



Appendix A

RF Test Data for BT(BDR/EDR) (Conducted Measurement)

Product Name: Car Wireless FM Transmitter-Black

Trade Mark: JOYROOM

Test Model: JR-CL18

Environmental Conditions

Temperature:	25.5℃
Relative Humidity:	52.3%
ATM Pressure:	101Kpa
Test Engineer:	Simba Huang
Supervised by:	Seal Chen



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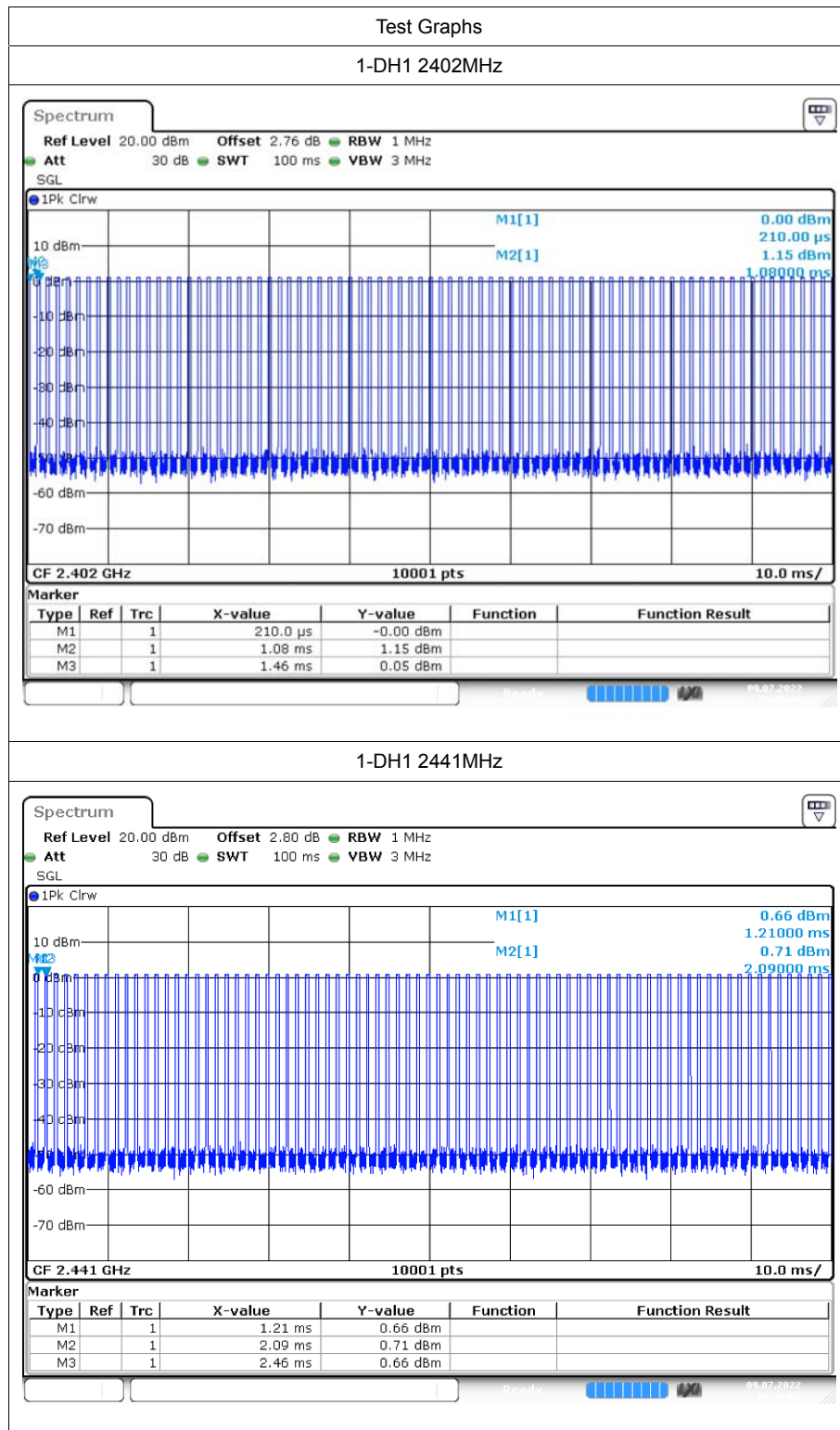


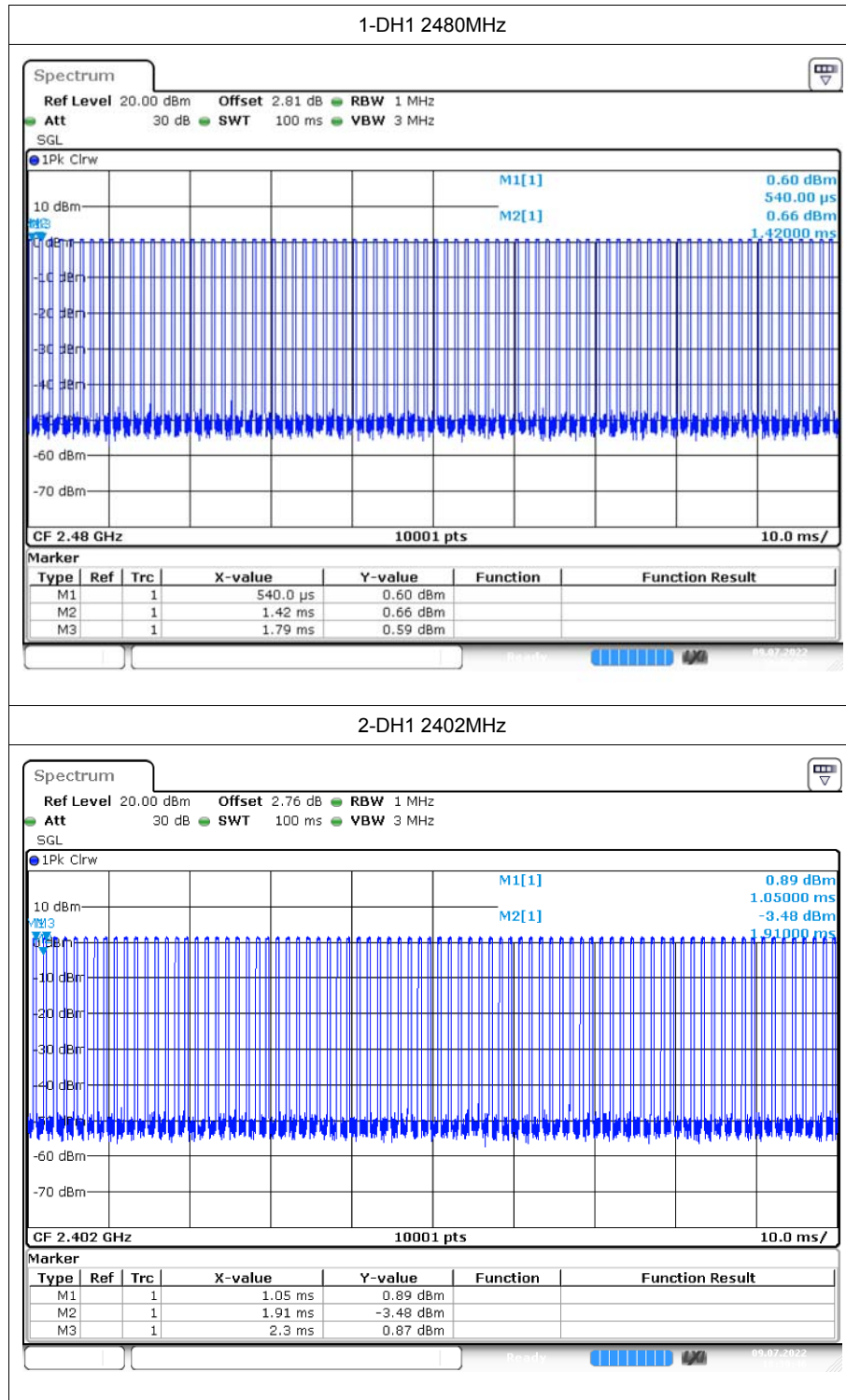
1 Duty Cycle

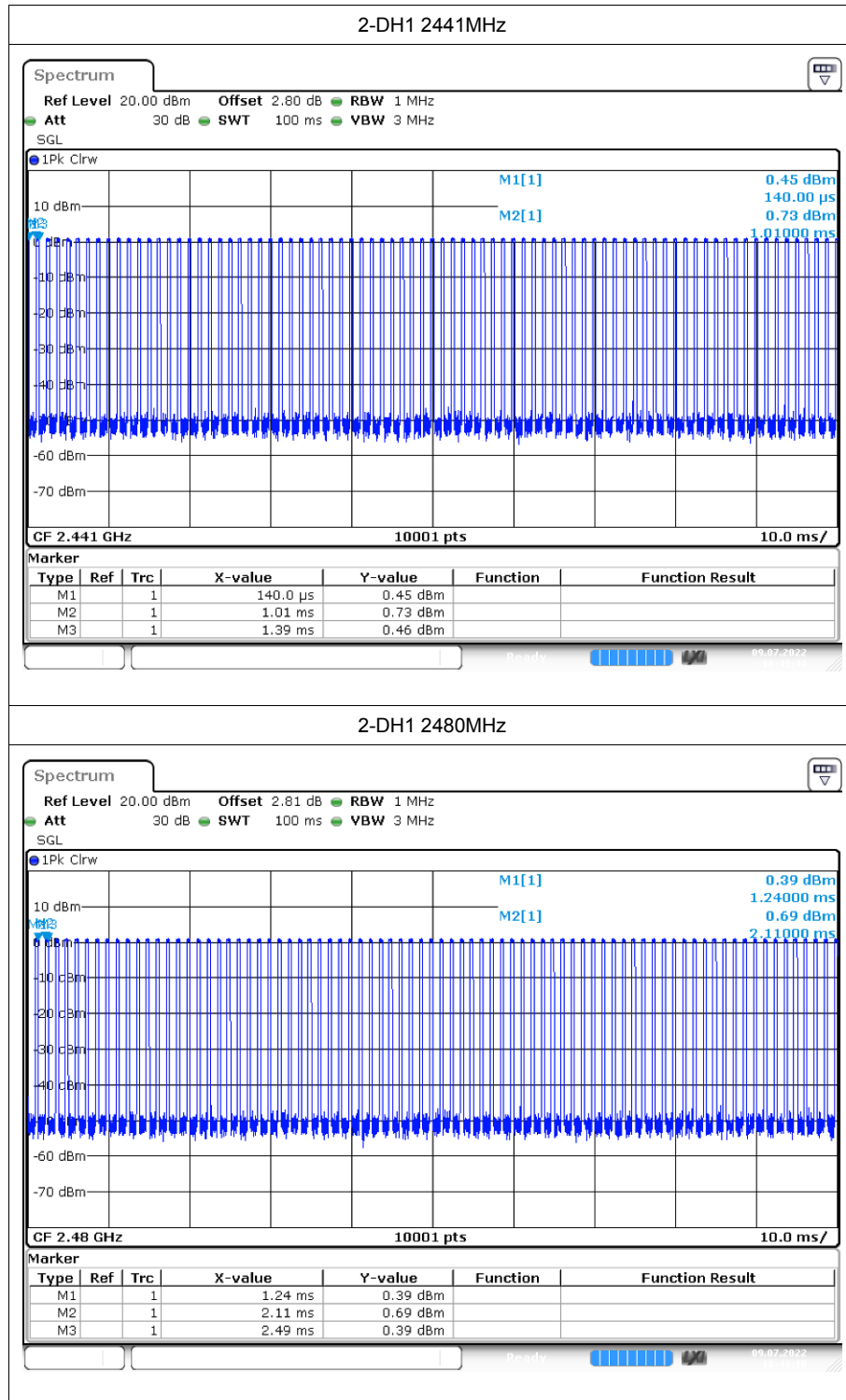
1.1 Test Result

Mode	Frequency (MHz)	Duty Cycle (%)	1/T (kHz)
1-DH1	2402	31.21	2.63
1-DH1	2441	30.51	2.7
1-DH1	2480	31.14	2.7
2-DH1	2402	31.77	2.56
2-DH1	2441	31.9	2.63
2-DH1	2480	31.84	2.63

1.2 Test Graphs





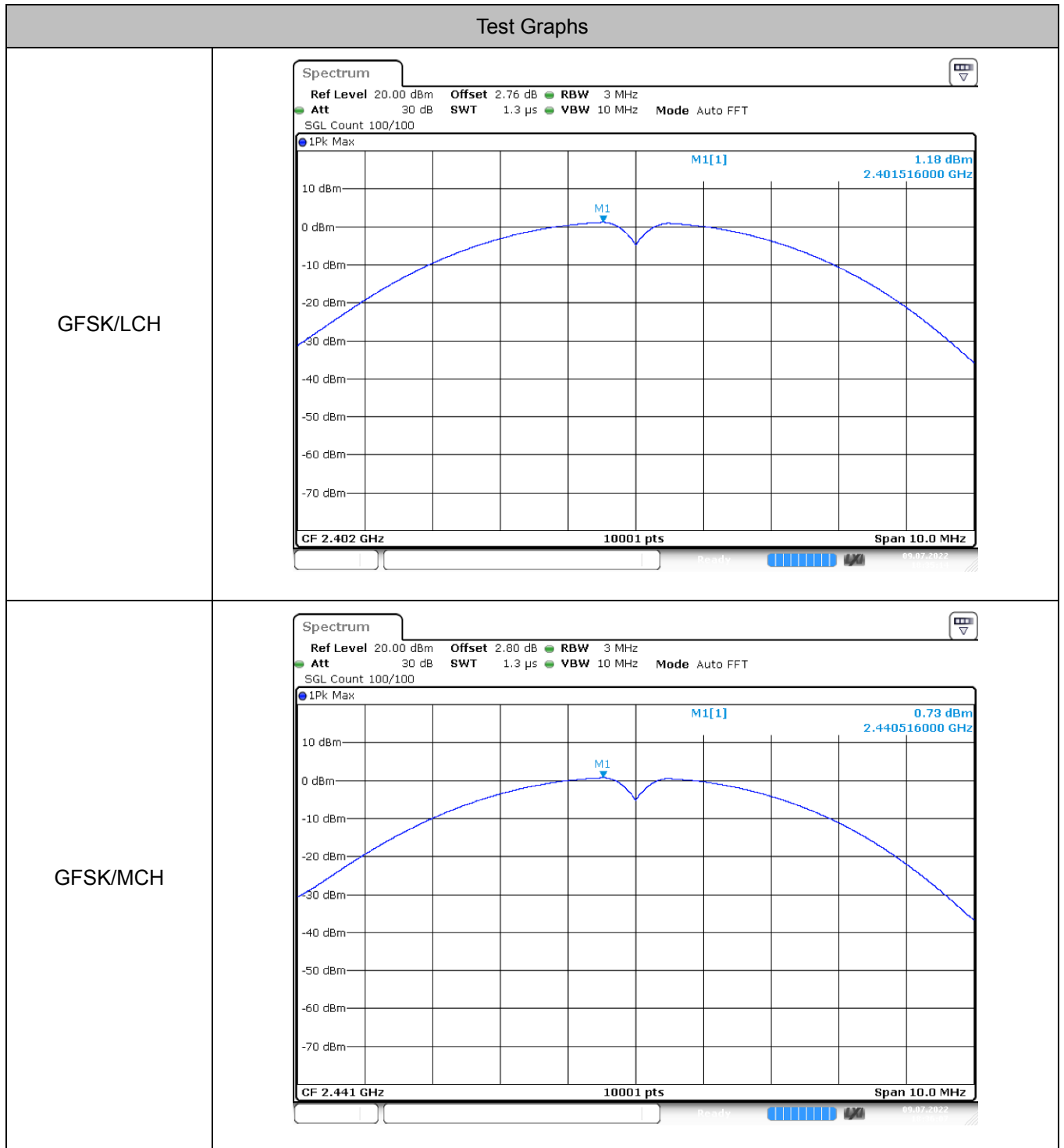


2 Maximum Conducted Peak Output Power

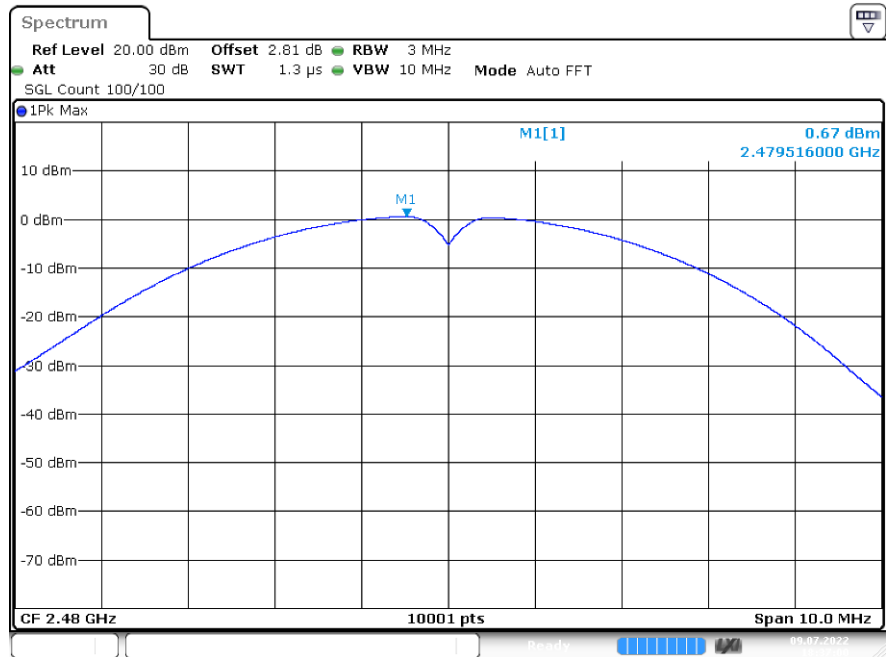
2.1 Test Result

Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	1.18	21	Pass
	MCH	0.73	21	Pass
	HCH	0.67	21	Pass
$\pi/4$ DQPSK	LCH	1.82	21	Pass
	MCH	1	21	Pass
	HCH	0.77	21	Pass

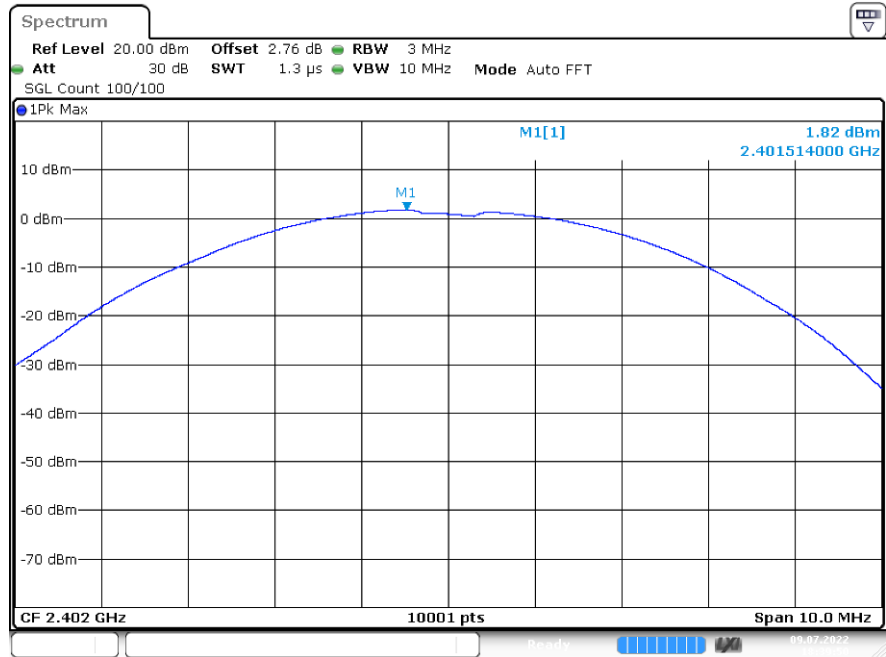
2.2 Test Graphs



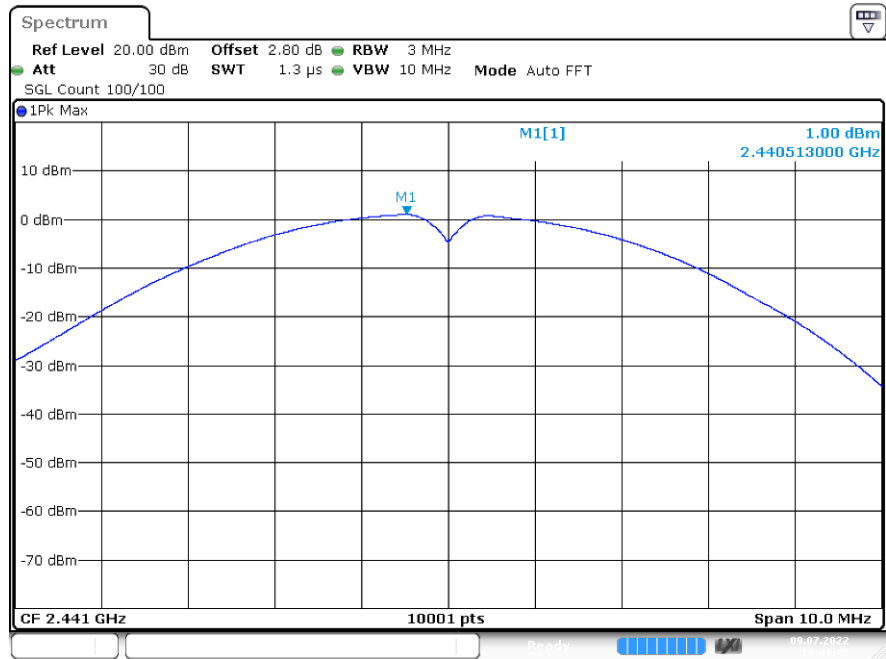
GFSK/HCH



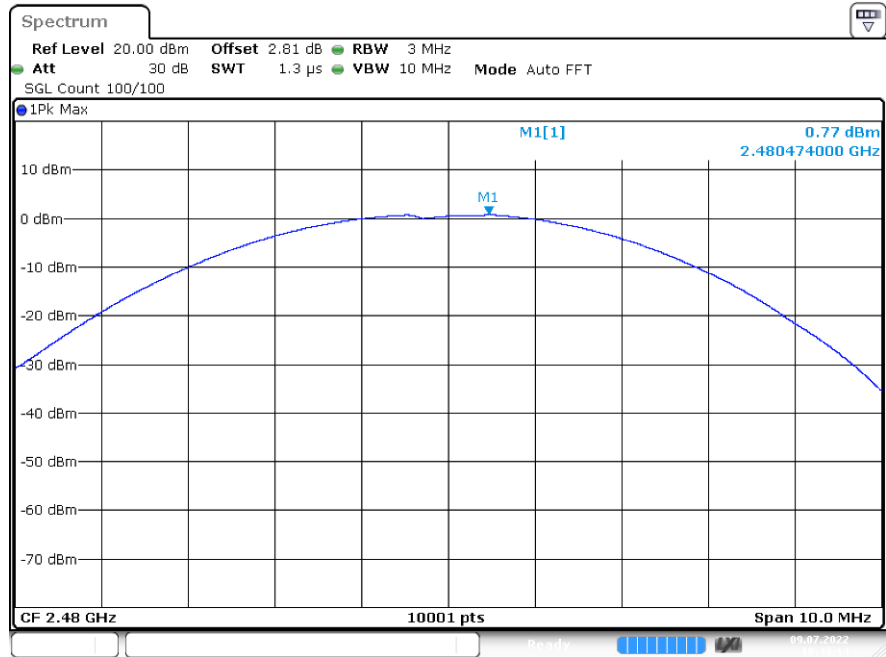
$\pi/4$ DQPSK/LCH



$\pi/4$ DQPSK/MCH



$\pi/4$ DQPSK/HCH

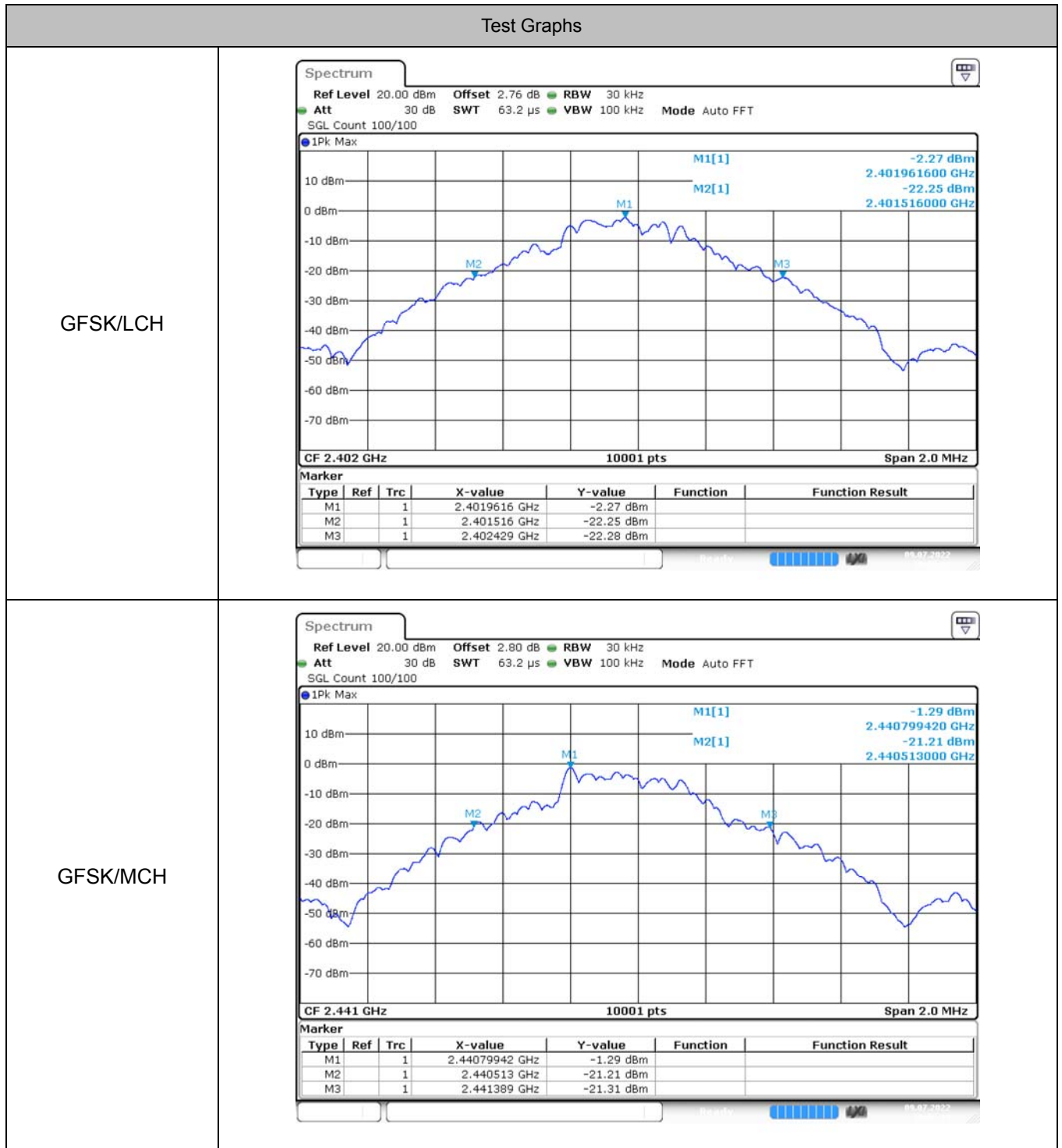


3 20dB Bandwidth

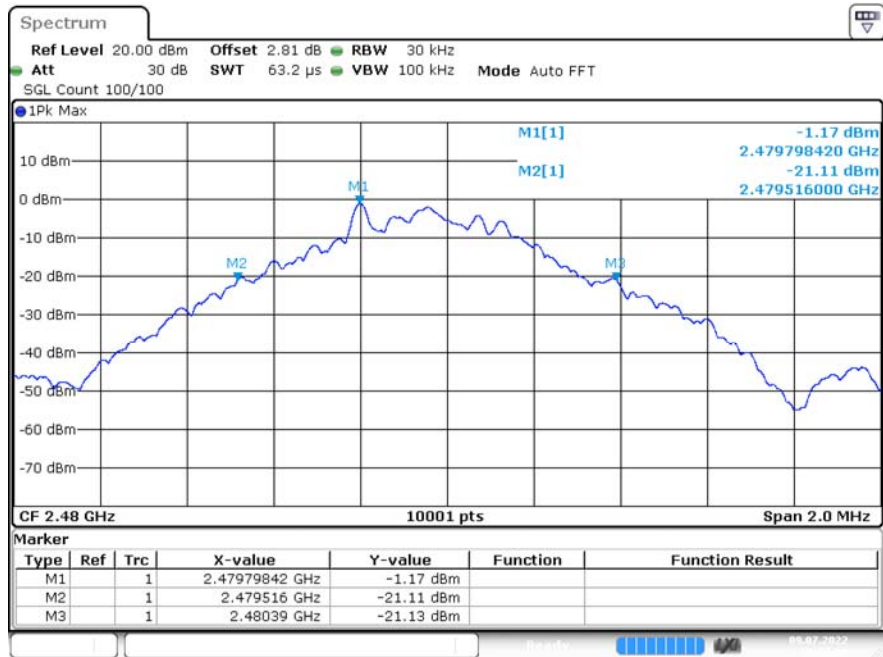
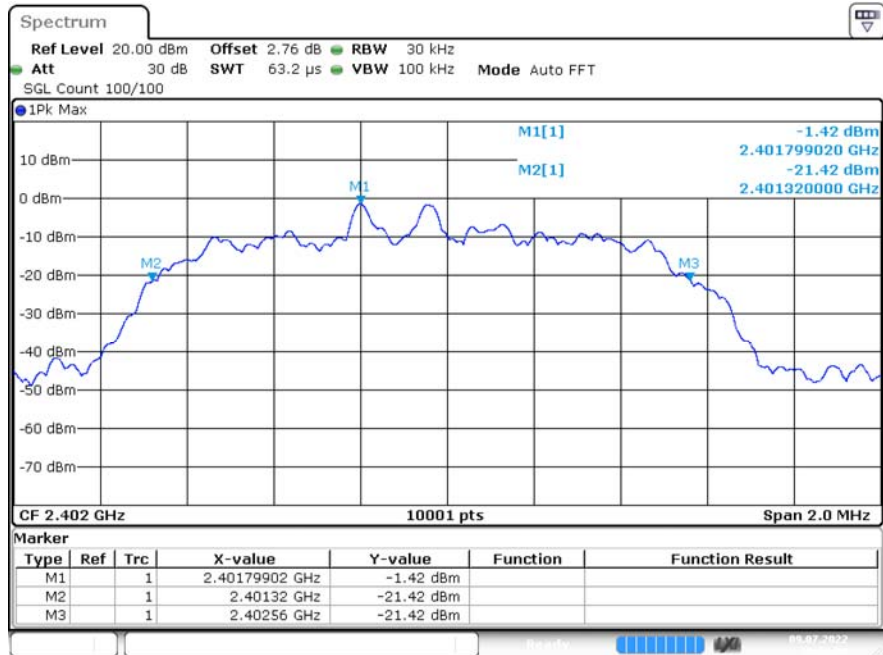
3.1 Test Result

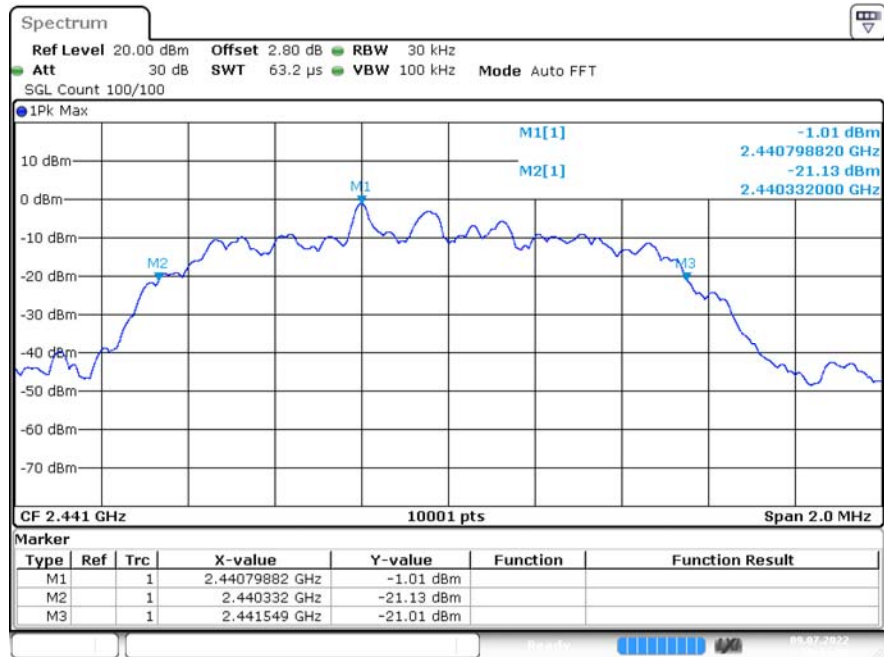
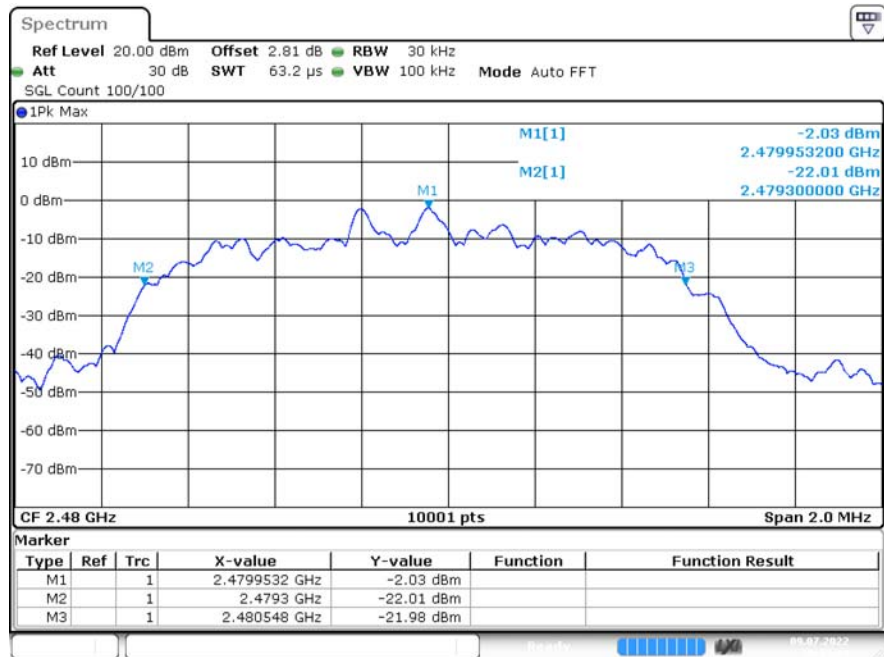
Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.913	Not Specified	Pass
	MCH	0.876	Not Specified	Pass
	HCH	0.875	Not Specified	Pass
$\pi/4$ DQPSK	LCH	1.24	Not Specified	Pass
	MCH	1.217	Not Specified	Pass
	HCH	1.248	Not Specified	Pass

3.2 Test Graphs



GFSK/HCH


 $\pi/4$ DQPSK/LCH


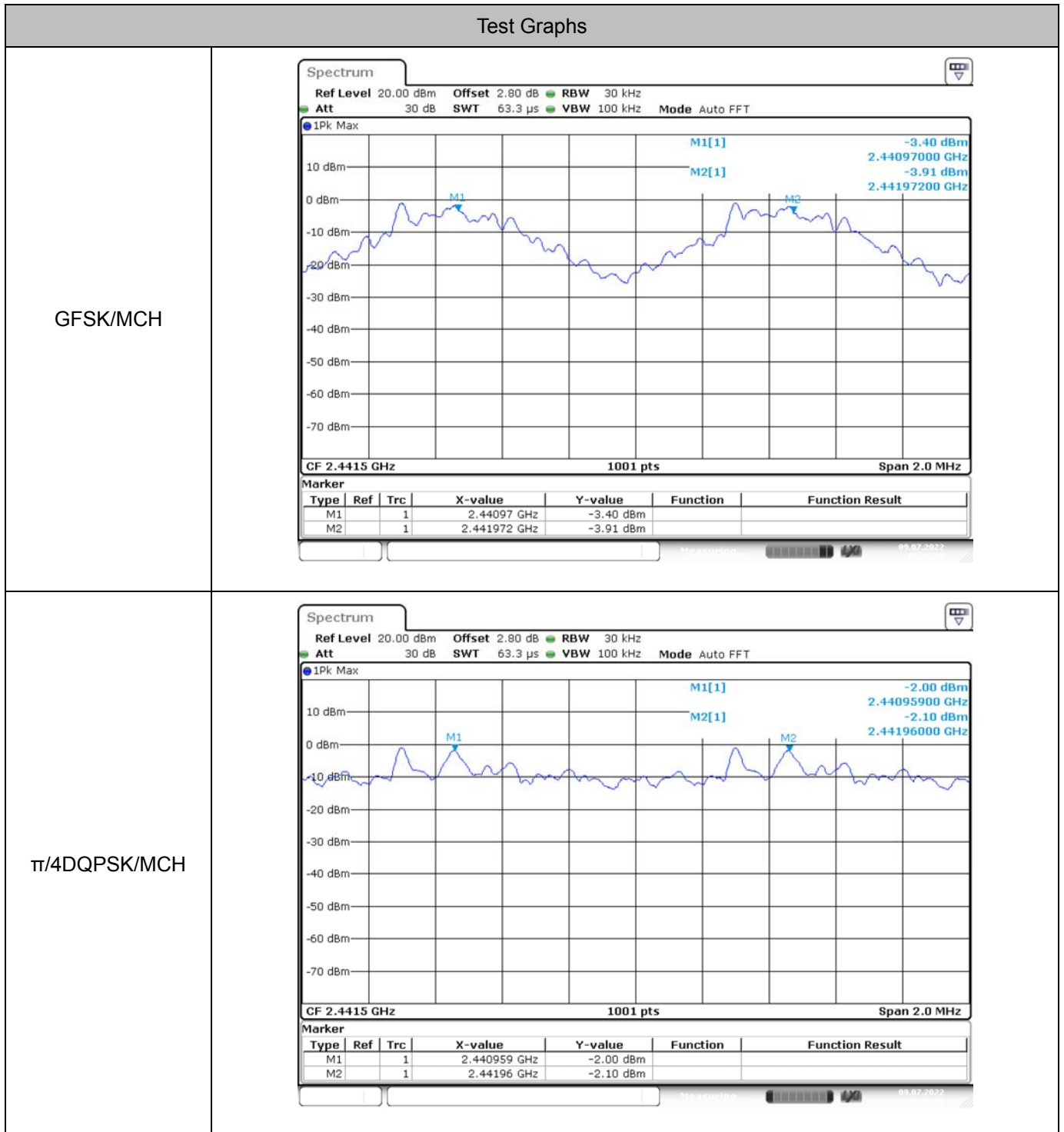
$\pi/4$ DQPSK/MCH

 $\pi/4$ DQPSK/HCH


4 Carrier Frequency Separation

4.1 Test Result

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	MCH	1.002	0.584	Pass
$\pi/4$ DQPSK	MCH	1.001	0.811	Pass

4.2 Test Graphs

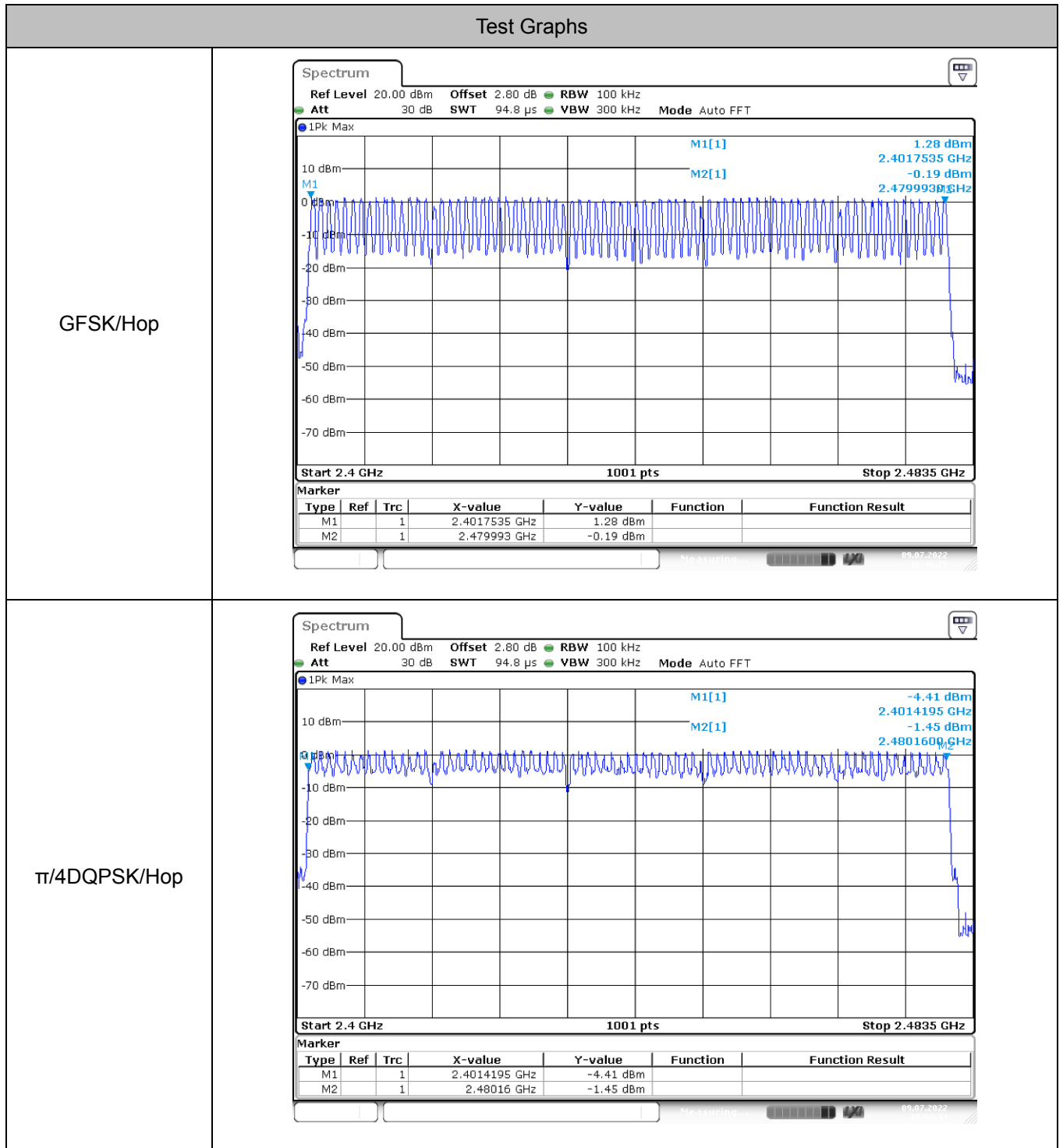


5 Hopping Channel Number

5.1 Test Result

Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	≥ 15	PASS
$\pi/4$ DQPSK	Hop	79	≥ 15	PASS

5.2 Test Graphs

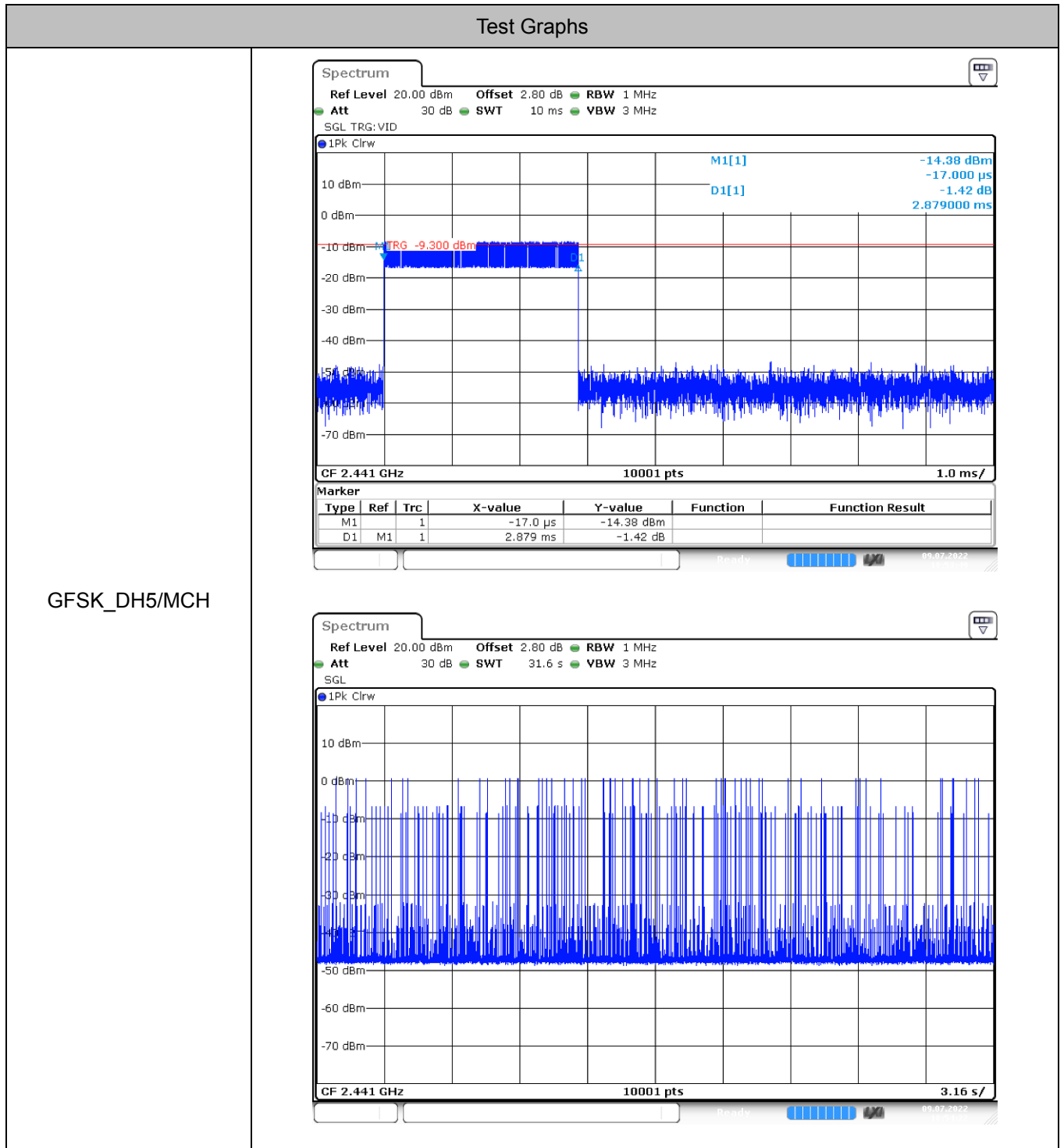


6 Dwell Time

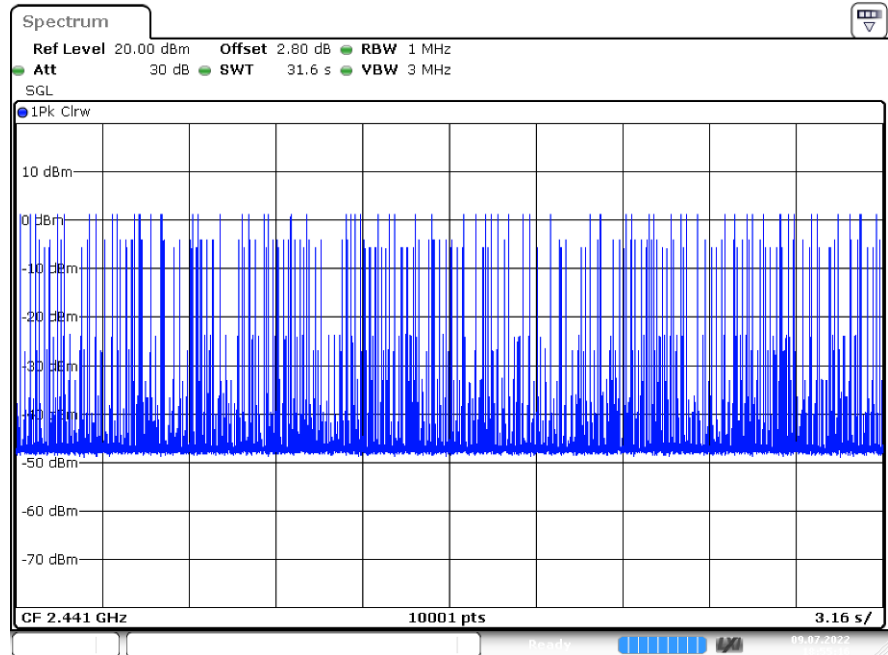
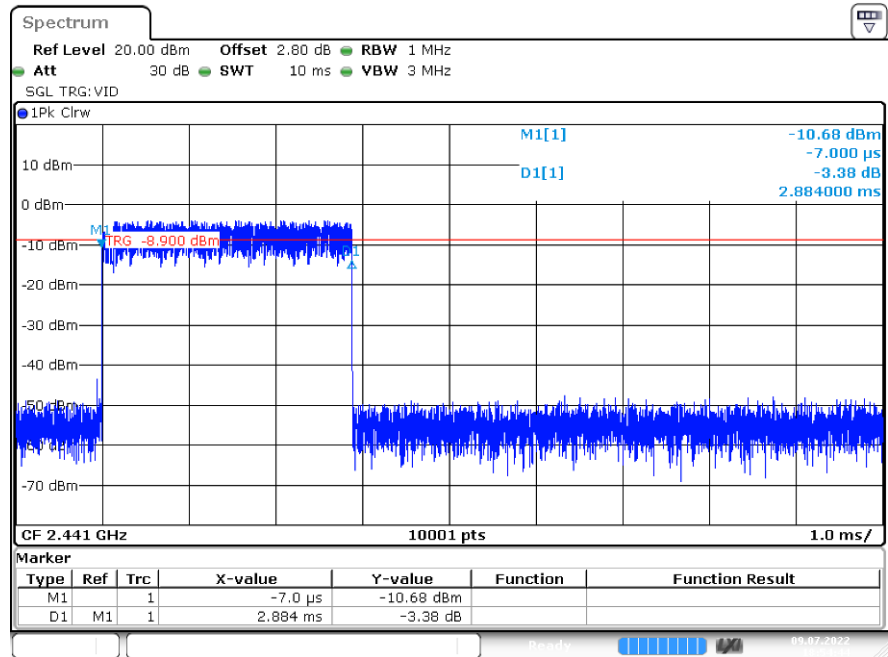
6.1 Test Result

Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[ms]	Limit [s]	Verdict
GFSK	DH5	MCH	2.879	58	166.982	0.4	Pass
$\pi/4$ DQPSK	2DH5	MCH	2.884	68	196.112	0.4	Pass

6.2 Test Graphs



$\pi/4$ DQPSK
_2DH5/MCH

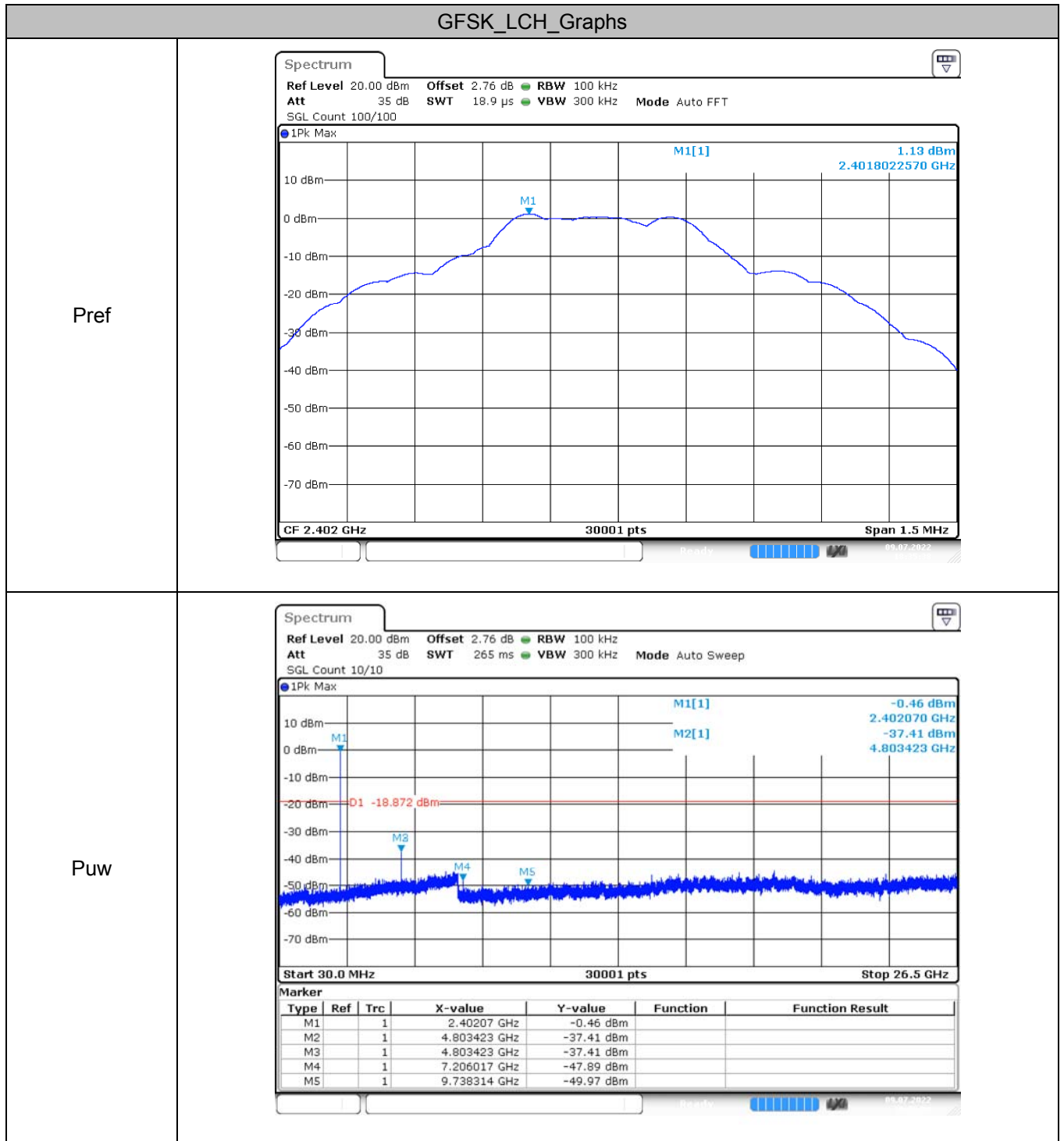


7 RF Conducted Spurious Emissions

7.1 Test Result

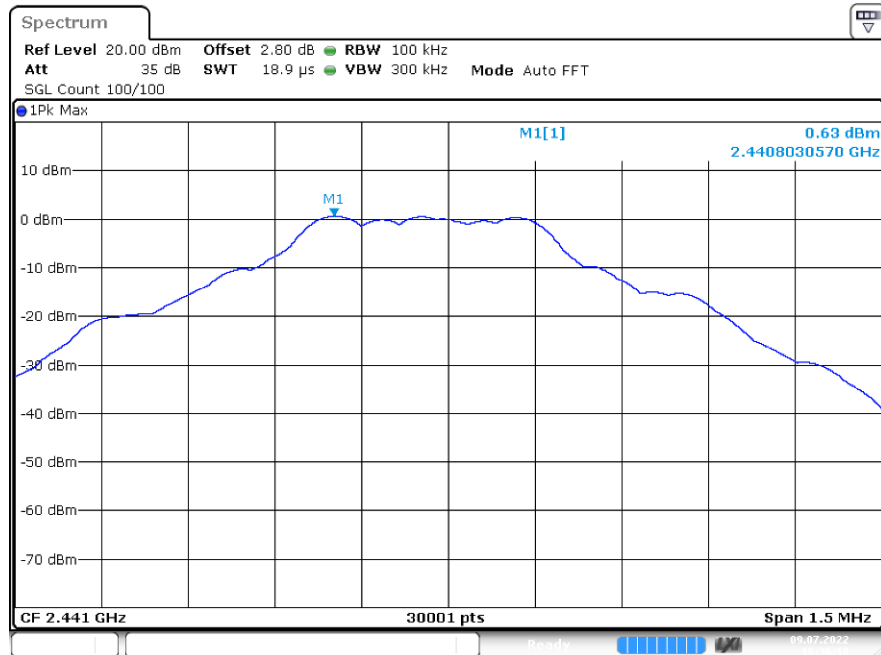
Mode	Channel	Max. Level [dBc]	Limit [dBc]	Verdict
GFSK	LCH	-38.54	-20	Pass
	MCH	-36.94	-20	Pass
	HCH	-41.21	-20	Pass
$\pi/4$ DQPSK	LCH	-41.94	-20	Pass
	MCH	-45.02	-20	Pass
	HCH	-37.55	-20	Pass

7.2 Test Graphs

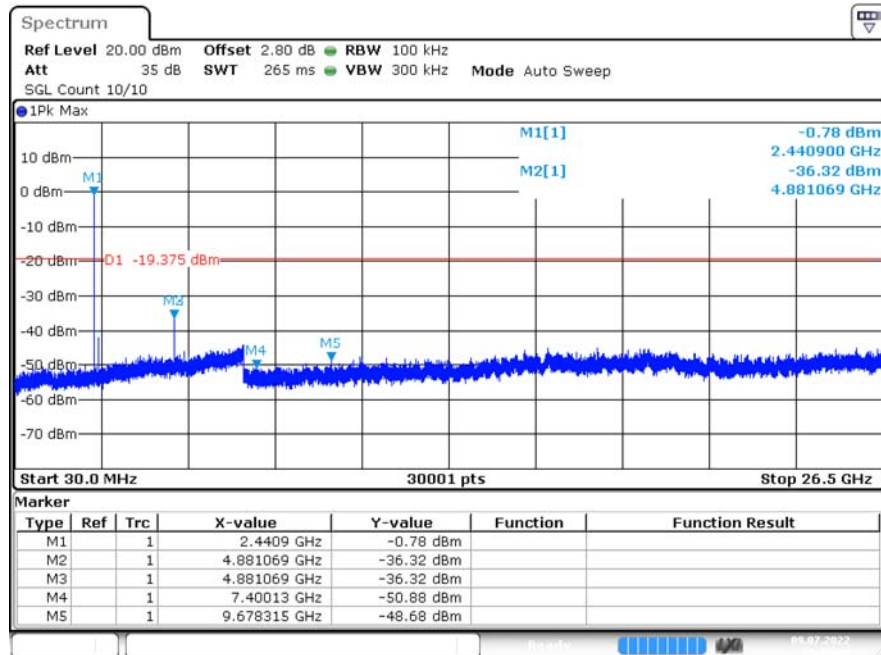


GFSK_MCH_Graphs

Pref

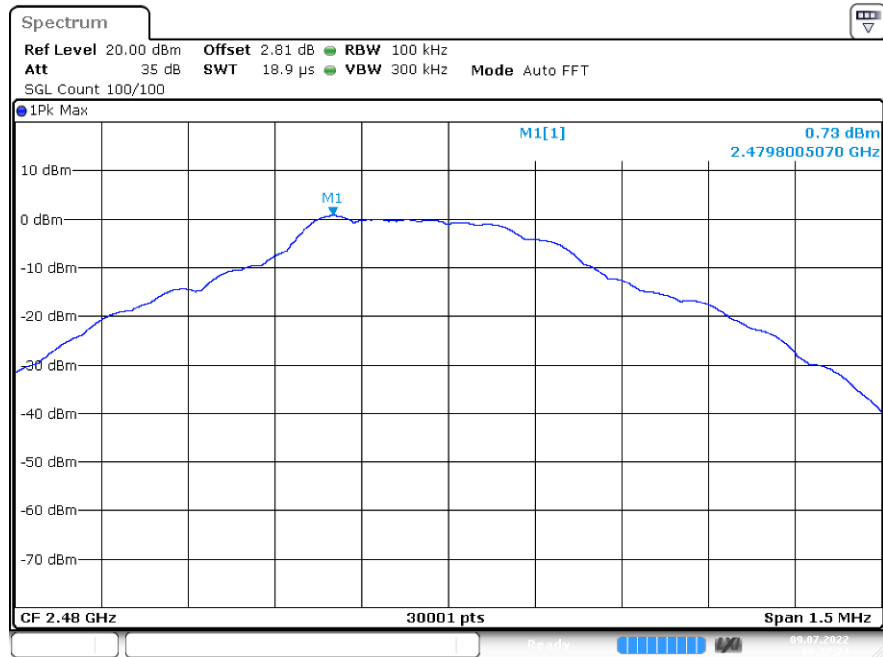


Puw

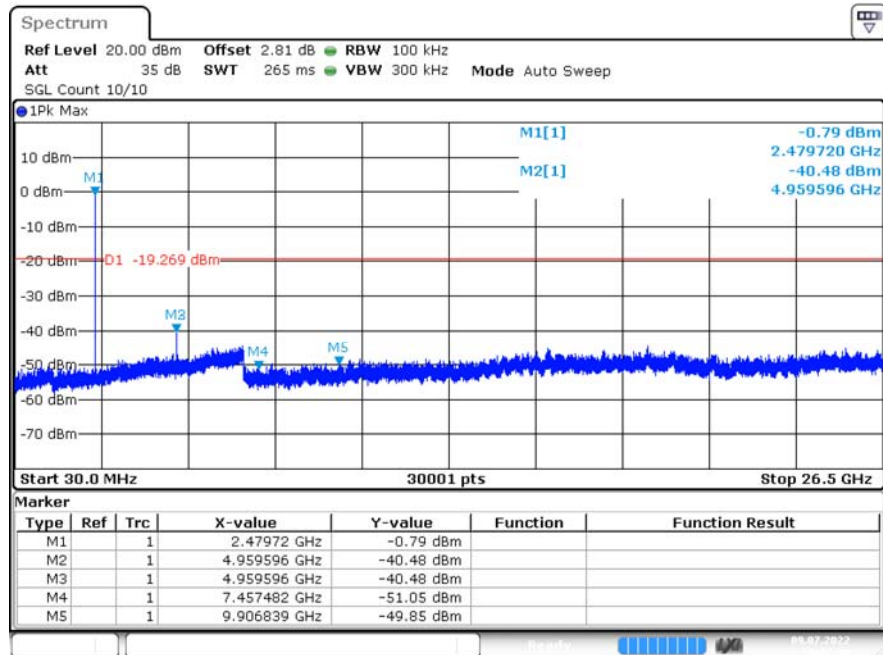


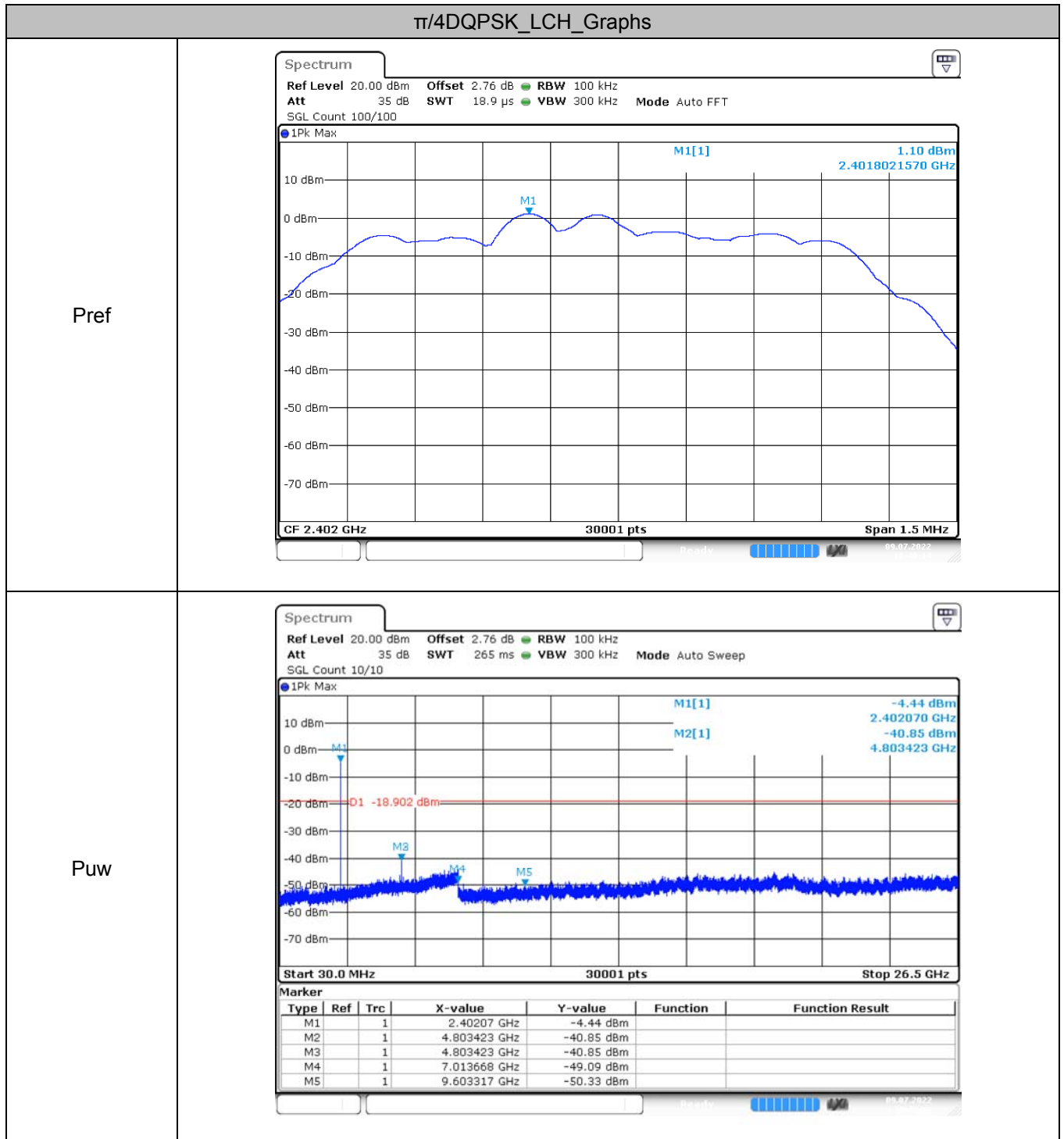
GFSK_HCH_Graphs

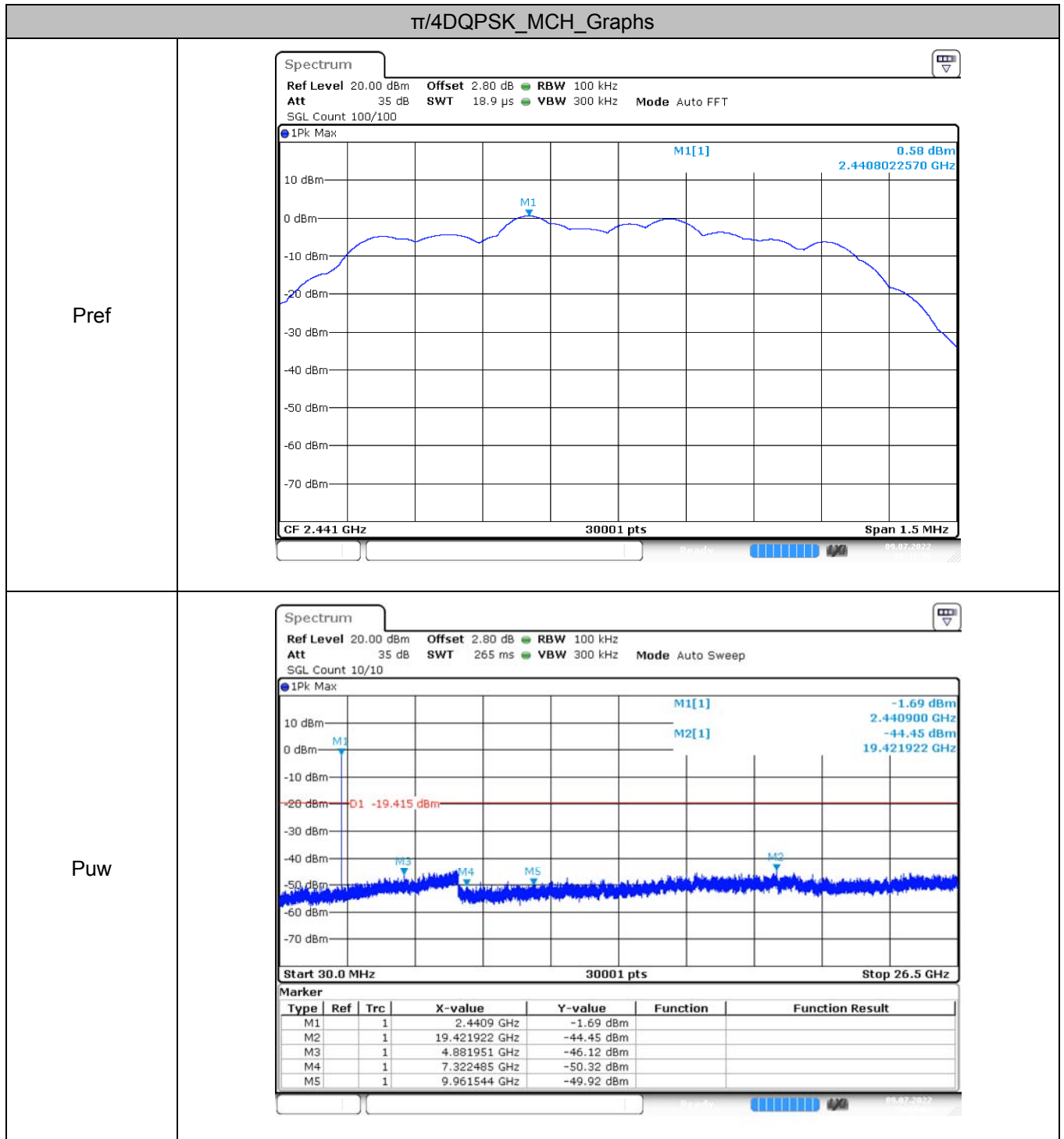
Pref

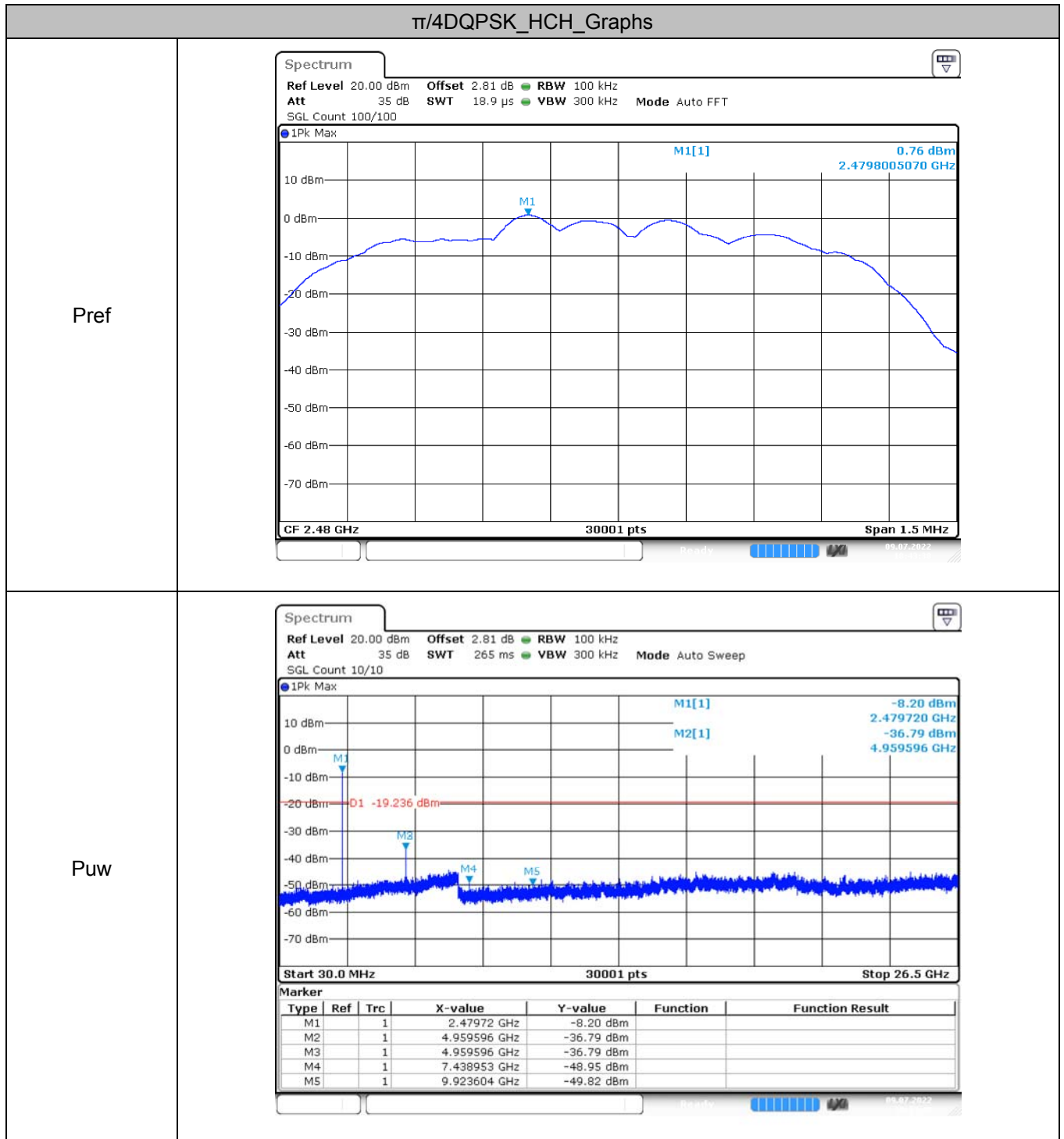


Puw







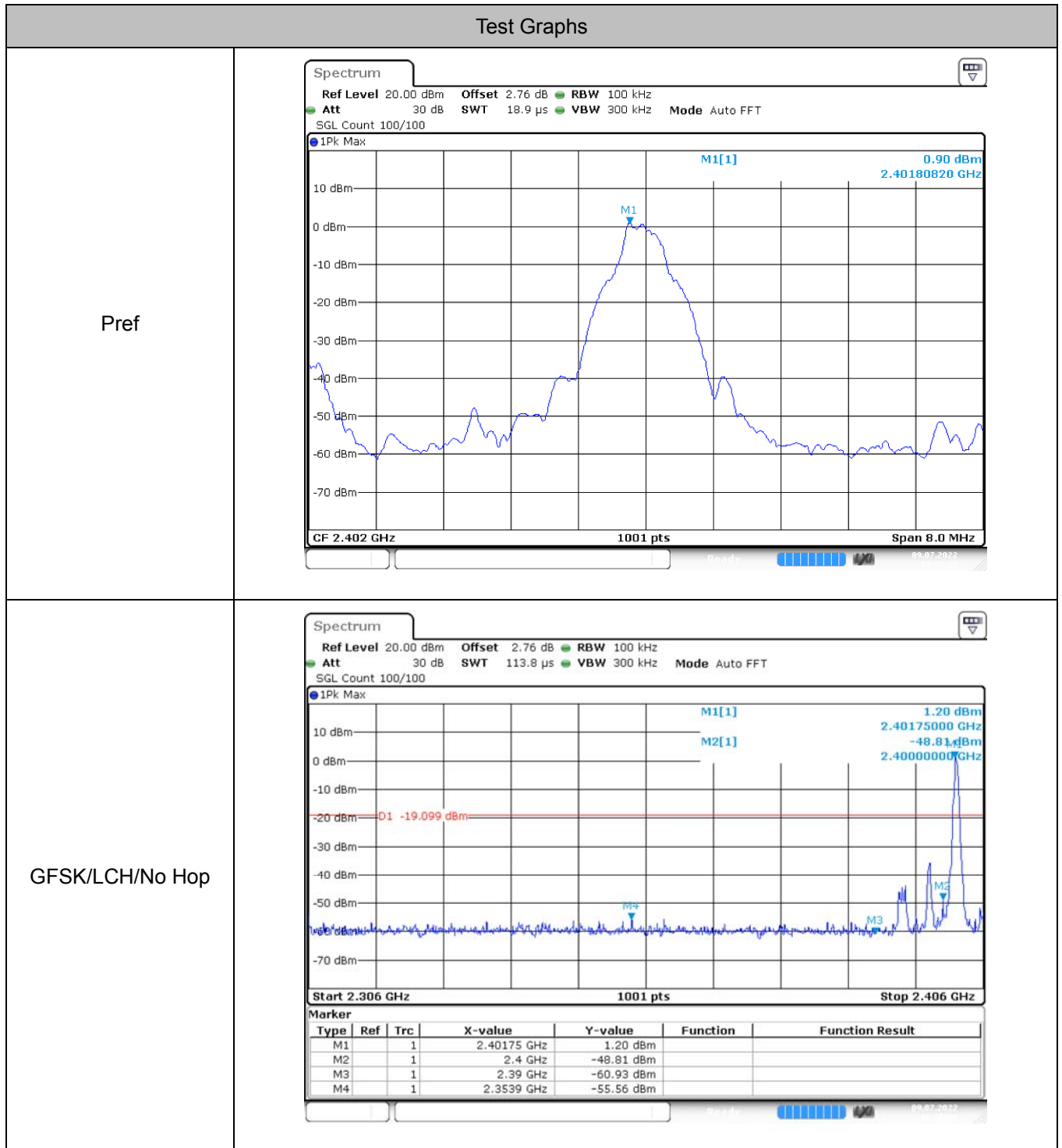


8 Band-edge for RF Conducted Emissions

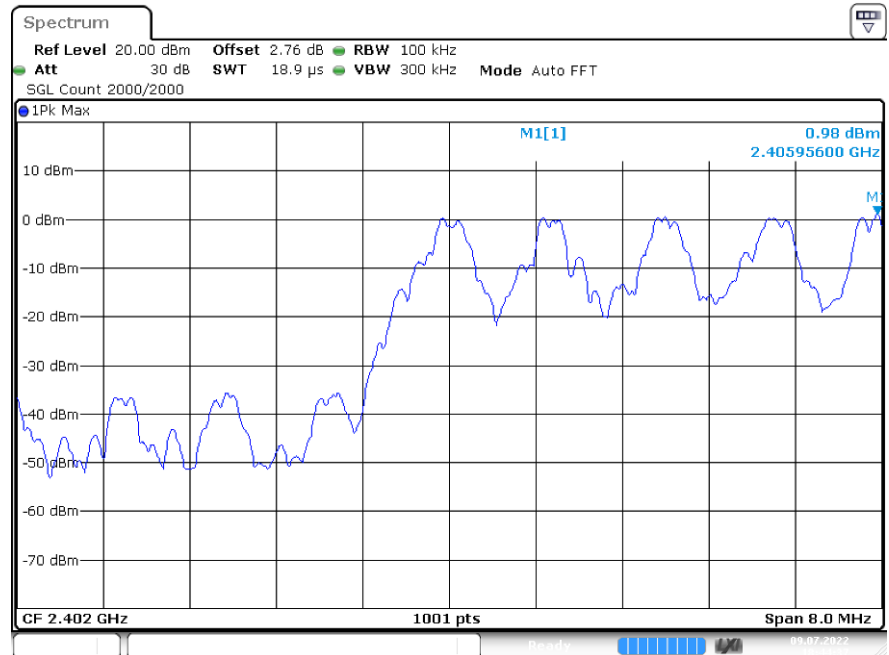
8.1 Test Result

Mode	Channel	Carrier Frequency [MHz]	Frequency Hopping	Max Spurious Level [dBc]	Limit [dBc]	Verdict
GFSK	LCH	2402	Off	-56.46	-20	Pass
			On	-54.57	-20	Pass
	HCH	2480	Off	-51.18	-20	Pass
			On	-53.76	-20	Pass
$\pi/4$ DQPSK	LCH	2402	Off	-57.17	-20	Pass
			On	-56.28	-20	Pass
	HCH	2480	Off	-49.49	-20	Pass
			On	-54.66	-20	Pass

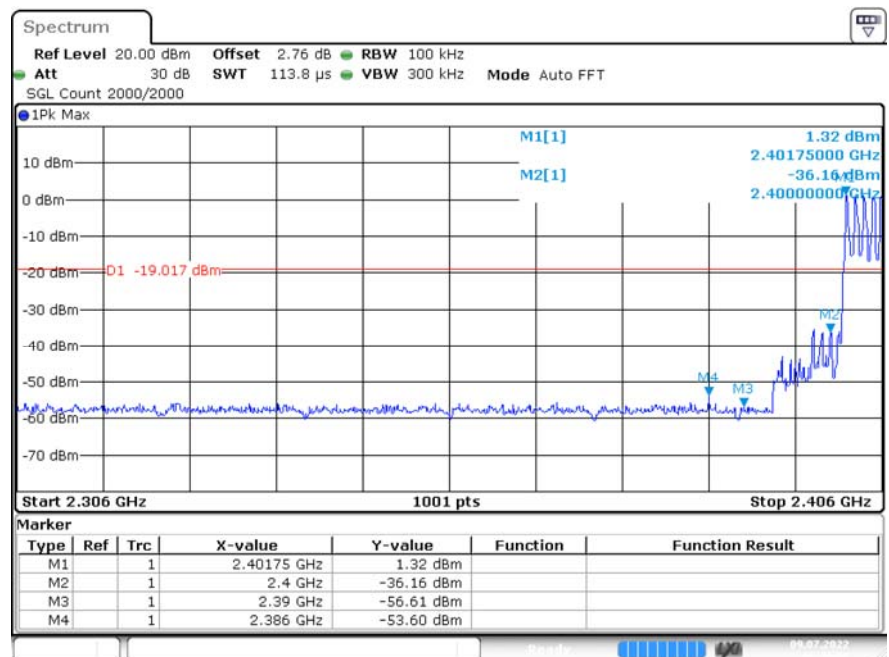
8.2 Test Graphs



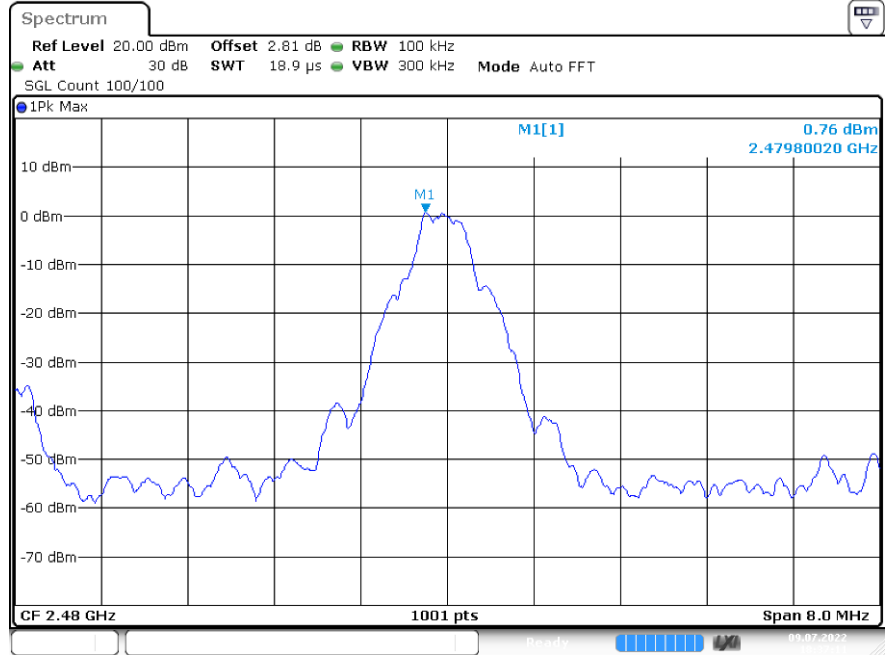
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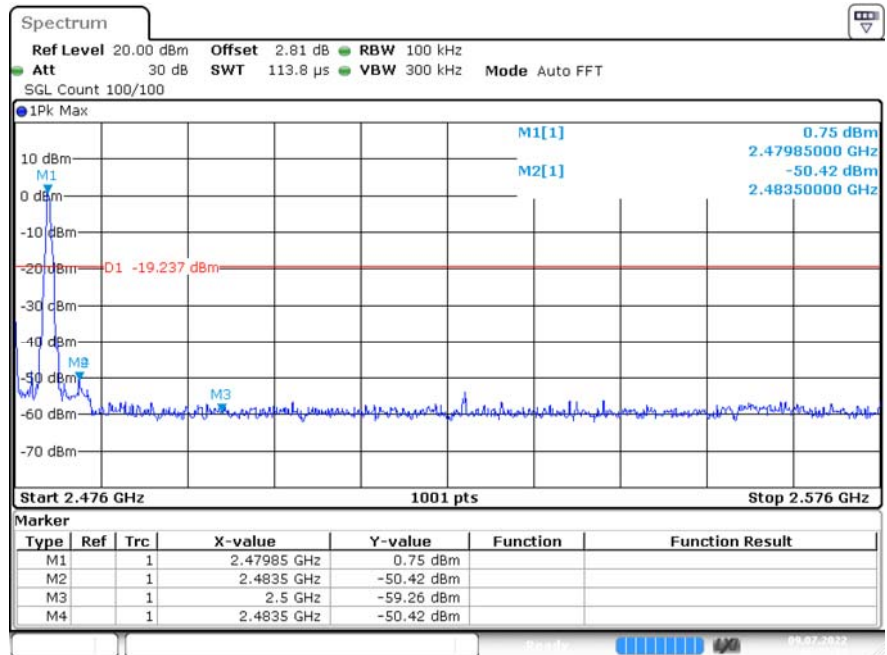
GFSK/LCH/Hop



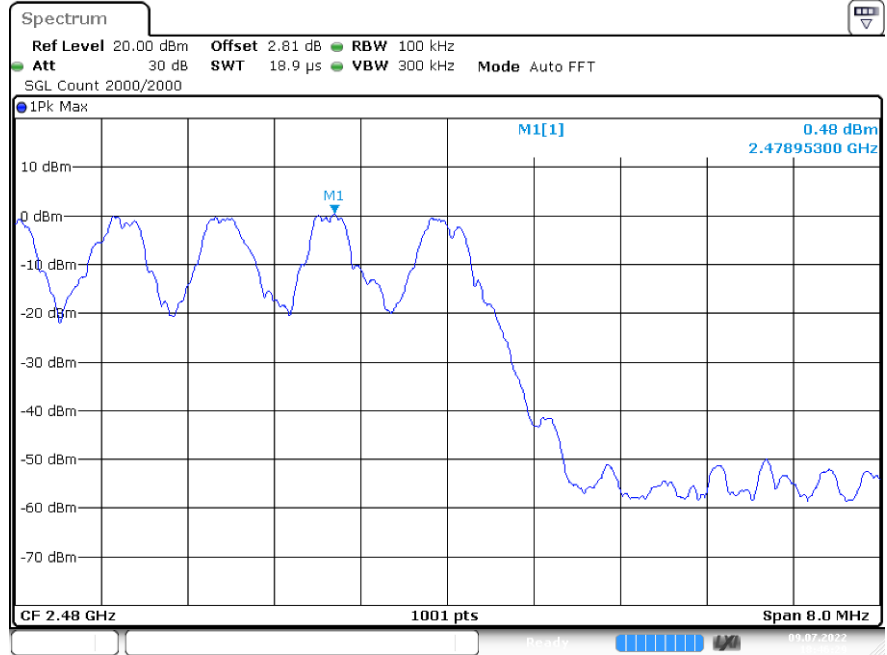
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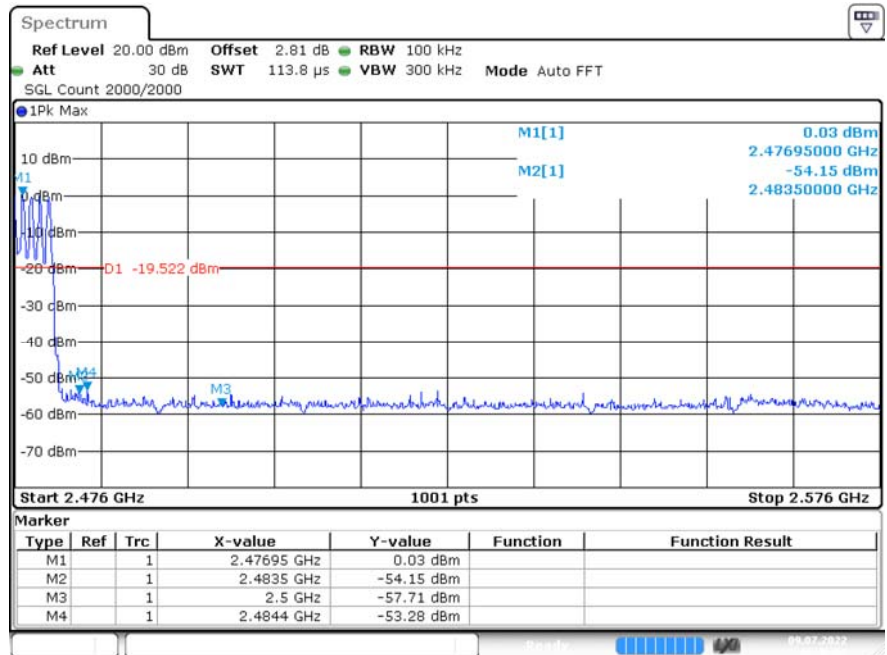
GFSK/HCH/No Hop



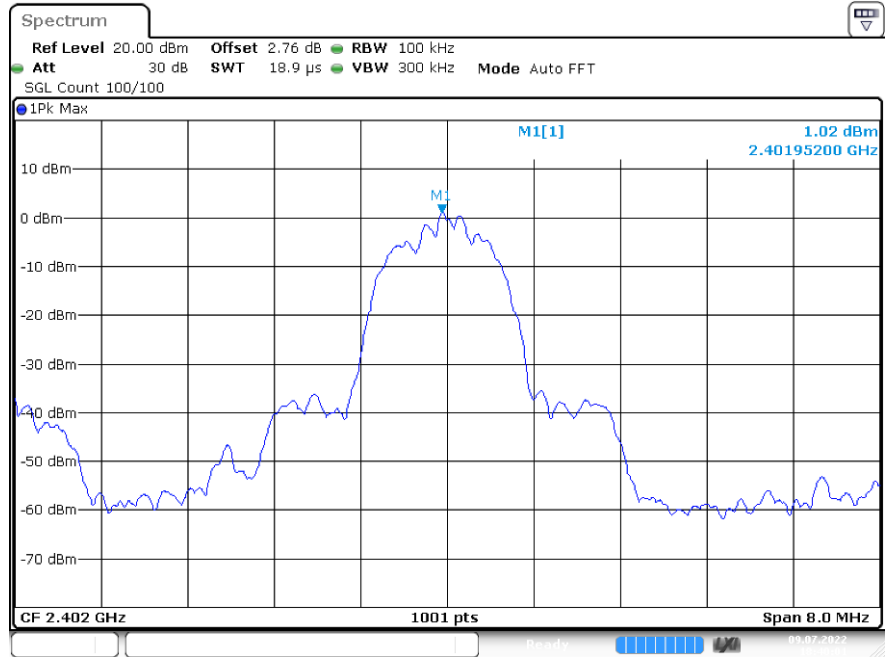
Ref.



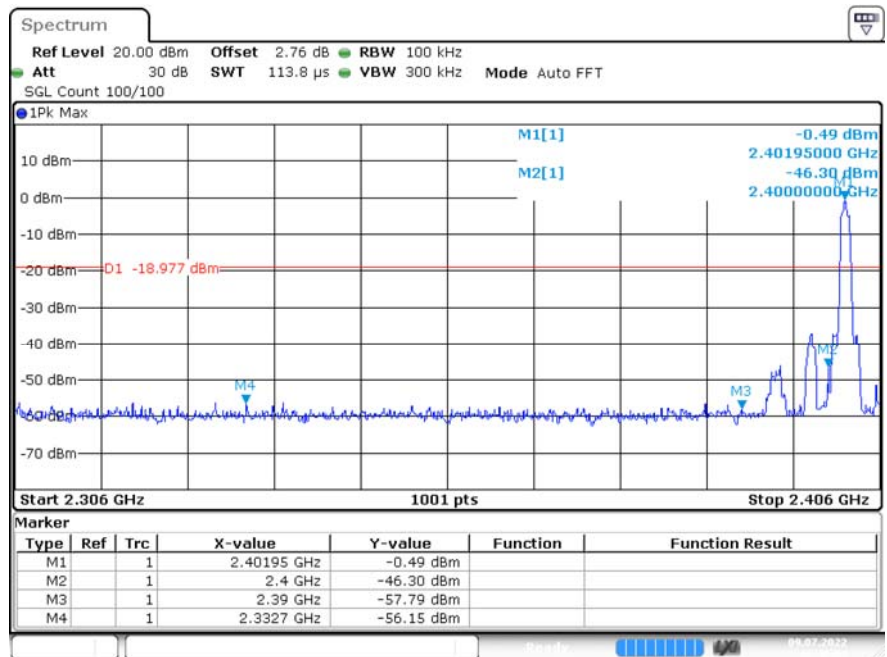
GFSK/HCH/Hop



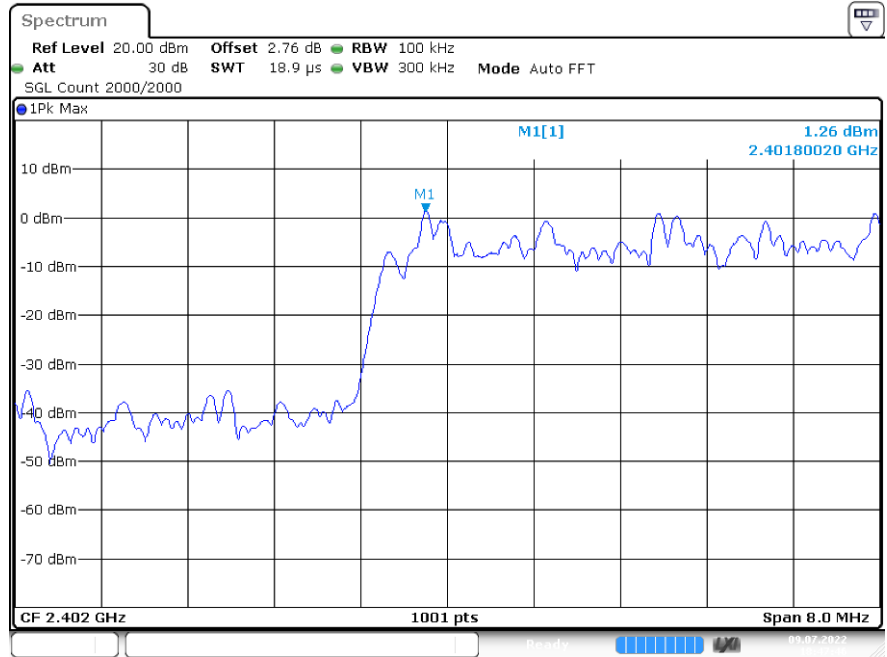
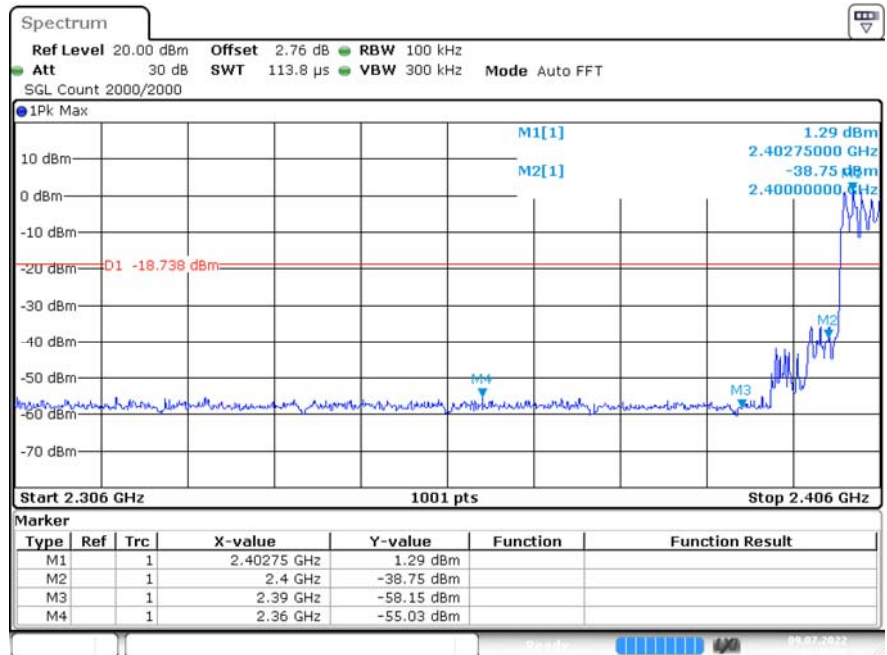
Ref



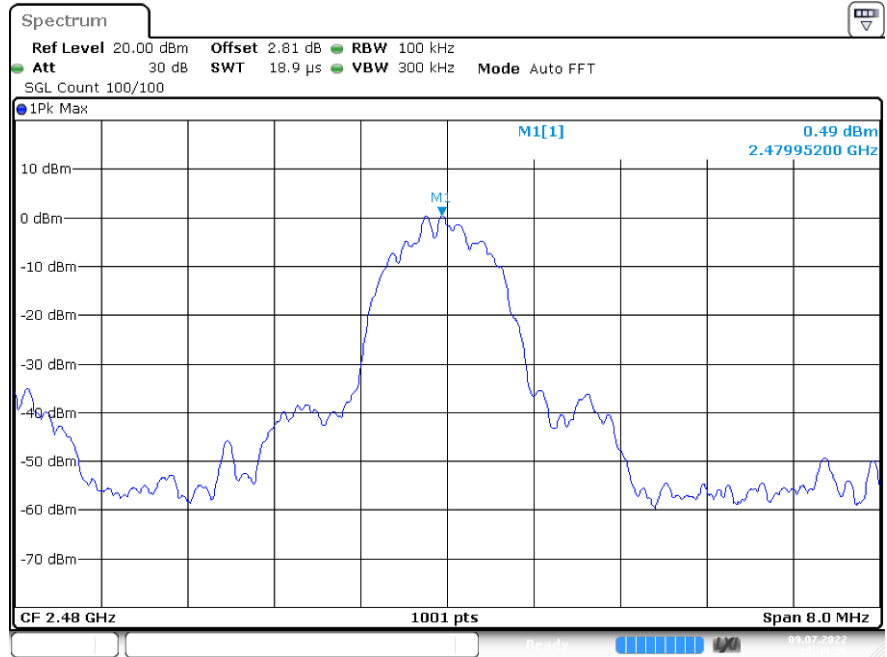
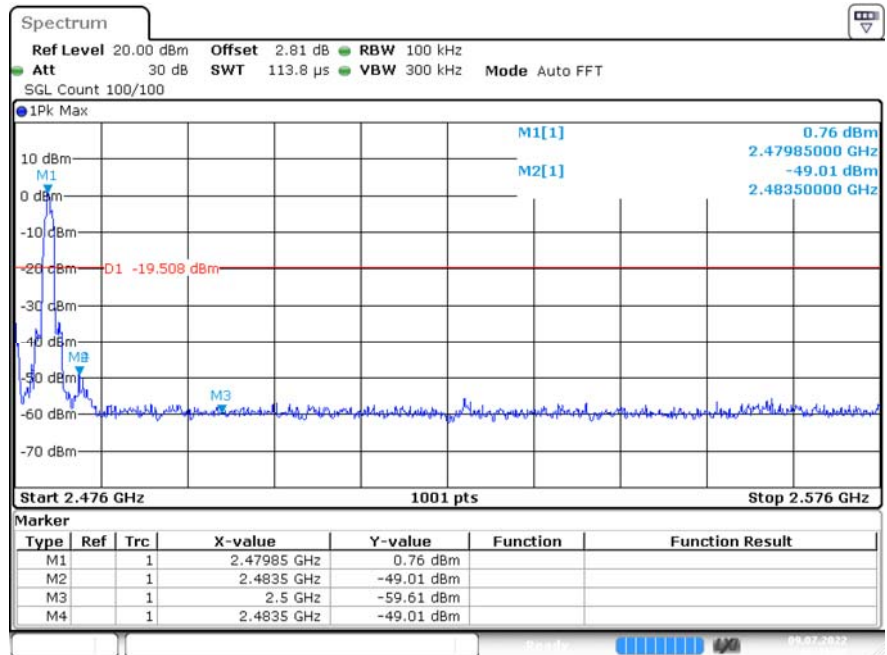
$\pi/4$ DQPSK/LCH/No
Hop



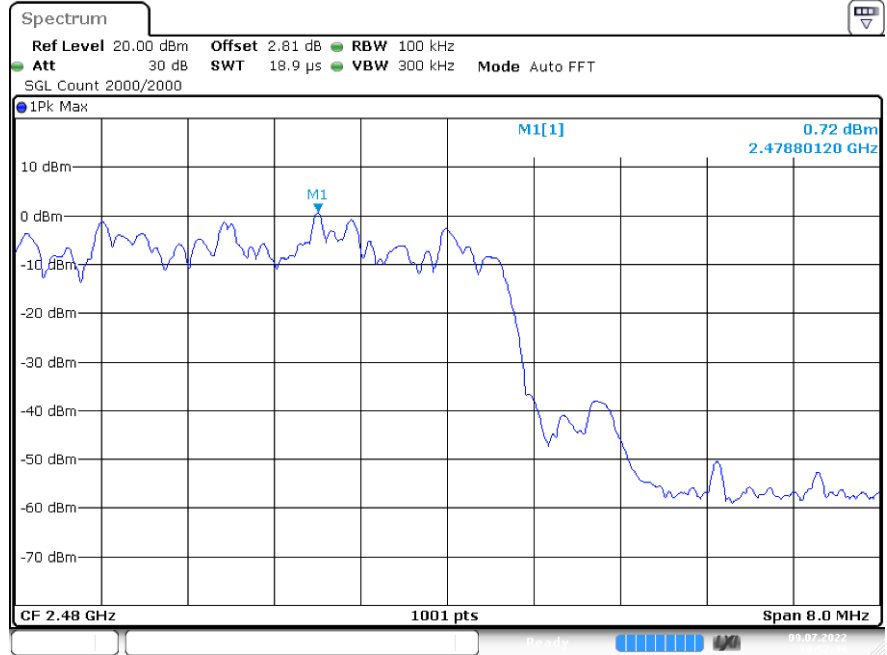
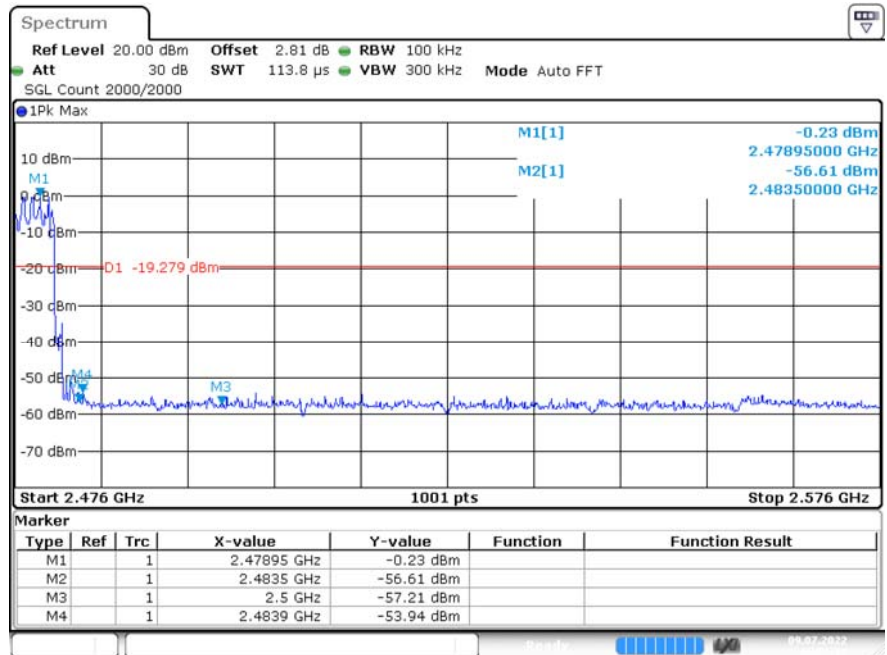
Ref


 $\pi/4$ DQPSK/LCH/Hop


Ref


 $\pi/4$ DQPSK/HCH/No
Hop


Ref


 $\pi/4$ DQPSK/HCH/Hop


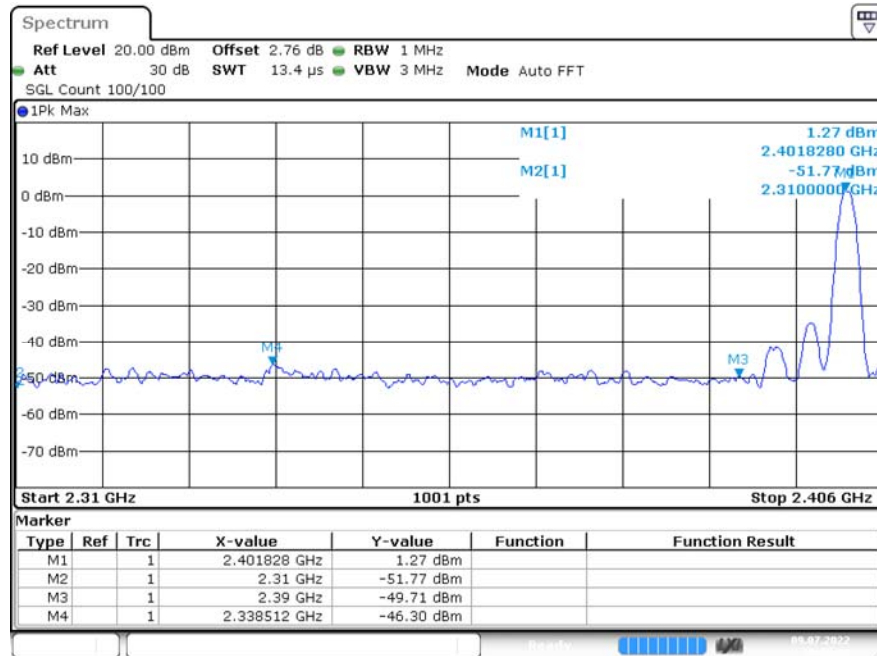
9 Restrict-band band-edge measurements

9.1 Test Result

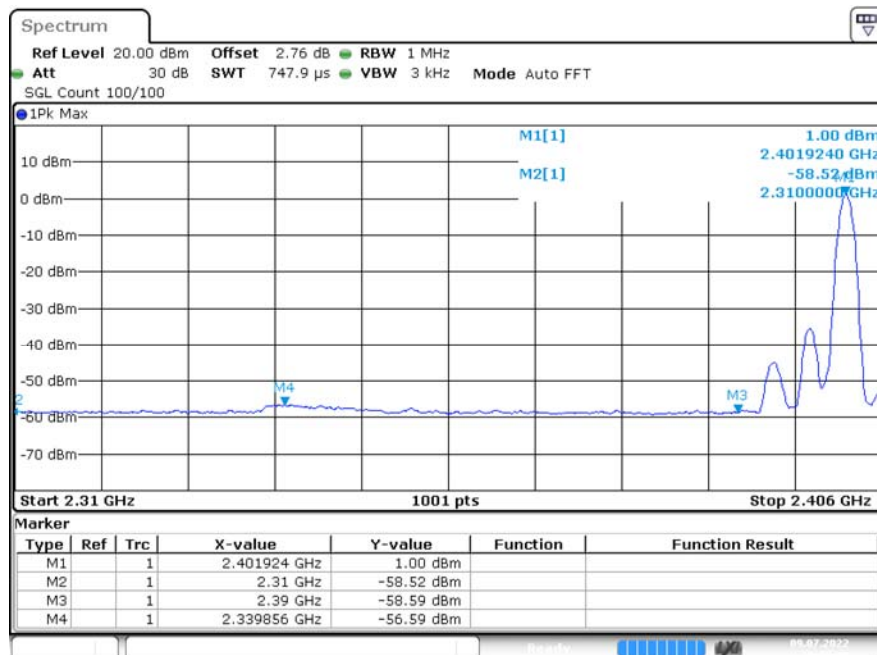
Test Mode	Hopping	Freq.	Power [dBm]	Gain	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-51.77	2	45.49	PEAK	74	Pass
	Off	2310.0	-58.51	2	38.75	AV	54	Pass
	Off	2338.512	-46.3	2	50.96	PEAK	74	Pass
	Off	2339.856	-56.58	2	40.68	AV	54	Pass
	Off	2390.0	-49.7	2	47.56	PEAK	74	Pass
	Off	2390.0	-58.59	2	38.67	AV	54	Pass
	Off	2483.5	-44.96	2	52.3	PEAK	74	Pass
	Off	2483.5	-51.25	2	46.01	AV	54	Pass
	Off	2483.704	-44.43	2	52.83	PEAK	74	Pass
	Off	2483.872	-50.52	2	46.74	AV	54	Pass
	Off	2500.0	-50.85	2	46.41	PEAK	74	Pass
	Off	2500.0	-58.34	2	38.92	AV	54	Pass
$\pi/4$ DQPSK	Off	2310.0	-50.95	2	46.31	PEAK	74	Pass
	Off	2310.0	-57.85	2	39.41	AV	54	Pass
	Off	2343.312	-46.03	2	51.23	PEAK	74	Pass
	Off	2339.088	-56.44	2	40.82	AV	54	Pass
	Off	2390.0	-50.02	2	47.24	PEAK	74	Pass
	Off	2390.0	-58.27	2	38.99	AV	54	Pass
	Off	2483.5	-44.62	2	52.64	PEAK	74	Pass
	Off	2483.5	-51.22	2	46.04	AV	54	Pass
	Off	2483.512	-44.62	2	52.64	PEAK	74	Pass
	Off	2483.824	-51.01	2	46.25	AV	54	Pass
	Off	2500.0	-48.49	2	48.77	PEAK	74	Pass
	Off	2500.0	-58.01	2	39.25	AV	54	Pass

9.2 Test Graphs

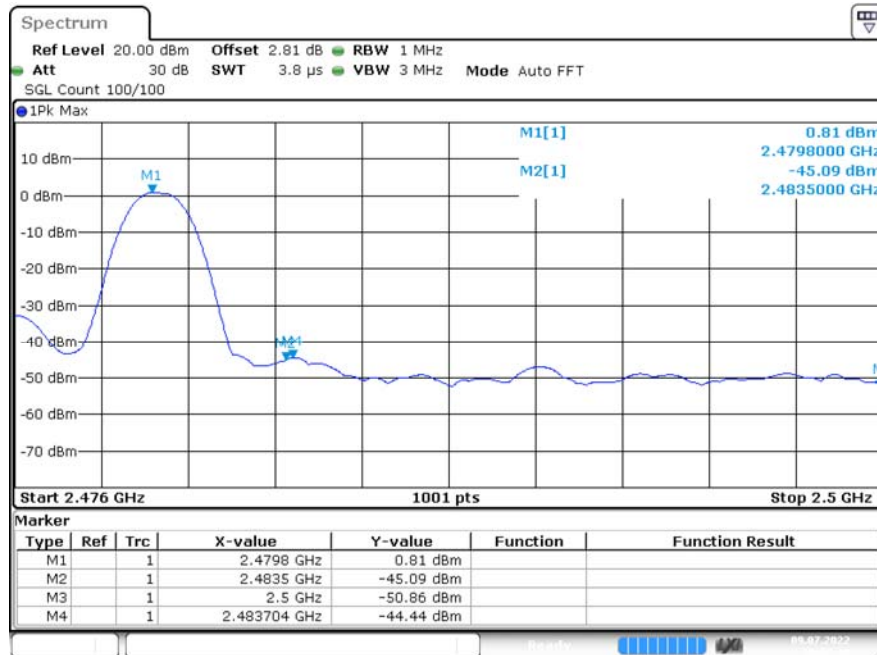
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (Low Channel)



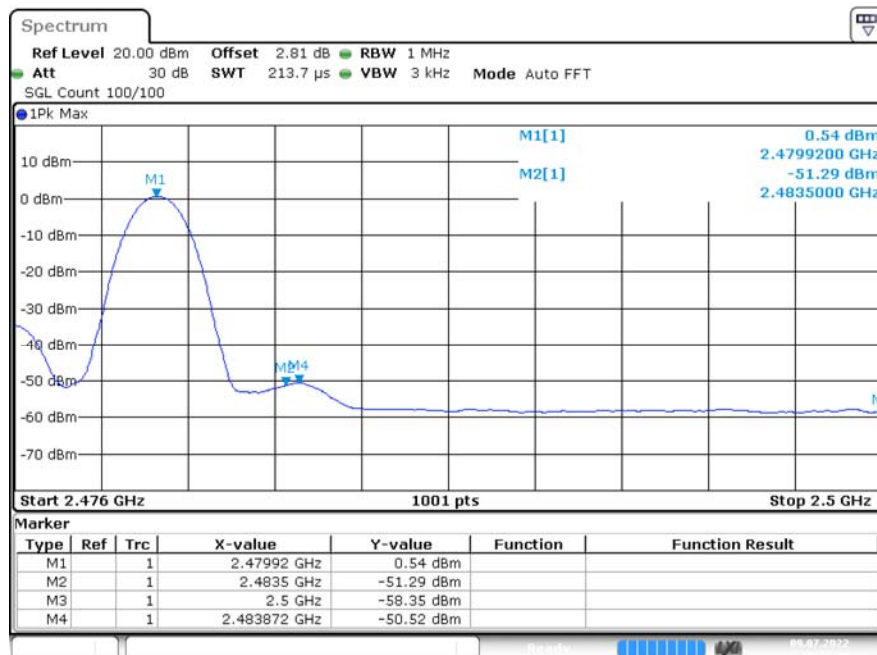
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (Low Channel)



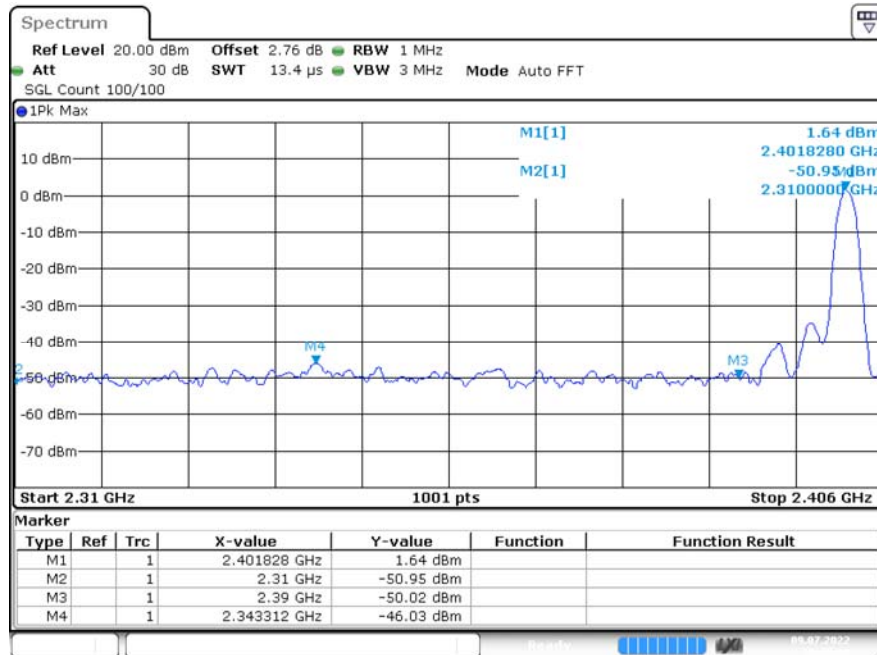
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (High Channel)



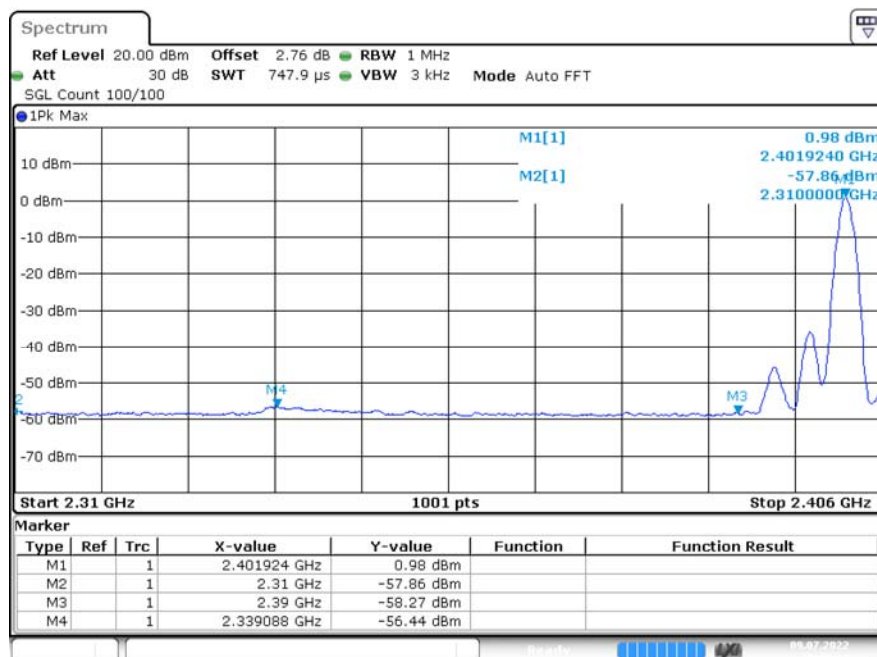
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (High Channel)



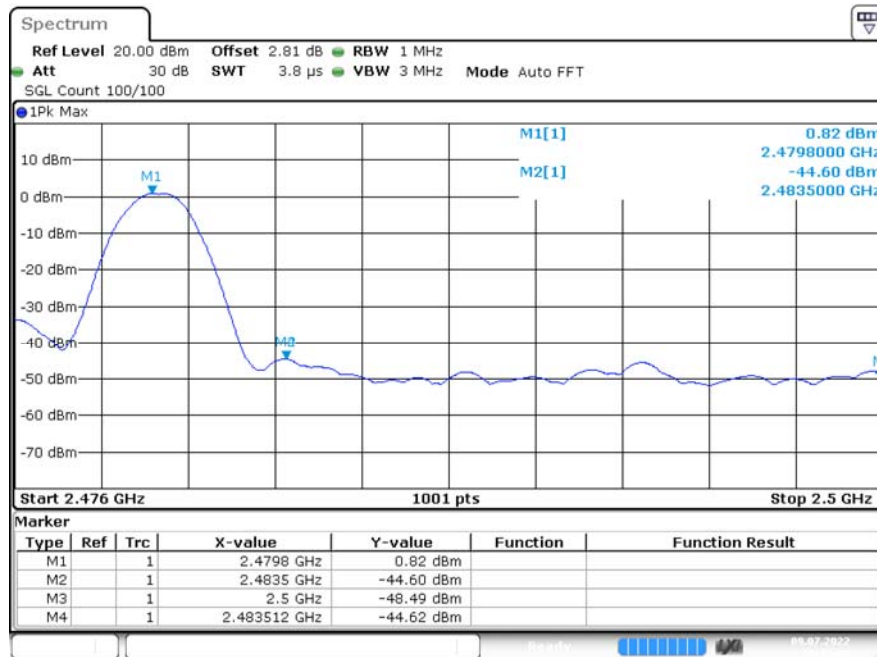
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (Low Channel)



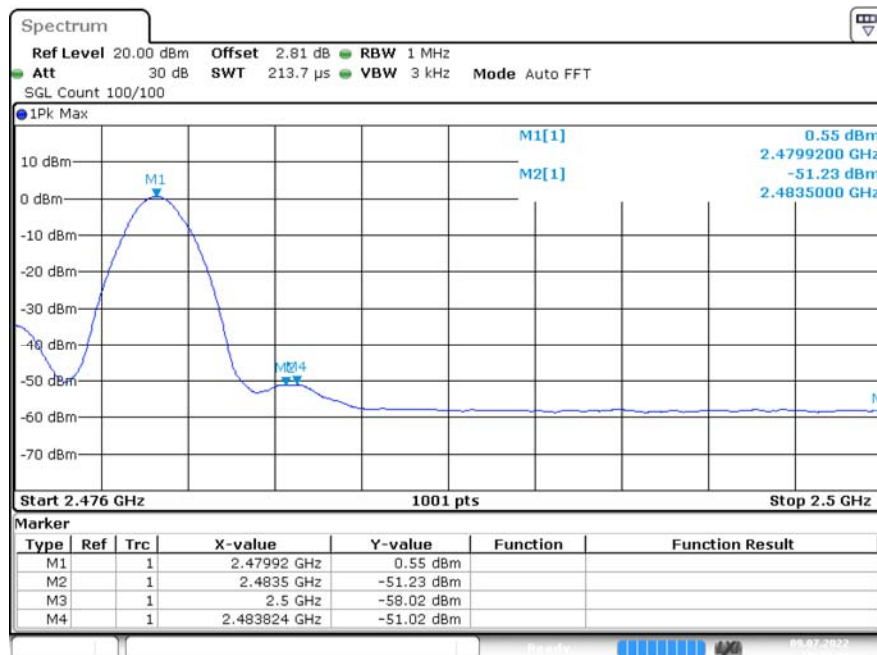
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (Low Channel)



Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (High Channel)



Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (High Channel)



---The End---