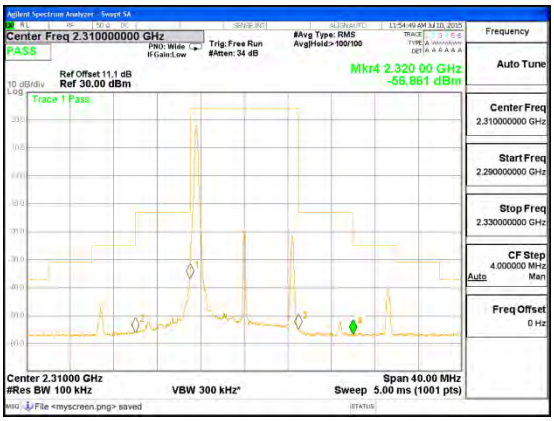
9.2.2. EMISSION MASK PLOTS

LTE Band 30

Band LTE30 10MHz 16QAM	 Band LTE30 10MHz EM 16QAM Mid Channel 1RB.gif	 Band LTE30 10MHz EM 16QAM Mid Channel 1RB_ZL.gif
Band LTE30 10MHz 16QAM	 Band LTE30 10MHz EM 16QAM Mid Channel 1RB_ZR.gif	

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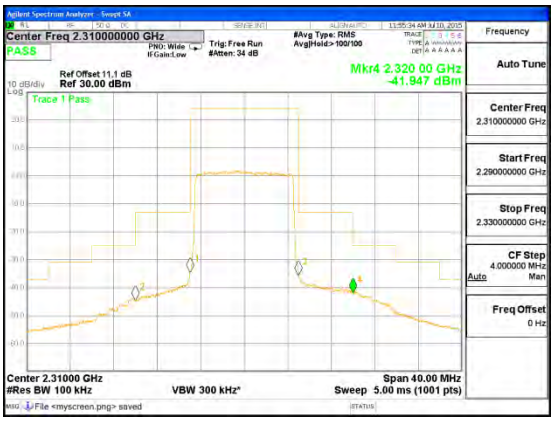
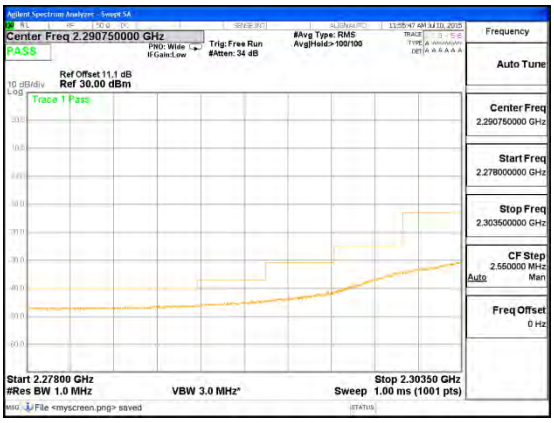
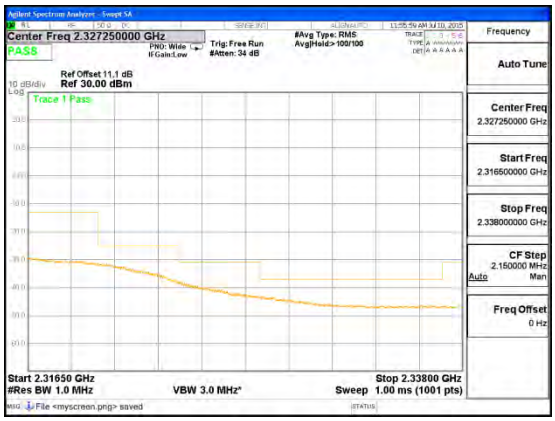
Band LTE30 10MHz 16QAM	 Band LTE30 10MHz EM 16QAM Mid Channel FRB.gif	 Band LTE30 10MHz EM 16QAM Mid Channel FRB_ZL.gif
Band LTE30 10MHz 16QAM	 Band LTE30 10MHz EM 16QAM Mid Channel FRB_ZR.gif	

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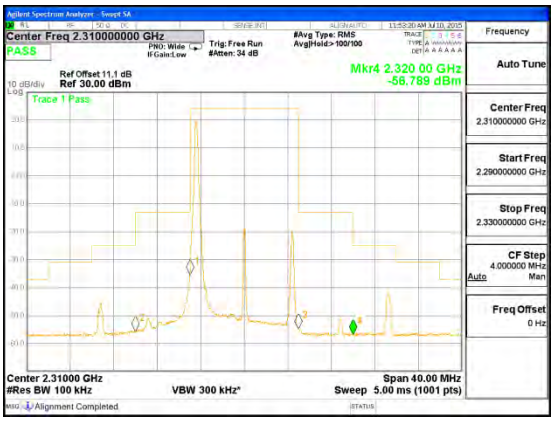
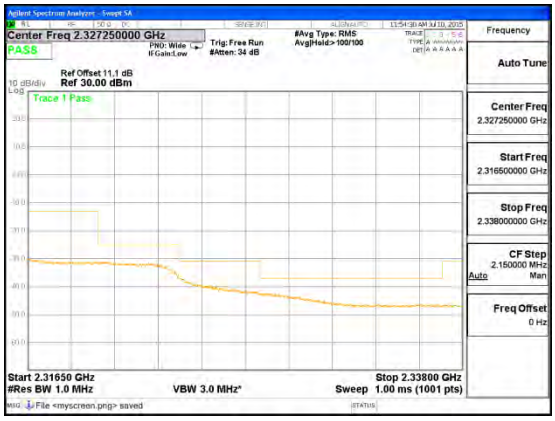
Band LTE30 10MHz QPSK	 Band LTE30 10MHz EM QPSK Mid Channel 1RB.gif	 Band LTE30 10MHz EM QPSK Mid Channel 1RB_ZL.gif
Band LTE30 10MHz QPSK	 Band LTE30 10MHz EM QPSK Mid Channel 1RB_ZR.gif	

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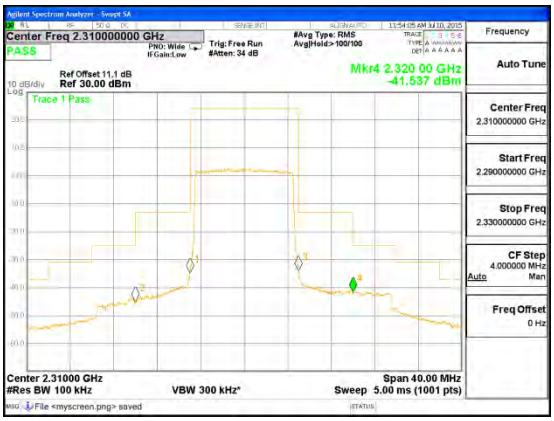
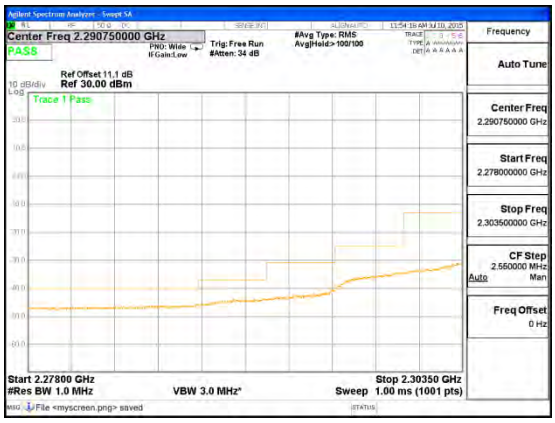
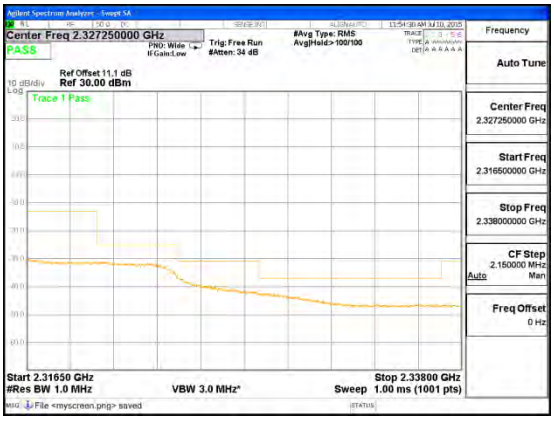
Band LTE30 10MHz 16QAM	 Band LTE30 10MHz EM QPSK Mid Channel FRB.gif	 Band LTE30 10MHz EM QPSK Mid Channel FRB_ZL.gif
Band LTE30 10MHz 16QAM	 Band LTE30 10MHz EM QPSK Mid Channel FRB_ZR.gif	

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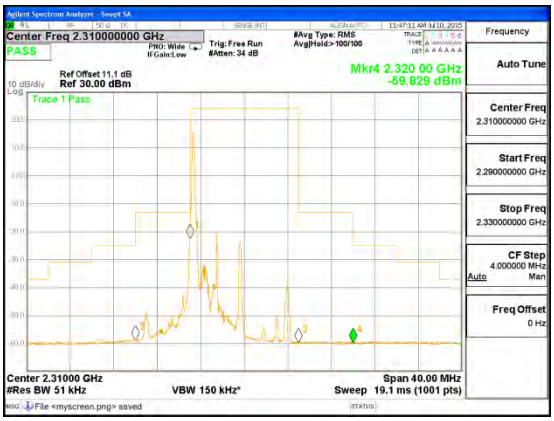
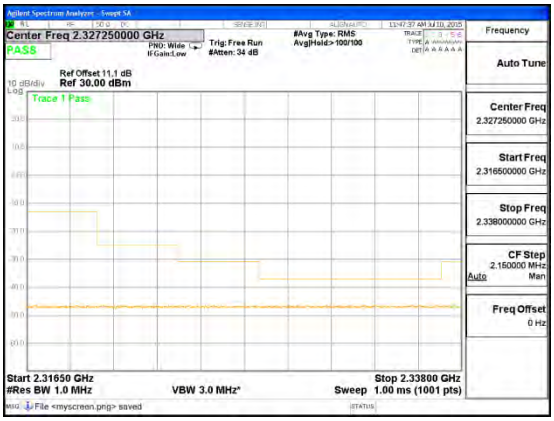
Band LTE30 5MHz 16QAM	 Band LTE30 5MHz EM 16QAM Low Channel 1RB.gif	 Band LTE30 5MHz EM 16QAM Low Channel 1RB_ZL.gif
Band LTE30 5MHz 16QAM	 Band LTE30 5MHz EM 16QAM Low Channel 1RB_ZR.gif	

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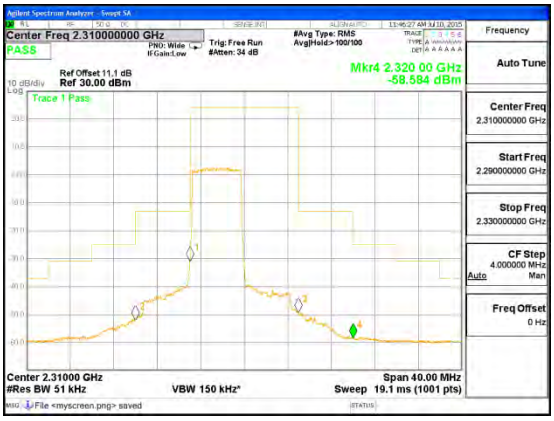
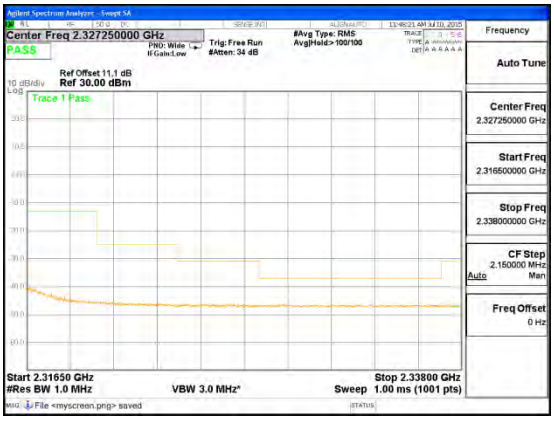
Band LTE30 5MHz 16QAM	 Band LTE30 5MHz EM 16QAM Low Channel FRB.gif	 Band LTE30 5MHz EM 16QAM Low Channel FRB_ZL.gif
Band LTE30 5MHz 16QAM	 Band LTE30 5MHz EM 16QAM Low Channel FRB_ZR.gif	

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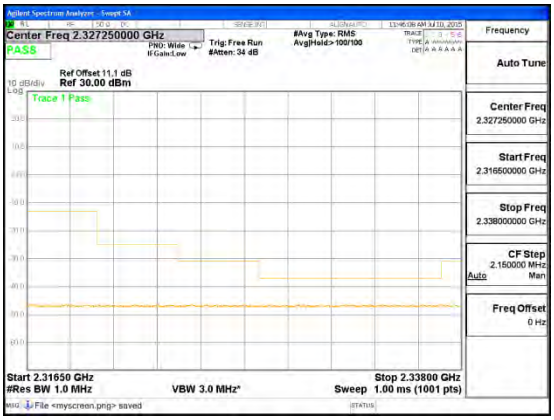
Band LTE30 5MHz QPSK	 Band LTE30 5MHz EM QPSK Low Channel 1RB.gif	 Band LTE30 5MHz EM 16QAM Low Channel 1RB_ZL.gif
Band LTE30 5MHz QPSK	 Band LTE30 5MHz EM 16QAM Low Channel 1RB_ZR.gif	

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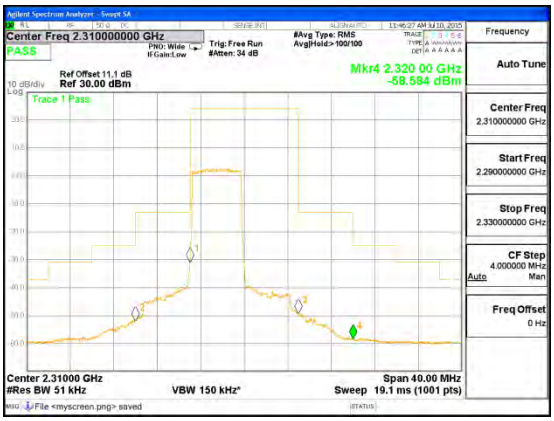
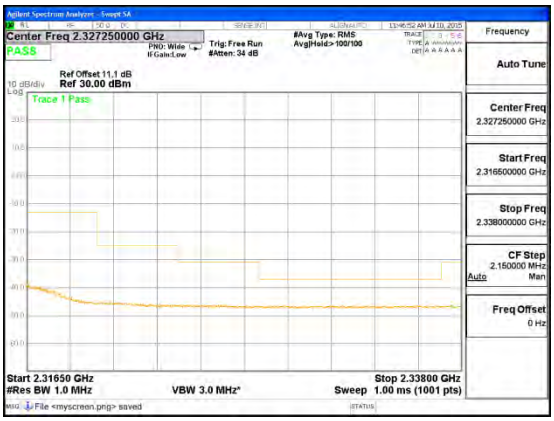
Band LTE30 5MHz QPSK	 Band LTE30 5MHz EM QPSK Low Channel FRB.gif	 Band LTE30 5MHz EM QPSK Low Channel FRB_ZL.gif

Band LTE30 5MHz QPSK	 Band LTE30 5MHz EM QPSK Low Channel FRB_ZR.gif	

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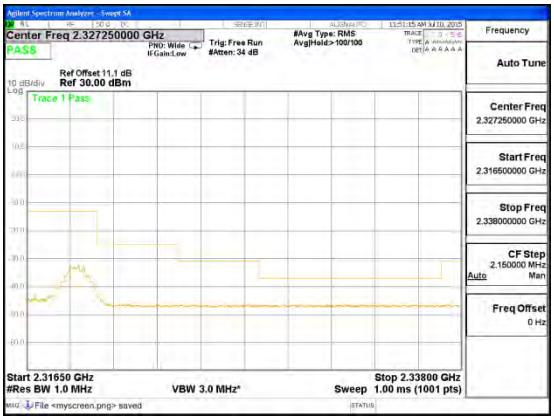
Band LTE30 5MHz 16QAM	 Band LTE30 5MHz EM 16QAM High Channel 1RB.gif	 Band LTE30 5MHz EM 16QAM High Channel 1RB_ZL.gif
Band LTE30 5MHz 16QAM	 Band LTE30 5MHz EM 16QAM High Channel 1RB_ZR.gif	

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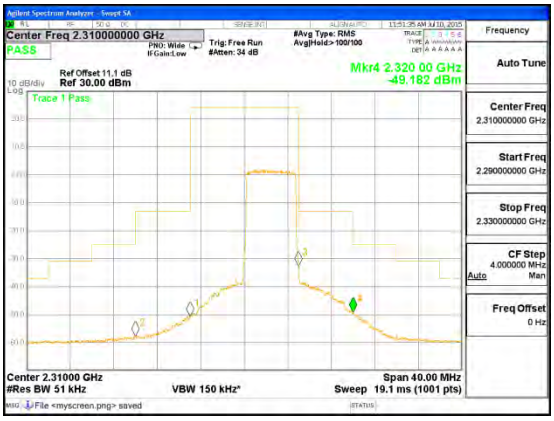
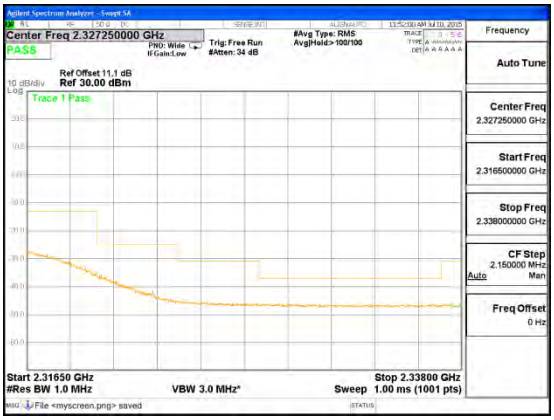
Band LTE30 5MHz 16QAM	 Band LTE30 5MHz EM 16QAM High Channel FRB.gif	 Band LTE30 5MHz EM 16QAM High Channel FRB_ZL.gif
Band LTE30 5MHz 16QAM	 Band LTE30 5MHz EM 16QAM High Channel FRB_ZR.gif	

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Band LTE30 5MHz QPSK	 Band LTE30 5MHz EM QPSK High Channel 1RB.gif	 Band LTE30 5MHz EM QPSK High Channel 1RB_ZL.gif
Band LTE30 5MHz QPSK	 Band LTE30 5MHz EM QPSK High Channel 1RB_ZR.gif	

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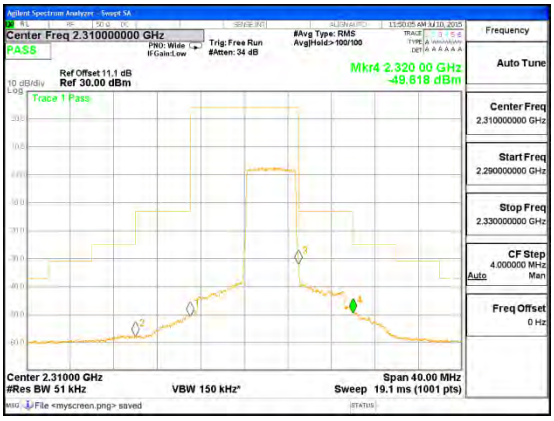
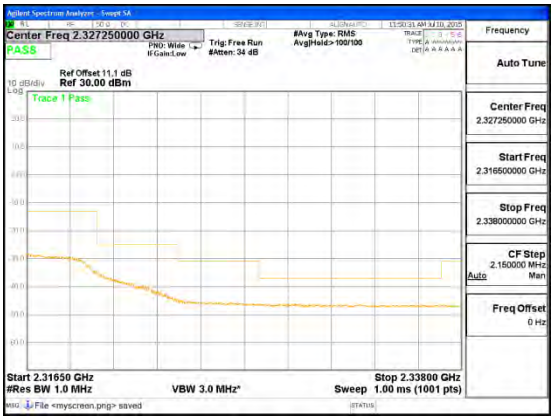
Band LTE30 5MHz QPSK	 Band LTE30 5MHz EM QPSK High Channel FRB.gif	 Band LTE30 5MHz EM QPSK High Channel FRB_ZL.gif
Band LTE30 5MHz QPSK	 Band LTE30 5MHz EM QPSK High Channel FRB_ZR.gif	

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9.3. OUT OF BAND EMISSIONS

RULE PART(S)

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

LIMITS

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

Part 27: (m)(4) (4) For mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

TEST PROCEDURE

Per KDB 971168 D01 Power Meas License Digital Systems v02r02

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

MODES TESTED

GSM, WCDMA and LTE

RESULTS

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9.3.1. OUT OF BAND EMISSIONS RESULT

GSM

Band	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
GSM 850	GPRS	824.2	-21.323	-13	-8.323
		836.6	-20.995	-13	-7.995
		848.8	-21.131	-13	-8.131
	EGPRS	824.2	-21.108	-13	-8.108
		836.6	-21.524	-13	-8.524
		848.8	-21.289	-13	-8.289
GSM 1900	GPRS	1850.2	-20.448	-13	-7.448
		1880	-20.079	-13	-7.079
		1909.8	-20.821	-13	-7.821
	EGPRS	1850.2	-21.13	-13	-8.13
		1880	-20.464	-13	-7.464
		1909.8	-19.688	-13	-6.688

WCDMA

Band	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
Band 5	REL99	826.4	-21.521	-13	-8.521
		836.6	-21.204	-13	-8.204
		846.6	-20.62	-13	-7.62
	HSDPA	826.4	-20.729	-13	-7.729
		836.6	-20.958	-13	-7.958
		846.6	-21.161	-13	-8.161
Band 2	REL99	1852.4	-20.216	-13	-7.216
		1880	-21.007	-13	-8.007
		1907.6	-20.339	-13	-7.339
	HSDPA	1852.4	-19.907	-13	-6.907
		1880	-20.088	-13	-7.088
		1907.6	-20.157	-13	-7.157

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LTE Band 2

Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE2	20	16QAM	1860	-21.697	-13	-8.697
			1880	-22.582	-13	-9.582
			1900	-22.61	-13	-9.61
		QPSK	1860	-22.748	-13	-9.748
			1880	-22.92	-13	-9.92
			1900	-22.22	-13	-9.22
	15	16QAM	1857.5	-22.826	-13	-9.826
			1880	-21.776	-13	-8.776
			1902.5	-23	-13	-10
		QPSK	1857.5	-21.853	-13	-8.853
			1880	-22.129	-13	-9.129
			1902.5	-22.63	-13	-9.63
	10	16QAM	1855	-22.85	-13	-9.85
			1880	-21.941	-13	-8.941
			1905	-22.29	-13	-9.29
		QPSK	1855	-22.341	-13	-9.341
			1880	-22.073	-13	-9.073
			1905	-21.491	-13	-8.491
	5	16QAM	1852.5	-21.944	-13	-8.944
			1880	-22.581	-13	-9.581
			1907.5	-21.236	-13	-8.236
		QPSK	1852.5	-21.95	-13	-8.95
			1880	-22.11	-13	-9.11
			1907.5	-22.345	-13	-9.345

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Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE2	3	16QAM	1851.5	-22.375	-13	-9.375
			1880	-21.993	-13	-8.993
			1908.5	-21.603	-13	-8.603
		QPSK	1851.5	-22.012	-13	-9.012
			1880	-22.39	-13	-9.39
			1908.5	-22.107	-13	-9.107
	1.4	16QAM	1850.7	-21.846	-13	-8.846
			1880	-22.592	-13	-9.592
			1909.3	-21.504	-13	-8.504
		QPSK	1850.7	-22.662	-13	-9.662
			1880	-21.461	-13	-8.461
			1909.3	-22.214	-13	-9.214

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LTE Band 4

Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE4	20	16QAM	1720	-27.687	-13	-14.687
			1732.5	-26.831	-13	-13.831
			1745	-27.648	-13	-14.648
		QPSK	1720	-27.047	-13	-14.047
			1732.5	-26.84	-13	-13.84
			1745	-27.367	-13	-14.367
	15	16QAM	1717.5	-27.408	-13	-14.408
			1732.5	-27.446	-13	-14.446
			1747.5	-25.714	-13	-12.714
		QPSK	1717.5	-27.322	-13	-14.322
			1732.5	-27.281	-13	-14.281
			1747.5	-27.298	-13	-14.298
	10	16QAM	1715	-27.575	-13	-14.575
			1732.5	-25.696	-13	-12.696
			1750	-27.055	-13	-14.055
		QPSK	1715	-27.607	-13	-14.607
			1732.5	-27.209	-13	-14.209
			1750	-27.101	-13	-14.101
	5	16QAM	1712.5	-27.218	-13	-14.218
			1732.5	-27.005	-13	-14.005
			1752.5	-27.331	-13	-14.331
		QPSK	1712.5	-26.169	-13	-13.169
			1732.5	-26.48	-13	-13.48
			1752.5	-27.282	-13	-14.282

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Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE4	3	16QAM	1711.5	-27.88	-13	-14.88
			1732.5	-25.86	-13	-16.32
			1753.5	-25.31	-13	-12.31
		QPSK	1711.5	-27.41	-13	-14.41
			1732.5	-27.17	-13	-14.17
			1753.5	--28.04	-13	-15.041
	1.4	16QAM	1710.7	-27.24	-13	-14.24
			1732.5	-26.92	-13	-13.92
			1754.3	-26.866	-13	-13.866
		QPSK	1710.7	-26.933	-13	-13.933
			1732.5	-27.707	-13	-14.707
			1754.3	-27.246	-13	-14.246

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LTE Band 5

Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE5	10	16QAM	829	-22.71	-13	-9.71
			836.5	-22.96	-13	-9.96
			844	-22.44	-13	-9.44
		QPSK	829	-22.24	-13	-9.24
			836.5	-22.34	-13	-9.34
			844	-22.89	-13	-9.89
	5	16QAM	826.5	-22.803	-13	-9.803
			836.5	-22.28	-13	-9.28
			846.5	-22.321	-13	-9.321
		QPSK	826.5	-22.271	-13	-9.271
			836.5	-22.603	-13	-9.603
			846.5	-22.154	-13	-9.154
	3	16QAM	825.5	-21.54	-13	-8.54
			836.5	-22.265	-13	-9.265
			847.5	-21.785	-13	-8.785
		QPSK	825.5	-22.977	-13	-9.977
			836.5	-22.349	-13	-9.349
			847.5	-22.863	-13	-9.863
	1.4	16QAM	824.7	-22.087	-13	-9.087
			836.5	-22.343	-13	-9.343
			848.3	-22.151	-13	-9.151
		QPSK	824.7	-22.541	-13	-9.541
			836.5	-21.857	-13	-8.857
			848.3	-21.576	-13	-8.576

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LTE Band 12

Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE12	10	16QAM	704	-22.64	-13	-9.64
			707.5	-22.51	-13	-9.35
			711	-23	-13	-10
		QPSK	704	-22.52	-13	-9.52
			707.5	-21.64	-13	-8.64
			711	-22.62	-13	-6.231
	5	16QAM	701.5	-22.617	-13	-9.617
			707.5	-22.011	-13	-9.011
			713.5	-22.338	-13	-9.338
		QPSK	701.5	-22.658	-13	-9.658
			707.5	-22.503	-13	-9.503
			713.5	-22.919	-13	-9.919
	3	16QAM	700.5	-22.291	-13	-9.291
			707.5	-22.658	-13	-9.658
			714.5	-22.481	-13	-9.481
		QPSK	700.5	-21.628	-13	-8.628
			707.5	-22.662	-13	-9.662
			714.5	-22.35	-13	-9.35
	1.4	16QAM	699.7	-22.94	-13	-9.94
			707.5	-22.553	-13	-9.553
			715.3	-22.465	-13	-9.465
		QPSK	699.7	-21.255	-13	-8.255
			707.5	-23.443	-13	-10.443
			715.3	-22.815	-13	-9.815

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LTE Band 30

Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE30	10	16QAM	2310	-47.83	-40	-7.83
		QPSK	2310	-46.65	-40	-6.65
	5	16QAM	2307.5	-46.73	-40	-6.73
			2310	-48.61	-40	-8.61
			2312.5	-48.48	-40	-8.48
		QPSK	2307.5	-45.67	-40	-5.67
			2310	-46.08	-40	-6.08
			2312.5	-48.03	-40	-8.03

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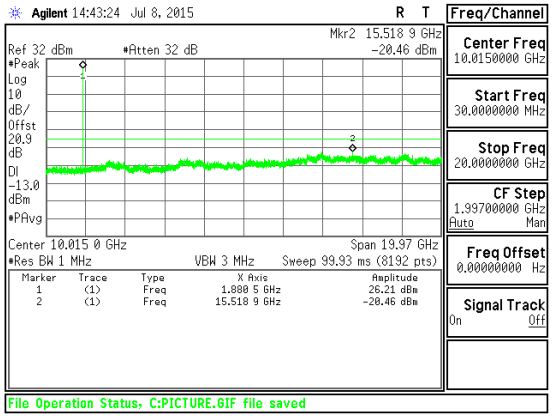
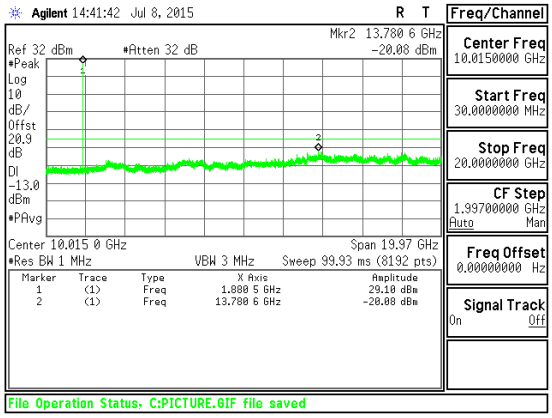
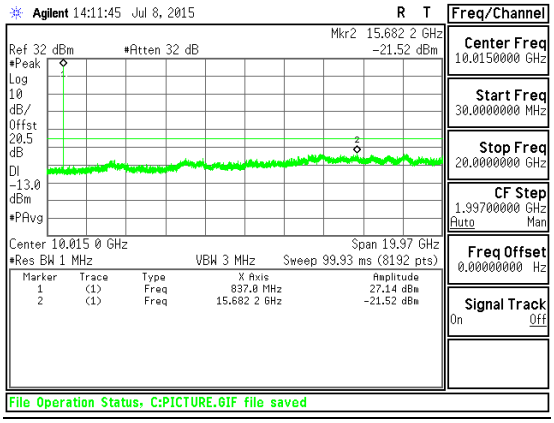
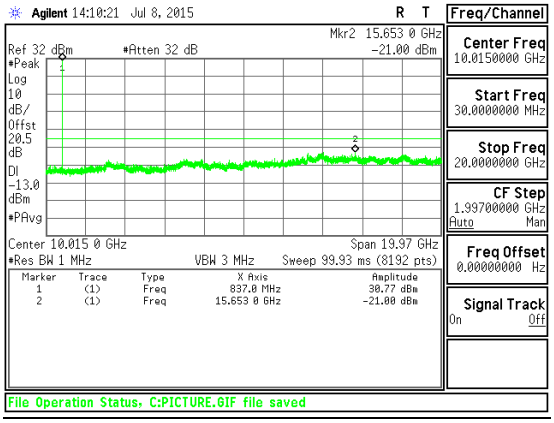
9.3.2. OUT OF BAND EMISSIONS PLOTS

GSM

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

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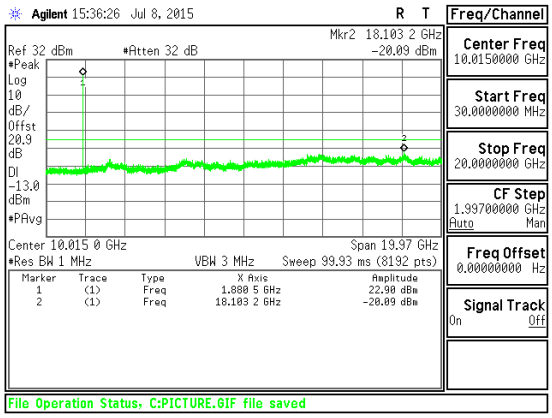
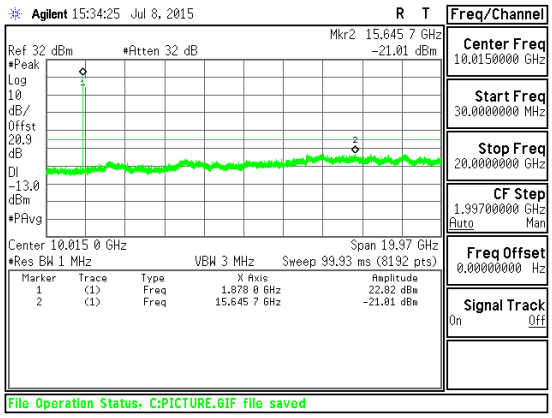
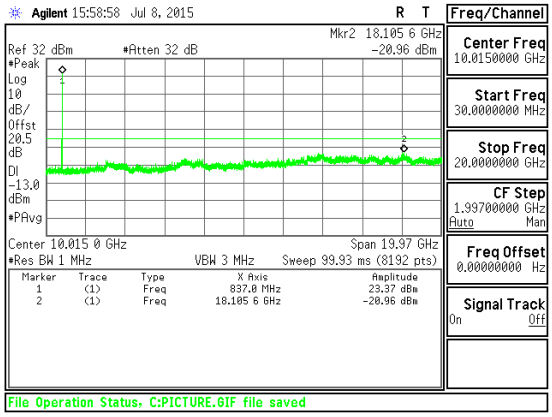
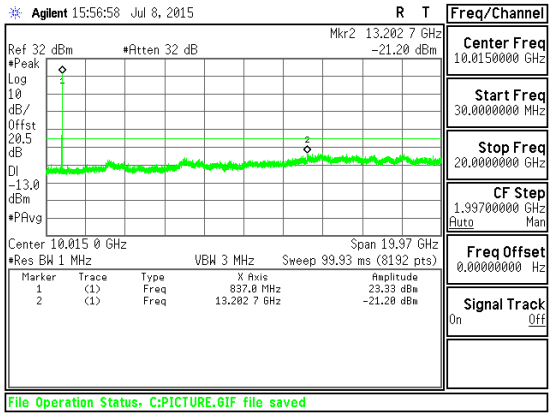
WCDMA

Band		
Band 2 HSDPA	 Band WCDMA B2 HSDPA CSE	 Band WCDMA B2 REL99 CSE
Band 5 HSDPA	 Band WCDMA B5 HSDPA CSE	 Band WCDMA B5 REL99 CSE

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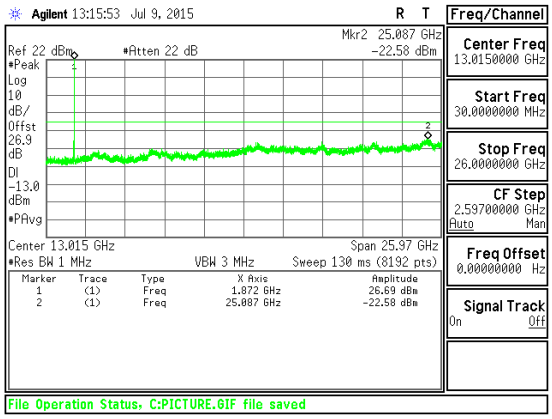
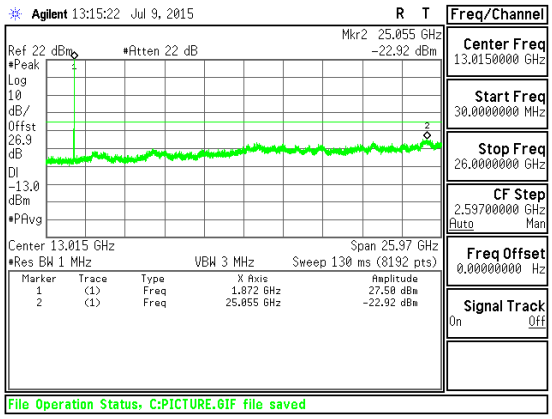
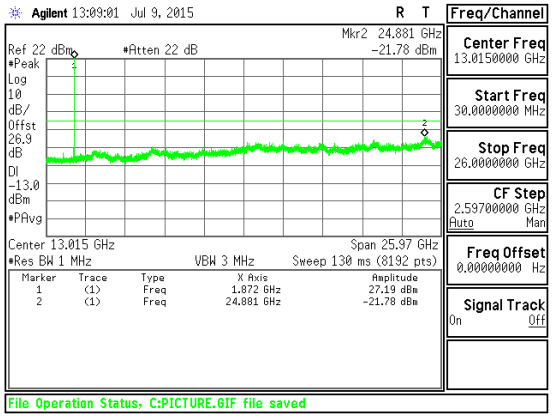
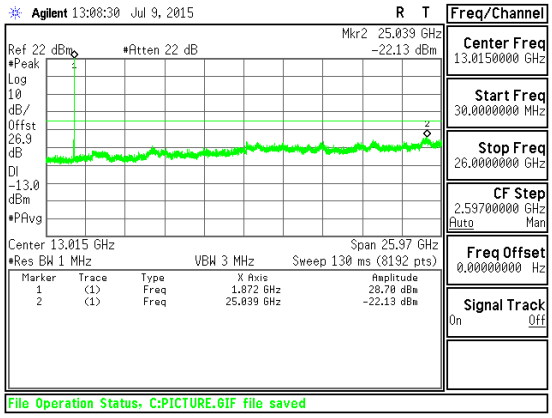
LTE Band 2

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

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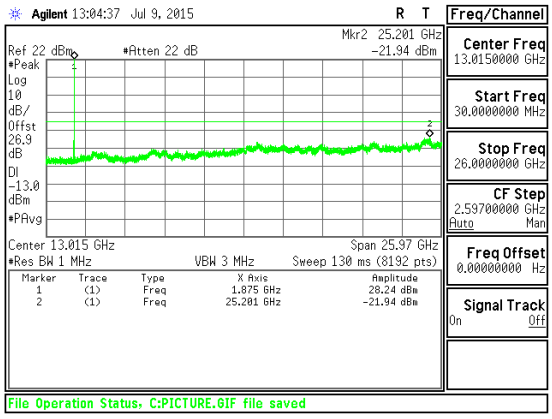
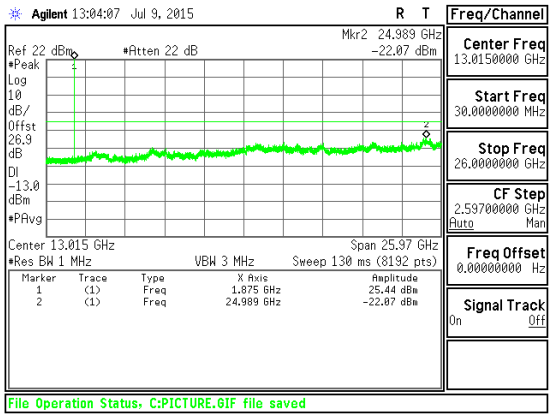
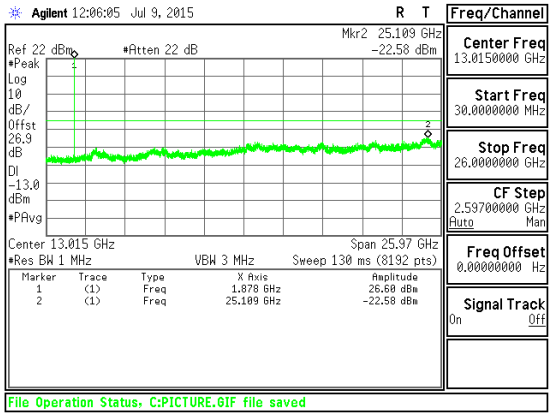
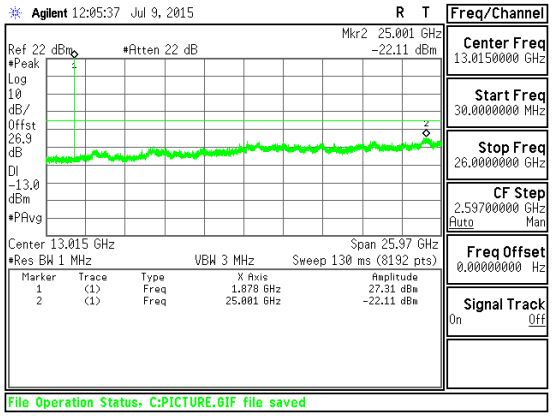
Band LTE2 10MHz 16QAM	 Band LTE2 10MHz CSE 16QAM Mid channel	 Band LTE2 10MHz CSE QPSK Mid channel
Band LTE2 5MHz 16QAM	 Band LTE2 5MHz CSE 16QAM Mid channel	 Band LTE2 5MHz CSE QPSK Mid channel

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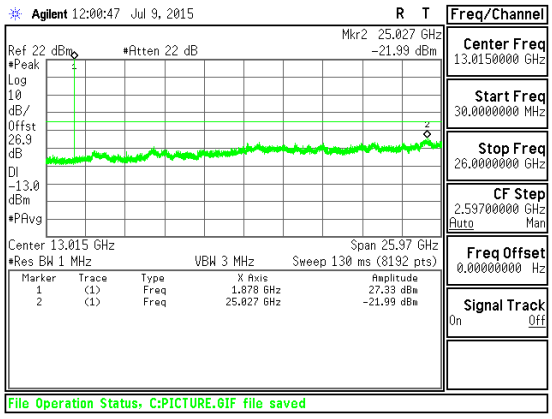
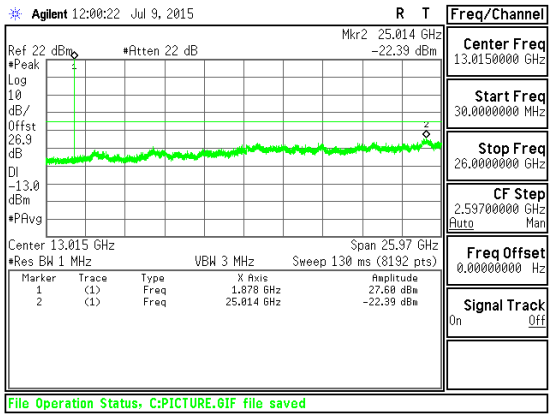
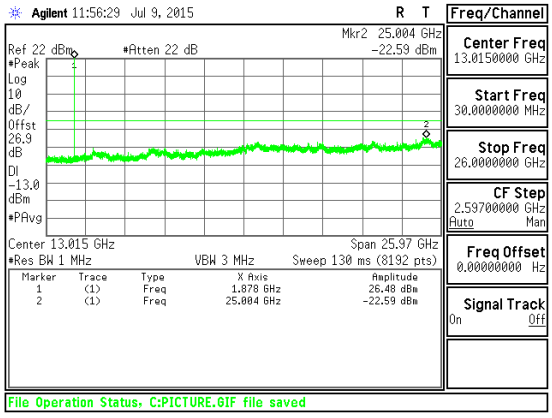
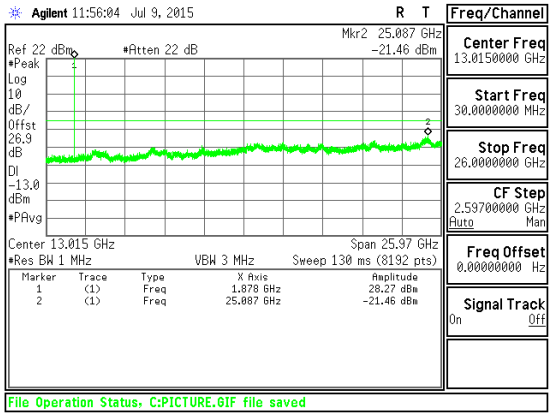
Band LTE2 3MHz 16QAM	 Band LTE2 3MHz CSE 16QAM Mid channel	 Band LTE2 3MHz CSE QPSK Mid channel
Band LTE2 1.4MHz 16QAM	 Band LTE2 1.4MHz CSE 16QAM Mid channel	 Band LTE2 1.4MHz CSE QPSK Mid channel

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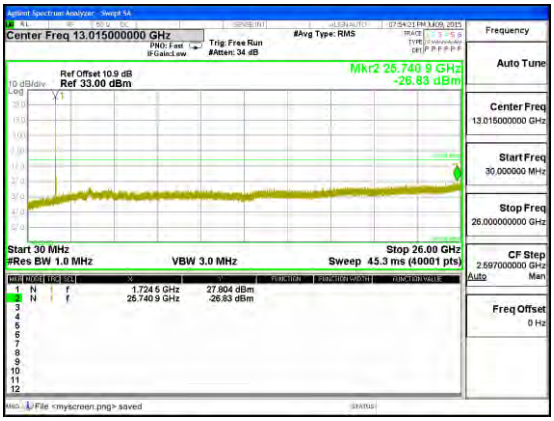
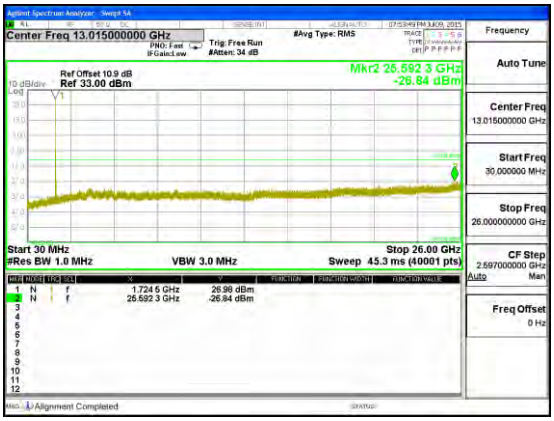
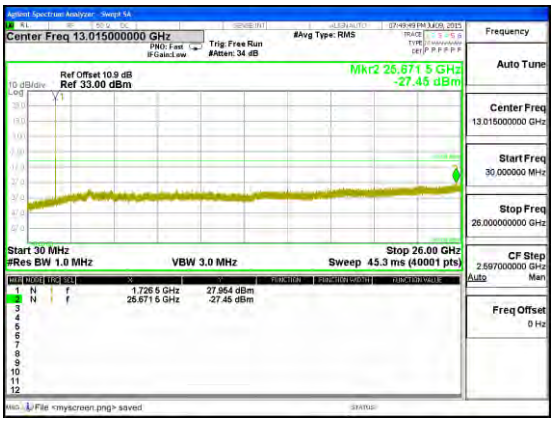
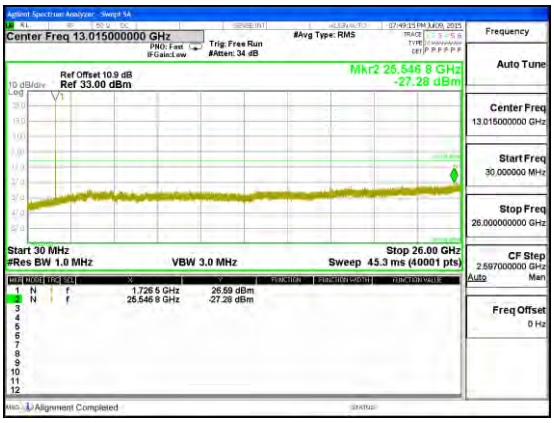
LTE Band 4

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

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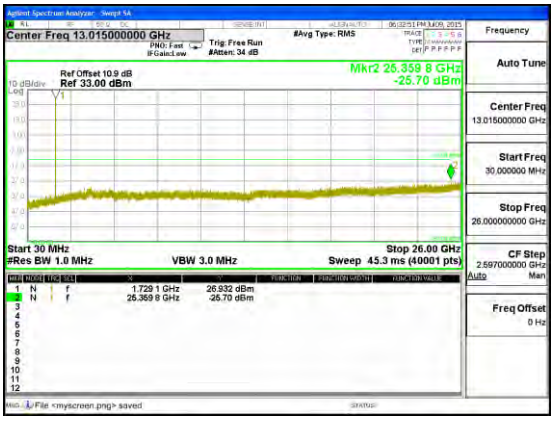
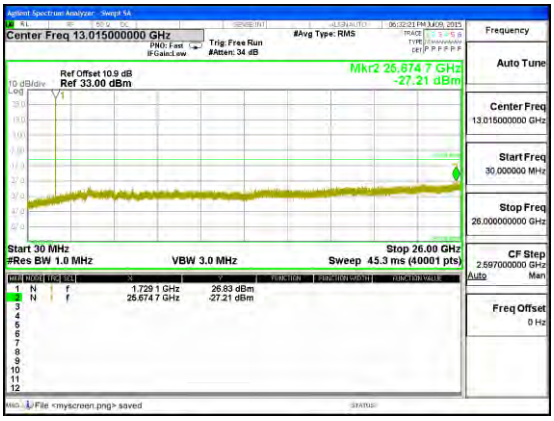
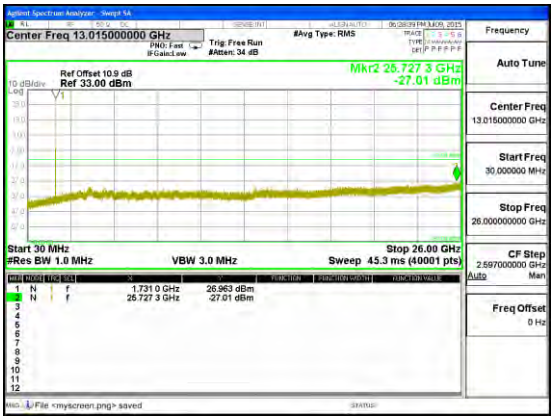
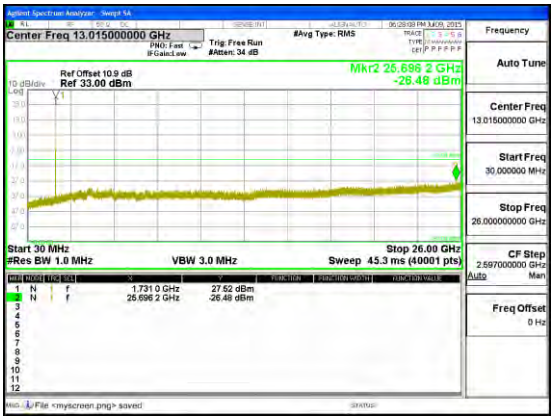
Band LTE4 10MHz 16QAM	 Band LTE4 10MHz CSE 16QAM Mid channel	 Band LTE4 10MHz CSE QPSK Mid channel
Band LTE4 5MHz 16QAM	 Band LTE4 5MHz CSE 16QAM Mid channel	 Band LTE4 5MHz CSE QPSK Mid channel

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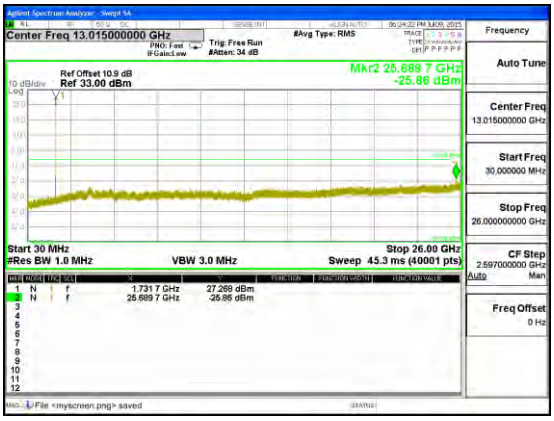
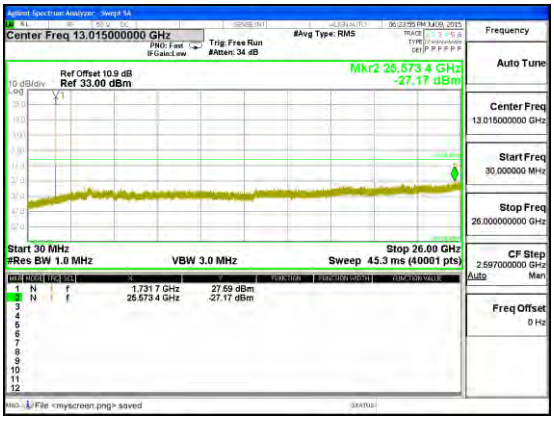
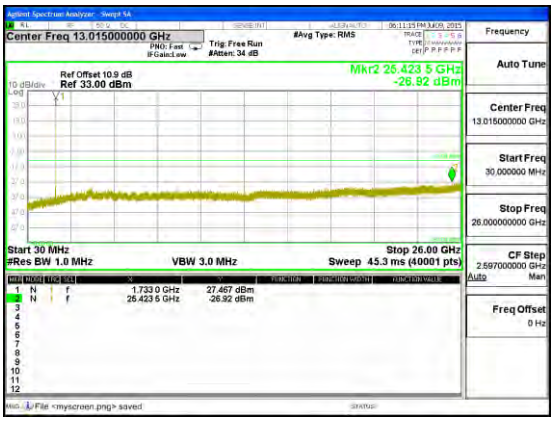
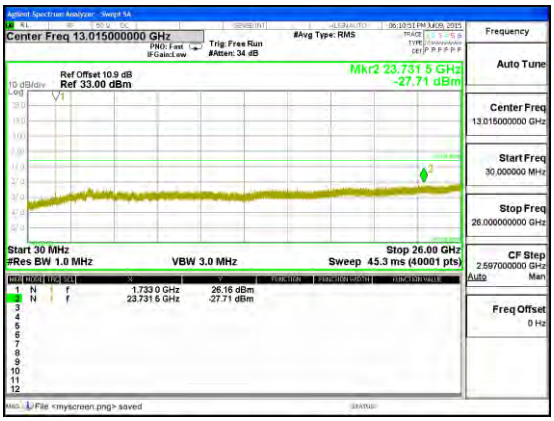
Band LTE4 3MHz 16QAM	 Band LTE4 3MHz CSE 16QAM Mid channel	 Band LTE4 3MHz CSE QPSK Mid channel
Band LTE4 1.4MHz 16QAM	 Band LTE4 1.4MHz CSE 16QAM Mid channel	 Band LTE4 1.4MHz CSE QPSK Mid channel

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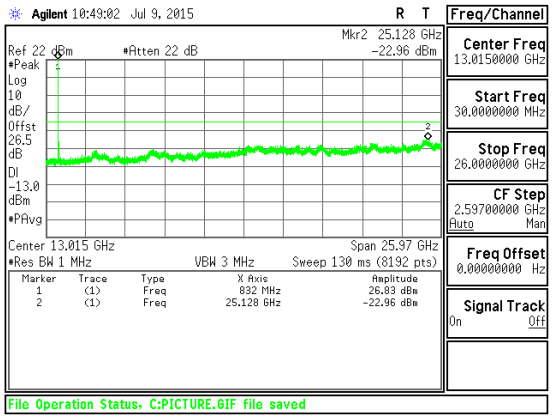
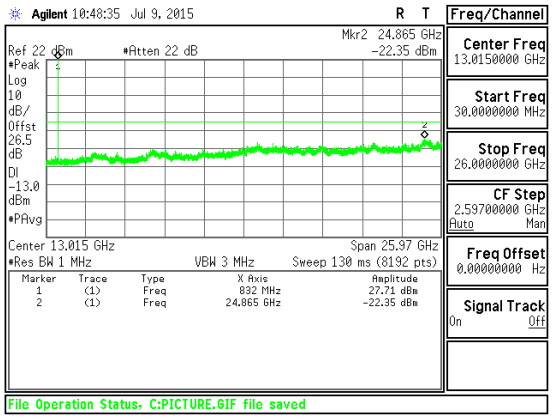
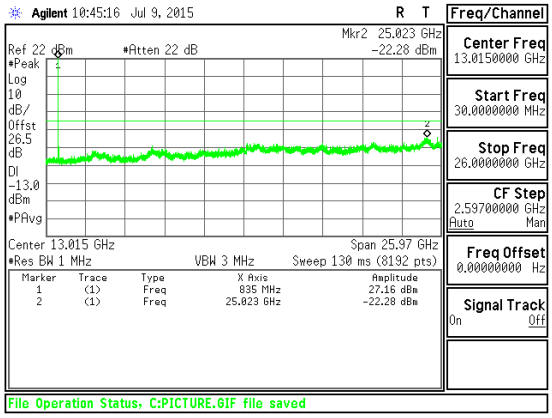
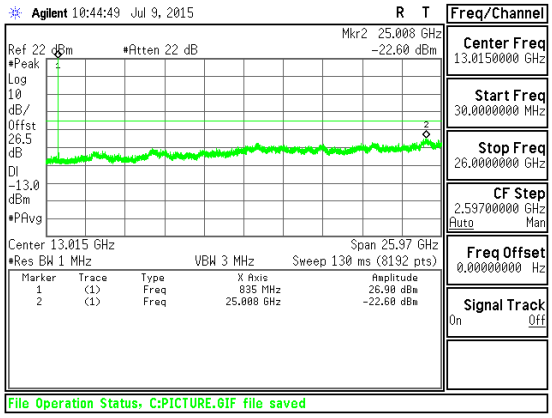
LTE Band 5

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

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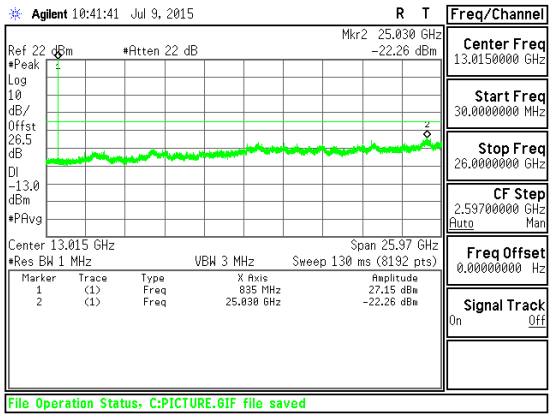
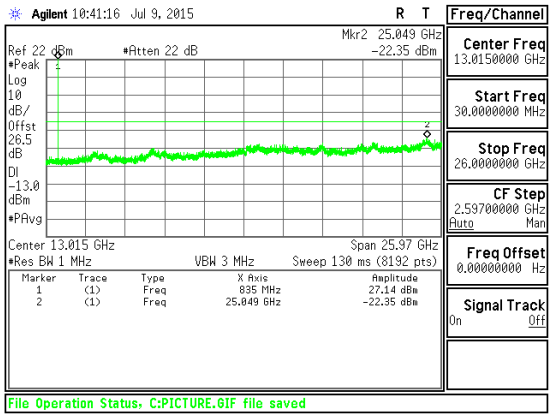
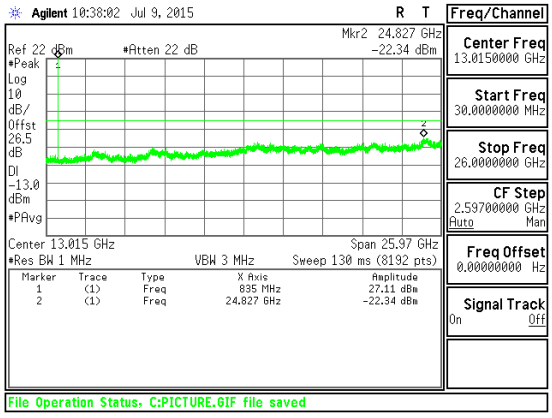
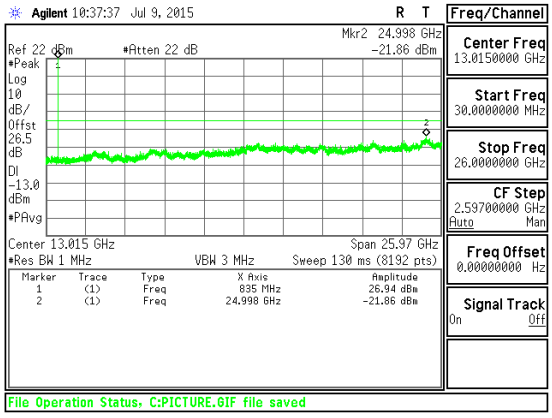
Band LTE5 3MHz 16QAM	 Band LTE5 3MHz CSE 16QAM Mid channel	 Band LTE5 3MHz CSE QPSK Mid channel
Band LTE5 1.4MHz 16QAM	 Band LTE5 1.4MHz CSE 16QAM Mid channel	 Band LTE5 1.4MHz CSE QPSK Mid channel

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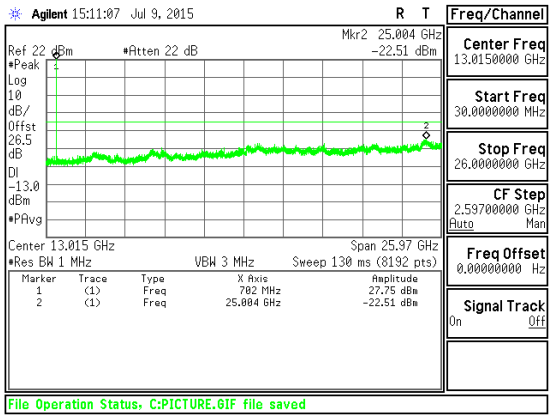
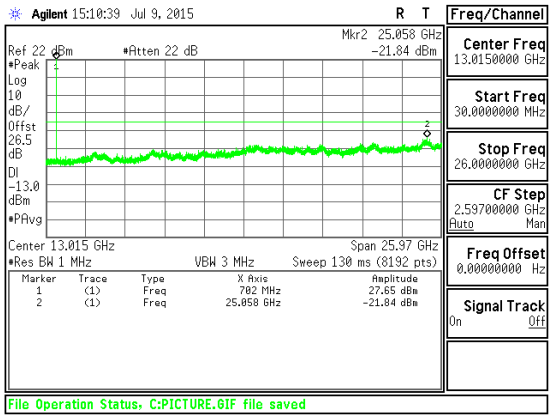
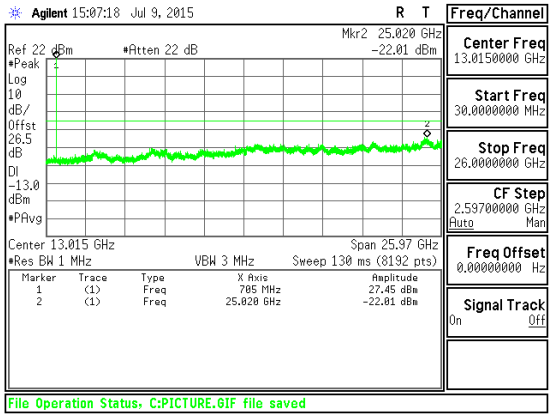
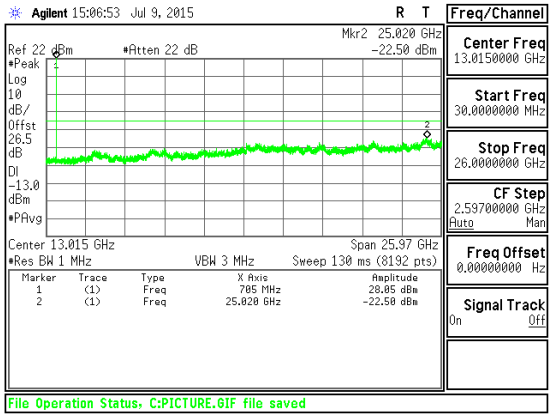
LTE Band 12

Band LTE12 10MHz 16QAM	 Band LTE12 10MHz CSE 16QAM Mid channel	 Band LTE12 10MHz CSE QPSK Mid channel
Band LTE12 5MHz 16QAM	 Band LTE12 5MHz CSE 16QAM Mid channel	 Band LTE12 5MHz CSE QPSK Mid channel

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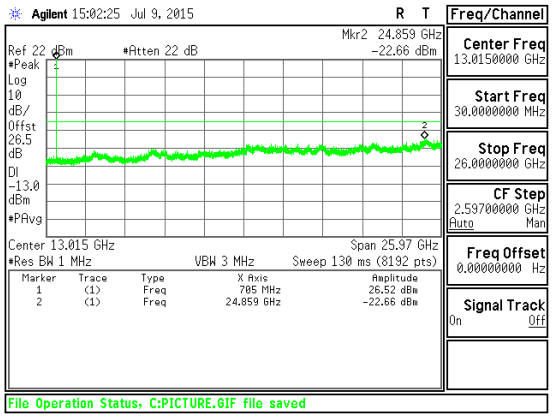
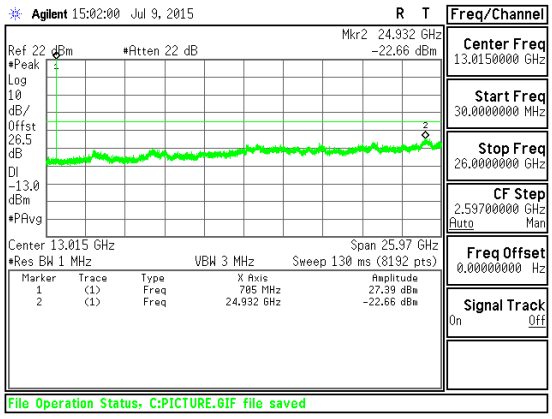
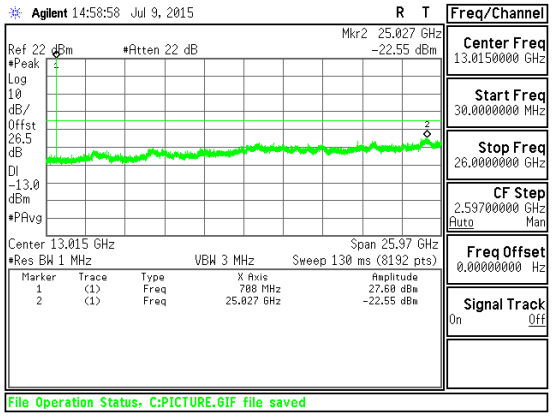
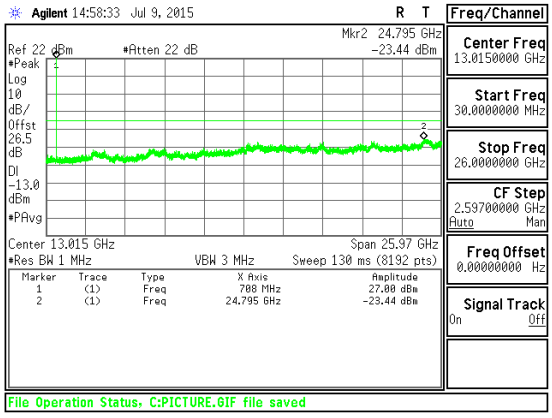
Band LTE12 3MHz 16QAM	 Band LTE12 3MHz CSE 16QAM Mid channel	 Band LTE12 3MHz CSE QPSK Mid channel
Band LTE12 1.4MHz 16QAM	 Band LTE12 1.4MHz CSE 16QAM Mid channel	 Band LTE12 1.4MHz CSE QPSK Mid channel

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LTE Band 30

Band LTE30 10MHz 16QAM	 Band LTE17 10MHz CSE 16QAM Mid channel	 Band LTE17 10MHz CSE QPSK Mid channel
Band LTE30 5MHz 16QAM	 Band LTE17 5MHz CSE 16QAM Mid channel	 Band LTE17 5MHz CSE QPSK Mid channel

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9.4. FREQUENCY STABILITY

RULE PART(S)

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

LIMITS

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

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

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

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

TEST PROCEDURE

Per KDB 971168 D01 Power Meas License Digital Systems v02r02

MODES TESTED

GSM, WCDMA, and LTE

RESULTS

See the following pages.

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9.4.1. FREQUENCY STABILITY RESULTS

GSM 850

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	836.600019	-0.006	2.5
3.80	40	836.600018	-0.006	2.5
3.80	30	836.600017	-0.004	2.5
3.80	***20***	**836.600014**	**0**	***2.5***
3.80	10	836.600018	-0.006	2.5
3.80	0	836.600019	-0.006	2.5
3.80	-10	836.600023	-0.011	2.5
3.80	-20	836.600016	-0.002	2.5
3.80	-30	836.600016	-0.002	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***	***836.600014***	***0***	***2.5***
4.37	20	836.6000129	*0.001*	2.5
3.23	20	836.6000165	*-0.003*	2.5

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GSM 1900

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	1879.999975	0.000	2.5
3.80	40	1879.999967	0.004	2.5
3.80	30	1879.999972	0.002	2.5
3.80	***20***	**1879.999976**	**0**	***2.5***
3.80	10	1879.999980	-0.002	2.5
3.80	0	1879.999982	-0.003	2.5
3.80	-10	1879.999982	-0.004	2.5
3.80	-20	1879.999983	-0.004	2.5
3.80	-30	1879.999982	-0.003	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***	***1879.999976***	***0***	***2.5***
4.37	20	1879.999973	*0.002*	2.5
3.23	20	1879.999979	*-0.002*	2.5

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LTE Band 4

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	1732.500005	0.000	2.5
3.80	30	1732.500005	0.000	2.5
3.80	***20***	**1732.500005**	**0**	***2.5***
3.80	10	1732.500004	0.000	2.5
3.80	0	1732.500005	0.000	2.5
3.80	-10	1732.500005	0.000	2.5
3.80	-20	1732.500005	0.000	2.5
3.80	-30	1732.500007	-0.001	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***	***1732.500005***	***0***	***2.5***
4.37	20	1732.500005	*0.000*	2.5
3.23(End of volt)	20	1732.500005	*0.000*	2.5

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LTE Band 12

Reference Frequency: Cellular Mid Channel 707.5 MHz @ 20°C Limit: to stay +- 2.5 ppm = 1768.750 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse (MHz)	Delta (ppm)	Limit (ppm)
3.80	50	707.499997	-0.001	2.5
3.80	40	707.499997	-0.001	2.5
3.80	30	707.499997	-0.001	2.5
3.80	***20***	***707.499996***	***0***	2.5
3.80	10	707.499997	-0.001	2.5
3.80	0	707.499995	0.001	2.5
3.80	-10	707.499997	-0.001	2.5
3.80	-20	707.499996	0.000	2.5
3.80	-30	707.499995	0.001	2.5

Reference Frequency: Cellular Mid Channel 707.5 MHz @ 20°C Limit: to stay +- 2.5 ppm = 1768.750 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse (MHz)	Delta (ppm)	Limit (ppm)
3.80	***20***	***707.499996***	***0***	***2.5***
3.23	20	707.499994	*0.003*	2.5
4.37	20	707.499997	*-0.001*	2.5

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LTE Band 30

Reference Frequency: PCS Mid Channel		2310	MHz @ 20°C	
Limit: to stay +- 2.5 ppm =		5775.000	Hz	
Power Supply (Vdc)	**Environment Temperature (°C)**	**Frequency Deviation Measureed with Time Elapse (MHz)**	**Delta (ppm)**	**Limit (ppm)**
3.80	50	2309.999991	0.001	2.5
3.80	40	2309.999992	0.001	2.5
3.80	30	2309.999992	0.001	2.5
3.80	***20***	**2309.999994**	**0**	***2.5***
3.80	10	2309.999991	0.001	2.5
3.80	0	2309.999991	0.001	2.5
3.80	-10	2309.999993	0.000	2.5
3.80	-20	2309.999992	0.001	2.5
3.80	-30	2309.999990	0.002	2.5

Reference Frequency: PCS Mid Channel		2310	MHz @ 20°C	
Limit: to stay +- 2.5 ppm =		5775.000	Hz	
Power Supply (Vdc)	**Environment Temperature (°C)**	**Frequency Deviation Measureed with Time Elapse (MHz)**	**Delta (ppm)**	**Limit (ppm)**
3.80	***20***	***2309.999994***	***0***	***2.5***
4.37	20	2309.999989	*0.002*	2.5
3.23	20	2309.999991	*0.001*	2.5

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10. RADIATED TEST RESULTS

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

27.50(d) - (4) Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP.(Band 4)
27.50(h) - (2) Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.(LTE B41 & 7)

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

TEST PROCEDURE

ANSI / TIA / EIA 603C Clause 2.2.17; PSA setting reference to 971168 D01 v02r02
For peak power measurement with a PSA:
a) Set the RBW ≥ OBW; b) Set VBW ≥ 3 × RBW; c) Set span ≥ 2 x RBW; d) Sweep time = auto couple; e) Detector = peak; f) Ensure that the number of measurement points ≥ span/RBW; g) Trace mode = max hold;

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

MODES TESTED

GSM, WCDMA, and LTE

TEST RESULTS

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10.1.1. ERP/EIRP Results

GSM

Band	Mode	Channel	f(MHz)	ERP / EIRP	
				dBm	mW
GSM1900	GPRS	512	1850.2	30.21	1049.54
		661	1880	29.88	972.75
		810	1909.8	30.15	1035.14
	EGPRS	512	1850.2	26.78	476.43
		661	1880	26.59	456.04
		810	1909.8	26.78	476.43
GSM850	GPRS	128	824.2	28.17	656.15
		190	836.6	28.02	633.87
		251	848.8	28.10	645.65
	EGPRS	128	824.2	24.03	252.93
		190	836.6	24.13	258.82
		251	848.8	24.26	266.69

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WCDMA

Band	Mode	Channel	f(MHz)	ERP / EIRP	
				dBm	mW
Band 2	REL99	9262	1852.4	26.63	460.26
		9400	1880	25.77	377.57
		9538	1907.6	26.09	406.44
	HSDPA	9262	1852.4	26.67	464.52
		9400	1880	26.04	401.79
		9538	1907.6	26.07	404.58
Band	Mode	Channel	f(MHz)	ERP / EIRP	
				dBm	mW
Band 5	REL99	4132	826.4	19.502	89.17
		4183	836.6	20.043	101
		4233	846.6	19.733	94.04
	HSDPA	4132	826.4	19.351	86.12
		4183	836.6	19.411	87.32
		4233	846.6	19.601	91.22

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LTE Band 2

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE2	20	QPSK	1/0	1860	27.73	592.93
			1/0	1880	26.08	405.51
			1/0	1900	26.77	475.34
		16QAM	1/0	1860	26.75	473.15
			1/0	1880	25.1	323.59
			1/0	1900	25.85	384.59
LTE2	15	QPSK	1/0	1857.5	27.85	609.54
			1/0	1880	26.32	428.55
			1/0	1902.5	26.78	476.43
		16QAM	1/0	1857.5	26.88	487.53
			1/0	1880	25.35	342.77
			1/0	1902.5	25.86	385.48
LTE2	10	QPSK	1/0	1855	27.83	606.74
			1/0	1880	26.39	435.51
			1/0	1905	26.8	478.63
		16QAM	1/0	1855	26.83	481.95
			1/0	1880	25.38	345.14
			1/0	1905	25.85	384.59
LTE2	5	QPSK	1/0	1852.5	27.9	616.6
			1/0	1880	25.79	379.31
			1/0	1907.5	26.83	481.95
		16QAM	1/0	1852.5	26.99	500.03
			1/0	1880	24.84	304.79
			1/0	1907.5	25.86	385.48

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Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE2	3	QPSK	1/0	1851.5	27.90	616.6
			1/0	1880	25.95	393.55
			1/0	1908.5	26.84	483.06
		16QAM	1/0	1851.5	26.98	498.88
			1/0	1880	24.9	309.03
			1/0	1908.5	25.85	384.59
LTE2	1.4	QPSK	1/0	1850.7	27.89	615.18
			1/0	1880	25.80	380.19
			1/0	1909.3	26.83	481.95
		16QAM	1/0	1850.7	26.97	497.74
			1/0	1880	24.79	301.3
			1/0	1909.3	25.87	386.37

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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	26.99425	500.52
			1/0	1732.5	26.53105	449.89
			1/0	1745	26.70785	468.58
		16QAM	1/0	1720	26.10425	407.78
			1/0	1732.5	25.55105	359.01
			1/0	1745	25.59785	362.9
LTE4	15	QPSK	1/0	1717.5	27.01791	503.26
			1/0	1732.5	27.01105	502.46
			1/0	1747.5	26.69419	467.11
		16QAM	1/0	1717.5	26.12791	410.01
			1/0	1732.5	26.02105	400.04
			1/0	1747.5	25.66419	368.48
LTE4	10	QPSK	1/0	1715	26.92105	492.16
			1/0	1732.5	26.86105	485.41
			1/0	1750	26.761262	474.38
		16QAM	1/0	1715	26.05105	402.81
			1/0	1732.5	26.50105	446.79
			1/0	1750	25.711262	372.5
LTE4	5	QPSK	1/0	1712.5	27.00425	501.68
			1/0	1732.5	27.01105	502.46
			1/0	1752.5	26.76785	475.1
		16QAM	1/0	1712.5	26.02425	400.34
			1/0	1732.5	26.11105	408.42
			1/0	1752.5	25.55785	359.57

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Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE4	3	QPSK	1/0	1711.5	27.01791	503.26
			1/0	1732.5	26.91105	491.03
			1/0	1753.5	26.26419	423.08
		16QAM	1/0	1711.5	26.16791	413.8
			1/0	1732.5	26.06105	403.74
			1/0	1753.5	25.37419	344.68
LTE4	1.4	QPSK	1/0	1710.7	26.92105	492.16
			1/0	1732.5	26.95105	495.57
			1/0	1754.3	26.161262	413.17
		16QAM	1/0	1710.7	26.06105	403.74
			1/0	1732.5	26.06105	403.74
			1/0	1754.3	25.001262	316.32

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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	20.551	113.53
			1/0	836.5	19.721	93.78
			1/0	844	19.211	83.39
		16QAM	1/0	829	19.461	88.33
			1/0	836.5	18.701	74.15
			1/0	844	18.311	67.78
LTE5	5	QPSK	1/0	826.5	20.411	109.93
			1/0	836.5	19.541	89.97
			1/0	846.5	19.391	86.92
		16QAM	1/0	826.5	19.381	86.72
			1/0	836.5	18.581	72.13
			1/0	846.5	18.421	69.52
LTE5	3	QPSK	1/0	825.5	20.371	108.92
			1/0	836.5	19.531	89.76
			1/0	847.5	19.181	82.81
		16QAM	1/0	825.5	19.341	85.92
			1/0	836.5	18.511	70.97
			1/0	847.5	18.211	66.24
LTE5	1.4	QPSK	1/0	824.7	20.391	109.42
			1/0	836.5	19.511	89.35
			1/0	848.3	19.201	83.2
		16QAM	1/0	824.7	19.421	87.52
			1/0	836.5	18.531	71.3
			1/0	848.3	18.301	67.62

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LTE Band 12

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE12	10	QPSK	1/0	704	20.861	121.93
			1/0	707.5	21.201	131.86
			1/0	711	21.251	133.38
		16QAM	1/0	704	19.981	99.56
			1/0	707.5	20.221	105.22
			1/0	711	20.271	106.44
LTE12	5	QPSK	1/0	701.5	21.021	126.5
			1/0	707.5	21.081	128.26
			1/0	713.5	21.151	130.35
		16QAM	1/0	701.5	20.101	102.35
			1/0	707.5	20.091	102.12
			1/0	713.5	20.191	104.5
LTE12	3	QPSK	1/0	700.5	21.011	126.21
			1/0	707.5	21.171	130.95
			1/0	714.5	21.241	133.08
		16QAM	1/0	700.5	19.991	99.79
			1/0	707.5	20.001	100.02
			1/0	714.5	20.251	105.95
LTE12	1.4	QPSK	1/0	699.7	21.041	127.09
			1/0	707.5	21.101	128.85
			1/0	715.3	21.251	133.38
		16QAM	1/0	699.7	20.021	100.48
			1/0	707.5	20.061	101.41
			1/0	715.3	20.221	105.22

LTE Band 17

Measured Results

LTE Band 17 is covered by LTE Band 12 due to similar frequency range, same maximum tune-up limit and same channel bandwidth.

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LTE Band 30

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE30	10	QPSK	1/0	2310	21	125.89
		16QAM	1/0	2310	20.15	103.51
LTE30	5	QPSK	1/0	2307.5	20.50	112.20
			1/0	2310	20.70	117.49
			1/0	2312.5	20.40	109.65
		16QAM	1/0	2307.5	19.85	96.61
			1/0	2310	20.05	125.89
			1/0	2312.5	19.65	103.51

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10.1.2. ERP/EIRP PLOTS

GSM

Band

GSM

1900

EGPRS

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company:	LG
Project #:	15I21238
Date:	7/9/2015
Test Engineer:	R.Alegre
Configuration:	EUT Only
Location:	Chamber B
Mode:	EGPRS 1900

Test Equipment:
Receiving: Horn T345 and Chamber B 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								
1850.20	5.96	V	0.9	8.0	13.07	33.0	-19.9	
1850.20	19.67	H	0.9	8.0	26.78	33.0	-6.2	
Mid Ch								
1880.00	6.01	V	0.9	8.0	13.12	33.0	-19.9	
1880.00	19.48	H	0.9	8.0	26.59	33.0	-6.4	
High Ch								
1909.80	5.90	V	0.9	8.0	13.01	33.0	-20.0	
1909.80	19.67	H	0.9	8.0	26.78	33.0	-6.2	

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.

Company:	LG
Project #:	15I21238
Date:	7/9/2015
Test Engineer:	R.Alegre
Configuration:	EUT Only
Location:	Chamber B
Mode:	GPRS 1900

Test Equipment:
Receiving: Horn T345 and Chamber B 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								
1850.20	9.37	V	0.9	8.0	16.48	33.0	-16.5	
1850.20	23.10	H	0.9	8.0	30.21	33.0	-2.8	
Mid Ch								
1880.00	9.28	V	0.9	8.0	16.39	33.0	-16.6	
1880.00	22.77	H	0.9	8.0	29.88	33.0	-3.1	
High Ch								
1909.80	9.28	V	0.9	8.0	16.39	33.0	-16.6	
1909.80	23.04	H	0.9	8.0	30.15	33.0	-2.8	

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 A

Company: LG
Project #: 15I21238
Date: 8/4/2015
Test Engineer: A. Escamilla
Configuration: EUT only
Mode: EGPRS850

Test Equipment:
Receiving: Sunol T130, and 5m 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								
824.20	16.28	V	0.9	0.0	15.38	38.5	-23.1	
824.20	24.93	H	0.9	0.0	24.03	38.5	-14.4	
Mid Ch								
836.60	16.55	V	0.9	0.0	15.65	38.5	-22.8	
836.60	25.03	H	0.9	0.0	24.13	38.5	-14.3	
High Ch								
848.80	16.75	V	0.9	0.0	15.85	38.5	-22.6	
848.80	25.16	H	0.9	0.0	24.26	38.5	-14.2	

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

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Band

GSM

850

GPRS

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

Company: LG
Project #: 15I21238
Date: 8/4/2015
Test Engineer: A. Escamilla
Configuration: EUT only
Mode: GPRS850

Test Equipment:
Receiving: Sunol T130, and 5m 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								
824.20	21.78	V	0.9	0.0	20.88	38.5	-17.6	
824.20	29.07	H	0.9	0.0	28.17	38.5	-10.3	
Mid Ch								
836.60	20.68	V	0.9	0.0	19.78	38.5	-18.7	
836.60	28.92	H	0.9	0.0	28.02	38.5	-10.4	
High Ch								
848.80	20.97	V	0.9	0.0	20.07	38.5	-18.4	
848.80	29.00	H	0.9	0.0	28.10	38.5	-10.4	

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.

Company:	LG
Project #:	15I21238
Date:	7/9/2015
Test Engineer:	R.Alegre
Configuration:	EUT Only
Location:	Chamber B
Mode:	HSDPA B2

Test Equipment:
Receiving: Horn T345, and Chamber B 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								
1852.20	2.64	V	0.9	8.0	9.75	33.0	-23.2	
1852.20	19.56	H	0.9	8.0	26.67	33.0	-6.3	
Mid Ch								
1880.00	2.21	V	0.9	8.0	9.32	33.0	-23.7	
1880.00	18.93	H	0.9	8.0	26.04	33.0	-7.0	
High Ch								
1907.60	2.75	V	0.9	8.0	9.86	33.0	-23.1	
1907.60	18.96	H	0.9	8.0	26.07	33.0	-6.9	

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.

Company: LG
Project #: 15I21238
Date: 7/9/2015
Test Engineer: R.Alegre
Configuration: EUT Only
Location: Chamber B
Mode: Rel99 B2

Test Equipment:
Receiving: Horn T345, and Chamber B 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								
1852.20	2.65	V	0.9	8.0	9.76	33.0	-23.2	
1852.20	19.52	H	0.9	8.0	26.63	33.0	-6.4	
Mid Ch								
1880.00	2.23	V	0.9	8.0	9.34	33.0	-23.7	
1880.00	18.66	H	0.9	8.0	25.77	33.0	-7.2	
High Ch								
1907.60	2.76	V	0.9	8.0	9.87	33.0	-23.1	
1907.60	18.98	H	0.9	8.0	26.09	33.0	-6.9	

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

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Band

Band 5

HSDPA

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I21238
Date: 7/9/2015
Test Engineer: R.Alegre
Configuration: EUT only
Mode: WCDMA Band 5 HSDPA

Test Equipment:
Receiving: Sunol T243, and 3m Chamber B 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	16.17	V	0.9	0.0	15.32	38.5	-23.1	
826.40	20.20	H	0.9	0.0	19.35	38.5	-19.1	
Mid Ch								
836.60	16.64	V	0.9	0.0	15.79	38.5	-22.7	
836.60	20.26	H	0.9	0.0	19.41	38.5	-19.0	
High Ch								
846.60	16.71	V	0.9	0.0	15.86	38.5	-22.6	
846.60	20.45	H	0.9	0.0	19.60	38.5	-18.8	

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

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Band

Band 5

REL99

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I21238
Date: 7/9/2015
Test Engineer: R.Alegre
Configuration: EUT only
Mode: REL99 B5 FUND

Test Equipment:
Receiving: Sunol T243, and 3m Chamber B 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	16.27	V	0.9	0.0	15.42	38.5	-23.0	
826.40	20.35	H	0.9	0.0	19.50	38.5	-18.9	
Mid Ch								
836.60	16.78	V	0.9	0.0	15.93	38.5	-22.5	
836.60	20.89	H	0.9	0.0	20.04	38.5	-18.4	
High Ch								
846.60	16.80	V	0.9	0.0	15.95	38.5	-22.5	
846.60	20.58	H	0.9	0.0	19.73	38.5	-18.7	

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

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LTE Band 2

Band

LTE2

20MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I21238
Date: 7/9/2015
Test Engineer: R.Alegre
Configuration: EUT Only
Location: Chamber B
Mode: LTE_16QAM Band 2 Fundamentals, 20MHz Bandwidth

Test Equpment:
Receiving: Horn T345 and Chamber B 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)	Delta (dB)	Notes
Low Ch								
1860.00	4.57	V	0.9	8.0	11.68	33.0	-21.3	
1860.00	19.64	H	0.9	8.0	26.75	33.0	-6.3	
Mid Ch								
1880.00	6.69	V	0.9	8.0	13.80	33.0	-19.2	
1880.00	17.99	H	0.9	8.0	25.10	33.0	-7.9	
High Ch								
1900.00	4.99	V	0.9	8.0	12.10	33.0	-20.9	
1900.00	18.74	H	0.9	8.0	25.85	33.0	-7.2	

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Band

LTE2

20MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I21238
Date: 7/9/2015
Test Engineer: R.Alegre
Configuration: EUT Only
Location: Chamber B
Mode: LTE_QPSK Band 2 Fundamentals, 20MHz Bandwidth

Test Equipment:
Receiving: Horn T345 and Chamber B 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)	Delta (dB)	Notes
Low Ch								
1860.00	5.51	V	0.9	8.0	12.62	33.0	-20.4	
1860.00	20.62	H	0.9	8.0	27.73	33.0	-5.3	
Mid Ch								
1880.00	7.65	V	0.9	8.0	14.76	33.0	-18.2	
1880.00	18.97	H	0.9	8.0	26.08	33.0	-6.9	
High Ch								
1900.00	5.96	V	0.9	8.0	13.07	33.0	-19.9	
1900.00	19.66	H	0.9	8.0	26.77	33.0	-6.2	

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Band

LTE2

15MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I21238
Date: 7/9/2015
Test Engineer: R.Alegre
Configuration: EUT Only
Location: Chamber B
Mode: LTE_16QAM Band 2 Fundamentals, 15MHz Bandwidth

Test Equpment:
Receiving: Horn T345 and Chamber B 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)	Delta (dB)	Notes
Low Ch								
1857.50	4.87	V	0.9	8.0	11.98	33.0	-21.0	
1857.50	19.77	H	0.9	8.0	26.88	33.0	-6.1	
Mid Ch								
1880.00	6.71	V	0.9	8.0	13.82	33.0	-19.2	
1880.00	18.24	H	0.9	8.0	25.35	33.0	-7.7	
High Ch								
1902.50	4.95	V	0.9	8.0	12.06	33.0	-20.9	
1902.50	18.75	H	0.9	8.0	25.86	33.0	-7.1	

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Band

LTE2

15MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I21238
Date: 7/9/2015
Test Engineer: R.Alegre
Configuration: EUT Only
Location: Chamber B
Mode: LTE_QPSK Band 2 Fundamentals, 15MHz Bandwidth

Test Equpment:
Receiving: Horn T345 and Chamber B 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)	Delta (dB)	Notes
Low Ch								
1857.50	5.61	V	0.9	8.0	12.72	33.0	-20.3	
1857.50	20.74	H	0.9	8.0	27.85	33.0	-5.2	
Mid Ch								
1880.00	7.68	V	0.9	8.0	14.79	33.0	-18.2	
1880.00	19.21	H	0.9	8.0	26.32	33.0	-6.7	
High Ch								
1902.50	5.98	V	0.9	8.0	13.09	33.0	-19.9	
1902.50	19.67	H	0.9	8.0	26.78	33.0	-6.2	

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Band

LTE2

10MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I21238
Date: 7/9/2015
Test Engineer: R.Alegre
Configuration: EUT Only
Location: Chamber B
Mode: LTE_16QAM Band 2 Fundamentals, 10MHz Bandwidth

Test Equpment:
Receiving: Horn T345 and Chamber B 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)	Delta (dB)	Notes
Low Ch								
1855.00	4.61	V	0.9	8.0	11.72	33.0	-21.3	
1855.00	19.72	H	0.9	8.0	26.83	33.0	-6.2	
Mid Ch								
1880.00	6.70	V	0.9	8.0	13.81	33.0	-19.2	
1880.00	18.27	H	0.9	8.0	25.38	33.0	-7.6	
High Ch								
1905.00	5.10	V	0.9	8.0	12.21	33.0	-20.8	
1905.00	18.74	H	0.9	8.0	25.85	33.0	-7.2	

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Band

LTE2

10MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I21238
Date: 7/9/2015
Test Engineer: R.Alegre
Configuration: EUT Only
Location: Chamber B
Mode: LTE_QPSK Band 2 Fundamentals, 10MHz Bandwidth

Test Equipment:
Receiving: Horn T345 and Chamber B 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)	Delta (dB)	Notes
Low Ch								
1855.00	5.59	V	0.9	8.0	12.70	33.0	-20.3	
1855.00	20.72	H	0.9	8.0	27.83	33.0	-5.2	
Mid Ch								
1880.00	7.69	V	0.9	8.0	14.80	33.0	-18.2	
1880.00	19.28	H	0.9	8.0	26.39	33.0	-6.6	
High Ch								
1905.00	6.04	V	0.9	8.0	13.15	33.0	-19.9	
1905.00	19.69	H	0.9	8.0	26.80	33.0	-6.2	

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Band

LTE2

5MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I21238
Date: 7/9/2015
Test Engineer: R.Alegre
Configuration: EUT Only
Location: Chamber B
Mode: LTE_16QAM Band 2 Fundamentals, 5MHz Bandwidth

Test Equpment:
Receiving: Horn T345 and Chamber B 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)	Delta (dB)	Notes
Low Ch								
1852.50	4.59	V	0.9	8.0	11.70	33.0	-21.3	
1852.50	19.88	H	0.9	8.0	26.99	33.0	-6.0	
Mid Ch								
1880.00	6.79	V	0.9	8.0	13.90	33.0	-19.1	
1880.00	17.73	H	0.9	8.0	24.84	33.0	-8.2	
High Ch								
1907.50	4.89	V	0.9	8.0	12.00	33.0	-21.0	
1907.50	18.75	H	0.9	8.0	25.86	33.0	-7.1	

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Band

LTE2

5MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I21238
Date: 7/9/2015
Test Engineer: R.Alegre
Configuration: EUT Only
Location: Chamber B
Mode: LTE_QPSK Band 2 Fundamentals, 5MHz Bandwidth

Test Equpment:
Receiving: Horn T345 and Chamber B 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)	Delta (dB)	Notes
Low Ch								
1852.50	5.61	V	0.9	8.0	12.72	33.0	-20.3	
1852.50	20.79	H	0.9	8.0	27.90	33.0	-5.1	
Mid Ch								
1880.00	7.75	V	0.9	8.0	14.86	33.0	-18.1	
1880.00	18.68	H	0.9	8.0	25.79	33.0	-7.2	
High Ch								
1907.50	5.87	V	0.9	8.0	12.98	33.0	-20.0	
1907.50	19.72	H	0.9	8.0	26.83	33.0	-6.2	

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Band

LTE2

3MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I21238
Date: 7/9/2015
Test Engineer: R.Alegre
Configuration: EUT Only
Location: Chamber B
Mode: LTE_16QAM Band 2 Fundamentals, 3MHz Bandwidth

Test Equpment:
Receiving: Horn T345 and Chamber B 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)	Delta (dB)	Notes
Low Ch								
1851.50	4.63	V	0.9	8.0	11.74	33.0	-21.3	
1851.50	19.87	H	0.9	8.0	26.98	33.0	-6.0	
Mid Ch								
1880.00	6.71	V	0.9	8.0	13.82	33.0	-19.2	
1880.00	17.79	H	0.9	8.0	24.90	33.0	-8.1	
High Ch								
1908.50	4.88	V	0.9	8.0	11.99	33.0	-21.0	
1908.50	18.74	H	0.9	8.0	25.85	33.0	-7.2	

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Band

LTE2

3MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I21238
Date: 7/9/2015
Test Engineer: R.Alegre
Configuration: EUT Only
Location: Chamber B
Mode: LTE_QPSK Band 2 Fundamentals, 3MHz Bandwidth

Test Equpment:
Receiving: Horn T345 and Chamber B 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)	Delta (dB)	Notes
Low Ch								
1851.50	5.64	V	0.9	8.0	12.75	33.0	-20.2	
1851.50	20.79	H	0.9	8.0	27.90	33.0	-5.1	
Mid Ch								
1880.00	7.72	V	0.9	8.0	14.83	33.0	-18.2	
1880.00	18.84	H	0.9	8.0	25.95	33.0	-7.1	
High Ch								
1908.50	5.91	V	0.9	8.0	13.02	33.0	-20.0	
1908.50	19.73	H	0.9	8.0	26.84	33.0	-6.2	

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Band

LTE2

1.4MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I21238
Date: 7/9/2015
Test Engineer: R.Alegre
Configuration: EUT Only
Location: Chamber B
Mode: LTE_16QAM Band 2 Fundamentals, 1.4MHz Bandwidth

Test Equpment:
Receiving: Horn T345 and Chamber B 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)	Delta (dB)	Notes
Low Ch								
1850.70	4.61	V	0.9	8.0	11.72	33.0	-21.3	
1850.70	19.86	H	0.9	8.0	26.97	33.0	-6.0	
Mid Ch								
1880.00	6.69	V	0.9	8.0	13.80	33.0	-19.2	
1880.00	17.68	H	0.9	8.0	24.79	33.0	-8.2	
High Ch								
1909.30	4.88	V	0.9	8.0	11.99	33.0	-21.0	
1909.30	18.76	H	0.9	8.0	25.87	33.0	-7.1	

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Band

LTE2

1.4MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I21238
Date: 7/9/2015
Test Engineer: R.Alegre
Configuration: EUT Only
Location: Chamber B
Mode: LTE_QPSK Band 2 Fundamentals, 1.4MHz Bandwidth

Test Equpment:
Receiving: Horn T345 and Chamber B 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)	Delta (dB)	Notes
Low Ch								
1850.70	5.56	V	0.9	8.0	12.67	33.0	-20.3	
1850.70	20.78	H	0.9	8.0	27.89	33.0	-5.1	
Mid Ch								
1880.00	7.67	V	0.9	8.0	14.78	33.0	-18.2	
1880.00	18.69	H	0.9	8.0	25.80	33.0	-7.2	
High Ch								
1909.30	5.90	V	0.9	8.0	13.01	33.0	-20.0	
1909.30	19.72	H	0.9	8.0	26.83	33.0	-6.2	

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LTE Band 4

Band

LTE4

20MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I21238
Date: 7/13/2015
Test Engineer: R.Alegre
Configuration: EUT Only
Location: Chamber C
Mode: LTE_16QAM Band 4 Fundamentals, 20MHz Bandwidth

Test Equpment:
Receiving: Horn T119, and Chamber C SMA Cables
Substitution: Horn T59, 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	12.60	V	0.9	8.2	19.94	30.0	-10.1	
1720.00	18.76	H	0.9	8.2	26.10	30.0	-3.9	
Mid Ch								
1732.50	11.77	V	0.9	8.2	19.04	30.0	-11.0	
1732.50	18.28	H	0.9	8.2	25.55	30.0	-4.4	
High Ch								
1745.00	11.55	V	0.9	8.1	18.75	30.0	-11.3	
1745.00	18.40	H	0.9	8.1	25.60	30.0	-4.4	

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Band

LTE4

20MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I21238
Date: 7/13/2015
Test Engineer: R.Alegre
Configuration: EUT Only
Location: Chamber C
Mode: LTE_QPSK Band 4 Fundamentals, 20MHz Bandwidth

Test Equipment:
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								
1720.00	13.56	V	0.9	8.2	20.90	30.0	-9.1	
1720.00	19.65	H	0.9	8.2	26.99	30.0	-3.0	
Mid Ch								
1732.50	12.73	V	0.9	8.2	20.00	30.0	-10.0	
1732.50	19.26	H	0.9	8.2	26.53	30.0	-3.5	
High Ch								
1745.00	12.66	V	0.9	8.1	19.86	30.0	-10.1	
1745.00	19.51	H	0.9	8.1	26.71	30.0	-3.3	

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Band

LTE4

15MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I21238
Date: 7/13/2015
Test Engineer: R.Alegre
Configuration: EUT Only
Location: Chamber C
Mode: LTE_16QAM Band 4 Fundamentals, 15MHz Bandwidth

Test Equipment:
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								
1717.50	12.49	V	0.9	8.2	19.84	30.0	-10.2	
1717.50	18.78	H	0.9	8.2	26.13	30.0	-3.9	
Mid Ch								
1732.50	11.71	V	0.9	8.2	18.98	30.0	-11.0	
1732.50	18.75	H	0.9	8.2	26.02	30.0	-4.0	
High Ch								
1747.50	11.44	V	0.9	8.1	18.63	30.0	-11.4	
1747.50	18.47	H	0.9	8.1	25.66	30.0	-4.3	

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Band

LTE4

15MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I21238
Date: 7/13/2015
Test Engineer: R.Alegre
Configuration: EUT Only
Location: Chamber C
Mode: LTE_QPSK Band 4 Fundamentals, 15MHz Bandwidth

Test Equipment:
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								
1717.50	13.47	V	0.9	8.2	20.82	30.0	-9.2	
1717.50	19.67	H	0.9	8.2	27.02	30.0	-3.0	
Mid Ch								
1732.50	12.70	V	0.9	8.2	19.97	30.0	-10.0	
1732.50	19.74	H	0.9	8.2	27.01	30.0	-3.0	
High Ch								
1747.50	12.42	V	0.9	8.1	19.61	30.0	-10.4	
1747.50	19.50	H	0.9	8.1	26.69	30.0	-3.3	

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Band

LTE4

10MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I21238
Date: 7/13/2015
Test Engineer: R.Alegre
Configuration: EUT Only
Location: Chamber C
Mode: LTE_16QAM Band 4 Fundamentals, 10MHz Bandwidth

Test Equipment:
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	12.47	V	0.9	8.2	19.74	30.0	-10.3	
1715.00	18.78	H	0.9	8.2	26.05	30.0	-3.9	
Mid Ch								
1732.50	11.76	V	0.9	8.2	19.03	30.0	-11.0	
1732.50	19.23	H	0.9	8.2	26.50	30.0	-3.5	
High Ch								
1750.00	11.53	V	0.9	8.1	18.72	30.0	-11.3	
1750.00	18.52	H	0.9	8.1	25.71	30.0	-4.3	

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Band

LTE4

10MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I21238
Date: 7/13/2015
Test Engineer: R.Alegre
Configuration: EUT Only
Location: Chamber C
Mode: LTE_QPSK Band 4 Fundamentals, 10MHz Bandwidth

Test Equipment:
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	13.38	V	0.9	8.2	20.65	30.0	-9.3	
1715.00	19.65	H	0.9	8.2	26.92	30.0	-3.1	
Mid Ch								
1732.50	12.75	V	0.9	8.2	20.02	30.0	-10.0	
1732.50	19.59	H	0.9	8.2	26.86	30.0	-3.1	
High Ch								
1750.00	12.59	V	0.9	8.1	19.78	30.0	-10.2	
1750.00	19.57	H	0.9	8.1	26.76	30.0	-3.2	

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Band

LTE4

5MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I21238
Date: 7/13/2015
Test Engineer: R.Alegre
Configuration: EUT Only
Location: Chamber C
Mode: LTE_16QAM Band 4 Fundamentals, 5MHz Bandwidth

Test Equipment:
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								
1712.50	12.54	V	0.9	8.2	19.88	30.0	-10.1	
1712.50	18.68	H	0.9	8.2	26.02	30.0	-4.0	
Mid Ch								
1732.50	11.75	V	0.9	8.2	19.02	30.0	-11.0	
1732.50	18.84	H	0.9	8.2	26.11	30.0	-3.9	
High Ch								
1752.50	11.38	V	0.9	8.1	18.58	30.0	-11.4	
1752.50	18.36	H	0.9	8.1	25.56	30.0	-4.4	

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Band

LTE4

5MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I21238
Date: 7/13/2015
Test Engineer: R.Alegre
Configuration: EUT Only
Location: Chamber C
Mode: LTE_QPSK Band 4 Fundamentals, 5MHz 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								
1712.50	13.55	V	0.9	8.2	20.89	30.0	-9.1	
1712.50	19.66	H	0.9	8.2	27.00	30.0	-3.0	
Mid Ch								
1732.50	12.74	V	0.9	8.2	20.01	30.0	-10.0	
1732.50	19.74	H	0.9	8.2	27.01	30.0	-3.0	
High Ch								
1752.50	12.57	V	0.9	8.1	19.77	30.0	-10.2	
1752.50	19.57	H	0.9	8.1	26.77	30.0	-3.2	

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Band

LTE4

3MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I21238
Date: 7/13/2015
Test Engineer: R.Alegre
Configuration: EUT Only
Location: Chamber C
Mode: LTE_16QAM Band 4 Fundamentals, 3MHz 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								
1711.50	12.51	V	0.9	8.2	19.86	30.0	-10.1	
1711.50	18.82	H	0.9	8.2	26.17	30.0	-3.8	
Mid Ch								
1732.50	11.75	V	0.9	8.2	19.02	30.0	-11.0	
1732.50	18.79	H	0.9	8.2	26.06	30.0	-3.9	
High Ch								
1753.50	11.52	V	0.9	8.1	18.71	30.0	-11.3	
1753.50	18.18	H	0.9	8.1	25.37	30.0	-4.6	

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Band

LTE4

3MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I21238
Date: 7/13/2015
Test Engineer: R.Alegre
Configuration: EUT Only
Location: Chamber C
Mode: LTE_QPSK Band 4 Fundamentals, 3MHz 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								
1711.50	13.48	V	0.9	8.2	20.83	30.0	-9.2	
1711.50	19.67	H	0.9	8.2	27.02	30.0	-3.0	
Mid Ch								
1732.50	12.72	V	0.9	8.2	19.99	30.0	-10.0	
1732.50	19.64	H	0.9	8.2	26.91	30.0	-3.1	
High Ch								
1753.50	12.54	V	0.9	8.1	19.73	30.0	-10.3	
1753.50	19.07	H	0.9	8.1	26.26	30.0	-3.7	

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Band

LTE4

1.4MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I21238
Date: 7/13/2015
Test Engineer: R.Alegre
Configuration: EUT Only
Location: Chamber C
Mode: LTE_16QAM Band 4 Fundamentals, 1.4MHz 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								
1710.70	12.56	V	0.9	8.2	19.83	30.0	-10.2	
1710.70	18.79	H	0.9	8.2	26.06	30.0	-3.9	
Mid Ch								
1732.50	11.70	V	0.9	8.2	18.97	30.0	-11.0	
1732.50	18.79	H	0.9	8.2	26.06	30.0	-3.9	
High Ch								
1754.30	11.52	V	0.9	8.1	18.71	30.0	-11.3	
1754.30	17.81	H	0.9	8.1	25.00	30.0	-5.0	

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Band

LTE4

1.4MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I21238
Date: 7/13/2015
Test Engineer: R.Alegre
Configuration: EUT Only
Location: Chamber C
Mode: LTE_QPSK Band 4 Fundamentals, 1.4MHz 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								
1710.70	13.50	V	0.9	8.2	20.77	30.0	-9.2	
1710.70	19.65	H	0.9	8.2	26.92	30.0	-3.1	
Mid Ch								
1732.50	12.71	V	0.9	8.2	19.98	30.0	-10.0	
1732.50	19.68	H	0.9	8.2	26.95	30.0	-3.0	
High Ch								
1754.30	12.40	V	0.9	8.1	19.59	30.0	-10.4	
1754.30	18.97	H	0.9	8.1	26.16	30.0	-3.8	

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LTE Band 5

Band

LTE5

10MHz

16QAM

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

Company: LG
Project #: 15I21238
Date: 7/11/2015
Test Engineer: R.Alegre
Configuration: EUT only
Mode: LTE_16QAM Band 5 Fundamentals, 10MHz Bandwidth

Test Equipment:
Receiving: Sunol T185, and 3m Chamber C 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								
829.00	11.11	V	0.9	0.0	10.21	38.5	-28.2	
829.00	20.36	H	0.9	0.0	19.46	38.5	-19.0	
Mid Ch								
836.50	10.98	V	0.9	0.0	10.08	38.5	-28.4	
836.50	19.60	H	0.9	0.0	18.70	38.5	-19.7	
High Ch								
844.00	10.91	V	0.9	0.0	10.01	38.5	-28.4	
844.00	19.21	H	0.9	0.0	18.31	38.5	-20.1	

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. Chamber C

Company: LG
Project #: 15I21238
Date: 7/11/2015
Test Engineer: R.Alegre
Configuration: EUT only
Mode: LTE_QPSK Band 5 Fundamentals, 10MHz Bandwidth

Test Equipment:
Receiving: Sunol T185, and 3m Chamber C 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								
829.00	12.06	V	0.9	0.0	11.16	38.5	-27.3	
829.00	21.45	H	0.9	0.0	20.55	38.5	-17.9	
Mid Ch								
836.50	11.91	V	0.9	0.0	11.01	38.5	-27.4	
836.50	20.62	H	0.9	0.0	19.72	38.5	-18.7	
High Ch								
844.00	11.60	V	0.9	0.0	10.70	38.5	-27.7	
844.00	20.11	H	0.9	0.0	19.21	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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Band

LTE5

5MHz

16QAM

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

Company: LG
Project #: 15I21238
Date: 7/11/2015
Test Engineer: R.Alegre
Configuration: EUT only
Mode: LTE_16QAM Band 5 Fundamentals, 5MHz Bandwidth

Test Equipment:
Receiving: Sunol T185, and 3m Chamber C 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								
826.50	11.03	V	0.9	0.0	10.13	38.5	-28.3	
826.50	20.28	H	0.9	0.0	19.38	38.5	-19.1	
Mid Ch								
836.50	10.96	V	0.9	0.0	10.06	38.5	-28.4	
836.50	19.48	H	0.9	0.0	18.58	38.5	-19.9	
High Ch								
846.50	10.50	V	0.9	0.0	9.60	38.5	-28.8	
846.50	19.32	H	0.9	0.0	18.42	38.5	-20.0	

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

5MHz

QPSK

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

Company: LG
Project #: 15I21238
Date: 7/11/2015
Test Engineer: R.Alegre
Configuration: EUT only
Mode: LTE_QPSK Band 5 Fundamentals, 5MHz Bandwidth

Test Equipment:
Receiving: Sunol T185, and 3m Chamber C 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								
826.50	11.99	V	0.9	0.0	11.09	38.5	-27.4	
826.50	21.31	H	0.9	0.0	20.41	38.5	-18.0	
Mid Ch								
836.50	11.87	V	0.9	0.0	10.97	38.5	-27.5	
836.50	20.44	H	0.9	0.0	19.54	38.5	-18.9	
High Ch								
846.50	11.51	V	0.9	0.0	10.61	38.5	-27.8	
846.50	20.29	H	0.9	0.0	19.39	38.5	-19.1	

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

3MHz

16QAM

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

Company: LG
Project #: 15I21238
Date: 7/11/2015
Test Engineer: R.Alegre
Configuration: EUT only
Mode: LTE_16QAM Band 5 Fundamentals, 3MHz Bandwidth

Test Equipment:
Receiving: Sunol T185, and 3m Chamber C 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								
825.50	10.96	V	0.9	0.0	10.06	38.5	-28.4	
825.50	20.24	H	0.9	0.0	19.34	38.5	-19.1	
Mid Ch								
836.50	10.92	V	0.9	0.0	10.02	38.5	-28.4	
836.50	19.41	H	0.9	0.0	18.51	38.5	-19.9	
High Ch								
847.50	10.86	V	0.9	0.0	9.96	38.5	-28.5	
847.50	19.11	H	0.9	0.0	18.21	38.5	-20.2	

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

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Band

LTE5

3MHz

QPSK

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

Company: LG
Project #: 15I21238
Date: 7/11/2015
Test Engineer: R.Alegre
Configuration: EUT only
Mode: LTE_QPSK Band 5 Fundamentals, 3MHz Bandwidth

Test Equipment:
Receiving: Sunol T185, and 3m Chamber C 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								
825.50	11.93	V	0.9	0.0	11.03	38.5	-27.4	
825.50	21.27	H	0.9	0.0	20.37	38.5	-18.1	
Mid Ch								
836.50	11.89	V	0.9	0.0	10.99	38.5	-27.5	
836.50	20.43	H	0.9	0.0	19.53	38.5	-18.9	
High Ch								
847.50	11.50	V	0.9	0.0	10.60	38.5	-27.8	
847.50	20.08	H	0.9	0.0	19.18	38.5	-19.3	

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

1.4MHz

16QAM

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

Company: LG
Project #: 15I21238
Date: 7/11/2015
Test Engineer: R.Alegre
Configuration: EUT Only
Mode: LTE_16QAM Band 5 Fundamentals, 1.4MHz Bandwidth

Test Equipment:
Receiving: Sunol T185, and 3m Chamber C 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								
824.70	10.92	V	0.9	0.0	10.02	38.5	-28.4	
824.70	20.32	H	0.9	0.0	19.42	38.5	-19.0	
Mid Ch								
836.50	10.93	V	0.9	0.0	10.03	38.5	-28.4	
836.50	19.43	H	0.9	0.0	18.53	38.5	-19.9	
High Ch								
848.30	10.47	V	0.9	0.0	9.57	38.5	-28.9	
848.30	19.20	H	0.9	0.0	18.30	38.5	-20.1	

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

1.4MHz

QPSK

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

Company: LG
Project #: 15I21238
Date: 7/11/2015
Test Engineer: R.Alegre
Configuration: EUT only
Mode: LTE_QPSK Band 5 Fundamentals, 1.4MHz Bandwidth

Test Equipment:
Receiving: Sunol T185, and 3m Chamber C 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								
824.70	11.90	V	0.9	0.0	11.00	38.5	-27.4	
824.70	21.29	H	0.9	0.0	20.39	38.5	-18.1	
Mid Ch								
836.50	11.91	V	0.9	0.0	11.01	38.5	-27.4	
836.50	20.41	H	0.9	0.0	19.51	38.5	-18.9	
High Ch								
848.30	11.49	V	0.9	0.0	10.59	38.5	-27.9	
848.30	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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LTE Band 12

Band

LTE12

10MHz

16QAM

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

Company: LG
Project #: 15I21238
Date: 7/13/2015
Test Engineer: R.Alegre
Configuration: EUT Only
Mode: LTE_16QAM Band 12 Fundamentals, 5MHz Bandwidth

Test Equipment:
Receiving: Sunol T185, and 3m Chamber C 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								
704.00	11.30	V	0.9	0.0	10.40	38.5	-28.0	
704.00	20.88	H	0.9	0.0	19.98	38.5	-18.5	
Mid Ch								
707.50	11.42	V	0.9	0.0	10.52	38.5	-27.9	
707.50	21.12	H	0.9	0.0	20.22	38.5	-18.2	
High Ch								
711.00	11.90	V	0.9	0.0	11.00	38.5	-27.4	
711.00	21.17	H	0.9	0.0	20.27	38.5	-18.2	

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

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Band

LTE12

10MHz

QPSK

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

Company: LG
Project #: 15I21238
Date: 7/13/2015
Test Engineer: R.Alegre
Configuration: EUT Only
Mode: LTE_QPSK Band 12 Fundamentals, 10MHz Bandwidth

Test Equipment:
Receiving: Sunol T185, and 3m Chamber C 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								
704.00	12.44	V	0.9	0.0	11.54	38.5	-26.9	
704.00	21.76	H	0.9	0.0	20.86	38.5	-17.6	
Mid Ch								
707.50	12.53	V	0.9	0.0	11.63	38.5	-26.8	
707.50	22.10	H	0.9	0.0	21.20	38.5	-17.2	
High Ch								
711.00	12.88	V	0.9	0.0	11.98	38.5	-26.5	
711.00	22.15	H	0.9	0.0	21.25	38.5	-17.2	

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

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Band

LTE12

5MHz

16QAM

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

Company: LG
Project #: 15I21238
Date: 7/13/2015
Test Engineer: R.Alegre
Configuration: EUT Only
Mode: LTE_16QAM Band 12 Fundamentals, 5MHz Bandwidth

Test Equipment:
Receiving: Sunol T185, and 3m Chamber C 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								
701.50	11.52	V	0.9	0.0	10.62	38.5	-27.8	
701.50	21.00	H	0.9	0.0	20.10	38.5	-18.3	
Mid Ch								
707.50	11.51	V	0.9	0.0	10.61	38.5	-27.8	
707.50	20.99	H	0.9	0.0	20.09	38.5	-18.4	
High Ch								
713.50	12.17	V	0.9	0.0	11.27	38.5	-27.2	
713.50	21.09	H	0.9	0.0	20.19	38.5	-18.3	

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

LTE12

5MHz

QPSK

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

Company: LG
Project #: 15I21238
Date: 7/13/2015
Test Engineer: R.Alegre
Configuration: EUT Only
Mode: LTE_QPSK Band 12 Fundamentals, 5MHz Bandwidth

Test Equipment:
Receiving: Sunol T185, and 3m Chamber C 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								
701.50	12.47	V	0.9	0.0	11.57	38.5	-26.9	
701.50	21.92	H	0.9	0.0	21.02	38.5	-17.4	
Mid Ch								
707.50	12.50	V	0.9	0.0	11.60	38.5	-26.8	
707.50	21.98	H	0.9	0.0	21.08	38.5	-17.4	
High Ch								
713.50	13.00	V	0.9	0.0	12.10	38.5	-26.3	
713.50	22.05	H	0.9	0.0	21.15	38.5	-17.3	

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

LTE12

3MHz

16QAM

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

Company: LG
Project #: 15I21238
Date: 7/13/2015
Test Engineer: R.Alegre
Configuration: EUT Only
Mode: LTE_16QAM Band 12 Fundamentals, 3MHz Bandwidth

Test Equipment:
Receiving: Sunol T185, and 3m Chamber C 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								
700.50	11.24	V	0.9	0.0	10.34	38.5	-28.1	
700.50	20.89	H	0.9	0.0	19.99	38.5	-18.5	
Mid Ch								
707.50	11.50	V	0.9	0.0	10.60	38.5	-27.8	
707.50	20.90	H	0.9	0.0	20.00	38.5	-18.4	
High Ch								
714.50	12.07	V	0.9	0.0	11.17	38.5	-27.3	
714.50	21.15	H	0.9	0.0	20.25	38.5	-18.2	

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

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Band

LTE12

3MHz

QPSK

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

Company: LG
Project #: 15I21238
Date: 7/13/2015
Test Engineer: R.Alegre
Configuration: EUT Only
Mode: LTE_QPSK Band 12 Fundamentals, 3MHz Bandwidth

Test Equipment:
Receiving: Sunol T185, and 3m Chamber C 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								
700.50	12.16	V	0.9	0.0	11.26	38.5	-27.2	
700.50	21.91	H	0.9	0.0	21.01	38.5	-17.4	
Mid Ch								
707.50	12.48	V	0.9	0.0	11.58	38.5	-26.9	
707.50	22.07	H	0.9	0.0	21.17	38.5	-17.3	
High Ch								
714.50	13.03	V	0.9	0.0	12.13	38.5	-26.3	
714.50	22.14	H	0.9	0.0	21.24	38.5	-17.2	

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

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Band

LTE12

1.4MHz

16QAM

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

Company: LG
Project #: 15I21238
Date: 7/13/2015
Test Engineer: R.Alegre
Configuration: EUT Only
Mode: LTE_16QAM Band 12 Fundamentals, 1.4MHz Bandwidth

Test Equipment:
Receiving: Sunol T185, and 3m Chamber C 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								
699.70	11.35	V	0.9	0.0	10.45	38.5	-28.0	
699.70	20.92	H	0.9	0.0	20.02	38.5	-18.4	
Mid Ch								
707.50	11.52	V	0.9	0.0	10.62	38.5	-27.8	
707.50	20.96	H	0.9	0.0	20.06	38.5	-18.4	
High Ch								
715.30	11.91	V	0.9	0.0	11.01	38.5	-27.4	
715.30	21.12	H	0.9	0.0	20.22	38.5	-18.2	

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

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Band

LTE12

1.4MHz

QPSK

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

Company: LG
Project #: 15I21238
Date: 7/13/2015
Test Engineer: R.Alegre
Configuration: EUT Only
Mode: LTE_QPSK Band 12 Fundamentals, 1.4MHz Bandwidth

Test Equipment:
Receiving: Sunol T185, and 3m Chamber C 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								
699.70	12.31	V	0.9	0.0	11.41	38.5	-27.0	
699.70	21.94	H	0.9	0.0	21.04	38.5	-17.4	
Mid Ch								
707.50	12.59	V	0.9	0.0	11.69	38.5	-26.8	
707.50	22.00	H	0.9	0.0	21.10	38.5	-17.3	
High Ch								
715.30	12.89	V	0.9	0.0	11.99	38.5	-26.5	
715.30	22.15	H	0.9	0.0	21.25	38.5	-17.2	

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

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LTE Band 30

Band

LTE30

10MHz

16QAM

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

Company: LG
Project #: 15I21238
Date: 07/10/15
Test Engineer: Jude Semana
Configuration: EUT Only (X position)
Location: Chamber C
Mode: TX, LTE band 30 10MHz, 16QAM

Test Equipment:
Receiving: Horn T119, and Chamber C SMA Cables
Substitution: Horn T60 Substitution, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
		V	0.9					
		H	0.9					
Mid Ch								
2310.00	1.80	V	0.9	9.3	10.25	24.0	-13.7	
2310.00	11.70	H	0.9	9.3	20.15	24.0	-3.8	
High Ch								
		V	0.9	8.0				
		H	0.9	8.0				

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

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Band

LTE30

10MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I21238
Date: 07/10/15
Test Engineer: Jude Semana
Configuration: EUT Only (X position)
Location: Chamber C
Mode: TX, LTE band 30 10MHz, QPSK

Test Equpment:
Receiving: Horn T119, and Chamber C SMA Cables
Substitution: Horn T60 Substitution, 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								
	0.00	V	0.9	8.0	0.00		0.0	
	0.00	H	0.9	8.0	0.00		0.0	
Mid Ch								
2310.00	2.70	V	0.9	9.3	11.10	24.0	-12.9	
2310.00	12.60	H	0.9	9.3	21.00	24.0	-3.0	
High Ch								
	0.00	V	0.9	8.0	0.00		0.0	
	0.00	H	0.9	8.0	0.00		0.0	

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Band

LTE30

5MHz

16QAM

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

Company: LG
Project #: 15I21238
Date: 07/10/15
Test Engineer: Jude Semana
Configuration: EUT Only (X Position)
Location: Chamber C
Mode: TX, LTE band 30 5MHz, 16QAM

Test Equipment:
Receiving: Horn T119, and Chamber C SMA Cables
Substitution: Horn T60 Substitution, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
2307.50	1.60	V	0.9	9.3	10.05	24.0	-13.9	
2307.50	11.40	H	0.9	9.3	19.85	24.0	-4.1	
Mid Ch								
2310.00	1.70	V	0.9	9.3	10.15	24.0	-13.8	
2310.00	11.60	H	0.9	9.3	20.05	24.0	-3.9	
High Ch								
2312.50	1.50	V	0.9	9.3	9.95	24.0	-14.0	
2312.50	11.20	H	0.9	9.3	19.65	24.0	-4.3	

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

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Band

LTE30

5MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I21238
Date: 07/10/15
Test Engineer: Jude Semana
Configuration: EUT Only (X Position)
Location: Chamber C
Mode: TX, LTE band 30 5MHz, QPSK

Test Equpment:
Receiving: Horn T119, and Chamber C SMA Cables
Substitution: Horn T60 Substitution, 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								
2307.50	2.20	V	0.9	9.4	10.70	24.0	-13.3	
2307.50	12.00	H	0.9	9.4	20.50	24.0	-3.5	
Mid Ch								
2310.00	2.30	V	0.9	9.4	10.80	24.0	-13.2	
2310.00	12.20	H	0.9	9.4	20.70	24.0	-3.3	
High Ch								
2312.50	2.30	V	0.9	9.4	10.80	24.0	-13.2	
2312.50	11.90	H	0.9	9.4	20.40	24.0	-3.6	

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10.2. FIELD STRENGTH OF SPURIOUS RADIATION

RULE PART(S)

FCC: §2.1053, §22.917, §24.238, §27.53

LIMIT

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

Part 27: (m)(4) (4) For mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

TEST PROCEDURE

For Cellular equipment - Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 100 kHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

For PCS equipment - Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 1 MHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

MODES TESTED

GSM, WCDMA, and LTE

RESULTS

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10.2.1. SPURIOUS RADIATION PLOTS

GSM

Band

GSM

1900

EGPRS

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I21238
Date: 7/25/2015
Test Engineer: R.Alegre
Configuration: X-pos EUT w/ AC Adapter + Headset
Location: Chamber C
Mode: EGPRS 1900 MHz Harmonics

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1850.2									
3700.40	-20.7	V	3.0	35.9	1.0	-55.6	-13.0	-42.6	
5550.60	-17.7	V	3.0	35.5	1.0	-52.2	-13.0	-39.2	
7400.80	-13.8	V	3.0	35.7	1.0	-48.5	-13.0	-35.5	
3700.40	-21.7	H	3.0	35.9	1.0	-56.5	-13.0	-43.5	
5550.60	-13.5	H	3.0	35.5	1.0	-48.0	-13.0	-35.0	
7400.80	-12.9	H	3.0	35.7	1.0	-47.6	-13.0	-34.6	
Mid Ch, 1880									
3760.00	-20.7	V	3.0	35.8	1.0	-55.6	-13.0	-42.6	
5640.00	-17.3	V	3.0	35.5	1.0	-51.8	-13.0	-38.8	
7520.00	-13.8	V	3.0	35.7	1.0	-48.6	-13.0	-35.6	
3760.00	-20.5	H	3.0	35.8	1.0	-55.3	-13.0	-42.3	
5640.00	-17.0	H	3.0	35.5	1.0	-51.5	-13.0	-38.5	
7520.00	-13.7	H	3.0	35.7	1.0	-48.4	-13.0	-35.4	
High Ch, 1909.8									
3819.60	-20.6	V	3.0	35.8	1.0	-55.3	-13.0	-42.3	
5729.40	-17.4	V	3.0	35.5	1.0	-51.9	-13.0	-38.9	
7639.20	-14.1	V	3.0	35.8	1.0	-48.9	-13.0	-35.9	
3819.60	-20.7	H	3.0	35.8	1.0	-55.5	-13.0	-42.5	
5729.40	-15.5	H	3.0	35.5	1.0	-50.0	-13.0	-37.0	
7639.20	-13.0	H	3.0	35.8	1.0	-47.8	-13.0	-34.8	

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UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I21238
Date: 7/25/2015
Test Engineer: R.Alegre
Configuration: X-pos EUT w/ AC Adapter + Headset
Location: Chamber C
Mode: GPRS 1900 MHz Harmonics

Band GSM 1900 GPRS

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1850.2									
3700.40	-20.5	V	3.0	35.9	1.0	-55.4	-13.0	-42.4	
5550.60	-17.4	V	3.0	35.5	1.0	-51.9	-13.0	-38.9	
7400.80	-13.1	V	3.0	35.7	1.0	-47.8	-13.0	-34.8	
3700.40	-20.8	H	3.0	35.9	1.0	-55.7	-13.0	-42.7	
5550.60	-12.7	H	3.0	35.5	1.0	-47.1	-13.0	-34.1	
7400.80	-12.6	H	3.0	35.7	1.0	-47.3	-13.0	-34.3	
Mid Ch, 1880									
3760.00	-20.4	V	3.0	35.8	1.0	-55.2	-13.0	-42.2	
5640.00	-16.9	V	3.0	35.5	1.0	-51.4	-13.0	-38.4	
7520.00	-13.2	V	3.0	35.7	1.0	-48.0	-13.0	-35.0	
3760.00	-19.4	H	3.0	35.8	1.0	-54.3	-13.0	-41.3	
5640.00	-16.6	H	3.0	35.5	1.0	-51.1	-13.0	-38.1	
7520.00	-13.3	H	3.0	35.7	1.0	-48.0	-13.0	-35.0	
High Ch, 1909.8									
3819.60	-20.3	V	3.0	35.8	1.0	-55.1	-13.0	-42.1	
5729.40	-17.0	V	3.0	35.5	1.0	-51.5	-13.0	-38.5	
7639.20	-13.6	V	3.0	35.8	1.0	-48.4	-13.0	-35.4	
3819.60	-20.4	H	3.0	35.8	1.0	-55.2	-13.0	-42.2	
5729.40	-15.4	H	3.0	35.5	1.0	-49.9	-13.0	-36.9	
7639.20	-12.7	H	3.0	35.8	1.0	-47.5	-13.0	-34.5	

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Band

GSM

850

EGPRS

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I21238
Date: 7/25/2015
Test Engineer: R.Alegre
Configuration: EUT w/ AC Adapter + Headset
Location: Chamber C
Mode: EGPRS 850 MHz Harmonics

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 824.2									
1648.40	-16.3	V	3.0	37.0	1.0	-52.3	-13.0	-39.3	
2472.60	-17.5	V	3.0	36.4	1.0	-52.9	-13.0	-39.9	
3296.80	-21.8	V	3.0	36.2	1.0	-56.9	-13.0	-43.9	
1648.40	-15.7	H	3.0	37.0	1.0	-51.7	-13.0	-38.7	
2472.60	-24.2	H	3.0	36.4	1.0	-59.6	-13.0	-46.6	
3296.80	-22.0	H	3.0	36.2	1.0	-57.1	-13.0	-44.1	
Mid Ch, 836.6									
1673.20	-19.8	V	3.0	37.0	1.0	-55.8	-13.0	-42.8	
2509.80	-16.9	V	3.0	36.4	1.0	-52.3	-13.0	-39.3	
3346.40	-21.6	V	3.0	36.1	1.0	-56.7	-13.0	-43.7	
1673.20	-18.4	H	3.0	37.0	1.0	-54.4	-13.0	-41.4	
2509.80	-20.7	H	3.0	36.4	1.0	-56.1	-13.0	-43.1	
3346.40	-22.2	H	3.0	36.1	1.0	-57.3	-13.0	-44.3	
High Ch, 848.8									
1697.60	-21.8	V	3.0	37.0	1.0	-57.8	-13.0	-44.8	
2546.40	-17.6	V	3.0	36.4	1.0	-53.0	-13.0	-40.0	
3395.20	-21.2	V	3.0	36.1	1.0	-56.3	-13.0	-43.3	
1697.60	-19.9	H	3.0	37.0	1.0	-55.8	-13.0	-42.8	
2546.40	-17.2	H	3.0	36.4	1.0	-52.6	-13.0	-39.6	
3395.20	-22.0	H	3.0	36.1	1.0	-57.1	-13.0	-44.1	

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Band

GSM

850

GPRS

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I21238
Date: 7/25/2015
Test Engineer: R.Alegre
Configuration: EUT w/ AC Adapter + Headset
Location: Chamber C
Mode: GPRS 850 MHz Harmonics

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 824.2									
1648.40	-14.5	V	3.0	37.0	1.0	-50.6	-13.0	-37.6	
2472.60	-16.1	V	3.0	36.4	1.0	-51.5	-13.0	-38.5	
3296.80	-21.9	V	3.0	36.2	1.0	-57.0	-13.0	-44.0	
1648.40	-14.1	H	3.0	37.0	1.0	-50.1	-13.0	-37.1	
2472.60	-24.5	H	3.0	36.4	1.0	-59.9	-13.0	-46.9	
3296.80	-21.5	H	3.0	36.2	1.0	-56.6	-13.0	-43.6	
Mid Ch, 836.6									
1673.20	-17.9	V	3.0	37.0	1.0	-53.9	-13.0	-40.9	
2509.80	-15.7	V	3.0	36.4	1.0	-51.1	-13.0	-38.1	
3346.40	-21.3	V	3.0	36.1	1.0	-56.4	-13.0	-43.4	
1673.20	-15.5	H	3.0	37.0	1.0	-51.5	-13.0	-38.5	
2509.80	-19.1	H	3.0	36.4	1.0	-54.5	-13.0	-41.5	
3346.40	-21.5	H	3.0	36.1	1.0	-56.6	-13.0	-43.6	
High Ch, 848.8									
1697.60	-20.2	V	3.0	37.0	1.0	-56.2	-13.0	-43.2	
2546.40	-16.5	V	3.0	36.4	1.0	-51.9	-13.0	-38.9	
3395.20	-20.8	V	3.0	36.1	1.0	-55.9	-13.0	-42.9	
1697.60	-19.0	H	3.0	37.0	1.0	-55.0	-13.0	-42.0	
2546.40	-16.4	H	3.0	36.4	1.0	-51.9	-13.0	-38.9	
3395.20	-21.8	H	3.0	36.1	1.0	-56.8	-13.0	-43.8	

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WCDMA

Band

Band 2

HSDPA

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I21238
Date: 7/25/2015
Test Engineer: R.Alegre
Configuration: X-pos EUT w/ AC Adapter + Headset
Location: Chamber C
Mode: HSDPA Band 2 Harmonics

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1852.4									
3704.80	-21.4	V	3.0	35.9	1.0	-56.2	-13.0	-43.2	
5557.20	-16.7	V	3.0	35.5	1.0	-51.1	-13.0	-38.1	
7409.60	-14.8	V	3.0	35.7	1.0	-49.5	-13.0	-36.5	
3704.80	-22.1	H	3.0	35.9	1.0	-56.9	-13.0	-43.9	
5557.20	-16.8	H	3.0	35.5	1.0	-51.3	-13.0	-38.3	
7409.60	-13.7	H	3.0	35.7	1.0	-48.5	-13.0	-35.5	
Mid Ch, 1880									
3760.00	-20.2	V	3.0	35.8	1.0	-55.0	-13.0	-42.0	
5640.00	-15.9	V	3.0	35.5	1.0	-50.4	-13.0	-37.4	
7520.00	-14.1	V	3.0	35.7	1.0	-48.8	-13.0	-35.8	
3760.00	-21.0	H	3.0	35.8	1.0	-55.8	-13.0	-42.8	
5640.00	-16.9	H	3.0	35.5	1.0	-51.4	-13.0	-38.4	
7520.00	-13.1	H	3.0	35.7	1.0	-47.9	-13.0	-34.9	
High Ch, 1907.6									
3815.20	-20.3	V	3.0	35.8	1.0	-55.1	-13.0	-42.1	
5722.80	-8.8	V	3.0	35.5	1.0	-43.3	-13.0	-30.3	
7630.40	-13.1	V	3.0	35.8	1.0	-47.9	-13.0	-34.9	
3815.20	-21.1	H	3.0	35.8	1.0	-55.9	-13.0	-42.9	
5722.80	-15.5	H	3.0	35.5	1.0	-50.0	-13.0	-37.0	
7630.40	-12.9	H	3.0	35.8	1.0	-47.7	-13.0	-34.7	

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Band

Band 2

REL99

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I21238
Date: 7/25/2015
Test Engineer: R.Alegre
Configuration: X-pos EUT w/ AC Adapter + Headset
Location: Chamber C
Mode: Rel99 Band 2 Harmonics

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1852.4									
3704.80	-20.7	V	3.0	35.9	1.0	-55.5	-13.0	-42.5	
5557.20	-16.1	V	3.0	35.5	1.0	-50.5	-13.0	-37.5	
7409.60	-13.9	V	3.0	35.7	1.0	-48.6	-13.0	-35.6	
3704.80	-21.4	H	3.0	35.9	1.0	-56.3	-13.0	-43.3	
5557.20	-16.4	H	3.0	35.5	1.0	-50.9	-13.0	-37.9	
7409.60	-13.2	H	3.0	35.7	1.0	-47.9	-13.0	-34.9	
Mid Ch, 1880									
3760.00	-19.2	V	3.0	35.8	1.0	-54.0	-13.0	-41.0	
5640.00	-15.2	V	3.0	35.5	1.0	-49.7	-13.0	-36.7	
7520.00	-13.5	V	3.0	35.7	1.0	-48.2	-13.0	-35.2	
3760.00	-20.4	H	3.0	35.8	1.0	-55.2	-13.0	-42.2	
5640.00	-16.5	H	3.0	35.5	1.0	-51.0	-13.0	-38.0	
7520.00	-12.7	H	3.0	35.7	1.0	-47.4	-13.0	-34.4	
High Ch, 1907.6									
3815.20	-18.7	V	3.0	35.8	1.0	-53.5	-13.0	-40.5	
5722.80	-7.5	V	3.0	35.5	1.0	-42.0	-13.0	-29.0	
7630.40	-12.4	V	3.0	35.8	1.0	-47.2	-13.0	-34.2	
3815.20	-20.5	H	3.0	35.8	1.0	-55.3	-13.0	-42.3	
5722.80	-14.2	H	3.0	35.5	1.0	-48.7	-13.0	-35.7	
7630.40	-12.3	H	3.0	35.8	1.0	-47.1	-13.0	-34.1	

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Band

Band 5

HSDPA

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I21238
Date: 7/25/2015
Test Engineer: R.Alegre
Configuration: EUT w/ AC Adapter + Headset
Location: Chamber C
Mode: HSDPA Band 5 Harmonics

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 826.4									
1652.80	-28.0	V	3.0	37.0	1.0	-64.0	-13.0	-51.0	
2479.20	-18.0	V	3.0	36.4	1.0	-53.4	-13.0	-40.4	
3305.60	-21.9	V	3.0	36.1	1.0	-57.1	-13.0	-44.1	
1652.80	-27.8	H	3.0	37.0	1.0	-63.8	-13.0	-50.8	
2479.20	-16.8	H	3.0	36.4	1.0	-52.2	-13.0	-39.2	
3305.60	-21.9	H	3.0	36.1	1.0	-57.1	-13.0	-44.1	
Mid Ch, 836.6									
1673.20	-27.3	V	3.0	37.0	1.0	-63.3	-13.0	-50.3	
2509.80	-17.2	V	3.0	36.4	1.0	-52.6	-13.0	-39.6	
3346.40	-21.9	V	3.0	36.1	1.0	-57.0	-13.0	-44.0	
1673.20	-27.5	H	3.0	37.0	1.0	-63.5	-13.0	-50.5	
2509.80	-16.4	H	3.0	36.4	1.0	-51.8	-13.0	-38.8	
3346.40	-22.2	H	3.0	36.1	1.0	-57.3	-13.0	-44.3	
High Ch, 846.6									
1693.20	-27.8	V	3.0	37.0	1.0	-63.8	-13.0	-50.8	
2539.80	-17.7	V	3.0	36.4	1.0	-53.1	-13.0	-40.1	
3386.40	-21.9	V	3.0	36.1	1.0	-57.0	-13.0	-44.0	
1693.20	-28.2	H	3.0	37.0	1.0	-64.2	-13.0	-51.2	
2539.80	-15.5	H	3.0	36.4	1.0	-50.9	-13.0	-37.9	
3386.40	-21.7	H	3.0	36.1	1.0	-56.8	-13.0	-43.8	

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Band

Band 5

REL99

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I21238
Date: 7/25/2015
Test Engineer: R.Alegre
Configuration: EUT w/ AC Adapter + Headset
Location: Chamber C
Mode: Rel99 Band 5 Harmonics

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 826.4									
1652.80	-27.8	V	3.0	37.0	1.0	-63.8	-13.0	-50.8	
2479.20	-17.6	V	3.0	36.4	1.0	-53.1	-13.0	-40.1	
3305.60	-21.6	V	3.0	36.1	1.0	-56.7	-13.0	-43.7	
1652.80	-27.7	H	3.0	37.0	1.0	-63.8	-13.0	-50.8	
2479.20	-16.7	H	3.0	36.4	1.0	-52.1	-13.0	-39.1	
3305.60	-21.8	H	3.0	36.1	1.0	-57.0	-13.0	-44.0	
Mid Ch, 836.6									
1673.20	-27.6	V	3.0	37.0	1.0	-63.6	-13.0	-50.6	
2509.80	-17.1	V	3.0	36.4	1.0	-52.5	-13.0	-39.5	
3346.40	-21.5	V	3.0	36.1	1.0	-56.7	-13.0	-43.7	
1673.20	-27.6	H	3.0	37.0	1.0	-63.5	-13.0	-50.5	
2509.80	-16.3	H	3.0	36.4	1.0	-51.7	-13.0	-38.7	
3346.40	-21.9	H	3.0	36.1	1.0	-57.0	-13.0	-44.0	
High Ch, 846.6									
1693.20	-27.6	V	3.0	37.0	1.0	-63.6	-13.0	-50.6	
2539.80	-17.5	V	3.0	36.4	1.0	-52.9	-13.0	-39.9	
3386.40	-22.0	V	3.0	36.1	1.0	-57.1	-13.0	-44.1	
1693.20	-28.1	H	3.0	37.0	1.0	-64.1	-13.0	-51.1	
2539.80	-15.3	H	3.0	36.4	1.0	-50.7	-13.0	-37.7	
3386.40	-21.3	H	3.0	36.1	1.0	-56.4	-13.0	-43.4	

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LTE Band 2

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG Electronics
Project #: 15I21238
Date: 7/14/2015
Test Engineer: R.Alegre
Configuration: EUT w/ AC Charger + HS
Location: Chamber C
Mode: LTE_16QAM Band 2 Harmonics, 20MHz Bandwidth

Band
LTE2
20MHz
16QAM

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1860									
3720.00	-18.7	V	3.0	35.8	1.0	-53.5	-13.0	-40.5	
5580.00	-15.5	V	3.0	35.5	1.0	-50.0	-13.0	-37.0	
7440.00	-13.6	V	3.0	35.7	1.0	-48.3	-13.0	-35.3	
3720.00	-19.7	H	3.0	35.8	1.0	-54.6	-13.0	-41.6	
5580.00	-13.9	H	3.0	35.5	1.0	-48.4	-13.0	-35.4	
7440.00	-11.6	H	3.0	35.7	1.0	-46.3	-13.0	-33.3	
Mid Ch, 1880									
3760.00	-20.0	V	3.0	35.8	1.0	-54.9	-13.0	-41.9	
5640.00	-15.5	V	3.0	35.5	1.0	-50.0	-13.0	-37.0	
7520.00	-12.6	V	3.0	35.7	1.0	-47.4	-13.0	-34.4	
3760.00	-20.0	H	3.0	35.8	1.0	-54.8	-13.0	-41.8	
5640.00	-14.7	H	3.0	35.5	1.0	-49.2	-13.0	-36.2	
7520.00	-10.3	H	3.0	35.7	1.0	-45.1	-13.0	-32.1	
High Ch, 1900									
3800.00	-19.7	V	3.0	35.8	1.0	-54.4	-13.0	-41.4	
5700.00	-15.1	V	3.0	35.5	1.0	-49.6	-13.0	-36.6	
7600.00	-11.6	V	3.0	35.8	1.0	-46.3	-13.0	-33.3	
3800.00	-20.0	H	3.0	35.8	1.0	-54.8	-13.0	-41.8	
5700.00	-14.6	H	3.0	35.5	1.0	-49.1	-13.0	-36.1	
7600.00	-11.1	H	3.0	35.8	1.0	-45.9	-13.0	-32.9	

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UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG Electronics
Project #: 15I21238
Date: 7/14/2015
Test Engineer: R.Alegre
Configuration: EUT w/ AC Charger + HS
Location: Chamber C
Mode: LTE_QPSK Band 2 Harmonics, 20MHz Bandwidth

Band	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch, 1860									
LTE2	3720.00	-18.6	V	3.0	35.8	1.0	-53.5	-13.0	-40.5	
	5580.00	-15.4	V	3.0	35.5	1.0	-49.9	-13.0	-36.9	
20MHz	7440.00	-13.3	V	3.0	35.7	1.0	-48.1	-13.0	-35.1	
	3720.00	-19.6	H	3.0	35.8	1.0	-54.4	-13.0	-41.4	
QPSK	5580.00	-14.1	H	3.0	35.5	1.0	-48.6	-13.0	-35.6	
	7440.00	-11.4	H	3.0	35.7	1.0	-46.1	-13.0	-33.1	
	Mid Ch, 1880									
	3760.00	-19.8	V	3.0	35.8	1.0	-54.6	-13.0	-41.6	
	5640.00	-15.3	V	3.0	35.5	1.0	-49.8	-13.0	-36.8	
	7520.00	-12.6	V	3.0	35.7	1.0	-47.4	-13.0	-34.4	
	3760.00	-19.8	H	3.0	35.8	1.0	-54.6	-13.0	-41.6	
	5640.00	-14.9	H	3.0	35.5	1.0	-49.4	-13.0	-36.4	
	7520.00	-10.2	H	3.0	35.7	1.0	-44.9	-13.0	-31.9	
	High Ch, 1900									
	3800.00	-19.7	V	3.0	35.8	1.0	-54.5	-13.0	-41.5	
	5700.00	-14.9	V	3.0	35.5	1.0	-49.4	-13.0	-36.4	
	7600.00	-11.5	V	3.0	35.8	1.0	-46.2	-13.0	-33.2	
	3800.00	-19.7	H	3.0	35.8	1.0	-54.5	-13.0	-41.5	
	5700.00	-14.5	H	3.0	35.5	1.0	-49.0	-13.0	-36.0	
	7600.00	-11.3	H	3.0	35.8	1.0	-46.0	-13.0	-33.0	

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UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG Electronics
Project #: 15I21238
Date: 7/14/2015
Test Engineer: R.Alegre
Configuration: EUT w/ AC Charger + HS
Location: Chamber C
Mode: LTE_16QAM Band 2 Harmonics, 15MHz Bandwidth

Band	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch, 1857.5									
LTE2	3715.00	-18.6	V	3.0	35.8	1.0	-53.5	-13.0	-40.5	
	5572.50	-15.5	V	3.0	35.5	1.0	-49.9	-13.0	-36.9	
15MHz	7430.00	-13.2	V	3.0	35.7	1.0	-47.9	-13.0	-34.9	
	3715.00	-18.8	H	3.0	35.8	1.0	-53.6	-13.0	-40.6	
16QAM	5572.50	-14.6	H	3.0	35.5	1.0	-49.1	-13.0	-36.1	
	7430.00	-11.6	H	3.0	35.7	1.0	-46.3	-13.0	-33.3	
	Mid Ch, 1880									
	3760.00	-20.0	V	3.0	35.8	1.0	-54.8	-13.0	-41.8	
	5640.00	-15.4	V	3.0	35.5	1.0	-49.8	-13.0	-36.8	
	7520.00	-12.6	V	3.0	35.7	1.0	-47.4	-13.0	-34.4	
	3760.00	-19.9	H	3.0	35.8	1.0	-54.7	-13.0	-41.7	
	5640.00	-15.0	H	3.0	35.5	1.0	-49.5	-13.0	-36.5	
	7520.00	-11.0	H	3.0	35.7	1.0	-45.7	-13.0	-32.7	
	High Ch, 1902.5									
	3805.00	-20.0	V	3.0	35.8	1.0	-54.8	-13.0	-41.8	
	5707.50	-14.8	V	3.0	35.5	1.0	-49.3	-13.0	-36.3	
	7610.00	-11.6	V	3.0	35.8	1.0	-46.3	-13.0	-33.3	
	3805.00	-19.6	H	3.0	35.8	1.0	-54.3	-13.0	-41.3	
	5707.50	-15.3	H	3.0	35.5	1.0	-49.8	-13.0	-36.8	
	7610.00	-11.2	H	3.0	35.8	1.0	-45.9	-13.0	-32.9	

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UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG Electronics
Project #: 15I21238
Date: 7/14/2015
Test Engineer: R.Alegre
Configuration: EUT w/ AC Charger + HS
Location: Chamber C
Mode: LTE_QPSK Band 2 Harmonics, 15MHz Bandwidth

Band	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch, 1857.5									
LTE2	3715.00	-18.5	V	3.0	35.8	1.0	-53.4	-13.0	-40.4	
	5572.50	-15.3	V	3.0	35.5	1.0	-49.8	-13.0	-36.8	
15MHz	7430.00	-13.1	V	3.0	35.7	1.0	-47.8	-13.0	-34.8	
	3715.00	-18.7	H	3.0	35.8	1.0	-53.5	-13.0	-40.5	
QPSK	5572.50	-14.0	H	3.0	35.5	1.0	-48.5	-13.0	-35.5	
	7430.00	-11.2	H	3.0	35.7	1.0	-45.9	-13.0	-32.9	
	Mid Ch, 1880									
	3760.00	-19.7	V	3.0	35.8	1.0	-54.5	-13.0	-41.5	
	5640.00	-15.2	V	3.0	35.5	1.0	-49.7	-13.0	-36.7	
	7520.00	-12.6	V	3.0	35.7	1.0	-47.4	-13.0	-34.4	
	3760.00	-19.6	H	3.0	35.8	1.0	-54.4	-13.0	-41.4	
	5640.00	-14.8	H	3.0	35.5	1.0	-49.3	-13.0	-36.3	
	7520.00	-10.1	H	3.0	35.7	1.0	-44.9	-13.0	-31.9	
	High Ch, 1902.5									
	3805.00	-19.7	V	3.0	35.8	1.0	-54.5	-13.0	-41.5	
	5707.50	-14.4	V	3.0	35.5	1.0	-48.9	-13.0	-35.9	
	7610.00	-11.3	V	3.0	35.8	1.0	-46.1	-13.0	-33.1	
	3805.00	-19.4	H	3.0	35.8	1.0	-54.2	-13.0	-41.2	
	5707.50	-14.9	H	3.0	35.5	1.0	-49.4	-13.0	-36.4	
	7610.00	-11.4	H	3.0	35.8	1.0	-46.2	-13.0	-33.2	

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UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG Electronics
Project #: 15I21238
Date: 7/14/2015
Test Engineer: R.Alegre
Configuration: EUT w/ AC Charger + HS
Location: Chamber C
Mode: LTE_16QAM Band 2 Harmonics, 10MHz Bandwidth

Band: LTE2 10MHz 16QAM

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1855									
3710.00	-18.9	V	3.0	35.9	1.0	-53.8	-13.0	-40.8	
5565.00	-15.1	V	3.0	35.5	1.0	-49.6	-13.0	-36.6	
7420.00	-13.6	V	3.0	35.7	1.0	-48.3	-13.0	-35.3	
3710.00	-19.0	H	3.0	35.9	1.0	-53.8	-13.0	-40.8	
5565.00	-14.3	H	3.0	35.5	1.0	-48.8	-13.0	-35.8	
7420.00	-11.5	H	3.0	35.7	1.0	-46.2	-13.0	-33.2	
Mid Ch, 1880									
3760.00	-20.0	V	3.0	35.8	1.0	-54.8	-13.0	-41.8	
5640.00	-15.5	V	3.0	35.5	1.0	-50.0	-13.0	-37.0	
7520.00	-12.7	V	3.0	35.7	1.0	-47.4	-13.0	-34.4	
3760.00	-19.5	H	3.0	35.8	1.0	-54.3	-13.0	-41.3	
5640.00	-14.8	H	3.0	35.5	1.0	-49.3	-13.0	-36.3	
7520.00	-10.7	H	3.0	35.7	1.0	-45.4	-13.0	-32.4	
High Ch, 1905									
3810.00	-20.2	V	3.0	35.8	1.0	-55.0	-13.0	-42.0	
5715.00	-14.7	V	3.0	35.5	1.0	-49.2	-13.0	-36.2	
7620.00	-11.5	V	3.0	35.8	1.0	-46.2	-13.0	-33.2	
3810.00	-19.3	H	3.0	35.8	1.0	-54.1	-13.0	-41.1	
5715.00	-15.4	H	3.0	35.5	1.0	-49.9	-13.0	-36.9	
7620.00	-11.5	H	3.0	35.8	1.0	-46.3	-13.0	-33.3	

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UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG Electronics
Project #: 15I21238
Date: 7/14/2015
Test Engineer: R.Alegre
Configuration: EUT w/ AC Charger + HS
Location: Chamber C
Mode: LTE_QPSK Band 2 Harmonics, 10MHz Bandwidth

Band	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch, 1855									
LTE2	3710.00	-18.5	V	3.0	35.9	1.0	-53.3	-13.0	-40.3	
	5565.00	-15.2	V	3.0	35.5	1.0	-49.7	-13.0	-36.7	
10MHz	7420.00	-13.2	V	3.0	35.7	1.0	-47.9	-13.0	-34.9	
	3710.00	-18.9	H	3.0	35.9	1.0	-53.7	-13.0	-40.7	
QPSK	5565.00	-14.1	H	3.0	35.5	1.0	-48.6	-13.0	-35.6	
	7420.00	-11.1	H	3.0	35.7	1.0	-45.9	-13.0	-32.9	
	Mid Ch, 1880									
	3760.00	-19.8	V	3.0	35.8	1.0	-54.6	-13.0	-41.6	
	5640.00	-15.2	V	3.0	35.5	1.0	-49.7	-13.0	-36.7	
	7520.00	-12.5	V	3.0	35.7	1.0	-47.3	-13.0	-34.3	
	3760.00	-19.7	H	3.0	35.8	1.0	-54.5	-13.0	-41.5	
	5640.00	-14.9	H	3.0	35.5	1.0	-49.4	-13.0	-36.4	
	7520.00	-10.3	H	3.0	35.7	1.0	-45.1	-13.0	-32.1	
	High Ch, 1905									
	3810.00	-19.6	V	3.0	35.8	1.0	-54.3	-13.0	-41.3	
	5715.00	-14.2	V	3.0	35.5	1.0	-48.7	-13.0	-35.7	
	7620.00	-11.2	V	3.0	35.8	1.0	-45.9	-13.0	-32.9	
	3810.00	-19.1	H	3.0	35.8	1.0	-53.9	-13.0	-40.9	
	5715.00	-14.8	H	3.0	35.5	1.0	-49.3	-13.0	-36.3	
	7620.00	-11.5	H	3.0	35.8	1.0	-46.2	-13.0	-33.2	

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UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG Electronics
Project #: 15I21238
Date: 7/14/2015
Test Engineer: R.Alegre
Configuration: EUT w/ AC Charger + HS
Location: Chamber C
Mode: LTE_16QAM Band 2 Harmonics, 5MHz Bandwidth

Band: LTE2 5MHz 16QAM

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1852.5									
3705.00	-17.6	V	3.0	35.9	1.0	-52.5	-13.0	-39.5	
5557.50	-15.3	V	3.0	35.5	1.0	-49.8	-13.0	-36.8	
7410.00	-13.5	V	3.0	35.7	1.0	-48.2	-13.0	-35.2	
3705.00	-18.9	H	3.0	35.9	1.0	-53.7	-13.0	-40.7	
5557.50	-14.9	H	3.0	35.5	1.0	-49.4	-13.0	-36.4	
7410.00	-11.4	H	3.0	35.7	1.0	-46.1	-13.0	-33.1	
Mid Ch, 1880									
3760.00	-20.1	V	3.0	35.8	1.0	-54.9	-13.0	-41.9	
5640.00	-14.8	V	3.0	35.5	1.0	-49.3	-13.0	-36.3	
7520.00	-9.9	V	3.0	35.7	1.0	-44.6	-13.0	-31.6	
3760.00	-18.6	H	3.0	35.8	1.0	-53.4	-13.0	-40.4	
5640.00	-14.7	H	3.0	35.5	1.0	-49.2	-13.0	-36.2	
7520.00	-10.1	H	3.0	35.7	1.0	-44.9	-13.0	-31.9	
High Ch, 1907.5									
3815.00	-20.6	V	3.0	35.8	1.0	-55.3	-13.0	-42.3	
5722.50	-13.5	V	3.0	35.5	1.0	-48.0	-13.0	-35.0	
7630.00	-11.2	V	3.0	35.8	1.0	-46.0	-13.0	-33.0	
3815.00	-19.0	H	3.0	35.8	1.0	-53.8	-13.0	-40.8	
5722.50	-14.8	H	3.0	35.5	1.0	-49.3	-13.0	-36.3	
7630.00	-10.8	H	3.0	35.8	1.0	-45.6	-13.0	-32.6	

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UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG Electronics
Project #: 15I21238
Date: 7/14/2015
Test Engineer: R.Alegre
Configuration: EUT w/ AC Charger + HS
Location: Chamber C
Mode: LTE_QPSK Band 2 Harmonics, 5MHz Bandwidth

Band
LTE2
5MHz
QPSK

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1852.5									
3705.00	-17.4	V	3.0	35.9	1.0	-52.2	-13.0	-39.2	
5557.50	-15.0	V	3.0	35.5	1.0	-49.4	-13.0	-36.4	
7410.00	-13.2	V	3.0	35.7	1.0	-47.9	-13.0	-34.9	
3705.00	-18.8	H	3.0	35.9	1.0	-53.6	-13.0	-40.6	
5557.50	-14.1	H	3.0	35.5	1.0	-48.6	-13.0	-35.6	
7410.00	-11.2	H	3.0	35.7	1.0	-45.9	-13.0	-32.9	
Mid Ch, 1880									
3760.00	-19.5	V	3.0	35.8	1.0	-54.3	-13.0	-41.3	
5640.00	-15.6	V	3.0	35.5	1.0	-50.1	-13.0	-37.1	
7520.00	-9.3	V	3.0	35.7	1.0	-44.0	-13.0	-31.0	
3760.00	-19.4	H	3.0	35.8	1.0	-54.2	-13.0	-41.2	
5640.00	-14.6	H	3.0	35.5	1.0	-49.1	-13.0	-36.1	
7520.00	-8.0	H	3.0	35.7	1.0	-42.7	-13.0	-29.7	
High Ch, 1907.5									
3815.00	-19.4	V	3.0	35.8	1.0	-54.2	-13.0	-41.2	
5722.50	-12.9	V	3.0	35.5	1.0	-47.4	-13.0	-34.4	
7630.00	-11.0	V	3.0	35.8	1.0	-45.8	-13.0	-32.8	
3815.00	-18.8	H	3.0	35.8	1.0	-53.6	-13.0	-40.6	
5722.50	-14.6	H	3.0	35.5	1.0	-49.1	-13.0	-36.1	
7630.00	-11.2	H	3.0	35.8	1.0	-45.9	-13.0	-32.9	

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UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG Electronics
Project #: 15I21238
Date: 7/14/2015
Test Engineer: R.Alegre
Configuration: EUT w/ AC Charger + HS
Location: Chamber C
Mode: LTE_16QAM Band 2 Harmonics, 3MHz Bandwidth

Band: LTE2 3MHz 16QAM

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1851.5									
3703.00	-17.9	V	3.0	35.9	1.0	-52.8	-13.0	-39.8	
5554.50	-14.7	V	3.0	35.5	1.0	-49.2	-13.0	-36.2	
7406.00	-13.6	V	3.0	35.7	1.0	-48.4	-13.0	-35.4	
3703.00	-19.5	H	3.0	35.9	1.0	-54.3	-13.0	-41.3	
5554.50	-15.1	H	3.0	35.5	1.0	-49.6	-13.0	-36.6	
7406.00	-11.5	H	3.0	35.7	1.0	-46.2	-13.0	-33.2	
Mid Ch, 1880									
3760.00	-19.8	V	3.0	35.8	1.0	-54.7	-13.0	-41.7	
5640.00	-14.0	V	3.0	35.5	1.0	-48.5	-13.0	-35.5	
7520.00	-10.0	V	3.0	35.7	1.0	-44.8	-13.0	-31.8	
3760.00	-18.5	H	3.0	35.8	1.0	-53.3	-13.0	-40.3	
5640.00	-14.0	H	3.0	35.5	1.0	-48.5	-13.0	-35.5	
7520.00	-9.2	H	3.0	35.7	1.0	-43.9	-13.0	-30.9	
High Ch, 1908.5									
3817.00	-20.3	V	3.0	35.8	1.0	-55.0	-13.0	-42.0	
5725.50	-13.7	V	3.0	35.5	1.0	-48.2	-13.0	-35.2	
7634.00	-11.2	V	3.0	35.8	1.0	-46.0	-13.0	-33.0	
3817.00	-19.3	H	3.0	35.8	1.0	-54.1	-13.0	-41.1	
5725.50	-15.4	H	3.0	35.5	1.0	-49.9	-13.0	-36.9	
7634.00	-10.3	H	3.0	35.8	1.0	-45.1	-13.0	-32.1	

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UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG Electronics
Project #: 15I21238
Date: 7/14/2015
Test Engineer: R.Alegre
Configuration: EUT w/ AC Charger + HS
Location: Chamber C
Mode: LTE_QPSK Band 2 Harmonics, 3MHz Bandwidth

Band	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch, 1851.5									
LTE2	3703.00	-17.4	V	3.0	35.9	1.0	-52.3	-13.0	-39.3	
	5554.50	-14.2	V	3.0	35.5	1.0	-48.7	-13.0	-35.7	
3MHz	7406.00	-13.5	V	3.0	35.7	1.0	-48.2	-13.0	-35.2	
	3703.00	-18.8	H	3.0	35.9	1.0	-53.6	-13.0	-40.6	
QPSK	5554.50	-14.1	H	3.0	35.5	1.0	-48.6	-13.0	-35.6	
	7406.00	-11.4	H	3.0	35.7	1.0	-46.2	-13.0	-33.2	
	Mid Ch, 1880									
	3760.00	-19.4	V	3.0	35.8	1.0	-54.2	-13.0	-41.2	
	5640.00	-14.4	V	3.0	35.5	1.0	-48.9	-13.0	-35.9	
	7520.00	-9.3	V	3.0	35.7	1.0	-44.0	-13.0	-31.0	
	3760.00	-19.4	H	3.0	35.8	1.0	-54.2	-13.0	-41.2	
	5640.00	-13.7	H	3.0	35.5	1.0	-48.2	-13.0	-35.2	
	7520.00	-8.9	H	3.0	35.7	1.0	-43.6	-13.0	-30.6	
	High Ch, 1908.5									
	3817.00	-19.4	V	3.0	35.8	1.0	-54.1	-13.0	-41.1	
	5725.50	-12.8	V	3.0	35.5	1.0	-47.3	-13.0	-34.3	
	7634.00	-11.0	V	3.0	35.8	1.0	-45.7	-13.0	-32.7	
	3817.00	-18.5	H	3.0	35.8	1.0	-53.3	-13.0	-40.3	
	5725.50	-14.6	H	3.0	35.5	1.0	-49.1	-13.0	-36.1	
	7634.00	-10.2	H	3.0	35.8	1.0	-45.0	-13.0	-32.0	

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UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG Electronics
Project #: 15I21238
Date: 7/14/2015
Test Engineer: R.Alegre
Configuration: EUT w/ AC Charger + HS
Location: Chamber C
Mode: LTE_16QAM Band 2 Harmonics, 1.4MHz Bandwidth

Band
LTE2
1.4MHz
16QAM

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1850.7									
3701.40	-17.4	V	3.0	35.9	1.0	-52.3	-13.0	-39.3	
5552.10	-14.7	V	3.0	35.5	1.0	-49.2	-13.0	-36.2	
7402.80	-13.6	V	3.0	35.7	1.0	-48.3	-13.0	-35.3	
3701.40	-18.9	H	3.0	35.9	1.0	-53.8	-13.0	-40.8	
5552.10	-14.2	H	3.0	35.5	1.0	-48.7	-13.0	-35.7	
7402.80	-11.4	H	3.0	35.7	1.0	-46.1	-13.0	-33.1	
Mid Ch, 1880									
3760.00	-19.9	V	3.0	35.8	1.0	-54.7	-13.0	-41.7	
5640.00	-14.9	V	3.0	35.5	1.0	-49.4	-13.0	-36.4	
7520.00	-12.6	V	3.0	35.7	1.0	-47.3	-13.0	-34.3	
3760.00	-18.5	H	3.0	35.8	1.0	-53.3	-13.0	-40.3	
5640.00	-14.6	H	3.0	35.5	1.0	-49.1	-13.0	-36.1	
7520.00	-9.5	H	3.0	35.7	1.0	-44.2	-13.0	-31.2	
High Ch, 1909.3									
3818.60	-20.1	V	3.0	35.8	1.0	-54.9	-13.0	-41.9	
5727.90	-13.4	V	3.0	35.5	1.0	-47.9	-13.0	-34.9	
7637.20	-10.9	V	3.0	35.8	1.0	-45.6	-13.0	-32.6	
3818.60	-19.2	H	3.0	35.8	1.0	-54.0	-13.0	-41.0	
5727.90	-15.3	H	3.0	35.5	1.0	-49.8	-13.0	-36.8	
7637.20	-10.5	H	3.0	35.8	1.0	-45.3	-13.0	-32.3	

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UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG Electronics
Project #: 15I21238
Date: 7/14/2015
Test Engineer: R.Alegre
Configuration: EUT w/ AC Charger + HS
Location: Chamber C
Mode: LTE_QPSK Band 2 Harmonics, 1.4MHz Bandwidth

Band: LTE2 1.4MHz QPSK

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1850.7									
3701.40	-17.3	V	3.0	35.9	1.0	-52.2	-13.0	-39.2	
5552.10	-14.2	V	3.0	35.5	1.0	-48.7	-13.0	-35.7	
7402.80	-13.5	V	3.0	35.7	1.0	-48.2	-13.0	-35.2	
3701.40	-18.7	H	3.0	35.9	1.0	-53.6	-13.0	-40.6	
5552.10	-14.1	H	3.0	35.5	1.0	-48.6	-13.0	-35.6	
7402.80	-11.1	H	3.0	35.7	1.0	-45.9	-13.0	-32.9	
Mid Ch, 1880									
3760.00	-19.4	V	3.0	35.8	1.0	-54.3	-13.0	-41.3	
5640.00	-14.9	V	3.0	35.5	1.0	-49.4	-13.0	-36.4	
7520.00	-12.5	V	3.0	35.7	1.0	-47.2	-13.0	-34.2	
3760.00	-19.3	H	3.0	35.8	1.0	-54.1	-13.0	-41.1	
5640.00	-14.7	H	3.0	35.5	1.0	-49.2	-13.0	-36.2	
7520.00	-9.4	H	3.0	35.7	1.0	-44.1	-13.0	-31.1	
High Ch, 1909.3									
3818.60	-19.3	V	3.0	35.8	1.0	-54.1	-13.0	-41.1	
5727.90	-12.7	V	3.0	35.5	1.0	-47.2	-13.0	-34.2	
7637.20	-10.9	V	3.0	35.8	1.0	-45.6	-13.0	-32.6	
3818.60	-18.7	H	3.0	35.8	1.0	-53.4	-13.0	-40.4	
5727.90	-14.7	H	3.0	35.5	1.0	-49.2	-13.0	-36.2	
7637.20	-11.3	H	3.0	35.8	1.0	-46.0	-13.0	-33.0	

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LTE Band 4

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I21238
Date: 7/25/2015
Test Engineer: R.Alegre
Configuration: EUT + AC Adapter + HS
Location: Chamber A
Mode: LTE_16QAM Band 4 Harmonics, 20MHz Bandwidth

Band LTE4 20MHz 16QAM

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1720									
3440.00	-20.2	V	3.0	36.0	1.0	-55.2	-13.0	-42.2	
5160.00	-16.9	V	3.0	35.4	1.0	-51.3	-13.0	-38.3	
6880.00	-13.0	V	3.0	35.7	1.0	-47.7	-13.0	-34.7	
3440.00	-19.9	H	3.0	36.0	1.0	-54.9	-13.0	-41.9	
5160.00	-15.4	H	3.0	35.4	1.0	-49.8	-13.0	-36.8	
6880.00	-12.9	H	3.0	35.7	1.0	-47.6	-13.0	-34.6	
Mid Ch, 1732.5									
3465.00	-21.2	V	3.0	36.0	1.0	-56.2	-13.0	-43.2	
5197.50	-17.0	V	3.0	35.4	1.0	-51.4	-13.0	-38.4	
6930.00	-14.0	V	3.0	35.7	1.0	-48.7	-13.0	-35.7	
3465.00	-20.9	H	3.0	36.0	1.0	-55.9	-13.0	-42.9	
5197.50	-16.0	H	3.0	35.4	1.0	-50.4	-13.0	-37.4	
6930.00	-13.4	H	3.0	35.7	1.0	-48.1	-13.0	-35.1	
High Ch, 1745									
3490.00	-20.2	V	3.0	36.0	1.0	-55.2	-13.0	-42.2	
5235.00	-15.4	V	3.0	35.4	1.0	-49.9	-13.0	-36.9	
6980.00	-13.2	V	3.0	35.7	1.0	-47.8	-13.0	-34.8	
3490.00	-19.9	H	3.0	36.0	1.0	-54.9	-13.0	-41.9	
5235.00	-15.5	H	3.0	35.4	1.0	-49.9	-13.0	-36.9	
6980.00	-12.3	H	3.0	35.7	1.0	-46.9	-13.0	-33.9	

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Band

LTE4

20MHz

QPSK

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I21238
Date: 7/25/2015
Test Engineer: R.Alegre
Configuration: EUT + AC Adapter + HS
Location: Chamber A
Mode: LTE_QPSK Band 4 Harmonics, 20MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1720									
3440.00	-20.2	V	3.0	36.0	1.0	-55.2	-13.0	-42.2	
5160.00	-16.7	V	3.0	35.4	1.0	-51.1	-13.0	-38.1	
6880.00	-13.1	V	3.0	35.7	1.0	-47.8	-13.0	-34.8	
3440.00	-20.0	H	3.0	36.0	1.0	-55.0	-13.0	-42.0	
5160.00	-15.1	H	3.0	35.4	1.0	-49.5	-13.0	-36.5	
6880.00	-12.1	H	3.0	35.7	1.0	-46.8	-13.0	-33.8	
Mid Ch, 1732.5									
3465.00	-21.3	V	3.0	36.0	1.0	-56.3	-13.0	-43.3	
5197.50	-16.9	V	3.0	35.4	1.0	-51.3	-13.0	-38.3	
6930.00	-14.0	V	3.0	35.7	1.0	-48.6	-13.0	-35.6	
3465.00	-20.8	H	3.0	36.0	1.0	-55.8	-13.0	-42.8	
5197.50	-15.9	H	3.0	35.4	1.0	-50.3	-13.0	-37.3	
6930.00	-13.4	H	3.0	35.7	1.0	-48.1	-13.0	-35.1	
High Ch, 1745									
3490.00	-20.1	V	3.0	36.0	1.0	-55.1	-13.0	-42.1	
5235.00	-15.4	V	3.0	35.4	1.0	-49.8	-13.0	-36.8	
6980.00	-12.6	V	3.0	35.7	1.0	-47.3	-13.0	-34.3	
3490.00	-19.8	H	3.0	36.0	1.0	-54.8	-13.0	-41.8	
5235.00	-15.1	H	3.0	35.4	1.0	-49.5	-13.0	-36.5	
6980.00	-12.1	H	3.0	35.7	1.0	-46.8	-13.0	-33.8	

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
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UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I21238
Date: 7/25/2015
Test Engineer: R.Alegre
Configuration: EUT + AC Adapter + HS
Location: Chamber A
Mode: LTE_16QAM Band 4 Harmonics, 15MHz Bandwidth

Band
LTE4
15MHz
16QAM

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1717.5									
3435.00	-20.2	V	3.0	36.1	1.0	-55.3	-13.0	-42.3	
5152.50	-17.0	V	3.0	35.4	1.0	-51.4	-13.0	-38.4	
6870.00	-12.5	V	3.0	35.7	1.0	-47.1	-13.0	-34.1	
3435.00	-20.2	H	3.0	36.1	1.0	-55.2	-13.0	-42.2	
5152.50	-15.4	H	3.0	35.4	1.0	-49.8	-13.0	-36.8	
6870.00	-13.1	H	3.0	35.7	1.0	-47.7	-13.0	-34.7	
Mid Ch, 1732.5									
3465.00	-20.9	V	3.0	36.0	1.0	-55.9	-13.0	-42.9	
5197.50	-17.5	V	3.0	35.4	1.0	-52.0	-13.0	-39.0	
6930.00	-13.8	V	3.0	35.7	1.0	-48.5	-13.0	-35.5	
3465.00	-21.7	H	3.0	36.0	1.0	-56.7	-13.0	-43.7	
5197.50	-16.5	H	3.0	35.4	1.0	-50.9	-13.0	-37.9	
6930.00	-13.3	H	3.0	35.7	1.0	-48.0	-13.0	-35.0	
High Ch, 1747.5									
3495.00	-20.3	V	3.0	36.0	1.0	-55.3	-13.0	-42.3	
5242.50	-14.7	V	3.0	35.4	1.0	-49.1	-13.0	-36.1	
6990.00	-13.0	V	3.0	35.7	1.0	-47.7	-13.0	-34.7	
3495.00	-19.7	H	3.0	36.0	1.0	-54.7	-13.0	-41.7	
5242.50	-15.4	H	3.0	35.4	1.0	-49.9	-13.0	-36.9	
6990.00	-12.5	H	3.0	35.7	1.0	-47.2	-13.0	-34.2	

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Band

LTE4

15MHz

QPSK

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I21238
Date: 7/25/2015
Test Engineer: R.Alegre
Configuration: EUT + AC Adapter + HS
Location: Chamber A
Mode: LTE_QPSK Band 4 Harmonics, 15MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1717.5									
3435.00	-20.1	V	3.0	36.1	1.0	-55.1	-13.0	-42.1	
5152.50	-17.2	V	3.0	35.4	1.0	-51.6	-13.0	-38.6	
6870.00	-12.2	V	3.0	35.7	1.0	-46.9	-13.0	-33.9	
3435.00	-19.5	H	3.0	36.1	1.0	-54.6	-13.0	-41.6	
5152.50	-15.4	H	3.0	35.4	1.0	-49.8	-13.0	-36.8	
6870.00	-12.2	H	3.0	35.7	1.0	-46.8	-13.0	-33.8	
Mid Ch, 1732.5									
3465.00	-21.3	V	3.0	36.0	1.0	-56.4	-13.0	-43.4	
5197.50	-17.0	V	3.0	35.4	1.0	-51.4	-13.0	-38.4	
6930.00	-13.9	V	3.0	35.7	1.0	-48.6	-13.0	-35.6	
3465.00	-21.2	H	3.0	36.0	1.0	-56.3	-13.0	-43.3	
5197.50	-16.7	H	3.0	35.4	1.0	-51.1	-13.0	-38.1	
6930.00	-12.9	H	3.0	35.7	1.0	-47.5	-13.0	-34.5	
High Ch, 1747.5									
3495.00	-20.0	V	3.0	36.0	1.0	-55.1	-13.0	-42.1	
5242.50	-14.5	V	3.0	35.4	1.0	-48.9	-13.0	-35.9	
6990.00	-12.5	V	3.0	35.7	1.0	-47.2	-13.0	-34.2	
3495.00	-19.0	H	3.0	36.0	1.0	-54.0	-13.0	-41.0	
5242.50	-15.4	H	3.0	35.4	1.0	-49.9	-13.0	-36.9	
6990.00	-12.2	H	3.0	35.7	1.0	-46.9	-13.0	-33.9	

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UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I21238
Date: 7/25/2015
Test Engineer: R.Alegre
Configuration: EUT + AC Adapter + HS
Location: Chamber A
Mode: LTE_16QAM Band 4 Harmonics, 10MHz Bandwidth

Band LTE4 10MHz 16QAM

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1715									
3430.00	-20.5	V	3.0	36.1	1.0	-55.6	-13.0	-42.6	
5145.00	-17.0	V	3.0	35.4	1.0	-51.4	-13.0	-38.4	
6860.00	-12.4	V	3.0	35.7	1.0	-47.1	-13.0	-34.1	
3430.00	-20.0	H	3.0	36.1	1.0	-55.1	-13.0	-42.1	
5145.00	-15.7	H	3.0	35.4	1.0	-50.1	-13.0	-37.1	
6860.00	-13.0	H	3.0	35.7	1.0	-47.7	-13.0	-34.7	
Mid Ch, 1732.5									
3465.00	-20.7	V	3.0	36.0	1.0	-55.7	-13.0	-42.7	
5197.50	-17.6	V	3.0	35.4	1.0	-52.0	-13.0	-39.0	
6930.00	-14.0	V	3.0	35.7	1.0	-48.7	-13.0	-35.7	
3465.00	-21.0	H	3.0	36.0	1.0	-56.0	-13.0	-43.0	
5197.50	-16.9	H	3.0	35.4	1.0	-51.3	-13.0	-38.3	
6930.00	-13.1	H	3.0	35.7	1.0	-47.7	-13.0	-34.7	
High Ch, 1750									
3500.00	-20.4	V	3.0	36.0	1.0	-55.4	-13.0	-42.4	
5250.00	-14.7	V	3.0	35.4	1.0	-49.1	-13.0	-36.1	
7000.00	-13.1	V	3.0	35.7	1.0	-47.8	-13.0	-34.8	
3500.00	-19.7	H	3.0	36.0	1.0	-54.7	-13.0	-41.7	
5250.00	-15.5	H	3.0	35.4	1.0	-50.0	-13.0	-37.0	
7000.00	-12.5	H	3.0	35.7	1.0	-47.2	-13.0	-34.2	

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Band

LTE4

10MHz

QPSK

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I21238
Date: 7/25/2015
Test Engineer: R.Alegre
Configuration: EUT + AC Adapter + HS
Location: Chamber A
Mode: LTE_QPSK Band 4 Harmonics, 10MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1715									
3430.00	-20.2	V	3.0	36.1	1.0	-55.2	-13.0	-42.2	
5145.00	-16.9	V	3.0	35.4	1.0	-51.3	-13.0	-38.3	
6860.00	-12.1	V	3.0	35.7	1.0	-46.8	-13.0	-33.8	
3430.00	-19.7	H	3.0	36.1	1.0	-54.7	-13.0	-41.7	
5145.00	-15.4	H	3.0	35.4	1.0	-49.8	-13.0	-36.8	
6860.00	-12.5	H	3.0	35.7	1.0	-47.2	-13.0	-34.2	
Mid Ch, 1732.5									
3465.00	-20.7	V	3.0	36.0	1.0	-55.7	-13.0	-42.7	
5197.50	-16.4	V	3.0	35.4	1.0	-50.8	-13.0	-37.8	
6930.00	-13.9	V	3.0	35.7	1.0	-48.6	-13.0	-35.6	
3465.00	-20.2	H	3.0	36.0	1.0	-55.2	-13.0	-42.2	
5197.50	-16.7	H	3.0	35.4	1.0	-51.1	-13.0	-38.1	
6930.00	-13.0	H	3.0	35.7	1.0	-47.7	-13.0	-34.7	
High Ch, 1750									
3500.00	-20.0	V	3.0	36.0	1.0	-55.0	-13.0	-42.0	
5250.00	-14.4	V	3.0	35.4	1.0	-48.9	-13.0	-35.9	
7000.00	-12.6	V	3.0	35.7	1.0	-47.2	-13.0	-34.2	
3500.00	-18.9	H	3.0	36.0	1.0	-53.9	-13.0	-40.9	
5250.00	-15.5	H	3.0	35.4	1.0	-49.9	-13.0	-36.9	
7000.00	-12.3	H	3.0	35.7	1.0	-47.0	-13.0	-34.0	

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UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I21238
Date: 7/25/2015
Test Engineer: R.Alegre
Configuration: EUT + AC Adapter + HS
Location: Chamber A
Mode: LTE_16QAM Band 4 Harmonics, 5MHz Bandwidth

Band
LTE4
5MHz
16QAM

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1712.5									
3425.00	-20.2	V	3.0	36.1	1.0	-55.3	-13.0	-42.3	
5137.50	-16.8	V	3.0	35.4	1.0	-51.2	-13.0	-38.2	
6850.00	-12.2	V	3.0	35.7	1.0	-46.8	-13.0	-33.8	
3425.00	-19.6	H	3.0	36.1	1.0	-54.7	-13.0	-41.7	
5137.50	-15.2	H	3.0	35.4	1.0	-49.7	-13.0	-36.7	
6850.00	-12.9	H	3.0	35.7	1.0	-47.5	-13.0	-34.5	
Mid Ch, 1732.5									
3465.00	-21.1	V	3.0	36.0	1.0	-56.1	-13.0	-43.1	
5197.50	-15.5	V	3.0	35.4	1.0	-49.9	-13.0	-36.9	
6930.00	-12.3	V	3.0	35.7	1.0	-46.9	-13.0	-33.9	
3465.00	-19.8	H	3.0	36.0	1.0	-54.8	-13.0	-41.8	
5197.50	-15.5	H	3.0	35.4	1.0	-49.9	-13.0	-36.9	
6930.00	-13.0	H	3.0	35.7	1.0	-47.6	-13.0	-34.6	
High Ch, 1752.5									
3505.00	-20.4	V	3.0	36.0	1.0	-55.4	-13.0	-42.4	
5257.50	-14.5	V	3.0	35.4	1.0	-48.9	-13.0	-35.9	
7010.00	-13.0	V	3.0	35.7	1.0	-47.7	-13.0	-34.7	
3505.00	-19.7	H	3.0	36.0	1.0	-54.7	-13.0	-41.7	
5257.50	-15.4	H	3.0	35.4	1.0	-49.9	-13.0	-36.9	
7010.00	-12.5	H	3.0	35.7	1.0	-47.2	-13.0	-34.2	

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Band

LTE4

5MHz

QPSK

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I21238
Date: 7/25/2015
Test Engineer: R.Alegre
Configuration: EUT + AC Adapter + HS
Location: Chamber A
Mode: LTE_QPSK Band 4 Harmonics, 5MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1712.5									
3425.00	-20.1	V	3.0	36.1	1.0	-55.1	-13.0	-42.1	
5137.50	-16.5	V	3.0	35.4	1.0	-50.9	-13.0	-37.9	
6850.00	-12.2	V	3.0	35.7	1.0	-46.9	-13.0	-33.9	
3425.00	-19.8	H	3.0	36.1	1.0	-54.9	-13.0	-41.9	
5137.50	-15.3	H	3.0	35.4	1.0	-49.8	-13.0	-36.8	
6850.00	-13.3	H	3.0	35.7	1.0	-47.9	-13.0	-34.9	
Mid Ch, 1732.5									
3465.00	-20.9	V	3.0	36.0	1.0	-56.0	-13.0	-43.0	
5197.50	-15.6	V	3.0	35.4	1.0	-50.0	-13.0	-37.0	
6930.00	-12.3	V	3.0	35.7	1.0	-47.0	-13.0	-34.0	
3465.00	-19.5	H	3.0	36.0	1.0	-54.5	-13.0	-41.5	
5197.50	-15.4	H	3.0	35.4	1.0	-49.8	-13.0	-36.8	
6930.00	-12.8	H	3.0	35.7	1.0	-47.4	-13.0	-34.4	
High Ch, 1752.5									
3505.00	-20.0	V	3.0	36.0	1.0	-55.0	-13.0	-42.0	
5257.50	-14.3	V	3.0	35.4	1.0	-48.7	-13.0	-35.7	
7010.00	-12.5	V	3.0	35.7	1.0	-47.2	-13.0	-34.2	
3505.00	-18.9	H	3.0	36.0	1.0	-53.9	-13.0	-40.9	
5257.50	-15.2	H	3.0	35.4	1.0	-49.7	-13.0	-36.7	
7010.00	-12.4	H	3.0	35.7	1.0	-47.1	-13.0	-34.1	

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UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I21238
Date: 7/25/2015
Test Engineer: R.Alegre
Configuration: EUT + AC Adapter + HS
Location: Chamber A
Mode: LTE_16QAM Band 4 Harmonics, 3MHz Bandwidth

Band
LTE4
3MHz
16QAM

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1711.5									
3423.00	-20.4	V	3.0	36.1	1.0	-55.5	-13.0	-42.5	
5134.50	-17.0	V	3.0	35.4	1.0	-51.4	-13.0	-38.4	
6846.00	-12.1	V	3.0	35.7	1.0	-46.8	-13.0	-33.8	
3423.00	-20.1	H	3.0	36.1	1.0	-55.1	-13.0	-42.1	
5134.50	-15.7	H	3.0	35.4	1.0	-50.2	-13.0	-37.2	
6846.00	-13.2	H	3.0	35.7	1.0	-47.9	-13.0	-34.9	
Mid Ch, 1732.5									
3465.00	-20.9	V	3.0	36.0	1.0	-55.9	-13.0	-42.9	
5197.50	-15.8	V	3.0	35.4	1.0	-50.2	-13.0	-37.2	
6930.00	-12.3	V	3.0	35.7	1.0	-47.0	-13.0	-34.0	
3465.00	-20.0	H	3.0	36.0	1.0	-55.0	-13.0	-42.0	
5197.50	-15.1	H	3.0	35.4	1.0	-49.5	-13.0	-36.5	
6930.00	-12.3	H	3.0	35.7	1.0	-47.0	-13.0	-34.0	
High Ch, 1753.5									
3507.00	-20.3	V	3.0	36.0	1.0	-55.3	-13.0	-42.3	
5260.50	-14.7	V	3.0	35.4	1.0	-49.2	-13.0	-36.2	
7014.00	-12.9	V	3.0	35.7	1.0	-47.6	-13.0	-34.6	
3507.00	-19.7	H	3.0	36.0	1.0	-54.7	-13.0	-41.7	
5260.50	-15.5	H	3.0	35.4	1.0	-50.0	-13.0	-37.0	
7014.00	-12.5	H	3.0	35.7	1.0	-47.2	-13.0	-34.2	

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UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I21238
Date: 7/25/2015
Test Engineer: R.Alegre
Configuration: EUT + AC Adapter + HS
Location: Chamber A
Mode: LTE_QPSK Band 4 Harmonics, 3MHz Bandwidth

Band
LTE4
3MHz
QPSK

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1711.5									
3423.00	-20.2	V	3.0	36.1	1.0	-55.2	-13.0	-42.2	
5134.50	-16.9	V	3.0	35.4	1.0	-51.4	-13.0	-38.4	
6846.00	-12.2	V	3.0	35.7	1.0	-46.9	-13.0	-33.9	
3423.00	-19.3	H	3.0	36.1	1.0	-54.4	-13.0	-41.4	
5134.50	-14.8	H	3.0	35.4	1.0	-49.3	-13.0	-36.3	
6846.00	-13.0	H	3.0	35.7	1.0	-47.7	-13.0	-34.7	
Mid Ch, 1732.5									
3465.00	-20.8	V	3.0	36.0	1.0	-55.9	-13.0	-42.9	
5197.50	-15.5	V	3.0	35.4	1.0	-50.0	-13.0	-37.0	
6930.00	-12.4	V	3.0	35.7	1.0	-47.0	-13.0	-34.0	
3465.00	-19.9	H	3.0	36.0	1.0	-54.9	-13.0	-41.9	
5197.50	-15.0	H	3.0	35.4	1.0	-49.4	-13.0	-36.4	
6930.00	-12.5	H	3.0	35.7	1.0	-47.2	-13.0	-34.2	
High Ch, 1753.5									
3507.00	-19.8	V	3.0	36.0	1.0	-54.8	-13.0	-41.8	
5260.50	-14.4	V	3.0	35.4	1.0	-48.8	-13.0	-35.8	
7014.00	-12.6	V	3.0	35.7	1.0	-47.3	-13.0	-34.3	
3507.00	-18.9	H	3.0	36.0	1.0	-53.9	-13.0	-40.9	
5260.50	-15.5	H	3.0	35.4	1.0	-49.9	-13.0	-36.9	
7014.00	-12.3	H	3.0	35.7	1.0	-47.0	-13.0	-34.0	

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Band

LTE4

1.4MHz

16QAM

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I21238
Date: 7/25/2015
Test Engineer: R.Alegre
Configuration: EUT + AC Adapter + HS
Location: Chamber A
Mode: LTE_16QAM Band 4 Harmonics, 1.4MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1710.7									
3421.40	-20.6	V	3.0	36.1	1.0	-55.7	-13.0	-42.7	
5132.10	-16.8	V	3.0	35.4	1.0	-51.3	-13.0	-38.3	
6842.80	-12.4	V	3.0	35.7	1.0	-47.1	-13.0	-34.1	
3421.40	-20.2	H	3.0	36.1	1.0	-55.3	-13.0	-42.3	
5132.10	-15.7	H	3.0	35.4	1.0	-50.1	-13.0	-37.1	
6842.80	-13.1	H	3.0	35.7	1.0	-47.8	-13.0	-34.8	
Mid Ch, 1732.5									
3465.00	-20.8	V	3.0	36.0	1.0	-55.9	-13.0	-42.9	
5197.50	-15.6	V	3.0	35.4	1.0	-50.0	-13.0	-37.0	
6930.00	-12.2	V	3.0	35.7	1.0	-46.9	-13.0	-33.9	
3465.00	-19.5	H	3.0	36.0	1.0	-54.6	-13.0	-41.6	
5197.50	-7.2	H	3.0	35.4	1.0	-41.6	-13.0	-28.6	
6930.00	-13.1	H	3.0	35.7	1.0	-47.7	-13.0	-34.7	
High Ch, 1754.3									
3508.60	-20.6	V	3.0	36.0	1.0	-55.6	-13.0	-42.6	
5262.90	-14.9	V	3.0	35.4	1.0	-49.3	-13.0	-36.3	
7017.20	-13.0	V	3.0	35.7	1.0	-47.7	-13.0	-34.7	
3508.60	-19.6	H	3.0	36.0	1.0	-54.6	-13.0	-41.6	
5262.90	-15.4	H	3.0	35.4	1.0	-49.8	-13.0	-36.8	
7017.20	-12.5	H	3.0	35.7	1.0	-47.2	-13.0	-34.2	

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UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I21238
Date: 7/25/2015
Test Engineer: R.Alegre
Configuration: EUT + AC Adapter + HS
Location: Chamber A
Mode: LTE_QPSK Band 4 Harmonics, 1.4MHz Bandwidth

Band LTE4 1.4MHz QPSK

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1710.7									
3421.40	-20.2	V	3.0	36.1	1.0	-55.3	-13.0	-42.3	
5132.10	-16.9	V	3.0	35.4	1.0	-51.4	-13.0	-38.4	
6842.80	-12.2	V	3.0	35.7	1.0	-46.9	-13.0	-33.9	
3421.40	-19.7	H	3.0	36.1	1.0	-54.7	-13.0	-41.7	
5132.10	-15.2	H	3.0	35.4	1.0	-49.6	-13.0	-36.6	
6842.80	-12.6	H	3.0	35.7	1.0	-47.3	-13.0	-34.3	
Mid Ch, 1732.5									
3465.00	-20.7	V	3.0	36.0	1.0	-55.8	-13.0	-42.8	
5197.50	-15.5	V	3.0	35.4	1.0	-49.9	-13.0	-36.9	
6930.00	-12.1	V	3.0	35.7	1.0	-46.7	-13.0	-33.7	
3465.00	-19.4	H	3.0	36.0	1.0	-54.4	-13.0	-41.4	
5197.50	-6.8	H	3.0	35.4	1.0	-41.2	-13.0	-28.2	
6930.00	-13.0	H	3.0	35.7	1.0	-47.6	-13.0	-34.6	
High Ch, 1754.3									
3508.60	-20.0	V	3.0	36.0	1.0	-54.9	-13.0	-41.9	
5262.90	-14.3	V	3.0	35.4	1.0	-48.7	-13.0	-35.7	
7017.20	-12.6	V	3.0	35.7	1.0	-47.3	-13.0	-34.3	
3508.60	-18.8	H	3.0	36.0	1.0	-53.8	-13.0	-40.8	
5262.90	-15.5	H	3.0	35.4	1.0	-49.9	-13.0	-36.9	
7017.20	-12.3	H	3.0	35.7	1.0	-47.0	-13.0	-34.0	

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LTE Band 5

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I21238
Date: 7/28/2015
Test Engineer: A. Escamilla
Configuration: EUT , AC Adapter, HS
Location: Chamber B
Mode: LTE_16QAM Band 5 Harmonics, 10MHz Bandwidth

Band LTE5 10MHz 16QAM

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 829									
1658.00	-29.1	V	3.0	37.0	1.0	-65.1	-13.0	-52.1	
2487.00	-23.5	V	3.0	36.4	1.0	-58.9	-13.0	-45.9	
3316.00	-20.8	V	3.0	36.1	1.0	-56.0	-13.0	-43.0	
1658.00	-29.3	H	3.0	37.0	1.0	-65.3	-13.0	-52.3	
2487.00	-26.1	H	3.0	36.4	1.0	-61.5	-13.0	-48.5	
3316.00	-20.4	H	3.0	36.1	1.0	-55.5	-13.0	-42.5	
Mid Ch, 836.5									
1673.00	-29.4	V	3.0	37.0	1.0	-65.4	-13.0	-52.4	
2509.50	-23.6	V	3.0	36.4	1.0	-59.0	-13.0	-46.0	
3346.00	-19.8	V	3.0	36.1	1.0	-54.9	-13.0	-41.9	
1673.00	-28.5	H	3.0	37.0	1.0	-64.5	-13.0	-51.5	
2509.50	-25.6	H	3.0	36.4	1.0	-61.0	-13.0	-48.0	
3346.00	-20.0	H	3.0	36.1	1.0	-55.1	-13.0	-42.1	
High Ch, 844									
1688.00	-29.5	V	3.0	37.0	1.0	-65.4	-13.0	-52.4	
2532.00	-23.9	V	3.0	36.4	1.0	-59.3	-13.0	-46.3	
3376.00	-20.3	V	3.0	36.1	1.0	-55.4	-13.0	-42.4	
1688.00	-28.7	H	3.0	37.0	1.0	-64.7	-13.0	-51.7	
2532.00	-25.0	H	3.0	36.4	1.0	-60.4	-13.0	-47.4	
3376.00	-20.7	H	3.0	36.1	1.0	-55.7	-13.0	-42.7	

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UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I21238
Date: 7/28/2015
Test Engineer: A. Escamilla
Configuration: EUT , AC Adapter, HS
Location: Chamber B
Mode: LTE_QPSK Band 5 Harmonics, 10MHz Bandwidth

Band
LTE5
10MHz
QPSK

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 829									
1658.00	-29.2	V	3.0	37.0	1.0	-65.2	-13.0	-52.2	
2487.00	-23.0	V	3.0	36.4	1.0	-58.4	-13.0	-45.4	
3316.00	-20.2	V	3.0	36.1	1.0	-55.4	-13.0	-42.4	
1658.00	-28.9	H	3.0	37.0	1.0	-64.9	-13.0	-51.9	
2487.00	-25.5	H	3.0	36.4	1.0	-60.9	-13.0	-47.9	
3316.00	-20.2	H	3.0	36.1	1.0	-55.3	-13.0	-42.3	
Mid Ch, 836.5									
1673.00	-28.8	V	3.0	37.0	1.0	-64.8	-13.0	-51.8	
2509.50	-23.7	V	3.0	36.4	1.0	-59.1	-13.0	-46.1	
3346.00	-20.1	V	3.0	36.1	1.0	-55.2	-13.0	-42.2	
1673.00	-28.8	H	3.0	37.0	1.0	-64.8	-13.0	-51.8	
2509.50	-25.3	H	3.0	36.4	1.0	-60.7	-13.0	-47.7	
3346.00	-19.8	H	3.0	36.1	1.0	-54.9	-13.0	-41.9	
High Ch, 844									
1688.00	-29.2	V	3.0	37.0	1.0	-65.1	-13.0	-52.1	
2532.00	-23.5	V	3.0	36.4	1.0	-58.9	-13.0	-45.9	
3376.00	-19.8	V	3.0	36.1	1.0	-54.9	-13.0	-41.9	
1688.00	-28.6	H	3.0	37.0	1.0	-64.5	-13.0	-51.5	
2532.00	-25.0	H	3.0	36.4	1.0	-60.4	-13.0	-47.4	
3376.00	-20.0	H	3.0	36.1	1.0	-55.1	-13.0	-42.1	

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UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I21238
Date: 7/28/2015
Test Engineer: A. Escamilla
Configuration: EUT , AC Adapter, HS
Location: Chamber B
Mode: LTE_16QAM Band 5 Harmonics, 5MHz Bandwidth

Band
LTE5
5MHz
16QAM

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 826.5									
1653.00	-29.7	V	3.0	37.0	1.0	-65.7	-13.0	-52.7	
2479.50	-23.7	V	3.0	36.4	1.0	-59.1	-13.0	-46.1	
3306.00	-20.6	V	3.0	36.1	1.0	-55.8	-13.0	-42.8	
1653.00	-29.0	H	3.0	37.0	1.0	-65.0	-13.0	-52.0	
2479.50	-25.3	H	3.0	36.4	1.0	-60.7	-13.0	-47.7	
3306.00	-21.0	H	3.0	36.1	1.0	-56.2	-13.0	-43.2	
Mid Ch, 836.5									
1673.00	-29.1	V	3.0	37.0	1.0	-65.1	-13.0	-52.1	
2509.50	-23.3	V	3.0	36.4	1.0	-58.7	-13.0	-45.7	
3346.00	-20.5	V	3.0	36.1	1.0	-55.6	-13.0	-42.6	
1673.00	-28.6	H	3.0	37.0	1.0	-64.6	-13.0	-51.6	
2509.50	-26.0	H	3.0	36.4	1.0	-61.4	-13.0	-48.4	
3346.00	-20.4	H	3.0	36.1	1.0	-55.5	-13.0	-42.5	
High Ch, 846.5									
1693.00	-28.8	V	3.0	37.0	1.0	-64.8	-13.0	-51.8	
2539.50	-23.4	V	3.0	36.4	1.0	-58.8	-13.0	-45.8	
3386.00	-20.4	V	3.0	36.1	1.0	-55.5	-13.0	-42.5	
1693.00	-28.8	H	3.0	37.0	1.0	-64.8	-13.0	-51.8	
2539.50	-25.1	H	3.0	36.4	1.0	-60.5	-13.0	-47.5	
3386.00	-20.2	H	3.0	36.1	1.0	-55.3	-13.0	-42.3	

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Band

LTE5

5MHz

QPSK

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I21238
Date: 7/28/2015
Test Engineer: A. Escamilla
Configuration: EUT , AC Adapter, HS
Location: Chamber B
Mode: LTE_QPSK Band 5 Harmonics, 5MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 826.5									
1653.00	-29.3	V	3.0	37.0	1.0	-65.3	-13.0	-52.3	
2479.50	-23.2	V	3.0	36.4	1.0	-58.7	-13.0	-45.7	
3306.00	-20.7	V	3.0	36.1	1.0	-55.8	-13.0	-42.8	
1653.00	-29.0	H	3.0	37.0	1.0	-65.0	-13.0	-52.0	
2479.50	-25.2	H	3.0	36.4	1.0	-60.7	-13.0	-47.7	
3306.00	-20.7	H	3.0	36.1	1.0	-55.9	-13.0	-42.9	
Mid Ch, 836.5									
1673.00	-29.0	V	3.0	37.0	1.0	-65.0	-13.0	-52.0	
2509.50	-23.2	V	3.0	36.4	1.0	-58.6	-13.0	-45.6	
3346.00	-20.5	V	3.0	36.1	1.0	-55.6	-13.0	-42.6	
1673.00	-29.0	H	3.0	37.0	1.0	-64.9	-13.0	-51.9	
2509.50	-25.0	H	3.0	36.4	1.0	-60.4	-13.0	-47.4	
3346.00	-20.3	H	3.0	36.1	1.0	-55.4	-13.0	-42.4	
High Ch, 846.5									
1693.00	-29.0	V	3.0	37.0	1.0	-65.0	-13.0	-52.0	
2539.50	-23.5	V	3.0	36.4	1.0	-58.9	-13.0	-45.9	
3386.00	-20.8	V	3.0	36.1	1.0	-55.9	-13.0	-42.9	
1693.00	-29.0	H	3.0	37.0	1.0	-64.9	-13.0	-51.9	
2539.50	-25.1	H	3.0	36.4	1.0	-60.5	-13.0	-47.5	
3386.00	-20.0	H	3.0	36.1	1.0	-55.1	-13.0	-42.1	

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UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I21238
Date: 7/28/2015
Test Engineer: A. Escamilla
Configuration: EUT , AC Adapter, HS
Location: Chamber B
Mode: LTE_16QAM Band 5 Harmonics, 3MHz Bandwidth

Band
LTE5
3MHz
16QAM

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 825.5									
1651.00	-29.9	V	3.0	37.0	1.0	-65.9	-13.0	-52.9	
2476.50	-23.8	V	3.0	36.4	1.0	-59.2	-13.0	-46.2	
3302.00	-20.3	V	3.0	36.2	1.0	-55.5	-13.0	-42.5	
1651.00	-29.1	H	3.0	37.0	1.0	-65.1	-13.0	-52.1	
2476.50	-25.6	H	3.0	36.4	1.0	-61.0	-13.0	-48.0	
3302.00	-20.4	H	3.0	36.2	1.0	-55.6	-13.0	-42.6	
Mid Ch, 836.5									
1673.00	-29.6	V	3.0	37.0	1.0	-65.6	-13.0	-52.6	
2509.50	-23.3	V	3.0	36.4	1.0	-58.7	-13.0	-45.7	
3346.00	-20.1	V	3.0	36.1	1.0	-55.2	-13.0	-42.2	
1673.00	-29.2	H	3.0	37.0	1.0	-65.2	-13.0	-52.2	
2509.50	-25.6	H	3.0	36.4	1.0	-61.0	-13.0	-48.0	
3346.00	-20.9	H	3.0	36.1	1.0	-56.0	-13.0	-43.0	
High Ch, 847.5									
1695.00	-29.5	V	3.0	37.0	1.0	-65.4	-13.0	-52.4	
2542.50	-23.6	V	3.0	36.4	1.0	-59.0	-13.0	-46.0	
3390.00	-21.1	V	3.0	36.1	1.0	-56.2	-13.0	-43.2	
1695.00	-28.8	H	3.0	37.0	1.0	-64.8	-13.0	-51.8	
2542.50	-24.6	H	3.0	36.4	1.0	-60.0	-13.0	-47.0	
3390.00	-20.6	H	3.0	36.1	1.0	-55.7	-13.0	-42.7	

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Band

LTE5

3MHz

QPSK

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I21238
Date: 7/28/2015
Test Engineer: A. Escamilla
Configuration: EUT , AC Adapter, HS
Location: Chamber B
Mode: LTE_QPSK Band 5 Harmonics, 3MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 825.5									
1651.00	-29.9	V	3.0	37.0	1.0	-65.9	-13.0	-52.9	
2476.50	-23.4	V	3.0	36.4	1.0	-58.8	-13.0	-45.8	
3302.00	-20.5	V	3.0	36.2	1.0	-55.7	-13.0	-42.7	
1651.00	-29.7	H	3.0	37.0	1.0	-65.7	-13.0	-52.7	
2476.50	-25.5	H	3.0	36.4	1.0	-60.9	-13.0	-47.9	
3302.00	-20.7	H	3.0	36.2	1.0	-55.9	-13.0	-42.9	
Mid Ch, 836.5									
1673.00	-28.9	V	3.0	37.0	1.0	-64.9	-13.0	-51.9	
2509.50	-22.5	V	3.0	36.4	1.0	-57.9	-13.0	-44.9	
3346.00	-20.6	V	3.0	36.1	1.0	-55.7	-13.0	-42.7	
1673.00	-29.5	H	3.0	37.0	1.0	-65.4	-13.0	-52.4	
2509.50	-24.8	H	3.0	36.4	1.0	-60.2	-13.0	-47.2	
3346.00	-20.4	H	3.0	36.1	1.0	-55.6	-13.0	-42.6	
High Ch, 847.5									
1695.00	-29.4	V	3.0	37.0	1.0	-65.4	-13.0	-52.4	
2542.50	-23.9	V	3.0	36.4	1.0	-59.3	-13.0	-46.3	
3390.00	-21.1	V	3.0	36.1	1.0	-56.2	-13.0	-43.2	
1695.00	-29.1	H	3.0	37.0	1.0	-65.1	-13.0	-52.1	
2542.50	-25.0	H	3.0	36.4	1.0	-60.4	-13.0	-47.4	
3390.00	-20.8	H	3.0	36.1	1.0	-55.9	-13.0	-42.9	

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
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UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I21238
Date: 7/28/2015
Test Engineer: A. Escamilla
Configuration: EUT , AC Adapter, HS
Location: Chamber B
Mode: LTE_16QAM Band 5 Harmonics, 1.4MHz Bandwidth

Band
LTE5
1.4MHz
16QAM

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 824.7									
1649.40	-29.4	V	3.0	37.0	1.0	-65.5	-13.0	-52.5	
2474.10	-24.1	V	3.0	36.4	1.0	-59.5	-13.0	-46.5	
3298.80	-20.9	V	3.0	36.2	1.0	-56.1	-13.0	-43.1	
1649.40	-29.3	H	3.0	37.0	1.0	-65.4	-13.0	-52.4	
2474.10	-25.6	H	3.0	36.4	1.0	-61.0	-13.0	-48.0	
3298.80	-20.8	H	3.0	36.2	1.0	-55.9	-13.0	-42.9	
Mid Ch, 836.5									
1673.00	-29.7	V	3.0	37.0	1.0	-65.7	-13.0	-52.7	
2509.50	-23.4	V	3.0	36.4	1.0	-58.8	-13.0	-45.8	
3346.00	-20.7	V	3.0	36.1	1.0	-55.8	-13.0	-42.8	
1673.00	-28.9	H	3.0	37.0	1.0	-64.9	-13.0	-51.9	
2509.50	-25.3	H	3.0	36.4	1.0	-60.7	-13.0	-47.7	
3346.00	-20.8	H	3.0	36.1	1.0	-55.9	-13.0	-42.9	
High Ch, 848.3									
1696.60	-29.1	V	3.0	37.0	1.0	-65.1	-13.0	-52.1	
2544.90	-23.8	V	3.0	36.4	1.0	-59.2	-13.0	-46.2	
3393.20	-20.5	V	3.0	36.1	1.0	-55.6	-13.0	-42.6	
1696.60	-29.1	H	3.0	37.0	1.0	-65.1	-13.0	-52.1	
2544.90	-25.2	H	3.0	36.4	1.0	-60.6	-13.0	-47.6	
3393.20	-20.3	H	3.0	36.1	1.0	-55.4	-13.0	-42.4	

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UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I21238
Date: 7/28/2015
Test Engineer: A. Escamilla
Configuration: EUT , AC Adapter, HS
Location: Chamber B
Mode: LTE_QPSK Band 5 Harmonics, 1.4MHz Bandwidth

Band LTE5 1.4MHz QPSK

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 824.7									
1649.40	-29.4	V	3.0	37.0	1.0	-65.4	-13.0	-52.4	
2474.10	-23.4	V	3.0	36.4	1.0	-58.9	-13.0	-45.9	
3298.80	-20.0	V	3.0	36.2	1.0	-55.1	-13.0	-42.1	
1649.40	-29.7	H	3.0	37.0	1.0	-65.8	-13.0	-52.8	
2474.10	-25.2	H	3.0	36.4	1.0	-60.6	-13.0	-47.6	
3298.80	-20.6	H	3.0	36.2	1.0	-55.7	-13.0	-42.7	
Mid Ch, 836.5									
1673.00	-29.5	V	3.0	37.0	1.0	-65.5	-13.0	-52.5	
2509.50	-23.3	V	3.0	36.4	1.0	-58.7	-13.0	-45.7	
3346.00	-20.1	V	3.0	36.1	1.0	-55.2	-13.0	-42.2	
1673.00	-28.8	H	3.0	37.0	1.0	-64.8	-13.0	-51.8	
2509.50	-25.3	H	3.0	36.4	1.0	-60.7	-13.0	-47.7	
3346.00	-20.7	H	3.0	36.1	1.0	-55.8	-13.0	-42.8	
High Ch, 848.3									
1696.60	-28.8	V	3.0	37.0	1.0	-64.8	-13.0	-51.8	
2544.90	-23.1	V	3.0	36.4	1.0	-58.5	-13.0	-45.5	
3393.20	-20.0	V	3.0	36.1	1.0	-55.0	-13.0	-42.0	
1696.60	-29.2	H	3.0	37.0	1.0	-65.2	-13.0	-52.2	
2544.90	-25.2	H	3.0	36.4	1.0	-60.6	-13.0	-47.6	
3393.20	-20.3	H	3.0	36.1	1.0	-55.4	-13.0	-42.4	

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LTE Band 12

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I21238
Date: 7/25/2015
Test Engineer: R.Alegre
Configuration: EUT , AC Adapter /HS
Location: Chamber C
Mode: LTE_16QAM Band 12 Harmonics, 10MHz Bandwidth

Band: LTE12 10MHz 16QAM

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch,704									
1408.00	-31.6	V	3.0	37.4	1.0	-68.0	-13.0	-55.0	
2112.00	-23.5	V	3.0	36.6	1.0	-59.0	-13.0	-46.0	
2816.00	-22.9	V	3.0	36.4	1.0	-58.3	-13.0	-45.3	
1408.00	-29.5	H	3.0	37.4	1.0	-65.9	-13.0	-52.9	
2112.00	-25.0	H	3.0	36.6	1.0	-60.5	-13.0	-47.5	
2816.00	-24.0	H	3.0	36.4	1.0	-59.3	-13.0	-46.3	
Mid Ch,707.5									
1415.00	-31.1	V	3.0	37.3	1.0	-67.5	-13.0	-54.5	
2122.50	-23.0	V	3.0	36.6	1.0	-58.6	-13.0	-45.6	
2830.00	-22.1	V	3.0	36.4	1.0	-57.5	-13.0	-44.5	
1415.00	-30.2	H	3.0	37.3	1.0	-66.5	-13.0	-53.5	
2122.50	-24.7	H	3.0	36.6	1.0	-60.3	-13.0	-47.3	
2830.00	-23.9	H	3.0	36.4	1.0	-59.3	-13.0	-46.3	
High Ch,711									
1422.00	-31.3	V	3.0	37.3	1.0	-67.7	-13.0	-54.7	
2133.00	-23.5	V	3.0	36.6	1.0	-59.0	-13.0	-46.0	
2844.00	-22.7	V	3.0	36.4	1.0	-58.1	-13.0	-45.1	
1422.00	-29.6	H	3.0	37.3	1.0	-65.9	-13.0	-52.9	
2133.00	-25.2	H	3.0	36.6	1.0	-60.8	-13.0	-47.8	
2844.00	-23.7	H	3.0	36.4	1.0	-59.1	-13.0	-46.1	

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UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I21238
Date: 7/25/2015
Test Engineer: R.Alegre
Configuration: EUT , AC Adapter /HS
Location: Chamber C
Mode: LTE_QPSK Band 12 Harmonics, 10MHz Bandwidth

Band
LTE12
10MHz
QPSK

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch,704									
1408.00	-31.1	V	3.0	37.4	1.0	-67.5	-13.0	-54.5	
2112.00	-23.0	V	3.0	36.6	1.0	-58.6	-13.0	-45.6	
2816.00	-22.8	V	3.0	36.4	1.0	-58.2	-13.0	-45.2	
1408.00	-29.4	H	3.0	37.4	1.0	-65.8	-13.0	-52.8	
2112.00	-24.5	H	3.0	36.6	1.0	-60.0	-13.0	-47.0	
2816.00	-23.3	H	3.0	36.4	1.0	-58.7	-13.0	-45.7	
Mid Ch,707.5									
1415.00	-30.3	V	3.0	37.3	1.0	-66.7	-13.0	-53.7	
2122.50	-22.8	V	3.0	36.6	1.0	-58.4	-13.0	-45.4	
2830.00	-22.7	V	3.0	36.4	1.0	-58.1	-13.0	-45.1	
1415.00	-29.5	H	3.0	37.3	1.0	-65.8	-13.0	-52.8	
2122.50	-24.9	H	3.0	36.6	1.0	-60.5	-13.0	-47.5	
2830.00	-23.6	H	3.0	36.4	1.0	-59.0	-13.0	-46.0	
High Ch,711									
1422.00	-31.2	V	3.0	37.3	1.0	-67.6	-13.0	-54.6	
2133.00	-23.8	V	3.0	36.6	1.0	-59.4	-13.0	-46.4	
2844.00	-22.4	V	3.0	36.4	1.0	-57.8	-13.0	-44.8	
1422.00	-29.2	H	3.0	37.3	1.0	-65.6	-13.0	-52.6	
2133.00	-24.9	H	3.0	36.6	1.0	-60.5	-13.0	-47.5	
2844.00	-23.4	H	3.0	36.4	1.0	-58.7	-13.0	-45.7	

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
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UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I21238
Date: 7/25/2015
Test Engineer: R.Alegre
Configuration: EUT , AC Adapter /HS
Location: Chamber C
Mode: LTE_16QAM Band 12 Harmonics, 5MHz Bandwidth

Band
LTE12
5MHz
16QAM

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 701.50									
1403.00	-31.4	V	3.0	37.4	1.0	-67.8	-13.0	-54.8	
2104.50	-23.2	V	3.0	36.6	1.0	-58.7	-13.0	-45.7	
2806.00	-22.3	V	3.0	36.4	1.0	-57.7	-13.0	-44.7	
1403.00	-30.0	H	3.0	37.4	1.0	-66.3	-13.0	-53.3	
2104.50	-25.1	H	3.0	36.6	1.0	-60.7	-13.0	-47.7	
2806.00	-23.5	H	3.0	36.4	1.0	-58.9	-13.0	-45.9	
Mid Ch, 707.50									
1415.00	-31.1	V	3.0	37.3	1.0	-67.5	-13.0	-54.5	
2122.50	-23.1	V	3.0	36.6	1.0	-58.7	-13.0	-45.7	
2830.00	-23.0	V	3.0	36.4	1.0	-58.4	-13.0	-45.4	
1415.00	-30.2	H	3.0	37.3	1.0	-66.6	-13.0	-53.6	
2122.50	-24.8	H	3.0	36.6	1.0	-60.3	-13.0	-47.3	
2830.00	-23.9	H	3.0	36.4	1.0	-59.3	-13.0	-46.3	
High Ch, 713.50									
1427.00	-31.4	V	3.0	37.3	1.0	-67.7	-13.0	-54.7	
2140.50	-24.1	V	3.0	36.6	1.0	-59.7	-13.0	-46.7	
2854.00	-22.6	V	3.0	36.4	1.0	-58.0	-13.0	-45.0	
1427.00	-29.4	H	3.0	37.3	1.0	-65.7	-13.0	-52.7	
2140.50	-25.0	H	3.0	36.6	1.0	-60.6	-13.0	-47.6	
2854.00	-23.5	H	3.0	36.4	1.0	-58.9	-13.0	-45.9	

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UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I21238
Date: 7/25/2015
Test Engineer: R.Alegre
Configuration: EUT , AC Adapter /HS
Location: Chamber C
Mode: LTE_QPSK Band 12 Harmonics, 5MHz Bandwidth

Band
LTE12
5MHz
QPSK

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 701.50									
1403.00	-31.0	V	3.0	37.4	1.0	-67.4	-13.0	-54.4	
2104.50	-22.9	V	3.0	36.6	1.0	-58.5	-13.0	-45.5	
2806.00	-22.4	V	3.0	36.4	1.0	-57.8	-13.0	-44.8	
1403.00	-30.1	H	3.0	37.4	1.0	-66.5	-13.0	-53.5	
2104.50	-24.9	H	3.0	36.6	1.0	-60.4	-13.0	-47.4	
2806.00	-23.4	H	3.0	36.4	1.0	-58.8	-13.0	-45.8	
Mid Ch, 707.50									
1415.00	-30.2	V	3.0	37.3	1.0	-66.5	-13.0	-53.5	
2122.50	-23.0	V	3.0	36.6	1.0	-58.5	-13.0	-45.5	
2830.00	-22.7	V	3.0	36.4	1.0	-58.1	-13.0	-45.1	
1415.00	-29.7	H	3.0	37.3	1.0	-66.0	-13.0	-53.0	
2122.50	-25.0	H	3.0	36.6	1.0	-60.6	-13.0	-47.6	
2830.00	-23.6	H	3.0	36.4	1.0	-59.0	-13.0	-46.0	
High Ch, 713.50									
1427.00	-31.2	V	3.0	37.3	1.0	-67.5	-13.0	-54.5	
2140.50	-23.8	V	3.0	36.6	1.0	-59.3	-13.0	-46.3	
2854.00	-22.3	V	3.0	36.4	1.0	-57.7	-13.0	-44.7	
1427.00	-29.3	H	3.0	37.3	1.0	-65.6	-13.0	-52.6	
2140.50	-25.0	H	3.0	36.6	1.0	-60.5	-13.0	-47.5	
2854.00	-23.3	H	3.0	36.4	1.0	-58.7	-13.0	-45.7	

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UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I21238
Date: 7/25/2015
Test Engineer: R.Alegre
Configuration: EUT , AC Adapter /HS
Location: Chamber C
Mode: LTE_16QAM Band 12 Harmonics, 3MHz Bandwidth

Band
LTE12
3MHz
16QAM

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 700.5									
1401.00	-31.1	V	3.0	37.4	1.0	-67.5	-13.0	-54.5	
2101.50	-23.6	V	3.0	36.6	1.0	-59.2	-13.0	-46.2	
2802.00	-22.5	V	3.0	36.4	1.0	-57.9	-13.0	-44.9	
1401.00	-30.4	H	3.0	37.4	1.0	-66.8	-13.0	-53.8	
2101.50	-25.4	H	3.0	36.6	1.0	-60.9	-13.0	-47.9	
2802.00	-24.0	H	3.0	36.4	1.0	-59.4	-13.0	-46.4	
Mid Ch, 707.50									
1415.00	-31.0	V	3.0	37.3	1.0	-67.3	-13.0	-54.3	
2122.00	-23.4	V	3.0	36.6	1.0	-59.0	-13.0	-46.0	
2830.00	-23.0	V	3.0	36.4	1.0	-58.4	-13.0	-45.4	
1415.00	-29.9	H	3.0	37.3	1.0	-66.2	-13.0	-53.2	
2122.00	-25.5	H	3.0	36.6	1.0	-61.1	-13.0	-48.1	
2830.00	-23.9	H	3.0	36.4	1.0	-59.3	-13.0	-46.3	
High Ch, 714.5									
1429.00	-31.6	V	3.0	37.3	1.0	-68.0	-13.0	-55.0	
2143.50	-23.3	V	3.0	36.6	1.0	-58.9	-13.0	-45.9	
2858.00	-22.5	V	3.0	36.4	1.0	-57.9	-13.0	-44.9	
1429.00	-29.6	H	3.0	37.3	1.0	-65.9	-13.0	-52.9	
2143.50	-25.2	H	3.0	36.6	1.0	-60.8	-13.0	-47.8	
2858.00	-23.5	H	3.0	36.4	1.0	-58.9	-13.0	-45.9	

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UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I21238
Date: 7/25/2015
Test Engineer: R.Alegre
Configuration: EUT , AC Adapter /HS
Location: Chamber C
Mode: LTE_QPSK Band 12 Harmonics, 3MHz Bandwidth

Band
LTE12
3MHz
QPSK

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 700.5									
1401.00	-31.2	V	3.0	37.4	1.0	-67.6	-13.0	-54.6	
2101.50	-23.3	V	3.0	36.6	1.0	-58.9	-13.0	-45.9	
2802.00	-22.2	V	3.0	36.4	1.0	-57.6	-13.0	-44.6	
1401.00	-30.1	H	3.0	37.4	1.0	-66.4	-13.0	-53.4	
2101.50	-25.1	H	3.0	36.6	1.0	-60.6	-13.0	-47.6	
2802.00	-23.5	H	3.0	36.4	1.0	-58.8	-13.0	-45.8	
Mid Ch, 707.50									
1415.00	-30.3	V	3.0	37.3	1.0	-66.6	-13.0	-53.6	
2122.00	-22.9	V	3.0	36.6	1.0	-58.4	-13.0	-45.4	
2830.00	-22.6	V	3.0	36.4	1.0	-58.0	-13.0	-45.0	
1415.00	-29.3	H	3.0	37.3	1.0	-65.7	-13.0	-52.7	
2122.00	-25.0	H	3.0	36.6	1.0	-60.6	-13.0	-47.6	
2830.00	-23.3	H	3.0	36.4	1.0	-58.7	-13.0	-45.7	
High Ch, 714.5									
1429.00	-31.2	V	3.0	37.3	1.0	-67.6	-13.0	-54.6	
2143.50	-23.7	V	3.0	36.6	1.0	-59.2	-13.0	-46.2	
2858.00	-22.1	V	3.0	36.4	1.0	-57.5	-13.0	-44.5	
1429.00	-29.5	H	3.0	37.3	1.0	-65.9	-13.0	-52.9	
2143.50	-24.9	H	3.0	36.6	1.0	-60.5	-13.0	-47.5	
2858.00	-23.2	H	3.0	36.4	1.0	-58.6	-13.0	-45.6	

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UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I21238
Date: 7/25/2015
Test Engineer: R.Alegre
Configuration: EUT , AC Adapter /HS
Location: Chamber B
Mode: LTE_16QAM Band 5 Harmonics, 1.4MHz Bandwidth

Band
LTE12
1.4MHz
16QAM

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 824.7									
1649.40	0.0	V	3.0	37.0	1.0	-36.0	-13.0	-23.0	
2474.10	0.0	V	3.0	36.4	1.0	-35.4	-13.0	-22.4	
3298.80	0.0	V	3.0	36.2	1.0	-35.2	-13.0	-22.2	
1649.40	0.0	H	3.0	37.0	1.0	-36.0	-13.0	-23.0	
2474.10	0.0	H	3.0	36.4	1.0	-35.4	-13.0	-22.4	
3298.80	0.0	H	3.0	36.2	1.0	-35.2	-13.0	-22.2	
Mid Ch, 836.5									
1673.00	0.0	V	3.0	37.0	1.0	-36.0	-13.0	-23.0	
2509.50	0.0	V	3.0	36.4	1.0	-35.4	-13.0	-22.4	
3346.00	0.0	V	3.0	36.1	1.0	-35.1	-13.0	-22.1	
1673.00	0.0	H	3.0	37.0	1.0	-36.0	-13.0	-23.0	
2509.50	0.0	H	3.0	36.4	1.0	-35.4	-13.0	-22.4	
3346.00	0.0	H	3.0	36.1	1.0	-35.1	-13.0	-22.1	
High Ch, 848.3									
1696.60	0.0	V	3.0	37.0	1.0	-36.0	-13.0	-23.0	
2544.90	0.0	V	3.0	36.4	1.0	-35.4	-13.0	-22.4	
3393.20	0.0	V	3.0	36.1	1.0	-35.1	-13.0	-22.1	
1696.60	0.0	H	3.0	37.0	1.0	-36.0	-13.0	-23.0	
2544.90	0.0	H	3.0	36.4	1.0	-35.4	-13.0	-22.4	
3393.20	0.0	H	3.0	36.1	1.0	-35.1	-13.0	-22.1	

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UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I21238
Date: 7/25/2015
Test Engineer: R.Alegre
Configuration: EUT , AC Adapter /HS
Location: Chamber C
Mode: LTE_QPSK Band 12 Harmonics, 1.4MHz Bandwidth

Band
LTE12
1.4MHz
QPSK

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 699.7									
1399.40	-30.2	V	3.0	37.4	1.0	-66.5	-13.0	-53.5	
2099.10	-21.9	V	3.0	36.6	1.0	-57.5	-13.0	-44.5	
2798.80	-22.0	V	3.0	36.4	1.0	-57.3	-13.0	-44.3	
1399.40	-30.2	H	3.0	37.4	1.0	-66.5	-13.0	-53.5	
2099.10	-20.0	H	3.0	36.6	1.0	-55.6	-13.0	-42.6	
2798.80	-23.0	H	3.0	36.4	1.0	-58.4	-13.0	-45.4	
Mid Ch, 707.50									
1415.00	-30.5	V	3.0	37.3	1.0	-66.8	-13.0	-53.8	
2122.00	-22.5	V	3.0	36.6	1.0	-58.1	-13.0	-45.1	
2830.00	-22.7	V	3.0	36.4	1.0	-58.1	-13.0	-45.1	
1415.00	-28.8	H	3.0	37.3	1.0	-65.2	-13.0	-52.2	
2122.00	-21.9	H	3.0	36.6	1.0	-57.5	-13.0	-44.5	
2830.00	-23.3	H	3.0	36.4	1.0	-58.6	-13.0	-45.6	
High Ch, 715.3									
1430.60	-30.8	V	3.0	37.3	1.0	-67.2	-13.0	-54.2	
2145.90	-22.6	V	3.0	36.6	1.0	-58.1	-13.0	-45.1	
2861.20	-22.4	V	3.0	36.4	1.0	-57.8	-13.0	-44.8	
1430.60	-28.3	H	3.0	37.3	1.0	-64.7	-13.0	-51.7	
2145.90	-16.2	H	3.0	36.6	1.0	-51.7	-13.0	-38.7	
2861.20	-23.1	H	3.0	36.4	1.0	-58.5	-13.0	-45.5	

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LTE Band 30

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG Electronics
Project #: 15I21238
Date: 7/8/2015
Test Engineer: Jude Semana
Configuration: X-pos EUT, AC Charger, Headset
Location: Chamber B
Mode: LTE_16QAM Band 30 Harmonics, 10MHz Bandwidth

Band
LTE30
10MHz
16QAM

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Mid Ch, 2310.00									
4620.00	-12.1	V	3.0	35.4	1.0	-46.6	-40.0	-6.6	
6930.00	-9.5	V	3.0	35.8	1.0	-44.3	-40.0	-4.3	
9240.00	-10.9	V	3.0	35.8	1.0	-45.7	-40.0	-5.7	
4620.00	-10.7	H	3.0	35.4	1.0	-45.2	-40.0	-5.2	
6930.00	-9.2	H	3.0	35.8	1.0	-44.0	-40.0	-4.0	
9240.00	-10.1	H	3.0	35.8	1.0	-45.0	-40.0	-5.0	

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Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG Electronics
Project #: 15I21238
Date: 7/8/2015
Test Engineer: Jude Semana
Configuration: X-pos EUT, AC Charger, Headset
Location: Chamber B
Mode: LTE_QPSK Band 30 Harmonics, 10MHz Bandwidth

Band
LTE30
10MHz
QPSK

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Mid Ch, 2310.00									
4620.00	-12.9	V	3.0	35.4	1.0	-47.3	-40.0	-7.3	
6930.00	-9.6	V	3.0	35.8	1.0	-44.4	-40.0	-4.4	
9240.00	-10.5	V	3.0	35.8	1.0	-45.4	-40.0	-5.4	
4620.00	-11.5	H	3.0	35.4	1.0	-46.0	-40.0	-6.0	
6930.00	-9.0	H	3.0	35.8	1.0	-43.8	-40.0	-3.8	
9240.00	-10.3	H	3.0	35.8	1.0	-45.1	-40.0	-5.1	

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Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG Electronics
Project #: 15I21238
Date: 7/8/2015
Test Engineer: Jude Semana
Configuration: X-pos EUT, AC Charger, Headset
Location: Chamber C
Mode: LTE_16QAM Band 30 Harmonics, 5MHz Bandwidth

Band
LTE30
5MHz
16QAM

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 2307.50									
4615.00	-12.9	V	3.0	35.5	1.0	-47.3	-40.0	-7.3	
6922.50	-10.9	V	3.0	35.7	1.0	-45.7	-40.0	-5.7	
9230.00	-11.1	V	3.0	36.0	1.0	-46.1	-40.0	-6.1	
4615.00	-12.7	H	3.0	35.5	1.0	-47.1	-40.0	-7.1	
6922.50	-9.7	H	3.0	35.7	1.0	-44.5	-40.0	-4.5	
9230.00	-9.5	H	3.0	36.0	1.0	-44.5	-40.0	-4.5	
Mid Ch, 2310.00									
4620.00	-12.7	V	3.0	35.4	1.0	-47.1	-40.0	-7.1	
6930.00	-9.9	V	3.0	35.8	1.0	-44.6	-40.0	-4.6	
9240.00	-10.6	V	3.0	35.8	1.0	-45.4	-40.0	-5.4	
4620.00	-11.9	H	3.0	35.4	1.0	-46.3	-40.0	-6.3	
6930.00	-8.8	H	3.0	35.8	1.0	-43.5	-40.0	-3.5	
9240.00	-10.2	H	3.0	35.8	1.0	-45.1	-40.0	-5.1	
High Ch, 2312.50									
4625.00	-12.4	V	3.0	35.4	1.0	-46.8	-40.0	-6.8	
6937.50	-8.6	V	3.0	35.8	1.0	-43.4	-40.0	-3.4	
9250.00	-10.6	V	3.0	35.7	1.0	-45.3	-40.0	-5.3	
4625.00	-12.2	H	3.0	35.4	1.0	-46.6	-40.0	-6.6	
6937.50	-9.1	H	3.0	35.8	1.0	-43.9	-40.0	-3.9	
9250.00	-10.0	H	3.0	35.7	1.0	-44.7	-40.0	-4.7	

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Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG Electronics
Project #: 15I21238
Date: 7/8/2015
Test Engineer: Jude Semana
Configuration: X-pos EUT, AC Charger, Headset
Location: Chamber B
Mode: LTE_QPSK Band 30 Harmonics, 5MHz Bandwidth

Band
LTE30
5MHz
QPSK

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 2307.50									
4615.00	-12.8	V	3.0	35.5	1.0	-47.3	-40.0	-7.3	
6922.50	-10.5	V	3.0	35.7	1.0	-45.2	-40.0	-5.2	
9230.00	-10.7	V	3.0	36.0	1.0	-45.7	-40.0	-5.7	
4615.00	-11.5	H	3.0	35.5	1.0	-45.9	-40.0	-5.9	
6922.50	-9.0	H	3.0	35.7	1.0	-43.7	-40.0	-3.7	
9230.00	-9.9	H	3.0	36.0	1.0	-44.9	-40.0	-4.9	
Mid Ch, 2310.00									
4620.00	-13.3	V	3.0	35.4	1.0	-47.7	-40.0	-7.7	
6930.00	-10.7	V	3.0	35.8	1.0	-45.5	-40.0	-5.5	
9240.00	-10.8	V	3.0	35.8	1.0	-45.6	-40.0	-5.6	
4620.00	-13.0	H	3.0	35.4	1.0	-47.4	-40.0	-7.4	
6930.00	-10.1	H	3.0	35.8	1.0	-44.9	-40.0	-4.9	
9240.00	-11.0	H	3.0	35.8	1.0	-45.9	-40.0	-5.9	
High Ch, 2312.50									
4625.00	-12.9	V	3.0	35.4	1.0	-47.3	-40.0	-7.3	
6937.50	-9.4	V	3.0	35.8	1.0	-44.2	-40.0	-4.2	
9250.00	-10.2	V	3.0	35.7	1.0	-44.9	-40.0	-4.9	
4625.00	-12.0	H	3.0	35.4	1.0	-46.4	-40.0	-6.4	
6937.50	-10.1	H	3.0	35.8	1.0	-44.9	-40.0	-4.9	
9250.00	-9.9	H	3.0	35.7	1.0	-44.6	-40.0	-4.6	

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