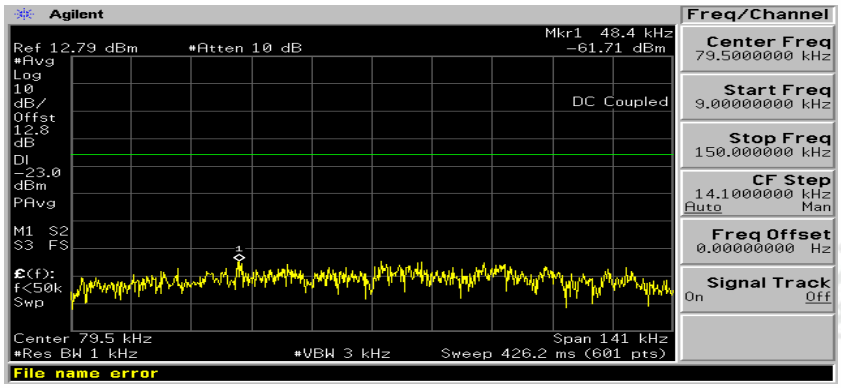
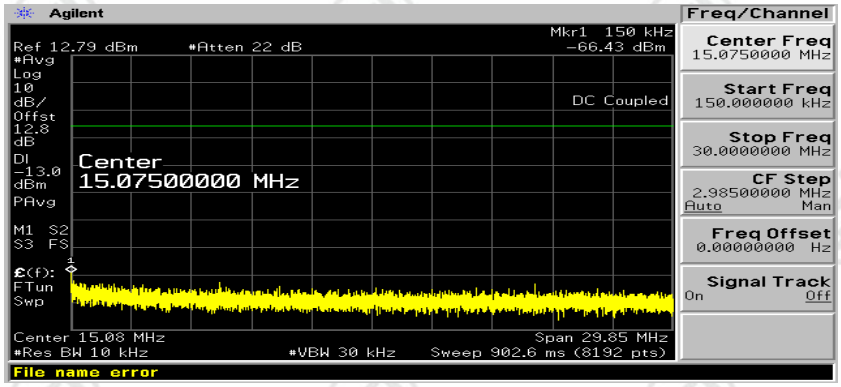
Appendix E: Conducted Spurious Emission

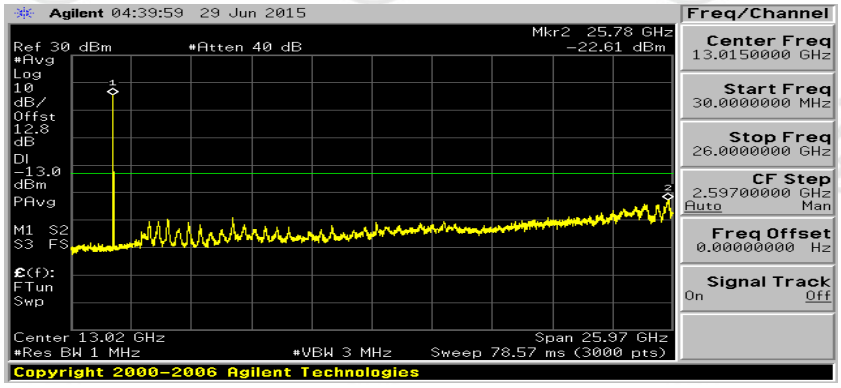
Test Graphs

Channel Bandwidth: 1.4 MHz

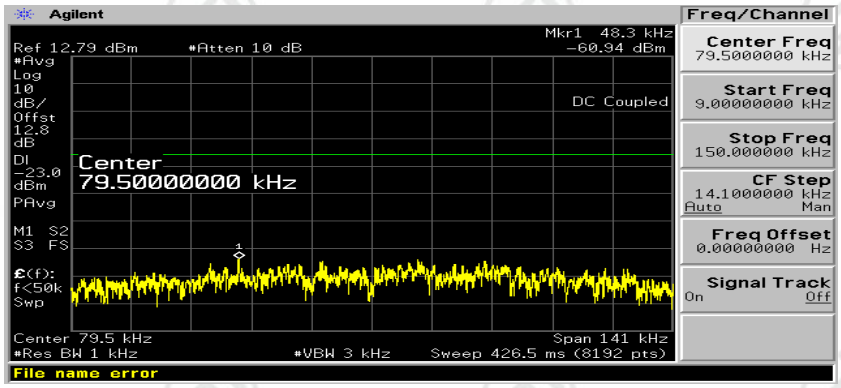
(Channel Bandwidth: 1.4 MHz)_LCH_QPSK_1RB#0

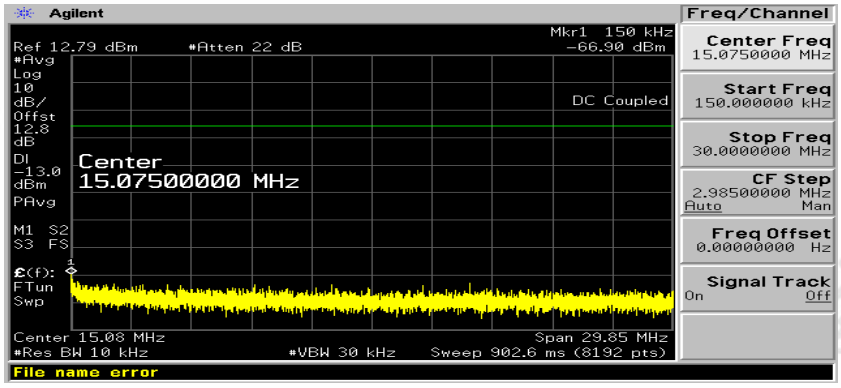


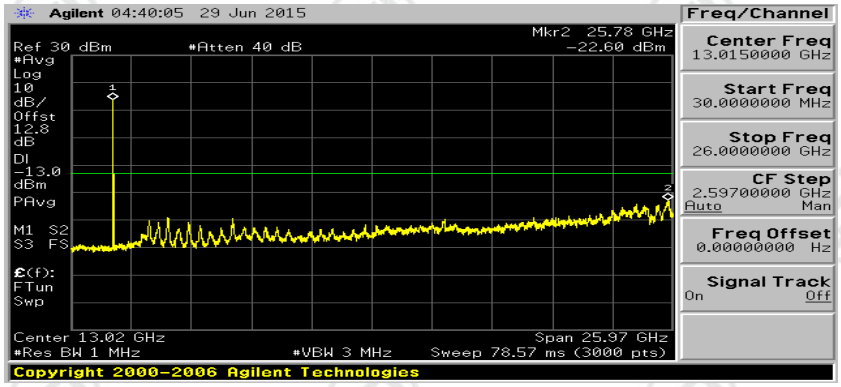




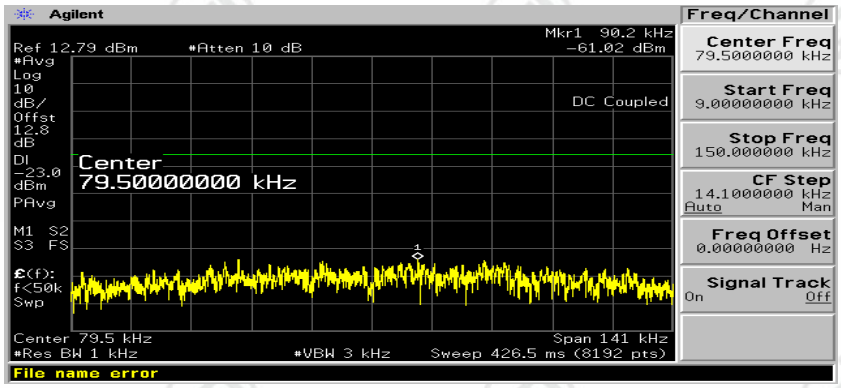
(Channel Bandwidth: 1.4 MHz)_LCH_QPSK_1RB#3

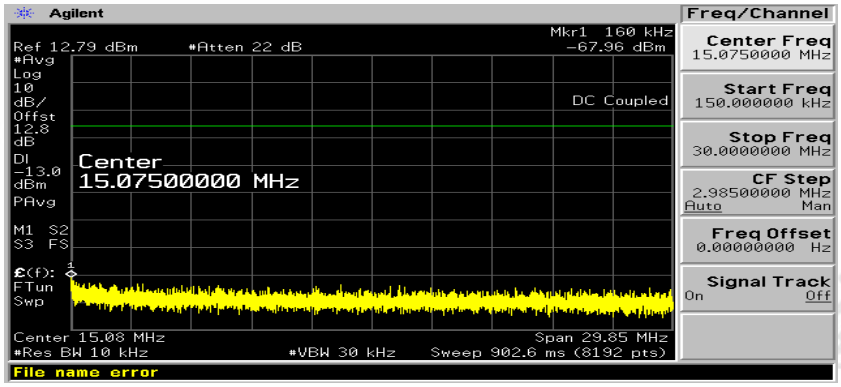


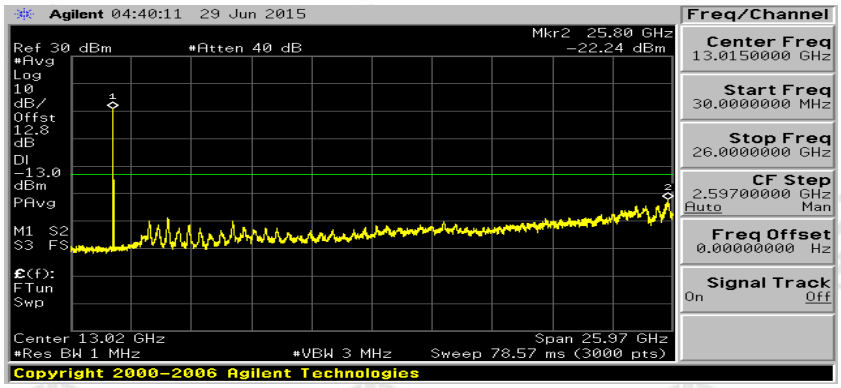




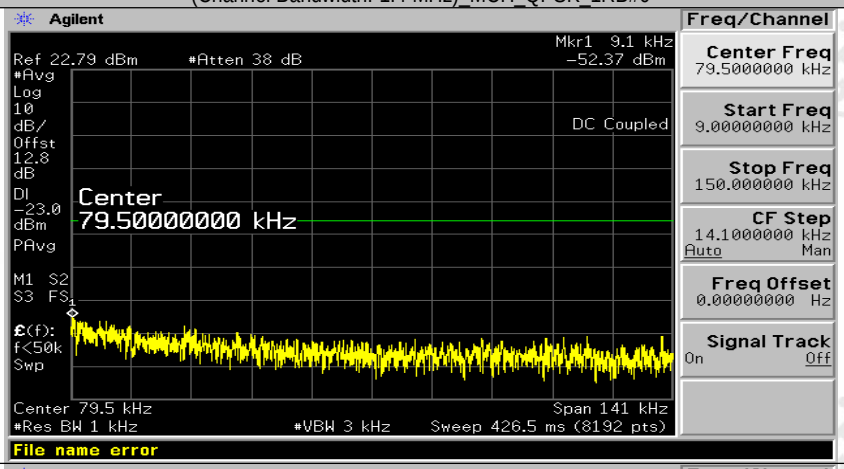
(Channel Bandwidth: 1.4 MHz)_LCH_QPSK_1RB#5

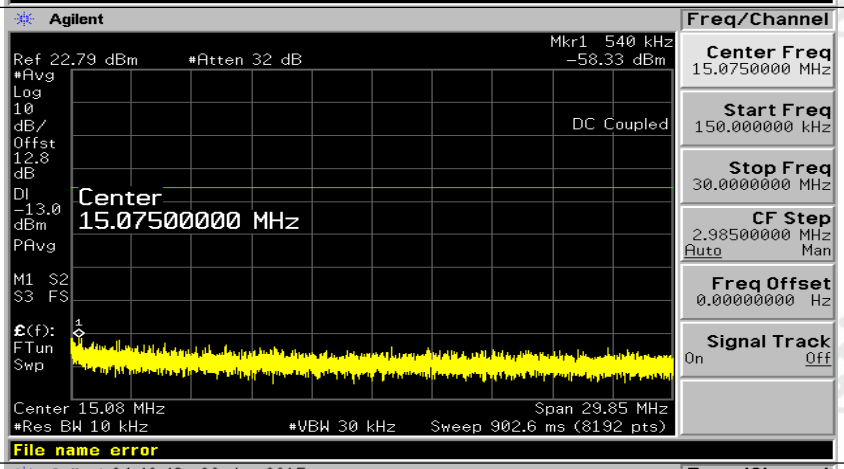


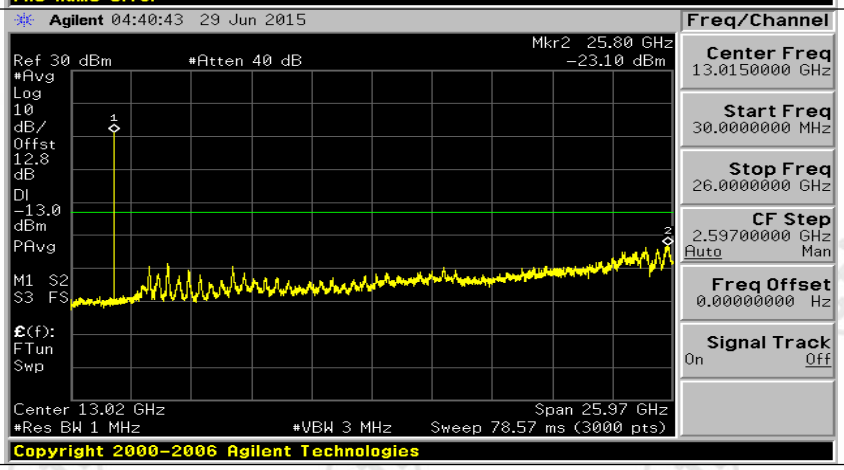




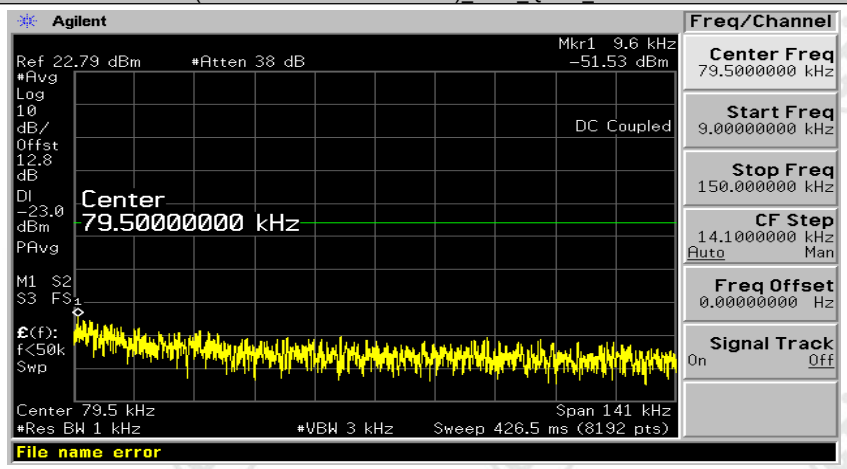
(Channel Bandwidth: 1.4 MHz)_MCH_QPSK_1RB#0

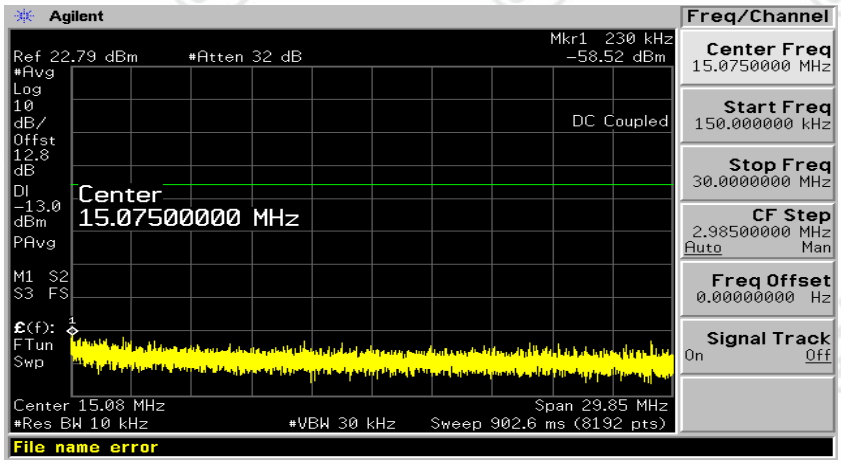


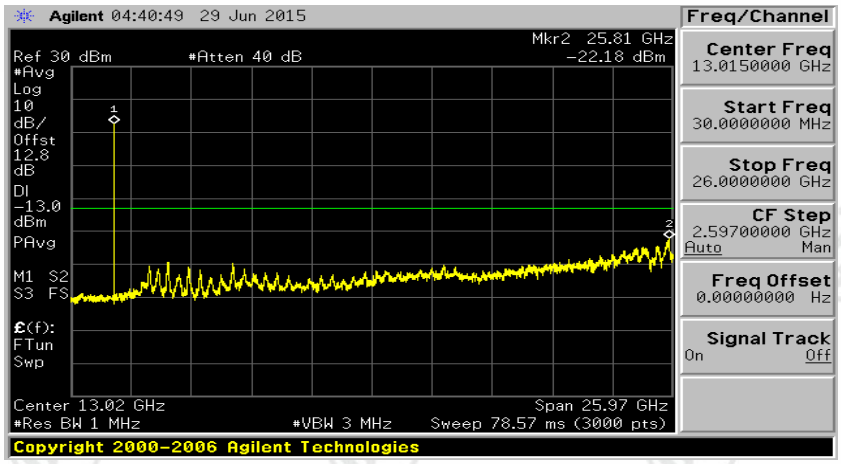




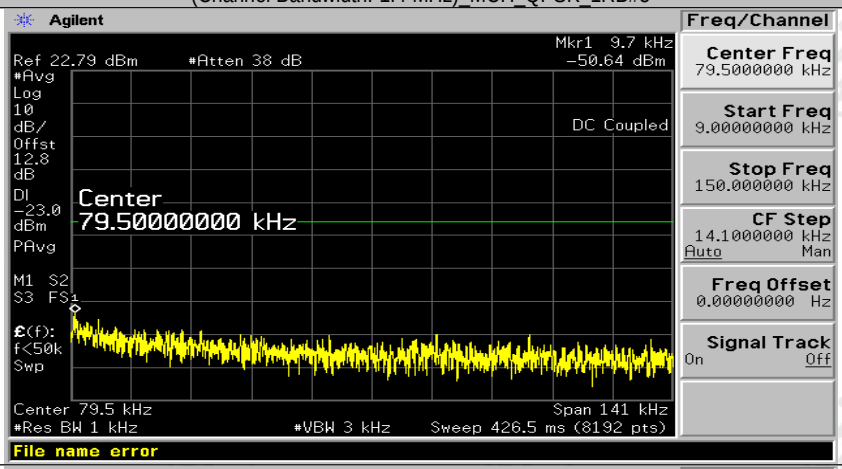
(Channel Bandwidth: 1.4 MHz)_MCH_QPSK_1RB#3

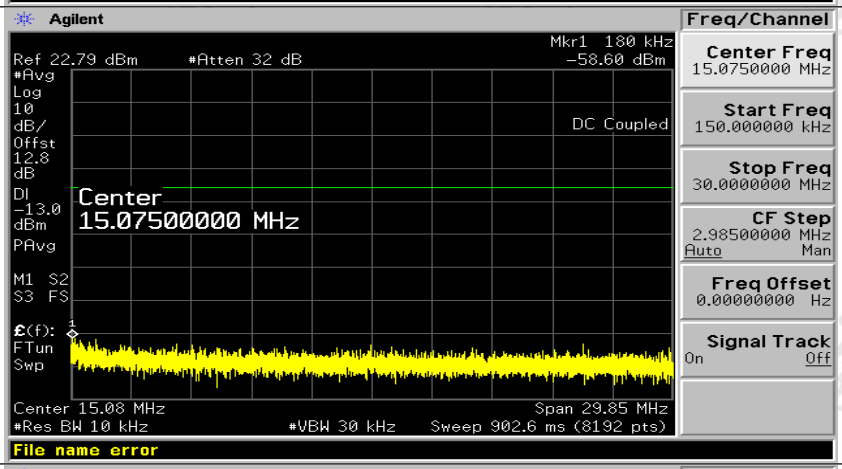


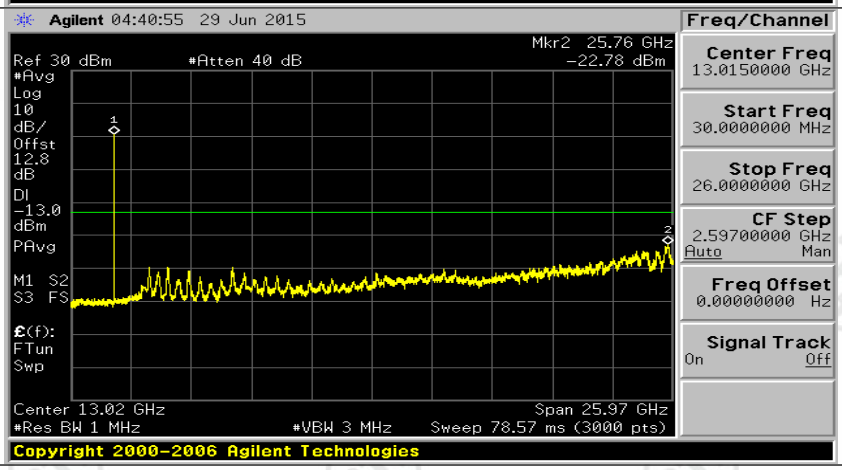




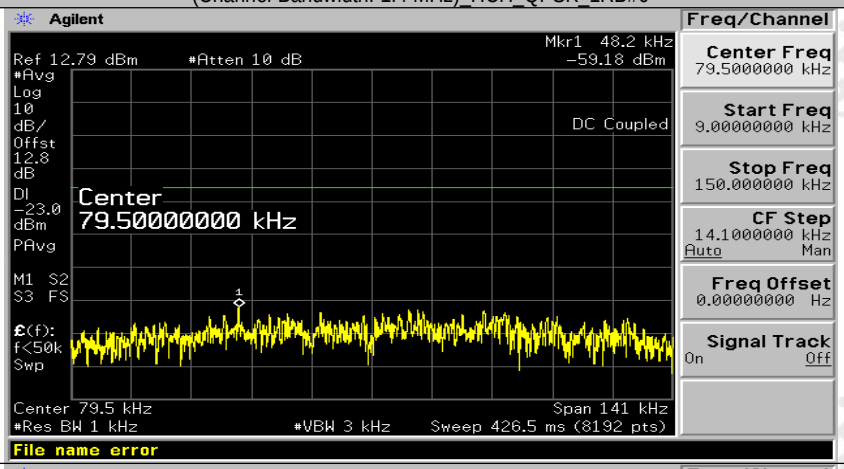
(Channel Bandwidth: 1.4 MHz)_MCH_QPSK_1RB#5

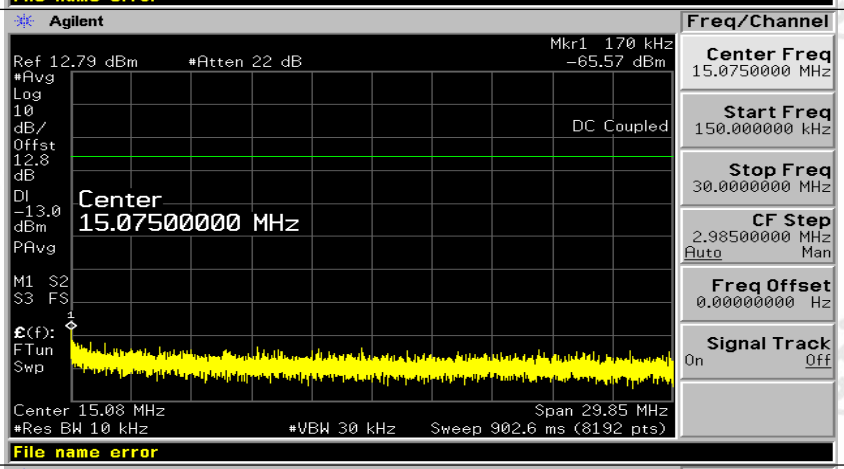


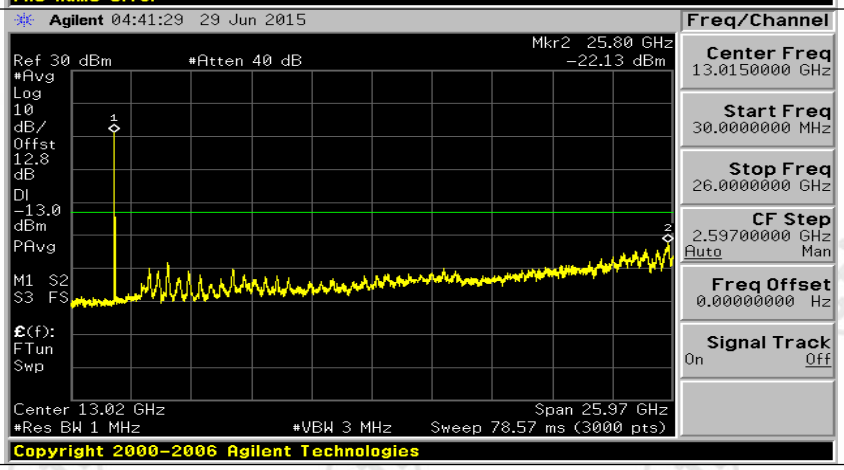




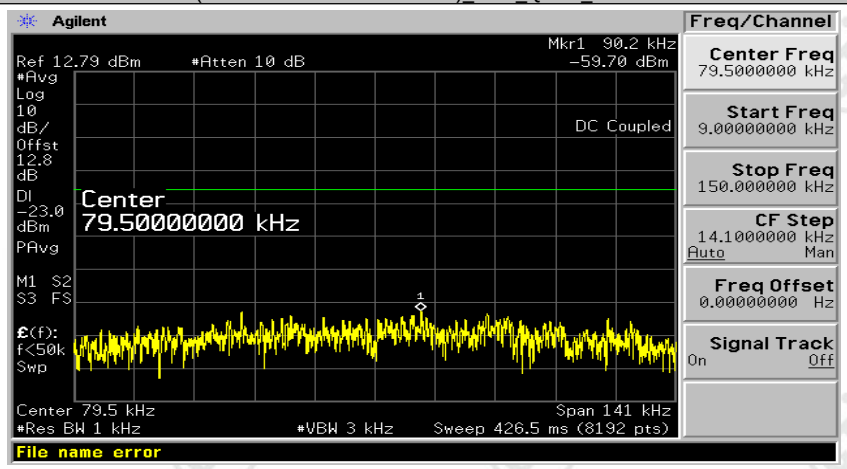
(Channel Bandwidth: 1.4 MHz)_HCH_QPSK_1RB#0

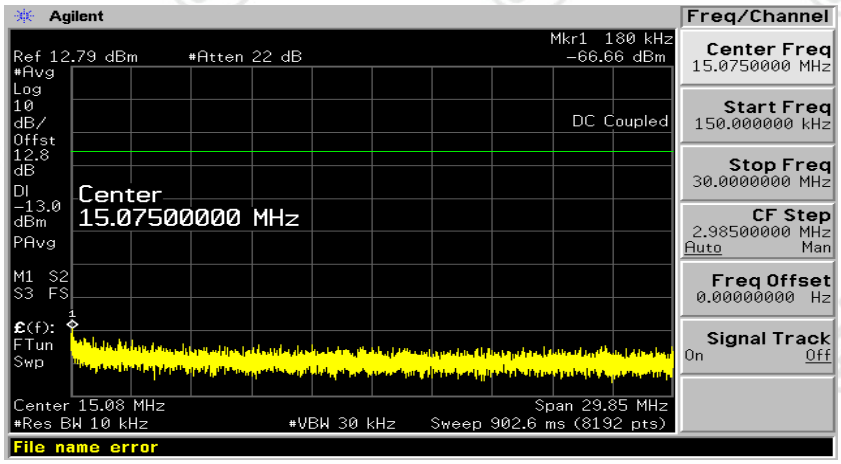


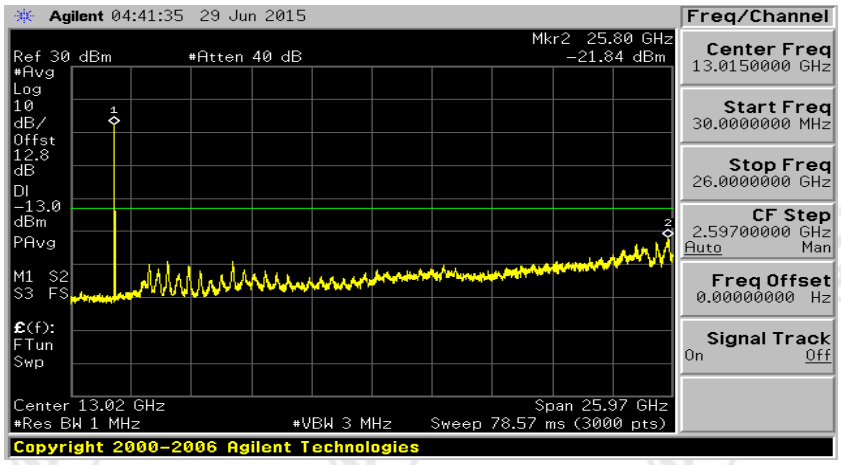




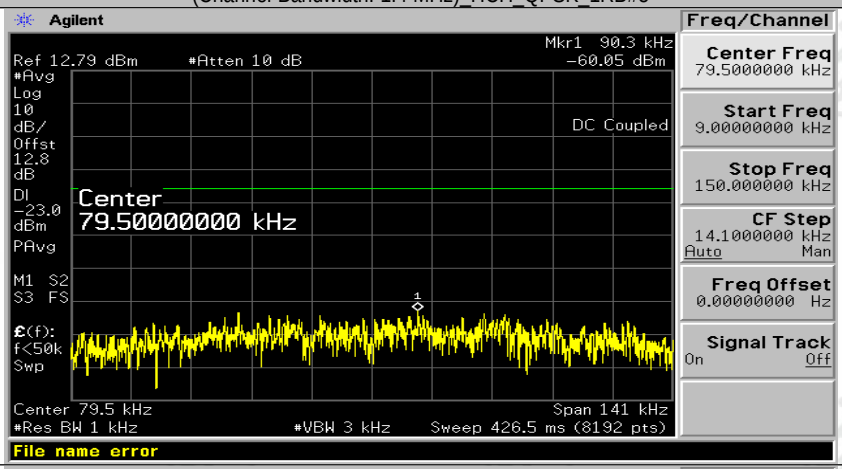
(Channel Bandwidth: 1.4 MHz)_HCH_QPSK_1RB#3

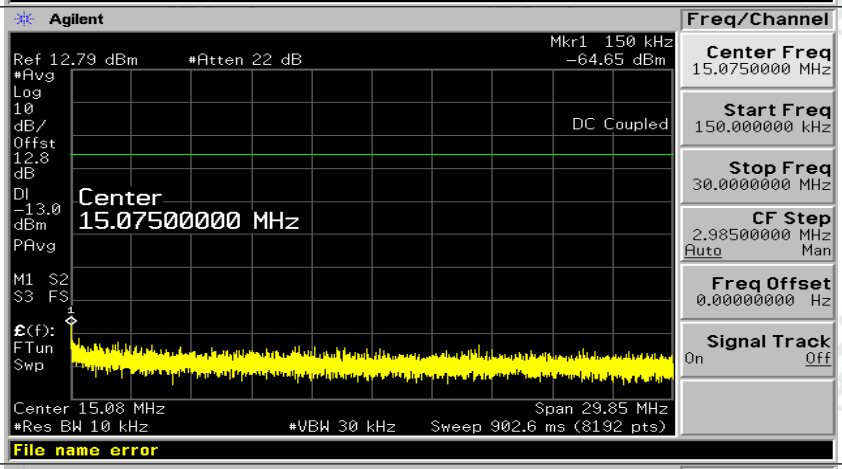


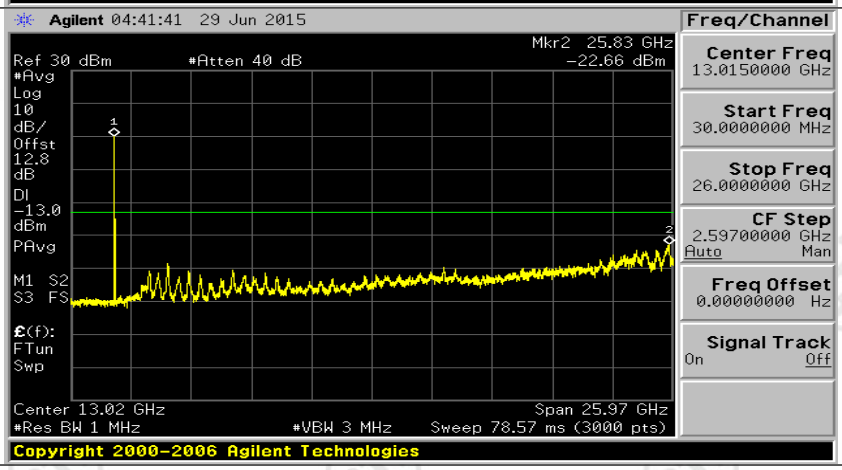




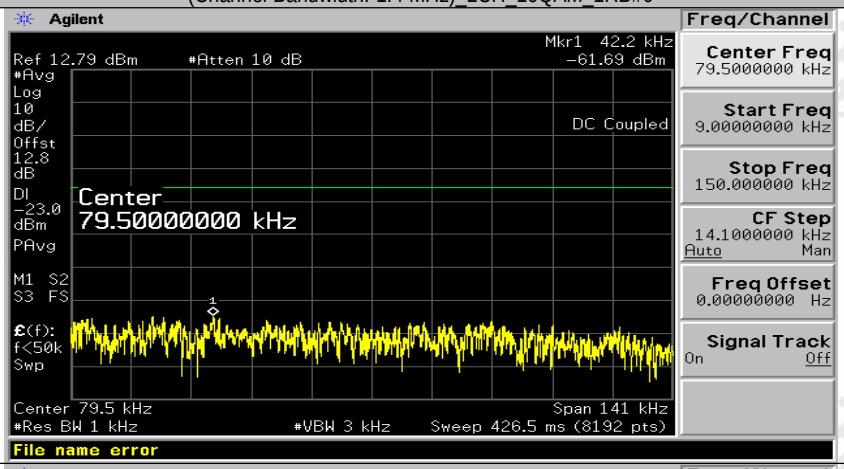
(Channel Bandwidth: 1.4 MHz)_HCH_QPSK_1RB#5

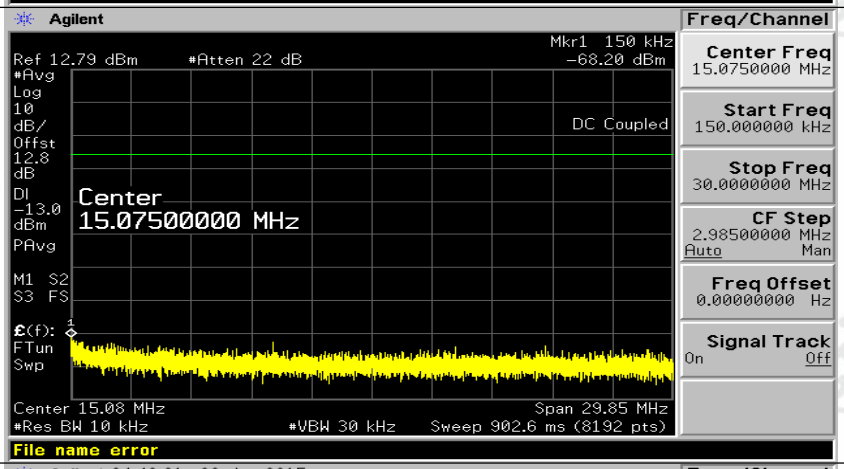


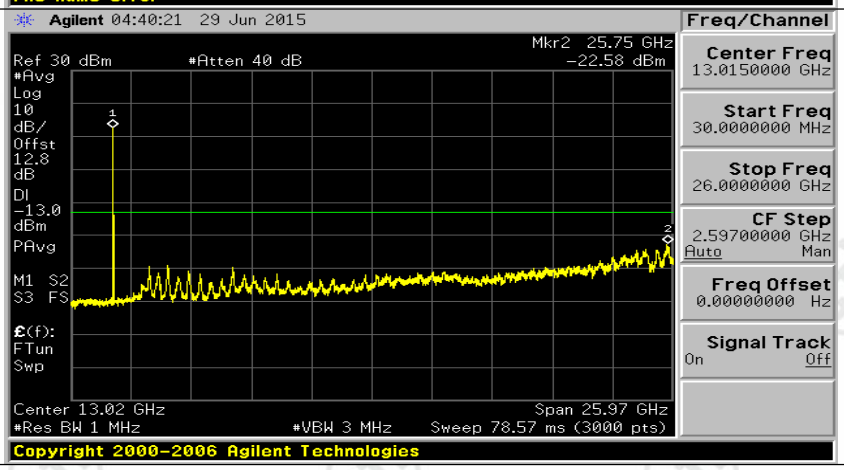




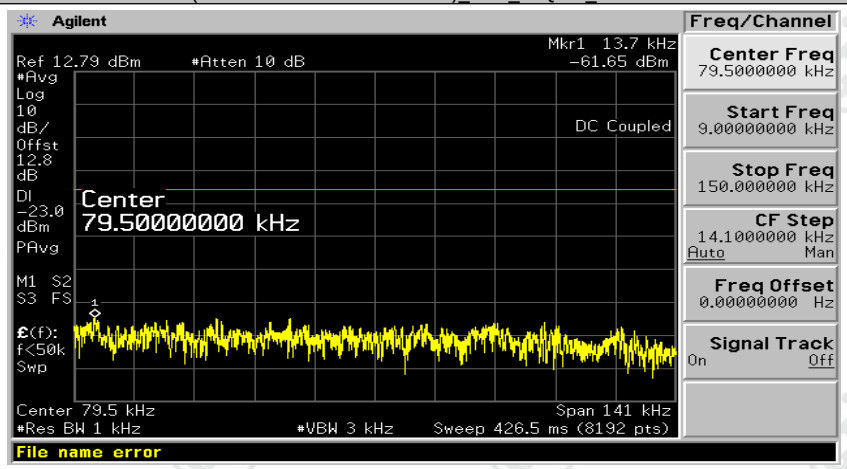
(Channel Bandwidth: 1.4 MHz)_LCH_16QAM_1RB#0

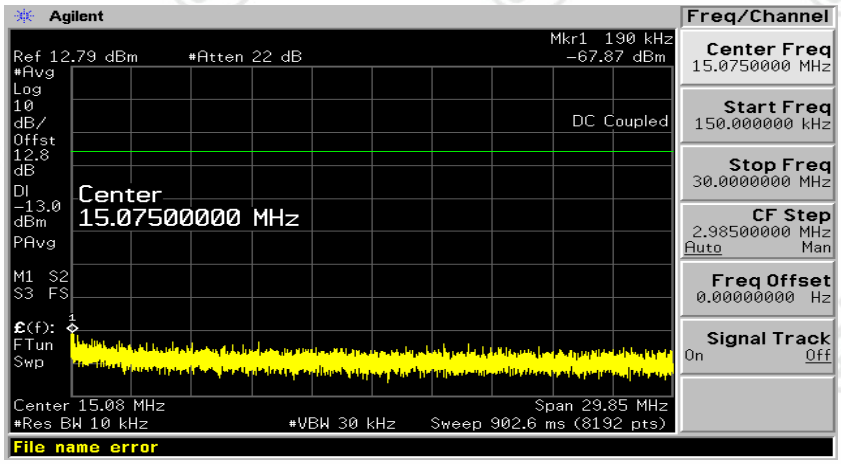


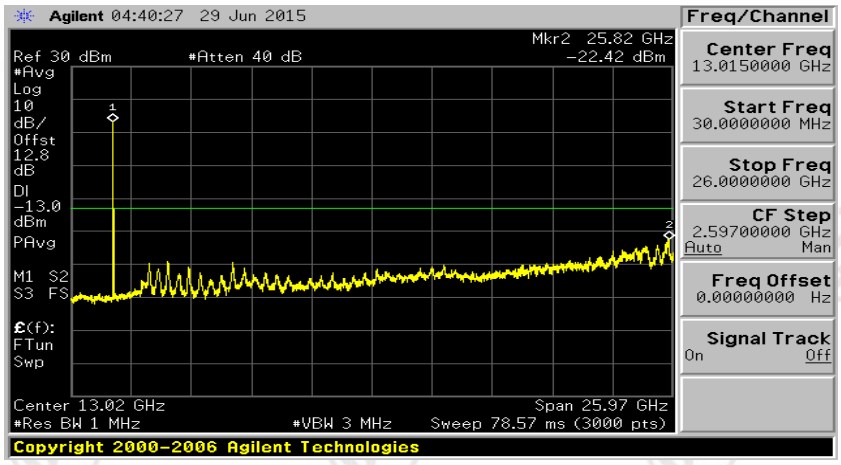




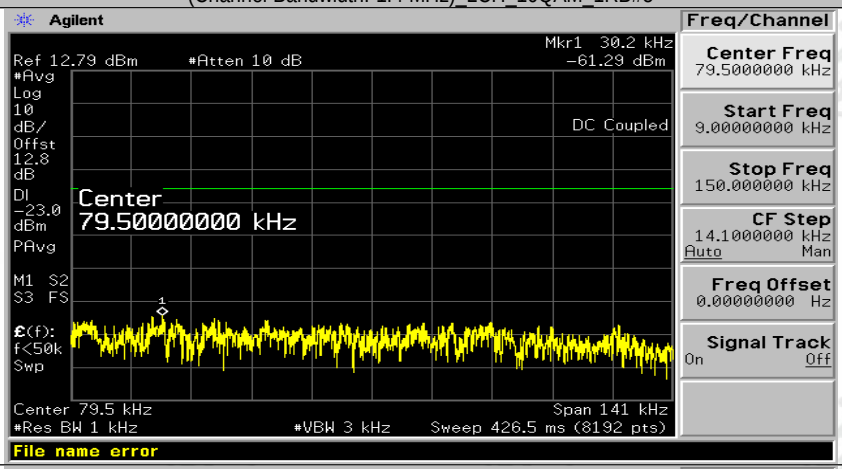
(Channel Bandwidth: 1.4 MHz)_LCH_16QAM_1RB#3

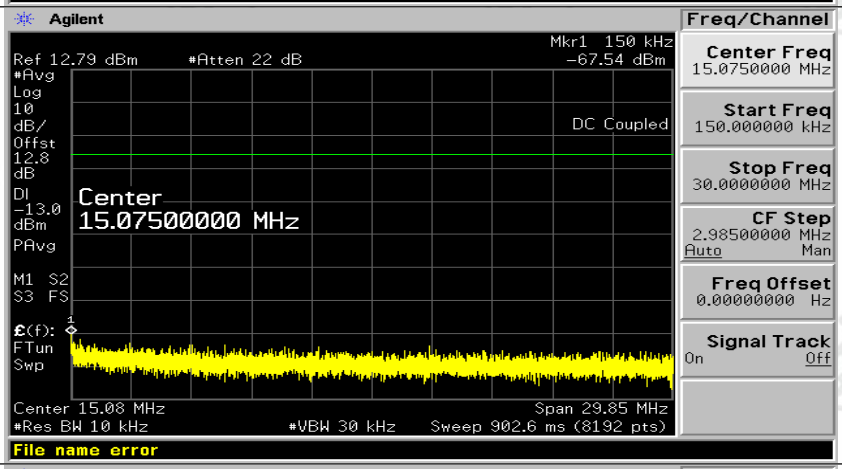


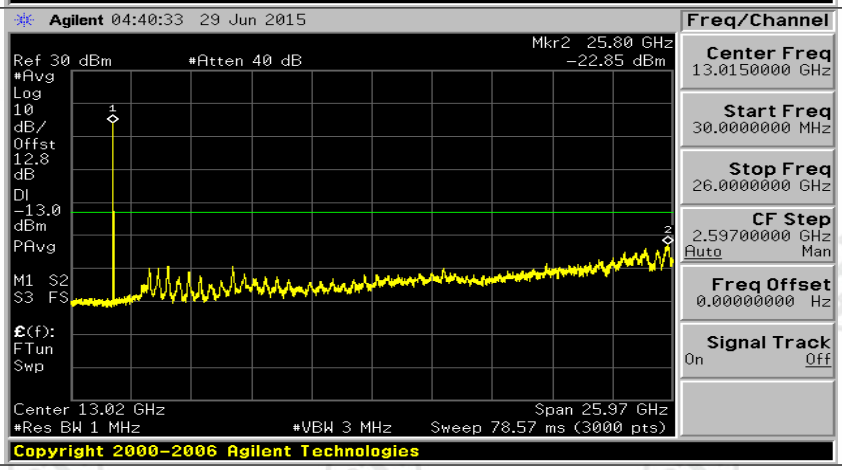




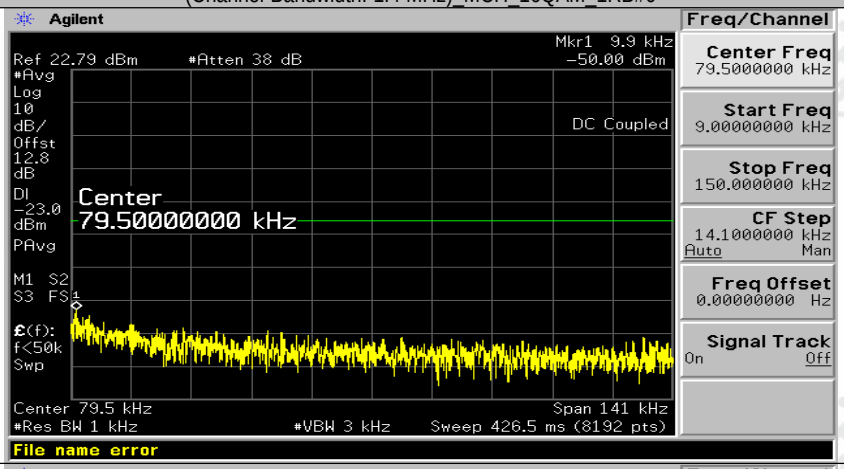
(Channel Bandwidth: 1.4 MHz)_LCH_16QAM_1RB#5

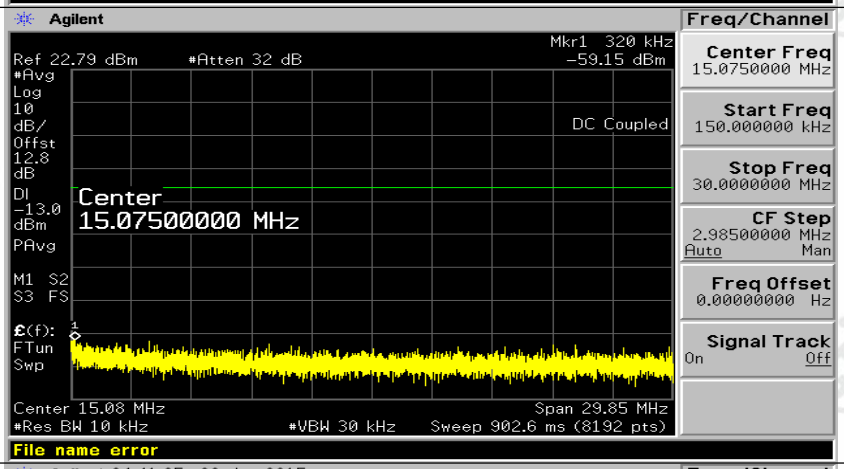


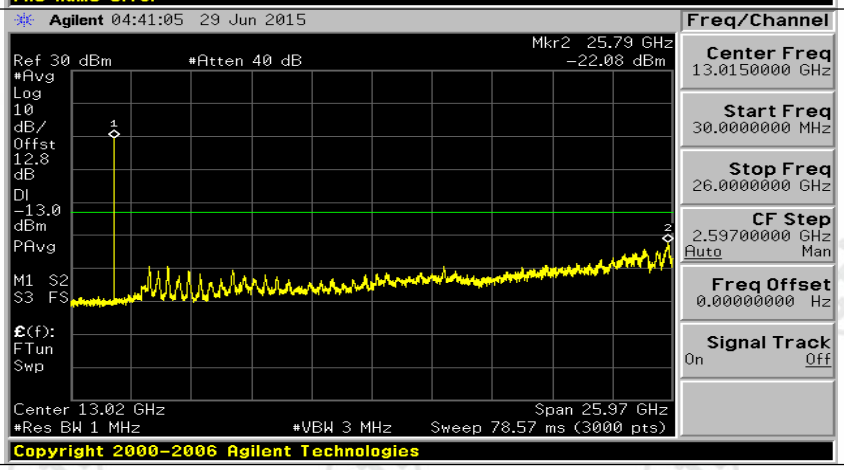




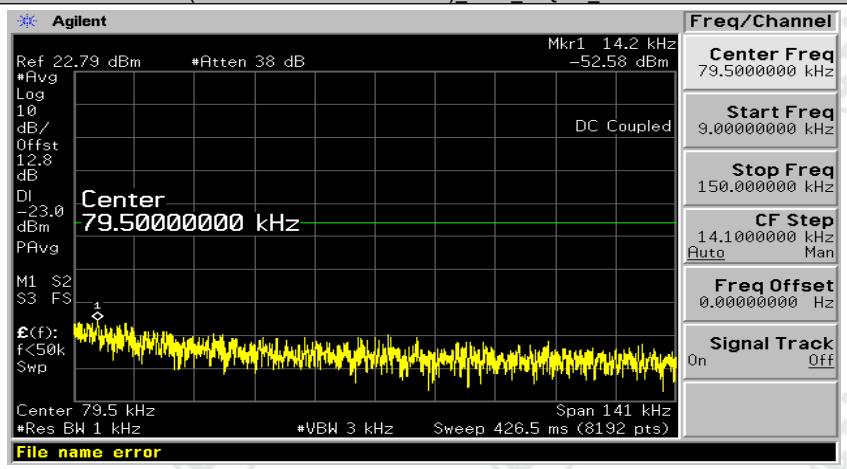
(Channel Bandwidth: 1.4 MHz)_MCH_16QAM_1RB#0

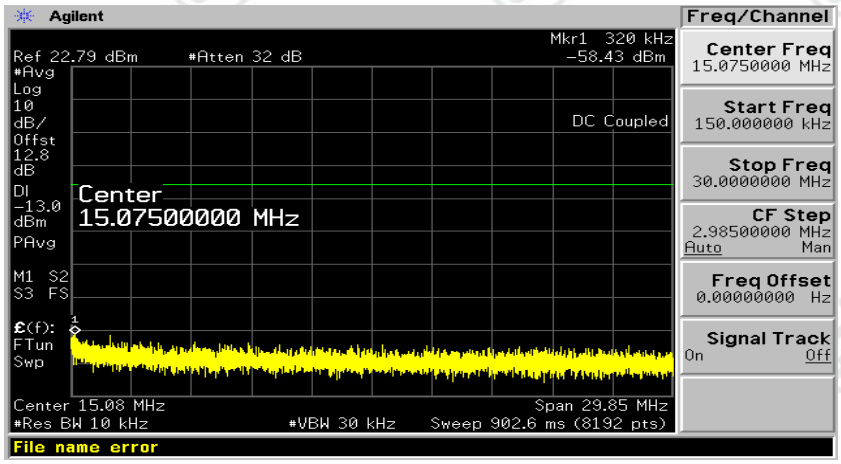


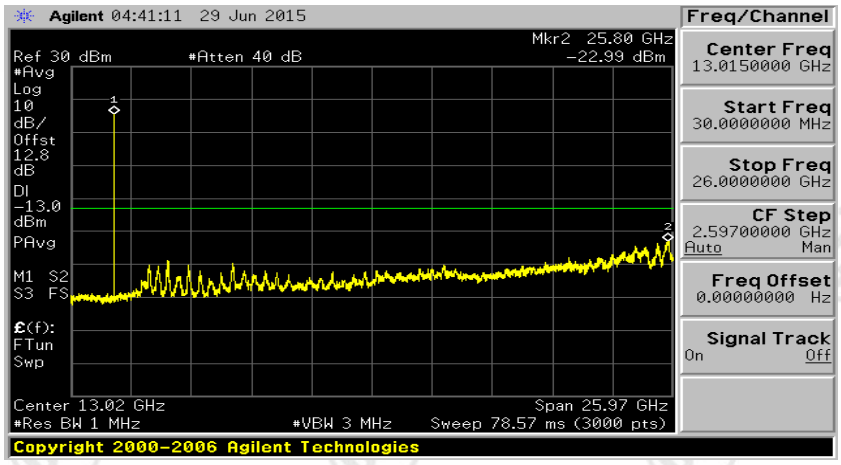




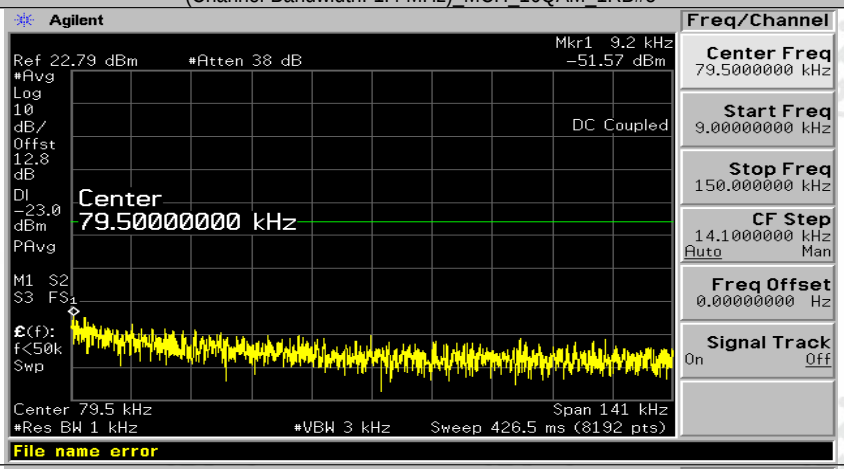
(Channel Bandwidth: 1.4 MHz)_MCH_16QAM_1RB#3

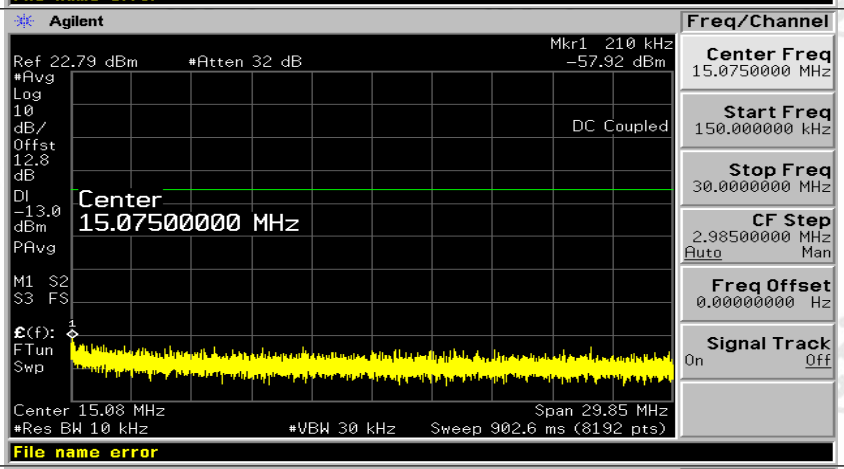


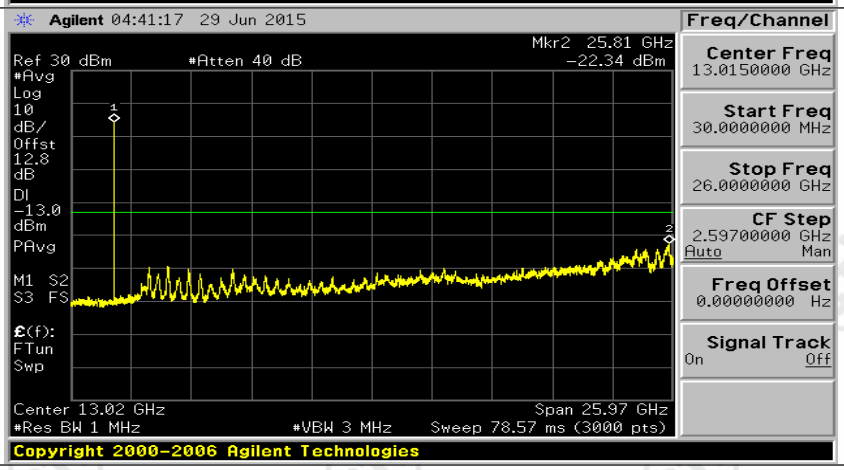




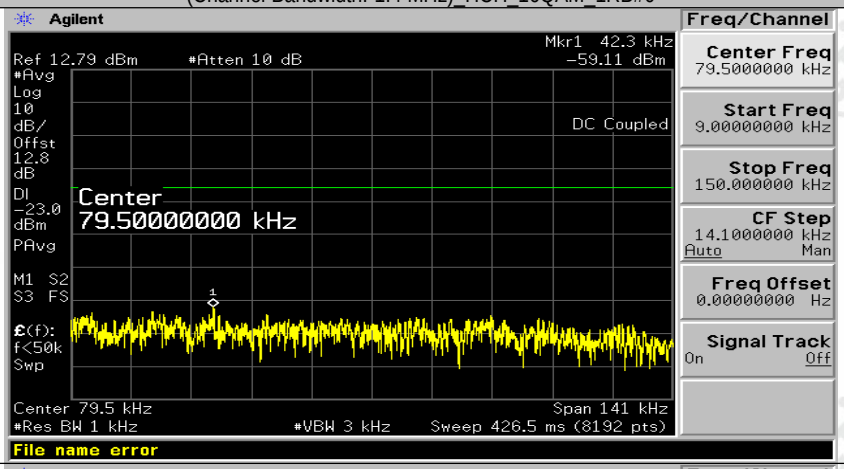
(Channel Bandwidth: 1.4 MHz)_MCH_16QAM_1RB#5

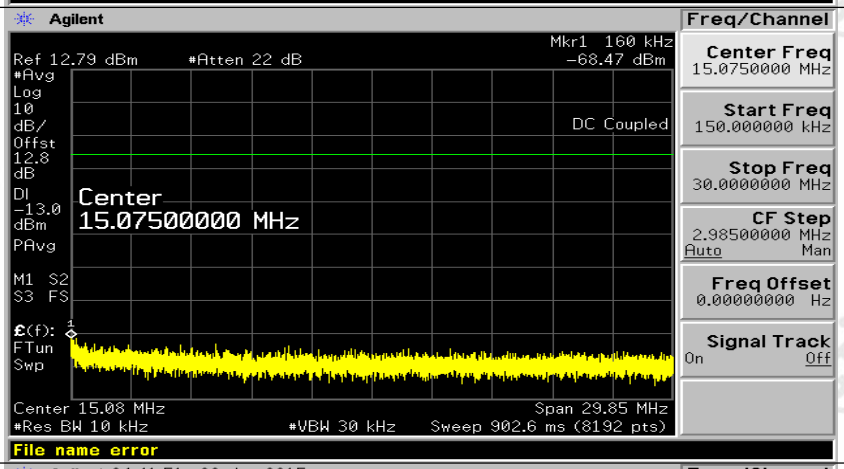


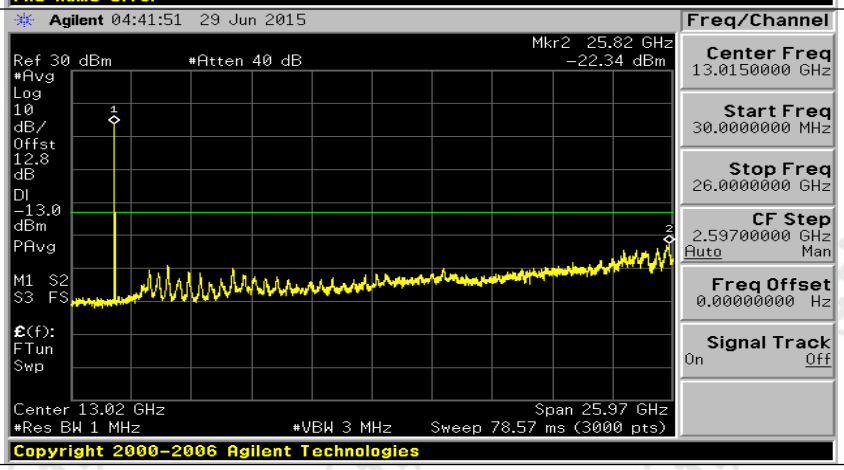




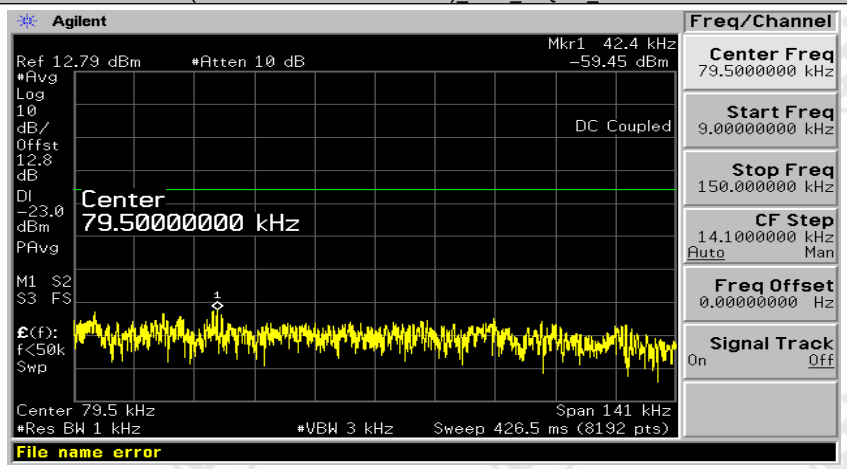
(Channel Bandwidth: 1.4 MHz)_HCH_16QAM_1RB#0

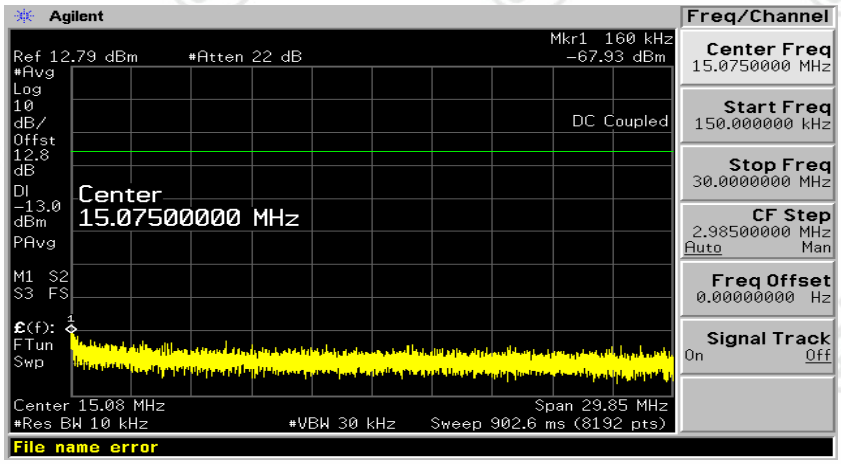


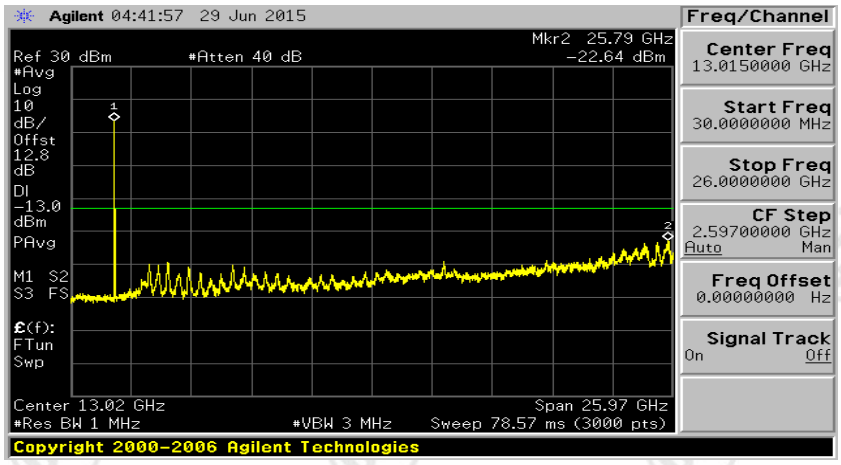




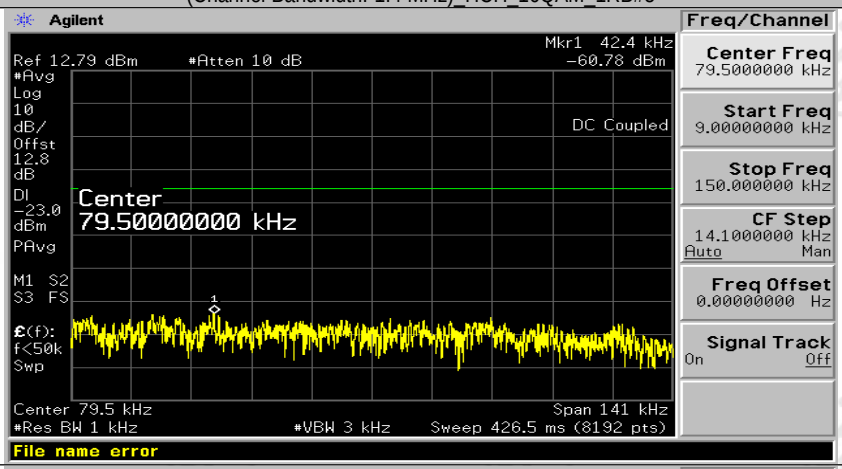
(Channel Bandwidth: 1.4 MHz)_HCH_16QAM_1RB#3

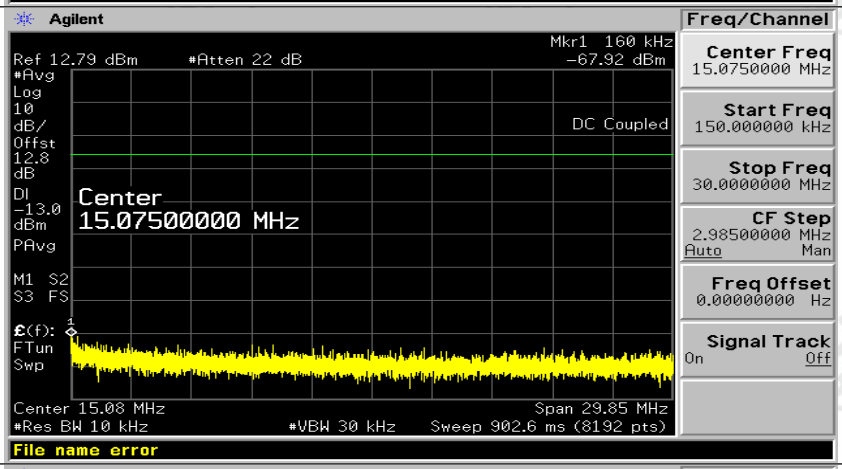


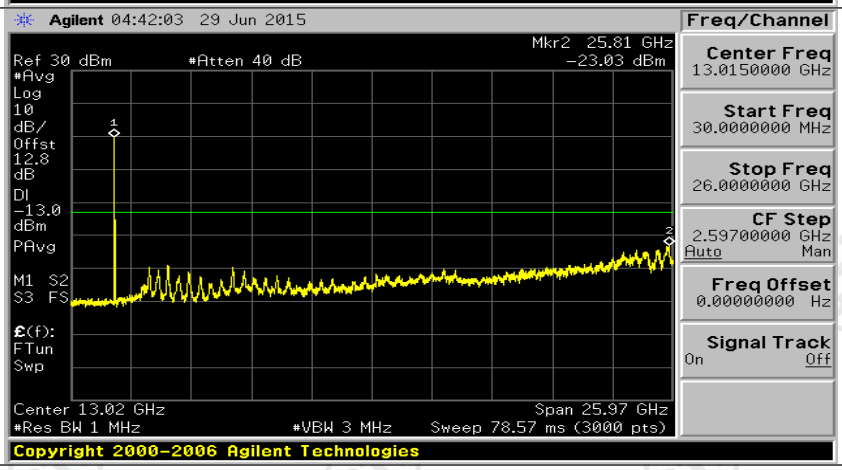




(Channel Bandwidth: 1.4 MHz)_HCH_16QAM_1RB#5

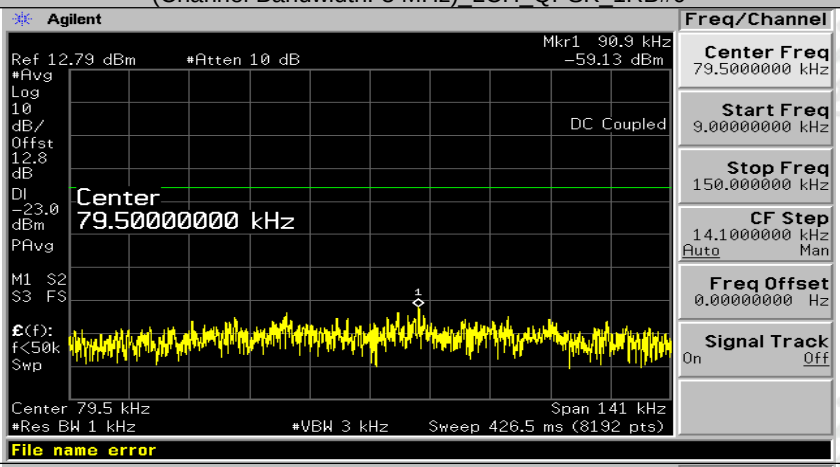


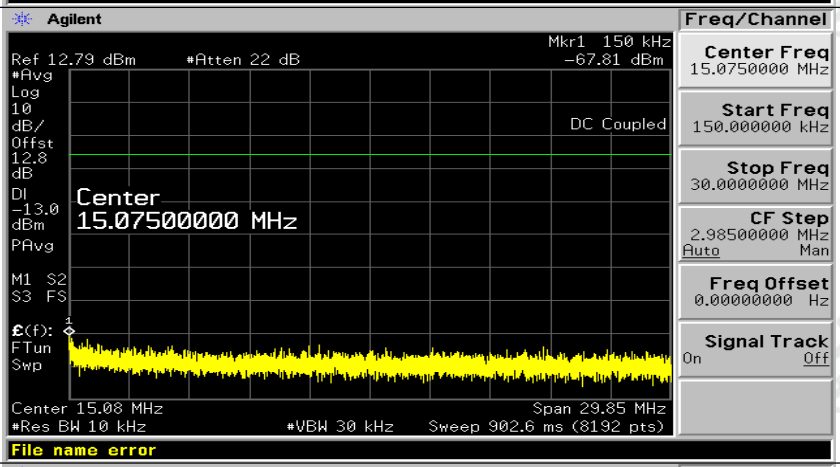


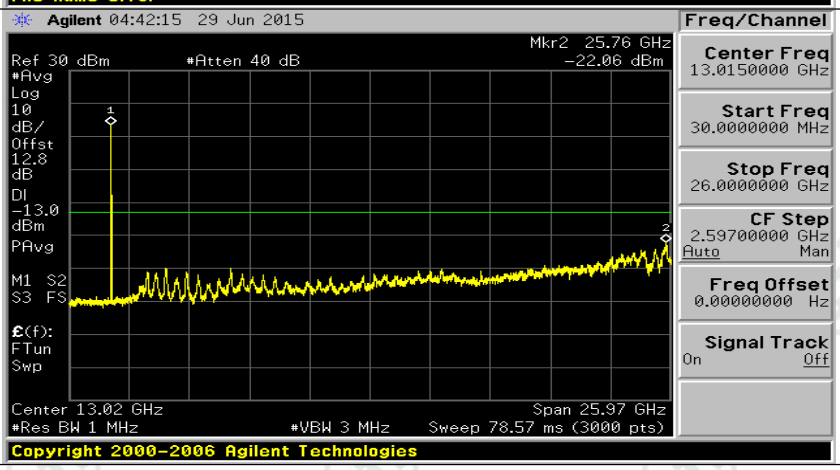


Channel Bandwidth: 3 MHz

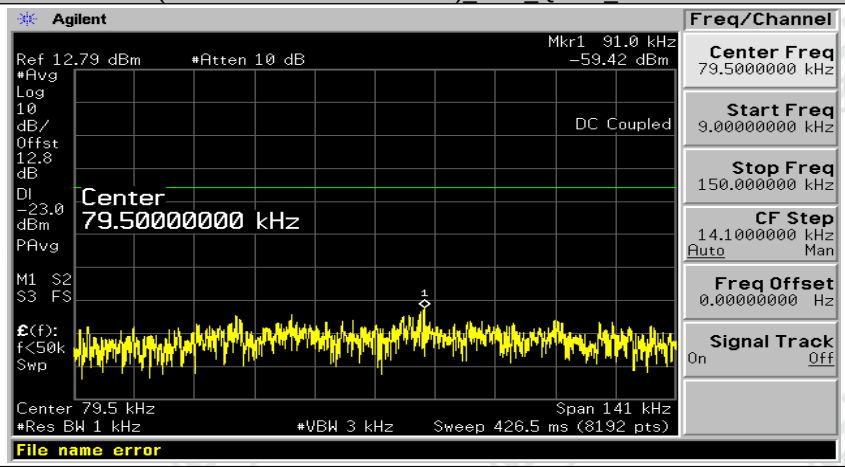
(Channel Bandwidth: 3 MHz)_LCH_QPSK_1RB#0

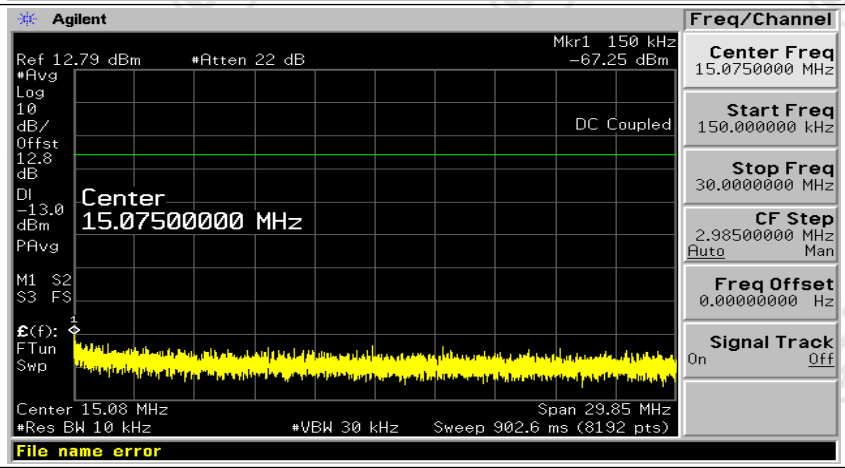


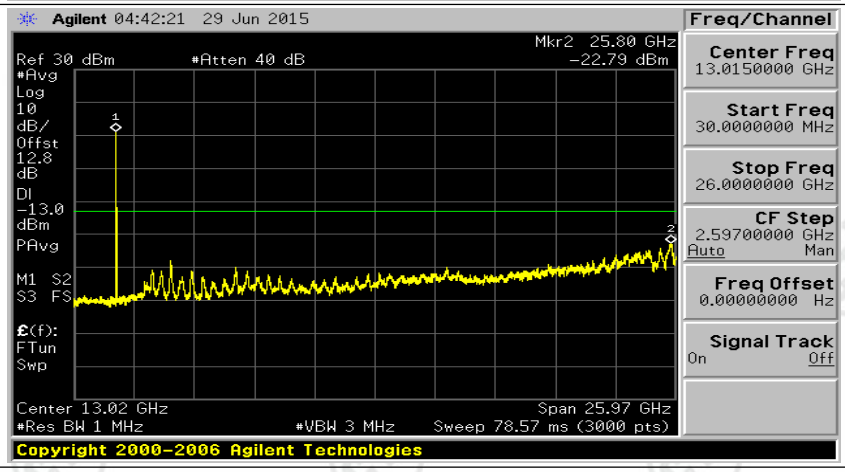




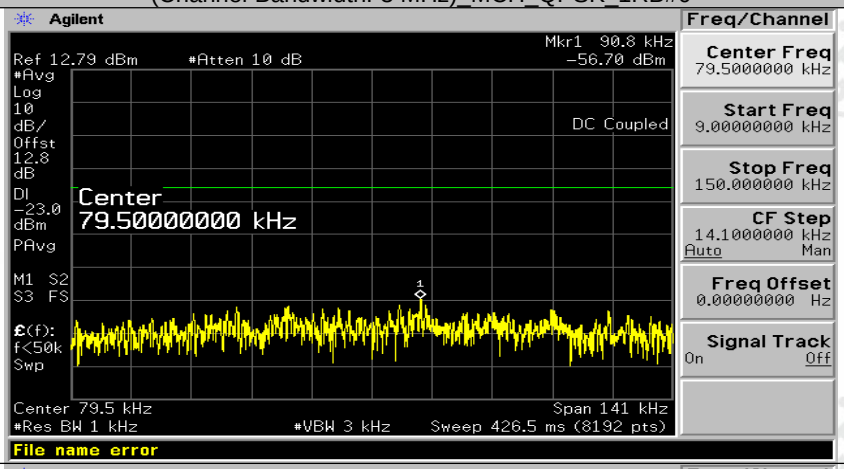
(Channel Bandwidth: 3 MHz)_LCH_QPSK_1RB#7

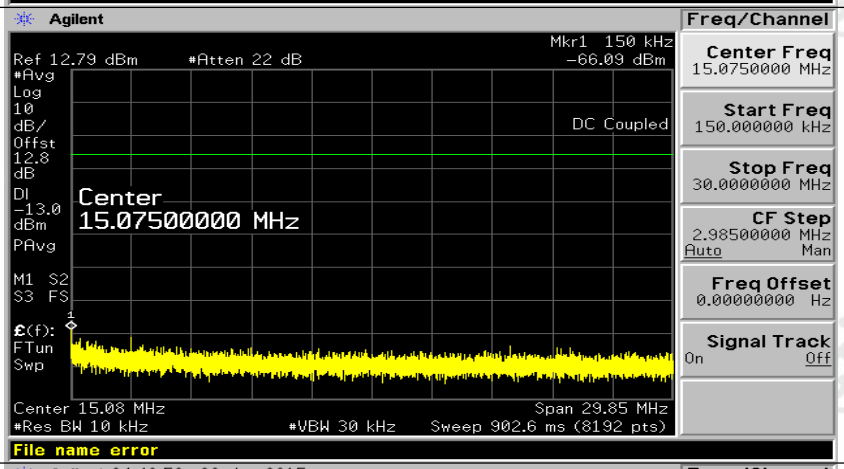


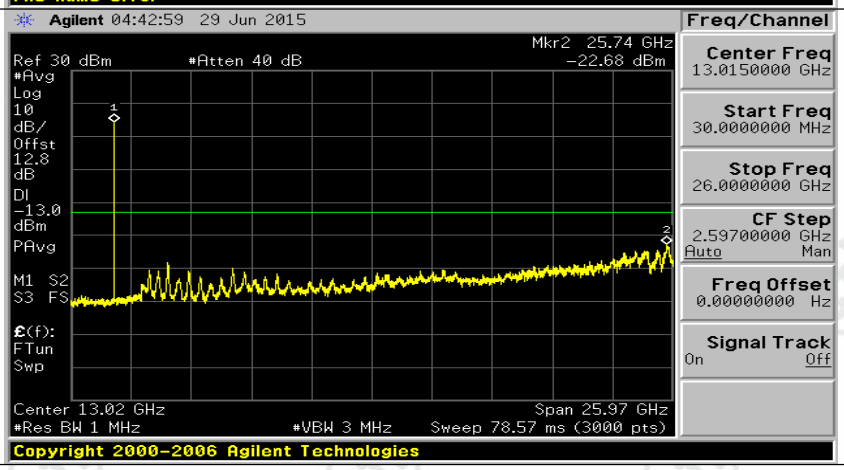




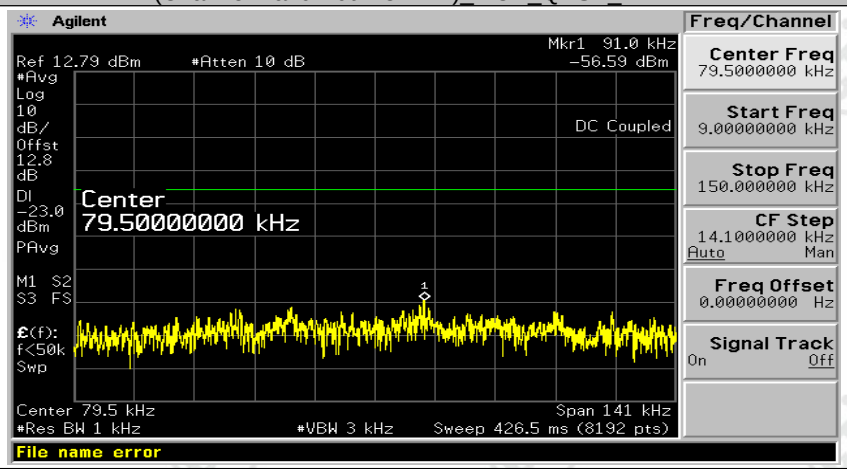
(Channel Bandwidth: 3 MHz)_MCH_QPSK_1RB#0

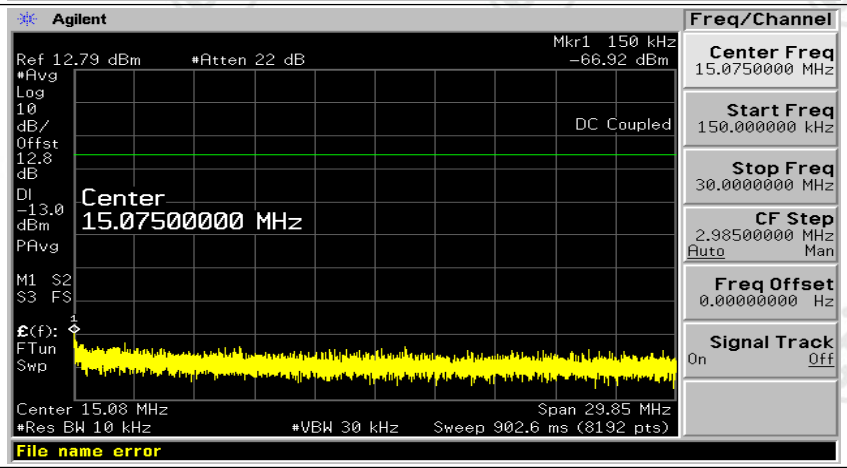


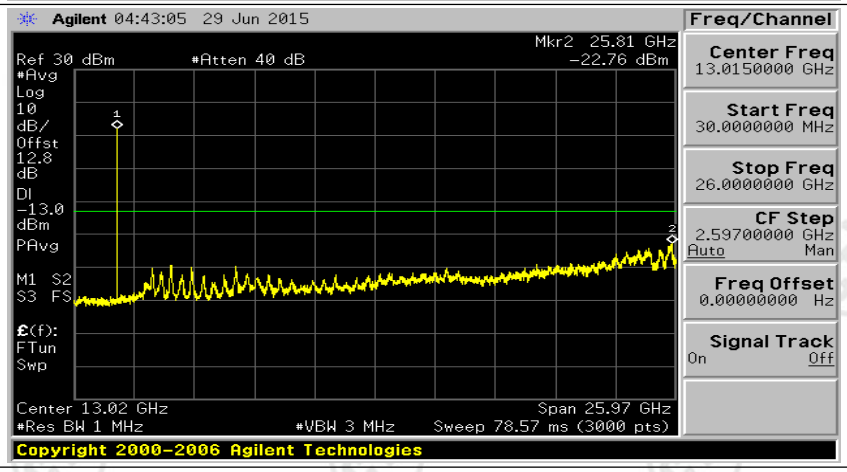




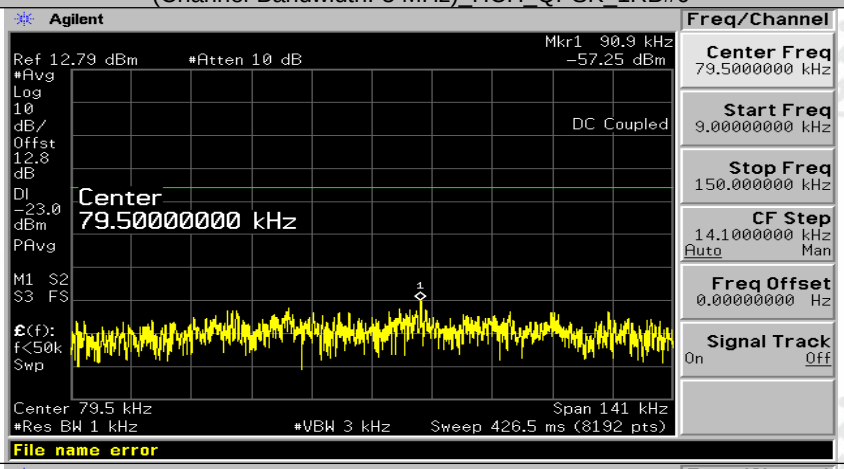
(Channel Bandwidth: 3 MHz)_MCH_QPSK_1RB#7

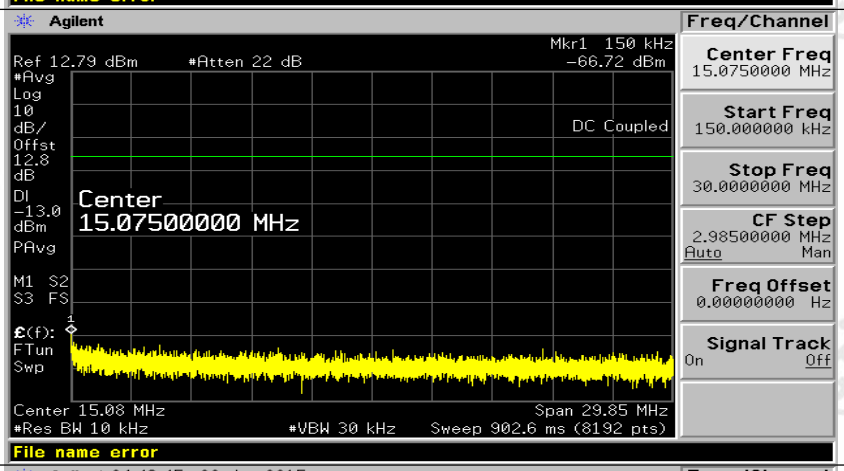


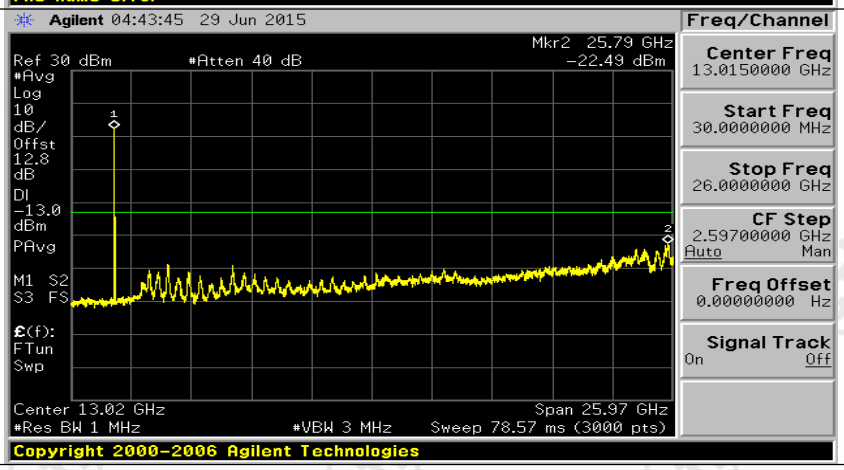




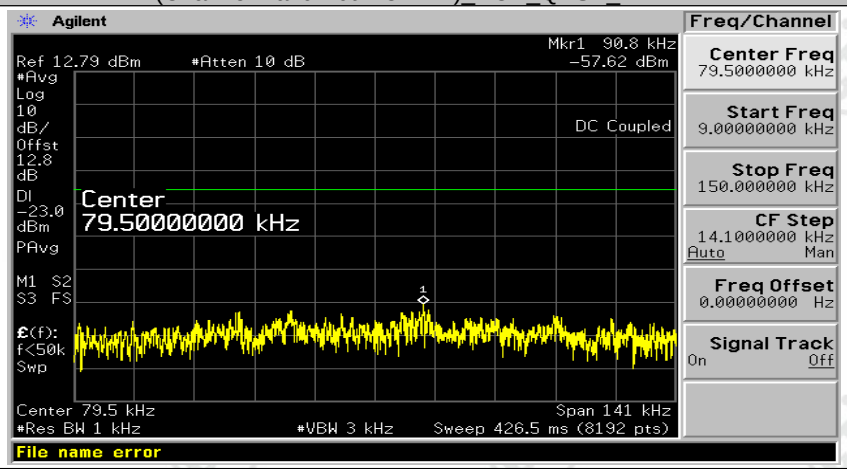
(Channel Bandwidth: 3 MHz)_HCH_QPSK_1RB#0

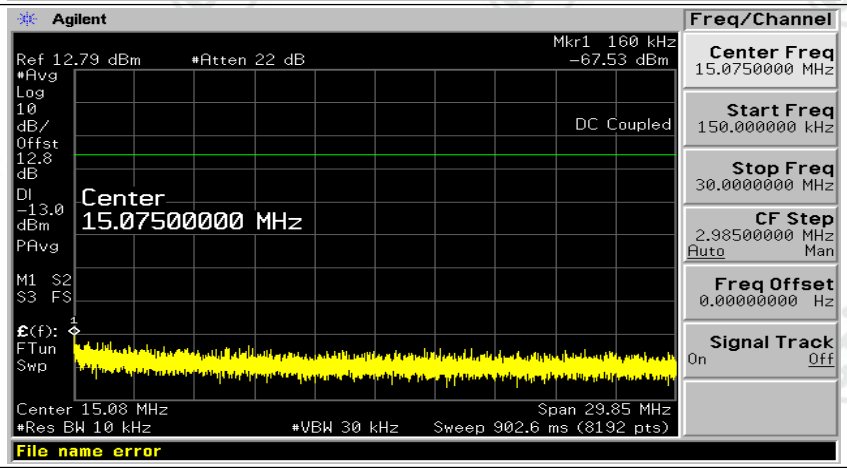


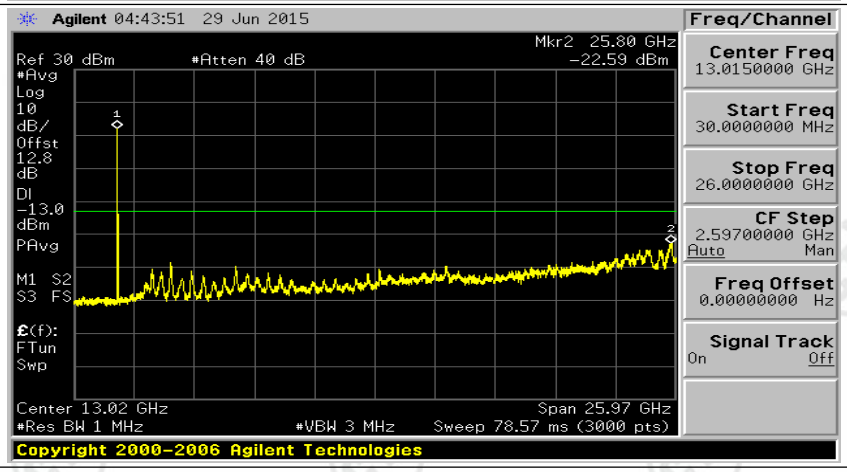




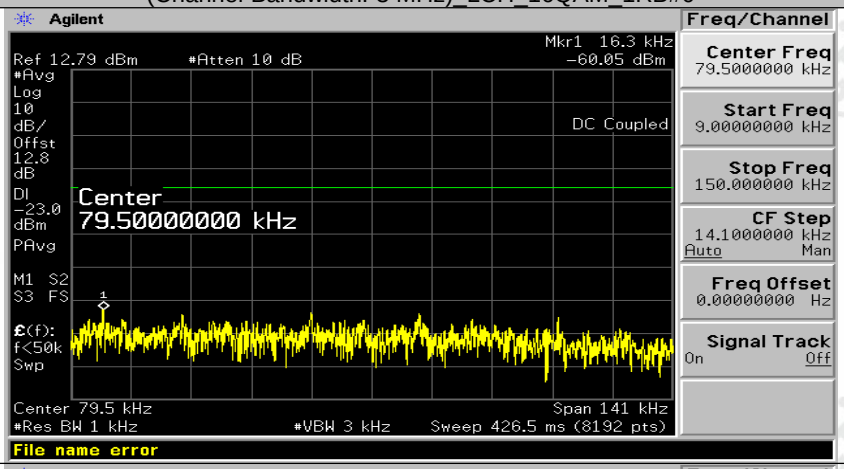
(Channel Bandwidth: 3 MHz)_HCH_QPSK_1RB#7

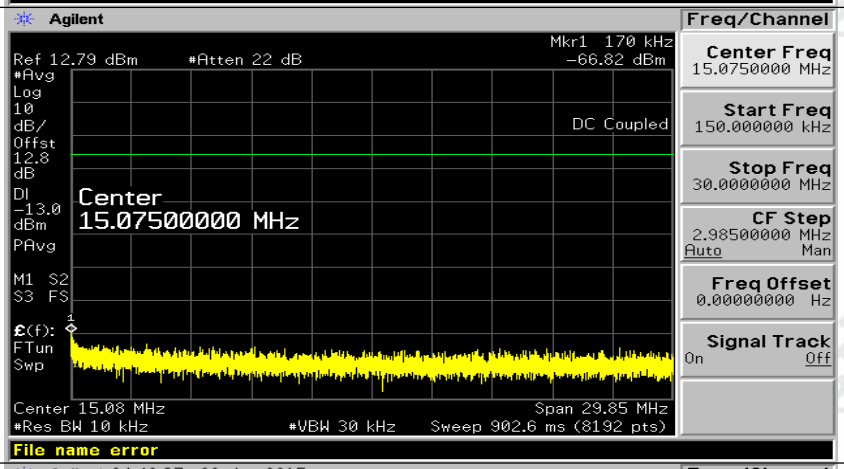


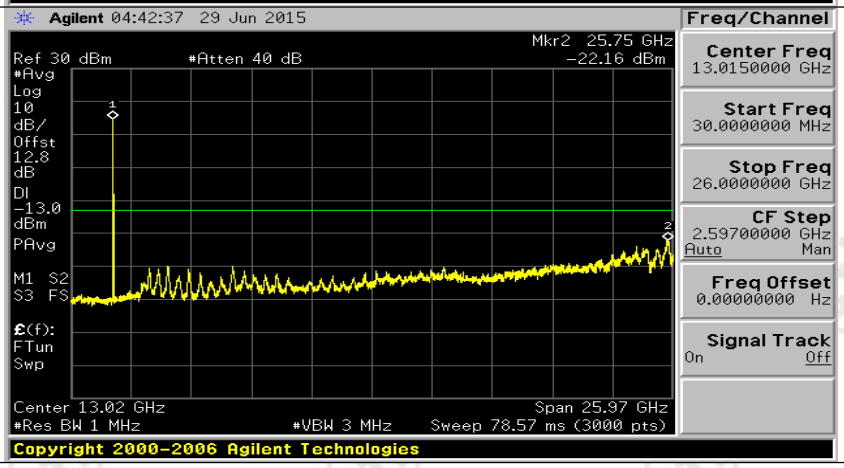




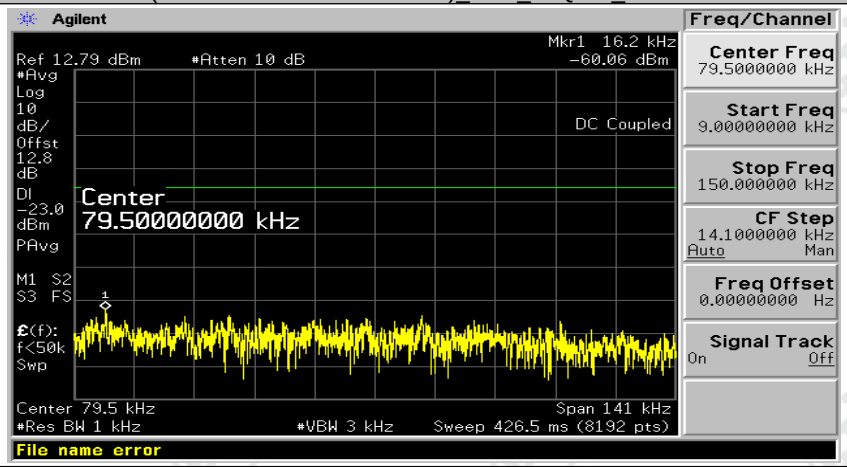
(Channel Bandwidth: 3 MHz)_LCH_16QAM_1RB#0

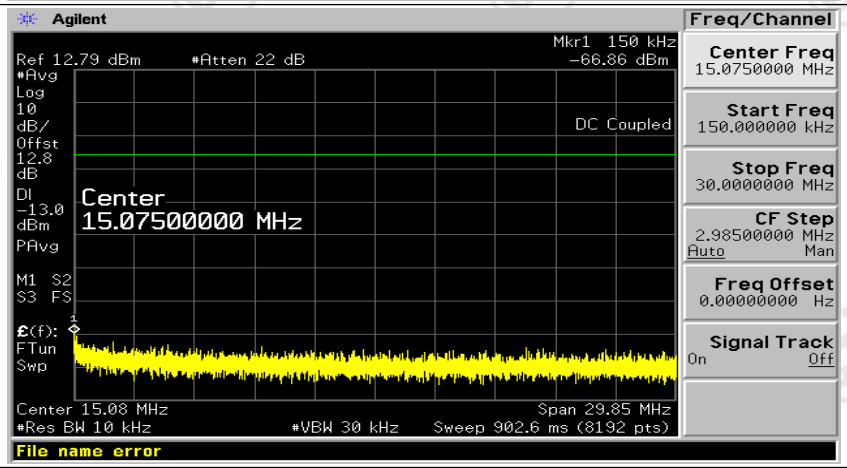


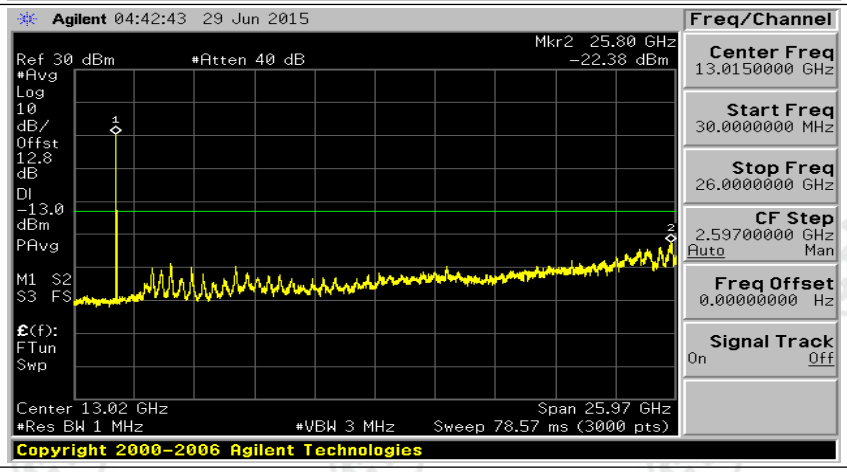




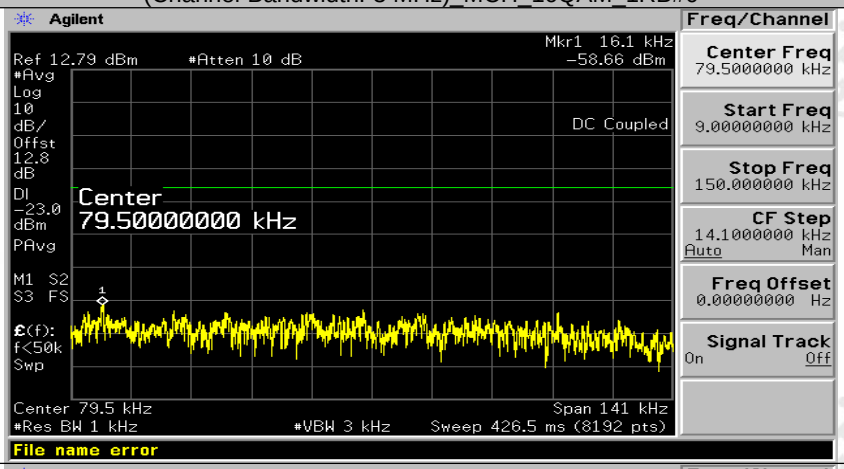
(Channel Bandwidth: 3 MHz)_LCH_16QAM_1RB#7

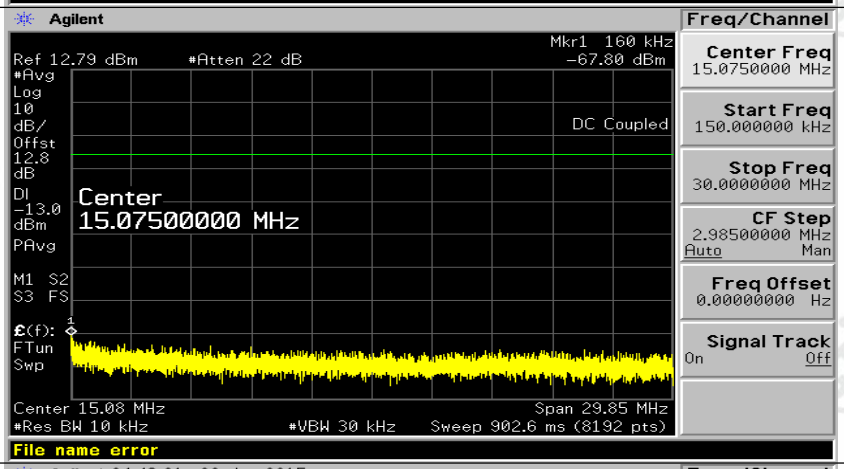


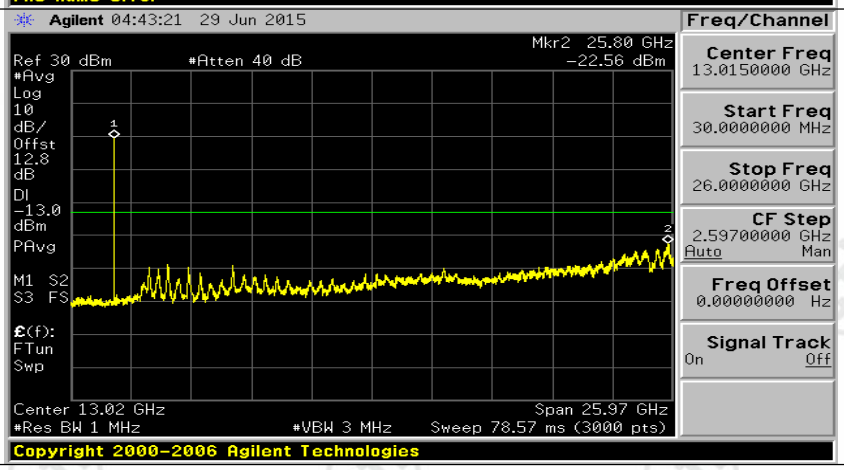




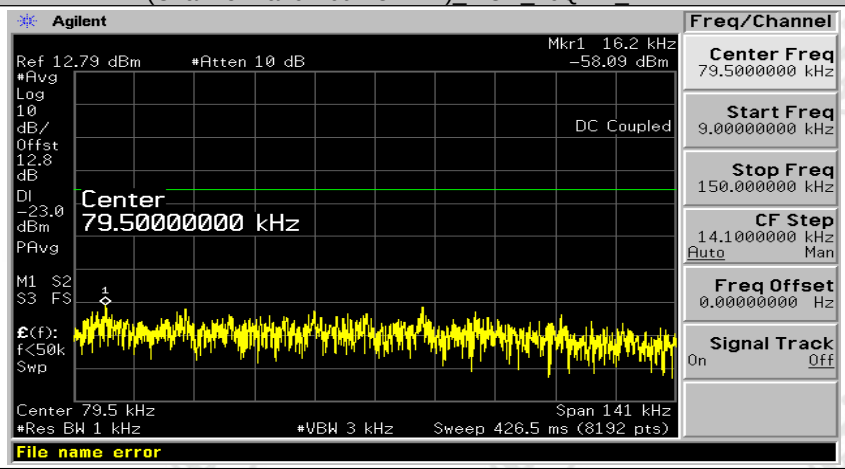
(Channel Bandwidth: 3 MHz)_MCH_16QAM_1RB#0

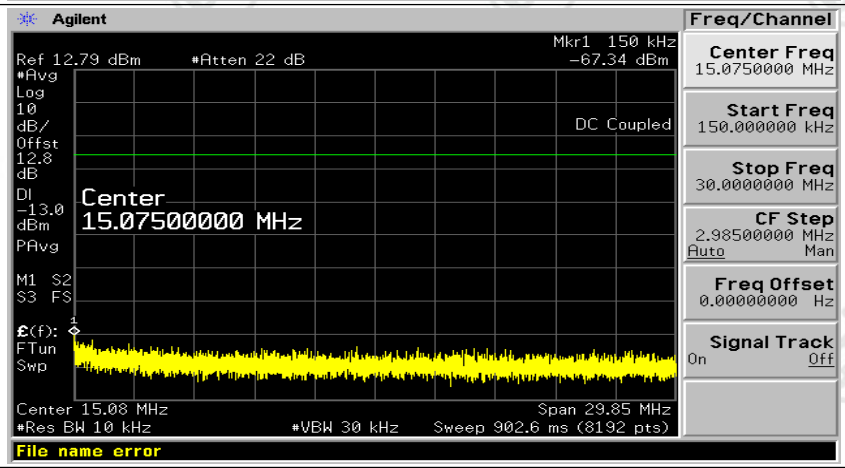


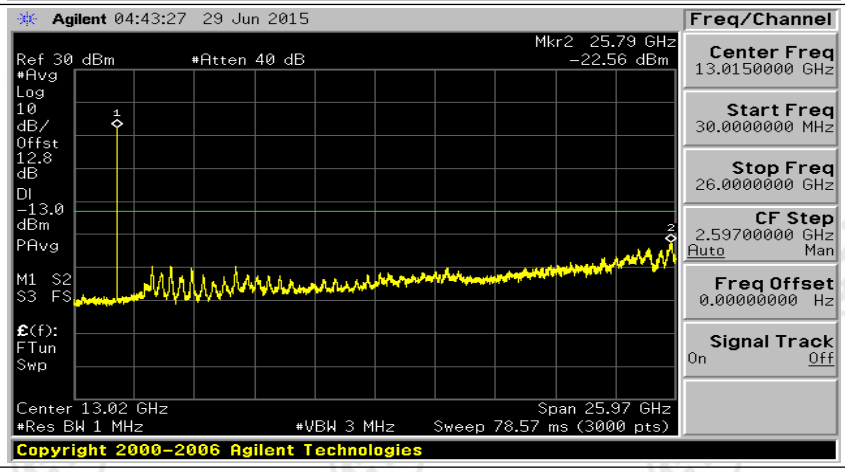




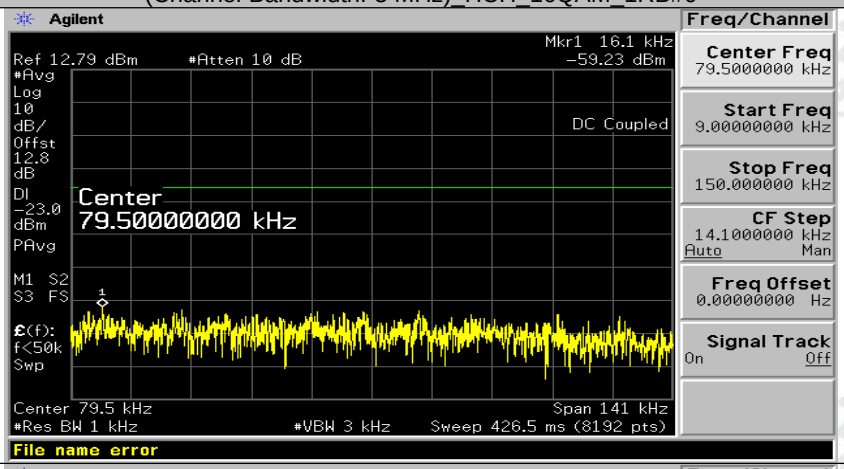
(Channel Bandwidth: 3 MHz)_MCH_16QAM_1RB#7

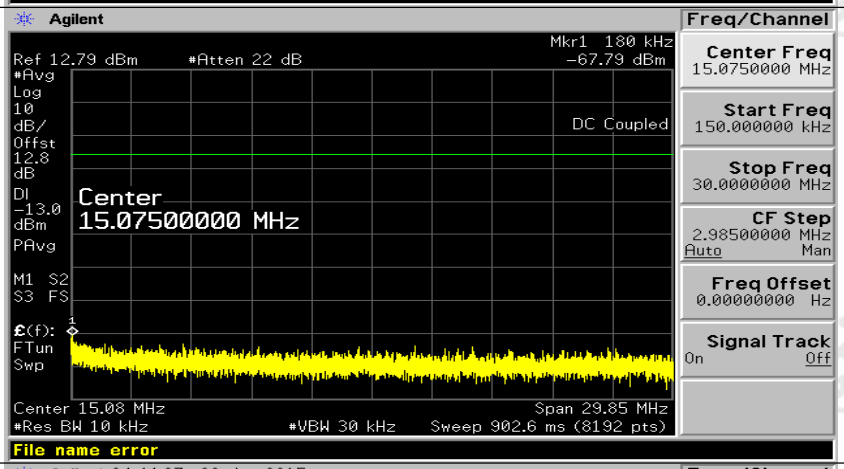


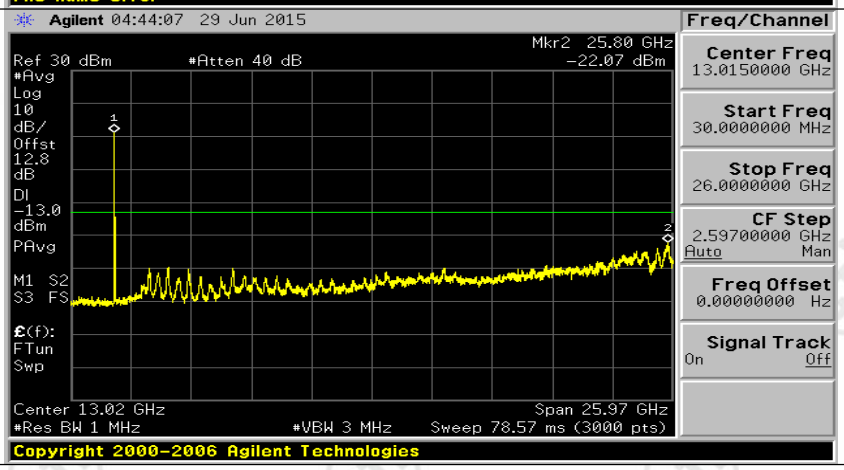




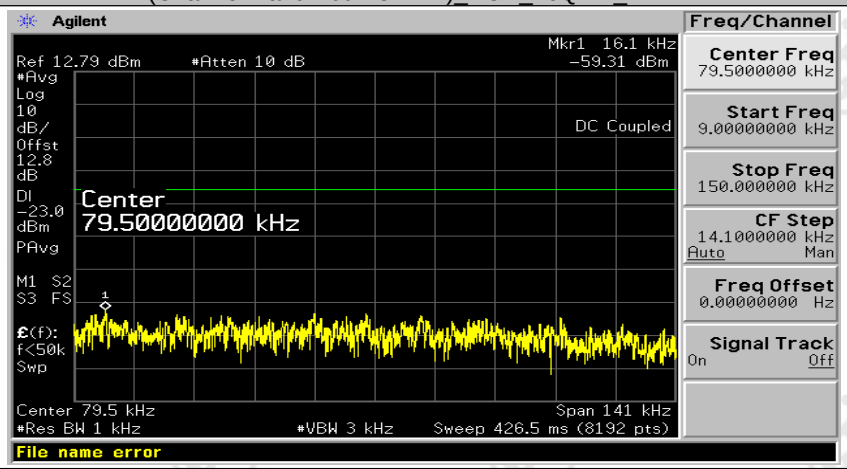
(Channel Bandwidth: 3 MHz)_HCH_16QAM_1RB#0

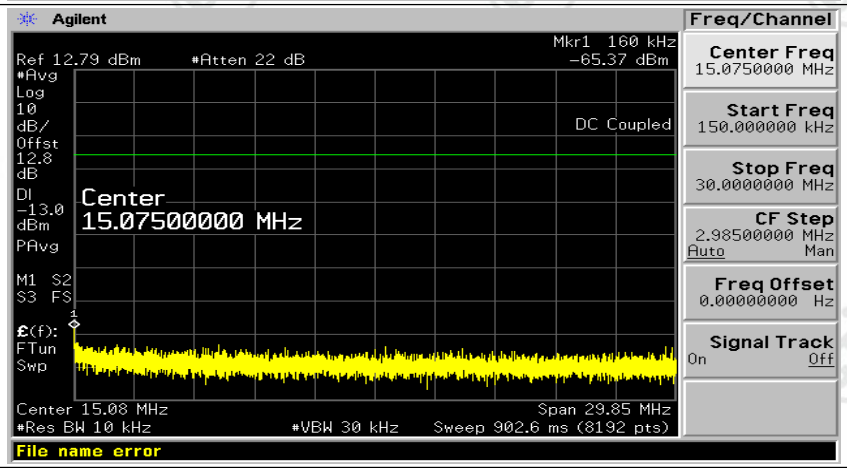


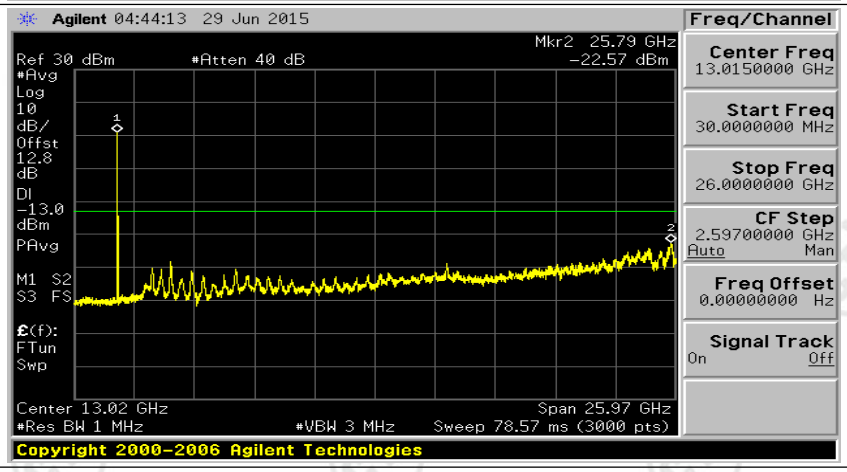




(Channel Bandwidth: 3 MHz)_HCH_16QAM_1RB#7

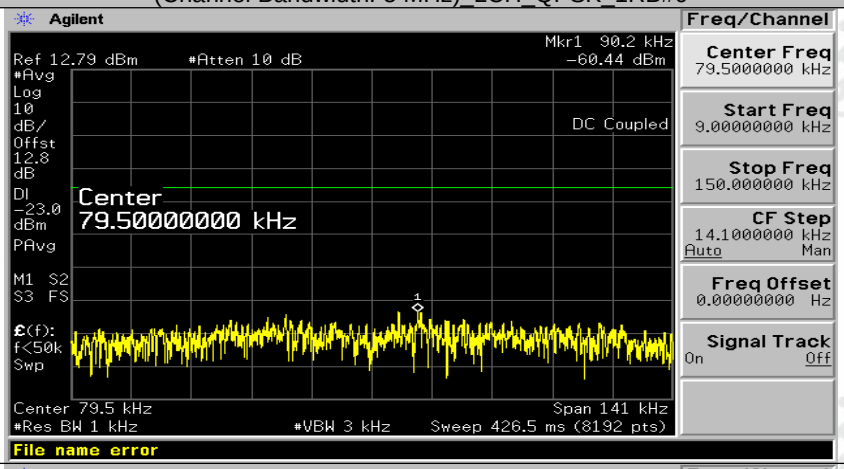


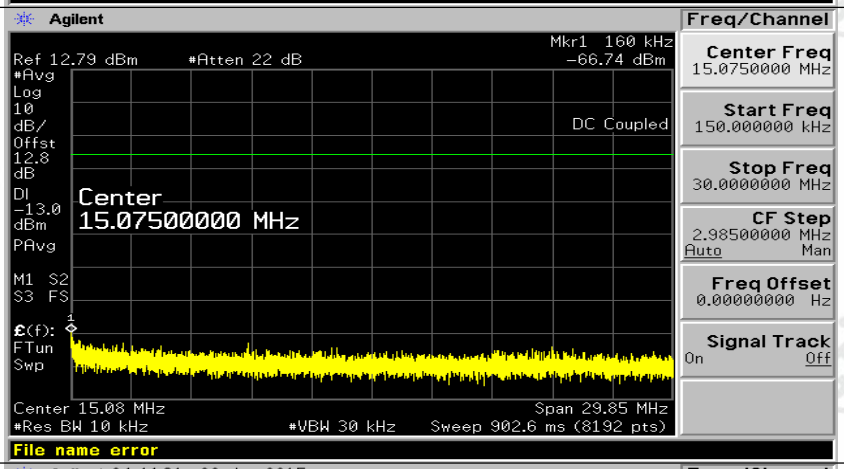


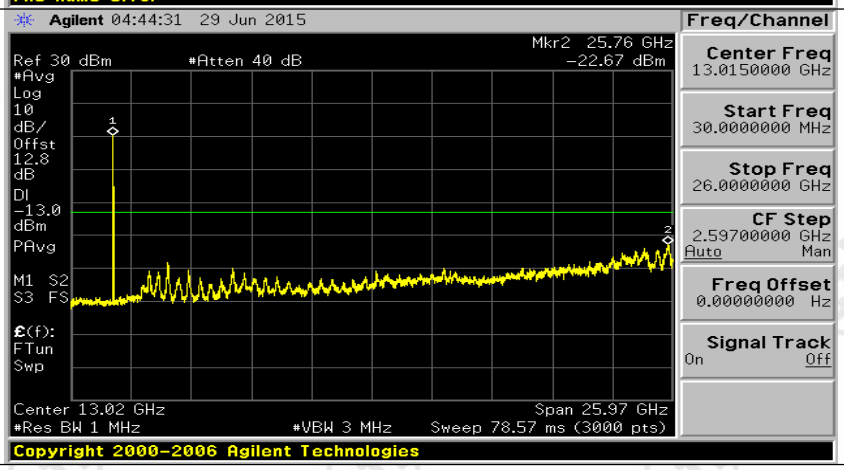


Channel Bandwidth: 5 MHz

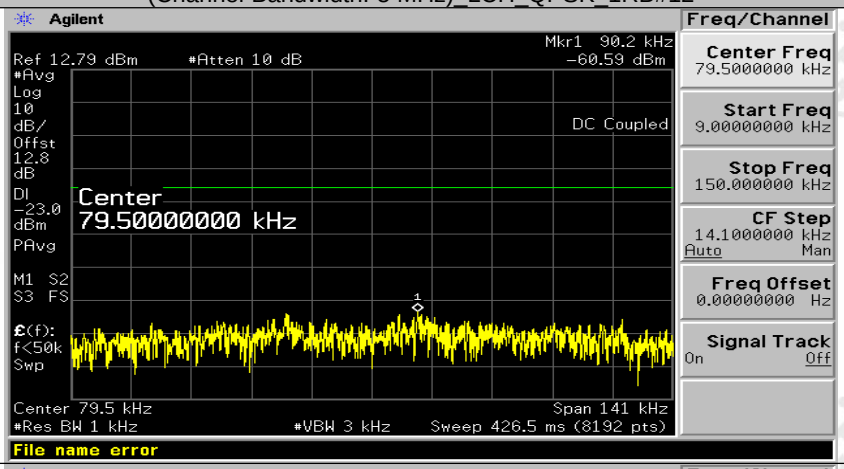
(Channel Bandwidth: 5 MHz)_LCH_QPSK_1RB#0

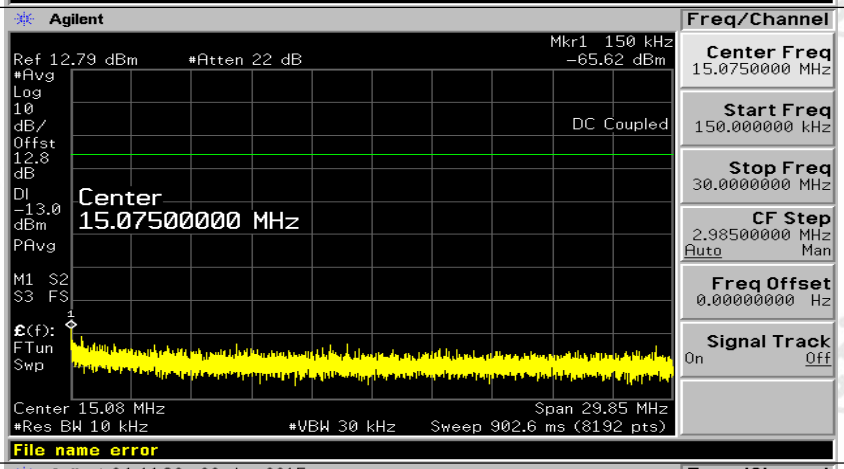


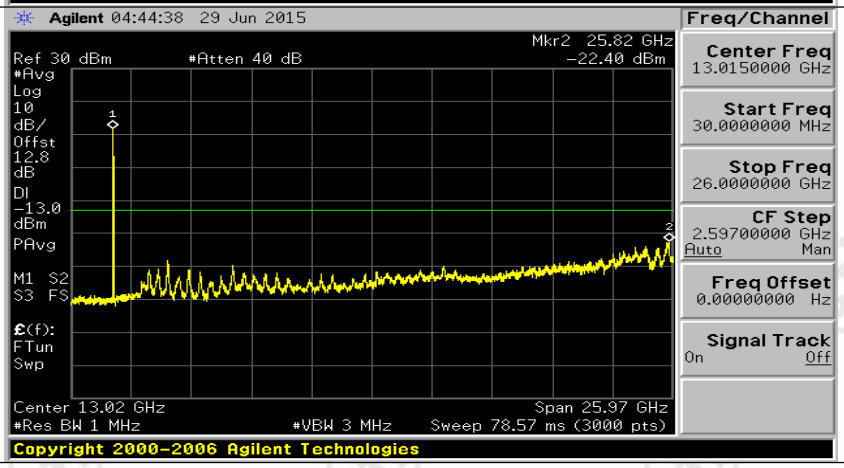




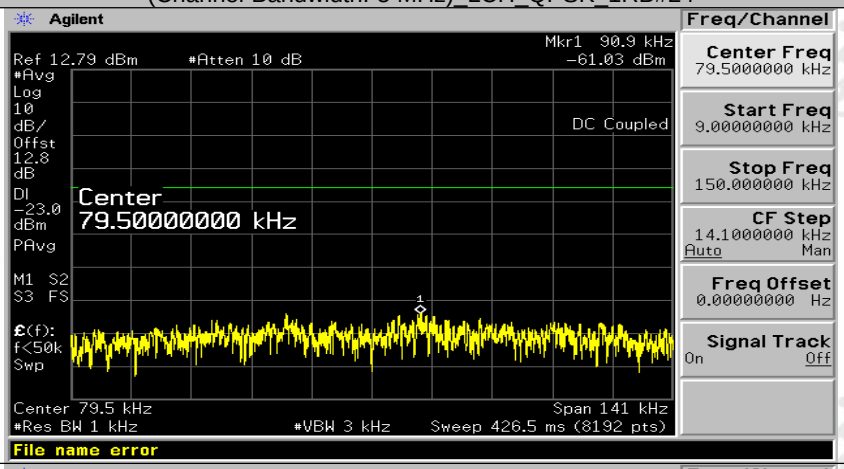
(Channel Bandwidth: 5 MHz)_LCH_QPSK_1RB#12

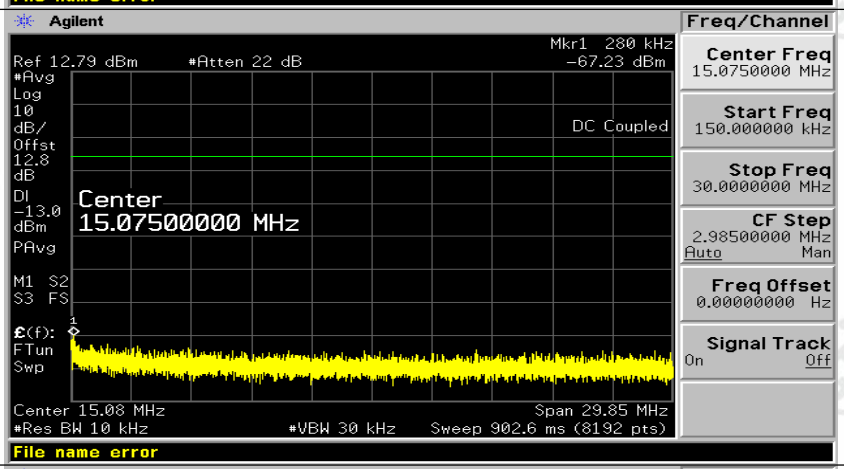


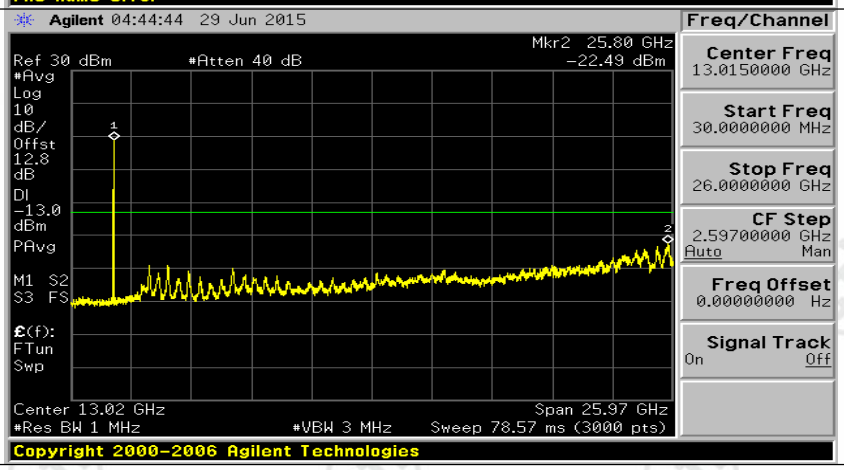




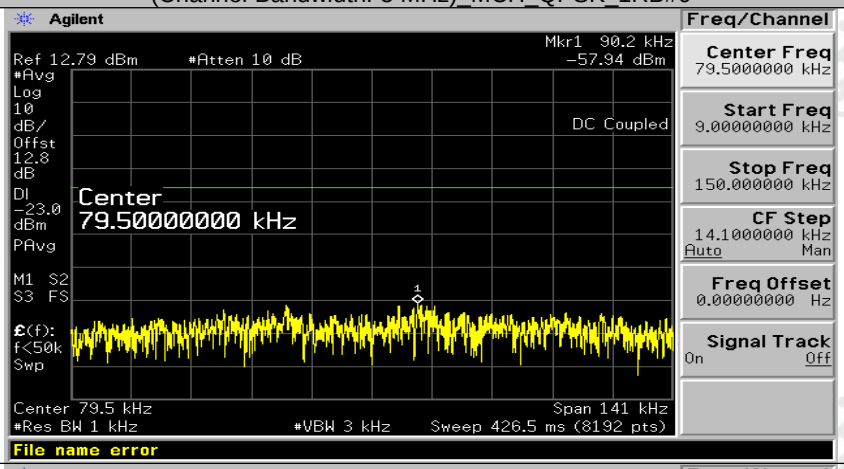
(Channel Bandwidth: 5 MHz)_LCH_QPSK_1RB#24

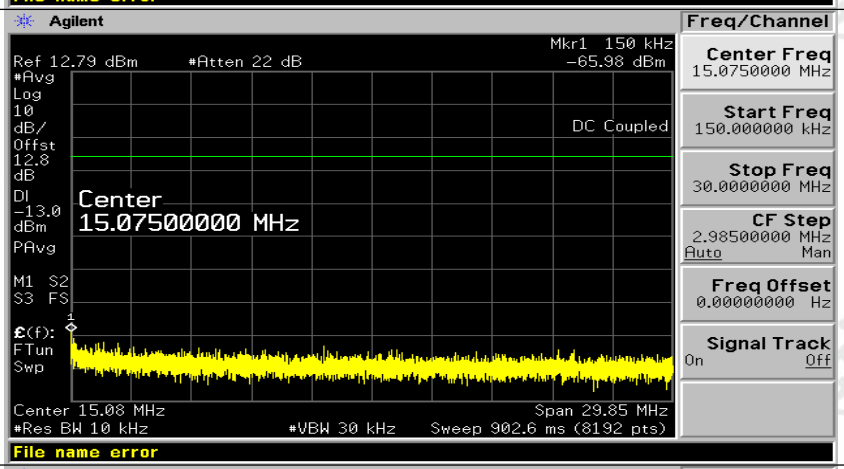


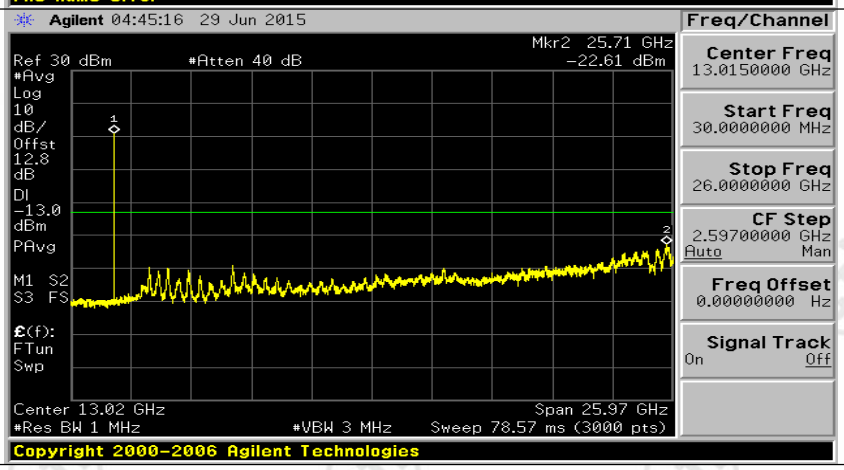




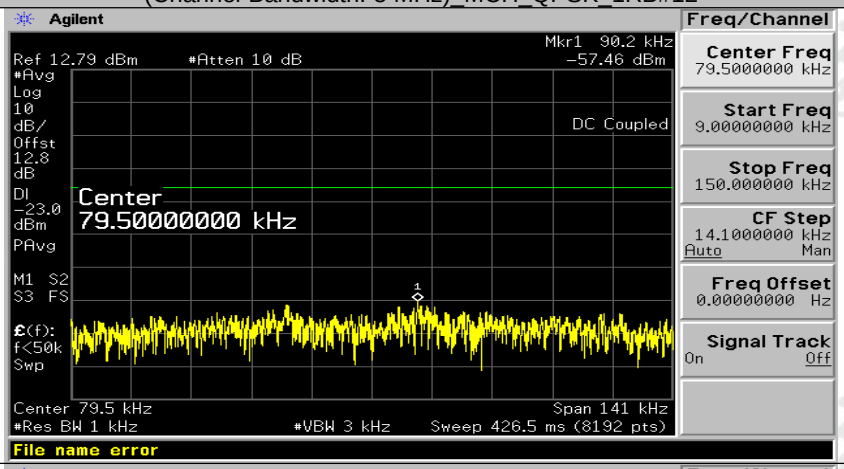
(Channel Bandwidth: 5 MHz)_MCH_QPSK_1RB#0

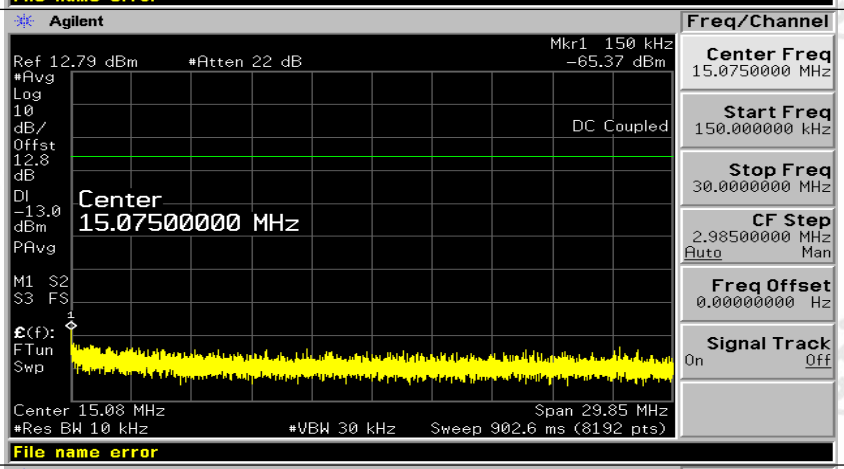


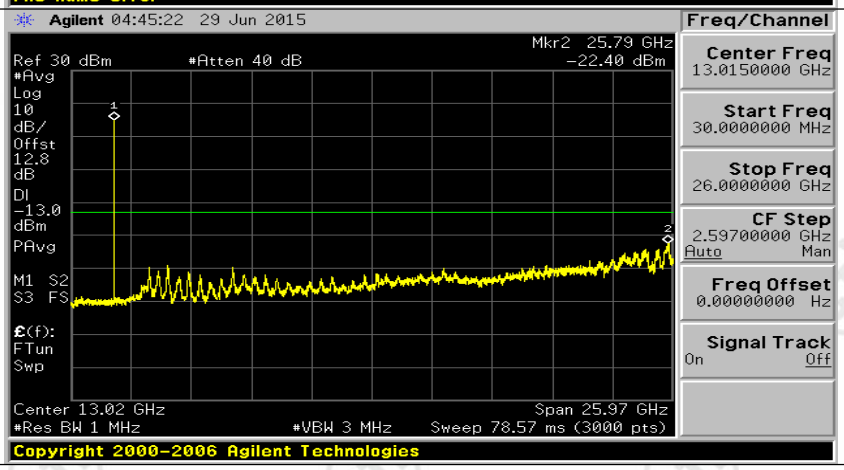




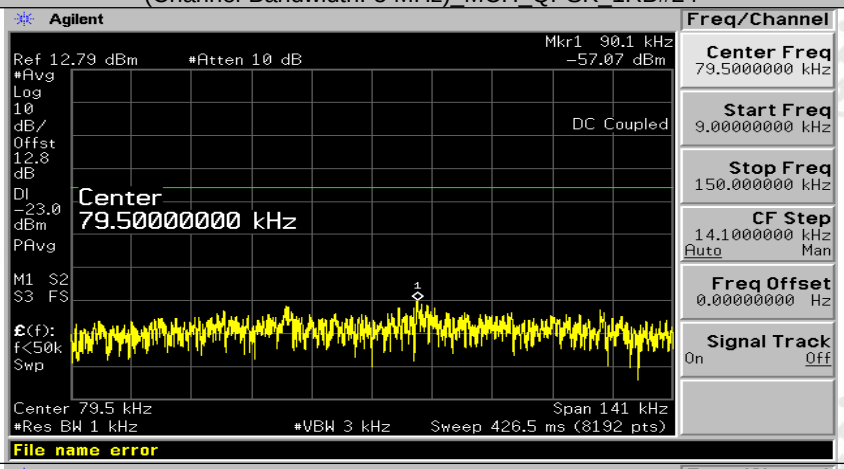
(Channel Bandwidth: 5 MHz)_MCH_QPSK_1RB#12

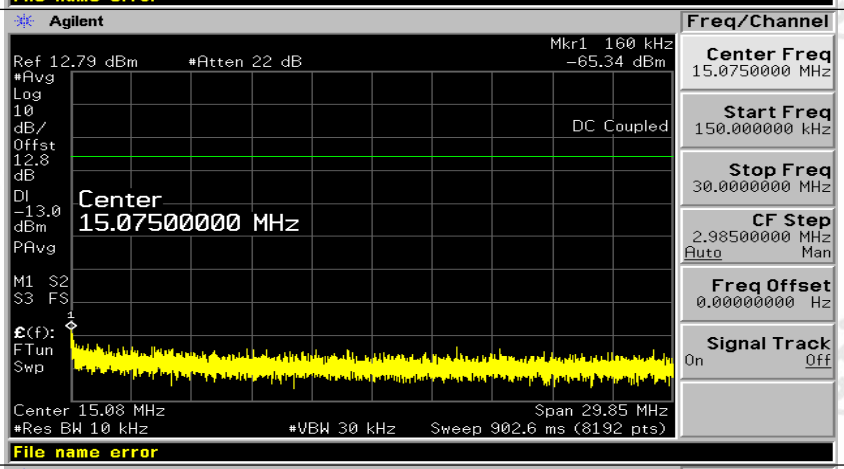


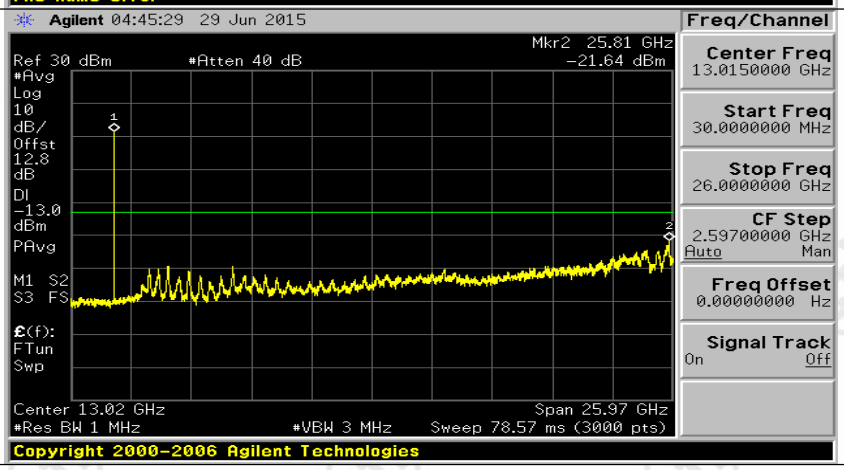




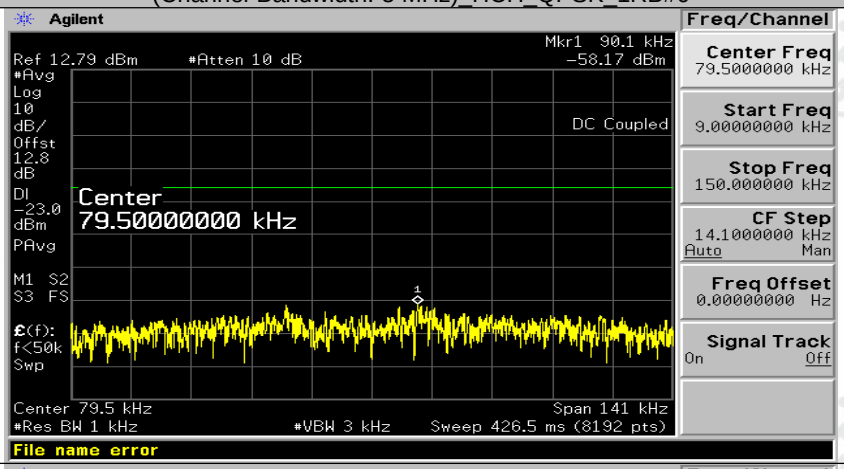
(Channel Bandwidth: 5 MHz)_MCH_QPSK_1RB#24

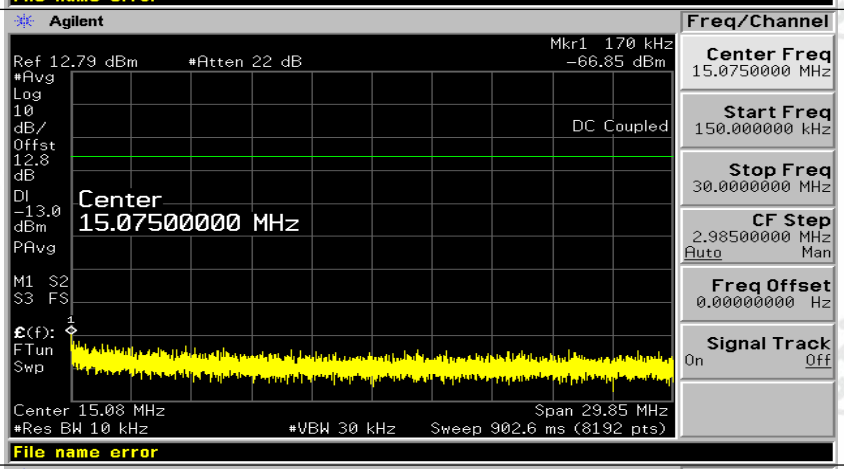


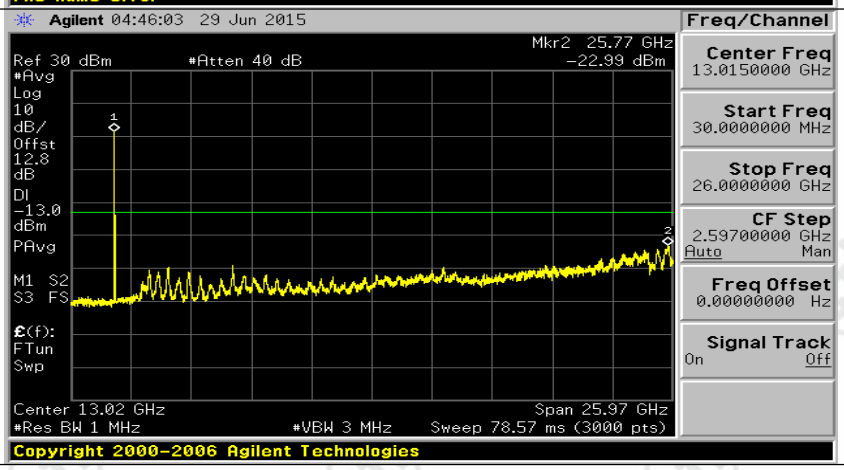




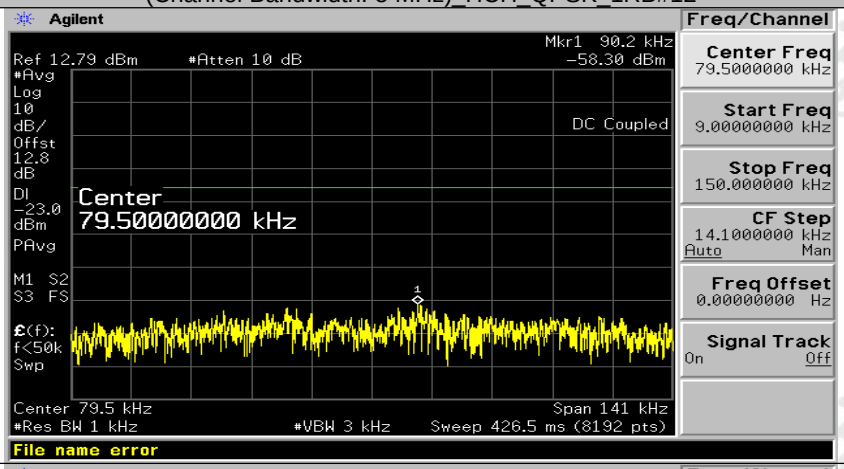
(Channel Bandwidth: 5 MHz)_HCH_QPSK_1RB#0

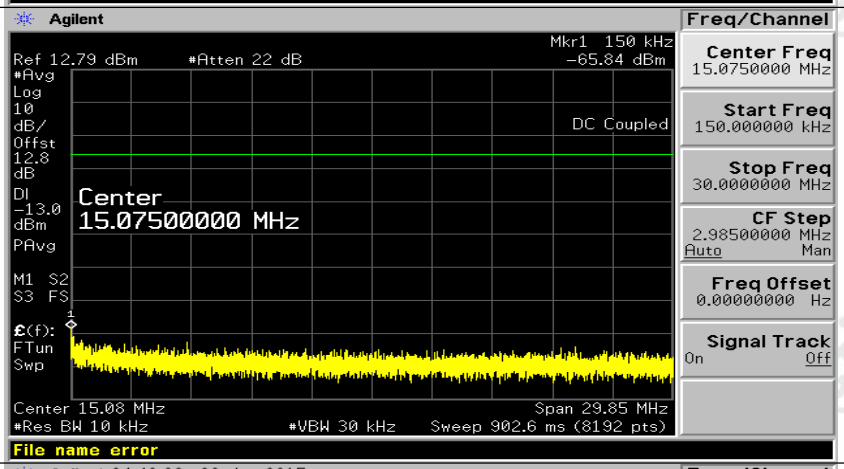


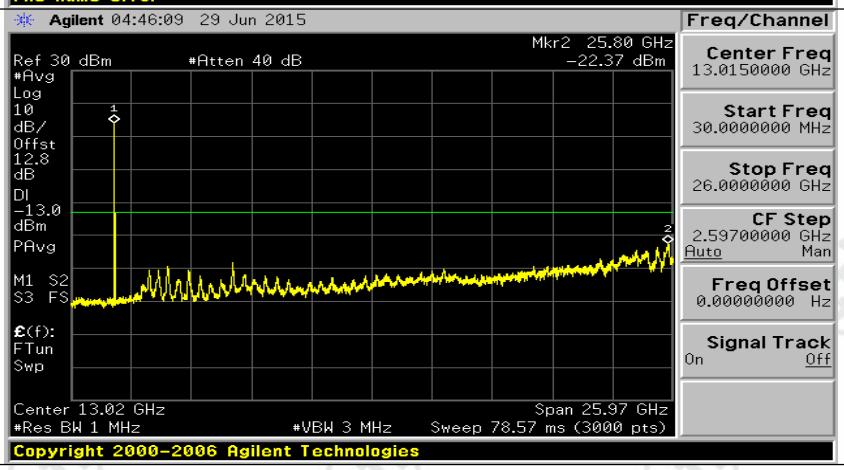




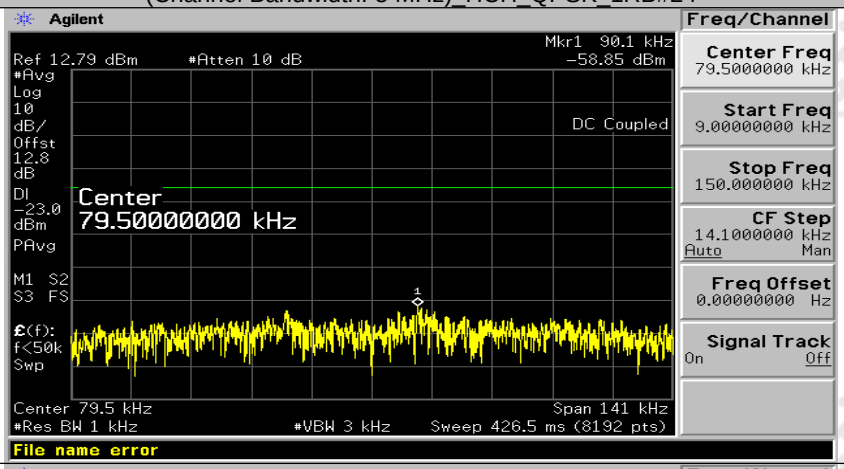
(Channel Bandwidth: 5 MHz)_HCH_QPSK_1RB#12

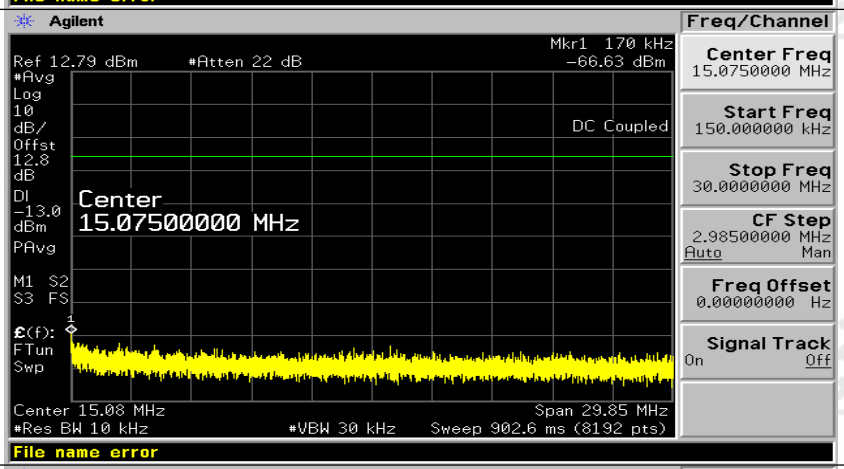


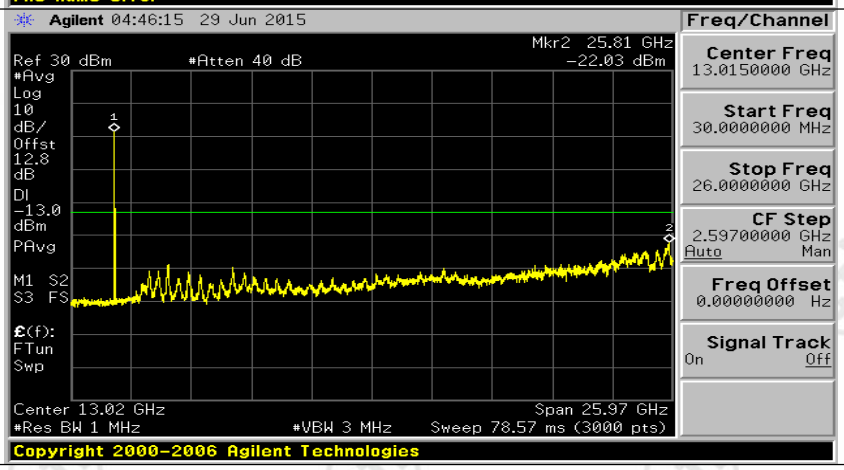




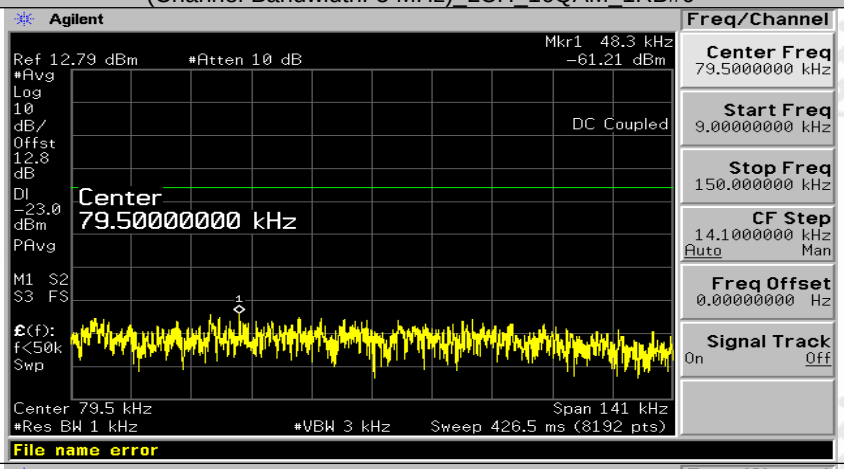
(Channel Bandwidth: 5 MHz)_HCH_QPSK_1RB#24

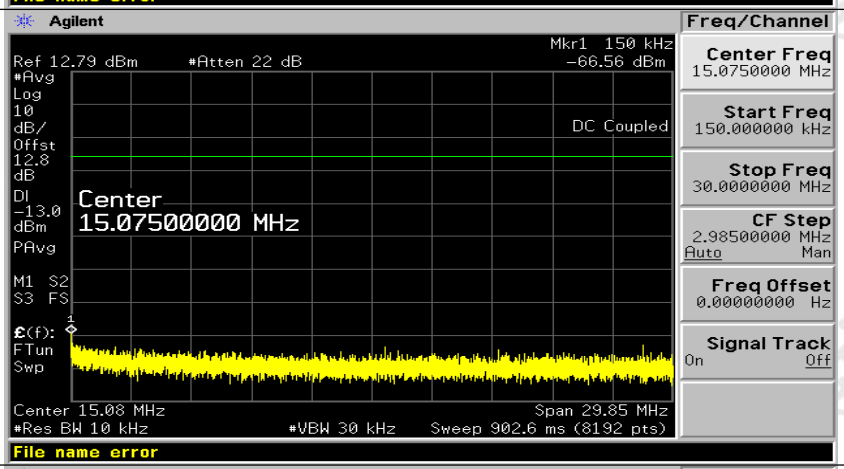


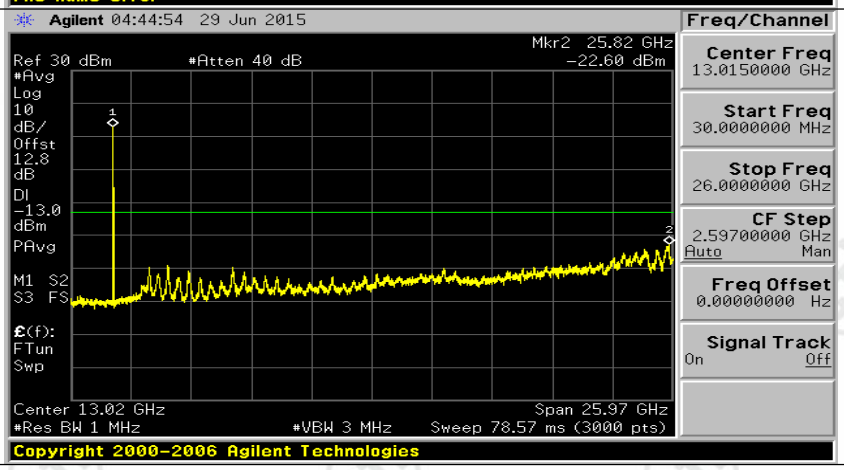




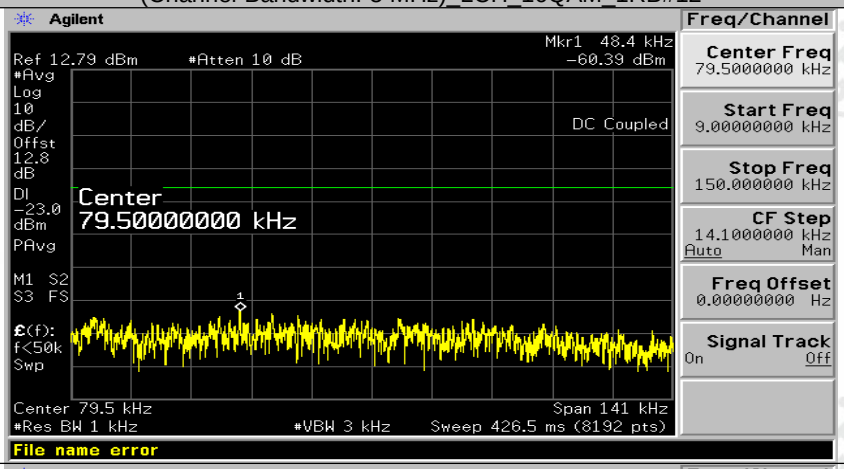
(Channel Bandwidth: 5 MHz)_LCH_16QAM_1RB#0

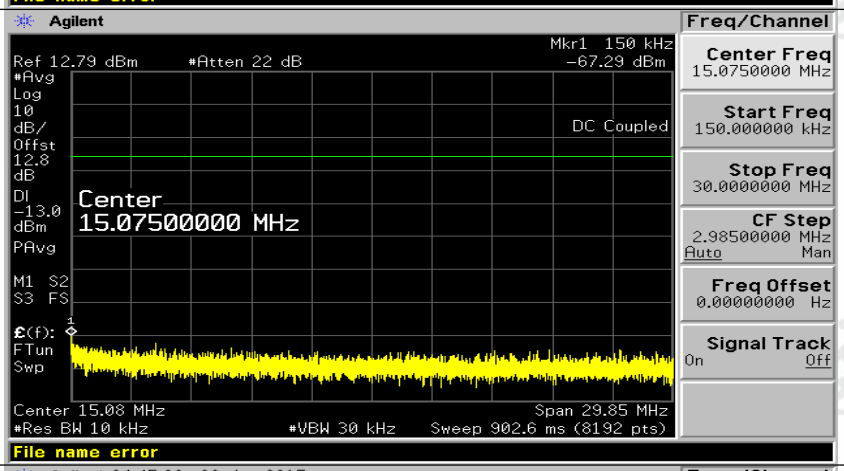


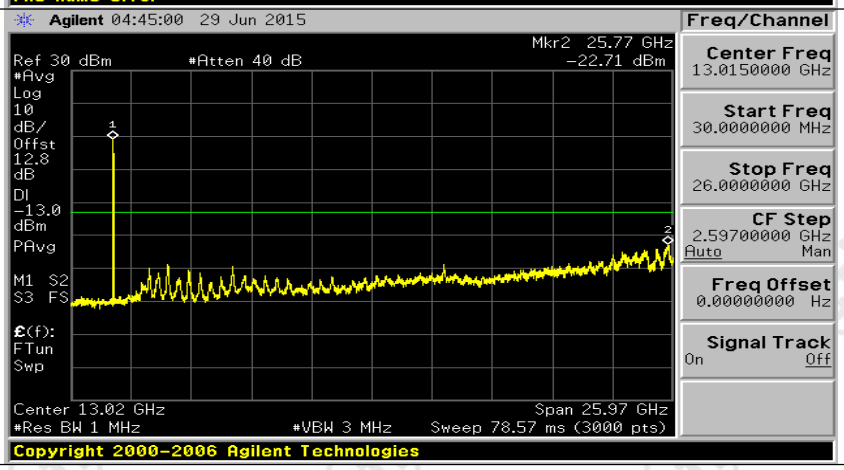




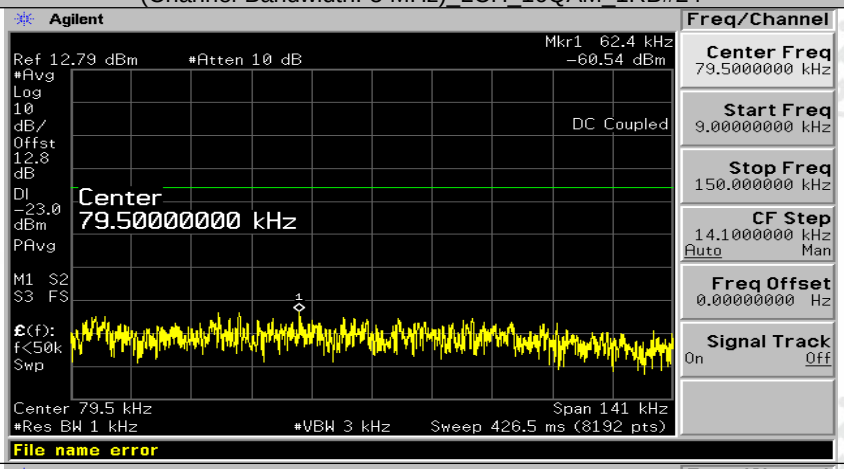
(Channel Bandwidth: 5 MHz)_LCH_16QAM_1RB#12

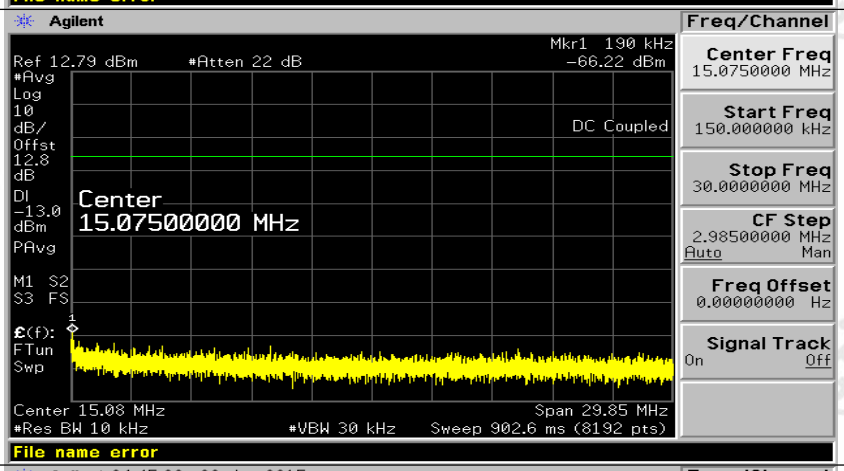


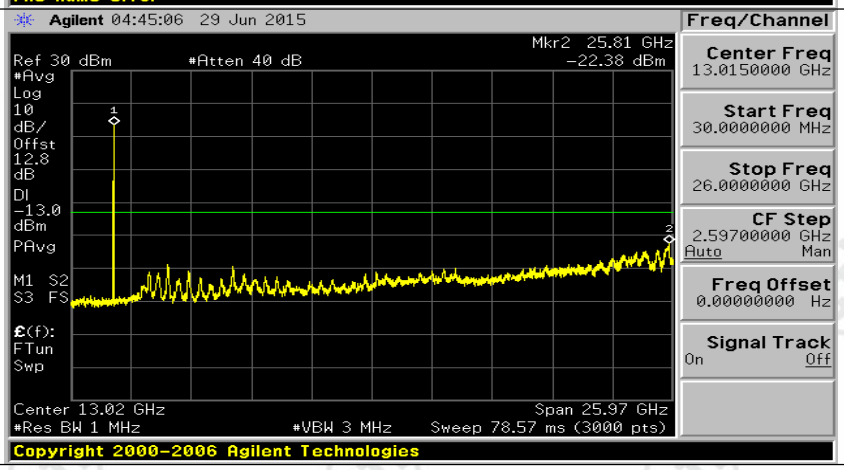




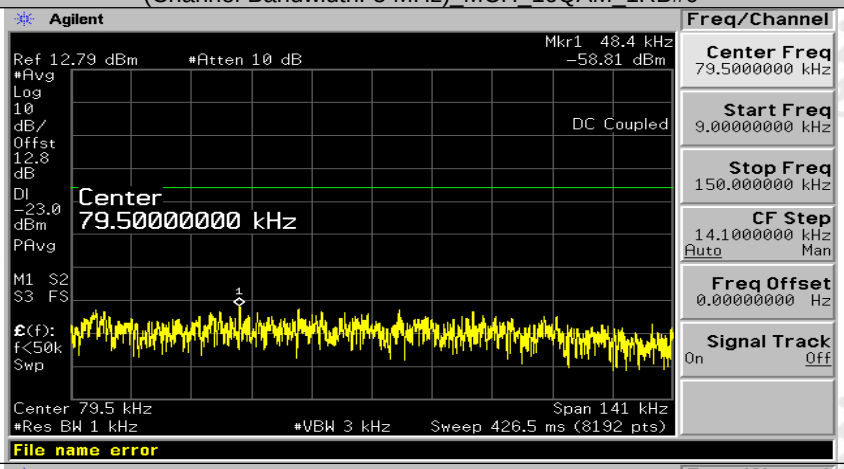
(Channel Bandwidth: 5 MHz)_LCH_16QAM_1RB#24

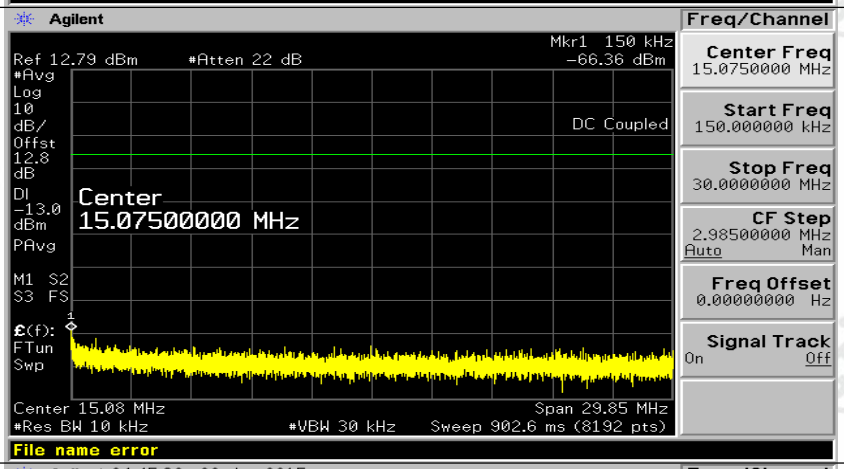


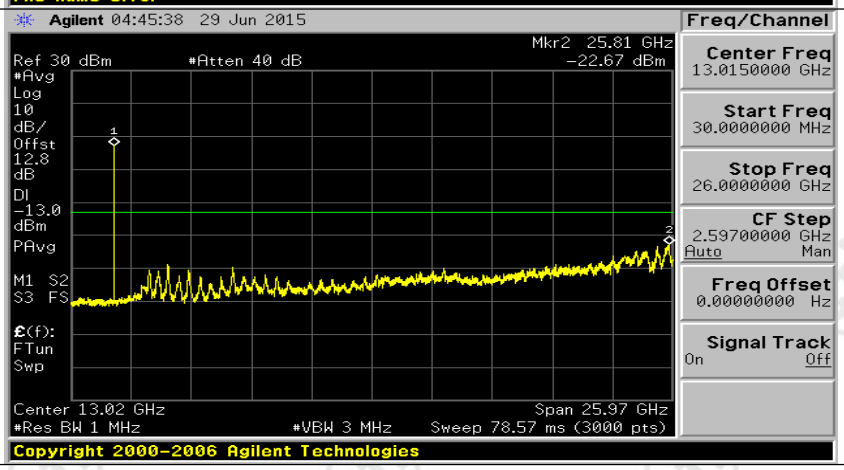




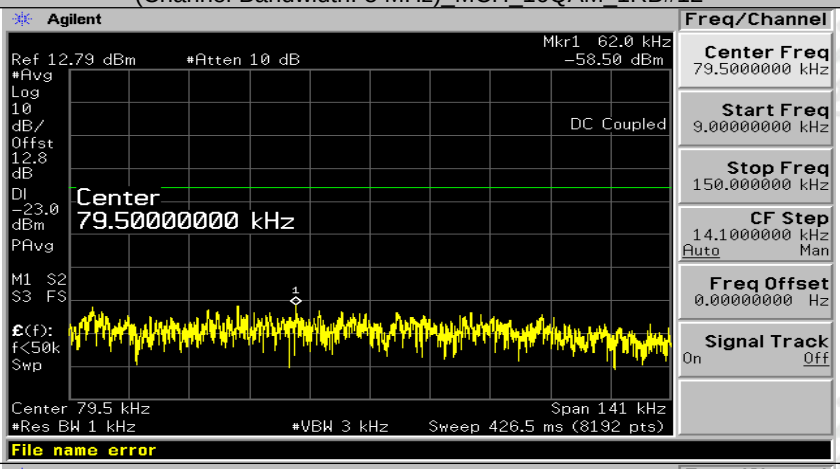
(Channel Bandwidth: 5 MHz)_MCH_16QAM_1RB#0

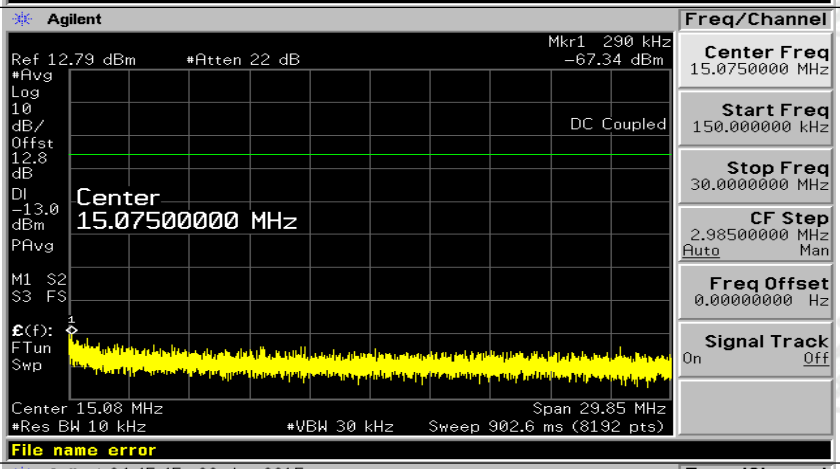


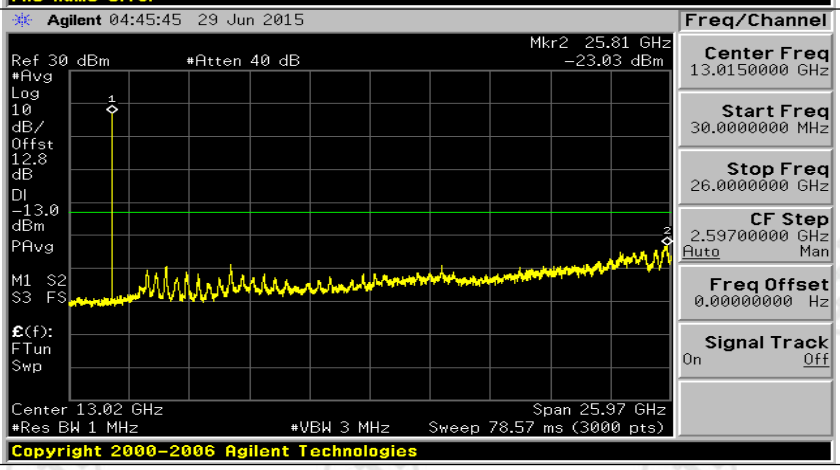




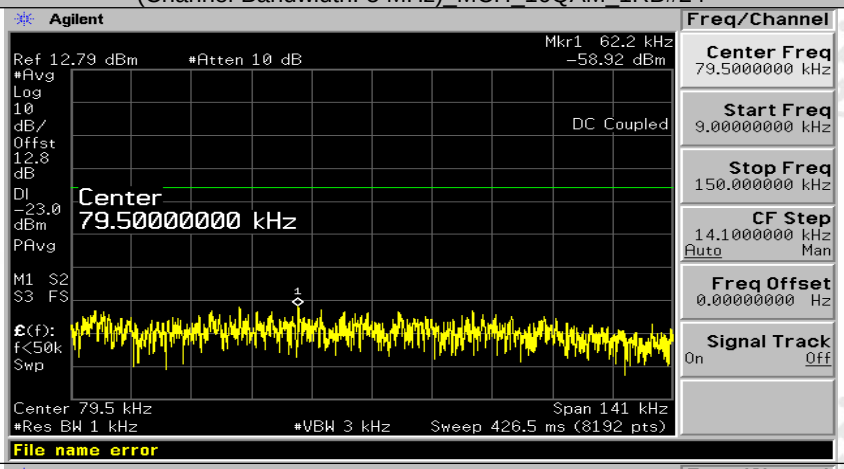
(Channel Bandwidth: 5 MHz)_MCH_16QAM_1RB#12

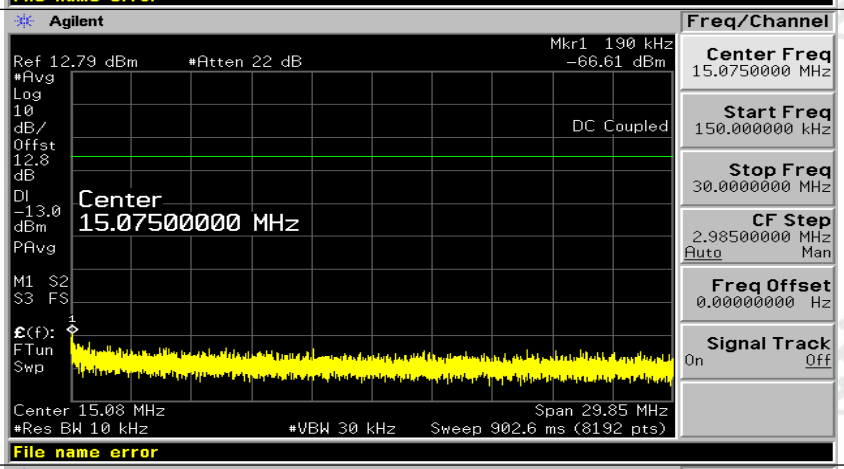


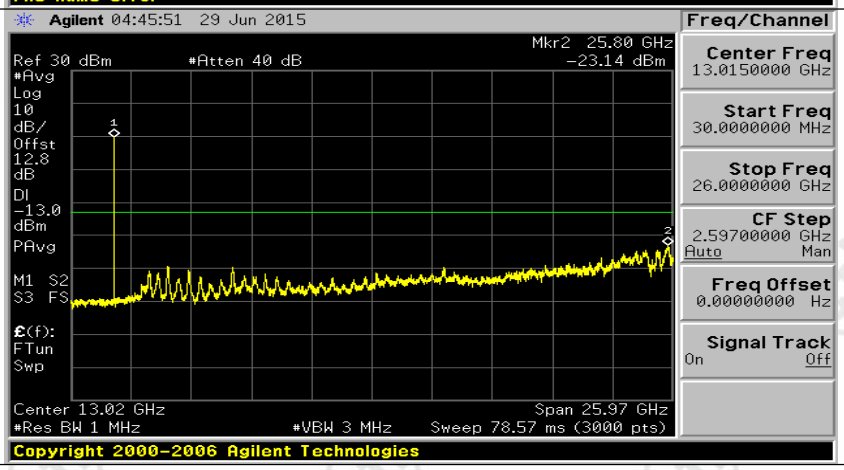




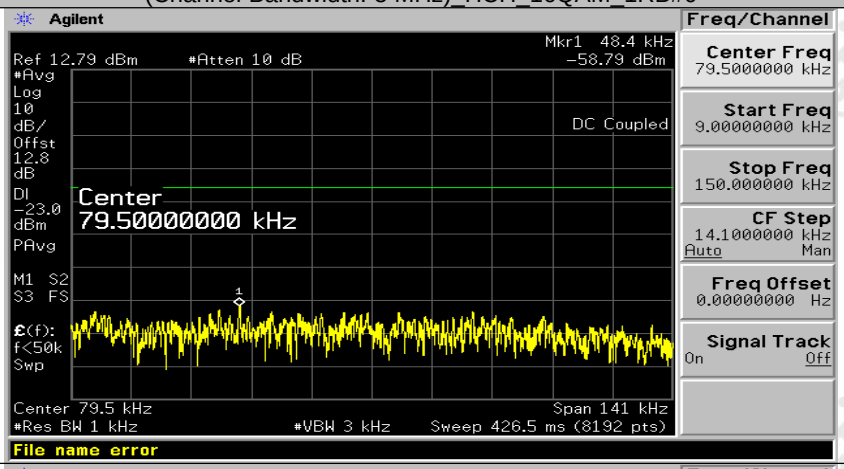
(Channel Bandwidth: 5 MHz)_MCH_16QAM_1RB#24

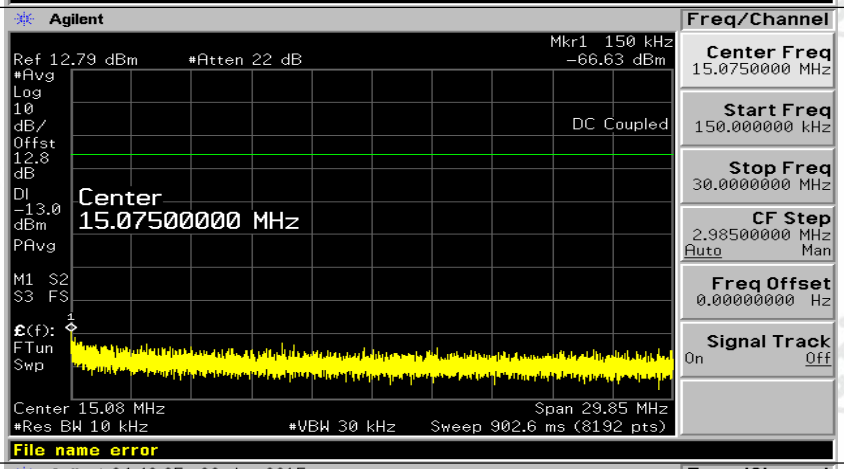


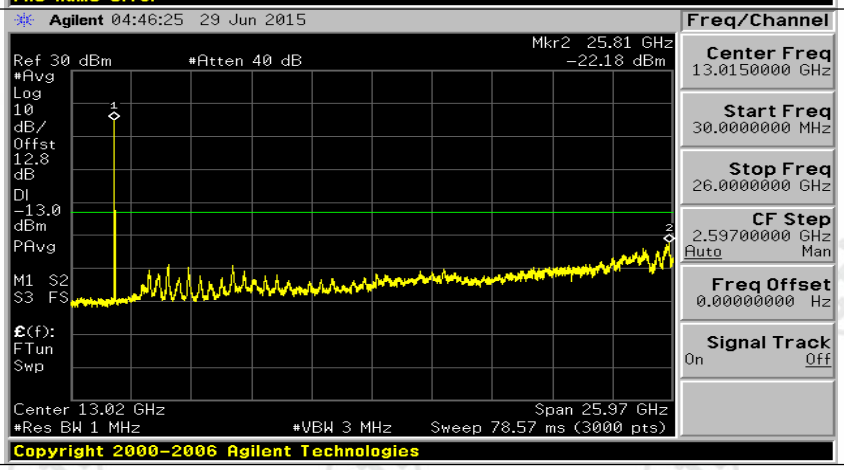




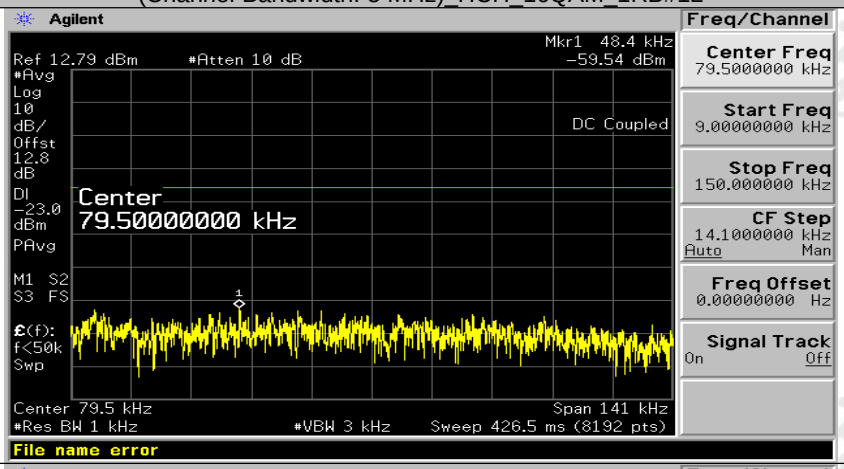
(Channel Bandwidth: 5 MHz)_HCH_16QAM_1RB#0

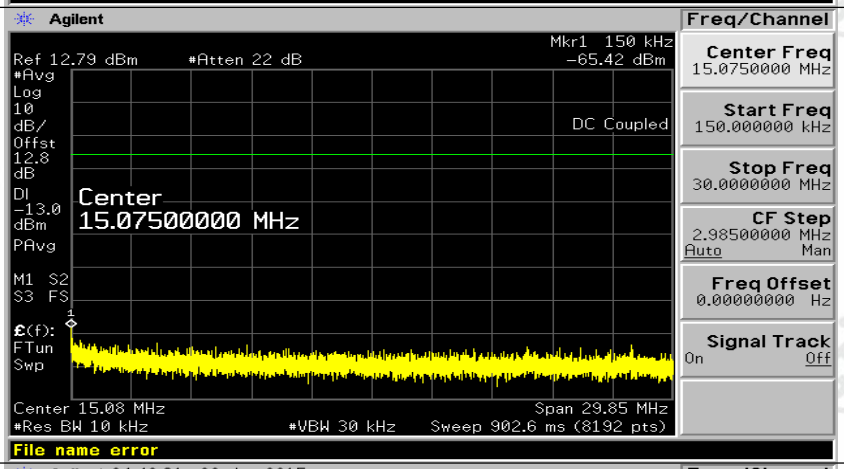


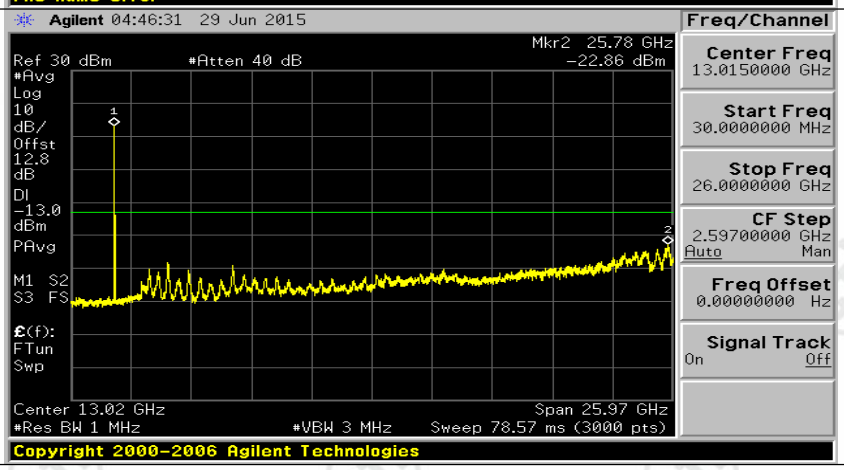




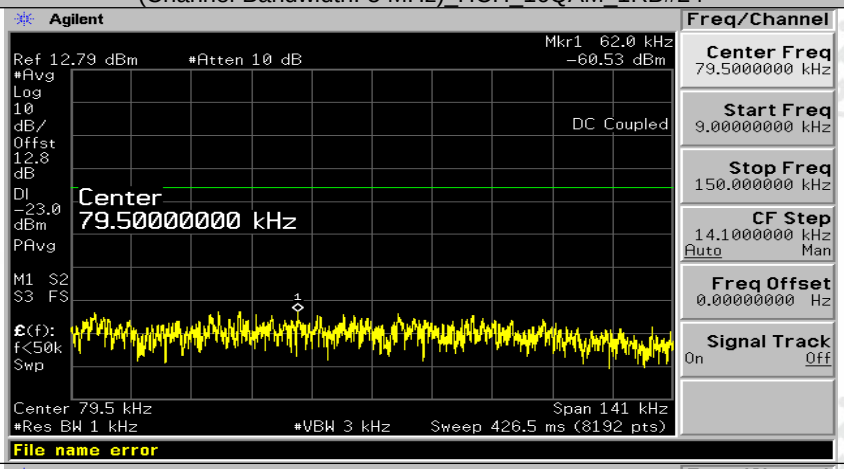
(Channel Bandwidth: 5 MHz)_HCH_16QAM_1RB#12

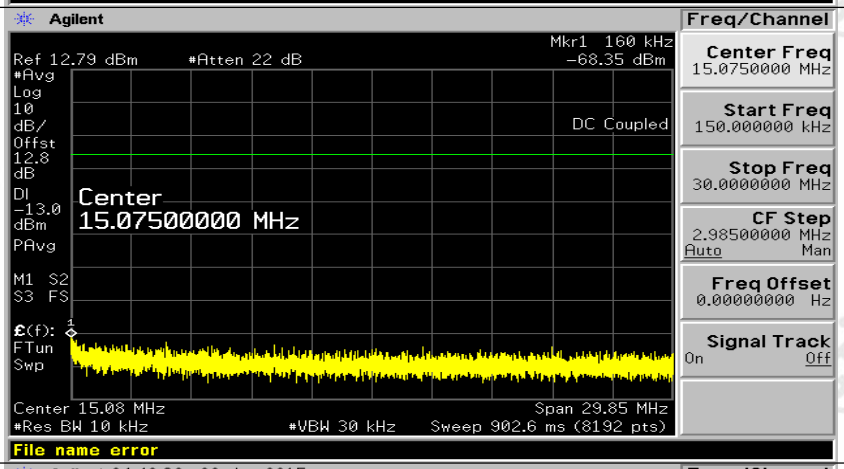


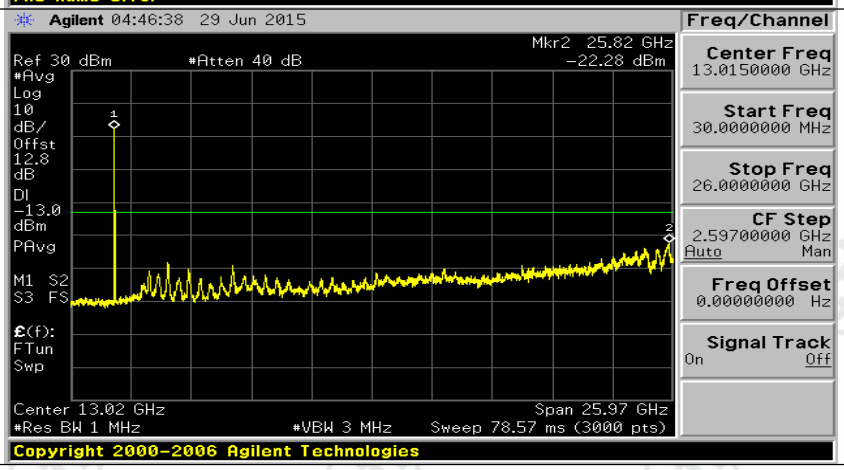




(Channel Bandwidth: 5 MHz)_HCH_16QAM_1RB#24

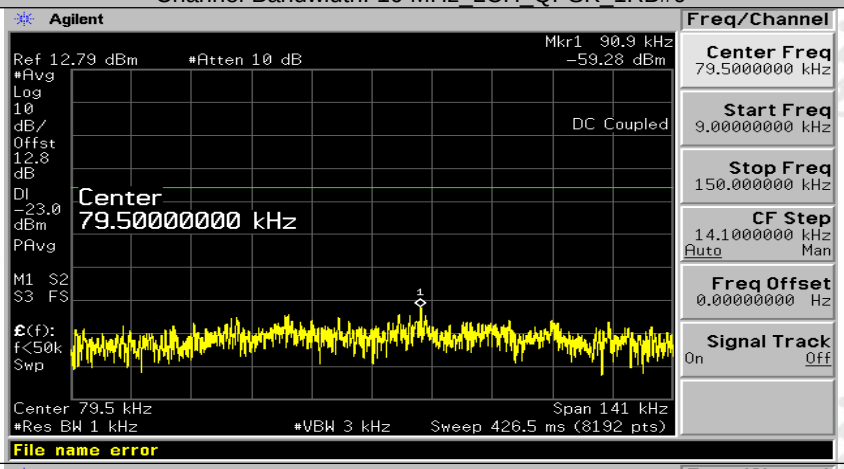


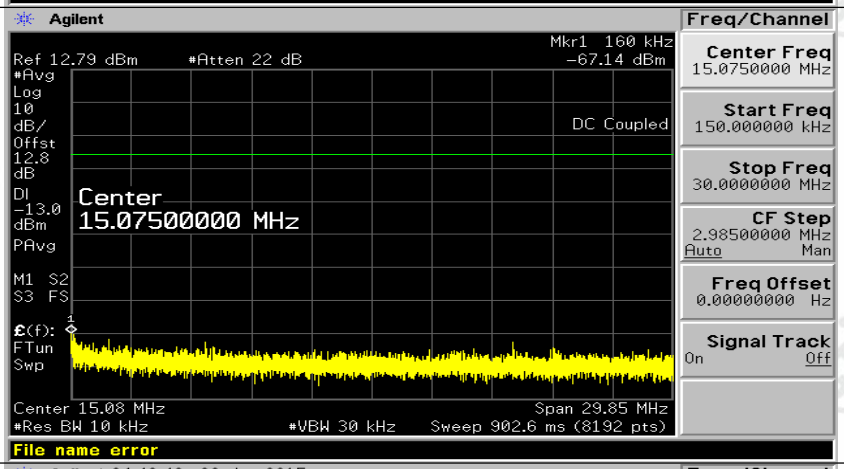


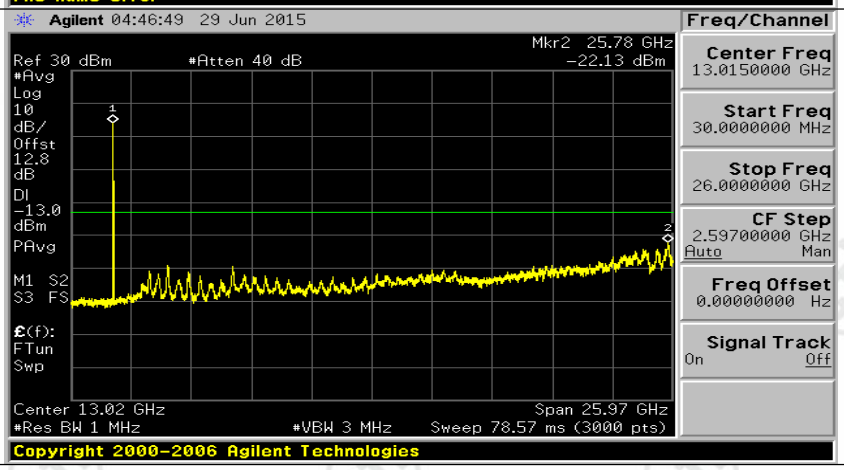


Channel Bandwidth: 10 MHz

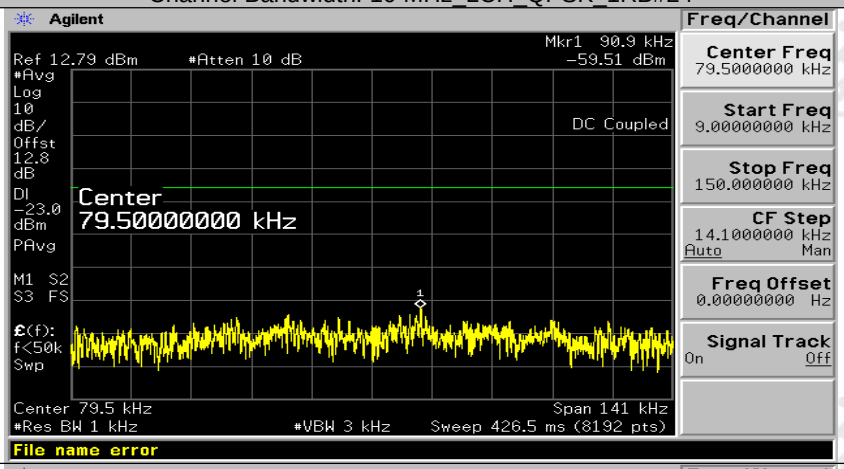
Channel Bandwidth: 10 MHz_LCH_QPSK_1RB#0

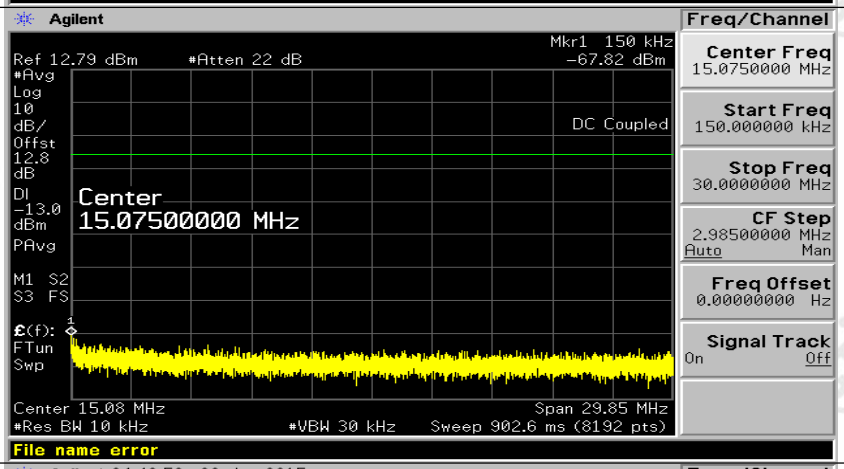


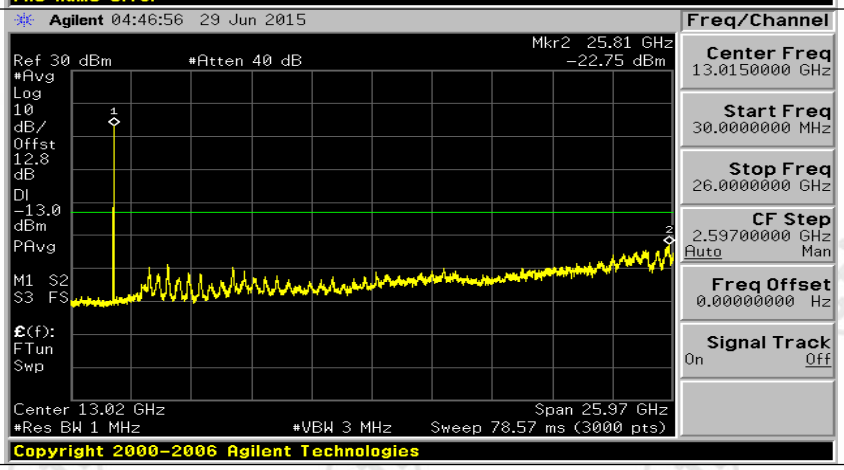




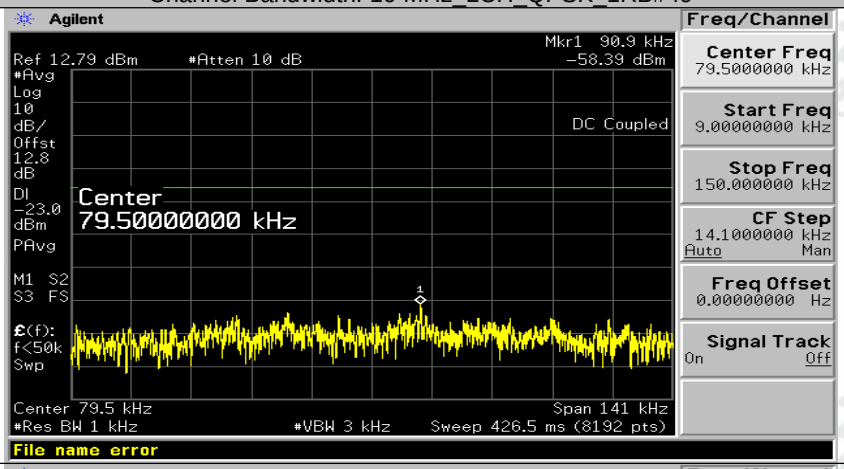
Channel Bandwidth: 10 MHz_LCH_QPSK_1RB#24

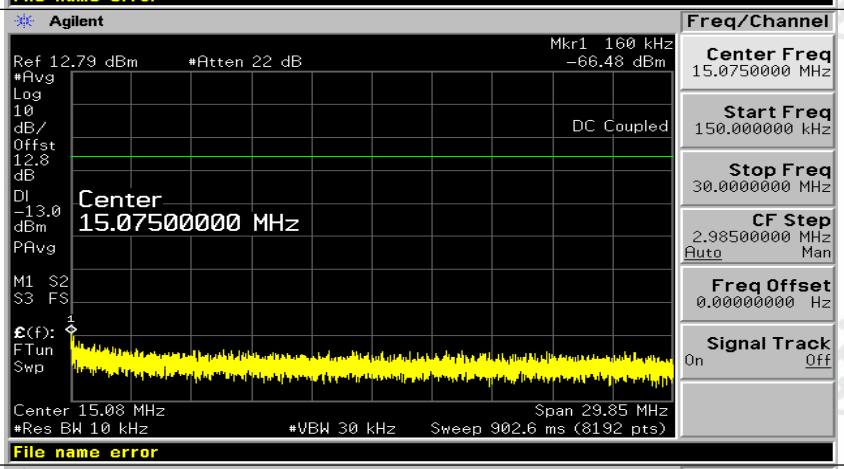


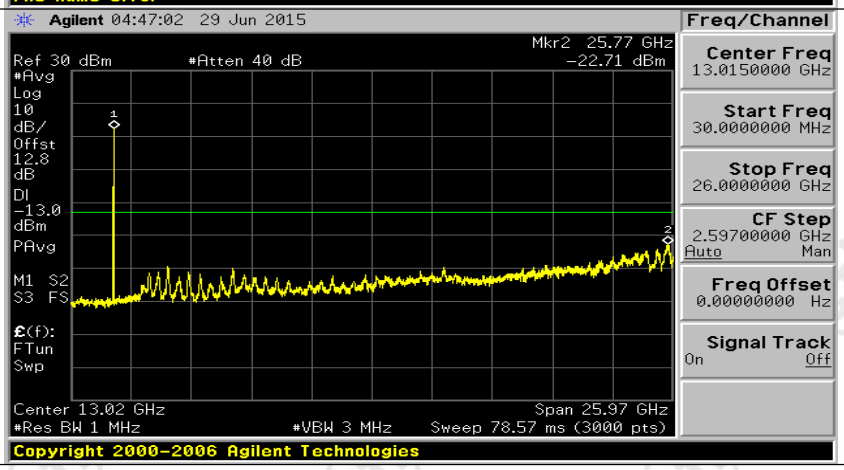




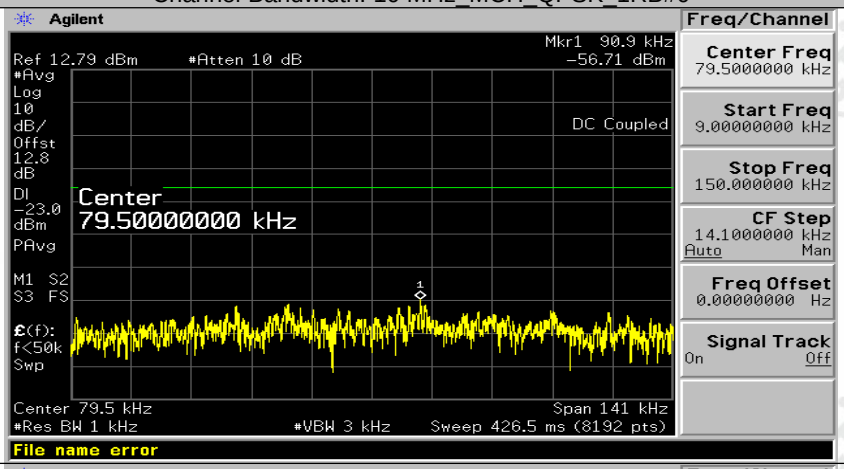
Channel Bandwidth: 10 MHz_LCH_QPSK_1RB#49

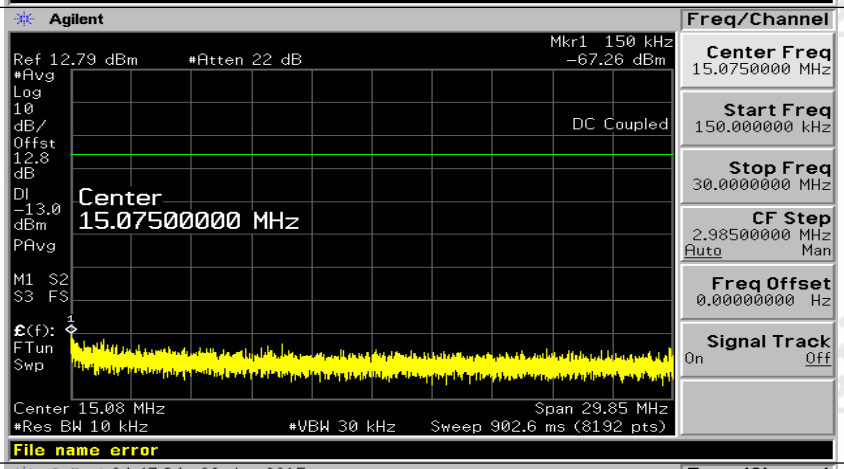


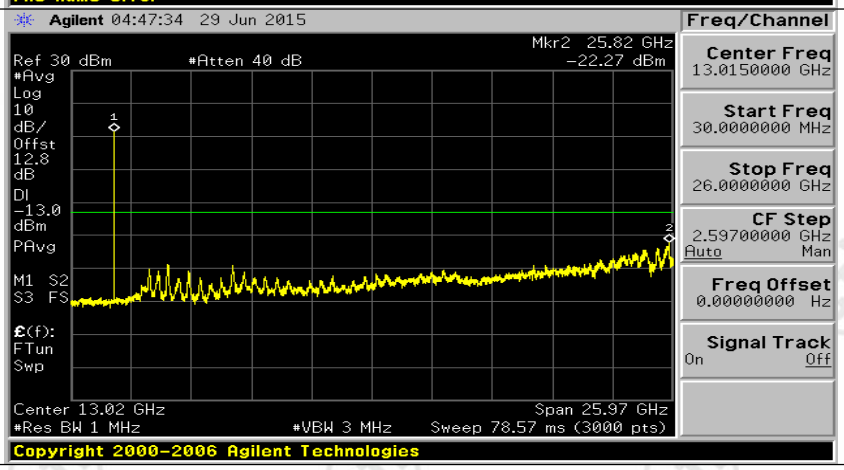




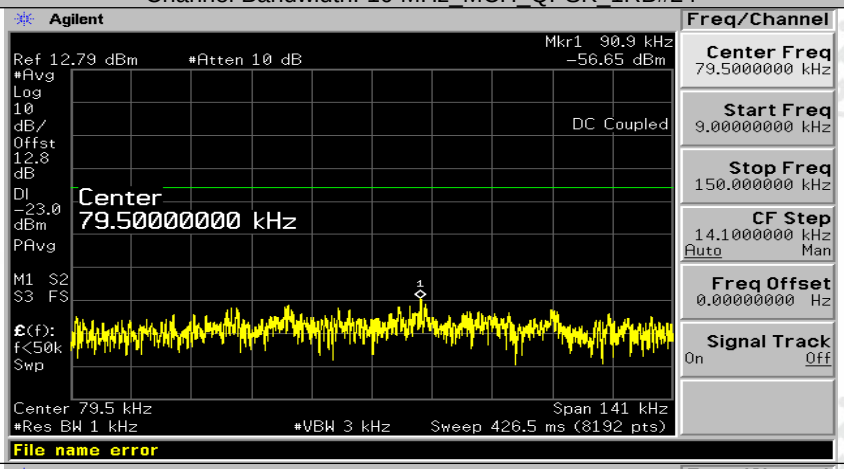
Channel Bandwidth: 10 MHz_MCH_QPSK_1RB#0

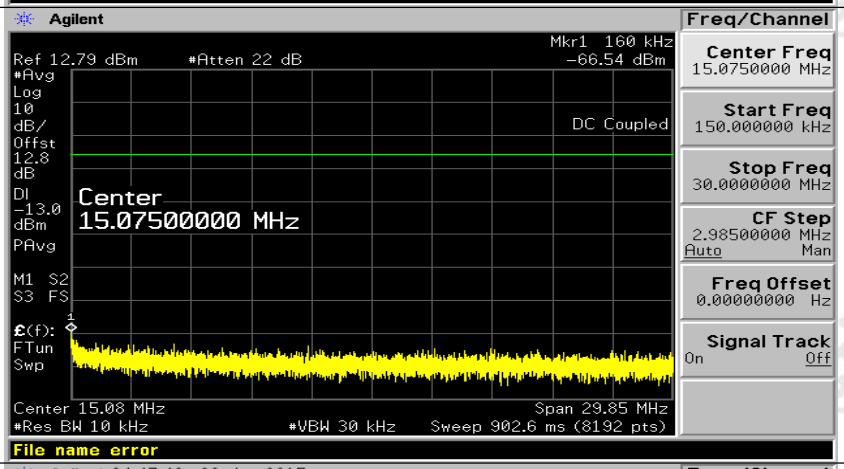


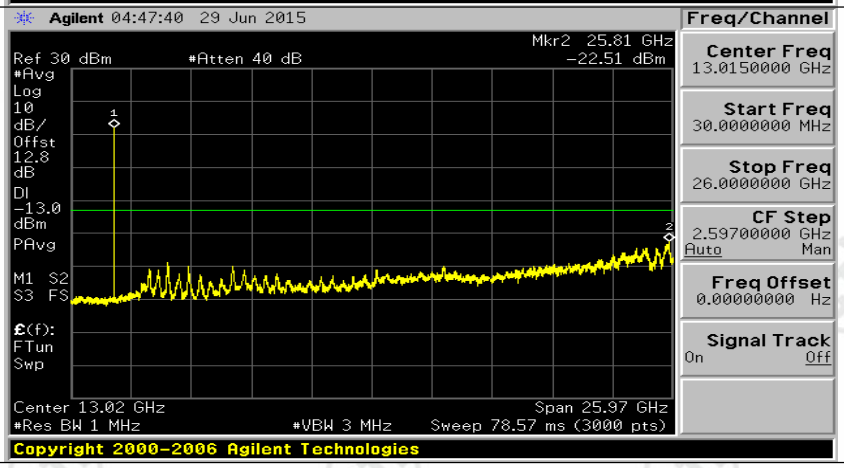




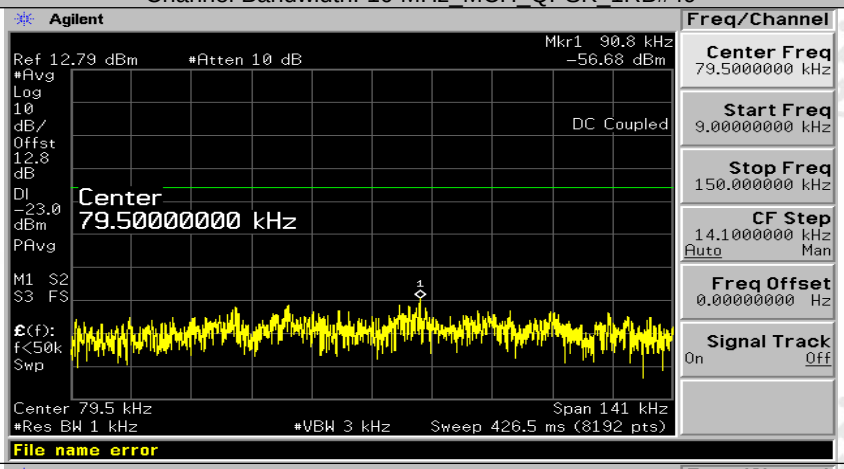
Channel Bandwidth: 10 MHz_MCH_QPSK_1RB#24

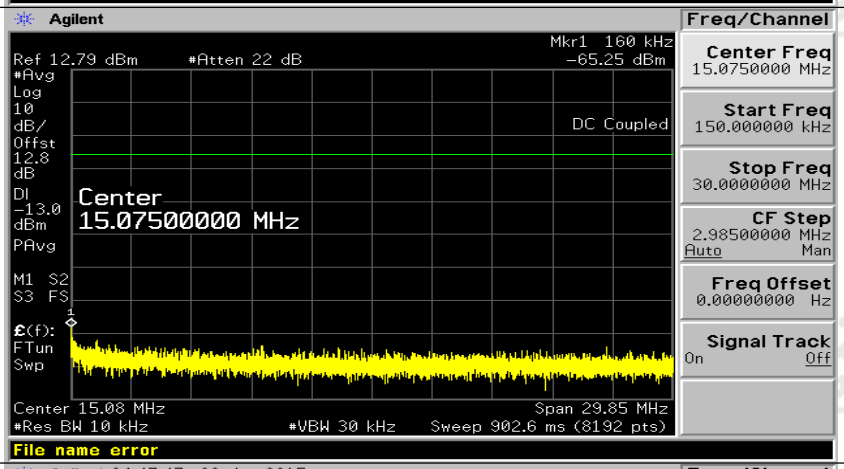


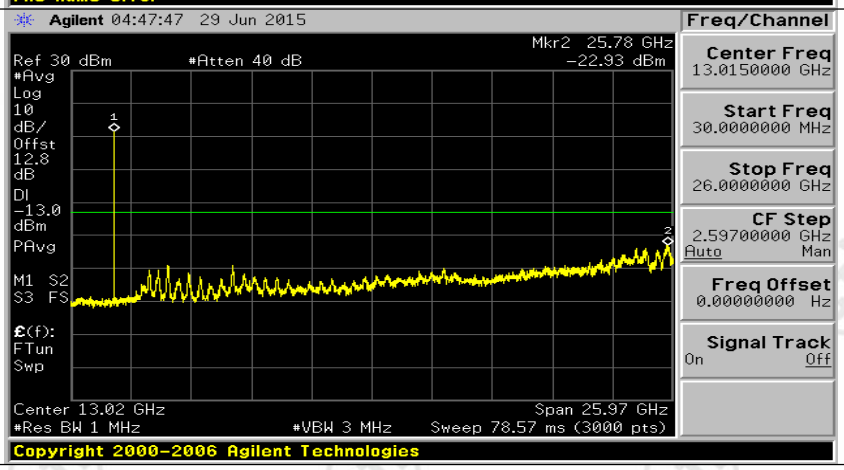




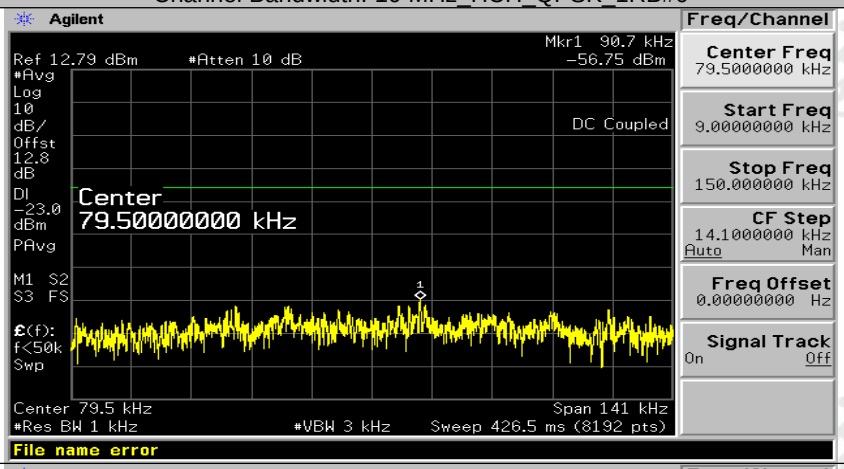
Channel Bandwidth: 10 MHz_MCH_QPSK_1RB#49

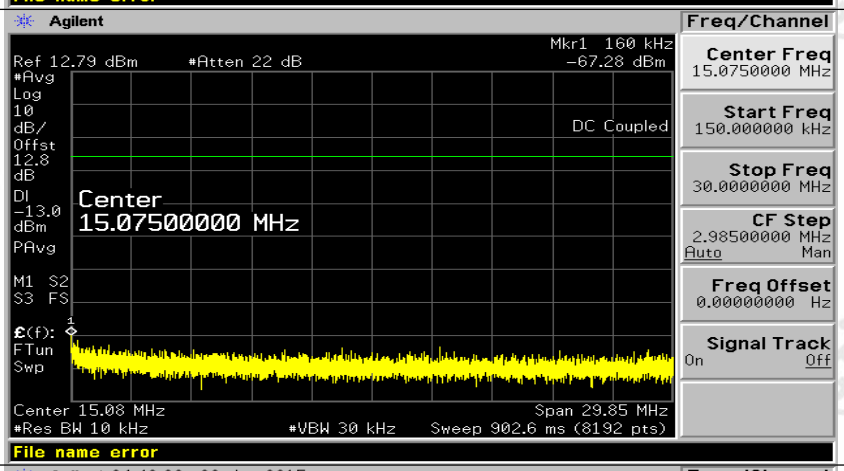


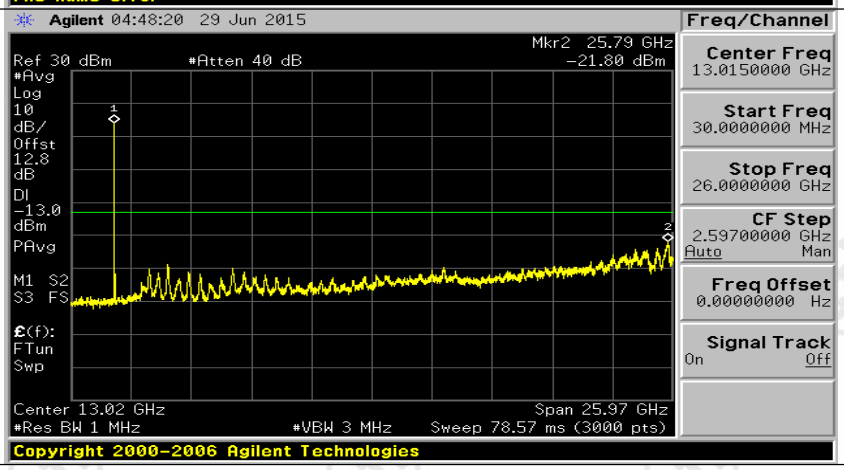




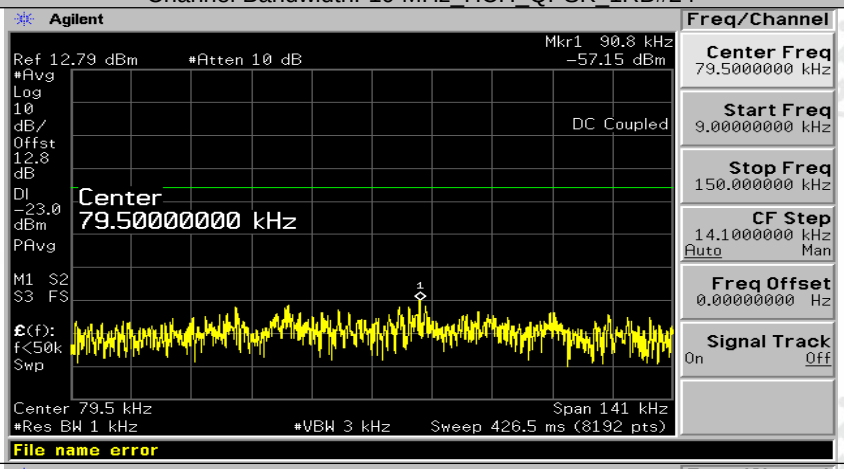
Channel Bandwidth: 10 MHz_HCH_QPSK_1RB#0

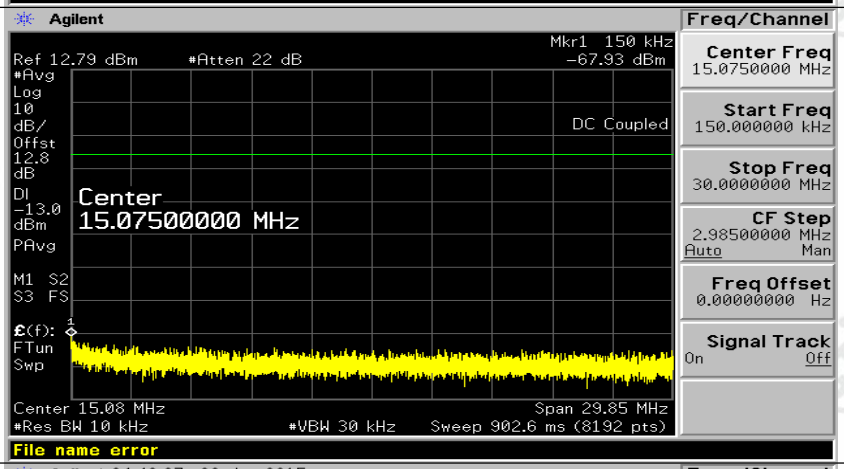


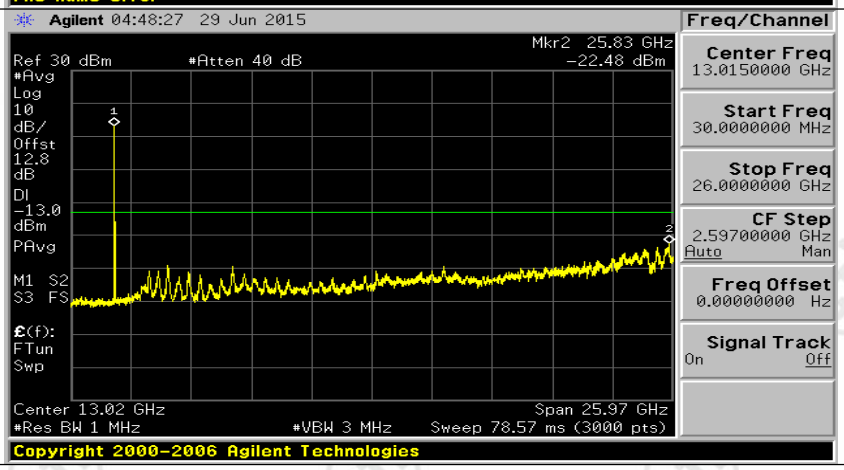




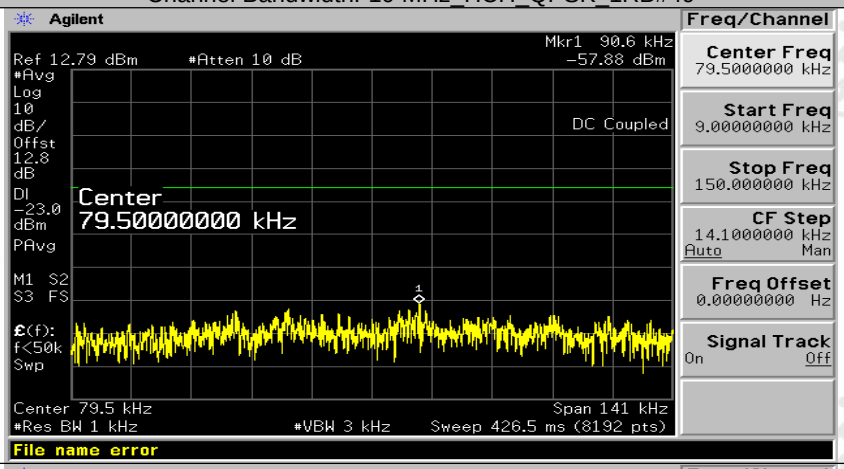
Channel Bandwidth: 10 MHz_HCH_QPSK_1RB#24

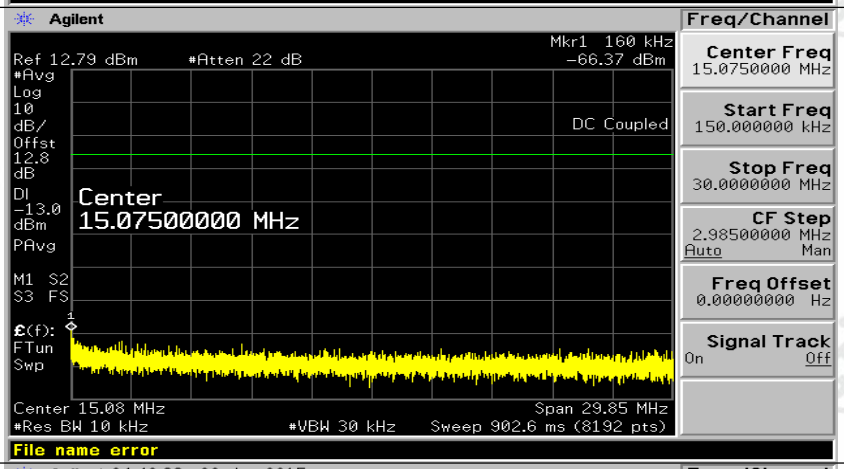


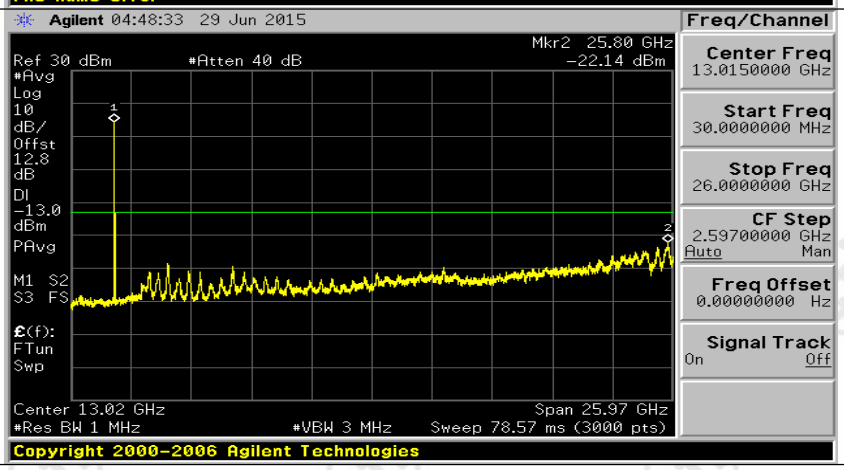




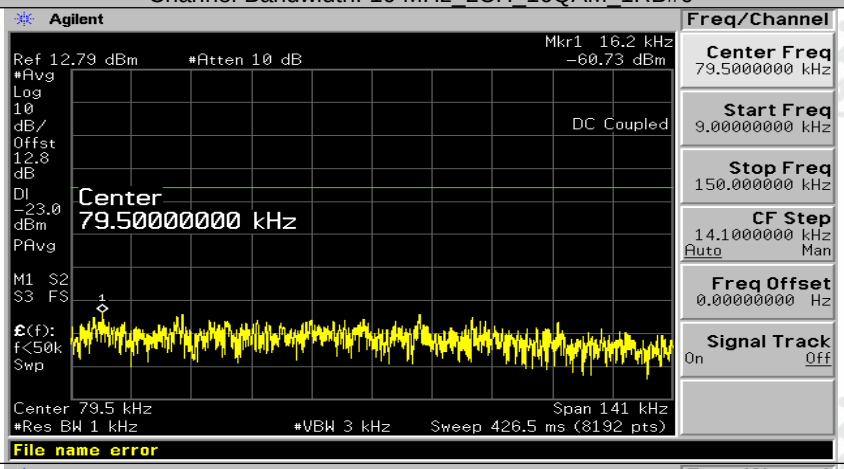
Channel Bandwidth: 10 MHz_HCH_QPSK_1RB#49

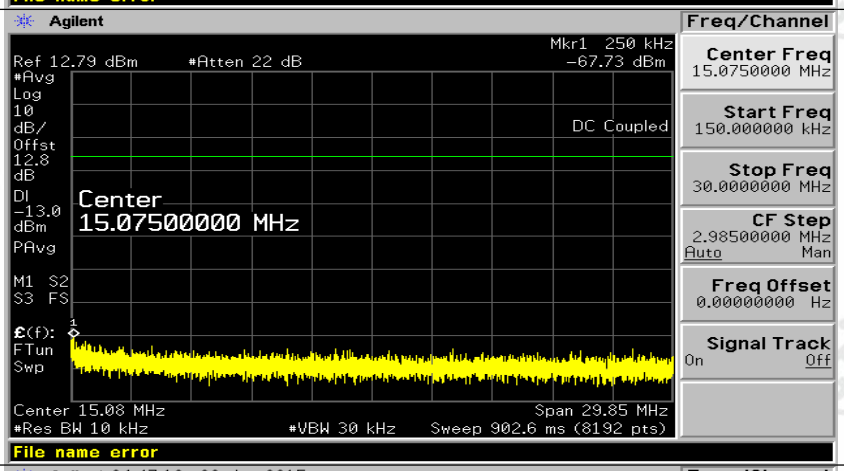


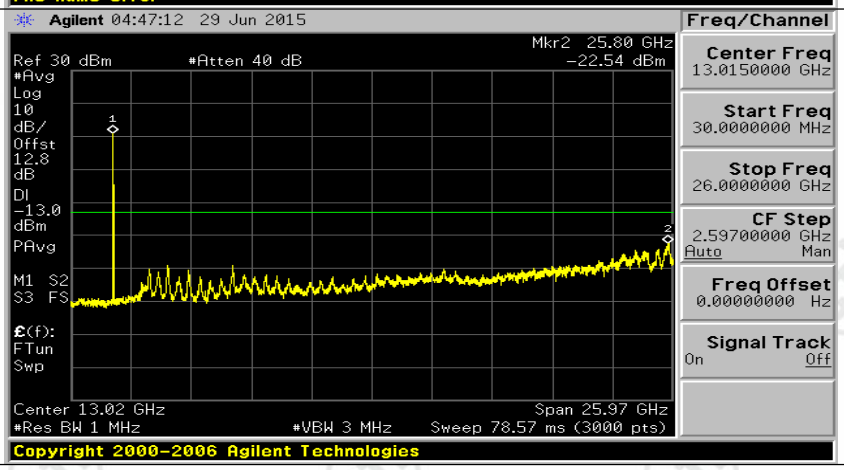




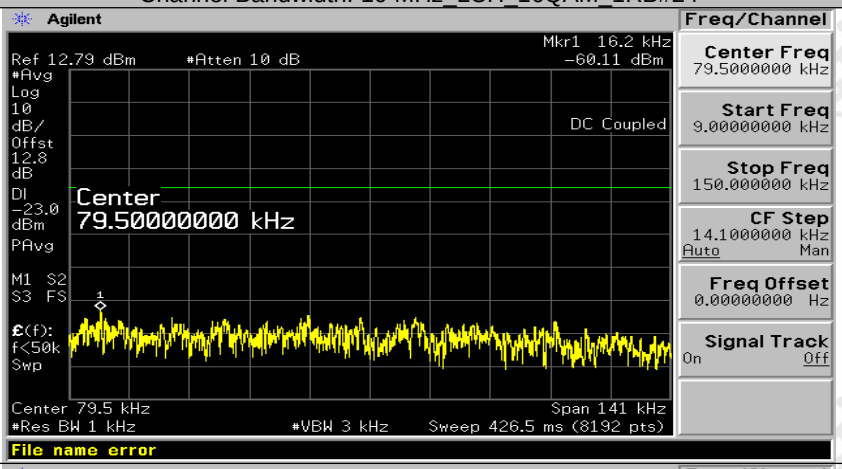
Channel Bandwidth: 10 MHz_LCH_16QAM_1RB#0

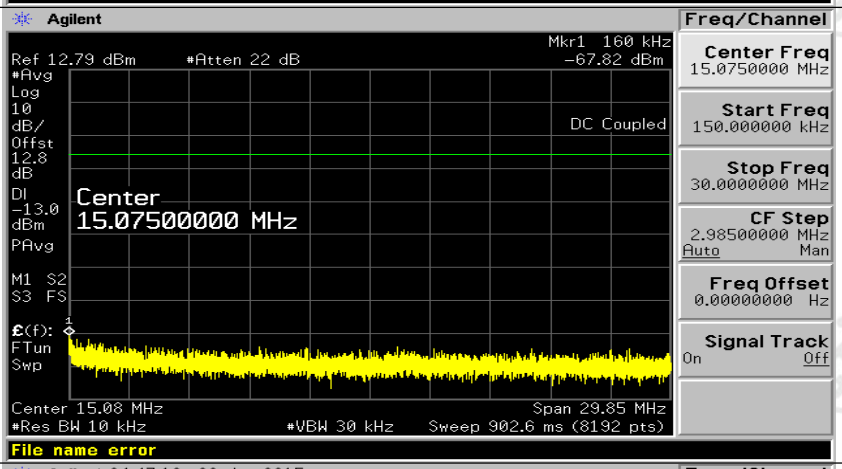


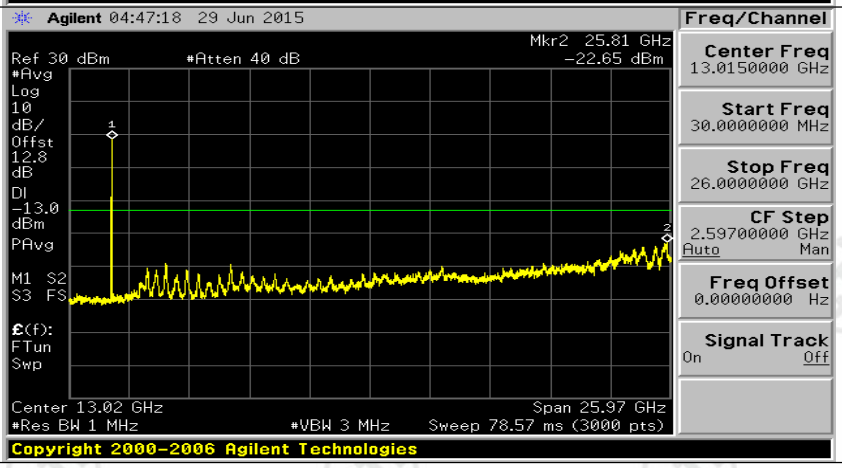




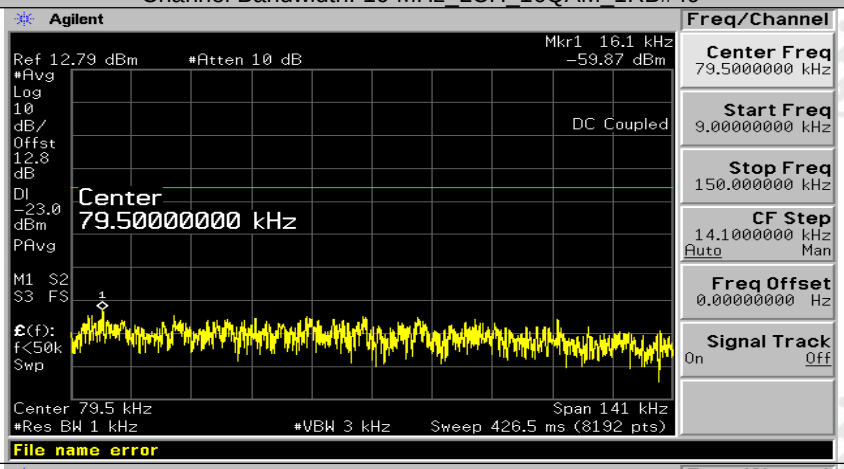
Channel Bandwidth: 10 MHz_LCH_16QAM_1RB#24

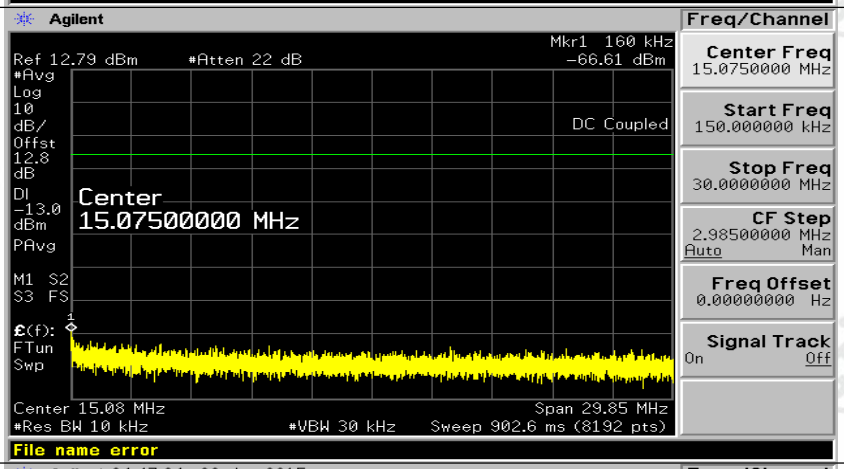


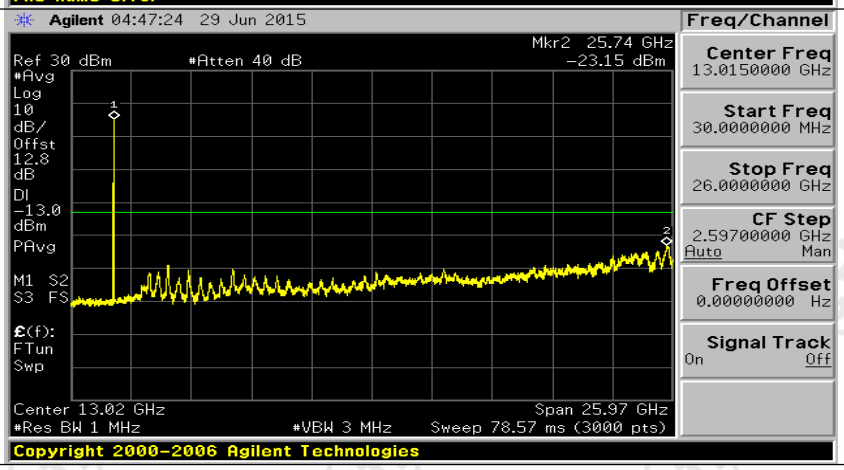




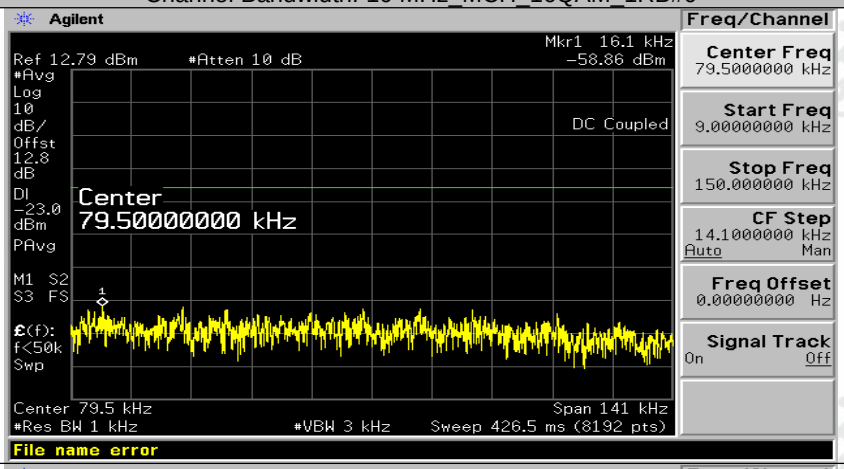
Channel Bandwidth: 10 MHz_LCH_16QAM_1RB#49

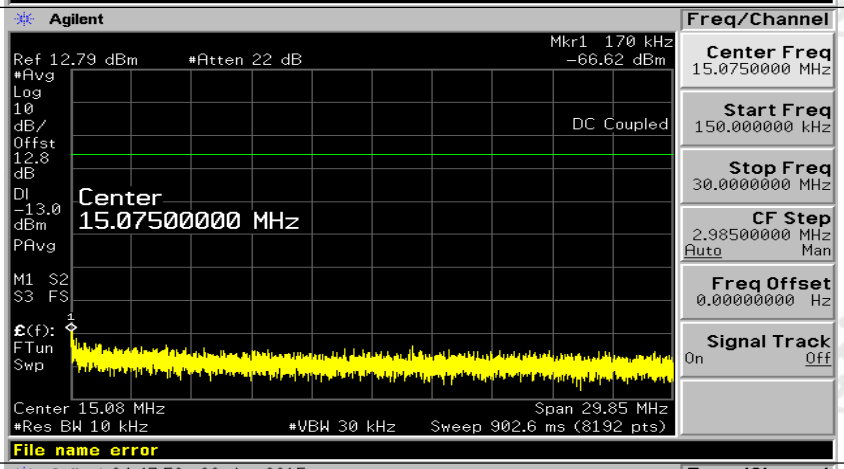


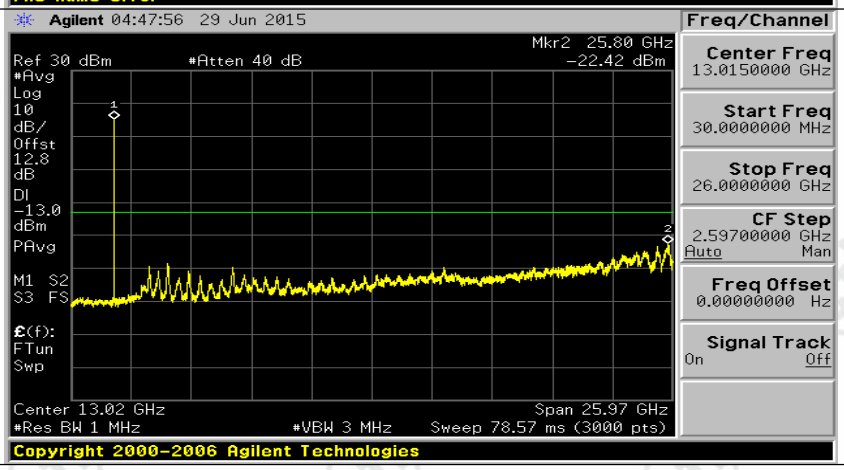




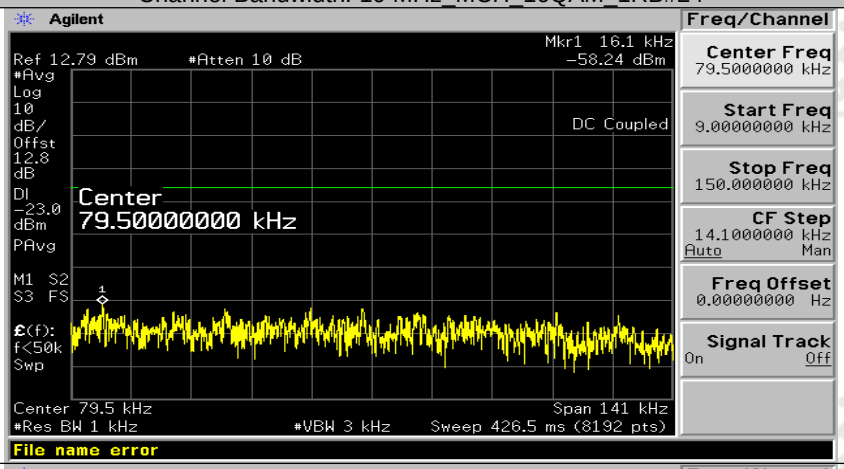
Channel Bandwidth: 10 MHz_MCH_16QAM_1RB#0

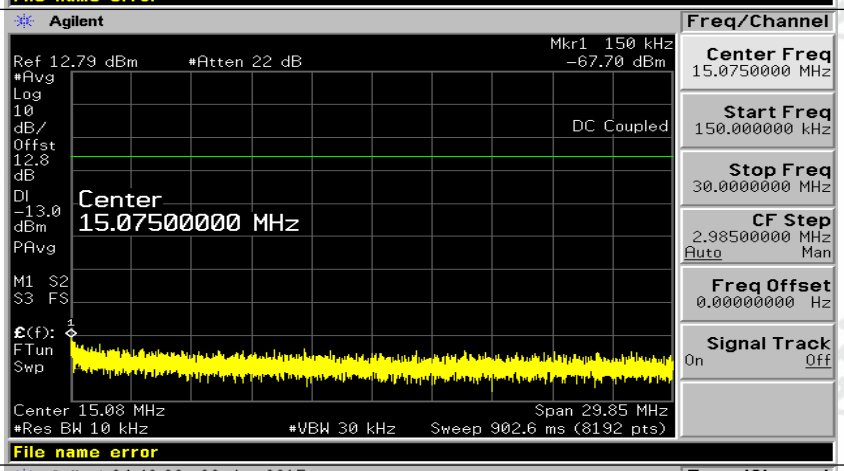


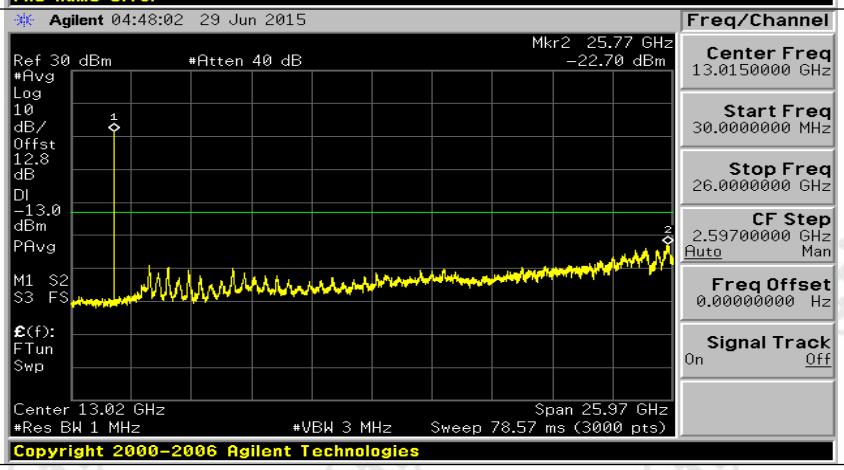




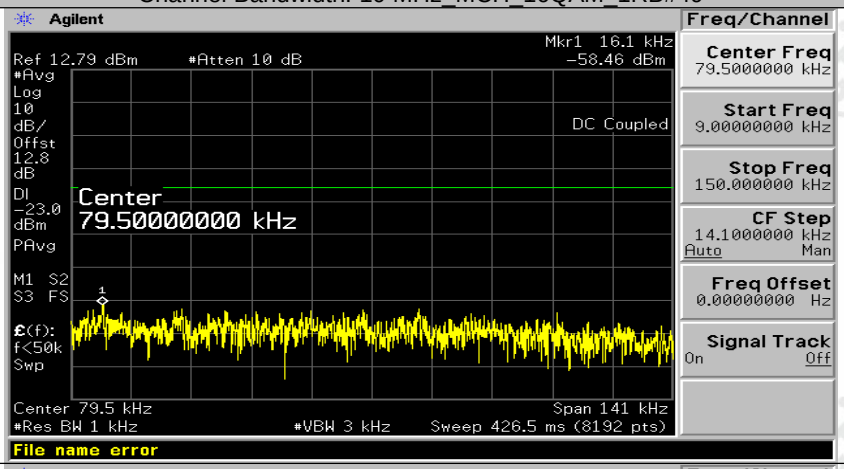
Channel Bandwidth: 10 MHz_MCH_16QAM_1RB#24

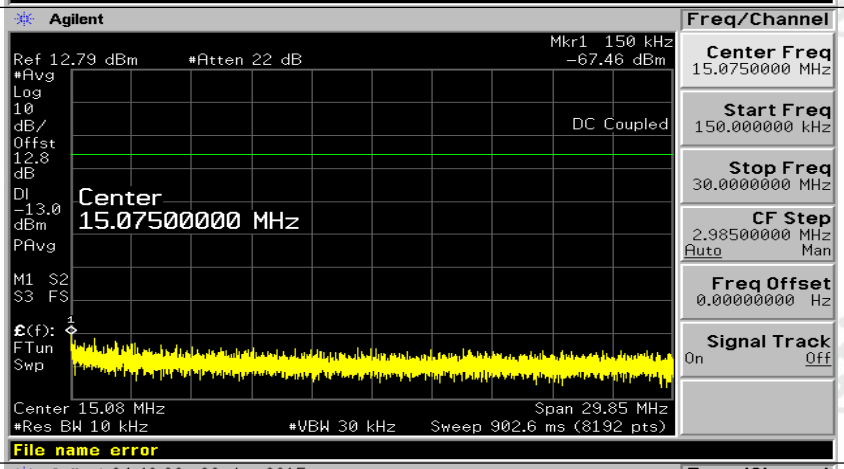


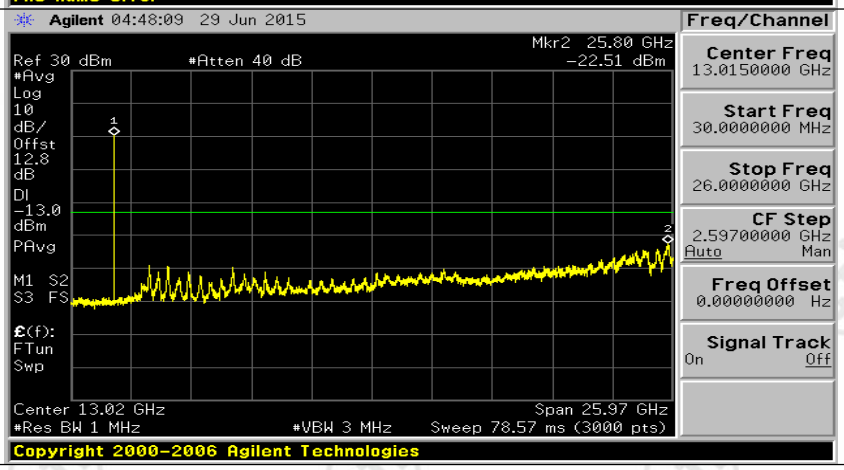




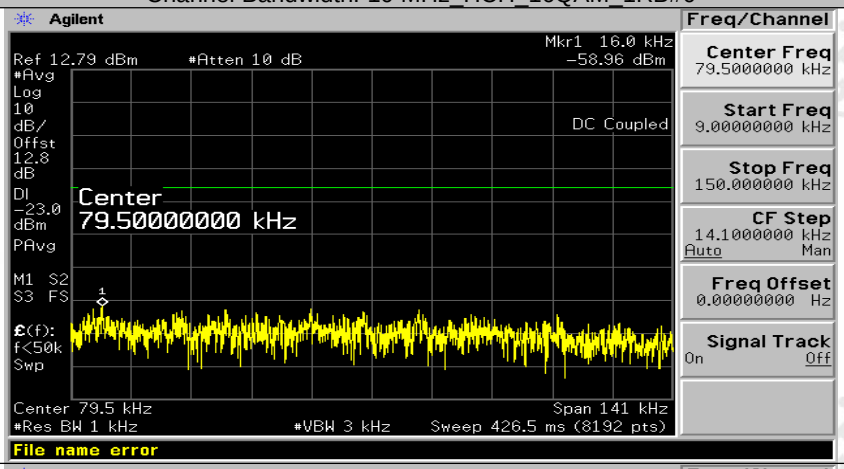
Channel Bandwidth: 10 MHz_MCH_16QAM_1RB#49

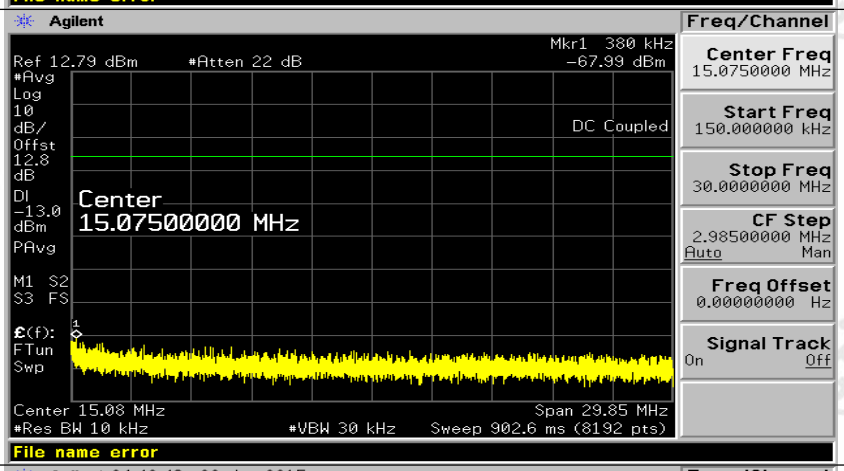


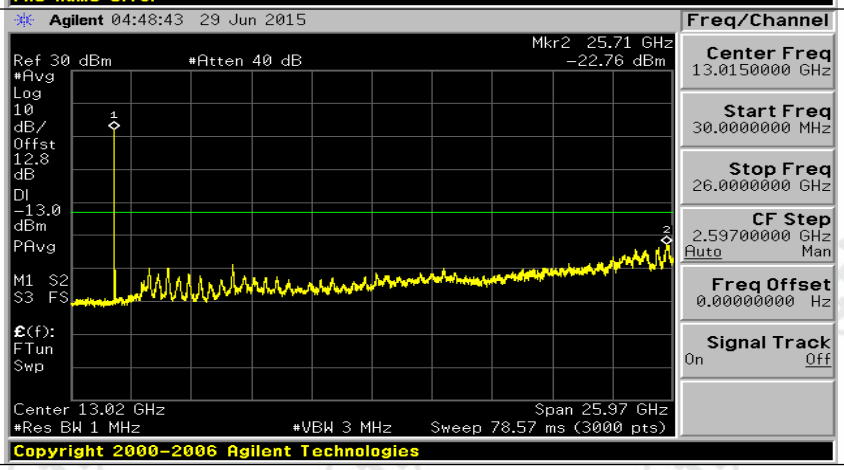




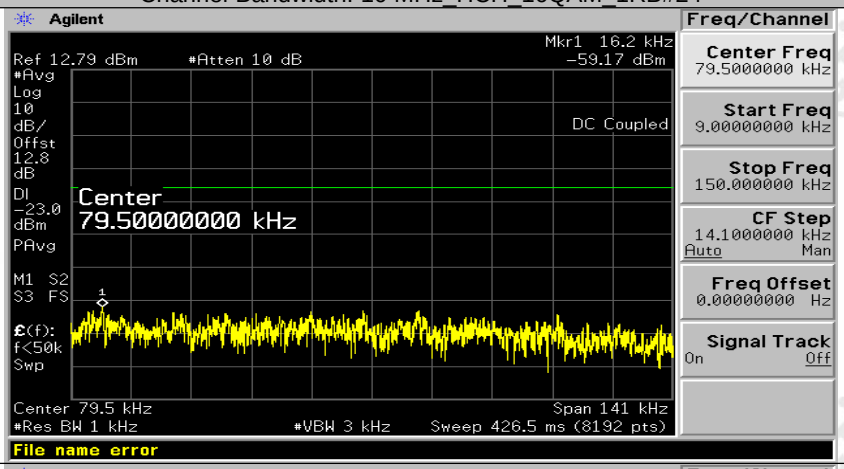
Channel Bandwidth: 10 MHz_HCH_16QAM_1RB#0

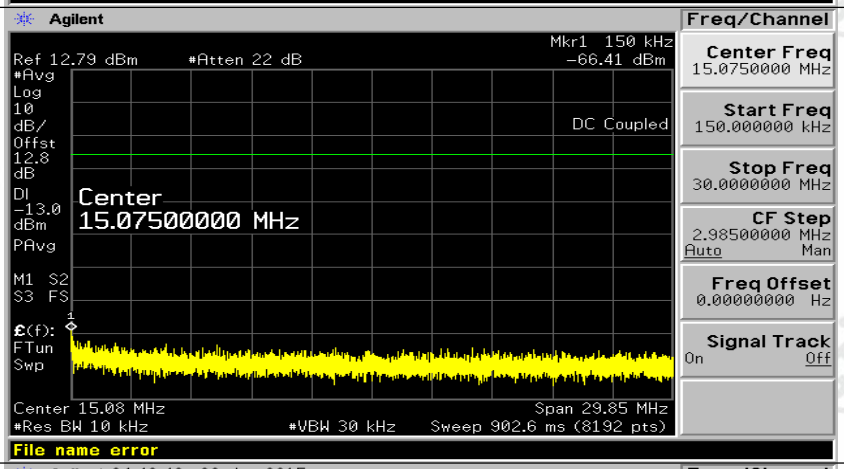


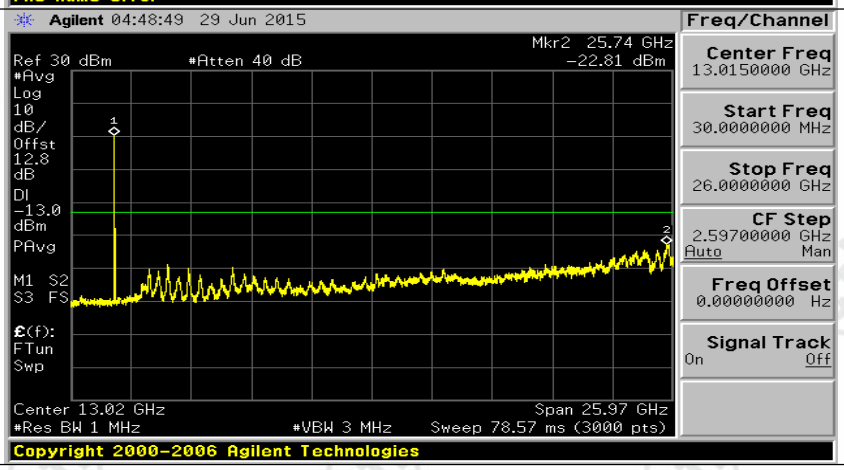




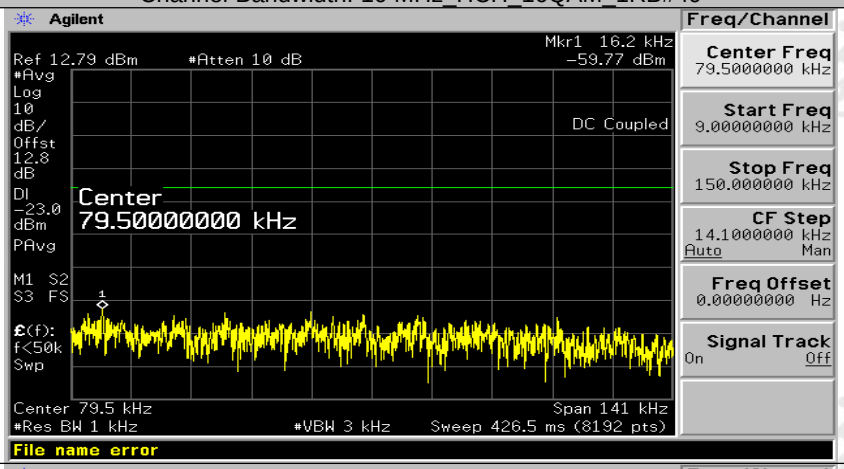
Channel Bandwidth: 10 MHz_HCH_16QAM_1RB#24

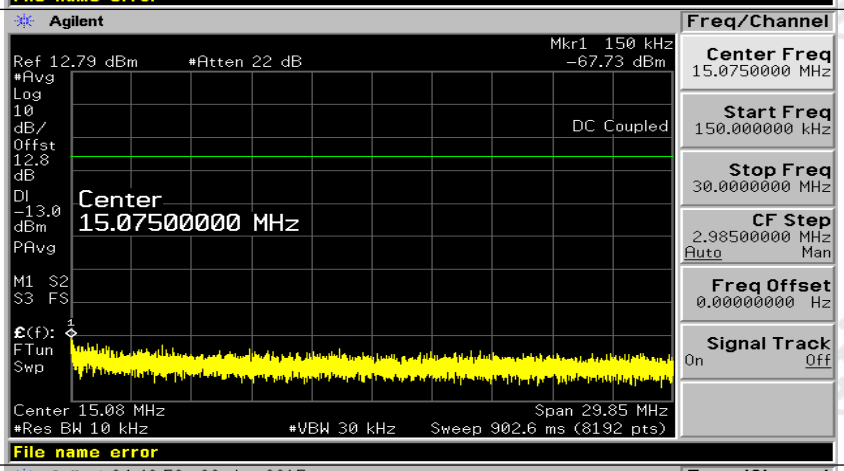


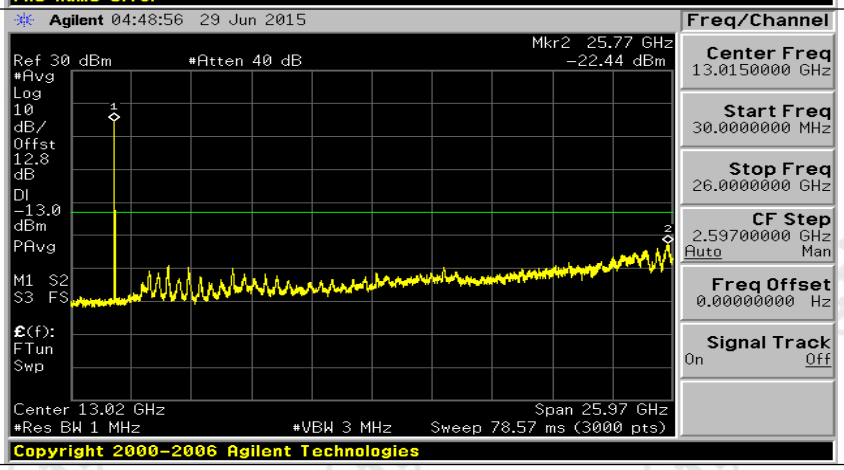




Channel Bandwidth: 10 MHz_HCH_16QAM_1RB#49

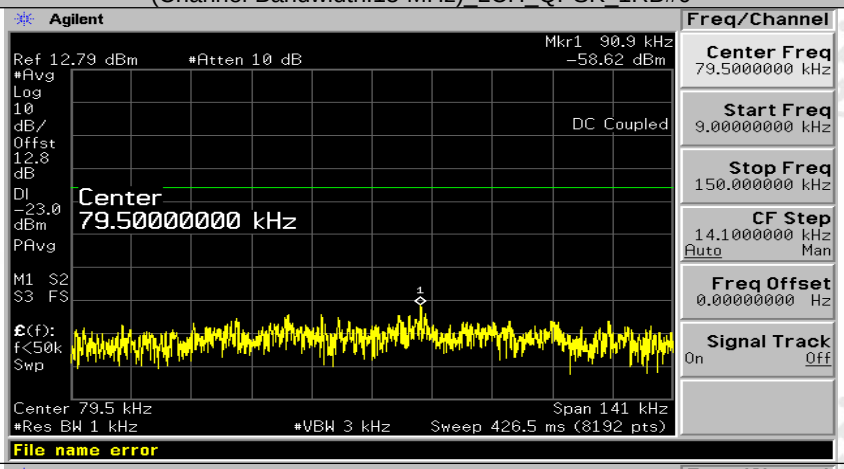


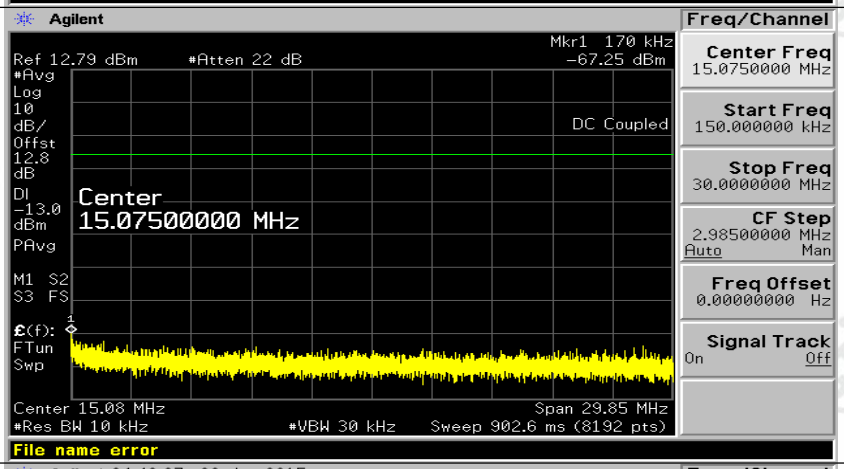


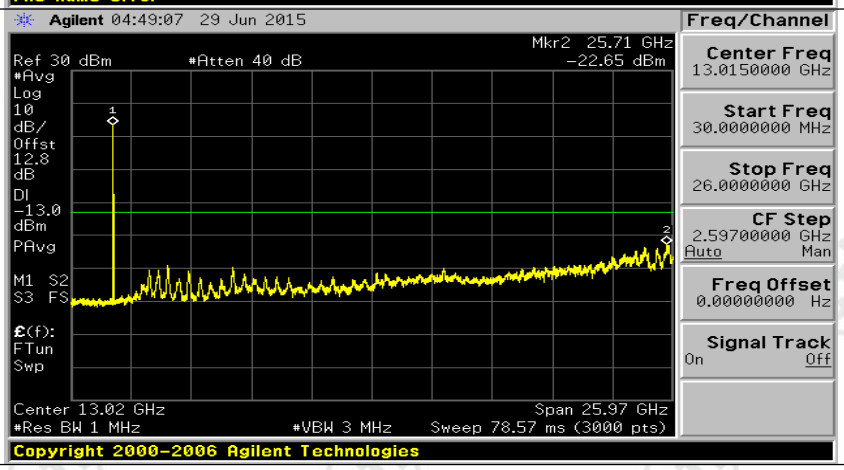


Channel Bandwidth: 15 MHz

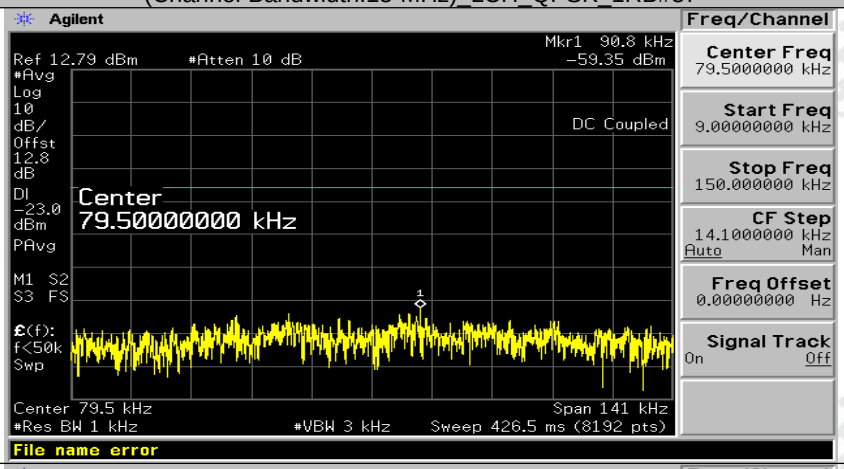
(Channel Bandwidth:15 MHz)_LCH_QPSK_1RB#0

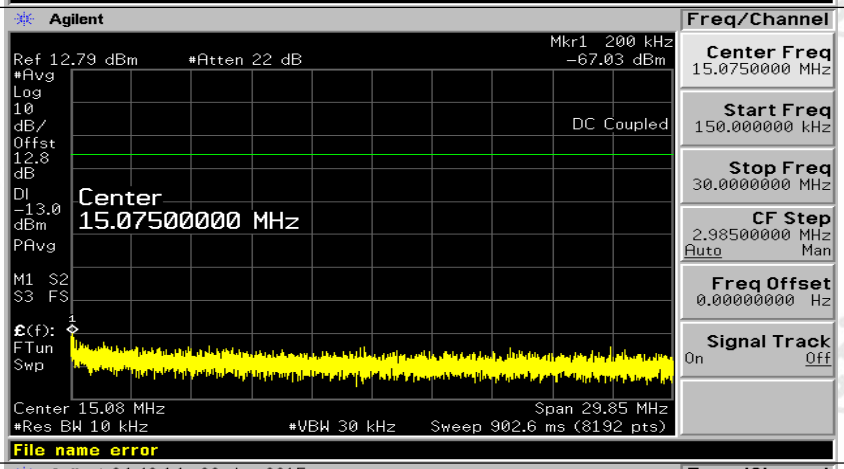


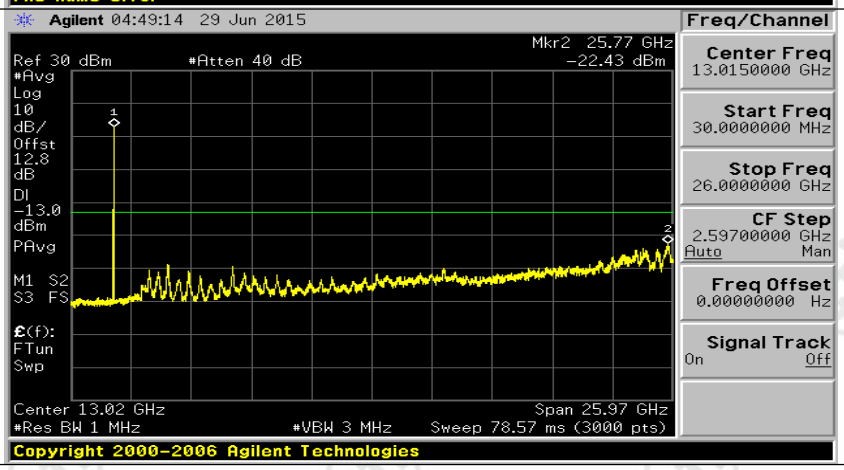




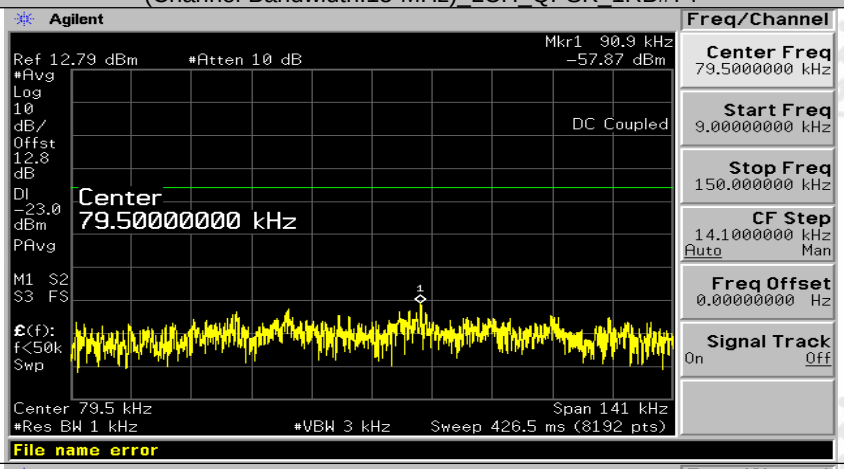
(Channel Bandwidth:15 MHz)_LCH_QPSK_1RB#37

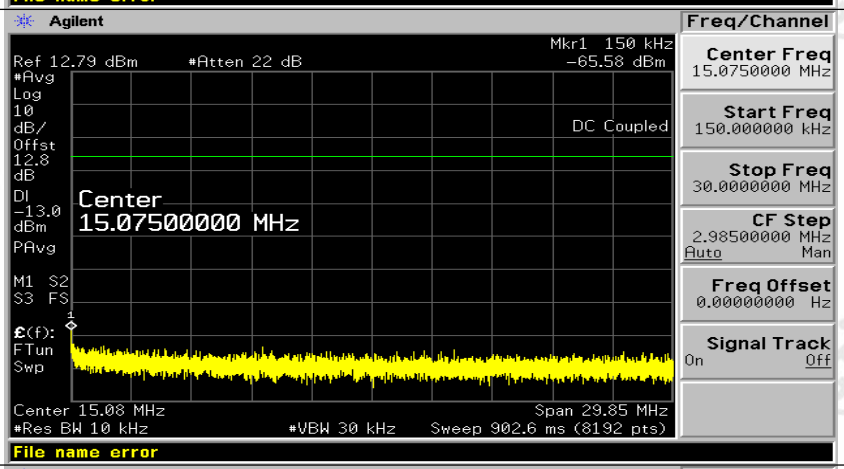


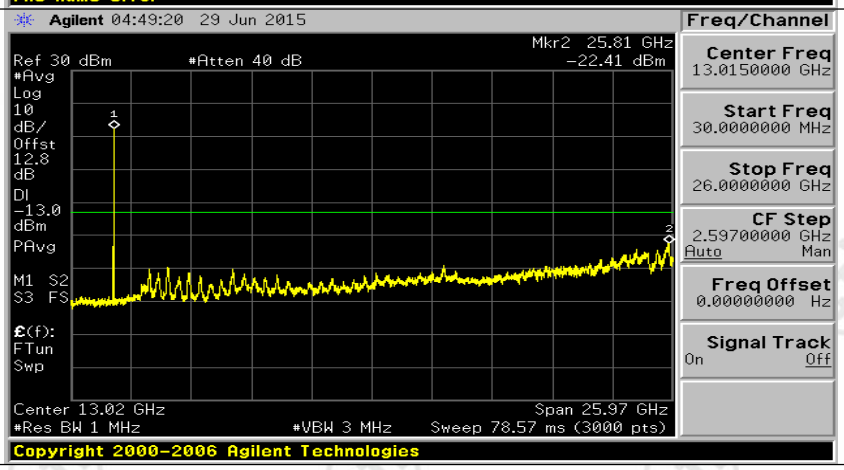




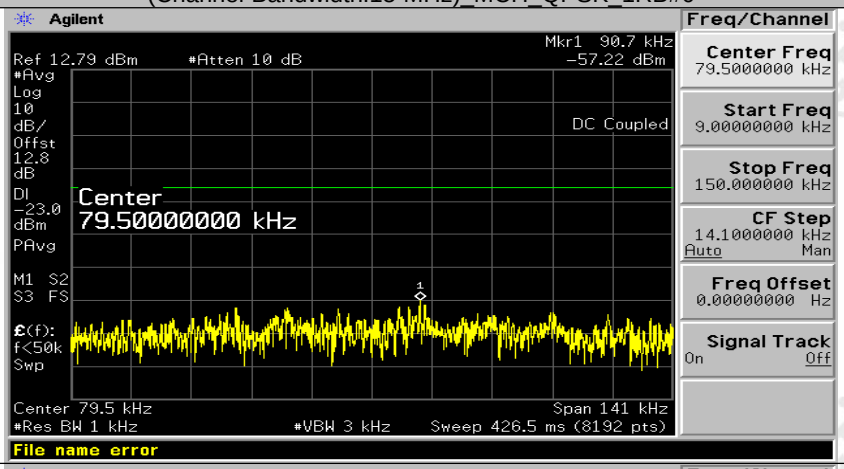
(Channel Bandwidth:15 MHz)_LCH_QPSK_1RB#74

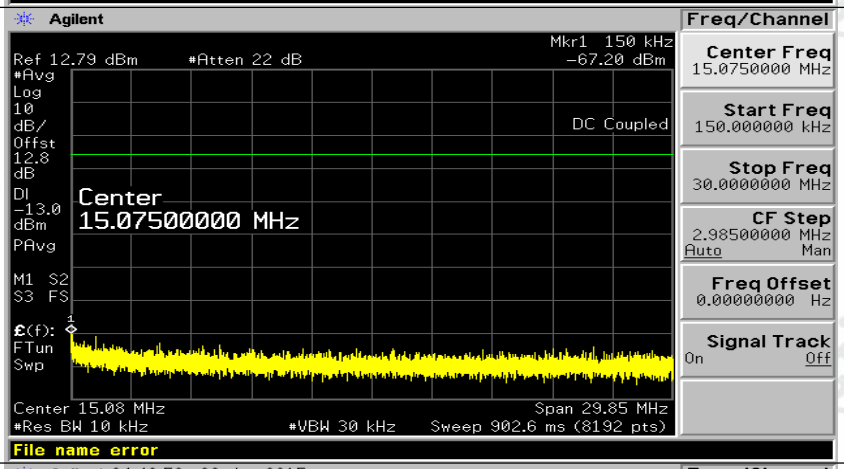


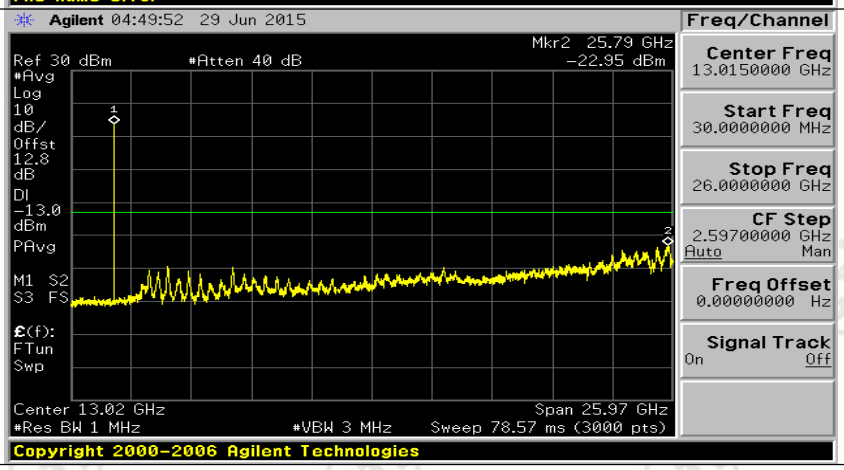




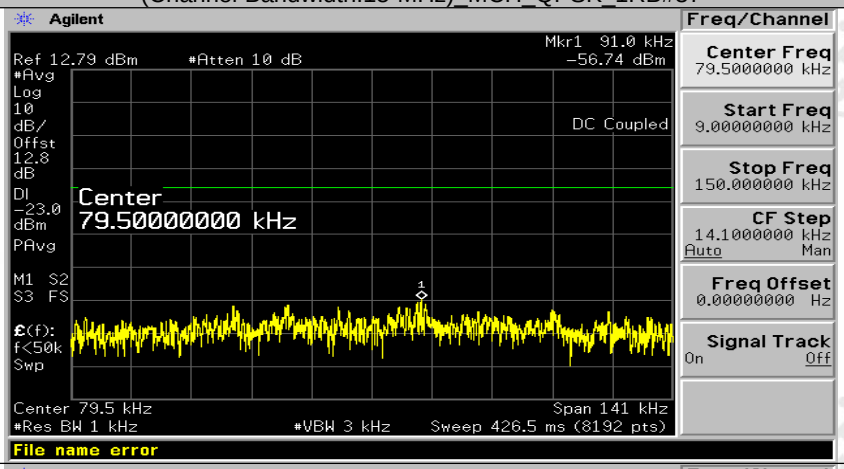
(Channel Bandwidth:15 MHz)_MCH_QPSK_1RB#0

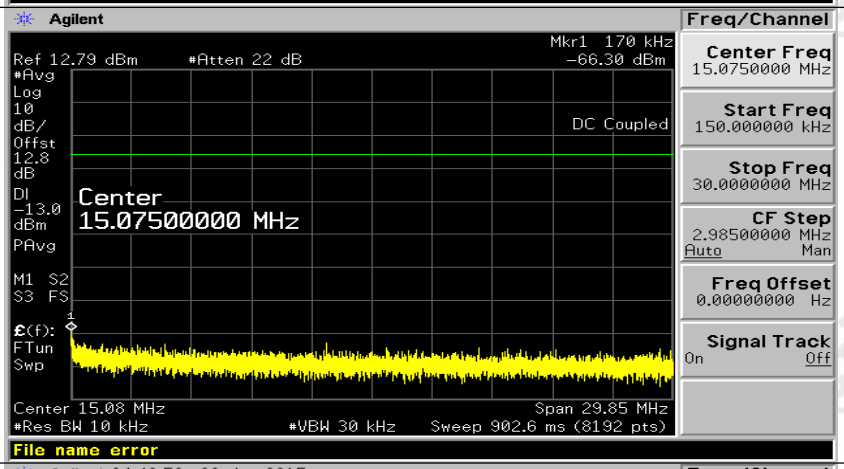


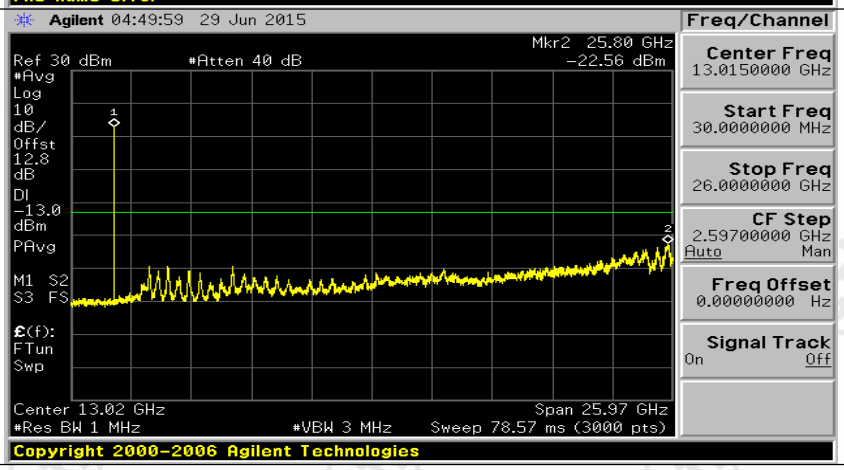




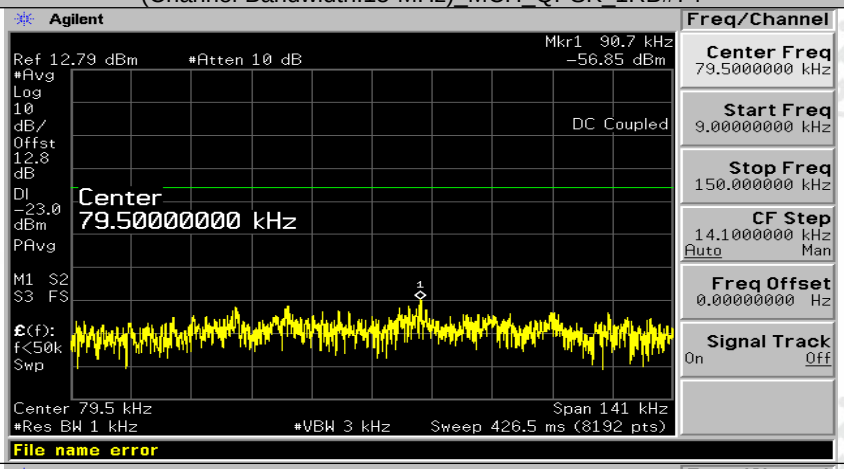
(Channel Bandwidth:15 MHz)_MCH_QPSK_1RB#37

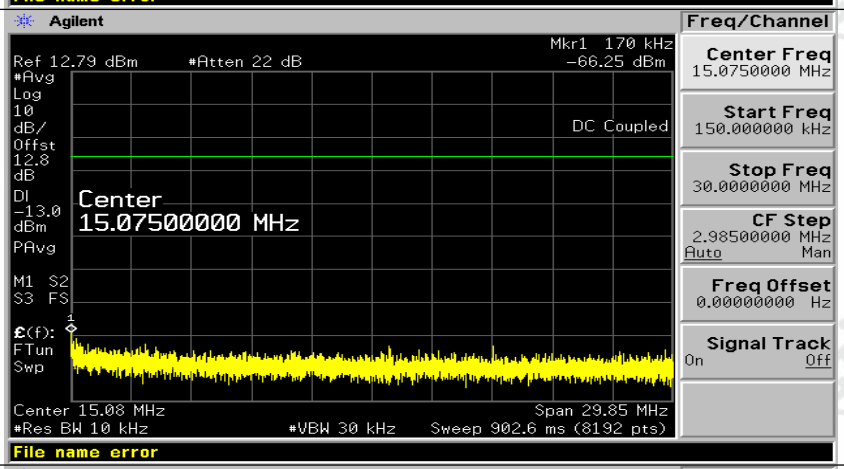


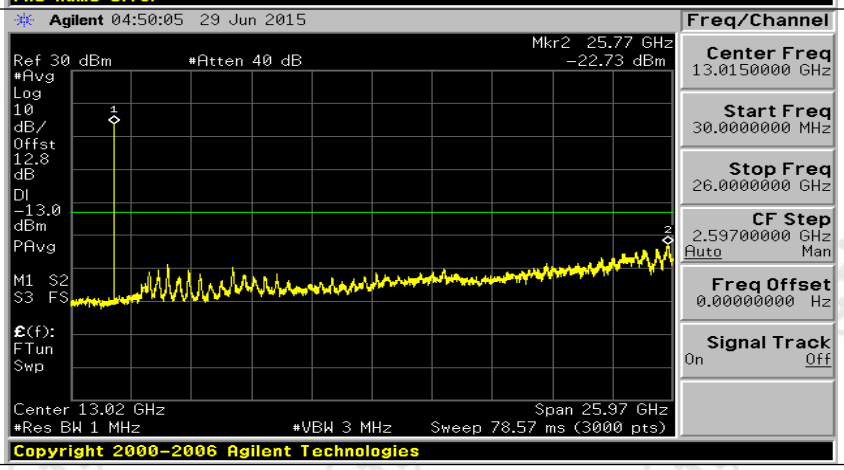




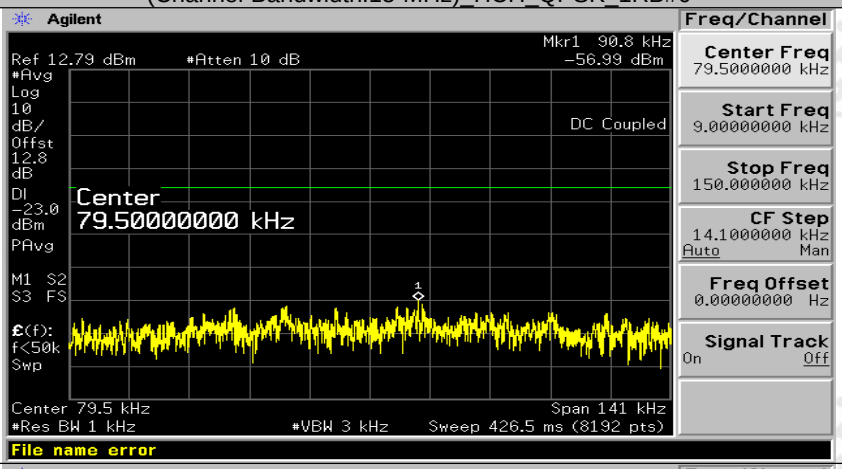
(Channel Bandwidth:15 MHz)_MCH_QPSK_1RB#74

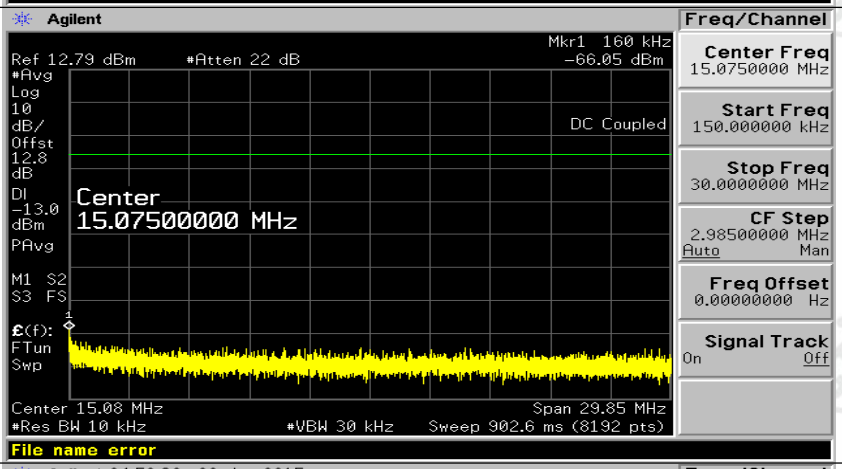


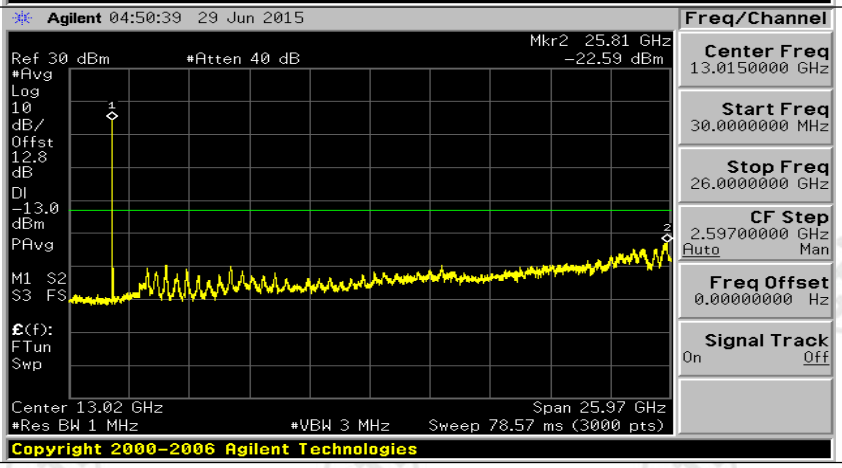




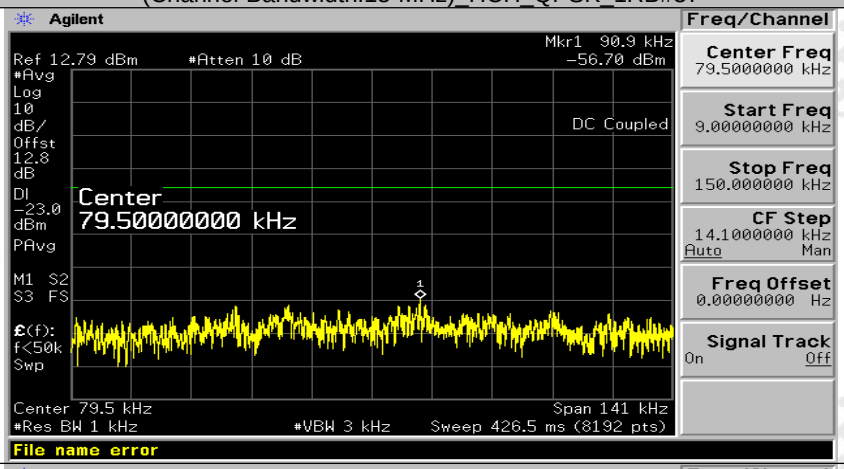
(Channel Bandwidth:15 MHz)_HCH_QPSK_1RB#0

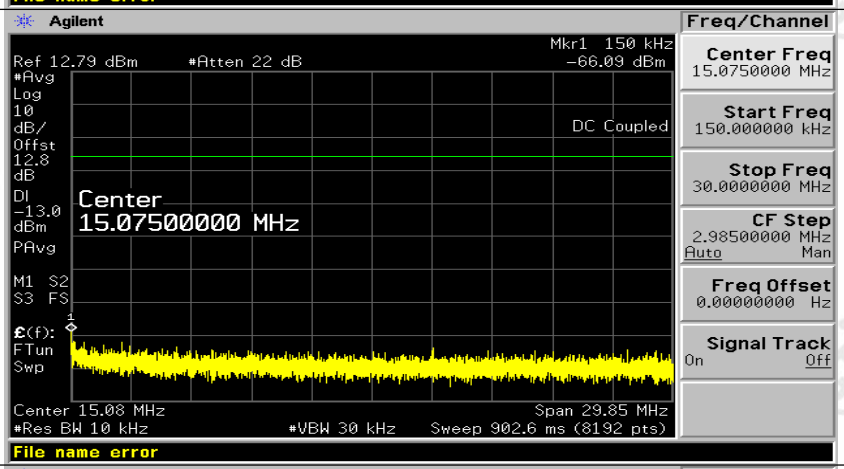


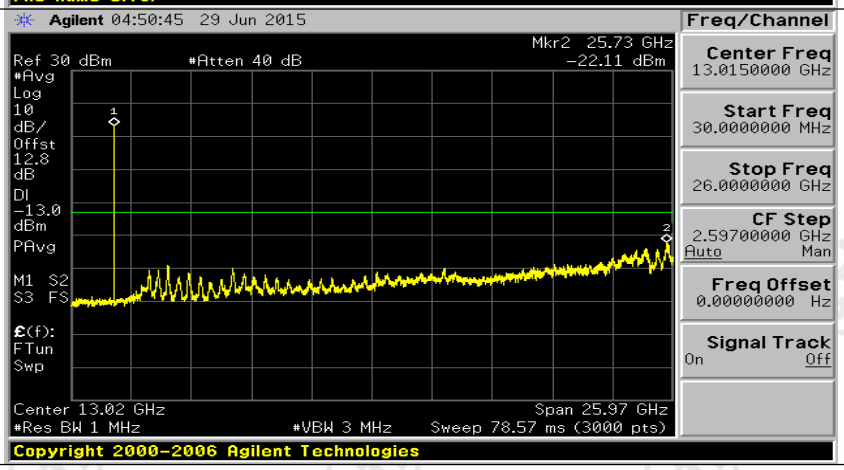




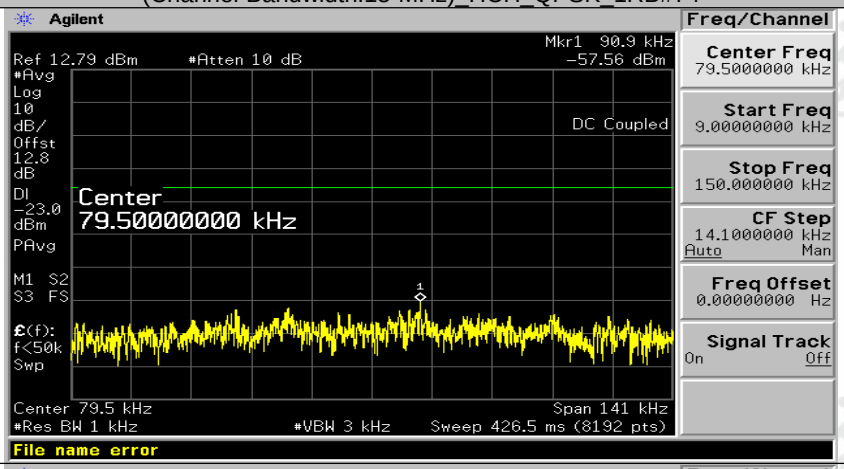
(Channel Bandwidth:15 MHz)_HCH_QPSK_1RB#37

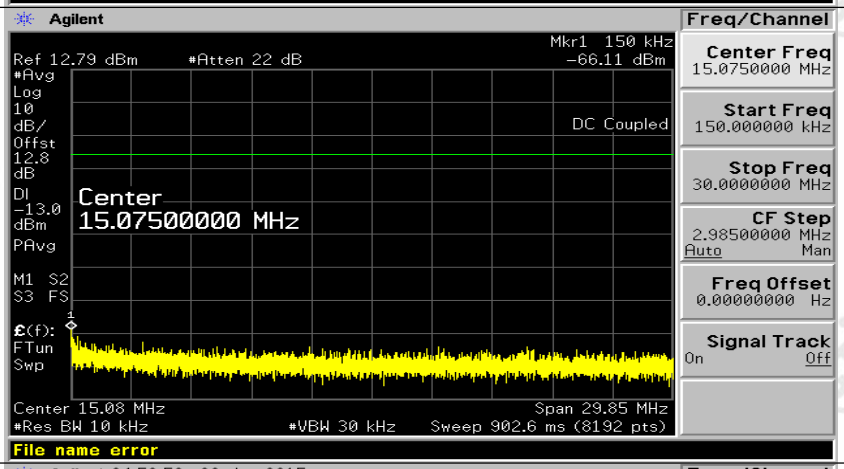


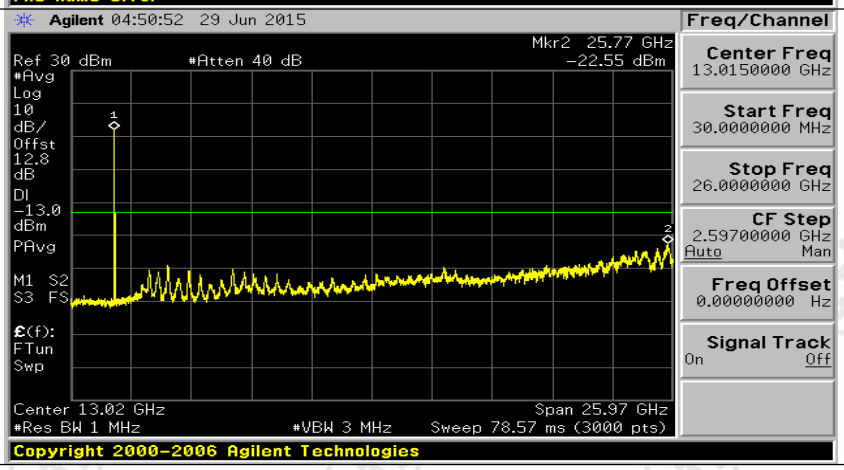




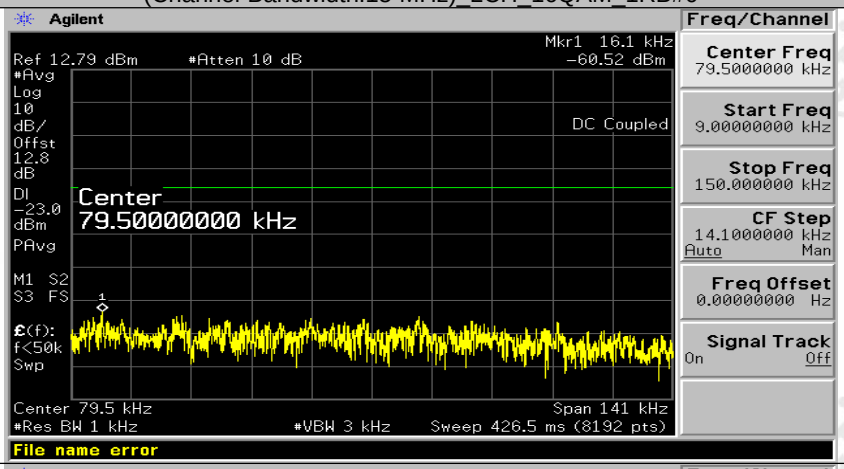
(Channel Bandwidth:15 MHz)_HCH_QPSK_1RB#74

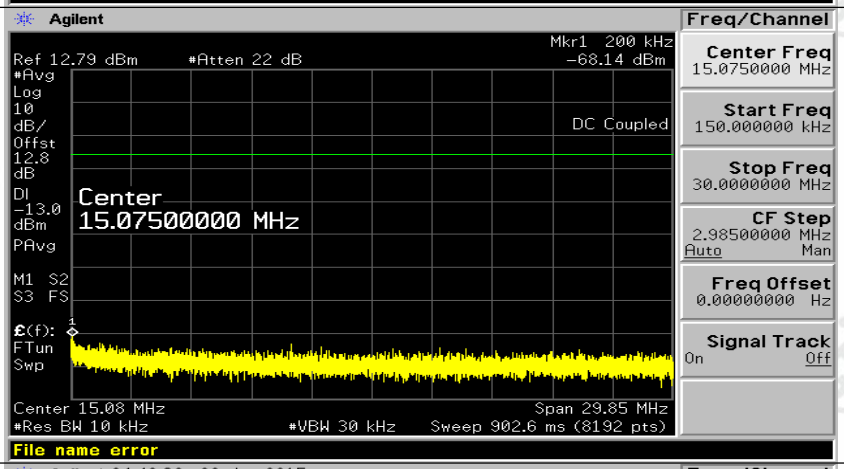


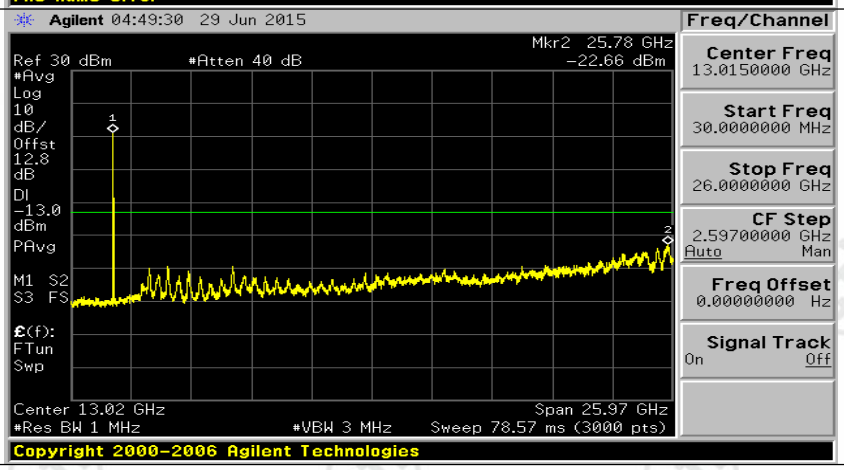




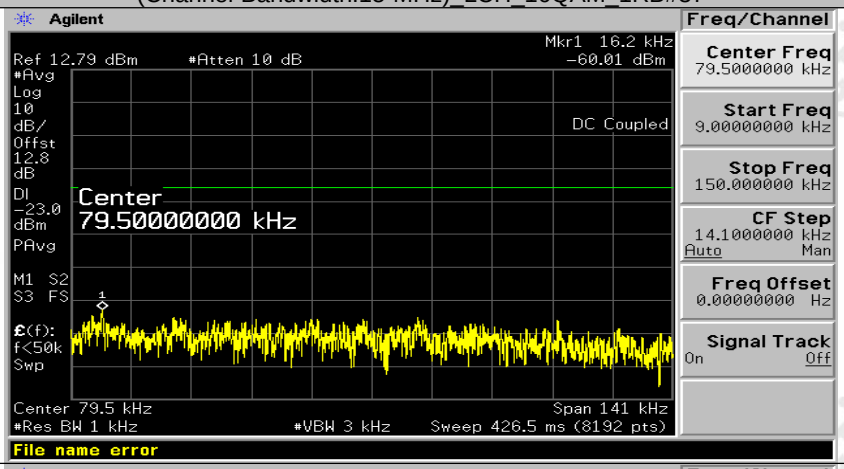
(Channel Bandwidth:15 MHz)_LCH_16QAM_1RB#0

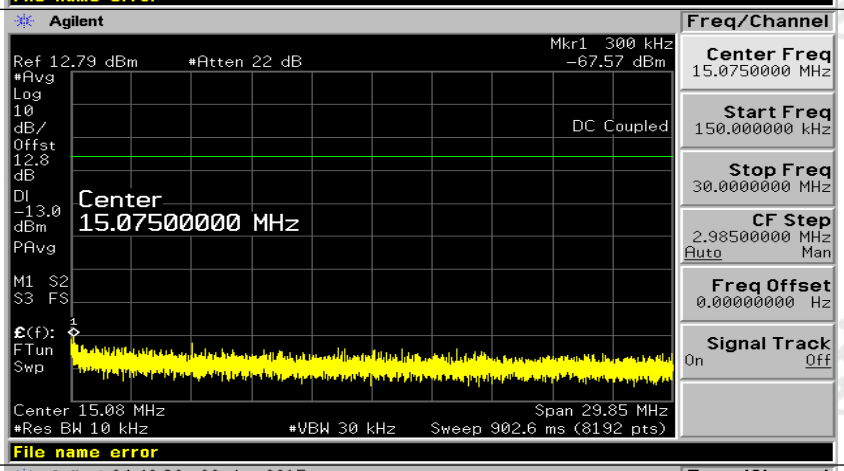


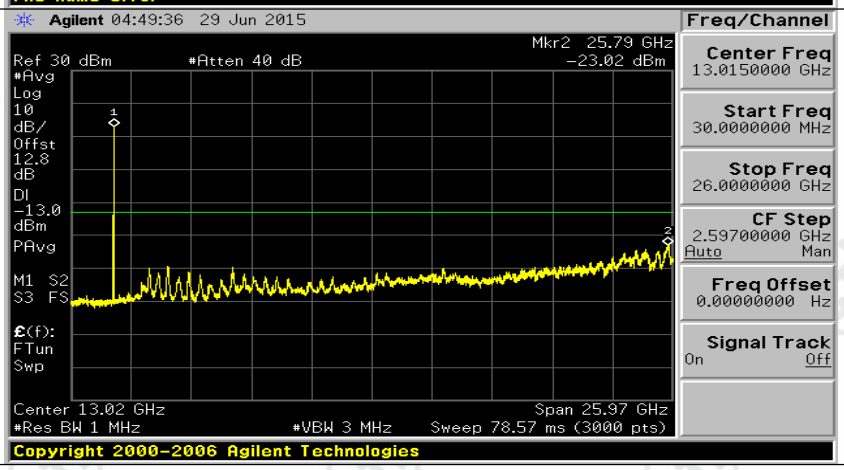




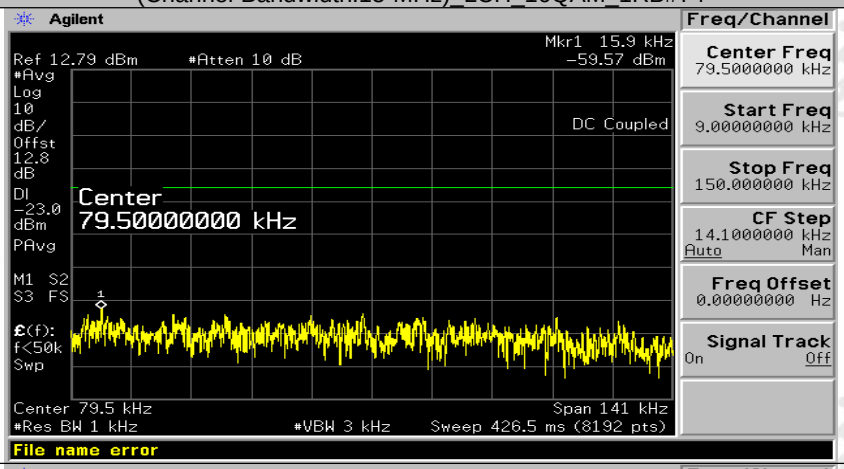
(Channel Bandwidth:15 MHz)_LCH_16QAM_1RB#37

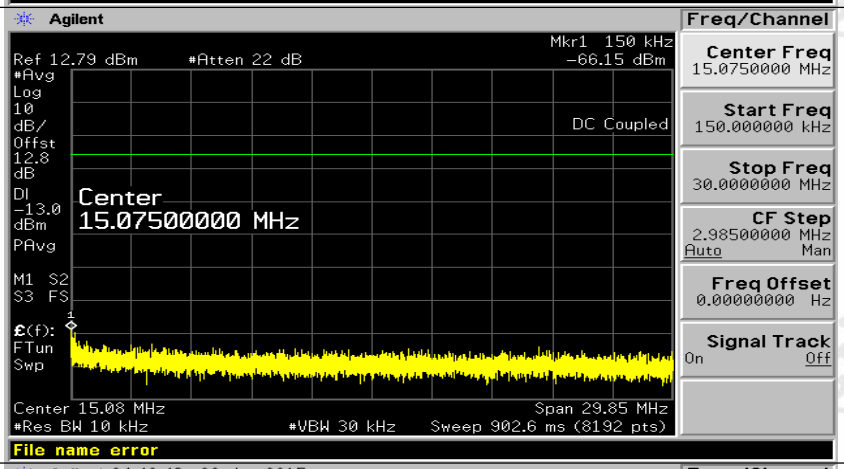


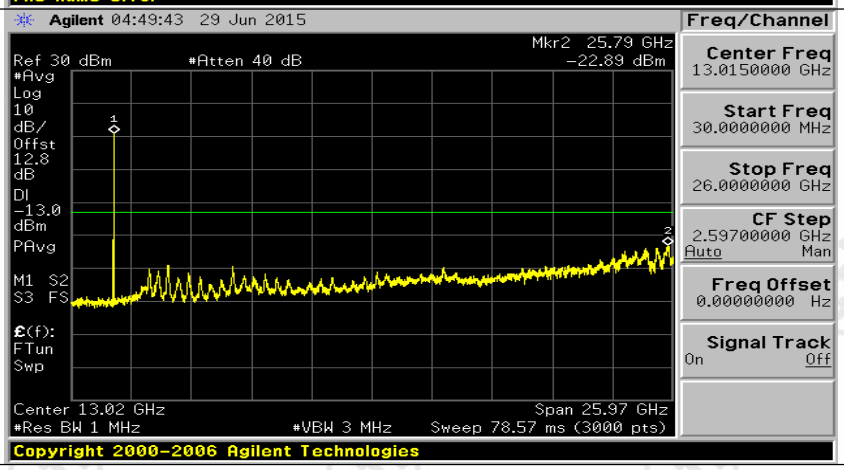




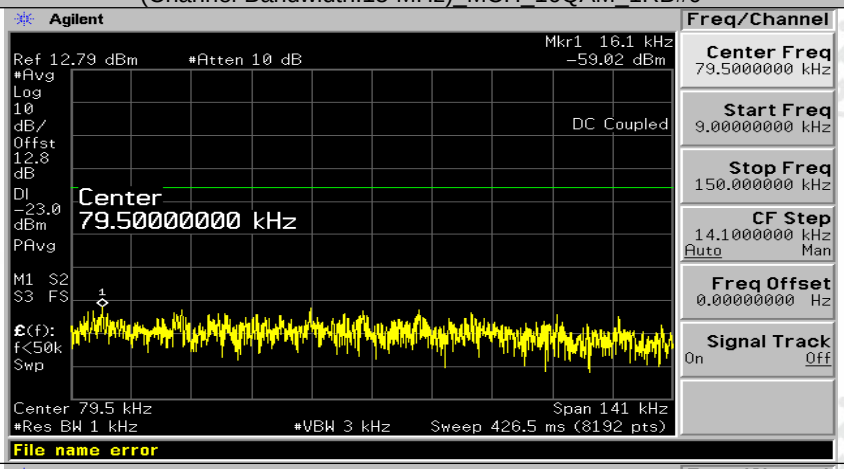
(Channel Bandwidth:15 MHz)_LCH_16QAM_1RB#74

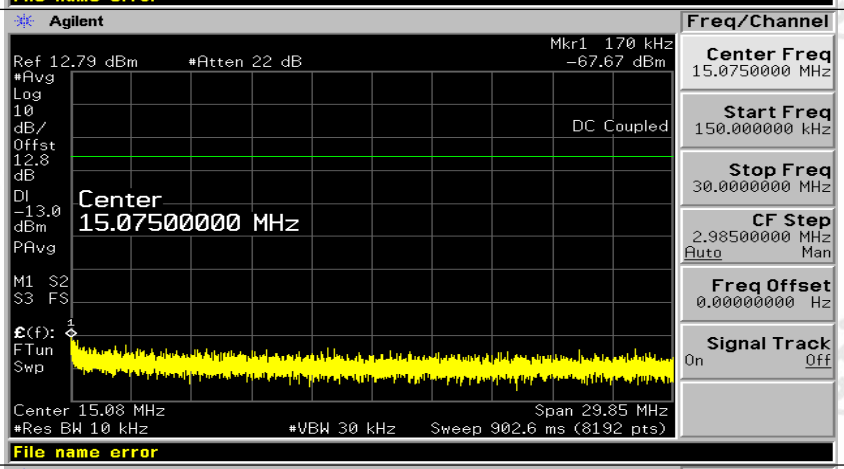


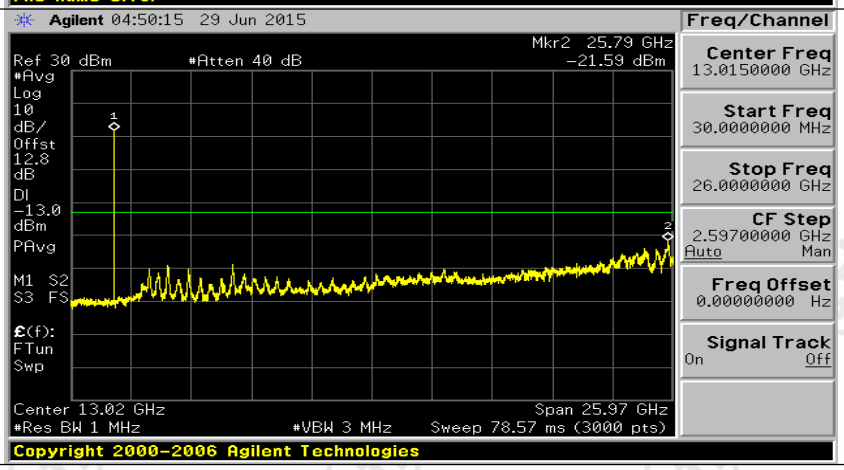




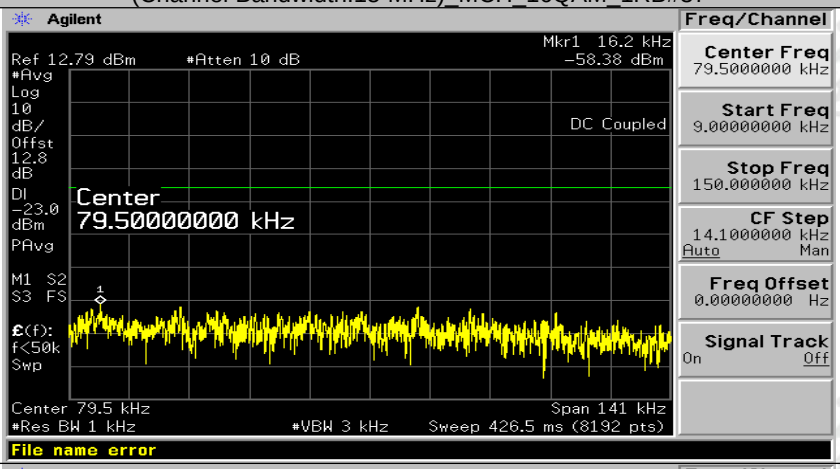
(Channel Bandwidth:15 MHz)_MCH_16QAM_1RB#0

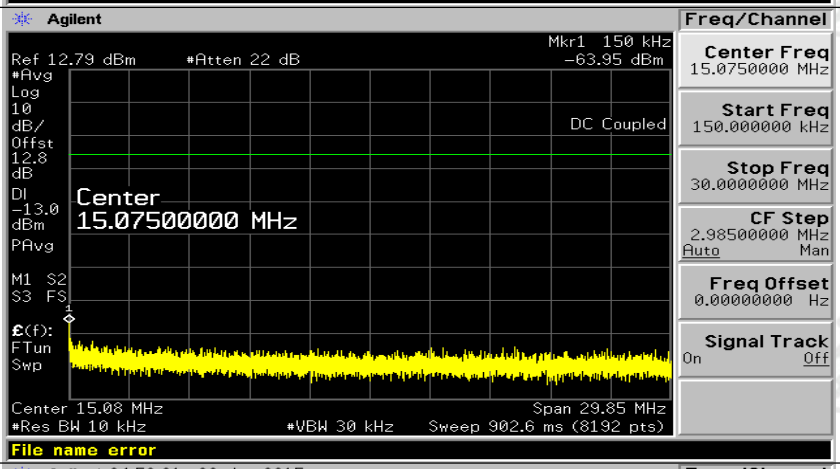


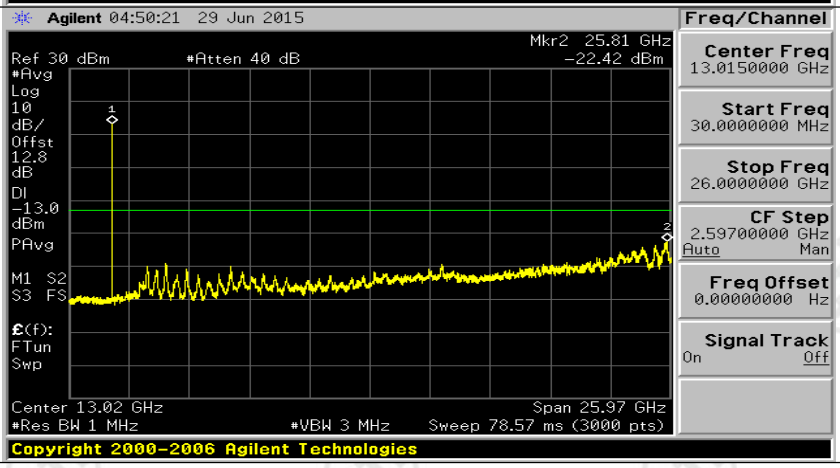




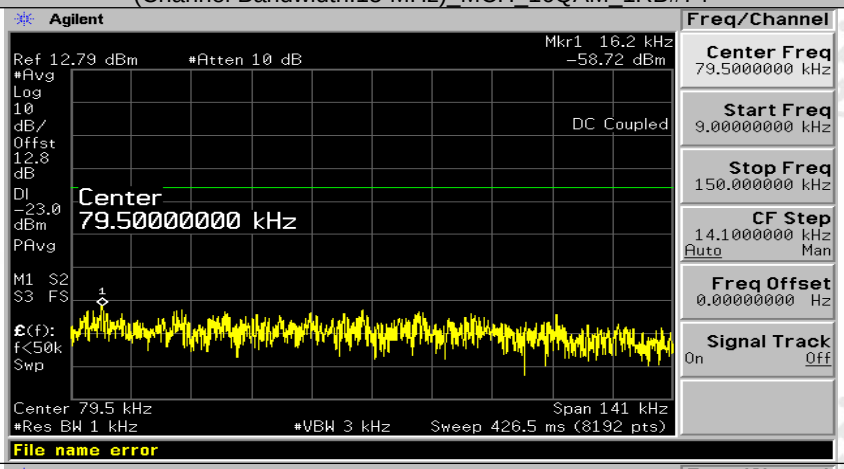
(Channel Bandwidth:15 MHz)_MCH_16QAM_1RB#37

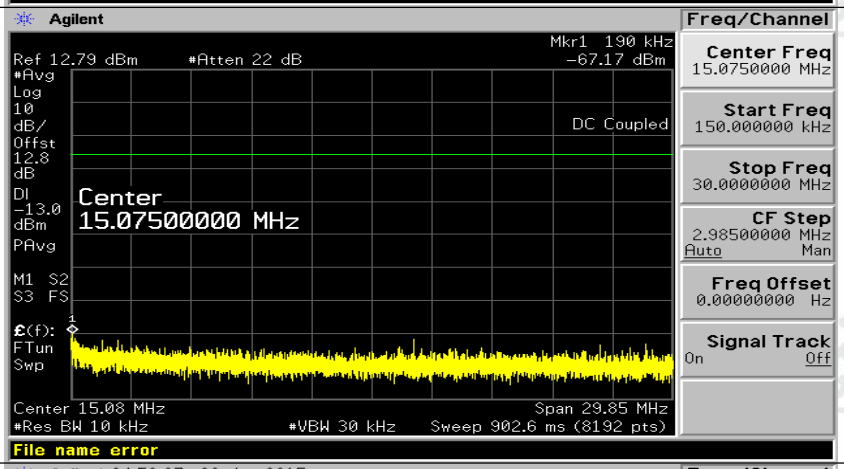


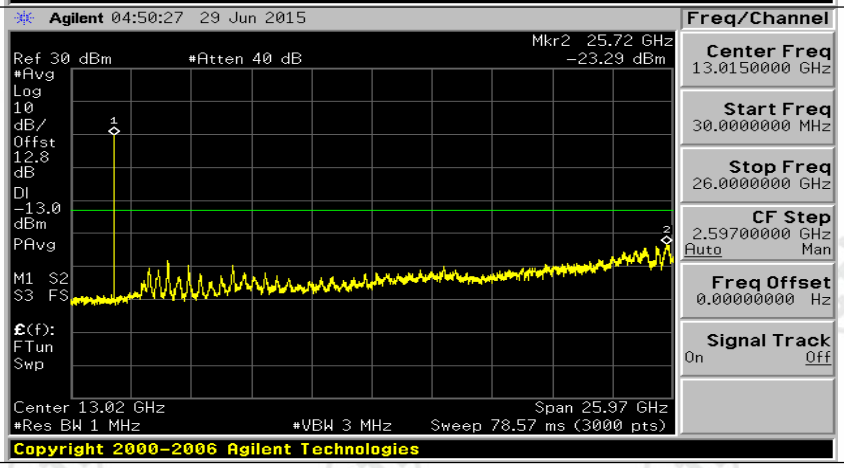




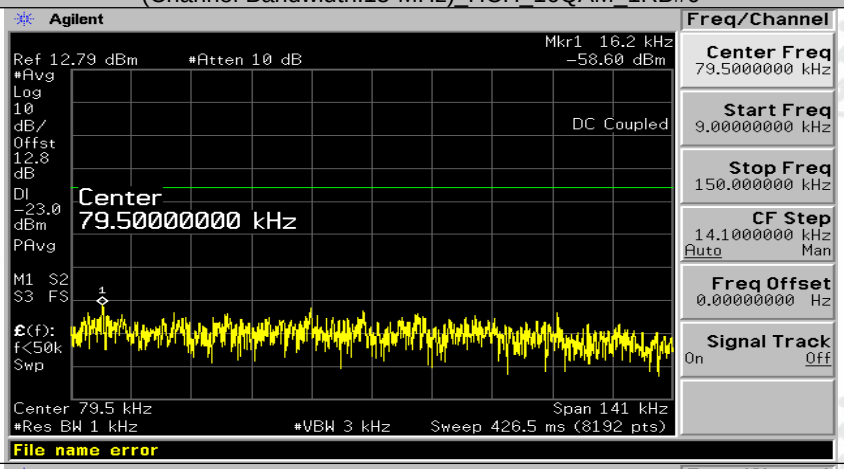
(Channel Bandwidth:15 MHz)_MCH_16QAM_1RB#74

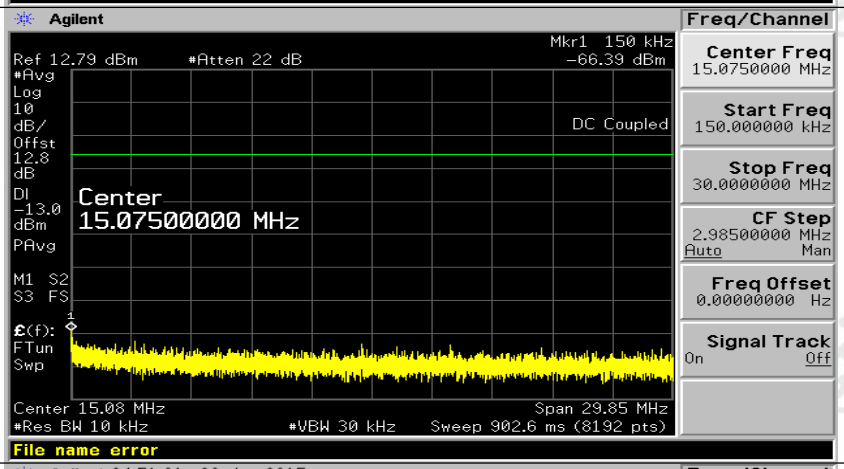


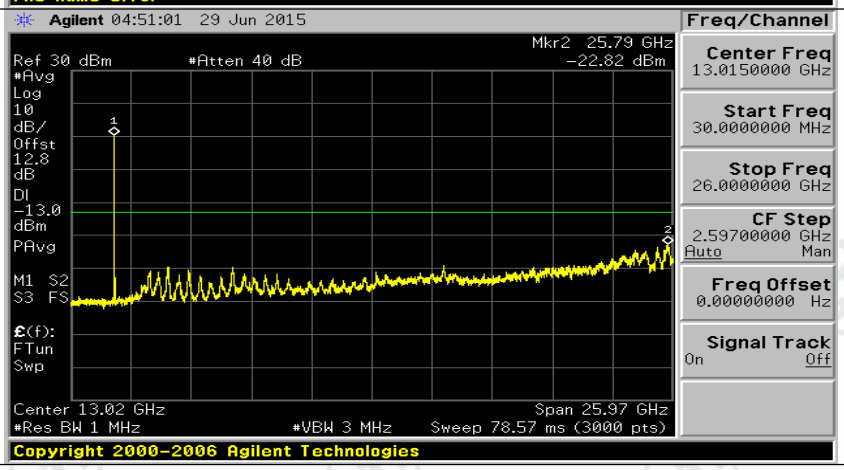




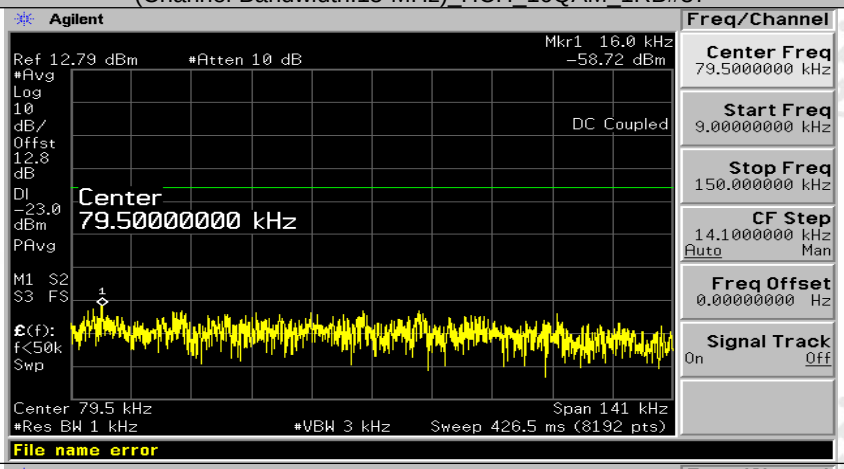
(Channel Bandwidth:15 MHz)_HCH_16QAM_1RB#0

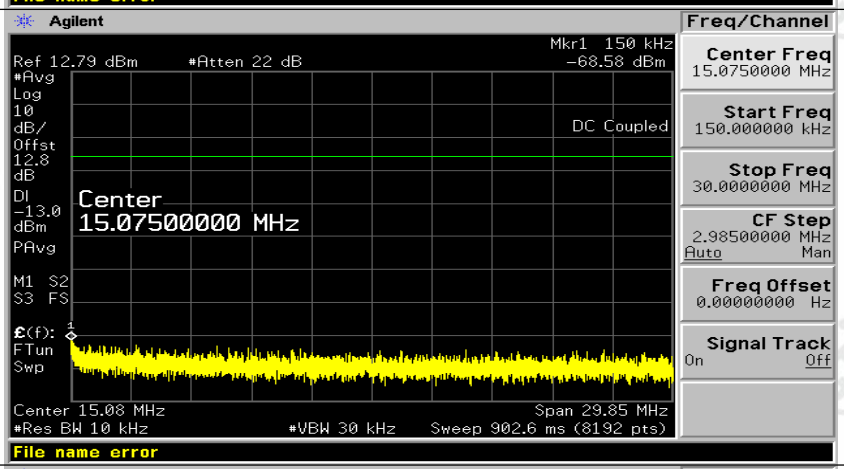


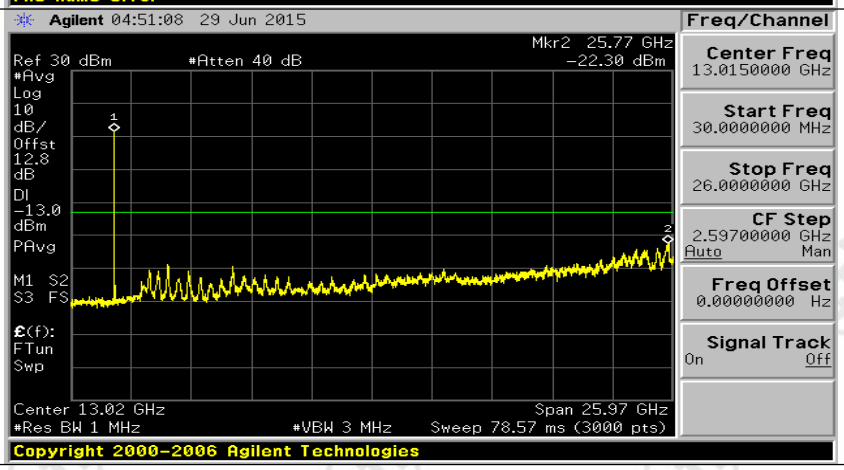




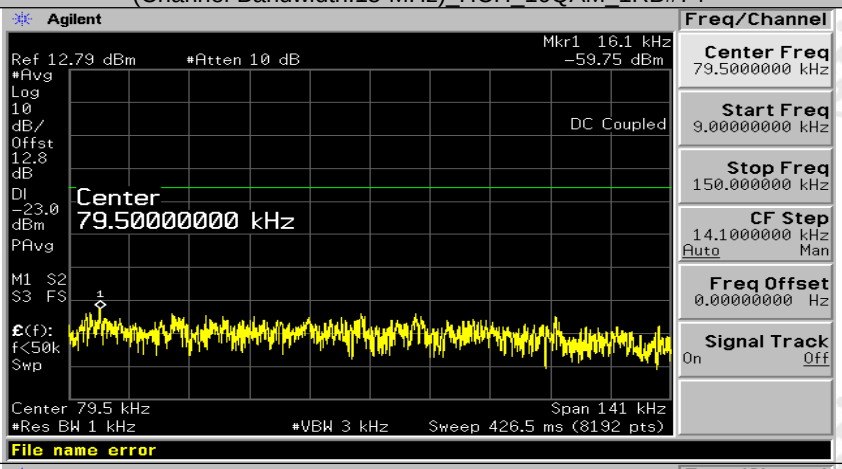
(Channel Bandwidth:15 MHz)_HCH_16QAM_1RB#37

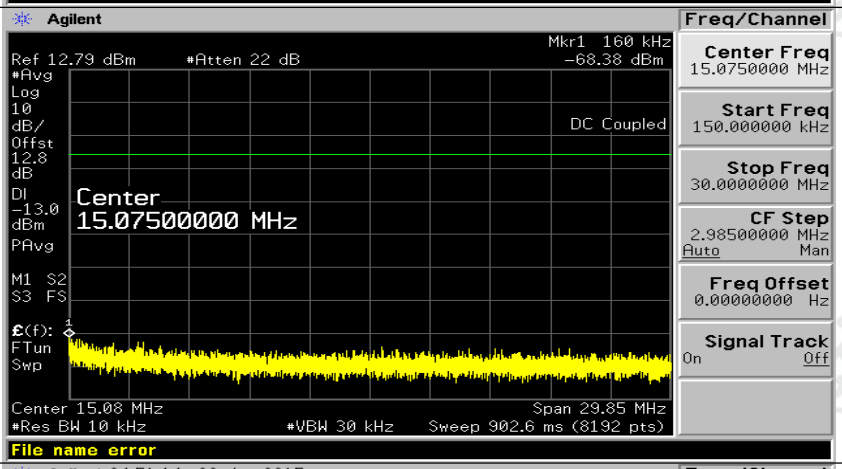


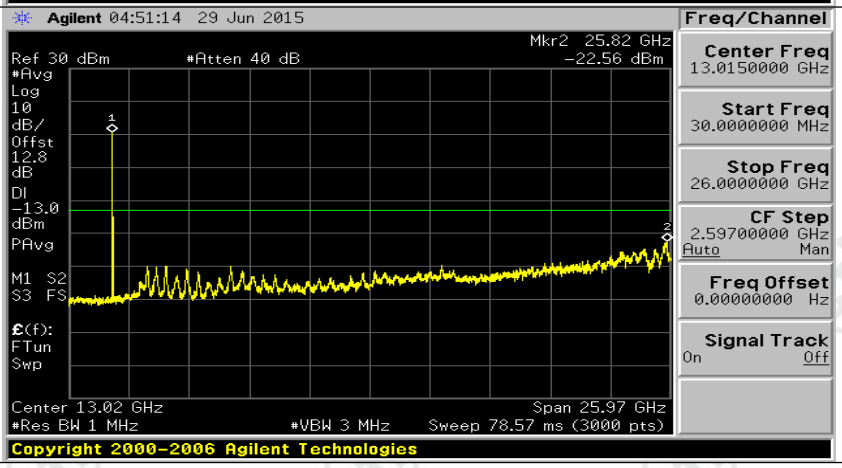




(Channel Bandwidth:15 MHz)_HCH_16QAM_1RB#74

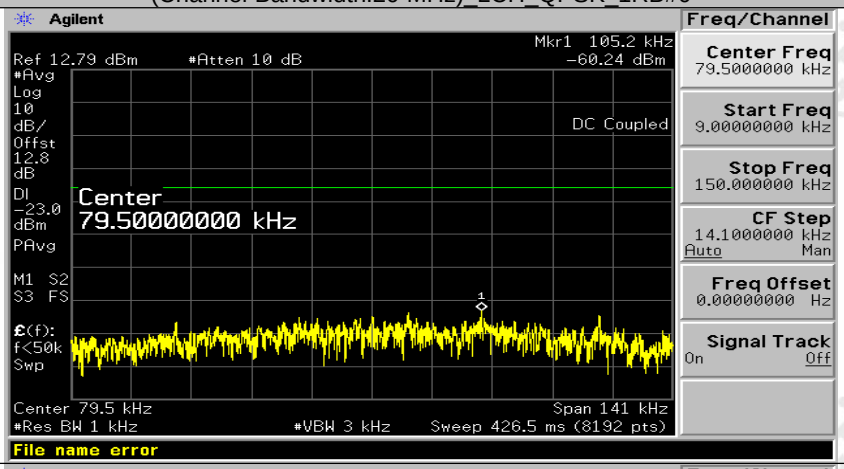


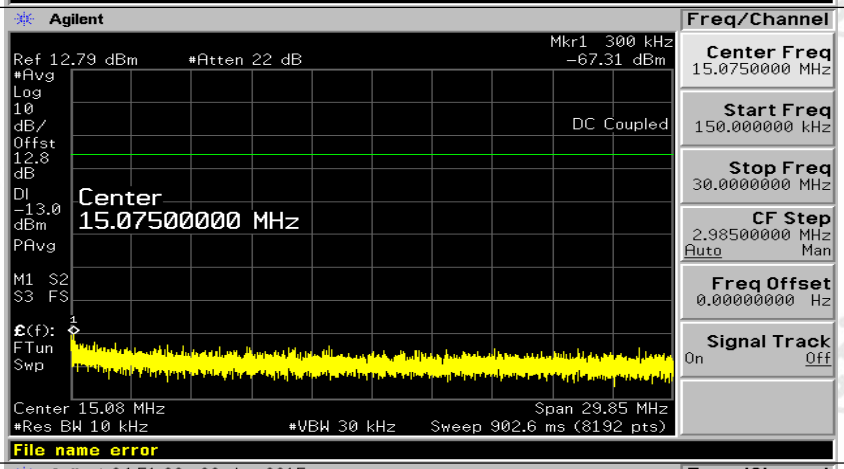


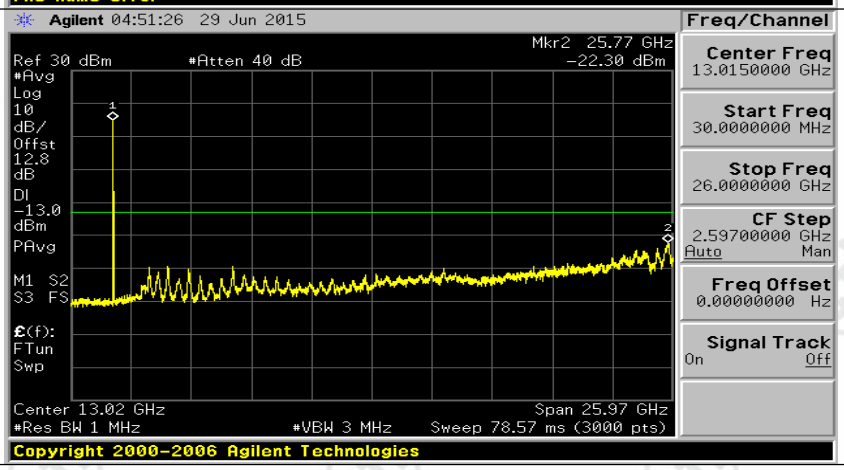


Channel Bandwidth: 20 MHz

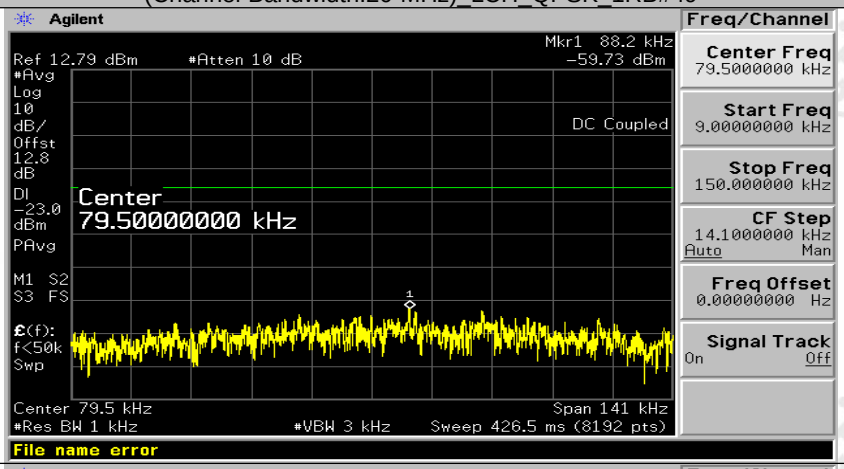
(Channel Bandwidth:20 MHz)_LCH_QPSK_1RB#0

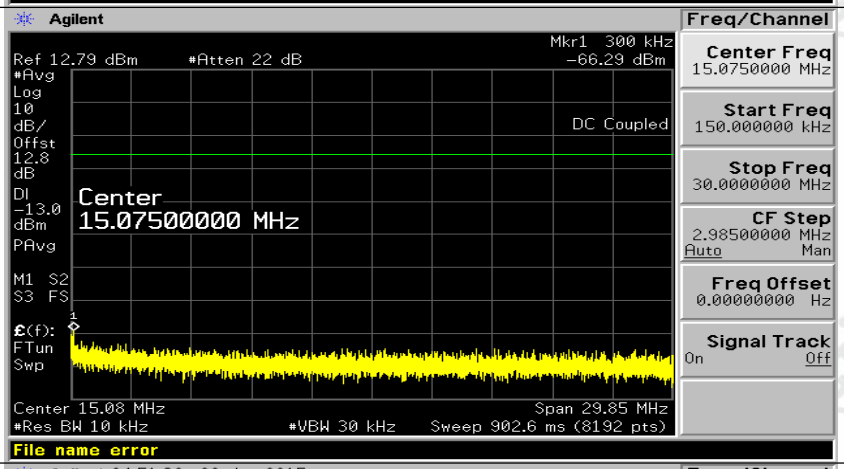


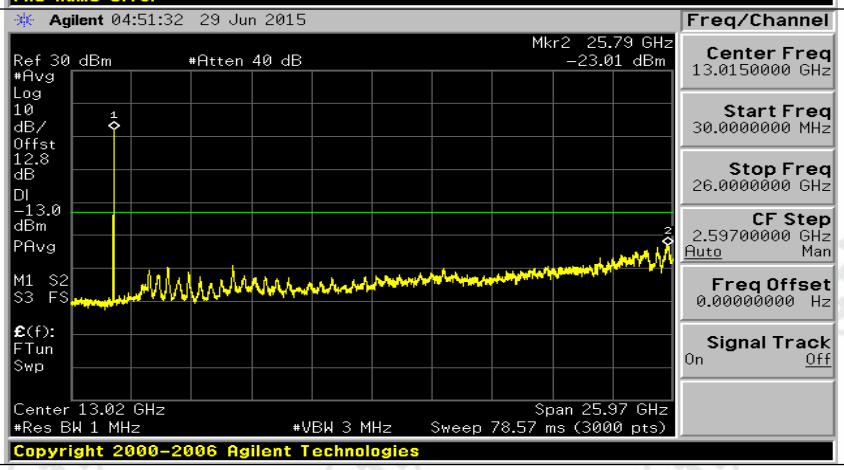




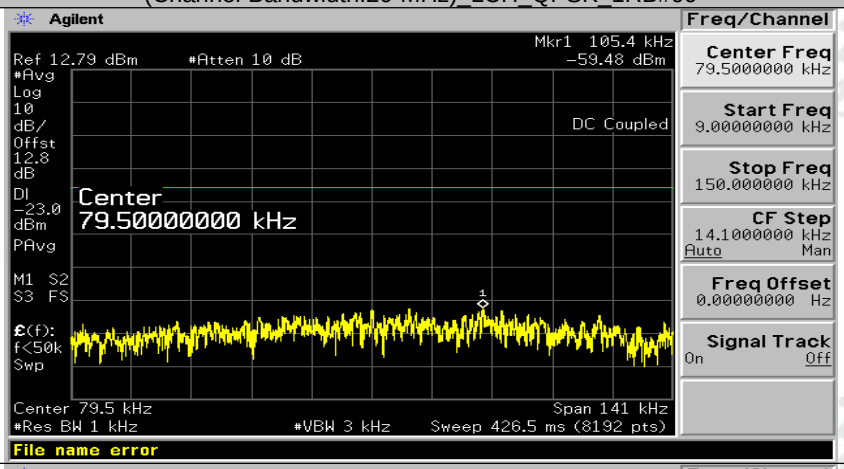
(Channel Bandwidth:20 MHz)_LCH_QPSK_1RB#49

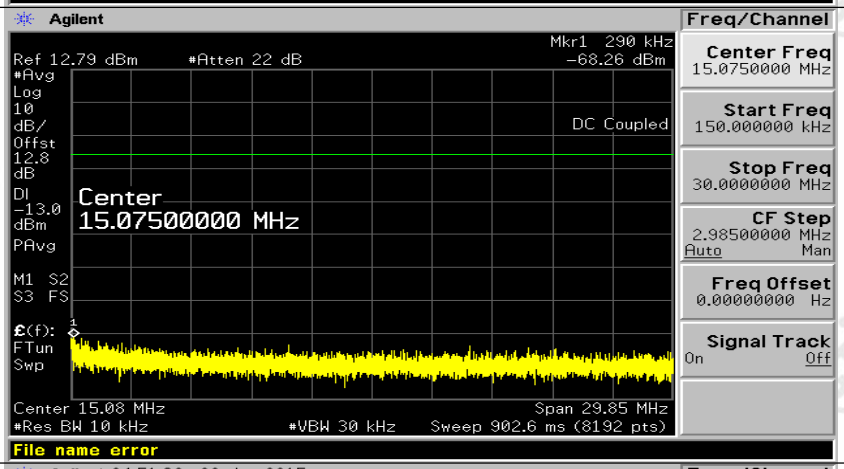


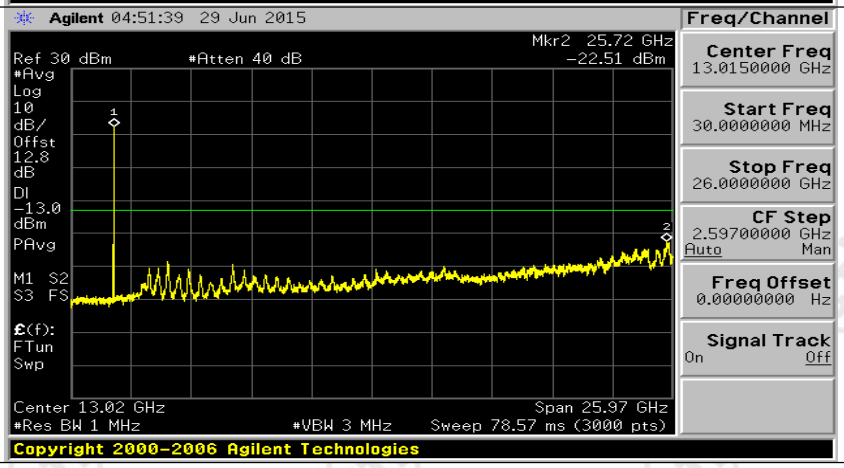




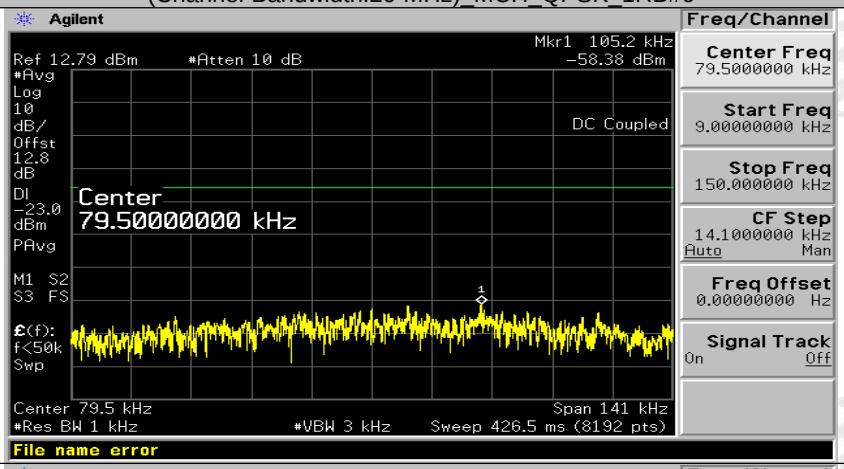
(Channel Bandwidth:20 MHz)_LCH_QPSK_1RB#99

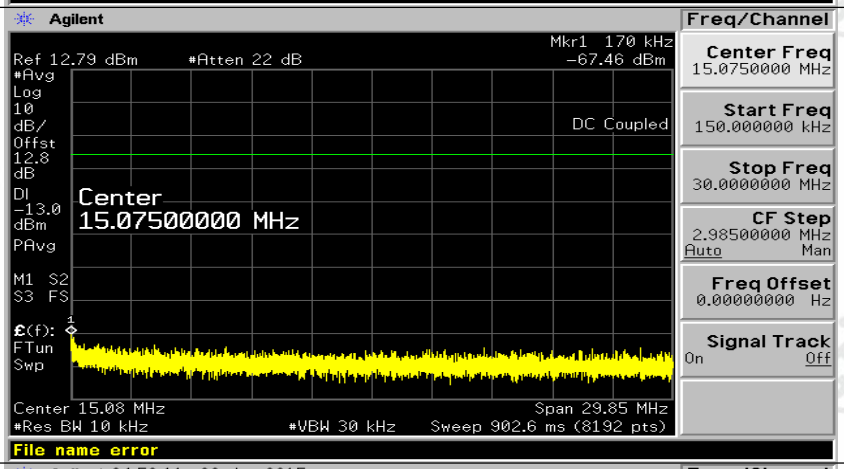


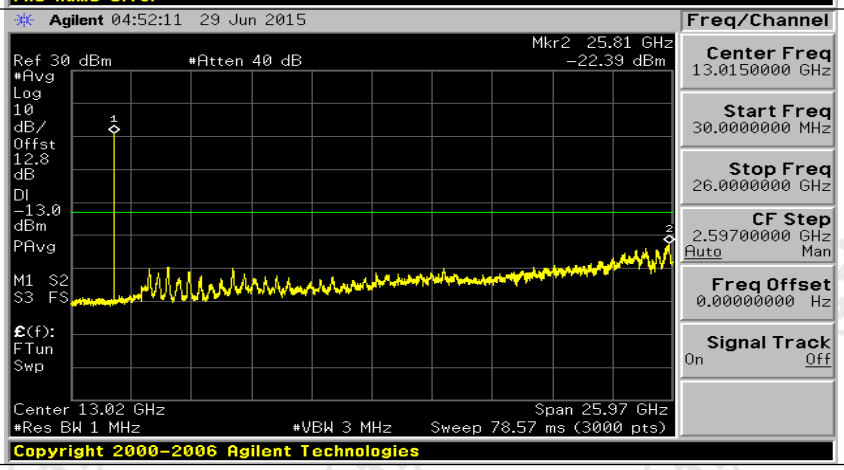




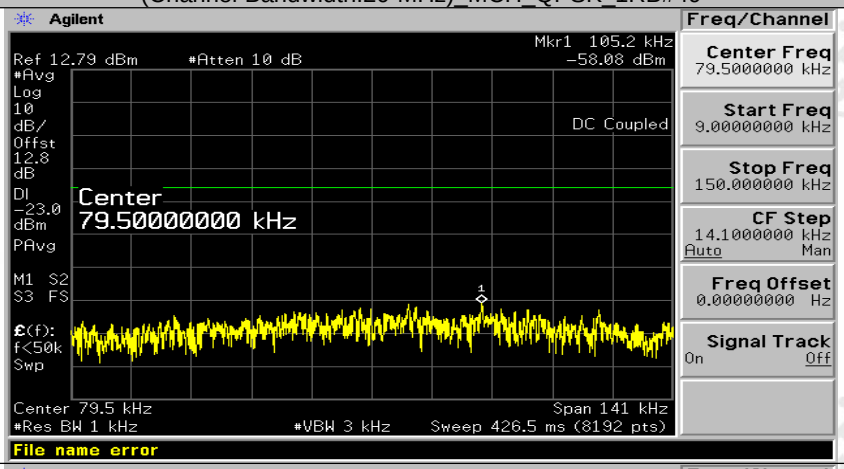
(Channel Bandwidth:20 MHz)_MCH_QPSK_1RB#0

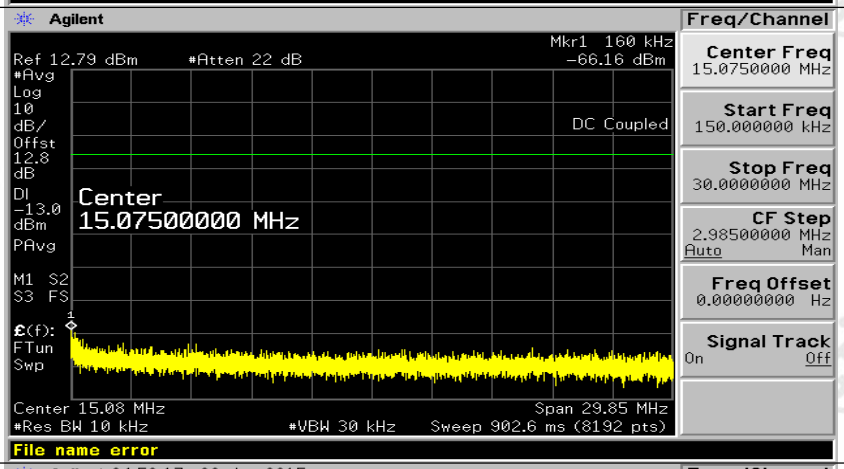


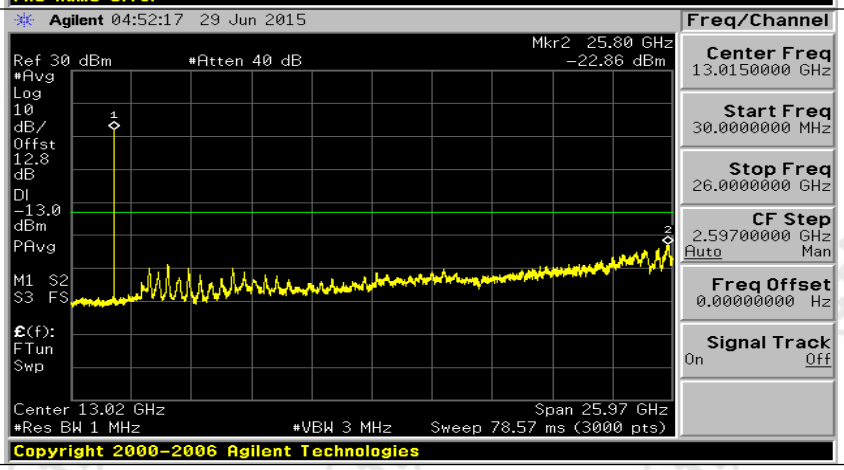




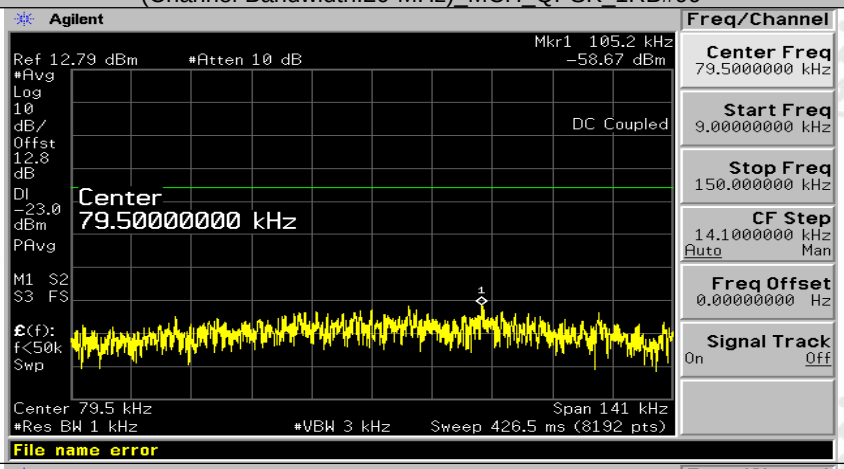
(Channel Bandwidth:20 MHz)_MCH_QPSK_1RB#49

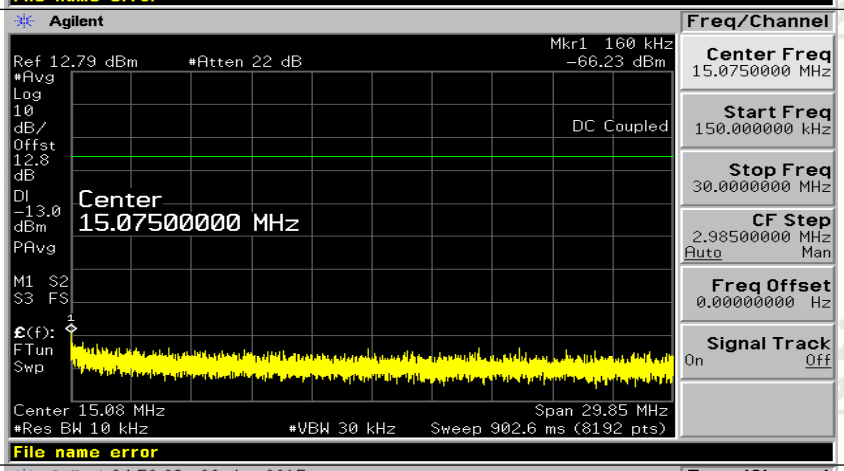


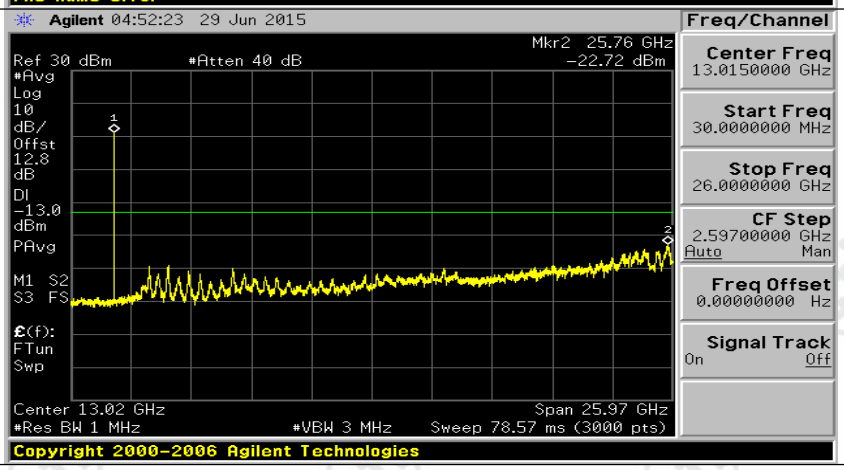




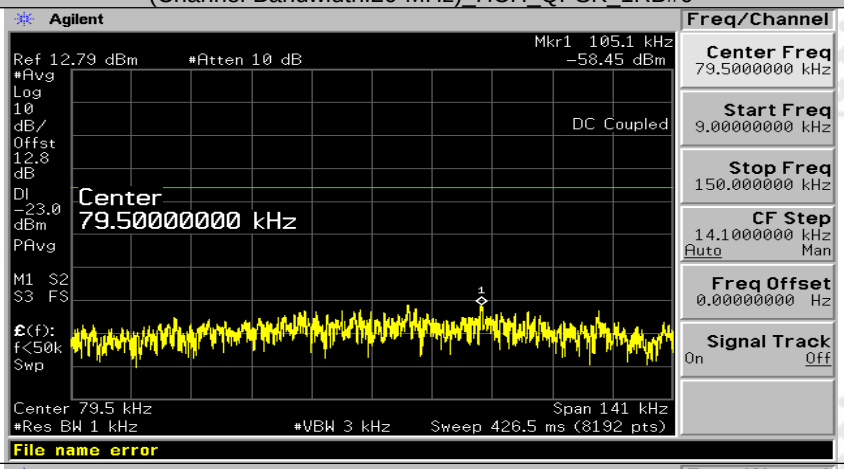
(Channel Bandwidth:20 MHz)_MCH_QPSK_1RB#99

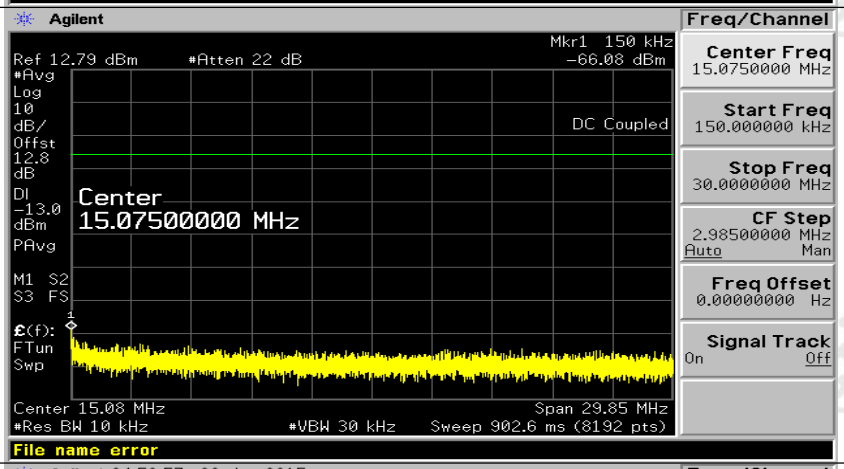


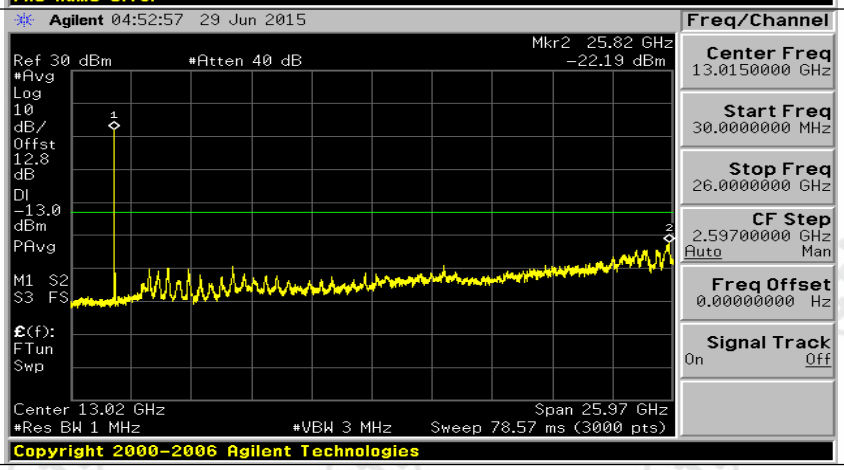




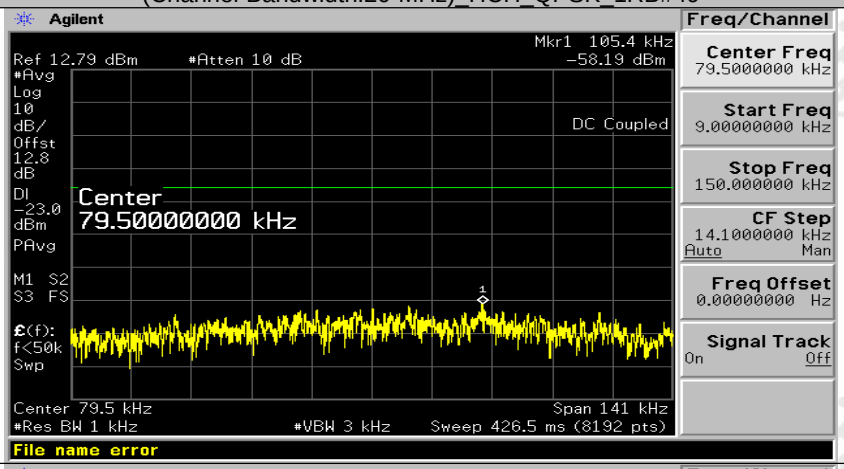
(Channel Bandwidth:20 MHz)_HCH_QPSK_1RB#0

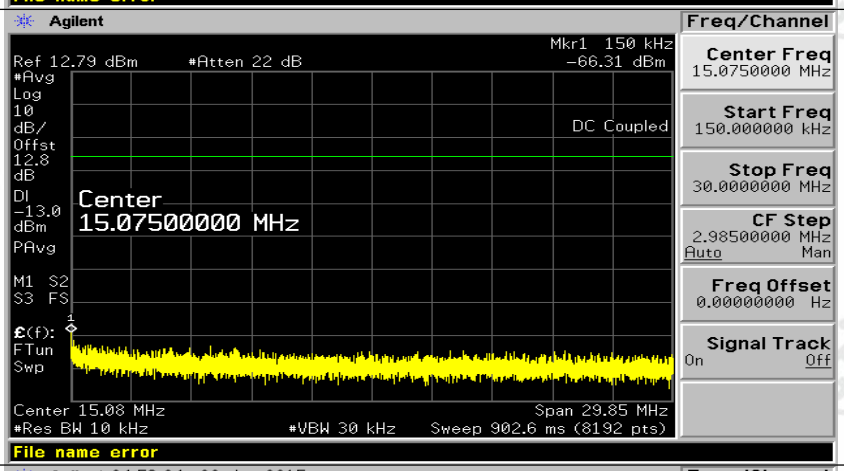


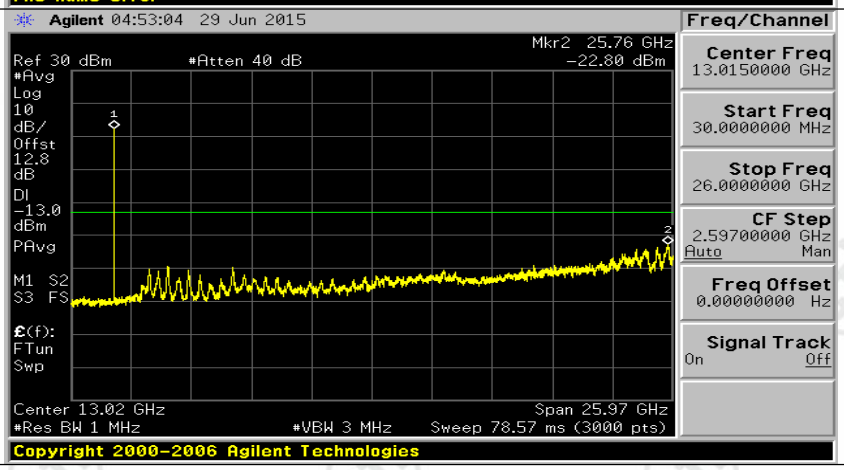




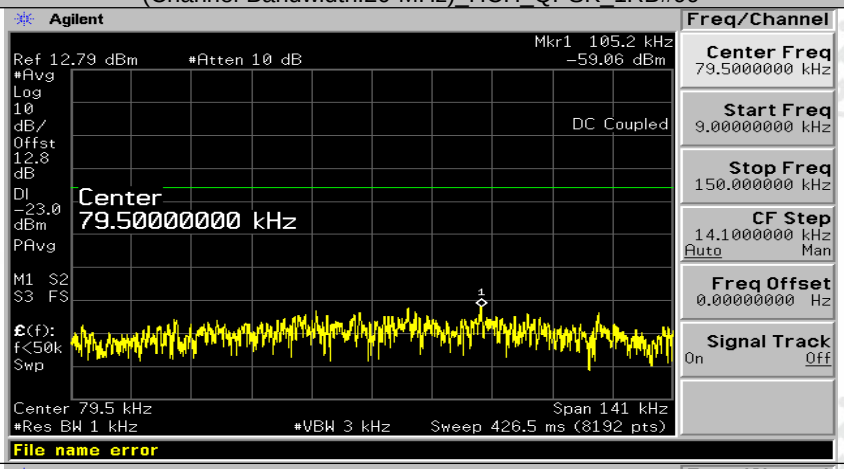
(Channel Bandwidth:20 MHz)_HCH_QPSK_1RB#49

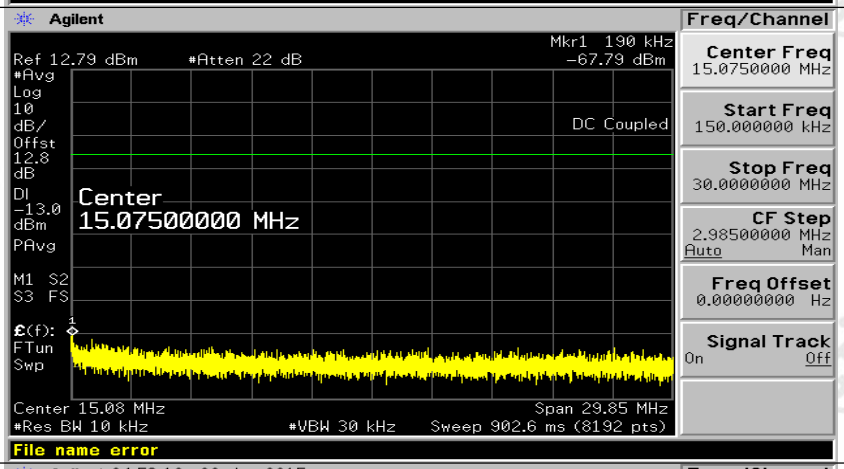


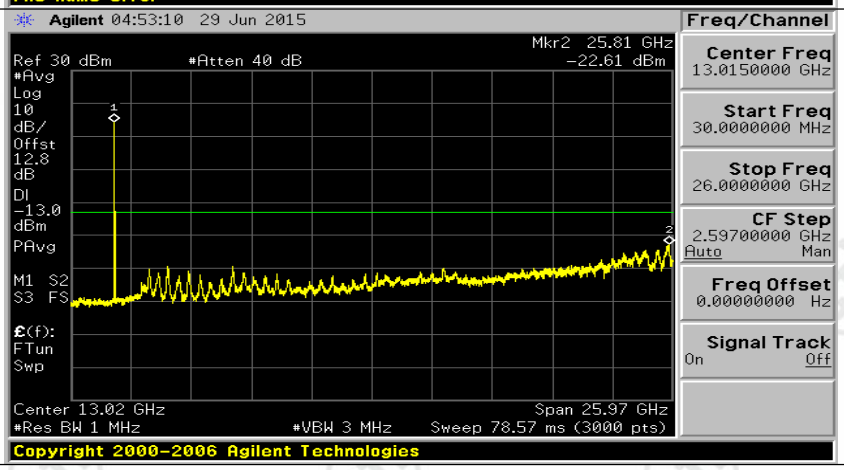




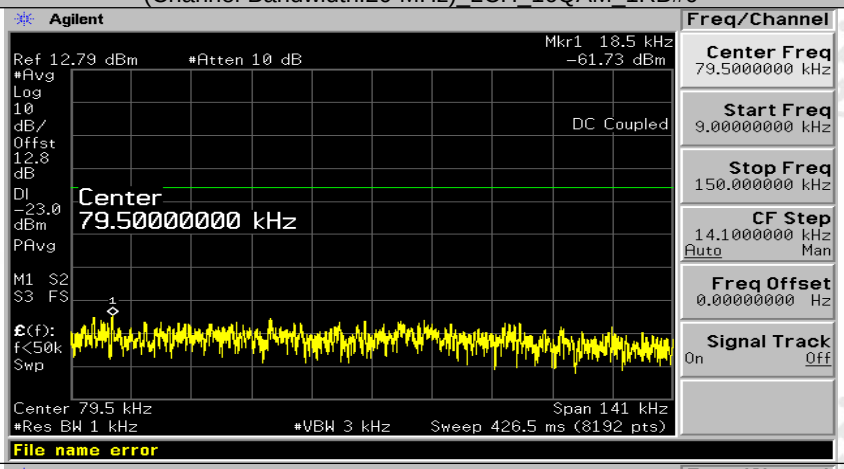
(Channel Bandwidth:20 MHz)_HCH_QPSK_1RB#99

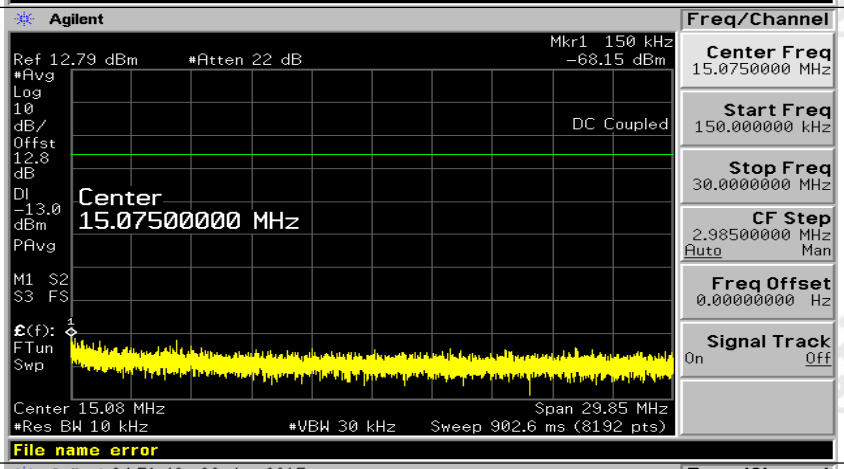


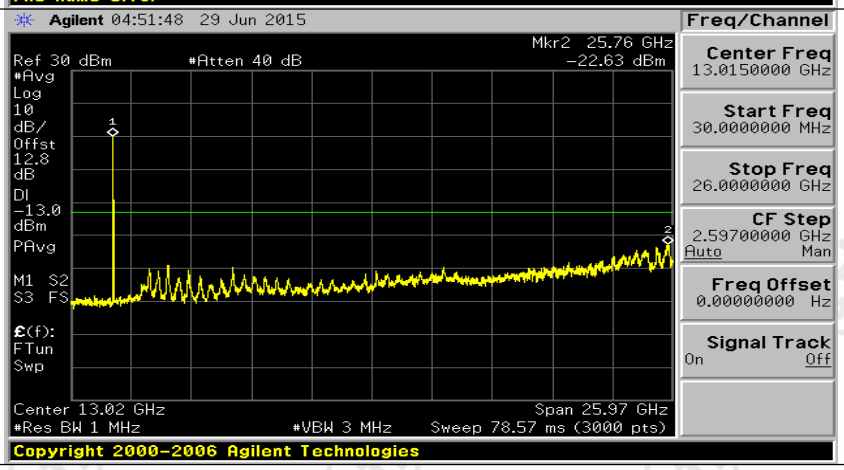




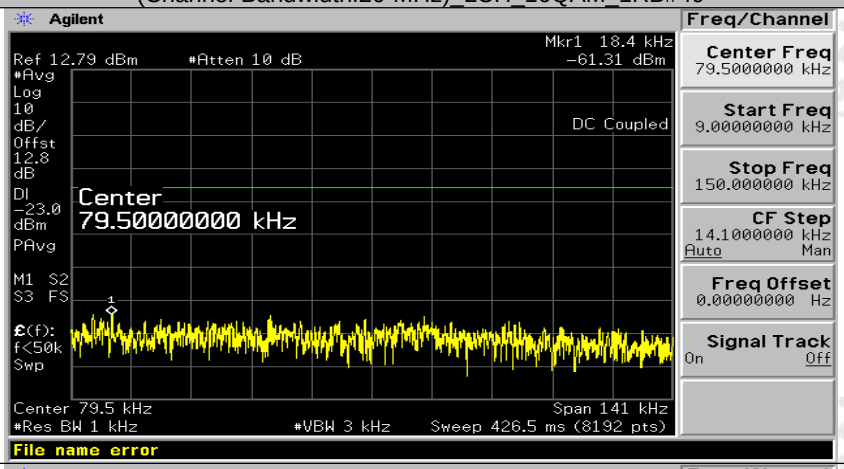
(Channel Bandwidth:20 MHz)_LCH_16QAM_1RB#0

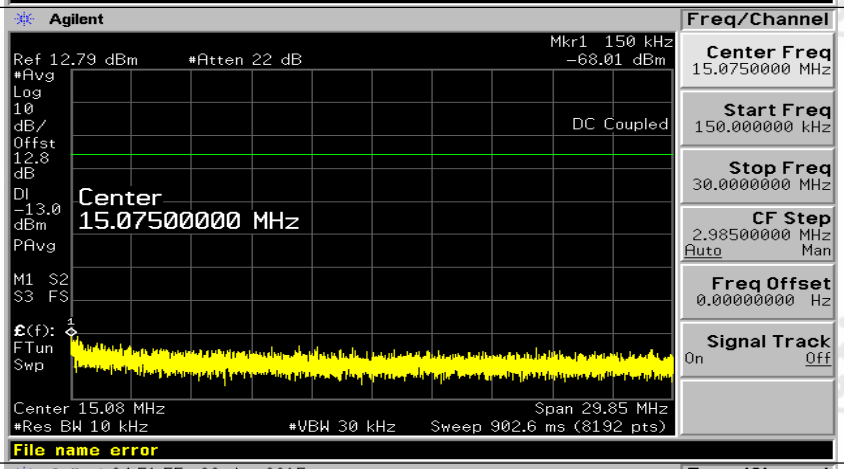


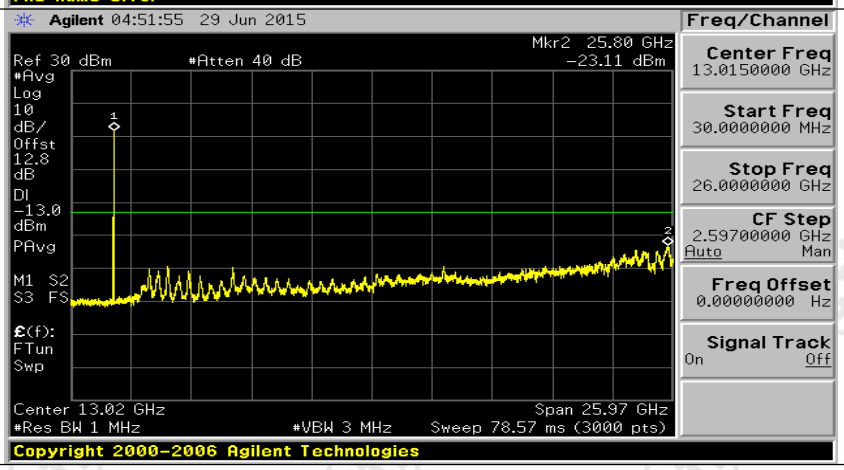




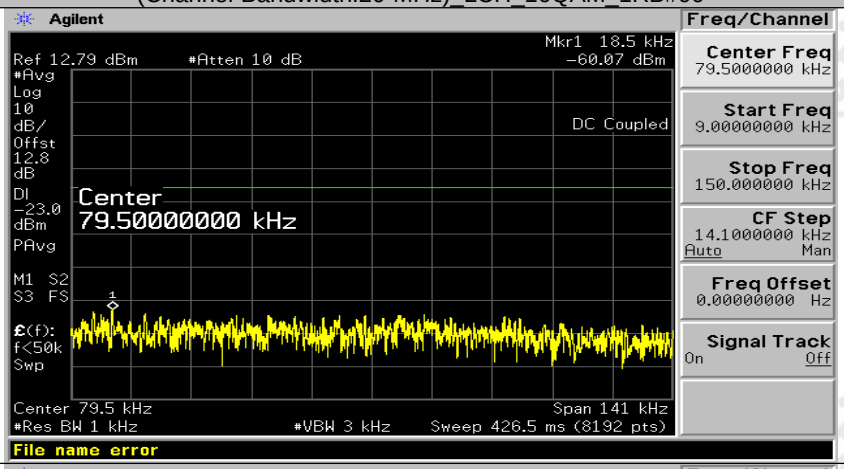
(Channel Bandwidth:20 MHz)_LCH_16QAM_1RB#49

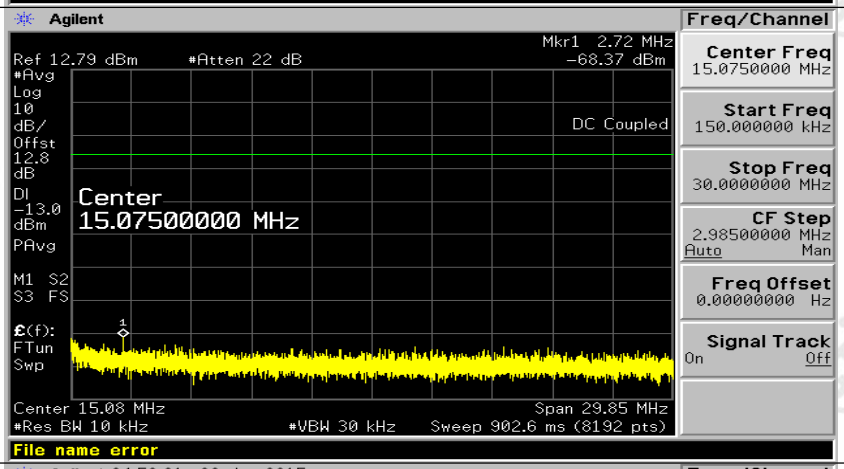


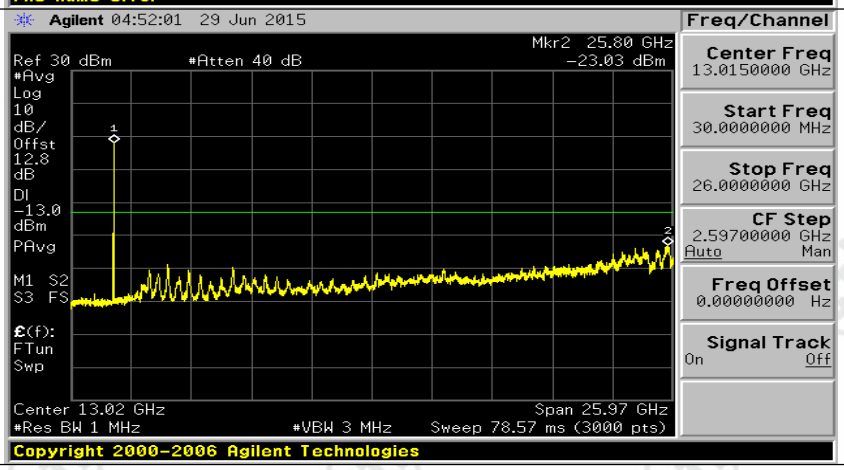




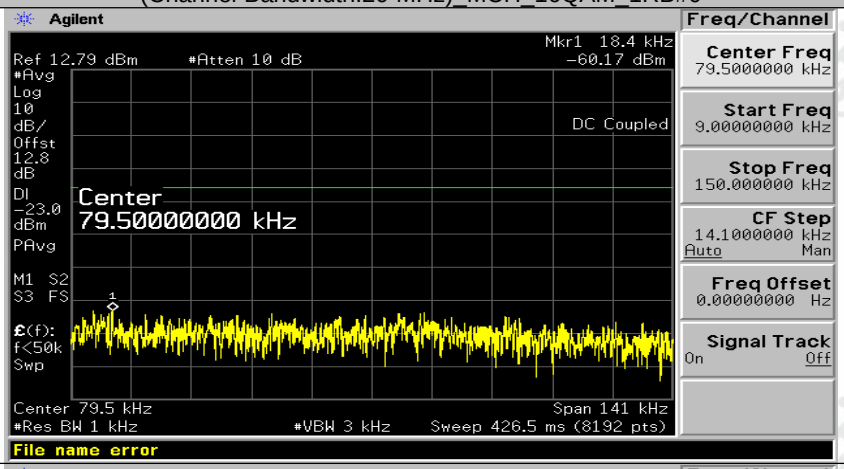
(Channel Bandwidth:20 MHz)_LCH_16QAM_1RB#99

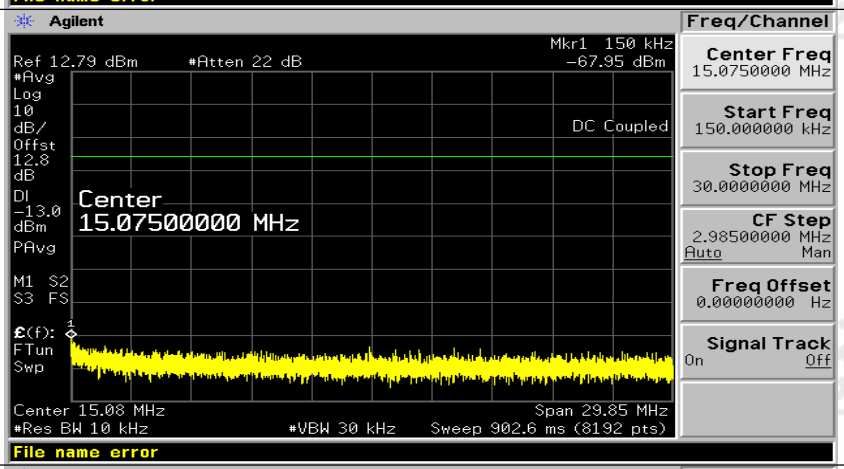


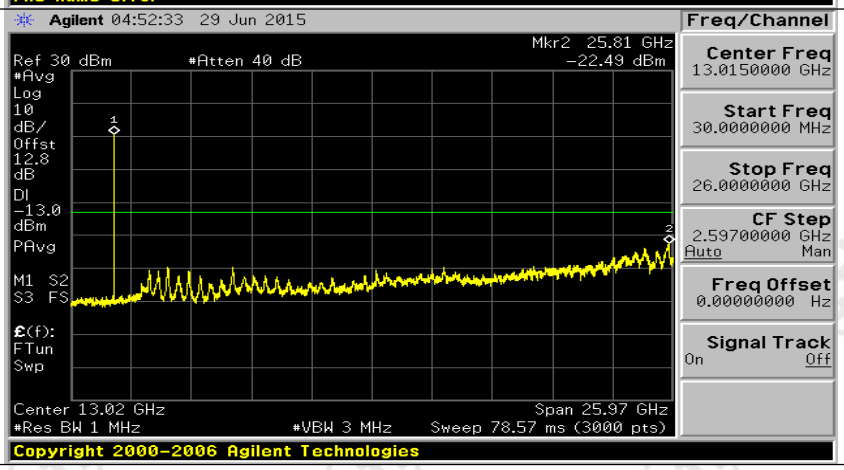




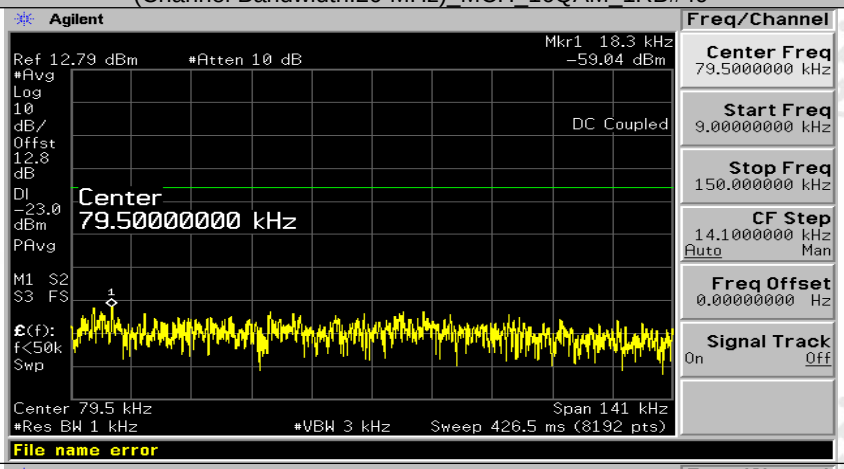
(Channel Bandwidth:20 MHz)_MCH_16QAM_1RB#0

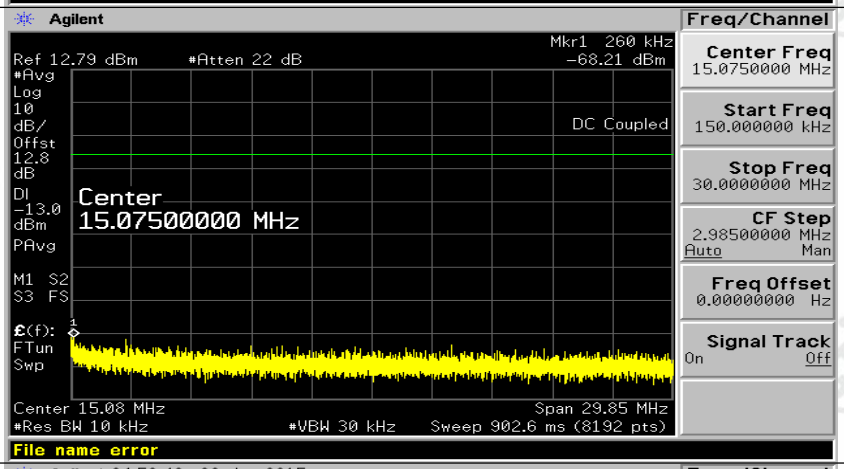


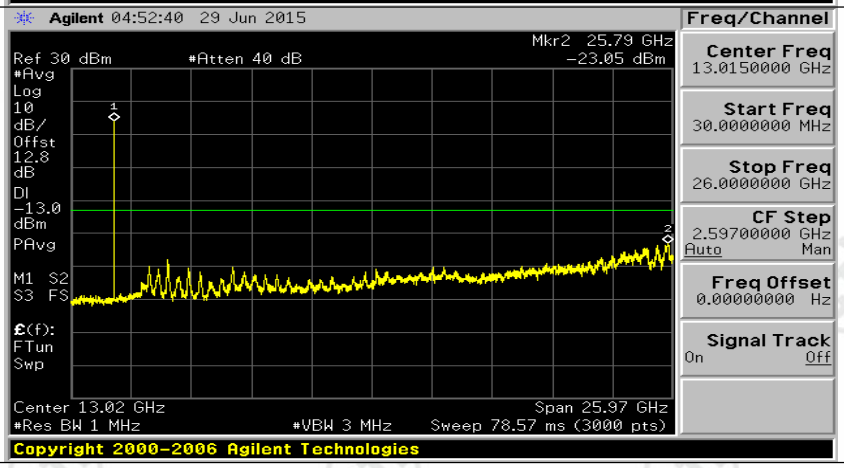




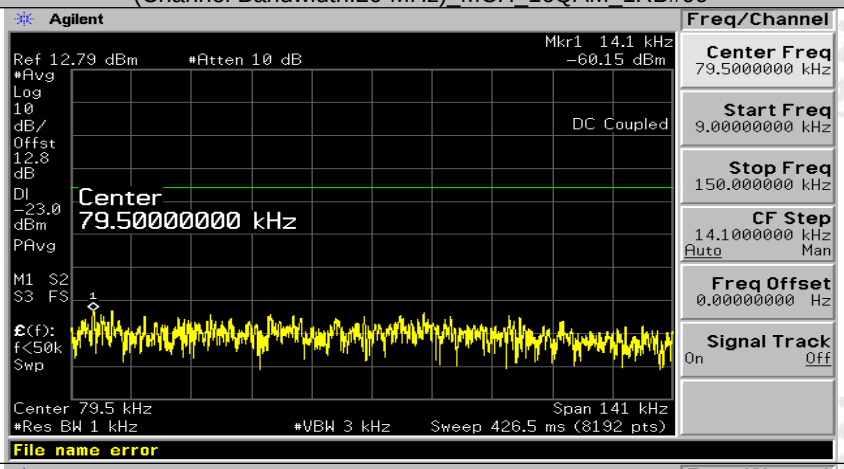
(Channel Bandwidth:20 MHz)_MCH_16QAM_1RB#49

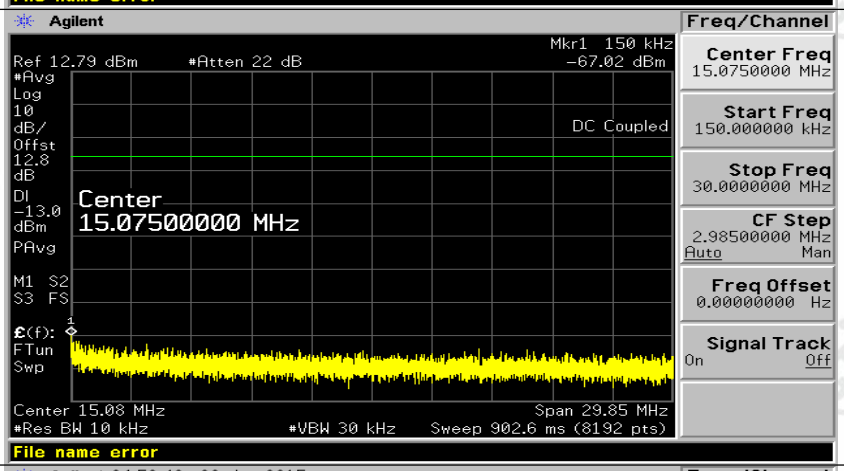


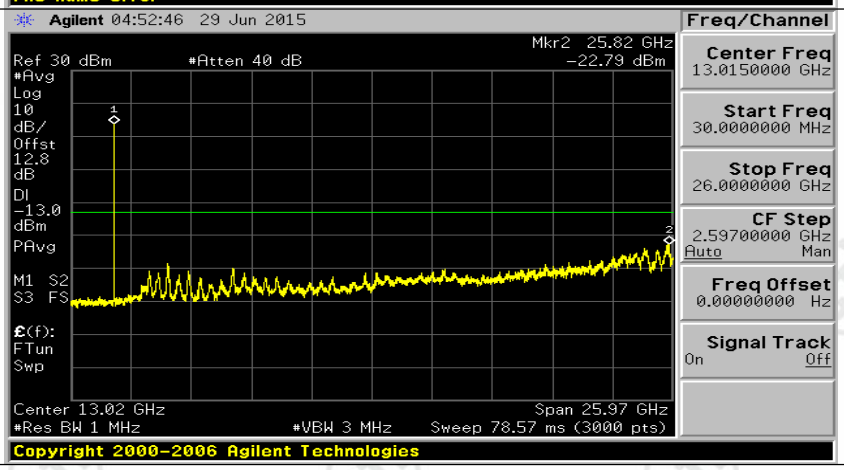




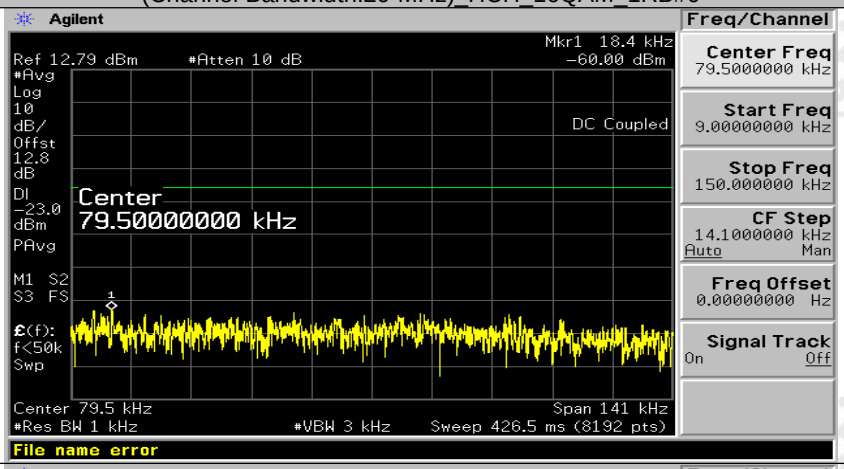
(Channel Bandwidth:20 MHz)_MCH_16QAM_1RB#99

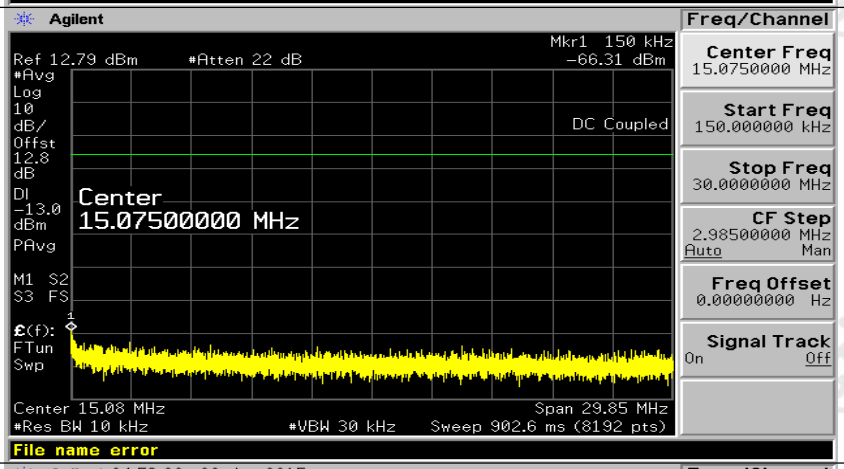


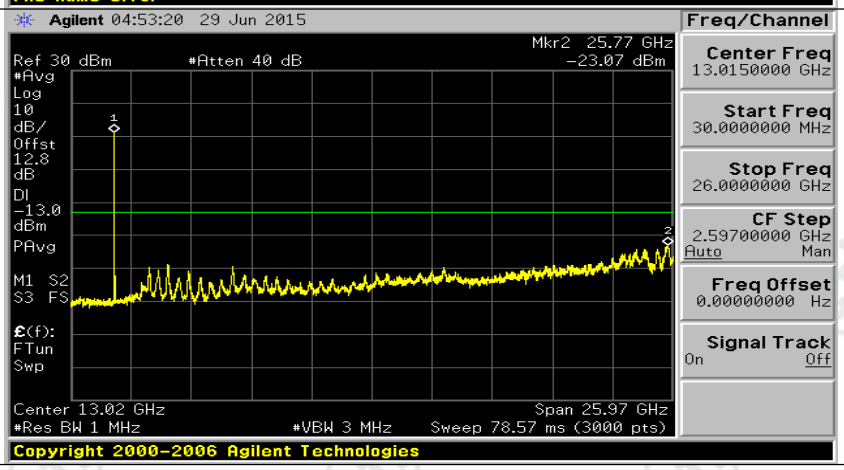




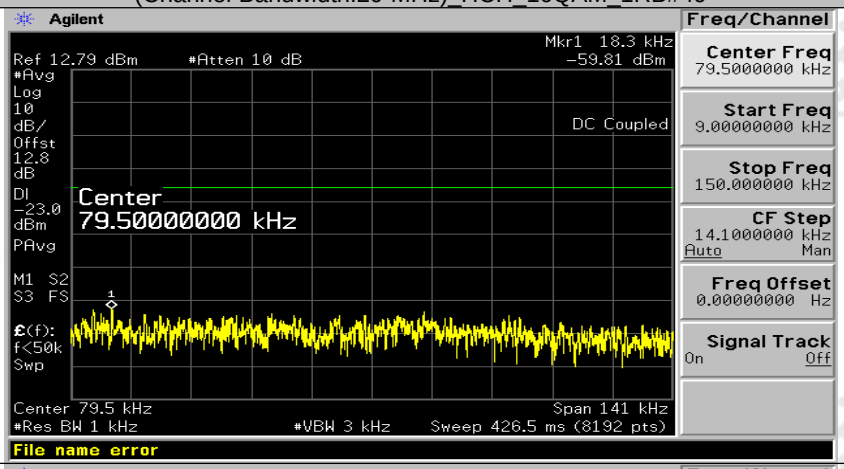
(Channel Bandwidth:20 MHz)_HCH_16QAM_1RB#0

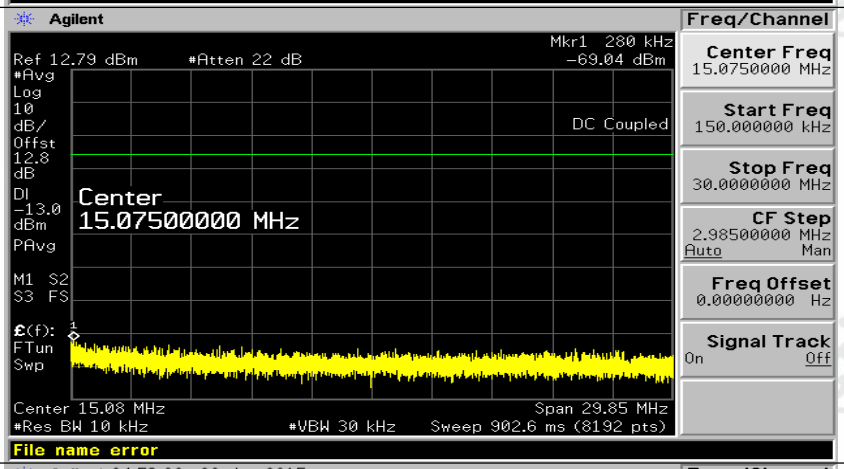


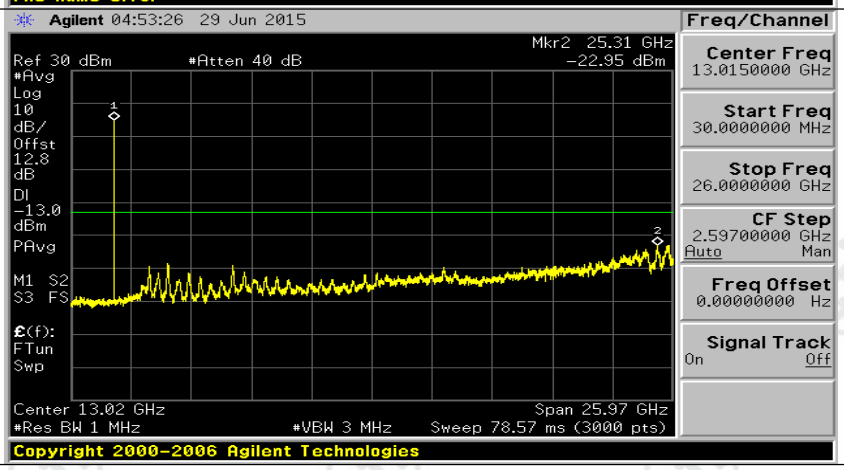




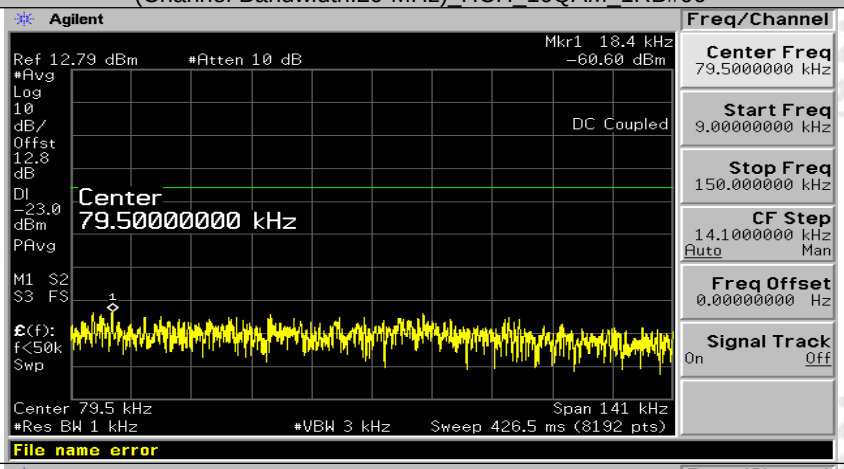
(Channel Bandwidth:20 MHz)_HCH_16QAM_1RB#49

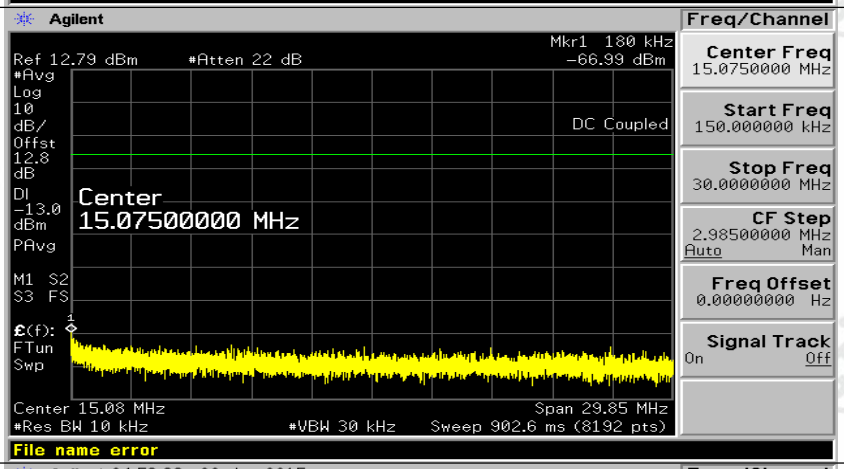


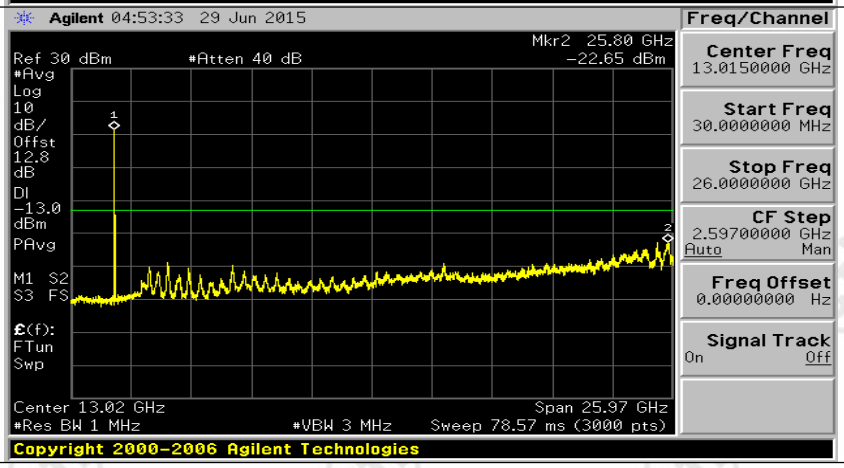




(Channel Bandwidth:20 MHz)_HCH_16QAM_1RB#99







Appendix F: Frequency Stability

Test Result

Channel Bandwidth: 1.4 MHz

Channel Bandwidth: 1.4 MHz							
Voltage							
Modulation	Channel	Voltage [Vdc]	Temperature (℃)	Deviation (Hz)	Deviation (ppm)		Verdict
QPSK	LCH	VL	TN	-7.02	-0.003795		PASS
		VN	TN	9.50	0.005132		PASS
		VH	TN	-9.00	-0.004862		PASS
	MCH	VL	TN	-11.32	-0.006019		PASS
		VN	TN	3.48	0.001849		PASS
		VH	TN	3.42	0.001819		PASS
	HCH	VL	TN	-12.77	-0.006691		PASS
		VN	TN	2.53	0.001326		PASS
		VH	TN	-7.57	-0.003963		PASS
16QAM	LCH	VL	TN	-7.81	-0.004220		PASS
		VN	TN	3.06	0.001654		PASS
		VH	TN	0.59	0.000317		PASS
	MCH	VL	TN	-19.60	-0.010424		PASS
		VN	TN	-1.92	-0.001020		PASS
		VH	TN	-13.49	-0.007175		PASS
	HCH	VL	TN	-4.76	-0.002495		PASS
		VN	TN	-15.31	-0.008017		PASS
		VH	TN	-15.46	-0.008099		PASS
Temperature							
Modulation	Channel	Voltage [Vdc]	Temperature (℃)	Deviation (Hz)	Deviation (ppm)		Verdict
QPSK	LCH	VN	-30	-12.47	-0.006740		PASS
		VN	-20	-12.43	-0.006717		PASS
		VN	-10	-13.30	-0.007189		PASS
		VN	0	11.80	0.006377		PASS
		VN	10	7.81	0.004220		PASS
		VN	20	-0.67	-0.000363		PASS
		VN	30	3.85	0.002079		PASS
		VN	40	7.08	0.003826		PASS
		VN	50	4.75	0.002566		PASS
	MCH	VN	-30	-2.89	-0.001537		PASS
		VN	-20	-2.03	-0.001080		PASS
		VN	-10	-3.69	-0.001963		PASS
		VN	0	-3.40	-0.001811		PASS
		VN	10	-8.35	-0.004444		PASS
		VN	20	5.71	0.003036		PASS
		VN	30	-0.84	-0.000449		PASS
		VN	40	-12.89	-0.006856		PASS
		VN	50	-17.38	-0.009245		PASS
	HCH	VN	-30	7.34	0.003844		PASS
		VN	-20	-6.61	-0.003461		PASS
		VN	-10	-6.22	-0.003259		PASS
		VN	0	-14.43	-0.007560		PASS

		VN	10	-2.20	-0.001154		PASS
		VN	20	5.18	0.002712		PASS
		VN	30	-10.81	-0.005664		PASS
		VN	40	-4.82	-0.002525		PASS
		VN	50	6.18	0.003237		PASS
16QAM	LCH	VN	-30	-6.75	-0.003648		PASS
		VN	-20	-5.45	-0.002945		PASS
		VN	-10	-10.79	-0.005828		PASS
		VN	0	-0.64	-0.000348		PASS
		VN	10	7.61	0.004112		PASS
		VN	20	8.44	0.004560		PASS
		VN	30	10.41	0.005627		PASS
		VN	40	-14.65	-0.007915		PASS
		VN	50	-12.57	-0.006794		PASS
	MCH	VN	-30	5.51	0.002930		PASS
		VN	-20	-16.69	-0.008880		PASS
		VN	-10	4.46	0.002374		PASS
		VN	0	5.21	0.002770		PASS
		VN	10	3.98	0.002115		PASS
		VN	20	0.00	0.000000		PASS
		VN	30	4.79	0.002549		PASS
		VN	40	2.66	0.001415		PASS
		VN	50	5.51	0.002930		PASS
	HCH	VN	-30	-1.13	-0.000592		PASS
		VN	-20	4.56	0.002390		PASS
		VN	-10	0.09	0.000045		PASS
		VN	0	-6.78	-0.003551		PASS
		VN	10	0.86	0.000450		PASS
		VN	20	-0.10	-0.000052		PASS
		VN	30	-1.19	-0.000622		PASS
		VN	40	-11.27	-0.005904		PASS
		VN	50	-9.33	-0.004885		PASS

Channel Bandwidth: 3 MHz

Channel Bandwidth: 3 MHz+							
Voltage							
Modulation	Channel	Voltage [Vdc]	Temperature (℃)	Deviation (Hz)	Deviation (ppm)		Verdict
QPSK	LCH	VL	TN	-8.91	-0.004813		PASS
		VN	TN	4.88	0.002635		PASS
		VH	TN	0.56	0.000301		PASS
	MCH	VL	TN	-14.15	-0.007525		PASS
		VN	TN	-15.13	-0.008050		PASS
		VH	TN	-15.28	-0.008127		PASS
	HCH	VL	TN	-13.28	-0.006956		PASS
		VN	TN	-3.39	-0.001776		PASS
		VH	TN	-20.74	-0.010868		PASS
16QAM	LCH	VL	TN	-18.55	-0.010021		PASS
		VN	TN	-18.98	-0.010253		PASS
		VH	TN	3.52	0.001901		PASS
	MCH	VL	TN	-13.55	-0.007206		PASS

		VN	TN	-9.70	-0.005159		PASS
		VH	TN	-18.32	-0.009747		PASS
	HCH	VL	TN	1.39	0.000727		PASS
		VN	TN	-16.79	-0.008800		PASS
		VH	TN	0.70	0.000367		PASS
Temperature							
Modulation	Channel	Voltage [Vdc]	Temperature (℃)	Deviation (Hz)	Deviation (ppm)		Verdict
QPSK	LCH	VN	-30	-1.80	-0.000974		PASS
		VN	-20	-0.23	-0.000124		PASS
		VN	-10	-8.05	-0.004350		PASS
		VN	0	-12.06	-0.006513		PASS
		VN	10	-14.89	-0.008043		PASS
		VN	20	2.47	0.001337		PASS
		VN	30	1.90	0.001028		PASS
		VN	40	-1.66	-0.000896		PASS
		VN	50	3.99	0.002156		PASS
	MCH	VN	-30	-6.38	-0.003394		PASS
		VN	-20	-0.23	-0.000122		PASS
		VN	-10	-2.22	-0.001179		PASS
		VN	0	-7.24	-0.003850		PASS
		VN	10	-15.94	-0.008477		PASS
		VN	20	-1.42	-0.000753		PASS
		VN	30	-17.41	-0.009260		PASS
		VN	40	-6.78	-0.003607		PASS
		VN	50	1.62	0.000860		PASS
	HCH	VN	-30	-11.84	-0.006206		PASS
		VN	-20	-15.82	-0.008290		PASS
		VN	-10	-10.26	-0.005374		PASS
		VN	0	0.30	0.000157		PASS
		VN	10	5.34	0.002796		PASS
		VN	20	-6.58	-0.003448		PASS
		VN	30	-19.00	-0.009954		PASS
		VN	40	-0.87	-0.000457		PASS
		VN	50	-18.18	-0.009527		PASS
16QAM	LCH	VN	-30	-18.61	-0.010052		PASS
		VN	-20	-1.82	-0.000981		PASS
		VN	-10	5.45	0.002944		PASS
		VN	0	3.93	0.002125		PASS
		VN	10	4.48	0.002418		PASS
		VN	20	-17.84	-0.009635		PASS
		VN	30	-19.07	-0.010299		PASS
		VN	40	-15.51	-0.008375		PASS
		VN	50	-7.70	-0.004157		PASS
	MCH	VN	-30	-14.89	-0.007921		PASS
		VN	-20	-16.45	-0.008750		PASS
		VN	-10	-16.64	-0.008849		PASS
		VN	0	2.30	0.001225		PASS
		VN	10	-3.78	-0.002009		PASS
		VN	20	0.46	0.000243		PASS
		VN	30	1.46	0.000776		PASS
		VN	40	-4.63	-0.002465		PASS

		VN	50	-20.28	-0.010790		PASS
	HCH	VN	-30	1.44	0.000757		PASS
		VN	-20	-4.39	-0.002301		PASS
		VN	-10	-9.86	-0.005164		PASS
		VN	0	-19.01	-0.009961		PASS
		VN	10	3.62	0.001896		PASS
		VN	20	-8.83	-0.004625		PASS
		VN	30	-10.63	-0.005569		PASS
		VN	40	-8.08	-0.004235		PASS
		VN	50	-16.02	-0.008395		PASS

Channel Bandwidth: 5 MHz

Channel Bandwidth: 5 MHz							
Voltage							
Modulation	Channel	Voltage [Vdc]	Temperature (℃)	Deviation (Hz)	Deviation (ppm)		Verdict
QPSK	LCH	VL	TN	-11.74	-0.006340		PASS
		VN	TN	1.96	0.001058		PASS
		VH	TN	8.74	0.004718		PASS
	MCH	VL	TN	-15.09	-0.008028		PASS
		VN	TN	-17.35	-0.009230		PASS
		VH	TN	-10.10	-0.005372		PASS
	HCH	VL	TN	-9.28	-0.004867		PASS
		VN	TN	7.65	0.004012		PASS
		VH	TN	-10.63	-0.005572		PASS
16QAM	LCH	VL	TN	9.43	0.005089		PASS
		VN	TN	-14.20	-0.007668		PASS
		VH	TN	6.68	0.003606		PASS
	MCH	VL	TN	5.72	0.003044		PASS
		VN	TN	5.34	0.002838		PASS
		VH	TN	-9.47	-0.005037		PASS
	HCH	VL	TN	-13.68	-0.007169		PASS
		VN	TN	5.99	0.003142		PASS
		VH	TN	5.85	0.003067		PASS
Temperature							
Modulation	Channel	Voltage [Vdc]	Temperature (℃)	Deviation (Hz)	Deviation (ppm)		Verdict
QPSK	LCH	VN	-30	-2.89	-0.001560		PASS
		VN	-20	-12.20	-0.006587		PASS
		VN	-10	7.55	0.004077		PASS
		VN	0	9.91	0.005351		PASS
		VN	10	-0.11	-0.000062		PASS
		VN	20	-1.16	-0.000625		PASS
		VN	30	-4.82	-0.002602		PASS
		VN	40	-8.07	-0.004355		PASS
		VN	50	-14.08	-0.007599		PASS
	MCH	VN	-30	0.50	0.000266		PASS
		VN	-20	2.45	0.001301		PASS
		VN	-10	-14.79	-0.007868		PASS
		VN	0	-11.04	-0.005874		PASS
		VN	10	0.16	0.000084		PASS

		VN	20	6.17	0.003280		PASS
		VN	30	-5.85	-0.003112		PASS
		VN	40	-17.57	-0.009344		PASS
		VN	50	-9.74	-0.005182		PASS
	HCH	VN	-30	1.33	0.000697		PASS
		VN	-20	-6.69	-0.003510		PASS
		VN	-10	5.16	0.002707		PASS
		VN	0	-7.40	-0.003877		PASS
		VN	10	-5.88	-0.003082		PASS
		VN	20	-9.20	-0.004822		PASS
		VN	30	-11.62	-0.006090		PASS
		VN	40	5.92	0.003105		PASS
		VN	50	-9.04	-0.004740		PASS
16QAM	LCH	VN	-30	8.74	0.004718		PASS
		VN	-20	-12.25	-0.006610		PASS
		VN	-10	4.49	0.002425		PASS
		VN	0	10.94	0.005907		PASS
		VN	10	5.88	0.003174		PASS
		VN	20	7.01	0.003784		PASS
		VN	30	5.56	0.003004		PASS
		VN	40	9.20	0.004965		PASS
		VN	50	8.44	0.004556		PASS
	MCH	VN	-30	-13.62	-0.007244		PASS
		VN	-20	-6.05	-0.003219		PASS
		VN	-10	-16.75	-0.008910		PASS
		VN	0	-12.33	-0.006559		PASS
		VN	10	-11.60	-0.006171		PASS
		VN	20	-17.57	-0.009344		PASS
		VN	30	-19.18	-0.010204		PASS
		VN	40	5.71	0.003036		PASS
		VN	50	-16.38	-0.008712		PASS
	HCH	VN	-30	7.85	0.004117		PASS
		VN	-20	0.57	0.000300		PASS
		VN	-10	-15.26	-0.008002		PASS
		VN	0	-14.75	-0.007732		PASS
		VN	10	5.41	0.002835		PASS
		VN	20	-1.23	-0.000645		PASS
		VN	30	-0.76	-0.000397		PASS
		VN	40	-11.86	-0.006217		PASS
		VN	50	2.83	0.001485		PASS

Channel Bandwidth: 10 MHz

Channel Bandwidth: 10 MHz							
Voltage							
Modulation	Channel	Voltage [Vdc]	Temperature (℃)	Deviation (Hz)	Deviation (ppm)		Verdict
QPSK	LCH	VL	TN	-12.85	-0.006925		PASS
		VN	TN	-5.22	-0.002815		PASS
		VH	TN	-7.42	-0.004002		PASS
	MCH	VL	TN	-12.65	-0.006726		PASS
		VN	TN	-13.30	-0.007076		PASS
		VH	TN	-13.39	-0.007122		PASS
	HCH	VL	TN	-7.20	-0.003777		PASS
		VN	TN	-6.95	-0.003649		PASS
		VH	TN	-12.45	-0.006533		PASS
16QAM	LCH	VL	TN	-8.40	-0.004527		PASS
		VN	TN	-4.02	-0.002167		PASS
		VH	TN	-6.71	-0.003617		PASS
	MCH	VL	TN	-16.16	-0.008598		PASS
		VN	TN	-12.95	-0.006886		PASS
		VH	TN	3.88	0.002062		PASS
	HCH	VL	TN	-7.97	-0.004183		PASS
		VN	TN	8.68	0.004558		PASS
		VH	TN	2.68	0.001404		PASS
Temperature							
Modulation	Channel	Voltage [Vdc]	Temperature (℃)	Deviation (Hz)	Deviation (ppm)		Verdict
16QAM	LCH	VN	-30	-13.06	-0.007041		PASS
		VN	-20	5.58	0.003008		PASS
		VN	-10	-1.56	-0.000841		PASS
		VN	0	-8.20	-0.004419		PASS
		VN	10	-1.37	-0.000740		PASS
		VN	20	-15.59	-0.008406		PASS
		VN	30	7.12	0.003840		PASS
		VN	40	-3.12	-0.001681		PASS
		VN	50	3.43	0.001851		PASS
	MCH	VN	-30	-6.97	-0.003706		PASS
		VN	-20	0.17	0.000091		PASS
		VN	-10	-9.76	-0.005189		PASS
		VN	0	2.33	0.001240		PASS
		VN	10	-4.42	-0.002351		PASS
		VN	20	-12.89	-0.006856		PASS
		VN	30	-18.15	-0.009656		PASS
		VN	40	4.38	0.002328		PASS
		VN	50	-2.82	-0.001499		PASS
	HCH	VN	-30	5.97	0.003131		PASS
		VN	-20	7.51	0.003942		PASS
		VN	-10	-2.32	-0.001216		PASS
		VN	0	-12.32	-0.006465		PASS
		VN	10	5.41	0.002838		PASS
		VN	20	9.96	0.005226		PASS
		VN	30	0.01	0.000008		PASS
		VN	40	1.60	0.000841		PASS

		VN	50	-11.77	-0.006180		PASS
QPSK	LCH	VN	-30	-14.08	-0.007588		PASS
		VN	-20	-10.63	-0.005730		PASS
		VN	-10	-11.42	-0.006154		PASS
		VN	0	-4.42	-0.002383		PASS
		VN	10	-5.54	-0.002984		PASS
		VN	20	-5.82	-0.003139		PASS
		VN	30	2.17	0.001172		PASS
		VN	40	-1.73	-0.000933		PASS
		VN	50	3.75	0.002020		PASS
	MCH	VN	-30	-5.98	-0.003181		PASS
		VN	-20	-4.11	-0.002184		PASS
		VN	-10	-12.97	-0.006901		PASS
		VN	0	-2.47	-0.001316		PASS
		VN	10	5.62	0.002990		PASS
		VN	20	-6.77	-0.003599		PASS
		VN	30	4.38	0.002328		PASS
		VN	40	-16.79	-0.008933		PASS
		VN	50	-12.26	-0.006521		PASS
	HCH	VN	-30	6.21	0.003259		PASS
		VN	-20	-7.14	-0.003747		PASS
		VN	-10	4.25	0.002230		PASS
		VN	0	-1.40	-0.000736		PASS
		VN	10	5.81	0.003049		PASS
		VN	20	0.09	0.000045		PASS
		VN	30	-10.94	-0.005745		PASS
		VN	40	1.70	0.000894		PASS
		VN	50	5.74	0.003011		PASS

Channel Bandwidth: 15 MHz

Channel Bandwidth: 15 MHz							
Voltage							
Modulation	Channel	Voltage [Vdc]	Temperature (℃)	Deviation (Hz)	Deviation (ppm)		Verdict
QPSK	LCH	VL	TN	-17.21	-0.009265		PASS
		VN	TN	0.99	0.000531		PASS
		VH	TN	2.86	0.001540		PASS
	MCH	VL	TN	0.20	0.000107		PASS
		VN	TN	1.37	0.000730		PASS
		VH	TN	-11.54	-0.006141		PASS
	HCH	VL	TN	-13.56	-0.007128		PASS
		VN	TN	-15.31	-0.008045		PASS
		VH	TN	2.98	0.001564		PASS
16QAM	LCH	VL	TN	-12.93	-0.006962		PASS
		VN	TN	-8.85	-0.004767		PASS
		VH	TN	-10.79	-0.005807		PASS
	MCH	VL	TN	-11.77	-0.006262		PASS
		VN	TN	-3.42	-0.001819		PASS
		VH	TN	1.06	0.000563		PASS
	HCH	VL	TN	1.24	0.000654		PASS
		VN	TN	-12.26	-0.006444		PASS

		VH	TN	1.96	0.001030		PASS
Temperature							
Modulation	Channel	Voltage [Vdc]	Temperature (℃)	Deviation (Hz)	Deviation (ppm)		Verdict
QPSK	LCH	VN	-30	-7.28	-0.003920		PASS
		VN	-20	-13.69	-0.007370		PASS
		VN	-10	-8.96	-0.004821		PASS
		VN	0	-13.80	-0.007432		PASS
		VN	10	-7.65	-0.004120		PASS
		VN	20	-15.74	-0.008471		PASS
		VN	30	-11.52	-0.006200		PASS
		VN	40	4.71	0.002534		PASS
		VN	50	-0.09	-0.000046		PASS
	MCH	VN	-30	-9.53	-0.005068		PASS
		VN	-20	-14.42	-0.007670		PASS
		VN	-10	-14.75	-0.007845		PASS
		VN	0	0.84	0.000449		PASS
		VN	10	-4.63	-0.002465		PASS
		VN	20	-4.38	-0.002328		PASS
		VN	30	-7.71	-0.004101		PASS
		VN	40	-16.31	-0.008674		PASS
		VN	50	-8.07	-0.004292		PASS
	HCH	VN	-30	-17.35	-0.009121		PASS
		VN	-20	-11.66	-0.006128		PASS
		VN	-10	2.86	0.001504		PASS
		VN	0	-1.67	-0.000880		PASS
		VN	10	-0.04	-0.000023		PASS
		VN	20	-7.52	-0.003955		PASS
		VN	30	-2.02	-0.001060		PASS
		VN	40	-13.83	-0.007271		PASS
		VN	50	-16.55	-0.008700		PASS
16QAM	LCH	VN	-30	-6.01	-0.003235		PASS
		VN	-20	-10.81	-0.005822		PASS
		VN	-10	-14.05	-0.007563		PASS
		VN	0	-12.00	-0.006461		PASS
		VN	10	-15.08	-0.008117		PASS
		VN	20	6.44	0.003466		PASS
		VN	30	-12.63	-0.006800		PASS
		VN	40	2.10	0.001132		PASS
		VN	50	-0.44	-0.000239		PASS
	MCH	VN	-30	0.06	0.000030		PASS
		VN	-20	2.62	0.001392		PASS
		VN	-10	-12.59	-0.006696		PASS
		VN	0	-2.15	-0.001141		PASS
		VN	10	3.65	0.001940		PASS
		VN	20	-9.94	-0.005288		PASS
		VN	30	-14.76	-0.007853		PASS
		VN	40	-15.49	-0.008241		PASS
		VN	50	-5.18	-0.002754		PASS
	HCH	VN	-30	-5.65	-0.002970		PASS
		VN	-20	1.26	0.000662		PASS
		VN	-10	-13.25	-0.006963		PASS

		VN	0	1.34	0.000707		PASS
		VN	10	-8.91	-0.004684		PASS
		VN	20	-13.26	-0.006970		PASS
		VN	30	-9.76	-0.005128		PASS
		VN	40	-3.55	-0.001865		PASS
		VN	50	-9.37	-0.004925		PASS

Channel Bandwidth: 20 MHz

Channel Bandwidth: 20 MHz							
Voltage							
Modulation	Channel	Voltage [Vdc]	Temperature (℃)	Deviation (Hz)	Deviation (ppm)		Verdict
QPSK	LCH	VL	TN	5.42	0.002915		PASS
		VN	TN	-9.34	-0.005022		PASS
		VH	TN	-12.79	-0.006876		PASS
	MCH	VL	TN	-1.30	-0.000692		PASS
		VN	TN	-13.88	-0.007381		PASS
		VH	TN	-5.92	-0.003150		PASS
	HCH	VL	TN	7.41	0.003900		PASS
		VN	TN	7.50	0.003945		PASS
		VH	TN	6.75	0.003554		PASS
16QAM	LCH	VL	TN	3.81	0.002046		PASS
		VN	TN	-5.76	-0.003099		PASS
		VH	TN	-6.94	-0.003730		PASS
	MCH	VL	TN	-4.48	-0.002382		PASS
		VN	TN	-1.47	-0.000784		PASS
		VH	TN	-0.04	-0.000023		PASS
	HCH	VL	TN	-0.23	-0.000120		PASS
		VN	TN	-10.89	-0.005730		PASS
		VH	TN	-1.27	-0.000670		PASS
Temperature							
Modulation	Channel	Voltage [Vdc]	Temperature (℃)	Deviation (Hz)	Deviation (ppm)		Verdict
QPSK	LCH	VN	-30	6.78	0.003645		PASS
		VN	-20	2.75	0.001477		PASS
		VN	-10	-0.51	-0.000277		PASS
		VN	0	-7.80	-0.004192		PASS
		VN	10	1.80	0.000969		PASS
		VN	20	8.83	0.004745		PASS
		VN	30	-4.95	-0.002661		PASS
		VN	40	0.79	0.000423		PASS
		VN	50	-3.38	-0.001815		PASS
	MCH	VN	-30	-10.60	-0.005638		PASS
		VN	-20	-12.75	-0.006780		PASS
		VN	-10	-4.08	-0.002169		PASS
		VN	0	-12.73	-0.006772		PASS
		VN	10	-11.26	-0.005988		PASS
		VN	20	-6.34	-0.003371		PASS
		VN	30	2.37	0.001263		PASS
		VN	40	-11.79	-0.006270		PASS
		VN	50	-3.06	-0.001628		PASS

	HCH	VN	-30	-12.69	-0.006678		PASS
		VN	-20	4.16	0.002191		PASS
		VN	-10	-2.80	-0.001476		PASS
		VN	0	-10.87	-0.005722		PASS
		VN	10	0.60	0.000316		PASS
		VN	20	5.49	0.002891		PASS
		VN	30	-8.87	-0.004668		PASS
		VN	40	-10.31	-0.005428		PASS
		VN	50	-5.95	-0.003132		PASS
16QAM	LCH	VN	-30	10.03	0.005391		PASS
		VN	-20	-3.76	-0.002023		PASS
		VN	-10	-9.26	-0.004976		PASS
		VN	0	5.44	0.002923		PASS
		VN	10	10.49	0.005637		PASS
		VN	20	4.86	0.002615		PASS
		VN	30	-5.32	-0.002861		PASS
		VN	40	-8.35	-0.004491		PASS
		VN	50	-7.67	-0.004122		PASS
	MCH	VN	-30	-13.12	-0.006978		PASS
		VN	-20	-0.66	-0.000350		PASS
		VN	-10	-2.68	-0.001423		PASS
		VN	0	-9.66	-0.005136		PASS
		VN	10	-3.16	-0.001682		PASS
		VN	20	-20.66	-0.010988		PASS
		VN	30	-5.45	-0.002899		PASS
		VN	40	5.24	0.002785		PASS
		VN	50	-7.20	-0.003827		PASS
	HCH	VN	-30	-9.16	-0.004819		PASS
		VN	-20	-3.59	-0.001890		PASS
		VN	-10	-5.69	-0.002997		PASS
		VN	0	-11.52	-0.006061		PASS
		VN	10	-15.18	-0.007988		PASS
		VN	20	-1.26	-0.000663		PASS
		VN	30	5.44	0.002861		PASS
		VN	40	-1.86	-0.000979		PASS
		VN	50	-3.28	-0.001724		PASS

Appendix G): Field strength of spurious radiation

Receiver Setup:

Frequency	Detector	RBW	VBW	Remark
0.009MHz-30MHz	Peak	10kHz	30kHz	Peak
30MHz-1GHz	Peak	120kHz	300kHz	Peak
Above 1GHz	Peak	1MHz	3MHz	Peak

Measurement Procedure:

1. Scan up to 10th harmonic, find the maximum radiation frequency to measure.
2. The technique used to find the Spurious Emissions of the transmitter was the antenna substitution method. Substitution method was performed to determine the actual ERP/EIRP emission levels of the EUT.

Test procedure as below:

1) The EUT was powered ON and placed on a 1.5m hight table at a 3 meter fully Anechoic Chamber. The antenna of the transmitter was extended to its maximum length. modulation mode and the measuring receiver shall be tuned to the frequency of the transmitter under test.
2) The EUT was set 3 meters(above 18GHz the distance is 1 meter) away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
3) The disturbance of the transmitter was maximized on the test receiver display by raising and lowering from 1m to 4m the receive antenna and by rotating through 360° the turntable. After the fundamental emission was maximized, a field strength measurement was made.
4) Steps 1) to 3) were performed with the EUT and the receive antenna in both vertical and horizontal polarization.
5) The transmitter was then removed and replaced with another antenna. The center of the antenna was approximately at the same location as the center of the transmitter.
6) A signal at the disturbance was fed to the substitution antenna by means of a non-radiating cable. With both the substitution and the receive antennas horizontally polarized, the receive antenna was raised and lowered to obtain a maximum reading at the test receiver. The level of the signal generator was adjusted until the measured field strength level in step 3) is obtained for this set of conditions.
7) The output power into the substitution antenna was then measured.
8) Steps 6) and 7)were repeated with both antennas polarized.
9) Calculate power in dBm by the following formula:

   ERP(dBm) = Pg(dBm) – cable loss (dB) + antenna gain (dBd)
   EIRP(dBm) = Pg(dBm) – cable loss (dB) + antenna gain (dBi)
   EIRP=ERP+2.15dB

   where:
   Pg is the generator output power into the substitution antenna.
10) Test the EUT in the lowest channel, the middle channel the Highest channel
11) The radiation measurements are performed in X, Y, Z axis positioning for EUT operation mode,And found the X axis positioning which it is worse case.
12) Repeat above procedures until all frequencies measured was complete.

Limit: Attenuated at least 43+10log(P)

Test Data:
Above 1GHz
QPSK

Band 2 18607 channel/BW1.4(lowest channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
1118.517	151	54	-56.06	-13	-43.06	Pass	H
1350.362	158	78	-54.77	-13	-41.77	Pass	H
2551.689	149	200	-51.59	-13	-38.59	Pass	H
4797.271	146	161	-46.67	-13	-33.67	Pass	H
6299.178	150	98	-44.65	-13	-31.65	Pass	H
10113.670	150	57	-43.90	-13	-30.90	Pass	H
1350.362	160	20	-52.73	-13	-39.73	Pass	V
1851.542	155	36	-23.66	-13	-10.66	Pass	V
3747.656	146	151	-46.92	-13	-33.92	Pass	V
6331.329	150	20	-45.34	-13	-32.34	Pass	V
9204.600	150	47	-44.42	-13	-31.42	Pass	V
12303.620	146	360	-41.32	-13	-28.32	Pass	V

Band 2 18900 channel/BW1.4(middle channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
1118.517	150	59	-56.44	-13	-43.44	Pass	H
1350.362	148	200	-54.88	-13	-41.88	Pass	H
3766.785	151	161	-47.78	-13	-34.78	Pass	H
6511.117	160	30	-44.53	-13	-31.53	Pass	H
9088.188	155	41	-45.12	-13	-32.12	Pass	H
12272.340	150	75	-41.91	-13	-28.91	Pass	H
1124.226	152	200	-54.80	-13	-41.80	Pass	V
1346.929	150	151	-52.87	-13	-39.87	Pass	V
3402.126	149	68	-48.97	-13	-35.97	Pass	V
6511.117	147	201	-44.48	-13	-31.48	Pass	V
9228.060	156	30	-45.12	-13	-32.12	Pass	V
12620.840	151	78	-41.75	-13	-28.75	Pass	V

Band 2 19193 channel/BW1.4(highest channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
1038.921	145	54	-55.97	-13	-42.97	Pass	H
1346.929	150	100	-55.08	-13	-42.08	Pass	H
3747.656	150	281	-48.46	-13	-35.46	Pass	H
6511.117	152	360	-44.35	-13	-31.35	Pass	H
8637.084	160	78	-44.65	-13	-31.65	Pass	H
12366.420	158	225	-42.10	-13	-29.10	Pass	H
1127.091	150	20	-56.40	-13	-43.40	Pass	V
1350.362	150	161	-53.05	-13	-40.05	Pass	V
3815.033	150	10	-47.33	-13	-34.33	Pass	V
5476.219	150	79	-45.37	-13	-32.37	Pass	V
8659.098	152	200	-45.14	-13	-32.14	Pass	V
11663.190	160	151	-43.04	-13	-30.04	Pass	V

16QAM

Band 2 18607 channel/BW1.4(lowest channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
1350.362	151	51	-55.15	-13	-42.15	Pass	H
3728.625	152	200	-48.67	-13	-35.67	Pass	H
4946.072	148	56	-48.31	-13	-35.31	Pass	H
6527.712	145	321	-44.98	-13	-31.98	Pass	H
9417.908	150	22	-44.95	-13	-31.95	Pass	H
12272.340	147	78	-42.74	-13	-29.74	Pass	H
1350.362	150	60	-53.77	-13	-40.77	Pass	V
3747.656	158	70	-48.61	-13	-35.61	Pass	V
4946.072	150	89	-48.24	-13	-35.24	Pass	V
6032.401	155	200	-46.62	-13	-33.62	Pass	V
9204.600	152	151	-45.68	-13	-32.68	Pass	V
11428.080	150	360	-43.63	-13	-30.63	Pass	V

Band 2 18900 channel/BW1.4(middle channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
1346.929	155	145	-55.33	-13	-42.33	Pass	H
3367.661	158	36078	-49.73	-13	-36.73	Pass	H
4354.967	149	200	-48.21	-13	-35.21	Pass	H
6561.030	147	36	-45.06	-13	-32.06	Pass	H
8022.456	150	78	-46.12	-13	-33.12	Pass	H
10139.450	150	205	-45.29	-13	-32.29	Pass	H
1350.362	155	55	-53.35	-13	-40.35	Pass	V
3588.939	152	164	-47.66	-13	-34.66	Pass	V
4388.352	147	78	-48.54	-13	-35.54	Pass	V
6527.712	150	92	-45.17	-13	-32.17	Pass	V
9346.262	150	200	-45.30	-13	-32.30	Pass	V
12303.620	147	16	-42.41	-13	-29.41	Pass	V

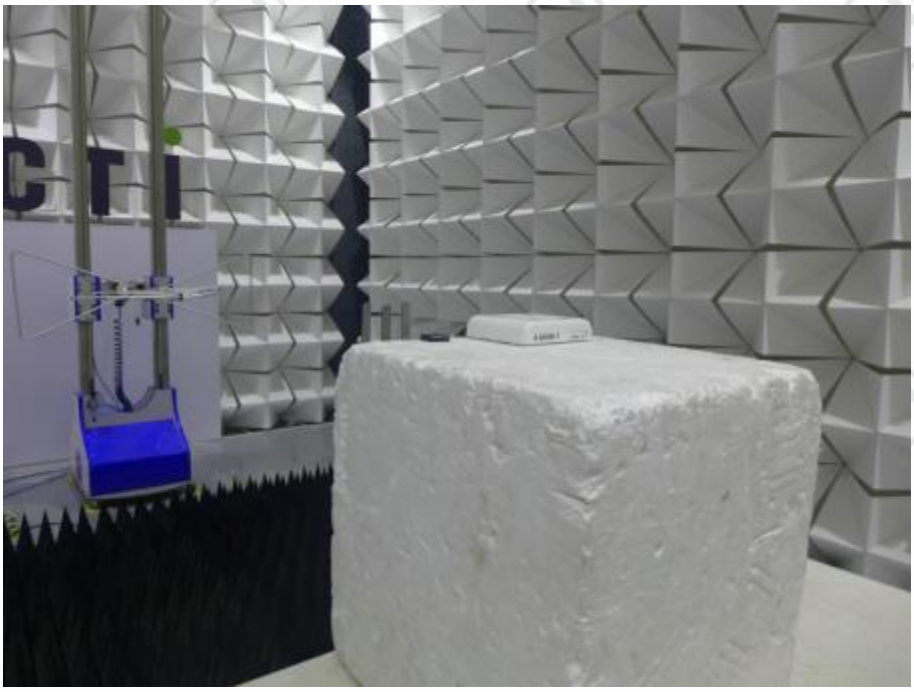
Band 2 19193 channel/BW1.4(highest channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
1350.362	151	78	-56.01	-13	-43.01	Pass	H
2912.824	158	215	-52.27	-13	-39.27	Pass	H
3757.208	150	36	-47.89	-13	-34.89	Pass	H
6527.712	150	49	-43.98	-13	-30.98	Pass	H
9322.501	150	220	-45.24	-13	-32.24	Pass	H
12303.620	148	157	-42.51	-13	-29.51	Pass	H
1350.362	150	20	-53.46	-13	-40.46	Pass	V
3815.033	150	10	-47.99	-13	-34.99	Pass	V
5895.771	146	360	-46.13	-13	-33.13	Pass	V
8022.456	155	78	-45.98	-13	-32.98	Pass	V
9228.060	152	20	-45.09	-13	-32.09	Pass	V
11812.580	150	46	-42.17	-13	-29.17	Pass	V

Note:

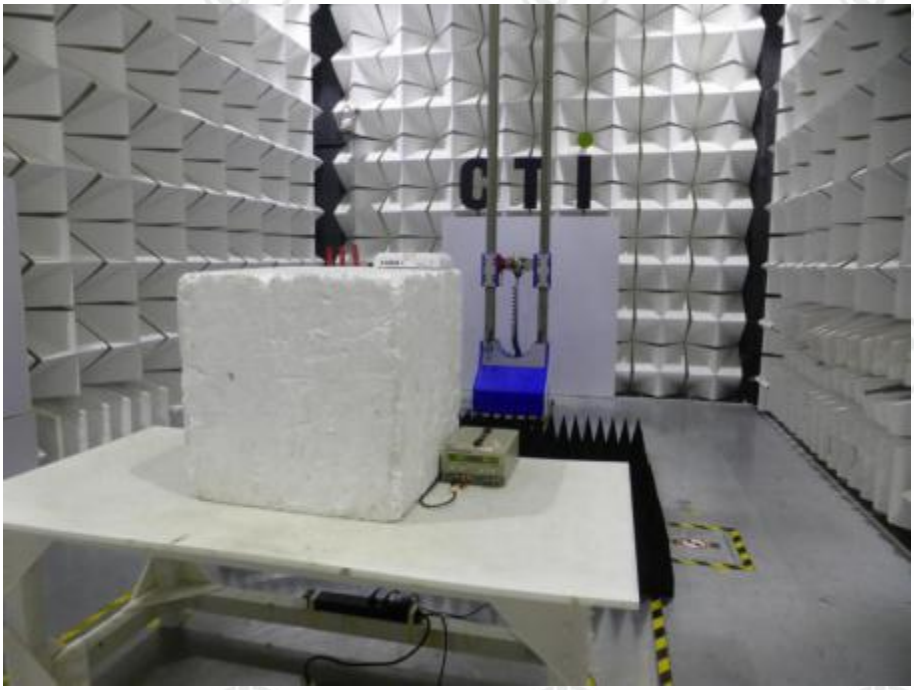
1) Scan from 9kHz to 25GHz, the disturbance above 13GHz and below 1GHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

PHOTOGRAPHS OF TEST SETUP

Test model No.: TN-IVS-8000



Radiated spurious emission Test Setup-1(Below 1GHz)



Radiated spurious emission Test Setup-2(Above 1GHz)

Annex A: Appendix A: PHOTOGRAPHS OF EUT Constructional Details

(Please See Appendix A)

*** End of Report ***

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