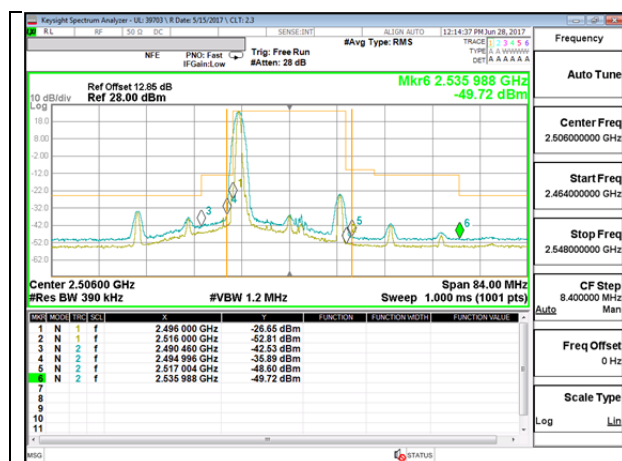
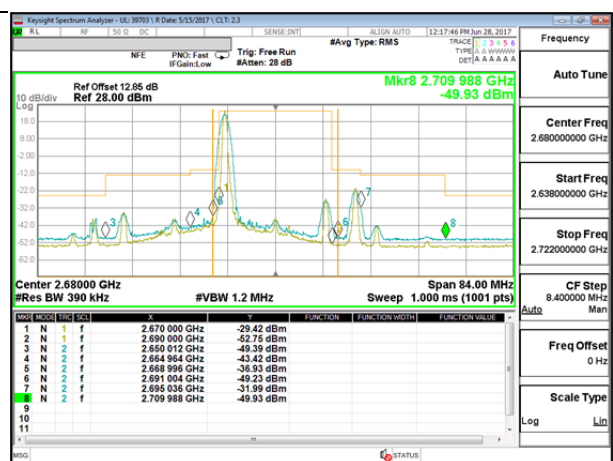
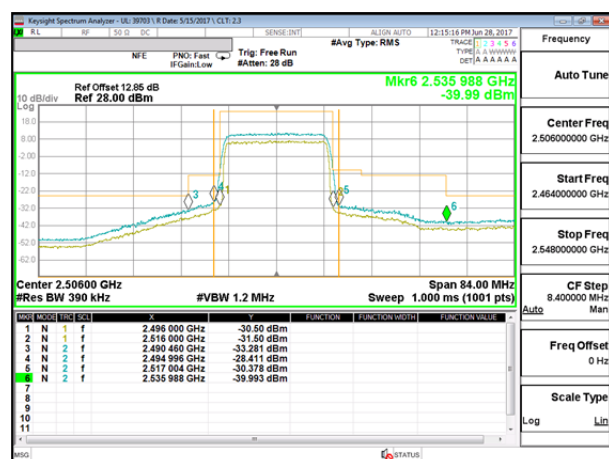




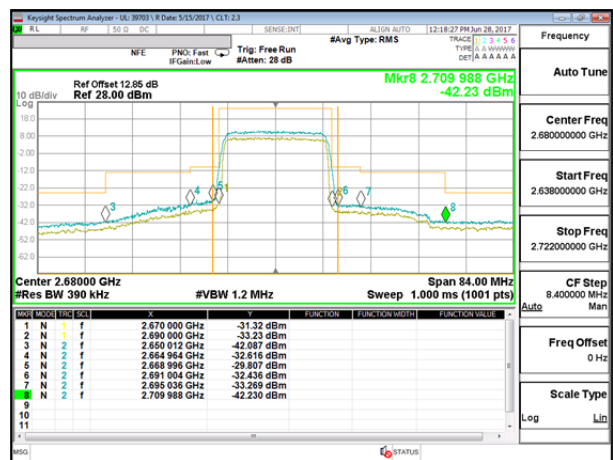
LTE B41 20MHz QPSK Low Channel 1RB



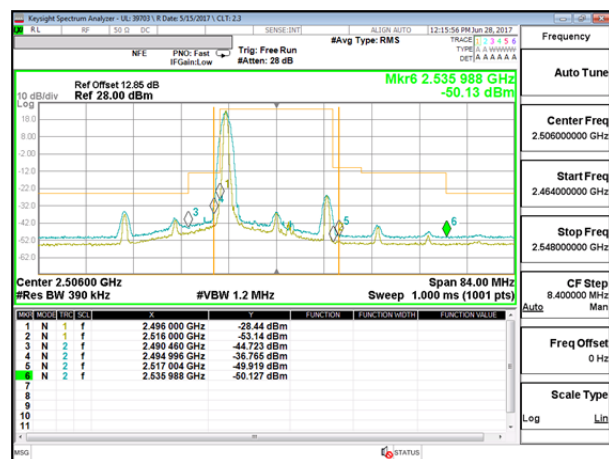
LTE B41 20MHz QPSK High Channel 1RB



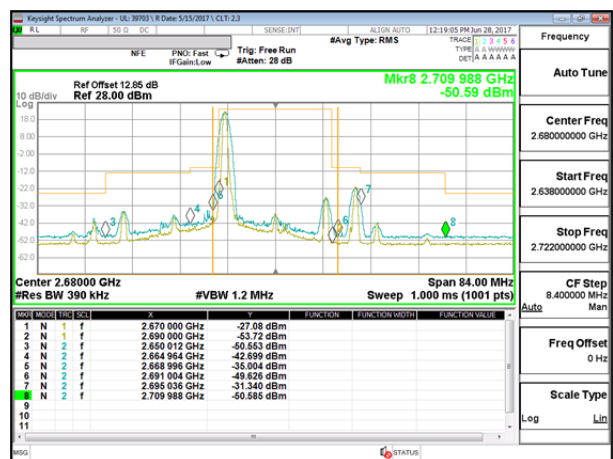
LTE B41 20MHz QPSK Low Channel FRB



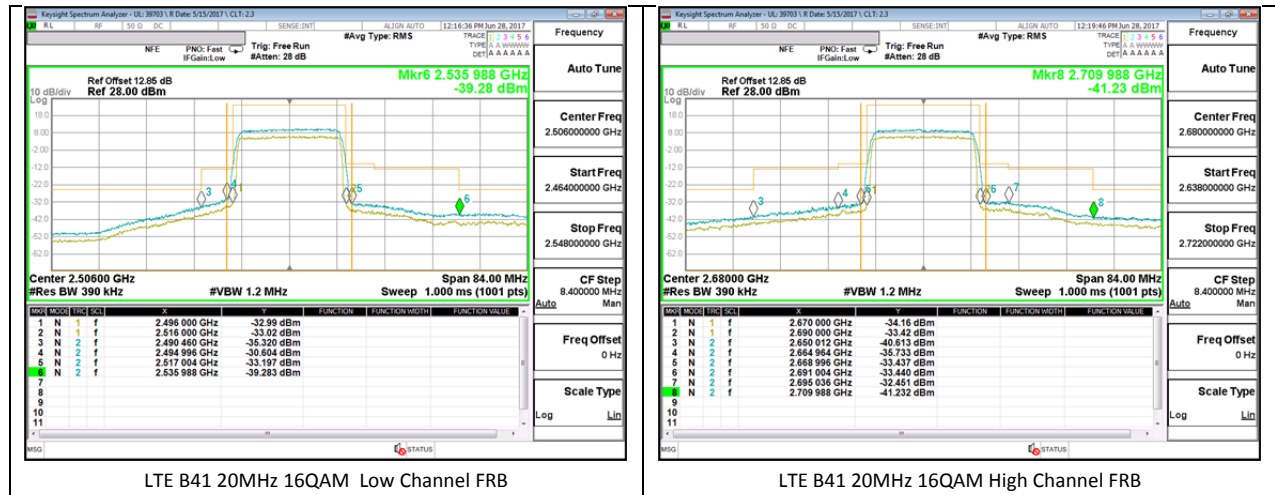
LTE B41 20MHz QPSK High Channel FRB



LTE B41 20MHz 16QAM Low Channel 1RB



LTE B41 20MHz 16QAM High Channel 1RB



15. OUT OF BAND EMISSIONS

RULE PART(S)

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

FCC 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 than $43 + 10 \log (P)$ 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

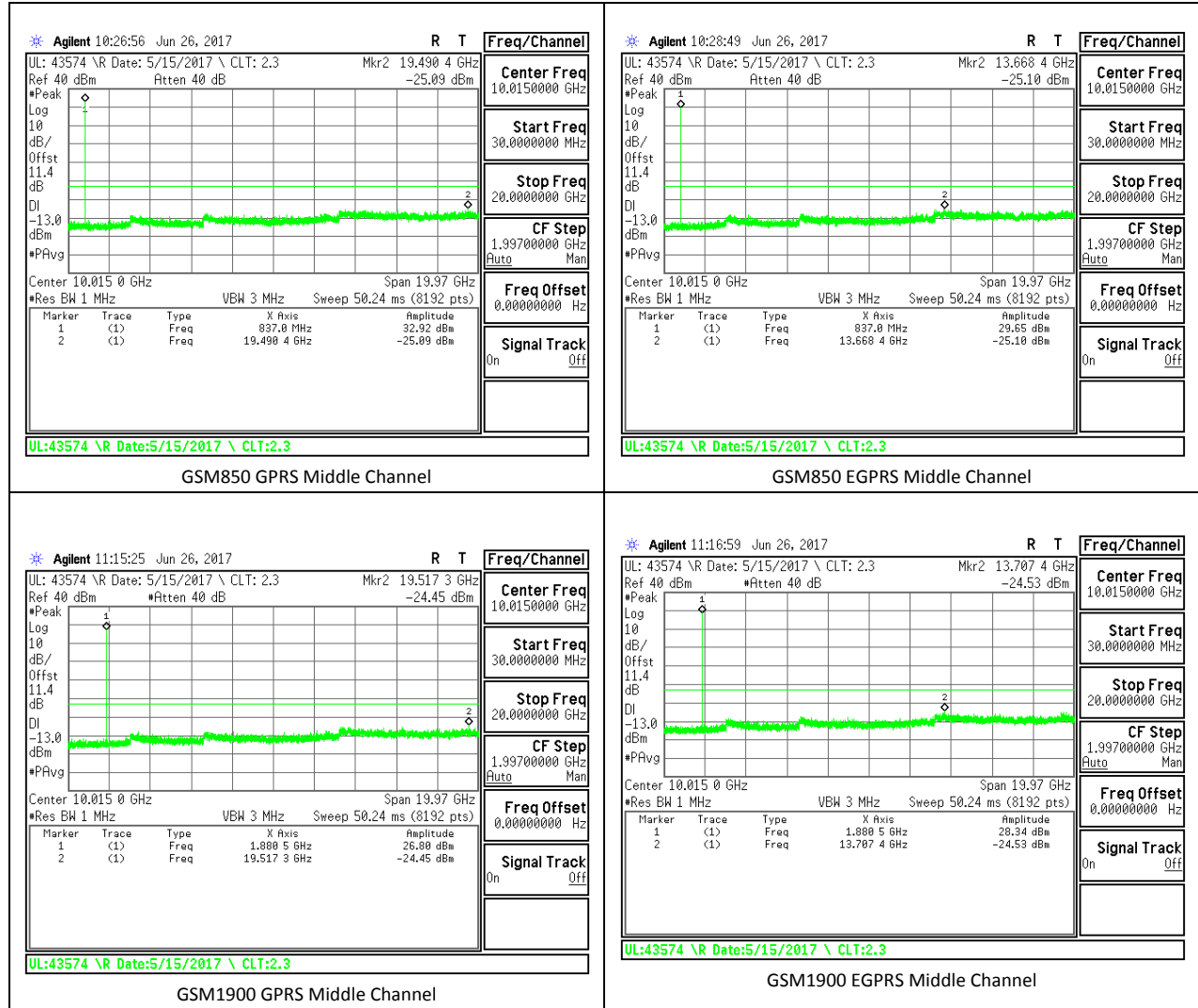
The RF output of the transmitter was connected to a spectrum analyzer through a calibrated coaxial cable. Sufficient scans were taken to show the out-of-band Emissions, if any, up to 10th harmonic. Multiple sweeps were recorded in a maximum hold mode using a peak detector to ensure that the worst-case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

RESULTS

15.1. OUT OF BAND EMISSIONS RESULT AND PLOTS

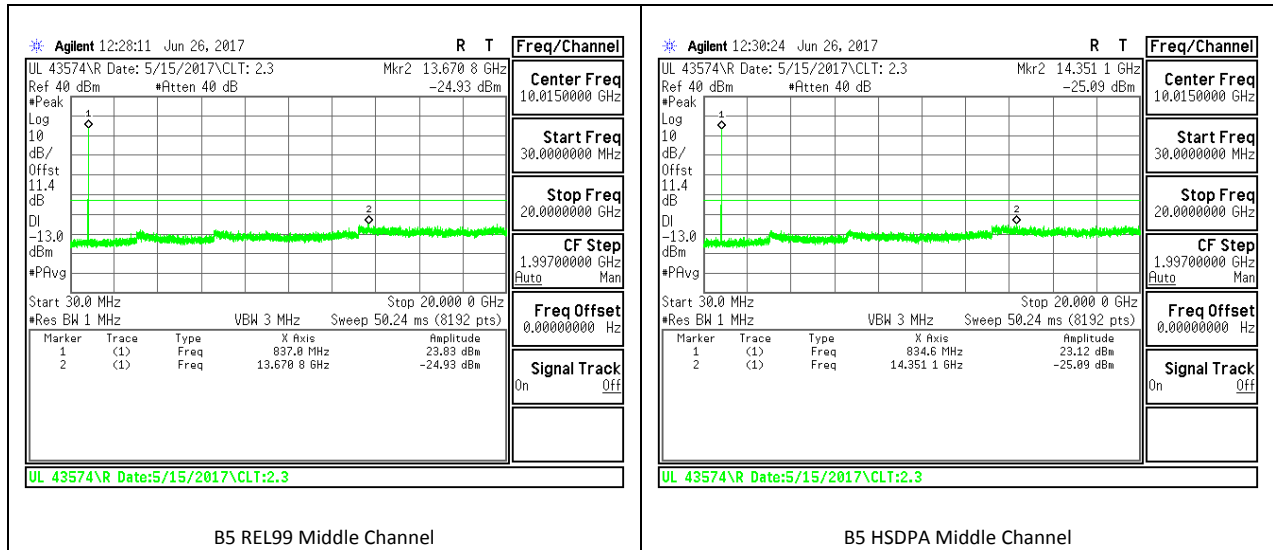
GSM

Band	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
GSM 850	GPRS	824.2	-24.78	-13	-11.78
		836.6	-25.09	-13	-12.09
		848.8	-24.64	-13	-11.64
	EGPRS	824.2	-24.5	-13	-11.5
		836.6	-25.10	-13	-12.1
		848.8	-24.76	-13	-11.76
GSM 1900	GPRS	1850.2	-25.35	-13	-12.35
		1880	-24.45	-13	-11.45
		1909.8	-24.84	-13	-11.84
	EGPRS	1850.2	-24.59	-13	-11.59
		1880	-24.53	-13	-11.53
		1909.8	-25.05	-13	-12.05



WCDMA

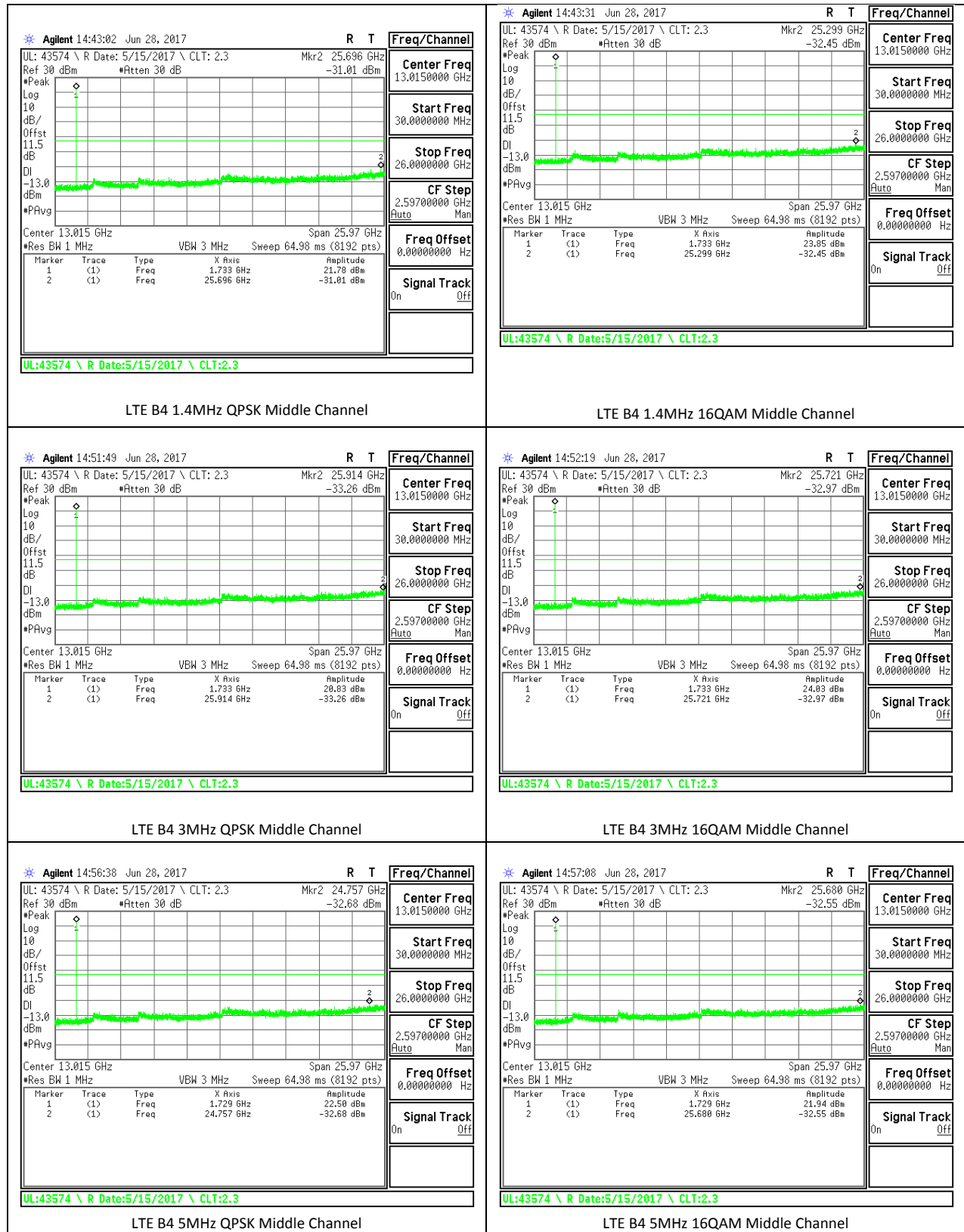
Band	Mode	f (MHz)	Spur (dBm)	99% BW (MHz)	Delta (dB)
Band 5	REL99	826.4	-24.75	-13	-11.75
		836.6	-24.93	-13	-11.93
		846.6	-24.69	-13	-11.69
	HSDPA	826.4	-24.64	-13	-11.64
		836.6	-24.09	-13	-11.09
		846.6	-24.95	-13	-11.95

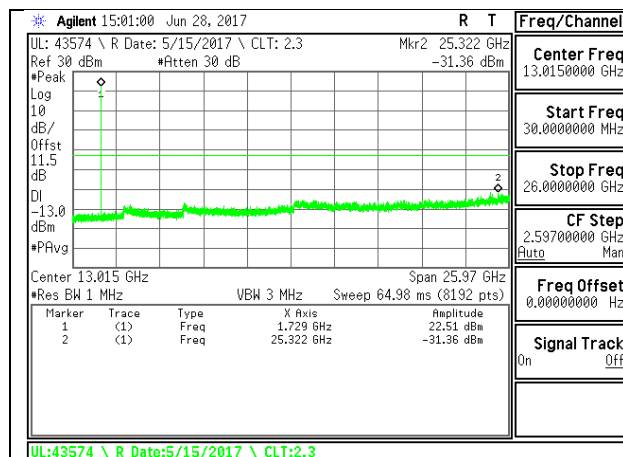


LTE Band 4

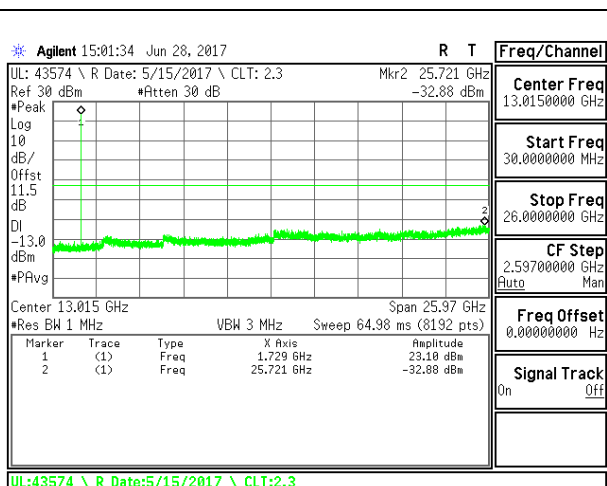
Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE4	1.4	QPSK	1710.7	-32.28	-13	-19.28
			1732.5	-31.01	-13	-18.01
			1754.3	-32.69	-13	-19.69
		16QAM	1710.7	-32.72	-13	-19.72
			1732.5	-35.45	-13	-22.45
			1754.3	-32.42	-13	-19.42
	3	QPSK	1711.5	-32.40	-13	-19.4
			1732.5	-33.26	-13	-20.26
			1753.5	-33.06	-13	-20.06
		16QAM	1711.5	-32.86	-13	-19.86
			1732.5	-32.97	-13	-19.97
			1753.5	-32.08	-13	-19.08
	5	QPSK	1712.5	-31.87	-13	-18.87
			1732.5	-32.68	-13	-19.68
			1752.5	-32.32	-13	-19.32
		16QAM	1712.5	-32.22	-13	-19.22
			1732.5	-32.55	-13	-19.55
			1752.5	-32.33	-13	-19.33
	10	QPSK	1715	-32.55	-13	-19.55
			1732.5	-31.36	-13	-18.36
			1750	-32.98	-13	-19.98
		16QAM	1715	-31.82	-13	-18.82
			1732.5	-32.88	-13	-19.88
			1750	-32.73	-13	-19.73

Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE4	15	QPSK	1717.5	-32.72	-13	-19.72
			1732.5	-32.72	-13	-19.72
			1747.5	-32.44	-13	-19.44
		16QAM	1717.5	-32.46	-13	-19.46
			1732.5	-32.45	-13	-19.45
			1747.5	-32.53	-13	-19.53
	20	QPSK	1720	-31.35	-13	-18.35
			1732.5	-32.63	-13	-19.63
			1745	-31.77	-13	-18.77
		16QAM	1720	-32.87	-13	-19.87
			1732.5	-30.87	-13	-17.87
			1745	-32.97	-13	-19.97

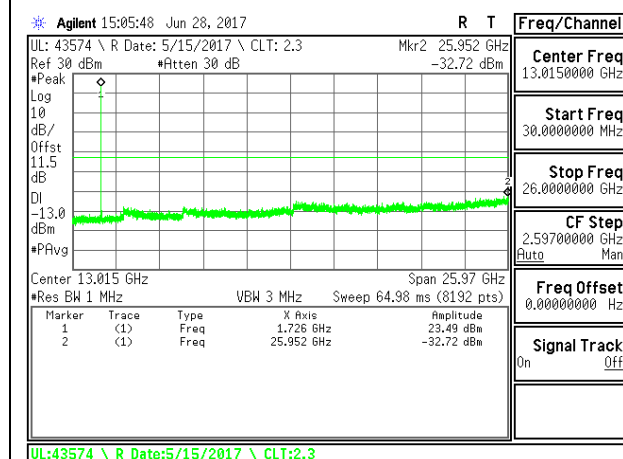




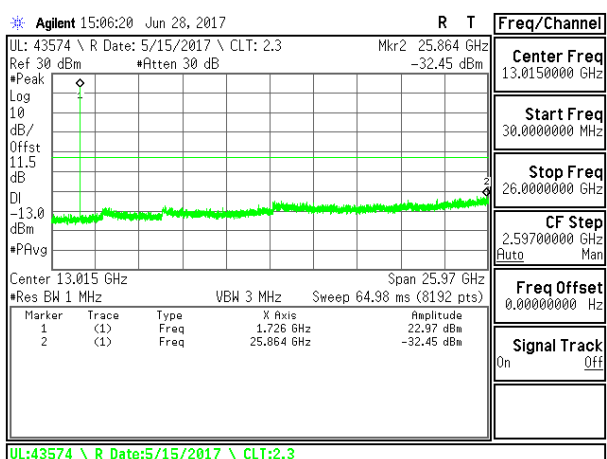
LTE B4 10MHz QPSK Middle Channel



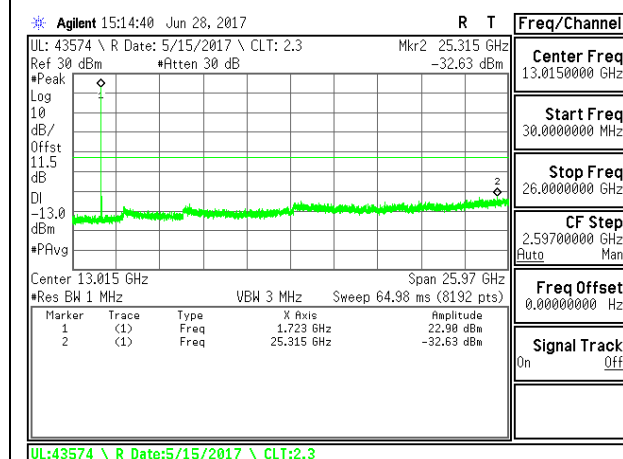
LTE B4 10MHz 16QAM Middle Channel



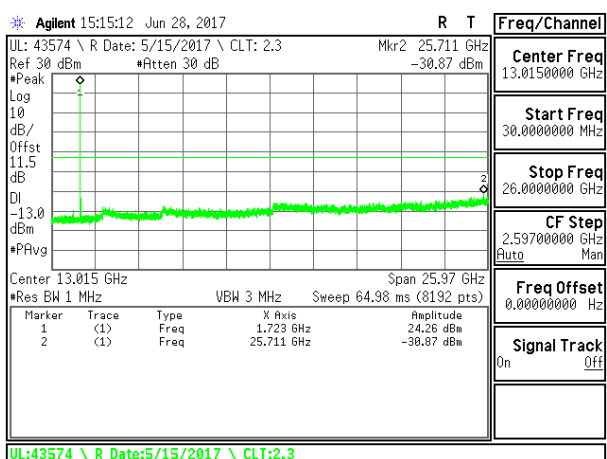
LTE B4 15MHz QPSK Middle Channel



LTE B4 15MHz 16QAM Middle Channel



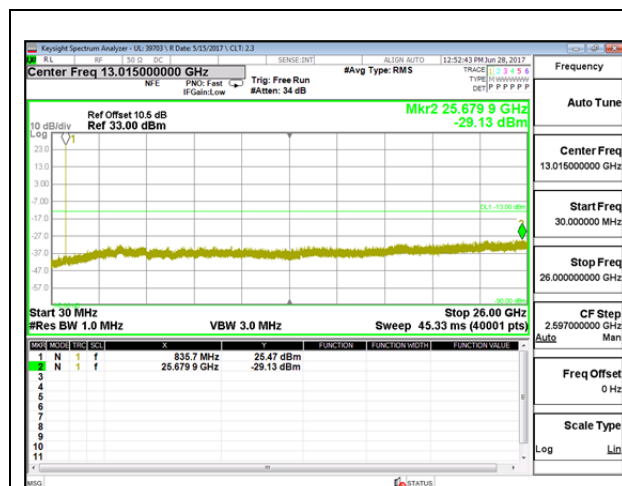
LTE B4 20MHz QPSK Middle Channel



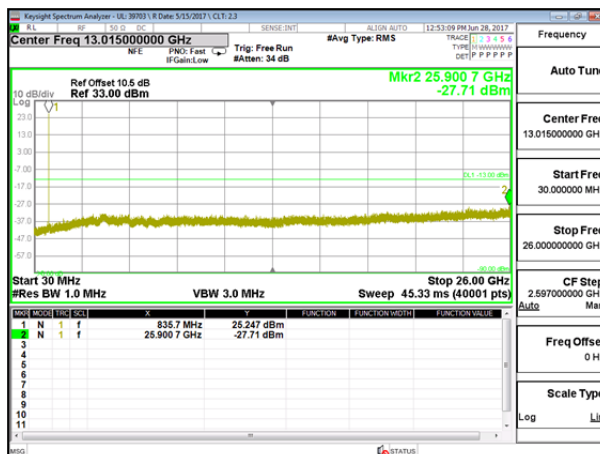
LTE B4 20MHz 16QAM Middle Channel

LTE Band 5

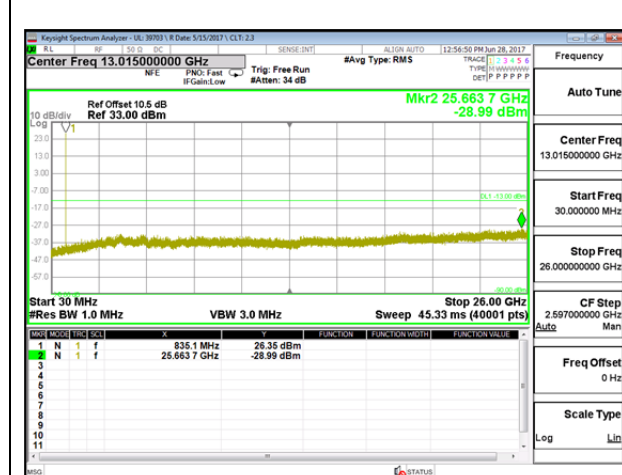
Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE5	1.4	QPSK	824.7	-29.07	-13	-16.07
			836.5	-29.13	-13	-16.13
			848.3	-28.83	-13	-15.83
		16QAM	824.7	-28.58	-13	-15.58
			836.5	-27.71	-13	-14.71
			848.3	-28.81	-13	-15.81
	3	QPSK	825.5	-28.91	-13	-15.91
			836.5	-28.99	-13	-15.99
			847.5	-29.30	-13	-16.3
		16QAM	825.5	-28.83	-13	-15.83
			836.5	-27.69	-13	-14.69
			847.5	-28.61	-13	-15.61
	5	QPSK	826.5	-29.47	-13	-16.47
			836.5	-29.12	-13	-16.12
			846.5	-28.59	-13	-15.59
		16QAM	826.5	-29.10	-13	-16.1
			836.5	-29.05	-13	-16.05
			846.5	-28.69	-13	-15.69
	10	QPSK	829	-28.89	-13	-15.89
			836.5	-28.93	-13	-15.93
			844	-29.10	-13	-16.1
		16QAM	829	-28.33	-13	-15.33
			836.5	-29.09	-13	-16.09
			844	-28.42	-13	-15.42



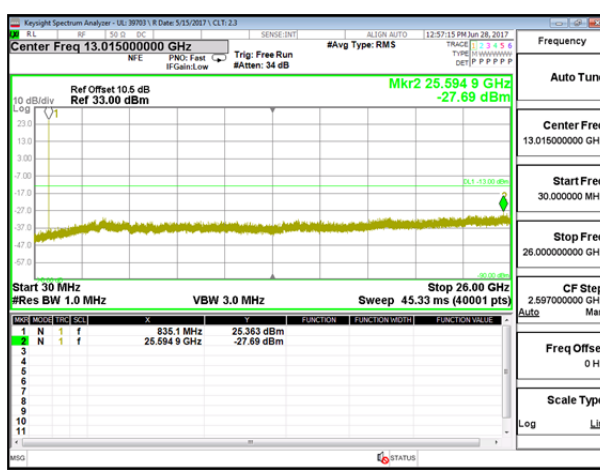
LTE B5 1.4MHz QPSK Middle Channel



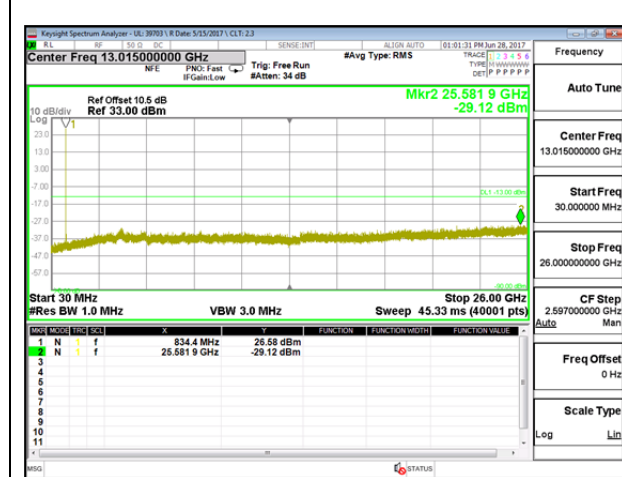
LTE B5 1.4MHz 16QAM Middle Channel



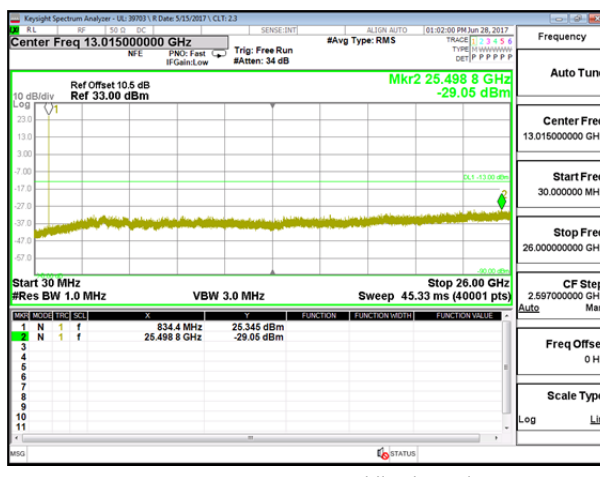
LTE B5 3MHz QPSK Middle Channel



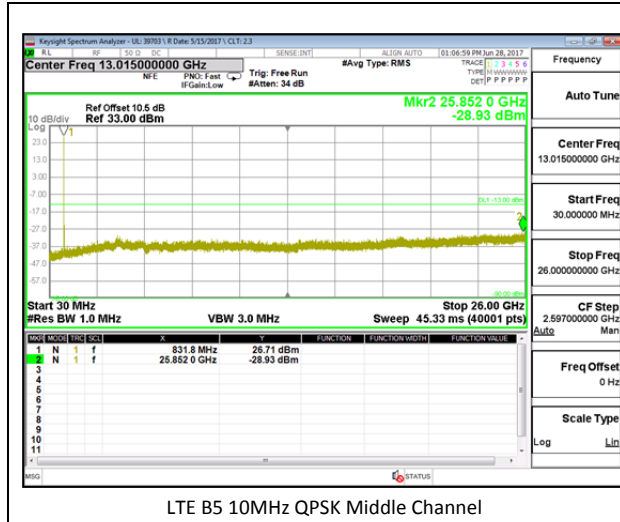
LTE B5 3MHz 16QAM Middle Channel



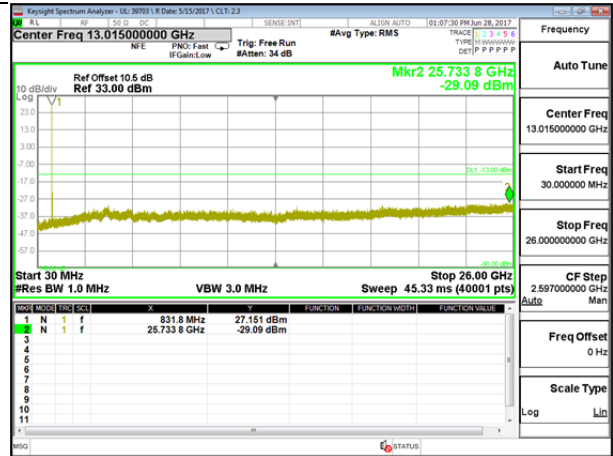
LTE B5 5MHz QPSK Middle Channel



LTE B5 5MHz 16QAM Middle Channel



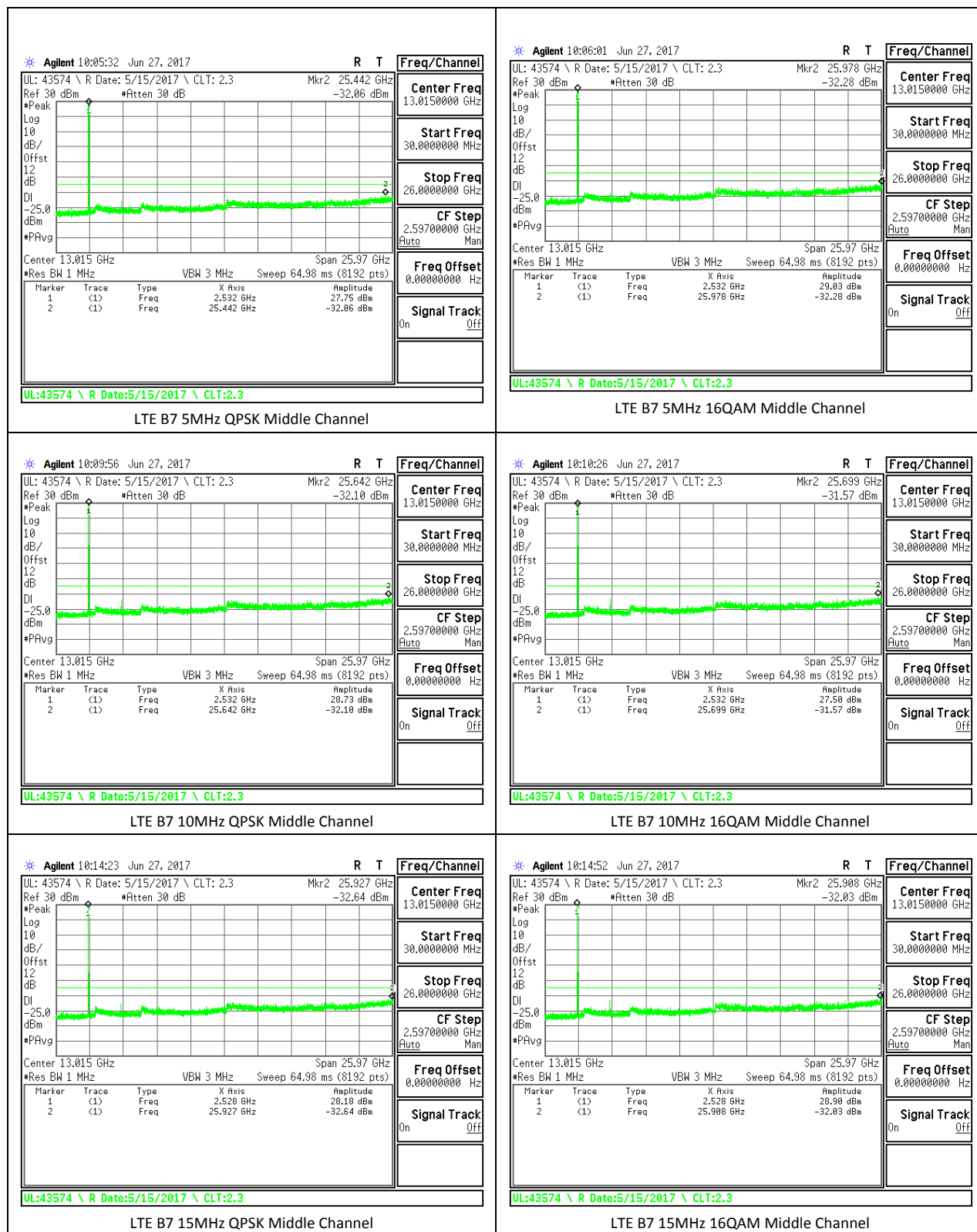
LTE B5 10MHz QPSK Middle Channel

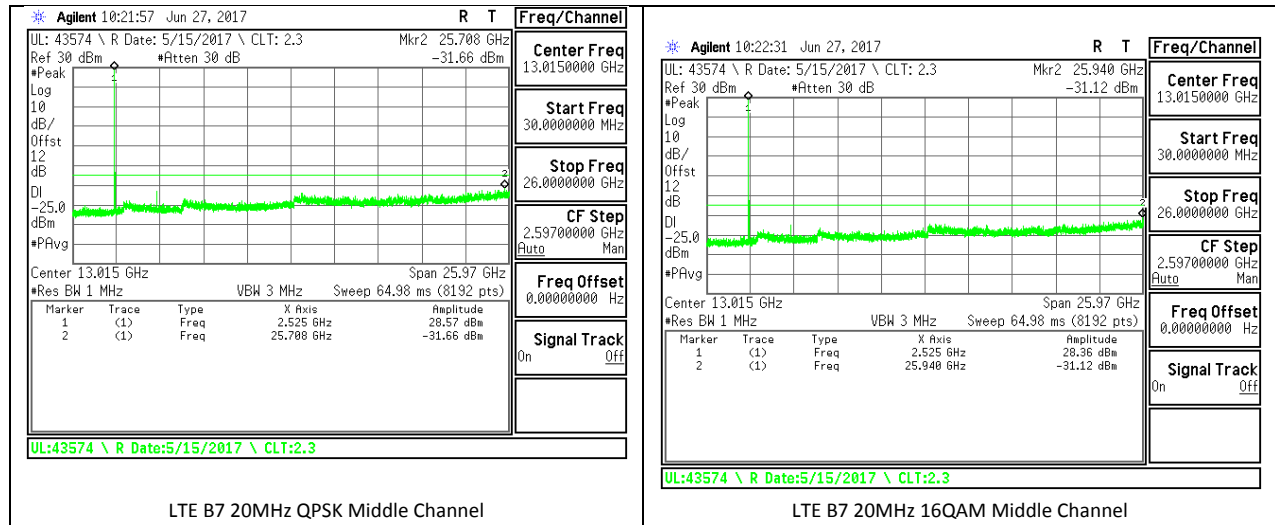


LTE B5 10MHz 16QAM Middle Channel

LTE Band 7

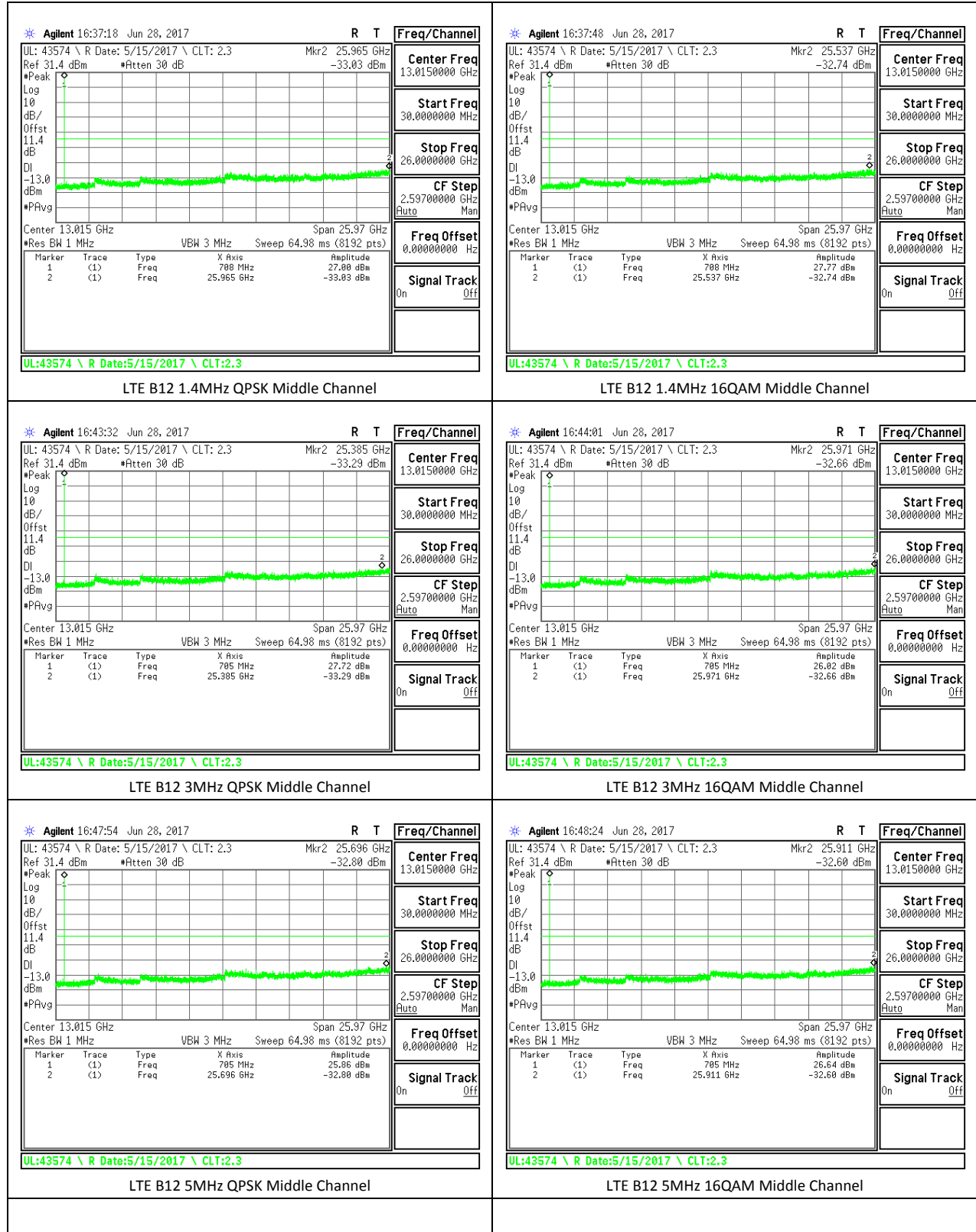
Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE7	5	QPSK	2502.5	-31.78	-25	-18.78
			2535	-32.06	-25	-19.06
			2567.5	-32.44	-25	-19.44
		16QAM	2502.5	-32.20	-25	-19.2
			2535	-32.28	-25	-19.28
			2567.5	-31.65	-25	-18.65
	10	QPSK	2505	-31.37	-25	-18.37
			2535	-32.10	-25	-19.1
			2565	-31.52	-25	-18.52
		16QAM	2505	-31.39	-25	-18.39
			2535	-31.57	-25	-18.57
			2565	-31.70	-25	-18.7
	15	QPSK	2507.5	-31.43	-25	-18.43
			2535	-32.64	-25	-19.64
			2562.5	-32.18	-25	-19.18
		16QAM	2507.5	-31.44	-25	-18.44
			2535	-32.03	-25	-19.03
			2562.5	-32.36	-25	-19.36
	20	QPSK	2510	-31.96	-25	-18.96
			2535	-31.66	-25	-18.66
			2560	-30.74	-25	-17.74
		16QAM	2510	-31.70	-25	-18.7
			2535	-31.12	-25	-18.12
			2560	-32.79	-25	-19.79

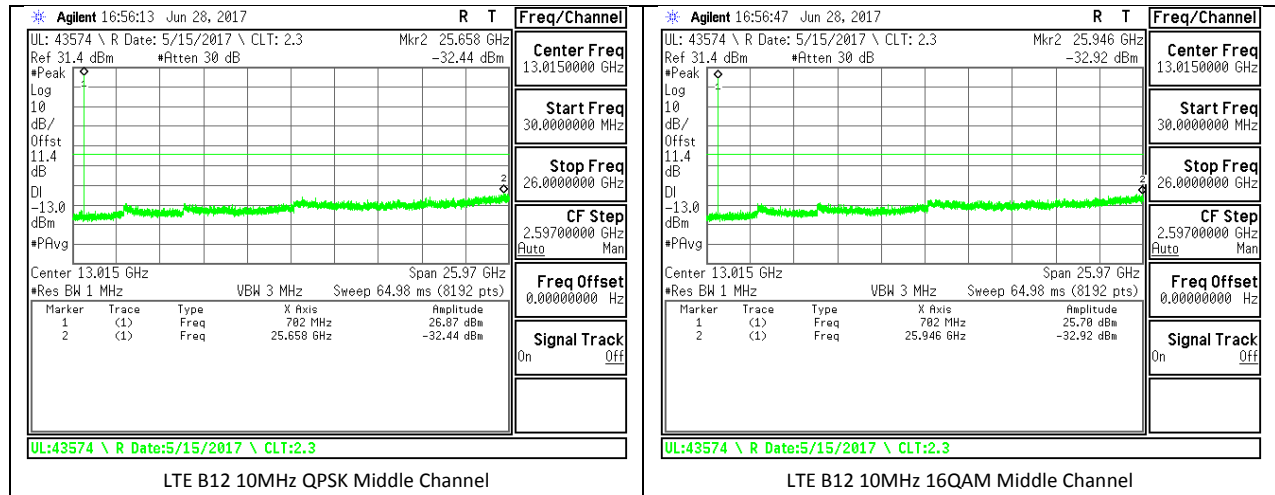




LTE Band 12

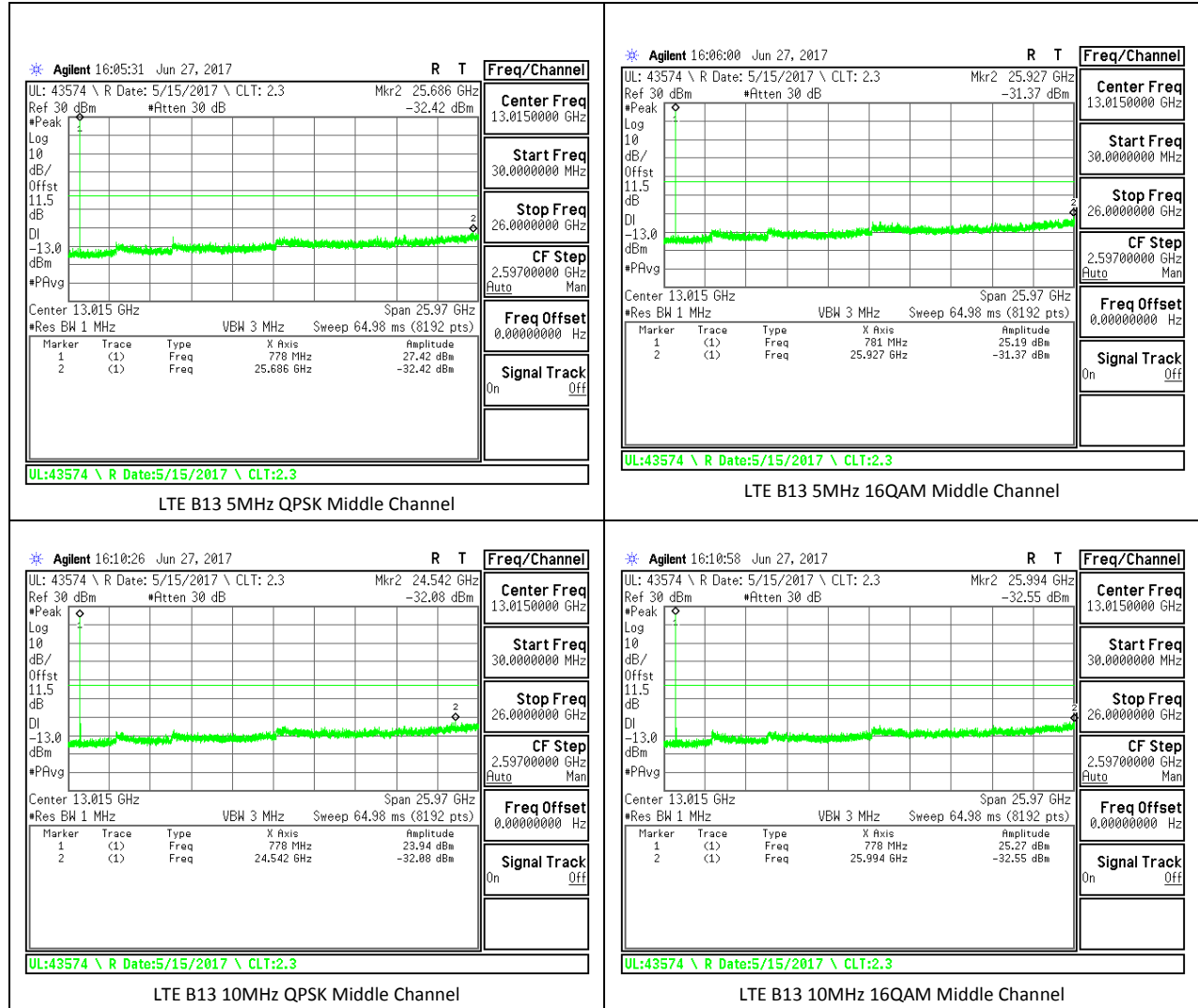
Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE12	1.4	QPSK	699.7	-32.47	-13	-19.47
			707.5	-33.03	-13	-20.03
			715.3	-33.12	-13	-20.12
		16QAM	699.7	-32.79	-13	-19.79
			707.5	-32.74	-13	-19.74
			715.3	-33.06	-13	-20.06
	3	QPSK	700.5	-32.76	-13	-19.76
			707.5	-33.29	-13	-20.29
			714.5	-32.55	-13	-19.55
		16QAM	700.5	-33.09	-13	-20.09
			707.5	-32.66	-13	-19.66
			714.5	-32.95	-13	-19.95
	5	QPSK	701.5	-33.00	-13	-20
			707.5	-32.80	-13	-19.8
			713.5	-32.69	-13	-19.69
		16QAM	701.5	-32.62	-13	-19.62
			707.5	-32.60	-13	-19.6
			713.5	-32.78	-13	-19.78
	10	QPSK	704	-31.83	-13	-18.83
			707.5	-32.44	-13	-19.44
			711	-31.56	-13	-18.56
		16QAM	704	-32.71	-13	-19.71
			707.5	-32.92	-13	-19.92
			711	-32.76	-13	-19.76





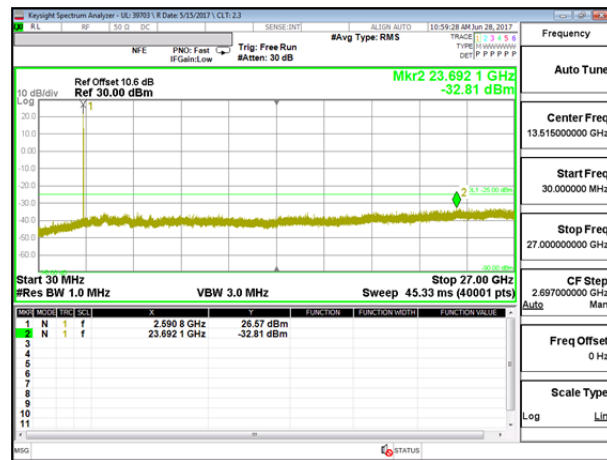
LTE Band 13

Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE13	5	QPSK	779.5	-32.67	-13	-19.67
			782	-32.42	-13	-19.42
			784.5	-31.57	-13	-18.57
		16QAM	779.5	-32.83	-13	-19.83
			782	-31.37	-13	-18.37
			784.5	-32.22	-13	-19.22
	10	QPSK				
			782	-32.08	-13	-19.08
		16QAM				
			782	-32.55	-13	-19.55

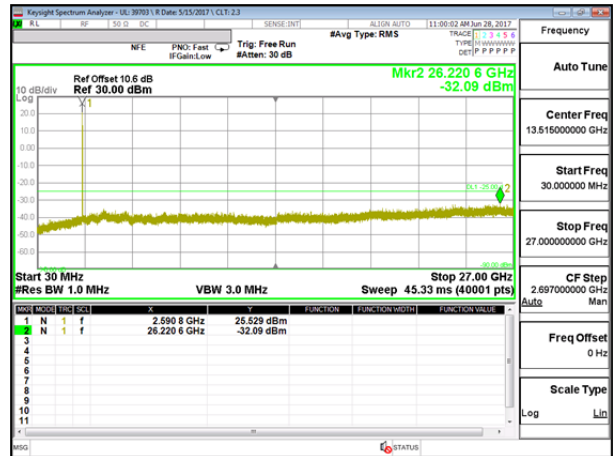


LTE Band 41

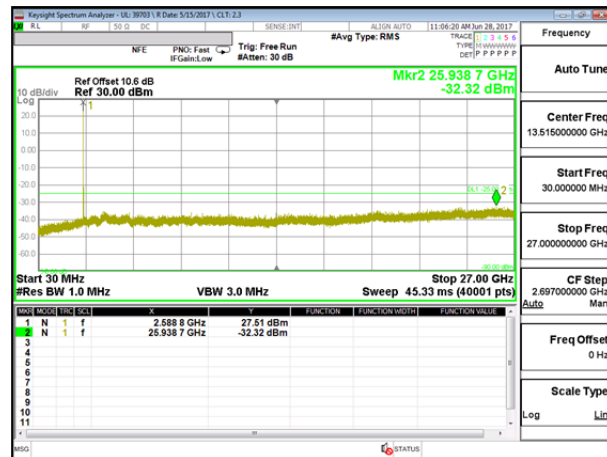
Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE41	5	QPSK	2498.5	-34.433	-25	-21.433
			2593	-32.81	-25	-19.81
			2687.5	-32.54	-25	-19.54
		16QAM	2498.5	-32.29	-25	-19.29
			2593	-32.09	-25	-19.09
			2687.5	-32.23	-25	-19.23
	10	QPSK	2501	-32.54	-25	-19.54
			2593	-32.32	-25	-19.32
			2685	-32.34	-25	-19.34
		16QAM	2501	-32.66	-25	-19.66
			2593	-31.99	-25	-18.99
			2685	-32.16	-25	-19.16
	15	QPSK	2503.5	-32.15	-25	-19.15
			2593	-32.61	-25	-19.61
			2682.5	-32.11	-25	-19.11
		16QAM	2503.5	-32.57	-25	-19.57
			2593	-32.63	-25	-19.63
			2682.5	-31.79	-25	-18.79
	20	QPSK	2506	-33.02	-25	-20.02
			2593	-32.63	-25	-19.63
			2680	-32.28	-25	-19.28
		16QAM	2506	-32.52	-25	-19.52
			2593	-32.63	-25	-19.63
			2680	-31.63	-25	-18.63



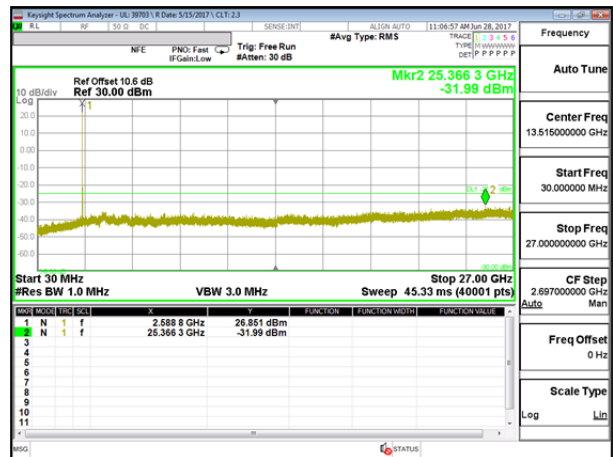
LTE B41 5MHz QPSK Middle Channel



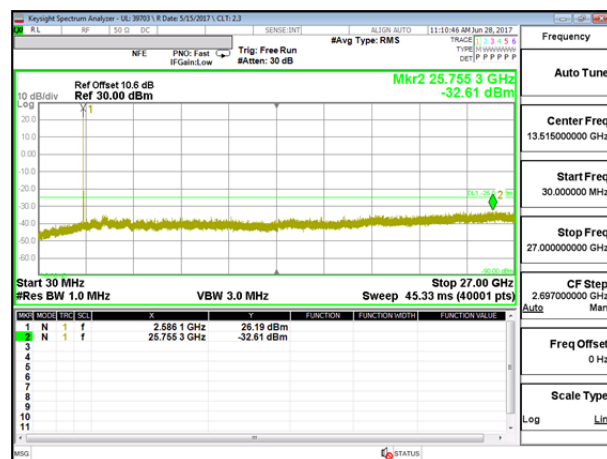
LTE B41 5MHz 16QAM Middle Channel



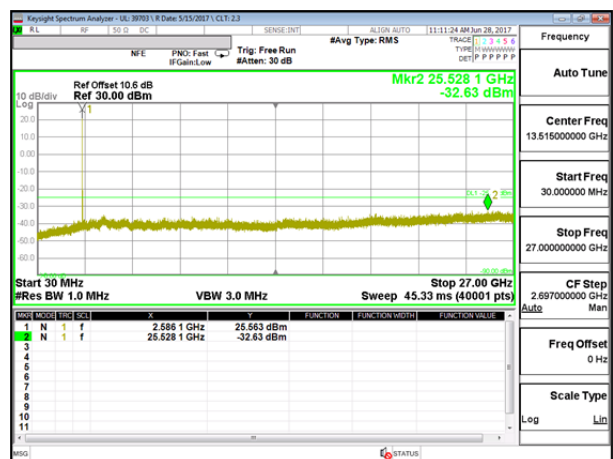
LTE B41 10MHz QPSK Middle Channel



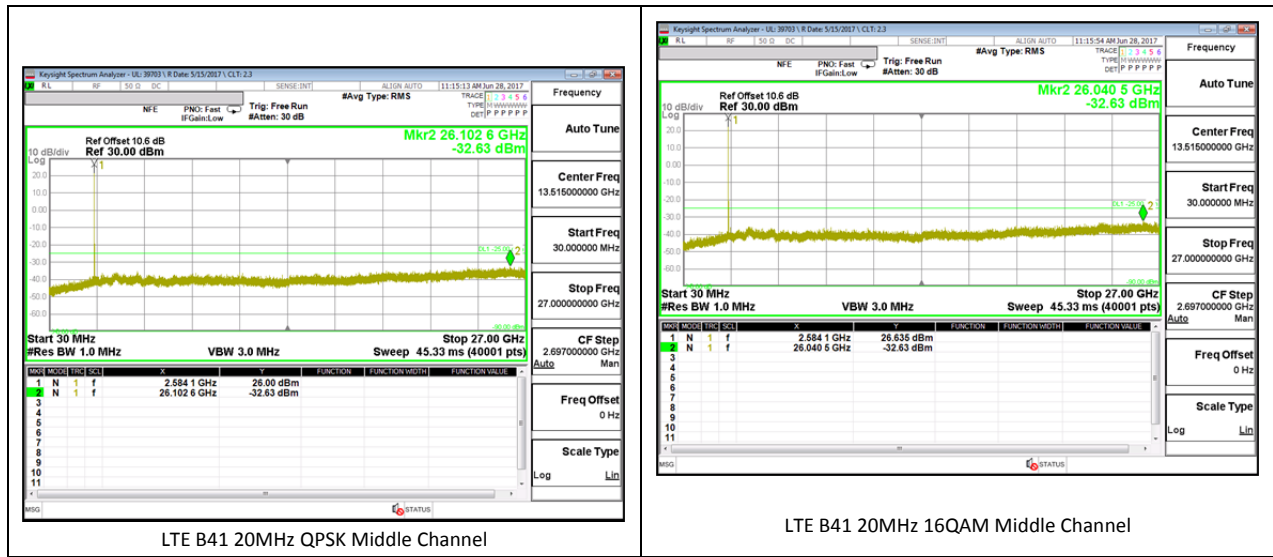
LTE B41 10MHz 16QAM Middle Channel



LTE B41 15MHz QPSK Middle Channel



LTE B41 15MHz 16QAM Middle Channel



16. FREQUENCY STABILITY

RULE PART(S)

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

FCC 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.

TEST PROCEDURE

Per KDB 971168 D01 Power Meas License Digital Systems v02r02

Results

Tested By	Oren Stoelting
Date	6/29/17

Note(s):

GSM 850 Band Measured Results

GSM 850 (Frequency range: 824.2-848.8 MHz) is covered by LTE Band 26 (Frequency range: 814-849 MHz) no testing is necessary due to overlapping frequency range.

GSM 1900 Band Measured Results

GSM 1900 (Frequency range: 1850.2-1909.8 MHz) is covered by LTE Band 25 (Frequency range: 1850-1915 MHz) no testing is necessary due to overlapping frequency range.

WCDMA Band 5 Measured Results

WCDMA Band 5 (Frequency range: 826.4-846.6 MHz) is covered by LTE Band 26 (Frequency range: 814-849 MHz) no testing is necessary due to overlapping frequency range.

WCDMA Band 2 Measured Results

WCDMA Band 2 (Frequency range: 1852.4-1907.6 MHz) is covered by LTE Band 25 (Frequency range: 1850-1915 MHz) no testing is necessary due to overlapping frequency range.

WCDMA Band 4 Measured Results

WCDMA Band 4 (Frequency range: 1712.4-1752.6 MHz) is covered by LTE Band 66 (Frequency range: 1710-1780 MHz) no testing is necessary due to overlapping frequency range.

16.1. FREQUENCY STABILITY RESULTS

GSM1900

Reference Frequency: GSM1900 Mid Channel			1880	MHz @ 20°C
Limit: to stay +/- 2.5 ppm =			4700.000	Hz
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.80	50	1880.000032	0.003	2.5
3.80	40	1880.000033	0.003	2.5
3.80	30	1880.000036	0.001	2.5
3.80	20	1880.000038	0	2.5
3.80	10	1880.000038	0.000	2.5
3.80	0	1880.000040	-0.001	2.5
3.80	-10	1880.000041	-0.002	2.5
3.80	-20	1880.000045	-0.004	2.5
3.80	-30	1880.000027	0.006	2.5

Reference Frequency: GSM1900 Mid Channel			1880	MHz @ 20°C
Limit: to stay +/- 2.5 ppm =			4700.000	Hz
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.80	20	1880.000038	0	2.5
4.37	20	1880.000039	-0.001	2.5
3.23	20	1880.000047	-0.005	2.5

LTE Band 4

Reference Frequency: LTE Band 4 Mid Channel 1732.5 MHz @ 20°C Limit: to stay +/- 2.5 ppm = 4331.250 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.80	50	1732.500016	-0.001	2.5
3.80	40	1732.500014	0.000	2.5
3.80	30	1732.500016	-0.001	2.5
3.80	20	1732.500014	0	2.5
3.80	10	1732.500017	-0.002	2.5
3.80	0	1732.500017	-0.002	2.5
3.80	-10	1732.500016	-0.001	2.5
3.80	-20	1732.500015	-0.001	2.5
3.80	-30	1732.500016	-0.001	2.5

Reference Frequency: LTE Band 4 Mid Channel 1732.5 MHz @ 20°C Limit: to stay +/- 2.5 ppm = 4331.250 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.80	20	1732.500014	0	2.5
4.37	20	1732.500012	0.001	2.5
3.23	20	1732.500014	0.000	2.5

LTE Band 5

Reference Frequency: LTE Band 5 Mid Channel 836.5 MHz @ 20°C				
Limit: to stay +/- 2.5 ppm = 2091.250 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.80	50	836.499989	0.003	2.5
3.80	40	836.499991	0.001	2.5
3.80	30	836.499991	0.001	2.5
3.80	20	836.499992	0	2.5
3.80	10	836.499991	0.001	2.5
3.80	0	836.499993	-0.001	2.5
3.80	-10	836.499996	-0.005	2.5
3.80	-20	836.499991	0.001	2.5
3.80	-30	836.499992	-0.001	2.5

Reference Frequency: LTE Band 5 Mid Channel 836.5 MHz @ 20°C				
Limit: to stay +/- 2.5 ppm = 2091.250 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.80	20	836.499992	0	2.5
4.37	20	836.499991	0.001	2.5
3.23	20	836.499990	0.002	2.5

LTE Band 7

Reference Frequency: LTE Band 7 Mid Channel 2535 MHz @ 20°C Limit: to stay +/- 2.5 ppm = 6337.500 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.80	50	2535.000014	0.001	2.5
3.80	40	2535.000016	0.000	2.5
3.80	30	2535.000016	0.000	2.5
3.80	20	2535.000017	0	2.5
3.80	10	2535.000015	0.001	2.5
3.80	0	2535.000016	0.000	2.5
3.80	-10	2535.000015	0.001	2.5
3.80	-20	2535.000014	0.001	2.5
3.80	-30	2535.000016	0.000	2.5

Reference Frequency: LTE Band 7 Mid Channel 2535 MHz @ 20°C Limit: to stay +/- 2.5 ppm = 6337.500 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.80	20	2535.000017	0	2.5
4.37	20	2535.000015	0.001	2.5
3.23	20	2535.000015	0.001	2.5

LTE Band 12

Reference Frequency: LTE Band 12 Mid Channel 707.5 MHz @ 20°C Limit: to stay +/- 2.5 ppm = 1768.750 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.80	50	707.499990	-0.002	2.5
3.80	40	707.499990	-0.003	2.5
3.80	30	707.499989	-0.001	2.5
3.80	20	707.499988	0	2.5
3.80	10	707.499991	-0.004	2.5
3.80	0	707.499991	-0.004	2.5
3.80	-10	707.499992	-0.005	2.5
3.80	-20	707.499991	-0.003	2.5
3.80	-30	707.499990	-0.002	2.5

Reference Frequency: LTE Band 12 Mid Channel 707.5 MHz @ 20°C Limit: to stay +/- 2.5 ppm = 1768.750 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.80	20	707.499988	0	2.5
4.37	20	707.499988	0.001	2.5
3.23	20	707.499989	-0.001	2.5

LTE Band 13

Reference Frequency: LTE Band 13 Mid Channel 782 MHz @ 20°C Limit: to stay +/- 2.5 ppm = 1955.000 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.80	50	781.999987	0.007	2.5
3.80	40	781.999990	0.003	2.5
3.80	30	781.999990	0.004	2.5
3.80	20	781.999992	0	2.5
3.80	10	781.999991	0.001	2.5
3.80	0	781.999994	-0.001	2.5
3.80	-10	781.999994	-0.002	2.5
3.80	-20	781.999991	0.001	2.5
3.80	-30	781.999988	0.006	2.5

Reference Frequency: LTE Band 13 Mid Channel 782 MHz @ 20°C Limit: to stay +/- 2.5 ppm = 1955.000 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.80	20	781.999992	0	2.5
4.37	20	781.999994	-0.001	2.5
3.23	20	781.999993	0.000	2.5

LTE Band 41

Reference Frequency: LTE Band 41 Mid Channel 2593 MHz @ 20°C Limit: to stay +/- 2.5 ppm = 6482.500 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.80	50	2593.000016	0.000	2.5
3.80	40	2593.000014	0.000	2.5
3.80	30	2593.000013	0.000	2.5
3.80	20	2593.000014	0	2.5
3.80	10	2593.000016	-0.001	2.5
3.80	0	2593.000015	0.000	2.5
3.80	-10	2593.000015	0.000	2.5
3.80	-20	2593.000015	0.000	2.5
3.80	-30	2593.000016	-0.001	2.5

Reference Frequency: LTE Band 41 Mid Channel 2593 MHz @ 20°C Limit: to stay +/- 2.5 ppm = 6482.500 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.80	20	2593.000014	0	2.5
4.37	20	2593.000016	-0.001	2.5
3.23	20	2593.000015	0.000	2.5

17. RADIATED TEST RESULTS

17.1. FIELD STRENGTH OF SPURIOUS RADIATION

RULE PART(S)

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

FCC 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 than $43 + 10 \log (P)$ 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.

17.1.1. SPURIOUS RADIATION PLOTS

GSM

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement										
Company:		SOMC								
Project #:		11785223								
Date:		7/5/2017								
Test Engineer:		43574 JS								
Configuration:		EUT + AC Charger								
Location:		Chamber C								
Mode:		GPRS 850 MHz Harmonics								
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes	
Low Ch, 824.2										
1648.40	-25.0	V	3.0	37.0	1.0	61.1	-13.0	48.1		
2472.60	-22.0	V	3.0	36.4	1.0	57.4	-13.0	44.4		
3296.80	-21.6	V	3.0	36.2	1.0	56.7	-13.0	43.7		
1648.40	-25.8	H	3.0	37.0	1.0	61.8	-13.0	48.8		
2472.60	-25.0	H	3.0	36.4	1.0	60.4	-13.0	47.4		
3296.80	-21.6	H	3.0	36.2	1.0	56.7	-13.0	43.7		
Mid Ch, 836.6										
1673.20	-24.9	V	3.0	37.0	1.0	60.9	-13.0	47.9		
2509.80	-22.3	V	3.0	36.4	1.0	57.7	-13.0	44.7		
3346.40	-21.7	V	3.0	36.1	1.0	56.8	-13.0	43.8		
1673.20	-25.8	H	3.0	37.0	1.0	61.8	-13.0	48.8		
2509.80	-25.0	H	3.0	36.4	1.0	60.4	-13.0	47.4		
3346.40	-21.6	H	3.0	36.1	1.0	56.7	-13.0	43.7		
High Ch, 848.8										
1697.60	-24.5	V	3.0	37.0	1.0	60.4	-13.0	47.4		
2546.40	-21.9	V	3.0	36.4	1.0	57.3	-13.0	44.3		
3395.20	-21.5	V	3.0	36.1	1.0	56.5	-13.0	43.5		
1697.60	-25.4	H	3.0	37.0	1.0	61.4	-13.0	48.4		
2546.40	-24.9	H	3.0	36.4	1.0	60.3	-13.0	47.3		
3395.20	-21.4	H	3.0	36.1	1.0	56.5	-13.0	43.5		

GSM850 GPRS

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement										
Company:		SOMC								
Project #:		11785223								
Date:		7/5/2017								
Test Engineer:		43574 JS								
Configuration:		EUT + AC Charger								
Location:		Chamber C								
Mode:		EGPRS 850 MHz Harmonics								
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes	
Low Ch, 824.2										
1648.40	-24.9	V	3.0	37.0	1.0	60.9	-13.0	47.9		
2472.60	-21.6	V	3.0	36.4	1.0	57.1	-13.0	44.1		
3296.80	-21.5	V	3.0	36.2	1.0	56.6	-13.0	43.6		
1648.40	-25.6	H	3.0	37.0	1.0	61.6	-13.0	48.6		
2472.60	-25.1	H	3.0	36.4	1.0	60.5	-13.0	47.5		
3296.80	-19.9	H	3.0	36.2	1.0	54.0	-13.0	41.0		
Mid Ch, 836.6										
1673.20	-24.6	V	3.0	37.0	1.0	60.6	-13.0	47.6		
2509.80	-22.6	V	3.0	36.4	1.0	58.0	-13.0	45.0		
3346.40	-21.4	V	3.0	36.1	1.0	56.5	-13.0	43.5		
1673.20	-25.7	H	3.0	37.0	1.0	61.7	-13.0	48.7		
2509.80	-24.8	H	3.0	36.4	1.0	60.2	-13.0	47.2		
3346.40	-21.9	H	3.0	36.1	1.0	57.0	-13.0	44.0		
High Ch, 848.8										
1697.60	-24.4	V	3.0	37.0	1.0	60.3	-13.0	47.3		
2546.40	-21.4	V	3.0	36.4	1.0	56.8	-13.0	43.8		
3395.20	-21.2	V	3.0	36.1	1.0	56.3	-13.0	43.3		
1697.60	-25.5	H	3.0	37.0	1.0	61.4	-13.0	48.4		
2546.40	-24.7	H	3.0	36.4	1.0	60.1	-13.0	47.1		
3395.20	-21.6	H	3.0	36.1	1.0	56.7	-13.0	43.7		

GSM850 EGPRS

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement										
Company:		SOMC								
Project #:		11785223								
Date:		7/5/2017								
Test Engineer:		43574 JS								
Configuration:		EUT + AC Charger								
Location:		Chamber C								
Mode:		GPRS 1900 MHz Harmonics								
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes	
Low Ch, 1850.2										
3700.40	-16.3	V	3.0	35.9	1.0	51.2	-13.0	38.2		
5550.60	-12.1	V	3.0	35.5	1.0	46.6	-13.0	33.6		
7400.80	-12.3	V	3.0	35.7	1.0	47.1	-13.0	34.1		
3700.40	-17.1	H	3.0	35.9	1.0	51.9	-13.0	38.9		
5550.60	-11.7	H	3.0	35.5	1.0	46.2	-13.0	33.2		
7400.80	-11.5	H	3.0	35.7	1.0	46.2	-13.0	33.2		
Mid Ch, 1880										
3760.00	-16.5	V	3.0	35.8	1.0	51.3	-13.0	38.3		
5640.00	-12.0	V	3.0	35.5	1.0	46.5	-13.0	33.5		
7520.00	-12.2	V	3.0	35.7	1.0	46.9	-13.0	33.9		
3760.00	-17.0	H	3.0	35.8	1.0	51.8	-13.0	38.8		
5640.00	-12.1	H	3.0	35.5	1.0	46.5	-13.0	33.5		
7520.00	-11.2	H	3.0	35.7	1.0	46.0	-13.0	33.0		
High Ch, 1909.8										
3819.60	-16.1	V	3.0	35.8	1.0	50.9	-13.0	37.9		
5729.40	-12.0	V	3.0	35.5	1.0	46.5	-13.0	33.5		
7639.20	-12.1	V	3.0	35.8	1.0	46.9	-13.0	33.9		
3819.60	-16.8	H	3.0	35.8	1.0	51.5	-13.0	38.5		
5729.40	-11.6	H	3.0	35.5	1.0	46.1	-13.0	33.1		
7639.20	-10.9	H	3.0	35.8	1.0	45.7	-13.0	32.7		

GSM1900 GPRS

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement										
Company:		SOMC								
Project #:		11785223								
Date:		7/5/2017								
Test Engineer:		43574 JS								
Configuration:		EUT + AC Charger								
Location:		Chamber C								
Mode:		EGPRS 1900 MHz Harmonics								
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes	
Low Ch, 1850.2										
3700.40	-16.6	V	3.0	35.9	1.0	51.4	-13.0	38.4		
5550.60	-13.3	V	3.0	35.5	1.0	47.8	-13.0	34.8		
7400.80	-12.4	V	3.0	35.7	1.0	47.1	-13.0	34.1		
3700.40	-17.3	H	3.0	35.9	1.0	52.2	-13.0	39.2		
5550.60	-12.5	H	3.0	35.5	1.0	47.0	-13.0	34.0		
7400.80	-11.4	H	3.0	35.7	1.0	46.1	-13.0	33.1		
Mid Ch, 1880										
3760.00	-16.5	V	3.0	35.8	1.0	51.4	-13.0	38.4		
5640.00	-13.3	V	3.0	35.5	1.0	47.8	-13.0	34.8		
7520.00	-12.1	V	3.0	35.7	1.0	46.8	-13.0	33.8		
3760.00	-17.2	H	3.0	35.8	1.0	52.1	-13.0	39.1		
5640.00	-12.6	H	3.0	35.5	1.0	47.1	-13.0	34.1		
7520.00	-11.4	H	3.0	35.7	1.0	46.1	-13.0	33.1		
High Ch, 1909.8										
3819.60	-16.2	V	3.0	35.8	1.0	50.9	-13.0	37.9		
5729.40	-12.6	V	3.0	35.5	1.0	47.1	-13.0	34.1		
7639.20	-12.1	V	3.0	35.8	1.0	46.8	-13.0	33.8		
3819.60	-16.9	H	3.0	35.8	1.0	51.6	-13.0	38.6		
5729.40	-12.6	H	3.0	35.5	1.0	47.1	-13.0	34.1		

WCDMA

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
Company:		SOMC							
Project #:		11785223							
Date:		7/5/2017							
Test Engineer:		43574 JS							
Configuration:		EUT + AC Charger + HS							
Location:		Chamber C							
Mode:		Rel99 Band 5 Harmonics							
F MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 826.4									
1652.80	-24.8	V	3.0	37.0	1.0	-60.9	-13.0	-47.9	
2479.20	-21.5	V	3.0	36.4	1.0	-58.9	-13.0	-45.9	
3365.60	-21.2	V	3.0	36.1	1.0	-56.3	-13.0	-43.3	
1652.80	-25.6	H	3.0	37.0	1.0	-61.6	-13.0	-48.6	
2479.20	-24.8	H	3.0	36.4	1.0	-60.2	-13.0	-47.2	
3365.60	-18.7	H	3.0	36.1	1.0	-53.9	-13.0	-40.9	
Mid Ch, 836.6									
1673.20	-24.9	V	3.0	37.0	1.0	-60.9	-13.0	-47.9	
2509.80	-23.4	V	3.0	36.4	1.0	-58.9	-13.0	-45.9	
3346.40	-21.1	V	3.0	36.1	1.0	-56.2	-13.0	-43.2	
1673.20	-25.5	H	3.0	37.0	1.0	-61.5	-13.0	-48.5	
2509.80	-24.6	H	3.0	36.4	1.0	-60.0	-13.0	-47.0	
3346.40	-21.7	H	3.0	36.1	1.0	-56.8	-13.0	-43.8	
High Ch, 846.6									
1693.20	-24.8	V	3.0	37.0	1.0	-60.7	-13.0	-47.7	
2539.80	-23.4	V	3.0	36.4	1.0	-58.8	-13.0	-45.8	
3386.40	-20.6	V	3.0	36.1	1.0	-55.7	-13.0	-42.7	
1693.20	-25.1	H	3.0	37.0	1.0	-61.1	-13.0	-48.1	
2539.80	-24.2	H	3.0	36.4	1.0	-59.6	-13.0	-46.6	
3386.40	-21.8	H	3.0	36.1	1.0	-56.9	-13.0	-43.9	
B5 REL99									

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
Company:		SOMC							
Project #:		11785223							
Date:		7/5/2017							
Test Engineer:		43574 JS							
Configuration:		EUT + AC Charger + HS							
Location:		Chamber C							
Mode:		HSDPA Band 5 Harmonics							
F MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 826.4									
1652.80	-25.8	V	3.0	37.0	1.0	-61.9	-13.0	-48.9	
2479.20	-23.4	V	3.0	36.4	1.0	-58.8	-13.0	-45.8	
3365.60	-21.4	V	3.0	36.1	1.0	-56.5	-13.0	-43.5	
1652.80	-26.0	H	3.0	37.0	1.0	-62.1	-13.0	-49.1	
2479.20	-23.8	H	3.0	36.4	1.0	-59.2	-13.0	-46.2	
3365.60	-21.8	H	3.0	36.1	1.0	-56.9	-13.0	-43.9	
Mid Ch, 836.6									
1673.20	-25.7	V	3.0	37.0	1.0	-61.7	-13.0	-48.7	
2509.80	-23.4	V	3.0	36.4	1.0	-58.8	-13.0	-45.8	
3346.40	-21.3	V	3.0	36.1	1.0	-56.4	-13.0	-43.4	
1673.20	-26.1	H	3.0	37.0	1.0	-62.1	-13.0	-49.1	
2509.80	-23.9	H	3.0	36.4	1.0	-59.3	-13.0	-46.3	
3346.40	-21.5	H	3.0	36.1	1.0	-56.6	-13.0	-43.6	
High Ch, 846.6									
1693.20	-25.1	V	3.0	37.0	1.0	-61.1	-13.0	-48.1	
2539.80	-23.2	V	3.0	36.4	1.0	-58.6	-13.0	-45.6	
3386.40	-21.0	V	3.0	36.1	1.0	-56.1	-13.0	-43.1	
1693.20	-25.8	H	3.0	37.0	1.0	-61.9	-13.0	-48.9	
2539.80	-23.9	H	3.0	36.4	1.0	-59.3	-13.0	-46.3	
3386.40	-18.7	H	3.0	36.1	1.0	-53.8	-13.0	-40.8	
B5 HSDPA									

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement Company: Project #: Date: Test Engineer: Configuration: Location: Mode: SOMC 11785223 7/5/2017 43575 OS EUT + HS + Charger Chamber C LTE_QPSK Band 4 Harmonics, 10MHz Bandwidth									
f	SG reading	Ant. Pol.	Distance	Preampl	Filter	ERP	Limit	Delta	Notes
MHz	(dBm)	(H/V)	(m)	(dB)	(dB)	(dBm)	(dBm)	(dB)	
Low Ch, 1715MHz									
3430.00	-19.2	V	3.0	36.1	1.0	-54.2	-13.0	-41.2	
5145.00	-15.4	V	3.0	35.4	1.0	-49.8	-13.0	-36.8	
6870.00	-13.9	V	3.0	35.7	1.0	-48.6	-13.0	-35.6	
3430.00	-19.3	H	3.0	36.1	1.0	-54.4	-13.0	-41.4	
5145.00	-13.7	H	3.0	35.4	1.0	-48.1	-13.0	-35.1	
6860.00	-13.0	H	3.0	35.7	1.0	-47.7	-13.0	-34.7	
Mid Ch, 1732.5MHz									
3465.00	-18.7	V	3.0	36.0	1.0	-53.8	-13.0	-40.8	
5197.50	-15.8	V	3.0	35.4	1.0	-50.2	-13.0	-37.2	
6930.00	-14.2	V	3.0	35.7	1.0	-48.9	-13.0	-35.9	
3465.00	-18.9	H	3.0	36.0	1.0	-53.9	-13.0	-40.9	
5197.50	-13.5	H	3.0	35.4	1.0	-47.9	-13.0	-34.9	
6930.00	-13.5	H	3.0	35.7	1.0	-48.2	-13.0	-35.2	
High Ch, 1750MHz									
3500.00	-18.6	V	3.0	36.0	1.0	-53.6	-13.0	-40.6	
5250.00	-15.0	V	3.0	35.4	1.0	-49.5	-13.0	-36.5	
7000.00	-14.6	V	3.0	35.7	1.0	-49.3	-13.0	-36.3	
3500.00	-18.9	H	3.0	36.0	1.0	-53.9	-13.0	-40.9	
5250.00	-14.5	H	3.0	35.4	1.0	-48.9	-13.0	-35.9	
7000.00	-13.3	H	3.0	35.7	1.0	-48.0	-13.0	-35.0	

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement Company: Project #: Date: Test Engineer: Configuration: Location: Mode: SOMC 11785223 7/5/2017 43575 OS EUT + HS + Charger Chamber C LTE_QPSK Band 4 Harmonics, 10MHz Bandwidth									
f	SG reading	Ant. Pol.	Distance	Preampl	Filter	ERP	Limit	Delta	Notes
MHz	(dBm)	(H/V)	(m)	(dB)	(dB)	(dBm)	(dBm)	(dB)	
Low Ch, 1717.5MHz									
3435.00	-18.9	V	3.0	36.1	1.0	-54.0	-13.0	-41.0	
5152.50	-15.4	V	3.0	35.4	1.0	-49.8	-13.0	-36.8	
6870.00	-13.6	V	3.0	35.7	1.0	-48.3	-13.0	-35.3	
3435.00	-18.6	H	3.0	36.1	1.0	-53.6	-13.0	-40.6	
5152.50	-13.7	H	3.0	35.4	1.0	-48.1	-13.0	-35.1	
6870.00	-13.3	H	3.0	35.7	1.0	-47.9	-13.0	-34.9	
Mid Ch, 1732.5MHz									
3465.00	-18.9	V	3.0	36.0	1.0	-54.0	-13.0	-41.0	
5197.50	-15.5	V	3.0	35.4	1.0	-49.9	-13.0	-36.9	
6930.00	-14.6	V	3.0	35.7	1.0	-49.3	-13.0	-36.3	
3465.00	-18.6	H	3.0	36.0	1.0	-53.7	-13.0	-40.7	
5197.50	-10.8	H	3.0	35.4	1.0	-45.2	-13.0	-32.2	
6930.00	-13.9	H	3.0	35.7	1.0	-48.6	-13.0	-35.6	
High Ch, 1747.5MHz									

LTE Band 5

UL Verification Services, Inc.								
Above 1GHz High Frequency Substitution Measurement								
Company:		SOMC						
Project #:		11785223						
Date:		7/6/2017						
Test Engineer:		43574 JS						
Configuration:		EUT + AC Charger + HS						
Location:		Chamber C						
Mode:		LTE_QPSK Band 5 Harmonics, 1.4MHz Bandwidth						
f	SG reading	Ant. Pol.	Distance	Preamp	Filter	ERP	Limit	Notes
MHz	(dBm)	(H/V)	(m)	(dB)	(dB)	(dBm)	(dBm)	
Low Ch, B24.7								
1649.40	-25.3	V	3.0	36.4	1.0	-60.6	-13.0	-47.6
2474.10	-25.1	V	3.0	35.0	1.0	-59.1	-13.0	-46.1
3298.80	-22.1	V	3.0	34.3	1.0	-55.4	-13.0	-42.4
1649.40	-25.9	H	3.0	36.4	1.0	-61.3	-13.0	-48.3
2474.10	-24.6	H	3.0	35.0	1.0	-58.5	-13.0	-45.5
3298.80	-22.5	H	3.0	34.3	1.0	-55.8	-13.0	-42.8
Mid Ch, B36.5								
1673.00	-24.9	V	3.0	36.3	1.0	-60.3	-13.0	-47.3
2509.50	-24.7	V	3.0	34.9	1.0	-56.6	-13.0	-43.6
3346.00	-22.3	V	3.0	34.2	1.0	-55.6	-13.0	-42.6
1673.00	-25.2	H	3.0	36.3	1.0	-60.5	-13.0	-47.5
2509.50	-24.3	H	3.0	34.9	1.0	-58.2	-13.0	-45.2
3346.00	-23.1	H	3.0	34.2	1.0	-56.3	-13.0	-43.3
High Ch, B48.3								
1696.60	-24.7	V	3.0	36.3	1.0	-60.0	-13.0	-47.0
2544.90	-24.8	V	3.0	34.9	1.0	-58.7	-13.0	-45.7
3393.20	-22.0	V	3.0	34.2	1.0	-55.1	-13.0	-42.1
1696.60	-25.2	H	3.0	36.3	1.0	-60.5	-13.0	-47.5
2544.90	-24.3	H	3.0	34.9	1.0	-58.2	-13.0	-45.2
3393.20	-27.3	H	3.0	34.2	1.0	-55.4	-13.0	-42.4

LTE B5 1.4MHz QPSK

UL Verification Services, Inc.								
Above 1GHz High Frequency Substitution Measurement								
Company:		SOMC						
Project #:		11785223						
Date:		7/6/2017						
Test Engineer:		43574 JS						
Configuration:		EUT + AC Charger + HS						
Location:		Chamber C						
Mode:		LTE_GPRS Band 5 Harmonics, 3MHz Bandwidth						
f	SG reading	Ant. Pol.	Distance	Preamp	Filter	ERP	Limit	Notes
MHz	(dBm)	(H/V)	(m)	(dB)	(dB)	(dBm)	(dBm)	(dB)
Low Ch, 825.5								
1651.00	-25.3	V	3.0	36.4	1.0	-60.6	-13.0	47.6
2476.50	-24.5	V	3.0	35.0	1.0	-58.4	-13.0	45.4
3302.00	-22.2	V	3.0	34.3	1.0	-55.5	-13.0	42.5
1651.00	-25.5	H	3.0	36.4	1.0	-60.9	-13.0	47.9
2476.50	-24.0	H	3.0	35.0	1.0	-58.0	-13.0	45.0
3302.00	-23.0	H	3.0	34.3	1.0	-56.3	-13.0	43.3
Mid Ch, 836.5								
1673.00	-25.0	V	3.0	36.3	1.0	-60.3	-13.0	47.3
2699.50	-24.5	V	3.0	34.9	1.0	-58.4	-13.0	45.4
3346.00	-22.0	V	3.0	34.2	1.0	-55.3	-13.0	42.3
1673.00	-25.2	H	3.0	36.3	1.0	-60.5	-13.0	47.5
2699.50	-24.0	H	3.0	34.9	1.0	-58.0	-13.0	45.0
3346.00	-22.8	H	3.0	34.2	1.0	-56.1	-13.0	43.1
High Ch, 847.5								
1695.00	-24.6	V	3.0	36.3	1.0	-59.9	-13.0	46.9
2542.50	-24.3	V	3.0	34.9	1.0	-58.2	-13.0	45.2
3390.00	-22.0	V	3.0	34.2	1.0	-55.2	-13.0	42.2
1695.00	-25.0	H	3.0	36.3	1.0	-60.3	-13.0	47.3
2542.50	-24.0	H	3.0	34.9	1.0	-57.9	-13.0	44.9
3390.00	-22.8	H	3.0	34.2	1.0	-56.0	-13.0	43.0

LTE B5 3MHz QPSK

UL Verification Services, Inc.									
Above 1GHz High Frequency Substitution Measurement									
Company:		SOMC							
Project #:		11785223							
Date:		7/6/2017							
Test Engineer:		43574 JS							
Configuration:		EUT + AC Charger + HS							
Location:		Chamber C							
Mode:		LTE_GPRS Band 5 Harmonics, 5MHz Bandwidth							
f	SG reading	Ant. Pol.	Distance	Preampl	Filter	ERP	Limit	Delta	Notes
MHz	(dBm)	(H/V)	(m)	(dB)	(dB)	(dBm)	(dBm)	(dB)	
Low Ch, B26.5									
1653.00	-24.6	V	3.0	26.4	1.0	-59.9	-13.0	46.9	
2479.50	-22.5	V	3.0	35.0	1.0	-57.5	-13.0	44.5	
3306.00	-22.7	V	3.0	34.3	1.0	-55.9	-13.0	42.9	
1653.00	-25.5	H	3.0	36.4	1.0	-60.8	-13.0	47.8	
2479.50	-23.7	H	3.0	35.0	1.0	-57.7	-13.0	44.7	
3306.00	-23.2	H	3.0	34.3	1.0	-56.5	-13.0	43.5	
Mid Ch, B36.5									
1673.00	-24.5	V	3.0	26.3	1.0	-59.8	-13.0	46.8	
2499.50	-24.7	V	3.0	24.9	1.0	-58.6	-13.0	45.6	
3346.00	-22.5	V	3.0	34.2	1.0	-55.7	-13.0	42.7	
1673.00	-25.3	H	3.0	26.3	1.0	-60.7	-13.0	47.7	
2499.50	-24.5	H	3.0	24.9	1.0	-58.5	-13.0	45.5	
3346.00	-23.1	H	3.0	34.2	1.0	-56.3	-13.0	43.3	
High Ch, B46.5									
1693.00	-22.7	V	3.0	26.3	1.0	-59.0	-13.0	46.0	
2539.50	-24.6	V	3.0	34.9	1.0	-58.5	-13.0	45.5	
3386.00	-22.3	V	3.0	34.2	1.0	-55.5	-13.0	42.5	
1693.00	-24.7	H	3.0	26.3	1.0	-60.0	-13.0	47.0	
2539.50	-23.4	H	3.0	24.9	1.0	-57.3	-13.0	44.3	
3386.00	-22.8	H	3.0	34.2	1.0	-56.0	-13.0	43.0	

LTE B5 5MHz QPSK

UL Verification Services, Inc.

Above 1GHz High Frequency Substitution Measurement

Company: SOMC
 Project #: 11785223
 Date: 7/6/2017
 Test Engineer: 43574 JS
 Configuration: EUT + AC Charger + HS
 Location: Chamber C
 Mode: LTE, 16QAM Band 5 Harmonics, 1.4MHz Bandwidth

I	SG reading	Ant. Pol.	Distance	Preamp	Filter	ERP	Limit	Notes
MHz	(dBm)	(dBi)	(m)	(dB)	(dB)	(dBm)	(dBm)	
Low Ch, B24.7								
1649.40	-25.4	V	3.0	36.4	1.0	60.8	-13.0	47.8
2474.10	-25.2	V	3.0	35.0	1.0	59.2	-13.0	46.2
3298.80	-22.3	V	3.0	34.3	1.0	55.6	-13.0	42.6
1649.40	-25.7	H	3.0	36.4	1.0	61.0	-13.0	48.0
2474.10	-24.7	H	3.0	35.0	1.0	58.7	-13.0	45.7
3298.80	-22.6	H	3.0	34.3	1.0	55.8	-13.0	42.8
Mid Ch, B36.5								
1673.00	-25.2	V	3.0	36.3	1.0	60.5	-13.0	47.5
2509.50	-24.7	V	3.0	34.9	1.0	58.3	-13.0	45.7
3346.00	-22.7	V	3.0	34.2	1.0	56.0	-13.0	43.0
1673.00	-26.0	H	3.0	36.3	1.0	61.3	-13.0	48.3
2509.50	-24.3	H	3.0	34.9	1.0	58.2	-13.0	45.2
3346.00	-22.8	H	3.0	34.2	1.0	56.1	-13.0	43.1
High Ch, B48.3								
1696.60	-24.8	V	3.0	36.3	1.0	60.1	-13.0	47.1
2544.90	-25.0	V	3.0	34.9	1.0	58.9	-13.0	45.9
3393.20	-22.1	V	3.0	34.2	1.0	55.3	-13.0	42.3
1696.60	-25.4	H	3.0	36.3	1.0	60.7	-13.0	47.7
2544.90	-24.5	H	3.0	34.9	1.0	58.4	-13.0	45.4
3393.20	-22.4	H	3.0	34.2	1.0	55.6	-13.0	42.6

LTE B5 1.4MHz 16QAM

UL Verification Services, Inc.								
Above 1GHz High Frequency Substitution Measurement								
Company: SMMC								
Project #: 11785223								
Date: 7/6/2017								
Test Engineer: 43874 JS								
Configuration: EUT + AC Charger + HS								
Location: Chamber C								
Model: LTE, 4QAM Band 5 Harmonics, 3MHz Bandwidth								
F	SG reading	Ant. Pol.	Distance	Preamp	Filter	ERP	Limit	Notes
MHz	(dBm)	(H/V)	(m)	(dB)	(dB)	(dBm)	(dBm)	(dB)
Low Ch, B25.5								
1651.60	-25.4	V	3.0	36.4	1.0	-60.8	-13.0	47.8
2476.50	-24.6	V	3.0	35.0	1.0	-56.5	-13.0	45.5
3302.00	-22.4	V	3.0	34.3	1.0	-55.7	-13.0	42.7
1651.00	-25.7	H	3.0	36.4	1.0	-61.1	-13.0	48.1
2476.50	-24.2	H	3.0	35.0	1.0	-56.1	-13.0	45.1
3302.00	-22.9	H	3.0	34.3	1.0	-56.2	-13.0	43.2
Mid Ch, B36.5								
1673.00	-25.4	V	3.0	36.3	1.0	-60.7	-13.0	47.7
2509.50	-24.8	V	3.0	34.9	1.0	-58.7	-13.0	45.7
3346.00	-22.1	V	3.0	34.2	1.0	-55.4	-13.0	42.4
1673.00	-25.1	H	3.0	36.3	1.0	-60.4	-13.0	47.4
2509.50	-24.2	H	3.0	34.9	1.0	-58.2	-13.0	45.2
3346.00	-23.0	H	3.0	34.2	1.0	-56.2	-13.0	43.2
High Ch, B47.5								
1695.00	-24.8	V	3.0	36.3	1.0	-60.1	-13.0	47.1
2542.50	-24.4	V	3.0	34.9	1.0	-58.3	-13.0	45.3
3390.00	-22.1	V	3.0	34.2	1.0	-55.5	-13.0	42.5
1695.00	-24.9	H	3.0	36.3	1.0	-60.2	-13.0	47.2
2542.50	-23.9	H	3.0	34.9	1.0	-57.8	-13.0	44.8
3390.00	-22.9	H	3.0	34.2	1.0	-56.1	-13.0	43.1

LTE B5 3MHz 16QAM

UL Verification Services, Inc.

Above 1GHz High Frequency Substitution Measurement

Company:

SOMC

Project #:

11785223

Date:

7/6/2017

Test Engineer:

43574 JS

Configuration:

EUT + AC Charger + HS

Location:

Chamber C

Mode:

LTE, 16QAM Band 5 Harmonics, 5MHz Bandwidth

I MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, R26.5									
1653.00	-24.5	V	3.0	36.4	1.0	59.9	-13.0	-46.9	
2479.50	-23.6	V	3.0	35.0	1.0	57.5	-13.0	-44.5	
3306.00	-22.7	V	3.0	34.3	1.0	56.0	-13.0	-43.0	
1653.00	-25.4	H	3.0	36.4	1.0	60.7	-13.0	-41.7	
2479.50	-24.1	H	3.0	35.0	1.0	56.1	-13.0	-45.1	
3306.00	-23.3	H	3.0	34.3	1.0	56.5	-13.0	-43.5	
Mid Ch, R36.5									
1673.00	-24.2	V	3.0	36.3	1.0	59.5	-13.0	-46.5	
2669.50	-24.7	V	3.0	34.9	1.0	58.6	-13.0	-45.6	
3346.00	-24.7	V	3.0	34.2	1.0	56.0	-13.0	-43.0	
1673.00	-25.5	H	3.0	36.3	1.0	60.8	-13.0	-41.8	
2669.50	-24.1	H	3.0	34.9	1.0	58.0	-13.0	-45.0	
3346.00	-23.2	H	3.0	34.2	1.0	56.4	-13.0	-43.4	
High Ch, R46.5									
1693.00	-23.8	V	3.0	36.3	1.0	59.1	-13.0	-46.1	
2539.50	-24.8	V	3.0	34.9	1.0	58.7	-13.0	-45.7	
3386.00	-22.4	V	3.0	34.2	1.0	55.5	-13.0	-42.5	
1693.00	-24.7	H	3.0	36.3	1.0	60.0	-13.0	-47.0	
2539.50	-23.5	H	3.0	34.9	1.0	57.4	-13.0	-44.4	
3386.00	-22.9	H	3.0	34.2	1.0	56.1	-13.0	-43.1	

LTE B5 5MHz 16QAM

Above 1GHz High Frequency Substitution Measurement									
Company:		SOMC							
Project #:		11785223							
Date:		7/6/2017							
Test Engineer:		43574 JS							
Configuration:		EUT + AC Charger + HS							
Location:		Chamber C							
Mode:		LTE_16QPSK Band 5 Harmonics, 10MHz Bandwidth							
f	SG reading	Ant. Pol.	Distance	Preamp	Filter	ERP	Limit	Delta	Notes
MHz	(dBm)	(H/V)	(m)	(dB)	(dB)	(dBm)	(dBm)	(dB)	
Low Ch, 829									
1658.00	-24.6	V	3.0	36.4	1.0	-60.0	-13.0	-47.0	
2487.00	-24.5	V	3.0	35.0	1.0	-58.4	-13.0	-45.4	
3316.00	-22.9	V	3.0	34.3	1.0	-56.1	-13.0	-43.1	
1658.00	-26.2	H	3.0	36.4	1.0	-61.5	-13.0	-48.5	
2487.00	-25.0	H	3.0	35.0	1.0	-59.0	-13.0	-46.0	
3316.00	-23.0	H	3.0	34.3	1.0	-56.2	-13.0	-43.2	
Mid Ch, 836.5									
1673.00	-24.8	V	3.0	36.3	1.0	-60.1	-13.0	-47.1	
2509.50	-24.5	V	3.0	34.9	1.0	-58.5	-13.0	-45.5	
3346.00	-23.0	V	3.0	34.2	1.0	-56.2	-13.0	-43.2	
1673.00	-26.1	H	3.0	36.3	1.0	-61.4	-13.0	-48.4	
2509.50	-24.8	H	3.0	34.9	1.0	-58.7	-13.0	-45.7	
3346.00	-22.8	H	3.0	34.2	1.0	-56.1	-13.0	-43.1	
High Ch, 844									
1688.00	-24.9	V	3.0	36.3	1.0	-60.2	-13.0	-47.2	
2532.00	-21.5	V	3.0	34.9	1.0	-55.4	-13.0	-42.4	
3376.00	-22.9	V	3.0	34.2	1.0	-56.1	-13.0	-43.1	
1688.00	-26.1	H	3.0	36.3	1.0	-61.4	-13.0	-48.4	
2532.00	-24.9	H	3.0	34.9	1.0	-58.8	-13.0	-45.8	
3376.00	-22.6	H	3.0	34.2	1.0	-55.8	-13.0	-42.8	
LTE B5 10MHz QPSK									

Above 1GHz High Frequency Substitution Measurement									
Company:		SOMC							
Project #:		11785223							
Date:		7/6/2017							
Test Engineer:		43574 JS							
Configuration:		EUT + AC Charger + HS							
Location:		Chamber C							
Mode:		LTE_16QAM Band 5 Harmonics, 10MHz Bandwidth							
f	SG reading	Ant. Pol.	Distance	Preamp	Filter	ERP	Limit	Delta	Notes
MHz	(dBm)	(H/V)	(m)	(dB)	(dB)	(dBm)	(dBm)	(dB)	
Low Ch, 829									
1658.00	-24.8	V	3.0	36.4	1.0	-60.2	-13.0	-47.2	
2487.00	-24.3	V	3.0	35.0	1.0	-56.3	-13.0	-43.3	
3316.00	-22.6	V	3.0	34.3	1.0	-55.8	-13.0	-42.8	
1658.00	-26.1	H	3.0	36.4	1.0	-61.5	-13.0	-48.5	
2487.00	-25.1	H	3.0	35.0	1.0	-59.0	-13.0	-46.0	
3316.00	-22.9	H	3.0	34.3	1.0	-56.2	-13.0	-43.2	
Mid Ch, 836.5									
1673.00	-25.4	V	3.0	36.3	1.0	-60.8	-13.0	-47.8	
2509.50	-24.2	V	3.0	34.9	1.0	-58.1	-13.0	-45.1	
3346.00	-22.3	V	3.0	34.2	1.0	-55.5	-13.0	-42.5	
1673.00	-25.7	H	3.0	36.3	1.0	-61.1	-13.0	-48.1	
2509.50	-24.2	H	3.0	34.9	1.0	-58.1	-13.0	-45.1	
3346.00	-23.2	H	3.0	34.2	1.0	-56.5	-13.0	-43.5	
High Ch, 844									
1688.00	-25.0	V	3.0	36.3	1.0	-60.3	-13.0	-47.3	
2532.00	-21.4	V	3.0	34.9	1.0	-55.3	-13.0	-42.3	
3376.00	-23.4	V	3.0	34.2	1.0	-56.6	-13.0	-43.6	
1688.00	-25.8	H	3.0	36.3	1.0	-61.1	-13.0	-48.1	
2532.00	-24.7	H	3.0	34.9	1.0	-58.6	-13.0	-45.6	
3376.00	-23.2	H	3.0	34.2	1.0	-56.4	-13.0	-43.4	
LTE B5 10MHz 16QAM									

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

Company:

Project #:

Date:

Test Engineer:

Configuration:

Location:

Mode:

SOMC

11785223

7/5/2017

43575 OS

EUT + HS + Charger

Chamber C

LTE_QPSK Band 7 Harmonics, 20MHz Bandwidth

f	SG reading	Ant. Pol.	Distance	Preampl	Filter	ERP	Limit	Delta	Notes
MHz	(dBm)	(H/V)	(m)	(dB)	(dB)	(dBm)	(dBm)	(dB)	
Low Ch, 2510MHz									
5020.00	-13.9	V	3.0	35.5	1.0	-48.3	-25.0	-23.3	
7530.00	-13.1	V	3.0	35.7	1.0	-47.9	-25.0	-22.9	
10040.00	-13.0	V	3.0	36.0	1.0	-48.0	-25.0	-23.0	
5020.00	-9.1	H	3.0	35.5	1.0	-43.6	-25.0	-18.6	
7530.00	-13.3	H	3.0	35.7	1.0	-48.0	-25.0	-23.0	
10040.00	-13.2	H	3.0	36.0	1.0	-48.2	-25.0	-23.2	
Mid Ch, 2535MHz									
5070.00	-14.8	V	3.0	35.4	1.0	-49.2	-25.0	-24.2	
7605.00	-13.8	V	3.0	35.8	1.0	-48.5	-25.0	-23.5	
10140.00	-12.7	V	3.0	36.0	1.0	-47.7	-25.0	-22.7	
5070.00	-15.4	H	3.0	35.4	1.0	-49.9	-25.0	-24.9	
7605.00	-12.7	H	3.0	35.8	1.0	-47.4	-25.0	-22.4	
10140.00	-12.3	H	3.0	36.0	1.0	-47.2	-25.0	-22.2	
High Ch, 2560MHz									
5120.00	-12.5	V	3.0	35.4	1.0	-47.0	-25.0	-22.0	
7680.00	-13.1	V	3.0	35.8	1.0	-47.9	-25.0	-22.9	
10240.00	-12.0	V	3.0	35.9	1.0	-47.8	-25.0	-22.8	
5120.00	-12.2	H	3.0	35.4	1.0	-46.6	-25.0	-21.6	
7680.00	-12.9	H	3.0	35.8	1.0	-47.6	-25.0	-22.6	
10240.00	-13.3	H	3.0	35.9	1.0	-48.2	-25.0	-23.2	

LTE B7 20MHz QPSK

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

Company:

Project #:

Date:

Test Engineer:

Configuration:

Location:

Mode:

SOMC

11785223

7/5/2017

43575 OS

EUT + HS + Charger

Chamber C

LTE_16QAM Band 7 Harmonics, 20MHz Bandwidth

f	SG reading	Ant. Pol.	Distance	Preampl	Filter	ERP	Limit	Delta	Notes
MHz	(dBm)	(H/V)	(m)	(dB)	(dB)	(dBm)	(dBm)	(dB)	
Low Ch, 2510MHz									
5020.00	-14.2	V	3.0	35.5	1.0	-48.7	-25.0	-23.7	
7530.00	-14.0	V	3.0	35.7	1.0	-48.8	-25.0	-23.8	
10040.00	-13.3	V	3.0	36.0	1.0	-48.3	-25.0	-23.3	
5020.00	-10.5	H	3.0	35.5	1.0	-44.9	-25.0	-19.9	
7530.00	-13.0	H	3.0	35.7	1.0	-47.7	-25.0	-22.7	
10040.00	-12.0	H	3.0	36.0	1.0	-47.0	-25.0	-22.0	
Mid Ch, 2535MHz									
5070.00	-15.1	V	3.0	35.4	1.0	-49.5	-25.0	-24.5	
7605.00	-12.8	V	3.0	35.8	1.0	-47.6	-25.0	-22.6	
10140.00	-14.0	V	3.0	36.0	1.0	-48.9	-25.0	-23.9	
5070.00	-15.0	H	3.0	35.4	1.0	-49.4	-25.0	-24.4	
7605.00	-11.6	H	3.0	35.8	1.0	-46.4	-25.0	-21.4	
10140.00	-13.1	H	3.0	36.0	1.0	-48.1	-25.0	-23.1	
High Ch, 2560MHz									
5120.00	-12.6	V	3.0	35.4	1.0	-47.0	-25.0	-22.0	
7680.00	-13.7	V	3.0	35.8	1.0	-48.5	-25.0	-23.5	
10240.00	-13.1	V	3.0	35.9	1.0	-48.0	-25.0	-23.0	
5120.00	-12.8	H	3.0	35.4	1.0	-47.3	-25.0	-22.3	
7680.00	-13.4	H	3.0	35.8	1.0	-48.2	-25.0	-23.2	
10240.00	-12.1	H	3.0	35.9	1.0	-47.0	-25.0	-22.0	

LTE B7 20MHz 16QAM

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

Company:

Project #:

Date:

Test Engineer:

Configuration:

Location:

Mode:

SOMC

11785223

7/6/2017

43574 JS

EUT + AC Charger + HS

Chamber C

LTE_QPSK Band 12 Harmonics, 10MHz Bandwidth

f	SG reading	Ant. Pol.	Distance	Preampl	Filter	ERP	Limit	Delta	Notes
MHz	(dBm)	(H/V)	(m)	(dB)	(dB)	(dBm)	(dBm)	(dB)	
Low Ch, 704									
1408.00	-28.3	V	3.0	36.5	1.0	-43.8	-13.0	-50.8	
2112.00	-20.8	V	3.0	35.6	1.0	-55.4	-13.0	-42.4	
2816.00	-23.0	V	3.0	34.7	1.0	-56.7	-13.0	-43.7	
1408.00	-28.9	H	3.0	36.5	1.0	-44.4	-13.0	-51.4	
2112.00	-21.9	H	3.0	35.6	1.0	-56.5	-13.0	-43.5	
2816.00	-22.6	H	3.0	34.7	1.0	-56.3	-13.0	-43.3	
Mid Ch, 707.5									
1415.00	-28.5	V	3.0	36.5	1.0	-44.0	-13.0	-51.0	
2122.50	-20.8	V	3.0	35.6	1.0	-55.5	-13.0	-42.5	
2830.00	-23.1	V	3.0	34.7	1.0	-56.8	-13.0	-43.8	
1415.00	-29.2	H	3.0	36.5	1.0	-44.7	-13.0	-51.7	
2122.50	-22.1	H	3.0	35.6	1.0	-56.7	-13.0	-43.7	
2830.00	-22.7	H	3.0	34.7	1.0	-56.4	-13.0	-43.4	
High Ch, 711									
1422.00	-28.5	V	3.0	36.5	1.0	-44.0	-13.0	-51.0	
2133.00	-21.0	V	3.0	35.6	1.0	-55.6	-13.0	-42.6	
2844.00	-22.9	V	3.0	34.7	1.0	-56.6	-13.0	-43.6	
1422.00	-29.0	H	3.0	36.5	1.0	-44.6	-13.0	-51.6	
2133.00	-21.7	H	3.0	35.6	1.0	-56.3	-13.0	-43.3	
2844.00	-22.8	H	3.0	34.7	1.0	-56.5	-13.0	-43.5	

LTE B12 10MHz QPSK

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

Company:

Project #:

Date:

Test Engineer:

Configuration:

Location:

Mode:

SOMC

11785223

7/6/2017

43574 JS

EUT + AC Charger + HS

Chamber C

LTE_QPSK Band 12 Harmonics, 10MHz Bandwidth

f	SG reading	Ant. Pol.	Distance	Preampl	Filter	ERP	Limit	Delta	Notes
MHz	(dBm)	(H/V)	(m)	(dB)	(dB)	(dBm)	(dBm)	(dB)	
Low Ch, 704									
1408.00	-28.1	V	3.0	36.5	1.0	-43.7	-13.0	-50.7	
2112.00	-20.9	V	3.0	35.6	1.0	-55.5	-13.0	-42.5	
2816.00	-23.1	V	3.0	34.7	1.0	-56.8	-13.0	-43.8	
1408.00	-29.1	H	3.0	36.5	1.0	-44.6	-13.0	-51.6	
2112.00	-21.9	H	3.0	35.6	1.0	-56.6	-13.0	-43.6	
2816.00	-22.6	H	3.0	34.7	1.0	-56.3	-13.0	-43.3	
Mid Ch, 707.5									
1415.00	-28.3	V	3.0	36.5	1.0	-43.8	-13.0	-50.8	
2122.50	-20.9	V	3.0	35.6	1.0	-55.5	-13.0	-42.5	
2830.00	-23.2	V	3.0	34.7	1.0	-56.9	-13.0	-43.9	
1415.00	-29.2	H	3.0	36.5	1.0	-44.7	-13.0	-51.7	
2122.50	-22.2	H	3.0	35.6	1.0	-56.8	-13.0	-43.8	
2830.00	-23.9	H	3.0	34.7	1.0	-57.6	-13.0	-44.6	
High Ch, 711									
1422.00	-28.6	V	3.0	36.5	1.0	-44.1	-13.0	-51.1	
2133.00	-21.1	V	3.0	35.6	1.0	-55.7	-13.0	-42.7	
2844.00	-22.9	V	3.0	34.7	1.0	-56.6	-13.0	-43.6	
1422.00	-29.2	H	3.0	36.5	1.0	-44.7	-13.0	-51.7	
2133.00	-21.7	H	3.0	35.6	1.0	-56.3	-13.0	-43.3	
2844.00	-22.9	H	3.0	34.7	1.0	-56.6	-13.0	-43.6	

LTE B12 10MHz 16QAM

