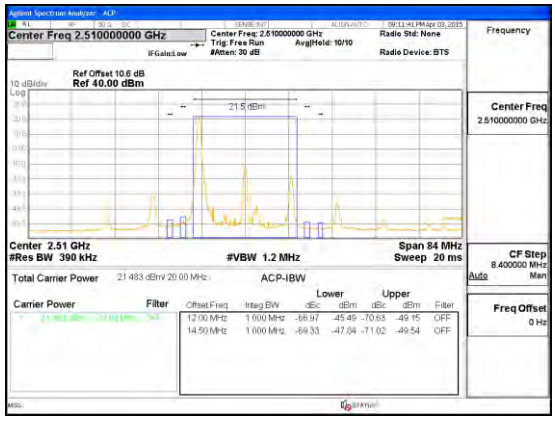
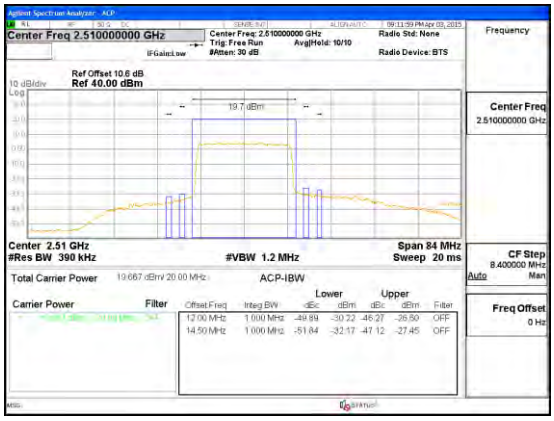
10.2.2. EMISSION MASK PLOTS

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

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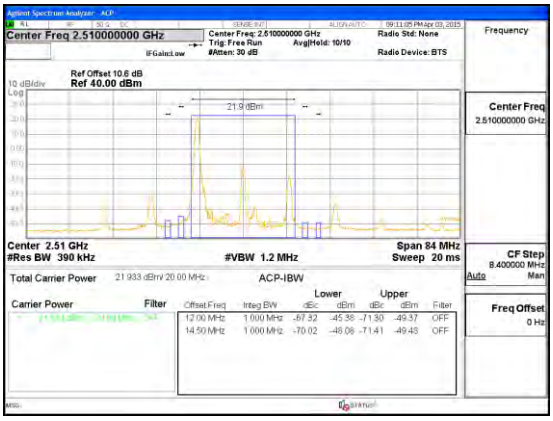
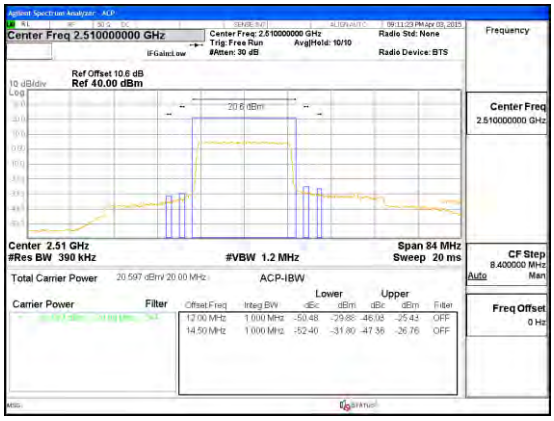
Band LTE7 20MHz QPSK	 Band LTE7 20MHz EM QPSK Low Channel 1RB.gif	 Band LTE7 20MHz EM QPSK Low Channel FRB.gif

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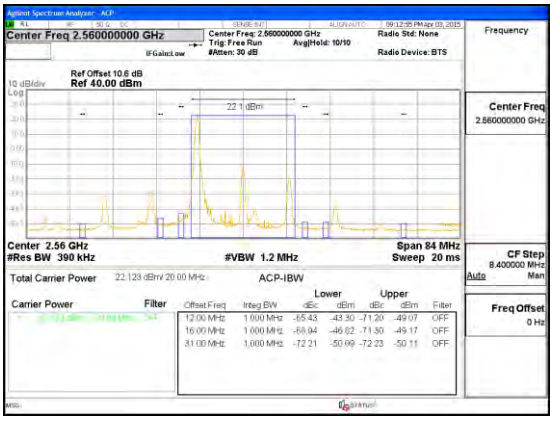
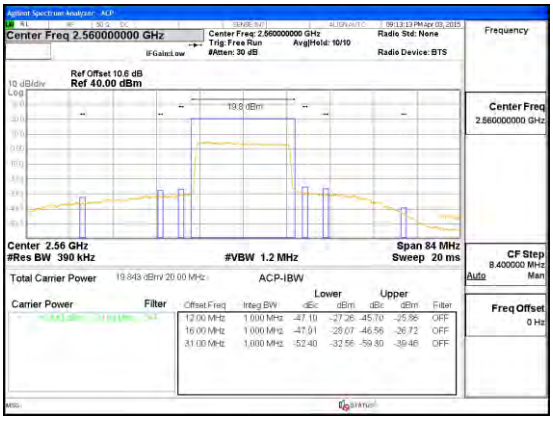
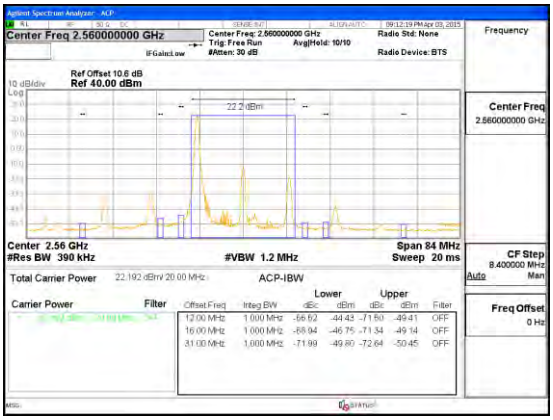
Band LTE7 20MHz 16QAM	 Band LTE7 20MHz EM 16QAM High Channel 1RB.gif	 Band LTE7 20MHz EM 16QAM High Channel FRB.gif
Band LTE7 20MHz QPSK	 Band LTE7 20MHz EM QPSK High Channel 1RB.gif	 Band LTE7 20MHz EM QPSK High Channel FRB.gif

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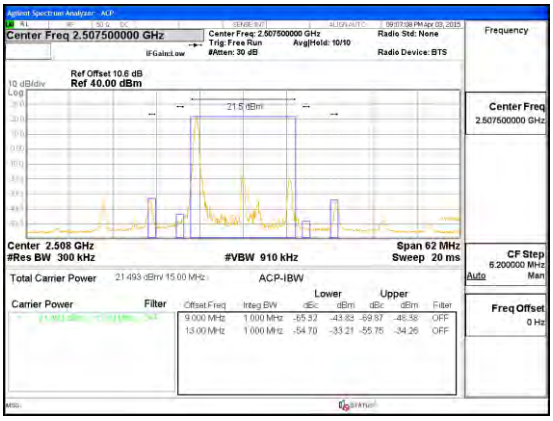
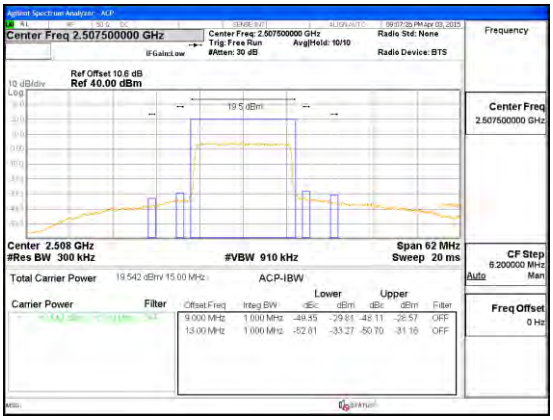
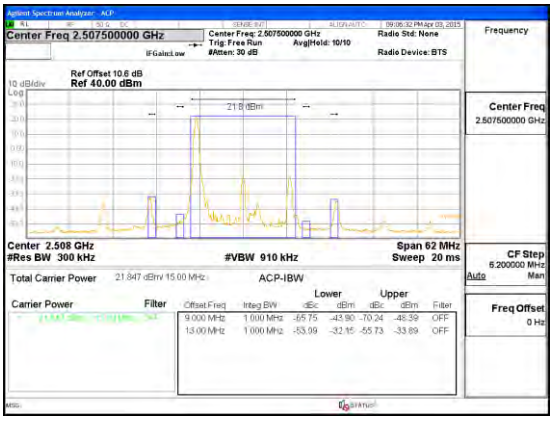
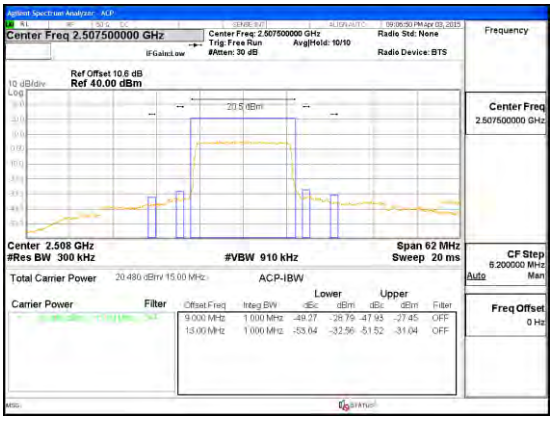
Band LTE7 15MHz 16QAM	 Band LTE7 15MHz EM 16QAM Low Channel 1RB.gif	Ba  nd LTE7 15MHz EM 16QAM Low Channel FRB.gif
Band LTE7 15MHz QPSK	 Band LTE7 15MHz EM QPSK Low Channel 1RB.gif	 Band LTE7 15MHz EM QPSK Low Channel FRB.gif

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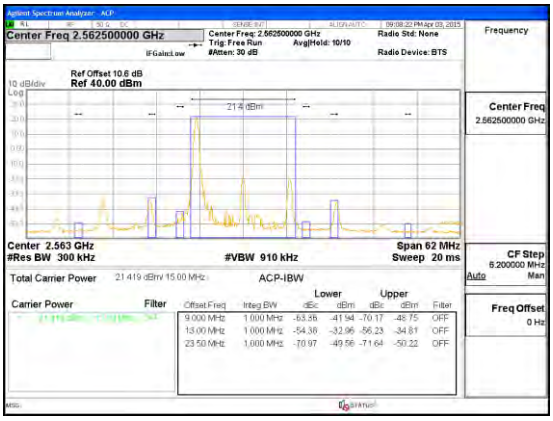
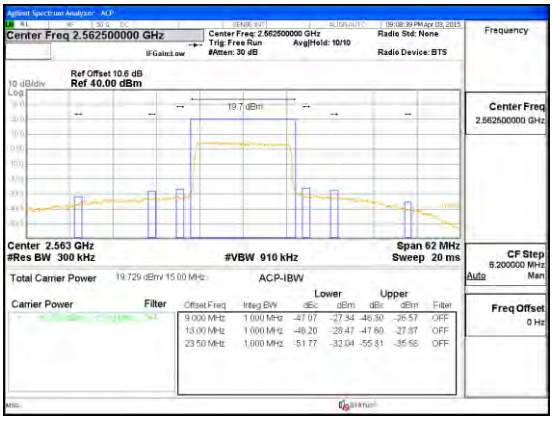
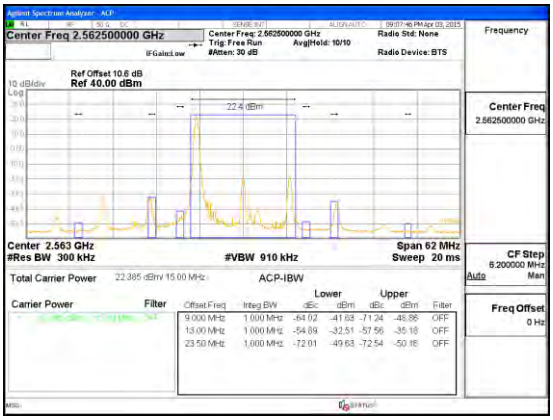
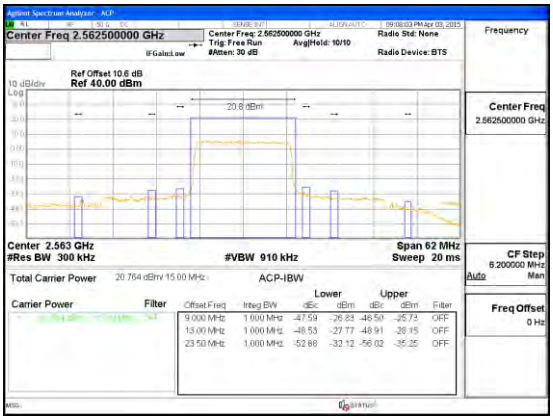
Band LTE7 15MHz 16QAM	 Band LTE7 15MHz EM 16QAM High Channel 1RB.gif	 Band LTE7 15MHz EM 16QAM High Channel FRB.gif
Band LTE7 15MHz QPSK	 Band LTE7 15MHz EM QPSK High Channel 1RB.gif	 Band LTE7 15MHz EM QPSK High Channel FRB.gif

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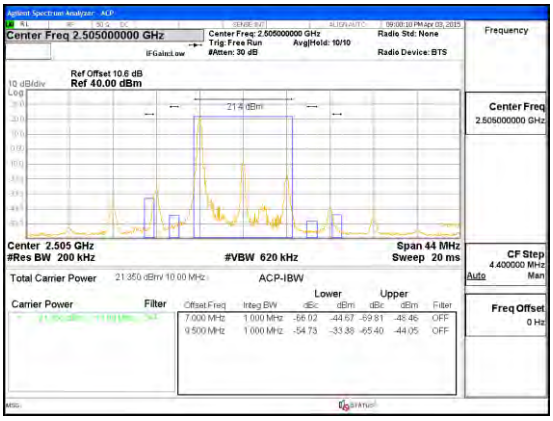
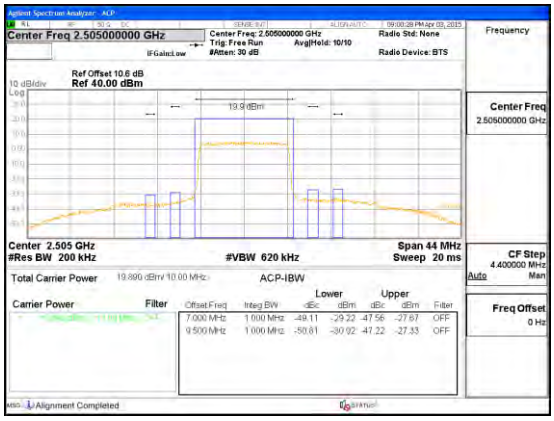
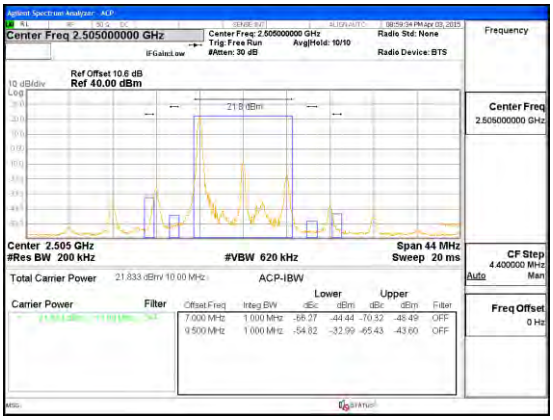
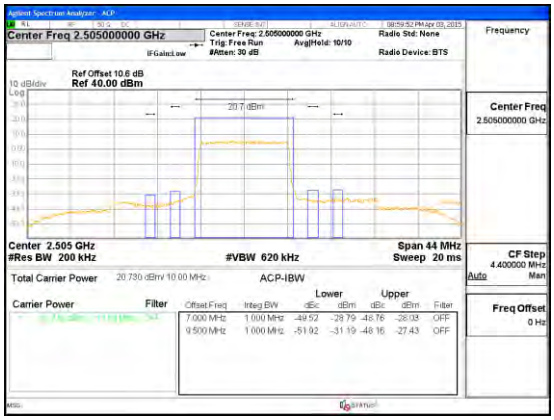
Band LTE7 10MHz 16QAM	 Band LTE7 10MHz EM 16QAM Low Channel 1RB.gif	 Band LTE7 10MHz EM 16QAM Low Channel FRB.gif
Band LTE7 10MHz QPSK	 Band LTE7 10MHz EM QPSK Low Channel 1RB.gif	 Band LTE7 10MHz EM QPSK Low Channel FRB.gif

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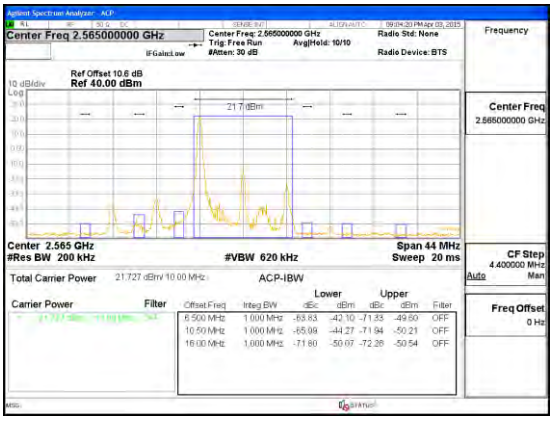
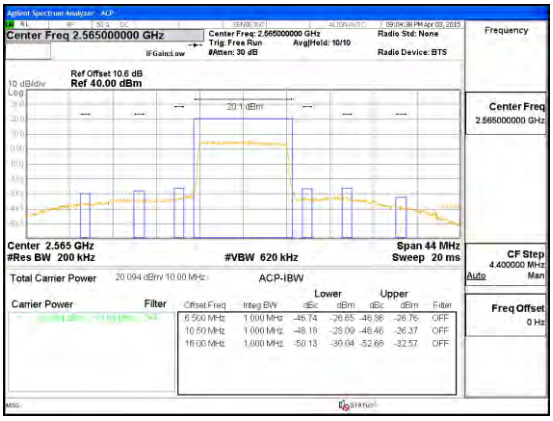
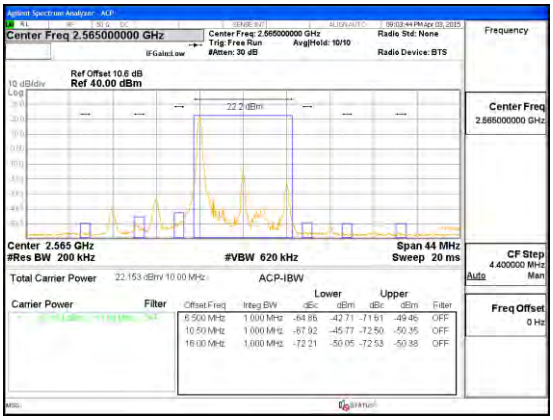
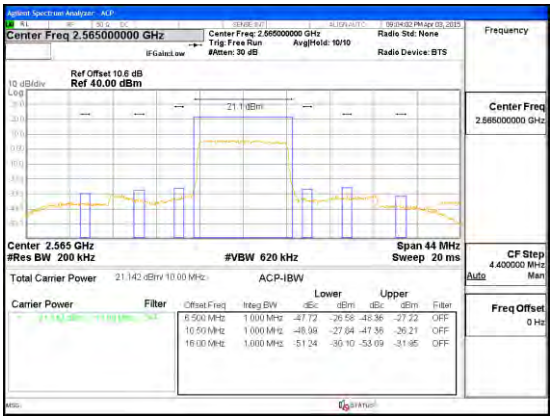
Band LTE7 10MHz 16QAM	 Band LTE7 10MHz EM 16QAM High Channel 1RB.gif	 Band LTE7 10MHz EM 16QAM High Channel FRB.gif
Band LTE7 10MHz QPSK	 Band LTE7 10MHz EM QPSK High Channel 1RB.gif	 Band LTE7 10MHz EM QPSK High Channel FRB.gif

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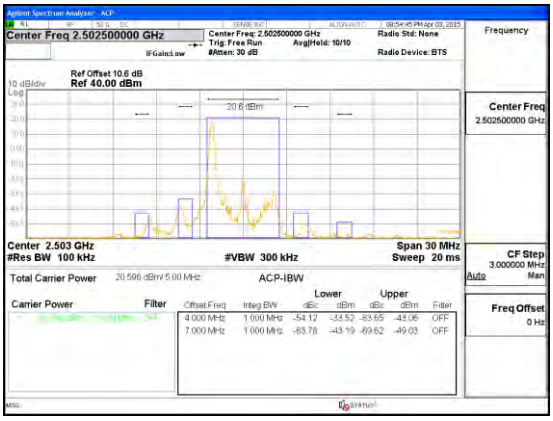
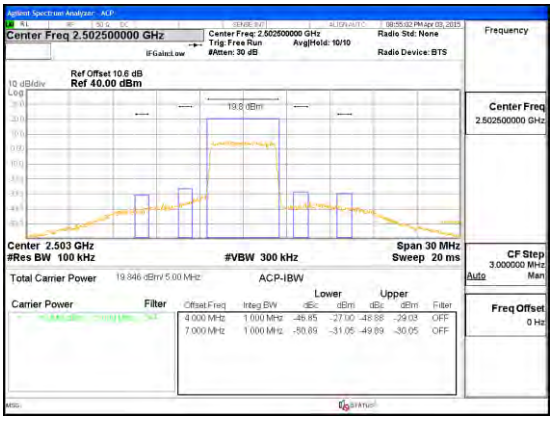
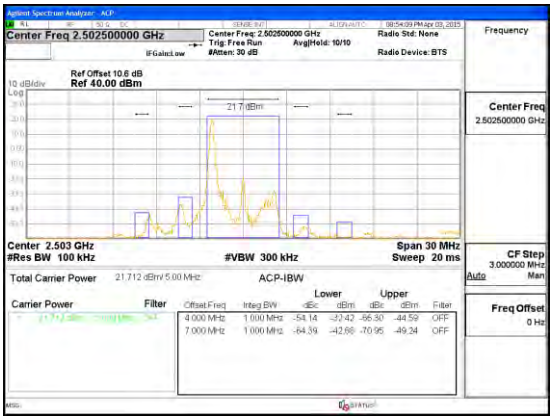
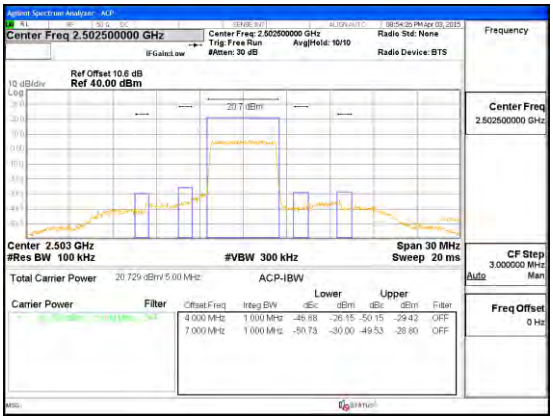
Band LTE7 5MHz 16QAM	 Band LTE7 5MHz EM 16QAM Low Channel 1RB.gif	 Band LTE7 5MHz EM 16QAM Low Channel FRB.gif
Band LTE7 5MHz QPSK	 Band LTE7 5MHz EM QPSK Low Channel 1RB.gif	 Band LTE7 5MHz EM QPSK Low Channel FRB.gif

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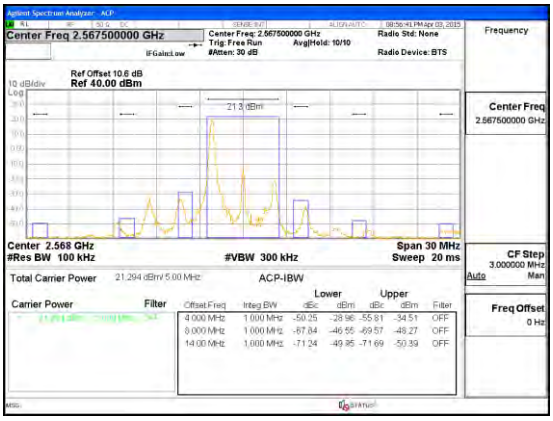
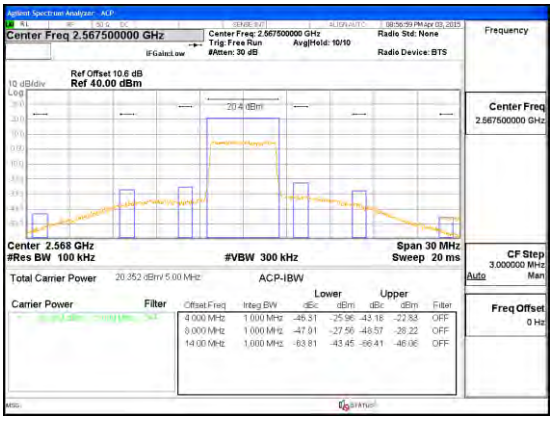
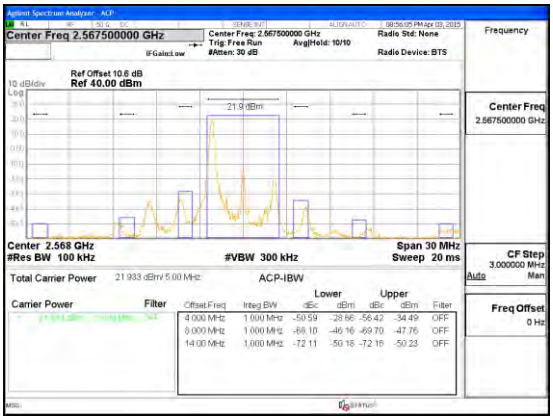
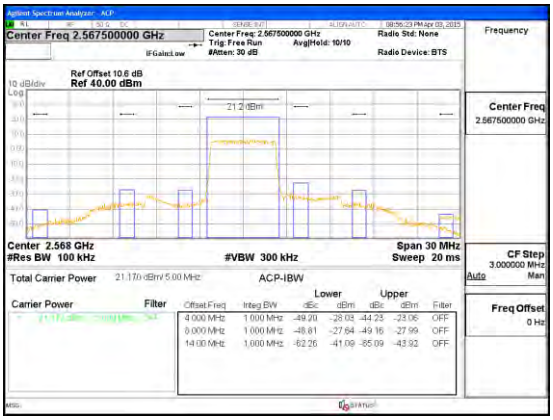
Band LTE7 5MHz 16QAM	 Band LTE7 5MHz EM 16QAM High Channel 1RB.gif	 Band LTE7 5MHz EM 16QAM High Channel FRB.gif
Band LTE7 5MHz QPSK	 Band LTE7 5MHz EM QPSK High Channel 1RB.gif	 Band LTE7 5MHz EM QPSK High Channel FRB.gif

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10.3. OUT OF BAND EMISSIONS

RULE PART(S)

FCC: §2.1051, §22.917(a), §24.238 (a), §27. 53 (g)

LIMITS

Part 22.917(a) & Part 24.238(a) 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 27.53(g) For operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least 43 + 10 log (P) dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

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, CDMA, and LTE

RESULTS

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701I
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888

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10.3.1. OUT OF BAND EMISSIONS RESULT

GSM

Band	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
GSM850	GPRS	824.2	-18.739	-13	-5.739
		836.6	-18.891	-13	-5.891
		848.8	-17.862	-13	-4.862
	EGPRS	824.2	-18.23	-13	-5.23
		836.6	-18.557	-13	-5.557
		848.8	-18.956	-13	-5.956
GSM1900	GPRS	1850.2	-18.79	-13	-5.79
		1880	-18.393	-13	-5.393
		1909.8	-18.376	-13	-5.376
	EGPRS	1850.2	-18.849	-13	-5.849
		1880	-18.984	-13	-5.984
		1909.8	-17.659	-13	-4.659

WCDMA

Band	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
Band 5	REL99	826.4	-35.34	-13	-22.34
		836.6	-34.94	-13	-21.94
		846.6	-34.27	-13	-21.27
	HSDPA	826.4	-35.04	-13	-22.04
		836.6	-34.03	-13	-21.03
		846.6	-35.28	-13	-22.28
Band 2	REL99	1852.4	-34.14	-13	-21.14
		1880	-34.92	-13	-21.92
		1907.6	-34.62	-13	-21.62
	HSDPA	1852.4	-35.22	-13	-22.22
		1880	-34.02	-13	-21.02
		1907.6	-34.87	-13	-21.87

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CDMA

Band	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
BC0	1xRTT	824.7	-36.26	-13	-23.26
		836.52	-37.26	-13	-24.26
		848.31	-35.52	-13	-22.52
	EVDO	824.7	-37.01	-13	-24.01
		836.52	-36.21	-13	-23.21
		848.31	-36.90	-13	-23.90
BC1	1xRTT	1851.25	-36.75	-13	-23.75
		1880	-36.46	-13	-23.46
		1908.75	-36.98	-13	-23.98
	EVDO	1851.25	-36.75	-13	-23.75
		1880	-36.66	-13	-23.66
		1908.75	-36.83	-13	-23.83

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LTE Band 2

Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE2	20	QPSK	1860	-28.40	-13	-15.40
			1880	-28.40	-13	-15.40
			1900	-28.57	-13	-15.57
		16QAM	1860	-28.28	-13	-15.28
			1880	-28.09	-13	-15.09
			1900	-27.33	-13	-14.33
	15	QPSK	1857.5	-28.63	-13	-15.63
			1880	-28.09	-13	-15.09
			1902.5	-26.97	-13	-13.97
		16QAM	1857.5	-27.95	-13	-14.95
			1880	-28.19	-13	-15.19
			1902.5	-28.69	-13	-15.69
	10	QPSK	1855	-28.62	-13	-15.62
			1880	-28.50	-13	-15.50
			1905	-28.27	-13	-15.27
		16QAM	1855	-28.67	-13	-15.67
			1880	-27.73	-13	-14.73
			1905	-28.69	-13	-15.69
	5	QPSK	1852.5	-28.12	-13	-15.12
			1880	-26.88	-13	-13.88
			1907.5	-28.14	-13	-15.14
		16QAM	1852.5	-28.20	-13	-15.20
			1880	-28.27	-13	-15.27
			1907.5	-28.35	-13	-15.35

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Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE2	3	QPSK	1851.5	-26.62	-13	-13.62
			1880	-28.47	-13	-15.47
			1908.5	-27.48	-13	-14.48
		16QAM	1851.5	-28.53	-13	-15.53
			1880	-28.28	-13	-15.28
			1908.5	-28.06	-13	-15.06
	1.4	QPSK	1850.7	-28.05	-13	-15.05
			1880	-28.29	-13	-15.29
			1909.3	-28.57	-13	-15.57
		16QAM	1850.7	-28.48	-13	-15.48
			1880	-28.22	-13	-15.22
			1909.3	-28.44	-13	-15.44

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LTE Band 4

Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE4	20	QPSK	1720	-28.18	-13	-15.18
			1732.5	-27.50	-13	-14.50
			1745	-27.87	-13	-14.87
		16QAM	1720	-27.62	-13	-14.62
			1732.5	-27.49	-13	-14.49
			1745	-28.10	-13	-15.10
	15	QPSK	1717.5	-27.95	-13	-14.95
			1732.5	-27.43	-13	-14.43
			1747.5	-28.23	-13	-15.23
		16QAM	1717.5	-28.30	-13	-15.30
			1732.5	-27.10	-13	-14.10
			1747.5	-33.99	-13	-20.99
	10	QPSK	1715	-36.03	-13	-23.03
			1732.5	-27.09	-13	-14.09
			1750	-34.42	-13	-21.42
		16QAM	1715	-33.58	-13	-20.58
			1732.5	-27.46	-13	-14.46
			1750	-34.75	-13	-21.75
	5	QPSK	1712.5	-27.21	-13	-14.21
			1732.5	-27.75	-13	-14.75
			1752.5	-34.94	-13	-21.94
		16QAM	1712.5	-27.78	-13	-14.78
			1732.5	-27.59	-13	-14.59
			1752.5	-36.08	-13	-23.08

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Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE4	3	QPSK	1711.5	-27.03	-13	-14.03
			1732.5	-28.04	-13	-15.04
			1753.5	-27.45	-13	-14.45
		16QAM	1711.5	-27.37	-13	-14.37
			1732.5	-27.82	-13	-14.82
			1753.5	-27.30	-13	-14.30
	1.4	QPSK	1710.7	-27.64	-13	-14.64
			1732.5	-27.52	-13	-14.52
			1754.3	-28.10	-13	-15.10
		16QAM	1710.7	-26.93	-13	-13.93
			1732.5	-27.52	-13	-14.52
			1754.3	-27.59	-13	-14.59

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LTE Band 5

Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE5	10	QPSK	829	-33.99	-13	-20.99
			836.5	-27.82	-13	-14.82
			844	-33.56	-13	-20.56
		16QAM	829	-34.70	-13	-21.70
			836.5	-28.04	-13	-15.04
			844	-27.46	-13	-14.46
	5	QPSK	826.5	-27.60	-13	-14.60
			836.5	-28.46	-13	-15.46
			846.5	-27.68	-13	-14.68
		16QAM	826.5	-27.94	-13	-14.94
			836.5	-28.62	-13	-15.62
			846.5	-27.26	-13	-14.26
	3	QPSK	825.5	-27.77	-13	-14.77
			836.5	-28.18	-13	-15.18
			847.5	-27.62	-13	-14.62
		16QAM	825.5	-27.57	-13	-14.57
			836.5	-26.94	-13	-13.94
			847.5	-27.79	-13	-14.79
	1.4	QPSK	824.7	-28.06	-13	-15.06
			836.5	-28.01	-13	-15.01
			848.3	-27.68	-13	-14.68
		16QAM	824.7	-27.46	-13	-14.46
			836.5	-26.72	-13	-13.72
			848.3	-27.54	-13	-14.54

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LTE Band 7

Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE7	20	QPSK	2510	-37.34	-25	-12.34
			2535	-36.07	-25	-11.07
			2560	-35.03	-25	-10.03
		16QAM	2510	-34.30	-25	-9.30
			2535	-34.38	-25	-9.38
			2560	-35.16	-25	-10.16
	15	QPSK	2507.5	-34.65	-25	-9.65
			2535	-34.39	-25	-9.39
			2562.5	-34.96	-25	-9.96
		16QAM	2507.5	-34.08	-25	-9.08
			2535	-34.03	-25	-9.03
			2562.5	-33.94	-25	-8.94
	10	QPSK	2505	-37.40	-25	-12.40
			2535	-33.69	-25	-8.69
			2565	-35.08	-25	-10.08
		16QAM	2505	-34.23	-25	-9.23
			2535	-33.27	-25	-8.27
			2565	-34.38	-25	-9.38
	5	QPSK	2502.5	-34.26	-25	-9.26
			2535	-34.27	-25	-9.27
			2567.5	-33.22	-25	-8.22
		16QAM	2502.5	-34.37	-25	-9.37
			2535	-34.15	-25	-9.15
			2567.5	-34.40	-25	-9.40

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LTE Band 13

Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE13	10	QPSK	782	-35.08	-13	-22.08
		16QAM	782	-28.42	-13	-15.42
	5	QPSK	779.5	-27.72	-13	-14.72
			782	-27.76	-13	-14.76
			784.5	-35.31	-13	-22.31
		16QAM	779.5	-28.07	-13	-15.07
			782	-27.88	-13	-14.88
			784.5	-28.13	-13	-15.13

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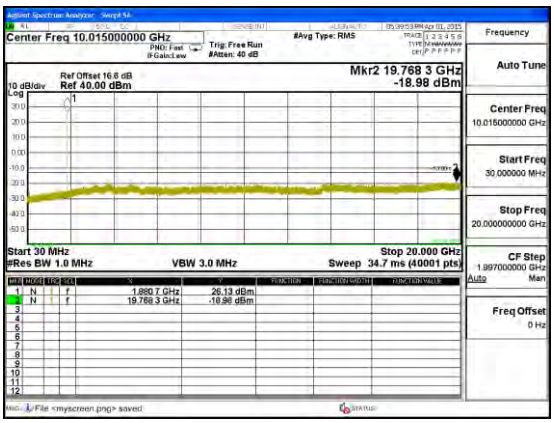
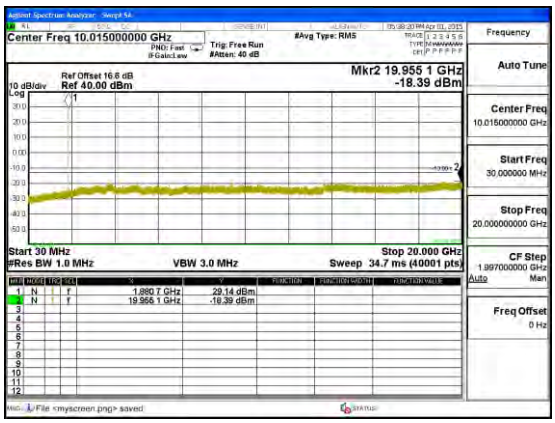
10.3.2. OUT OF BAND EMISSIONS PLOTS

GSM

Band GSM 1900 EGPRS	 Band GSM1900 EGPRS CSE Mid channel	 Band GSM1900 GPRS CSE Mid channel

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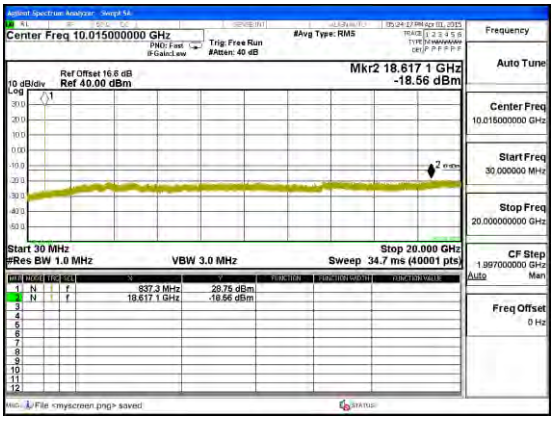
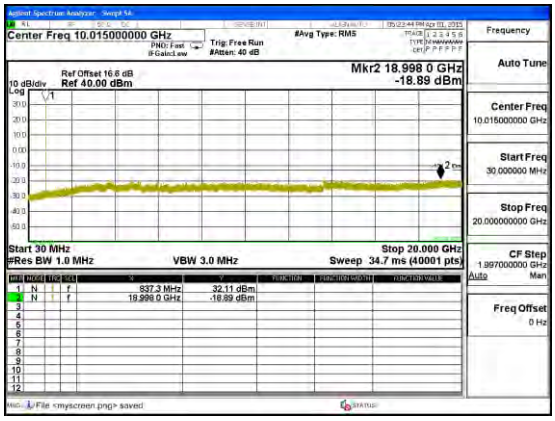
Band GSM 850 EGPRS	 Band GSM850 EGPRS CSE Mid channel	 Band GSM850 GPRS CSE Mid channel

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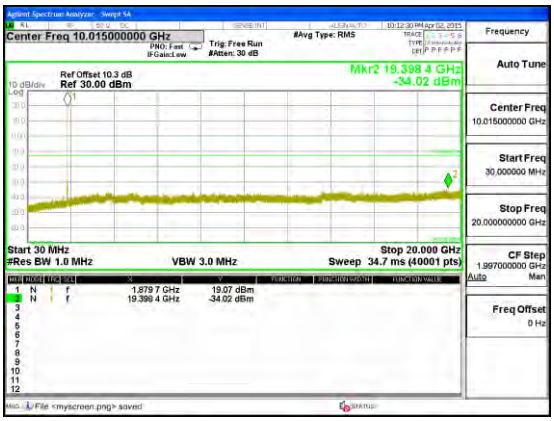
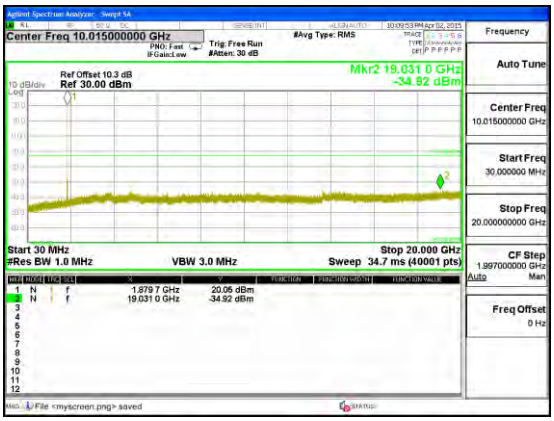
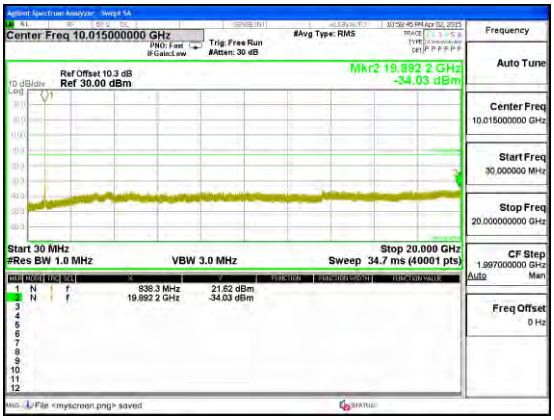
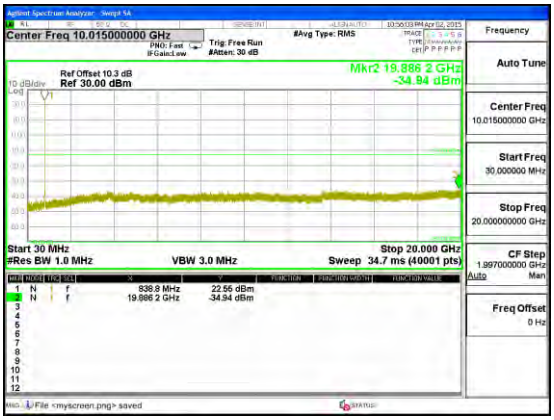
WCDMA

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

Band Band 5 HSDPA	 Band WCDMA B5 HSDPA CSE	 Band WCDMA B5 REL99 CSE

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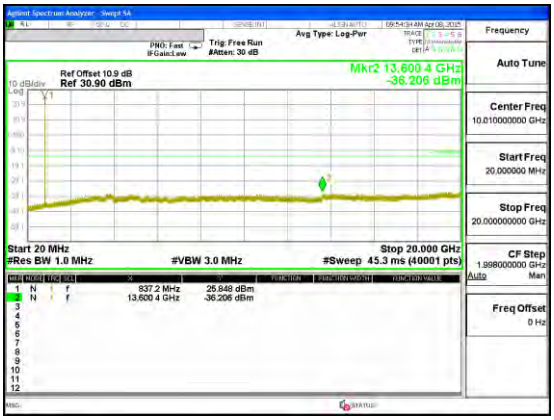
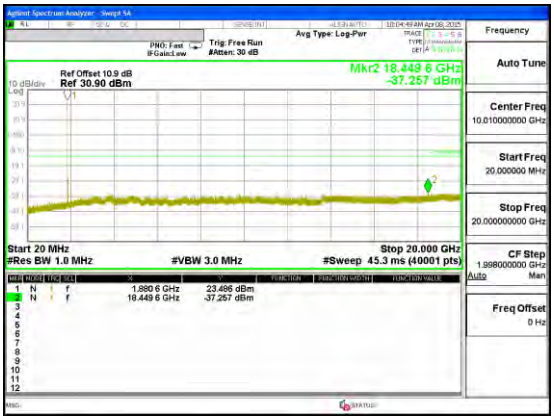
CDMA

Band BC1 EVDO REL. 0	 Band BC1 EVDO Rel. 0 CSE Mid channel	 Band BC1 1xRTT CSE Mid channel

Band BC0 EVDO REL. 0	 Band BC0 EVDO Rel. 0 CSE Mid channel	 Band BC0 1xRTT CSE Mid channel

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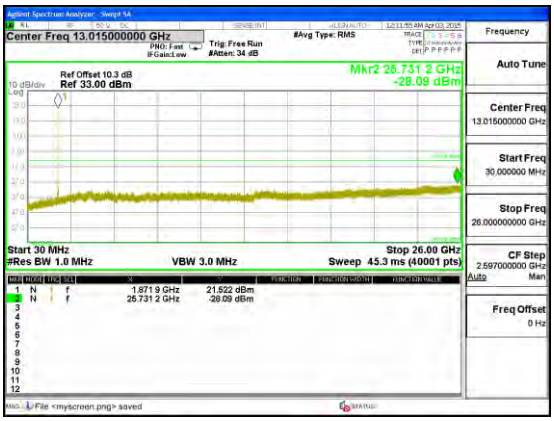
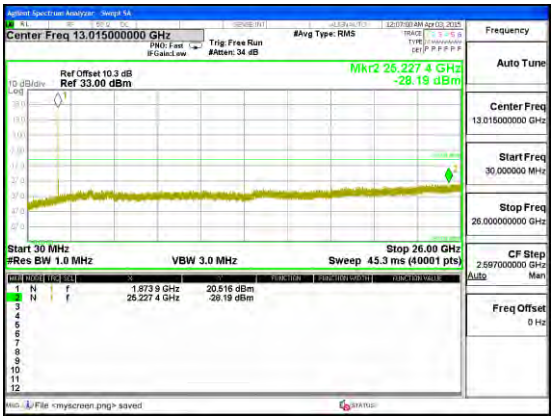
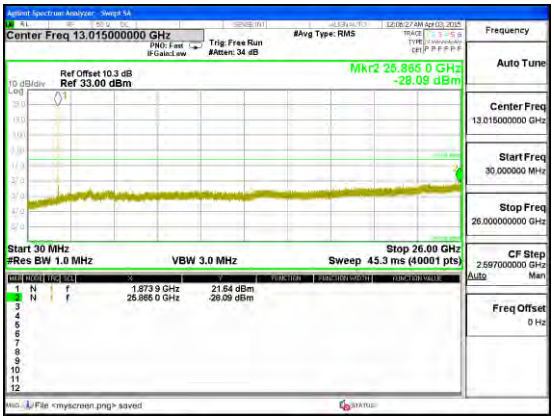
LTE Band 2

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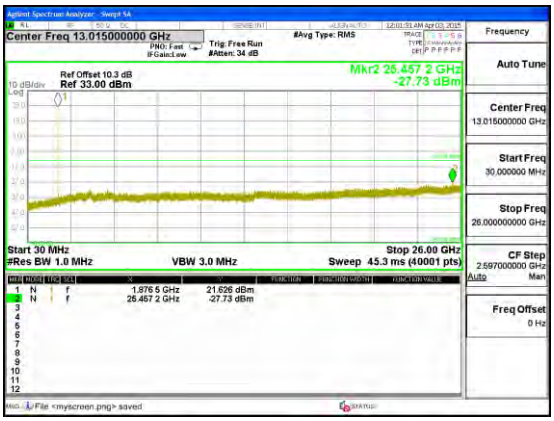
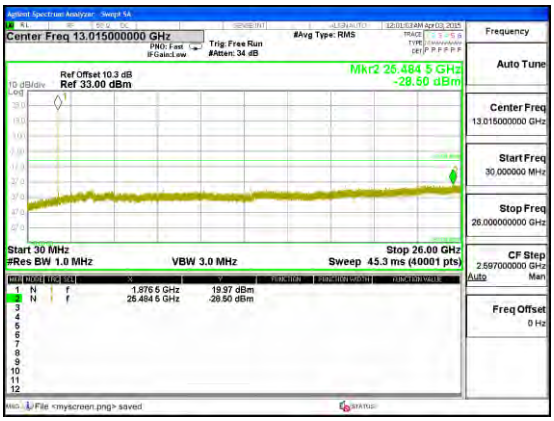
Band LTE2 10MHz 16QAM	 Band LTE2 10MHz CSE 16QAM Mid channel	 Band LTE2 10MHz CSE QPSK Mid channel

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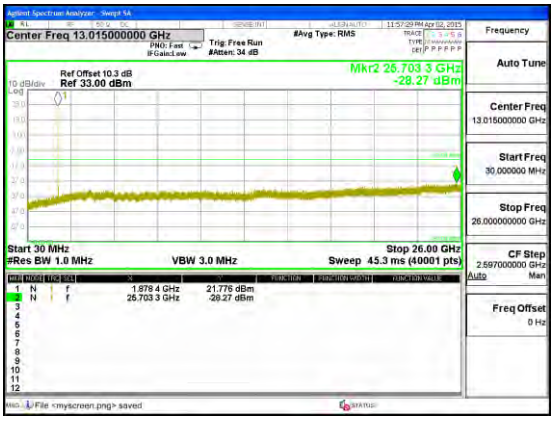
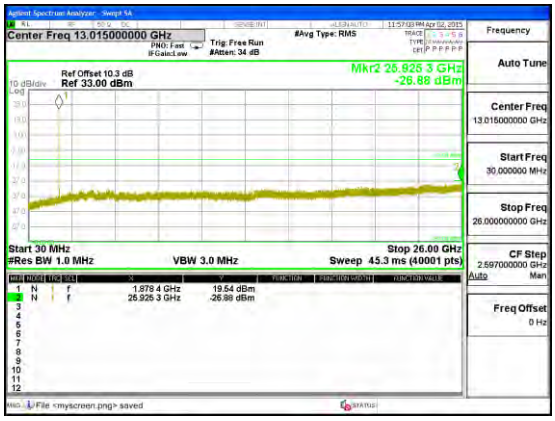
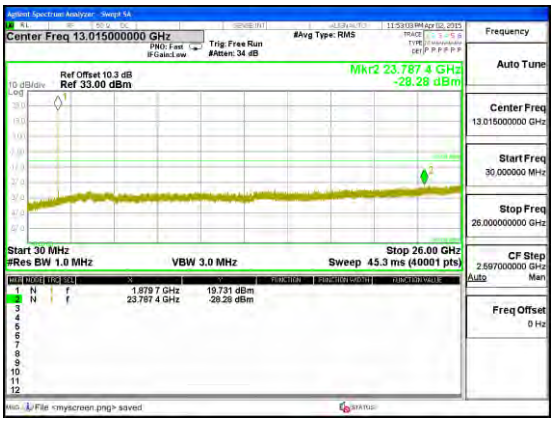
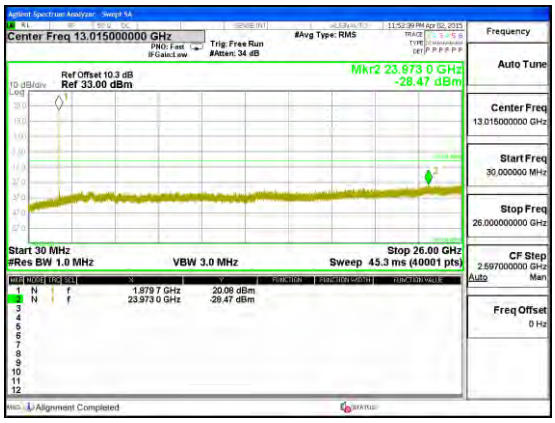
Band LTE2 5MHz 16QAM	 Band LTE2 5MHz CSE 16QAM Mid channel	 Band LTE2 5MHz CSE QPSK Mid channel

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

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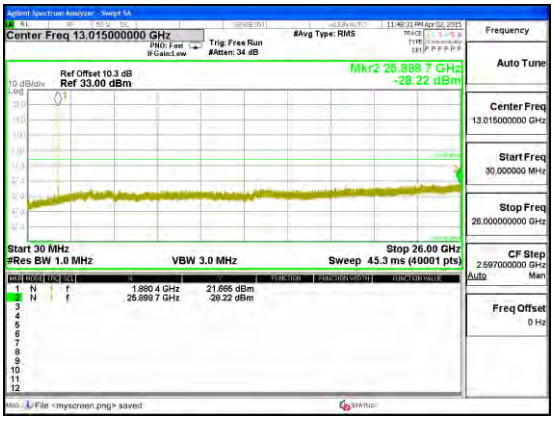
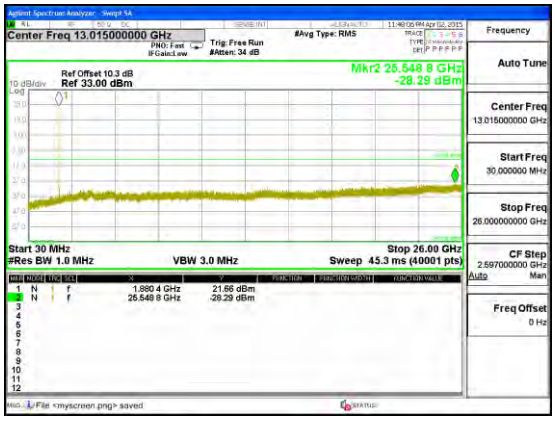
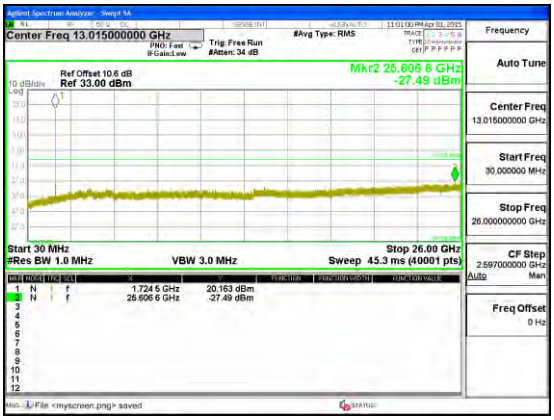
Band LTE2 1.4MHz 16QAM	 Band LTE2 1.4MHz CSE 16QAM Mid channel	 Band LTE2 1.4MHz CSE QPSK Mid channel

LTE Band 4

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

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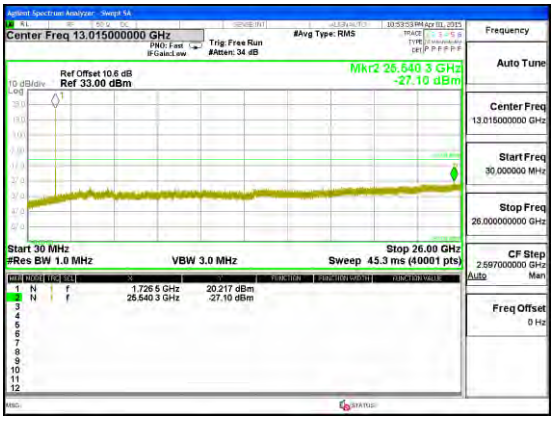
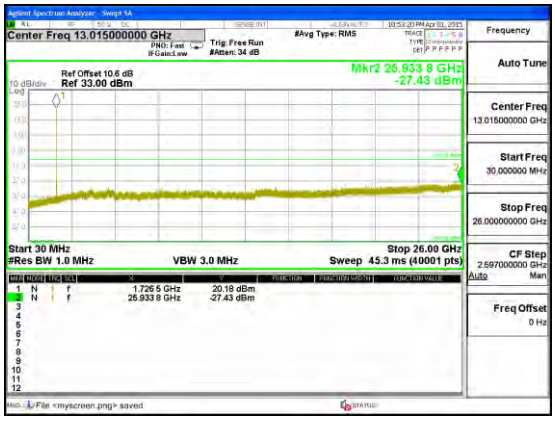
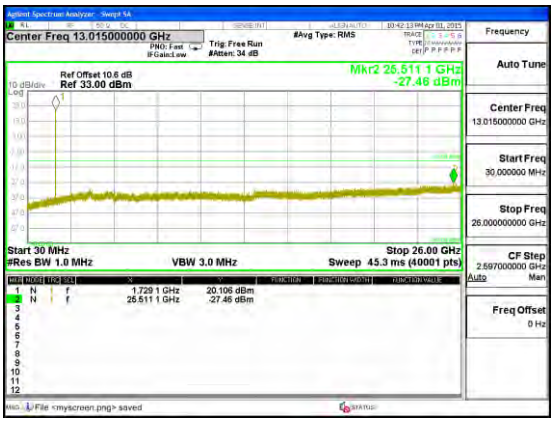
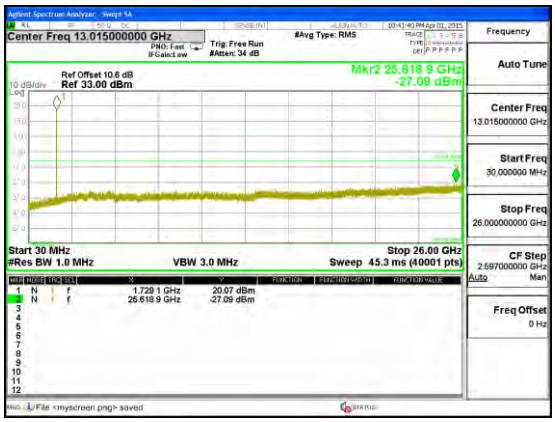
Band LTE4 15MHz 16QAM	 Band LTE4 15MHz CSE 16QAM Mid channel	 Band LTE4 15MHz CSE QPSK Mid channel

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

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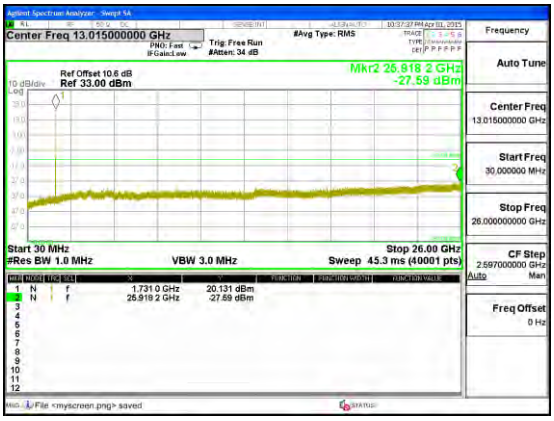
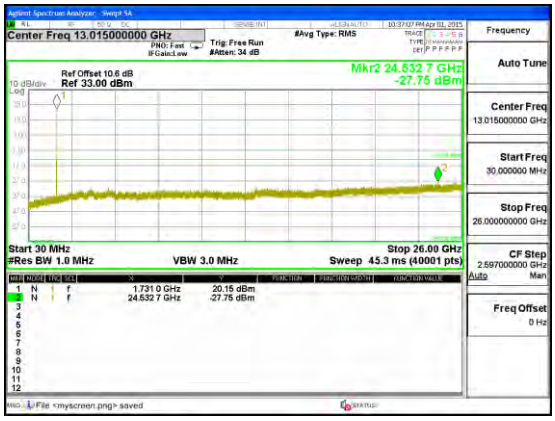
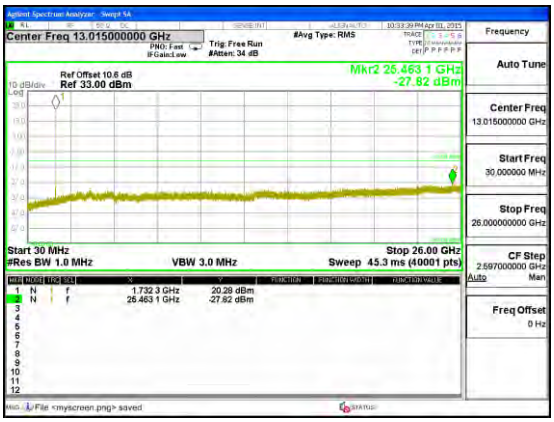
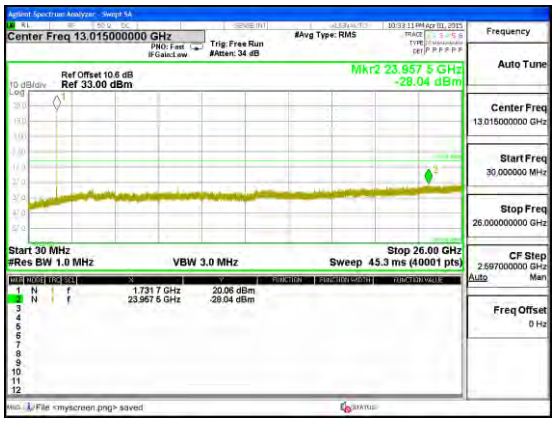
Band LTE4 5MHz 16QAM	 Band LTE4 5MHz CSE 16QAM Mid channel	 Band LTE4 5MHz CSE QPSK Mid channel

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

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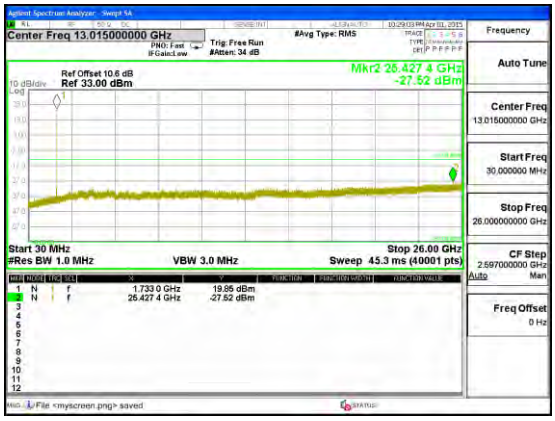
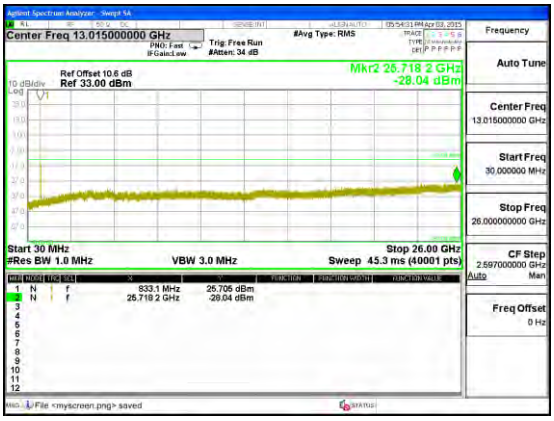
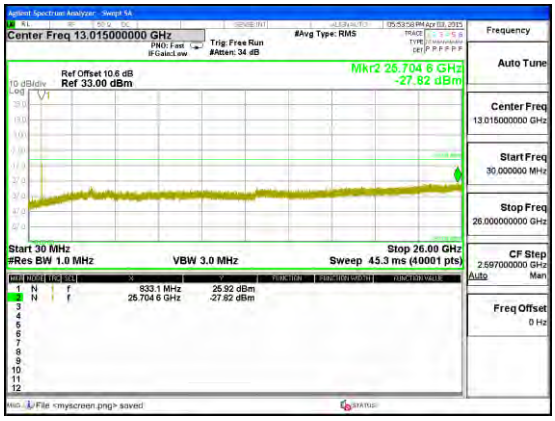
Band LTE4 1.4MHz 16QAM	 Band LTE4 1.4MHz CSE 16QAM Mid channel	 Band LTE4 1.4MHz CSE QPSK Mid channel

LTE Band 5

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

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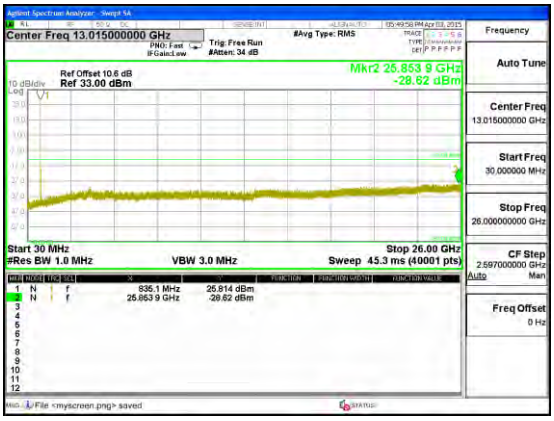
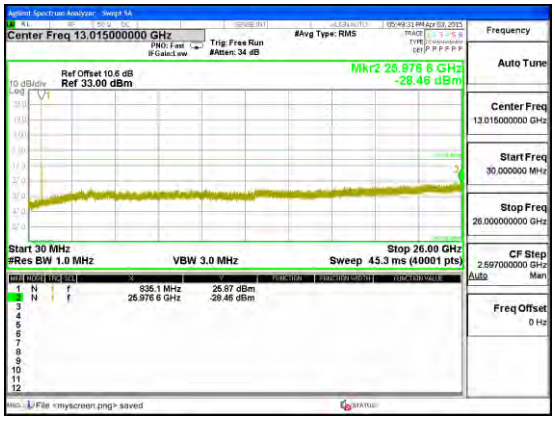
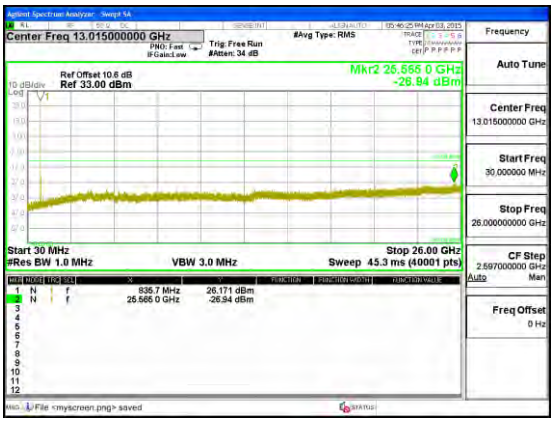
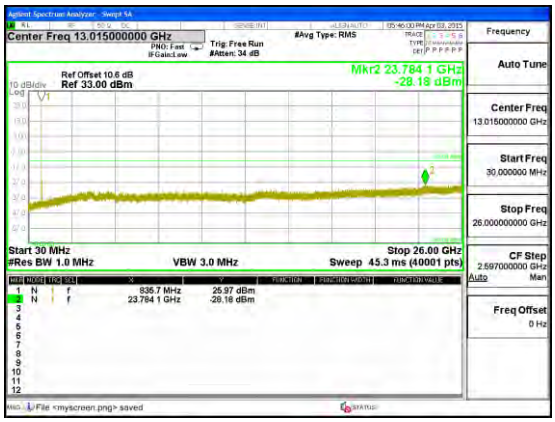
Band LTE5 5MHz 16QAM	 Band LTE5 5MHz CSE 16QAM Mid channel	 Band LTE5 5MHz CSE QPSK Mid channel

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

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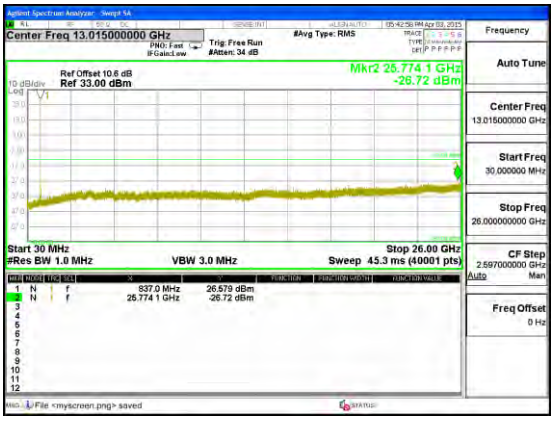
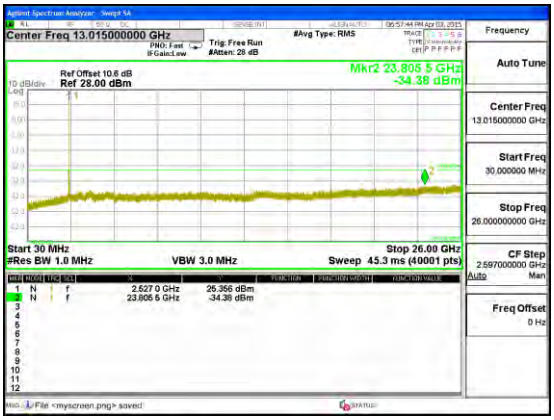
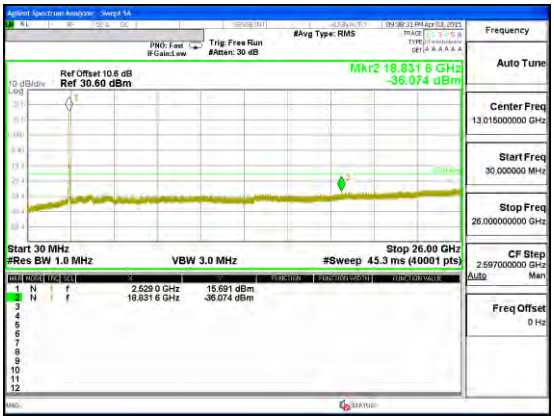
Band LTE5 1.4MHz 16QAM	 Band LTE5 1.4MHz CSE 16QAM Mid channel	 Band LTE5 1.4MHz CSE QPSK Mid channel

LTE Band 7

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

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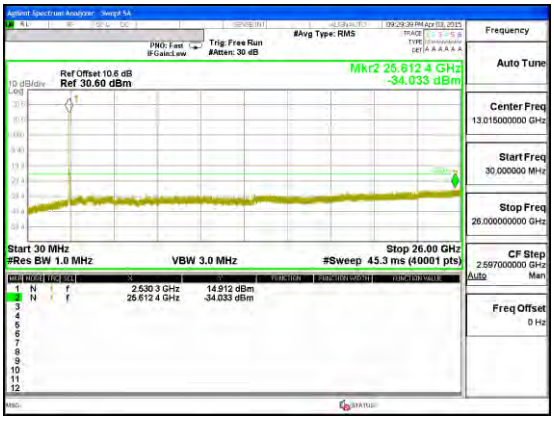
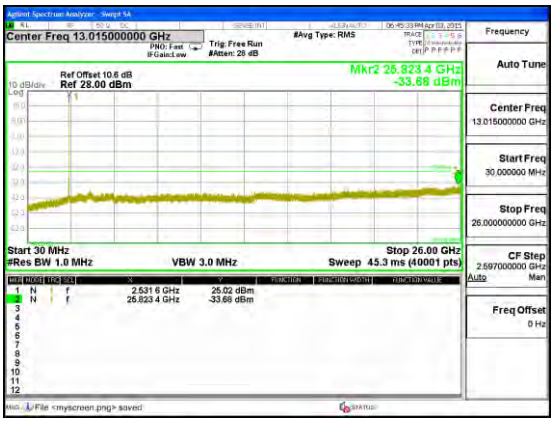
Band LTE7 15MHz 16QAM	 Band LTE7 15MHz CSE 16QAM Mid channel	 Band LTE7 15MHz CSE QPSK Mid channel

Band LTE7 10MHz 16QAM	 Band LTE7 10MHz CSE 16QAM Mid channel	 Band LTE7 10MHz CSE QPSK Mid channel

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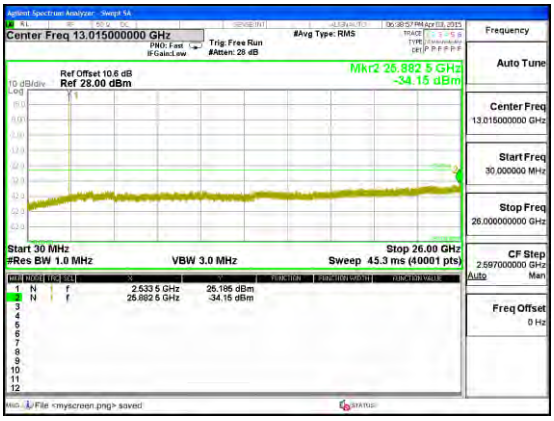
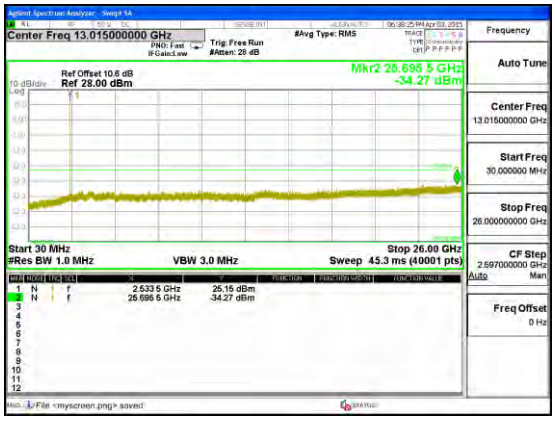
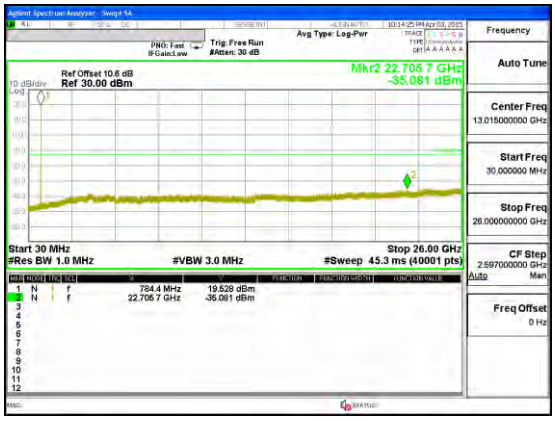
Band LTE7 5MHz 16QAM	 Band LTE7 5MHz CSE 16QAM Mid channel	 Band LTE7 5MHz CSE QPSK Mid channel

LTE Band 13

Band LTE13 10MHz 16QAM	 Band LTE13 10MHz CSE 16QAM High channel	 Band LTE13 10MHz CSE QPSK High channel

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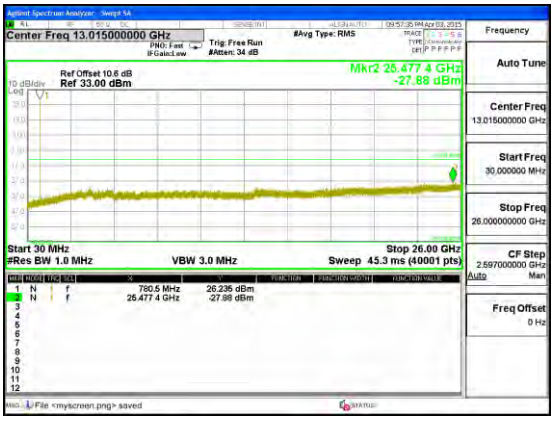
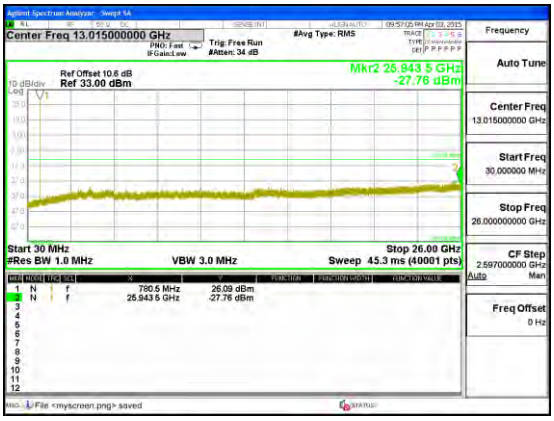
Band LTE13 5MHz 16QAM	 Band LTE13 5MHz CSE 16QAM Mid channel	 Band LTE13 5MHz CSE QPSK Mid channel

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10.4. FREQUENCY STABILITY

RULE PART(S)

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

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

WCDMA and LTE

RESULTS

See the following pages.

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10.4.1. FREQUENCY STABILITY RESULTS

WCDMA Band 5 Freq: 836.6 MHz– MID CHANNEL

Reference Frequency: PCS 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	836.599998	0.000	2.5
3.80	40	836.599998	0.000	2.5
3.80	30	836.599998	0.001	2.5
3.80	***20***	**836.599998**	**0**	***2.5***
3.80	10	836.599997	0.002	2.5
3.80	0	836.599998	0.001	2.5
3.80	-10	836.599997	0.001	2.5
3.80	-20	836.599996	0.003	2.5
3.80	-30	836.599999	0.000	2.5

Reference Frequency: PCS 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	***20***	***836.599998***	***0***	***2.5***
4.37	20	836.5999973	*0.001*	2.5
3.23(End of volt)	20	836.5999982	*0.000*	2.5

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WCDMA Band 2, Freq: 1880MHz– MID CHANNEL

Reference Frequency: PCS Mid Channel 1880 MHz @ 20°C Limit: to stay +- 2.5 ppm = 4700.000 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse (MHz)	Delta (ppm)	Limit (ppm)
3.80	50	1879.999995	0.001	2.5
3.80	40	1879.999996	0.000	2.5
3.80	30	1879.999997	0.000	2.5
3.80	***20***	**1879.999997**	**0**	***2.5***
3.80	10	1879.999996	0.000	2.5
3.80	0	1879.999995	0.001	2.5
3.80	-10	1879.999995	0.001	2.5
3.80	-20	1879.999996	0.000	2.5
3.80	-30	1879.999996	0.000	2.5

Reference Frequency: PCS Mid Channel 1880 MHz @ 20°C Limit: to stay +- 2.5 ppm = 4700.000 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse (MHz)	Delta (ppm)	Limit (ppm)
3.80	***20***	***1879.999997***	***0***	***2.5***
4.37	20	1879.999997	*0.000*	2.5
3.23(End of volt)	20	1879.999996	*0.000*	2.5

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LTE Band 4, Freq: 1732.5MHz– MID CHANNEL

Reference Frequency: PCS Mid Channel		1732.5	MHz @ 20°C	
Limit: to stay +- 2.5 ppm =		4331.250	Hz	
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse (MHz)	Delta (ppm)	Limit (ppm)
3.80	50	1732.500006	-0.001	2.5
3.80	40	1732.500003	0.000	2.5
3.80	30	1732.500004	0.000	2.5
3.80	***20***	**1732.500004**	**0**	***2.5***
3.80	10	1732.500004	0.000	2.5
3.80	0	1732.500006	-0.001	2.5
3.80	-10	1732.500006	-0.001	2.5
3.80	-20	1732.500007	-0.002	2.5
3.80	-30	1732.500005	0.000	2.5

Reference Frequency: PCS Mid Channel		1732.5	MHz @ 20°C	
Limit: to stay +- 2.5 ppm =		4331.250	Hz	
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse (MHz)	Delta (ppm)	Limit (ppm)
3.80	***20***	***1732.500004***	***0***	***2.5***
4.37	20	1732.500004	*0.000*	2.5
3.23(End of volt)	20	1732.500004	*0.000*	2.5

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LTE Band 13, Freq: 707.5 MHz– MID CHANNEL

Reference Frequency: PCS Mid Channel 782 MHz @ 20°C Limit: to stay +- 2.5 ppm = 1955.000 Hz				
Power Supply (Vdc)	**Environment Temperature (°C)**	**Frequency Deviation Measureed with Time Elapse**		
		(MHz)	**Delta (ppm)**	**Limit (ppm)**
3.80	50	782.000002	0.003	2.5
3.80	40	782.000003	0.002	2.5
3.80	30	782.000003	0.001	2.5
3.80	***20***	**782.000004**	**0**	***2.5***
3.80	10	782.000004	0.001	2.5
3.80	0	782.000003	0.002	2.5
3.80	-10	782.000003	0.001	2.5
3.80	-20	782.000005	-0.001	2.5
3.80	-30	782.000004	0.000	2.5

Reference Frequency: PCS Mid Channel 782 MHz @ 20°C Limit: to stay +- 2.5 ppm = 1955.000 Hz				
Power Supply (Vdc)	**Environment Temperature (°C)**	**Frequency Deviation Measureed with Time Elapse**		
		(MHz)	**Delta (ppm)**	**Limit (ppm)**
3.80	***20***	***781.999996***	***0***	***2.5***
4.37	20	781.9999964	*0.010*	2.5
3.23(End of volt)	20	781.9999969	*0.010*	2.5

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LTE Band 7, Freq: 2535 MHz– MID CHANNE

Reference Frequency: PCS Mid Channel 2535 MHz @ 20°C Limit: to stay +- 2.5 ppm = 6337.500 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse (MHz)	Delta (ppm)	Limit (ppm)
3.80	50	2534.999991	0.000	2.5
3.80	40	2534.999988	0.001	2.5
3.80	30	2534.999991	0.000	2.5
3.80	***20***	**2534.999991**	**0**	***2.5***
3.80	10	2534.999992	0.000	2.5
3.80	0	2534.999991	0.000	2.5
3.80	-10	2534.999991	0.000	2.5
3.80	-20	2534.999993	-0.001	2.5
3.80	-30	2534.999993	-0.001	2.5

Reference Frequency: PCS Mid Channel 2535 MHz @ 20°C Limit: to stay +- 2.5 ppm = 6337.500 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse (MHz)	Delta (ppm)	Limit (ppm)
3.80	***20***	***2534.999991***	***0***	***2.5***
4.37	20	2534.999992	*0.000*	2.5
3.23(End of volt)	20	2534.999992	*0.000*	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

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(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)

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, CDMA, and LTE

TEST RESULTS

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11.1.1. ERP/EIRP Results

GSM

Band	Mode	Channel	f(MHz)	ERP / EIRP	
				dBm	mW
GSM850	GPRS	128	824.2	28.87	770.90
		190	836.6	28.16	654.64
		251	848.8	28.61	726.11
	EGPRS	128	824.2	23.20	208.93
		190	836.6	23.78	238.78
		251	848.8	24.39	274.79

Band	Mode	Channel	f(MHz)	ERP / EIRP	
				dBm	mW
GSM1900	GPRS	512	1850.2	27.42	551.75
		661	1880	27.73	592.84
		810	1909.8	28.15	653.67
	EGPRS	512	1850.2	24.26	266.53
		661	1880	24.85	305.45
		810	1909.8	24.71	296.05

WCDMA

Band	Mode	Channel	f(MHz)	ERP / EIRP	
				dBm	mW
Band 5	REL99	4132	826.4	19.201	83.2
		4183	836.6	19.251	84.16
		4233	846.6	19.201	83.2
	HSDPA	4132	826.4	18.601	72.46
		4183	836.6	18.751	75.01
		4233	846.6	18.701	74.15

Band	Mode	Channel	f(MHz)	ERP / EIRP	
				dBm	mW
Band 2	REL99	9262	1852.4	23.72	235.5
		9400	1880	23.07	202.77
		9538	1907.6	22.76	188.8
	HSDPA	9262	1852.4	22.63	183.23
		9400	1880	21.68	147.23
		9538	1907.6	21.67	146.89

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CDMA

Band	Mode	Channel	f(MHz)	ERP / EIRP	
				dBm	mW
BC0	1xRTT	1013	824.7	19.97	99.31
		384	836.52	19.90	97.72
		777	848.31	18.26	66.99
	EVDO REL. 0	1013	824.7	19.93	98.40
		384	836.52	19.31	85.31
		777	848.31	19.08	80.91

Band	Mode	Channel	f(MHz)	ERP / EIRP	
				dBm	mW
BC1	1xRTT	25	1851.25	23.17	207.49
		600	1880	22.76	188.8
		1175	1908.75	21.83	152.41
	EVDO REL. 0	25	1851.25	22.59	181.55
		600	1880	22.90	194.98
		1175	1908.75	21.97	157.40

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11.1.2. LTE ERP/EIRP Results

LTE Band 2

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE2	20	QPSK	1/0	1860	23.63	230.67
			1/0	1880	23.78	238.78
			1/0	1900	23.11	204.64
		16QAM	1/0	1860	22.9	194.98
			1/0	1880	22.98	198.61
			1/0	1900	22.41	174.18
	15	QPSK	1/0	1857.5	23.64	231.21
			1/0	1880	23.71	234.96
			1/0	1902.5	23.14	206.06
		16QAM	1/0	1857.5	22.91	195.43
			1/0	1880	22.88	194.09
			1/0	1902.5	22.4	173.78
	10	QPSK	1/0	1855	23.66	232.27
			1/0	1880	23.73	236.05
			1/0	1905	23.16	207.01
		16QAM	1/0	1855	22.94	196.79
			1/0	1880	22.84	192.31
			1/0	1905	22.42	174.58
	5	QPSK	1/0	1852.5	23.72	235.5
			1/0	1880	23.08	203.24
			1/0	1907.5	23	199.53
		16QAM	1/0	1852.5	22.89	194.54
			1/0	1880	22.1	162.18
			1/0	1907.5	22.11	162.55

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Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE2	3	QPSK	1/0	1851.5	23.78	238.78
			1/0	1880	23.01	199.99
			1/0	1908.5	22.89	194.54
		16QAM	1/0	1851.5	23.11	204.64
			1/0	1880	22.06	160.69
			1/0	1908.5	22.11	162.55
	1.4	QPSK	1/0	1850.7	23.66	232.27
			1/0	1880	23.09	203.7
			1/0	1909.3	22.05	160.32
		16QAM	1/0	1850.7	22.91	195.43
			1/0	1880	22.03	159.59
			1/0	1909.3	21.47	140.28

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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	22.64	183.65
			1/0	1732.5	22.83	191.87
			1/0	1745	23.40	218.78
		16QAM	1/0	1720	21.74	149.28
			1/0	1732.5	21.71	148.25
			1/0	1745	22.50	177.83
	15	QPSK	1/0	1717.5	22.25	167.88
			1/0	1732.5	22.67	184.93
			1/0	1747.5	22.59	181.55
		16QAM	1/0	1717.5	21.15	130.32
			1/0	1732.5	21.47	140.28
			1/0	1747.5	21.69	147.57
	10	QPSK	1/0	1715	21.97	157.40
			1/0	1732.5	22.31	170.22
			1/0	1750	22.19	165.58
		16QAM	1/0	1715	20.87	122.18
			1/0	1732.5	21.42	138.68
			1/0	1750	21.09	128.53
	5	QPSK	1/0	1712.5	21.92	155.60
			1/0	1732.5	22.19	165.58
			1/0	1752.5	22.25	167.88
		16QAM	1/0	1712.5	20.84	121.34
			1/0	1732.5	21.27	133.97
			1/0	1752.5	21.30	134.90

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Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE4	3	QPSK	1/0	1711.5	22.06	160.69
			1/0	1732.5	22.37	172.58
			1/0	1753.5	22.31	170.22
		16QAM	1/0	1711.5	21.15	130.32
			1/0	1732.5	21.17	130.92
			1/0	1753.5	21.09	128.53
	1.4	QPSK	1/0	1710.7	22.07	161.06
			1/0	1732.5	22.17	164.82
			1/0	1754.3	22.31	170.22
		16QAM	1/0	1710.7	20.97	125.03
			1/0	1732.5	21.09	128.53
			1/0	1754.3	21.19	131.52

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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	19.69	93.11
			1/0	836.5	17.71	59.02
			1/0	844	18.15	65.31
		16QAM	1/0	829	17.89	61.53
			1/0	836.5	16.89	48.88
			1/0	844	17.07	50.94
	5	QPSK	1/0	826.5	20.00	100
			1/0	836.5	17.48	55.98
			1/0	846.5	17.28	53.46
		16QAM	1/0	826.5	19.11	81.47
			1/0	836.5	16.62	45.92
			1/0	846.5	16.66	46.34
	3	QPSK	1/0	825.5	19.66	92.47
			1/0	836.5	17.82	60.53
			1/0	847.5	18.51	70.96
		16QAM	1/0	825.5	18.89	77.45
			1/0	836.5	16.56	45.29
			1/0	847.5	17.64	58.08
	1.4	QPSK	1/0	824.7	19.79	95.28
			1/0	836.5	17.89	61.52
			1/0	848.3	18.47	70.31
		16QAM	1/0	824.7	18.91	77.8
			1/0	836.5	16.68	46.56
			1/0	848.3	17.69	58.75

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LTE Band 7

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE7	20	QPSK	1/0	2510	18.70	74.13
			1/0	2535	19.44	87.9
			1/0	2560	18.15	65.31
		16QAM	1/0	2510	17.90	61.66
			1/0	2535	18.60	72.44
			1/0	2560	17.29	53.58
	15	QPSK	1/0	2507.5	18.60	72.44
			1/0	2535	19.34	85.9
			1/0	2562.5	18.44	69.82
		16QAM	1/0	2507.5	17.50	56.23
			1/0	2535	18.20	66.07
			1/0	2562.5	17.60	57.54
	10	QPSK	1/0	2505	18.86	76.91
			1/0	2535	19.45	88.1
			1/0	2565	18.70	74.13
		16QAM	1/0	2505	17.70	58.88
			1/0	2535	18.49	70.63
			1/0	2565	17.75	59.57
	5	QPSK	1/0	2502.5	18.82	76.21
			1/0	2535	19.49	88.92
			1/0	2567.5	17.85	60.95
		16QAM	1/0	2502.5	17.80	60.26
			1/0	2535	18.39	69.02
			1/0	2567.5	17.05	50.7

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LTE Band 13

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE13	10	QPSK	1/0	782	19.48	88.72
			1/0	782	19.48	88.72
			1/0	782	19.48	88.72
		16QAM	1/0	782	18.40	69.18
			1/0	782	18.40	69.18
			1/0	782	18.40	69.18
	5	QPSK	1/0	779.5	19.89	97.5
			1/0	782	19.08	80.91
			1/0	784.5	20.02	100.46
		16QAM	1/0	779.5	18.70	74.13
			1/0	782	18.00	63.1
			1/0	784.5	18.80	75.86

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11.1.3. ERP/EIRP PLOTS

GSM

Band

GSM 1900

EGPRS

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

Company: Sony
Project #: 15U20107
Date: 4/7/2015
Test Engineer: K.Kedida
Configuration: X-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	14.20	V	0.9	8.5	21.86	33.0	-11.1	
1850.20	16.60	H	0.9	8.5	24.26	33.0	-8.7	
Mid Ch								
1880.00	14.24	V	0.9	8.5	21.89	33.0	-11.1	
1880.00	17.20	H	0.9	8.5	24.85	33.0	-8.2	
High Ch								
1909.80	15.00	V	0.9	8.5	22.69	33.0	-10.3	
1909.80	17.02	H	0.9	8.5	24.71	33.0	-8.3	

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

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Band

GSM 1900

GPRS

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

Company: Sony
Project #: 15U20107
Date: 4/7/2015
Test Engineer: K.Kedida
Configuration: X-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	17.80	V	0.9	8.5	25.46	33.0	-7.5	
1850.20	19.76	H	0.9	8.5	27.42	33.0	-5.6	
Mid Ch								
1880.00	18.32	V	0.9	8.5	25.97	33.0	-7.0	
1880.00	20.08	H	0.9	8.5	27.73	33.0	-5.3	
High Ch								
1909.80	18.62	V	0.9	8.5	26.31	33.0	-6.7	
1909.80	20.46	H	0.9	8.5	28.15	33.0	-4.8	

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

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Band

GSM 850

EGPRS

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

Company: Sony
Project #: 15U20107
Date: 04/22/15
Test Engineer: O. Stoelting
Configuration: EUT Z-position
Mode: EGPRS850

Test Equipment:
Receiving: Hybrid T243, and Chamber B N-type Cable
Substitution: Dipole T273, 5ft N 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								
824.20	24.10	V	0.9	0.0	23.20	38.5	-15.3	
824.20	15.95	H	0.9	0.0	15.05	38.5	-23.4	
Mid Ch								
836.60	24.67	V	0.9	0.0	23.78	38.5	-14.7	
836.60	17.15	H	0.9	0.0	16.25	38.5	-22.2	
High Ch								
848.80	25.29	V	0.9	0.0	24.39	38.5	-14.1	
848.80	16.75	H	0.9	0.0	15.85	38.5	-22.6	

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

GSM 850

GPRS

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

Company: Sony
Project #: 15U20107
Date: 04/22/15
Test Engineer: O. Stoelting
Configuration: EUT Z-position
Mode: GPRS850

Test Equipment:
Receiving: Hybrid T243, and Chamber B N-type Cable
Substitution: Dipole T273, 5ft N 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								
824.20	30.77	V	0.9	0.0	29.87	38.5	-8.6	
824.20	20.67	H	0.9	0.0	19.77	38.5	-18.7	
Mid Ch								
836.60	29.06	V	0.9	0.0	28.16	38.5	-10.3	
836.60	21.32	H	0.9	0.0	20.42	38.5	-18.0	
High Ch								
848.80	29.51	V	0.9	0.0	28.61	38.5	-9.8	
848.80	20.90	H	0.9	0.0	20.00	38.5	-18.5	

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

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WCDMA

Band

Band 2

HSDPA

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

Company: SONY
Project #: 15U20107
Date: 4/2/2015
Test Engineer: R. Alegre
Configuration: EUT Only
Location: Chamber C
Mode: HSDPA B2

Test Equipment:
Receiving: Horn T119, and Chamber C SMA Cables
Substitution: Horn T59 Substitution, 4ft 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	4.93	V	0.9	8.0	12.04	33.0	-21.0	
1852.40	15.52	H	0.9	8.0	22.63	33.0	-10.4	
Mid Ch								
1880.00	2.99	V	0.9	8.0	10.10	33.0	-22.9	
1880.00	14.57	H	0.9	8.0	21.68	33.0	-11.3	
High Ch								
1907.60	5.00	V	0.9	8.0	12.11	33.0	-20.9	
1907.60	14.56	H	0.9	8.0	21.67	33.0	-11.3	

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 C

Company:	SONY
Project #:	15U20107
Date:	4/2/2015
Test Engineer:	R. Alegre
Configuration:	EUT Only
Location:	Chamber C
Mode:	REL99 B2

Test Equipment:
Receiving: Horn T119, and Chamber C SMA Cables
Substitution: Horn T59 Substitution, 4ft 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	6.03	V	0.9	8.0	13.14	33.0	-19.9	
1852.40	16.61	H	0.9	8.0	23.72	33.0	-9.3	
Mid Ch								
1880.00	4.07	V	0.9	8.0	11.18	33.0	-21.8	
1880.00	15.96	H	0.9	8.0	23.07	33.0	-9.9	
High Ch								
1907.60	6.10	V	0.9	8.0	13.21	33.0	-19.8	
1907.60	15.65	H	0.9	8.0	22.76	33.0	-10.2	

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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: Sony
Project #: 15U20107
Date: 04/02/15
Test Engineer: K.Kedida
Configuration: EUT Z-position
Mode: HSDPA B5 FUND

Test Equipment:
Receiving: Sunol T130, and 3m Chamber A N-type Cable
Substitution: Dipole T273, 4ft 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	8.90	V	0.9	0.0	8.00	38.5	-30.4	
826.40	19.50	H	0.9	0.0	18.60	38.5	-19.8	
Mid Ch								
836.60	9.07	V	0.9	0.0	8.17	38.5	-30.3	
836.60	19.65	H	0.9	0.0	18.75	38.5	-19.7	
High Ch								
846.60	7.94	V	0.9	0.0	7.04	38.5	-31.4	
846.60	19.60	H	0.9	0.0	18.70	38.5	-19.7	

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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: Sony
Project #: 15U20107
Date: 04/02/15
Test Engineer: K.Kedida
Configuration: EUT Z-position
Mode: REL99 B5 FUND

Test Equipment:
Receiving: Sunol T130, and 3m Chamber A N-type Cable
Substitution: Dipole T273, 4ft 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	9.50	V	0.9	0.0	8.60	38.5	-29.8	
826.40	20.10	H	0.9	0.0	19.20	38.5	-19.2	
Mid Ch								
836.60	10.42	V	0.9	0.0	9.52	38.5	-28.9	
836.60	20.15	H	0.9	0.0	19.25	38.5	-19.2	
High Ch								
846.60	9.01	V	0.9	0.0	8.11	38.5	-30.3	
846.60	20.10	H	0.9	0.0	19.20	38.5	-19.2	

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

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CDMA

Band

BC1

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

Company: Sony
Project #: 15U20107
Date: 04/08/15
Test Engineer: K.Kedida
Configuration: EUT X-position
Mode: EVDO RTT BC1

Test Equipment:
Receiving: Horn T862, and Chamber G SMA Cables
Substitution: Horn T60 Substitution, 4ft SMA Cable Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.85125	11.0	V	0.85	9.20	19.35	33.0	-13.7	
1.85125	14.2	H	0.85	9.20	22.59	33.0	-10.4	
Mid Ch								
1.880	11.5	V	0.85	9.10	19.75	33.0	-13.3	
1.880	14.7	H	0.85	9.10	22.90	33.0	-10.1	
High Ch								
1.90875	10.3	V	0.85	9.00	18.45	33.0	-14.6	
1.90875	13.8	H	0.85	9.00	21.97	33.0	-11.0	

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Band

BC1

1xRTT

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

Company: Sony
Project #: 15U20107
Date: 04/08/15
Test Engineer: K.Kedida
Configuration: EUT X-position
Mode: CDMA RTT BC1

Test Equipment:
Receiving: Horn T862, and Chamber G SMA Cables
Substitution: Horn T60 Substitution, 4ft SMA Cable Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.85125	10.6	V	0.85	9.20	18.95	33.0	-14.1	
1.85125	14.8	H	0.85	9.20	23.17	33.0	-9.8	
Mid Ch								
1.880	11.1	V	0.85	9.10	19.40	33.0	-13.6	
1.880	14.5	H	0.85	9.10	22.76	33.0	-10.2	
High Ch								
1.90875	10.1	V	0.85	9.00	18.29	33.0	-14.7	
1.90875	13.7	H	0.85	9.00	21.83	33.0	-11.2	

Rev. 3.17.11

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Band

BC0

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

Company: Sony
Project #: 15U20107
Date: 4/26/2015
Test Engineer: O. Stoelting
Configuration: EUT Z-position
Mode: CDMA RTT BC0

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								
824.70	20.87	V	0.9	0.0	19.97	38.5	-18.5	
824.70	12.40	H	0.9	0.0	11.50	38.5	-26.9	
Mid Ch								
836.52	20.80	V	0.9	0.0	19.90	38.5	-18.6	
836.52	13.07	H	0.9	0.0	12.17	38.5	-26.3	
High Ch								
848.31	19.16	V	0.9	0.0	18.26	38.5	-20.2	
848.31	11.86	H	0.9	0.0	10.96	38.5	-27.5	

Rev. 3.9.15

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Band

BC0

1xRTT

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

Company: Sony
Project #: 15U20107
Date: 4/26/2015
Test Engineer: O. Stoelting
Configuration: EUT Z-position
Mode: EVDO BC0

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								
824.70	20.83	V	0.9	0.0	19.93	38.5	-18.5	
824.70	11.61	H	0.9	0.0	10.71	38.5	-27.7	
Mid Ch								
836.52	20.21	V	0.9	0.0	19.31	38.5	-19.1	
836.52	13.14	H	0.9	0.0	12.24	38.5	-26.2	
High Ch								
848.31	19.98	V	0.9	0.0	19.08	38.5	-19.4	
848.31	10.38	H	0.9	0.0	9.48	38.5	-29.0	

Rev. 3.9.15

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LTE Band 2

Band

LTE2

20MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Sony
Project #: 15U20107
Date: 4/6/2015
Test Engineer: R.Alegre
Configuration: EUT Only
Location: Chamber C
Mode: LTE_16QAM Band 2 Fundamentals, 20MHz Bandwidth

Test Equpment:
Receiving: Horn T119, and Chamber C SMA Cables
Substitution: Horn T59, Xft SMA Cable (SN # SERIALNUMBER) 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								
1860.00	4.28	V	0.9	8.0	11.39	33.0	-21.6	
1860.00	15.79	H	0.9	8.0	22.90	33.0	-10.1	
Mid Ch								
1880.00	3.95	V	0.9	8.0	11.06	33.0	-21.9	
1880.00	15.87	H	0.9	8.0	22.98	33.0	-10.0	
High Ch								
1900.00	5.26	V	0.9	8.0	12.37	33.0	-20.6	
1900.00	15.30	H	0.9	8.0	22.41	33.0	-10.6	

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Band

LTE2

20MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Sony
Project #: 15U20107
Date: 4/6/2015
Test Engineer: R.Alegre
Configuration: EUT Only
Location: Chamber C
Mode: LTE_QPSK Band 2 Fundamentals, 20MHz Bandwidth

Test Equpment:
Receiving: Horn T119, and Chamber C SMA Cables
Substitution: Horn T59, Xft SMA Cable (SN # SERIALNUMBER) 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								
1860.00	5.18	V	0.9	8.0	12.29	33.0	-20.7	
1860.00	16.52	H	0.9	8.0	23.63	33.0	-9.4	
Mid Ch								
1880.00	4.73	V	0.9	8.0	11.84	33.0	-21.2	
1880.00	16.67	H	0.9	8.0	23.78	33.0	-9.2	
High Ch								
1900.00	5.78	V	0.9	8.0	12.89	33.0	-20.1	
1900.00	16.00	H	0.9	8.0	23.11	33.0	-9.9	

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Band

LTE2

15MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Sony
Project #: 15U20107
Date: 4/6/2015
Test Engineer: R.Alegre
Configuration: EUT Only
Location: Chamber C
Mode: LTE_16QAM Band 2 Fundamentals, 15MHz Bandwidth

Test Equpment:
Receiving: Horn T119, and Chamber C SMA Cables
Substitution: Horn T59, Xft SMA Cable (SN # SERIALNUMBER) 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								
1857.50	4.32	V	0.9	8.0	11.43	33.0	-21.6	
1857.50	15.80	H	0.9	8.0	22.91	33.0	-10.1	
Mid Ch								
1880.00	4.00	V	0.9	8.0	11.11	33.0	-21.9	
1880.00	15.77	H	0.9	8.0	22.88	33.0	-10.1	
High Ch								
1902.50	4.95	V	0.9	8.0	12.06	33.0	-20.9	
1902.50	15.29	H	0.9	8.0	22.40	33.0	-10.6	

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Band

LTE2

15MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Sony
Project #: 15U20107
Date: 4/6/2015
Test Engineer: R.Alegre
Configuration: EUT Only
Location: Chamber C
Mode: LTE_QPSK Band 2 Fundamentals, 15MHz Bandwidth

Test Equpment:
Receiving: Horn T119, and Chamber C SMA Cables
Substitution: Horn T59, Xft SMA Cable (SN # SERIALNUMBER) 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								
1857.50	5.15	V	0.9	8.0	12.26	33.0	-20.7	
1857.50	16.53	H	0.9	8.0	23.64	33.0	-9.4	
Mid Ch								
1880.00	4.84	V	0.9	8.0	11.95	33.0	-21.1	
1880.00	16.60	H	0.9	8.0	23.71	33.0	-9.3	
High Ch								
1902.50	5.88	V	0.9	8.0	12.99	33.0	-20.0	
1902.50	16.03	H	0.9	8.0	23.14	33.0	-9.9	

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Band

LTE2

10MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Sony
Project #: 15U20107
Date: 4/6/2015
Test Engineer: R.Alegre
Configuration: EUT Only
Location: Chamber C
Mode: LTE_16QAM Band 2 Fundamentals, 10MHz Bandwidth

Test Equpment:
Receiving: Horn T119, and Chamber C SMA Cables
Substitution: Horn T59, Xft SMA Cable (SN # SERIALNUMBER) 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								
1855.00	4.23	V	0.9	8.0	11.34	33.0	-21.7	
1855.00	15.83	H	0.9	8.0	22.94	33.0	-10.1	
Mid Ch								
1880.00	3.89	V	0.9	8.0	11.00	33.0	-22.0	
1880.00	15.73	H	0.9	8.0	22.84	33.0	-10.2	
High Ch								
1905.00	5.09	V	0.9	8.0	12.20	33.0	-20.8	
1905.00	15.31	H	0.9	8.0	22.42	33.0	-10.6	

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Band

LTE2

10MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Sony
Project #: 15U20107
Date: 4/6/2015
Test Engineer: R.Alegre
Configuration: EUT Only
Location: Chamber C
Mode: LTE_QPSK Band 2 Fundamentals, 10MHz Bandwidth

Test Equpment:
Receiving: Horn T119, and Chamber C SMA Cables
Substitution: Horn T59, Xft SMA Cable (SN # SERIALNUMBER) 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								
1855.00	5.14	V	0.9	8.0	12.25	33.0	-20.8	
1855.00	16.55	H	0.9	8.0	23.66	33.0	-9.3	
Mid Ch								
1880.00	4.80	V	0.9	8.0	11.91	33.0	-21.1	
1880.00	16.62	H	0.9	8.0	23.73	33.0	-9.3	
High Ch								
1905.00	5.98	V	0.9	8.0	13.09	33.0	-19.9	
1905.00	16.05	H	0.9	8.0	23.16	33.0	-9.8	

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Band

LTE2

5MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Sony
Project #: 15U20107
Date: 4/6/2015
Test Engineer: R.Alegre
Configuration: EUT Only
Location: Chamber C
Mode: LTE_16QAM Band 2 Fundamentals, 5MHz Bandwidth

Test Equpment:
Receiving: Horn T119, and Chamber C SMA Cables
Substitution: Horn T59, Xft SMA Cable (SN # SERIALNUMBER) 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								
1852.50	4.23	V	0.9	8.0	11.34	33.0	-21.7	
1852.50	15.78	H	0.9	8.0	22.89	33.0	-10.1	
Mid Ch								
1880.00	3.78	V	0.9	8.0	10.89	33.0	-22.1	
1880.00	14.99	H	0.9	8.0	22.10	33.0	-10.9	
High Ch								
1907.50	4.94	V	0.9	8.0	12.05	33.0	-21.0	
1907.50	15.00	H	0.9	8.0	22.11	33.0	-10.9	

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Band

LTE2

5MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Sony
Project #: 15U20107
Date: 4/6/2015
Test Engineer: R.Alegre
Configuration: EUT Only
Location: Chamber C
Mode: LTE_QPSK Band 2 Fundamentals, 5MHz Bandwidth

Test Equpment:
Receiving: Horn T119, and Chamber C SMA Cables
Substitution: Horn T59, Xft SMA Cable (SN # SERIALNUMBER) 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								
1852.50	5.05	V	0.9	8.0	12.16	33.0	-20.8	
1852.50	16.61	H	0.9	8.0	23.72	33.0	-9.3	
Mid Ch								
1880.00	4.88	V	0.9	8.0	11.99	33.0	-21.0	
1880.00	15.97	H	0.9	8.0	23.08	33.0	-9.9	
High Ch								
1907.50	5.80	V	0.9	8.0	12.91	33.0	-20.1	
1907.50	15.89	H	0.9	8.0	23.00	33.0	-10.0	

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Band

LTE2

3MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Sony
Project #: 15U20107
Date: 4/6/2015
Test Engineer: R.Alegre
Configuration: EUT Only
Location: Chamber C
Mode: LTE_16QAM Band 2 Fundamentals, 3MHz Bandwidth

Test Equpment:
Receiving: Horn T119, and Chamber C SMA Cables
Substitution: Horn T59, Xft SMA Cable (SN # SERIALNUMBER) 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								
1851.50	4.44	V	0.9	8.0	11.55	33.0	-21.5	
1851.50	16.00	H	0.9	8.0	23.11	33.0	-9.9	
Mid Ch								
1880.00	4.04	V	0.9	8.0	11.15	33.0	-21.9	
1880.00	14.95	H	0.9	8.0	22.06	33.0	-10.9	
High Ch								
1908.50	5.10	V	0.9	8.0	12.21	33.0	-20.8	
1908.50	15.00	H	0.9	8.0	22.11	33.0	-10.9	

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Band

LTE2

3MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Sony
Project #: 15U20107
Date: 4/6/2015
Test Engineer: R.Alegre
Configuration: EUT Only
Location: Chamber C
Mode: LTE_QPSK Band 2 Fundamentals, 3MHz Bandwidth

Test Equpment:
Receiving: Horn T119, and Chamber C SMA Cables
Substitution: Horn T59, Xft SMA Cable (SN # SERIALNUMBER) 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								
1851.50	5.22	V	0.9	8.0	12.33	33.0	-20.7	
1851.50	16.67	H	0.9	8.0	23.78	33.0	-9.2	
Mid Ch								
1880.00	4.89	V	0.9	8.0	12.00	33.0	-21.0	
1880.00	15.90	H	0.9	8.0	23.01	33.0	-10.0	
High Ch								
1908.50	6.00	V	0.9	8.0	13.11	33.0	-19.9	
1908.50	15.78	H	0.9	8.0	22.89	33.0	-10.1	

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Band

LTE2

1.4MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Sony
Project #: 15U20107
Date: 4/6/2015
Test Engineer: R.Alegre
Configuration: EUT Only
Location: Chamber C
Mode: LTE_16QAM Band 2 Fundamentals, 1.4MHz Bandwidth

Test Equpment:
Receiving: Horn T119, and Chamber C SMA Cables
Substitution: Horn T59, Xft SMA Cable (SN # SERIALNUMBER) 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								
1850.70	4.29	V	0.9	8.0	11.40	33.0	-21.6	
1850.70	15.80	H	0.9	8.0	22.91	33.0	-10.1	
Mid Ch								
1880.00	4.01	V	0.9	8.0	11.12	33.0	-21.9	
1880.00	14.92	H	0.9	8.0	22.03	33.0	-11.0	
High Ch								
1909.30	5.18	V	0.9	8.0	12.29	33.0	-20.7	
1909.30	14.36	H	0.9	8.0	21.47	33.0	-11.5	

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Band

LTE2

1.4MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Sony
Project #: 15U20107
Date: 4/6/2015
Test Engineer: R.Alegre
Configuration: EUT Only
Location: Chamber C
Mode: LTE_QPSK Band 2 Fundamentals, 1.4MHz Bandwidth

Test Equipment:
Receiving: Horn T119, and Chamber C SMA Cables
Substitution: Horn T59, Xft SMA Cable (SN # SERIALNUMBER) 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								
1850.70	5.24	V	0.9	8.0	12.35	33.0	-20.7	
1850.70	16.55	H	0.9	8.0	23.66	33.0	-9.3	
Mid Ch								
1880.00	4.91	V	0.9	8.0	12.02	33.0	-21.0	
1880.00	15.98	H	0.9	8.0	23.09	33.0	-9.9	
High Ch								
1909.30	6.02	V	0.9	8.0	13.13	33.0	-19.9	
1909.30	14.94	H	0.9	8.0	22.05	33.0	-11.0	

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LTE Band 4

Band

LTE4

20MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Sony
Project #: 15U20107
Date: 4/17/2015
Test Engineer: K.Kedida
Configuration: EUT Only
Location: Chamber B
Mode: LTE_16QAM Band 4 Fundamentals, 20MHz Bandwidth

Test Equpment:
Receiving: Horn T119, and Chamber B SMA Cables
Substitution: Horn T59, 4ft SMA Cable 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	3.50	V	0.9	8.2	10.84	30.0	-19.2	
1720.00	14.40	H	0.9	8.2	21.74	30.0	-8.3	
Mid Ch								
1732.50	4.92	V	0.9	8.2	12.19	30.0	-17.8	
1732.50	14.44	H	0.9	8.2	21.71	30.0	-8.3	
High Ch								
1745.00	4.00	V	0.9	8.1	11.20	30.0	-18.8	
1745.00	15.30	H	0.9	8.1	22.50	30.0	-7.5	

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Band

LTE4

20MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Sony
Project #: 15U20107
Date: 4/17/2015
Test Engineer: K.Kedida
Configuration: EUT Only
Location: Chamber B
Mode: LTE_QPSK Band 4 Fundamentals, 20MHz Bandwidth

Test Equpment:
Receiving: Horn T119, and Chamber B SMA Cables
Substitution: Horn T59, 4ft SMA Cable 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	5.40	V	0.9	8.2	12.74	30.0	-17.3	
1720.00	15.30	H	0.9	8.2	22.64	30.0	-7.4	
Mid Ch								
1732.50	5.81	V	0.9	8.2	13.08	30.0	-16.9	
1732.50	15.56	H	0.9	8.2	22.83	30.0	-7.2	
High Ch								
1745.00	5.80	V	0.9	8.1	13.00	30.0	-17.0	
1745.00	16.20	H	0.9	8.1	23.40	30.0	-6.6	

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Band

LTE4

15MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Sony
Project #: 15U20107
Date: 4/17/2015
Test Engineer: K.Kedida
Configuration: EUT Only
Location: Chamber B
Mode: LTE_16QAM Band 4 Fundamentals, 15MHz Bandwidth

Test Equpment:
Receiving: Horn T119, and Chamber B SMA Cables
Substitution: Horn T59, 4ft SMA Cable 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	3.90	V	0.9	8.2	11.25	30.0	-18.8	
1717.50	13.80	H	0.9	8.2	21.15	30.0	-8.9	
Mid Ch								
1732.50	5.44	V	0.9	8.2	12.71	30.0	-17.3	
1732.50	14.20	H	0.9	8.2	21.47	30.0	-8.5	
High Ch								
1747.50	5.40	V	0.9	8.1	12.59	30.0	-17.4	
1747.50	14.50	H	0.9	8.1	21.69	30.0	-8.3	

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Band

LTE4

15MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Sony
Project #: 15U20107
Date: 4/17/2015
Test Engineer: K.Kedida
Configuration: EUT Only
Location: Chamber B
Mode: LTE_QPSK Band 4 Fundamentals, 15MHz Bandwidth

Test Equpment:
Receiving: Horn T119, and Chamber B SMA Cables
Substitution: Horn T59, 4ft SMA Cable 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	4.90	V	0.9	8.2	12.25	30.0	-17.8	
1717.50	14.90	H	0.9	8.2	22.25	30.0	-7.8	
Mid Ch								
1732.50	4.22	V	0.9	8.2	11.49	30.0	-18.5	
1732.50	15.40	H	0.9	8.2	22.67	30.0	-7.3	
High Ch								
1747.50	4.40	V	0.9	8.1	11.59	30.0	-18.4	
1747.50	15.40	H	0.9	8.1	22.59	30.0	-7.4	

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Band

LTE4

10MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Sony
Project #: 15U20107
Date: 4/17/2015
Test Engineer: K.Kedida
Configuration: EUT Only
Location: Chamber B
Mode: LTE_16QAM Band 4 Fundamentals, 10MHz Bandwidth

Test Equpment:
Receiving: Horn T119, and Chamber B SMA Cables
Substitution: Horn T59, 4ft SMA Cable 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	3.40	V	0.9	8.2	10.67	30.0	-19.3	
1715.00	13.60	H	0.9	8.2	20.87	30.0	-9.1	
Mid Ch								
1732.50	3.94	V	0.9	8.2	11.21	30.0	-18.8	
1732.50	14.15	H	0.9	8.2	21.42	30.0	-8.6	
High Ch								
1750.00	3.80	V	0.9	8.1	10.99	30.0	-19.0	
1750.00	13.90	H	0.9	8.1	21.09	30.0	-8.9	

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Band

LTE4

10MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Sony
Project #: 15U20107
Date: 4/17/2015
Test Engineer: K.Kedida
Configuration: EUT Only
Location: Chamber B
Mode: LTE_QPSK Band 4 Fundamentals, 10MHz Bandwidth

Test Equpment:
Receiving: Horn T119, and Chamber C SMA Cables
Substitution: Horn T59, 4ft SMA Cable 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	4.40	V	0.9	8.2	11.67	30.0	-18.3	
1715.00	14.70	H	0.9	8.2	21.97	30.0	-8.0	
Mid Ch								
1732.50	4.92	V	0.9	8.2	12.19	30.0	-17.8	
1732.50	15.04	H	0.9	8.2	22.31	30.0	-7.7	
High Ch								
1750.00	4.70	V	0.9	8.1	11.89	30.0	-18.1	
1750.00	15.00	H	0.9	8.1	22.19	30.0	-7.8	

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Band

LTE4

5MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Sony
Project #: 15U20107
Date: 4/17/2015
Test Engineer: K.Kedida
Configuration: EUT Only
Location: Chamber B
Mode: LTE_16QAM Band 4 Fundamentals, 5MHz Bandwidth

Test Equpment:
Receiving: Horn T119, and Chamber B SMA Cables
Substitution: Horn T59, 4ft SMA Cable 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								
1712.50	4.20	V	0.9	8.2	11.54	30.0	-18.5	
1712.50	13.50	H	0.9	8.2	20.84	30.0	-9.2	
Mid Ch								
1732.50	4.52	V	0.9	8.2	11.79	30.0	-18.2	
1732.50	14.00	H	0.9	8.2	21.27	30.0	-8.7	
High Ch								
1752.50	4.80	V	0.9	8.1	12.00	30.0	-18.0	
1752.50	14.10	H	0.9	8.1	21.30	30.0	-8.7	

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Band

LTE4

5MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Sony
Project #: 15U20107
Date: 4/17/2015
Test Engineer: K.Kedida
Configuration: EUT Only
Location: Chamber B
Mode: LTE_QPSK Band 4 Fundamentals, 5MHz Bandwidth

Test Equpment:
Receiving: Horn T119, and Chamber B SMA Cables
Substitution: Horn T59, 4ft SMA Cable 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								
1712.50	5.20	V	0.9	8.2	12.54	30.0	-17.5	
1712.50	14.58	H	0.9	8.2	21.92	30.0	-8.1	
Mid Ch								
1732.50	5.72	V	0.9	8.2	12.99	30.0	-17.0	
1732.50	14.92	H	0.9	8.2	22.19	30.0	-7.8	
High Ch								
1752.50	5.70	V	0.9	8.1	12.90	30.0	-17.1	
1752.50	15.05	H	0.9	8.1	22.25	30.0	-7.8	

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Band

LTE4

3MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Sony
Project #: 15U20107
Date: 4/17/2015
Test Engineer: K.Kedida
Configuration: EUT Only
Location: Chamber B
Mode: LTE_16QAM Band 4 Fundamentals, 3MHz Bandwidth

Test Equpment:
Receiving: Horn T119, and Chamber B SMA Cables
Substitution: Horn T59, 4ft SMA Cable 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								
1711.50	3.90	V	0.9	8.2	11.25	30.0	-18.8	
1711.50	13.80	H	0.9	8.2	21.15	30.0	-8.9	
Mid Ch								
1732.50	4.42	V	0.9	8.2	11.69	30.0	-18.3	
1732.50	13.90	H	0.9	8.2	21.17	30.0	-8.8	
High Ch								
1753.50	4.30	V	0.9	8.1	11.49	30.0	-18.5	
1753.50	13.90	H	0.9	8.1	21.09	30.0	-8.9	

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Band

LTE4

3MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Sony
Project #: 15U20107
Date: 4/17/2015
Test Engineer: K.Kedida
Configuration: EUT Only
Location: Chamber B
Mode: LTE_QPSK Band 4 Fundamentals, 3MHz Bandwidth

Test Equpment:
Receiving: Horn T119, and Chamber B SMA Cables
Substitution: Horn T59, 4ft SMA Cable 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								
1711.50	5.13	V	0.9	8.2	12.48	30.0	-17.5	
1711.50	14.71	H	0.9	8.2	22.06	30.0	-7.9	
Mid Ch								
1732.50	5.62	V	0.9	8.2	12.89	30.0	-17.1	
1732.50	15.10	H	0.9	8.2	22.37	30.0	-7.6	
High Ch								
1753.50	5.50	V	0.9	8.1	12.69	30.0	-17.3	
1753.50	15.12	H	0.9	8.1	22.31	30.0	-7.7	

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Band

LTE4

1.4MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Sony
Project #: 15U20107
Date: 4/17/2015
Test Engineer: K.Kedida
Configuration: EUT Only
Location: Chamber B
Mode: LTE_16QAM Band 4 Fundamentals, 1.4MHz Bandwidth

Test Equpment:
Receiving: Horn T119, and Chamber B SMA Cables
Substitution: Horn T59, 4ft SMA Cable 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								
1710.70	4.00	V	0.9	8.2	11.27	30.0	-18.7	
1710.70	13.70	H	0.9	8.2	20.97	30.0	-9.0	
Mid Ch								
1732.50	4.22	V	0.9	8.2	11.49	30.0	-18.5	
1732.50	13.80	H	0.9	8.2	21.07	30.0	-8.9	
High Ch								
1754.30	4.20	V	0.9	8.1	11.39	30.0	-18.6	
1754.30	14.00	H	0.9	8.1	21.19	30.0	-8.8	

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Band

LTE4

1.4MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Sony
Project #: 15U20107
Date: 4/17/2015
Test Engineer: K.Kedida
Configuration: EUT Only
Location: Chamber B
Mode: LTE_QPSK Band 4 Fundamentals, 1.4MHz Bandwidth

Test Equpment:
Receiving: Horn T119, and Chamber B SMA Cables
Substitution: Horn T59, 4ft SMA Cable 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								
1710.70	5.10	V	0.9	8.2	12.37	30.0	-17.6	
1710.70	14.80	H	0.9	8.2	22.07	30.0	-7.9	
Mid Ch								
1732.50	5.32	V	0.9	8.2	12.59	30.0	-17.4	
1732.50	14.90	H	0.9	8.2	22.17	30.0	-7.8	
High Ch								
1754.30	5.31	V	0.9	8.1	12.50	30.0	-17.5	
1754.30	15.12	H	0.9	8.1	22.31	30.0	-7.7	

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LTE Band 5

Band
LTE5
10MHz
16QAM

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

Company: Sony
Project #: 15U20107
Date: 4/2/2015
Test Engineer: Charles Vergonio
Configuration: Z-pos EUT Only
Mode: LTE5 16QAM 10M

Test Equipment:
Receiving: Sunol T185, and 3m Chamber C N-type Cable
Substitution: Dipole T276, 4ft SMA Cable (SN: 244639 002) 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								
829.00	18.79	V	0.9	0.0	17.89	38.5	-20.6	
829.00	8.36	H	0.9	0.0	7.46	38.5	-31.0	
Mid Ch								
836.50	17.79	V	0.9	0.0	16.89	38.5	-21.6	
836.50	6.72	H	0.9	0.0	5.82	38.5	-32.6	
High Ch								
844.00	17.97	V	0.9	0.0	17.07	38.5	-21.4	
844.00	7.67	H	0.9	0.0	6.77	38.5	-31.7	

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

LTE5

10MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Sony
Project #: 15U20107
Date: 4/2/2015
Test Engineer: Charles Vergonio
Configuration: Z-pos EUT Only
Location: Chamber C
Mode: LTE_QPSK Band 5 Fundamentals, 10MHz Bandwidth

Test Equpment:
Receiving: Hybrid T185, and Chamber C SMA Cables
Substitution: Dipole T273, 6ft SMA Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
829.00	20.59	V	0.9	0.0	19.69	38.5	-18.8	
829.00	8.96	H	0.9	0.0	8.06	38.5	-30.4	
Mid Ch								
836.50	18.61	V	0.9	0.0	17.71	38.5	-20.8	
836.50	7.31	H	0.9	0.0	6.41	38.5	-32.1	
High Ch								
844.00	19.05	V	0.9	0.0	18.15	38.5	-20.4	
844.00	7.87	H	0.9	0.0	6.97	38.5	-31.5	

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Band

LTE5

5MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Sony
Project #: 15U20107
Date: 4/2/2015
Test Engineer: Charles Vergonio
Configuration: Z-pos EUT Only
Location: Chamber C
Mode: LTE_16QAM Band 5 Fundamentals, 5MHz Bandwidth

Test Equpment:
Receiving: Hybrid T130, and Chamber A SMA Cables
Substitution: Dipole T273, 6ft SMA Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
826.50	20.01	V	0.9	0.0	19.11	38.5	-19.4	
826.50	9.51	H	0.9	0.0	8.61	38.5	-29.9	
Mid Ch								
836.50	17.52	V	0.9	0.0	16.62	38.5	-21.9	
836.50	6.52	H	0.9	0.0	5.62	38.5	-32.9	
High Ch								
846.50	17.56	V	0.9	0.0	16.66	38.5	-21.8	
846.50	6.74	H	0.9	0.0	5.84	38.5	-32.7	

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Band

LTE5

5MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Sony
Project #: 15U20107
Date: 4/2/2015
Test Engineer: Charles Vergonio
Configuration: Z-pos EUT Only
Location: Chamber C
Mode: LTE_QPSK Band 5 Fundamentals, 5MHz Bandwidth

Test Equpment:
Receiving: Hybrid T130, and Chamber A SMA Cables
Substitution: Dipole T273, 6ft SMA Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
826.50	20.90	V	0.9	0.0	20.00	38.5	-18.5	
826.50	10.45	H	0.9	0.0	9.55	38.5	-29.0	
Mid Ch								
836.50	18.38	V	0.9	0.0	17.48	38.5	-21.0	
836.50	7.88	H	0.9	0.0	6.98	38.5	-31.5	
High Ch								
846.50	18.18	V	0.9	0.0	17.28	38.5	-21.2	
846.50	7.71	H	0.9	0.0	6.81	38.5	-31.7	

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Band

LTE5

3MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Sony
Project #: 15U20107
Date: 4/2/2015
Test Engineer: Charles Vergonio
Configuration: Z-pos EUT Only
Location: Chamber C
Mode: LTE_16QAM Band 5 Fundamentals, 3MHz Bandwidth

Test Equpment:
Receiving: Hybrid T130, and Chamber A SMA Cables
Substitution: Dipole T273, 6ft SMA Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
825.50	19.79	V	0.9	0.0	18.89	38.5	-19.6	
825.50	9.26	H	0.9	0.0	8.36	38.5	-30.1	
Mid Ch								
836.50	17.46	V	0.9	0.0	16.56	38.5	-21.9	
836.50	6.77	H	0.9	0.0	5.87	38.5	-32.6	
High Ch								
847.50	18.54	V	0.9	0.0	17.64	38.5	-20.9	
847.50	7.52	H	0.9	0.0	6.62	38.5	-31.9	

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Band

LTE5

3MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Sony
Project #: 15U20107
Date: 4/2/2015
Test Engineer: Charles Vergonio
Configuration: Z-pos EUT Only
Location: Chamber C
Mode: LTE_QPSK Band 5 Fundamentals, 3MHz Bandwidth

Test Equpment:
Receiving: Hybrid T130, and Chamber A SMA Cables
Substitution: Dipole T273, 6ft SMA Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
825.50	20.56	V	0.9	0.0	19.66	38.5	-18.8	
825.50	10.21	H	0.9	0.0	9.31	38.5	-29.2	
Mid Ch								
836.50	18.72	V	0.9	0.0	17.82	38.5	-20.7	
836.50	7.78	H	0.9	0.0	6.88	38.5	-31.6	
High Ch								
847.50	19.41	V	0.9	0.0	18.51	38.5	-20.0	
847.50	8.47	H	0.9	0.0	7.57	38.5	-30.9	

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Band

LTE5

1.4MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Sony
Project #: 15U20107
Date: 4/2/2015
Test Engineer: Charles Vergonio
Configuration: Z-pos EUT Only
Location: Chamber C
Mode: LTE_16QAM Band 5 Fundamentals, 1.4MHz Bandwidth

Test Equipment:
Receiving: Hybrid T130, and Chamber A SMA Cables
Substitution: Dipole T273, 6ft SMA Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
824.70	19.81	V	0.9	0.0	18.91	38.5	-19.6	
824.70	9.41	H	0.9	0.0	8.51	38.5	-30.0	
Mid Ch								
836.50	17.58	V	0.9	0.0	16.68	38.5	-21.8	
836.50	6.78	H	0.9	0.0	5.88	38.5	-32.6	
High Ch								
848.30	18.59	V	0.9	0.0	17.69	38.5	-20.8	
848.30	7.94	H	0.9	0.0	7.04	38.5	-31.5	

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Band

LTE5

1.4MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Sony
Project #: 15U20107
Date: 4/2/2015
Test Engineer: Charles Vergonio
Configuration: Z-pos EUT Only
Location: Chamber C
Mode: LTE_QPSK Band 5 Fundamentals, 1.4MHz Bandwidth

Test Equipment:
Receiving: Hybrid T130, and Chamber A SMA Cables
Substitution: Dipole T273, 6ft SMA Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
824.70	20.69	V	0.9	0.0	19.79	38.5	-18.7	
824.70	10.26	H	0.9	0.0	9.36	38.5	-29.1	
Mid Ch								
836.50	18.79	V	0.9	0.0	17.89	38.5	-20.6	
836.50	7.77	H	0.9	0.0	6.87	38.5	-31.6	
High Ch								
848.30	19.37	V	0.9	0.0	18.47	38.5	-20.0	
848.30	8.37	H	0.9	0.0	7.47	38.5	-31.0	

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LTE Band 7

Band
LTE7
20MHz
16QAM

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

Company: Sony
Project #: 15U20107
Date: 04/02/15
Test Engineer: K.Kedida
Configuration: X-pos EUT Only
Mode: LTE7 20MHz 16QAM

Test Equipment:
Receiving: Horn T136, and Chamber A SMA Cables
Substitution: Horn S/N: T72, SMA Cable #C6 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								
2510.00	8.60	V	0.9	9.5	17.20	33.0	-15.8	
2510.00	9.30	H	0.9	9.5	17.90	33.0	-15.1	
Mid Ch								
2535.00	8.80	V	0.9	9.5	17.40	33.0	-15.6	
2535.00	10.00	H	0.9	9.5	18.60	33.0	-14.4	
High Ch								
2560.00	7.89	V	0.9	9.5	16.49	33.0	-16.5	
2560.00	8.69	H	0.9	9.5	17.29	33.0	-15.7	

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

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Band

LTE7

20MHz

QPSK

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

Company: Sony
Project #: 15U20107
Date: 04/02/15
Test Engineer: K.Kedida
Configuration: X-pos EUT Only
Mode: LTE7 20MHz QPSK

Test Equipment:
Receiving: Horn T136, and Chamber A SMA Cables
Substitution: Horn S/N: T72, SMA Cable #C6 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								
2510.00	9.50	V	0.9	9.5	18.10	33.0	-14.9	
2510.00	10.10	H	0.9	9.5	18.70	33.0	-14.3	
Mid Ch								
2535.00	9.94	V	0.9	9.5	18.54	33.0	-14.5	
2535.00	10.84	H	0.9	9.5	19.44	33.0	-13.6	
High Ch								
2560.00	8.72	V	0.9	9.5	17.32	33.0	-15.7	
2560.00	9.55	H	0.9	9.5	18.15	33.0	-14.9	

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

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Band

LTE7

15MHz

16QAM

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

Company: Sony
Project #: 15U20107
Date: 04/02/15
Test Engineer: K.Kedida
Configuration: X-pos EUT Only
Mode: LTE7 15MHz 16QAM

Test Equipment:
Receiving: Horn T136, and Chamber A SMA Cables
Substitution: Horn S/N: T72, SMA Cable #C6 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								
2507.50	8.00	V	0.9	9.5	16.60	33.0	-16.4	
2507.50	8.90	H	0.9	9.5	17.50	33.0	-15.5	
Mid Ch								
2535.00	8.89	V	0.9	9.5	17.49	33.0	-15.5	
2535.00	9.60	H	0.9	9.5	18.20	33.0	-14.8	
High Ch								
2562.50	8.40	V	0.9	9.5	17.00	33.0	-16.0	
2562.50	9.00	H	0.9	9.5	17.60	33.0	-15.4	

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

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Band

LTE7

15MHz

QPSK

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

Company: Sony
Project #: 15U20107
Date: 04/02/15
Test Engineer: K.Kedida
Configuration: X-pos EUT Only
Mode: LTE7 15MHz QPSK

Test Equipment:
Receiving: Horn T136, and Chamber A SMA Cables
Substitution: Horn S/N: T72, SMA Cable #C6 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								
2507.50	8.90	V	0.9	9.5	17.50	33.0	-15.5	
2507.50	10.00	H	0.9	9.5	18.60	33.0	-14.4	
Mid Ch								
2535.00	9.76	V	0.9	9.5	18.36	33.0	-14.6	
2535.00	10.74	H	0.9	9.5	19.34	33.0	-13.7	
High Ch								
2562.50	9.30	V	0.9	9.5	17.90	33.0	-15.1	
2562.50	9.84	H	0.9	9.5	18.44	33.0	-14.6	

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

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Band

LTE7

10MHz

16QAM

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

Company: Sony
Project #: 15U20107
Date: 04/02/15
Test Engineer: K.Kedida
Configuration: X-pos EUT Only
Mode: LTE7 10MHz 16QAM

Test Equipment:
Receiving: Horn T136, and Chamber A SMA Cables
Substitution: Horn S/N: T72, SMA Cable #C6 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								
2505.00	8.35	V	0.9	9.5	16.95	33.0	-16.1	
2505.00	9.10	H	0.9	9.5	17.70	33.0	-15.3	
Mid Ch								
2535.00	8.38	V	0.9	9.5	16.98	33.0	-16.0	
2535.00	9.89	H	0.9	9.5	18.49	33.0	-14.5	
High Ch								
2565.00	8.26	V	0.9	9.5	16.86	33.0	-16.1	
2565.00	9.15	H	0.9	9.5	17.75	33.0	-15.3	

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

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Band

LTE7

10MHz

QPSK

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

Company: Sony
Project #: 15U20107
Date: 04/02/15
Test Engineer: K.Kedida
Configuration: X-pos EUT Only
Mode: LTE7 10MHz QPSK

Test Equipment:
Receiving: Horn T136, and Chamber A SMA Cables
Substitution: Horn S/N: T72, SMA Cable #C6 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								
2505.00	9.25	V	0.9	9.5	17.85	33.0	-15.2	
2505.00	10.26	H	0.9	9.5	18.86	33.0	-14.1	
Mid Ch								
2535.00	9.46	V	0.9	9.5	18.06	33.0	-14.9	
2535.00	10.85	H	0.9	9.5	19.45	33.0	-13.6	
High Ch								
2565.00	9.09	V	0.9	9.5	17.69	33.0	-15.3	
2565.00	10.10	H	0.9	9.5	18.70	33.0	-14.3	

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

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Band

LTE7

5MHz

16QAM

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

Company: Sony
Project #: 15U20107
Date: 04/02/15
Test Engineer: K.Kedida
Configuration: X-pos EUT Only
Mode: LTE7 5MHz 16QAM

Test Equipment:
Receiving: Horn T136, and Chamber A SMA Cables
Substitution: Horn S/N: T72, SMA Cable #C6 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								
2502.50	8.15	V	0.9	9.5	16.75	33.0	-16.3	
2502.50	9.20	H	0.9	9.5	17.80	33.0	-15.2	
Mid Ch								
2535.00	8.86	V	0.9	9.5	17.46	33.0	-15.5	
2535.00	9.79	H	0.9	9.5	18.39	33.0	-14.6	
High Ch								
2567.50	7.73	V	0.9	9.5	16.33	33.0	-16.7	
2567.50	8.45	H	0.9	9.5	17.05	33.0	-16.0	

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

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Band

LTE7

5MHz

QPSK

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

Company: Sony
Project #: 15U20107
Date: 04/02/15
Test Engineer: K.Kedida
Configuration: X-pos EUT Only
Mode: LTE7 5MHz QPSK

Test Equipment:
Receiving: Horn T136, and Chamber A SMA Cables
Substitution: Horn S/N: T72, SMA Cable #C6 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								
2502.50	9.03	V	0.9	9.5	17.63	33.0	-15.4	
2502.50	10.22	H	0.9	9.5	18.82	33.0	-14.2	
Mid Ch								
2535.00	9.95	V	0.9	9.5	18.55	33.0	-14.5	
2535.00	10.89	H	0.9	9.5	19.49	33.0	-13.5	
High Ch								
2567.50	8.52	V	0.9	9.5	17.12	33.0	-15.9	
2567.50	9.25	H	0.9	9.5	17.85	33.0	-15.2	

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

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LTE Band 13

Band

LTE13

10MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Sony
Project #: 15U20107
Date: 4/7/2015
Test Engineer: K.Kedida
Configuration: X-pos EUT Only
Location: Chamber A
Mode: LTE_16QAM Band 13 Fundamentals, 10MHz Bandwidth

Test Equpment:
Receiving: Hybrid T130, and Chamber A SMA Cables
Substitution: Dipole T416, Xft SMA Cable (SN # SERIALNUMBER) Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
782.00	0.00	V	0.9	0.0	0.00	34.8	0.0	
782.00	0.00	H	0.9	0.0	0.00	34.8	0.0	
Mid Ch								
782.00	12.10	V	0.9	0.0	11.20	34.8	-23.6	
782.00	19.30	H	0.9	0.0	18.40	34.8	-16.4	
High Ch								
782.00	0.00	V	0.9	0.0	0.00	34.8	0.0	
782.00	0.00	H	0.9	0.0	0.00	34.8	0.0	

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Band

LTE13

10MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Sony
Project #: 15U20107
Date: 4/7/2015
Test Engineer: K.Kedida
Configuration: X-pos EUT Only
Location: Chamber A
Mode: LTE_QPSK Band 13 Fundamentals, 10MHz Bandwidth

Test Equpment:
Receiving: Hybrid T130, and Chamber A SMA Cables
Substitution: Dipole T416, Xft SMA Cable (SN # SERIALNUMBER) Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
782.00	0.00	V	0.9	0.0	0.00	34.8	0.0	
782.00	0.00	H	0.9	0.0	0.00	34.8	0.0	
Mid Ch								
782.00	11.91	V	0.9	0.0	11.01	34.8	-23.8	
782.00	20.38	H	0.9	0.0	19.48	34.8	-15.3	
High Ch								
782.00	0.00	V	0.9	0.0	0.00	34.8	0.0	
782.00	0.00	H	0.9	0.0	0.00	34.8	0.0	

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Band

LTE13

5MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Sony
Project #: 15U20107
Date: 4/7/2015
Test Engineer: K.Kedida
Configuration: X-pos EUT Only
Location: Chamber A
Mode: LTE_16QAM Band 13 Fundamentals, 5MHz Bandwidth

Test Equpment:
Receiving: Hybrid T130, and Chamber A SMA Cables
Substitution: Dipole T416, Xft SMA Cable (SN # SERIALNUMBER) Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
779.50	11.60	V	0.9	0.0	10.70	34.8	-24.1	
779.50	19.60	H	0.9	0.0	18.70	34.8	-16.1	
Mid Ch								
782.00	11.00	V	0.9	0.0	10.10	34.8	-24.7	
782.00	18.90	H	0.9	0.0	18.00	34.8	-16.8	
High Ch								
784.50	12.70	V	0.9	0.0	11.80	34.8	-23.0	
784.50	19.70	H	0.9	0.0	18.80	34.8	-16.0	

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Band

LTE13

5MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Sony
Project #: 15U20107
Date: 4/7/2015
Test Engineer: K.Kedida
Configuration: X-pos EUT Only
Location: Chamber A
Mode: LTE_QPSK Band 13 Fundamentals, 5MHz Bandwidth

Test Equpment:
Receiving: Hybrid T130, and Chamber A SMA Cables
Substitution: Dipole T416, Xft SMA Cable (SN # SERIALNUMBER) Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
779.50	12.50	V	0.9	0.0	11.60	34.8	-23.2	
779.50	20.79	H	0.9	0.0	19.89	34.8	-14.9	
Mid Ch								
782.00	12.13	V	0.9	0.0	11.23	34.8	-23.5	
782.00	19.98	H	0.9	0.0	19.08	34.8	-15.7	
High Ch								
784.50	13.55	V	0.9	0.0	12.65	34.8	-22.1	
784.50	20.92	H	0.9	0.0	20.02	34.8	-14.8	

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11.2. FIELD STRENGTH OF SPURIOUS RADIATION

RULE PART(S)

FCC: §2.1053, §22.917(a), §24.238 (a), §27. 53 (g)

LIMITS

Part 22.917(a) & Part 24.238(a) 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 27.53(g) For operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least 43 + 10 log (P) dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

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