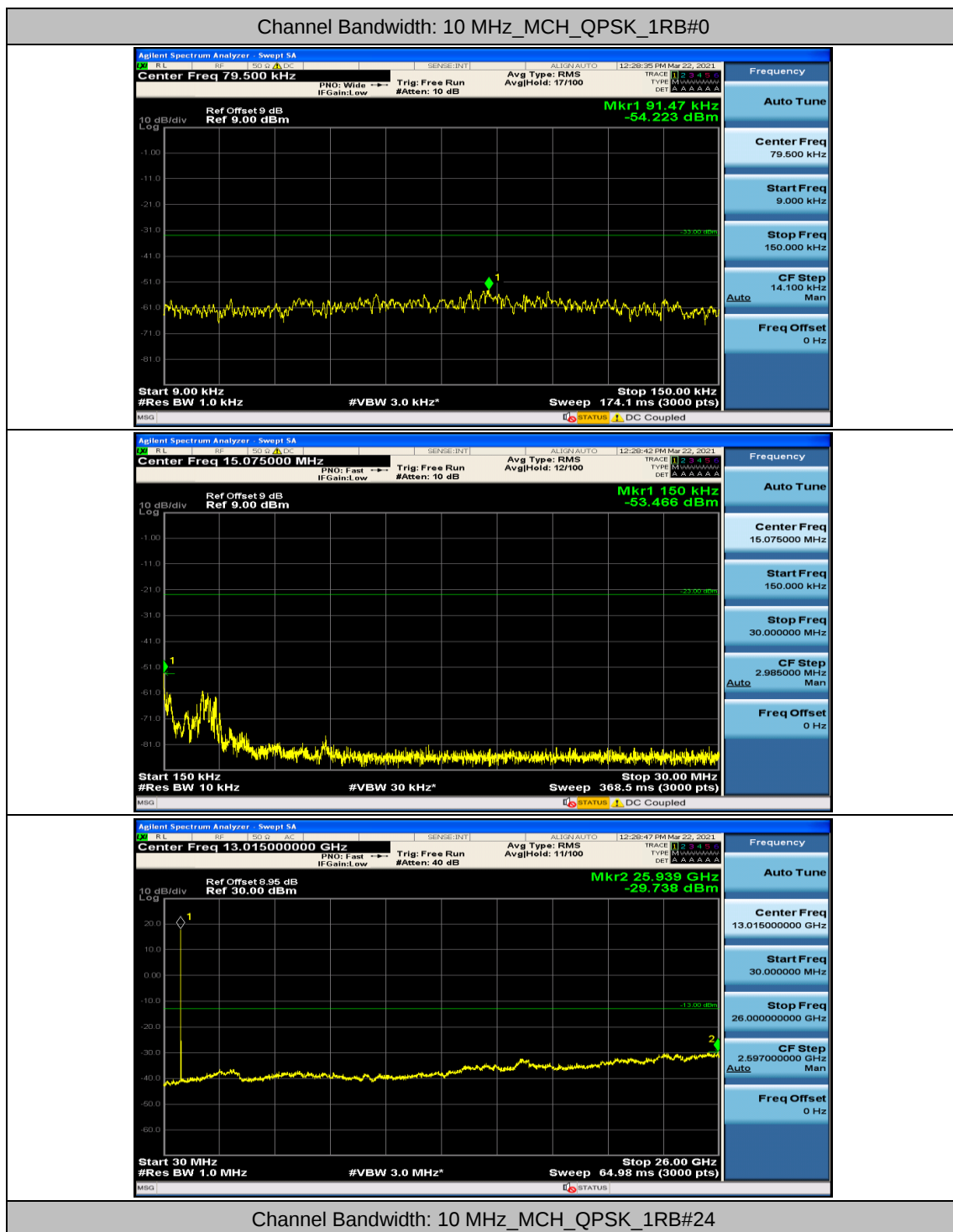
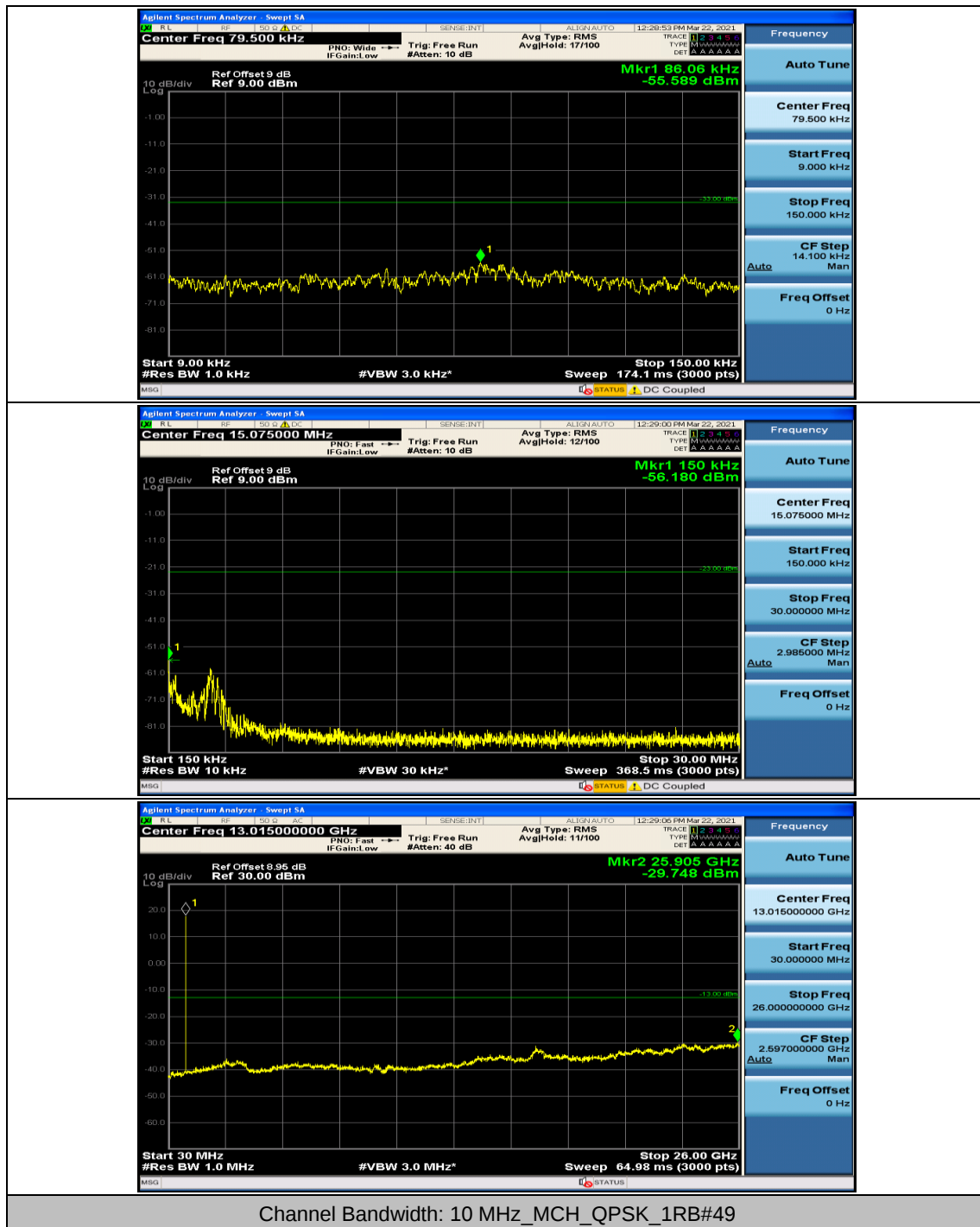
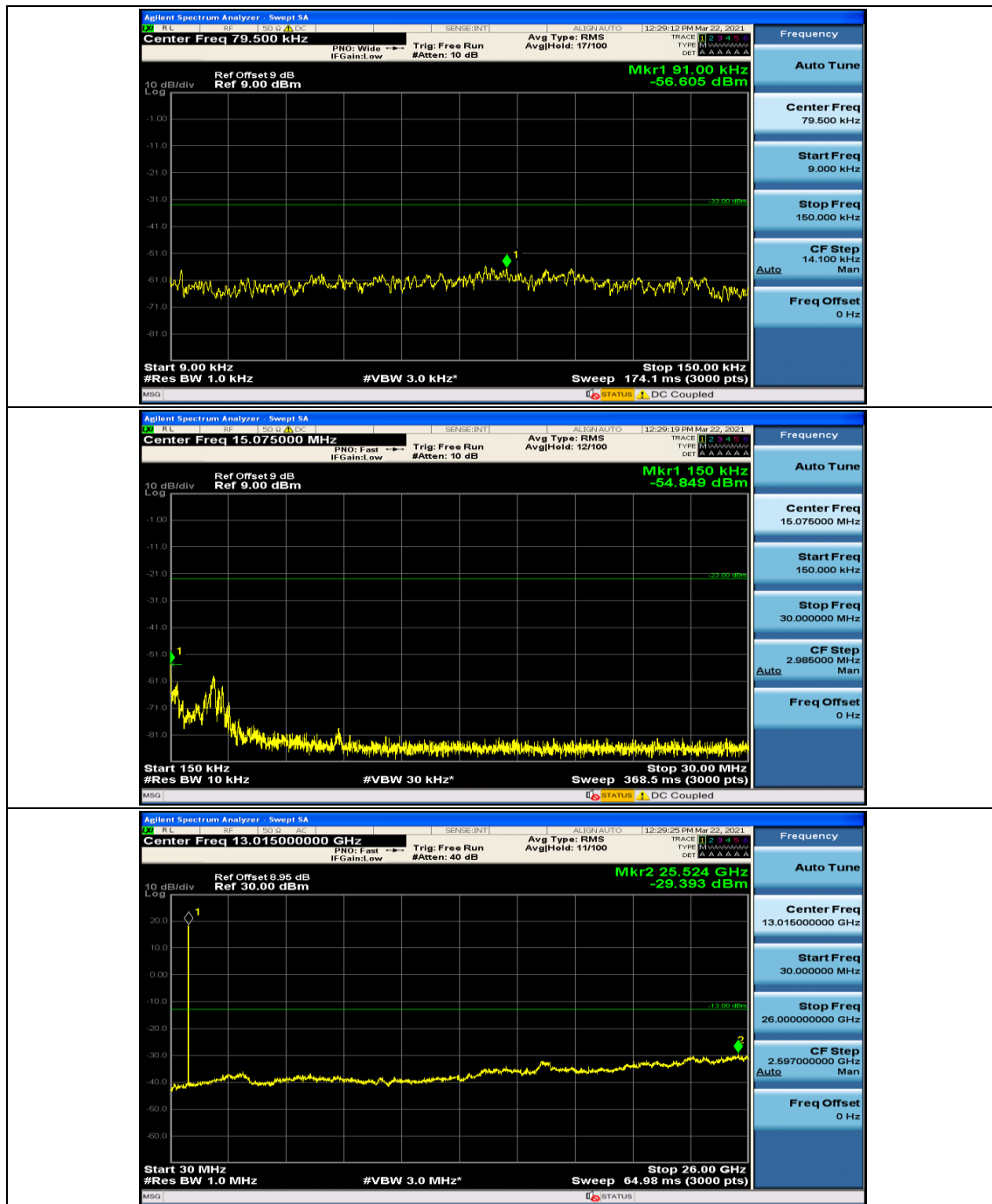
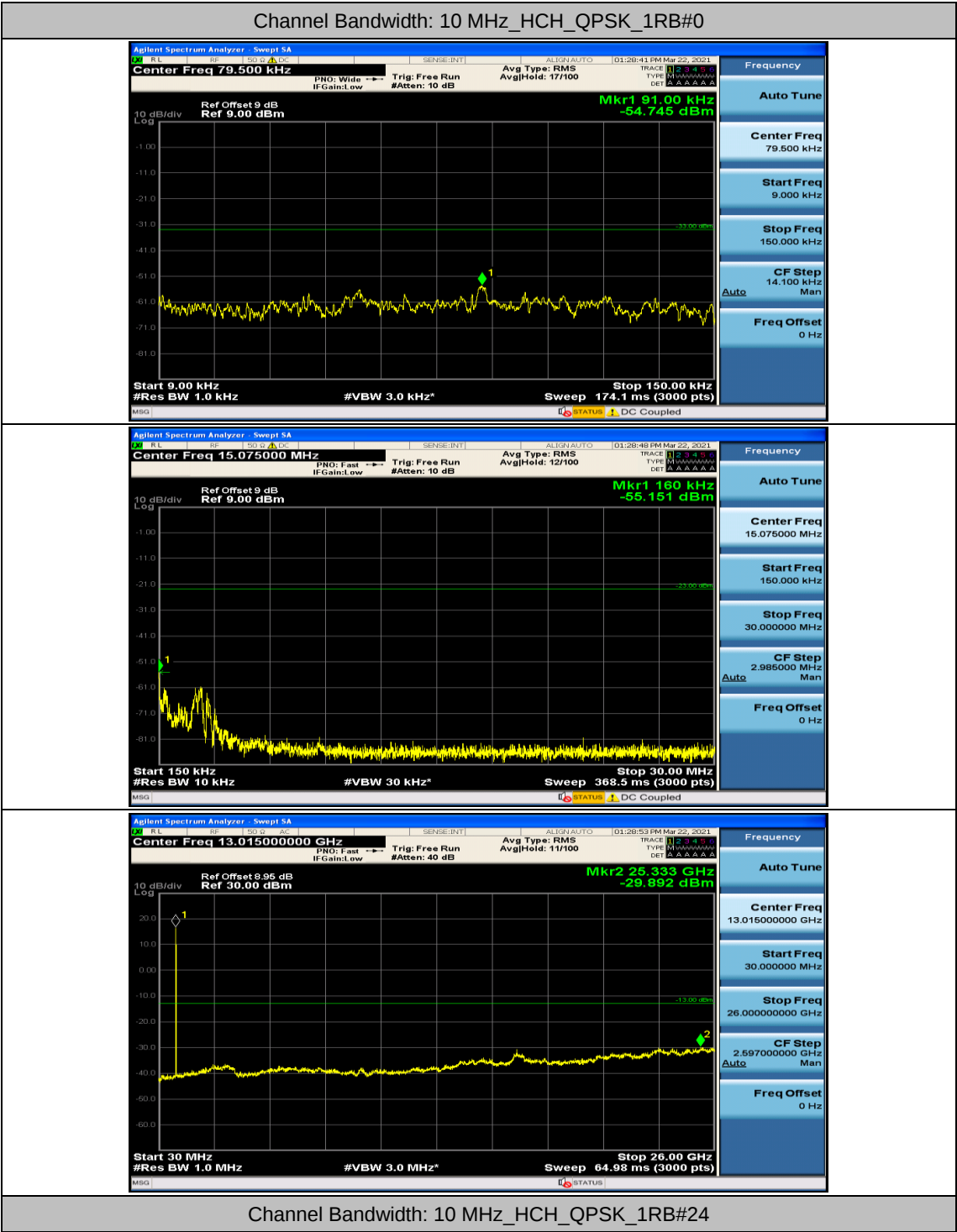
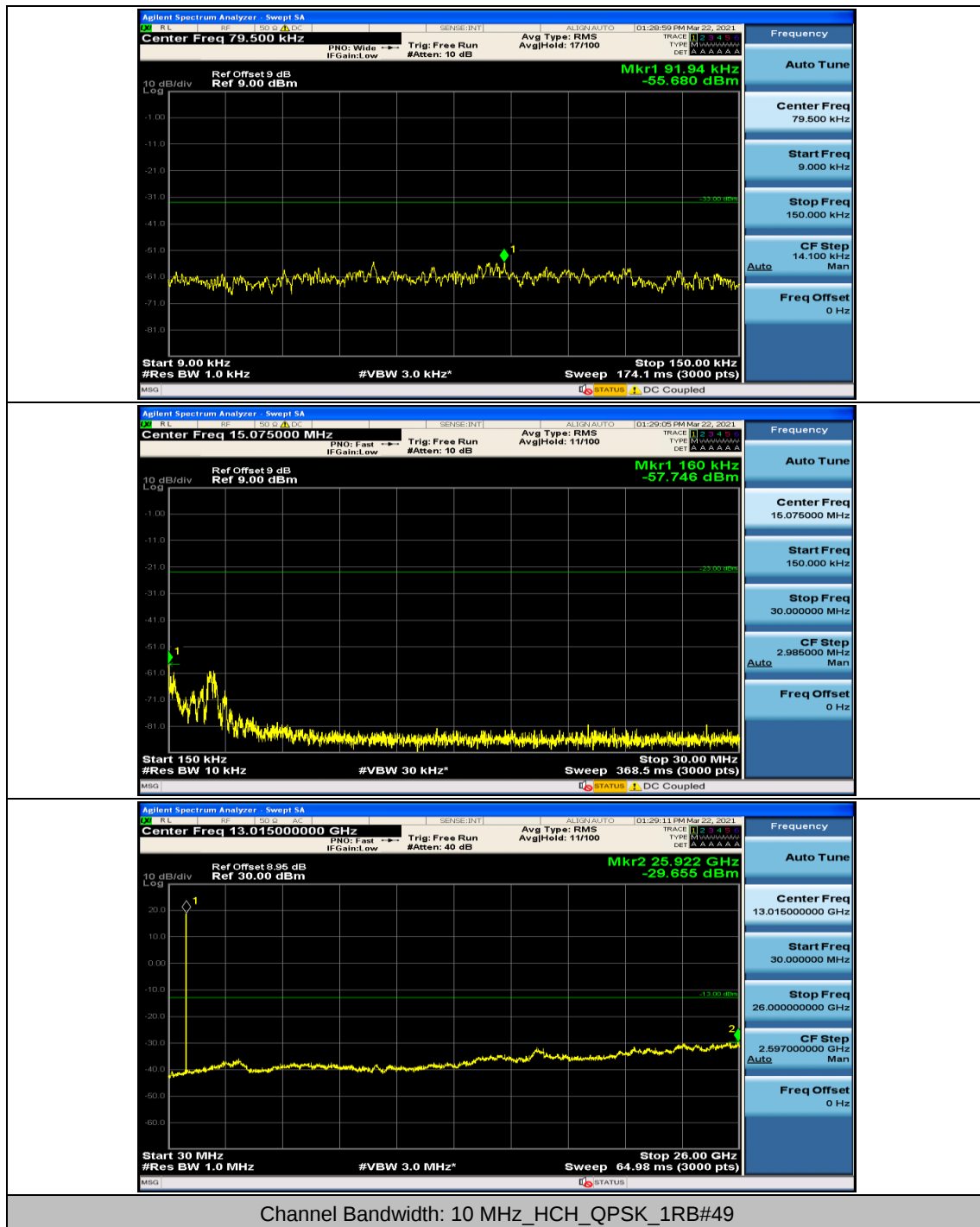


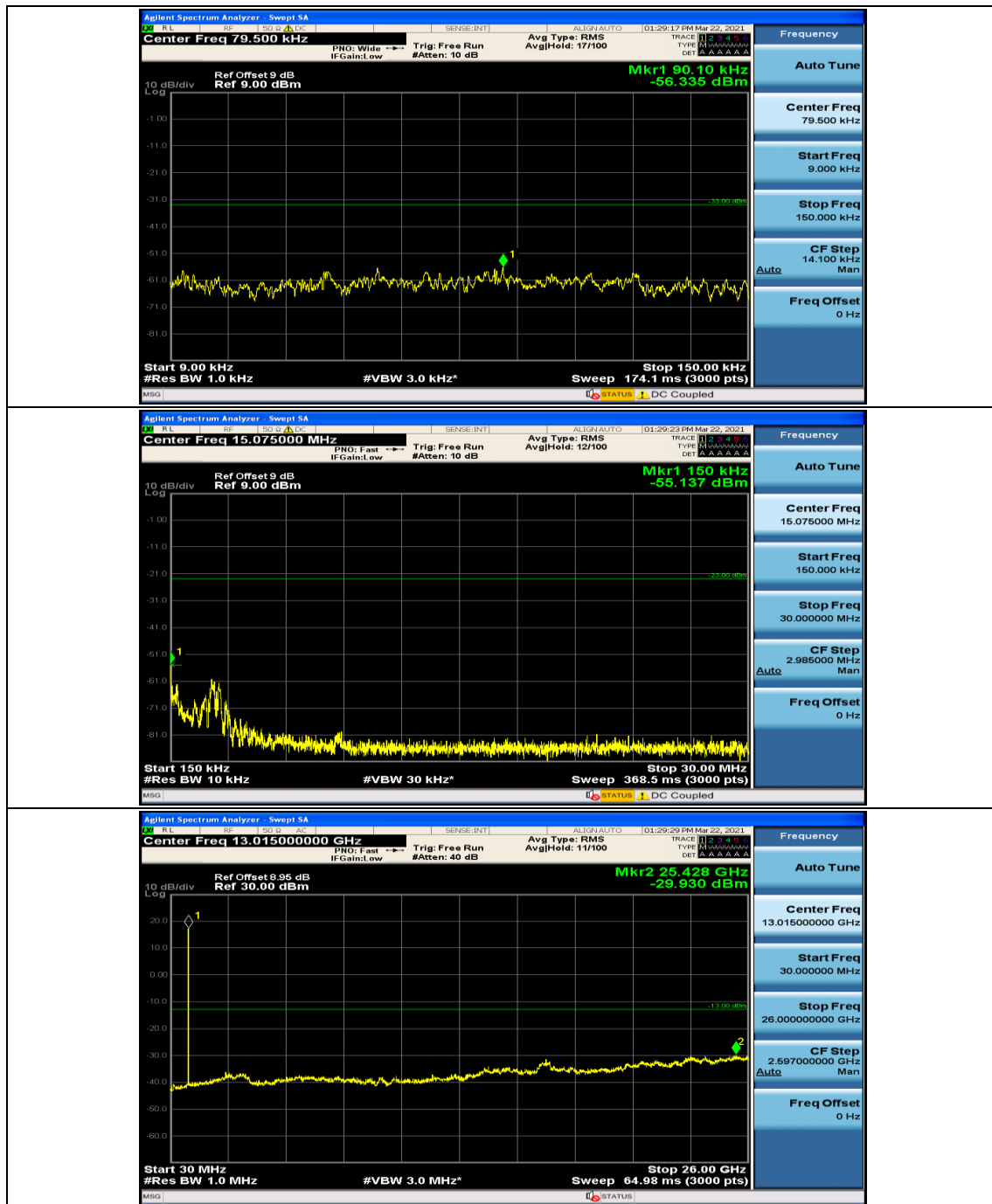


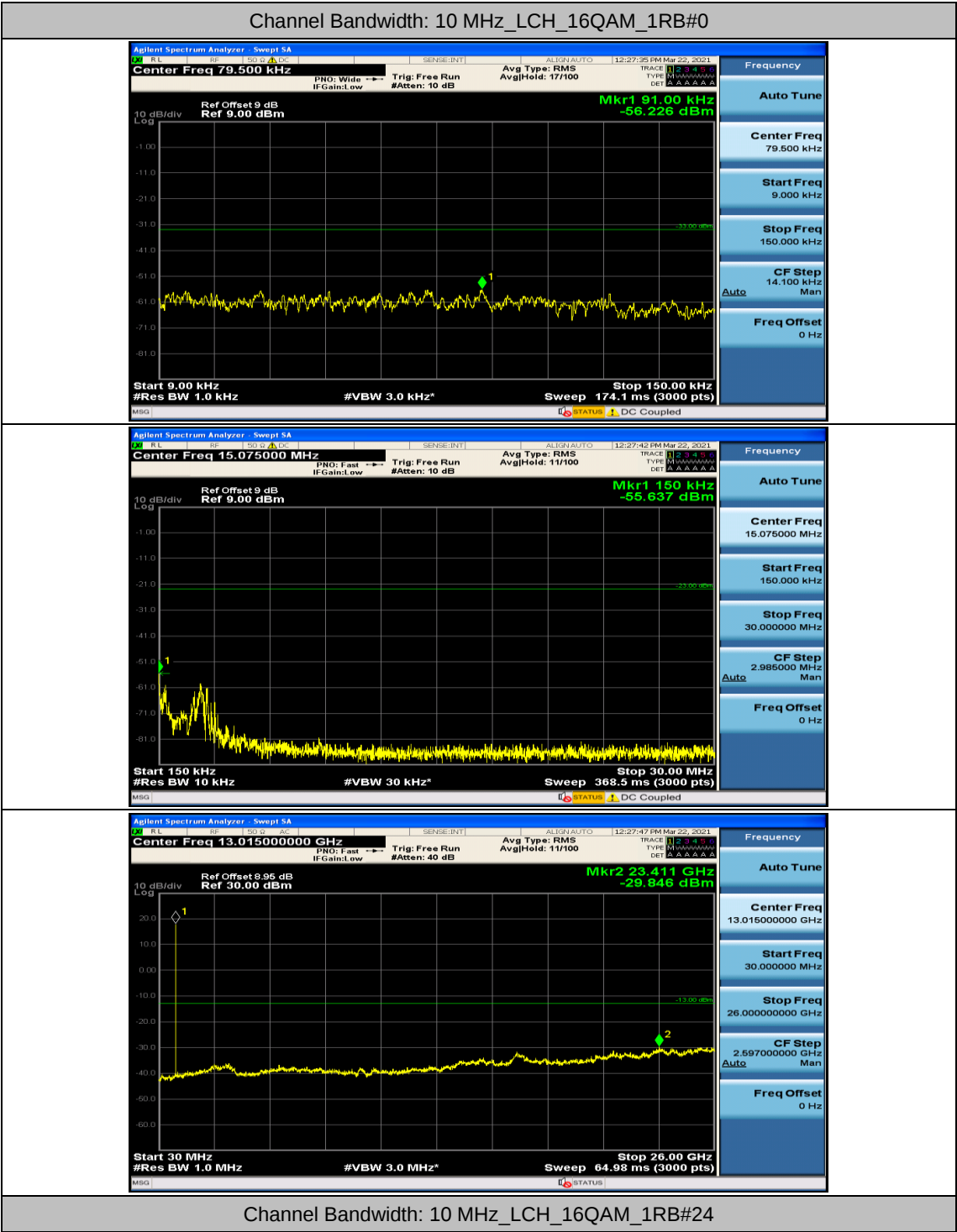


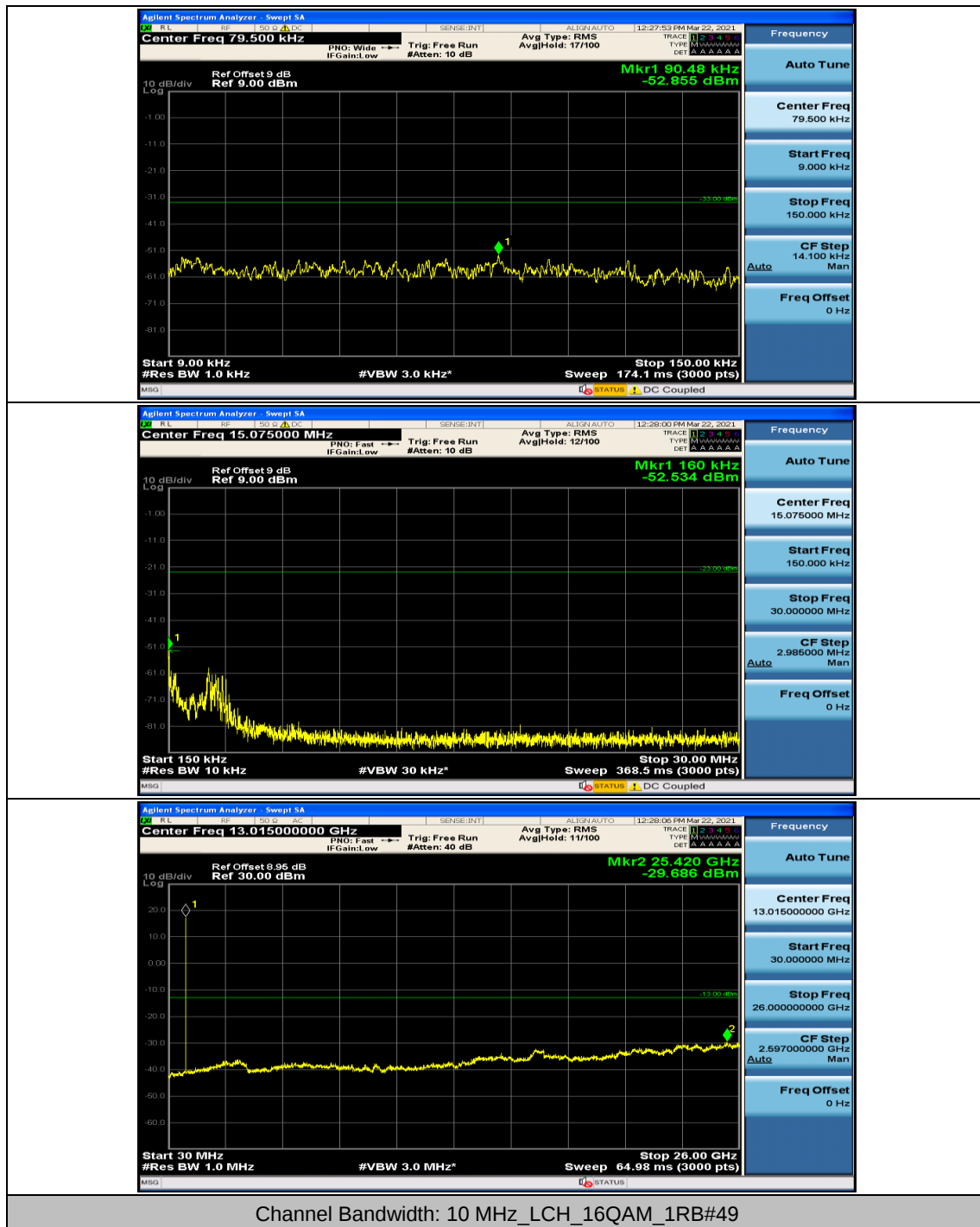


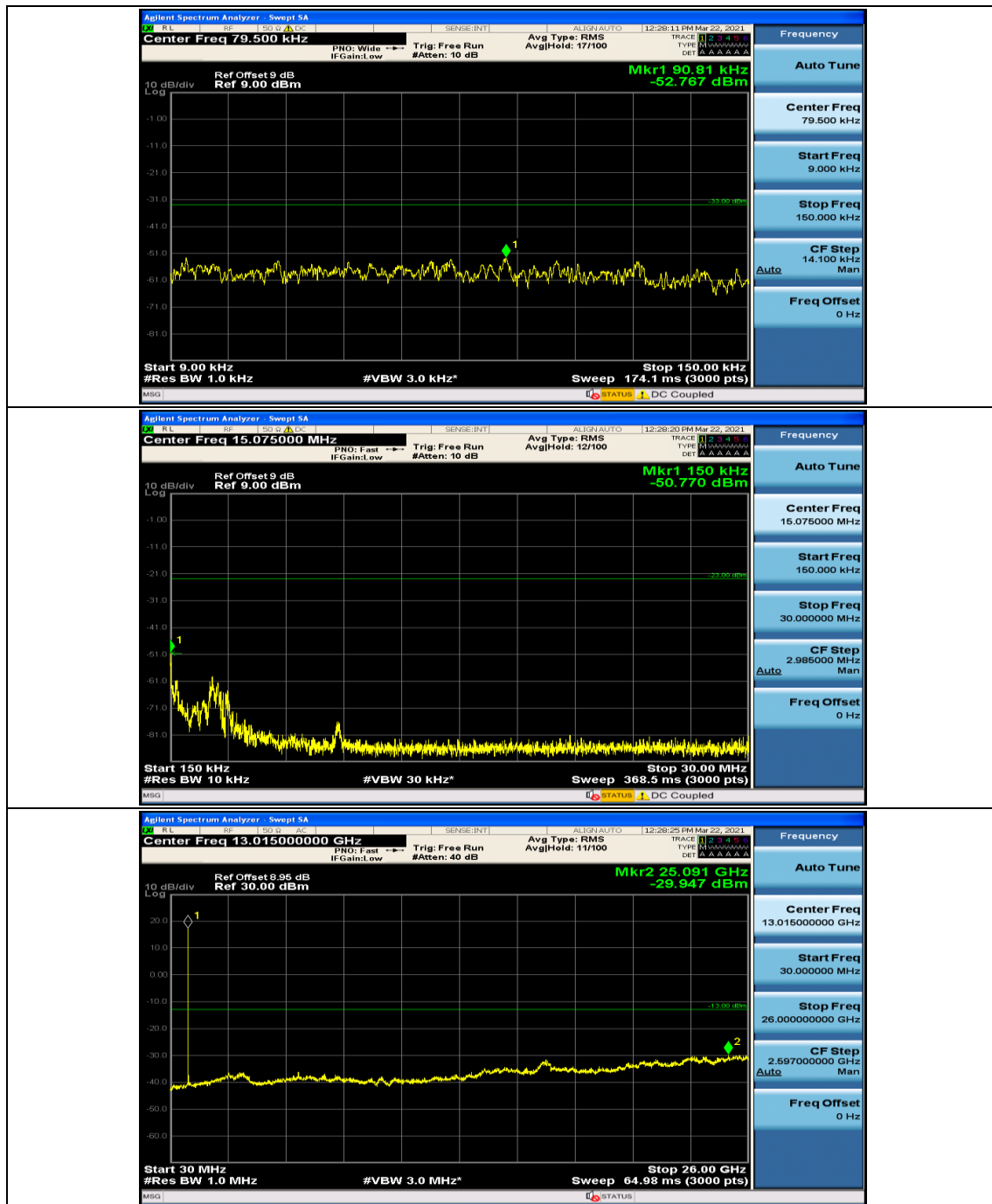


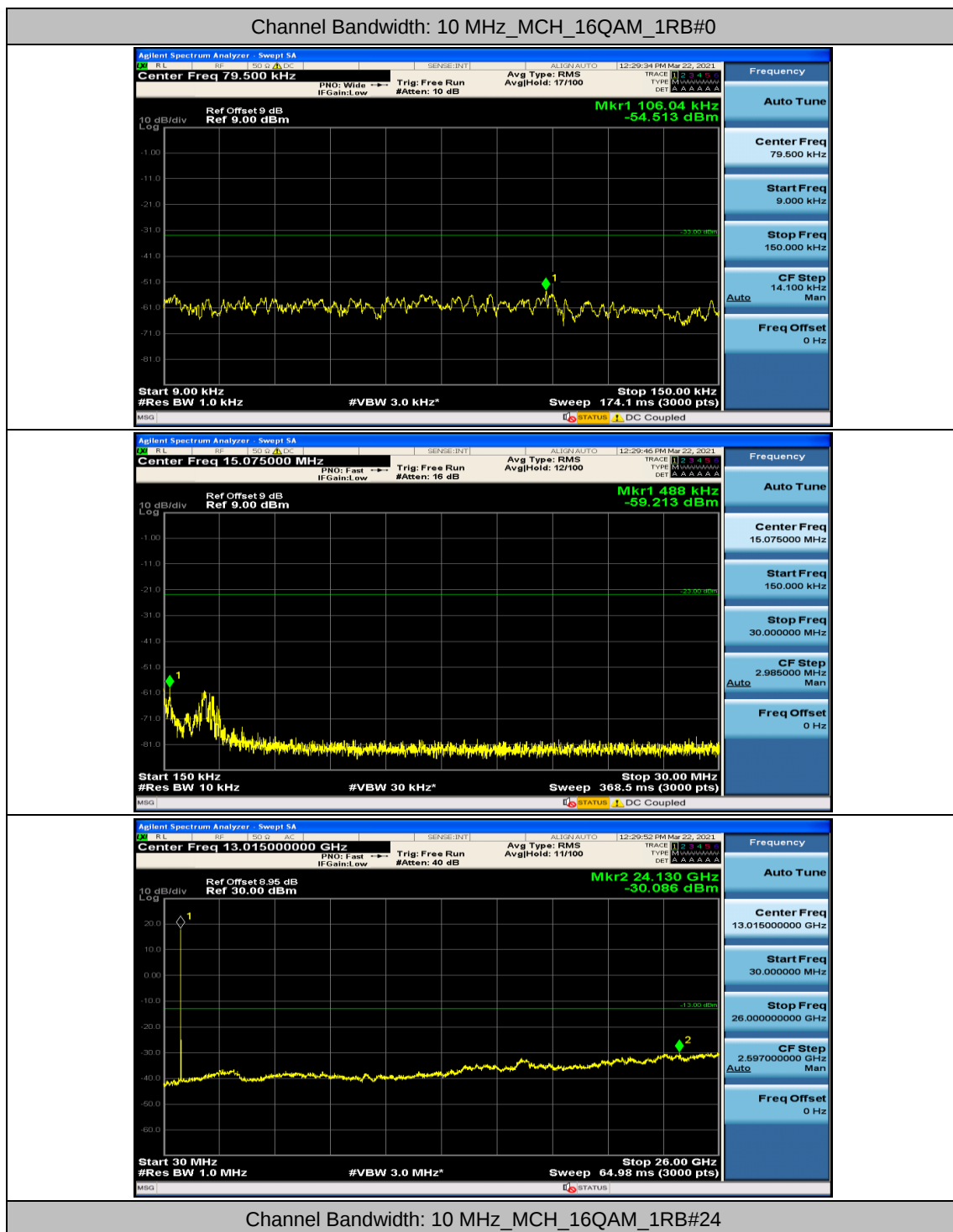


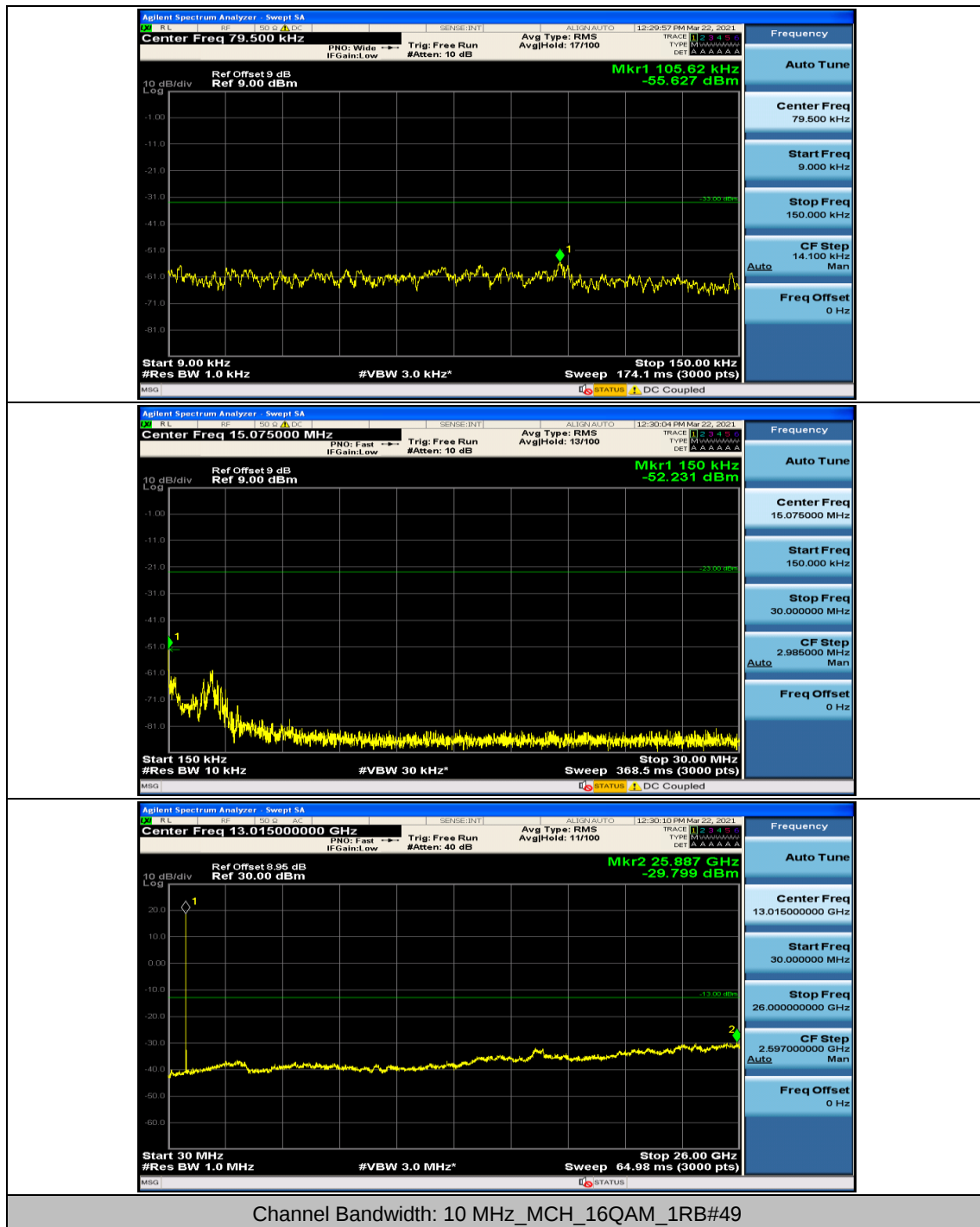


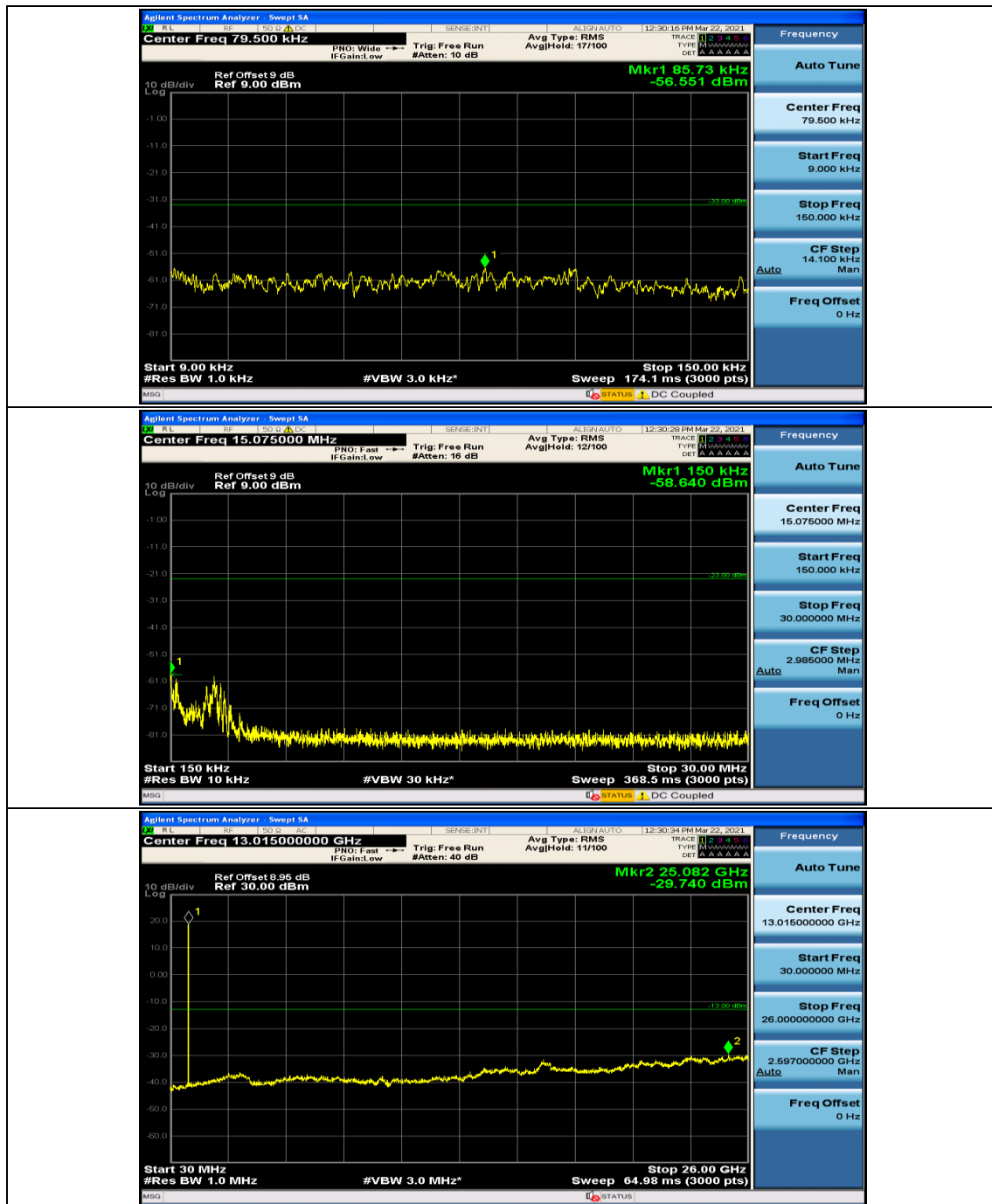


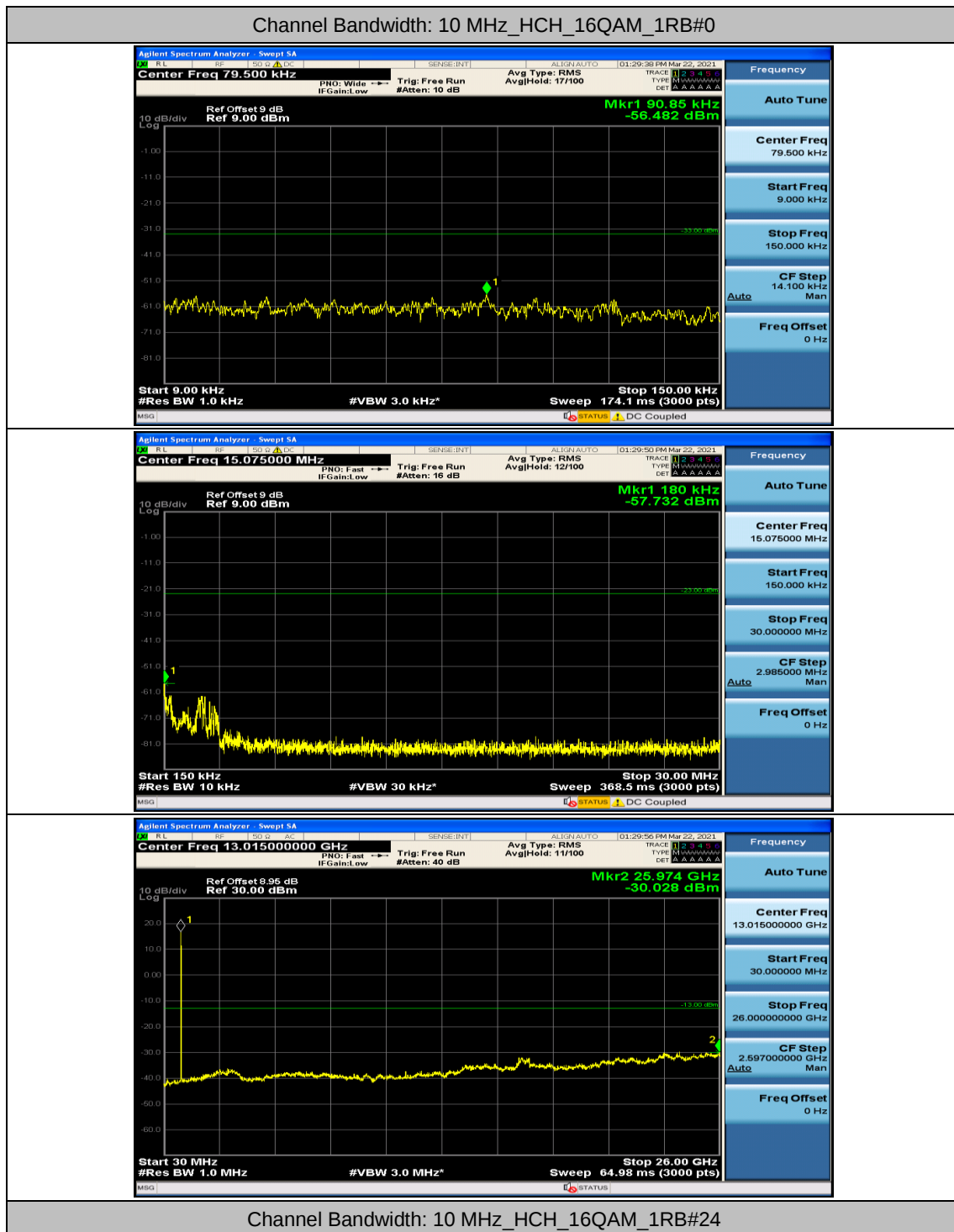


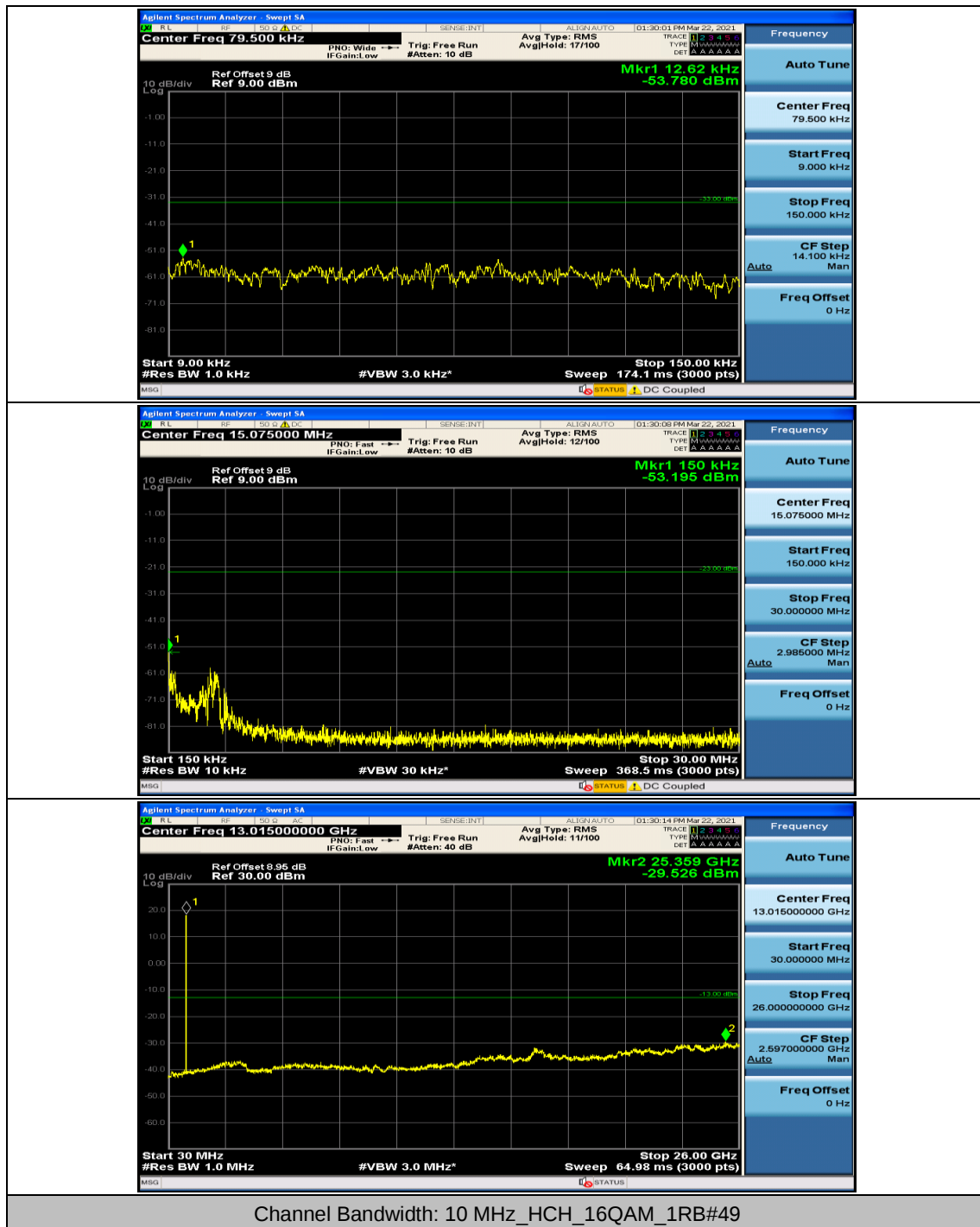


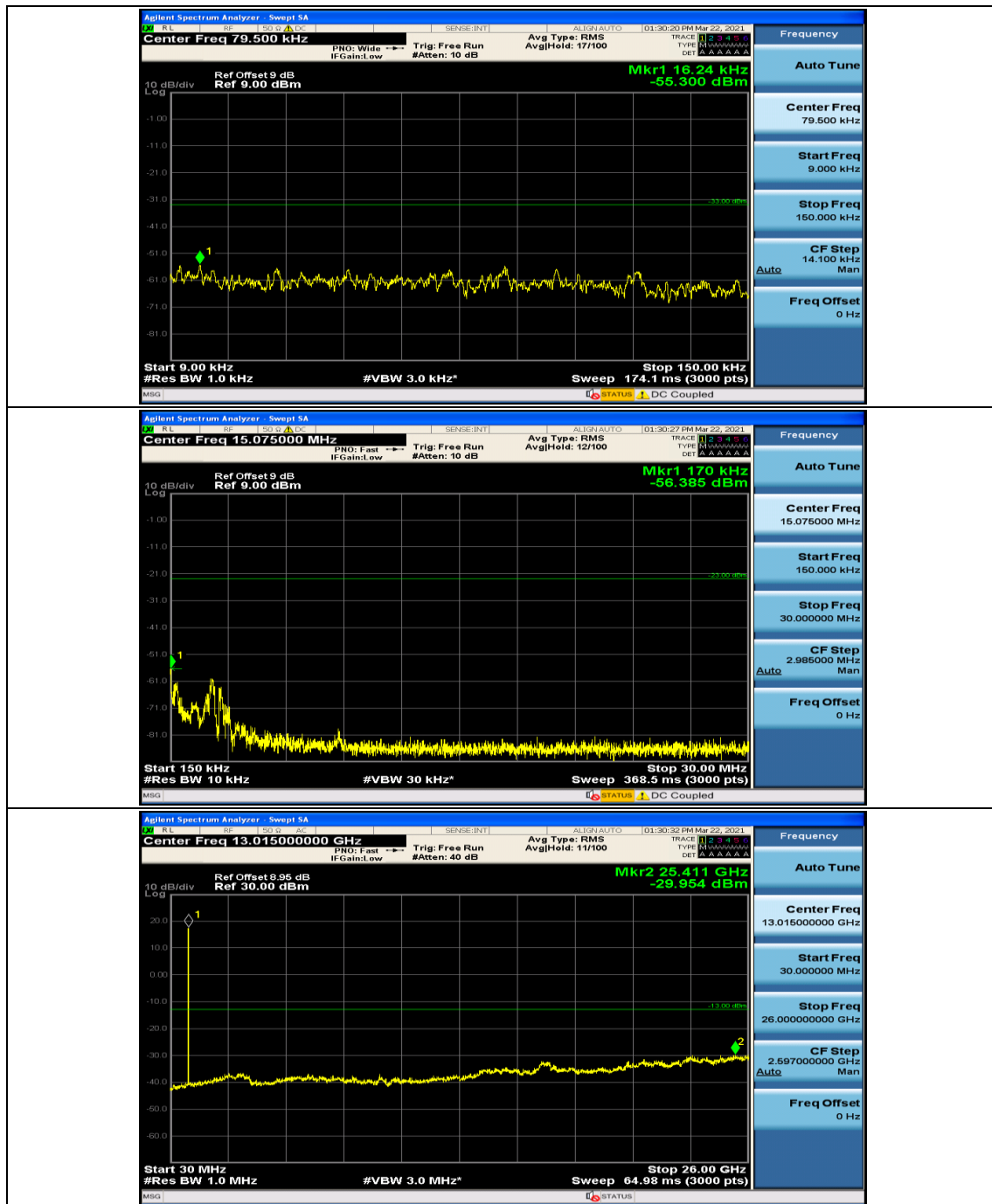












Appendix F: Frequency Stability

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	-0.94	-0.001140	± 2.5	PASS
		VH	TN	3.71	0.004499	± 2.5	PASS
	MCH	VL	TN	-0.11	-0.000132	± 2.5	PASS
		VN	TN	1.25	0.001494	± 2.5	PASS
		VH	TN	-0.68	-0.000813	± 2.5	PASS
	HCH	VL	TN	3.16	0.003725	± 2.5	PASS
		VN	TN	0.33	0.000389	± 2.5	PASS
		VH	TN	2.71	0.003195	± 2.5	PASS
16QAM	LCH	VL	TN	1.08	0.001310	± 2.5	PASS
		VN	TN	0.88	0.001067	± 2.5	PASS
		VH	TN	-0.09	-0.000109	± 2.5	PASS
	MCH	VL	TN	-0.46	-0.000550	± 2.5	PASS
		VN	TN	-1.71	-0.002044	± 2.5	PASS
		VH	TN	1.84	0.002200	± 2.5	PASS
	HCH	VL	TN	0.66	0.000778	± 2.5	PASS
		VN	TN	4.35	0.005128	± 2.5	PASS
		VH	TN	3.54	0.004173	± 2.5	PASS
Temperature							
Modulation	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
QPSK	LCH	VN	-30	2.54	0.003080	± 2.5	PASS
		VN	-20	0.63	0.000764	± 2.5	PASS
		VN	-10	-1.84	-0.002231	± 2.5	PASS
		VN	0	0.95	0.001152	± 2.5	PASS
		VN	10	-1.93	-0.002340	± 2.5	PASS
		VN	20	-0.95	-0.001152	± 2.5	PASS
		VN	30	-0.42	-0.000509	± 2.5	PASS
		VN	40	-0.76	-0.000922	± 2.5	PASS
		VN	50	0.41	0.000497	± 2.5	PASS
	MCH	VN	-30	3.69	0.004411	± 2.5	PASS

		VN	-20	1.88	0.002247	± 2.5	PASS
		VN	-10	-0.26	-0.000311	± 2.5	PASS
		VN	0	3.12	0.003730	± 2.5	PASS
		VN	10	-1.42	-0.001698	± 2.5	PASS
		VN	20	2.63	0.003144	± 2.5	PASS
		VN	30	3.45	0.004124	± 2.5	PASS
		VN	40	1.47	0.001757	± 2.5	PASS
		VN	50	-0.87	-0.001040	± 2.5	PASS
	HCH	VN	-30	0.45	0.000530	± 2.5	PASS
		VN	-20	1.71	0.002016	± 2.5	PASS
		VN	-10	1.02	0.001202	± 2.5	PASS
		VN	0	4.89	0.005764	± 2.5	PASS
		VN	10	4.36	0.005140	± 2.5	PASS
		VN	20	2.13	0.002511	± 2.5	PASS
		VN	30	2.57	0.003030	± 2.5	PASS
		VN	40	0.43	0.000507	± 2.5	PASS
		VN	50	0	0.000000	± 2.5	PASS
16QAM	LCH	VN	-30	4.34	0.005263	± 2.5	PASS
		VN	-20	1.28	0.001552	± 2.5	PASS
		VN	-10	1.78	0.002158	± 2.5	PASS
		VN	0	1.36	0.001649	± 2.5	PASS
		VN	10	-1.32	-0.001601	± 2.5	PASS
		VN	20	3.51	0.004256	± 2.5	PASS
		VN	30	4.51	0.005469	± 2.5	PASS
		VN	40	2.39	0.002898	± 2.5	PASS
		VN	50	4.27	0.005178	± 2.5	PASS
	MCH	VN	-30	4.54	0.005352	± 2.5	PASS
		VN	-20	-0.94	-0.001108	± 2.5	PASS
		VN	-10	1.08	0.001273	± 2.5	PASS
		VN	0	1.73	0.002039	± 2.5	PASS
		VN	10	-0.09	-0.000106	± 2.5	PASS
		VN	20	-1.75	-0.002063	± 2.5	PASS
		VN	30	0.63	0.000743	± 2.5	PASS
		VN	40	2.86	0.003371	± 2.5	PASS
		VN	50	0.9	0.001061	± 2.5	PASS
	HCH	VN	-30	-1.41	-0.001662	± 2.5	PASS
		VN	-20	0.83	0.000978	± 2.5	PASS
		VN	-10	4.52	0.005328	± 2.5	PASS
		VN	0	4.54	0.005352	± 2.5	PASS
		VN	10	-1.06	-0.001250	± 2.5	PASS
		VN	20	1.24	0.001462	± 2.5	PASS

		VN	30	4.42	0.005210	± 2.5	PASS
		VN	40	0.17	0.000200	± 2.5	PASS
		VN	50	2.97	0.003501	± 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	-0.27	-0.000327	± 2.5	PASS
		VH	TN	2.6	0.003150	± 2.5	PASS
	MCH	VL	TN	3.62	0.004328	± 2.5	PASS
		VN	TN	0.62	0.000741	± 2.5	PASS
		VH	TN	0.12	0.000143	± 2.5	PASS
	HCH	VL	TN	0.06	0.000071	± 2.5	PASS
		VN	TN	4.86	0.005735	± 2.5	PASS
		VH	TN	-1.37	-0.001617	± 2.5	PASS
16QAM	LCH	VL	TN	-1.75	-0.002120	± 2.5	PASS
		VN	TN	-1.93	-0.002338	± 2.5	PASS
		VH	TN	-1.77	-0.002144	± 2.5	PASS
	MCH	VL	TN	2.57	0.003072	± 2.5	PASS
		VN	TN	3.87	0.004626	± 2.5	PASS
		VH	TN	0.72	0.000861	± 2.5	PASS
	HCH	VL	TN	0.5	0.000590	± 2.5	PASS
		VN	TN	0.06	0.000071	± 2.5	PASS
		VH	TN	-1.24	-0.001463	± 2.5	PASS
Temperature							
Modulation	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
QPSK	LCH	VN	-30	3.62	0.004385	± 2.5	PASS
		VN	-20	0.66	0.000800	± 2.5	PASS
		VN	-10	-1.58	-0.001914	± 2.5	PASS
		VN	0	-0.68	-0.000824	± 2.5	PASS
		VN	10	1.35	0.001635	± 2.5	PASS
		VN	20	0.62	0.000751	± 2.5	PASS
		VN	30	2.51	0.003041	± 2.5	PASS
		VN	40	2.09	0.002532	± 2.5	PASS
		VN	50	3.72	0.004506	± 2.5	PASS
	MCH	VN	-30	-0.15	-0.000179	± 2.5	PASS
		VN	-20	1.27	0.001518	± 2.5	PASS

		VN	-10	2.02	0.002415	± 2.5	PASS
		VN	0	2.75	0.003288	± 2.5	PASS
		VN	10	-0.61	-0.000729	± 2.5	PASS
		VN	20	-1.17	-0.001399	± 2.5	PASS
		VN	30	0.04	0.000048	± 2.5	PASS
		VN	40	3.97	0.004746	± 2.5	PASS
		VN	50	4.69	0.005607	± 2.5	PASS
	HCH	VN	-30	0.44	0.000519	± 2.5	PASS
		VN	-20	1.8	0.002124	± 2.5	PASS
		VN	-10	4.69	0.005534	± 2.5	PASS
		VN	0	1.39	0.001640	± 2.5	PASS
		VN	10	1.29	0.001522	± 2.5	PASS
		VN	20	2.05	0.002419	± 2.5	PASS
		VN	30	3.31	0.003906	± 2.5	PASS
		VN	40	2.73	0.003221	± 2.5	PASS
	VN	50	0.87	0.001027	± 2.5	PASS	
16QAM	LCH	VN	-30	4.07	0.004866	± 2.5	PASS
		VN	-20	-1.78	-0.002128	± 2.5	PASS
		VN	-10	4.99	0.005965	± 2.5	PASS
		VN	0	-1.36	-0.001626	± 2.5	PASS
		VN	10	4.58	0.005475	± 2.5	PASS
		VN	20	-1.48	-0.001769	± 2.5	PASS
		VN	30	0.19	0.000227	± 2.5	PASS
		VN	40	-0.96	-0.001148	± 2.5	PASS
		VN	50	0.81	0.000968	± 2.5	PASS
	MCH	VN	-30	2.81	0.003316	± 2.5	PASS
		VN	-20	-0.25	-0.000295	± 2.5	PASS
		VN	-10	3.63	0.004283	± 2.5	PASS
		VN	0	-1.02	-0.001204	± 2.5	PASS
		VN	10	-1.42	-0.001676	± 2.5	PASS
		VN	20	1.58	0.001864	± 2.5	PASS
		VN	30	-0.95	-0.001121	± 2.5	PASS
		VN	40	-0.84	-0.000991	± 2.5	PASS
		VN	50	-0.11	-0.000130	± 2.5	PASS
	HCH	VN	-30	4	0.004720	± 2.5	PASS
		VN	-20	-0.85	-0.001003	± 2.5	PASS
		VN	-10	-0.56	-0.000661	± 2.5	PASS
		VN	0	0.9	0.001062	± 2.5	PASS
		VN	10	2.41	0.002844	± 2.5	PASS
		VN	20	-1.21	-0.001428	± 2.5	PASS
VN		30	2.86	0.003375	± 2.5	PASS	

		VN	40	4.42	0.005215	± 2.5	PASS
		VN	50	-1.82	-0.002147	± 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	2.23	0.002698	± 2.5	PASS
		VH	TN	1.59	0.001924	± 2.5	PASS
	MCH	VL	TN	3.65	0.004363	± 2.5	PASS
		VN	TN	2.81	0.003359	± 2.5	PASS
		VH	TN	2.51	0.003001	± 2.5	PASS
	HCH	VL	TN	-1.42	-0.001677	± 2.5	PASS
		VN	TN	0.93	0.001099	± 2.5	PASS
		VH	TN	2.66	0.003142	± 2.5	PASS
16QAM	LCH	VL	TN	-0.92	-0.001113	± 2.5	PASS
		VN	TN	3.69	0.004465	± 2.5	PASS
		VH	TN	-1.91	-0.002311	± 2.5	PASS
	MCH	VL	TN	3.14	0.003754	± 2.5	PASS
		VN	TN	2.92	0.003491	± 2.5	PASS
		VH	TN	0.6	0.000717	± 2.5	PASS
	HCH	VL	TN	-1.72	-0.002032	± 2.5	PASS
		VN	TN	2.75	0.003249	± 2.5	PASS
		VH	TN	1.67	0.001973	± 2.5	PASS
Temperature							
Modulation	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
QPSK	LCH	VN	-30	1.18	0.001428	± 2.5	PASS
		VN	-20	0.47	0.000569	± 2.5	PASS
		VN	-10	-0.18	-0.000218	± 2.5	PASS
		VN	0	3.96	0.004791	± 2.5	PASS
		VN	10	0.67	0.000811	± 2.5	PASS
		VN	20	-1.4	-0.001694	± 2.5	PASS
		VN	30	3.8	0.004598	± 2.5	PASS
		VN	40	2.6	0.003146	± 2.5	PASS
		VN	50	-1.17	-0.001416	± 2.5	PASS
	MCH	VN	-30	1.35	0.001614	± 2.5	PASS
		VN	-20	3.64	0.004351	± 2.5	PASS
		VN	-10	-0.54	-0.000646	± 2.5	PASS

		VN	0	1.84	0.002200	± 2.5	PASS
		VN	10	-0.05	-0.000060	± 2.5	PASS
		VN	20	-0.23	-0.000275	± 2.5	PASS
		VN	30	-0.2	-0.000239	± 2.5	PASS
		VN	40	0.65	0.000777	± 2.5	PASS
		VN	50	1.63	0.001949	± 2.5	PASS
	HCH	VN	-30	4.86	0.005741	± 2.5	PASS
		VN	-20	4.76	0.005623	± 2.5	PASS
		VN	-10	4.22	0.004985	± 2.5	PASS
		VN	0	-1.83	-0.002162	± 2.5	PASS
		VN	10	3.32	0.003922	± 2.5	PASS
		VN	20	1.1	0.001299	± 2.5	PASS
		VN	30	3.14	0.003709	± 2.5	PASS
		VN	40	3.33	0.003934	± 2.5	PASS
		VN	50	1.74	0.002056	± 2.5	PASS
16QAM	LCH	VN	-30	4.3	0.005140	± 2.5	PASS
		VN	-20	2.07	0.002475	± 2.5	PASS
		VN	-10	2.96	0.003539	± 2.5	PASS
		VN	0	0.54	0.000646	± 2.5	PASS
		VN	10	0.61	0.000729	± 2.5	PASS
		VN	20	-1.13	-0.001351	± 2.5	PASS
		VN	30	-0.78	-0.000932	± 2.5	PASS
		VN	40	4.5	0.005380	± 2.5	PASS
		VN	50	3.87	0.004626	± 2.5	PASS
	MCH	VN	-30	4.35	0.005139	± 2.5	PASS
		VN	-20	4.65	0.005493	± 2.5	PASS
		VN	-10	-1.67	-0.001973	± 2.5	PASS
		VN	0	1.35	0.001595	± 2.5	PASS
		VN	10	4.39	0.005186	± 2.5	PASS
		VN	20	2.07	0.002445	± 2.5	PASS
		VN	30	4.88	0.005765	± 2.5	PASS
		VN	40	-0.55	-0.000650	± 2.5	PASS
		VN	50	-1.93	-0.002280	± 2.5	PASS
	HCH	VN	-30	-1	-0.001181	± 2.5	PASS
		VN	-20	2.51	0.002965	± 2.5	PASS
		VN	-10	4.36	0.005151	± 2.5	PASS
		VN	0	3.3	0.003898	± 2.5	PASS
		VN	10	1.51	0.001784	± 2.5	PASS
		VN	20	0.91	0.001075	± 2.5	PASS
		VN	30	1.56	0.001843	± 2.5	PASS
		VN	40	2.77	0.003272	± 2.5	PASS

		VN	50	4.65	0.005493	± 2.5	PASS
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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	4.1	0.004946	± 2.5	PASS
		VH	TN	1.39	0.001677	± 2.5	PASS
	MCH	VL	TN	-0.5	-0.000598	± 2.5	PASS
		VN	TN	0.82	0.000980	± 2.5	PASS
		VH	TN	-0.66	-0.000789	± 2.5	PASS
	HCH	VL	TN	1.98	0.002346	± 2.5	PASS
		VN	TN	4.22	0.005000	± 2.5	PASS
		VH	TN	2.88	0.003412	± 2.5	PASS
16QAM	LCH	VL	TN	3.91	0.004717	± 2.5	PASS
		VN	TN	2.06	0.002485	± 2.5	PASS
		VH	TN	-0.28	-0.000338	± 2.5	PASS
	MCH	VL	TN	-0.81	-0.000968	± 2.5	PASS
		VN	TN	-0.66	-0.000789	± 2.5	PASS
		VH	TN	4.64	0.005547	± 2.5	PASS
	HCH	VL	TN	3.99	0.004727	± 2.5	PASS
		VN	TN	2.33	0.002761	± 2.5	PASS
		VH	TN	1.77	0.002097	± 2.5	PASS
Temperature							
Modulation	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
QPSK	LCH	VN	-30	-1.93	-0.002328	± 2.5	PASS
		VN	-20	-0.25	-0.000302	± 2.5	PASS
		VN	-10	0.32	0.000386	± 2.5	PASS
		VN	0	0.21	0.000253	± 2.5	PASS
		VN	10	0.55	0.000663	± 2.5	PASS
		VN	20	3.81	0.004596	± 2.5	PASS
		VN	30	-1.25	-0.001508	± 2.5	PASS
		VN	40	-2	-0.002413	± 2.5	PASS
		VN	50	0.79	0.000953	± 2.5	PASS
	MCH	VN	-30	2.92	0.003491	± 2.5	PASS
		VN	-20	2.73	0.003264	± 2.5	PASS
		VN	-10	-1.71	-0.002044	± 2.5	PASS
		VN	0	3.81	0.004555	± 2.5	PASS
		VN	10	-0.56	-0.000669	± 2.5	PASS

		VN	20	3.14	0.003754	± 2.5	PASS
		VN	30	1.53	0.001829	± 2.5	PASS
		VN	40	-1.33	-0.001590	± 2.5	PASS
		VN	50	2.39	0.002857	± 2.5	PASS
	HCH	VN	-30	-1.11	-0.001315	± 2.5	PASS
		VN	-20	2.44	0.002891	± 2.5	PASS
		VN	-10	0.72	0.000853	± 2.5	PASS
		VN	0	2.33	0.002761	± 2.5	PASS
		VN	10	0.02	0.000024	± 2.5	PASS
		VN	20	-0.8	-0.000948	± 2.5	PASS
		VN	30	2.95	0.003495	± 2.5	PASS
		VN	40	1.63	0.001931	± 2.5	PASS
		VN	50	0.95	0.001126	± 2.5	PASS
16QAM	LCH	VN	-30	4.48	0.005356	± 2.5	PASS
		VN	-20	4.89	0.005846	± 2.5	PASS
		VN	-10	3.3	0.003945	± 2.5	PASS
		VN	0	0.19	0.000227	± 2.5	PASS
		VN	10	-0.61	-0.000729	± 2.5	PASS
		VN	20	0.89	0.001064	± 2.5	PASS
		VN	30	2.98	0.003562	± 2.5	PASS
		VN	40	4.02	0.004806	± 2.5	PASS
		VN	50	-0.91	-0.001088	± 2.5	PASS
	MCH	VN	-30	3.09	0.003661	± 2.5	PASS
		VN	-20	1.72	0.002038	± 2.5	PASS
		VN	-10	-1.82	-0.002156	± 2.5	PASS
		VN	0	0.76	0.000900	± 2.5	PASS
		VN	10	2.95	0.003495	± 2.5	PASS
		VN	20	3.3	0.003910	± 2.5	PASS
		VN	30	2.5	0.002962	± 2.5	PASS
		VN	40	4.26	0.005047	± 2.5	PASS
		VN	50	2.56	0.003033	± 2.5	PASS
	HCH	VN	-30	-0.26	-0.000308	± 2.5	PASS
		VN	-20	3.4	0.004028	± 2.5	PASS
		VN	-10	1.3	0.001540	± 2.5	PASS
		VN	0	-1.75	-0.002073	± 2.5	PASS
		VN	10	3.87	0.004585	± 2.5	PASS
		VN	20	4.9	0.005806	± 2.5	PASS
		VN	30	1.75	0.002073	± 2.5	PASS
		VN	40	-0.56	-0.000664	± 2.5	PASS
		VN	50	1.24	0.001469	± 2.5	PASS