









## 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	-0.5	-0.000213	± 2.5	PASS
		VN	TN	-0.63	-0.000268	± 2.5	PASS
		VH	TN	2.55	0.001084	± 2.5	PASS
	MCH	VL	TN	2.95	0.001253	± 2.5	PASS
		VN	TN	-1.36	-0.000577	± 2.5	PASS
		VH	TN	4.99	0.002119	± 2.5	PASS
	HCH	VL	TN	-1.78	-0.000755	± 2.5	PASS
		VN	TN	-1.8	-0.000764	± 2.5	PASS
		VH	TN	4.73	0.002006	± 2.5	PASS
16QAM	LCH	VL	TN	0.19	0.000081	± 2.5	PASS
		VN	TN	3.04	0.001292	± 2.5	PASS
		VH	TN	3.32	0.001411	± 2.5	PASS
	MCH	VL	TN	4.35	0.001847	± 2.5	PASS
		VN	TN	-0.96	-0.000408	± 2.5	PASS
		VH	TN	-1.12	-0.000476	± 2.5	PASS
	HCH	VL	TN	-0.24	-0.000102	± 2.5	PASS
		VN	TN	4.64	0.001968	± 2.5	PASS
		VH	TN	3.56	0.001510	± 2.5	PASS
Temperature							
Modulation	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
QPSK	LCH	VN	-30	3.95	0.001679	± 2.5	PASS
		VN	-20	3.5	0.001488	± 2.5	PASS
		VN	-10	4.62	0.001964	± 2.5	PASS
		VN	0	1.66	0.000706	± 2.5	PASS
		VN	10	2.49	0.001058	± 2.5	PASS
		VN	20	2.92	0.001241	± 2.5	PASS
		VN	30	0.24	0.000102	± 2.5	PASS
		VN	40	3.32	0.001411	± 2.5	PASS
		VN	50	3.96	0.001683	± 2.5	PASS

	MCH	VN	-30	-0.89	-0.000378	± 2.5	PASS
		VN	-20	0.52	0.000221	± 2.5	PASS
		VN	-10	1.67	0.000709	± 2.5	PASS
		VN	0	-0.3	-0.000127	± 2.5	PASS
		VN	10	0.68	0.000289	± 2.5	PASS
		VN	20	4.14	0.001758	± 2.5	PASS
		VN	30	0.42	0.000178	± 2.5	PASS
		VN	40	1.88	0.000798	± 2.5	PASS
		VN	50	-1.74	-0.000739	± 2.5	PASS
	HCH	VN	-30	2.3	0.000976	± 2.5	PASS
		VN	-20	3.48	0.001476	± 2.5	PASS
		VN	-10	3.52	0.001493	± 2.5	PASS
		VN	0	4.09	0.001735	± 2.5	PASS
		VN	10	4.12	0.001748	± 2.5	PASS
		VN	20	4.71	0.001998	± 2.5	PASS
		VN	30	3.9	0.001654	± 2.5	PASS
		VN	40	2.97	0.001260	± 2.5	PASS
		VN	50	3.25	0.001379	± 2.5	PASS
16QAM	LCH	VN	-30	4.43	0.001883	± 2.5	PASS
		VN	-20	1.64	0.000697	± 2.5	PASS
		VN	-10	4.98	0.002117	± 2.5	PASS
		VN	0	4.39	0.001866	± 2.5	PASS
		VN	10	-1.86	-0.000791	± 2.5	PASS
		VN	20	2.88	0.001224	± 2.5	PASS
		VN	30	3.9	0.001658	± 2.5	PASS
		VN	40	4.47	0.001900	± 2.5	PASS
		VN	50	0.92	0.000391	± 2.5	PASS
	MCH	VN	-30	4.12	0.001749	± 2.5	PASS
		VN	-20	-1.99	-0.000845	± 2.5	PASS
		VN	-10	3.77	0.001601	± 2.5	PASS
		VN	0	0.23	0.000098	± 2.5	PASS
		VN	10	-0.89	-0.000378	± 2.5	PASS
		VN	20	1.67	0.000709	± 2.5	PASS
		VN	30	-0.55	-0.000234	± 2.5	PASS
		VN	40	2.57	0.001091	± 2.5	PASS
		VN	50	1.37	0.000582	± 2.5	PASS
	HCH	VN	-30	-1.32	-0.000560	± 2.5	PASS
		VN	-20	3.41	0.001446	± 2.5	PASS
		VN	-10	0.81	0.000344	± 2.5	PASS
VN		0	0.12	0.000051	± 2.5	PASS	
VN		10	2.69	0.001141	± 2.5	PASS	

		VN	20	3.09	0.001311	± 2.5	PASS
		VN	30	3.96	0.001680	± 2.5	PASS
		VN	40	-1.01	-0.000428	± 2.5	PASS
		VN	50	3.34	0.001417	± 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	MCH	VL	TN	1.71	0.000726	± 2.5	PASS
		VN	TN	-1.21	-0.000514	± 2.5	PASS
		VH	TN	4.44	0.001885	± 2.5	PASS
16QAM	MCH	VL	TN	-0.9	-0.000382	± 2.5	PASS
		VN	TN	-0.34	-0.000144	± 2.5	PASS
		VH	TN	-0.98	-0.000416	± 2.5	PASS
Temperature							
Modulation	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
QPSK	MCH	VN	-30	1.48	0.000628	± 2.5	PASS
		VN	-20	1.93	0.000820	± 2.5	PASS
		VN	-10	-1.41	-0.000599	± 2.5	PASS
		VN	0	4.25	0.001805	± 2.5	PASS
		VN	10	2.49	0.001057	± 2.5	PASS
		VN	20	4.27	0.001813	± 2.5	PASS
		VN	30	-0.61	-0.000259	± 2.5	PASS
		VN	40	0.34	0.000144	± 2.5	PASS
		VN	50	4.43	0.001881	± 2.5	PASS
16QAM	MCH	VN	-30	-1.92	-0.000815	± 2.5	PASS
		VN	-20	-1.26	-0.000535	± 2.5	PASS
		VN	-10	2.17	0.000921	± 2.5	PASS
		VN	0	1.5	0.000637	± 2.5	PASS
		VN	10	-0.28	-0.000119	± 2.5	PASS
		VN	20	4.42	0.001877	± 2.5	PASS
		VN	30	4.92	0.002089	± 2.5	PASS
		VN	40	4.49	0.001907	± 2.5	PASS
		VN	50	-0.78	-0.000331	± 2.5	PASS