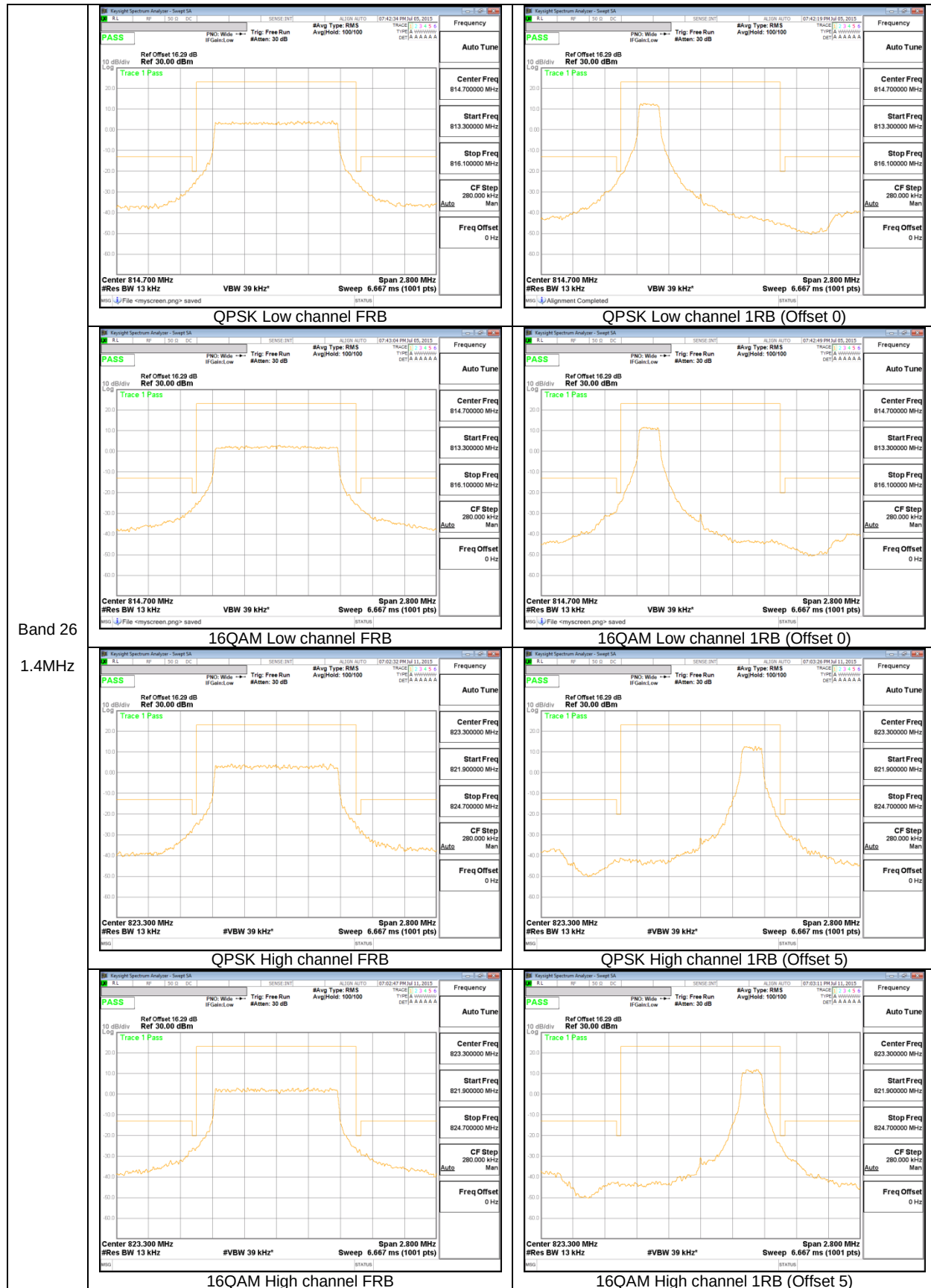




10.3 OUT OF BAND EMISSIONS

RULE PART(S)

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

LIMITS

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

Part 27: (m)(4) For mobile station, the attenuation factor shall be not less than $43 + 10 \log (P)$ dB at the channel edge and $(55 + 10 \log (P))$ dB at the 5.5 MHz from the channel edges.

Part 90: (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 100kHz reference bandwidth)

TEST PROCEDURE

Per KDB 971168 D01 Power Meas License Digital Systems v02r02

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

RESULTS

10.3.1. OUT OF BAND EMISSIONS RESULT

LTE 41

Bandwidth	Mode	f [MHz]	Spurious [dBm]	Limit [dBm]	Margin [dB]
20 MHz	QPSK	2506.0	-30.92	-25.00	5.92
		2593.0	-30.94		5.94
		2680.0	-31.58		6.58
	16QAM	2506.0	-31.08		6.08
		2593.0	-31.47		6.47
		2680.0	-31.72		6.72
15 MHz	QPSK	2503.5	-31.31		6.31
		2593.0	-32.11		7.11
		2682.5	-31.91		6.91
	16QAM	2503.5	-31.10		6.1
		2593.0	-31.07		6.07
		2682.5	-31.69		6.69
10 MHz	QPSK	2501.0	-31.74		6.74
		2593.0	-31.67		6.67
		2685.0	-30.95		5.95
	16QAM	2501.0	-31.11		6.11
		2593.0	-30.58		5.58
		2685.0	-30.30		5.3
5 MHz	QPSK	2498.5	-31.98		6.98
		2593.0	-31.66		6.66
		2687.5	-31.68		6.68
	16QAM	2498.5	-32.19		7.19
		2593.0	-31.64		6.64
		2687.5	-31.73		6.73

LTE 26

Bandwidth	Mode	f [MHz]	Spurious [dBm]	Limit [dBm]	Margin [dB]
15 MHz	QPSK	831.5	-25.62	-13.00	12.62
		841.5	-26.78		13.78
	16QAM	831.5	-26.67		13.67
		841.5	-26.44		13.44
10 MHz	QPSK	819.0	-27.47		14.47
		831.5	-27.63		14.63
		844.0	-28.21		15.21
	16QAM	819.0	-27.19		14.19
		831.5	-26.47		13.47
		844.0	-27.21		14.21
5 MHz	QPSK	816.5	-26.43		13.43
		819.0	-27.57		14.57
		821.5	-26.89		13.89
		831.5	-26.86		13.86
		846.5	-26.58		13.58
	16QAM	816.5	-27.73		14.73
		819.0	-27.39		14.39
		821.5	-27.24		14.24
		831.5	-26.81		13.81
		846.5	-26.87		13.87
3 MHz	QPSK	815.5	-27.36		14.36
		819.0	-27.71		14.71
		822.5	-27.34		14.34
		831.5	-26.24		13.24
		847.5	-27.14		14.14
	16QAM	815.5	-27.27		14.27
		819.0	-27.36		14.36
		822.5	-25.58		12.58
		831.5	-27.13		14.13
		847.5	-26.93		13.93
1.4 MHz	QPSK	814.7	-27.61		14.61
		819.0	-26.32		13.32
		823.3	-27.25		14.25
		831.5	-27.06		14.06
		848.3	-27.46		14.46
	16QAM	814.7	-26.67		13.67
		819.0	-26.77		13.77
		823.3	-27.26		14.26
		831.5	-26.66		13.66
		848.3	-26.92		13.92

LTE 25

Bandwidth	Mode	f [MHz]	Spurious [dBm]	Limit [dBm]	Margin [dB]
20 MHz	QPSK	1860.0	-26.69	-13.00	13.69
		1882.5	-27.50		14.5
		1905.0	-26.60		13.6
	16QAM	1860.0	-26.49		13.49
		1882.5	-27.28		14.28
		1905.0	-26.62		13.62
15 MHz	QPSK	1857.5	-26.74		13.74
		1882.5	-26.47		13.47
		1907.5	-26.73		13.73
	16QAM	1857.5	-26.94		13.94
		1882.5	-27.80		14.8
		1907.5	-26.28		13.28
10 MHz	QPSK	1855.0	-27.07		14.07
		1882.5	-26.83		13.83
		1910.0	-27.06		14.06
	16QAM	1855.0	-25.87		12.87
		1882.5	-26.40		13.4
		1910.0	-26.83		13.83
5 MHz	QPSK	1852.5	-26.32		13.32
		1882.5	-25.95		12.95
		1912.5	-27.00		14
	16QAM	1852.5	-26.42		13.42
		1882.5	-26.71		13.71
		1912.5	-26.65		13.65
3 MHz	QPSK	1851.5	-26.54		13.54
		1882.5	-26.88		13.88
		1913.5	-26.81		13.81
	16QAM	1851.5	-27.17		14.17
		1882.5	-27.60		14.6
		1913.5	-26.55		13.55
1.4 MHz	QPSK	1850.7	-26.46		13.46
		1882.5	-26.46		13.46
		1914.3	-25.09		12.09
	16QAM	1850.7	-26.07		13.07
		1882.5	-26.69		13.69
		1914.3	-27.30		14.3

LTE Band 17

Due to frequency range and same output power setting, test was carried in LTE Band 12 to cover both LTE Band 12 and LTE Band 17.

LTE 12

Bandwidth	Mode	f [MHz]	Spurious [dBm]	Limit [dBm]	Margin [dB]
10 MHz	QPSK	704.0	-27.73	-13.00	14.73
		707.5	-26.46		13.46
		711.0	-28.20		15.2
	16QAM	704.0	-26.84		13.84
		707.5	-27.01		14.01
		711.0	-27.10		14.1
5 MHz	QPSK	701.5	-27.45		14.45
		707.5	-27.19		14.19
		713.5	-27.29		14.29
	16QAM	701.5	-27.54		14.54
		707.5	-27.56		14.56
		713.5	-27.72		14.72
3 MHz	QPSK	700.5	-27.53		14.53
		707.5	-27.12		14.12
		714.5	-27.12		14.12
	16QAM	700.5	-26.74		13.74
		707.5	-27.90		14.9
		714.5	-27.52		14.52
1.4 MHz	QPSK	699.7	-27.31		14.31
		707.5	-27.21		14.21
		715.3	-27.58		14.58
	16QAM	699.7	-27.97		14.97
		707.5	-27.26		14.26
		715.3	-26.92		13.92

LTE Band 5

Due to frequency range and same output power setting, test was carried in LTE Band 26 to cover both LTE Band 26 and LTE Band 5.

LTE 4

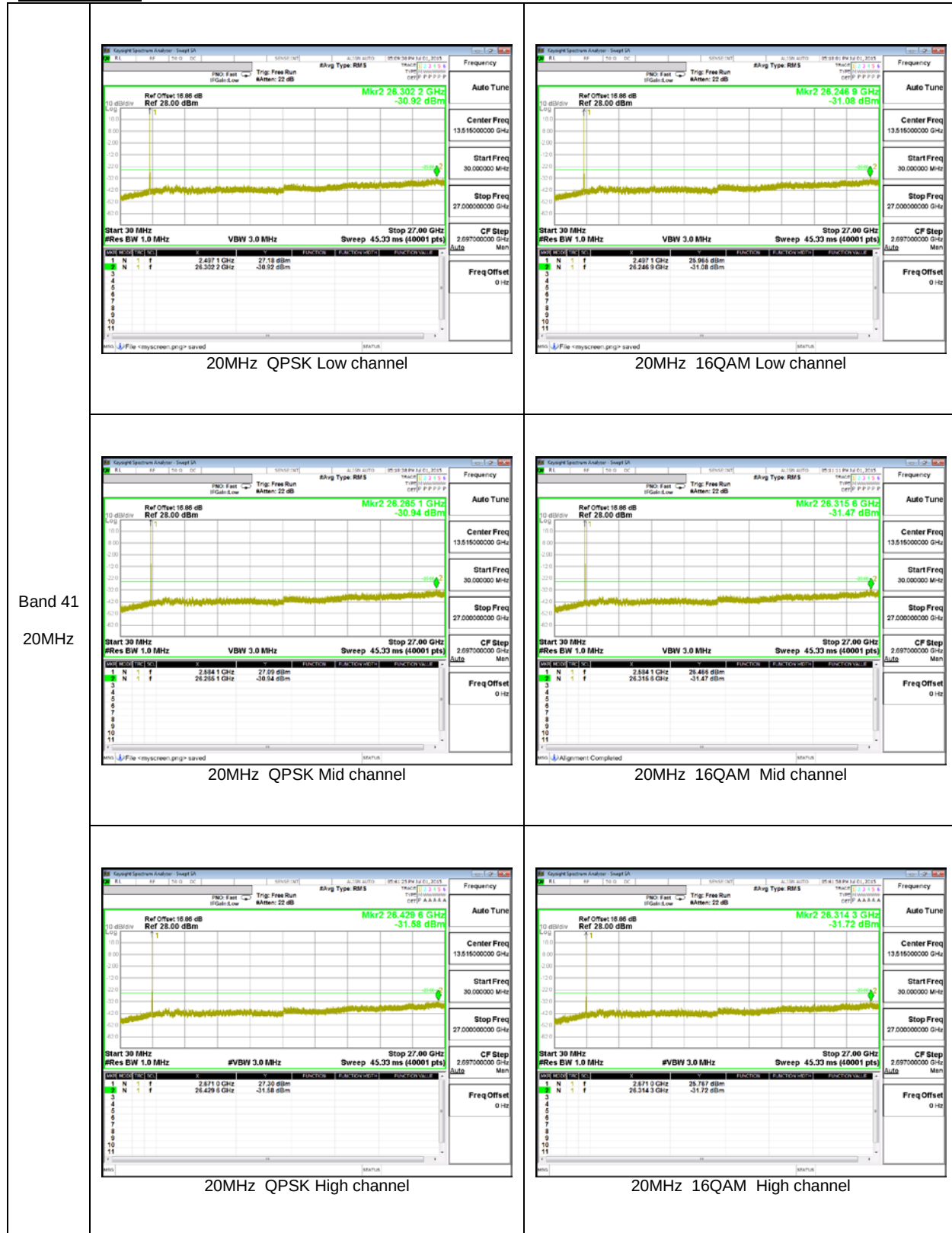
Bandwidth	Mode	f [MHz]	Spurious [dBm]	Limit [dBm]	Margin [dB]
20 MHz	QPSK	1720.0	-26.67	-13.00	13.67
		1732.5	-26.63		13.63
		1745.0	-26.92		13.92
	16QAM	1720.0	-27.14		14.14
		1732.5	-27.24		14.24
		1745.0	-26.56		13.56
15 MHz	QPSK	1717.5	-26.76		13.76
		1732.5	-27.11		14.11
		1747.5	-25.54		12.54
	16QAM	1717.5	-27.05		14.05
		1732.5	-26.83		13.83
		1747.5	-26.07		13.07
10 MHz	QPSK	1715.0	-26.30		13.3
		1732.5	-26.71		13.71
		1750.0	-27.21		14.21
	16QAM	1715.0	-27.26		14.26
		1732.5	-26.49		13.49
		1750.0	-26.03		13.03
5 MHz	QPSK	1712.5	-26.61		13.61
		1732.5	-26.70		13.7
		1752.5	-27.00		14
	16QAM	1712.5	-26.95		13.95
		1732.5	-26.74		13.74
		1752.5	-26.11		13.11
3 MHz	QPSK	1711.5	-26.84		13.84
		1732.5	-26.77		13.77
		1753.5	-27.34		14.34
	16QAM	1711.5	-26.75		13.75
		1732.5	-26.65		13.65
		1753.5	-26.60		13.6
1.4 MHz	QPSK	1710.7	-26.85		13.85
		1732.5	-27.64		14.64
		1754.3	-26.64		13.64
	16QAM	1710.7	-26.18		13.18
		1732.5	-26.24		13.24
		1754.3	-27.72		14.72

LTE Band 2

Due to frequency range and same output power setting, test was carried in LTE Band 25 to cover both LTE Band 25 and LTE Band 2.

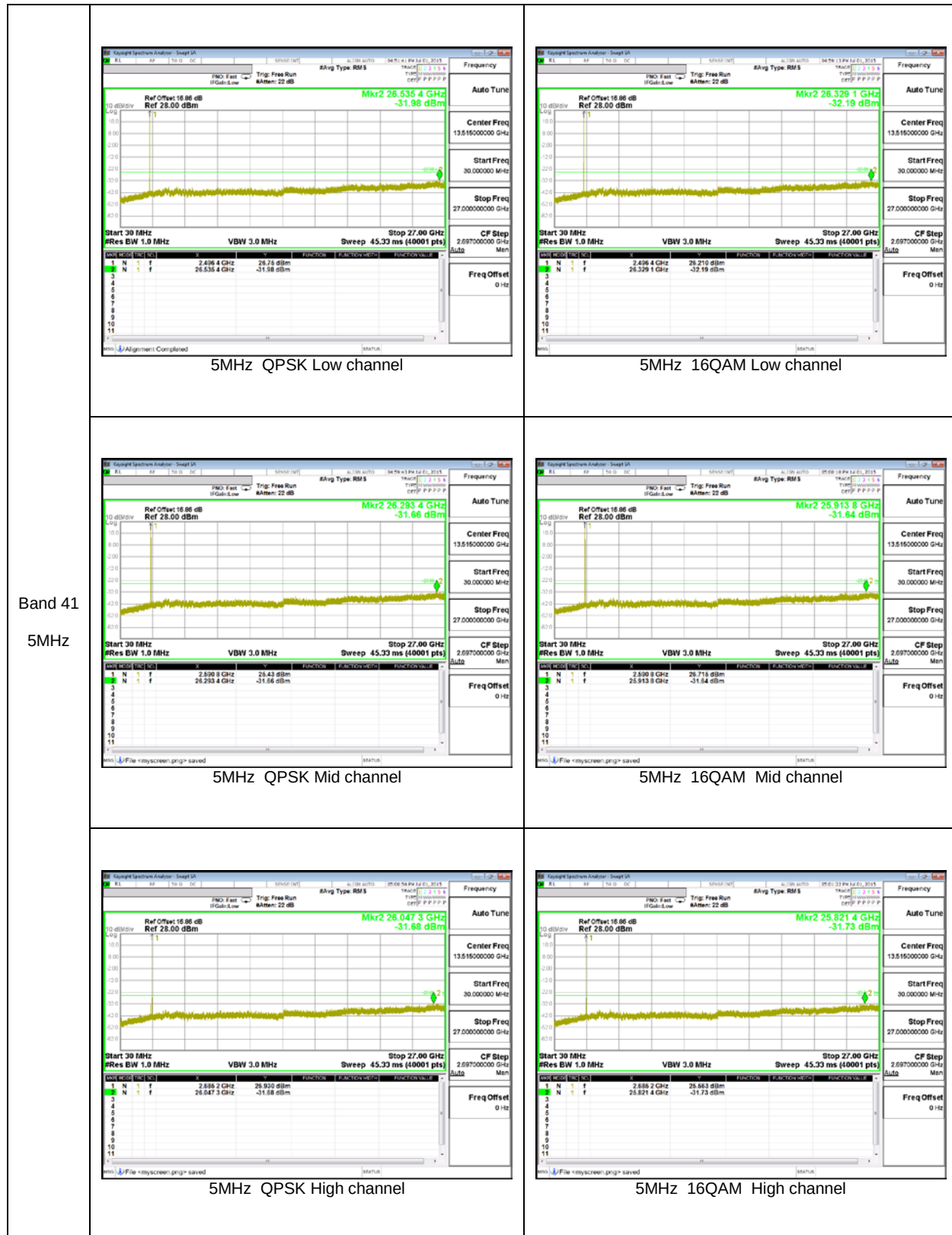
10.3.2. OUT OF BAND EMISSIONS PLOTS

LTE Band 41



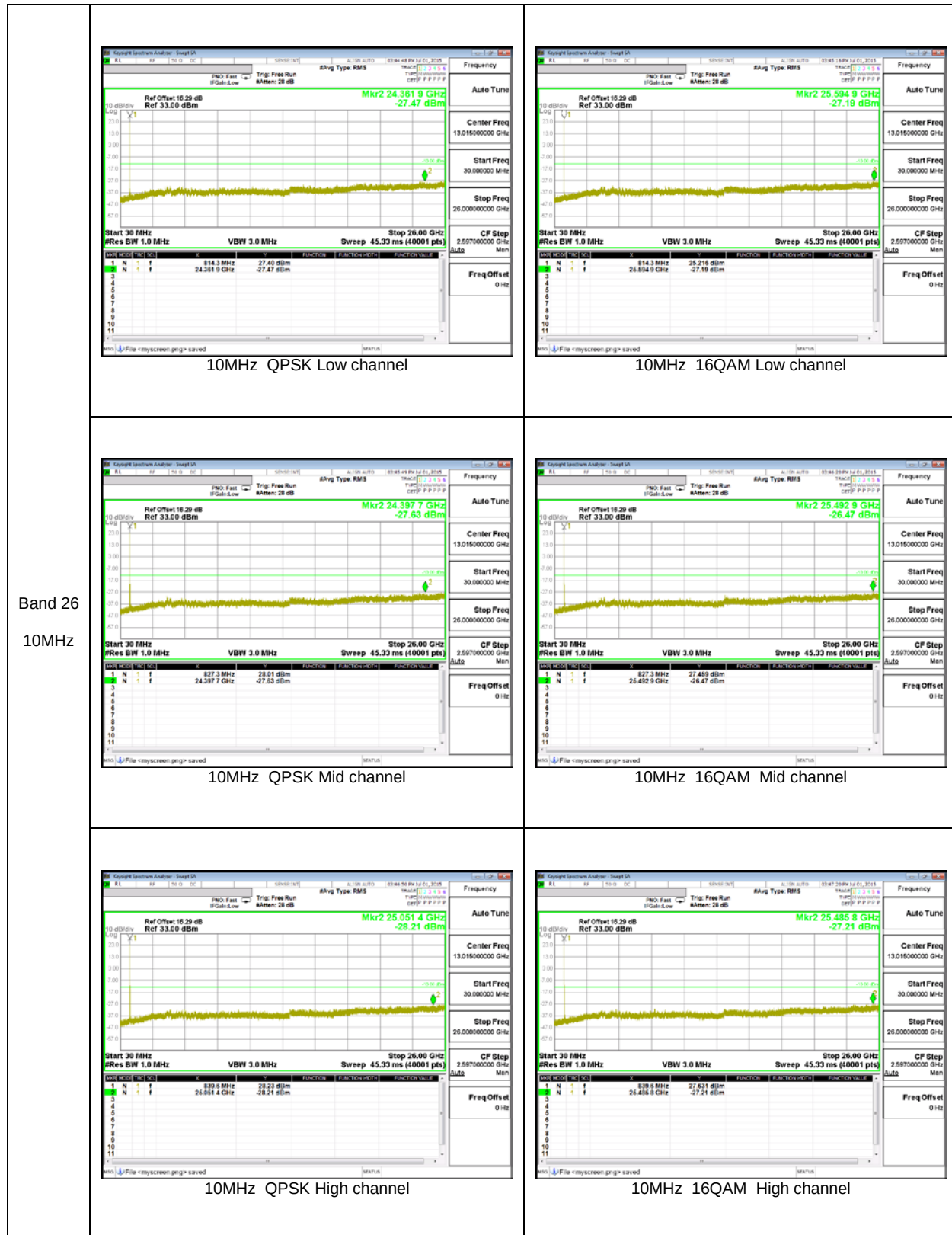


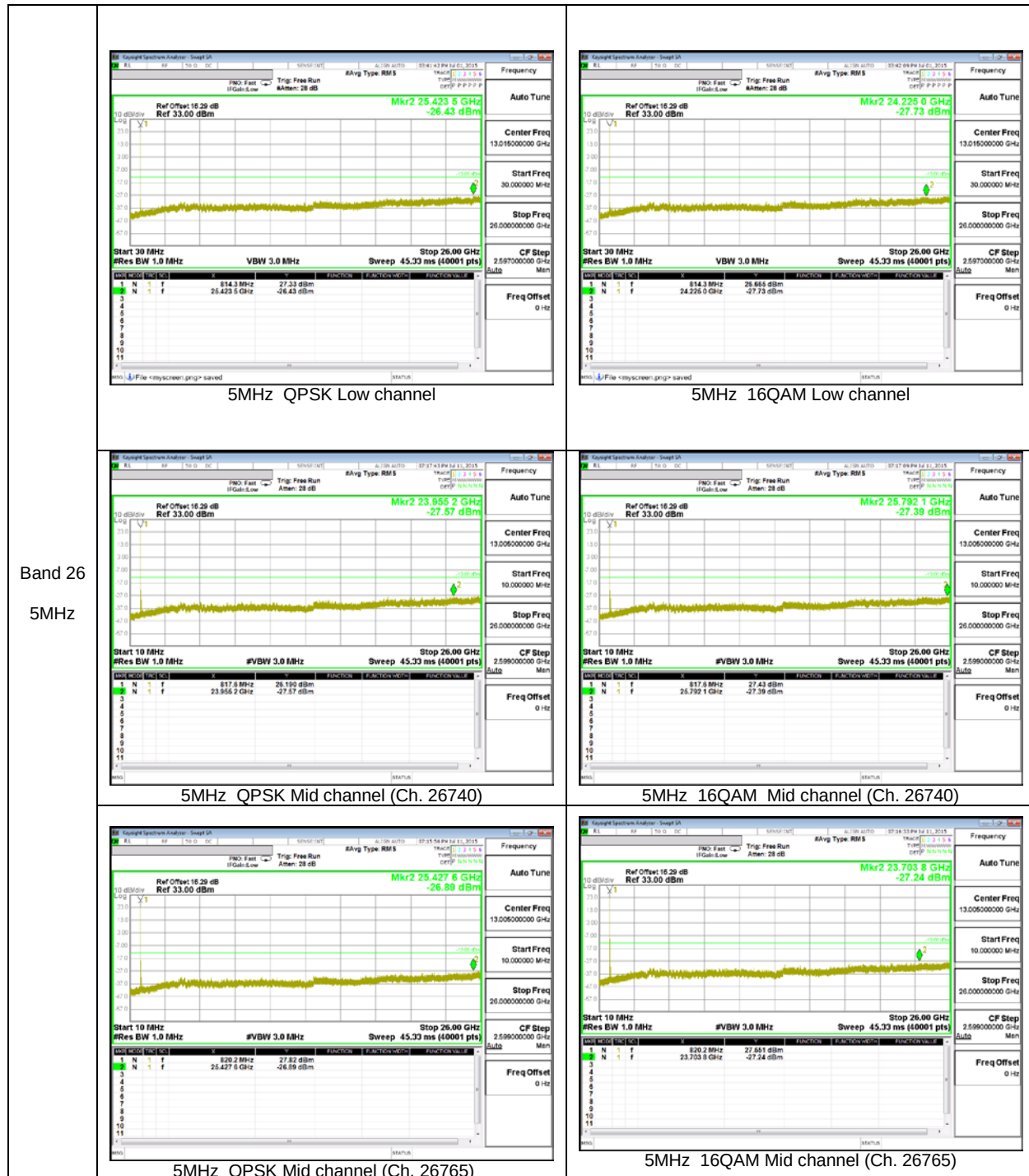


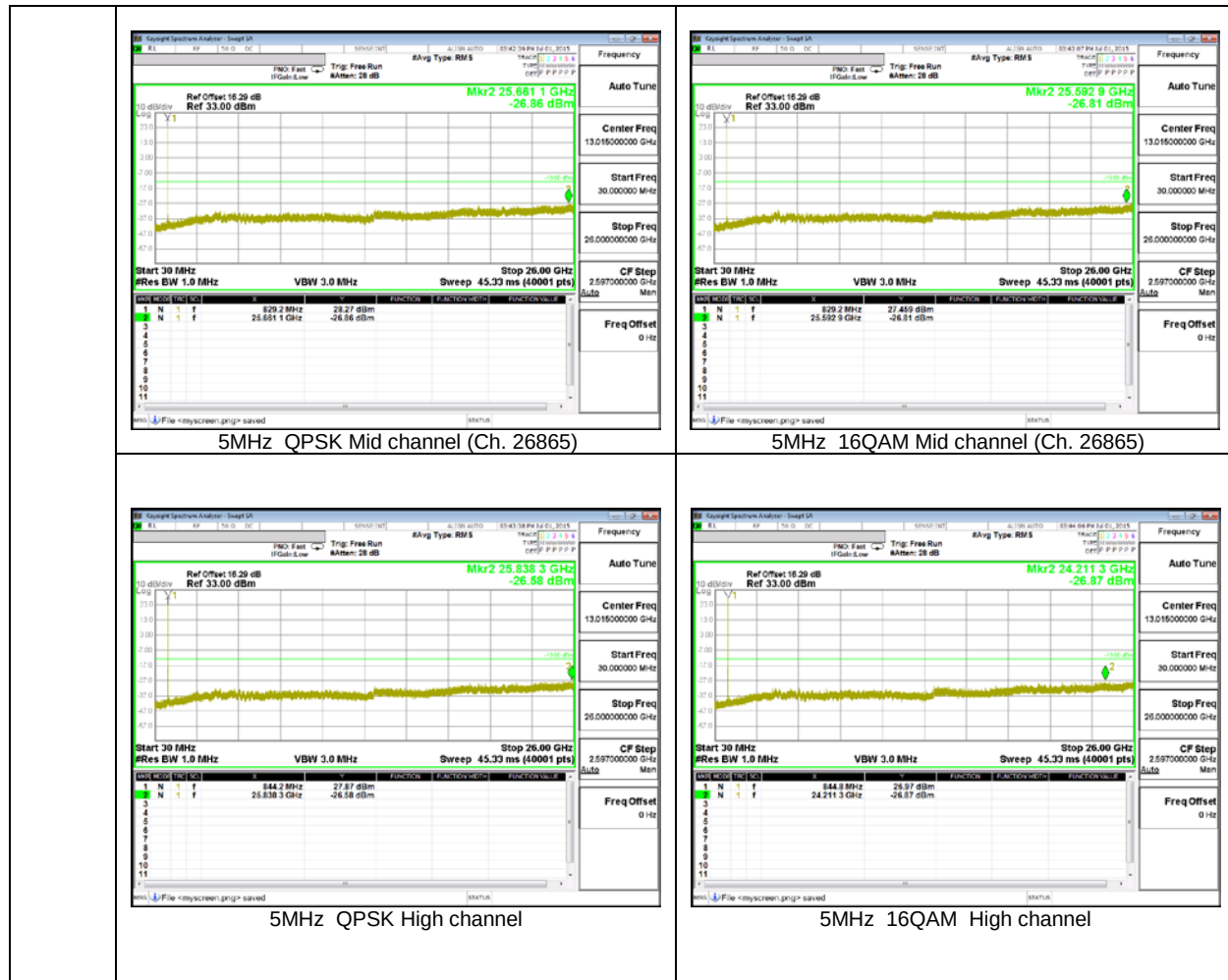


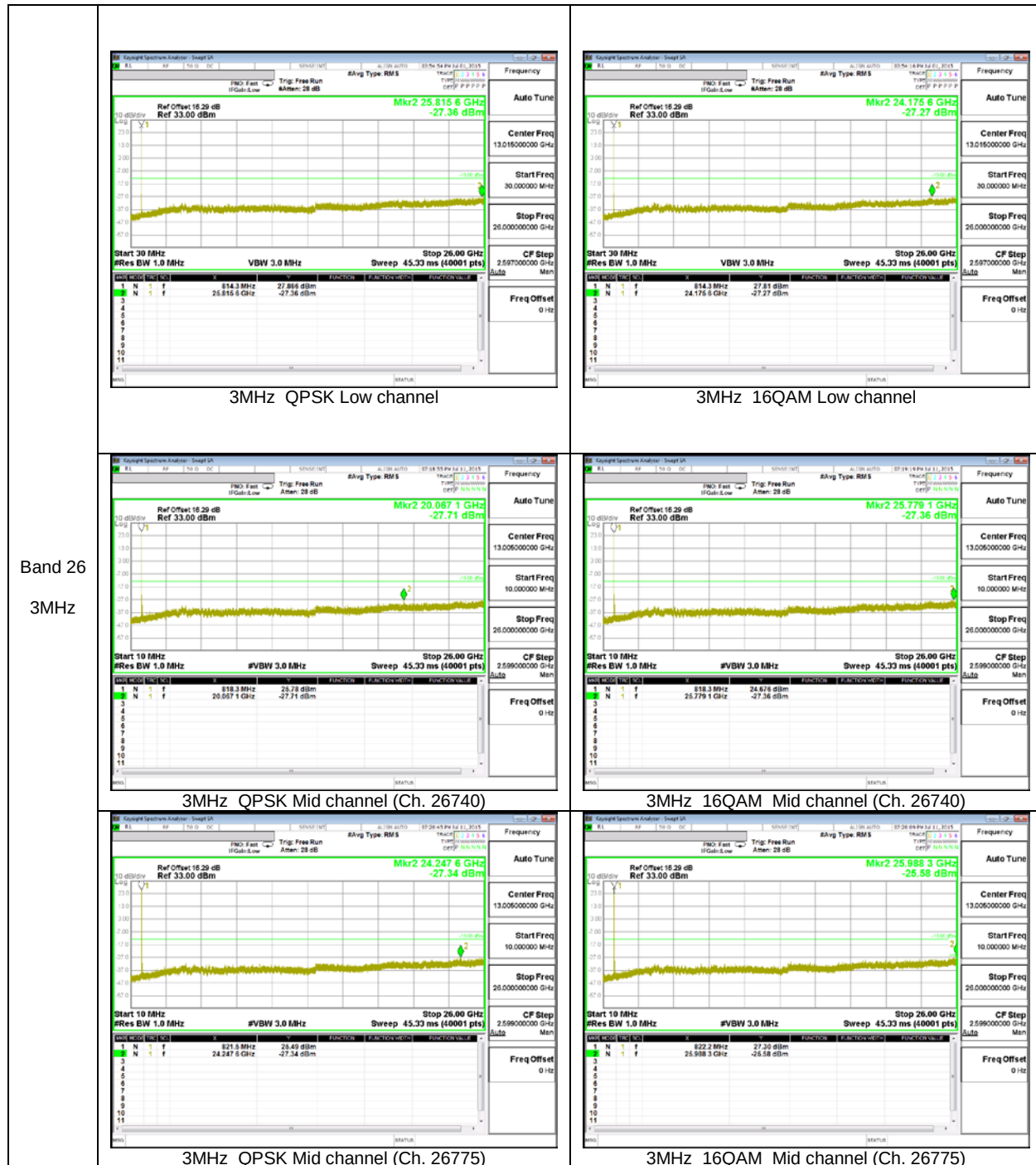
LTE Band 26

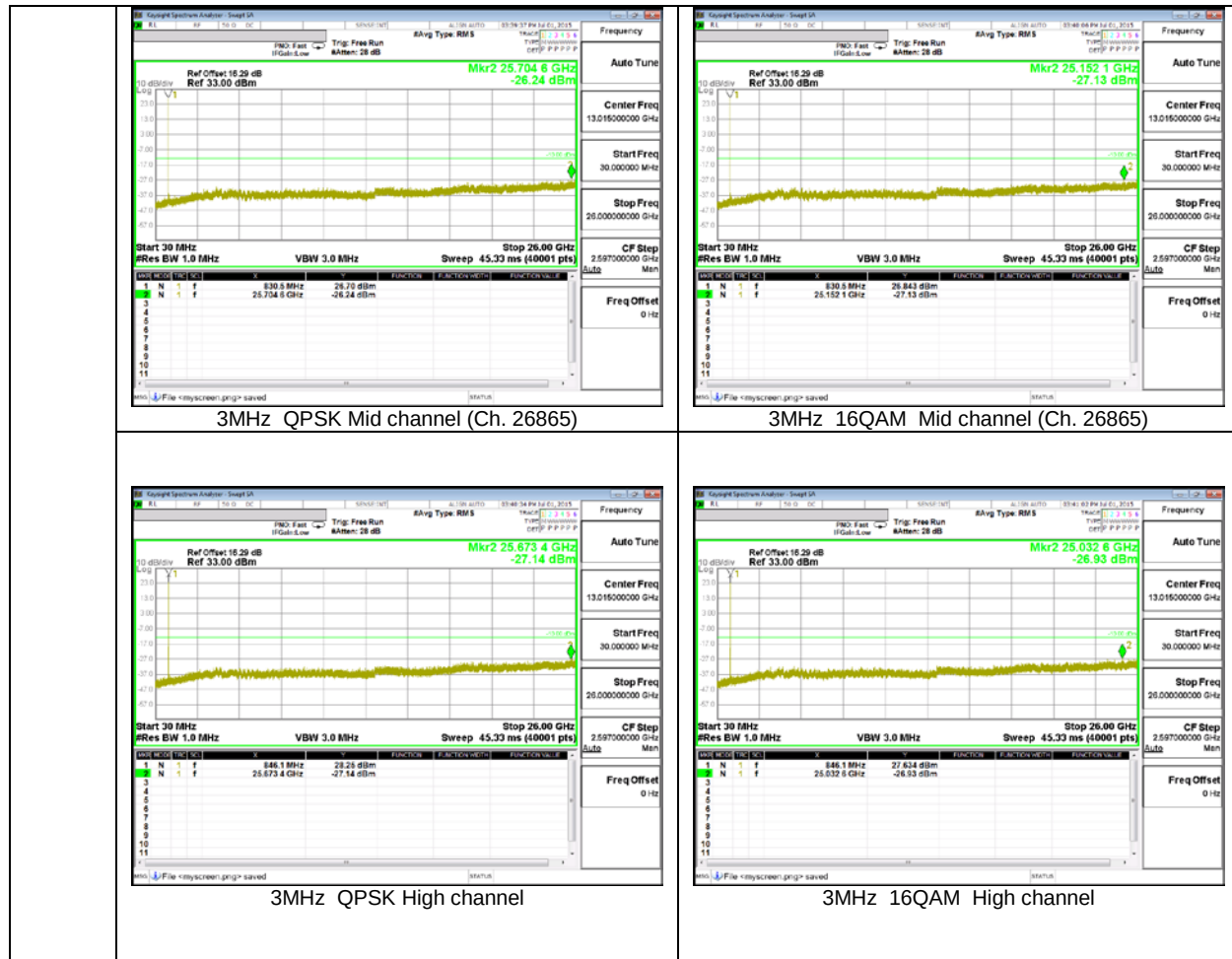


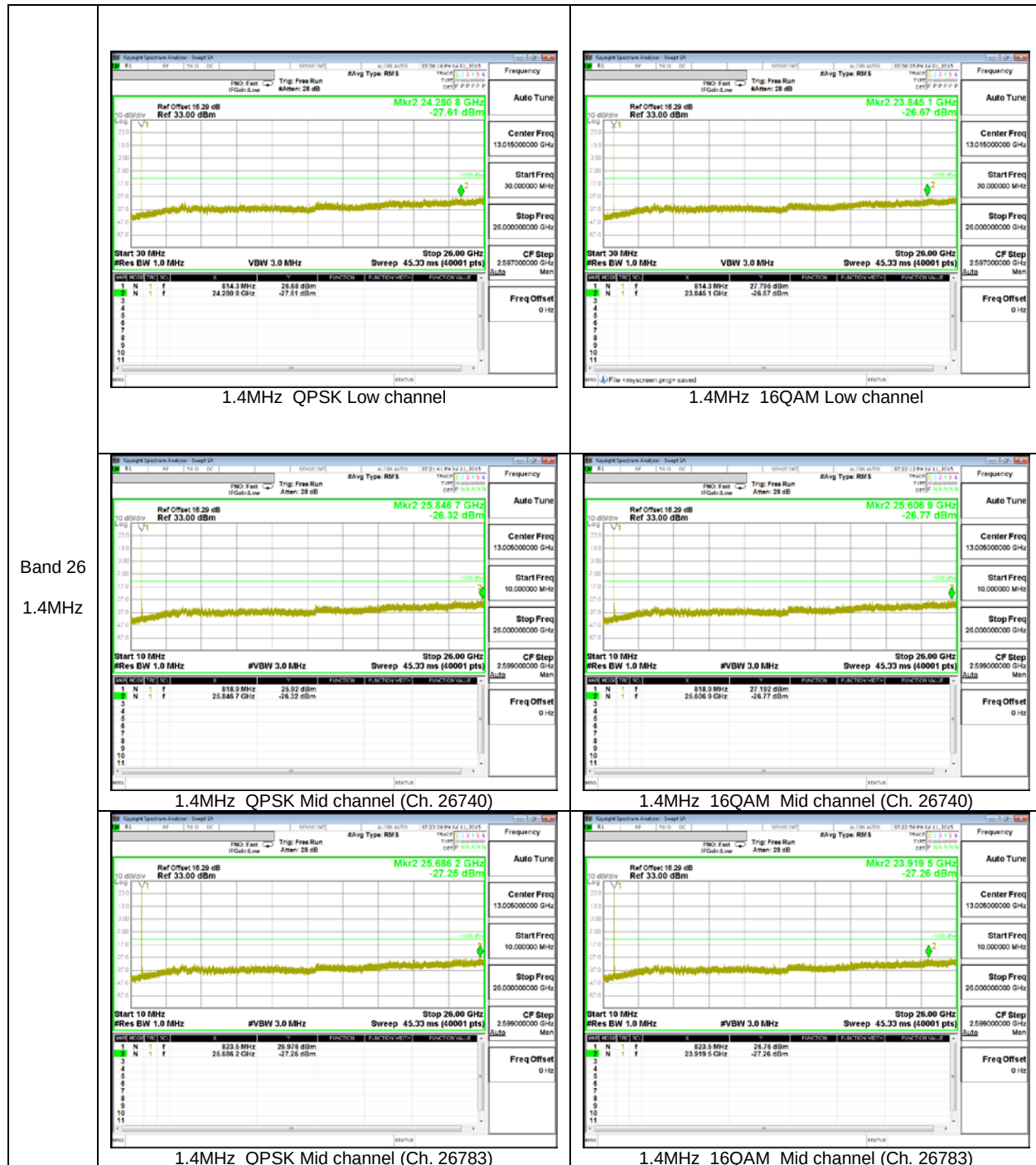


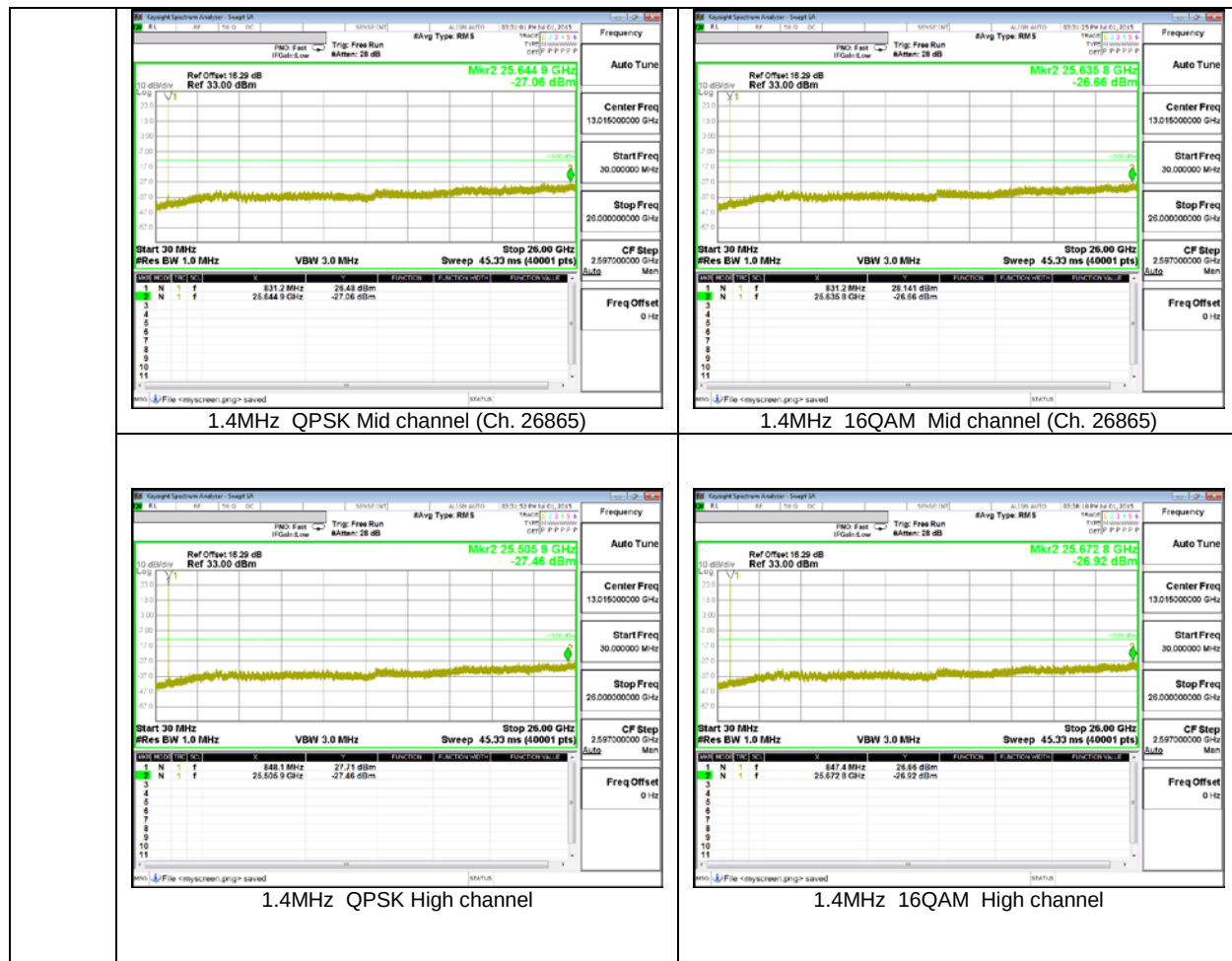












LTE Band 25

