

Spurious Emission table results

Band	BW [MHz]	Modulation	Frequency Range	#RB	Max Level [dBm]	Freq [MHz]
LTE 12	1.4	QPSK	30MHz-10GHz	1	-32.05	6604.14
		16QAM		1	-31.90	6892.26
	3	QPSK		1	-31.20	6891.76
		16QAM		1	-31.70	6961.55
	5	QPSK		1	-31.90	6845.40
		16QAM		1	-32.09	6761.16
	10	QPSK		1	-32.32	6806.02
		16QAM		1	-32.27	6807.52

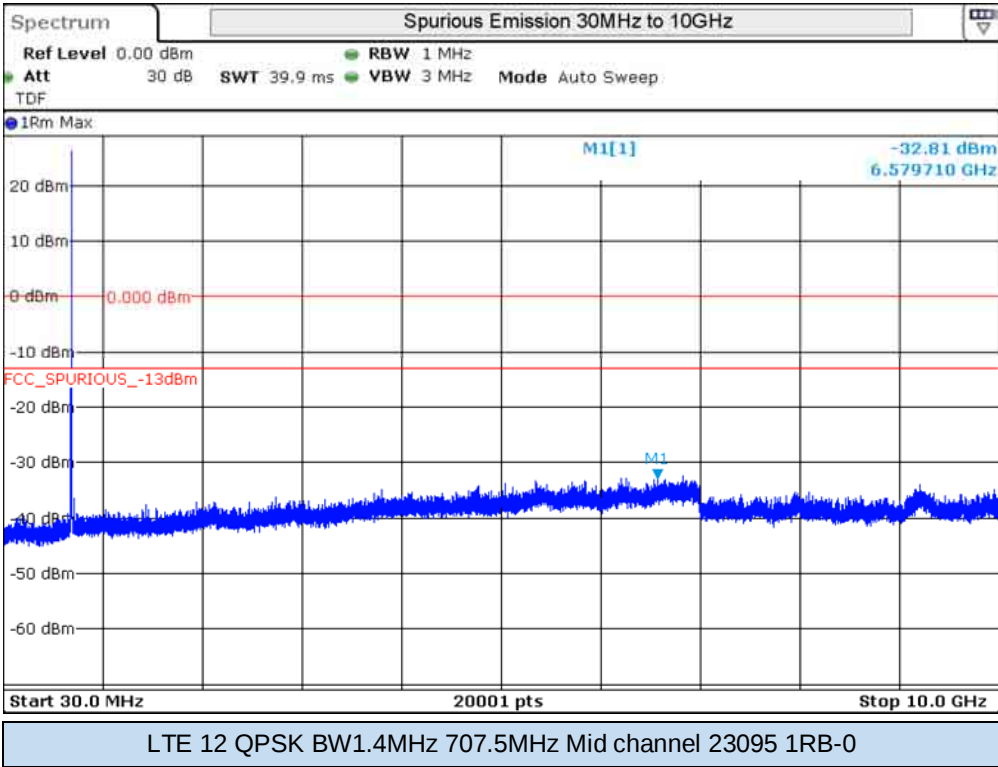
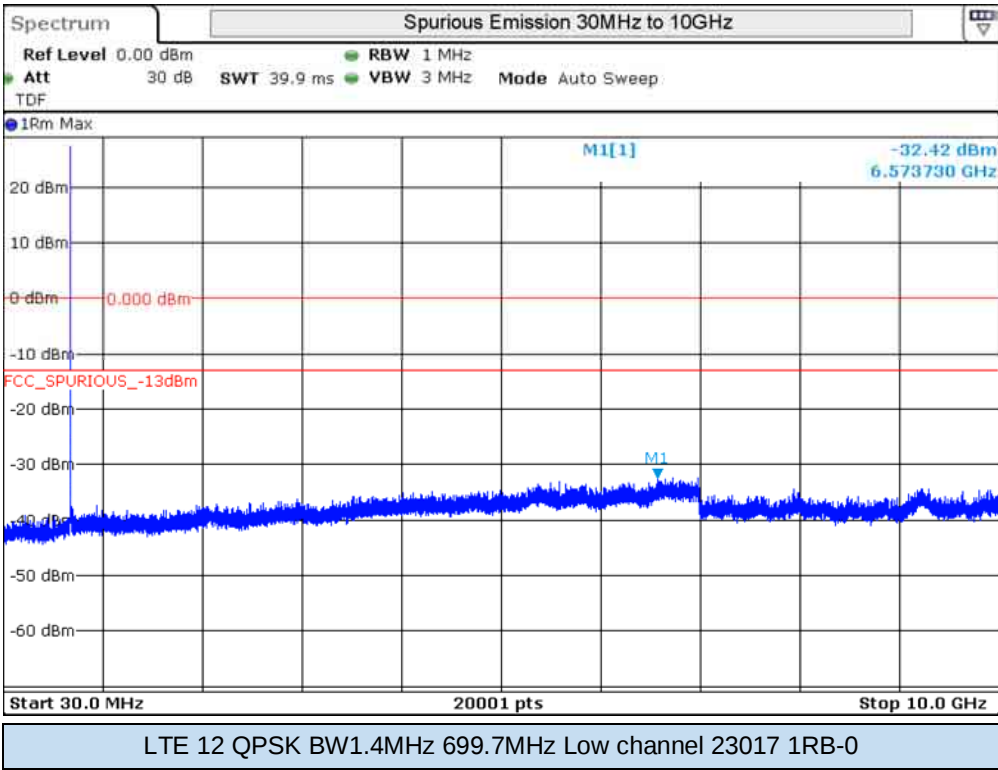
Band	BW [MHz]	Modulation	Frequency Range	#RB	Max Level [dBm]	Freq [MHz]
LTE 13	5	QPSK	30MHz-10GHz	1	-32.17	6761.16
		16QAM		1	-32.05	6802.53
	10	QPSK		1	-31.85	6829.95
		16QAM		1	-31.48	6824.90

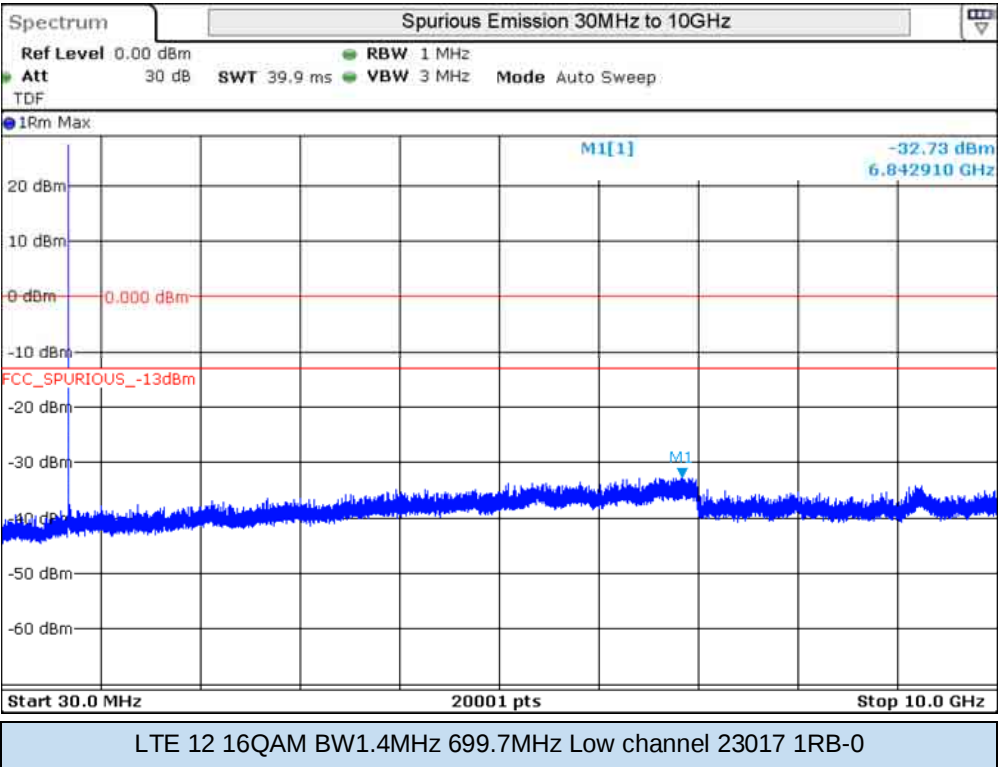
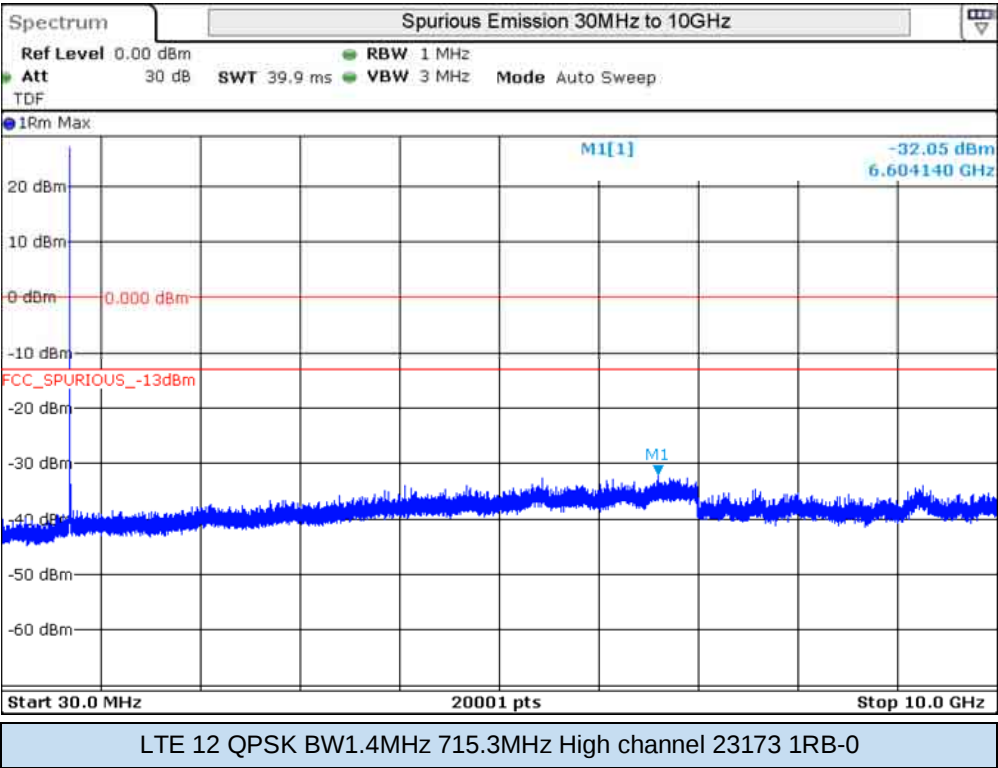
Band	BW [MHz]	Modulation	Frequency Range	#RB	Max Level [dBm]	Freq [MHz]
LTE 26	1.4	QPSK	30MHz-10GHz	1	-37.86	6905.22
		16QAM		1	-37.86	6974.01
	3	QPSK		1	-37.70	6934.63
		16QAM		1	-37.81	6694.36
	5	QPSK		1	-37.93	6855.37
		16QAM		1	-37.83	6803.03
	10	QPSK		1	-37.82	6826.96
		16QAM		1	-37.87	6782.59
	15	QPSK		1	-37.78	6916.68
		16QAM		1	-37.88	6826.96

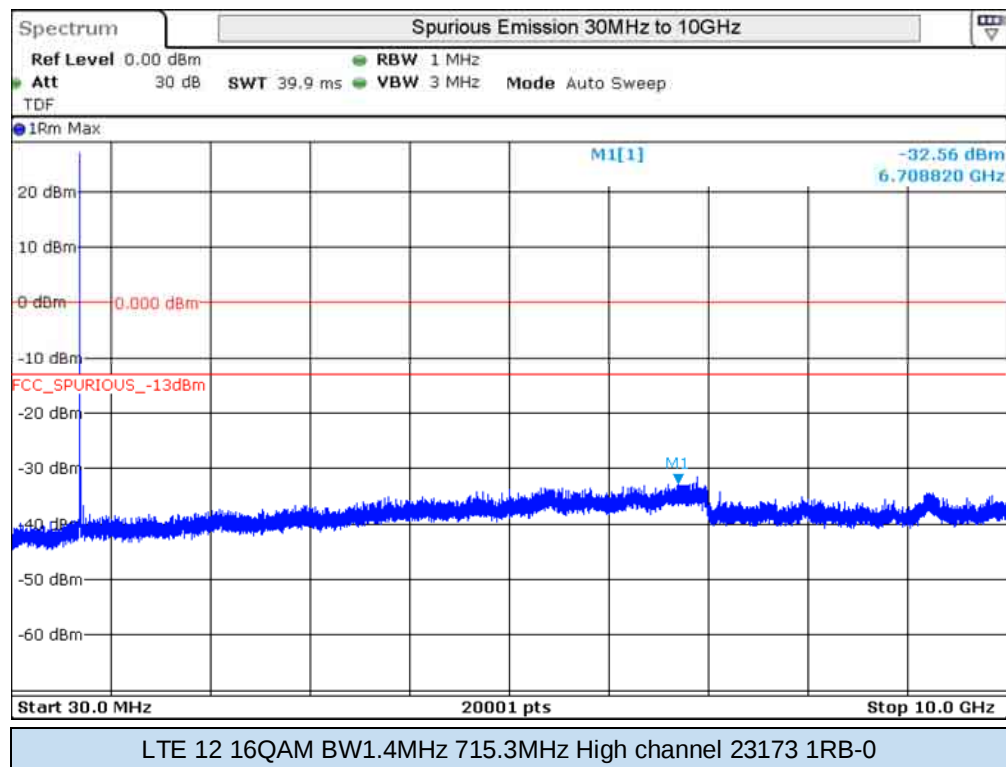
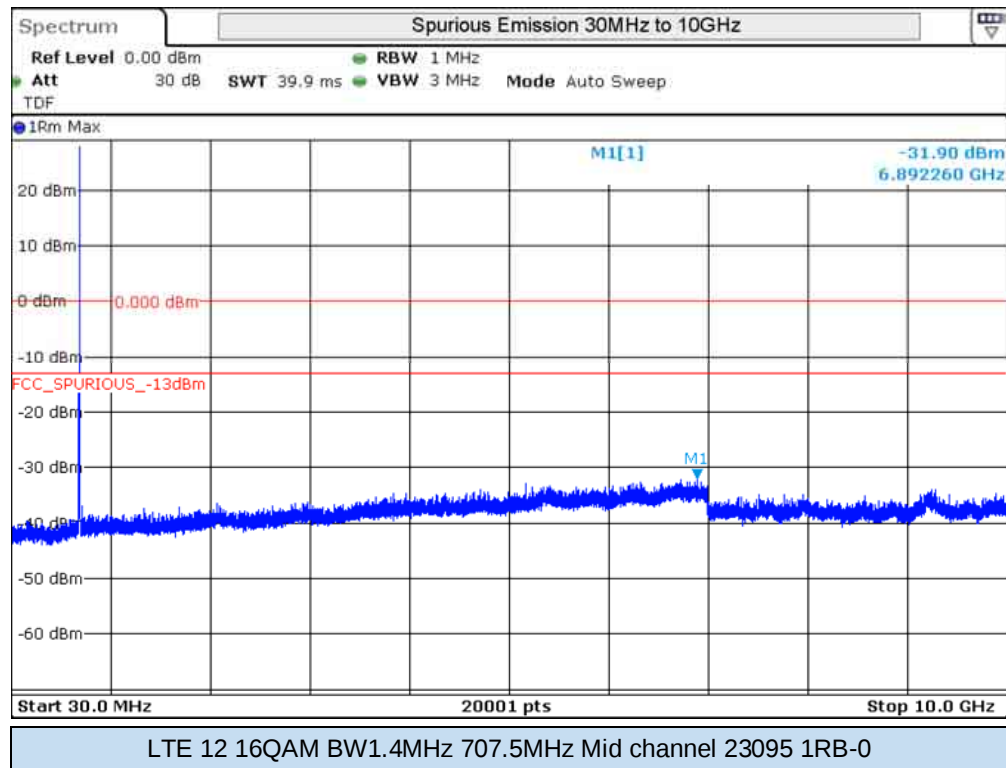
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LTE 7	5	QPSK	30MHz-10GHz	1	-33.01	5130.65
			9GHz-20GHz	1	-34.73	10261.41
			20GHz-27GHz	1	-41.81	20348.83
		16QAM	30MHz-10GHz	1	-33.18	5130.65
			9GHz-20GHz	1	-34.50	10261.41
			20GHz-27GHz	1	-43.74	20322.70
	10	QPSK	30MHz-10GHz	1	-31.12	5121.18
			9GHz-20GHz	1	-34.06	10242.28
			20GHz-27GHz	1	-43.69	28289.57
		16QAM	30MHz-10GHz	1	-33.25	5121.18
			9GHz-20GHz	1	-35.03	10242.28
			20GHz-27GHz	1	-43.67	20356.77
	15	QPSK	30MHz-10GHz	1	-33.57	5111.70
			9GHz-20GHz	1	-33.02	10223.15
			20GHz-27GHz	1	-43.42	20363.30
		16QAM	30MHz-10GHz	1	-33.99	5111.70
			9GHz-20GHz	1	-33.25	10223.63
			20GHz-27GHz	1	-43.46	20311.03
	20	QPSK	30MHz-10GHz	1	-33.93	5102.23
			9GHz-20GHz	1	-33.32	10204.50
			20GHz-27GHz	1	-43.69	20315.70
		16QAM	30MHz-10GHz	1	-33.77	5102.23
			9GHz-20GHz	1	-33.43	10204.02
			20GHz-27GHz	1	-43.32	20307.30

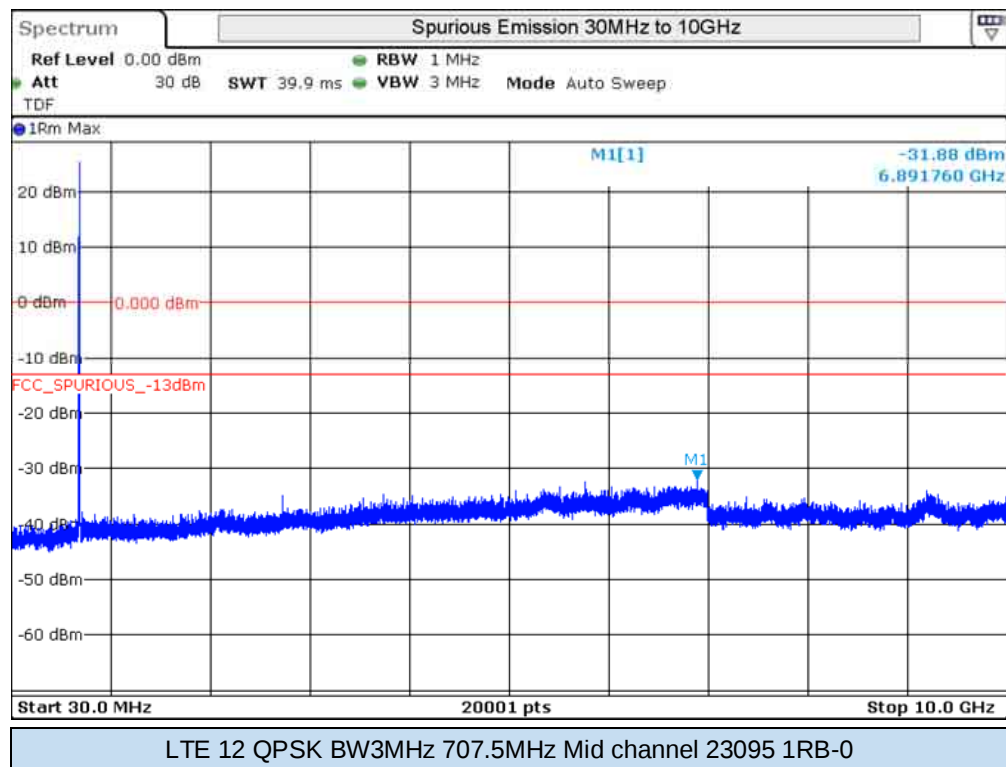
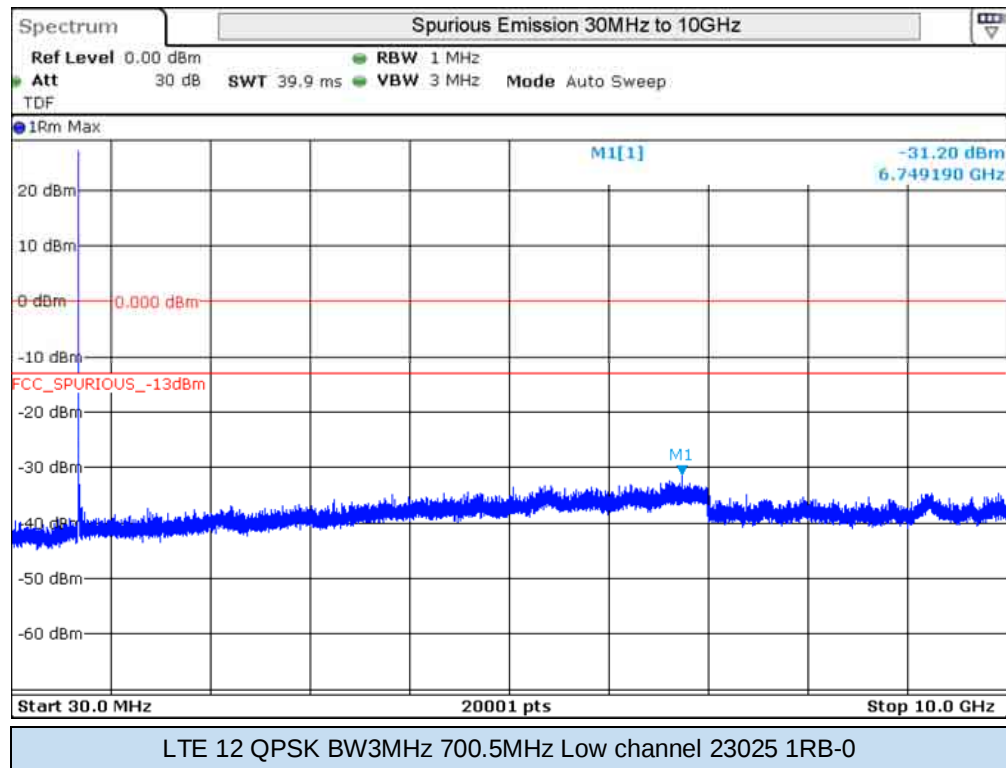
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LTE 41	5	QPSK	30MHz-10GHz	1	-37.85	8056.20
			10GHz-20GHz	1	-42.52	19890.26
			20GHz-27GHz	1	-43.63	20315.70
		16QAM	30MHz-10GHz	1	-36.45	8056.20
			10GHz-20GHz	1	-42.60	19882.76
			20GHz-27GHz	1	-43.64	20336.70
	10	QPSK	30MHz-10GHz	1	-37.48	8041.74
			10GHz-20GHz	1	-42.42	19879.26
			20GHz-27GHz	1	-43.68	20309.63
		16QAM	30MHz-10GHz	1	-37.24	8041.74
			10GHz-20GHz	1	-42.73	19881.76
			20GHz-27GHz	1	-43.50	20302.63
	15	QPSK	30MHz-10GHz	1	-37.64	6980.99
			10GHz-20GHz	1	-42.50	19905.25
			20GHz-27GHz	1	-43.46	20314.77
		16QAM	30MHz-10GHz	1	-37.80	6872.82
			10GHz-20GHz	1	-42.67	19881.26
			20GHz-27GHz	1	-43.59	20336.23
	20	QPSK	30MHz-10GHz	1	-37.76	6880.29
			10GHz-20GHz	1	-42.47	19870.76
			20GHz-27GHz	1	-43.60	20329.70
		16QAM	30MHz-10GHz	1	-37.60	6885.28
			10GHz-20GHz	1	-42.67	19918.87
			20GHz-27GHz	1	-43.69	20351.17

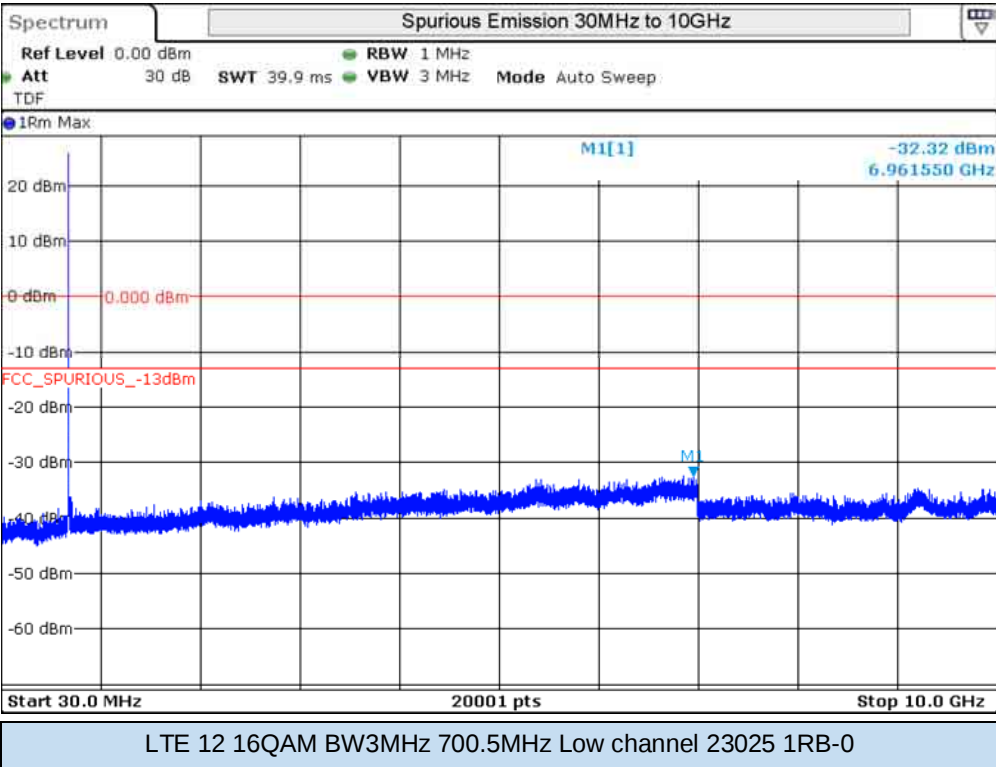
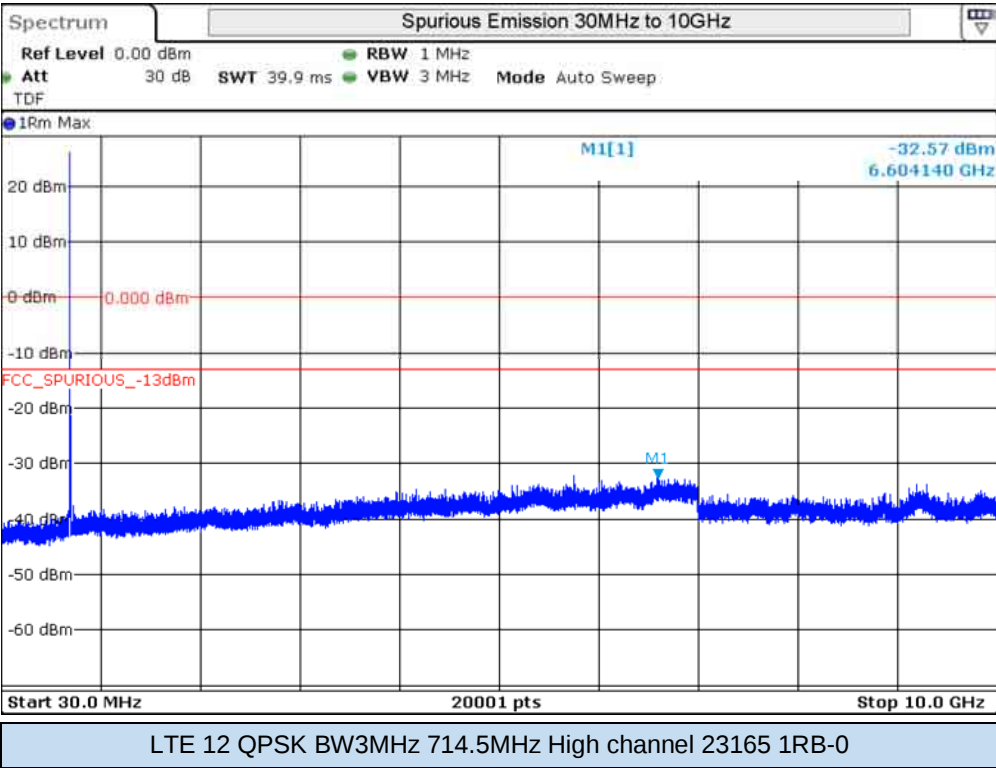
Spurious Emission screenshot results

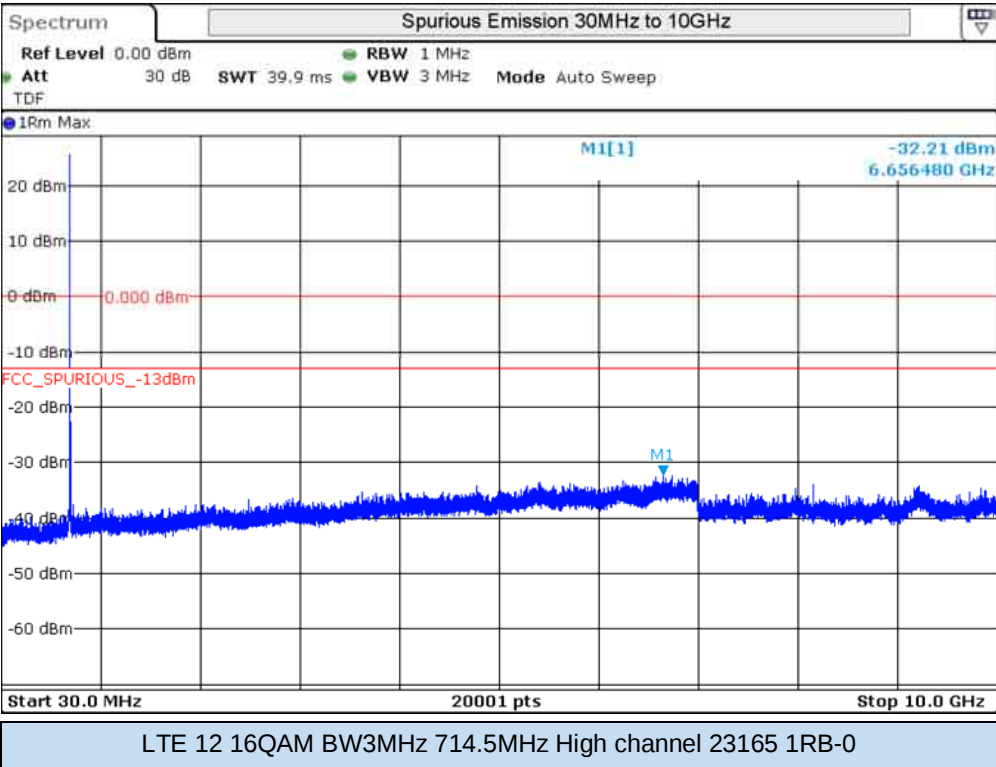
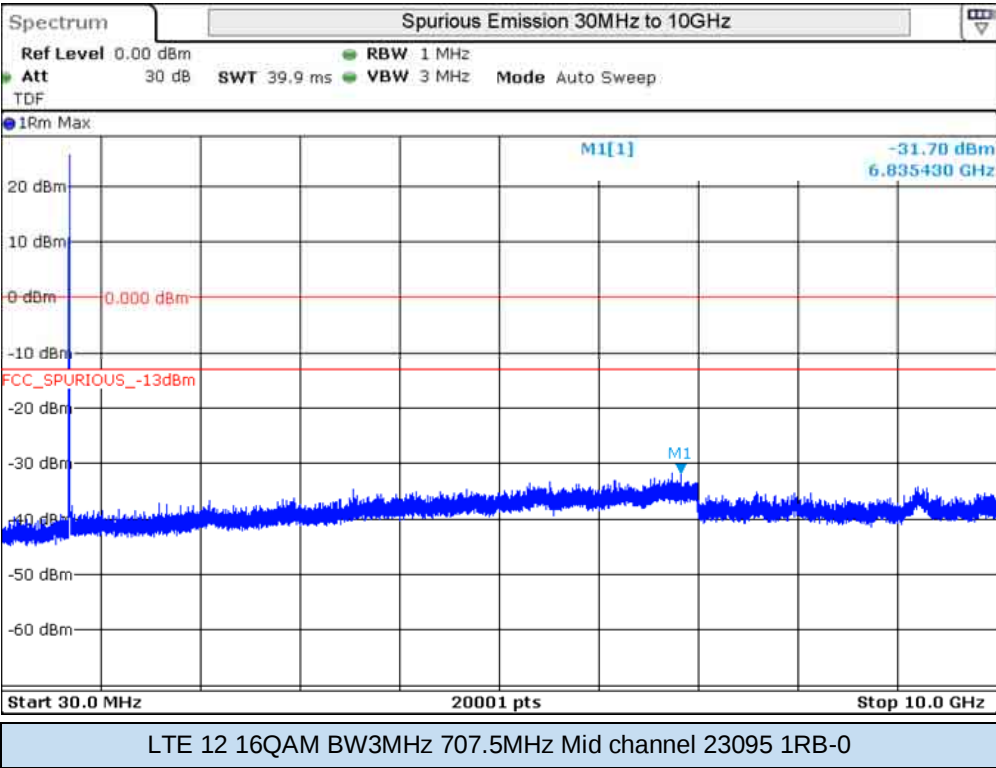


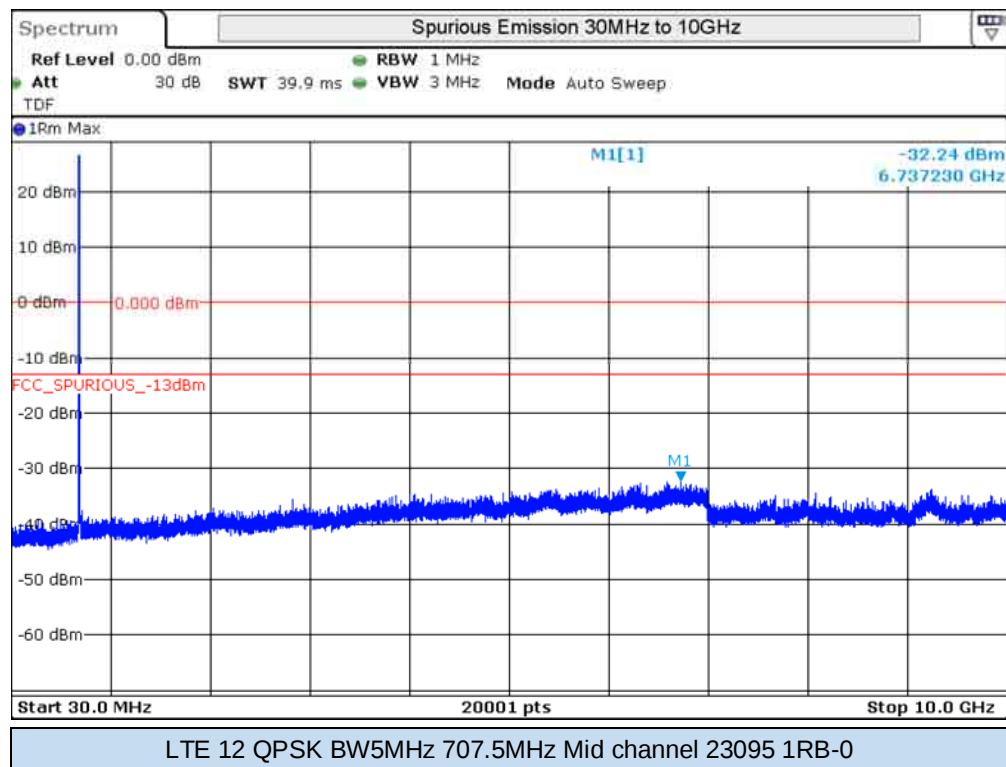
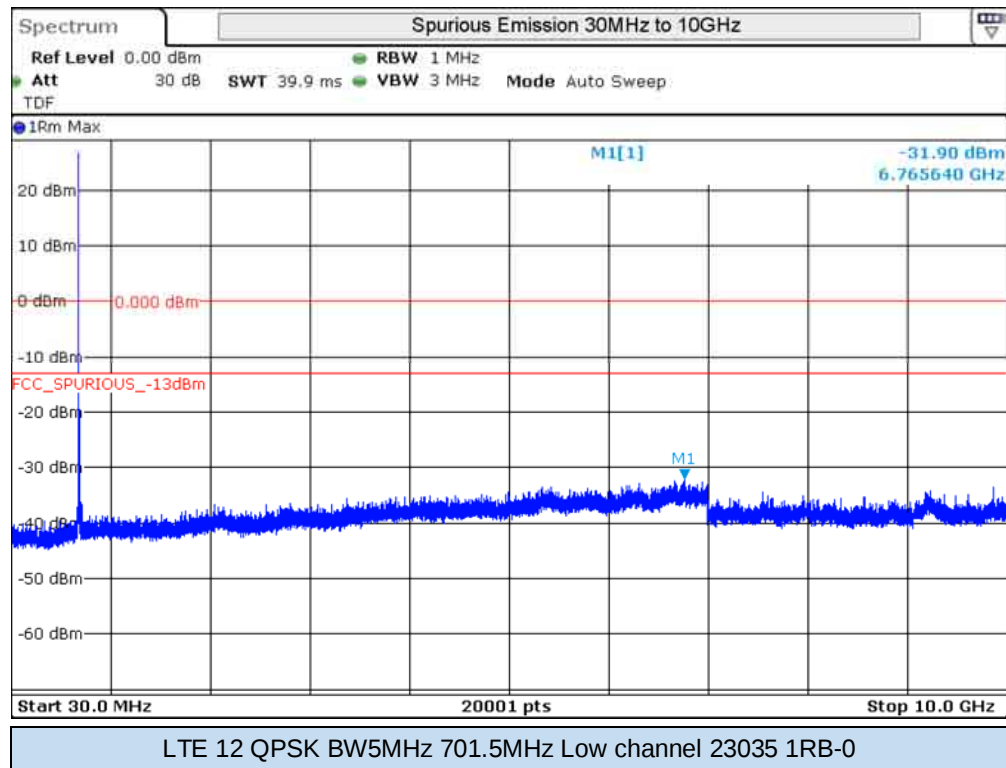


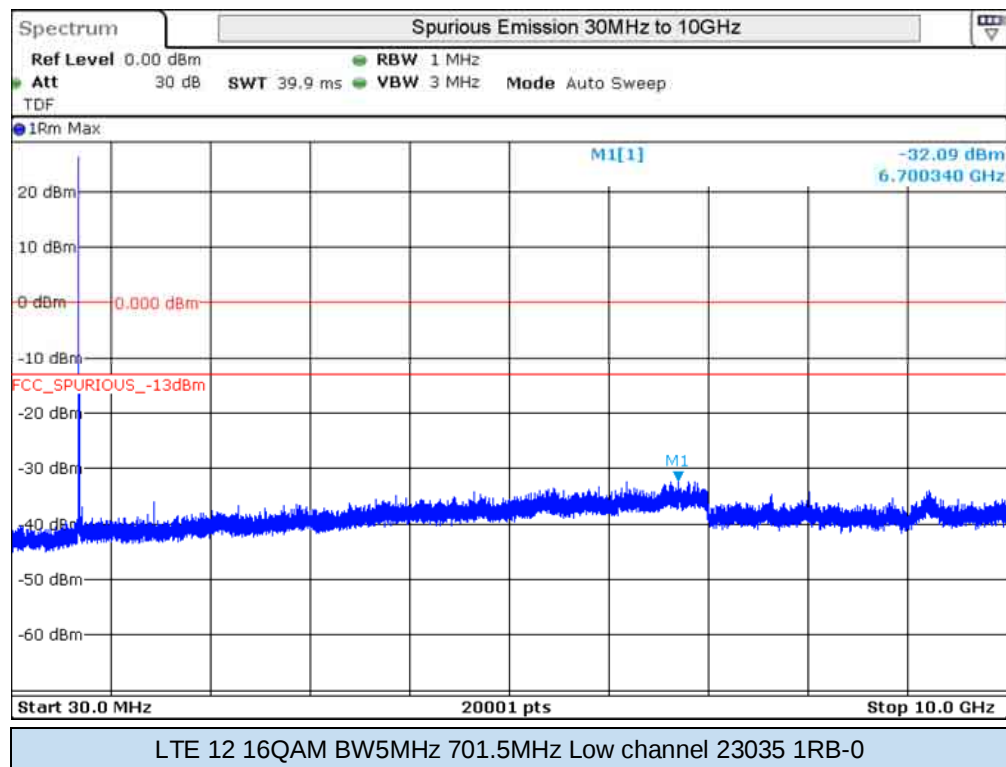
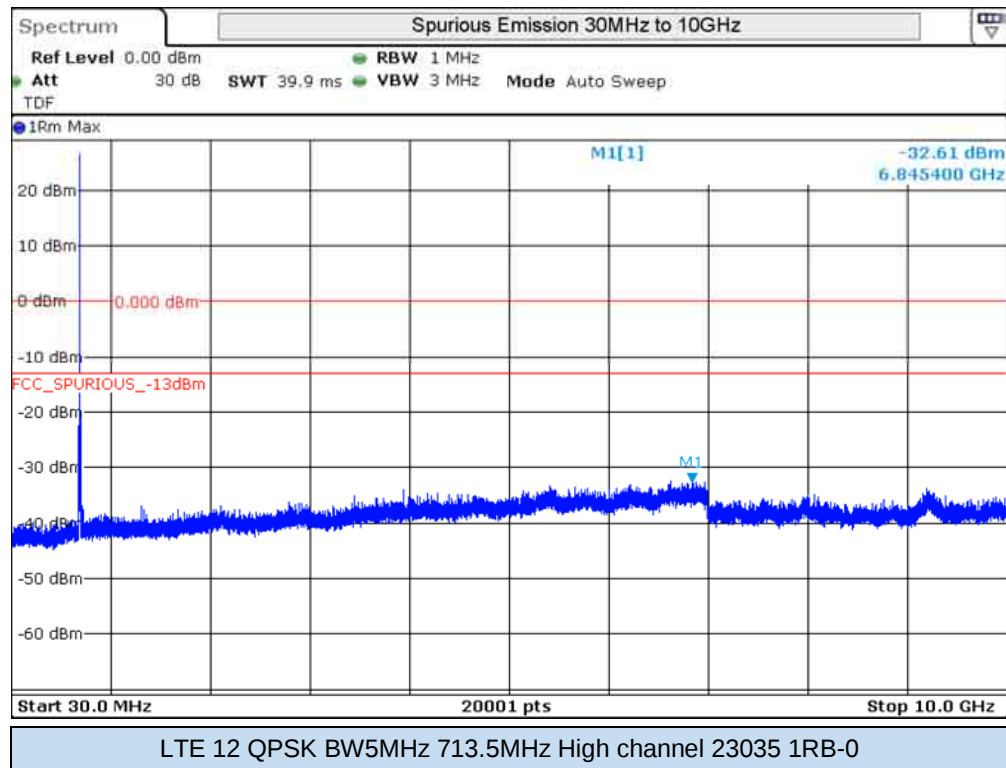


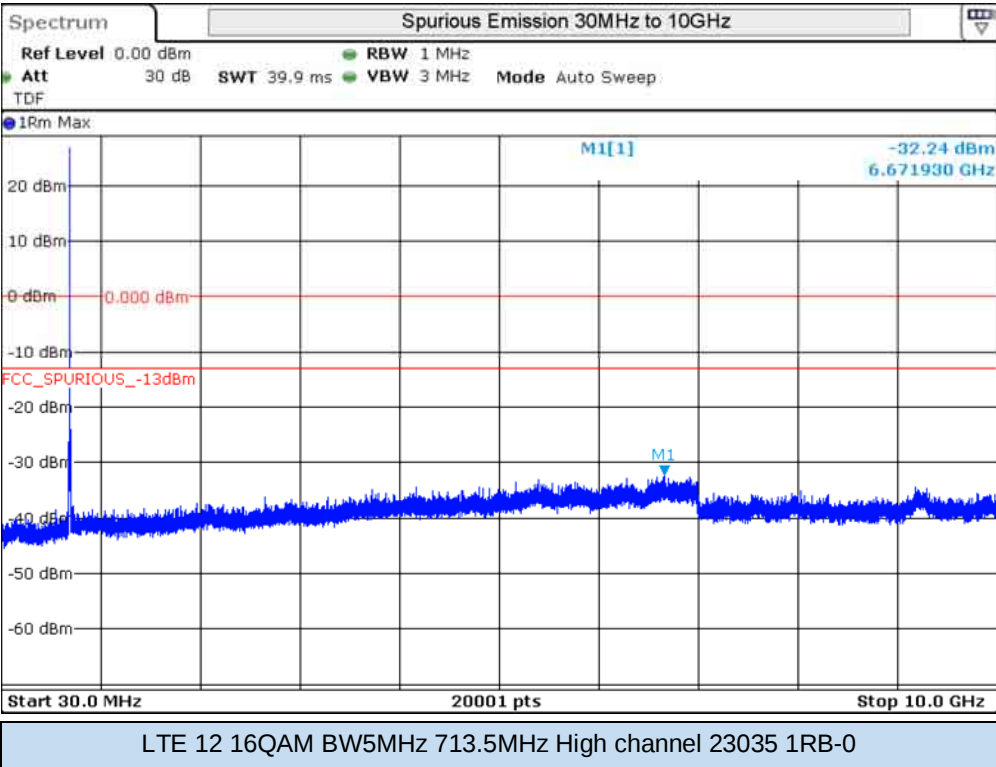
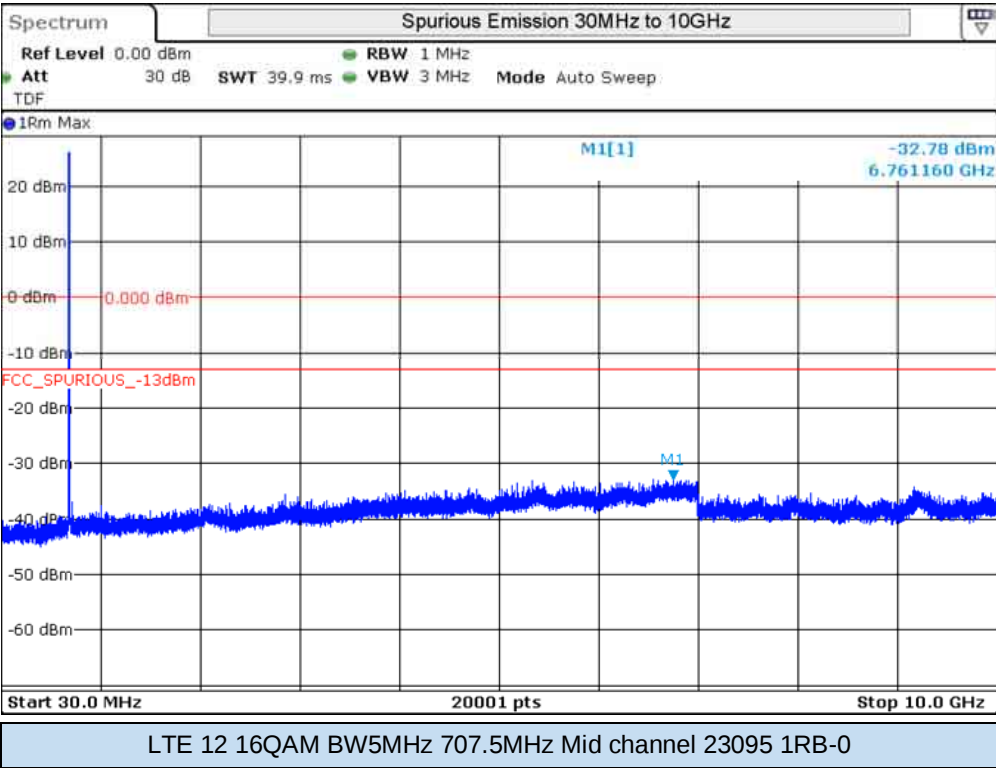


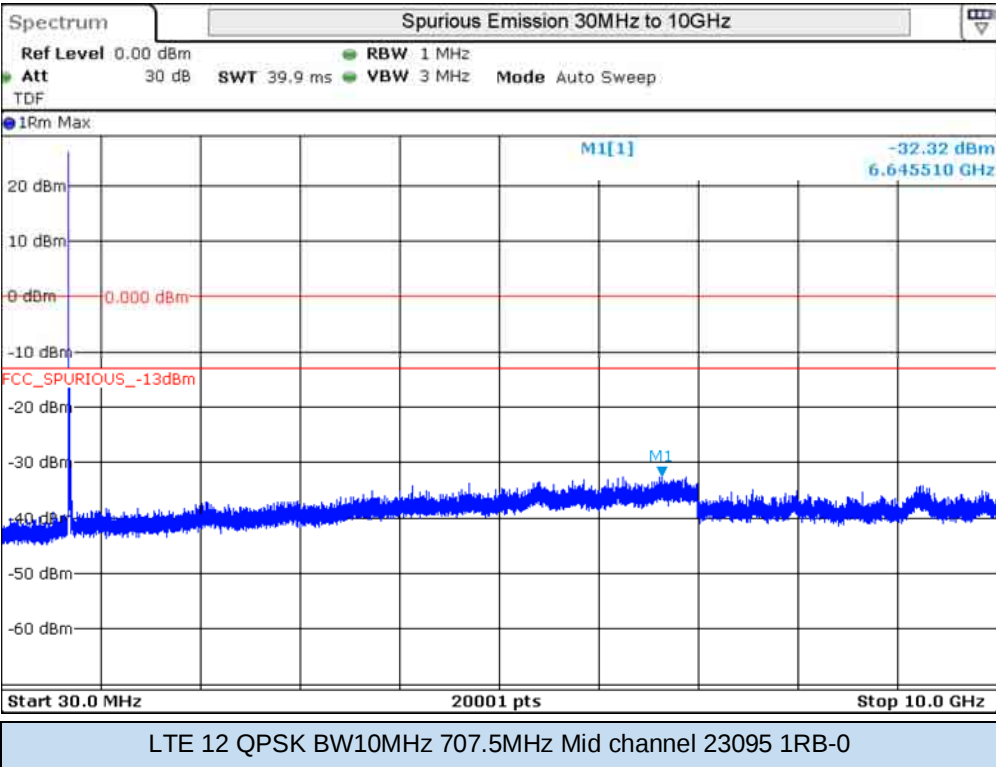
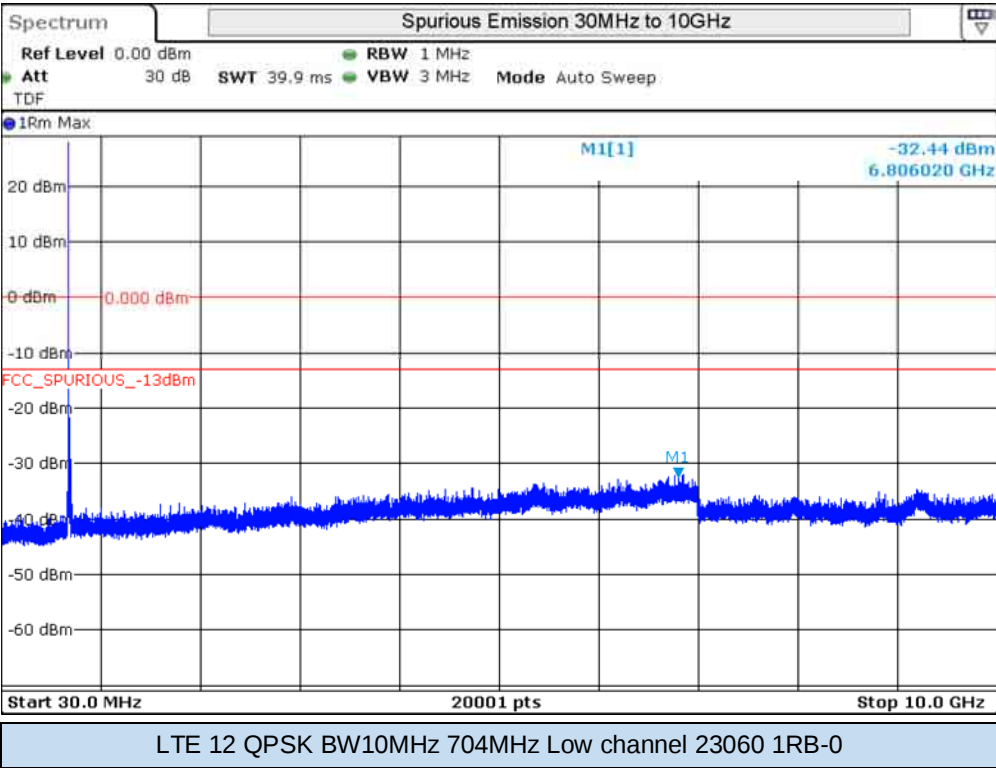


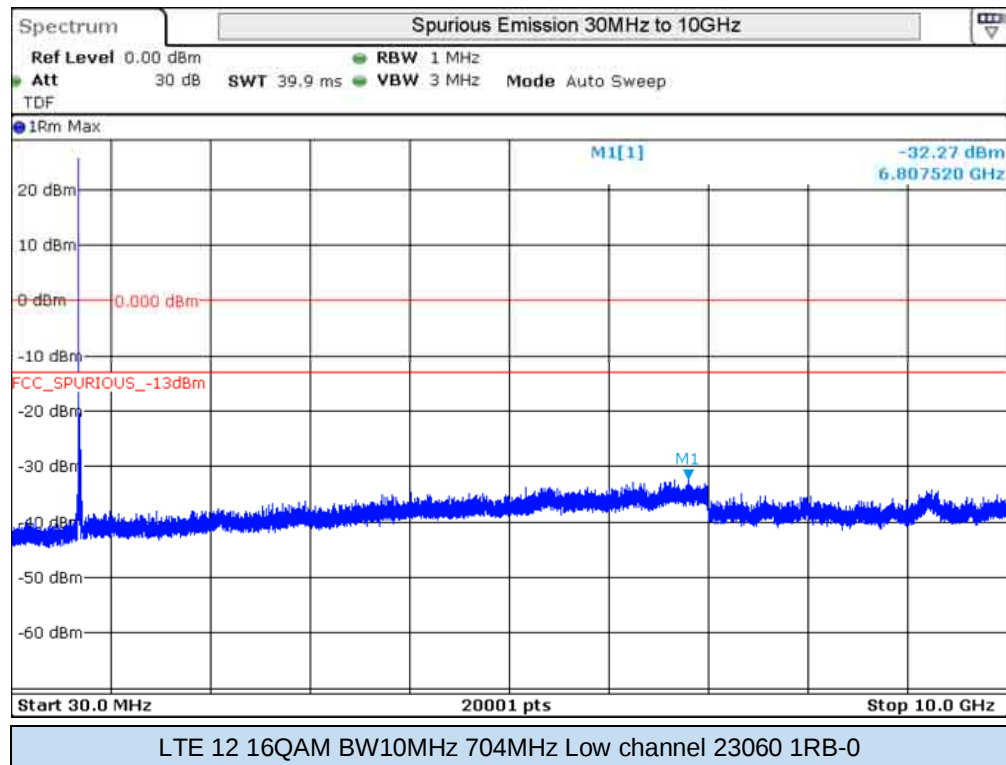
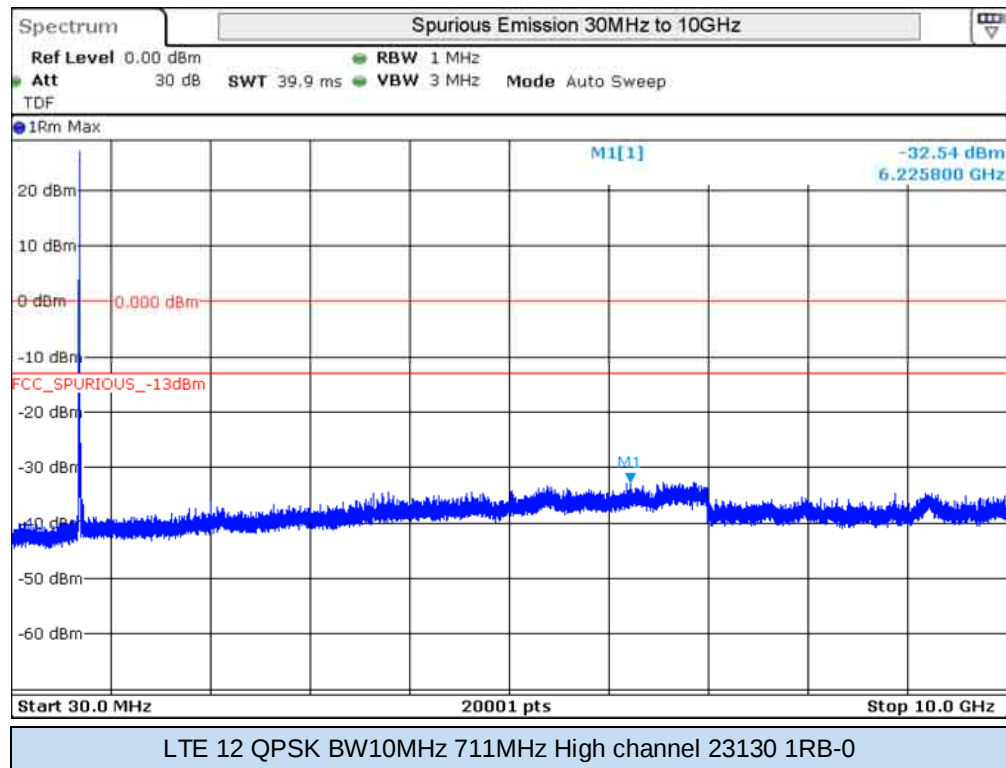


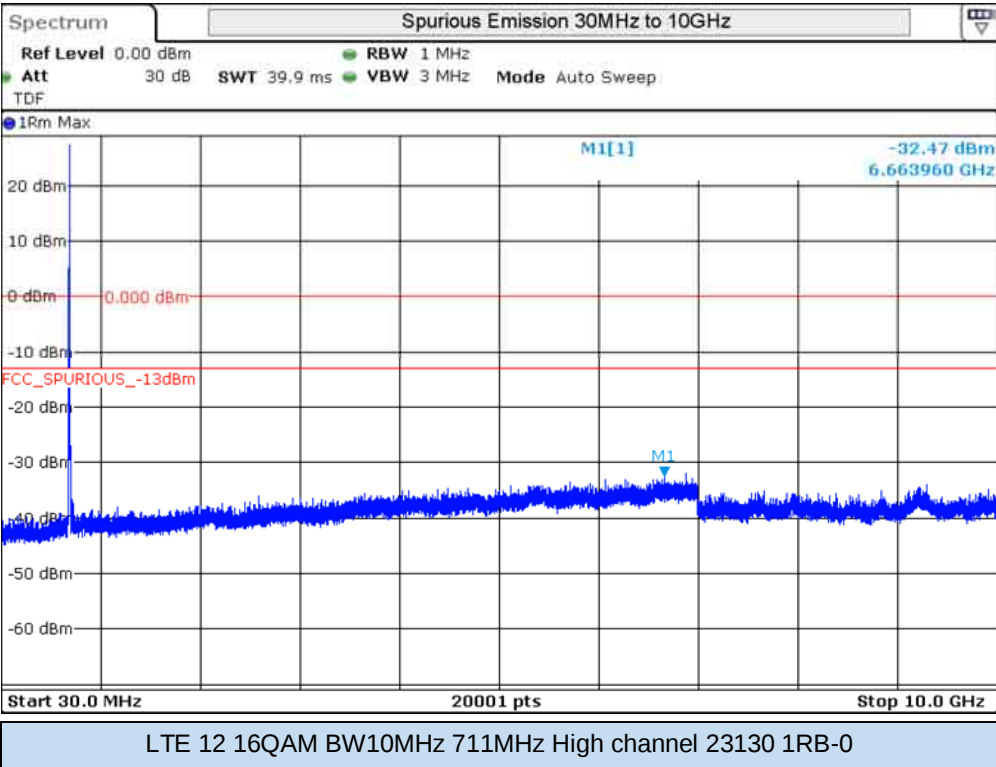
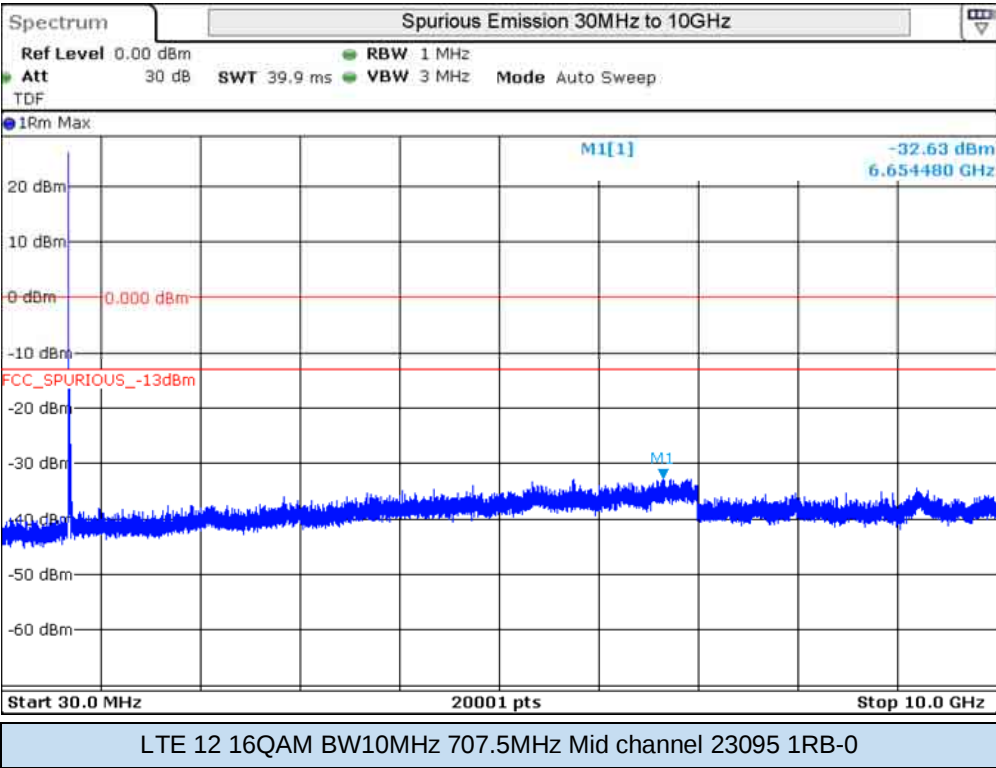


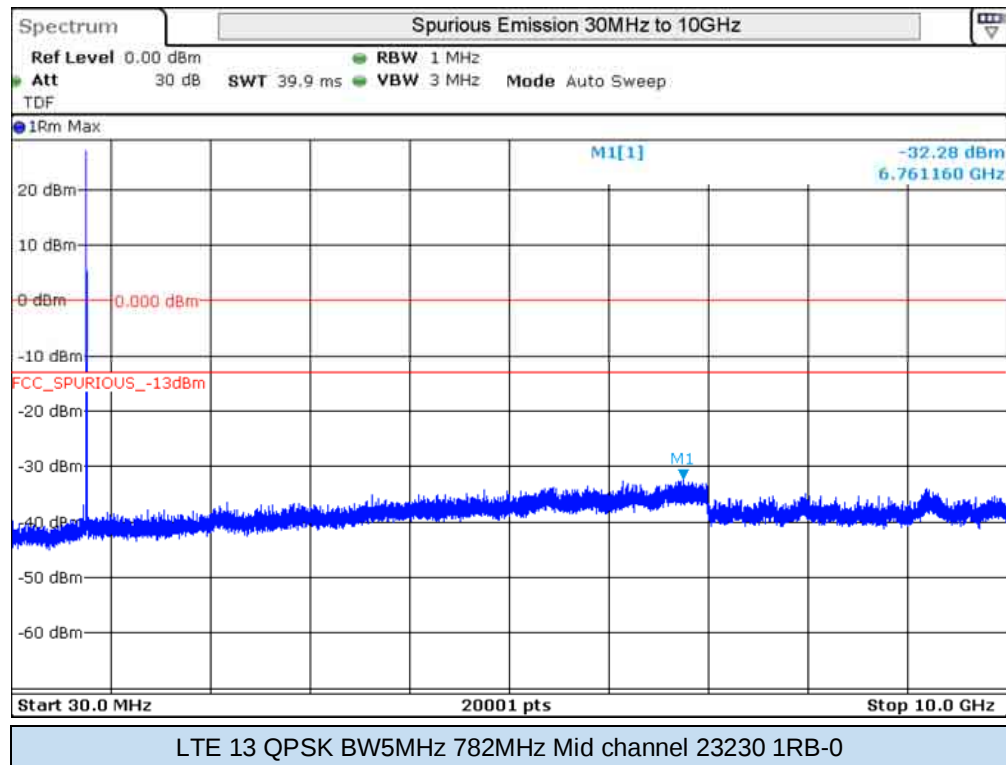
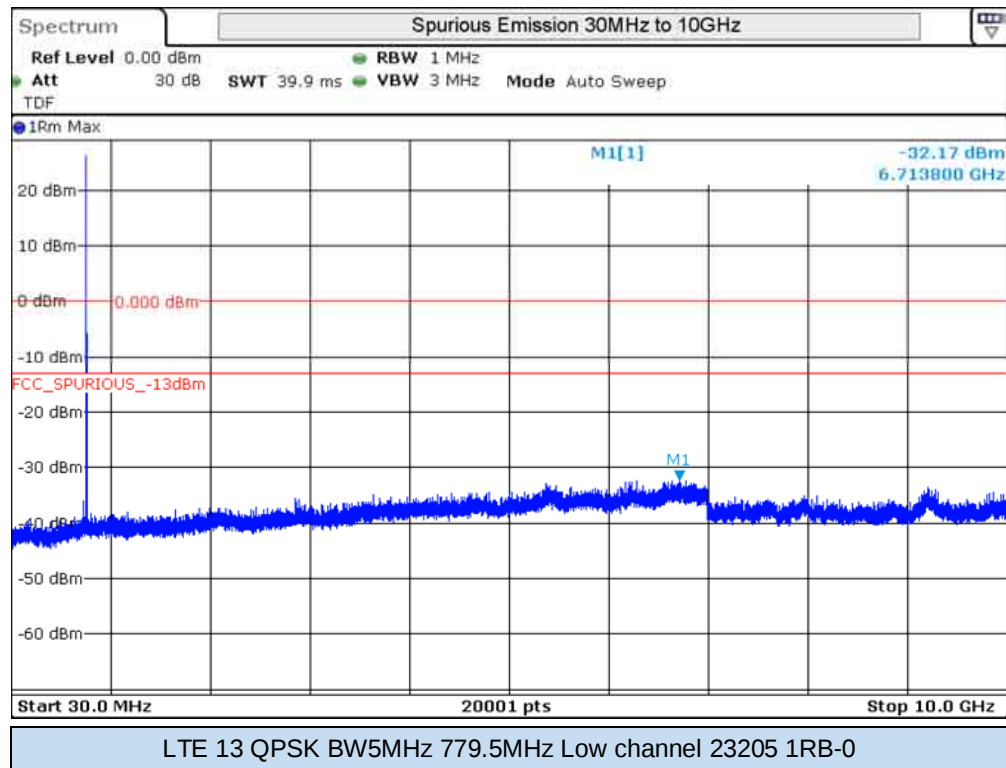


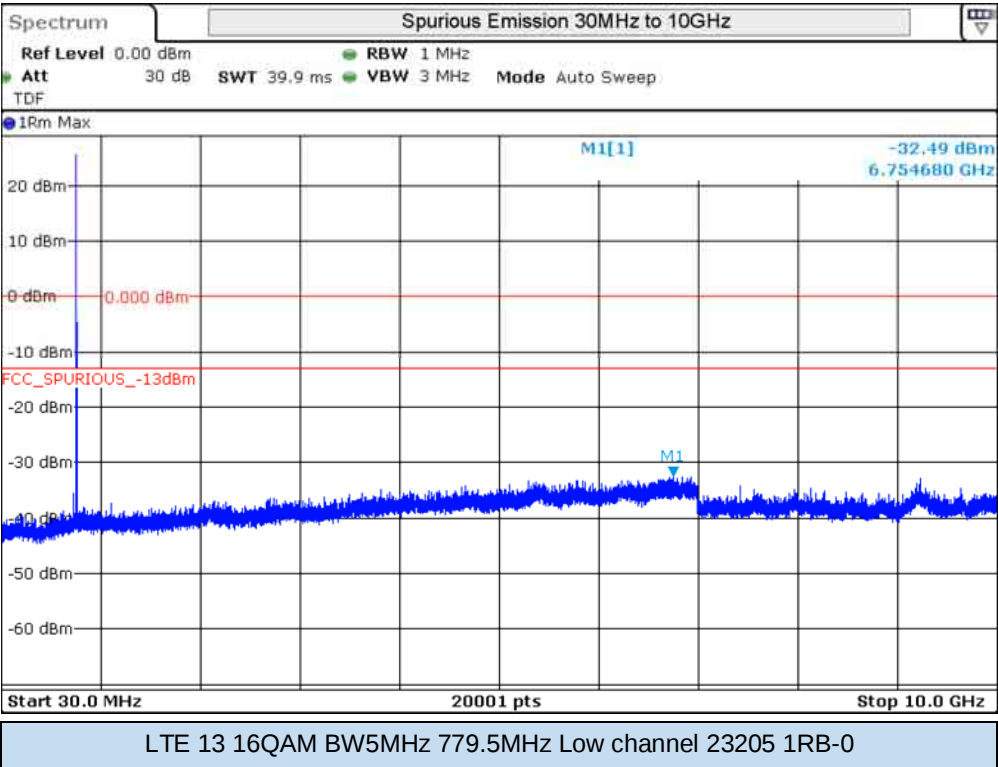
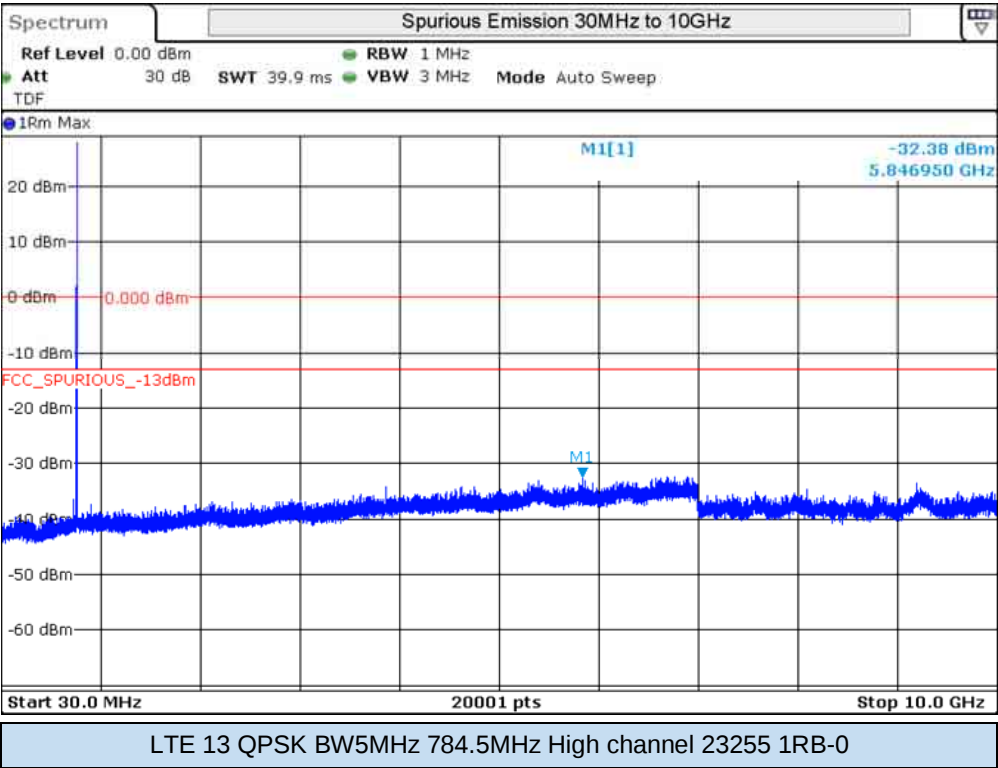


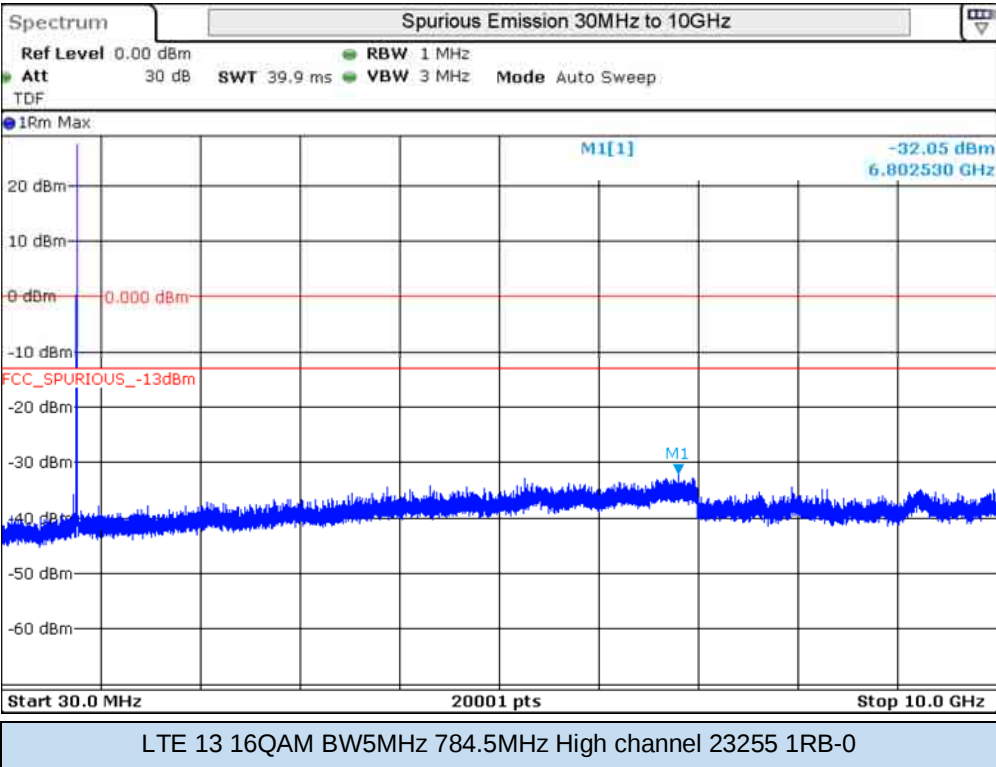
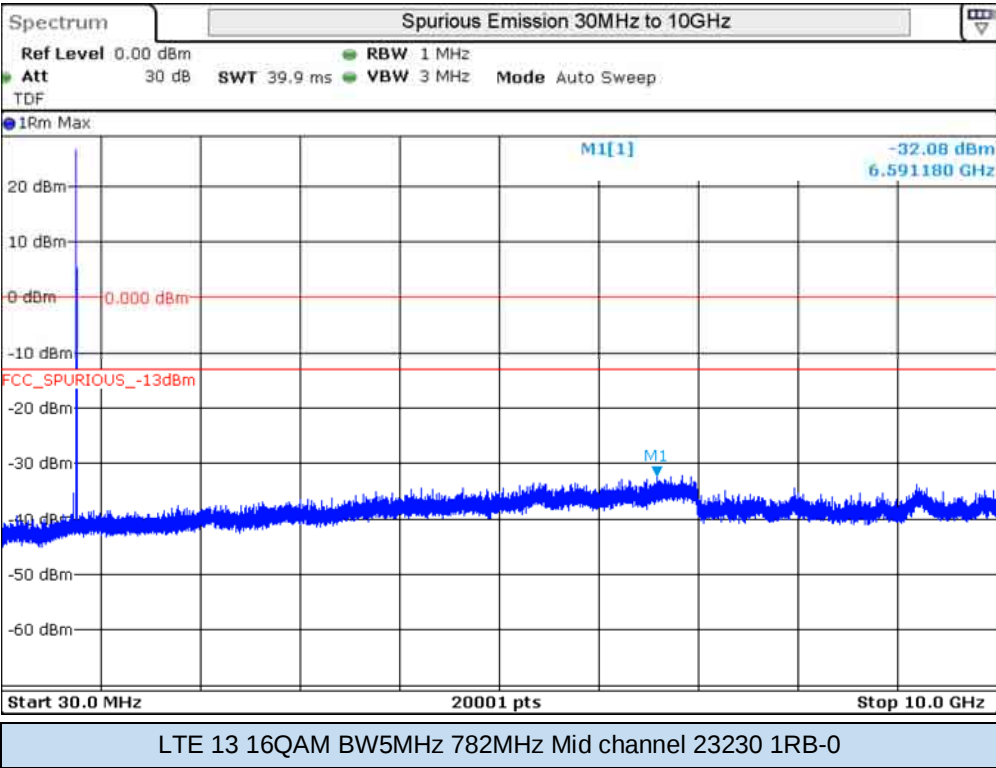


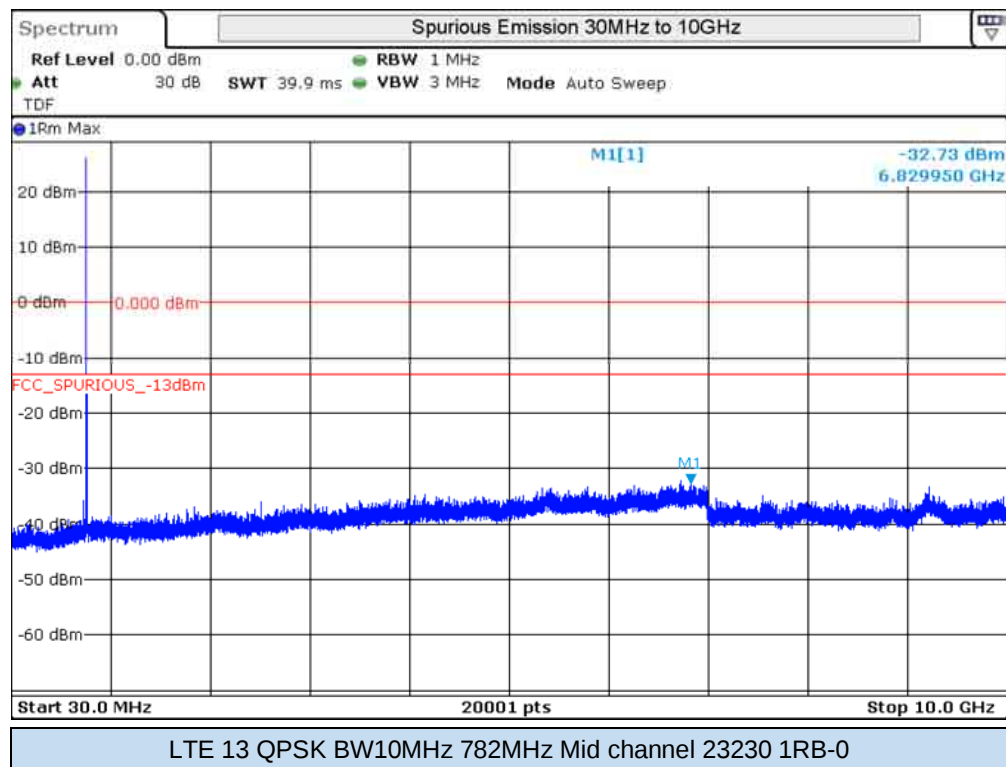
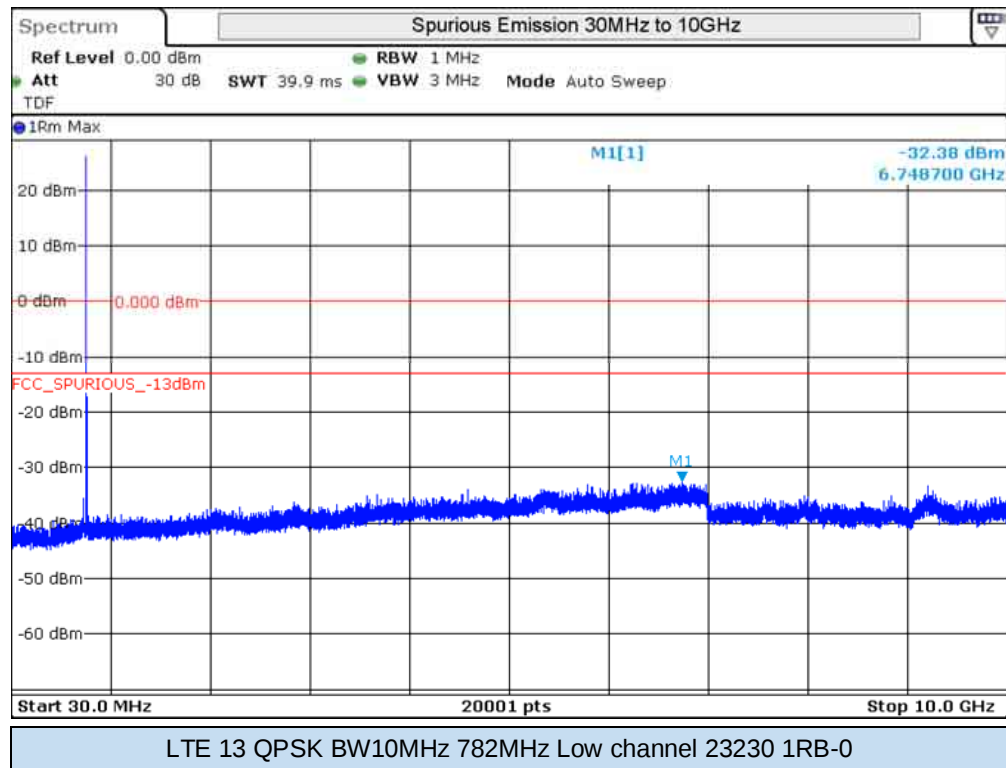


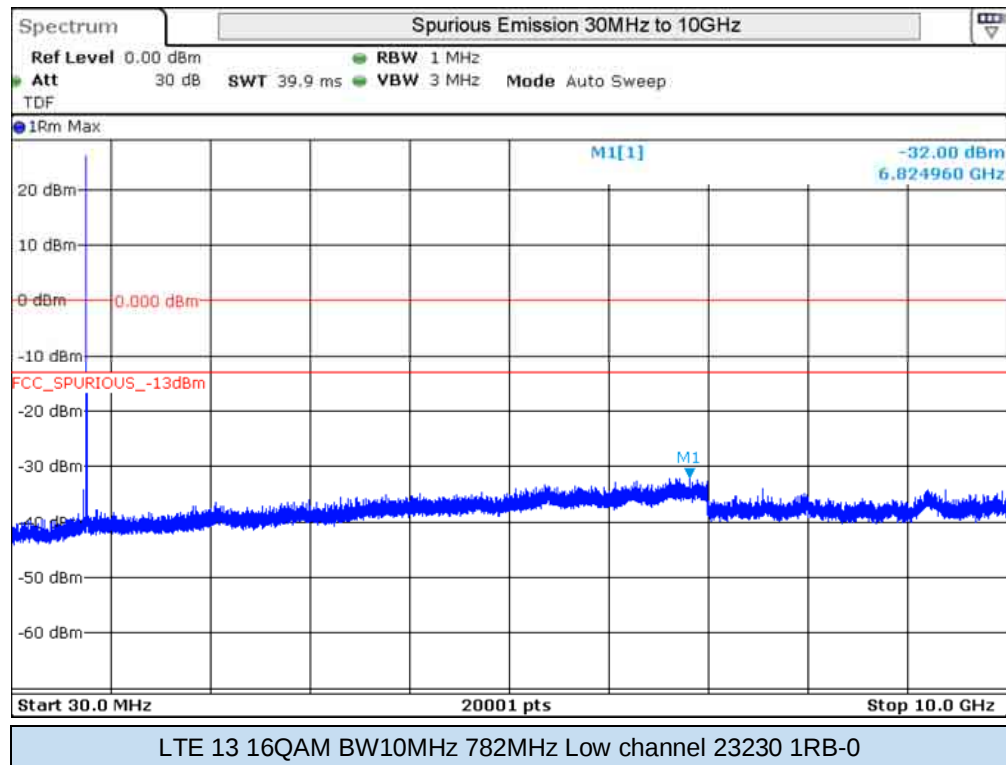
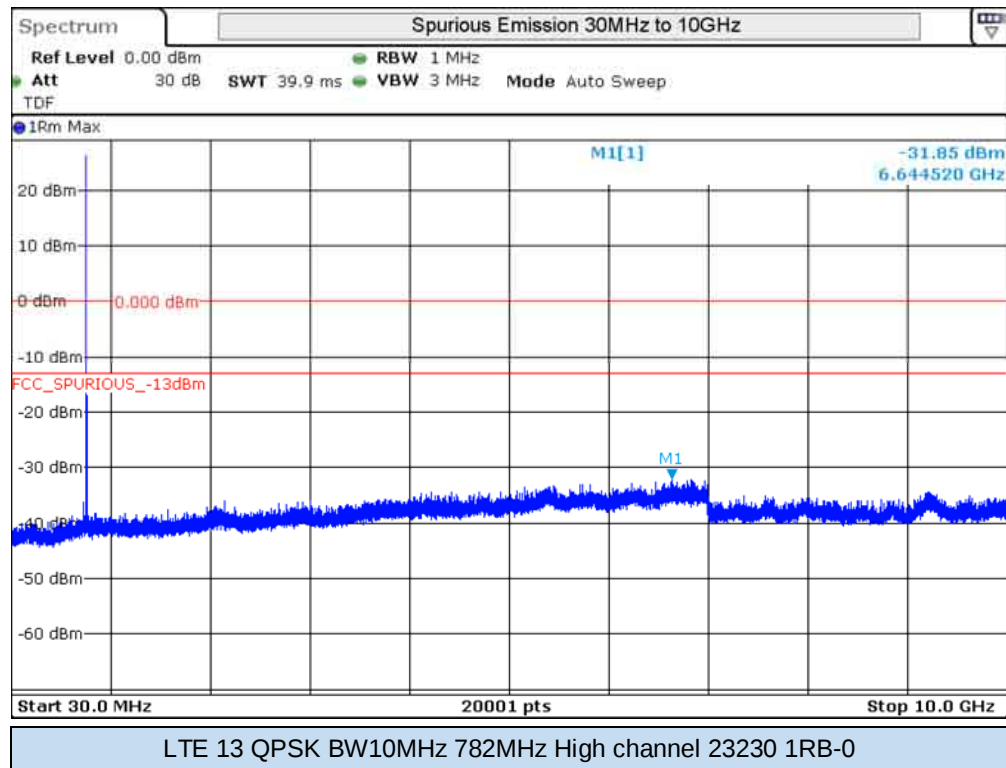


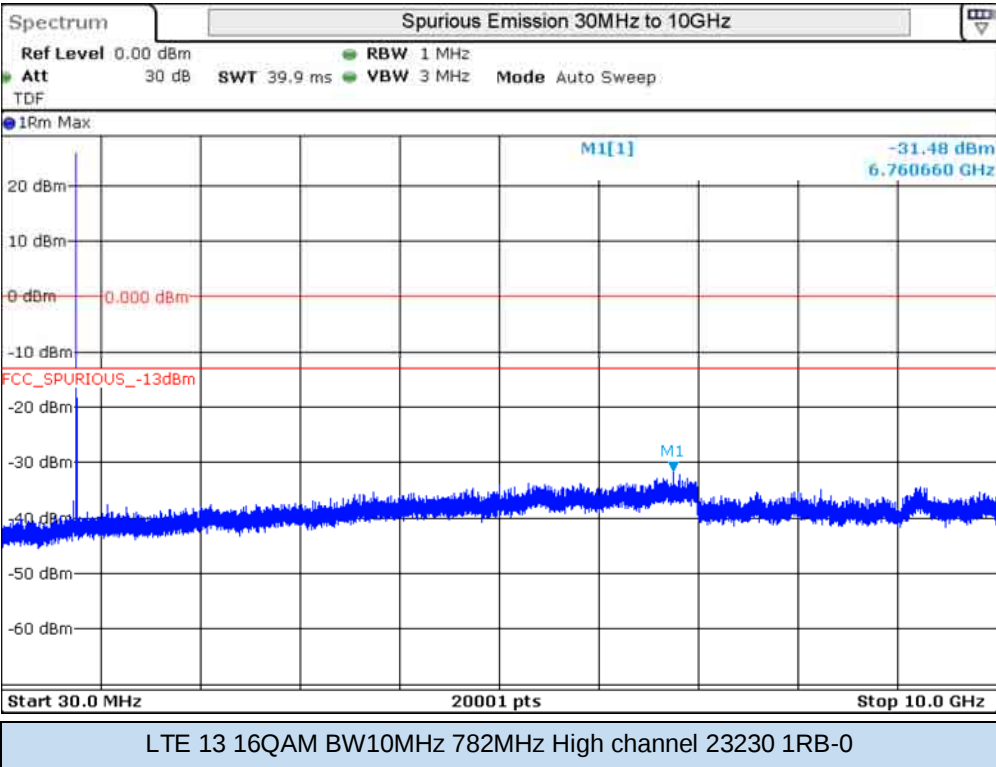
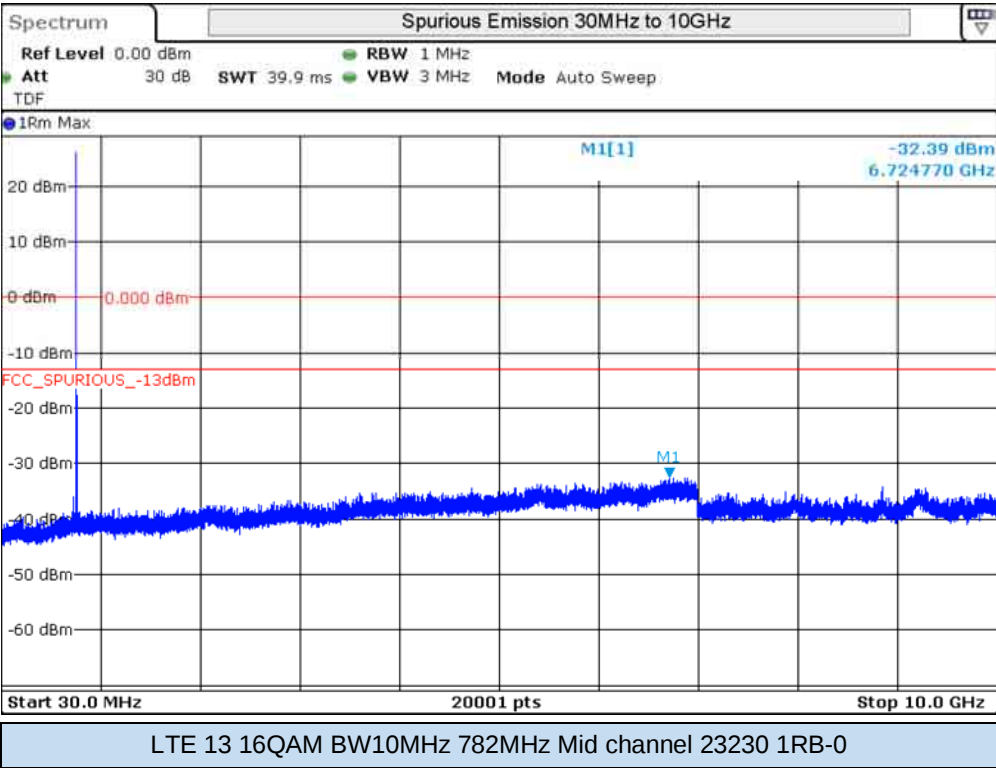


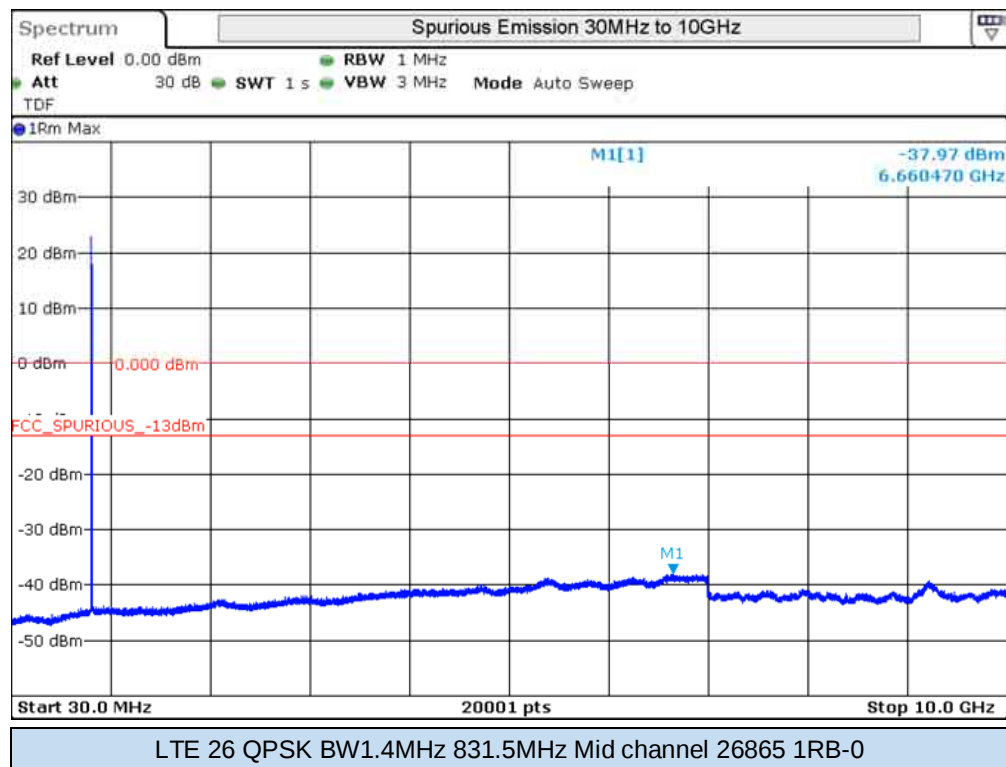
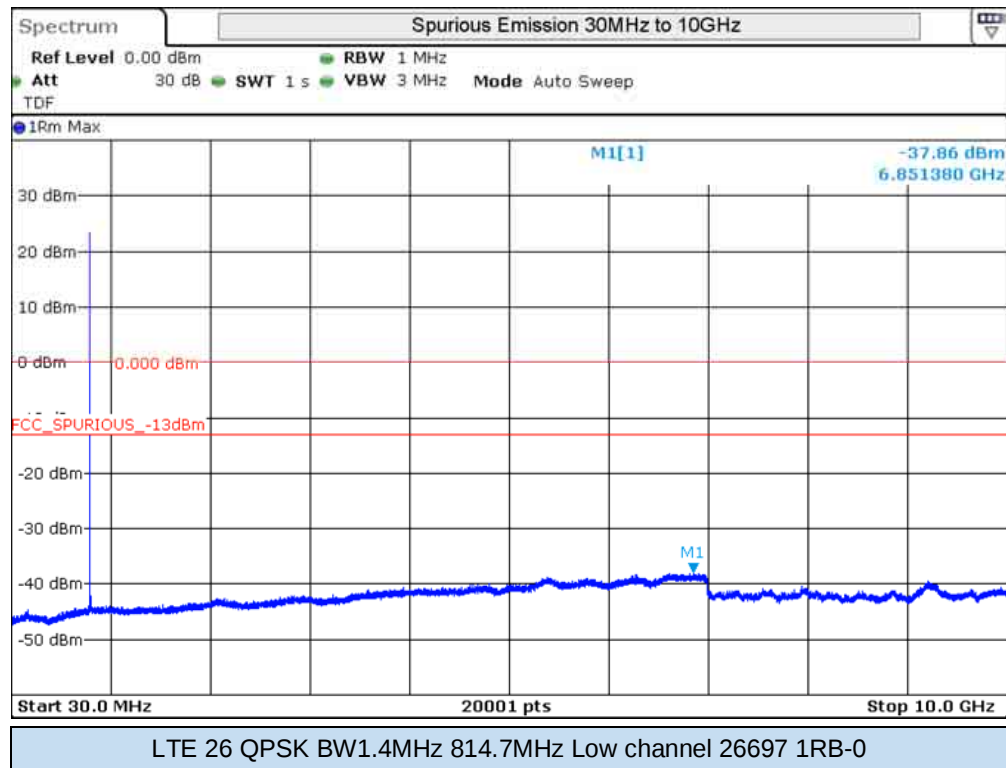


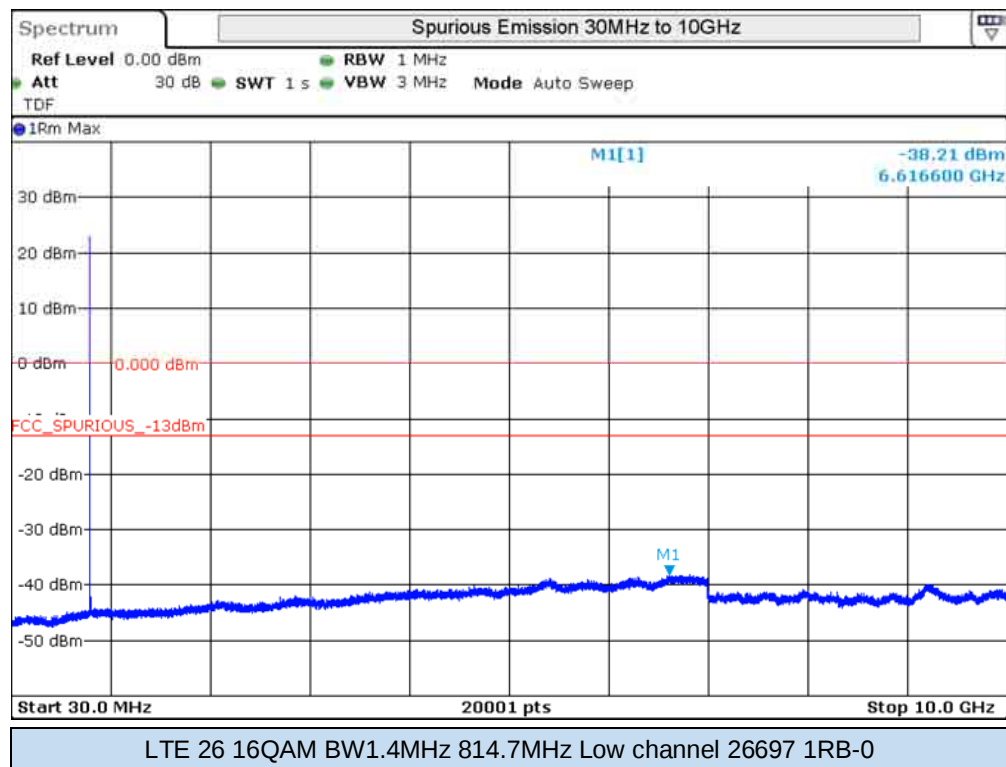
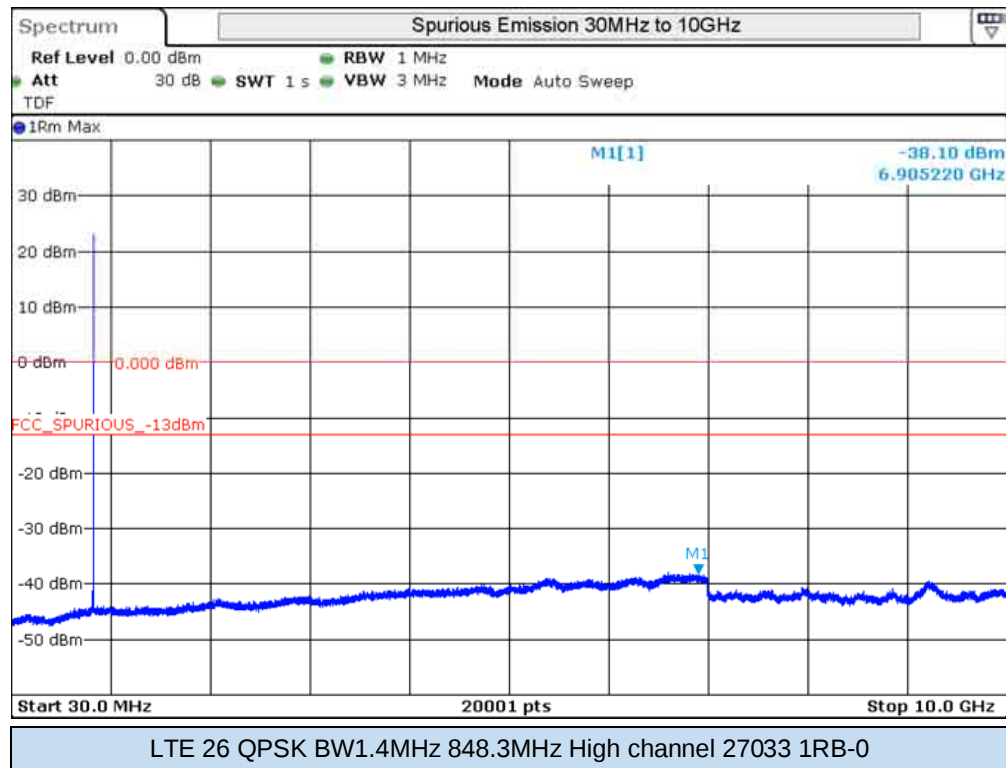


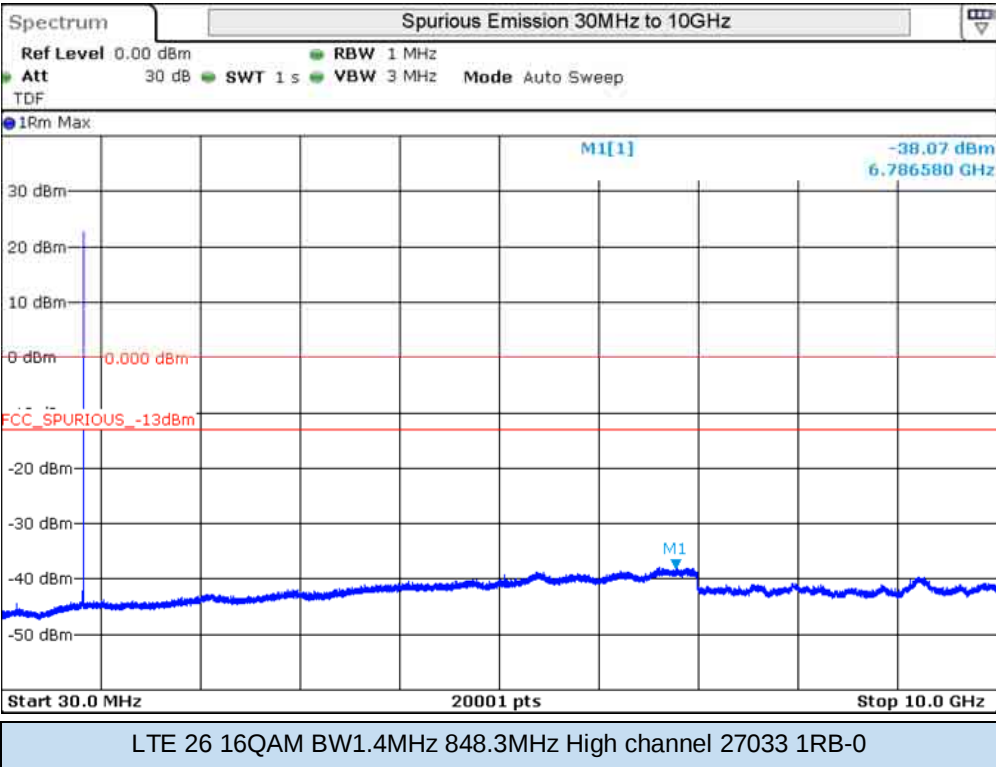
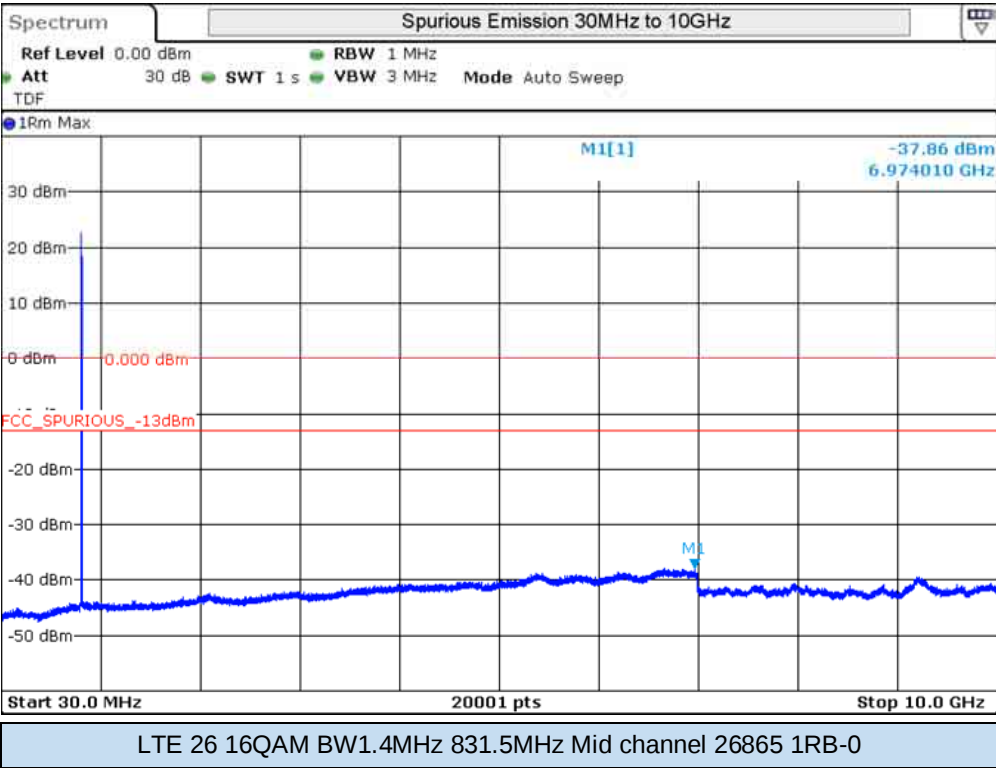


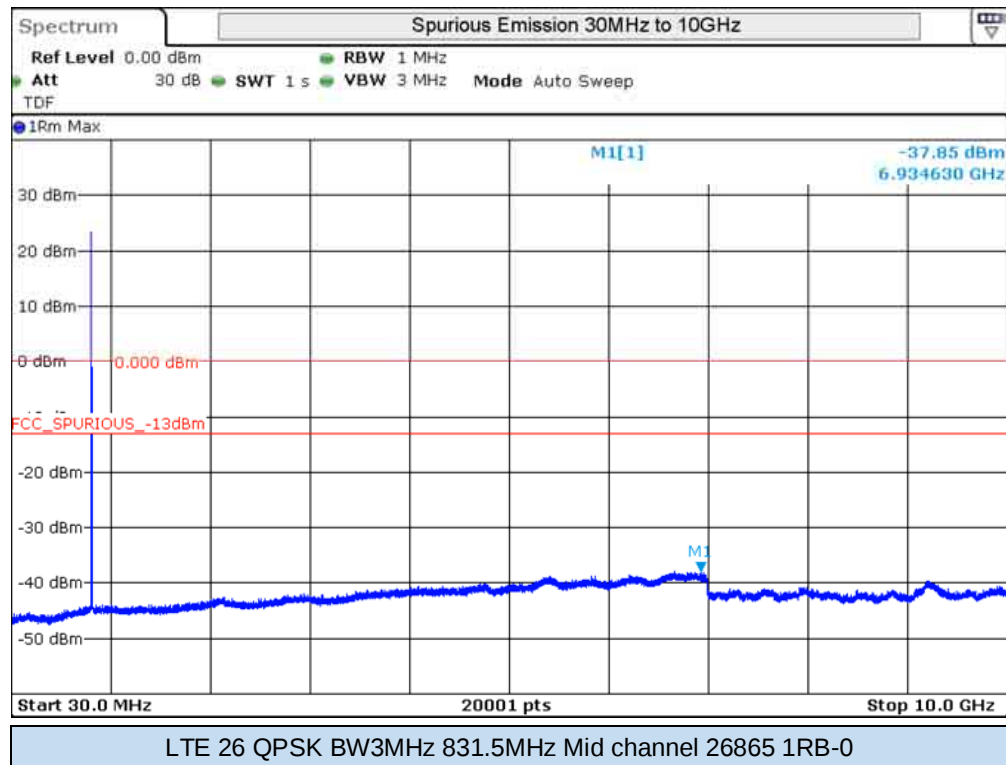
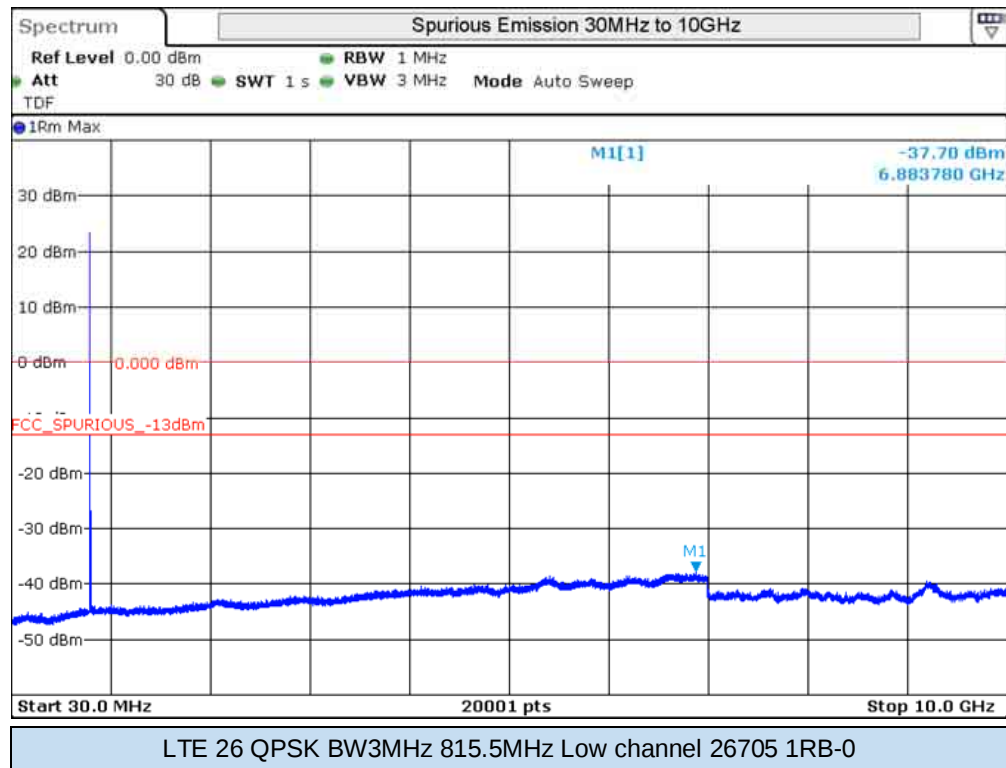


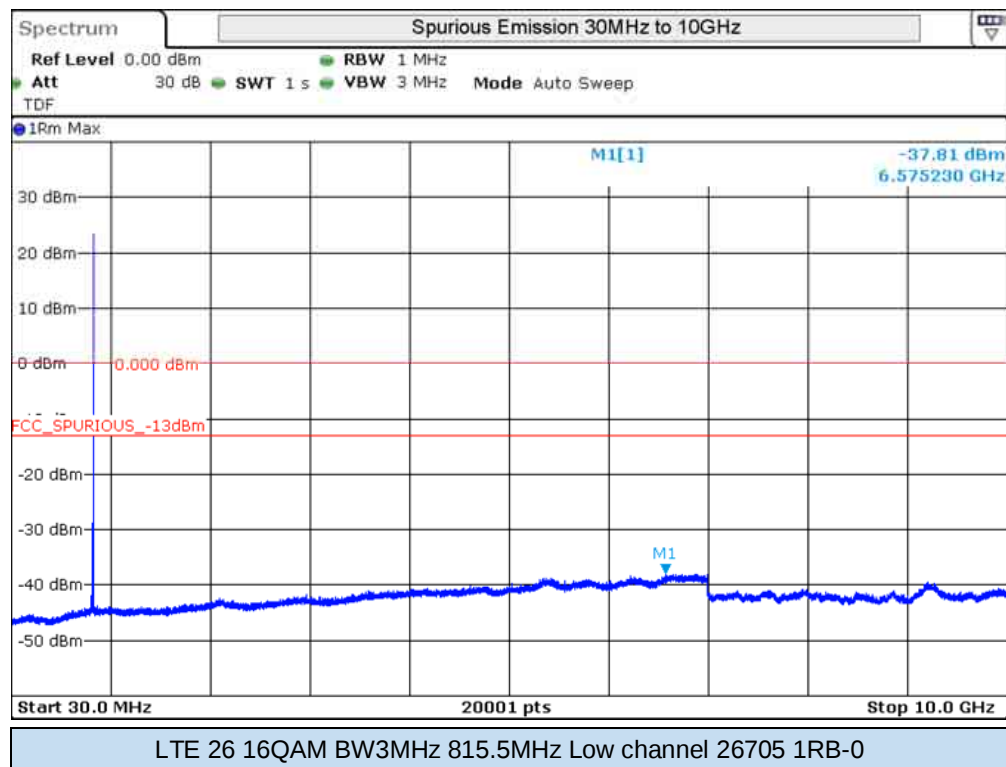
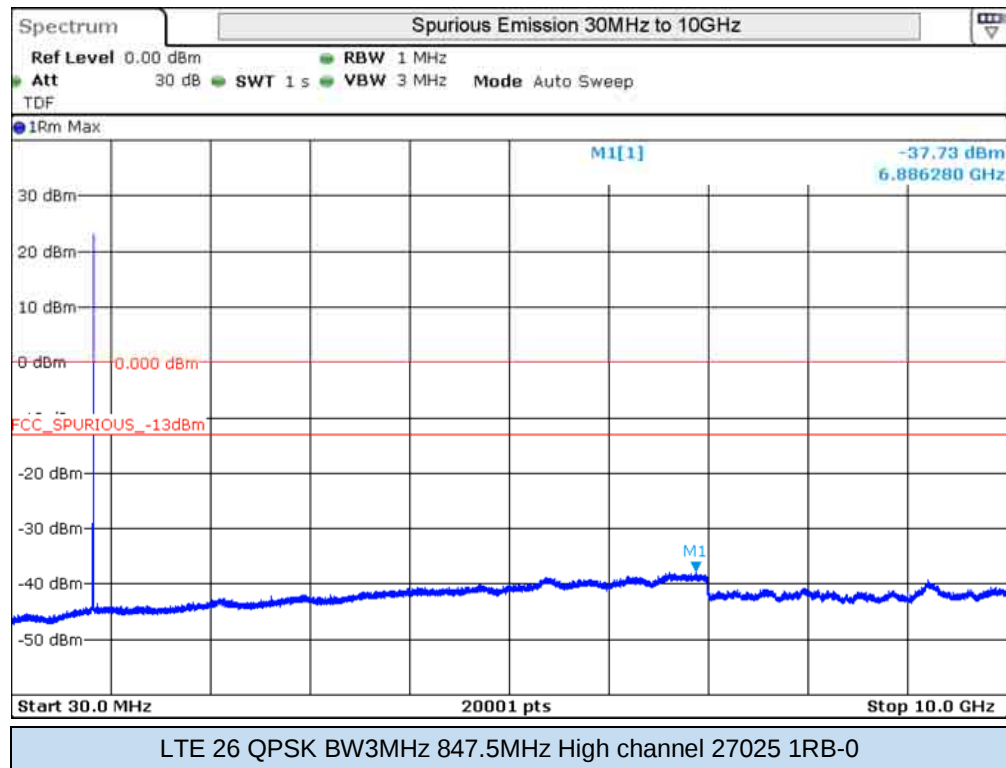


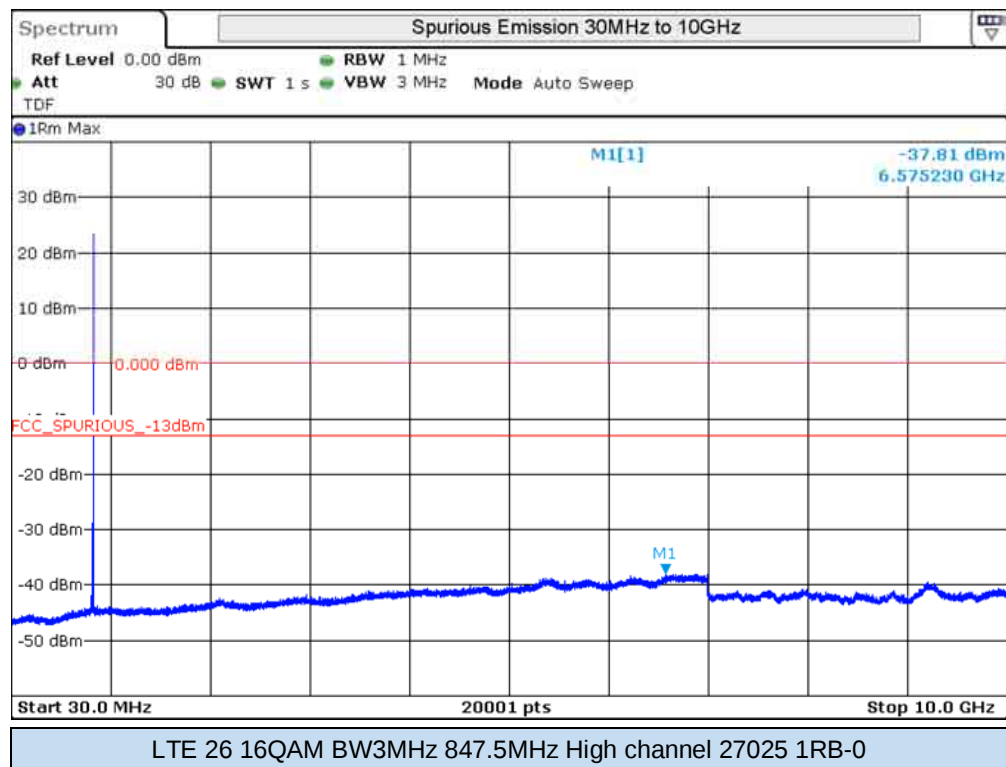
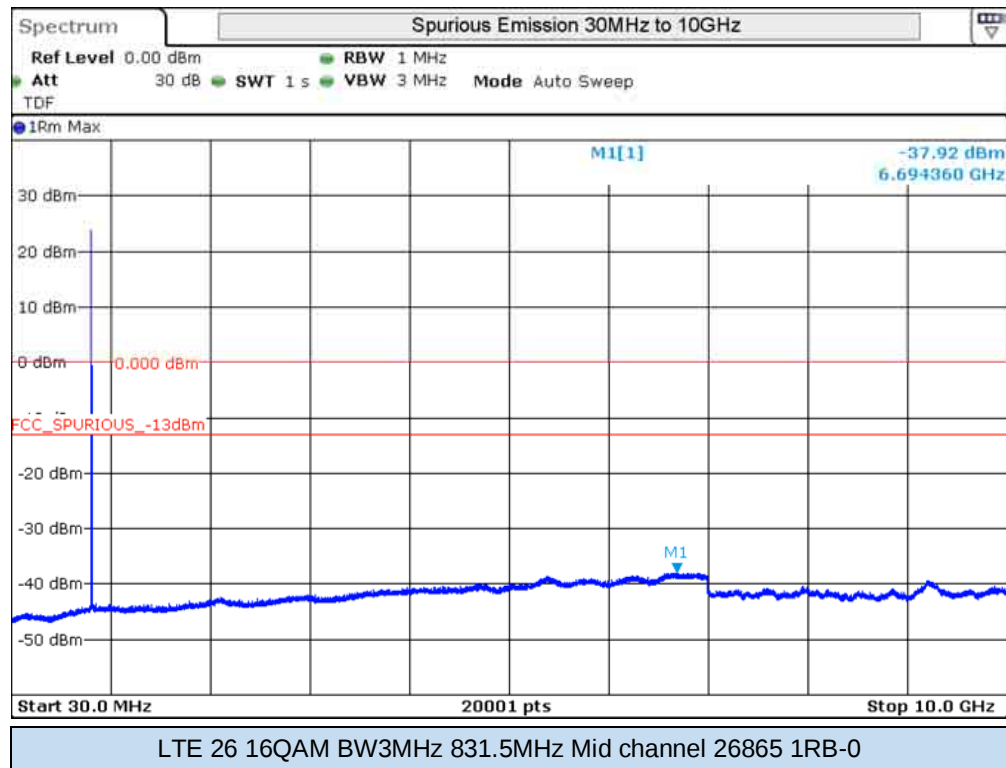


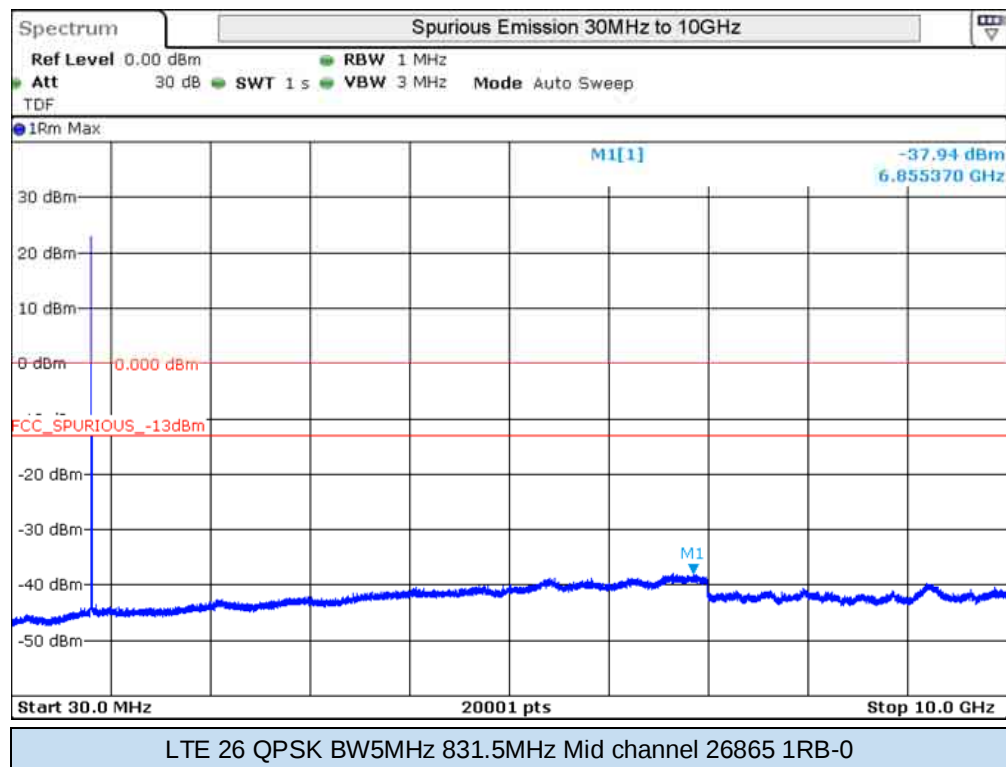
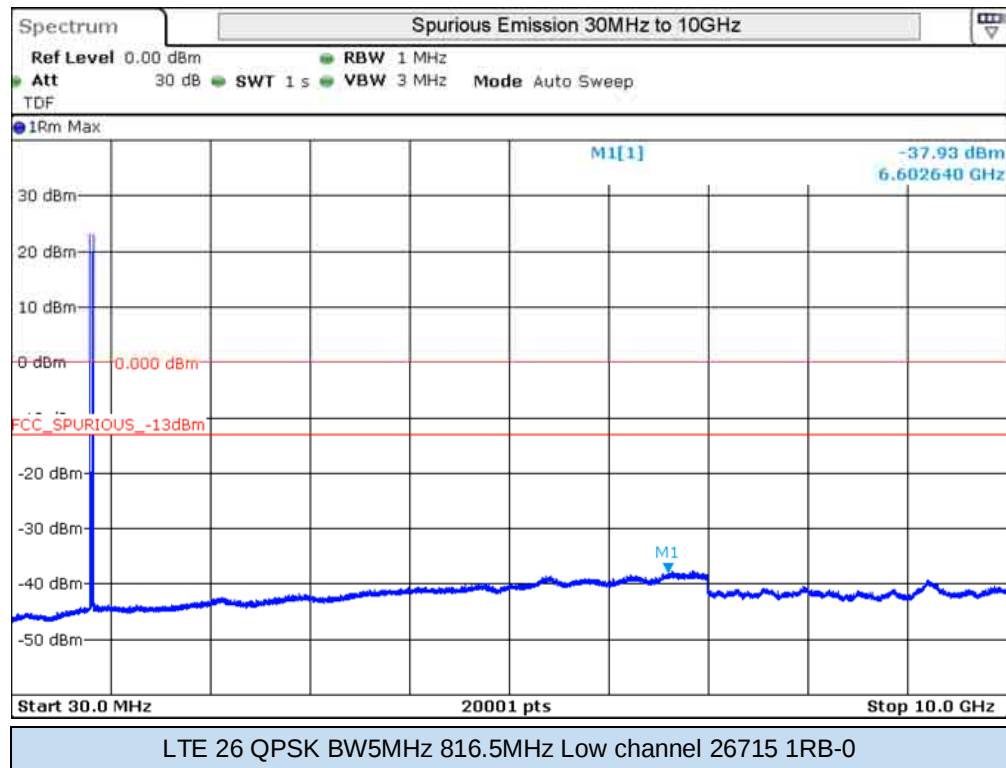


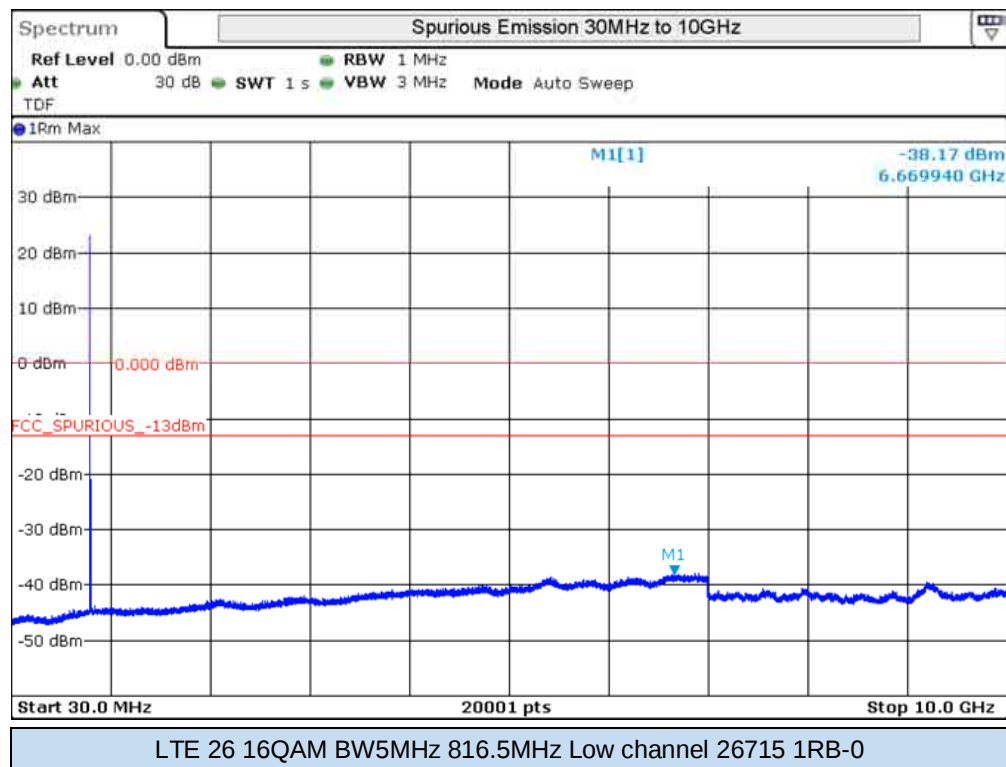
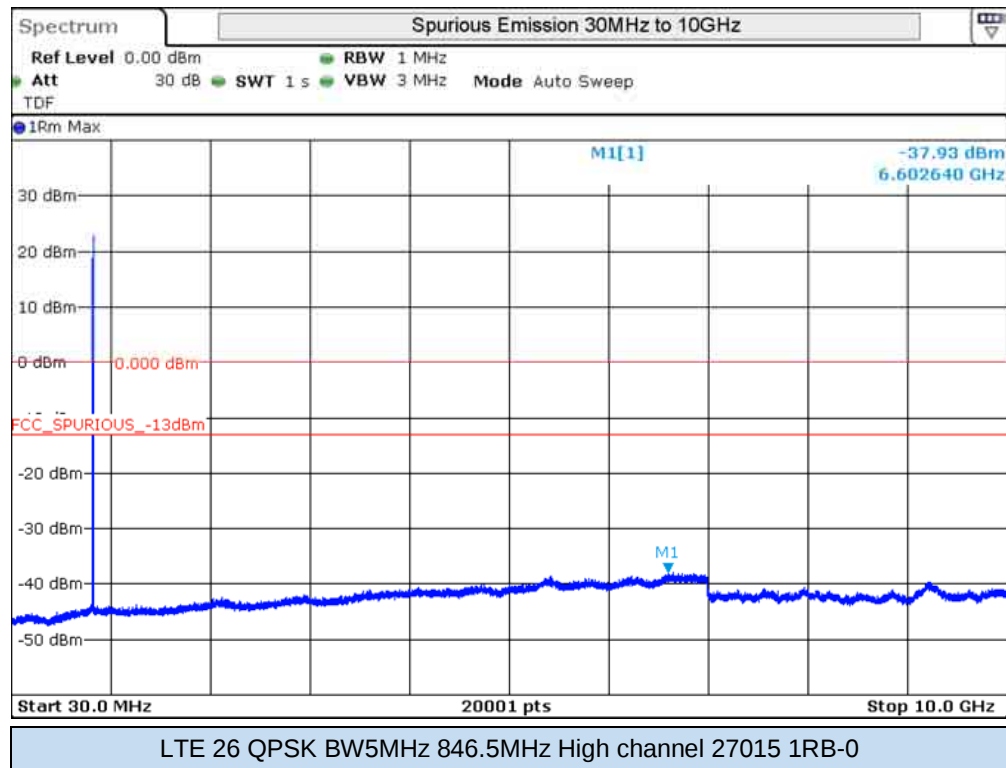


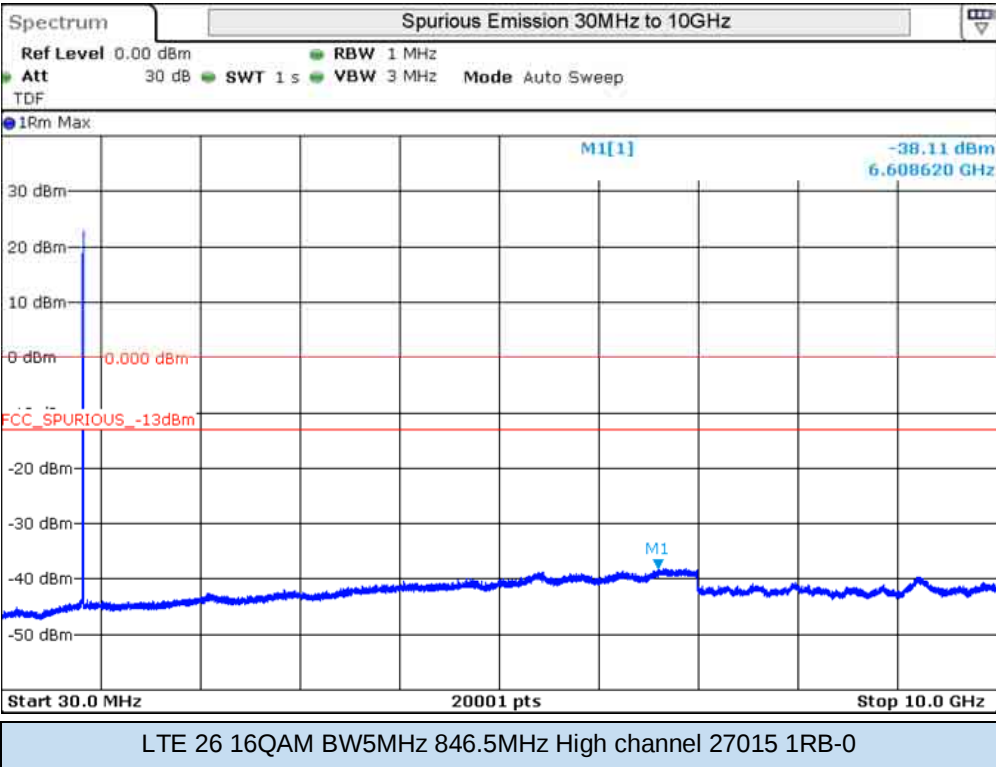
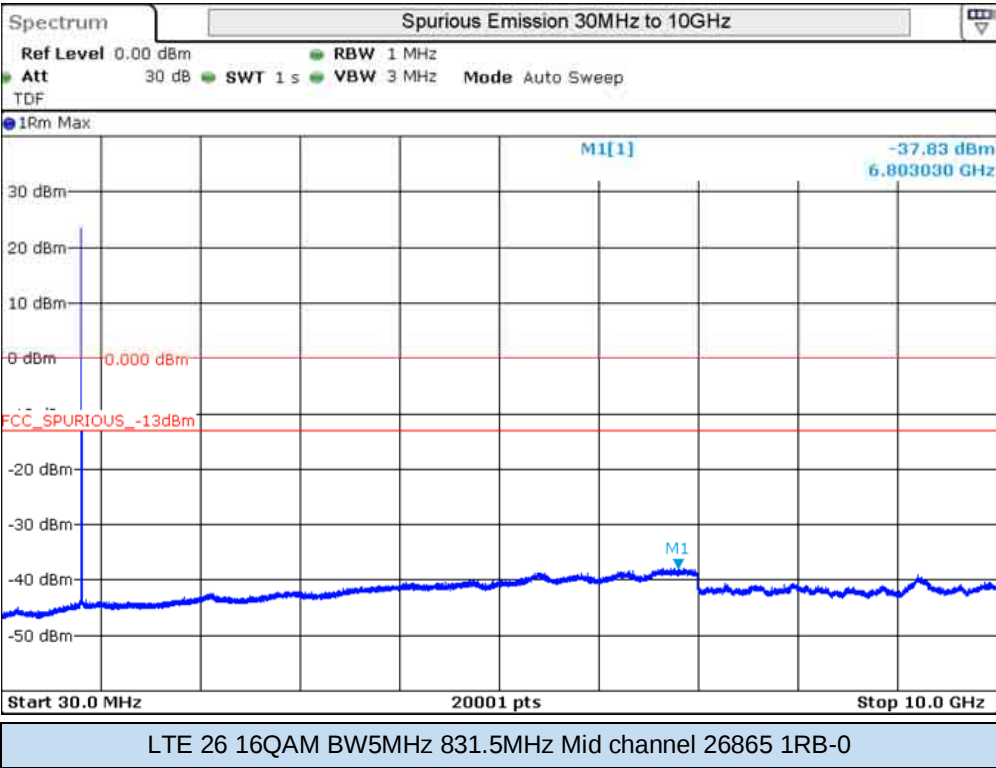


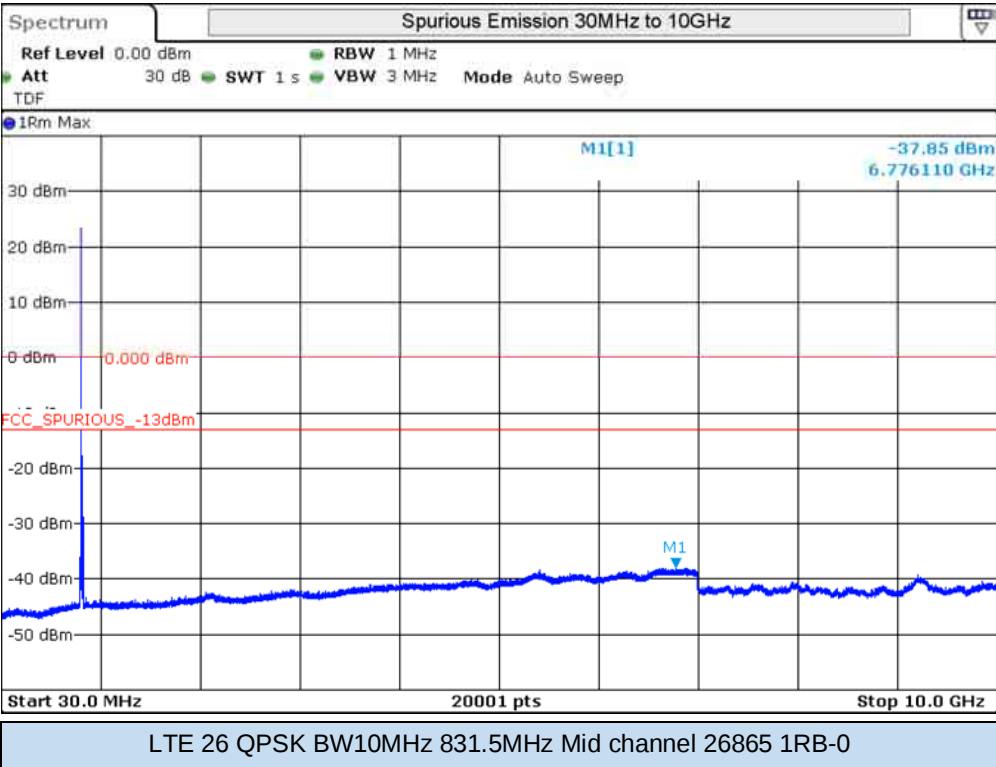
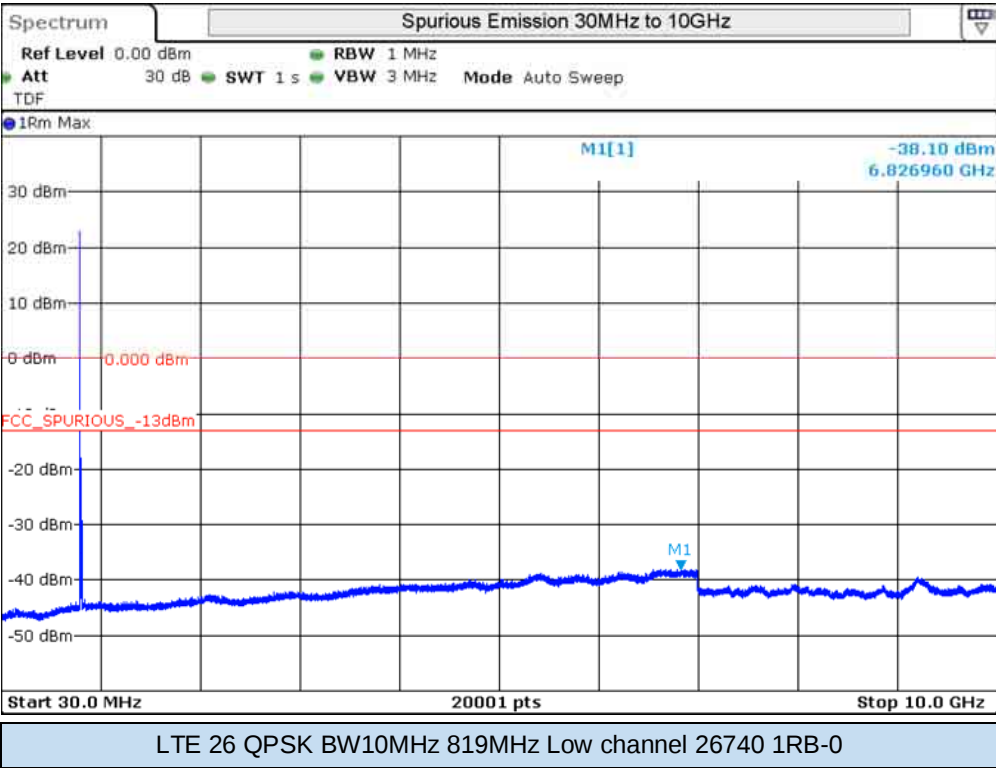


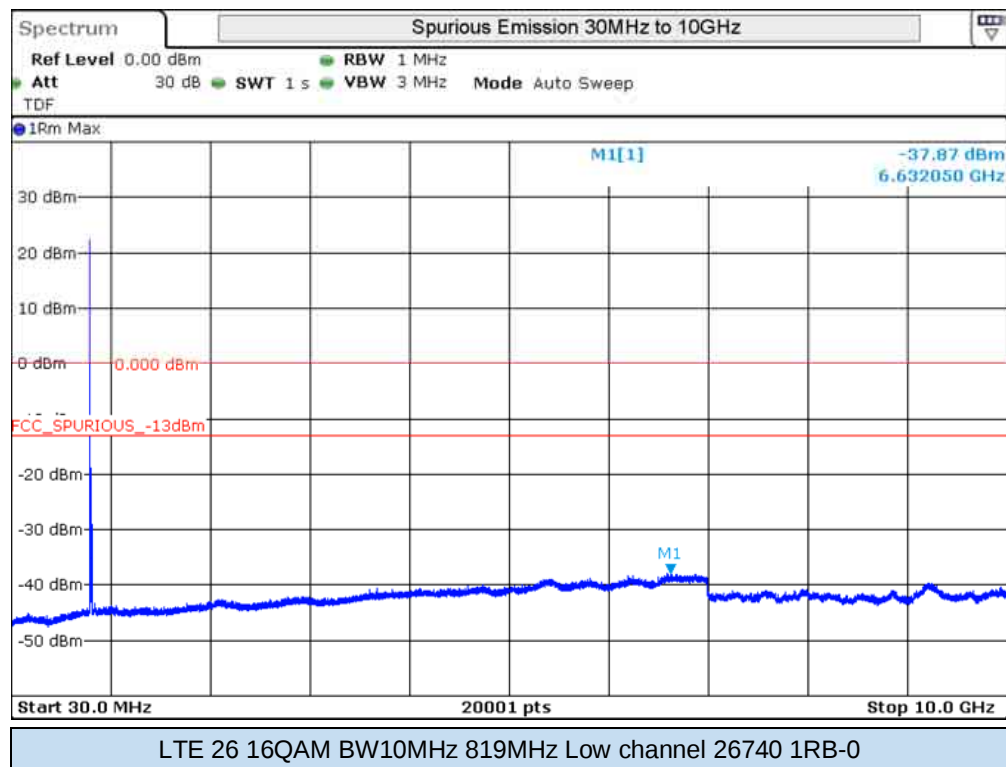
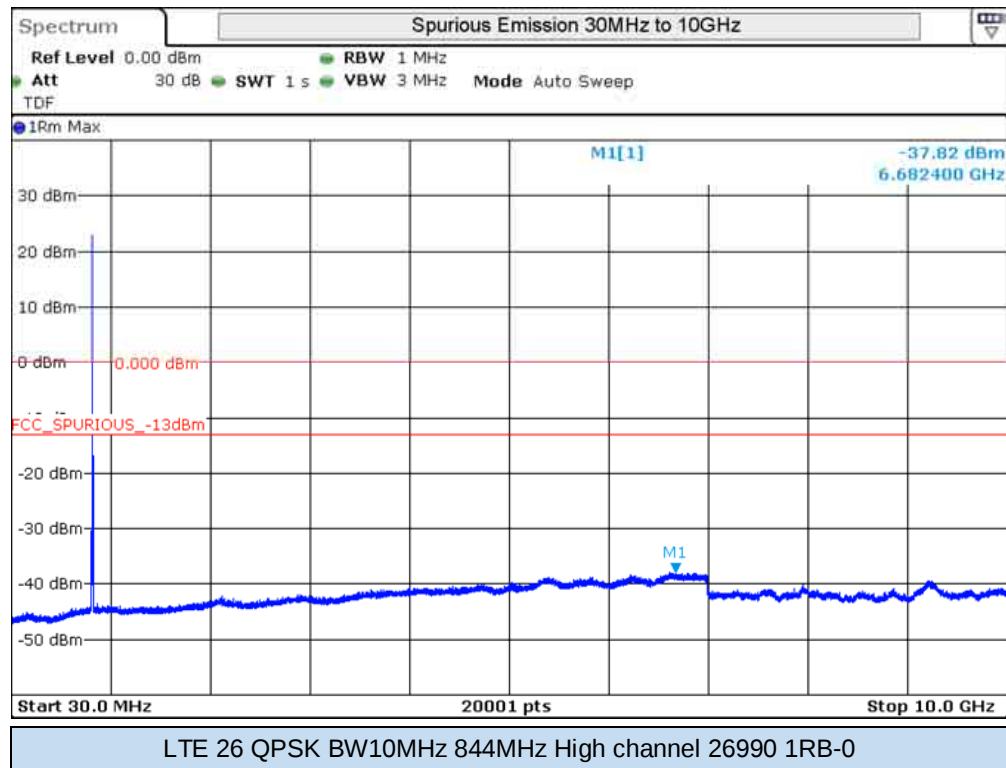


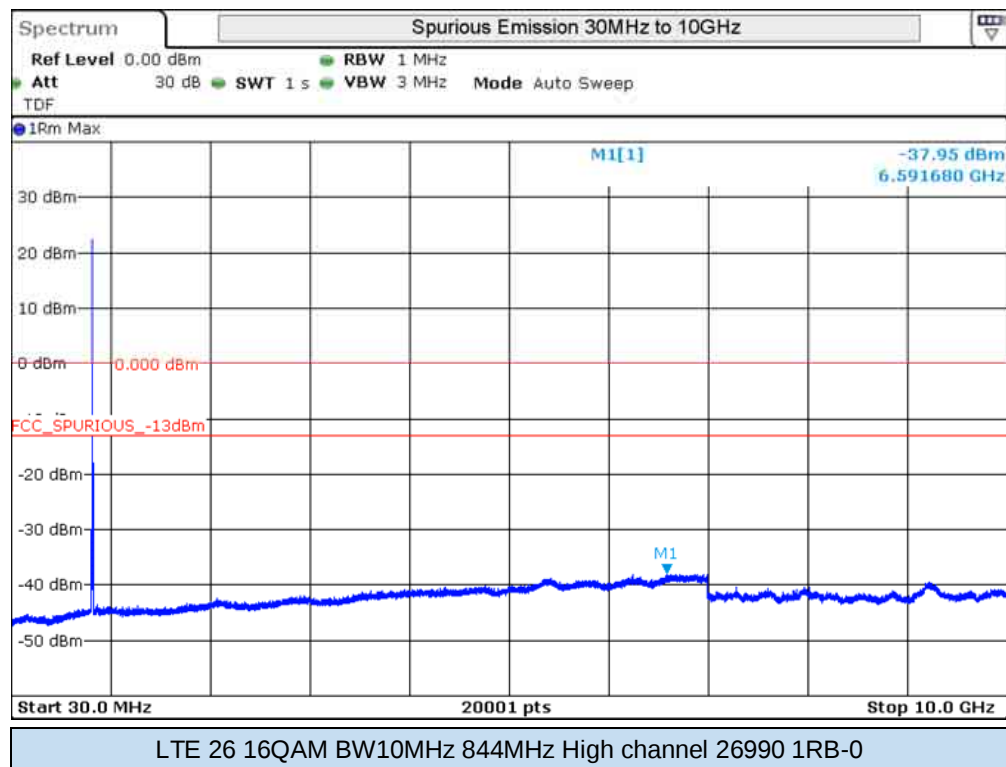
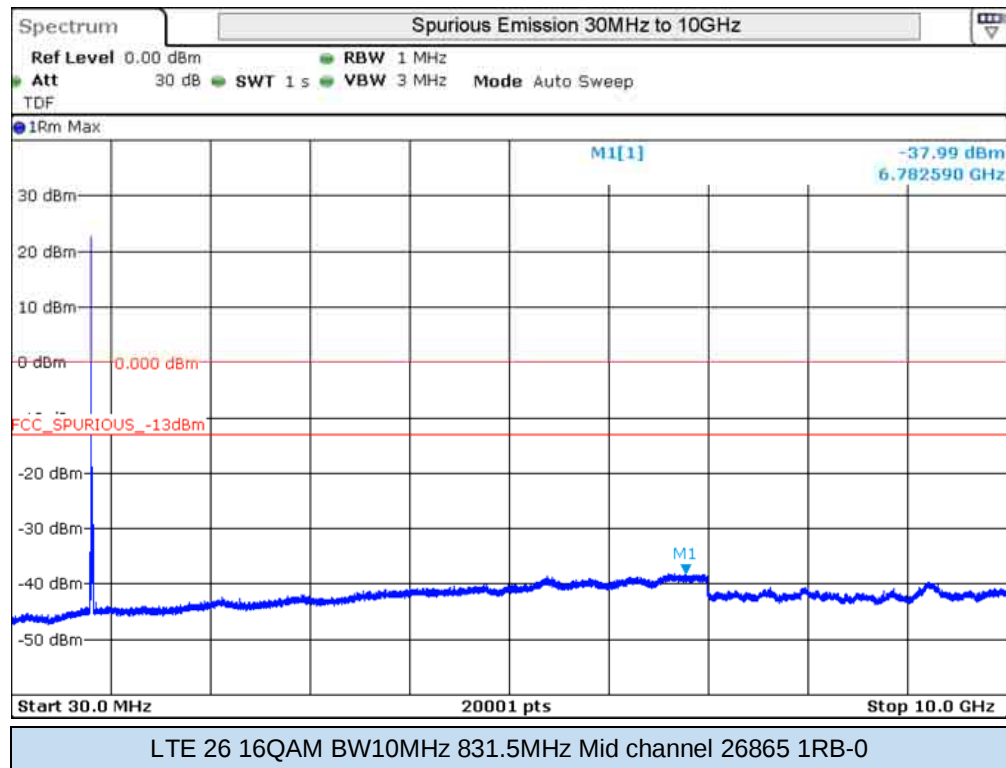


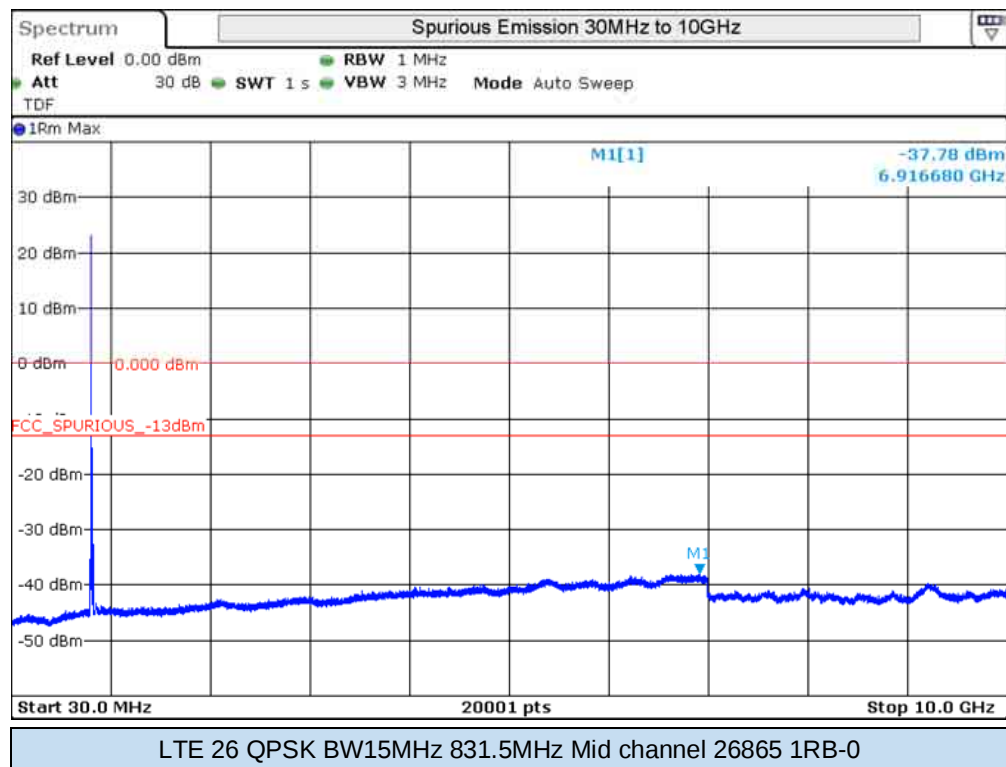
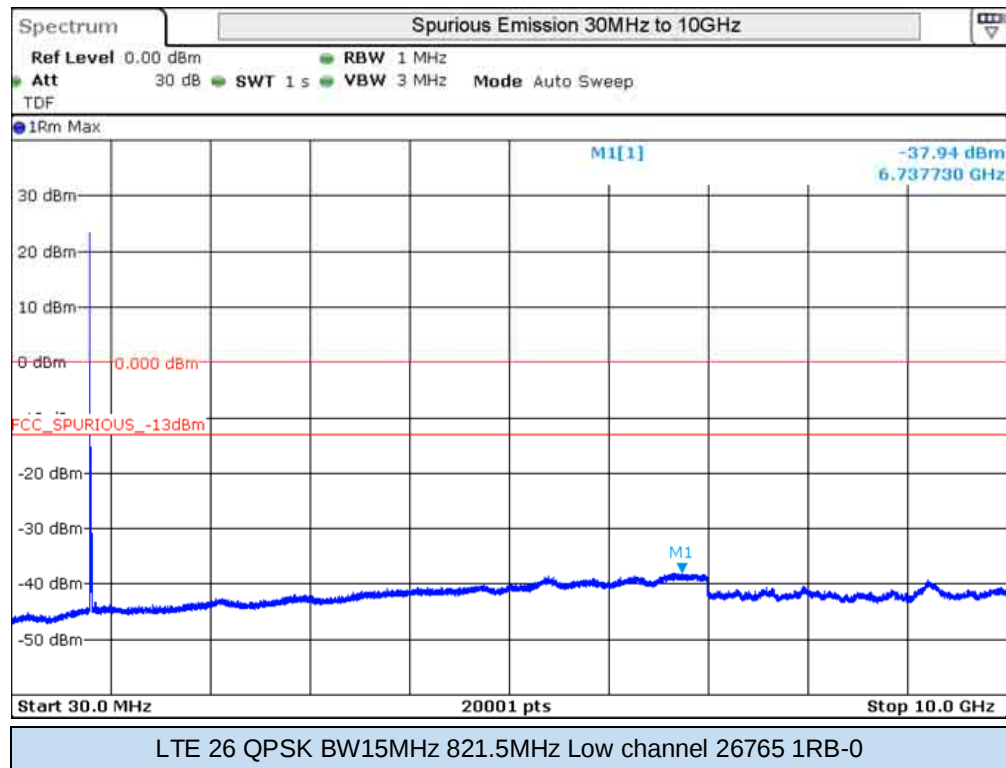


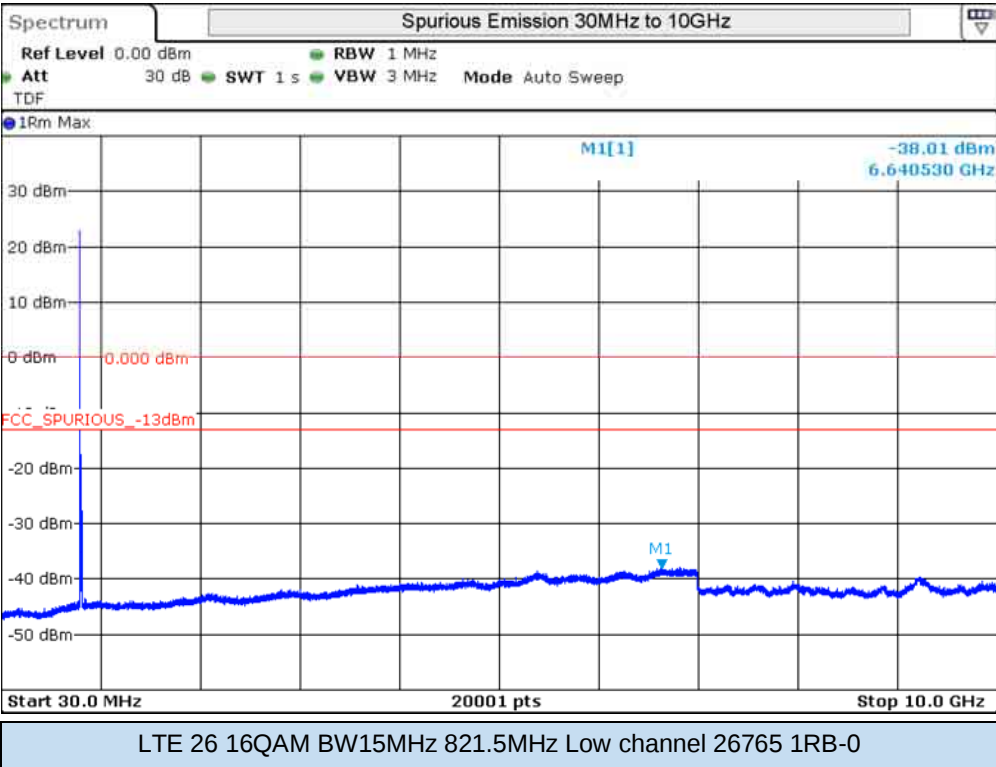
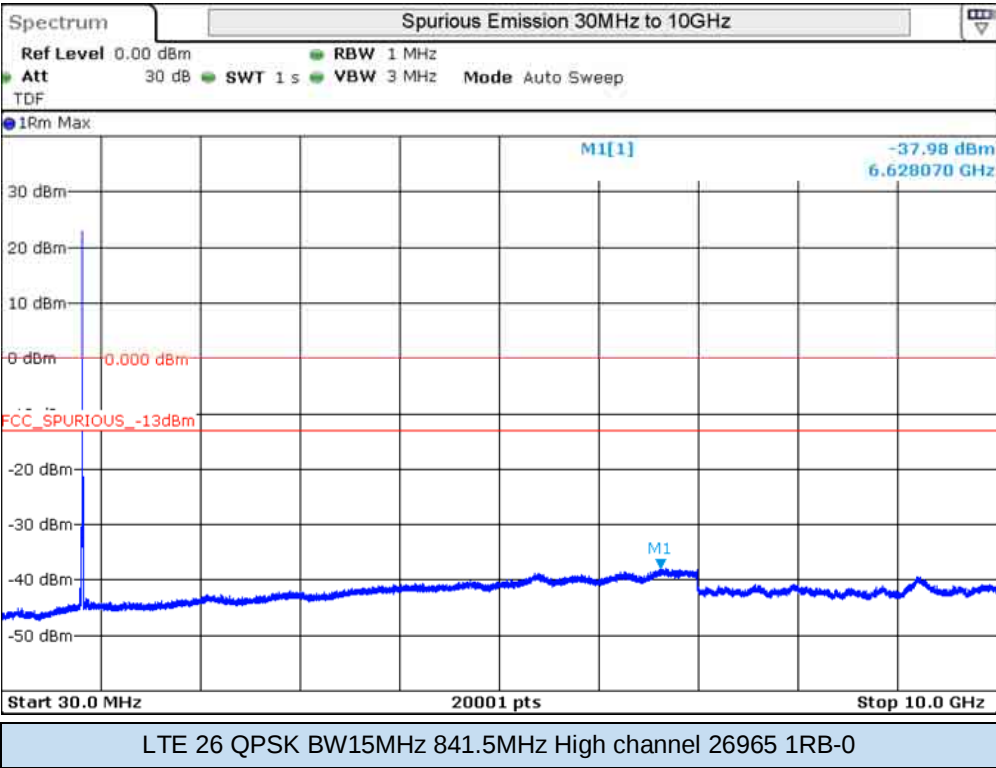


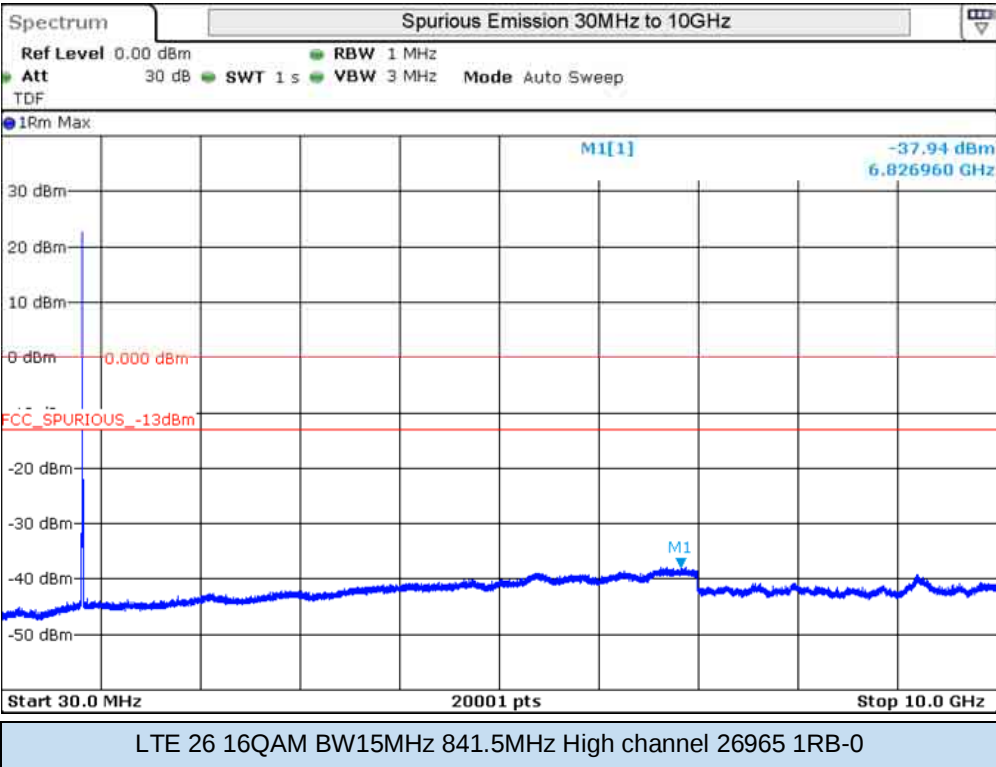
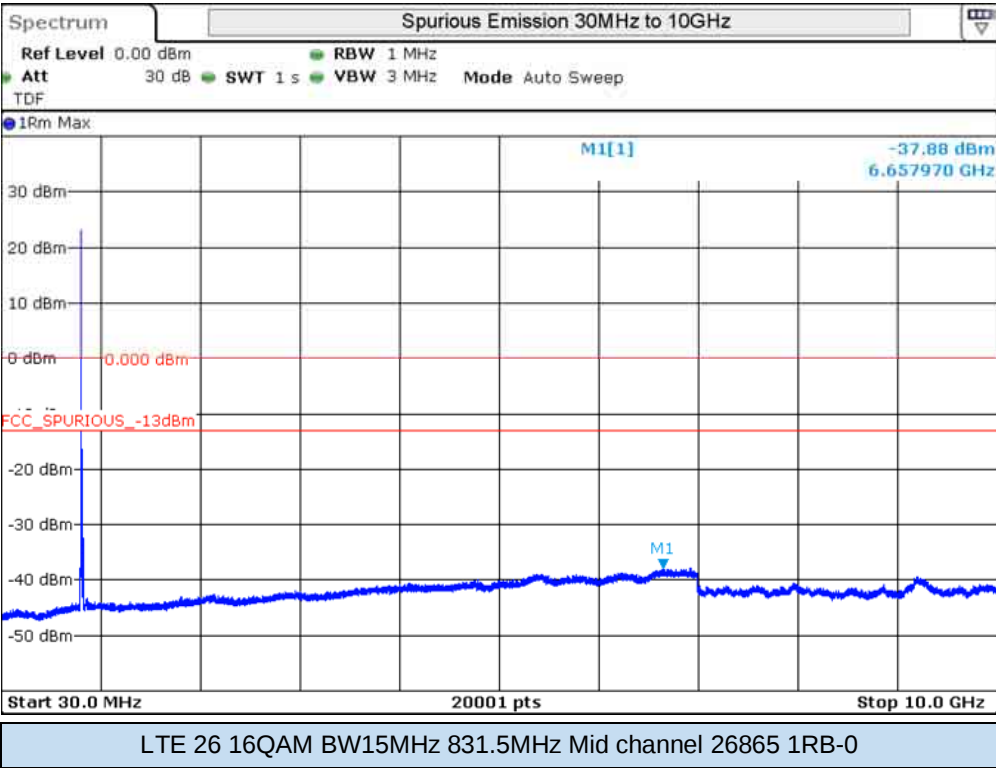


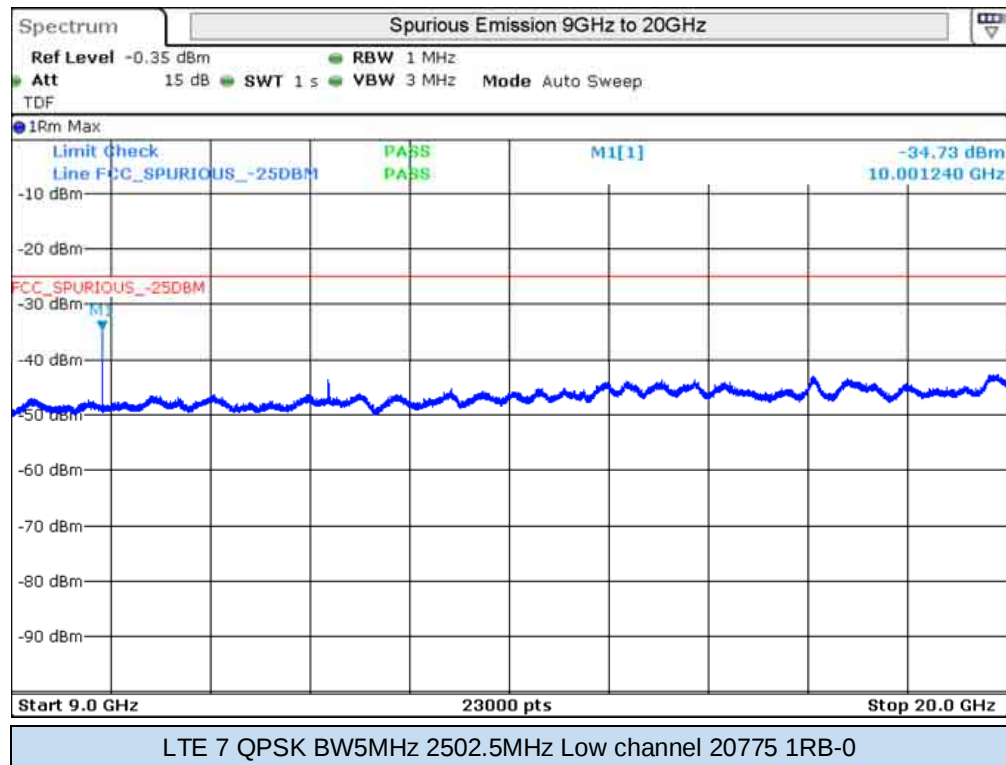
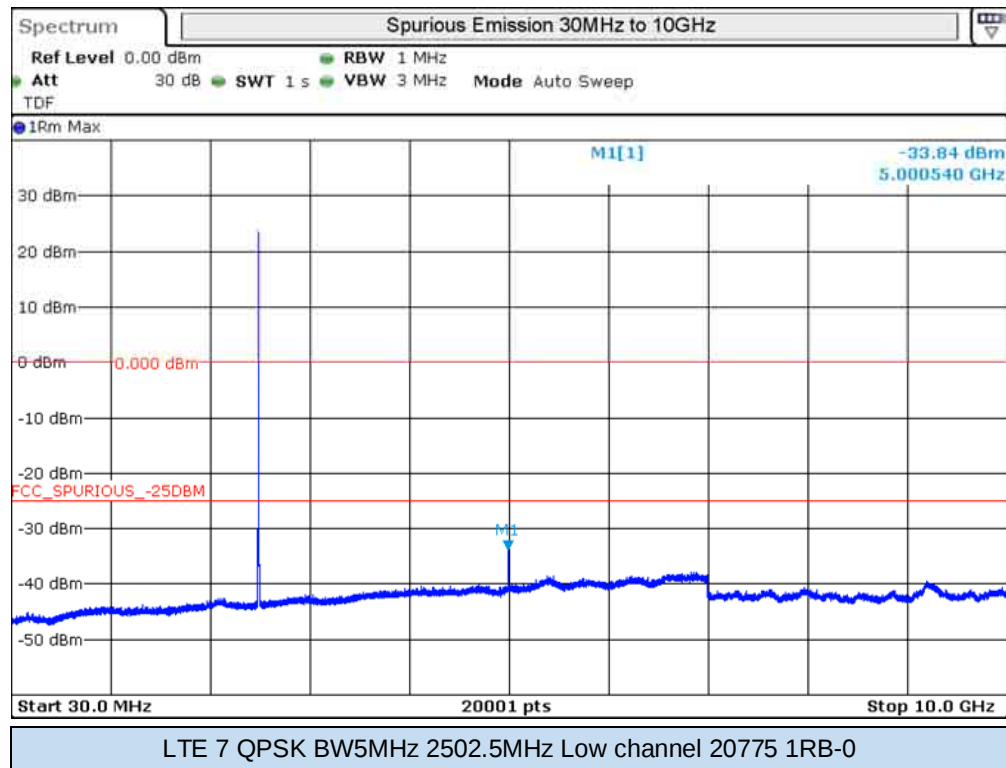


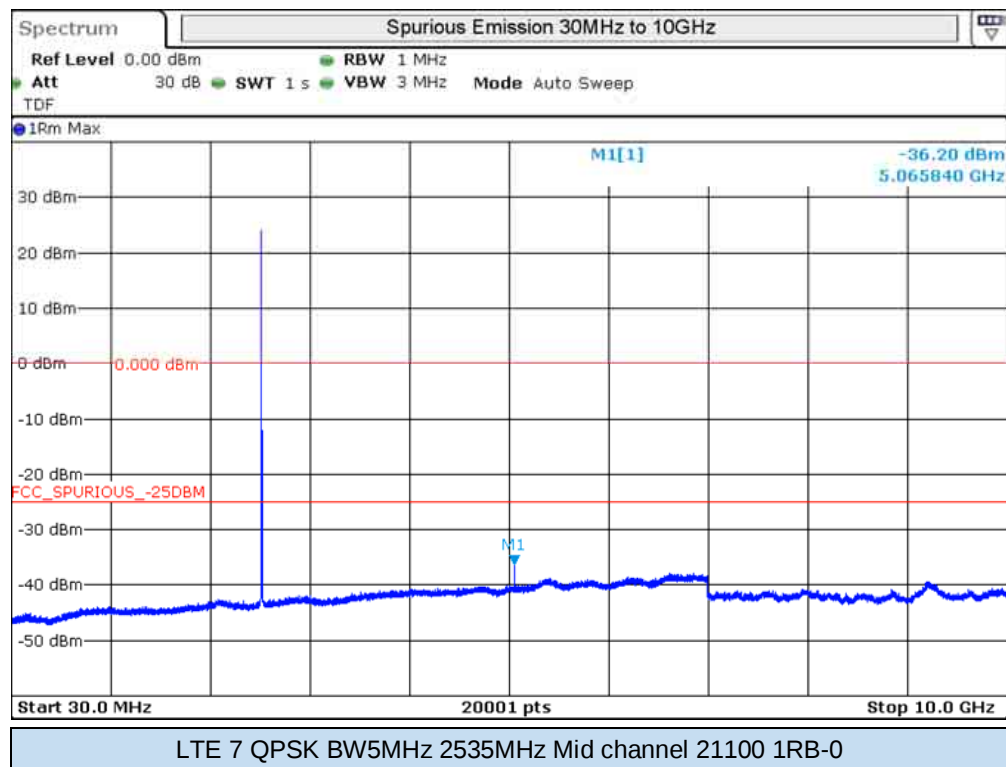
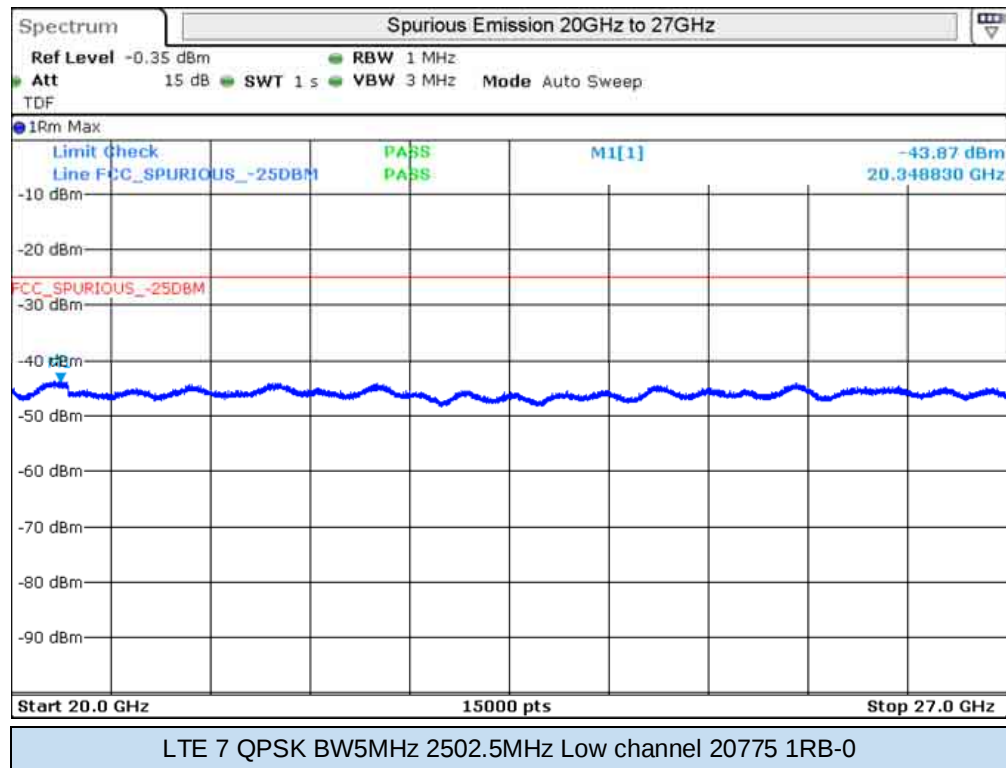


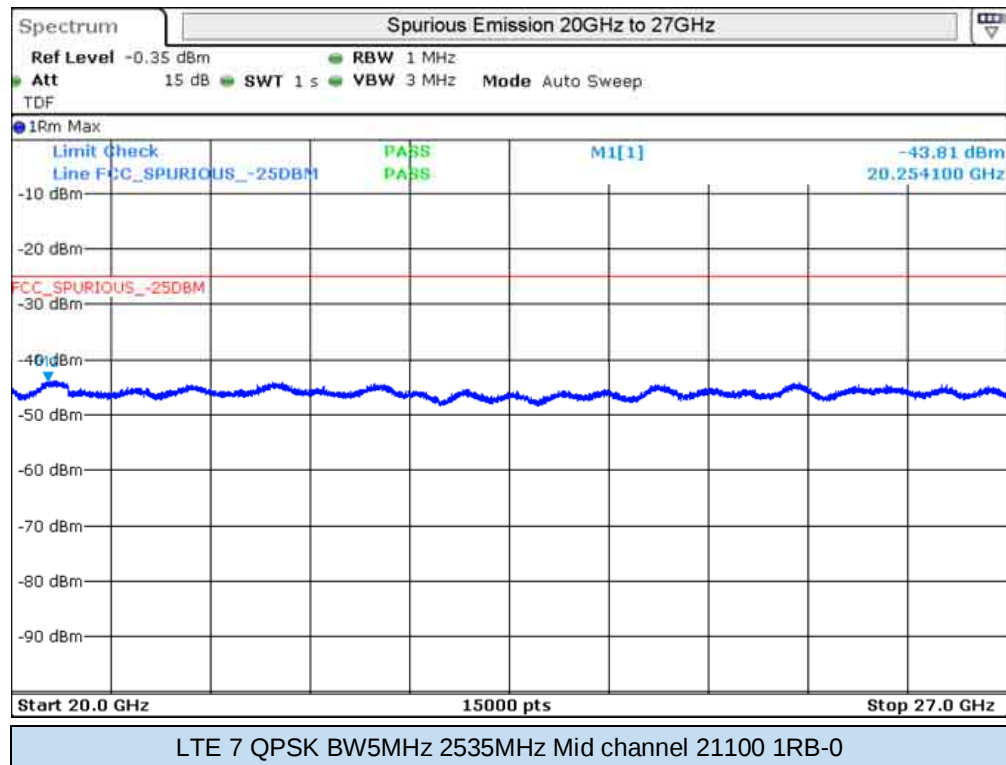
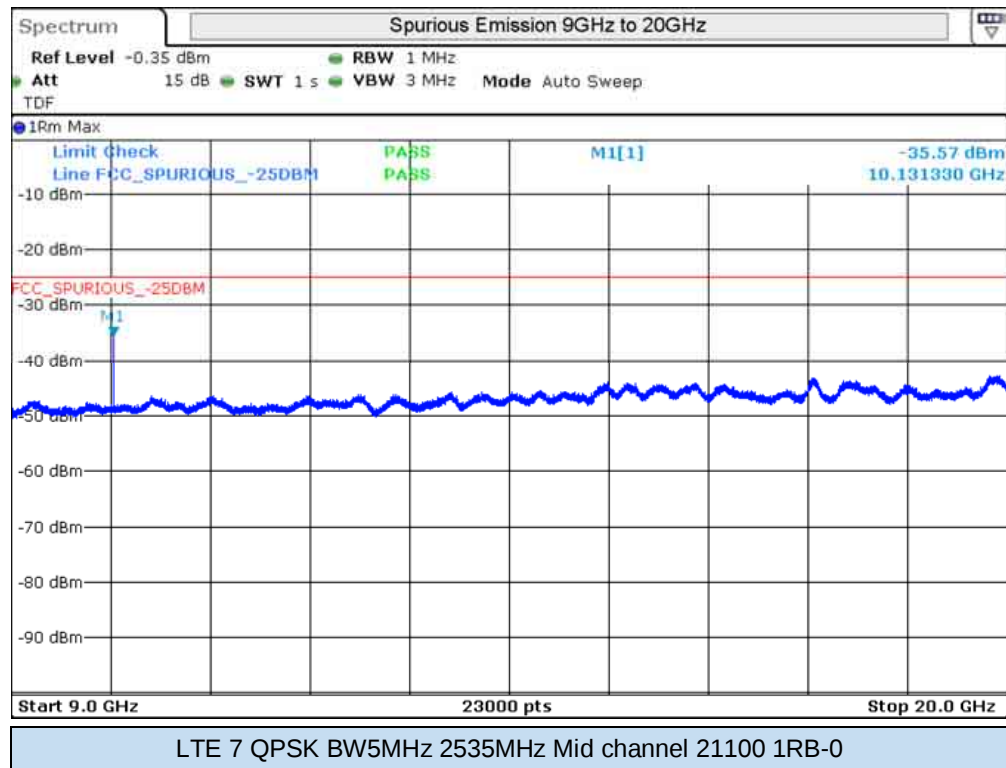


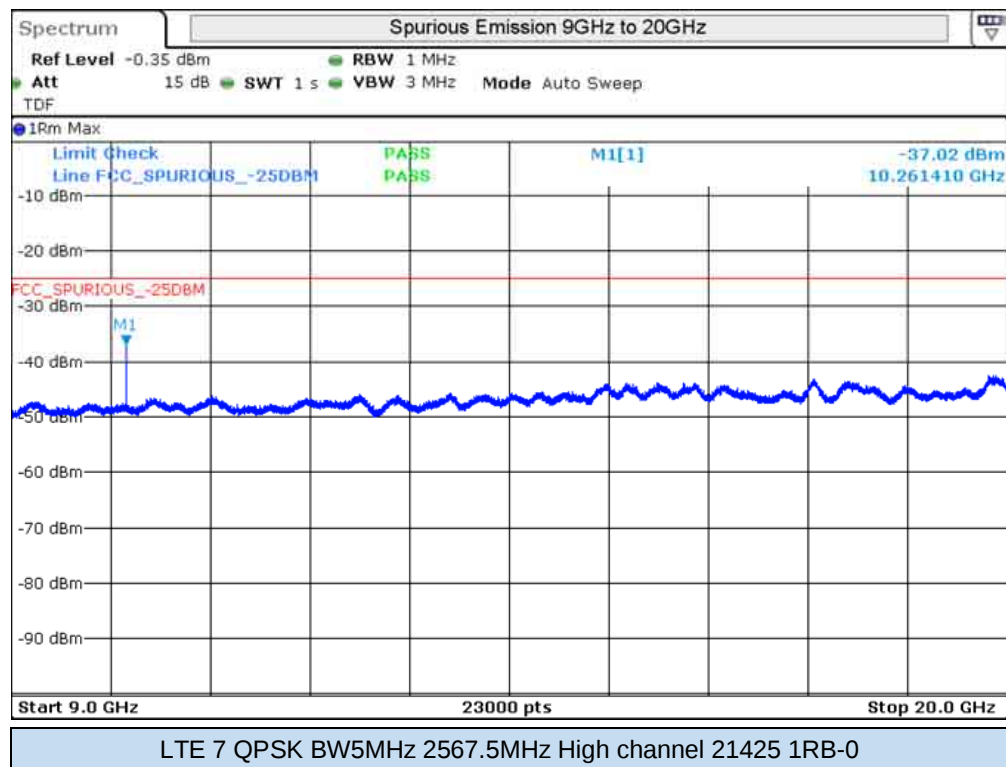
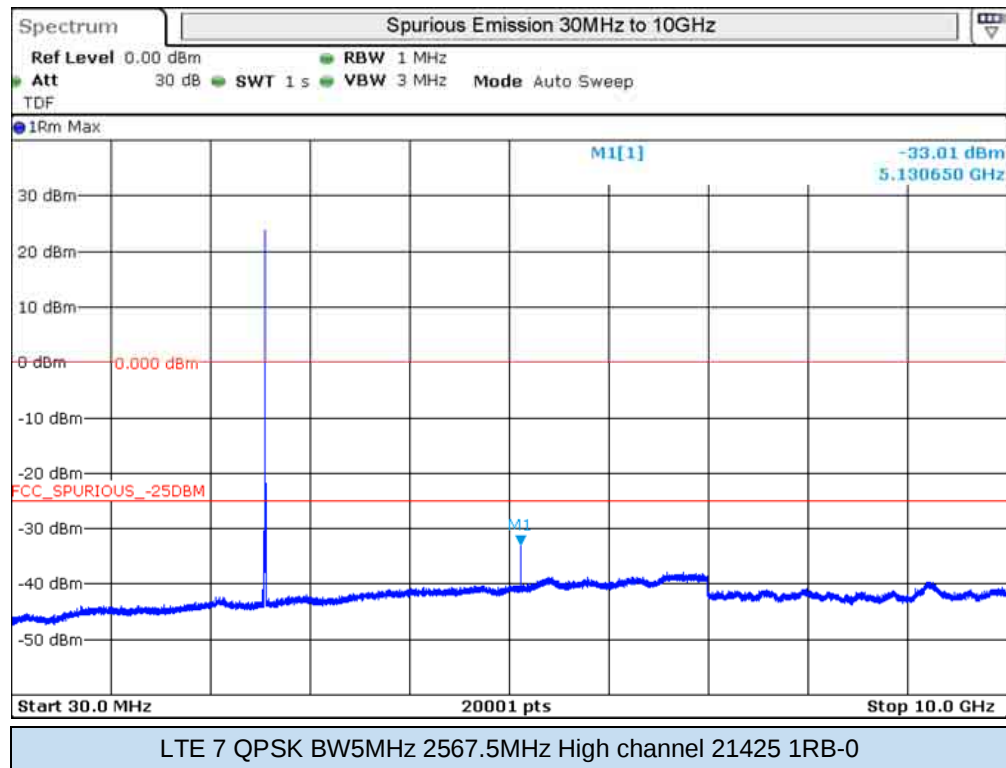


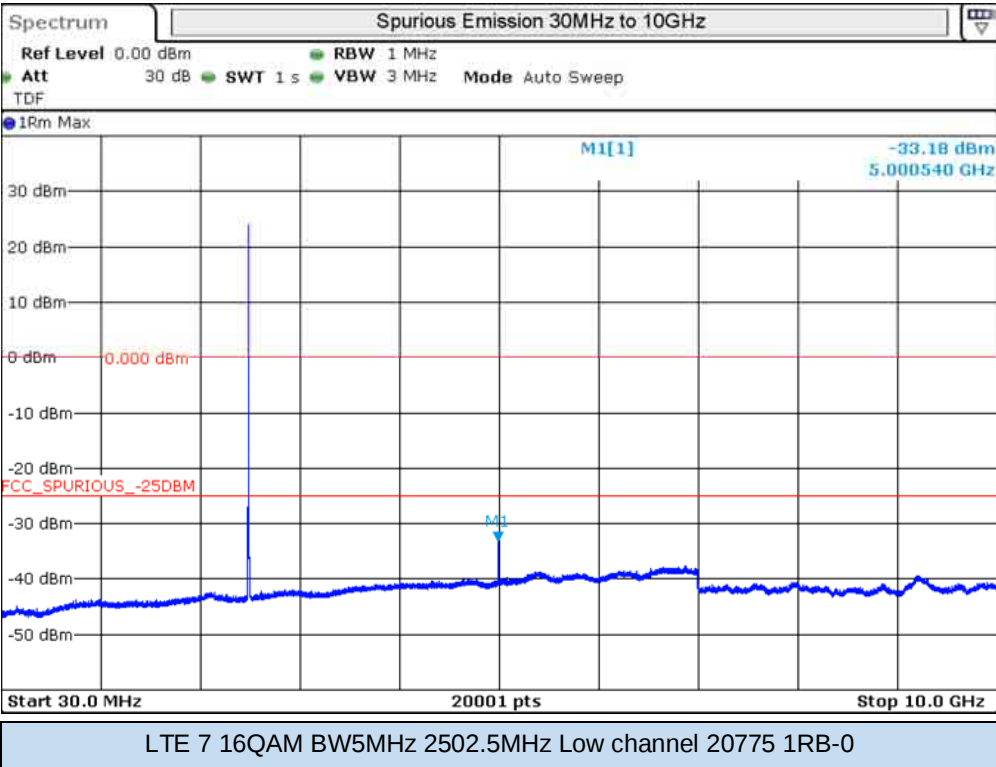
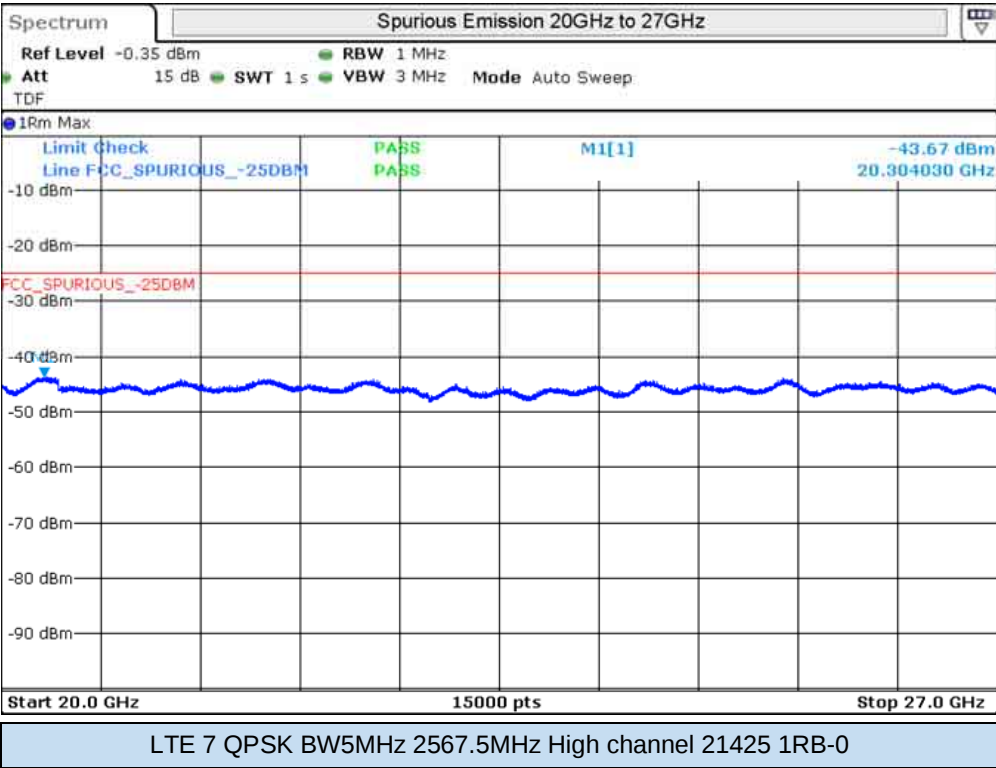


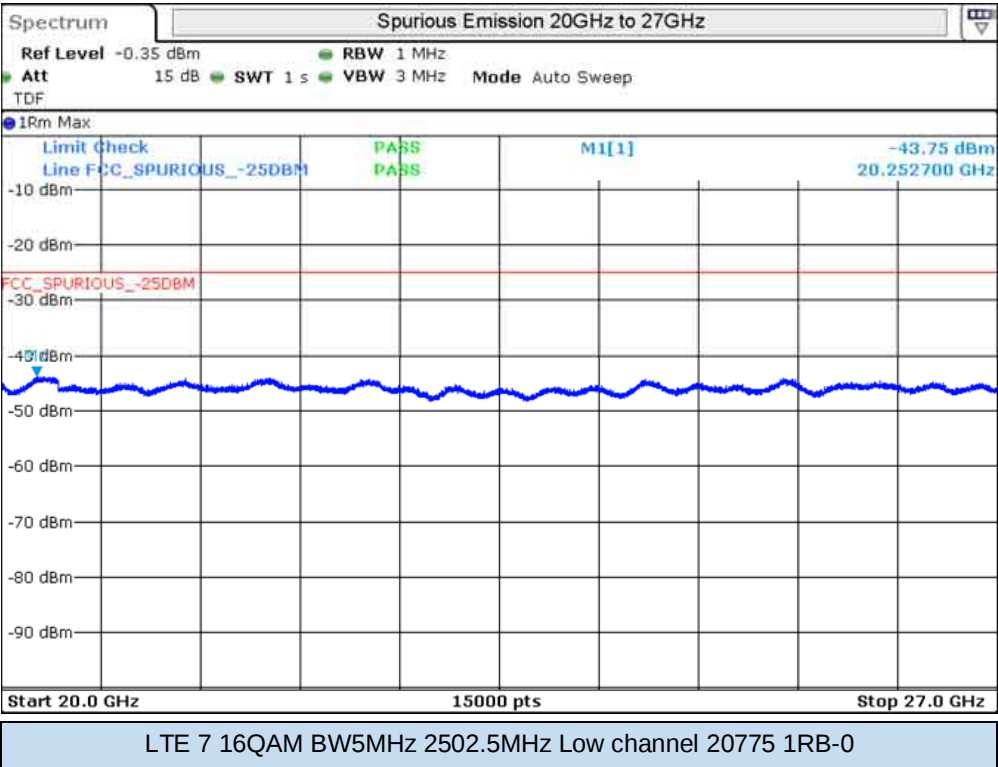
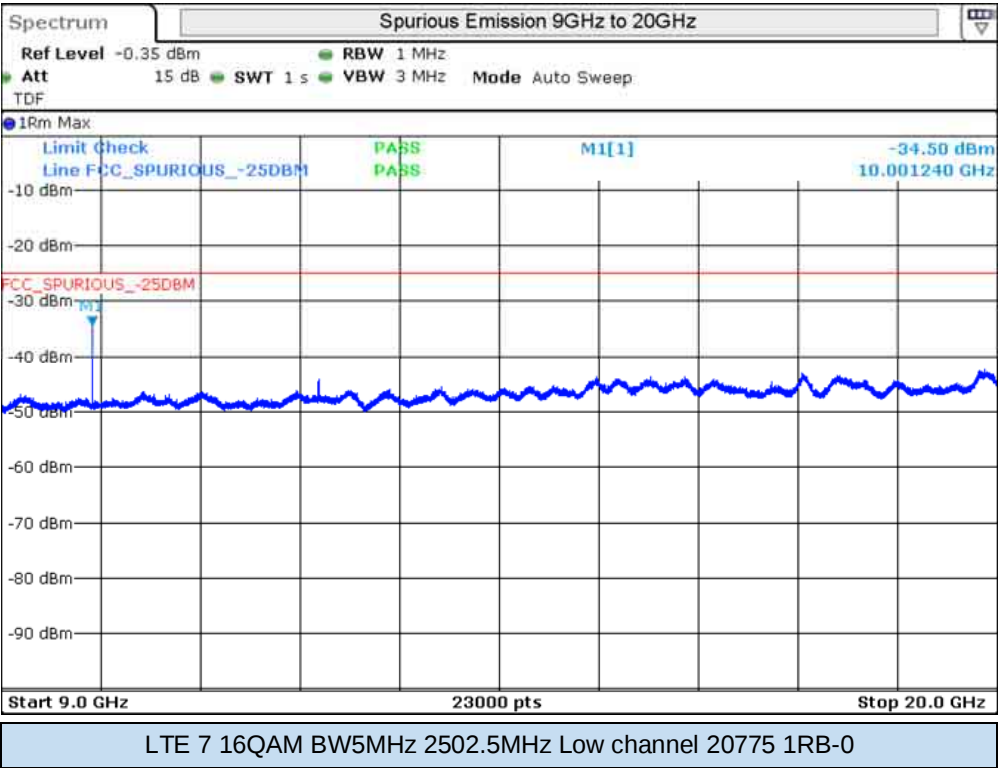


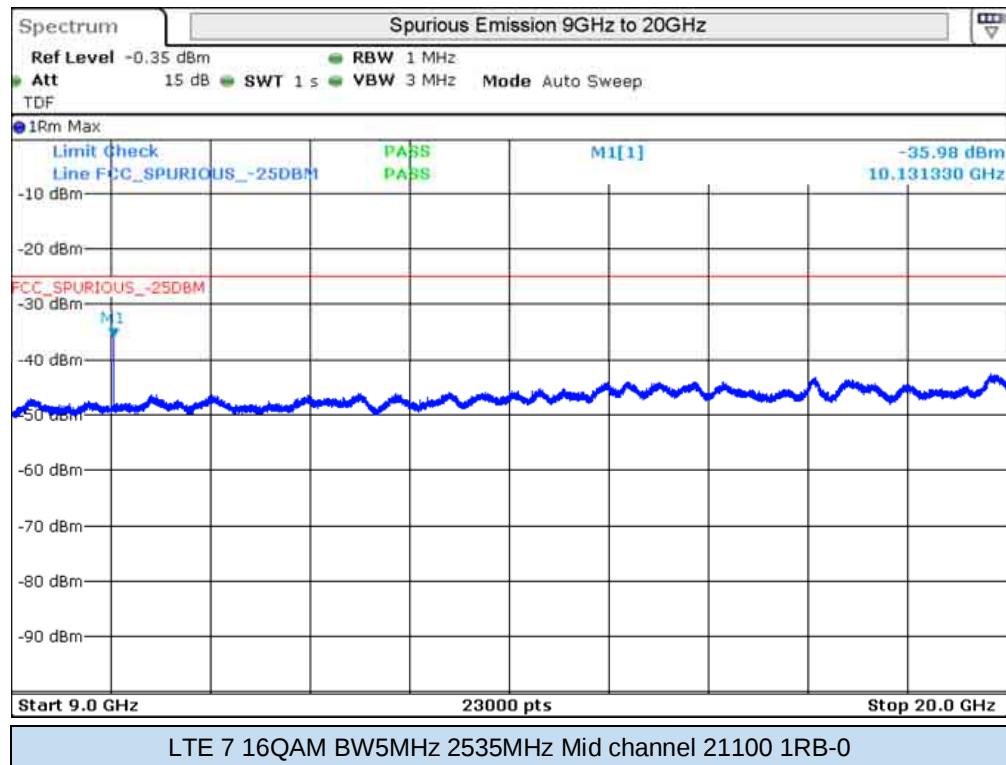
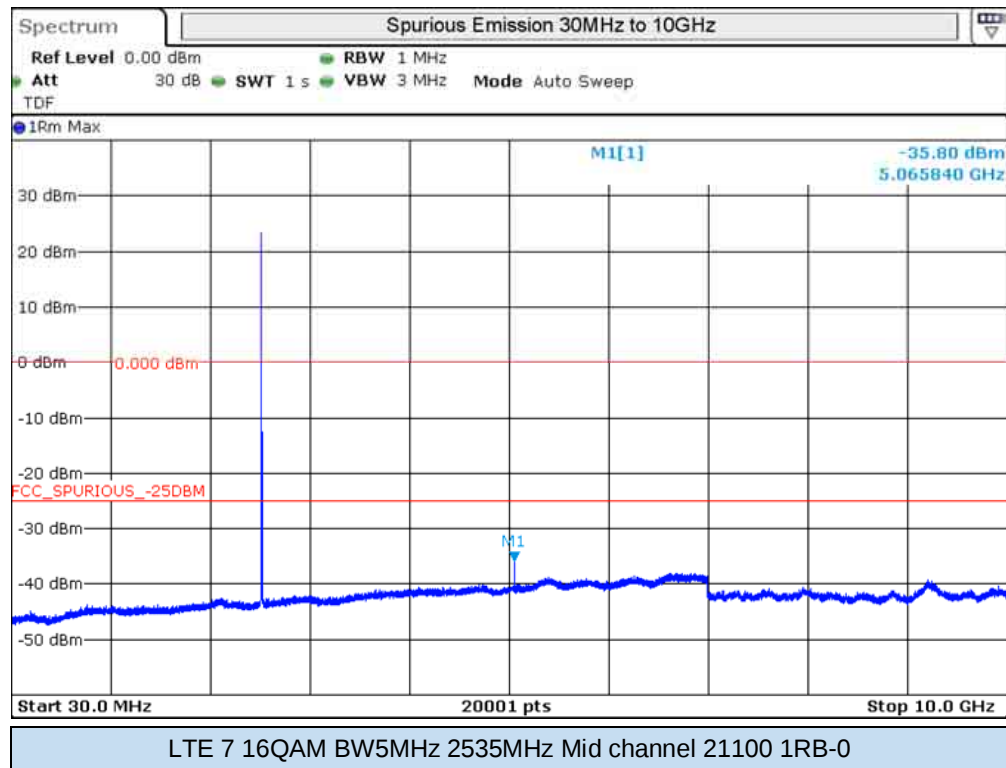


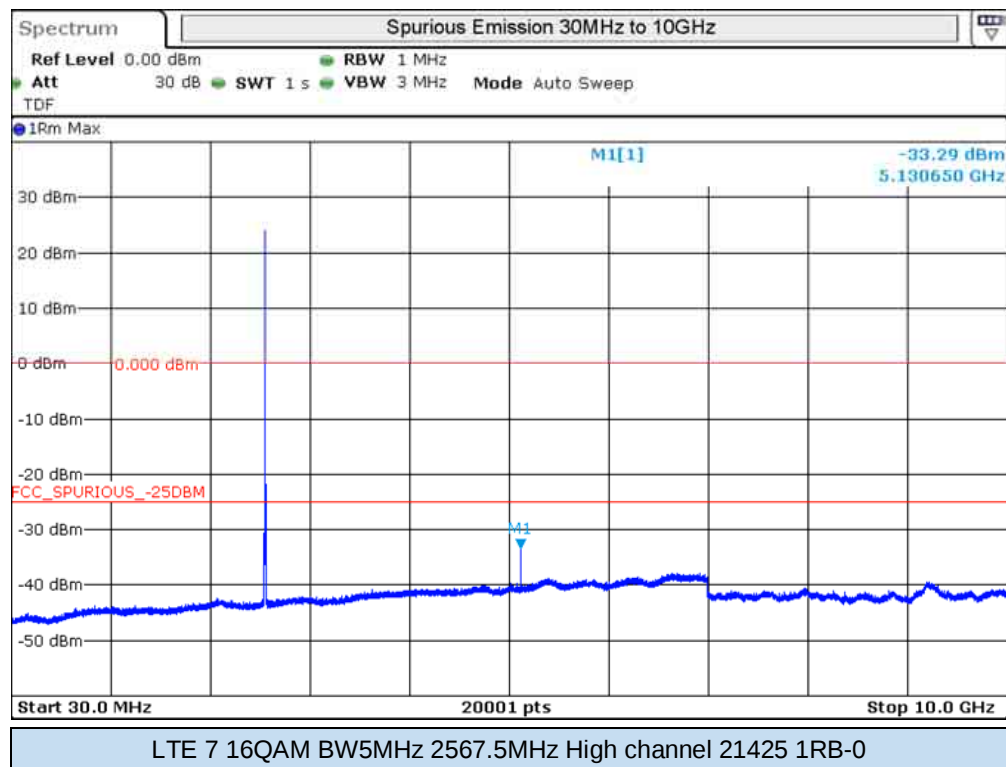
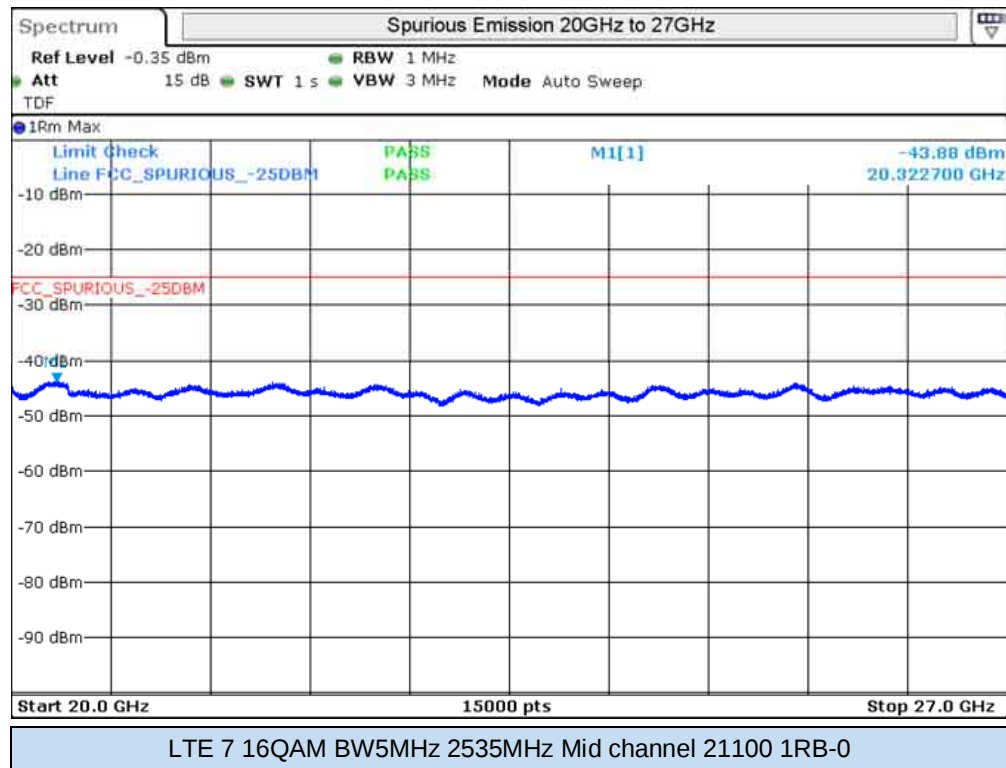


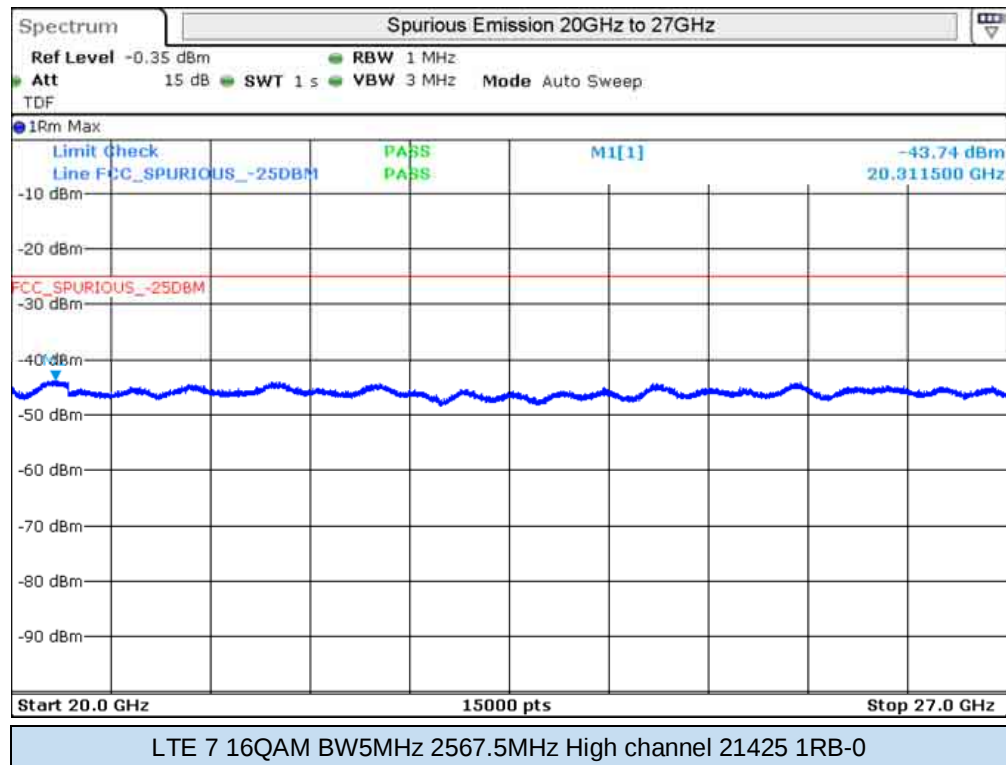
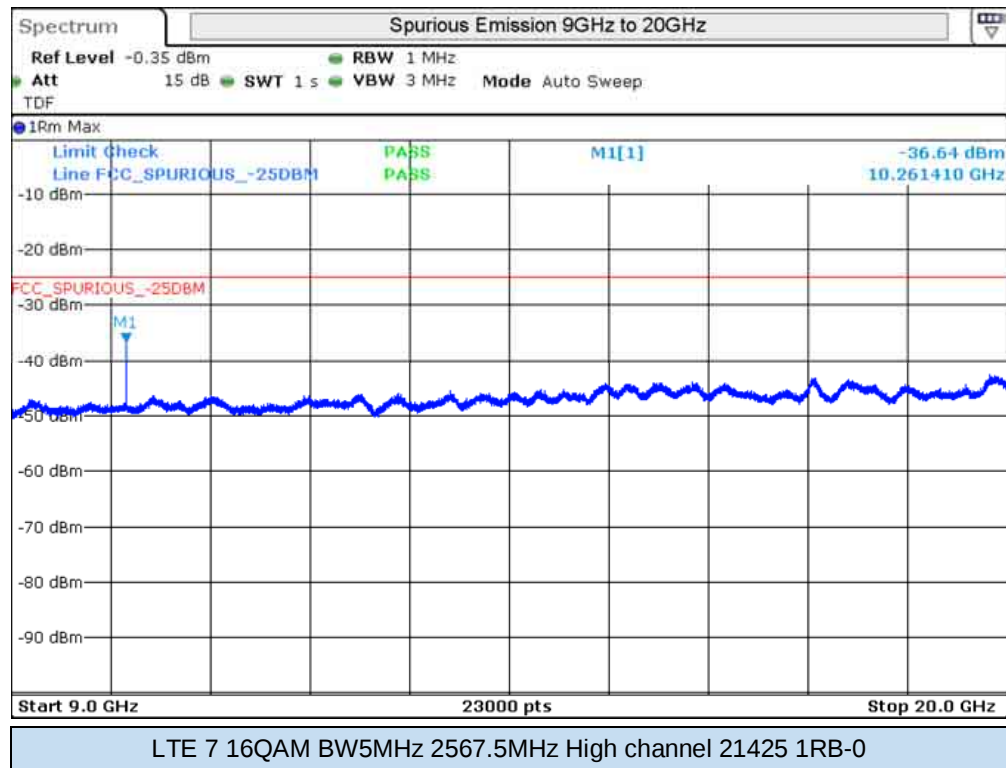


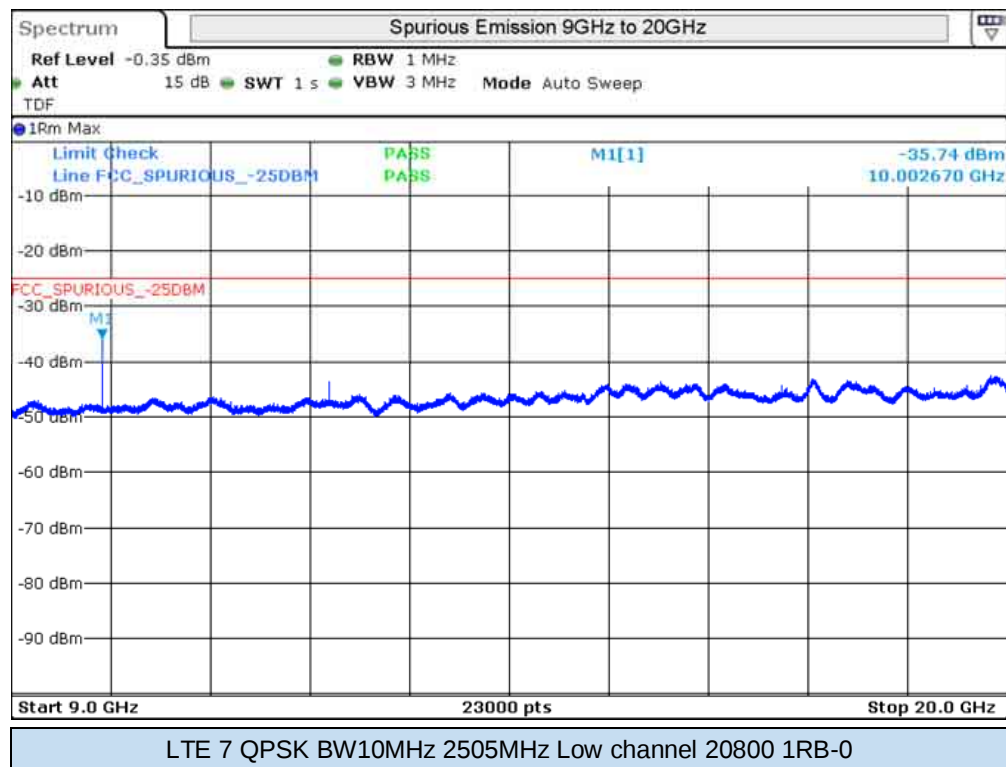
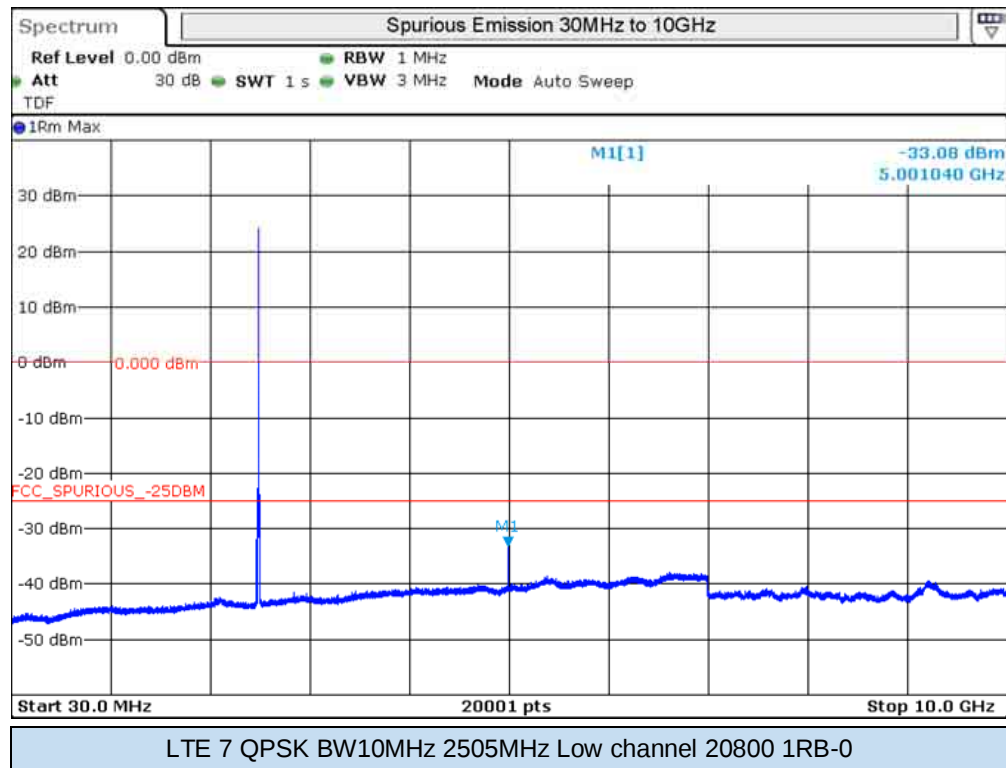


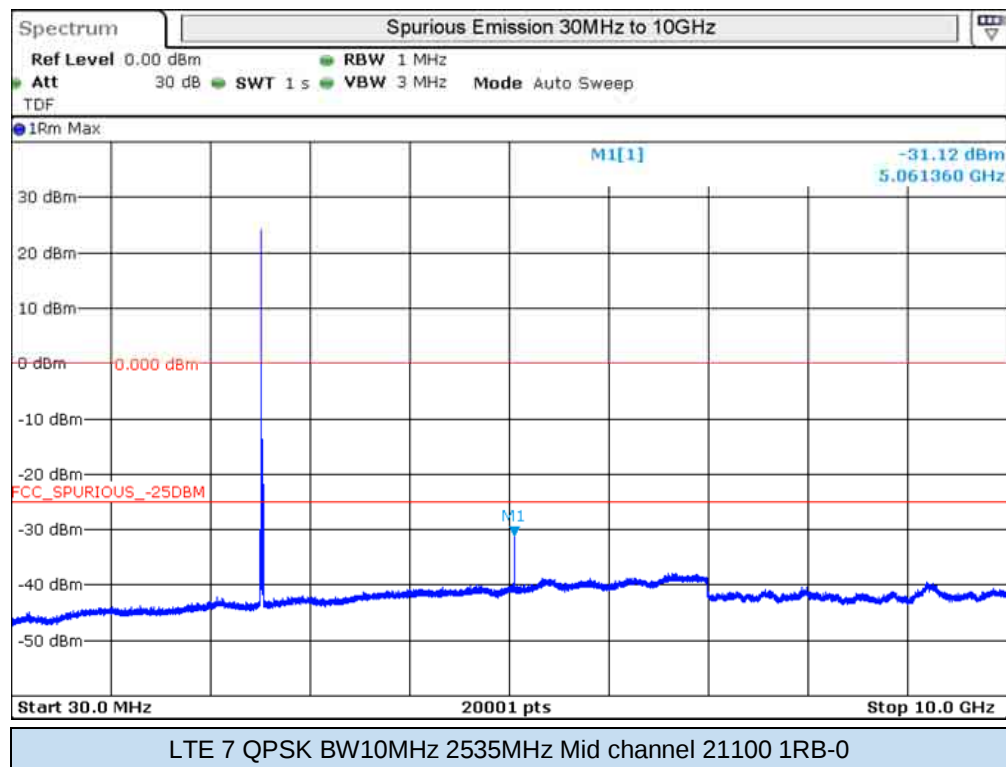
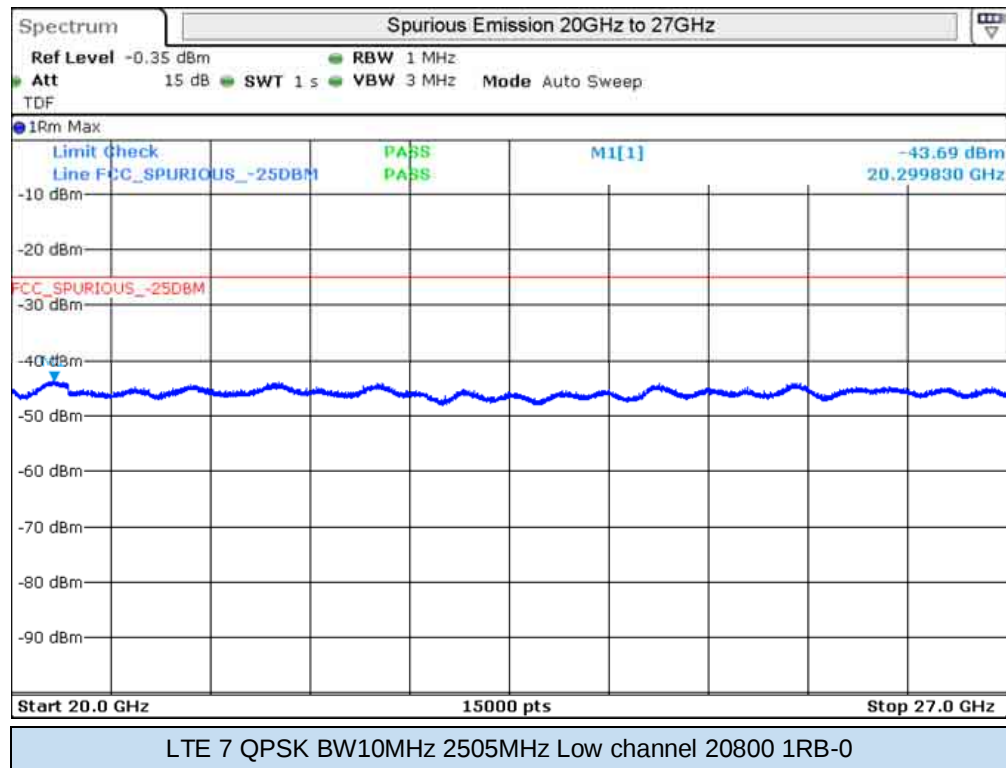


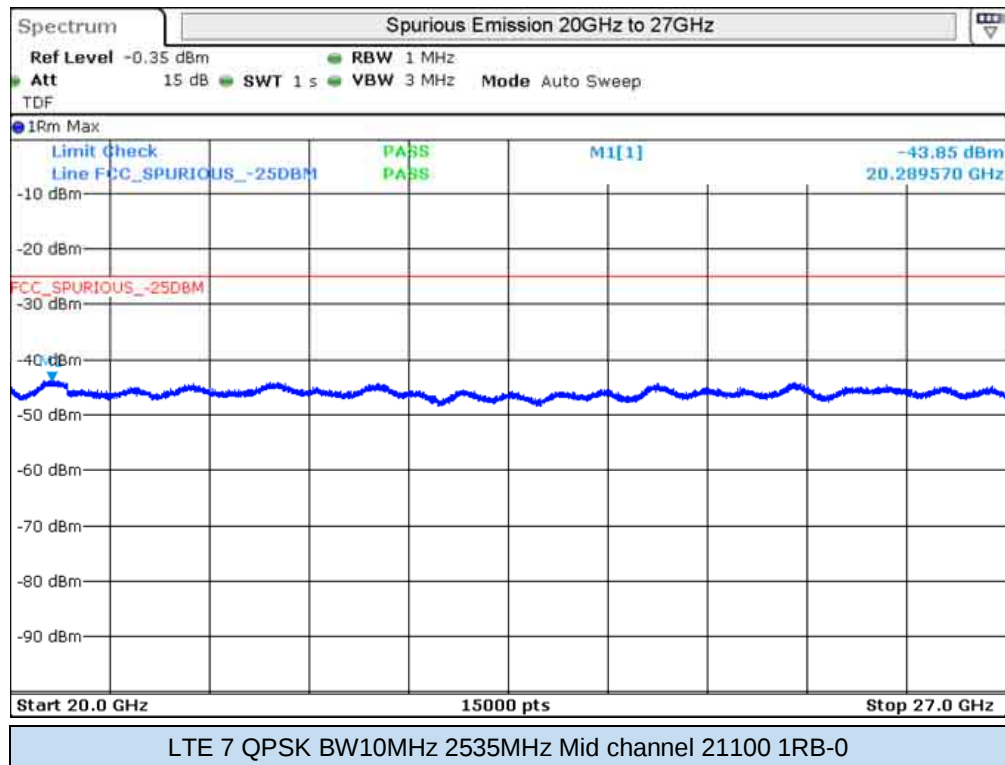
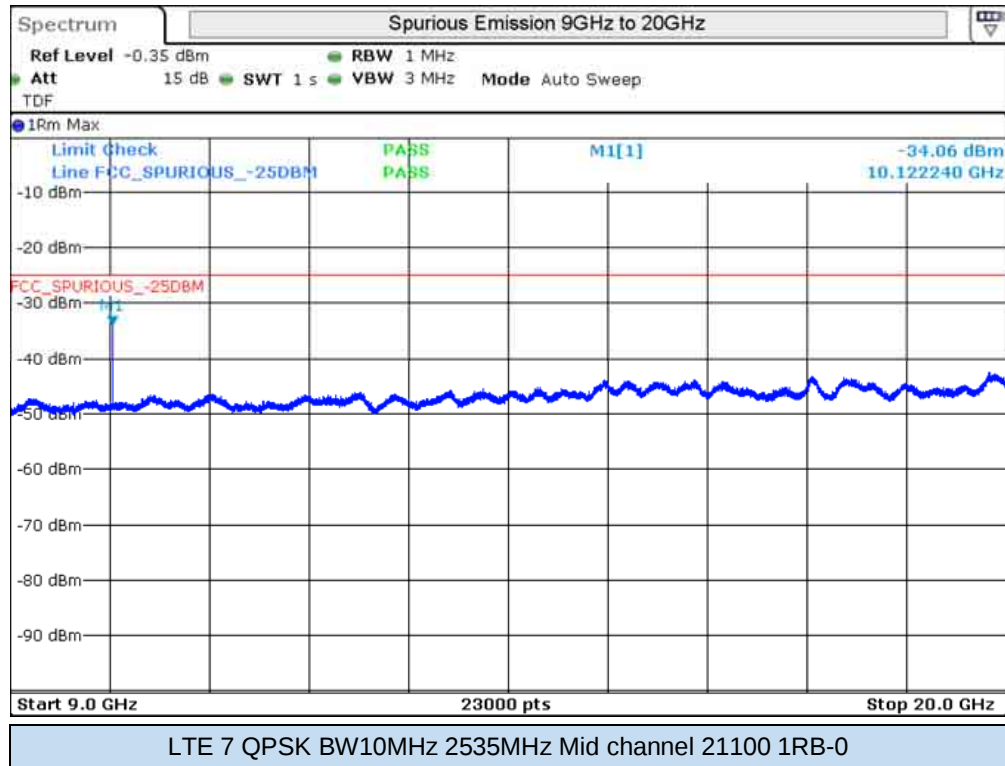


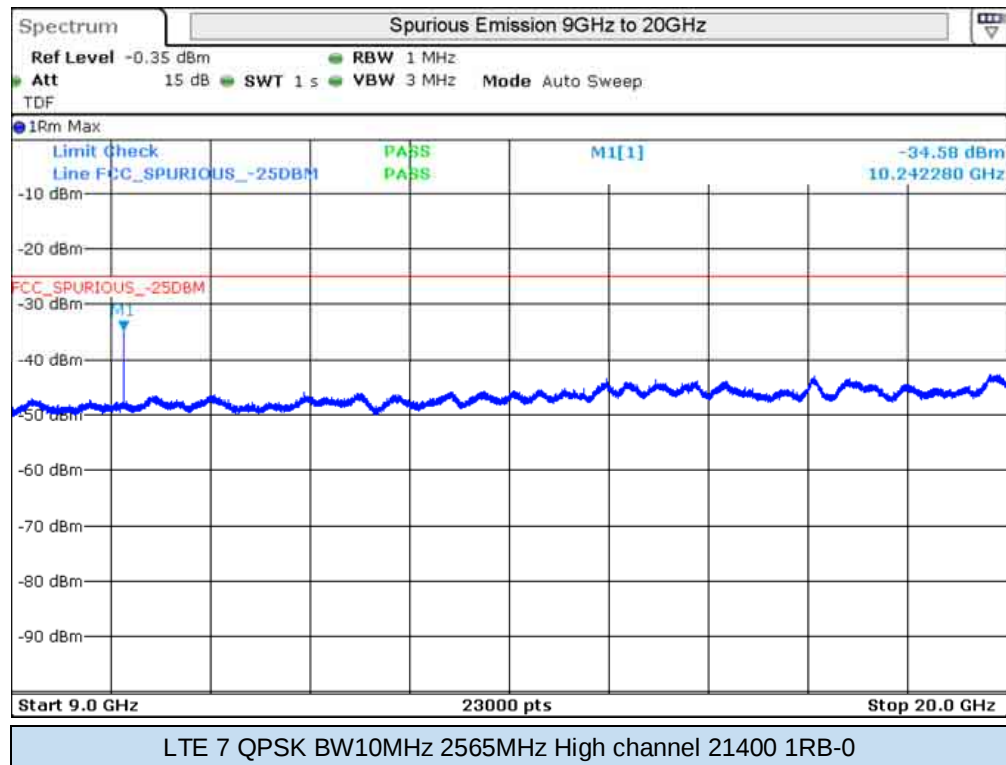
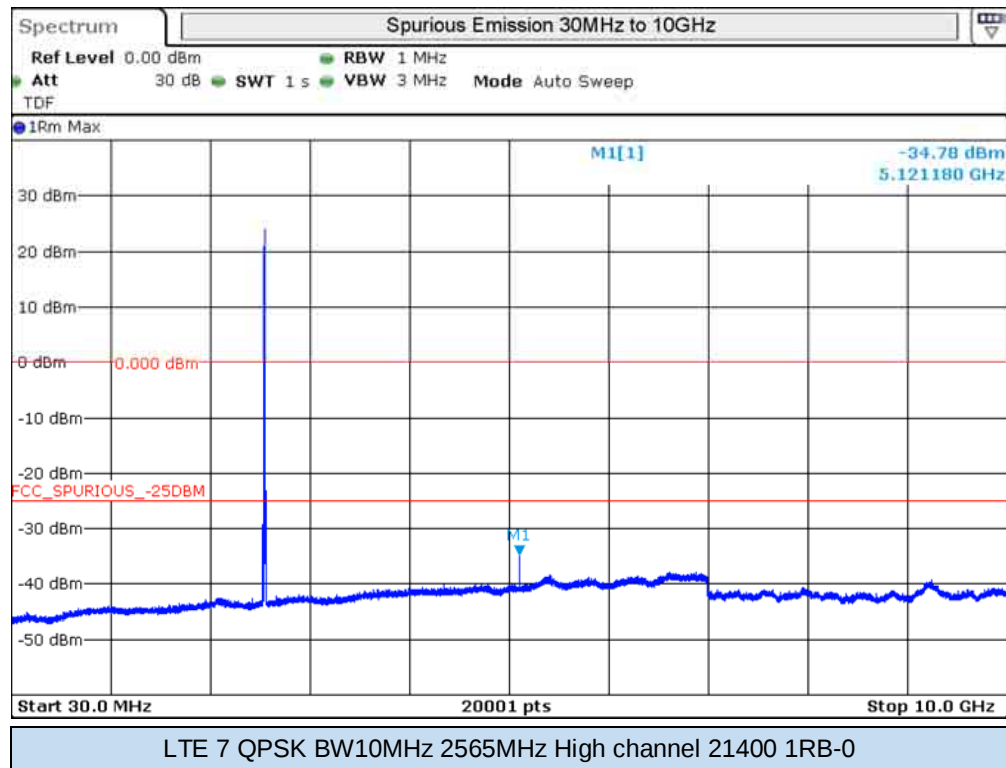


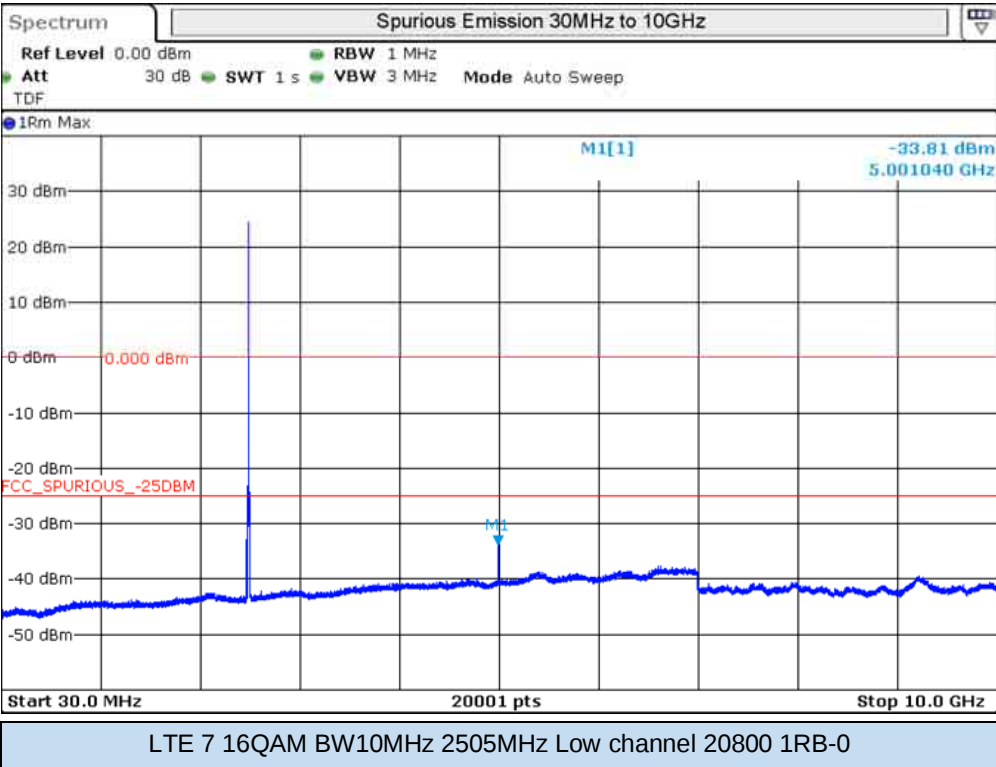
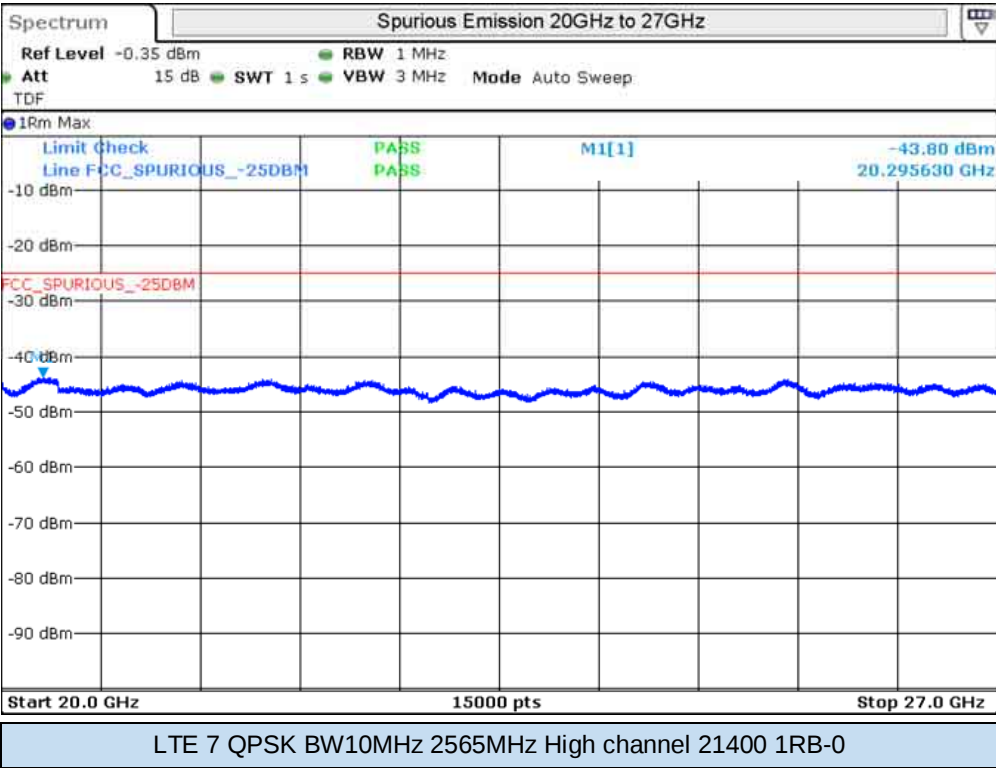


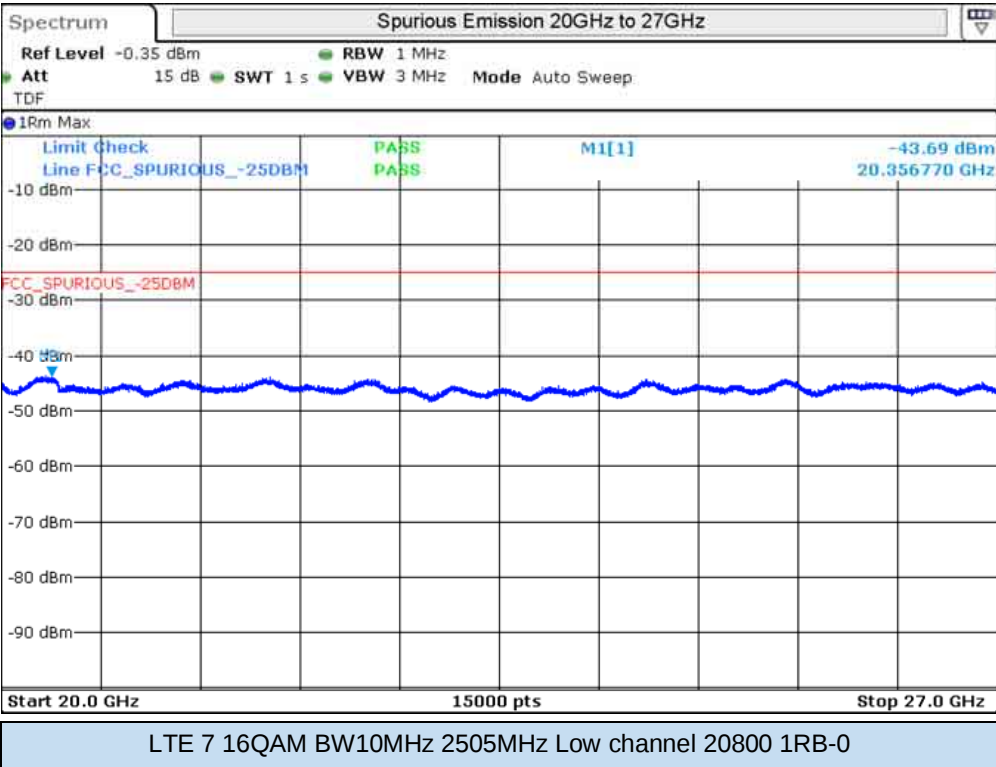
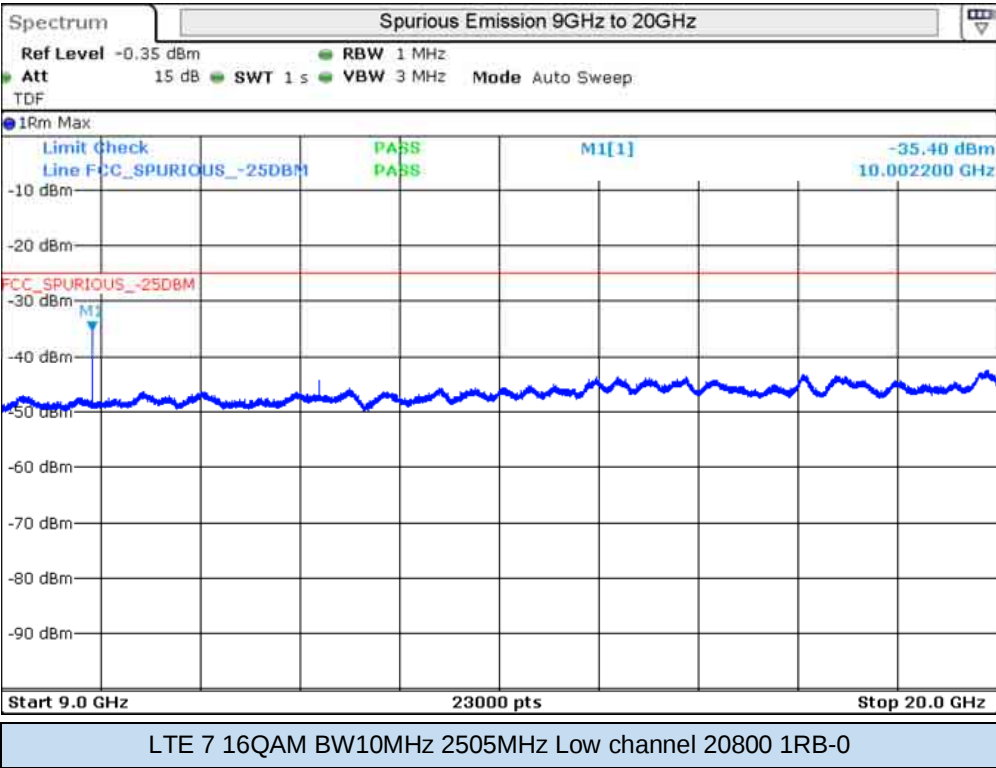


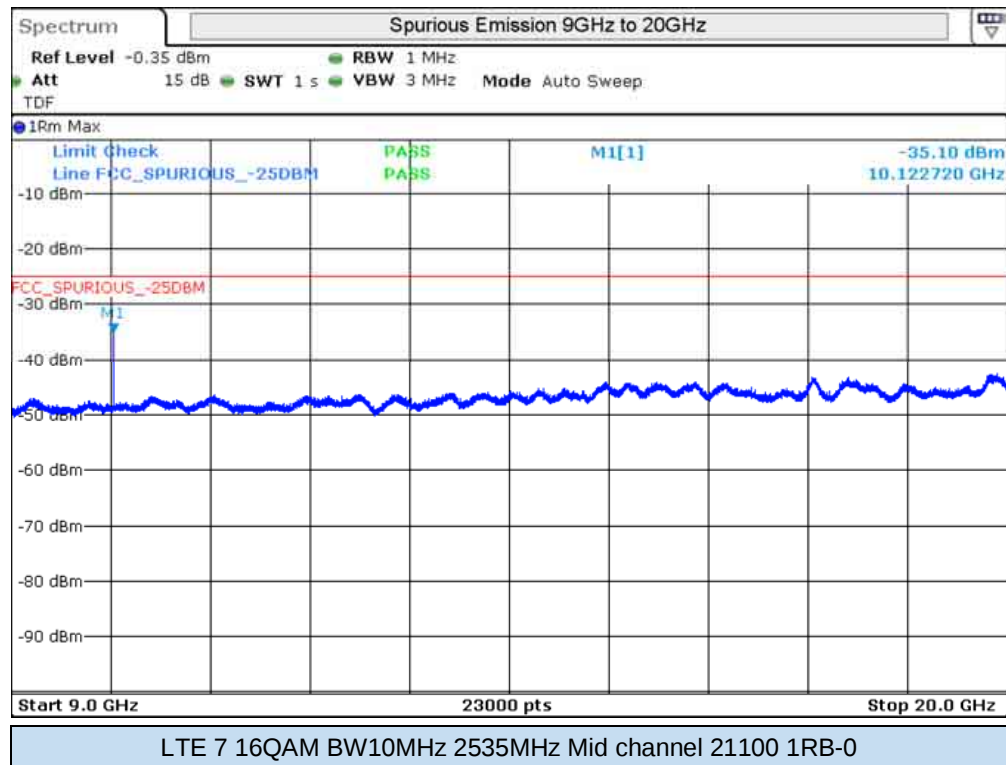
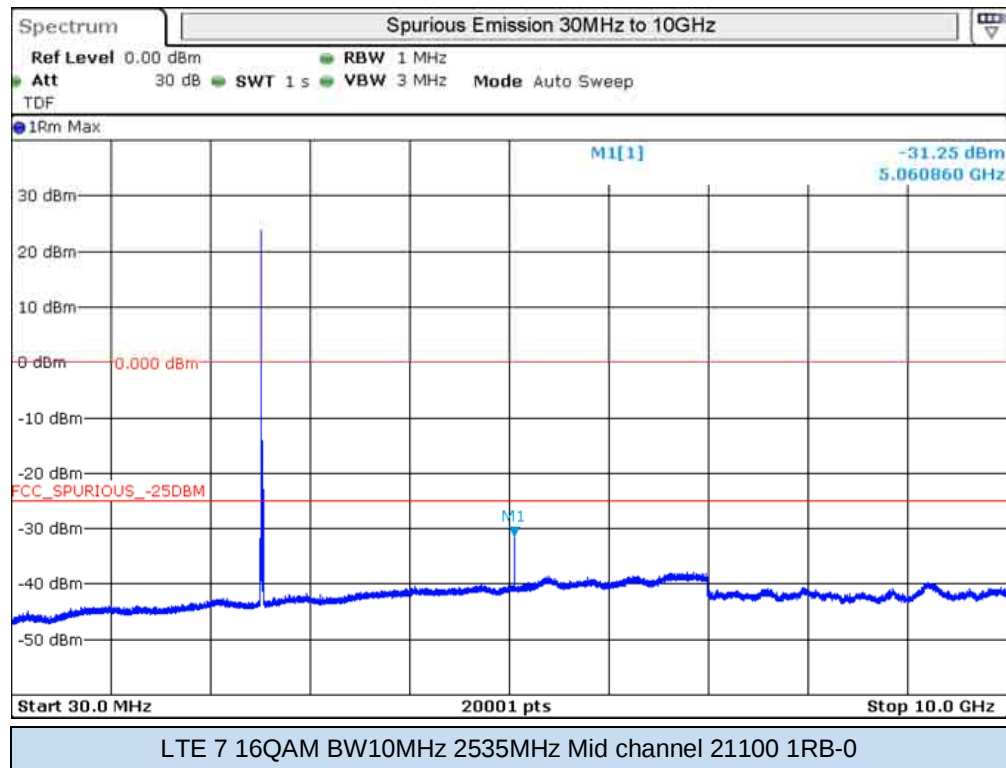


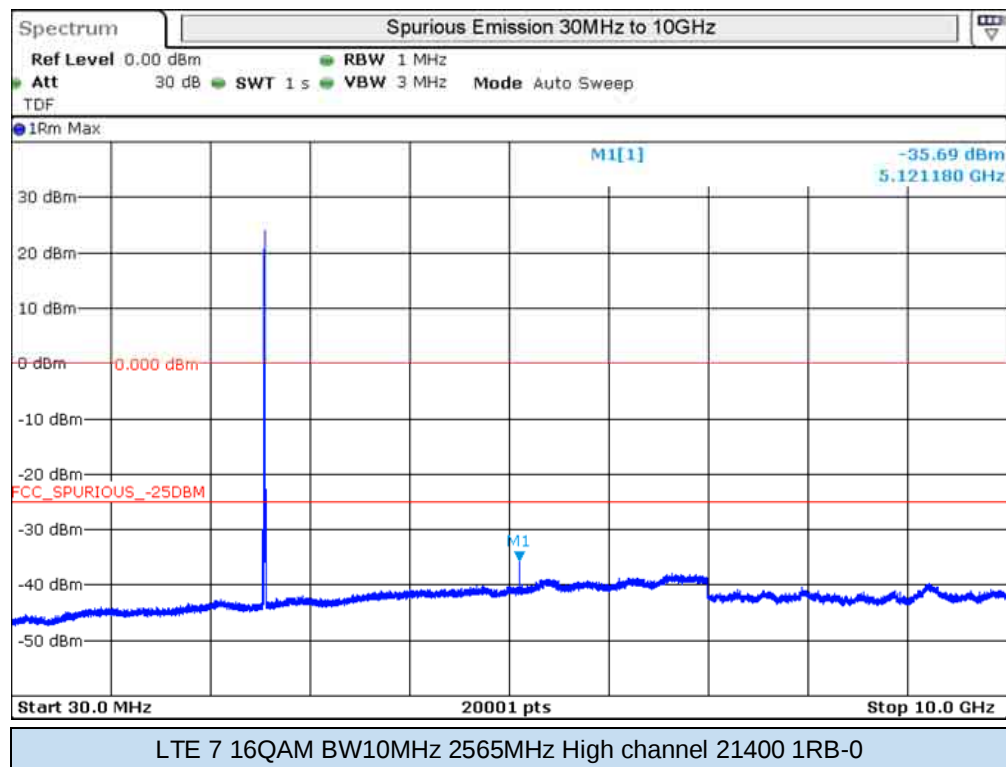
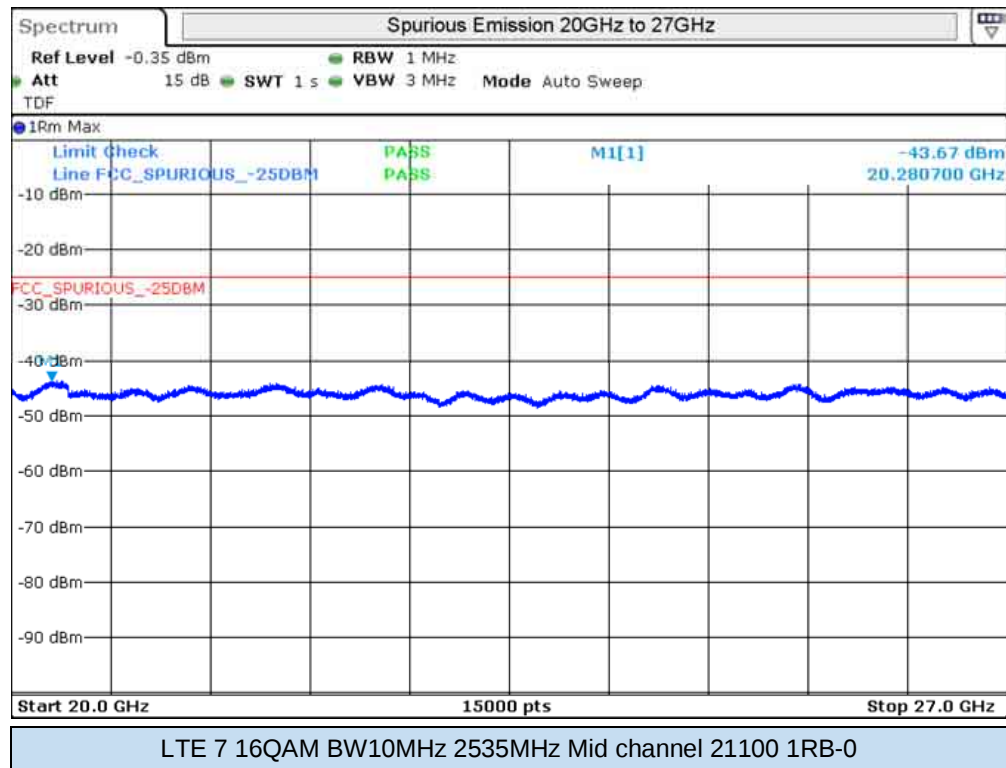


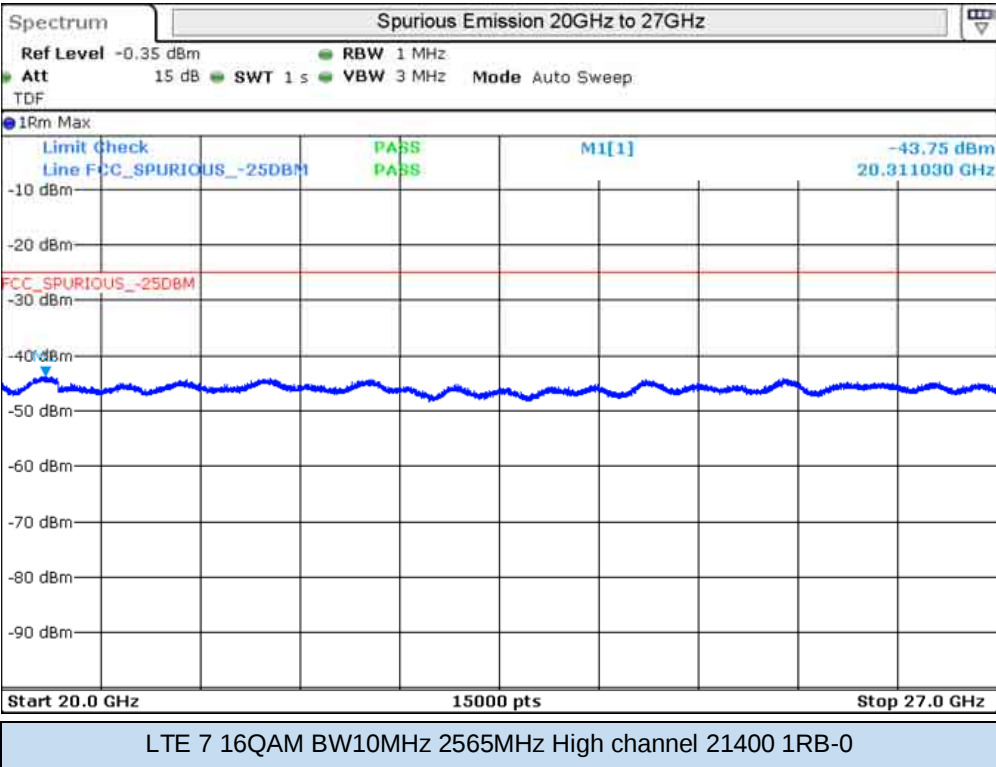
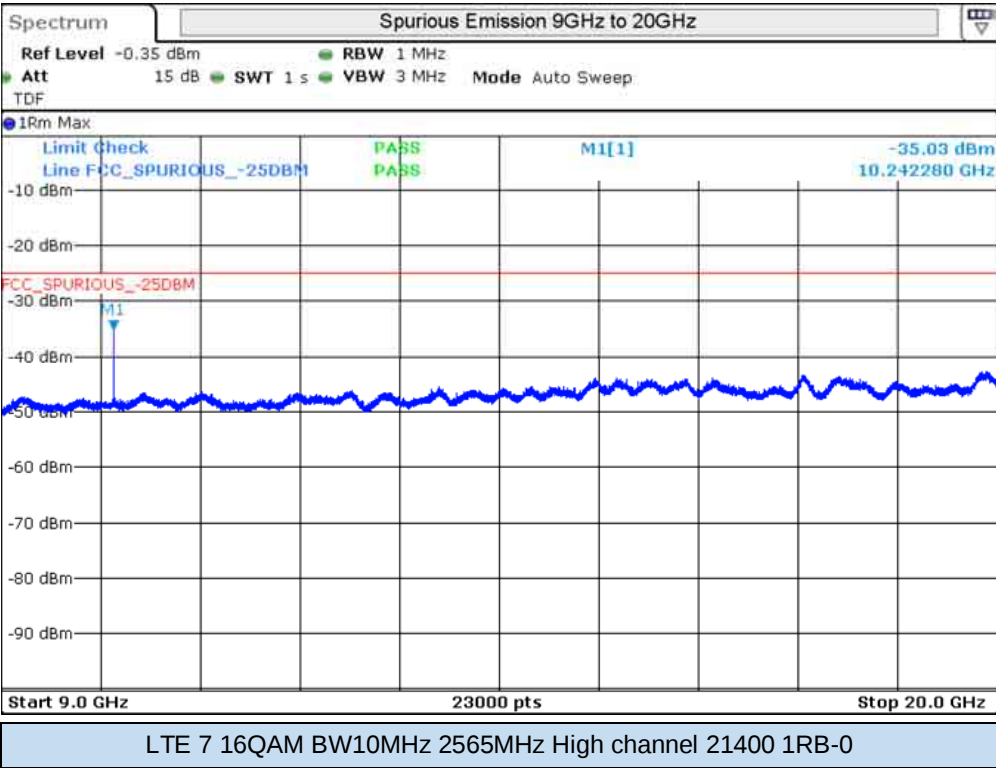


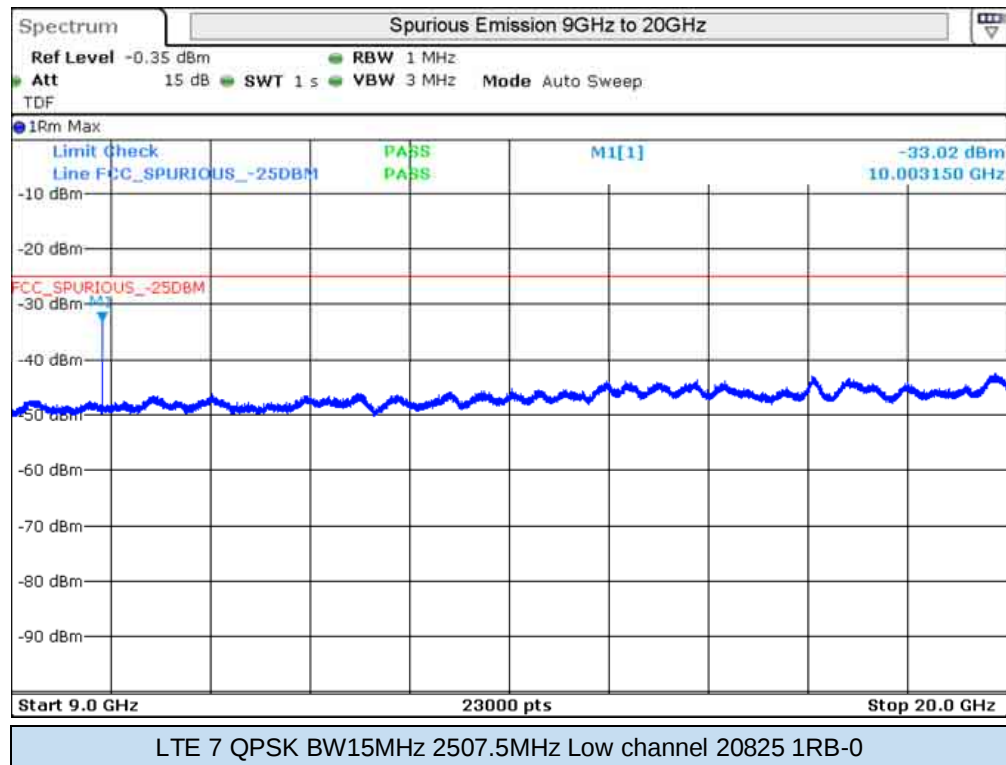
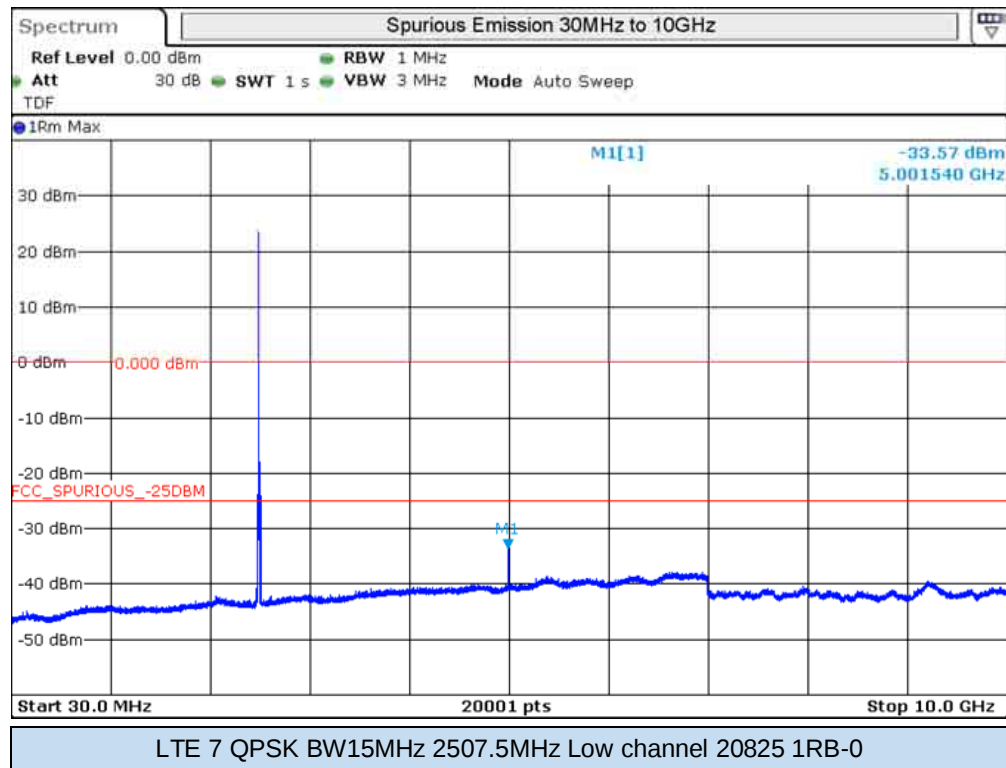


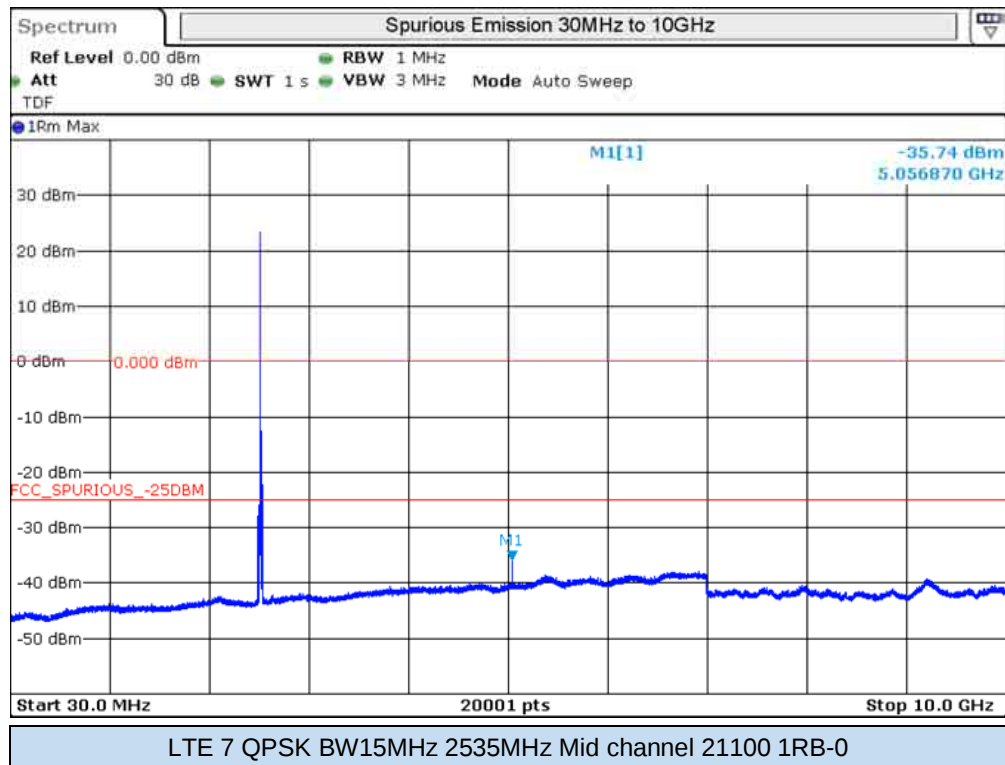
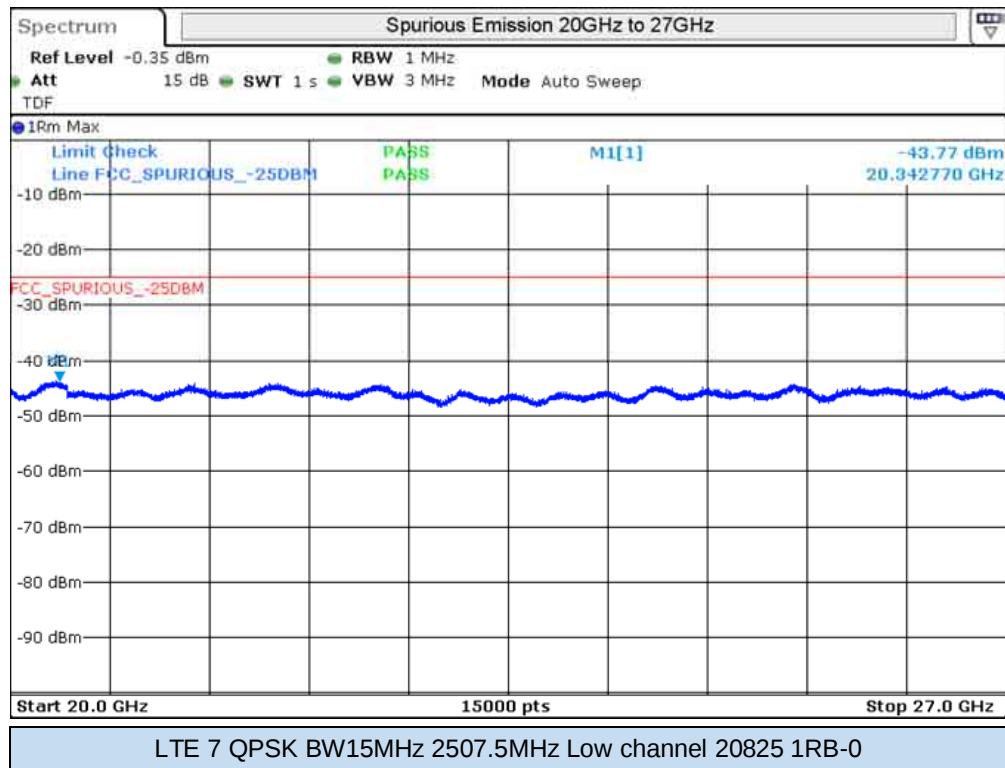


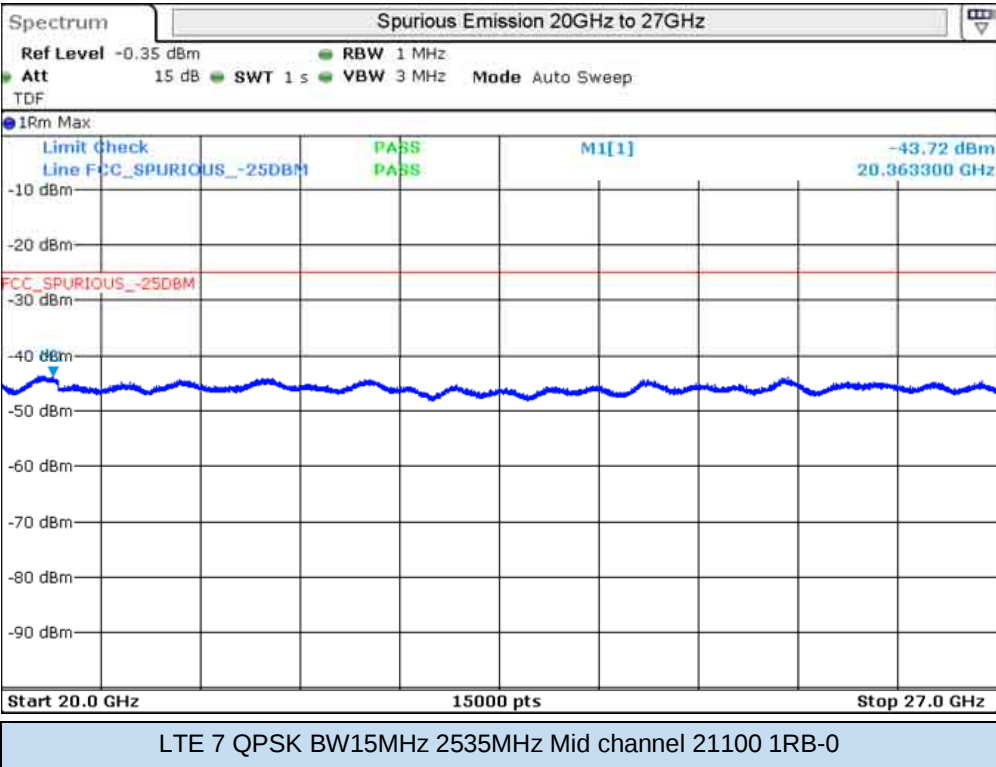
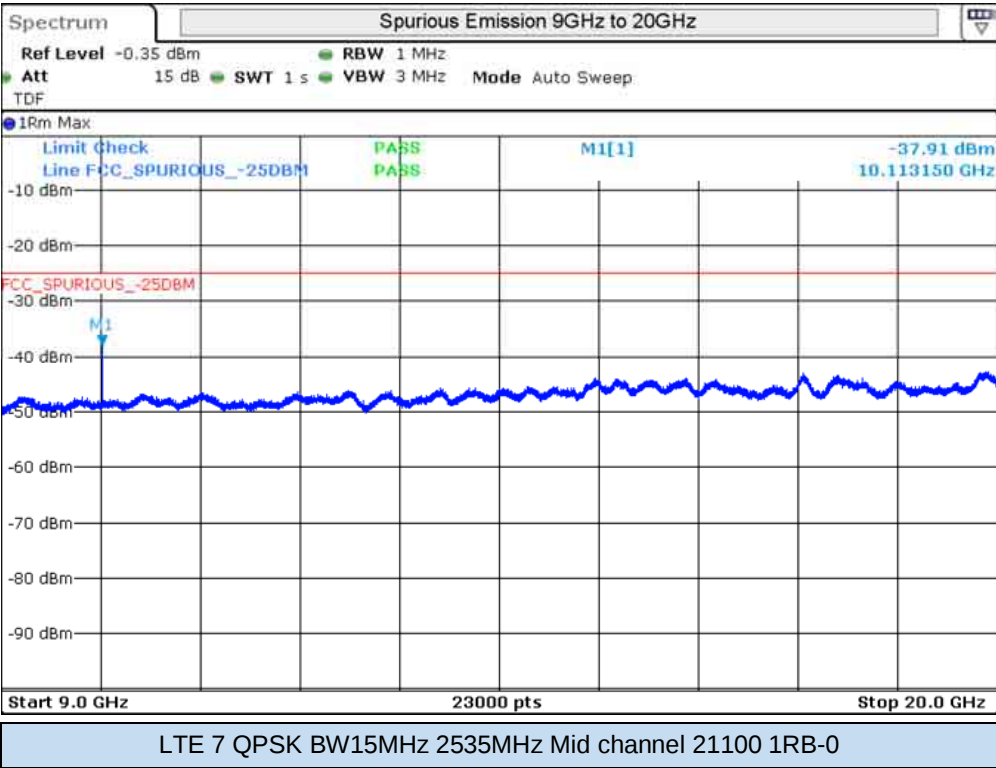


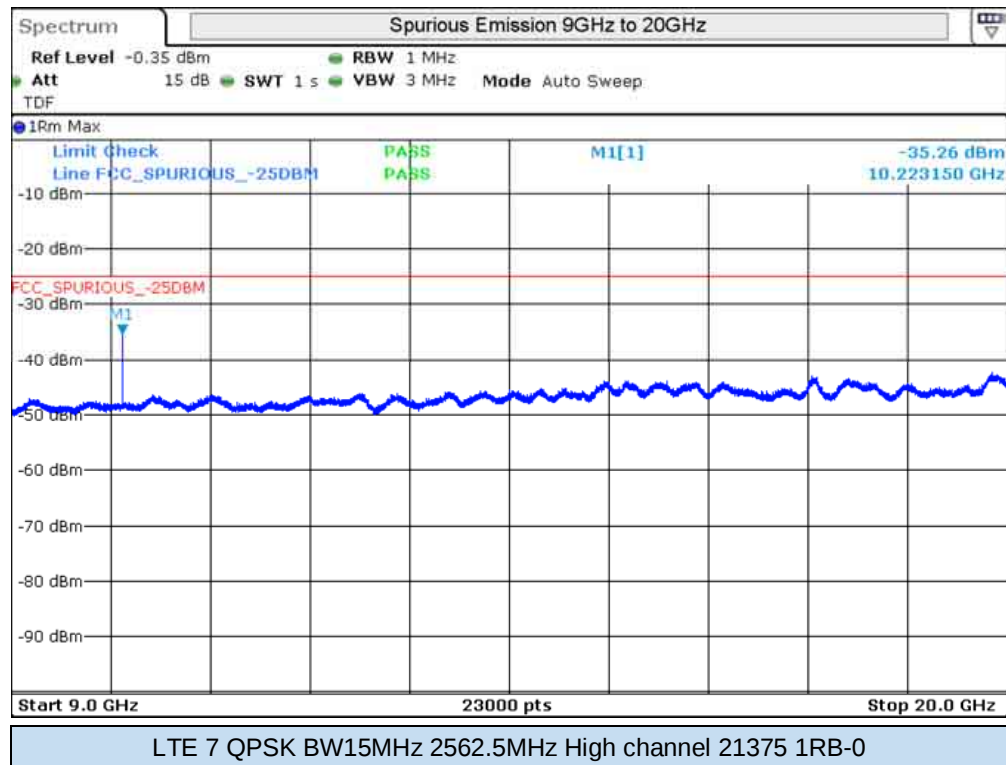
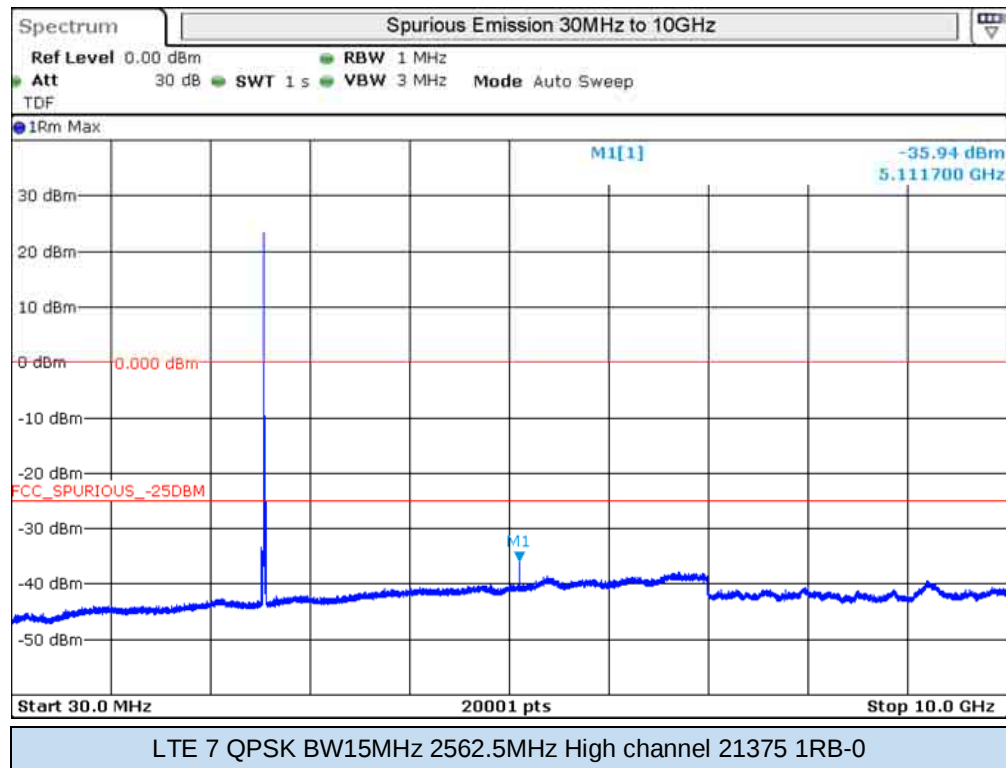


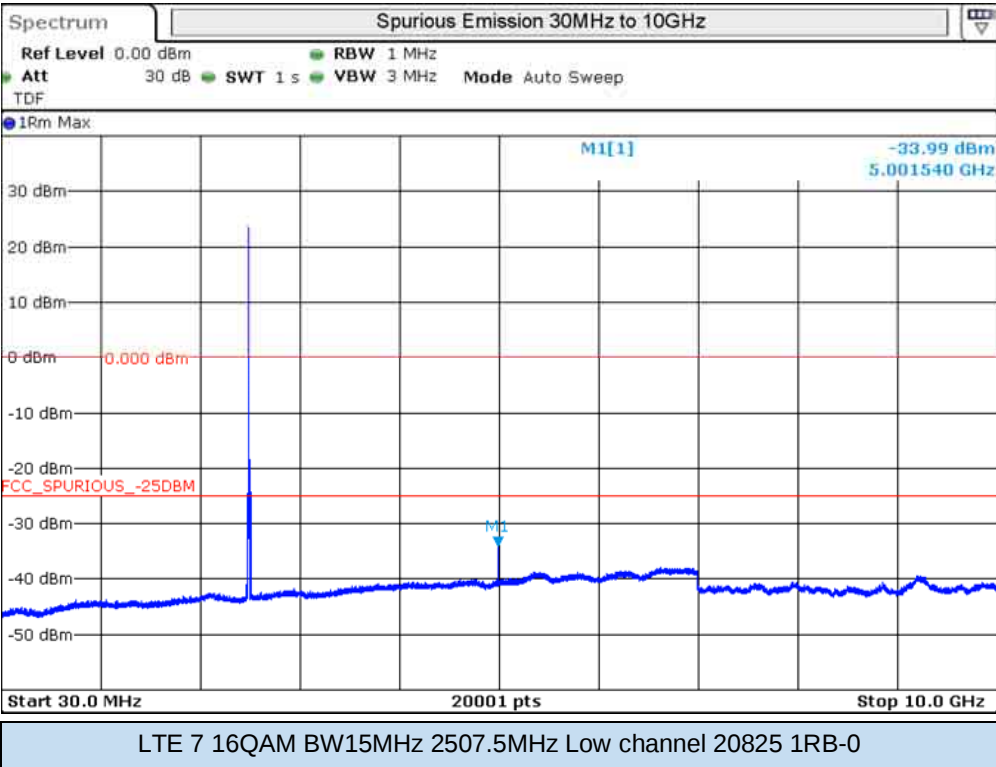
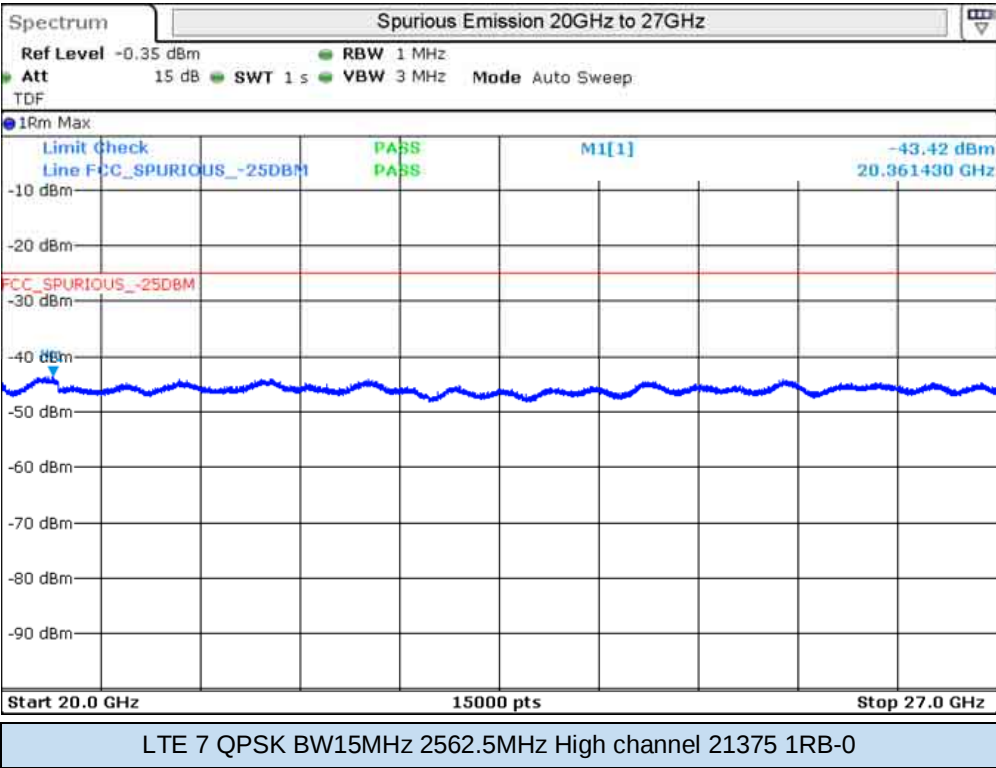


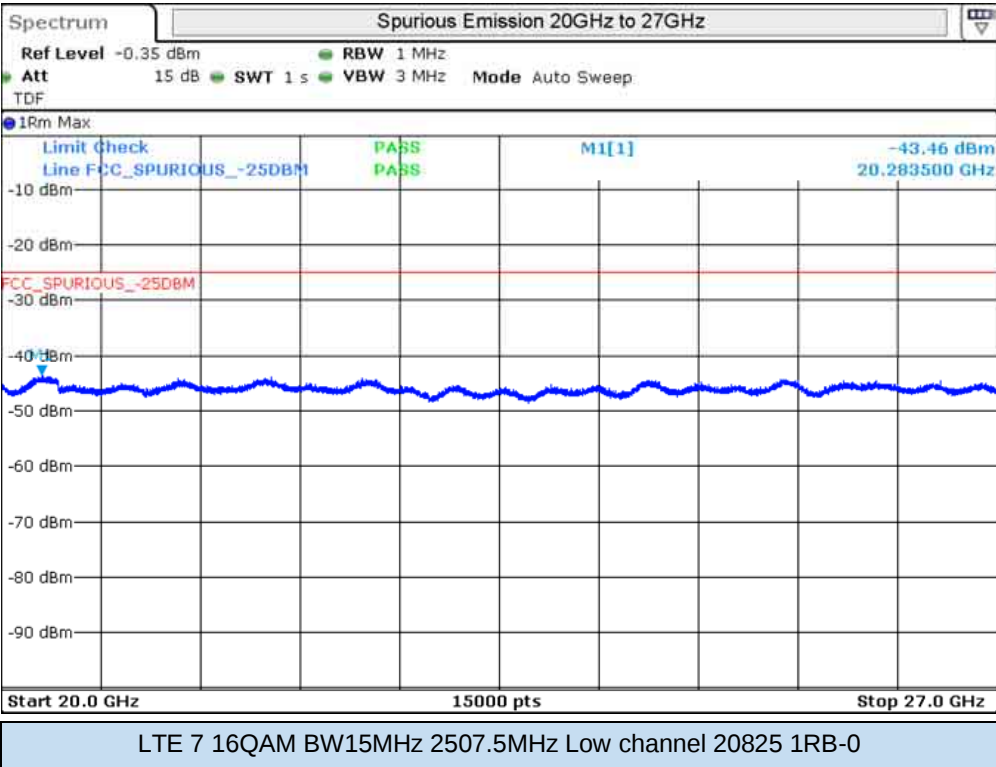
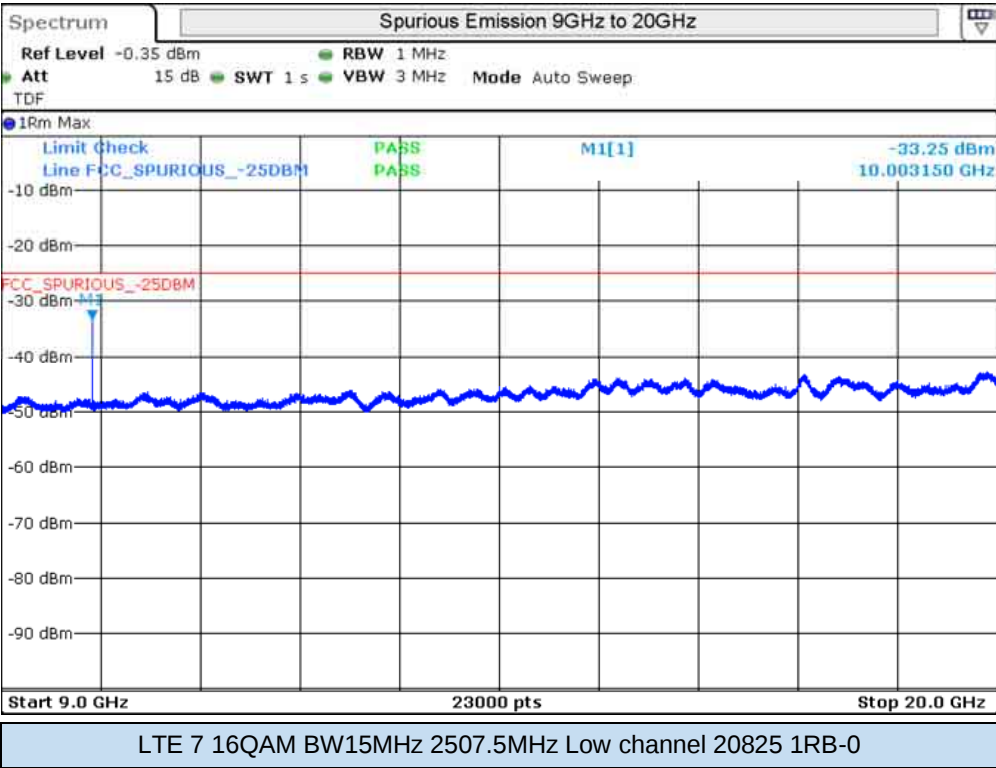


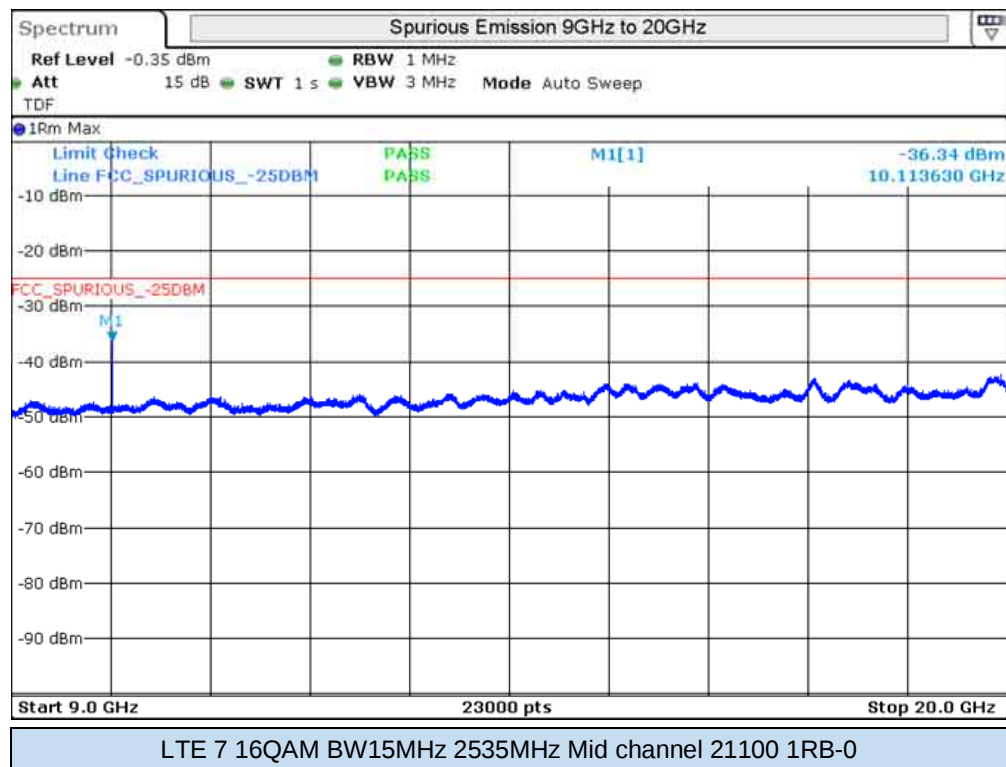
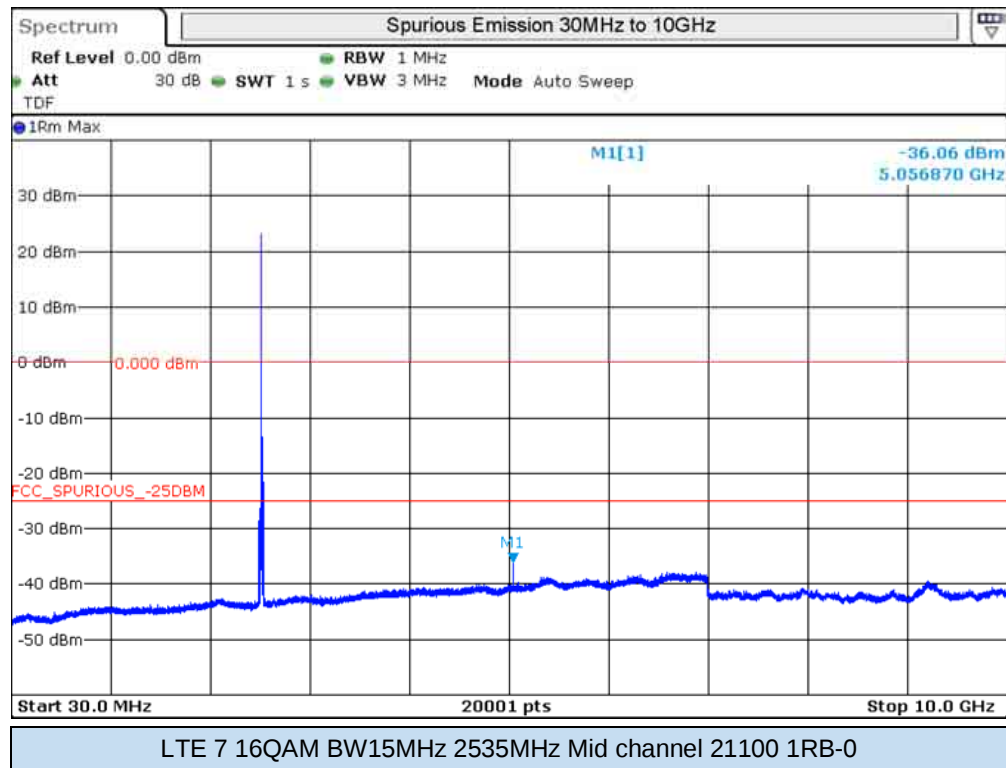


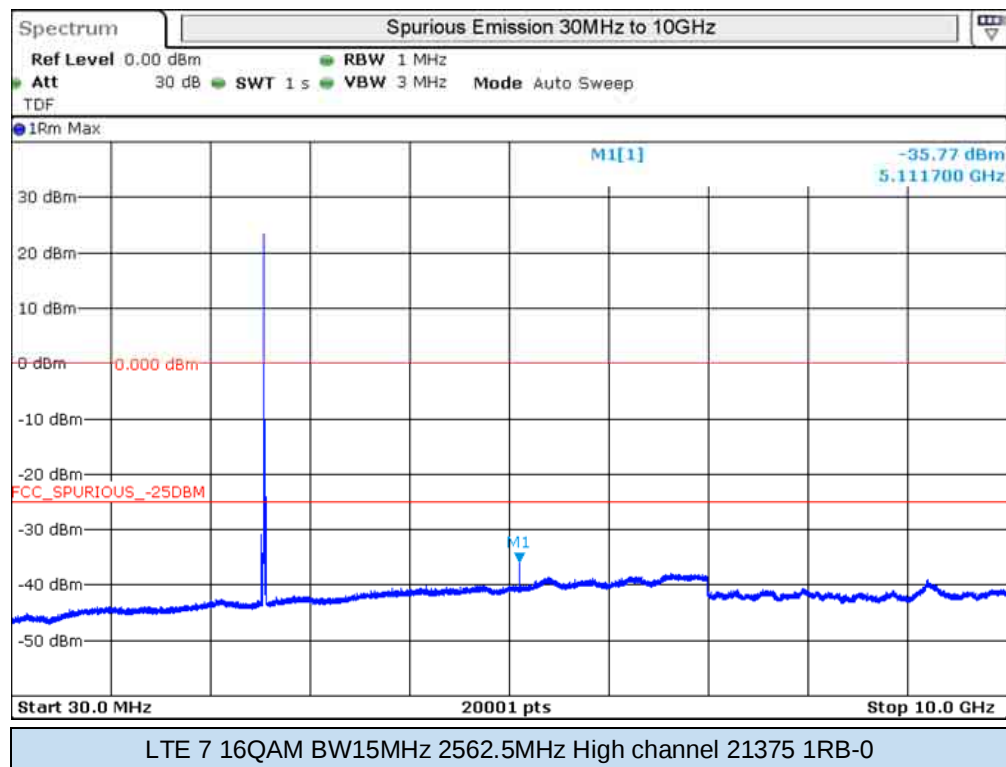
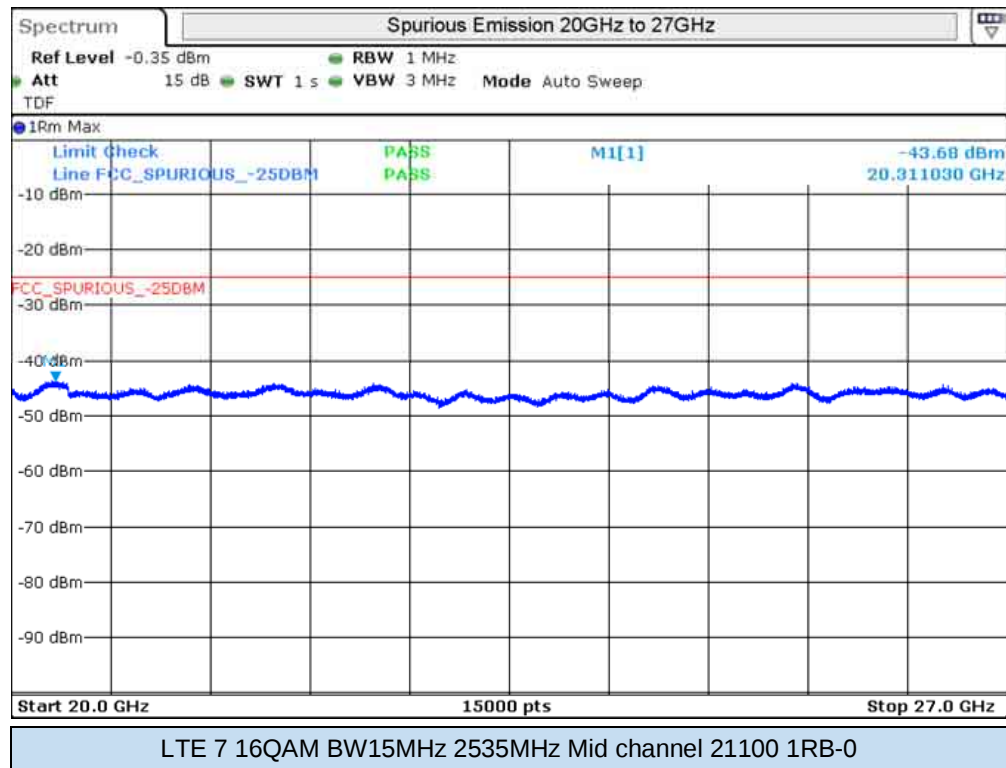


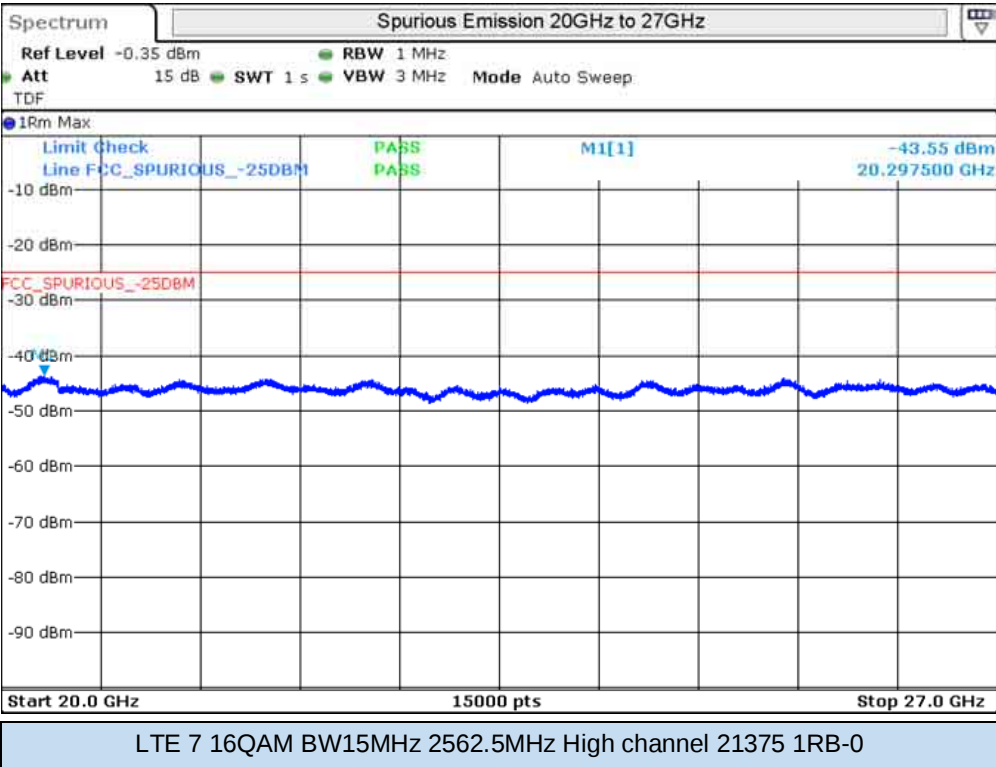
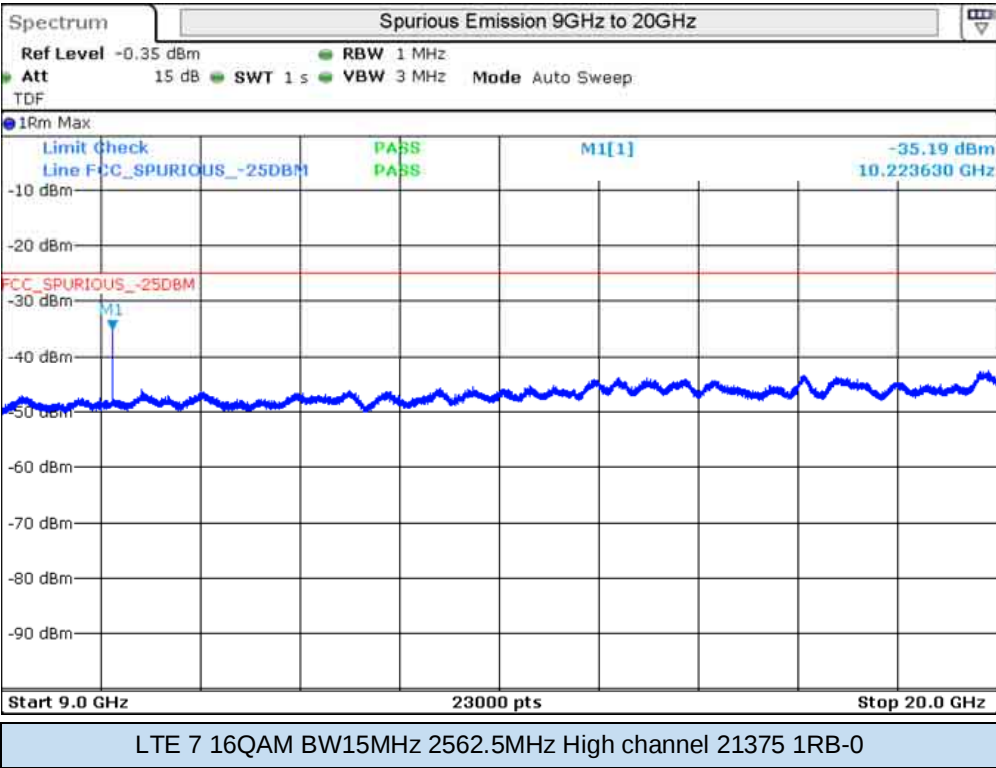


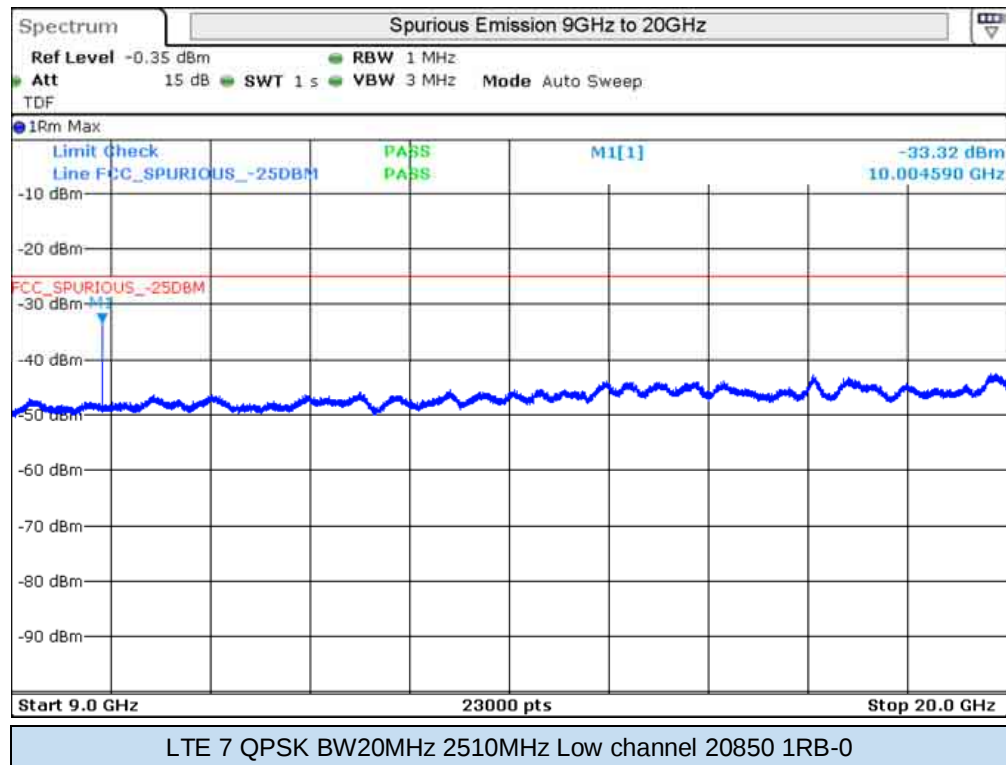
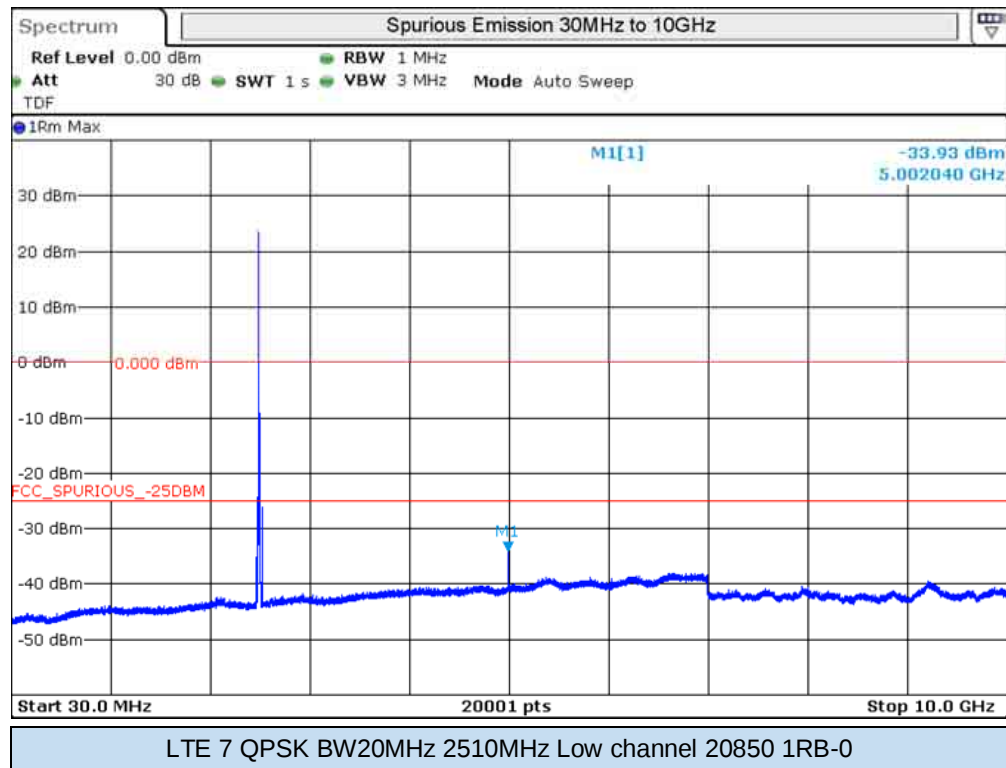


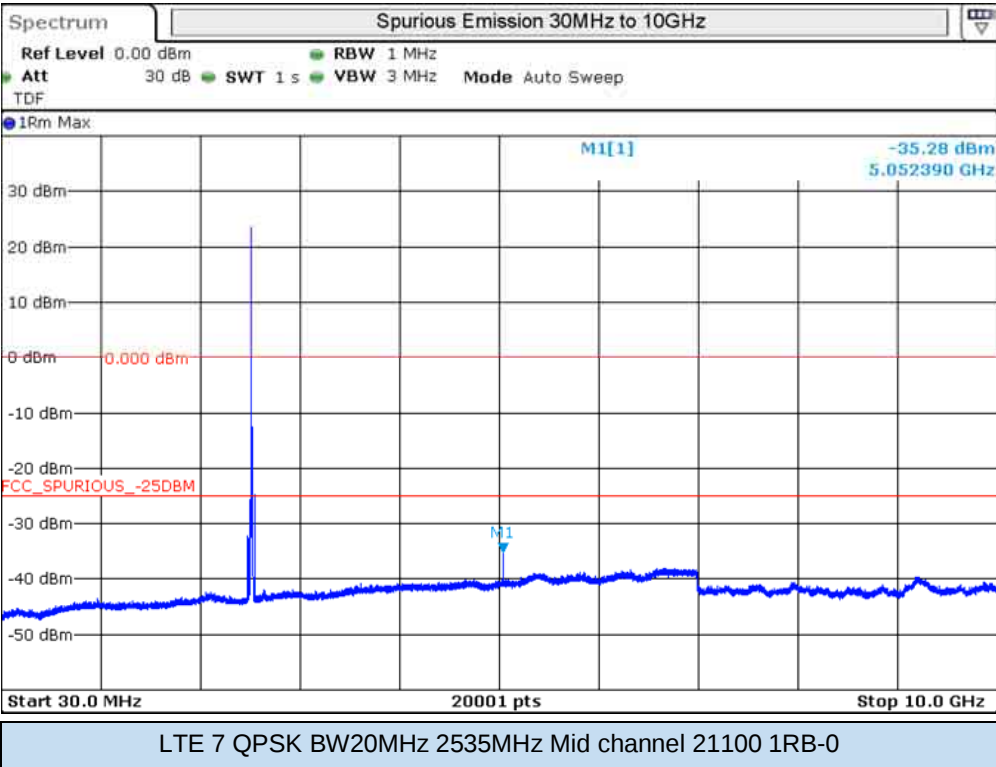
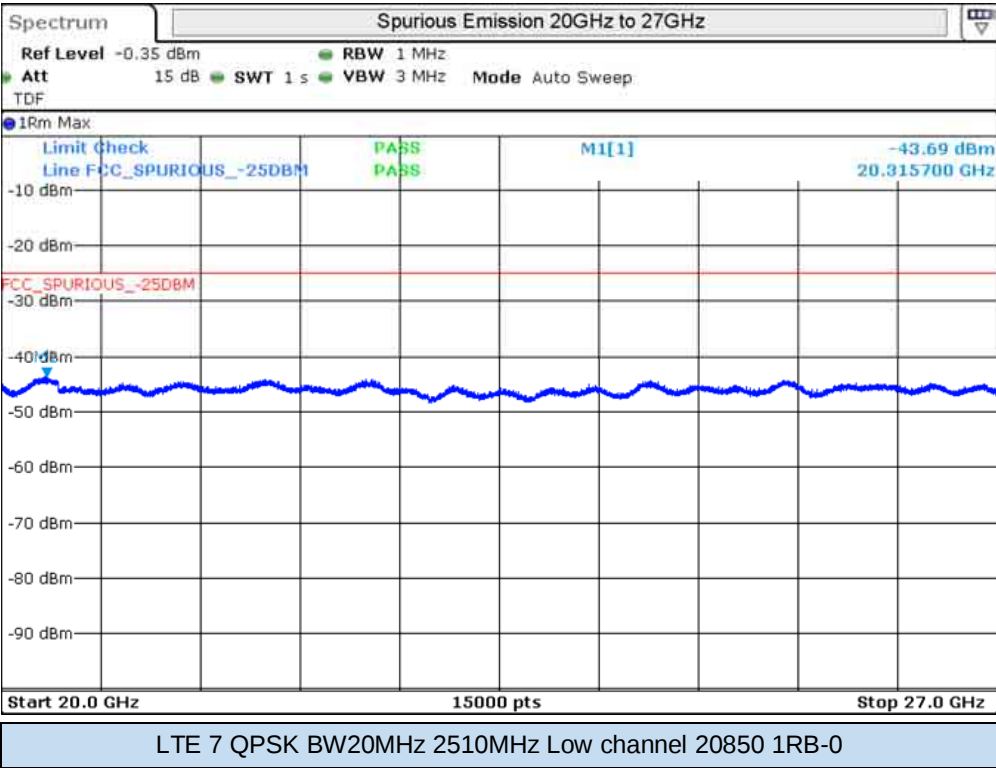


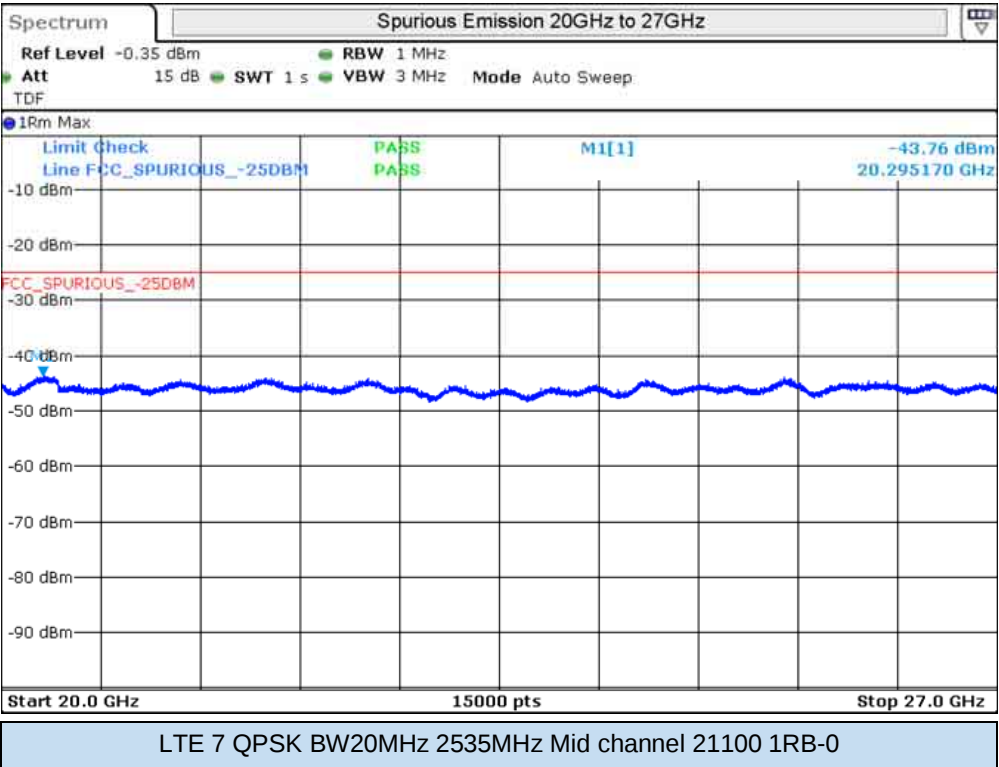
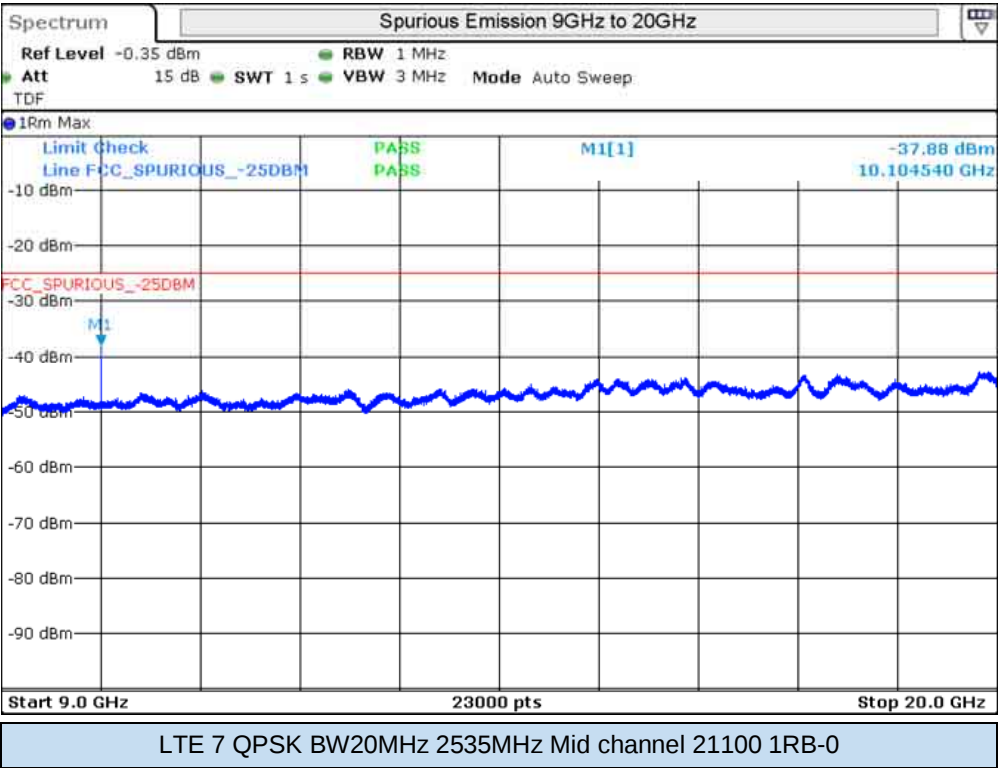


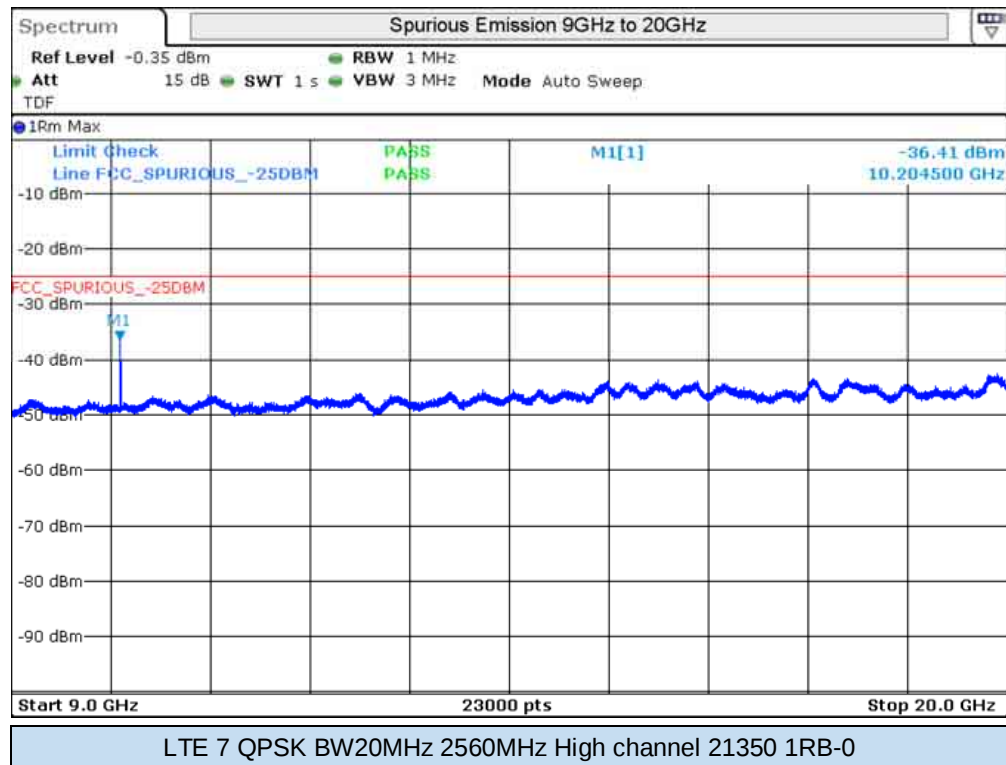
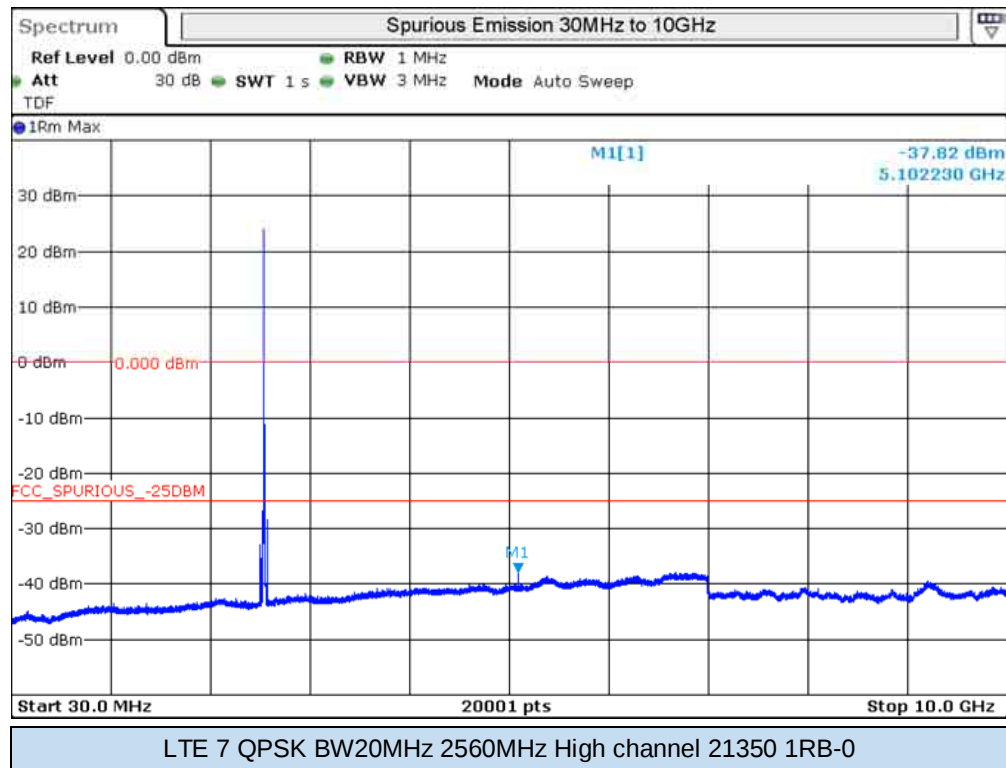


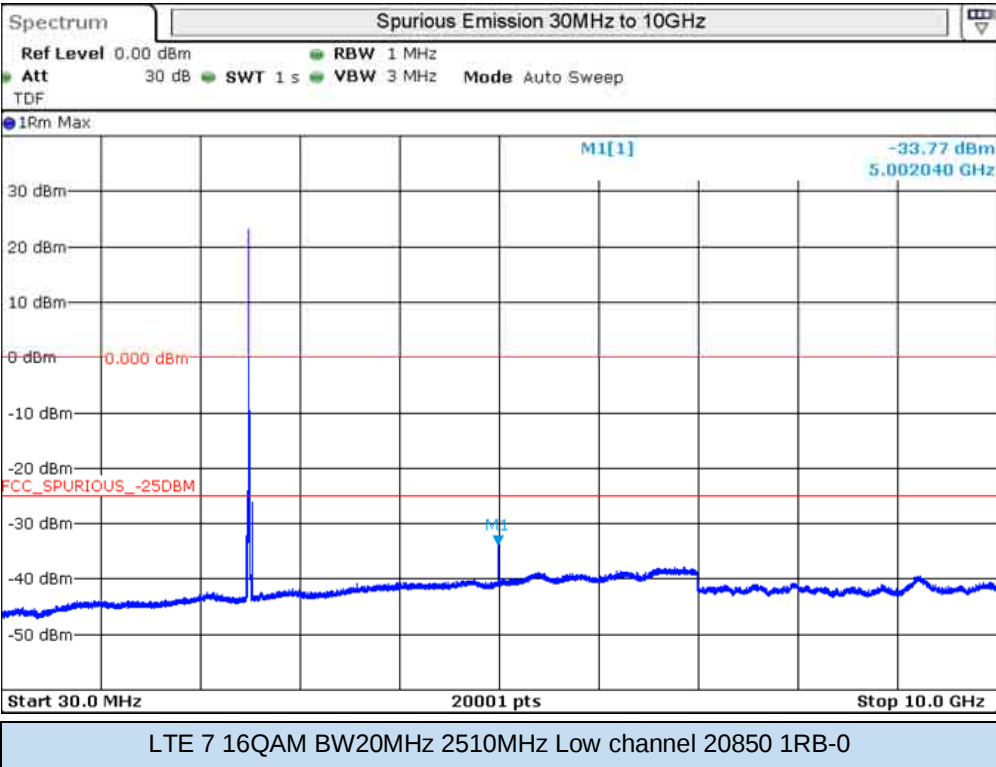
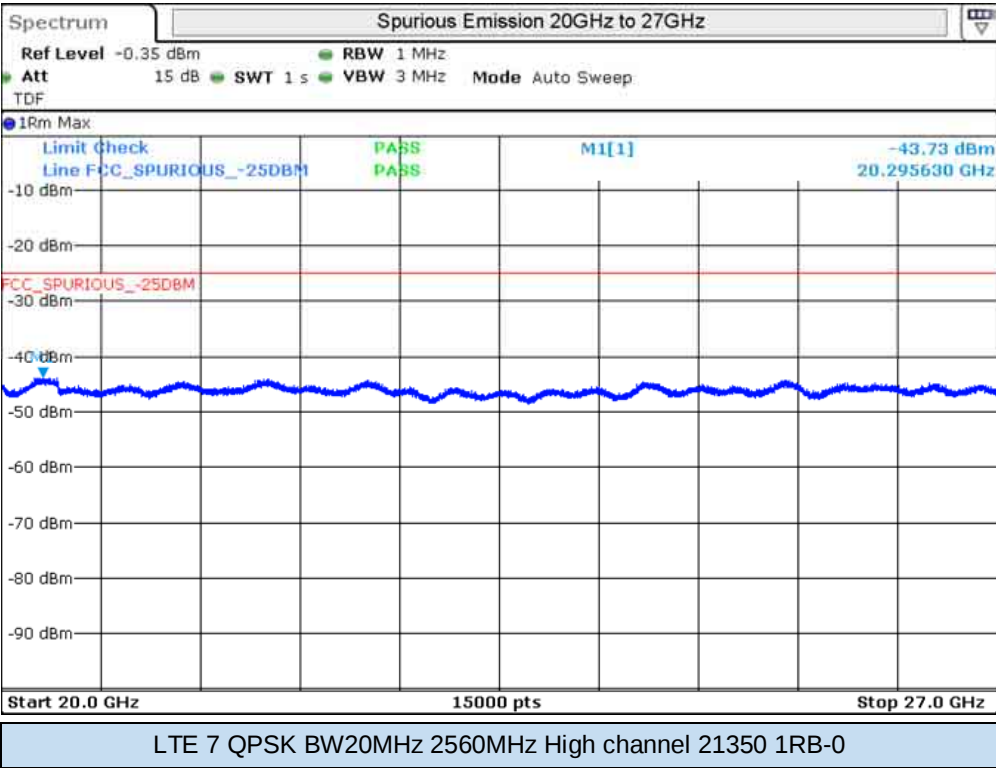


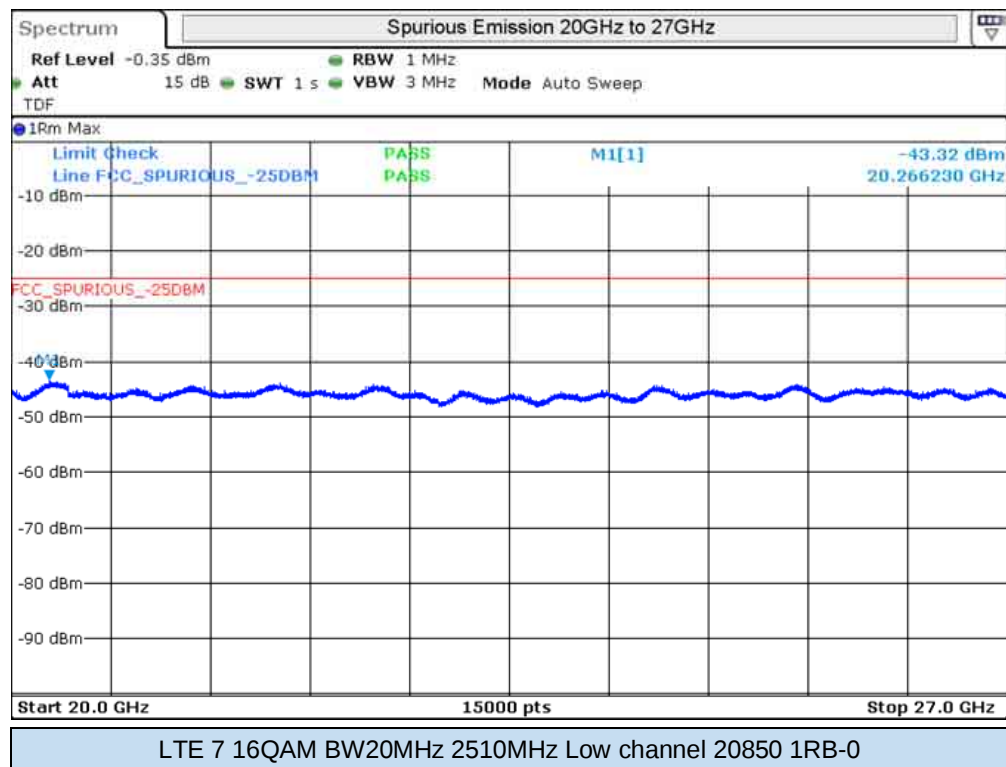
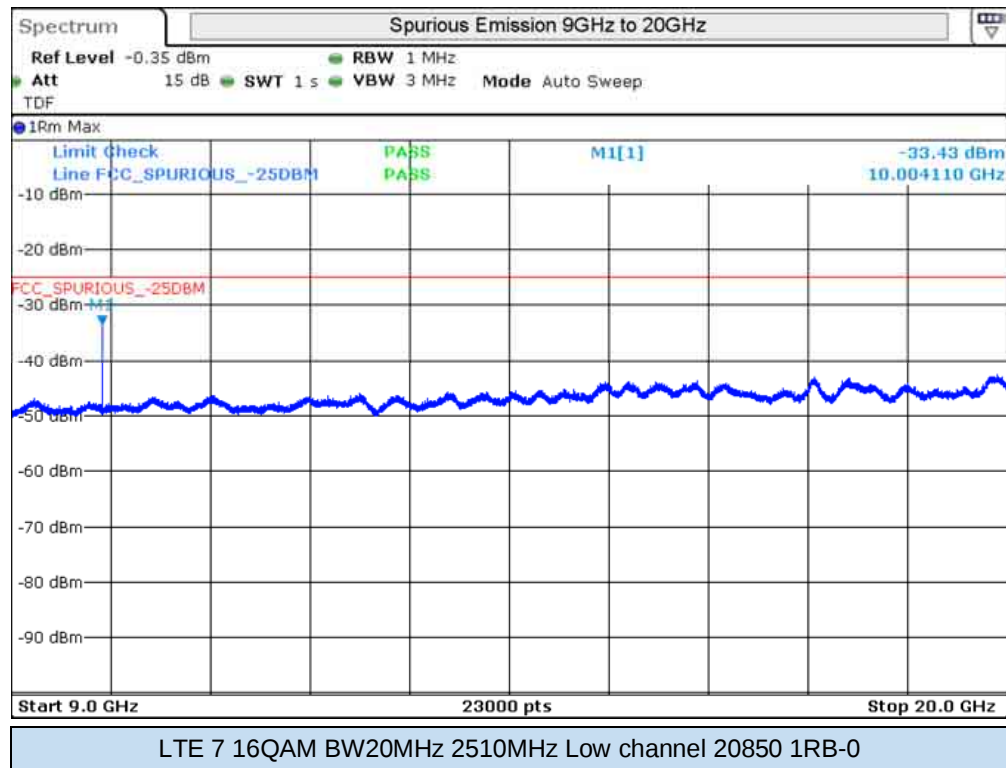


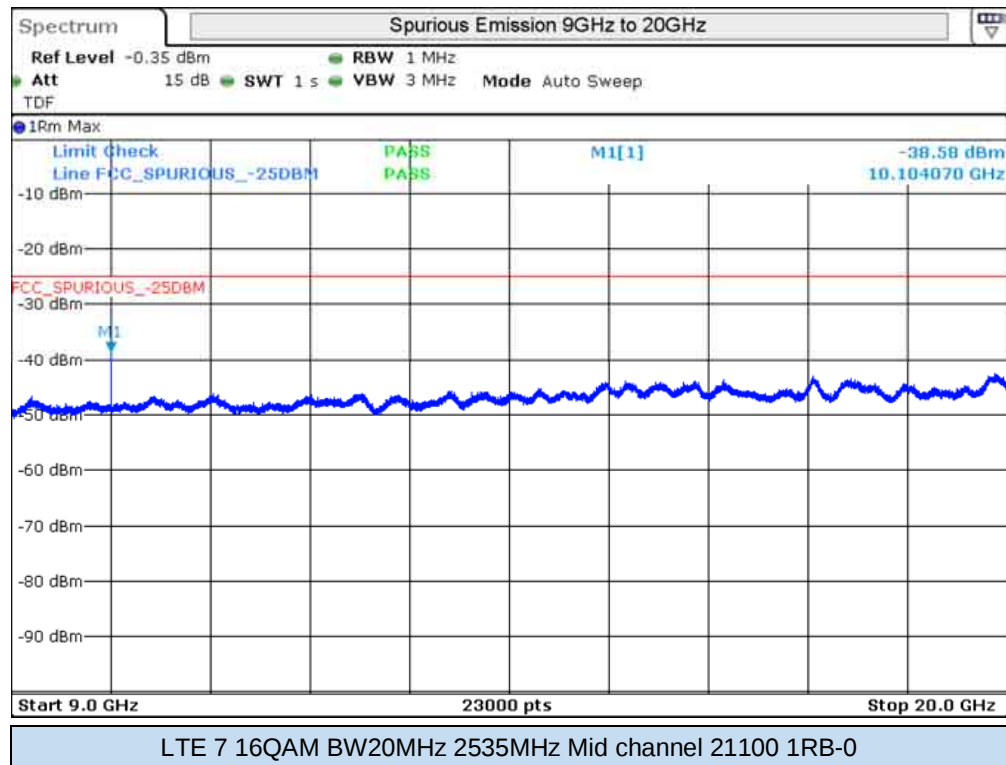
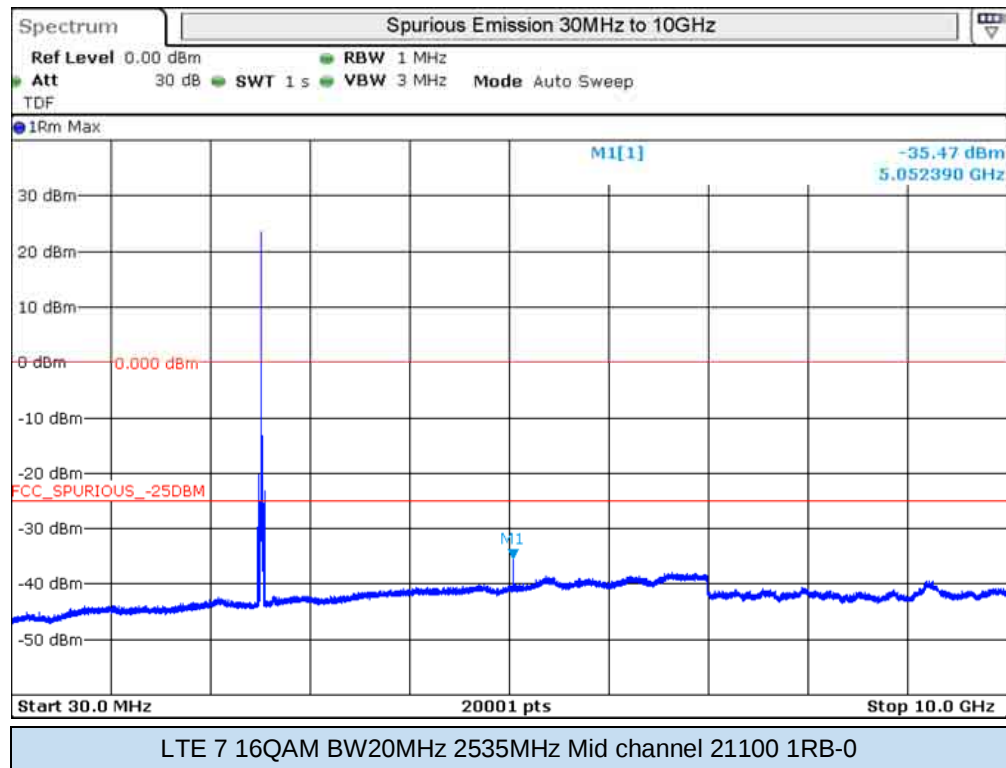


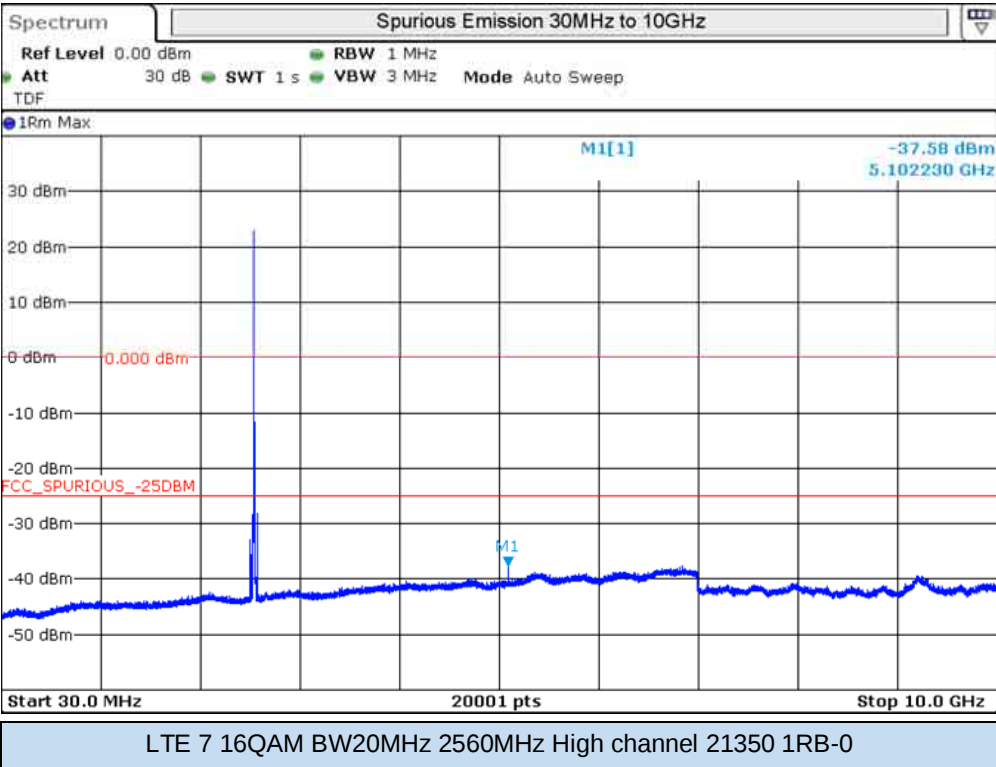
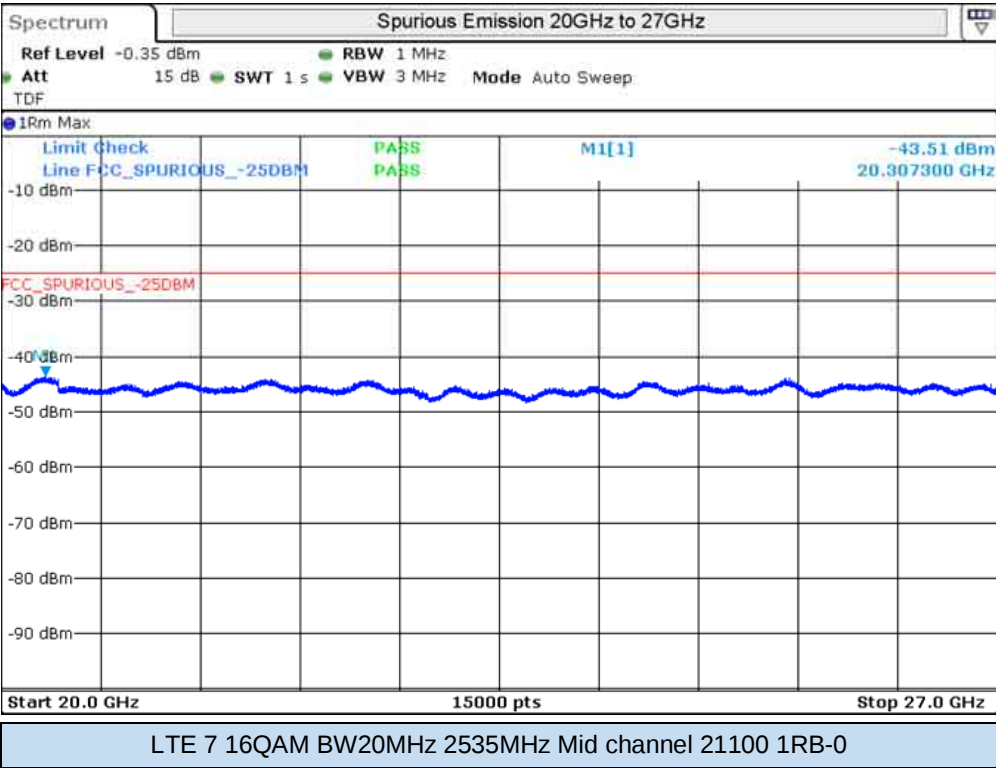


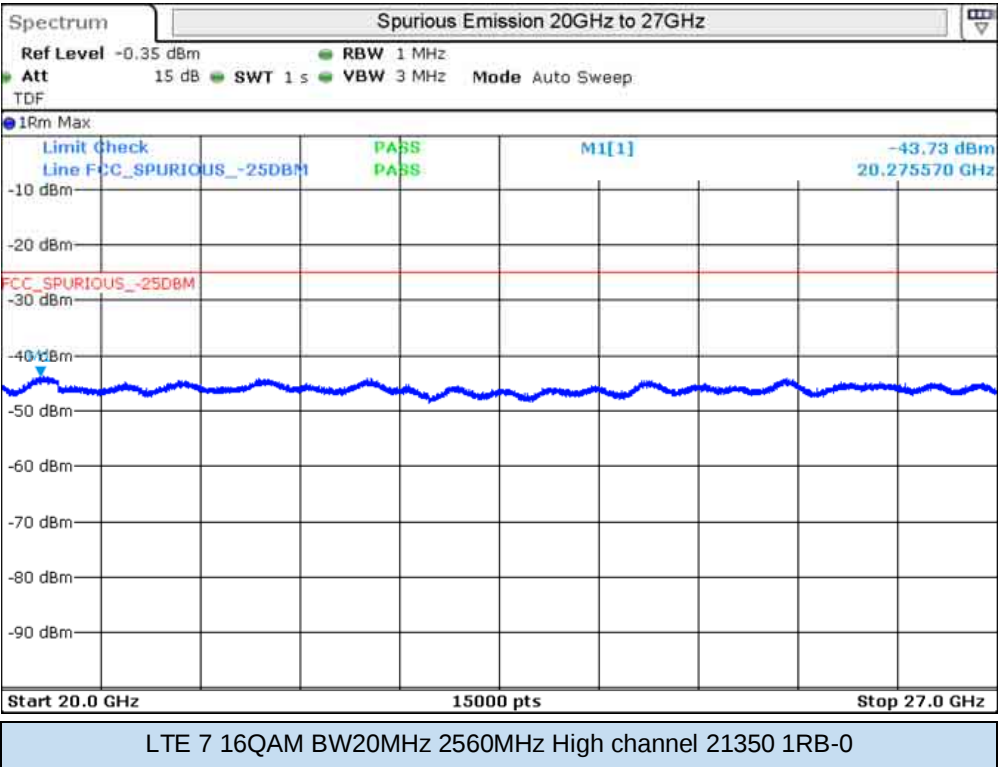
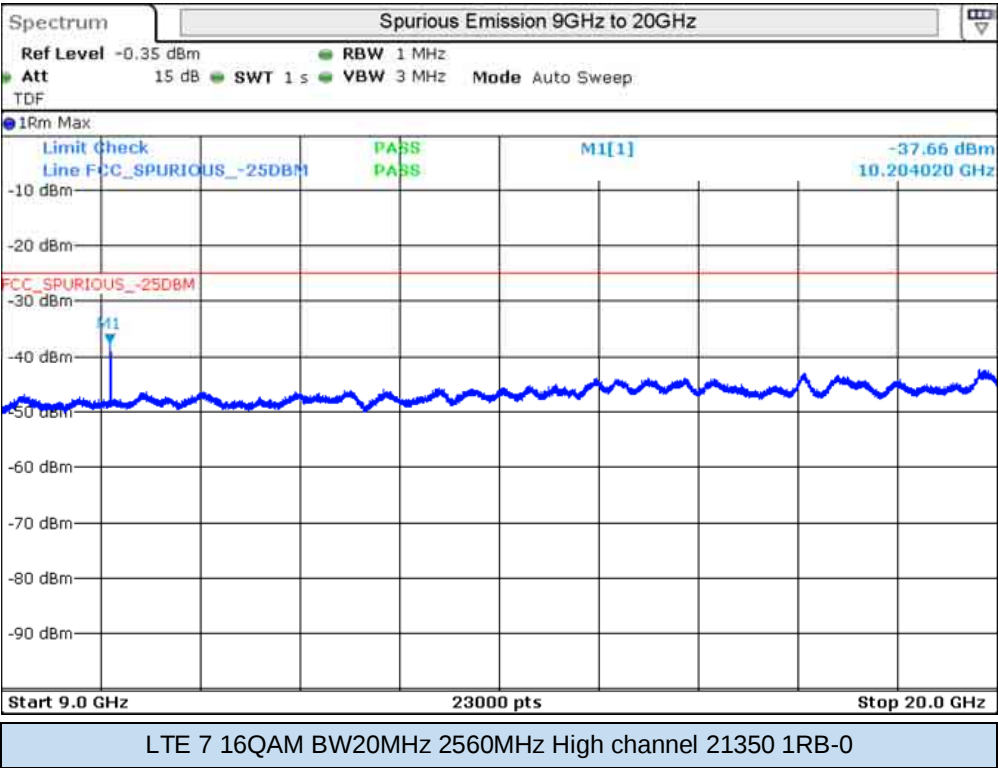


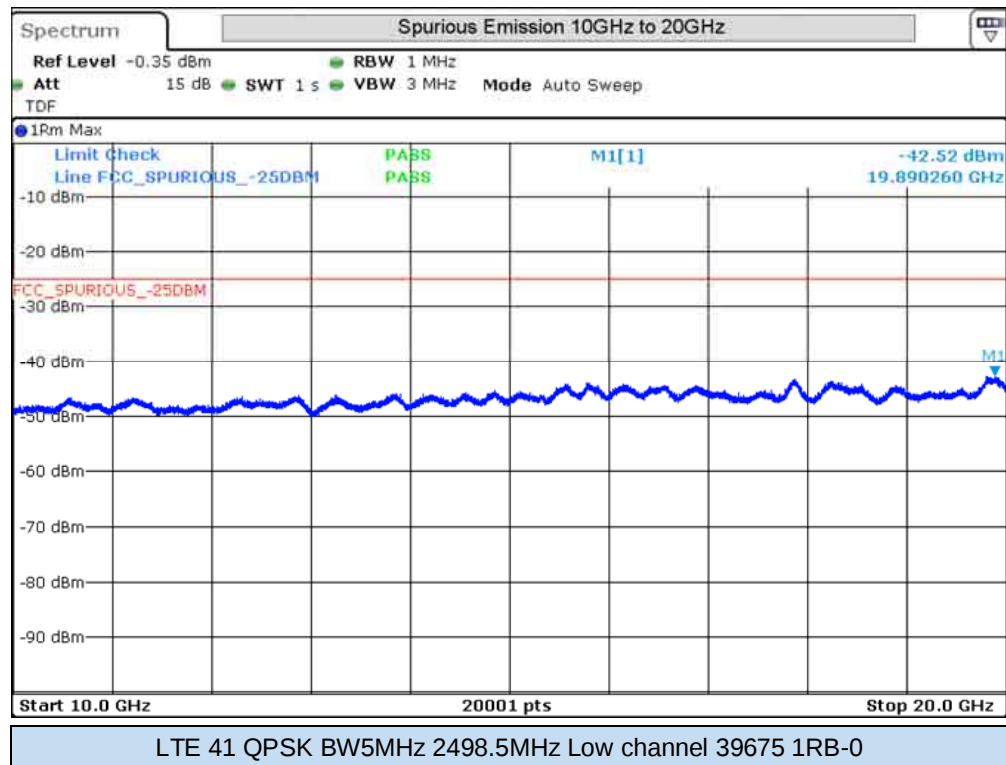
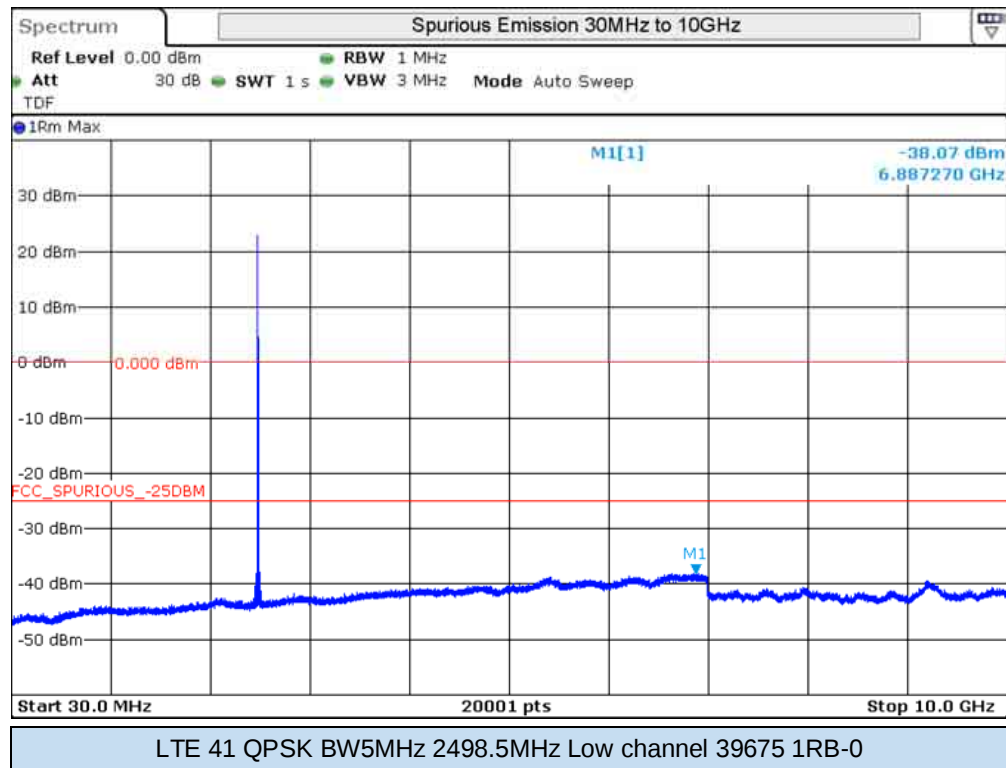


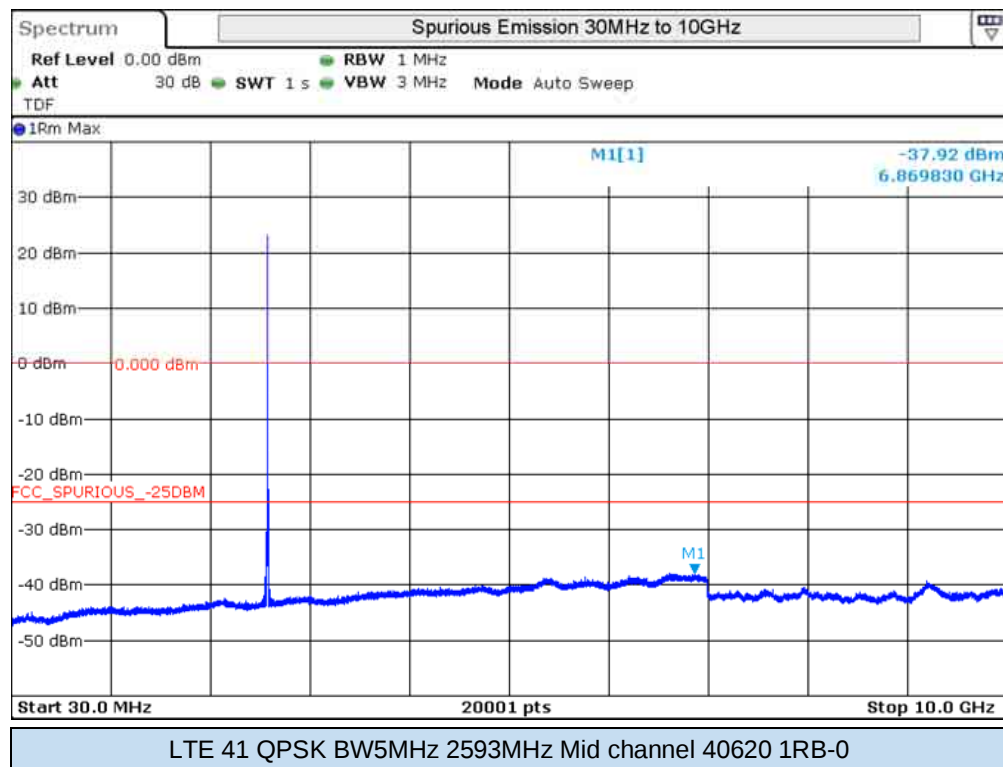
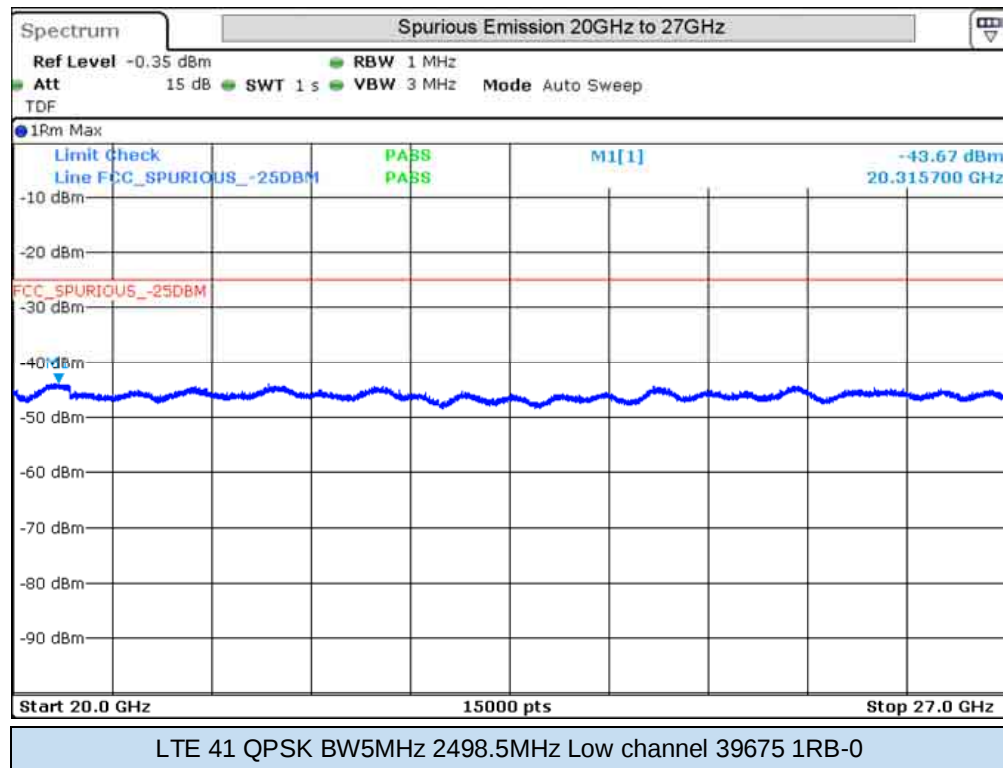


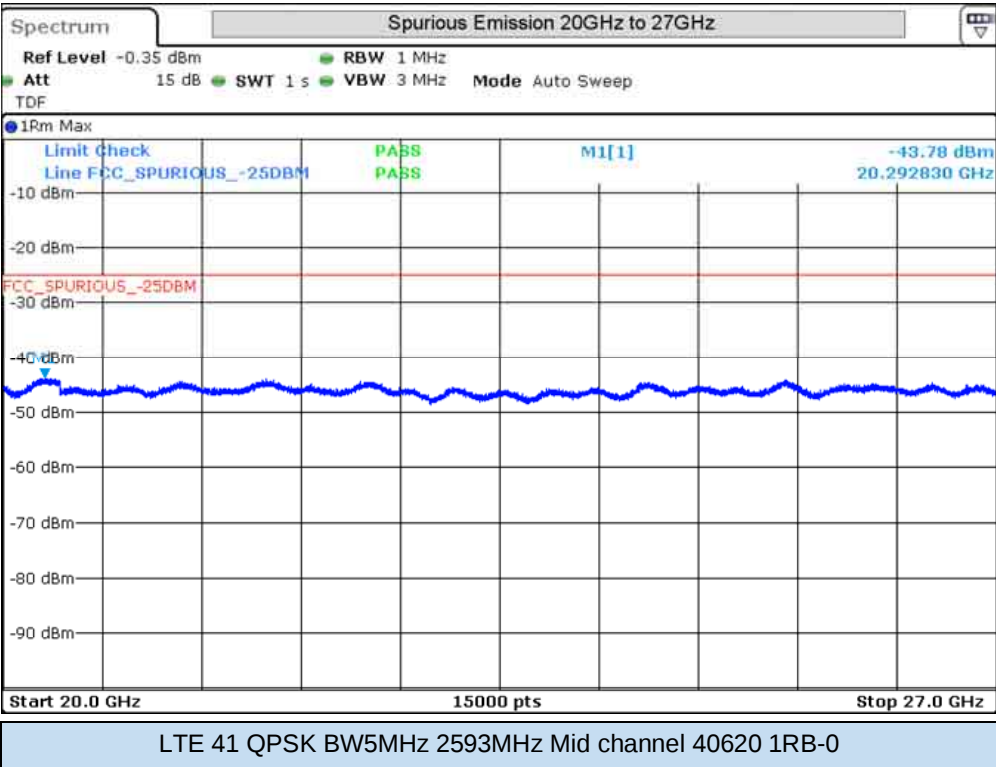
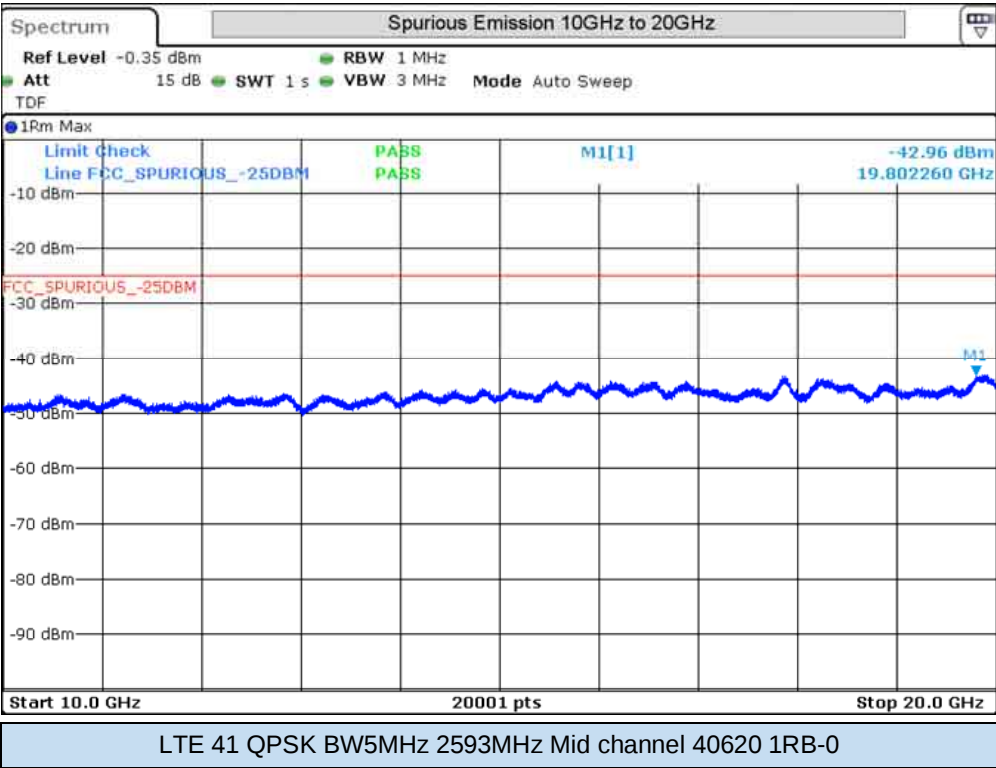


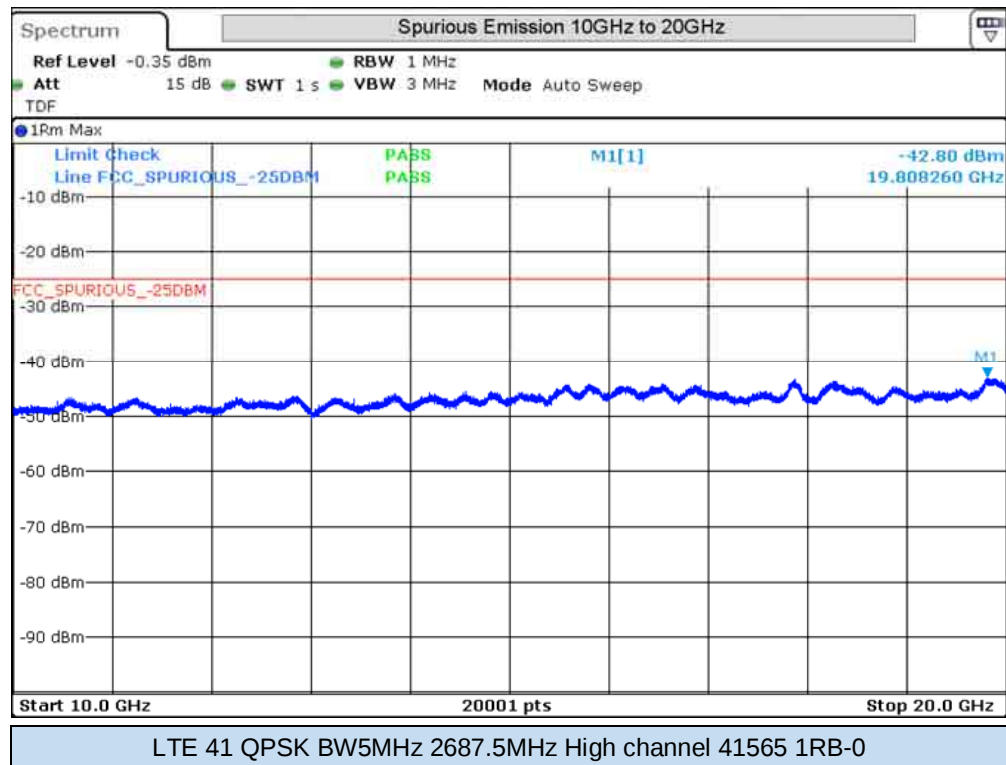
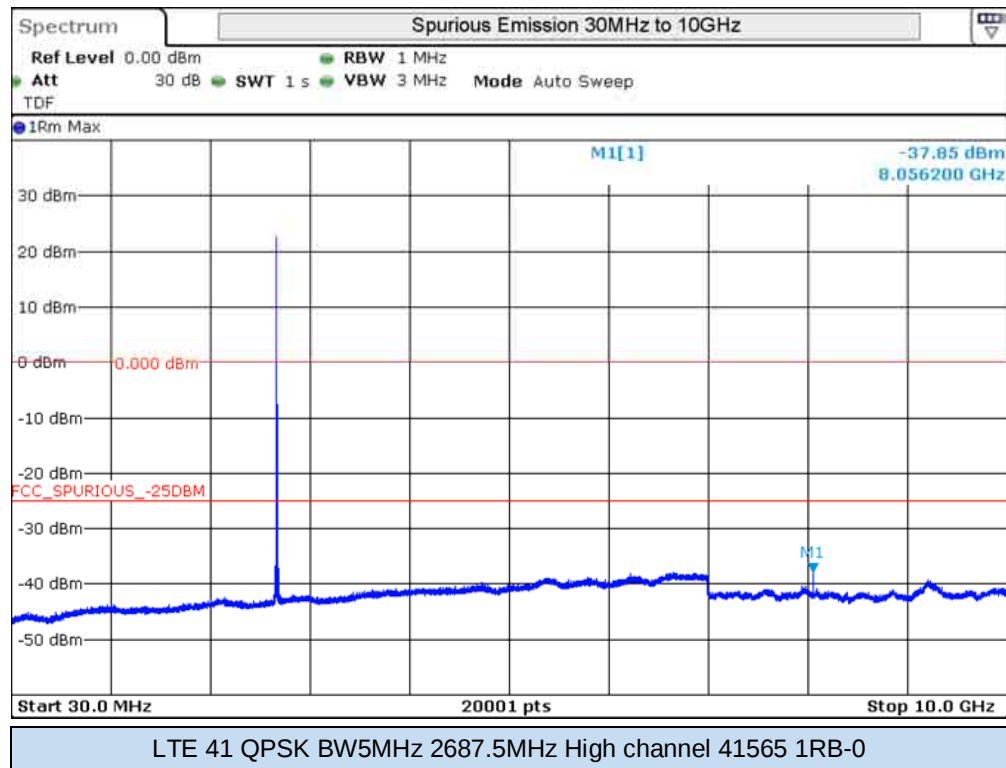


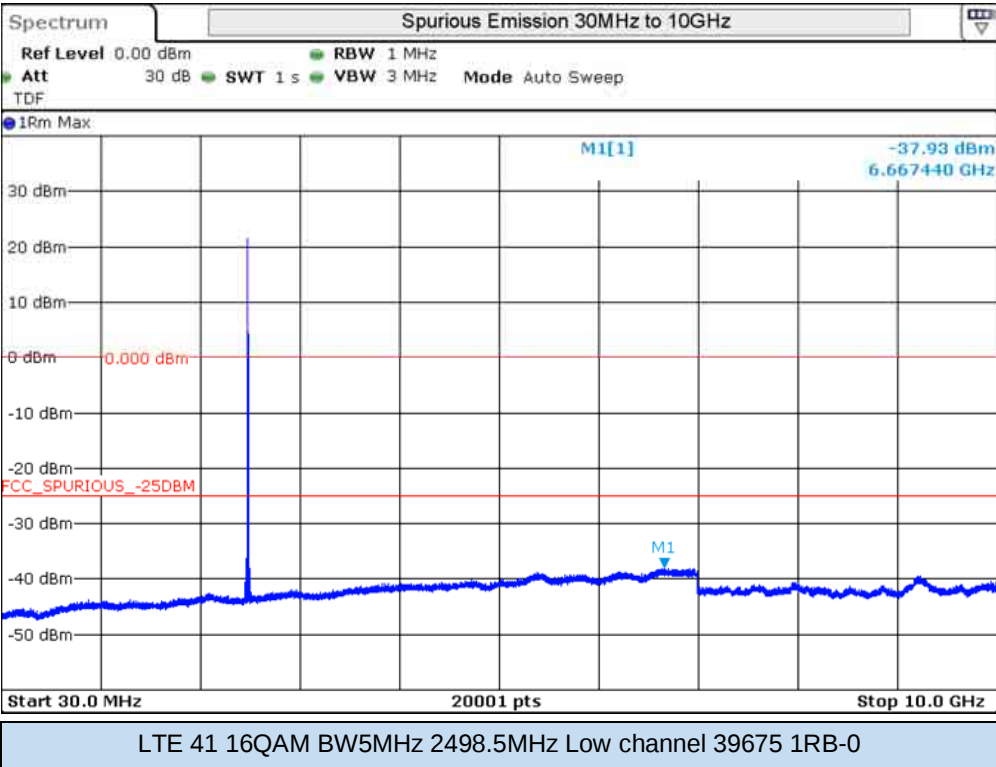
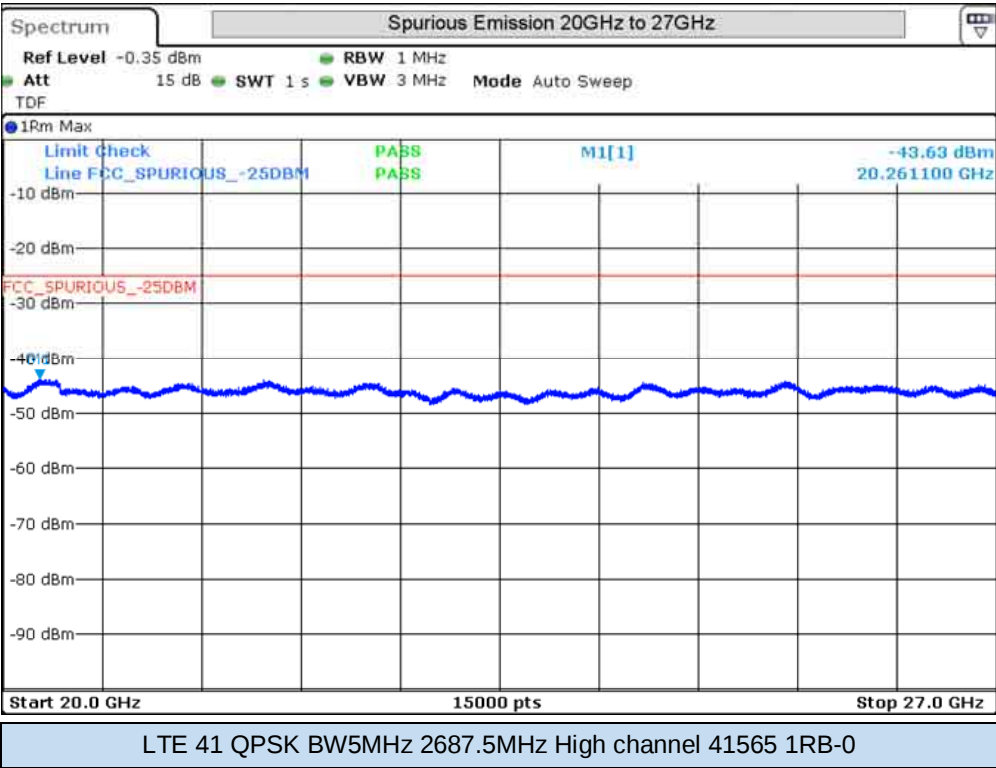


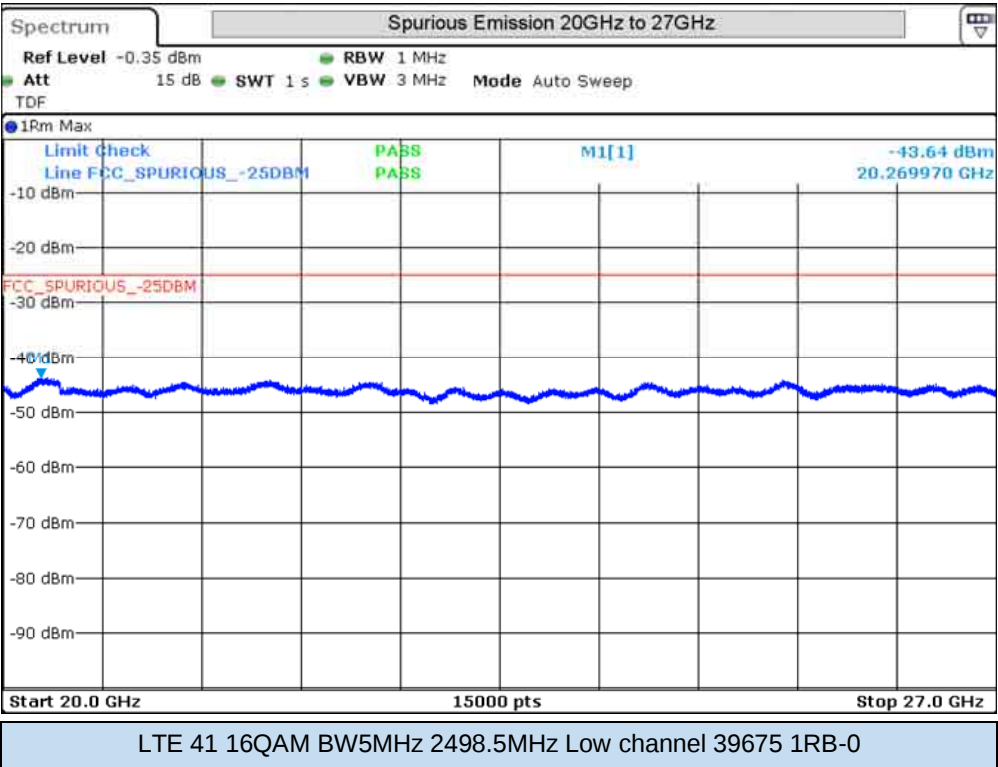
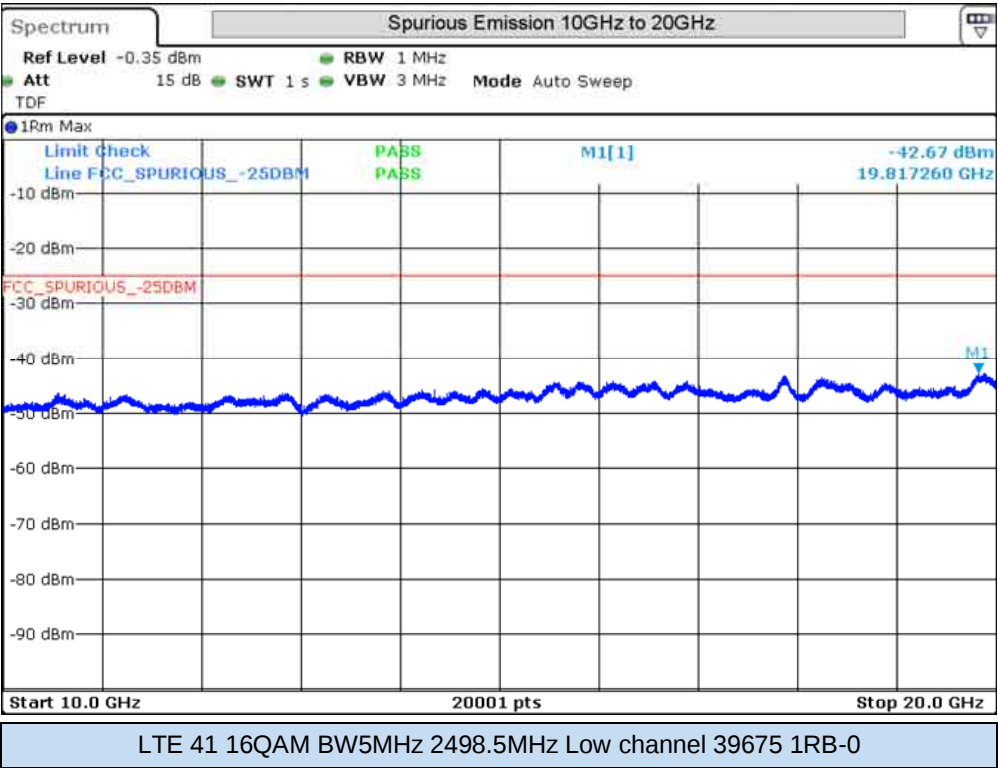


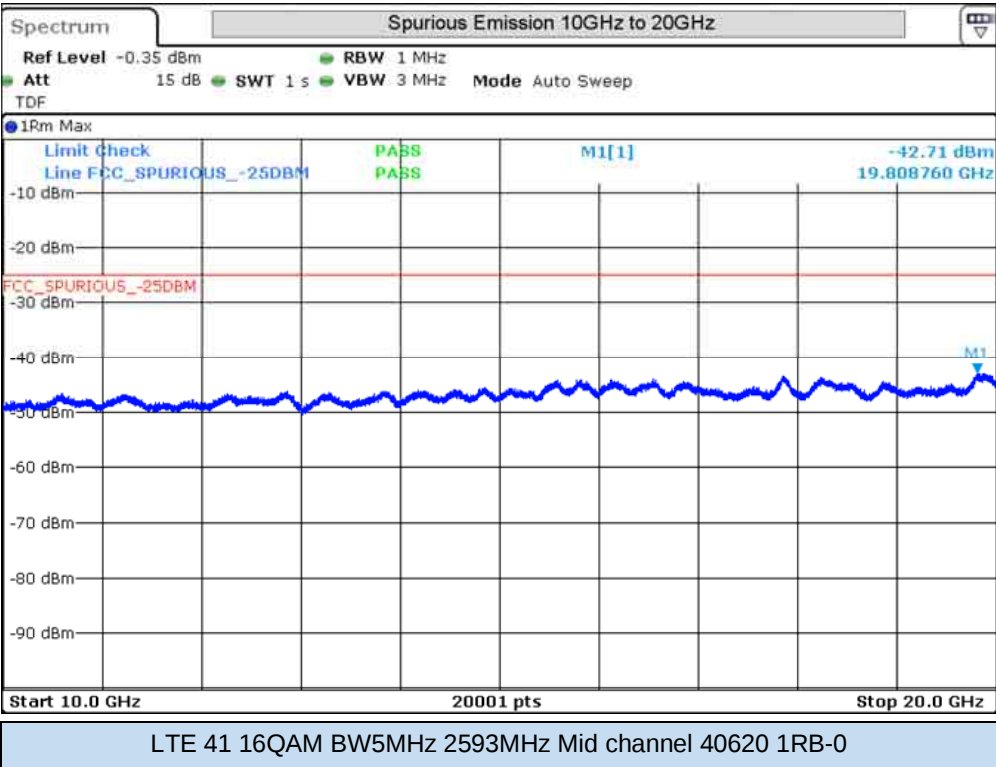
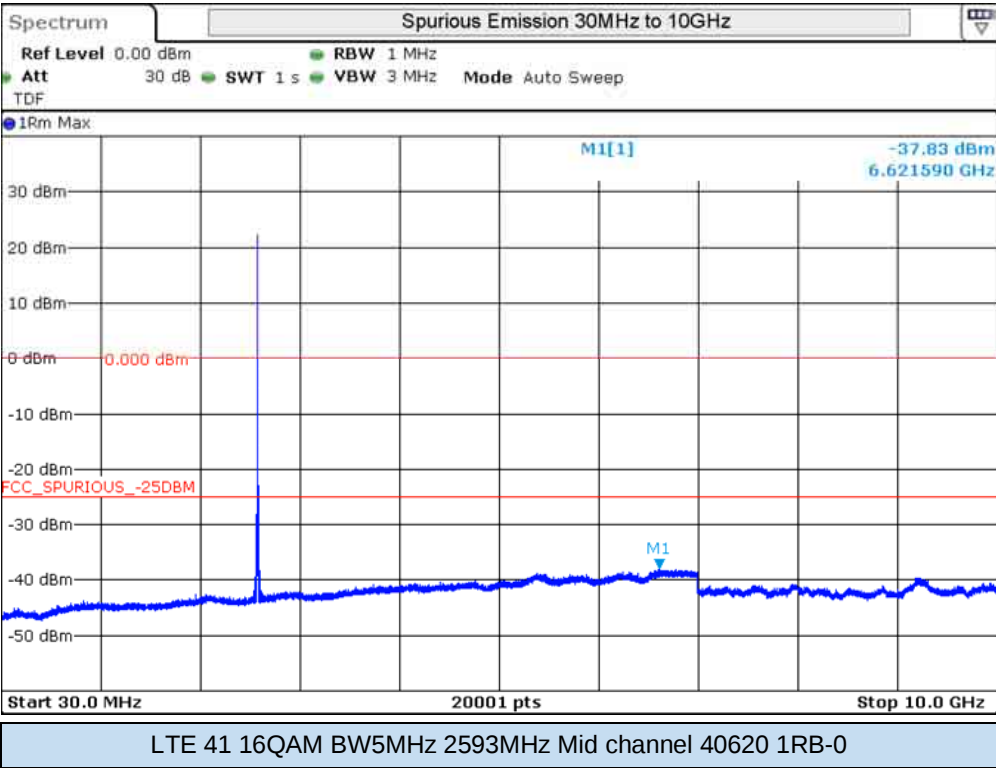


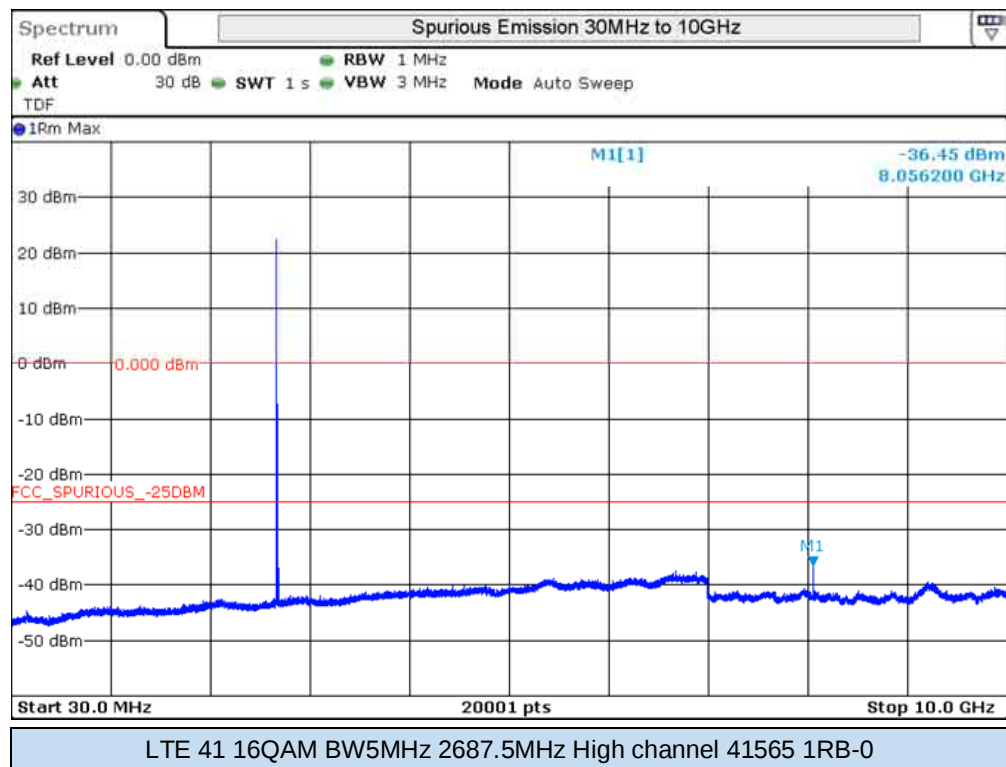
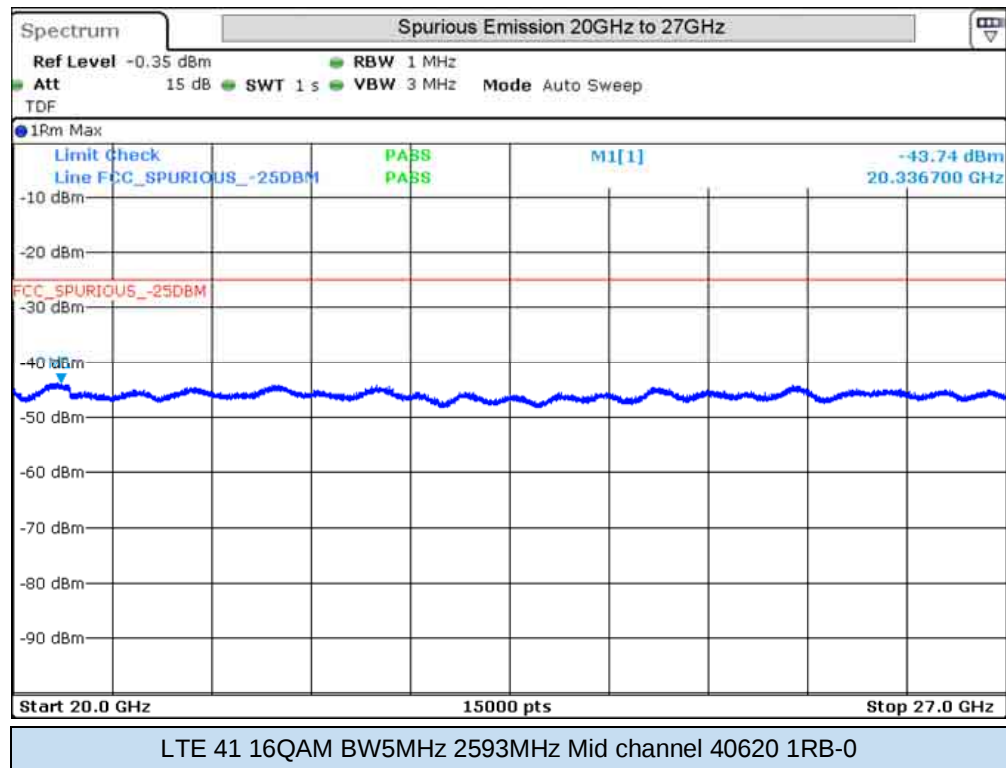


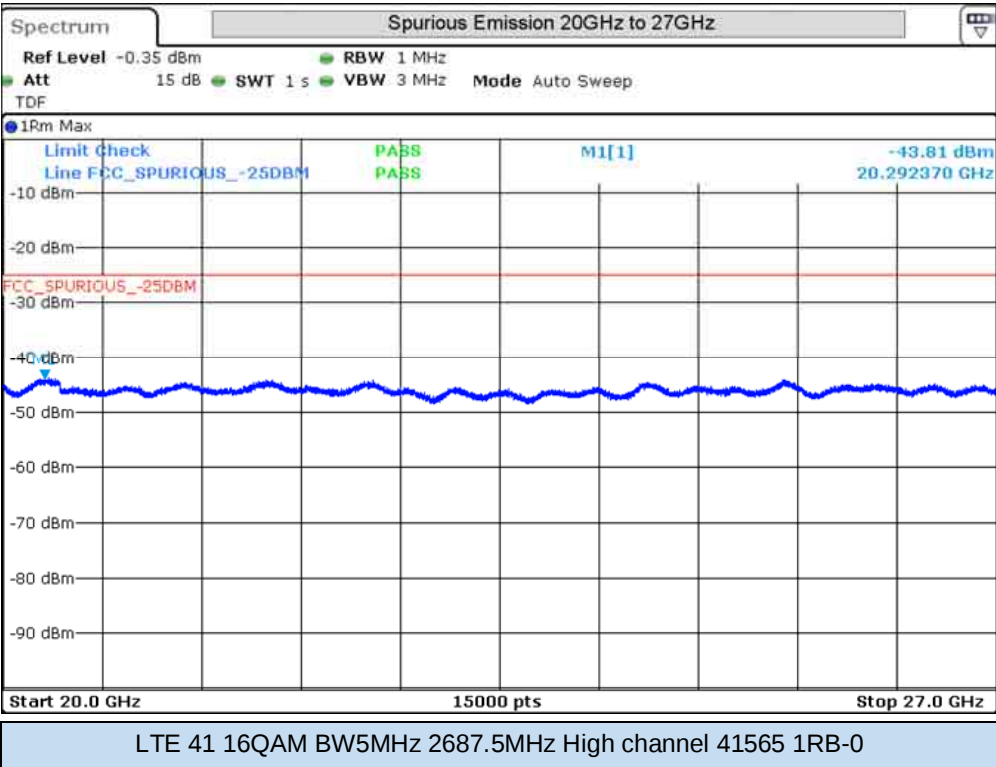
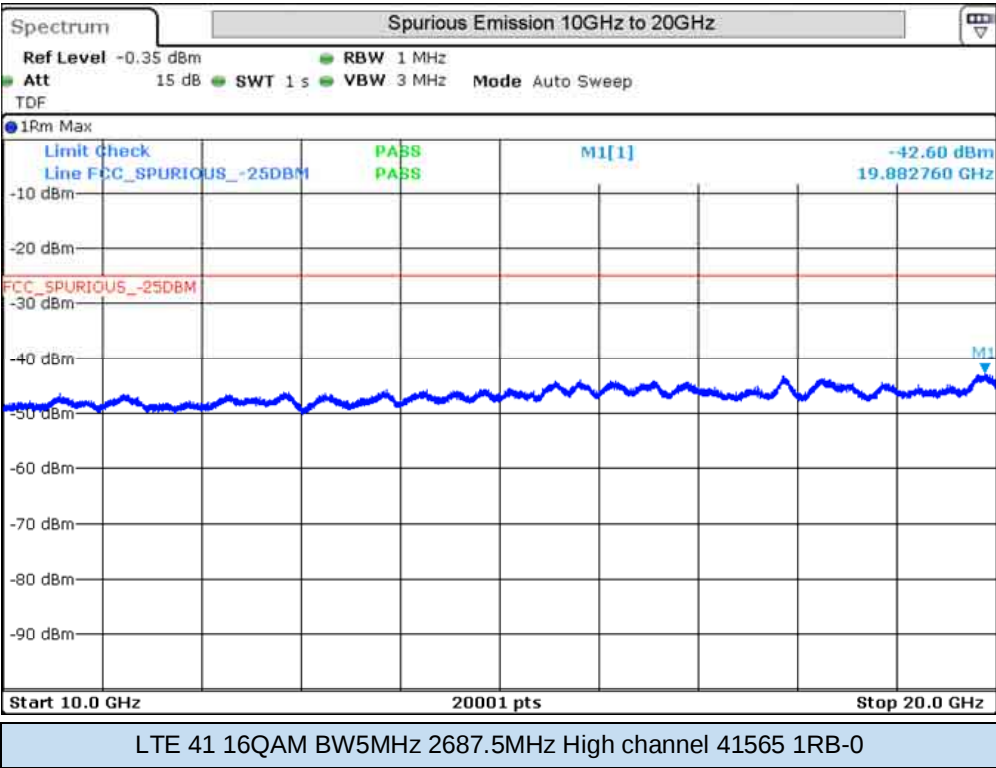


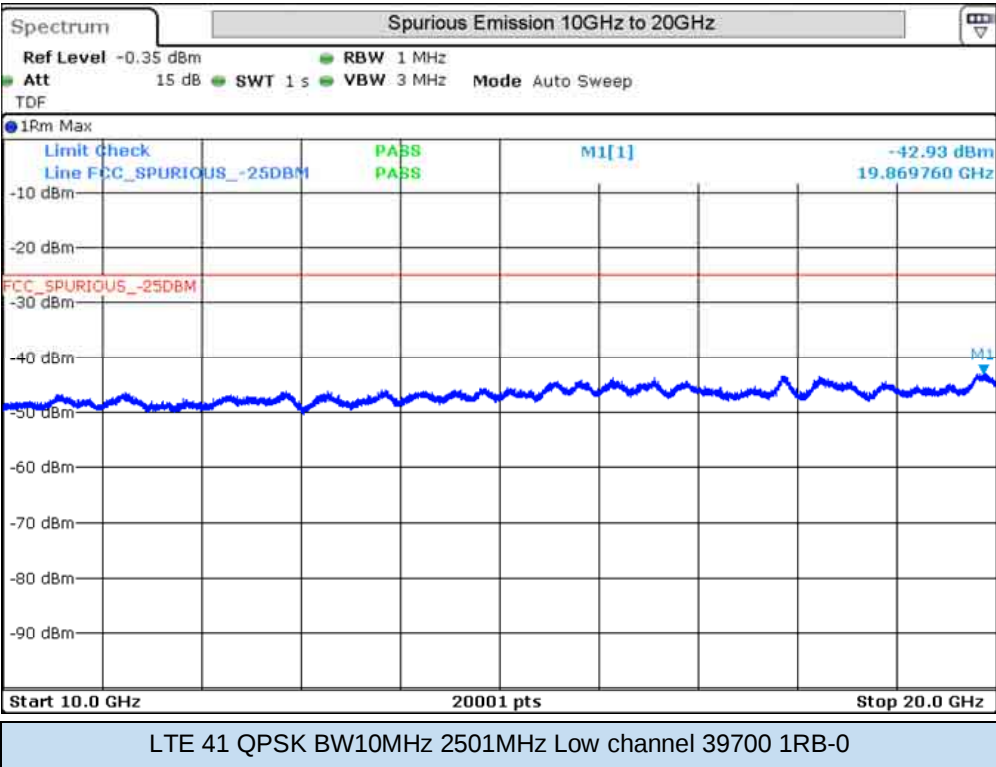
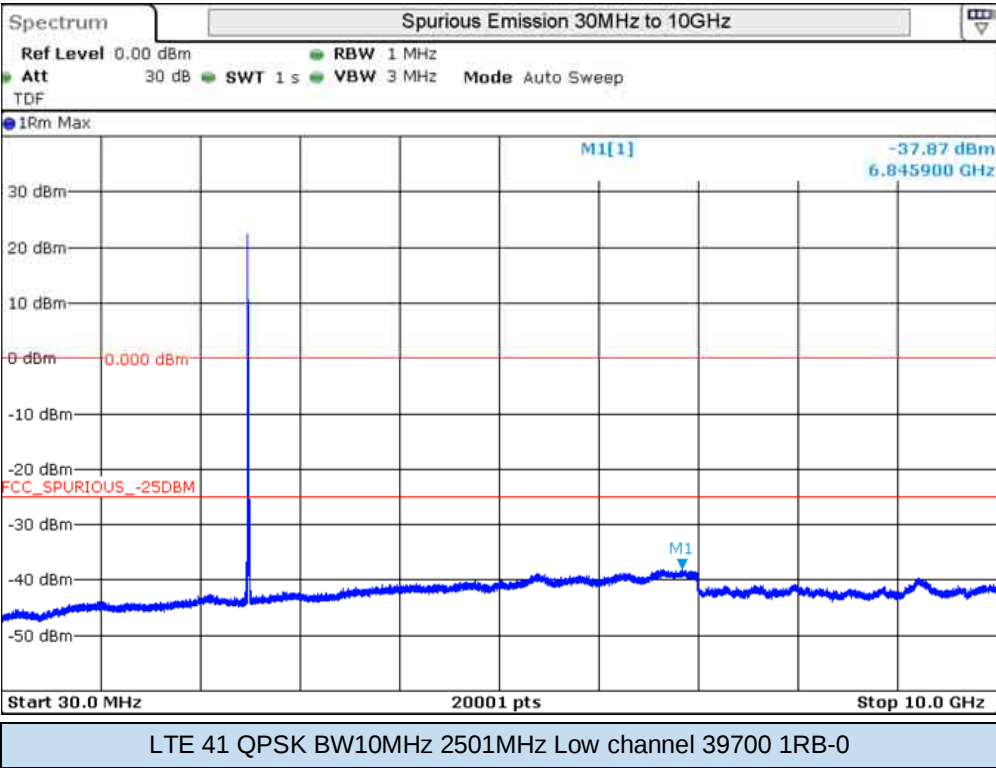


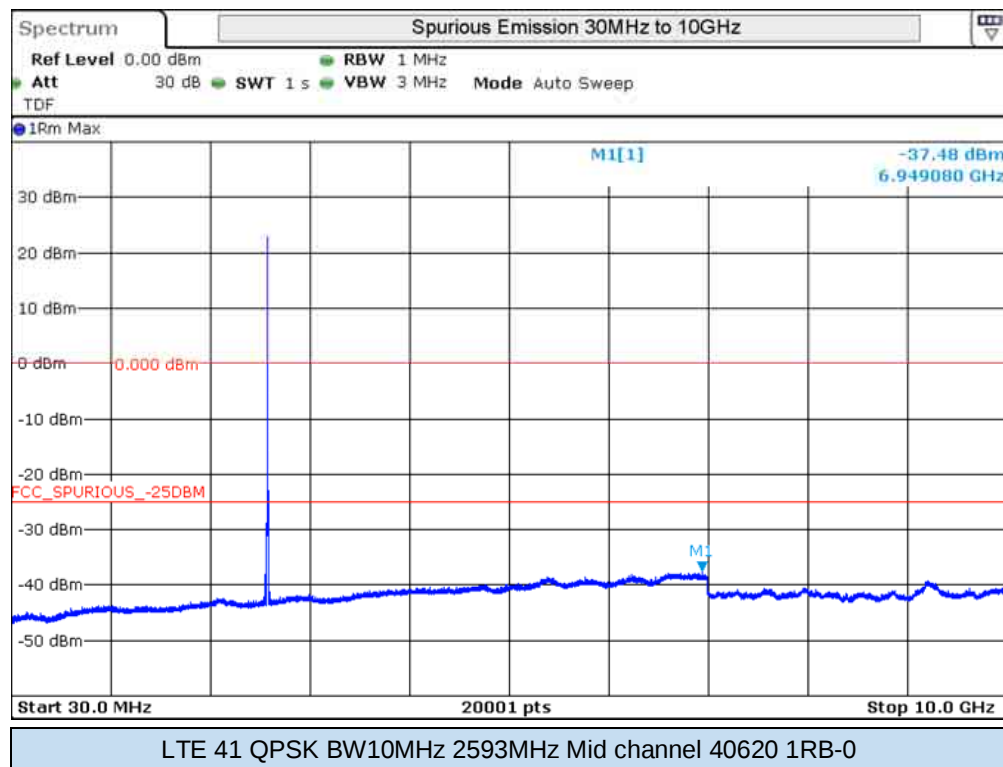
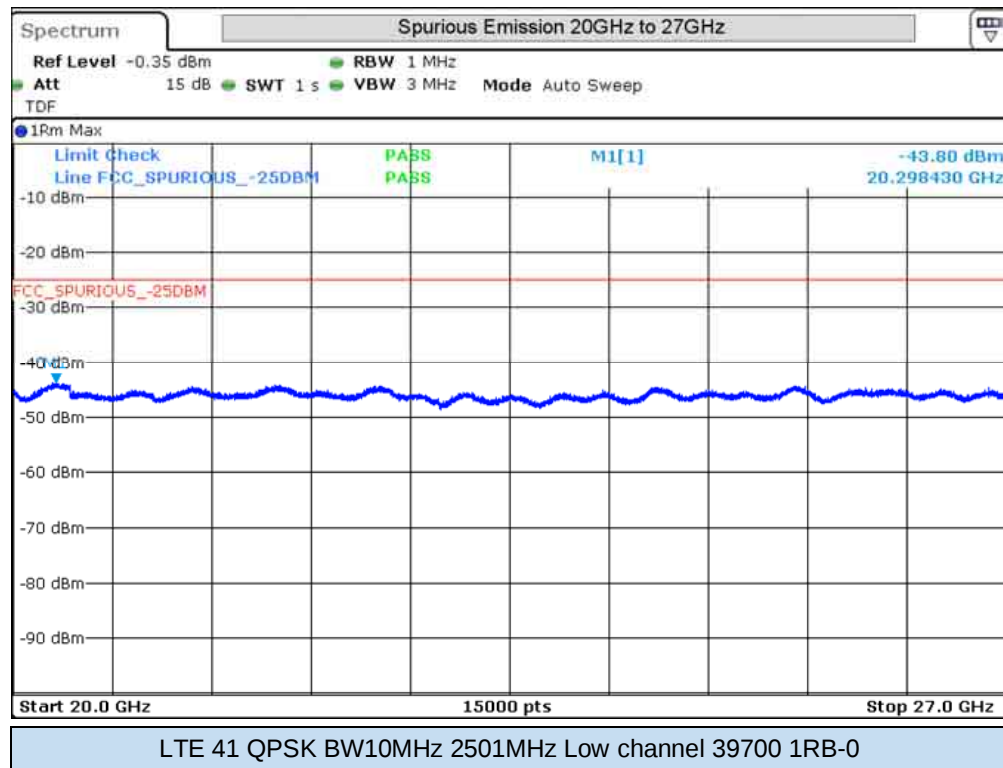


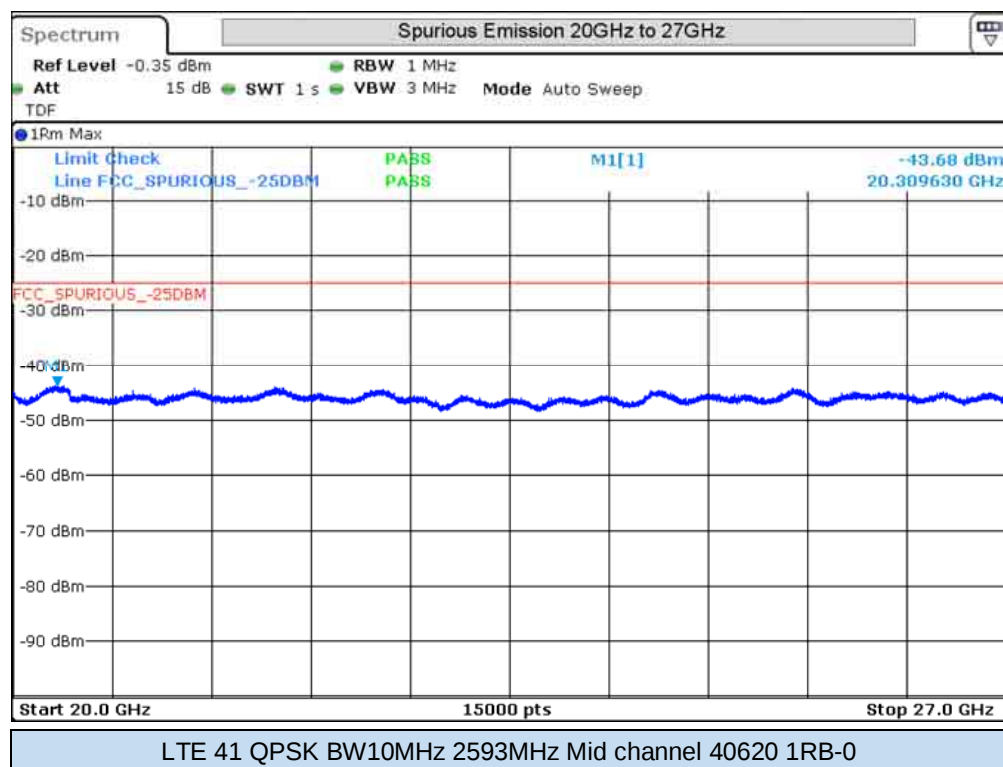
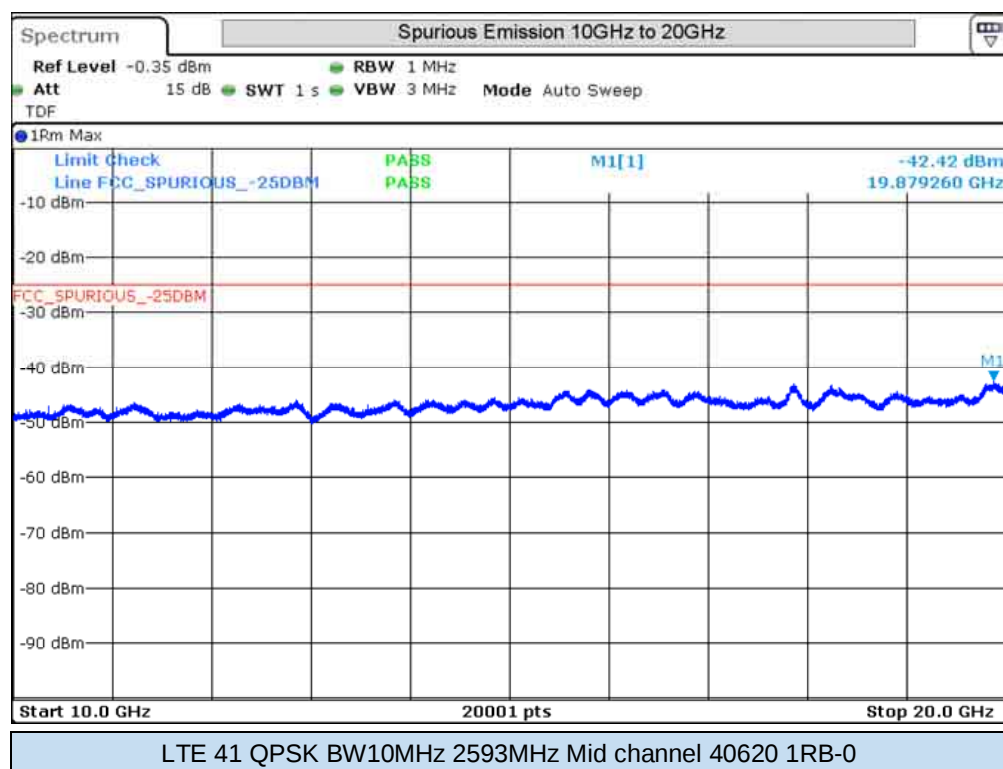


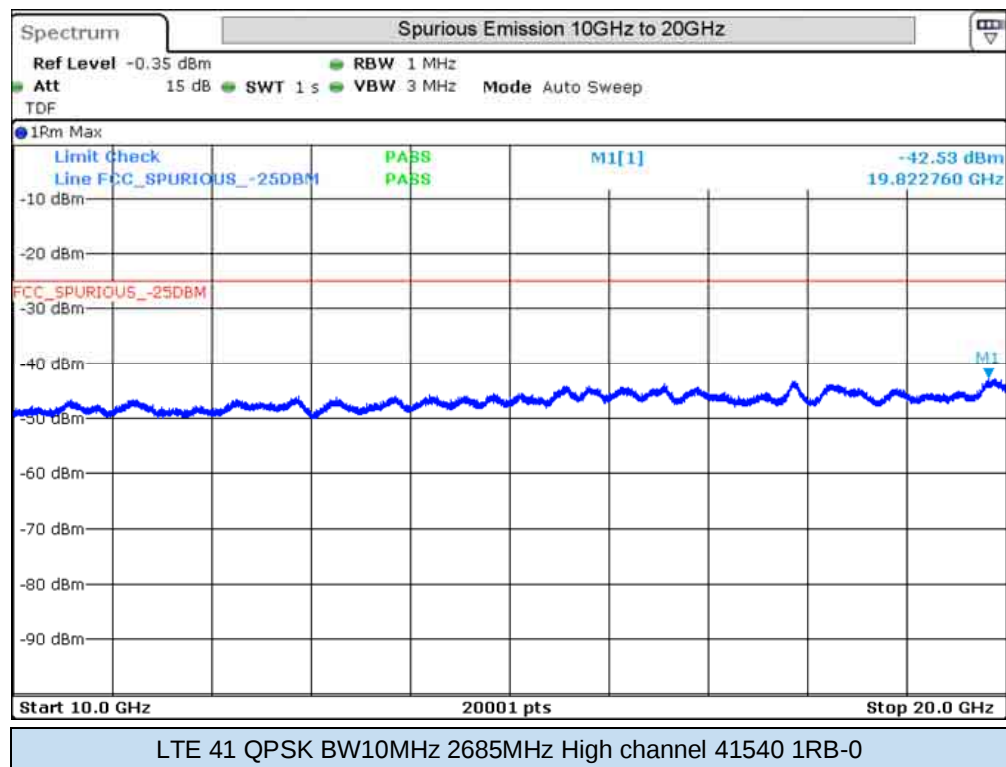
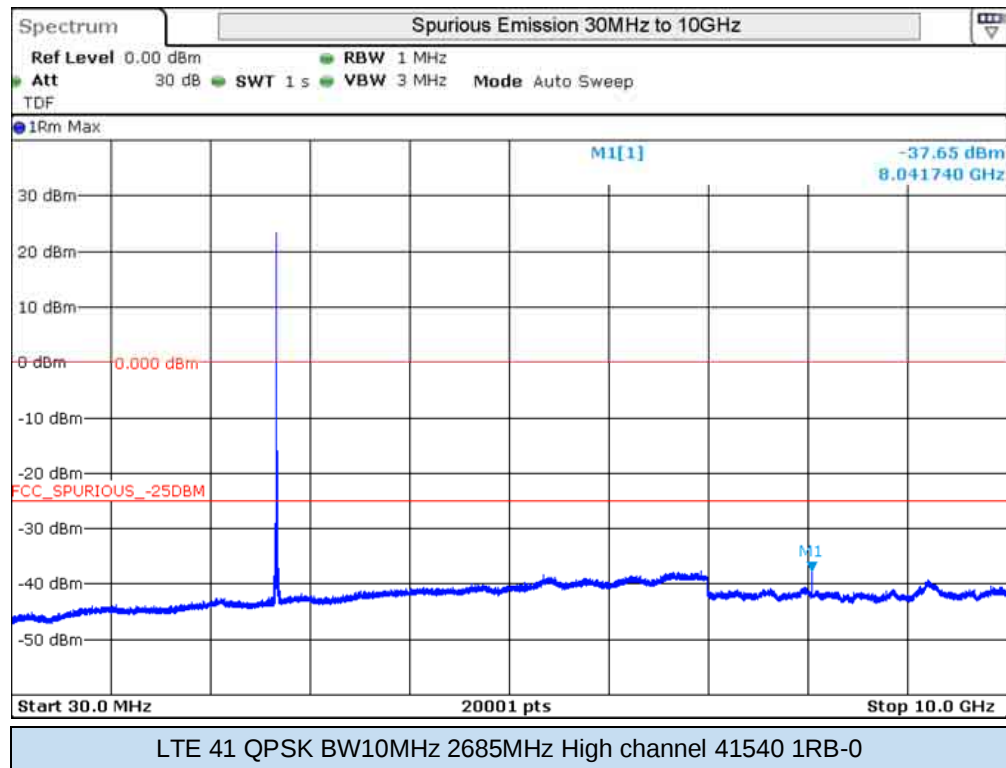


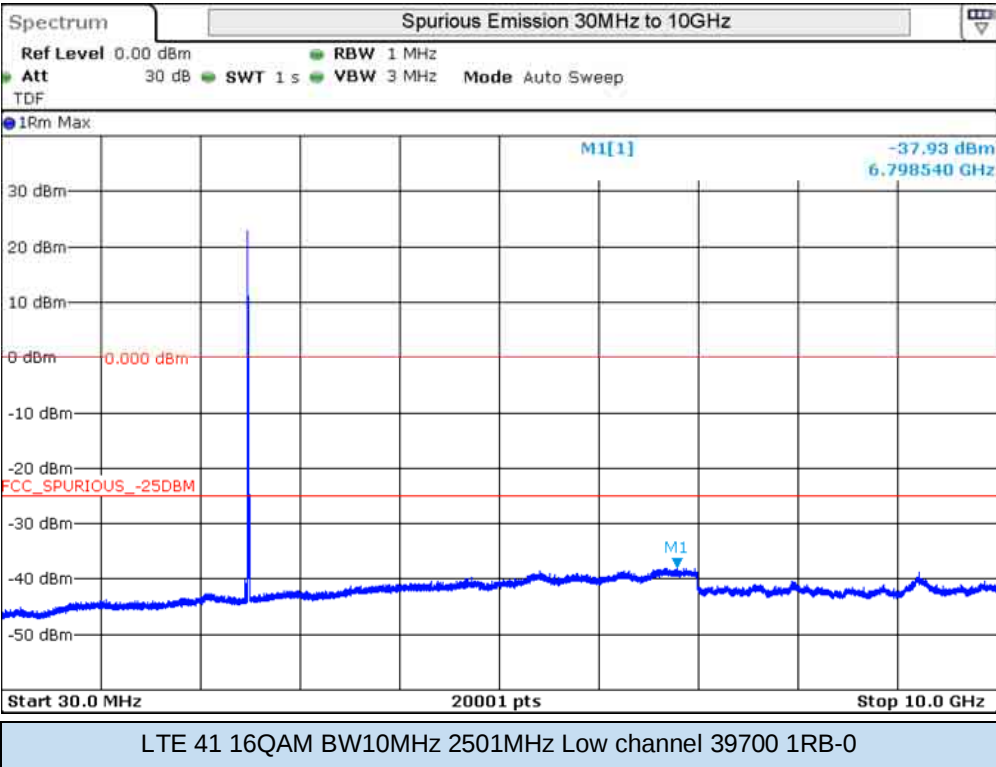
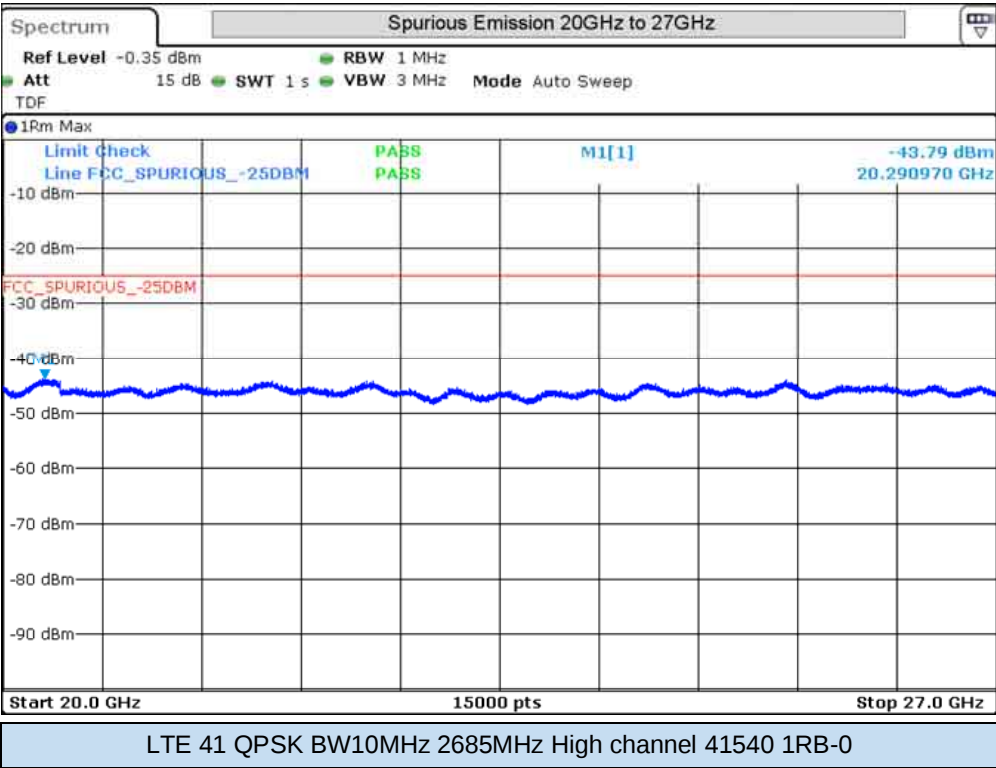


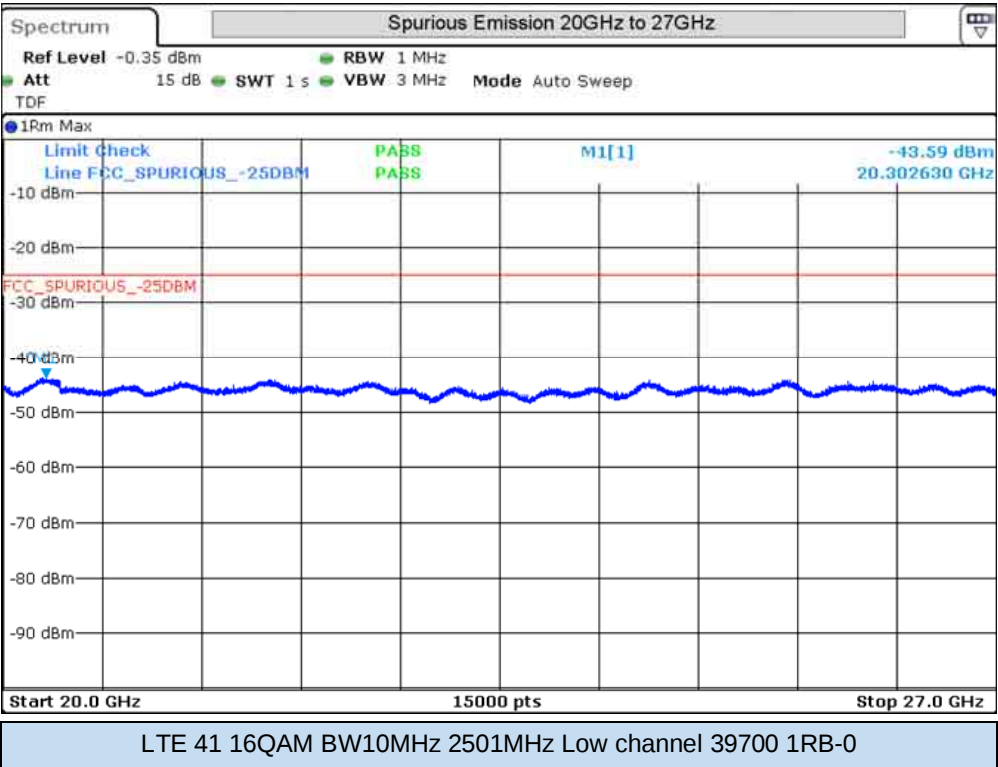
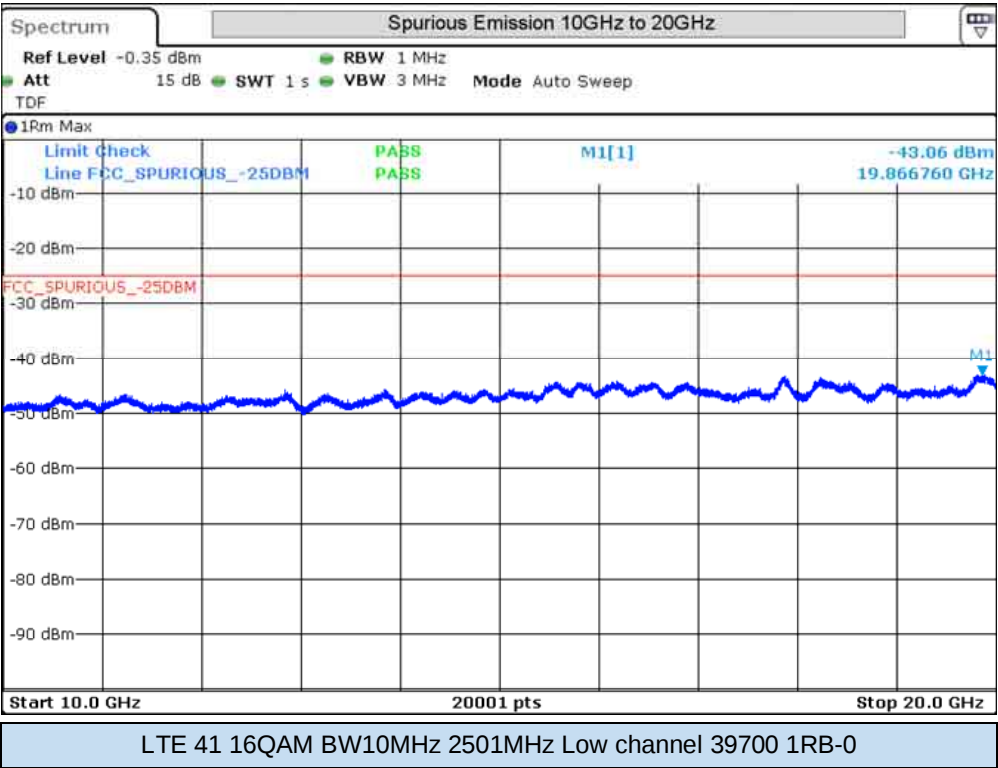


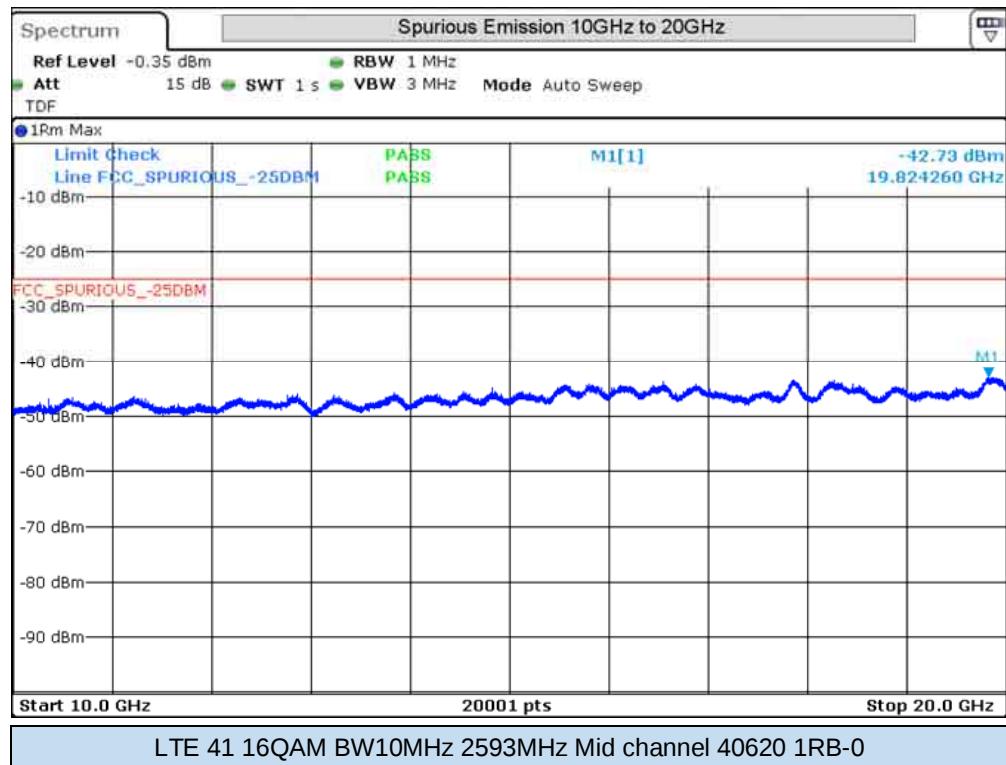
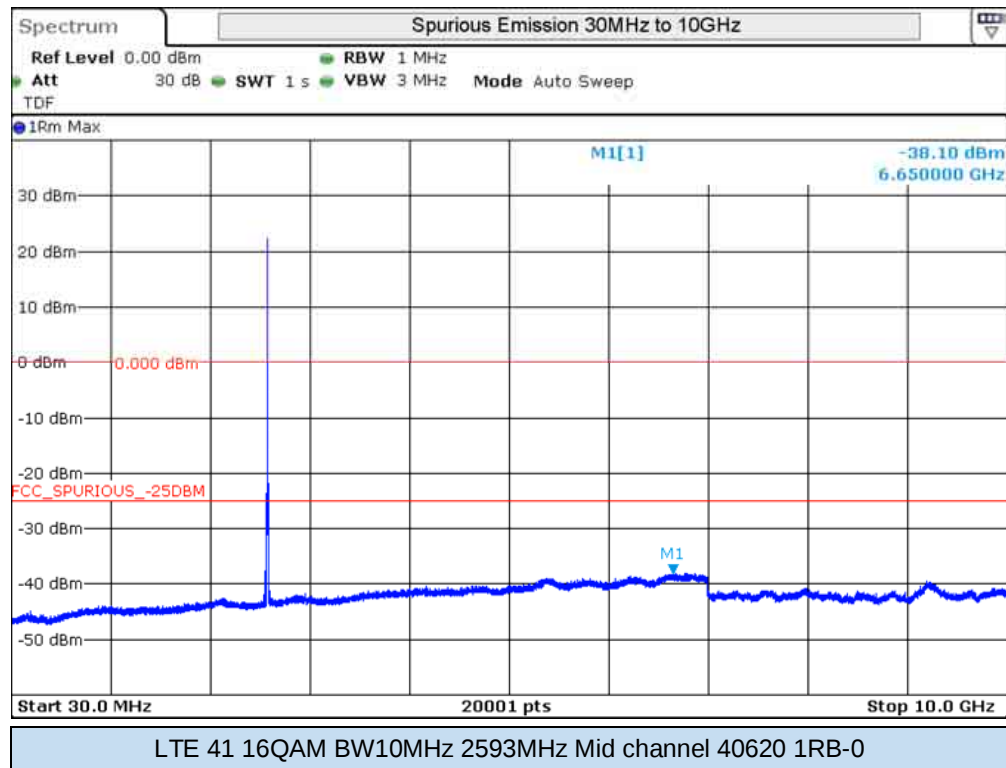


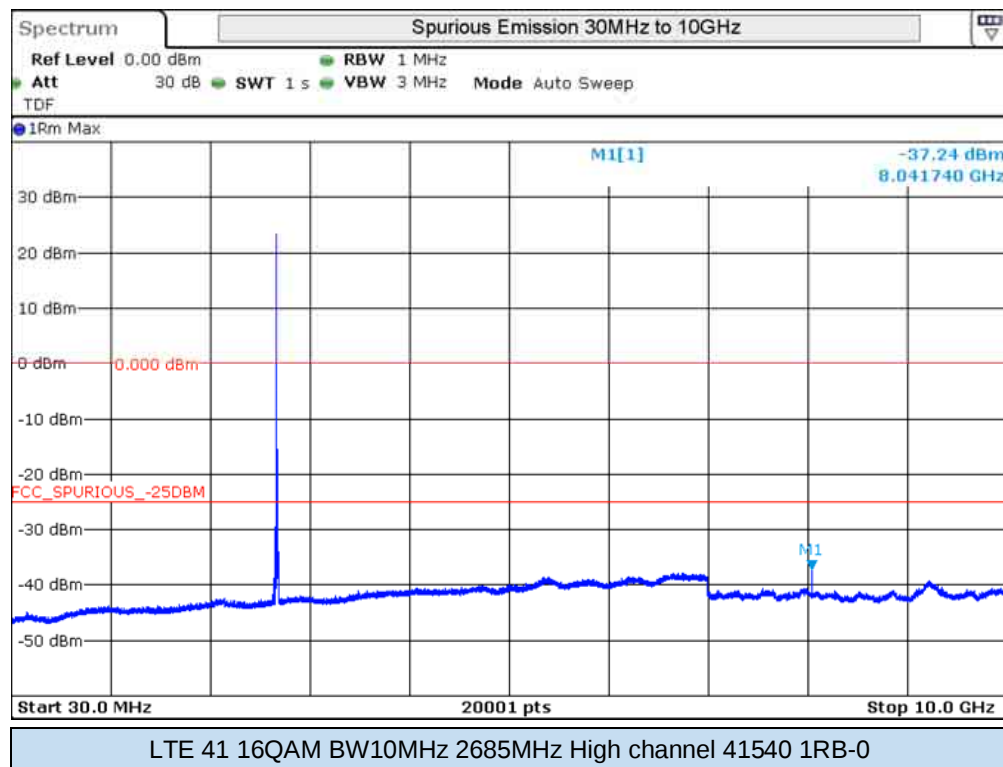
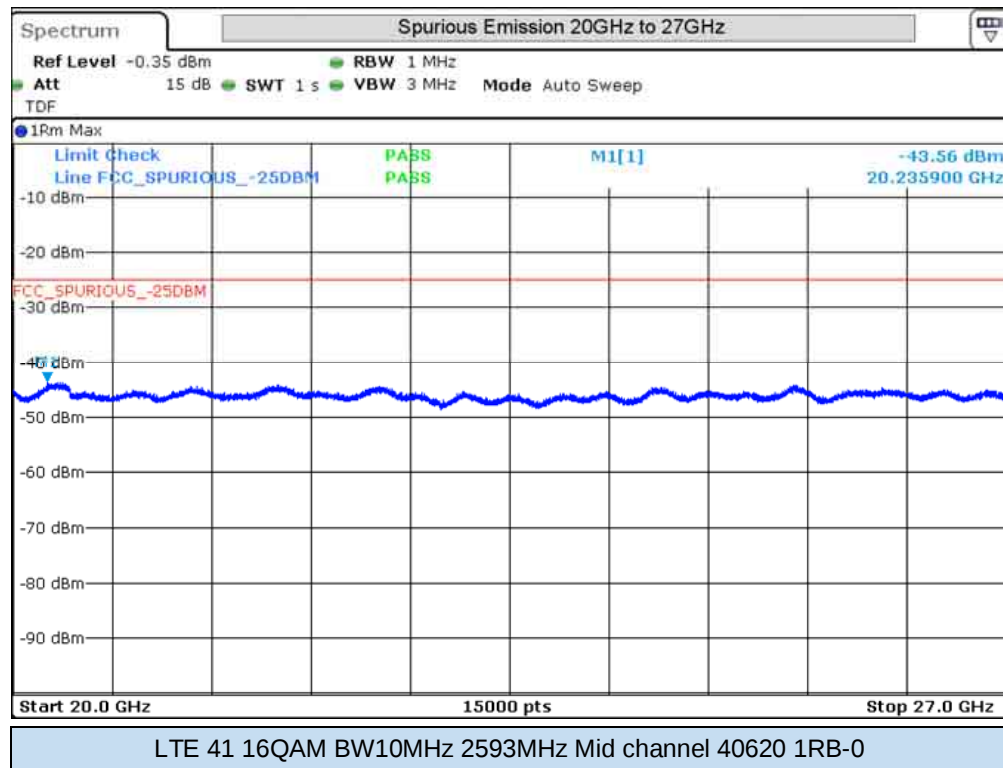


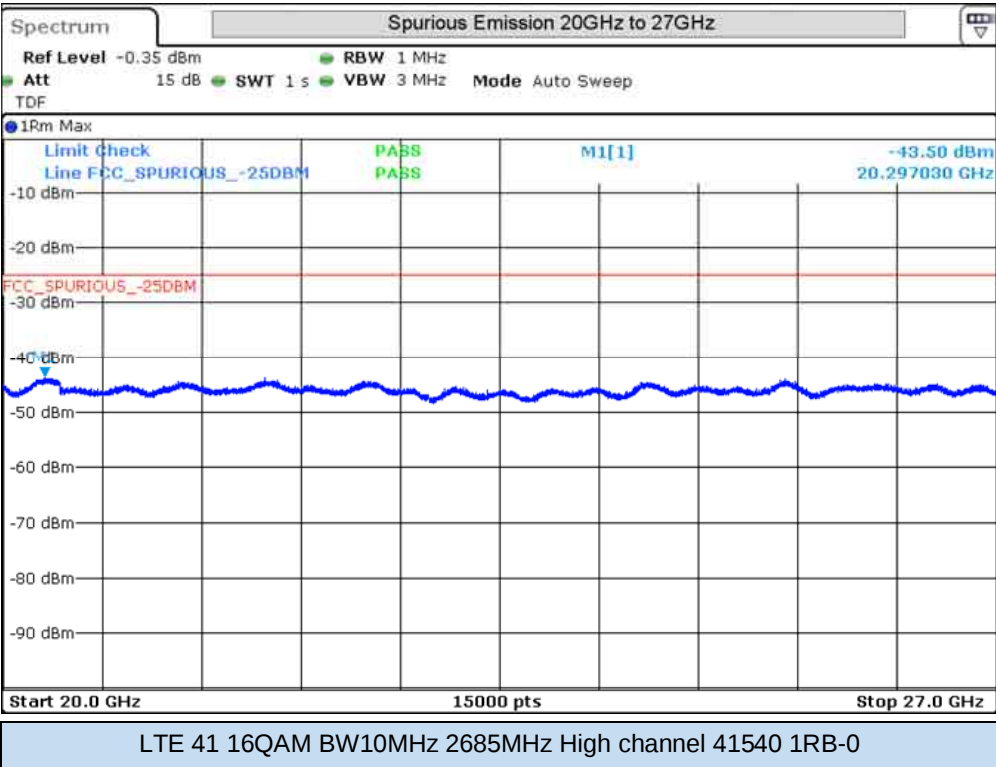
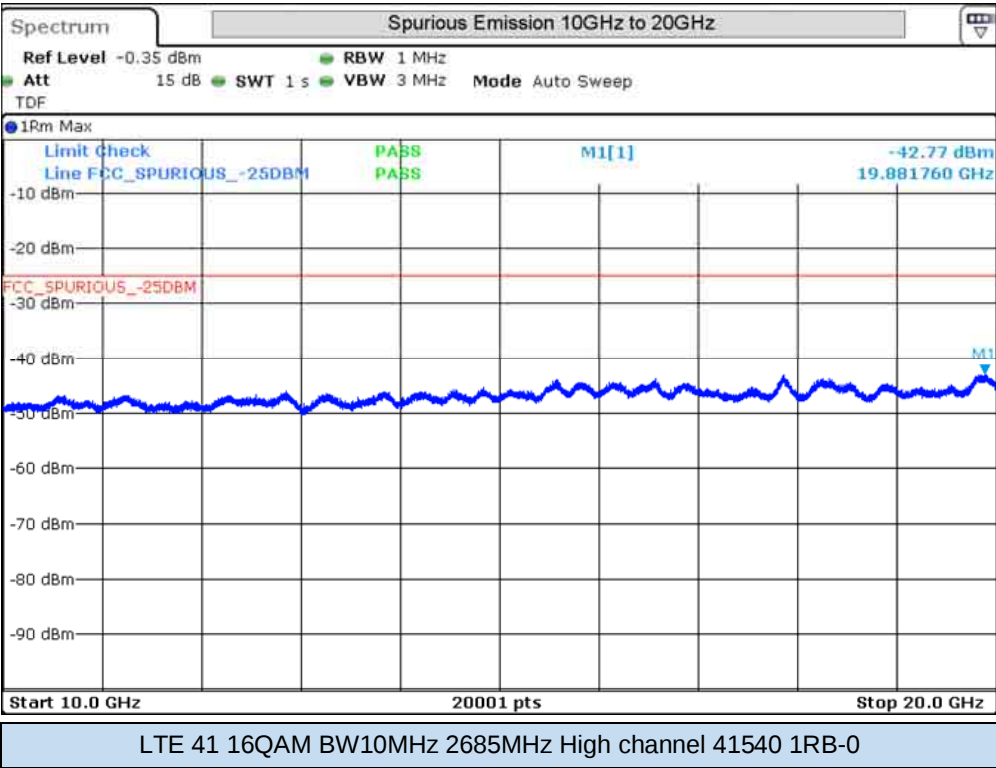


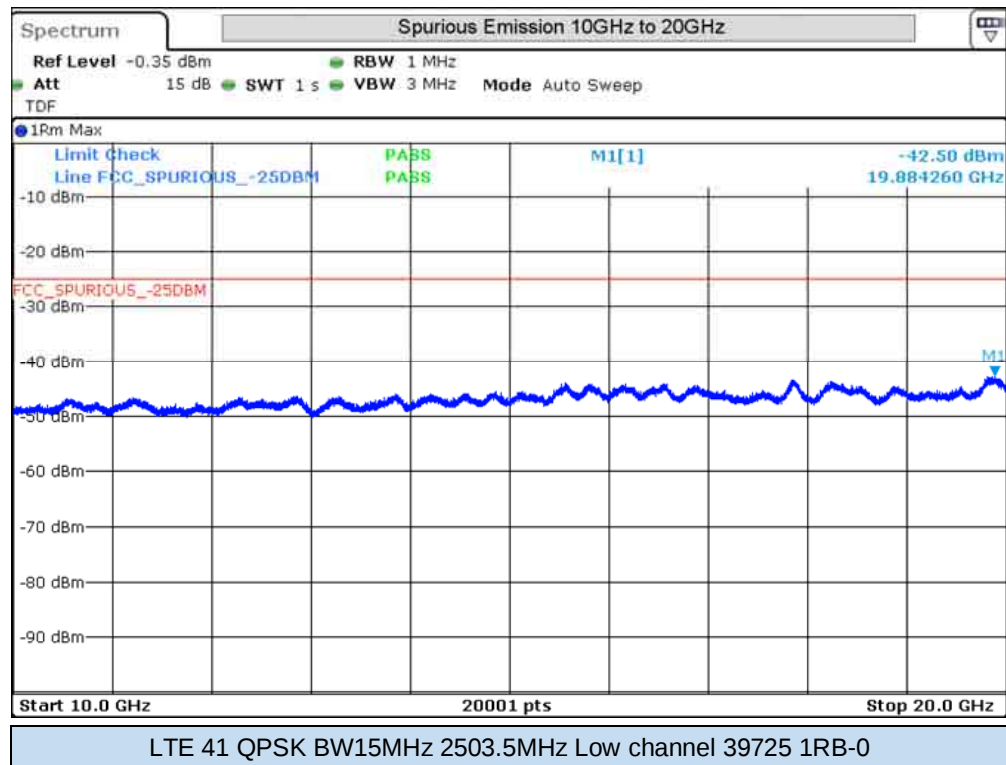
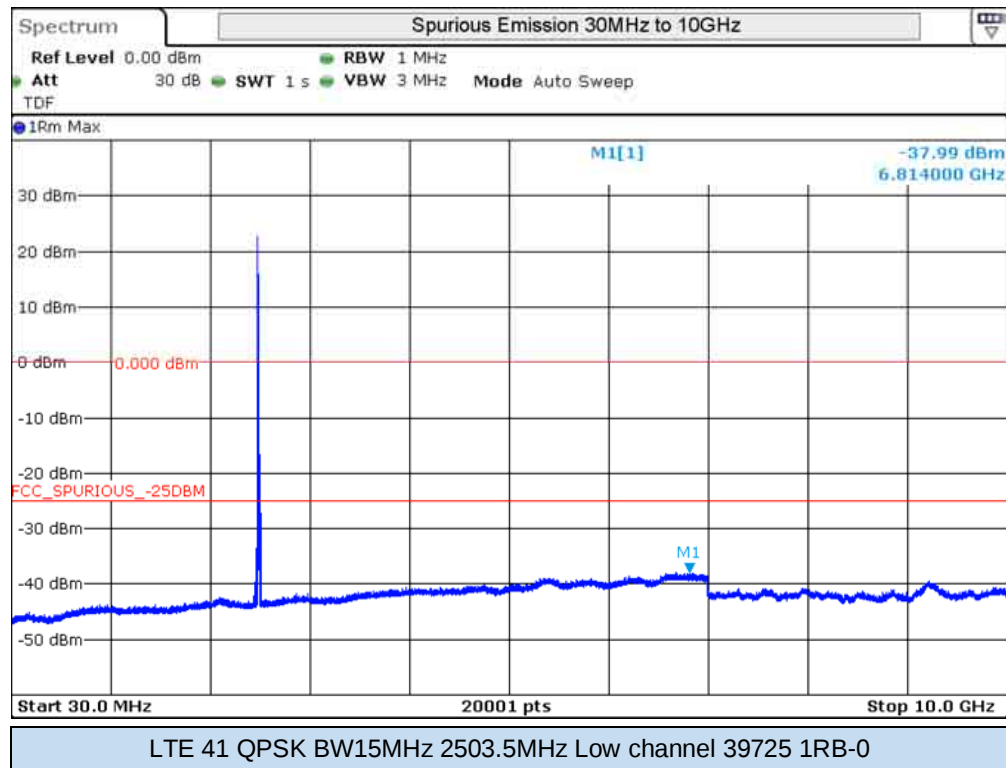


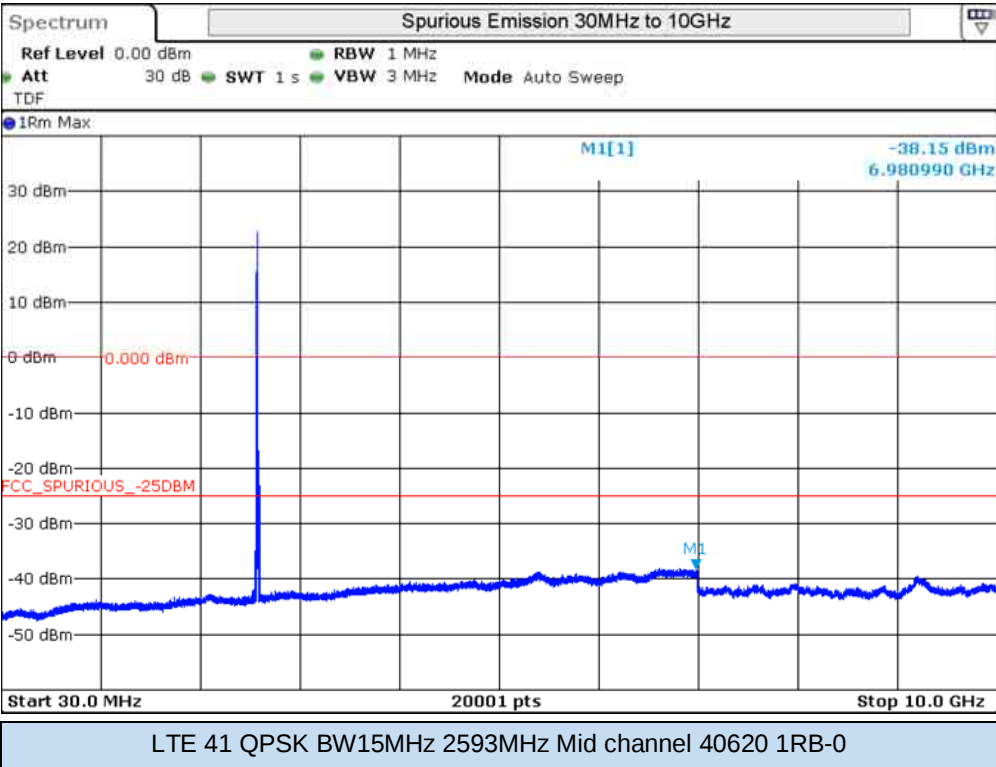
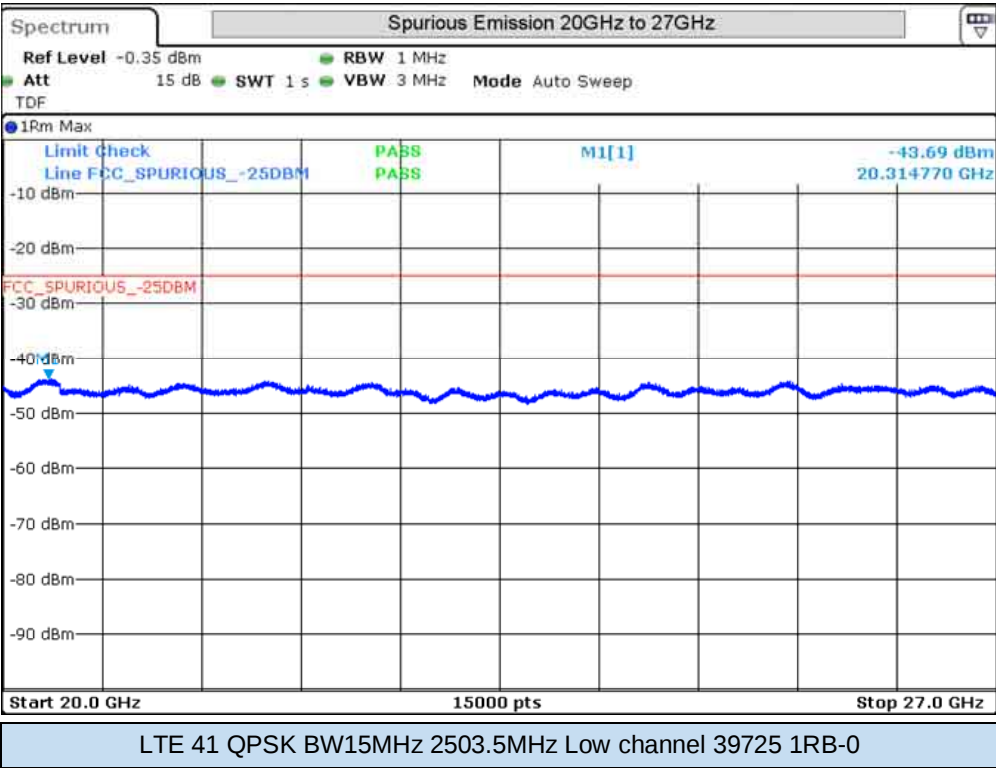


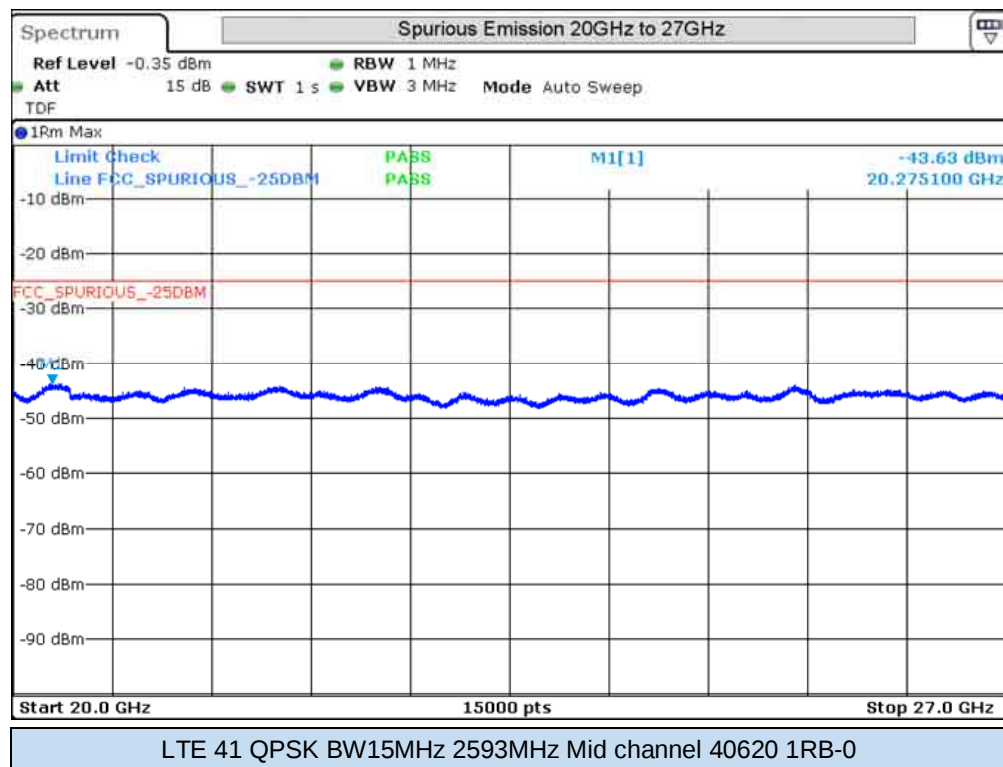
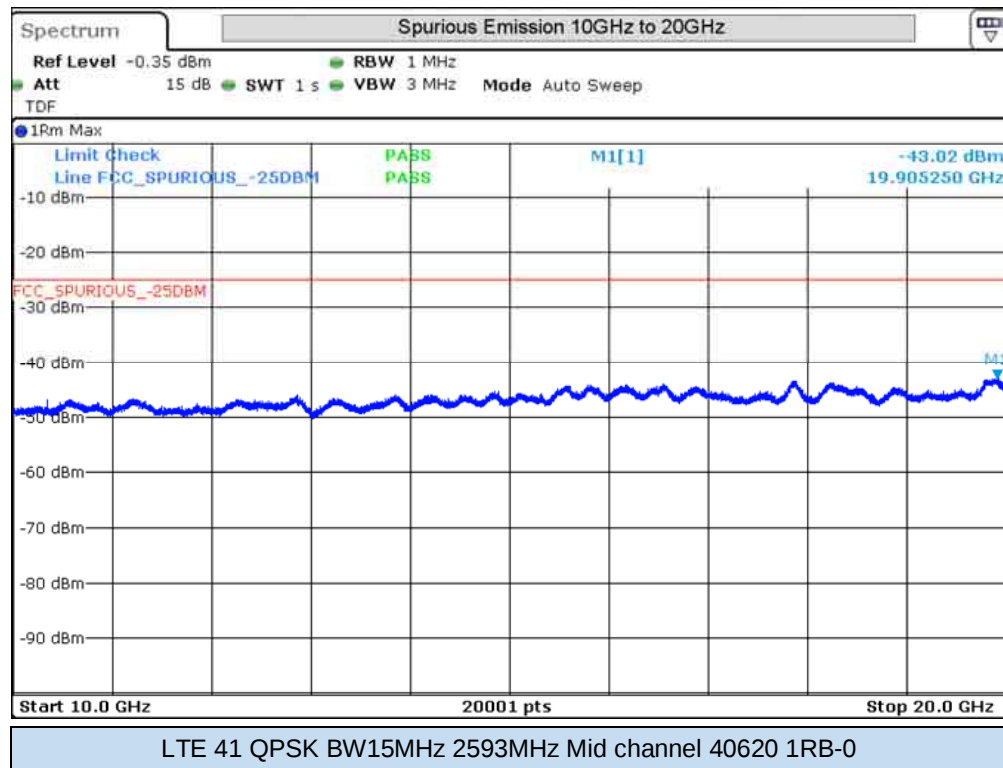


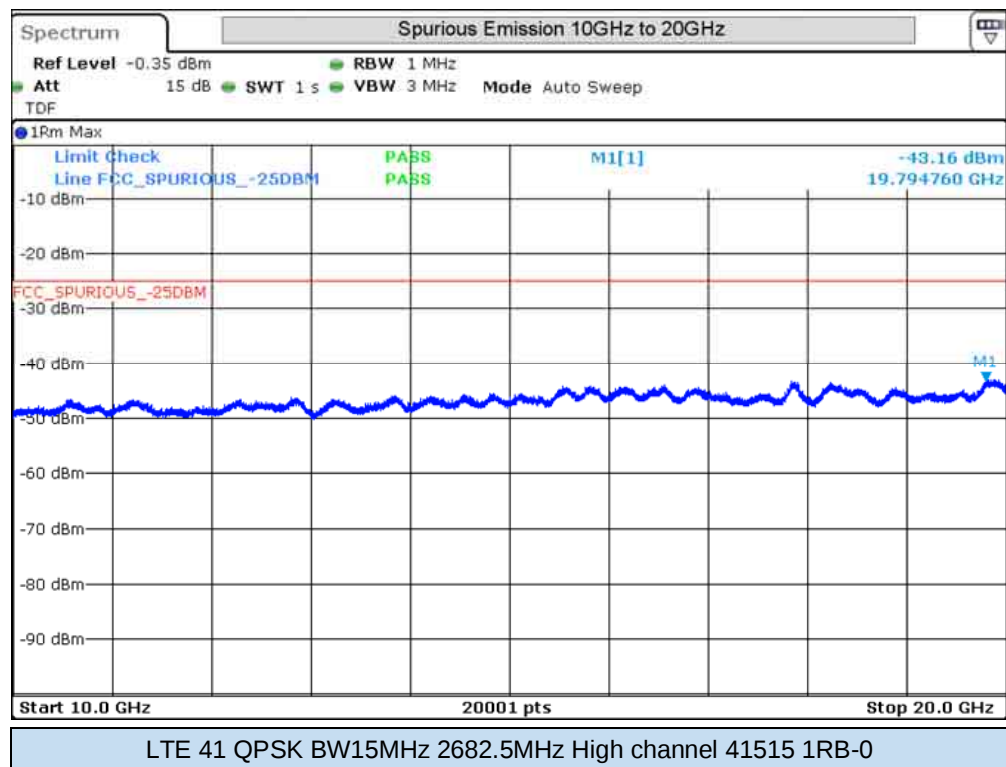
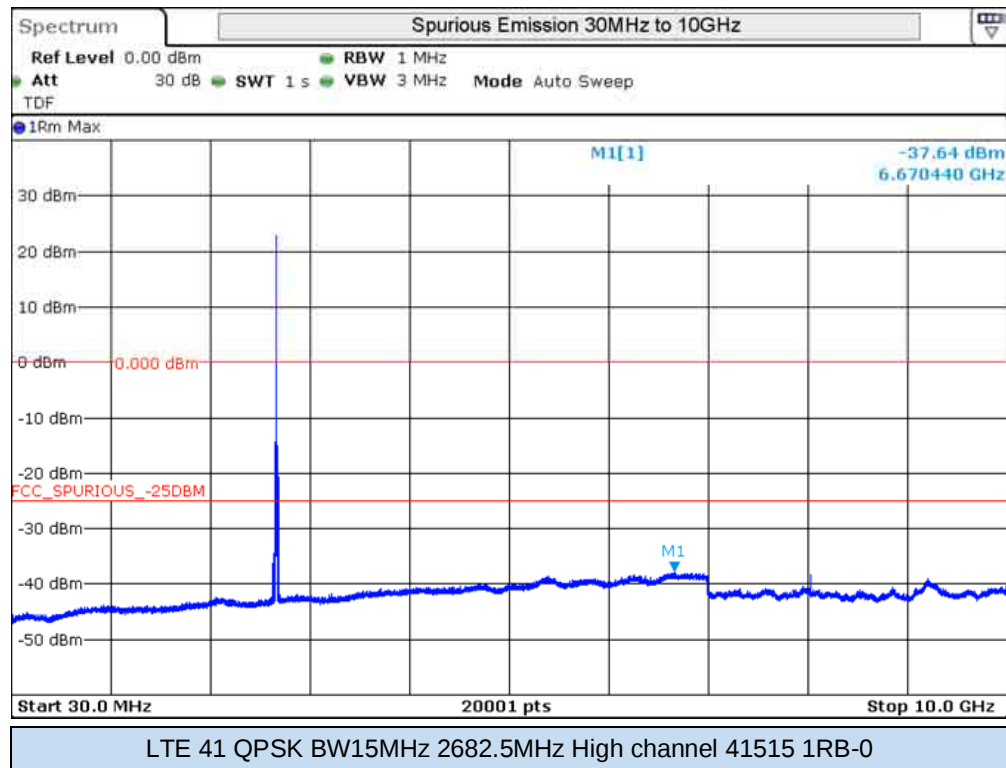


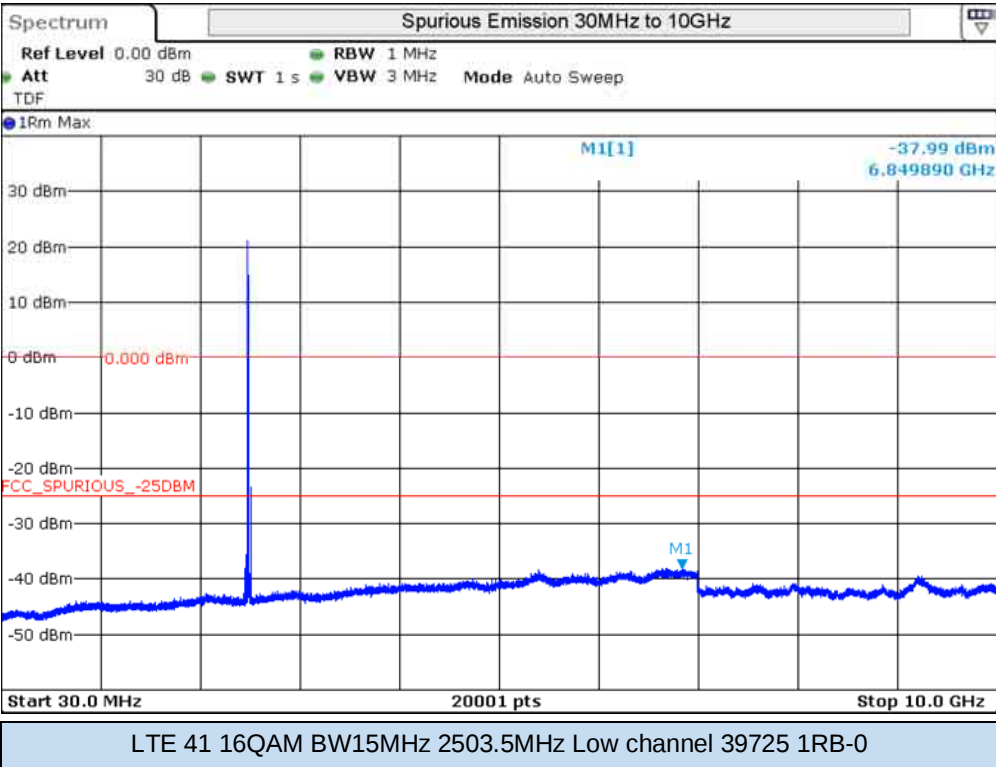
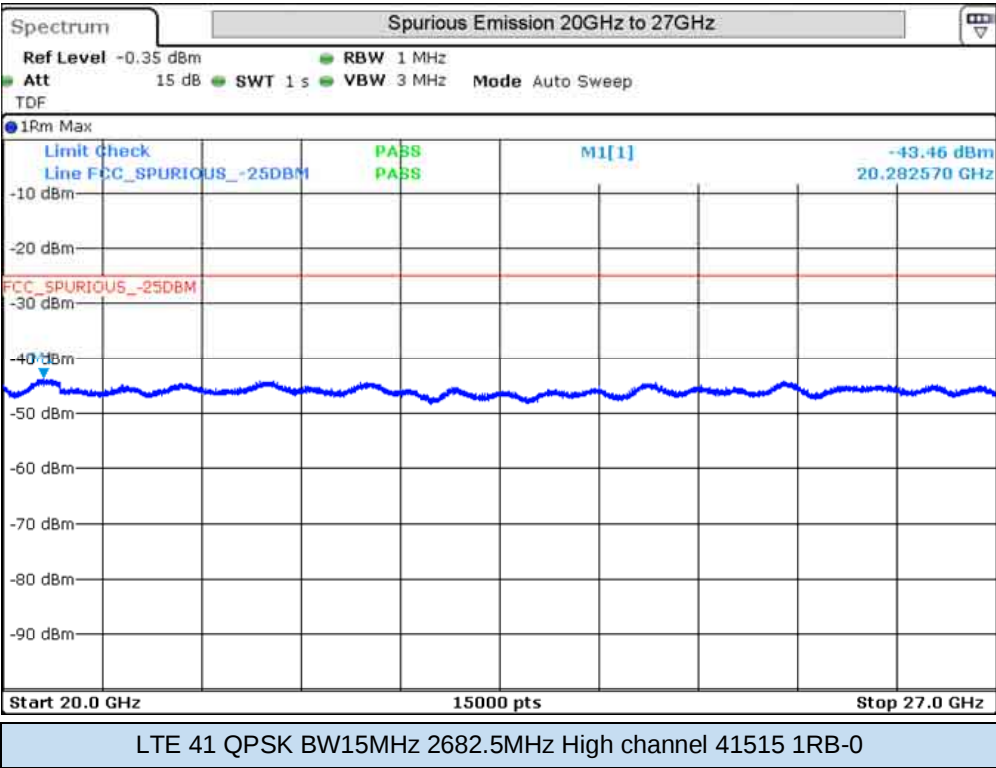


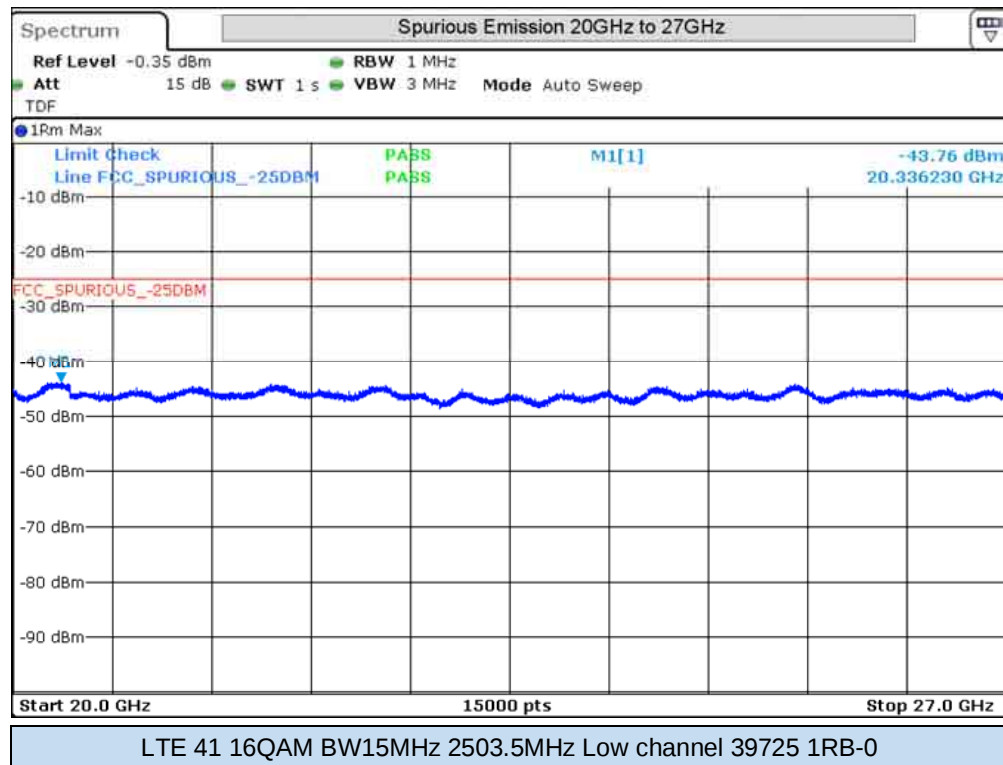
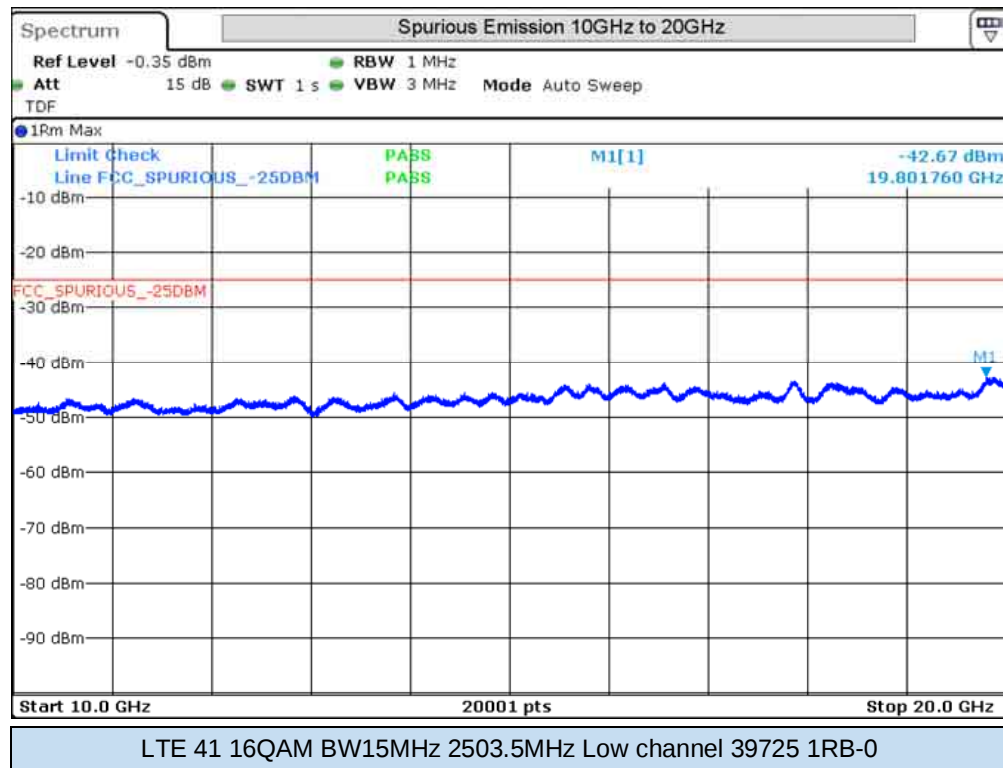


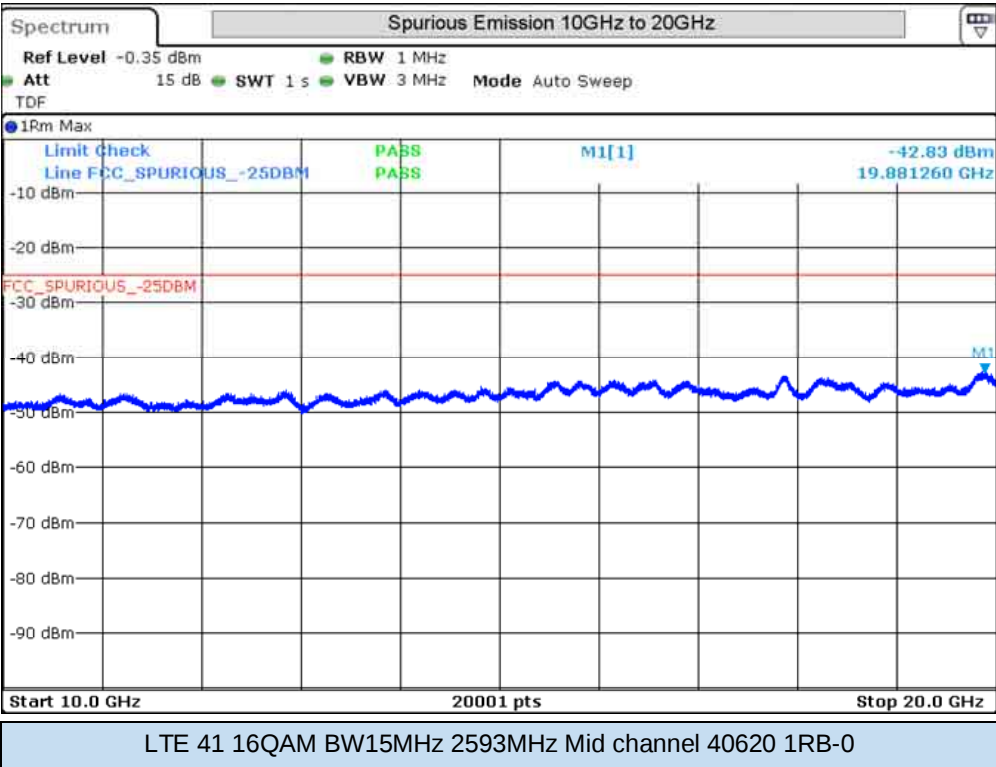
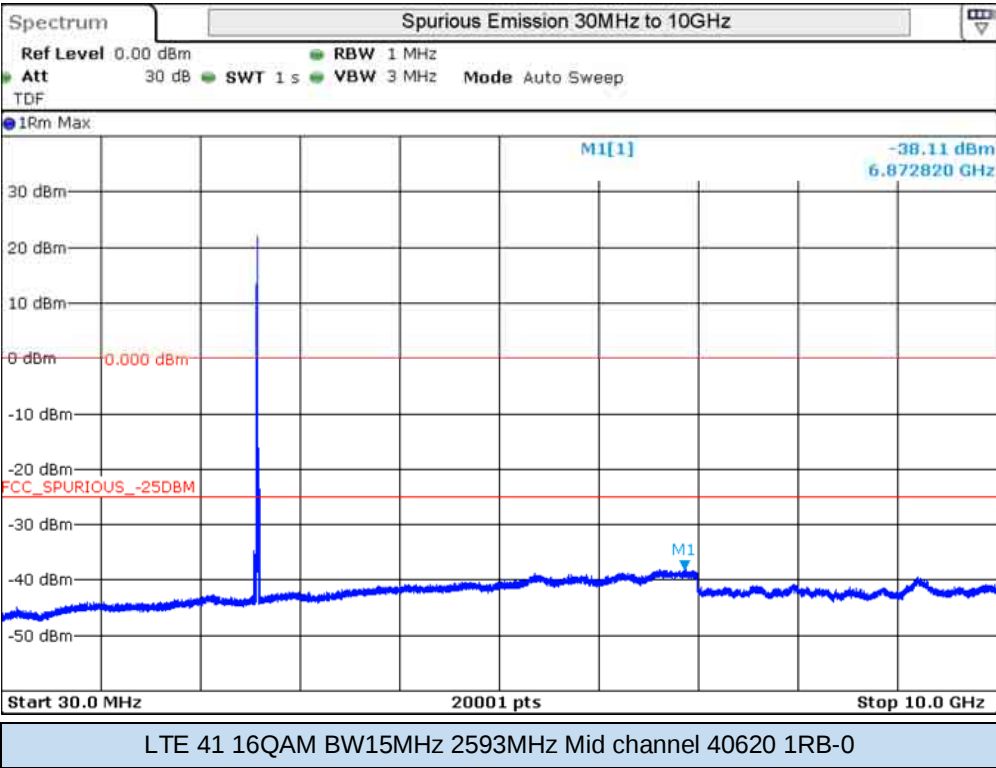


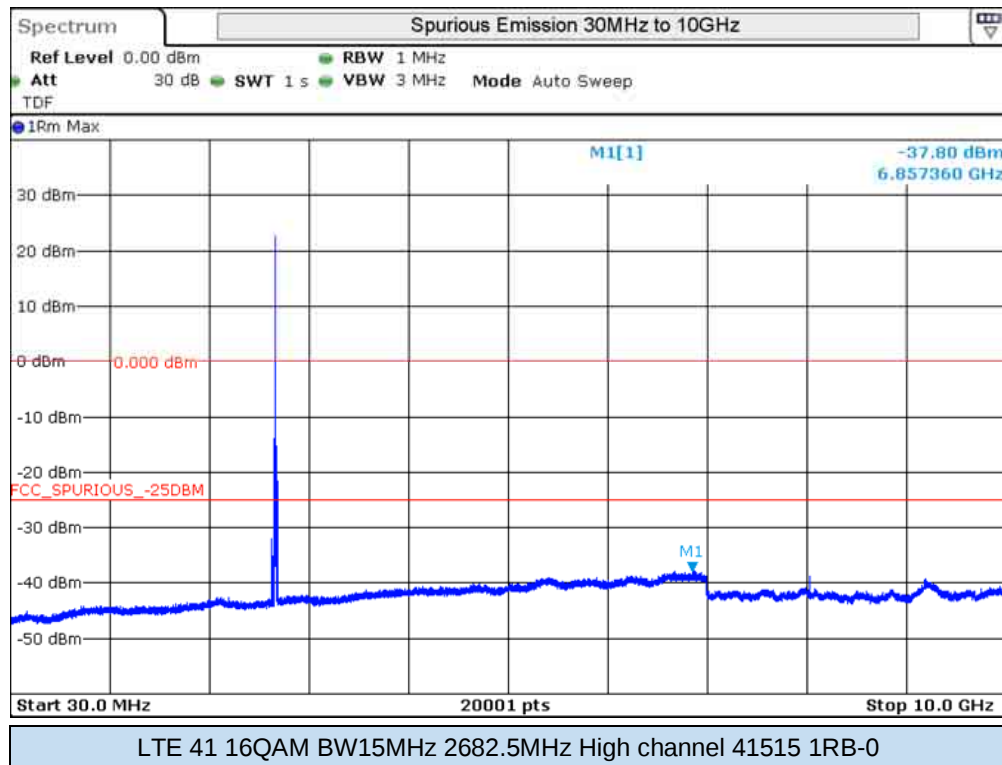
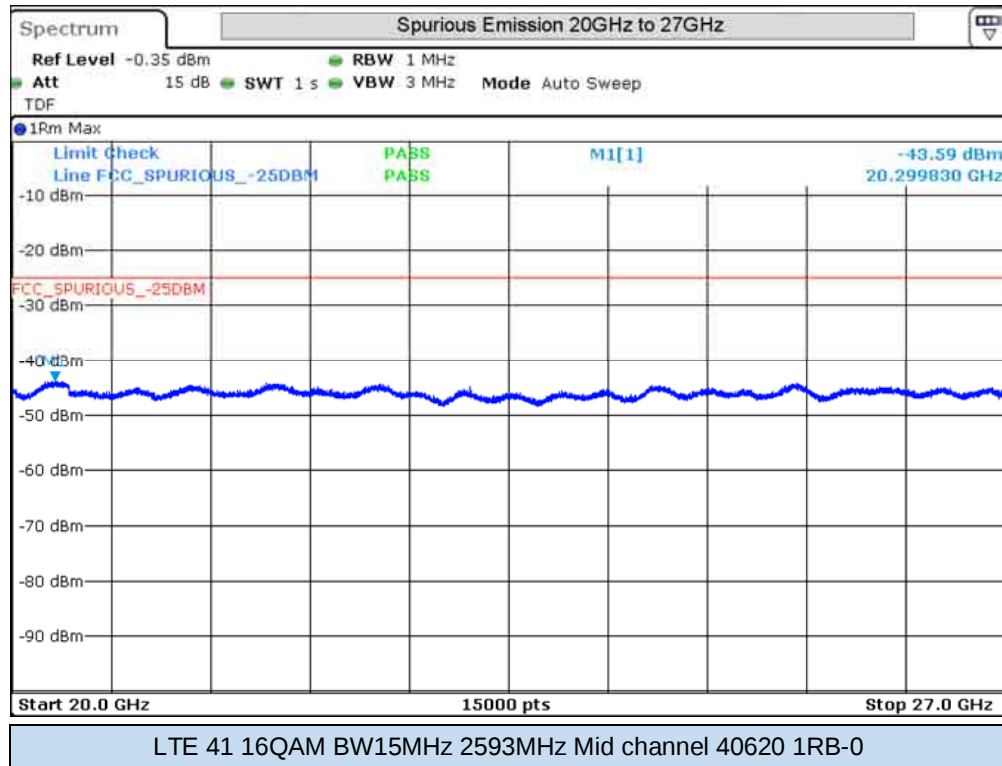


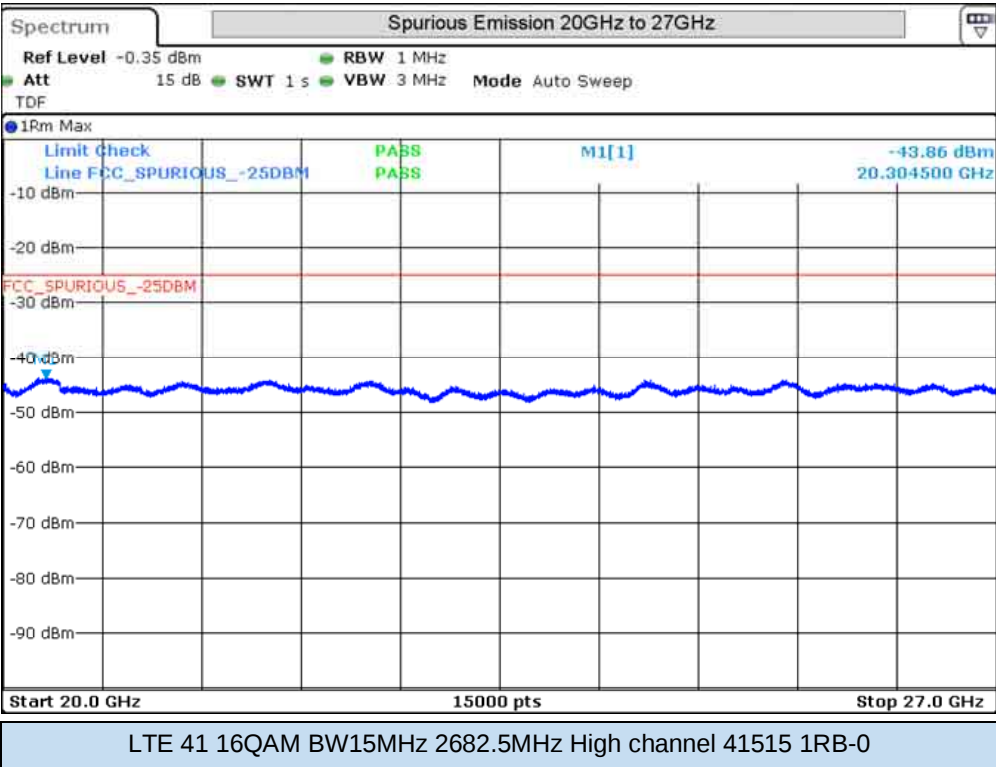
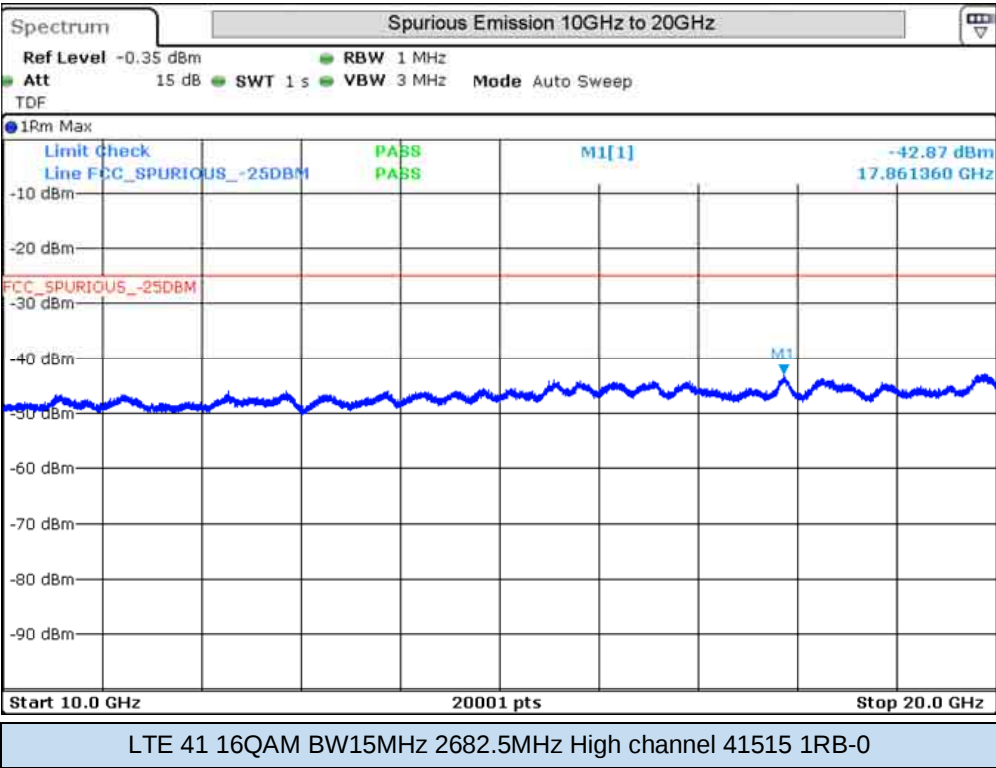


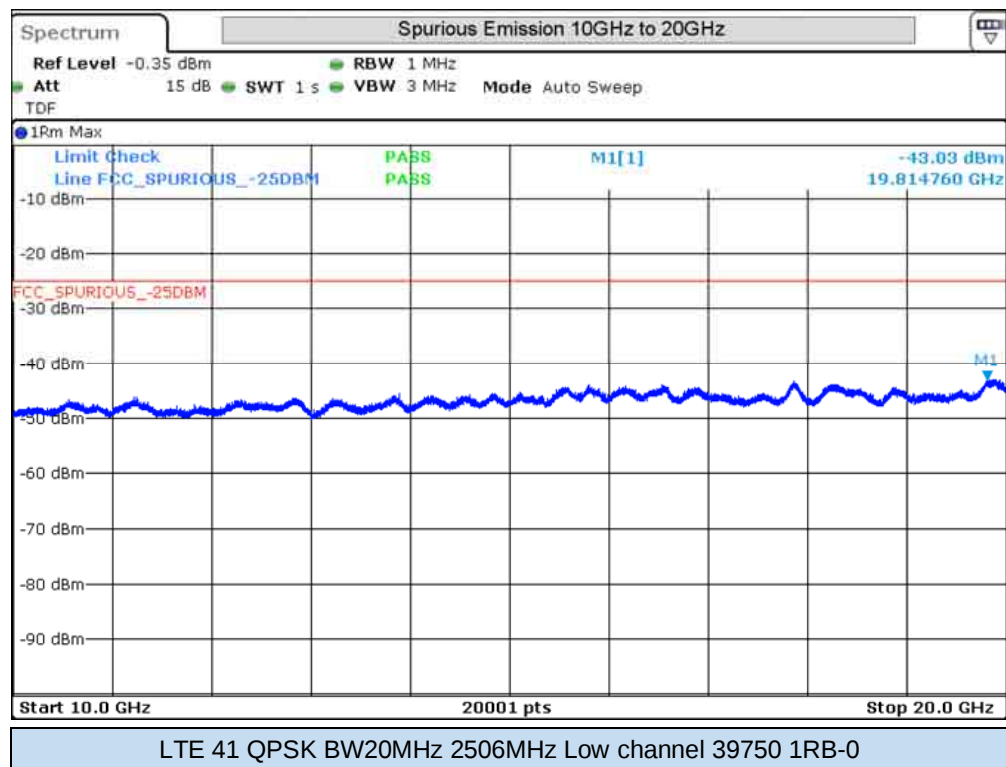
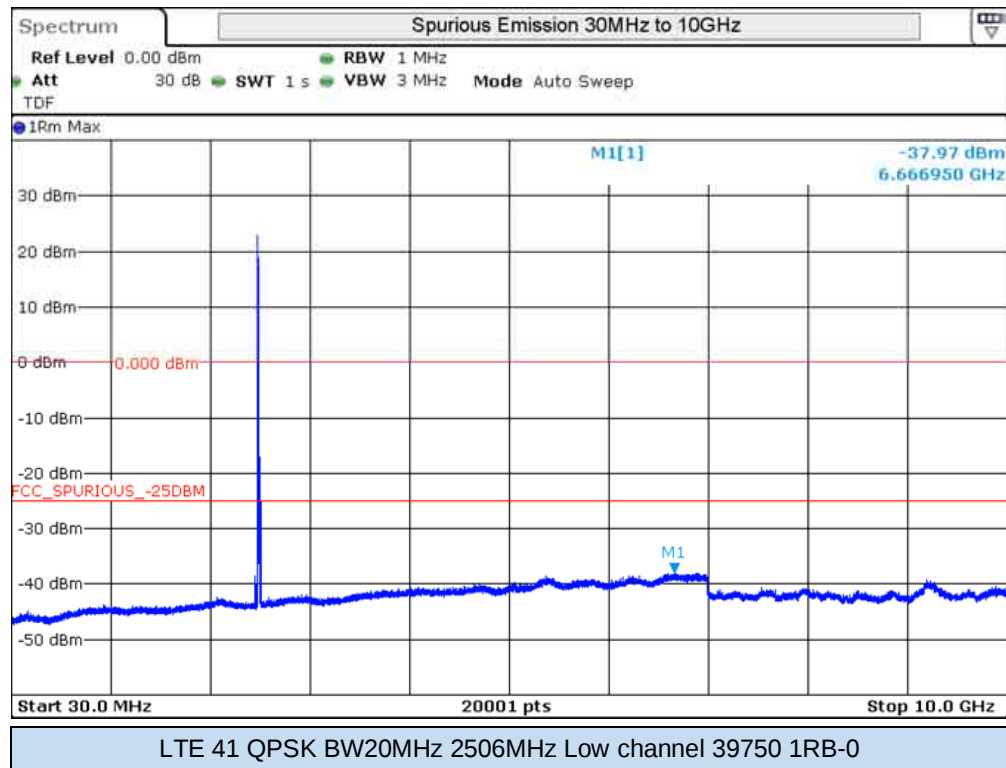


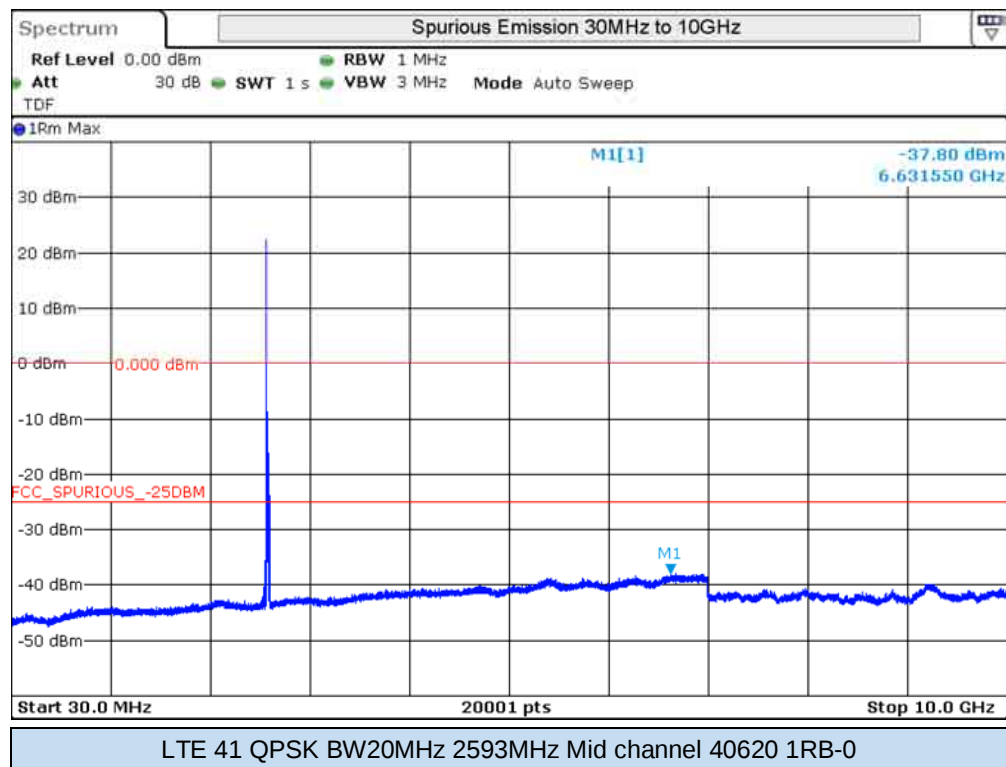
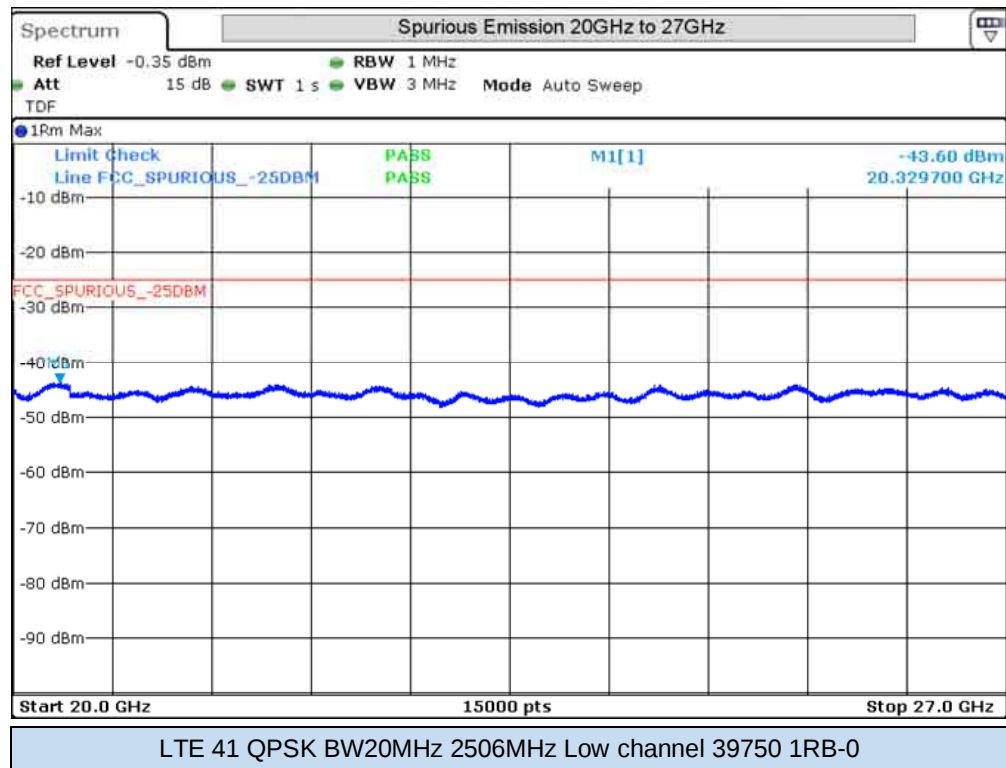


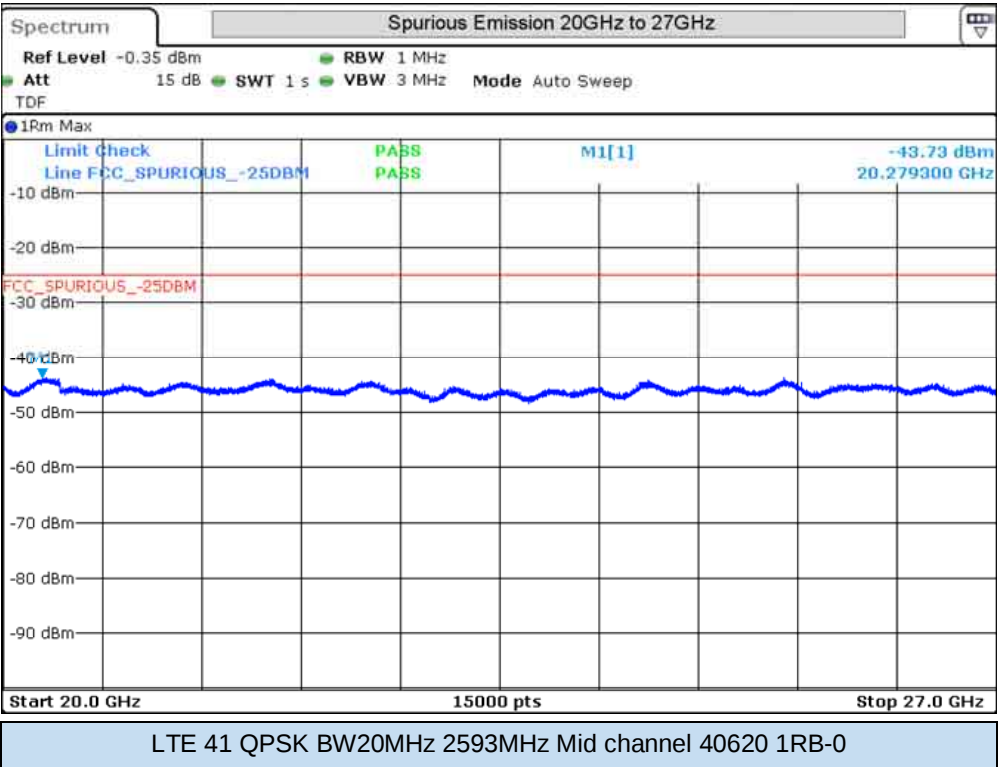
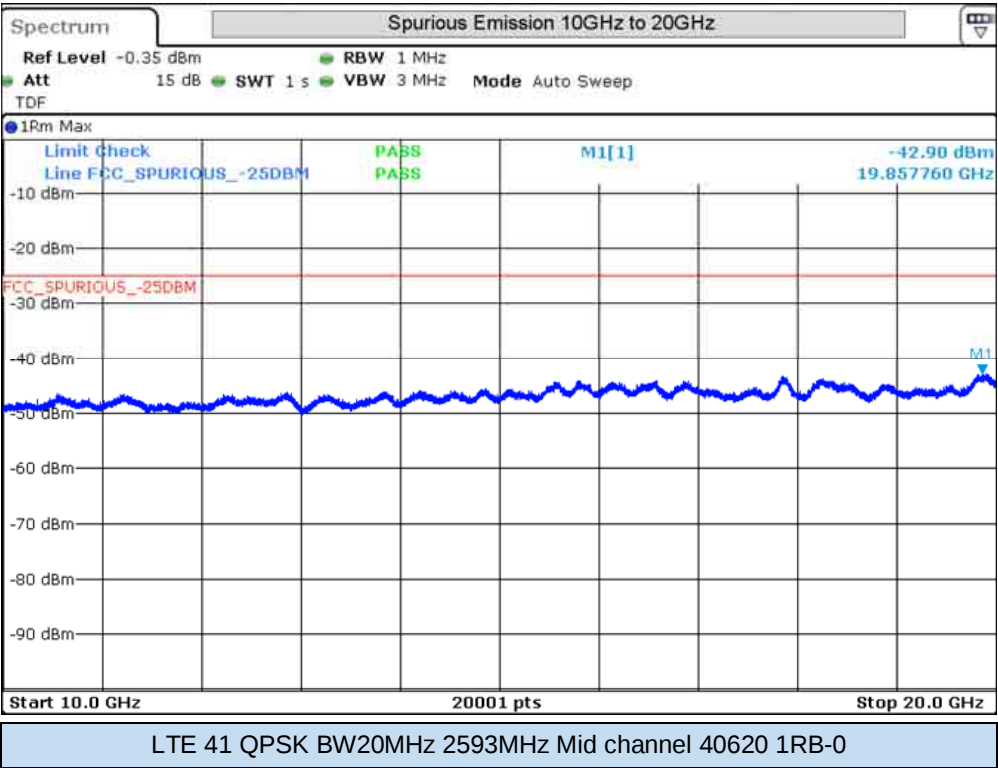


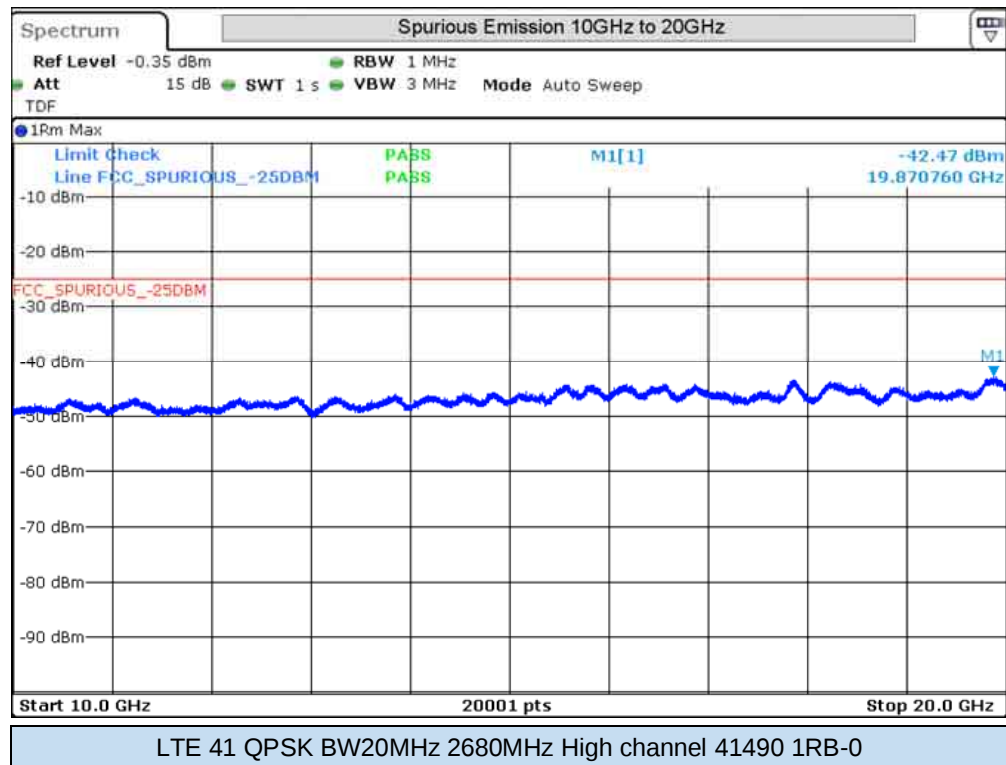
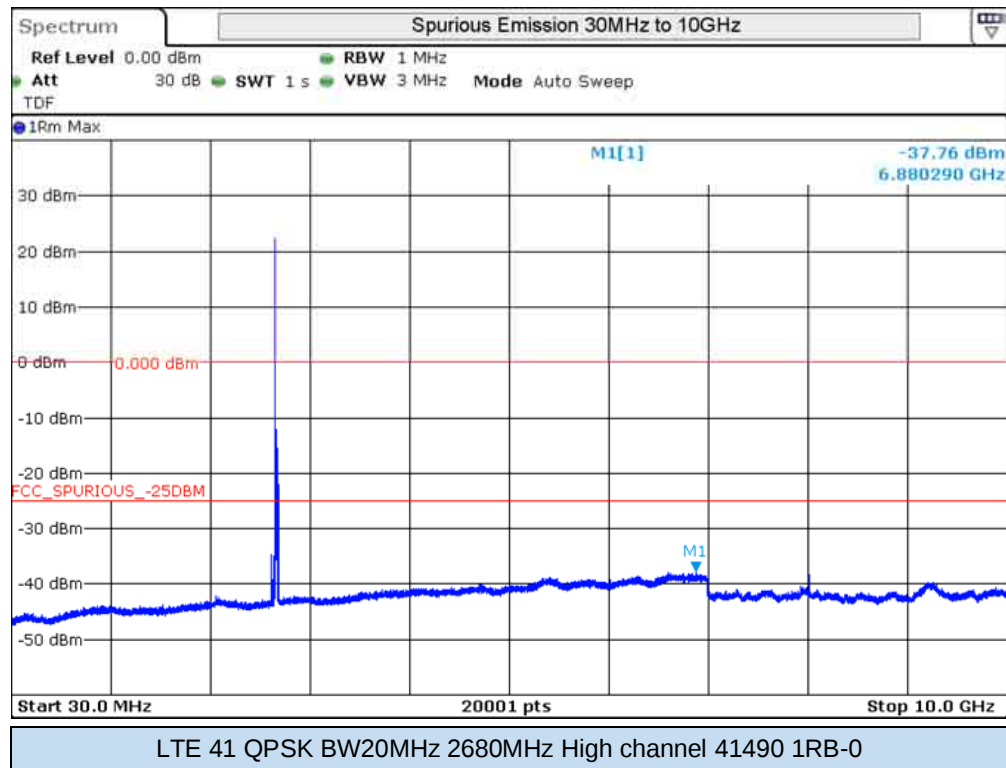


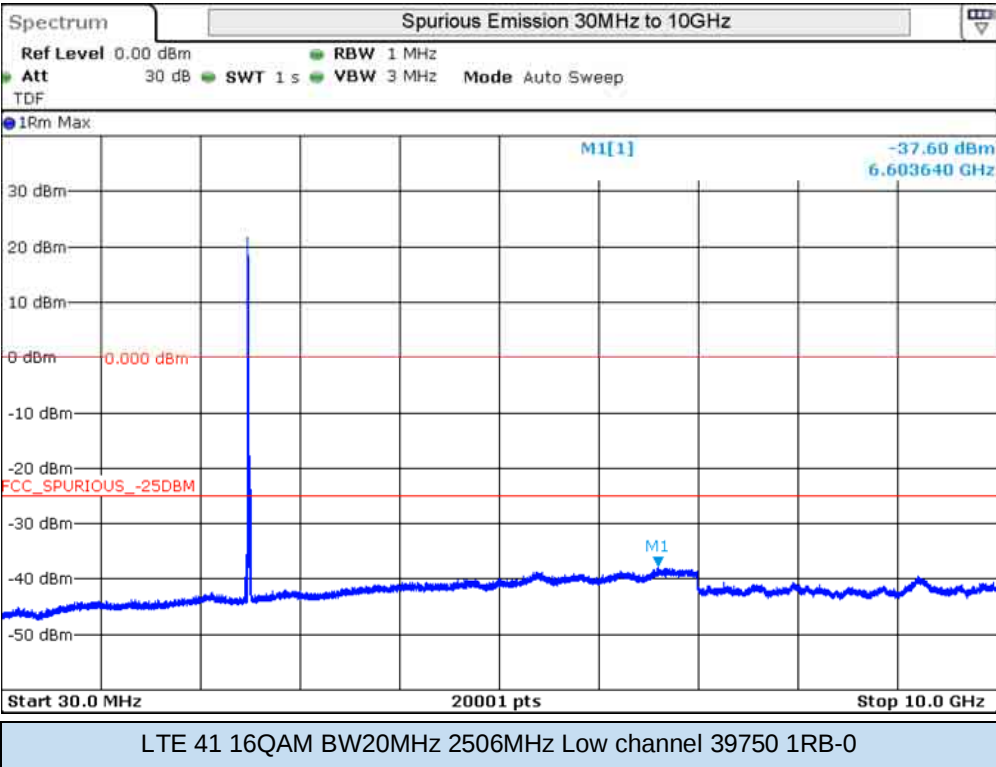
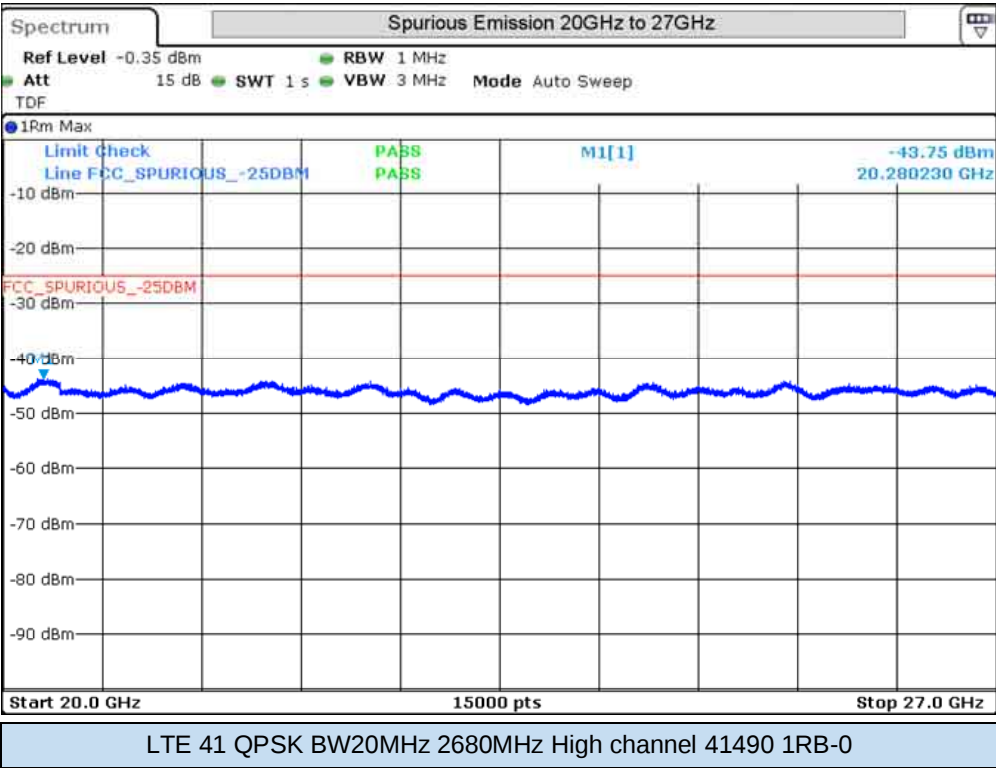


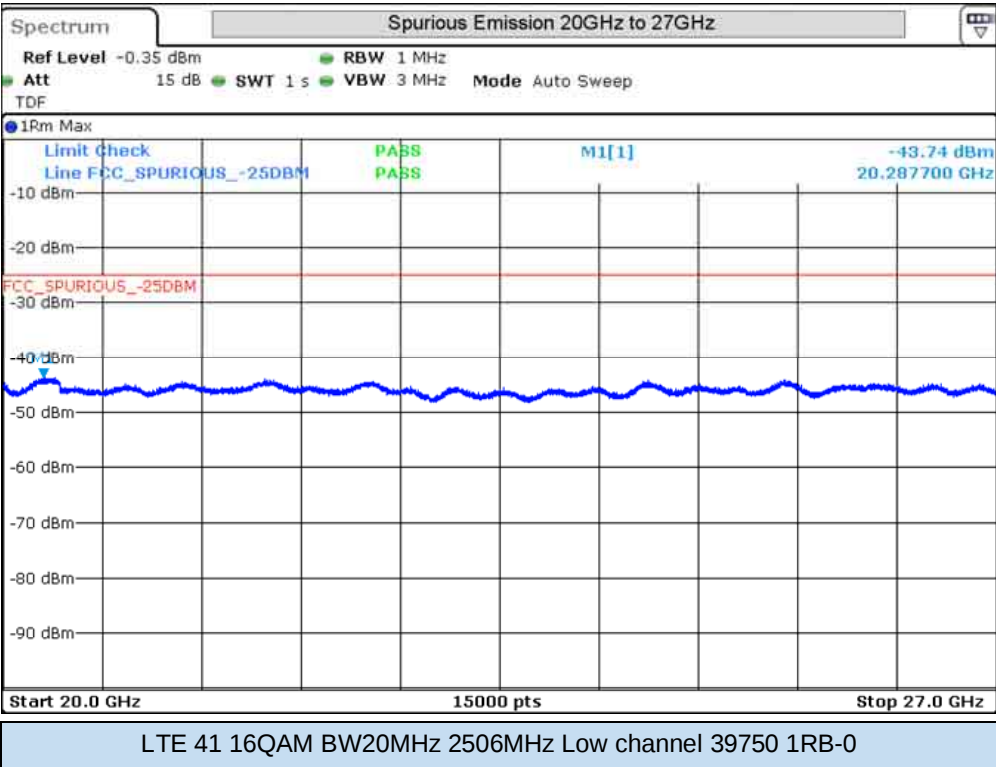
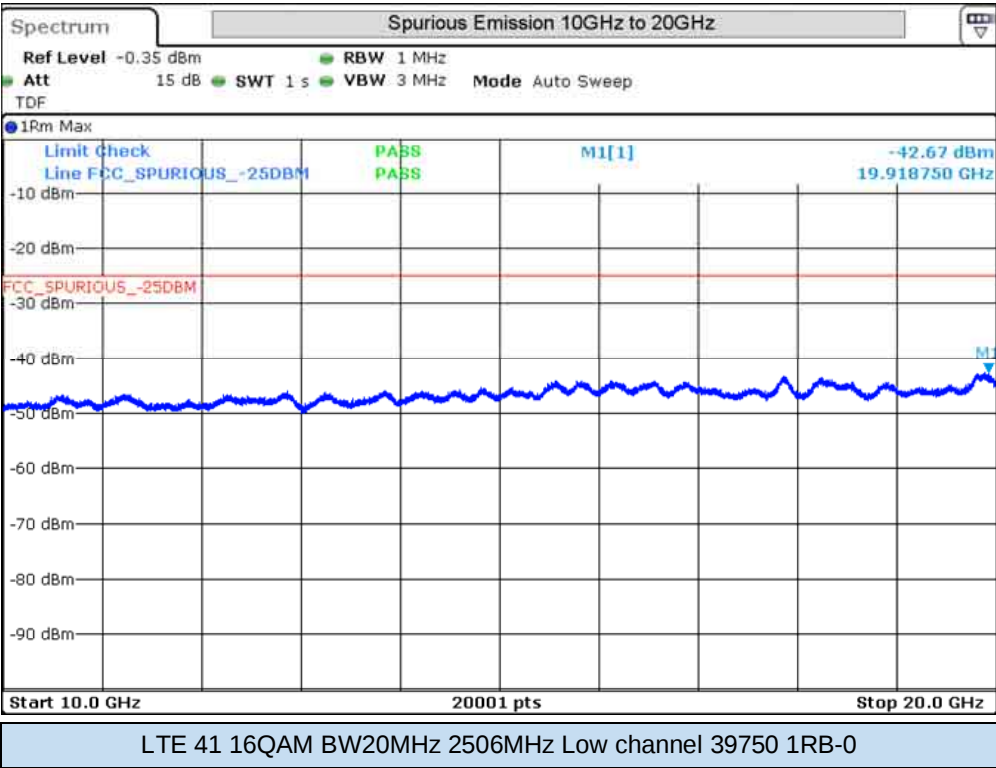


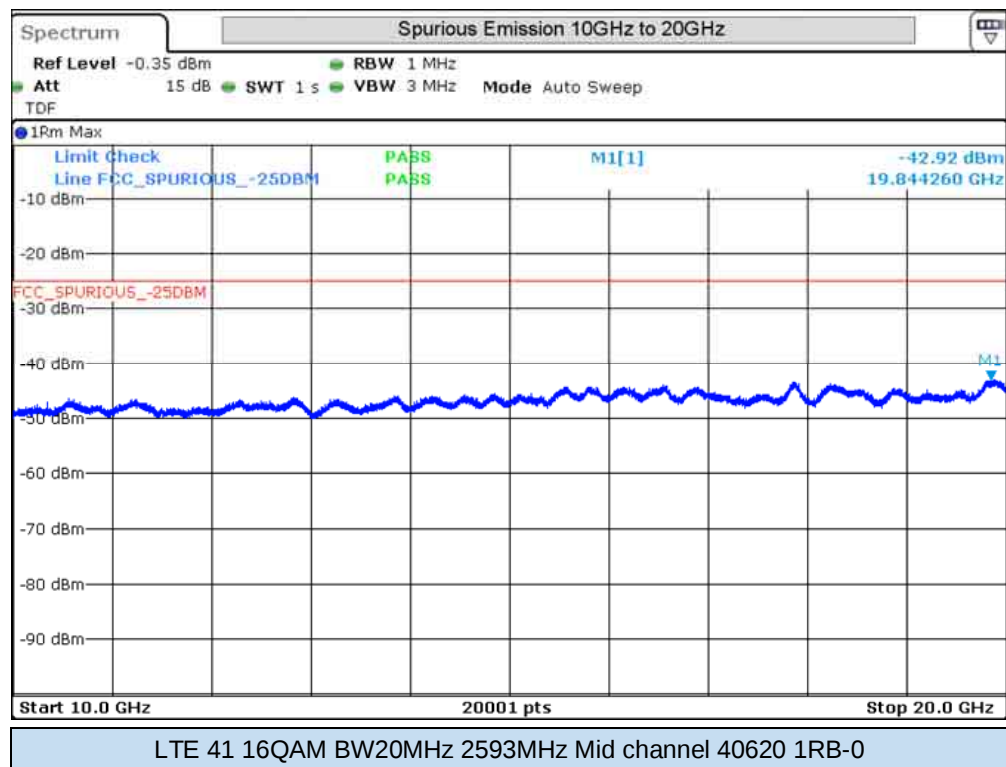
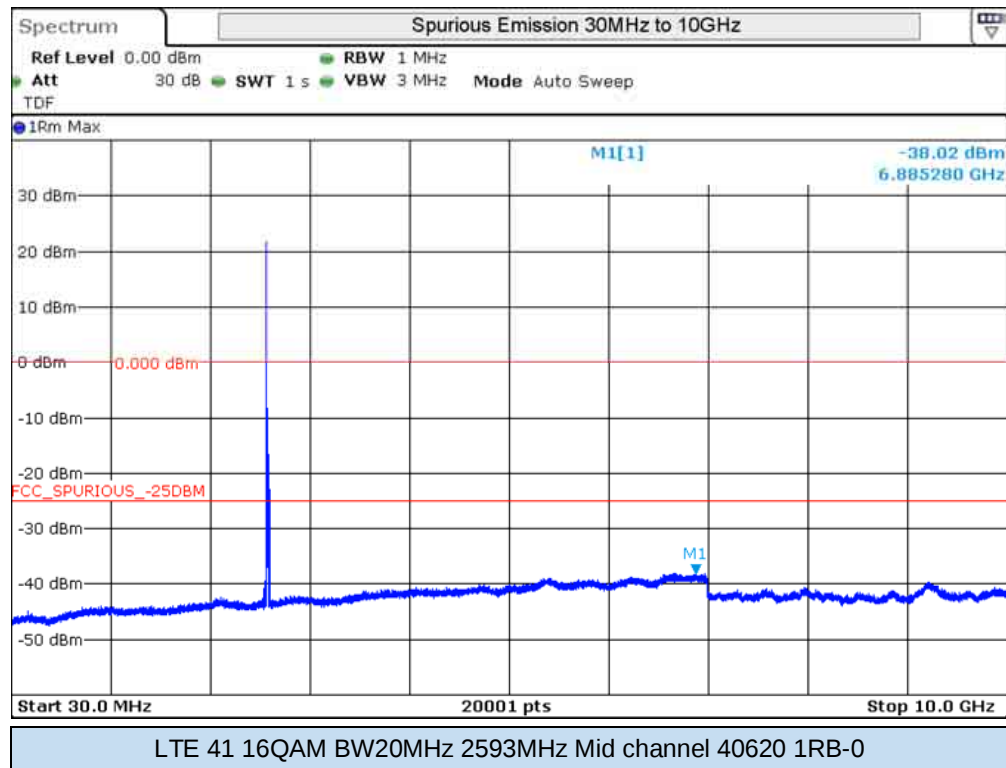


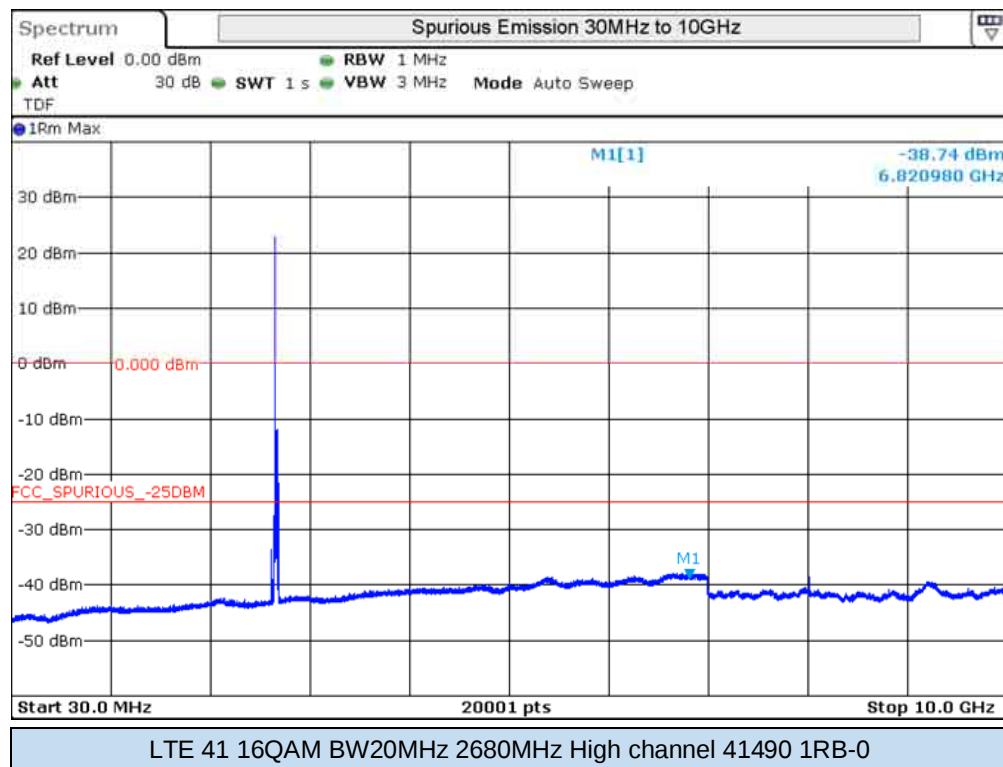
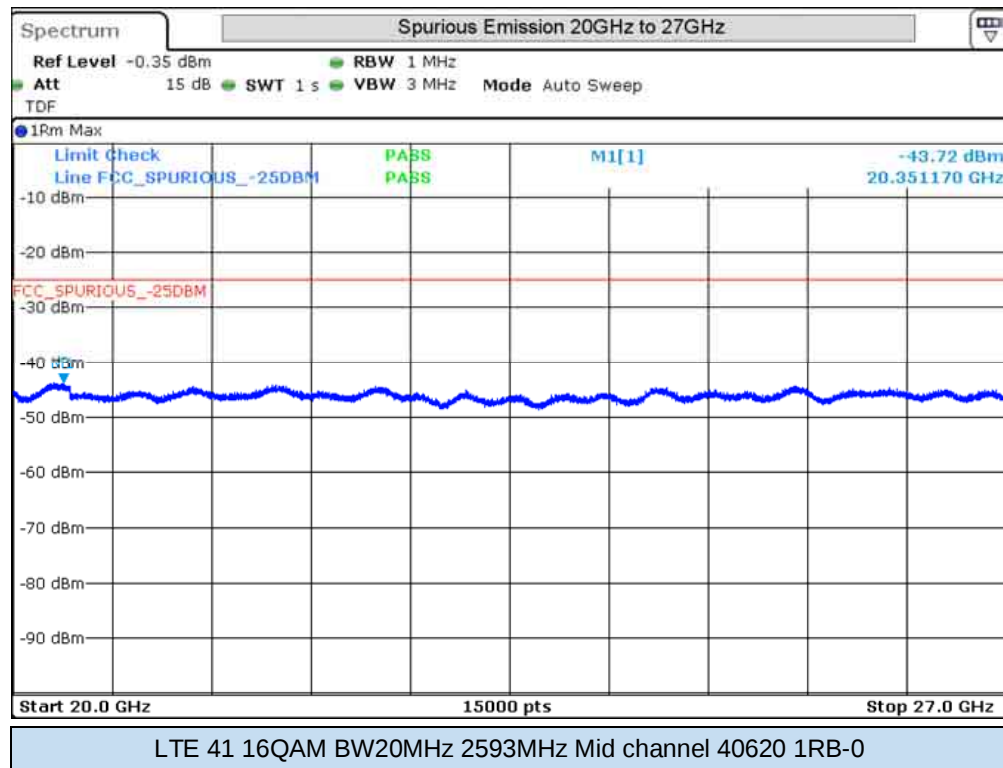


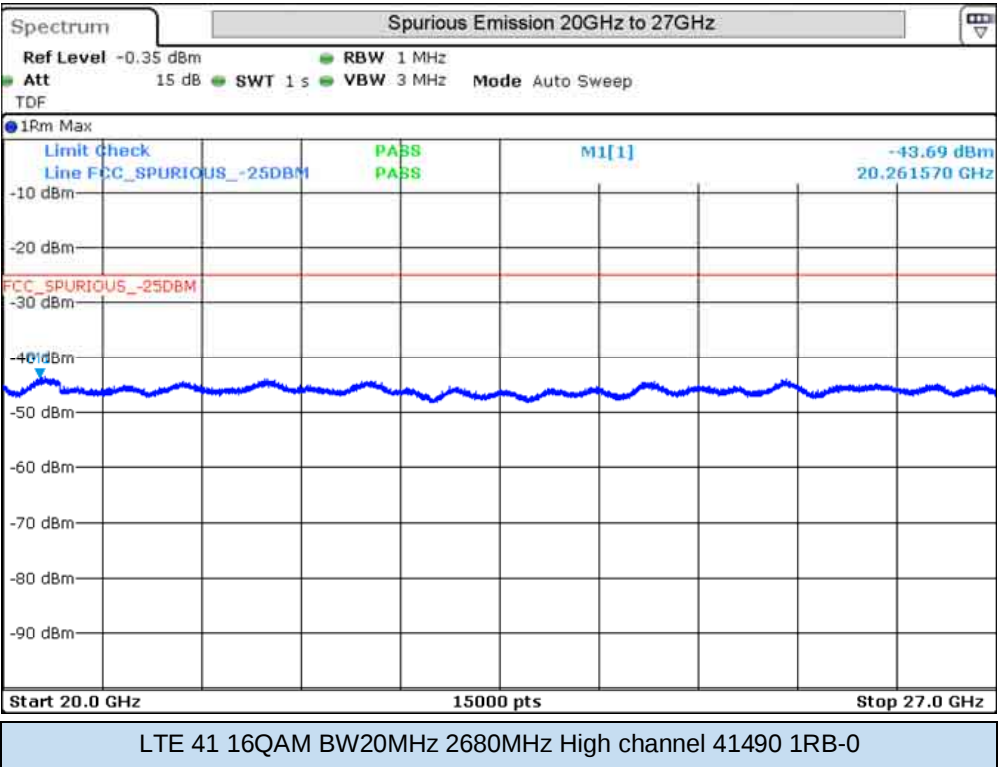
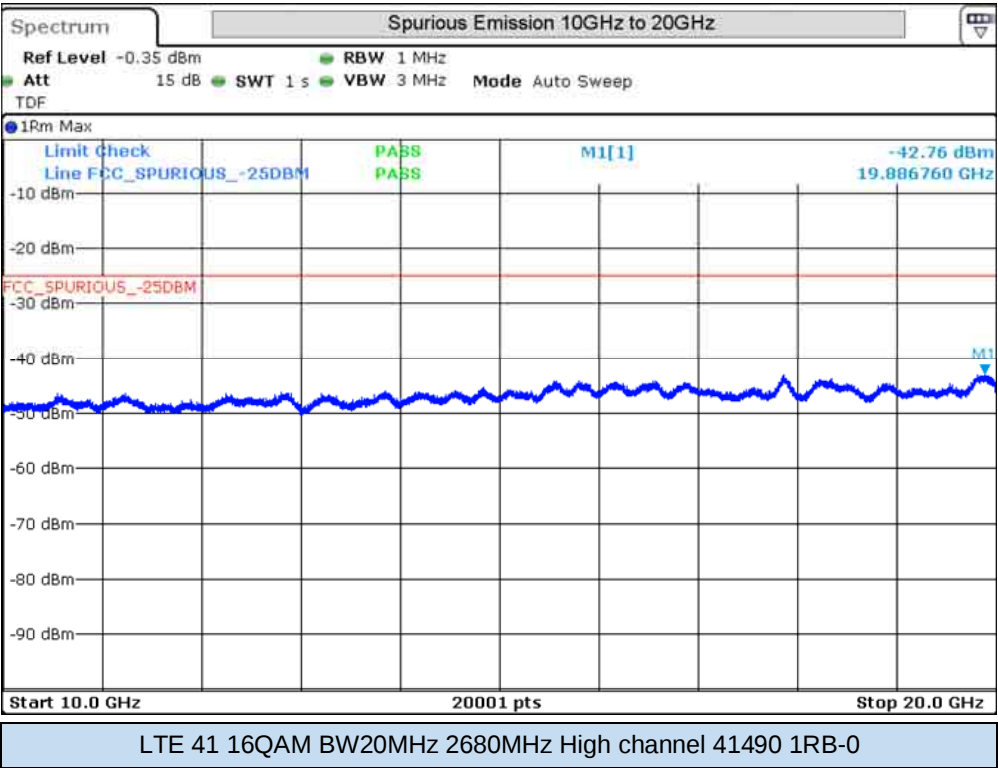












A.1.5 Radiated spurious emission

Standard references

BAND	FCC part	RSS part	Limits
LTE 12, 13, 7	2. 1051, 27.53	139-ch.6.5	The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}(P)$ dB.
LTE 26	2. 1051, 22.917, 90.961	132-ch.5.5	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.
LTE 41	27.53, 2.1053	199-ch.4.6	The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}(P)$ dB.

Test procedure

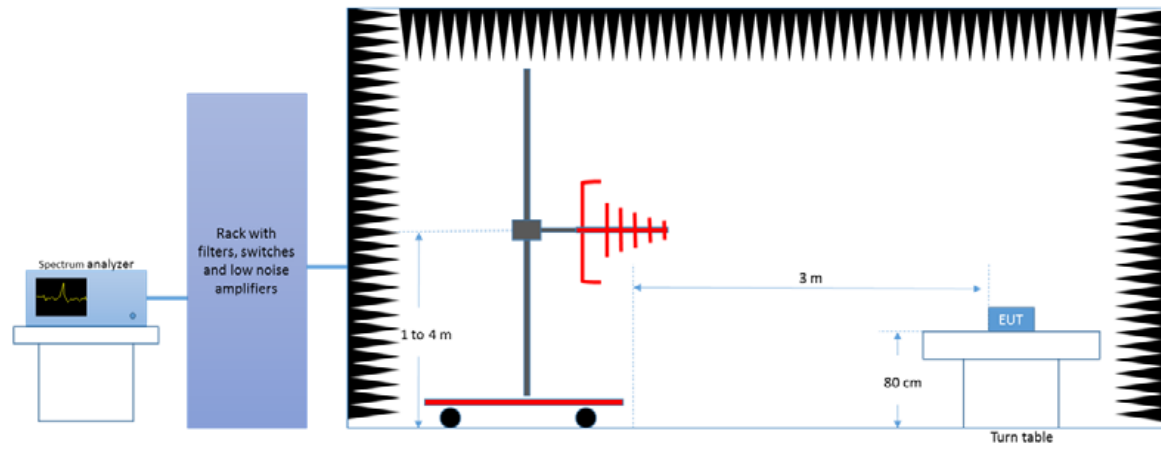
The setup below was used to measure the radiated spurious emissions. The test was done following the FCC OET KDB 971168 D01 v02r02 § 7.

Depending of the frequency range and bands being tested, different antennas and filters were used.

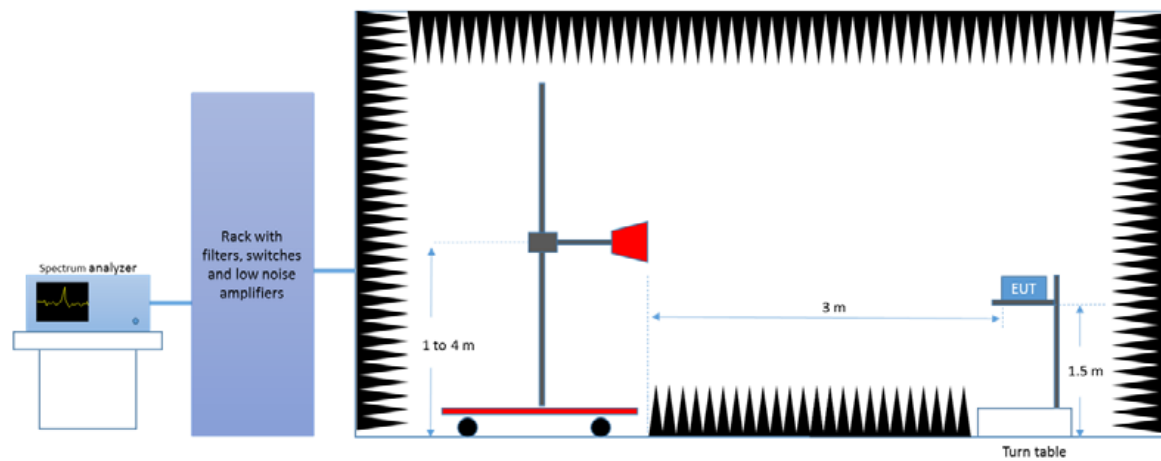
The final measurement is done by varying the antenna height from 1 to 4 meters, the EUT azimuth over 360° and for both Vertical and Horizontal polarizations.

For GSM and WCDMA, the radiated spurious emission was measured on the worst case configuration selected from the chapter A.1.1 and on the low, middle and high channel.

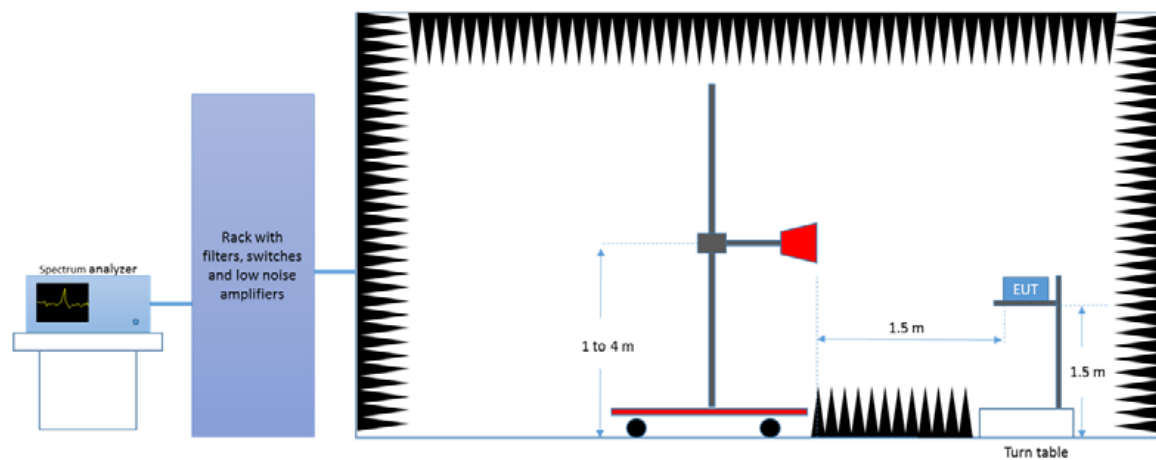
Radiated Setup < 1GHz



Radiated Setup Frequency range 1 GHz to 18 GHz



Radiated Setup > 18GHz



Test Results – LTE 7

Radiated measurement from 30MHz to 26.5GHz

LTE 7 Low channel 20775

Frequency	MaxPeak	RMS	Height	Pol	Azimuth	Corr.
MHz	dBm	dBm	cm		deg	dB
624.933333	-50.74	---	100.0	H	349.0	-94.8
624.933333	---	-62.05	100.0	H	349.0	-94.8
5000.577777	---	-37.81	277.2	V	212.0	-93.9
5000.738889	-29.59	---	120.2	V	60.0	-93.9
7679.866667	-49.98	---	150.0	V	116.0	-98.8
7680.833333	---	-57.07	150.0	V	124.0	-98.8
18079.069767	---	-52.89	150.0	H	117.0	-91.0
18113.662791	-42.71	---	150.0	V	2.0	-91.0

LTE 7 Mid channel 21100

Frequency	MaxPeak	RMS	Height	Pol	Azimuth	Corr.
MHz	dBm	dBm	cm		deg	dB
624.933333	---	-62.07	100.0	H	240.0	-94.8
629.783333	-51.02	---	100.0	H	227.0	-95.5
5065.500000	-38.72	---	150.0	V	71.0	-93.5
5065.500000	---	-48.30	150.0	V	71.0	-93.5
7695.333333	---	-39.64	150.0	V	110.0	-98.8
7696.300000	-32.49	---	150.0	V	110.0	-98.8
10260.866667	---	-46.34	150.0	V	255.0	-98.2
10260.866667	-35.19	---	150.0	V	255.0	-98.2
18078.081395	-43.24	---	150.0	V	58.0	-91.0
18097.848837	---	-52.95	150.0	V	58.0	-91.0

LTE 7 High channel 21425

Frequency	MaxPeak	RMS	Height	Pol	Azimuth	Corr.
MHz	dBm	dBm	cm		deg	dB
623.316667	---	-62.63	100.0	H	197.0	-95.3
624.933333	-50.82	---	100.0	H	226.0	-94.8
5130.666667	---	-44.85	150.0	V	71.0	-93.1
5131.611111	-34.74	---	150.0	V	71.0	-93.1
7695.333333	---	-39.05	150.0	V	111.0	-98.8
7695.333333	-31.63	---	150.0	V	111.0	-98.8
10260.866667	---	-48.13	150.0	V	266.0	-98.2
10260.866667	-40.51	---	150.0	V	266.0	-98.2
18103.779070	---	-52.81	150.0	V	326.0	-91.0
18119.593023	-42.79	---	150.0	V	116.0	-91.1

Test Results – LTE 12

Radiated measurement from 30MHz to 18GHz

LTE 12 Low channel 23017

Frequency	MaxPeak	RMS	Height	Pol	Azimuth	Corr.
MHz	dBm	dBm	cm		deg	dB
622.379000	---	-44.66	100.0	H	79.0	-65.2
624.707000	-38.27	---	100.0	H	224.0	-64.5
1398.535714	-44.53	---	162.2	V	36.0	-104.9
1398.575000	---	-52.16	149.2	V	278.0	-104.9
3165.082143	---	-58.16	400.0	H	12.0	-96.9
3167.203572	-46.19	---	128.1	H	1.0	-96.8
17969.066667	---	-47.81	300.0	H	0.0	-83.8
17997.100000	-37.00	---	150.0	H	41.0	-83.2

LTE 12 Mid channel 23095

Frequency	MaxPeak	RMS	Height	Pol	Azimuth	Corr.
MHz	dBm	dBm	cm		deg	dB
625.386000	---	-44.38	100.0	H	258.0	-64.5
628.393000	-37.88	---	250.0	H	302.0	-65.0
1413.678571	---	-53.55	150.0	V	40.0	-105.2
1413.678571	-47.25	---	150.0	V	40.0	-105.2
3250.642857	-44.48	---	150.0	H	144.0	-95.8
3253.535714	---	-56.22	150.0	H	93.0	-95.8
17483.800000	-38.13	---	300.0	H	180.0	-86.3
17500.233333	---	-49.13	300.0	H	308.0	-85.9

LTE 12 High channel 23173

Frequency	MaxPeak	RMS	Height	Pol	Azimuth	Corr.
MHz	dBm	dBm	cm		deg	dB
622.282000	-38.42	---	250.0	H	178.0	-65.3
624.610000	---	-44.90	100.0	H	236.0	-64.6
849.747000	---	-43.12	100.0	H	247.0	-65.6
849.941000	-38.59	---	250.0	H	41.0	-65.5
1429.646429	---	-56.78	196.1	V	315.0	-105.5
1429.767857	-48.51	---	128.2	V	217.0	-105.5
1958.782143	---	-61.67	239.1	V	197.0	-100.6
1965.592857	-50.25	---	178.2	V	205.0	-100.5
17860.800000	-37.33	---	150.0	H	213.0	-86.1
17891.733333	---	-48.51	150.0	H	277.0	-85.4

Test Results – LTE 13

Radiated measurement from 30MHz to 18GHz

LTE 13 Low channel 23205

Frequency	MaxPeak	RMS	Height	Pol	Azimuth	Corr.
MHz	dBm	dBm	cm		deg	dB
624.998000	---	-44.48	250.0	H	162.0	-64.5
625.580000	-37.87	---	100.0	H	173.0	-64.5
6371.071429	-42.51	---	300.0	H	12.0	-92.2
6371.071429	---	-52.60	300.0	V	299.0	-91.5
9298.266667	-45.26	---	132.2	V	117.0	-97.7
9298.295000	---	-56.78	154.1	V	121.0	-97.7
13172.301667	---	-43.72	131.2	V	28.0	-95.3
13172.460000	-35.08	---	137.2	V	26.0	-95.3

LTE 13 Mid channel 23230

Frequency	MaxPeak	RMS	Height	Pol	Azimuth	Corr.
MHz	dBm	dBm	cm		deg	dB
624.513000	-37.40	---	250.0	H	30.0	-64.6
625.386000	---	-43.63	250.0	H	169.0	-64.5
1954.875000	-49.90	---	232.2	V	267.0	-100.7
1960.114286	---	-61.76	399.8	V	184.0	-100.6
17867.566667	-37.59	---	300.0	H	357.0	-85.9
17880.133333	---	-48.72	300.0	H	169.0	-85.7

LTE 13 High channel 23255

Frequency	MaxPeak	RMS	Height	Pol	Azimuth	Corr.
MHz	dBm	dBm	cm		deg	dB
624.804000	---	-44.98	250.0	H	38.0	-64.5
625.677000	-37.92	---	250.0	H	276.0	-64.6
6365.285714	-42.11	---	150.0	V	189.0	-91.5
6366.250000	---	-52.98	150.0	V	319.0	-91.5
17500.233333	---	-49.23	300.0	H	0.0	-85.9
17543.733333	-38.57	---	300.0	H	300.0	-86.4

Test Results – LTE 26

Radiated measurement from 30MHz to 18GHz

LTE 26 Low channel 26715

Frequency	MaxPeak	RMS	Height	Pol	Azimuth	Corr.
MHz	dBm	dBm	cm		deg	dB
624.125000	-37.44	---	100.0	H	338.0	-64.7
625.289000	---	-44.51	100.0	H	166.0	-64.5
6387.464286	-42.27	---	300.0	V	20.0	-91.5
6390.357143	---	-52.75	300.0	V	138.0	-91.5
17478.966667	---	-49.20	300.0	H	178.0	-86.4
17505.066667	-38.40	---	150.0	H	0.0	-86.0

LTE 26 Mid channel 26865

Frequency	MaxPeak	RMS	Height	Pol	Azimuth	Corr.
MHz	dBm	dBm	cm		deg	dB
623.640000	-37.50	---	100.0	H	298.0	-64.9
626.550000	---	-44.32	250.0	H	67.0	-64.7
6369.142857	-42.01	---	150.0	V	340.0	-91.5
6379.750000	---	-52.69	150.0	V	346.0	-91.5
17990.333333	---	-47.45	150.0	H	289.0	-83.3
17998.066667	-37.19	---	300.0	H	170.0	-83.1

LTE 26 High channel 27015

Frequency	MaxPeak	RMS	Height	Pol	Azimuth	Corr.
MHz	dBm	dBm	cm		deg	dB
624.901000	-38.30	---	250.0	H	60.0	-64.5
625.386000	---	-44.74	250.0	H	139.0	-64.5
6371.071429	-42.51	---	300.0	H	12.0	-92.2
6371.071429	---	-52.60	300.0	V	299.0	-91.5
17994.200000	-36.74	---	150.0	H	211.0	-83.2
17997.100000	---	-46.97	300.0	H	269.0	-83.2

Test Results – LTE 41

Radiated measurement from 30MHz to 27GHz

LTE 41 Low channel 39650

Frequency	MaxPeak	RMS	Height	Pol	Azimuth	Corr.
MHz	dBm	dBm	cm		deg	dB
904.616667	---	-52.49	100.0	H	61.0	-99.8
904.616667	-44.80	---	100.0	H	61.0	-99.8
2909.090909	-38.96	---	300.0	H	45.0	-57.4
2915.454545	---	-51.60	150.0	H	267.0	-57.4
7772.490000	-16.34	---	172.1	V	128.0	-99.0
7772.640000	---	-29.01	171.2	V	127.0	-99.0
10363.380000	-27.95	---	213.2	V	286.0	-98.1
10363.503333	---	-35.05	211.1	V	288.0	-98.1
18073.139535	-43.03	---	150.0	H	357.0	-91.0
18076.104651	---	-53.05	150.0	V	109.0	-91.0

LTE 41 Mid channel 40620

Frequency	MaxPeak	RMS	Height	Pol	Azimuth	Corr.
MHz	dBm	dBm	cm		deg	dB
903.000000	---	-47.98	250.0	V	92.0	-99.0
904.616667	-41.98	---	250.0	V	92.0	-98.9
1956.363636	---	-52.14	300.0	V	333.0	-58.4
2000.909091	-41.09	---	300.0	V	279.0	-57.9
7772.490000	-16.34	---	172.1	V	128.0	-99.0
7772.640000	---	-27.01	171.2	V	127.0	-99.0
10363.380000	-27.95	---	213.2	V	286.0	-98.1
10363.503333	---	-37.05	211.1	V	288.0	-98.1
18081.046512	---	-53.18	150.0	H	0.0	-91.0
18085.988372	-42.79	---	150.0	V	60.0	-91.0

LTE 41 High channel 41589

Frequency	MaxPeak	RMS	Height	Pol	Azimuth	Corr.
MHz	dBm	dBm	cm		deg	dB
890.066667	-48.74	---	250.0	H	11.0	-99.3
890.066667	---	-55.80	250.0	H	11.0	-99.3
903.000000	---	-44.17	100.0	V	304.0	-99.0
904.616667	-39.20	---	100.0	V	304.0	-98.9
1957.272727	---	-47.00	150.0	V	328.0	-58.4
1958.181818	-38.45	---	150.0	V	328.0	-58.4
7772.490000	-16.34	---	172.1	V	128.0	-99.0
7772.640000	---	-28.01	171.2	V	127.0	-99.0
10363.380000	-27.95	---	213.2	V	286.0	-98.1
10363.503333	---	-39.05	211.1	V	288.0	-98.1
18075.116279	---	-53.01	150.0	H	230.0	-91.0
18081.046512	-43.06	---	150.0	H	0.0	-91.0