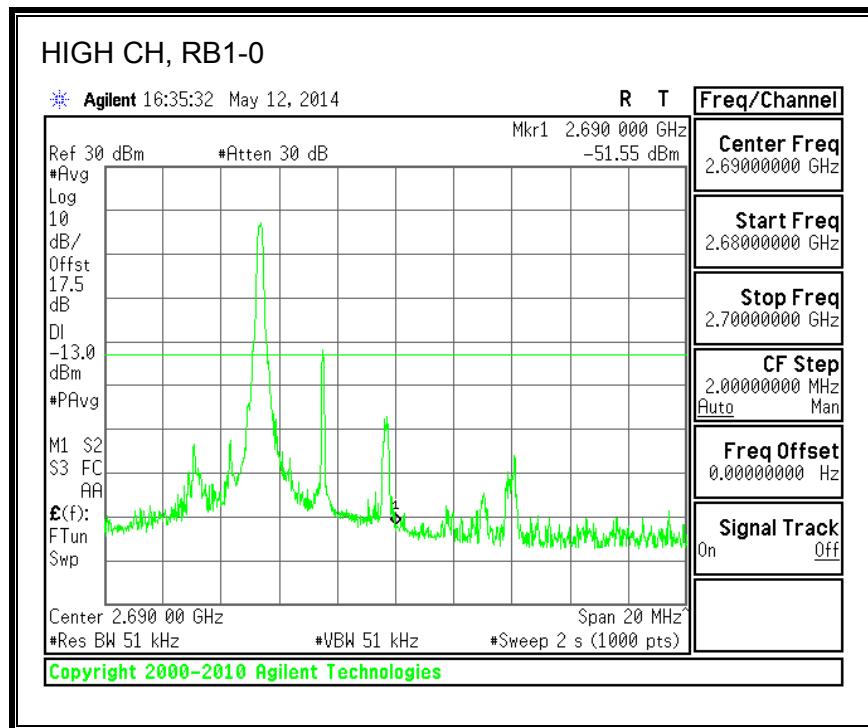
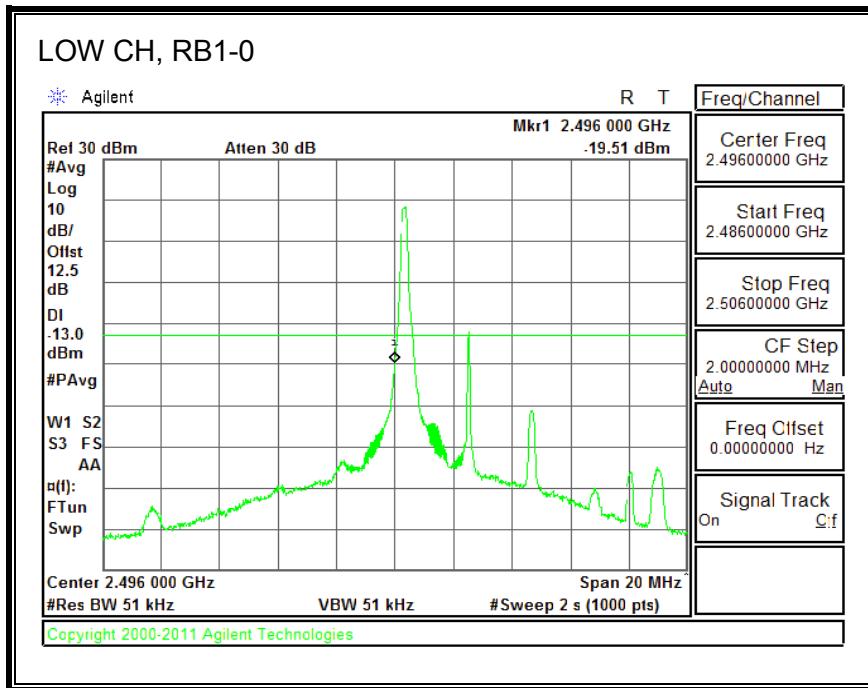
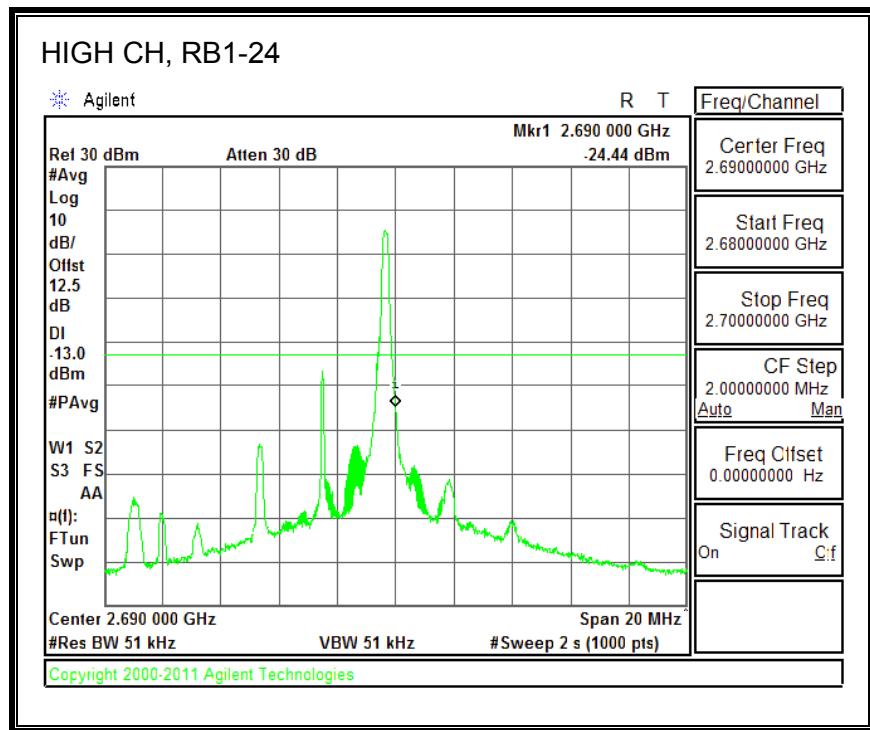
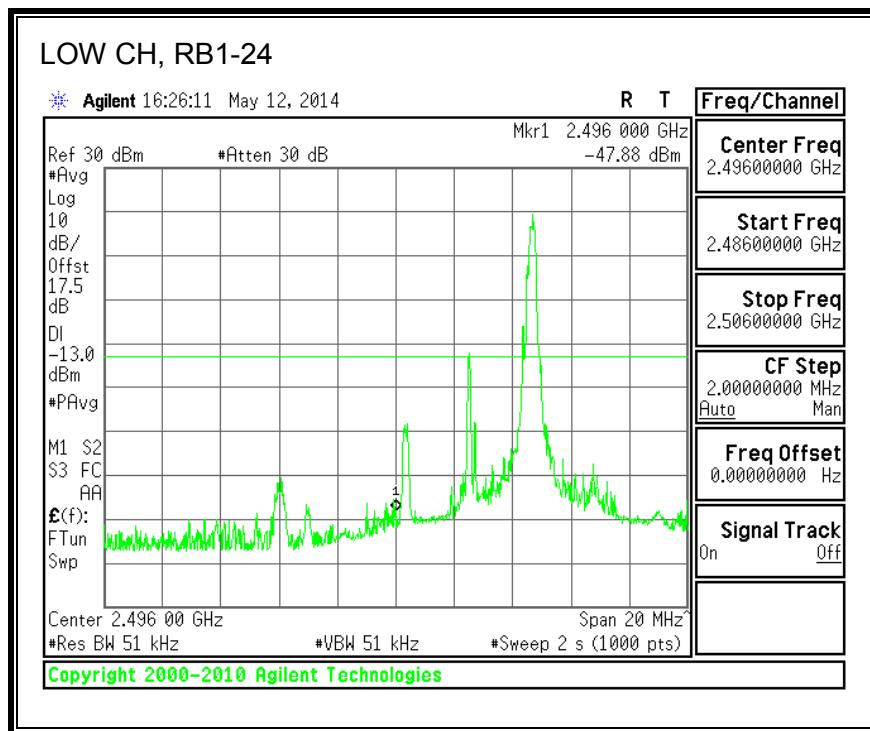
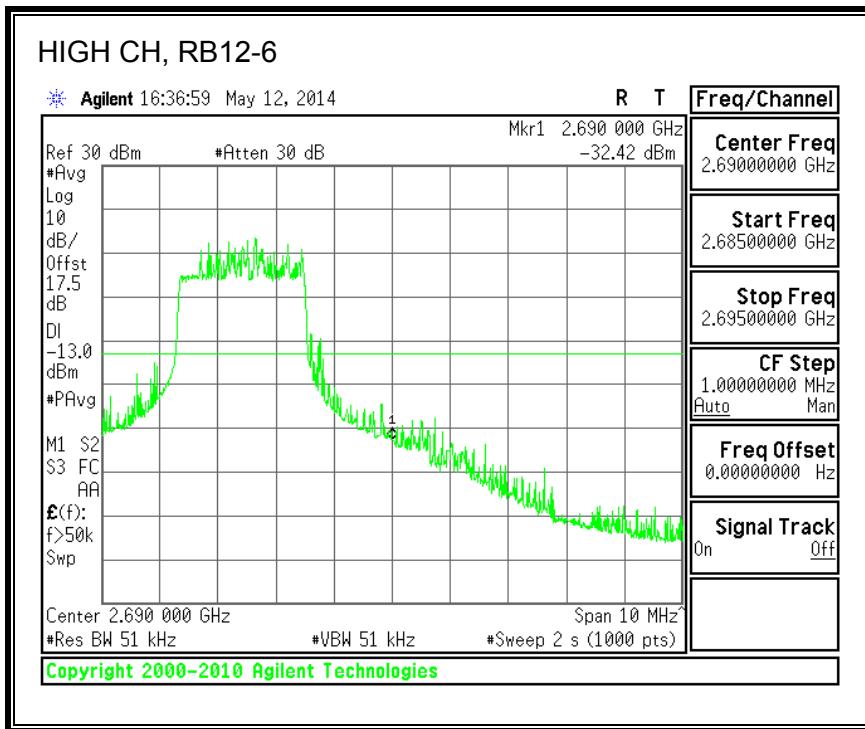
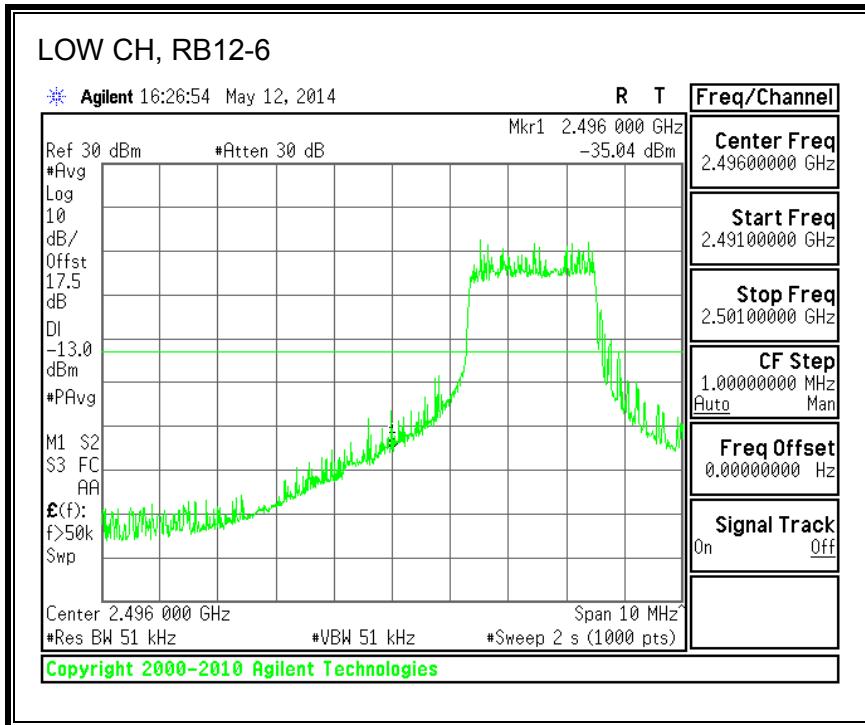
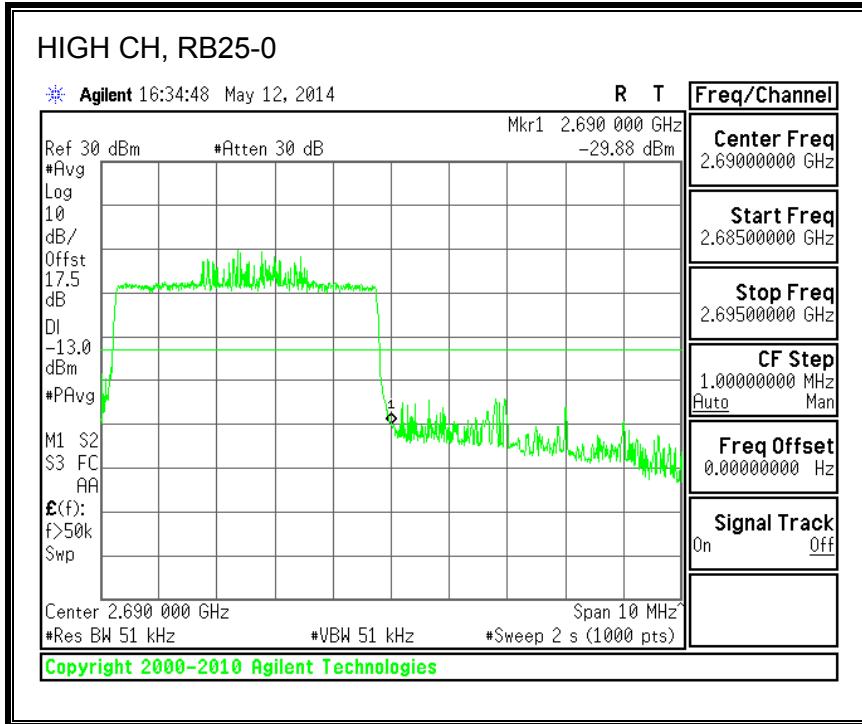
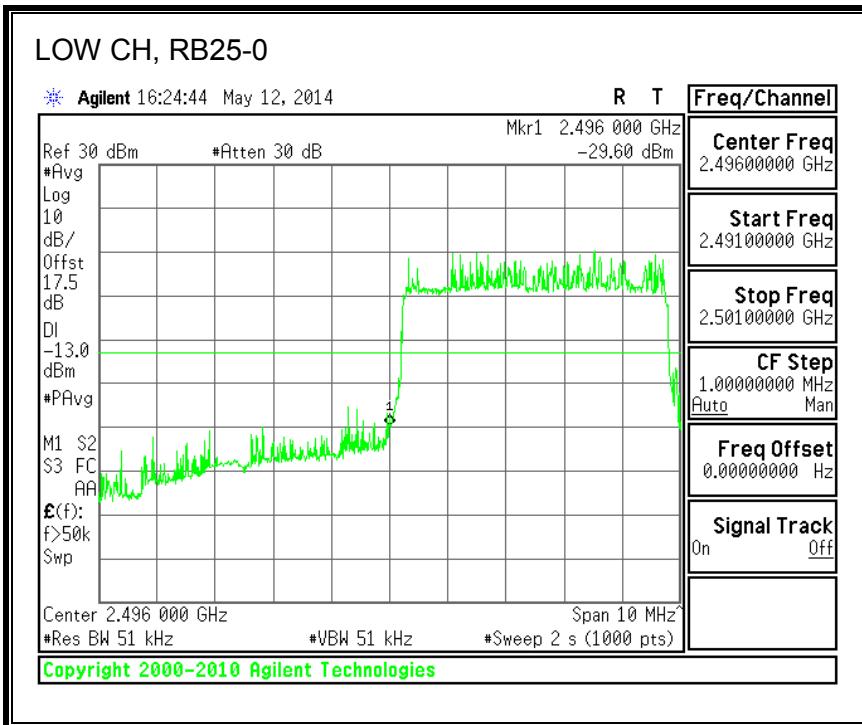


16QAM, (5.0 MHz BAND WIDTH)

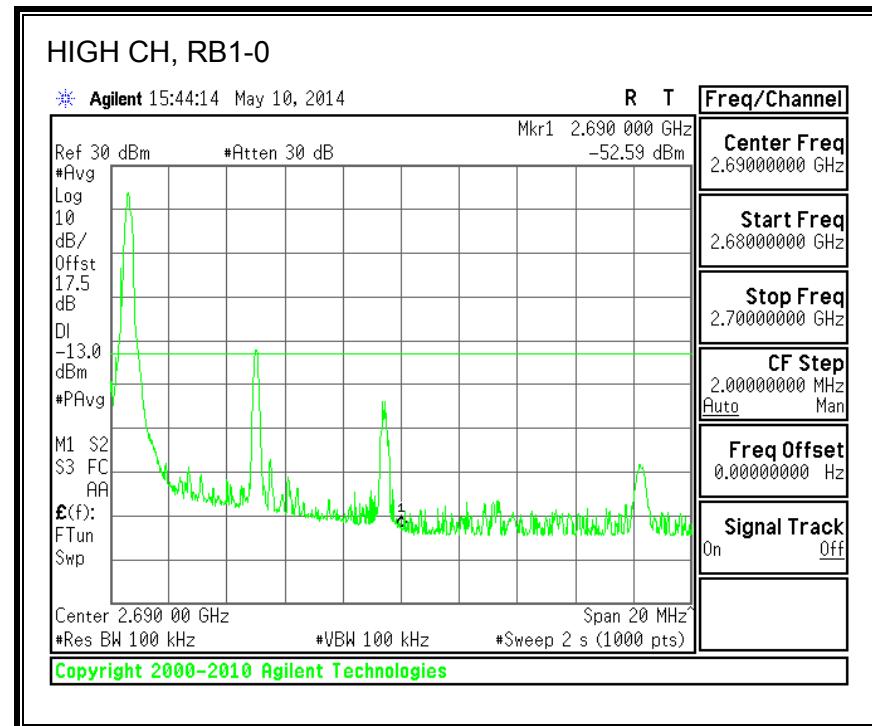
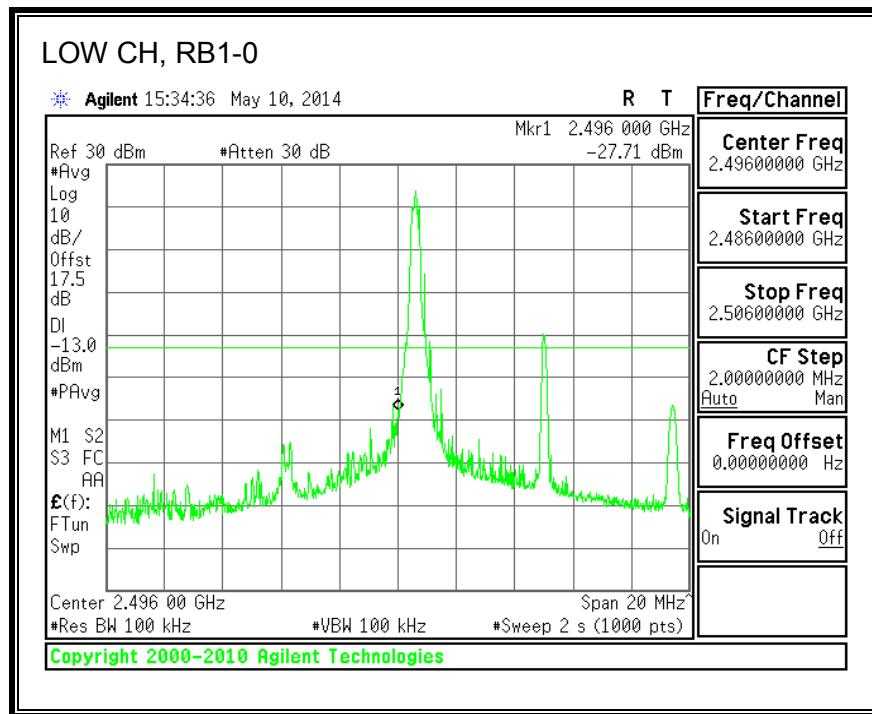


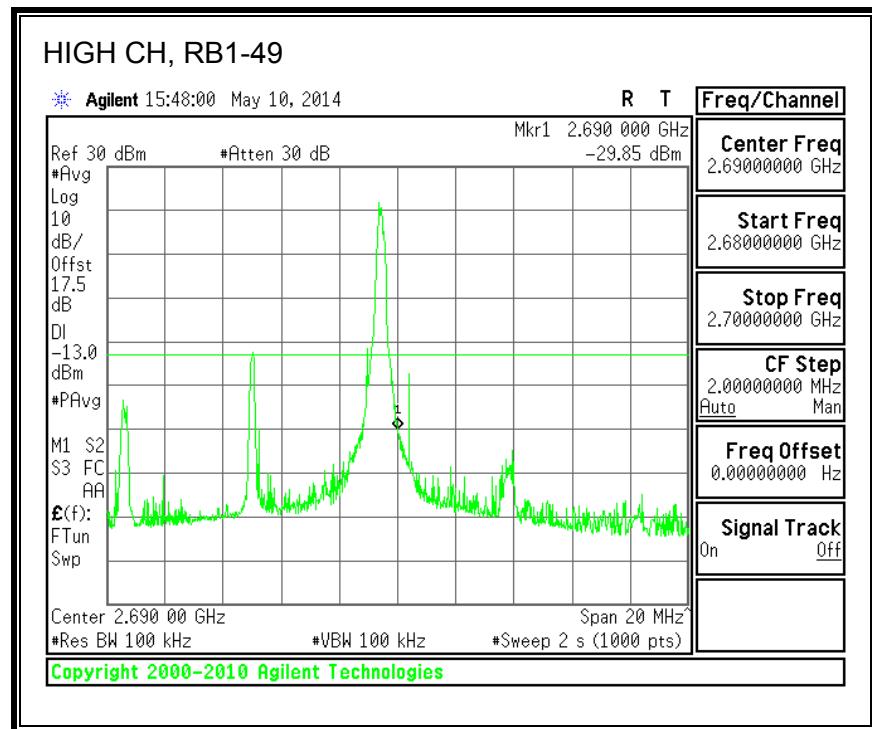
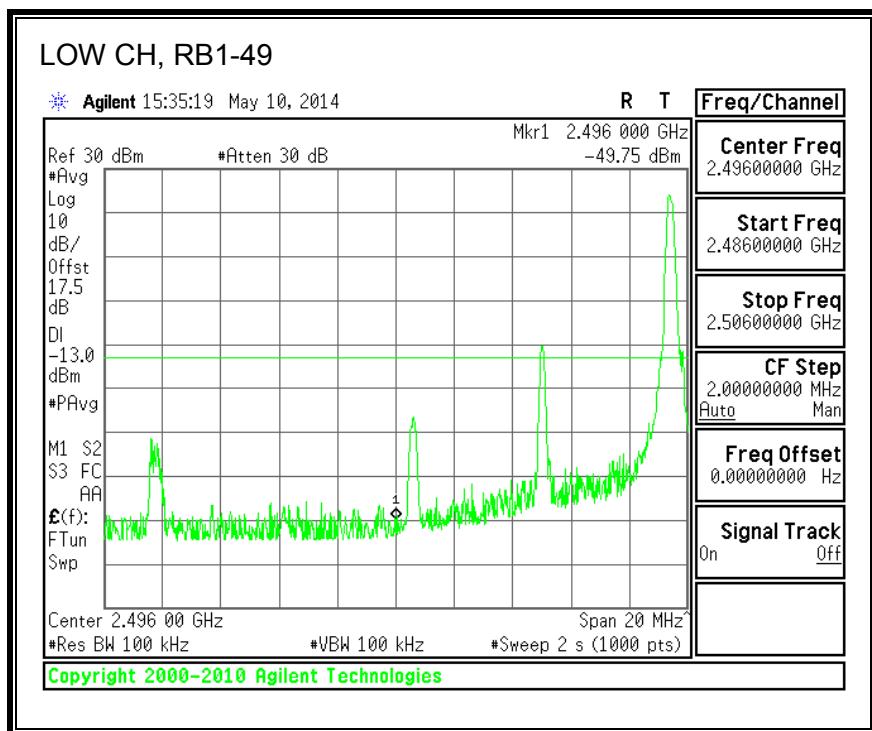


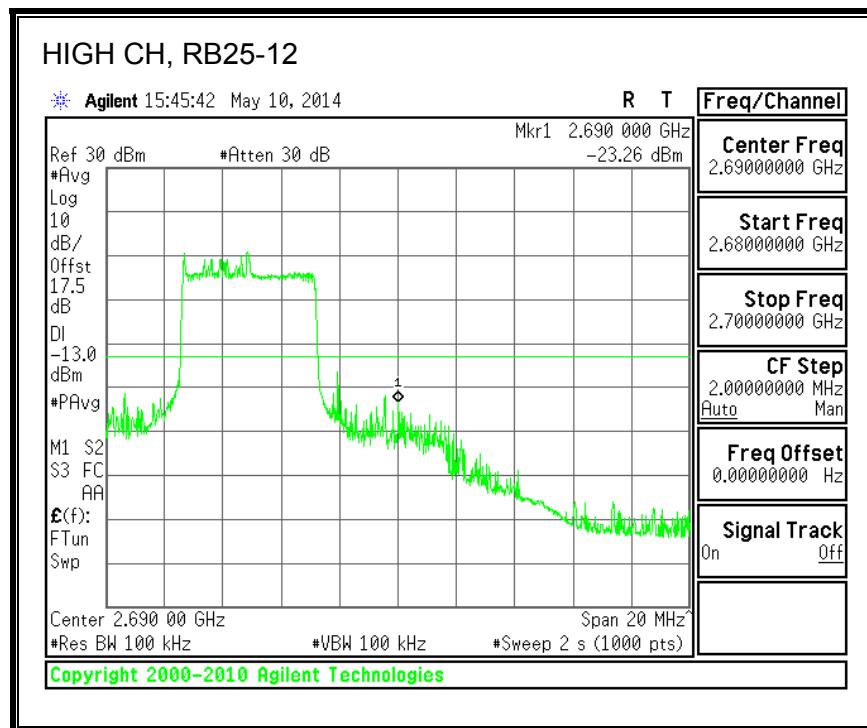
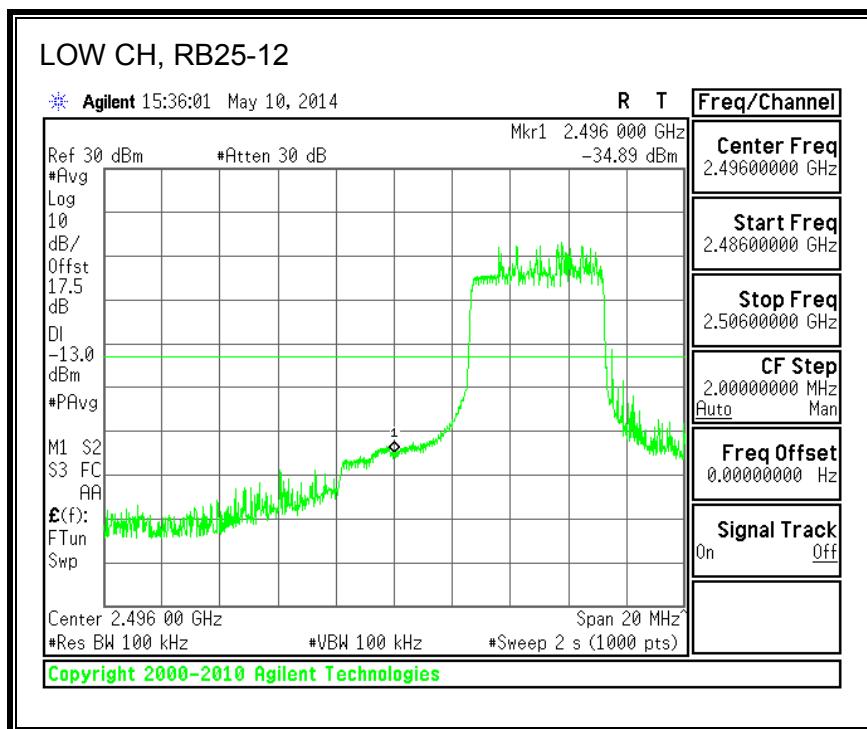


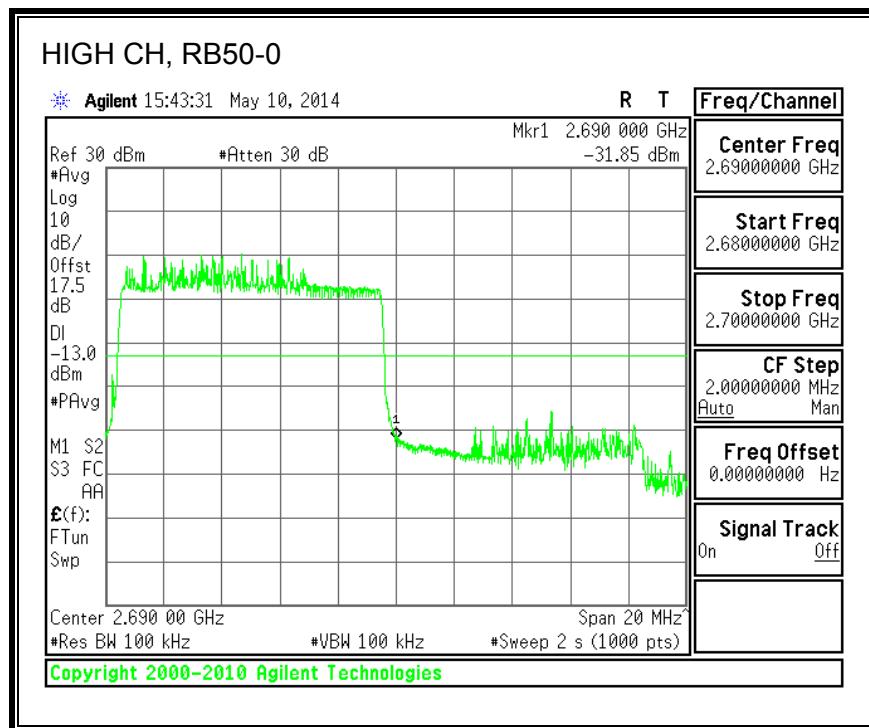
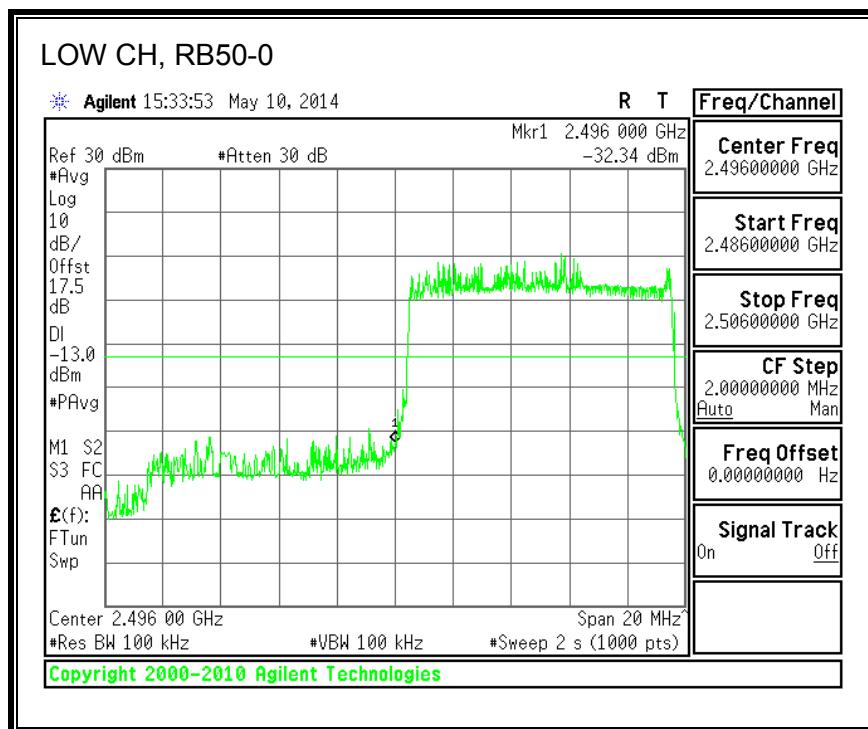


QPSK, (10.0 MHz BAND WIDTH)

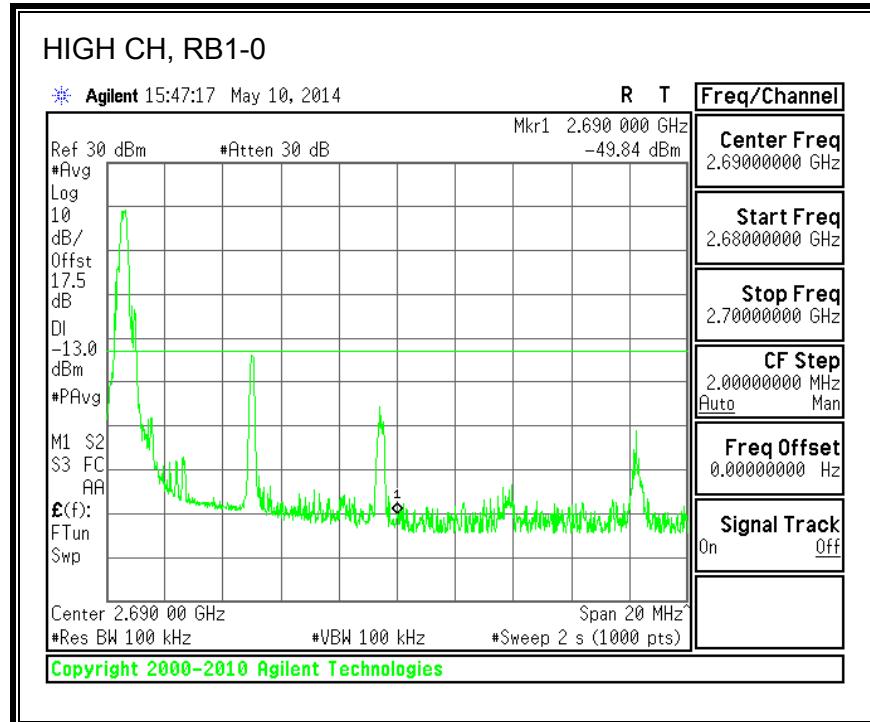
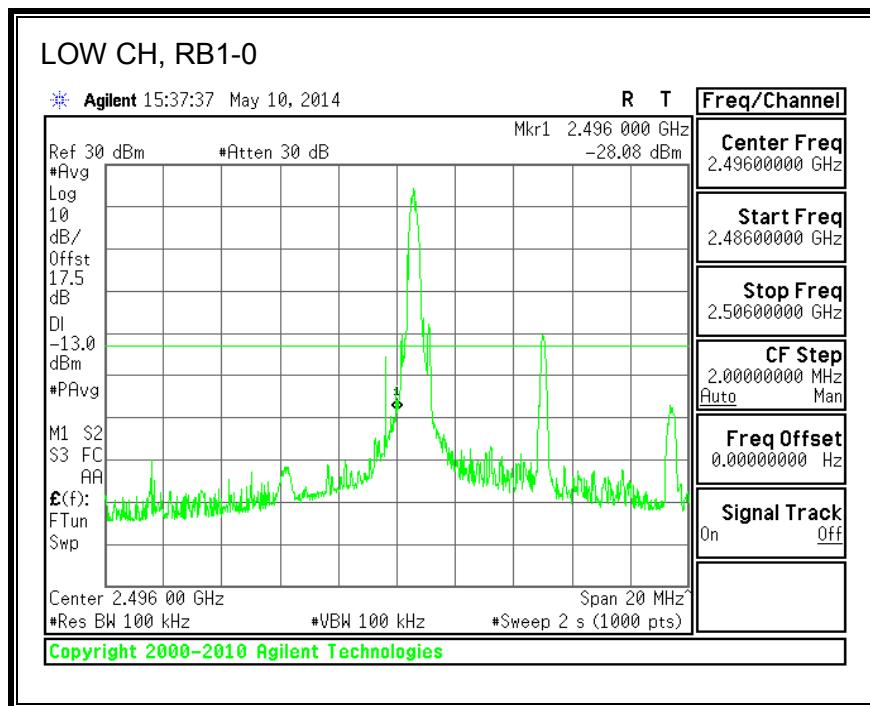


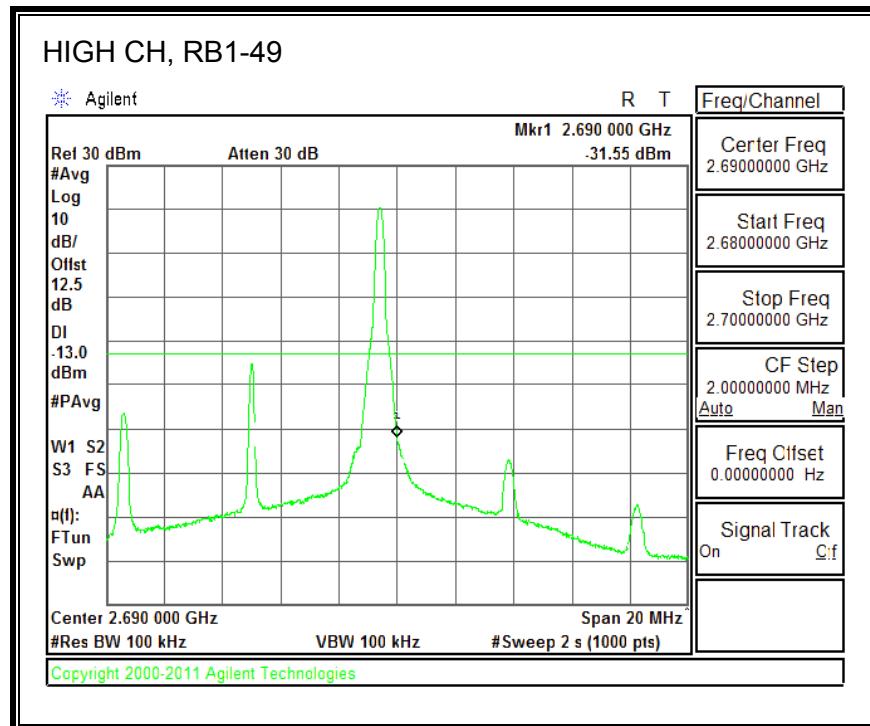
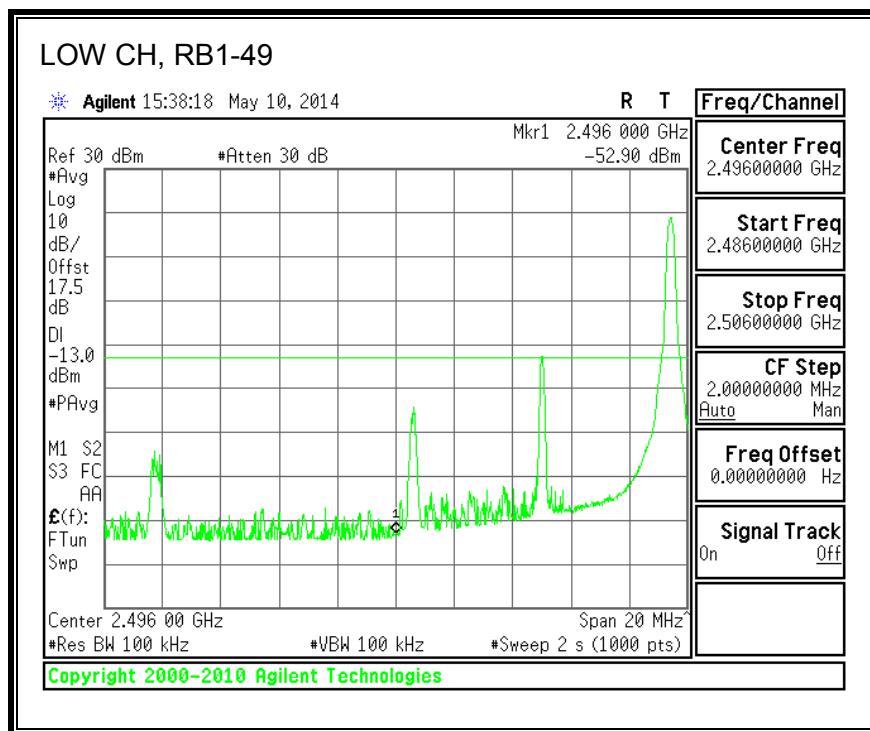


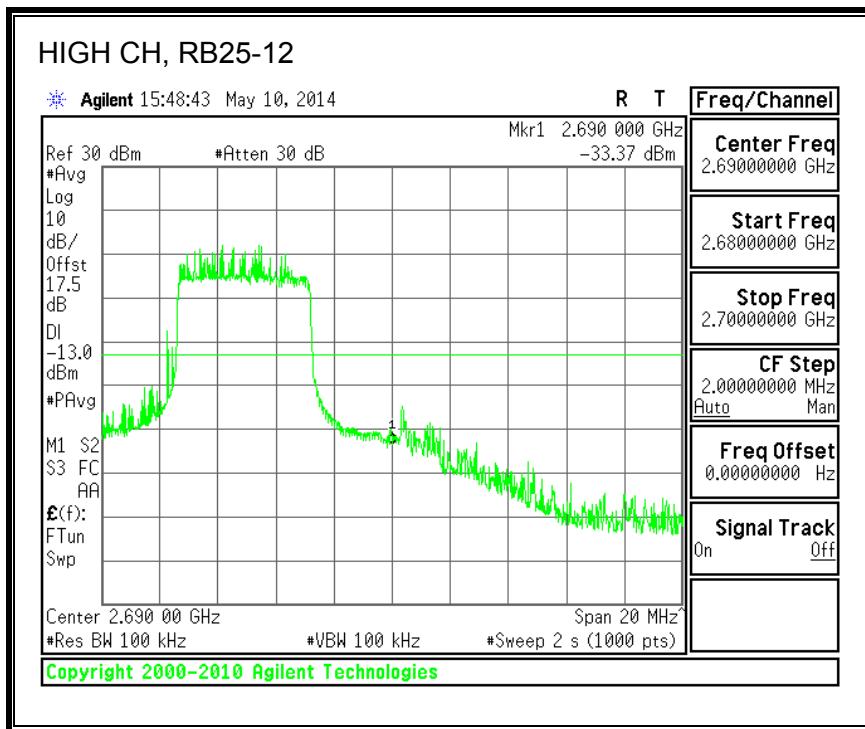
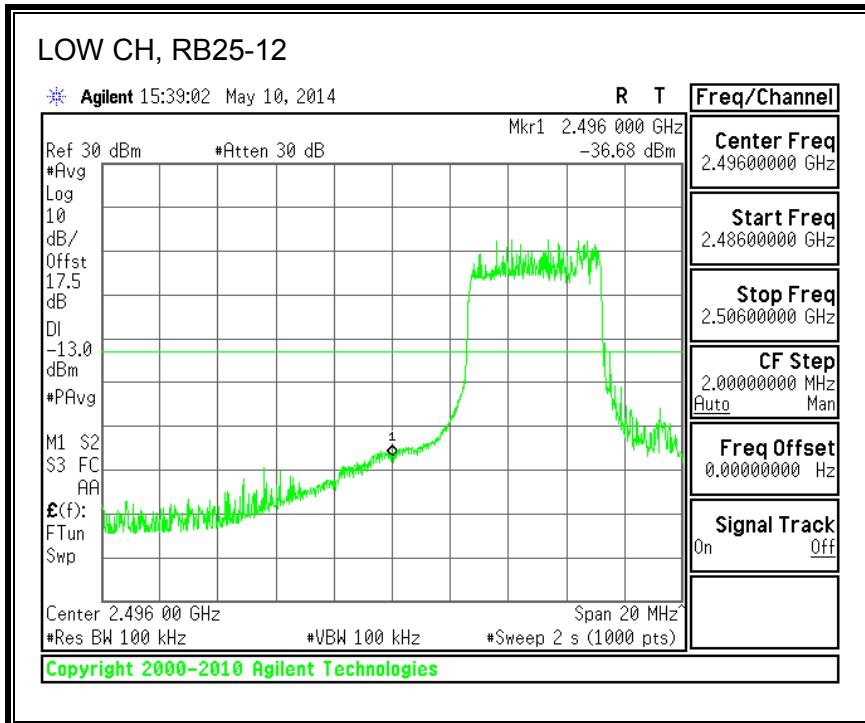


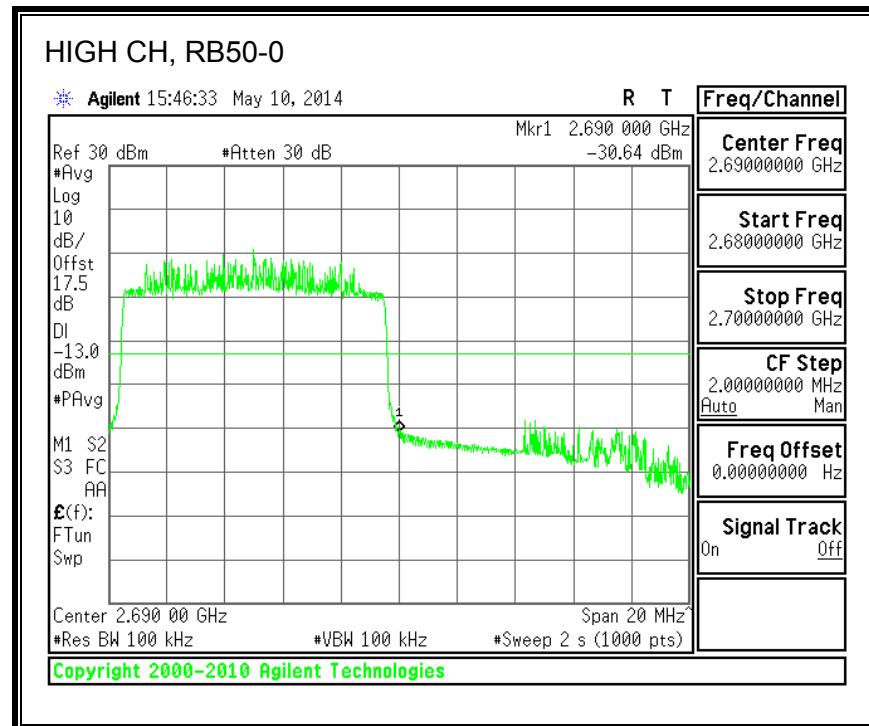
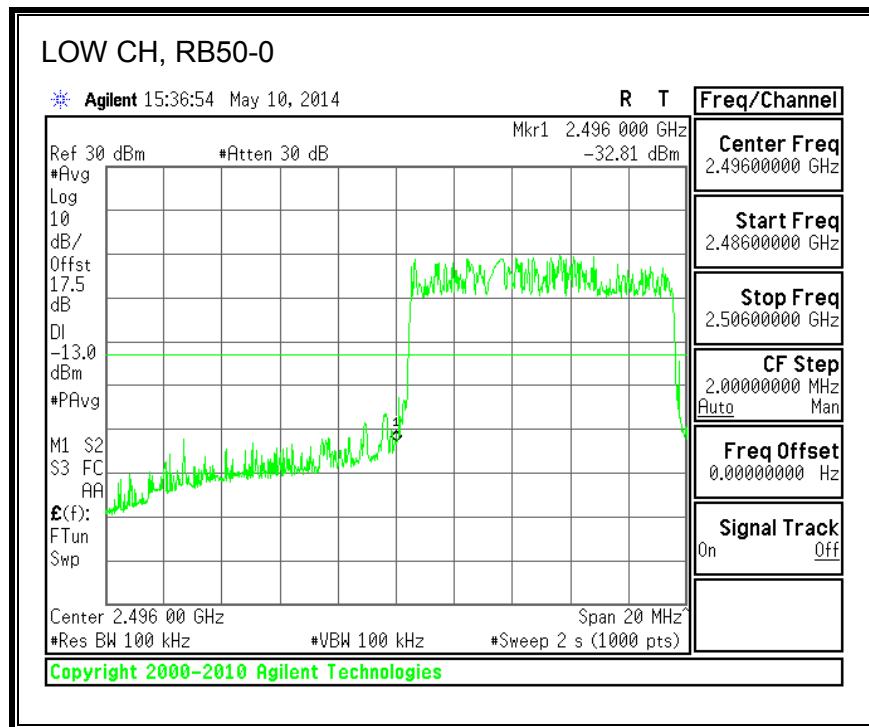


16QAM, (10.0 MHz BAND WIDTH)

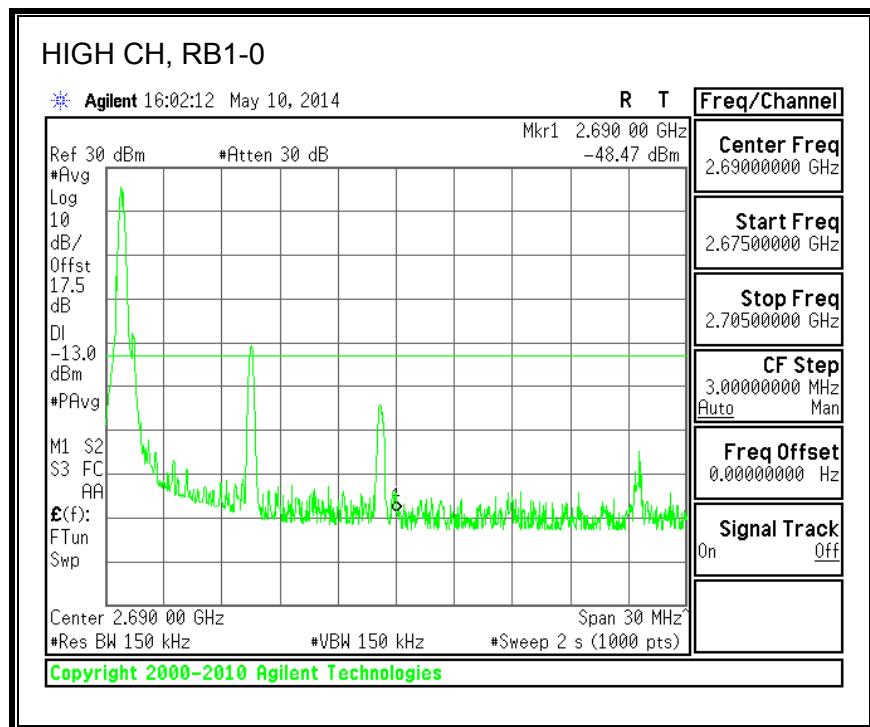
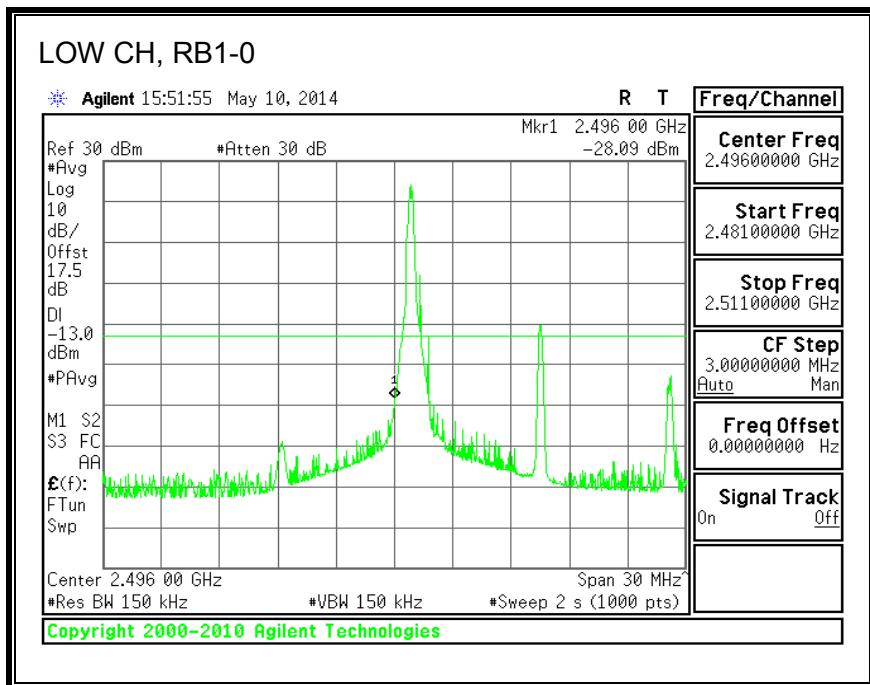


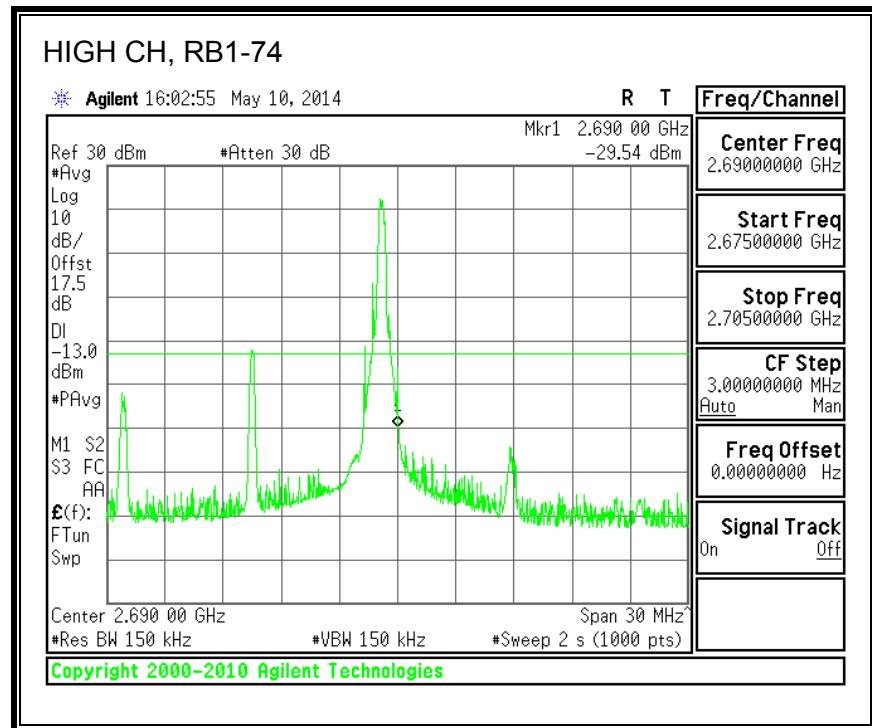
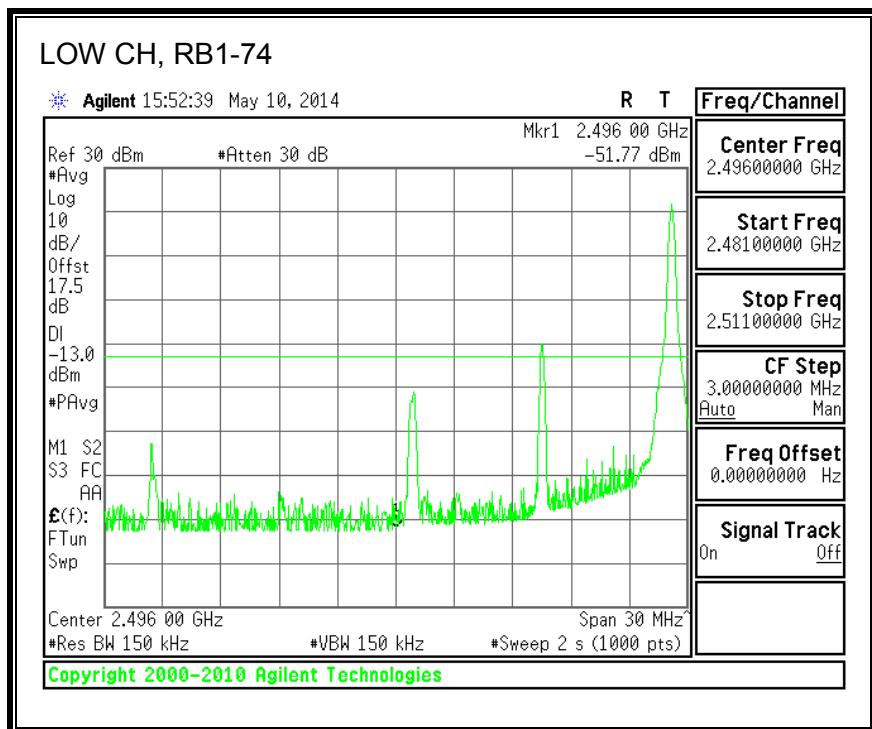


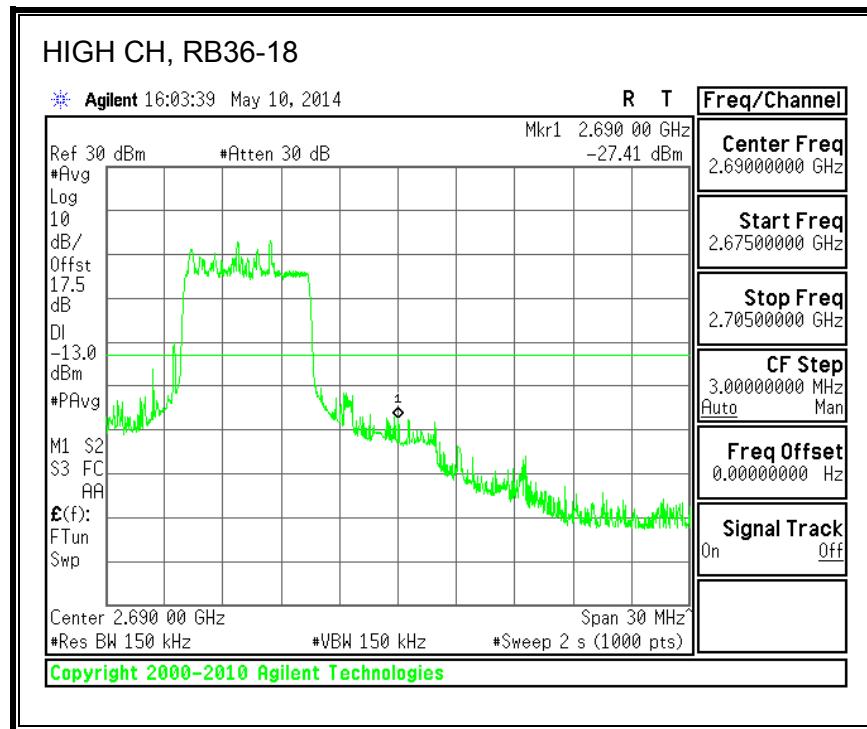
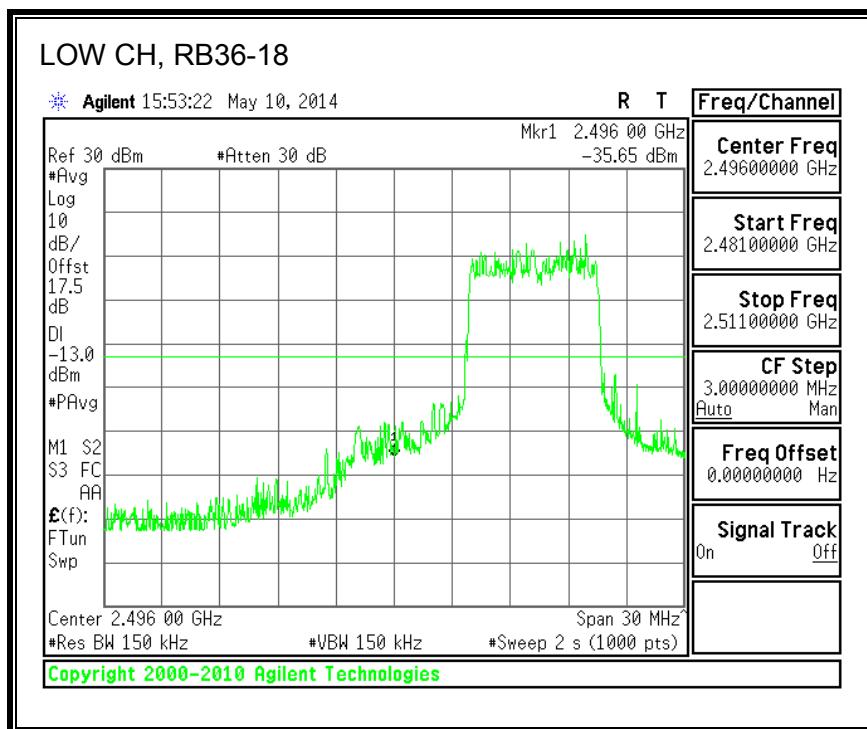


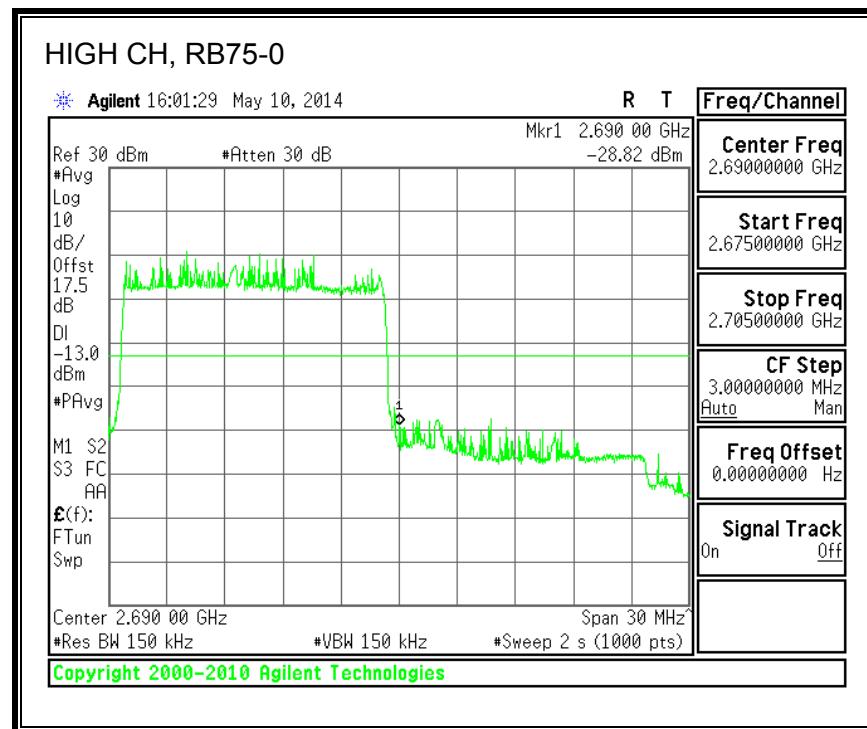
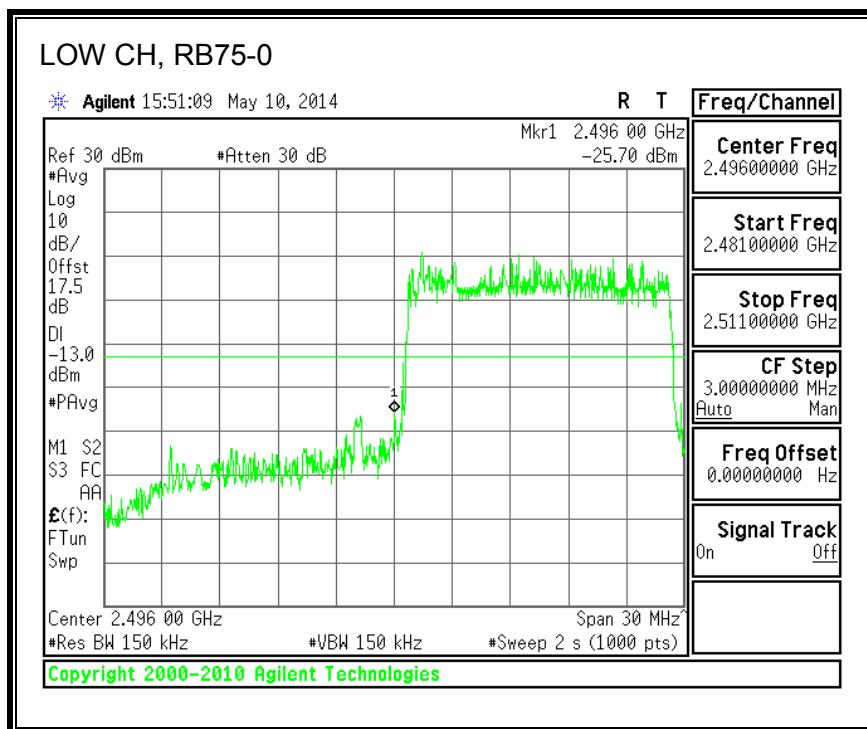


QPSK, (15.0 MHz BAND WIDTH)

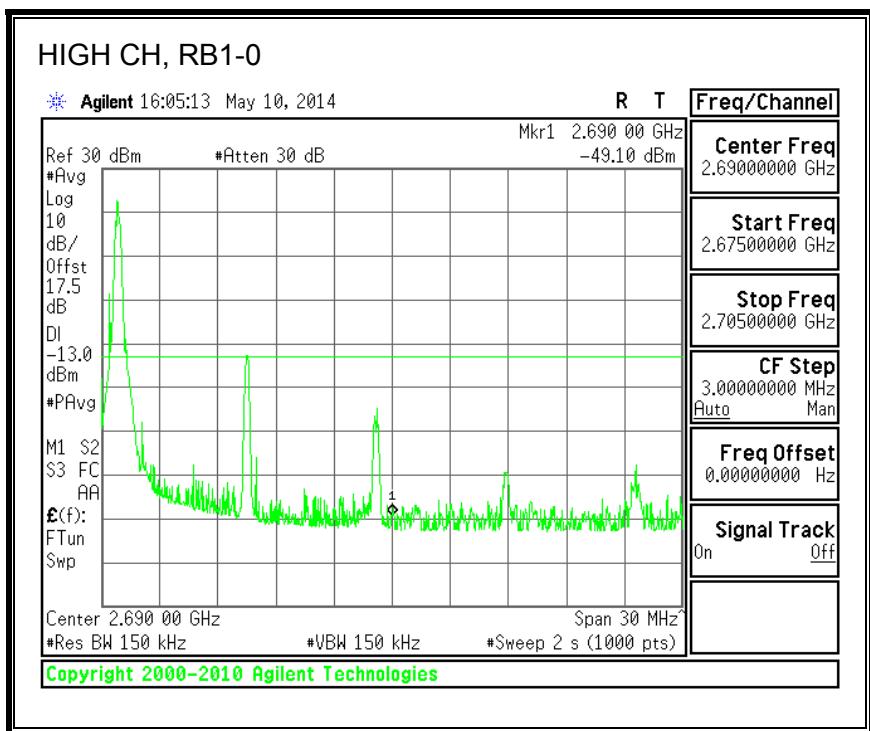
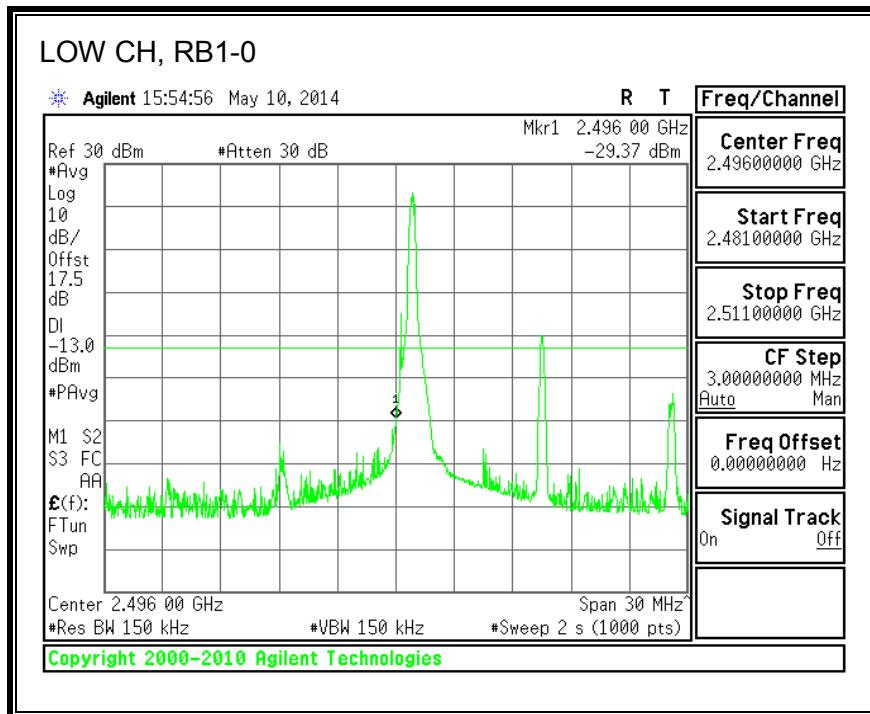


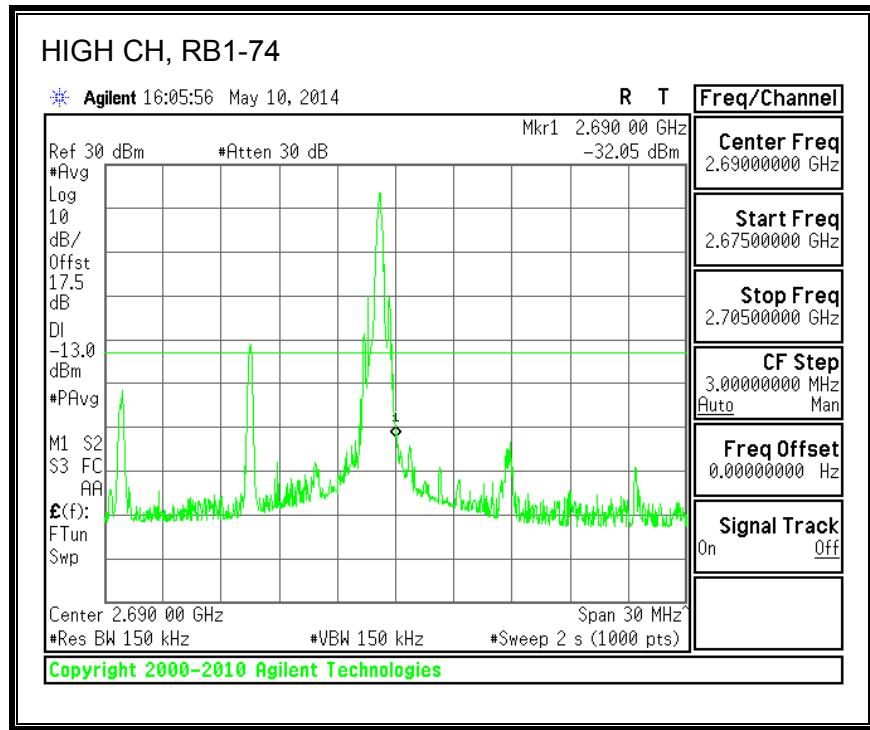
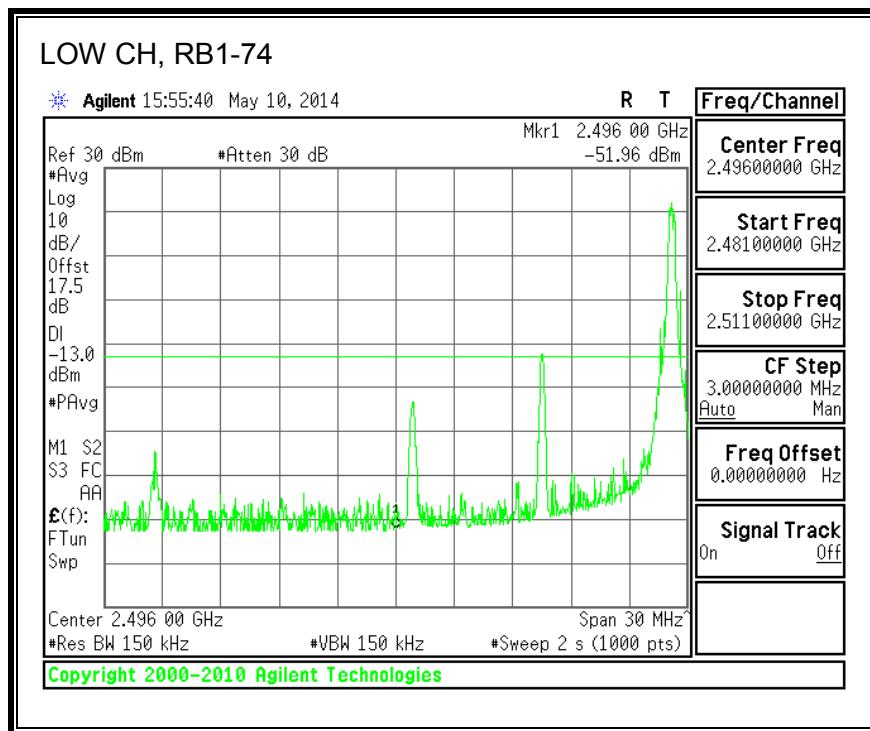


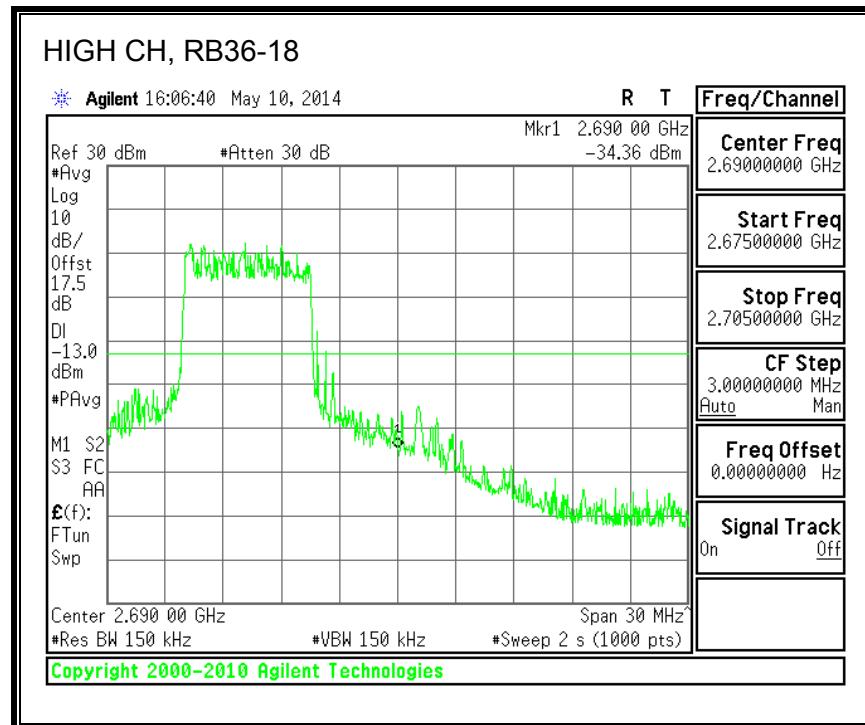
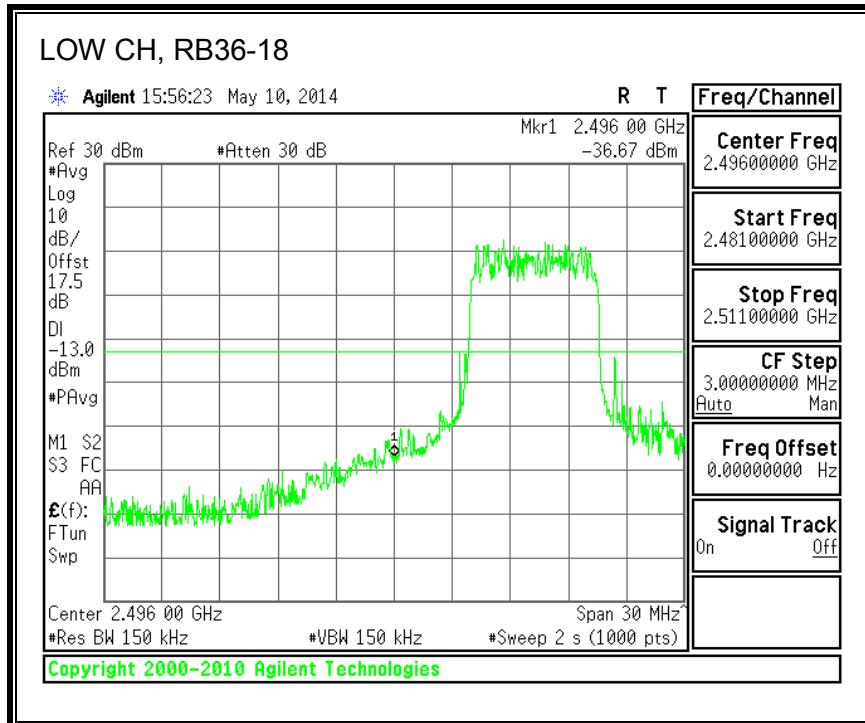


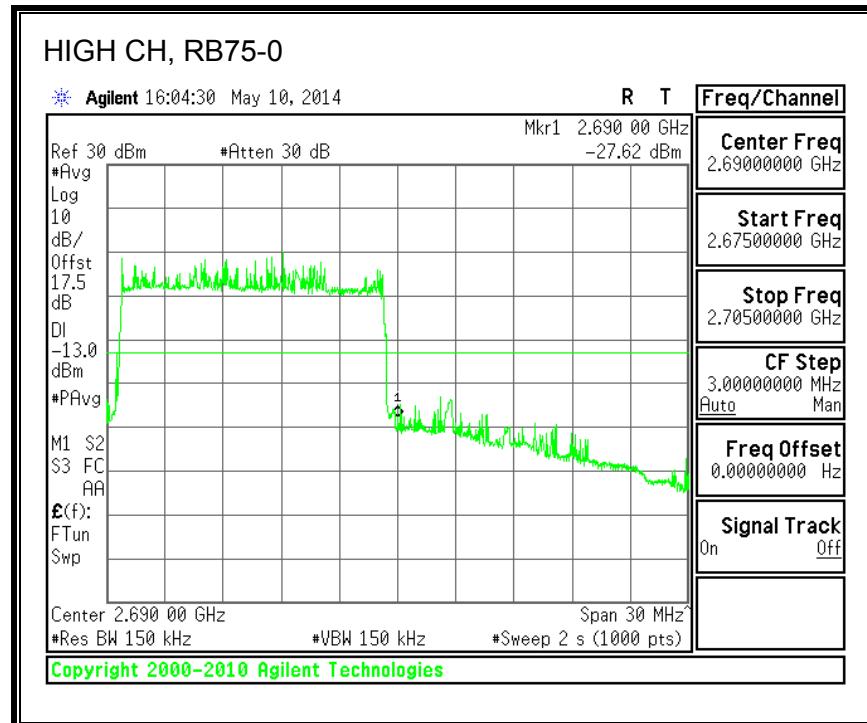
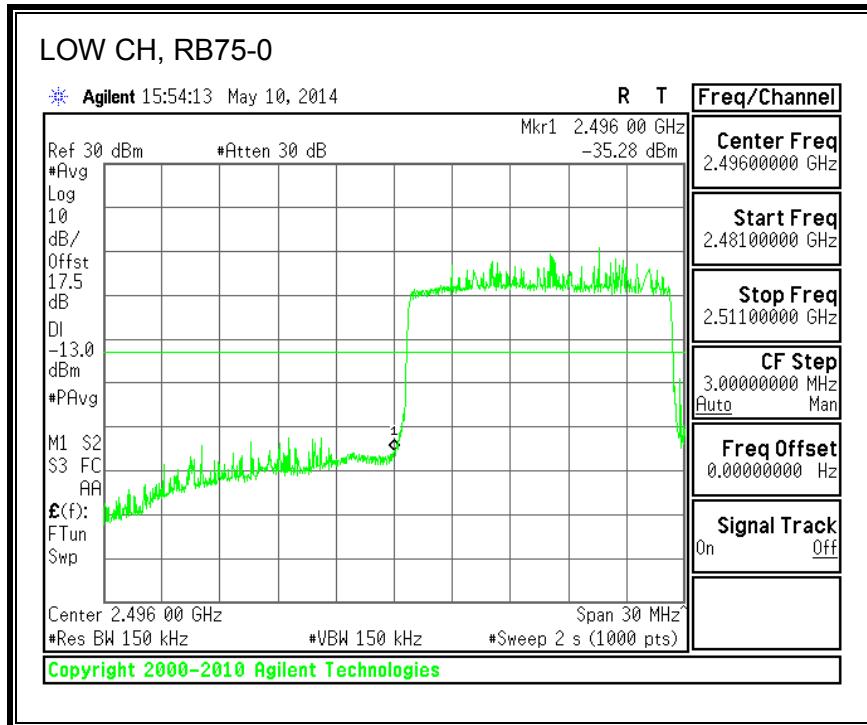


16QAM, (15.0 MHz BAND WIDTH)

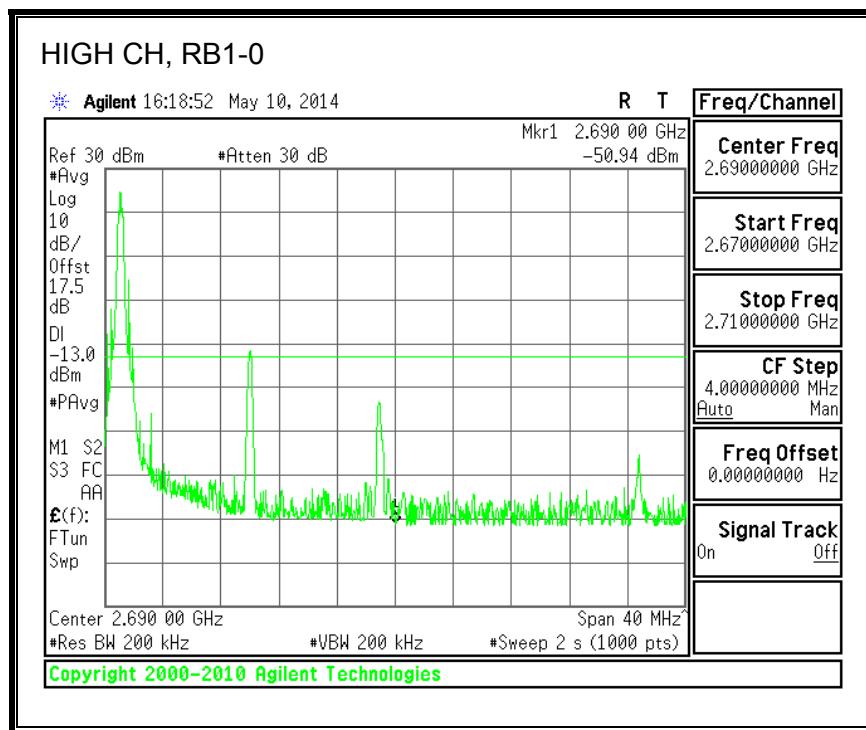
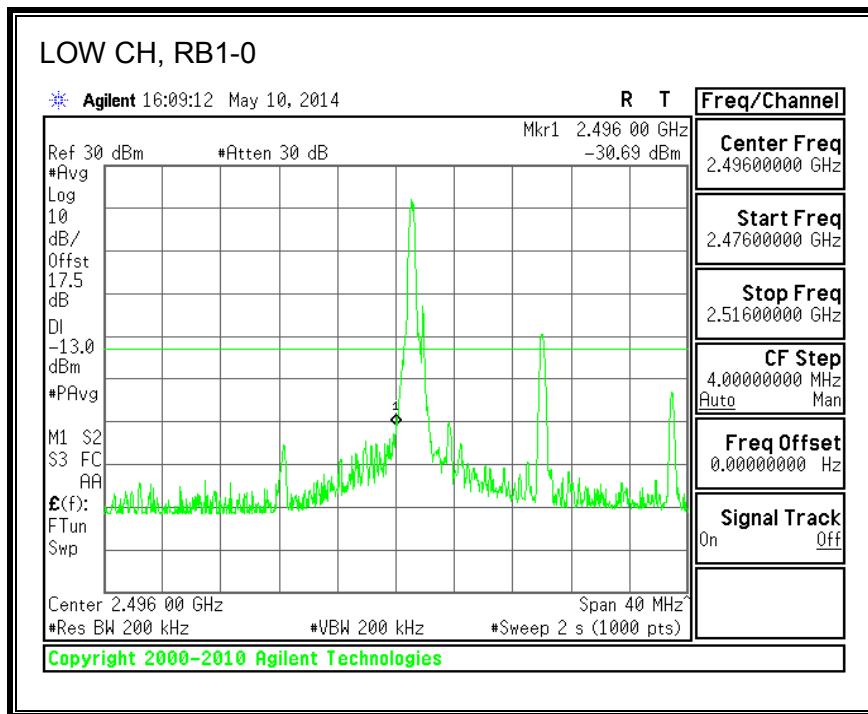


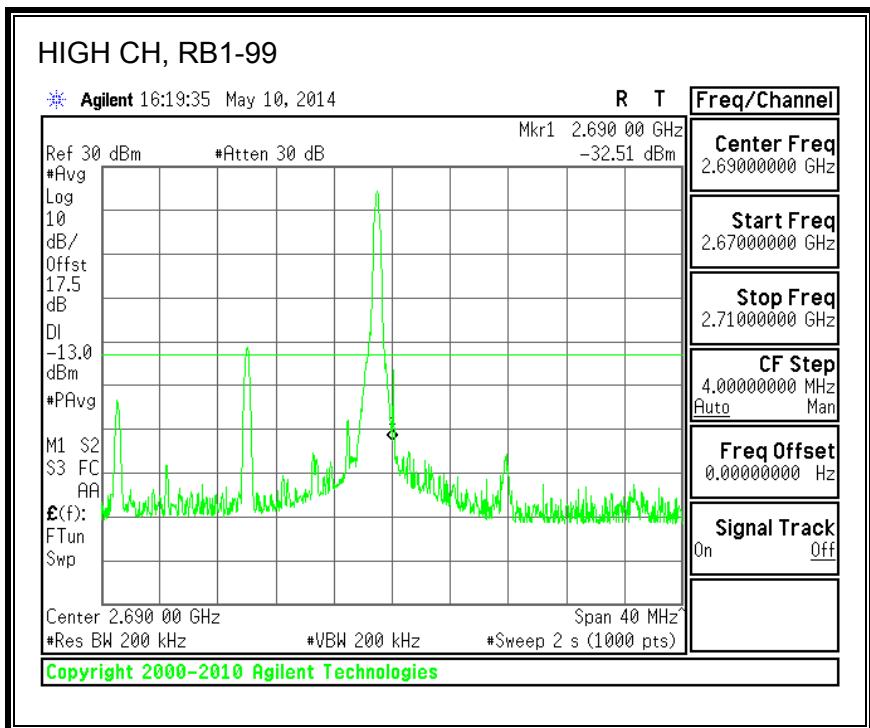
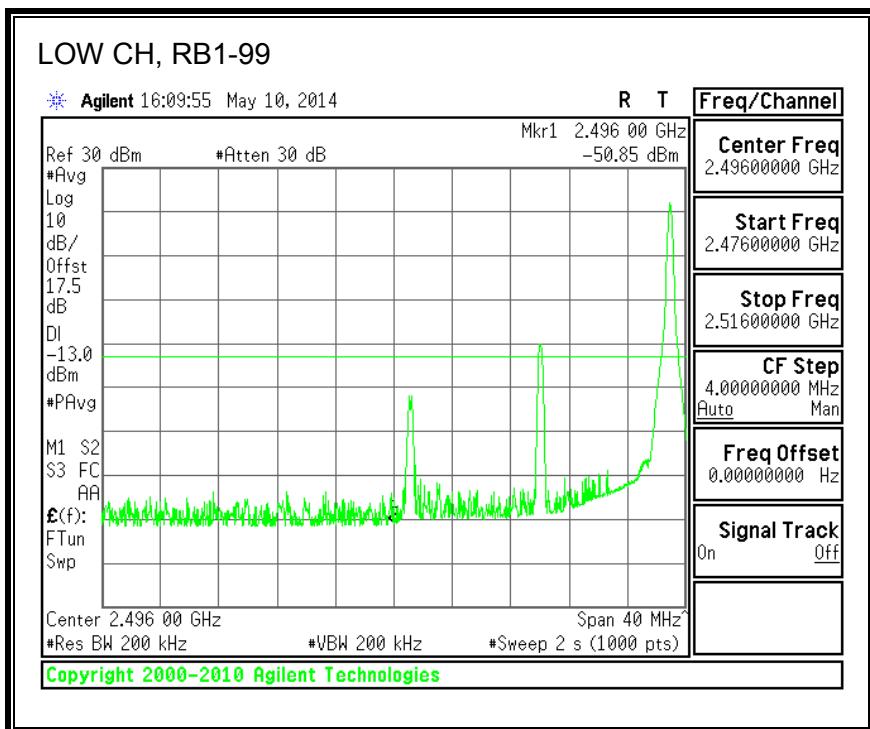


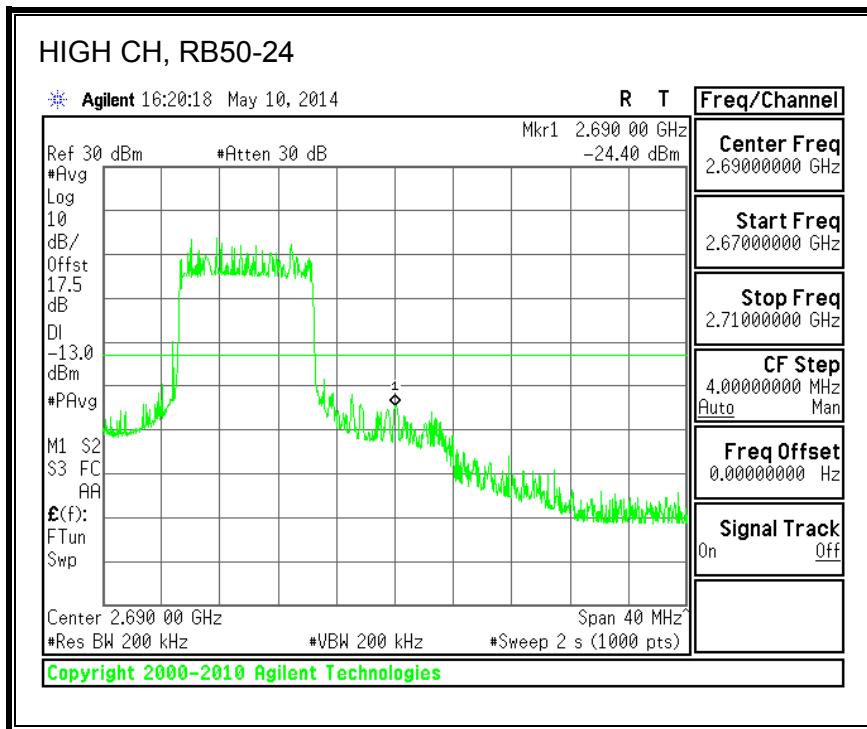
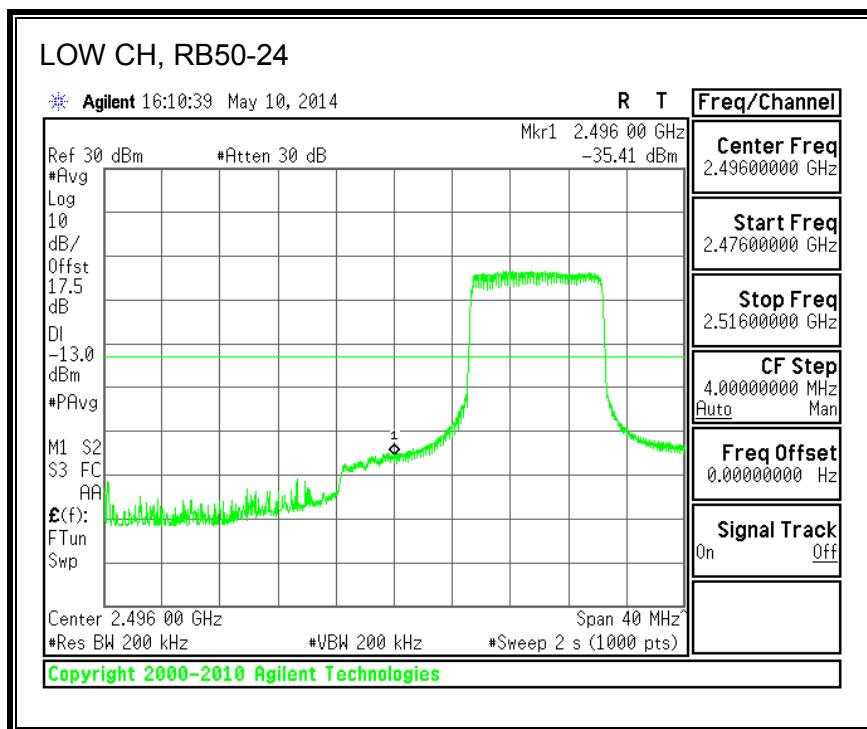


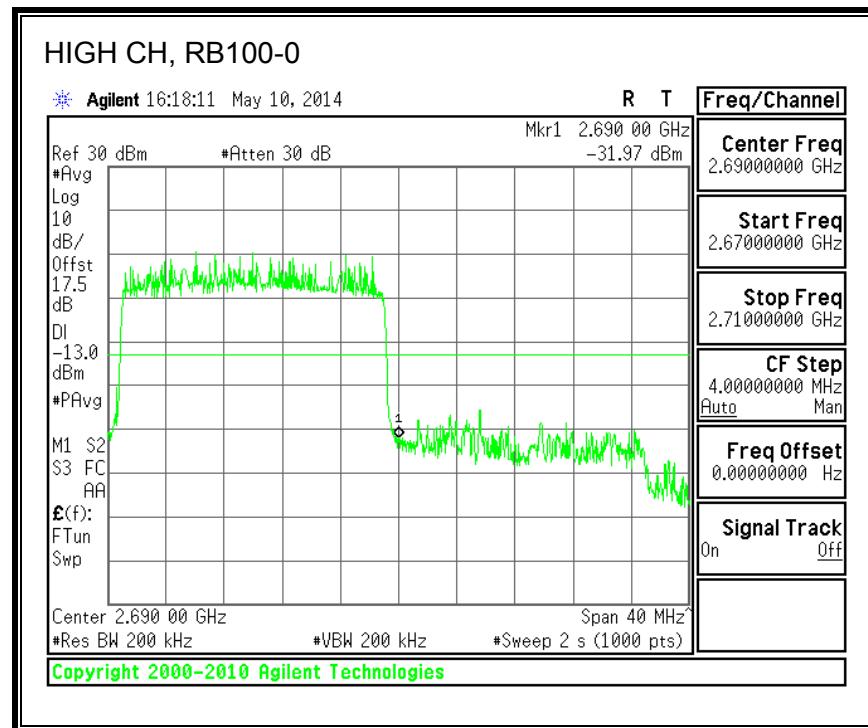
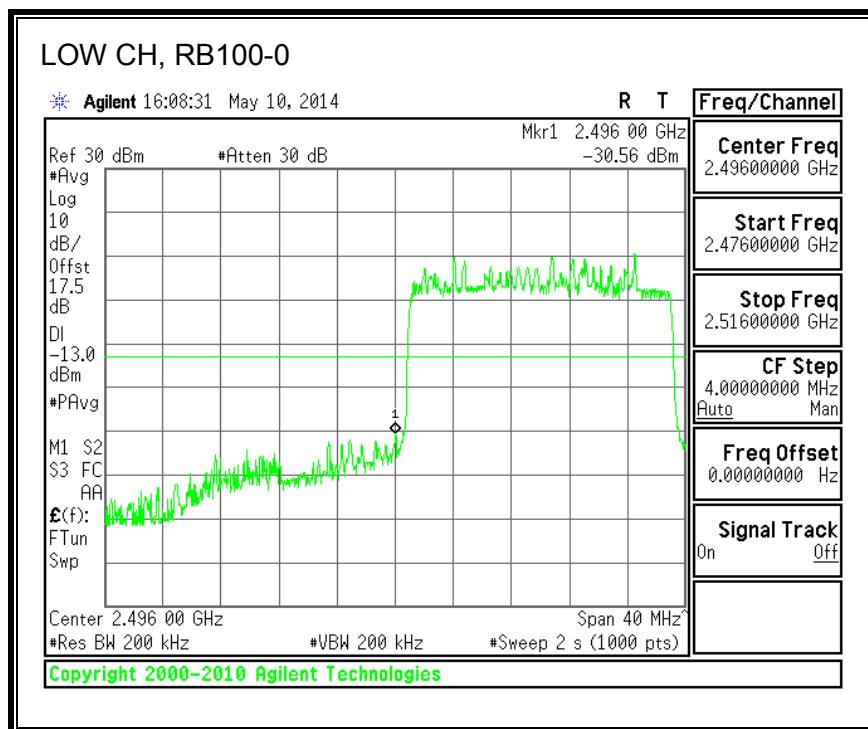


QPSK, (20.0 MHz BAND WIDTH)

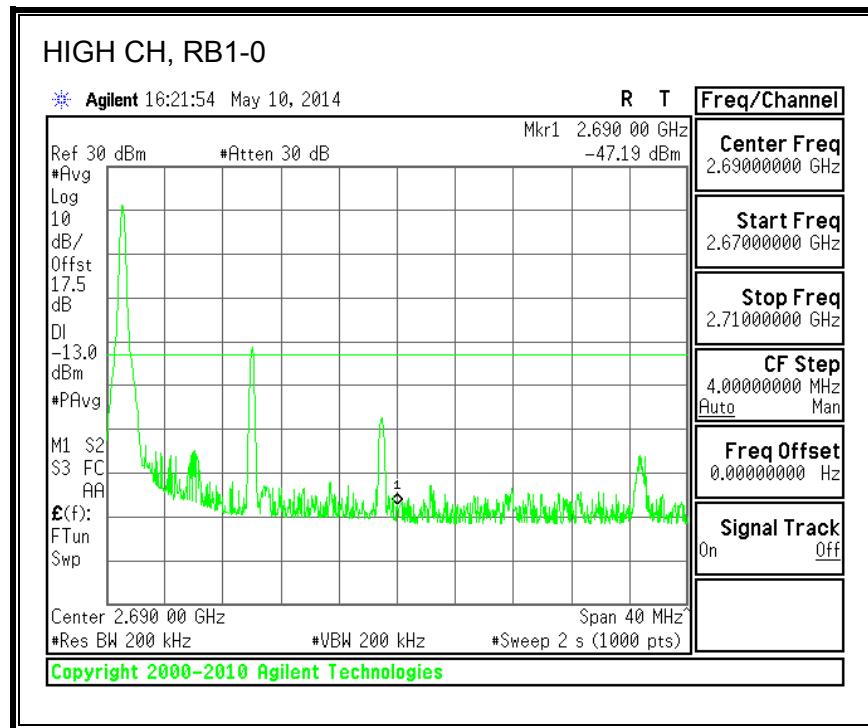
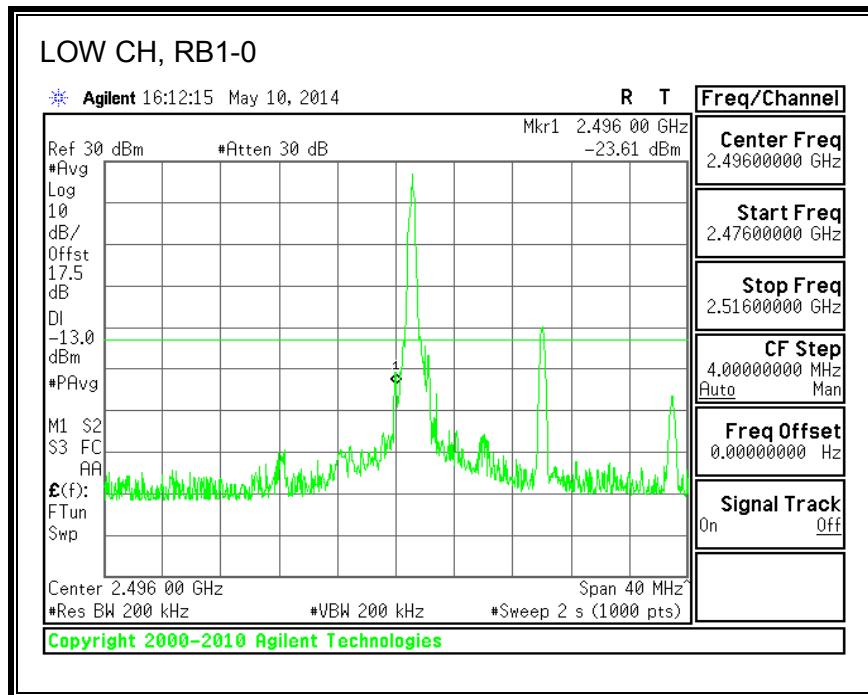


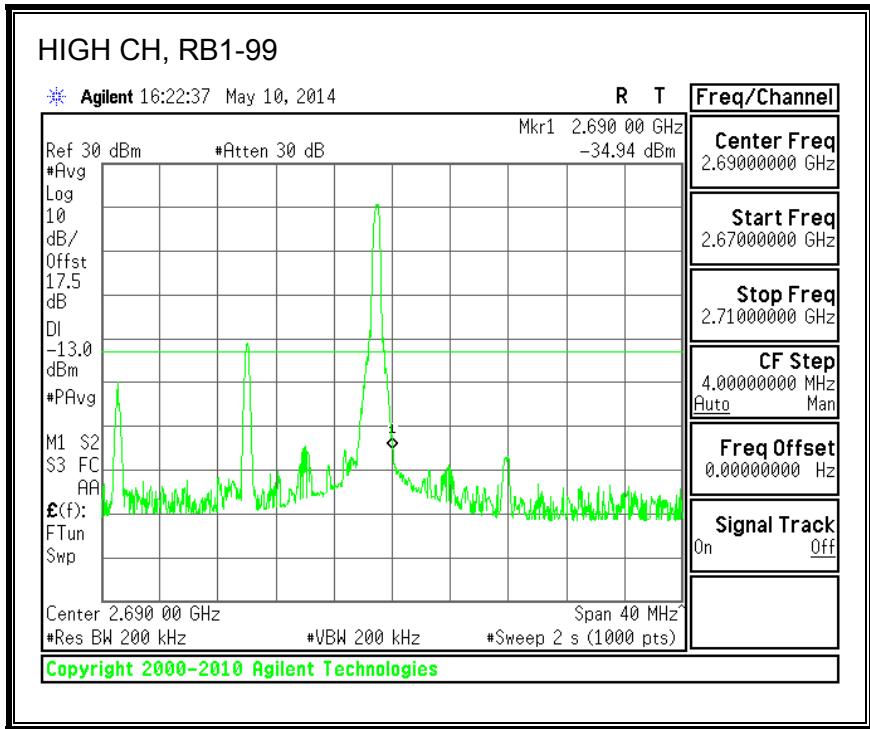
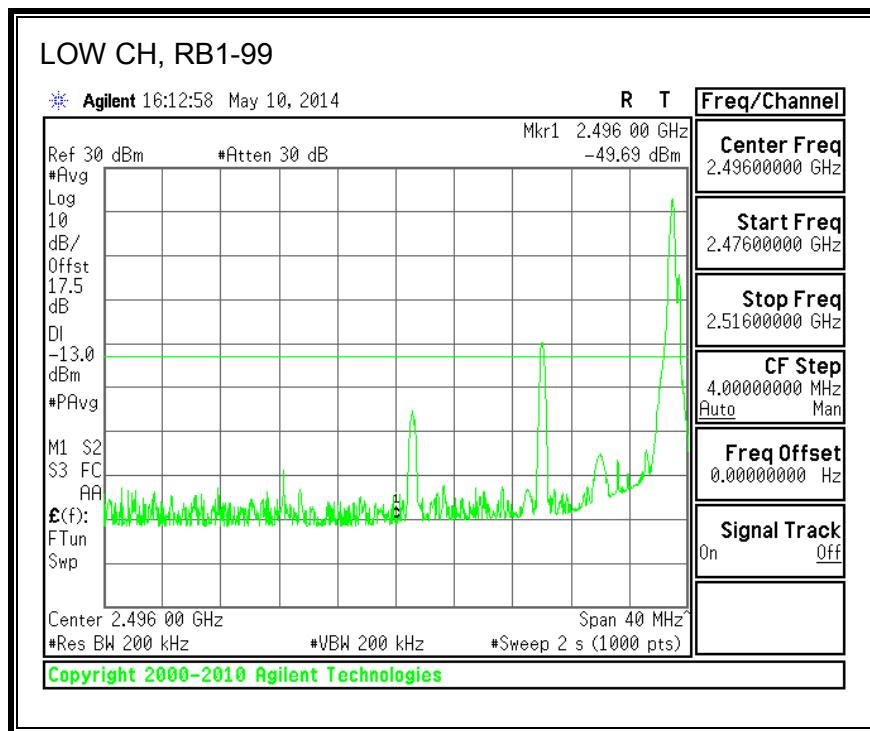


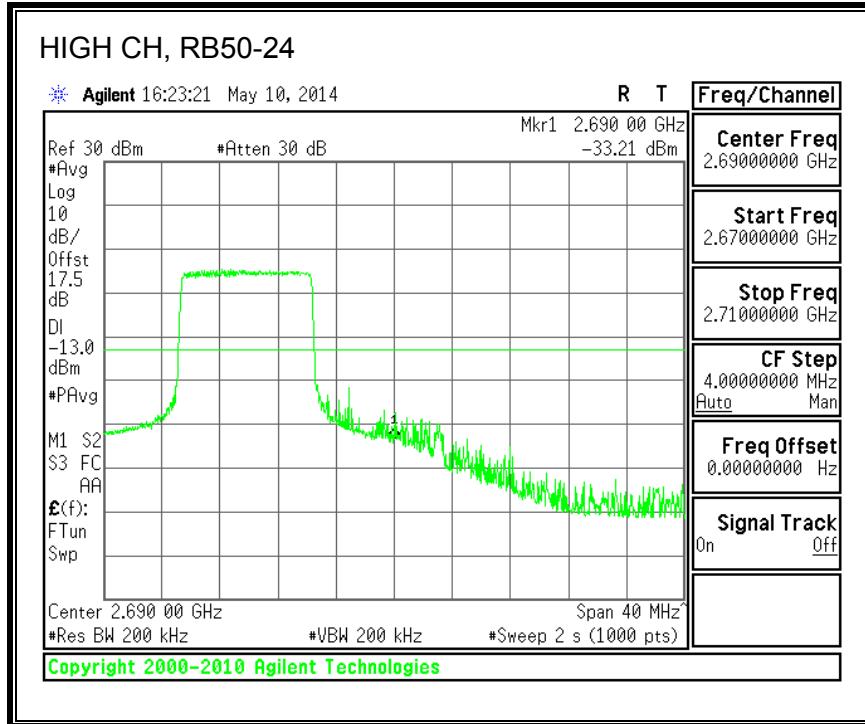
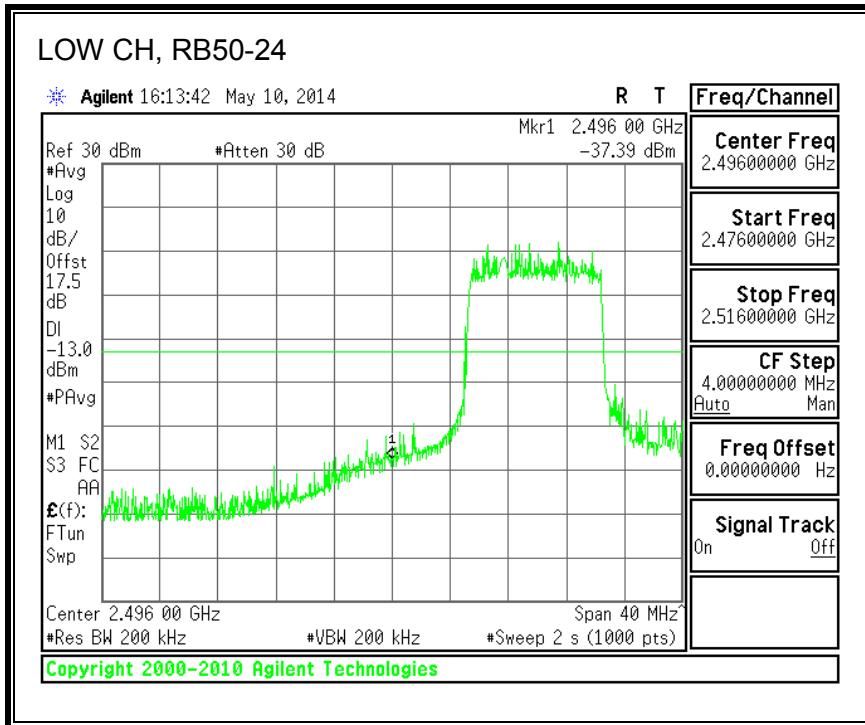


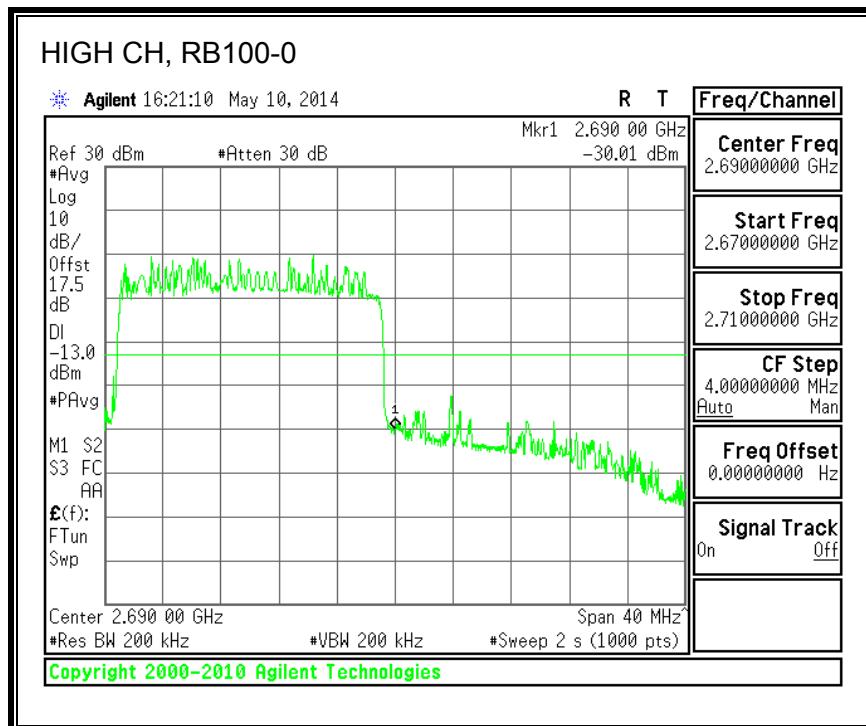
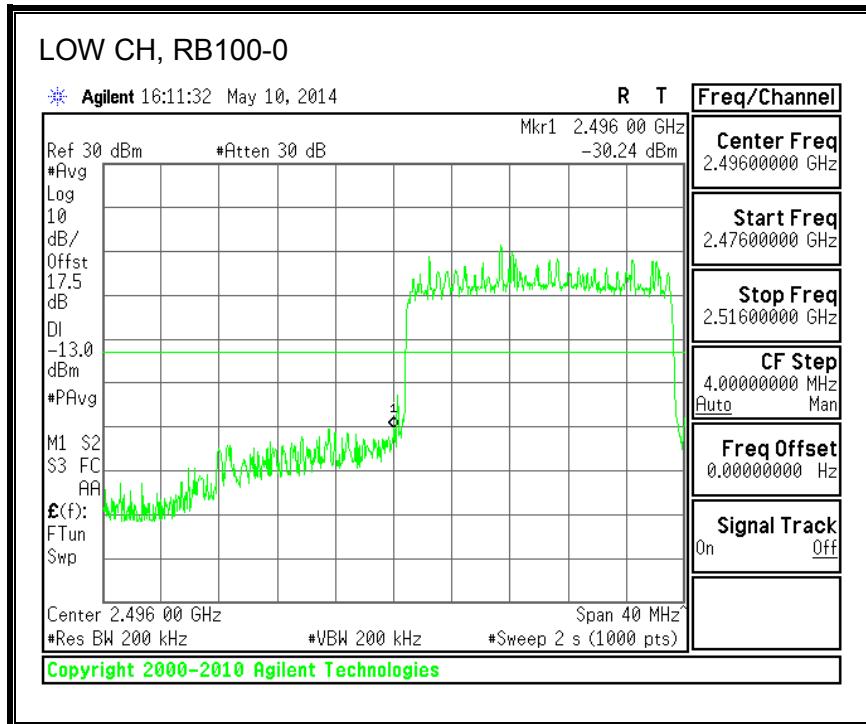


16QAM, (20.0 MHz BAND WIDTH)



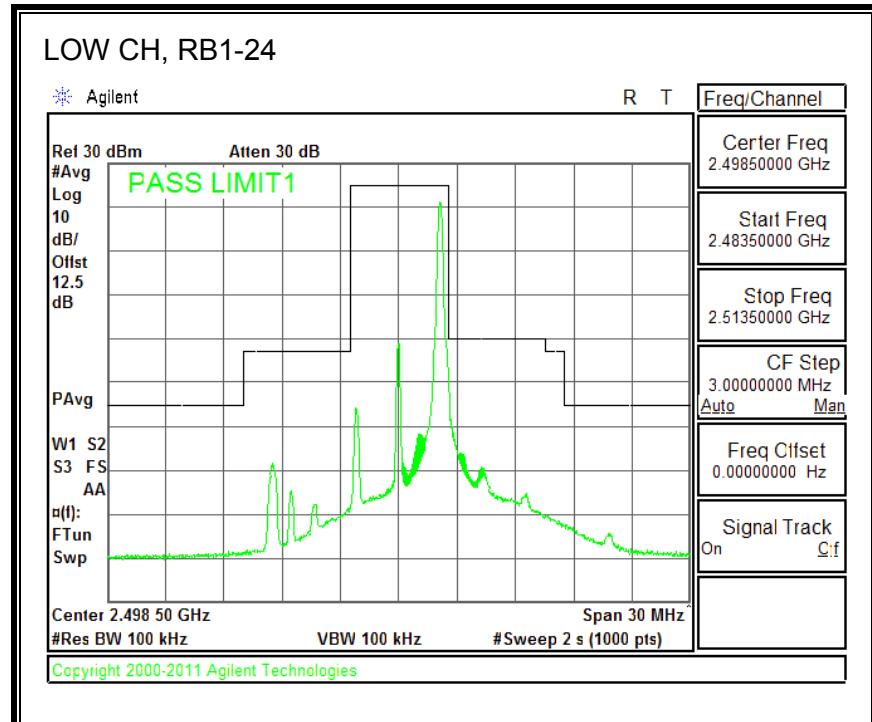
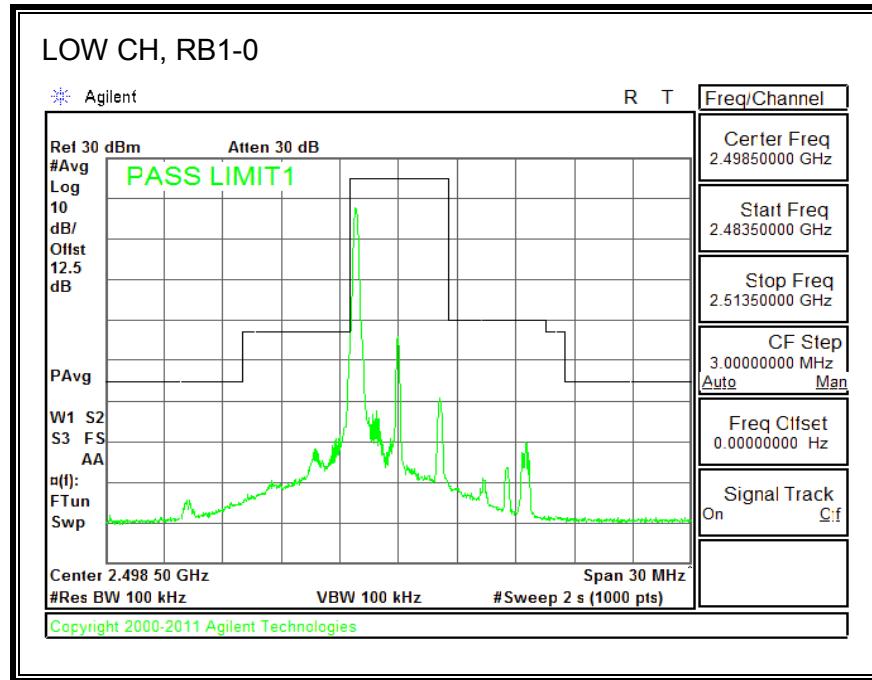


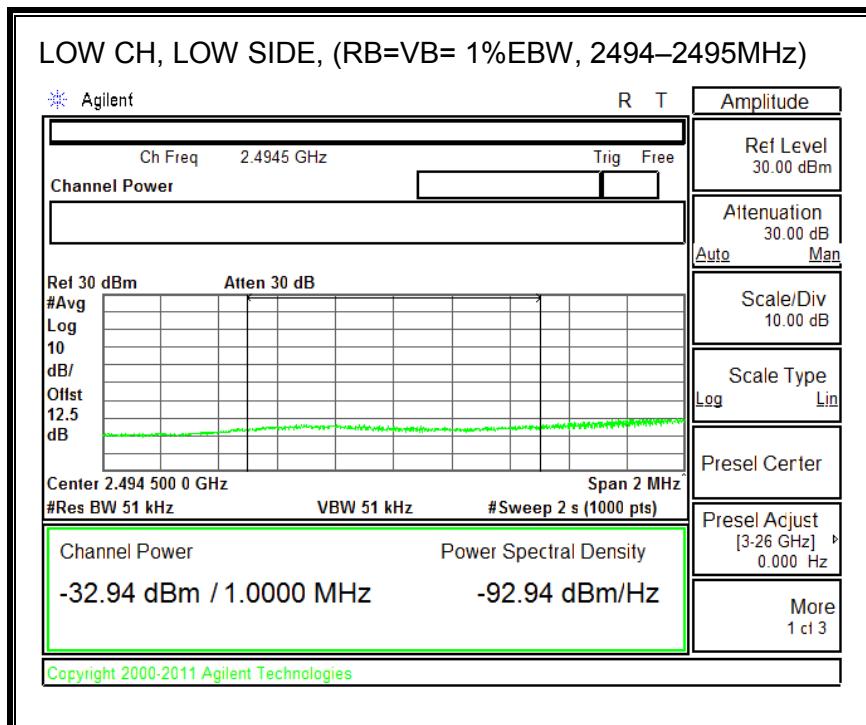
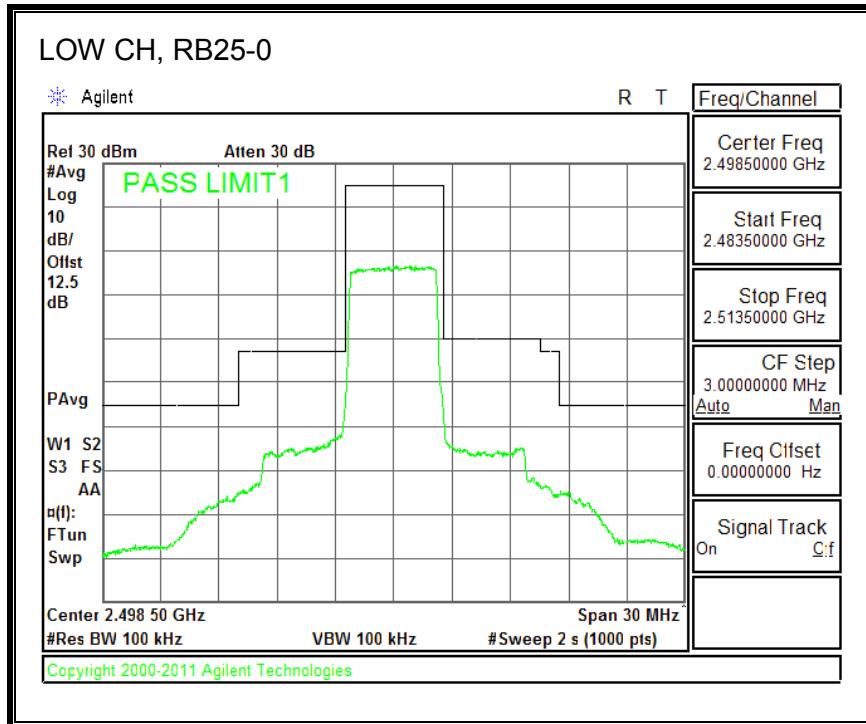


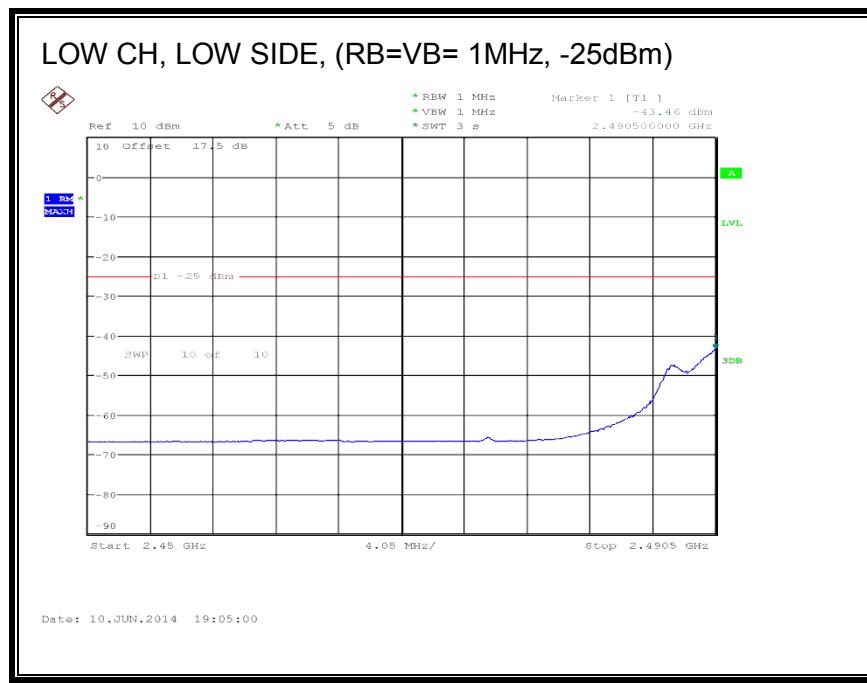
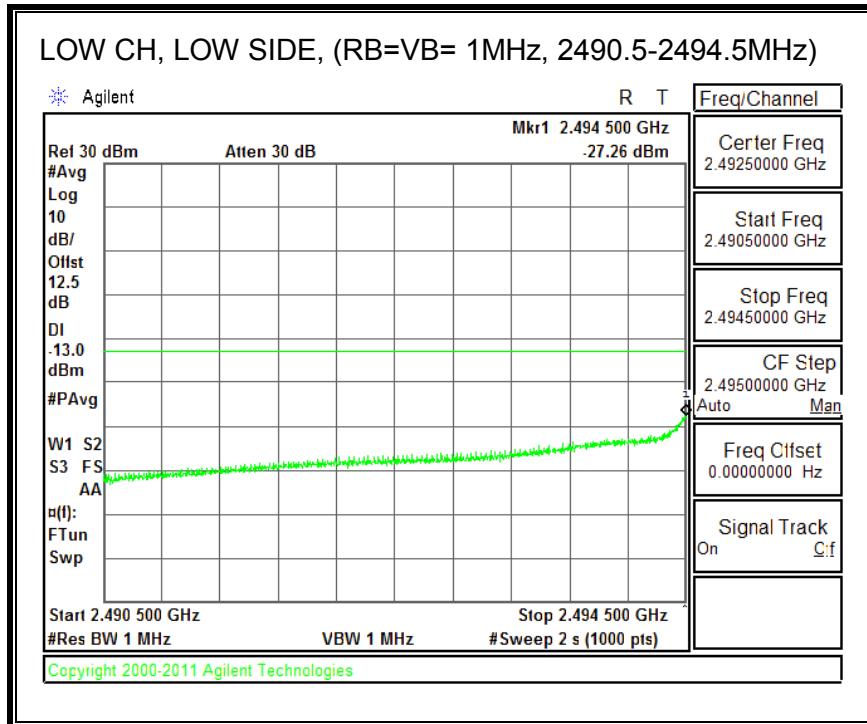


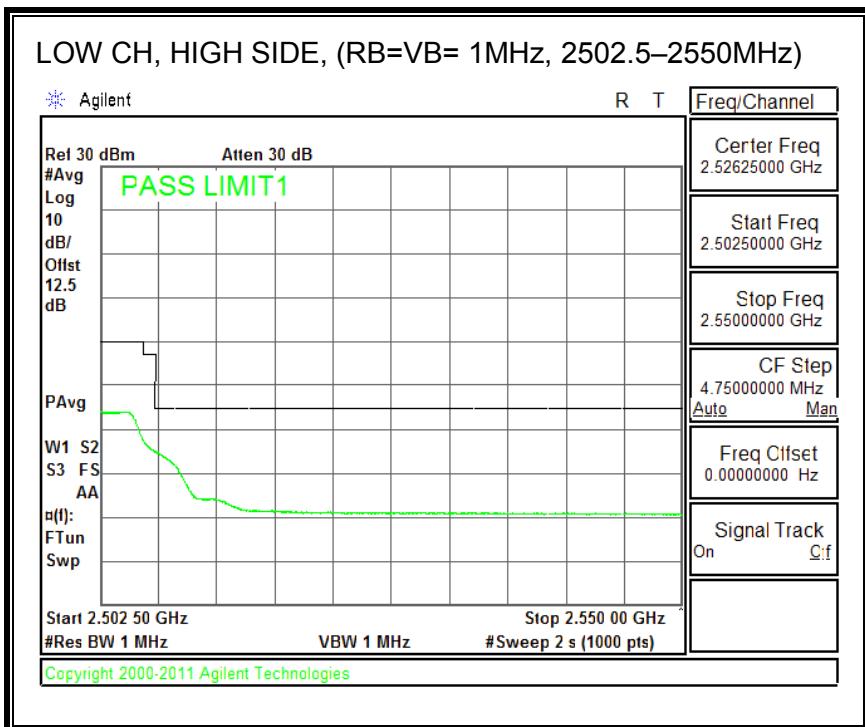
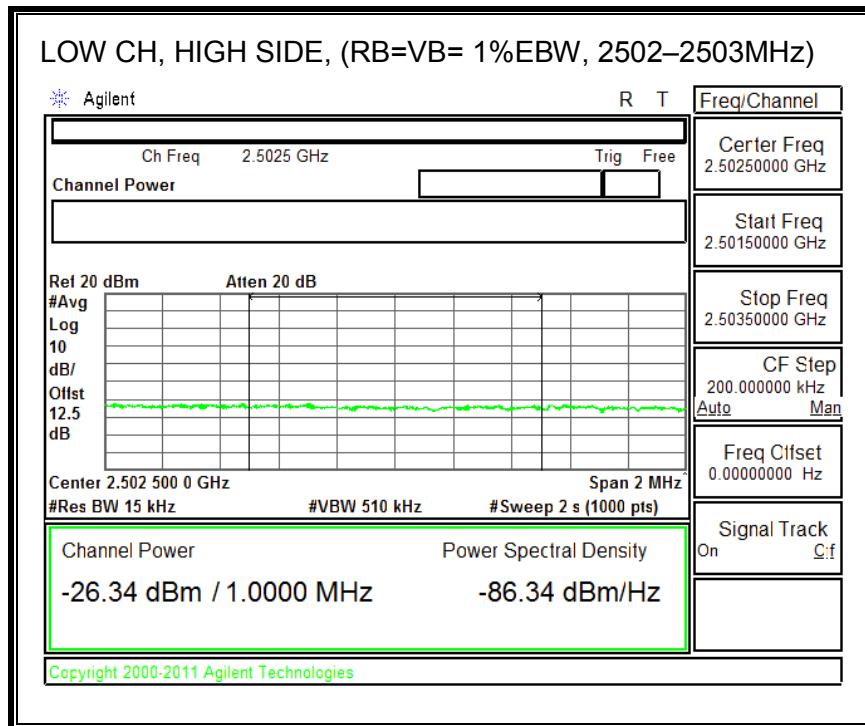
8.2.9. LTE BAND 41 EMISSION MASK

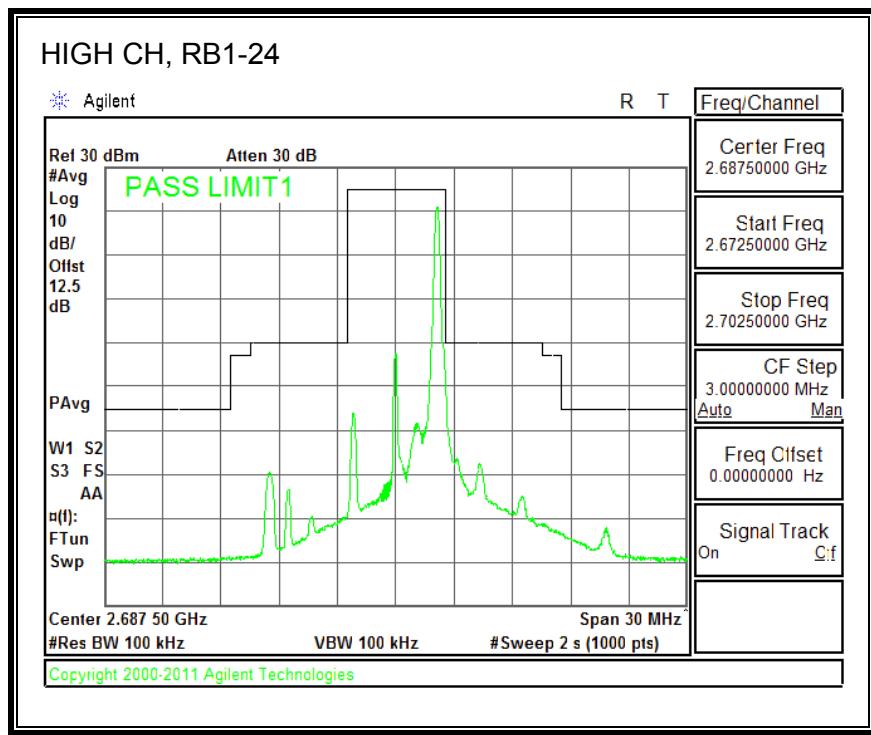
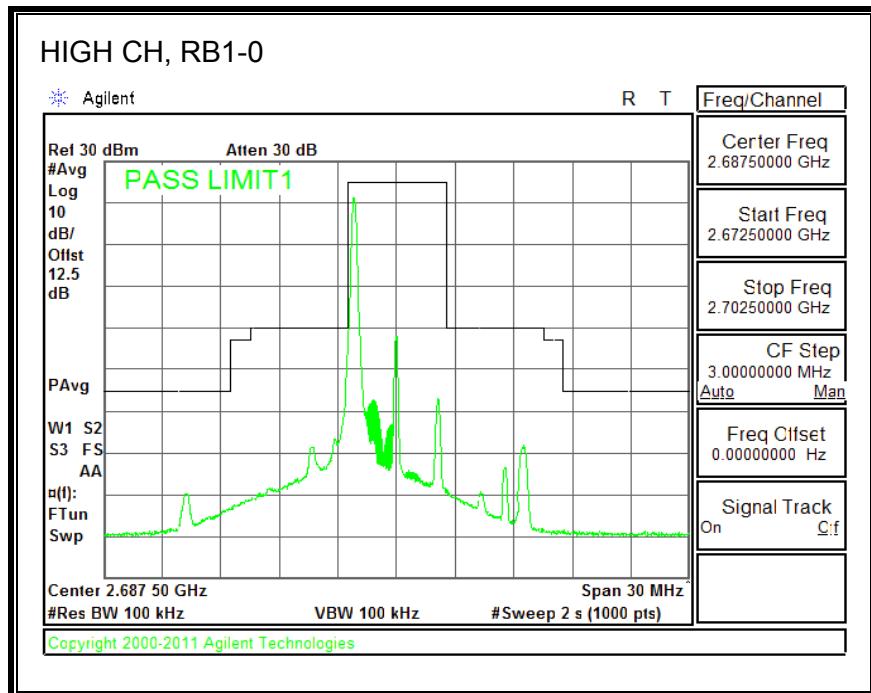
QPSK, (5.0 MHz BAND WIDTH)

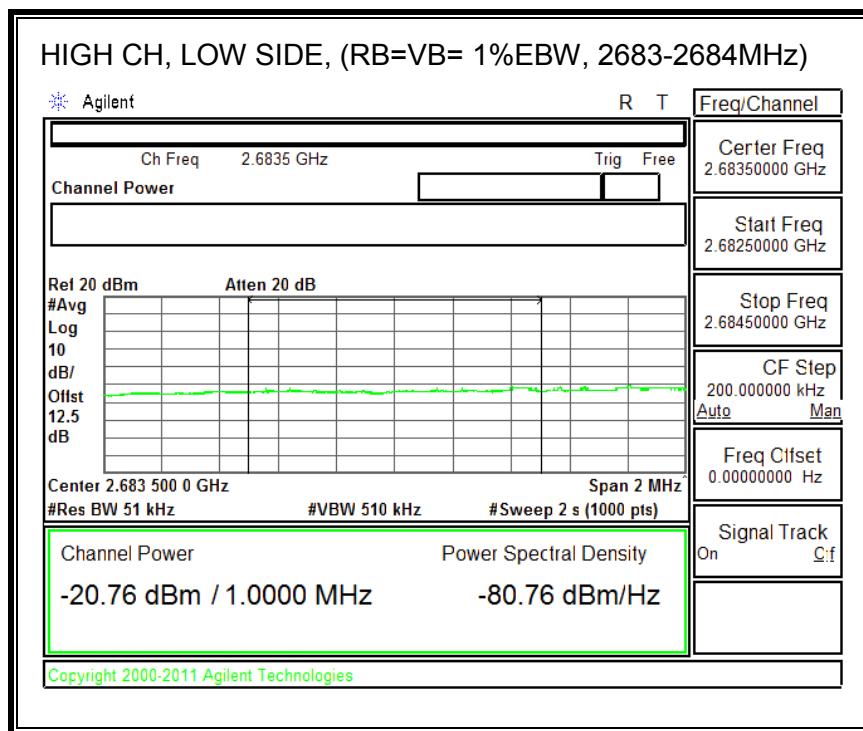
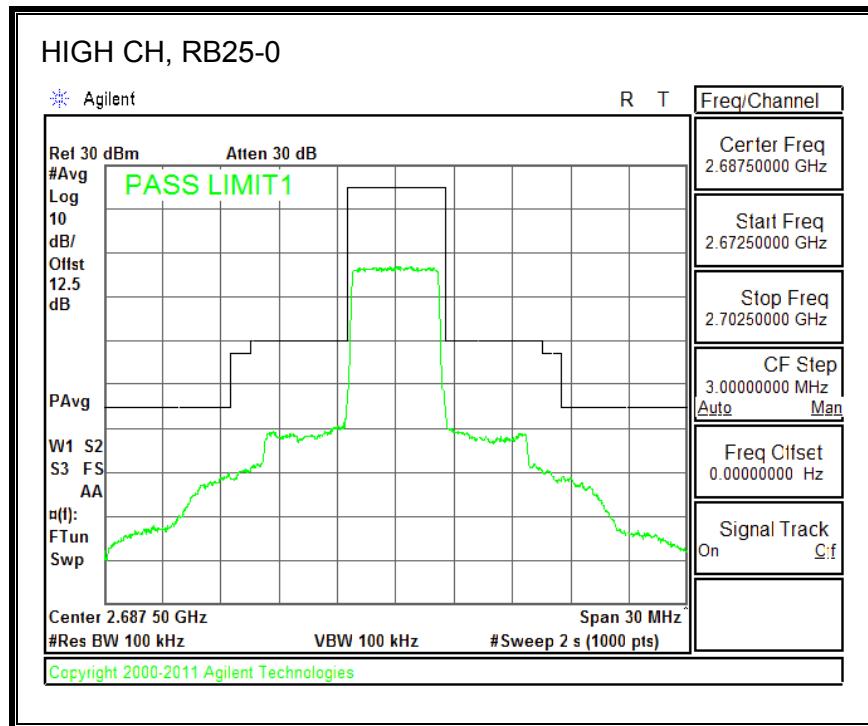


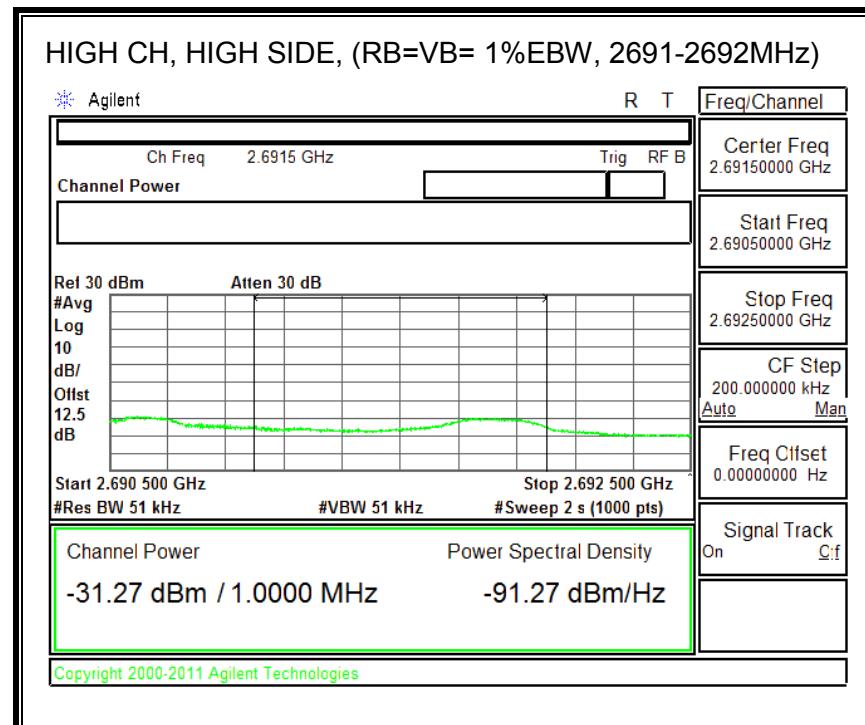
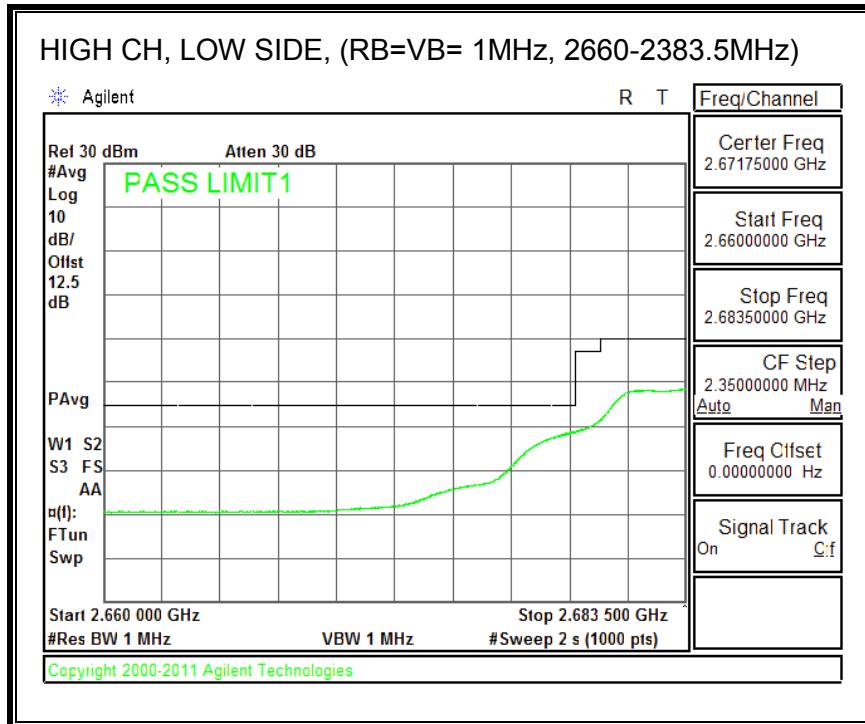


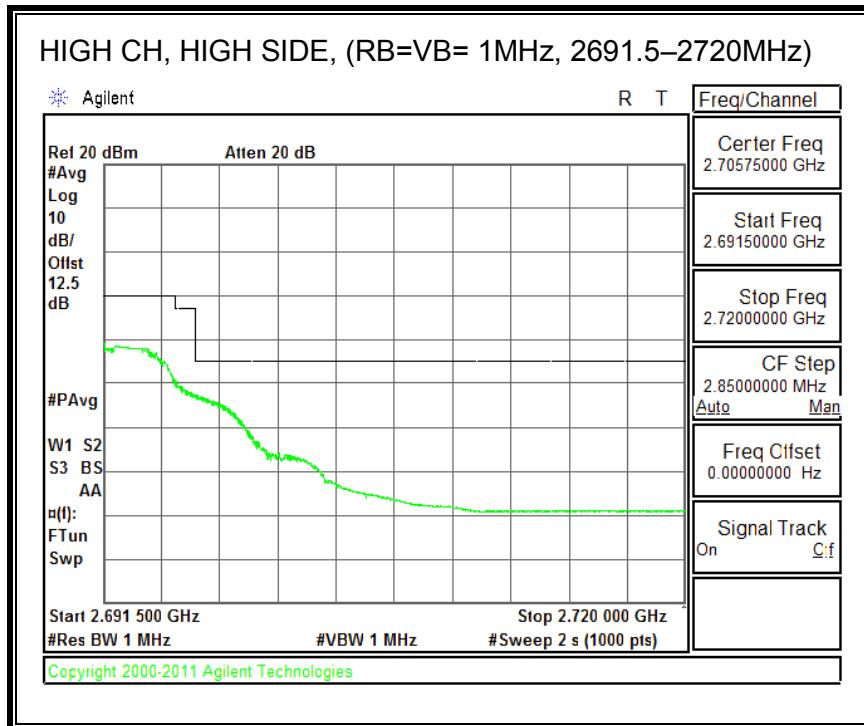




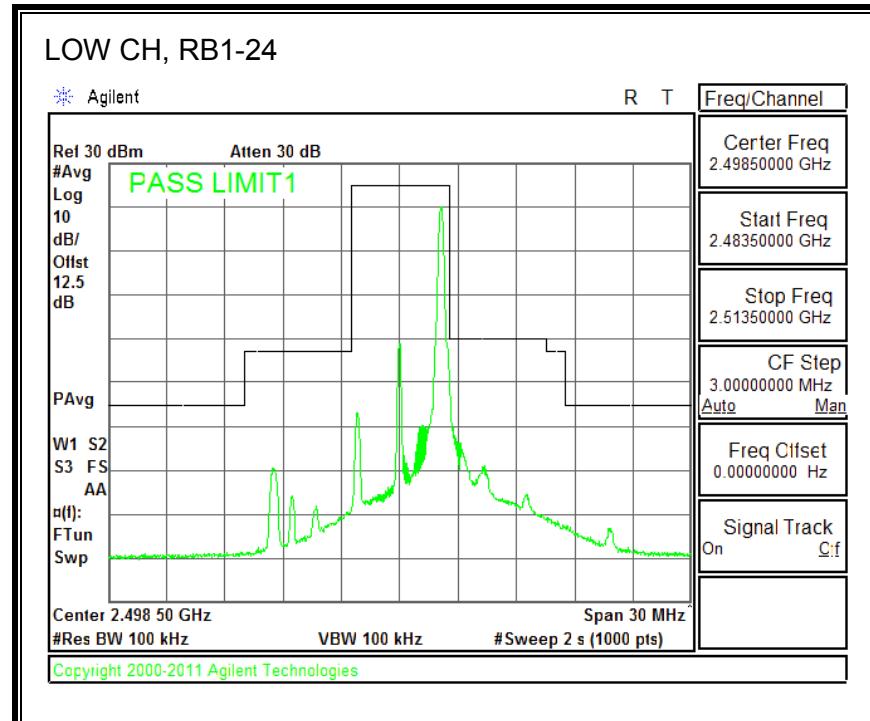
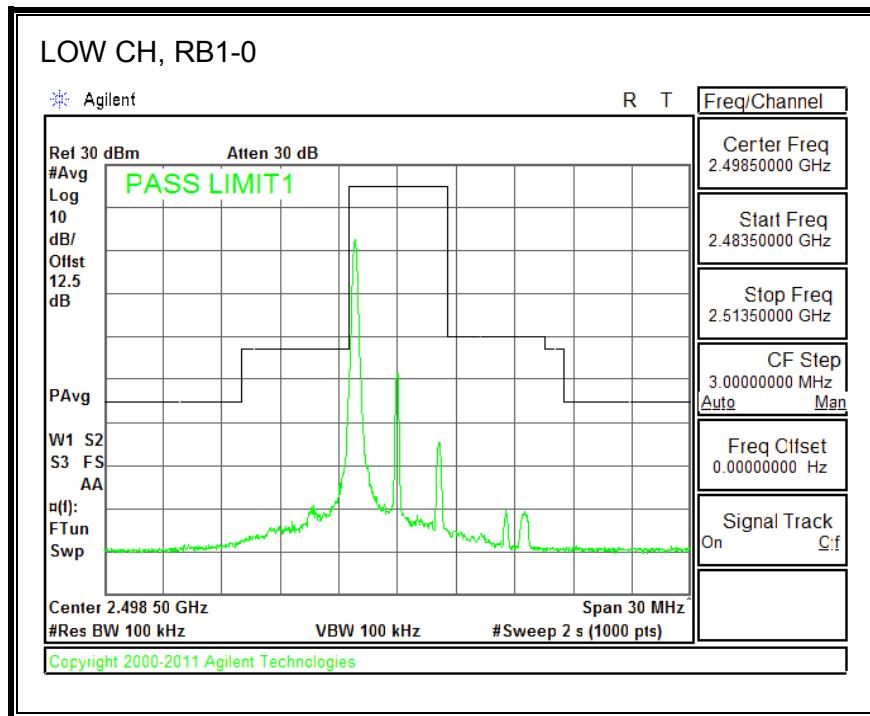


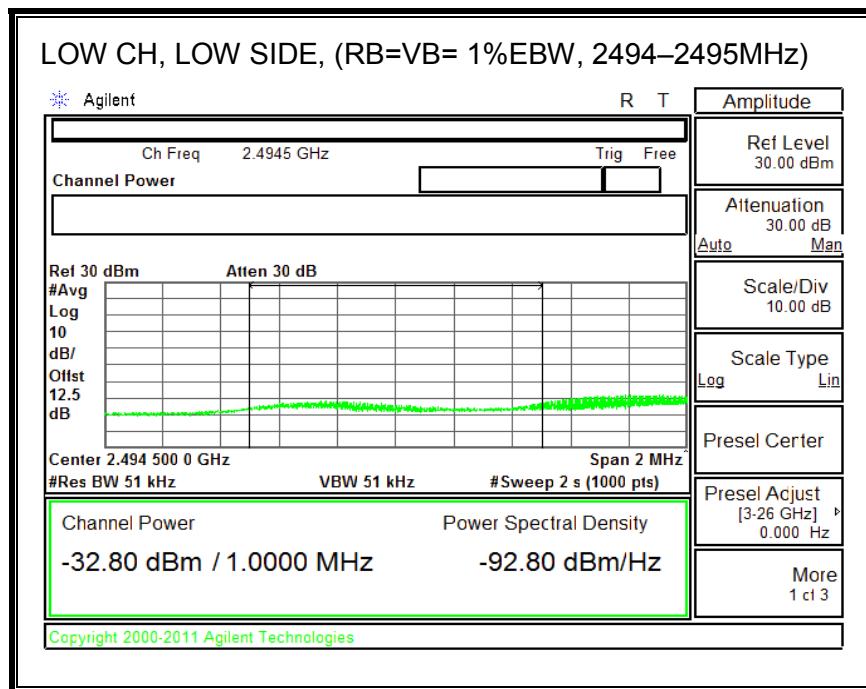
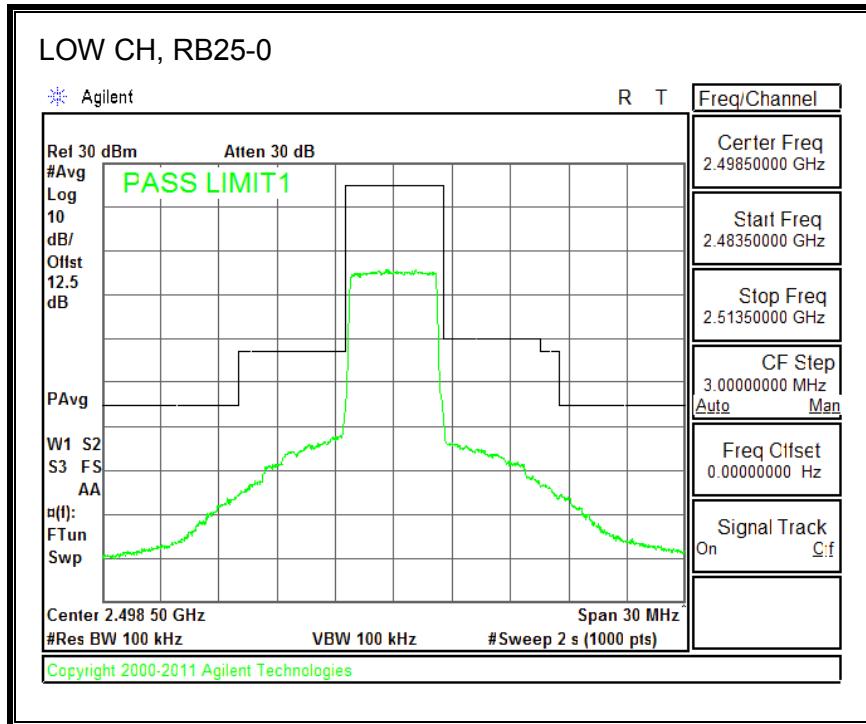


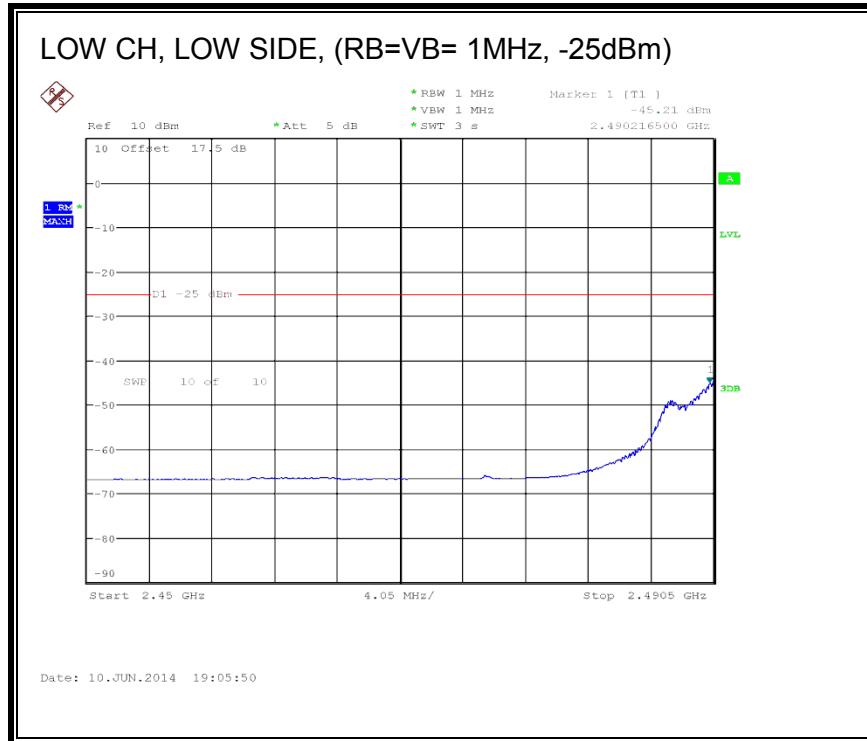
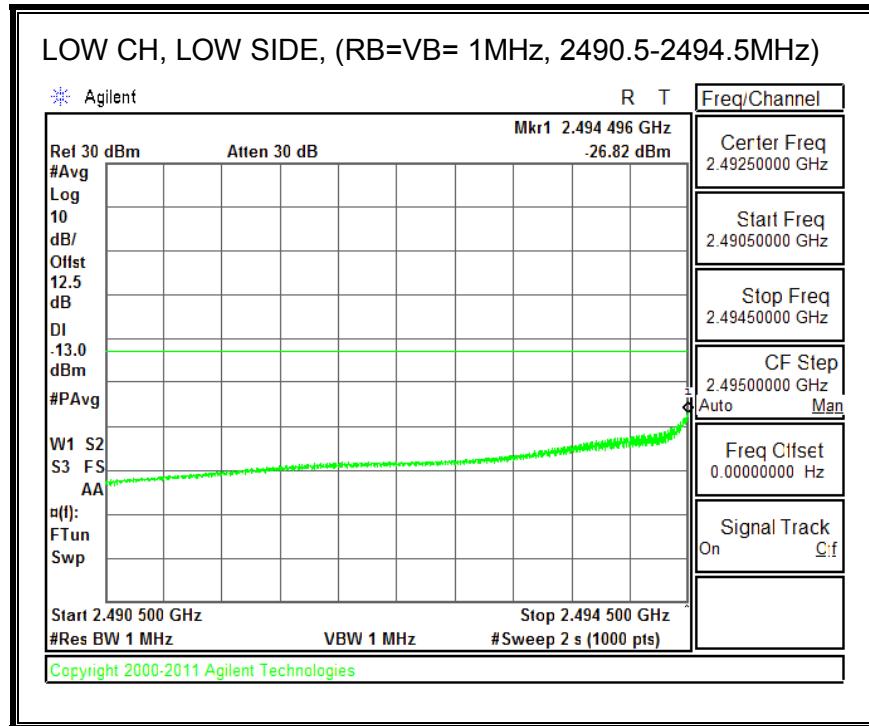


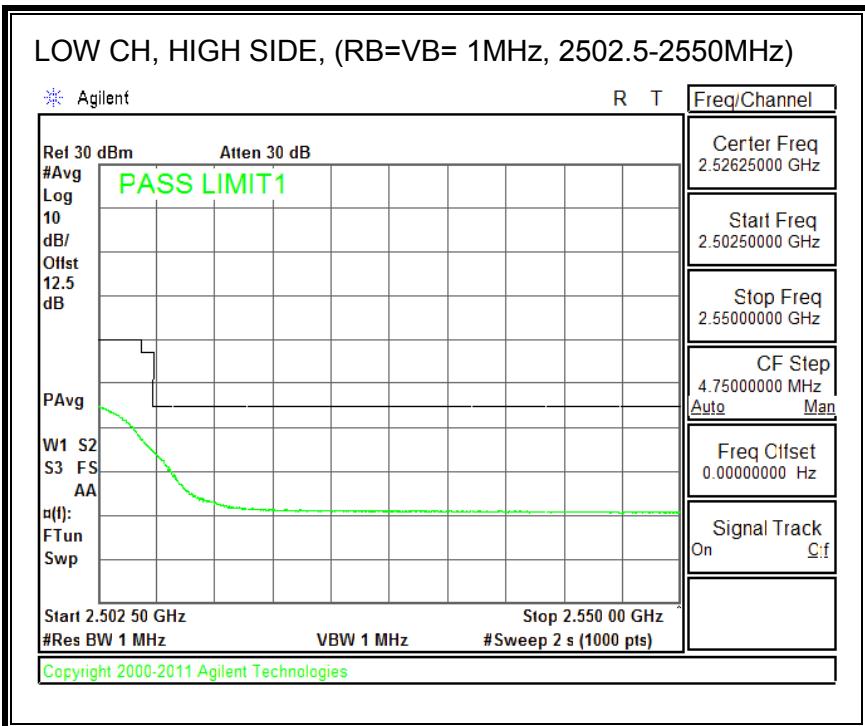
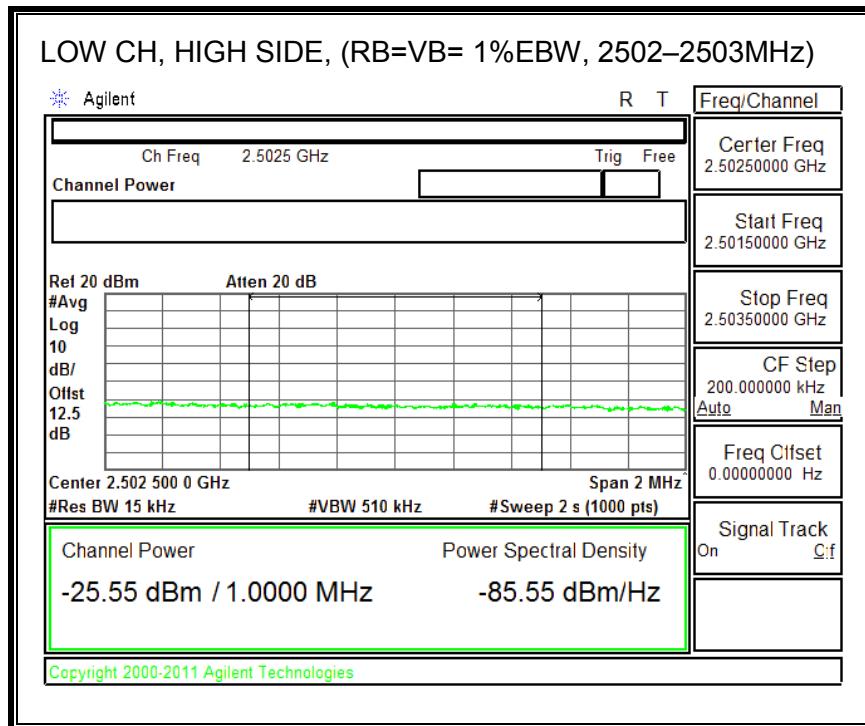


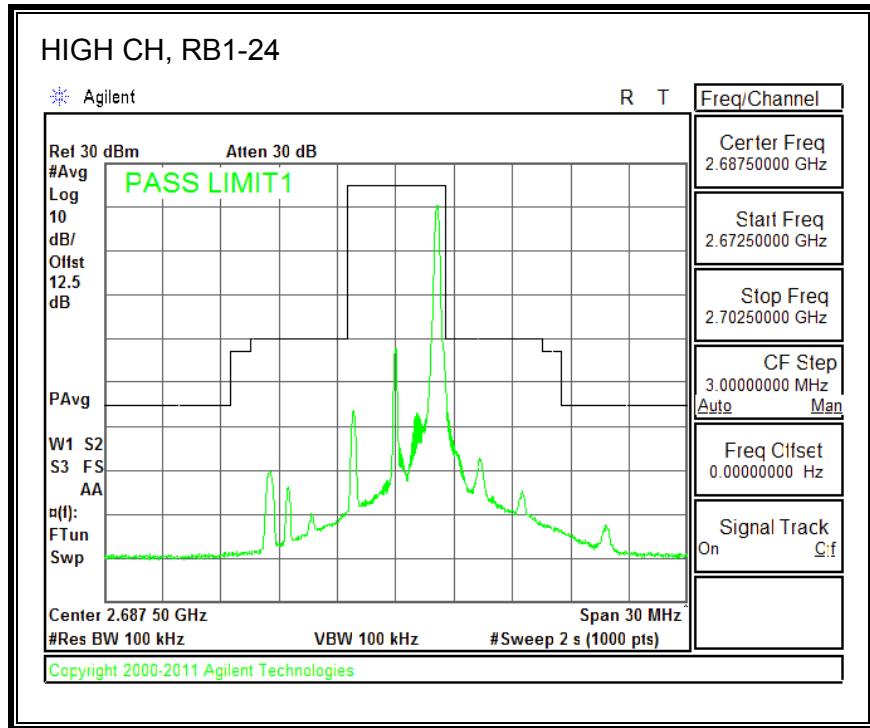
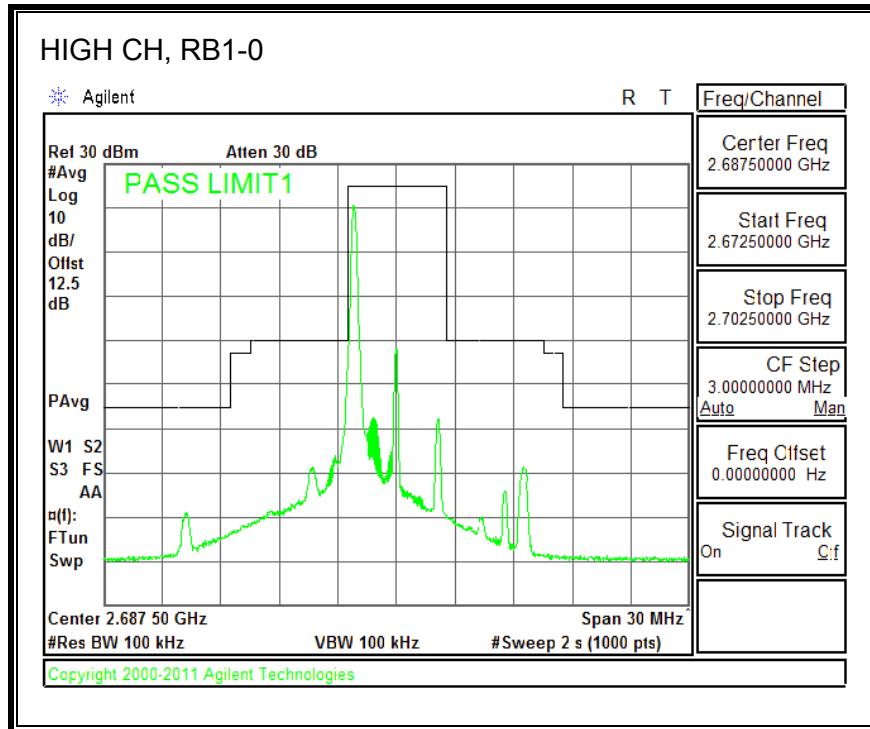
16QAM, (5.0 MHz BAND WIDTH)

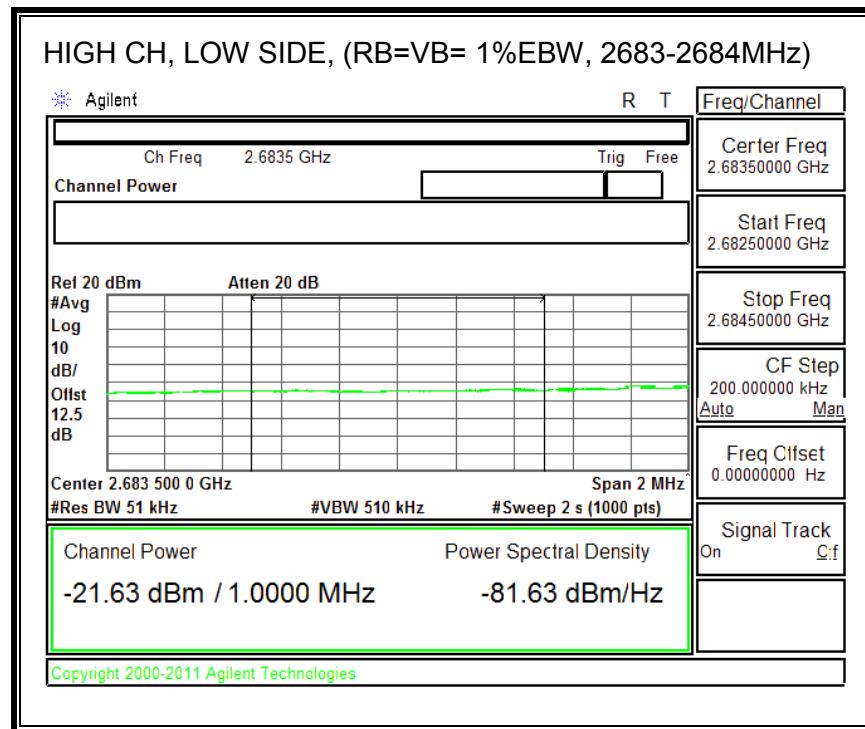
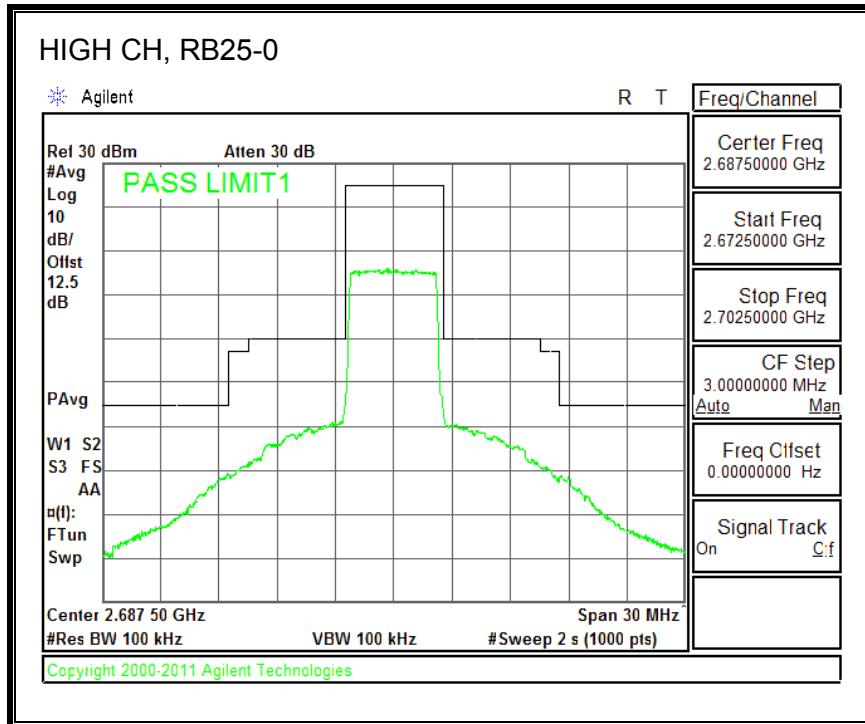


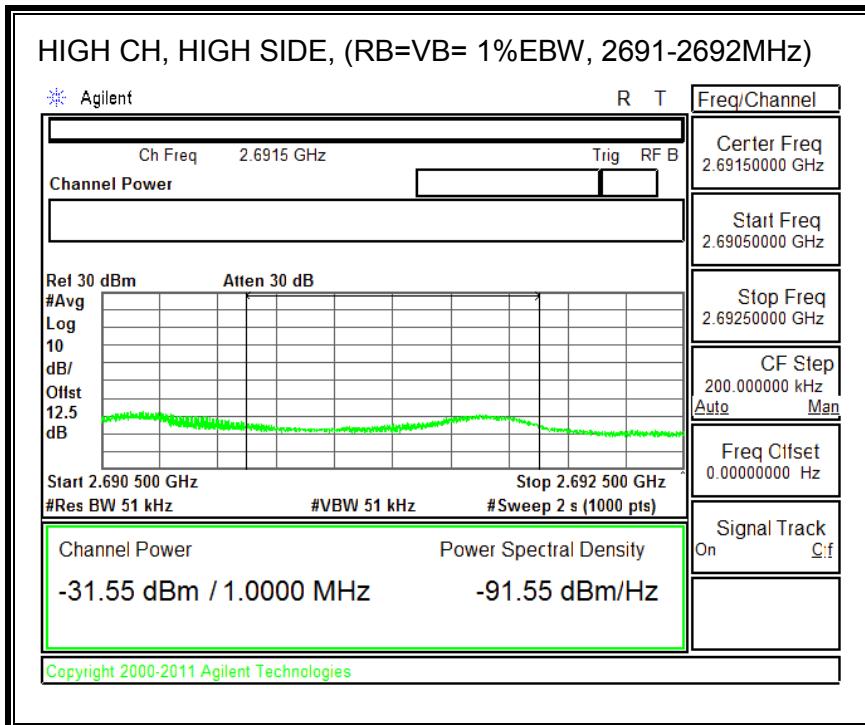
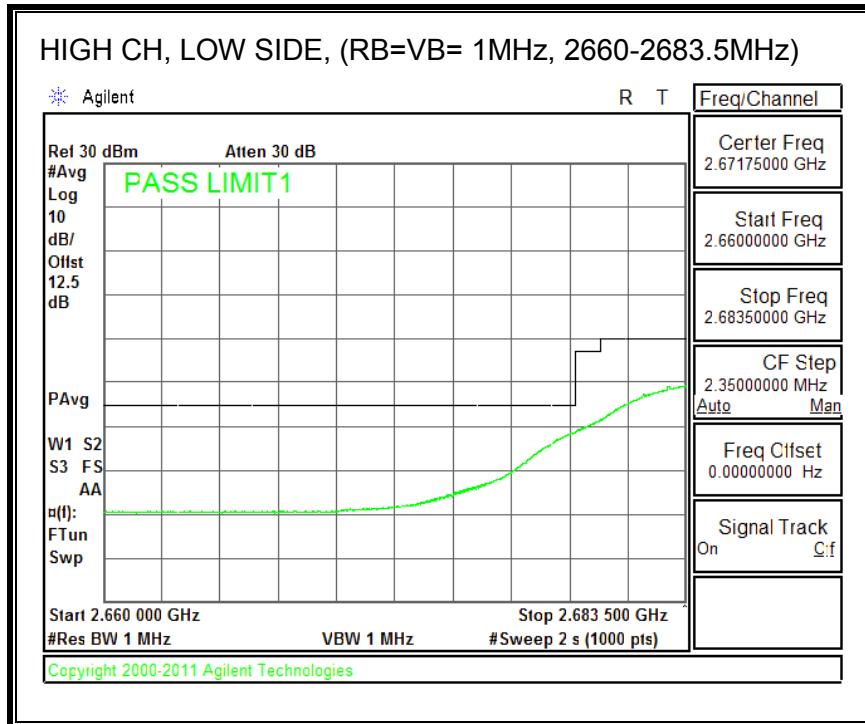


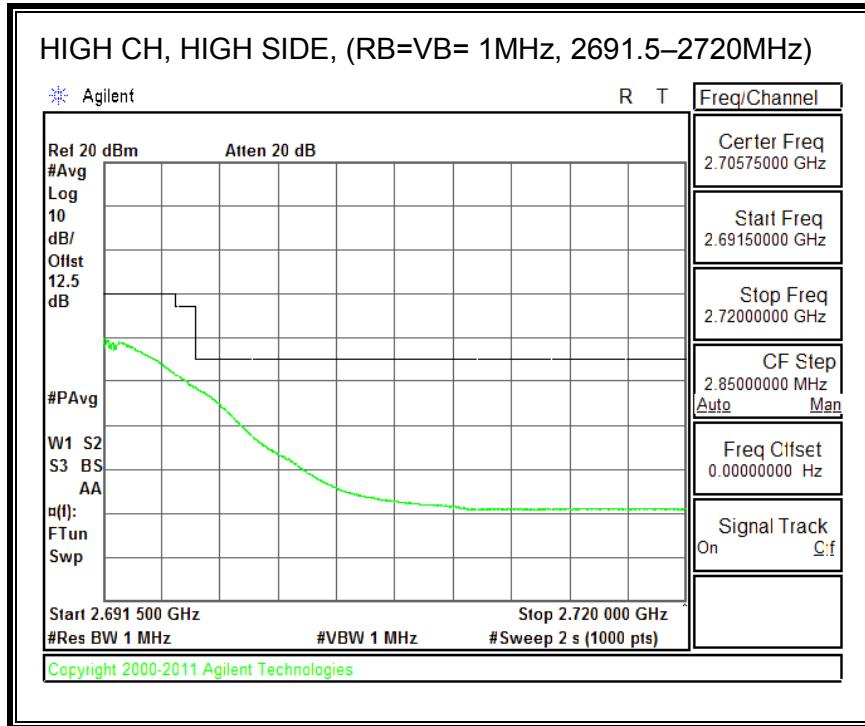




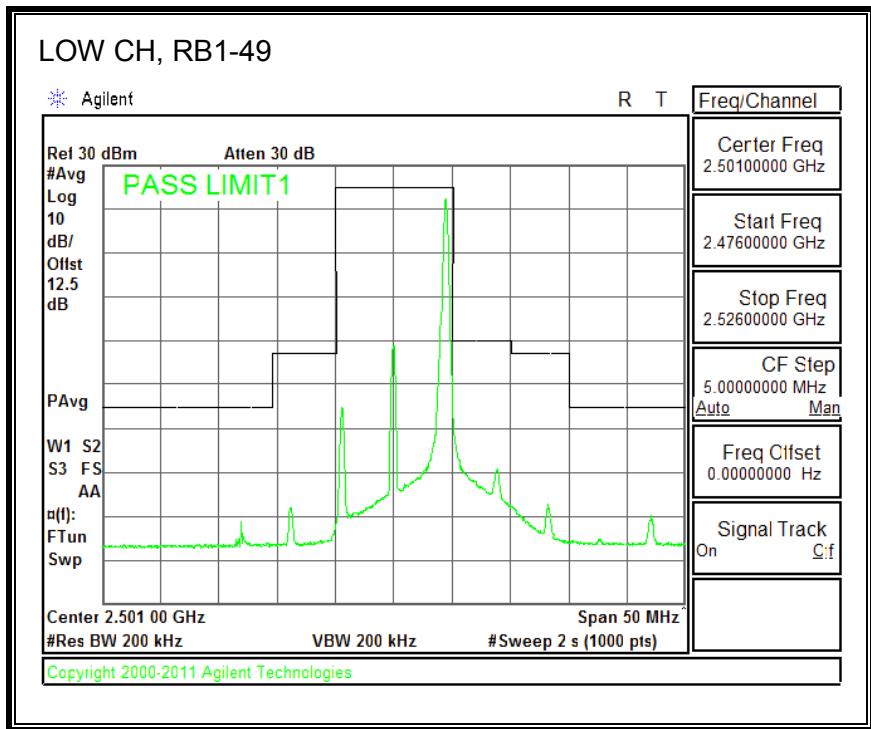
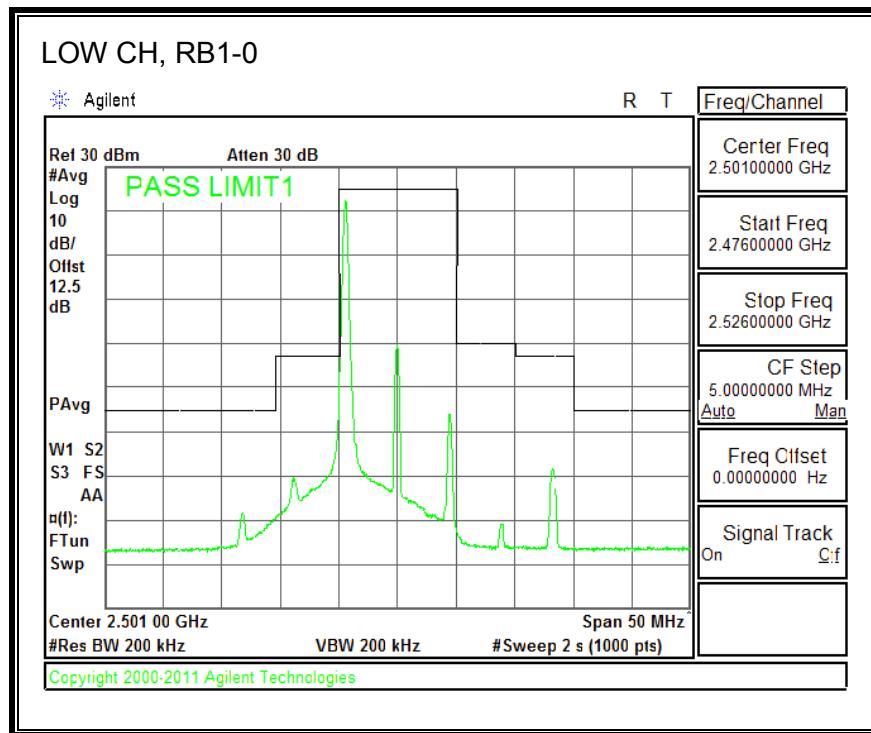


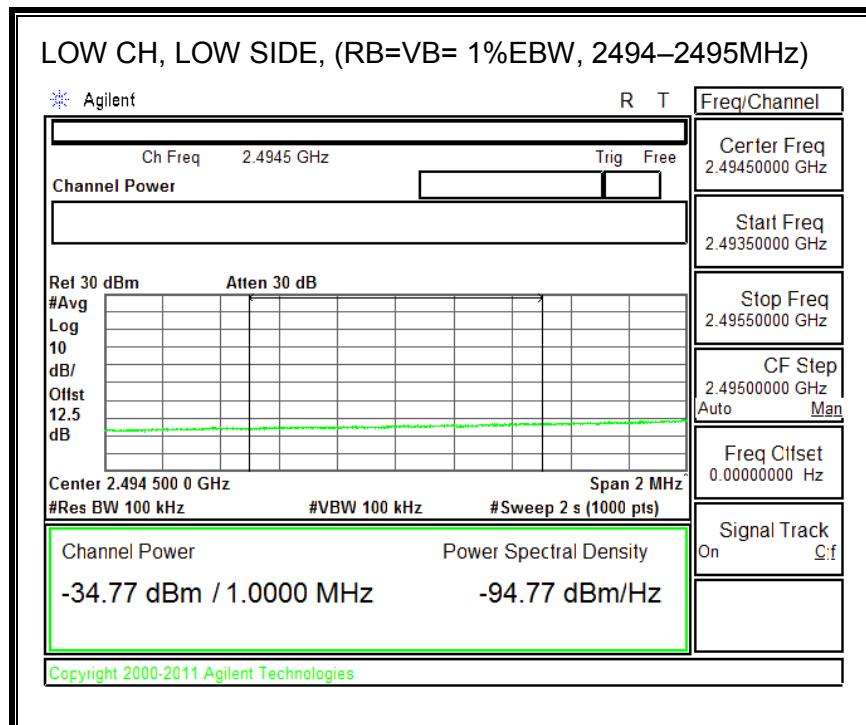
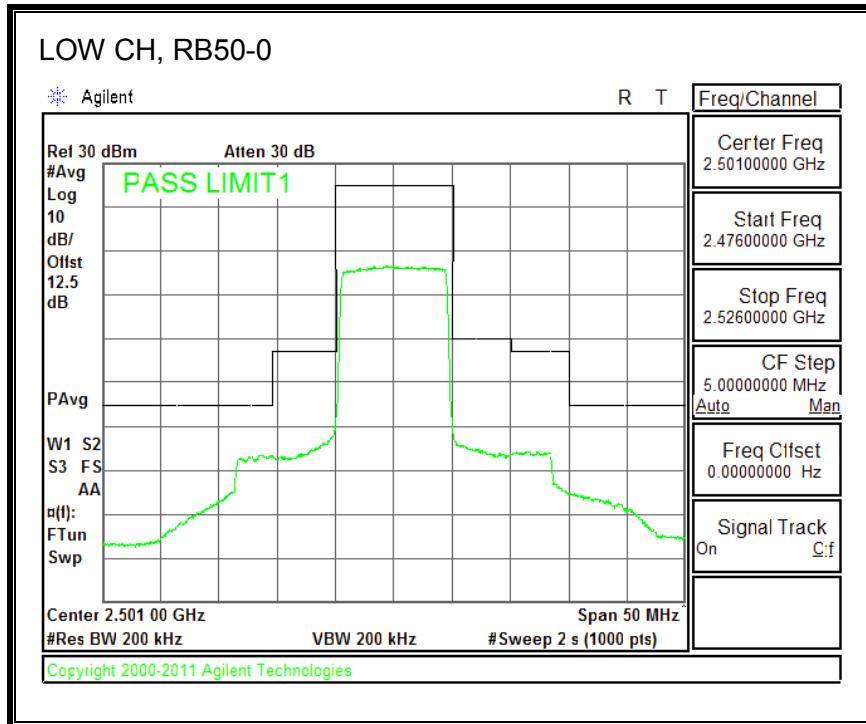


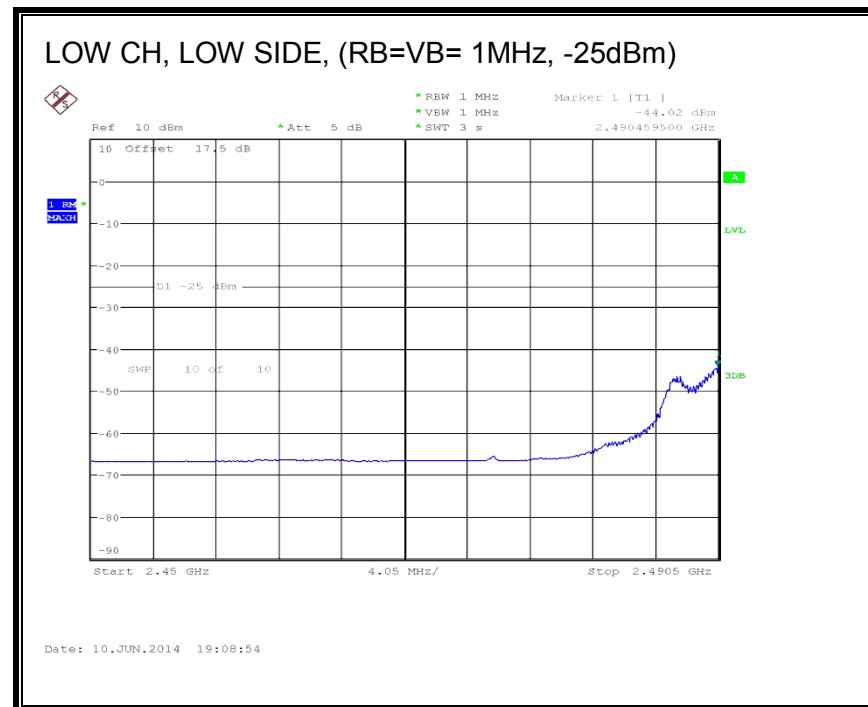
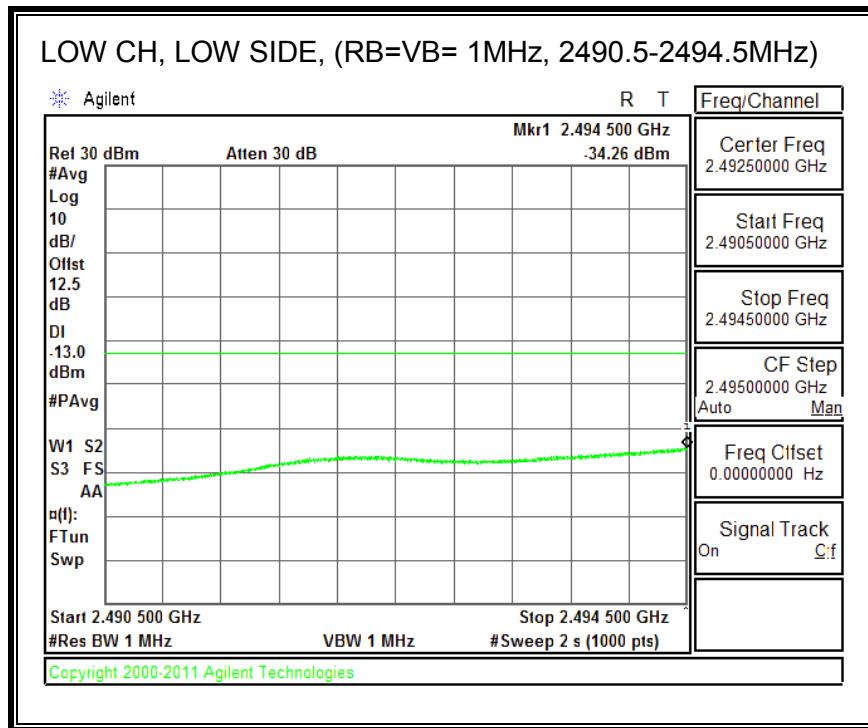


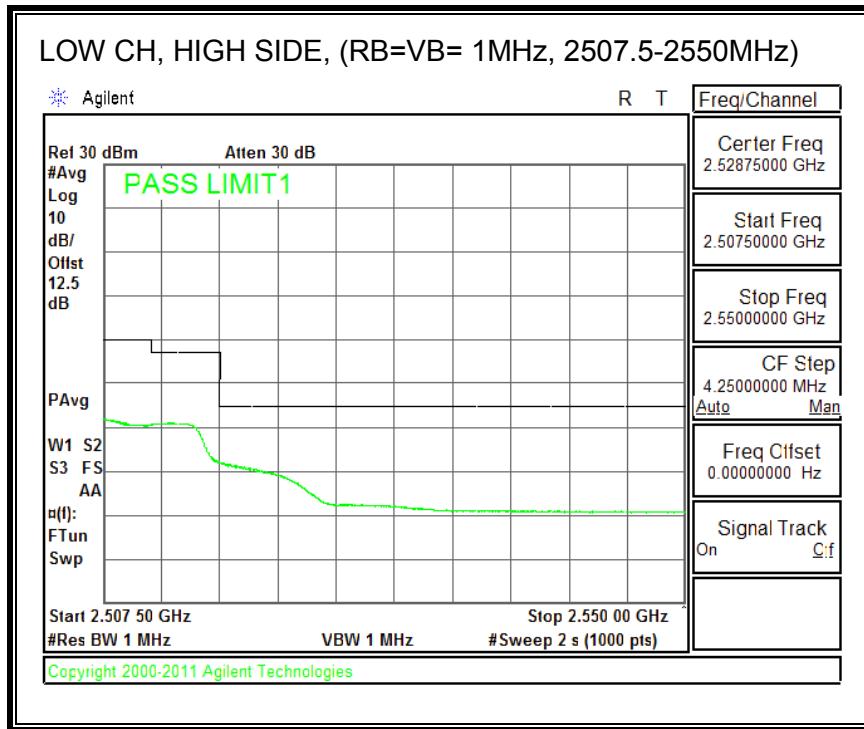
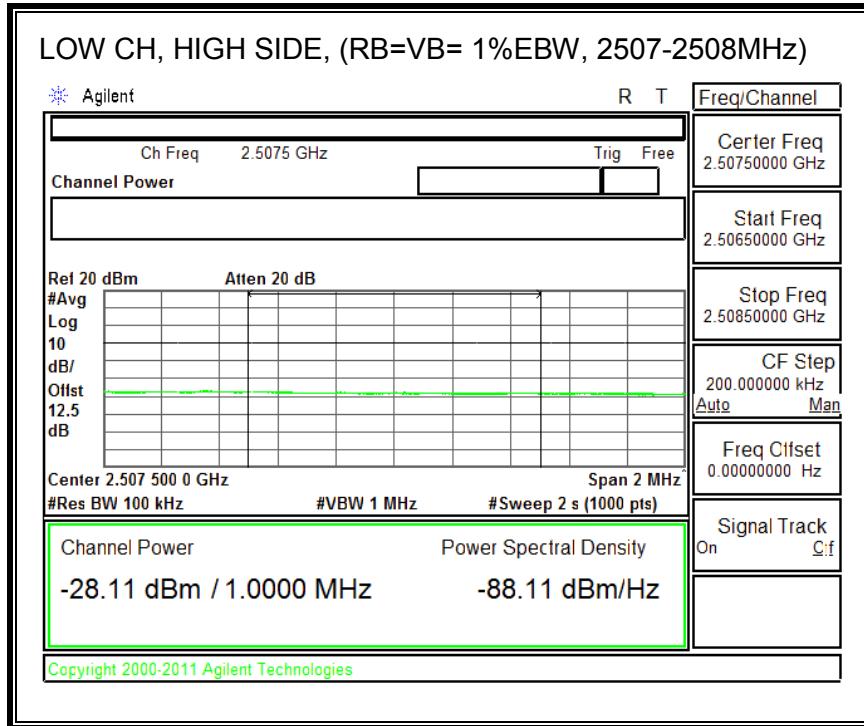


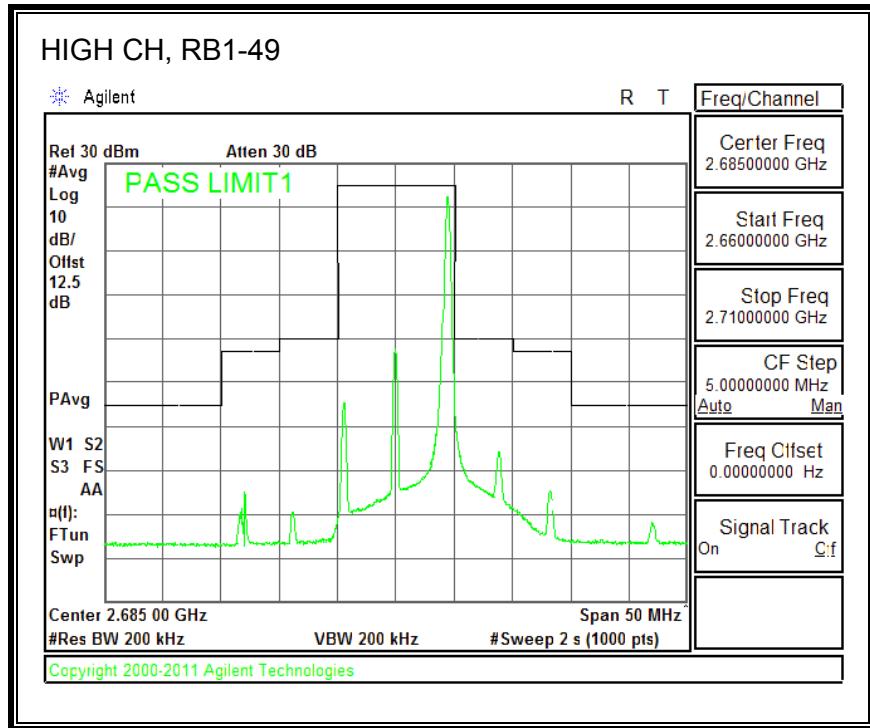
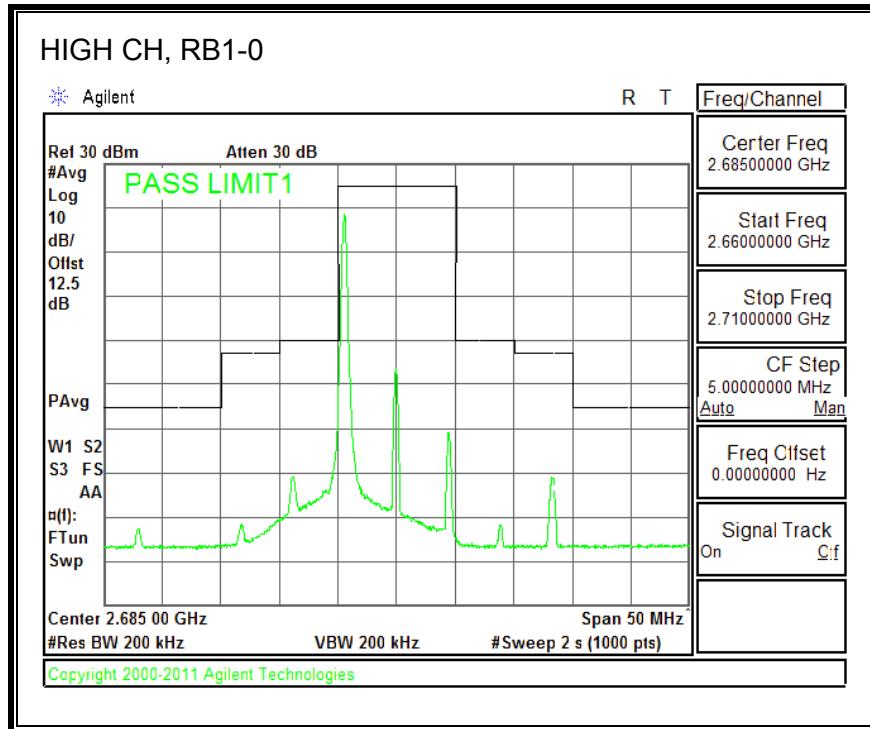
QPSK, (10.0 MHz BAND WIDTH)

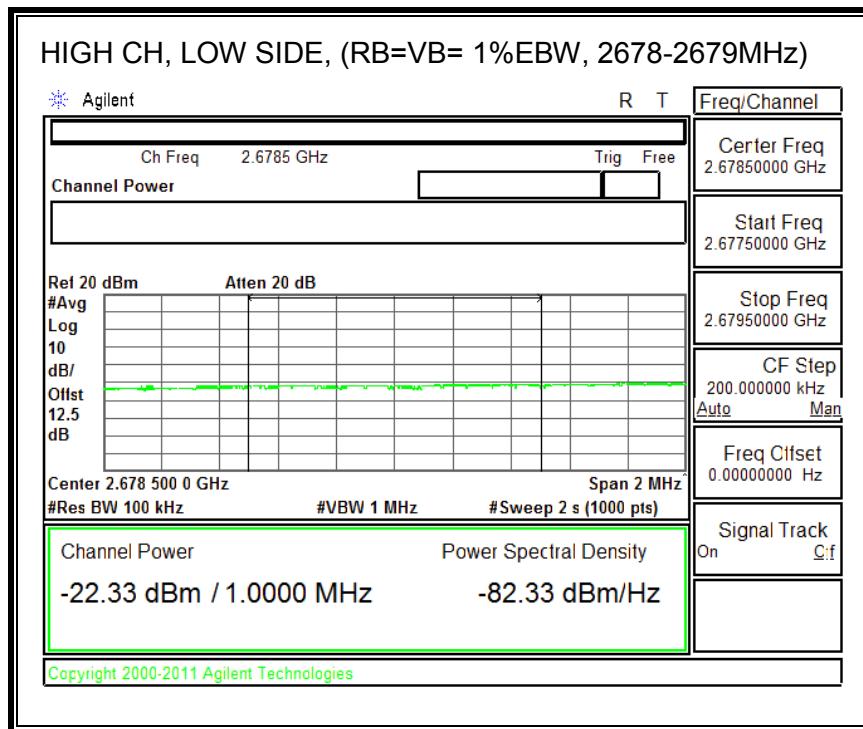
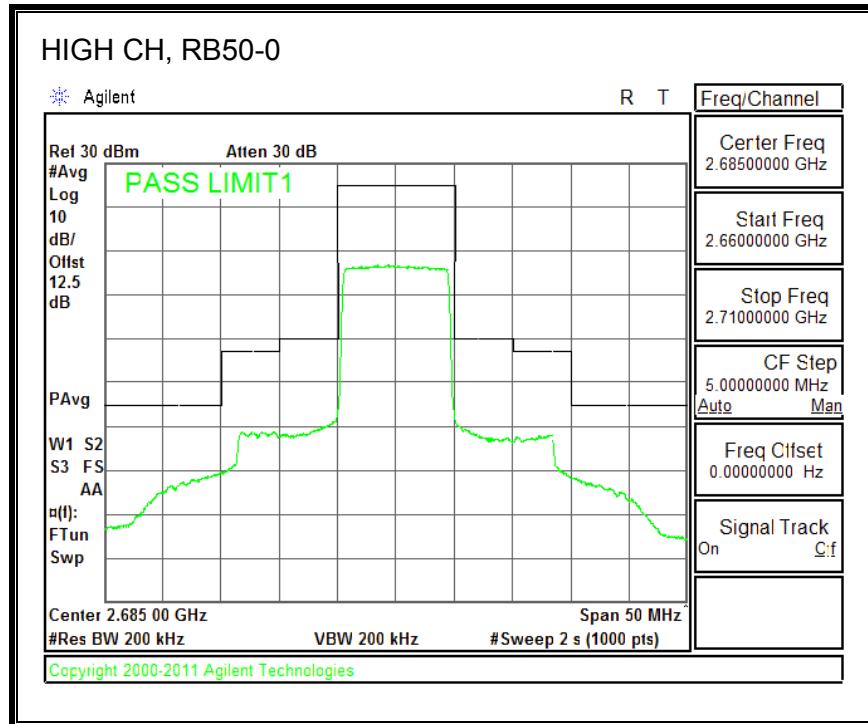


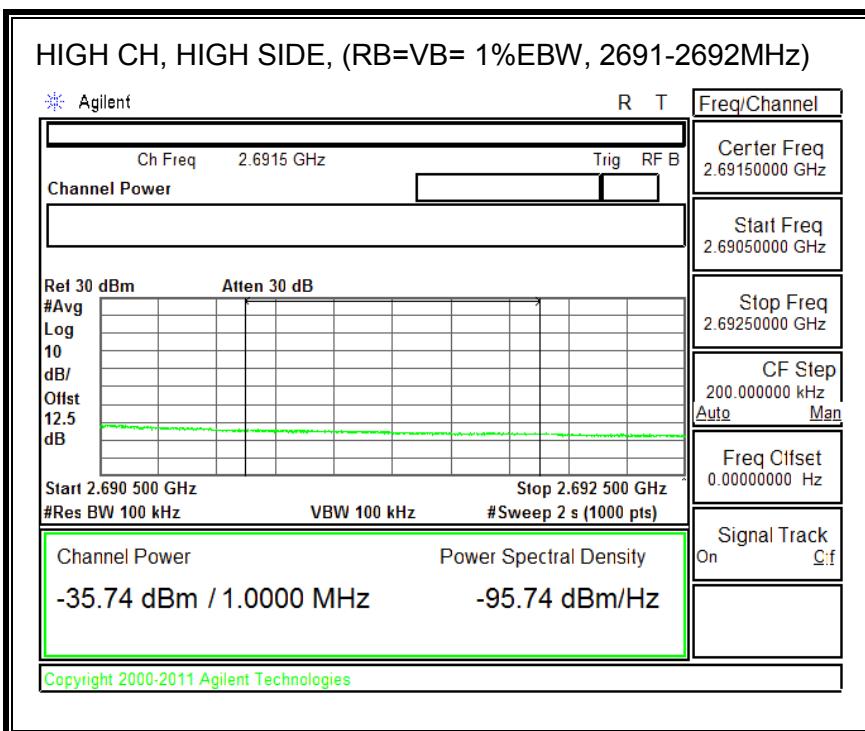
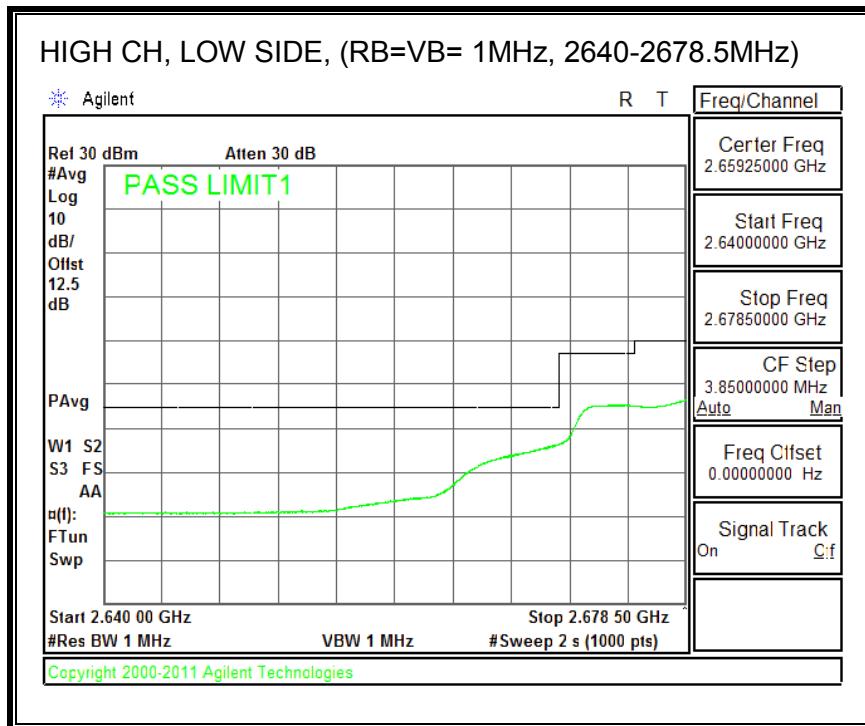


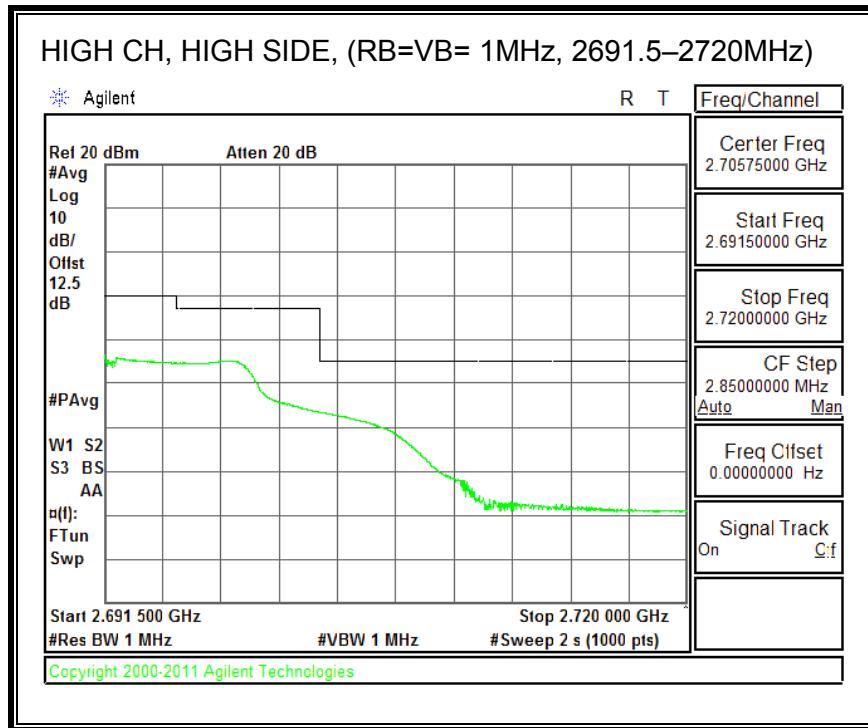




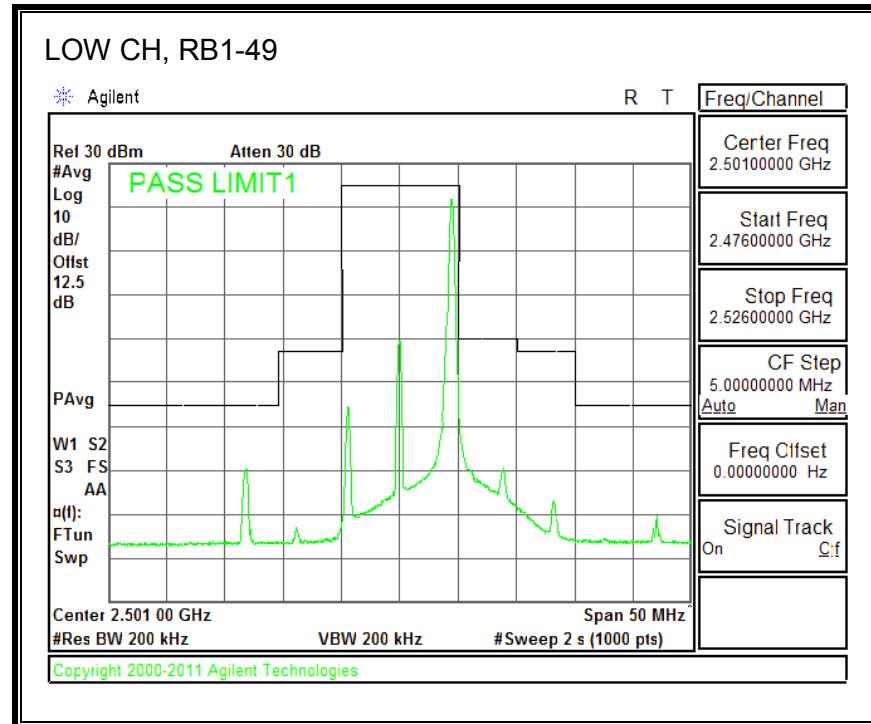
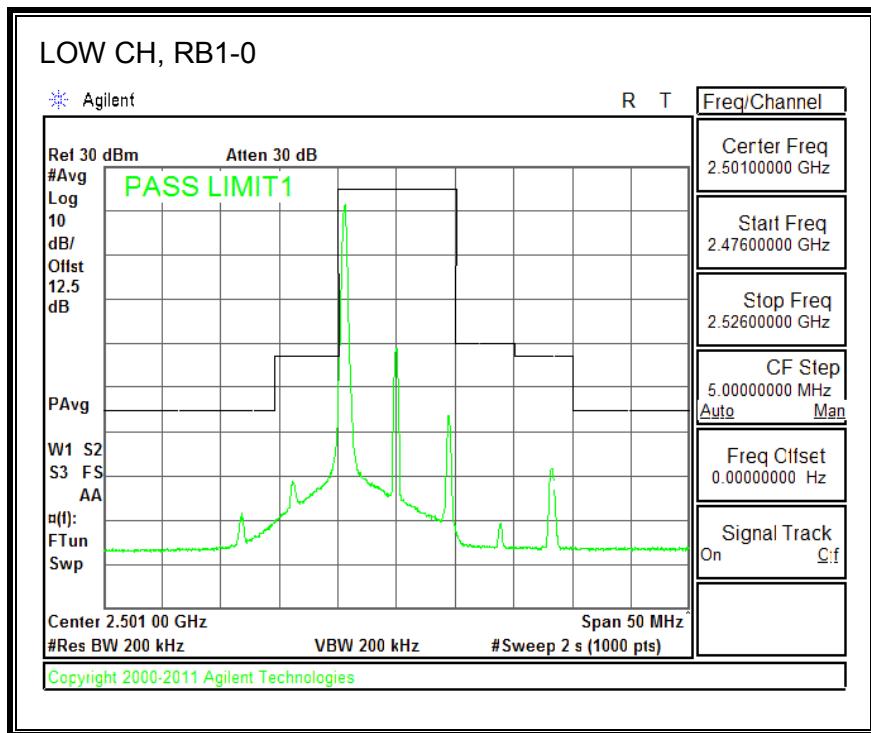


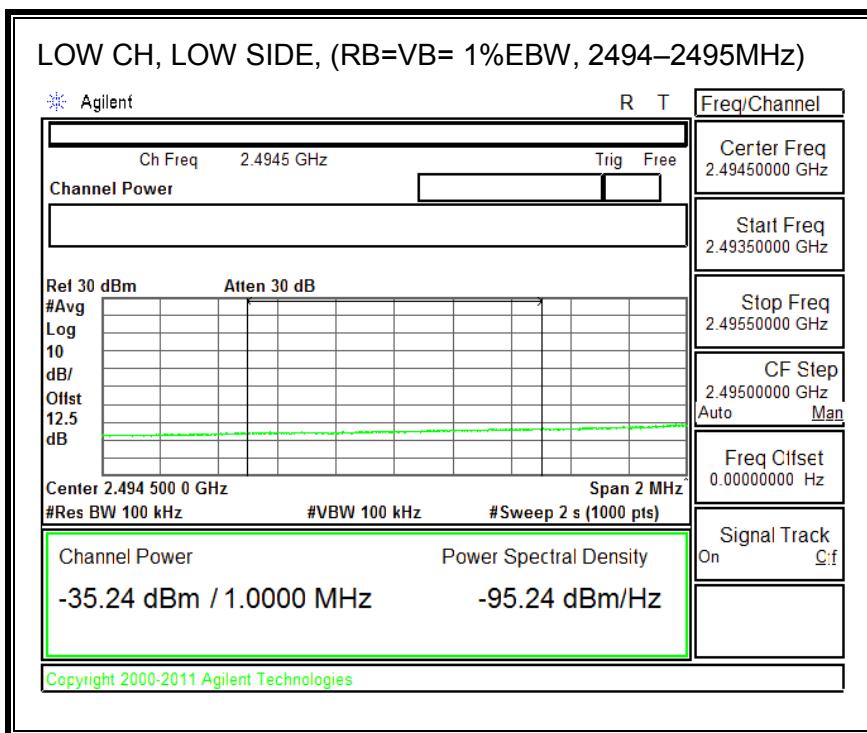
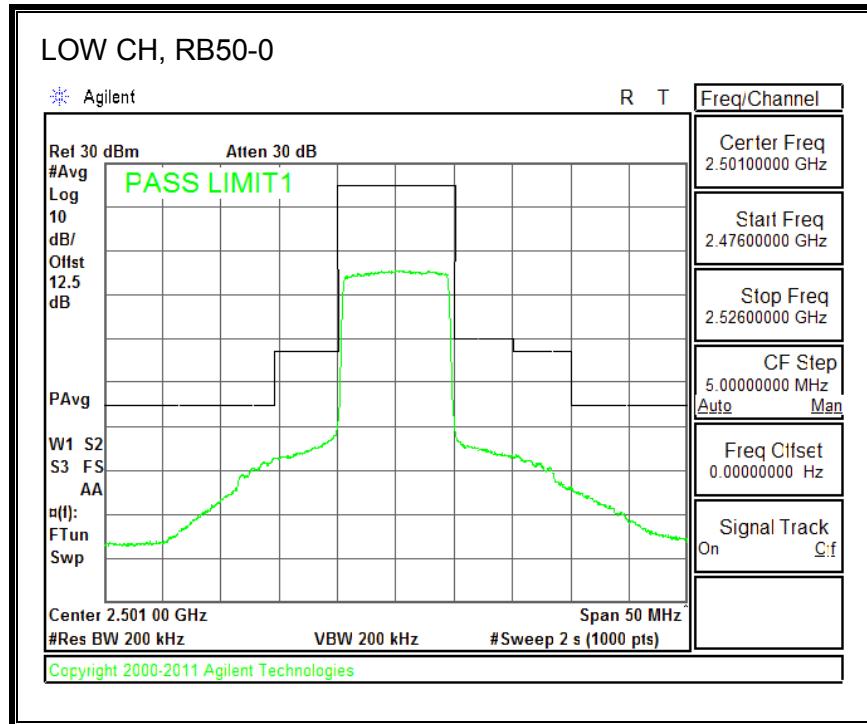


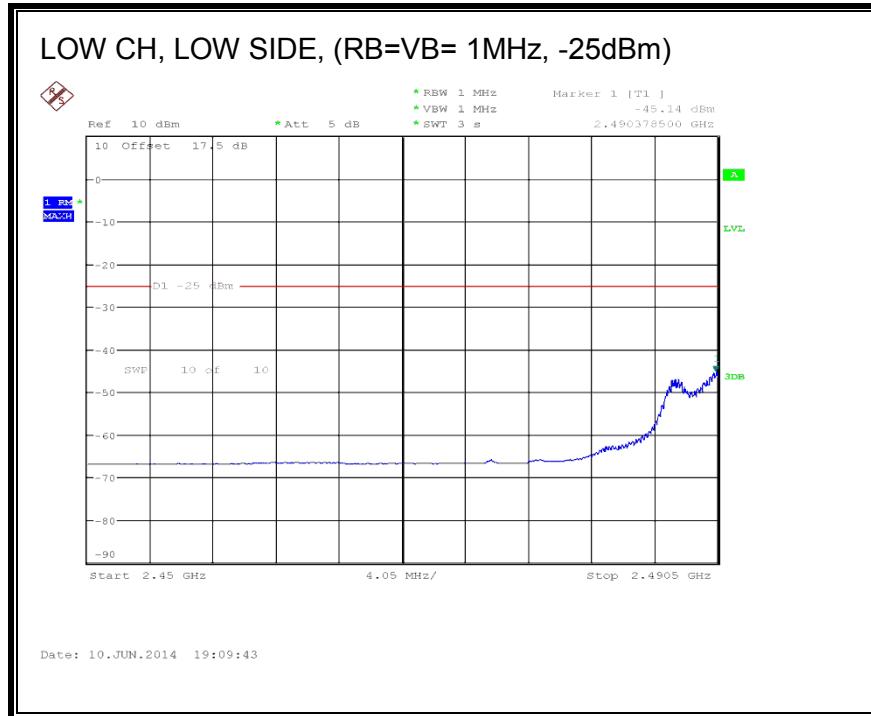
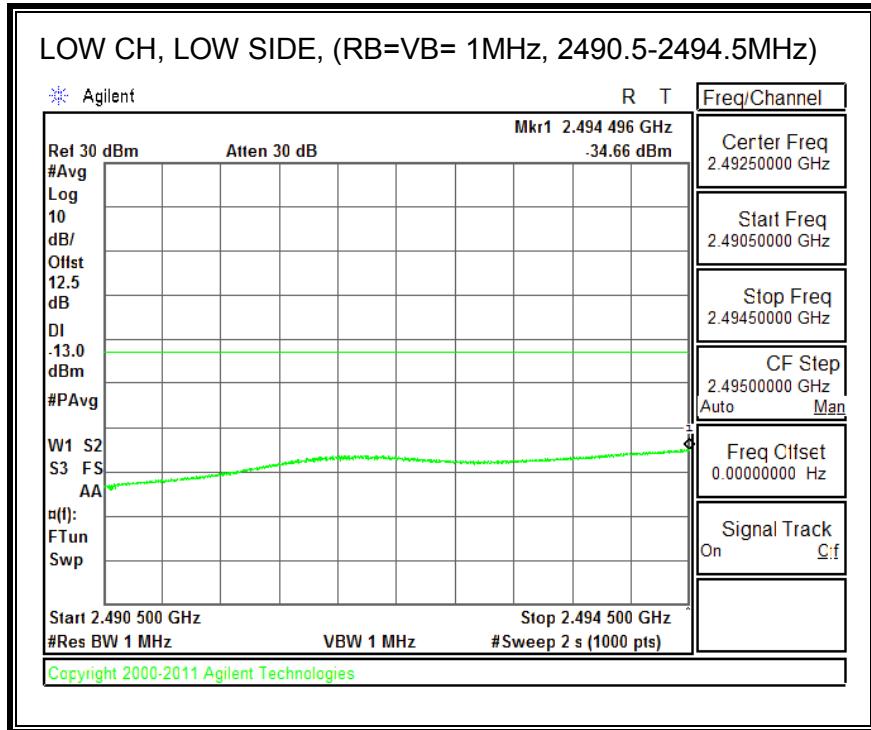


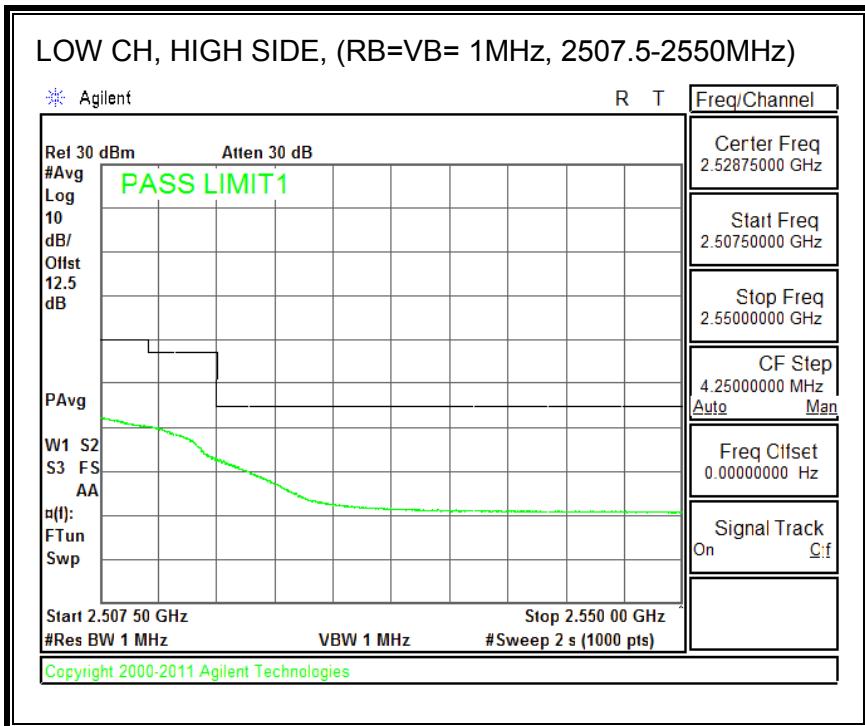
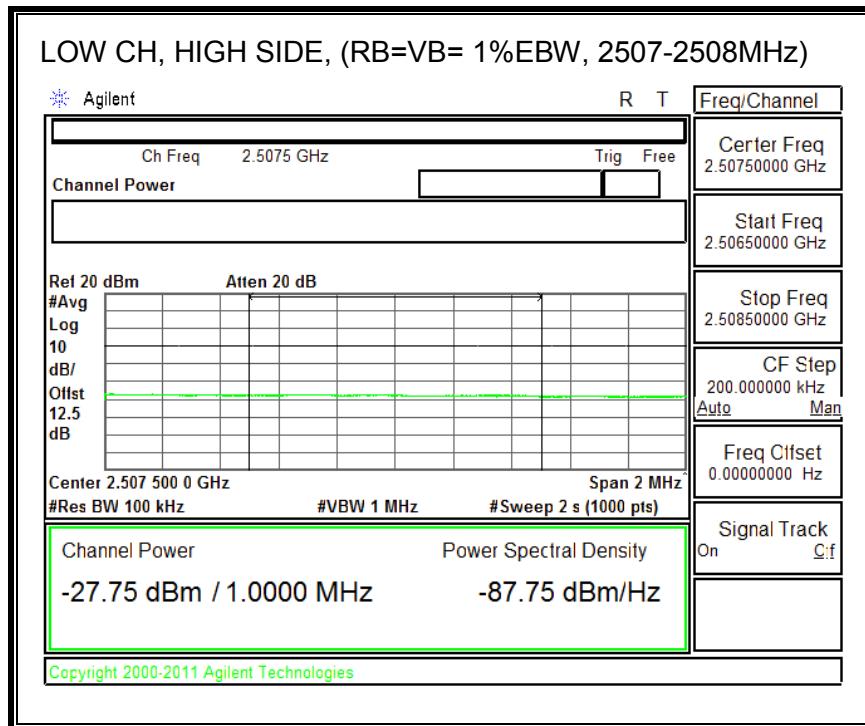


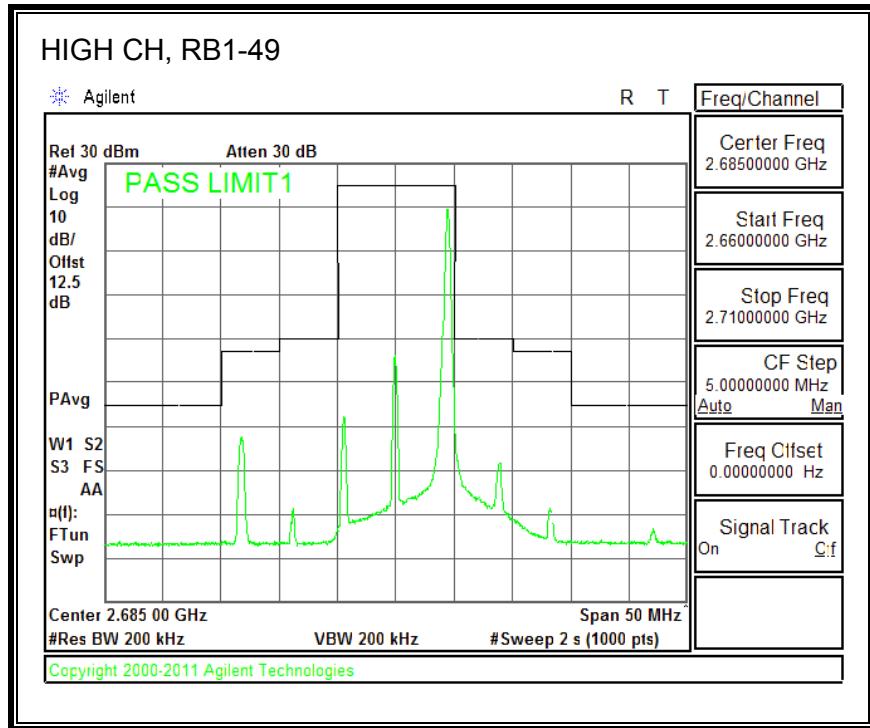
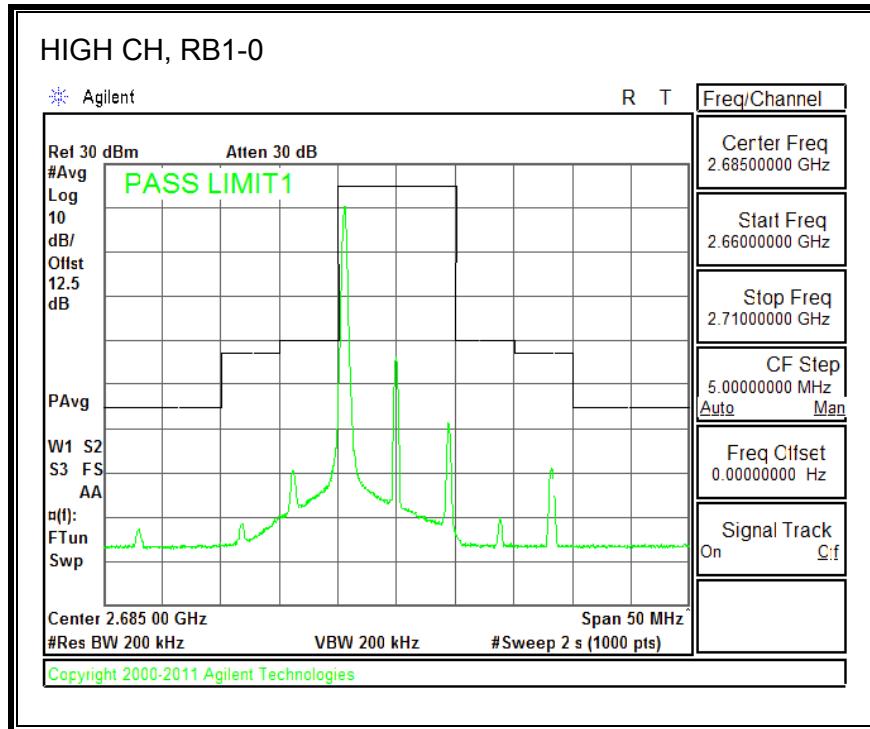
16QAM, (10.0 MHz BAND WIDTH)

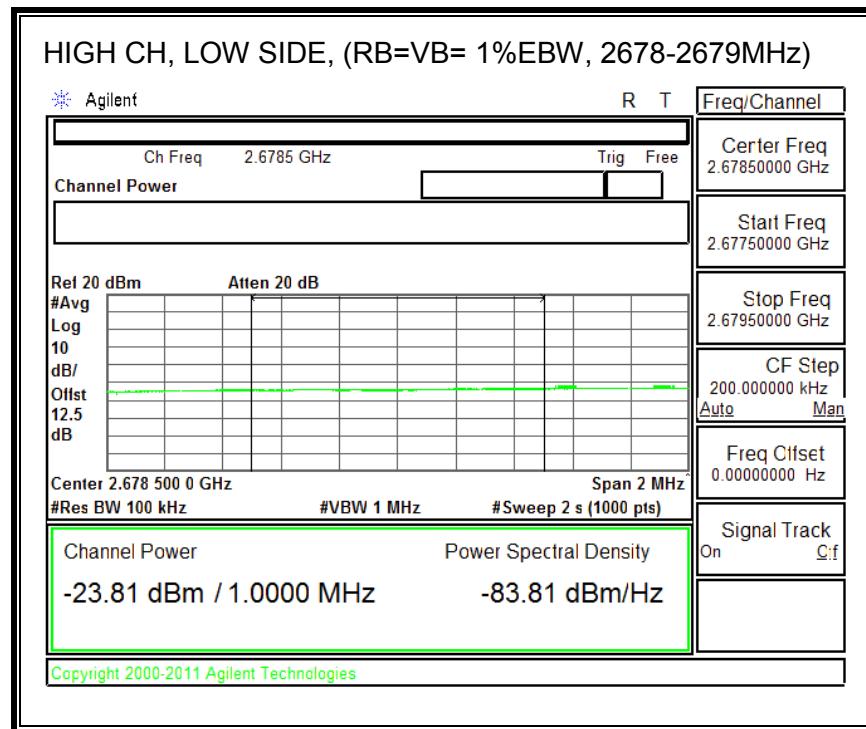
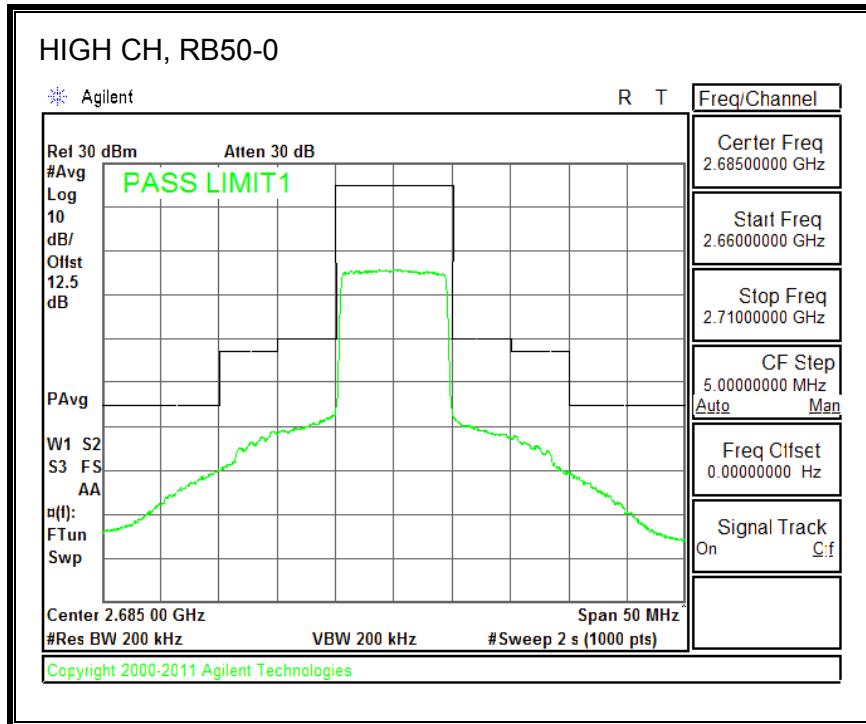


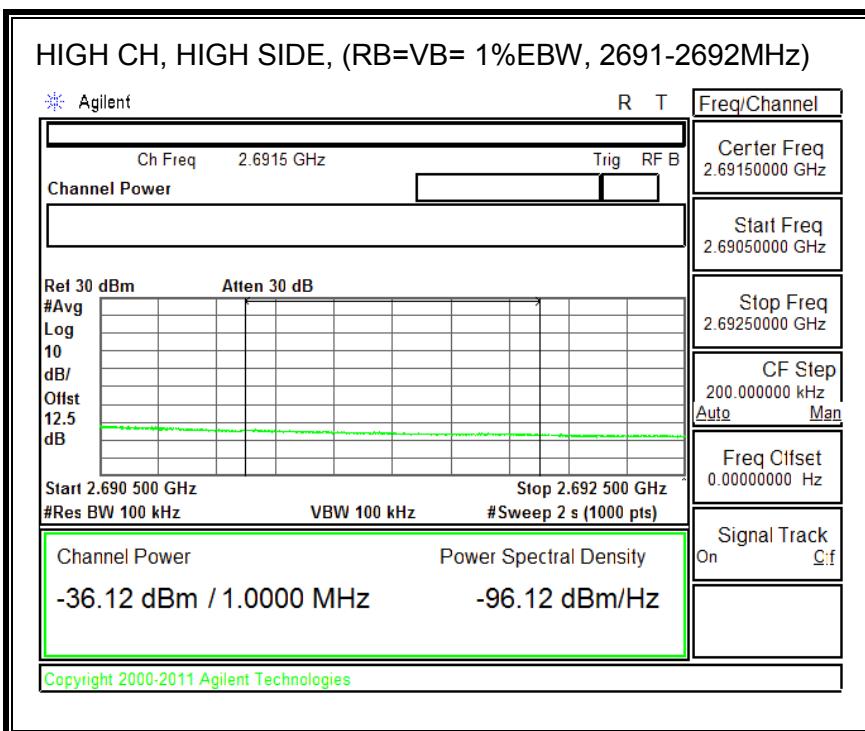
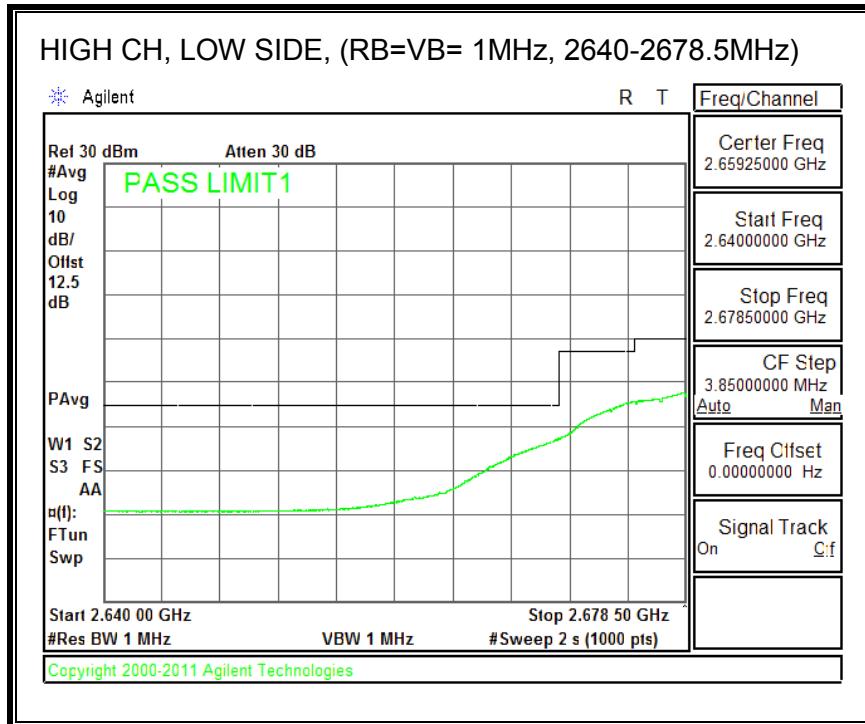


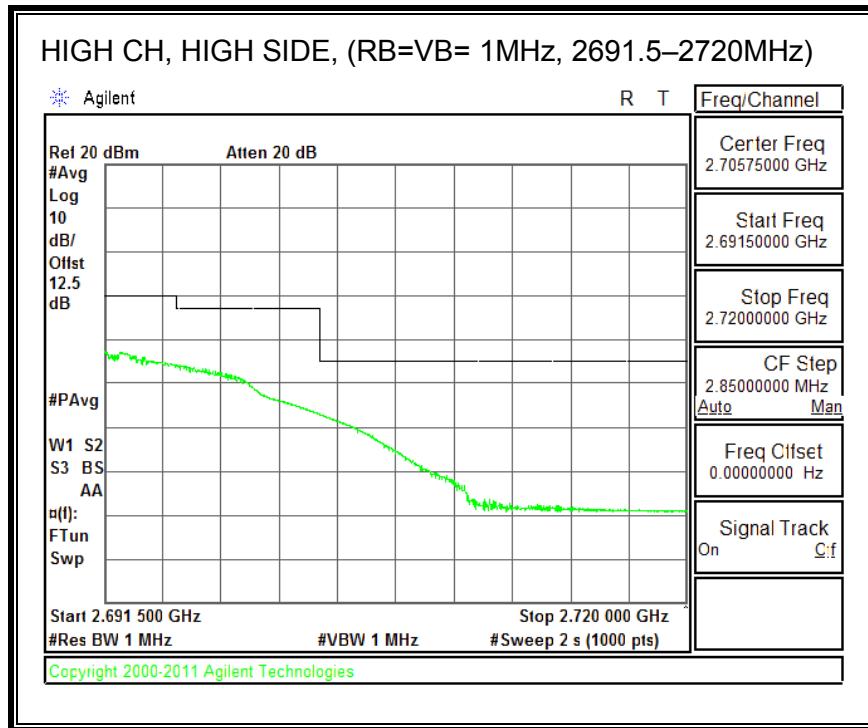




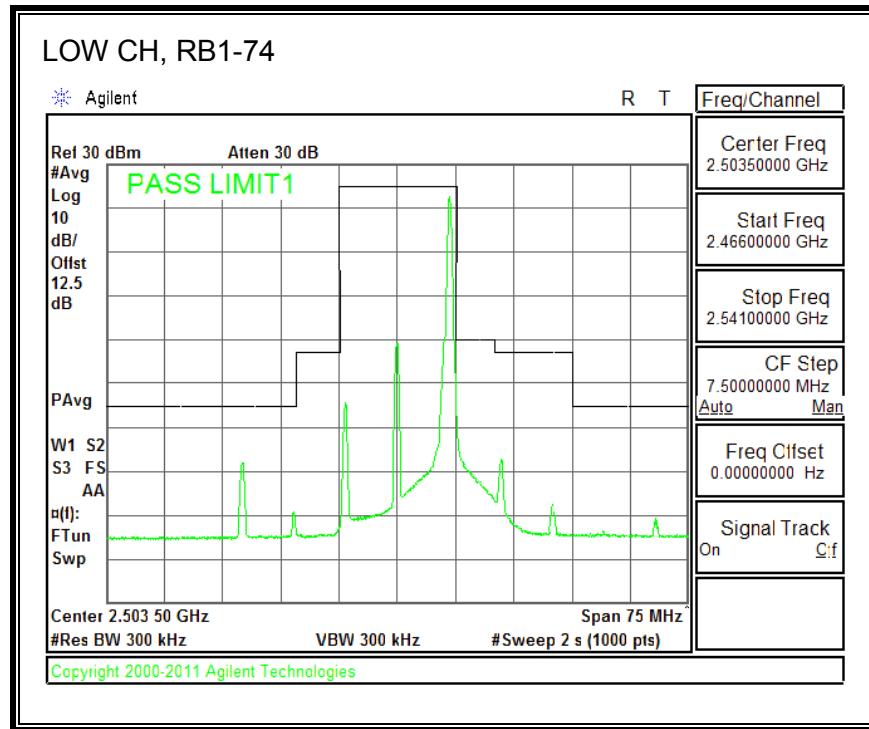
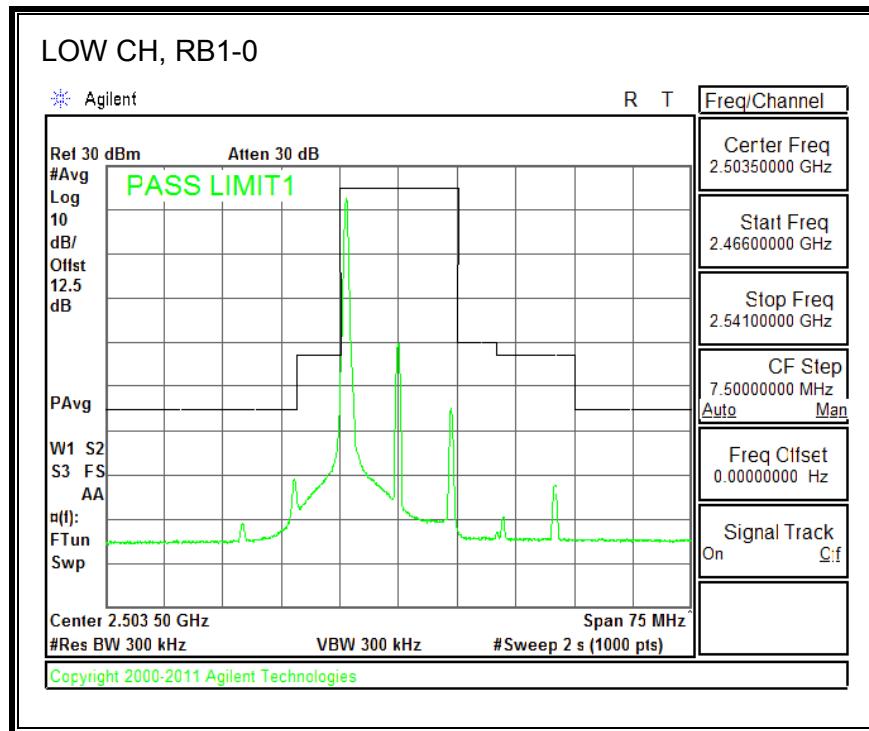


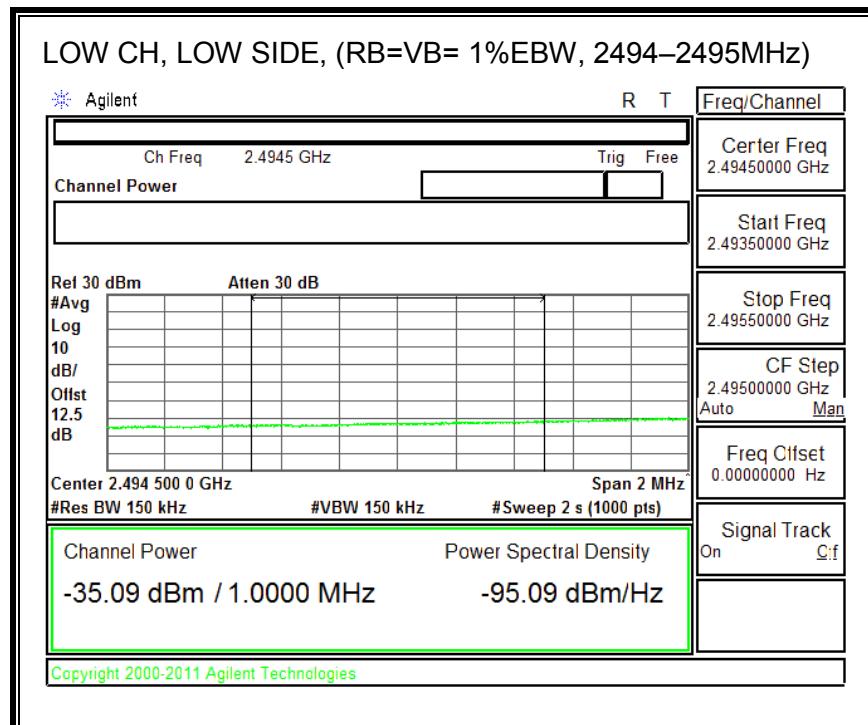
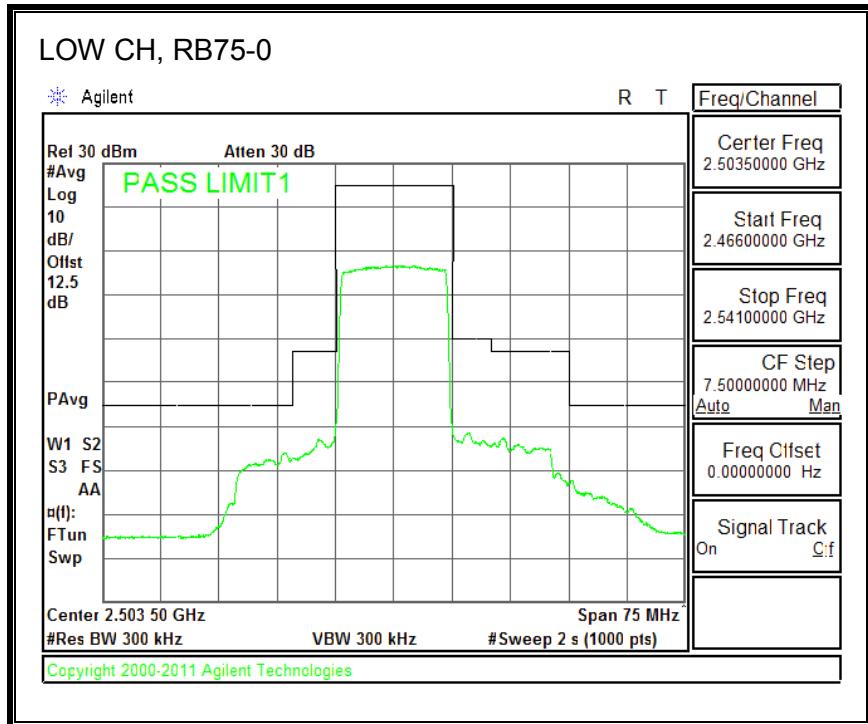


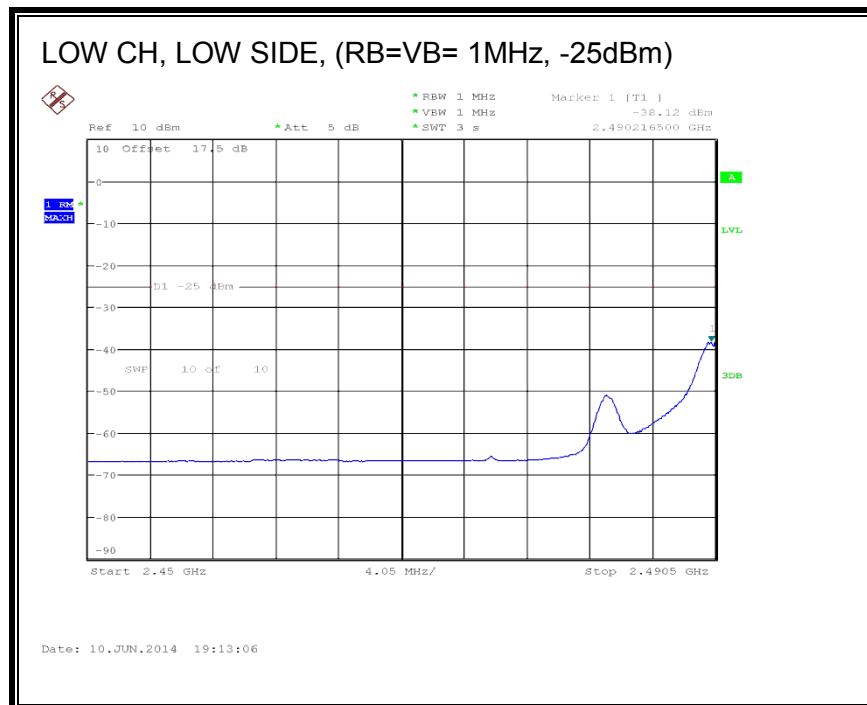
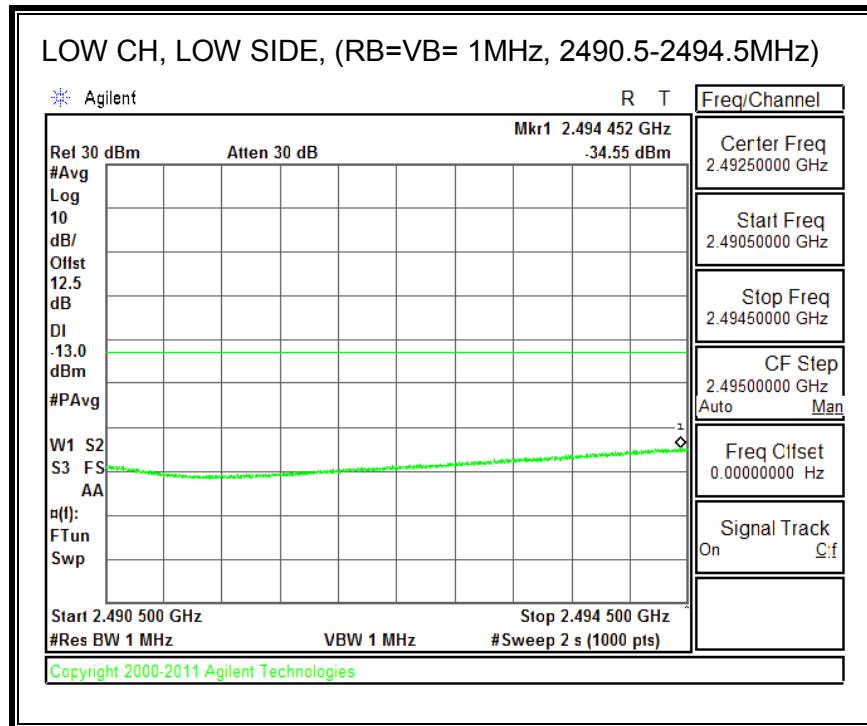


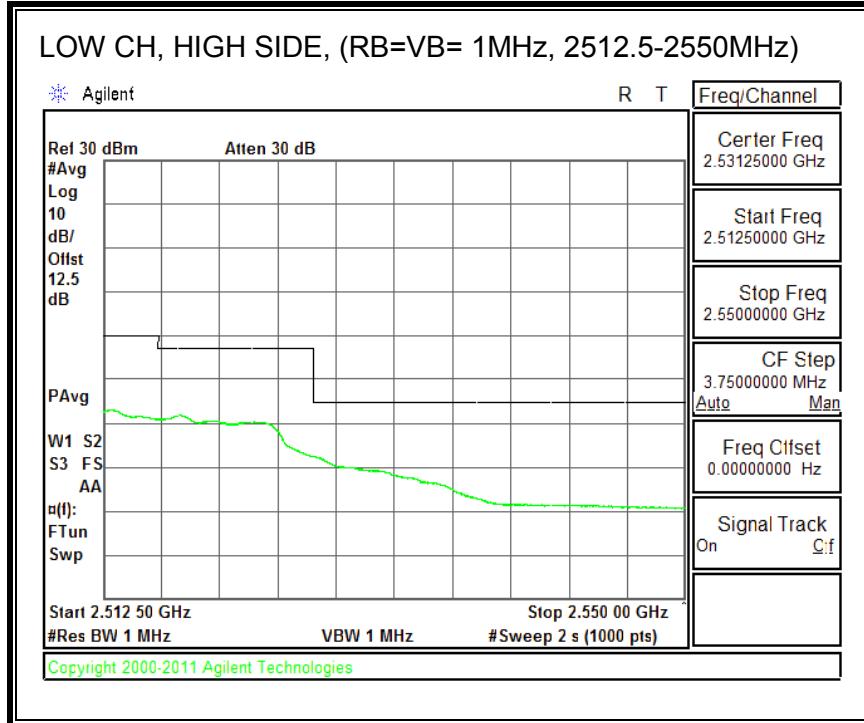
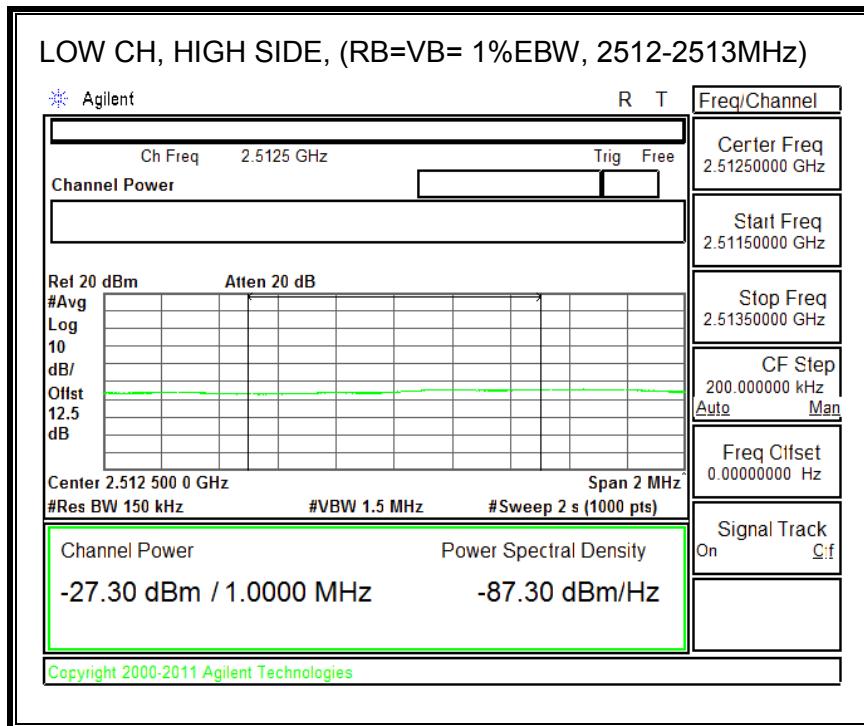


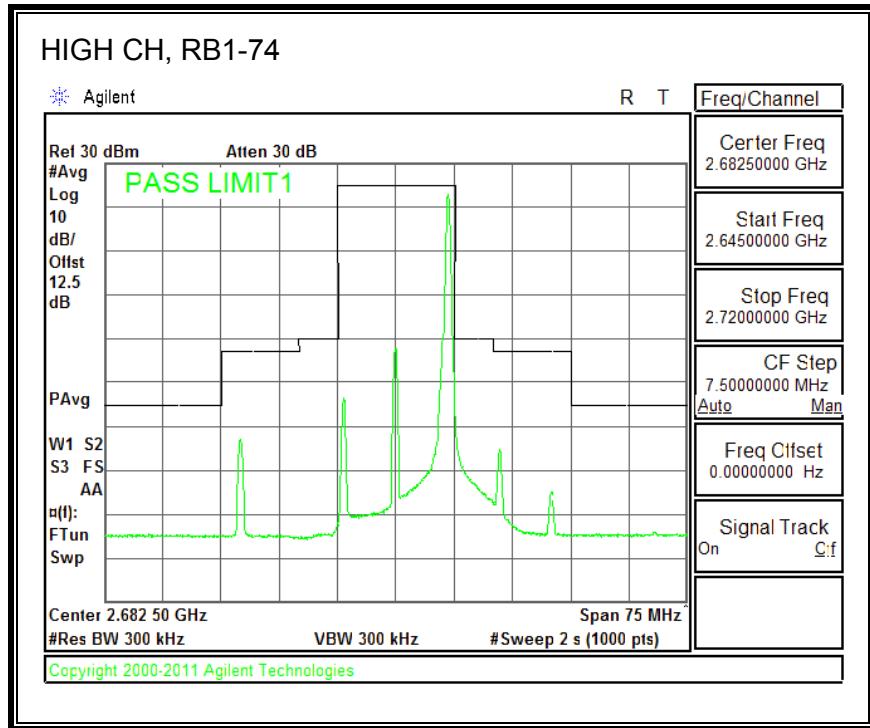
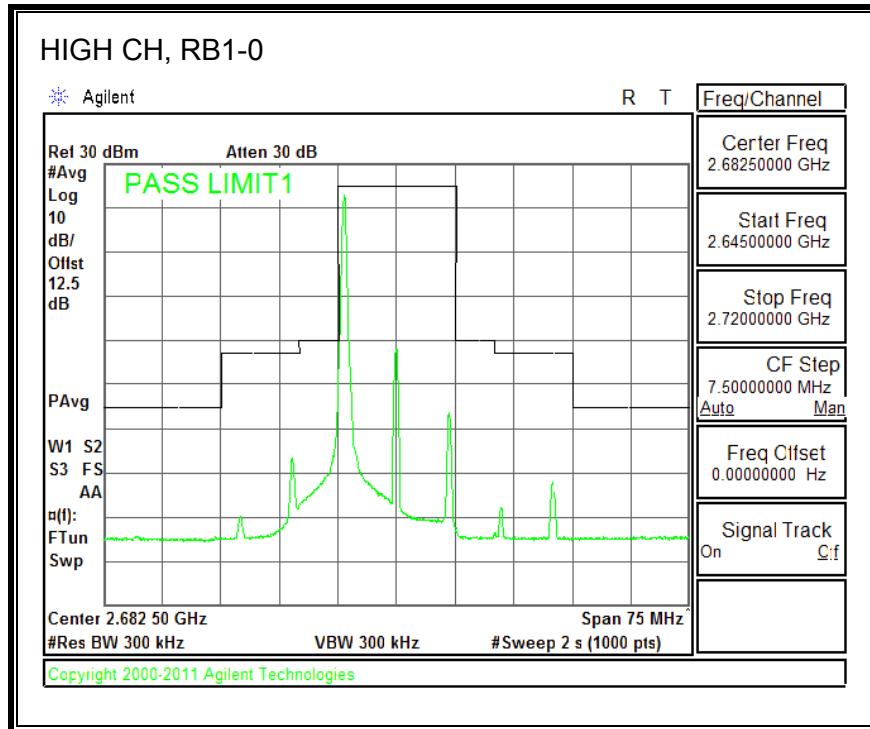
QPSK, (15.0 MHz BAND WIDTH)

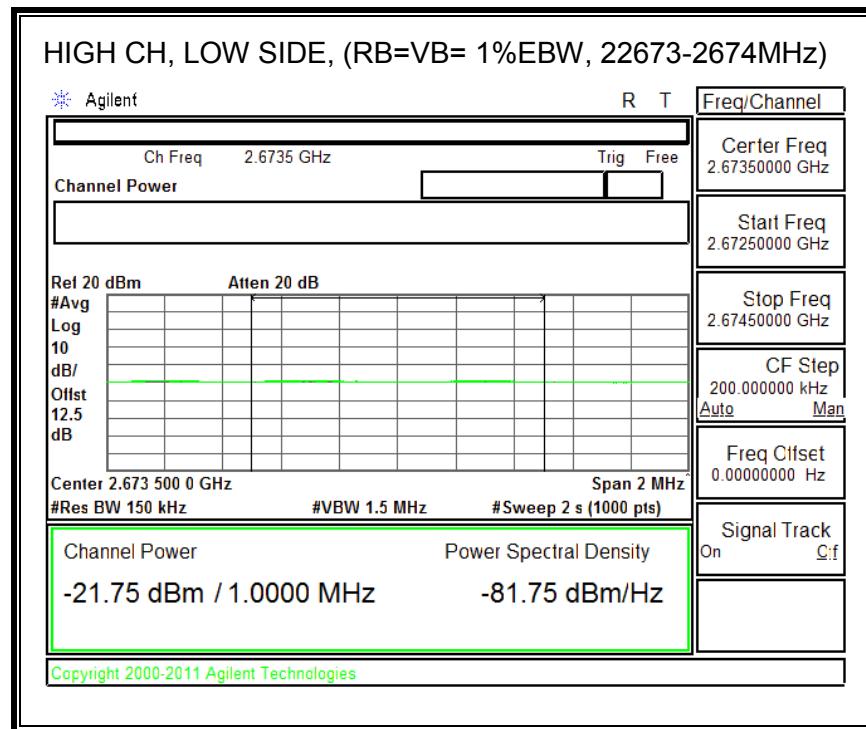
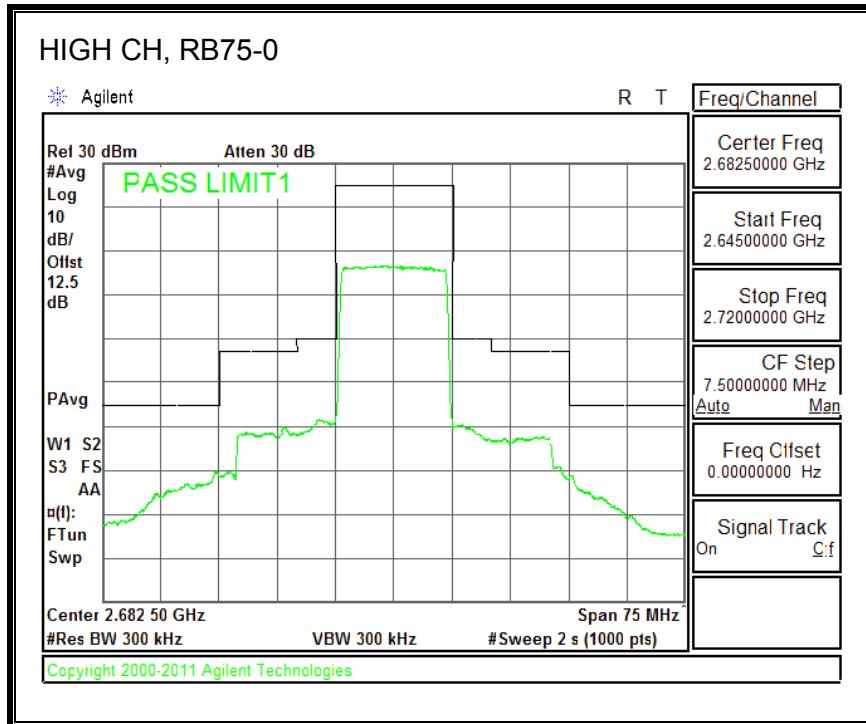


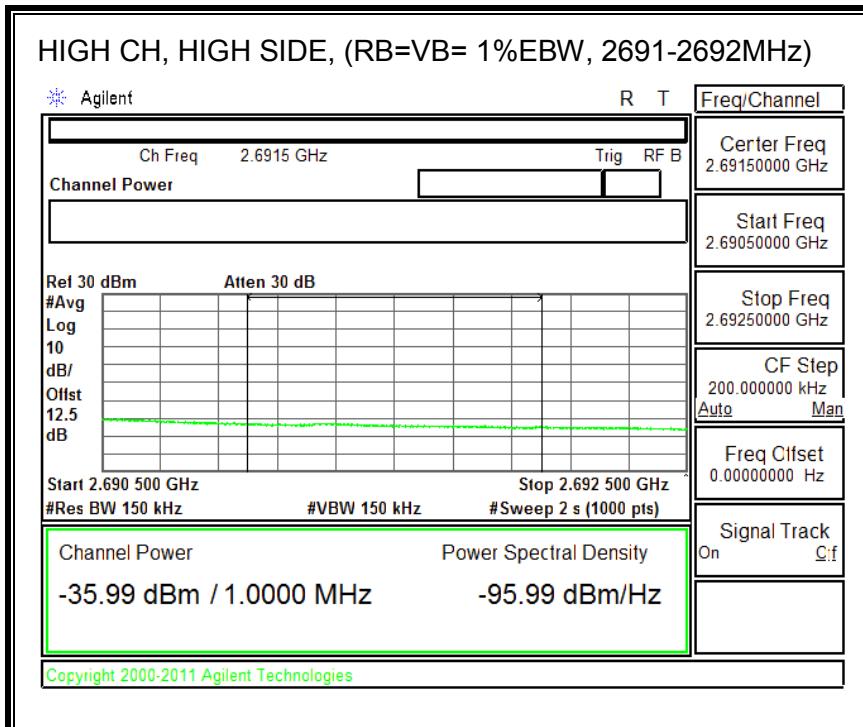
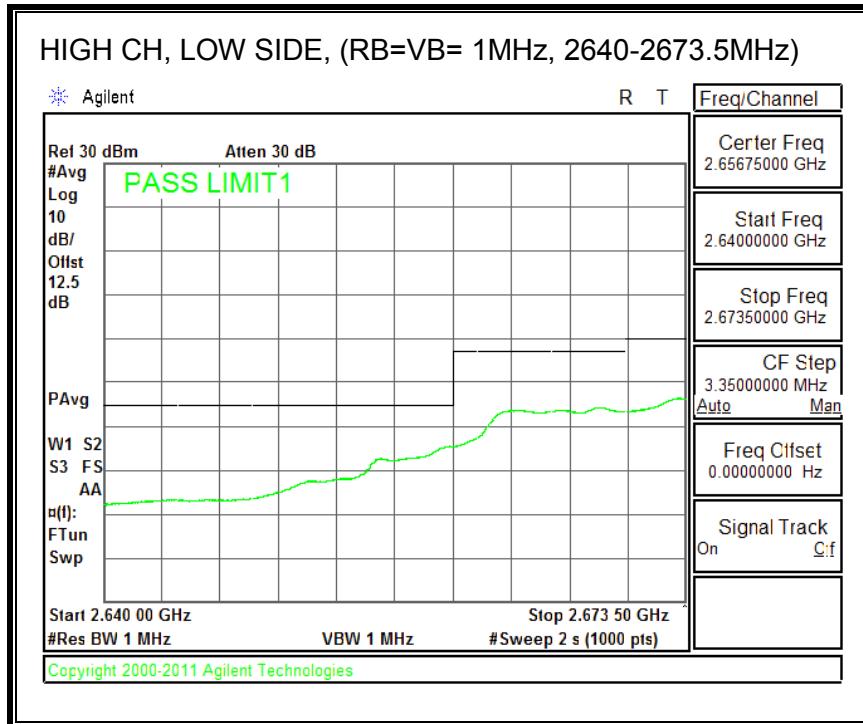


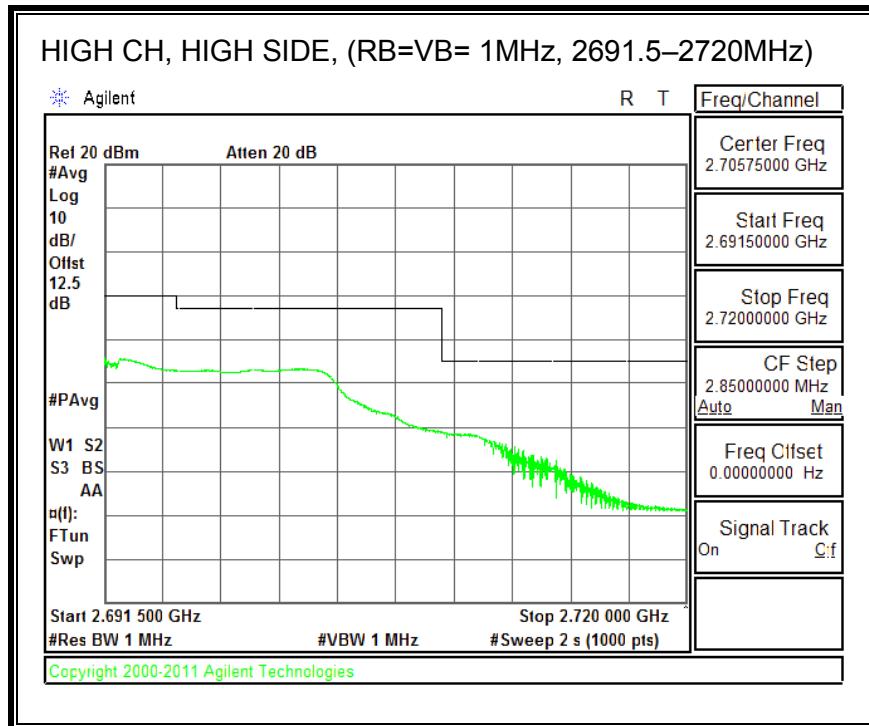




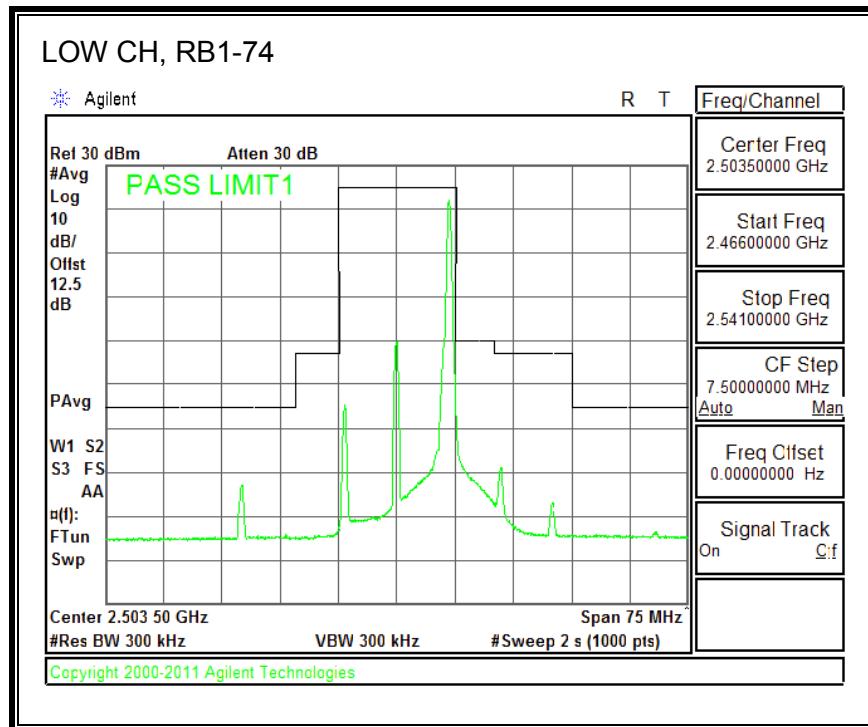
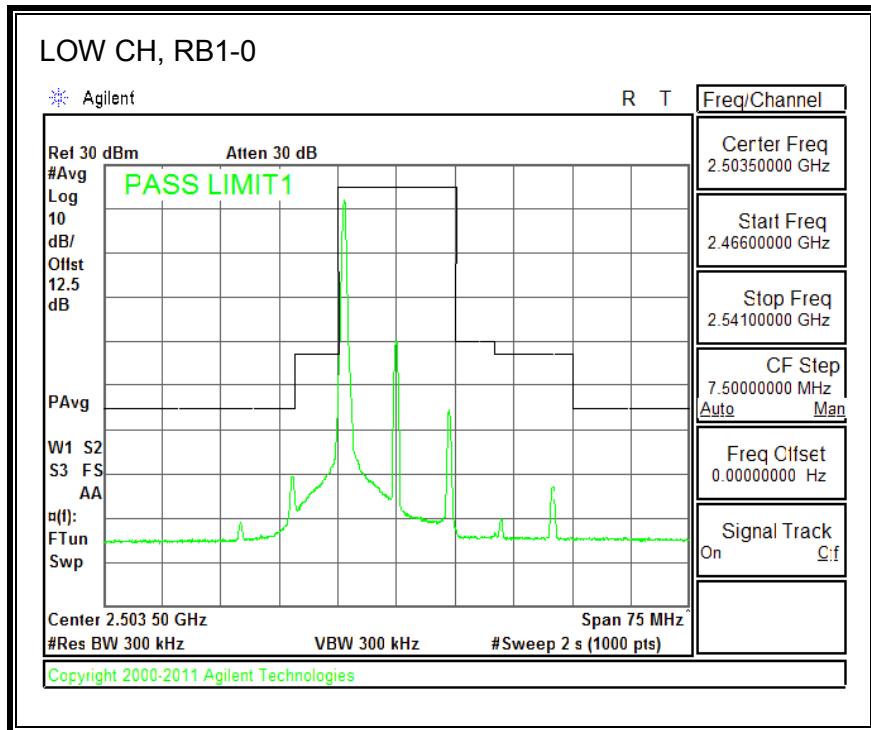


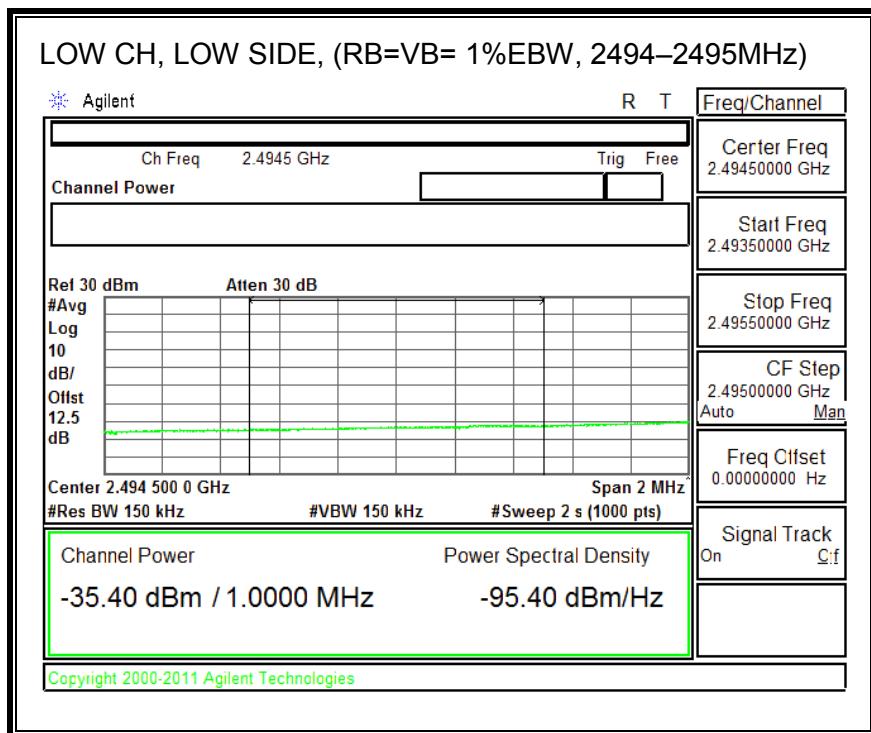
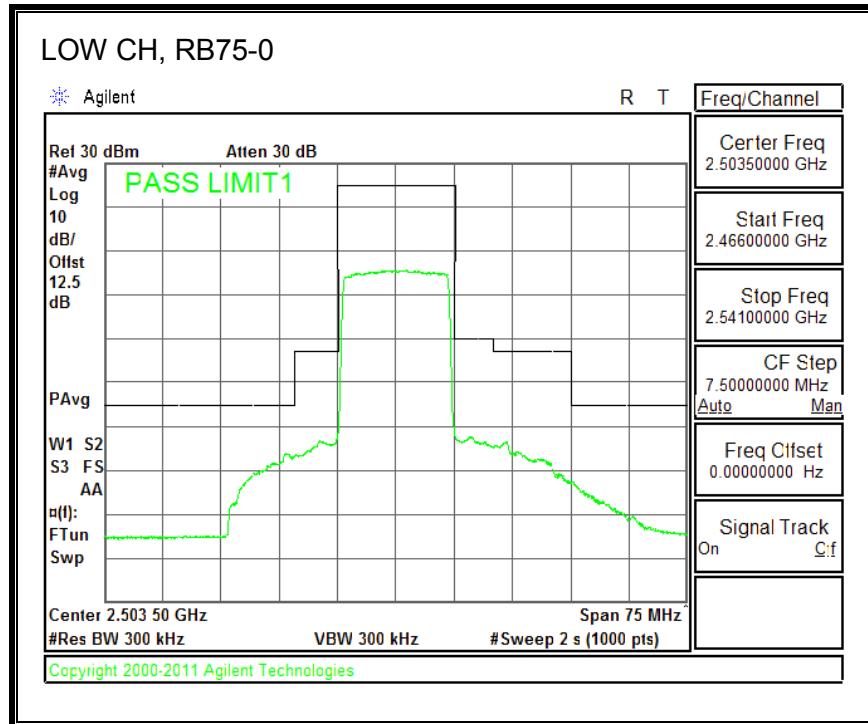


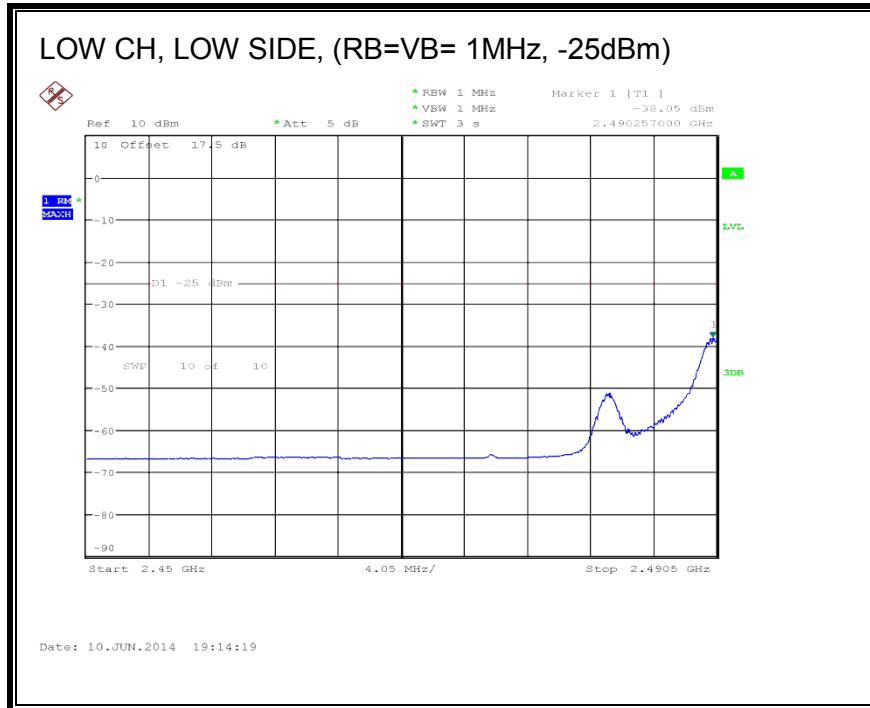
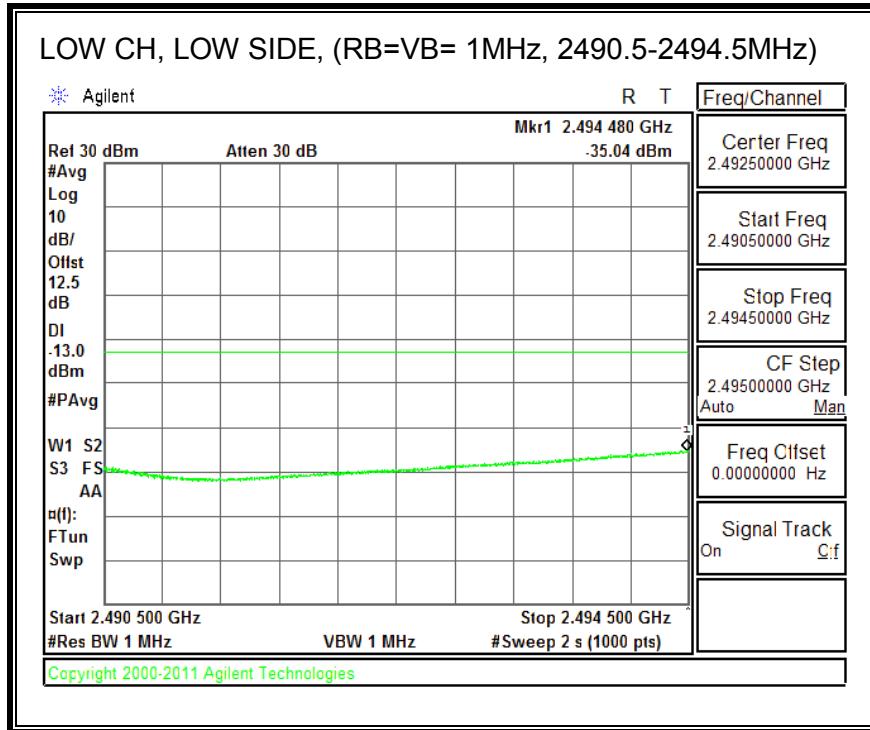


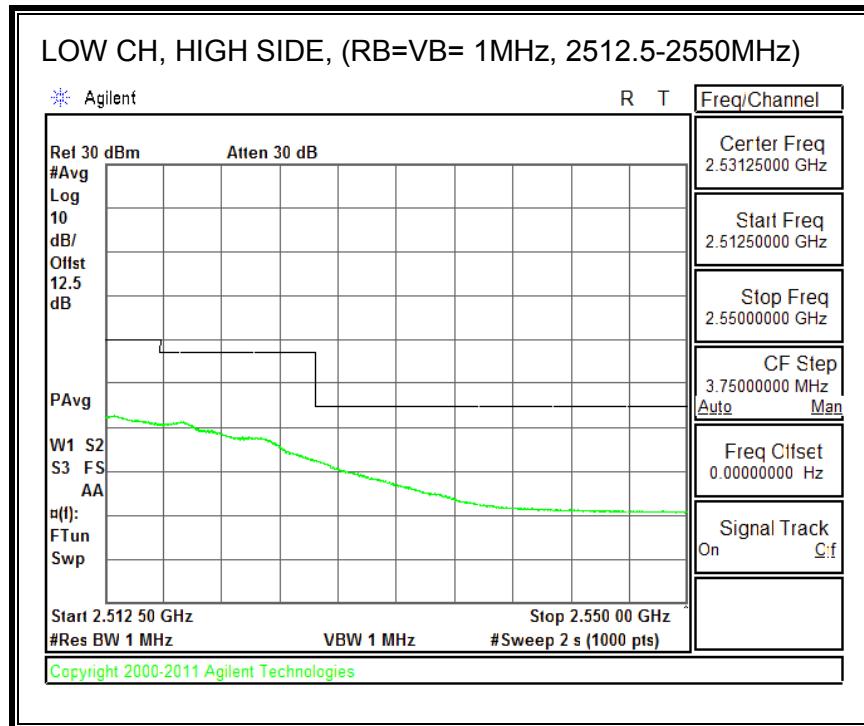
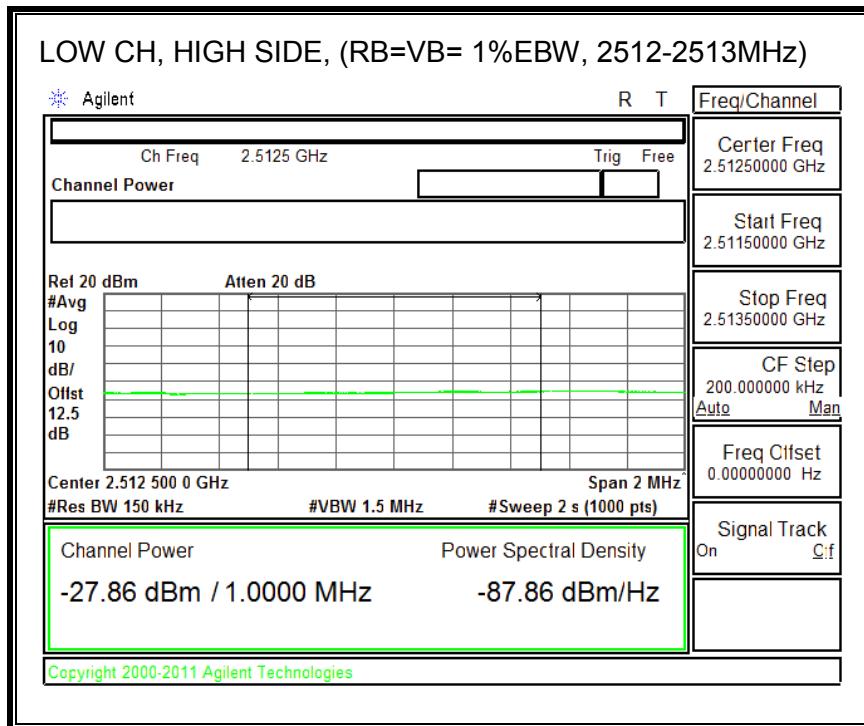


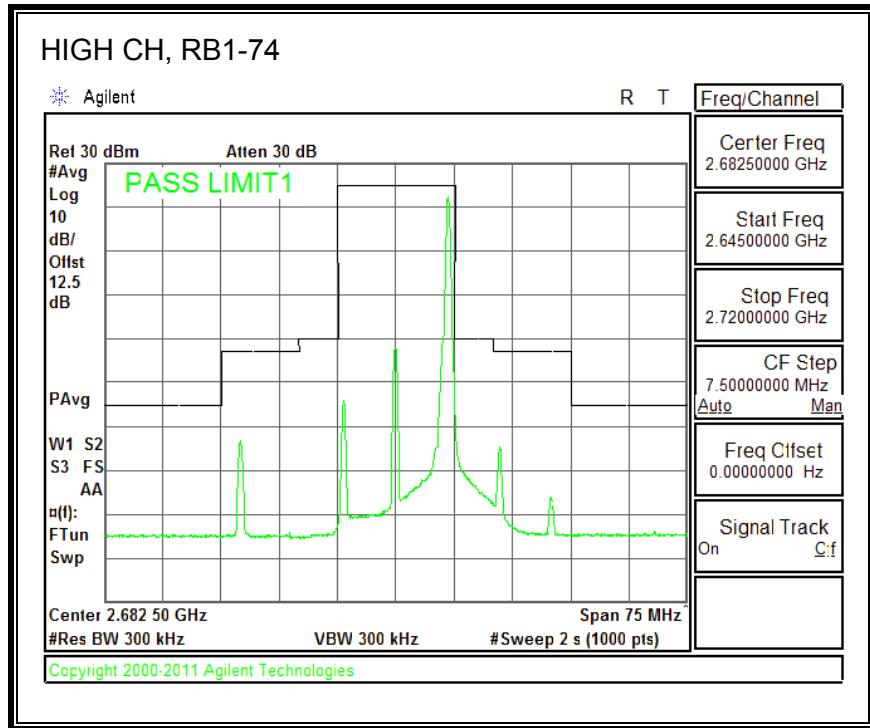
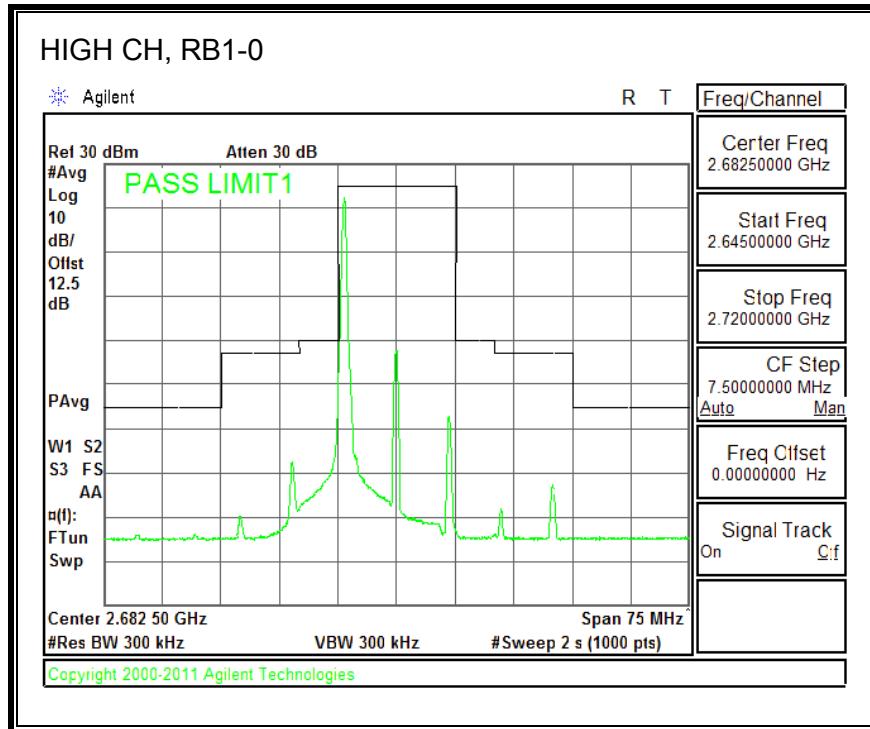
16QAM, (15.0 MHz BAND WIDTH)

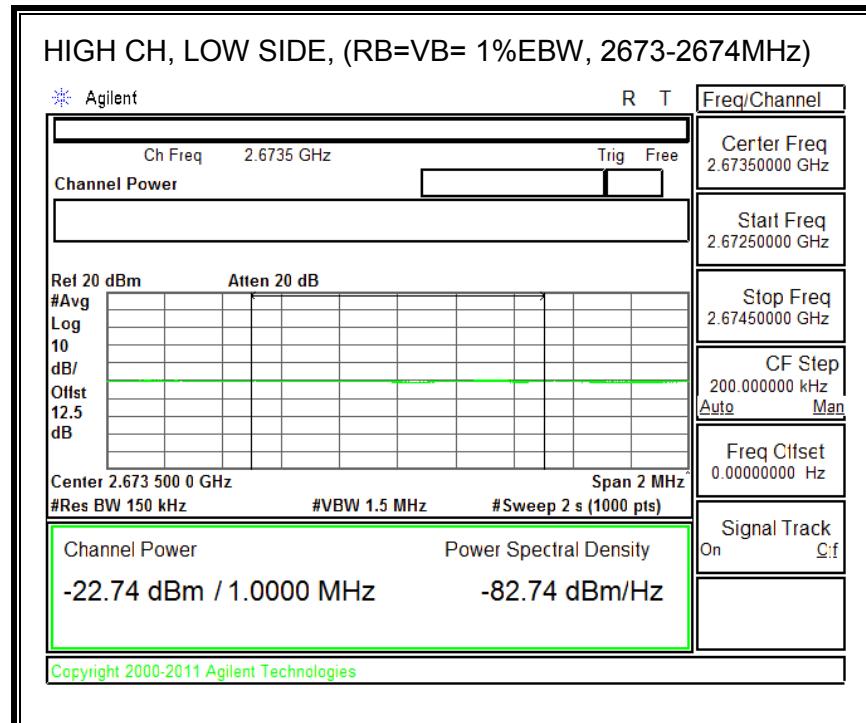
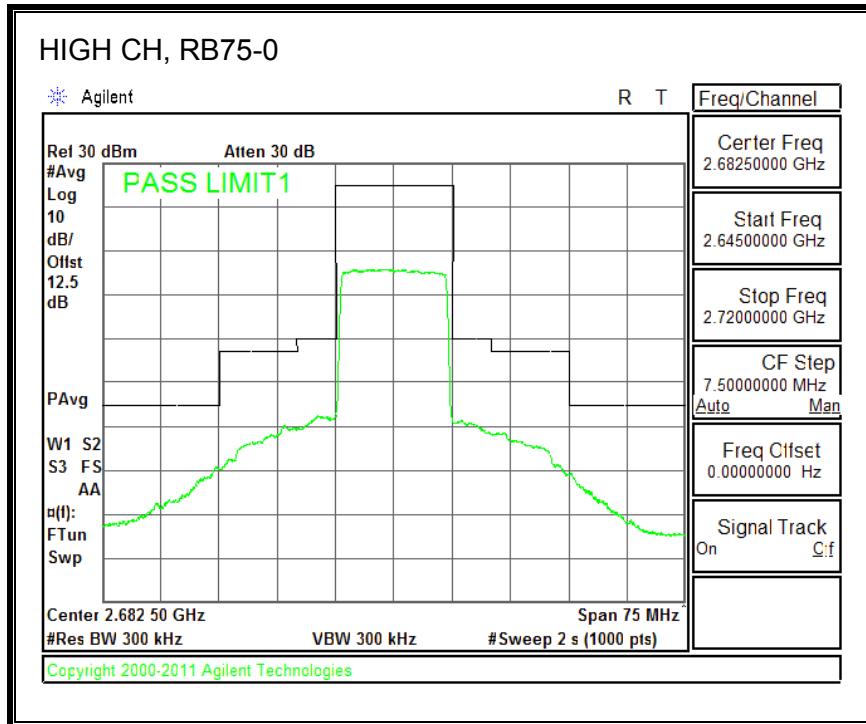


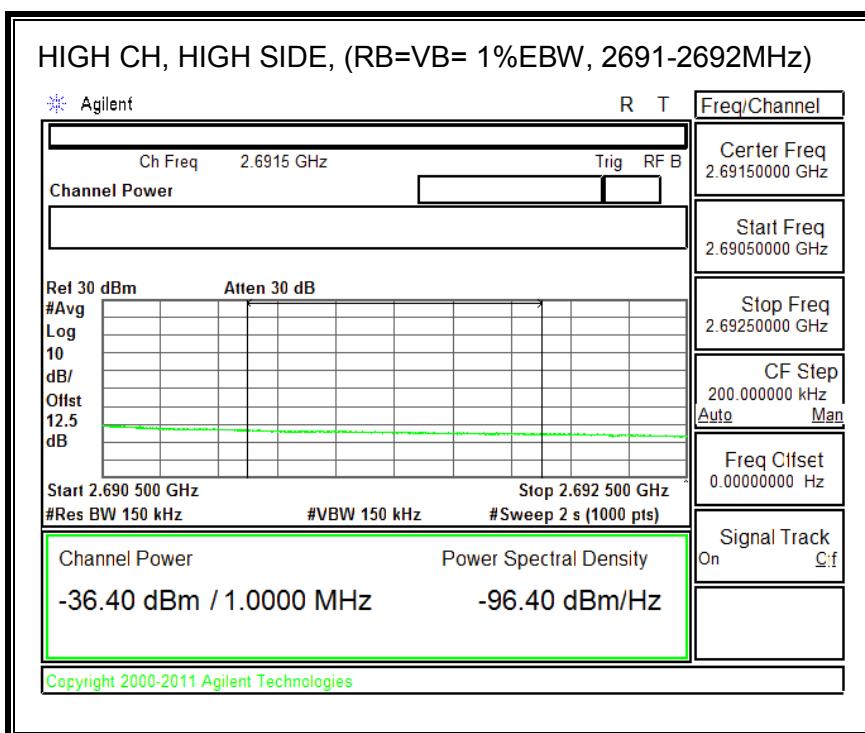
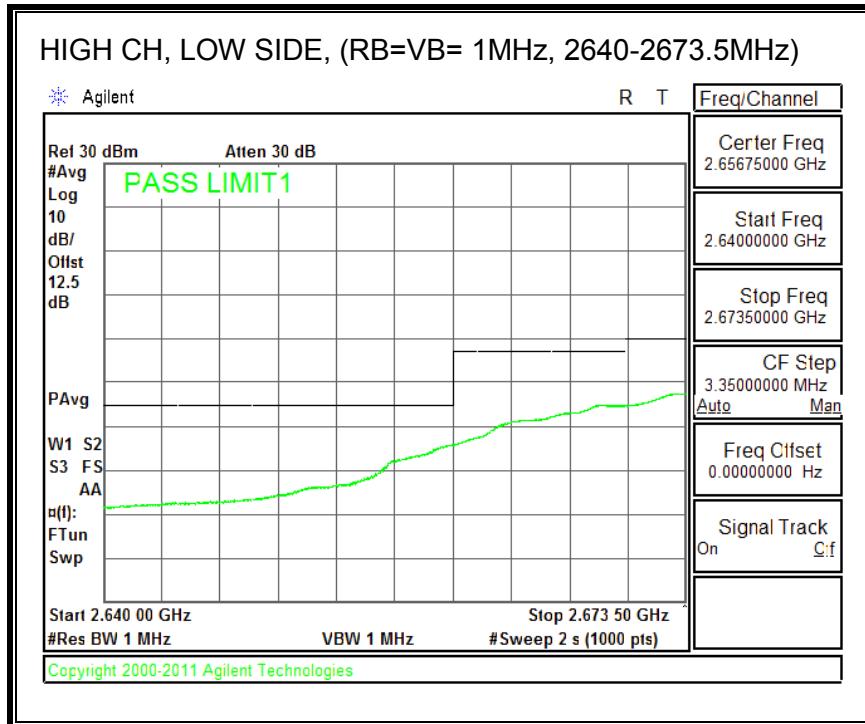


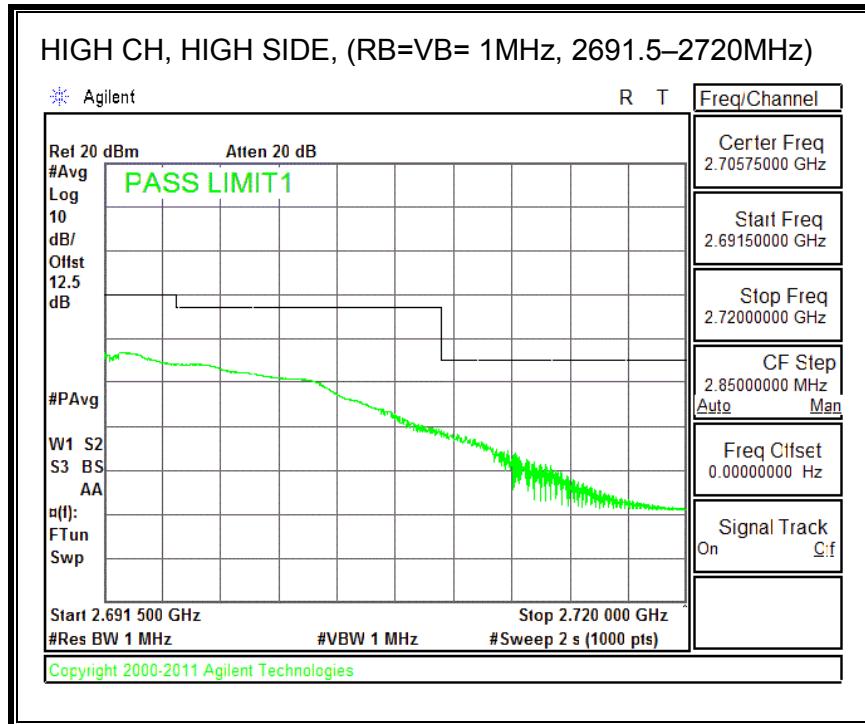




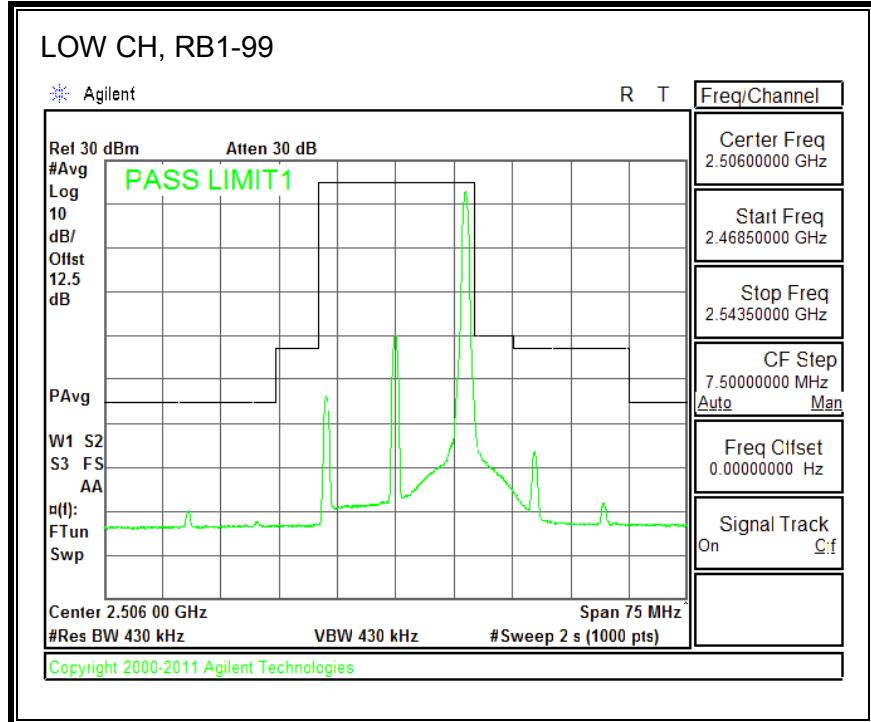
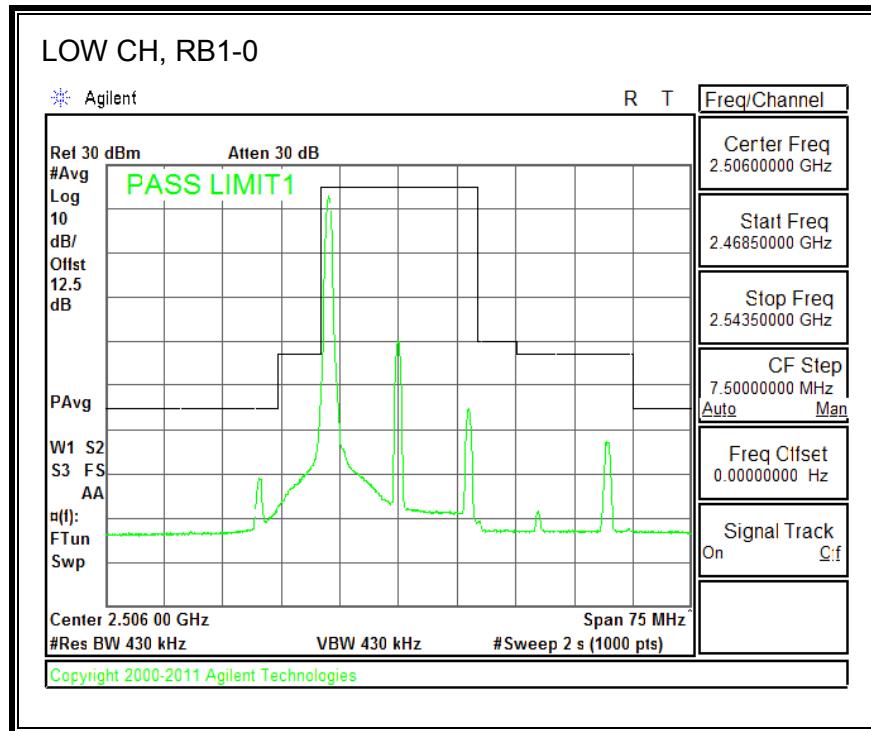


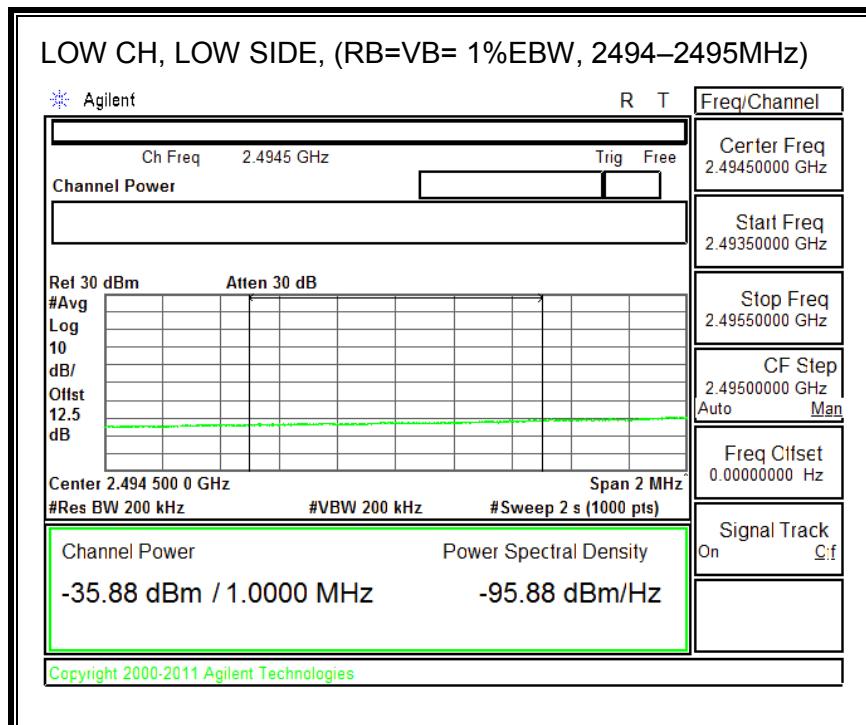
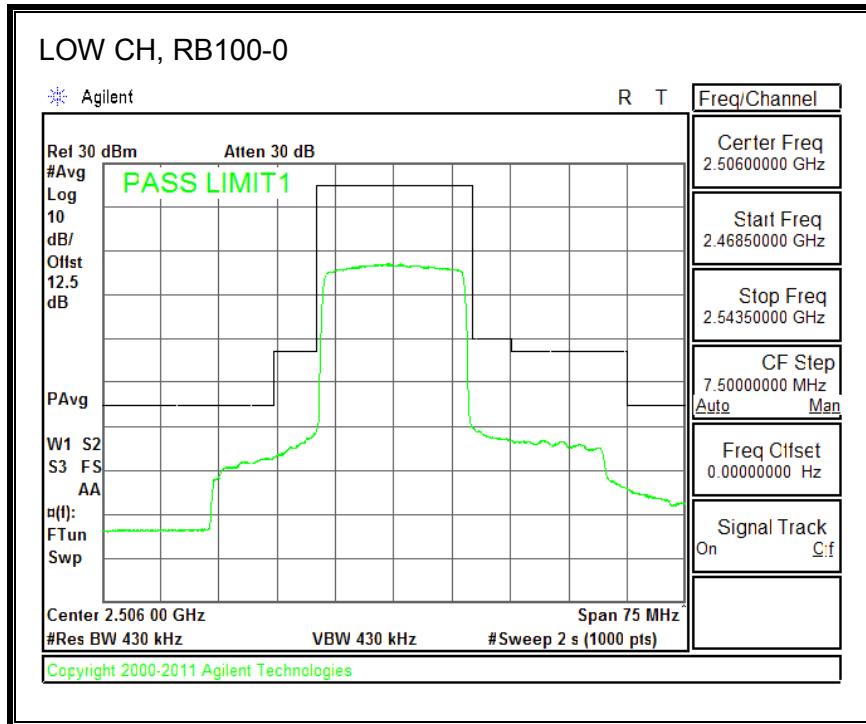


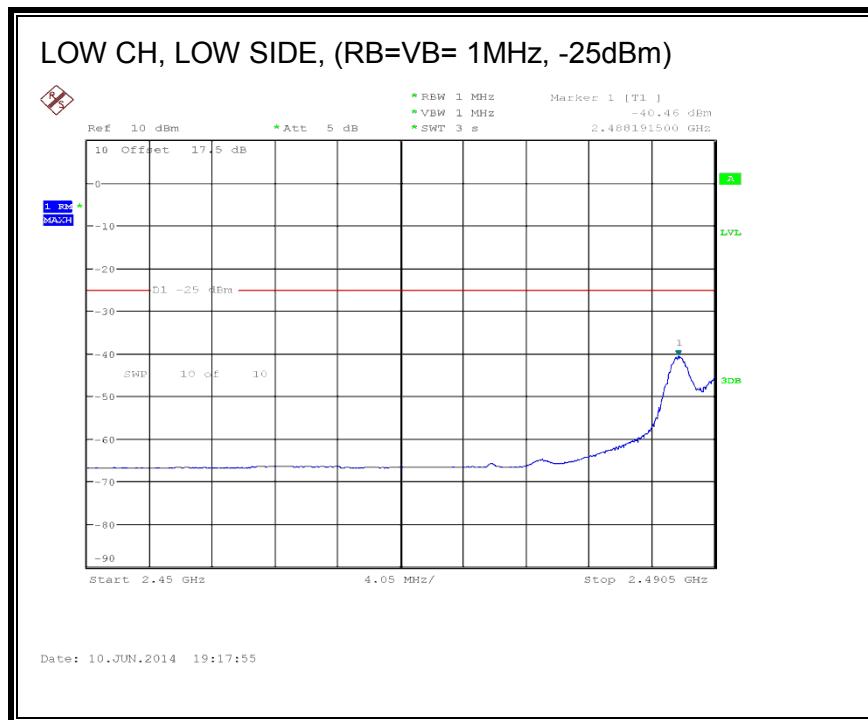
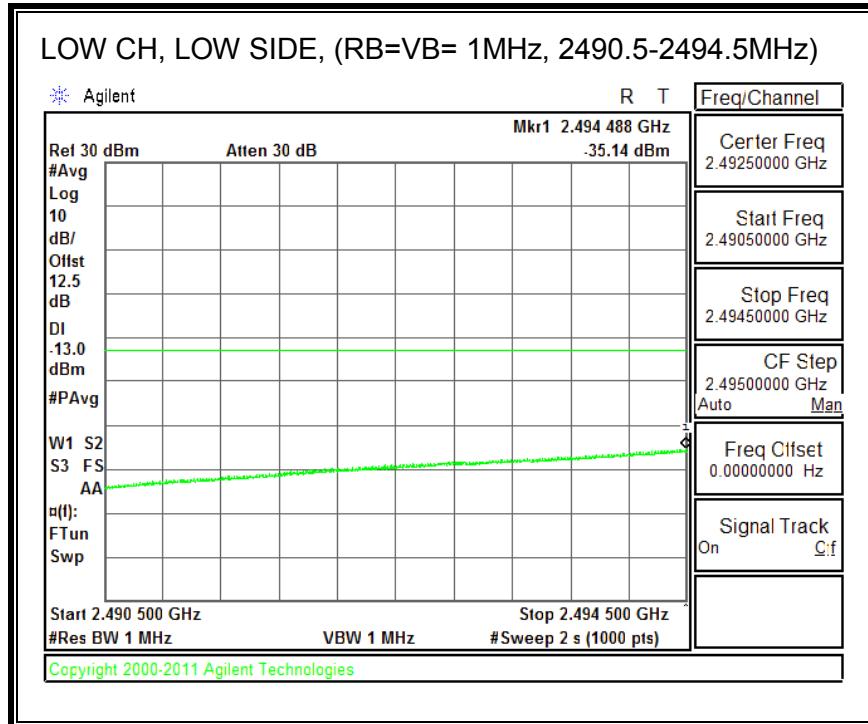


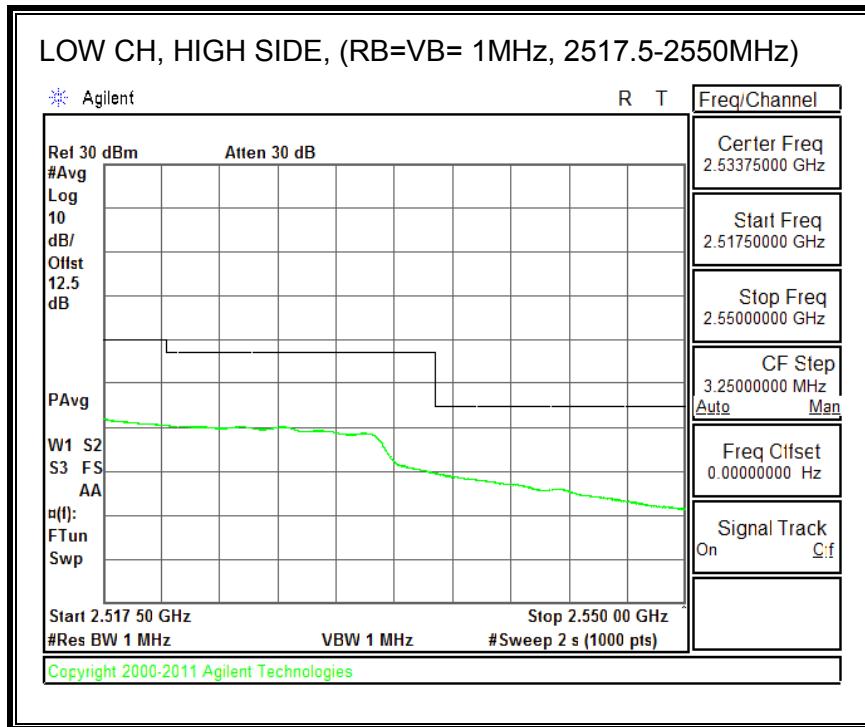
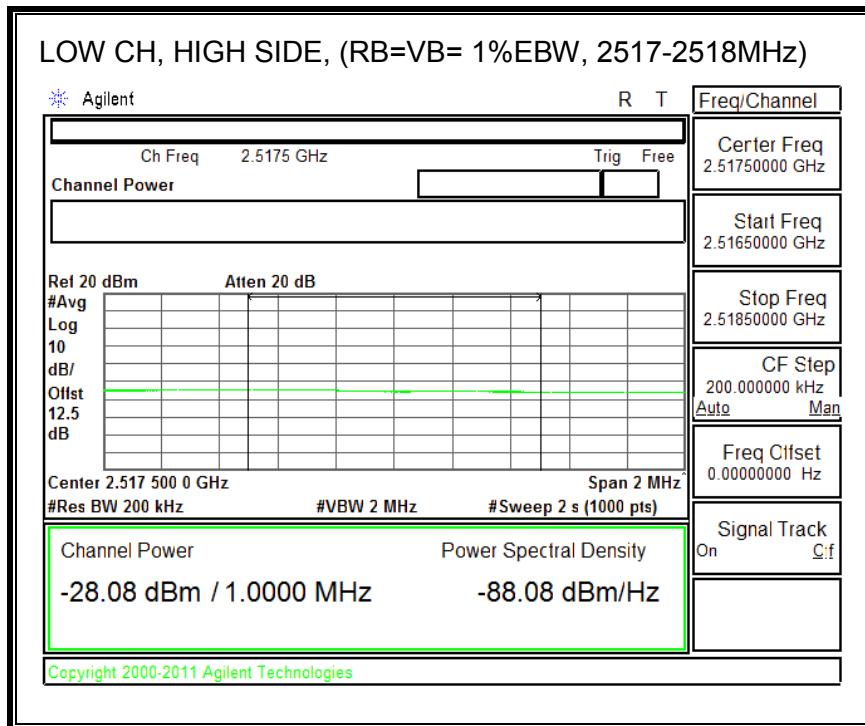


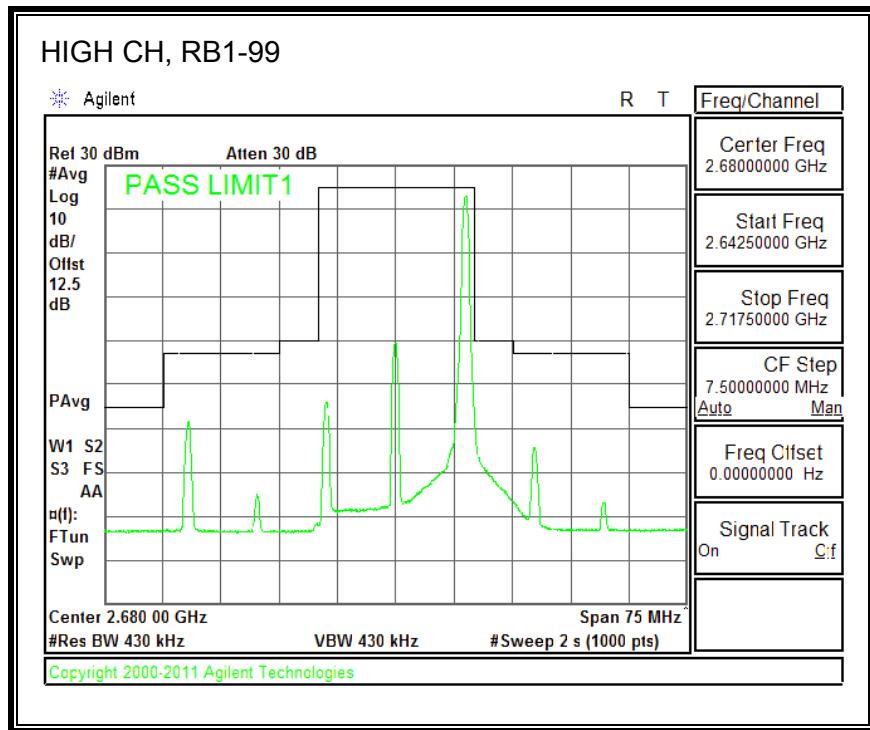
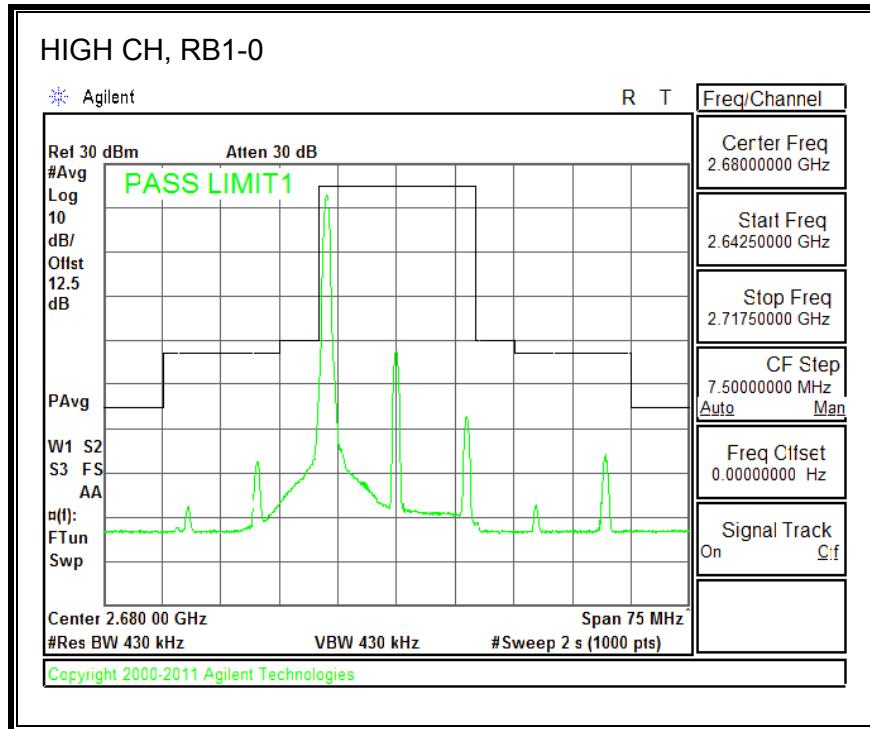
QPSK, (20.0 MHz BAND WIDTH)

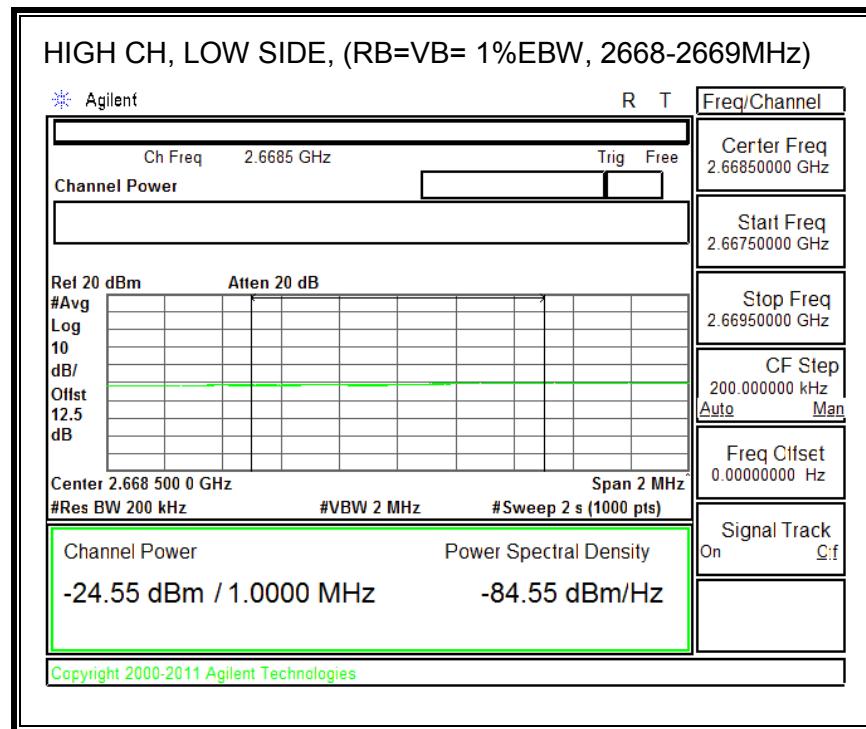
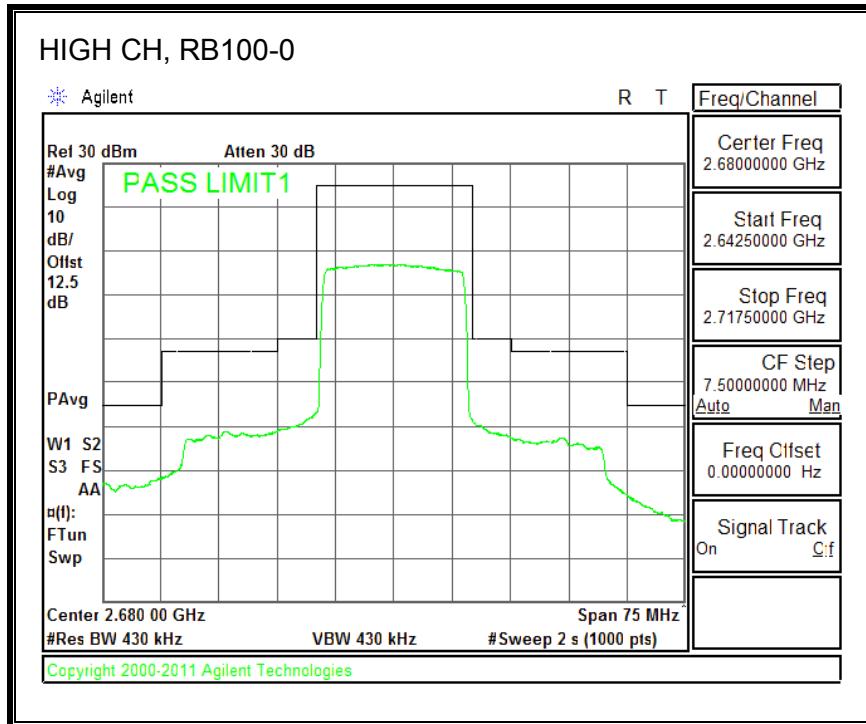


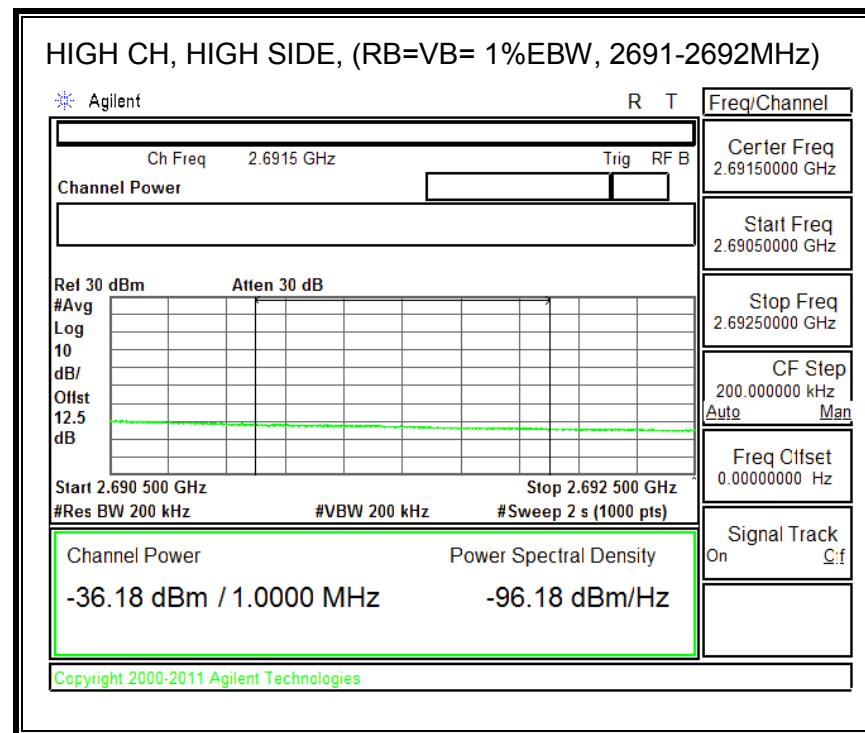
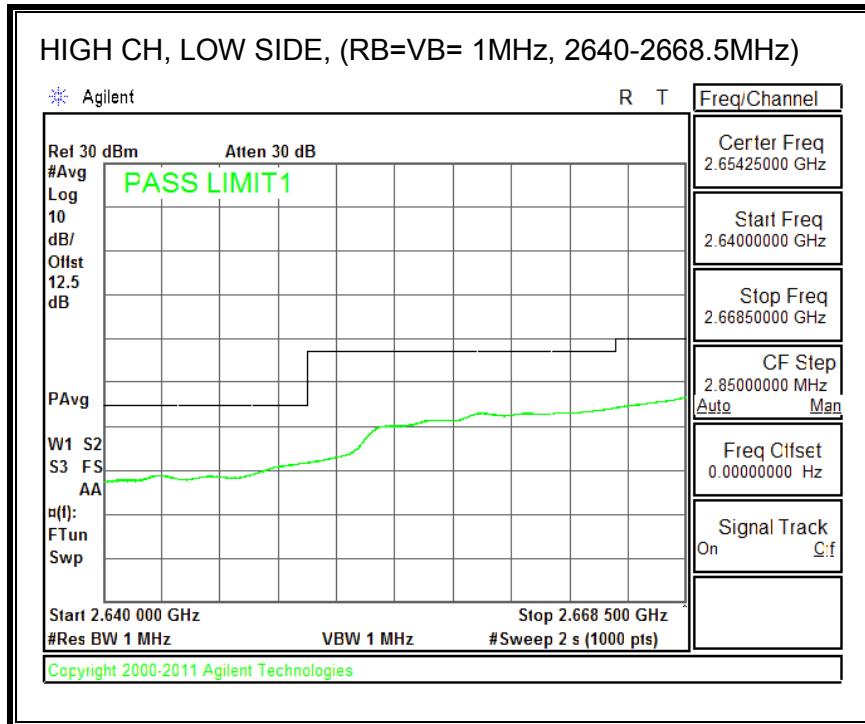


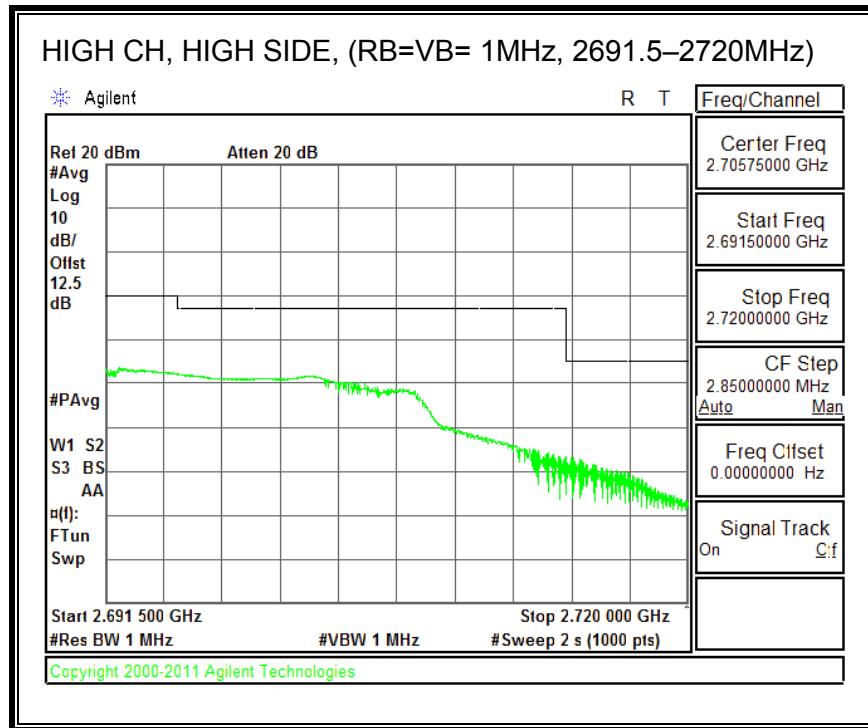




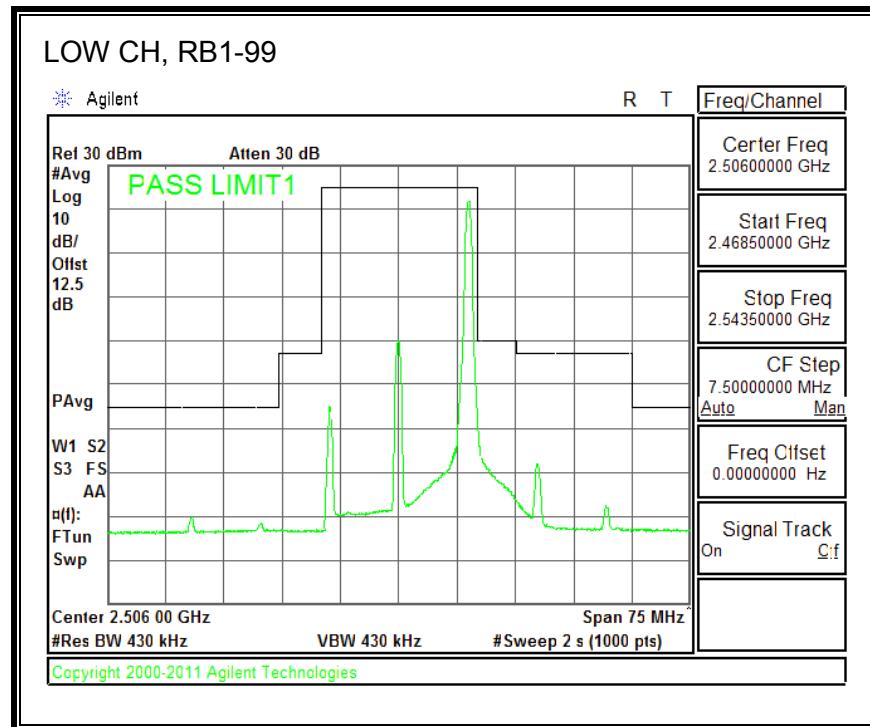
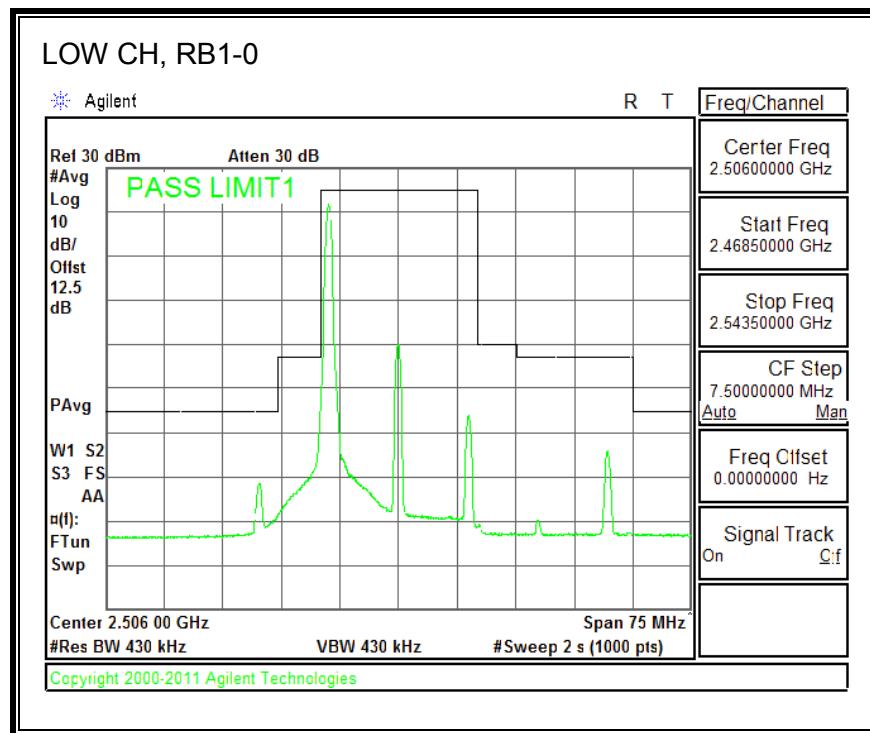


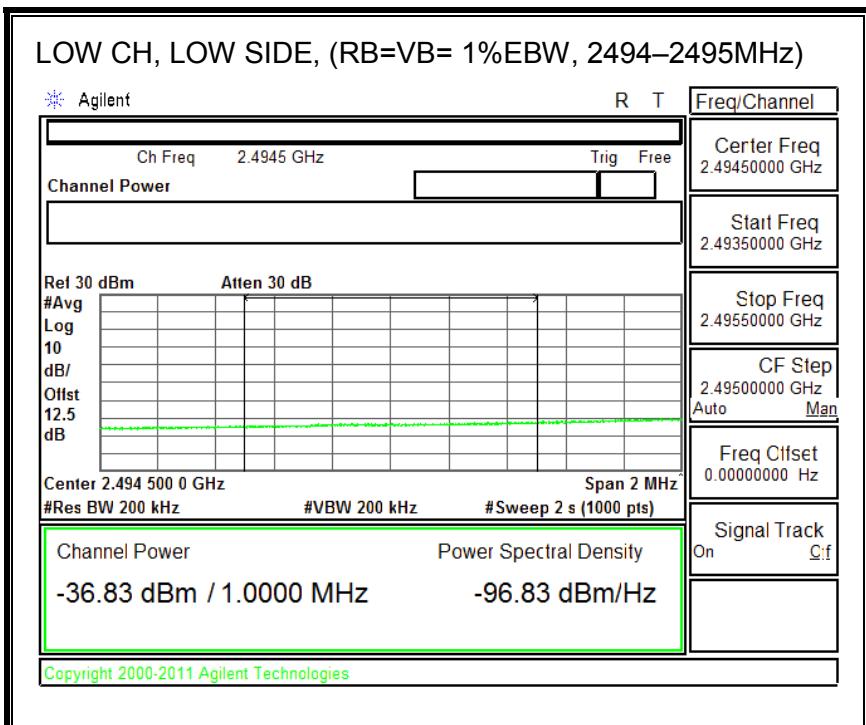
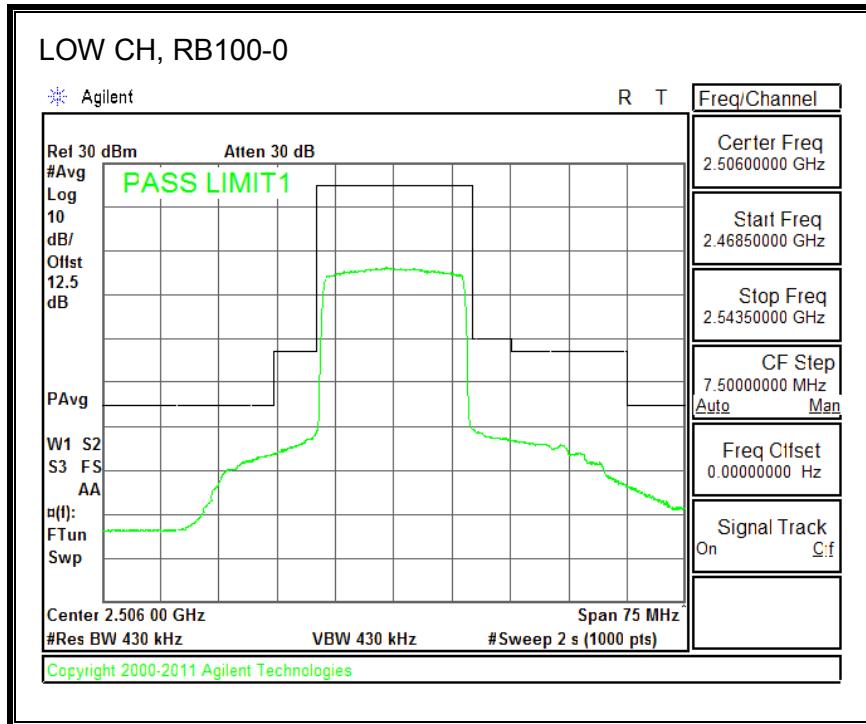


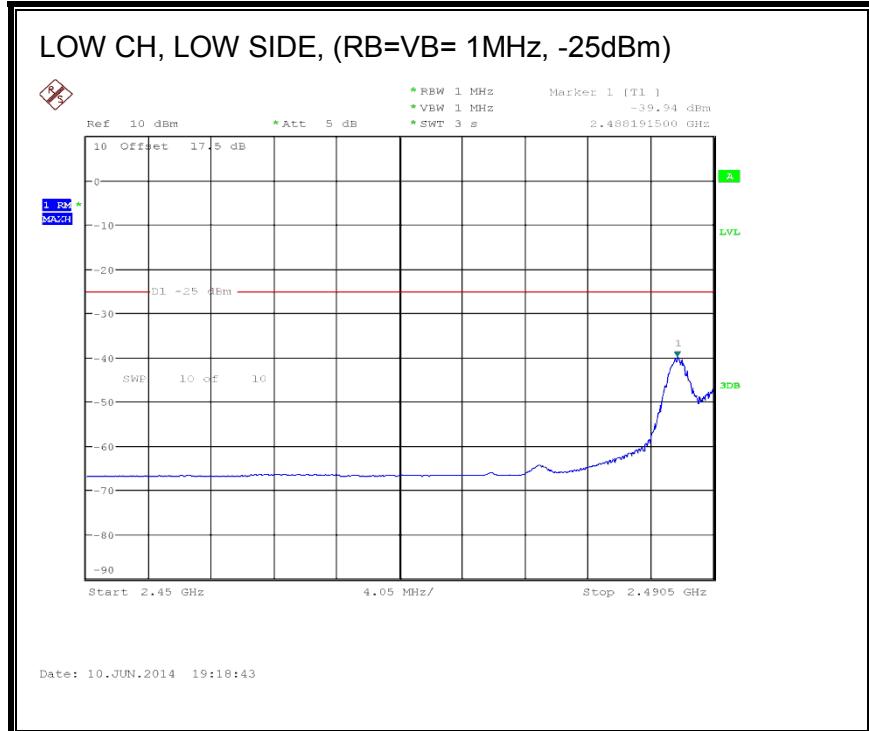
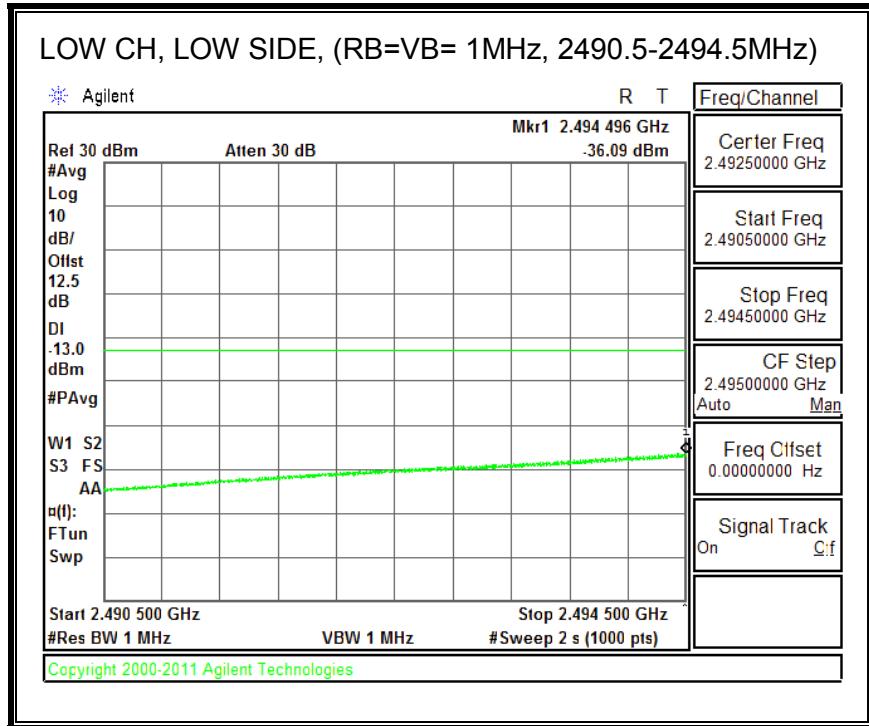


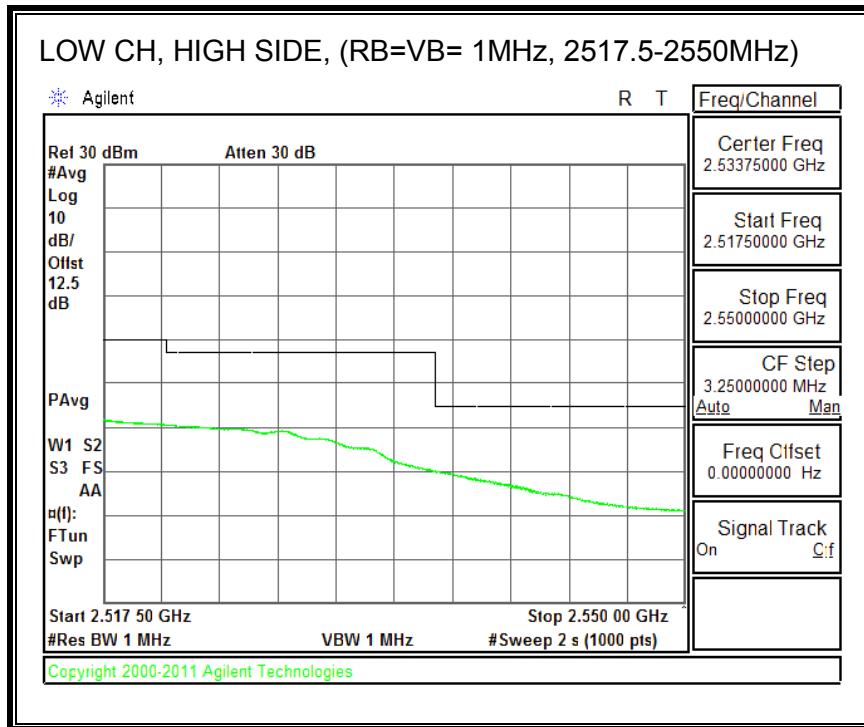
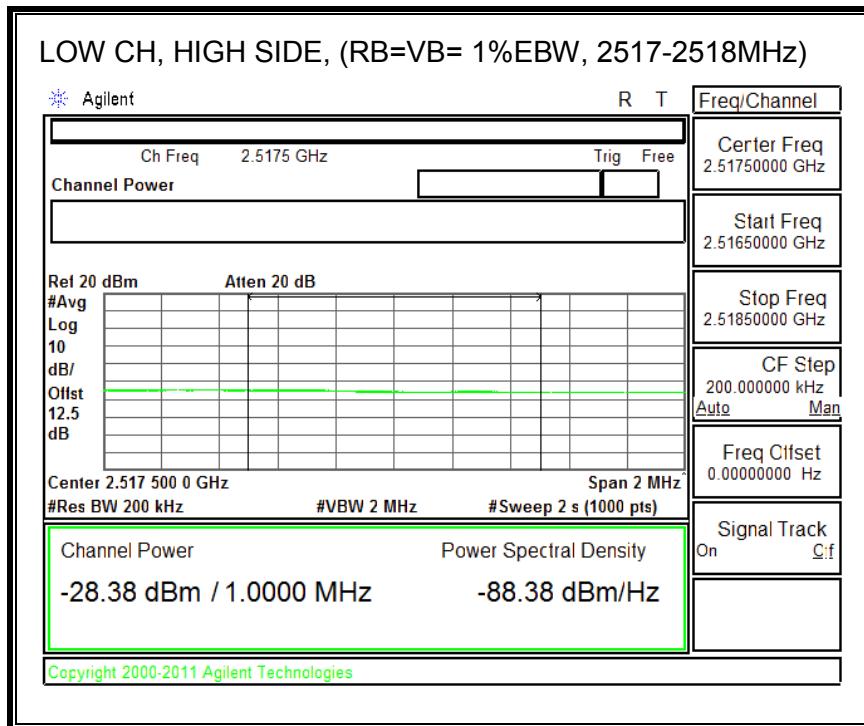


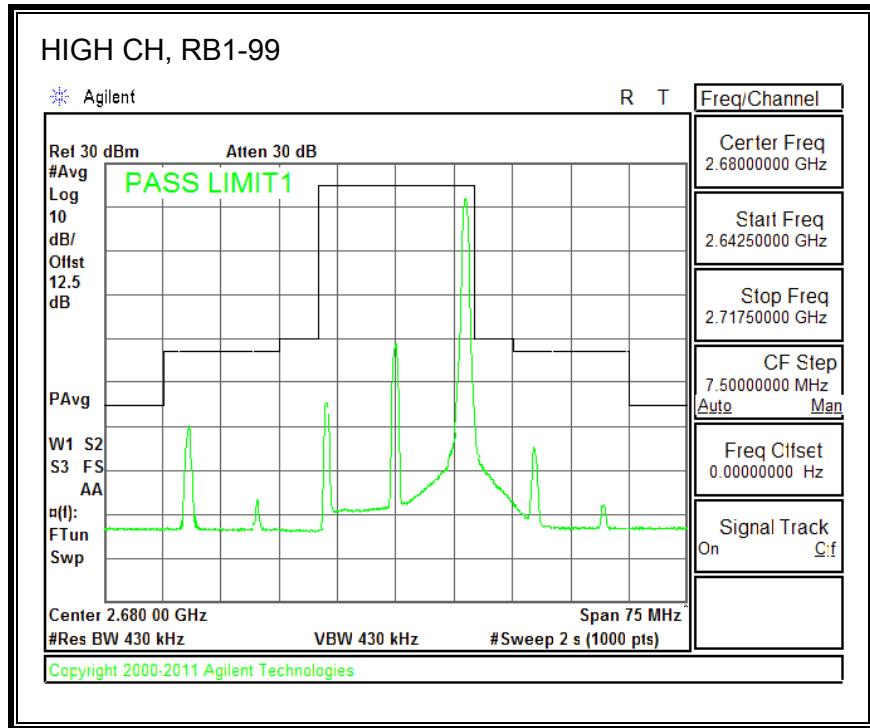
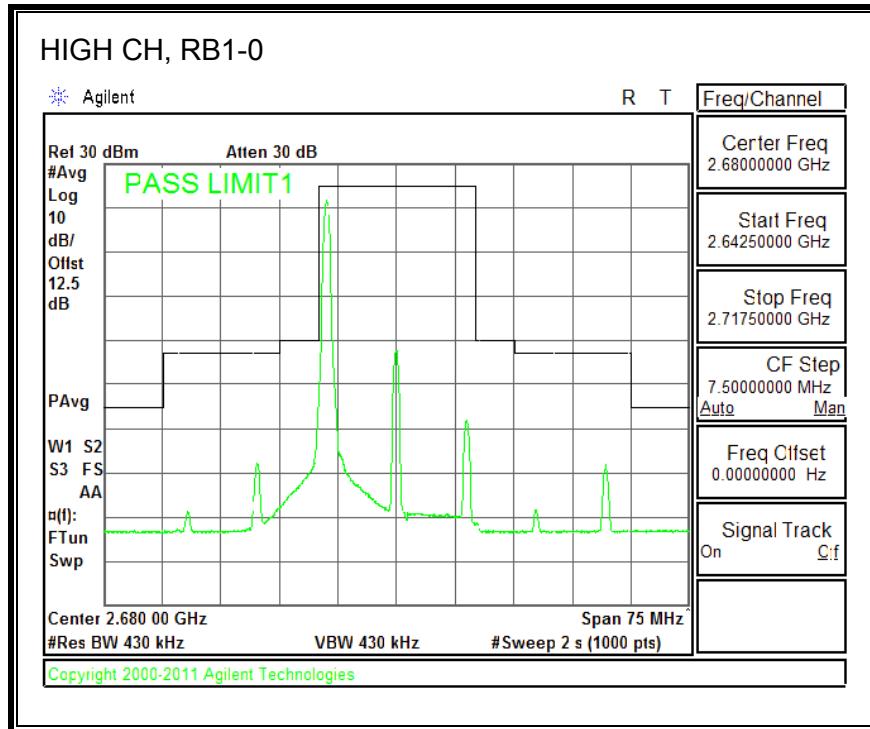
16QAM, (20.0 MHz BAND WIDTH)

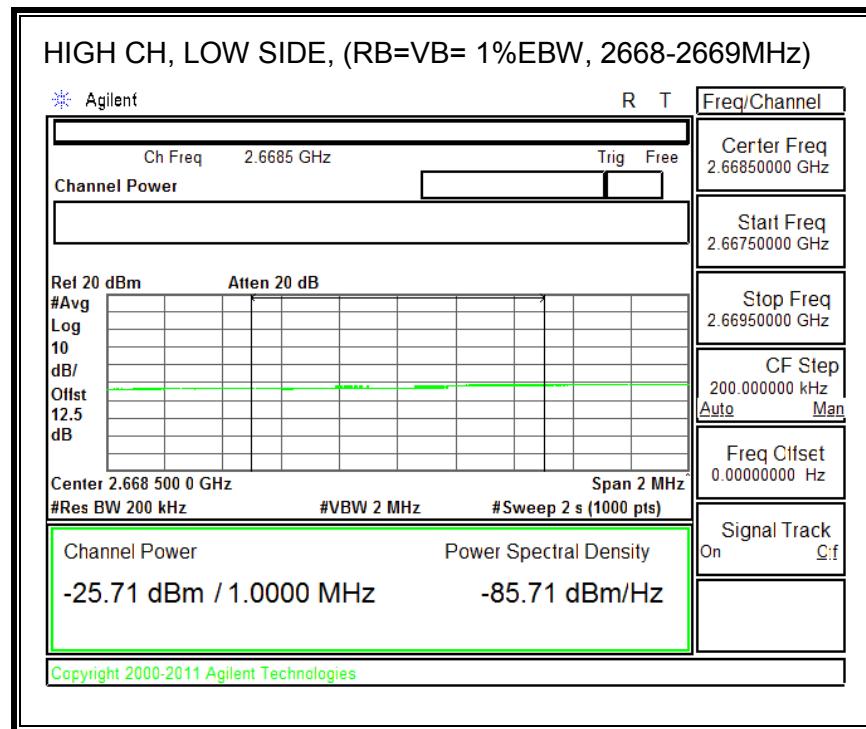
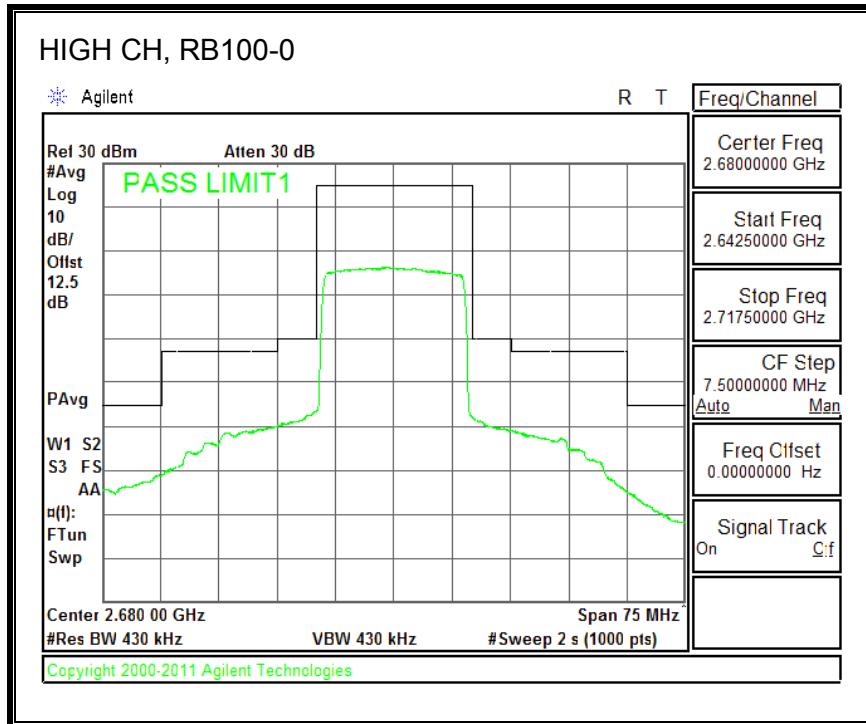


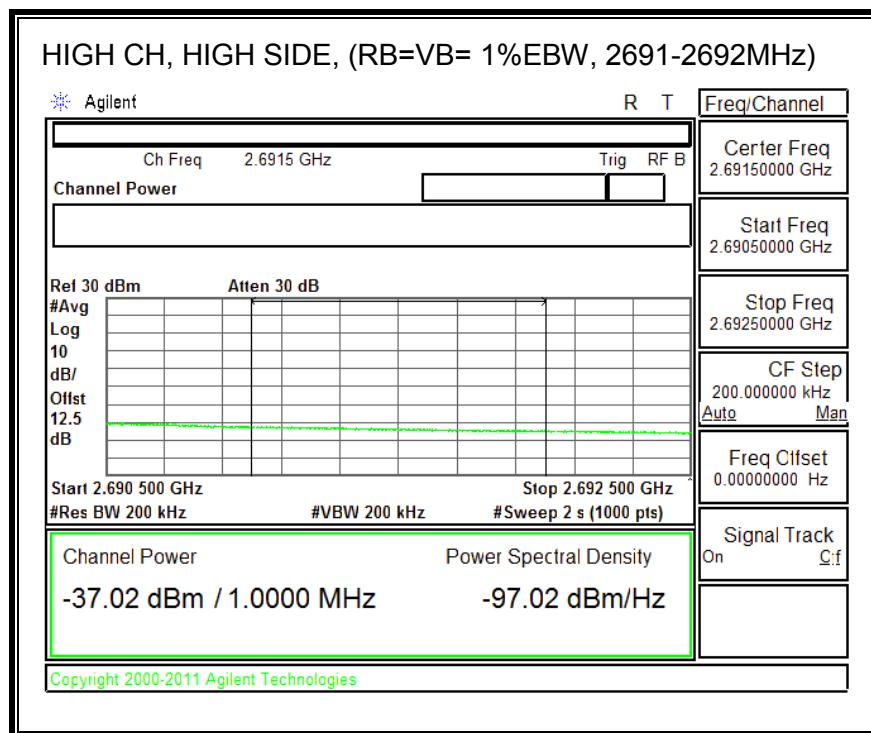
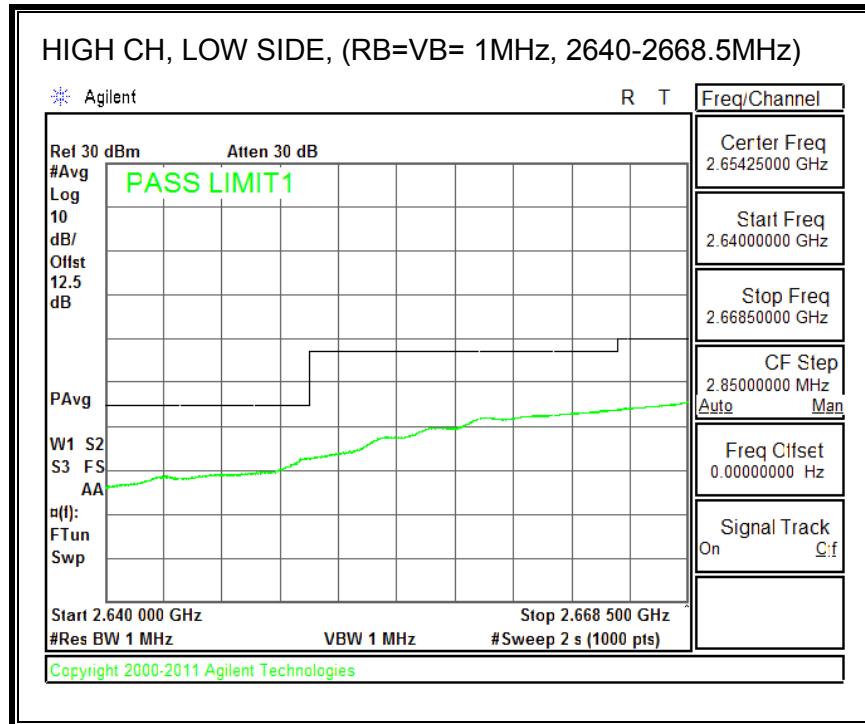


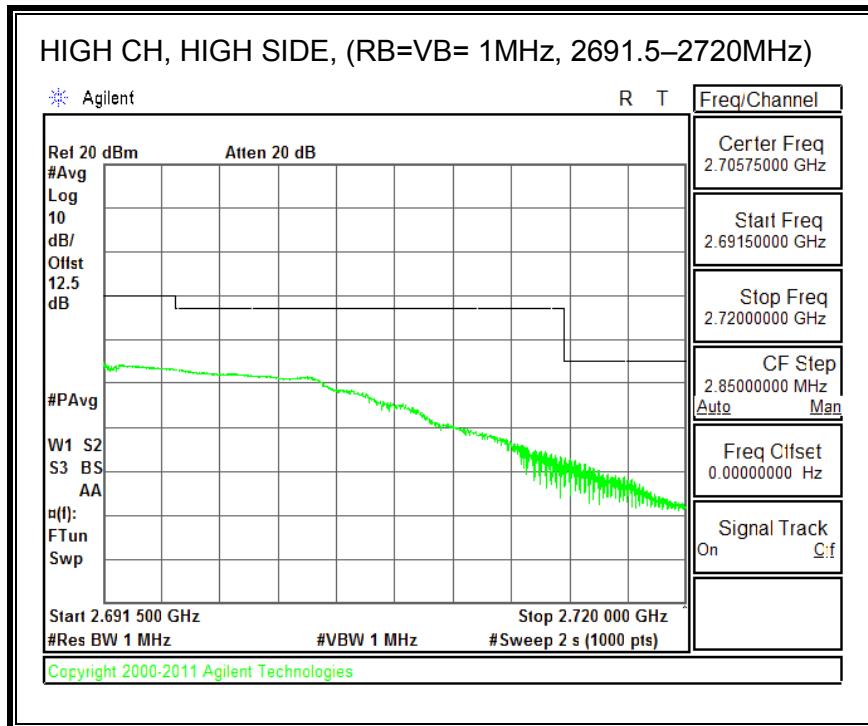












8.2.10. OUT OF BAND EMISSIONS

RULE PART(S)

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

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.

TEST PROCEDURE

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.

For each out of band emissions measurement:

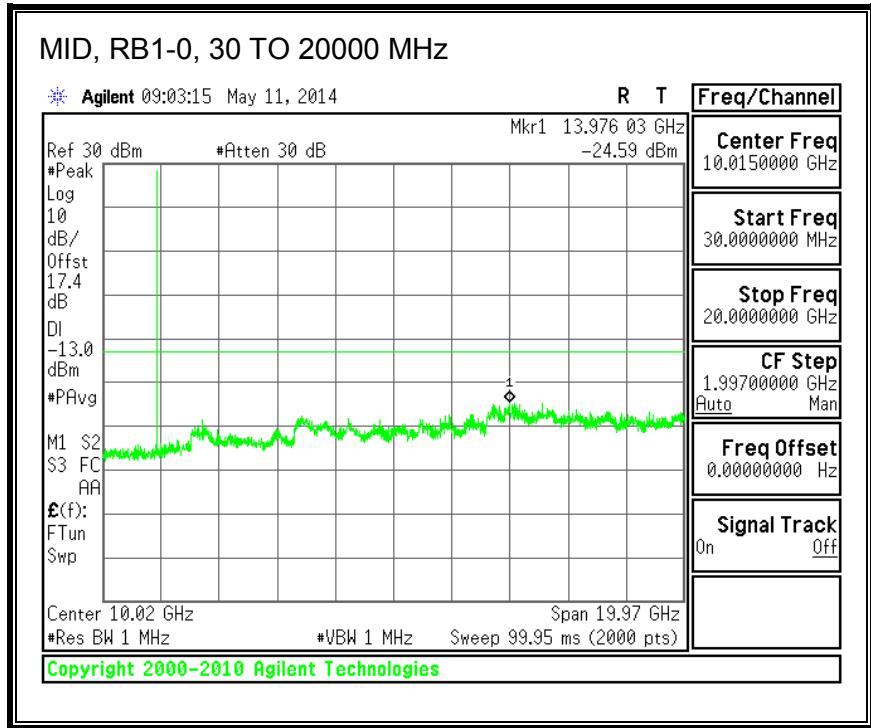
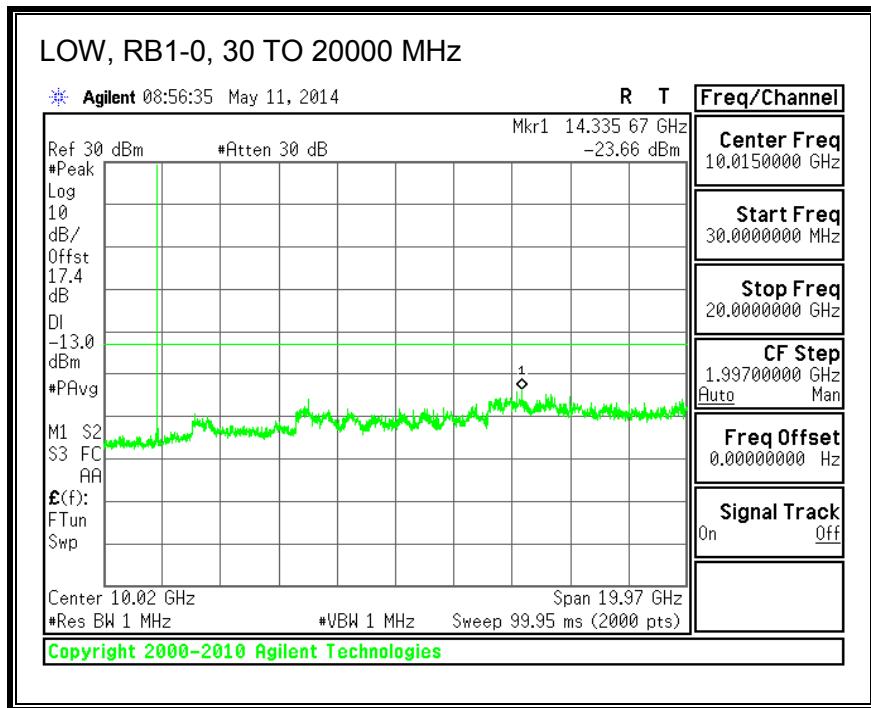
- Set display line at -13 dBm
- Set RBW & VBW to 100 kHz for the measurement below 1 GHz, and 1 MHz for the measurement above 1 GHz.

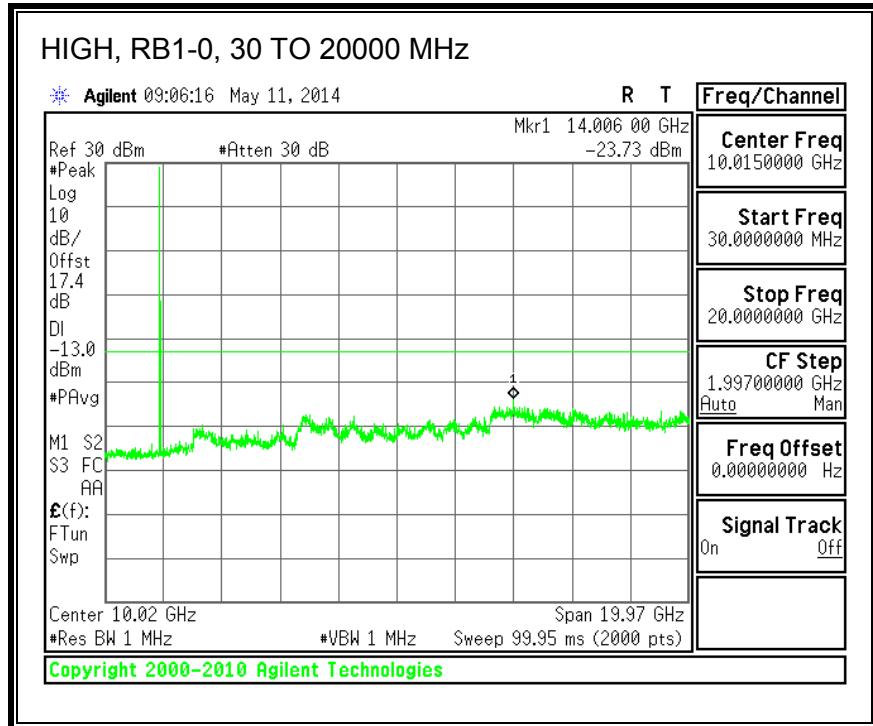
MODES TESTED

- Band 2
- Band 4
- Band 5
- Band 13
- Band 17
- Band 25
- Band 26
- Band 41

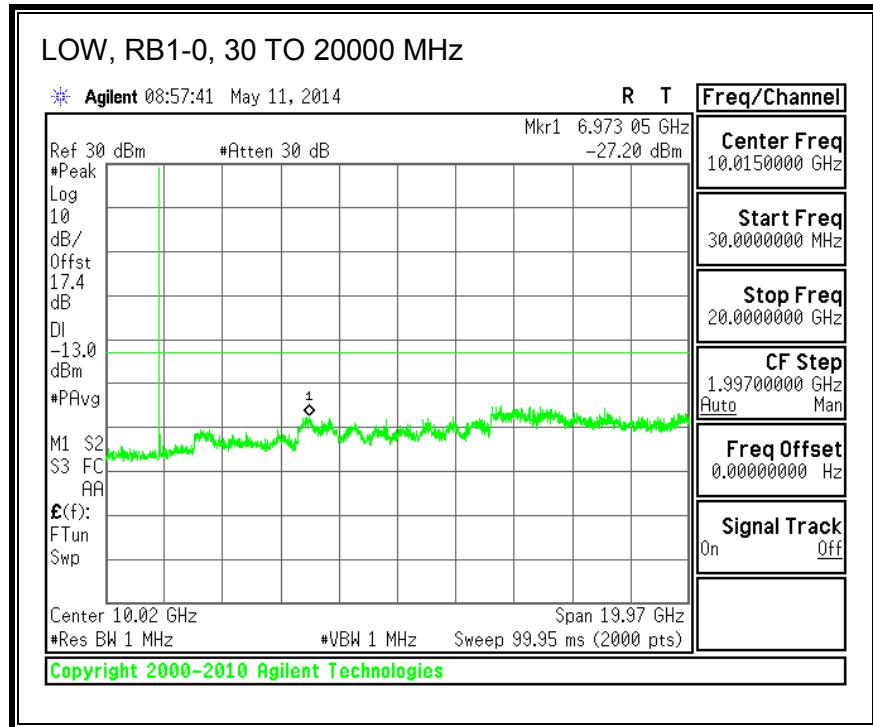
8.2.11. LTE BAND 2

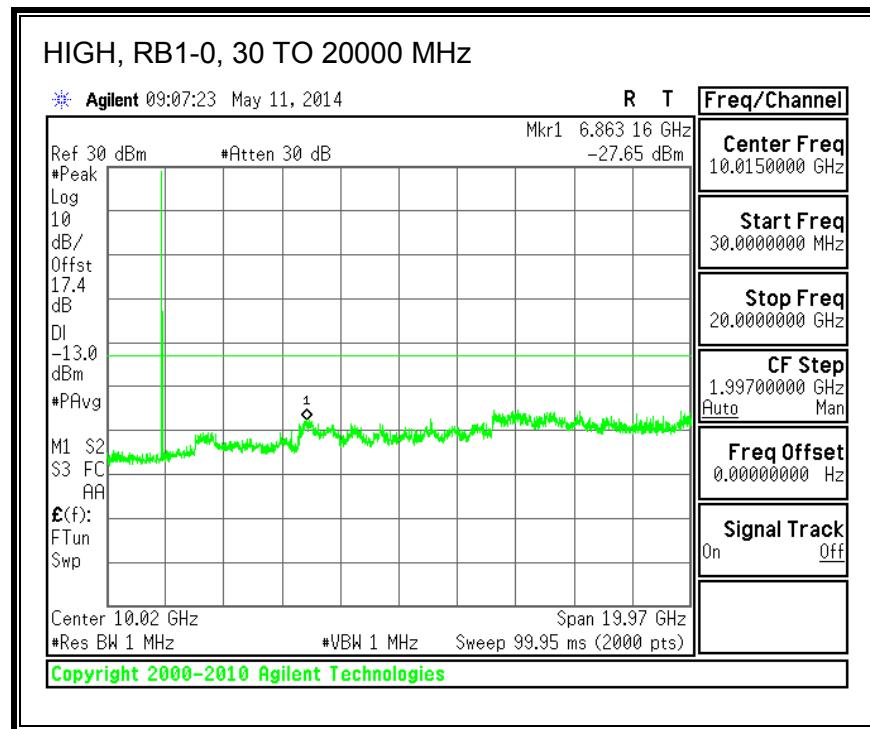
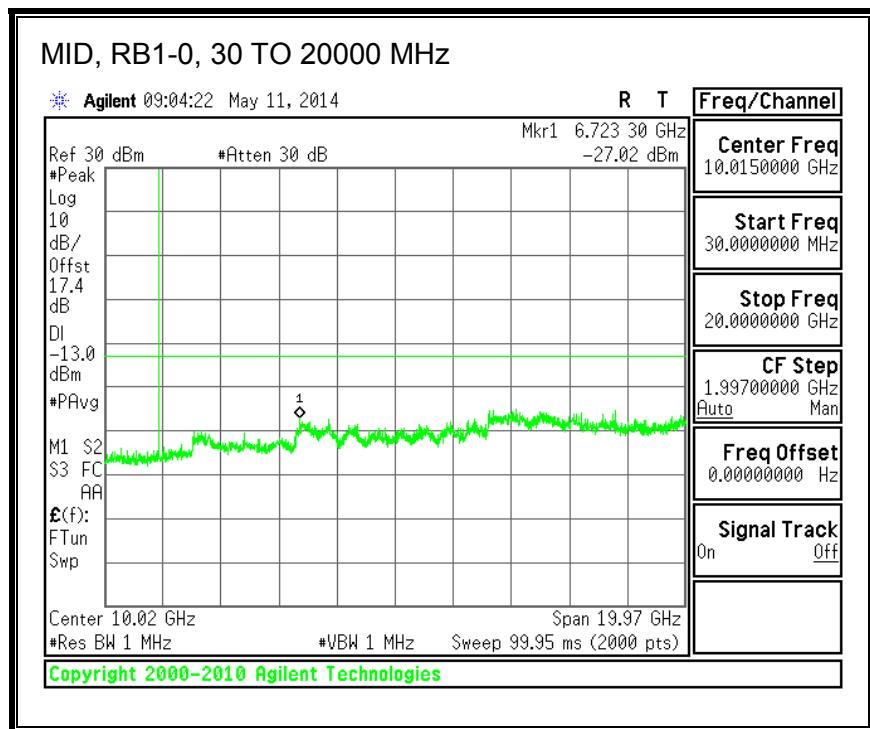
QPSK, (1.4 MHz BAND WIDTH)



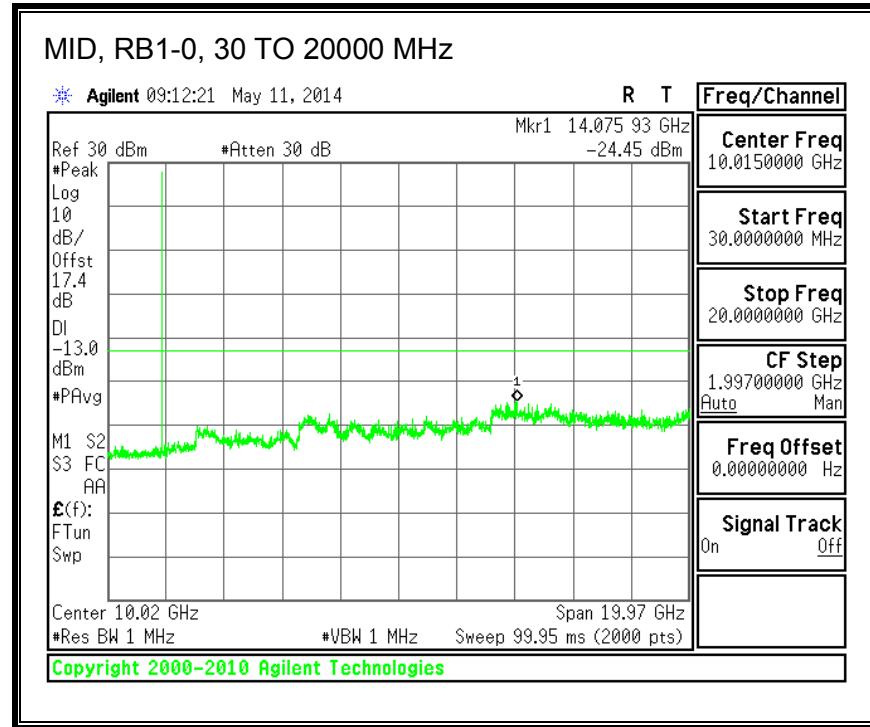
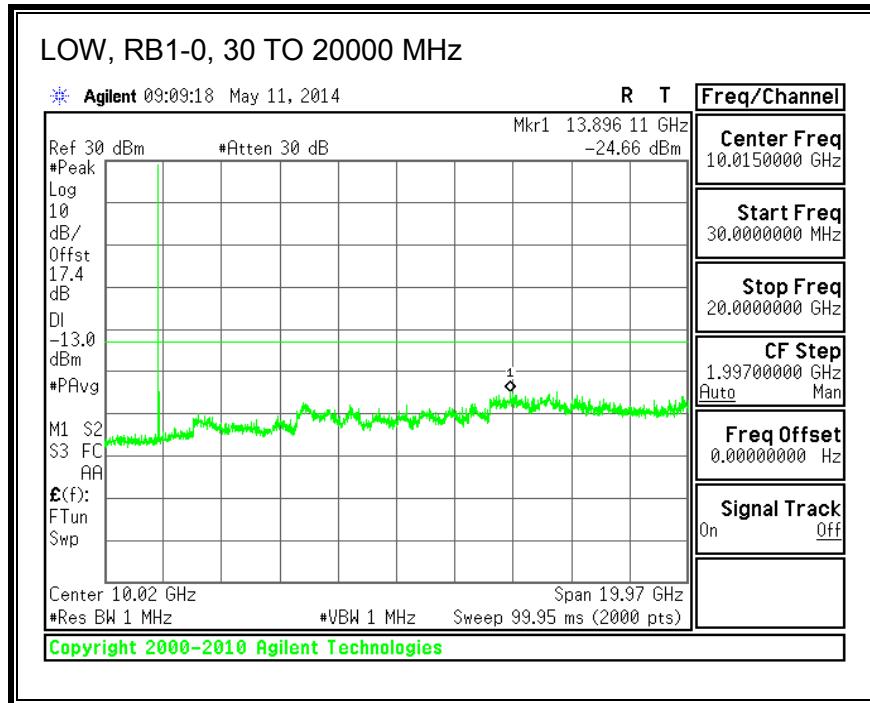


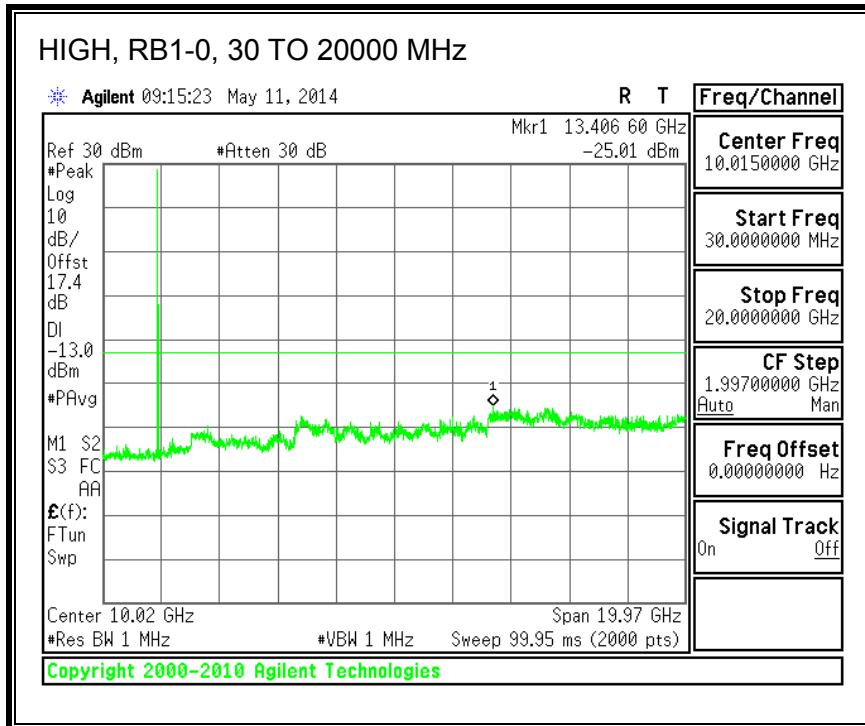
16QAM, (1.4 MHz BAND WIDTH)



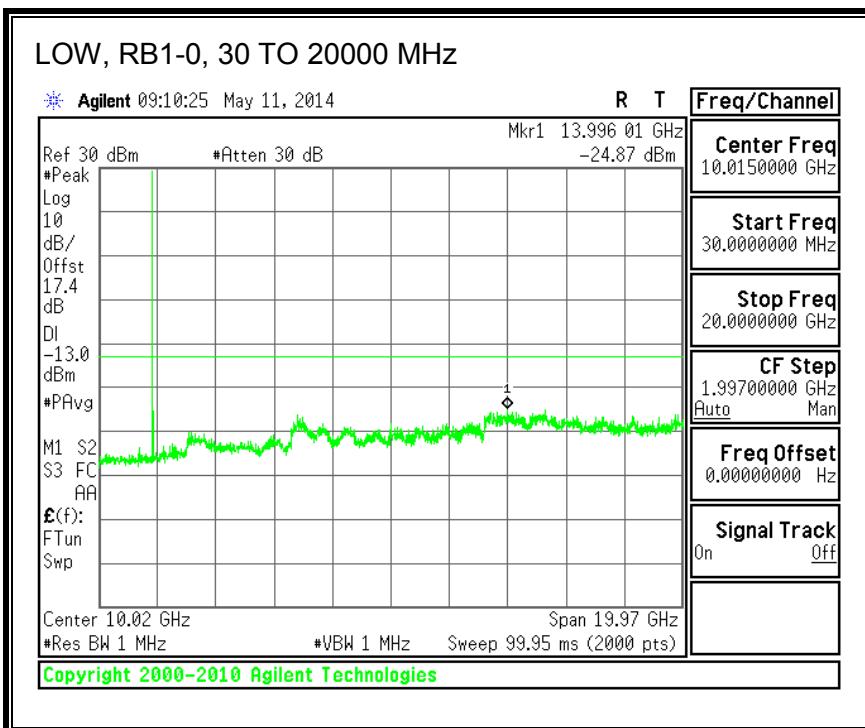


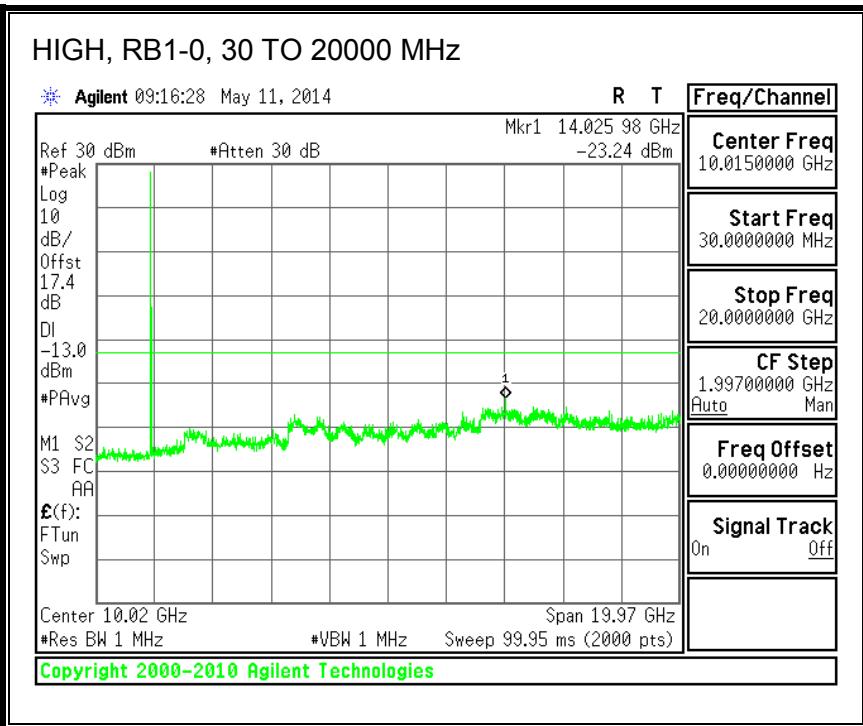
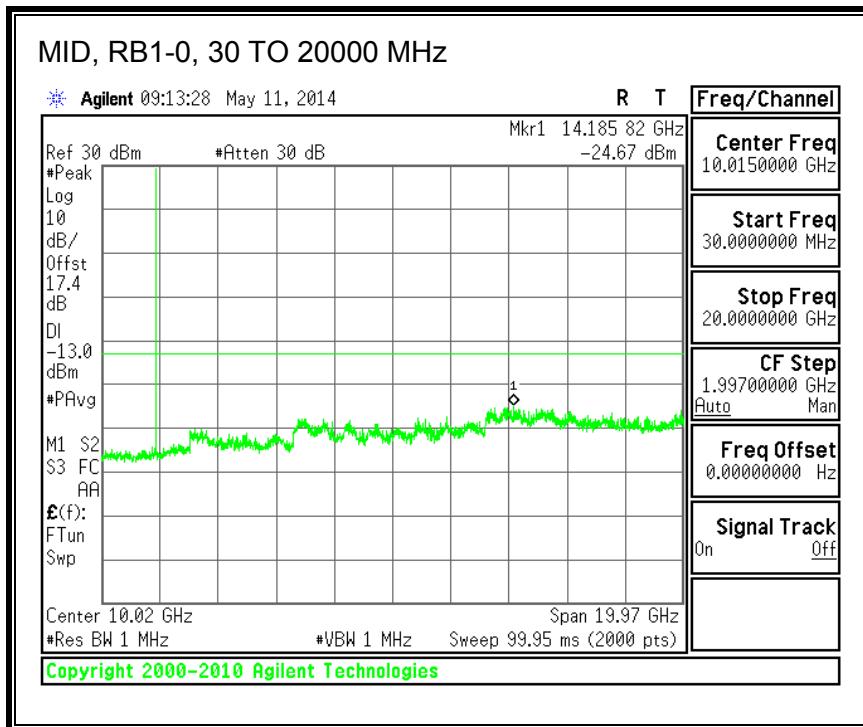
QPSK, (3.0 MHz BAND WIDTH)



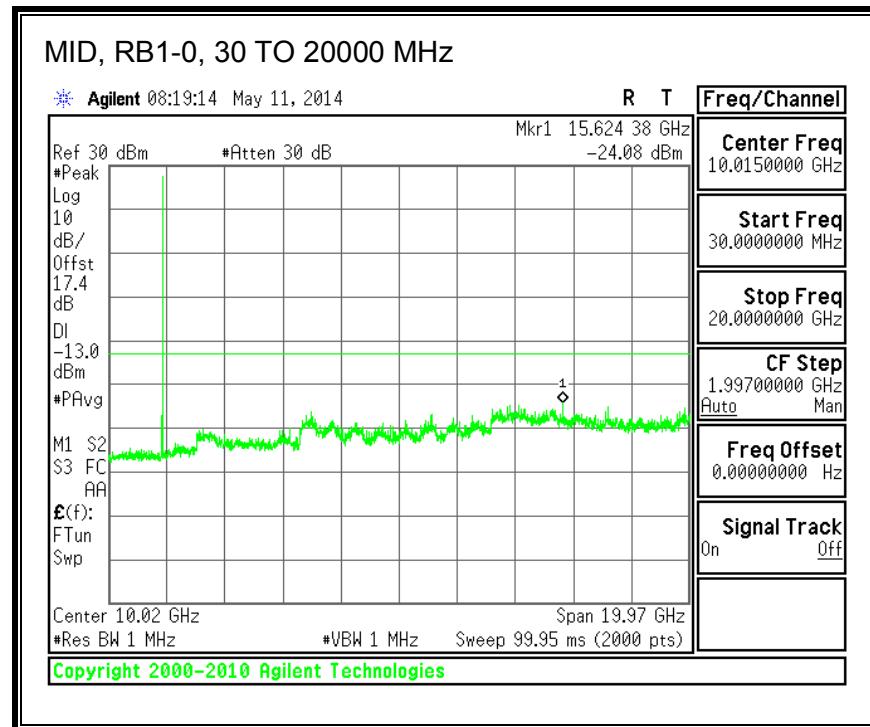
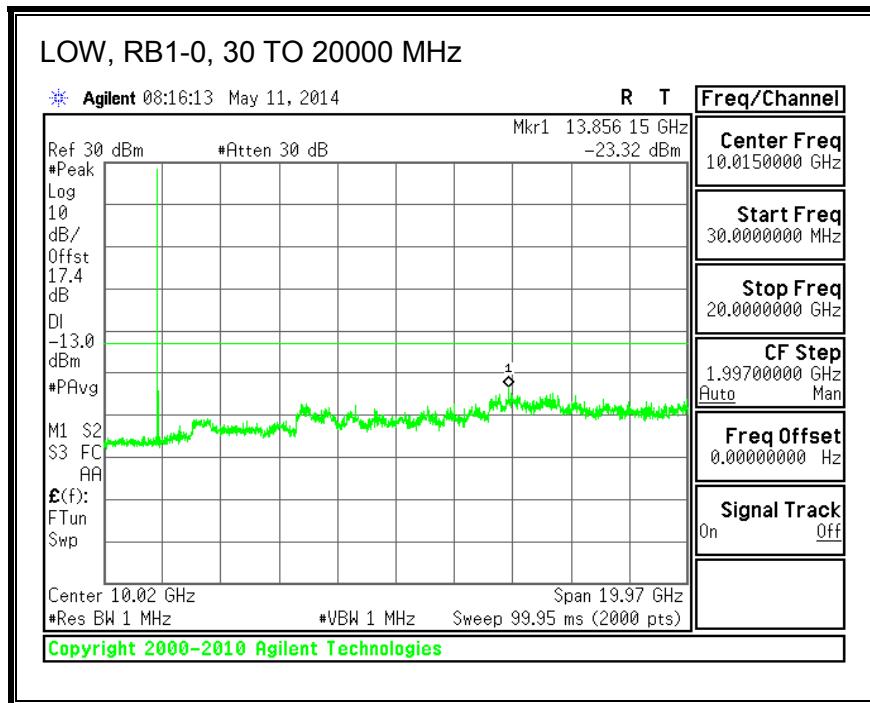


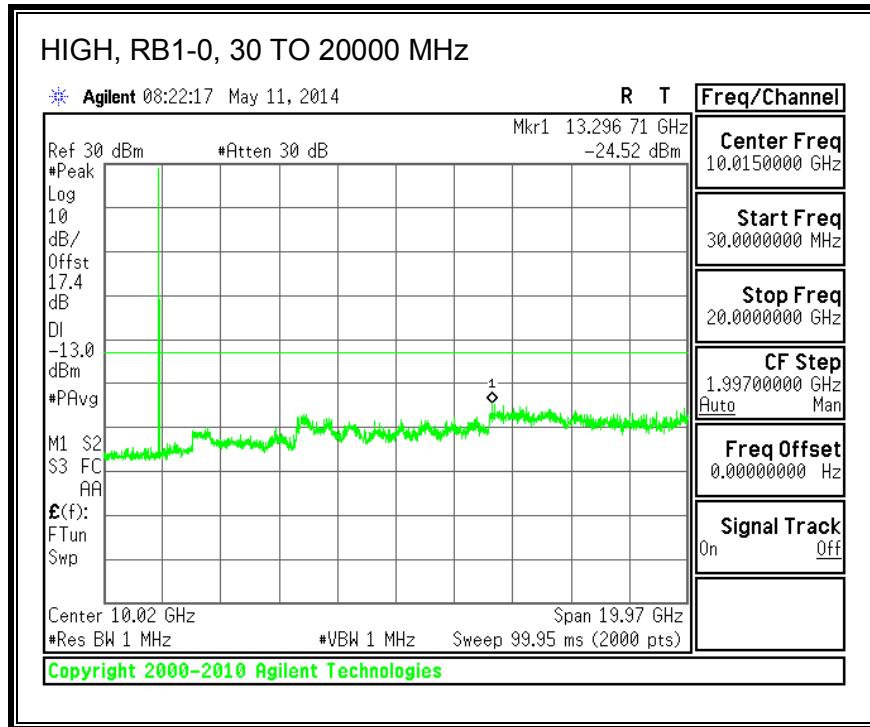
16QAM, (3.0 MHz BAND WIDTH)



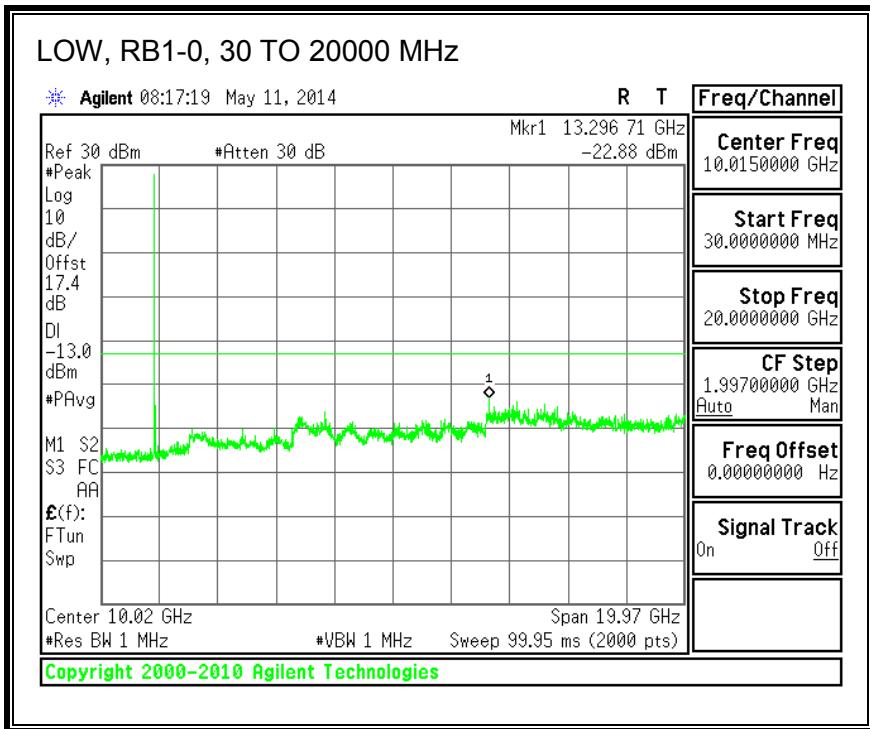


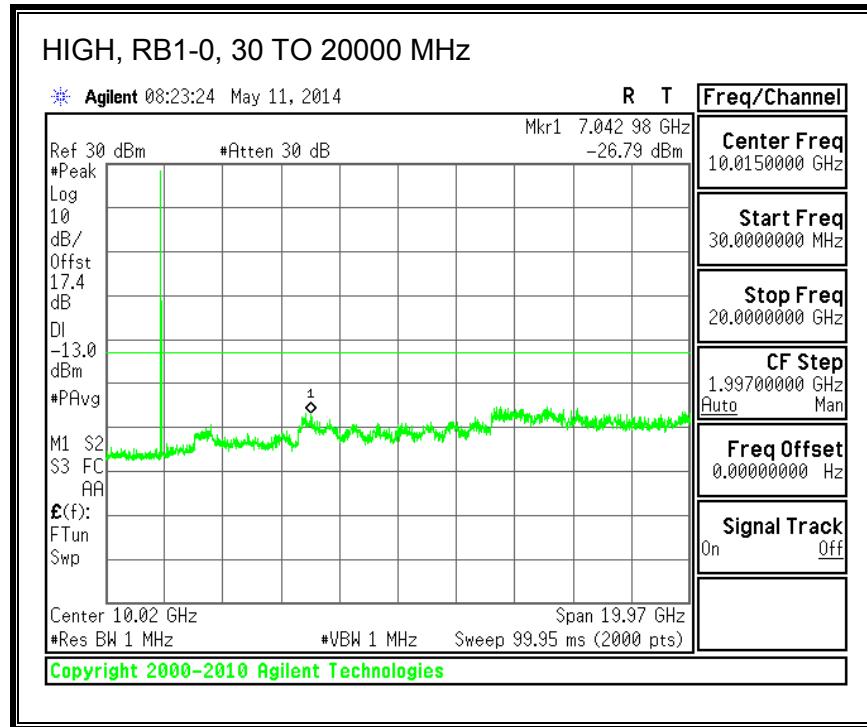
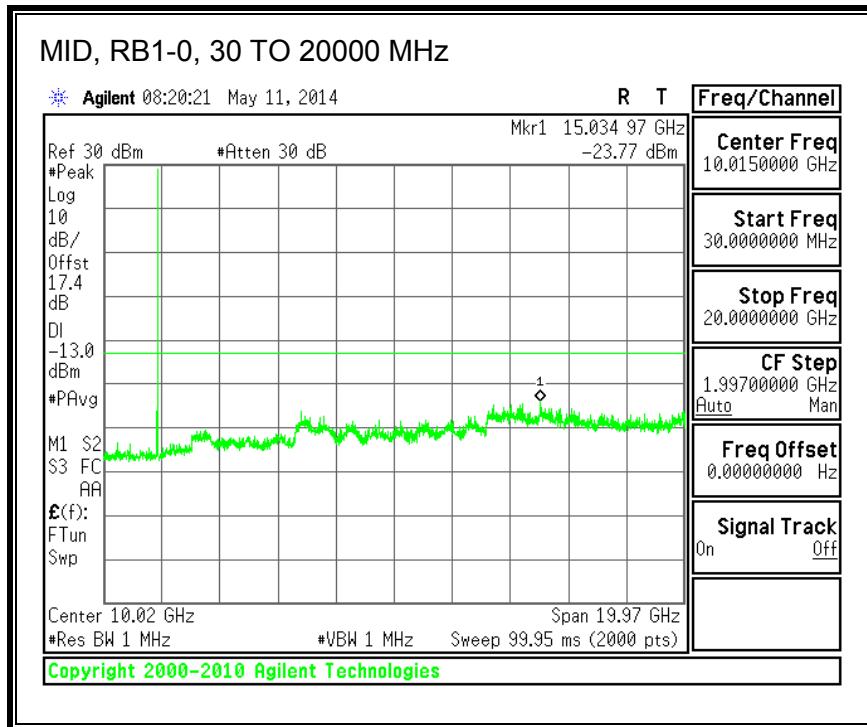
QPSK, (5.0 MHz BAND WIDTH)



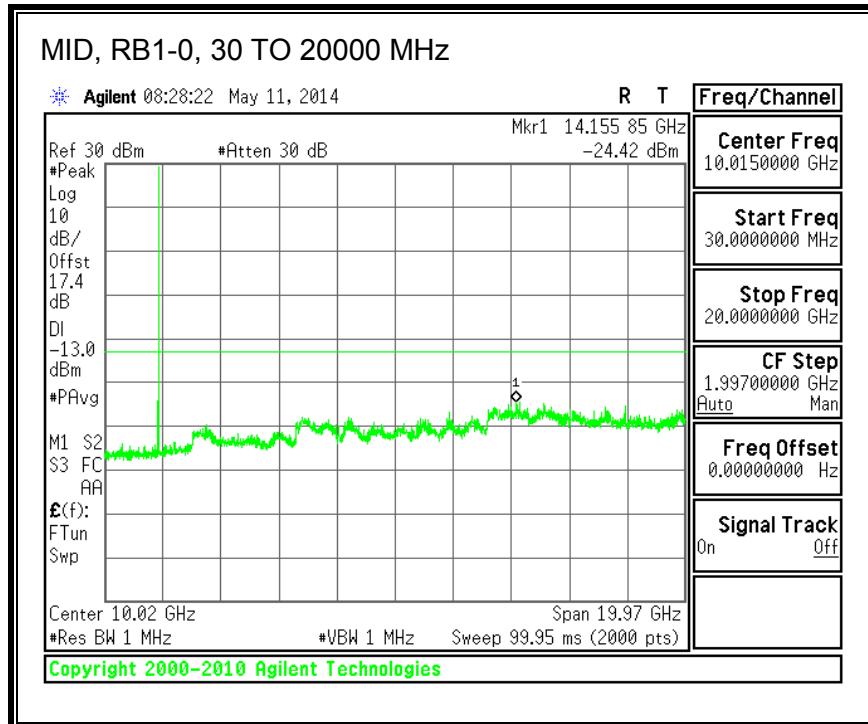
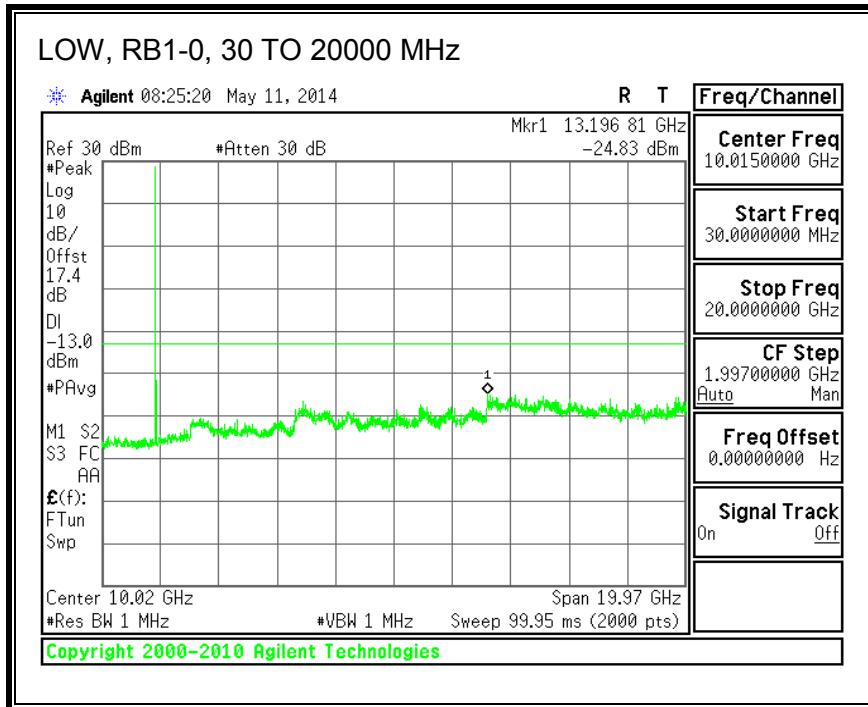


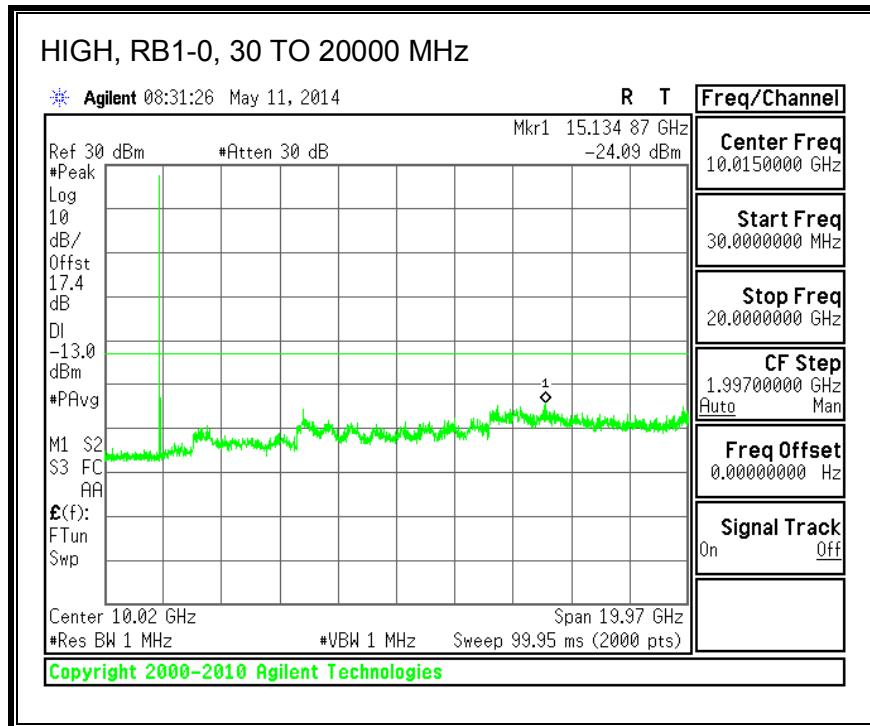
16QAM, (5.0 MHz BAND WIDTH)



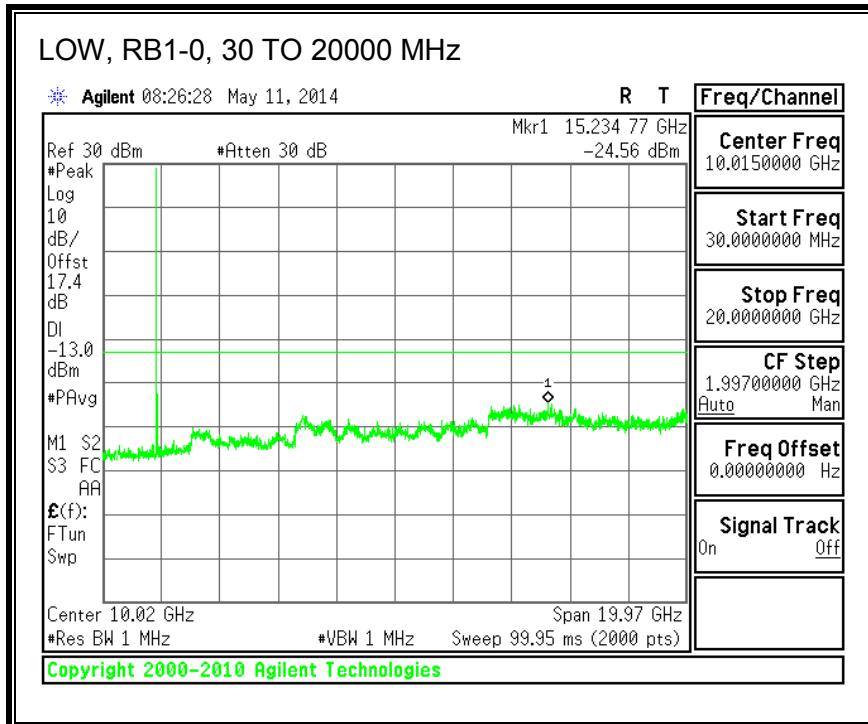


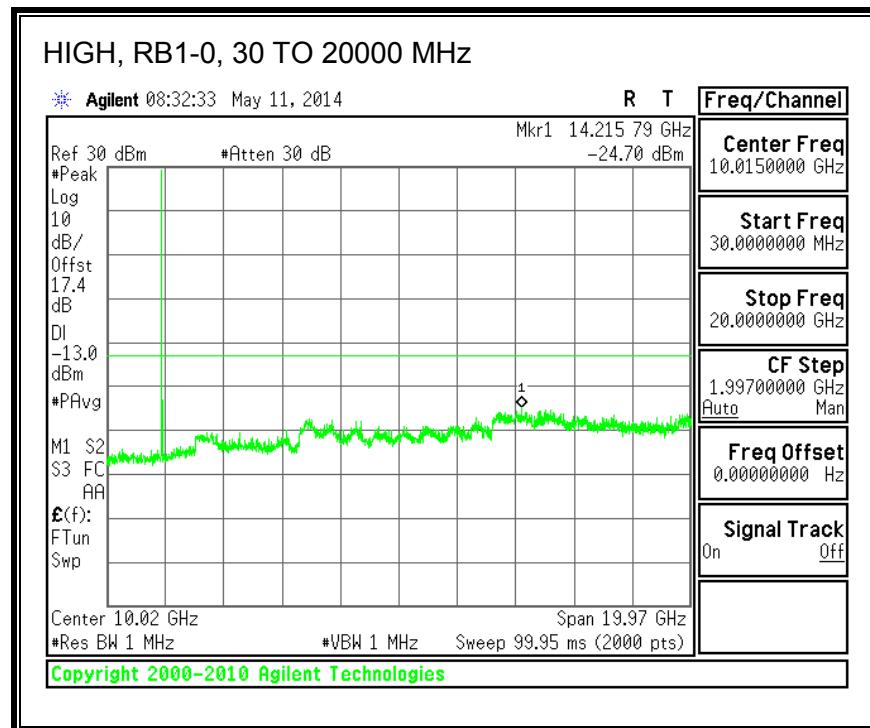
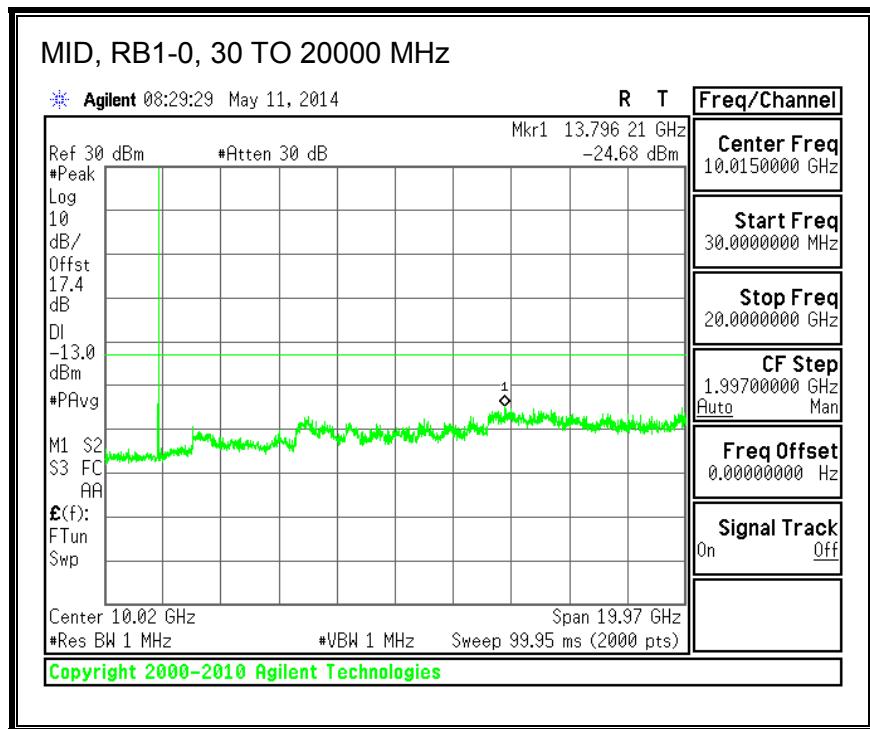
QPSK, (10.0 MHz BAND WIDTH)



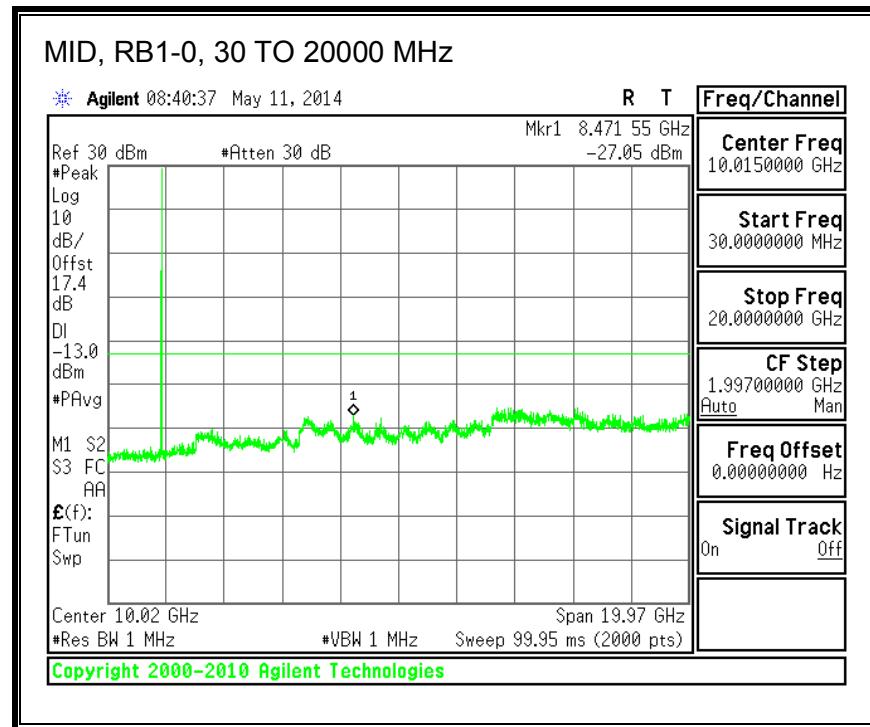
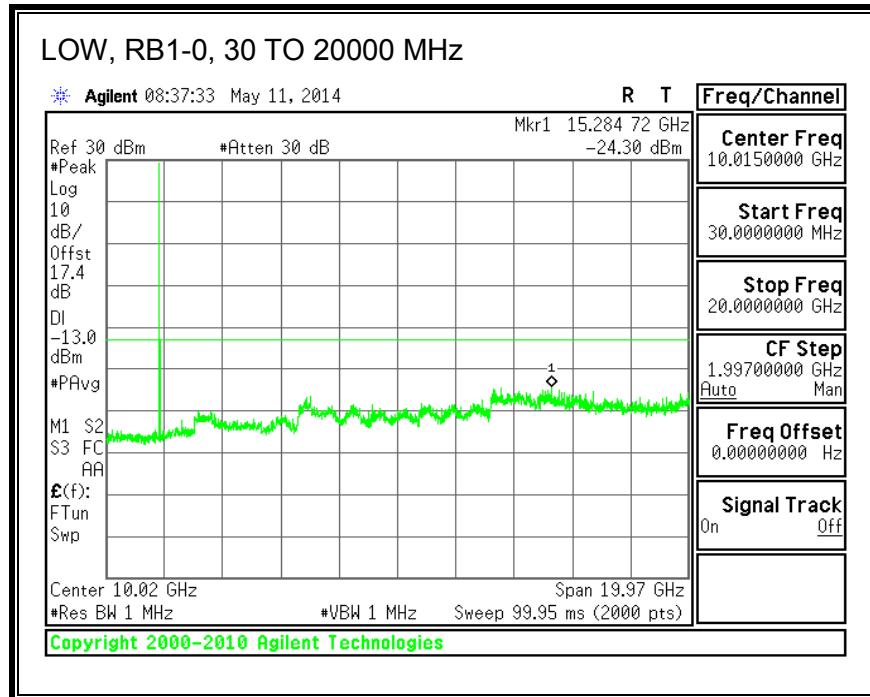


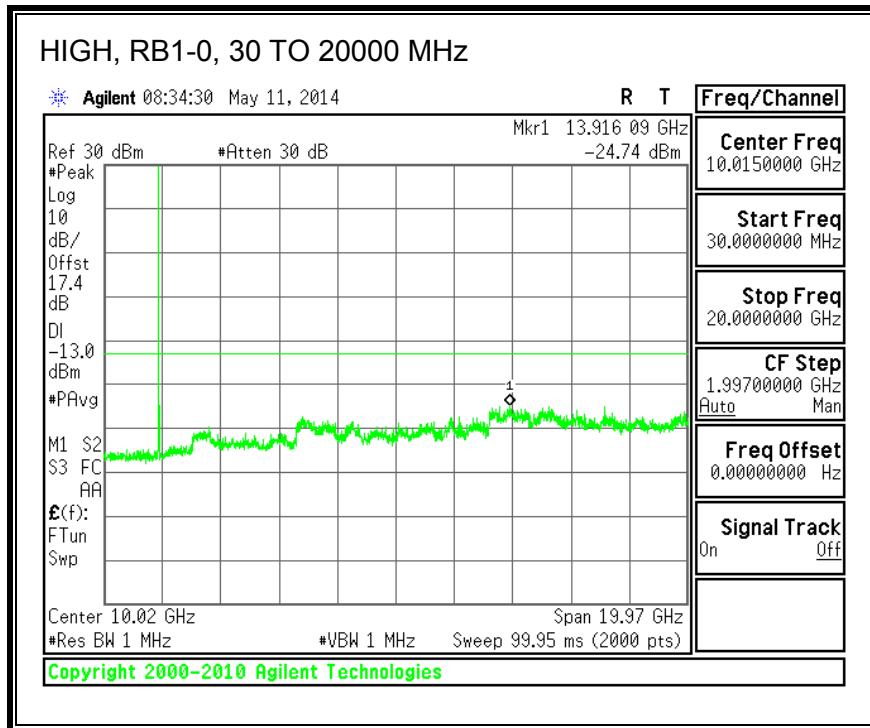
16QAM, (10.0 MHz BAND WIDTH)



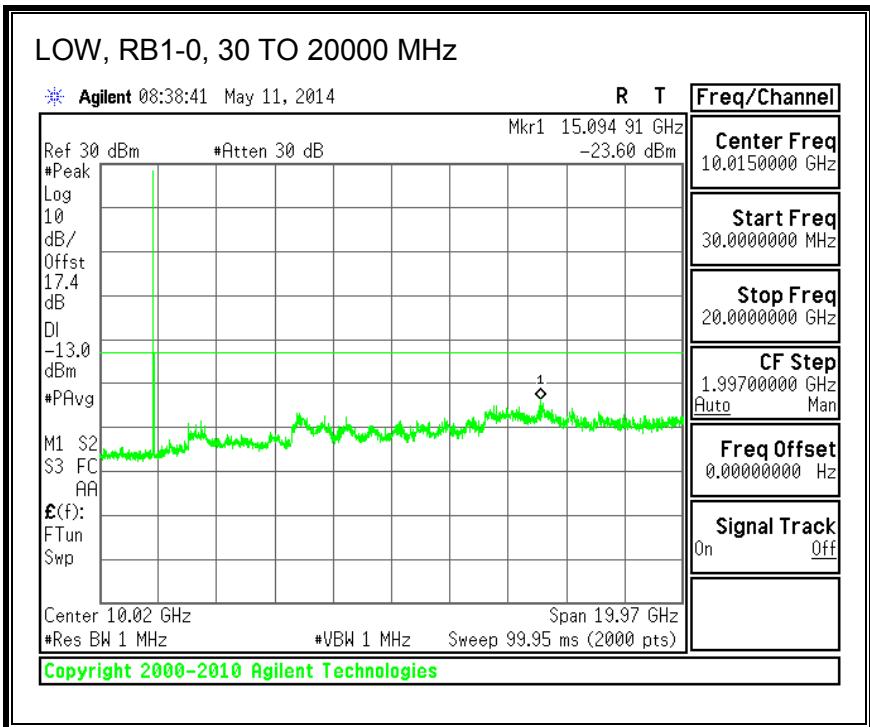


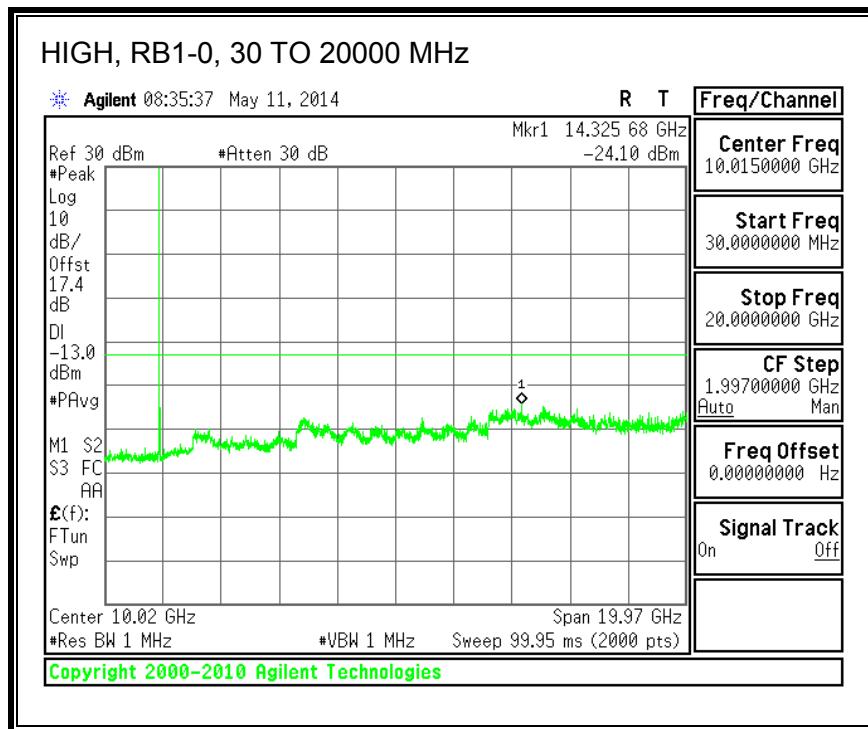
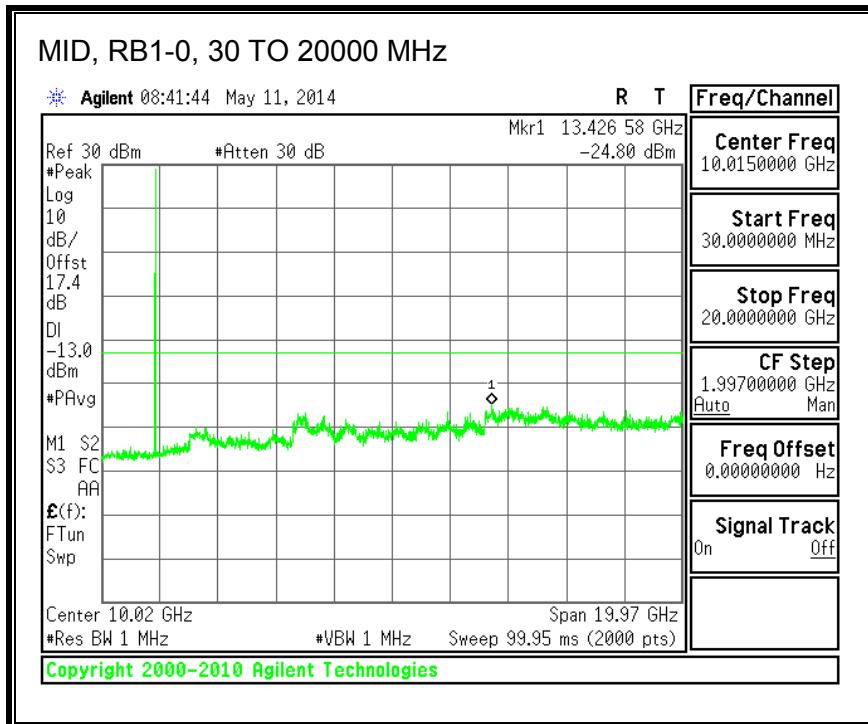
QPSK, (15.0 MHz BAND WIDTH)



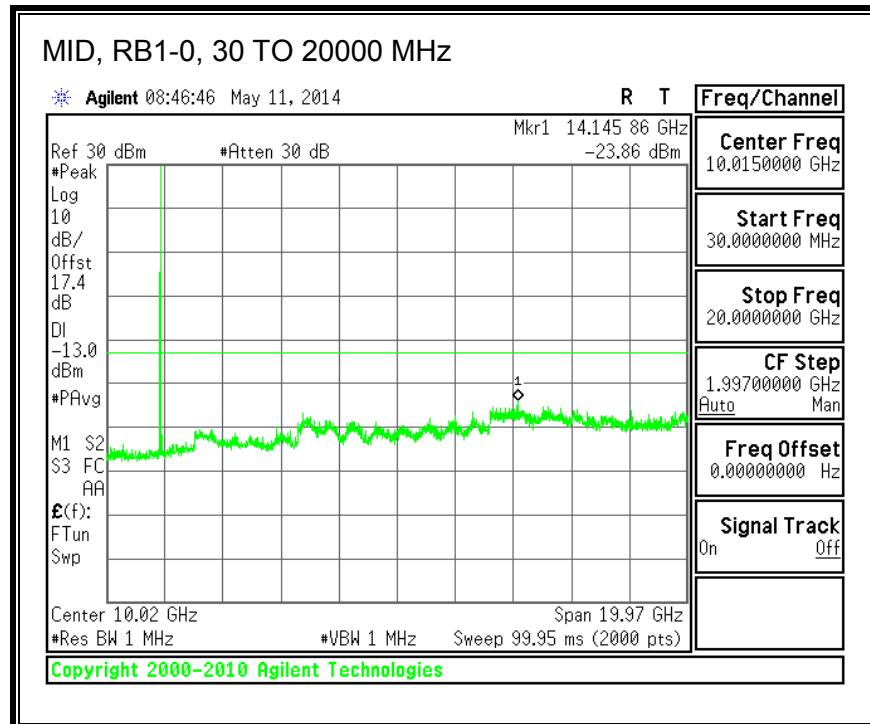
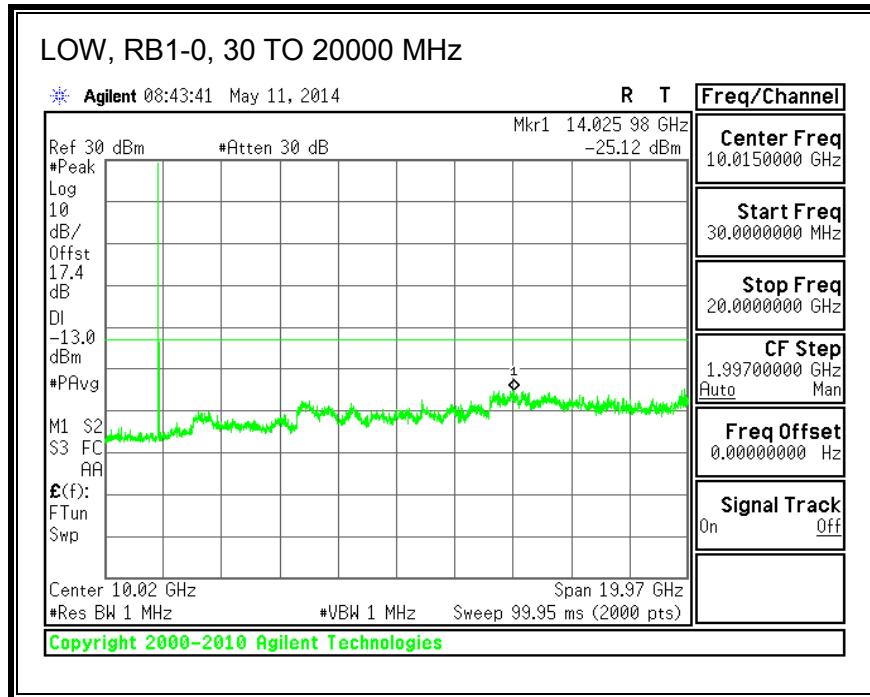


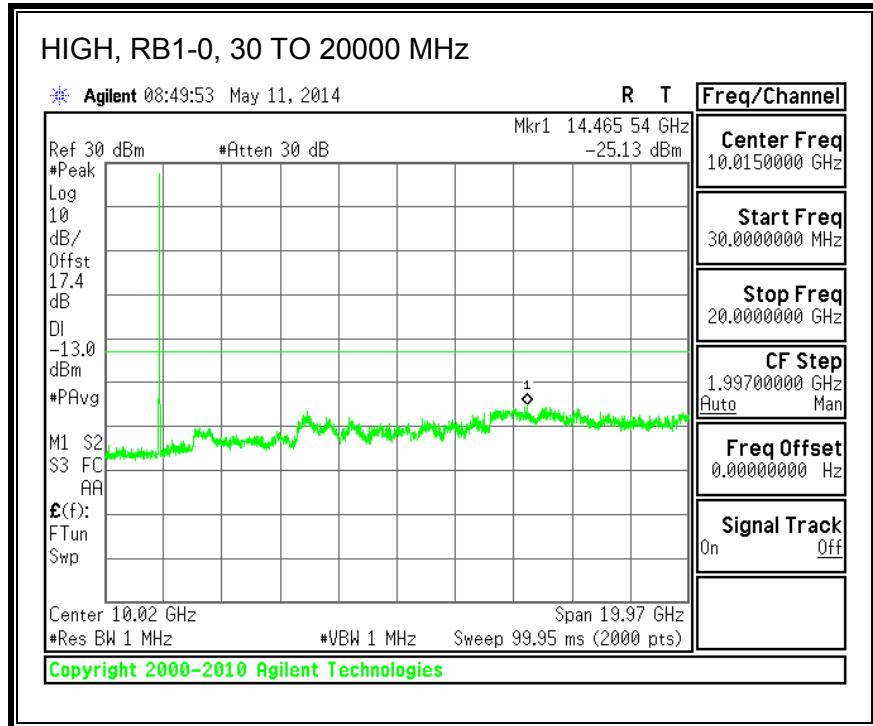
16QAM, (15.0 MHz BAND WIDTH)



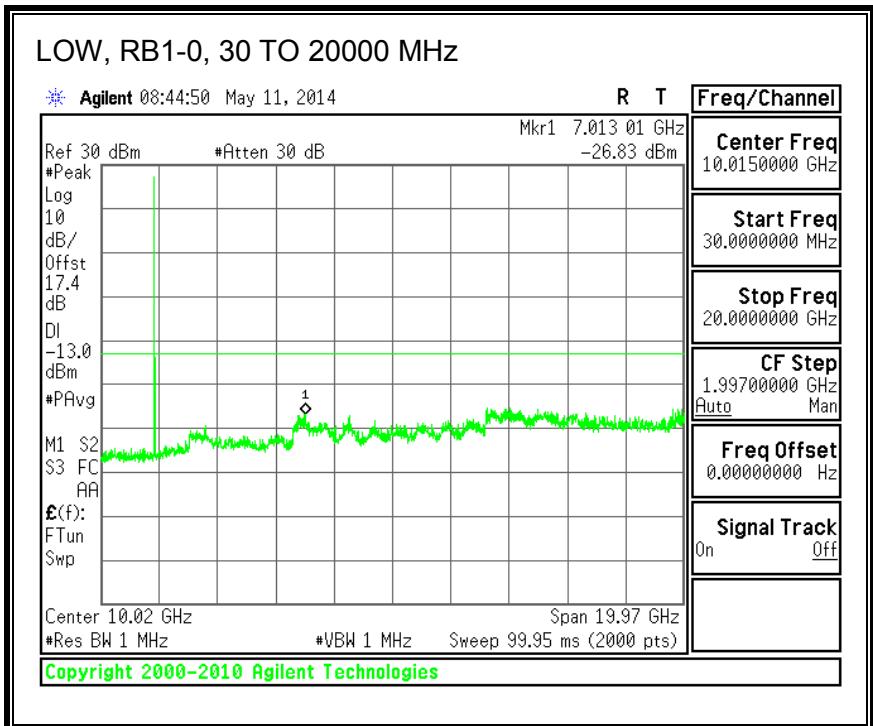


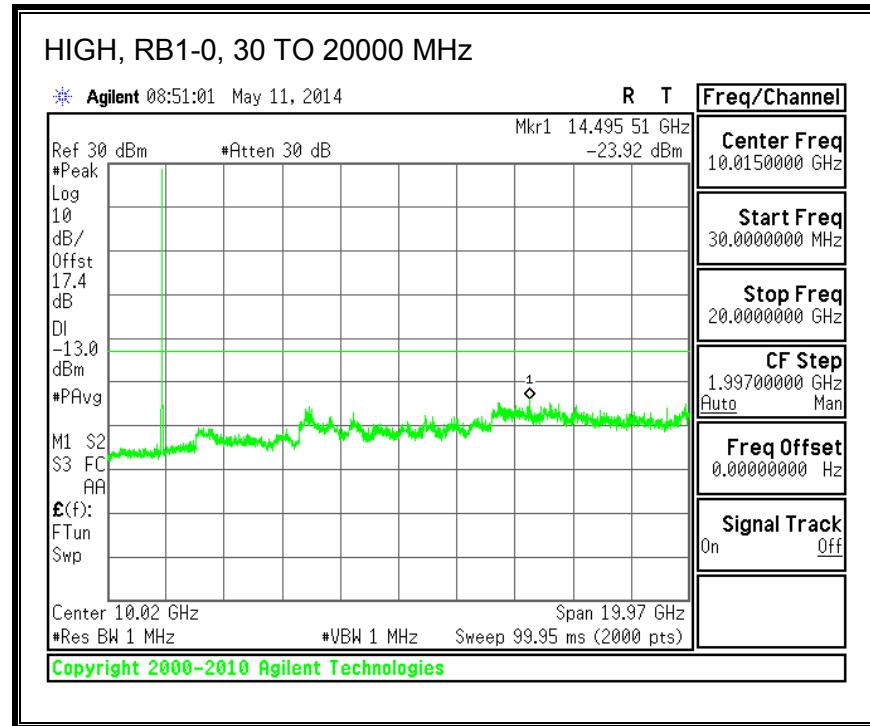
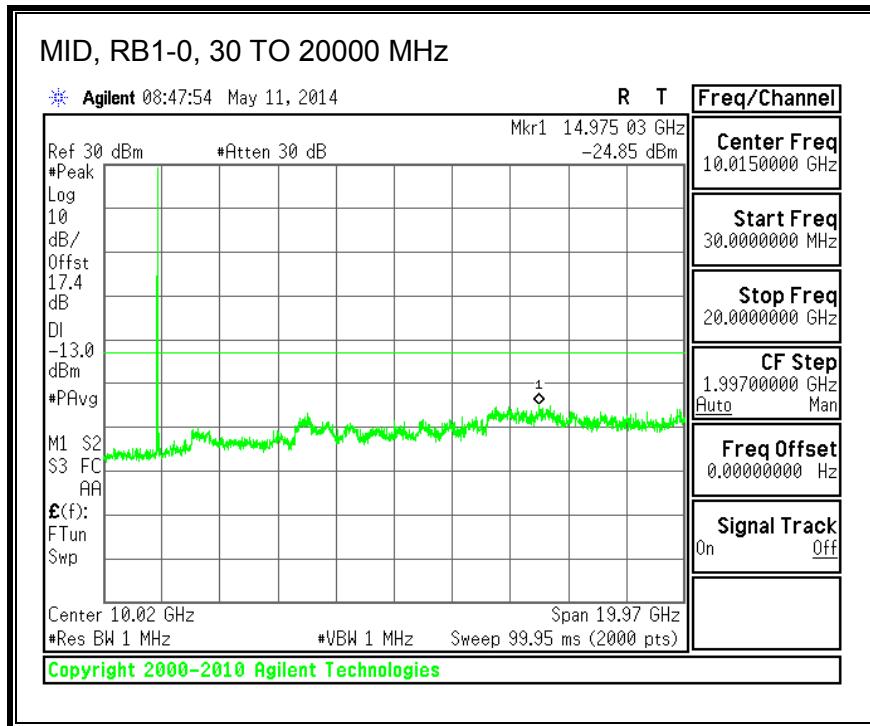
QPSK, (20.0 MHz BAND WIDTH)





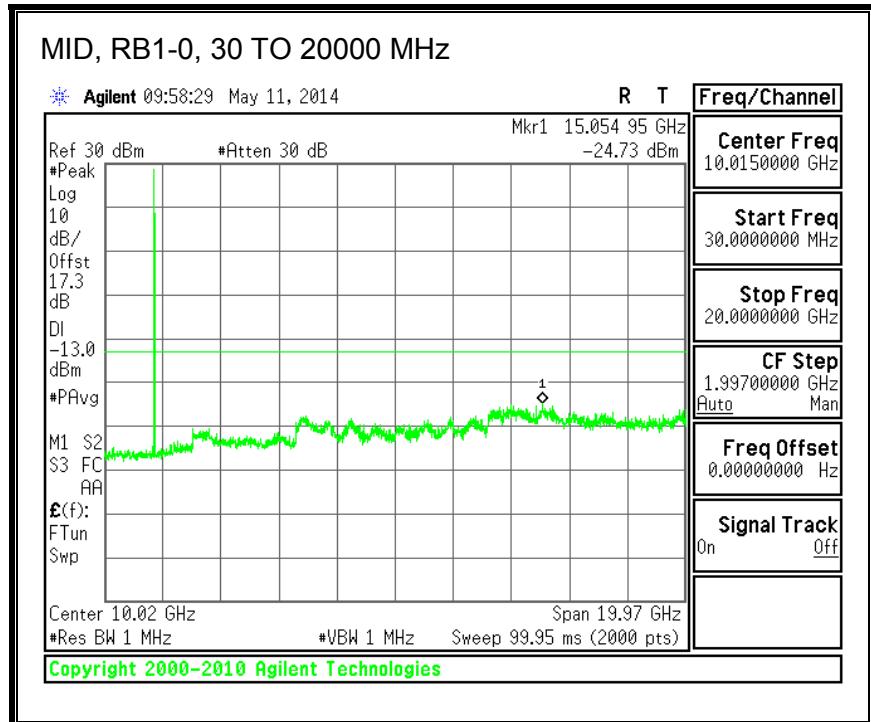
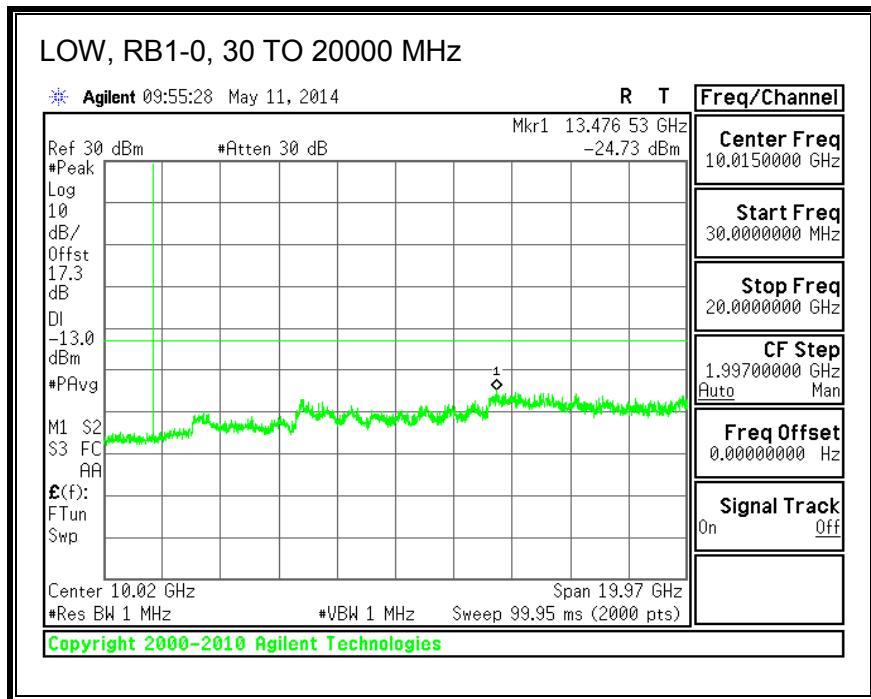
16QAM, (20.0 MHz BAND WIDTH)

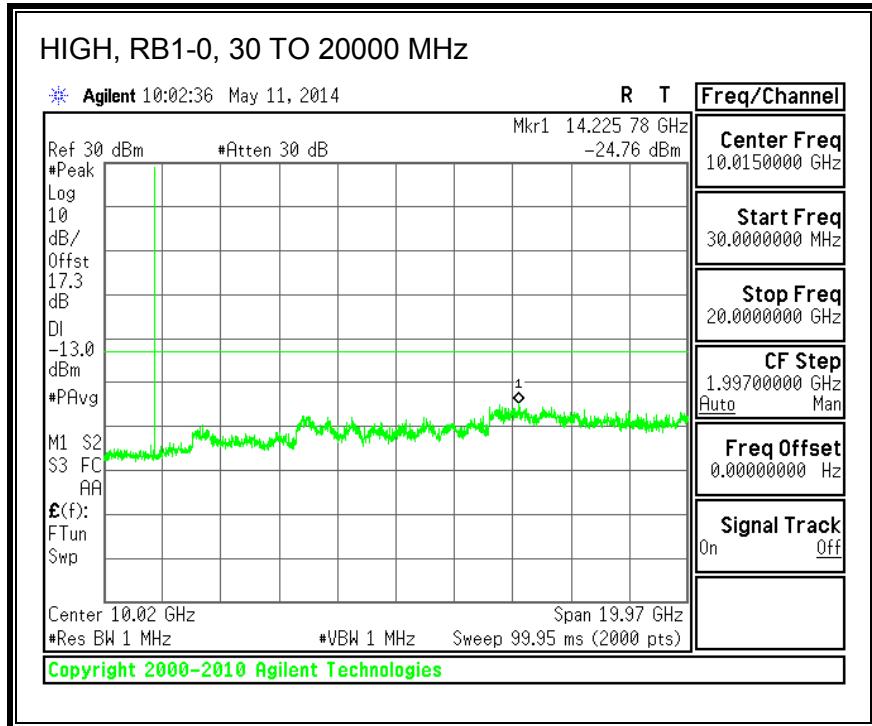




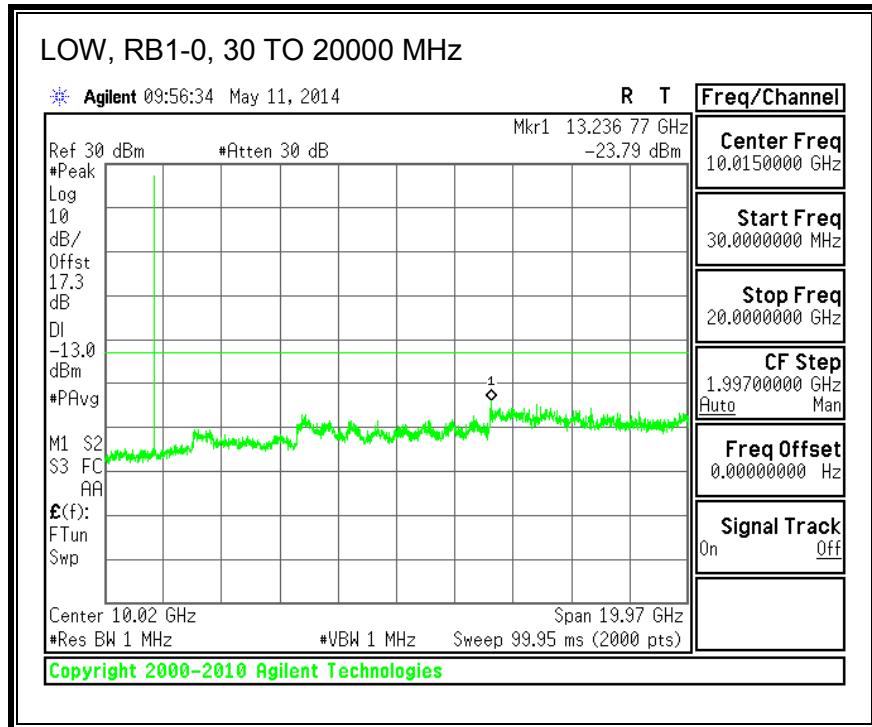
8.2.12. LTE BAND 4

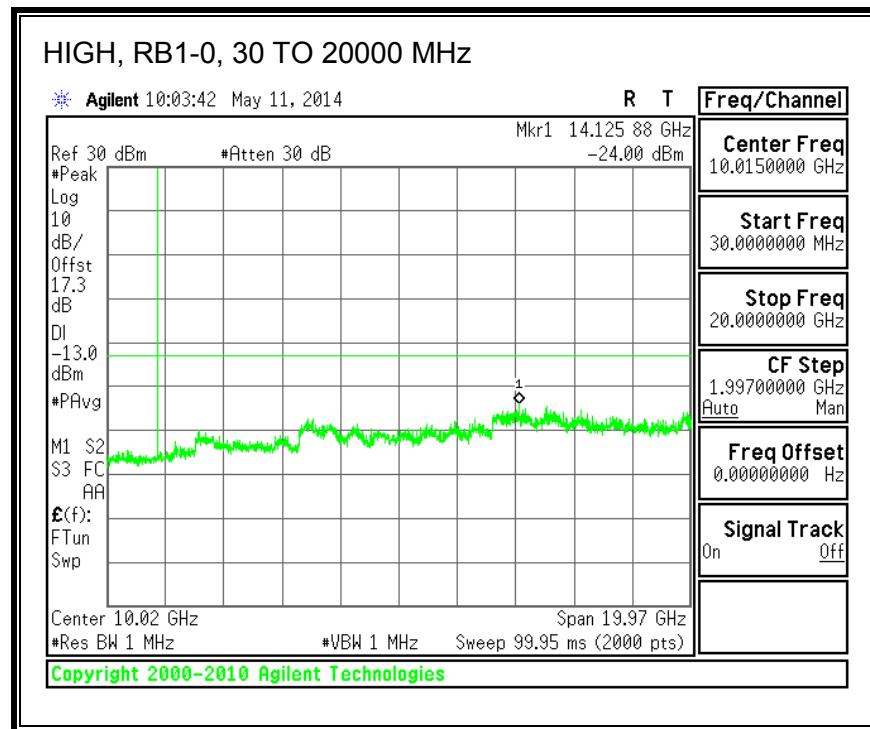
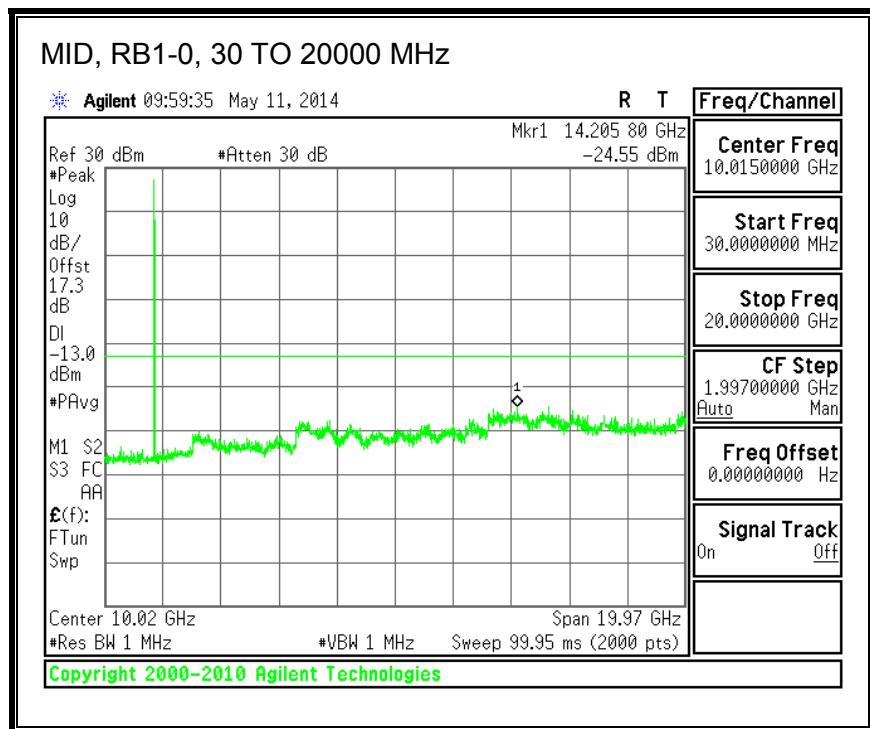
QPSK, (1.4 MHz BAND WIDTH)



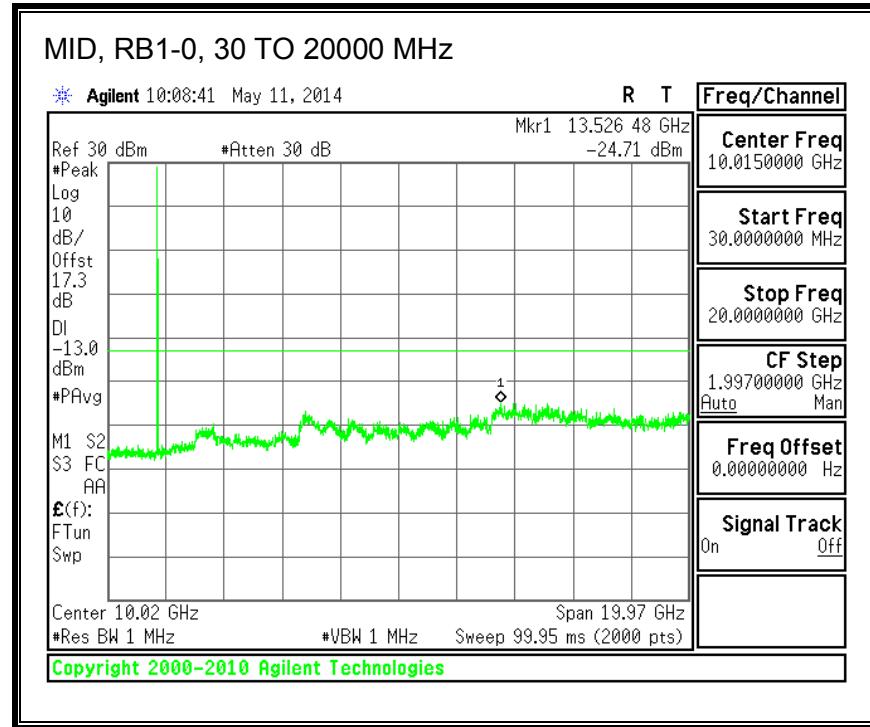
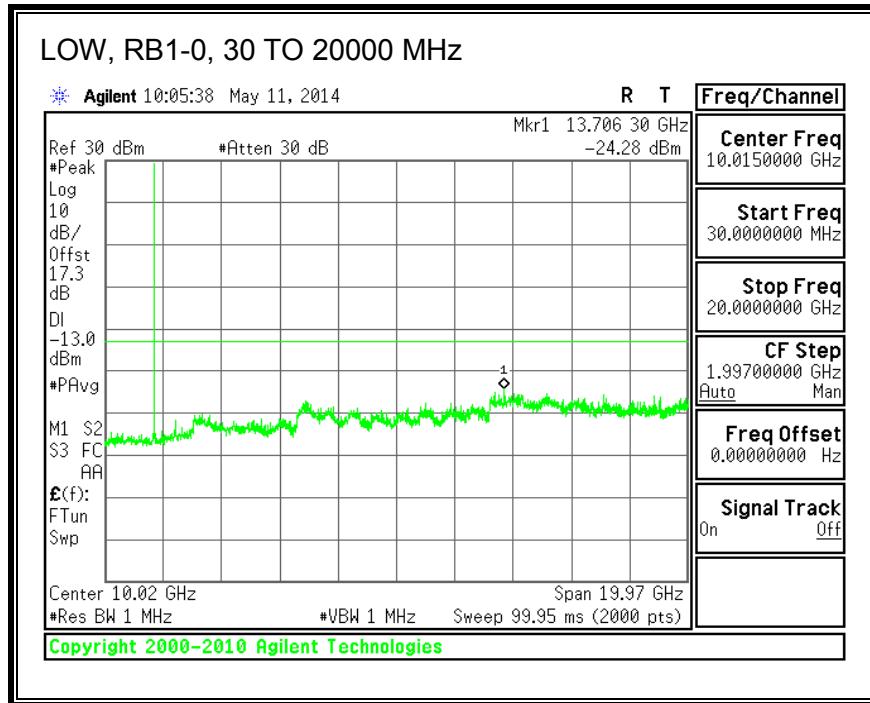


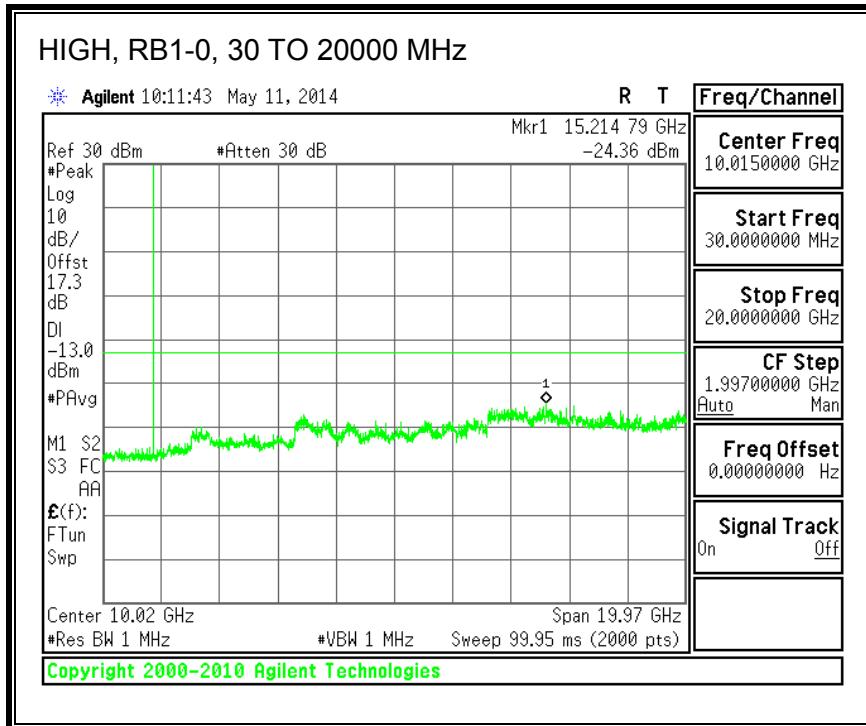
16QAM, (1.4 MHz BAND WIDTH)



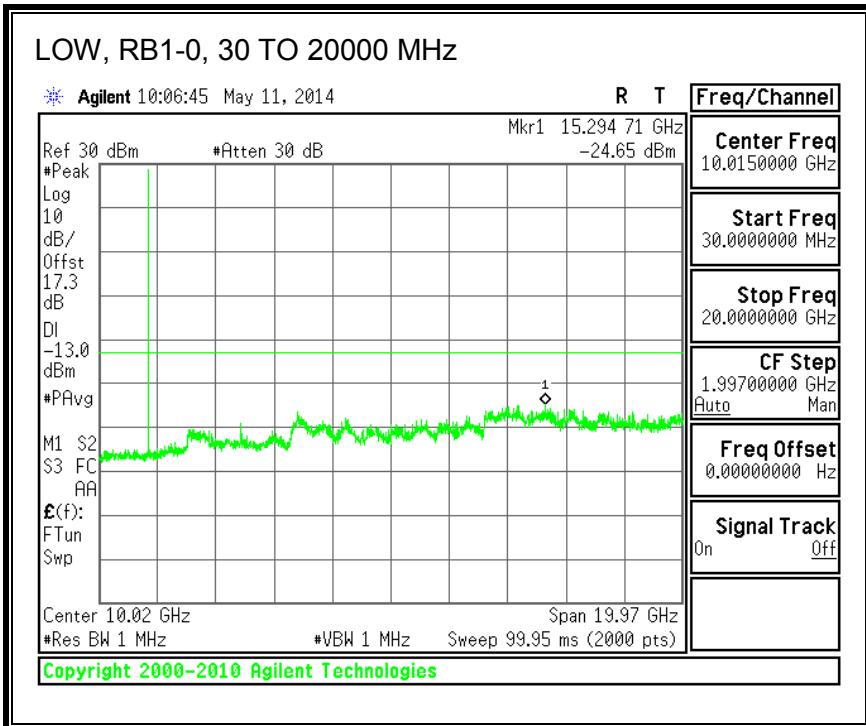


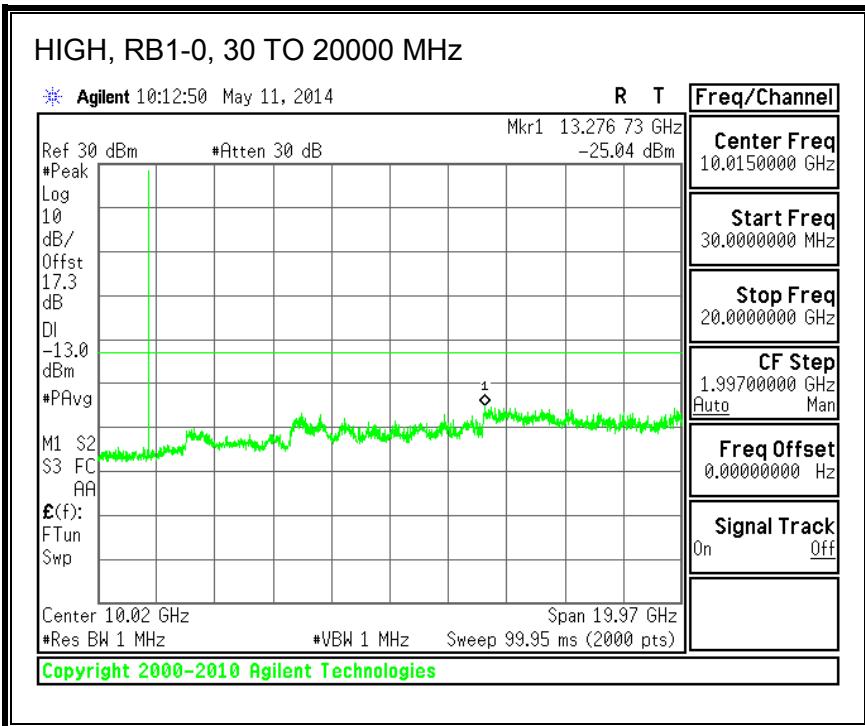
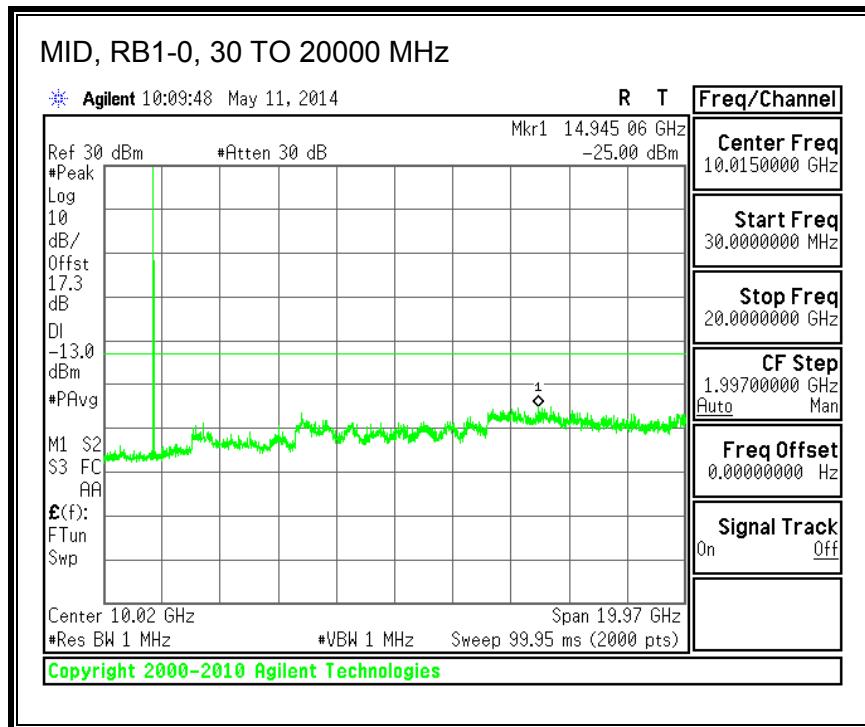
QPSK, (3.0 MHz BAND WIDTH)



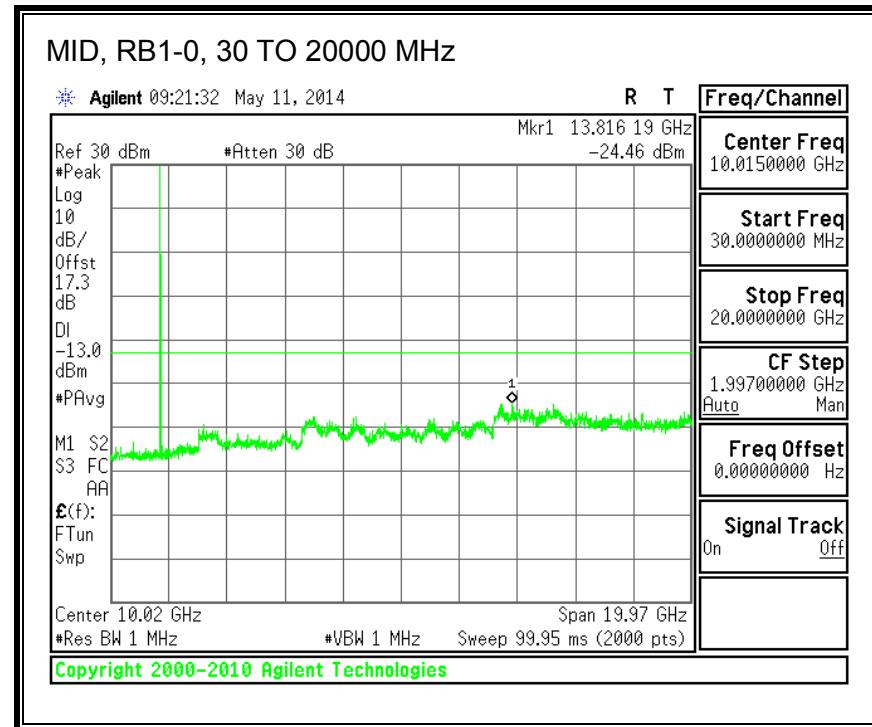
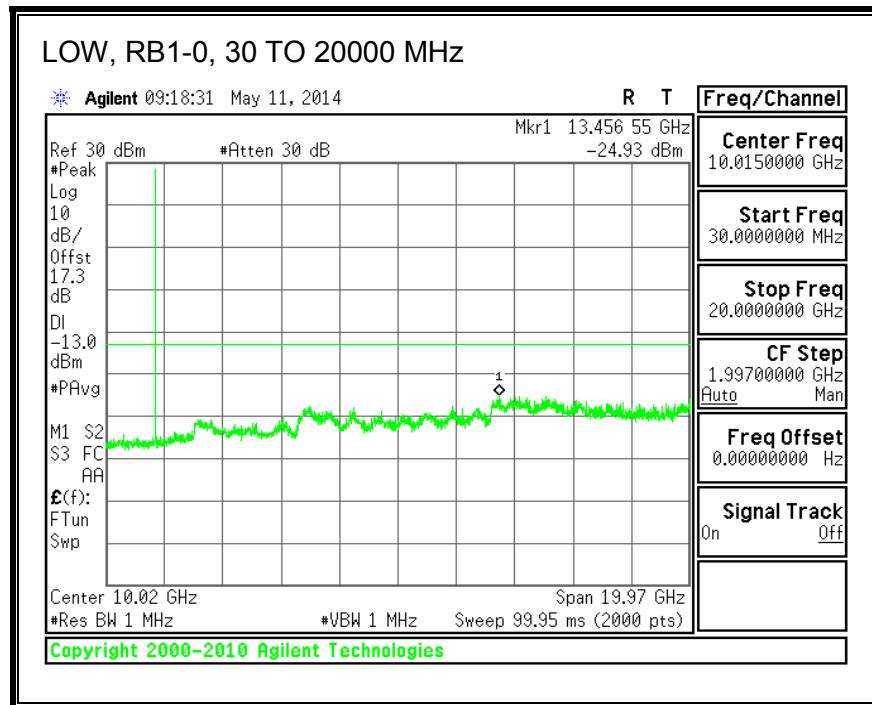


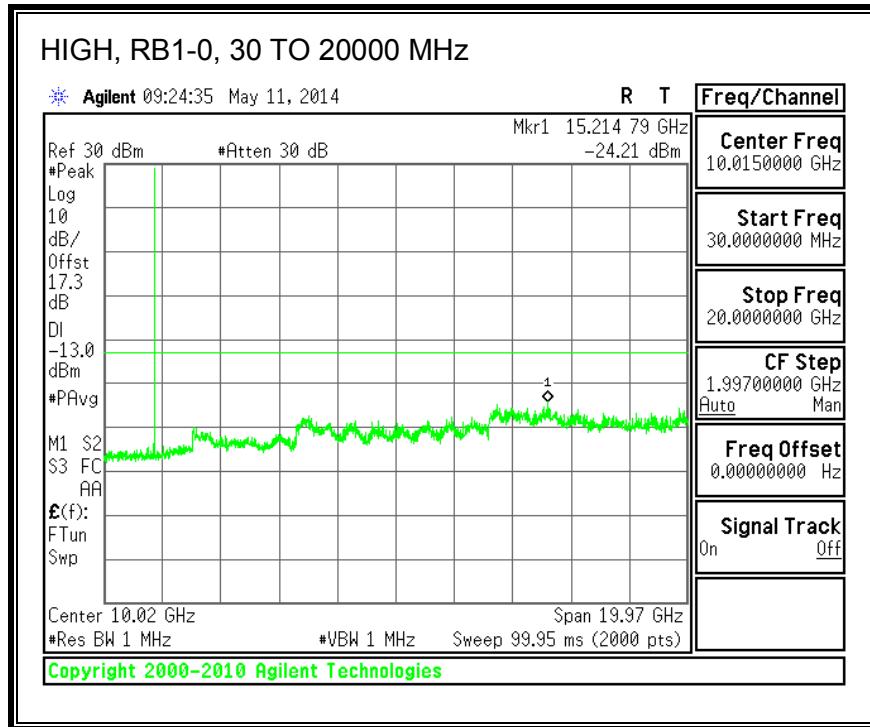
16QAM, (3.0 MHz BAND WIDTH)



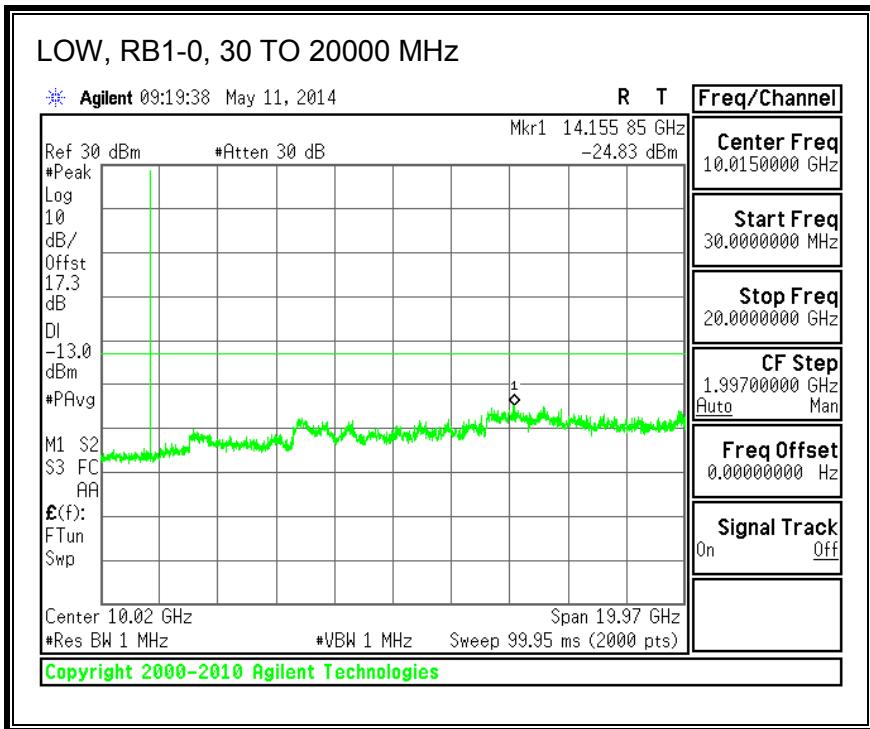


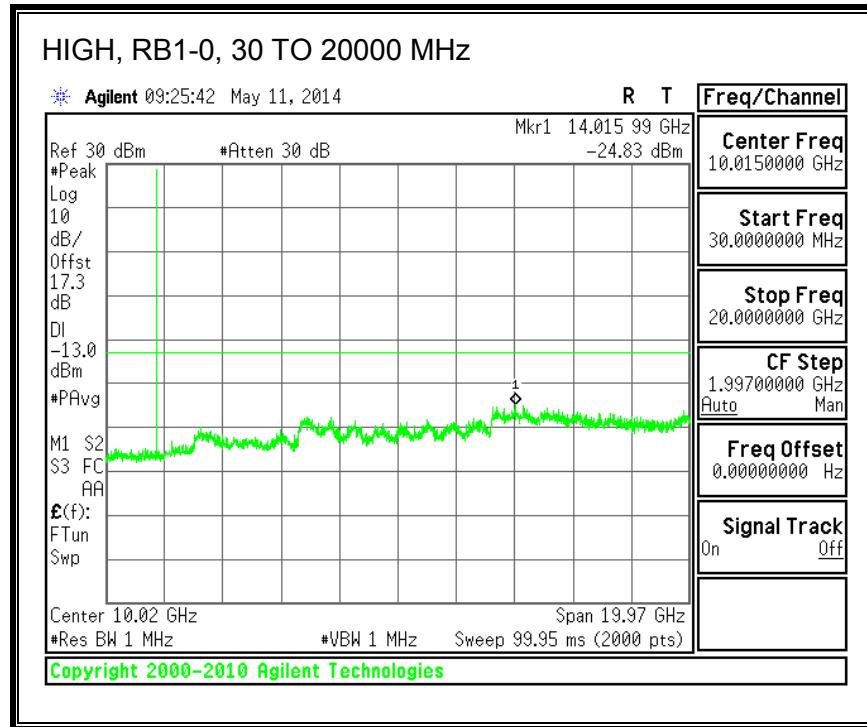
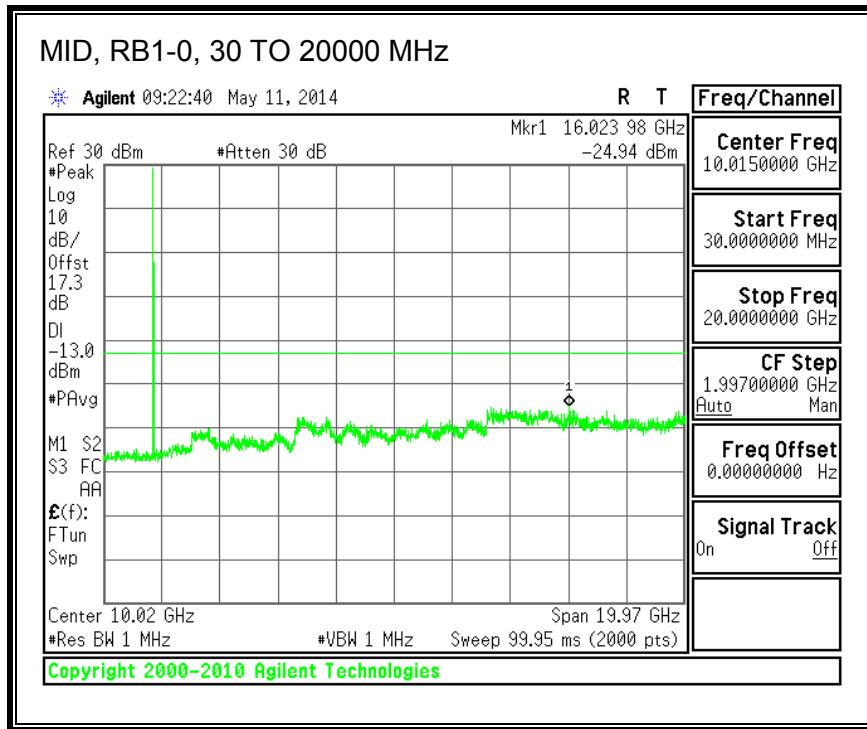
QPSK, (5.0 MHz BAND WIDTH)



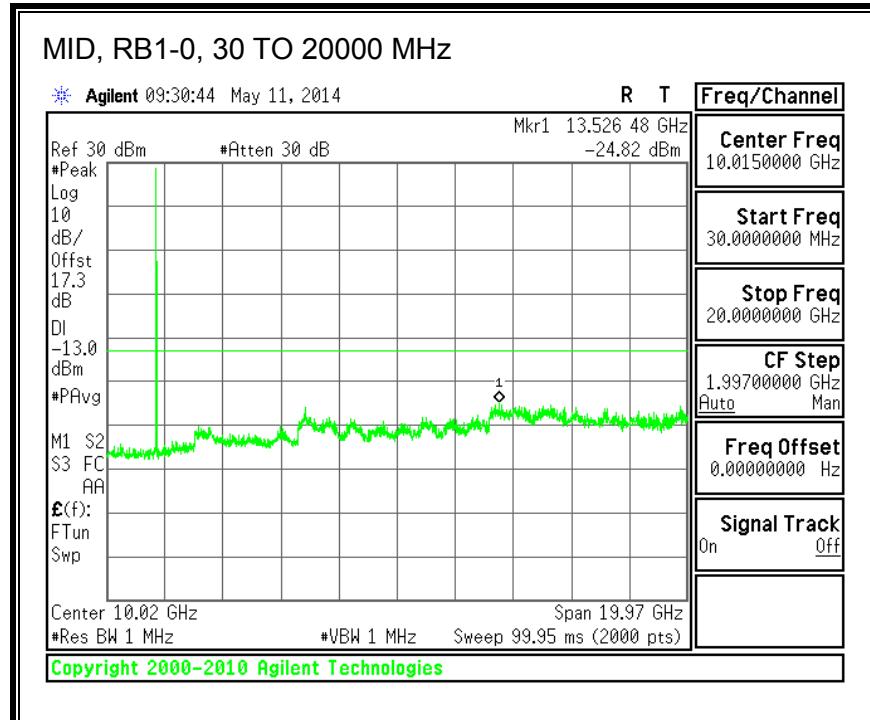
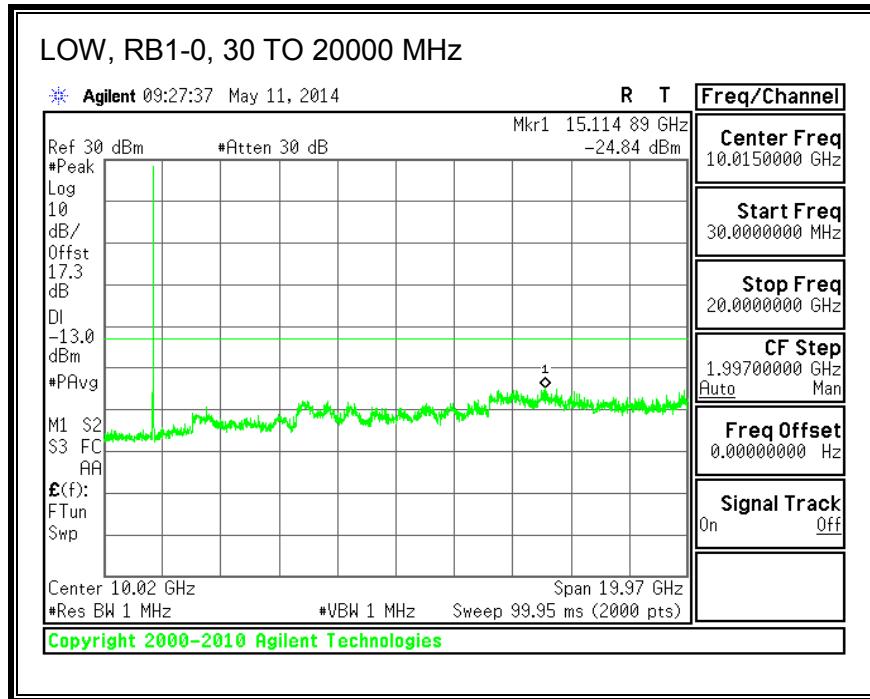


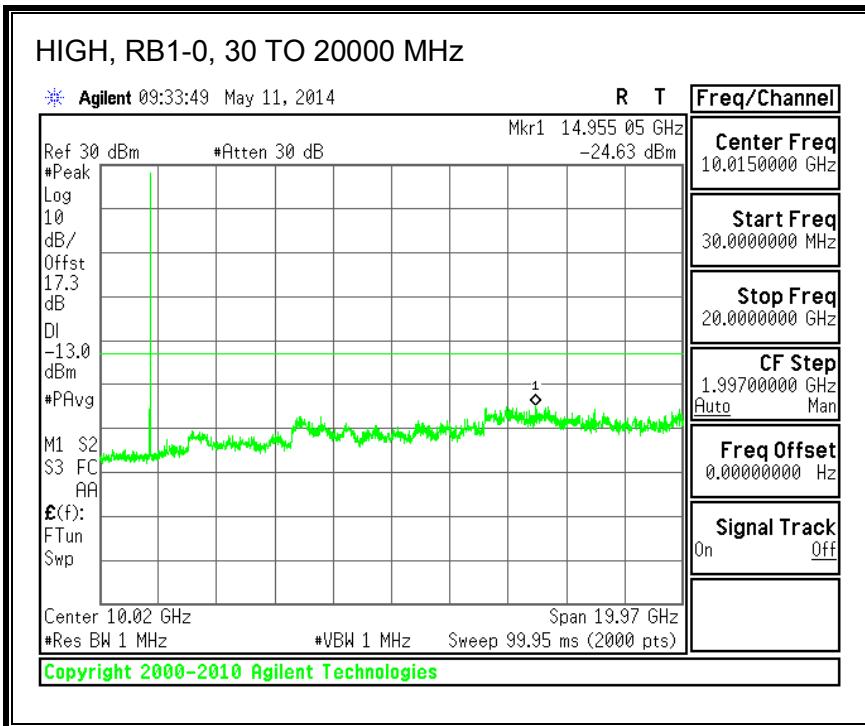
16QAM, (5.0 MHz BAND WIDTH)



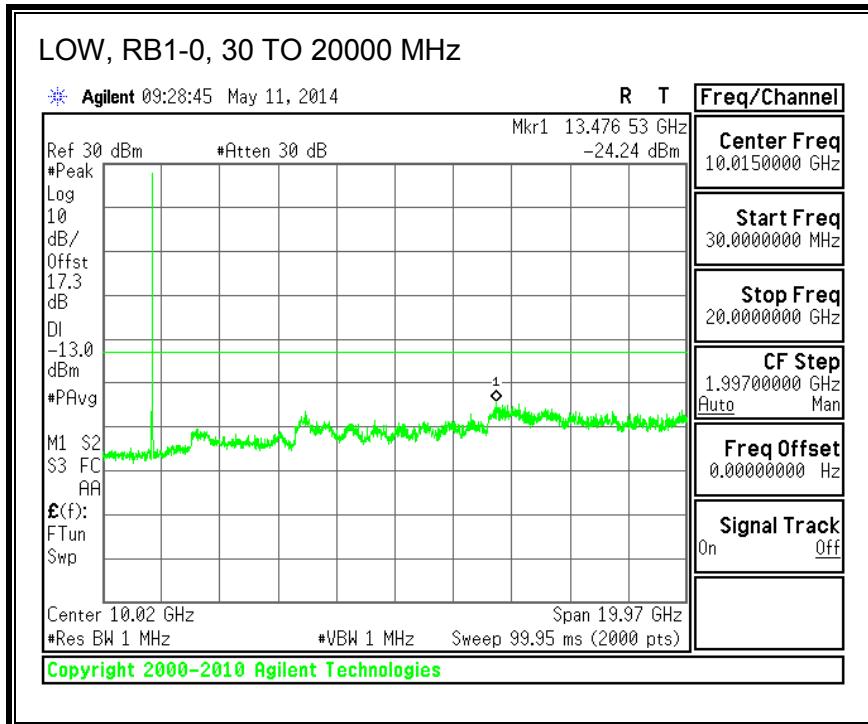


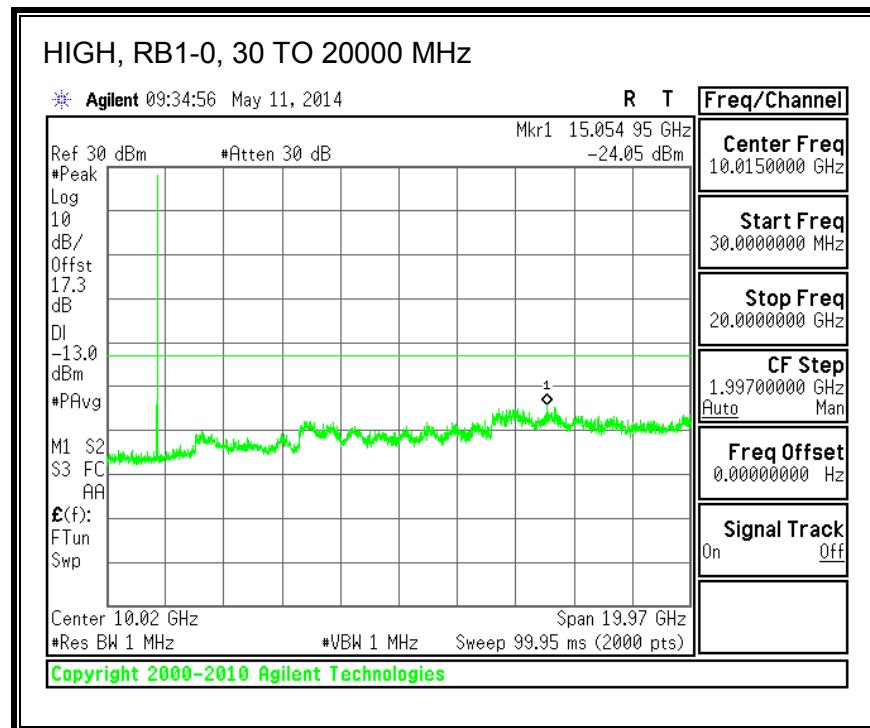
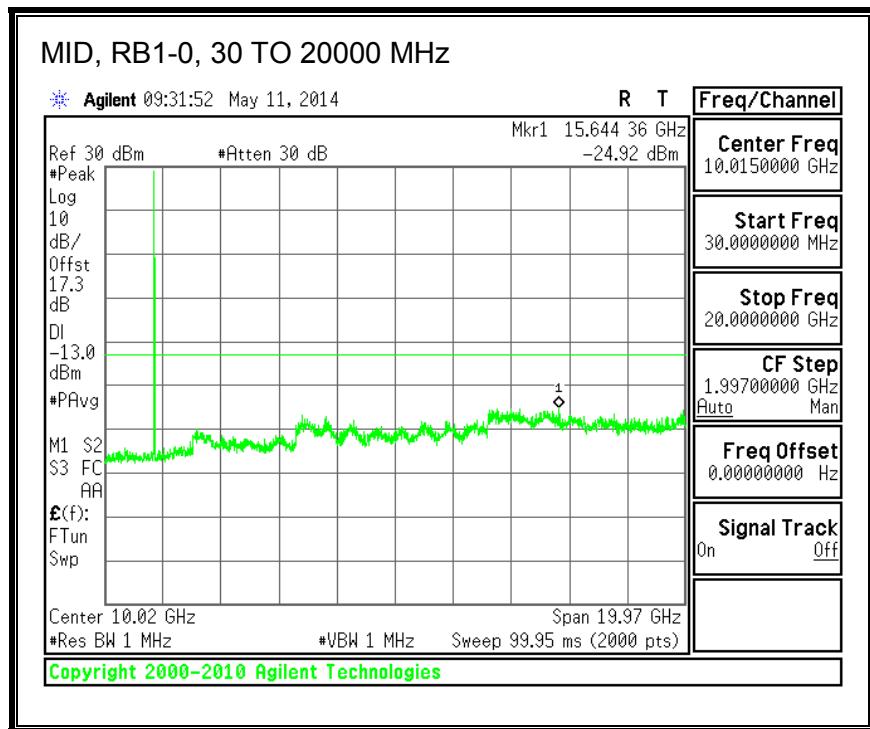
QPSK, (10.0 MHz BAND WIDTH)



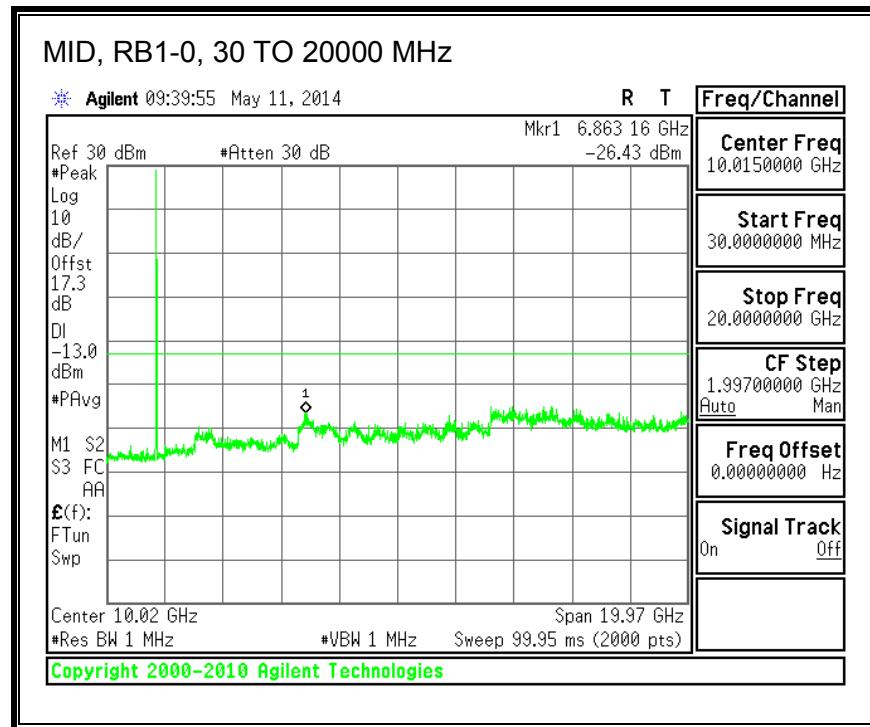
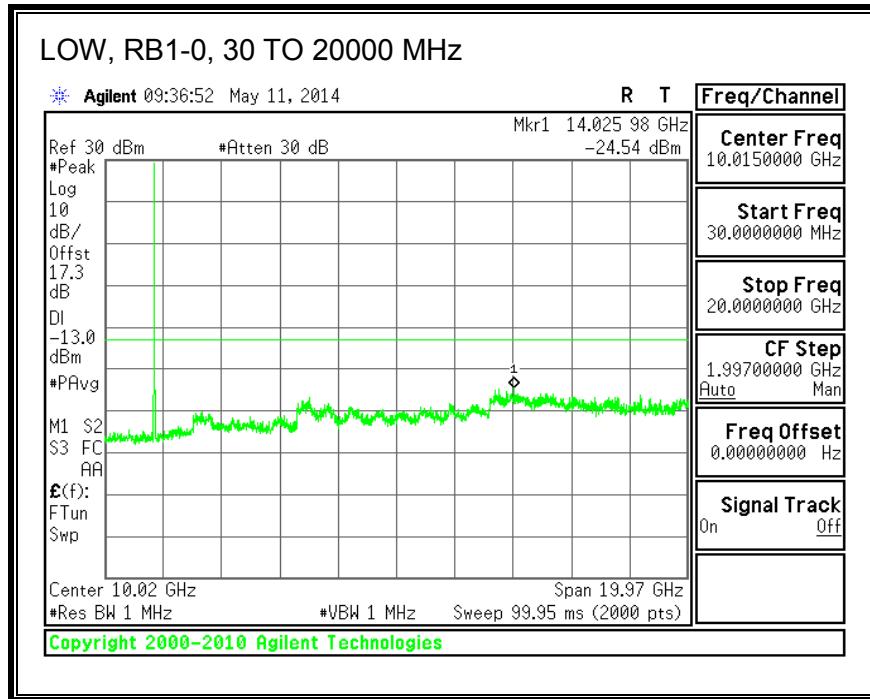


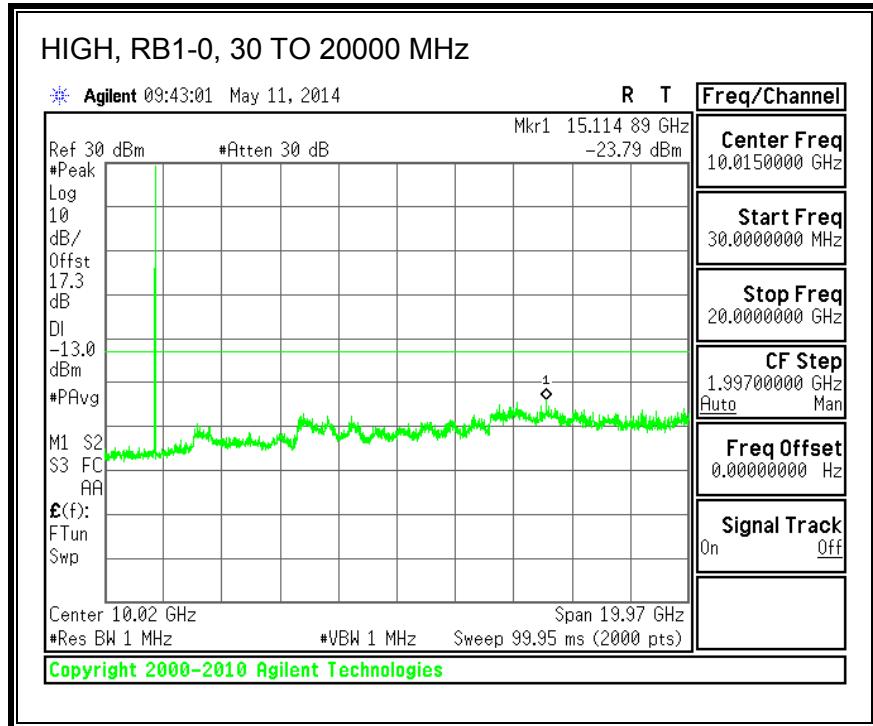
16QAM, (10.0 MHz BAND WIDTH)



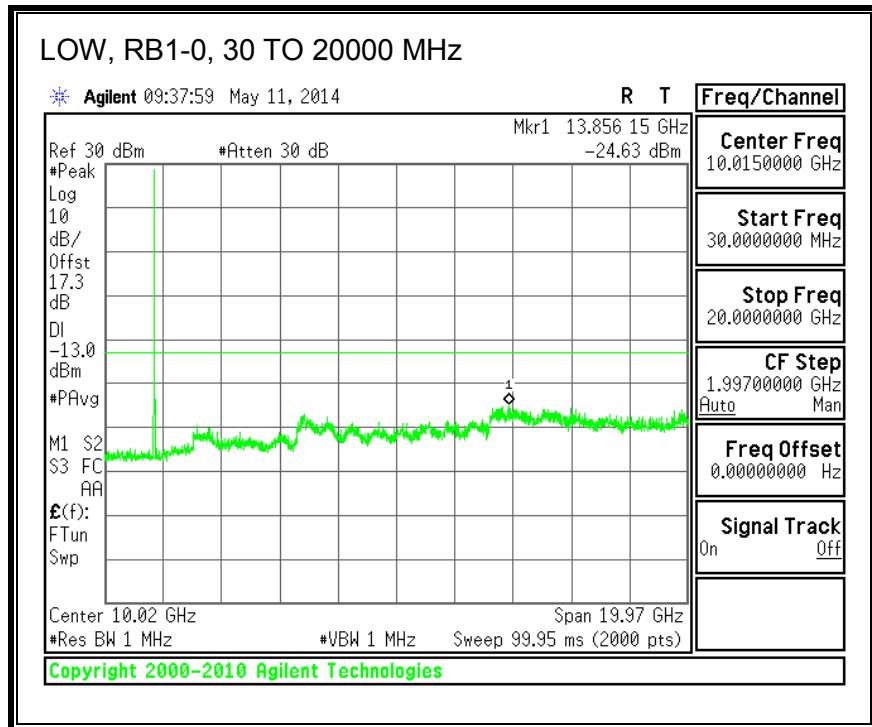


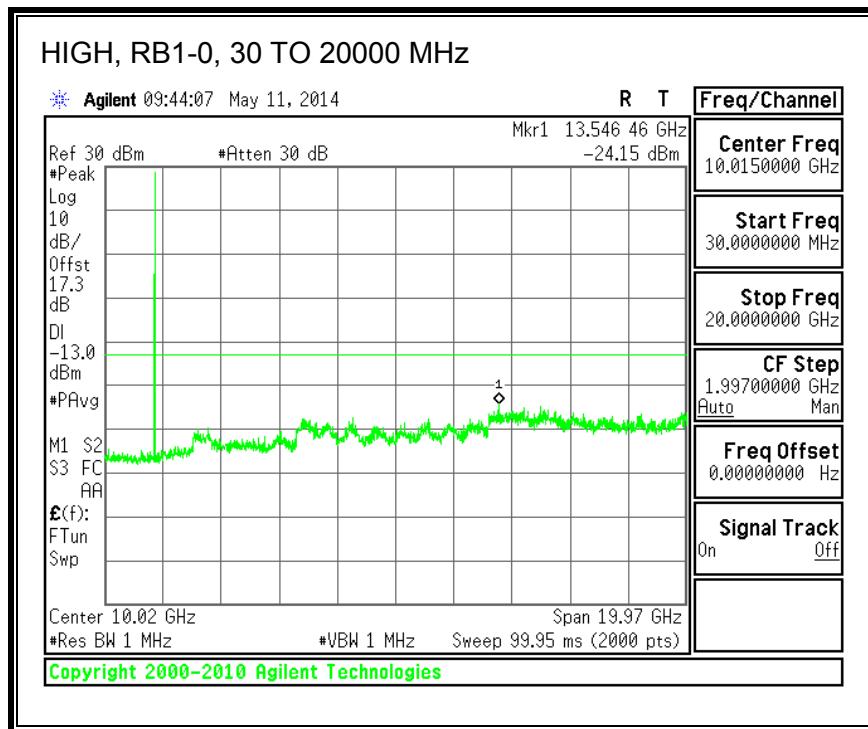
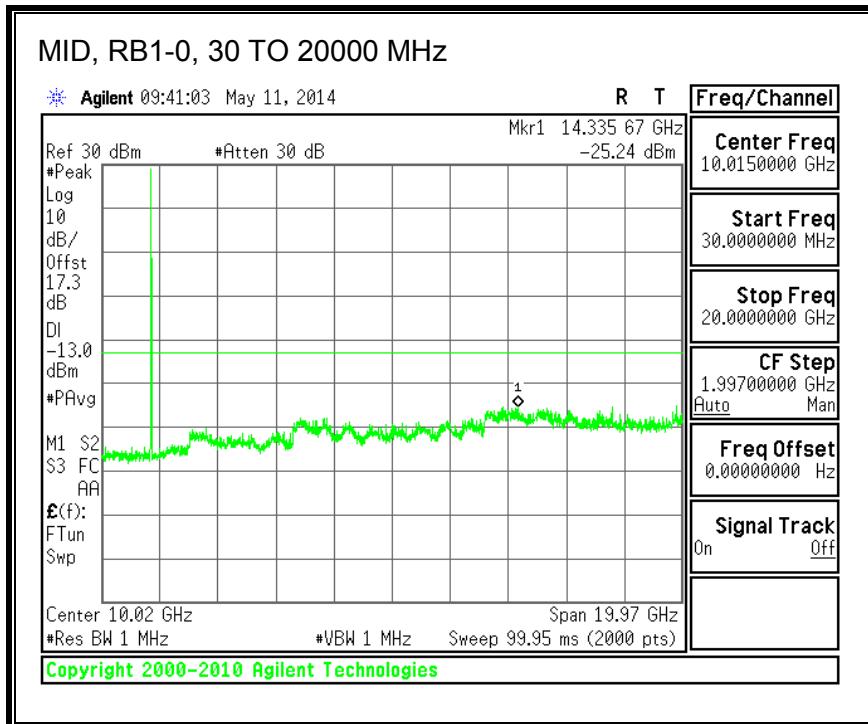
QPSK, (15.0 MHz BAND WIDTH)



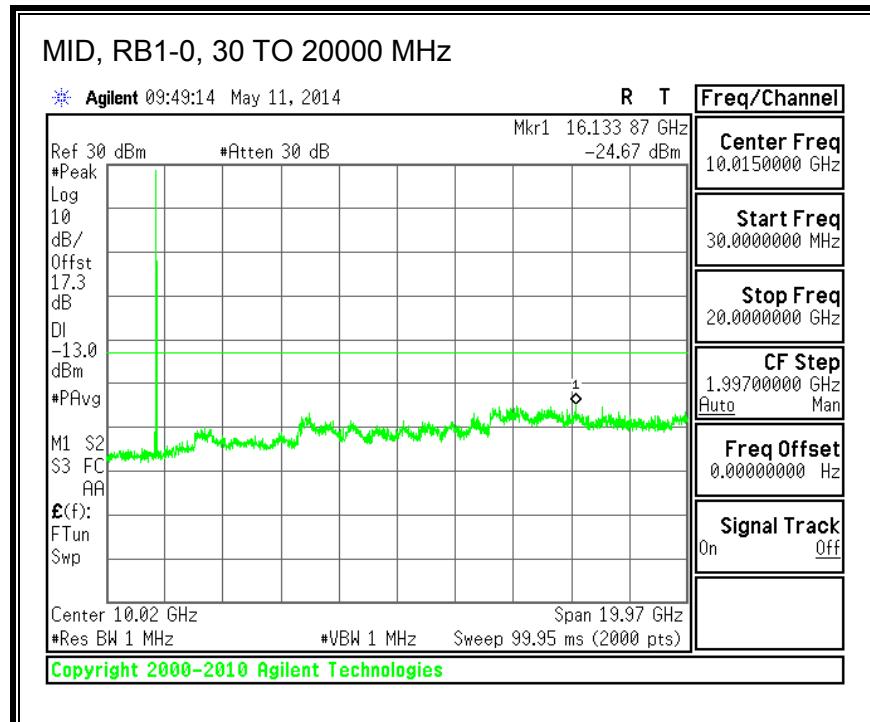
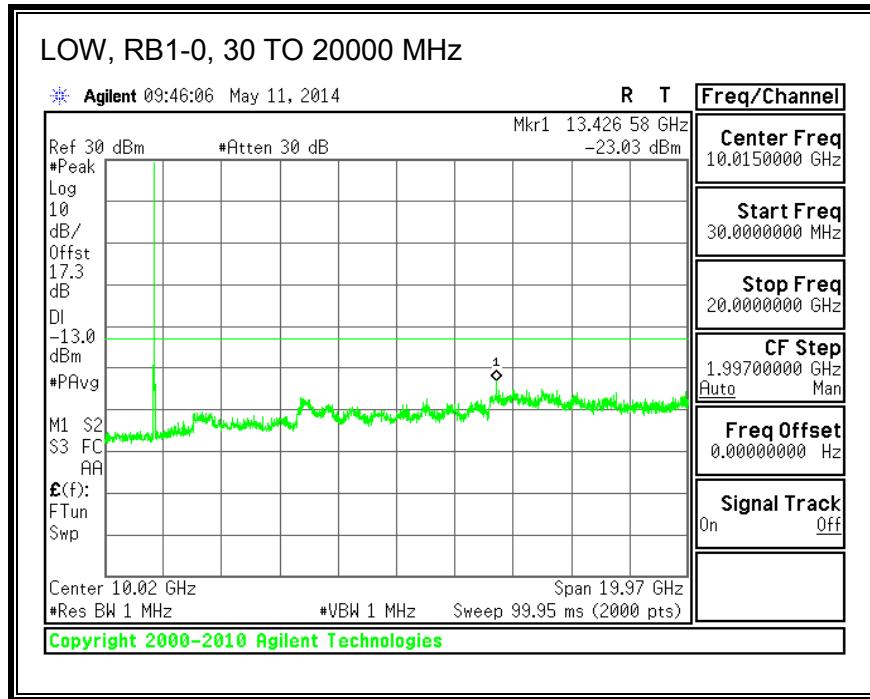


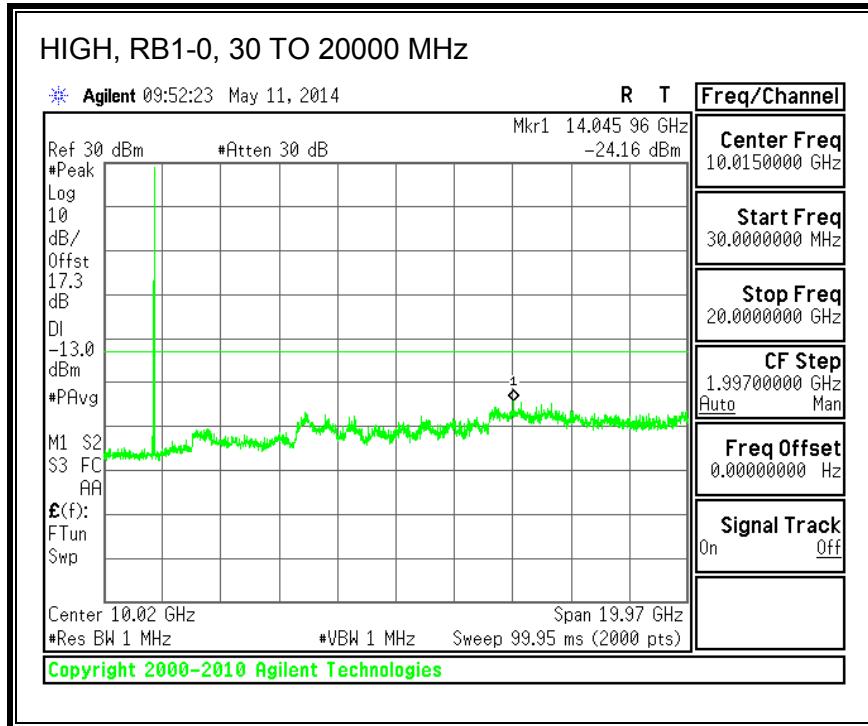
16QAM, (15.0 MHz BAND WIDTH)



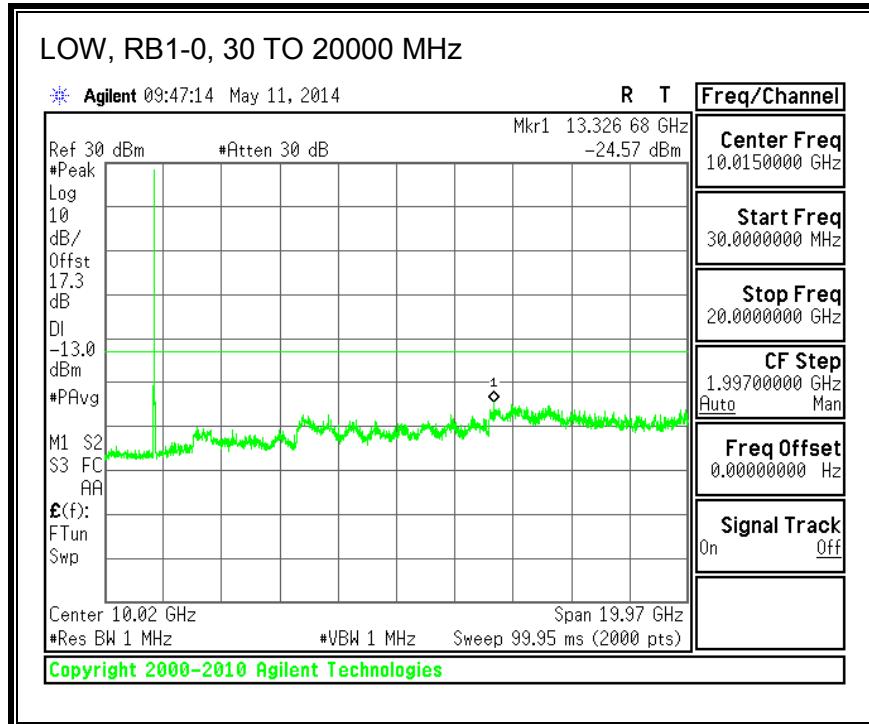


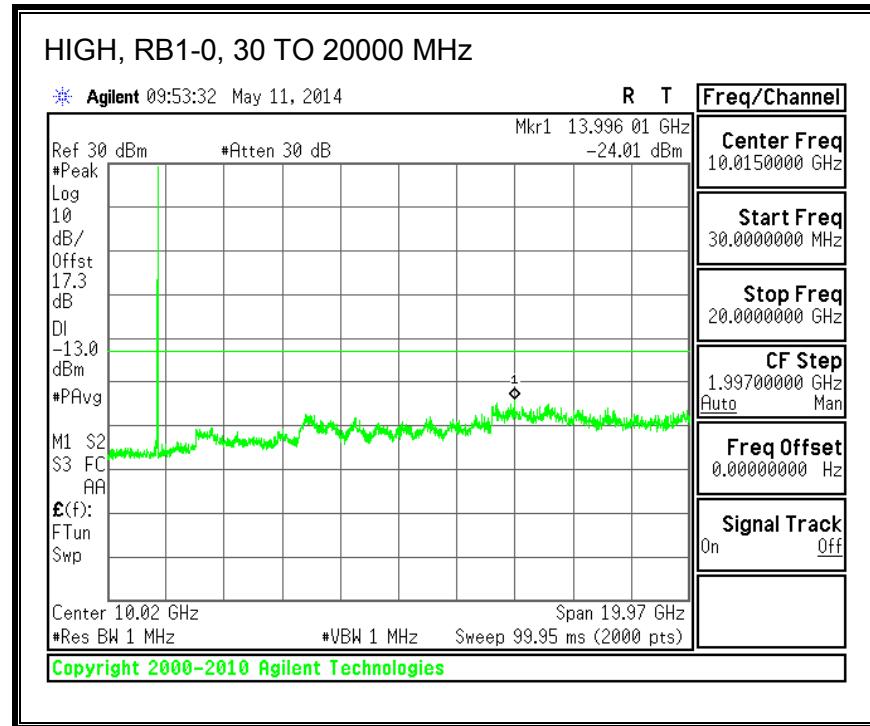
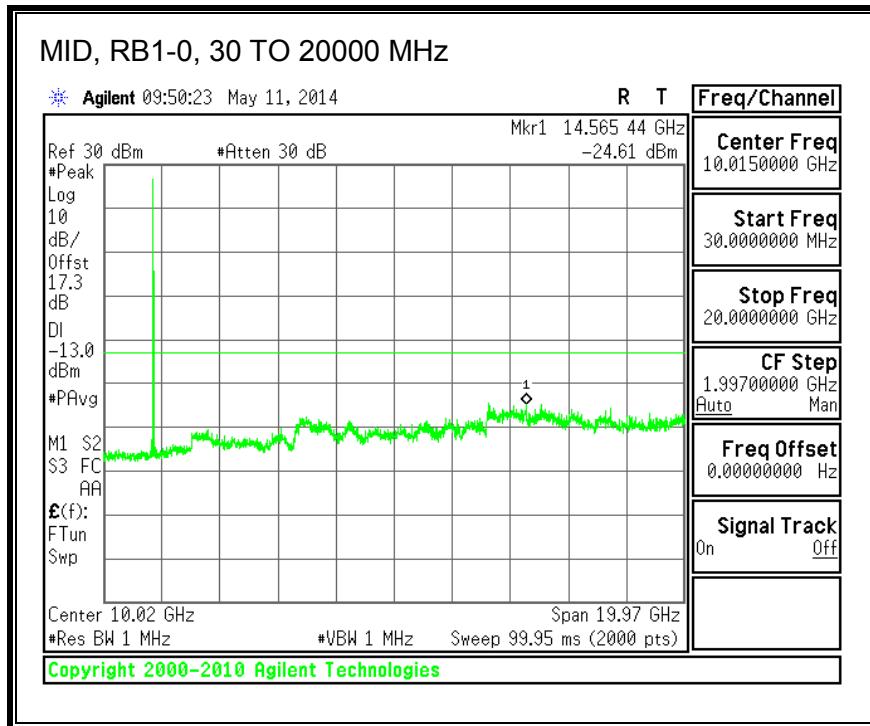
QPSK, (20.0 MHz BAND WIDTH)





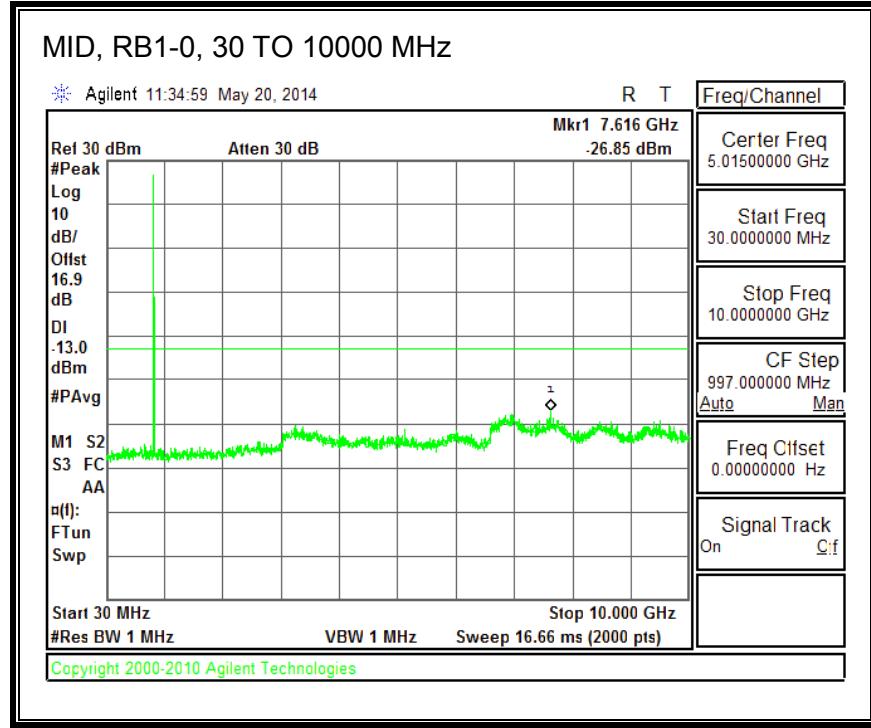
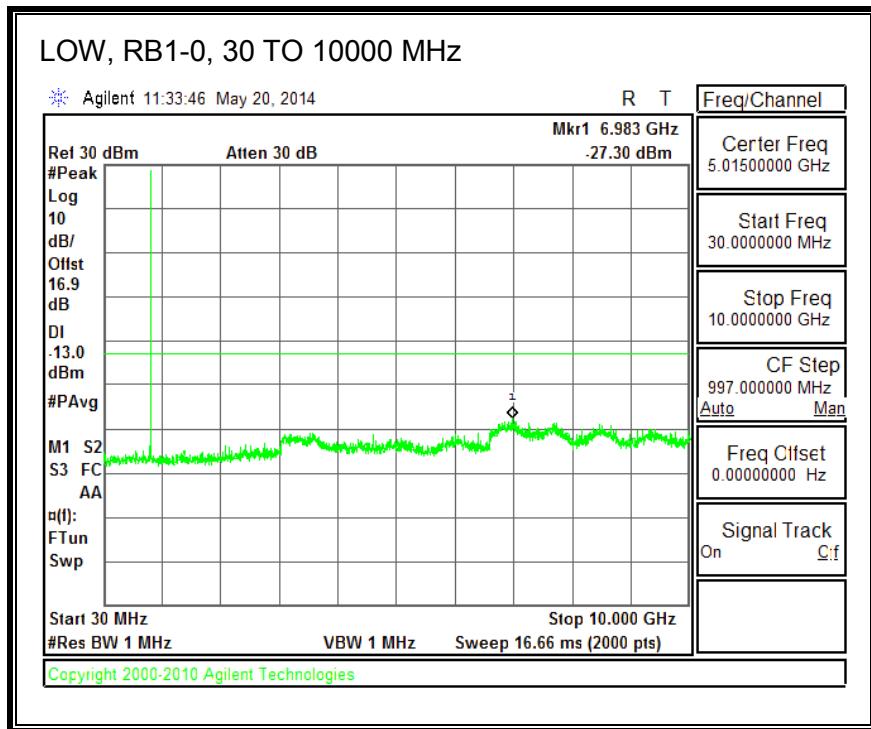
16QAM, (20.0 MHz BAND WIDTH)

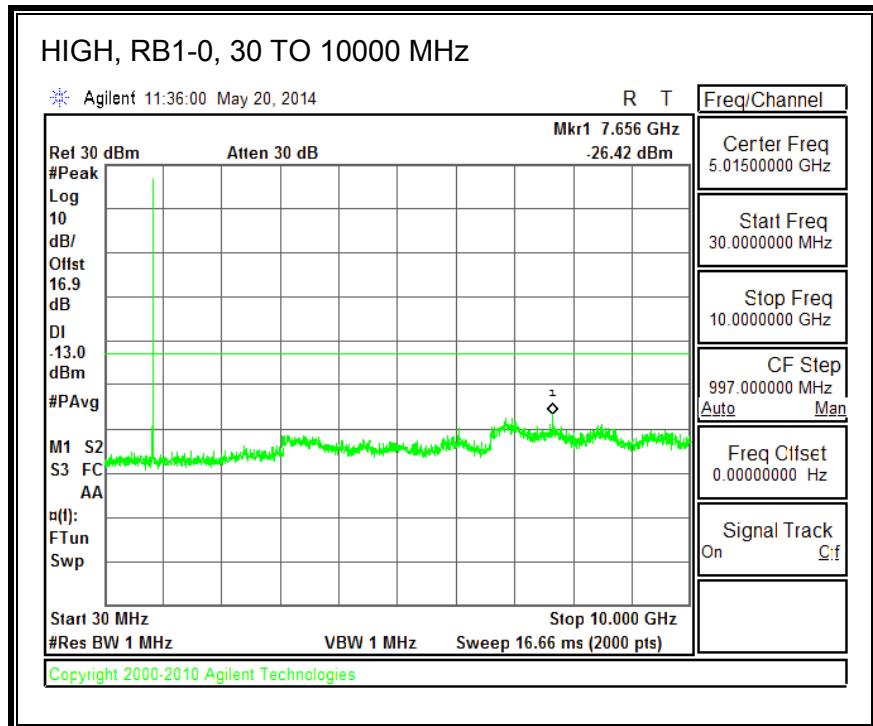




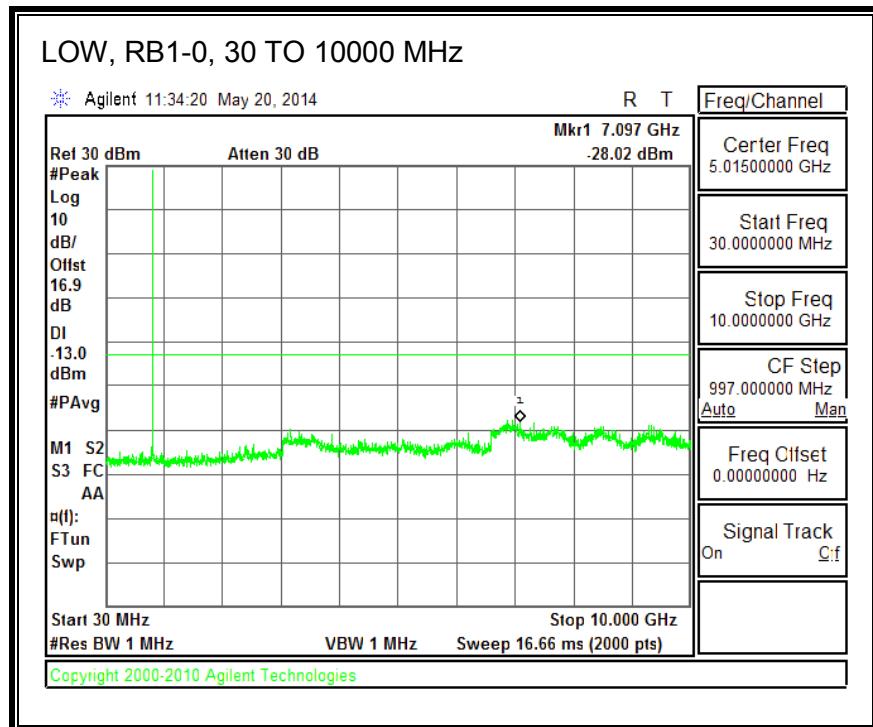
8.2.13. LTE BAND 5

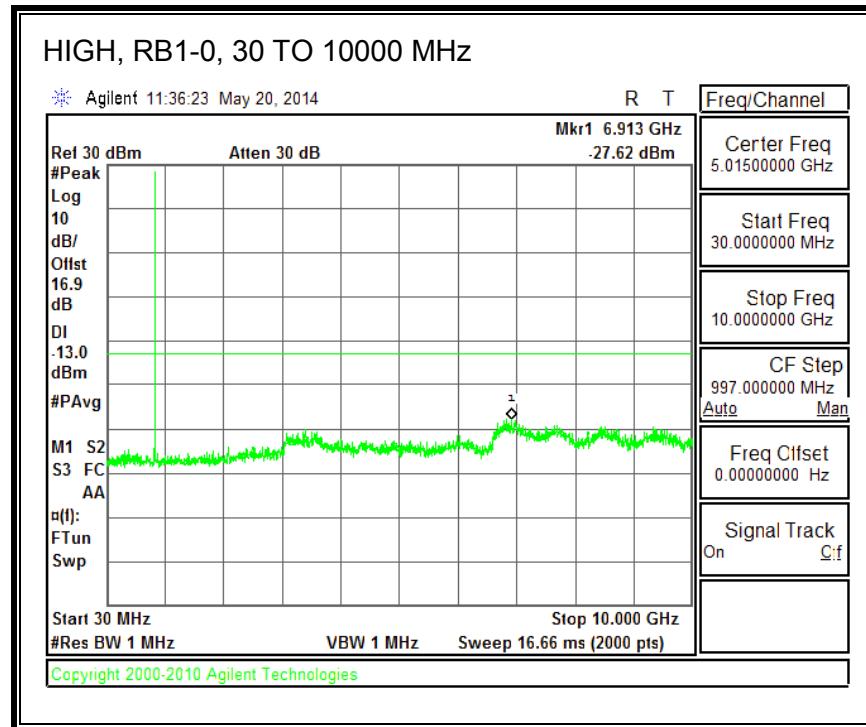
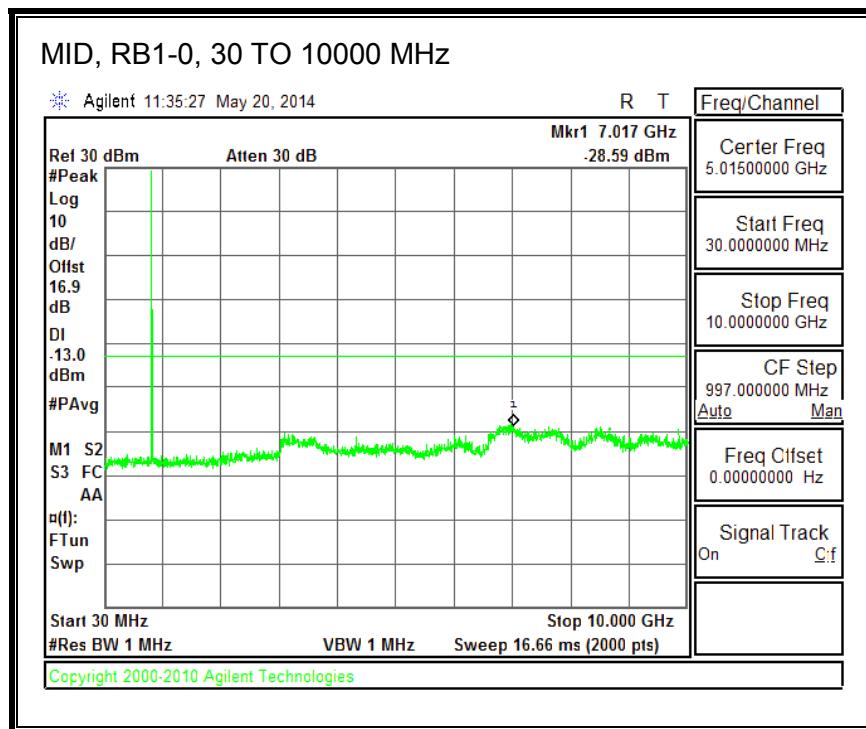
QPSK, (1.4 MHz BAND WIDTH)



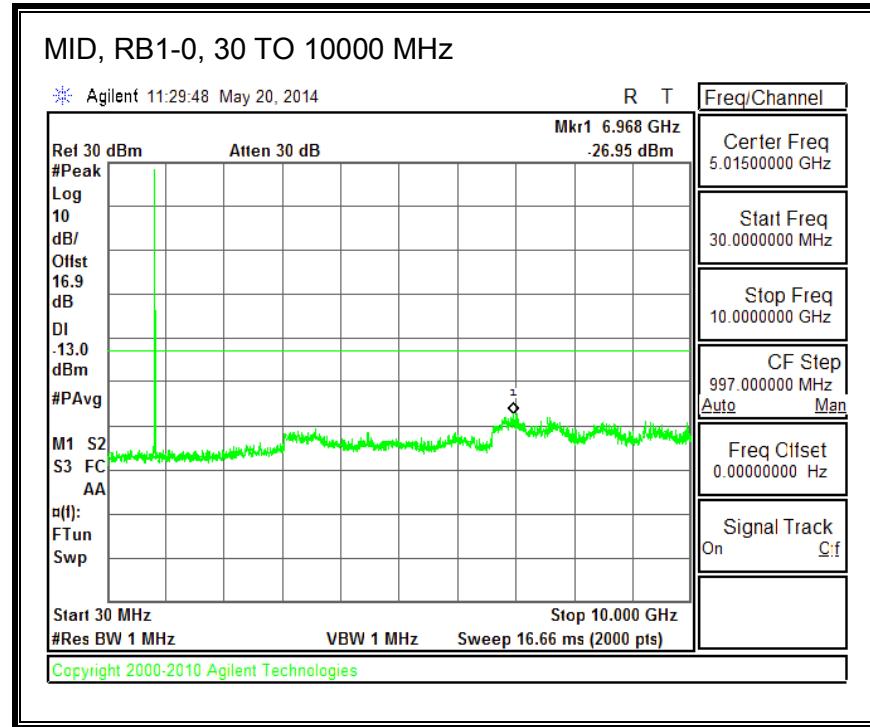
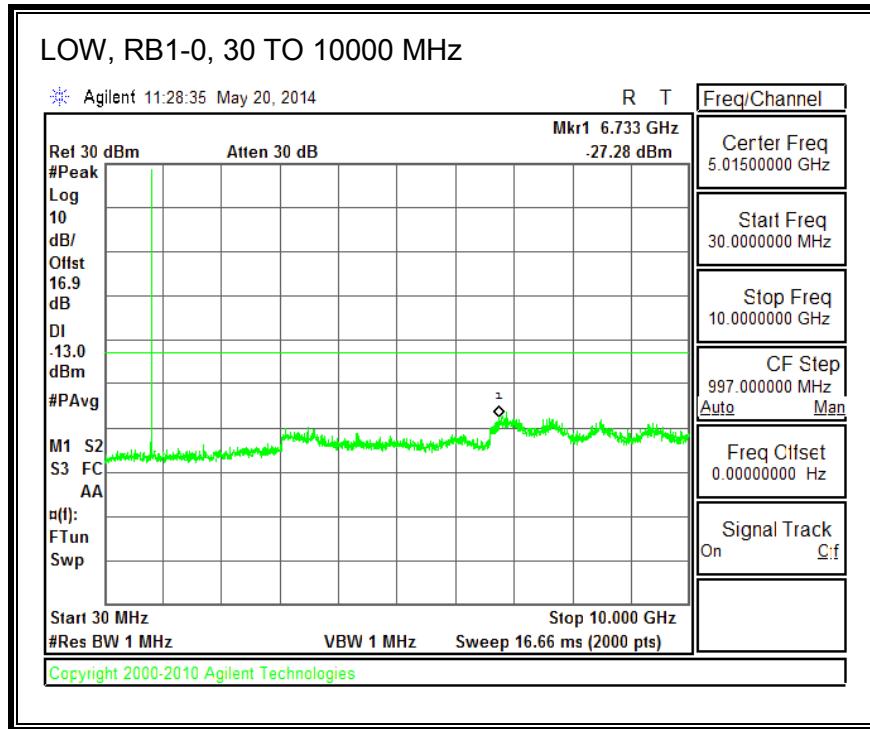


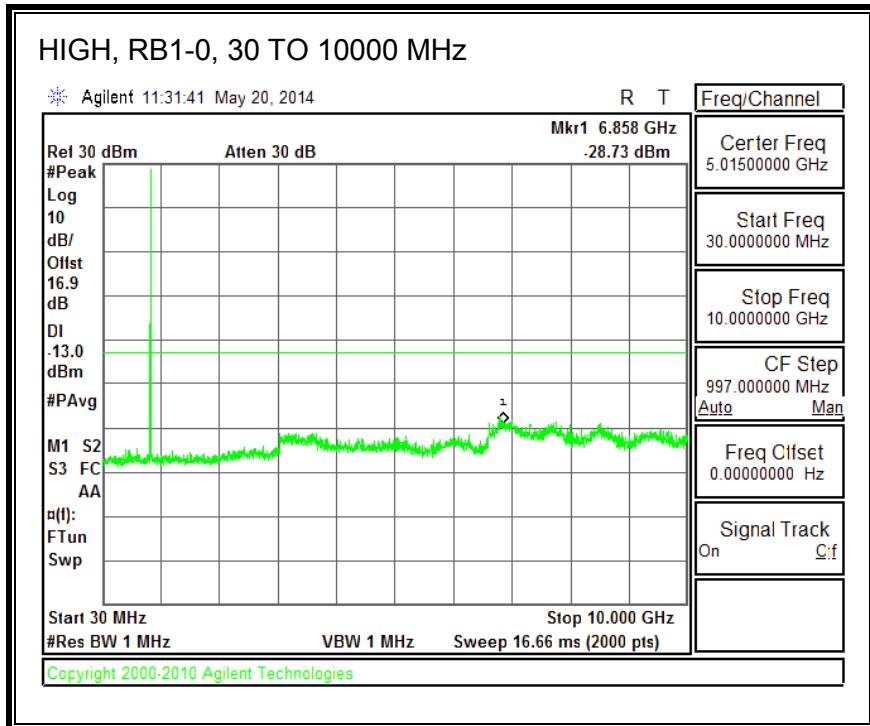
16QAM, (1.4 MHz BAND WIDTH)



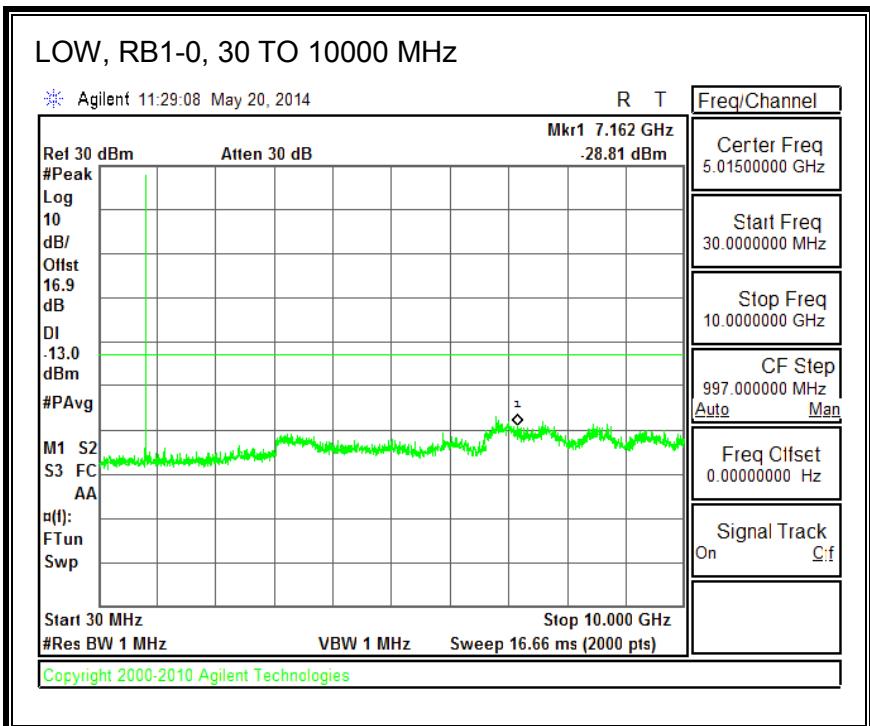


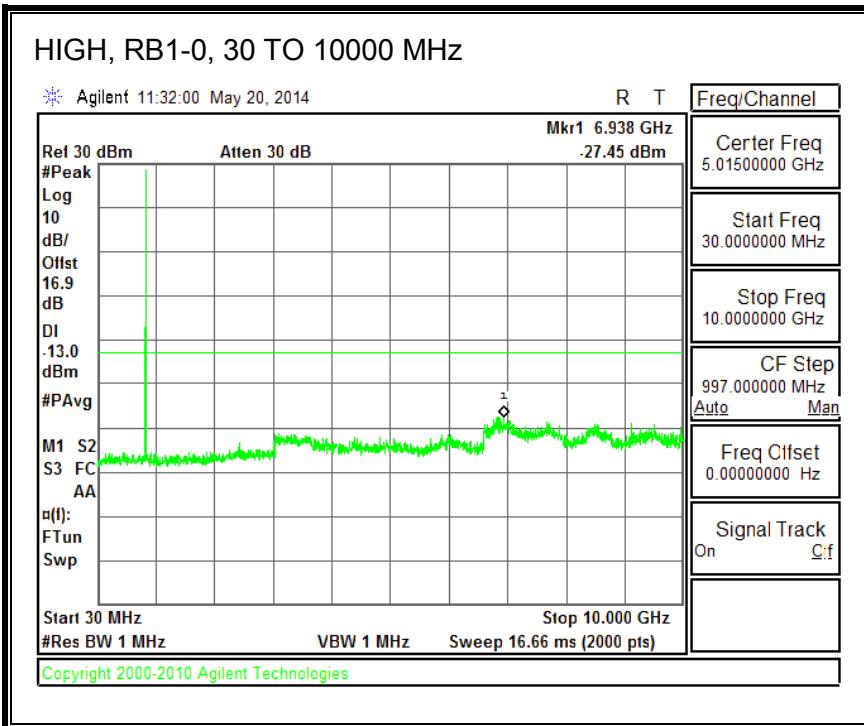
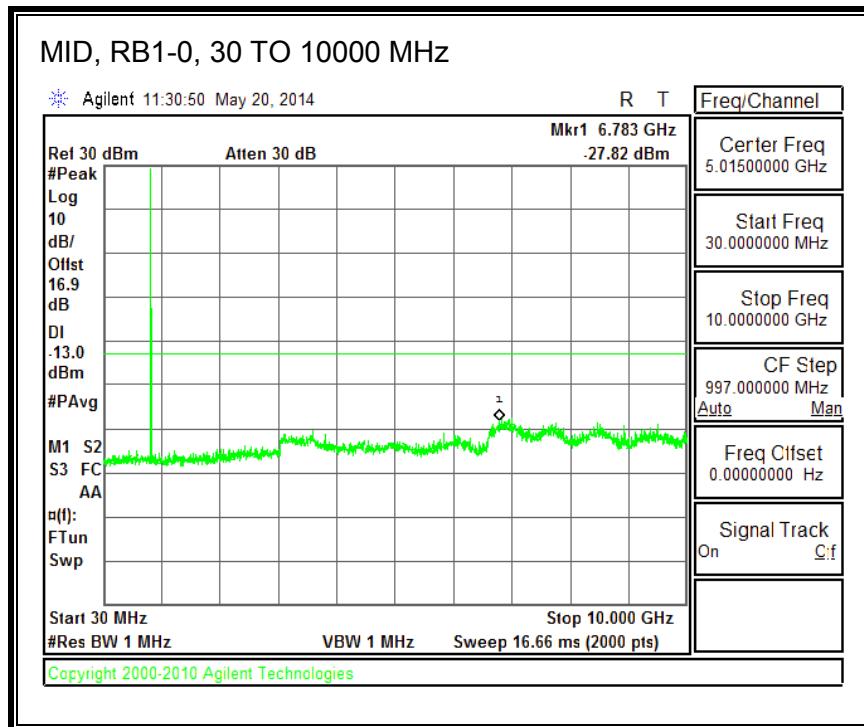
QPSK, (3.0 MHz BAND WIDTH)



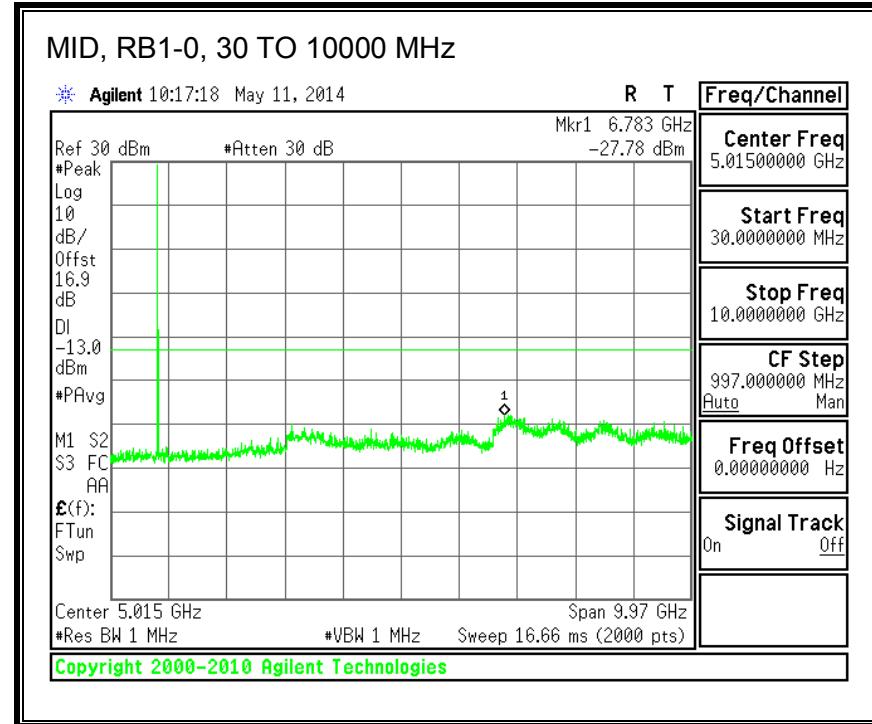
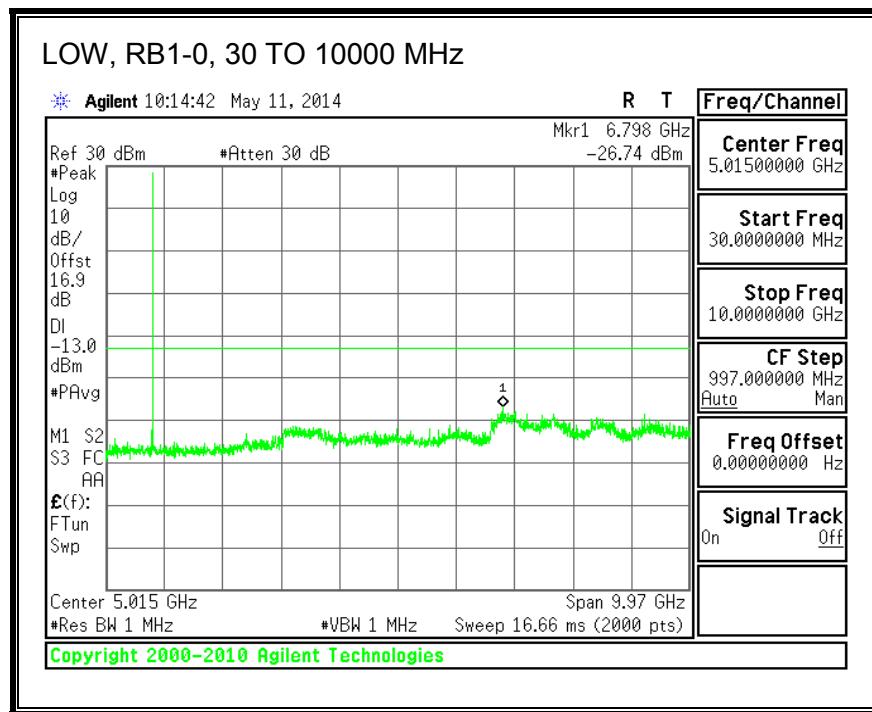


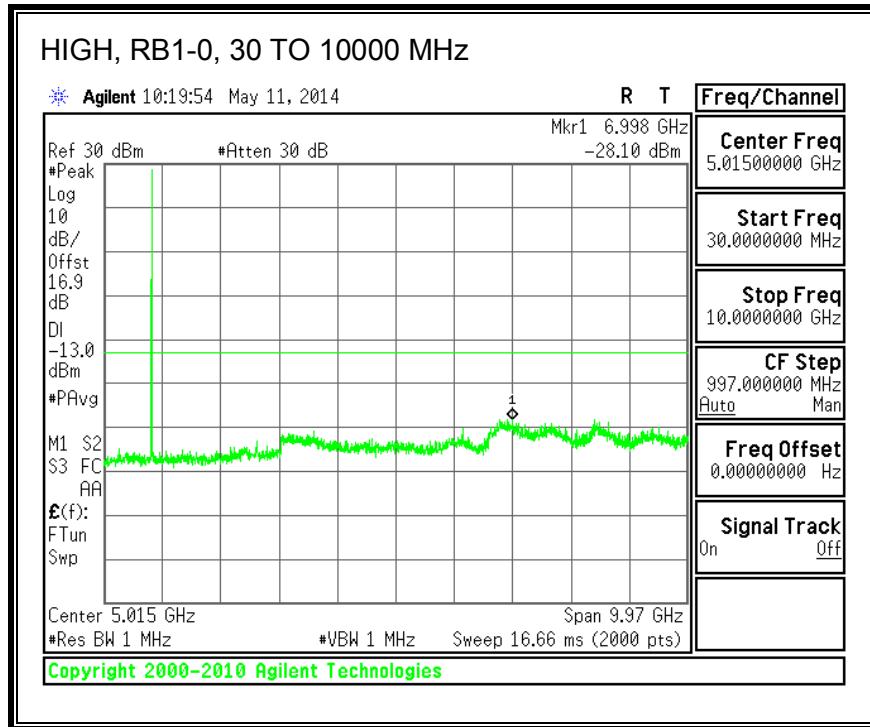
16QAM, (3.0 MHz BAND WIDTH)



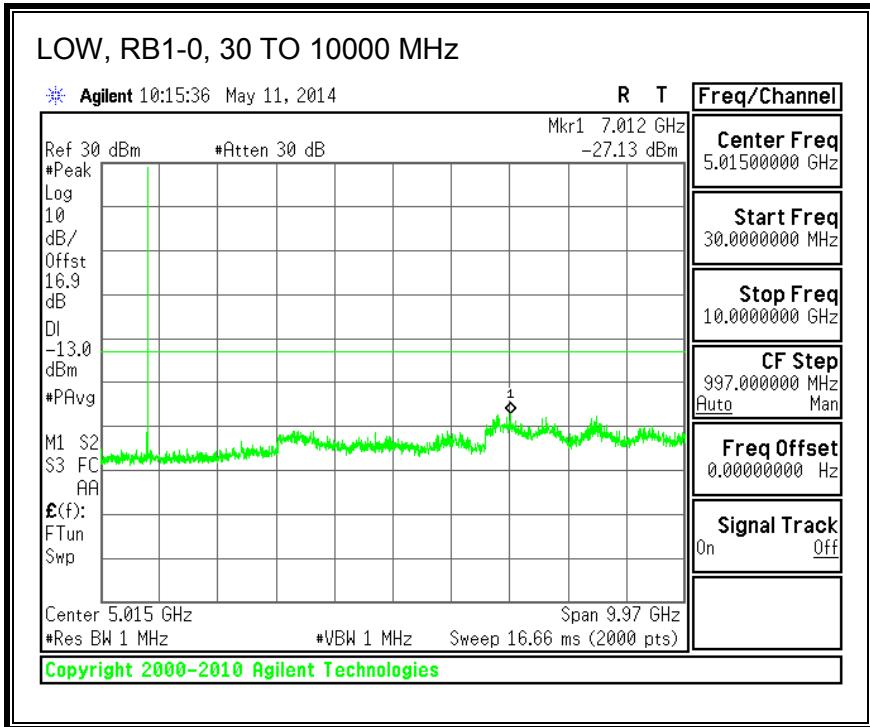


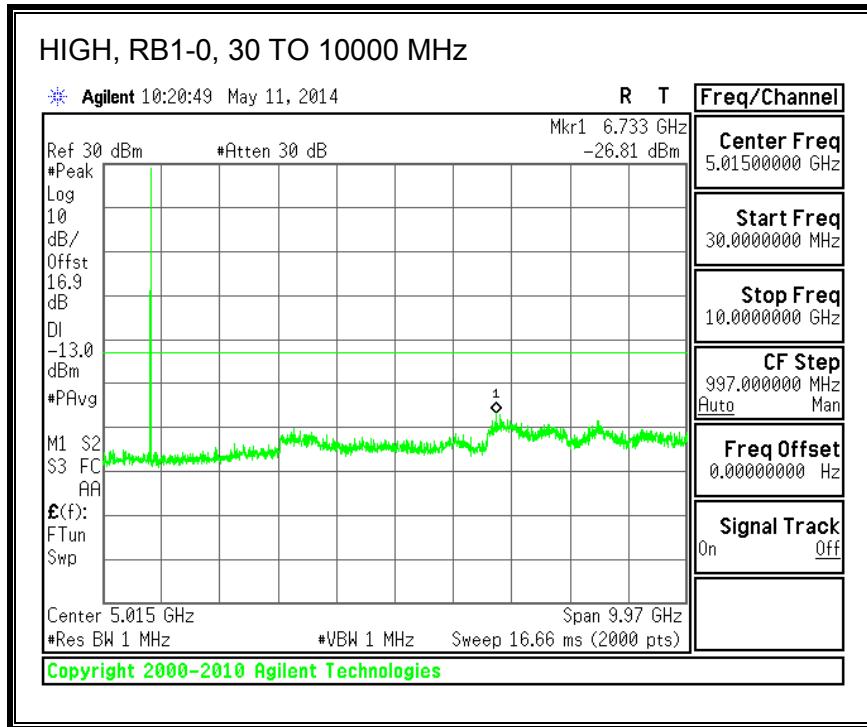
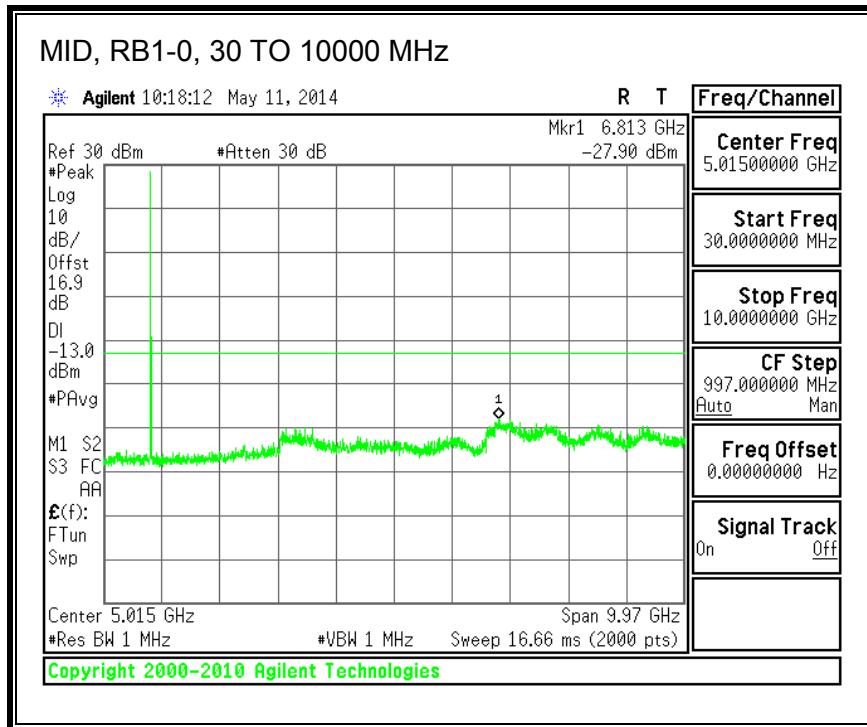
QPSK, (5.0 MHz BAND WIDTH)



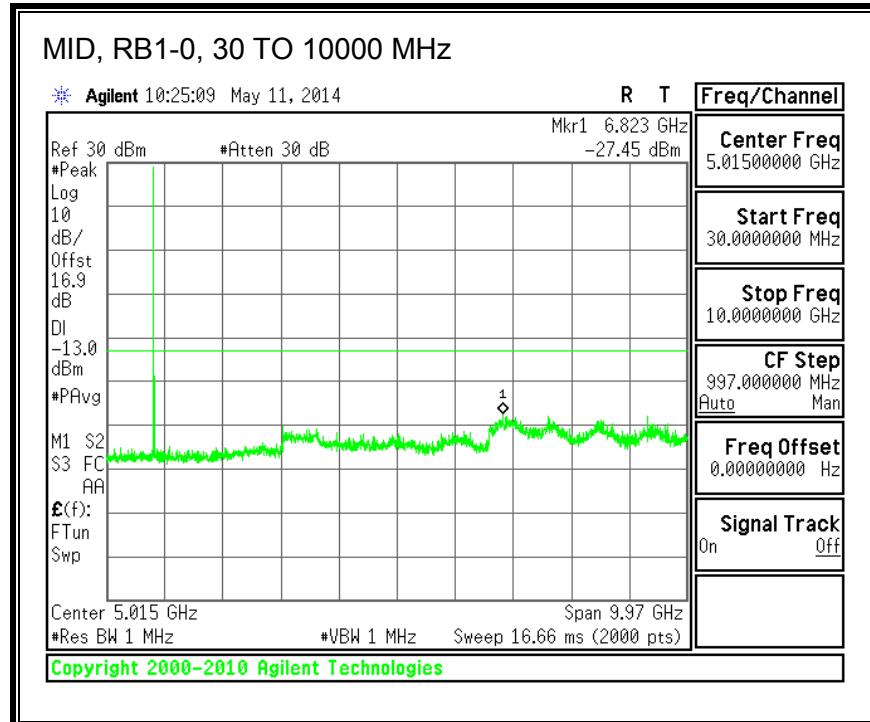
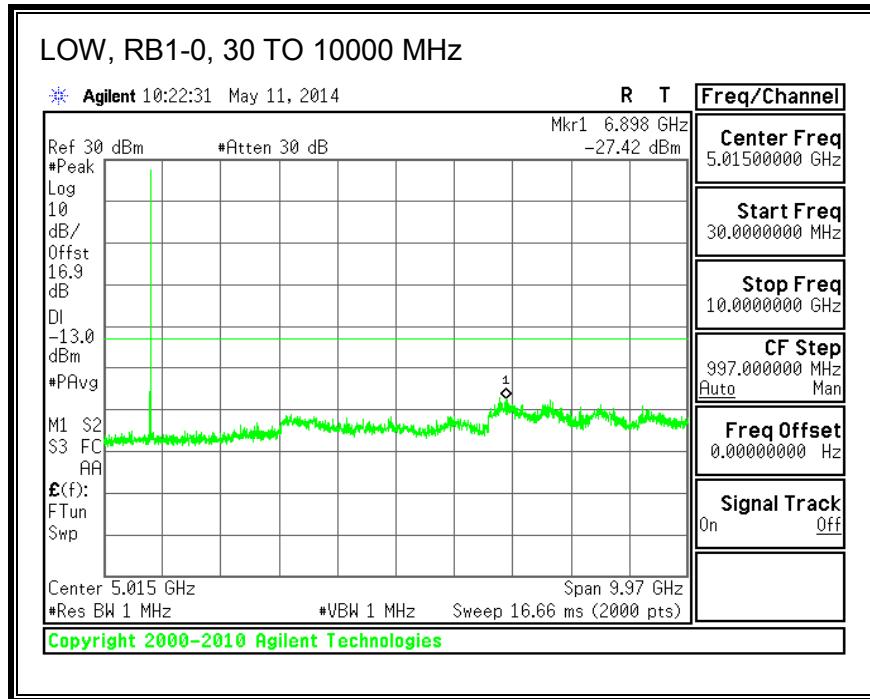


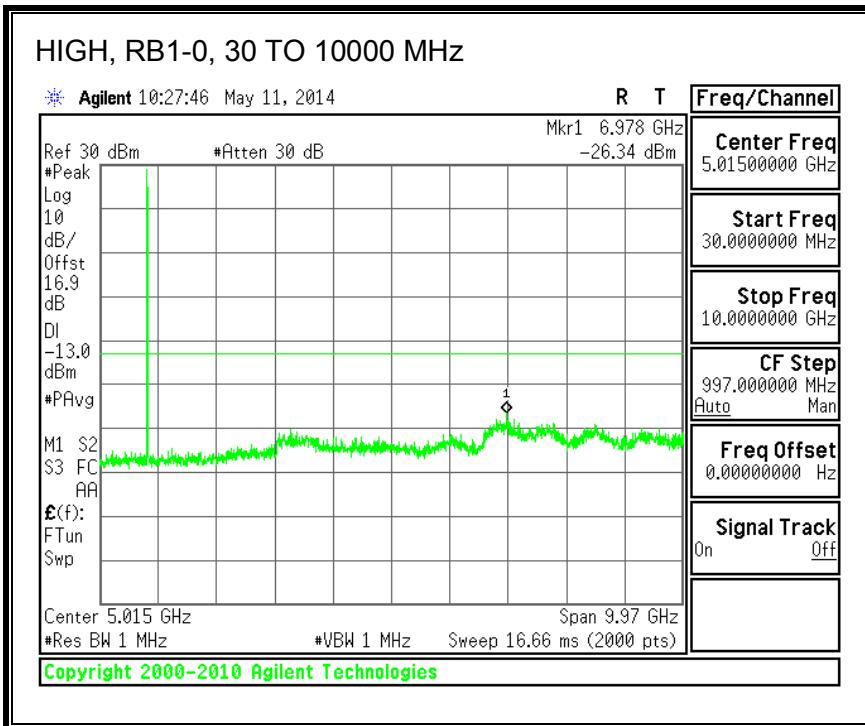
16QAM, (5.0 MHz BAND WIDTH)



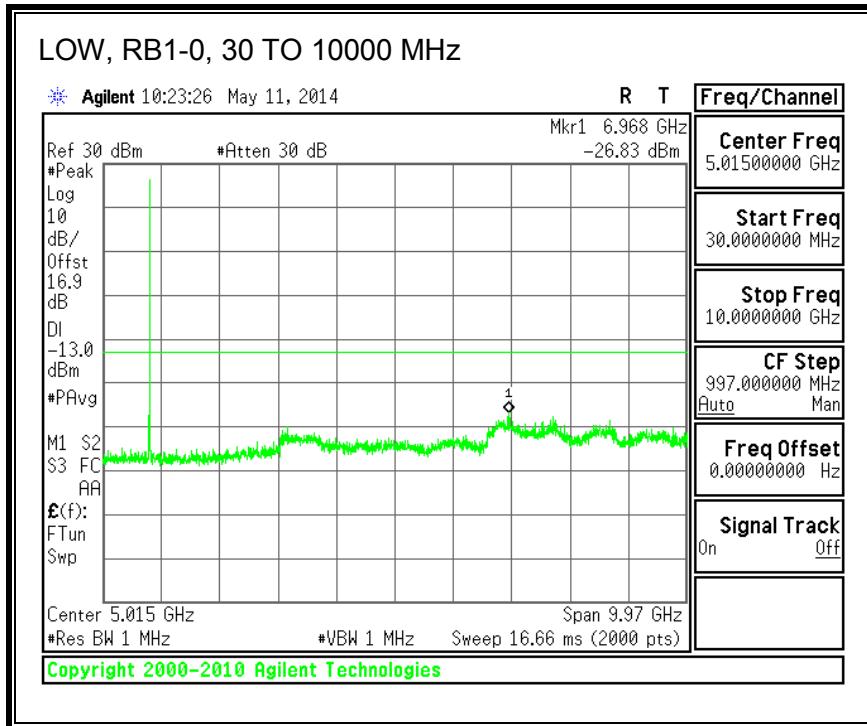


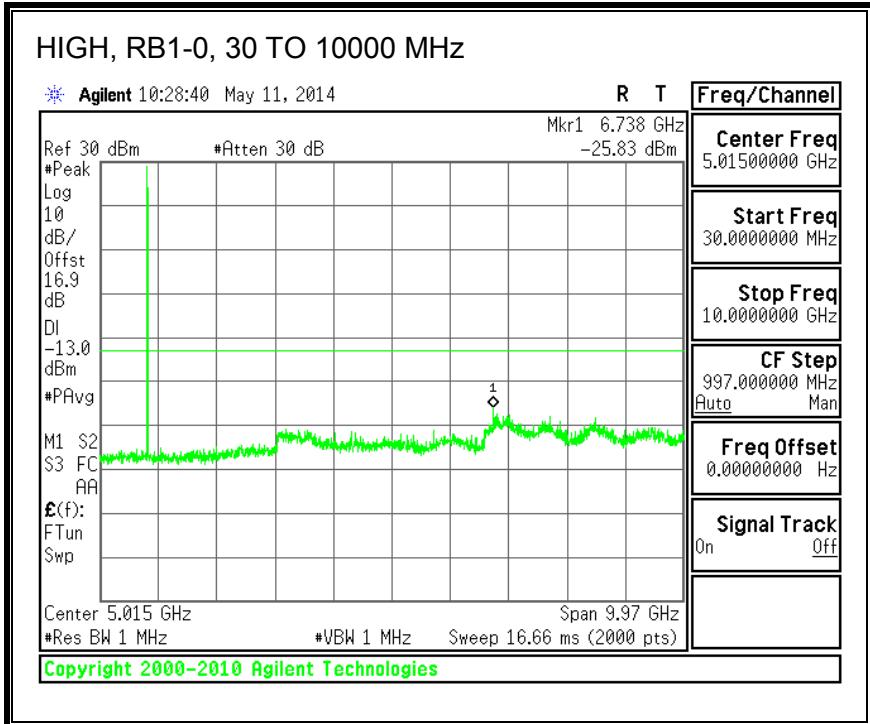
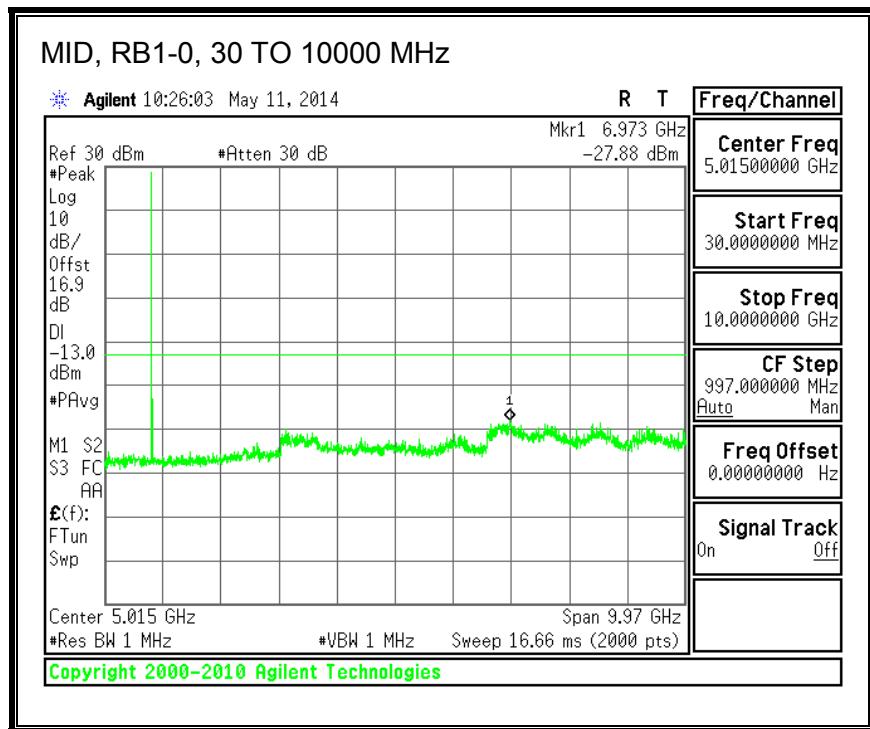
QPSK, (10.0 MHz BAND WIDTH)





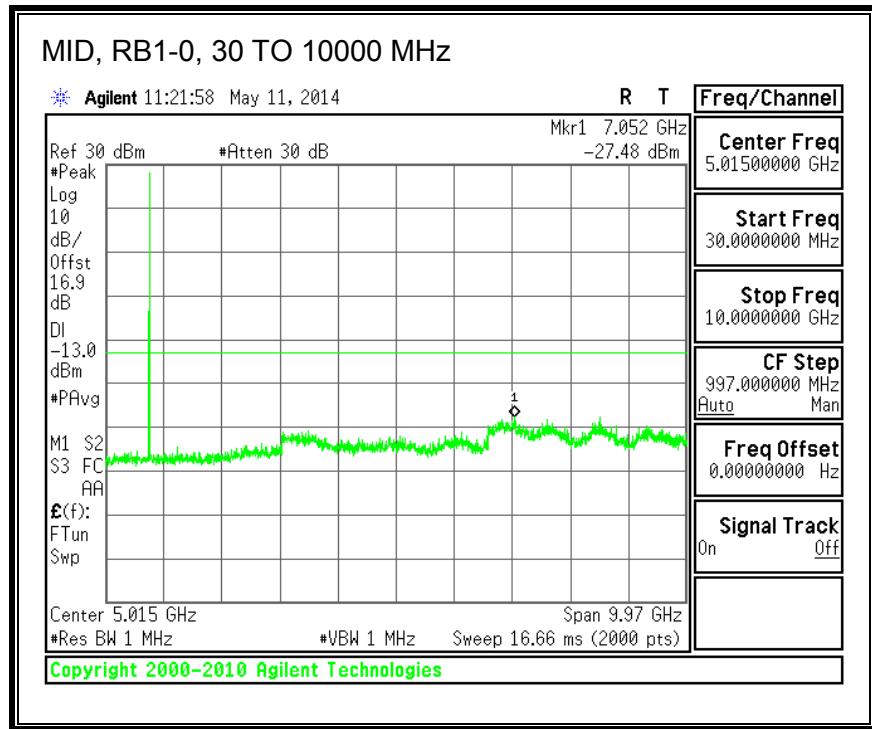
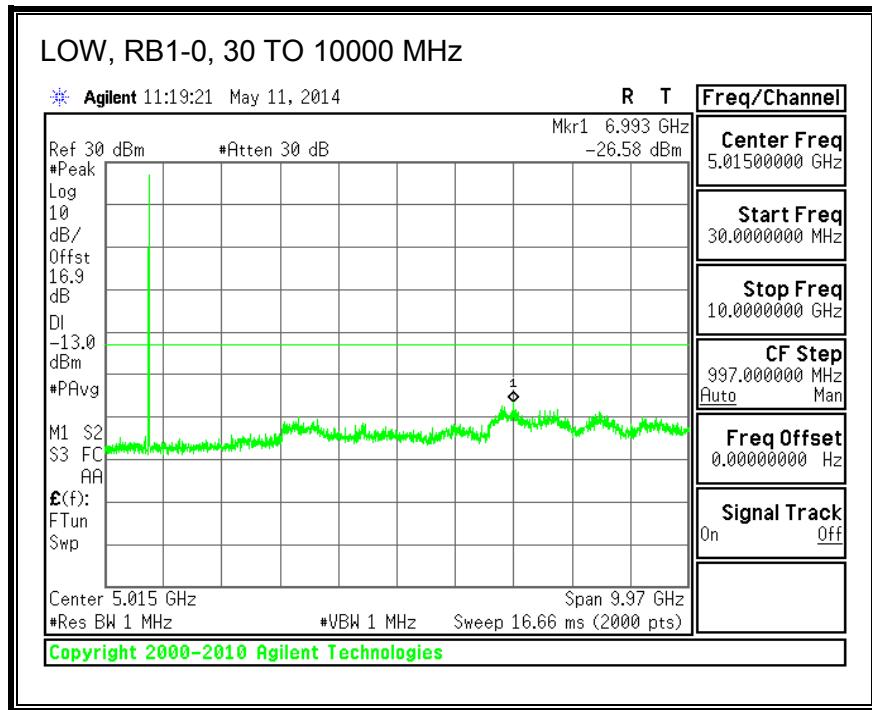
16QAM, (10.0 MHz BAND WIDTH)

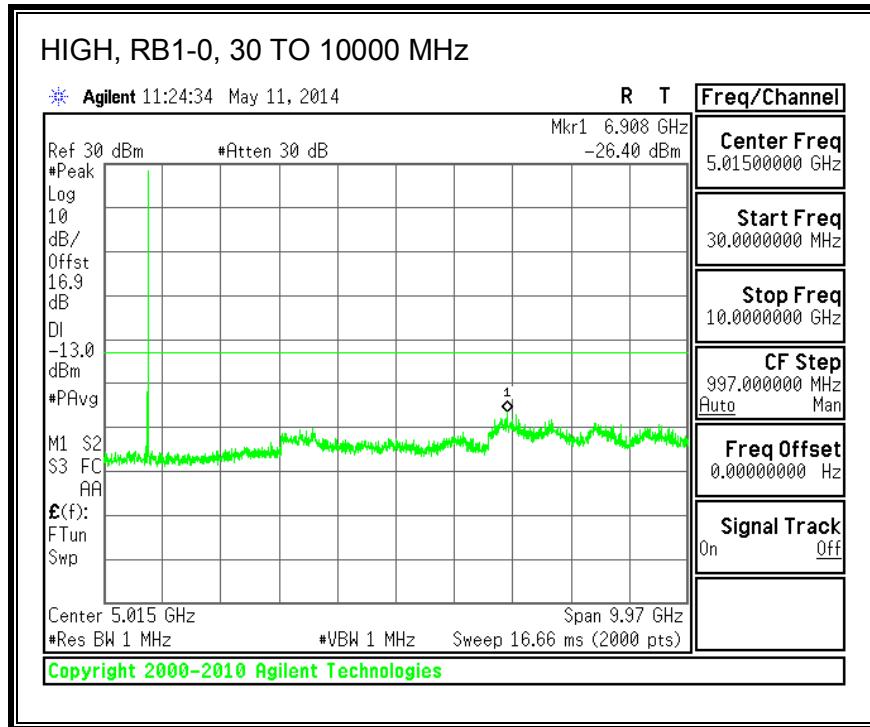




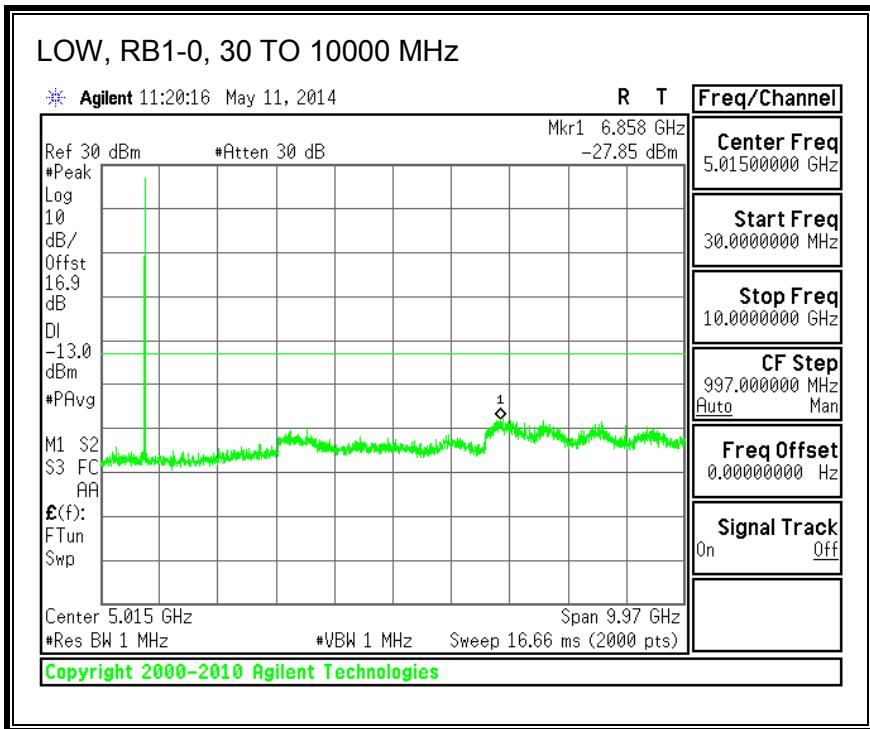
8.2.14. LTE BAND 13

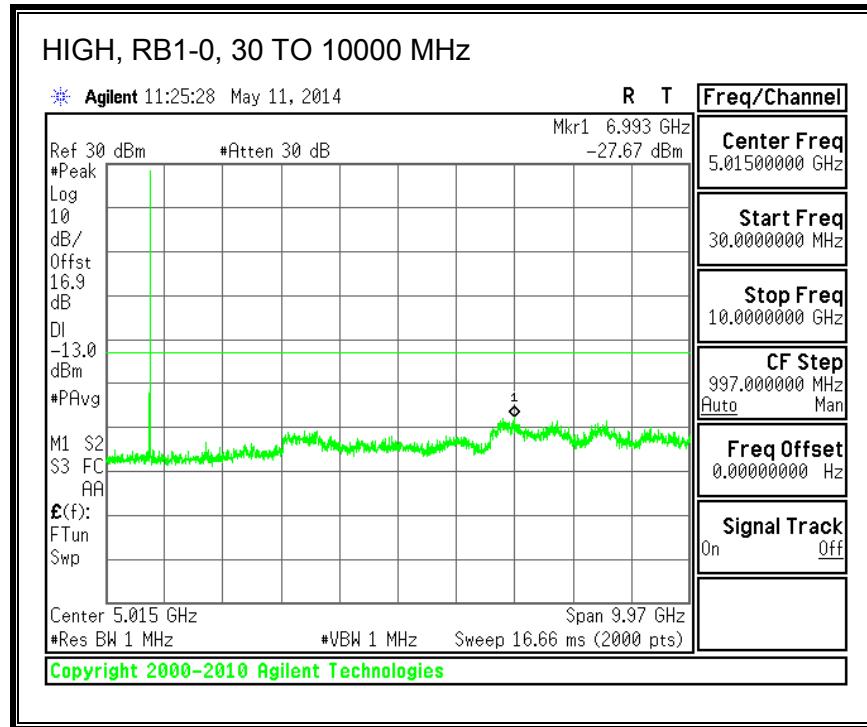
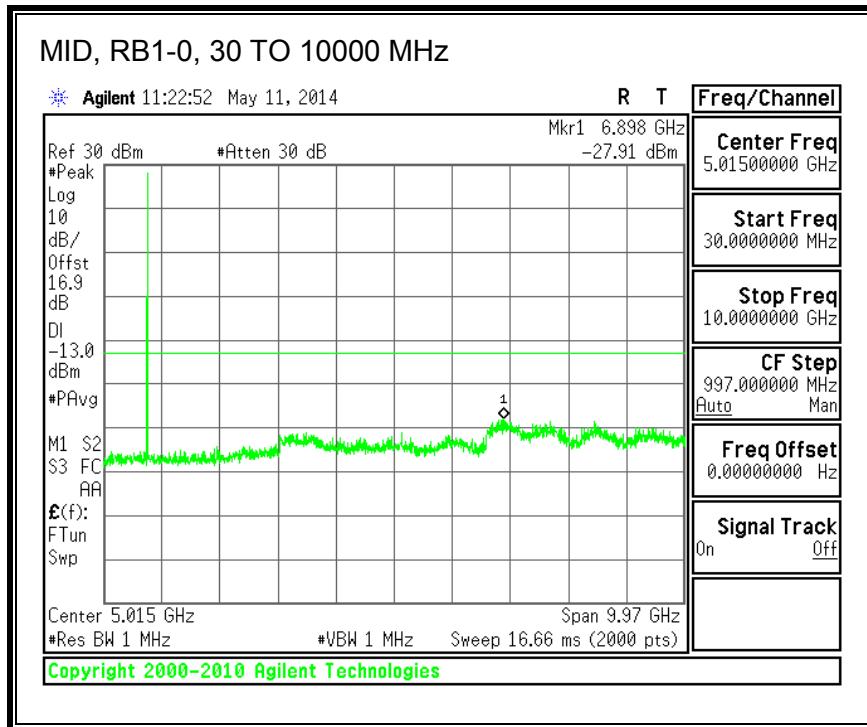
QPSK, (5.0 MHz BAND WIDTH)



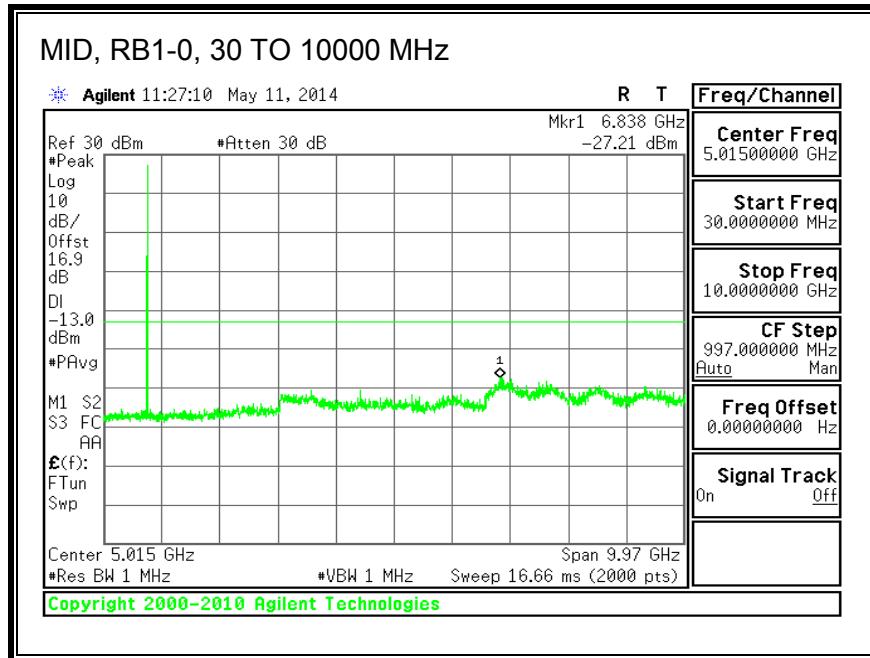


16QAM, (5.0 MHz BAND WIDTH)

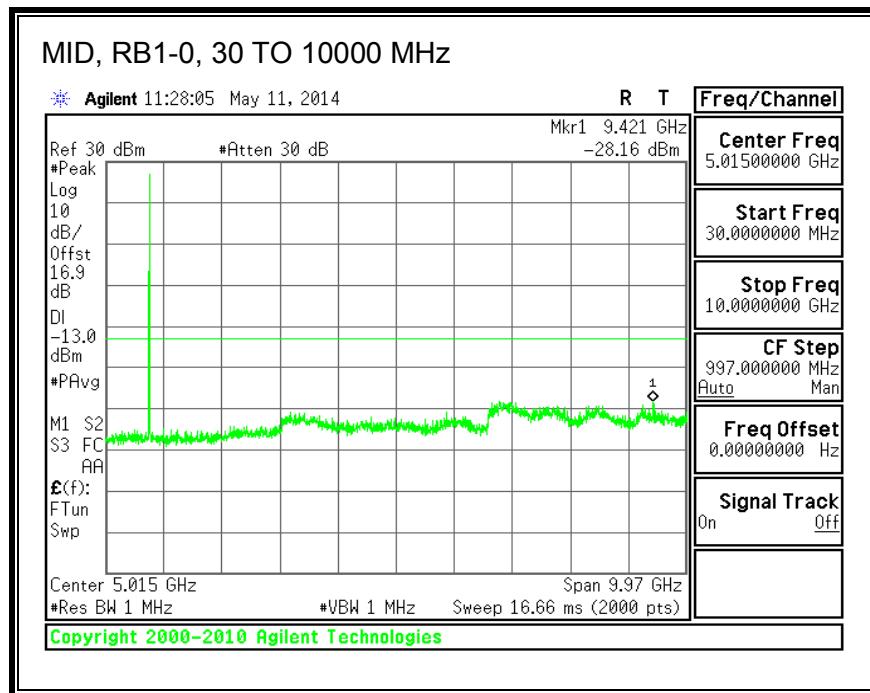




QPSK, (10.0 MHz BAND WIDTH)

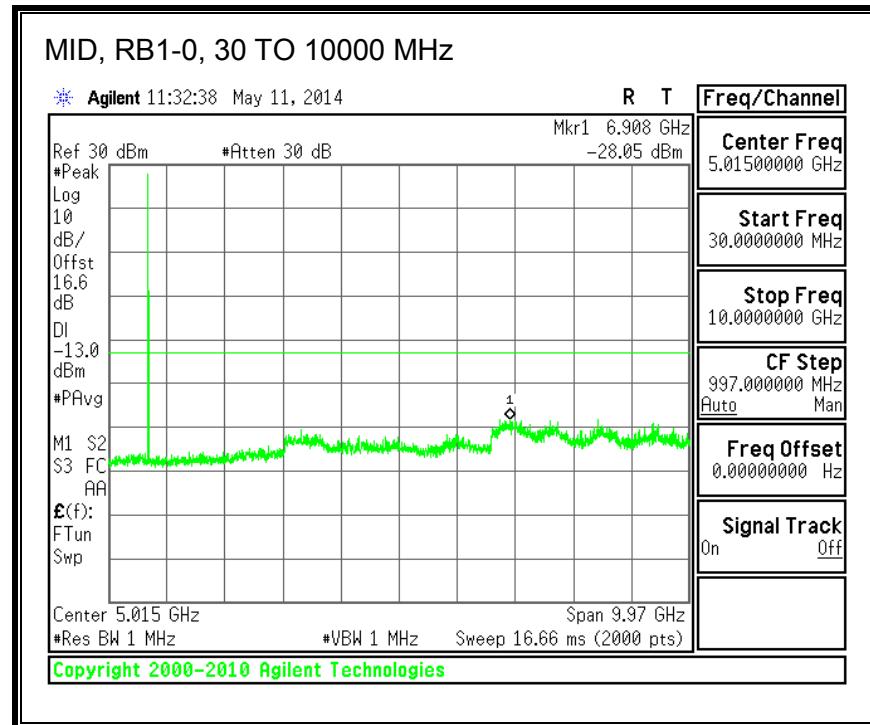
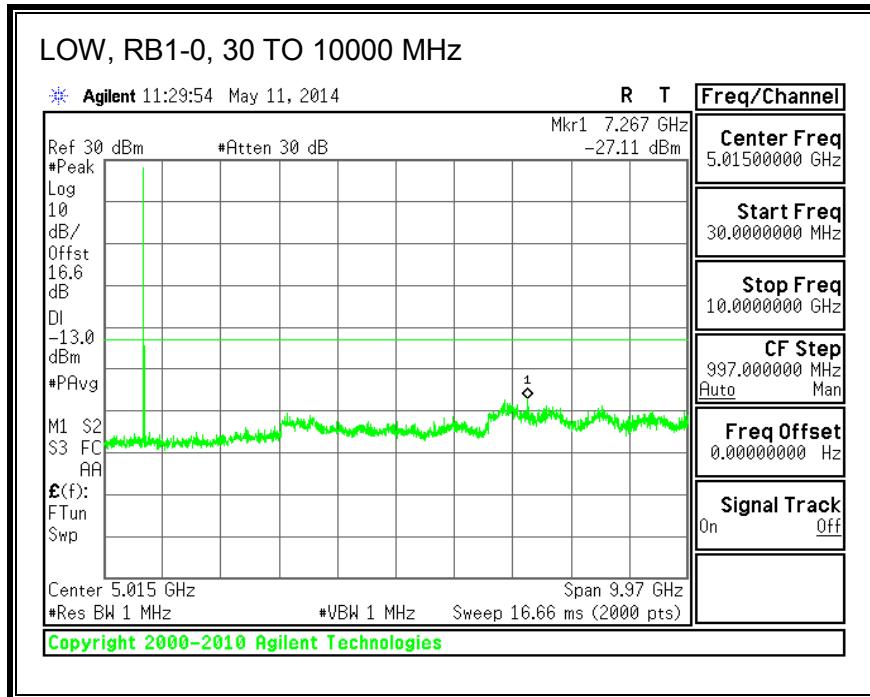


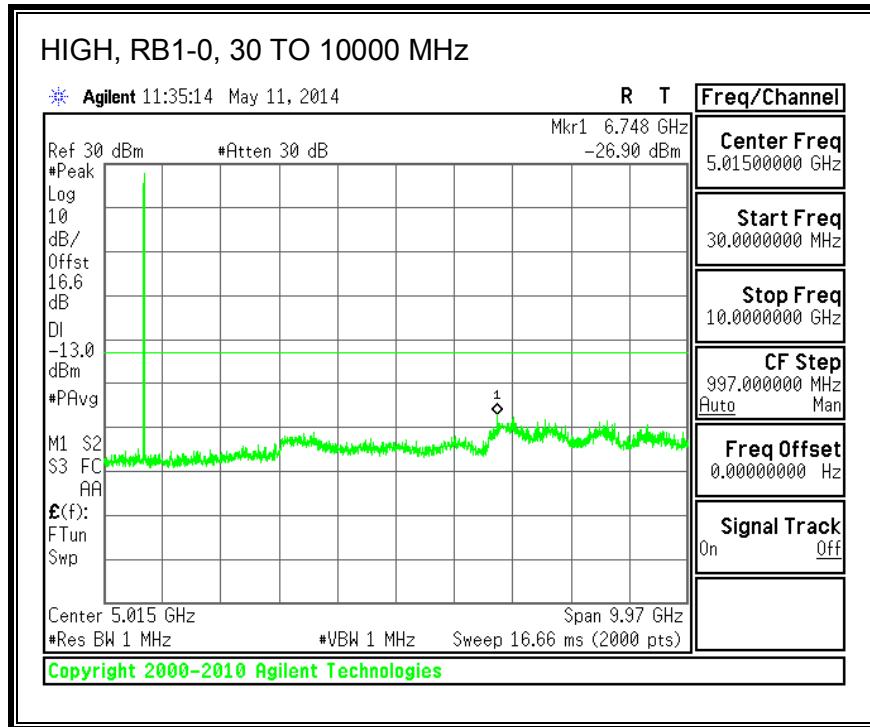
16QAM, (10.0 MHz BAND WIDTH)



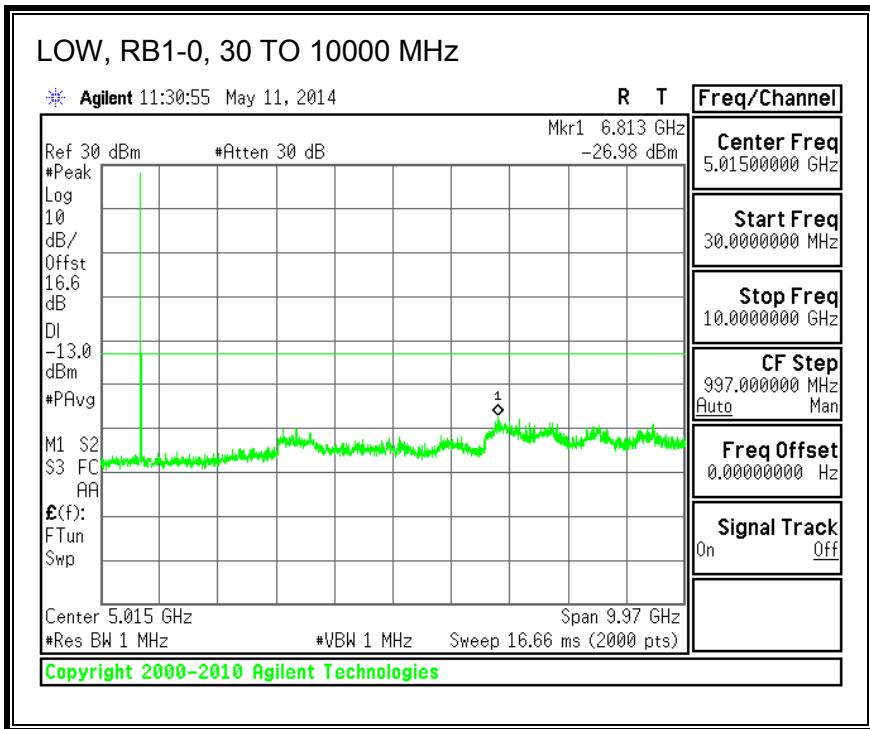
8.2.15. LTE BAND 17

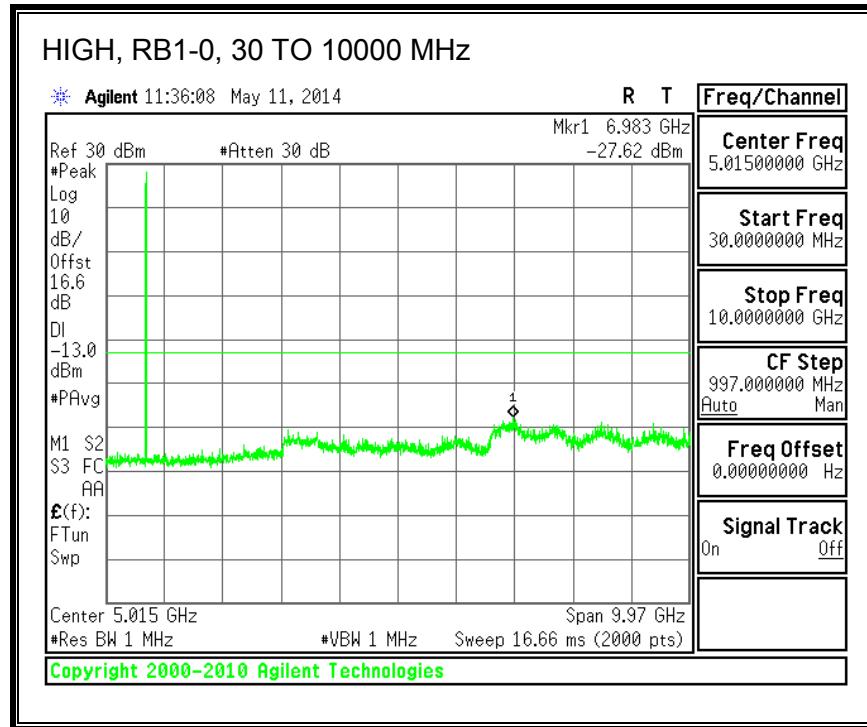
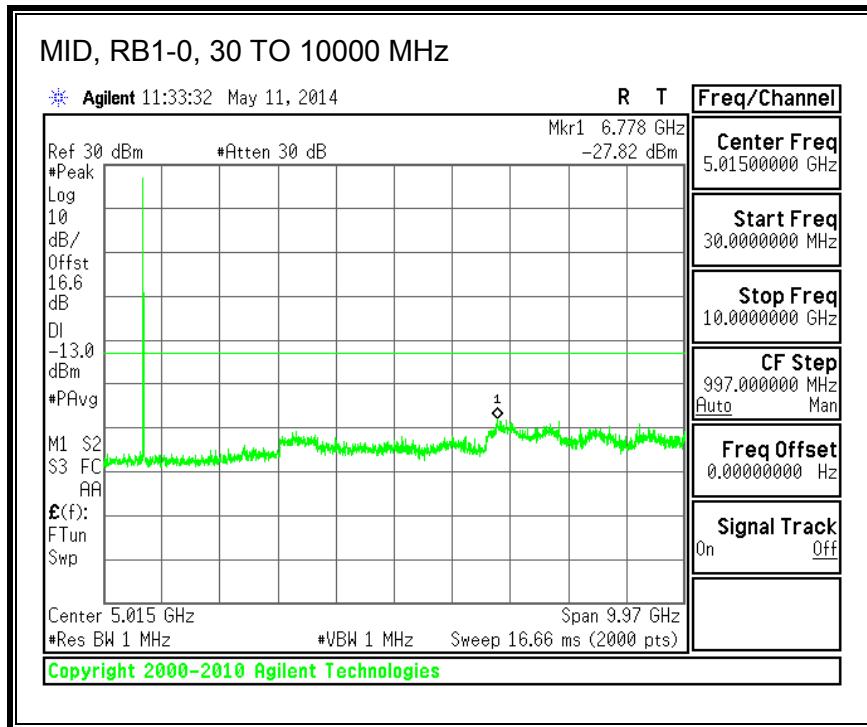
QPSK, (5.0 MHz BAND WIDTH)



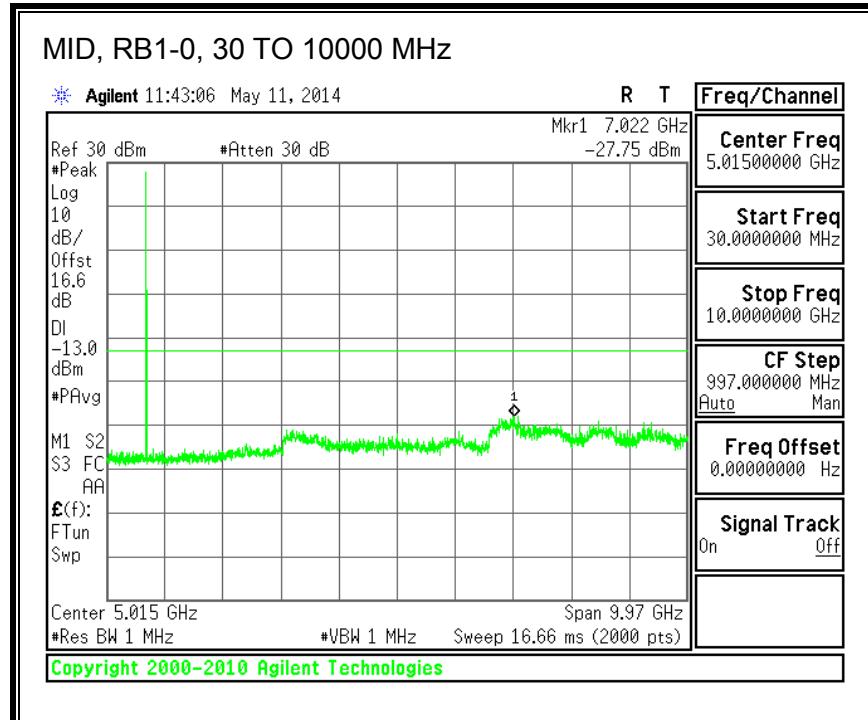
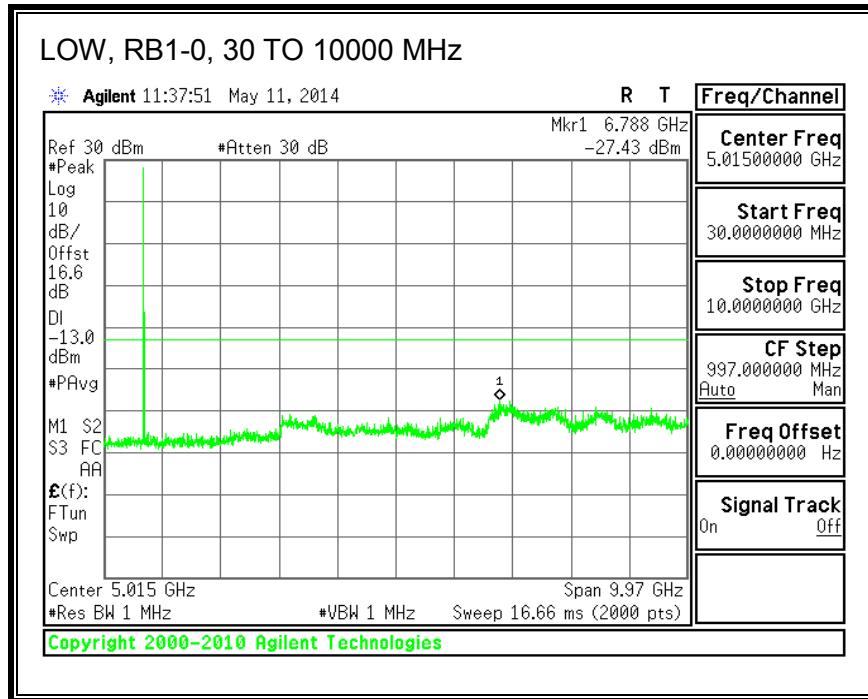


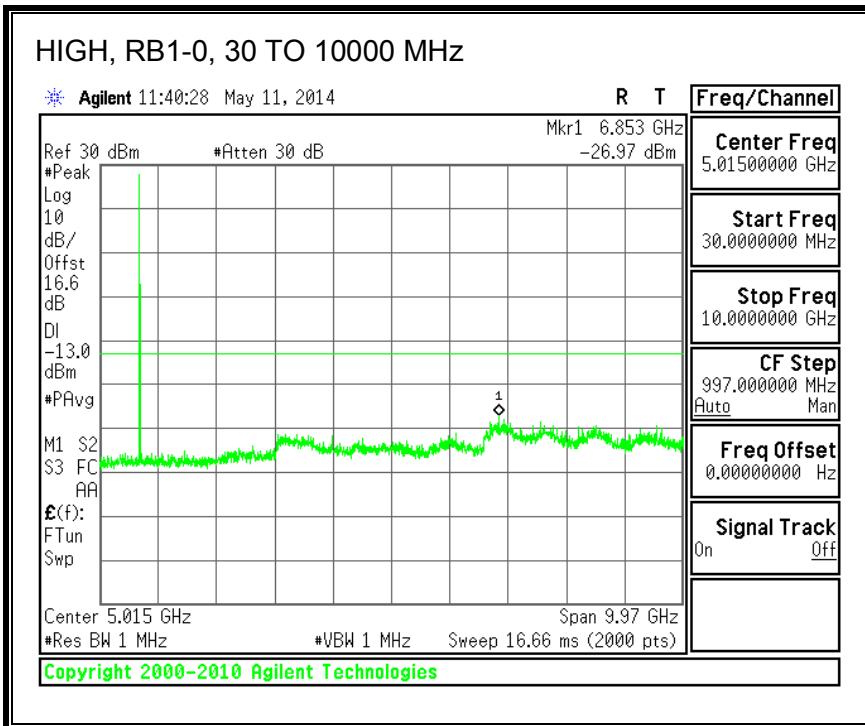
16QAM, (5.0 MHz BAND WIDTH)



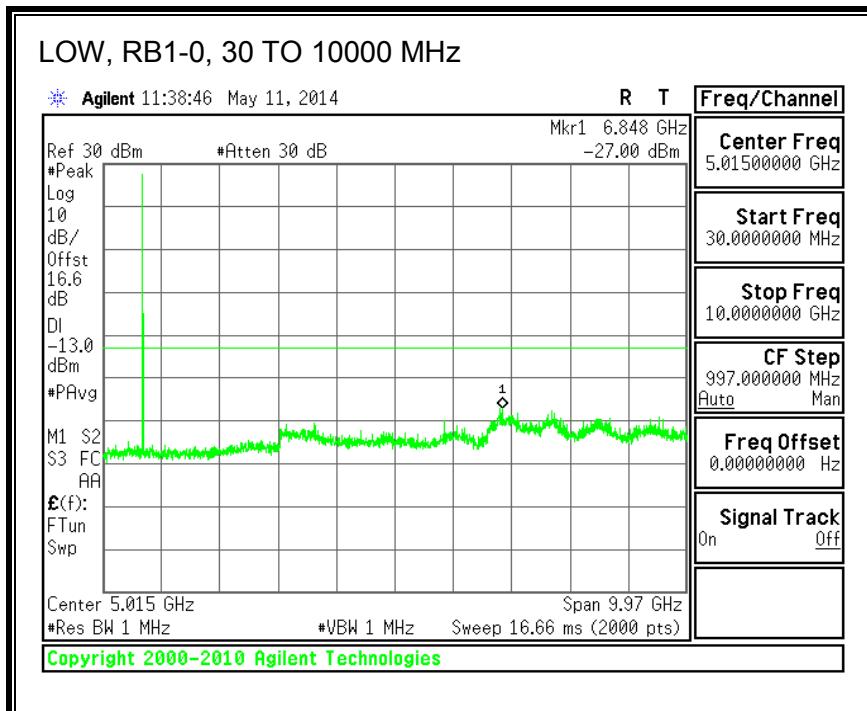


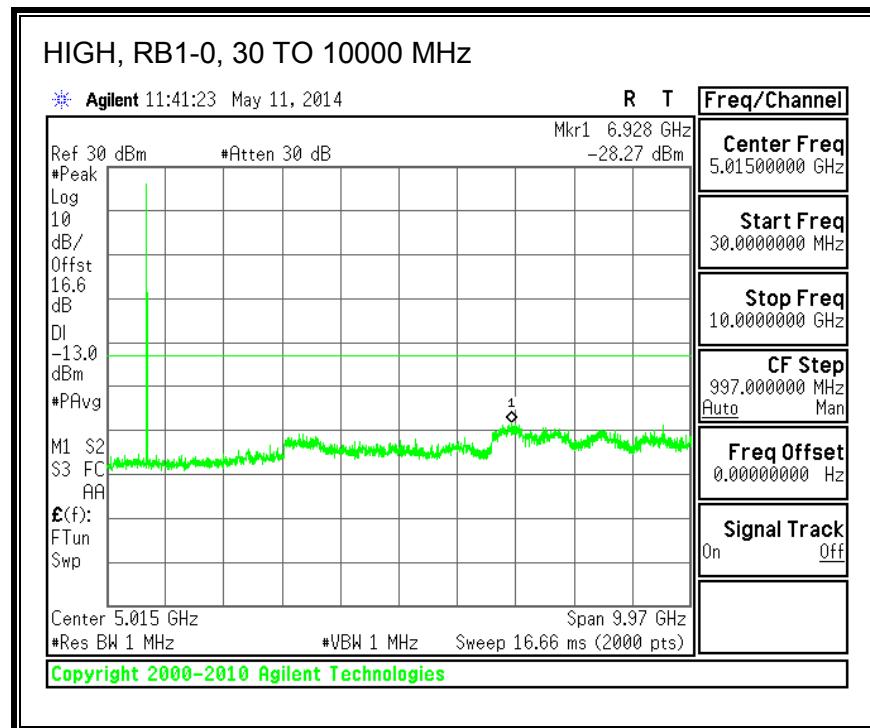
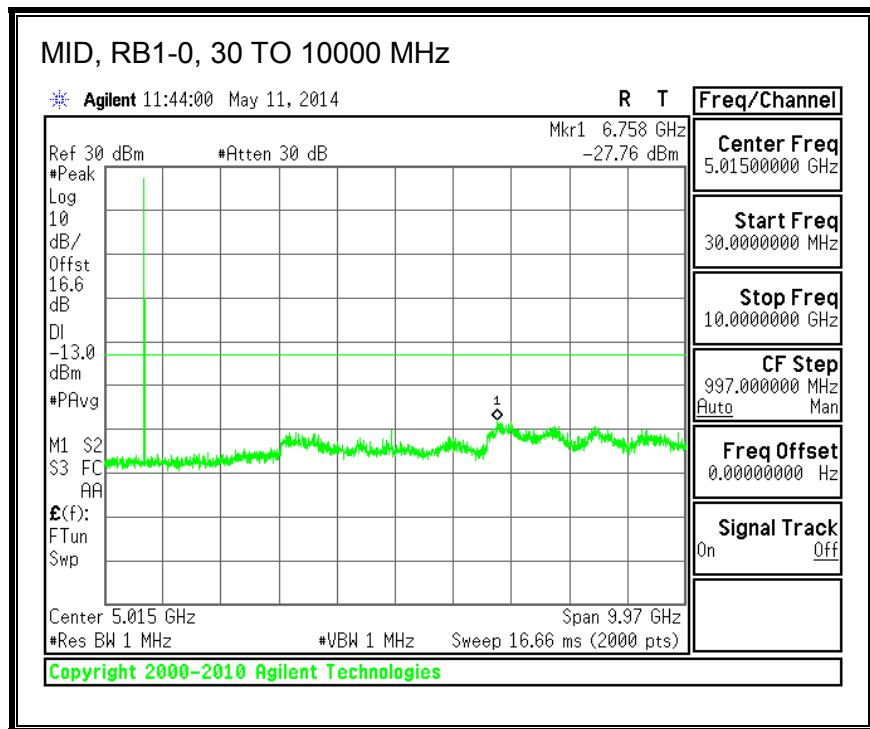
QPSK, (10.0 MHz BAND WIDTH)





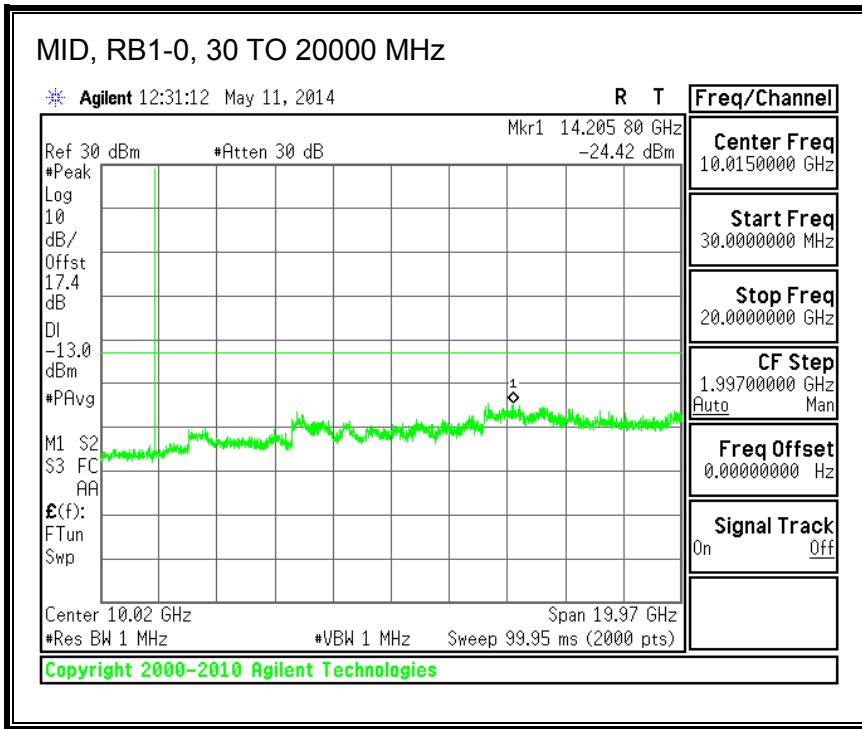
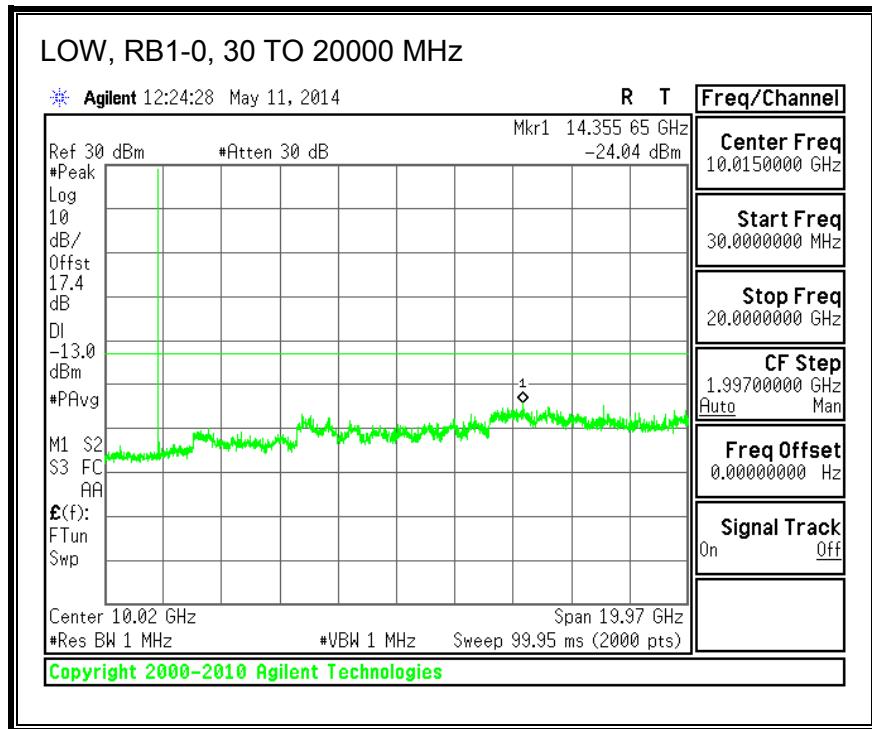
16QAM, (10.0 MHz BAND WIDTH)

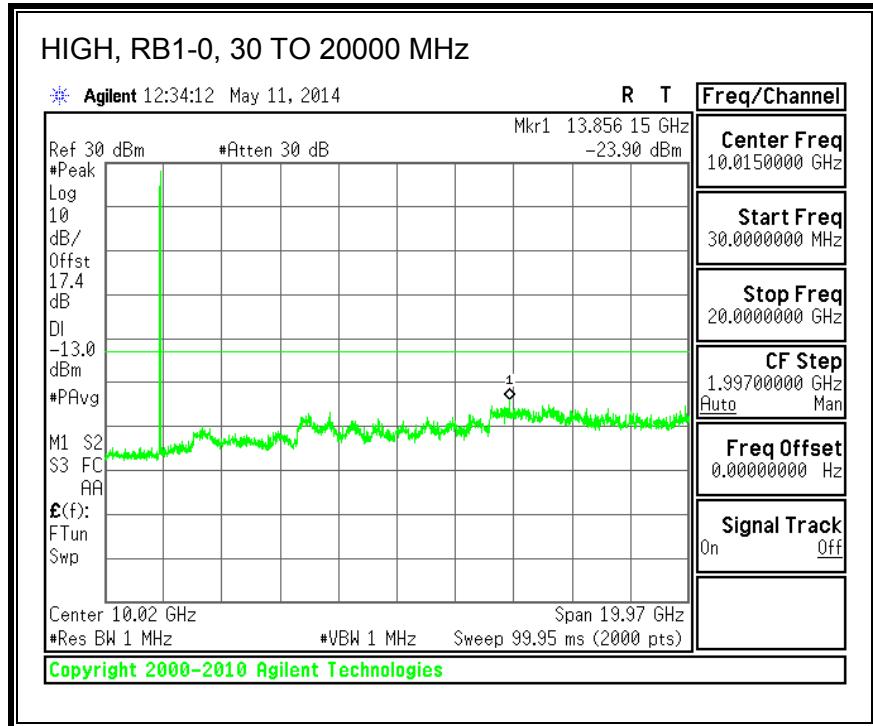




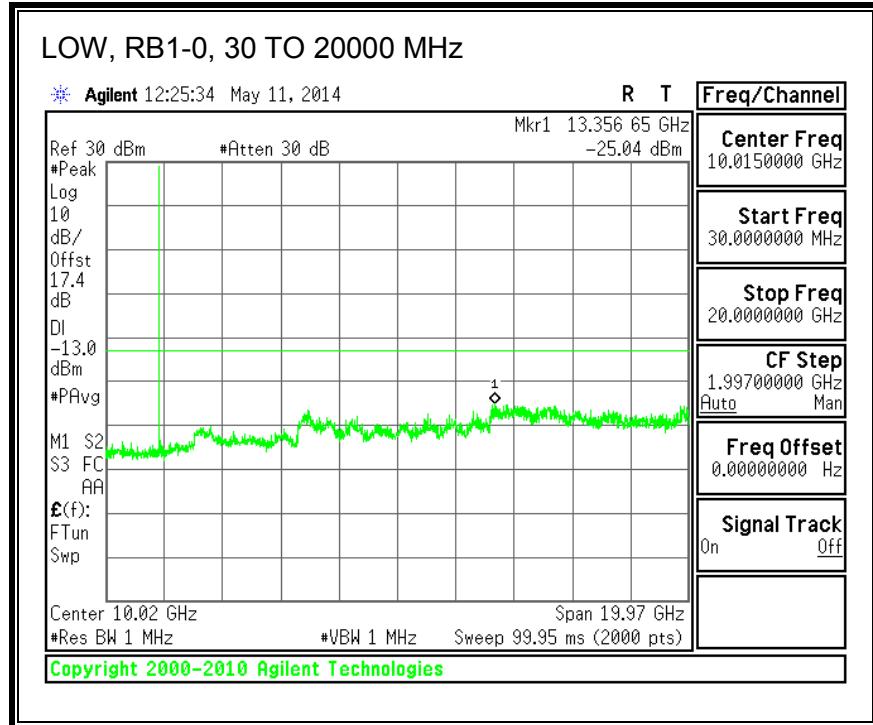
8.2.16. LTE BAND 25

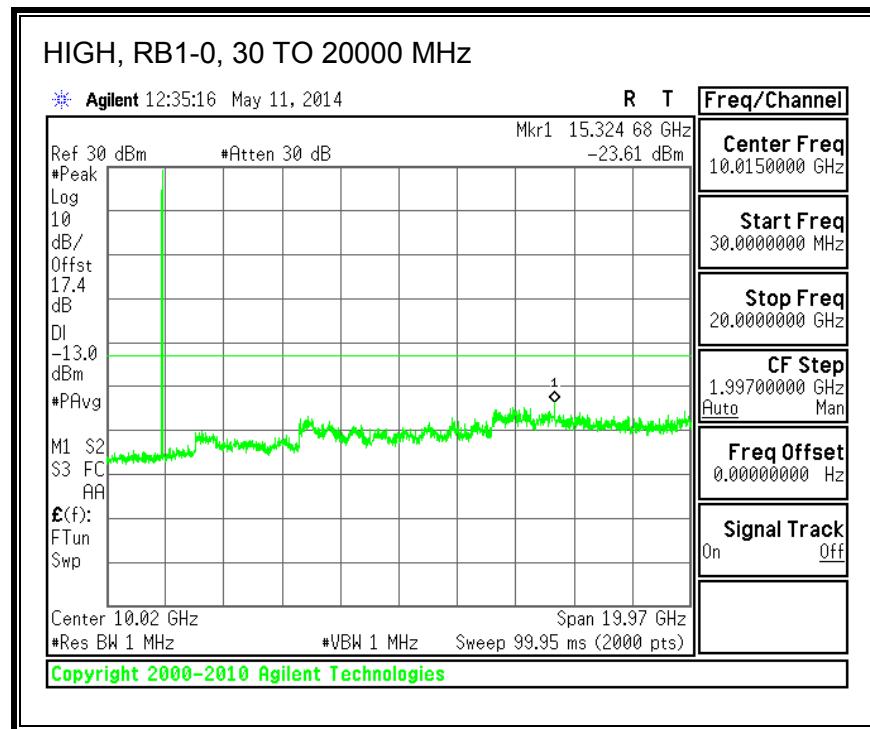
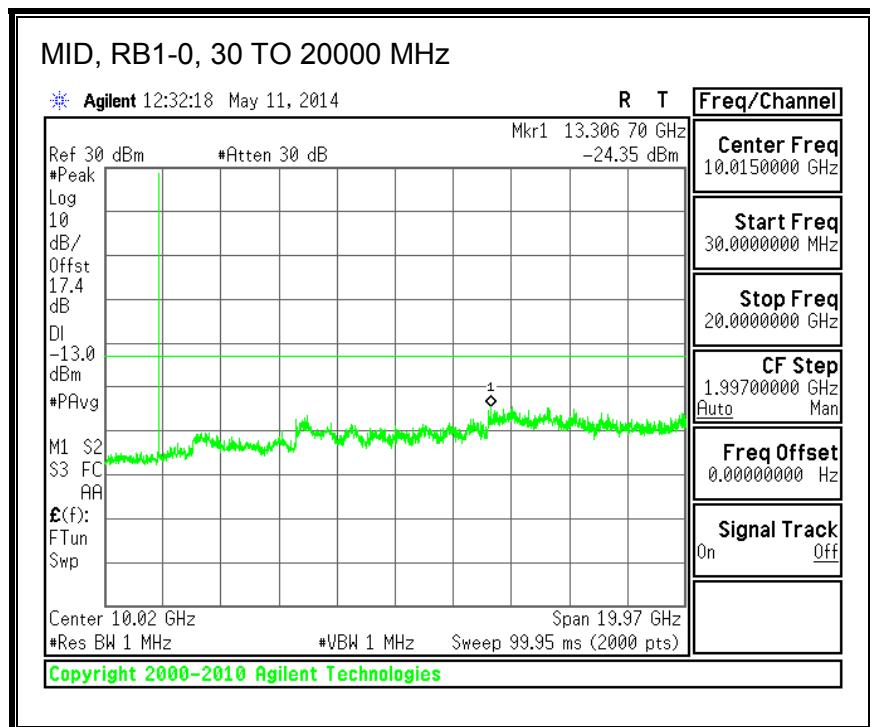
QPSK, (1.4 MHz BAND WIDTH)



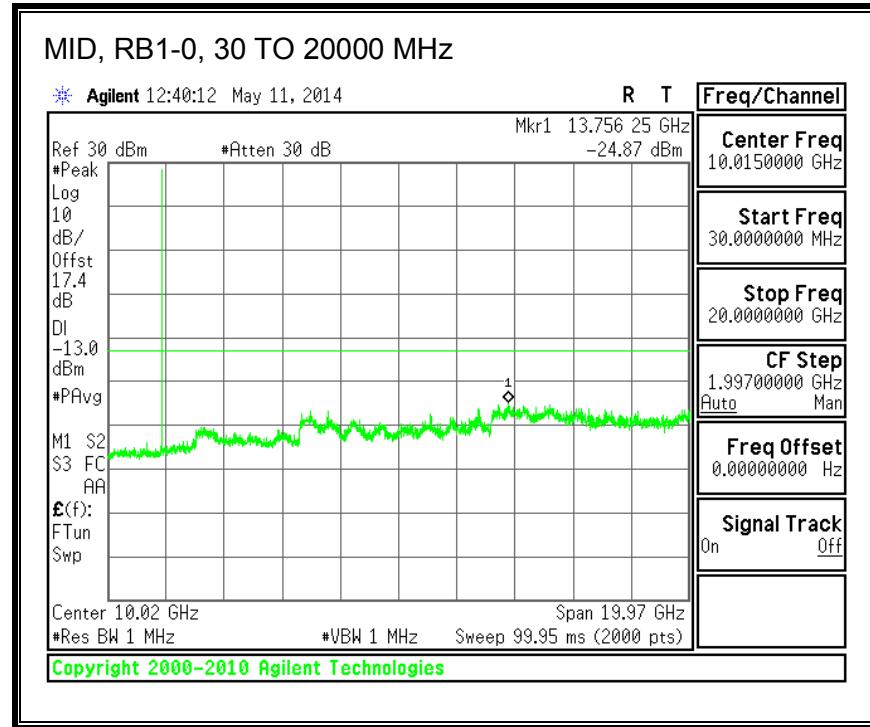
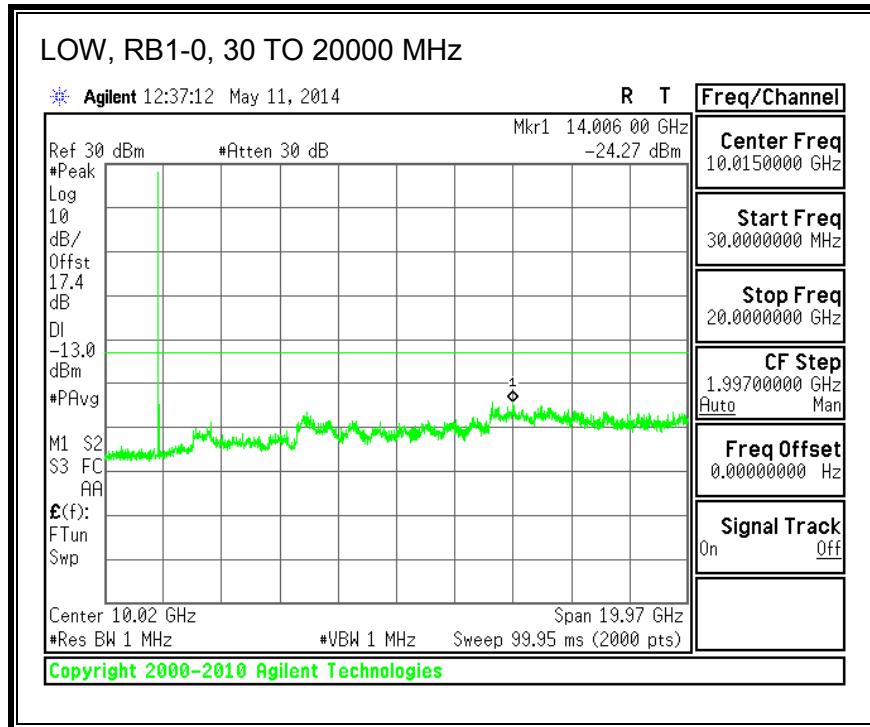


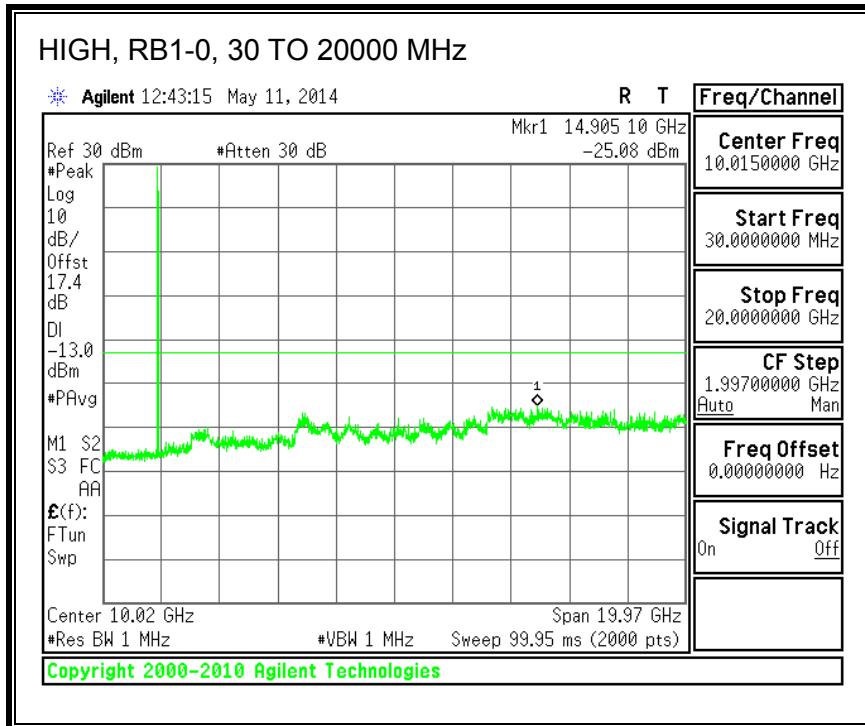
16QAM, (1.4 MHz BAND WIDTH)



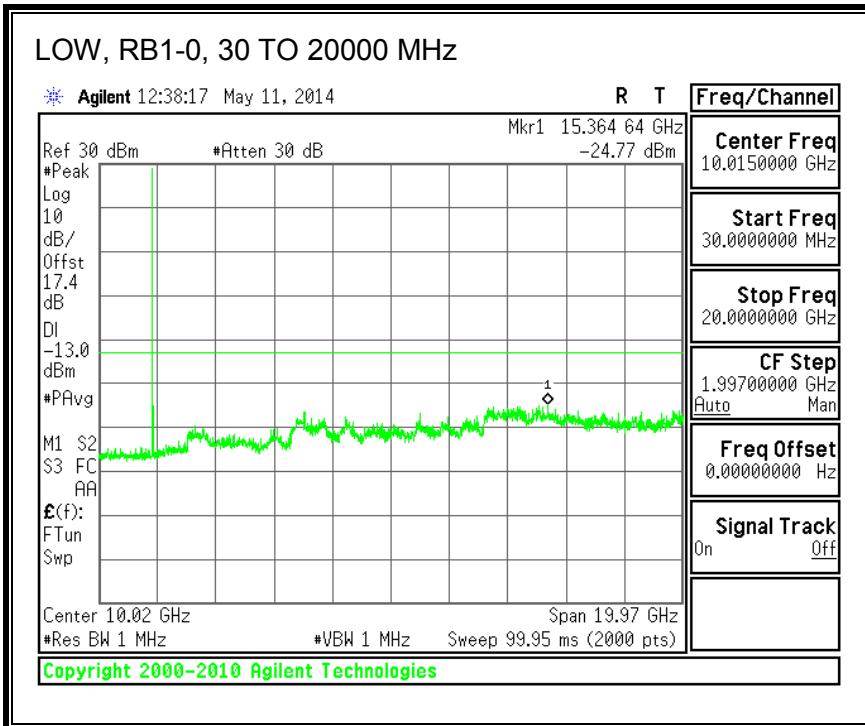


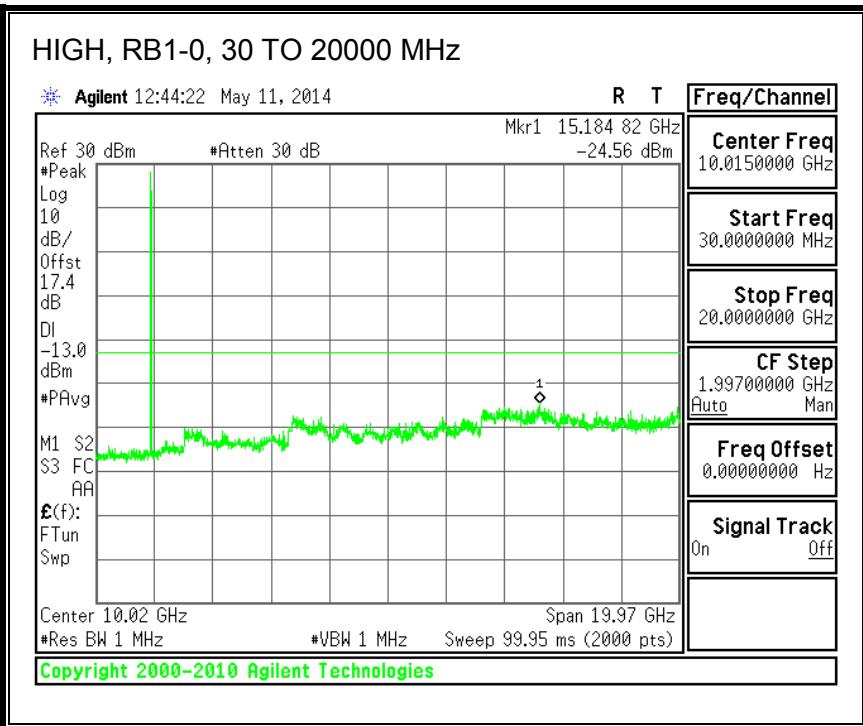
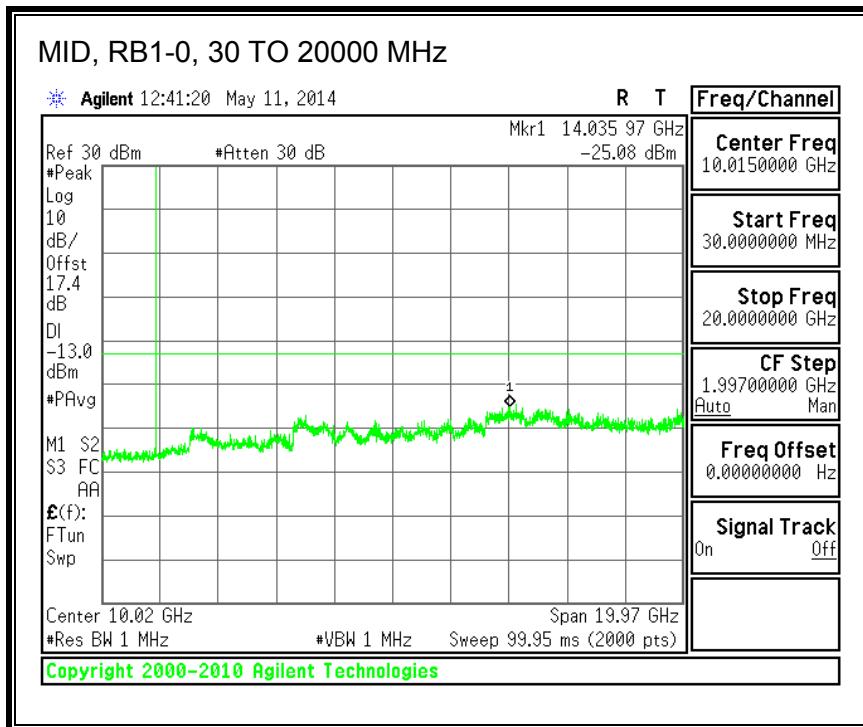
QPSK, (3.0 MHz BAND WIDTH)



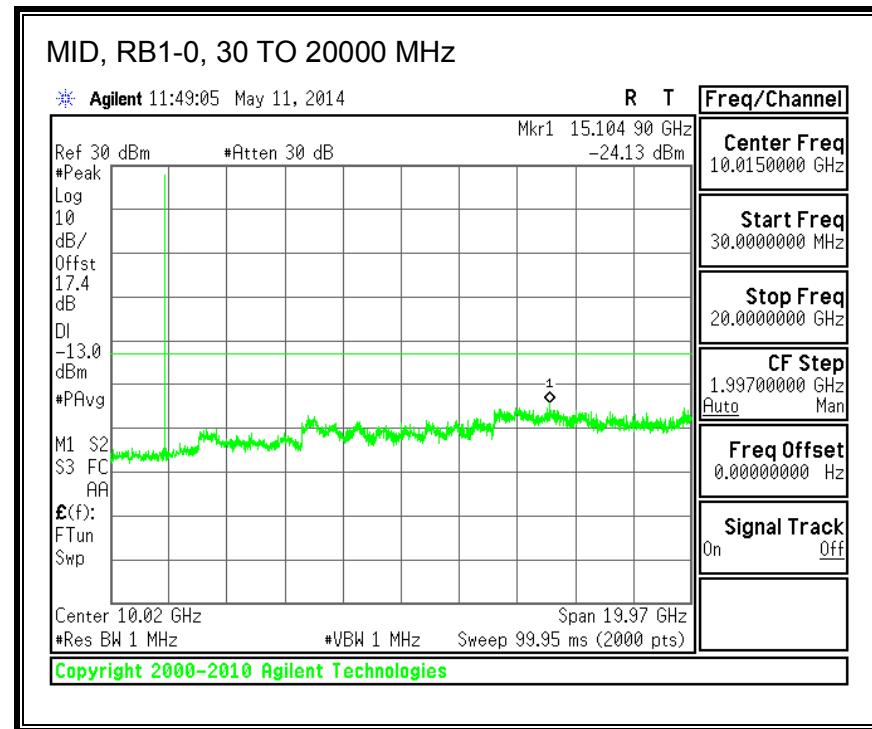
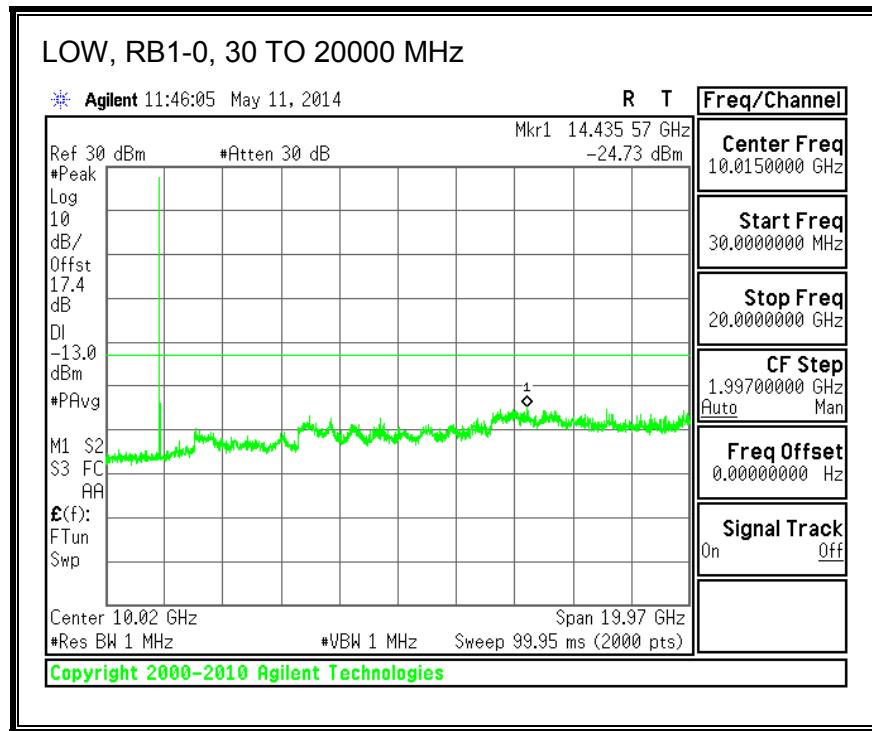


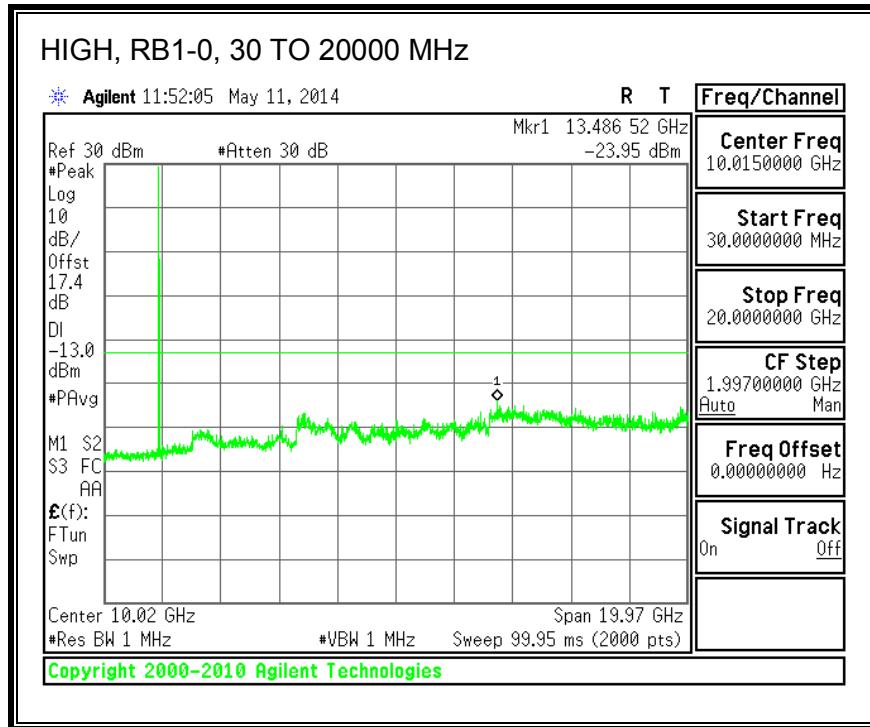
16QAM, (3.0 MHz BAND WIDTH)



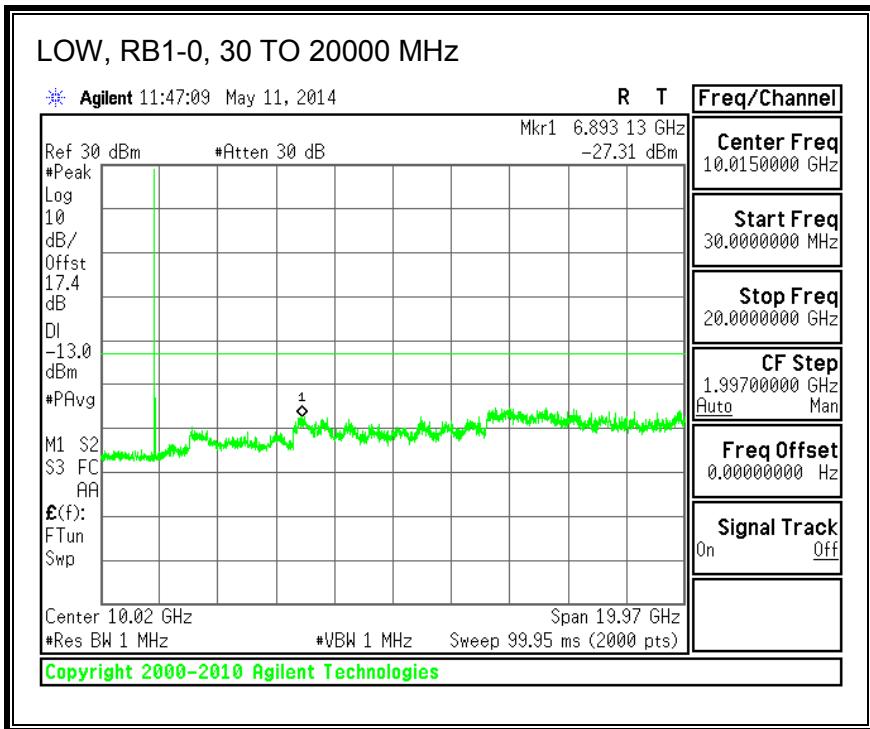


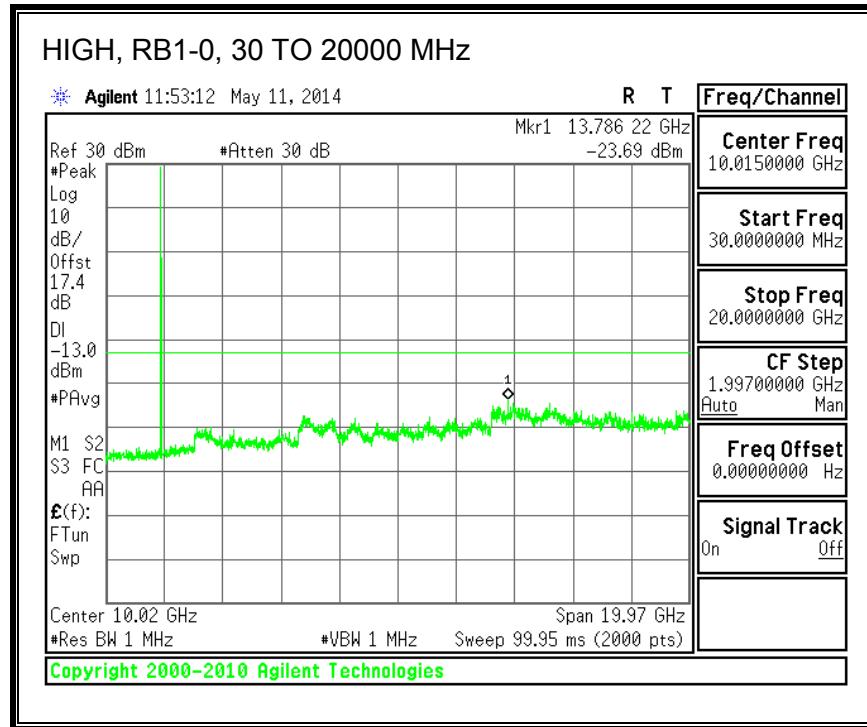
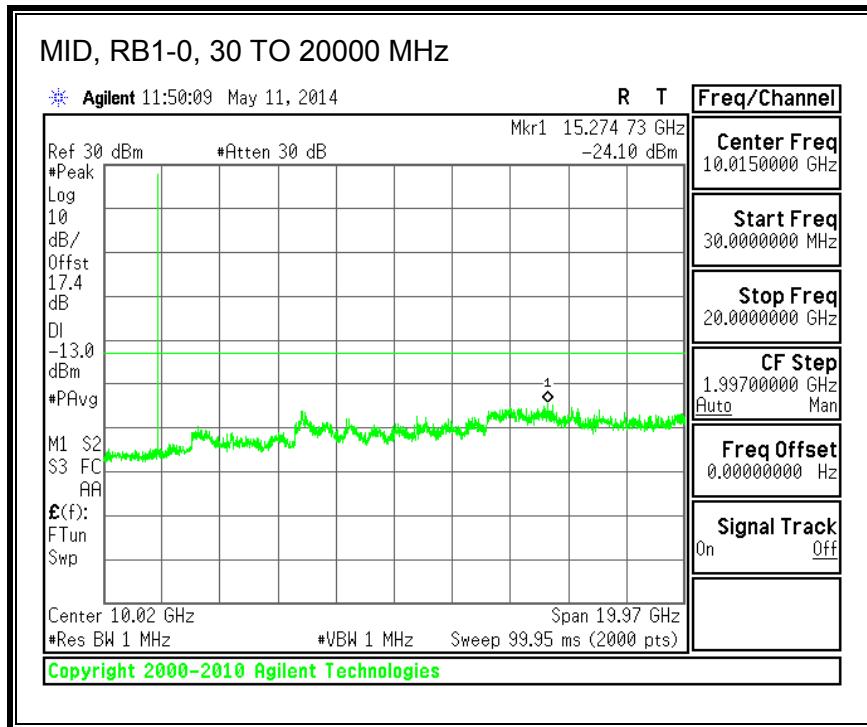
QPSK, (5.0 MHz BAND WIDTH)



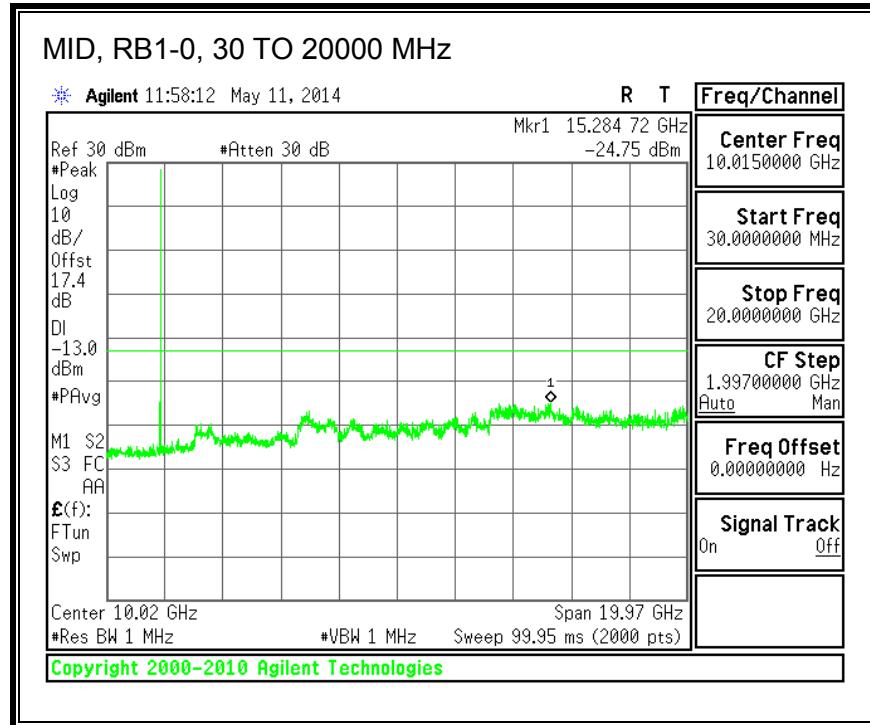
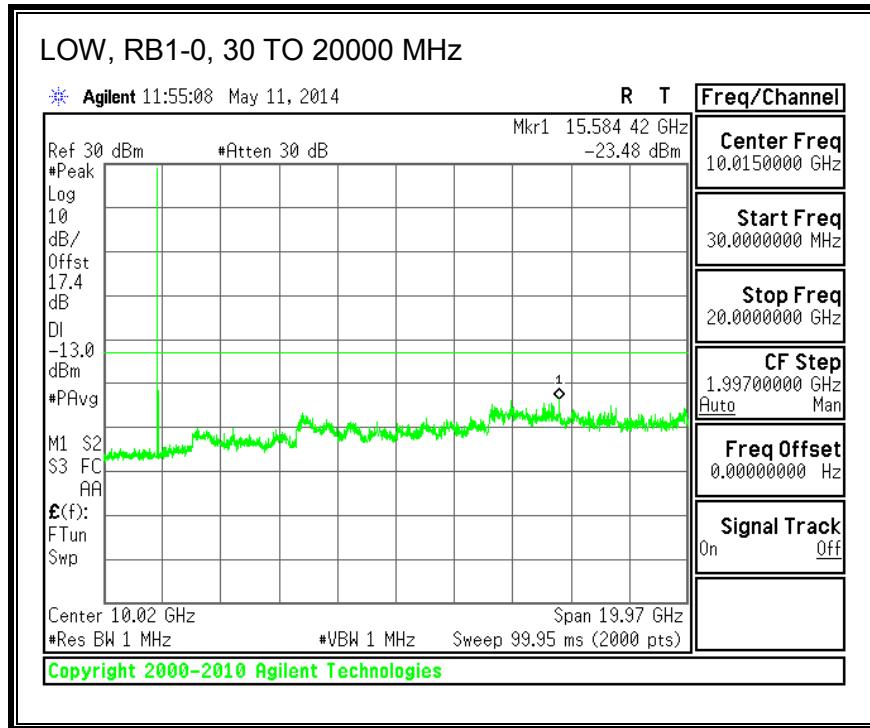


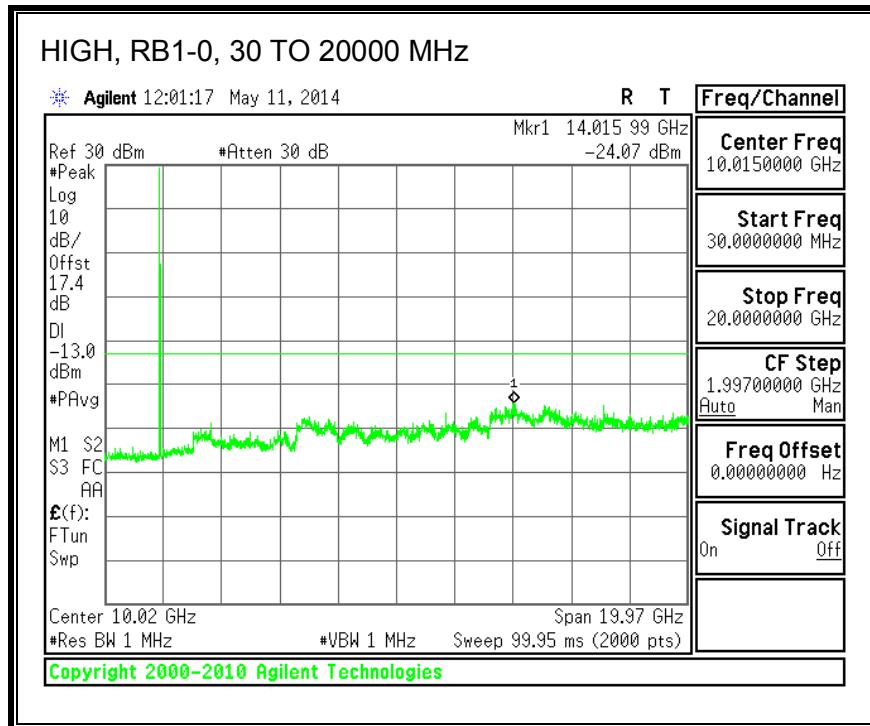
16QAM, (5.0 MHz BAND WIDTH)



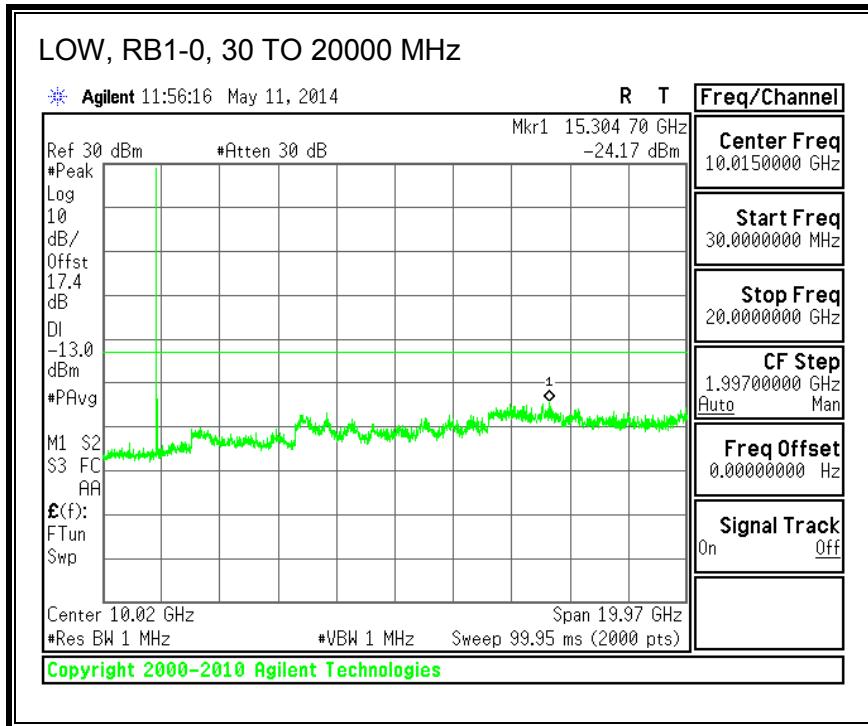


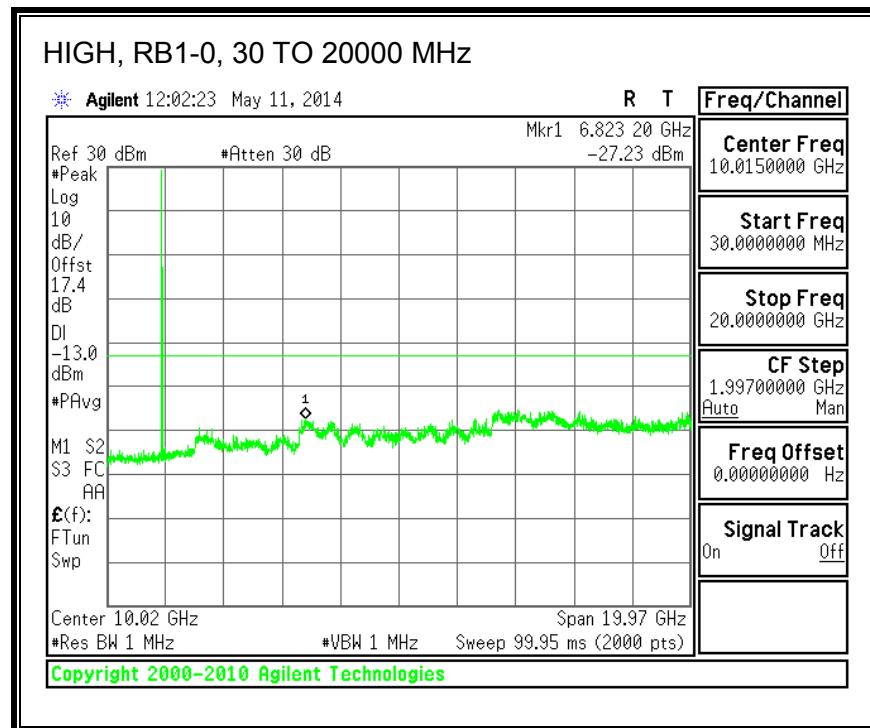
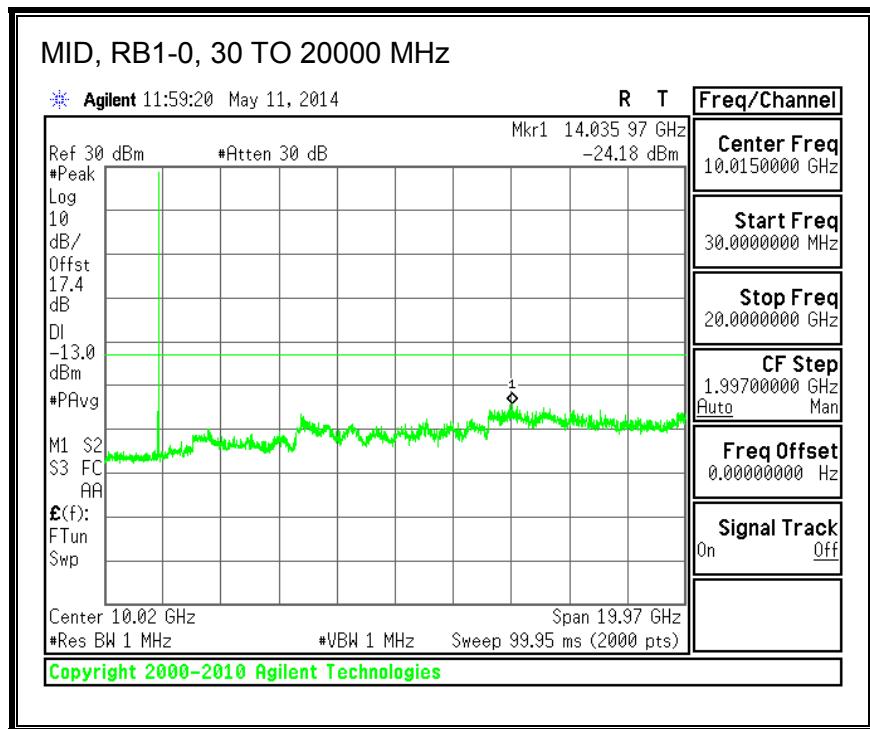
QPSK, (10.0 MHz BAND WIDTH)



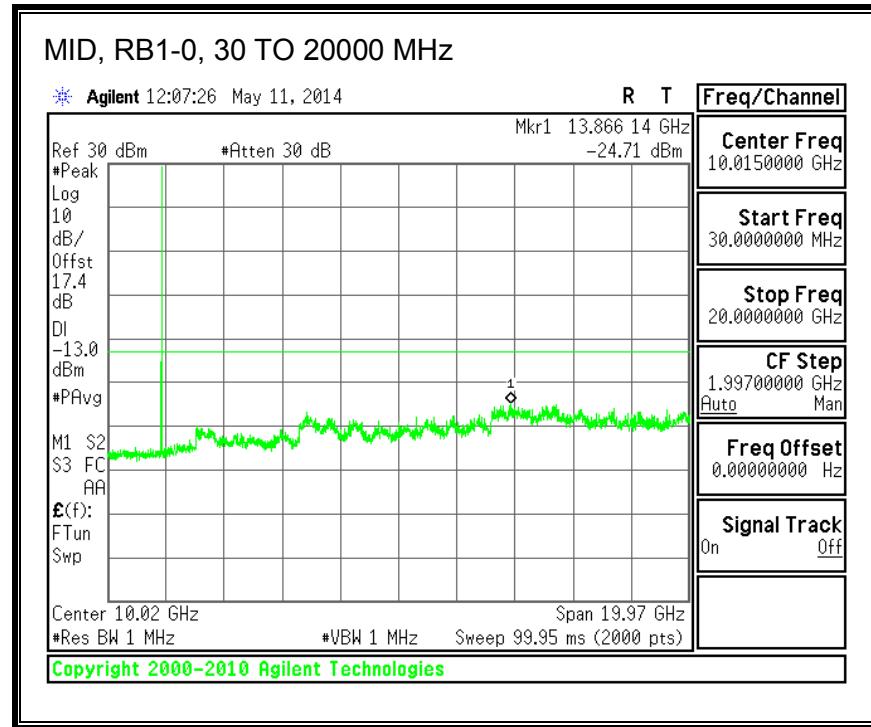
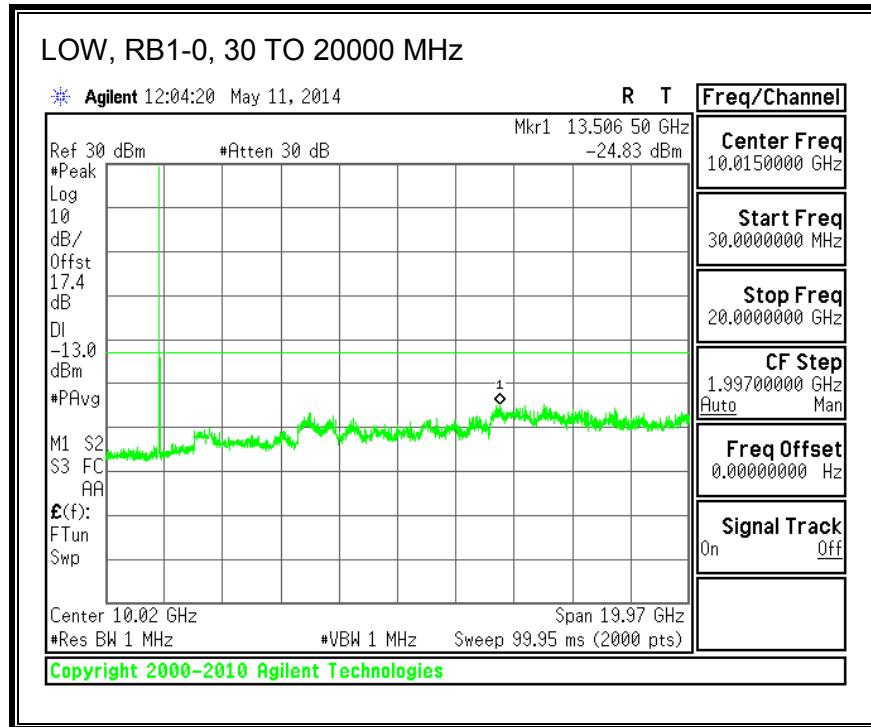


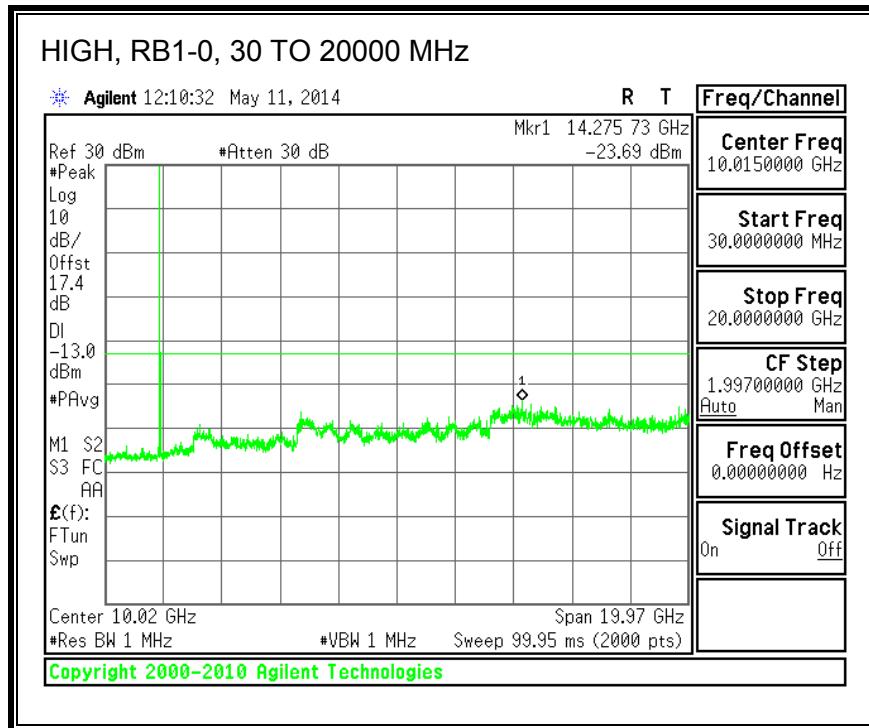
16QAM, (10.0 MHz BAND WIDTH)



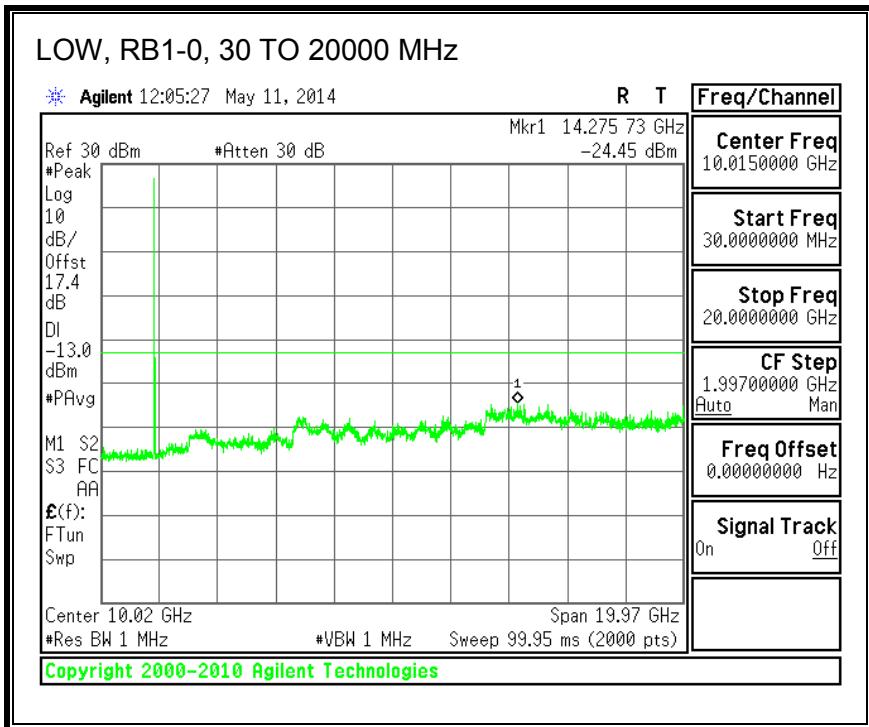


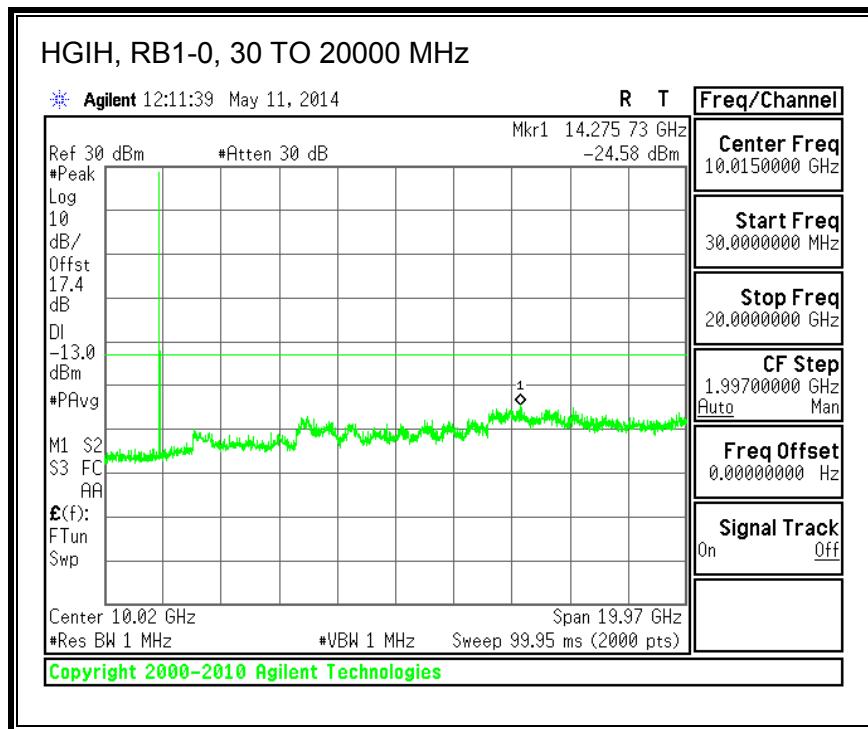
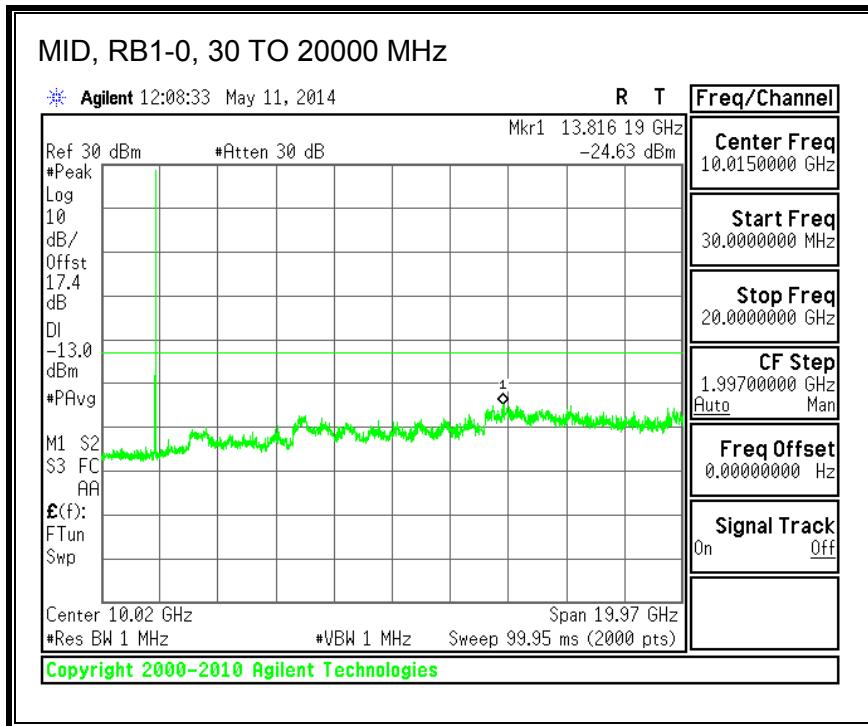
QPSK, (15.0 MHz BAND WIDTH)



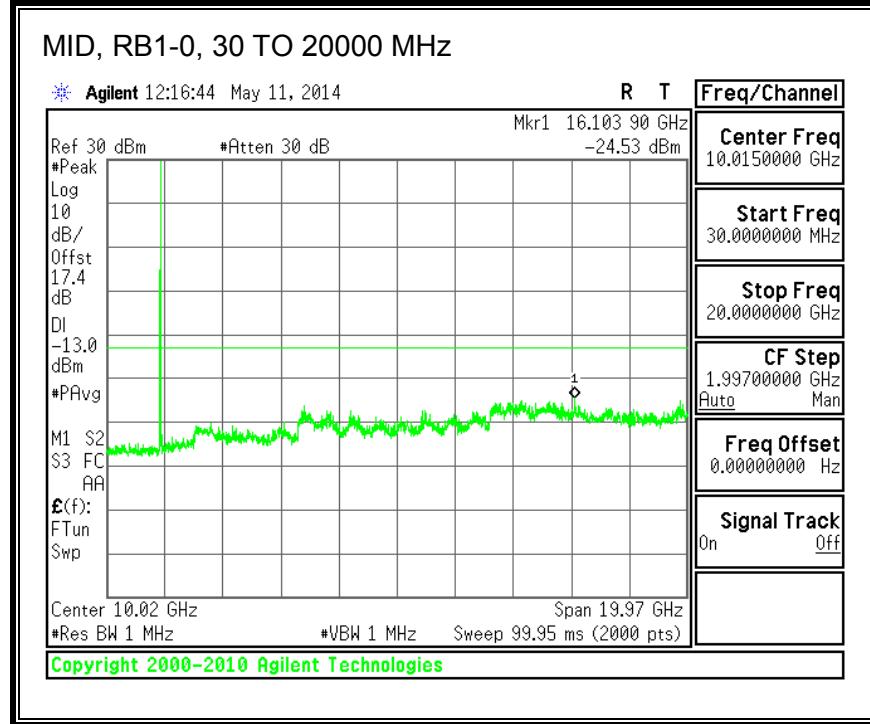
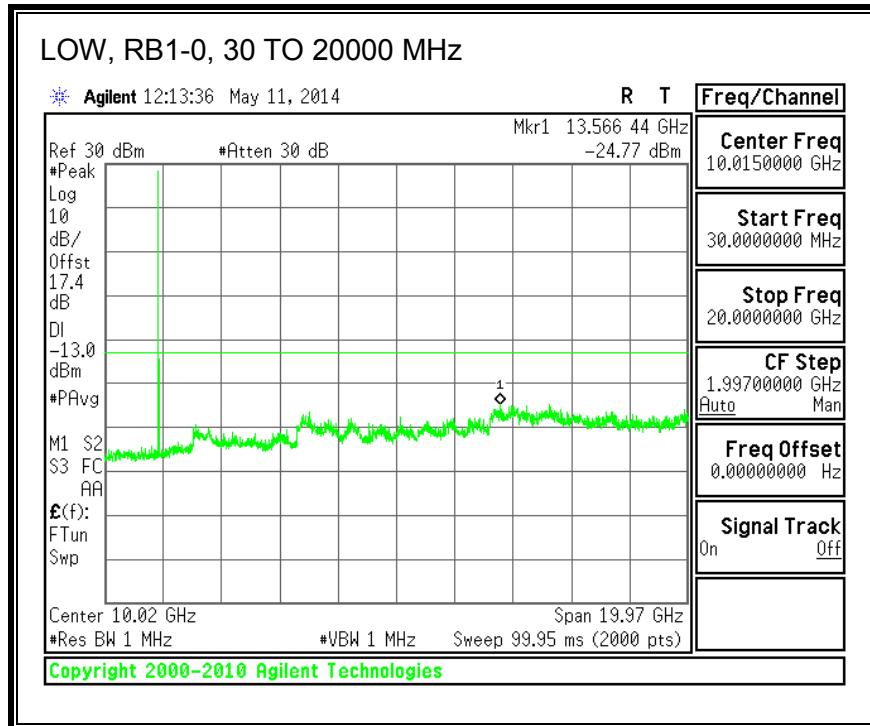


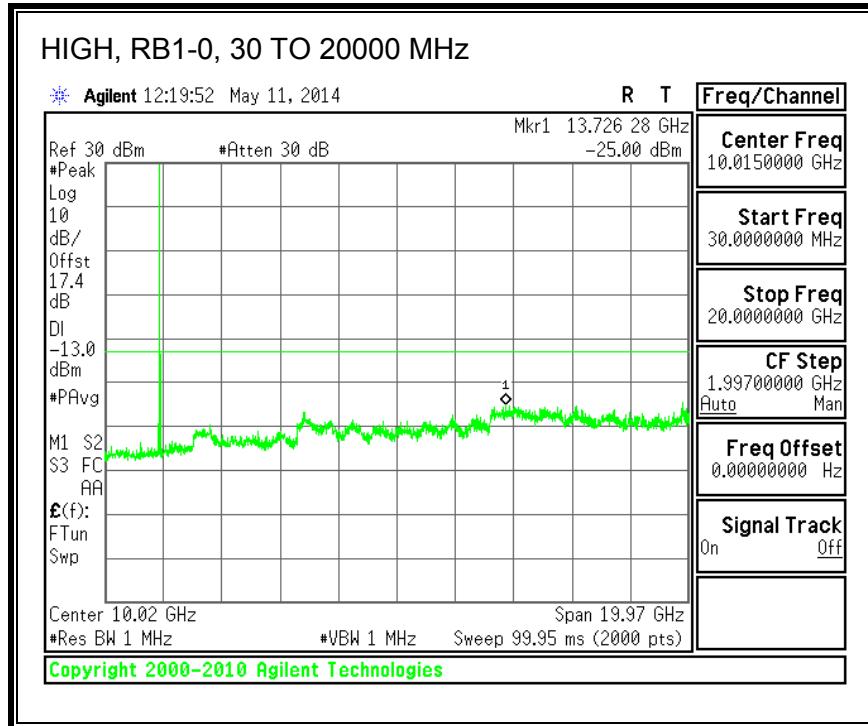
16QAM, (15.0 MHz BAND WIDTH)



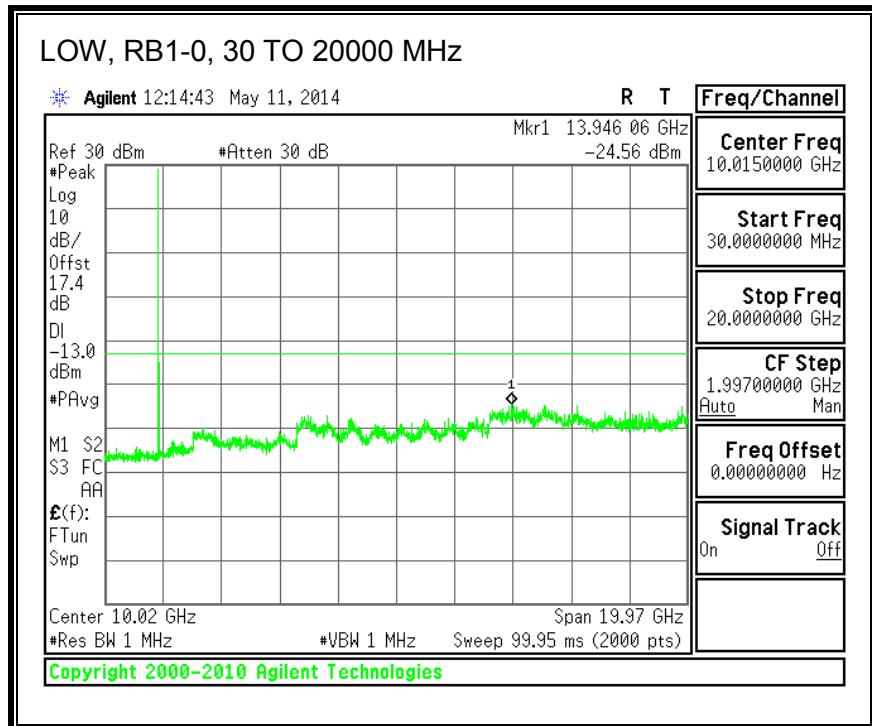


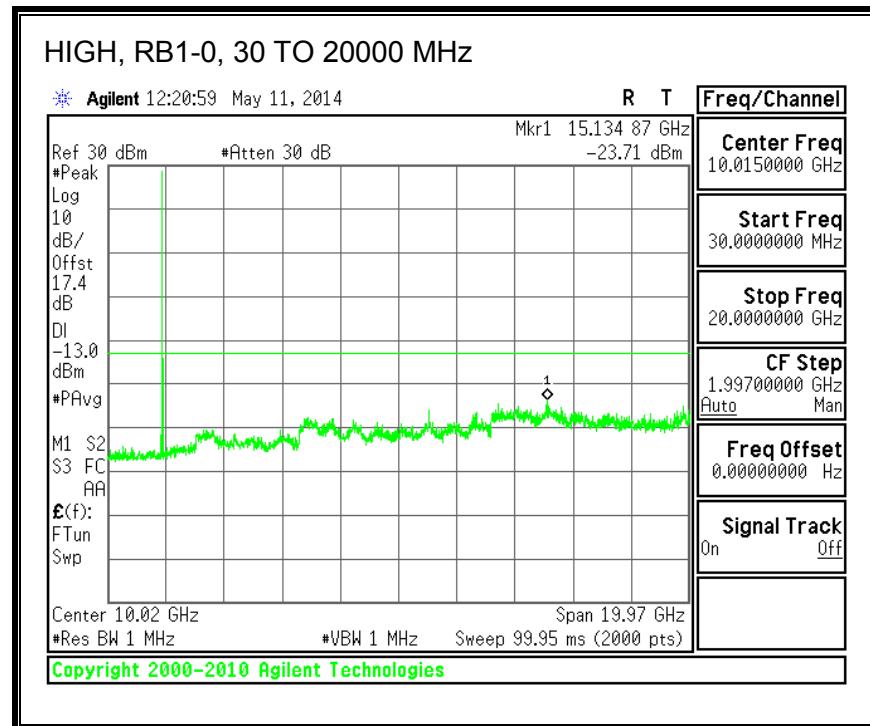
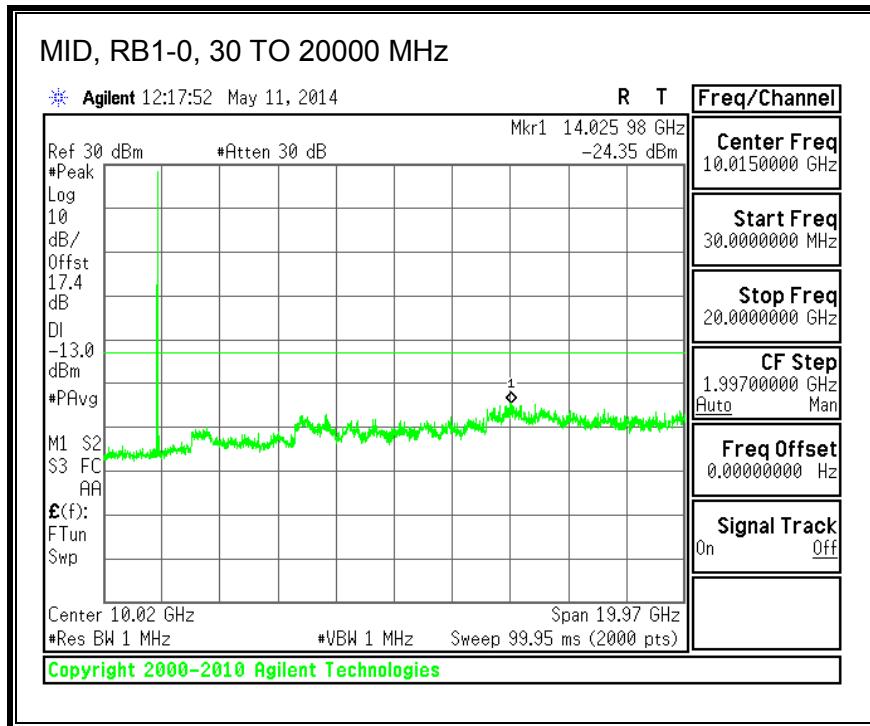
QPSK, (20.0 MHz BAND WIDTH)





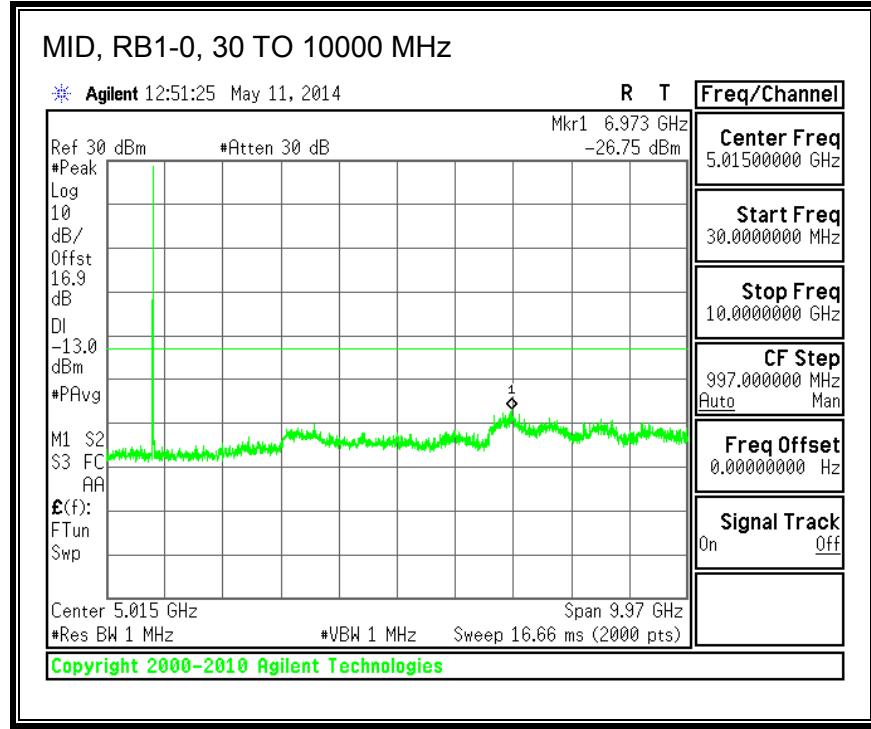
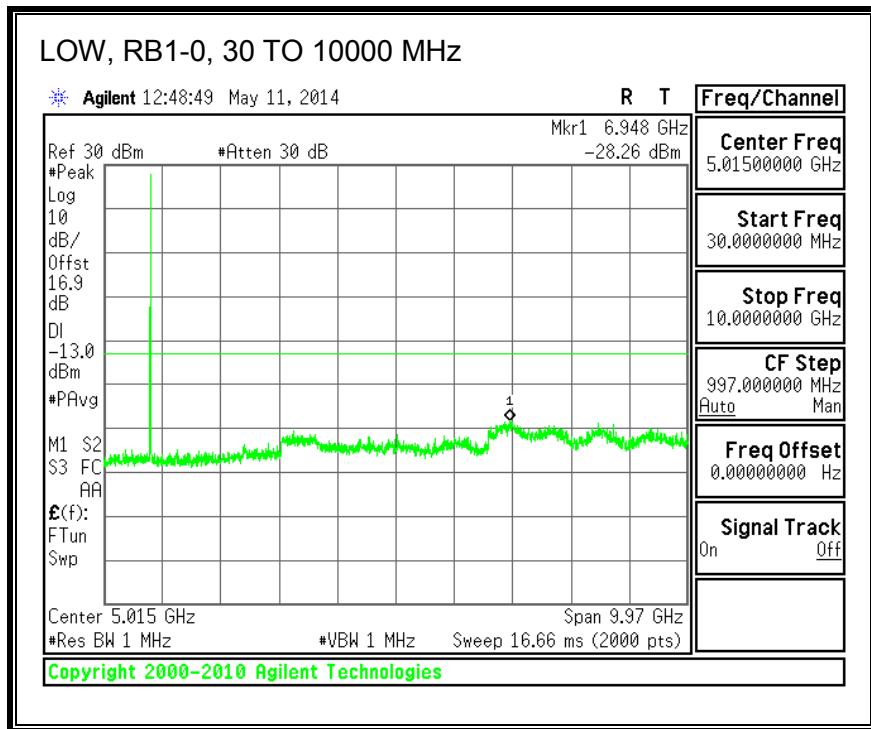
16QAM, (20.0 MHz BAND WIDTH)

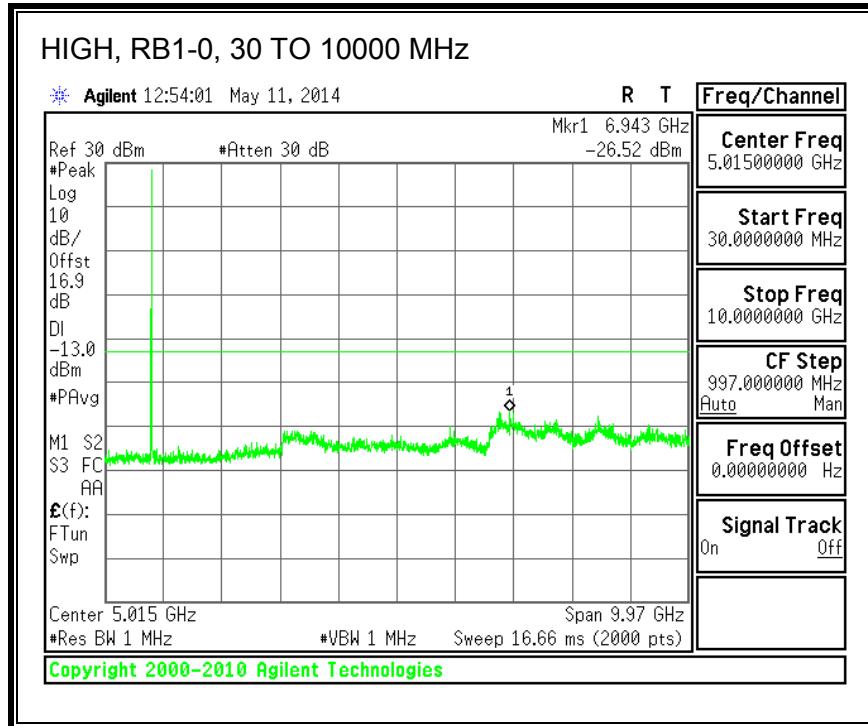




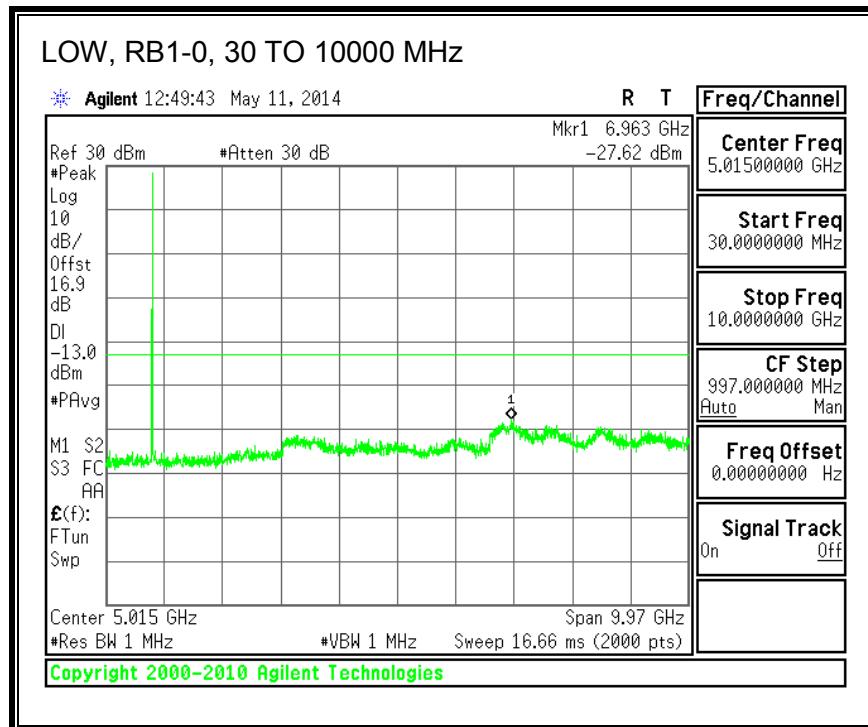
8.2.17. LTE BAND 26

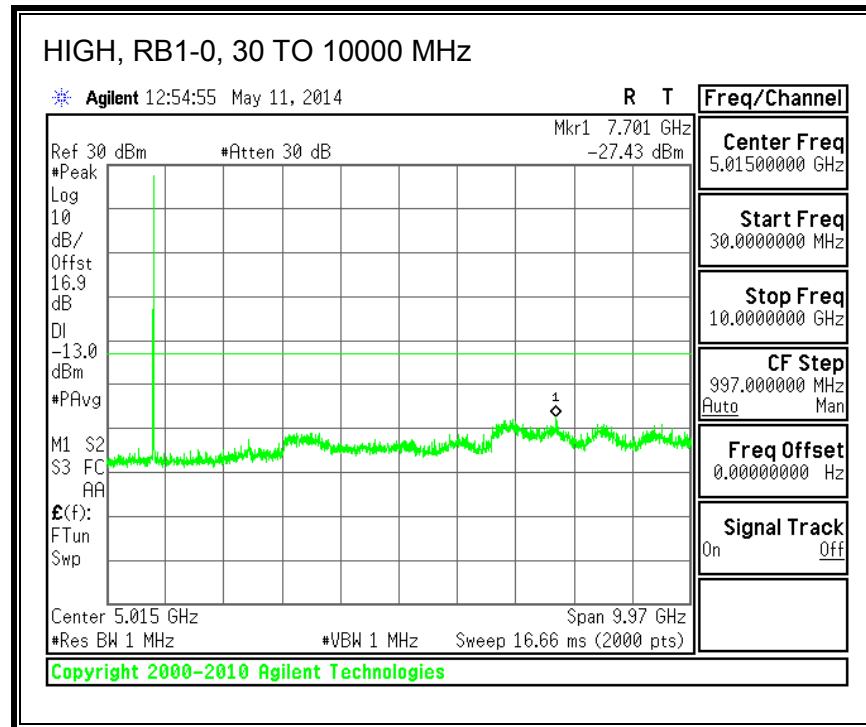
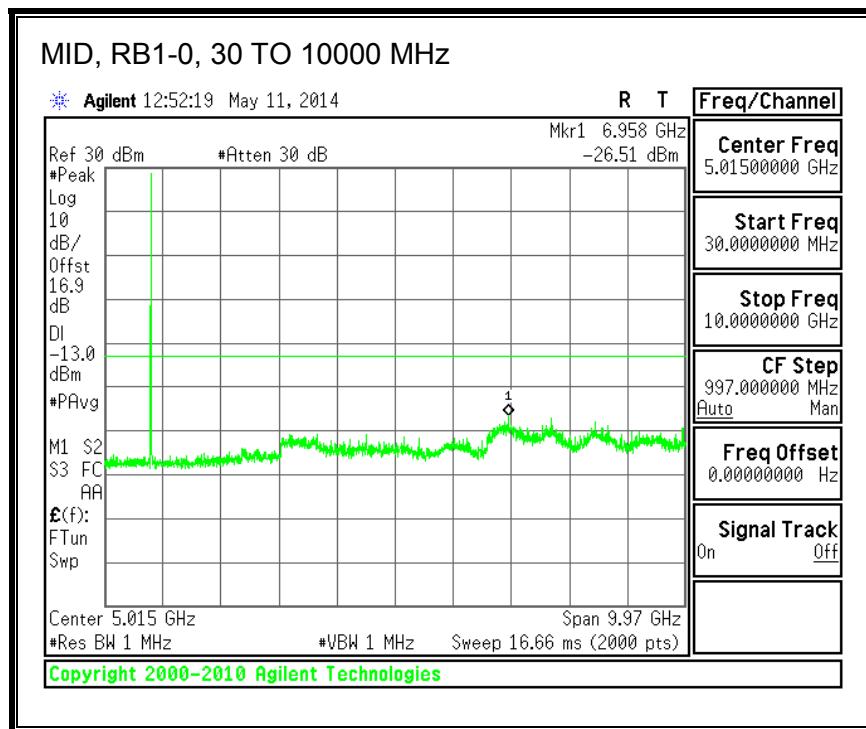
QPSK, (3.0 MHz BAND WIDTH)



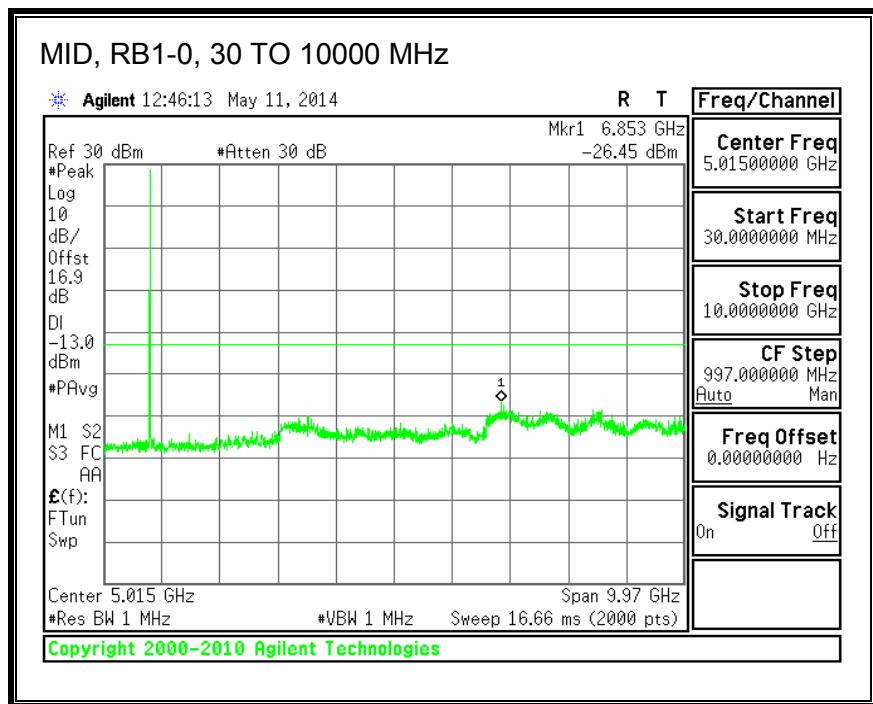


16QAM, (3.0 MHz BAND WIDTH)

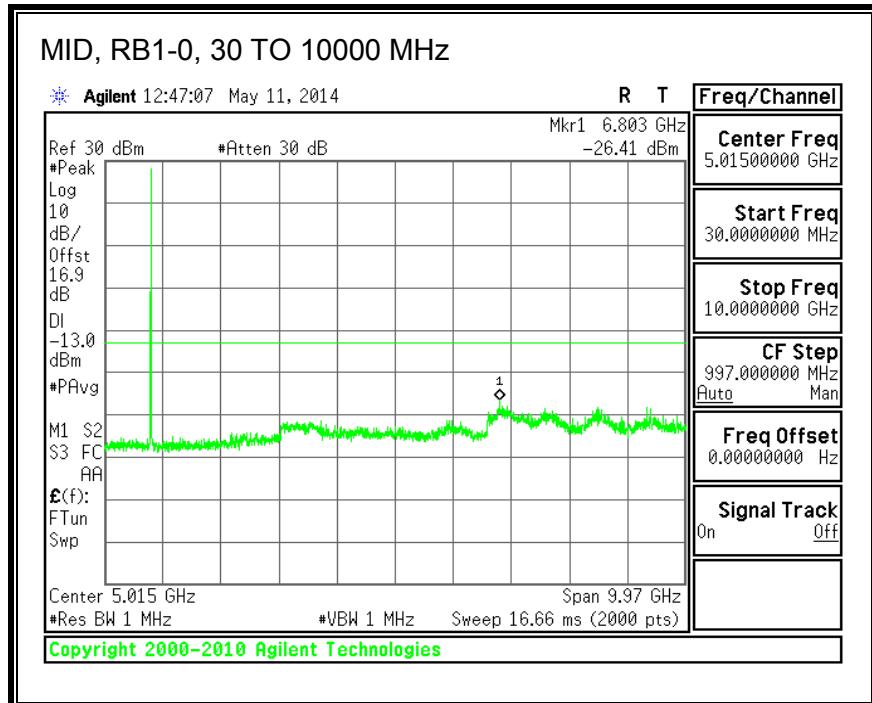




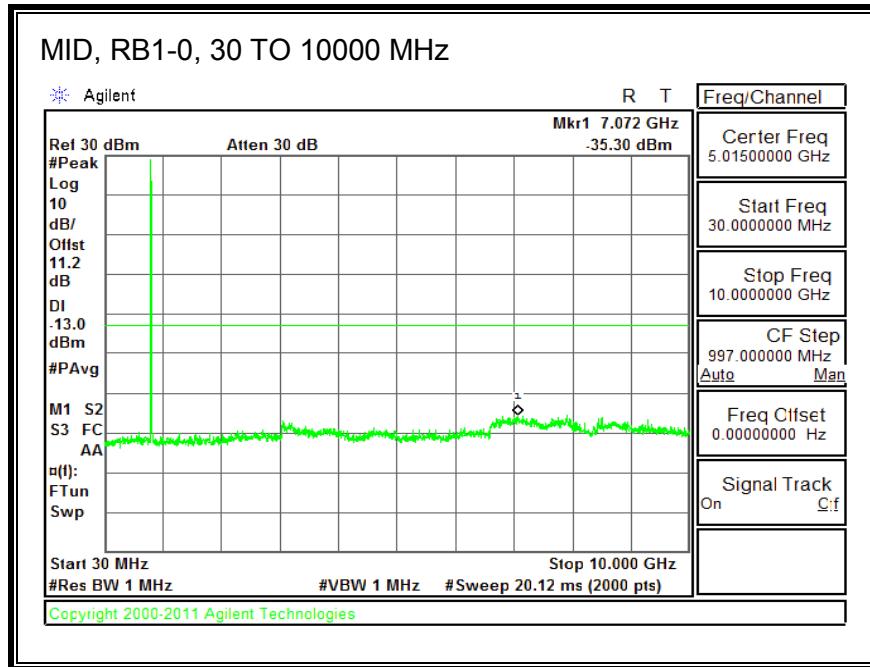
QPSK, (5.0 MHz BAND WIDTH)



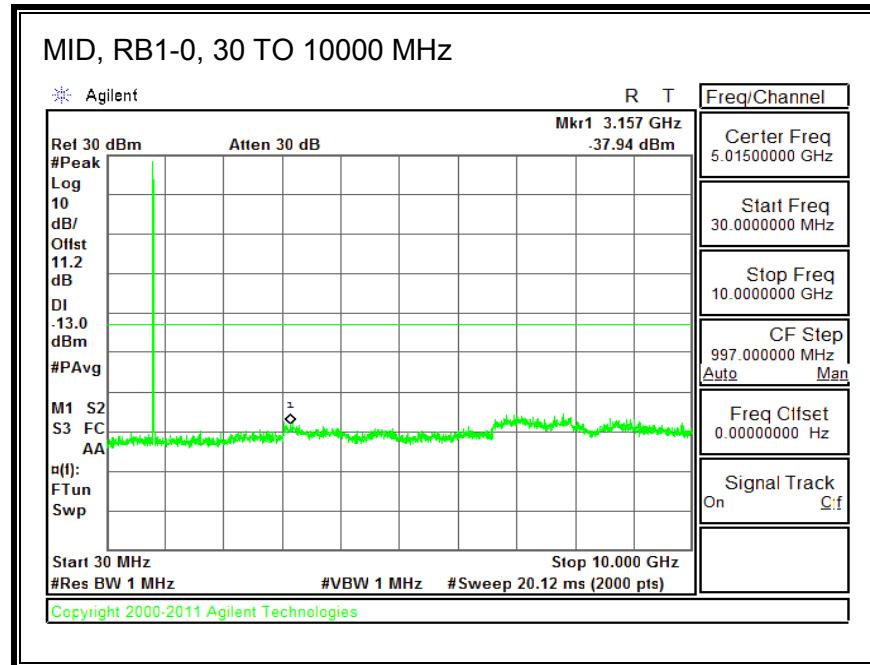
16QAM, (5.0 MHz BAND WIDTH)



QPSK, (10.0 MHz BAND WIDTH)

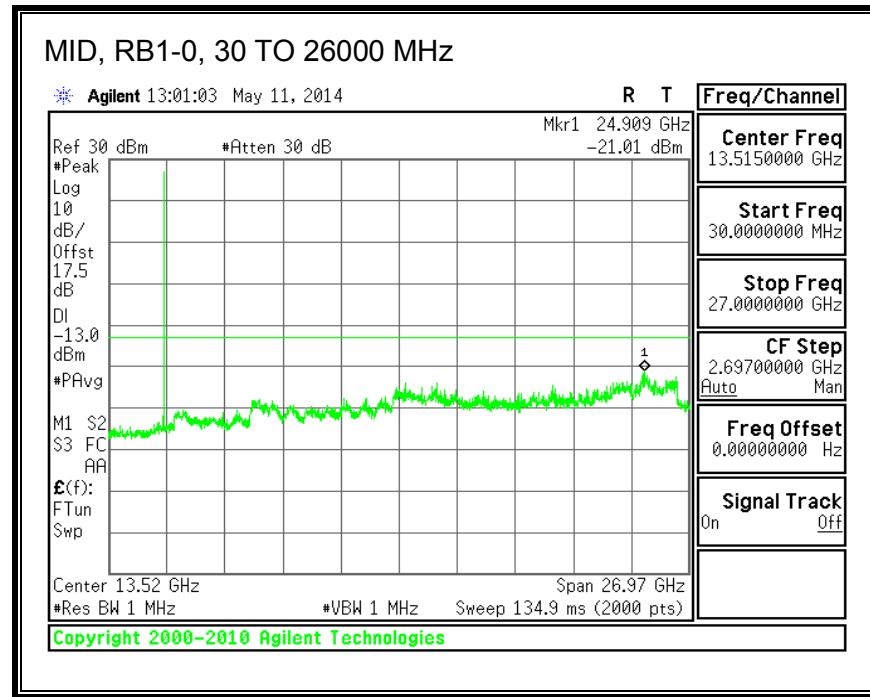
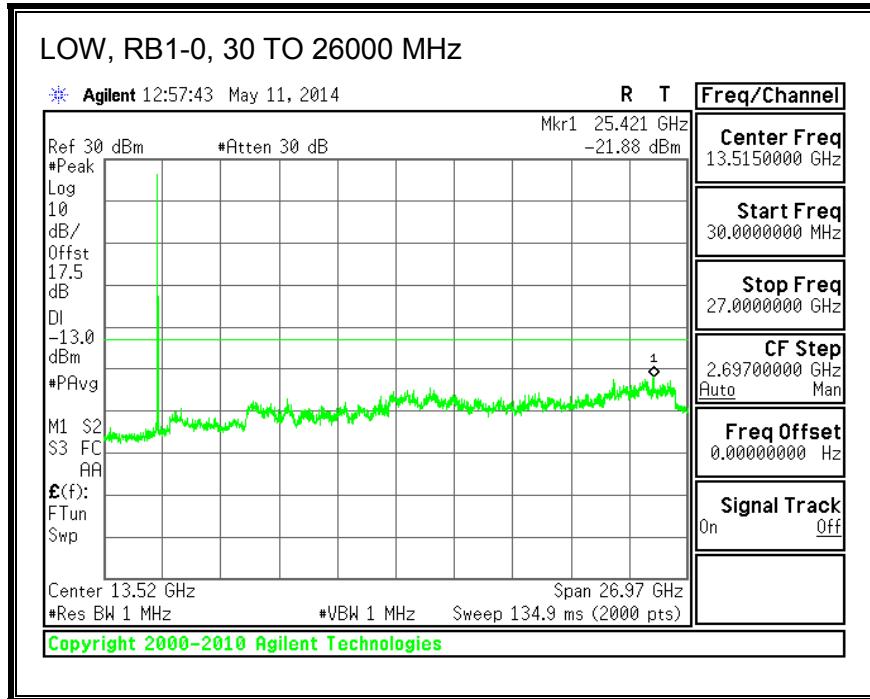


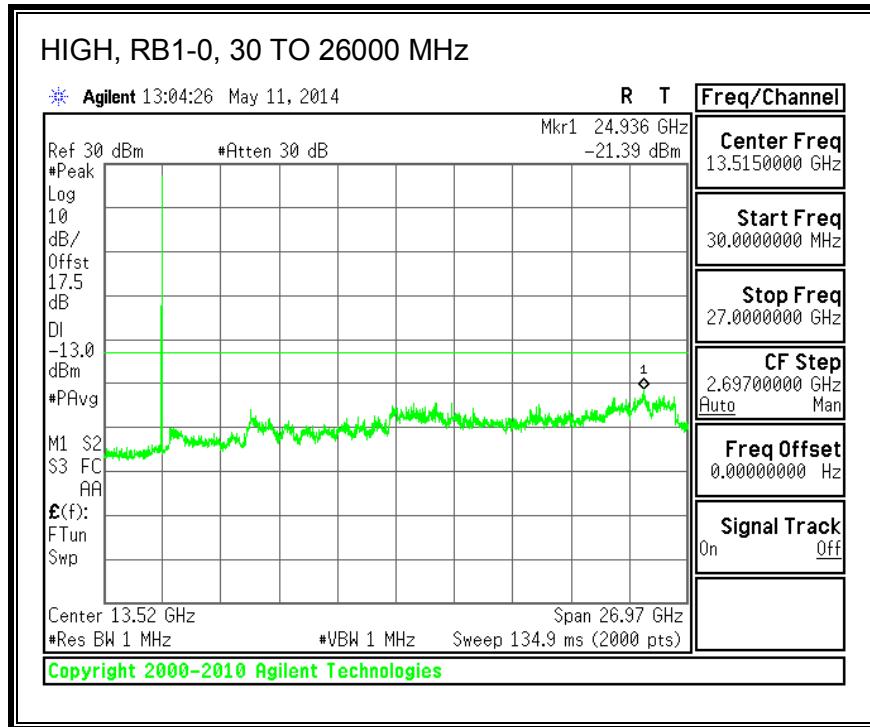
16QAM, (10.0 MHz BAND WIDTH)



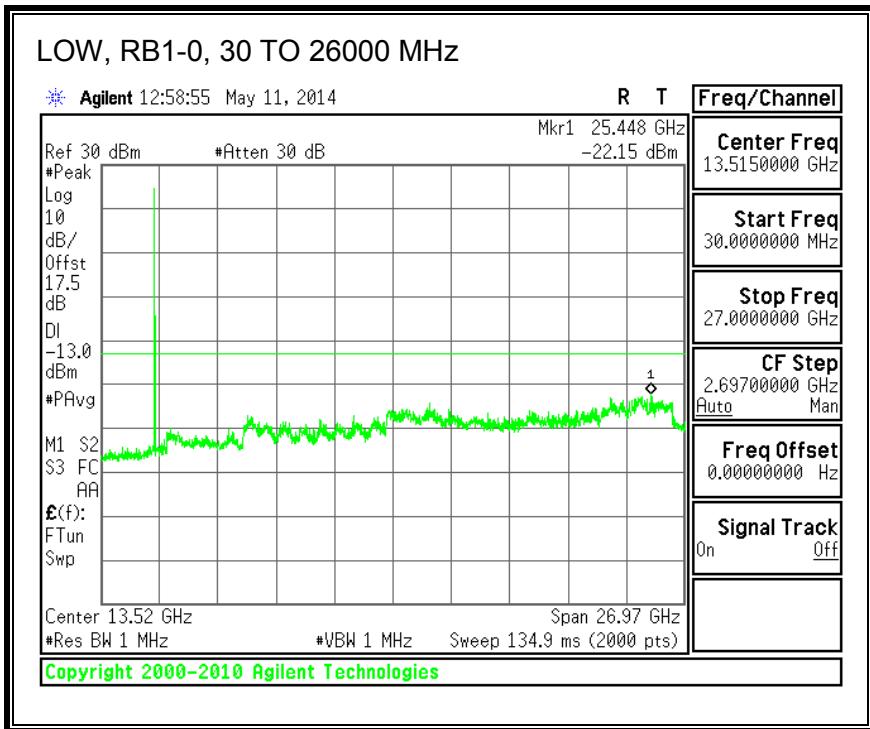
8.2.18. LTE BAND 41

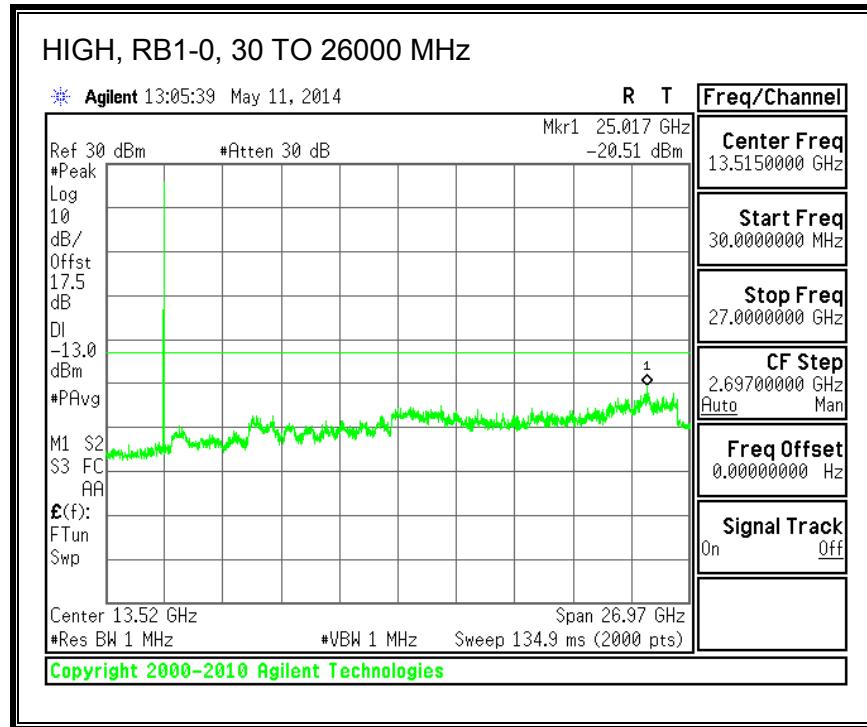
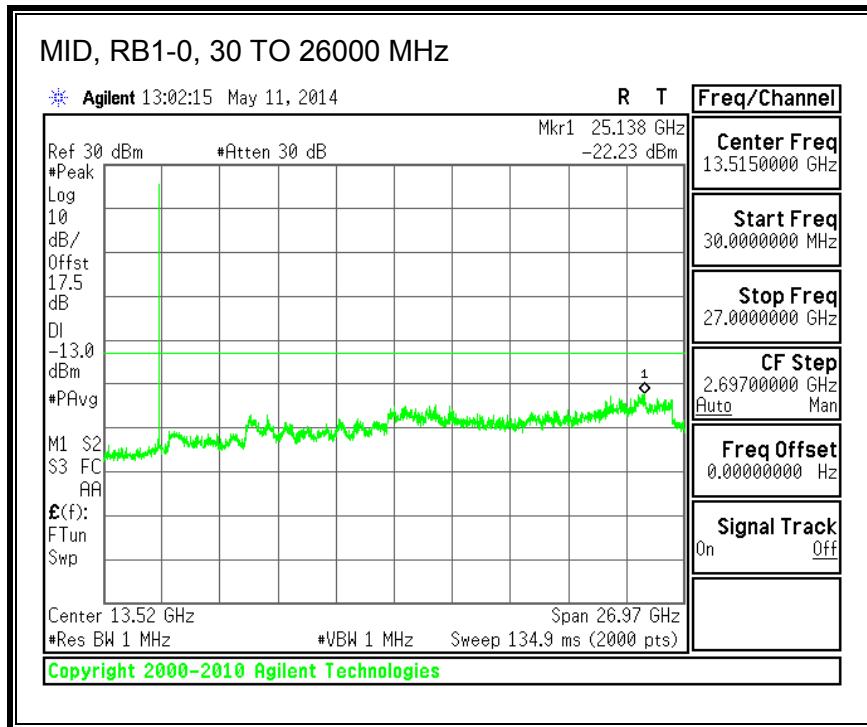
QPSK, (5.0 MHz BAND WIDTH)



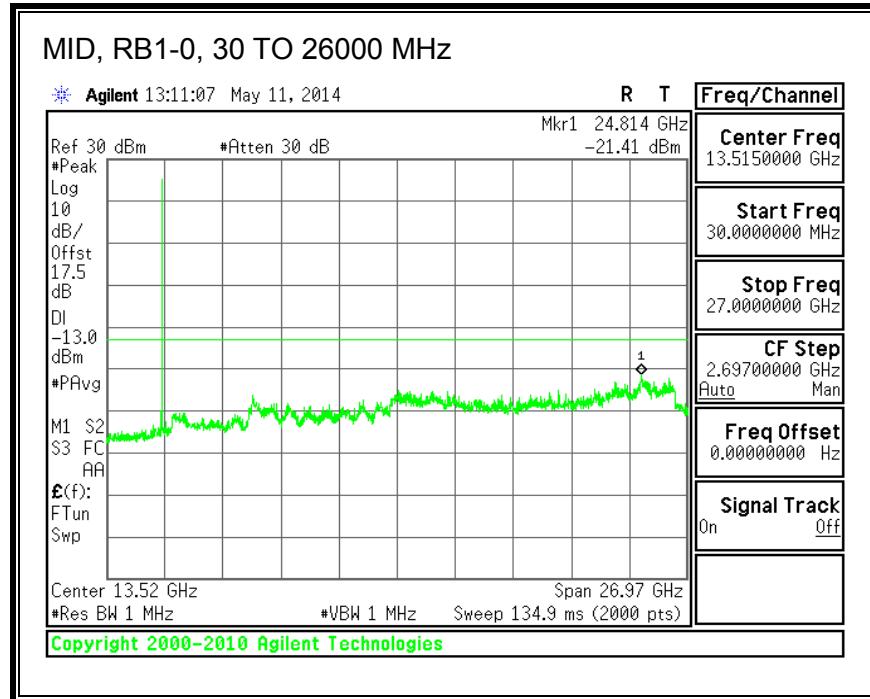
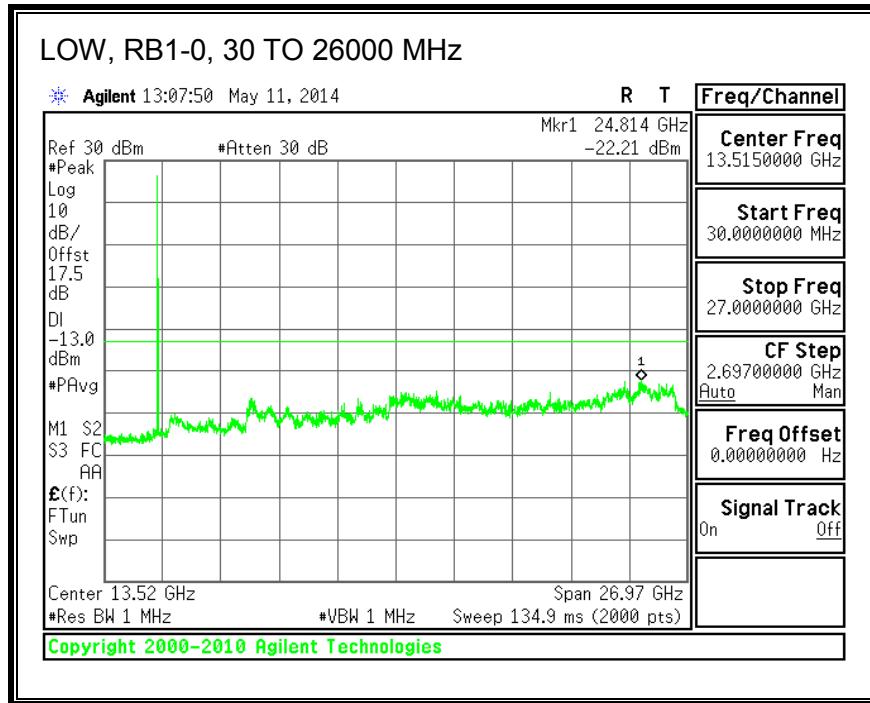


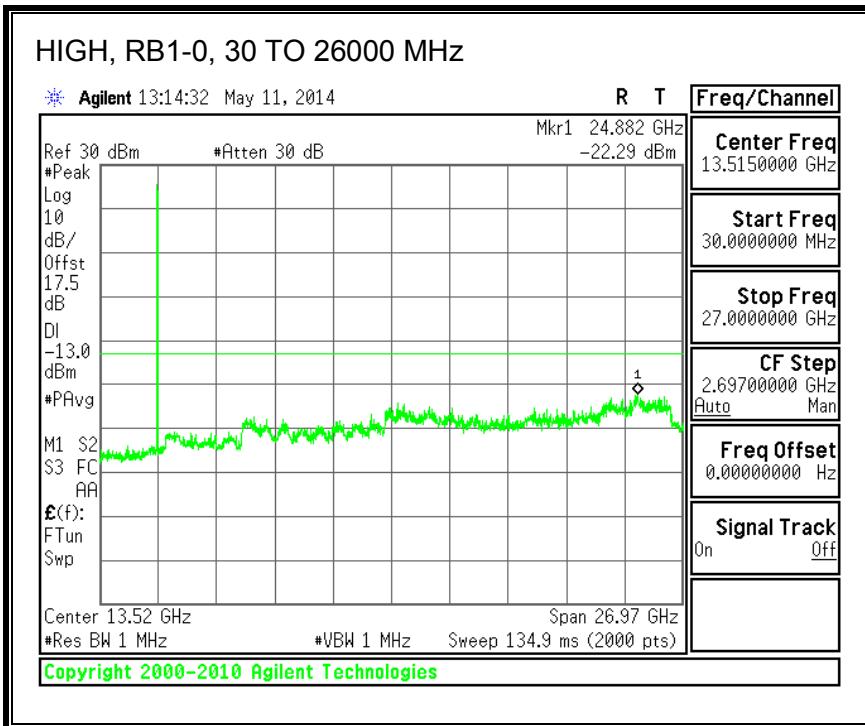
16QAM, (5.0 MHz BAND WIDTH)



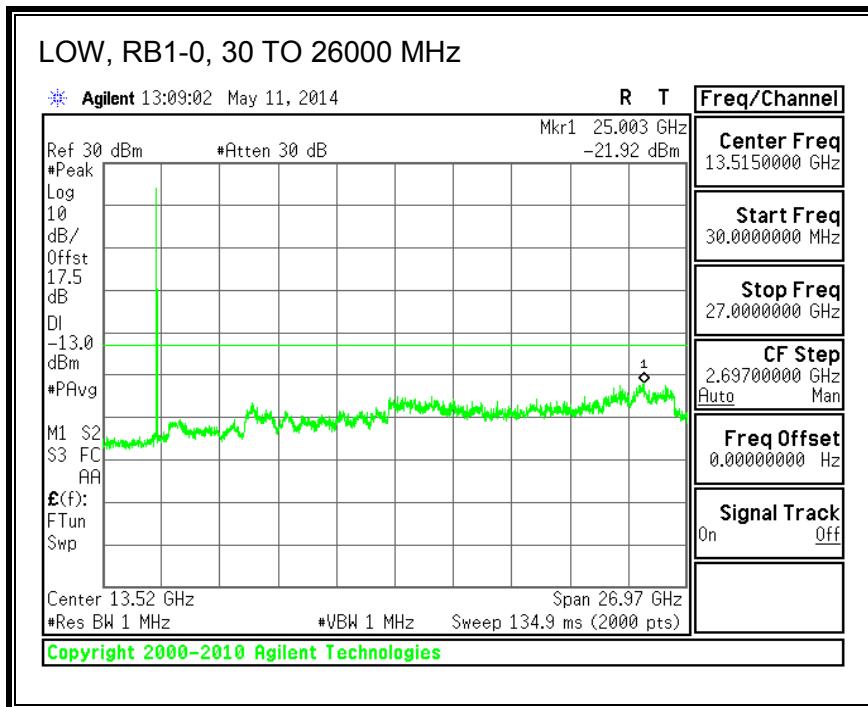


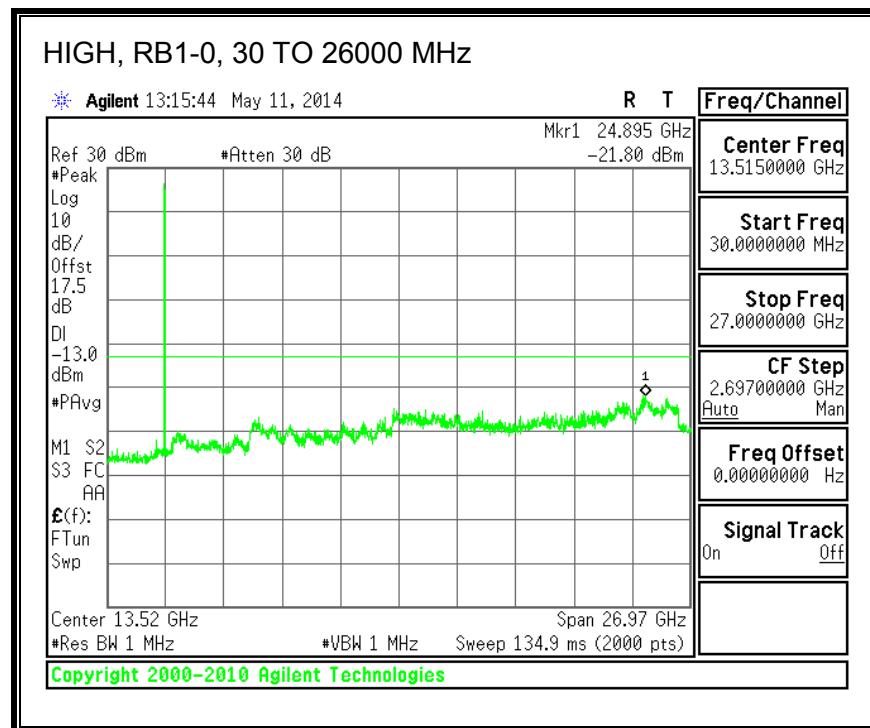
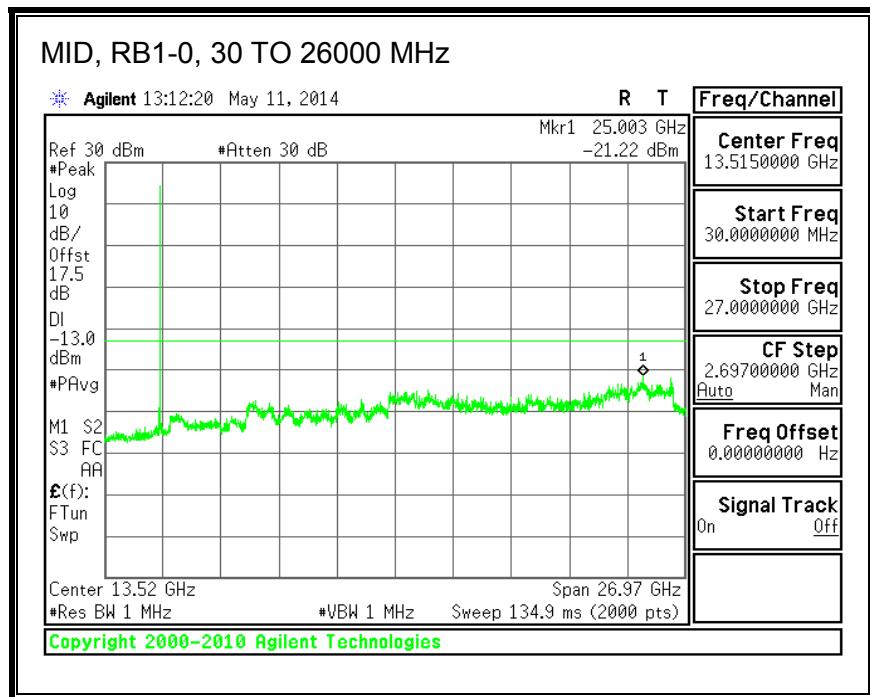
QPSK, (10.0 MHz BAND WIDTH)



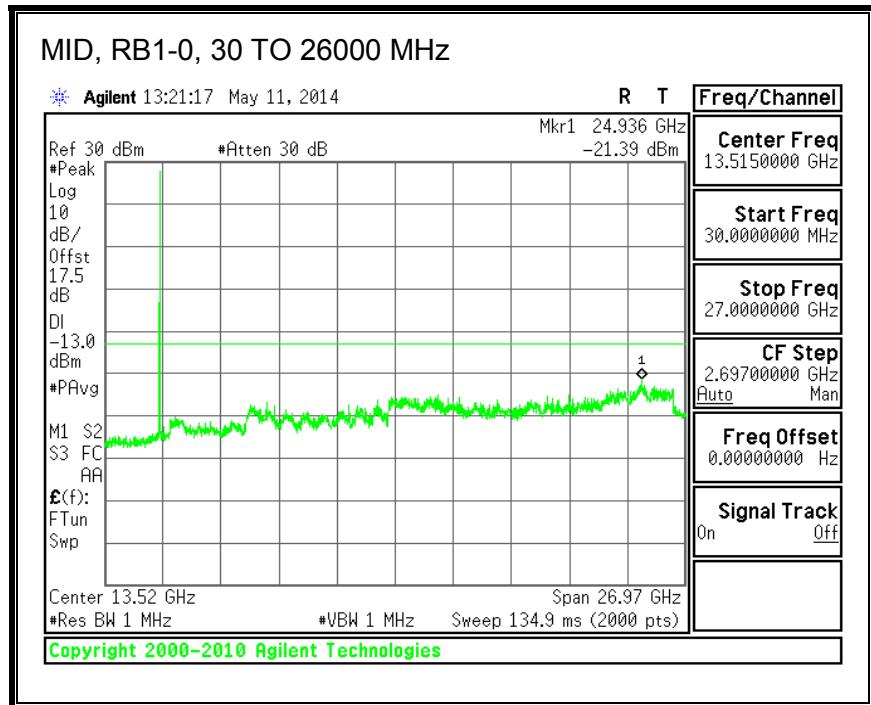
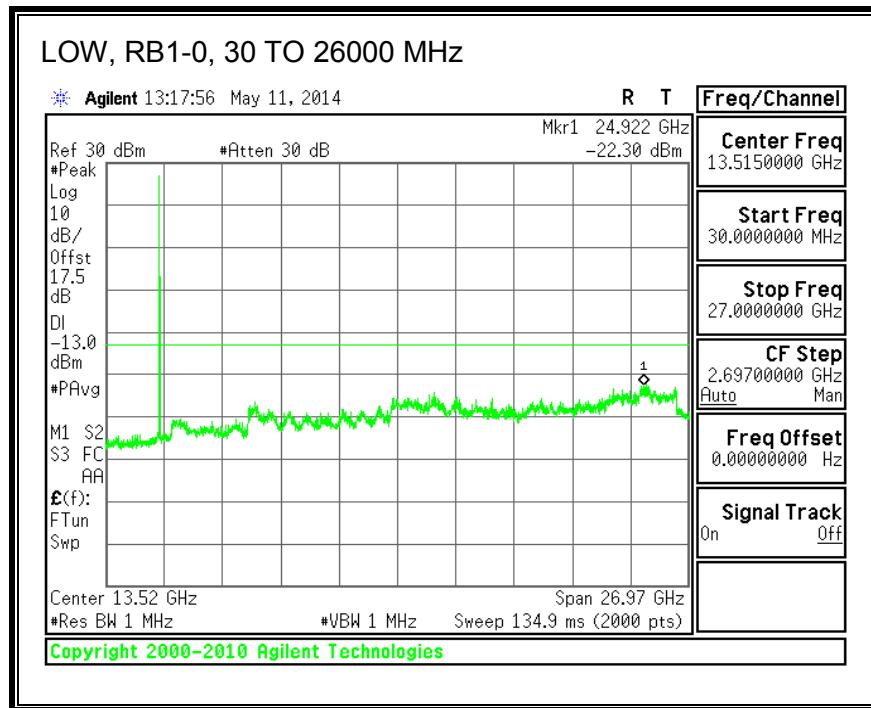


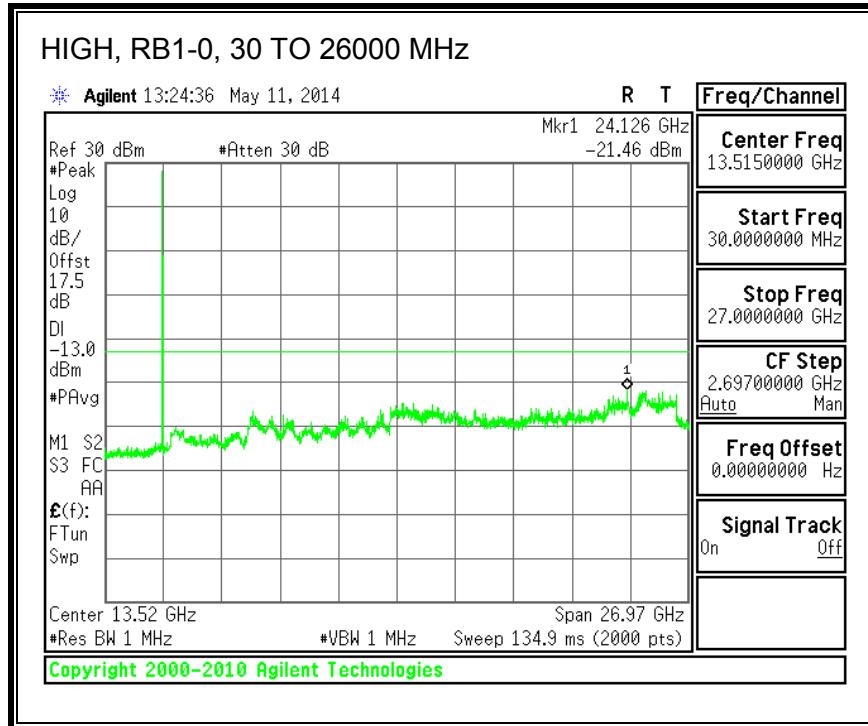
16QAM, (10.0 MHz BAND WIDTH)



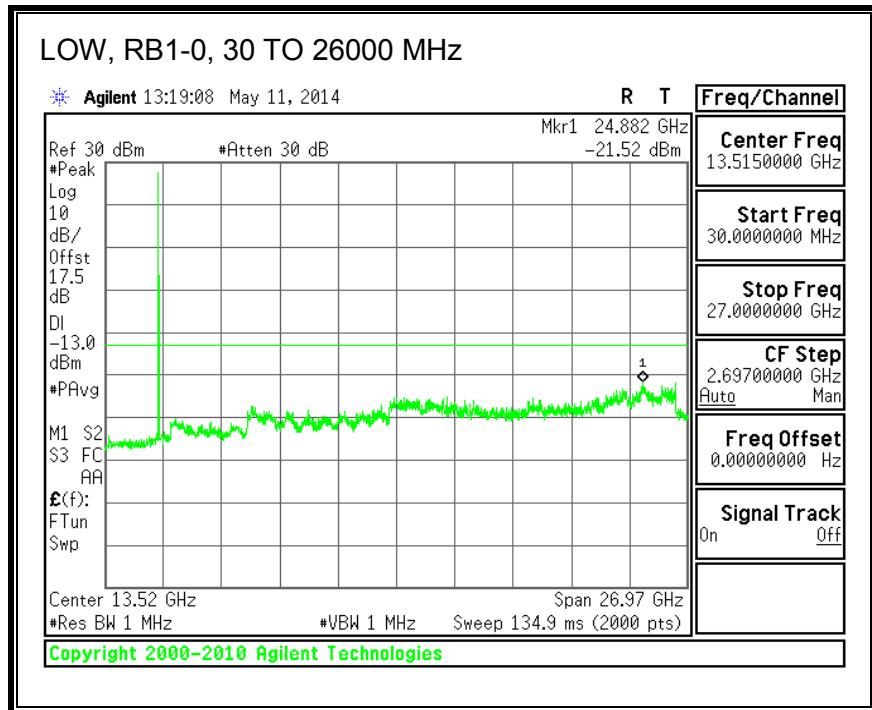


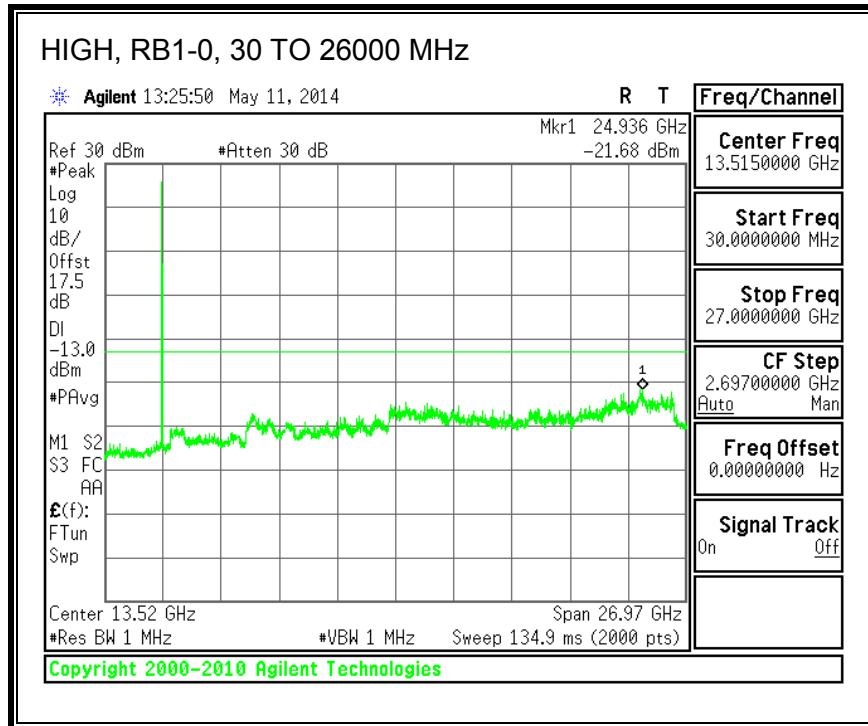
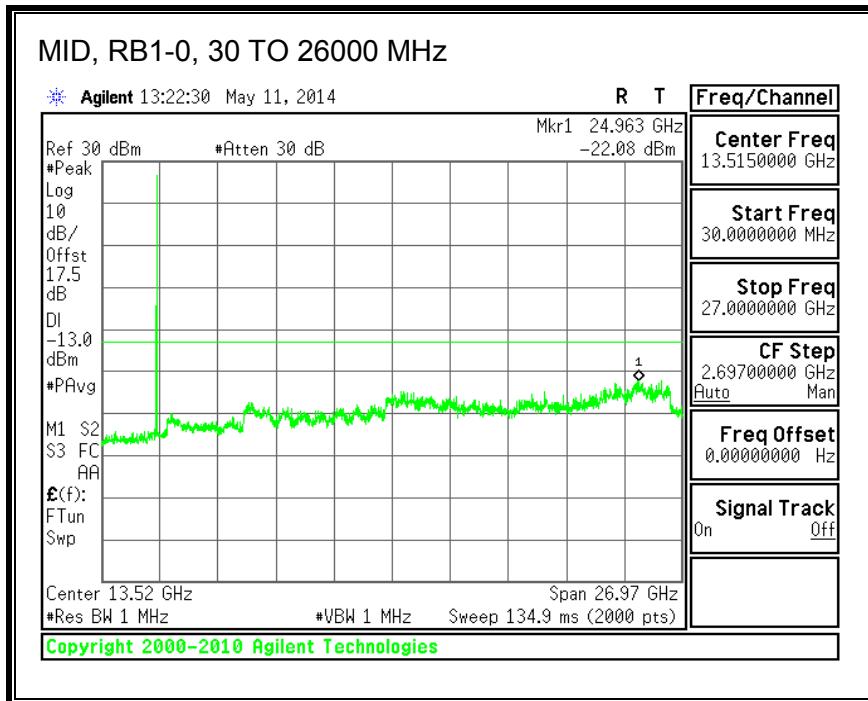
QPSK, (15.0 MHz BAND WIDTH)



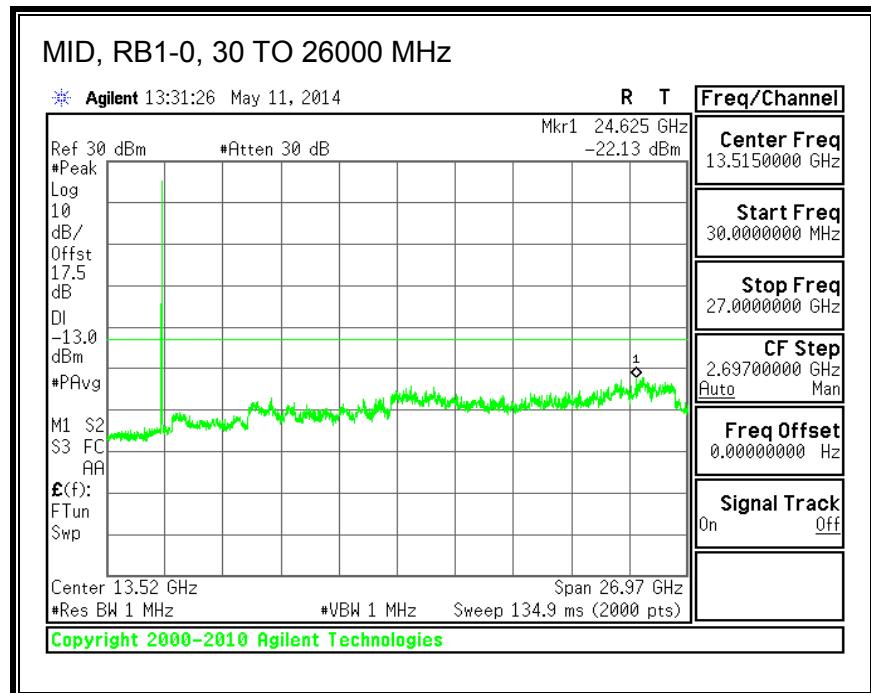
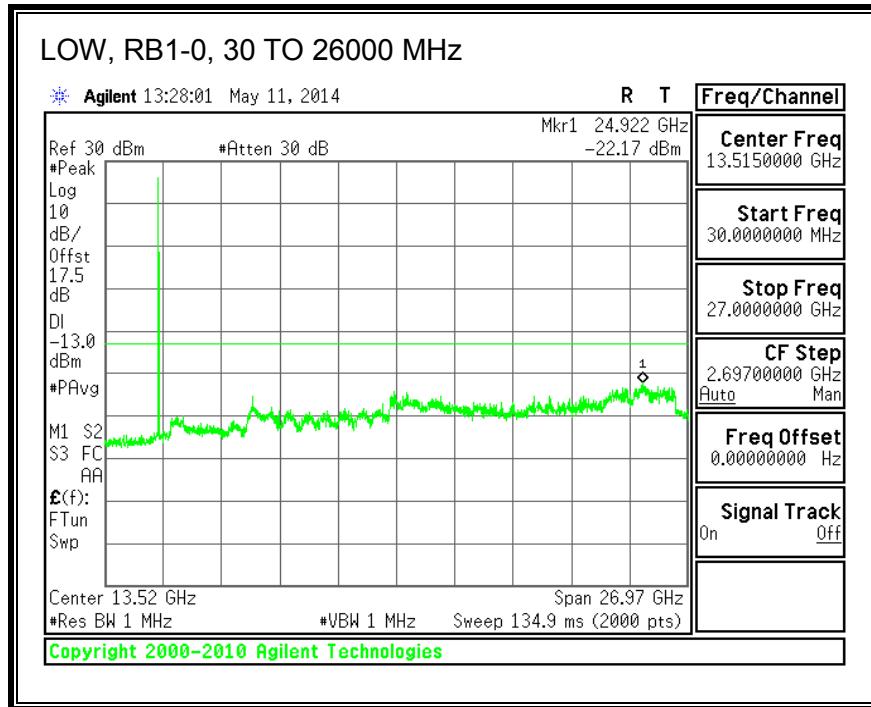


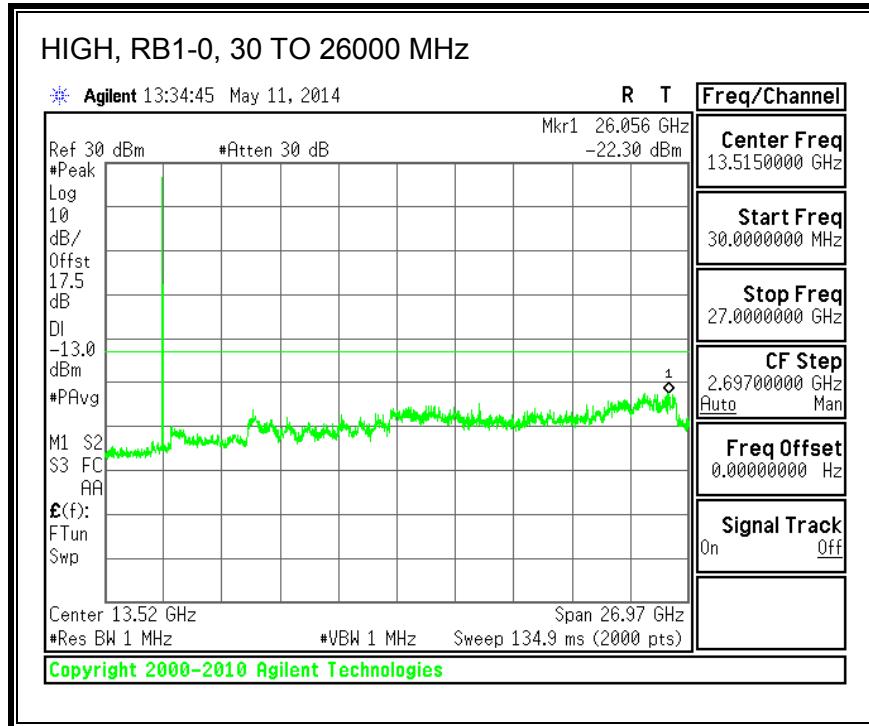
16QAM, (15.0 MHz BAND WIDTH)



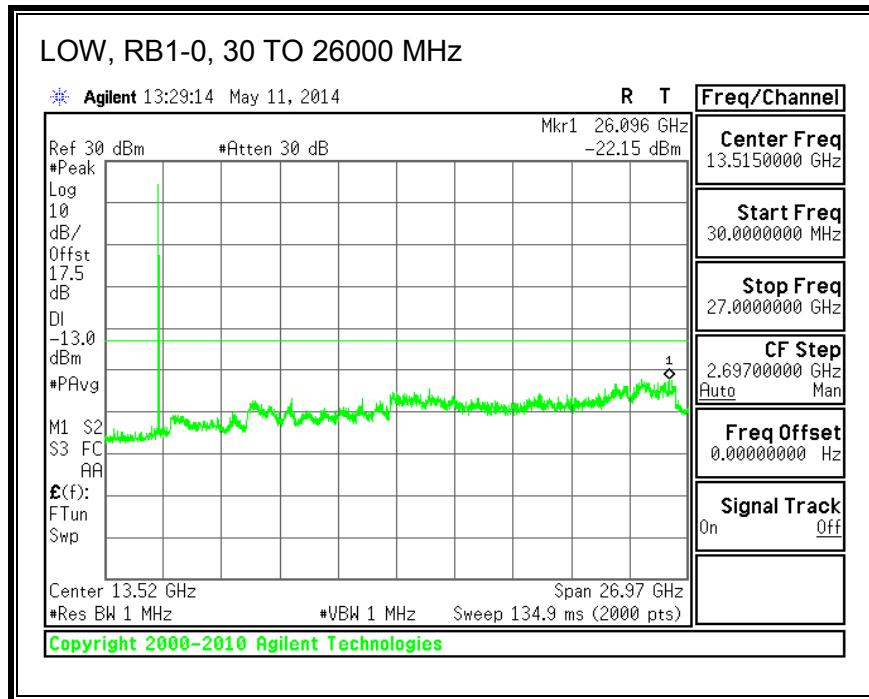


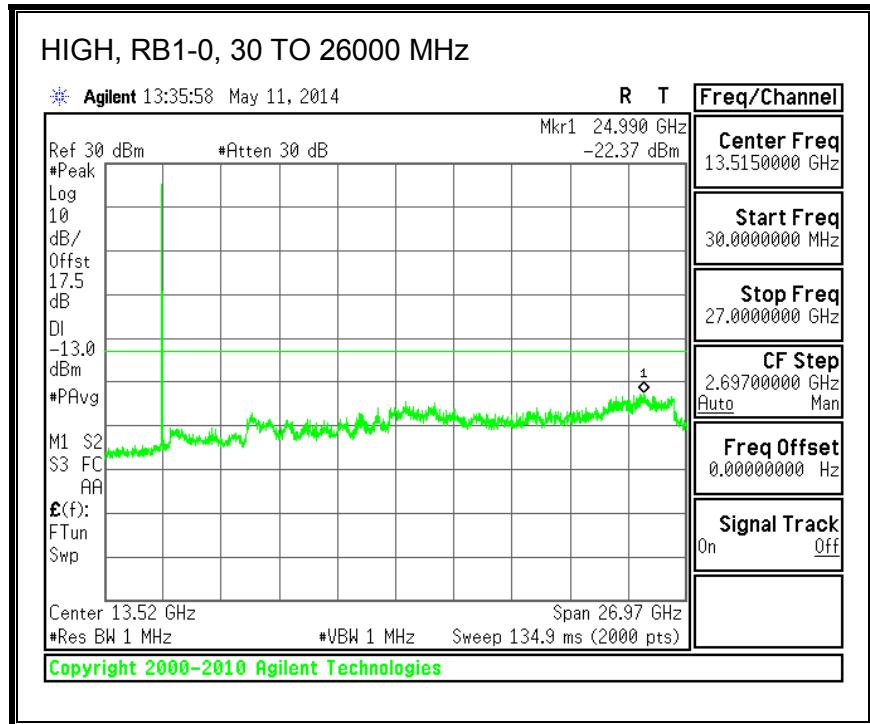
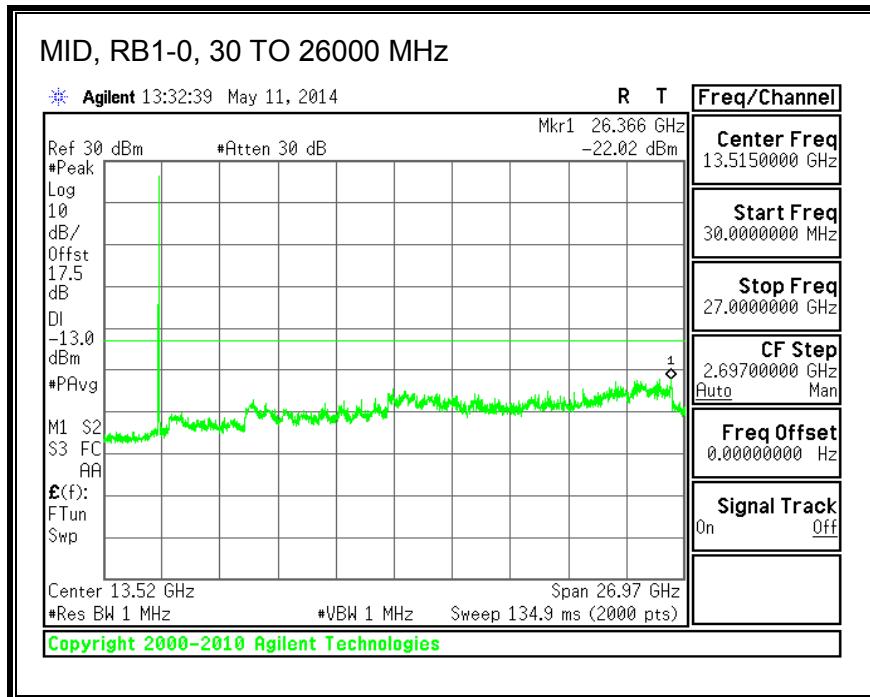
QPSK, (20.0 MHz BAND WIDTH)





16QAM, (20.0 MHz BAND WIDTH)





8.3. FREQUENCY STABILITY

RULE PART(S)

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

LIMITS

§22.355 & RSS-132 4.3 - The carrier frequency shall not depart from the reference frequency in excess of ± 2.5 ppm for mobile stations.

RSS-133 6.3 - The carrier frequency shall not depart from the reference frequency in excess of ± 2.5 ppm for mobile stations.

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

TEST PROCEDURE

Use CMW 500 with Frequency Error measurement capability.

- Temp. = -30° to $+50^{\circ}\text{C}$
- Voltage = low voltage, 3.4VDC, Normal, 3.8VDC and High voltage, 4.3VDC.

Frequency Stability vs Temperature:

The EUT is place inside a temperature chamber. The temperature is set to 20°C and allowed to stabilize. After sufficient soak time, the transmitting frequency error is measured. The temperature is increased by 10 degrees, allowed to stabilize and soak, and then the measurement is repeated. This is repeated until $+50^{\circ}\text{C}$ is reached.

Frequency Stability vs Voltage:

The peak frequency error is recorded (worst-case).

MODES TESTED

- LTE Band 2
- LTE Band 4
- LTE Band 5
- LTE Band 13
- LTE Band 17
- LTE Band 25
- LTE Band 26
- LTE Band 41

RESULTS

See the following pages.

8.3.1. LTE BAND 2

LTE BAND 2, 10MHz QPSK

Limit		1850	1910	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm (MHz)	F high @ -13dBm (MHz)		
Temperature	Voltage				
Normal (25C)	Normal	1851.0873	1908.9226		
Extreme (50C)		1851.0873	1908.9226	-10.2	-0.005
Extreme (40C)		1851.0873	1908.9226	-10.9	-0.006
Extreme (30C)		1851.0873	1908.9226	-8.8	-0.005
Extreme (10C)		1851.0873	1908.9226	-5.7	-0.003
Extreme (0C)		1851.0873	1908.9226	-7.2	-0.004
Extreme (-10C)		1851.0873	1908.9226	-7.6	-0.004
Extreme (-20C)		1851.0873	1908.9226	-8.4	-0.004
Extreme (-30C)		1851.0873	1908.9226	8.5	0.005
25C	10%	1851.0873	1908.9226	-8.4	-0.004
	-10%	1851.0873	1908.9226	-8.4	-0.004
	End Point	1851.0873	1908.9226	-11.1	-0.006

LTE BAND 2, 10MHz 16QAM

Limit		1850	1910	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm (MHz)	F high @ -13dBm (MHz)		
Temperature	Voltage				
Normal (25C)	Normal	1851.0815	1908.9386		
Extreme (50C)		1851.0815	1908.9386	-11.3	-0.006
Extreme (40C)		1851.0815	1908.9386	-9.3	-0.005
Extreme (30C)		1851.0815	1908.9386	-8.3	-0.004
Extreme (10C)		1851.0815	1908.9386	-6.4	-0.003
Extreme (0C)		1851.0815	1908.9386	-7.2	-0.004
Extreme (-10C)		1851.0815	1908.9386	-8.0	-0.004
Extreme (-20C)		1851.0815	1908.9386	-7.7	-0.004
Extreme (-30C)		1851.0815	1908.9386	-9.4	-0.005
25C	10%	1851.0815	1908.9386	-7.2	-0.004
	-10%	1851.0815	1908.9386	-6.8	-0.004
	End Point	1851.0815	1908.9386	-10.1	-0.005

8.3.2. LTE BAND 4

LTE BAND 4, 20MHz QPSK

Limit		1710	1755	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm (MHz)	F high @ -13dBm (MHz)		
Temperature	Voltage				
Normal (25C)	Normal	1711.1155	1753.9257		
Extreme (50C)		1711.1155	1753.9257	-10.1	-0.006
Extreme (40C)		1711.1155	1753.9257	-7.6	-0.004
Extreme (30C)		1711.1155	1753.9257	-7.5	-0.004
Extreme (10C)		1711.1155	1753.9257	-5.7	-0.003
Extreme (0C)		1711.1155	1753.9257	-6.5	-0.004
Extreme (-10C)		1711.1155	1753.9257	-8.4	-0.005
Extreme (-20C)		1711.1155	1753.9257	-9.1	-0.005
Extreme (-30C)		1711.1155	1753.9257	-7.8	-0.005
25C	10%	1711.1155	1753.9257	-7.2	-0.004
	-10%	1711.1155	1753.9257	-8.0	-0.005
	End Point	1711.1155	1753.9257	-11.2	-0.006

LTE BAND 4, 20MHz 16QAM

Limit		1710	1755	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm (MHz)	F high @ -13dBm (MHz)		
Temperature	Voltage				
Normal (25C)	Normal	1711.1090	1753.9405		
Extreme (50C)		1711.1090	1753.9405	-8.1	-0.005
Extreme (40C)		1711.1090	1753.9405	-7.9	-0.005
Extreme (30C)		1711.1090	1753.9405	-6.0	-0.003
Extreme (10C)		1711.1090	1753.9405	-6.1	-0.004
Extreme (0C)		1711.1090	1753.9405	-7.5	-0.004
Extreme (-10C)		1711.1090	1753.9405	-10.1	-0.006
Extreme (-20C)		1711.1090	1753.9405	-8.2	-0.005
Extreme (-30C)		1711.1090	1753.9405	-5.2	-0.003
25C	10%	1711.1090	1753.9405	-9.3	-0.005
	-10%	1711.1090	1753.9405	-7.2	-0.004
	End Point	1711.1090	1753.9405	-11.2	-0.006

8.3.3. LTE BAND 5

LTE BAND 5, 10MHz QPSK

Limit		824	849	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm (MHz)	F high @ -13dBm (MHz)		
Temperature	Voltage				
Normal (25C)	Normal	824.5725	848.4703	-4.2	-0.005
Extreme (50C)		824.5725	848.4703		
Extreme (40C)		824.5725	848.4703		
Extreme (30C)		824.5725	848.4703		
Extreme (10C)		824.5725	848.4703		
Extreme (0C)		824.5725	848.4703		
Extreme (-10C)		824.5725	848.4703		
Extreme (-20C)		824.5725	848.4703		
Extreme (-30C)		824.5725	848.4703		
25C	10%	824.5725	848.4703	-4.2	-0.005
	-10%	824.5725	848.4703		
	End Point	824.5725	848.4703		

LTE BAND 5, 10MHz 16QAM

Limit		824	849	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm (MHz)	F high @ -13dBm (MHz)		
Temperature	Voltage				
Normal (25C)	Normal	824.5624	848.4649	-4.0	-0.005
Extreme (50C)		824.5624	848.4649		
Extreme (40C)		824.5624	848.4649		
Extreme (30C)		824.5624	848.4649		
Extreme (10C)		824.5624	848.4649		
Extreme (0C)		824.5624	848.4649		
Extreme (-10C)		824.5624	848.4649		
Extreme (-20C)		824.5624	848.4649		
Extreme (-30C)		824.5624	848.4649		
25C	10%	824.5624	848.4649	-4.0	-0.005
	-10%	824.5624	848.4649		
	End Point	824.5624	848.4649		

8.3.4. LTE BAND 13

LTE BAND 13, 10MHz QPSK

Limit		777	787	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm (MHz)	F high @ -13dBm (MHz)		
Temperature	Voltage				
Normal (25C)	Normal	777.2724	786.7354		
Extreme (50C)		777.2724	786.7354	-5.3	-0.007
Extreme (40C)		777.2724	786.7354	-5.2	-0.007
Extreme (30C)		777.2724	786.7354	-5.3	-0.007
Extreme (10C)		777.2724	786.7354	-5.4	-0.007
Extreme (0C)		777.2724	786.7354	-4.3	-0.005
Extreme (-10C)		777.2724	786.7354	-4.3	-0.005
Extreme (-20C)		777.2724	786.7354	-4.4	-0.006
Extreme (-30C)		777.2724	786.7354	-5.0	-0.006
25C	10%	777.2724	786.7354	-6.2	-0.008
	-10%	777.2724	786.7354	-6.0	-0.008
	End Point	777.2724	786.7354	-11.2	-0.014

LTE BAND 13, 10MHz 16QAM

Limit		777	787	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm (MHz)	F high @ -13dBm (MHz)		
Temperature	Voltage				
Normal (25C)	Normal	777.2731	786.7300		
Extreme (50C)		777.2731	786.7300	-6.1	-0.008
Extreme (40C)		777.2731	786.7300	-5.6	-0.007
Extreme (30C)		777.2731	786.7300	-5.3	-0.007
Extreme (10C)		777.2731	786.7300	-5.8	-0.007
Extreme (0C)		777.2731	786.7300	-4.6	-0.006
Extreme (-10C)		777.2731	786.7300	-4.4	-0.006
Extreme (-20C)		777.2731	786.7300	-4.1	-0.005
Extreme (-30C)		777.2731	786.7300	-4.2	-0.005
25C	10%	777.2731	786.7300	-4.7	-0.006
	-10%	777.2731	786.7300	-5.2	-0.007
	End Point	777.2731	786.7300	-11.2	-0.014

8.3.5. LTE BAND 17

LTE BAND 17, 10MHz QPSK

Limit		704	716	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm (MHz)	F high @ -13dBm (MHz)		
Temperature	Voltage				
Normal (25C)	Normal	704.5560	715.4614	Delta (Hz)	Frequency Stability (ppm)
Extreme (50C)		704.5560	715.4614		-0.006
Extreme (40C)		704.5560	715.4614		0.006
Extreme (30C)		704.5560	715.4614		-0.006
Extreme (10C)		704.5560	715.4614		-0.007
Extreme (0C)		704.5560	715.4614		0.007
Extreme (-10C)		704.5560	715.4614		0.008
Extreme (-20C)		704.5560	715.4614		0.006
Extreme (-30C)		704.5560	715.4614		0.006
25C	10%	704.5560	715.4614	-3.2	-0.005
	-10%	704.5560	715.4614	-4.2	-0.006
	End Point	704.5560	715.4614	10.1	0.014

LTE BAND 17, 10MHz 16QAM

Limit		704	716	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm (MHz)	F high @ -13dBm (MHz)		
Temperature	Voltage				
Normal (25C)	Normal	704.3050	706.9080	Delta (Hz)	Frequency Stability (ppm)
Extreme (50C)		704.3050	706.9080		-0.006
Extreme (40C)		704.3050	706.9080		-0.006
Extreme (30C)		704.3050	706.9080		-0.008
Extreme (10C)		704.3050	706.9080		-0.005
Extreme (0C)		704.3050	706.9080		0.006
Extreme (-10C)		704.3050	706.9080		0.006
Extreme (-20C)		704.3050	706.9080		-0.008
Extreme (-30C)		704.3050	706.9080		0.006
25C	10%	704.3050	706.9080	-4.2	-0.006
	-10%	704.3050	706.9080	4.0	0.006
	End Point	704.3050	706.9080	10.1	0.014

8.3.6. LTE BAND 25

LTE BAND 25, 10MHz QPSK

Limit		1850	1915	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm (MHz)	F high @ -13dBm (MHz)		
Temperature	Voltage				
Normal (25C)	Normal	1851.0852	1913.9507		
Extreme (50C)		1851.0852	1913.9507	10.8	0.006
Extreme (40C)		1851.0852	1913.9507	12.8	0.007
Extreme (30C)		1851.0852	1913.9507	11.5	0.006
Extreme (10C)		1851.0852	1913.9507	12.5	0.007
Extreme (0C)		1851.0852	1913.9507	10.8	0.006
Extreme (-10C)		1851.0852	1913.9507	11.8	0.006
Extreme (-20C)		1851.0852	1913.9507	13.2	0.007
Extreme (-30C)		1851.0852	1913.9507	10.5	0.006
25C	10%	1851.0852	1913.9507	10.4	0.006
	-10%	1851.0852	1913.9507	11.3	0.006
	End Point	1851.0852	1913.9507	-20.2	-0.011

LTE BAND 25, 10MHz 16QAM

Limit		1850	1915	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm (MHz)	F high @ -13dBm (MHz)		
Temperature	Voltage				
Normal (25C)	Normal	1851.0936	1913.9380		
Extreme (50C)		1851.0936	1913.9380	11.6	0.006
Extreme (40C)		1851.0936	1913.9380	11.7	0.006
Extreme (30C)		1851.0936	1913.9380	13.1	0.007
Extreme (10C)		1851.0936	1913.9380	13.1	0.007
Extreme (0C)		1851.0936	1913.9380	10.4	0.006
Extreme (-10C)		1851.0936	1913.9380	13.3	0.007
Extreme (-20C)		1851.0936	1913.9380	11.5	0.006
Extreme (-30C)		1851.0936	1913.9380	13.1	0.007
25C	10%	1851.0936	1913.9380	11.6	0.006
	-10%	1851.0936	1913.9380	13.3	0.007
	End Point	1851.0936	1913.9380	-20.2	-0.011

8.3.7. LTE BAND 26

LTE BAND 26, 10MHz QPSK

Limit		814	824	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -20dBm (MHz)	F high @ -20dBm (MHz)		
Temperature	Voltage				
Normal (25C)	Normal	814.2885	823.6454		
Extreme (50C)		814.2885	823.6454	-4.7	-0.006
Extreme (40C)		814.2885	823.6454	4.4	0.005
Extreme (30C)		814.2885	823.6454	-4.0	-0.005
Extreme (10C)		814.2885	823.6454	5.0	0.006
Extreme (0C)		814.2885	823.6454	4.2	0.005
Extreme (-10C)		814.2885	823.6454	4.6	0.006
Extreme (-20C)		814.2885	823.6454	5.1	0.006
Extreme (-30C)		814.2885	823.6454	5.2	0.006
25C	10%	814.2885	823.6454	-3.7	-0.004
	-10%	814.2885	823.6454	-4.2	-0.005
	End Point	814.2885	823.6454	-12.7	-0.015

LTE BAND 26, 10MHz 16QAM

Limit		814	824	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -20dBm (MHz)	F high @ -20dBm (MHz)		
Temperature	Voltage				
Normal (25C)	Normal	814.4931	823.6314		
Extreme (50C)		814.4931	823.6314	-4.3	-0.005
Extreme (40C)		814.4931	823.6314	-4.1	-0.005
Extreme (30C)		814.4931	823.6314	-3.1	-0.004
Extreme (10C)		814.4931	823.6314	4.9	0.006
Extreme (0C)		814.4931	823.6314	3.5	0.004
Extreme (-10C)		814.4931	823.6314	5.7	0.007
Extreme (-20C)		814.4931	823.6314	4.8	0.006
Extreme (-30C)		814.4931	823.6314	4.5	0.005
25C	10%	814.4931	823.6314	3.8	0.005
	-10%	814.4931	823.6314	-4.2	-0.005
	End Point	814.4931	823.6314	-12.7	-0.015

8.3.8. LTE BAND 41

LTE BAND 41, 20MHz QPSK

Limit		2496	2690	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm (MHz)	F high @ -13dBm (MHz)		
Temperature	Voltage				
Normal (25C)	Normal	2496.9599	2682.5000	-16.6	-0.006
Extreme (50C)		2496.9599	2682.5000		
Extreme (40C)		2496.9599	2682.5000		
Extreme (30C)		2496.9599	2682.5000		
Extreme (10C)		2496.9599	2682.5000		
Extreme (0C)		2496.9599	2682.5000		
Extreme (-10C)		2496.9599	2682.5000		
Extreme (-20C)		2496.9599	2682.5000		
Extreme (-30C)		2496.9599	2682.5000		
		2496.9599	2682.5000		
25C	10%	2496.9599	2682.5000	-21.5	-0.008
	-10%	2496.9599	2682.5000	17.7	0.007
	End Point	2496.9598	2682.4999	-92.4	-0.036

LTE BAND 41, 20MHz 16QAM

Limit		2496	2690	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm (MHz)	F high @ -13dBm (MHz)		
Temperature	Voltage				
Normal (25C)	Normal	2496.9342	2689.1199	-16.2	-0.006
Extreme (50C)		2496.9342	2689.1199		
Extreme (40C)		2496.9342	2689.1199		
Extreme (30C)		2496.9342	2689.1199		
Extreme (10C)		2496.9342	2689.1199		
Extreme (0C)		2496.9342	2689.1199		
Extreme (-10C)		2496.9342	2689.1199		
Extreme (-20C)		2496.9342	2689.1199		
Extreme (-30C)		2496.9342	2689.1199		
		2496.9342	2689.1199		
25C	10%	2496.9342	2689.1199	-16.0	-0.006
	-10%	2496.9342	2689.1199	-18.7	-0.007
	End Point	2496.9341	2689.1198	-92.4	-0.036

9. RADIATED TEST RESULTS

9.1. RADIATED POWER (ERP & EIRP)

RULE PART(S)

FCC: §2.1046, §22.913, §24.232 and §27.50

LIMITS:

22.913(a) - The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

24.232(c) - Mobile/portable stations are limited to 2 watts e.i.r.p. peak power and the equipment must employ means to limit the power to the minimum necessary for successful communications.

27.50 (c) (10) the following power and antenna height requirements apply to stations transmitting in the 698–746 MHz band, the portable stations (hand-held devices) are limited to 3 watts ERP.

27.50 (b)(10) Portable stations (hand-held devices) transmitting in the 746–757 MHz, 758–763 MHz, 776–793 MHz, and 805–806 MHz bands are limited to 3 watts ERP.

27.50 (d)(4) The following power and antenna height requirements apply to stations transmitting in the 1710–1755 MHz and 2110–2155 MHz bands: Fixed, mobile, and portable (hand-held) stations operating in the 1710–1755 MHz band are limited to 1 watt EIRP.

TEST PROCEDURE

ANSI / TIA / EIA 603C Clause 2.2.17

KDB 971168 v02r01 RF power output using broadband peak and average power meter method.
KDB 971168 D01 Power Meas License Digital Systems v02r01, "Measurement Guidance for Certification of Licensed Digital Transmitters"

MODES TESTED

- LTE Band 2
- LTE Band 4
- LTE Band 5
- LTE Band 13
- LTE Band 17
- LTE Band 25
- LTE Band 26
- LTE Band 41

RESULTS

LAT EIRP POWER FOR LTE BAND 2 (1.4 MHZ BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP (Average)	
			dBm	mW
1.4MHz Band QPSK	6/0	1850.7	26.63	460.26
		1880.0	26.92	492.04
		1909.3	26.66	463.45
1.4MHz Band 16QAM	6/0	1850.7	25.19	330.37
		1880.0	25.70	371.54
		1909.3	25.95	393.55

LAT EIRP POWER FOR LTE BAND 2 (3.0 MHZ BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP (Average)	
			dBm	mW
3.0MHz Band QPSK	15/0	1851.5	26.88	487.53
		1880.0	26.67	464.52
		1908.5	26.43	439.54
3.0MHz Band 16QAM	15/0	1851.5	25.29	338.06
		1880.0	25.60	363.08
		1908.5	25.06	320.63

LAT EIRP POWER FOR LTE BAND 2 (5.0 MHZ BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP (Average)	
			dBm	mW
5.0MHz Band QPSK	25/0	1852.5	26.08	405.51
		1880.0	26.91	490.91
		1907.5	26.56	452.90
5.0MHz Band 16QAM	25/0	1852.5	26.23	419.76
		1880.0	25.03	318.42
		1907.5	25.60	363.08

LAT EIRP POWER FOR LTE BAND 2 (10.0 MHZ BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP (Average)	
			dBm	mW
10.0MHz Band QPSK	50/0	1855.0	26.89	488.65
		1880.0	25.52	356.45
		1905.0	25.90	389.05
10.0MHz Band 16QAM	50/0	1855.0	26.03	400.87
		1880.0	24.63	290.40
		1905.0	25.16	328.10

LAT EIRP POWER FOR LTE BAND 2 (15.0 MHZ BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP (Average)	
			dBm	mW
15MHz Band QPSK	75/0	1857.5	26.90	489.78
		1880.0	25.76	376.70
		1902.5	26.36	432.51
15MHz Band 16QAM	75/0	1857.5	25.91	389.94
		1880.0	24.62	289.73
		1902.5	25.27	336.51