

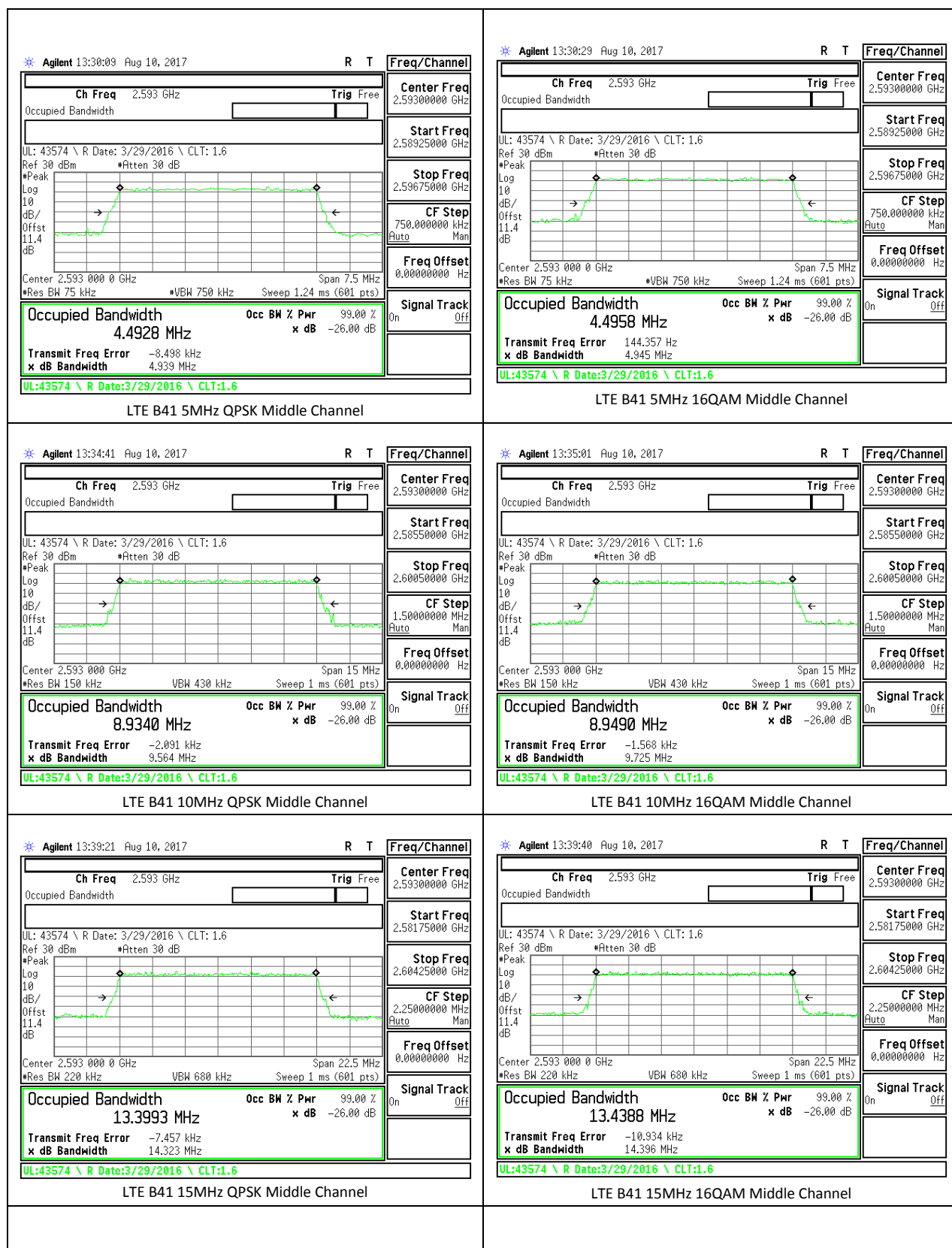
LTE Band 30

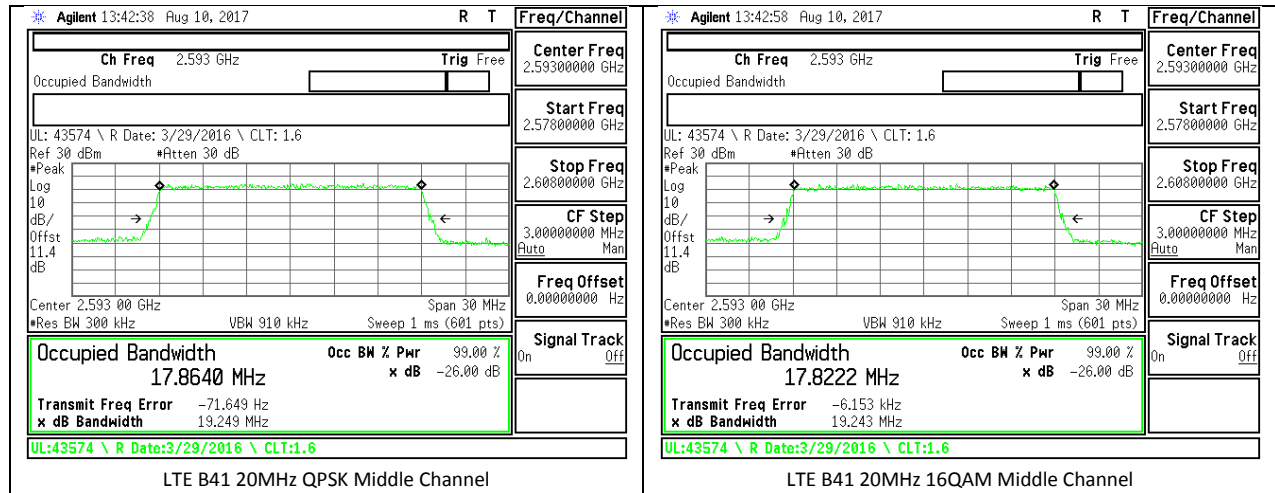
Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE30	5	QPSK	50/0	2307.5	4.5063	4.965
			50/0	2310	4.5068	4.959
			50/0	2312.5	4.5173	4.963
		16QAM	50/0	2307.5	4.4896	4.950
			50/0	2310	4.4981	4.981
			50/0	2312.5	4.4981	4.932
	10	QPSK				
			25/0	2310	8.9512	9.813
		16QAM				
			25/0	2310	8.9708	9.743



LTE Band 41

Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE41	5	QPSK	25/0	2498.5	4.49	4.92
			25/0	2593	4.49	4.94
			25/0	2687.5	4.5	4.87
		16QAM	25/0	2498.5	4.49	4.86
			25/0	2593	4.5	4.94
			25/0	2687.5	4.49	4.91
	10	QPSK	50/0	2501	8.9	9.49
			50/0	2593	8.93	9.56
			50/0	2685	8.94	9.65
		16QAM	50/0	2501	8.96	9.65
			50/0	2593	8.95	9.72
			50/0	2685	8.94	9.64
	15	QPSK	75/0	2503.5	13.39	14.41
			75/0	2593	13.4	14.32
			75/0	2682.5	13.38	14.33
		16QAM	75/0	2503.5	13.4	14.41
			75/0	2593	13.44	14.4
			75/0	2682.5	13.4	14.47
	20	QPSK	100/0	2506	17.86	19.17
			100/0	2593	17.87	19.25
			100/0	2680	17.87	19.19
		16QAM	100/0	2506	17.86	19.08
			100/0	2593	17.82	19.24
			100/0	2680	17.83	19.37





14. BAND EDGE EMISSIONS

RULE PART(S)

FCC: §2.1051, §22.359, §22.917, §24.238, §27.53, and §90.691
RSS-132, RSS-133, RSS-139, RSS-130, RSS-195, RSS-199

FCC LIMITS

FCC: §22.359, §22.917, §24.238, §27.53

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.

FCC: §27.53

(c) On any frequency outside the 776–788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log (P)$ dB;

(1) On any frequency outside the 746-758 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log (P)$ dB;

(2) On any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log (P)$ dB;

(4) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than $65 + 10 \log (P)$ dB in a 6.25 kHz band segment, for mobile and portable stations;

(5) Compliance with the provisions of paragraphs (c)(1) and (c)(2) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 30 kHz may be employed;

(6) Compliance with the provisions of paragraphs (c)(3) and (c)(4) of this section is based on the use of measurement instrumentation such that the reading taken with any resolution bandwidth setting should be adjusted to indicate spectral energy in a 6.25 kHz segment.

FCC: §27.53

(m)(6) Measurement procedure. Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz 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; for mobile digital stations, in the 1 megahertz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least two percent may be employed, except when the 1 megahertz band is 2495-2496 MHz, in which case a resolution bandwidth of at least one percent 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 megahertz or 1 percent of emission bandwidth, as specified; or 1 megahertz or 2 percent for mobile digital stations, except in the band 2495-2496 MHz). 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. With respect to television operations, measurements must be made of the separate visual and aural operating powers at sufficiently frequent intervals to ensure compliance with the rules.

(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.

FCC: §90.210, and §90.691

(a)(1) For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $116 \log_{10} (f/6.1)$ decibels or $50 + 10 \log_{10}(P)$ decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.

(a)(2) For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10} (P)$ decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz. {NOTE: Use 100 kHz reference bandwidth.}

IC LIMITS

RSS-133, RSS-132, RSS-139 and RSS-130: 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.

RSS130

4.6.1 The power of any unwanted emissions in any 100 kHz bandwidth on any frequency outside the frequency range(s) within which the equipment is designed to operate shall be attenuated below the transmitter power, P (dBW), by at least $43 + 10 \log_{10} p$ (watts), dB. However, in the 100 kHz band immediately outside the equipment's operating frequency range, a resolution bandwidth of 30 kHz may be employed.

4.6.2 In addition to the limit outlined in Section 4.6.1 above, equipment operating in the frequency bands 746-756 MHz and 777-787 MHz shall also comply with the following restrictions:

(a) The power of any unwanted emissions in any 6.25 kHz bandwidth for all frequencies between 763-775 MHz and 793-806 MHz shall be attenuated below the transmitter power, P (dBW), by at least:

- (i) $76 + 10 \log_{10} p$ (watts), dB, for base and fixed equipment, and
- (ii) $65 + 10 \log_{10} p$ (watts), dB, for mobile and portable equipment.

RSS199

For mobile subscriber equipment, the power of any unwanted emissions measured as above shall be attenuated (in dB) below the transmitter power, P (dBW), by at least:

- i) $40 + 10 \log_{10} p$ from the channel edges to 5 MHz away,
- ii) $43 + 10 \log_{10} p$ between 5 MHz and X MHz from the channel edges, and
- iii) $55 + 10 \log_{10} p$ at X MHz and beyond from the channel edges.
- iv) in addition, the attenuation shall be not be less than $43 + 10 \log_{10} p$ on all frequencies between 2490.5 MHz and 2496 MHz and $55 + 10 \log_{10} p$ at or below 2490.5 MHz.

TEST PROCEDURE

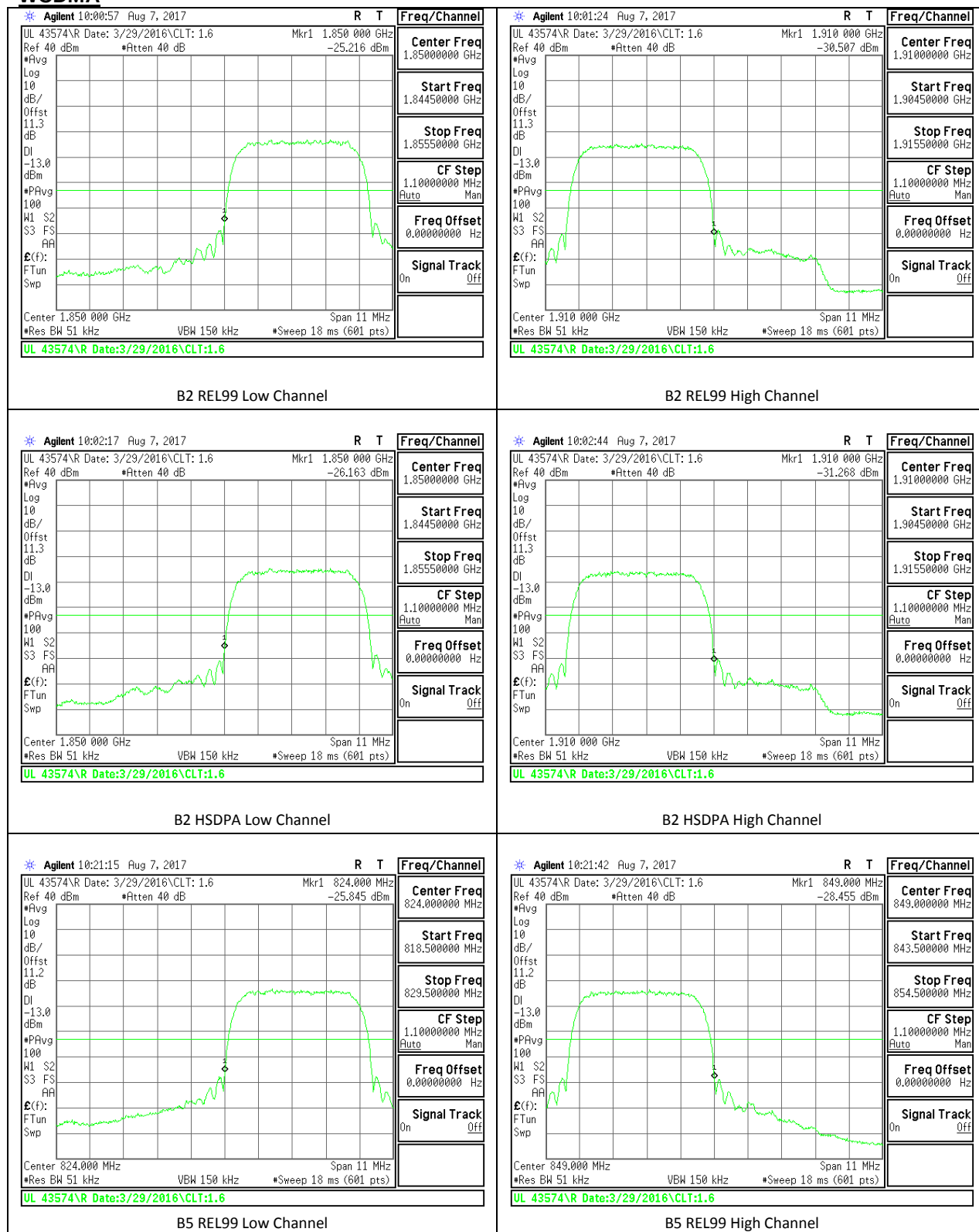
Per KDB 971168 D01 Power Meas License Digital Systems v02r02

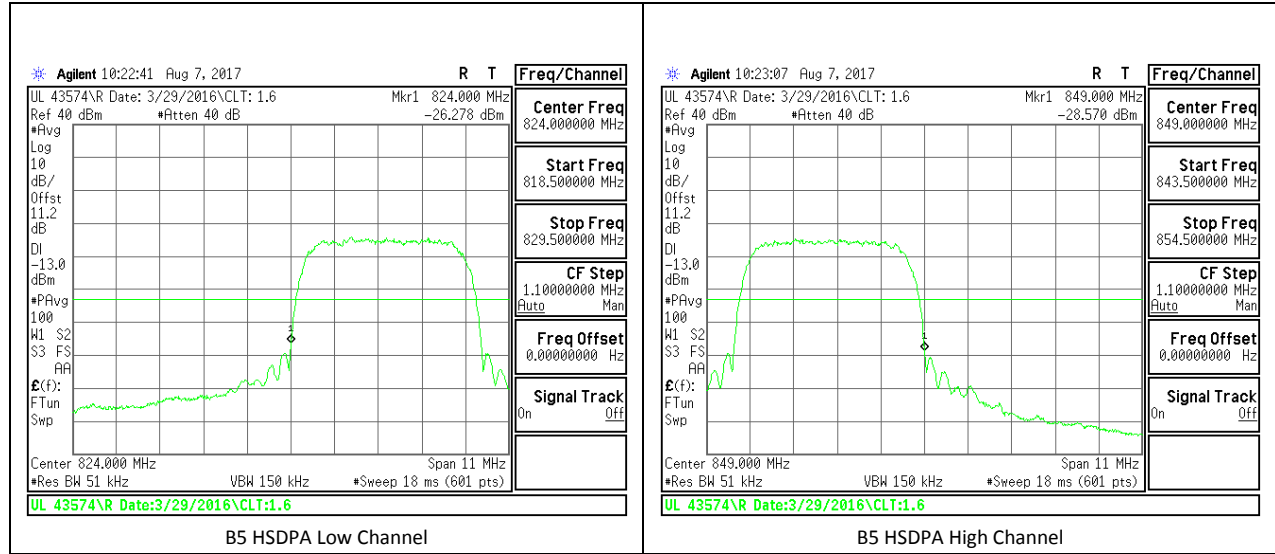
The transmitter output was connected to an Agilent 8960 or a CMW500 Test Set and configured to operate at maximum power. The band edge emissions were measured at the required operating frequencies in each band on the Spectrum Analyzer.

For each band edge measurement:

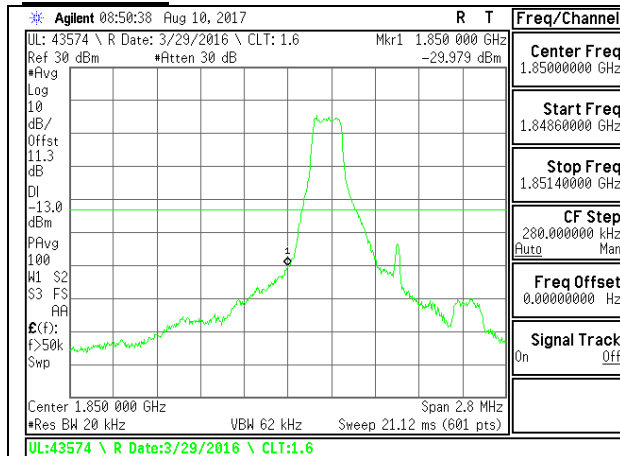
- Set the spectrum analyzer span to include the block edge frequency.
- Set a marker to point the corresponding band edge frequency in each test case.
- Set display line at -13 dBm
- Set resolution bandwidth to at least 1% of emission bandwidth.

14.1. BAND EDGE PLOTS WCDMA

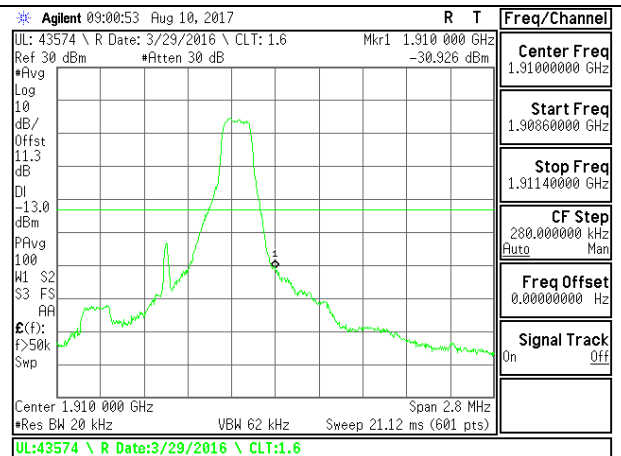




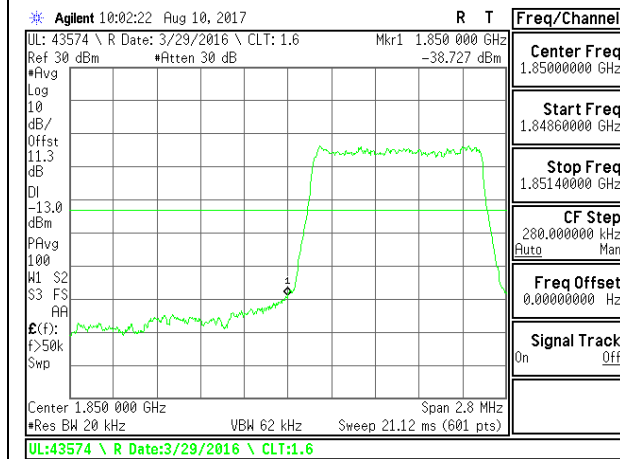
LTE Band 2



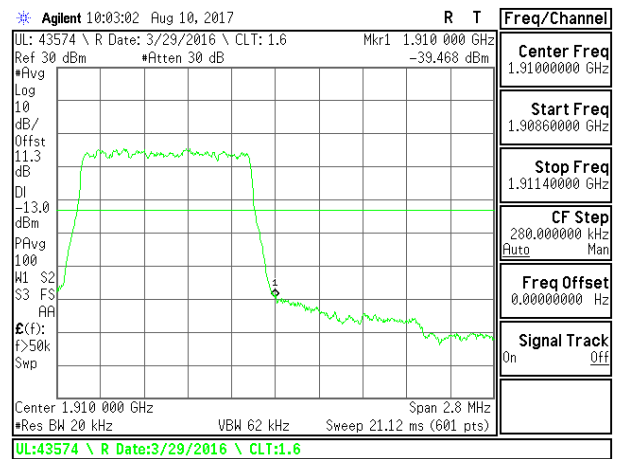
LTE B2 1.4MHz QPSK Low Channel 1RB



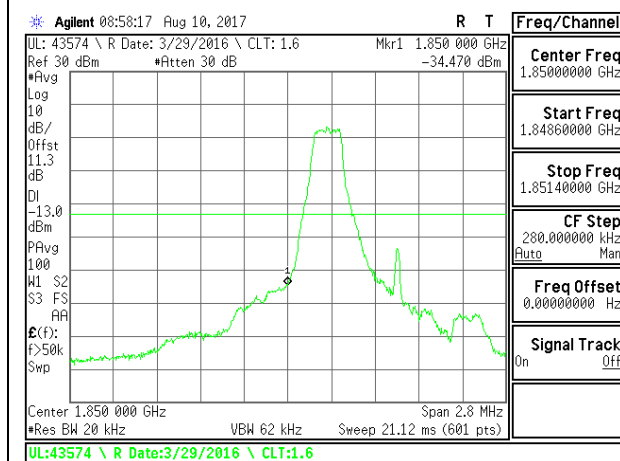
LTE B2 1.4MHz QPSK High Channel 1RB



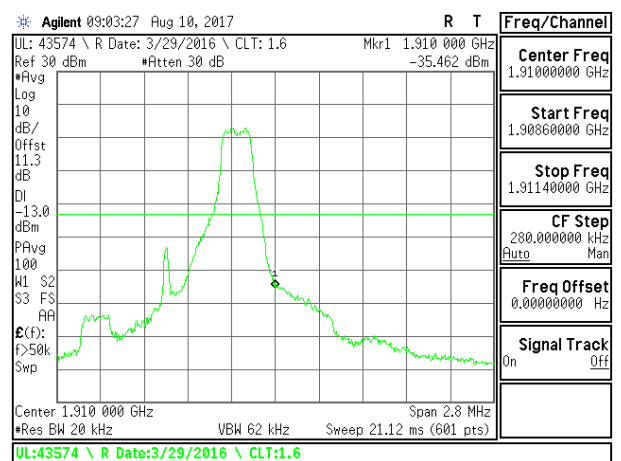
LTE B2 1.4MHz QPSK Low Channel FRB



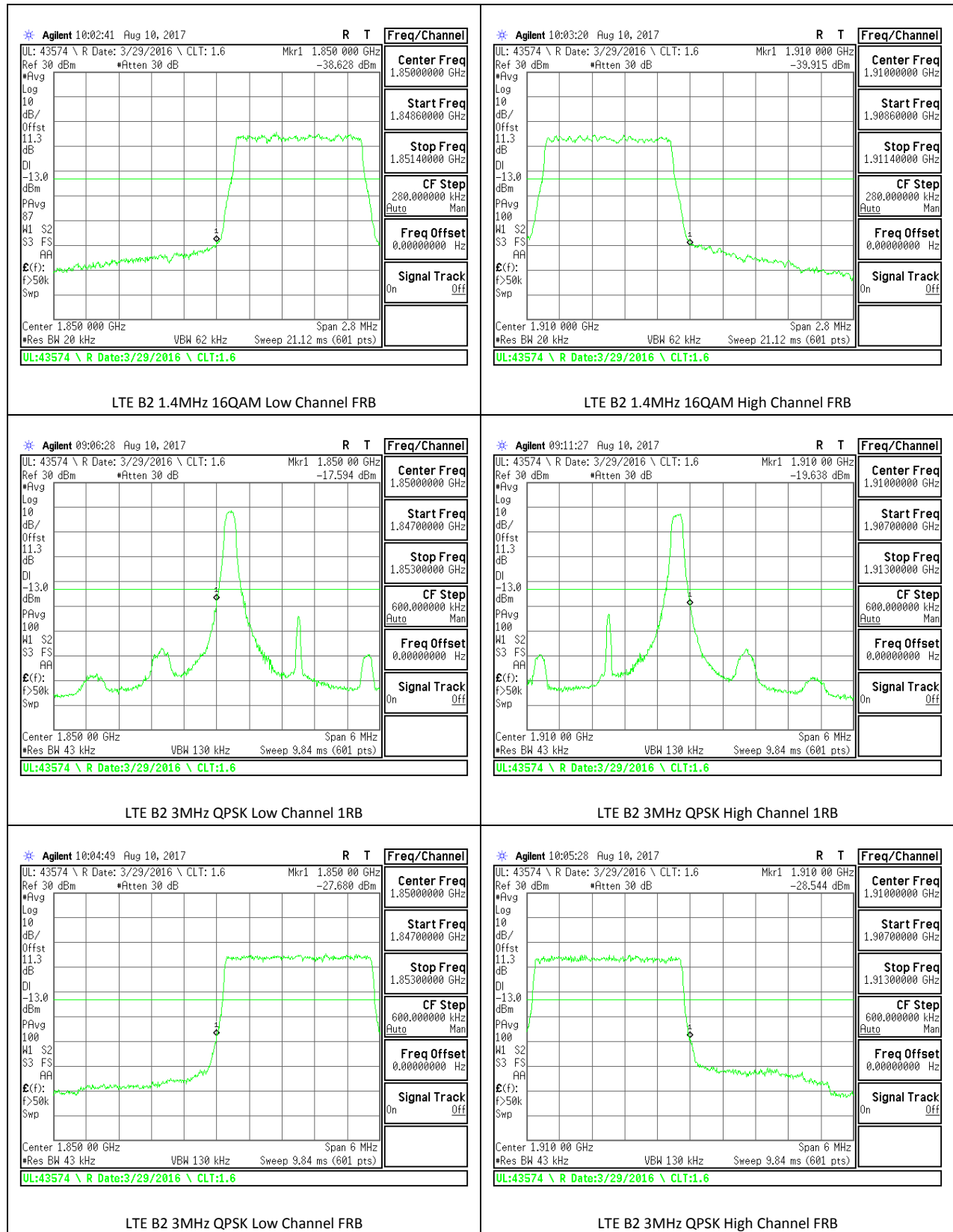
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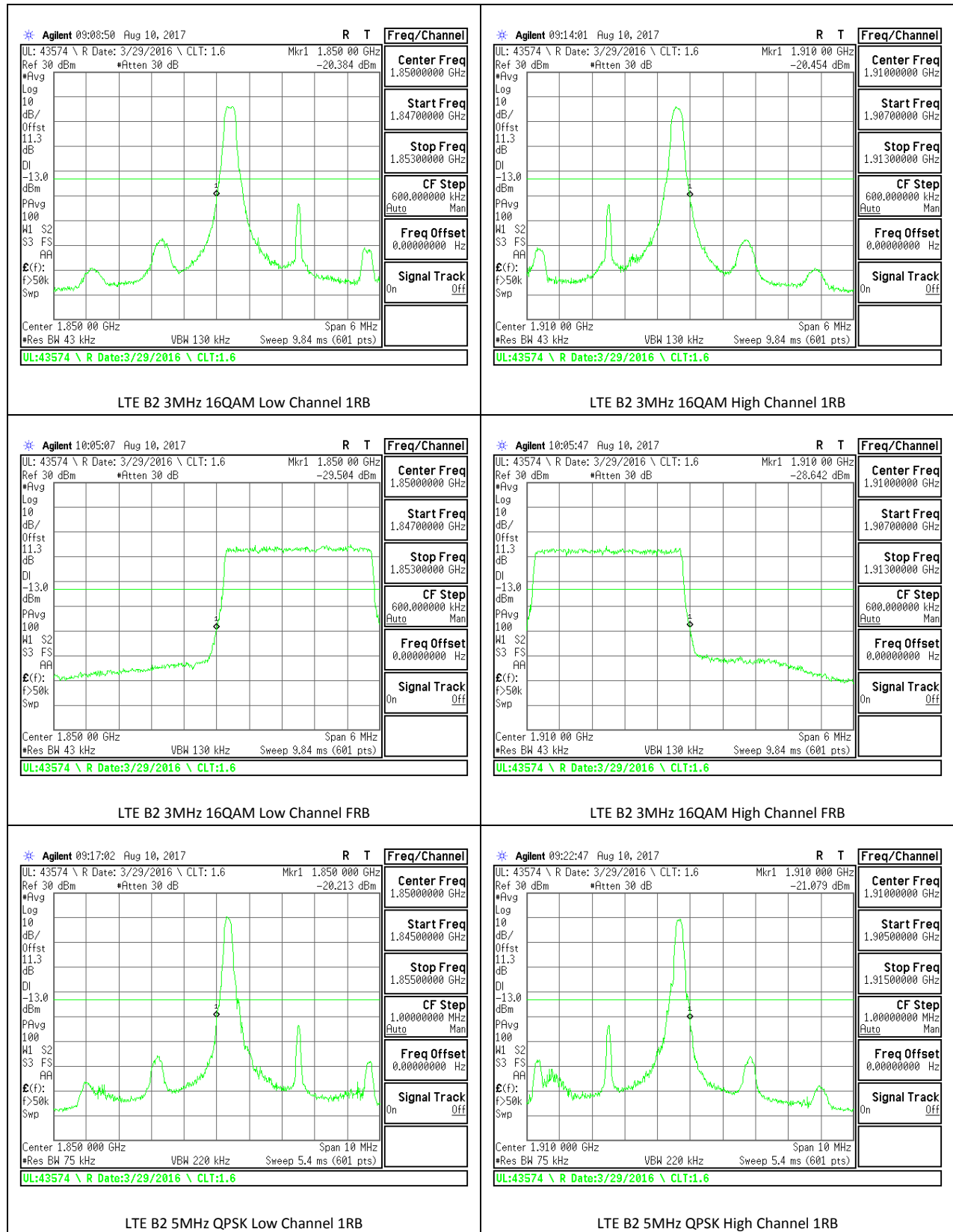


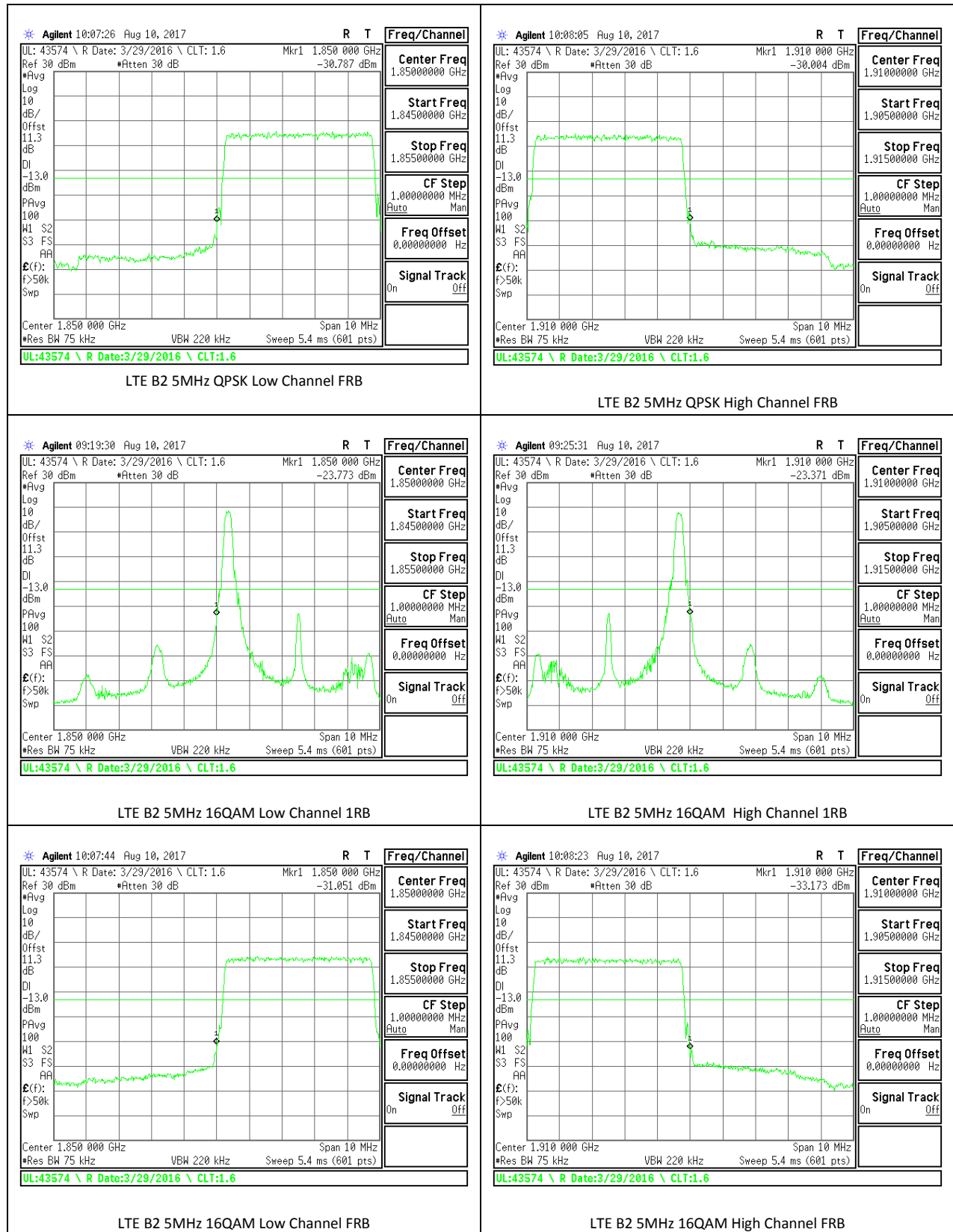
LTE B2 1.4MHz 16QAM Low Channel 1RB

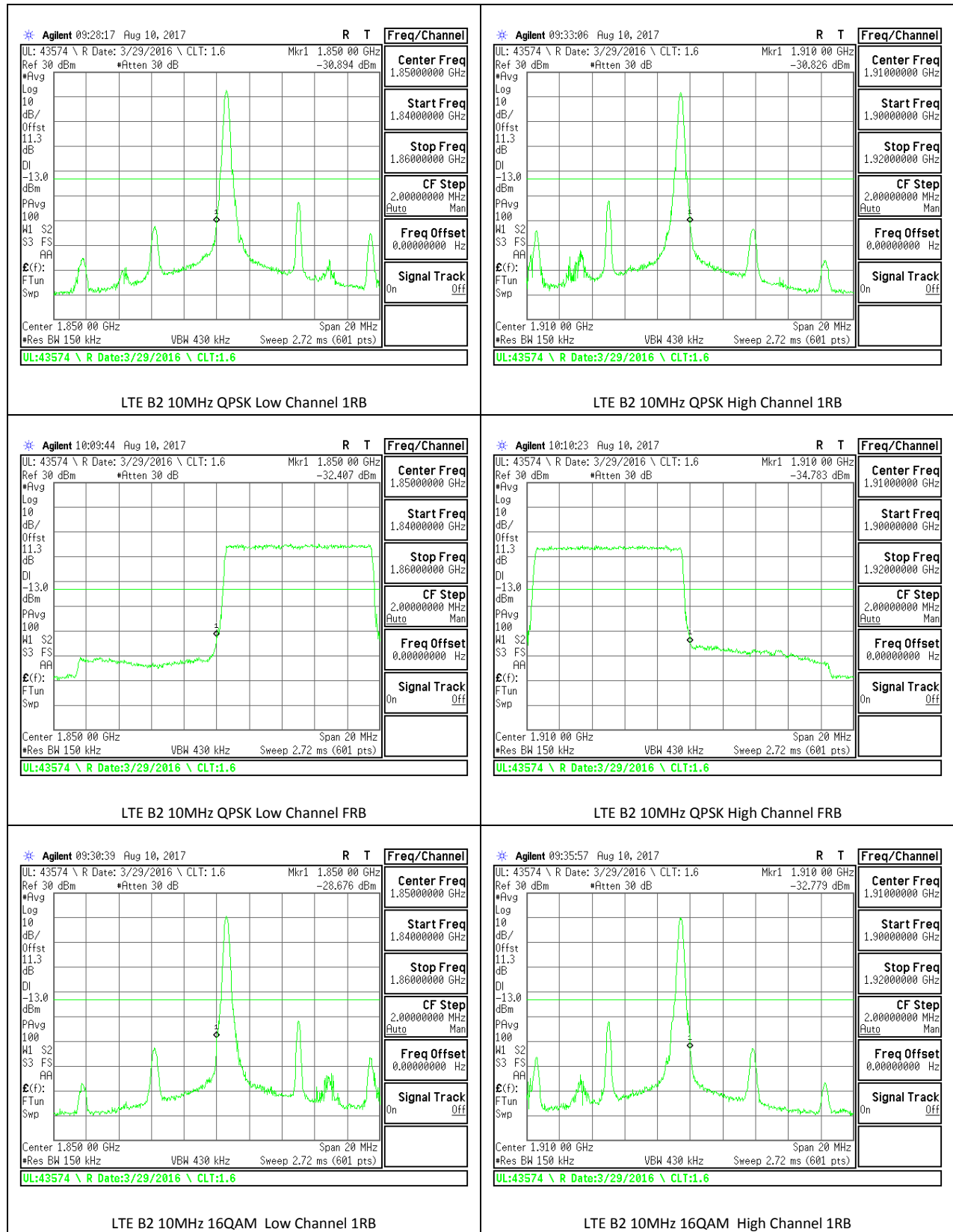


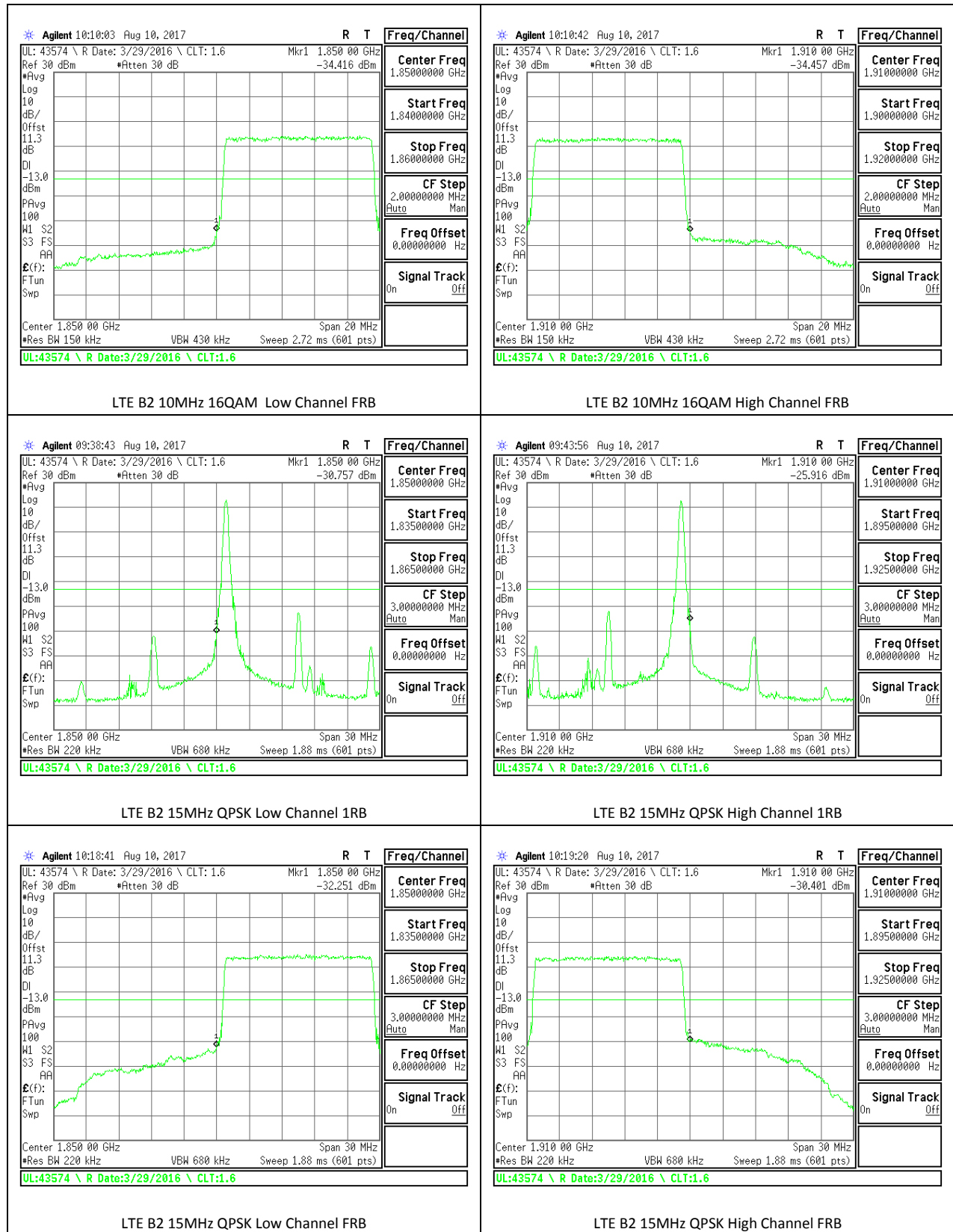
LTE B2 1.4MHz 16QAM High Channel 1RB

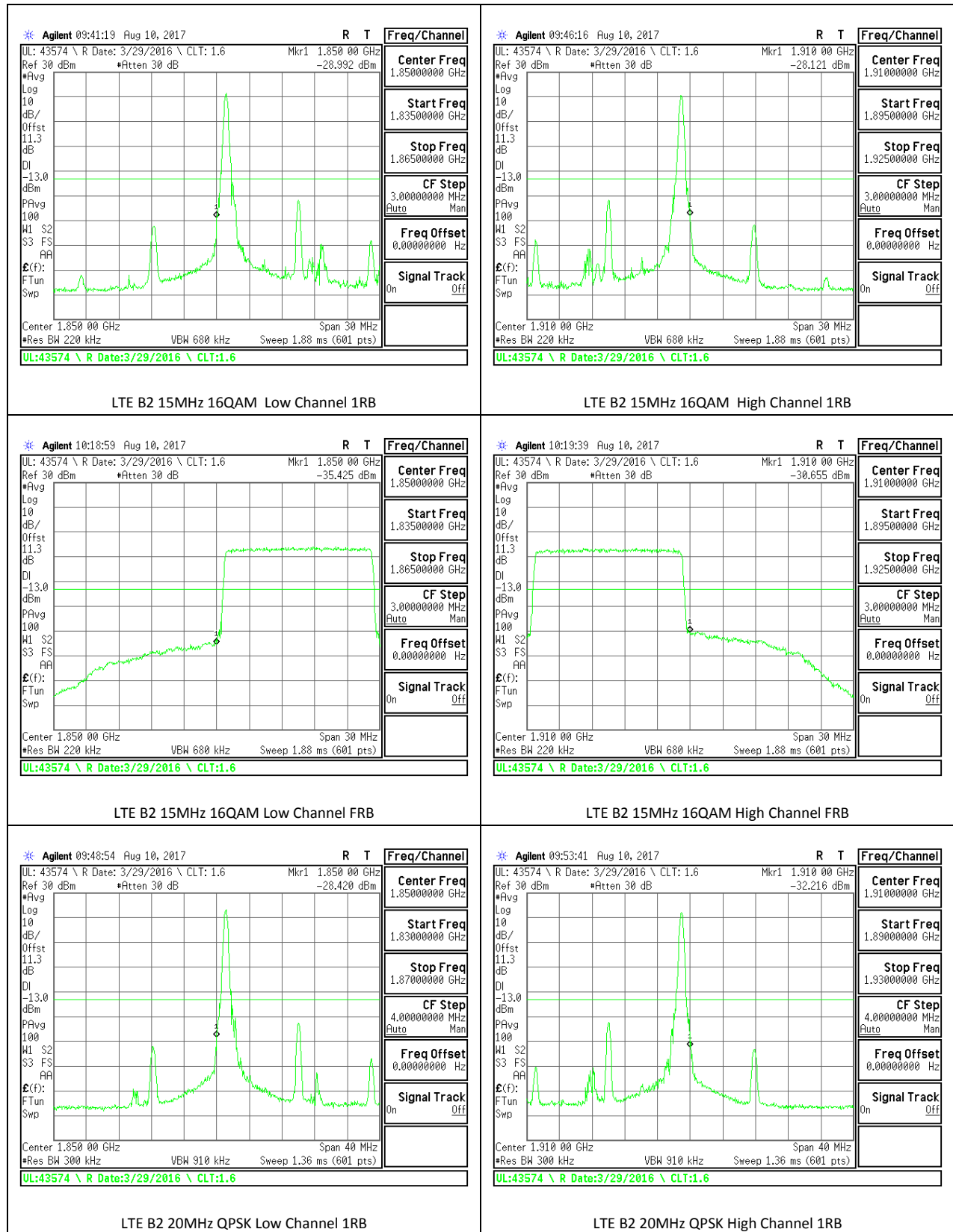


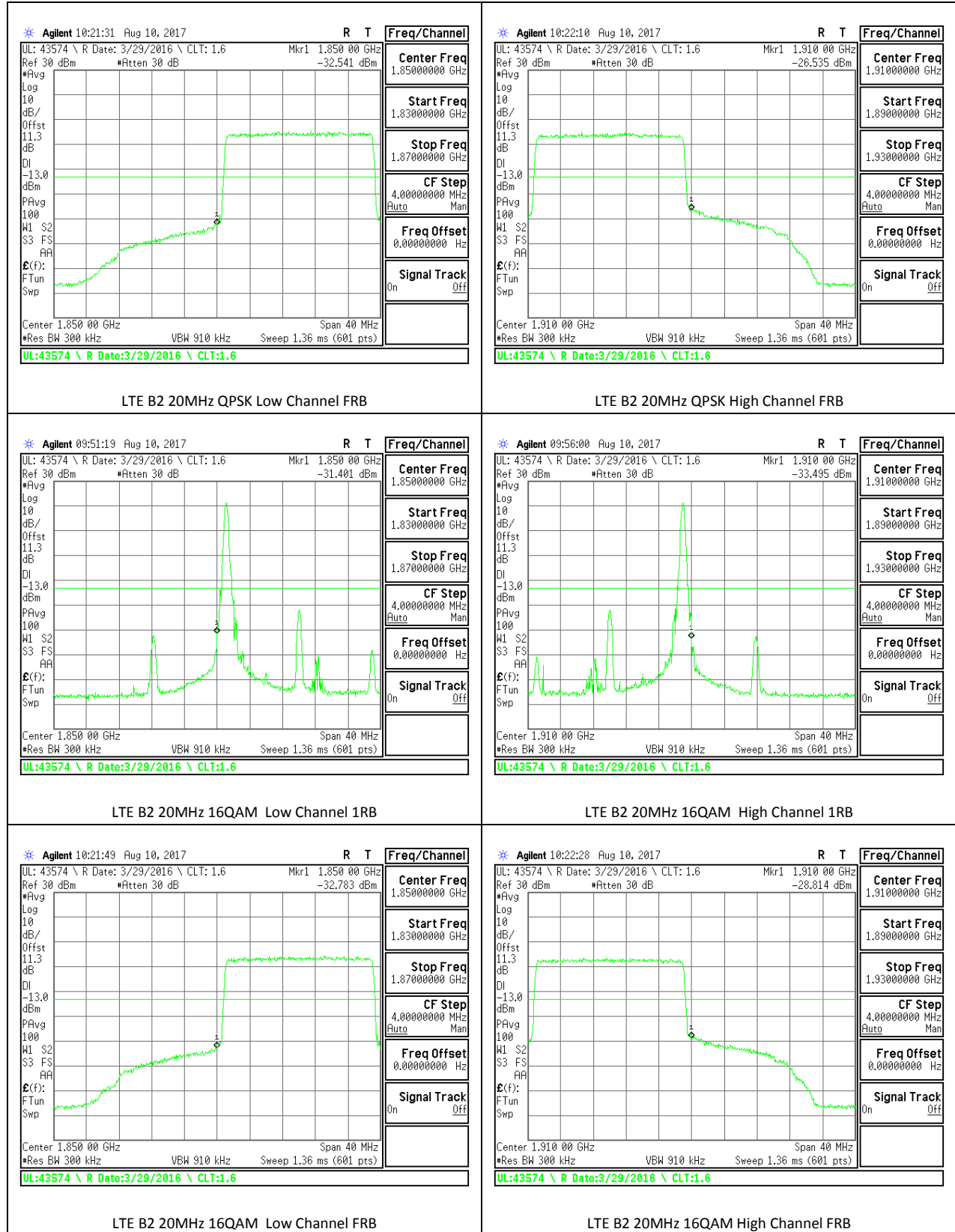




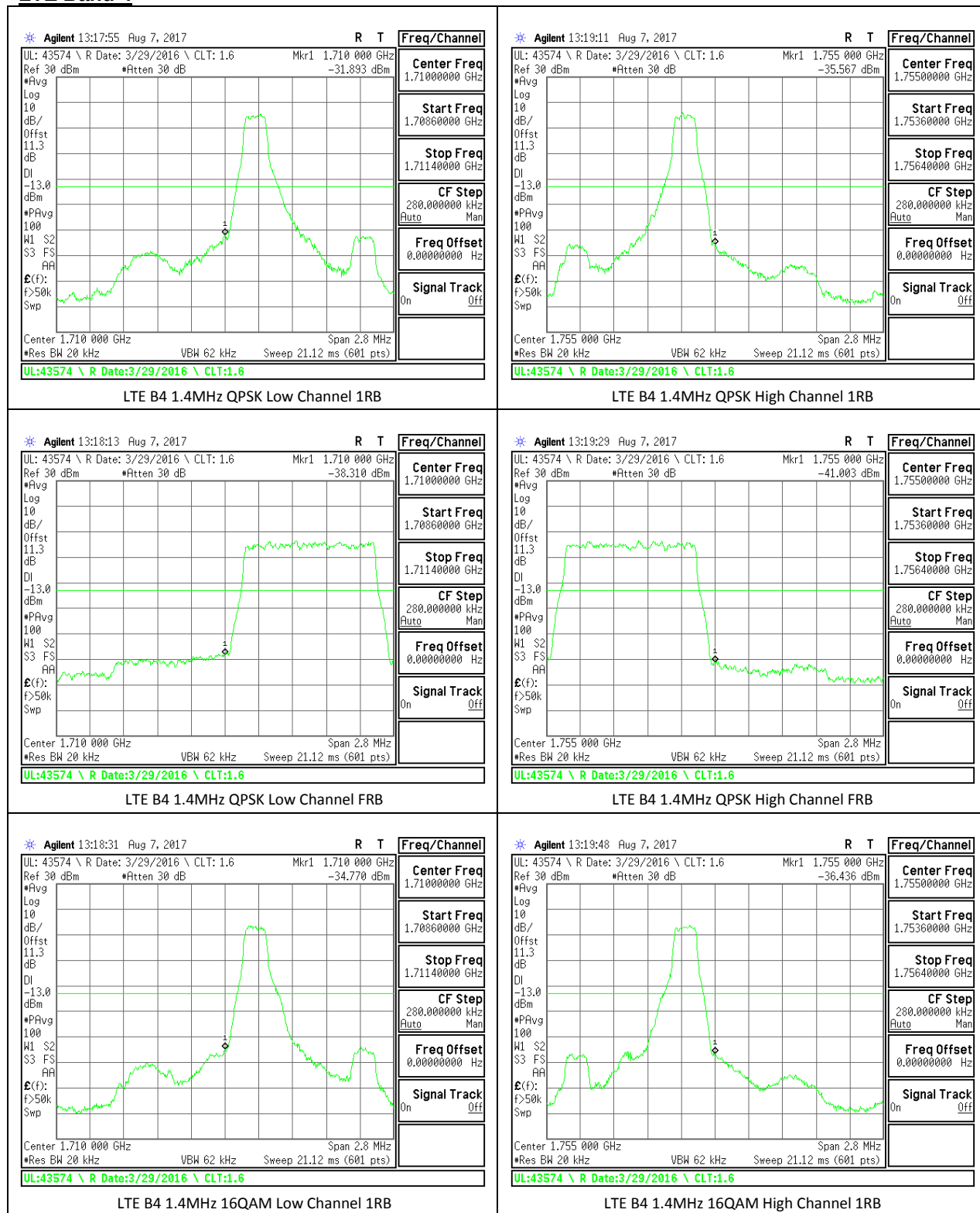


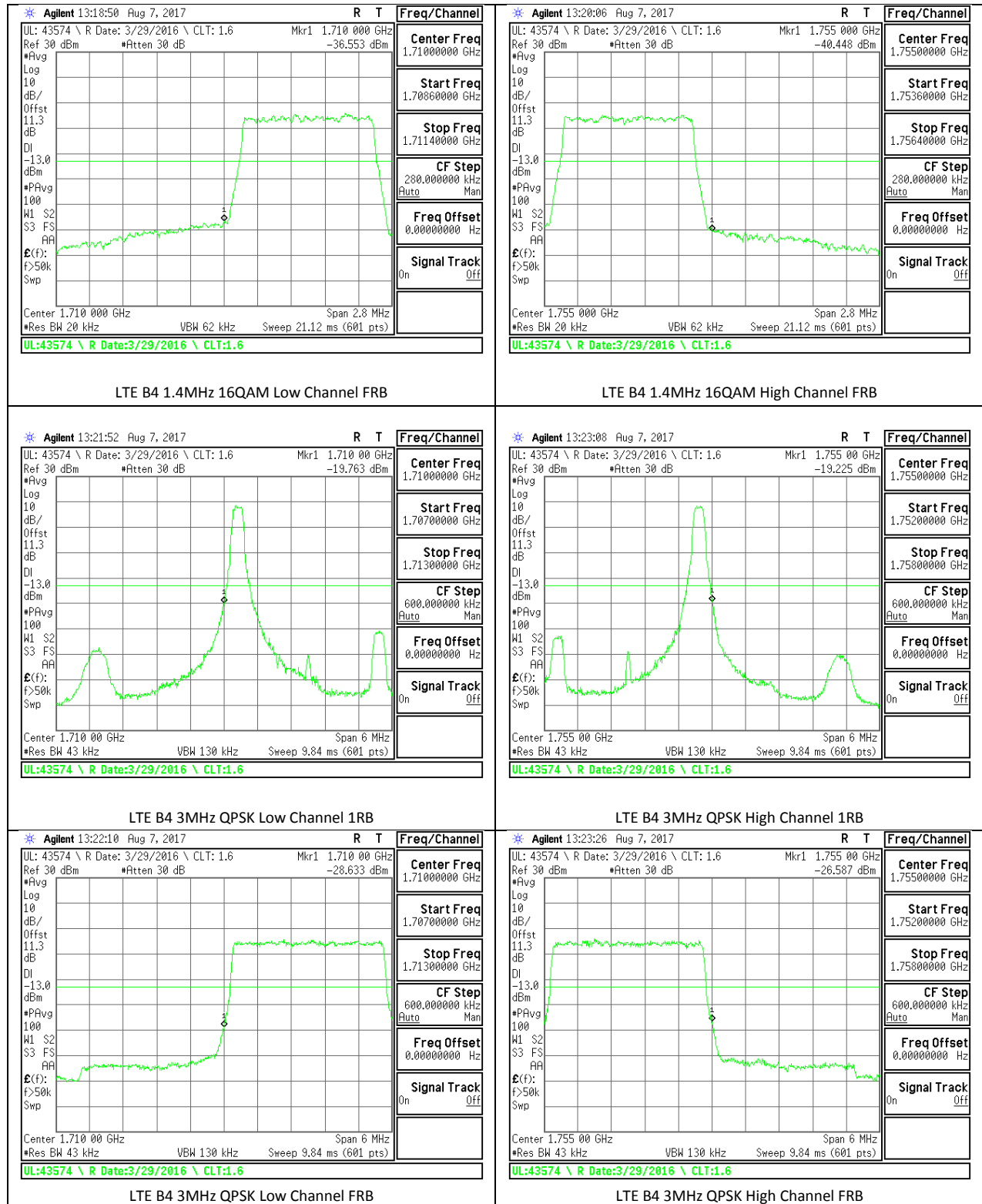


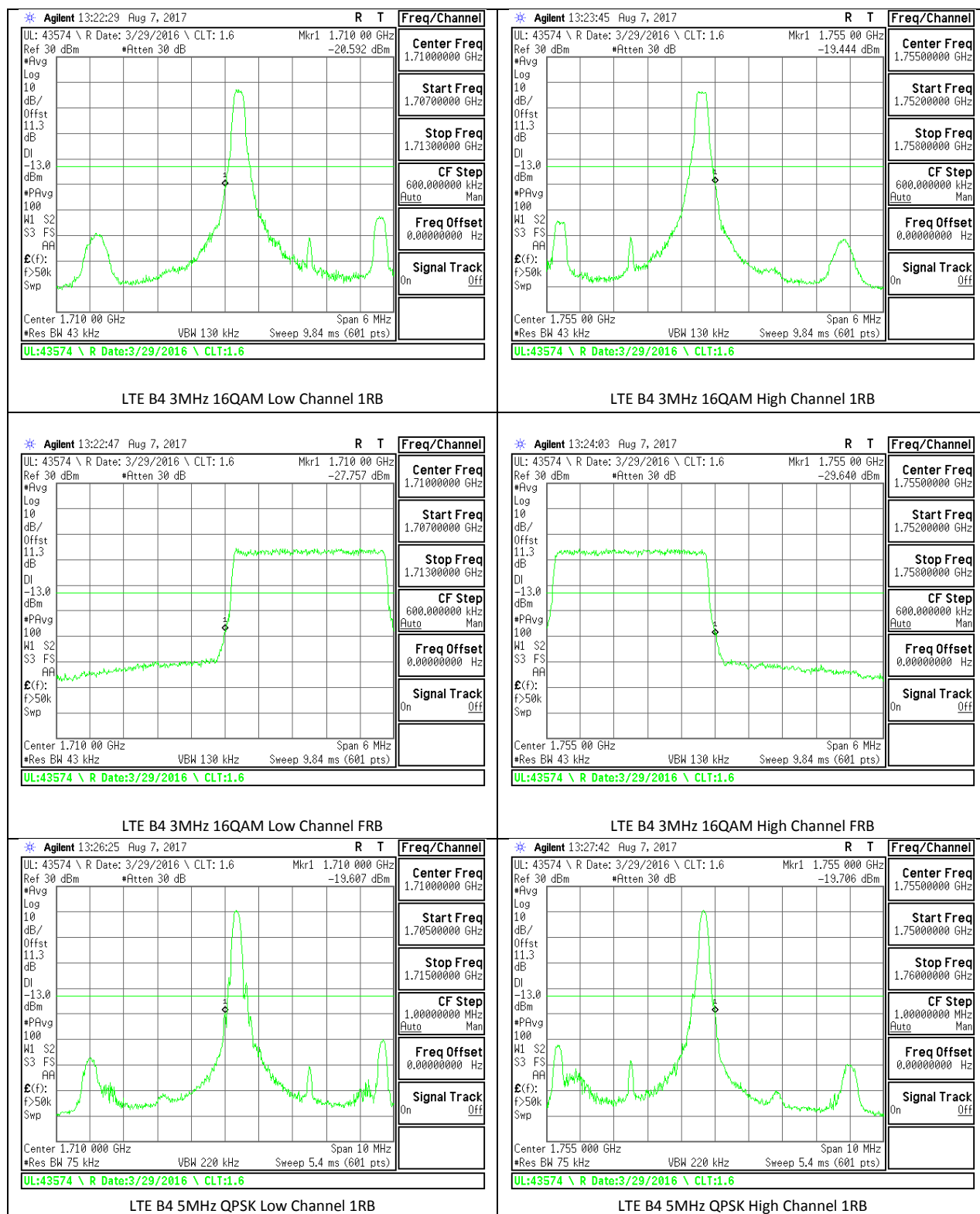


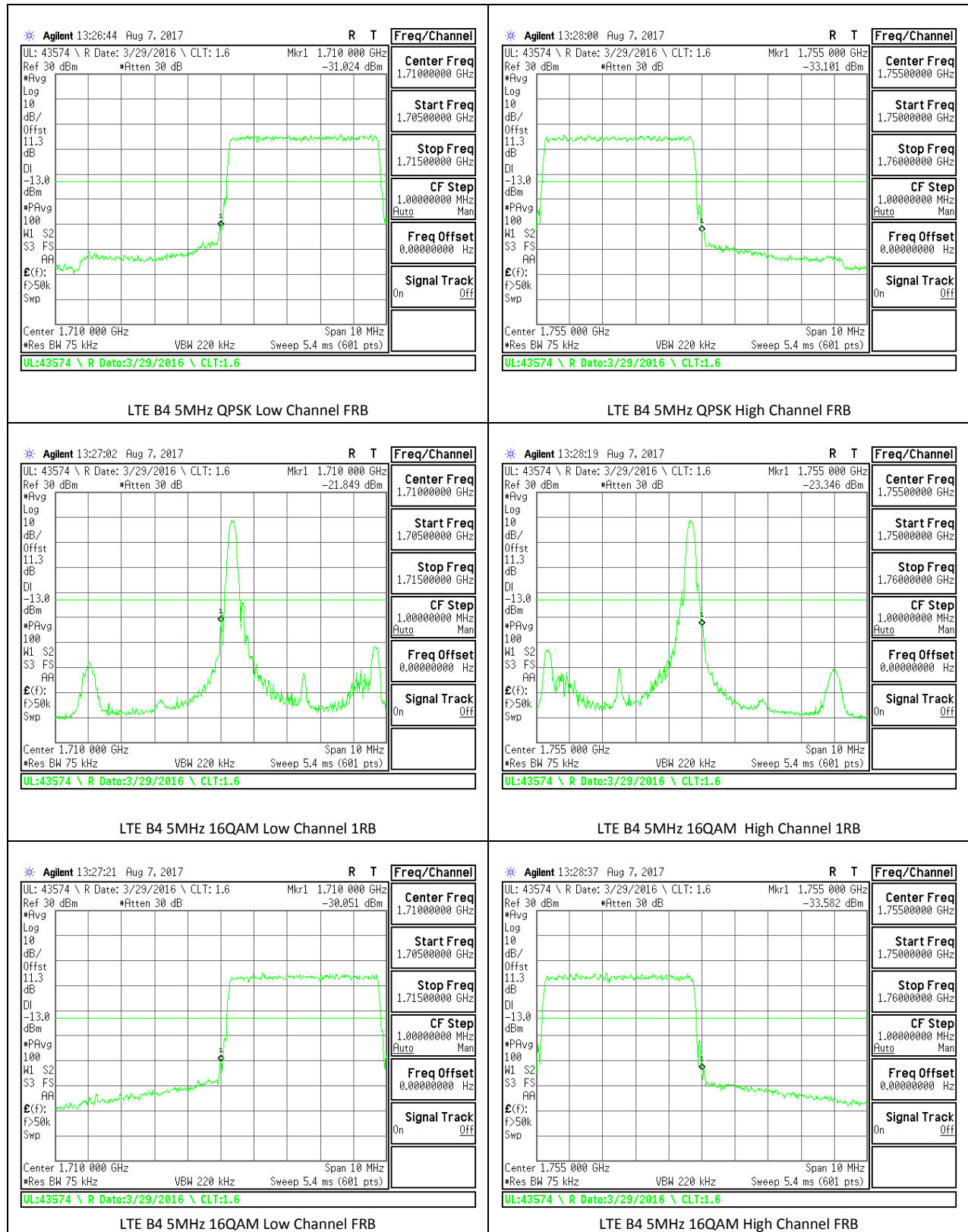


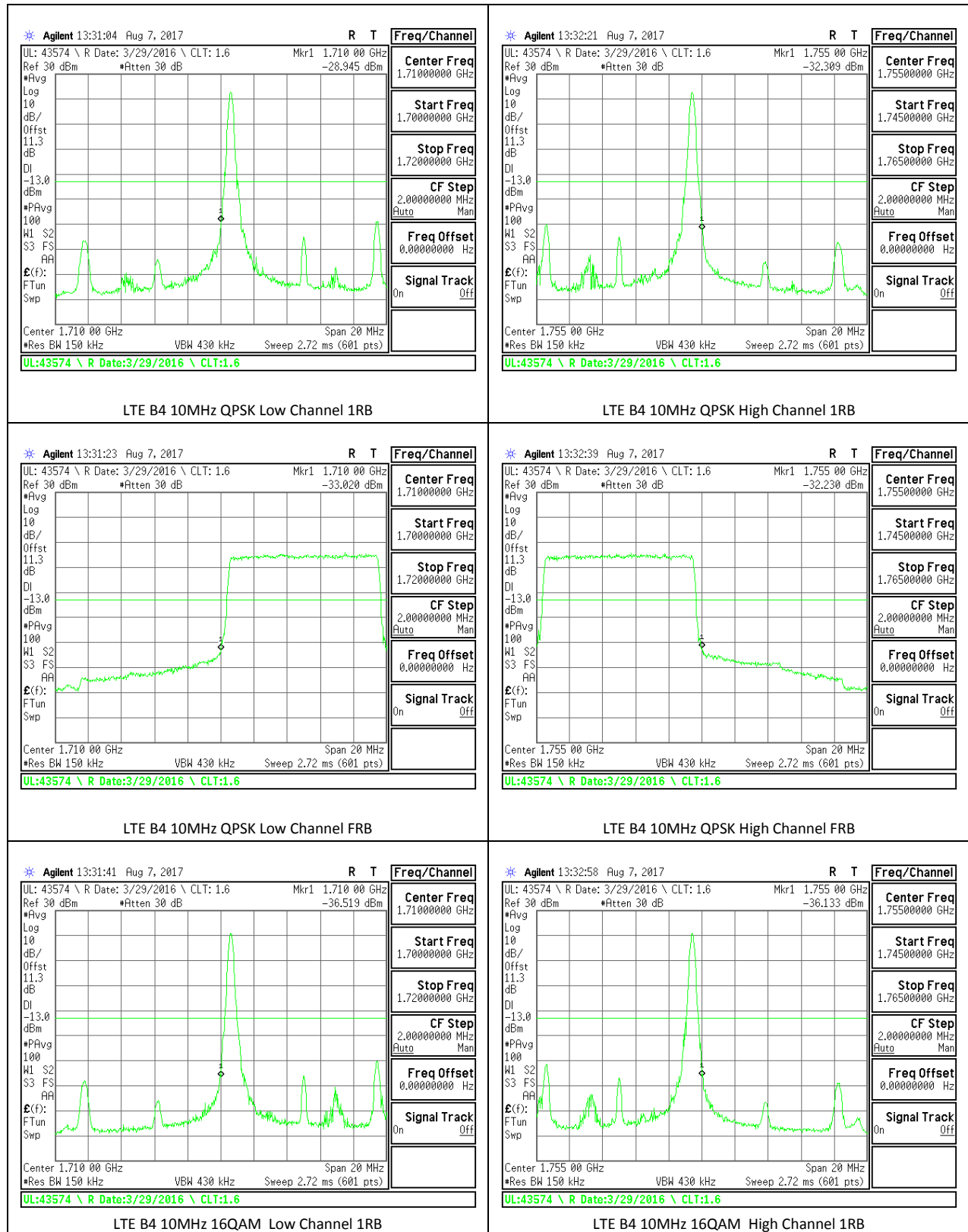
LTE Band 4

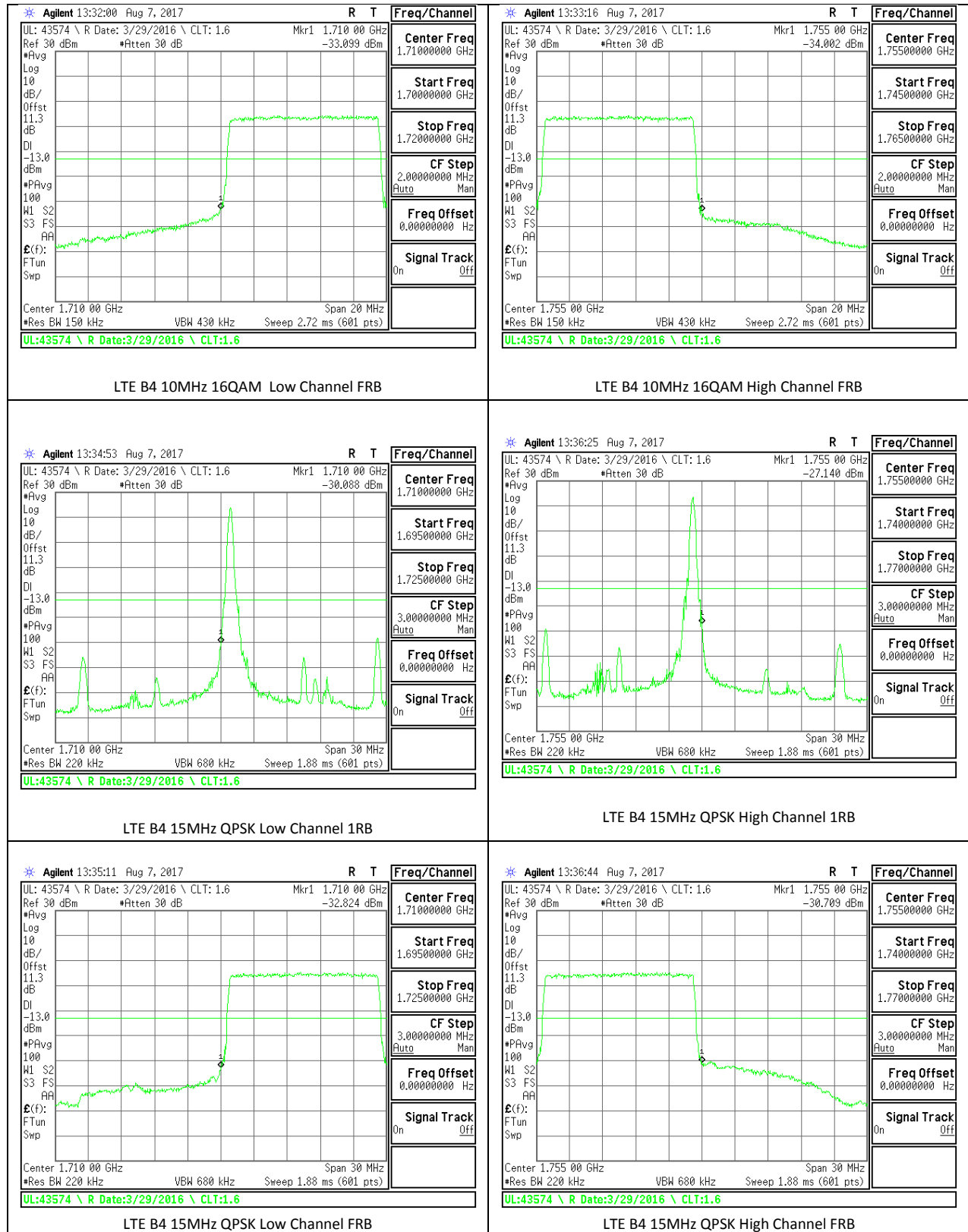


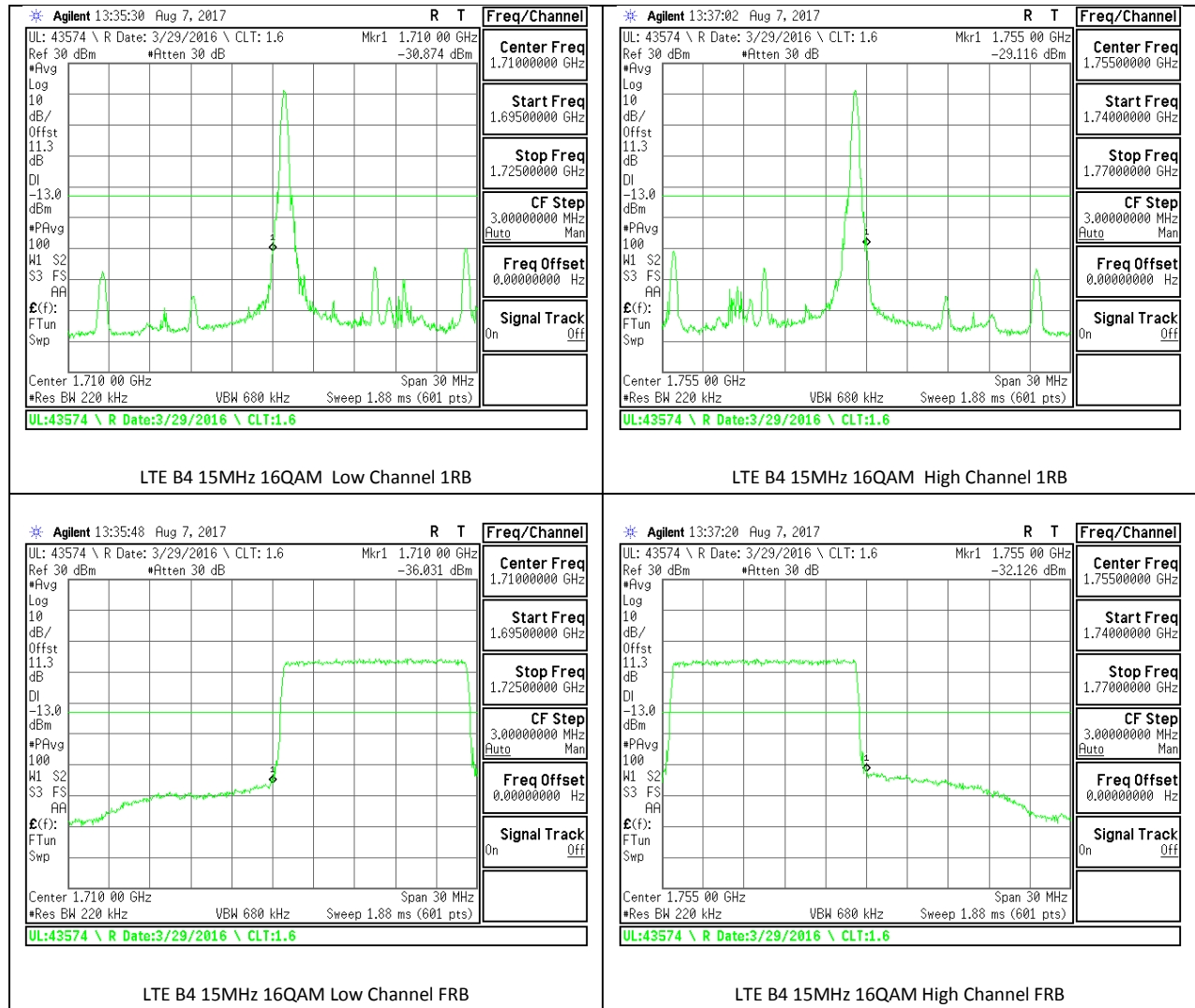




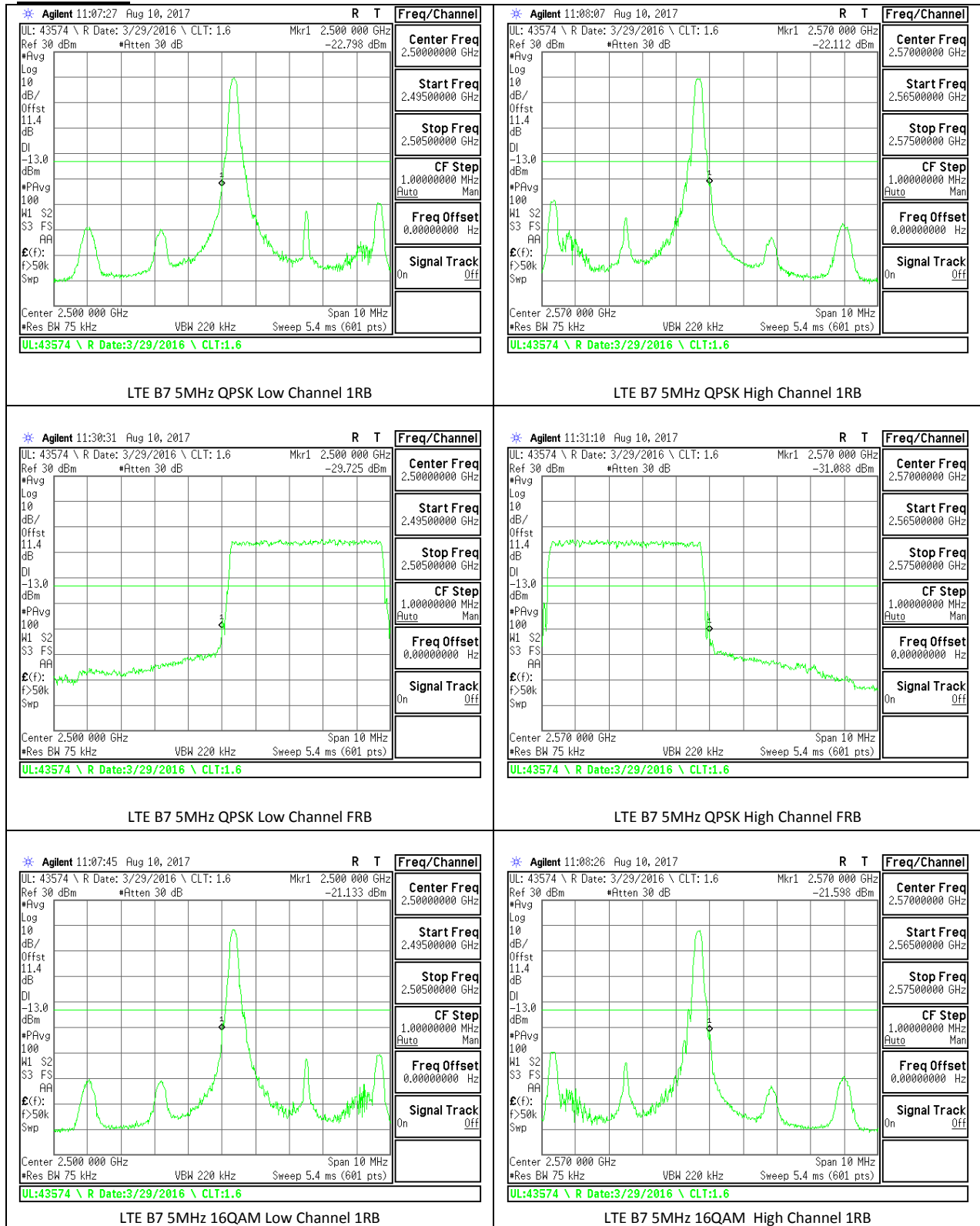


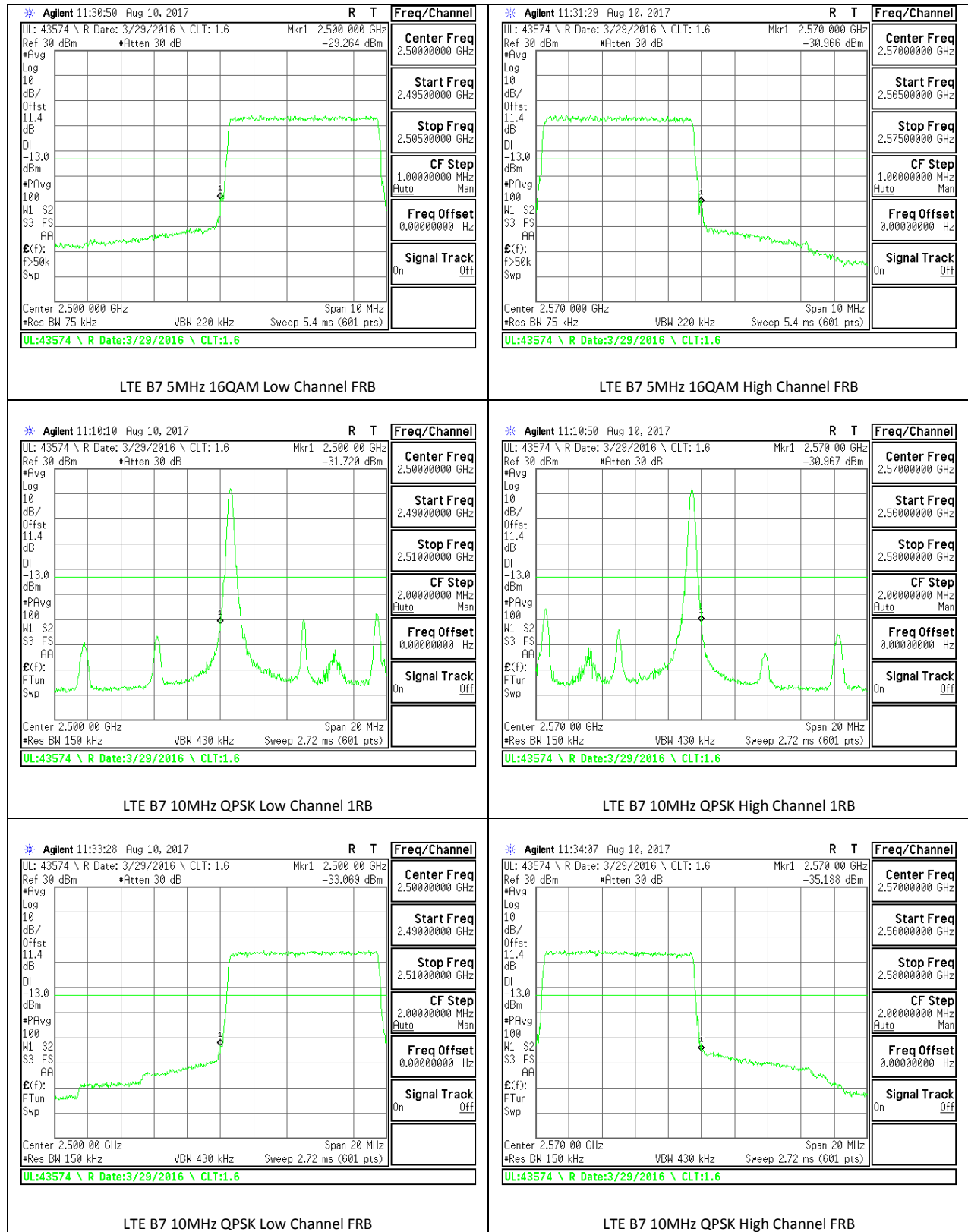


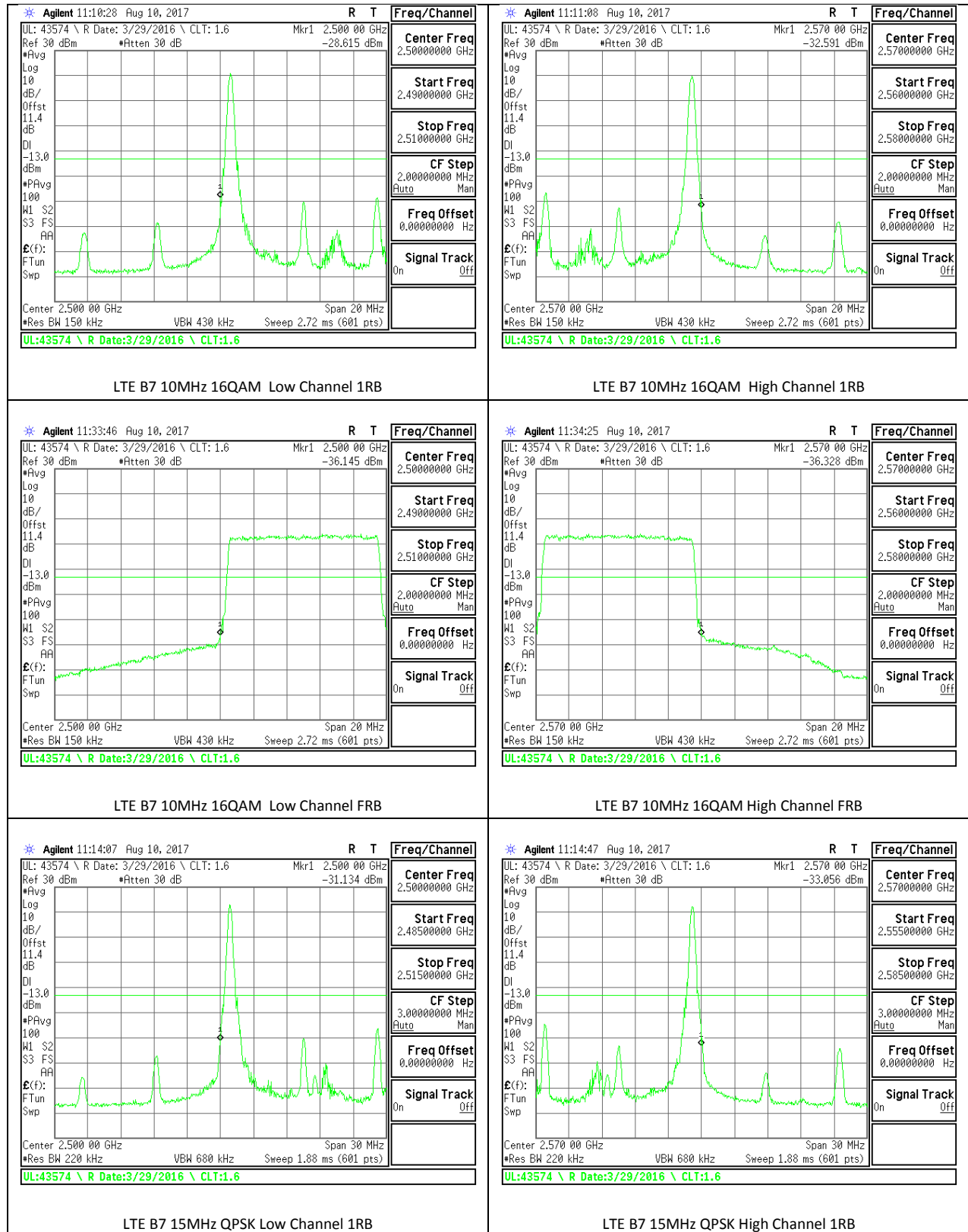


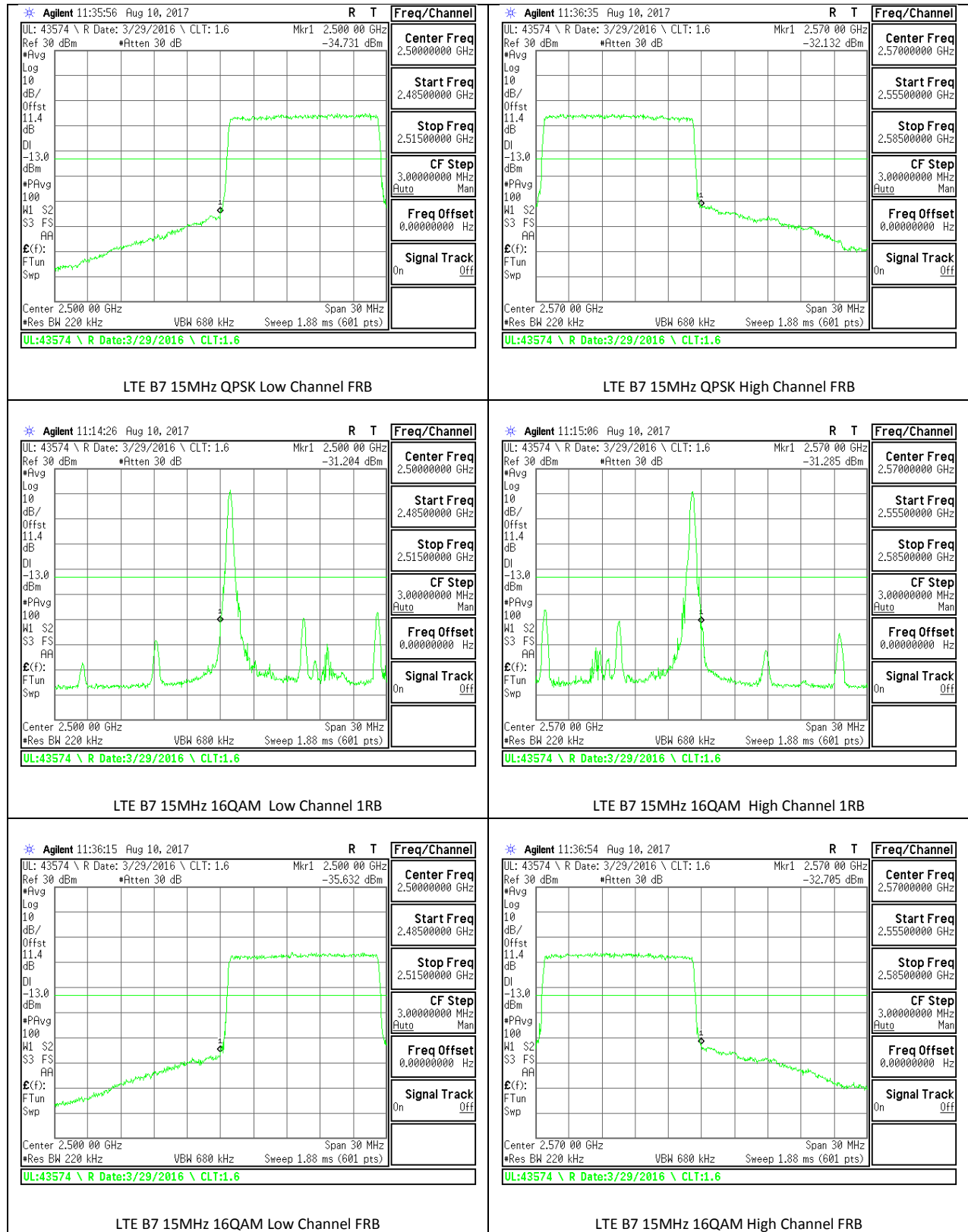


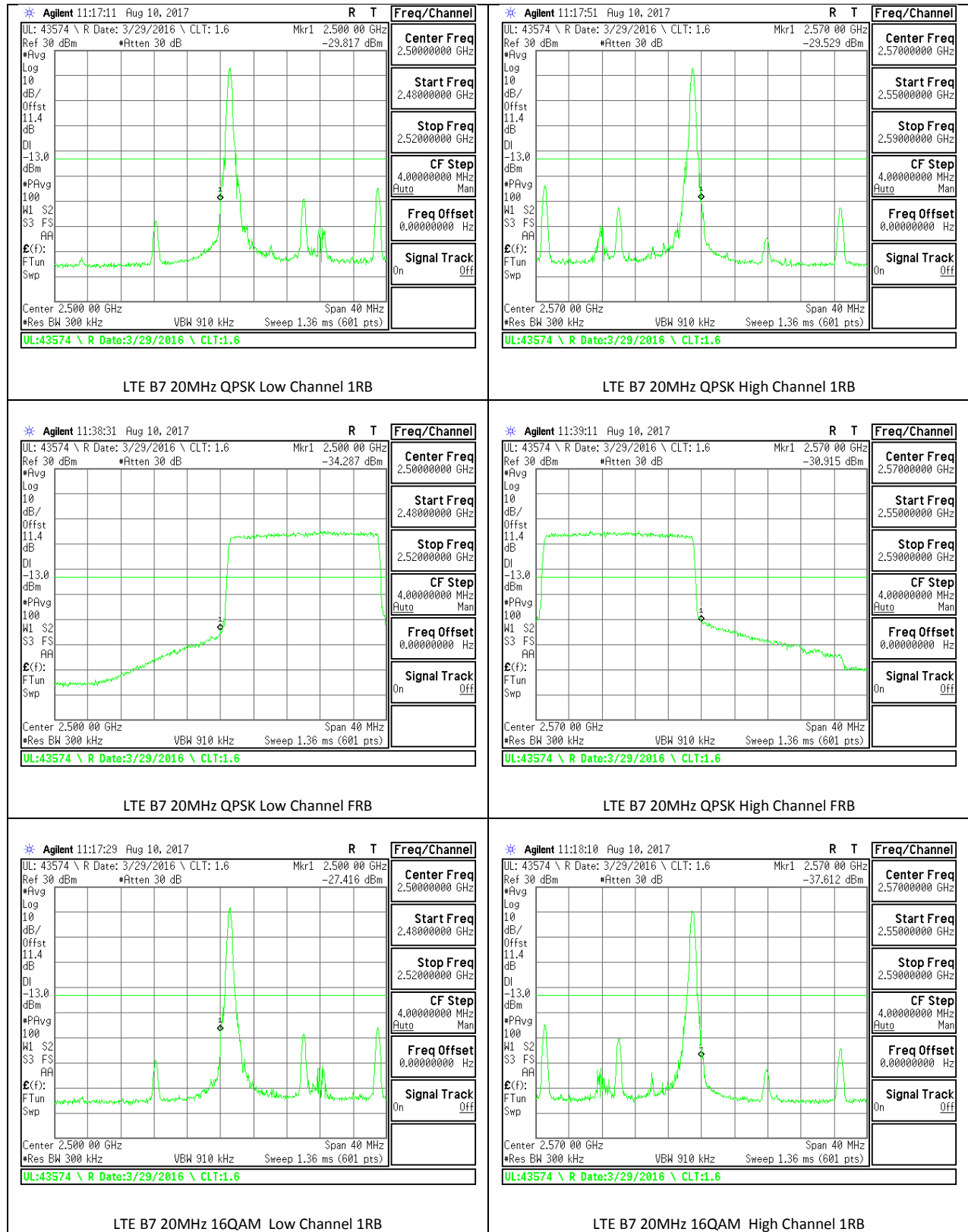
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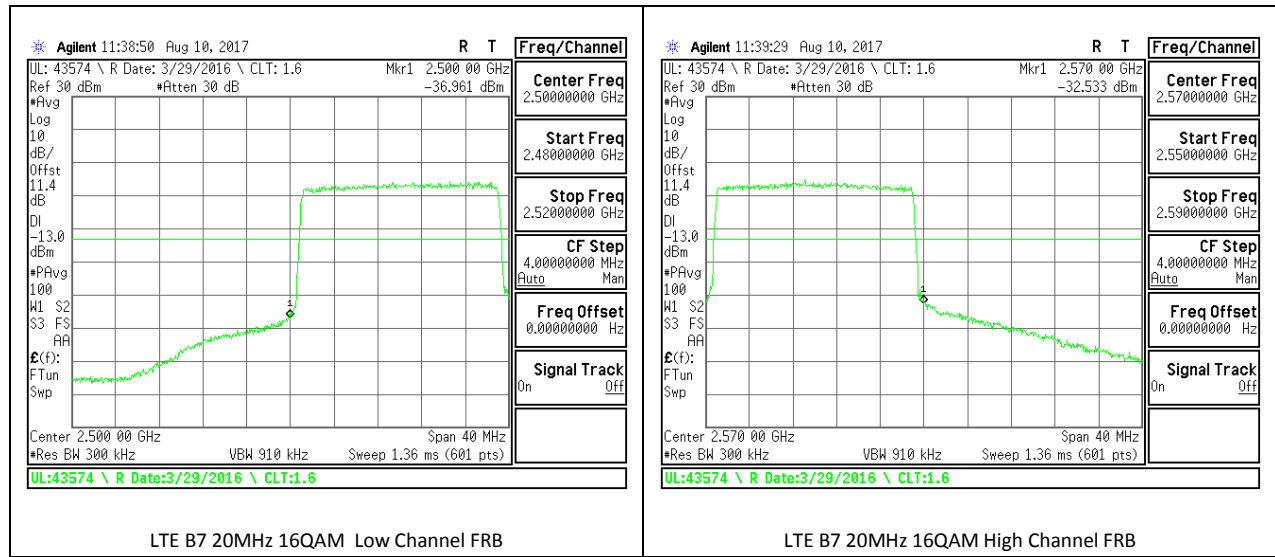




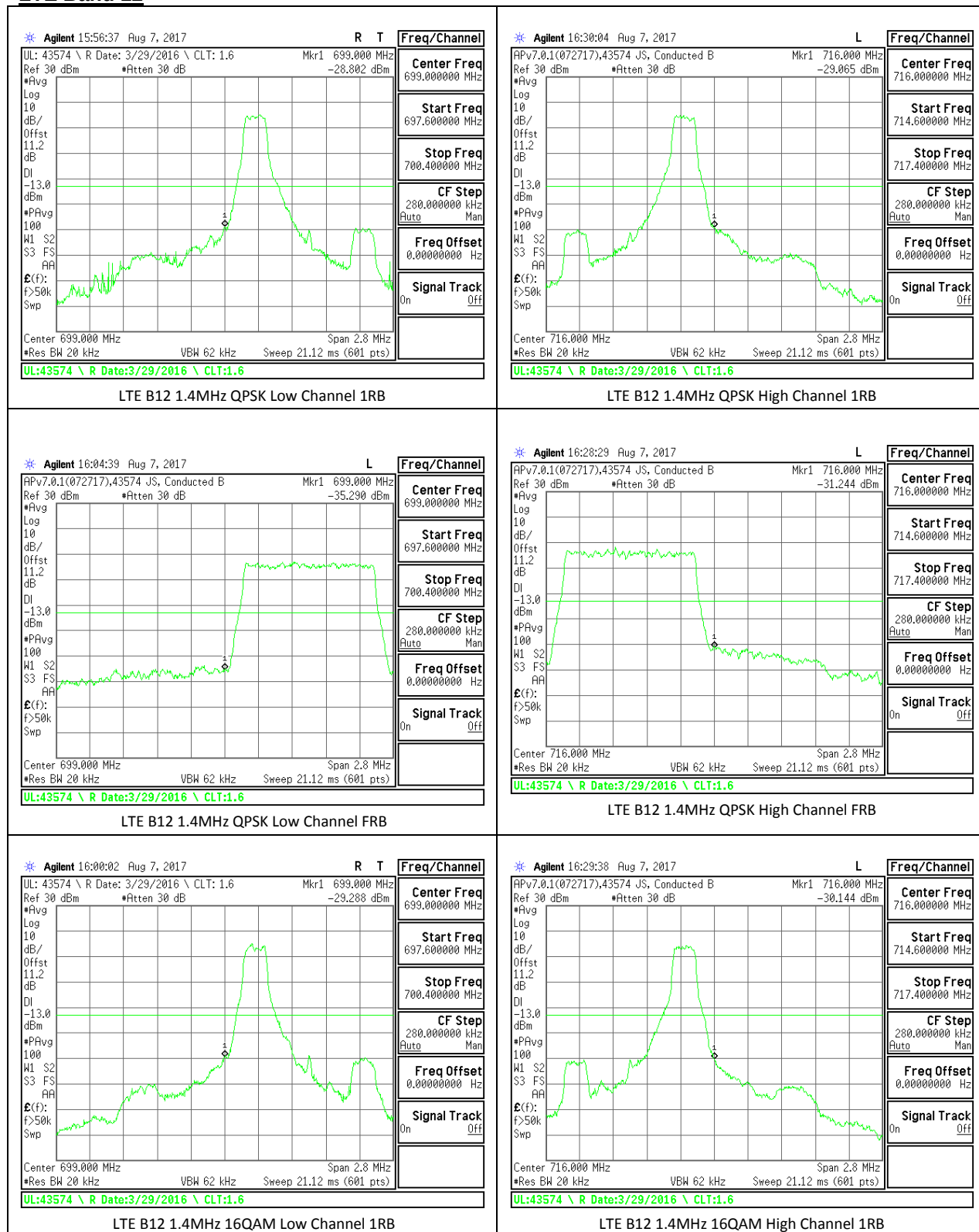


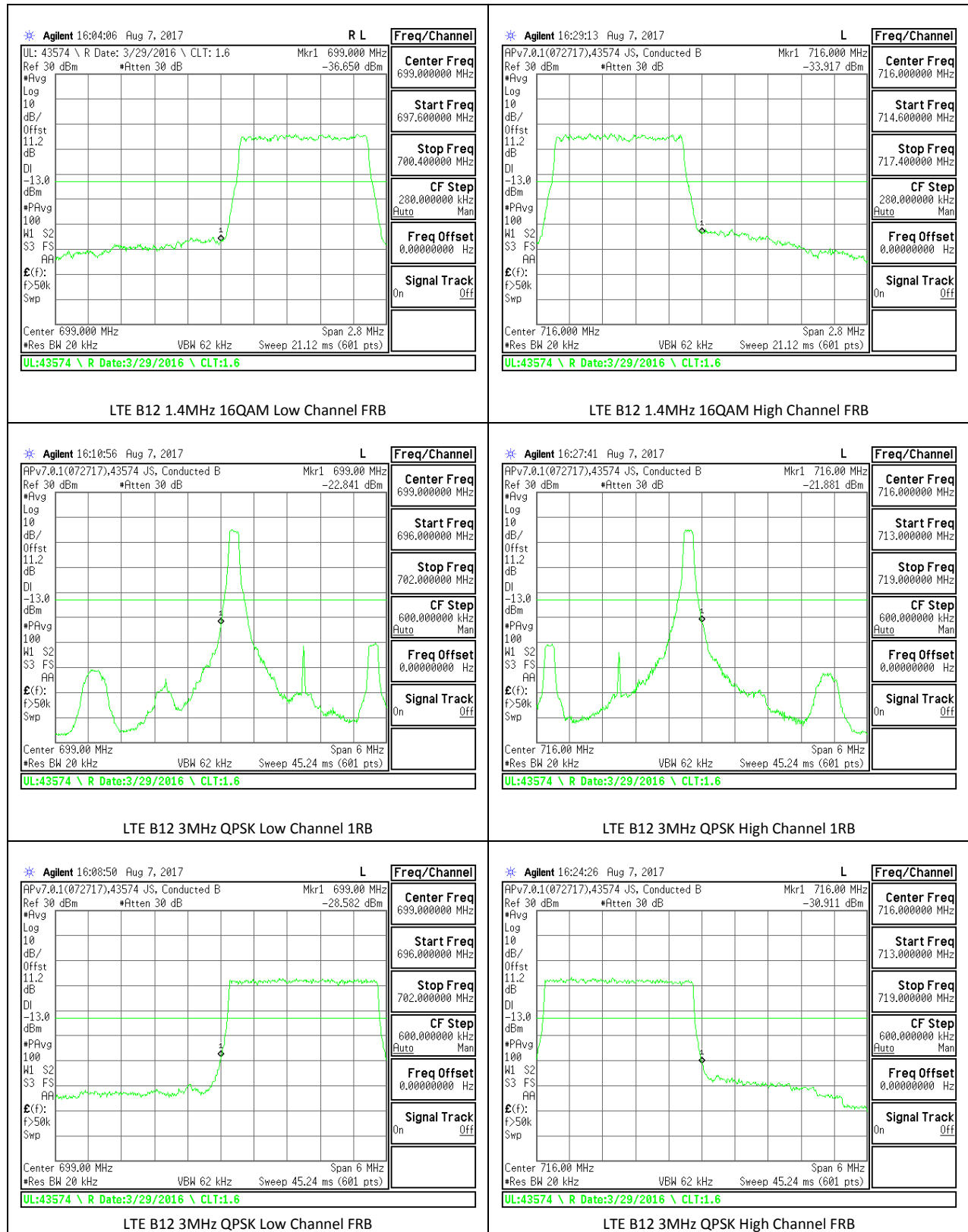


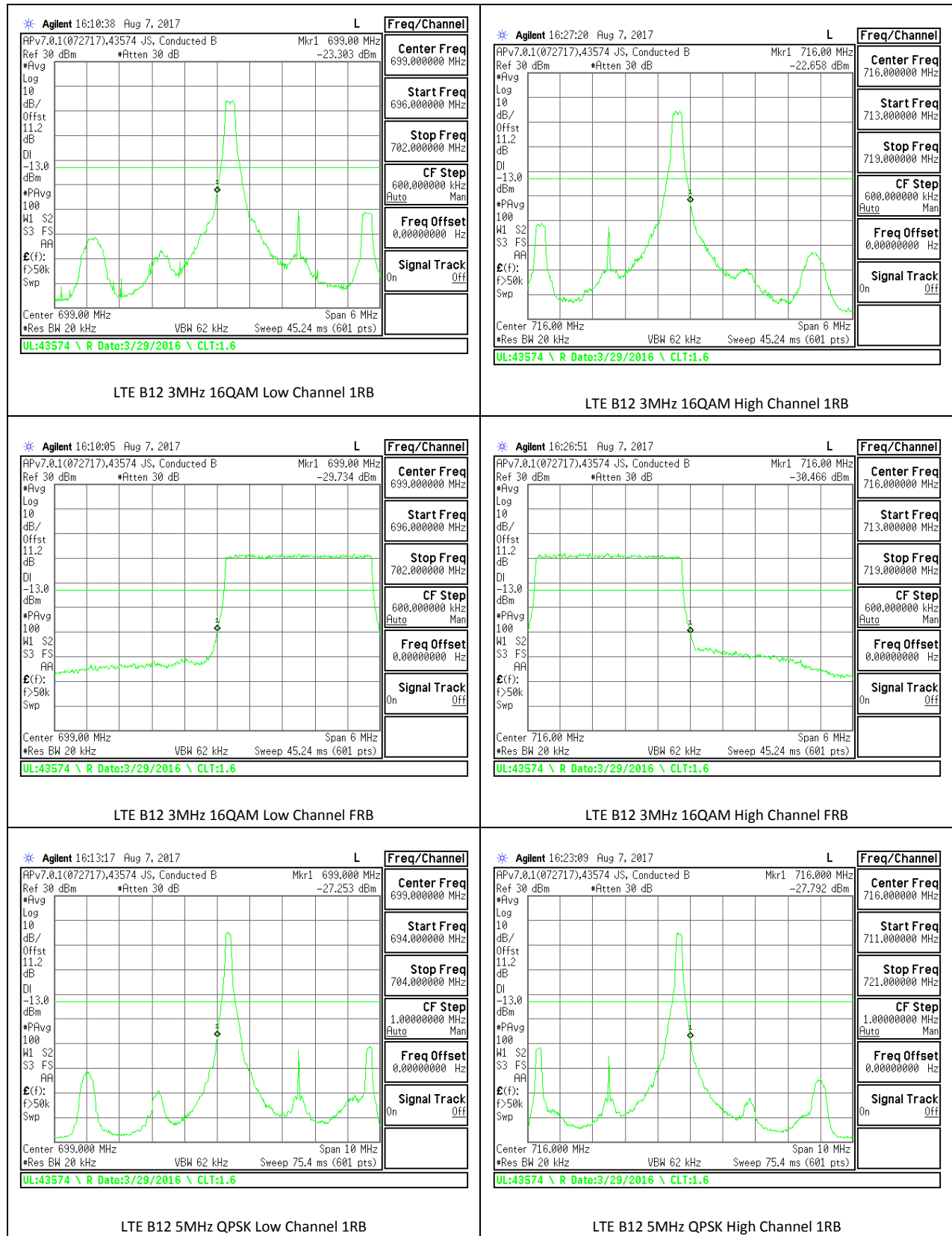


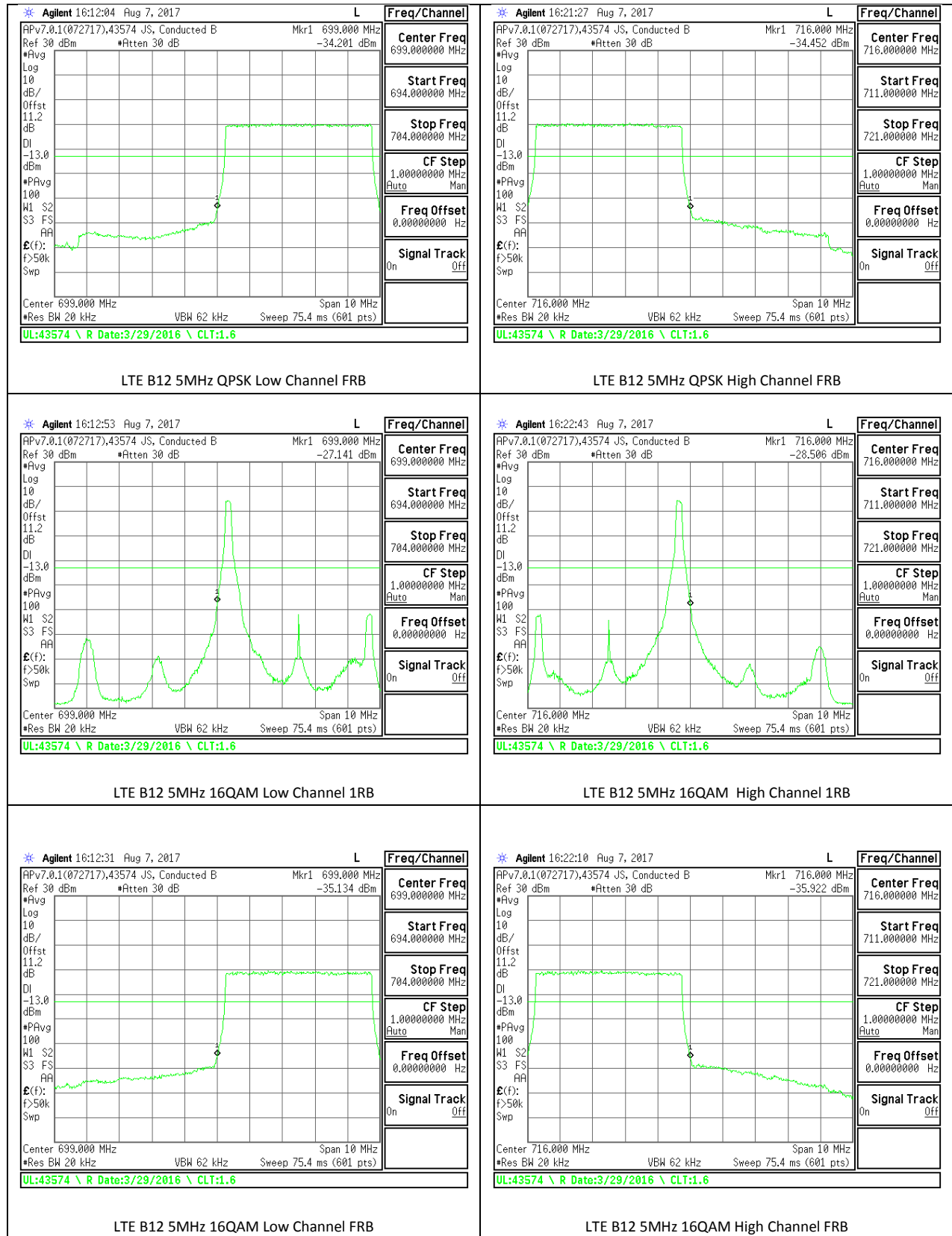


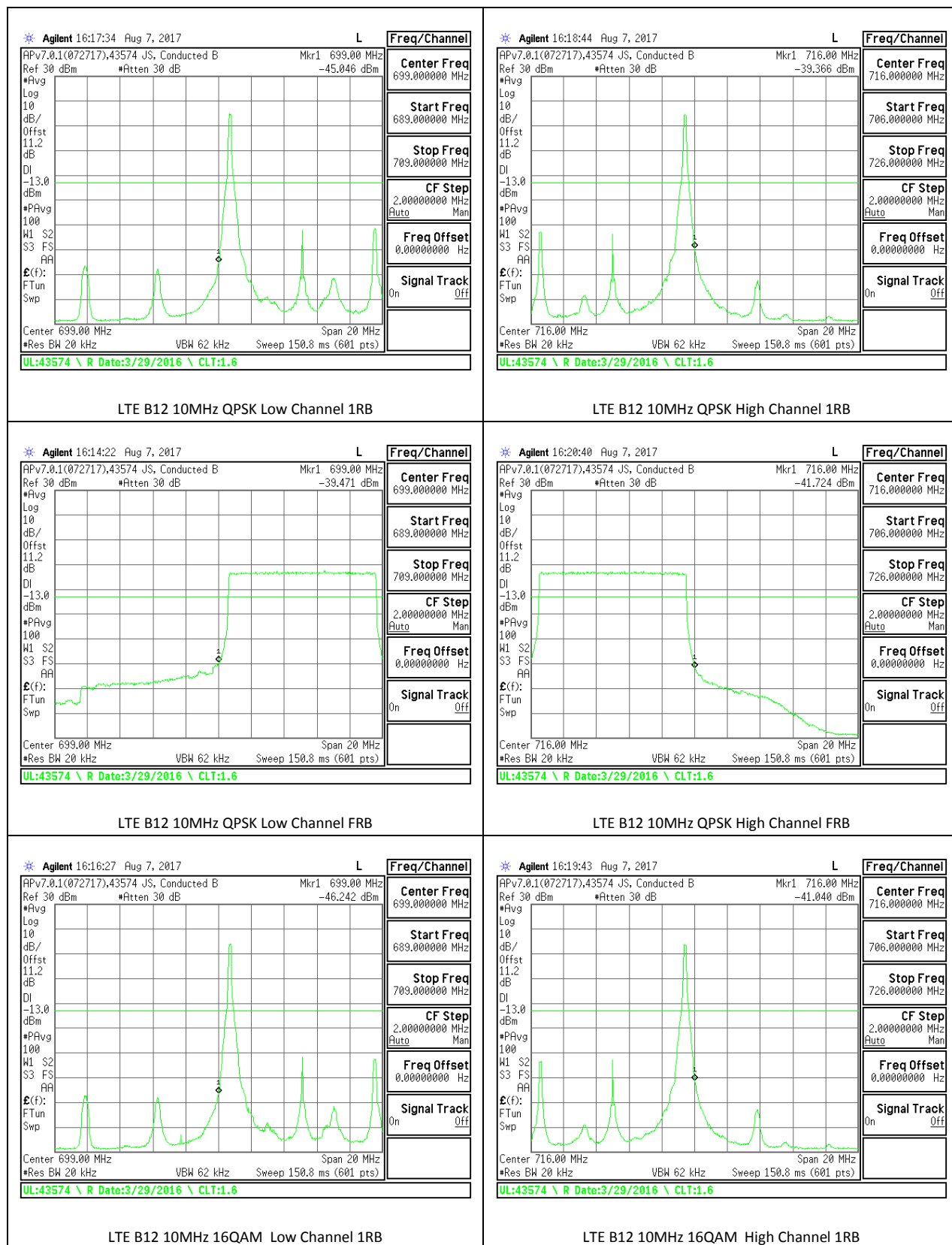
LTE Band 12

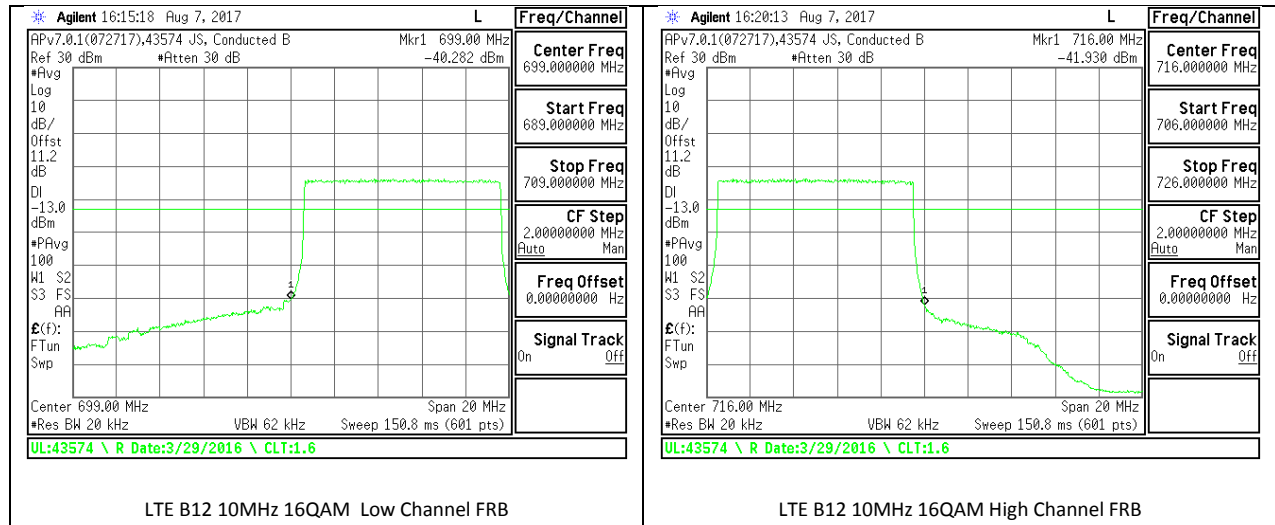




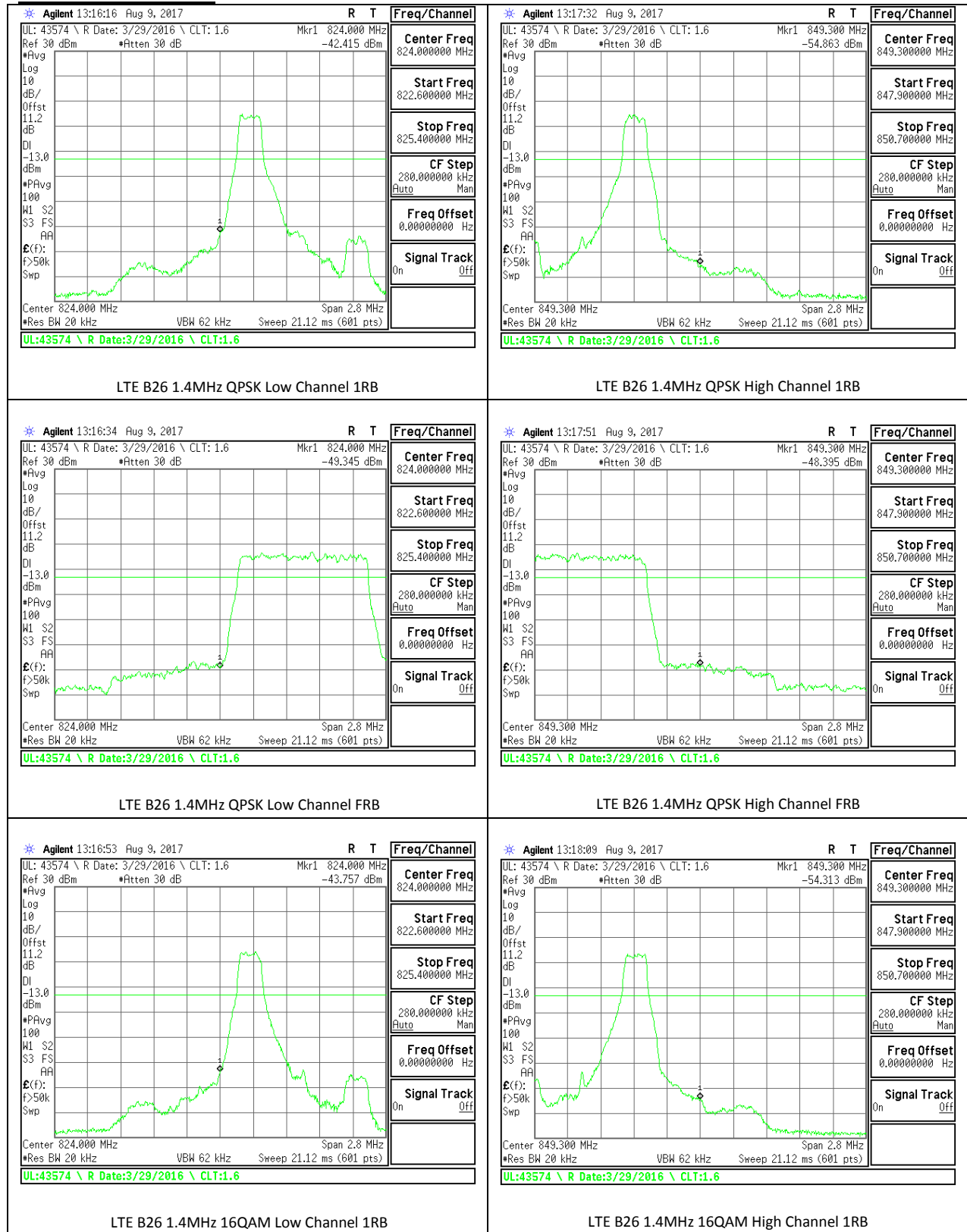


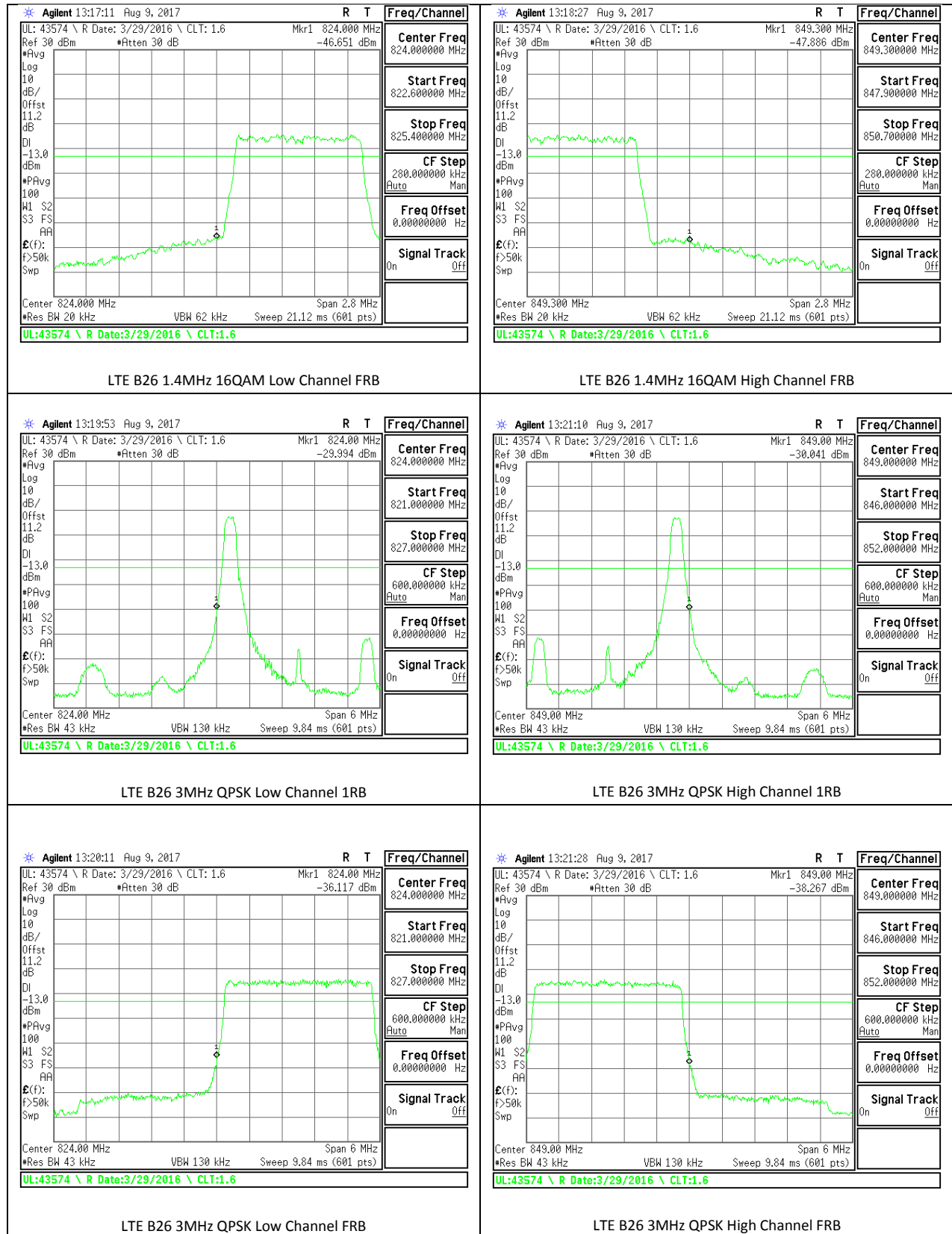


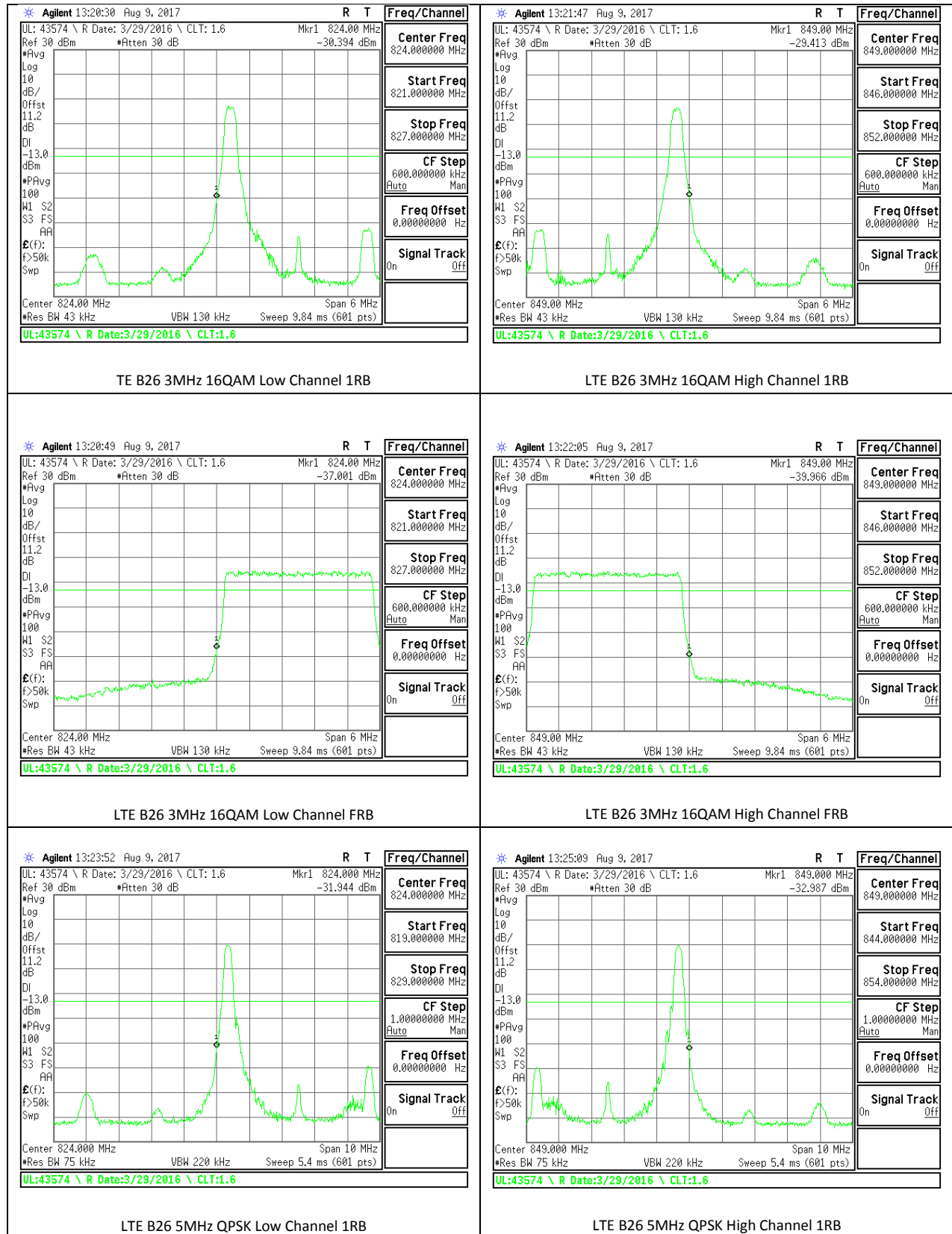


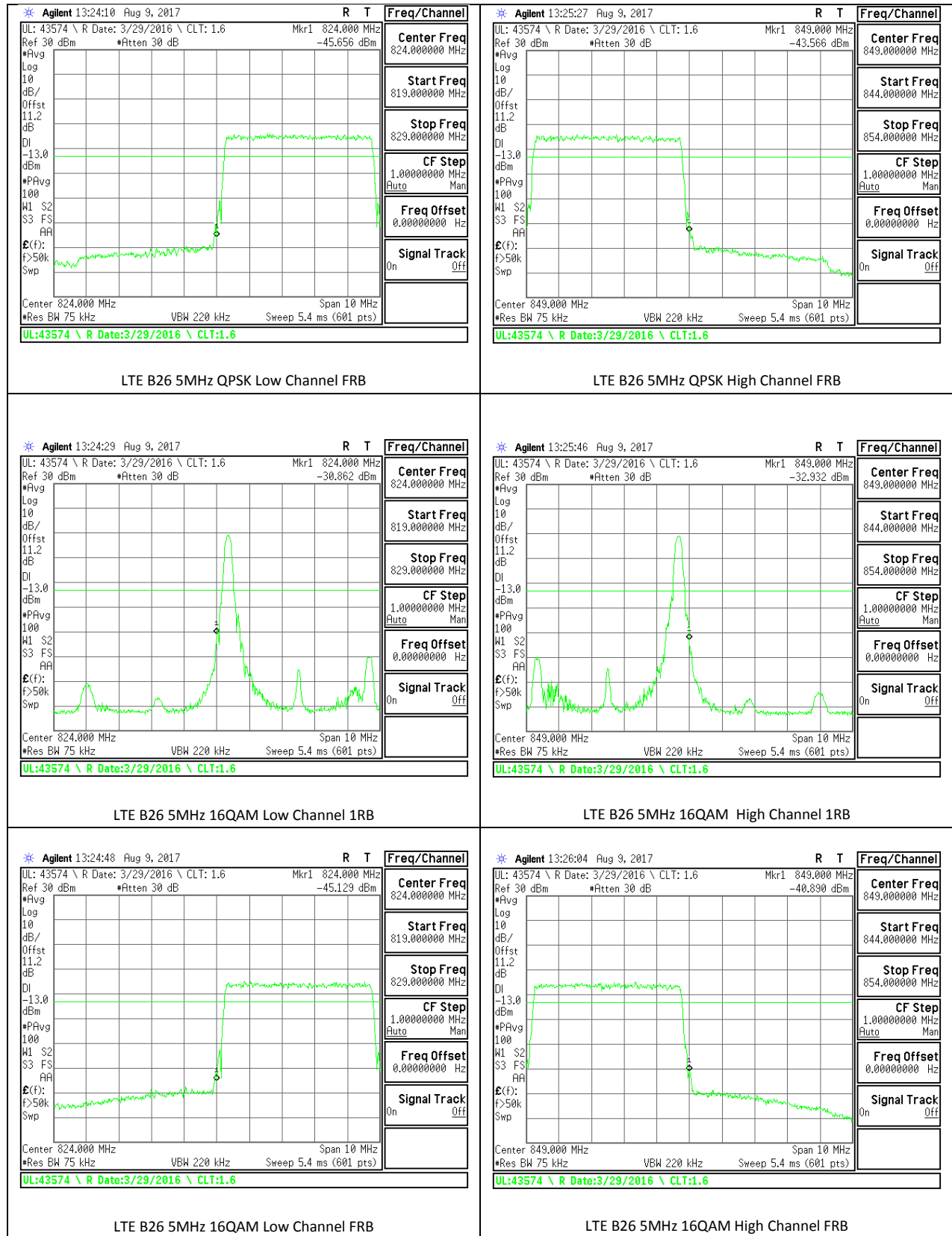


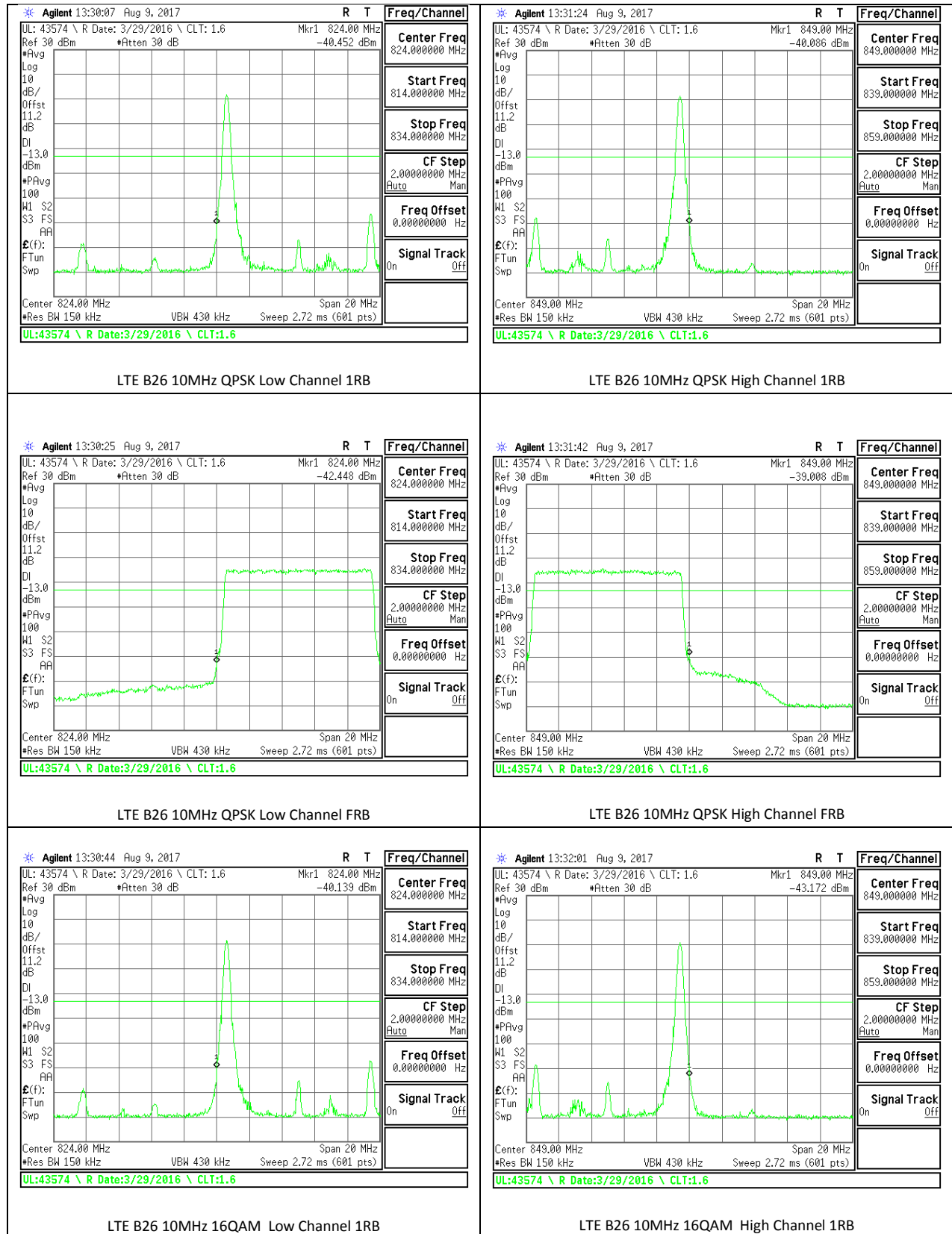
LTE Band 26-Part 22

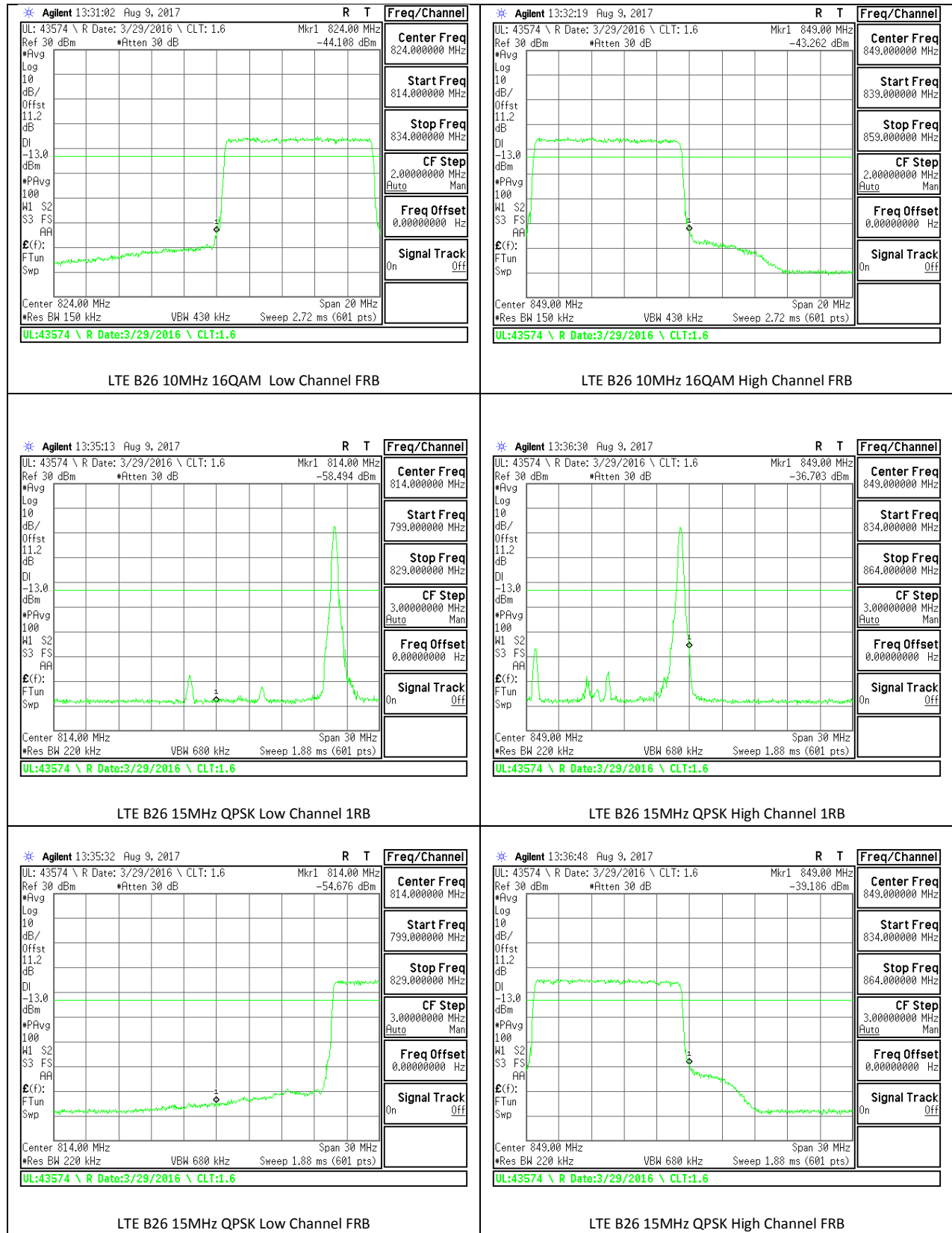


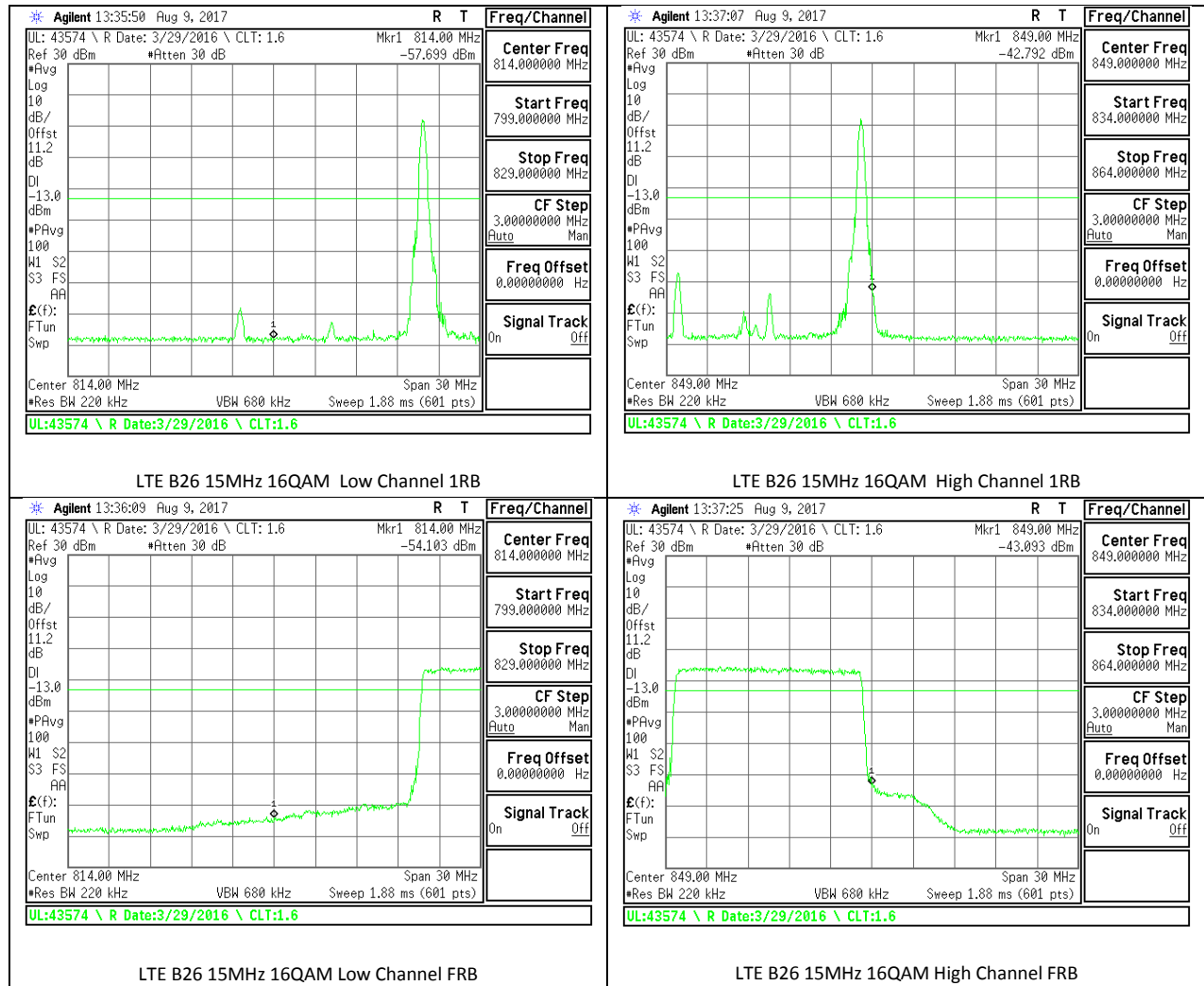




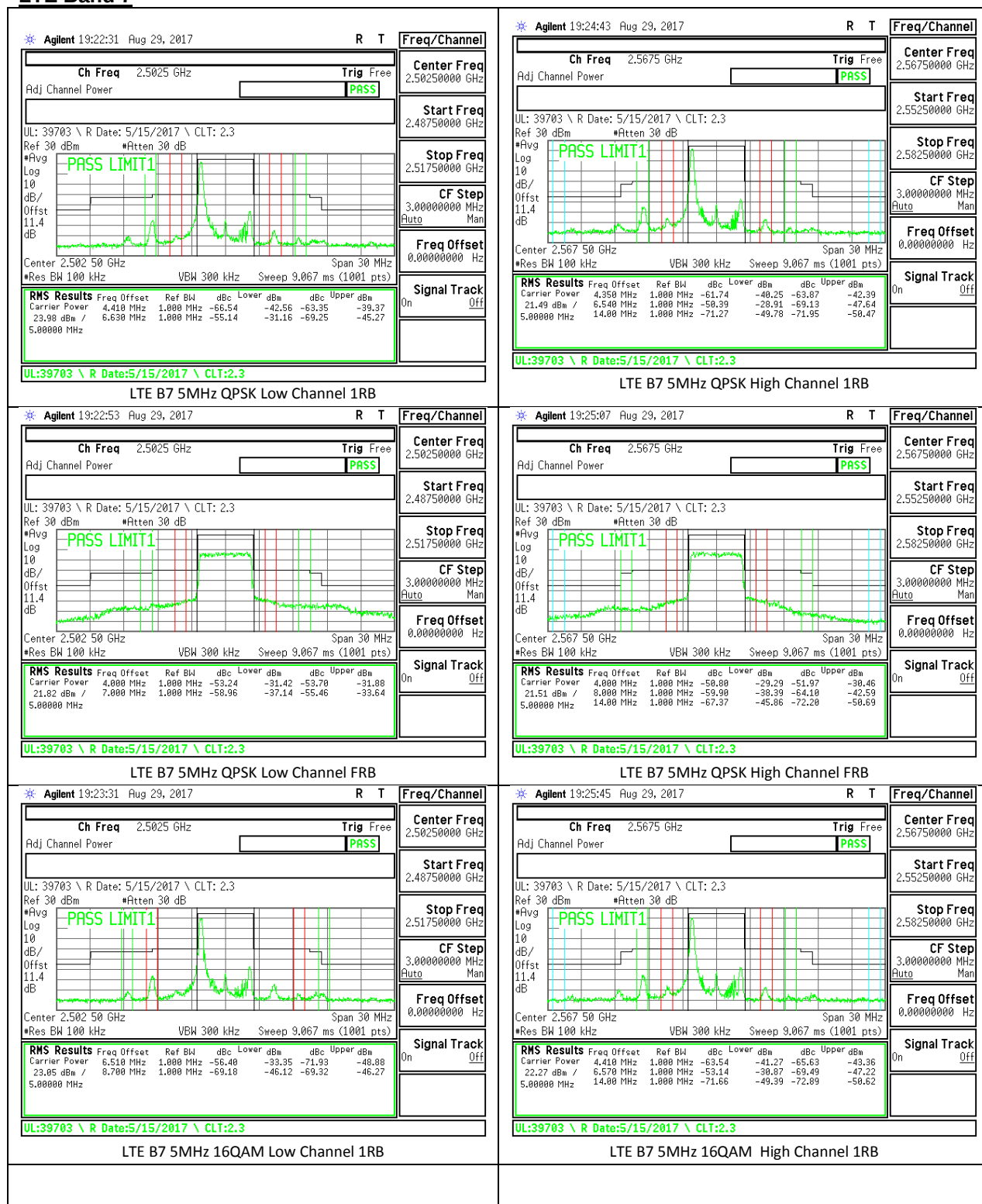


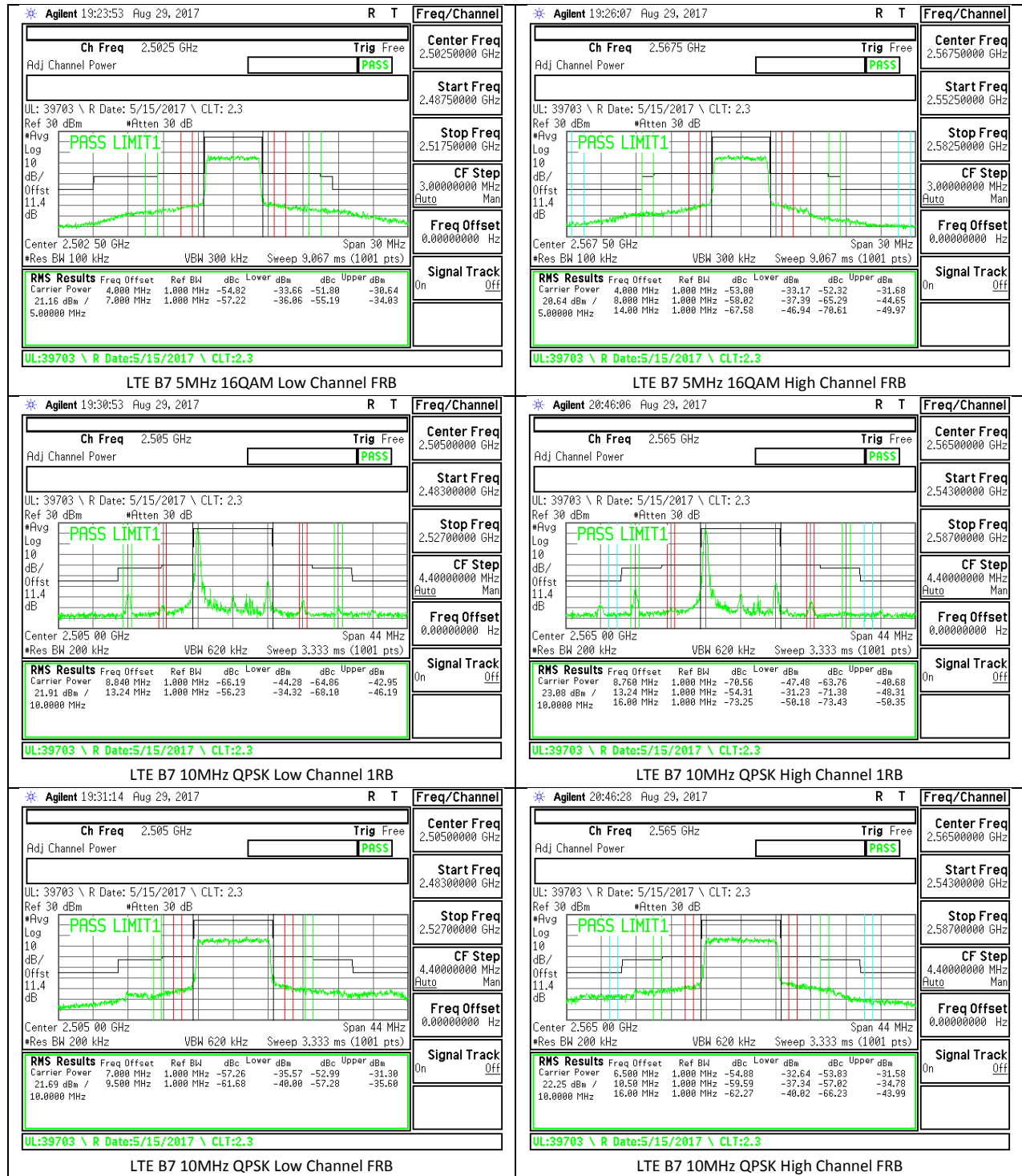


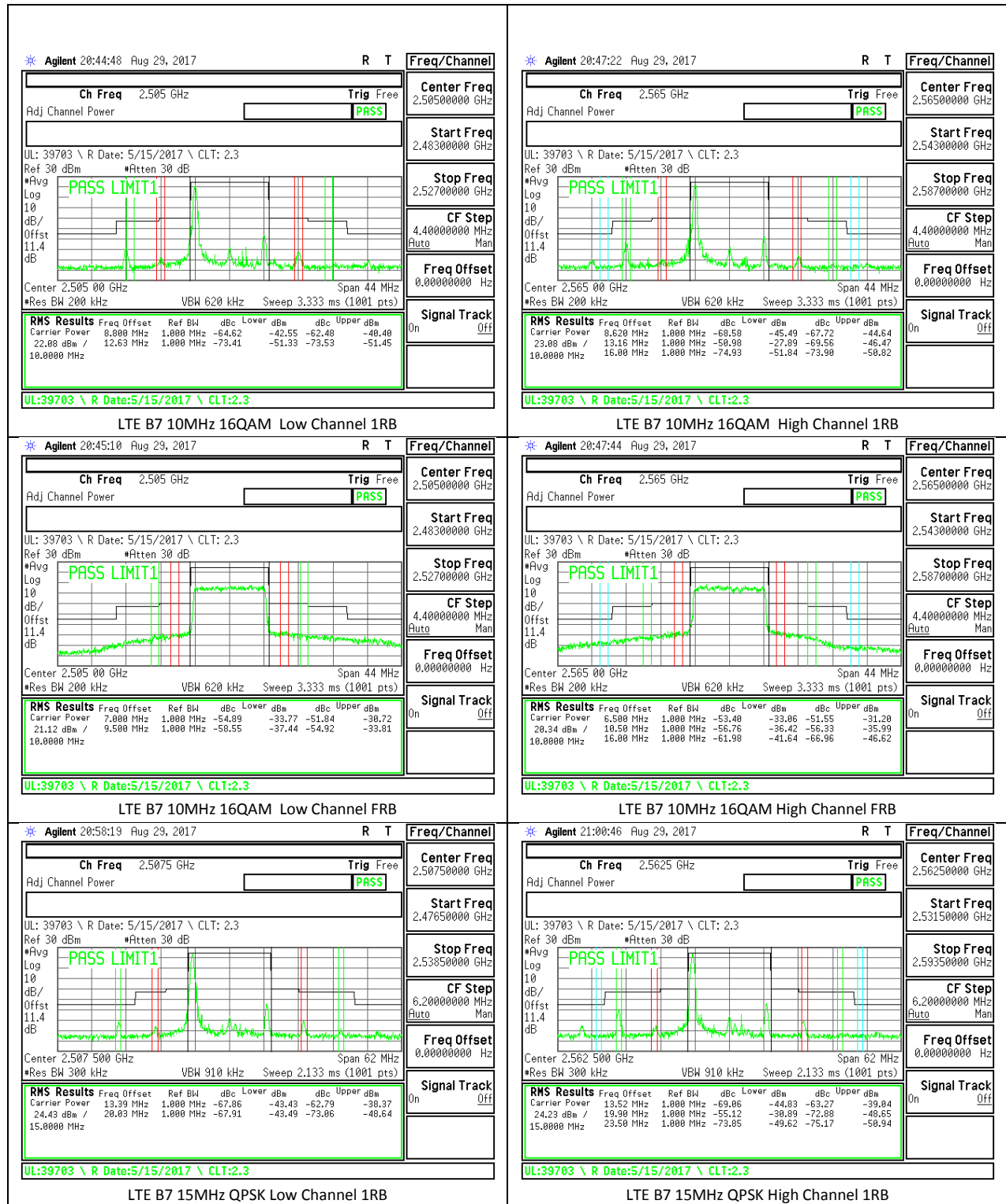


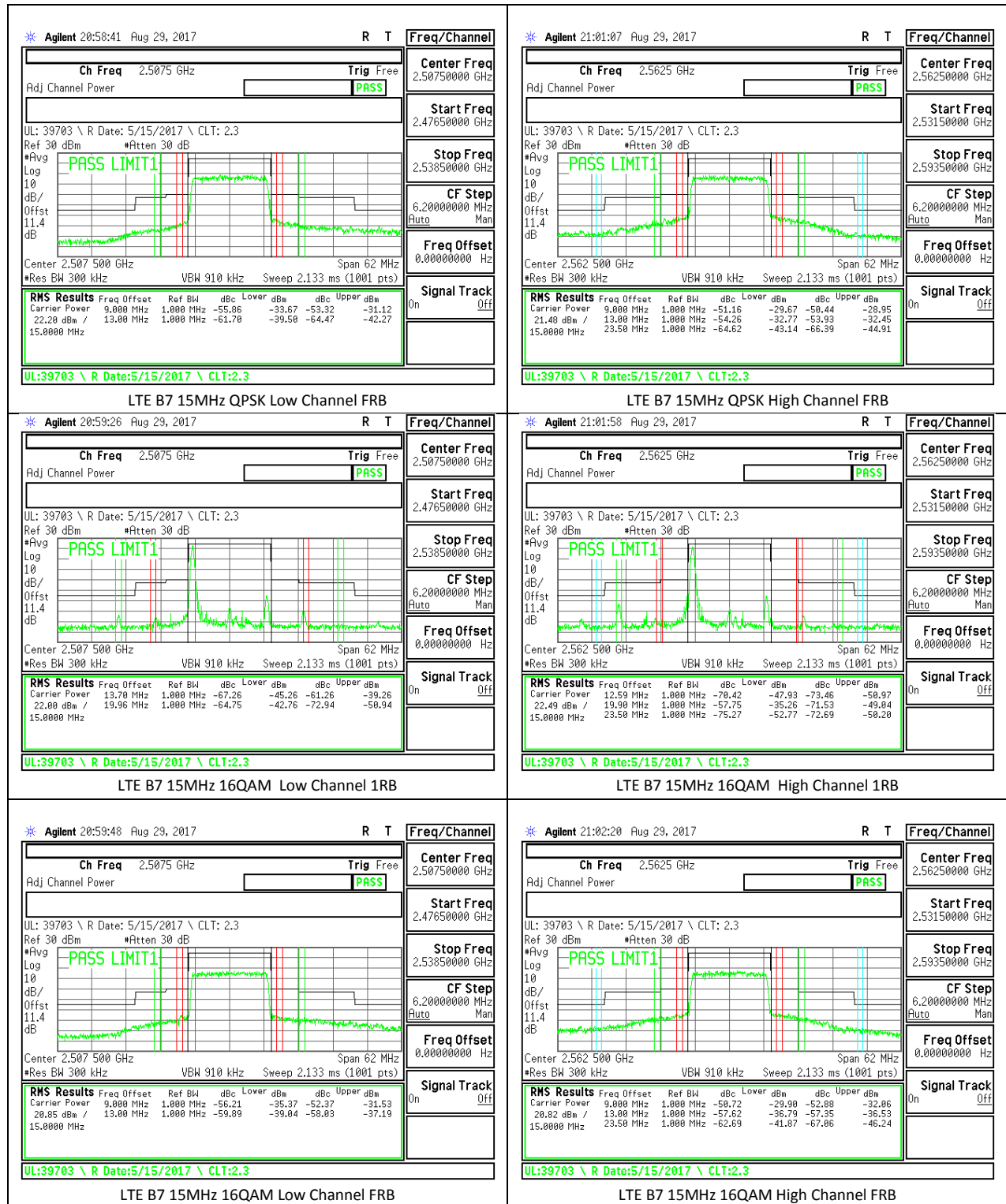


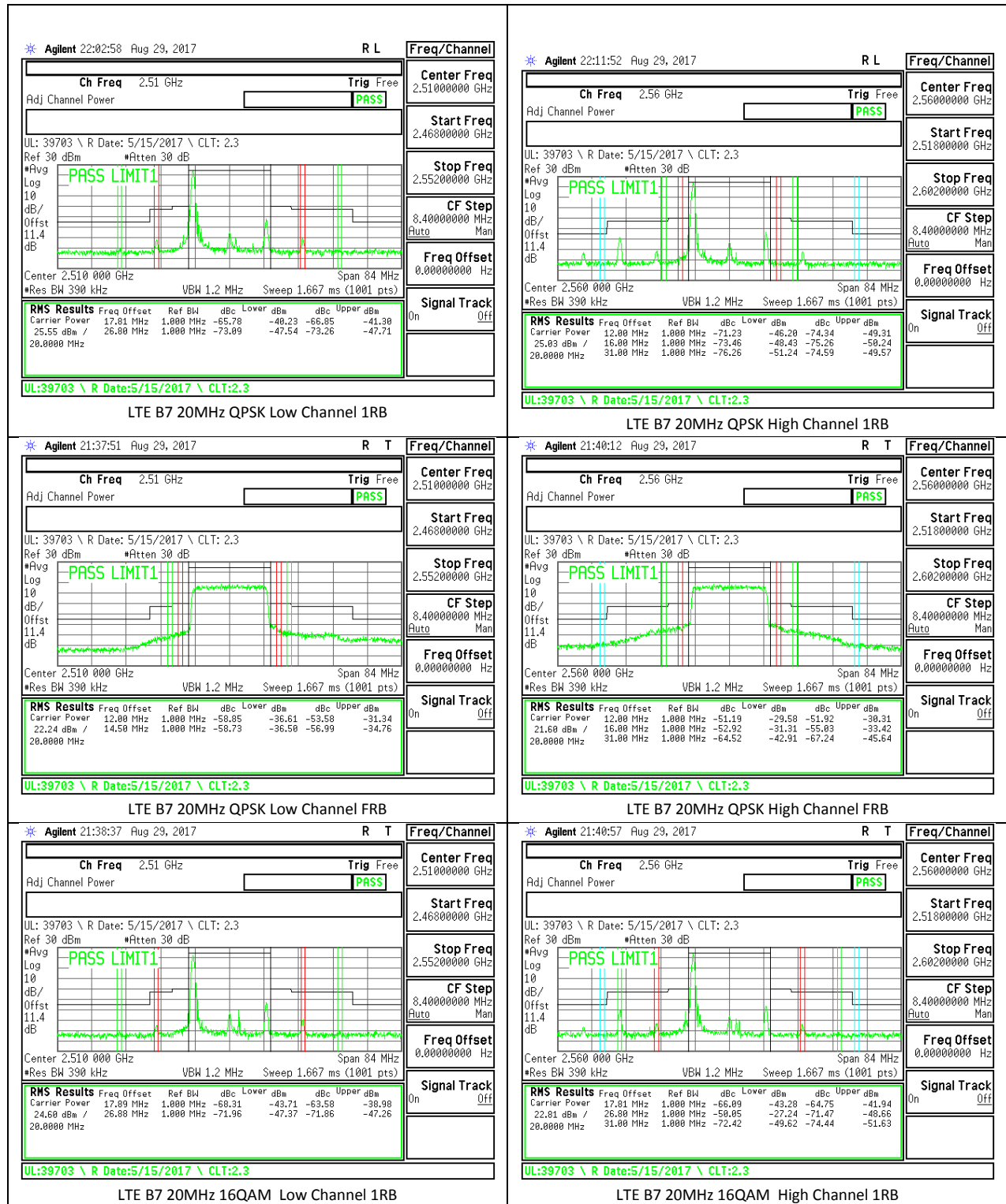
14.2. EMISSION MASK PLOTS LTE Band 7

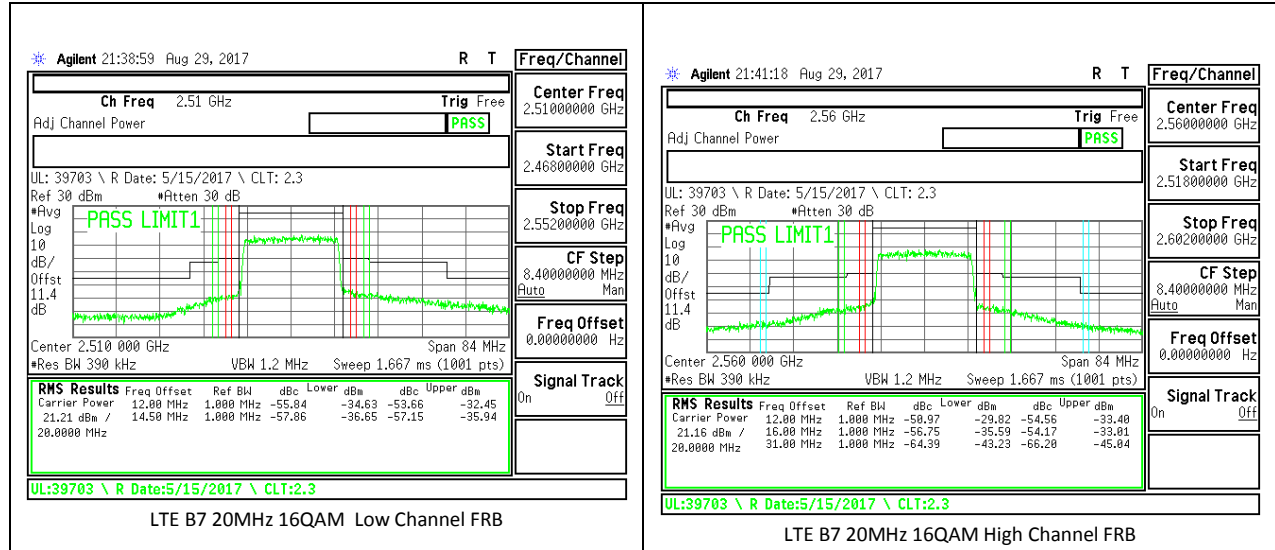




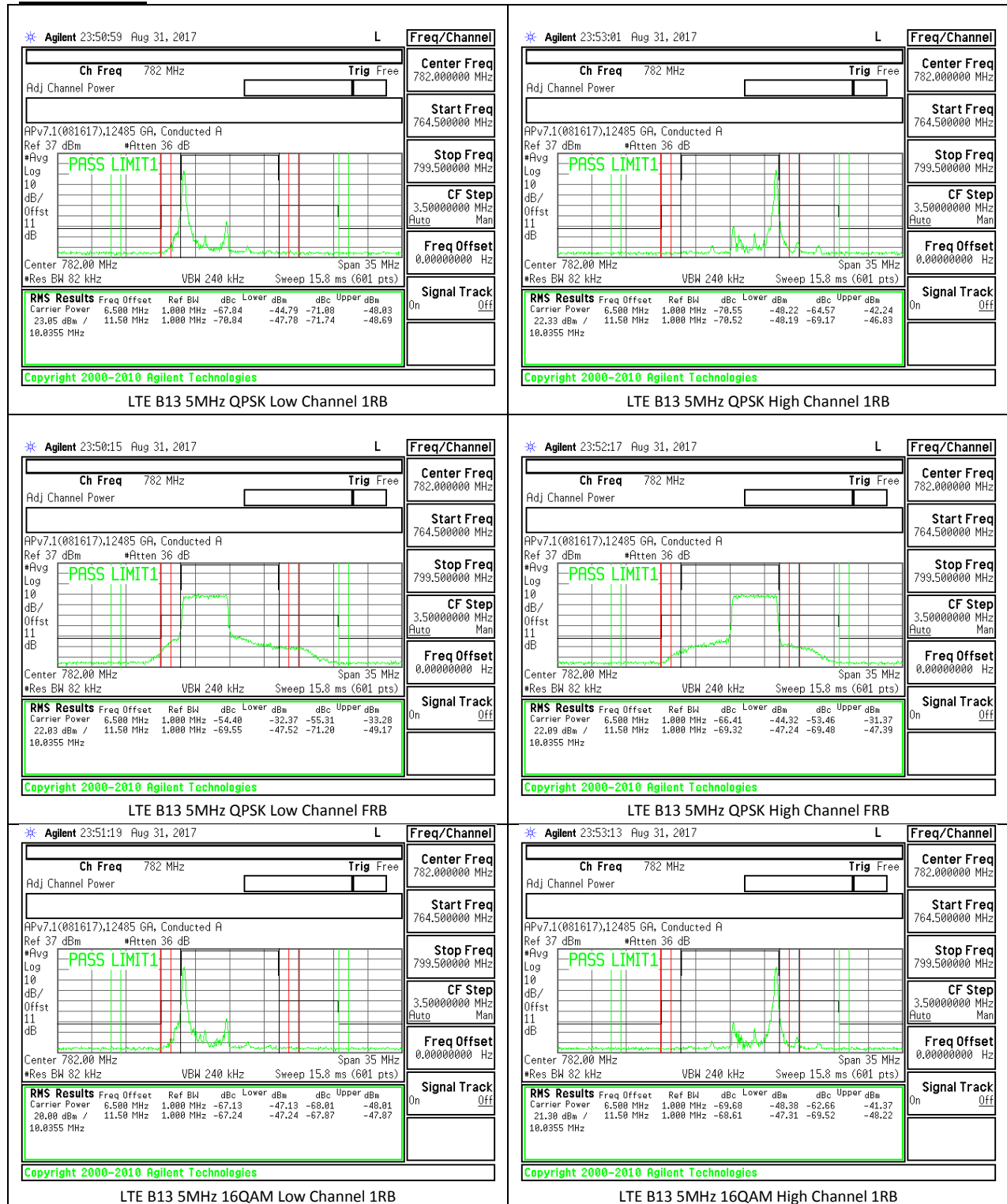


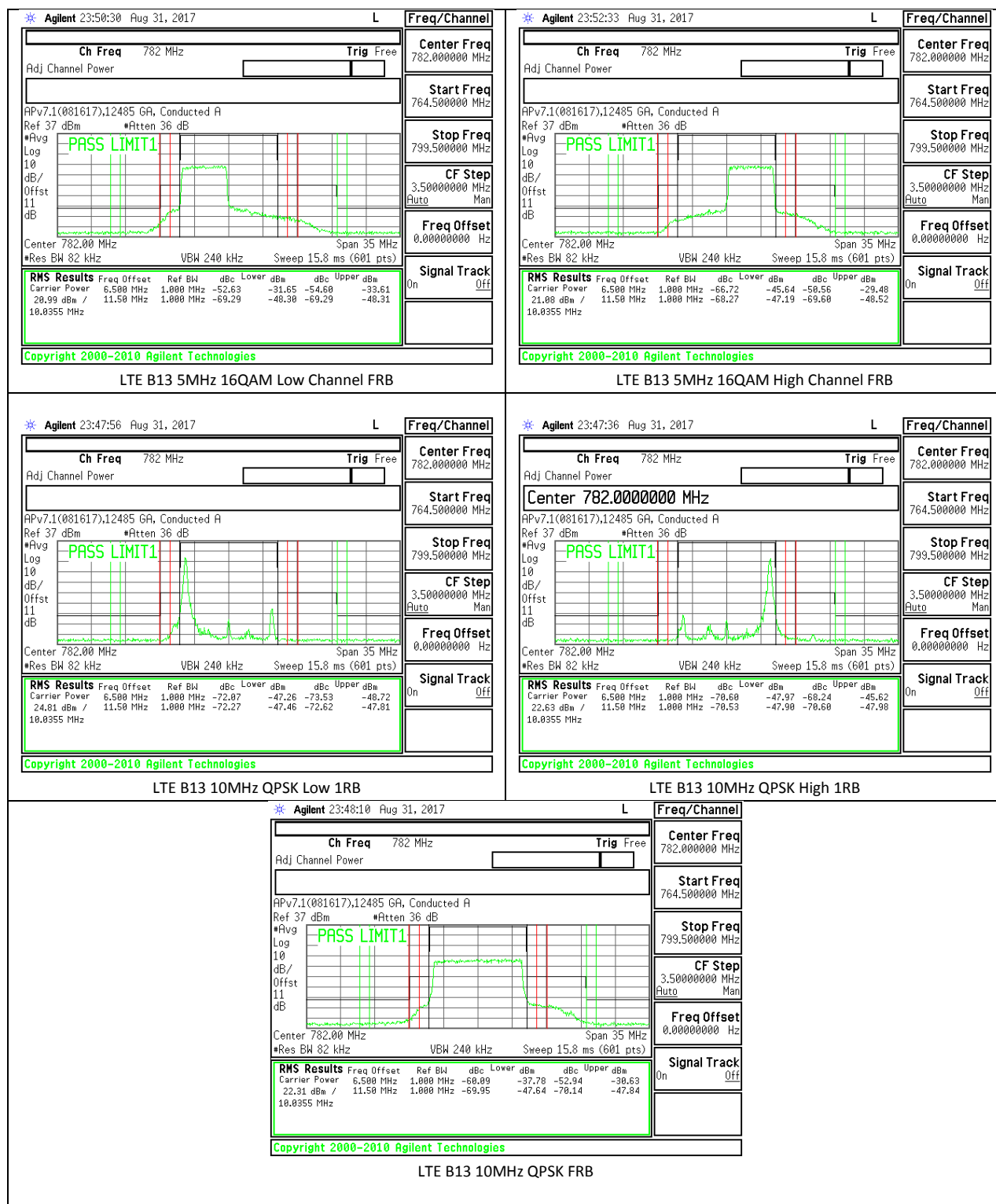


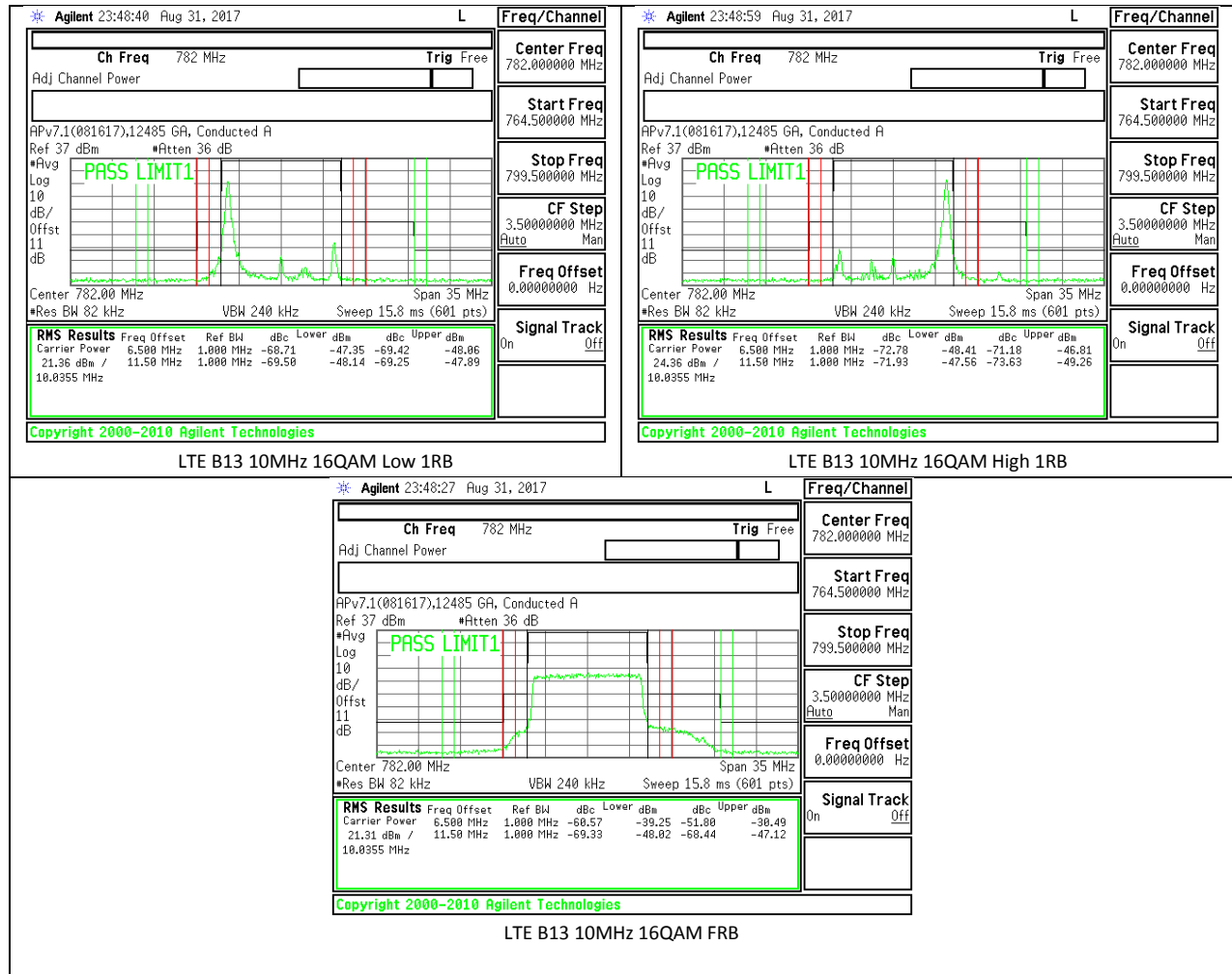




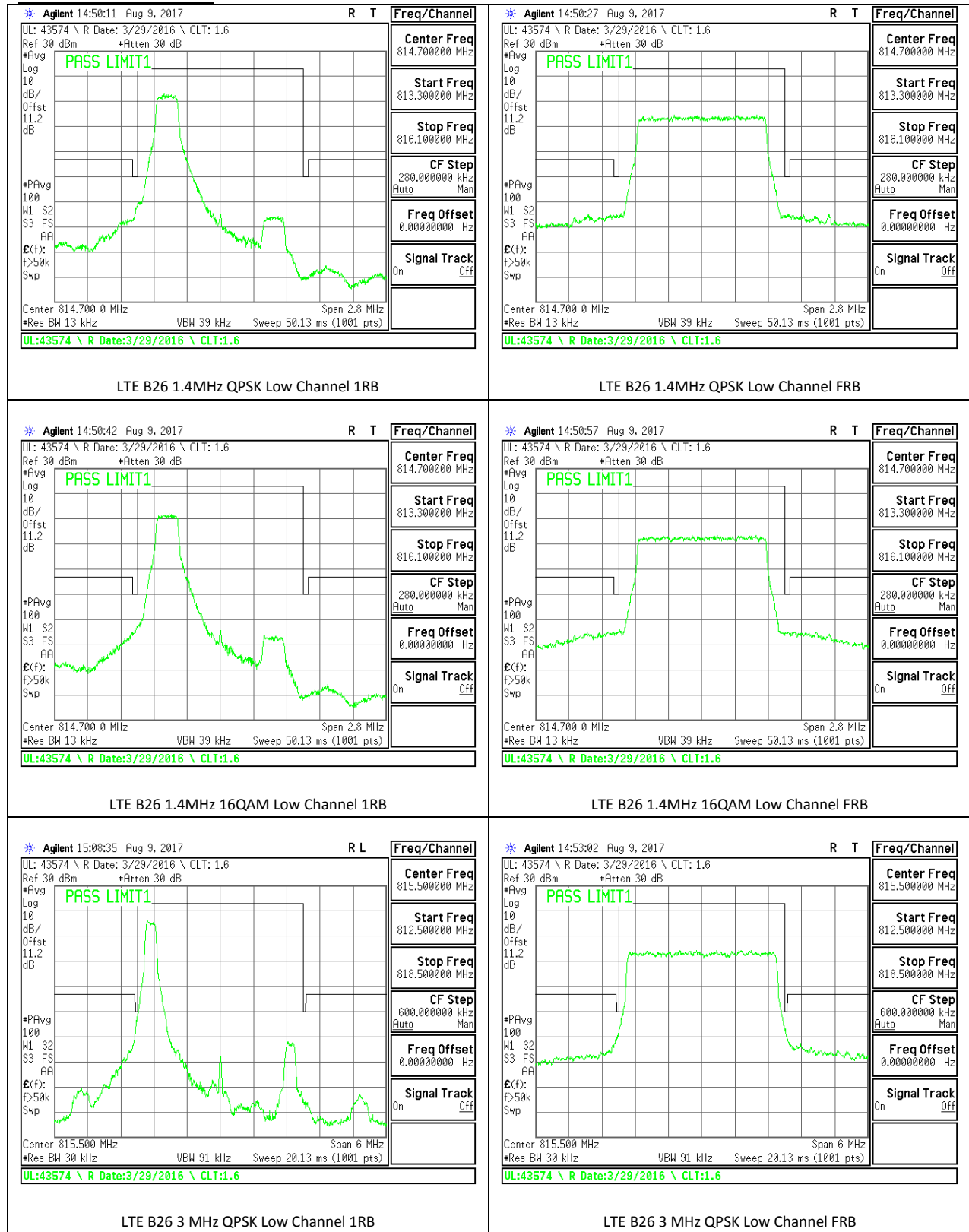
LTE Band 13

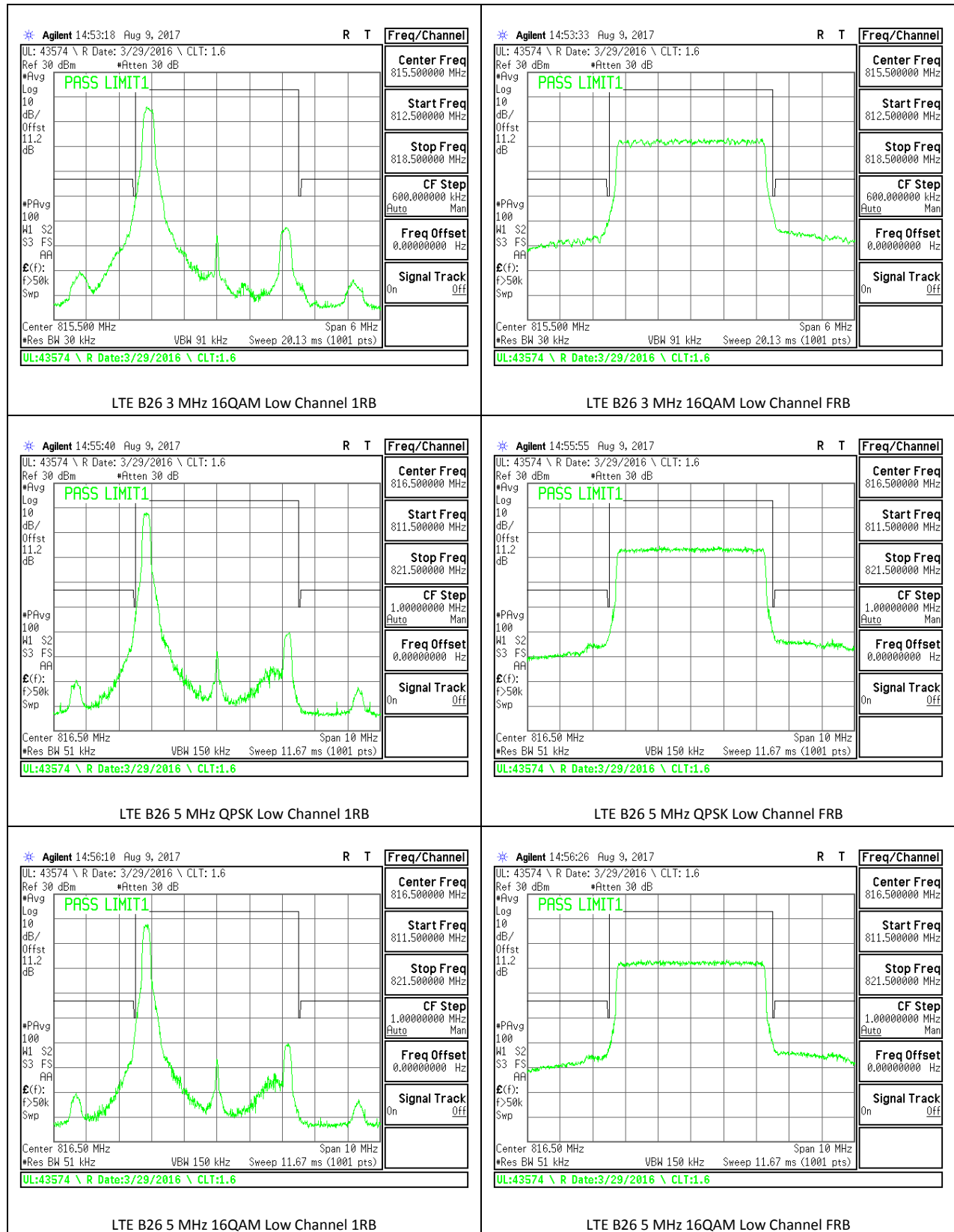


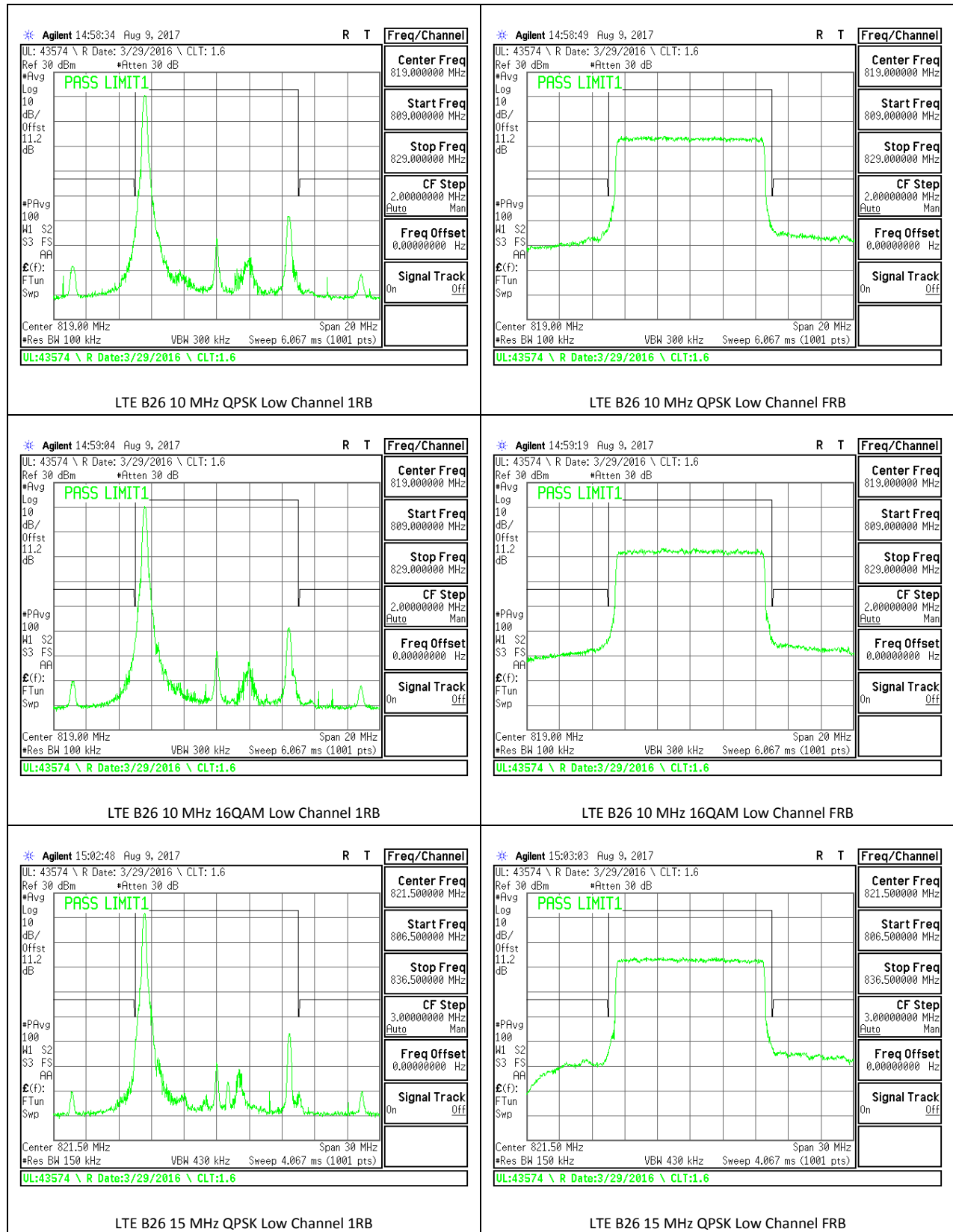


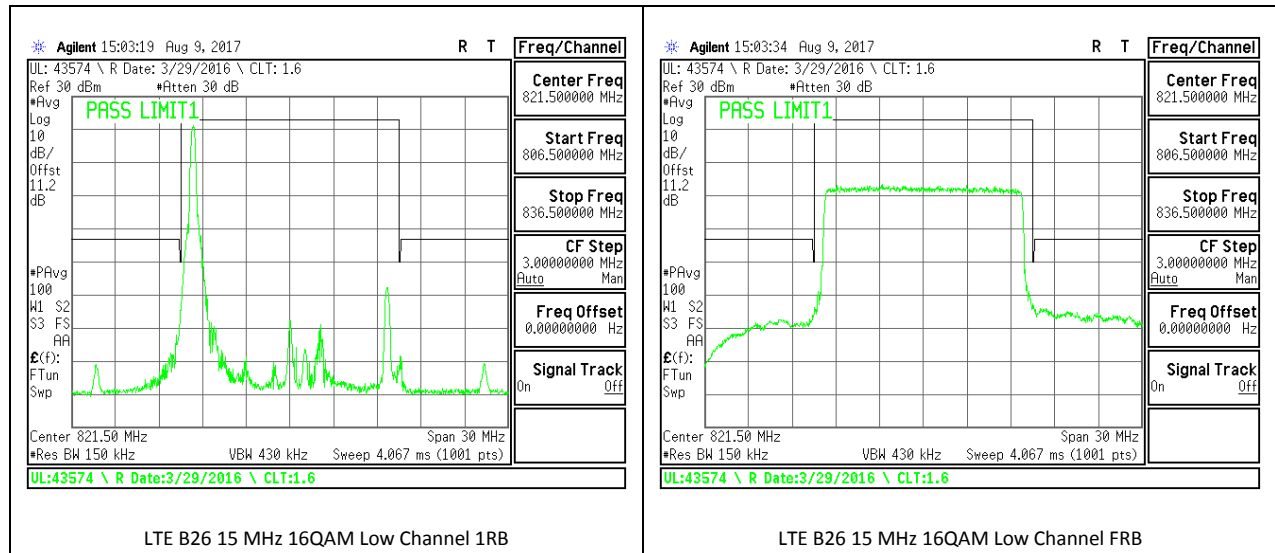


LTE Band 26 Part 90

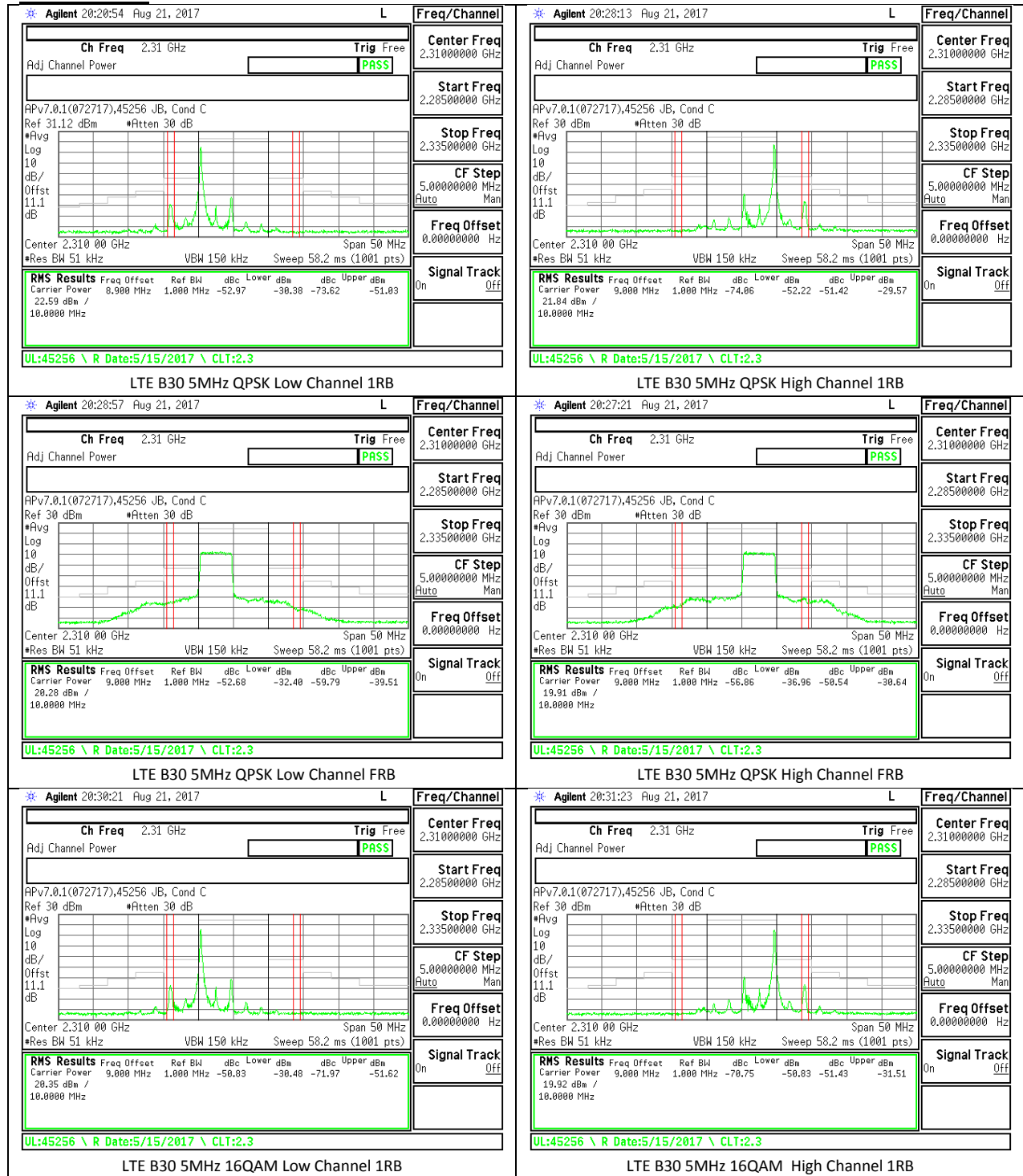


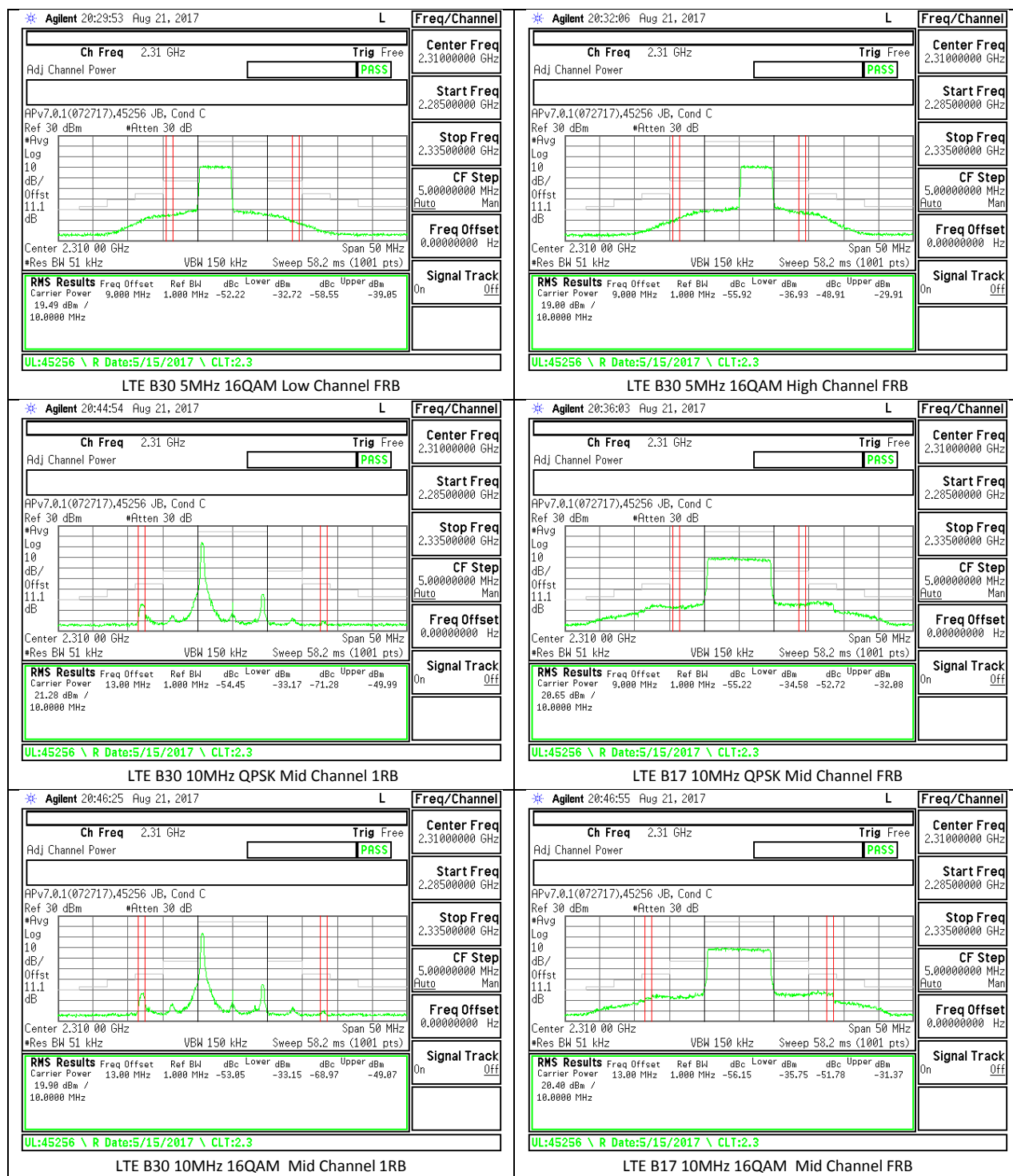




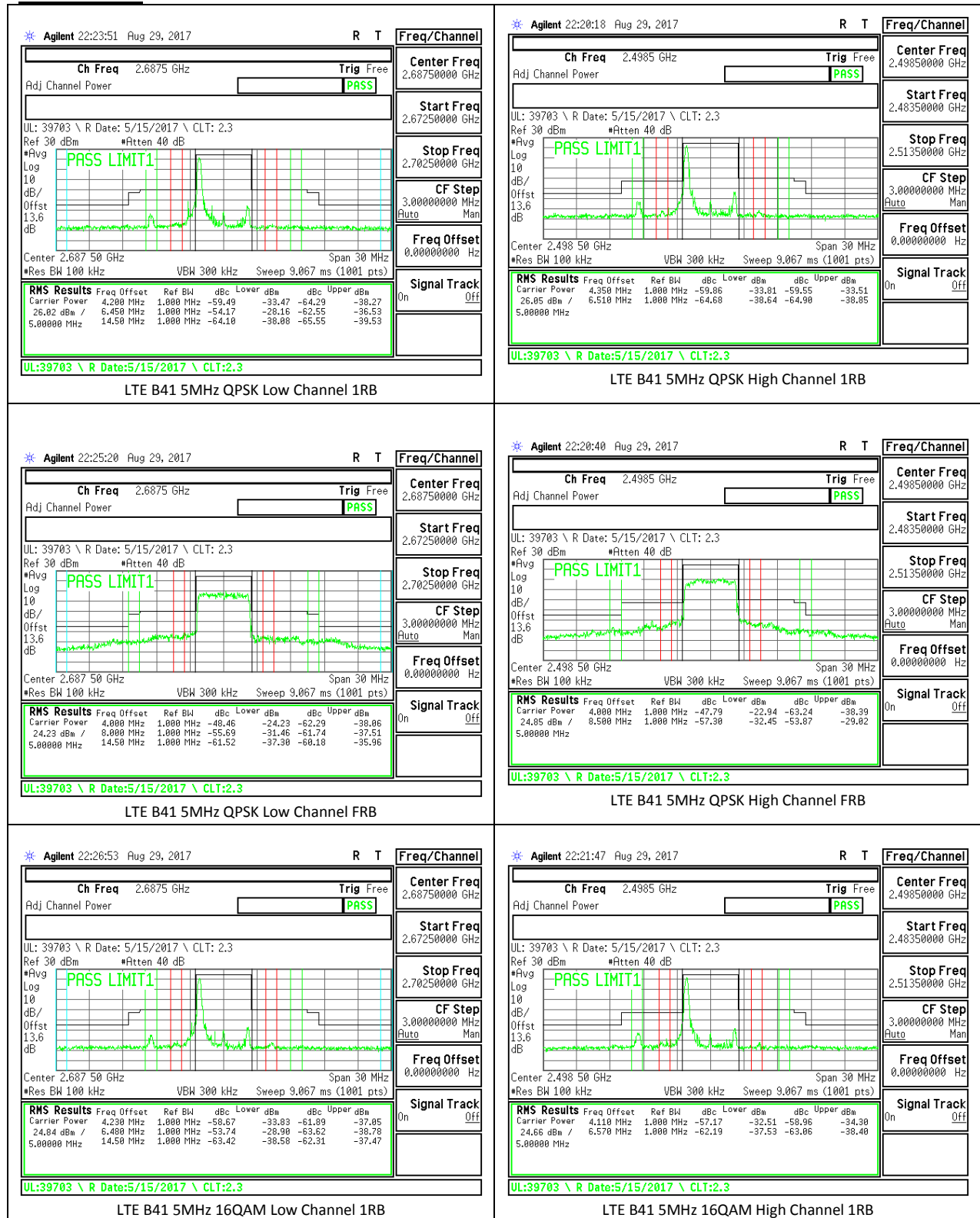


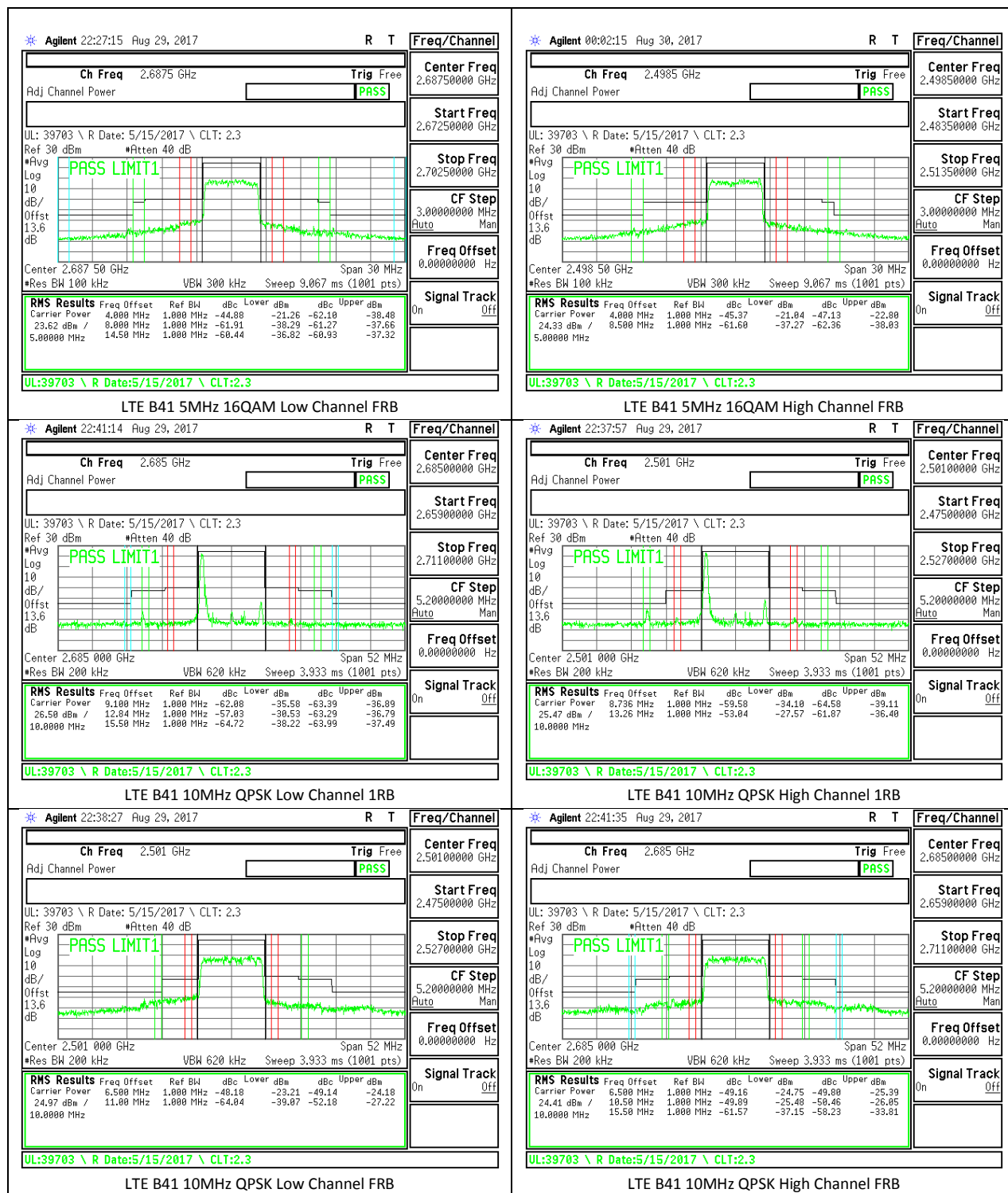
LTE Band 30

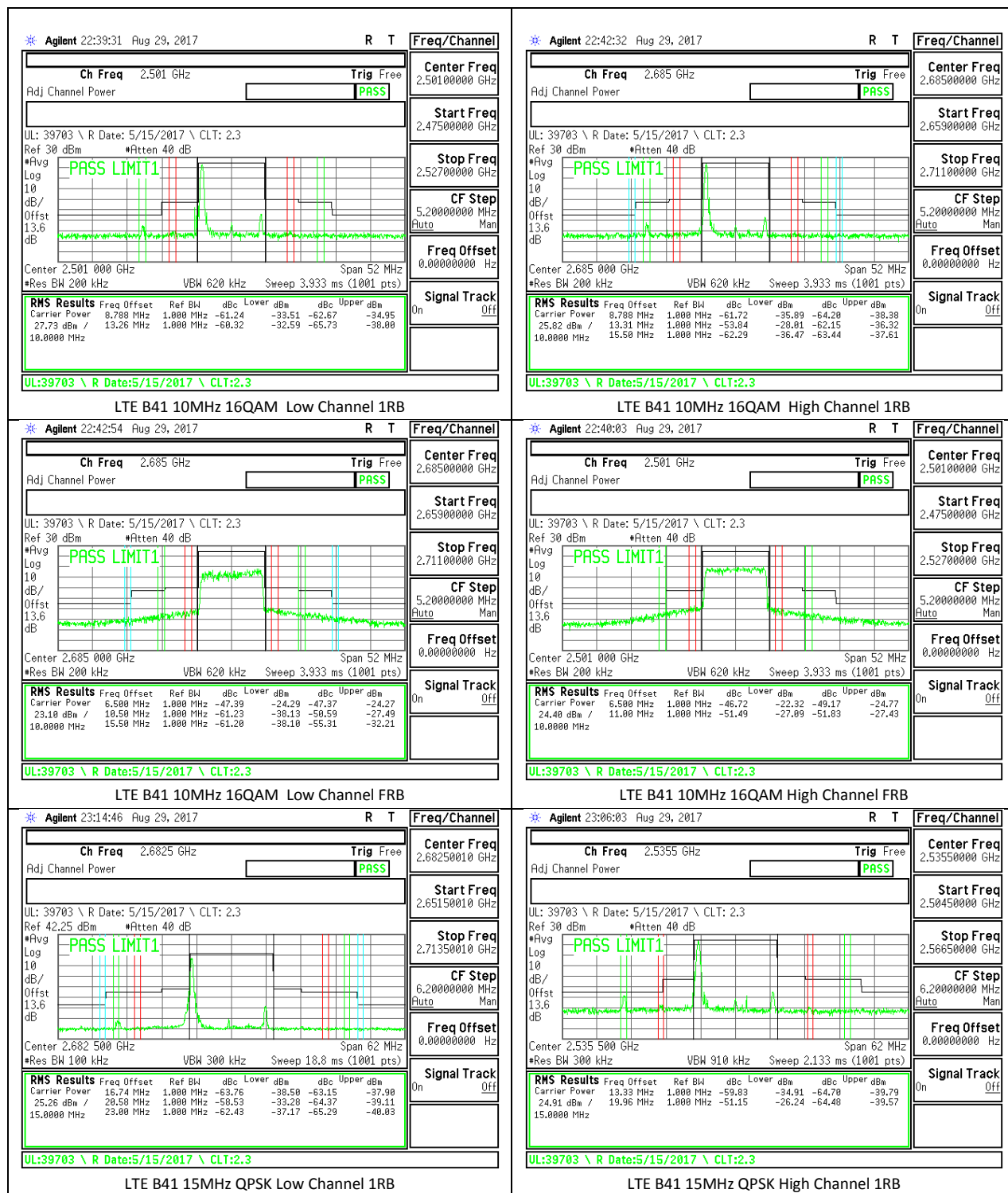


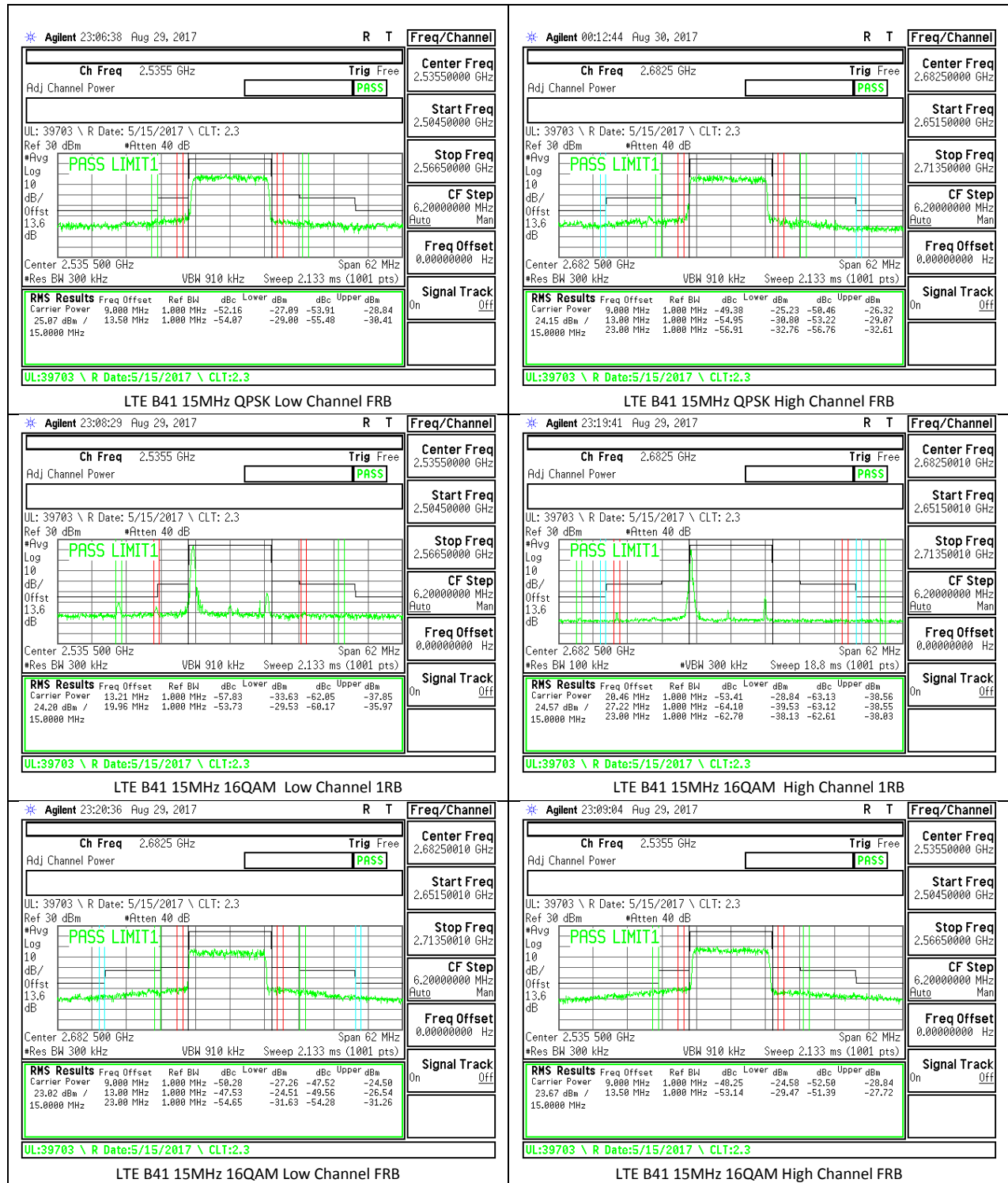


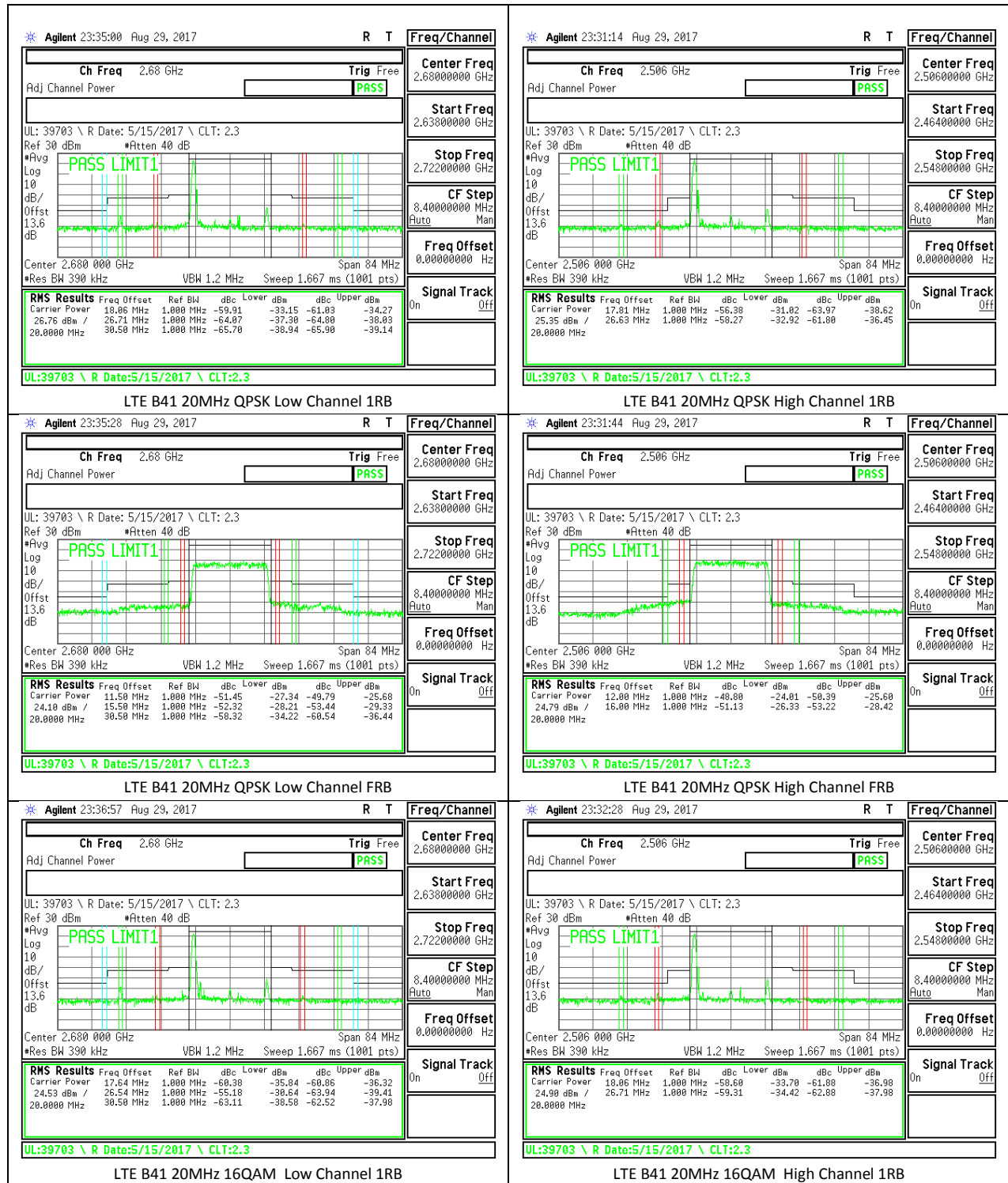
LTE Band 41

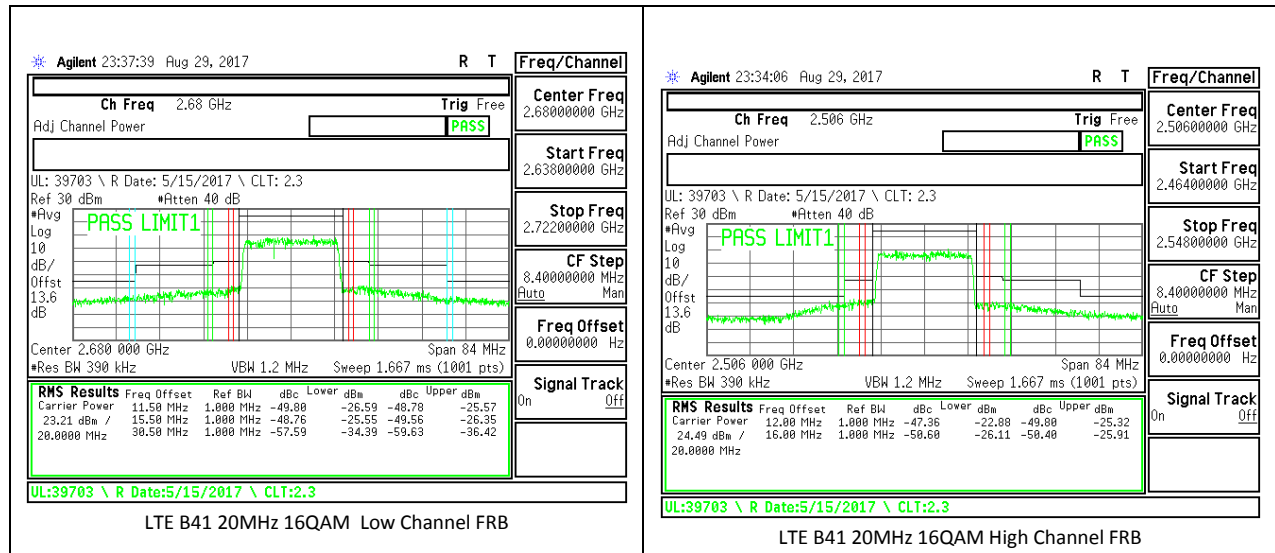












15. OUT OF BAND EMISSIONS

RULE PART(S)

FCC: §2.1051, §22.359, §22.917, §24.238, §27.53, and §90.691

RSS-132, RSS-133, RSS-139, RSS-130, RSS-195, RSS-199

FCC LIMITS

FCC: §22.359, §22.917, §24.238, §27.53

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.

FCC: §90.691

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

For mobile digital stations, the attenuation factor shall be not less than $40 + 10 \log (P)$ dB on all frequencies between the channel edge and 5 megahertz from the channel edge, $43 + 10 \log (P)$ dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and $55 + 10 \log (P)$ dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less 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.

IC LIMITS

RSS-133, RSS-132, RSS-139 and RSS-130: 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.

RSS130

4.6.1 The power of any unwanted emissions in any 100 kHz bandwidth on any frequency outside the frequency range(s) within which the equipment is designed to operate shall be attenuated below the transmitter power, P (dBW), by at least $43 + 10 \log_{10} p$ (watts), dB. However, in the 100 kHz band immediately outside the equipment's operating frequency range, a resolution bandwidth of 30 kHz may be employed.

4.6.2 In addition to the limit outlined in Section 4.6.1 above, equipment operating in the frequency bands 746-756 MHz and 777-787 MHz shall also comply with the following restrictions:

(a) The power of any unwanted emissions in any 6.25 kHz bandwidth for all frequencies between 763-775 MHz and 793-806 MHz shall be attenuated below the transmitter power, P (dBW), by at least:

- (i) $76 + 10 \log_{10} p$ (watts), dB, for base and fixed equipment, and
- (ii) $65 + 10 \log_{10} p$ (watts), dB, for mobile and portable equipment.

RSS199

For mobile subscriber equipment, the power of any unwanted emissions measured as above shall be attenuated (in dB) below the transmitter power, P (dBW), by at least:

- i) $40 + 10 \log_{10} p$ from the channel edges to 5 MHz away,
- ii) $43 + 10 \log_{10} p$ between 5 MHz and X MHz from the channel edges, and
- iii) $55 + 10 \log_{10} p$ at X MHz and beyond from the channel edges.
- iv) in addition, the attenuation shall be not be less than $43 + 10 \log_{10} p$ on all frequencies between 2490.5 MHz and 2496 MHz and $55 + 10 \log_{10} p$ at or below 2490.5 MHz.

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.

For each out of band emissions measurement:

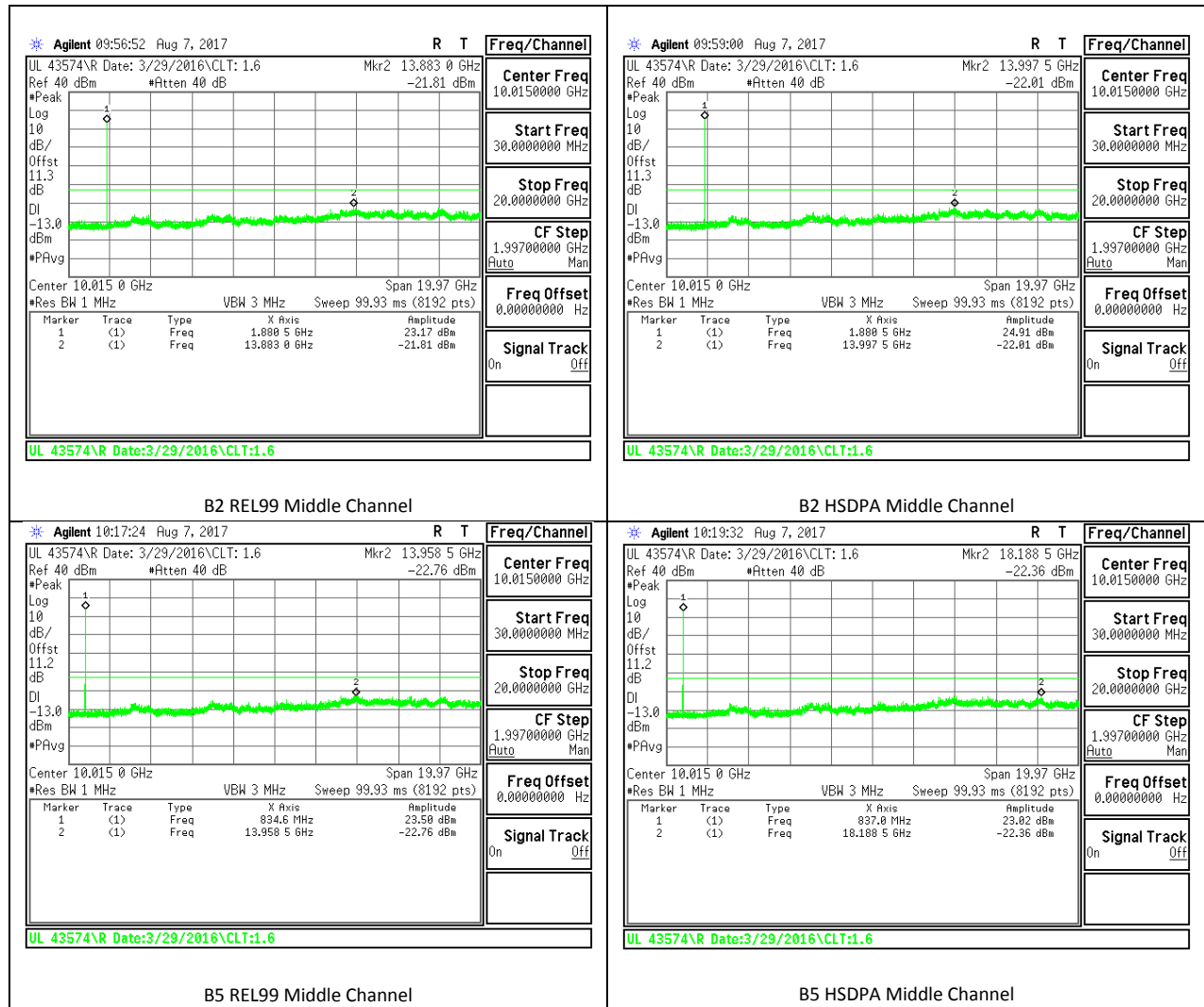
- Set display line at -13 dBm, -25dBm and -40dBm according to the band Limit
- Set RBW & VBW to 100 kHz for the measurement below 1 GHz, and 1 MHz for the measurement above 1 GHz. (NOTE: Worst case set RBW/VBW to 1MHz/3MHz)

RESULTS

15.1. OUT OF BAND EMISSIONS RESULT AND PLOTS

WCDMA

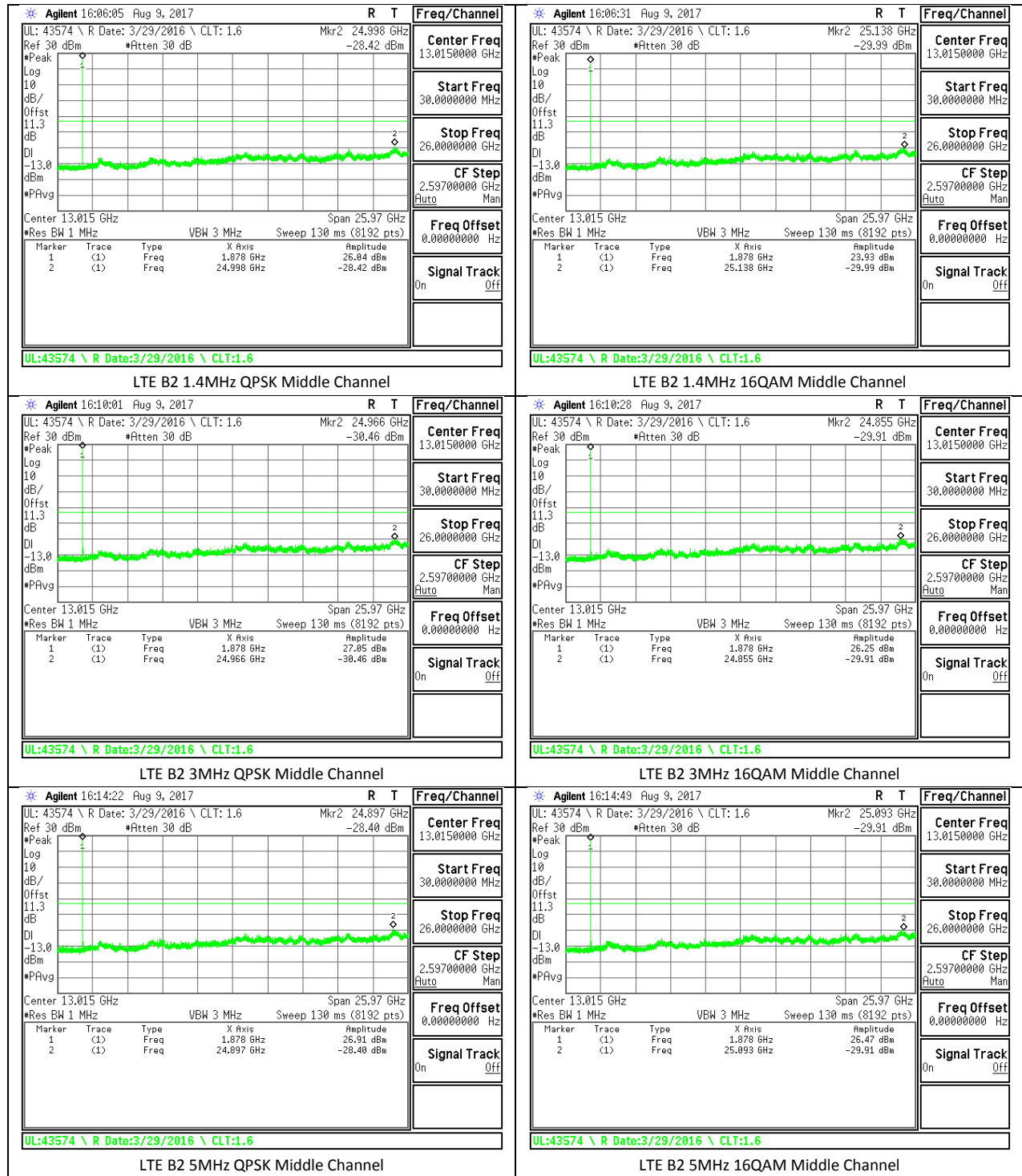
Band	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
Band 2	REL99	1852.4	-22.18	-13	-9.18
		1880	-21.81	-13	-8.81
		1907.6	-22.99	-13	-9.99
	HSDPA	1852.4	-22.71	-13	-9.71
		1880	-22.01	-13	-9.01
		1907.6	-22.58	-13	-9.58
Band 5	REL99	826.4	-22.32	-13	-9.32
		836.6	-22.76	-13	-9.76
		846.6	-22.09	-13	-9.09
	HSDPA	826.4	-22.83	-13	-9.83
		836.6	-22.36	-13	-9.36
		846.6	-22.79	-13	-9.79

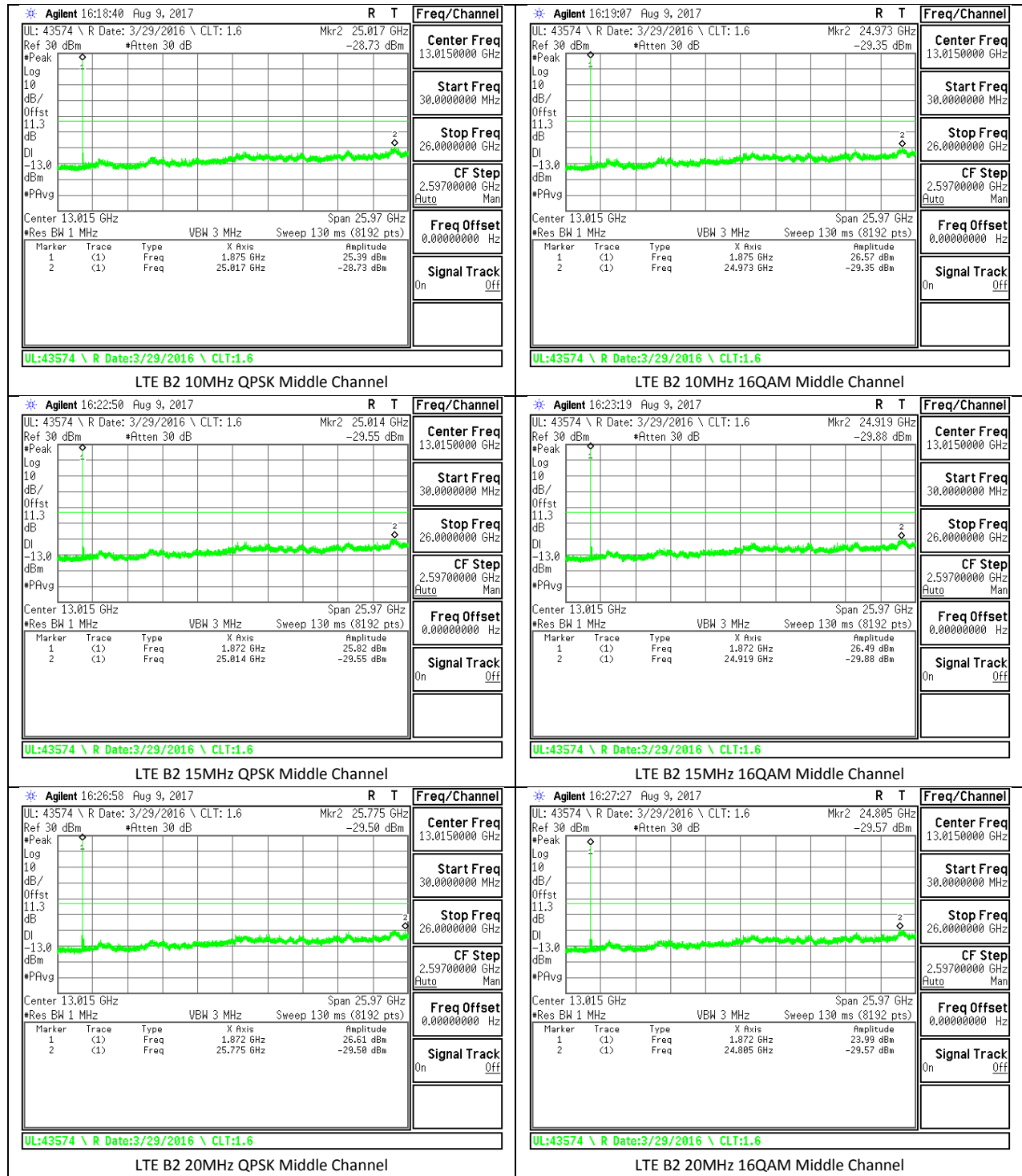


LTE Band 2

Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE2	1.4	QPSK	1850.7	-29.97	-13	-16.97
			1880	-28.42	-13	-15.42
			1909.3	-27.79	-13	-14.79
		16QAM	1850.7	-29.08	-13	-16.08
			1880	-29.99	-13	-16.99
			1909.3	-29.28	-13	-16.28
	3	QPSK	1851.5	-29.2	-13	-16.2
			1880	-30.46	-13	-17.46
			1908.5	-29.95	-13	-16.95
		16QAM	1851.5	-29.58	-13	-16.58
			1880	-29.91	-13	-16.91
			1908.5	-29.73	-13	-16.73
	5	QPSK	1852.5	-29.55	-13	-16.55
			1880	-28.4	-13	-15.4
			1907.5	-29.69	-13	-16.69
		16QAM	1852.5	-28.9	-13	-15.9
			1880	-29.9	-13	-16.9
			1907.5	-28.43	-13	-15.43
	10	QPSK	1855	-29.39	-13	-16.39
			1880	-28.73	-13	-15.73
			1905	-29.92	-13	-16.92
		16QAM	1855	-29.72	-13	-16.72
			1880	-29.35	-13	-16.35
			1905	-29.72	-13	-16.72

Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE2	15	QPSK	1857.5	-29.72	-13	-16.72
			1880	-29.55	-13	-16.55
			1902.5	-29.83	-13	-16.83
		16QAM	1857.5	-29.83	-13	-16.83
			1880	-29.88	-13	-16.88
			1902.5	-29.79	-13	-16.79
	20	QPSK	1860	-29.58	-13	-16.58
			1880	-29.50	-13	-16.5
			1900	-29.47	-13	-16.47
		16QAM	1860	-29.67	-13	-16.67
			1880	-29.57	-13	-16.57
			1900	-29.56	-13	-16.56

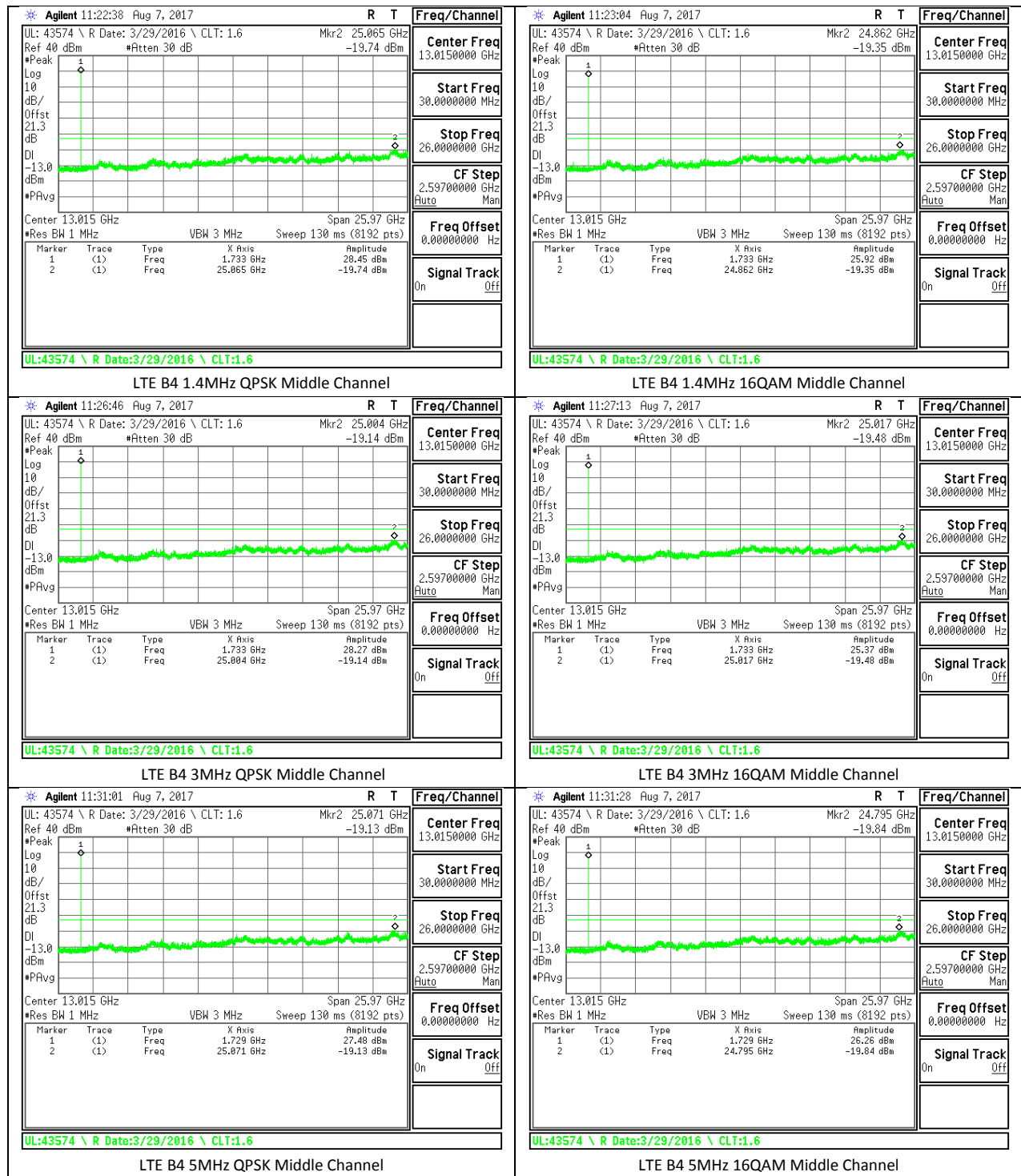


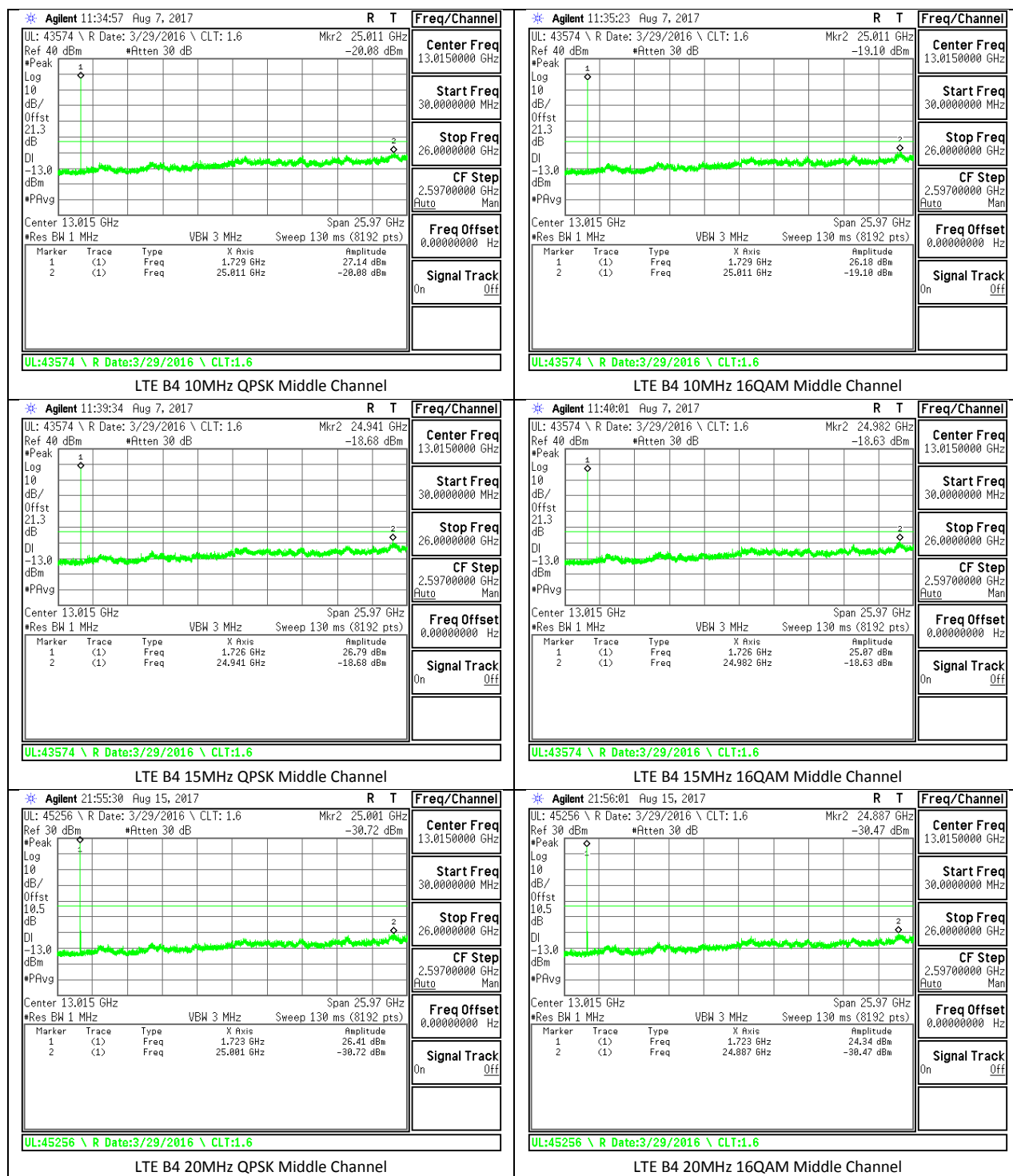


LTE Band 4

Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE4	1.4	QPSK	1710.7	-19.95	-13	-6.95
			1732.5	-19.74	-13	-6.74
			1754.3	-19.1	-13	-6.1
		16QAM	1710.7	-20	-13	-7
			1732.5	-19.35	-13	-6.35
			1754.3	-19.82	-13	-6.82
	3	QPSK	1711.5	-19.82	-13	-6.82
			1732.5	-19.14	-13	-6.14
			1753.5	-18.72	-13	-5.72
		16QAM	1711.5	-18.26	-13	-5.26
			1732.5	-19.48	-13	-6.48
			1753.5	-19.96	-13	-6.96
	5	QPSK	1712.5	-18.87	-13	-5.87
			1732.5	-19.13	-13	-6.13
			1752.5	-19.86	-13	-6.86
		16QAM	1712.5	-18.71	-13	-5.71
			1732.5	-19.84	-13	-6.84
			1752.5	-19.57	-13	-6.57
	10	QPSK	1715	-19.56	-13	-6.56
			1732.5	-20.08	-13	-7.08
			1750	-18.91	-13	-5.91
		16QAM	1715	-18.25	-13	-5.25
			1732.5	-19.1	-13	-6.1
			1750	-20.04	-13	-7.04

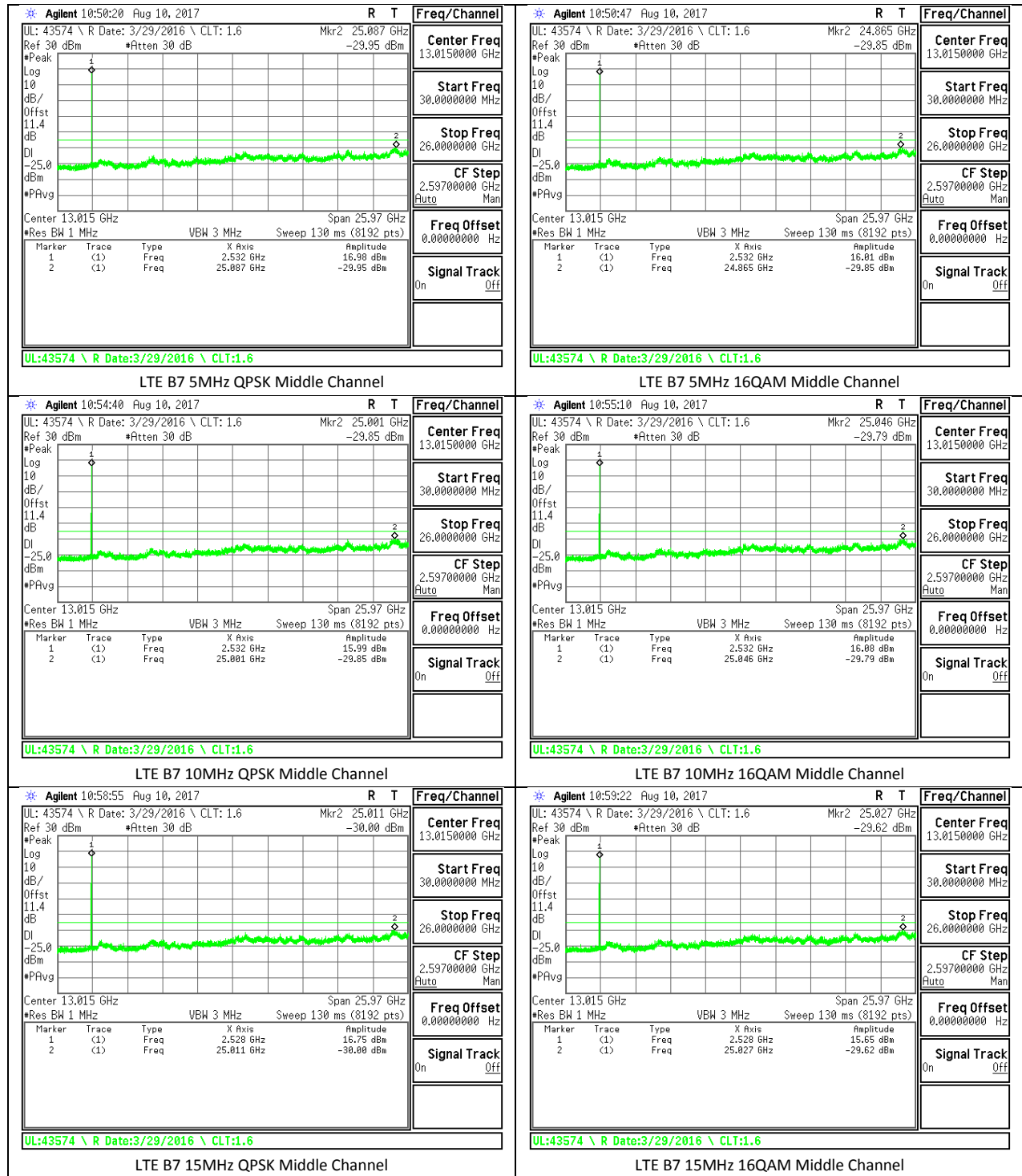
Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE4	15	QPSK	1717.5	-19.48	-13	-6.48
			1732.5	-18.68	-13	-5.68
			1747.5	-19.98	-13	-6.98
		16QAM	1717.5	-19.6	-13	-6.6
			1732.5	-18.63	-13	-5.63
			1747.5	-19.81	-13	-6.81
	20	QPSK	1720	-30.03	-13	-17.03
			1732.5	-30.72	-13	-17.72
			1745	-30.42	-13	-17.42
		16QAM	1720	-30.31	-13	-17.31
			1732.5	-30.47	-13	-17.47
			1745	-29.59	-13	-16.59

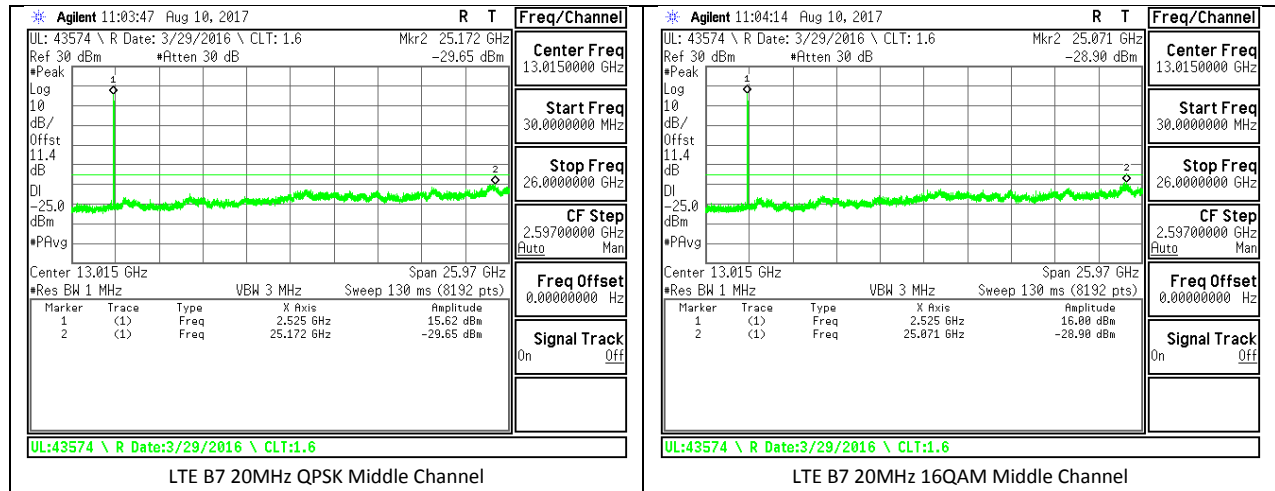




LTE Band 7

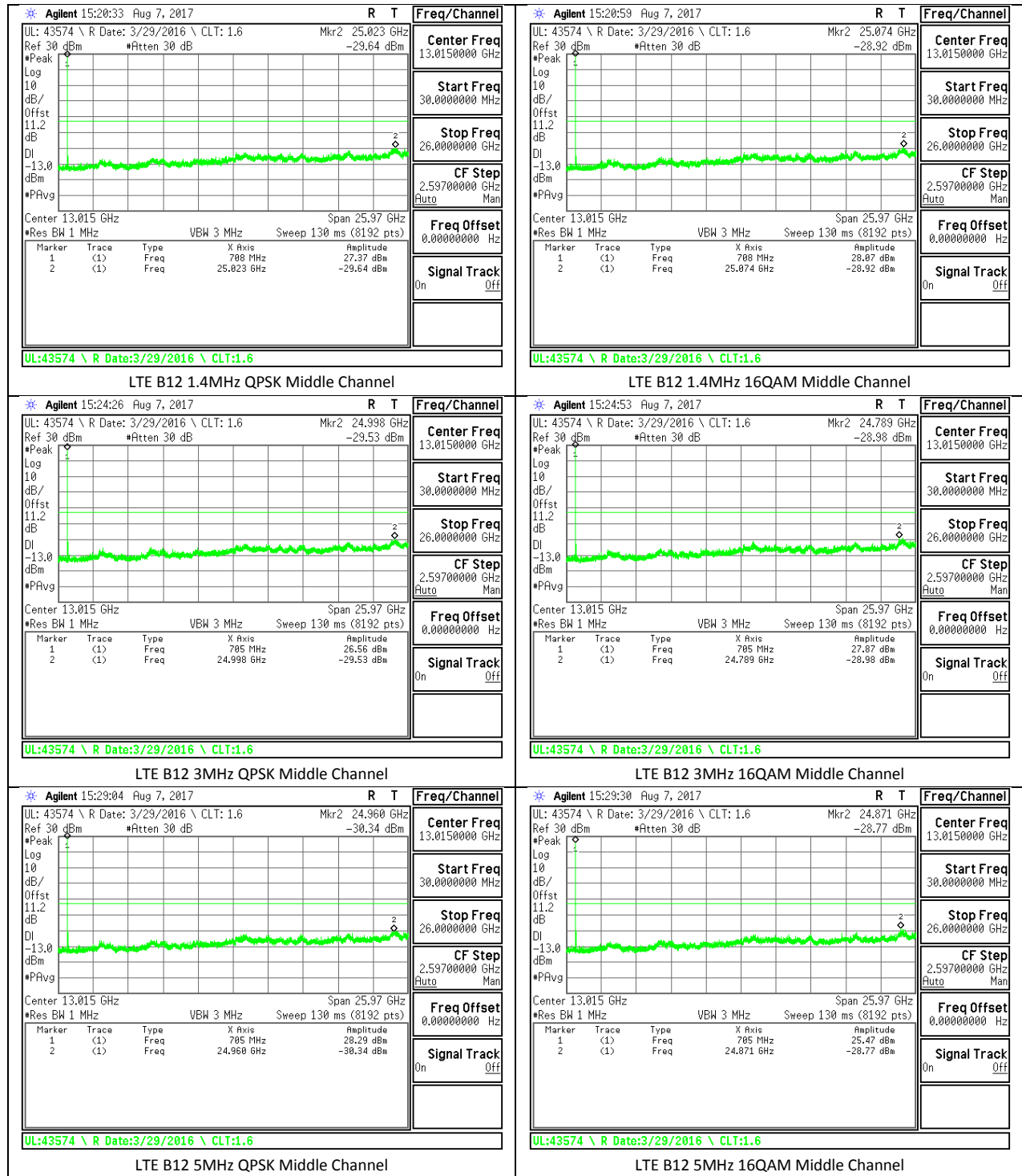
Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE7	5	QPSK	2502.5	-29.8	-25	-4.8
			2535	-29.95	-25	-4.96
			2567.5	-29.36	-25	-4.36
		16QAM	2502.5	-28.73	-25	-3.73
			2535	-29.85	-25	-4.86
			2567.5	-28.68	-25	-3.68
	10	QPSK	2505	-30.08	-25	-5.08
			2535	-29.85	-25	-4.85
			2565	-28.7	-25	-3.7
		16QAM	2505	-29.5	-25	-4.5
			2535	-29.79	-25	-4.79
			2565	-29.64	-25	-4.64
	15	QPSK	2507.5	-29.67	-25	-4.67
			2535	-30	-25	-5
			2562.5	-29.36	-25	-4.36
		16QAM	2507.5	-29.75	-25	-4.75
			2535	-29.62	-25	-4.62
			2562.5	-29.66	-25	-4.66
	20	QPSK	2510	-29.5	-25	-4.5
			2535	-29.65	-25	-4.65
			2560	-29.66	-25	-4.66
		16QAM	2510	-29.23	-25	-4.23
			2535	-28.9	-25	-3.9
			2560	-28.98	-25	-3.98

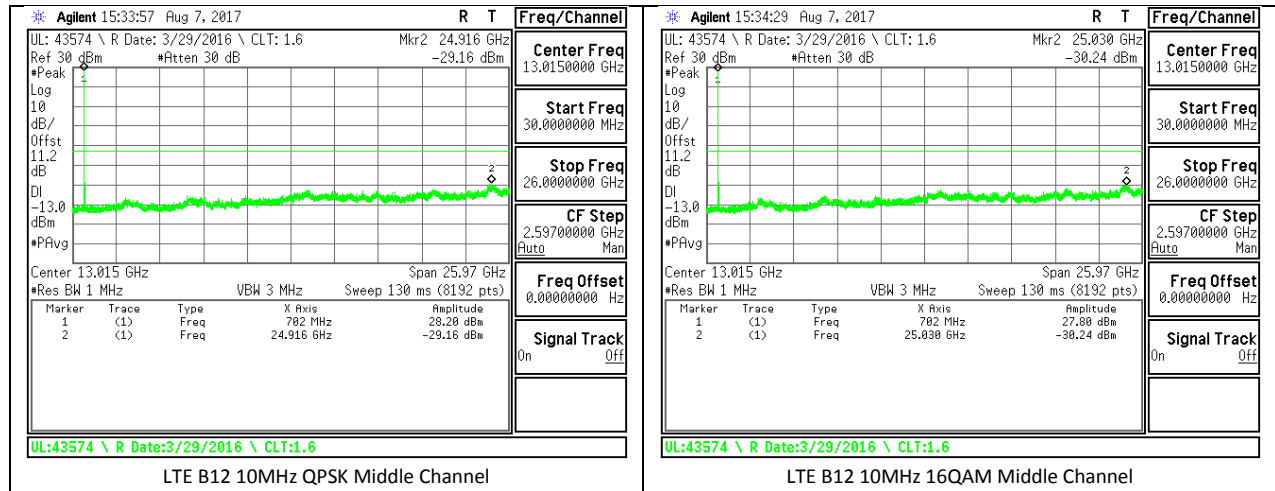




LTE Band 12

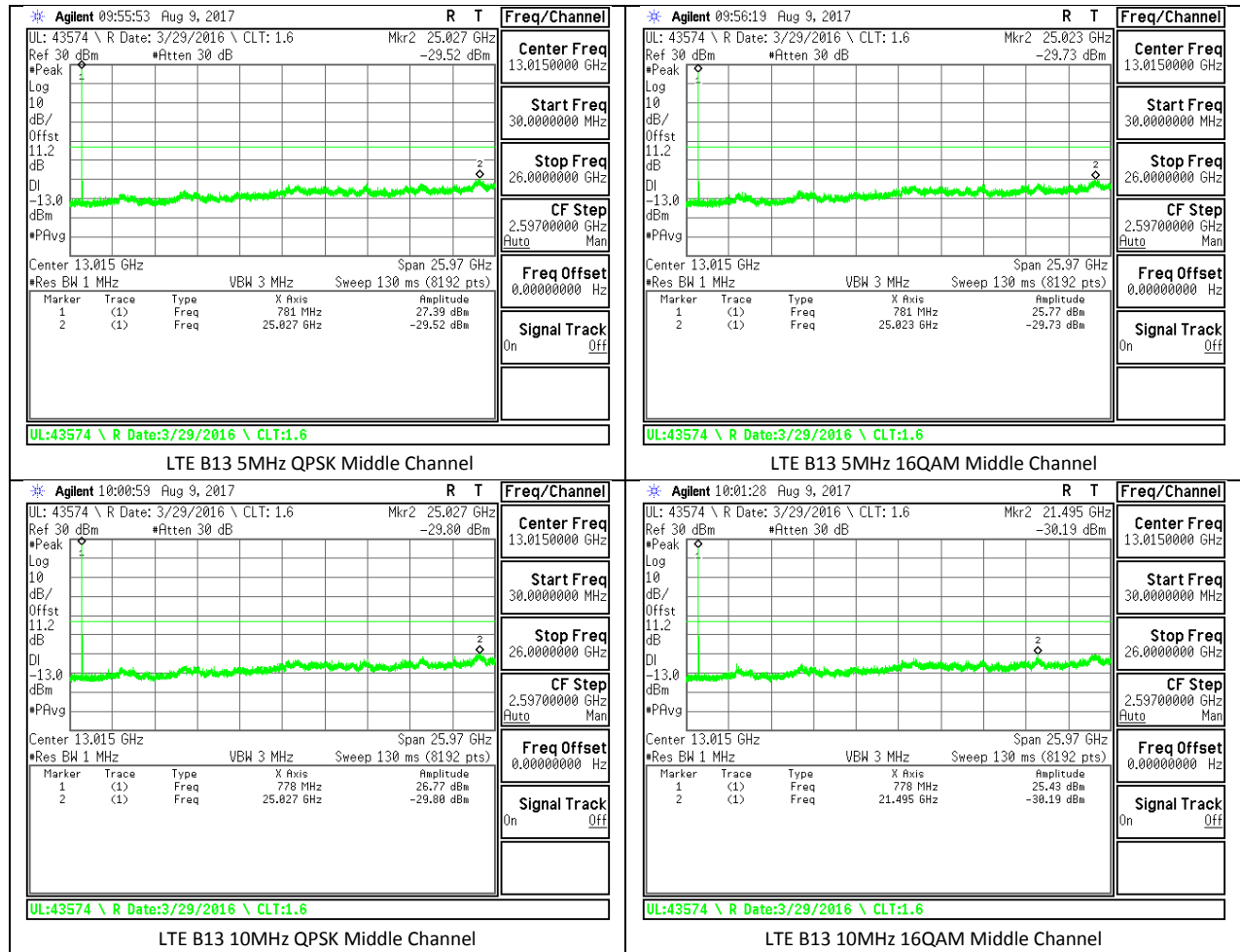
Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE12	1.4	QPSK	699.7	-29.42	-13	-16.42
			707.5	-29.64	-13	-16.64
			715.3	-29.48	-13	-16.48
		16QAM	699.7	-29.55	-13	-16.55
			707.5	-28.92	-13	-15.92
			715.3	-29.98	-13	-16.98
	3	QPSK	700.5	-30.15	-13	-17.15
			707.5	-29.53	-13	-16.53
			714.5	-29.73	-13	-16.73
		16QAM	700.5	-29.33	-13	-16.33
			707.5	-28.98	-13	-15.98
			714.5	-29.57	-13	-16.57
	5	QPSK	701.5	-29.2	-13	-16.2
			707.5	-30.34	-13	-17.34
			713.5	-30.18	-13	-17.18
		16QAM	701.5	-29.66	-13	-16.66
			707.5	-28.77	-13	-15.77
			713.5	-29.81	-13	-16.81
	10	QPSK	704	-29.53	-13	-16.53
			707.5	-29.16	-13	-16.16
			711	-30.84	-13	-17.84
		16QAM	704	-29.61	-13	-16.61
			707.5	-30.24	-13	-17.24
			711	-29.15	-13	-16.15





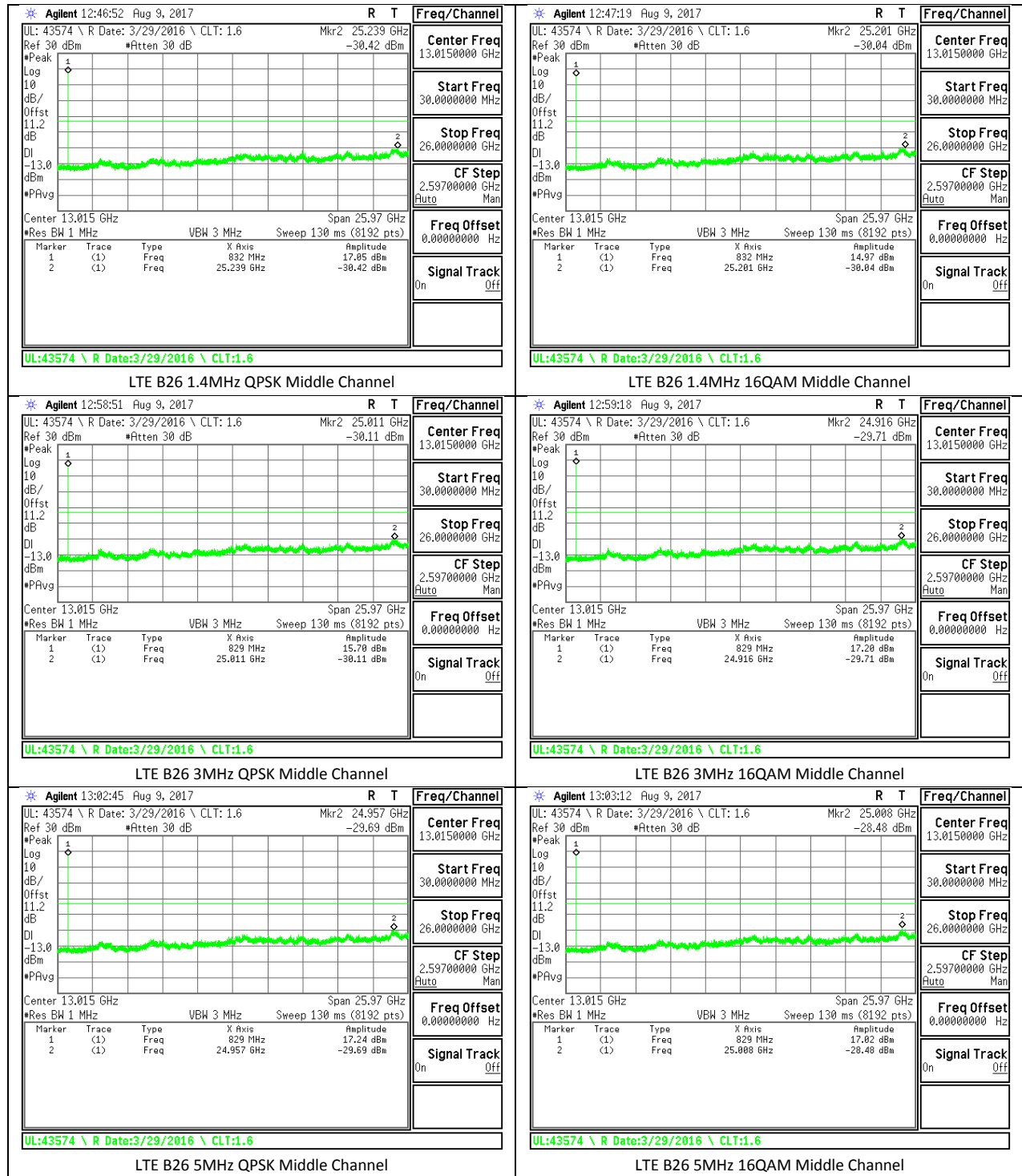
LTE Band 13

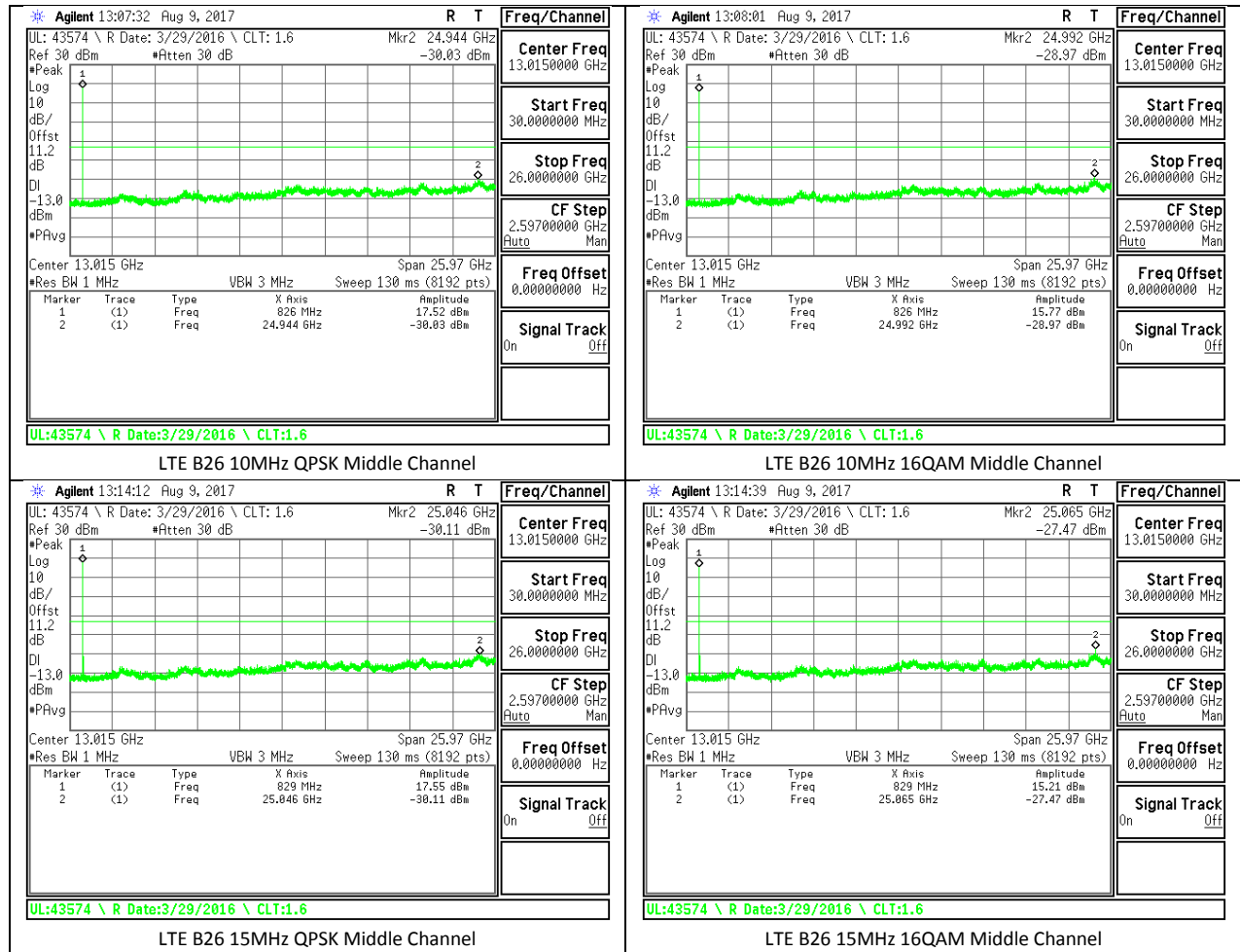
Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE13	5	QPSK	779.5	-29.88	-13	-16.88
			782	-29.52	-13	-16.52
			784.5	-29.64	-13	-16.64
		16QAM	779.5	-29.57	-13	-16.57
			782	-29.73	-13	-16.73
			784.5	-29.56	-13	-16.56
	10	QPSK				
			782	-29.80	-13	-16.8
		16QAM				
			782	-30.19	-13	-17.9



LTE Band 26

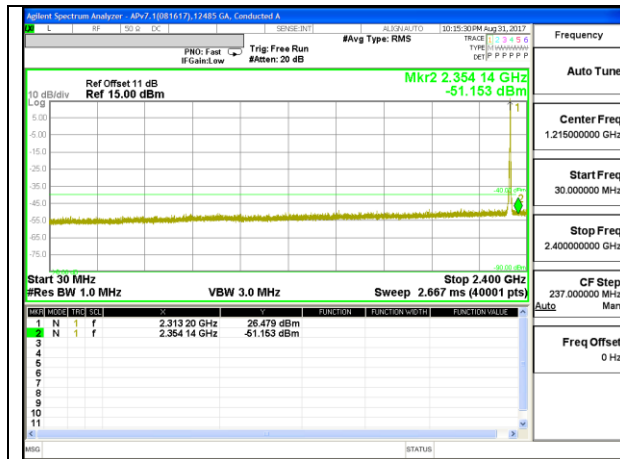
Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE26	1.4	QPSK	814.7	-29.39	-13	-16.39
			831.5	-30.42	-13	-17.42
			848.3	-29.21	-13	-16.21
		16QAM	814.7	-29.85	-13	-16.85
			831.5	-30.04	-13	-17.04
			848.3	-29.94	-13	-16.94
	3	QPSK	815.5	-30.01	-13	-17.01
			831.5	-30.11	-13	-17.11
			847.5	-29.9	-13	-16.9
		16QAM	815.5	-29.16	-13	-16.16
			831.5	-29.71	-13	-16.71
			847.5	-29.28	-13	-16.28
	5	QPSK	816.5	-29.9	-13	-16.9
			831.5	-29.69	-13	-16.69
			846.5	-29.78	-13	-16.78
		16QAM	816.5	-28.99	-13	-15.99
			831.5	-28.48	-13	-15.48
			846.5	-29.82	-13	-16.82
	10	QPSK	819	-29.29	-13	-16.29
			831.5	-30.03	-13	-17.04
			844	-29.89	-13	-16.89
		16QAM	819	-30.04	-13	-17.04
			831.5	-28.97	-13	-15.97
			844	-29.82	-13	-16.82
	15	QPSK	831.5	-29.98	-13	-16.98
			836.5	-30.11	-13	-17.11
			841.5	-29.9	-13	-16.9
		16QAM	831.5	-28.94	-13	-15.94
			836.5	-27.47	-13	-14.47
			841.5	-29.36	-13	-16.36



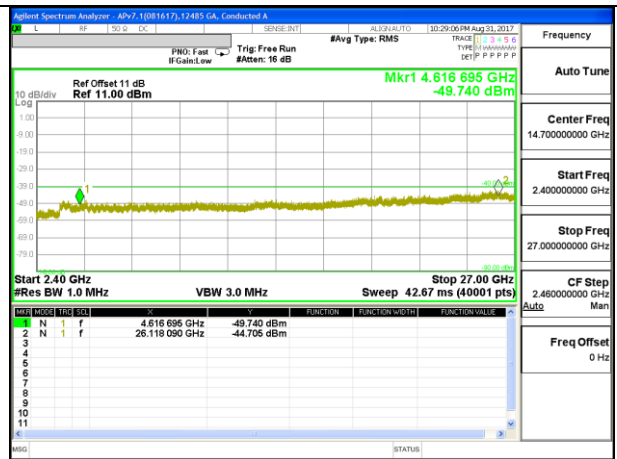


LTE Band 30

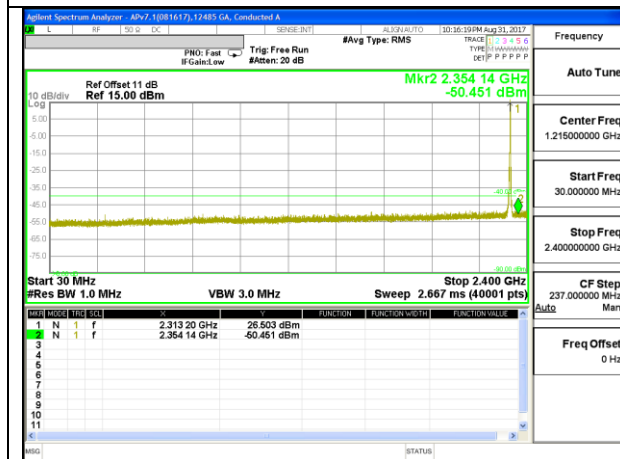
Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE30	5	QPSK	2307.5	-43.74	-40	-3.74
			2310	-44.71	-40	-4.71
			2312.5	-43.58	-40	-3.58
		16QAM	2307.5	-43.20	-40	-3.2
			2310	-42.06	-40	-2.06
			2312.5	-43.81	-40	-3.81
	10	QPSK				
			2310	-43.95	-40	-3.95
		16QAM				
			2310	-44.35	-40	-4.35



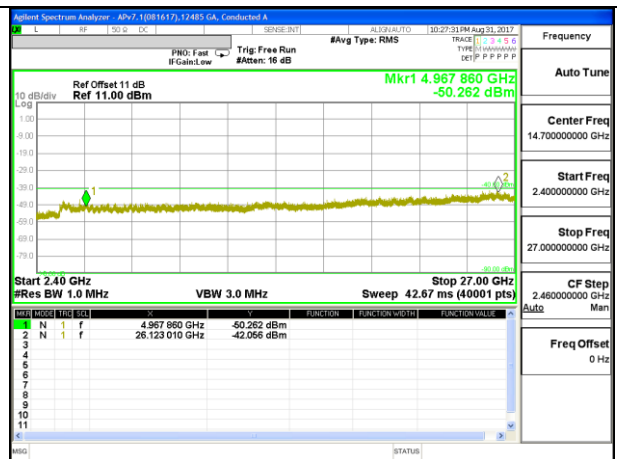
LTE B30 5MHz QPSK 30MHz-2.4GHz Middle Channel



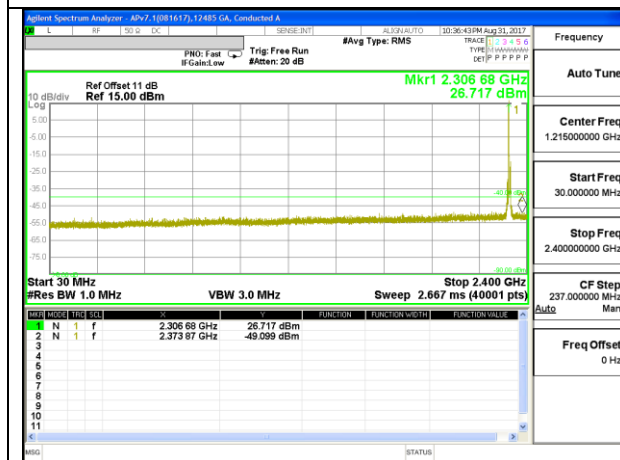
LTE B30 5MHz QPSK 2.4GHz-27GHz Middle Channel



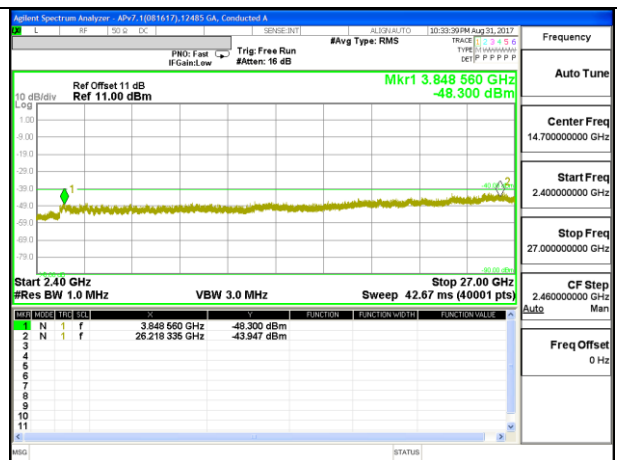
LTE B30 5MHz 16QAM 30MHz-2.4GHz Middle Channel



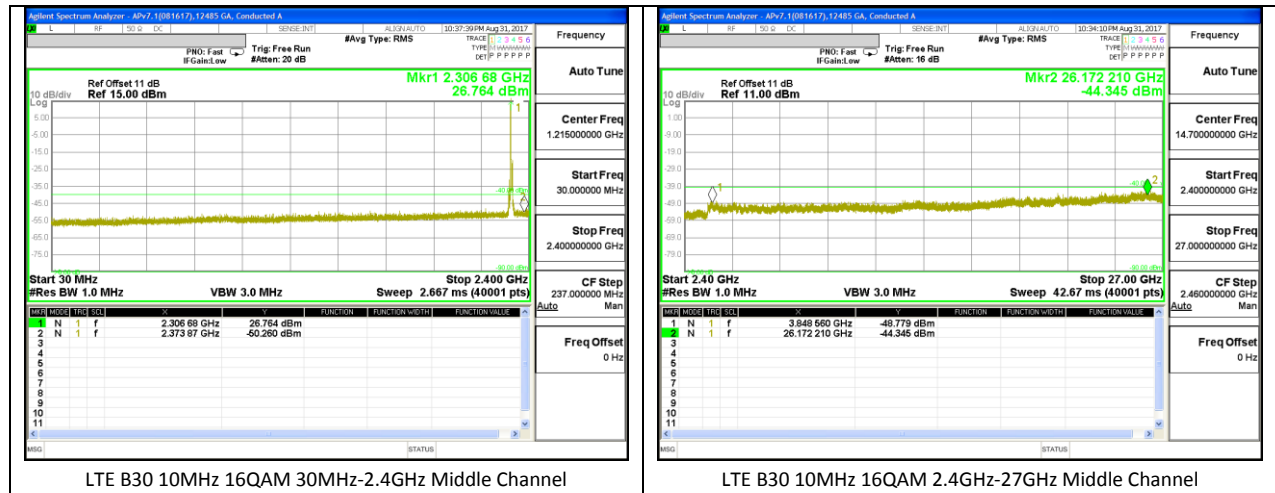
LTE B30 5MHz 16QAM 2.4GHz-27GHz Middle Channel



LTE B30 10MHz QPSK 30MHz-2.4GHz Middle Channel

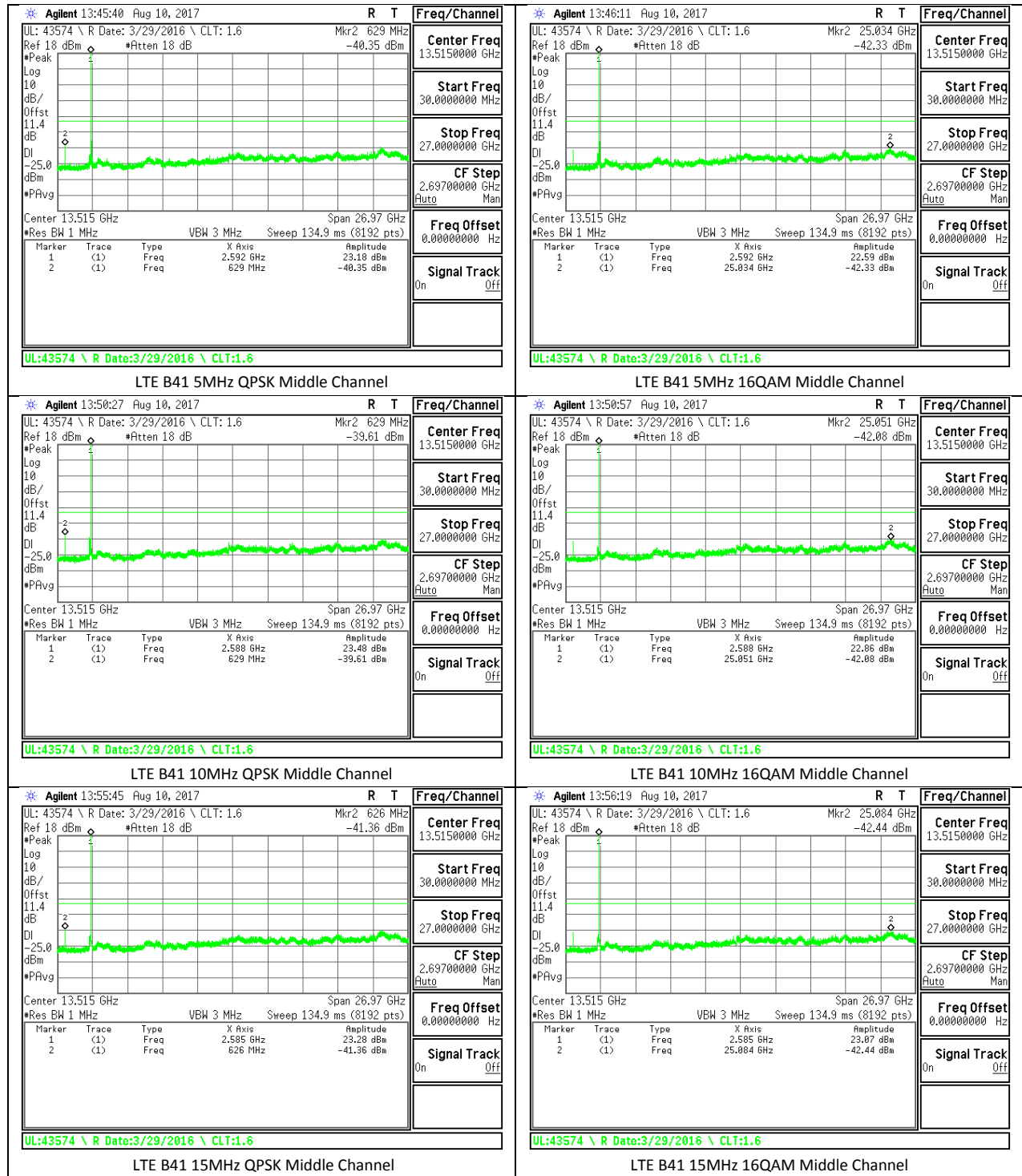


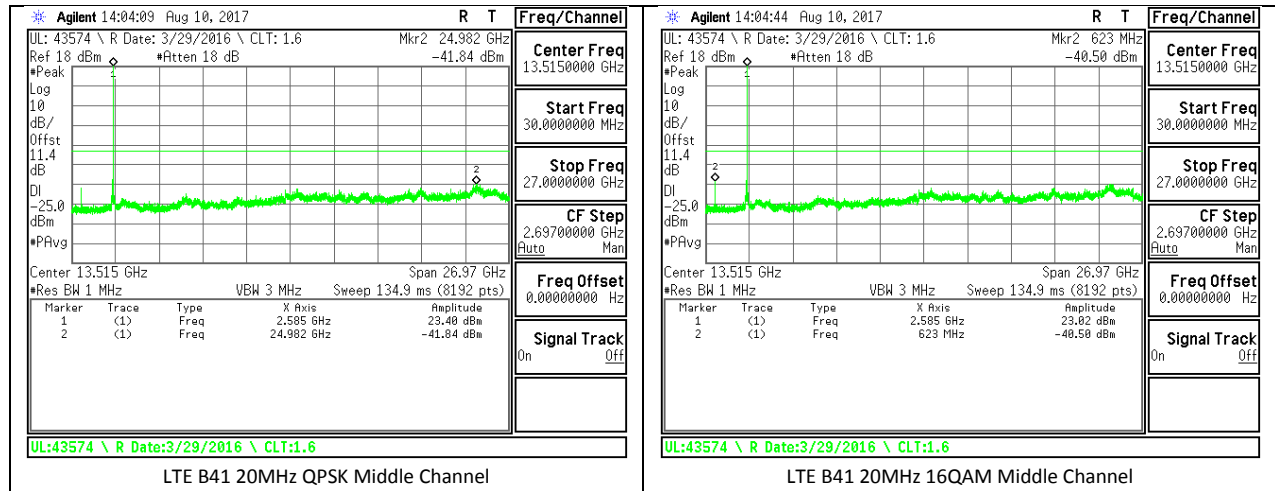
LTE B30 10MHz QPSK 2.4GHz-27GHz Middle Channel



LTE Band 41

Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE41	5	QPSK	2498.5	-38.87	-25	-13.87
			2593	-40.35	-25	-15.35
			2687.5	-40.6	-25	-15.6
		16QAM	2498.5	-39.94	-25	-14.94
			2593	-42.33	-25	-17.33
			2687.5	-41.58	-25	-16.58
	10	QPSK	2501	-41.09	-25	-16.09
			2593	-39.61	-25	-14.61
			2685	-37.98	-25	-12.98
		16QAM	2501	-36.31	-25	-11.31
			2593	-42.08	-25	-17.08
			2685	-40.85	-25	-15.85
	15	QPSK	2503.5	-39.79	-25	-14.79
			2593	-41.36	-25	-16.36
			2682.5	-38.51	-25	-13.51
		16QAM	2503.5	-34.36	-25	-9.36
			2593	-42.44	-25	-17.44
			2682.5	-40.13	-25	-15.13
	20	QPSK	2506	-36.69	-25	-11.69
			2593	-41.84	-25	-16.84
			2680	-36.76	-25	-11.76
		16QAM	2506	-41.24	-25	-16.24
			2593	-40.5	-25	-15.5
			2680	-39.55	-25	-14.55





16. FREQUENCY STABILITY

RULE PART(S)

FCC: §2.1055, §22.355, §24.235, §27.54 and §90.213
RSS-132, RSS-133, RSS-139, RSS-195, RSS-199, RSS-130

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 & §27.54 - The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

§90.213

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

IC LIMITS

RSS-130 and RSS-199

The transmitter frequency stability limit shall be determined as follows:

- (a) The frequency offset shall be measured according to the procedure described in RSS-Gen and recorded;
- (b) Using a resolution bandwidth of 1% of the occupied bandwidth, a reference point at the unwanted emission level which complies with the attenuation of $43 + 10 \log_{10} p$ (watts) on the emission mask of the lowest and highest channel shall be selected, and the frequency at these points shall be recorded as fL and fH respectively.

RSS-139

The frequency stability shall be sufficient to ensure that the emission bandwidth stays within the operating frequency block when tested to the temperature and supply voltage variations specified in RSS-Gen.

RSS-132 and RSS-133

- (a) The carrier frequency shall not depart from the reference frequency in excess of ± 2.5 ppm for mobile stations and ± 1.5 ppm for base stations.
- (b) In lieu of meeting the above stability values, the test report may show that the frequency stability is sufficient to ensure that the occupied bandwidth stays within each of the sub-bands (see Section 5.1) when tested to the temperature and supply voltage variations specified in RSS-Gen.

TEST PROCEDURE

Per KDB 971168 D01 Power Meas License Digital Systems v02r02

Results

16.1. FREQUENCY STABILITY RESULTS

Tested By	Oren Stoelting
Date	8/15/2017

LTE Band 2

Reference Frequency: LTE Band 2 Mid Channel			1880	MHz @ 20°C
Limit: to stay +/- 2.5 ppm =			4700.000	Hz
Power Supply (Vdc)	Environment	Frequency Deviation Measured with Time Elapse		
	Temperature (°C)	(MHz)	Delta (ppm)	Limit (ppm)
0.00	50	1880.000015	0.000	2.5
0.00	40	1880.000015	0.000	2.5
0.00	30	1880.000015	0.000	2.5
0.00	20	1880.000016	0	2.5
0.00	10	1880.000014	0.001	2.5
0.00	0	1880.000017	0.000	2.5
0.00	-10	1880.000016	0.000	2.5
0.00	-20	1880.000017	-0.001	2.5
0.00	-30	1880.000020	-0.003	2.5

Reference Frequency: LTE Band 2 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)
0.00	20	1880.000016	0	2.5
0.00	20	1880.000000	0.008	2.5
0.00	20	1880.000000	0.008	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)
0.00	50	1732.500017	-0.002	2.5
0.00	40	1732.500016	-0.001	2.5
0.00	30	1732.500018	-0.002	2.5
0.00	20	1732.500014	0	2.5
0.00	10	1732.500017	-0.002	2.5
0.00	0	1732.500018	-0.002	2.5
0.00	-10	1732.500012	0.001	2.5
0.00	-20	1732.500014	0.000	2.5
0.00	-30	1732.500019	-0.003	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)
0.00	20	1732.500014	0	2.5
0.00	20	1732.500000	0.008	2.5
0.00	20	1732.500000	0.008	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)
0.00	50	2535.000012	0.001	2.5
0.00	40	2535.000012	0.001	2.5
0.00	30	2535.000012	0.001	2.5
0.00	20	2535.000014	0	2.5
0.00	10	2535.000013	0.000	2.5
0.00	0	2535.000016	-0.001	2.5
0.00	-10	2535.000014	0.000	2.5
0.00	-20	2535.000013	0.000	2.5
0.00	-30	2535.000019	-0.002	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)
0.00	20	2535.000014	0	2.5
0.00	20	2535.000000	0.006	2.5
0.00	20	2535.000000	0.006	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)
0.00	50	707.499990	0.003	2.5
0.00	40	707.499992	0.000	2.5
0.00	30	707.499992	0.001	2.5
0.00	20	707.499992	0	2.5
0.00	10	707.499993	0.000	2.5
0.00	0	707.499992	0.001	2.5
0.00	-10	707.499990	0.003	2.5
0.00	-20	707.499991	0.002	2.5
0.00	-30	707.499994	-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)
0.00	20	707.499992	0	2.5
0.00	20	707.500000	-0.011	2.5
0.00	20	707.500000	-0.011	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)
0.00	50	781.999990	0.001	2.5
0.00	40	781.999989	0.002	2.5
0.00	30	781.999988	0.004	2.5
0.00	20	781.999991	0	2.5
0.00	10	781.999990	0.001	2.5
0.00	0	781.999993	-0.003	2.5
0.00	-10	781.999995	-0.005	2.5
0.00	-20	781.999990	0.001	2.5
0.00	-30	781.999991	0.000	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)
0.00	20	781.999991	0	2.5
0.00	20	782.000000	-0.012	2.5
0.00	20	782.000000	-0.012	2.5