



5.1.1.2.4.2.4 Test RB = RB50#0



6Appendix_F: Spurious Emission at Antenna Terminal

NOTE: For the averaged unwanted emissions measurements, the measurement points in each sweep is greater than twice the Span/RBW in order to ensure bin-to-bin spacing of $< RBW/2$ so that narrowband signals are not lost between frequency bins. As to the present test item, the "Measurement Points = $k * (Span / RBW)$ " with k between 4 and 5, which results in an acceptable level error of less than 0.5 dB.

Part I - Test Plots

6.1 For LTE

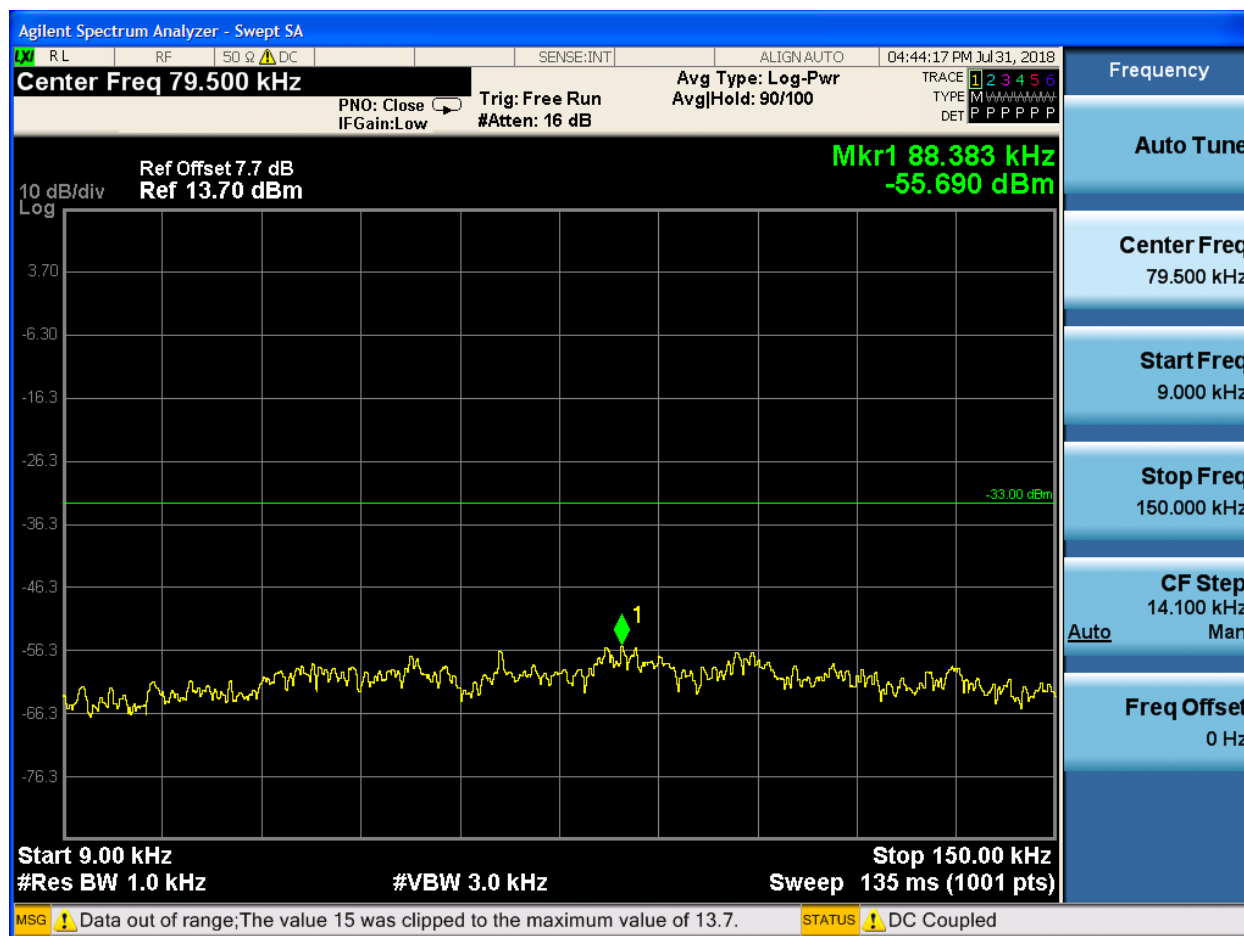
6.1.1 Test Band = BAND5

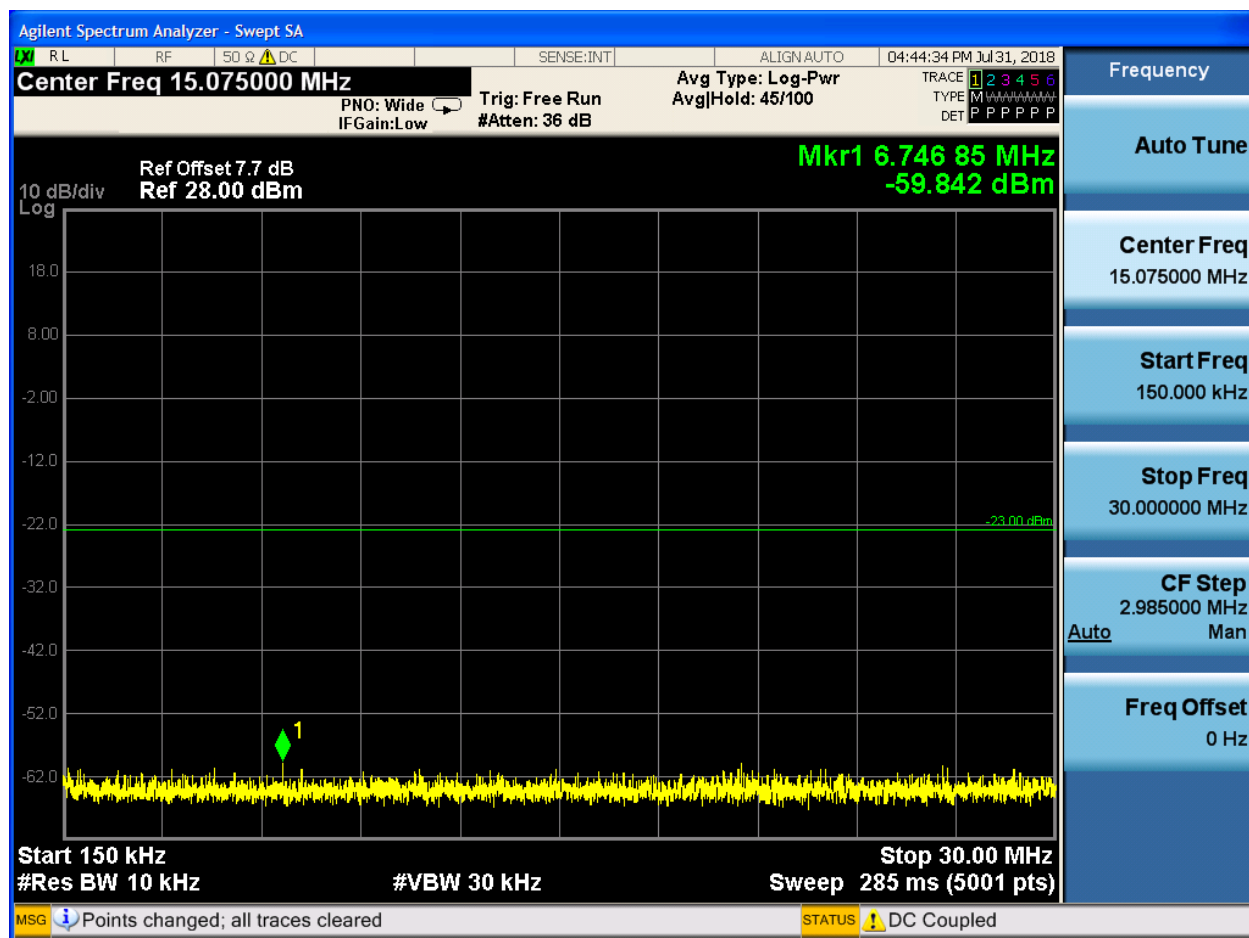
6.1.1.1 Test Mode = LTE/TM1

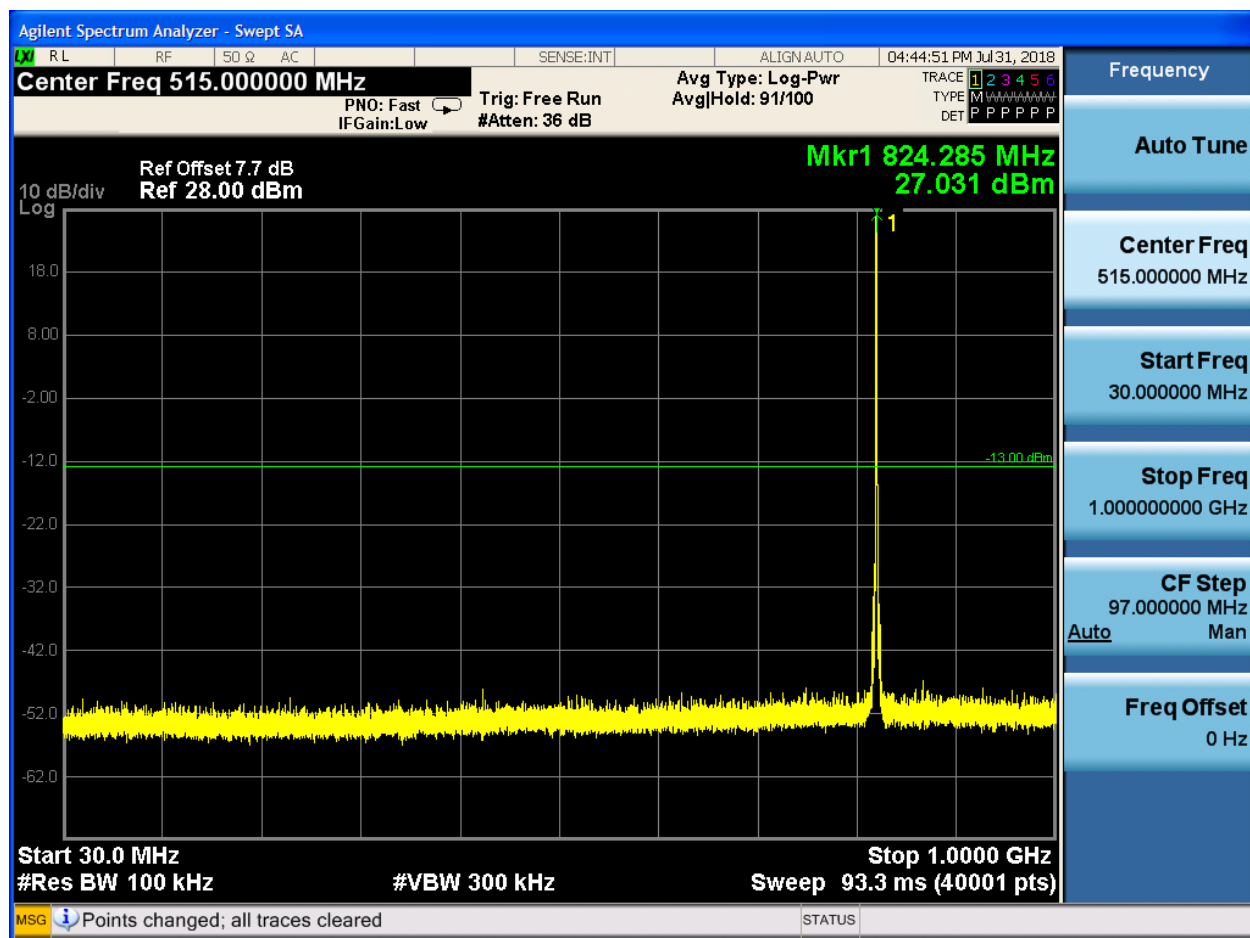
6.1.1.1.1 Test Bandwidth = 1.4

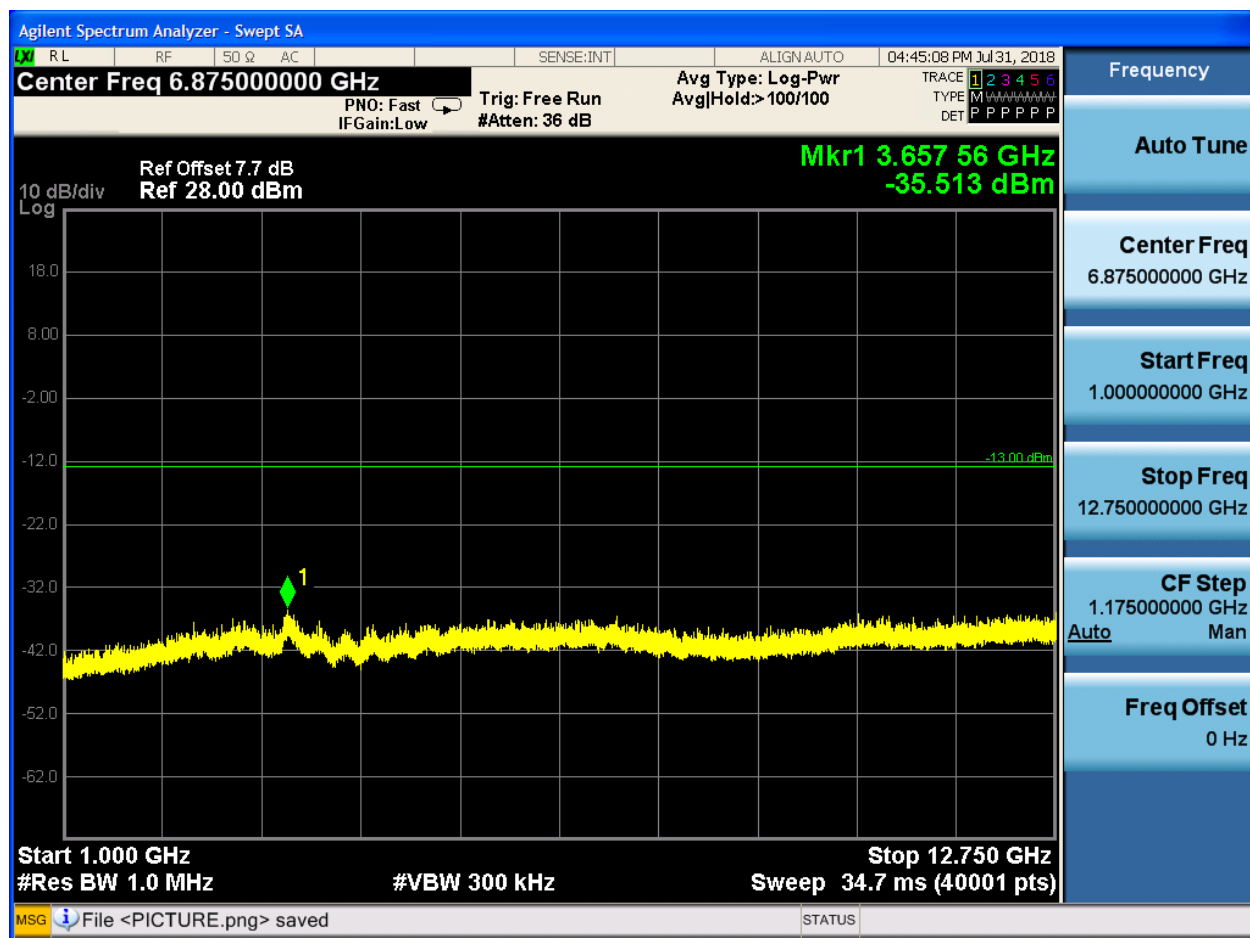
6.1.1.1.1.1 Test Channel = LCH

6.1.1.1.1.1.1 Test RB = RB1#0



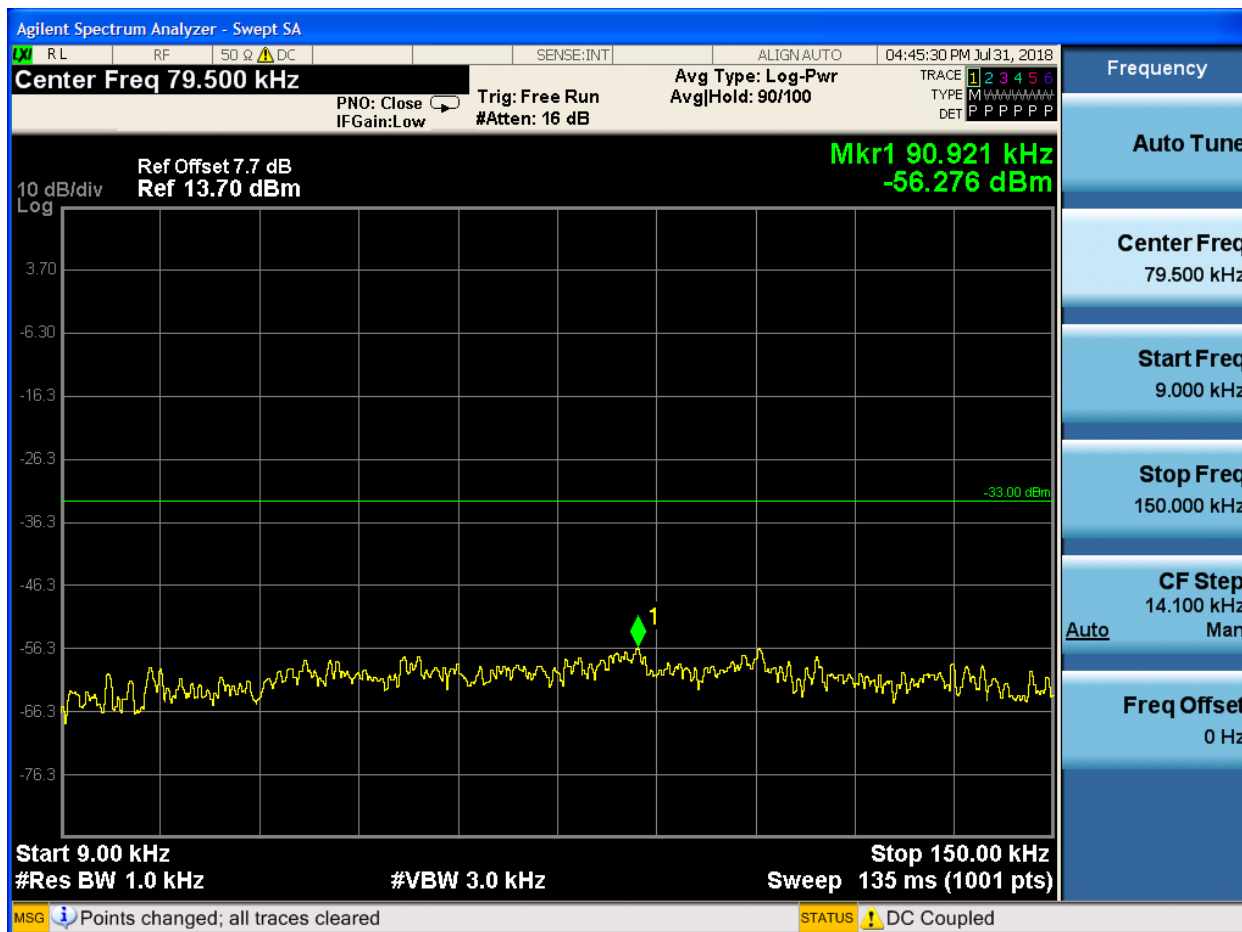


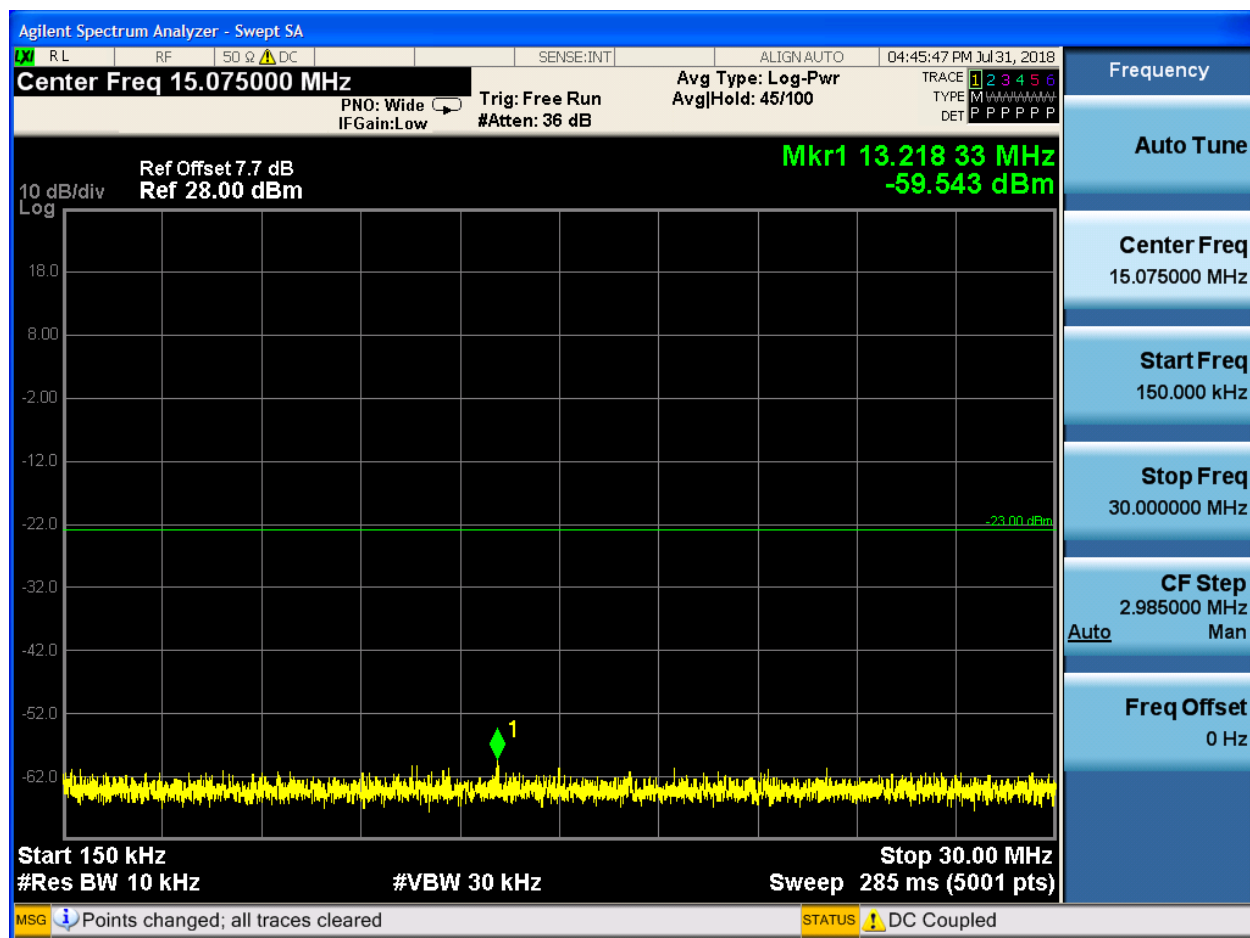


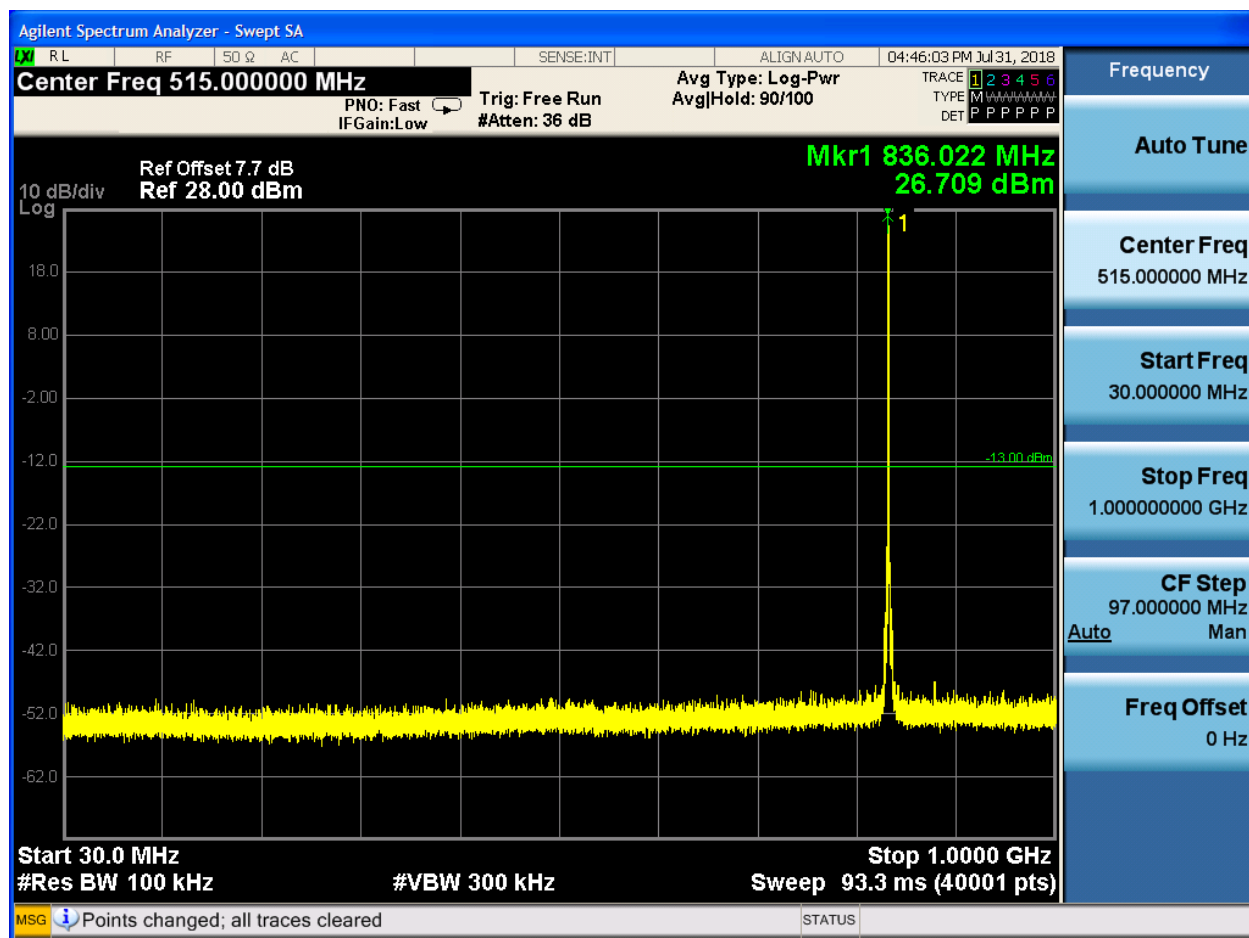


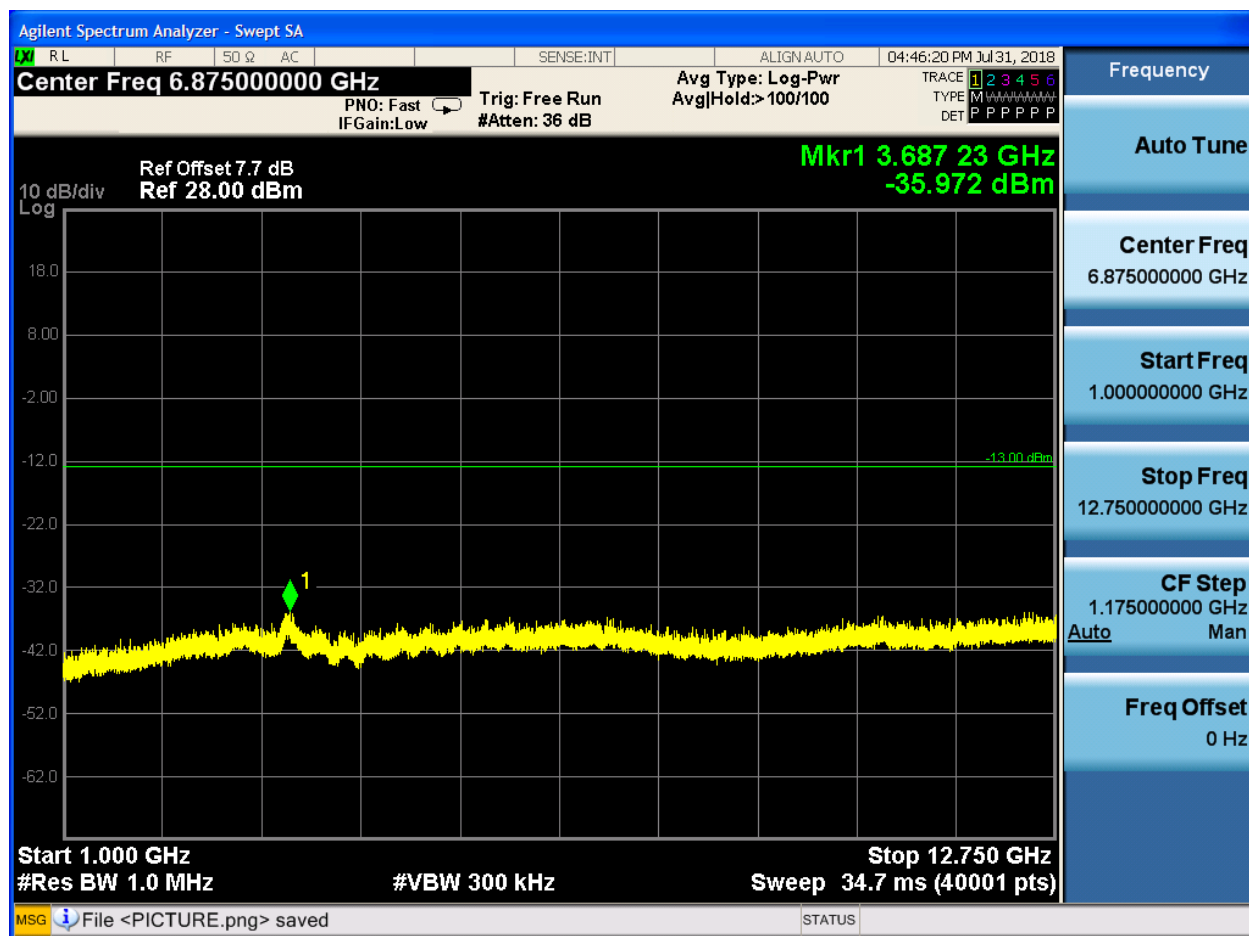
6.1.1.1.1.2 Test Channel = MCH

6.1.1.1.1.2.1 Test RB = RB1#0



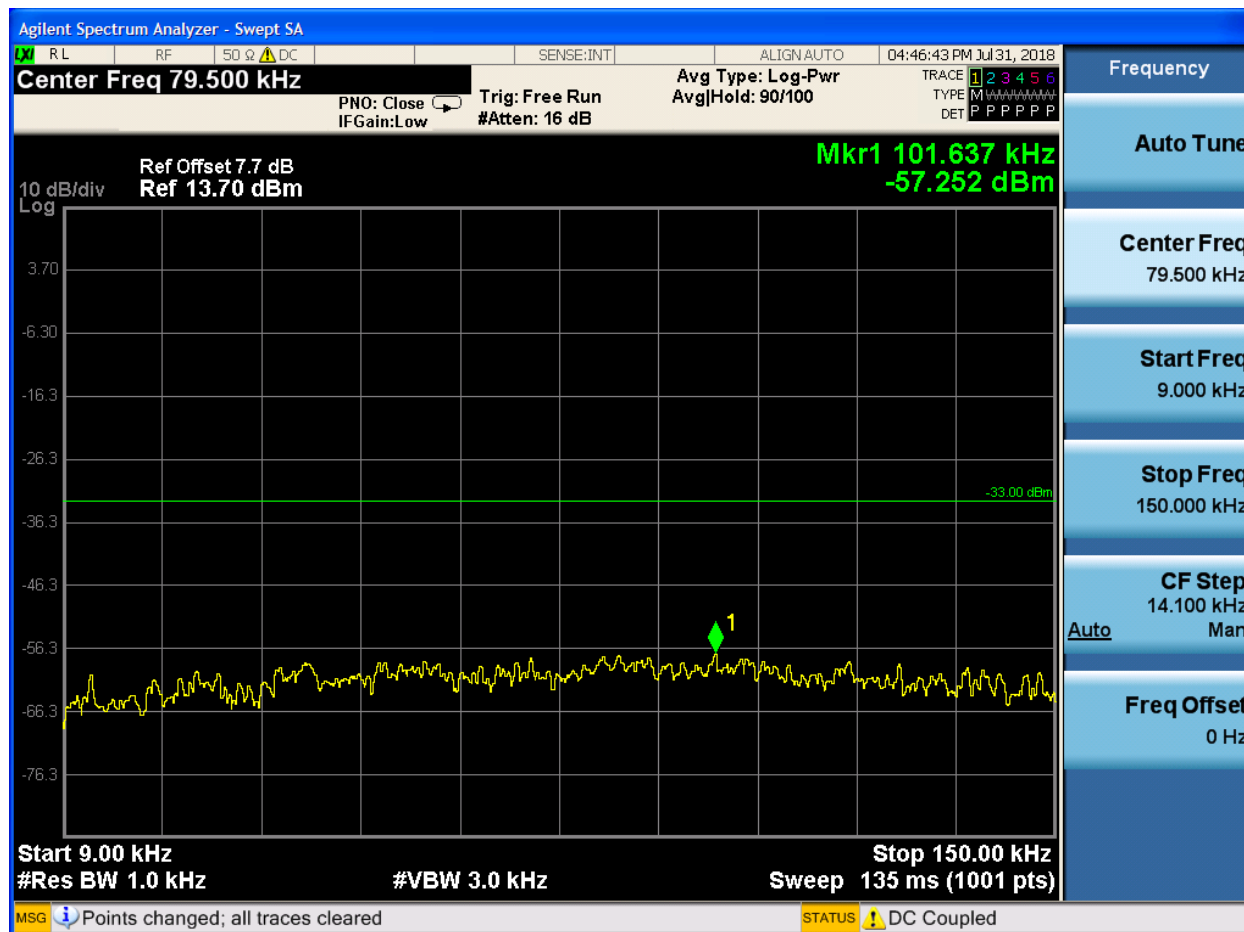


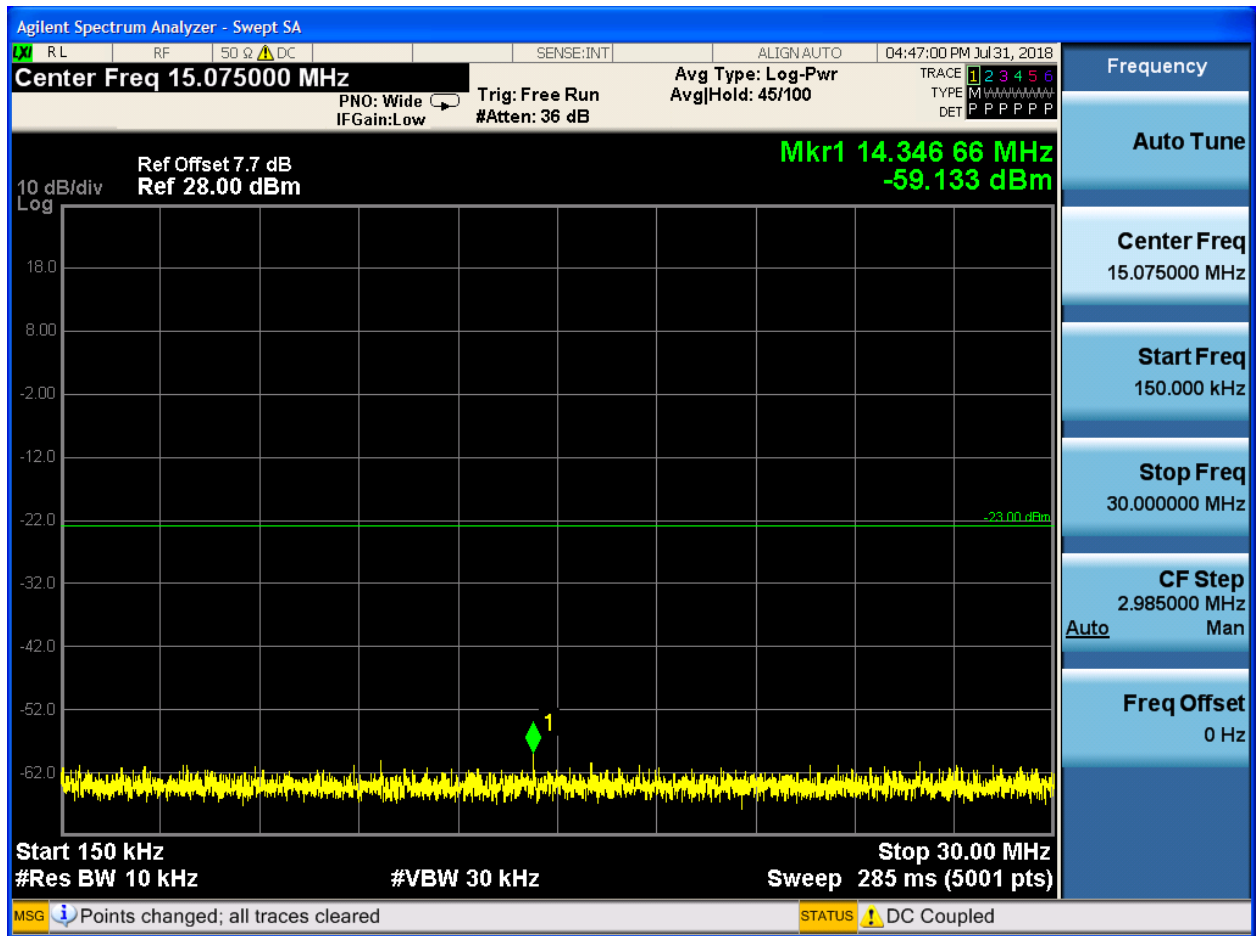


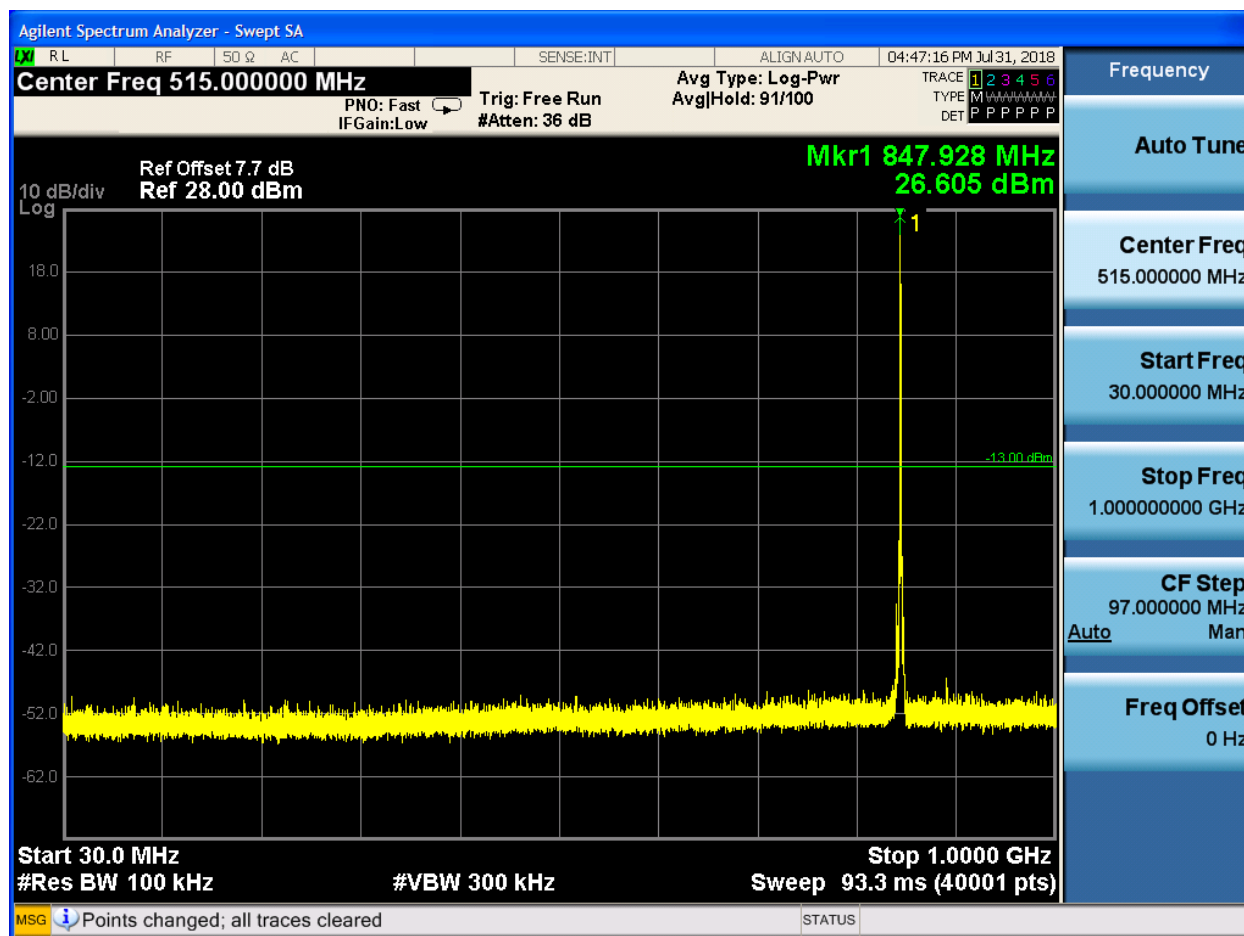


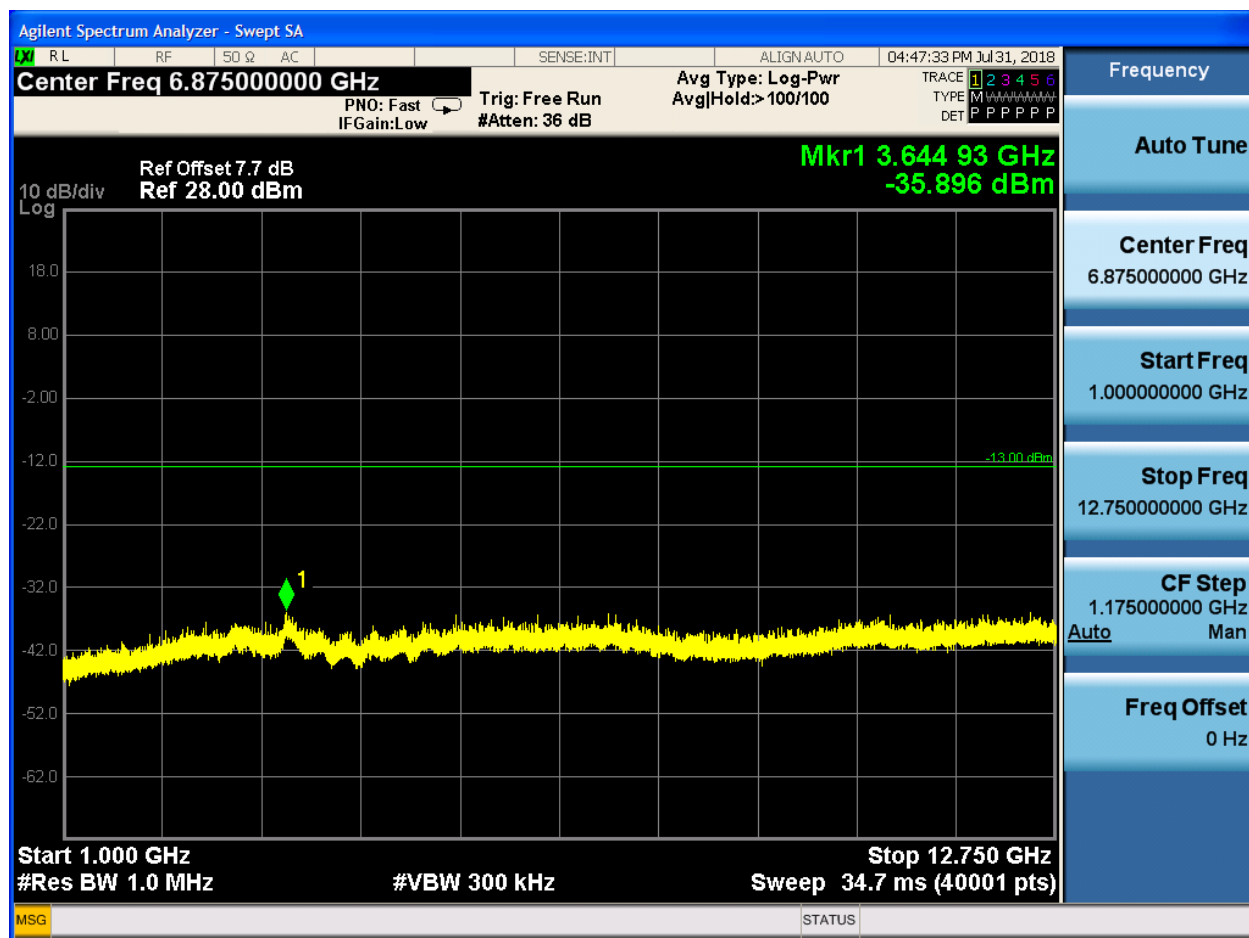
6.1.1.1.1.3 Test Channel = HCH

6.1.1.1.1.3.1 Test RB = RB1#0





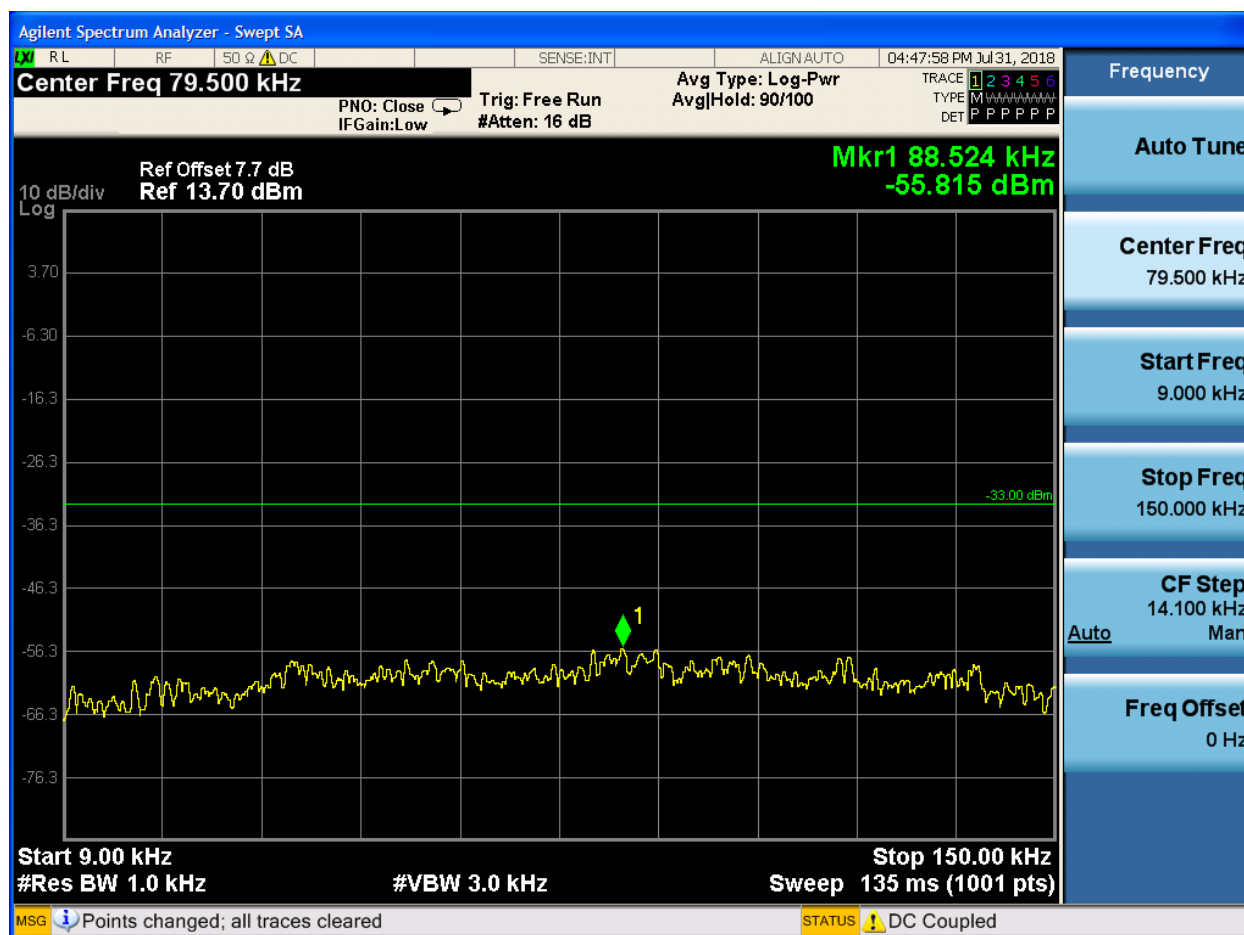


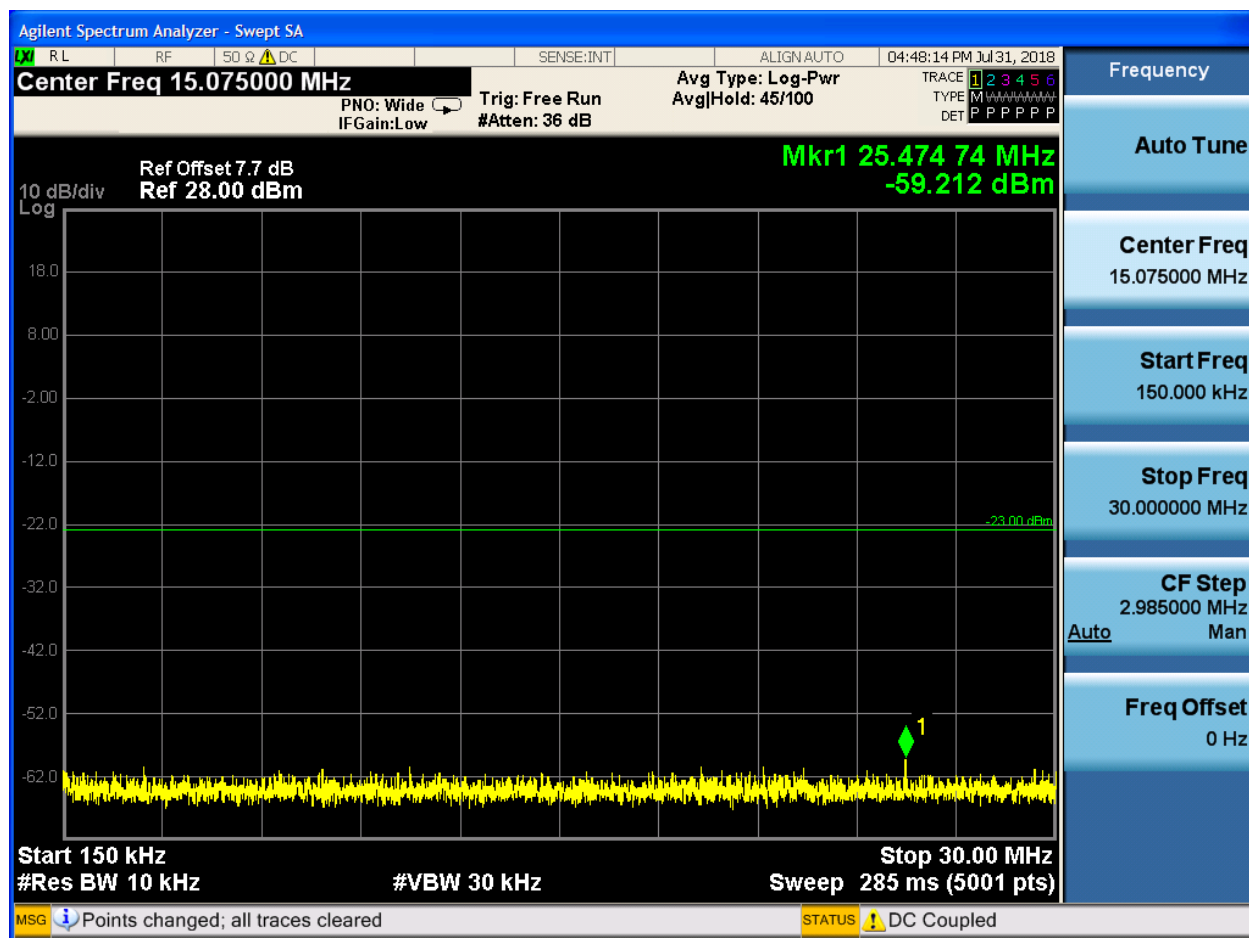


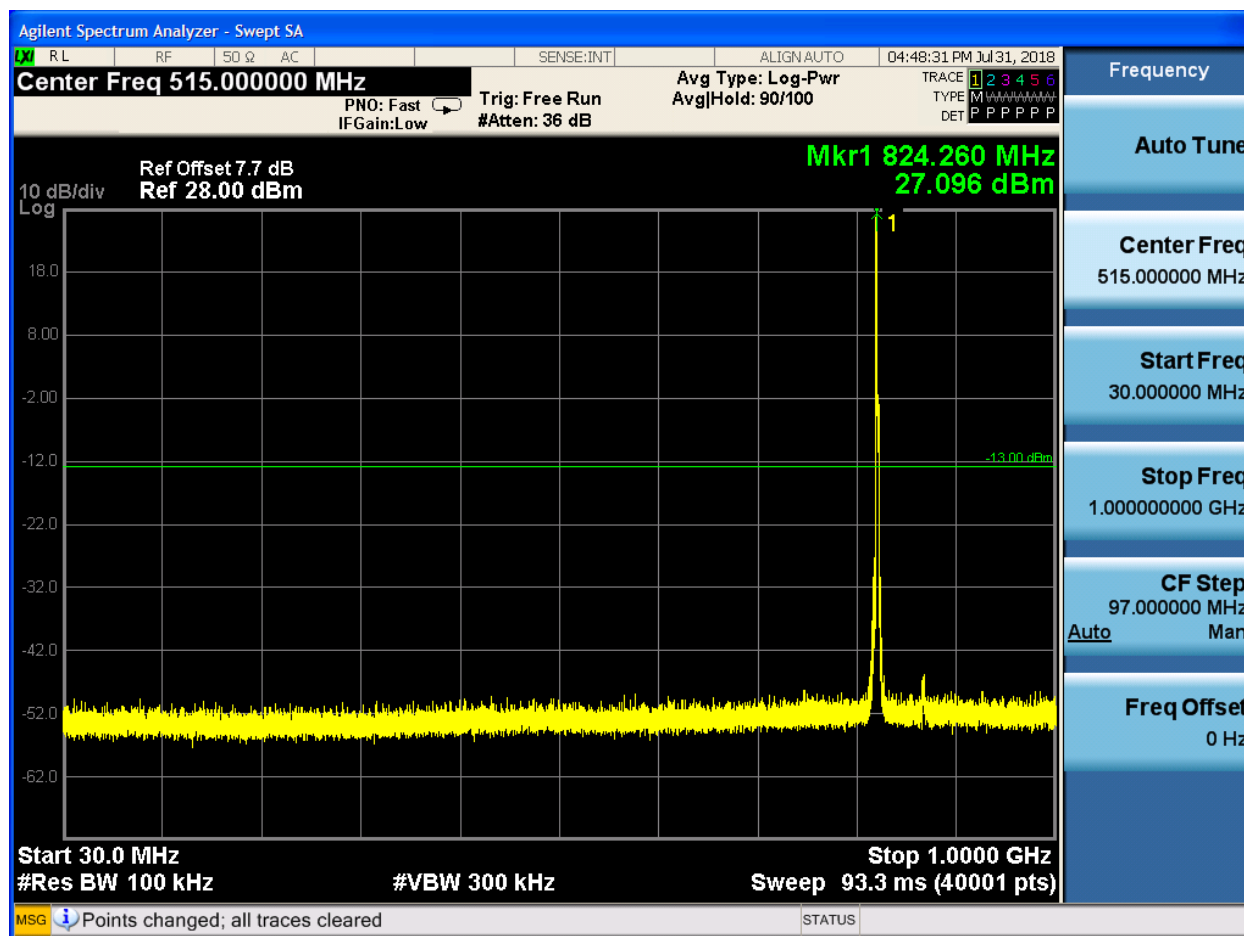
6.1.1.1.2 Test Bandwidth = 3

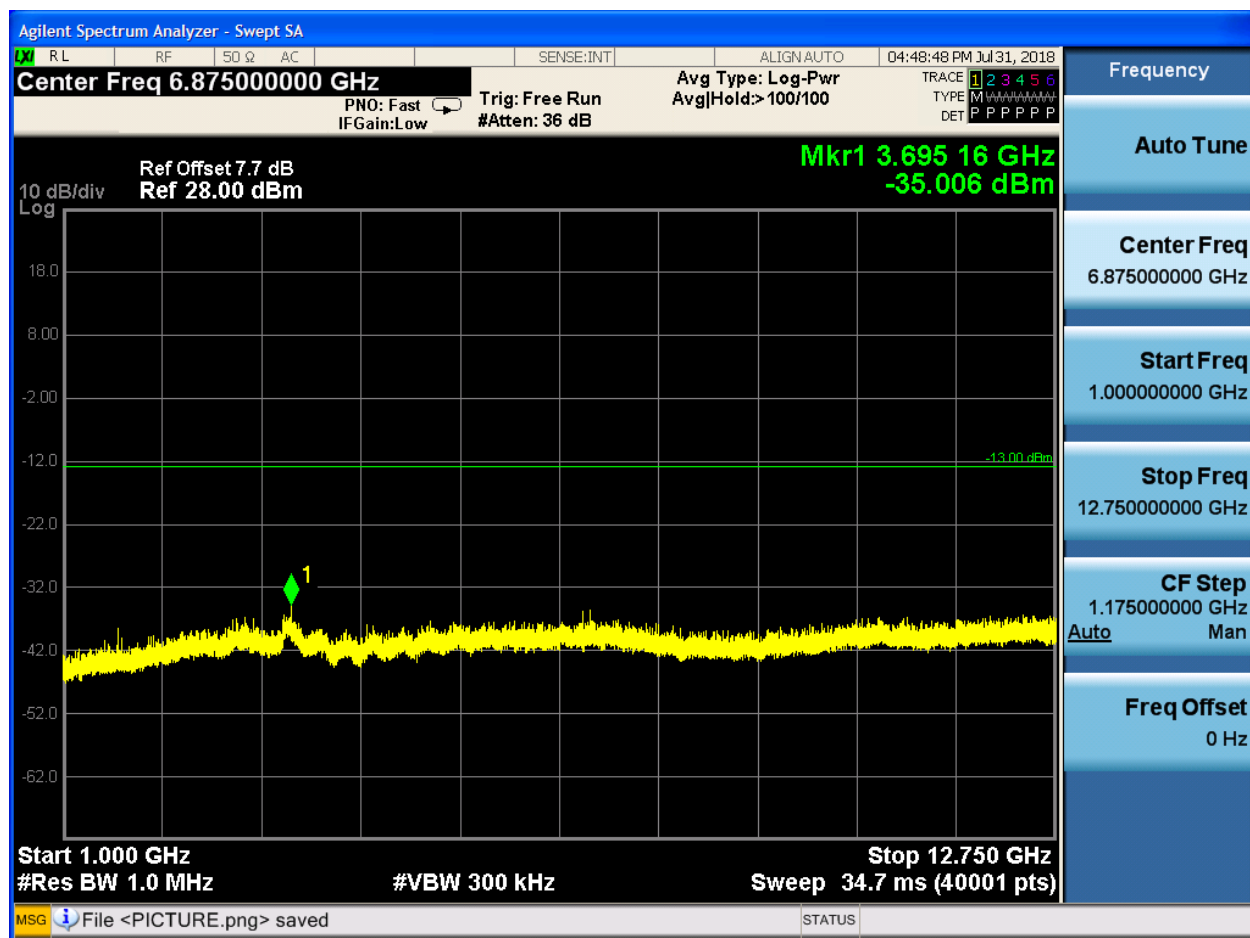
6.1.1.1.2.1 Test Channel = LCH

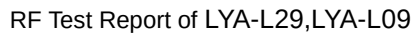
6.1.1.1.2.1.1 Test RB = RB1#0



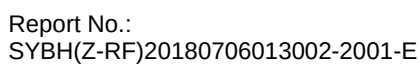


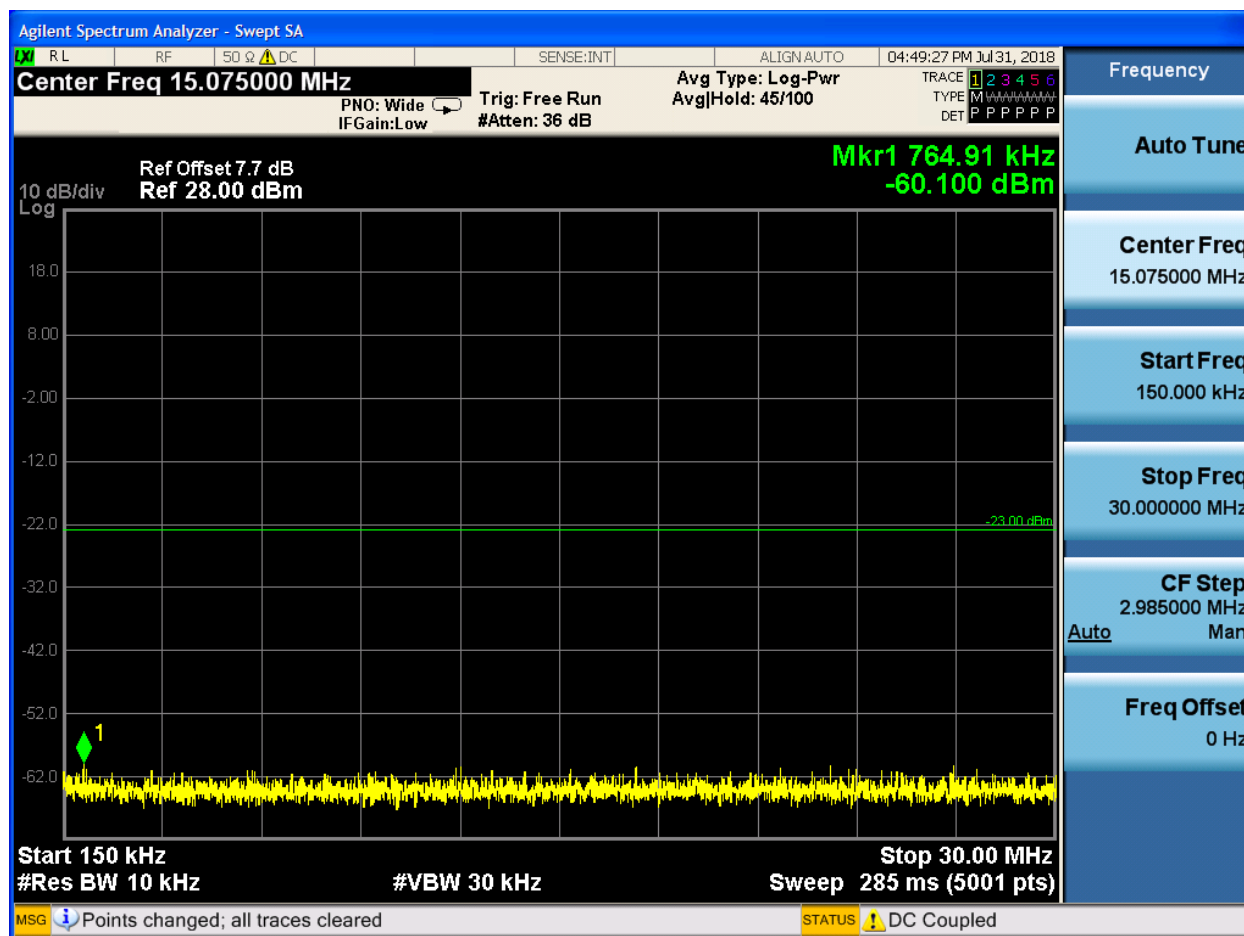


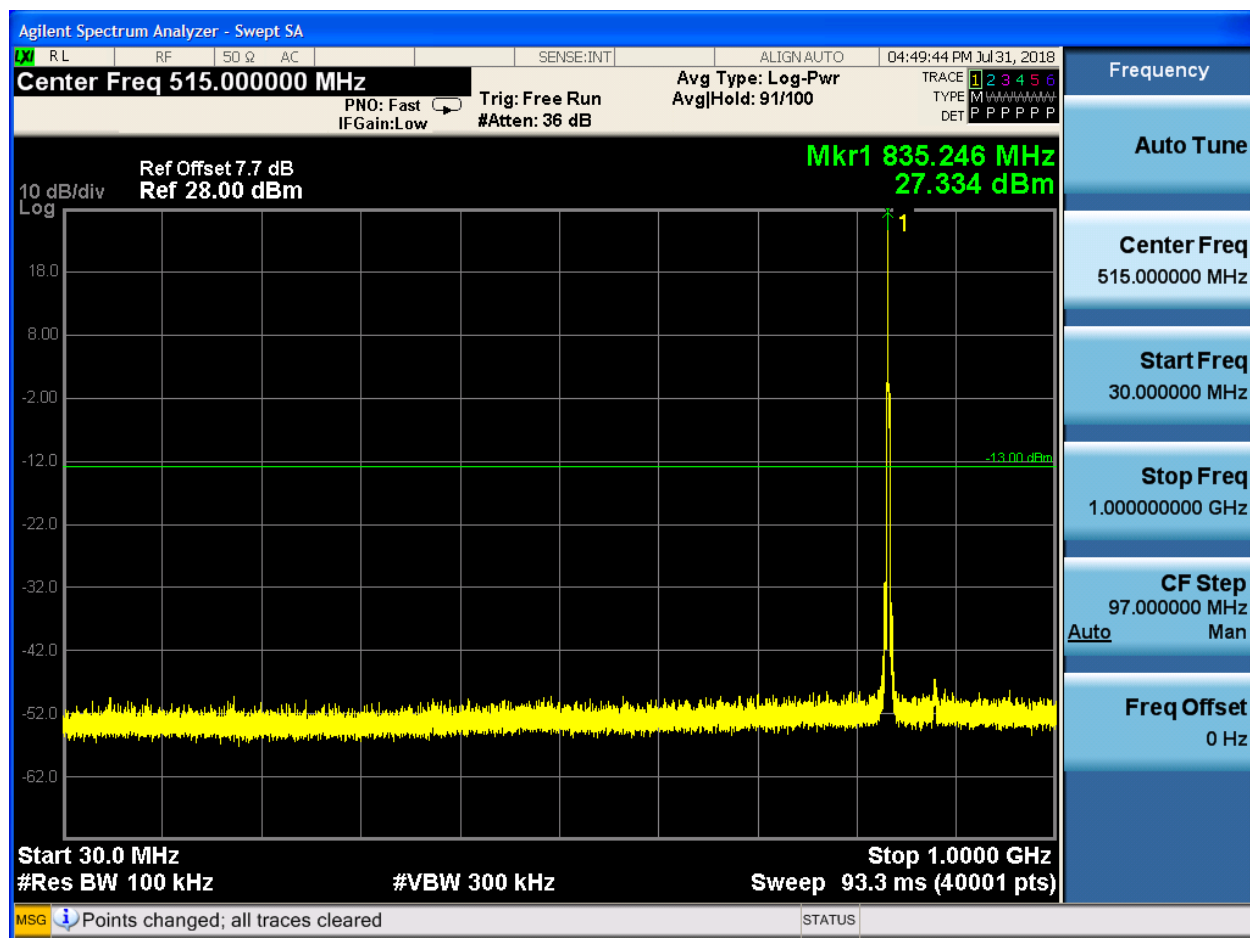


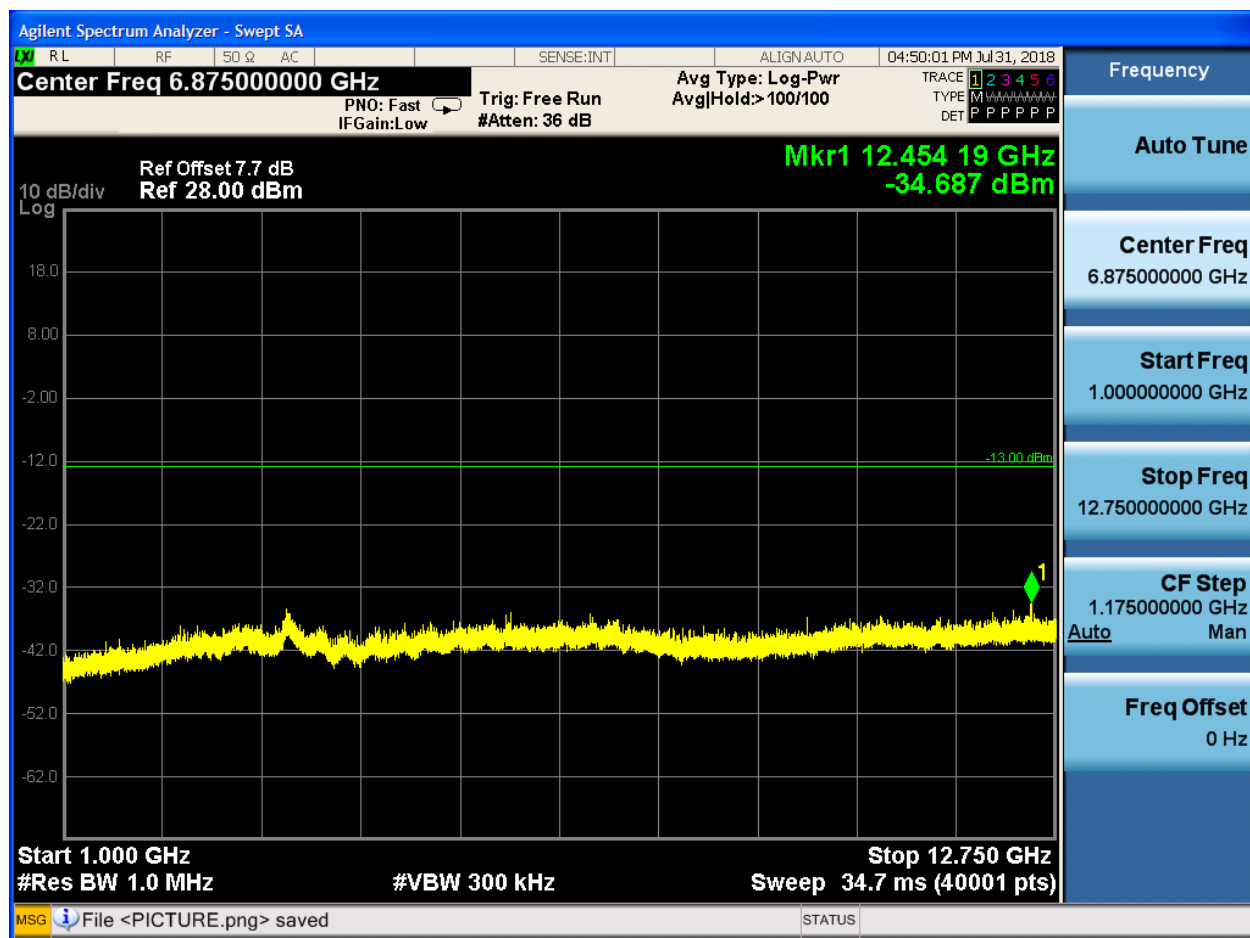


6.1.1.1.2.2.1 Test RB = RB1#0





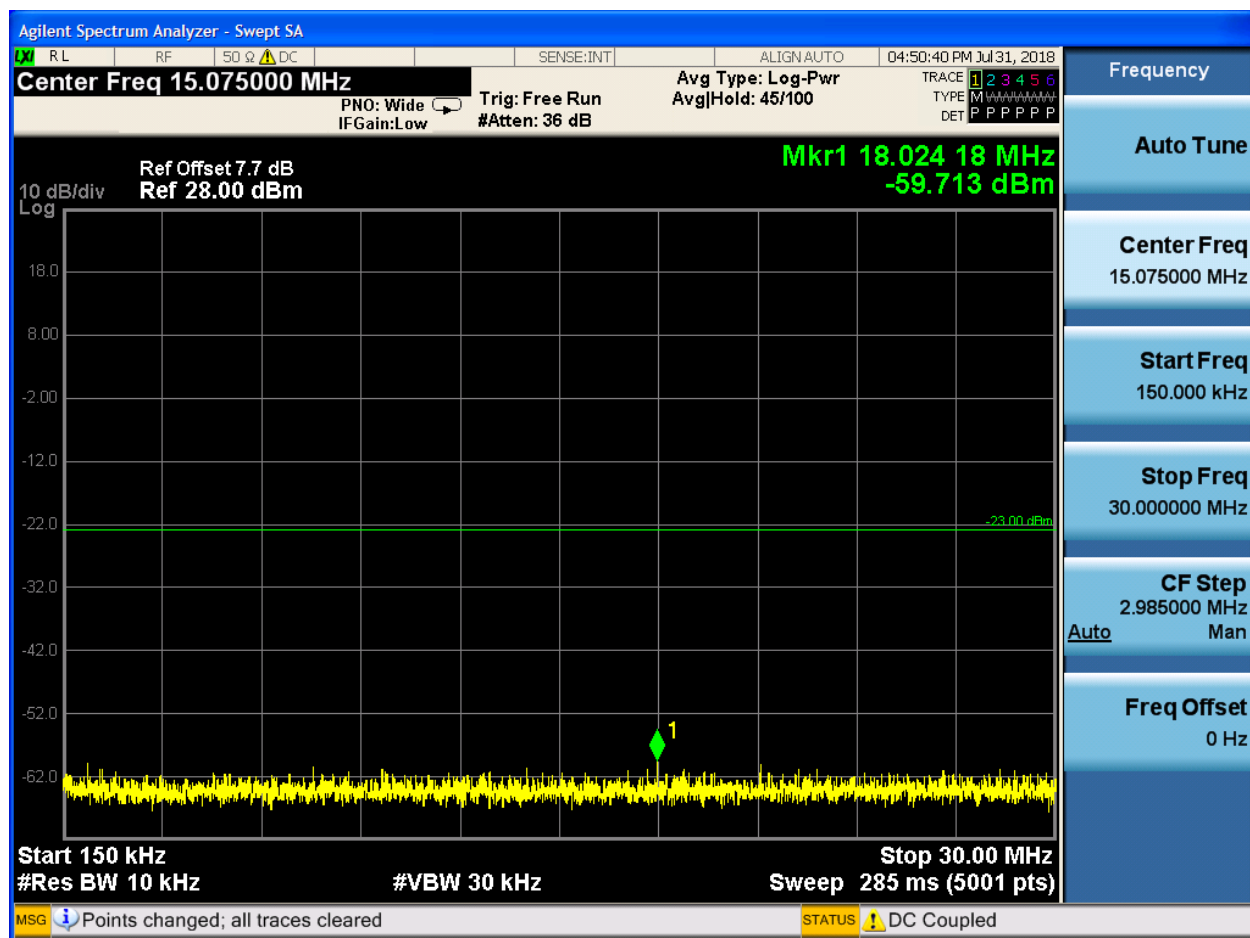


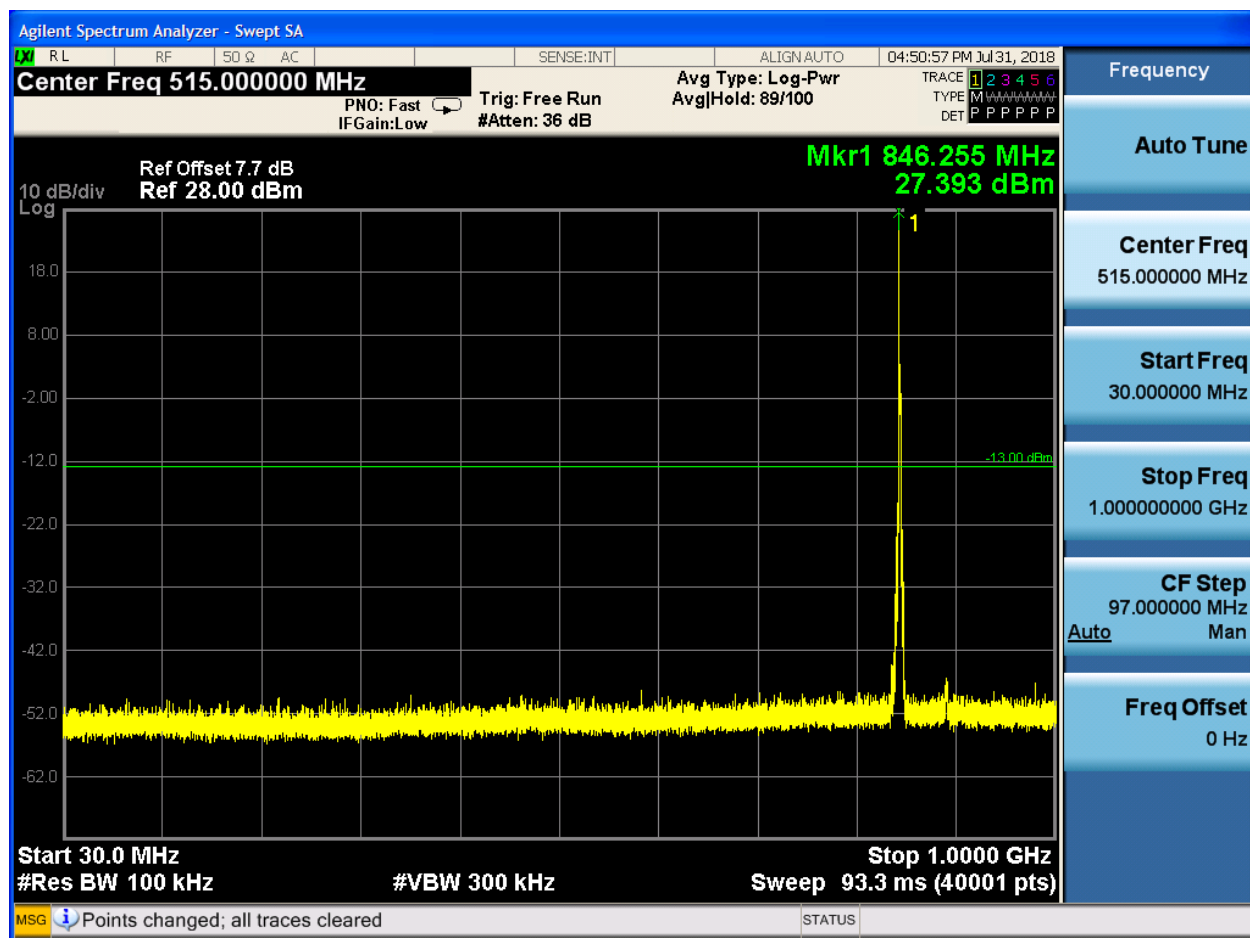


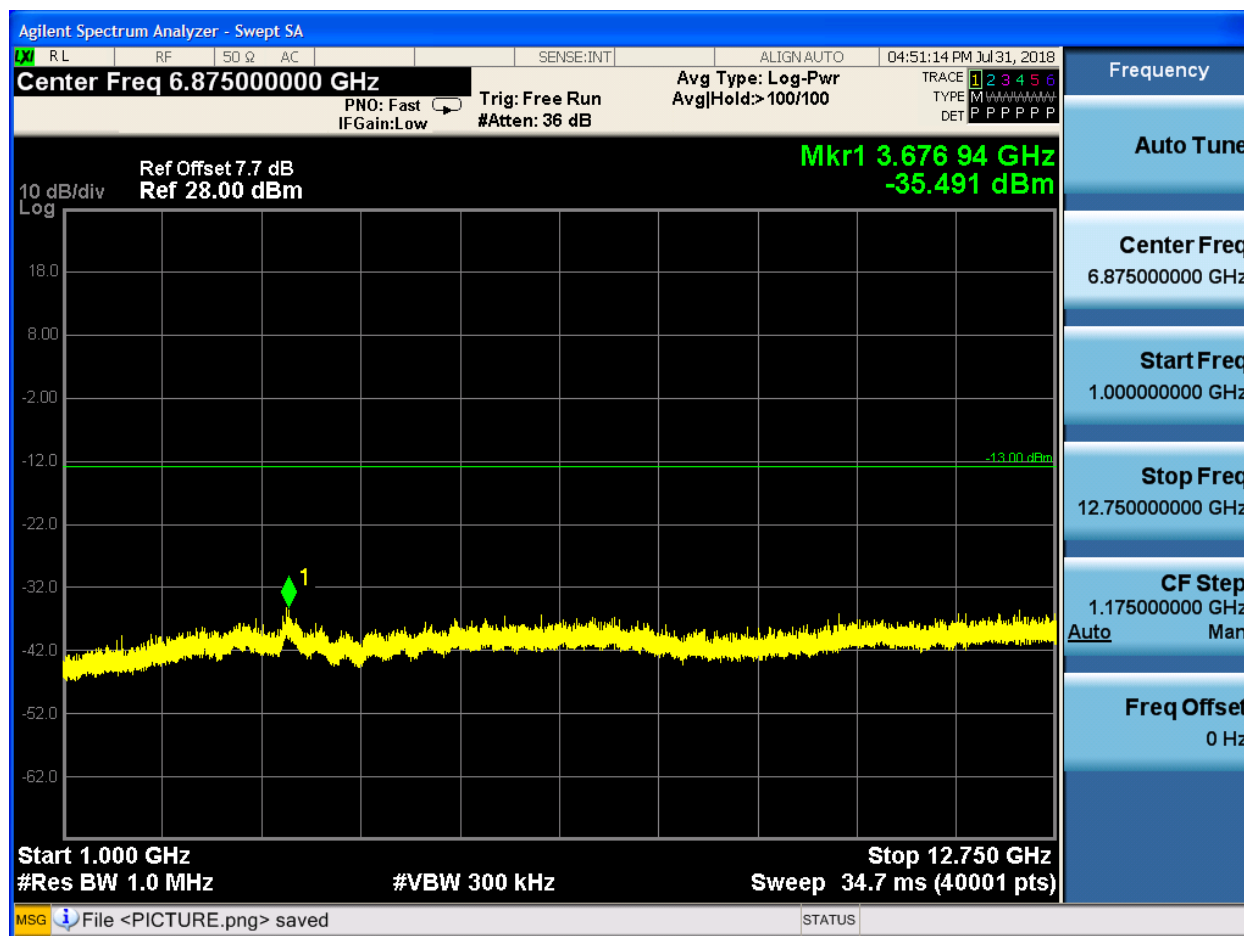
6.1.1.1.2.3 Test Channel = HCH

6.1.1.1.2.3.1 Test RB = RB1#0





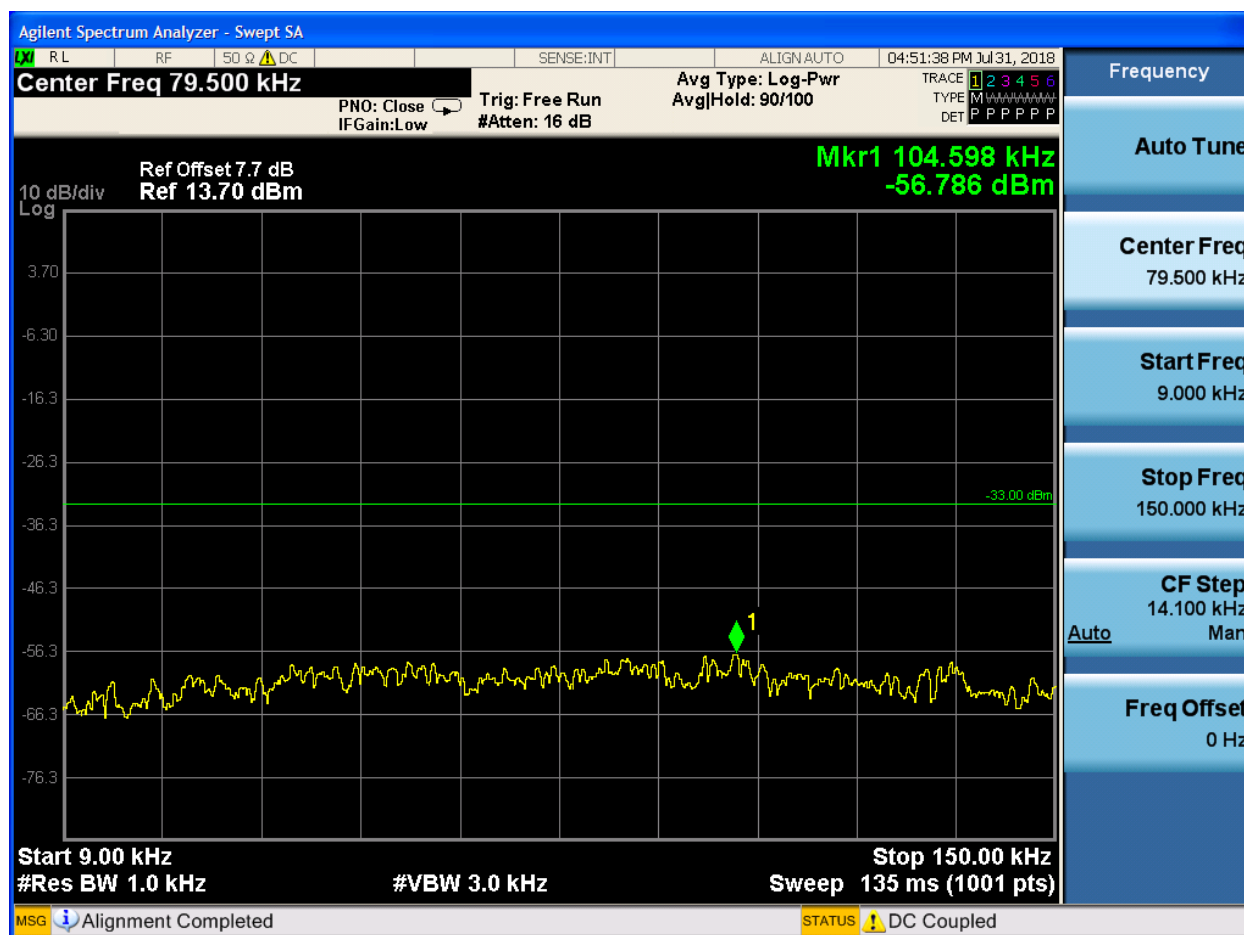


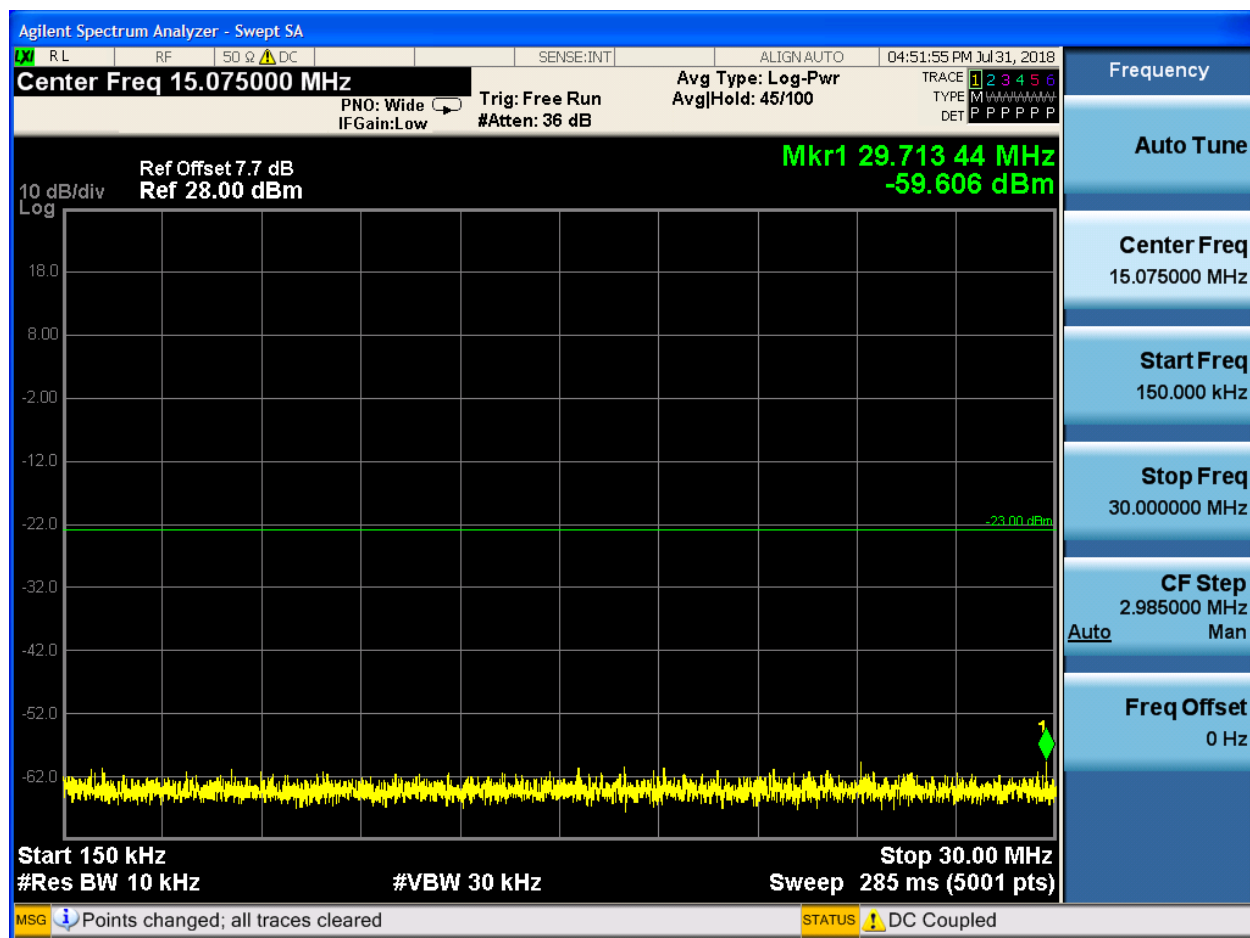


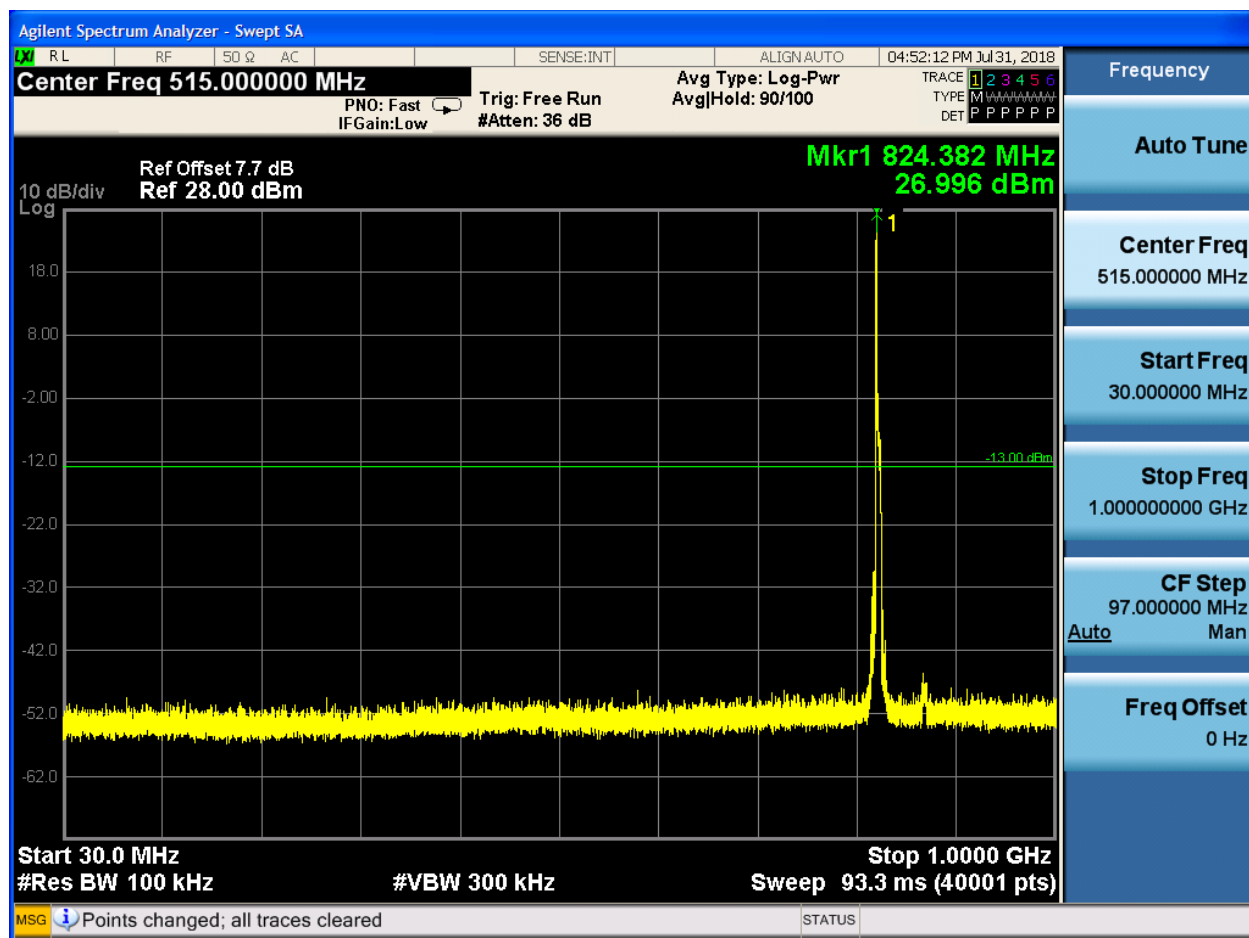
6.1.1.1.3 Test Bandwidth = 5

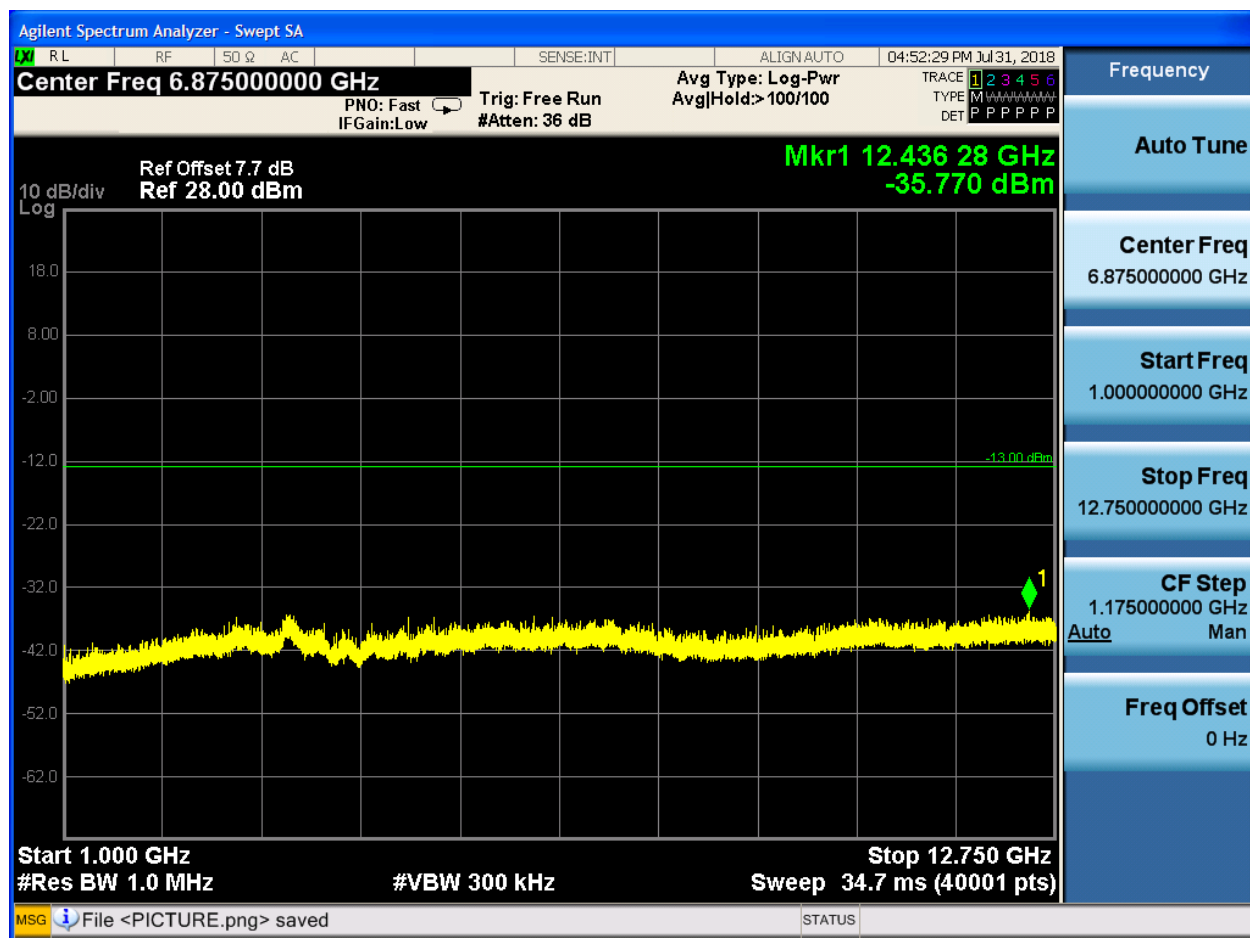
6.1.1.1.3.1 Test Channel = LCH

6.1.1.1.3.1.1 Test RB = RB1#0



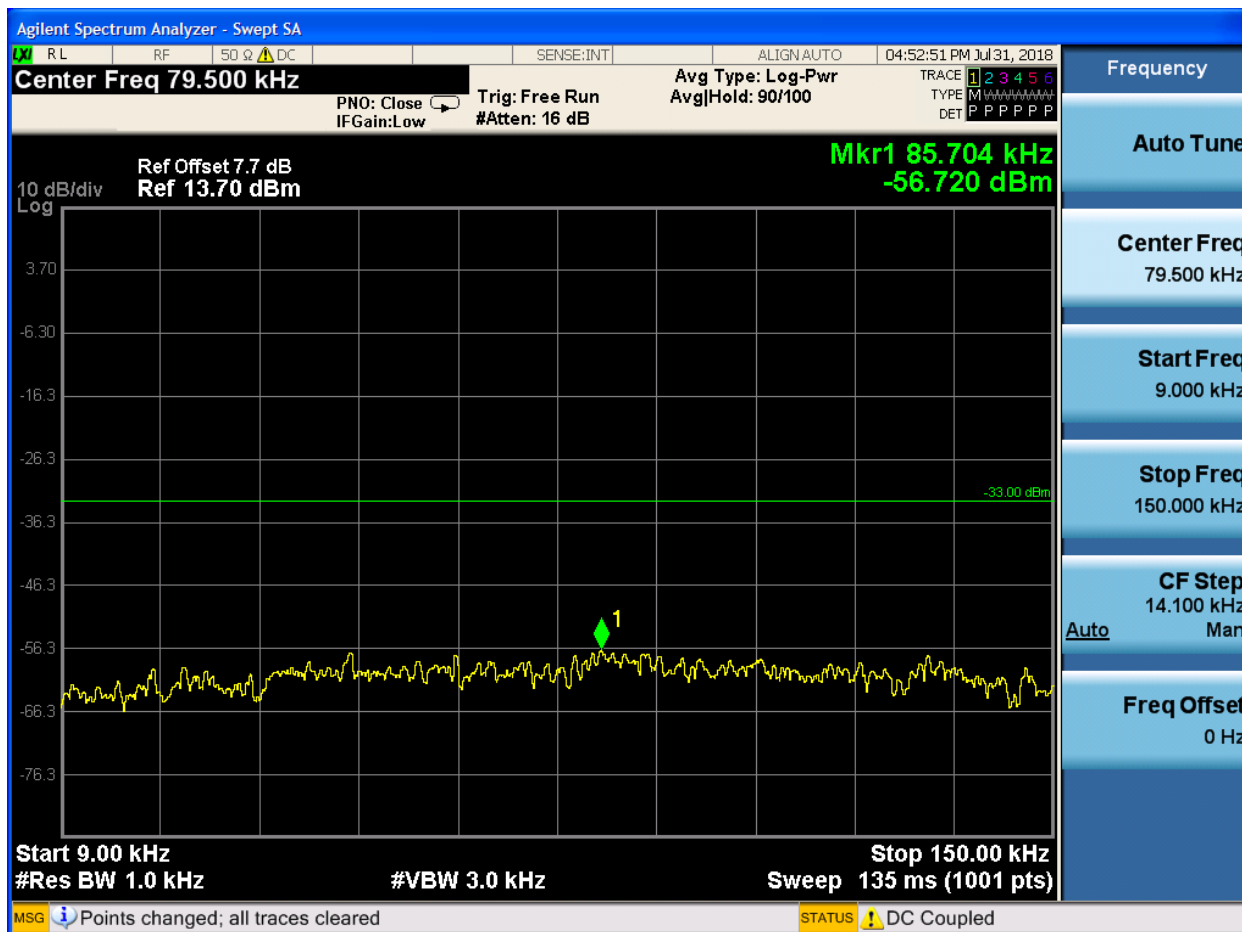


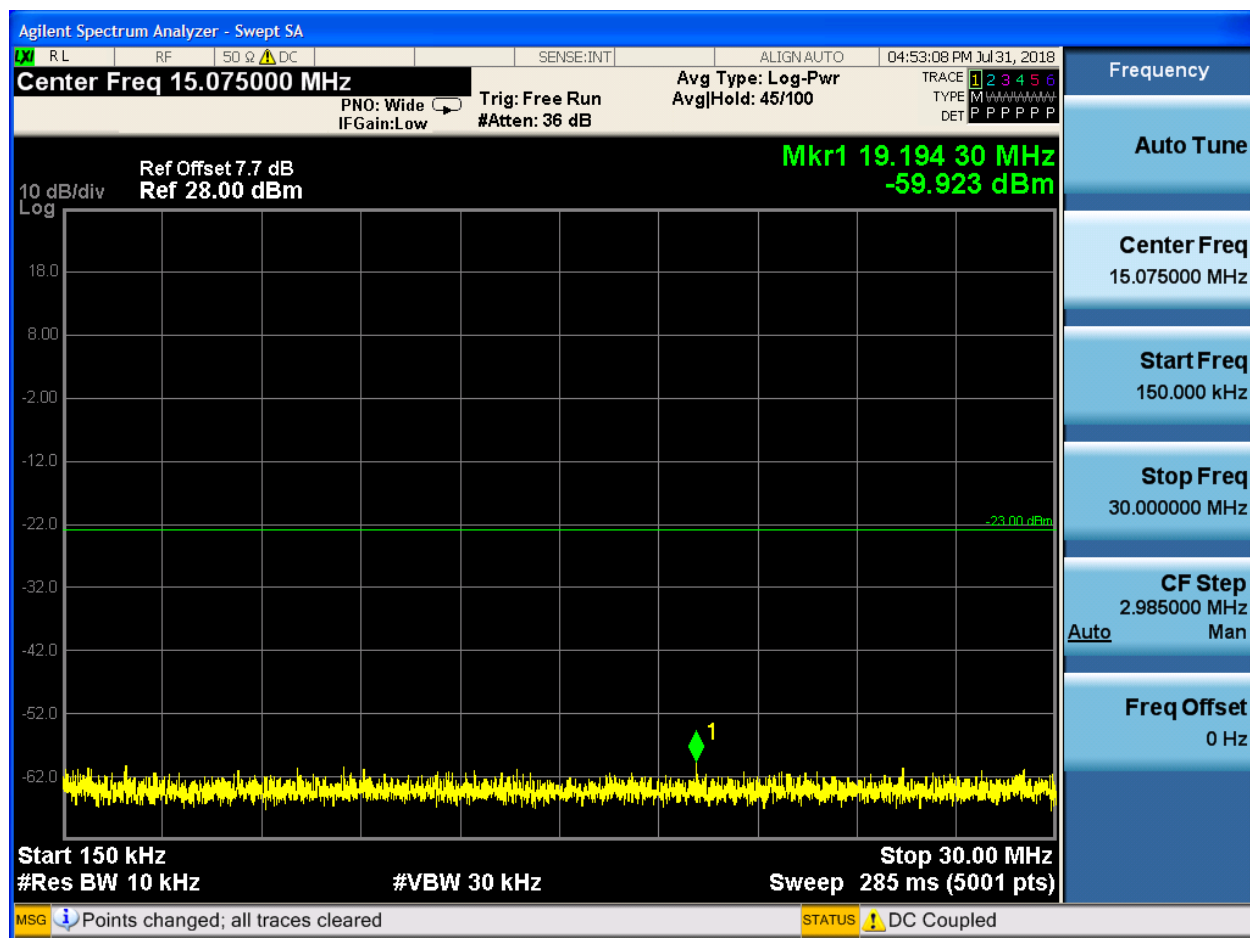


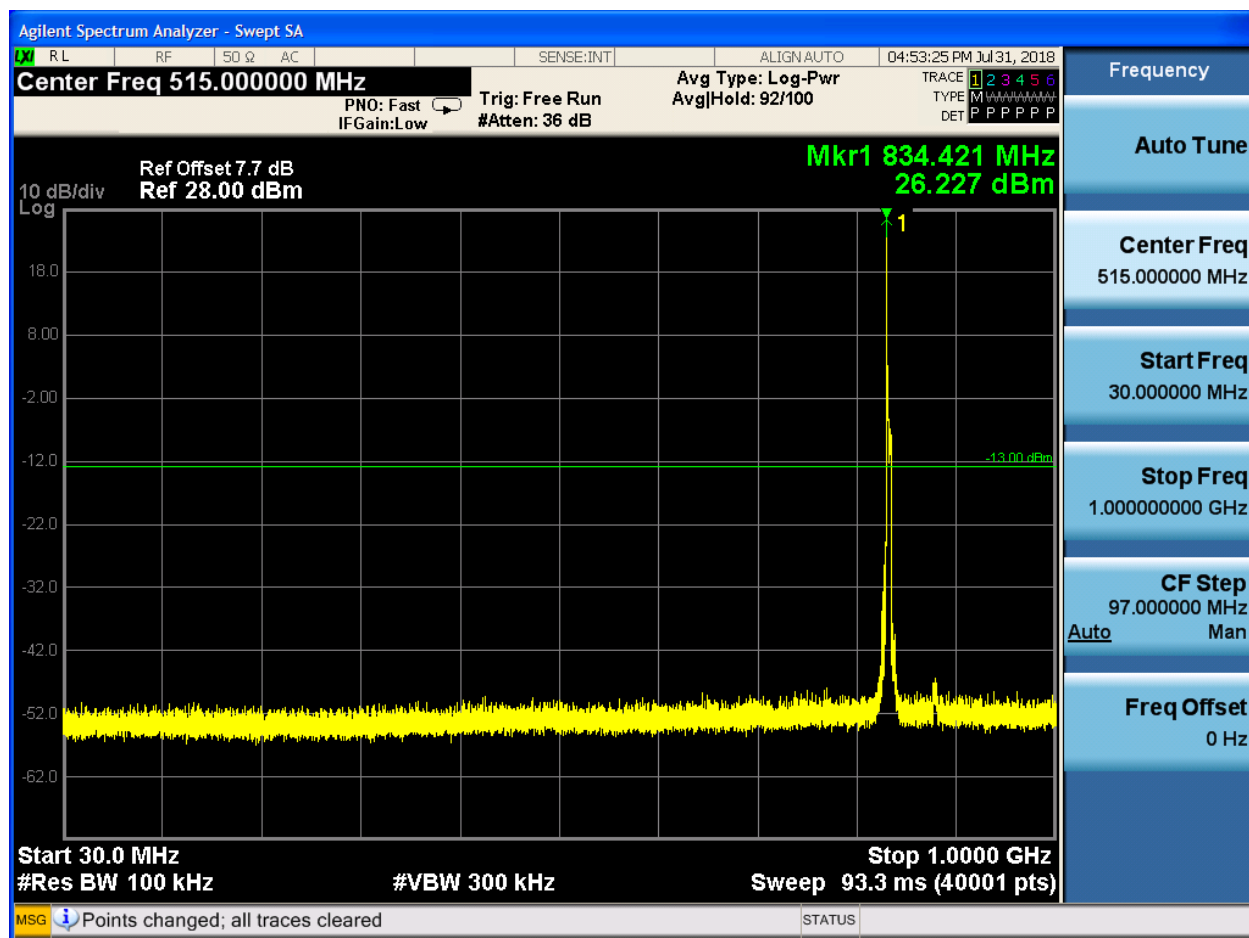


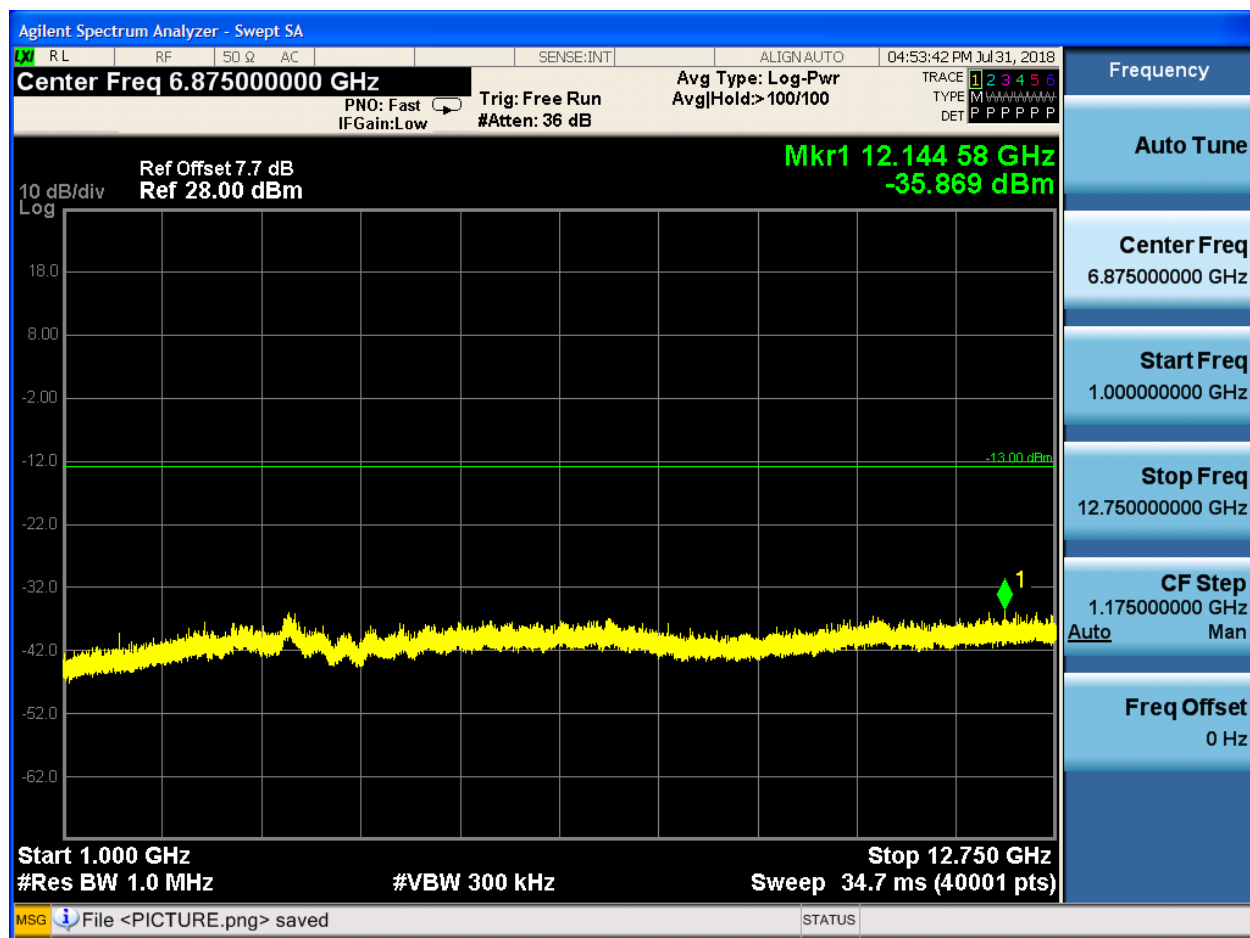
6.1.1.1.3.2 Test Channel = MCH

6.1.1.1.3.2.1 Test RB = RB1#0



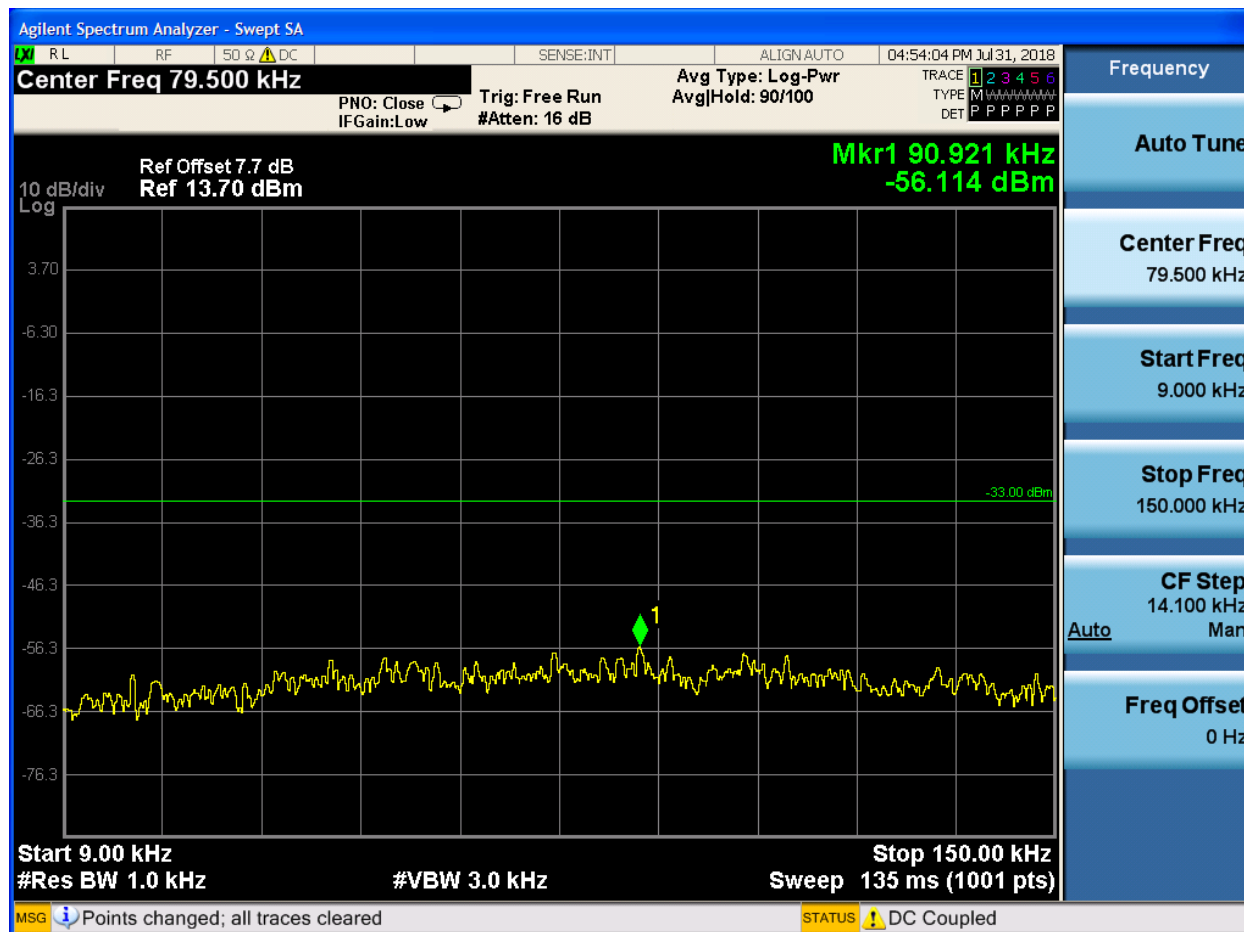


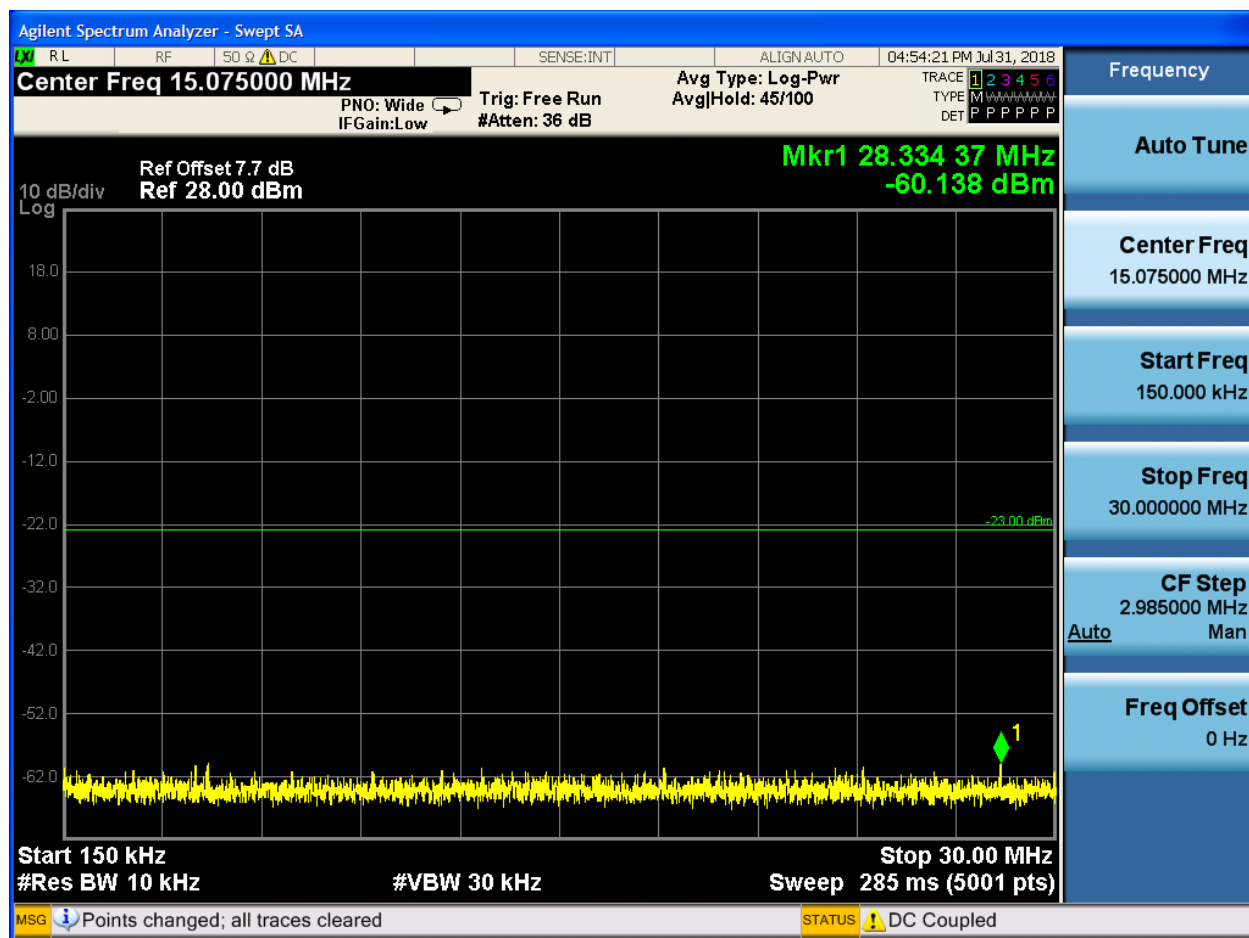


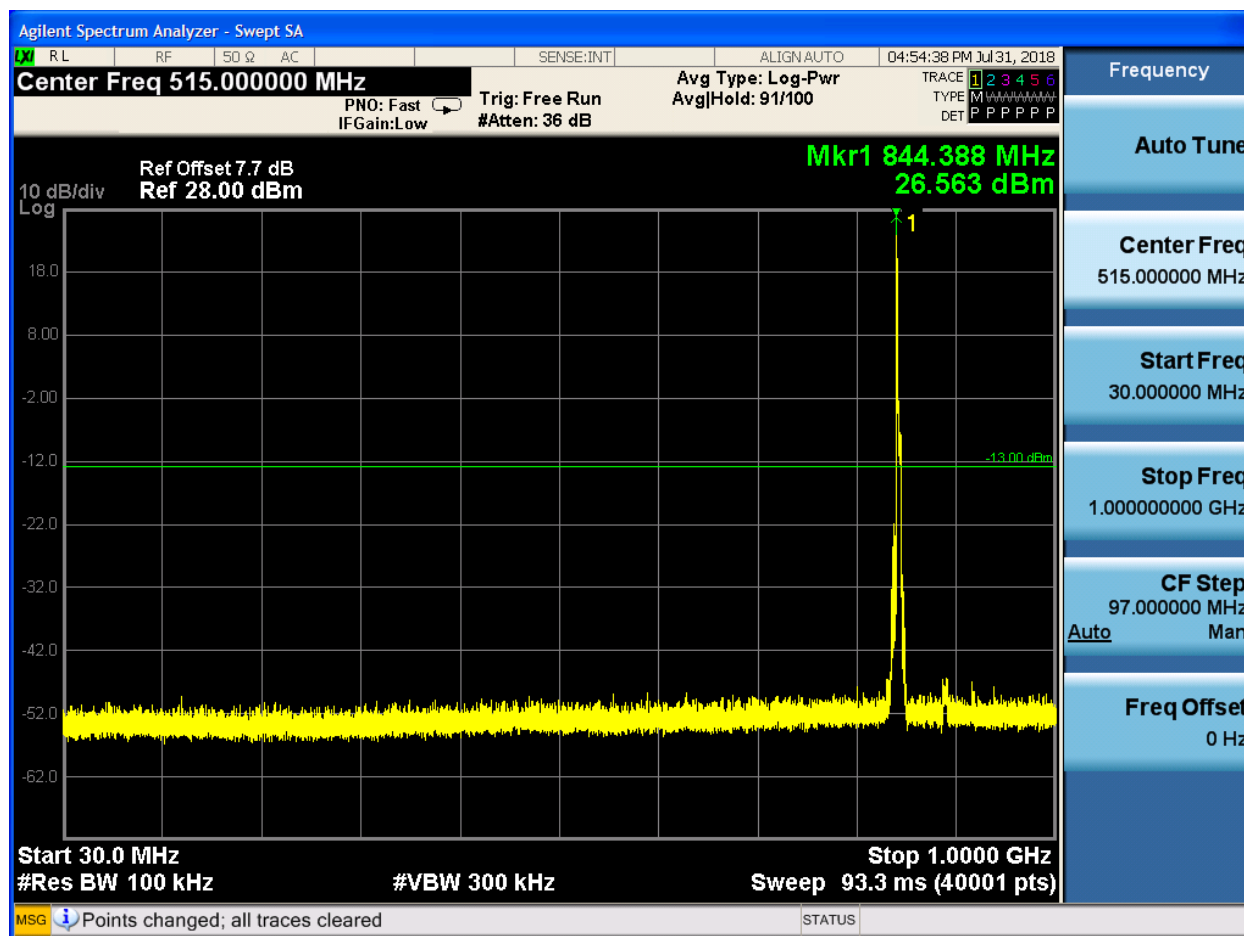


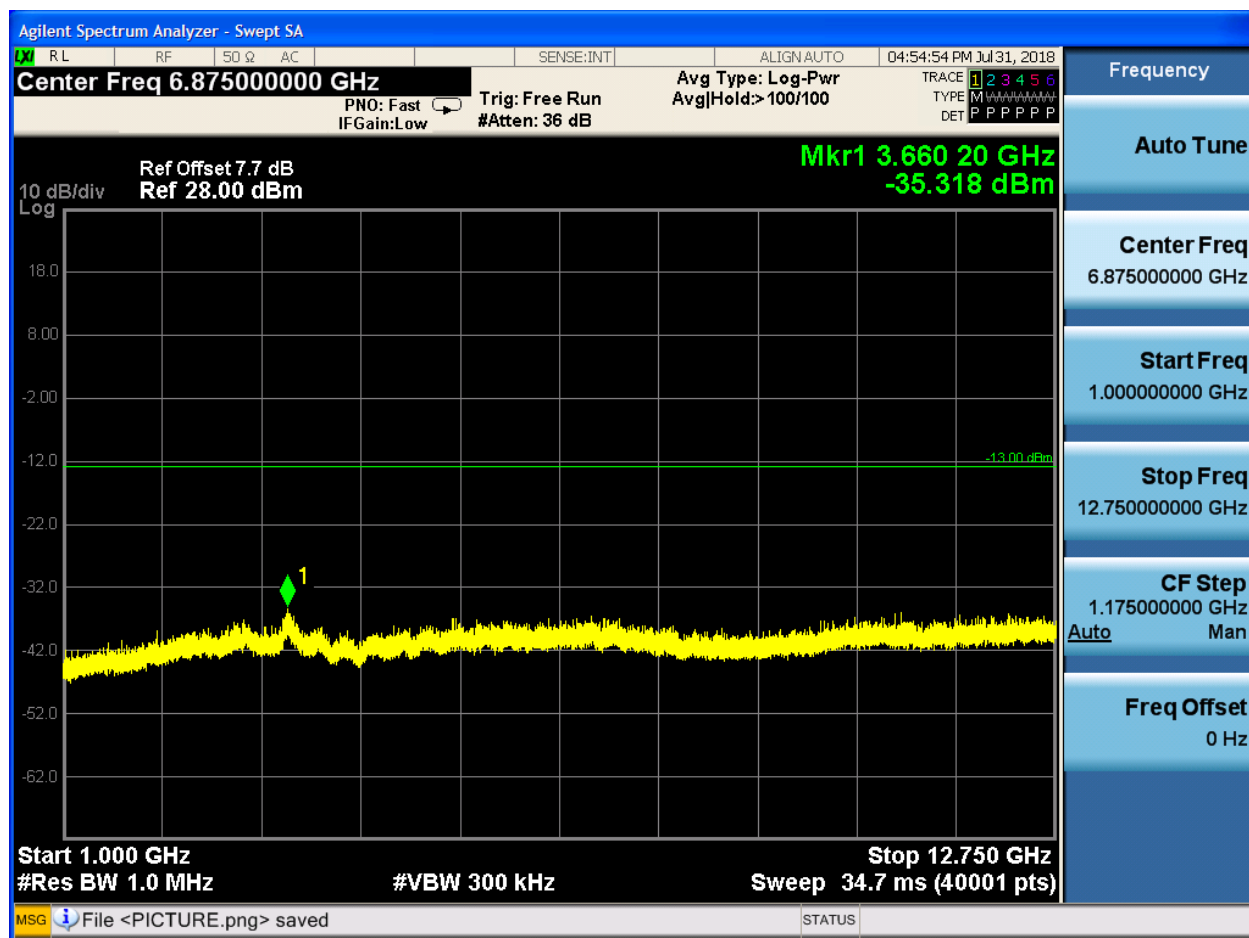
6.1.1.1.3.3 Test Channel = HCH

6.1.1.1.3.3.1 Test RB = RB1#0





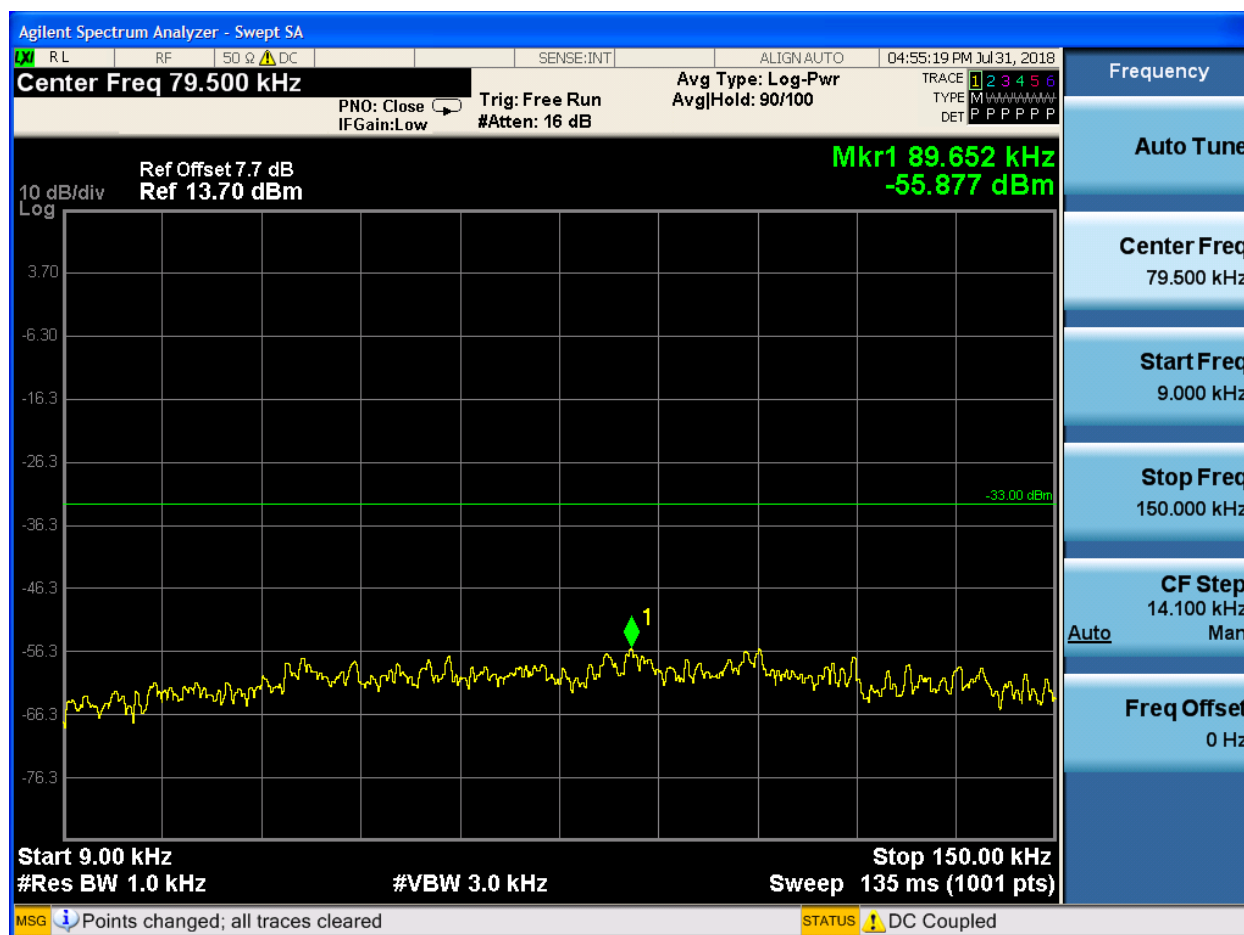


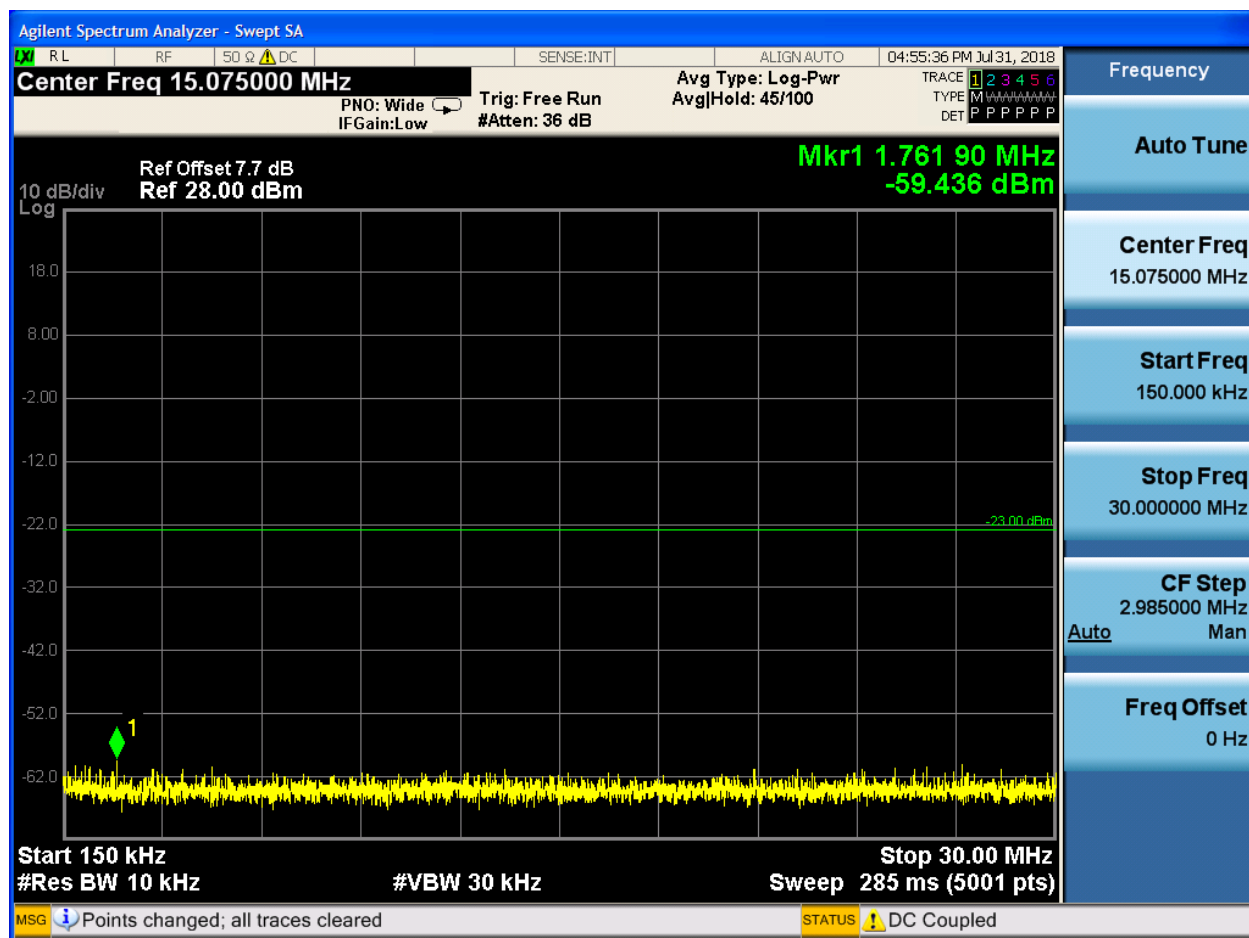


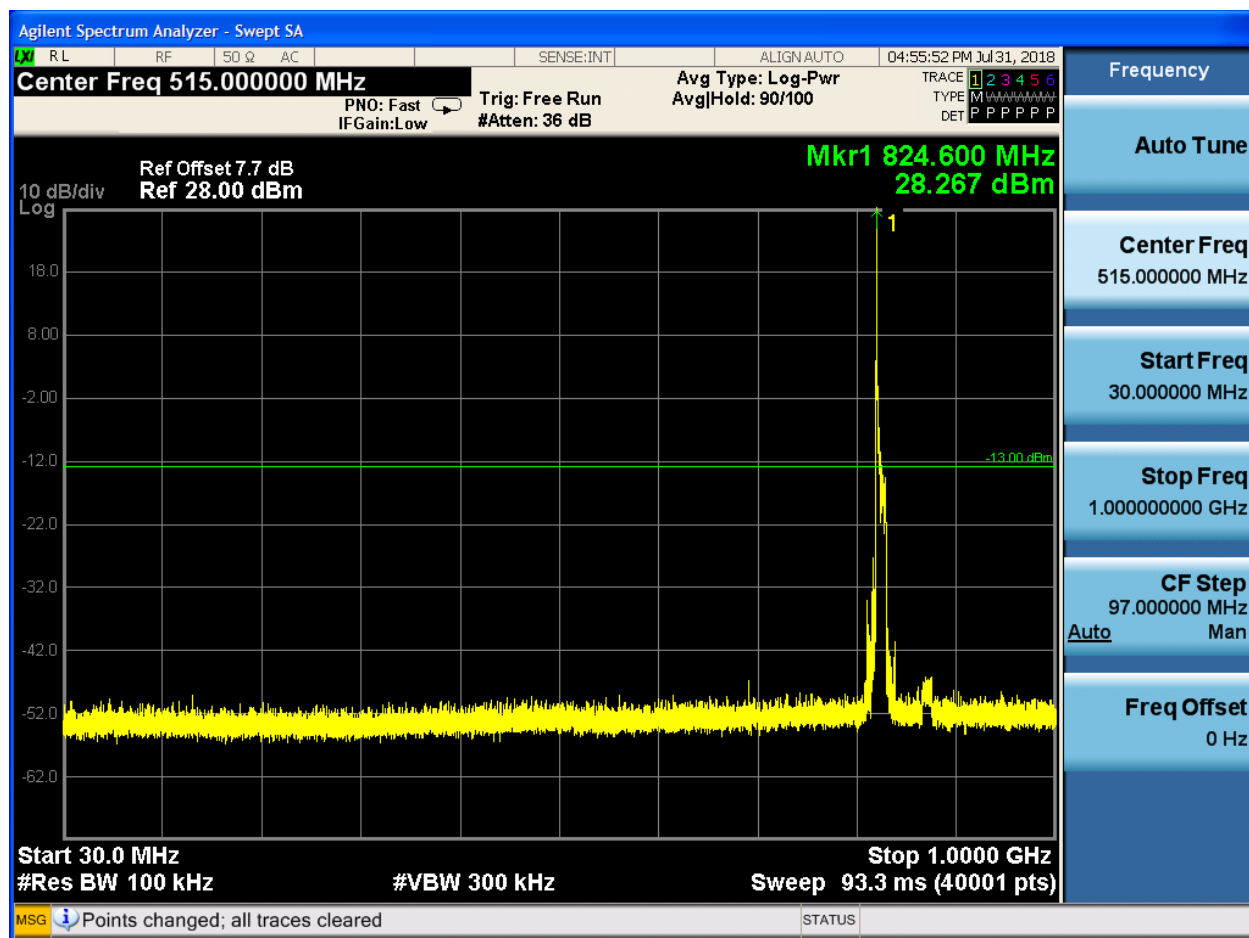
6.1.1.1.4 Test Bandwidth = 10

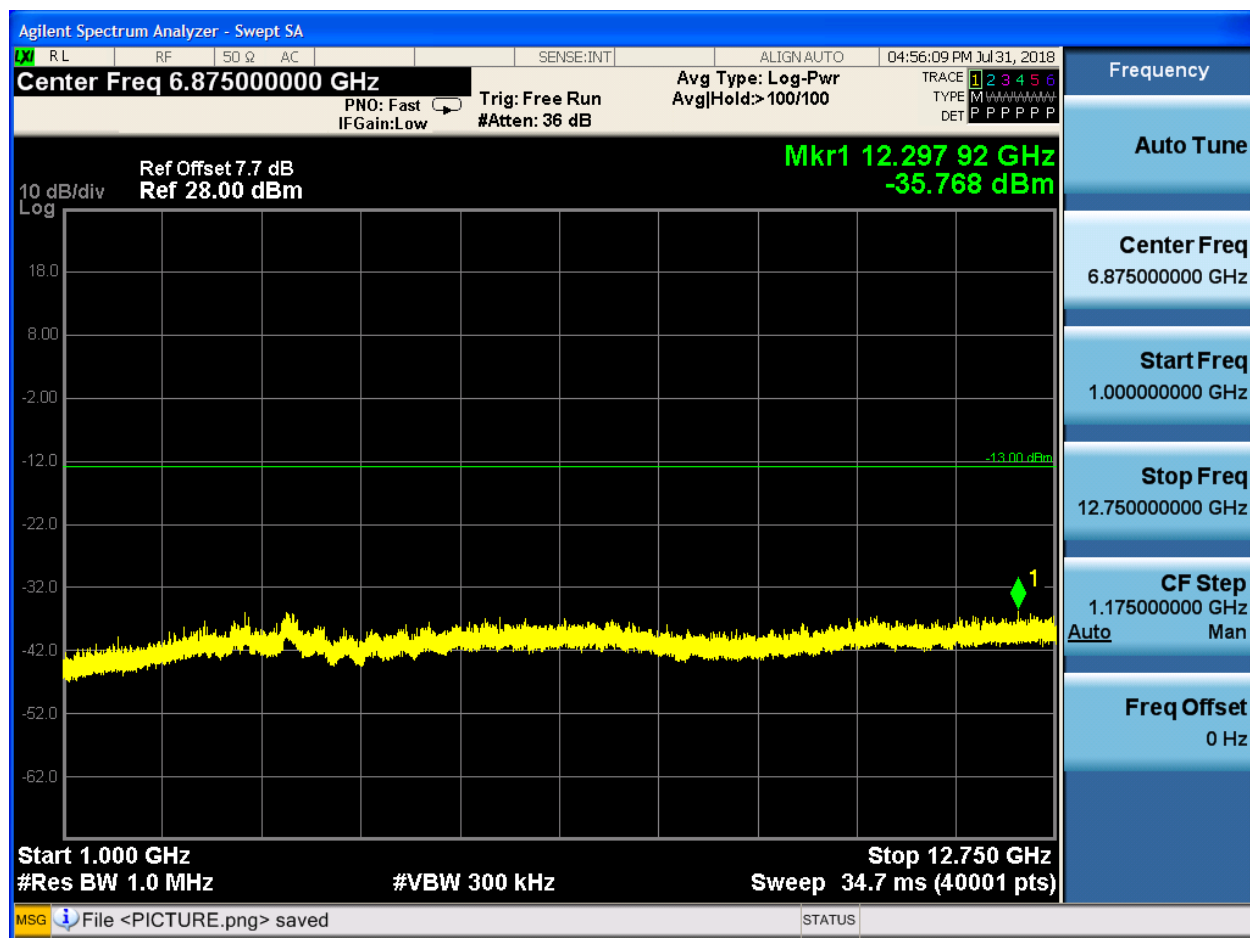
6.1.1.1.4.1 Test Channel = LCH

6.1.1.1.4.1.1 Test RB = RB1#0



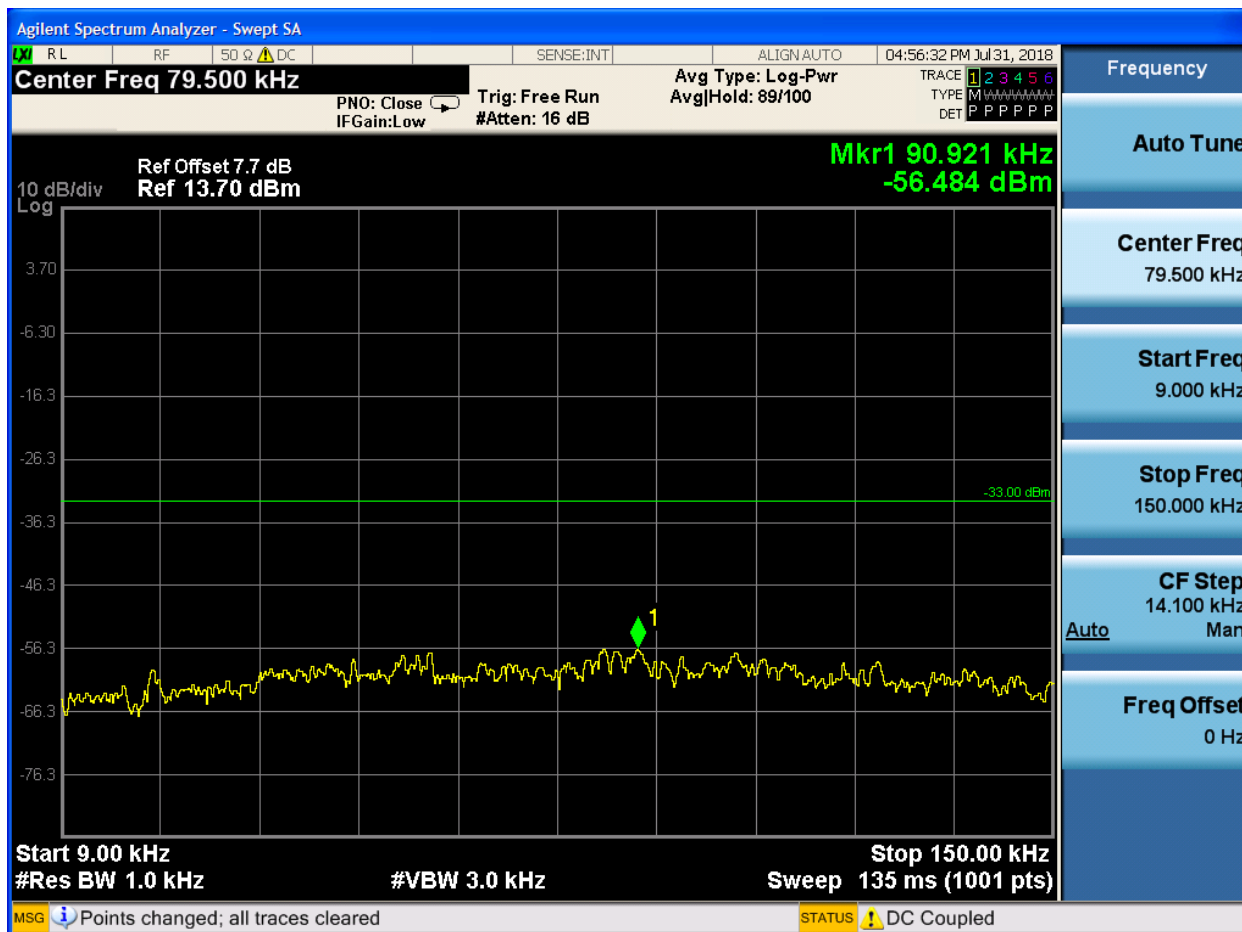


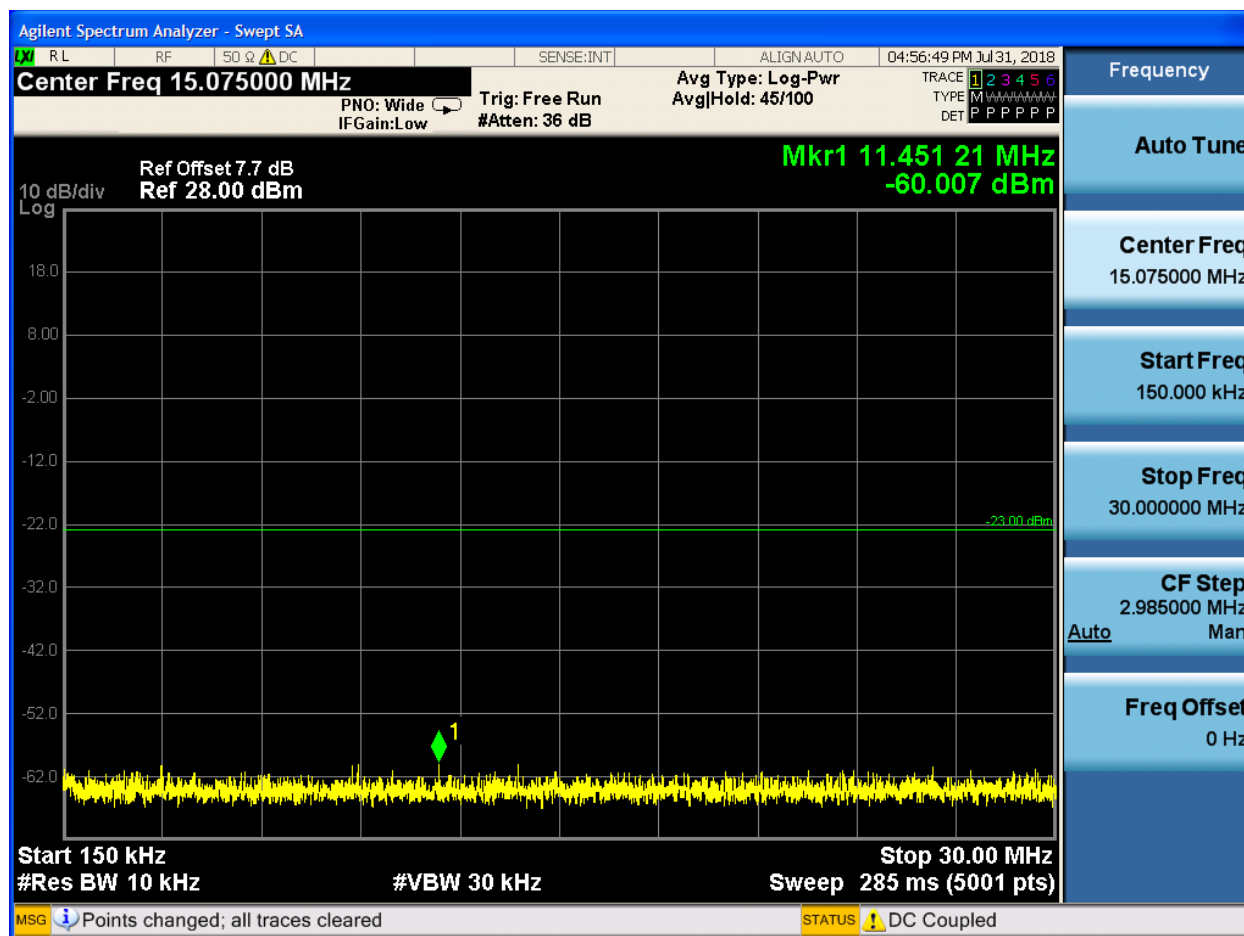


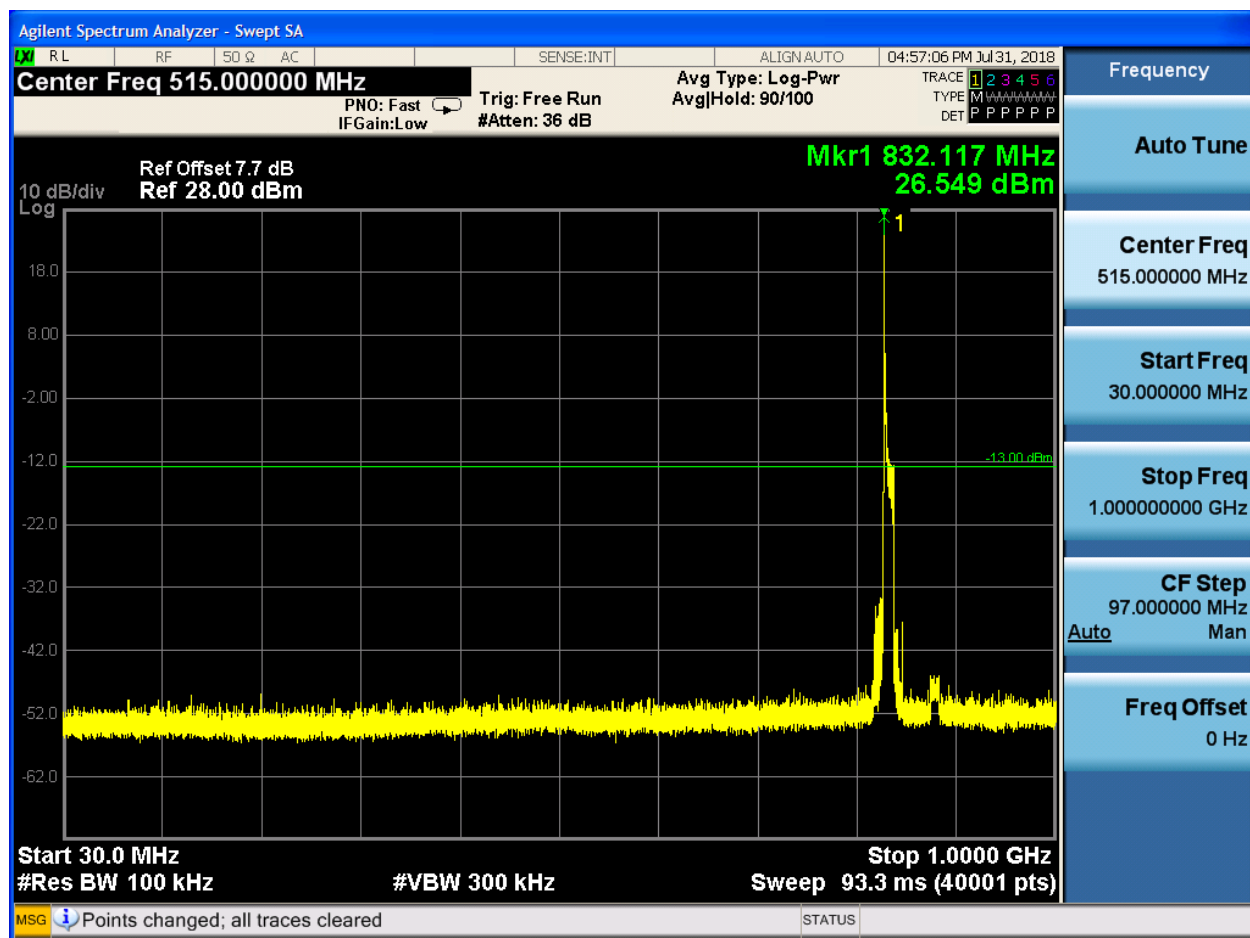


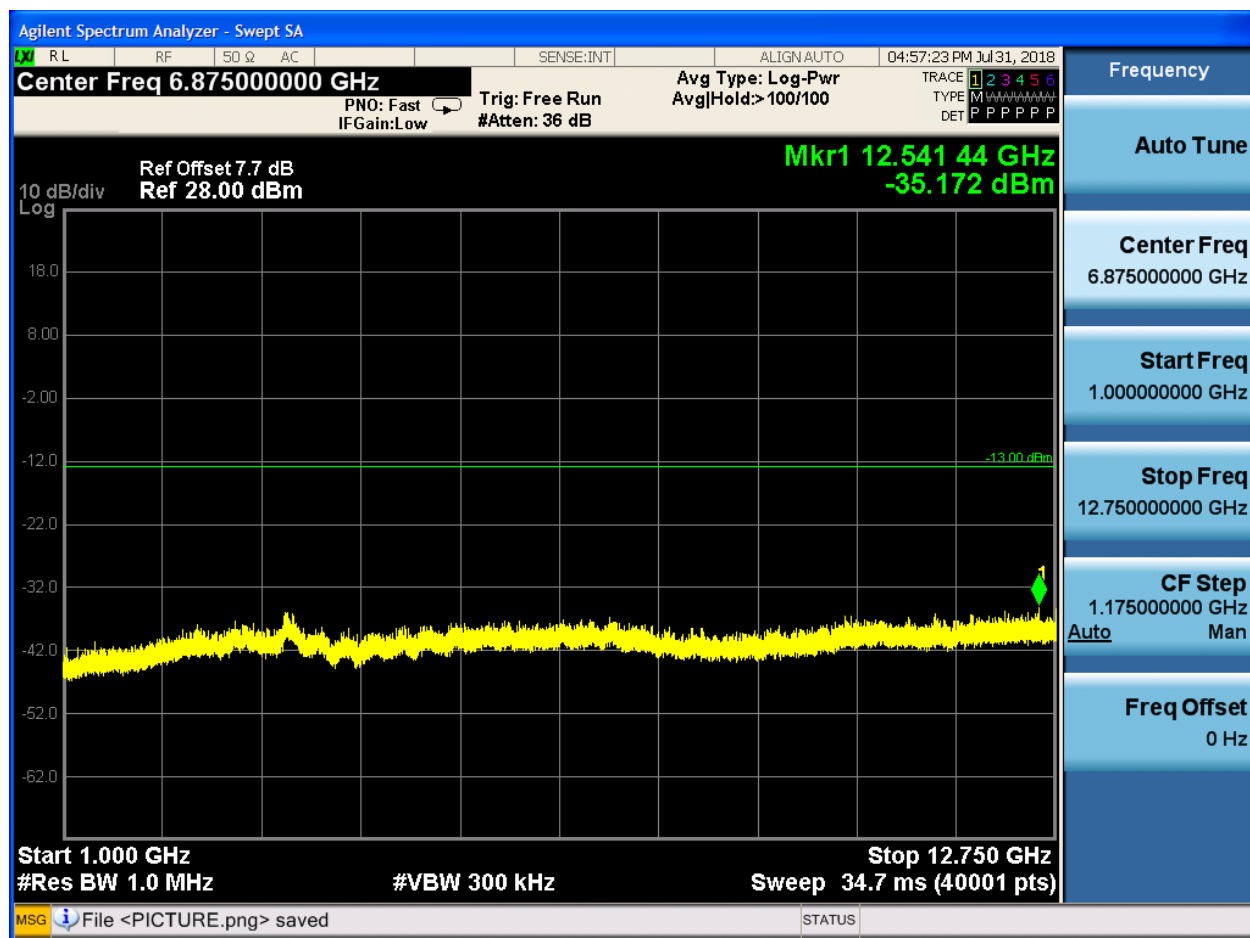
6.1.1.1.4.2 Test Channel = MCH

6.1.1.1.4.2.1 Test RB = RB1#0



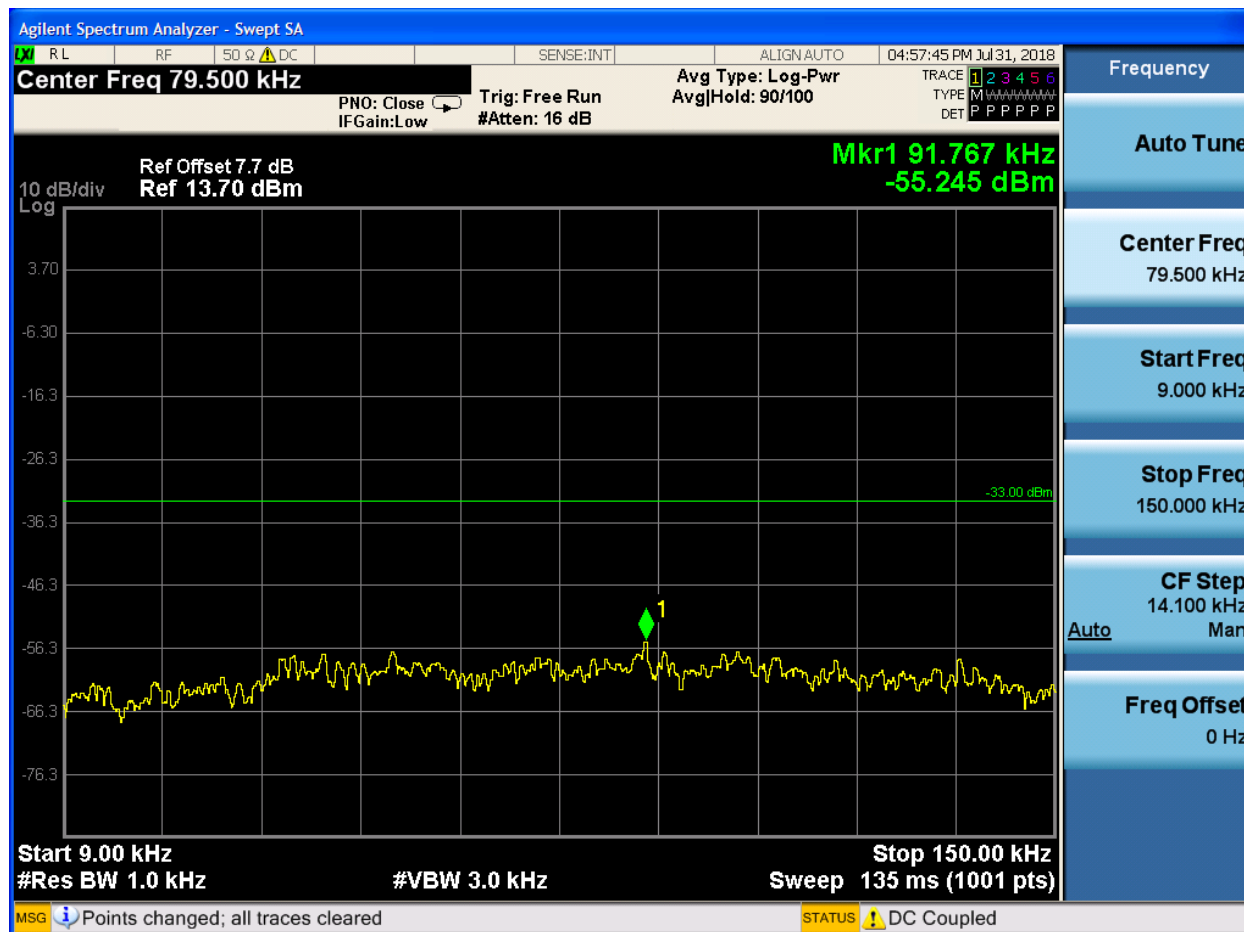


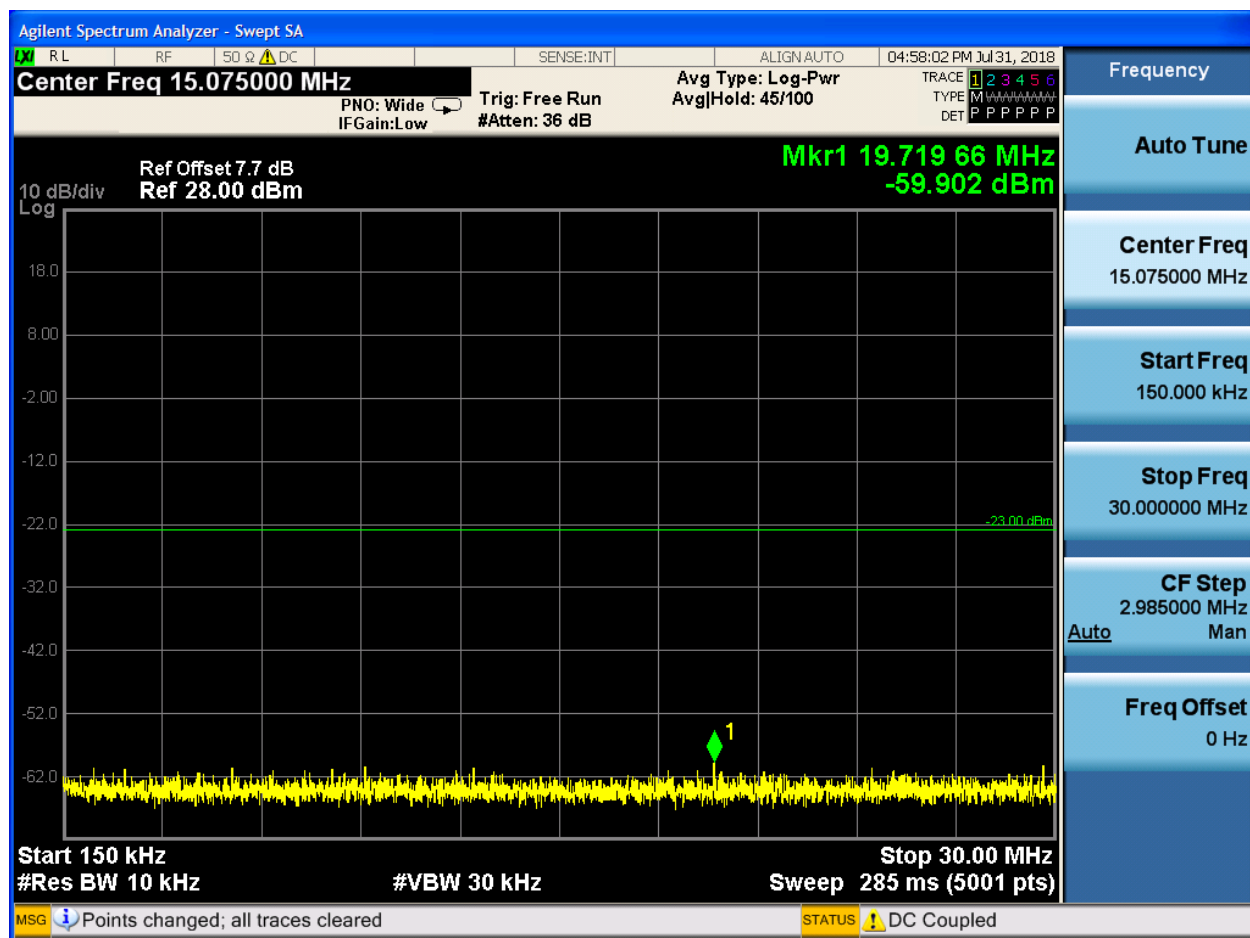


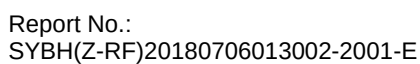
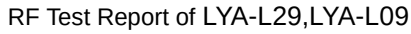


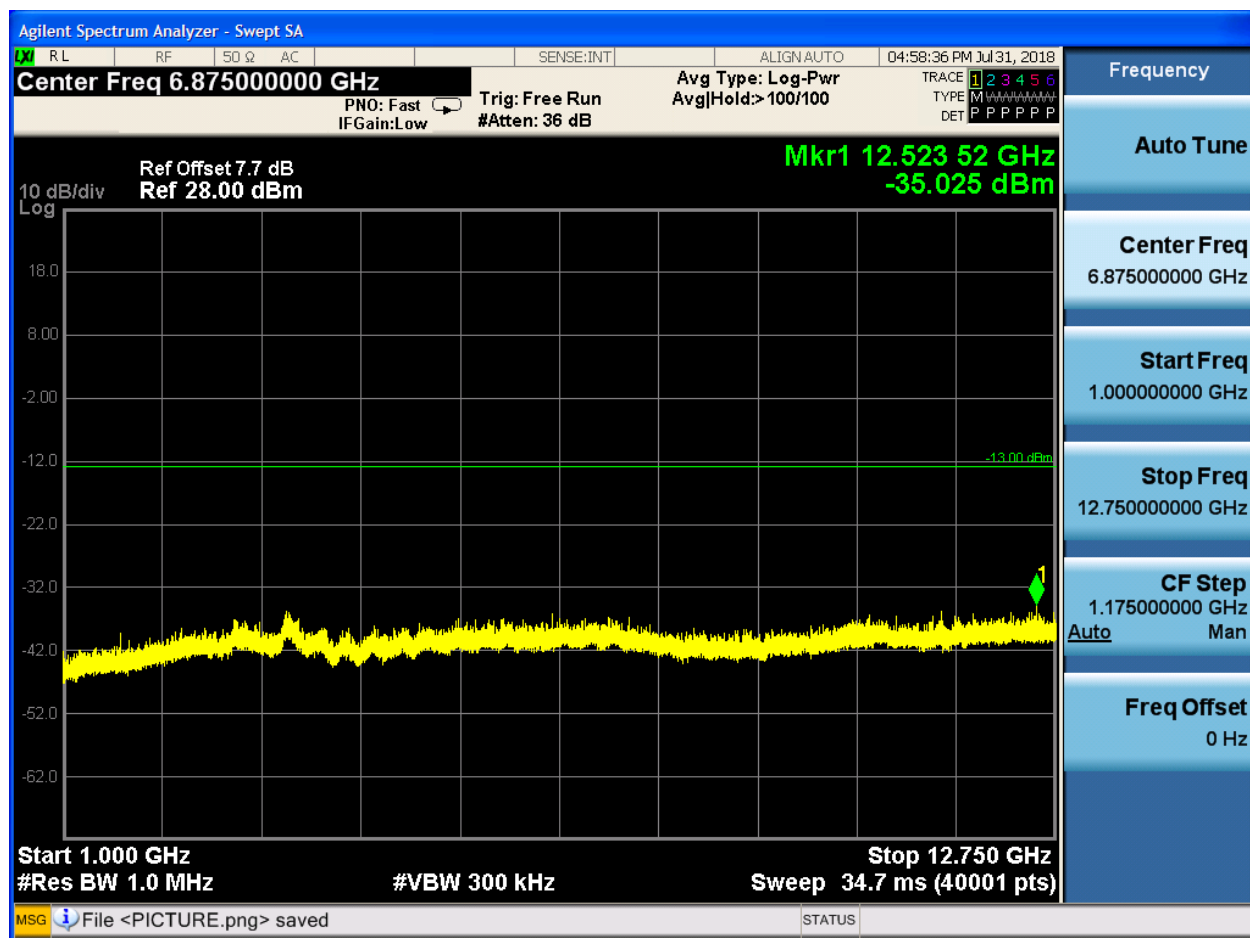
6.1.1.1.4.3 Test Channel = HCH

6.1.1.1.4.3.1 Test RB = RB1#0







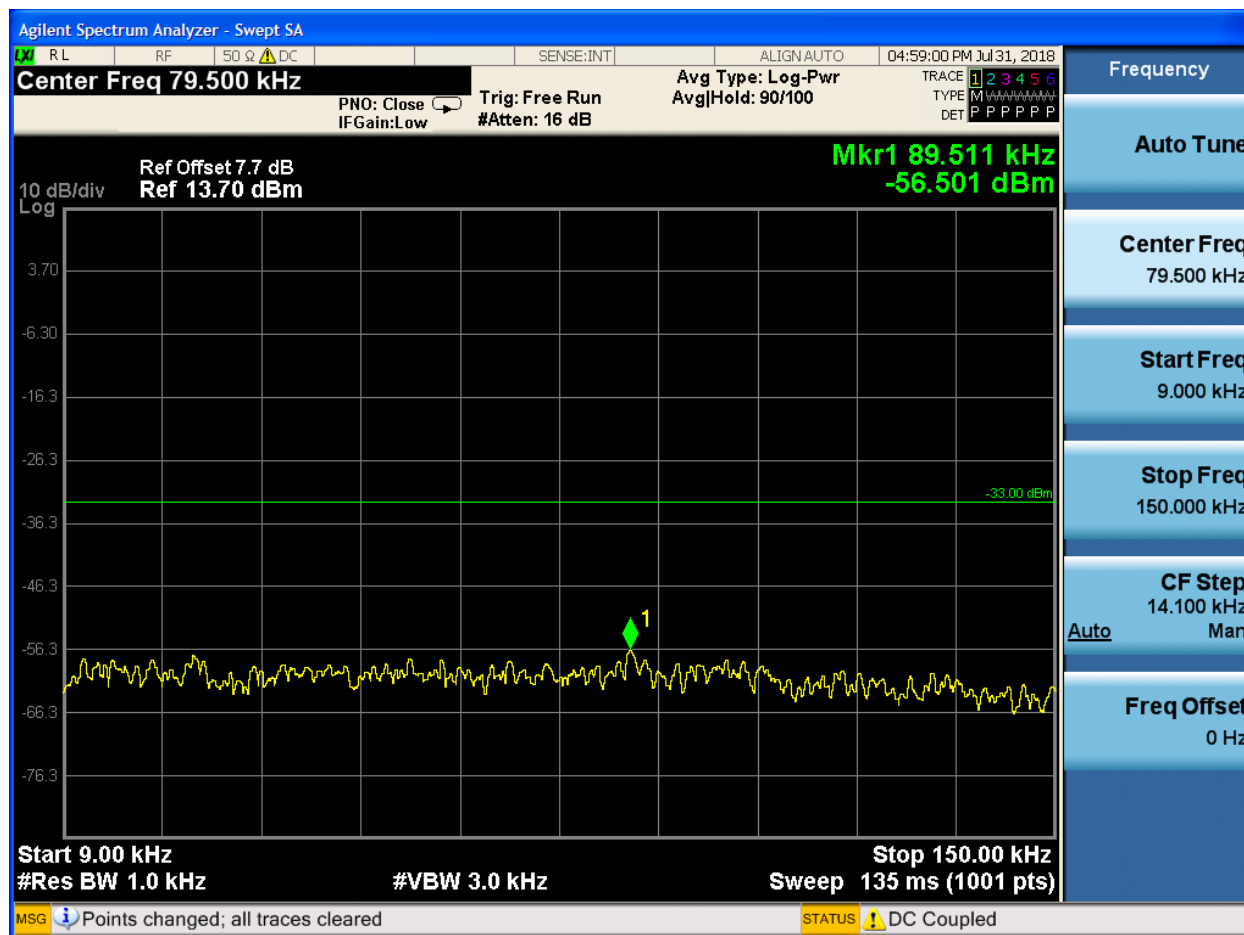


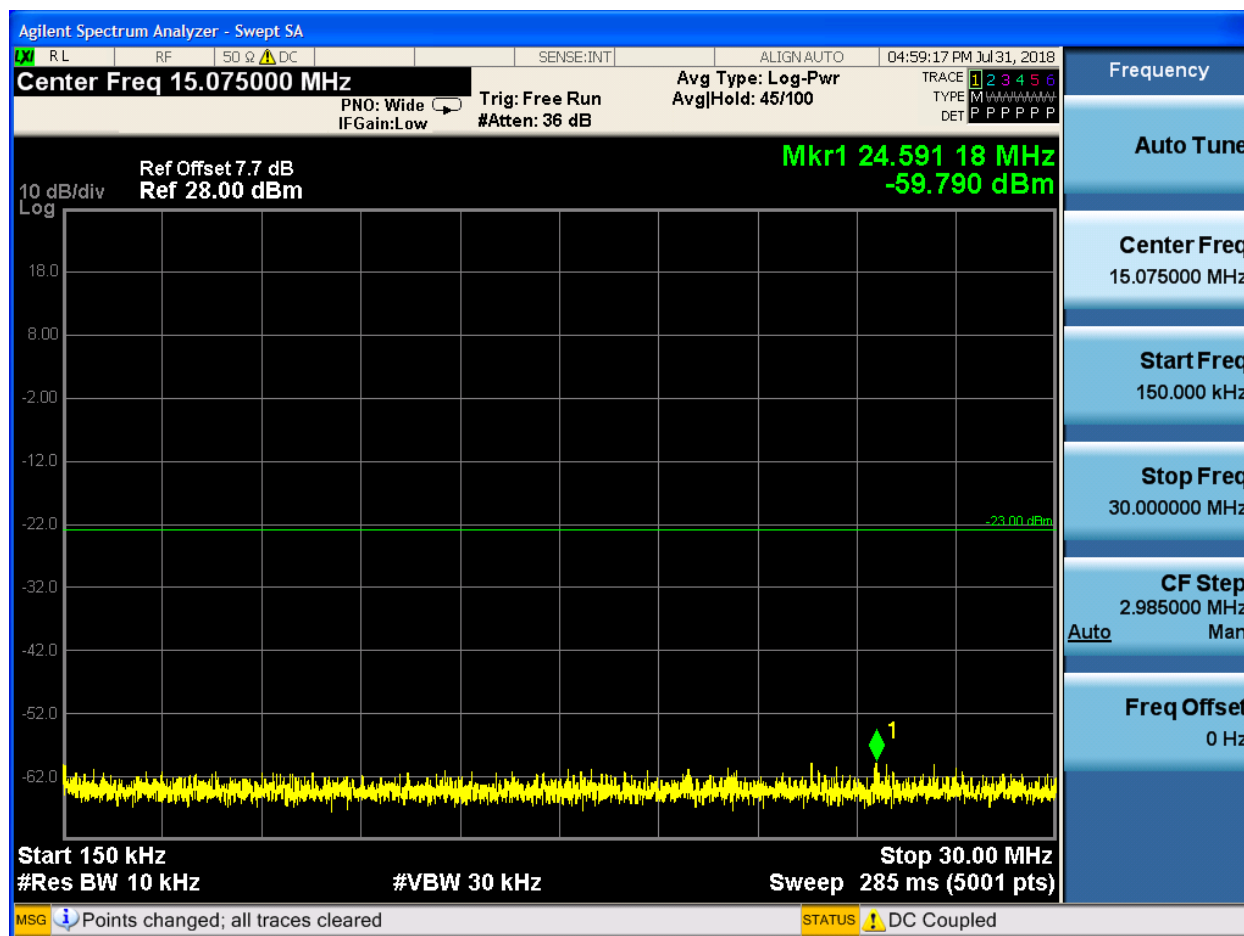
6.1.1.2 Test Mode = LTE/TM2

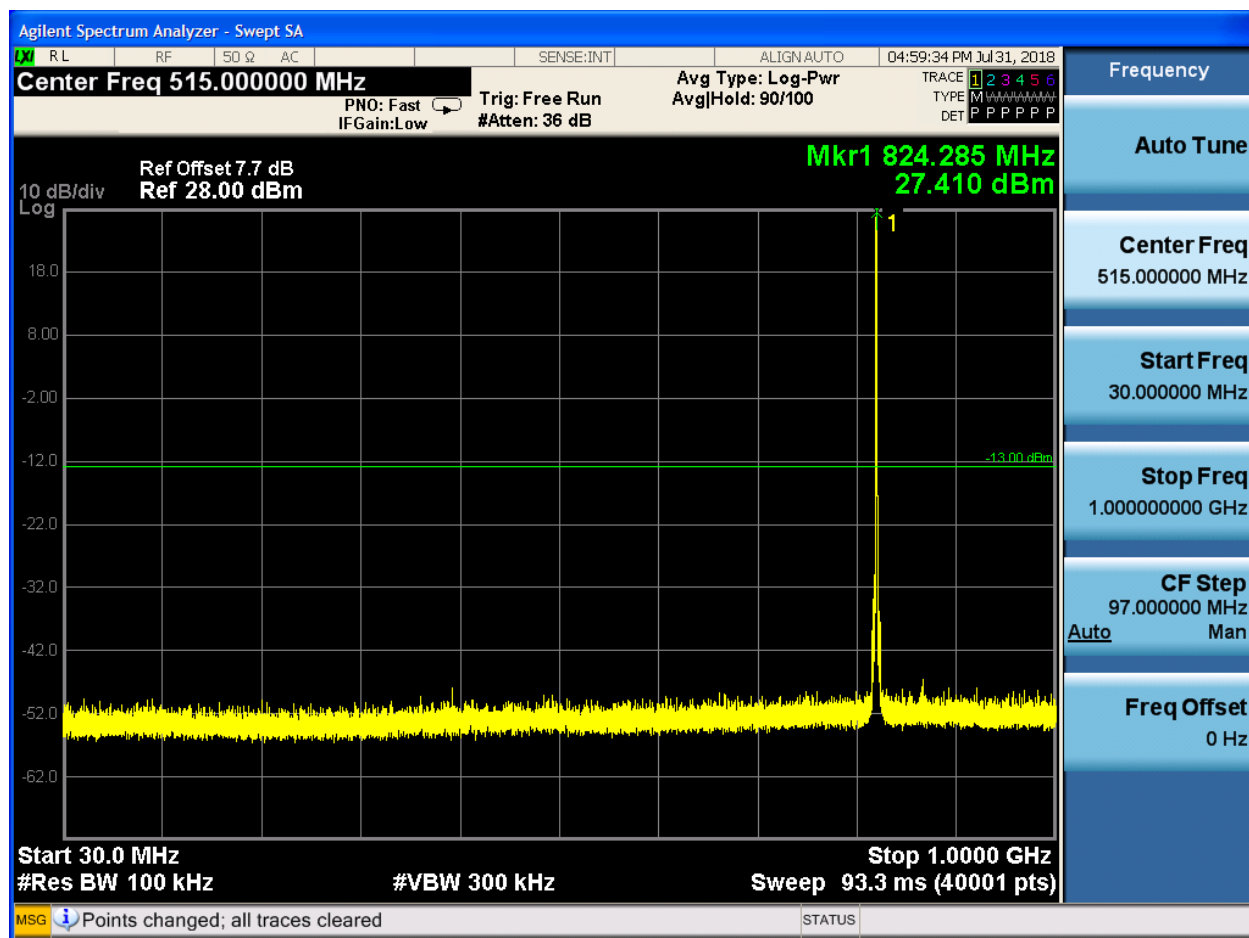
6.1.1.2.1 Test Bandwidth = 1.4

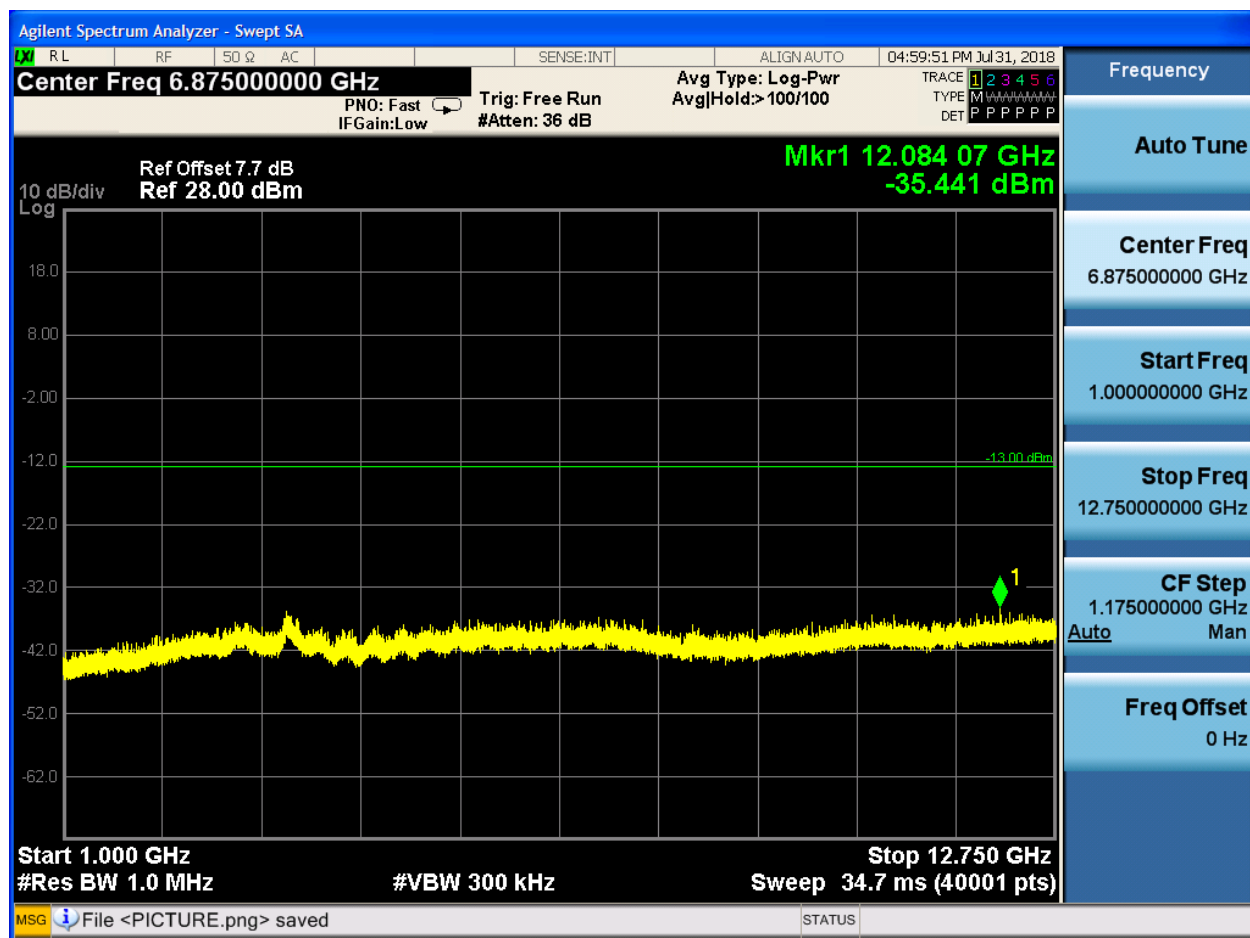
6.1.1.2.1.1 Test Channel = LCH

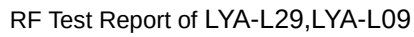
6.1.1.2.1.1.1 Test RB = RB1#0



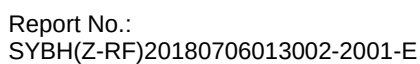


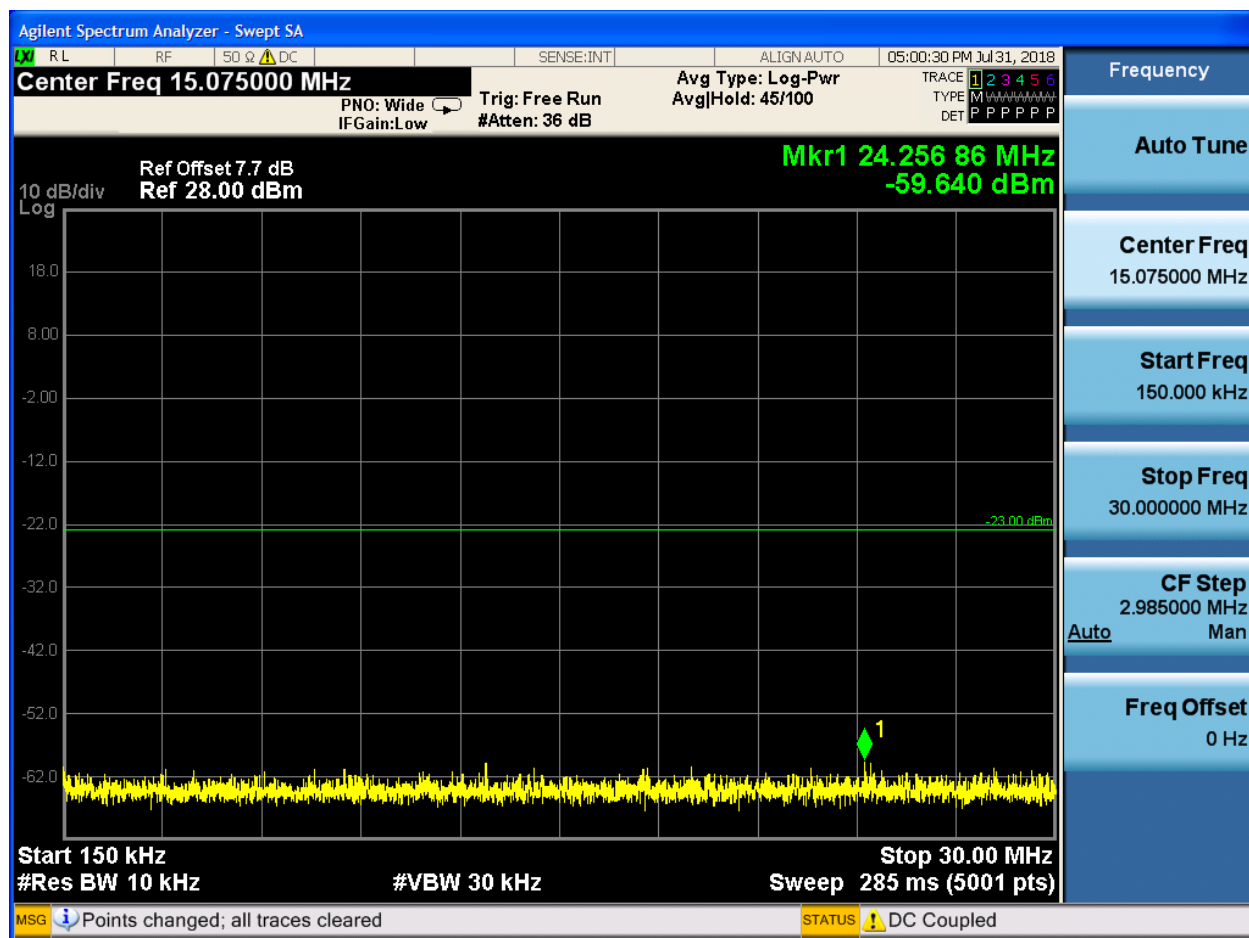


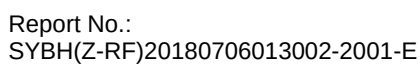
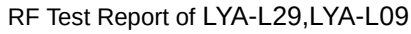


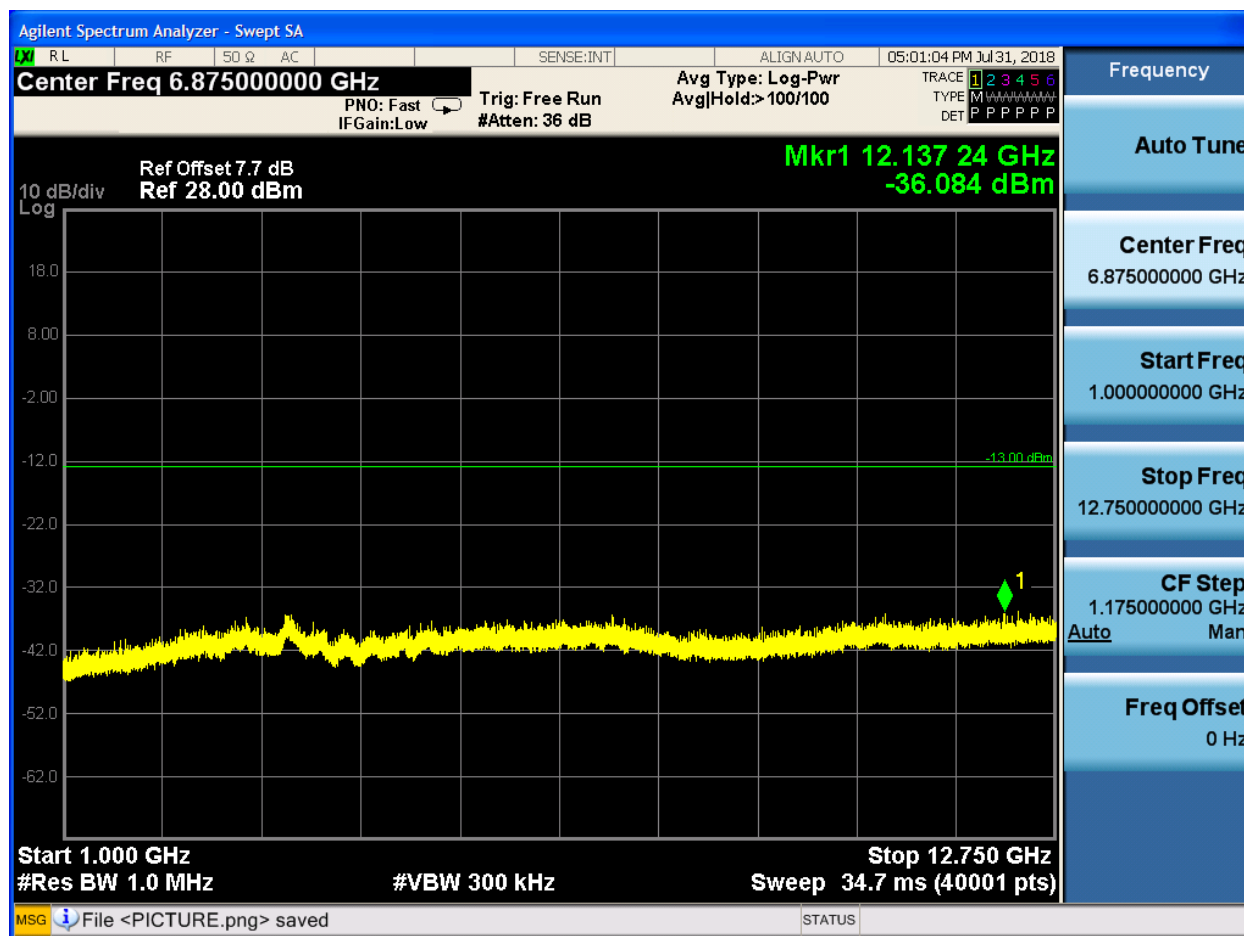


6.1.1.2.1.2.1 Test RB = RB1#0



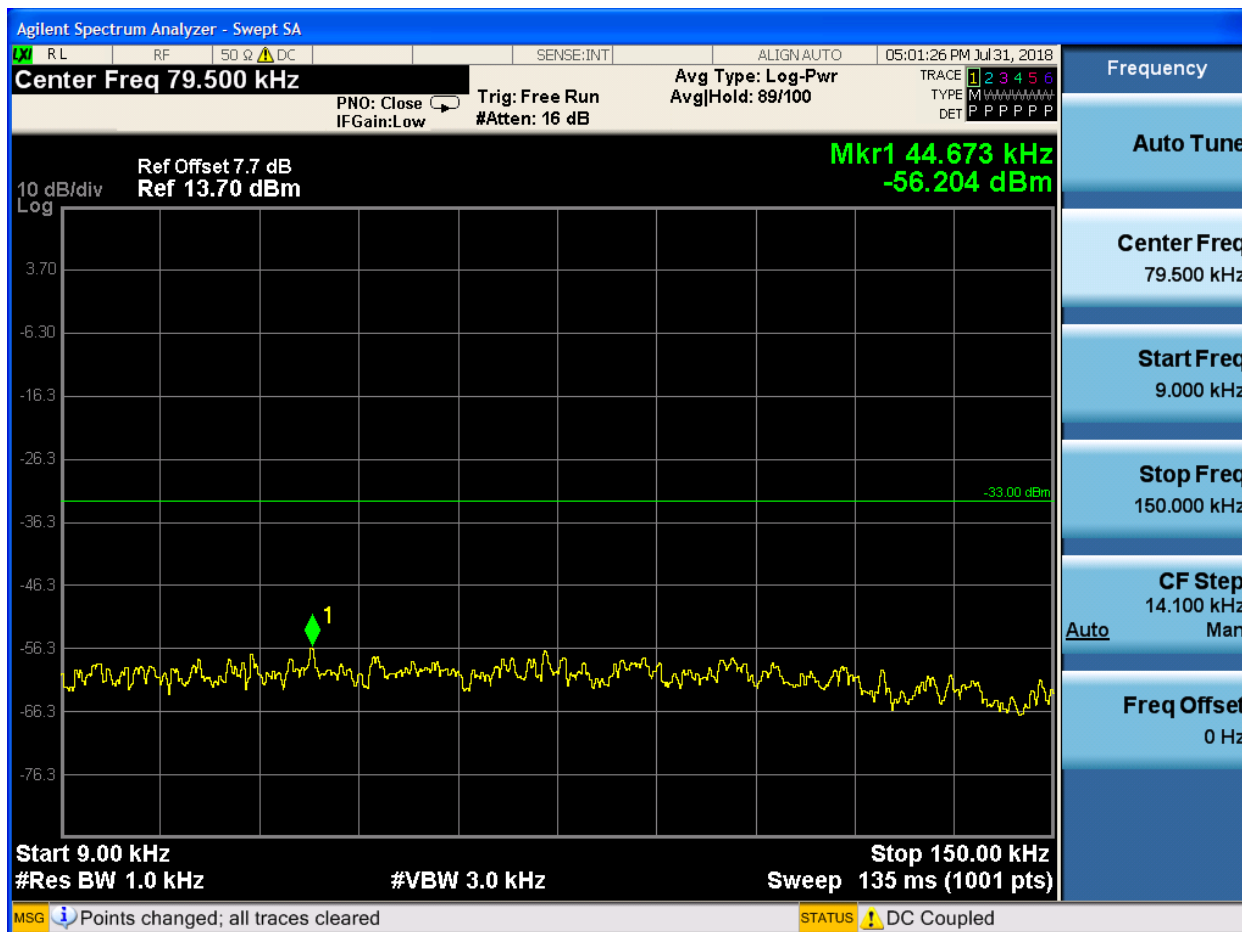


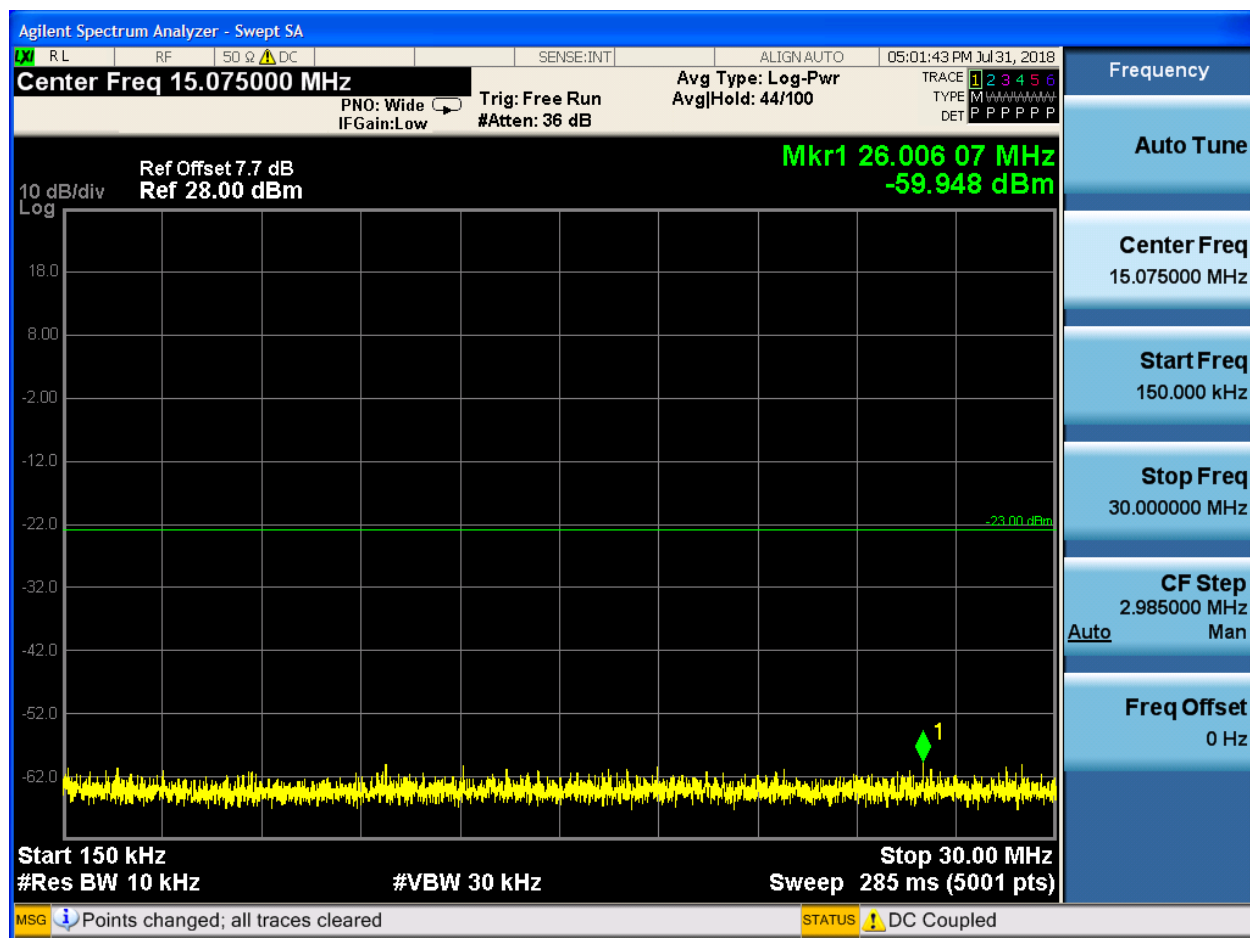


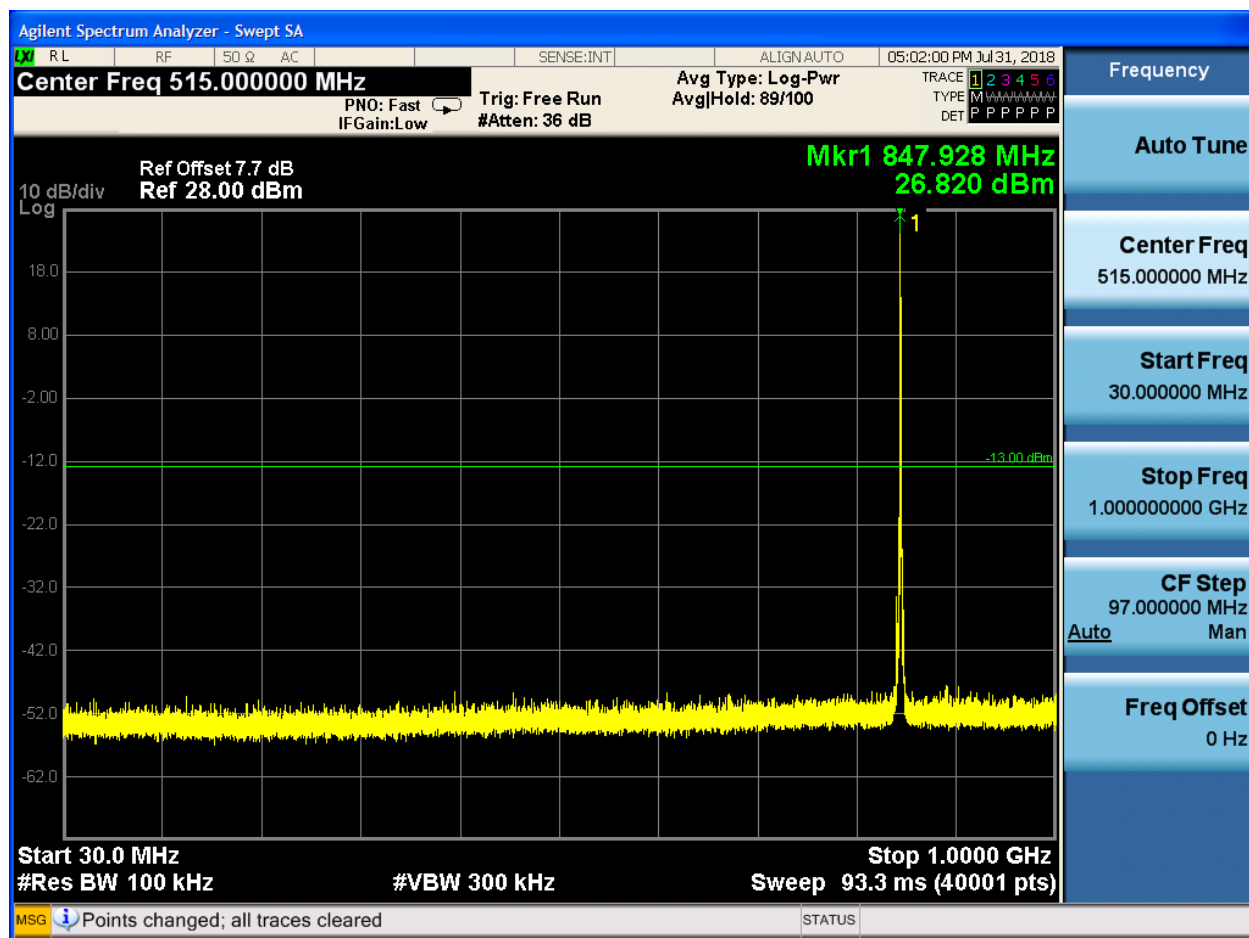


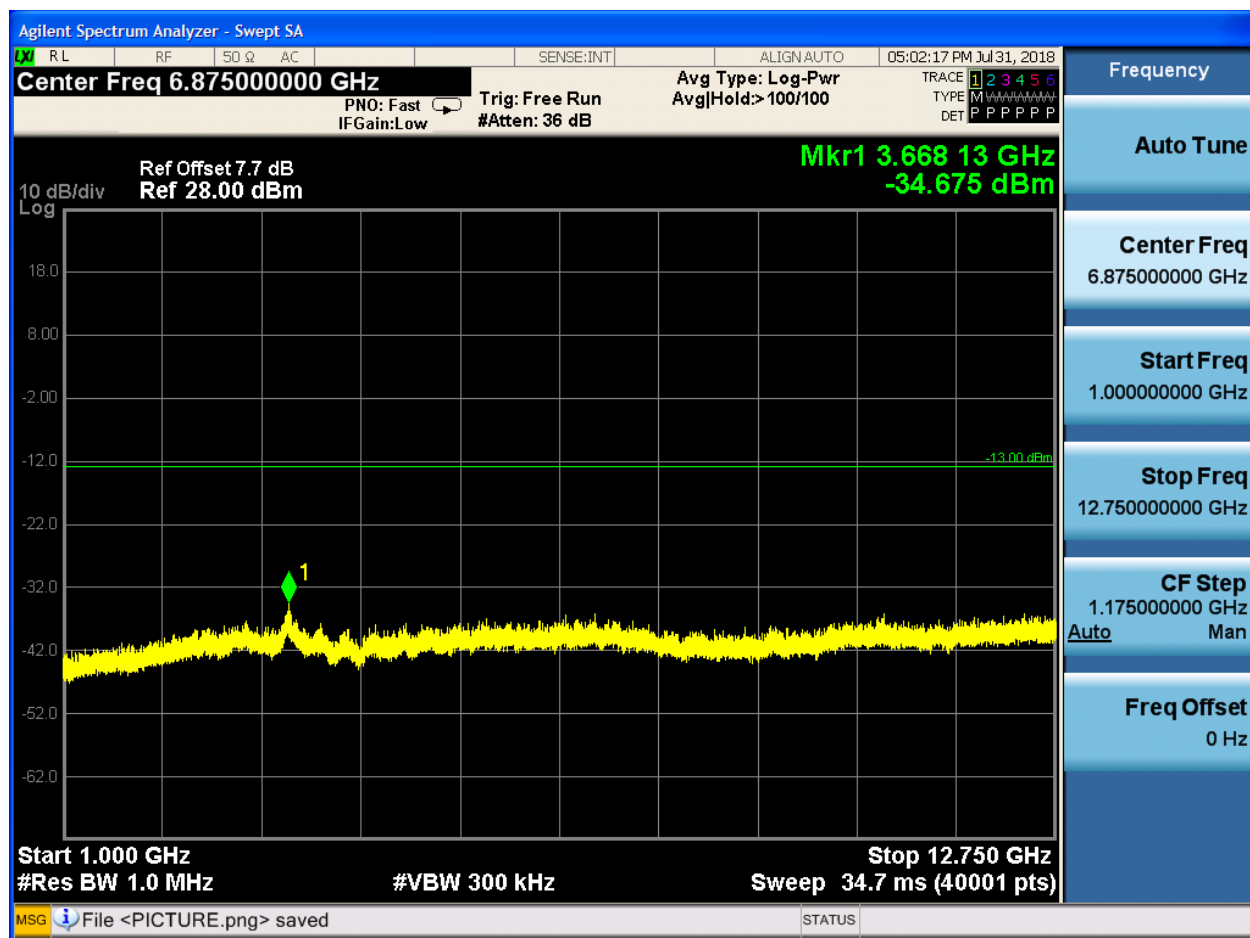
6.1.1.2.1.3 Test Channel = HCH

6.1.1.2.1.3.1 Test RB = RB1#0





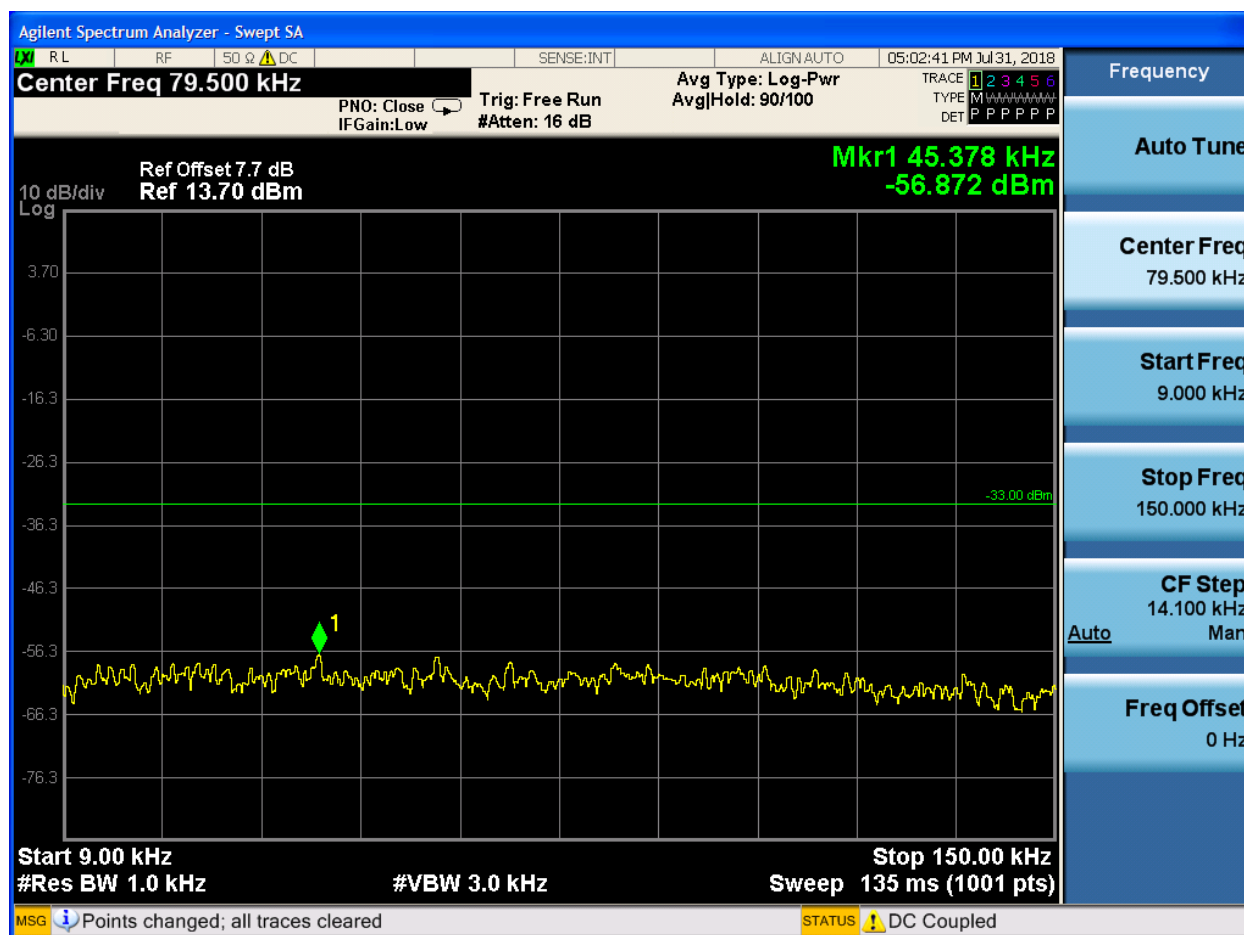


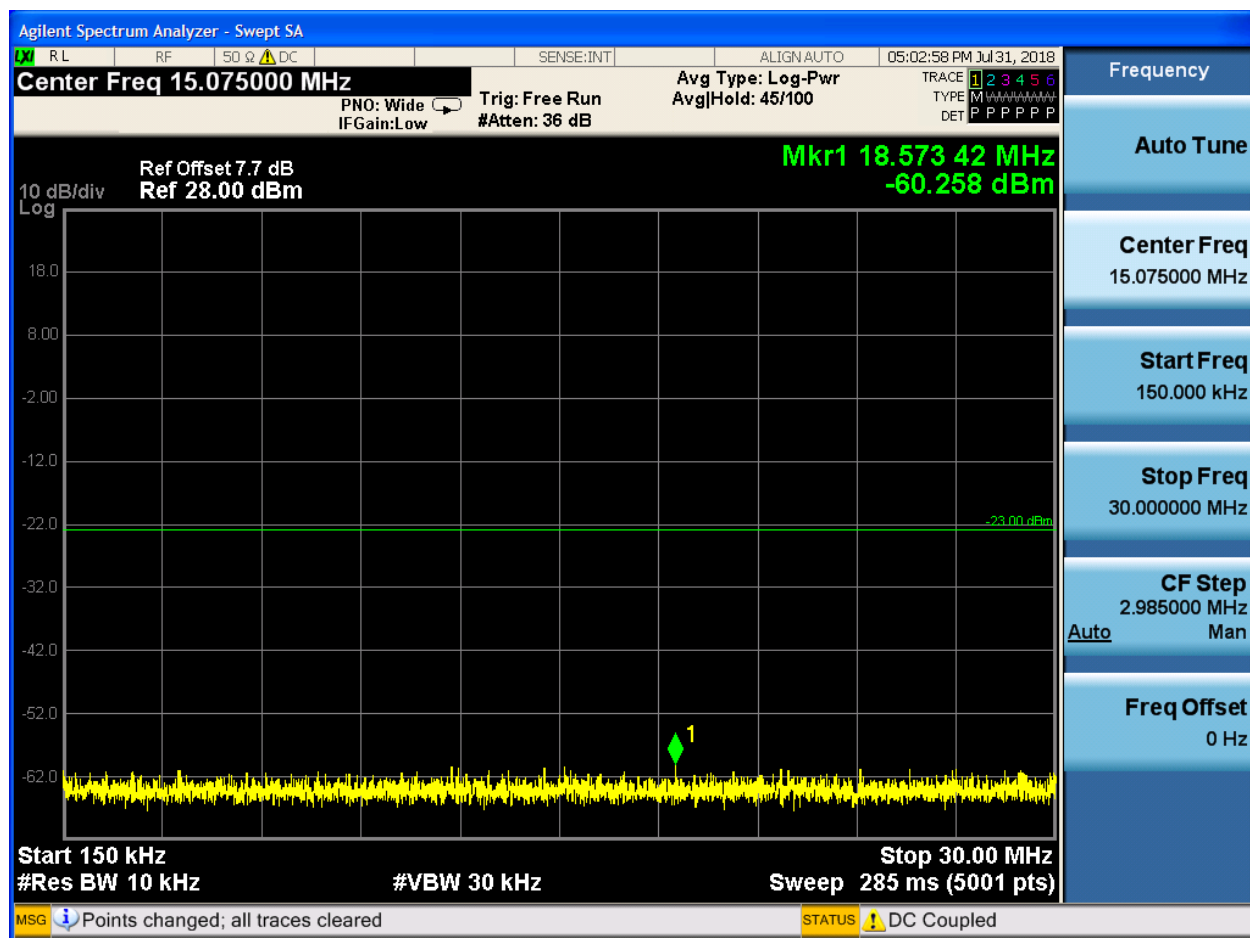


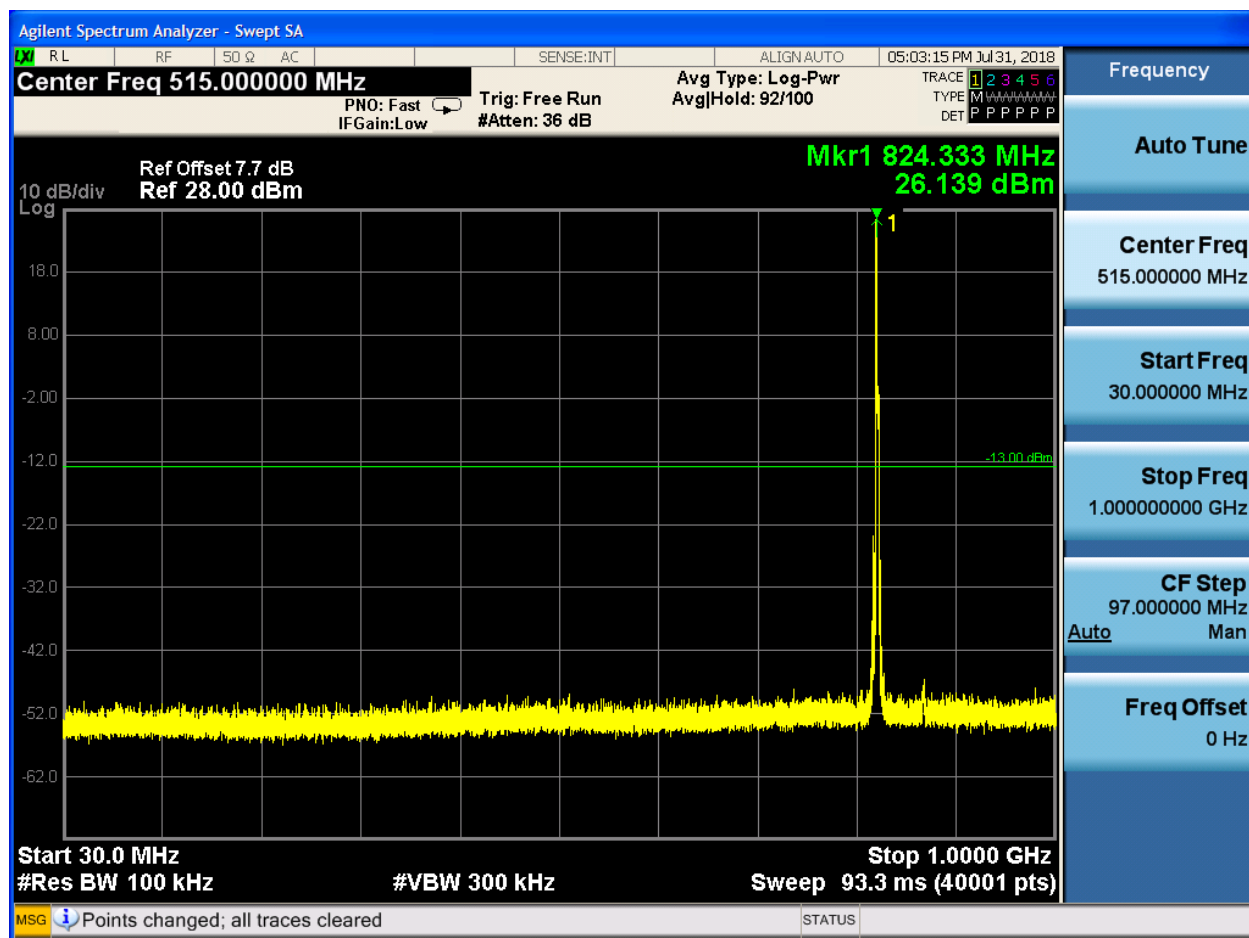
6.1.1.2.2 Test Bandwidth = 3

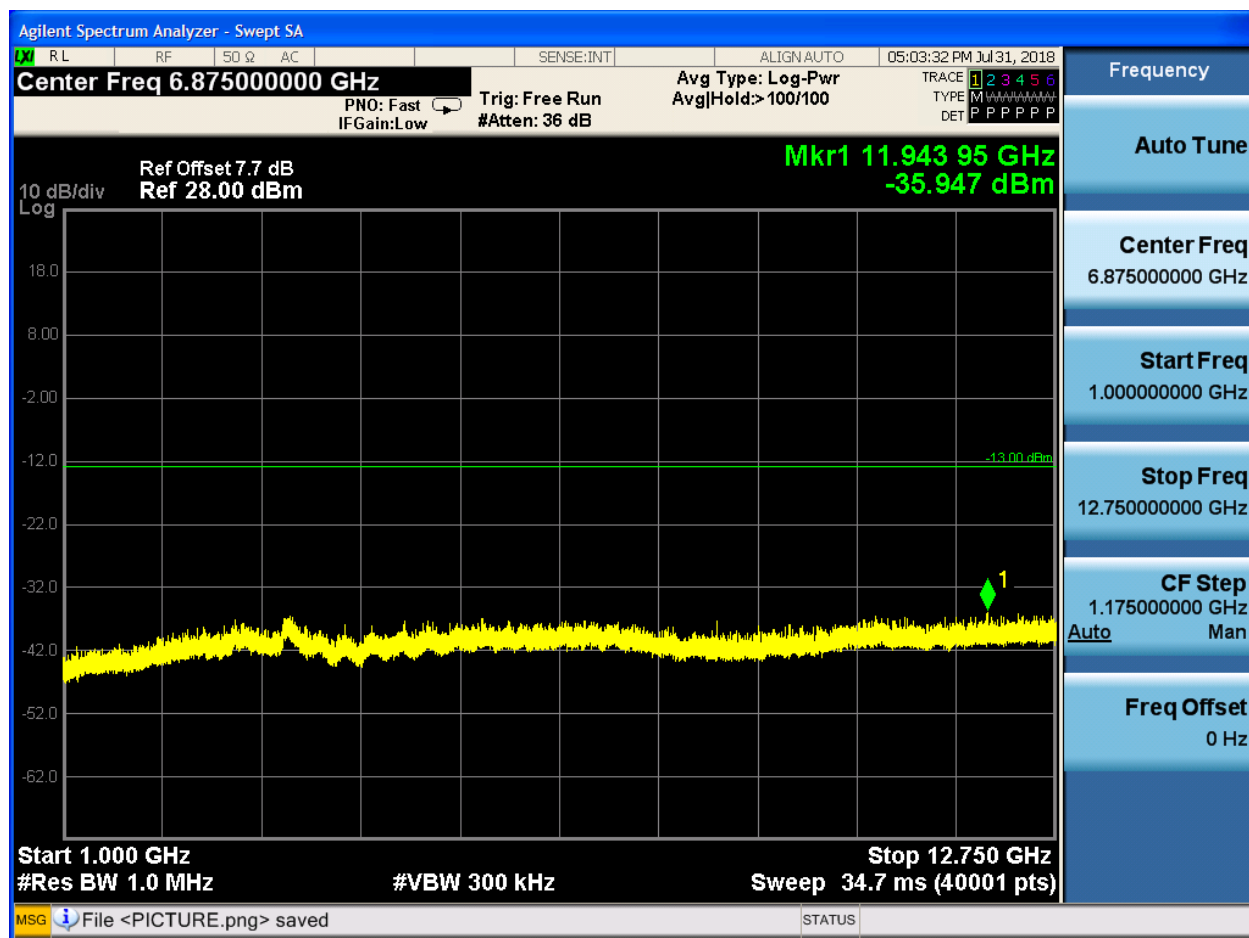
6.1.1.2.2.1 Test Channel = LCH

6.1.1.2.2.1.1 Test RB = RB1#0





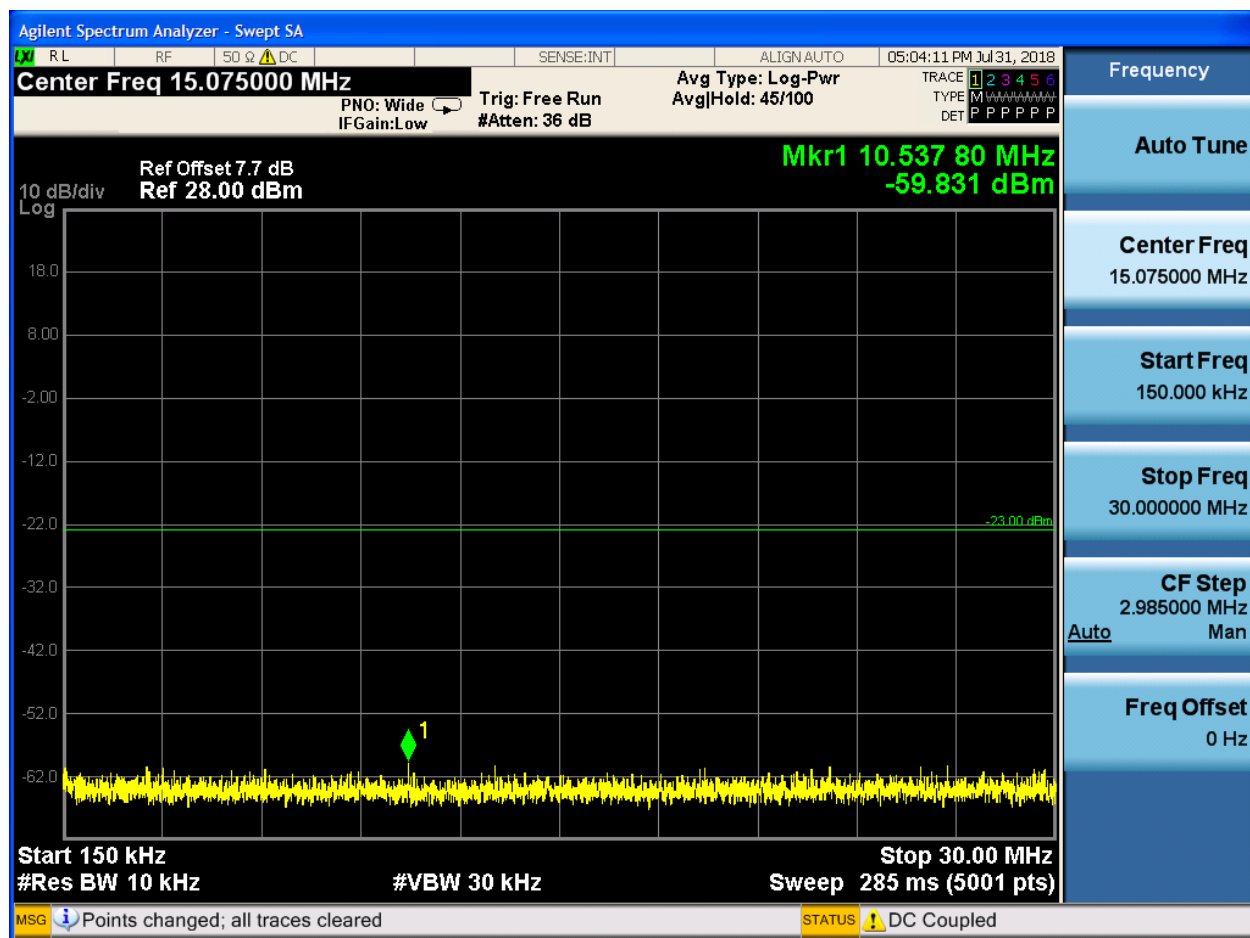


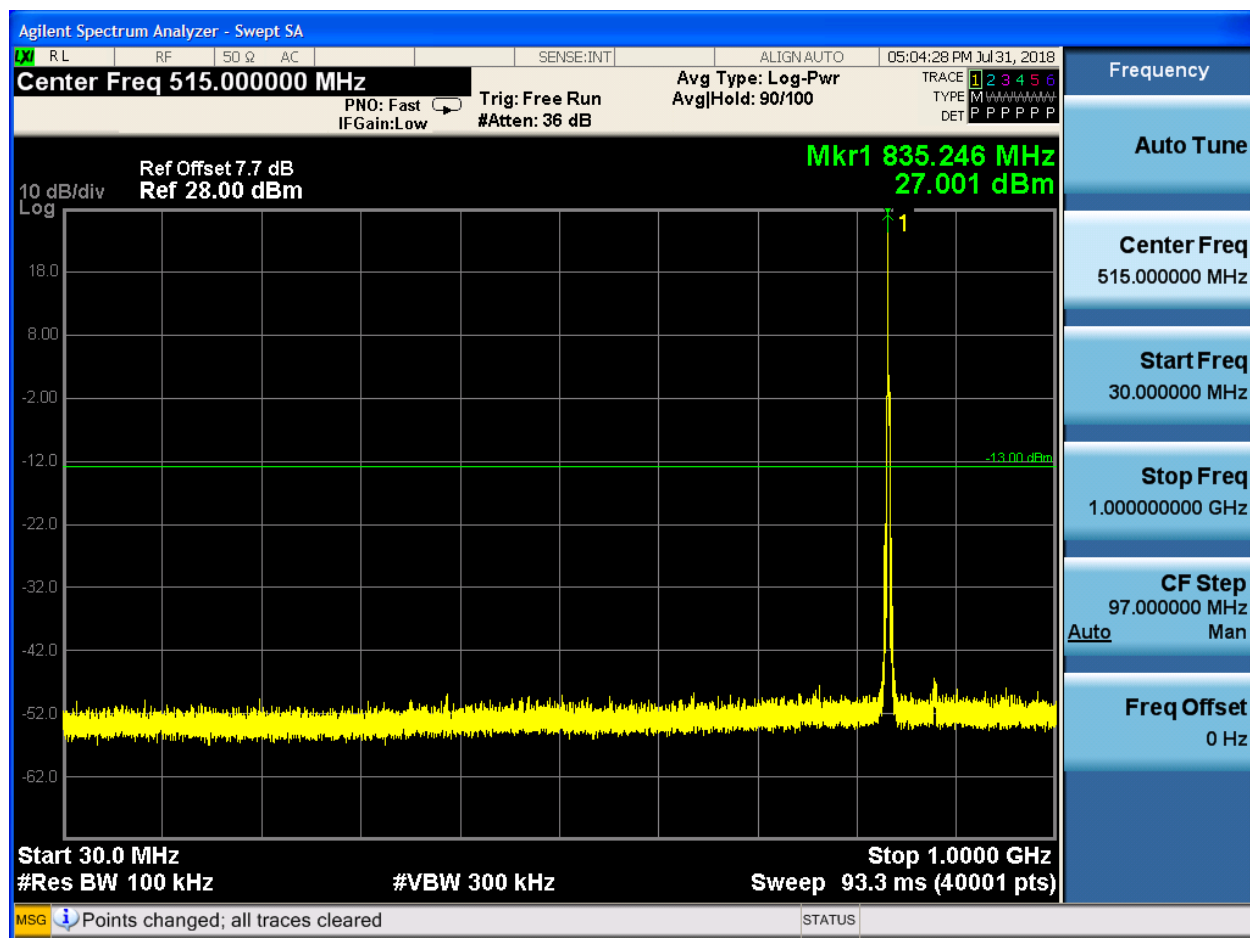


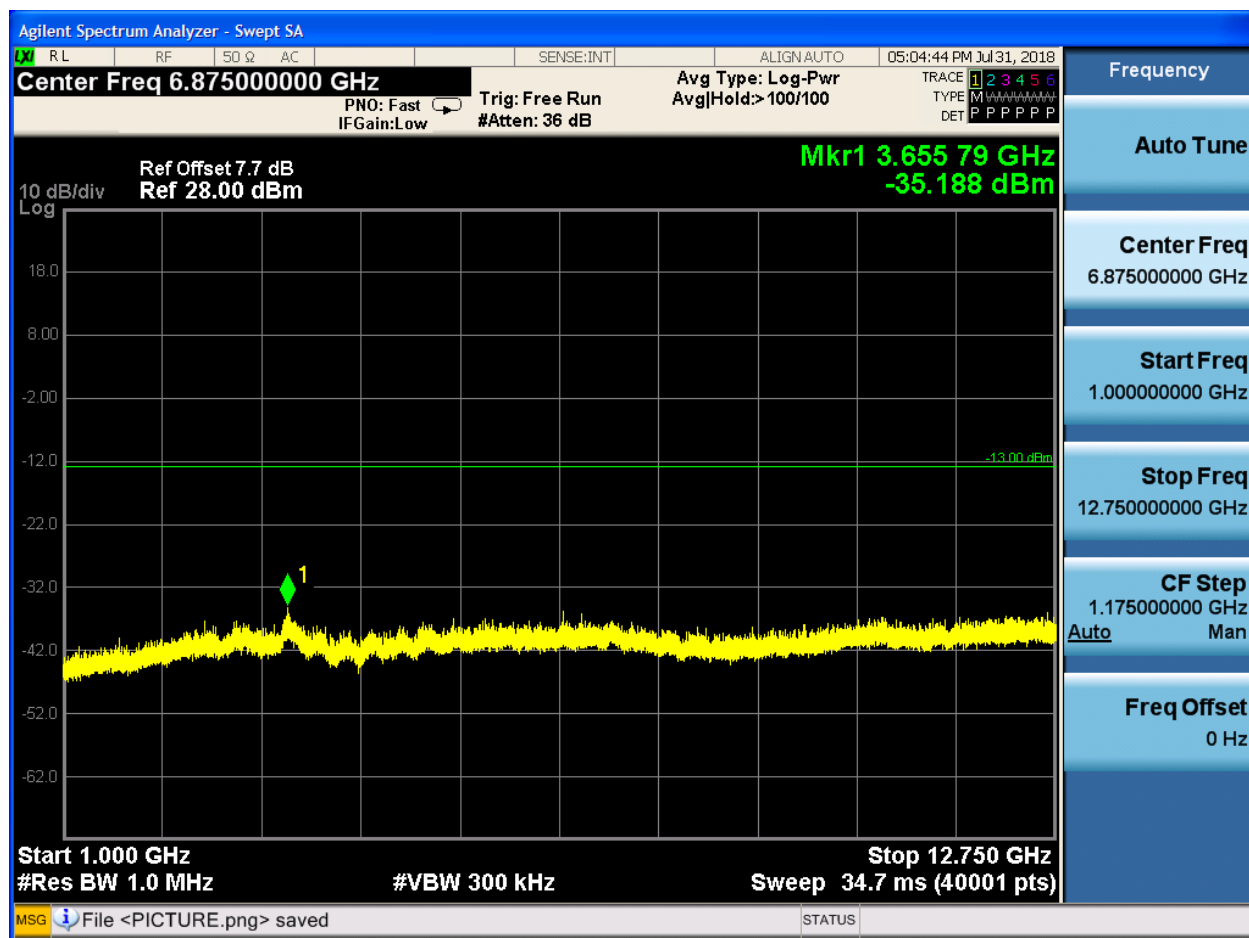
6.1.1.2.2.2 Test Channel = MCH

6.1.1.2.2.2.1 Test RB = RB1#0



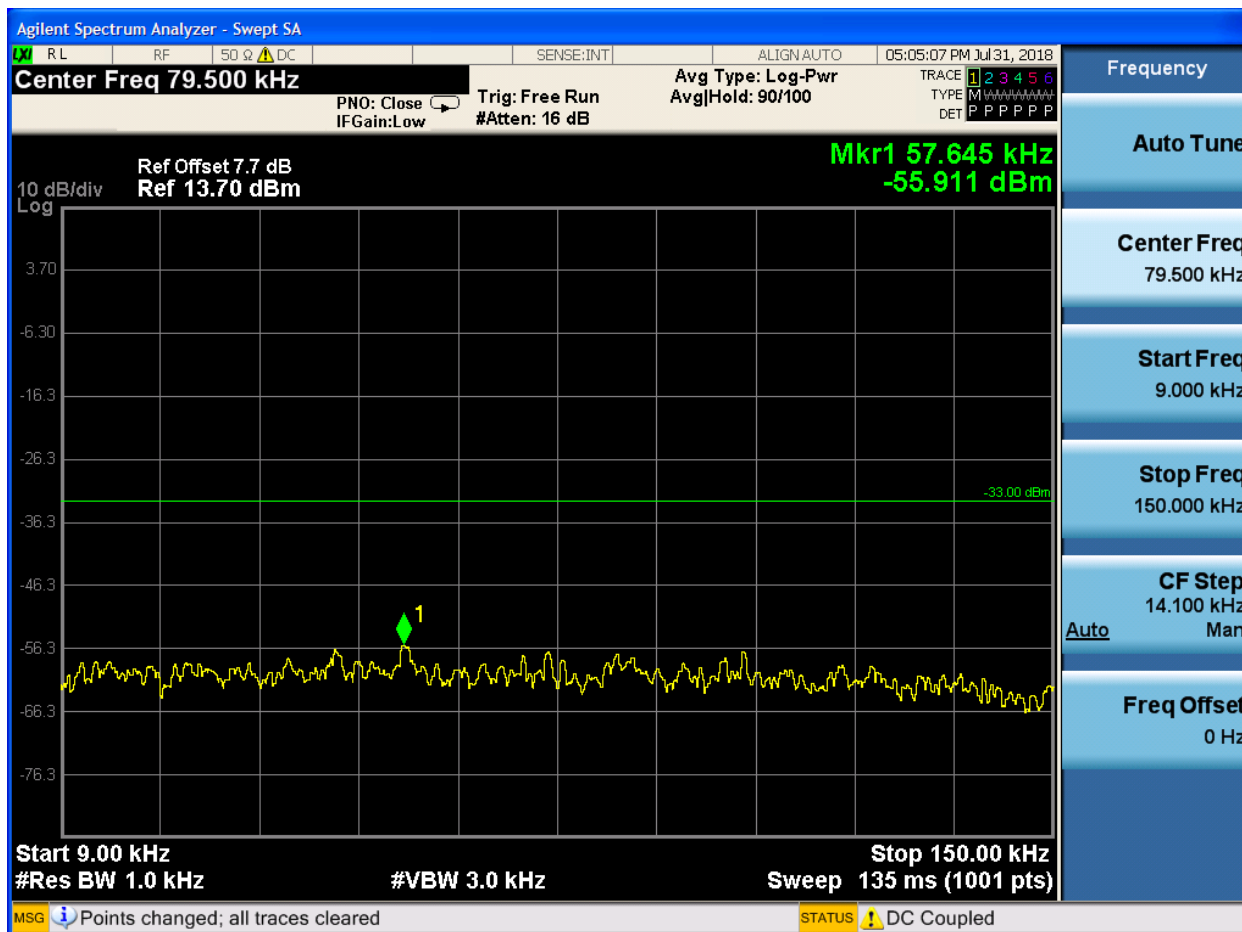


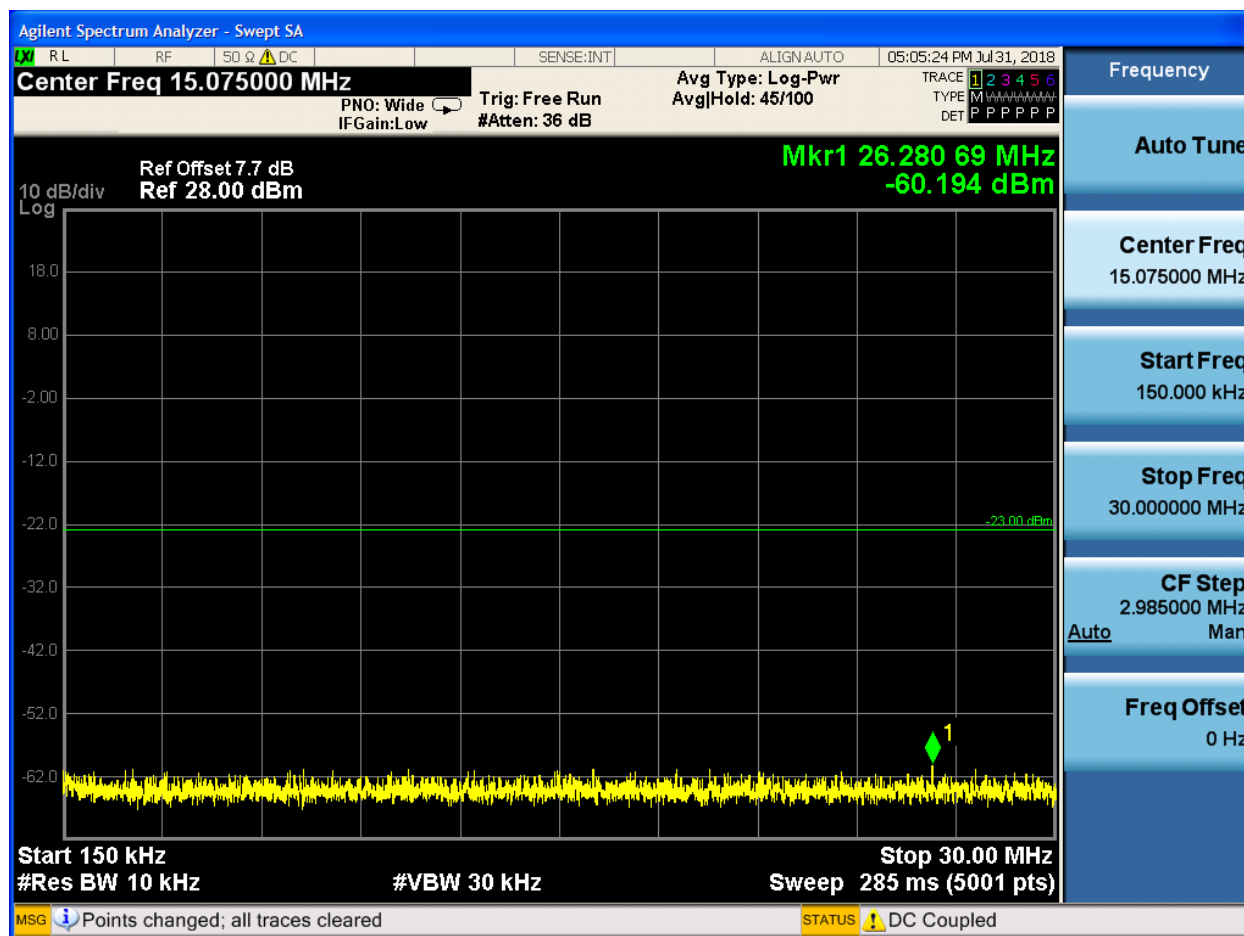


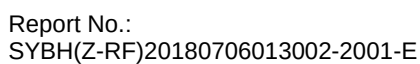
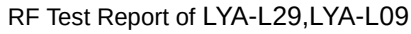


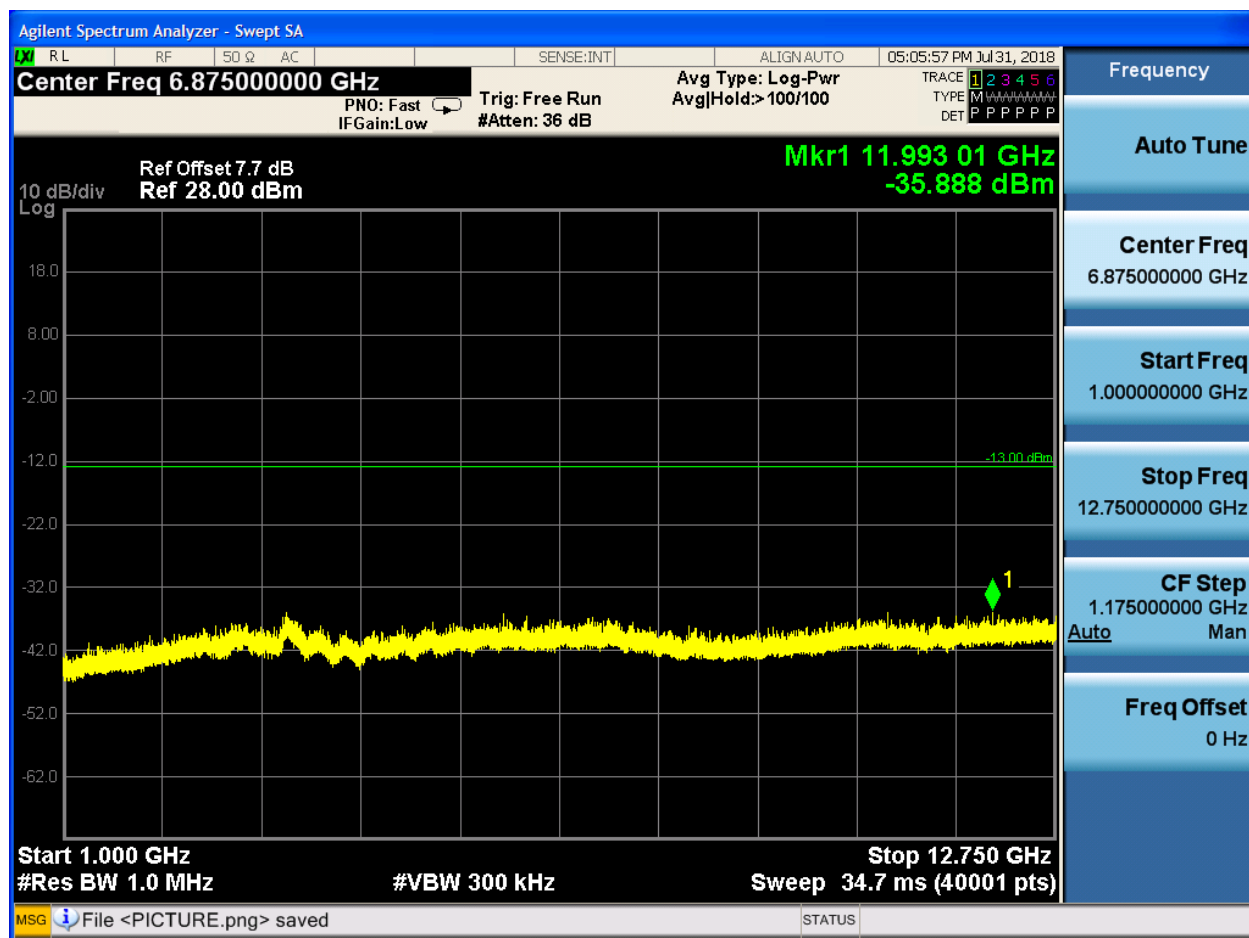
6.1.1.2.2.3 Test Channel = HCH

6.1.1.2.2.3.1 Test RB = RB1#0





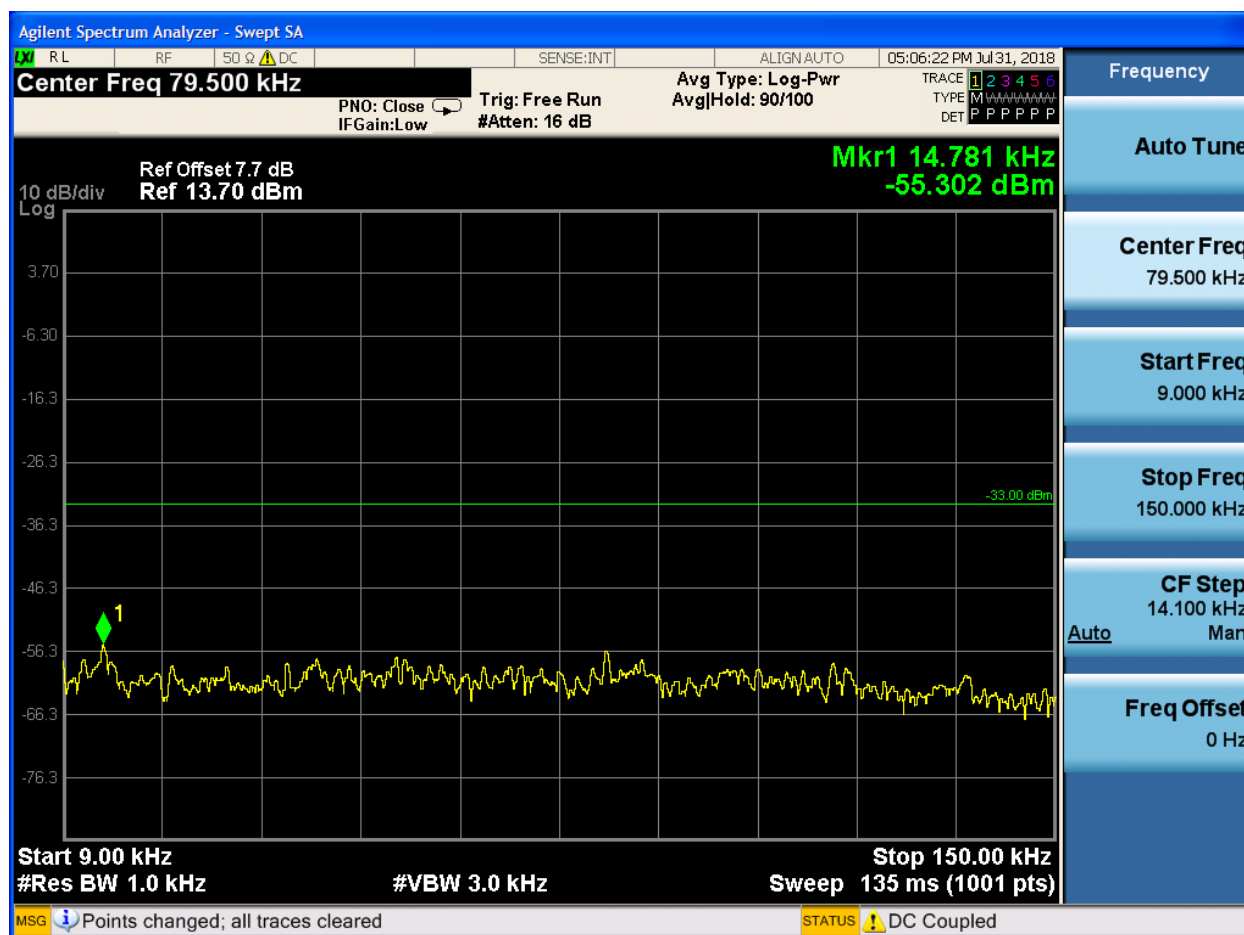


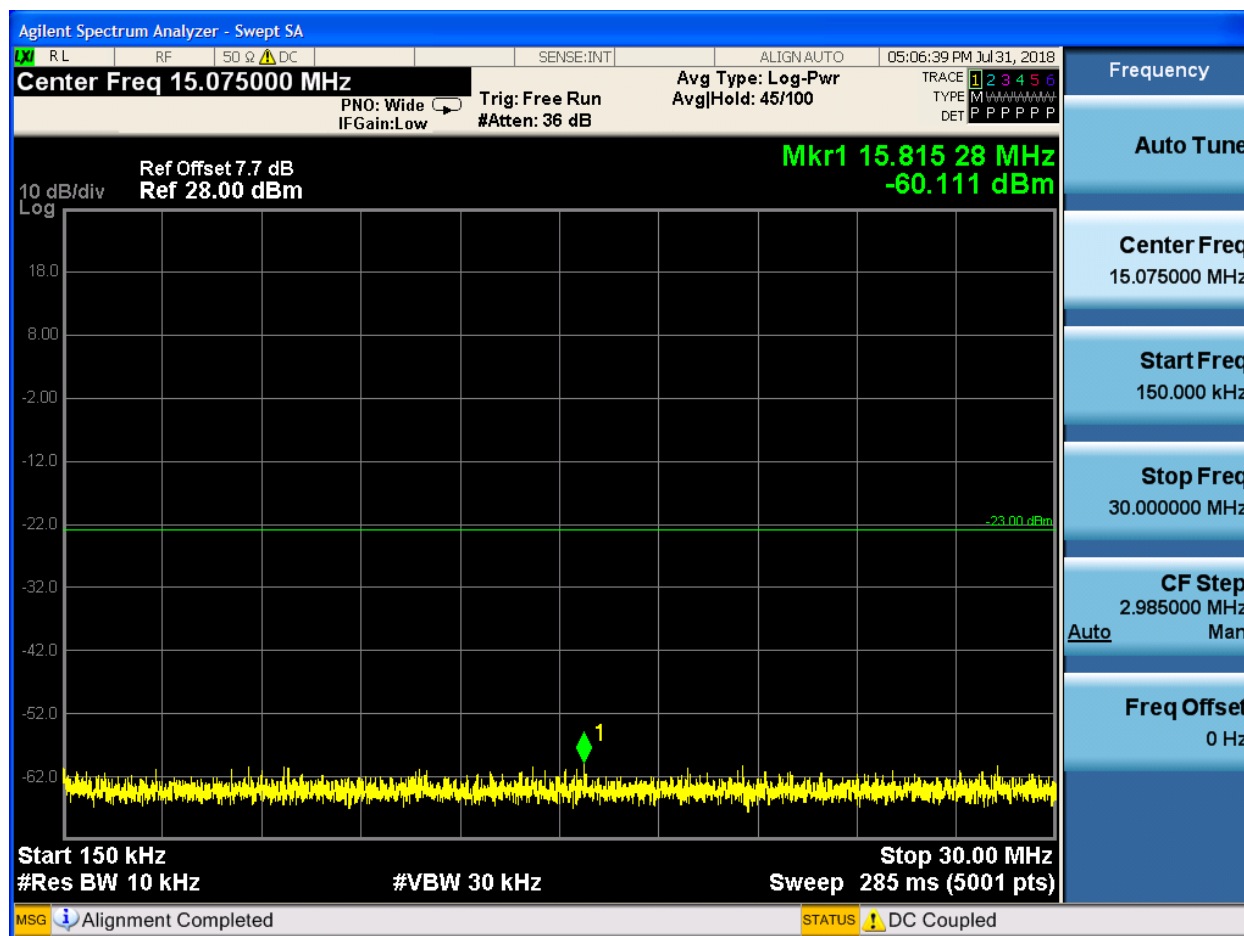


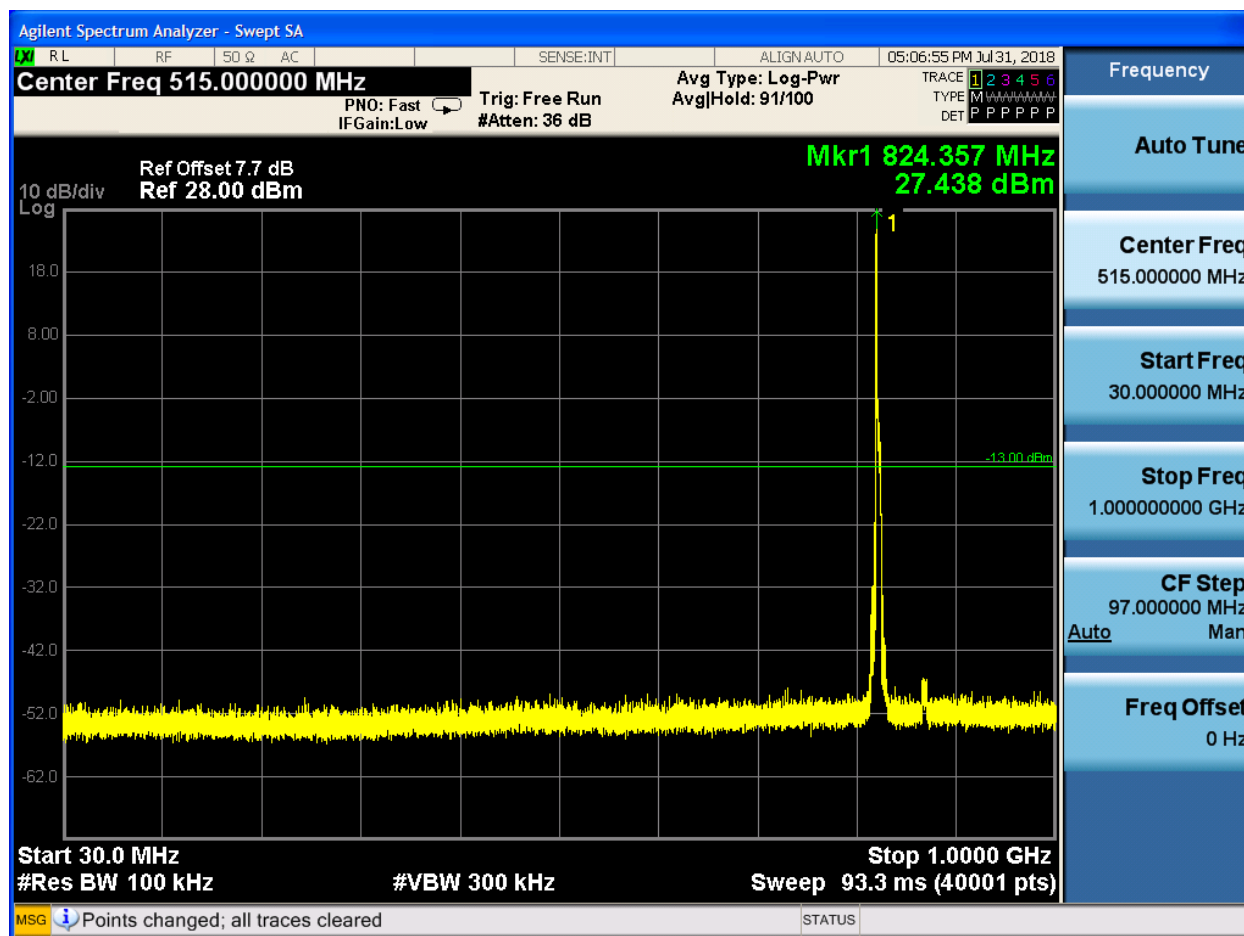
6.1.1.2.3 Test Bandwidth = 5

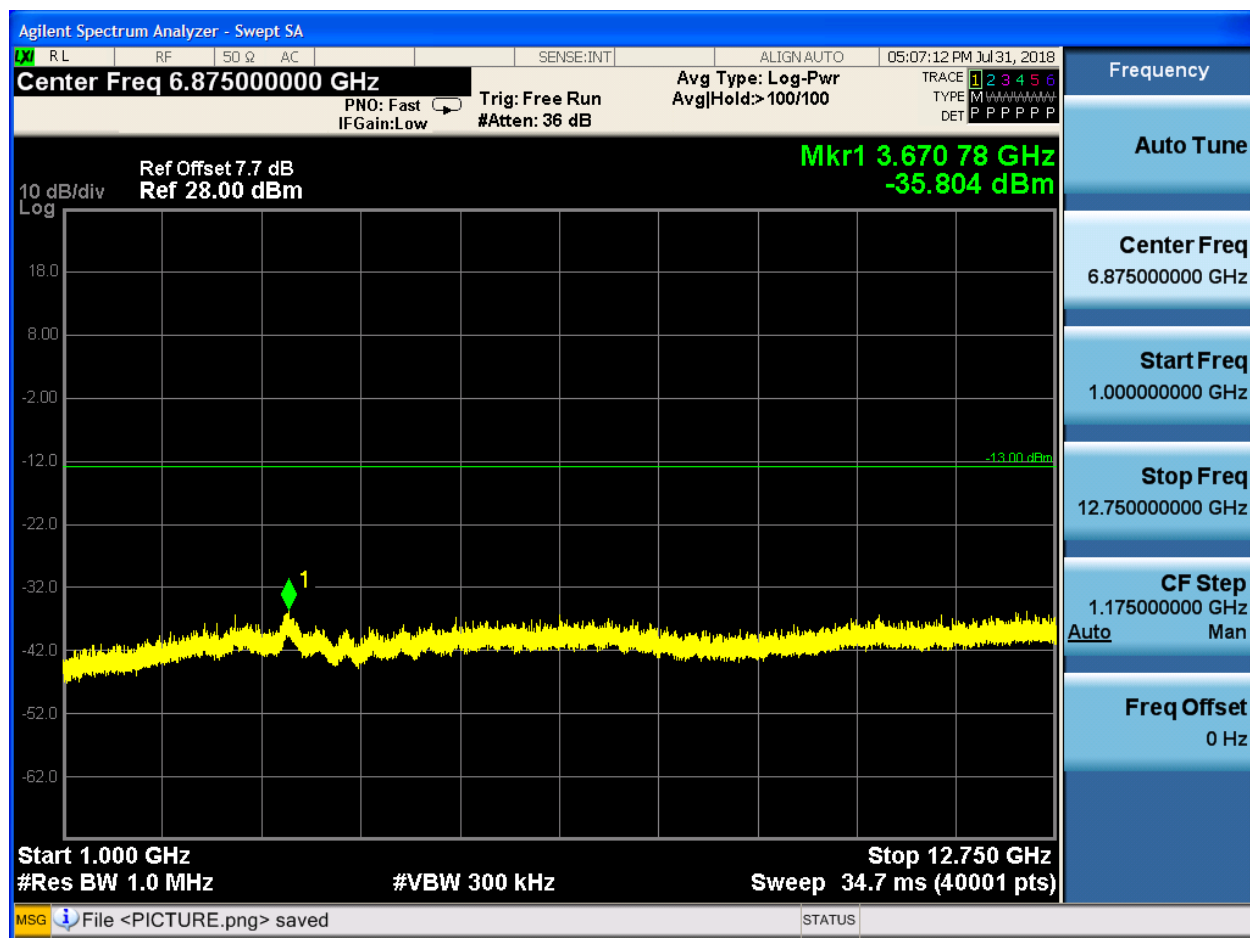
6.1.1.2.3.1 Test Channel = LCH

6.1.1.2.3.1.1 Test RB = RB1#0



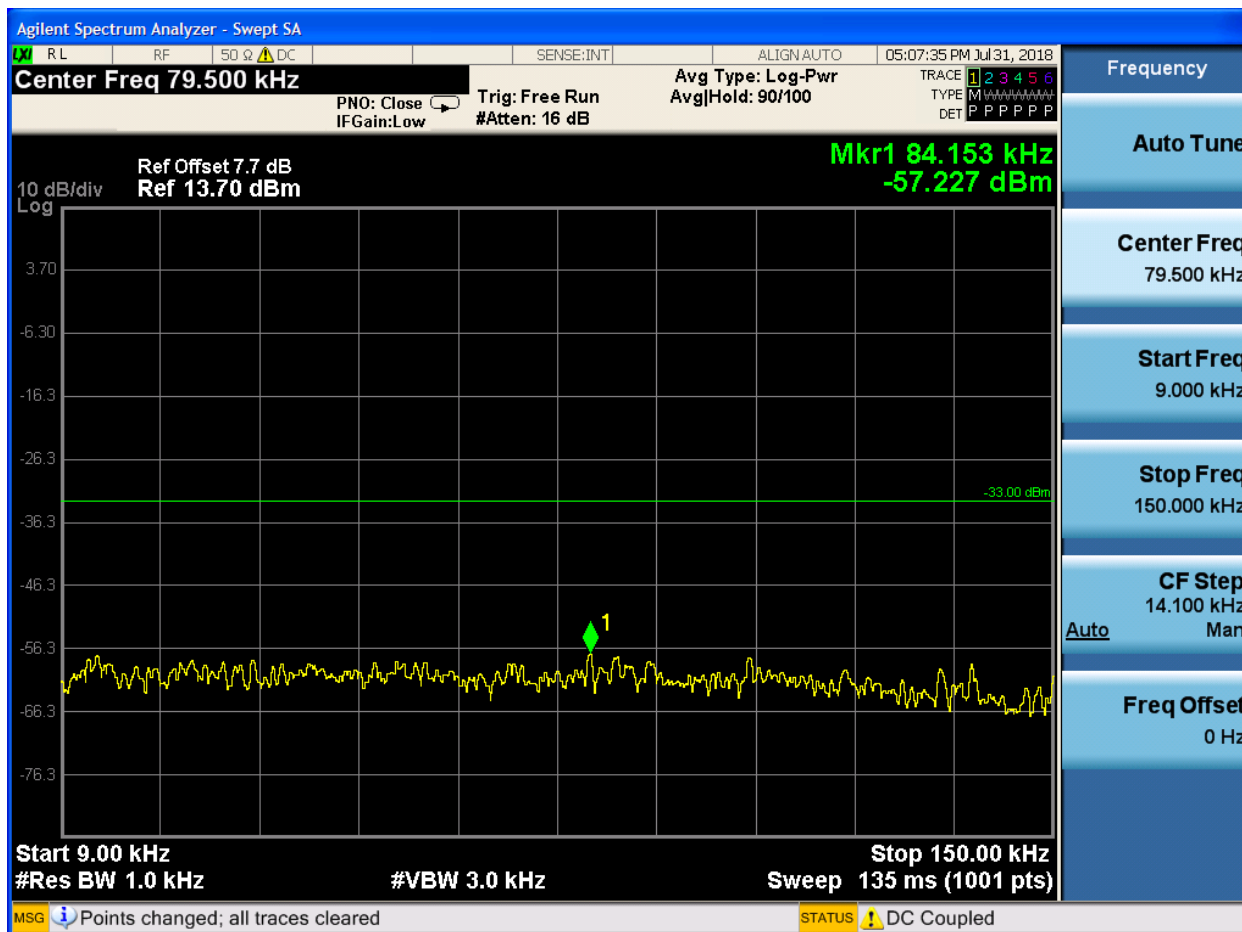


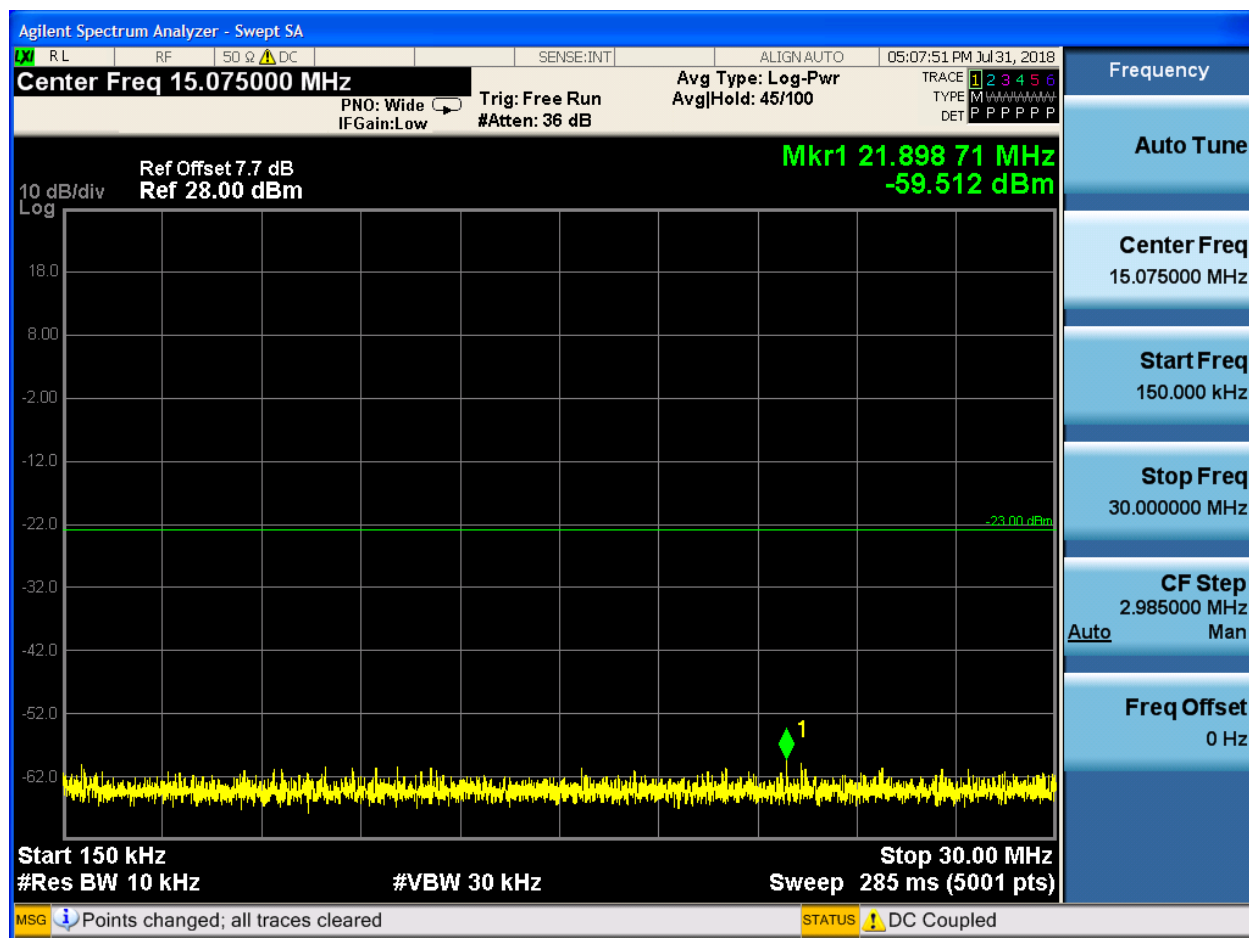


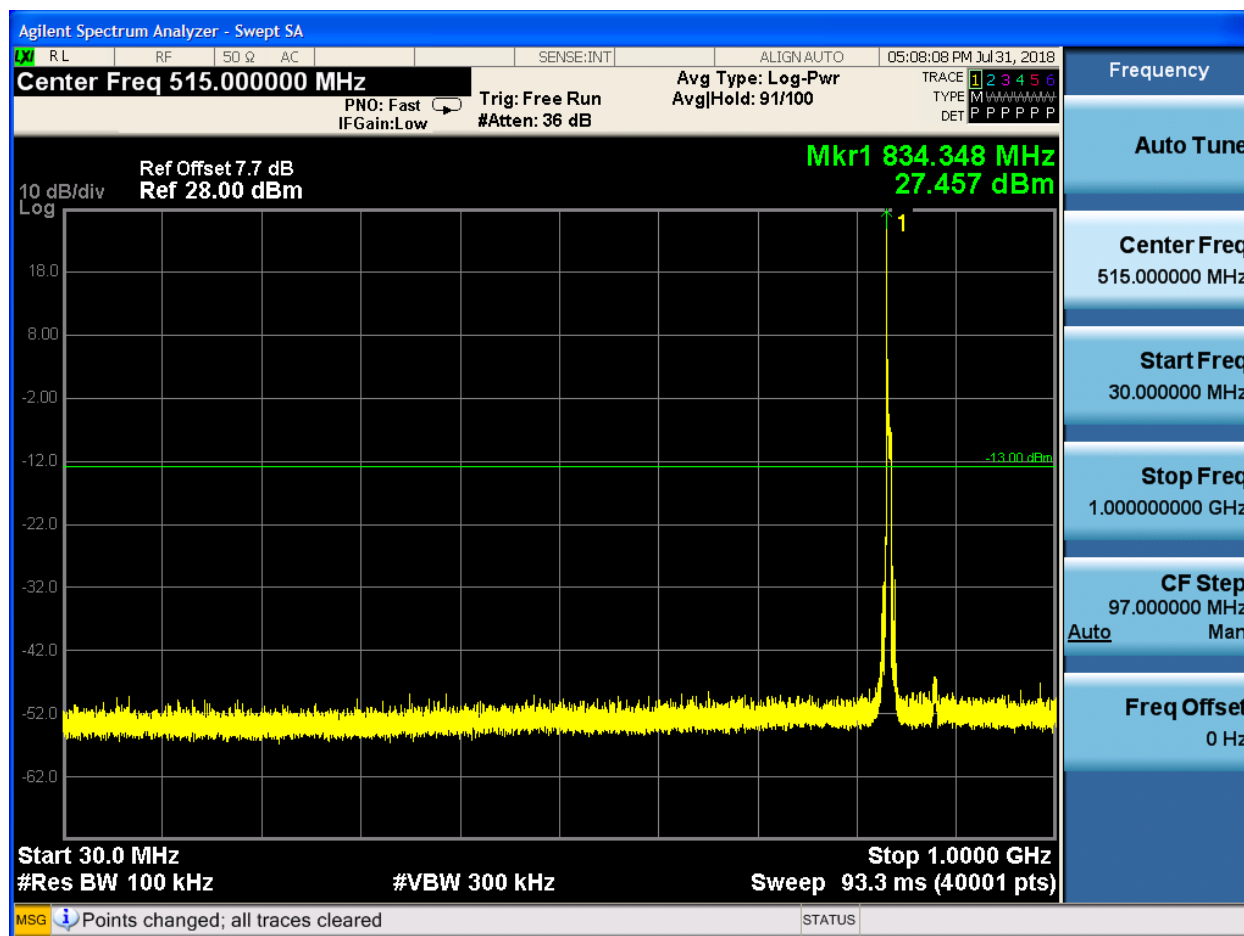


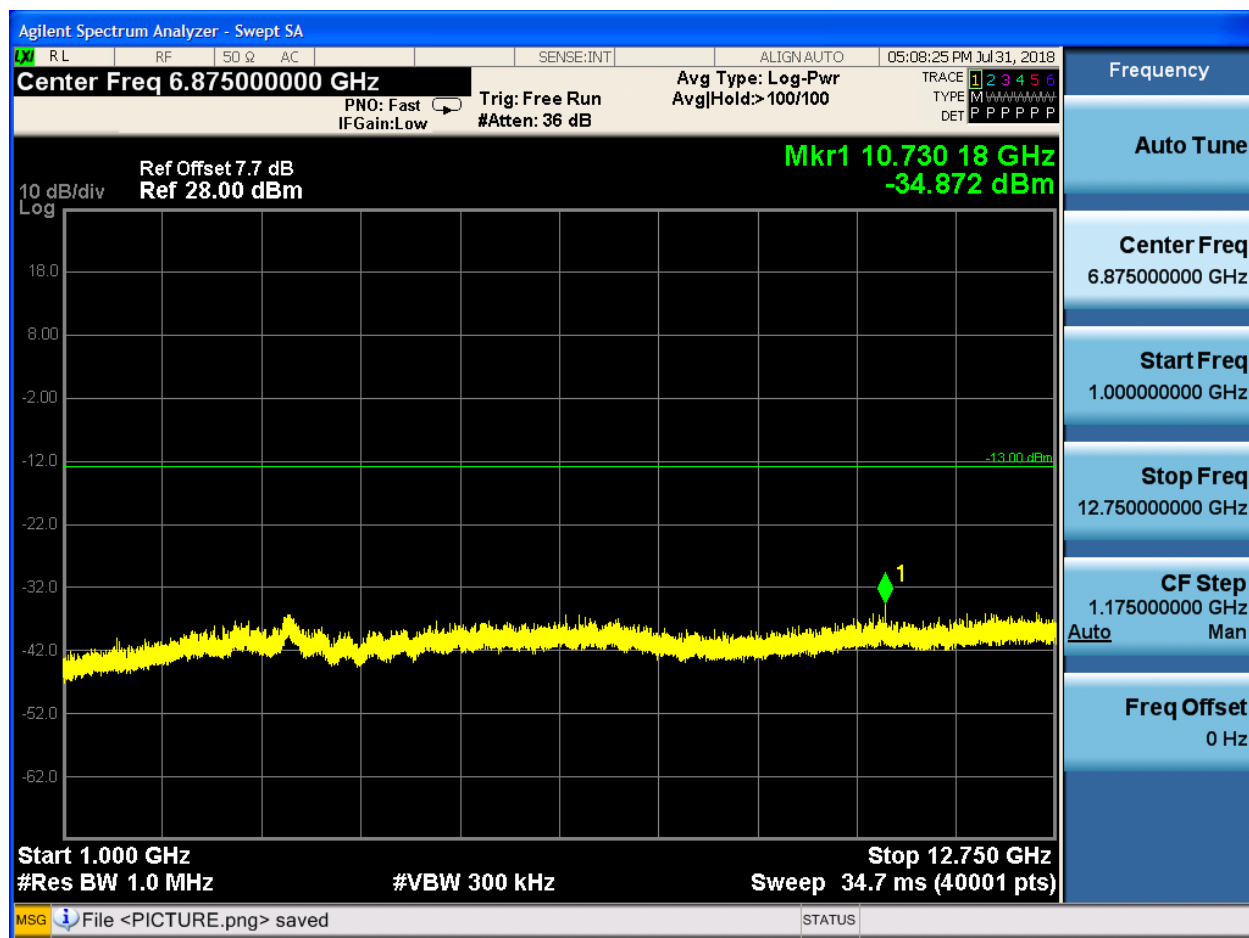
6.1.1.2.3.2 Test Channel = MCH

6.1.1.2.3.2.1 Test RB = RB1#0



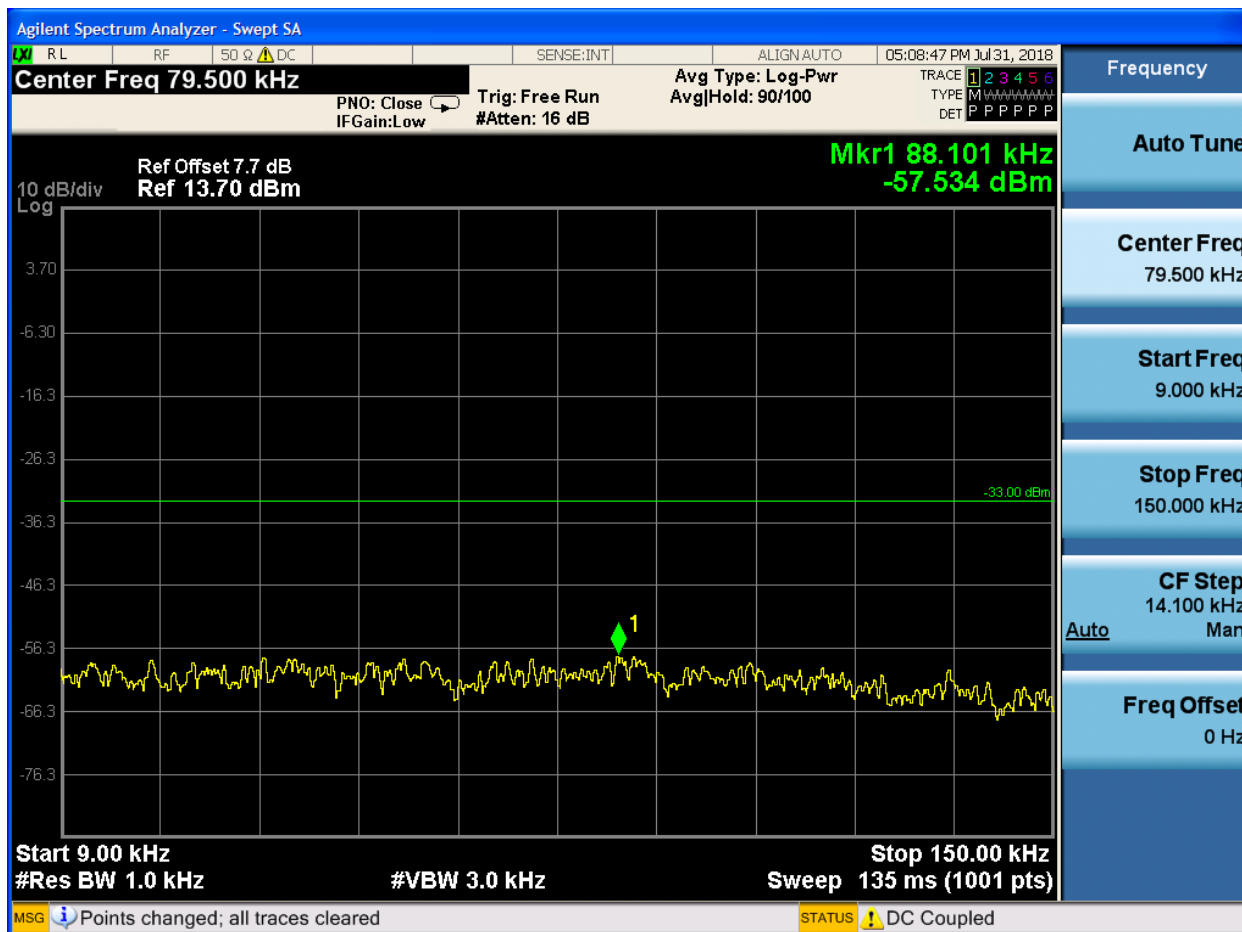


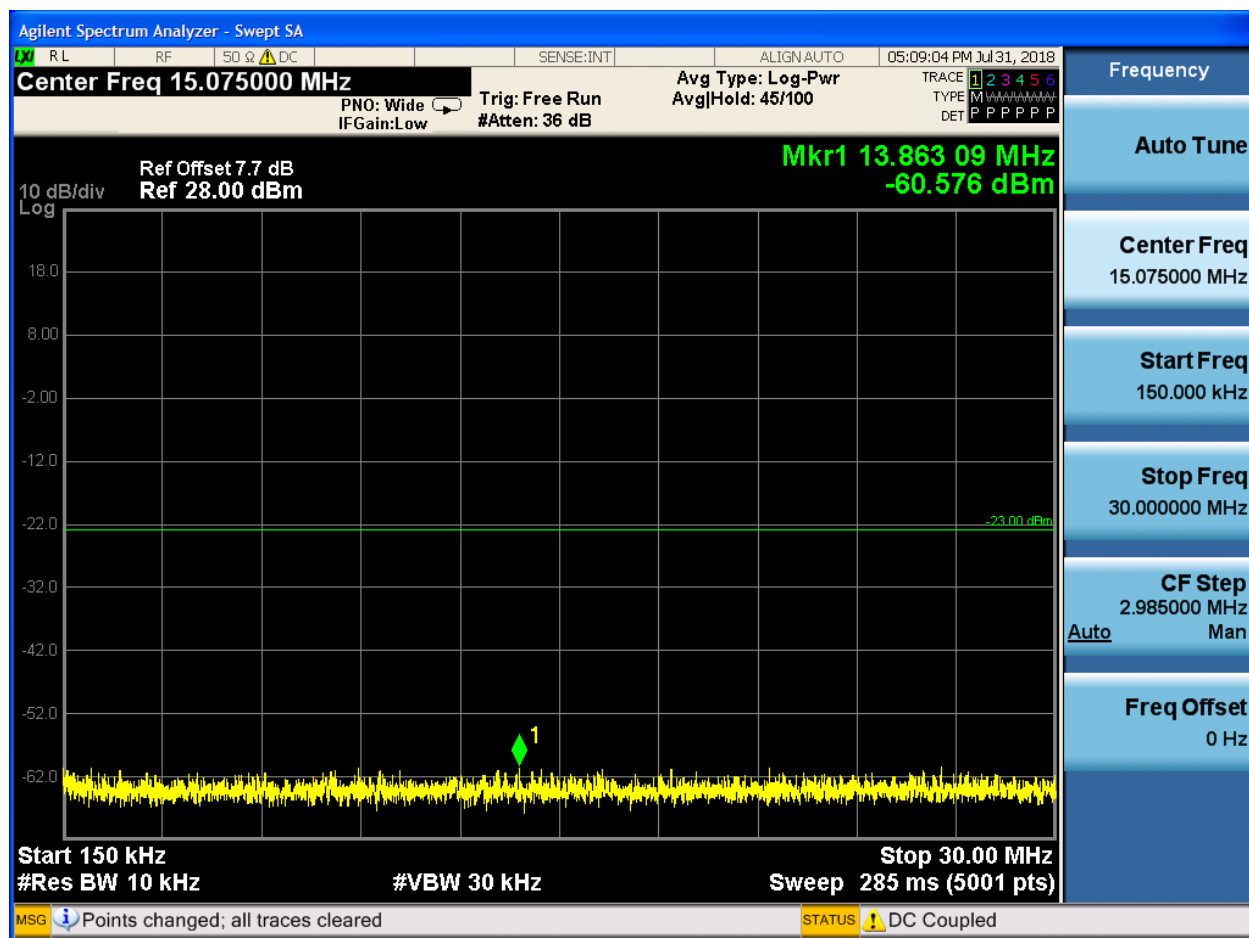


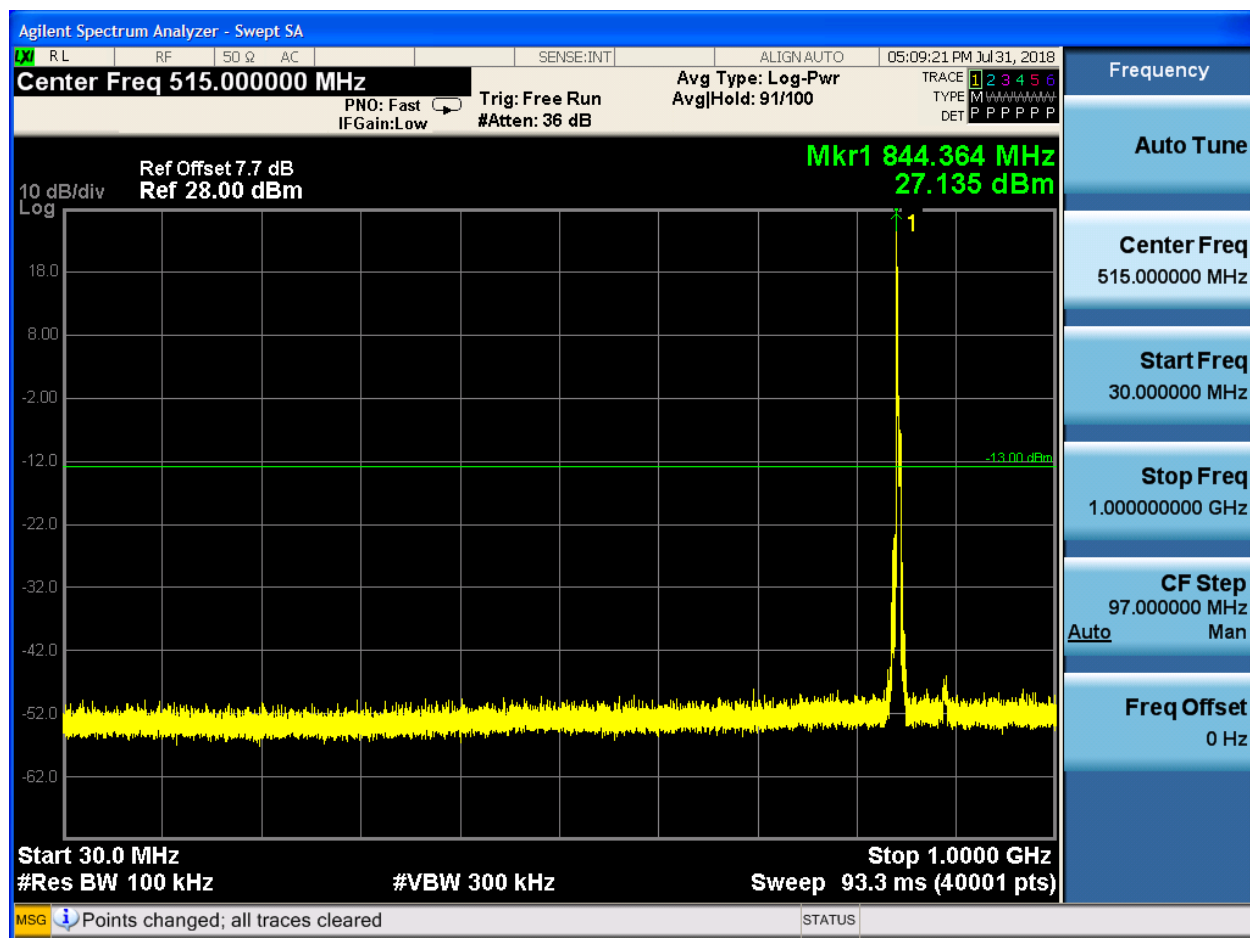


6.1.1.2.3.3 Test Channel = HCH

6.1.1.2.3.3.1 Test RB = RB1#0





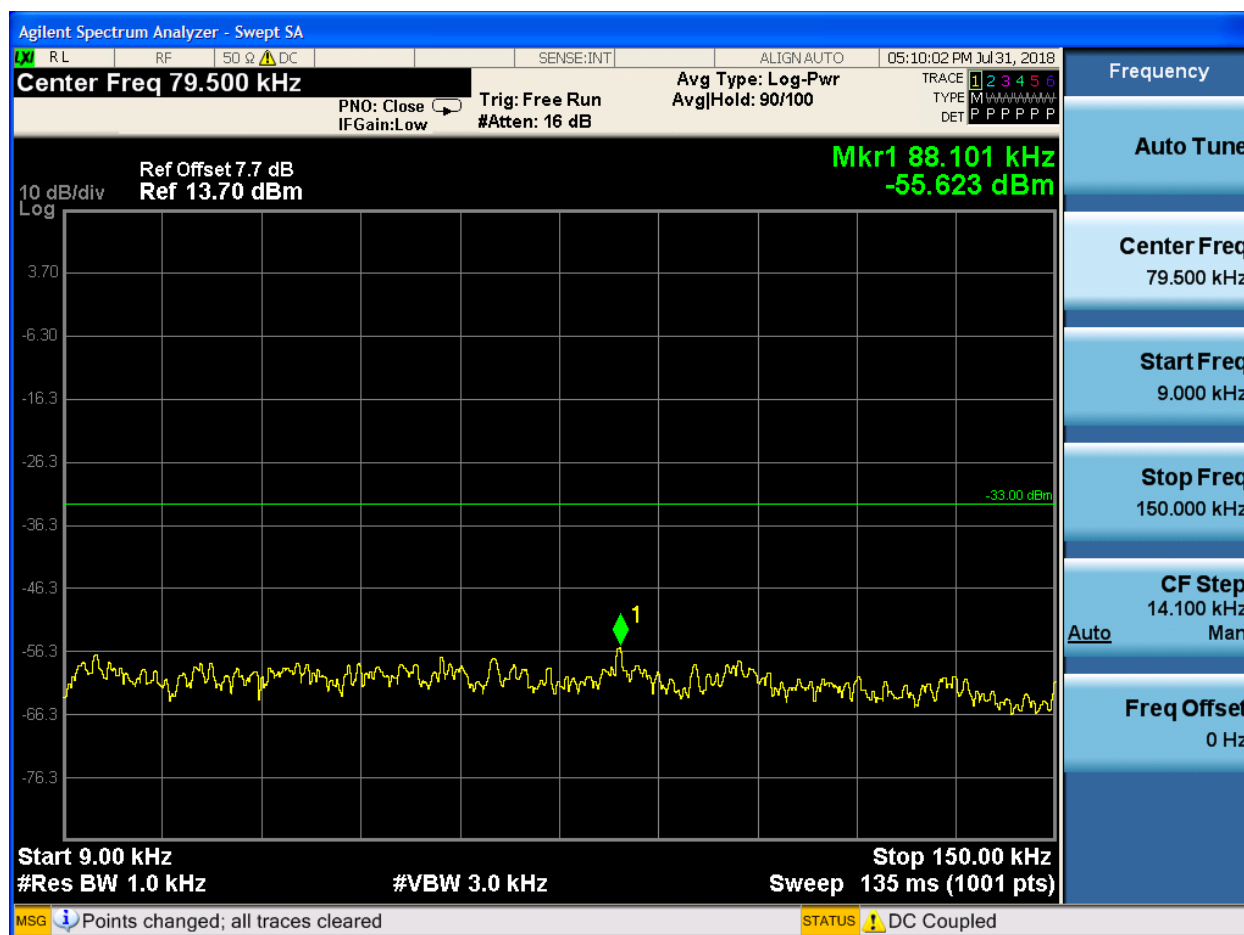


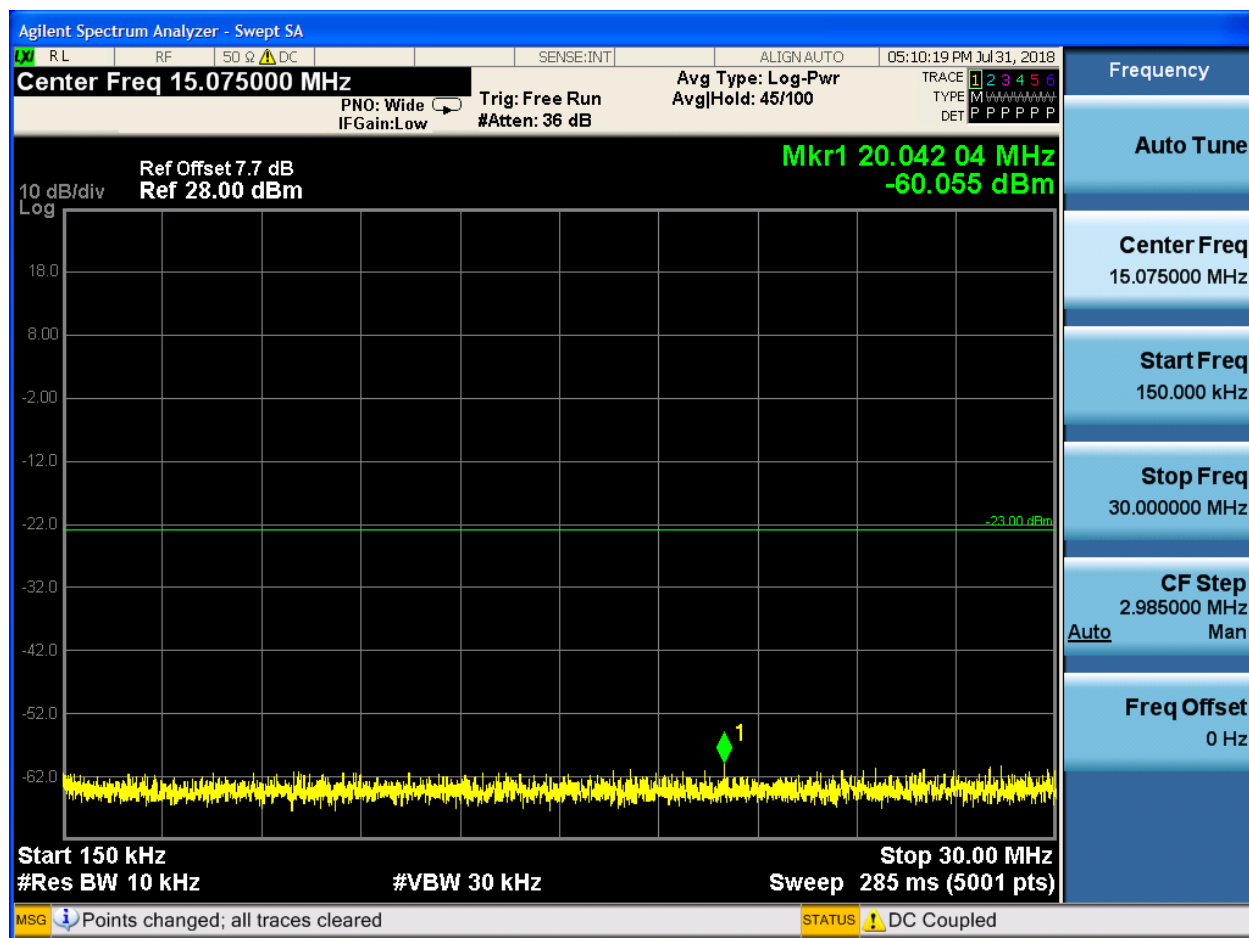


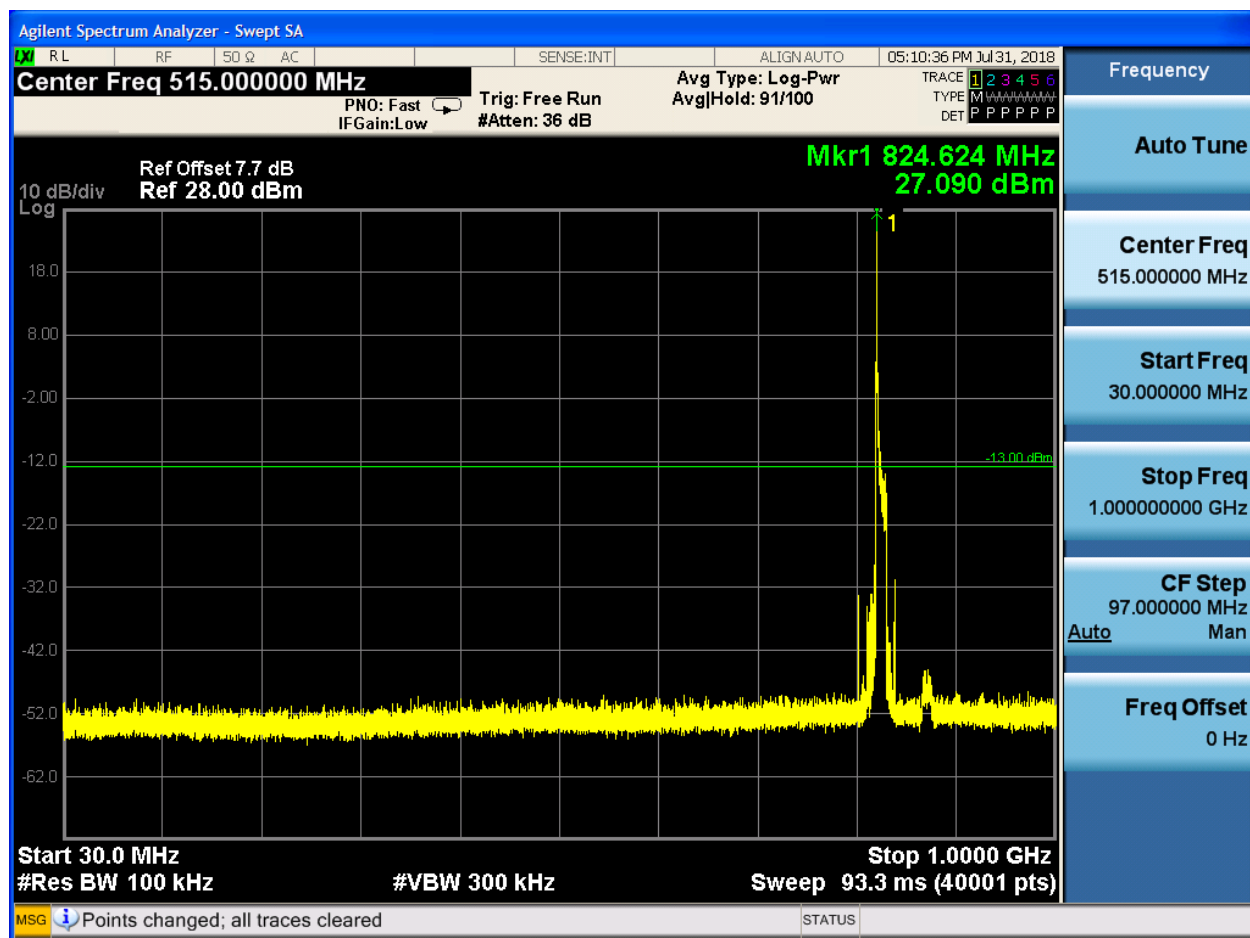
6.1.1.2.4 Test Bandwidth = 10

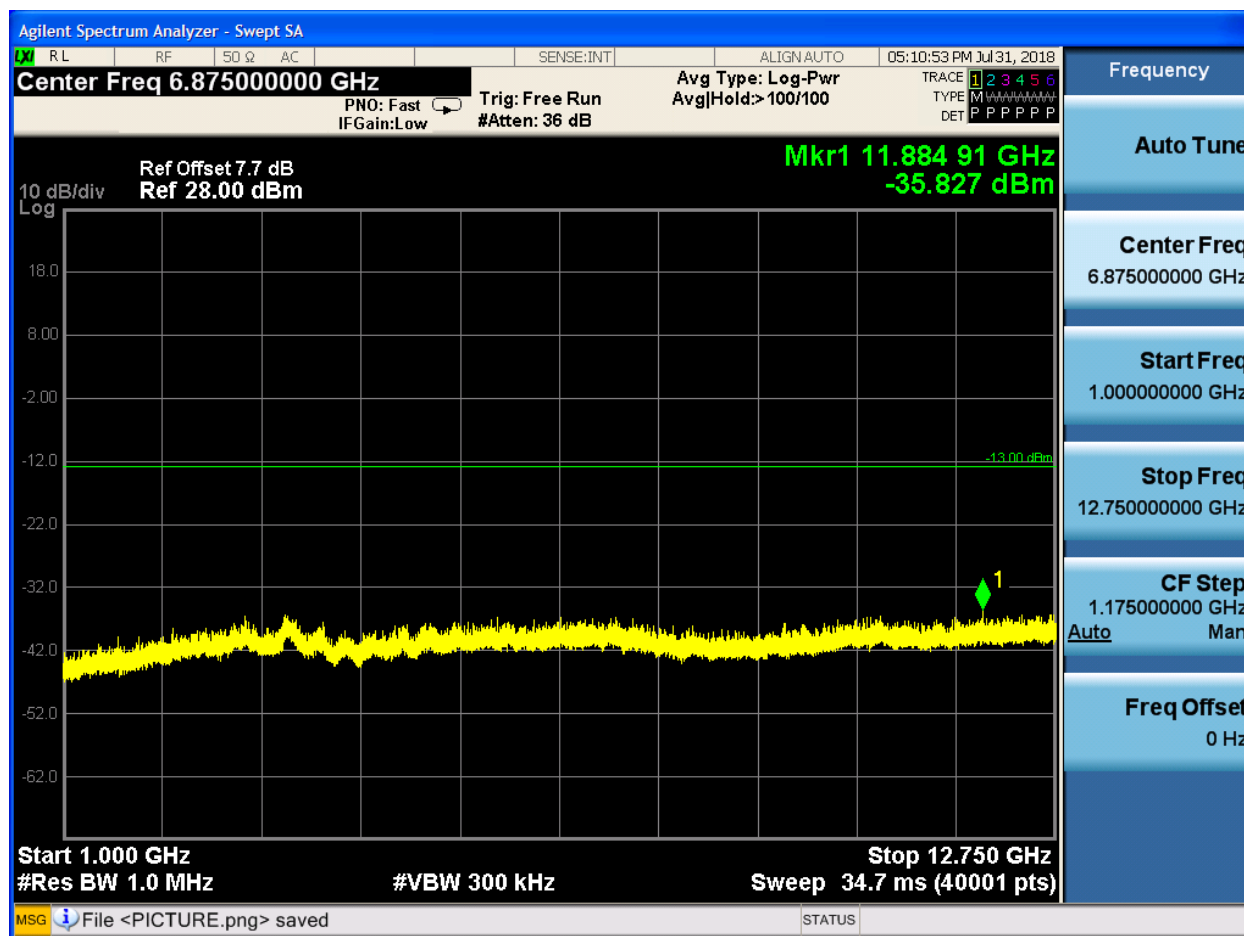
6.1.1.2.4.1 Test Channel = LCH

6.1.1.2.4.1.1 Test RB = RB1#0



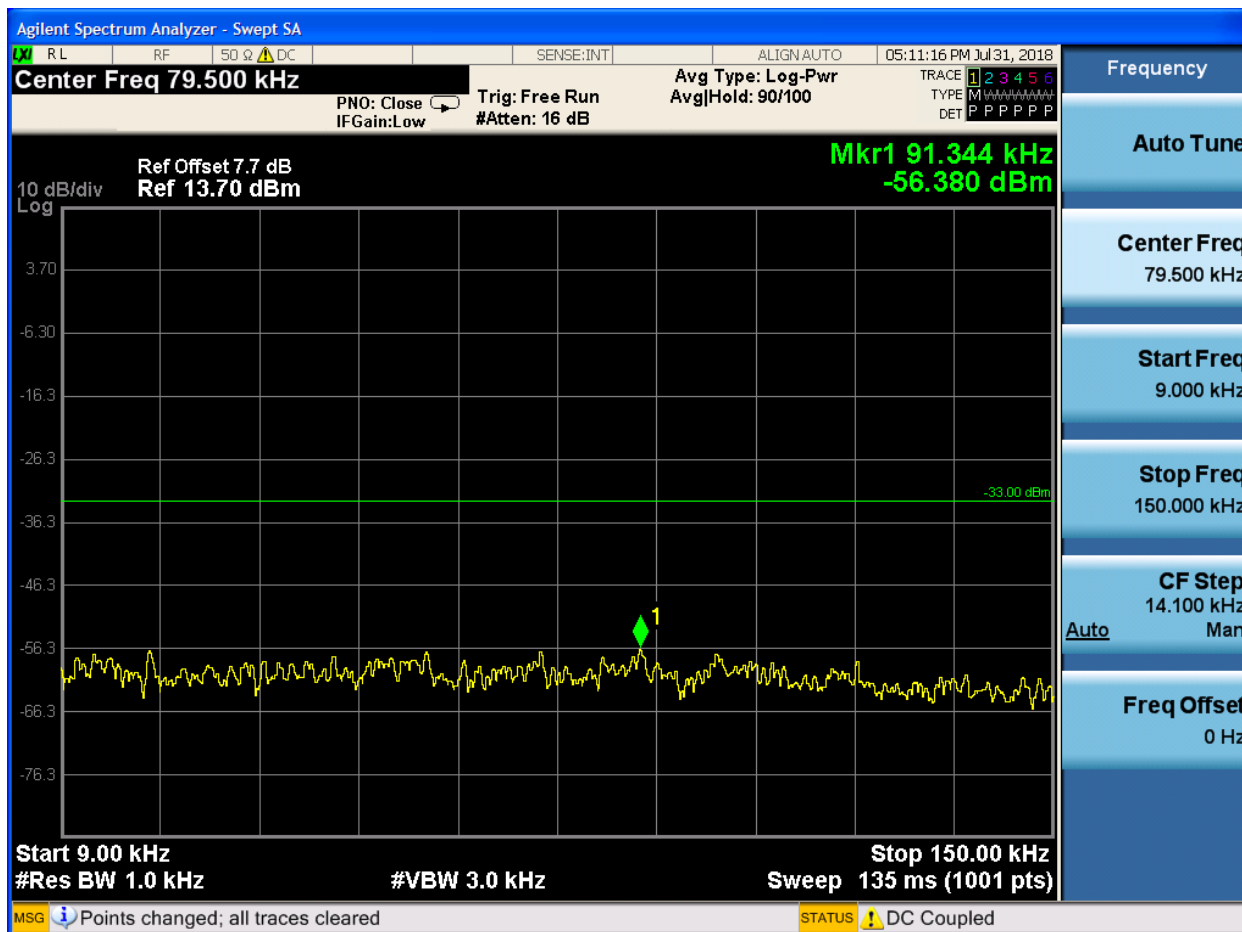


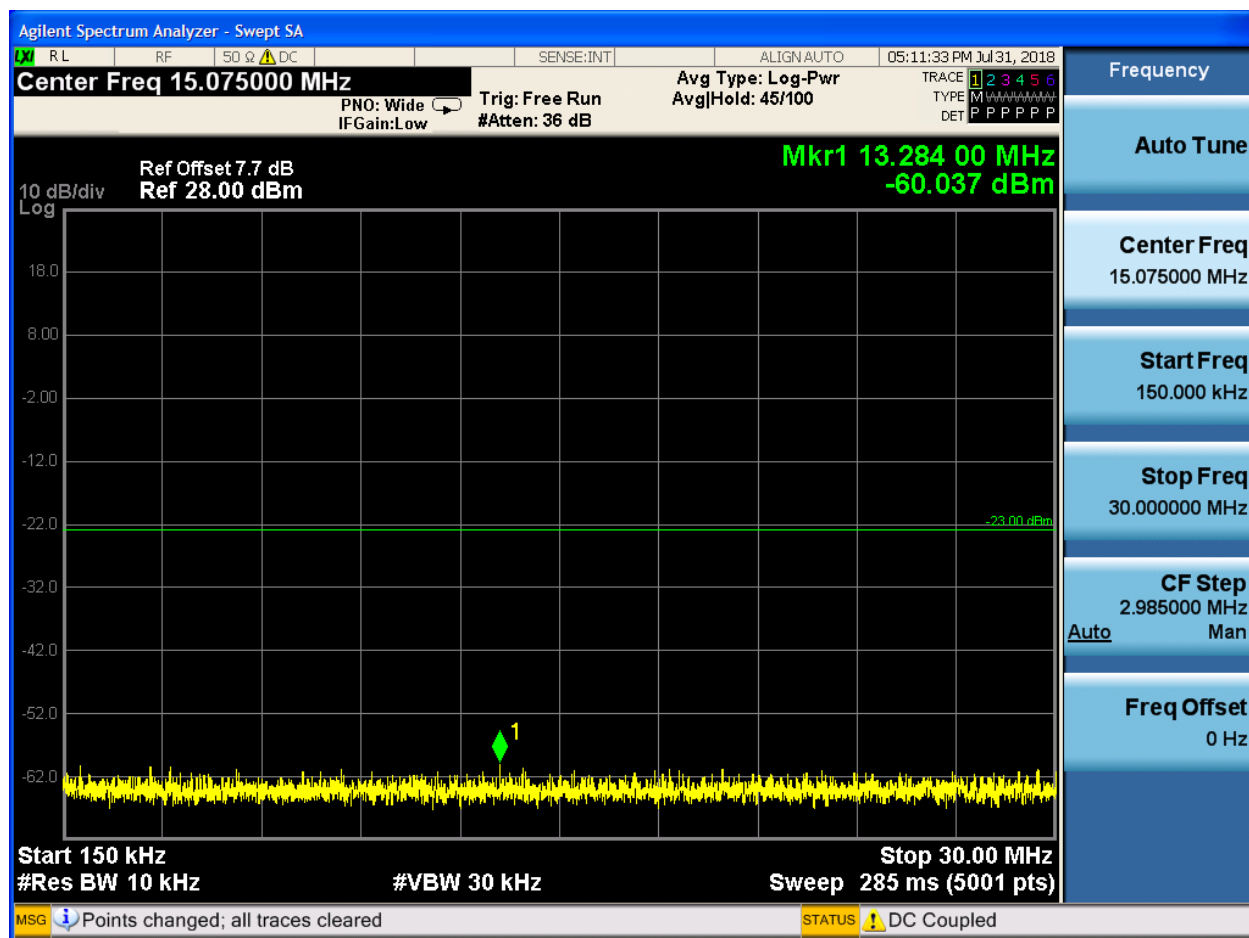


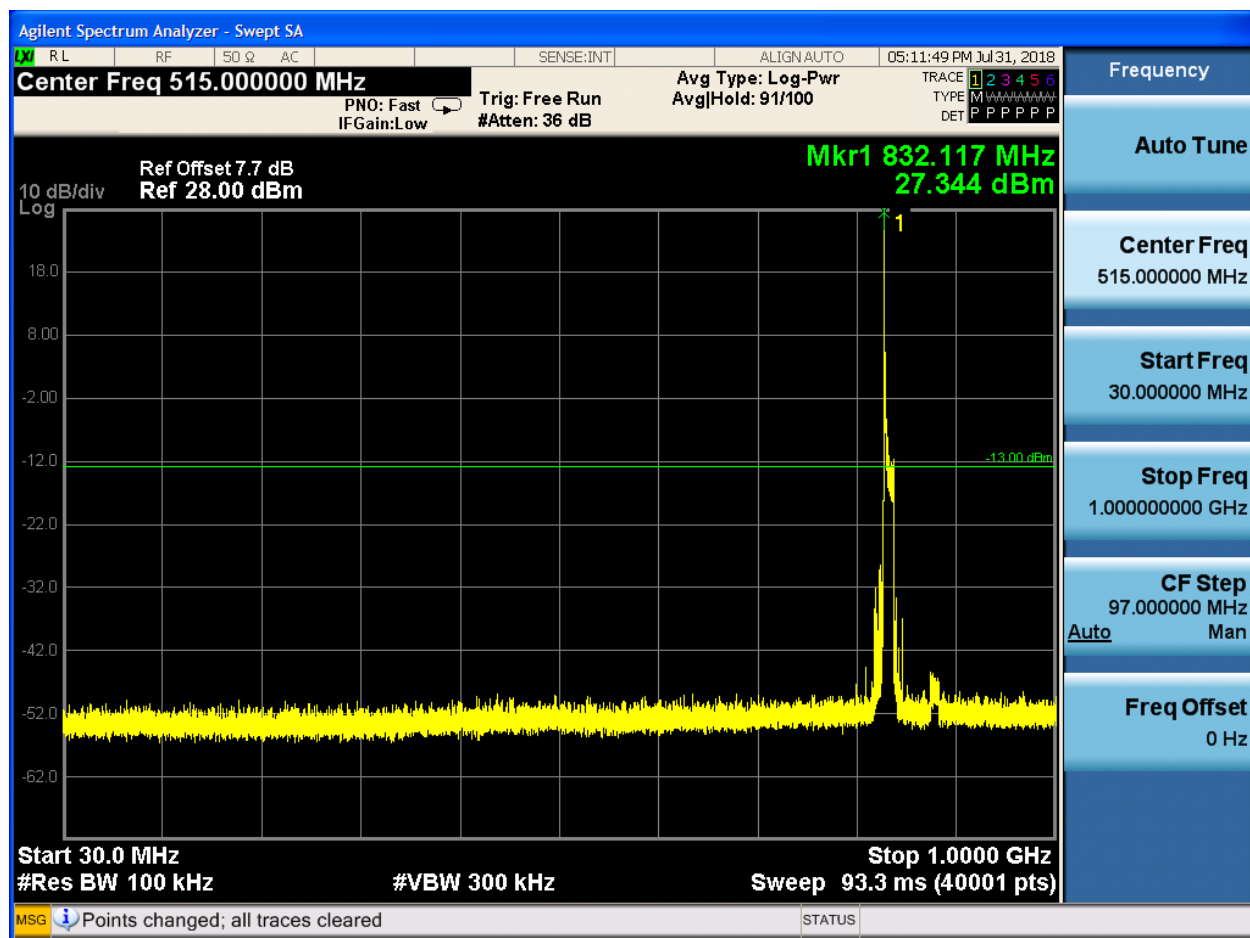


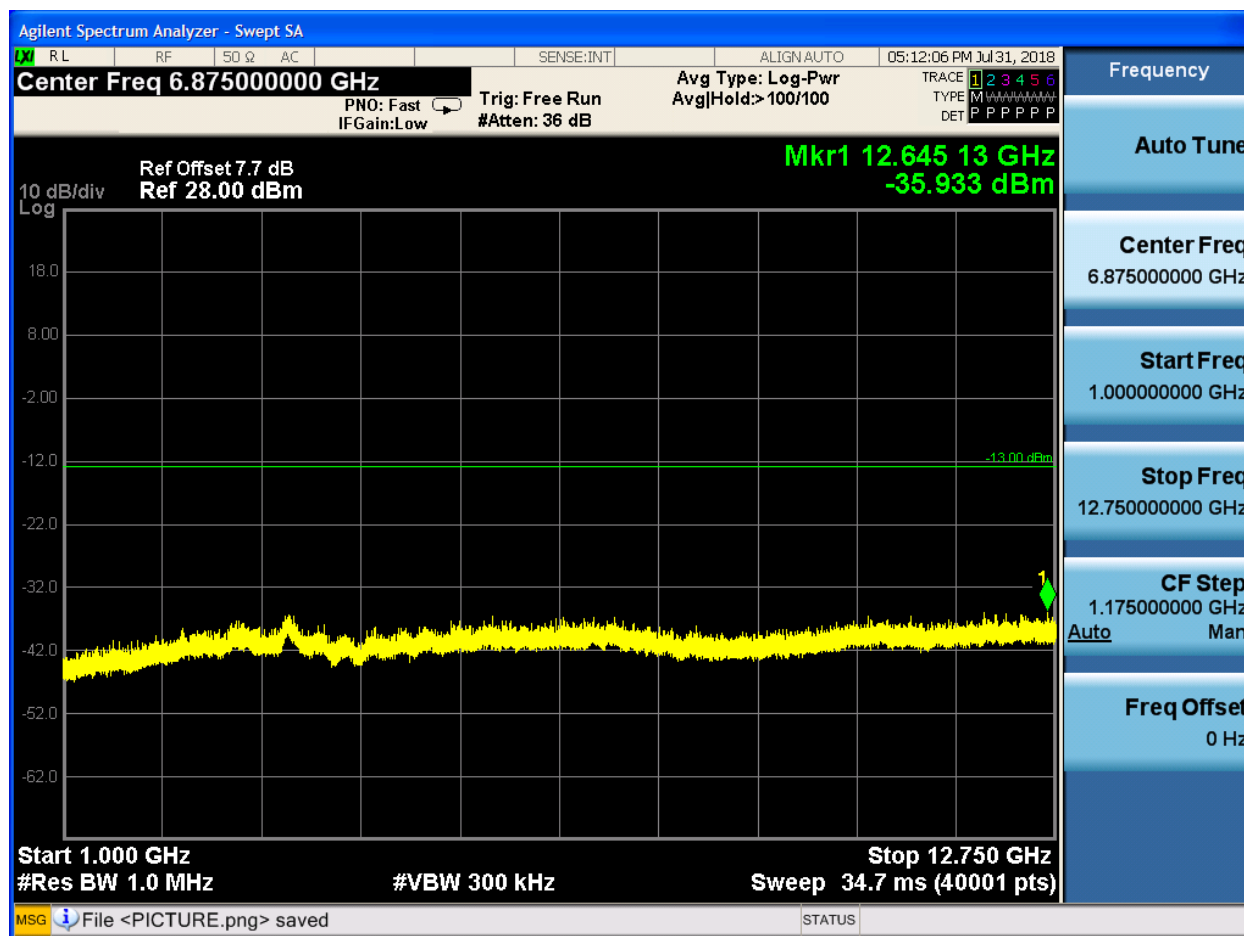
6.1.1.2.4.2 Test Channel = MCH

6.1.1.2.4.2.1 Test RB = RB1#0



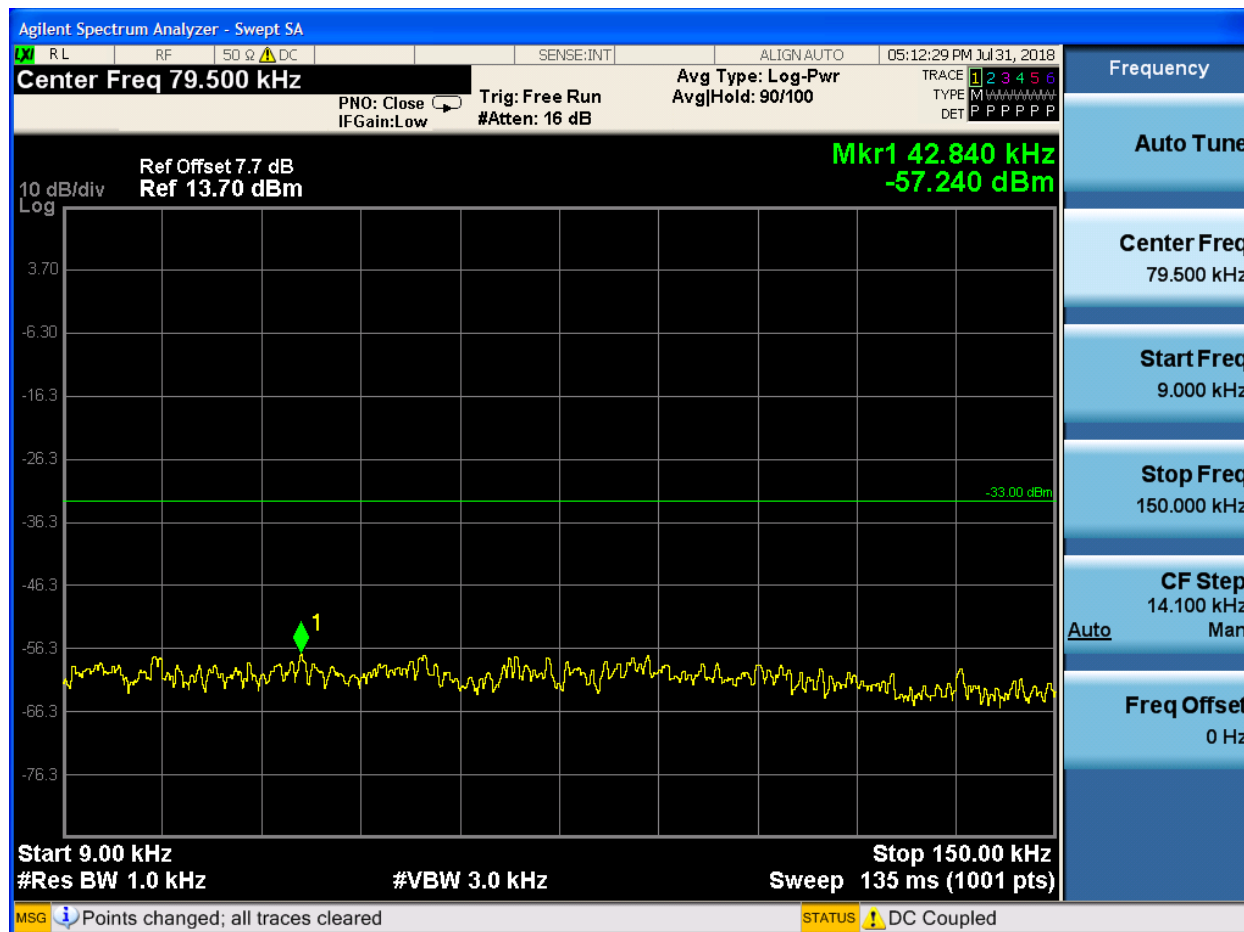


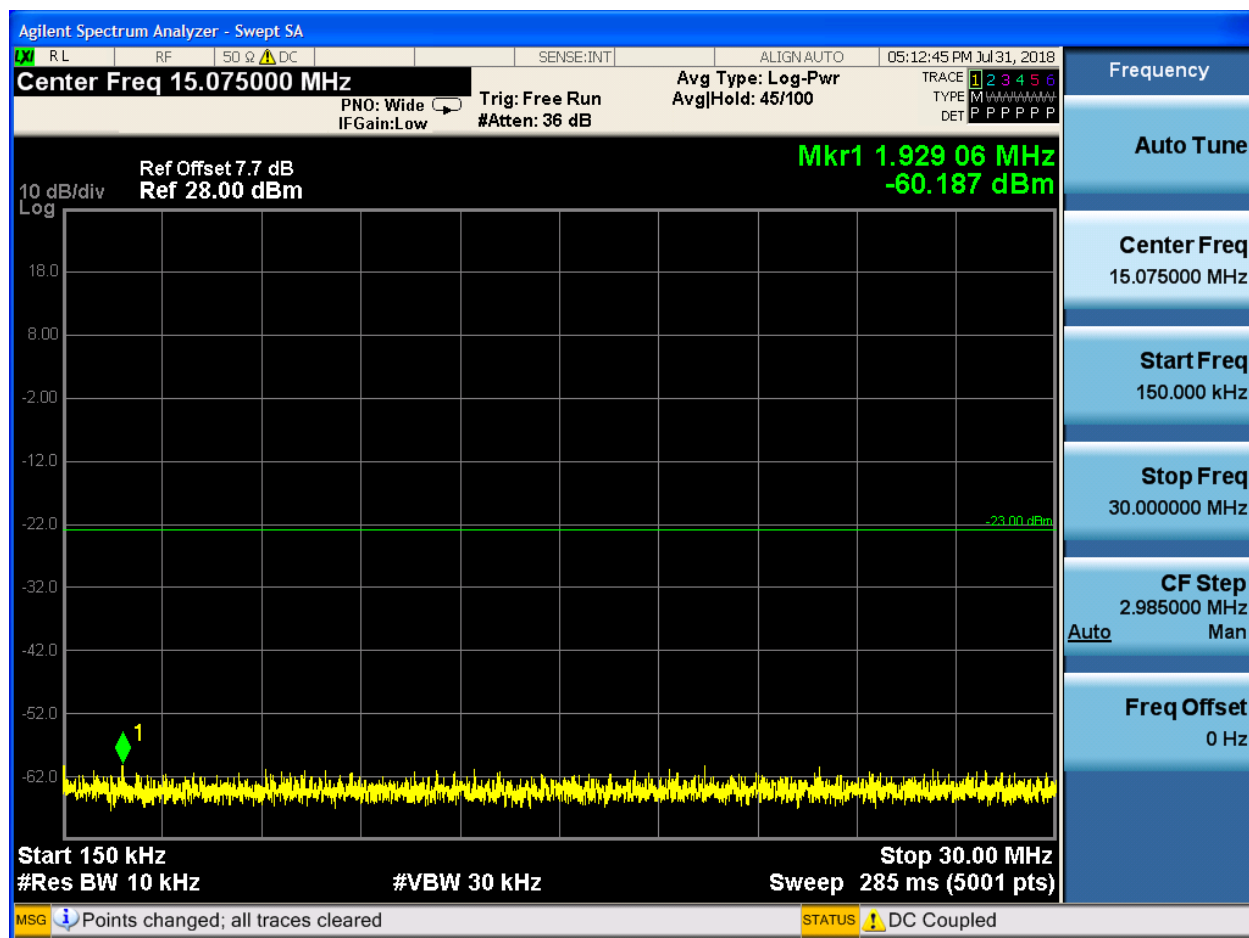


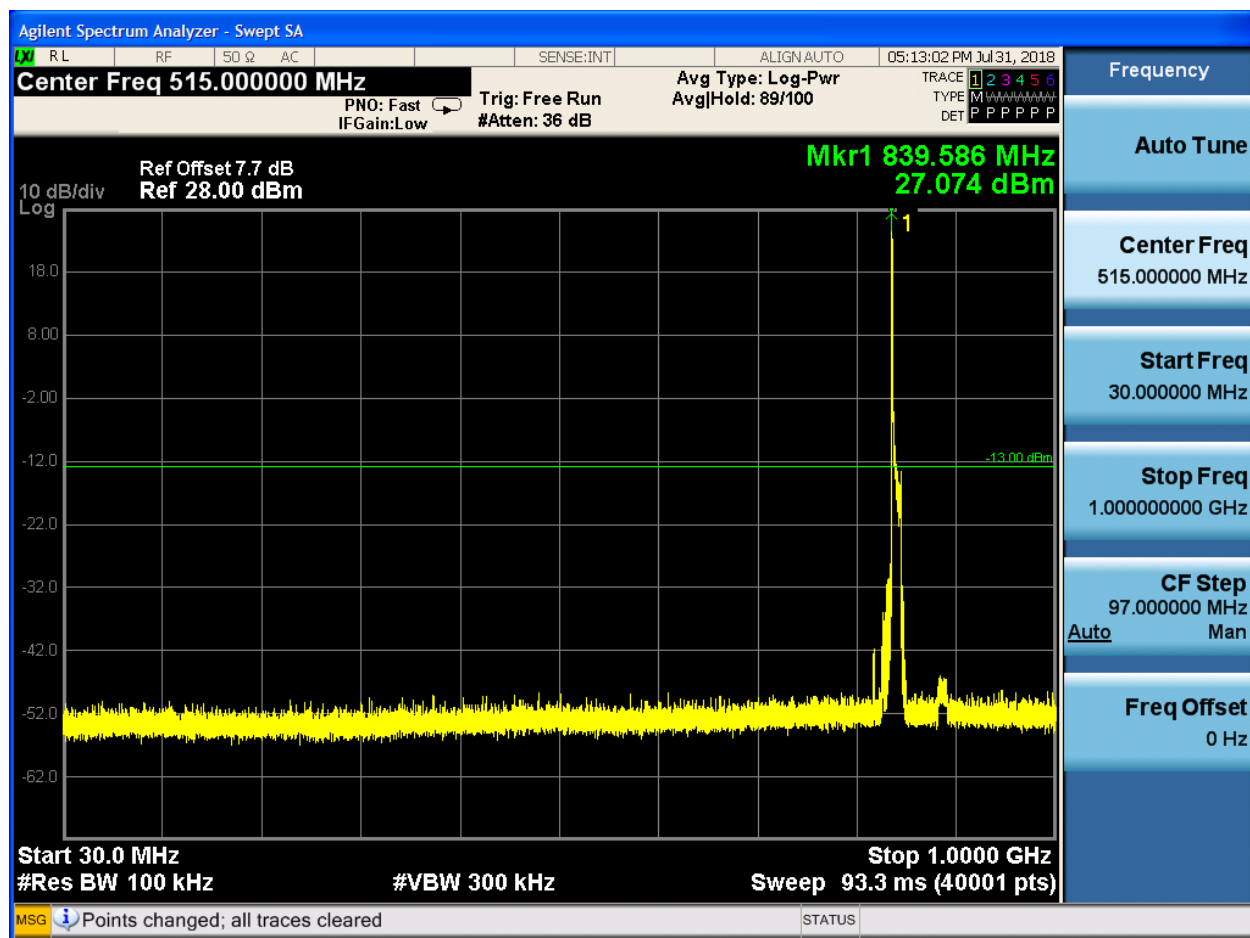


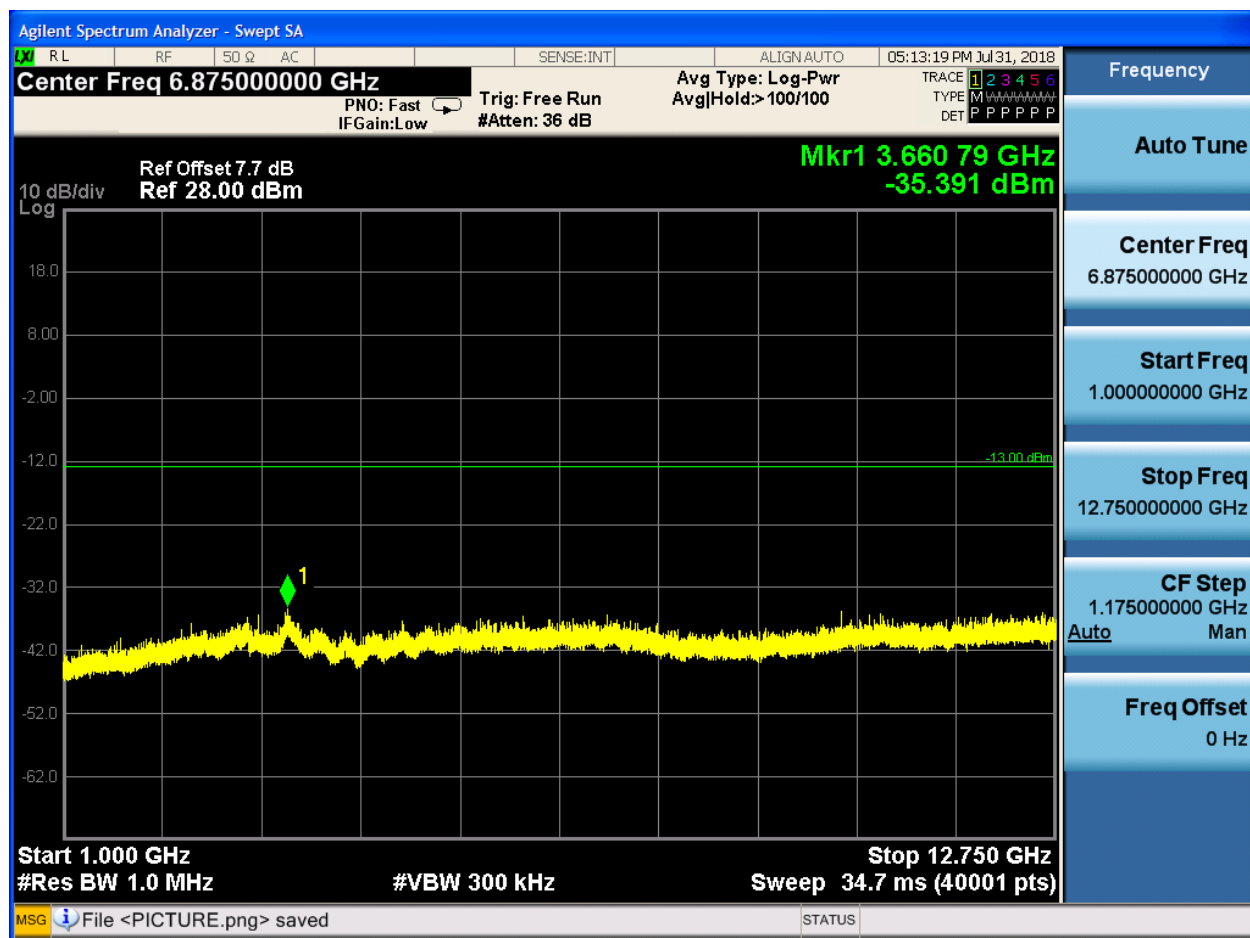
6.1.1.2.4.3 Test Channel = HCH

6.1.1.2.4.3.1 Test RB = RB1#0









7Appendix_G: Field Strength of Spurious Radiation

Note: We tested all modes, but the data presented below is the worst case.

9kHz~150kHz, RBW = 200Hz, VBW = 600 Hz, Detector: PK

150kHz~30MHz, RBW = 9kHz, VBW = 30k Hz, Detector: PK

30MHz~1GHz, RBW = 100 kHz, VBW = 300 kHz. Detector: PK

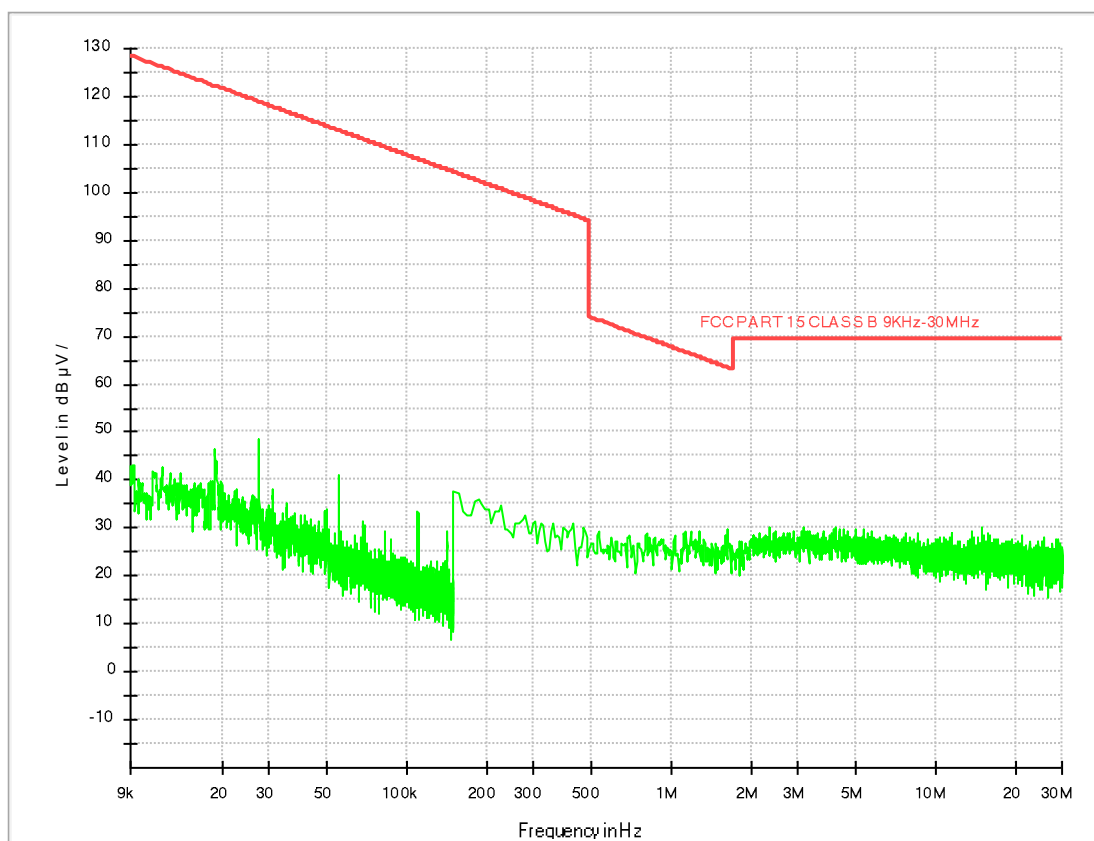
Above 1GHz, RBW = 1 MHz, VBW = 3 MHz. Detector: PK

Part I - Test Plots

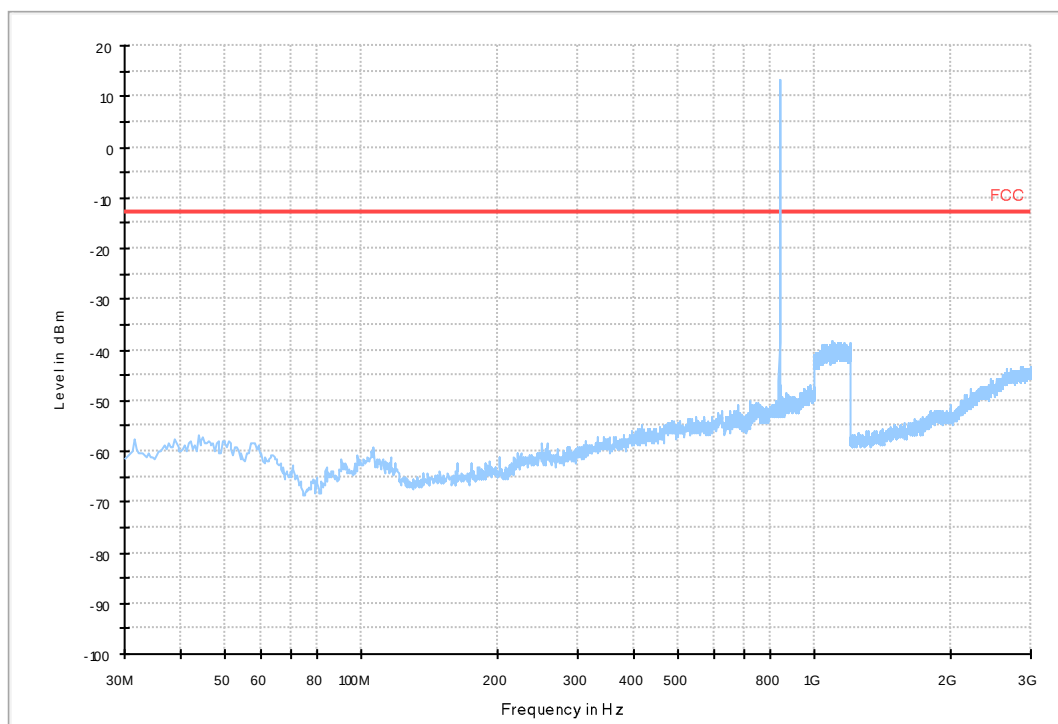
7.1 For LTE

7.1.1 Test Band = BAND5_ANT1

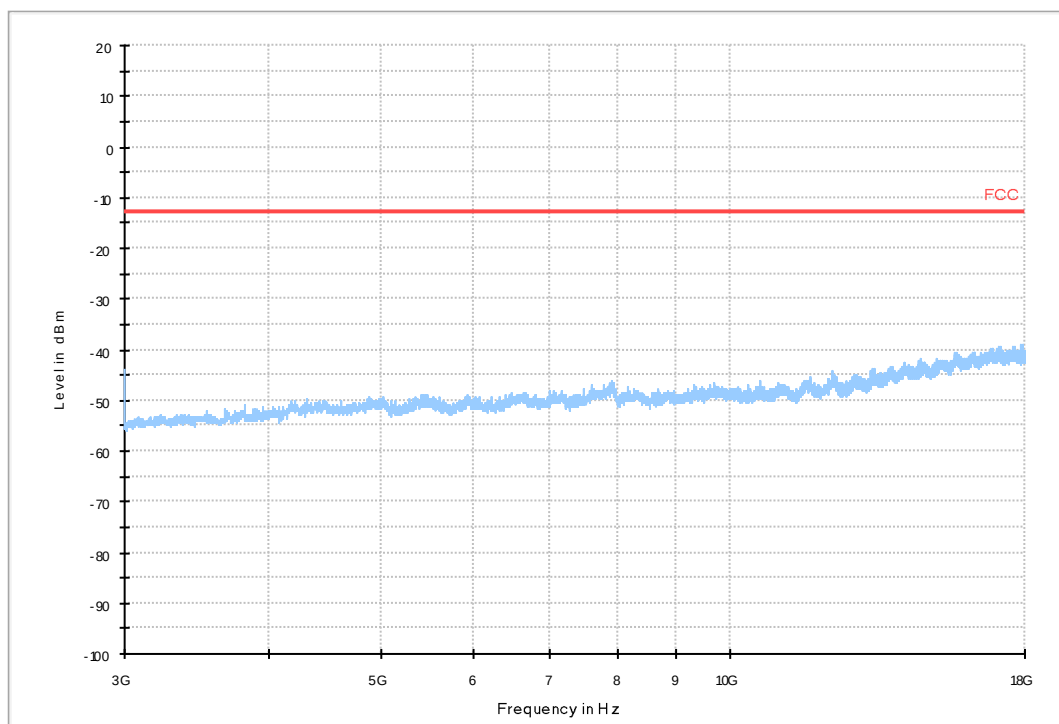
7.1.1.1 Test Bandwidth = 1.4



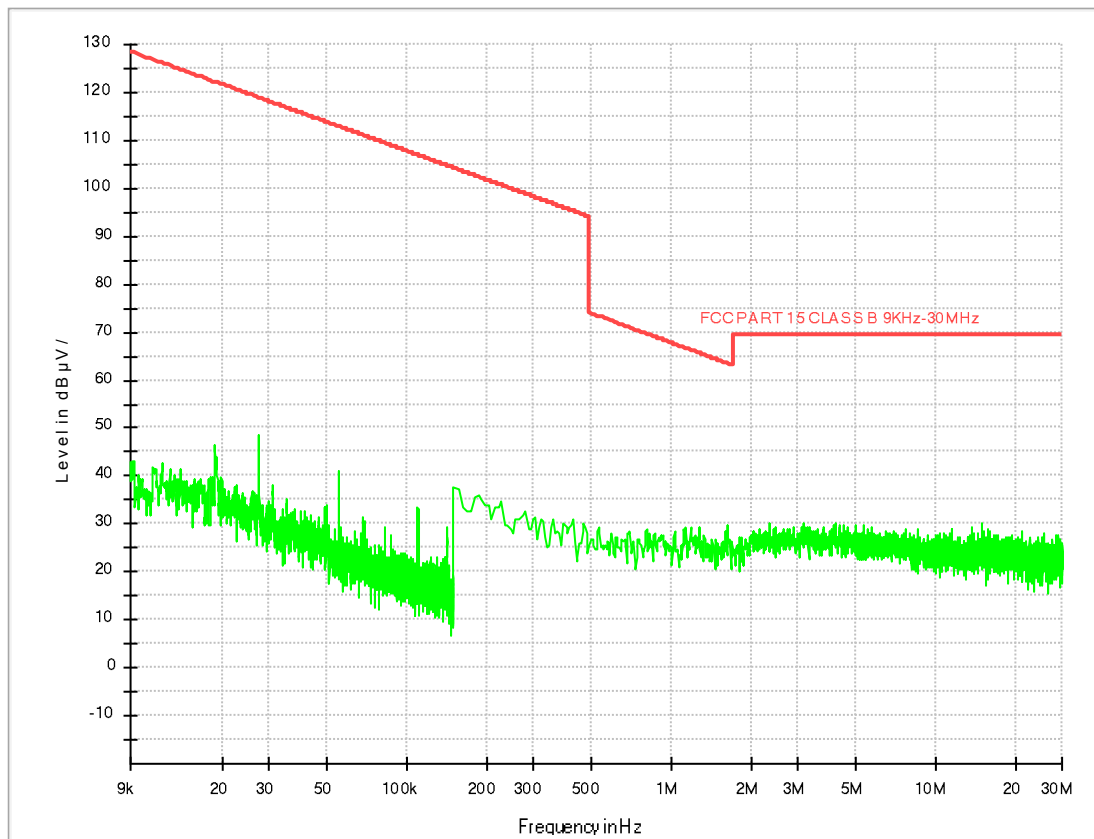
LTE FDD RSE-TX-DIRECTOR BELOW 1G_L



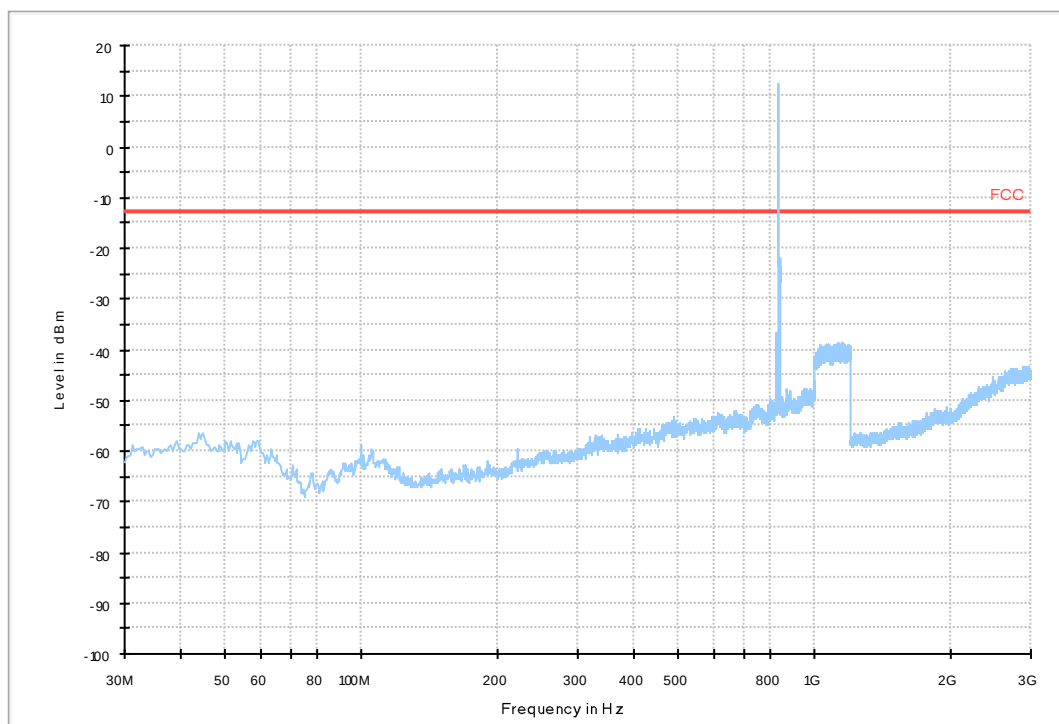
LTE FDD RSE-TX-DIRECTOR BELOW 1G_H



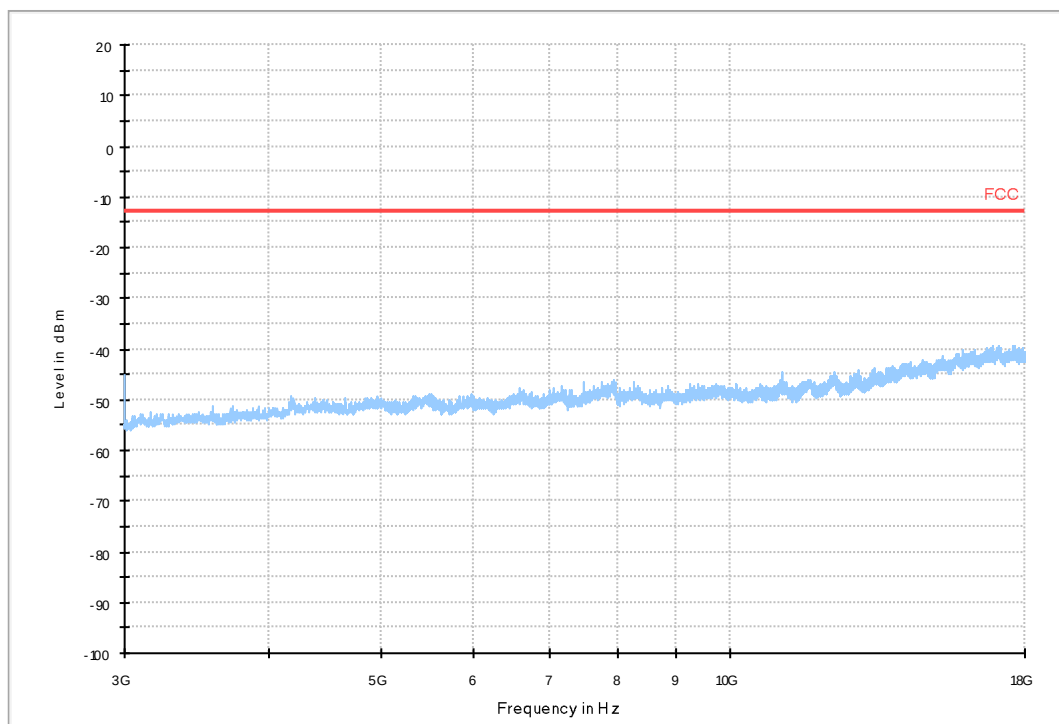
7.1.1.2 Test Bandwidth = 10



LTE FDD RSE-TX-DIRECTOR BELOW 1G_L

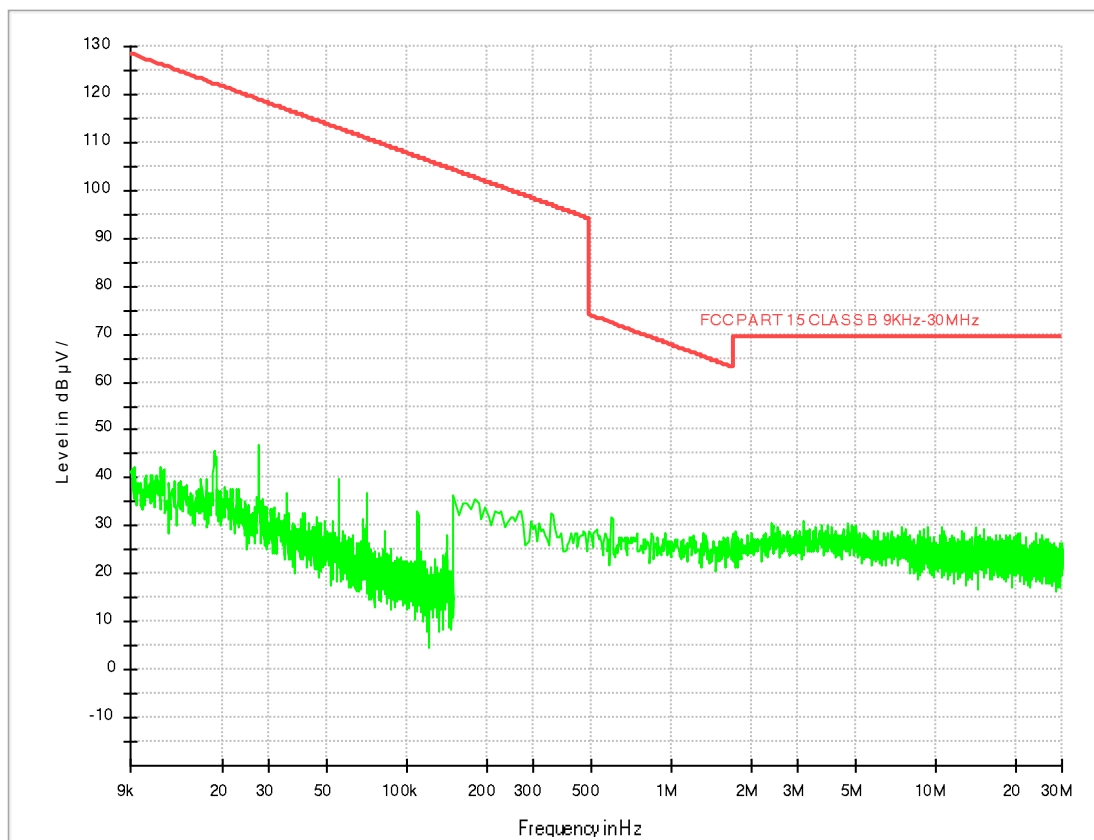


LTE FDD RSE-TX-DIRECTOR BELOW 1G_H

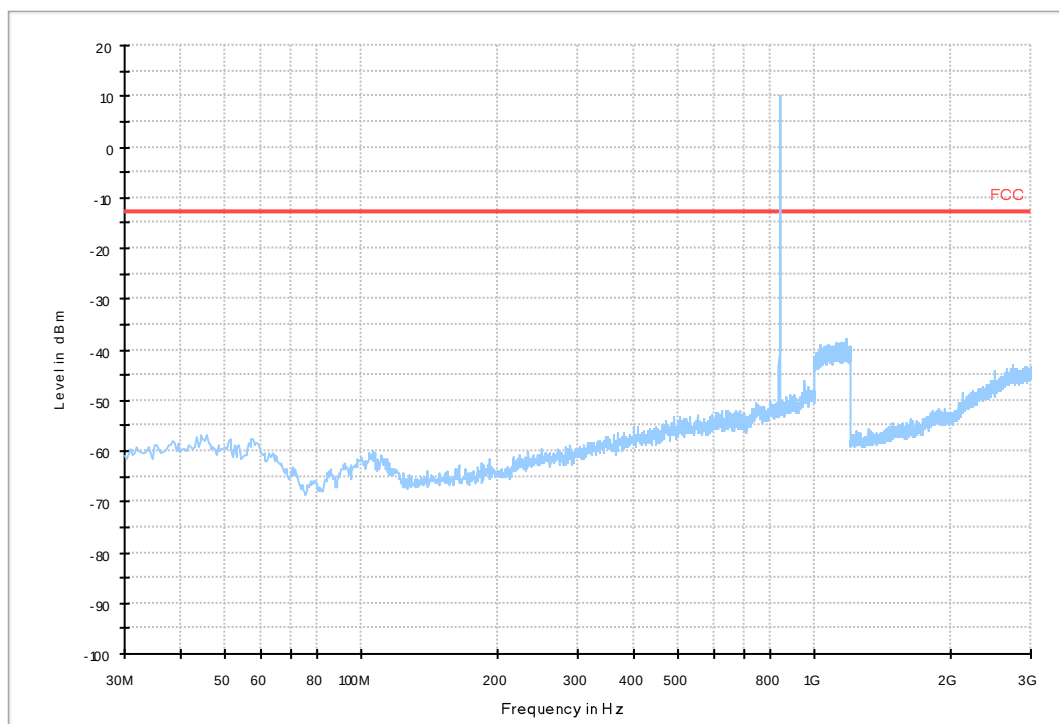


7.1.2 Test Band = BAND5_ANT2

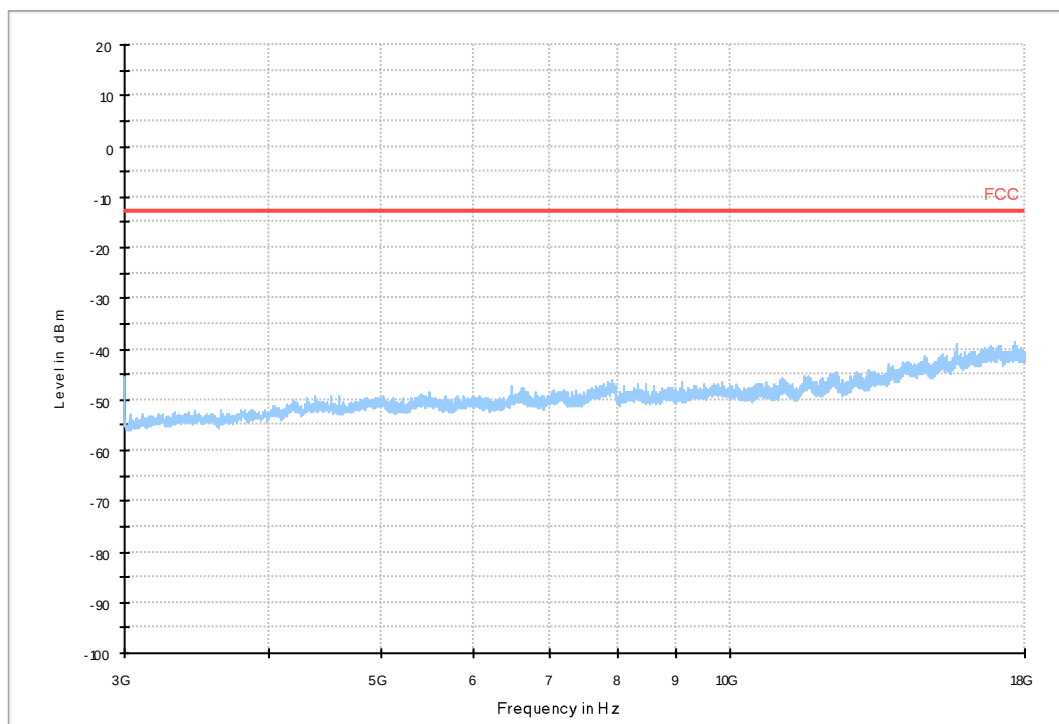
7.1.2.1 Test Bandwidth = 1.4



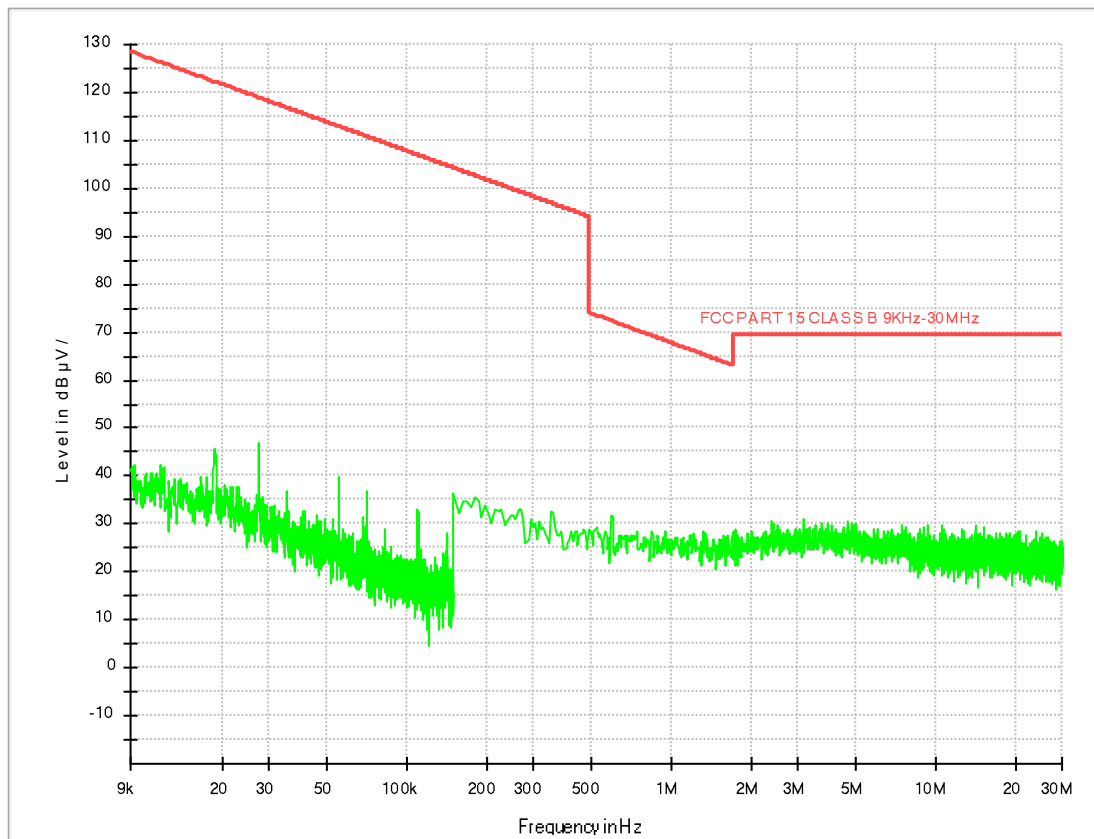
LTE FDD RSE-TX-DIRECTOR BELOW 1G_L



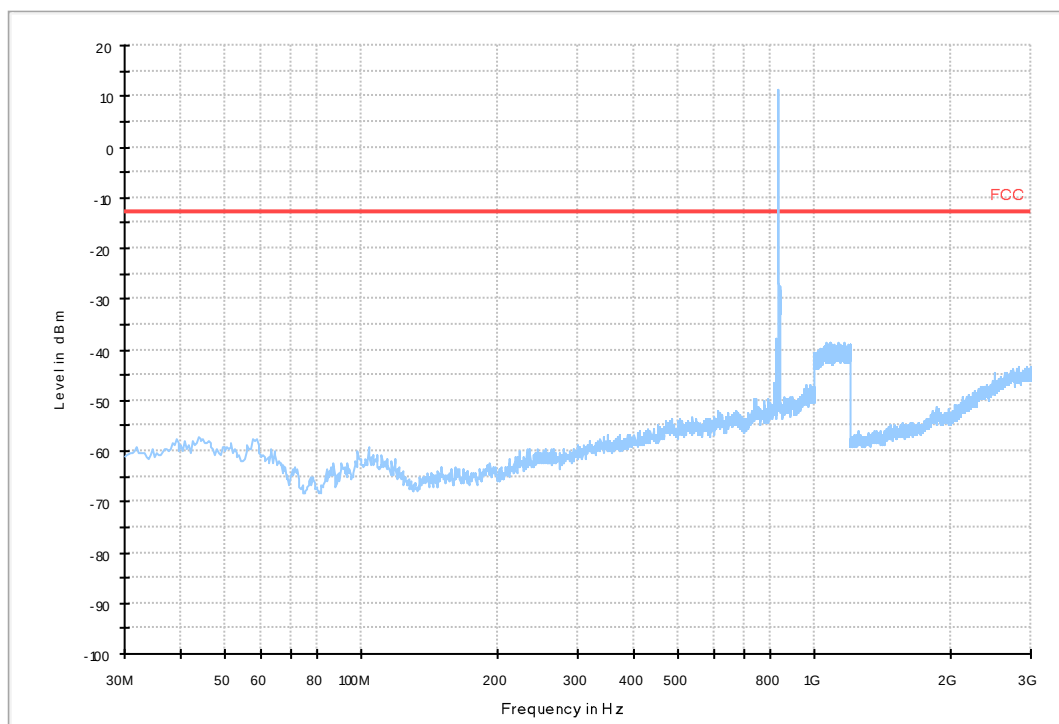
LTE FDD RSE-TX-DIRECTOR BELOW 1G_H



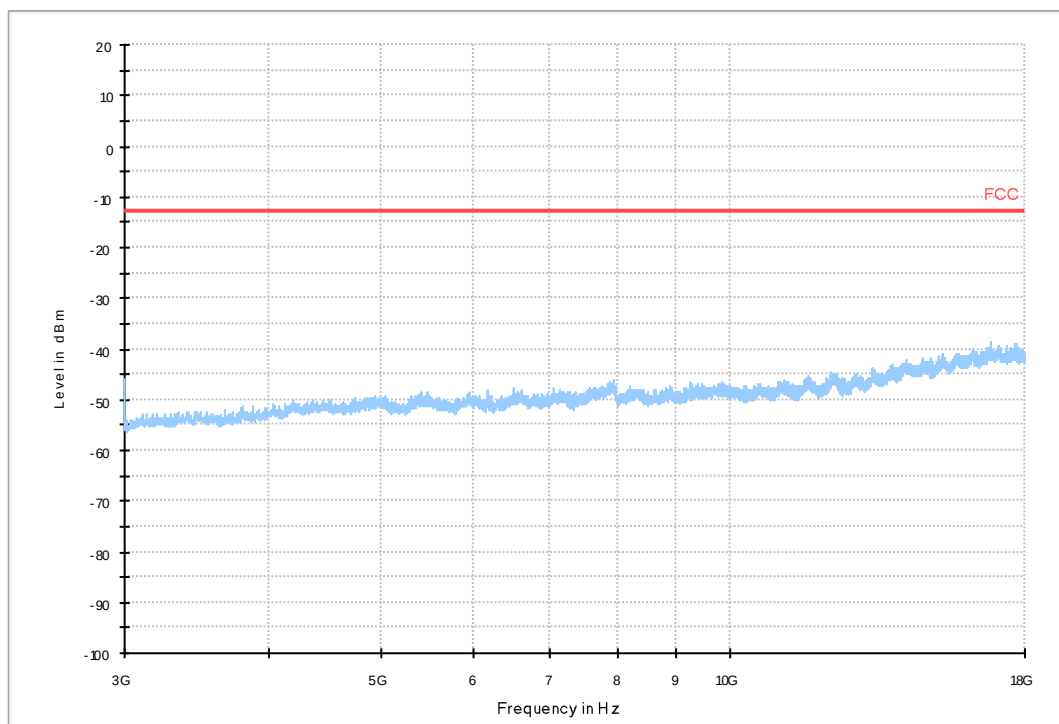
7.1.2.2 Test Bandwidth = 10



LTE FDD RSE-TX-DIRECTOR BELOW 1G_L



LTE FDD RSE-TX-DIRECTOR BELOW 1G_H



8Appendix_H: Frequency Stability

8.1 For LTE

8.1.1Frequency Error vs. Voltage:

Test Band	Test Mode	Test Bandwidth (MHz)	Test Channel	Test Temp.	Test Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
BAND5	LTE/TM1	1.4	LCH	TN	VL	-7.07	-0.00857	PASS
					VN	-0.30	-0.00036	PASS
					VH	-1.62	-0.00196	PASS
			MCH	TN	VL	10.33	0.01235	PASS
					VN	-14.52	-0.01736	PASS
					VH	-8.84	-0.01057	PASS
			HCH	TN	VL	25.43	0.02998	PASS
					VN	-2.09	-0.00246	PASS
					VH	-22.40	-0.02641	PASS
		3	LCH	TN	VL	24.60	0.0298	PASS
					VN	7.24	0.00877	PASS
					VH	4.31	0.00522	PASS
			MCH	TN	VL	-0.27	-0.00032	PASS
					VN	-2.26	-0.0027	PASS
					VH	-4.33	-0.00518	PASS
			HCH	TN	VL	4.95	0.00584	PASS
					VN	2.23	0.00263	PASS
					VH	-1.63	-0.00192	PASS
		5	LCH	TN	VL	0.54	0.00065	PASS
					VN	4.08	0.00494	PASS
					VH	-0.90	-0.00109	PASS
			MCH	TN	VL	-4.92	-0.00588	PASS
					VN	-12.04	-0.01439	PASS
					VH	-3.60	-0.0043	PASS
			HCH	TN	VL	0.06	0.00007	PASS
					VN	-5.12	-0.00605	PASS
					VH	-4.78	-0.00565	PASS
		10	LCH	TN	VL	3.45	0.00416	PASS
					VN	-6.05	-0.0073	PASS
					VH	-4.66	-0.00562	PASS
			MCH	TN	VL	0.69	0.00082	PASS

Test Band	Test Mode	Test Bandwidth (MHz)	Test Channel	Test Temp.	Test Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
			HCH	TN	VN	3.02	0.00361	PASS
					VH	1.03	0.00123	PASS
					VL	-2.90	-0.00344	PASS
					VN	-2.80	-0.00332	PASS
					VH	0.37	0.00044	PASS
		1.4	LCH	TN	VL	-0.07	-0.00008	PASS
					VN	5.91	0.00717	PASS
					VH	-2.22	-0.00269	PASS
			MCH	TN	VL	-0.06	-0.00007	PASS
					VN	13.12	0.01568	PASS
					VH	-7.17	-0.00857	PASS
			HCH	TN	VL	-31.90	-0.0376	PASS
					VN	-7.45	-0.00878	PASS
					VH	3.91	0.00461	PASS
	LTE/TM2	3	LCH	TN	VL	-12.76	-0.01546	PASS
					VN	-3.89	-0.00471	PASS
					VH	-10.47	-0.01268	PASS
			MCH	TN	VL	0.73	0.00087	PASS
					VN	8.71	0.01041	PASS
					VH	-7.27	-0.00869	PASS
			HCH	TN	VL	0.33	0.00039	PASS
					VN	3.78	0.00446	PASS
					VH	-2.68	-0.00316	PASS
		5	LCH	TN	VL	-18.58	-0.02248	PASS
					VN	-1.79	-0.00217	PASS
					VH	-2.90	-0.00351	PASS
			MCH	TN	VL	8.78	0.0105	PASS
					VN	13.48	0.01611	PASS
					VH	4.71	0.00563	PASS
			HCH	TN	VL	9.08	0.01073	PASS
					VN	6.84	0.00808	PASS
					VH	-1.52	-0.0018	PASS
		10	LCH	TN	VL	4.49	0.00542	PASS
					VN	-1.24	-0.0015	PASS
					VH	-0.49	-0.00059	PASS
			MCH	TN	VL	3.28	0.00392	PASS
					VN	10.74	0.01284	PASS
					VH	9.10	0.01088	PASS
			HCH	TN	VL	9.98	0.01182	PASS

Test Band	Test Mode	Test Bandwidth (MHz)	Test Channel	Test Temp.	Test Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
					VN	4.22	0.005	PASS
					VH	11.42	0.01353	PASS

8.1.2Frequency Error vs. Temperature:

Test Band	Test Mode	Test Bandwidth (MHz)	Test Channel	Test Volt.	Test Temp .	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
BAND5	LTE/TM1	1.4	LCH	VN	-30	0.36	0.00044	PASS
					-20	-7.62	-0.00924	PASS
					-10	20.59	0.02497	PASS
					0	-0.93	-0.00113	PASS
					10	4.53	0.00549	PASS
					20	-13.98	-0.01695	PASS
					30	-6.77	-0.00821	PASS
					40	-6.15	-0.00746	PASS
					50	5.18	0.00628	PASS
			MCH	VN	-30	12.60	0.01506	PASS
					-20	-7.61	-0.0091	PASS
					-10	-15.09	-0.01804	PASS
					0	-0.30	-0.00036	PASS
					10	5.46	0.00653	PASS
					20	14.23	0.01701	PASS
					30	3.66	0.00438	PASS
					40	1.42	0.0017	PASS
					50	-19.48	-0.02329	PASS
			HCH	VN	-30	14.45	0.01703	PASS
					-20	-31.14	-0.03671	PASS
					-10	-12.04	-0.01419	PASS
					0	-13.66	-0.0161	PASS
					10	9.18	0.01082	PASS
					20	10.24	0.01207	PASS
					30	-4.31	-0.00508	PASS
					40	-10.61	-0.01251	PASS
					50	17.50	0.02063	PASS
		3	LCH	VN	-30	-18.73	-0.02269	PASS
					-20	-3.89	-0.00471	PASS
					-10	-5.64	-0.00683	PASS
					0	-1.77	-0.00214	PASS

Test Band	Test Mode	Test Bandwidth (MHz)	Test Channel	Test Volt.	Test Temp .	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
					10	1.46	0.00177	PASS
					20	3.55	0.0043	PASS
					30	-4.16	-0.00504	PASS
					40	1.06	0.00128	PASS
					50	-10.56	-0.01279	PASS
			MCH	VN	-30	5.18	0.00619	PASS
					-20	-4.11	-0.00491	PASS
					-10	1.56	0.00186	PASS
					0	0.51	0.00061	PASS
					10	-3.43	-0.0041	PASS
					20	1.56	0.00186	PASS
					30	-4.32	-0.00516	PASS
					40	5.51	0.00659	PASS
					50	1.02	0.00122	PASS
			HCH	VN	-30	2.60	0.00307	PASS
					-20	-1.00	-0.00118	PASS
					-10	0.09	0.00011	PASS
					0	-0.59	-0.0007	PASS
					10	-3.85	-0.00454	PASS
					20	-1.92	-0.00227	PASS
					30	-0.72	-0.00085	PASS
					40	2.36	0.00278	PASS
					50	1.83	0.00216	PASS
		5	LCH	VN	-30	0.07	0.00008	PASS
					-20	-7.02	-0.00849	PASS
					-10	-2.82	-0.00341	PASS
					0	-3.53	-0.00427	PASS
					10	4.55	0.00551	PASS
					20	8.77	0.01061	PASS
					30	-0.43	-0.00052	PASS
					40	2.03	0.00246	PASS
					50	-1.22	-0.00148	PASS
			MCH	VN	-30	0.47	0.00056	PASS
					-20	4.39	0.00525	PASS
					-10	4.22	0.00504	PASS
					0	3.48	0.00416	PASS
					10	3.39	0.00405	PASS
					20	2.19	0.00262	PASS
					30	7.80	0.00932	PASS

Test Band	Test Mode	Test Bandwidth (MHz)	Test Channel	Test Volt.	Test Temp .	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
					40	6.18	0.00739	PASS
					50	7.97	0.00953	PASS
			HCH	VN	-30	0.73	0.00086	PASS
					-20	4.23	0.005	PASS
					-10	0.21	0.00025	PASS
					0	2.99	0.00353	PASS
					10	-0.87	-0.00103	PASS
					20	0.44	0.00052	PASS
					30	-0.04	-0.00005	PASS
					40	2.47	0.00292	PASS
					50	-1.04	-0.00123	PASS
		10	LCH	VN	-30	-1.23	-0.00148	PASS
					-20	-0.10	-0.00012	PASS
					-10	0.44	0.00053	PASS
					0	-2.15	-0.00259	PASS
					10	-1.07	-0.00129	PASS
					20	0.47	0.00057	PASS
					30	-6.18	-0.00745	PASS
					40	-5.48	-0.00661	PASS
					50	-2.98	-0.00359	PASS
			MCH	VN	-30	7.68	0.00918	PASS
					-20	2.13	0.00255	PASS
					-10	-1.07	-0.00128	PASS
					0	2.53	0.00302	PASS
					10	0.64	0.00077	PASS
					20	-2.57	-0.00307	PASS
					30	1.57	0.00188	PASS
					40	-0.47	-0.00056	PASS
					50	0.96	0.00115	PASS
			HCH	VN	-30	3.02	0.00358	PASS
					-20	-0.72	-0.00085	PASS
					-10	3.89	0.00461	PASS
					0	0.76	0.0009	PASS
					10	0.16	0.00019	PASS
					20	-2.10	-0.00249	PASS
					30	2.30	0.00273	PASS
					40	-1.46	-0.00173	PASS
					50	0.54	0.00064	PASS
	LTE/TM2	1.4	LCH	VN	-30	7.50	0.00909	PASS

Test Band	Test Mode	Test Bandwidth (MHz)	Test Channel	Test Volt.	Test Temp .	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
					-20	-12.47	-0.01512	PASS
					-10	1.89	0.00229	PASS
					0	13.66	0.01656	PASS
					10	5.46	0.00662	PASS
					20	2.85	0.00346	PASS
					30	-3.26	-0.00395	PASS
					40	0.20	0.00024	PASS
					50	-5.61	-0.0068	PASS
			MCH	VN	-30	18.34	0.02192	PASS
					-20	-3.73	-0.00446	PASS
					-10	-12.45	-0.01488	PASS
					0	-5.69	-0.0068	PASS
					10	27.09	0.03238	PASS
					20	-9.84	-0.01176	PASS
					30	-4.81	-0.00575	PASS
					40	-6.85	-0.00819	PASS
					50	-10.09	-0.01206	PASS
			HCH	VN	-30	3.79	0.00447	PASS
					-20	4.58	0.0054	PASS
					-10	1.40	0.00165	PASS
					0	-21.43	-0.02526	PASS
					10	13.03	0.01536	PASS
					20	-3.93	-0.00463	PASS
					30	11.90	0.01403	PASS
					40	-1.39	-0.00164	PASS
					50	26.01	0.03066	PASS
		3	LCH	VN	-30	1.17	0.00142	PASS
					-20	-8.14	-0.00986	PASS
					-10	0.86	0.00104	PASS
					0	7.08	0.00858	PASS
					10	18.55	0.02247	PASS
					20	-4.25	-0.00515	PASS
					30	0.43	0.00052	PASS
					40	-1.40	-0.0017	PASS
					50	5.79	0.00701	PASS
			MCH	VN	-30	1.72	0.00206	PASS
					-20	3.29	0.00393	PASS
					-10	-11.12	-0.01329	PASS
					0	0.72	0.00086	PASS

Test Band	Test Mode	Test Bandwidth (MHz)	Test Channel	Test Volt.	Test Temp .	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
					10	10.76	0.01286	PASS
					20	0.06	0.00007	PASS
					30	-2.52	-0.00301	PASS
					40	2.49	0.00298	PASS
					50	-0.83	-0.00099	PASS
			HCH	VN	-30	-2.20	-0.0026	PASS
					-20	-0.94	-0.00111	PASS
					-10	1.44	0.0017	PASS
					0	-0.72	-0.00085	PASS
					10	-0.29	-0.00034	PASS
					20	0.84	0.00099	PASS
					30	-0.13	-0.00015	PASS
					40	-4.25	-0.00501	PASS
					50	-1.07	-0.00126	PASS
		5	LCH	VN	-30	1.86	0.00225	PASS
					-20	3.09	0.00374	PASS
					-10	-0.66	-0.0008	PASS
					0	2.55	0.00309	PASS
					10	-2.86	-0.00346	PASS
					20	-0.43	-0.00052	PASS
					30	0.59	0.00071	PASS
					40	6.01	0.00727	PASS
					50	3.35	0.00405	PASS
			MCH	VN	-30	-8.30	-0.00992	PASS
					-20	-9.66	-0.01155	PASS
					-10	-1.09	-0.0013	PASS
					0	-1.80	-0.00215	PASS
					10	-4.85	-0.0058	PASS
					20	3.52	0.00421	PASS
					30	-8.64	-0.01033	PASS
					40	-0.07	-0.00008	PASS
					50	-7.17	-0.00857	PASS
			HCH	VN	-30	-3.82	-0.00451	PASS
					-20	1.43	0.00169	PASS
					-10	1.24	0.00146	PASS
					0	-6.48	-0.00766	PASS
					10	-1.40	-0.00165	PASS
					20	-2.42	-0.00286	PASS
					30	-0.64	-0.00076	PASS

Test Band	Test Mode	Test Bandwidth (MHz)	Test Channel	Test Volt.	Test Temp .	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
		10			40	-0.03	-0.00004	PASS
					50	0.41	0.00048	PASS
			LCH	VN	-30	5.69	0.00686	PASS
					-20	4.46	0.00538	PASS
					-10	1.42	0.00171	PASS
					0	1.89	0.00228	PASS
					10	0.59	0.00071	PASS
					20	-2.85	-0.00344	PASS
					30	2.16	0.00261	PASS
					40	6.92	0.00835	PASS
					50	-1.39	-0.00168	PASS
			MCH	VN	-30	3.20	0.00383	PASS
					-20	-4.41	-0.00527	PASS
					-10	-0.84	-0.001	PASS
					0	-1.53	-0.00183	PASS
					10	-1.33	-0.00159	PASS
					20	1.10	0.00132	PASS
					30	-0.01	-0.00001	PASS
					40	-0.34	-0.00041	PASS
					50	-6.57	-0.00785	PASS
			HCH	VN	-30	-3.18	-0.00377	PASS
					-20	-5.08	-0.00602	PASS
					-10	-2.66	-0.00315	PASS
					0	-4.33	-0.00513	PASS
					10	-3.43	-0.00406	PASS
					20	-0.24	-0.00028	PASS
					30	-4.49	-0.00532	PASS
					40	-1.23	-0.00146	PASS
					50	-2.96	-0.00351	PASS

END