

Appendix for n78A (3450-3550)

Catalogue

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1. Effective Isotropic Radiated Power

1.1. Test Results @ Ant5 (Antenna Gain=-2.93dBi)

SCS	Bandwidth	Channel	Modulation	Conducted Result (dBm)			Max EIRP (dBm)	Limit (dBm)	Verdict
				Inner_1RB_Left	Inner_1RB_Right	Inner_Full			
30KHz	20MHz	LCH	DFT-Pi2BPSK	23.05	23.21	23.11	20.28	30.00	Pass
30KHz	20MHz	LCH	DFT-QPSK	22.97	23.05	22.98	20.12	30.00	Pass
30KHz	20MHz	LCH	DFT-16QAM	22.05	22.16	22.03	19.23	30.00	Pass
30KHz	20MHz	LCH	DFT-64QAM	20.44	20.64	20.52	17.71	30.00	Pass
30KHz	20MHz	LCH	DFT-256QAM	18.52	18.62	18.43	15.69	30.00	Pass
30KHz	20MHz	LCH	CP-QPSK	21.53	21.67	21.48	18.74	30.00	Pass
30KHz	20MHz	MCH	DFT-Pi2BPSK	22.96	23.04	23.04	20.11	30.00	Pass
30KHz	20MHz	MCH	DFT-QPSK	22.95	22.97	22.96	20.04	30.00	Pass
30KHz	20MHz	MCH	DFT-16QAM	22.07	22.14	21.98	19.21	30.00	Pass
30KHz	20MHz	MCH	DFT-64QAM	20.54	20.62	20.51	17.69	30.00	Pass
30KHz	20MHz	MCH	DFT-256QAM	18.47	18.59	18.45	15.66	30.00	Pass
30KHz	20MHz	MCH	CP-QPSK	21.56	21.62	21.50	18.69	30.00	Pass
30KHz	20MHz	HCH	DFT-Pi2BPSK	22.97	22.58	22.77	20.04	30.00	Pass
30KHz	20MHz	HCH	DFT-QPSK	22.90	22.53	22.80	19.97	30.00	Pass
30KHz	20MHz	HCH	DFT-16QAM	21.89	21.50	21.79	18.96	30.00	Pass
30KHz	20MHz	HCH	DFT-64QAM	20.51	20.14	20.29	17.58	30.00	Pass
30KHz	20MHz	HCH	DFT-256QAM	18.44	18.05	18.21	15.51	30.00	Pass
30KHz	20MHz	HCH	CP-QPSK	21.52	21.06	21.26	18.59	30.00	Pass
30KHz	40MHz	LCH	DFT-Pi2BPSK	23.08	22.99	23.17	20.24	30.00	Pass
30KHz	40MHz	LCH	DFT-QPSK	23.09	22.98	23.15	20.22	30.00	Pass
30KHz	40MHz	LCH	DFT-16QAM	22.02	21.97	22.18	19.25	30.00	Pass
30KHz	40MHz	LCH	DFT-64QAM	20.62	20.53	20.59	17.69	30.00	Pass
30KHz	40MHz	LCH	DFT-256QAM	18.52	18.45	18.69	15.76	30.00	Pass
30KHz	40MHz	LCH	CP-QPSK	21.68	21.51	21.66	18.75	30.00	Pass
30KHz	40MHz	MCH	DFT-Pi2BPSK	23.20	23.10	23.02	20.27	30.00	Pass
30KHz	40MHz	MCH	DFT-QPSK	23.17	23.05	22.98	20.24	30.00	Pass
30KHz	40MHz	MCH	DFT-16QAM	22.25	22.11	22.12	19.32	30.00	Pass
30KHz	40MHz	MCH	DFT-64QAM	20.80	20.63	20.47	17.87	30.00	Pass
30KHz	40MHz	MCH	DFT-256QAM	18.84	18.60	18.55	15.91	30.00	Pass
30KHz	40MHz	MCH	CP-QPSK	21.87	21.60	21.52	18.94	30.00	Pass
30KHz	40MHz	HCH	DFT-Pi2BPSK	23.27	23.23	23.07	20.34	30.00	Pass
30KHz	40MHz	HCH	DFT-QPSK	23.24	22.70	23.09	20.31	30.00	Pass
30KHz	40MHz	HCH	DFT-16QAM	22.34	21.73	22.09	19.41	30.00	Pass
30KHz	40MHz	HCH	DFT-64QAM	20.80	20.24	20.52	17.87	30.00	Pass
30KHz	40MHz	HCH	DFT-256QAM	18.86	18.25	18.53	15.93	30.00	Pass
30KHz	40MHz	HCH	CP-QPSK	21.87	21.20	21.54	18.94	30.00	Pass
30KHz	80MHz	LCH	DFT-Pi2BPSK	22.76	22.57	22.85	19.92	30.00	Pass
30KHz	80MHz	LCH	DFT-QPSK	22.71	22.57	22.88	19.95	30.00	Pass
30KHz	80MHz	LCH	DFT-16QAM	21.81	21.73	21.84	18.91	30.00	Pass
30KHz	80MHz	LCH	DFT-64QAM	20.41	20.29	20.37	17.48	30.00	Pass
30KHz	80MHz	LCH	DFT-256QAM	18.25	18.13	18.36	15.43	30.00	Pass
30KHz	80MHz	LCH	CP-QPSK	21.22	21.11	21.41	18.48	30.00	Pass
30KHz	80MHz	MCH	DFT-Pi2BPSK	22.89	22.49	22.83	19.96	30.00	Pass
30KHz	80MHz	MCH	DFT-QPSK	22.92	22.49	22.90	19.99	30.00	Pass
30KHz	80MHz	MCH	DFT-16QAM	21.97	21.58	21.87	19.04	30.00	Pass
30KHz	80MHz	MCH	DFT-64QAM	20.58	20.21	20.40	17.65	30.00	Pass
30KHz	80MHz	MCH	DFT-256QAM	18.34	17.97	18.30	15.41	30.00	Pass
30KHz	80MHz	MCH	CP-QPSK	21.47	21.01	21.36	18.54	30.00	Pass
30KHz	80MHz	HCH	DFT-Pi2BPSK	23.02	22.22	22.92	20.09	30.00	Pass
30KHz	80MHz	HCH	DFT-QPSK	23.01	22.23	22.94	20.08	30.00	Pass
30KHz	80MHz	HCH	DFT-16QAM	21.94	21.22	21.81	19.01	30.00	Pass
30KHz	80MHz	HCH	DFT-64QAM	20.61	19.80	20.37	17.68	30.00	Pass
30KHz	80MHz	HCH	DFT-256QAM	18.56	17.78	18.30	15.63	30.00	Pass
30KHz	80MHz	HCH	CP-QPSK	21.65	20.71	21.32	18.72	30.00	Pass
30KHz	100MHz	MCH	DFT-Pi2BPSK	22.70	22.23	22.86	19.93	30.00	Pass
30KHz	100MHz	MCH	DFT-QPSK	22.64	22.19	22.84	19.91	30.00	Pass
30KHz	100MHz	MCH	DFT-16QAM	21.63	21.26	21.85	18.92	30.00	Pass
30KHz	100MHz	MCH	DFT-64QAM	20.22	19.81	20.41	17.48	30.00	Pass

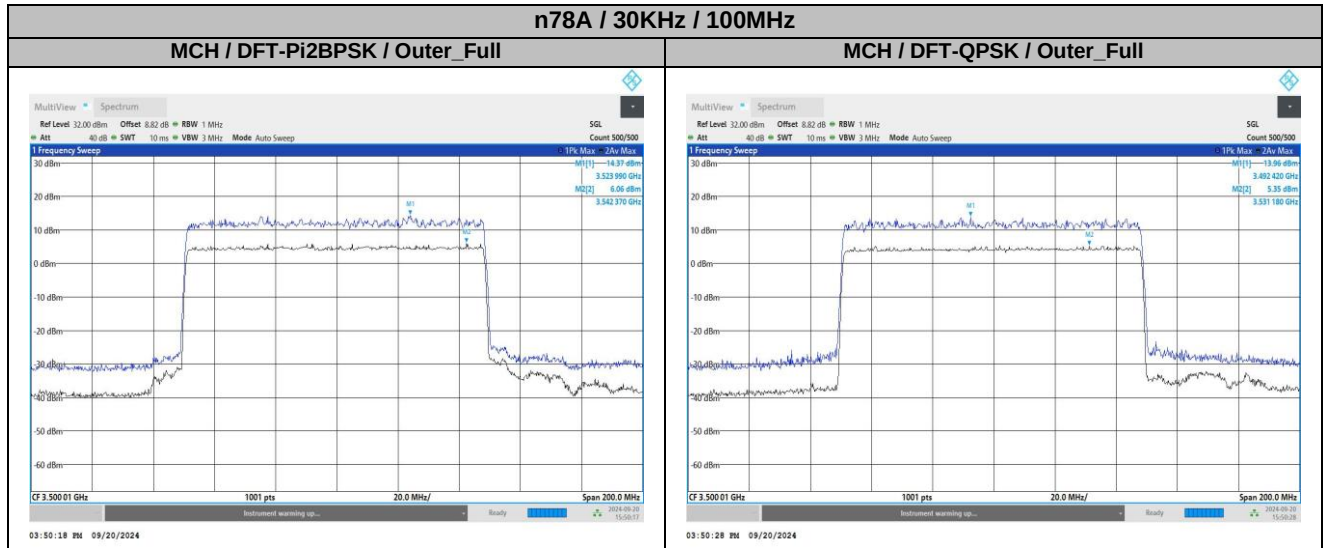
30KHz	100MHz	MCH	DFT-256QAM	18.13	17.81	18.34	15.41	30.00	Pass
30KHz	100MHz	MCH	CP-QPSK	21.32	20.86	21.35	18.42	30.00	Pass

2. Peak-to-Average Ratio

2.1. Test Results

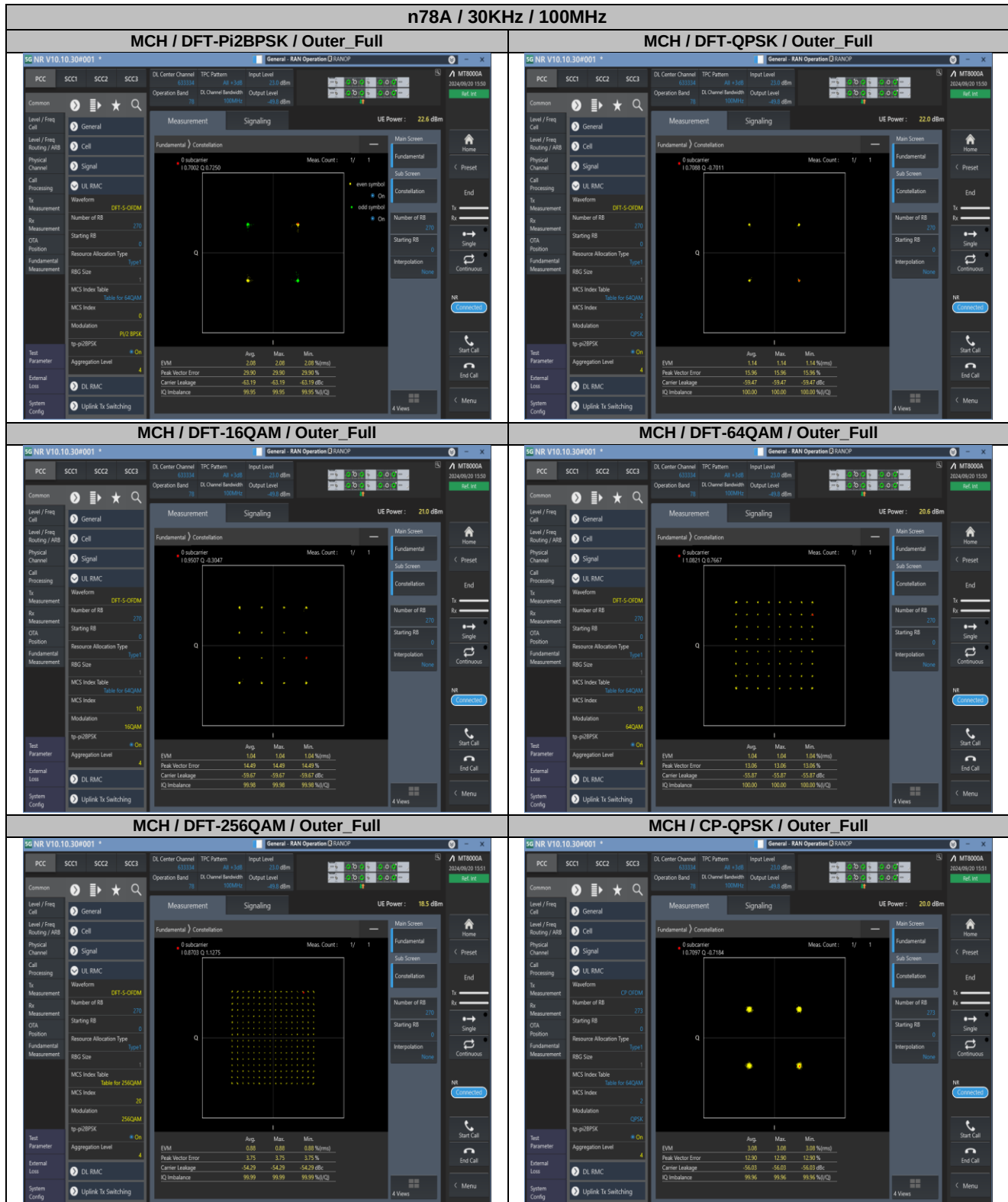
SCS	Bandwidth	Channel	RB	Result (dB)		Limit (dB)	Verdict
				DFT-Pi2BPSK	DFT-QPSK		
30KHz	100MHz	MCH	Outer_Full	8.32	8.61	13.00	Pass

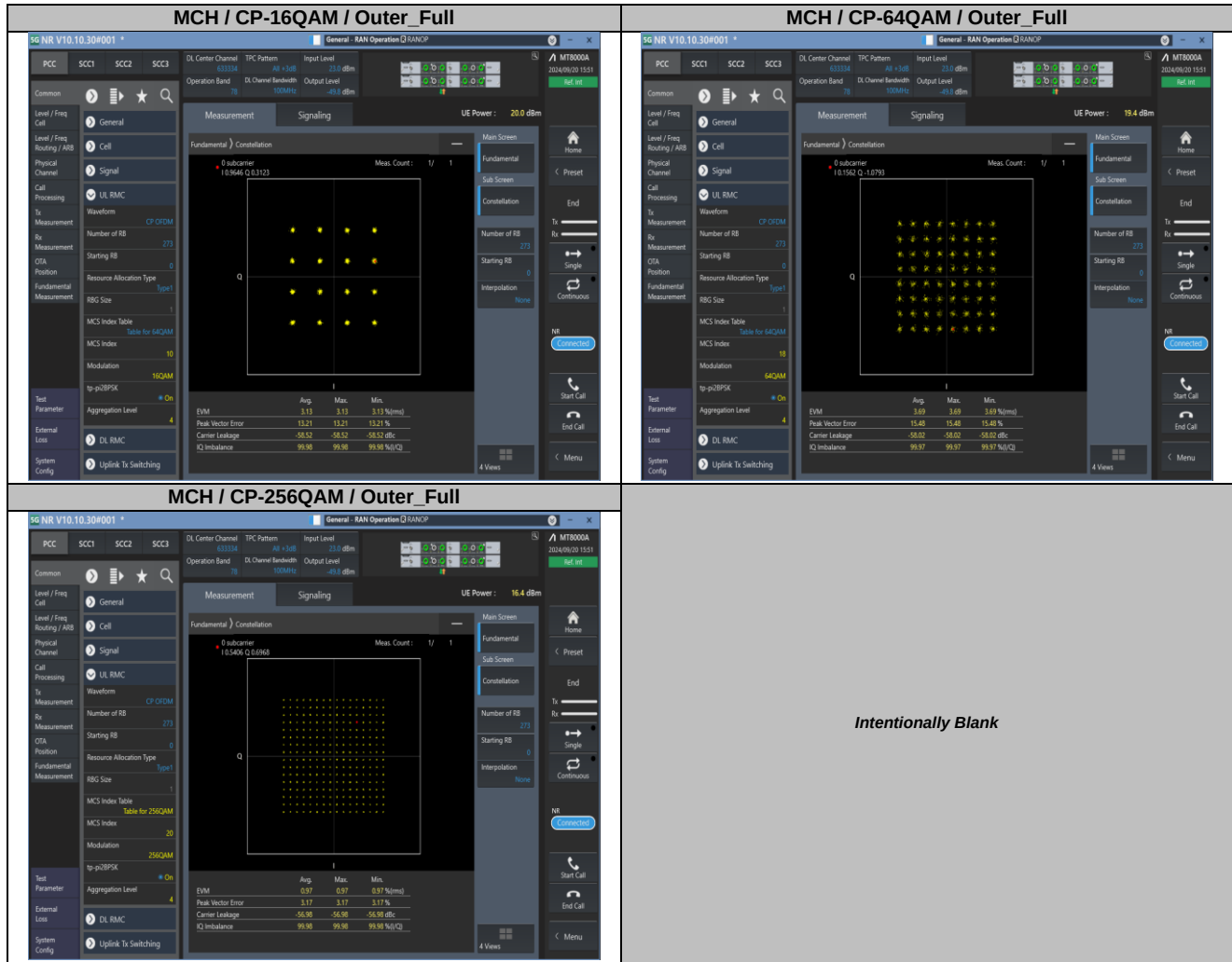
2.2. Test Plots



3. Modulation Characteristics

3.1. Test Plots





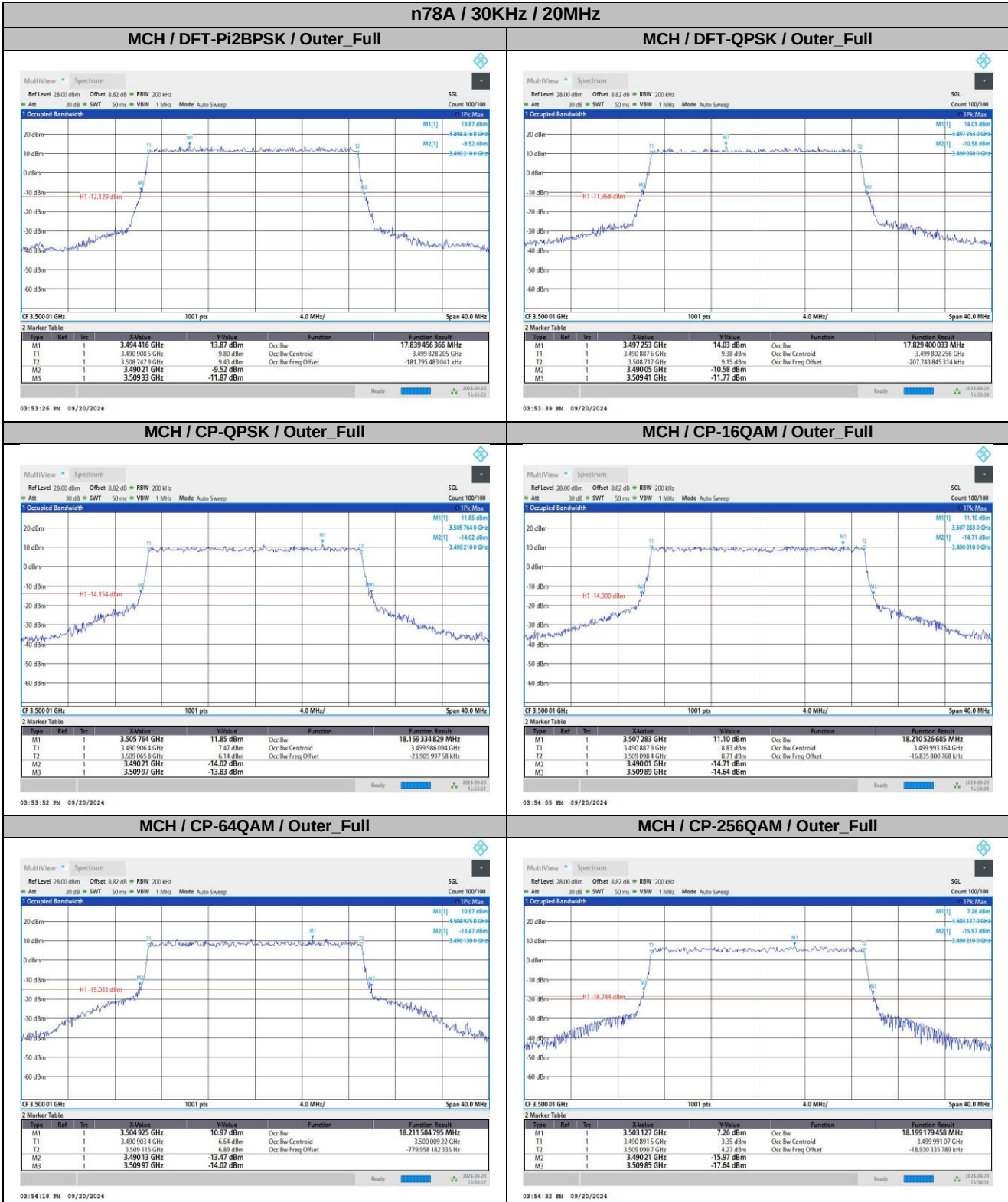
4. 99% Occupied Bandwidth & 26dB Emission Bandwidth

4.1. Test Results

SCS	Bandwidth	Modulation	RB	99% Occupied Bandwidth (MHz)	26dB Emission Bandwidth (MHz)	Verdict
30KHz	20MHz	DFT-Pi2BPSK	Outer_Full	17.84	19.12	Pass
30KHz	20MHz	DFT-QPSK	Outer_Full	17.83	19.36	Pass
30KHz	20MHz	CP-QPSK	Outer_Full	18.16	19.76	Pass
30KHz	20MHz	CP-16QAM	Outer_Full	18.21	19.88	Pass
30KHz	20MHz	CP-64QAM	Outer_Full	18.21	19.84	Pass
30KHz	20MHz	CP-256QAM	Outer_Full	18.20	19.64	Pass
30KHz	40MHz	DFT-Pi2BPSK	Outer_Full	35.67	37.76	Pass
30KHz	40MHz	DFT-QPSK	Outer_Full	35.73	37.92	Pass
30KHz	40MHz	CP-QPSK	Outer_Full	37.81	39.92	Pass
30KHz	40MHz	CP-16QAM	Outer_Full	37.78	40.08	Pass
30KHz	40MHz	CP-64QAM	Outer_Full	37.82	40.00	Pass
30KHz	40MHz	CP-256QAM	Outer_Full	37.94	40.24	Pass
30KHz	80MHz	DFT-Pi2BPSK	Outer_Full	76.96	80.16	Pass
30KHz	80MHz	DFT-QPSK	Outer_Full	77.17	80.64	Pass
30KHz	80MHz	CP-QPSK	Outer_Full	77.32	80.80	Pass
30KHz	80MHz	CP-16QAM	Outer_Full	77.47	80.80	Pass
30KHz	80MHz	CP-64QAM	Outer_Full	77.44	80.80	Pass
30KHz	80MHz	CP-256QAM	Outer_Full	77.34	80.96	Pass
30KHz	100MHz	DFT-Pi2BPSK	Outer_Full	96.30	99.80	Pass
30KHz	100MHz	DFT-QPSK	Outer_Full	96.37	100.00	Pass
30KHz	100MHz	CP-QPSK	Outer_Full	97.32	101.00	Pass

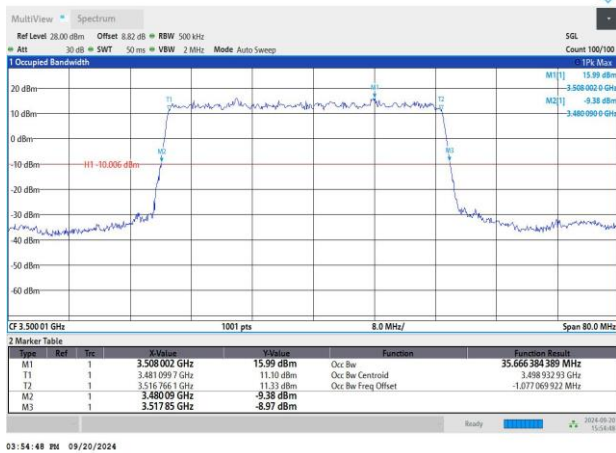
30KHz	100MHz	CP-16QAM	Outer_Full	97.35	101.00	Pass
30KHz	100MHz	CP-64QAM	Outer_Full	97.42	101.20	Pass
30KHz	100MHz	CP-256QAM	Outer_Full	97.43	100.80	Pass

4.2. Test Plots

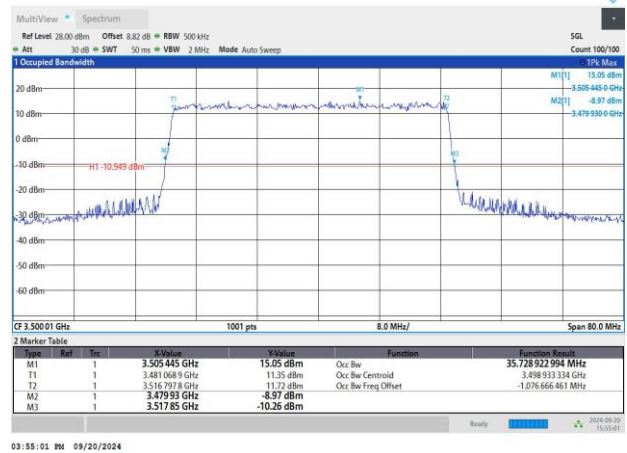


n78A / 30KHz / 40MHz

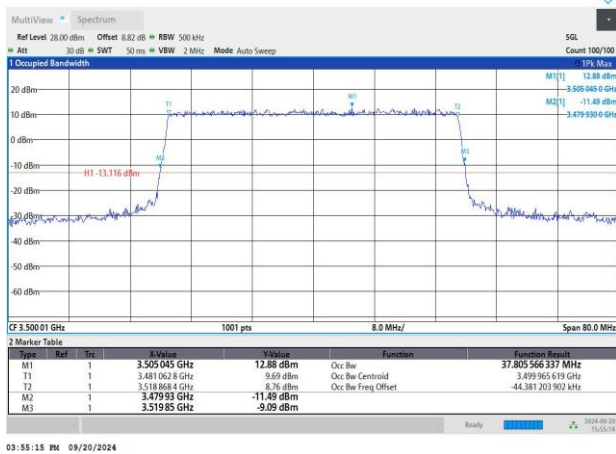
MCH / DFT-Pi2BPSK / Outer_Full



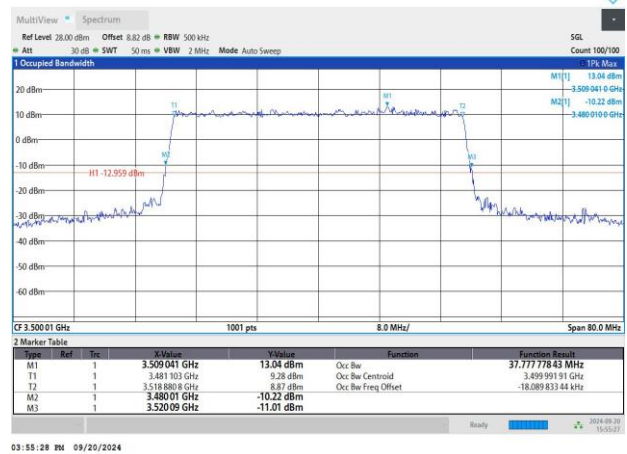
MCH / DFT-QPSK / Outer_Full



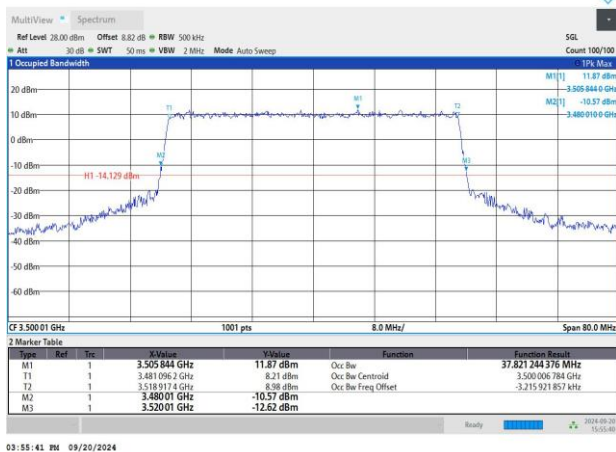
MCH / CP-QPSK / Outer_Full



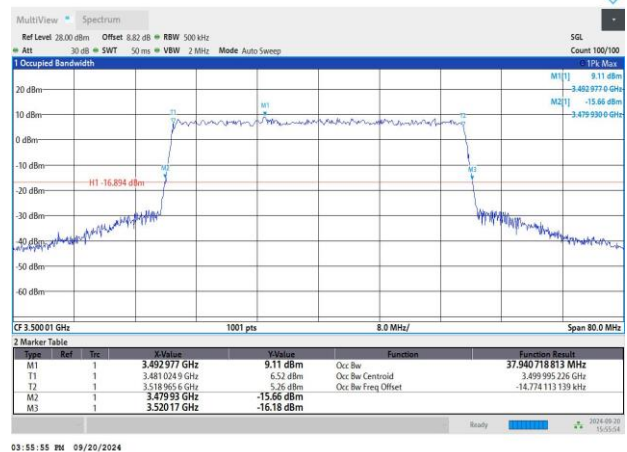
MCH / CP-16QAM / Outer_Full



MCH / CP-64QAM / Outer_Full



MCH / CP-256QAM / Outer_Full

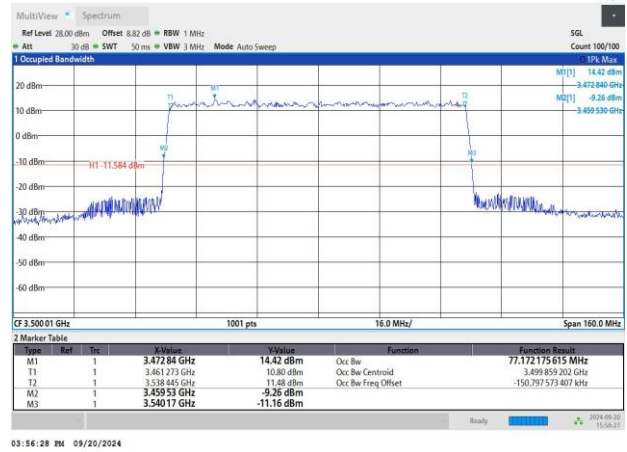


n78A / 30KHz / 80MHz

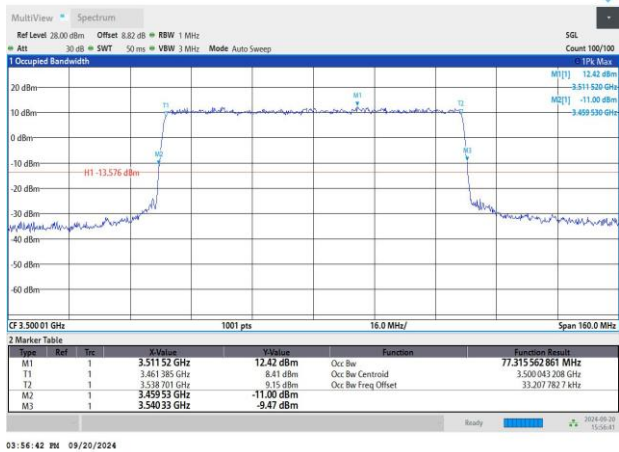
MCH / DFT-Pi2BPSK / Outer_Full



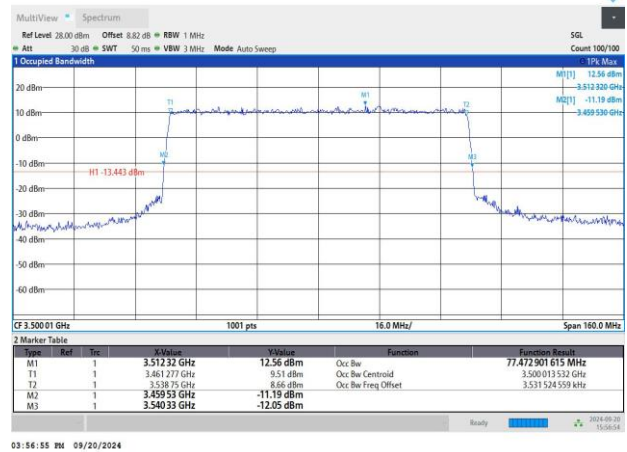
MCH / DFT-QPSK / Outer_Full



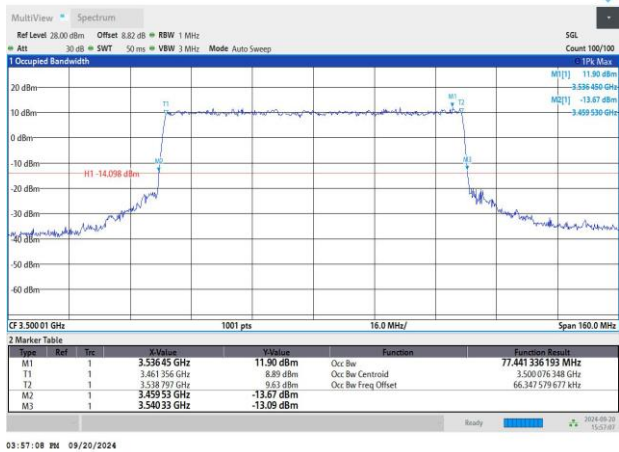
MCH / CP-QPSK / Outer_Full



MCH / CP-16QAM / Outer_Full



MCH / CP-64QAM / Outer_Full

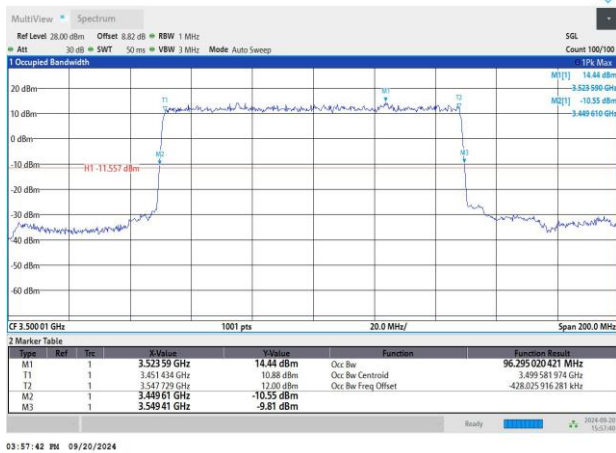


MCH / CP-256QAM / Outer_Full

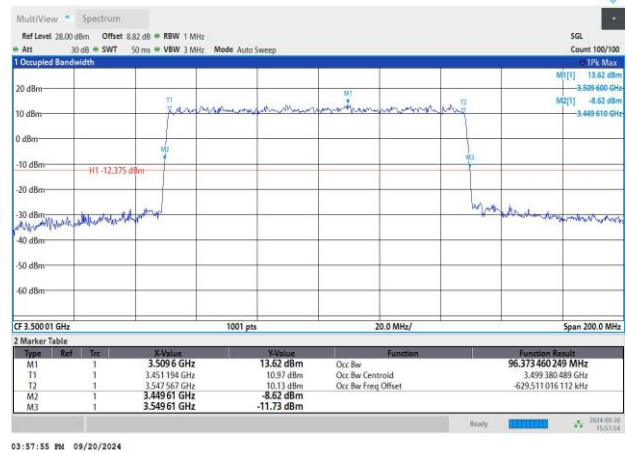


n78A / 30KHz / 100MHz

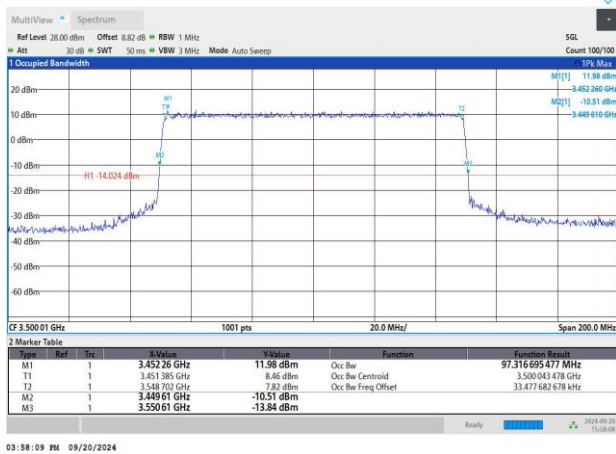
MCH / DFT-Pi2BPSK / Outer_Full



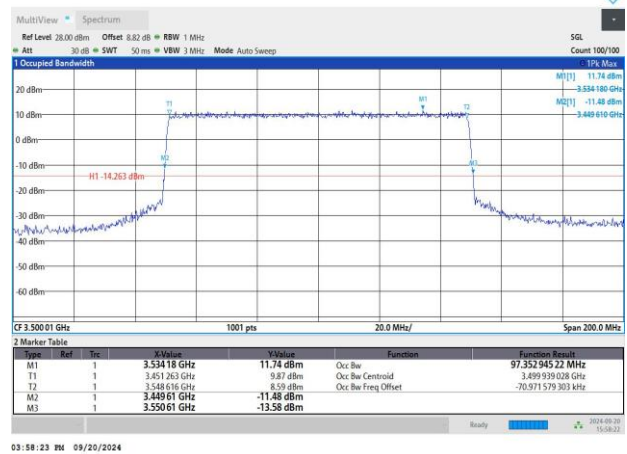
MCH / DFT-QPSK / Outer_Full



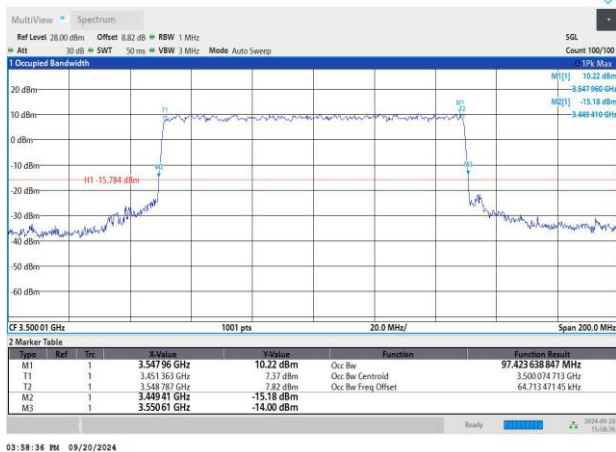
MCH / CP-QPSK / Outer_Full



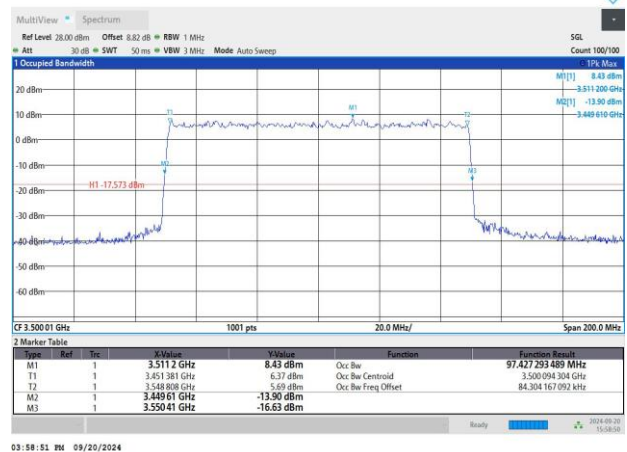
MCH / CP-16QAM / Outer_Full



MCH / CP-64QAM / Outer_Full

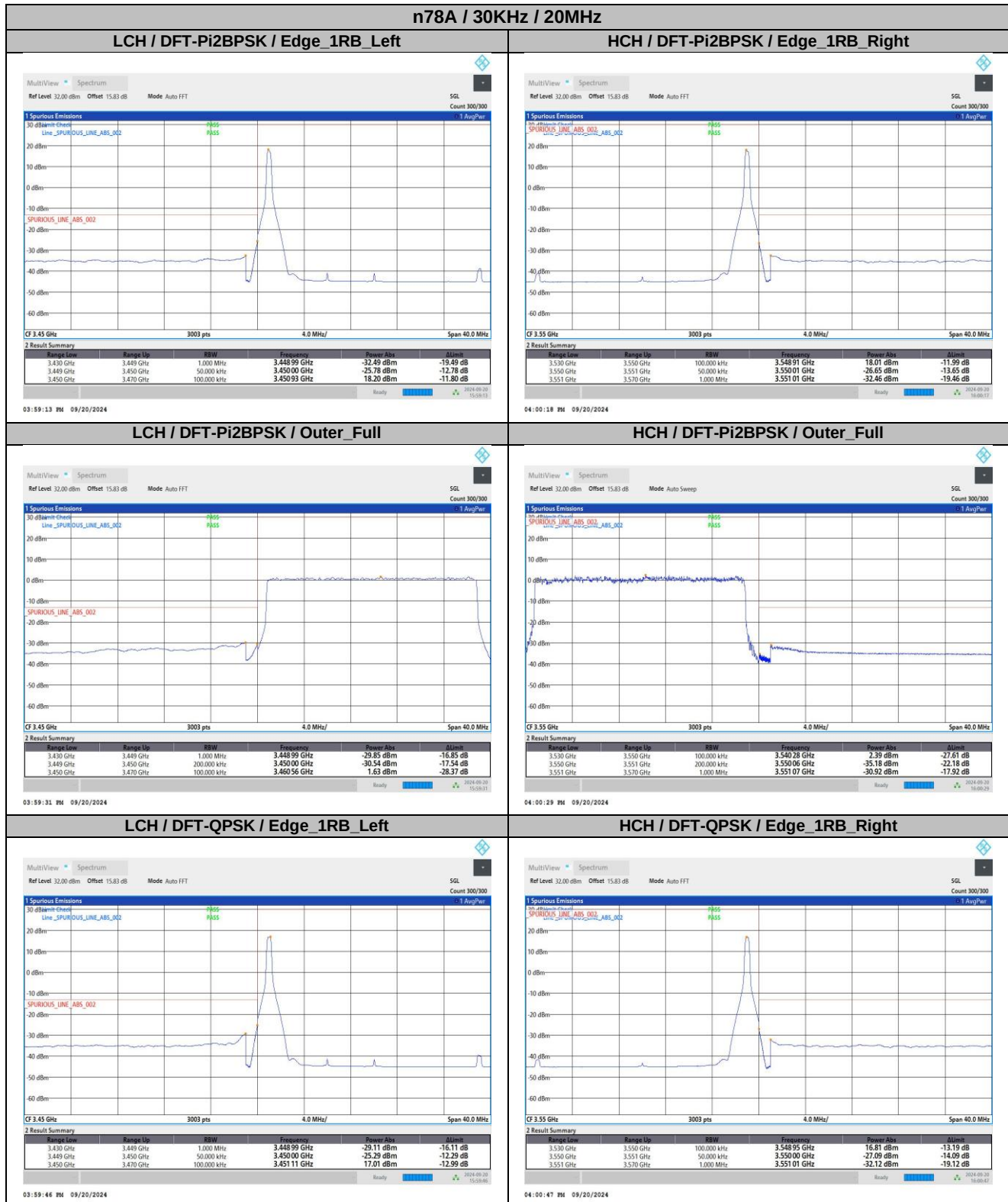


MCH / CP-256QAM / Outer_Full

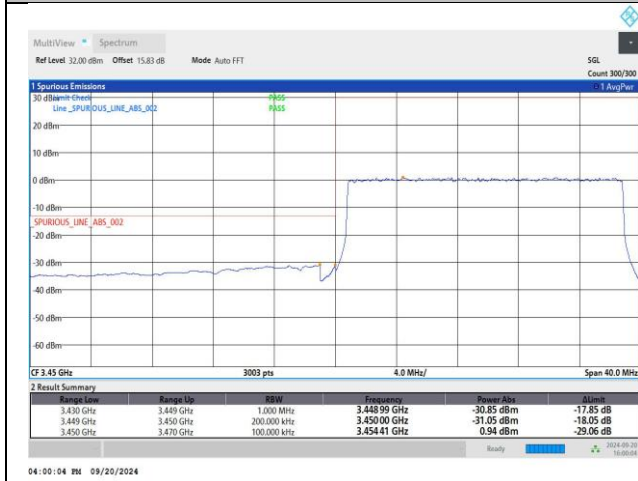


5. Conducted Band Edges

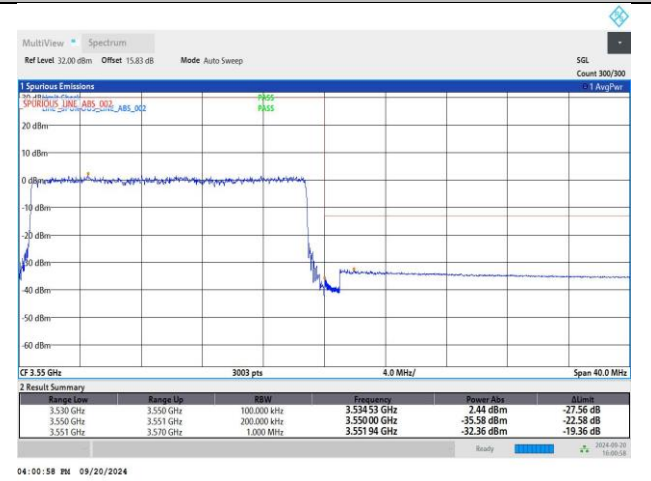
5.1. Test Plots



LCH / DFT-QPSK / Outer_Full

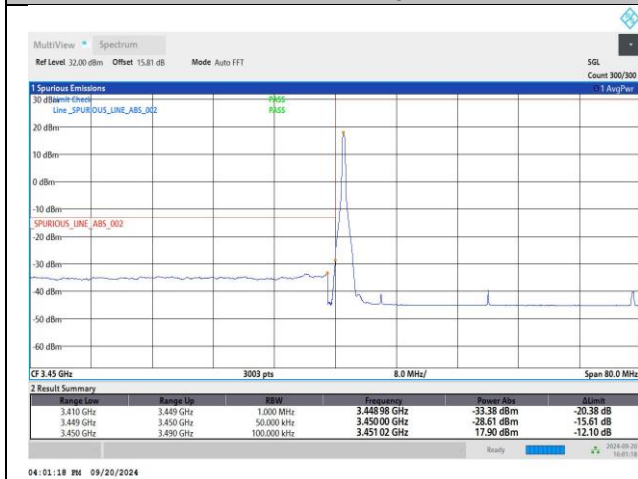


HCH / DFT-QPSK / Outer_Full

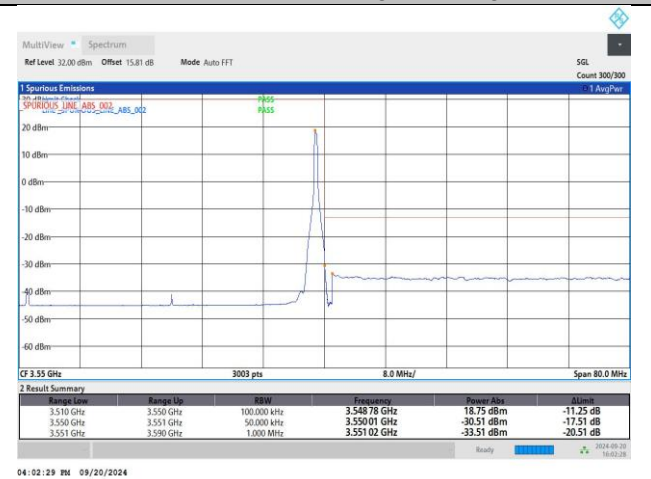


n78A / 30KHz / 40MHz

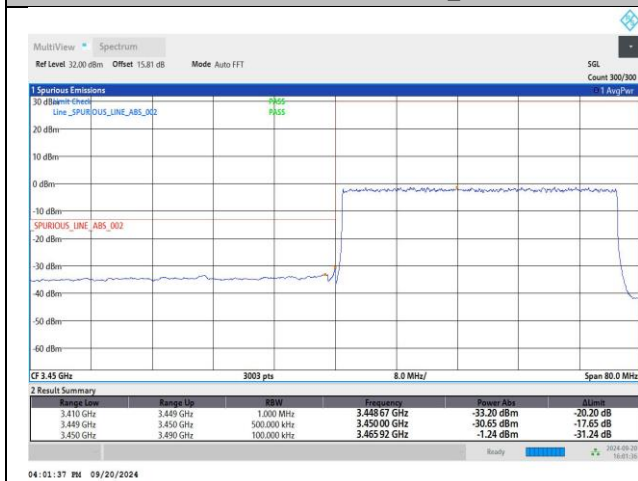
LCH / DFT-Pi2BPSK / Edge_1RB_Left



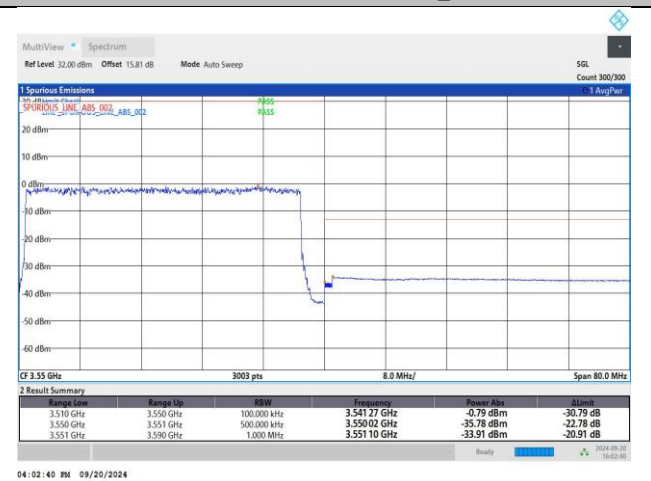
HCH / DFT-Pi2BPSK / Edge_1RB_Right



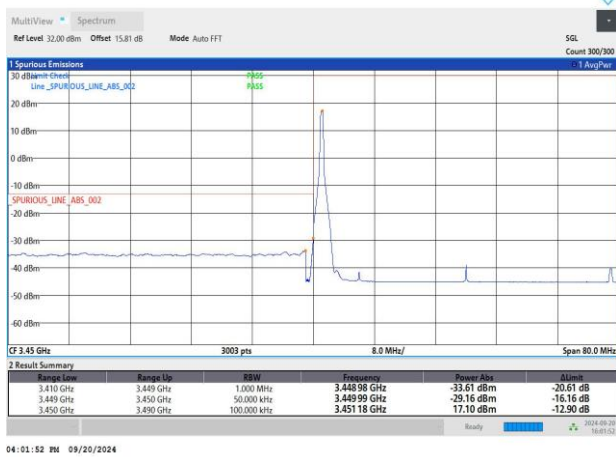
LCH / DFT-Pi2BPSK / Outer_Full



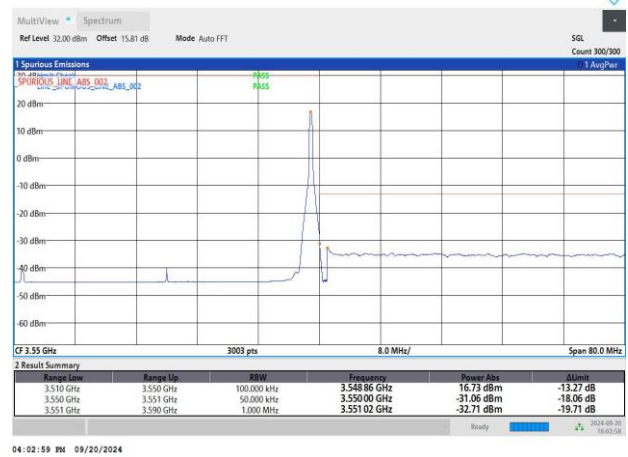
HCH / DFT-Pi2BPSK / Outer_Full



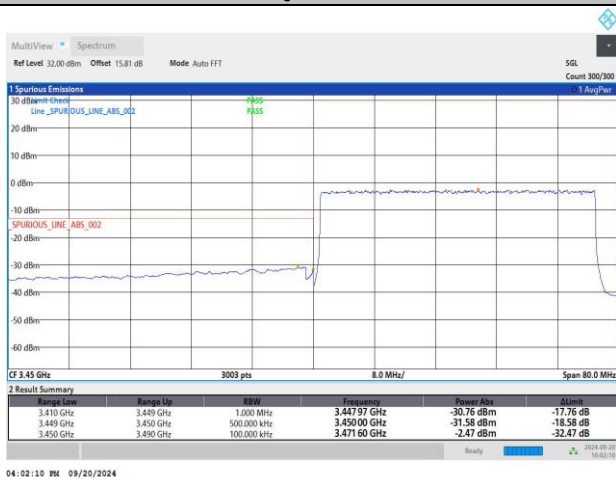
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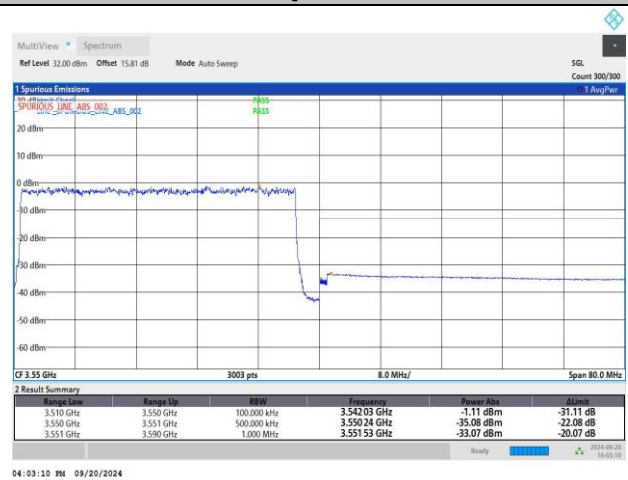
HCH / DFT-QPSK / Edge_1RB_Right



LCH / DFT-QPSK / Outer_Full

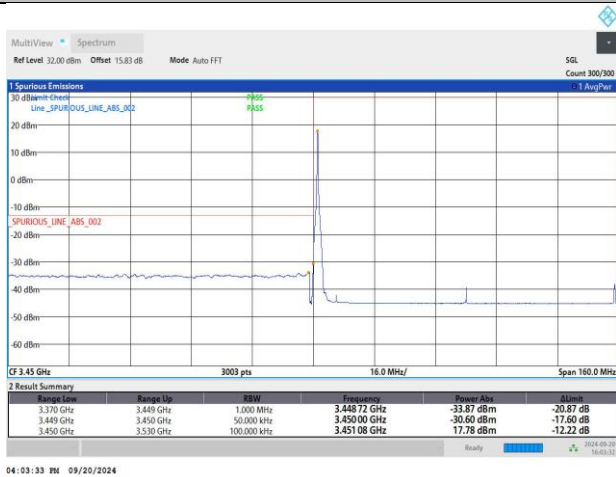


HCH / DFT-QPSK / Outer_Full

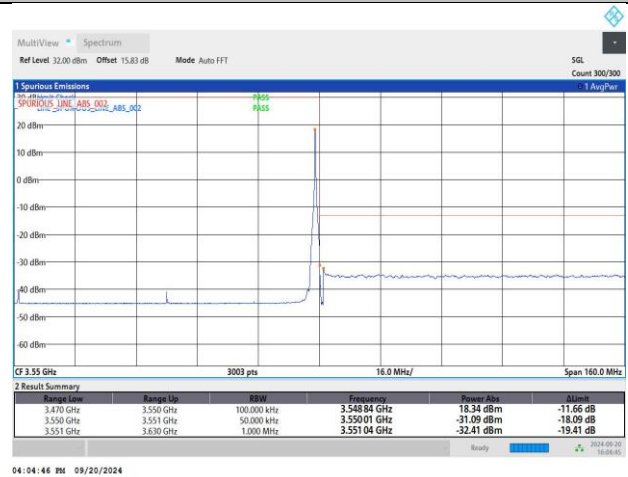


n78A / 30KHz / 80MHz

LCH / DFT-Pi2BPSK / Edge_1RB_Left



HCH / DFT-Pi2BPSK / Edge_1RB_Right





n78A / 30KHz / 100MHz

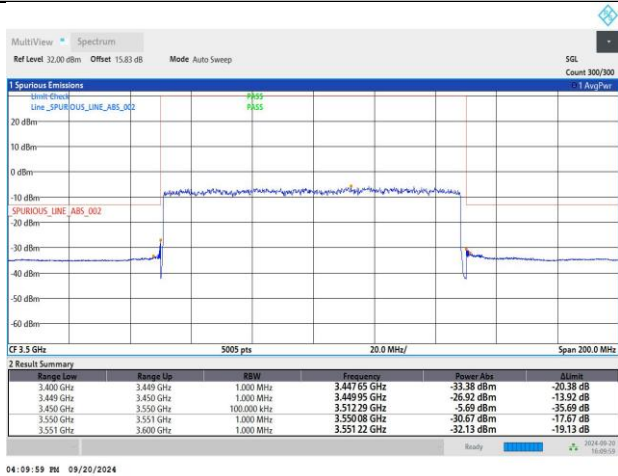
MCH / DFT-Pi2BPSK / Edge_1RB_Left



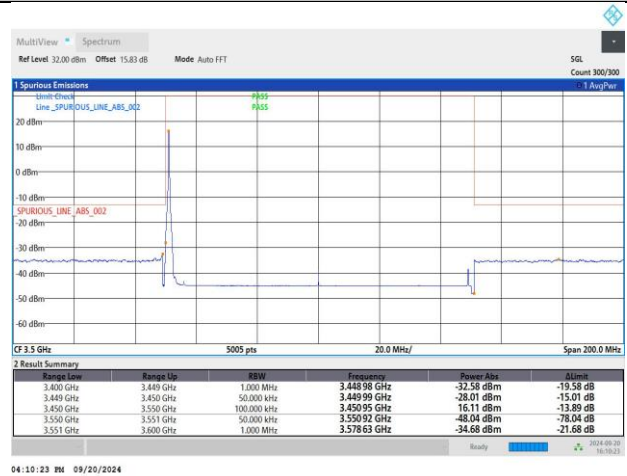
MCH / DFT-Pi2BPSK / Edge_1RB_Right



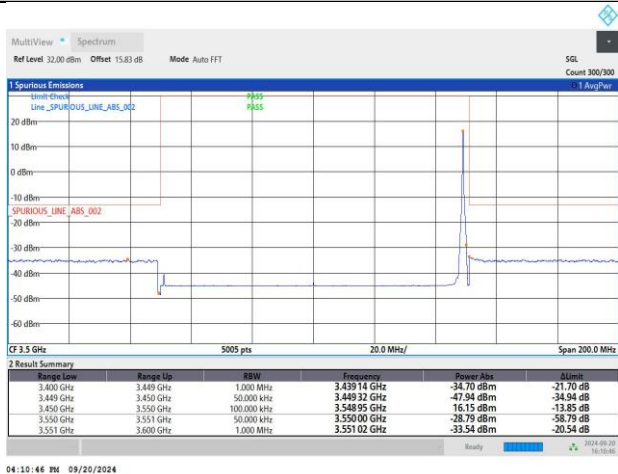
MCH / DFT-Pi2BPSK / Outer_Full



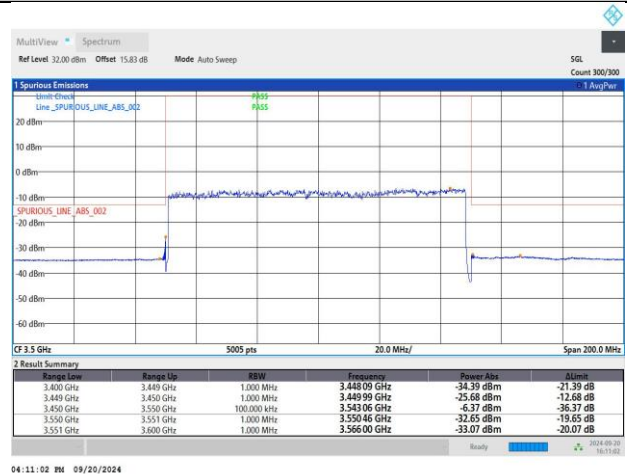
MCH / DFT-QPSK / Edge_1RB_Left



MCH / DFT-QPSK / Edge_1RB_Right

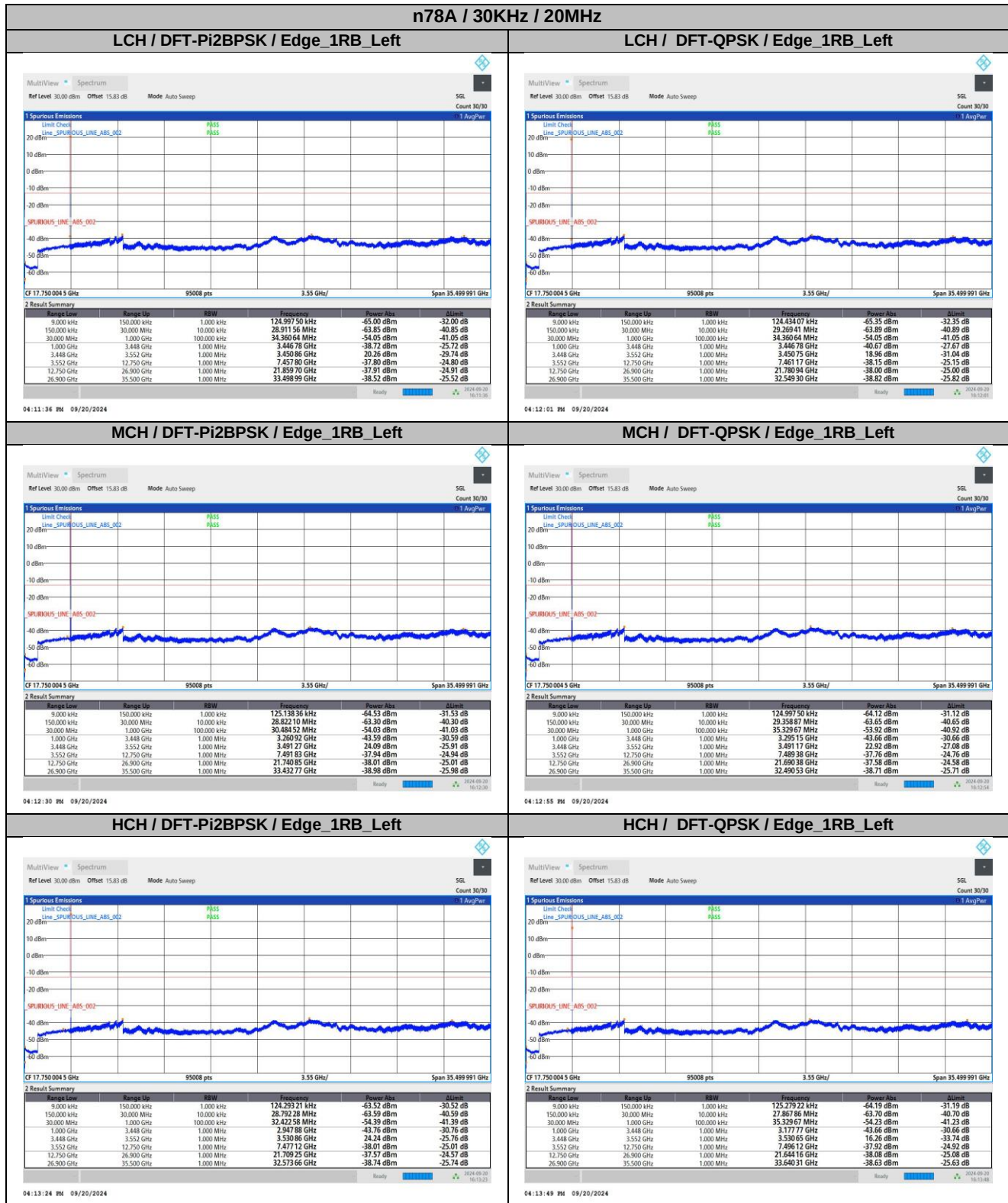


MCH / DFT-QPSK / Outer_Full



6. Conducted Spurious Emission

6.1. Test Plots

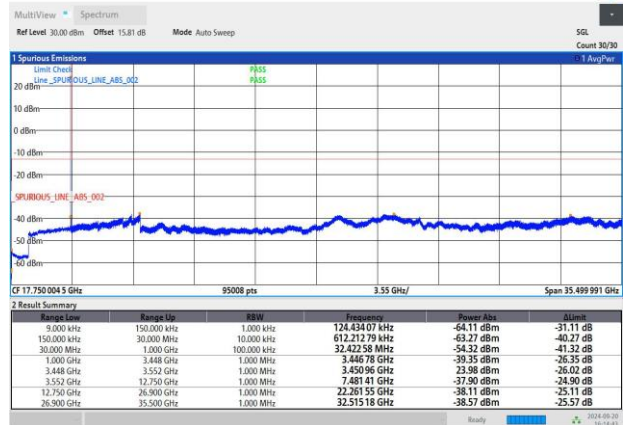


n78A / 30KHz / 40MHz

LCH / DFT-Pi2BPSK / Edge_1RB_Left



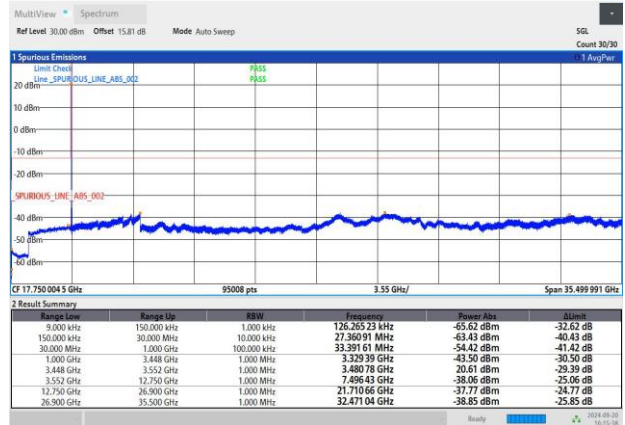
LCH / DFT-QPSK / Edge_1RB_Left



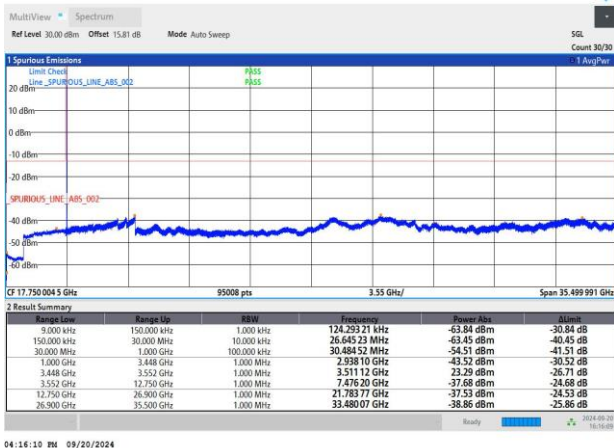
MCH / DFT-Pi2BPSK / Edge_1RB_Left



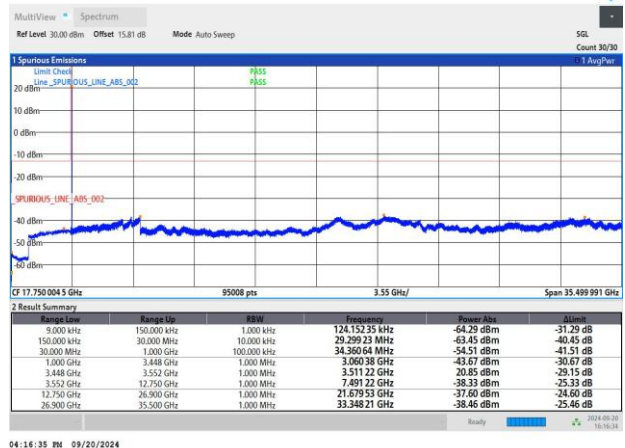
MCH / DFT-QPSK / Edge_1RB_Left



HCH / DFT-Pi2BPSK / Edge_1RB_Left



HCH / DFT-QPSK / Edge_1RB_Left

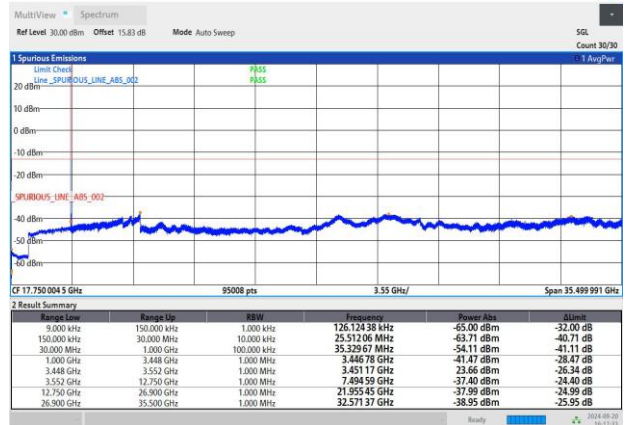


n78A / 30KHz / 80MHz

LCH / DFT-Pi2BPSK / Edge_1RB_Left



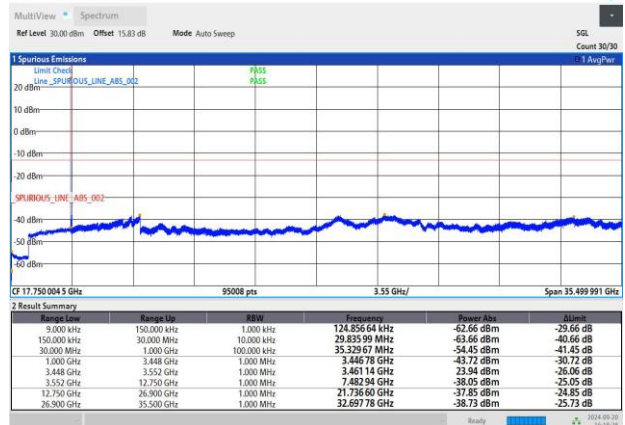
LCH / DFT-QPSK / Edge_1RB_Left



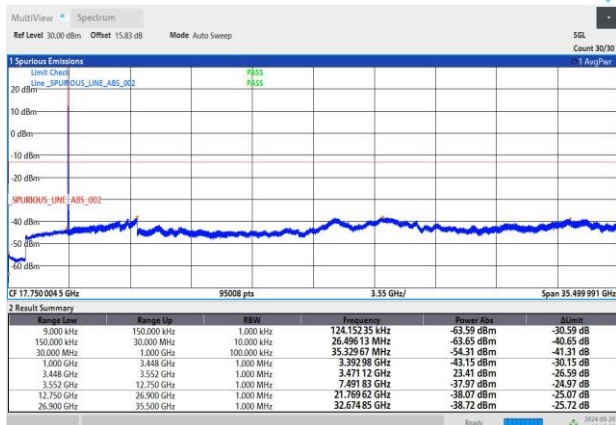
MCH / DFT-Pi2BPSK / Edge_1RB_Left



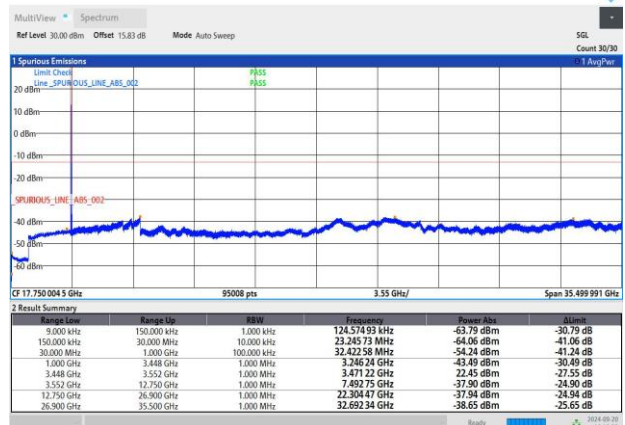
MCH / DFT-QPSK / Edge_1RB_Left

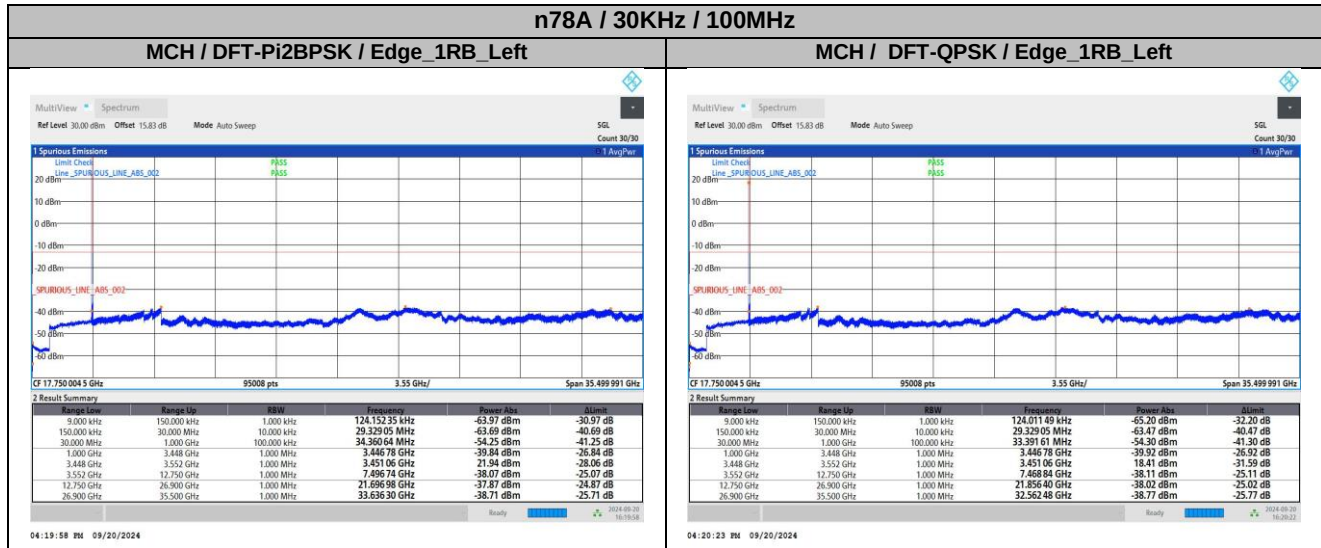


HCH / DFT-Pi2BPSK / Edge_1RB_Left



HCH / DFT-QPSK / Edge_1RB_Left





7. Frequency Stability

7.1. Test Results

7.1.1. Frequency Error Vs Voltage

SCS	Bandwidth	Channel	RB Config	Modulation	Temperature	Voltage	Deviation Result		Verdict
							(Hz)	(ppm)	
30KHz	100MHz	MCH	Outer_Full	DFT-QPSK	NT	LV	-1.50	-0.000429	Pass
30KHz	100MHz	MCH	Outer_Full	DFT-QPSK	NT	NV	-13.30	-0.003800	Pass
30KHz	100MHz	MCH	Outer_Full	DFT-QPSK	NT	HV	1.10	0.000314	Pass

7.1.2. Frequency Error Vs Temperature

SCS	Bandwidth	Channel	RB Config	Modulation	Temperature	Voltage	Deviation Result		Verdict
							(Hz)	(ppm)	
30KHz	100MHz	MCH	Outer_Full	DFT-QPSK	-30°C	NV	-1.20	-0.000343	Pass
30KHz	100MHz	MCH	Outer_Full	DFT-QPSK	-20°C	NV	-1.10	-0.000314	Pass
30KHz	100MHz	MCH	Outer_Full	DFT-QPSK	-10°C	NV	-2.40	-0.000686	Pass
30KHz	100MHz	MCH	Outer_Full	DFT-QPSK	0°C	NV	-6.80	-0.001943	Pass
30KHz	100MHz	MCH	Outer_Full	DFT-QPSK	10°C	NV	-14.00	-0.004000	Pass
30KHz	100MHz	MCH	Outer_Full	DFT-QPSK	20°C	NV	-5.50	-0.001571	Pass
30KHz	100MHz	MCH	Outer_Full	DFT-QPSK	30°C	NV	2.60	0.000743	Pass
30KHz	100MHz	MCH	Outer_Full	DFT-QPSK	40°C	NV	7.80	0.002229	Pass
30KHz	100MHz	MCH	Outer_Full	DFT-QPSK	50°C	NV	-14.70	-0.004200	Pass

The End