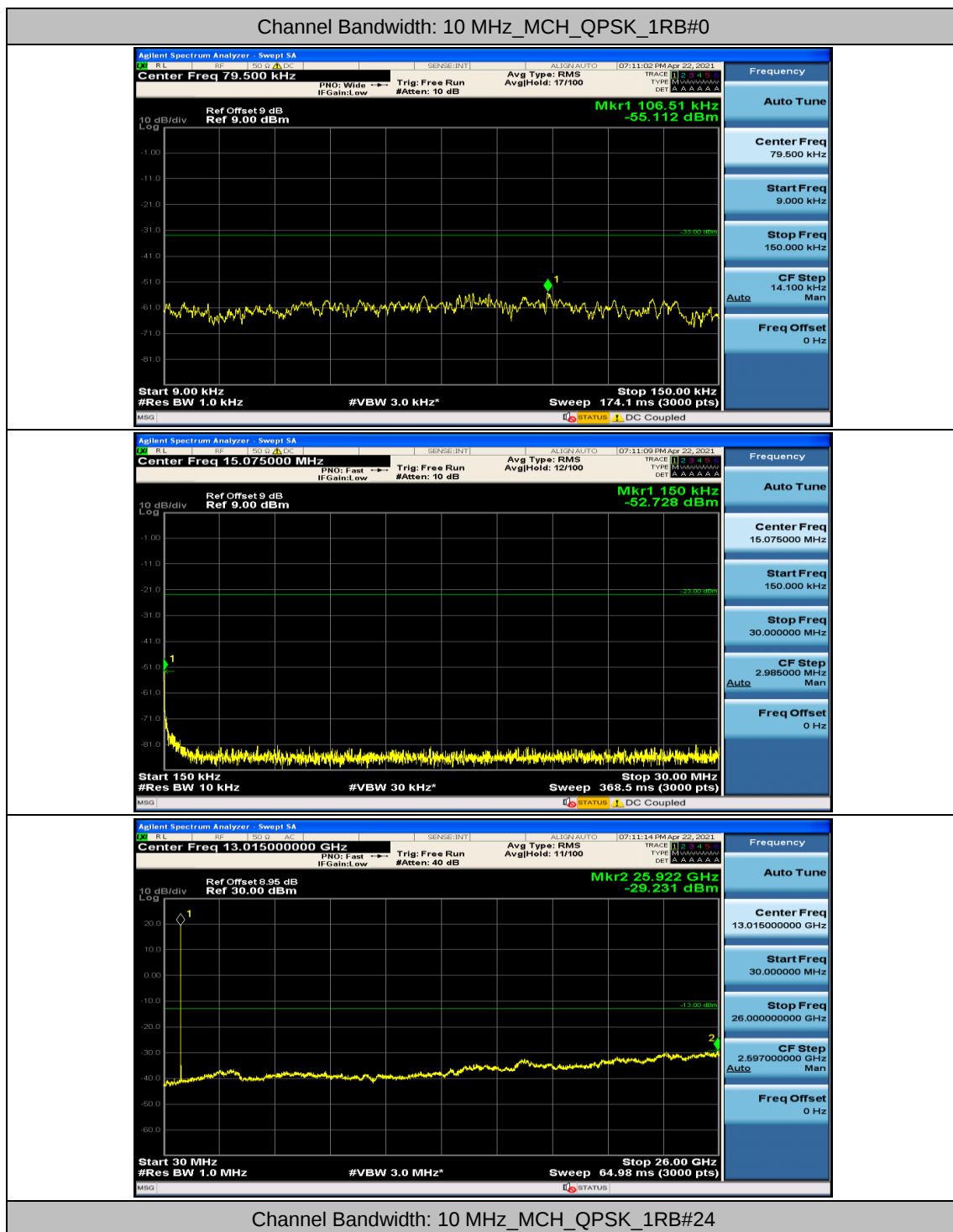
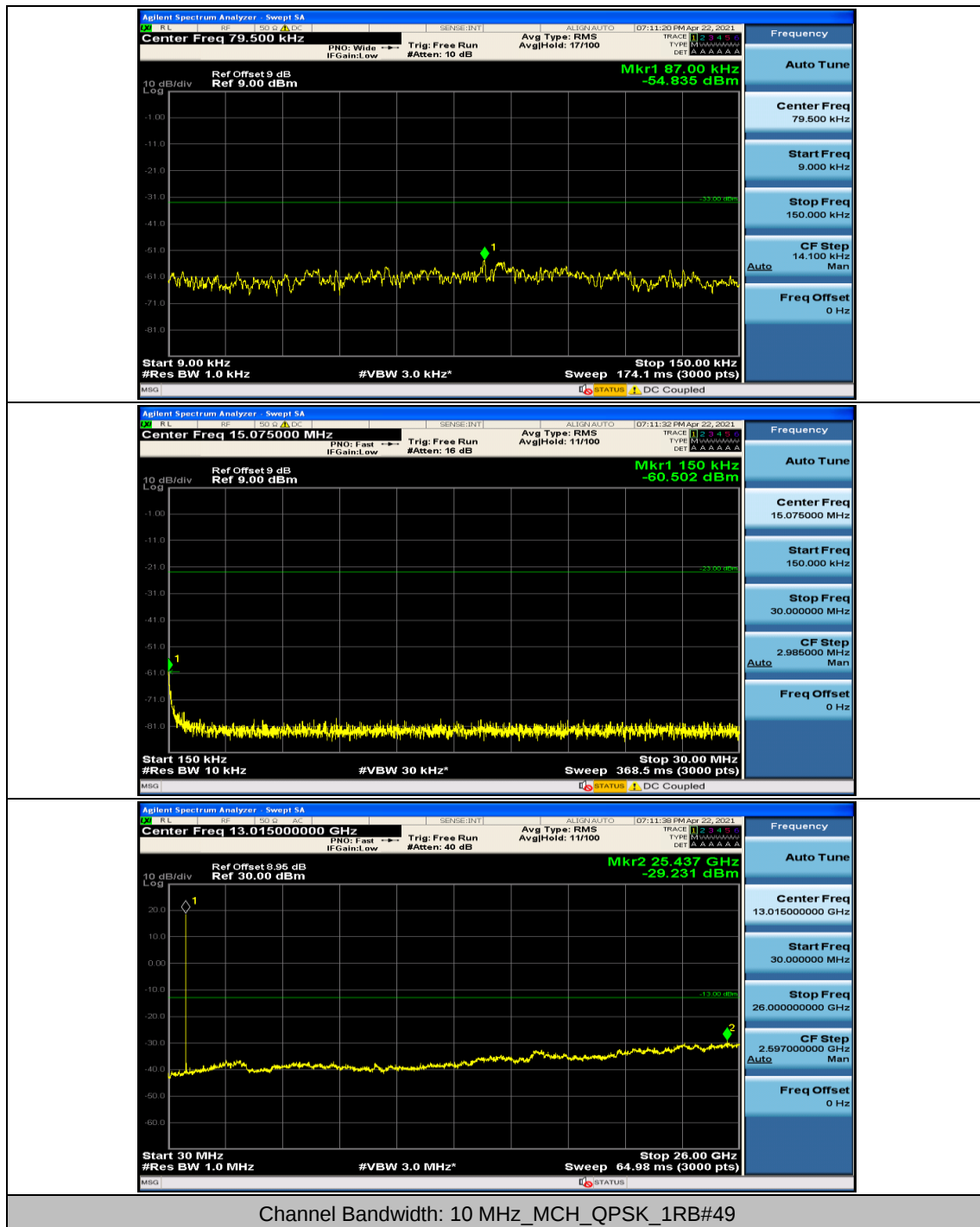
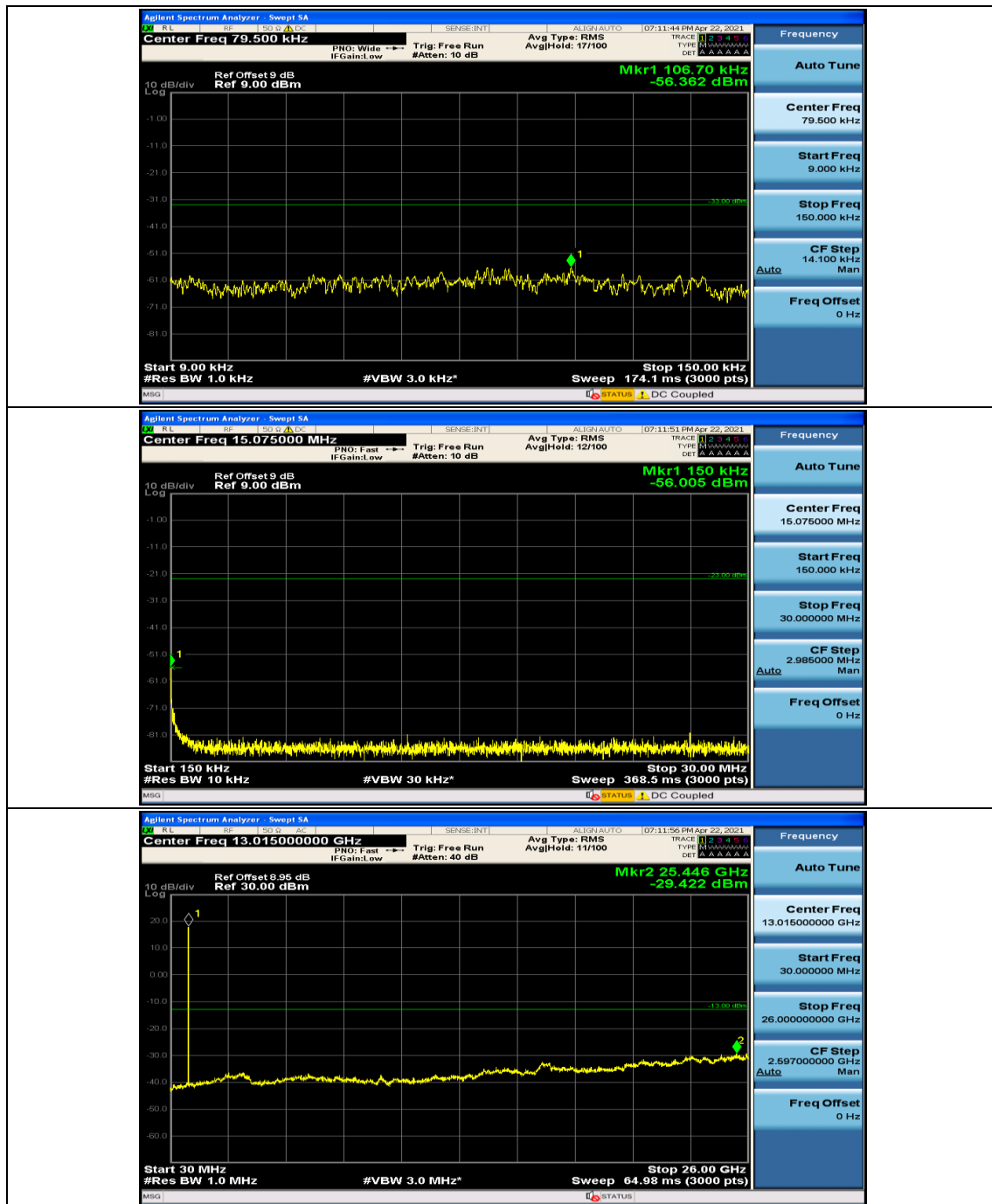
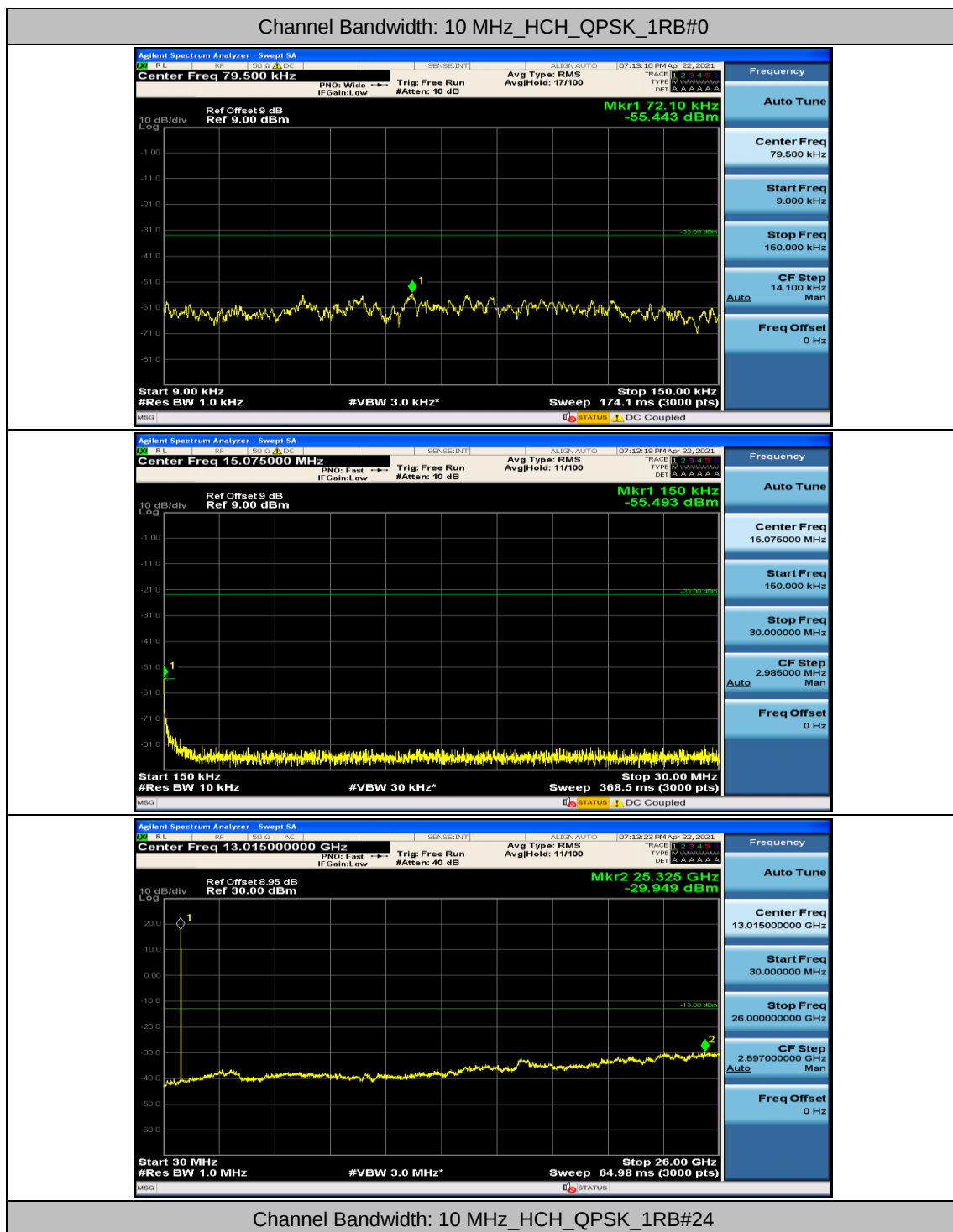
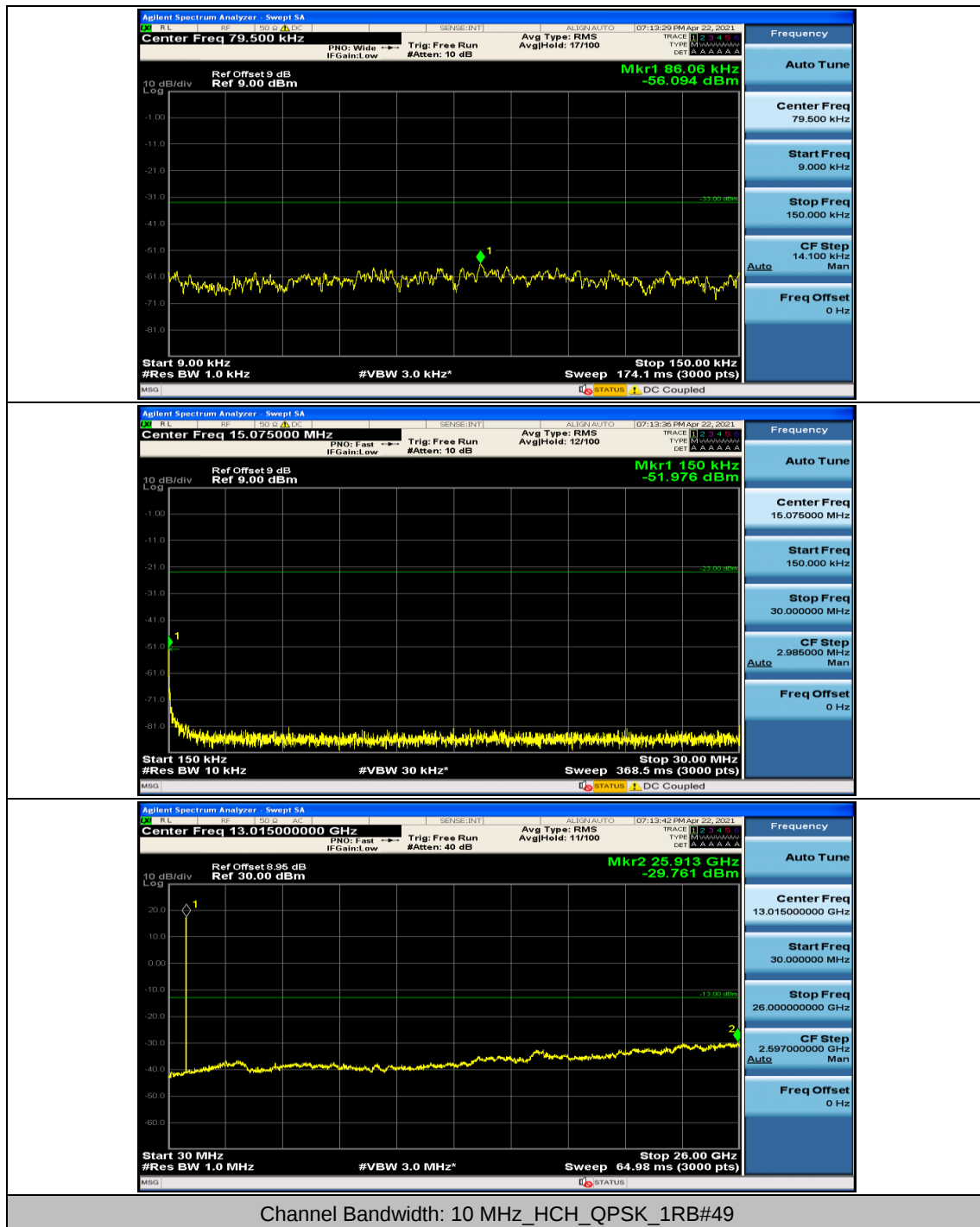


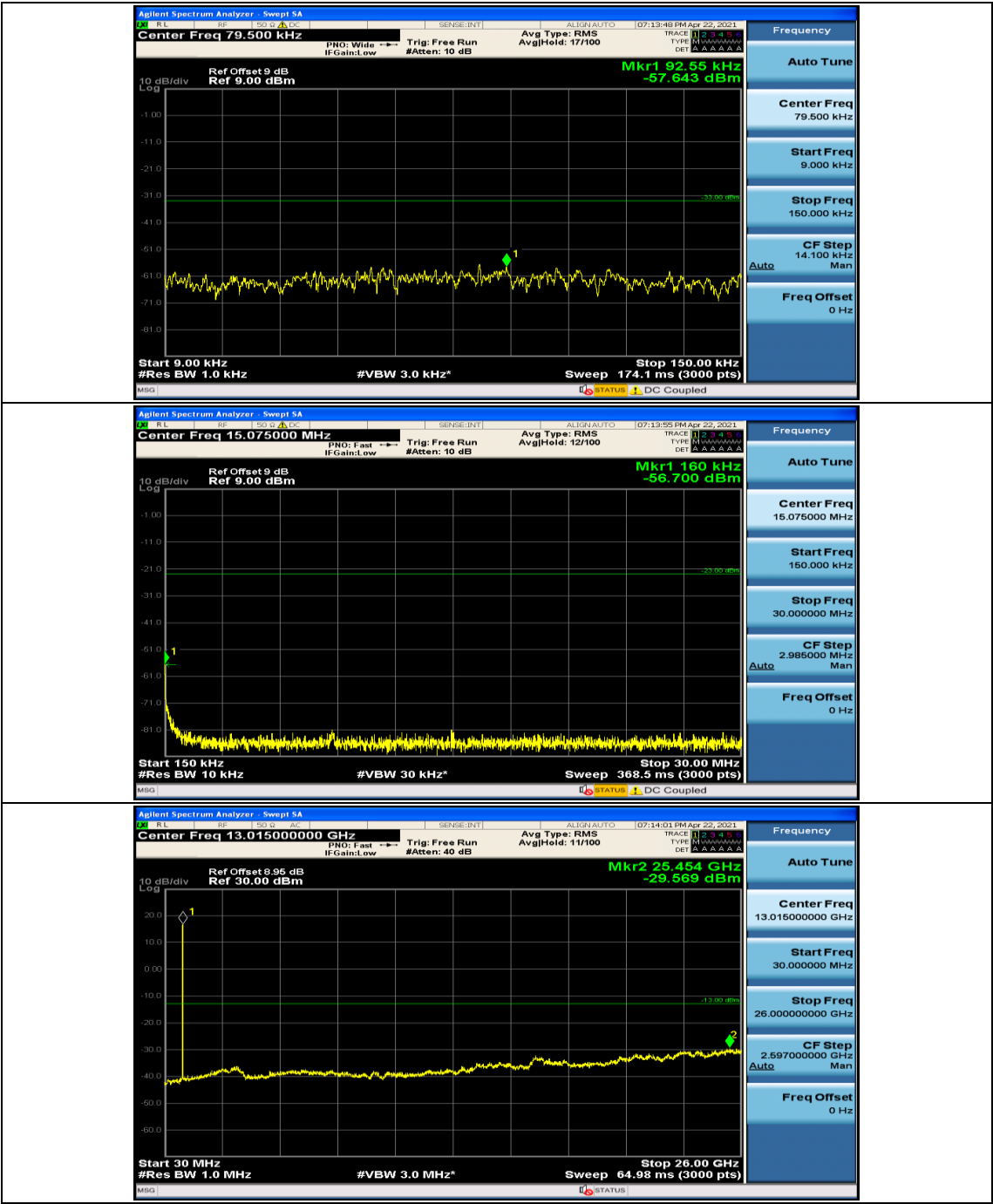


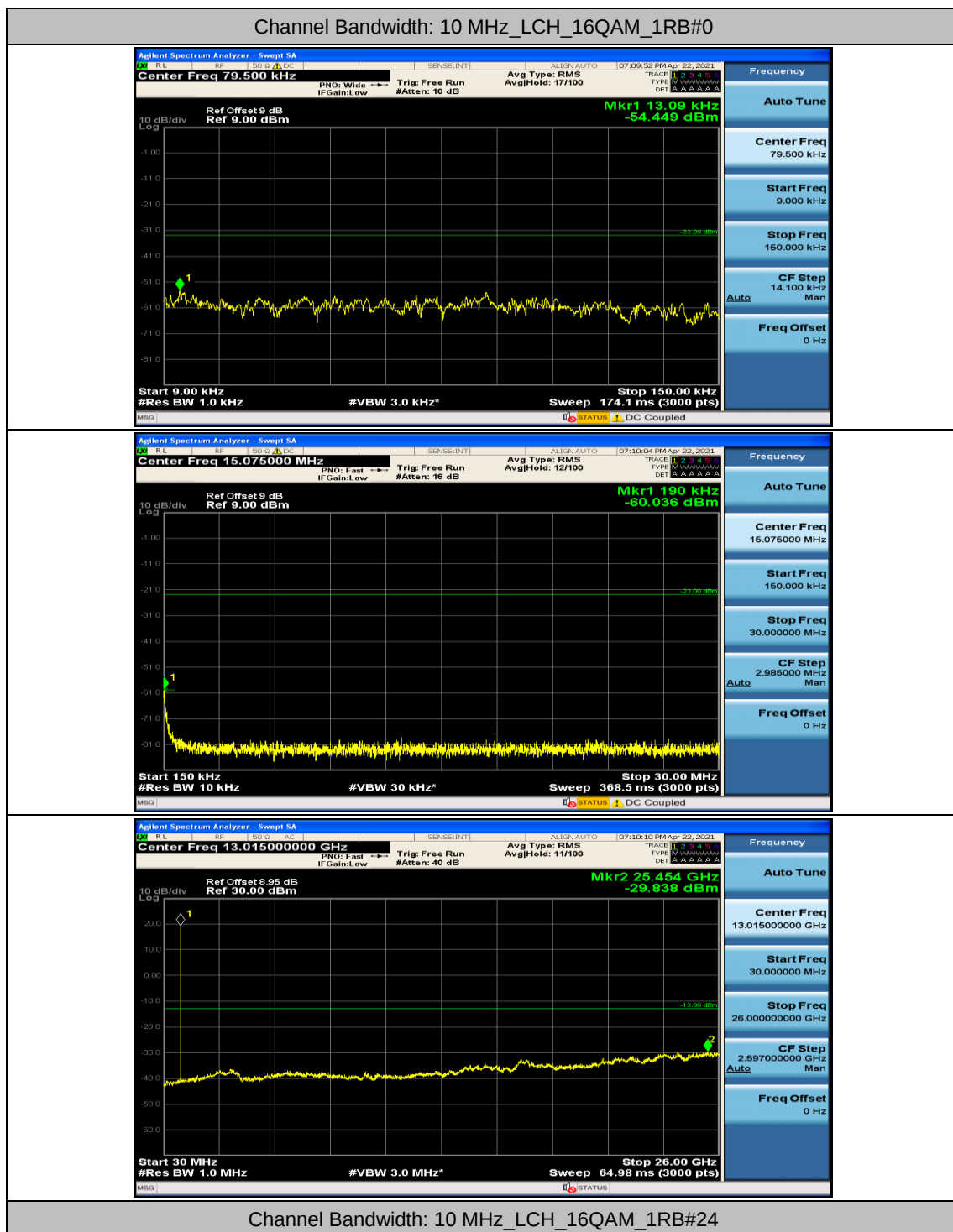


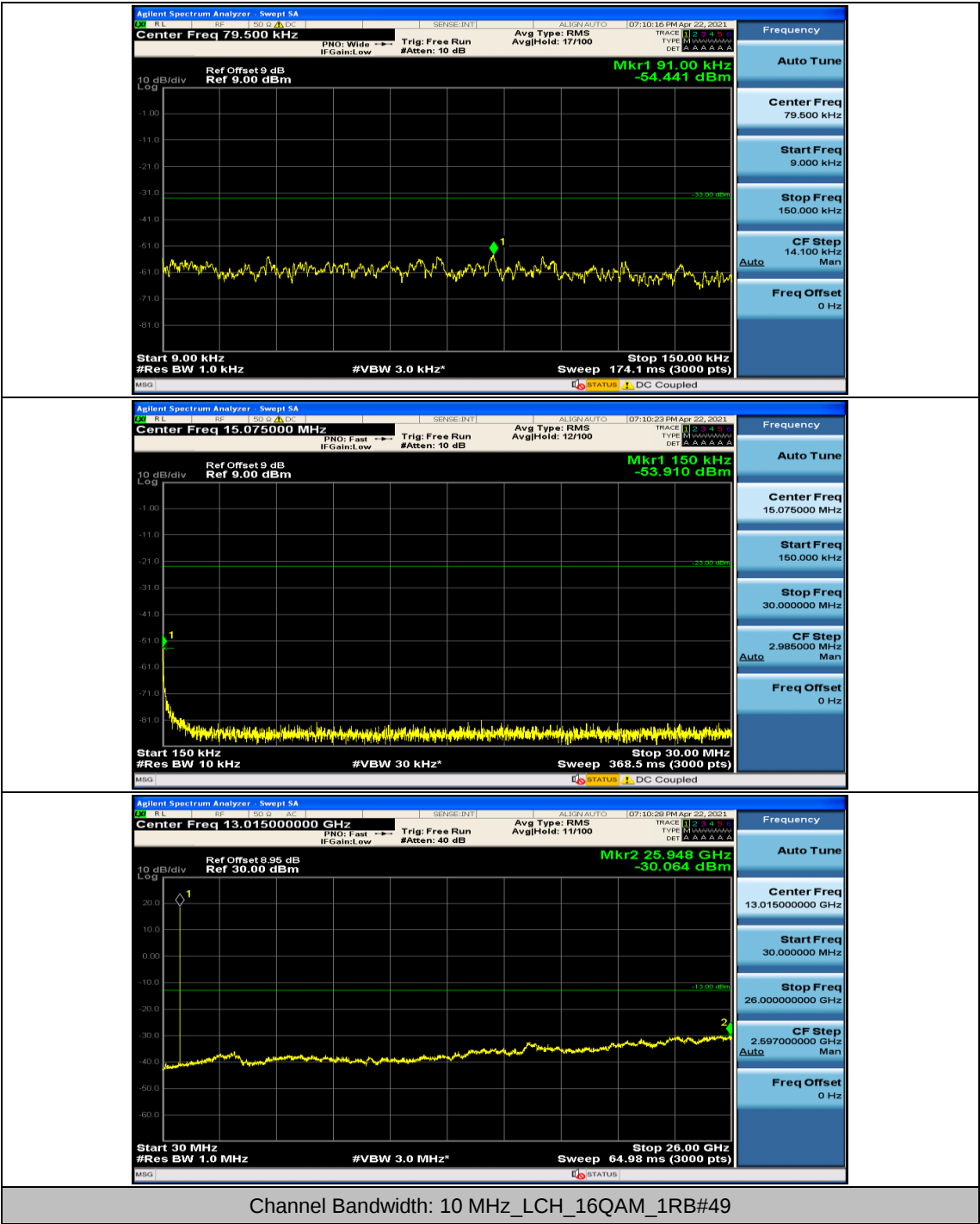


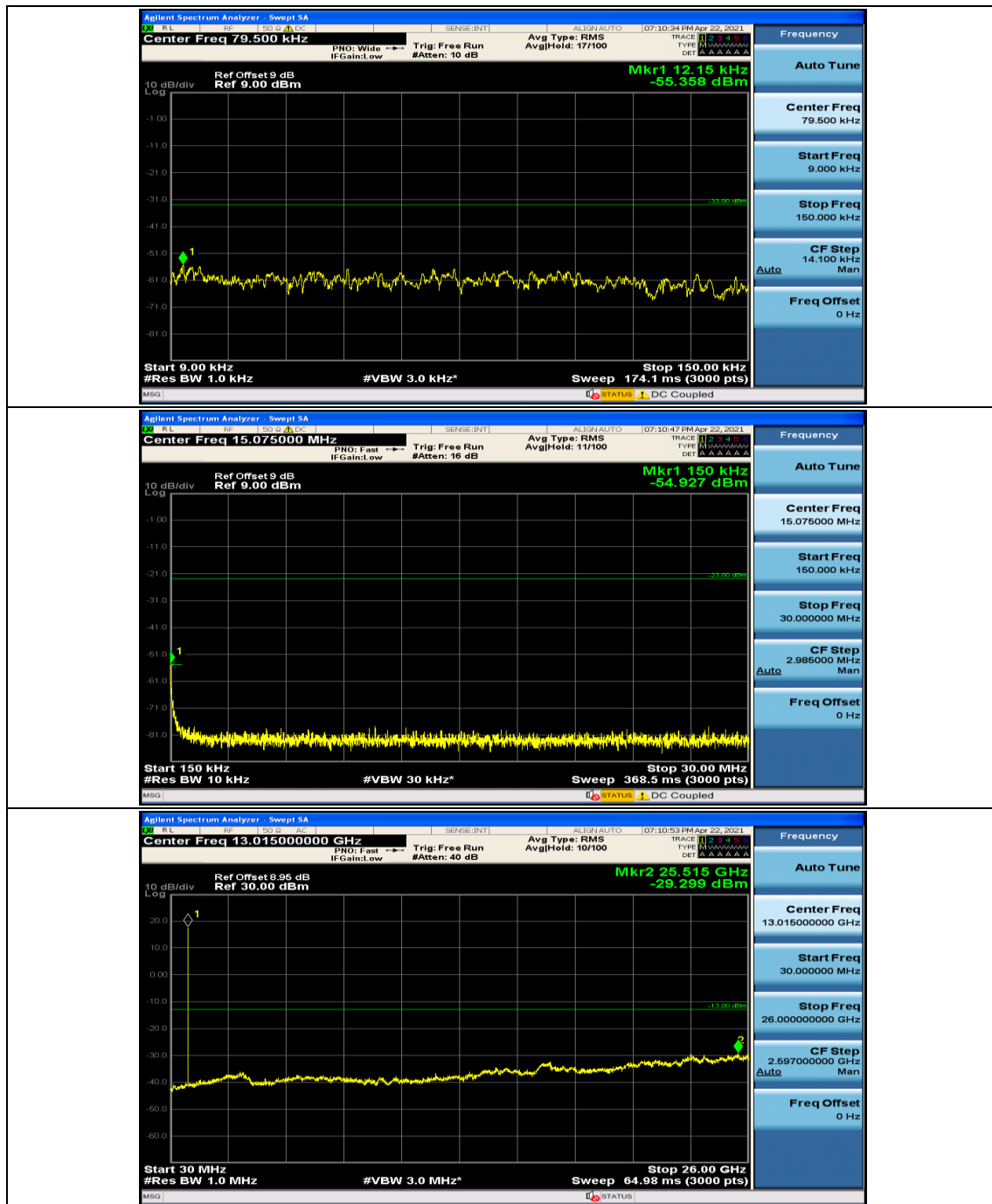


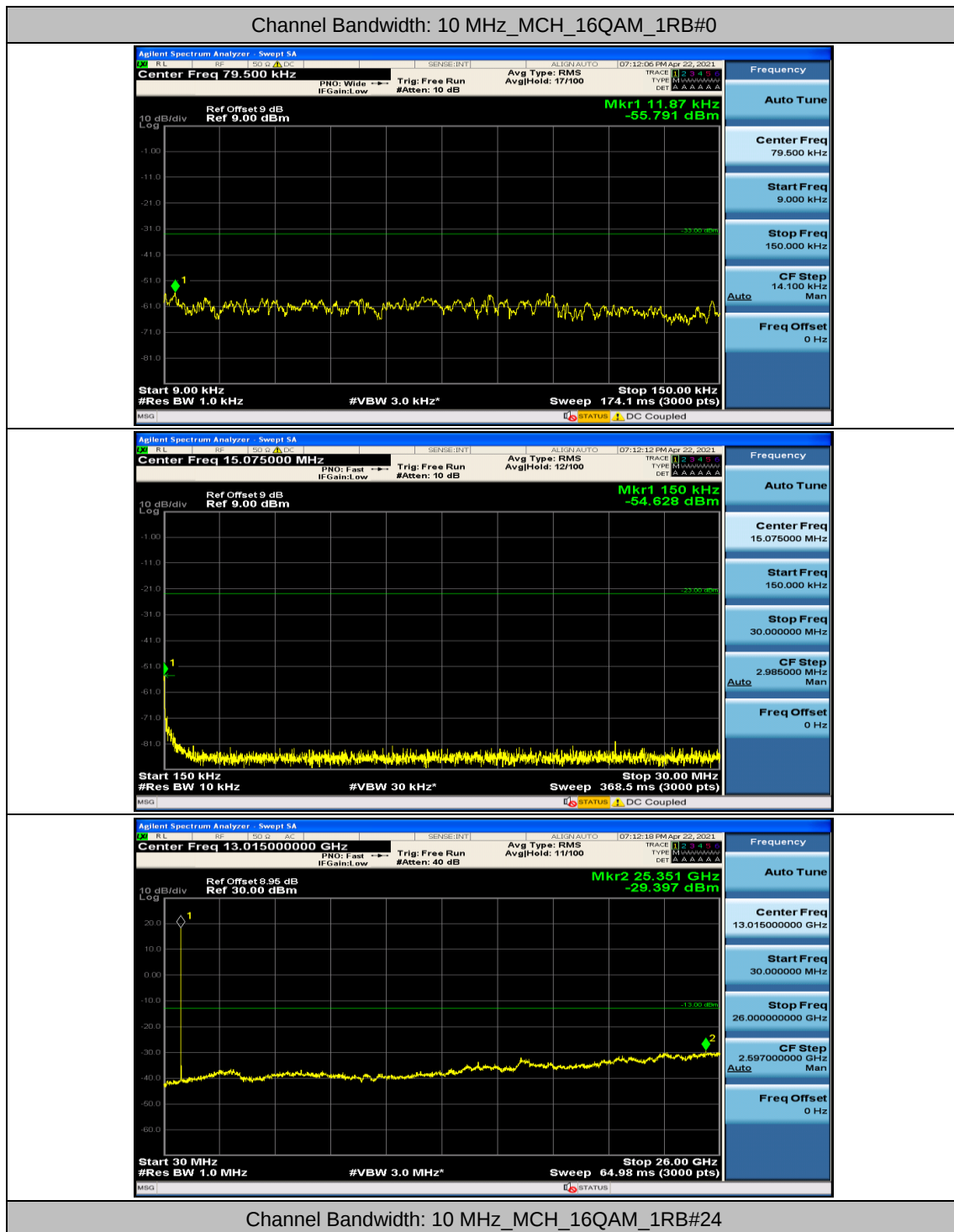


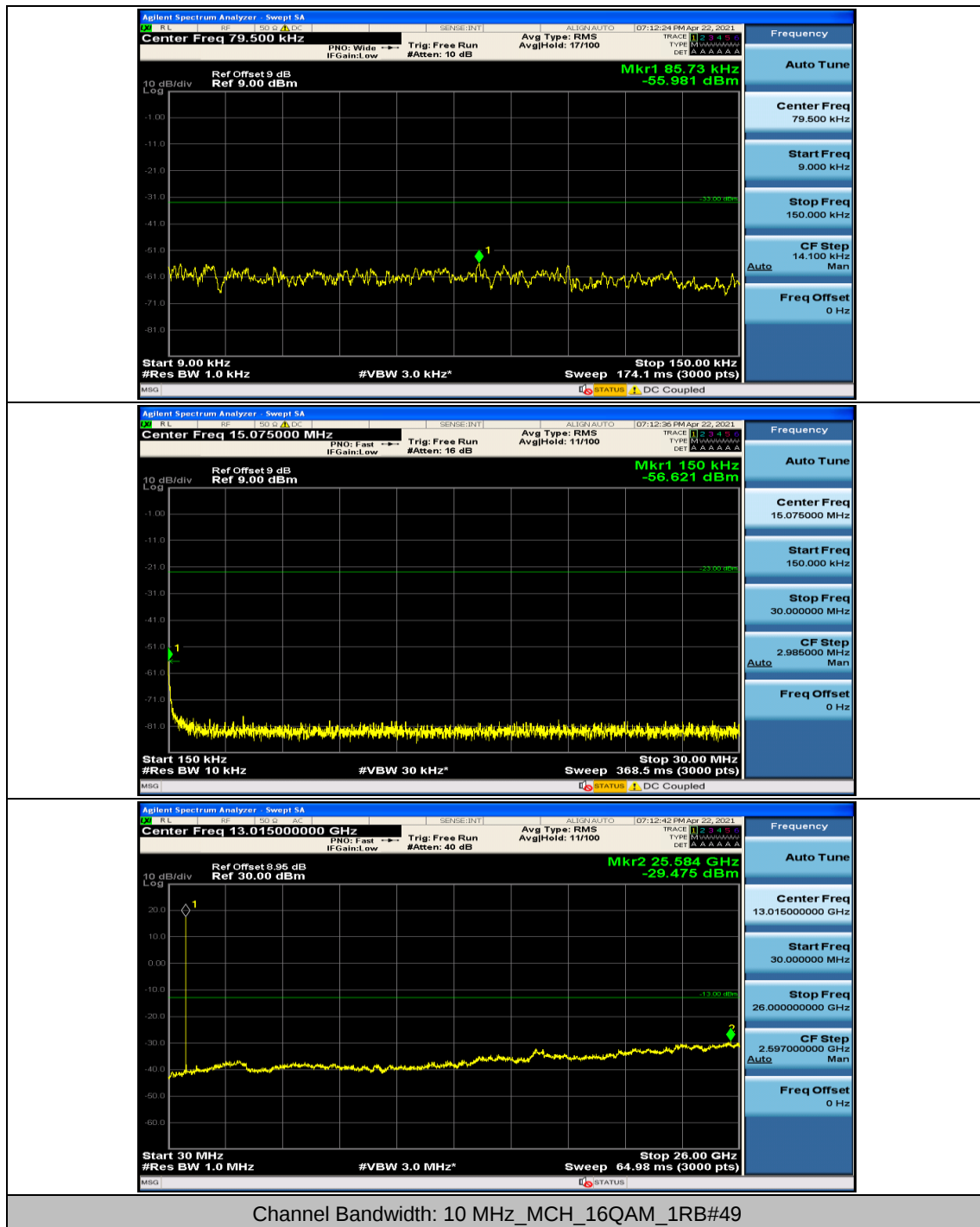


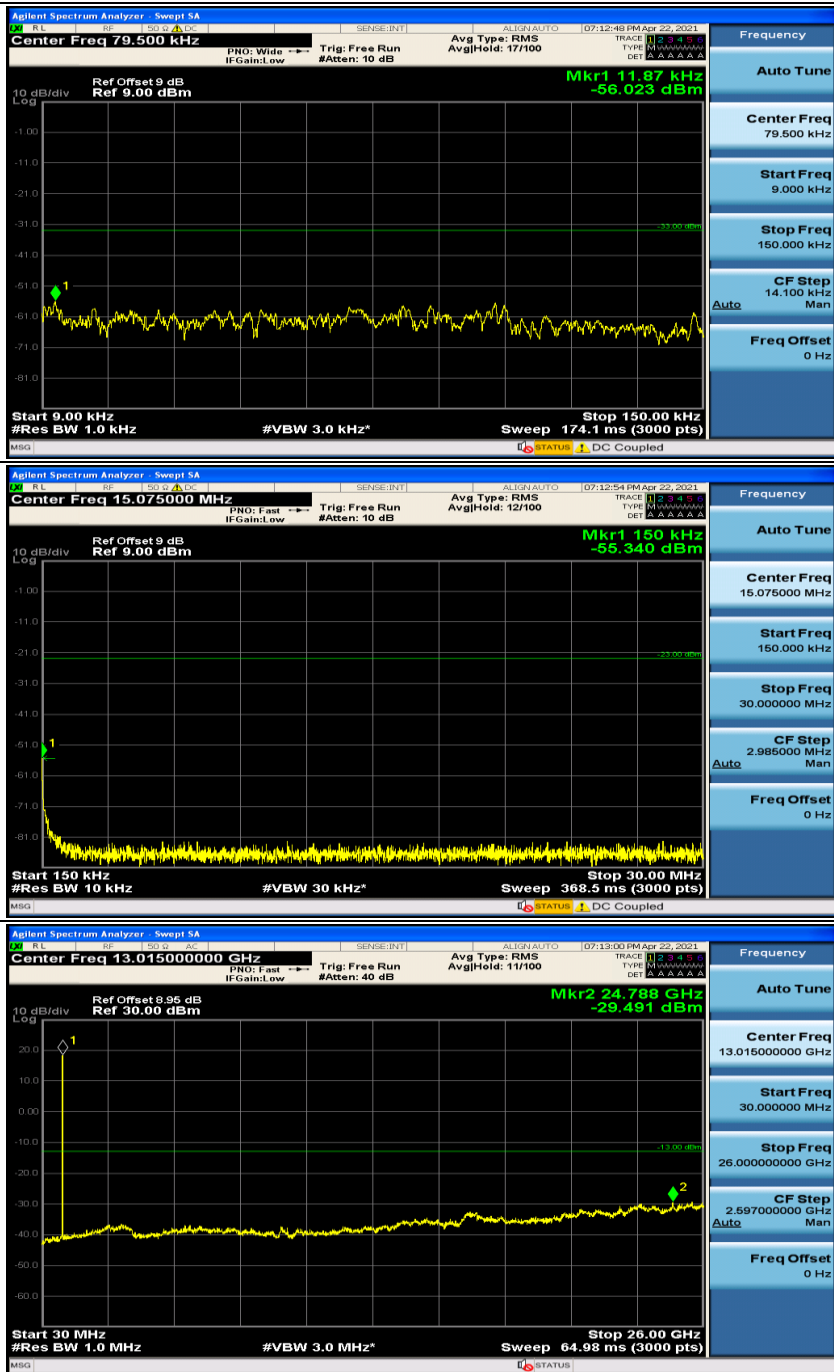


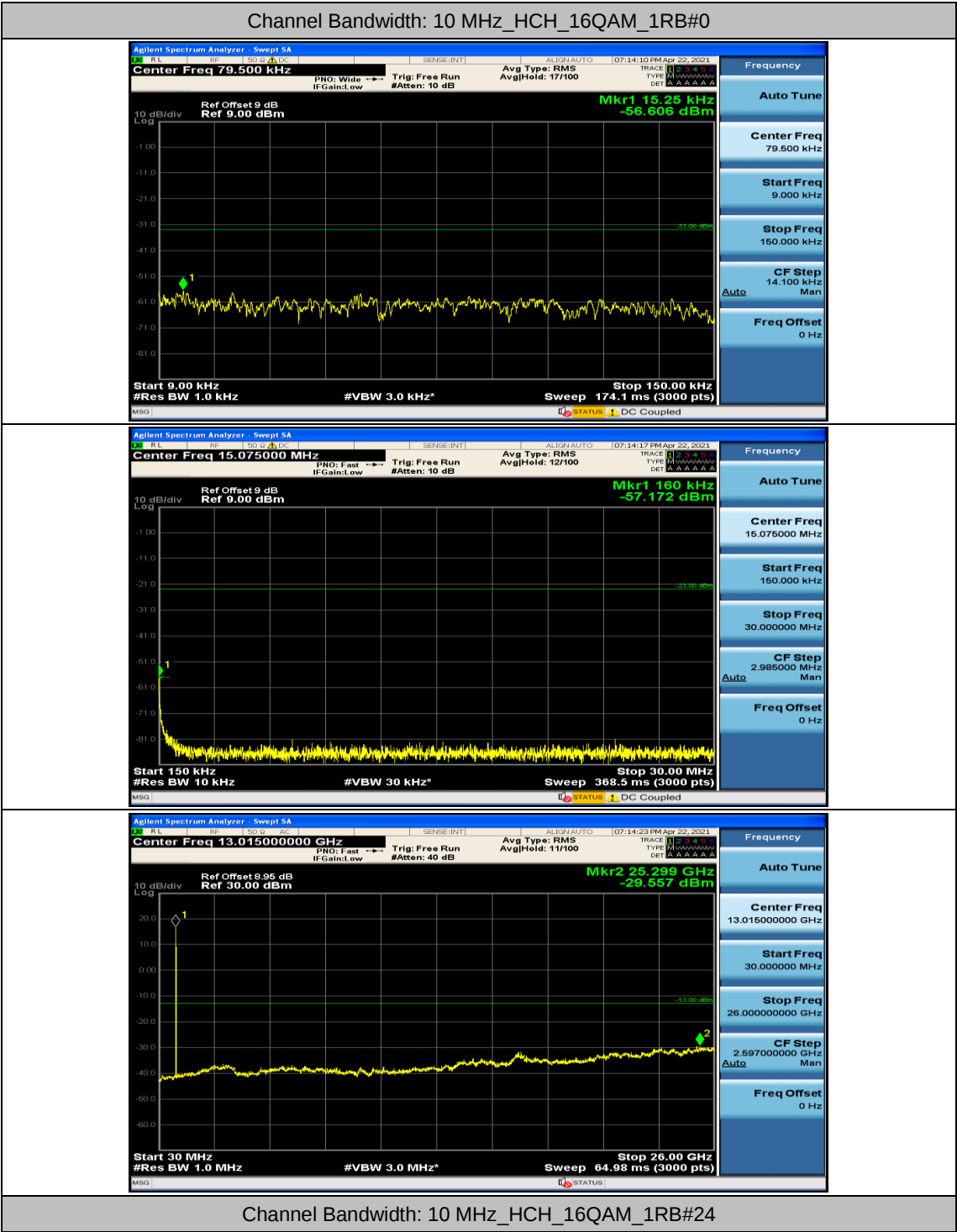


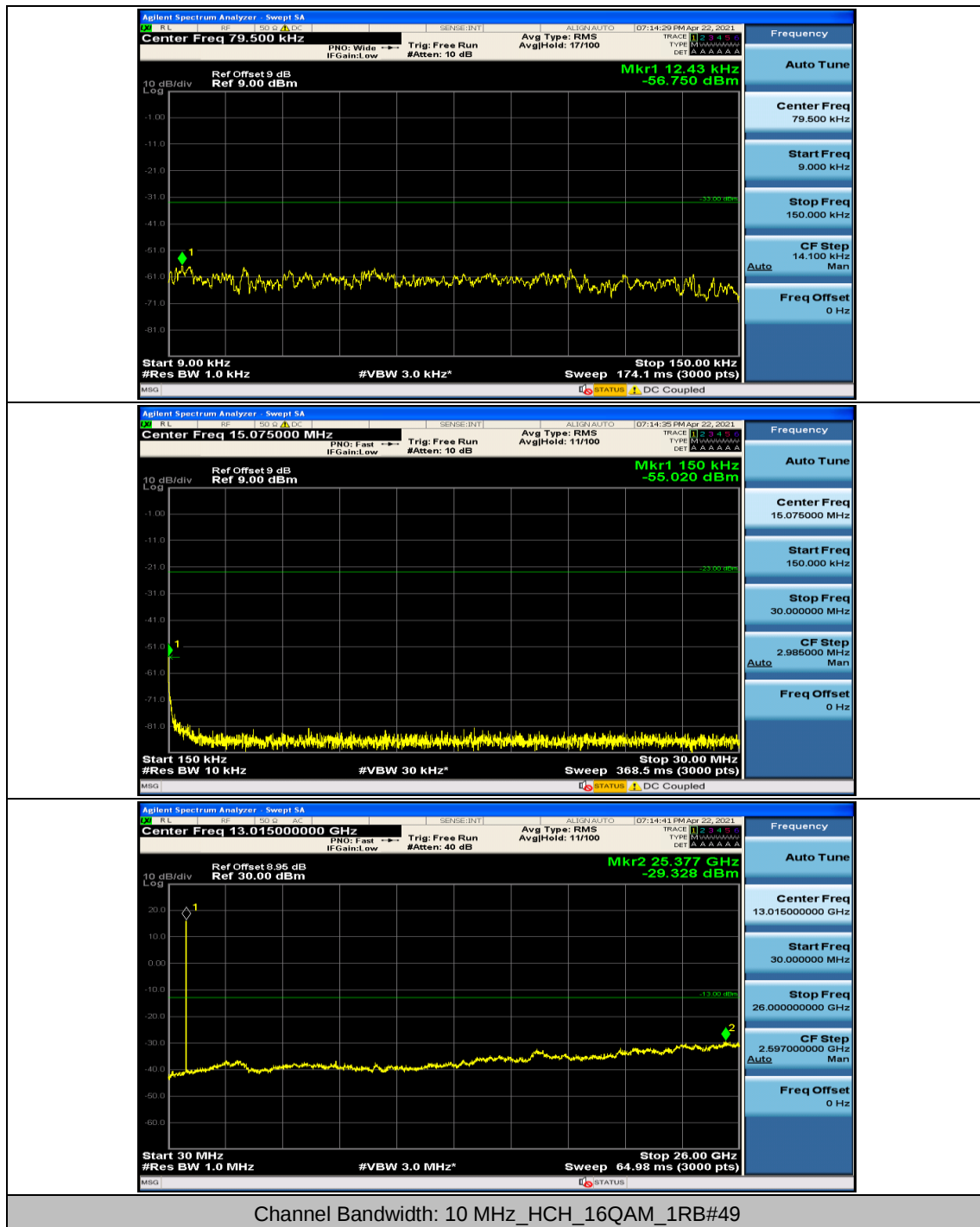


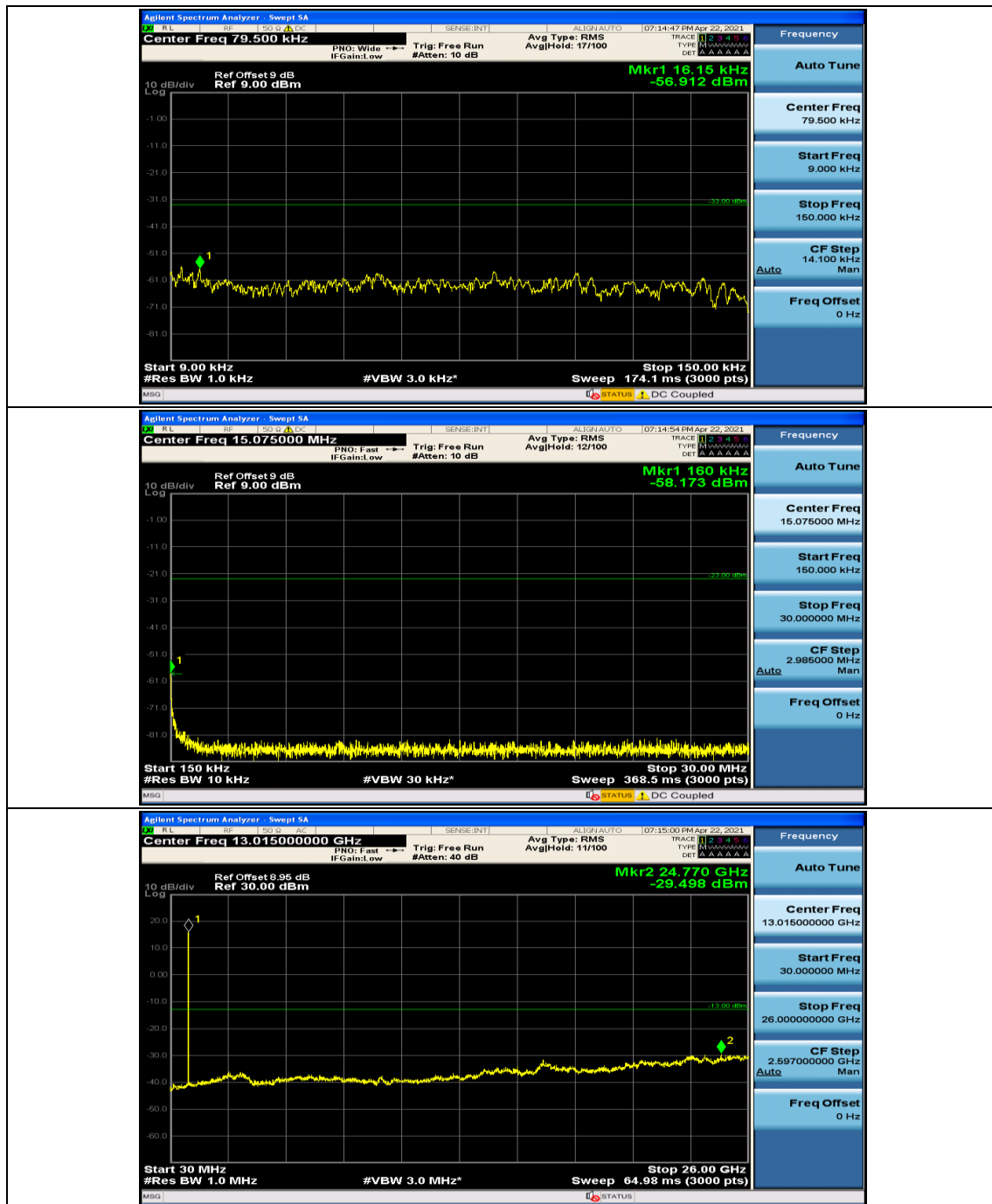












Appendix F: Frequency Stability

Test Result

Channel Bandwidth: 1.4 MHz

Channel Bandwidth: 1.4 MHz							
Voltage							
Modulation	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
QPSK	LCH	VL	TN	2.77	0.003359	± 2.5	PASS
		VN	TN	0.76	0.000922	± 2.5	PASS
		VH	TN	3.04	0.003686	± 2.5	PASS
	MCH	VL	TN	1.39	0.001662	± 2.5	PASS
		VN	TN	2.69	0.003216	± 2.5	PASS
		VH	TN	-1.23	-0.001470	± 2.5	PASS
	HCH	VL	TN	4.03	0.004751	± 2.5	PASS
		VN	TN	3.6	0.004244	± 2.5	PASS
		VH	TN	1.16	0.001367	± 2.5	PASS
16QAM	LCH	VL	TN	-1.02	-0.001237	± 2.5	PASS
		VN	TN	1.34	0.001625	± 2.5	PASS
		VH	TN	3.55	0.004305	± 2.5	PASS
	MCH	VL	TN	4.9	0.005858	± 2.5	PASS
		VN	TN	0.11	0.000132	± 2.5	PASS
		VH	TN	1.77	0.002116	± 2.5	PASS
	HCH	VL	TN	4.95	0.005835	± 2.5	PASS
		VN	TN	2.18	0.002570	± 2.5	PASS
		VH	TN	4.6	0.005423	± 2.5	PASS
Temperature							
Modulation	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
QPSK	LCH	VN	-30	-1.94	-0.002352	± 2.5	PASS
		VN	-20	-1.15	-0.001394	± 2.5	PASS
		VN	-10	2.03	0.002462	± 2.5	PASS
		VN	0	4.27	0.005178	± 2.5	PASS
		VN	10	0.34	0.000412	± 2.5	PASS
		VN	20	-0.01	-0.000012	± 2.5	PASS
		VN	30	3.09	0.003747	± 2.5	PASS
		VN	40	3.45	0.004183	± 2.5	PASS
		VN	50	0.35	0.000424	± 2.5	PASS

	MCH	VN	-30	4.24	0.005069	± 2.5	PASS
		VN	-20	0.26	0.000311	± 2.5	PASS
		VN	-10	1.84	0.002200	± 2.5	PASS
		VN	0	1.62	0.001937	± 2.5	PASS
		VN	10	1.54	0.001841	± 2.5	PASS
		VN	20	1.22	0.001458	± 2.5	PASS
		VN	30	0.37	0.000442	± 2.5	PASS
		VN	40	-1.97	-0.002355	± 2.5	PASS
		VN	50	-1.36	-0.001626	± 2.5	PASS
	HCH	VN	-30	1.64	0.001933	± 2.5	PASS
		VN	-20	-1.56	-0.001839	± 2.5	PASS
		VN	-10	0.27	0.000318	± 2.5	PASS
		VN	0	0.26	0.000306	± 2.5	PASS
		VN	10	4.35	0.005128	± 2.5	PASS
		VN	20	3.86	0.004550	± 2.5	PASS
		VN	30	-1.08	-0.001273	± 2.5	PASS
		VN	40	-0.81	-0.000955	± 2.5	PASS
		VN	50	-0.74	-0.000872	± 2.5	PASS
16QAM	LCH	VN	-30	-1.37	-0.001661	± 2.5	PASS
		VN	-20	-0.97	-0.001176	± 2.5	PASS
		VN	-10	2.93	0.003553	± 2.5	PASS
		VN	0	3.75	0.004547	± 2.5	PASS
		VN	10	-1.16	-0.001407	± 2.5	PASS
		VN	20	2.41	0.002922	± 2.5	PASS
		VN	30	-0.69	-0.000837	± 2.5	PASS
		VN	40	0.37	0.000449	± 2.5	PASS
		VN	50	4.22	0.005117	± 2.5	PASS
	MCH	VN	-30	-1.69	-0.001992	± 2.5	PASS
		VN	-20	3.17	0.003737	± 2.5	PASS
		VN	-10	2.08	0.002452	± 2.5	PASS
		VN	0	1.6	0.001886	± 2.5	PASS
		VN	10	2.45	0.002888	± 2.5	PASS
		VN	20	2.34	0.002758	± 2.5	PASS
		VN	30	3.2	0.003772	± 2.5	PASS
		VN	40	4.13	0.004869	± 2.5	PASS
		VN	50	2.01	0.002369	± 2.5	PASS
	HCH	VN	-30	-1.2	-0.001415	± 2.5	PASS
		VN	-20	3.39	0.003996	± 2.5	PASS
		VN	-10	0.9	0.001061	± 2.5	PASS
		VN	0	2.69	0.003171	± 2.5	PASS
		VN	10	0.4	0.000472	± 2.5	PASS

		VN	20	4.78	0.005635	± 2.5	PASS
		VN	30	2.43	0.002865	± 2.5	PASS
		VN	40	2.07	0.002440	± 2.5	PASS
		VN	50	2.38	0.002806	± 2.5	PASS

Channel Bandwidth: 3 MHz

Channel Bandwidth: 3 MHz+							
Voltage							
Modulation	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
QPSK	LCH	VL	TN	2.77	0.003356	± 2.5	PASS
		VN	TN	2.83	0.003428	± 2.5	PASS
		VH	TN	-1.51	-0.001829	± 2.5	PASS
	MCH	VL	TN	2.87	0.003431	± 2.5	PASS
		VN	TN	3.06	0.003658	± 2.5	PASS
		VH	TN	1.61	0.001925	± 2.5	PASS
	HCH	VL	TN	-1.48	-0.001746	± 2.5	PASS
		VN	TN	2.77	0.003268	± 2.5	PASS
		VH	TN	4.77	0.005628	± 2.5	PASS
16QAM	LCH	VL	TN	0.9	0.001090	± 2.5	PASS
		VN	TN	0.54	0.000654	± 2.5	PASS
		VH	TN	1.78	0.002156	± 2.5	PASS
	MCH	VL	TN	-0.74	-0.000885	± 2.5	PASS
		VN	TN	0.85	0.001016	± 2.5	PASS
		VH	TN	0.33	0.000395	± 2.5	PASS
	HCH	VL	TN	3.91	0.004614	± 2.5	PASS
		VN	TN	4.94	0.005829	± 2.5	PASS
		VH	TN	2.6	0.003068	± 2.5	PASS
Temperature							
Modulation	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
QPSK	LCH	VN	-30	3.71	0.004494	± 2.5	PASS
		VN	-20	4.34	0.005257	± 2.5	PASS
		VN	-10	4.31	0.005221	± 2.5	PASS
		VN	0	1.57	0.001902	± 2.5	PASS
		VN	10	2.95	0.003574	± 2.5	PASS
		VN	20	-1.04	-0.001260	± 2.5	PASS
		VN	30	3.67	0.004446	± 2.5	PASS
		VN	40	3.74	0.004531	± 2.5	PASS
		VN	50	-0.12	-0.000145	± 2.5	PASS
	MCH	VN	-30	-0.1	-0.000120	± 2.5	PASS

		VN	-20	1.2	0.001435	± 2.5	PASS
		VN	-10	2.6	0.003108	± 2.5	PASS
		VN	0	4.42	0.005284	± 2.5	PASS
		VN	10	1.92	0.002295	± 2.5	PASS
		VN	20	-1.5	-0.001793	± 2.5	PASS
		VN	30	4.33	0.005176	± 2.5	PASS
		VN	40	1.89	0.002259	± 2.5	PASS
		VN	50	-0.35	-0.000418	± 2.5	PASS
	HCH	VN	-30	2.98	0.003516	± 2.5	PASS
		VN	-20	-0.95	-0.001121	± 2.5	PASS
		VN	-10	4.05	0.004779	± 2.5	PASS
		VN	0	-0.88	-0.001038	± 2.5	PASS
		VN	10	1.94	0.002289	± 2.5	PASS
		VN	20	0.21	0.000248	± 2.5	PASS
		VN	30	0.73	0.000861	± 2.5	PASS
		VN	40	-0.48	-0.000566	± 2.5	PASS
		VN	50	0.84	0.000991	± 2.5	PASS
16QAM	LCH	VN	-30	-0.04	-0.000048	± 2.5	PASS
		VN	-20	3.2	0.003825	± 2.5	PASS
		VN	-10	3.2	0.003825	± 2.5	PASS
		VN	0	4.94	0.005906	± 2.5	PASS
		VN	10	1.26	0.001506	± 2.5	PASS
		VN	20	0.48	0.000574	± 2.5	PASS
		VN	30	1.83	0.002188	± 2.5	PASS
		VN	40	3.16	0.003778	± 2.5	PASS
		VN	50	-1.72	-0.002056	± 2.5	PASS
	MCH	VN	-30	3.76	0.004437	± 2.5	PASS
		VN	-20	0.36	0.000425	± 2.5	PASS
		VN	-10	2.34	0.002761	± 2.5	PASS
		VN	0	-0.85	-0.001003	± 2.5	PASS
		VN	10	0.52	0.000614	± 2.5	PASS
		VN	20	3.85	0.004543	± 2.5	PASS
		VN	30	0.92	0.001086	± 2.5	PASS
		VN	40	0.09	0.000106	± 2.5	PASS
		VN	50	2.39	0.002820	± 2.5	PASS
	HCH	VN	-30	1.28	0.001510	± 2.5	PASS
		VN	-20	1.06	0.001251	± 2.5	PASS
		VN	-10	-1.36	-0.001605	± 2.5	PASS
		VN	0	3.99	0.004708	± 2.5	PASS
		VN	10	0.8	0.000944	± 2.5	PASS
		VN	20	3.7	0.004366	± 2.5	PASS

		VN	30	4.55	0.005369	± 2.5	PASS
		VN	40	0.61	0.000720	± 2.5	PASS
		VN	50	3.95	0.004661	± 2.5	PASS

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	2.77	0.003351	± 2.5	PASS
		VN	TN	0.24	0.000290	± 2.5	PASS
		VH	TN	2.45	0.002964	± 2.5	PASS
	MCH	VL	TN	-1.77	-0.002116	± 2.5	PASS
		VN	TN	2.98	0.003562	± 2.5	PASS
		VH	TN	1.79	0.002140	± 2.5	PASS
	HCH	VL	TN	3.87	0.004572	± 2.5	PASS
		VN	TN	1.62	0.001914	± 2.5	PASS
		VH	TN	2.88	0.003402	± 2.5	PASS
16QAM	LCH	VL	TN	1.65	0.001996	± 2.5	PASS
		VN	TN	2.06	0.002492	± 2.5	PASS
		VH	TN	-1.3	-0.001573	± 2.5	PASS
	MCH	VL	TN	3.09	0.003694	± 2.5	PASS
		VN	TN	1.55	0.001853	± 2.5	PASS
		VH	TN	-1.07	-0.001279	± 2.5	PASS
	HCH	VL	TN	1.39	0.001642	± 2.5	PASS
		VN	TN	1.21	0.001429	± 2.5	PASS
		VH	TN	4.97	0.005871	± 2.5	PASS
Temperature							
Modulation	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
QPSK	LCH	VN	-30	3.82	0.004622	± 2.5	PASS
		VN	-20	0.82	0.000992	± 2.5	PASS
		VN	-10	3.28	0.003969	± 2.5	PASS
		VN	0	1.27	0.001537	± 2.5	PASS
		VN	10	3.3	0.003993	± 2.5	PASS
		VN	20	3.49	0.004223	± 2.5	PASS
		VN	30	-1.03	-0.001246	± 2.5	PASS
		VN	40	4.17	0.005045	± 2.5	PASS
		VN	50	1.59	0.001924	± 2.5	PASS
	MCH	VN	-30	-0.78	-0.000932	± 2.5	PASS
		VN	-20	-1	-0.001195	± 2.5	PASS

		VN	-10	-1.91	-0.002283	± 2.5	PASS	
		VN	0	3.9	0.004662	± 2.5	PASS	
		VN	10	1.93	0.002307	± 2.5	PASS	
		VN	20	4.72	0.005643	± 2.5	PASS	
		VN	30	2.95	0.003527	± 2.5	PASS	
		VN	40	1.57	0.001877	± 2.5	PASS	
		VN	50	-0.06	-0.000072	± 2.5	PASS	
	HCH	VN	-30	-0.18	-0.000213	± 2.5	PASS	
		VN	-20	4.8	0.005670	± 2.5	PASS	
		VN	-10	4.87	0.005753	± 2.5	PASS	
		VN	0	4.11	0.004855	± 2.5	PASS	
		VN	10	0.91	0.001075	± 2.5	PASS	
		VN	20	1.62	0.001914	± 2.5	PASS	
		VN	30	3.09	0.003650	± 2.5	PASS	
		VN	40	0.12	0.000142	± 2.5	PASS	
		VN	50	4.24	0.005009	± 2.5	PASS	
	16QAM	LCH	VN	-30	-0.03	-0.000036	± 2.5	PASS
			VN	-20	3.57	0.004268	± 2.5	PASS
VN			-10	4.13	0.004937	± 2.5	PASS	
VN			0	1.56	0.001865	± 2.5	PASS	
VN			10	-0.16	-0.000191	± 2.5	PASS	
VN			20	-1.88	-0.002247	± 2.5	PASS	
VN			30	-1.54	-0.001841	± 2.5	PASS	
VN			40	4.78	0.005714	± 2.5	PASS	
VN			50	-0.15	-0.000179	± 2.5	PASS	
MCH		VN	-30	2.38	0.002812	± 2.5	PASS	
		VN	-20	4.41	0.005210	± 2.5	PASS	
		VN	-10	2.52	0.002977	± 2.5	PASS	
		VN	0	1.32	0.001559	± 2.5	PASS	
		VN	10	-0.88	-0.001040	± 2.5	PASS	
		VN	20	3.45	0.004076	± 2.5	PASS	
		VN	30	-1.53	-0.001807	± 2.5	PASS	
		VN	40	2.71	0.003201	± 2.5	PASS	
		VN	50	0.55	0.000650	± 2.5	PASS	
HCH		VN	-30	0.59	0.000697	± 2.5	PASS	
		VN	-20	-0.93	-0.001099	± 2.5	PASS	
		VN	-10	3.13	0.003698	± 2.5	PASS	
		VN	0	-1.29	-0.001524	± 2.5	PASS	
		VN	10	1.94	0.002292	± 2.5	PASS	
		VN	20	0.46	0.000543	± 2.5	PASS	
		VN	30	2.39	0.002823	± 2.5	PASS	

		VN	40	2.69	0.003178	± 2.5	PASS
		VN	50	-0.99	-0.001170	± 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	2.77	0.003341	± 2.5	PASS
		VN	TN	-1.87	-0.002256	± 2.5	PASS
		VH	TN	2.19	0.002642	± 2.5	PASS
	MCH	VL	TN	3.88	0.004638	± 2.5	PASS
		VN	TN	4.27	0.005105	± 2.5	PASS
		VH	TN	0.77	0.000921	± 2.5	PASS
	HCH	VL	TN	4.47	0.005296	± 2.5	PASS
		VN	TN	2.47	0.002927	± 2.5	PASS
		VH	TN	3.01	0.003566	± 2.5	PASS
16QAM	LCH	VL	TN	2.18	0.002630	± 2.5	PASS
		VN	TN	-1.09	-0.001315	± 2.5	PASS
		VH	TN	1.92	0.002316	± 2.5	PASS
	MCH	VL	TN	1.98	0.002367	± 2.5	PASS
		VN	TN	4.12	0.004925	± 2.5	PASS
		VH	TN	-1.41	-0.001686	± 2.5	PASS
	HCH	VL	TN	-1.24	-0.001469	± 2.5	PASS
		VN	TN	0.08	0.000095	± 2.5	PASS
		VH	TN	1.78	0.002109	± 2.5	PASS
Temperature							
Modulation	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
QPSK	LCH	VN	-30	4.08	0.004922	± 2.5	PASS
		VN	-20	1.42	0.001713	± 2.5	PASS
		VN	-10	2.46	0.002967	± 2.5	PASS
		VN	0	3.43	0.004138	± 2.5	PASS
		VN	10	-0.15	-0.000181	± 2.5	PASS
		VN	20	-0.4	-0.000483	± 2.5	PASS
		VN	30	-0.43	-0.000519	± 2.5	PASS
		VN	40	0.9	0.001086	± 2.5	PASS
		VN	50	2.66	0.003209	± 2.5	PASS
	MCH	VN	-30	2.11	0.002522	± 2.5	PASS
		VN	-20	0.79	0.000944	± 2.5	PASS
		VN	-10	2.17	0.002594	± 2.5	PASS

		VN	0	3.75	0.004483	± 2.5	PASS
		VN	10	-0.86	-0.001028	± 2.5	PASS
		VN	20	3.29	0.003933	± 2.5	PASS
		VN	30	1.56	0.001865	± 2.5	PASS
		VN	40	0.38	0.000454	± 2.5	PASS
		VN	50	-0.07	-0.000084	± 2.5	PASS
	HCH	VN	-30	3.32	0.003934	± 2.5	PASS
		VN	-20	1.19	0.001410	± 2.5	PASS
		VN	-10	3.52	0.004171	± 2.5	PASS
		VN	0	3.16	0.003744	± 2.5	PASS
		VN	10	2.59	0.003069	± 2.5	PASS
		VN	20	3.11	0.003685	± 2.5	PASS
		VN	30	-0.63	-0.000746	± 2.5	PASS
		VN	40	0.2	0.000237	± 2.5	PASS
		VN	50	-0.98	-0.001161	± 2.5	PASS
16QAM	LCH	VN	-30	4.08	0.004922	± 2.5	PASS
		VN	-20	0.65	0.000784	± 2.5	PASS
		VN	-10	2.47	0.002979	± 2.5	PASS
		VN	0	-1.51	-0.001821	± 2.5	PASS
		VN	10	4.83	0.005826	± 2.5	PASS
		VN	20	0.53	0.000639	± 2.5	PASS
		VN	30	1.56	0.001882	± 2.5	PASS
		VN	40	-0.41	-0.000495	± 2.5	PASS
		VN	50	0.54	0.000651	± 2.5	PASS
	MCH	VN	-30	1.62	0.001937	± 2.5	PASS
		VN	-20	-0.33	-0.000395	± 2.5	PASS
		VN	-10	-0.8	-0.000956	± 2.5	PASS
		VN	0	2.89	0.003455	± 2.5	PASS
		VN	10	1.84	0.002200	± 2.5	PASS
		VN	20	-1.58	-0.001889	± 2.5	PASS
		VN	30	1.13	0.001351	± 2.5	PASS
		VN	40	1.89	0.002259	± 2.5	PASS
		VN	50	-0.25	-0.000299	± 2.5	PASS
	HCH	VN	-30	4.68	0.005545	± 2.5	PASS
		VN	-20	0.14	0.000166	± 2.5	PASS
		VN	-10	4.87	0.005770	± 2.5	PASS
		VN	0	2.89	0.003424	± 2.5	PASS
		VN	10	3.01	0.003566	± 2.5	PASS
		VN	20	3.36	0.003981	± 2.5	PASS
		VN	30	5	0.005924	± 2.5	PASS
		VN	40	1.84	0.002180	± 2.5	PASS

		VN	50	2.31	0.002737	± 2.5	PASS
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