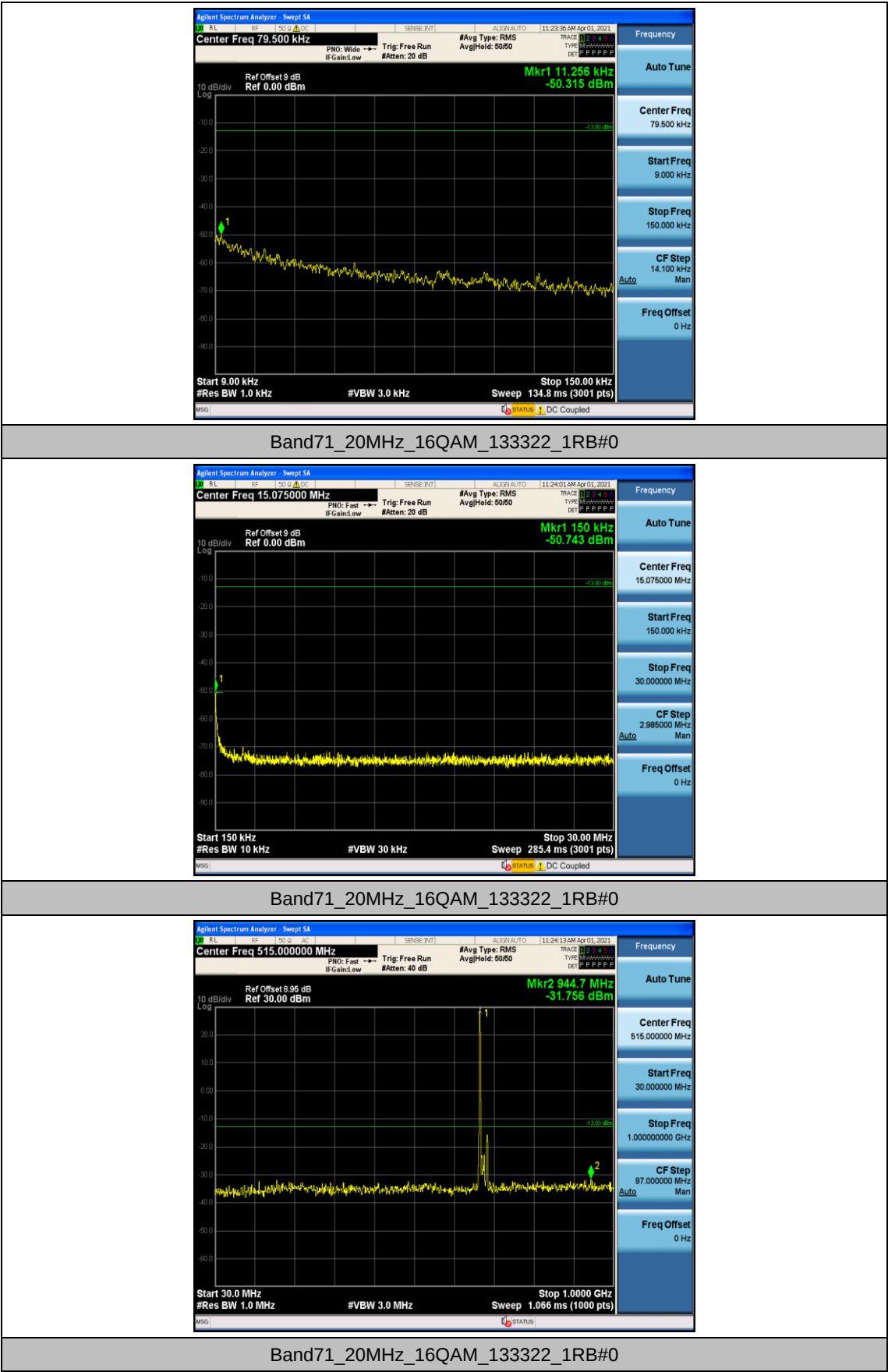
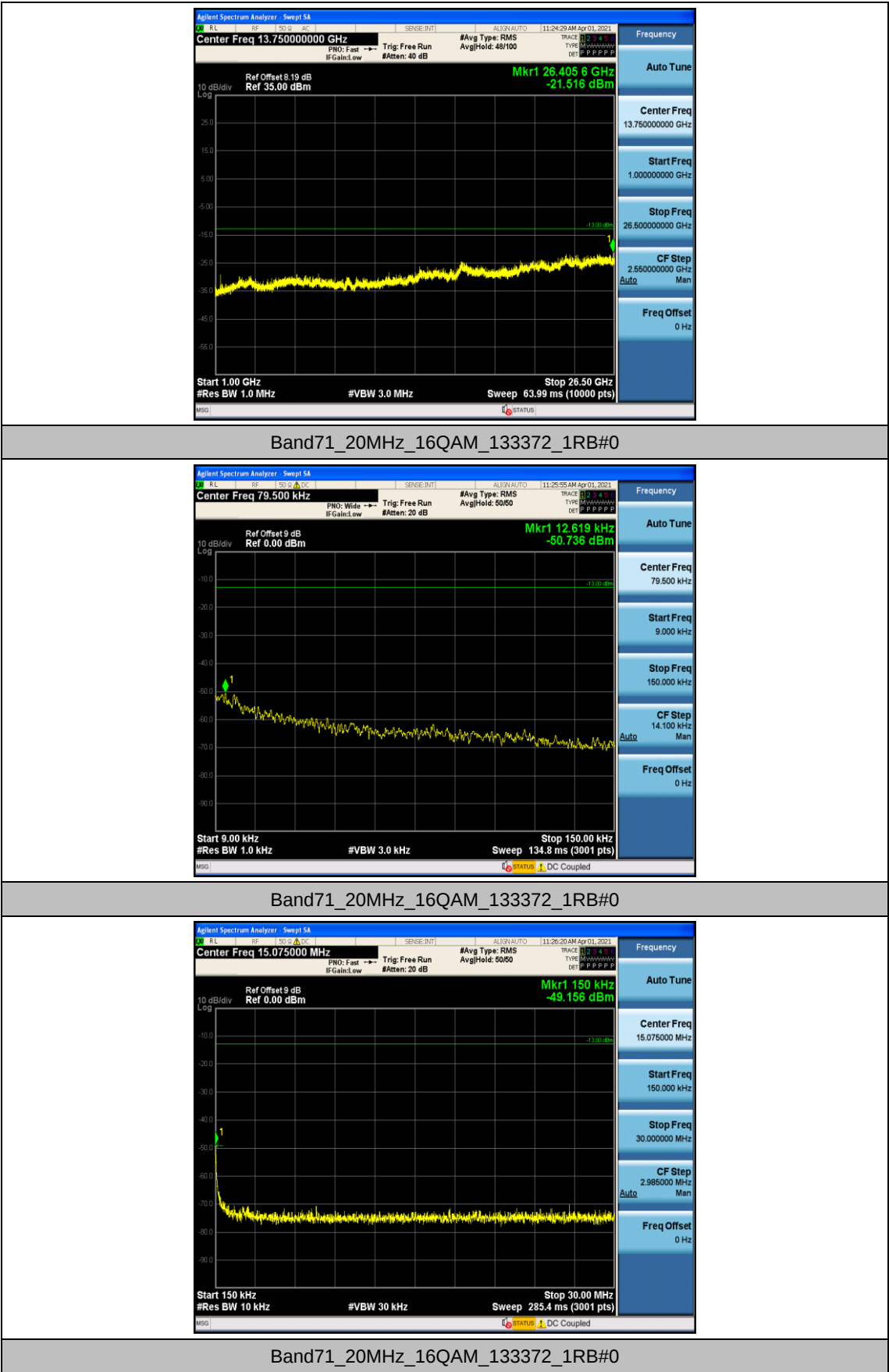
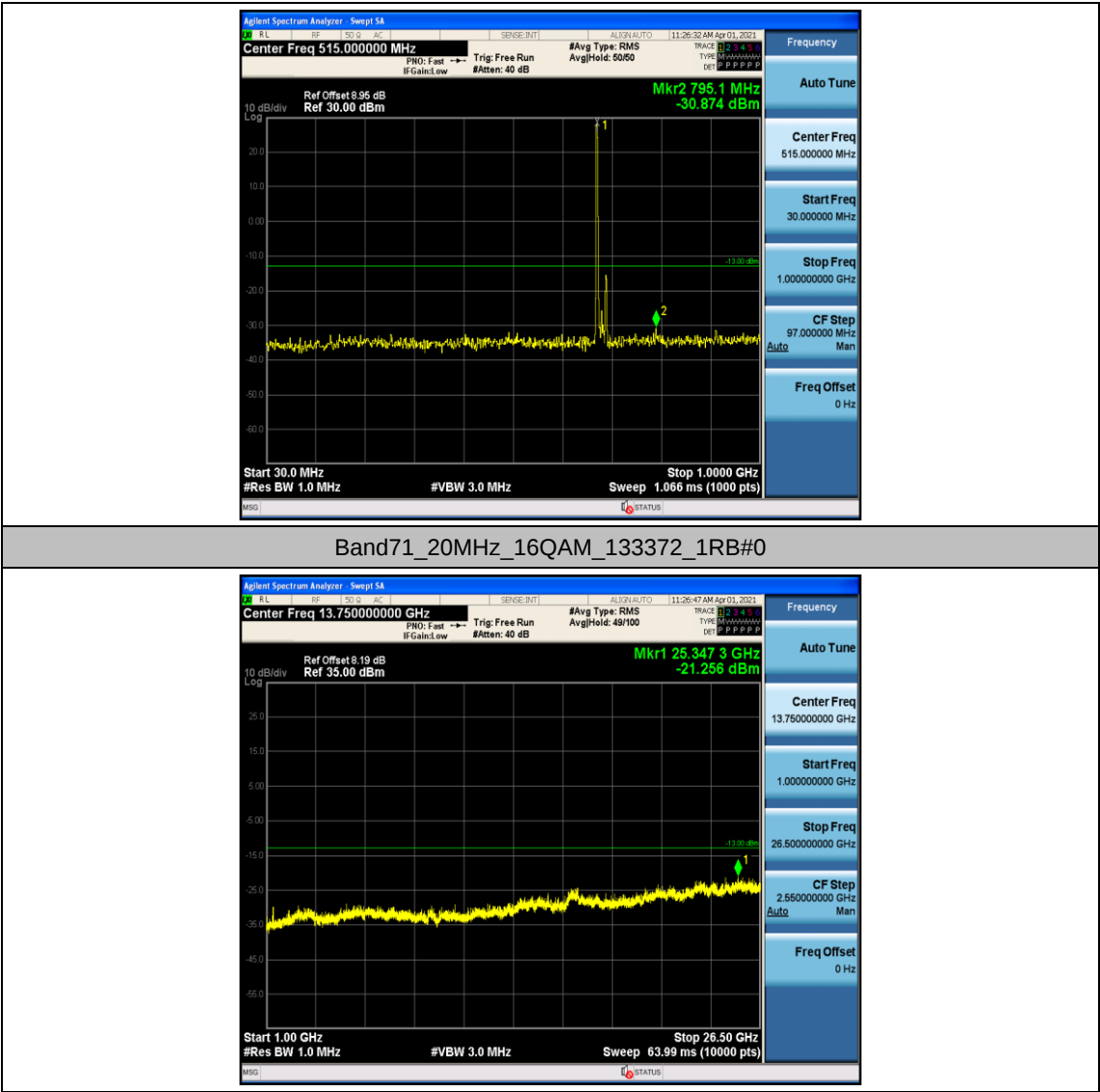








Appendix F: Frequency Stability

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	-1.72	-0.002585	± 2.5	PASS
		VN	TN	0.87	0.001307	± 2.5	PASS
		VH	TN	2.61	0.003922	± 2.5	PASS
	MCH	VL	TN	2.22	0.003262	± 2.5	PASS
		VN	TN	4.79	0.007039	± 2.5	PASS
		VH	TN	-0.11	-0.000162	± 2.5	PASS
	HCH	VL	TN	1.22	0.001754	± 2.5	PASS
		VN	TN	1.03	0.001481	± 2.5	PASS
		VH	TN	4.41	0.006341	± 2.5	PASS
16QAM	LCH	VL	TN	-0.29	-0.000436	± 2.5	PASS
		VN	TN	1.32	0.001983	± 2.5	PASS
		VH	TN	1.88	0.002825	± 2.5	PASS
	MCH	VL	TN	1.41	0.002072	± 2.5	PASS
		VN	TN	1.32	0.001940	± 2.5	PASS
		VH	TN	3.03	0.004453	± 2.5	PASS
	HCH	VL	TN	2.54	0.003652	± 2.5	PASS
		VN	TN	0.58	0.000834	± 2.5	PASS
		VH	TN	-0.67	-0.000963	± 2.5	PASS
Temperature							
Modulation	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
QPSK	LCH	VN	-30	-0.8	-0.001202	± 2.5	PASS
		VN	-20	2.2	0.003306	± 2.5	PASS
		VN	-10	2.38	0.003576	± 2.5	PASS
		VN	0	3.05	0.004583	± 2.5	PASS
		VN	10	-0.61	-0.000917	± 2.5	PASS
		VN	20	3.13	0.004703	± 2.5	PASS
		VN	30	-0.18	-0.000270	± 2.5	PASS
		VN	40	-0.36	-0.000541	± 2.5	PASS
		VN	50	4.74	0.007122	± 2.5	PASS
	MCH	VN	-30	1.71	0.002513	± 2.5	PASS

		VN	-20	2.38	0.003497	± 2.5	PASS
		VN	-10	3.16	0.004644	± 2.5	PASS
		VN	0	-1.24	-0.001822	± 2.5	PASS
		VN	10	1.65	0.002425	± 2.5	PASS
		VN	20	-1.48	-0.002175	± 2.5	PASS
		VN	30	4.08	0.005996	± 2.5	PASS
		VN	40	2.64	0.003880	± 2.5	PASS
		VN	50	2.85	0.004188	± 2.5	PASS
	HCH	VN	-30	1.05	0.001510	± 2.5	PASS
		VN	-20	3.19	0.004587	± 2.5	PASS
		VN	-10	1.42	0.002042	± 2.5	PASS
		VN	0	2.7	0.003882	± 2.5	PASS
		VN	10	4.82	0.006930	± 2.5	PASS
		VN	20	4.75	0.006830	± 2.5	PASS
		VN	30	2.86	0.004112	± 2.5	PASS
		VN	40	4.9	0.007045	± 2.5	PASS
		VN	50	0.68	0.000978	± 2.5	PASS
16QAM	LCH	VN	-30	-0.88	-0.001322	± 2.5	PASS
		VN	-20	0.95	0.001427	± 2.5	PASS
		VN	-10	4.22	0.006341	± 2.5	PASS
		VN	0	1.99	0.002990	± 2.5	PASS
		VN	10	4.74	0.007122	± 2.5	PASS
		VN	20	1.97	0.002960	± 2.5	PASS
		VN	30	1.01	0.001518	± 2.5	PASS
		VN	40	1.65	0.002479	± 2.5	PASS
		VN	50	-1.64	-0.002464	± 2.5	PASS
	MCH	VN	-30	1.15	0.001690	± 2.5	PASS
		VN	-20	4.26	0.006260	± 2.5	PASS
		VN	-10	1.88	0.002763	± 2.5	PASS
		VN	0	-1.16	-0.001705	± 2.5	PASS
		VN	10	1.66	0.002439	± 2.5	PASS
		VN	20	2.07	0.003042	± 2.5	PASS
		VN	30	4.33	0.006363	± 2.5	PASS
		VN	40	2.13	0.003130	± 2.5	PASS
		VN	50	1.47	0.002160	± 2.5	PASS
	HCH	VN	-30	0.18	0.000259	± 2.5	PASS
		VN	-20	4.77	0.006858	± 2.5	PASS
		VN	-10	-1.93	-0.002775	± 2.5	PASS
		VN	0	0.75	0.001078	± 2.5	PASS
		VN	10	2.78	0.003997	± 2.5	PASS

		VN	20	-1.25	-0.001797	± 2.5	PASS
		VN	30	2.82	0.004055	± 2.5	PASS
		VN	40	-0.08	-0.000115	± 2.5	PASS
		VN	50	0.28	0.000403	± 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	3.18	0.004760	± 2.5	PASS
		VN	TN	0.5	0.000749	± 2.5	PASS
		VH	TN	3.48	0.005210	± 2.5	PASS
	MCH	VL	TN	-0.84	-0.001234	± 2.5	PASS
		VN	TN	3.94	0.005790	± 2.5	PASS
		VH	TN	2.09	0.003071	± 2.5	PASS
	HCH	VL	TN	1.49	0.002150	± 2.5	PASS
		VN	TN	3.69	0.005325	± 2.5	PASS
		VH	TN	4.77	0.006883	± 2.5	PASS
16QAM	LCH	VL	TN	1.52	0.002275	± 2.5	PASS
		VN	TN	3.95	0.005913	± 2.5	PASS
		VH	TN	0.09	0.000135	± 2.5	PASS
	MCH	VL	TN	1.76	0.002586	± 2.5	PASS
		VN	TN	-0.77	-0.001132	± 2.5	PASS
		VH	TN	3.86	0.005672	± 2.5	PASS
	HCH	VL	TN	-0.44	-0.000635	± 2.5	PASS
		VN	TN	0.54	0.000779	± 2.5	PASS
		VH	TN	0.75	0.001082	± 2.5	PASS
Temperature							
Modulation	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
QPSK	LCH	VN	-30	-0.94	-0.001407	± 2.5	PASS
		VN	-20	0.56	0.000838	± 2.5	PASS
		VN	-10	3.14	0.004701	± 2.5	PASS
		VN	0	3.26	0.004880	± 2.5	PASS
		VN	10	4.43	0.006632	± 2.5	PASS
		VN	20	-1.94	-0.002904	± 2.5	PASS
		VN	30	3.77	0.005644	± 2.5	PASS
		VN	40	4.05	0.006063	± 2.5	PASS
		VN	50	-0.46	-0.000689	± 2.5	PASS

	MCH	VN	-30	3.29	0.004835	± 2.5	PASS
		VN	-20	3.28	0.004820	± 2.5	PASS
		VN	-10	-1.79	-0.002630	± 2.5	PASS
		VN	0	3.36	0.004938	± 2.5	PASS
		VN	10	1.11	0.001631	± 2.5	PASS
		VN	20	-1.65	-0.002425	± 2.5	PASS
		VN	30	3.98	0.005849	± 2.5	PASS
		VN	40	1.19	0.001749	± 2.5	PASS
		VN	50	2.67	0.003924	± 2.5	PASS
	HCH	VN	-30	1.71	0.002468	± 2.5	PASS
		VN	-20	-0.41	-0.000592	± 2.5	PASS
		VN	-10	0.98	0.001414	± 2.5	PASS
		VN	0	-1.72	-0.002482	± 2.5	PASS
		VN	10	3.65	0.005267	± 2.5	PASS
		VN	20	4.69	0.006768	± 2.5	PASS
		VN	30	0.32	0.000462	± 2.5	PASS
		VN	40	3	0.004329	± 2.5	PASS
		VN	50	3.01	0.004343	± 2.5	PASS
16QAM	LCH	VN	-30	0.73	0.001093	± 2.5	PASS
		VN	-20	2.7	0.004042	± 2.5	PASS
		VN	-10	-1.96	-0.002934	± 2.5	PASS
		VN	0	1.54	0.002305	± 2.5	PASS
		VN	10	-0.92	-0.001377	± 2.5	PASS
		VN	20	0	0.000000	± 2.5	PASS
		VN	30	3.65	0.005464	± 2.5	PASS
		VN	40	1.28	0.001916	± 2.5	PASS
		VN	50	0.76	0.001138	± 2.5	PASS
	MCH	VN	-30	3.03	0.004453	± 2.5	PASS
		VN	-20	3.16	0.004644	± 2.5	PASS
		VN	-10	-0.2	-0.000294	± 2.5	PASS
		VN	0	-0.21	-0.000309	± 2.5	PASS
		VN	10	2.45	0.003600	± 2.5	PASS
		VN	20	0.8	0.001176	± 2.5	PASS
		VN	30	2.45	0.003600	± 2.5	PASS
		VN	40	-1.23	-0.001807	± 2.5	PASS
		VN	50	0.79	0.001161	± 2.5	PASS
	HCH	VN	-30	-0.73	-0.001053	± 2.5	PASS
		VN	-20	3.16	0.004560	± 2.5	PASS
		VN	-10	4.17	0.006017	± 2.5	PASS
		VN	0	0.16	0.000231	± 2.5	PASS

		VN	10	0.45	0.000649	± 2.5	PASS
		VN	20	0.71	0.001025	± 2.5	PASS
		VN	30	2.01	0.002900	± 2.5	PASS
		VN	40	0.15	0.000216	± 2.5	PASS
		VN	50	4.48	0.006465	± 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	3.84	0.005727	± 2.5	PASS
		VN	TN	3.33	0.004966	± 2.5	PASS
		VH	TN	-1.75	-0.002610	± 2.5	PASS
	MCH	VL	TN	0.43	0.000632	± 2.5	PASS
		VN	TN	-1.93	-0.002836	± 2.5	PASS
		VH	TN	-1.61	-0.002366	± 2.5	PASS
	HCH	VL	TN	3.2	0.004634	± 2.5	PASS
		VN	TN	0.43	0.000623	± 2.5	PASS
		VH	TN	4.02	0.005822	± 2.5	PASS
16QAM	LCH	VL	TN	2.37	0.003535	± 2.5	PASS
		VN	TN	4.28	0.006383	± 2.5	PASS
		VH	TN	3.65	0.005444	± 2.5	PASS
	MCH	VL	TN	1.64	0.002410	± 2.5	PASS
		VN	TN	-0.9	-0.001323	± 2.5	PASS
		VH	TN	1.46	0.002145	± 2.5	PASS
	HCH	VL	TN	4.97	0.007198	± 2.5	PASS
		VN	TN	1.97	0.002853	± 2.5	PASS
		VH	TN	4.27	0.006184	± 2.5	PASS
Temperature							
Modulation	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
QPSK	LCH	VN	-30	1.46	0.002177	± 2.5	PASS
		VN	-20	3.85	0.005742	± 2.5	PASS
		VN	-10	-1.65	-0.002461	± 2.5	PASS
		VN	0	1.49	0.002222	± 2.5	PASS
		VN	10	2.56	0.003818	± 2.5	PASS
		VN	20	-1.68	-0.002506	± 2.5	PASS
		VN	30	4.61	0.006875	± 2.5	PASS
		VN	40	-1.37	-0.002043	± 2.5	PASS
		VN	50	-1.28	-0.001909	± 2.5	PASS

	MCH	VN	-30	0.16	0.000235	± 2.5	PASS
		VN	-20	0.46	0.000676	± 2.5	PASS
		VN	-10	2.03	0.002983	± 2.5	PASS
		VN	0	-0.47	-0.000691	± 2.5	PASS
		VN	10	1.62	0.002381	± 2.5	PASS
		VN	20	0.37	0.000544	± 2.5	PASS
		VN	30	3.1	0.004555	± 2.5	PASS
		VN	40	-0.44	-0.000647	± 2.5	PASS
		VN	50	4.38	0.006436	± 2.5	PASS
	HCH	VN	-30	1.51	0.002187	± 2.5	PASS
		VN	-20	4.68	0.006778	± 2.5	PASS
		VN	-10	3.77	0.005460	± 2.5	PASS
		VN	0	-0.62	-0.000898	± 2.5	PASS
		VN	10	4.91	0.007111	± 2.5	PASS
		VN	20	2.45	0.003548	± 2.5	PASS
		VN	30	0.7	0.001014	± 2.5	PASS
		VN	40	-0.04	-0.000058	± 2.5	PASS
		VN	50	2.27	0.003287	± 2.5	PASS
16QAM	LCH	VN	-30	0.88	0.001312	± 2.5	PASS
		VN	-20	-1.01	-0.001506	± 2.5	PASS
		VN	-10	-1.51	-0.002252	± 2.5	PASS
		VN	0	-1.21	-0.001805	± 2.5	PASS
		VN	10	0.33	0.000492	± 2.5	PASS
		VN	20	-0.35	-0.000522	± 2.5	PASS
		VN	30	4.98	0.007427	± 2.5	PASS
		VN	40	3.54	0.005280	± 2.5	PASS
		VN	50	1.73	0.002580	± 2.5	PASS
	MCH	VN	-30	0.63	0.000926	± 2.5	PASS
		VN	-20	-0.42	-0.000617	± 2.5	PASS
		VN	-10	-1.84	-0.002704	± 2.5	PASS
		VN	0	0.84	0.001234	± 2.5	PASS
		VN	10	3.64	0.005349	± 2.5	PASS
		VN	20	0.3	0.000441	± 2.5	PASS
		VN	30	1.63	0.002395	± 2.5	PASS
		VN	40	-1.16	-0.001705	± 2.5	PASS
		VN	50	2.9	0.004262	± 2.5	PASS
	HCH	VN	-30	4.48	0.006488	± 2.5	PASS
		VN	-20	-0.92	-0.001332	± 2.5	PASS
		VN	-10	2.44	0.003534	± 2.5	PASS
		VN	0	2.39	0.003461	± 2.5	PASS

		VN	10	-1.82	-0.002636	± 2.5	PASS
		VN	20	1.03	0.001492	± 2.5	PASS
		VN	30	3.6	0.005214	± 2.5	PASS
		VN	40	1.63	0.002361	± 2.5	PASS
		VN	50	4.8	0.006951	± 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	3.08	0.004577	± 2.5	PASS
		VN	TN	-1.4	-0.002080	± 2.5	PASS
		VH	TN	-0.43	-0.000639	± 2.5	PASS
	MCH	VL	TN	1.99	0.002924	± 2.5	PASS
		VN	TN	2.47	0.003630	± 2.5	PASS
		VH	TN	4.2	0.006172	± 2.5	PASS
	HCH	VL	TN	1.15	0.001672	± 2.5	PASS
		VN	TN	2.68	0.003895	± 2.5	PASS
		VH	TN	-1.48	-0.002151	± 2.5	PASS
16QAM	LCH	VL	TN	2.85	0.004235	± 2.5	PASS
		VN	TN	-1.9	-0.002823	± 2.5	PASS
		VH	TN	1.19	0.001768	± 2.5	PASS
	MCH	VL	TN	-0.79	-0.001161	± 2.5	PASS
		VN	TN	2.64	0.003880	± 2.5	PASS
		VH	TN	3.76	0.005525	± 2.5	PASS
	HCH	VL	TN	0.75	0.001090	± 2.5	PASS
		VN	TN	1.75	0.002544	± 2.5	PASS
		VH	TN	-1.78	-0.002587	± 2.5	PASS
Temperature							
Modulation	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
QPSK	LCH	VN	-30	-0.02	-0.000030	± 2.5	PASS
		VN	-20	3.09	0.004591	± 2.5	PASS
		VN	-10	2.84	0.004220	± 2.5	PASS
		VN	0	3.18	0.004725	± 2.5	PASS
		VN	10	-0.15	-0.000223	± 2.5	PASS
		VN	20	1.66	0.002467	± 2.5	PASS
		VN	30	-0.86	-0.001278	± 2.5	PASS
		VN	40	3.91	0.005810	± 2.5	PASS
		VN	50	2.13	0.003165	± 2.5	PASS
	MCH	VN	-30	0.66	0.000970	± 2.5	PASS

		VN	-20	4.45	0.006539	± 2.5	PASS
		VN	-10	-1.16	-0.001705	± 2.5	PASS
		VN	0	1.26	0.001852	± 2.5	PASS
		VN	10	3.18	0.004673	± 2.5	PASS
		VN	20	3.75	0.005511	± 2.5	PASS
		VN	30	-1.39	-0.002043	± 2.5	PASS
		VN	40	0	0.000000	± 2.5	PASS
		VN	50	2.81	0.004129	± 2.5	PASS
	HCH	VN	-30	-1.31	-0.001904	± 2.5	PASS
		VN	-20	3.53	0.005131	± 2.5	PASS
		VN	-10	4.97	0.007224	± 2.5	PASS
		VN	0	3.68	0.005349	± 2.5	PASS
		VN	10	-1.56	-0.002267	± 2.5	PASS
		VN	20	4.33	0.006294	± 2.5	PASS
		VN	30	0.83	0.001206	± 2.5	PASS
		VN	40	-0.03	-0.000044	± 2.5	PASS
		VN	50	3.8	0.005523	± 2.5	PASS
16QAM	LCH	VN	-30	2.25	0.003343	± 2.5	PASS
		VN	-20	1.65	0.002452	± 2.5	PASS
		VN	-10	4.44	0.006597	± 2.5	PASS
		VN	0	-0.06	-0.000089	± 2.5	PASS
		VN	10	4.66	0.006924	± 2.5	PASS
		VN	20	0.83	0.001233	± 2.5	PASS
		VN	30	2.61	0.003878	± 2.5	PASS
		VN	40	4.64	0.006895	± 2.5	PASS
		VN	50	0.29	0.000431	± 2.5	PASS
	MCH	VN	-30	1.2	0.001763	± 2.5	PASS
		VN	-20	3.76	0.005525	± 2.5	PASS
		VN	-10	1.73	0.002542	± 2.5	PASS
		VN	0	1.75	0.002572	± 2.5	PASS
		VN	10	1.45	0.002131	± 2.5	PASS
		VN	20	1.65	0.002425	± 2.5	PASS
		VN	30	0.31	0.000456	± 2.5	PASS
		VN	40	-1.22	-0.001793	± 2.5	PASS
		VN	50	4.64	0.006819	± 2.5	PASS
	HCH	VN	-30	0.14	0.000203	± 2.5	PASS
		VN	-20	1.25	0.001817	± 2.5	PASS
		VN	-10	1.22	0.001773	± 2.5	PASS
		VN	0	3.82	0.005552	± 2.5	PASS
		VN	10	0.98	0.001424	± 2.5	PASS

		VN	20	3.31	0.004811	± 2.5	PASS
		VN	30	3.29	0.004782	± 2.5	PASS
		VN	40	3.29	0.004782	± 2.5	PASS
		VN	50	2.81	0.004084	± 2.5	PASS