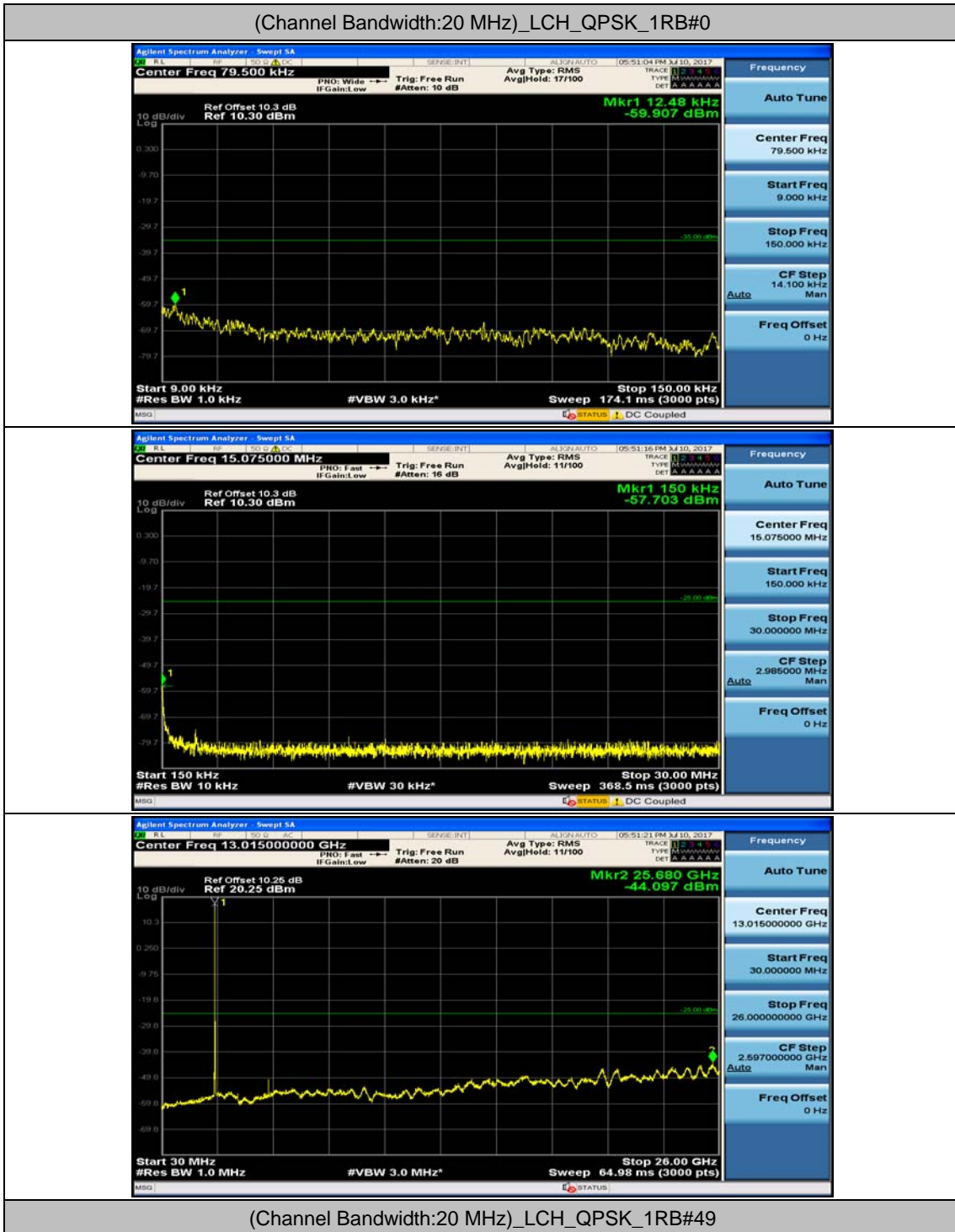
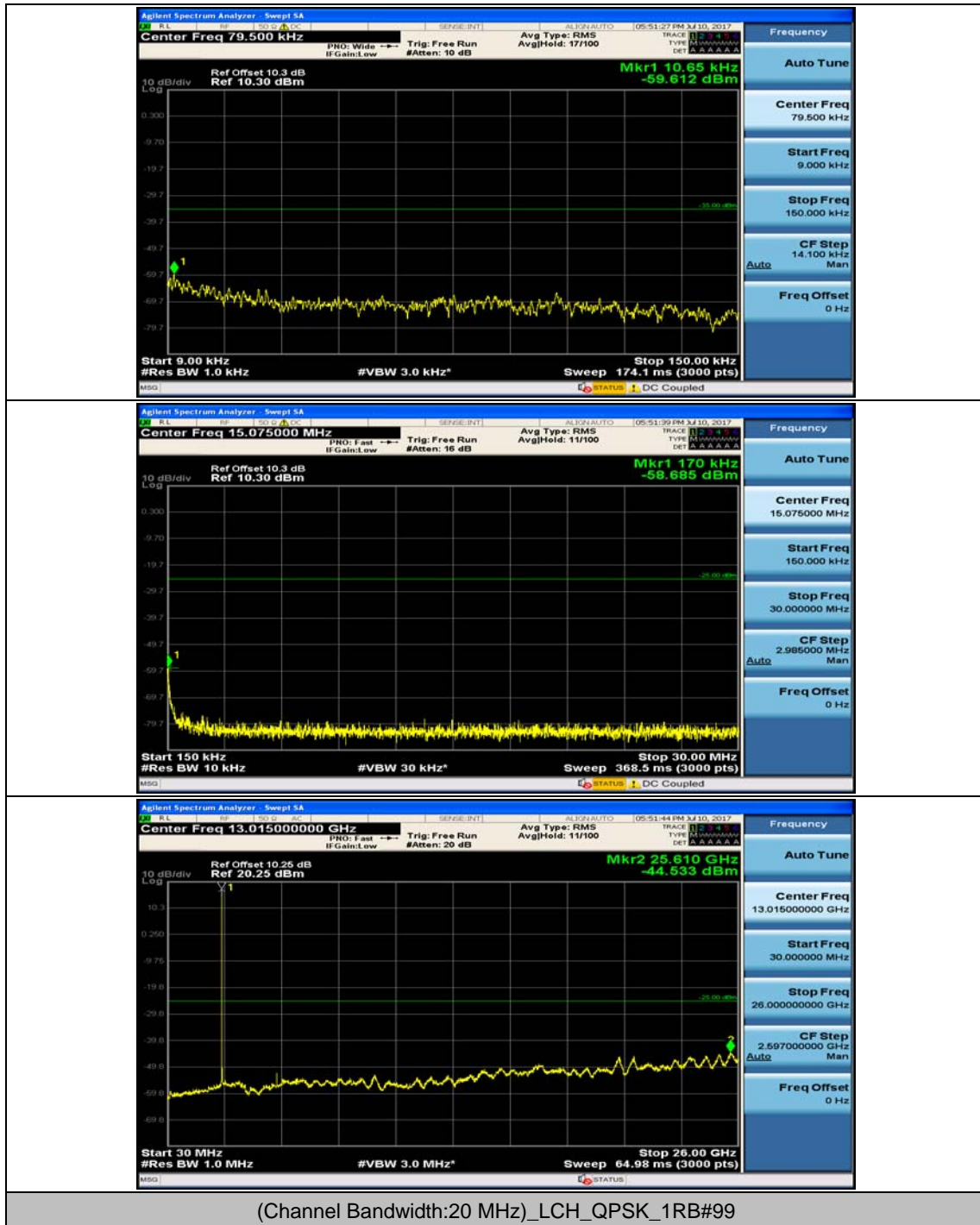
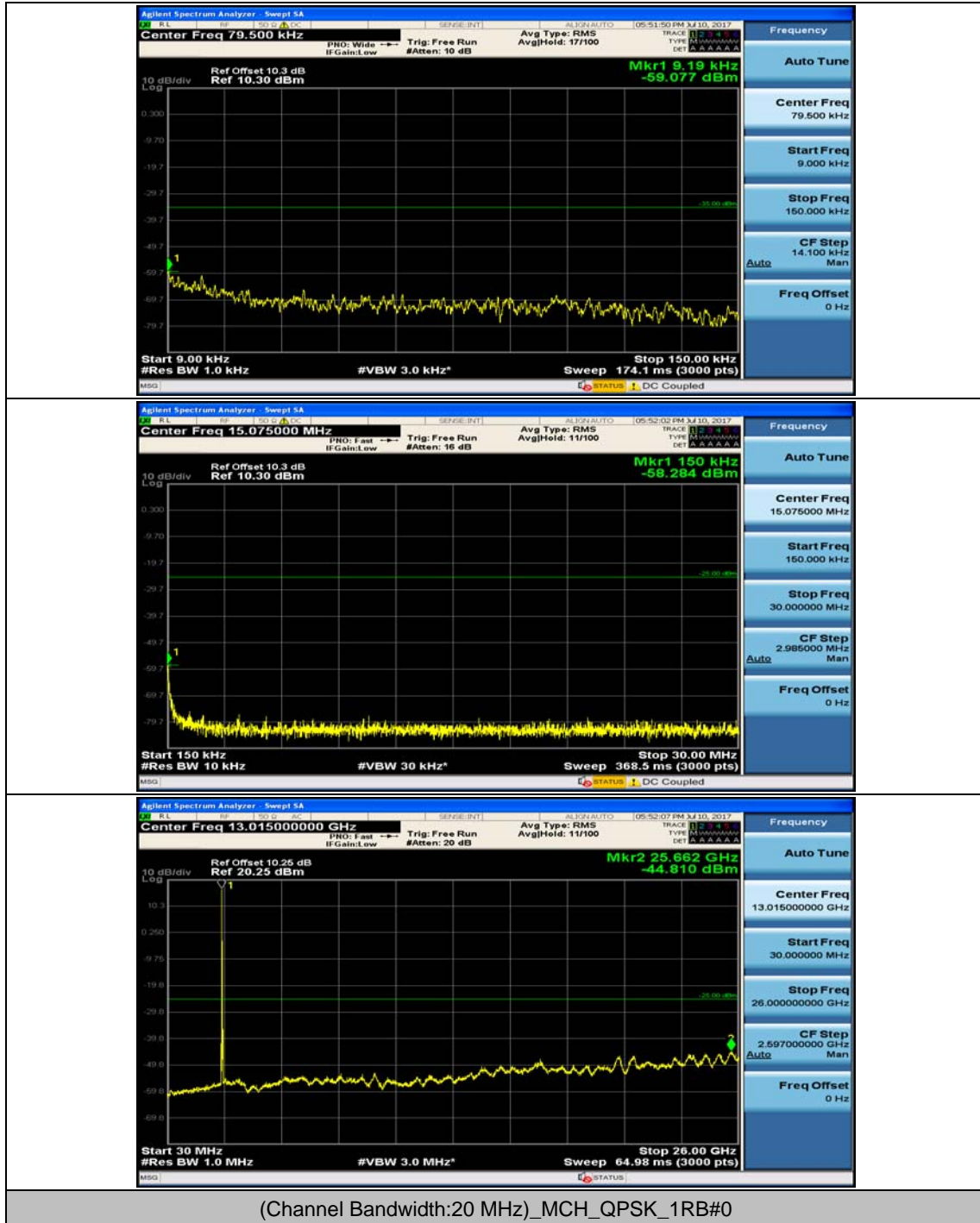


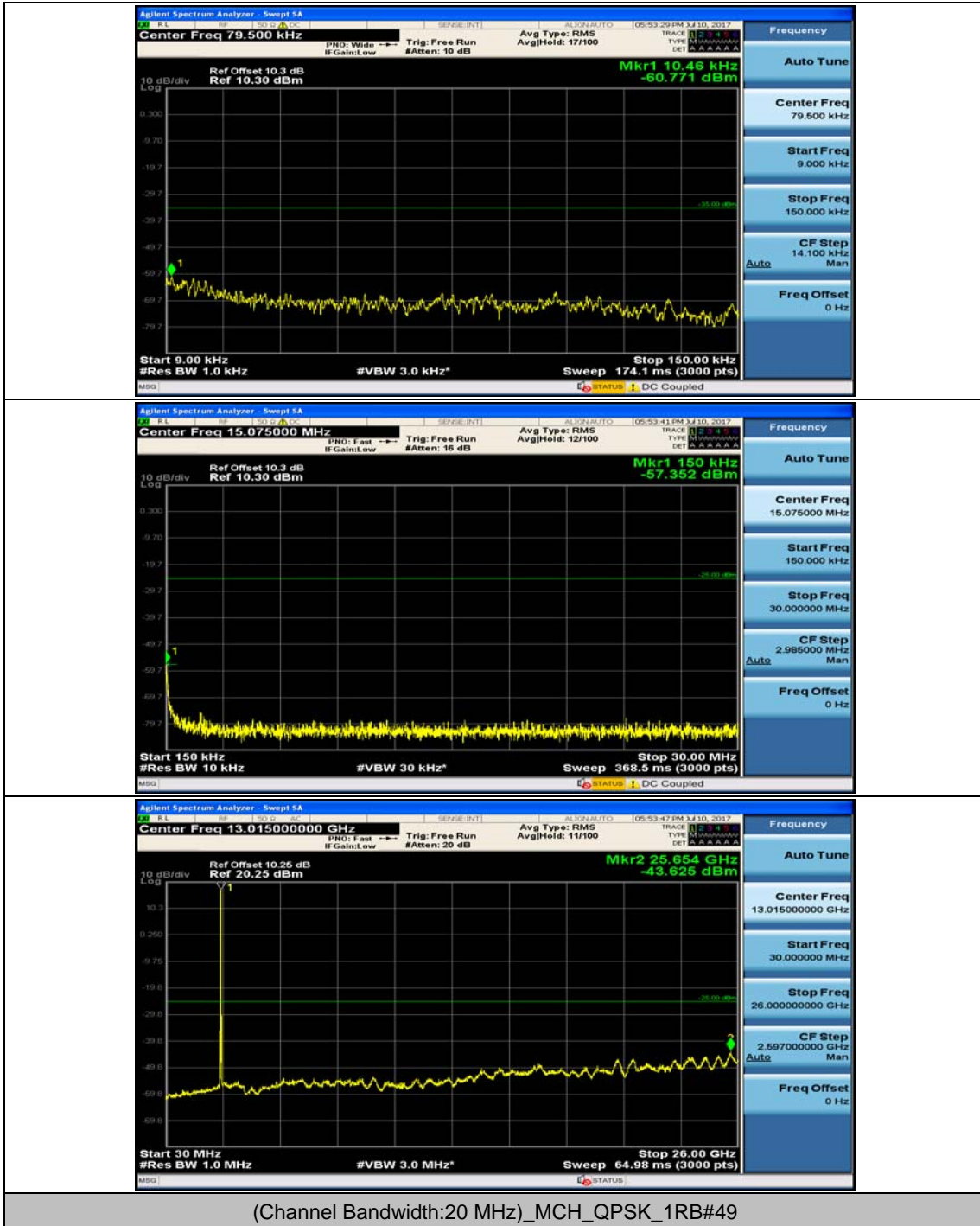
### Channel Bandwidth: 20 MHz

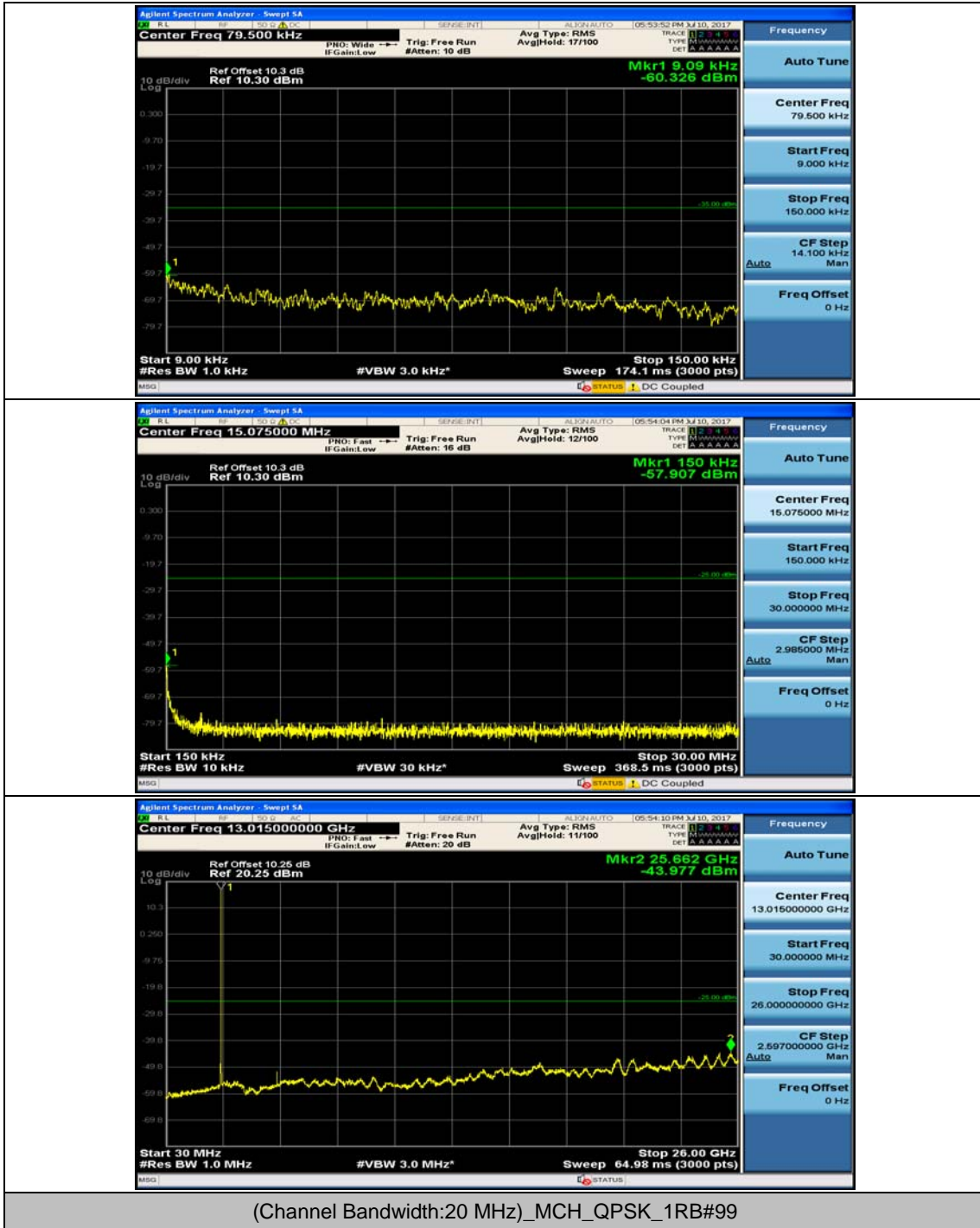


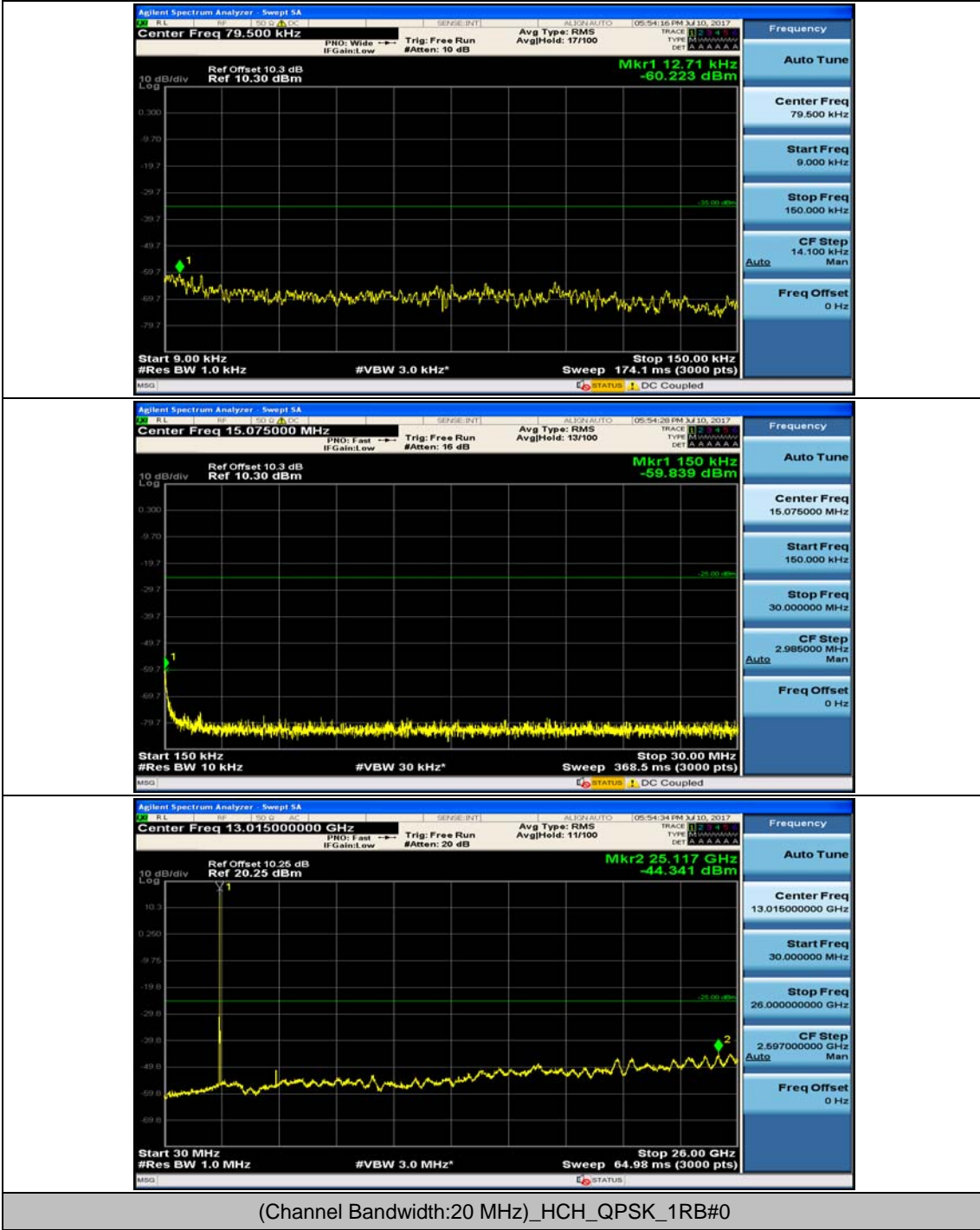


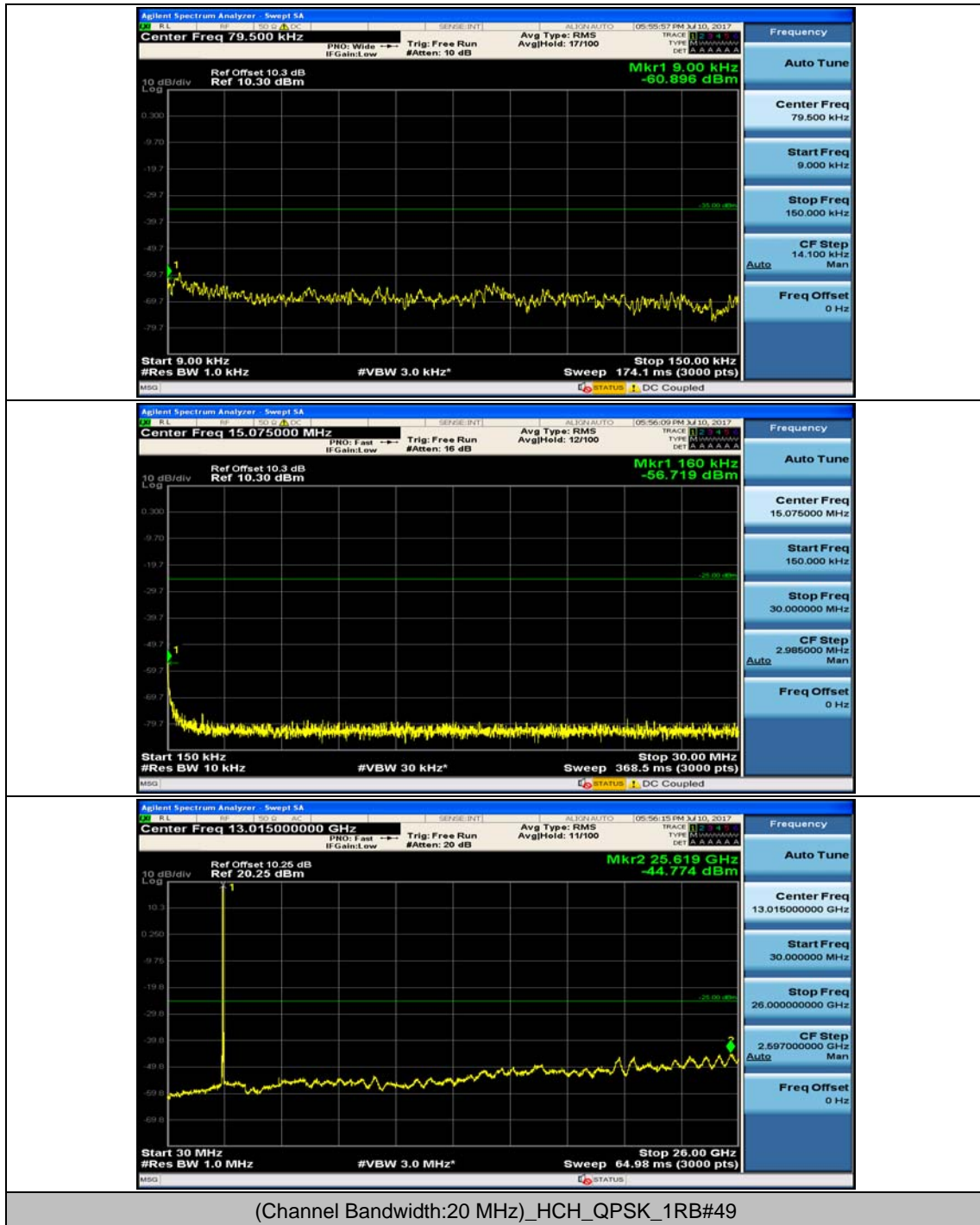


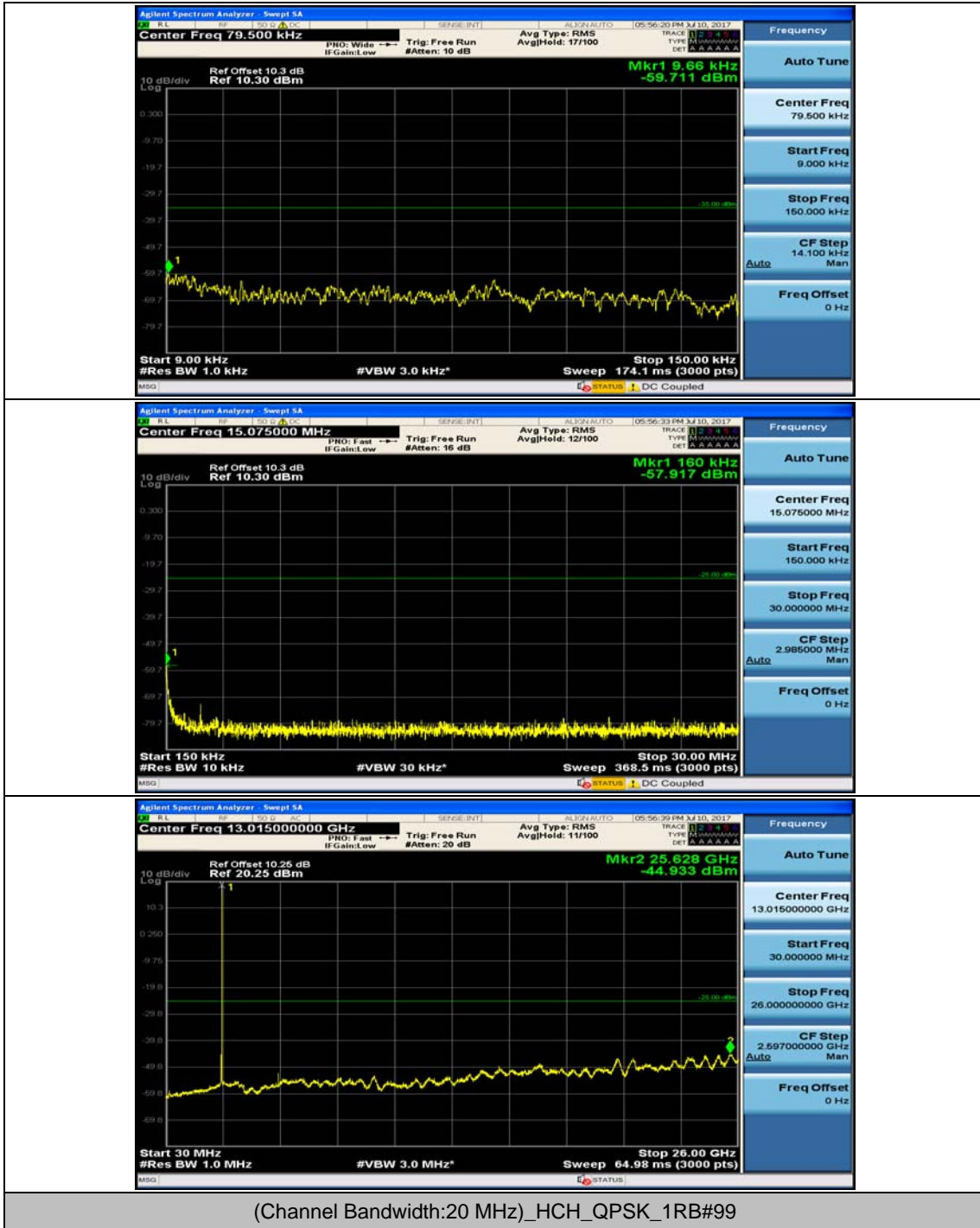


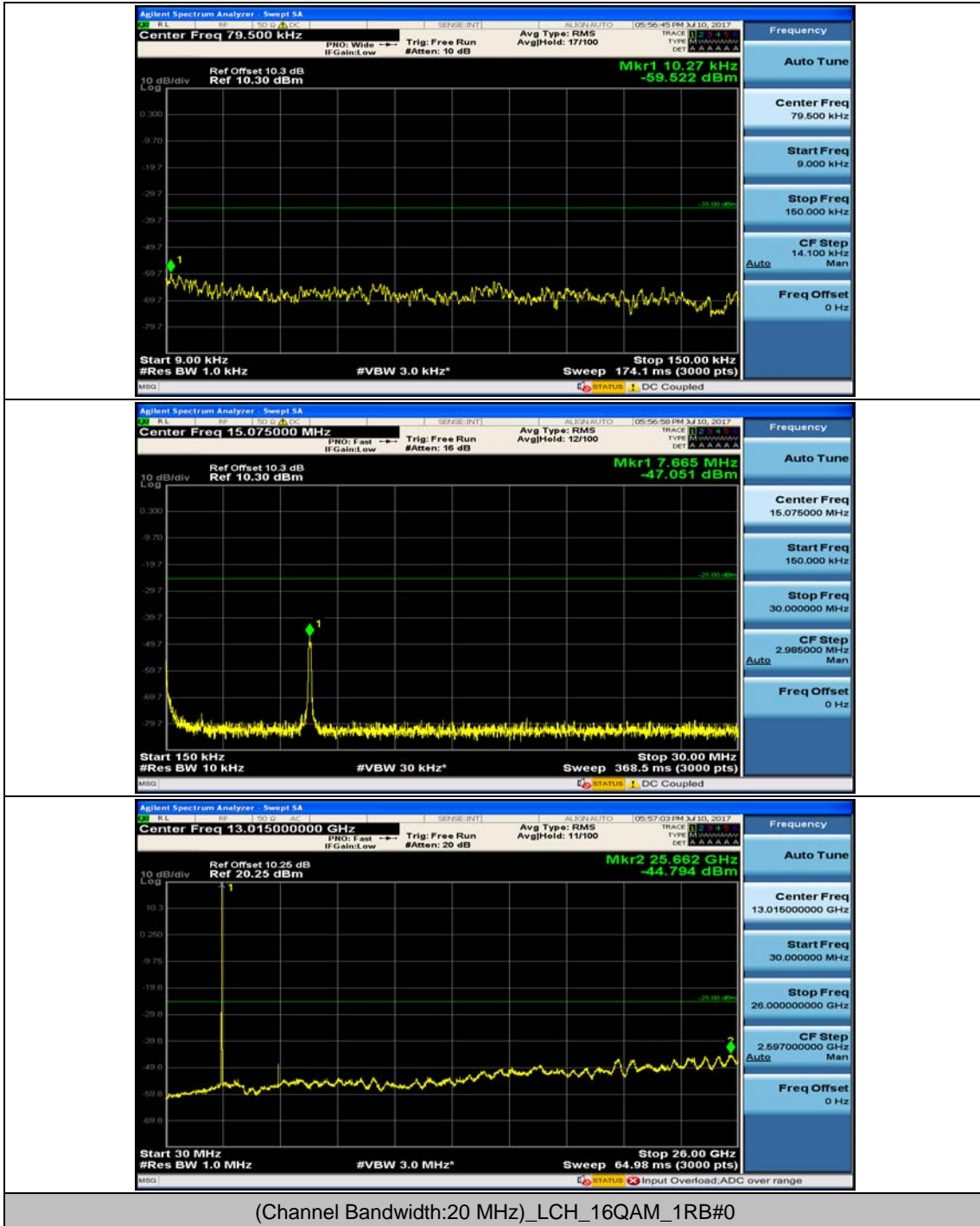




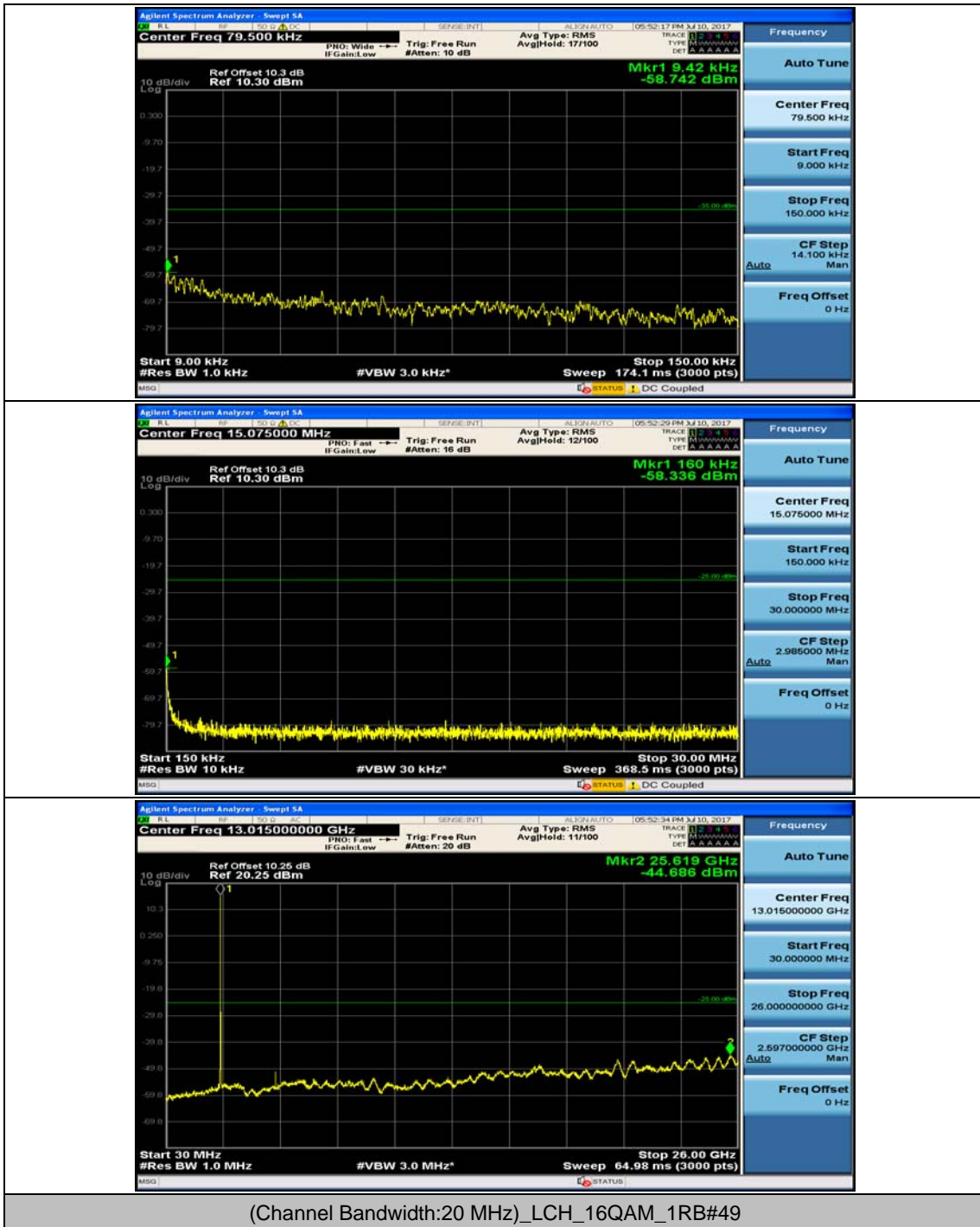


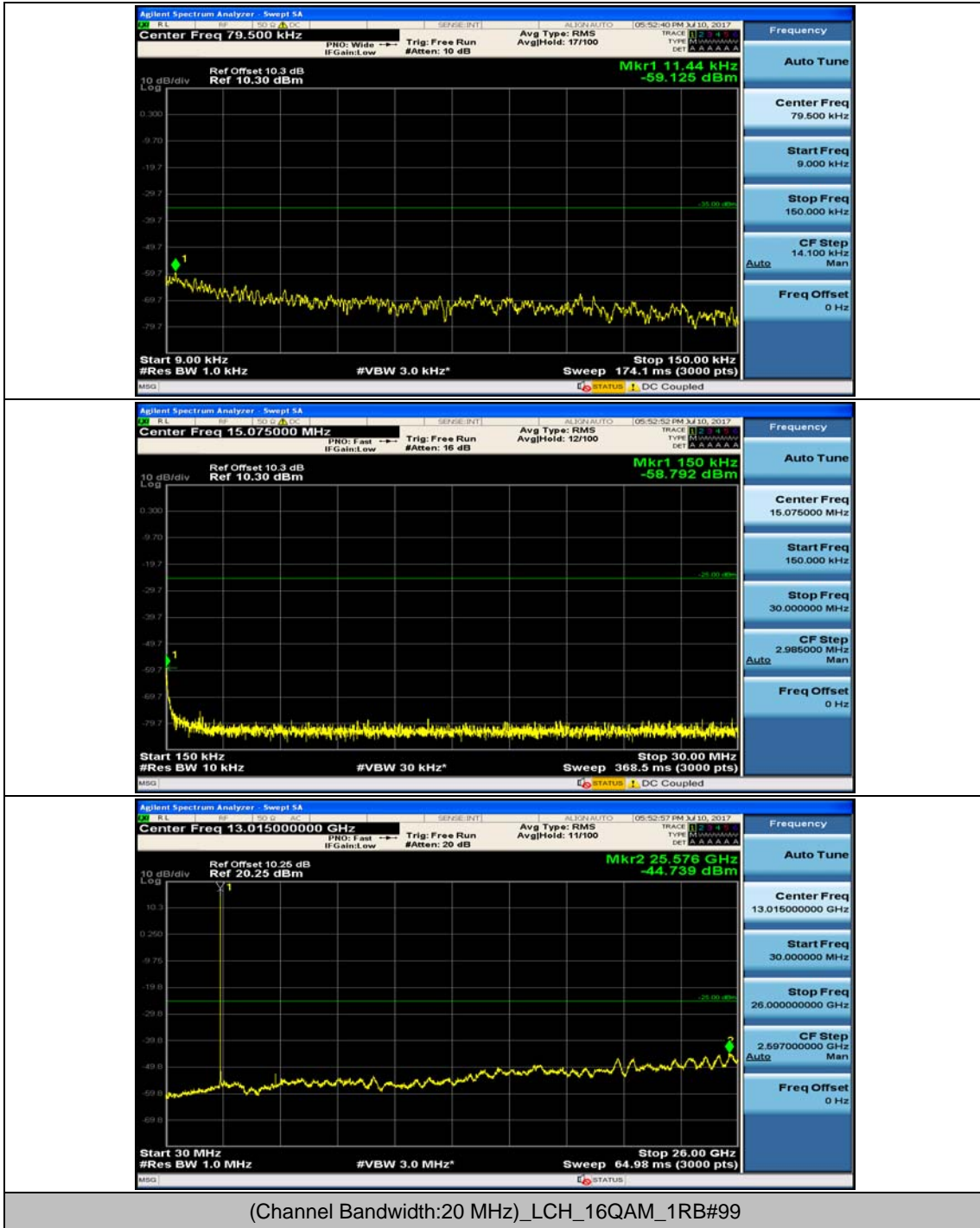


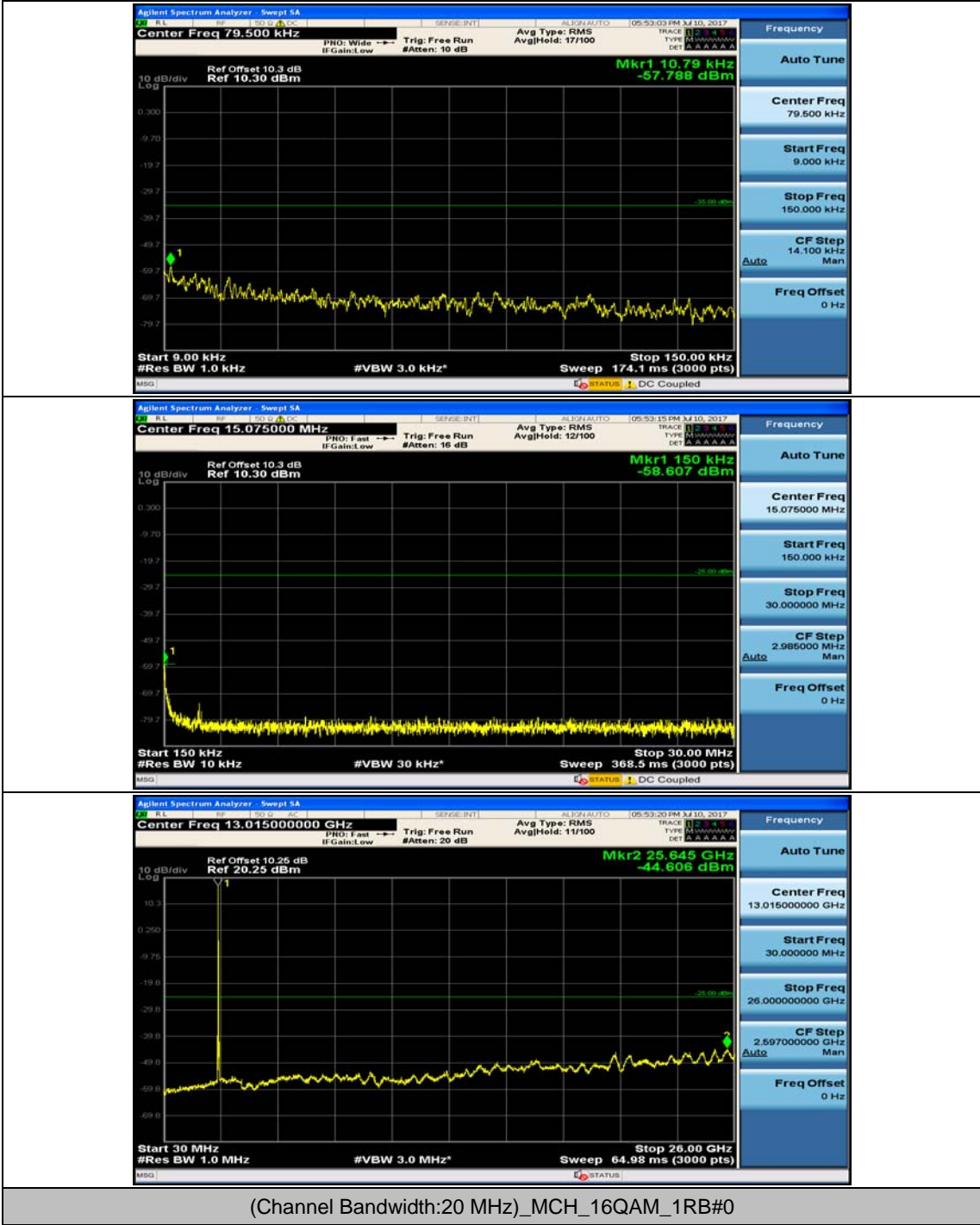


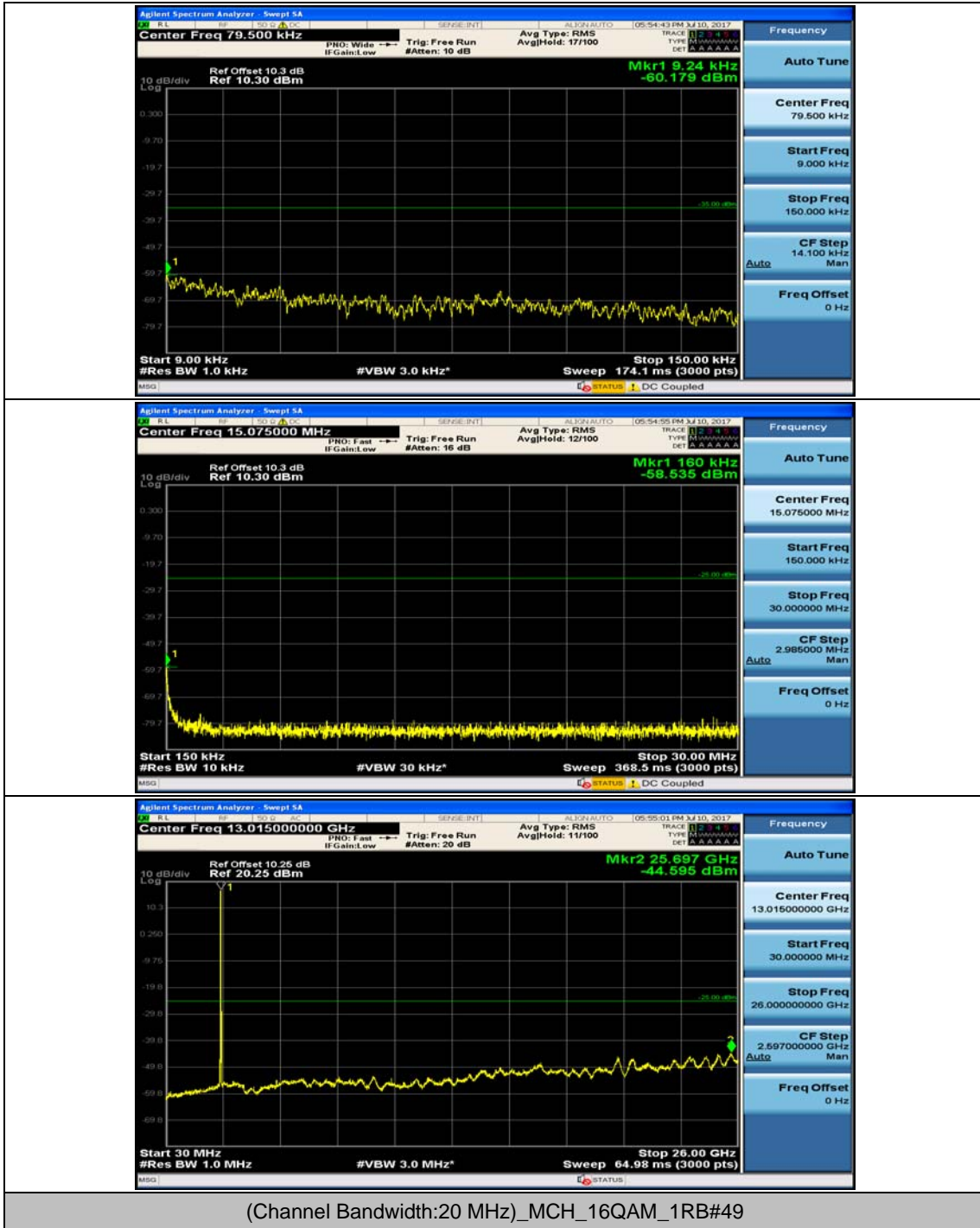


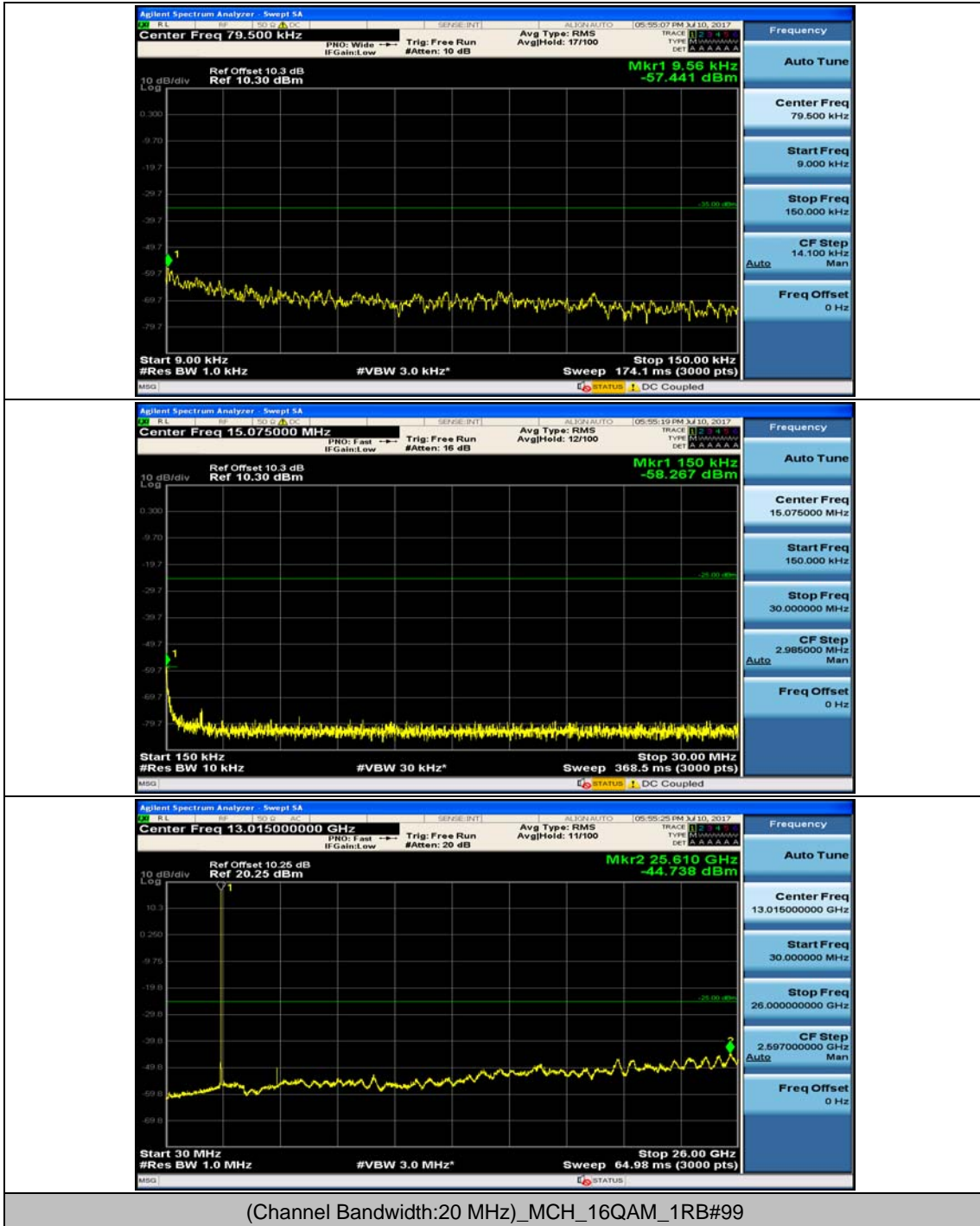


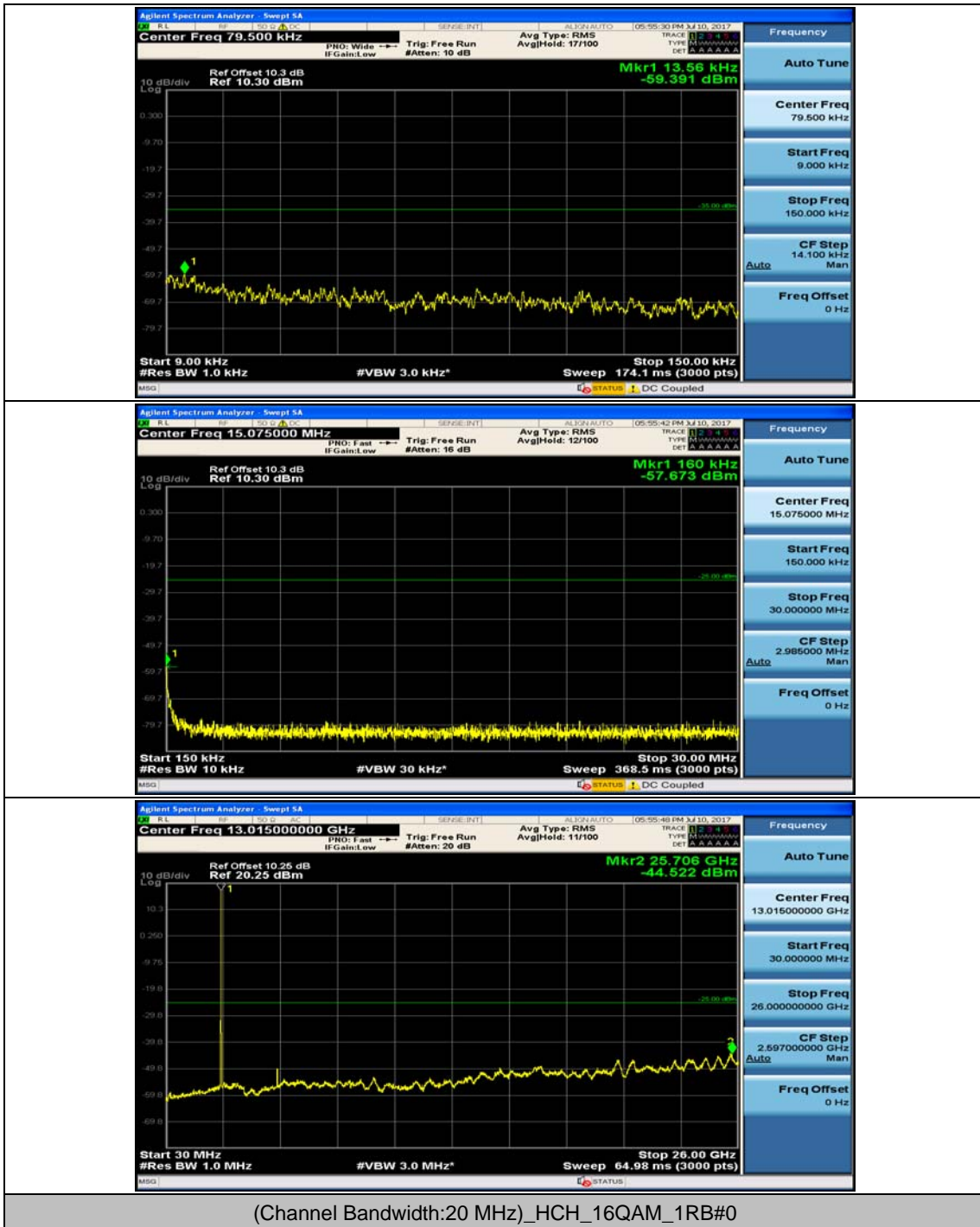


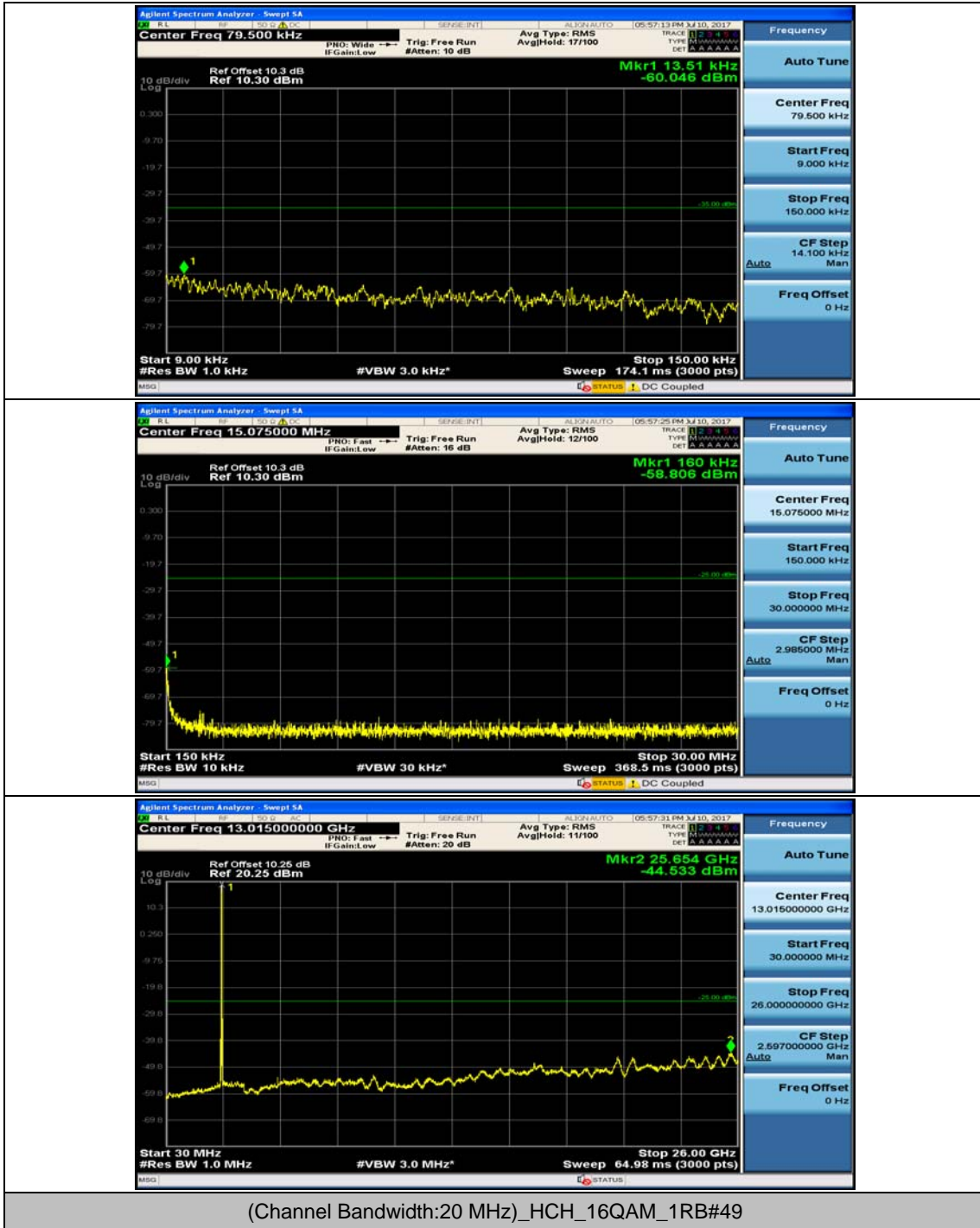


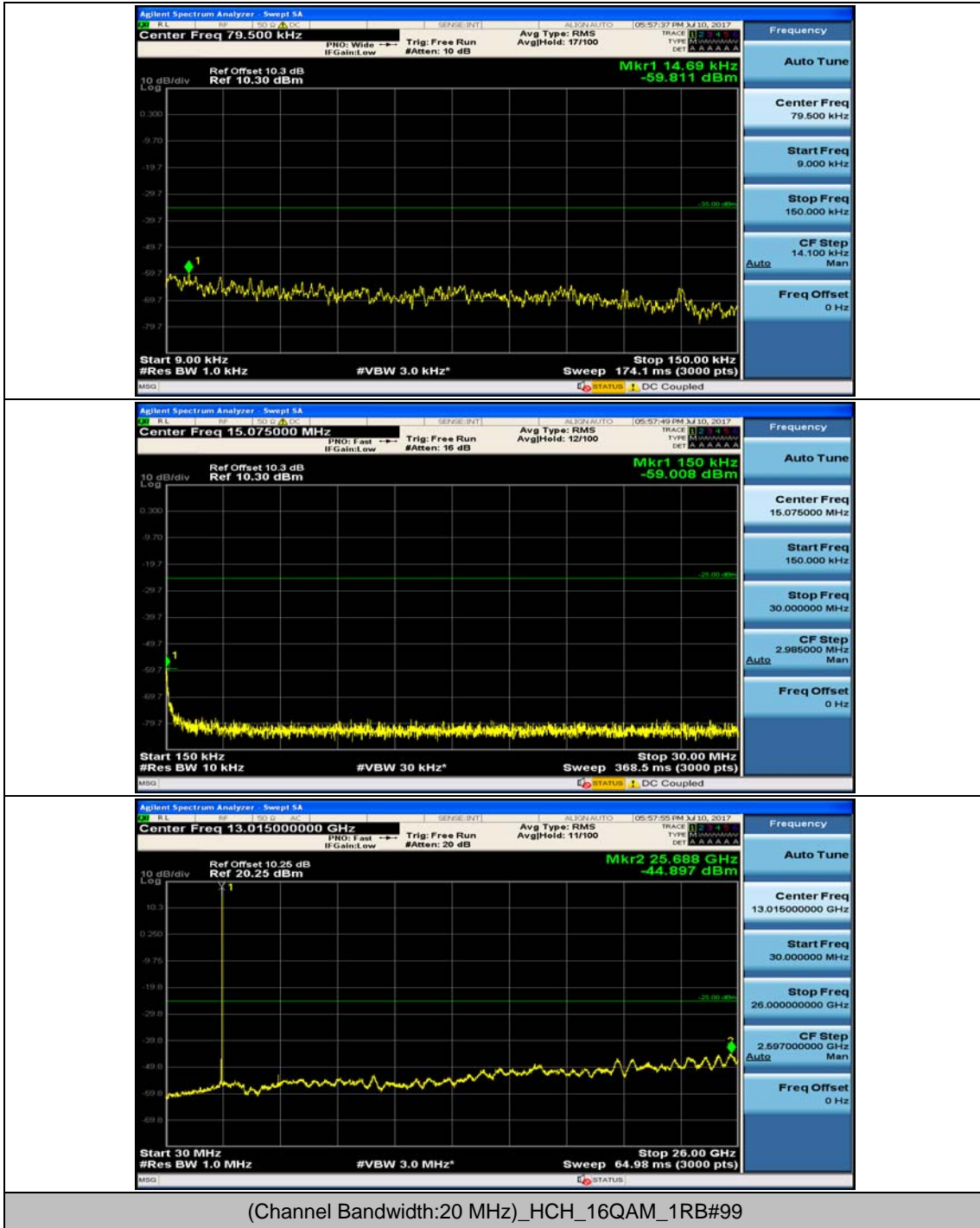




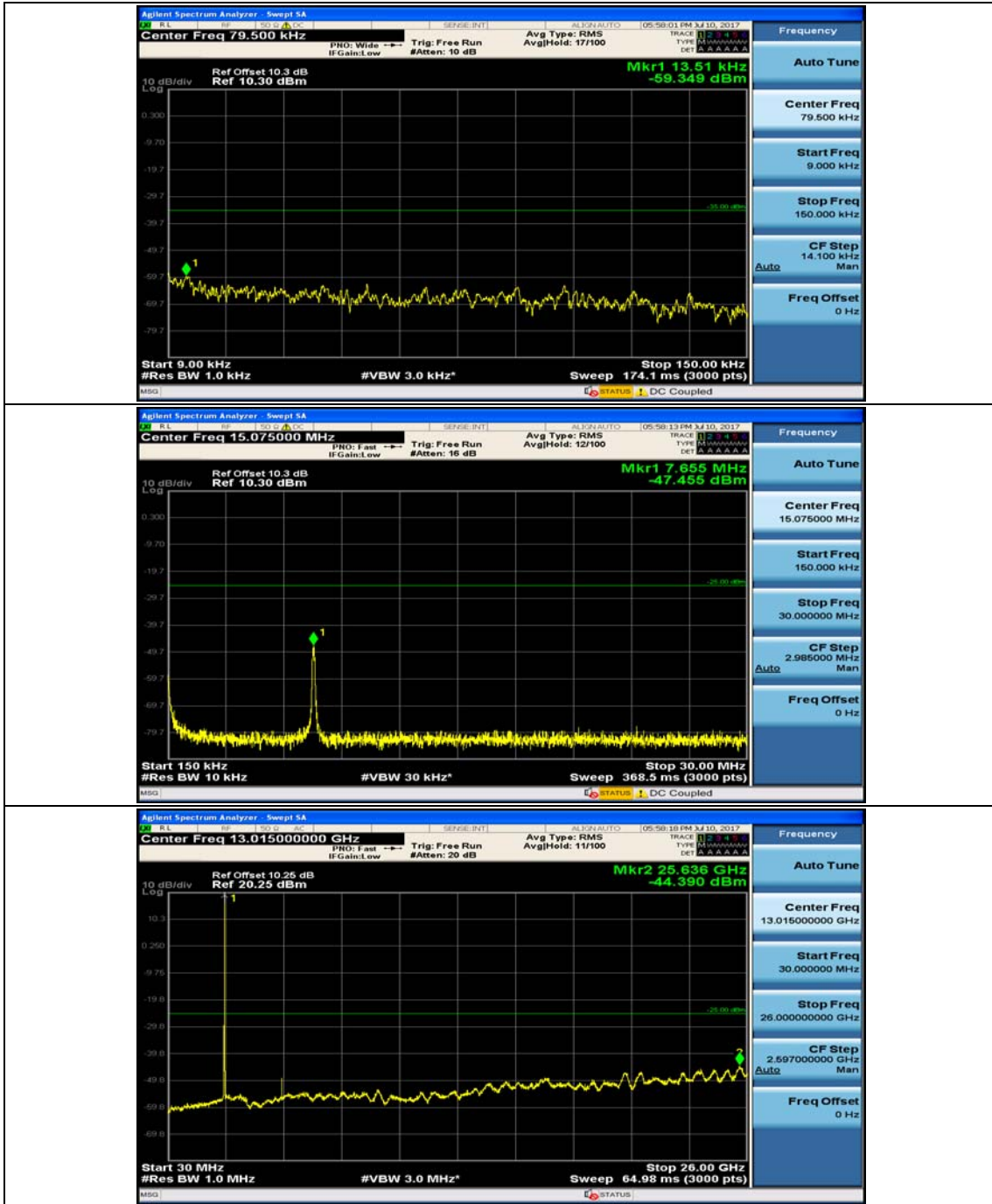












## Appendix F: Frequency Stability

### Test Result

#### Channel Bandwidth: 5 MHz

Channel Bandwidth: 5 MHz							
Voltage							
Modulation	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
QPSK	LCH	VL	TN	0.06	0.000024	± 2.5	PASS
		VN	TN	-0.83	-0.000332	± 2.5	PASS
		VH	TN	1.86	0.000743	± 2.5	PASS
	MCH	VL	TN	4.23	0.001669	± 2.5	PASS
		VN	TN	2.05	0.000809	± 2.5	PASS
		VH	TN	2.66	0.001049	± 2.5	PASS
	HCH	VL	TN	-0.15	-0.000058	± 2.5	PASS
		VN	TN	4.37	0.001702	± 2.5	PASS
		VH	TN	-1.76	-0.000685	± 2.5	PASS
16QAM	LCH	VL	TN	-1.72	-0.000687	± 2.5	PASS
		VN	TN	3.19	0.001275	± 2.5	PASS
		VH	TN	-0.38	-0.000152	± 2.5	PASS
	MCH	VL	TN	2.61	0.001030	± 2.5	PASS
		VN	TN	-0.43	-0.000170	± 2.5	PASS
		VH	TN	2.28	0.000899	± 2.5	PASS
	HCH	VL	TN	1.94	0.000756	± 2.5	PASS
		VN	TN	4.55	0.001772	± 2.5	PASS
		VH	TN	0.55	0.000214	± 2.5	PASS
Temperature							
Modulation	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
QPSK	LCH	VN	-30	1.45	0.000579	± 2.5	PASS
		VN	-20	1.02	0.000408	± 2.5	PASS
		VN	-10	0.05	0.000020	± 2.5	PASS
		VN	0	3.71	0.001483	± 2.5	PASS
		VN	10	3.17	0.001267	± 2.5	PASS
		VN	20	-0.13	-0.000052	± 2.5	PASS
		VN	30	0.38	0.000152	± 2.5	PASS
		VN	40	4.59	0.001834	± 2.5	PASS
		VN	50	-1.55	-0.000619	± 2.5	PASS
	MCH	VN	-30	4.43	0.001748	± 2.5	PASS
		VN	-20	1.69	0.000667	± 2.5	PASS

		VN	-10	3.22	0.001270	± 2.5	PASS	
		VN	0	0.4	0.000158	± 2.5	PASS	
		VN	10	-0.87	-0.000343	± 2.5	PASS	
		VN	20	1.35	0.000533	± 2.5	PASS	
		VN	30	-0.28	-0.000110	± 2.5	PASS	
		VN	40	0.99	0.000391	± 2.5	PASS	
		VN	50	4.63	0.001826	± 2.5	PASS	
	HCH	VN	-30	1.87	0.000728	± 2.5	PASS	
		VN	-20	0.11	0.000043	± 2.5	PASS	
		VN	-10	-1.65	-0.000643	± 2.5	PASS	
		VN	0	1.06	0.000413	± 2.5	PASS	
		VN	10	3.06	0.001192	± 2.5	PASS	
		VN	20	0.71	0.000277	± 2.5	PASS	
		VN	30	-1.68	-0.000654	± 2.5	PASS	
	16QAM	LCH	VN	40	1.45	0.000565	± 2.5	PASS
			VN	50	2.84	0.001106	± 2.5	PASS
			VN	-30	-0.25	-0.000100	± 2.5	PASS
			VN	-20	3.9	0.001558	± 2.5	PASS
VN			-10	1.9	0.000759	± 2.5	PASS	
VN			0	4.47	0.001786	± 2.5	PASS	
VN			10	-1.36	-0.000543	± 2.5	PASS	
VN			20	-1.69	-0.000675	± 2.5	PASS	
VN			30	-0.06	-0.000024	± 2.5	PASS	
MCH		VN	40	4.97	0.001986	± 2.5	PASS	
		VN	50	-1.07	-0.000428	± 2.5	PASS	
		VN	-30	4.51	0.001779	± 2.5	PASS	
		VN	-20	1.55	0.000611	± 2.5	PASS	
		VN	-10	-0.92	-0.000363	± 2.5	PASS	
		VN	0	-1.41	-0.000556	± 2.5	PASS	
		VN	10	-1.61	-0.000635	± 2.5	PASS	
		VN	20	3.95	0.001558	± 2.5	PASS	
		VN	30	-1.75	-0.000690	± 2.5	PASS	
HCH	VN	40	2.9	0.001144	± 2.5	PASS		
	VN	50	-0.61	-0.000241	± 2.5	PASS		
	VN	-30	0.99	0.000386	± 2.5	PASS		
	VN	-20	-1.72	-0.000670	± 2.5	PASS		
	VN	-10	0.47	0.000183	± 2.5	PASS		
	VN	0	-1.86	-0.000724	± 2.5	PASS		
	VN	10	2.57	0.001001	± 2.5	PASS		
VN	20	2.85	0.001110	± 2.5	PASS			
VN	30	2.02	0.000787	± 2.5	PASS			

		VN	40	-1.98	-0.000771	± 2.5	PASS
		VN	50	-0.82	-0.000319	± 2.5	PASS

**Channel Bandwidth: 10 MHz**

Channel Bandwidth: 10 MHz							
Voltage							
Modulation	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
QPSK	LCH	VL	TN	4.86	0.001940	± 2.5	PASS
		VN	TN	3.69	0.001473	± 2.5	PASS
		VH	TN	-0.09	-0.000036	± 2.5	PASS
	MCH	VL	TN	-1.84	-0.000726	± 2.5	PASS
		VN	TN	4.54	0.001791	± 2.5	PASS
		VH	TN	2.64	0.001041	± 2.5	PASS
	HCH	VL	TN	0.71	0.000277	± 2.5	PASS
		VN	TN	3.25	0.001267	± 2.5	PASS
		VH	TN	2.01	0.000784	± 2.5	PASS
16QAM	LCH	VL	TN	1.71	0.000683	± 2.5	PASS
		VN	TN	2.72	0.001086	± 2.5	PASS
		VH	TN	3.59	0.001433	± 2.5	PASS
	MCH	VL	TN	-0.71	-0.000280	± 2.5	PASS
		VN	TN	-0.19	-0.000075	± 2.5	PASS
		VH	TN	0.09	0.000036	± 2.5	PASS
	HCH	VL	TN	2.65	0.001033	± 2.5	PASS
		VN	TN	-1.52	-0.000593	± 2.5	PASS
		VH	TN	0.71	0.000277	± 2.5	PASS
Temperature							
Modulation	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
QPSK	LCH	VN	-30	0.43	0.000172	± 2.5	PASS
		VN	-20	-0.14	-0.000056	± 2.5	PASS
		VN	-10	4.2	0.001677	± 2.5	PASS
		VN	0	0.07	0.000028	± 2.5	PASS
		VN	10	-0.79	-0.000315	± 2.5	PASS
		VN	20	1.18	0.000471	± 2.5	PASS
		VN	30	-1.79	-0.000715	± 2.5	PASS
		VN	40	2.89	0.001154	± 2.5	PASS
		VN	50	3.32	0.001325	± 2.5	PASS
	MCH	VN	-30	0.87	0.000343	± 2.5	PASS
		VN	-20	0.74	0.000292	± 2.5	PASS
		VN	-10	1.8	0.000710	± 2.5	PASS

		VN	0	4.63	0.001826	± 2.5	PASS		
		VN	10	-1.35	-0.000533	± 2.5	PASS		
		VN	20	4.99	0.001968	± 2.5	PASS		
		VN	30	2.79	0.001101	± 2.5	PASS		
		VN	40	0.42	0.000166	± 2.5	PASS		
		VN	50	-0.36	-0.000142	± 2.5	PASS		
	HCH	VN	-30	-0.02	-0.000008	± 2.5	PASS		
		VN	-20	-0.28	-0.000109	± 2.5	PASS		
		VN	-10	2.02	0.000788	± 2.5	PASS		
		VN	0	1.17	0.000456	± 2.5	PASS		
		VN	10	2.56	0.000998	± 2.5	PASS		
		VN	20	-1.16	-0.000452	± 2.5	PASS		
		VN	30	-1.72	-0.000671	± 2.5	PASS		
		VN	40	1.62	0.000632	± 2.5	PASS		
		VN	50	-0.29	-0.000113	± 2.5	PASS		
		16QAM	LCH	VN	-30	4.51	0.001800	± 2.5	PASS
				VN	-20	0.86	0.000343	± 2.5	PASS
				VN	-10	-0.89	-0.000355	± 2.5	PASS
VN	0			4	0.001597	± 2.5	PASS		
VN	10			0.92	0.000367	± 2.5	PASS		
VN	20			1.61	0.000643	± 2.5	PASS		
VN	30			1.68	0.000671	± 2.5	PASS		
VN	40			-0.23	-0.000092	± 2.5	PASS		
VN	50			-1.97	-0.000786	± 2.5	PASS		
MCH	VN		-30	-1.02	-0.000402	± 2.5	PASS		
	VN		-20	0.75	0.000296	± 2.5	PASS		
	VN		-10	-0.84	-0.000331	± 2.5	PASS		
	VN		0	0.37	0.000146	± 2.5	PASS		
	VN		10	4.24	0.001673	± 2.5	PASS		
	VN		20	4.48	0.001767	± 2.5	PASS		
	VN		30	-1.09	-0.000430	± 2.5	PASS		
	VN		40	4.57	0.001803	± 2.5	PASS		
	VN		50	-0.49	-0.000193	± 2.5	PASS		
HCH	VN		-30	1.7	0.000663	± 2.5	PASS		
	VN		-20	4.55	0.001774	± 2.5	PASS		
	VN		-10	4.39	0.001712	± 2.5	PASS		
	VN		0	1.54	0.000600	± 2.5	PASS		
	VN		10	2.27	0.000885	± 2.5	PASS		
	VN		20	-1.5	-0.000585	± 2.5	PASS		
	VN		30	2.3	0.000897	± 2.5	PASS		
	VN		40	2.9	0.001131	± 2.5	PASS		

		VN	50	0.57	0.000222	± 2.5	PASS
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**Channel Bandwidth: 15 MHz**

Channel Bandwidth: 15 MHz							
Voltage							
Modulation	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
QPSK	LCH	VL	TN	2.69	0.001073	± 2.5	PASS
		VN	TN	-1.05	-0.000419	± 2.5	PASS
		VH	TN	-0.55	-0.000219	± 2.5	PASS
	MCH	VL	TN	2.9	0.001144	± 2.5	PASS
		VN	TN	3.63	0.001432	± 2.5	PASS
		VH	TN	0.08	0.000032	± 2.5	PASS
	HCH	VL	TN	0.47	0.000183	± 2.5	PASS
		VN	TN	1.08	0.000421	± 2.5	PASS
		VH	TN	4.94	0.001928	± 2.5	PASS
16QAM	LCH	VL	TN	2.66	0.001061	± 2.5	PASS
		VN	TN	2.02	0.000806	± 2.5	PASS
		VH	TN	3.07	0.001224	± 2.5	PASS
	MCH	VL	TN	2.97	0.001172	± 2.5	PASS
		VN	TN	-0.45	-0.000178	± 2.5	PASS
		VH	TN	4.27	0.001684	± 2.5	PASS
	HCH	VL	TN	-1.66	-0.000648	± 2.5	PASS
		VN	TN	1.98	0.000773	± 2.5	PASS
		VH	TN	2.95	0.001151	± 2.5	PASS
Temperature							
Modulation	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
QPSK	LCH	VN	-30	1.54	0.000614	± 2.5	PASS
		VN	-20	-1.13	-0.000451	± 2.5	PASS
		VN	-10	2.95	0.001176	± 2.5	PASS
		VN	0	-1.19	-0.000475	± 2.5	PASS
		VN	10	3.36	0.001340	± 2.5	PASS
		VN	20	0.82	0.000327	± 2.5	PASS
		VN	30	-0.72	-0.000287	± 2.5	PASS
		VN	40	2.16	0.000861	± 2.5	PASS
		VN	50	2.98	0.001188	± 2.5	PASS
	MCH	VN	-30	4.45	0.001755	± 2.5	PASS
		VN	-20	3.3	0.001302	± 2.5	PASS
		VN	-10	2.56	0.001010	± 2.5	PASS
		VN	0	4.51	0.001779	± 2.5	PASS

		VN	10	5	0.001972	± 2.5	PASS
		VN	20	-1.49	-0.000588	± 2.5	PASS
		VN	30	2.74	0.001081	± 2.5	PASS
		VN	40	2.37	0.000935	± 2.5	PASS
		VN	50	0.48	0.000189	± 2.5	PASS
	HCH	VN	-30	0.17	0.000066	± 2.5	PASS
		VN	-20	4.32	0.001686	± 2.5	PASS
		VN	-10	2.13	0.000831	± 2.5	PASS
		VN	0	2.68	0.001046	± 2.5	PASS
		VN	10	4	0.001561	± 2.5	PASS
		VN	20	-0.87	-0.000340	± 2.5	PASS
		VN	30	-1.16	-0.000453	± 2.5	PASS
		VN	40	0.62	0.000242	± 2.5	PASS
		VN	50	-1.62	-0.000632	± 2.5	PASS
		16QAM	LCH	VN	-30	3.08	0.001228
VN	-20			-0.36	-0.000144	± 2.5	PASS
VN	-10			2.18	0.000869	± 2.5	PASS
VN	0			1.42	0.000566	± 2.5	PASS
VN	10			2.68	0.001069	± 2.5	PASS
VN	20			4.99	0.001990	± 2.5	PASS
VN	30			-1.26	-0.000502	± 2.5	PASS
VN	40			0.54	0.000215	± 2.5	PASS
VN	50			2.51	0.001001	± 2.5	PASS
MCH	VN		-30	2.25	0.000888	± 2.5	PASS
	VN		-20	2.63	0.001037	± 2.5	PASS
	VN		-10	1.28	0.000505	± 2.5	PASS
	VN		0	-0.59	-0.000233	± 2.5	PASS
	VN		10	-1.8	-0.000710	± 2.5	PASS
	VN		20	4.54	0.001791	± 2.5	PASS
	VN		30	-0.22	-0.000087	± 2.5	PASS
	VN		40	-0.06	-0.000024	± 2.5	PASS
	VN		50	0.76	0.000300	± 2.5	PASS
HCH	VN		-30	-1.84	-0.000718	± 2.5	PASS
	VN		-20	0.37	0.000144	± 2.5	PASS
	VN		-10	3.04	0.001186	± 2.5	PASS
	VN		0	4.4	0.001717	± 2.5	PASS
	VN		10	-1.2	-0.000468	± 2.5	PASS
	VN		20	4.12	0.001608	± 2.5	PASS
	VN		30	-1.27	-0.000496	± 2.5	PASS
	VN		40	1.96	0.000765	± 2.5	PASS
	VN		50	3.12	0.001218	± 2.5	PASS

**Channel Bandwidth: 20 MHz**

Channel Bandwidth: 20 MHz							
Voltage							
Modulation	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
QPSK	LCH	VL	TN	-0.05	-0.000020	± 2.5	PASS
		VN	TN	-0.26	-0.000104	± 2.5	PASS
		VH	TN	1.86	0.000741	± 2.5	PASS
	MCH	VL	TN	2.18	0.000860	± 2.5	PASS
		VN	TN	3	0.001183	± 2.5	PASS
		VH	TN	1.33	0.000525	± 2.5	PASS
	HCH	VL	TN	-0.55	-0.000215	± 2.5	PASS
		VN	TN	-0.31	-0.000121	± 2.5	PASS
		VH	TN	-1.87	-0.000730	± 2.5	PASS
16QAM	LCH	VL	TN	-0.13	-0.000052	± 2.5	PASS
		VN	TN	-1.27	-0.000506	± 2.5	PASS
		VH	TN	3.53	0.001406	± 2.5	PASS
	MCH	VL	TN	3.55	0.001400	± 2.5	PASS
		VN	TN	4.31	0.001700	± 2.5	PASS
		VH	TN	0.59	0.000233	± 2.5	PASS
	HCH	VL	TN	3.67	0.001434	± 2.5	PASS
		VN	TN	-1.46	-0.000570	± 2.5	PASS
		VH	TN	1.8	0.000703	± 2.5	PASS
Temperature							
Modulation	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
QPSK	LCH	VN	-30	4.96	0.001976	± 2.5	PASS
		VN	-20	4.24	0.001689	± 2.5	PASS
		VN	-10	-0.67	-0.000267	± 2.5	PASS
		VN	0	0.74	0.000295	± 2.5	PASS
		VN	10	2.58	0.001028	± 2.5	PASS
		VN	20	-1.07	-0.000426	± 2.5	PASS
		VN	30	2.17	0.000865	± 2.5	PASS
		VN	40	-0.34	-0.000135	± 2.5	PASS
		VN	50	0.85	0.000339	± 2.5	PASS
	MCH	VN	-30	4.43	0.001748	± 2.5	PASS
		VN	-20	4.25	0.001677	± 2.5	PASS
		VN	-10	1.6	0.000631	± 2.5	PASS
		VN	0	0.95	0.000375	± 2.5	PASS
		VN	10	1.37	0.000540	± 2.5	PASS
		VN	20	0.18	0.000071	± 2.5	PASS
VN	30	-0.59	-0.000233	± 2.5	PASS		



		VN	40	1.53	0.000604	± 2.5	PASS
		VN	50	-0.07	-0.000028	± 2.5	PASS
	HCH	VN	-30	0.99	0.000387	± 2.5	PASS
		VN	-20	2.48	0.000969	± 2.5	PASS
		VN	-10	-1.61	-0.000629	± 2.5	PASS
		VN	0	-0.76	-0.000297	± 2.5	PASS
		VN	10	-0.53	-0.000207	± 2.5	PASS
		VN	20	-1.89	-0.000738	± 2.5	PASS
		VN	30	-1.79	-0.000699	± 2.5	PASS
		VN	40	0.48	0.000188	± 2.5	PASS
		VN	50	-0.41	-0.000160	± 2.5	PASS
16QAM	LCH	VN	-30	4.49	0.001789	± 2.5	PASS
		VN	-20	-1.68	-0.000669	± 2.5	PASS
		VN	-10	-1.46	-0.000582	± 2.5	PASS
		VN	0	4.37	0.001741	± 2.5	PASS
		VN	10	4.3	0.001713	± 2.5	PASS
		VN	20	1.66	0.000661	± 2.5	PASS
		VN	30	0.38	0.000151	± 2.5	PASS
		VN	40	-1.97	-0.000785	± 2.5	PASS
	MCH	VN	50	2.34	0.000932	± 2.5	PASS
		VN	-30	3.98	0.001570	± 2.5	PASS
		VN	-20	3.32	0.001310	± 2.5	PASS
		VN	-10	3.68	0.001452	± 2.5	PASS
		VN	0	2.88	0.001136	± 2.5	PASS
		VN	10	1.84	0.000726	± 2.5	PASS
		VN	20	4.42	0.001744	± 2.5	PASS
		VN	30	-0.8	-0.000316	± 2.5	PASS
	HCH	VN	40	2.7	0.001065	± 2.5	PASS
		VN	50	-0.66	-0.000260	± 2.5	PASS
		VN	-30	4.07	0.001590	± 2.5	PASS
		VN	-20	3.16	0.001234	± 2.5	PASS
		VN	-10	0.7	0.000273	± 2.5	PASS
		VN	0	4.68	0.001828	± 2.5	PASS
		VN	10	2.23	0.000871	± 2.5	PASS
		VN	20	2.35	0.000918	± 2.5	PASS
	VN	30	4.6	0.001797	± 2.5	PASS	
	VN	40	3.27	0.001277	± 2.5	PASS	
	VN	50	3.56	0.001391	± 2.5	PASS	