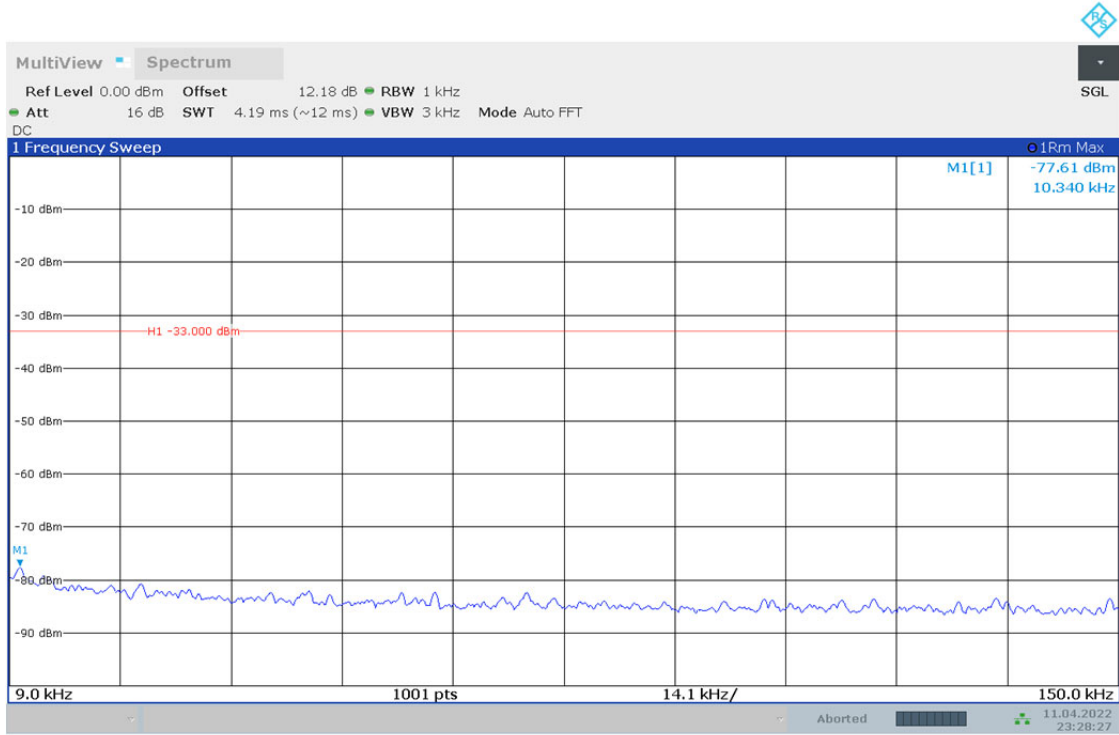
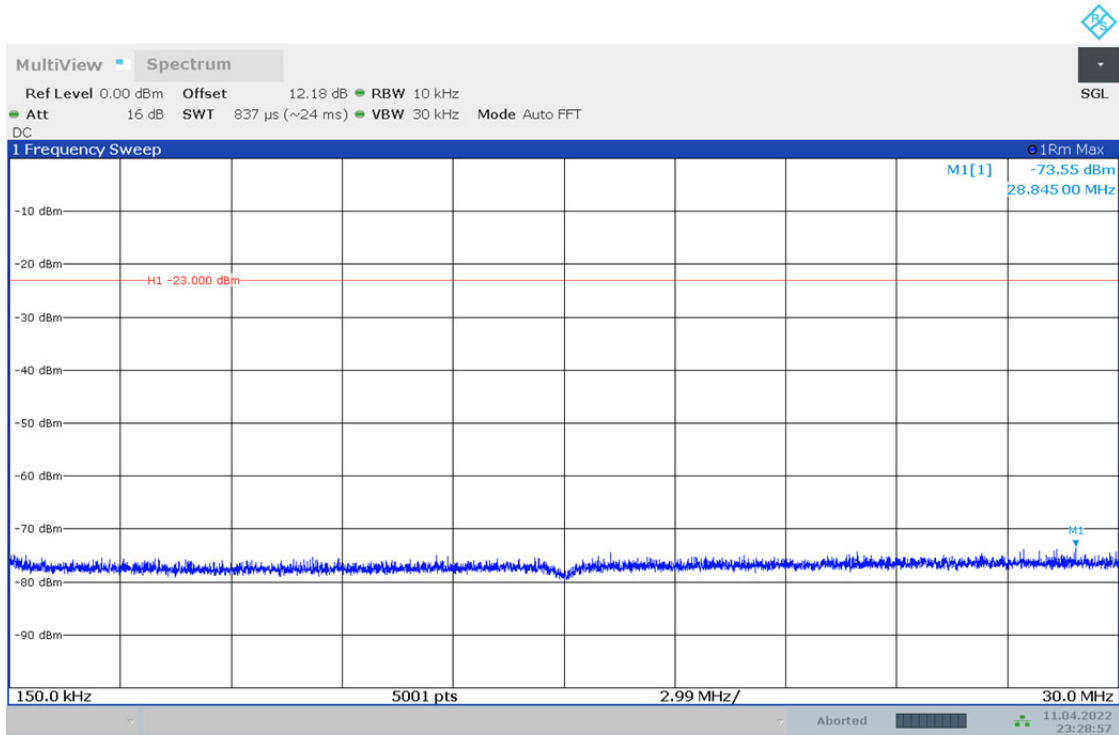


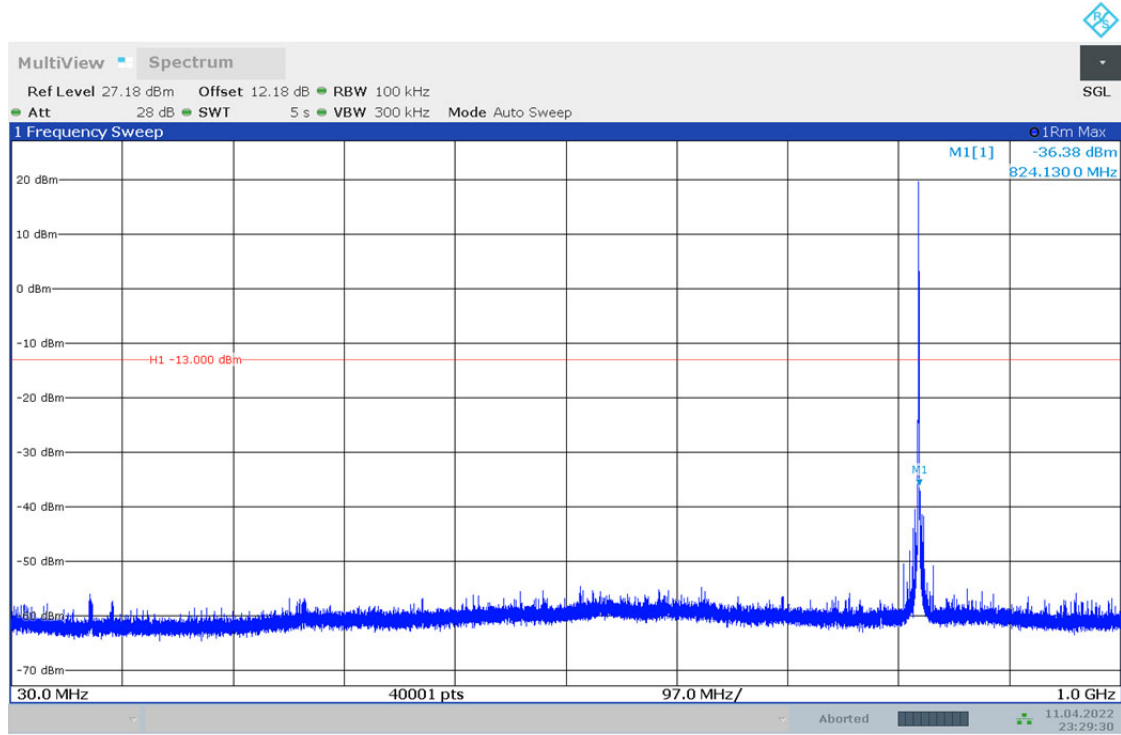
6.2.54 TM2_10MHz_HCH_RB1#49



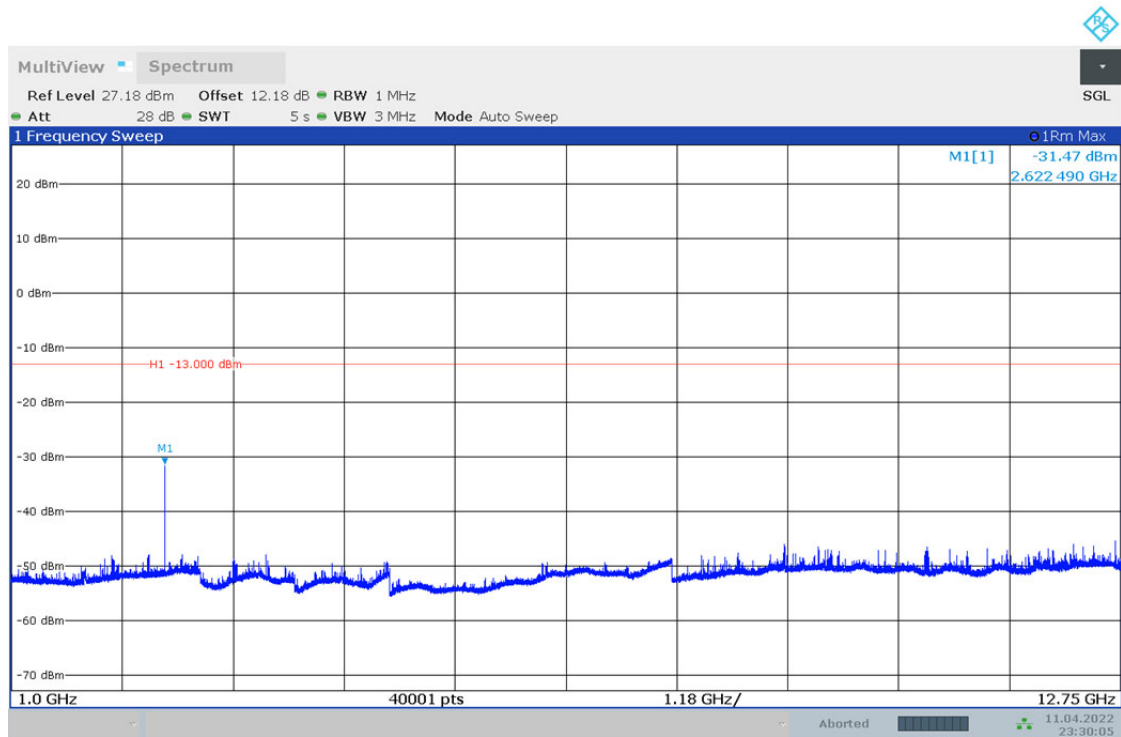
23:28:28 11.04.2022



23:28:58 11.04.2022



23:29:31 11.04.2022



23:30:05 11.04.2022

7 Appendix G: Frequency Stability

7.1 Test Results

7.1.1 Frequency Error vs. Voltage

Frequency Error vs. Voltage								
Test Mode	Test Bandwidth [MHz]	Test Channel	Modulation	Test Temp.	Test Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
TM1	1.4	LCH	QPSK	TN	VH	26	0.03	PASS
			QPSK	TN	VN	5.55	0.01	PASS
			QPSK	TN	VL	-6.2	-0.01	PASS
		MCH	QPSK	TN	VH	-7.12	-0.01	PASS
			QPSK	TN	VN	-9.89	-0.01	PASS
			QPSK	TN	VL	-1.53	0	PASS
		HCH	QPSK	TN	VH	9.66	0.01	PASS
			QPSK	TN	VN	10.75	0.01	PASS
			QPSK	TN	VL	10.92	0.01	PASS
	5	LCH	QPSK	TN	VH	-4.44	-0.01	PASS
			QPSK	TN	VN	5.71	0.01	PASS
			QPSK	TN	VL	3.07	0	PASS
		MCH	QPSK	TN	VH	-4.1	-0.01	PASS
			QPSK	TN	VN	-6.81	-0.01	PASS
			QPSK	TN	VL	2.88	0	PASS
		HCH	QPSK	TN	VH	0.75	0	PASS
			QPSK	TN	VN	4.52	0.01	PASS
			QPSK	TN	VL	-2.24	0	PASS
	10	LCH	QPSK	TN	VH	-0.52	0	PASS
			QPSK	TN	VN	-1.06	0	PASS
			QPSK	TN	VL	-0.9	0	PASS
		MCH	QPSK	TN	VH	1.73	0	PASS
			QPSK	TN	VN	-1.6	0	PASS
			QPSK	TN	VL	-4.12	-0.01	PASS
		HCH	QPSK	TN	VH	-1.99	0	PASS
			QPSK	TN	VN	-3.1	0	PASS
			QPSK	TN	VL	1.62	0	PASS

Frequency Error vs. Voltage								
Test Mode	Test Bandwidth [MHz]	Test Channel	Modulation	Test Temp.	Test Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
TM2	1.4	LCH	16QAM	TN	VH	4.63	0.01	PASS
			16QAM	TN	VN	-17.59	-0.02	PASS
			16QAM	TN	VL	2.94	0	PASS
		MCH	16QAM	TN	VH	11.43	0.01	PASS
			16QAM	TN	VN	7.98	0.01	PASS
			16QAM	TN	VL	4.72	0.01	PASS
		HCH	16QAM	TN	VH	-21.06	-0.03	PASS
			16QAM	TN	VN	-7.92	-0.01	PASS
			16QAM	TN	VL	-12.7	-0.02	PASS
	5	LCH	16QAM	TN	VH	1.87	0	PASS
			16QAM	TN	VN	8.59	0.01	PASS
			16QAM	TN	VL	8.33	0.01	PASS
		MCH	16QAM	TN	VH	1.32	0	PASS
			16QAM	TN	VN	-2.87	0	PASS
			16QAM	TN	VL	11.17	0.01	PASS
		HCH	16QAM	TN	VH	4.11	0.01	PASS
			16QAM	TN	VN	3.44	0	PASS
			16QAM	TN	VL	6.33	0.01	PASS
	10	LCH	16QAM	TN	VH	3.29	0	PASS
			16QAM	TN	VN	4.08	0	PASS
			16QAM	TN	VL	0.84	0	PASS
		MCH	16QAM	TN	VH	-0.4	0	PASS
			16QAM	TN	VN	1.67	0	PASS
			16QAM	TN	VL	6.11	0.01	PASS
		HCH	16QAM	TN	VH	-3.45	0	PASS
			16QAM	TN	VN	1.11	0	PASS
			16QAM	TN	VL	-3.07	0	PASS

7.1.2 Frequency Error vs. Temperature

Frequency Error vs. Temperature								
Test Mode	Test Bandwidth [MHz]	Test Channel	Modulation	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
TM1	1.4	LCH	QPSK	VN	-30	2.14	0	PASS
			QPSK	VN	-20	4.66	0.01	PASS
			QPSK	VN	-10	-5.60	-0.01	PASS
			QPSK	VN	0	-3.32	0	PASS
			QPSK	VN	10	-1.05	0	PASS
			QPSK	VN	20	-0.84	0	PASS
			QPSK	VN	30	8.69	0.01	PASS
			QPSK	VN	40	-2.39	0	PASS
			QPSK	VN	50	13.28	0.02	PASS
		MCH	QPSK	VN	-30	-28.15	-0.03	PASS
			QPSK	VN	-20	-3.61	0	PASS
			QPSK	VN	-10	-6.07	-0.01	PASS
			QPSK	VN	0	-19.07	-0.02	PASS
			QPSK	VN	10	-3.64	0	PASS
			QPSK	VN	20	-6.58	-0.01	PASS
			QPSK	VN	30	12.16	0.01	PASS
			QPSK	VN	40	-9.02	-0.01	PASS
			QPSK	VN	50	12.15	0.01	PASS
		HCH	QPSK	VN	-30	2.71	0	PASS
			QPSK	VN	-20	-3.18	0	PASS
			QPSK	VN	-10	1.10	0	PASS
			QPSK	VN	0	19.21	0.02	PASS
			QPSK	VN	10	9.71	0.01	PASS
			QPSK	VN	20	2.44	0	PASS
	QPSK		VN	30	11.51	0.01	PASS	
	QPSK		VN	40	11.78	0.01	PASS	
	QPSK		VN	50	-7.22	-0.01	PASS	
	5	LCH	QPSK	VN	-30	2.88	0	PASS
			QPSK	VN	-20	-2.11	0	PASS
			QPSK	VN	-10	2.40	0	PASS
			QPSK	VN	0	2.87	0	PASS
			QPSK	VN	10	8.38	0.01	PASS
			QPSK	VN	20	-4.03	0	PASS
			QPSK	VN	30	5.15	0.01	PASS
			QPSK	VN	40	8.80	0.01	PASS
			QPSK	VN	50	6.59	0.01	PASS

Frequency Error vs. Temperature								
Test Mode	Test Bandwidth [MHz]	Test Channel	Modulation	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
TM1	5	MCH	QPSK	VN	-30	-3.24	0	PASS
			QPSK	VN	-20	3.36	0	PASS
			QPSK	VN	-10	-4.01	0	PASS
			QPSK	VN	0	-7.01	-0.01	PASS
			QPSK	VN	10	-1.66	0	PASS
			QPSK	VN	20	4.00	0	PASS
			QPSK	VN	30	-8.90	-0.01	PASS
			QPSK	VN	40	-3.46	0	PASS
			QPSK	VN	50	6.21	0.01	PASS
		HCH	QPSK	VN	-30	5.30	0.01	PASS
			QPSK	VN	-20	0.51	0	PASS
			QPSK	VN	-10	0.05	0	PASS
			QPSK	VN	0	3.59	0	PASS
			QPSK	VN	10	4.48	0.01	PASS
			QPSK	VN	20	-3.77	0	PASS
			QPSK	VN	30	2.54	0	PASS
			QPSK	VN	40	4.53	0.01	PASS
			QPSK	VN	50	0.46	0	PASS
	10	LCH	QPSK	VN	-30	-0.27	0	PASS
			QPSK	VN	-20	-0.52	0	PASS
			QPSK	VN	-10	1.35	0	PASS
			QPSK	VN	0	-7.89	-0.01	PASS
			QPSK	VN	10	4.06	0	PASS
			QPSK	VN	20	-4.17	-0.01	PASS
			QPSK	VN	30	-3.42	0	PASS
			QPSK	VN	40	1.58	0	PASS
			QPSK	VN	50	-2.20	0	PASS
		MCH	QPSK	VN	-30	-0.84	0	PASS
			QPSK	VN	-20	-1.42	0	PASS
			QPSK	VN	-10	3.95	0	PASS
			QPSK	VN	0	-4.41	-0.01	PASS
			QPSK	VN	10	-1.97	0	PASS
			QPSK	VN	20	-2.71	0	PASS
			QPSK	VN	30	-0.70	0	PASS
			QPSK	VN	40	-1.14	0	PASS
			QPSK	VN	50	2.14	0	PASS

Frequency Error vs. Temperature								
Test Mode	Test Bandwidth [MHz]	Test Channel	Modulation	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
TM1	10	HCH	QPSK	VN	-30	-2.32	0	PASS
			QPSK	VN	-20	-2.06	0	PASS
			QPSK	VN	-10	5.79	0.01	PASS
			QPSK	VN	0	-3.58	0	PASS
			QPSK	VN	10	5.08	0.01	PASS
			QPSK	VN	20	0.59	0	PASS
			QPSK	VN	30	-1.93	0	PASS
			QPSK	VN	40	0.69	0	PASS
TM2	1.4	LCH	16QAM	VN	-30	11.37	0.01	PASS
			16QAM	VN	-20	4.58	0.01	PASS
			16QAM	VN	-10	1.14	0	PASS
			16QAM	VN	0	5.95	0.01	PASS
			16QAM	VN	10	-19.48	-0.02	PASS
			16QAM	VN	20	2.76	0	PASS
			16QAM	VN	30	-3.02	0	PASS
			16QAM	VN	40	-4.33	-0.01	PASS
		MCH	16QAM	VN	-30	21.19	0.03	PASS
			16QAM	VN	-20	2.17	0	PASS
			16QAM	VN	-10	19.32	0.02	PASS
			16QAM	VN	0	2.14	0	PASS
			16QAM	VN	10	1.09	0	PASS
			16QAM	VN	20	3.61	0	PASS
			16QAM	VN	30	10.08	0.01	PASS
			16QAM	VN	40	9.79	0.01	PASS
		HCH	16QAM	VN	-30	13.62	0.02	PASS
			16QAM	VN	-20	3.21	0	PASS
			16QAM	VN	-10	5.11	0.01	PASS
			16QAM	VN	0	9.27	0.01	PASS
			16QAM	VN	10	17.65	0.02	PASS
			16QAM	VN	20	-1.12	0	PASS
			16QAM	VN	30	-1.10	0	PASS
			16QAM	VN	40	-6.30	-0.01	PASS
			16QAM	VN	50	-2.21	0	PASS

Frequency Error vs. Temperature								
Test Mode	Test Bandwidth [MHz]	Test Channel	Modulation	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
TM2	5	LCH	16QAM	VN	-30	-3.73	0	PASS
			16QAM	VN	-20	6.29	0.01	PASS
			16QAM	VN	-10	5.34	0.01	PASS
			16QAM	VN	0	2.79	0	PASS
			16QAM	VN	10	4.59	0.01	PASS
			16QAM	VN	20	6.54	0.01	PASS
			16QAM	VN	30	-1.16	0	PASS
			16QAM	VN	40	-3.44	0	PASS
		16QAM	VN	50	7.02	0.01	PASS	
		16QAM	VN	-30	3.07	0	PASS	
		16QAM	VN	-20	-5.36	-0.01	PASS	
		16QAM	VN	-10	1.20	0	PASS	
		16QAM	VN	0	-6.83	-0.01	PASS	
		16QAM	VN	10	-0.73	0	PASS	
		16QAM	VN	20	7.92	0.01	PASS	
		16QAM	VN	30	8.51	0.01	PASS	
		16QAM	VN	40	1.92	0	PASS	
		16QAM	VN	50	5.79	0.01	PASS	
		16QAM	VN	-30	-4.48	-0.01	PASS	
		16QAM	VN	-20	-0.05	0	PASS	
		16QAM	VN	-10	-1.59	0	PASS	
		16QAM	VN	0	-3.76	0	PASS	
		16QAM	VN	10	-0.05	0	PASS	
		16QAM	VN	20	-4.4	-0.01	PASS	
	16QAM	VN	30	3.77	0	PASS		
	16QAM	VN	40	5.14	0.01	PASS		
	16QAM	VN	50	-0.98	0	PASS		
	16QAM	VN	-30	2.50	0	PASS		
	16QAM	VN	-20	1.39	0	PASS		
	16QAM	VN	-10	2.45	0	PASS		
	16QAM	VN	0	4.31	0.01	PASS		
	16QAM	VN	10	3.39	0	PASS		
	16QAM	VN	20	-5.87	-0.01	PASS		
	16QAM	VN	30	0.44	0	PASS		
	16QAM	VN	40	5.80	0.01	PASS		
	16QAM	VN	50	5.25	0.01	PASS		

Frequency Error vs. Temperature								
Test Mode	Test Bandwidth [MHz]	Test Channel	Modulation	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
TM2	10	MCH	16QAM	VN	-30	4.92	0.01	PASS
			16QAM	VN	-20	1.22	0	PASS
			16QAM	VN	-10	1.21	0	PASS
			16QAM	VN	0	5.66	0.01	PASS
			16QAM	VN	10	-0.45	0	PASS
			16QAM	VN	20	2.10	0	PASS
			16QAM	VN	30	4.63	0.01	PASS
			16QAM	VN	40	-1.14	0	PASS
			16QAM	VN	50	1.68	0	PASS
		HCH	16QAM	VN	-30	2.67	0	PASS
			16QAM	VN	-20	0.61	0	PASS
			16QAM	VN	-10	2.14	0	PASS
			16QAM	VN	0	-0.37	0	PASS
			16QAM	VN	10	-2.70	0	PASS
			16QAM	VN	20	5.36	0.01	PASS
			16QAM	VN	30	-1.60	0	PASS
			16QAM	VN	40	3.09	0	PASS
			16QAM	VN	50	-1.28	0	PASS

End of Test Report