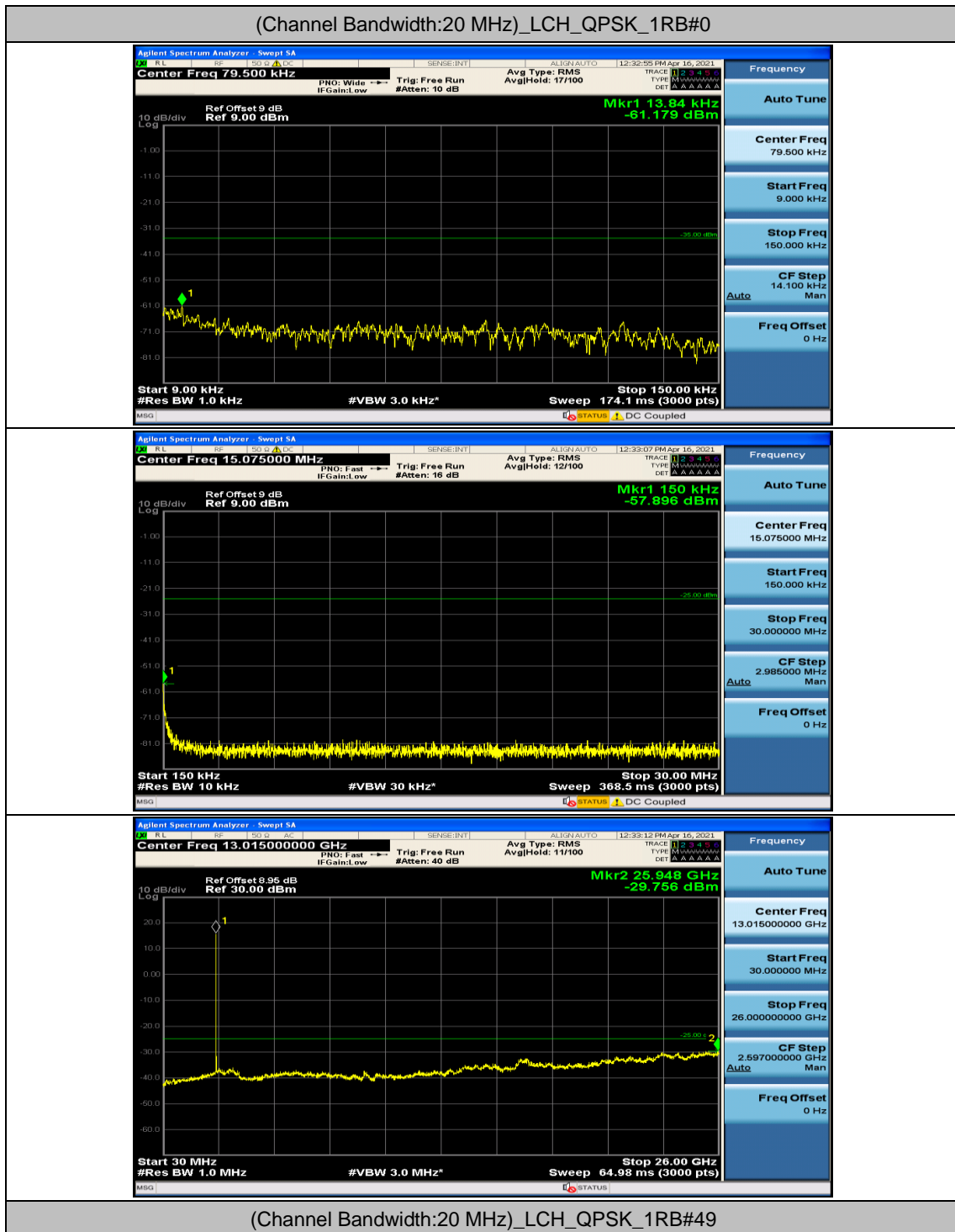
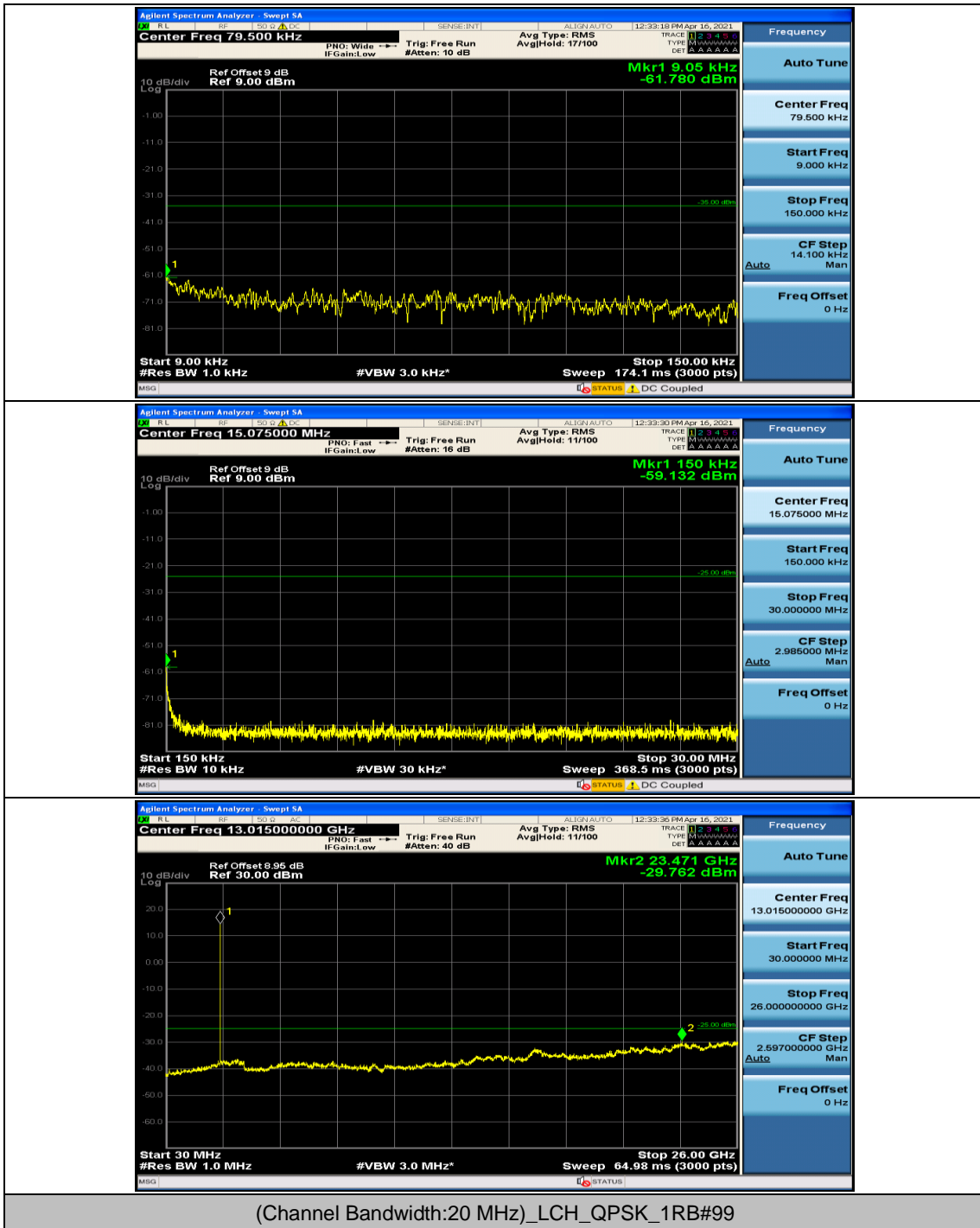
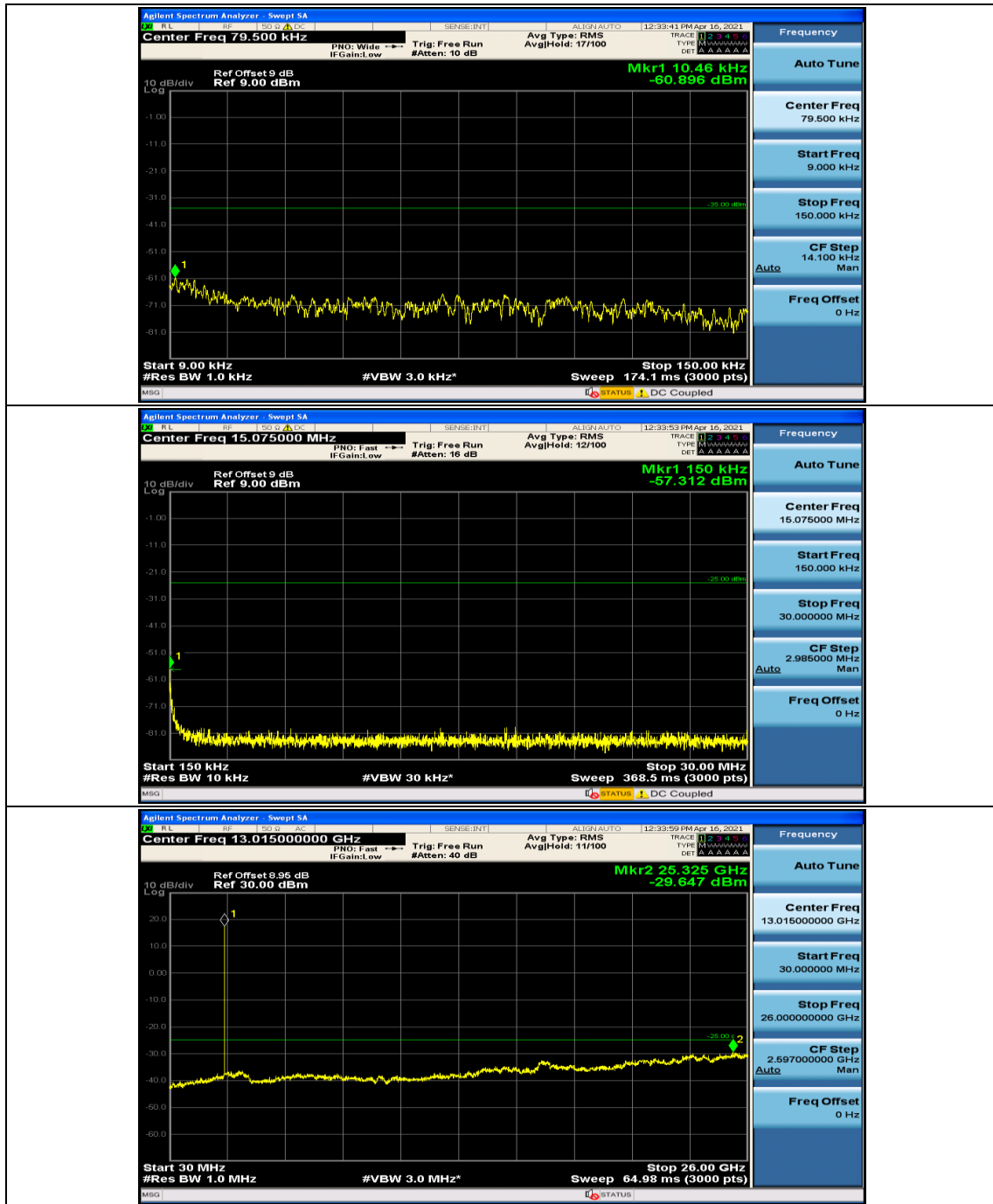


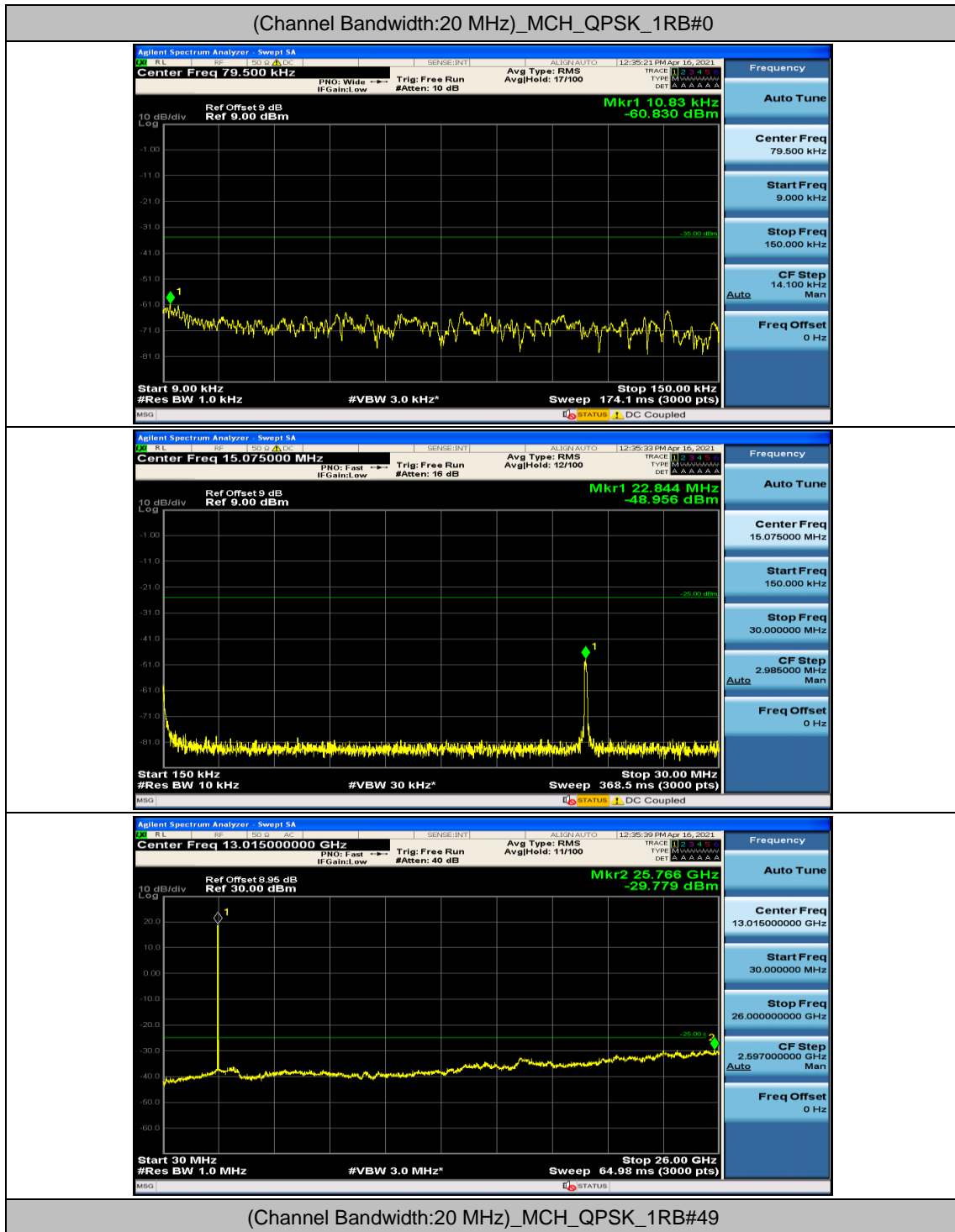
Channel Bandwidth: 20 MHz

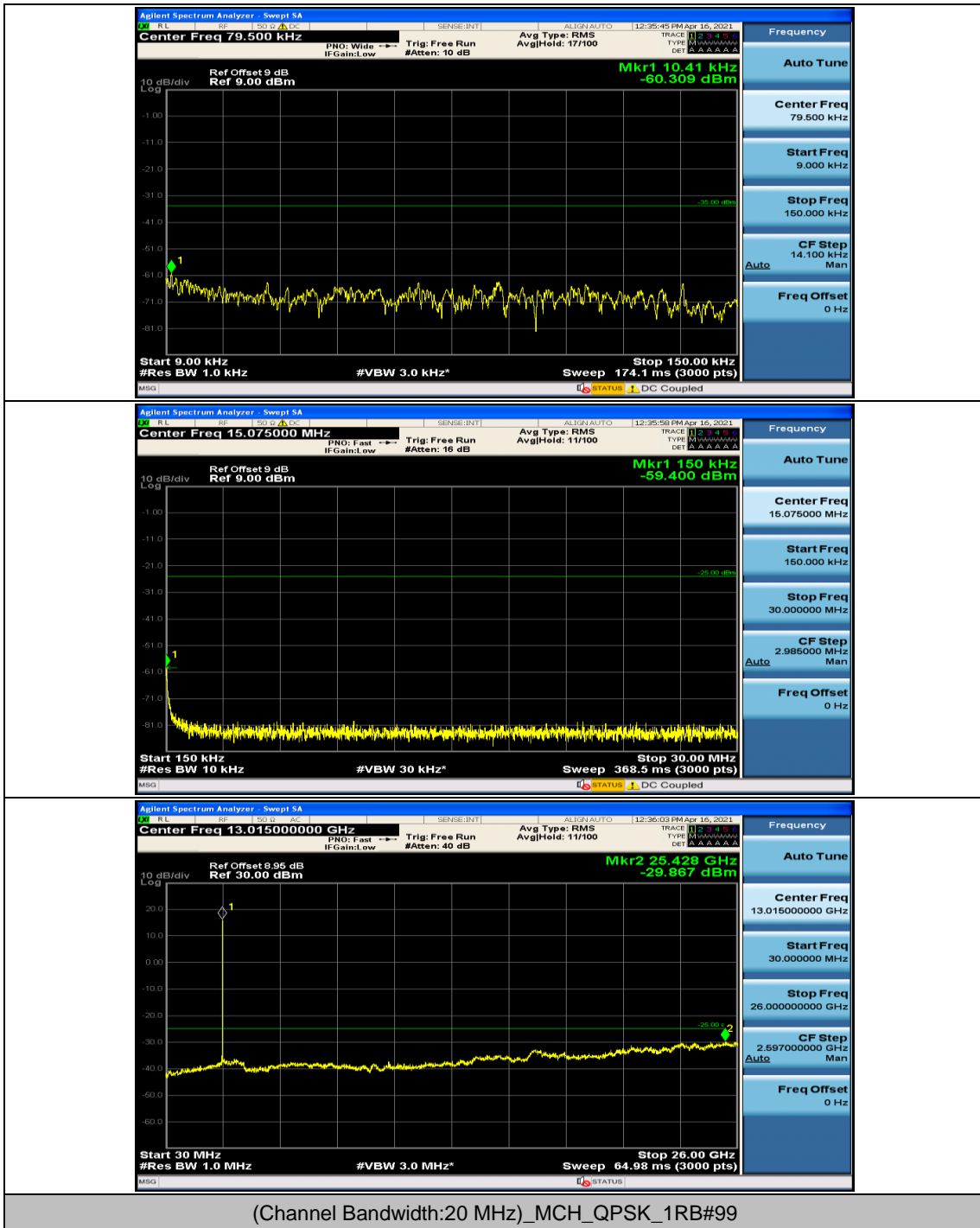


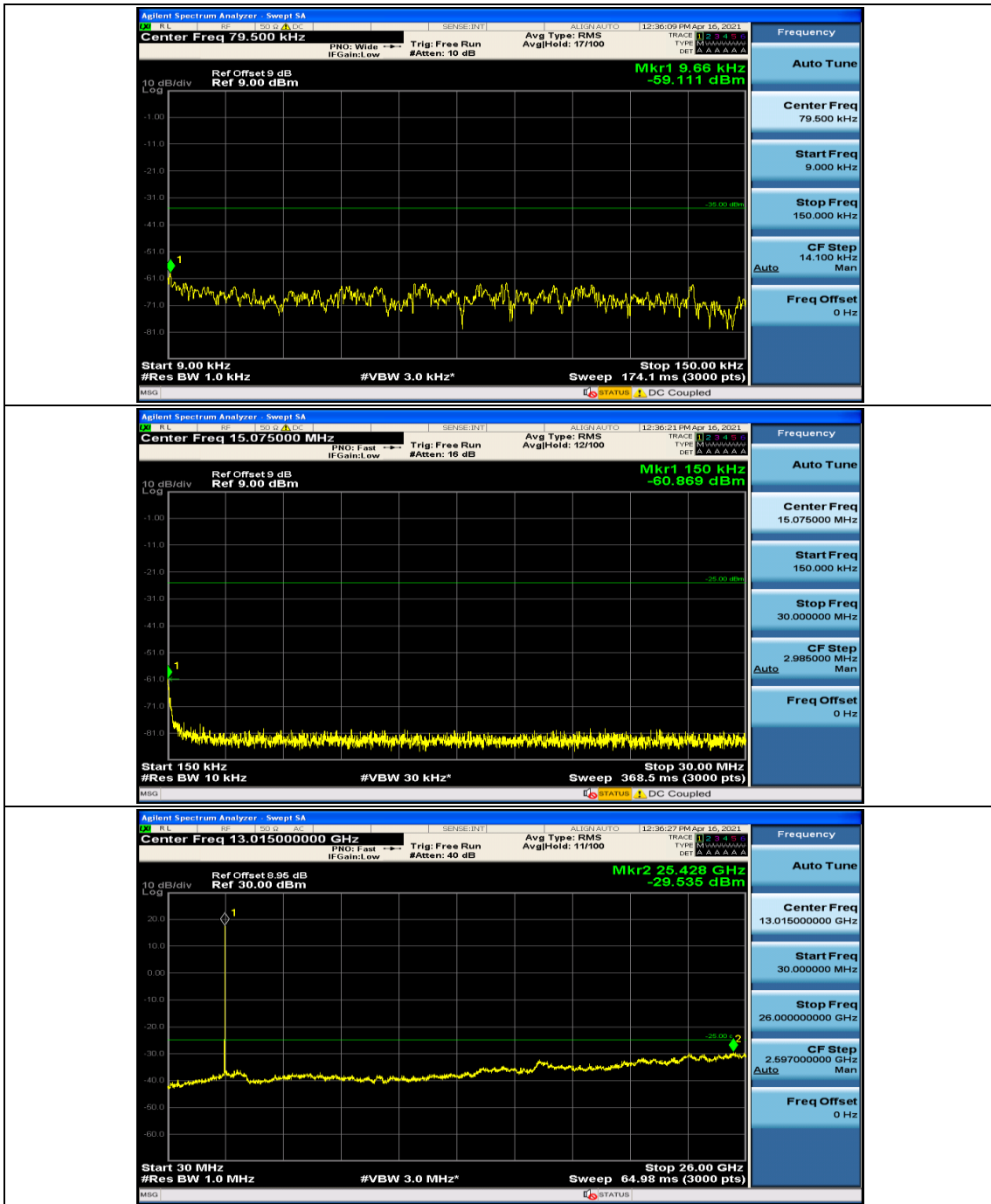


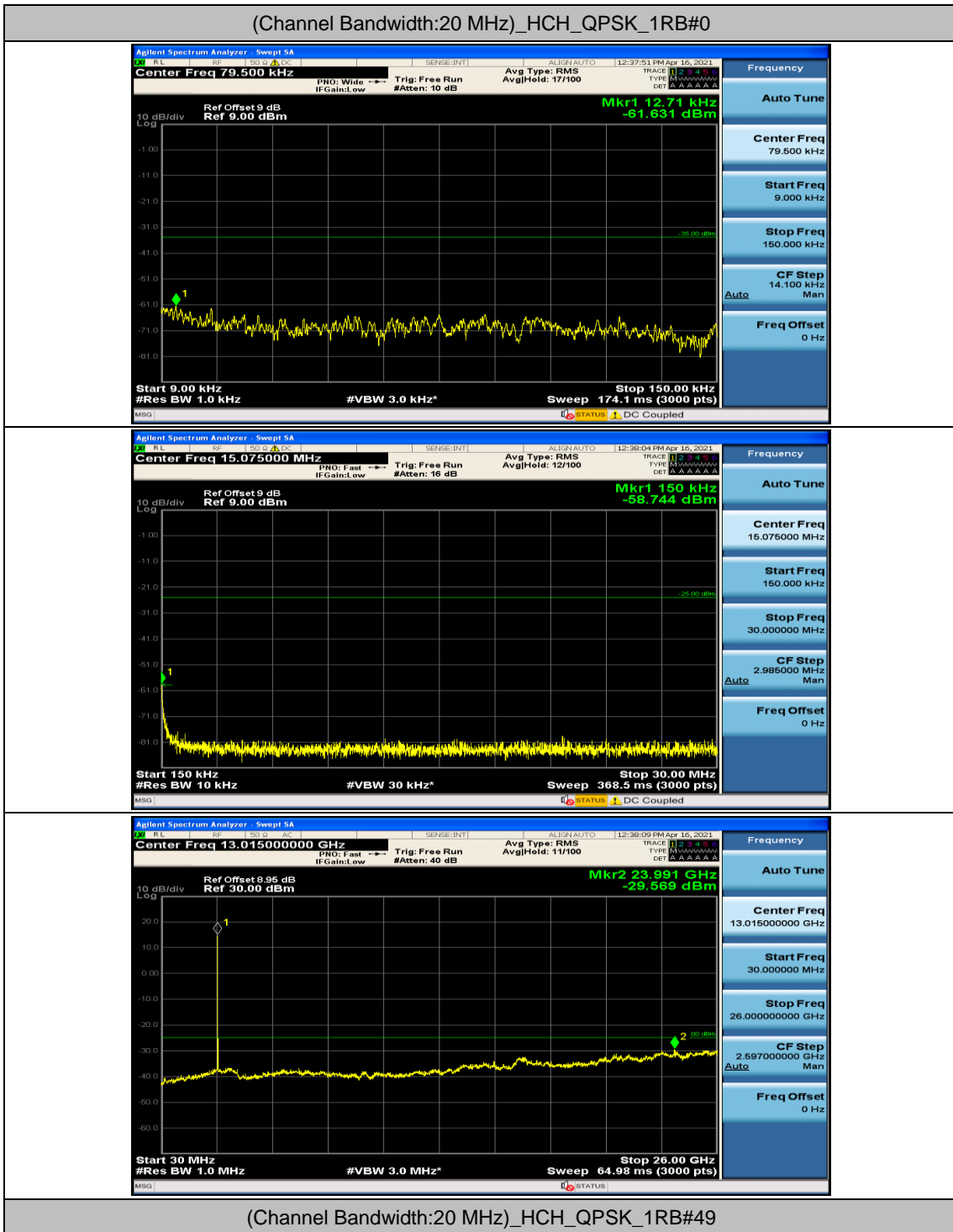


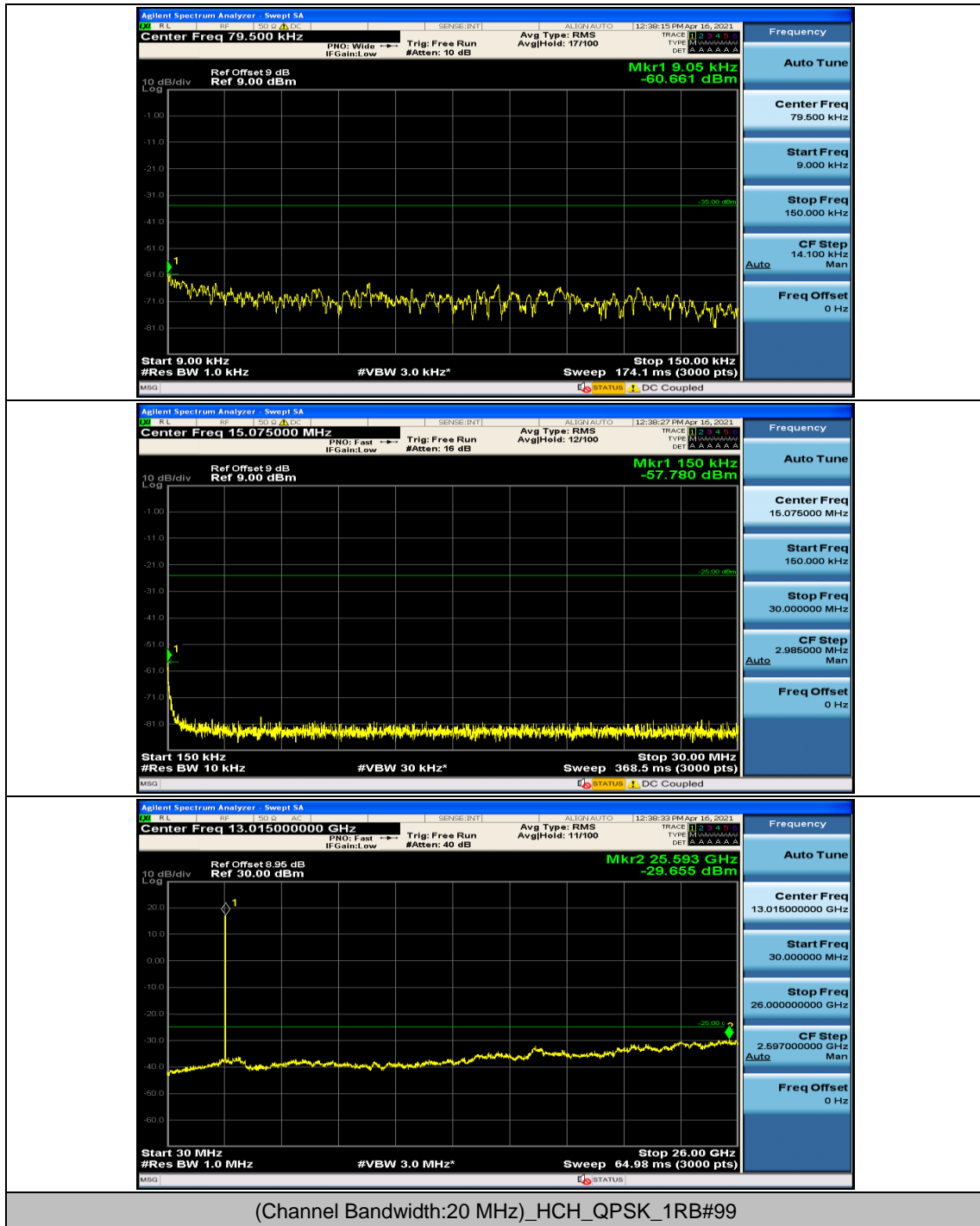


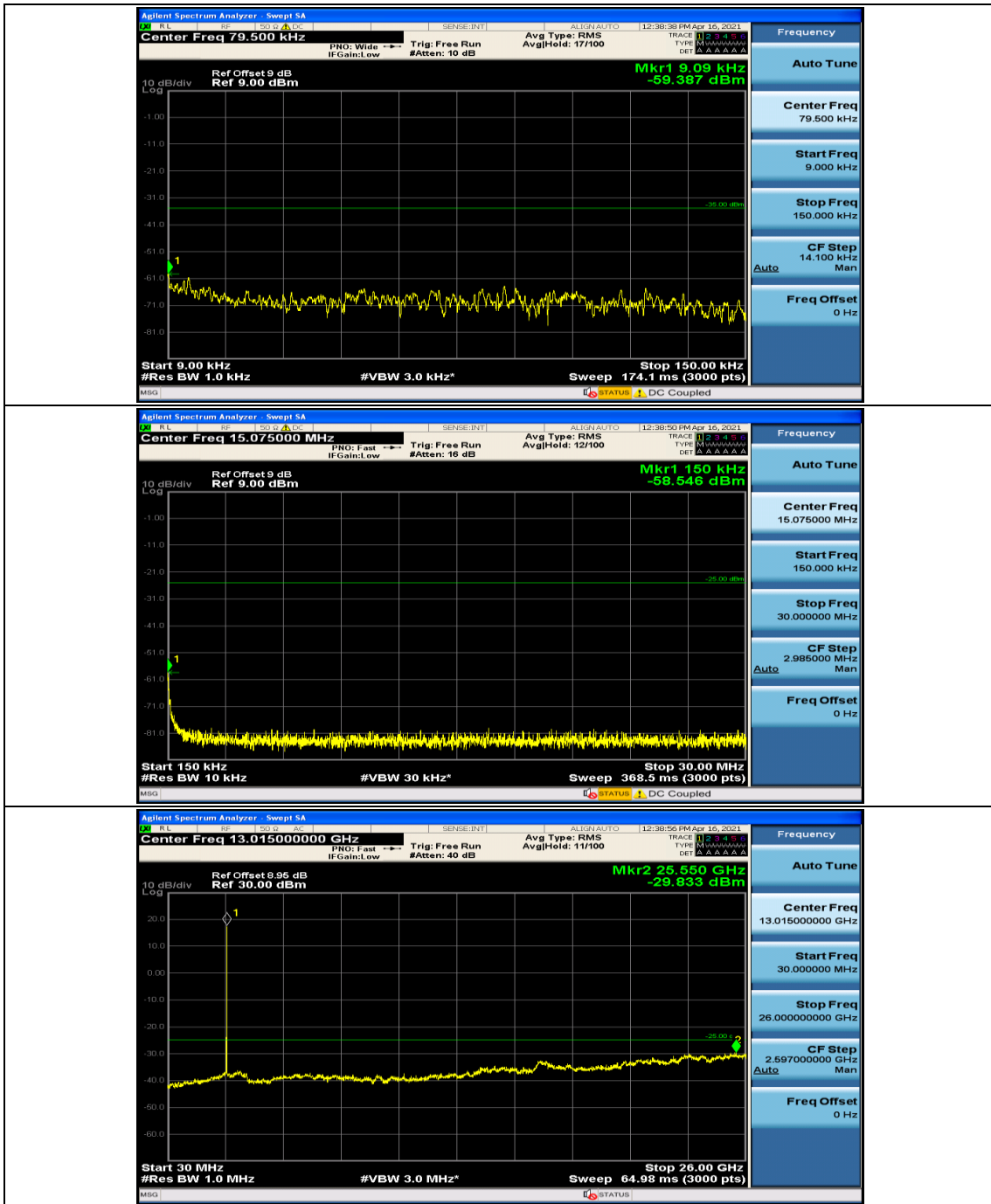


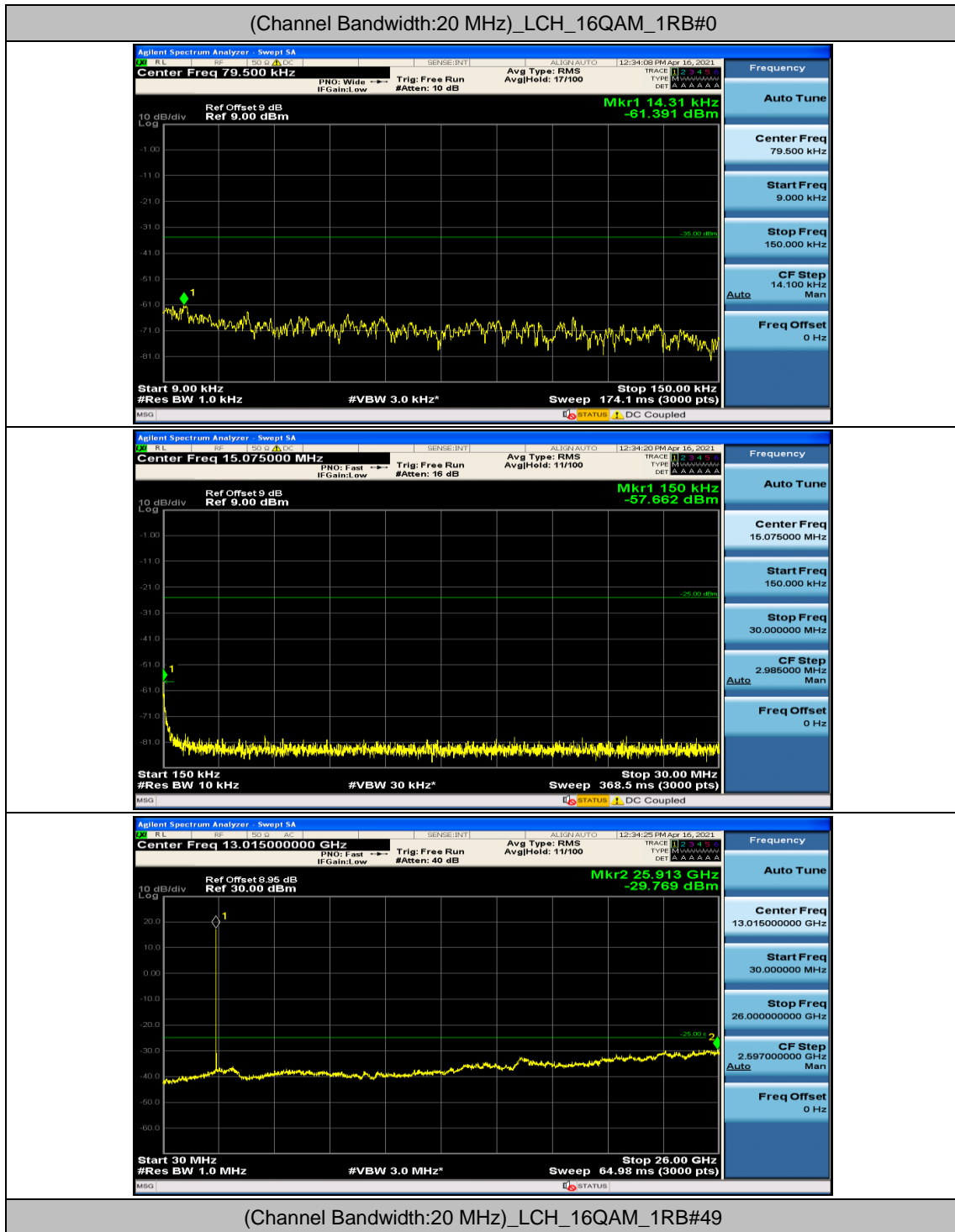


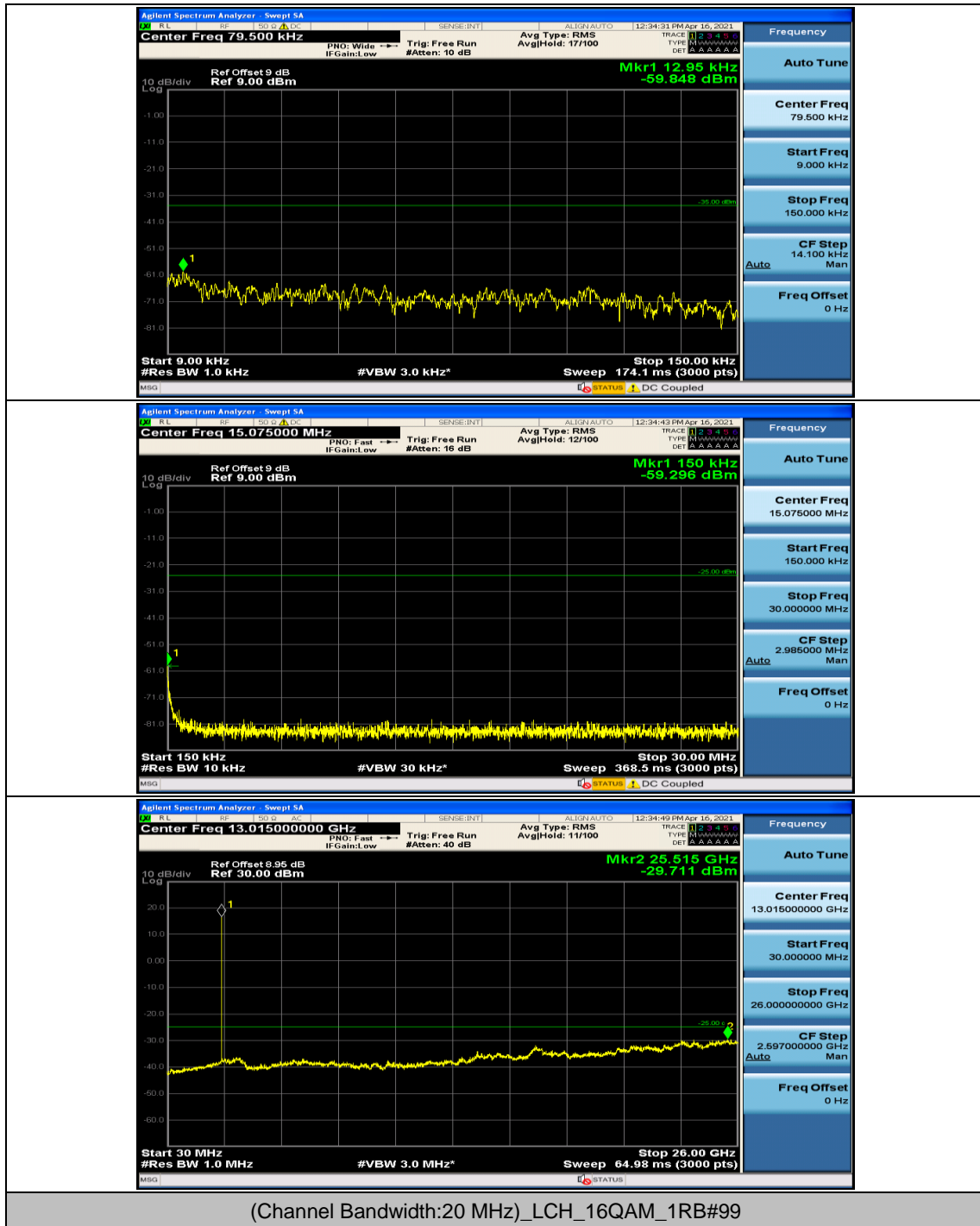




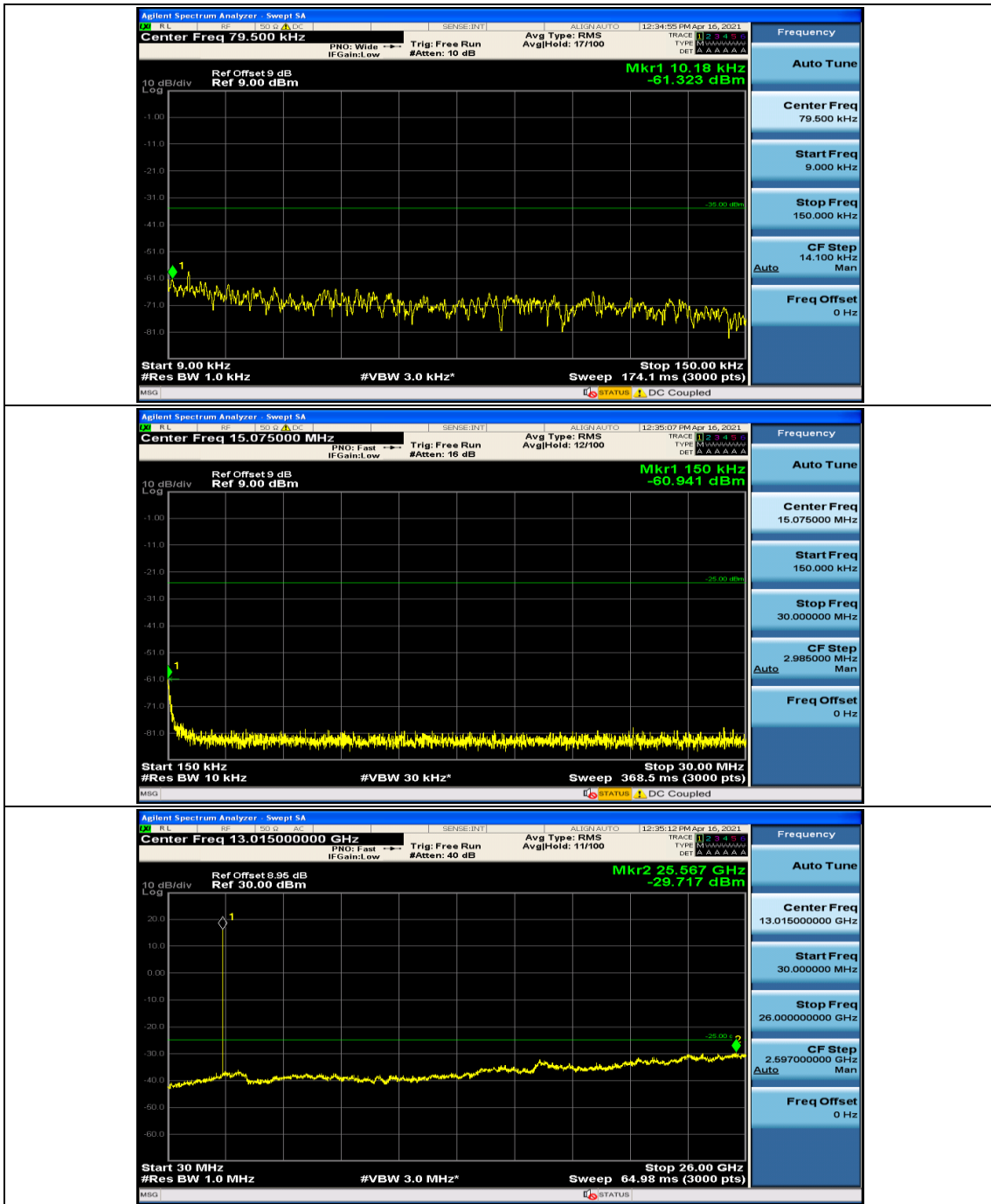


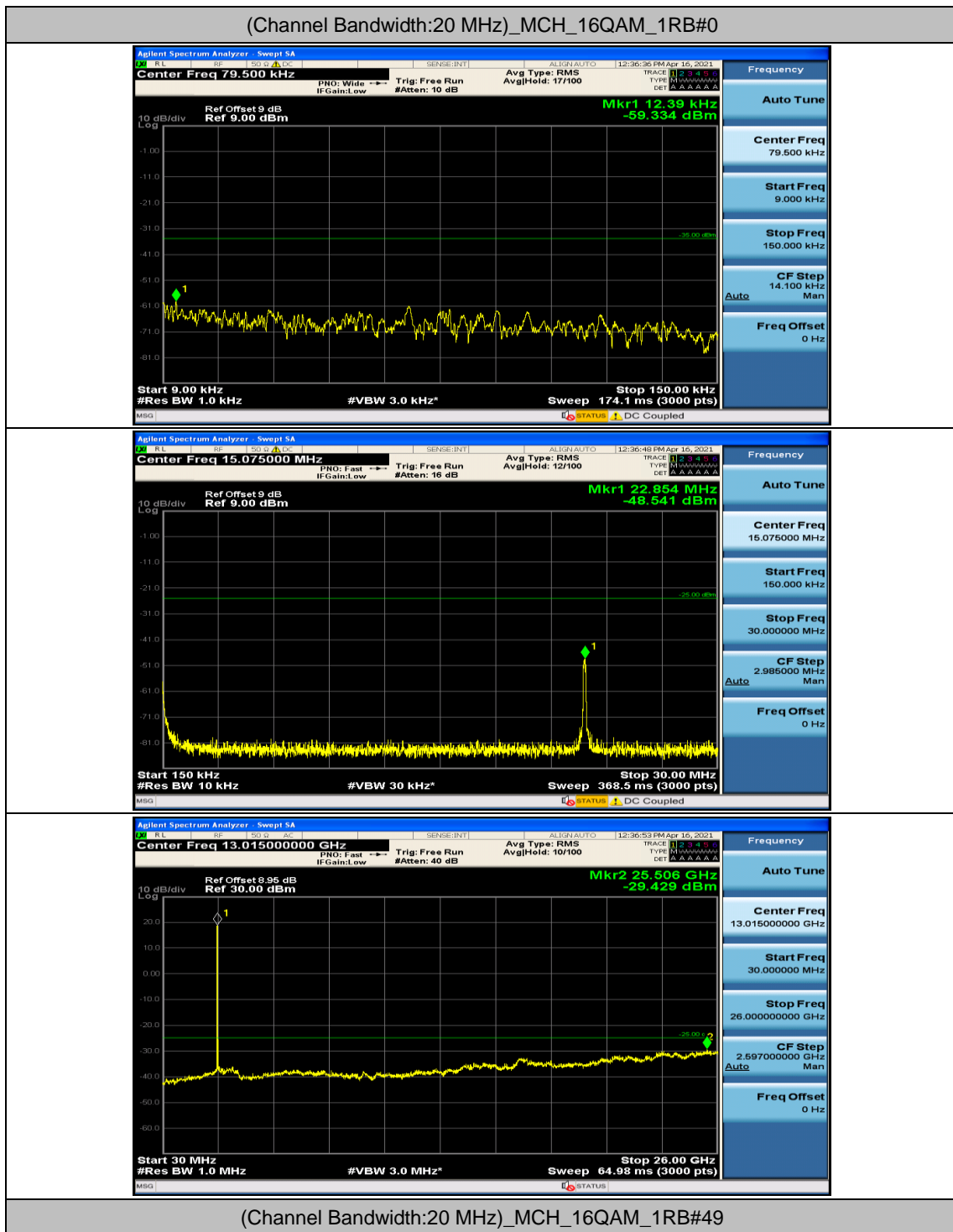


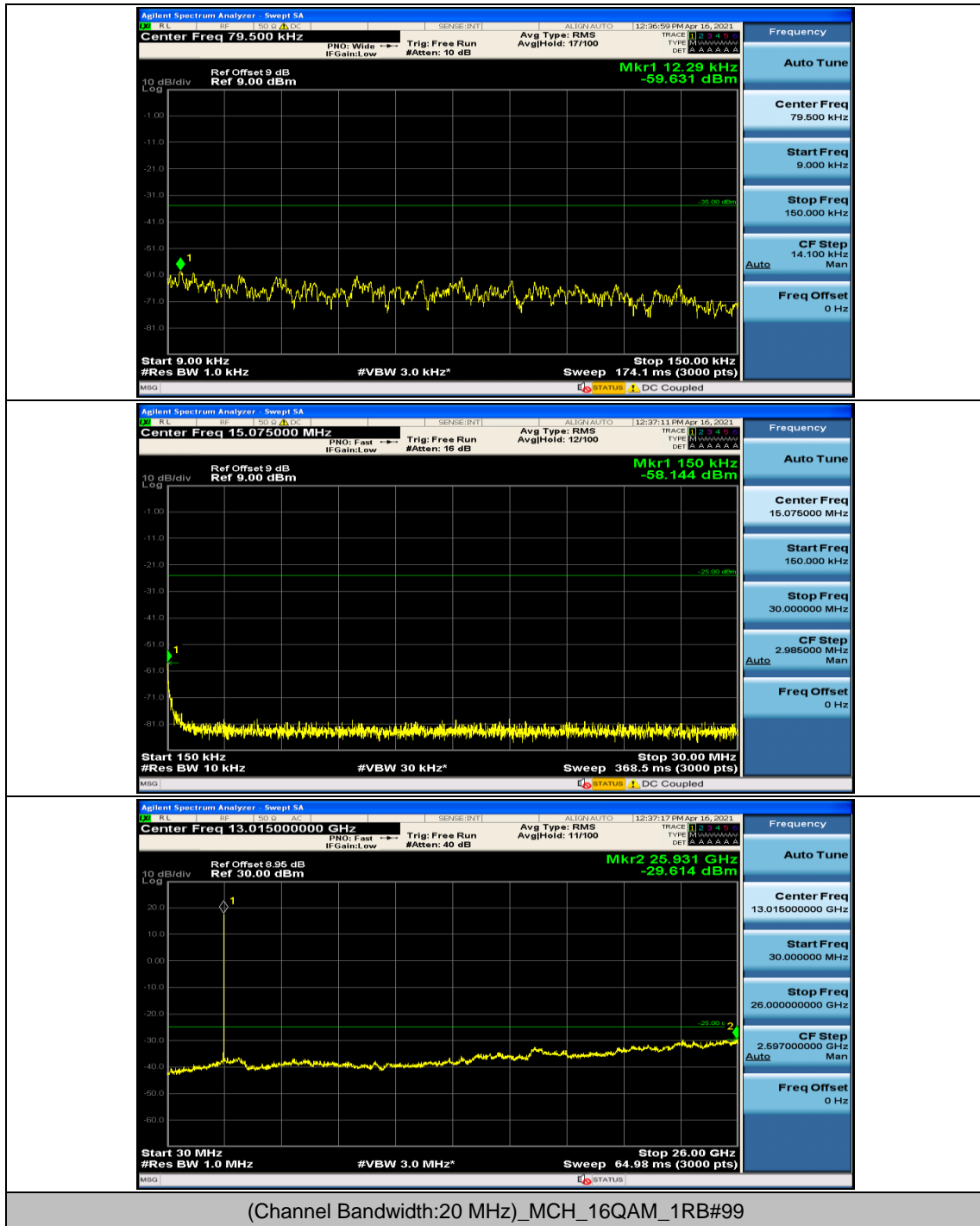


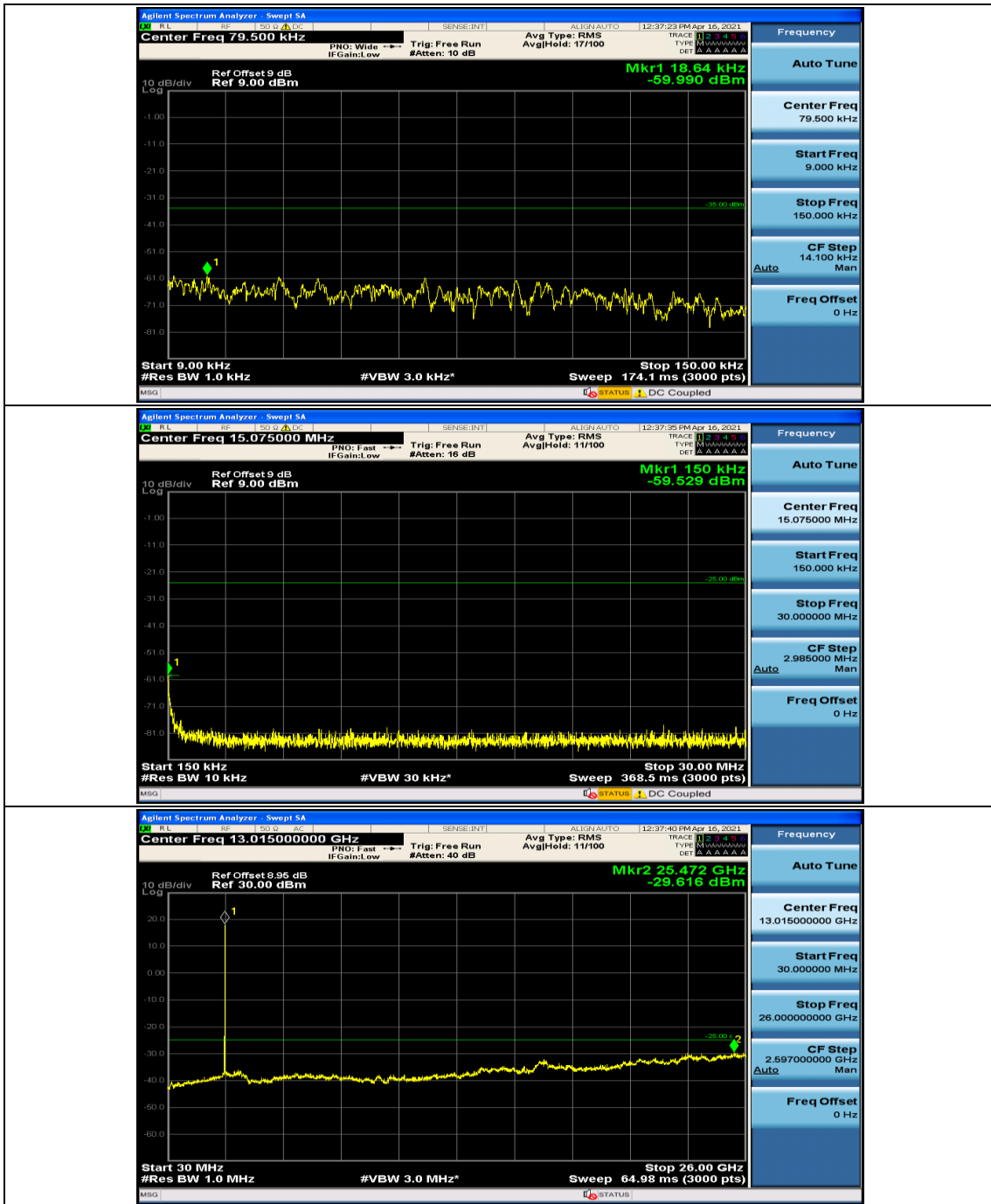


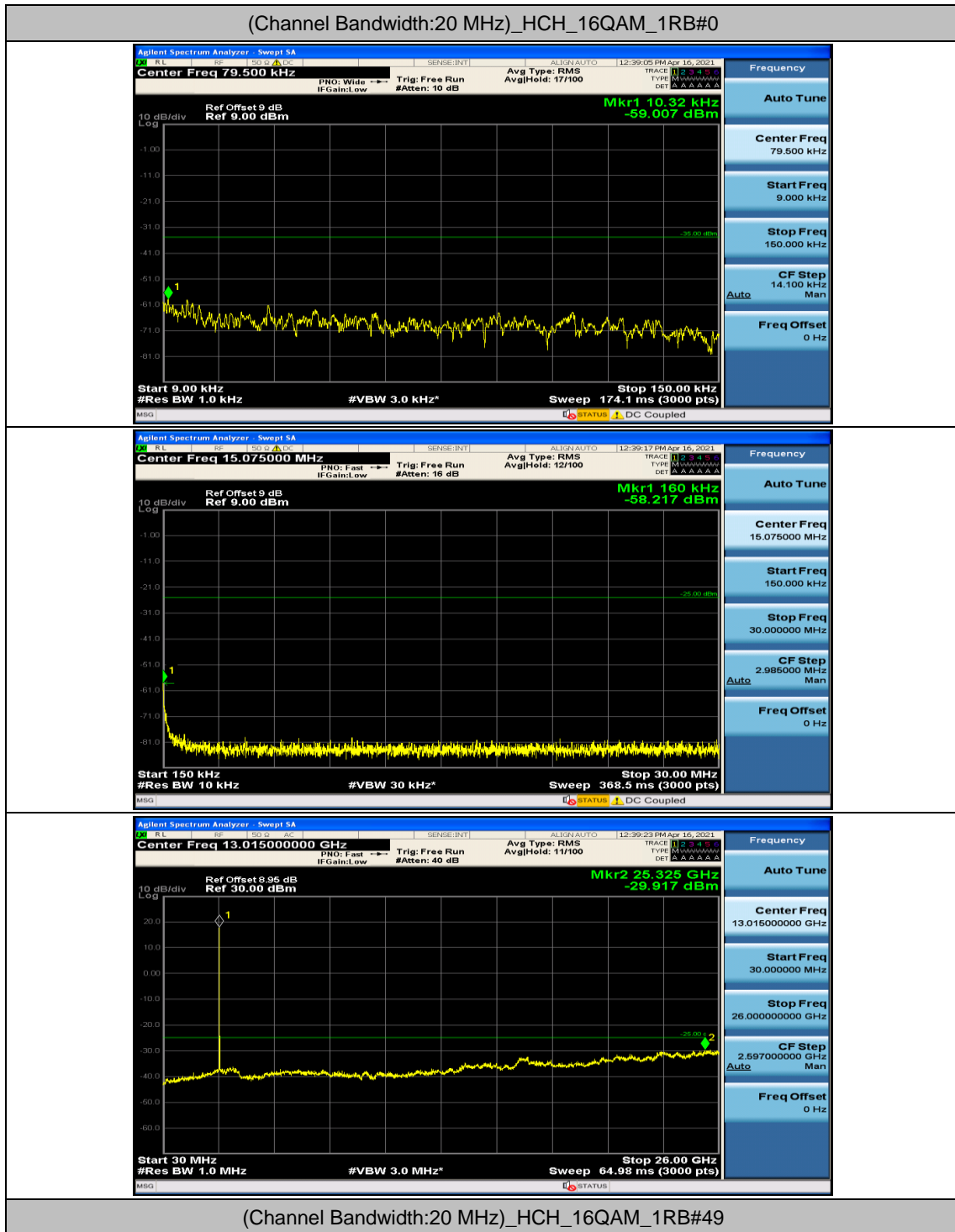


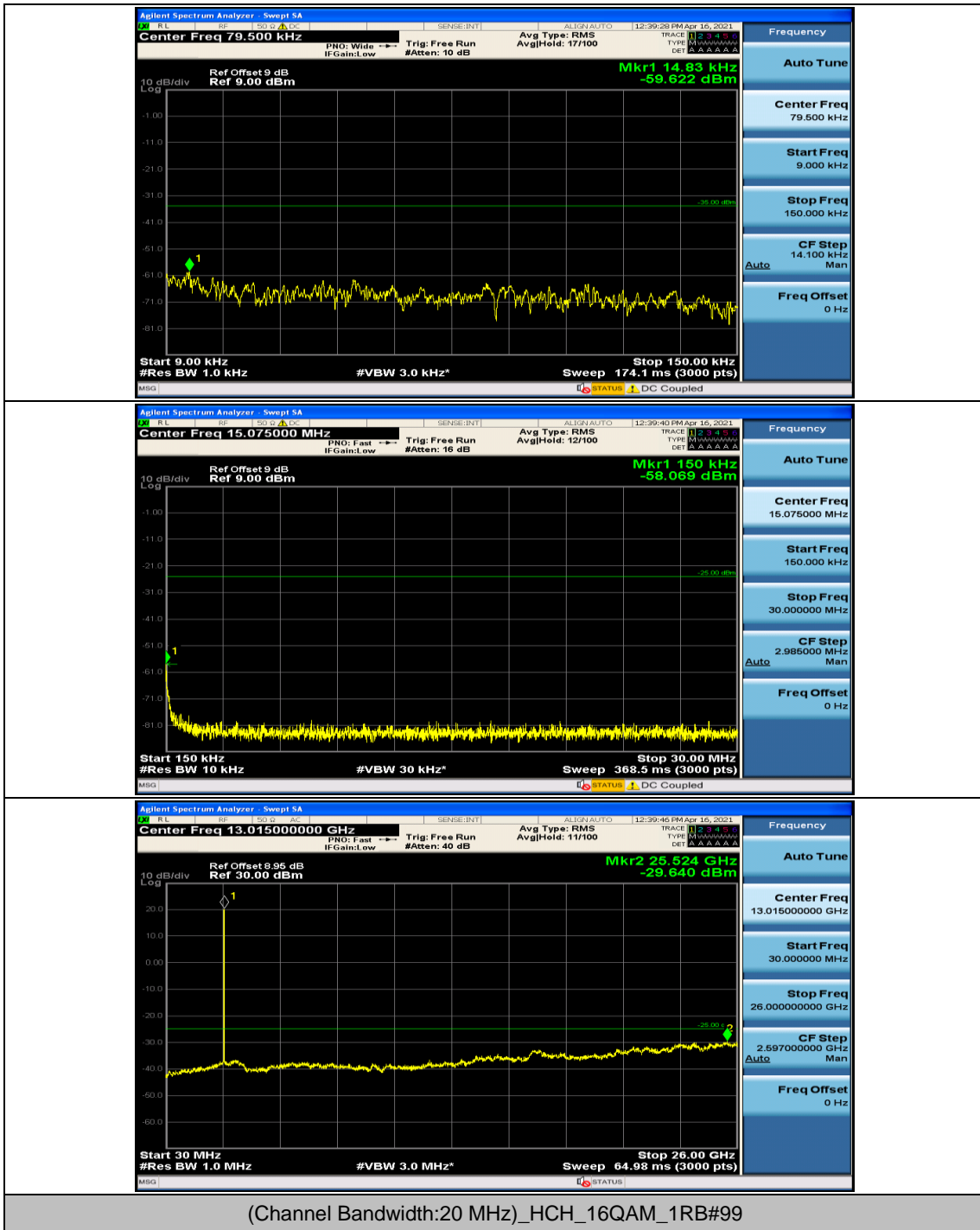


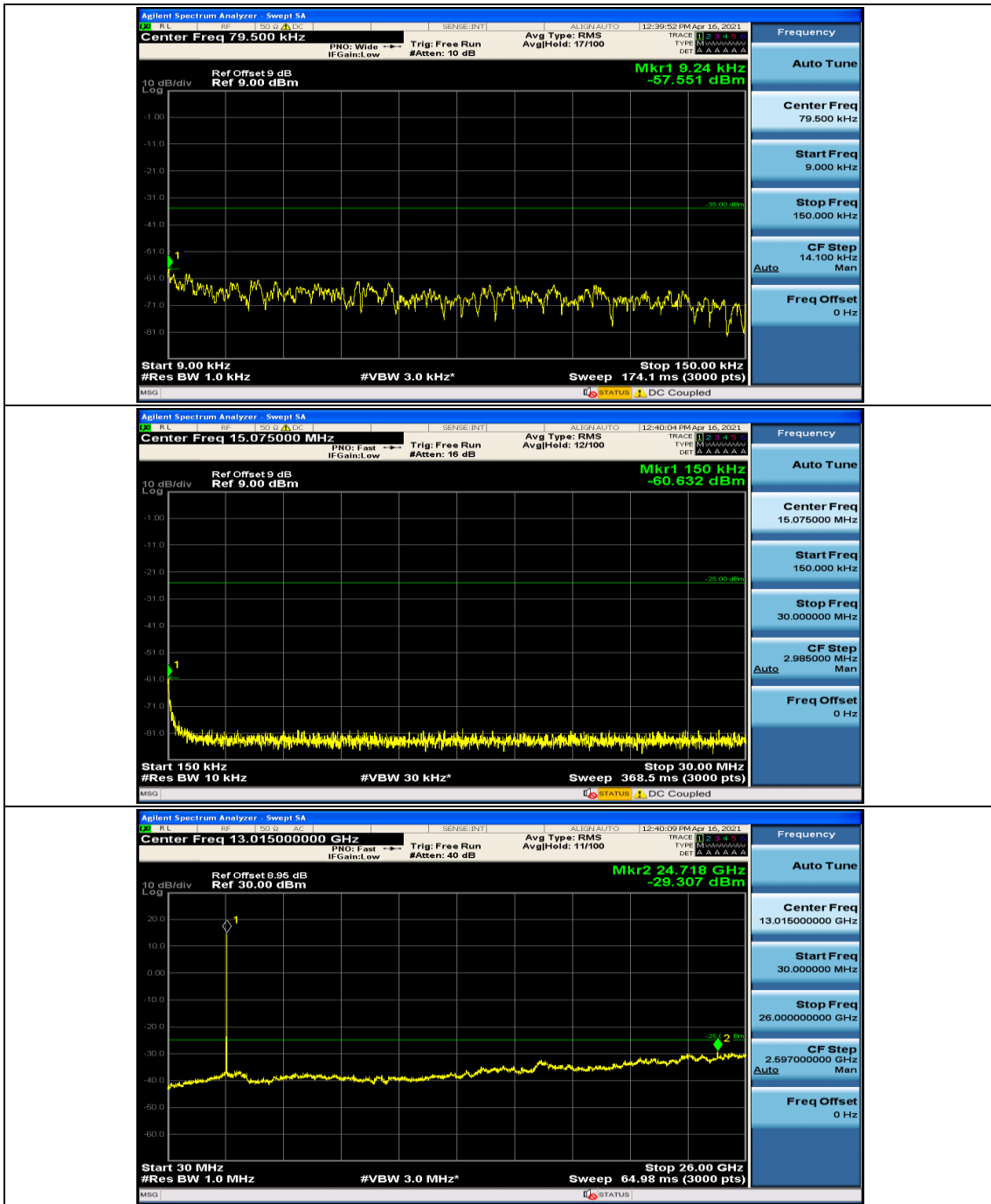












## Appendix F: Frequency Stability

### 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	4.59	0.001837	± 2.5	PASS
		VN	TN	2.54	0.001017	± 2.5	PASS
		VH	TN	2.24	0.000897	± 2.5	PASS
	MCH	VL	TN	2.24	0.000864	± 2.5	PASS
		VN	TN	0.4	0.000154	± 2.5	PASS
		VH	TN	4.15	0.001600	± 2.5	PASS
	HCH	VL	TN	1.99	0.000740	± 2.5	PASS
		VN	TN	1.13	0.000420	± 2.5	PASS
		VH	TN	2.14	0.000796	± 2.5	PASS
16QAM	LCH	VL	TN	1.08	0.000432	± 2.5	PASS
		VN	TN	2.8	0.001121	± 2.5	PASS
		VH	TN	-1.61	-0.000644	± 2.5	PASS
	MCH	VL	TN	0.82	0.000316	± 2.5	PASS
		VN	TN	4.21	0.001624	± 2.5	PASS
		VH	TN	-0.04	-0.000015	± 2.5	PASS
	HCH	VL	TN	-1.94	-0.000722	± 2.5	PASS
		VN	TN	-0.13	-0.000048	± 2.5	PASS
		VH	TN	0.23	0.000086	± 2.5	PASS
Temperature							
Modulation	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
QPSK	LCH	VN	-30	3.53	0.001413	± 2.5	PASS
		VN	-20	-0.61	-0.000244	± 2.5	PASS
		VN	-10	3.43	0.001373	± 2.5	PASS
		VN	0	-1.17	-0.000468	± 2.5	PASS
		VN	10	1.85	0.000740	± 2.5	PASS
		VN	20	1.72	0.000688	± 2.5	PASS
		VN	30	1.17	0.000468	± 2.5	PASS
		VN	40	-0.74	-0.000296	± 2.5	PASS
		VN	50	2.22	0.000889	± 2.5	PASS



	MCH	VN	-30	-1.46	-0.000563	± 2.5	PASS
		VN	-20	3.98	0.001535	± 2.5	PASS
		VN	-10	1.31	0.000505	± 2.5	PASS
		VN	0	-1.16	-0.000447	± 2.5	PASS
		VN	10	4.23	0.001631	± 2.5	PASS
		VN	20	-1.92	-0.000740	± 2.5	PASS
		VN	30	-1.07	-0.000413	± 2.5	PASS
		VN	40	1.28	0.000494	± 2.5	PASS
		VN	50	4.3	0.001658	± 2.5	PASS
	HCH	VN	-30	1.15	0.000428	± 2.5	PASS
		VN	-20	-0.61	-0.000227	± 2.5	PASS
		VN	-10	1.03	0.000383	± 2.5	PASS
		VN	0	-1.64	-0.000610	± 2.5	PASS
		VN	10	4.86	0.001808	± 2.5	PASS
		VN	20	0.32	0.000119	± 2.5	PASS
		VN	30	3.74	0.001392	± 2.5	PASS
		VN	40	-1.29	-0.000480	± 2.5	PASS
		VN	50	-0.96	-0.000357	± 2.5	PASS
16QAM	LCH	VN	-30	2.48	0.000993	± 2.5	PASS
		VN	-20	0.13	0.000052	± 2.5	PASS
		VN	-10	0.43	0.000172	± 2.5	PASS
		VN	0	0.18	0.000072	± 2.5	PASS
		VN	10	3.93	0.001573	± 2.5	PASS
		VN	20	1.86	0.000744	± 2.5	PASS
		VN	30	4.49	0.001797	± 2.5	PASS
		VN	40	3.96	0.001585	± 2.5	PASS
		VN	50	1.96	0.000784	± 2.5	PASS
	MCH	VN	-30	0.71	0.000274	± 2.5	PASS
		VN	-20	3.06	0.001180	± 2.5	PASS
		VN	-10	-1.21	-0.000467	± 2.5	PASS
		VN	0	1.04	0.000401	± 2.5	PASS
		VN	10	-1.69	-0.000652	± 2.5	PASS
		VN	20	3.66	0.001411	± 2.5	PASS
		VN	30	4.45	0.001716	± 2.5	PASS
		VN	40	-0.6	-0.000231	± 2.5	PASS
		VN	50	1.46	0.000563	± 2.5	PASS
	HCH	VN	-30	1.47	0.000547	± 2.5	PASS
		VN	-20	3.27	0.001217	± 2.5	PASS
		VN	-10	4.06	0.001511	± 2.5	PASS
		VN	0	4.9	0.001823	± 2.5	PASS
		VN	10	4.65	0.001730	± 2.5	PASS

		VN	20	3.05	0.001135	± 2.5	PASS
		VN	30	0.03	0.000011	± 2.5	PASS
		VN	40	1.58	0.000588	± 2.5	PASS
		VN	50	-11.63	-0.004327	± 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	4.55	0.001819	± 2.5	PASS
		VN	TN	1.41	0.000564	± 2.5	PASS
		VH	TN	2.28	0.000912	± 2.5	PASS
	MCH	VL	TN	3.03	0.001169	± 2.5	PASS
		VN	TN	3.88	0.001496	± 2.5	PASS
		VH	TN	-1.38	-0.000532	± 2.5	PASS
	HCH	VL	TN	4.7	0.001750	± 2.5	PASS
		VN	TN	2.73	0.001017	± 2.5	PASS
		VH	TN	-0.78	-0.000291	± 2.5	PASS
16QAM	LCH	VL	TN	2.52	0.001008	± 2.5	PASS
		VN	TN	0.76	0.000304	± 2.5	PASS
		VH	TN	0.12	0.000048	± 2.5	PASS
	MCH	VL	TN	-1.07	-0.000413	± 2.5	PASS
		VN	TN	-0.46	-0.000177	± 2.5	PASS
		VH	TN	0.58	0.000224	± 2.5	PASS
	HCH	VL	TN	0.25	0.000093	± 2.5	PASS
		VN	TN	1.57	0.000585	± 2.5	PASS
		VH	TN	2.18	0.000812	± 2.5	PASS
Temperature							
Modulation	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
QPSK	LCH	VN	-30	1.79	0.000716	± 2.5	PASS
		VN	-20	2.93	0.001172	± 2.5	PASS
		VN	-10	3	0.001200	± 2.5	PASS
		VN	0	-0.88	-0.000352	± 2.5	PASS
		VN	10	-1.61	-0.000644	± 2.5	PASS
		VN	20	2.06	0.000824	± 2.5	PASS
		VN	30	-0.46	-0.000184	± 2.5	PASS
		VN	40	2.47	0.000988	± 2.5	PASS
		VN	50	3.75	0.001499	± 2.5	PASS
	MCH	VN	-30	4.81	0.001855	± 2.5	PASS

		VN	-20	4	0.001543	± 2.5	PASS
		VN	-10	-1.7	-0.000656	± 2.5	PASS
		VN	0	1.07	0.000413	± 2.5	PASS
		VN	10	-0.99	-0.000382	± 2.5	PASS
		VN	20	-1	-0.000386	± 2.5	PASS
		VN	30	4.16	0.001604	± 2.5	PASS
		VN	40	-0.16	-0.000062	± 2.5	PASS
		VN	50	-1.05	-0.000405	± 2.5	PASS
	HCH	VN	-30	0.45	0.000168	± 2.5	PASS
		VN	-20	-0.92	-0.000343	± 2.5	PASS
		VN	-10	2.75	0.001024	± 2.5	PASS
		VN	0	1.19	0.000443	± 2.5	PASS
		VN	10	2.66	0.000991	± 2.5	PASS
		VN	20	3.21	0.001196	± 2.5	PASS
		VN	30	0.23	0.000086	± 2.5	PASS
		VN	40	4.14	0.001542	± 2.5	PASS
		VN	50	4.45	0.001657	± 2.5	PASS
		16QAM	LCH	VN	-30	-1.19	-0.000476
VN	-20			3.64	0.001455	± 2.5	PASS
VN	-10			0.2	0.000080	± 2.5	PASS
VN	0			3.18	0.001271	± 2.5	PASS
VN	10			3.66	0.001463	± 2.5	PASS
VN	20			3.93	0.001571	± 2.5	PASS
VN	30			4.88	0.001951	± 2.5	PASS
VN	40			1.97	0.000788	± 2.5	PASS
VN	50			3.11	0.001244	± 2.5	PASS
MCH	VN		-30	3.46	0.001334	± 2.5	PASS
	VN		-20	3.88	0.001496	± 2.5	PASS
	VN		-10	0.12	0.000046	± 2.5	PASS
	VN		0	-0.47	-0.000181	± 2.5	PASS
	VN		10	2.19	0.000845	± 2.5	PASS
	VN		20	3.85	0.001485	± 2.5	PASS
	VN		30	3.58	0.001381	± 2.5	PASS
	VN		40	-0.74	-0.000285	± 2.5	PASS
	VN		50	4.86	0.001874	± 2.5	PASS
HCH	VN		-30	2.92	0.001088	± 2.5	PASS
	VN		-20	-1.63	-0.000607	± 2.5	PASS
	VN		-10	-1.58	-0.000588	± 2.5	PASS
	VN		0	0.17	0.000063	± 2.5	PASS
	VN		10	1.88	0.000700	± 2.5	PASS
	VN		20	3.56	0.001326	± 2.5	PASS

		VN	30	1.26	0.000469	± 2.5	PASS
		VN	40	1.54	0.000574	± 2.5	PASS
		VN	50	-11.63	-0.004331	± 2.5	PASS

**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	4.31	0.001722	± 2.5	PASS
		VN	TN	-1.71	-0.000683	± 2.5	PASS
		VH	TN	3.68	0.001470	± 2.5	PASS
	MCH	VL	TN	0.14	0.000054	± 2.5	PASS
		VN	TN	-1.24	-0.000478	± 2.5	PASS
		VH	TN	1.41	0.000544	± 2.5	PASS
	HCH	VL	TN	2.55	0.000951	± 2.5	PASS
		VN	TN	1.81	0.000675	± 2.5	PASS
		VH	TN	1.31	0.000488	± 2.5	PASS
16QAM	LCH	VL	TN	1.77	0.000707	± 2.5	PASS
		VN	TN	-1.62	-0.000647	± 2.5	PASS
		VH	TN	0.61	0.000244	± 2.5	PASS
	MCH	VL	TN	4.75	0.001832	± 2.5	PASS
		VN	TN	3.38	0.001304	± 2.5	PASS
		VH	TN	2.83	0.001091	± 2.5	PASS
	HCH	VL	TN	0.85	0.000317	± 2.5	PASS
		VN	TN	2.75	0.001025	± 2.5	PASS
		VH	TN	3.71	0.001383	± 2.5	PASS
Temperature							
Modulation	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
QPSK	LCH	VN	-30	2.48	0.000991	± 2.5	PASS
		VN	-20	3.89	0.001554	± 2.5	PASS
		VN	-10	3.83	0.001530	± 2.5	PASS
		VN	0	-1.62	-0.000647	± 2.5	PASS
		VN	10	3.64	0.001454	± 2.5	PASS
		VN	20	-0.68	-0.000272	± 2.5	PASS
		VN	30	-0.44	-0.000176	± 2.5	PASS
		VN	40	4.58	0.001829	± 2.5	PASS
		VN	50	2.72	0.001086	± 2.5	PASS
	MCH	VN	-30	0.38	0.000147	± 2.5	PASS
		VN	-20	0.47	0.000181	± 2.5	PASS

		VN	-10	0.79	0.000305	± 2.5	PASS		
		VN	0	1.26	0.000486	± 2.5	PASS		
		VN	10	-0.68	-0.000262	± 2.5	PASS		
		VN	20	1.19	0.000459	± 2.5	PASS		
		VN	30	4.11	0.001585	± 2.5	PASS		
		VN	40	1.75	0.000675	± 2.5	PASS		
		VN	50	3.26	0.001257	± 2.5	PASS		
	HCH	VN	-30	-1.08	-0.000403	± 2.5	PASS		
		VN	-20	4.93	0.001838	± 2.5	PASS		
		VN	-10	-0.43	-0.000160	± 2.5	PASS		
		VN	0	0.66	0.000246	± 2.5	PASS		
		VN	10	4.88	0.001819	± 2.5	PASS		
		VN	20	2.5	0.000932	± 2.5	PASS		
		VN	30	0.66	0.000246	± 2.5	PASS		
		VN	40	-0.44	-0.000164	± 2.5	PASS		
		VN	50	0.99	0.000369	± 2.5	PASS		
		16QAM	LCH	VN	-30	-1.95	-0.000779	± 2.5	PASS
				VN	-20	2.25	0.000899	± 2.5	PASS
VN	-10			-0.9	-0.000359	± 2.5	PASS		
VN	0			-0.2	-0.000080	± 2.5	PASS		
VN	10			4.45	0.001778	± 2.5	PASS		
VN	20			2.26	0.000903	± 2.5	PASS		
VN	30			-0.19	-0.000076	± 2.5	PASS		
VN	40			0.32	0.000128	± 2.5	PASS		
VN	50			2.25	0.000899	± 2.5	PASS		
MCH	VN		-30	2.07	0.000798	± 2.5	PASS		
	VN		-20	1.03	0.000397	± 2.5	PASS		
	VN		-10	4.33	0.001670	± 2.5	PASS		
	VN		0	-1.78	-0.000686	± 2.5	PASS		
	VN		10	2.54	0.000980	± 2.5	PASS		
	VN		20	4.2	0.001620	± 2.5	PASS		
	VN		30	-0.14	-0.000054	± 2.5	PASS		
	VN		40	2.6	0.001003	± 2.5	PASS		
	VN		50	2.4	0.000926	± 2.5	PASS		
HCH	VN	-30	3.44	0.001282	± 2.5	PASS			
	VN	-20	4.03	0.001502	± 2.5	PASS			
	VN	-10	3.46	0.001290	± 2.5	PASS			
	VN	0	-0.58	-0.000216	± 2.5	PASS			
	VN	10	0.4	0.000149	± 2.5	PASS			
	VN	20	-1.83	-0.000682	± 2.5	PASS			
	VN	30	2.47	0.000921	± 2.5	PASS			

		VN	40	-0.69	-0.000257	± 2.5	PASS
		VN	50	-11.63	-0.004336	± 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	-1.92	-0.000766	± 2.5	PASS
		VN	TN	-1.37	-0.000547	± 2.5	PASS
		VH	TN	3.05	0.001217	± 2.5	PASS
	MCH	VL	TN	2.47	0.000953	± 2.5	PASS
		VN	TN	1.53	0.000590	± 2.5	PASS
		VH	TN	-0.18	-0.000069	± 2.5	PASS
	HCH	VL	TN	4.29	0.001601	± 2.5	PASS
		VN	TN	3.67	0.001369	± 2.5	PASS
		VH	TN	-0.12	-0.000045	± 2.5	PASS
16QAM	LCH	VL	TN	-1.18	-0.000471	± 2.5	PASS
		VN	TN	2.29	0.000914	± 2.5	PASS
		VH	TN	3.41	0.001361	± 2.5	PASS
	MCH	VL	TN	-1.92	-0.000740	± 2.5	PASS
		VN	TN	3.58	0.001381	± 2.5	PASS
		VH	TN	3.75	0.001446	± 2.5	PASS
	HCH	VL	TN	2.17	0.000810	± 2.5	PASS
		VN	TN	-1.9	-0.000709	± 2.5	PASS
		VH	TN	0.25	0.000093	± 2.5	PASS
Temperature							
Modulation	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
QPSK	LCH	VN	-30	1.75	0.000698	± 2.5	PASS
		VN	-20	-0.97	-0.000387	± 2.5	PASS
		VN	-10	-1.36	-0.000543	± 2.5	PASS
		VN	0	3.45	0.001377	± 2.5	PASS
		VN	10	3.33	0.001329	± 2.5	PASS
		VN	20	3.7	0.001476	± 2.5	PASS
		VN	30	1.06	0.000423	± 2.5	PASS
		VN	40	-1.75	-0.000698	± 2.5	PASS
		VN	50	3.51	0.001401	± 2.5	PASS
	MCH	VN	-30	-1.89	-0.000729	± 2.5	PASS
		VN	-20	-1.28	-0.000494	± 2.5	PASS
		VN	-10	4.93	0.001901	± 2.5	PASS

		VN	0	-0.45	-0.000174	± 2.5	PASS		
		VN	10	2.67	0.001030	± 2.5	PASS		
		VN	20	3.39	0.001307	± 2.5	PASS		
		VN	30	3.35	0.001292	± 2.5	PASS		
		VN	40	-1.49	-0.000575	± 2.5	PASS		
		VN	50	1.28	0.000494	± 2.5	PASS		
	HCH	VN	-30	-1.69	-0.000631	± 2.5	PASS		
		VN	-20	0.58	0.000216	± 2.5	PASS		
		VN	-10	3.31	0.001235	± 2.5	PASS		
		VN	0	3.65	0.001362	± 2.5	PASS		
		VN	10	0.38	0.000142	± 2.5	PASS		
		VN	20	4.34	0.001619	± 2.5	PASS		
		VN	30	0.23	0.000086	± 2.5	PASS		
		VN	40	0.49	0.000183	± 2.5	PASS		
		VN	50	3.76	0.001403	± 2.5	PASS		
		16QAM	LCH	VN	-30	1.62	0.000646	± 2.5	PASS
				VN	-20	1.24	0.000495	± 2.5	PASS
				VN	-10	3.31	0.001321	± 2.5	PASS
				VN	0	3.89	0.001552	± 2.5	PASS
VN	10			4.93	0.001967	± 2.5	PASS		
VN	20			1.02	0.000407	± 2.5	PASS		
VN	30			2.23	0.000890	± 2.5	PASS		
VN	40			1.02	0.000407	± 2.5	PASS		
VN	50			2.95	0.001177	± 2.5	PASS		
MCH	VN		-30	2.7	0.001041	± 2.5	PASS		
	VN		-20	4.07	0.001570	± 2.5	PASS		
	VN		-10	0.61	0.000235	± 2.5	PASS		
	VN		0	-0.83	-0.000320	± 2.5	PASS		
	VN		10	0.21	0.000081	± 2.5	PASS		
	VN		20	3.59	0.001384	± 2.5	PASS		
	VN		30	3.89	0.001500	± 2.5	PASS		
	VN		40	0.07	0.000027	± 2.5	PASS		
	VN		50	4.32	0.001666	± 2.5	PASS		
HCH	VN		-30	-1.41	-0.000526	± 2.5	PASS		
	VN	-20	2.9	0.001082	± 2.5	PASS			
	VN	-10	2.07	0.000772	± 2.5	PASS			
	VN	0	-1.86	-0.000694	± 2.5	PASS			
	VN	10	-1.76	-0.000657	± 2.5	PASS			
	VN	20	0.97	0.000362	± 2.5	PASS			
	VN	30	-0.79	-0.000295	± 2.5	PASS			
	VN	40	3.35	0.001250	± 2.5	PASS			

		VN	50	-11.63	-0.004340	± 2.5	PASS
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