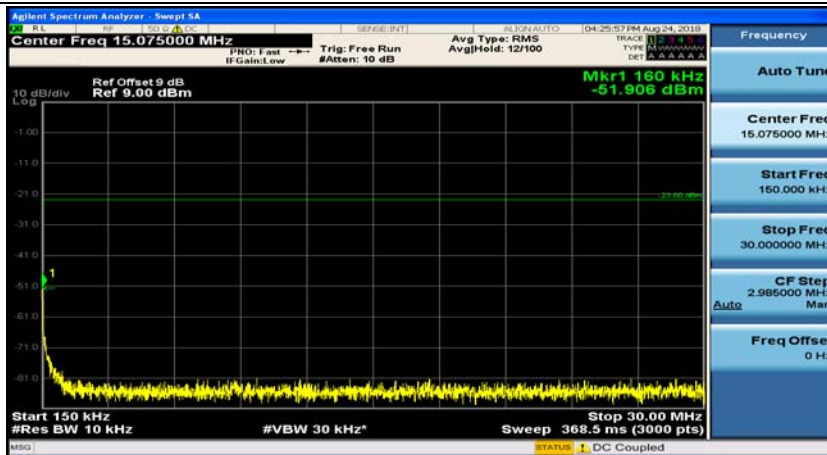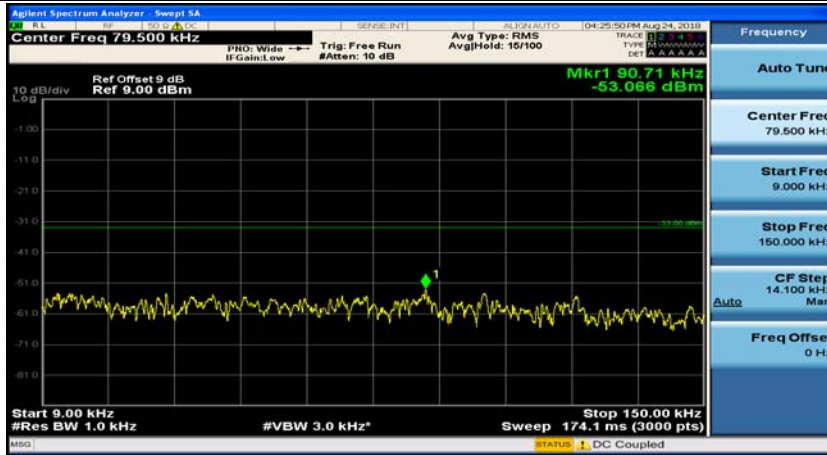| Channel Bandwidth: 10 MHz_LCH_16QAM_1RB#0 |
|---|

Channel Bandwidth: 10 MHz_LCH_16QAM_1RB#24

Channel Bandwidth: 10 MHz_LCH_16QAM_1RB#49

Screen 1 (Spectrum Analyzer):

Agilent Spectrum Analyzer - Swept SA
Center Freq 79.500 kHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 10 dB
Avg Type: RMS
Avg|Hold: 17/100
ALIGN AUTO 04:26:28 PM Aug 24, 2018
SENSE:INT

Ref Offset 9 dB
10 dB/div Ref 9.00 dBm
Log

Mkr1 16.10 kHz
-51.271 dBm

Start 9.00 kHz
#Res BW 1.0 kHz
#VBW 3.0 kHz*
Stop 150.00 kHz
Sweep 174.1 ms (3000 pts)
STATUS DC Coupled

Frequency
Auto Tune
Center Freq 79.500 kHz
Start Freq 9.000 kHz
Stop Freq 150.000 kHz
CF Step 14.100 kHz Auto Man
Freq Offset 0 Hz

Screen 2 (Spectrum Analyzer):

Agilent Spectrum Analyzer - Swept SA
Center Freq 15.075000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 10 dB
Avg Type: RMS
Avg|Hold: 12/100
ALIGN AUTO 04:26:35 PM Aug 24, 2018
SENSE:INT

Ref Offset 9 dB
10 dB/div Ref 9.00 dBm
Log

Mkr1 150 kHz
-50.816 dBm

Start 150 kHz
#Res BW 10 kHz
#VBW 30 kHz*
Stop 30.00 MHz
Sweep 368.5 ms (3000 pts)
STATUS DC Coupled

Frequency
Auto Tune
Center Freq 15.075000 MHz
Start Freq 150.000 kHz
Stop Freq 30.000000 MHz
CF Step 2.985000 MHz Auto Man
Freq Offset 0 Hz

Screen 3 (Spectrum Analyzer):

Agilent Spectrum Analyzer - Swept SA
Center Freq 13.015000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
Avg Type: RMS
Avg|Hold: 10/100
ALIGN AUTO 04:26:41 PM Aug 24, 2018
SENSE:INT

Ref Offset 8.96 dB
10 dB/div Ref 30.00 dBm
Log

Mkr2 25.151 GHz
-26.279 dBm

Start 30 MHz
#Res BW 1.0 MHz
#VBW 3.0 MHz*
Stop 26.00 GHz
Sweep 64.98 ms (3000 pts)
STATUS

Frequency
Auto Tune
Center Freq 13.015000000 GHz
Start Freq 30.000000 MHz
Stop Freq 26.000000000 GHz
CF Step 2.597000 GHz Auto Man
Freq Offset 0 Hz

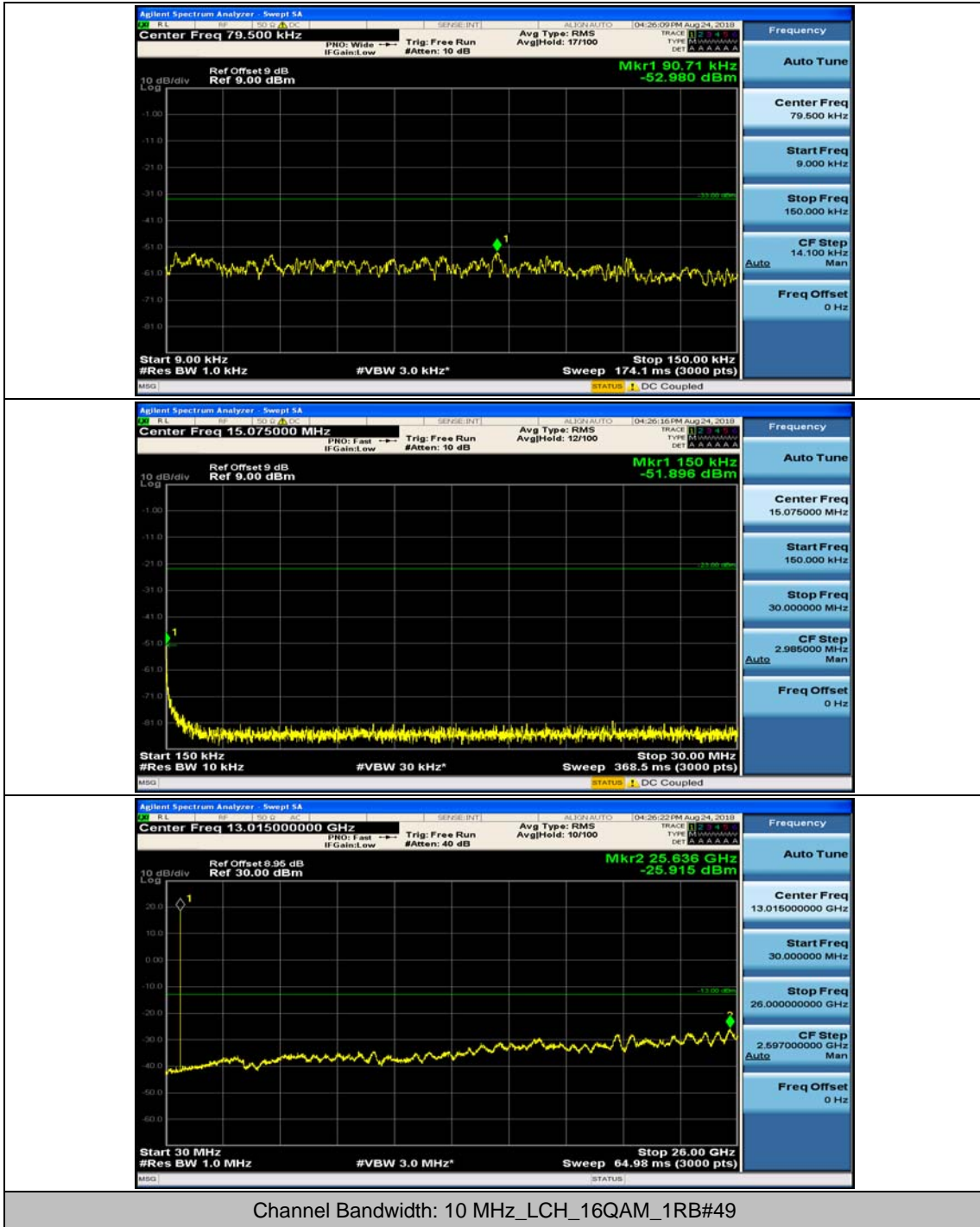| Channel Bandwidth: 10 MHz_MCH_16QAM_1RB#0 |
| --- |

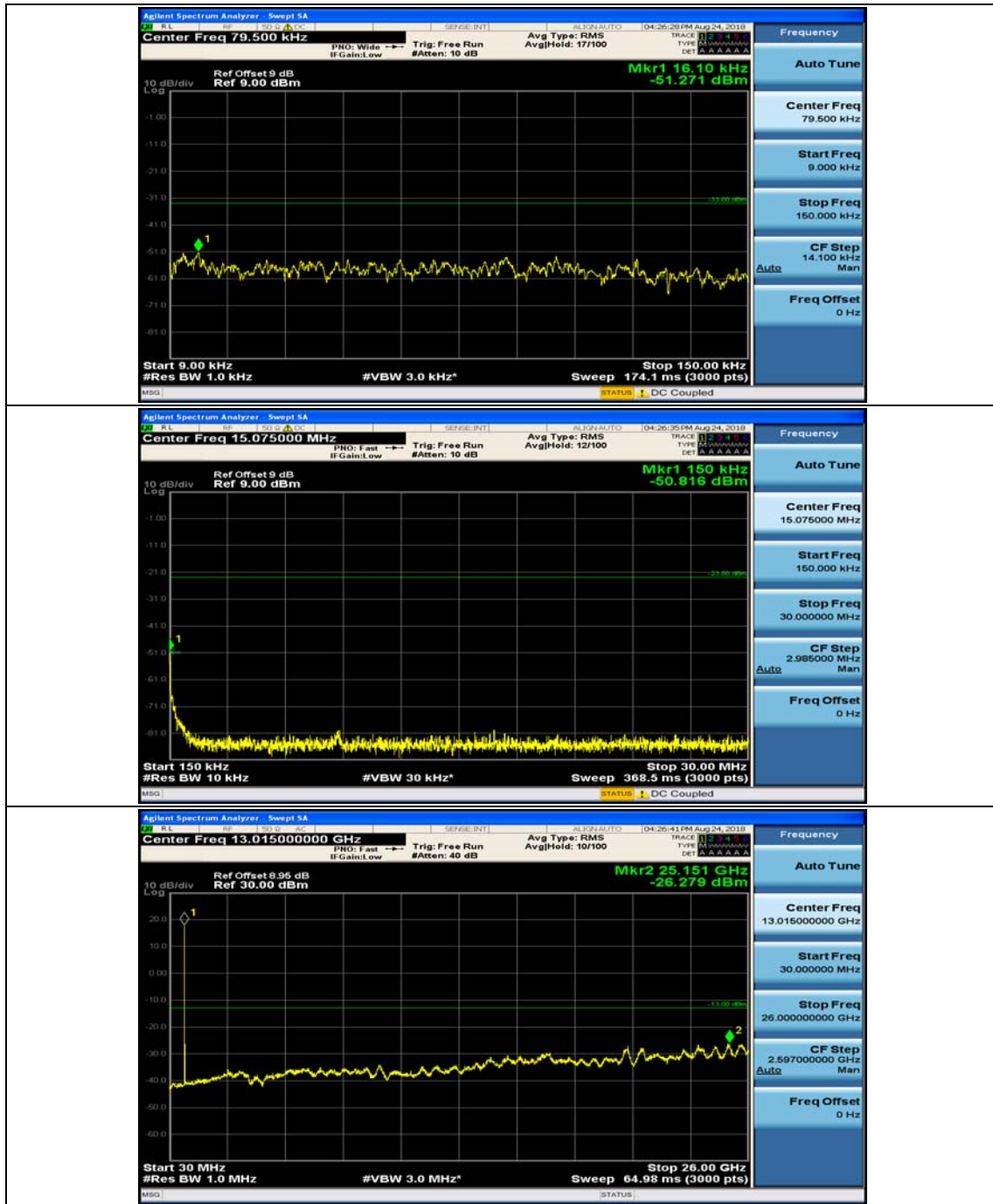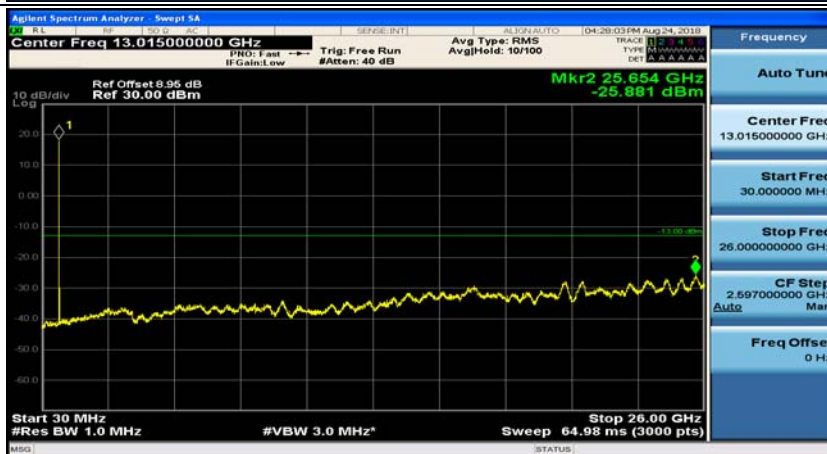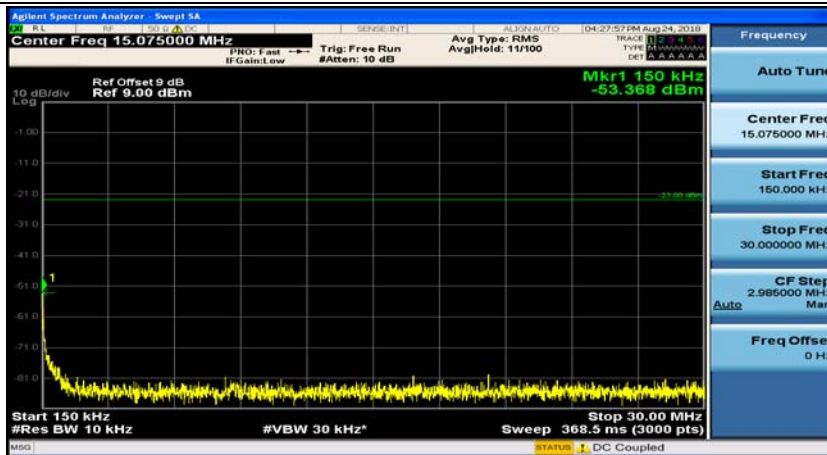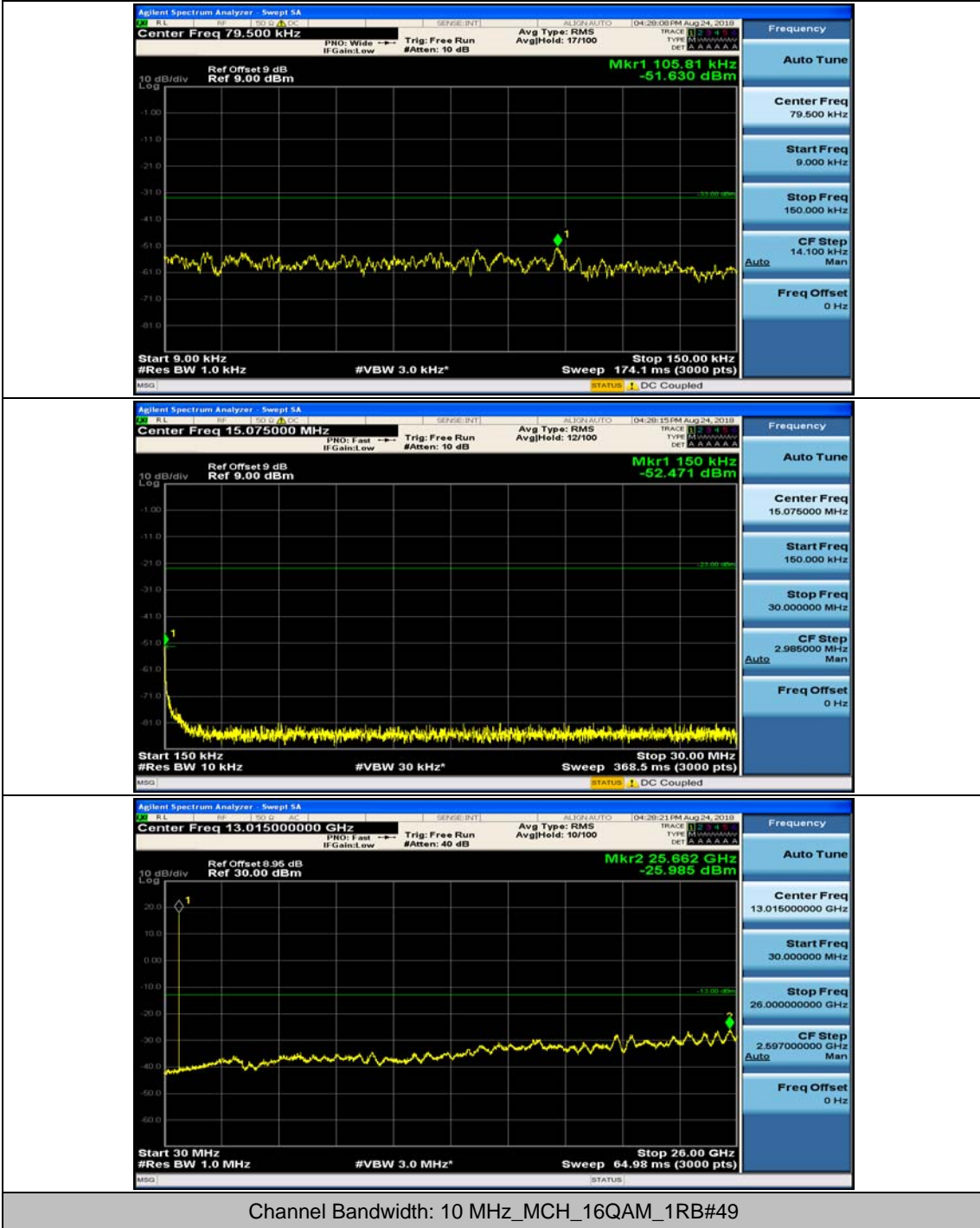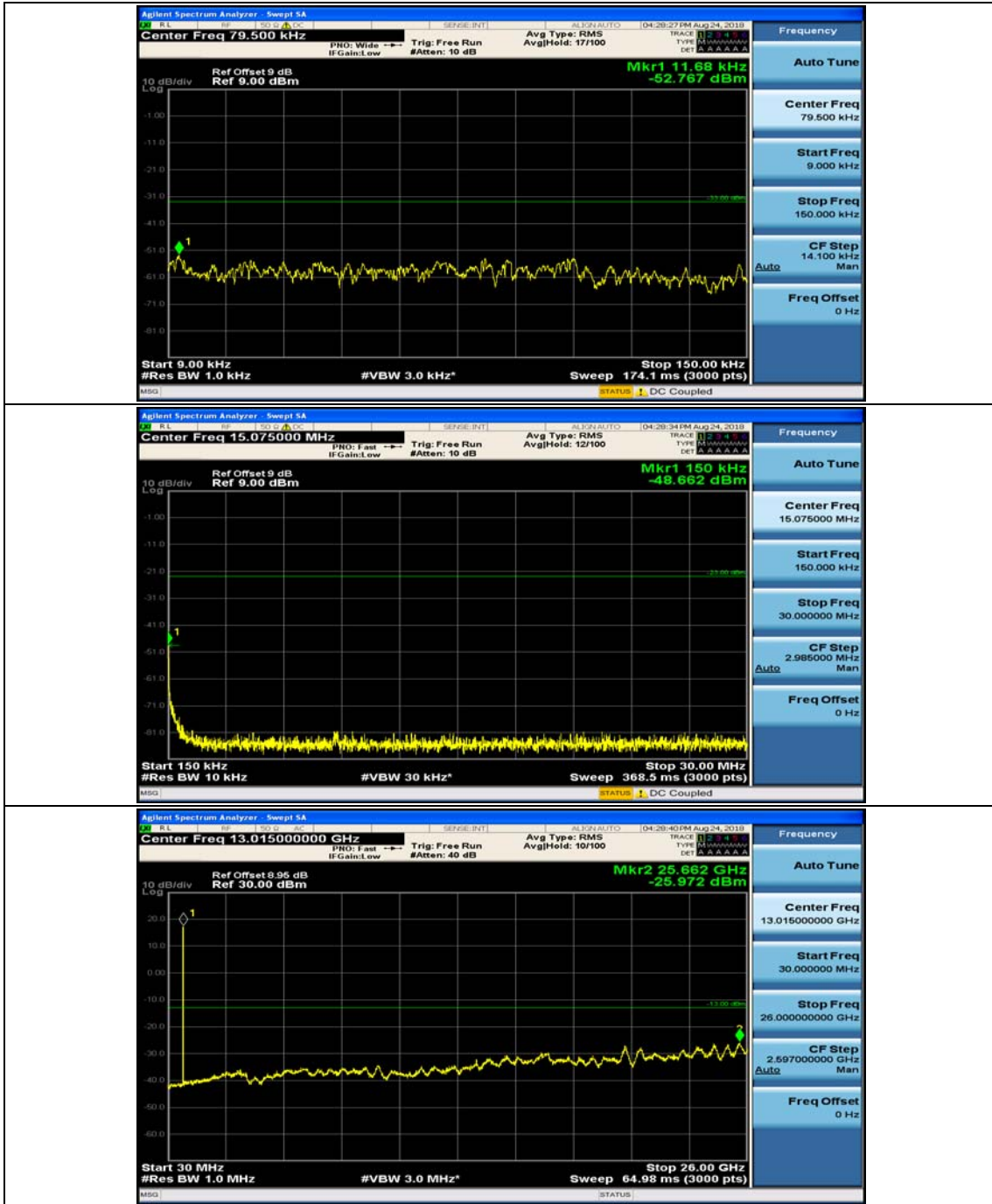| Channel Bandwidth: 10 MHz_MCH_16QAM_1RB#24 |
| --- |

Channel Bandwidth: 10 MHz_MCH_16QAM_1RB#49

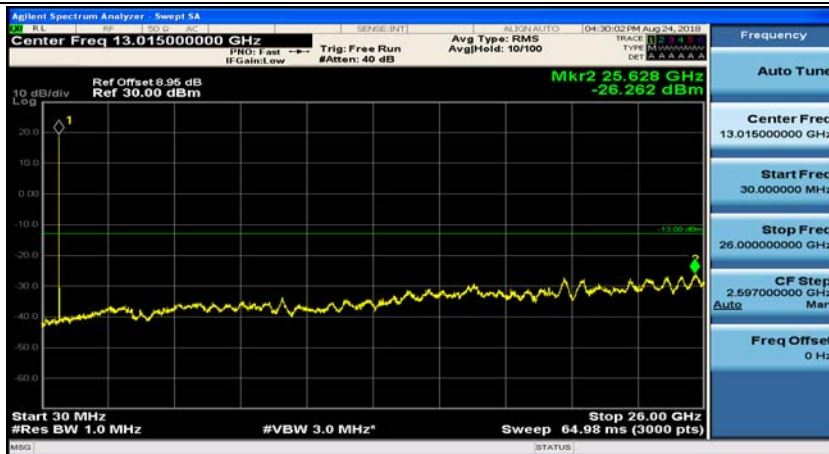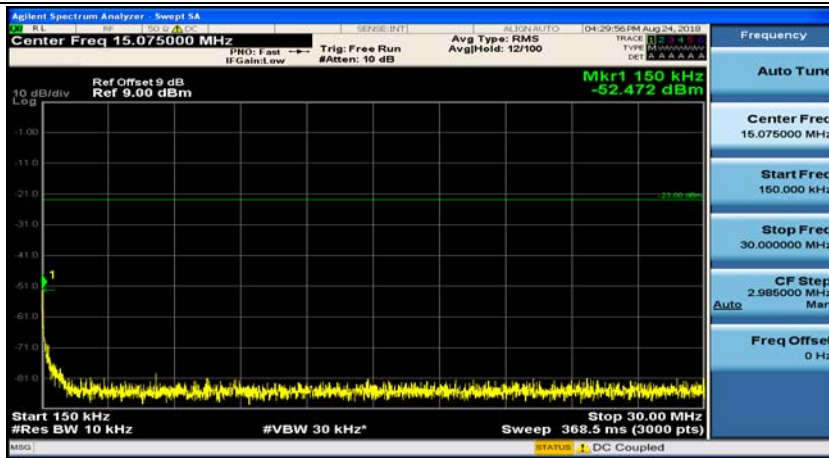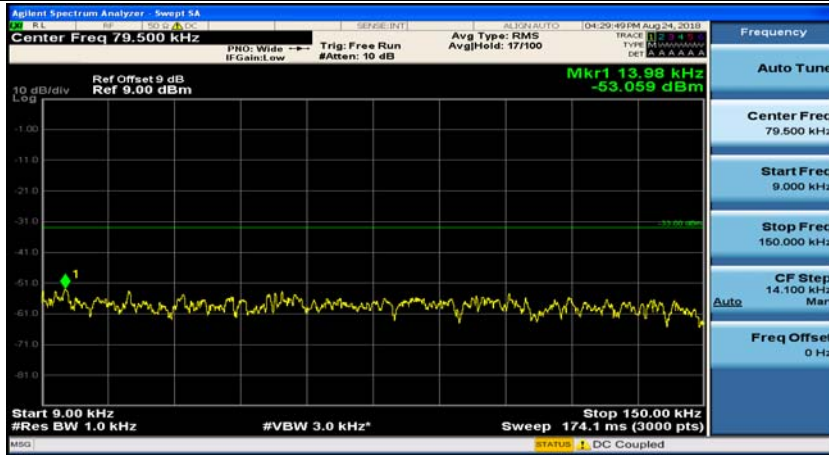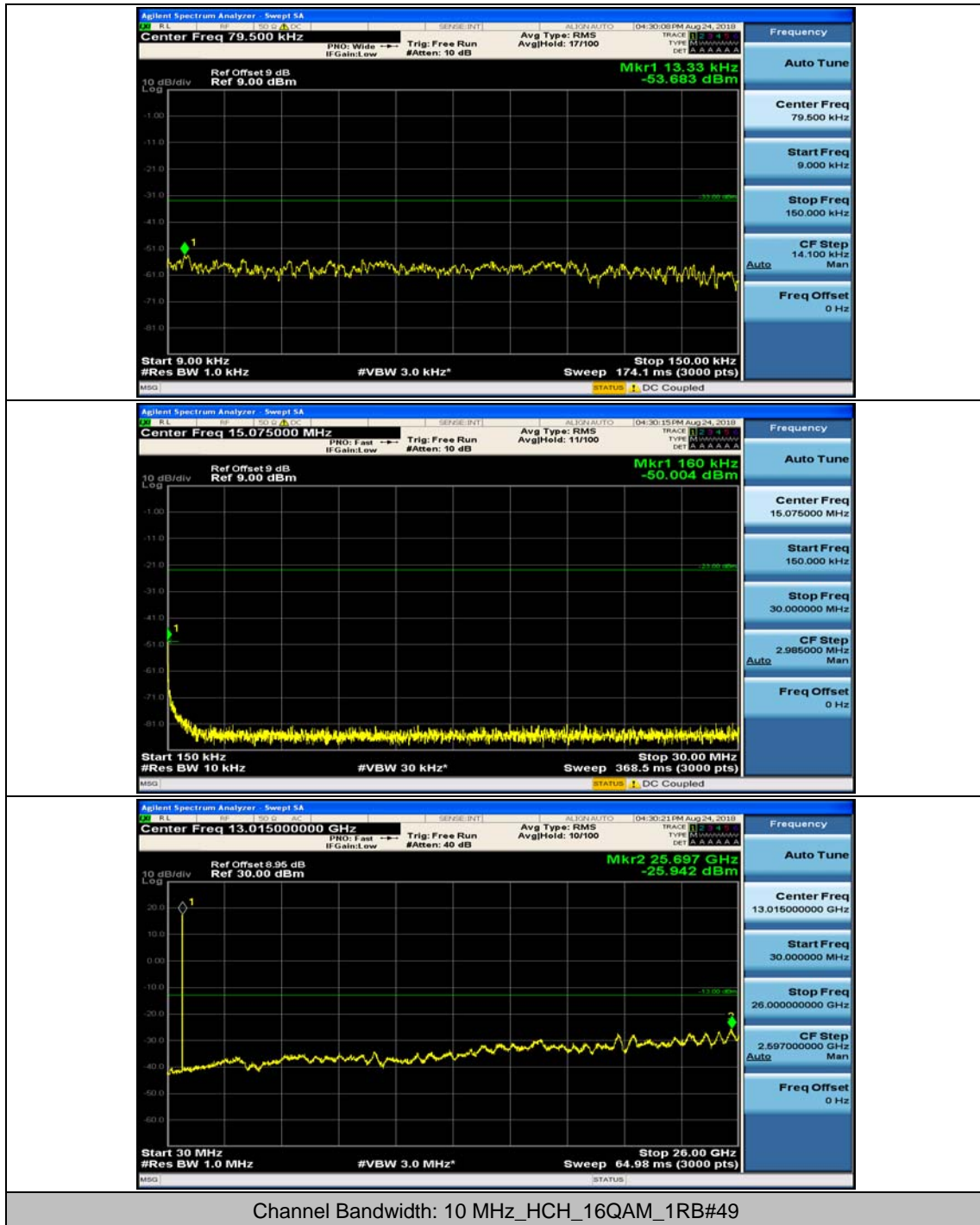| Channel Bandwidth: 10 MHz_HCH_16QAM_1RB#0 |
|---|

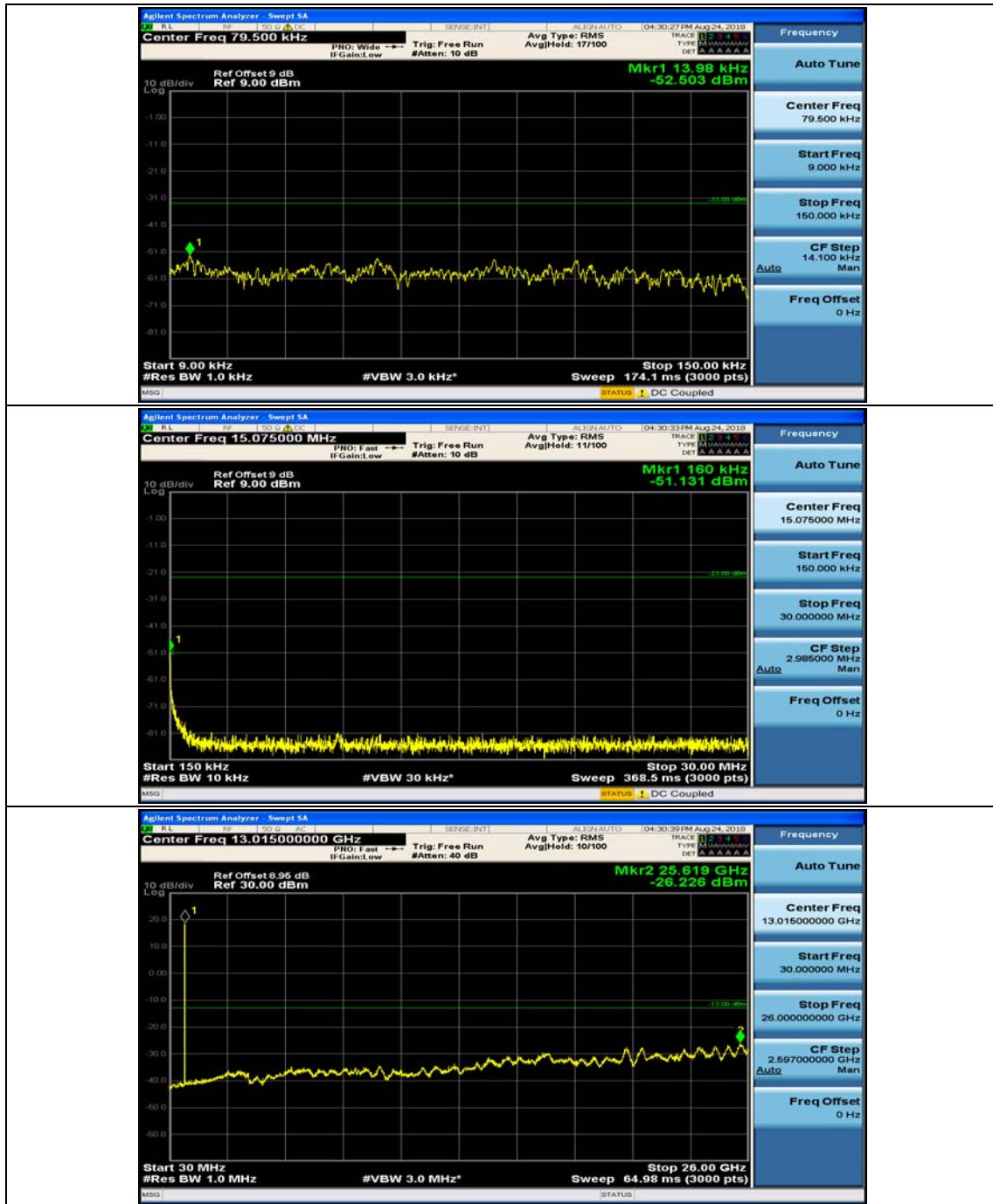| Channel Bandwidth: 10 MHz_HCH_16QAM_1RB#24 |
|---|

Channel Bandwidth: 10 MHz_HCH_16QAM_1RB#49

Appendix F: Frequency Stability

Test Result

Channel Bandwidth: 1.4 MHz

Channel Bandwidth: 1.4 MHz							
Voltage							
Modulation	Channel	Voltage [Vdc]	Temperature (℃)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
QPSK	LCH	VL	TN	3.62	0.005174	± 2.5	PASS
		VN	TN	3.2	0.004573	± 2.5	PASS
		VH	TN	0.39	0.000557	± 2.5	PASS
	MCH	VL	TN	3.97	0.005611	± 2.5	PASS
		VN	TN	4.66	0.006587	± 2.5	PASS
		VH	TN	-0.75	-0.001060	± 2.5	PASS
	HCH	VL	TN	-0.29	-0.000405	± 2.5	PASS
		VN	TN	0.59	0.000825	± 2.5	PASS
		VH	TN	1.09	0.001524	± 2.5	PASS
16QAM	LCH	VL	TN	2.97	0.004245	± 2.5	PASS
		VN	TN	-0.82	-0.001172	± 2.5	PASS
		VH	TN	-0.41	-0.000586	± 2.5	PASS
	MCH	VL	TN	3.06	0.004325	± 2.5	PASS
		VN	TN	4.12	0.005823	± 2.5	PASS
		VH	TN	4.39	0.006205	± 2.5	PASS
	HCH	VL	TN	2.91	0.004068	± 2.5	PASS
		VN	TN	4.87	0.006808	± 2.5	PASS
		VH	TN	4.42	0.006179	± 2.5	PASS
Temperature							
Modulation	Channel	Voltage [Vdc]	Temperature (℃)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
QPSK	LCH	VN	-30	0.77	0.001100	± 2.5	PASS
		VN	-20	4.58	0.006546	± 2.5	PASS
		VN	-10	0.31	0.000443	± 2.5	PASS
		VN	0	-0.69	-0.000986	± 2.5	PASS
		VN	10	-1.84	-0.002630	± 2.5	PASS
		VN	20	1.36	0.001944	± 2.5	PASS
		VN	30	3.82	0.005459	± 2.5	PASS
		VN	40	3.72	0.005317	± 2.5	PASS
		VN	50	-1.59	-0.002272	± 2.5	PASS
	MCH	VN	-30	2.74	0.003873	± 2.5	PASS

		VN	-20	1.16	0.001640	± 2.5	PASS
		VN	-10	4.25	0.006007	± 2.5	PASS
		VN	0	-1.52	-0.002148	± 2.5	PASS
		VN	10	1.05	0.001484	± 2.5	PASS
		VN	20	0.71	0.001004	± 2.5	PASS
		VN	30	-1.57	-0.002219	± 2.5	PASS
		VN	40	3.42	0.004834	± 2.5	PASS
		VN	50	-1.13	-0.001597	± 2.5	PASS
	HCH	VN	-30	-0.16	-0.000224	± 2.5	PASS
		VN	-20	2.14	0.002992	± 2.5	PASS
		VN	-10	0.66	0.000923	± 2.5	PASS
		VN	0	0.1	0.000140	± 2.5	PASS
		VN	10	2.94	0.004110	± 2.5	PASS
		VN	20	-0.63	-0.000881	± 2.5	PASS
		VN	30	1.83	0.002558	± 2.5	PASS
		VN	40	1.64	0.002293	± 2.5	PASS
		VN	50	1.28	0.001789	± 2.5	PASS
16QAM	LCH	VN	-30	-0.98	-0.001401	± 2.5	PASS
		VN	-20	0.86	0.001229	± 2.5	PASS
		VN	-10	4.1	0.005860	± 2.5	PASS
		VN	0	0.54	0.000772	± 2.5	PASS
		VN	10	0.3	0.000429	± 2.5	PASS
		VN	20	4.55	0.006503	± 2.5	PASS
		VN	30	-0.91	-0.001301	± 2.5	PASS
		VN	40	-0.32	-0.000457	± 2.5	PASS
		VN	50	-1.81	-0.002587	± 2.5	PASS
	MCH	VN	-30	-1.21	-0.001710	± 2.5	PASS
		VN	-20	0.87	0.001230	± 2.5	PASS
		VN	-10	0.93	0.001314	± 2.5	PASS
		VN	0	-0.64	-0.000905	± 2.5	PASS
		VN	10	3.27	0.004622	± 2.5	PASS
		VN	20	2.38	0.003364	± 2.5	PASS
		VN	30	2.78	0.003929	± 2.5	PASS
		VN	40	1.97	0.002784	± 2.5	PASS
		VN	50	-1.33	-0.001880	± 2.5	PASS
	HCH	VN	-30	1.02	0.001426	± 2.5	PASS
		VN	-20	-1.45	-0.002027	± 2.5	PASS
		VN	-10	0.79	0.001104	± 2.5	PASS
		VN	0	0	0.000000	± 2.5	PASS
		VN	10	-0.57	-0.000797	± 2.5	PASS
		VN	20	3.17	0.004432	± 2.5	PASS

		VN	30	3.58	0.005005	± 2.5	PASS
		VN	40	4.04	0.005648	± 2.5	PASS
		VN	50	0.72	0.001007	± 2.5	PASS

Channel Bandwidth: 3 MHz

Channel Bandwidth: 3 MHz+							
Voltage							
Modulation	Channel	Voltage [Vdc]	Temperature (℃)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
QPSK	LCH	VL	TN	3.26	0.004654	± 2.5	PASS
		VN	TN	-1.32	-0.001884	± 2.5	PASS
		VH	TN	1.86	0.002655	± 2.5	PASS
	MCH	VL	TN	0.62	0.000876	± 2.5	PASS
		VN	TN	1.23	0.001739	± 2.5	PASS
		VH	TN	2.01	0.002841	± 2.5	PASS
	HCH	VL	TN	4.94	0.006914	± 2.5	PASS
		VN	TN	0.55	0.000770	± 2.5	PASS
		VH	TN	0.66	0.000924	± 2.5	PASS
16QAM	LCH	VL	TN	2.39	0.003412	± 2.5	PASS
		VN	TN	0.68	0.000971	± 2.5	PASS
		VH	TN	3.78	0.005396	± 2.5	PASS
	MCH	VL	TN	-1.3	-0.001837	± 2.5	PASS
		VN	TN	1.01	0.001428	± 2.5	PASS
		VH	TN	-0.39	-0.000551	± 2.5	PASS
	HCH	VL	TN	2.1	0.002939	± 2.5	PASS
		VN	TN	4	0.005598	± 2.5	PASS
		VH	TN	-1.76	-0.002463	± 2.5	PASS
Temperature							
Modulation	Channel	Voltage [Vdc]	Temperature (℃)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
QPSK	LCH	VN	-30	2.62	0.003740	± 2.5	PASS
		VN	-20	4.43	0.006324	± 2.5	PASS
		VN	-10	4.27	0.006096	± 2.5	PASS
		VN	0	2.97	0.004240	± 2.5	PASS
		VN	10	-0.4	-0.000571	± 2.5	PASS
		VN	20	0.32	0.000457	± 2.5	PASS
		VN	30	-1.79	-0.002555	± 2.5	PASS
		VN	40	3	0.004283	± 2.5	PASS
		VN	50	2.56	0.003655	± 2.5	PASS
	MCH	VN	-30	2.19	0.003095	± 2.5	PASS
		VN	-20	4.71	0.006657	± 2.5	PASS

		VN	-10	-0.9	-0.001272	± 2.5	PASS
		VN	0	-1.21	-0.001710	± 2.5	PASS
		VN	10	2.53	0.003576	± 2.5	PASS
		VN	20	4.96	0.007011	± 2.5	PASS
		VN	30	1.15	0.001625	± 2.5	PASS
		VN	40	0.88	0.001244	± 2.5	PASS
		VN	50	2.6	0.003675	± 2.5	PASS
	HCH	VN	-30	-0.04	-0.000056	± 2.5	PASS
		VN	-20	4.12	0.005766	± 2.5	PASS
		VN	-10	2.72	0.003807	± 2.5	PASS
		VN	0	-1.34	-0.001875	± 2.5	PASS
		VN	10	0.76	0.001064	± 2.5	PASS
		VN	20	4.62	0.006466	± 2.5	PASS
		VN	30	2.65	0.003709	± 2.5	PASS
		VN	40	3.84	0.005374	± 2.5	PASS
		VN	50	0.47	0.000658	± 2.5	PASS
QPSK	LCH	VN	-30	4.51	0.006438	± 2.5	PASS
		VN	-20	-1.74	-0.002484	± 2.5	PASS
		VN	-10	3.88	0.005539	± 2.5	PASS
		VN	0	1.71	0.002441	± 2.5	PASS
		VN	10	4.18	0.005967	± 2.5	PASS
		VN	20	0.62	0.000885	± 2.5	PASS
		VN	30	-1.18	-0.001685	± 2.5	PASS
		VN	40	0.96	0.001370	± 2.5	PASS
		VN	50	3.58	0.005111	± 2.5	PASS
	MCH	VN	-30	0.27	0.000382	± 2.5	PASS
		VN	-20	-0.13	-0.000184	± 2.5	PASS
		VN	-10	4.22	0.005965	± 2.5	PASS
		VN	0	-0.75	-0.001060	± 2.5	PASS
		VN	10	0.23	0.000325	± 2.5	PASS
		VN	20	0.53	0.000749	± 2.5	PASS
		VN	30	3.41	0.004820	± 2.5	PASS
		VN	40	2.26	0.003194	± 2.5	PASS
		VN	50	1.45	0.002049	± 2.5	PASS
	HCH	VN	-30	-0.99	-0.001386	± 2.5	PASS
		VN	-20	2.93	0.004101	± 2.5	PASS
		VN	-10	4.97	0.006956	± 2.5	PASS
		VN	0	0.38	0.000532	± 2.5	PASS
		VN	10	-0.96	-0.001344	± 2.5	PASS
		VN	20	1.8	0.002519	± 2.5	PASS
		VN	30	4.04	0.005654	± 2.5	PASS

		VN	40	0.11	0.000154	± 2.5	PASS
		VN	50	-1.86	-0.002603	± 2.5	PASS

Channel Bandwidth: 5 MHz

Channel Bandwidth: 5 MHz							
Voltage							
Modulation	Channel	Voltage [Vdc]	Temperature (℃)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
QPSK	LCH	VL	TN	3.18	0.004533	± 2.5	PASS
		VN	TN	2.52	0.003592	± 2.5	PASS
		VH	TN	4.02	0.005731	± 2.5	PASS
	MCH	VL	TN	1.41	0.001993	± 2.5	PASS
		VN	TN	2.03	0.002869	± 2.5	PASS
		VH	TN	0.93	0.001314	± 2.5	PASS
	HCH	VL	TN	2.61	0.003658	± 2.5	PASS
		VN	TN	3.04	0.004261	± 2.5	PASS
		VH	TN	1.47	0.002060	± 2.5	PASS
16QAM	LCH	VL	TN	3.84	0.005474	± 2.5	PASS
		VN	TN	1.39	0.001981	± 2.5	PASS
		VH	TN	3.21	0.004576	± 2.5	PASS
	MCH	VL	TN	-0.47	-0.000664	± 2.5	PASS
		VN	TN	4.13	0.005837	± 2.5	PASS
		VH	TN	2.88	0.004071	± 2.5	PASS
	HCH	VL	TN	2.12	0.002971	± 2.5	PASS
		VN	TN	-1.68	-0.002355	± 2.5	PASS
		VH	TN	4.6	0.006447	± 2.5	PASS
Temperature							
Modulation	Channel	Voltage [Vdc]	Temperature (℃)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
QPSK	LCH	VN	-30	-1.72	-0.002452	± 2.5	PASS
		VN	-20	3.97	0.005659	± 2.5	PASS
		VN	-10	4.12	0.005873	± 2.5	PASS
		VN	0	-0.54	-0.000770	± 2.5	PASS
		VN	10	-0.99	-0.001411	± 2.5	PASS
		VN	20	2.57	0.003664	± 2.5	PASS
		VN	30	-0.24	-0.000342	± 2.5	PASS
		VN	40	3.81	0.005431	± 2.5	PASS
		VN	50	4.12	0.005873	± 2.5	PASS
	MCH	VN	-30	4.35	0.006148	± 2.5	PASS
		VN	-20	-0.47	-0.000664	± 2.5	PASS
		VN	-10	-0.45	-0.000636	± 2.5	PASS

		VN	0	1.15	0.001625	± 2.5	PASS
		VN	10	-0.92	-0.001300	± 2.5	PASS
		VN	20	-0.42	-0.000594	± 2.5	PASS
		VN	30	4.22	0.005965	± 2.5	PASS
		VN	40	4.14	0.005852	± 2.5	PASS
		VN	50	-0.16	-0.000226	± 2.5	PASS
	HCH	VN	-30	2.61	0.003658	± 2.5	PASS
		VN	-20	3.76	0.005270	± 2.5	PASS
		VN	-10	2.19	0.003069	± 2.5	PASS
		VN	0	1.21	0.001696	± 2.5	PASS
		VN	10	3.3	0.004625	± 2.5	PASS
		VN	20	4.6	0.006447	± 2.5	PASS
		VN	30	0.67	0.000939	± 2.5	PASS
		VN	40	4.01	0.005620	± 2.5	PASS
		VN	50	-1.56	-0.002186	± 2.5	PASS
16QAM	LCH	VN	-30	1.16	0.001654	± 2.5	PASS
		VN	-20	2.65	0.003778	± 2.5	PASS
		VN	-10	4.35	0.006201	± 2.5	PASS
		VN	0	1.9	0.002708	± 2.5	PASS
		VN	10	0.6	0.000855	± 2.5	PASS
		VN	20	-1.99	-0.002837	± 2.5	PASS
		VN	30	3.66	0.005217	± 2.5	PASS
		VN	40	1.37	0.001953	± 2.5	PASS
		VN	50	1.77	0.002523	± 2.5	PASS
	MCH	VN	-30	-1.74	-0.002459	± 2.5	PASS
		VN	-20	3.2	0.004523	± 2.5	PASS
		VN	-10	0.08	0.000113	± 2.5	PASS
		VN	0	-1.11	-0.001569	± 2.5	PASS
		VN	10	4.09	0.005781	± 2.5	PASS
		VN	20	-1.95	-0.002756	± 2.5	PASS
		VN	30	2.37	0.003350	± 2.5	PASS
		VN	40	-1.64	-0.002318	± 2.5	PASS
		VN	50	-0.93	-0.001314	± 2.5	PASS
	HCH	VN	-30	-0.31	-0.000434	± 2.5	PASS
		VN	-20	1.05	0.001472	± 2.5	PASS
		VN	-10	-0.82	-0.001149	± 2.5	PASS
		VN	0	1	0.001402	± 2.5	PASS
		VN	10	2.66	0.003728	± 2.5	PASS
		VN	20	-1.4	-0.001962	± 2.5	PASS
		VN	30	-1.04	-0.001458	± 2.5	PASS
		VN	40	-1.71	-0.002397	± 2.5	PASS

		VN	50	2.62	0.003672	± 2.5	PASS

Channel Bandwidth: 10 MHz

Channel Bandwidth: 10 MHz							
Voltage							
Modulation	Channel	Voltage [Vdc]	Temperature (℃)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
QPSK	LCH	VL	TN	2.26	0.003210	± 2.5	PASS
		VN	TN	0.78	0.001108	± 2.5	PASS
		VH	TN	-1.36	-0.001932	± 2.5	PASS
	MCH	VL	TN	-1.13	-0.001597	± 2.5	PASS
		VN	TN	4.59	0.006488	± 2.5	PASS
		VH	TN	3.07	0.004339	± 2.5	PASS
	HCH	VL	TN	3.82	0.005373	± 2.5	PASS
		VN	TN	3.4	0.004782	± 2.5	PASS
		VH	TN	2.95	0.004149	± 2.5	PASS
16QAM	LCH	VL	TN	2.38	0.003381	± 2.5	PASS
		VN	TN	-0.02	-0.000028	± 2.5	PASS
		VH	TN	1.73	0.002457	± 2.5	PASS
	MCH	VL	TN	0.97	0.001371	± 2.5	PASS
		VN	TN	0.11	0.000155	± 2.5	PASS
		VH	TN	4.91	0.006940	± 2.5	PASS
	HCH	VL	TN	-0.64	-0.000900	± 2.5	PASS
		VN	TN	1.46	0.002053	± 2.5	PASS
		VH	TN	0.19	0.000267	± 2.5	PASS
Temperature							
Modulation	Channel	Voltage [Vdc]	Temperature (℃)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
16QAM	LCH	VN	-30	0.45	0.000639	± 2.5	PASS
		VN	-20	-0.4	-0.000568	± 2.5	PASS
		VN	-10	3.28	0.004659	± 2.5	PASS
		VN	0	-0.02	-0.000028	± 2.5	PASS
		VN	10	1.27	0.001804	± 2.5	PASS
		VN	20	3.12	0.004432	± 2.5	PASS
		VN	30	2.48	0.003523	± 2.5	PASS
		VN	40	2.43	0.003452	± 2.5	PASS
		VN	50	1.21	0.001719	± 2.5	PASS
	MCH	VN	-30	4.31	0.006092	± 2.5	PASS
		VN	-20	-1.93	-0.002728	± 2.5	PASS
		VN	-10	3.76	0.005314	± 2.5	PASS
		VN	0	3.51	0.004961	± 2.5	PASS

		VN	10	2.91	0.004113	± 2.5	PASS
		VN	20	2	0.002827	± 2.5	PASS
		VN	30	-1.77	-0.002502	± 2.5	PASS
		VN	40	0.59	0.000834	± 2.5	PASS
		VN	50	-0.66	-0.000933	± 2.5	PASS
	HCH	VN	-30	0.85	0.001195	± 2.5	PASS
		VN	-20	0.82	0.001153	± 2.5	PASS
		VN	-10	1.34	0.001885	± 2.5	PASS
		VN	0	4.69	0.006596	± 2.5	PASS
		VN	10	3.22	0.004529	± 2.5	PASS
		VN	20	1.94	0.002729	± 2.5	PASS
		VN	30	-0.02	-0.000028	± 2.5	PASS
		VN	40	3.33	0.004684	± 2.5	PASS
		VN	50	2.68	0.003769	± 2.5	PASS
QPSK	LCH	VN	-30	-1.73	-0.002457	± 2.5	PASS
		VN	-20	-1.13	-0.001605	± 2.5	PASS
		VN	-10	1.08	0.001534	± 2.5	PASS
		VN	0	-1.4	-0.001989	± 2.5	PASS
		VN	10	1.08	0.001534	± 2.5	PASS
		VN	20	4.11	0.005838	± 2.5	PASS
		VN	30	0.11	0.000156	± 2.5	PASS
		VN	40	4.64	0.006591	± 2.5	PASS
		VN	50	0.48	0.000682	± 2.5	PASS
	MCH	VN	-30	3.83	0.005413	± 2.5	PASS
		VN	-20	4.06	0.005739	± 2.5	PASS
		VN	-10	3.42	0.004834	± 2.5	PASS
		VN	0	0.68	0.000961	± 2.5	PASS
		VN	10	1.05	0.001484	± 2.5	PASS
		VN	20	2.1	0.002968	± 2.5	PASS
		VN	30	1.06	0.001498	± 2.5	PASS
		VN	40	-1.14	-0.001611	± 2.5	PASS
		VN	50	-0.29	-0.000410	± 2.5	PASS
	HCH	VN	-30	0.98	0.001378	± 2.5	PASS
		VN	-20	0.48	0.000675	± 2.5	PASS
		VN	-10	0.07	0.000098	± 2.5	PASS
		VN	0	3.11	0.004374	± 2.5	PASS
		VN	10	3.82	0.005373	± 2.5	PASS
		VN	20	-1.89	-0.002658	± 2.5	PASS
		VN	30	3.65	0.005134	± 2.5	PASS
		VN	40	-0.42	-0.000591	± 2.5	PASS
		VN	50	3.1	0.004360	± 2.5	PASS