



Appendix A

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

Product Name: Bluetooth Adapter

Trade Mark: AUTOTECH

Test Model: AT-BT

Environmental Conditions

Temperature:	24.4℃
Relative Humidity:	52.2%
ATM Pressure:	101Kpa
Test Engineer:	Simba Huang
Supervised by:	Seal Chen

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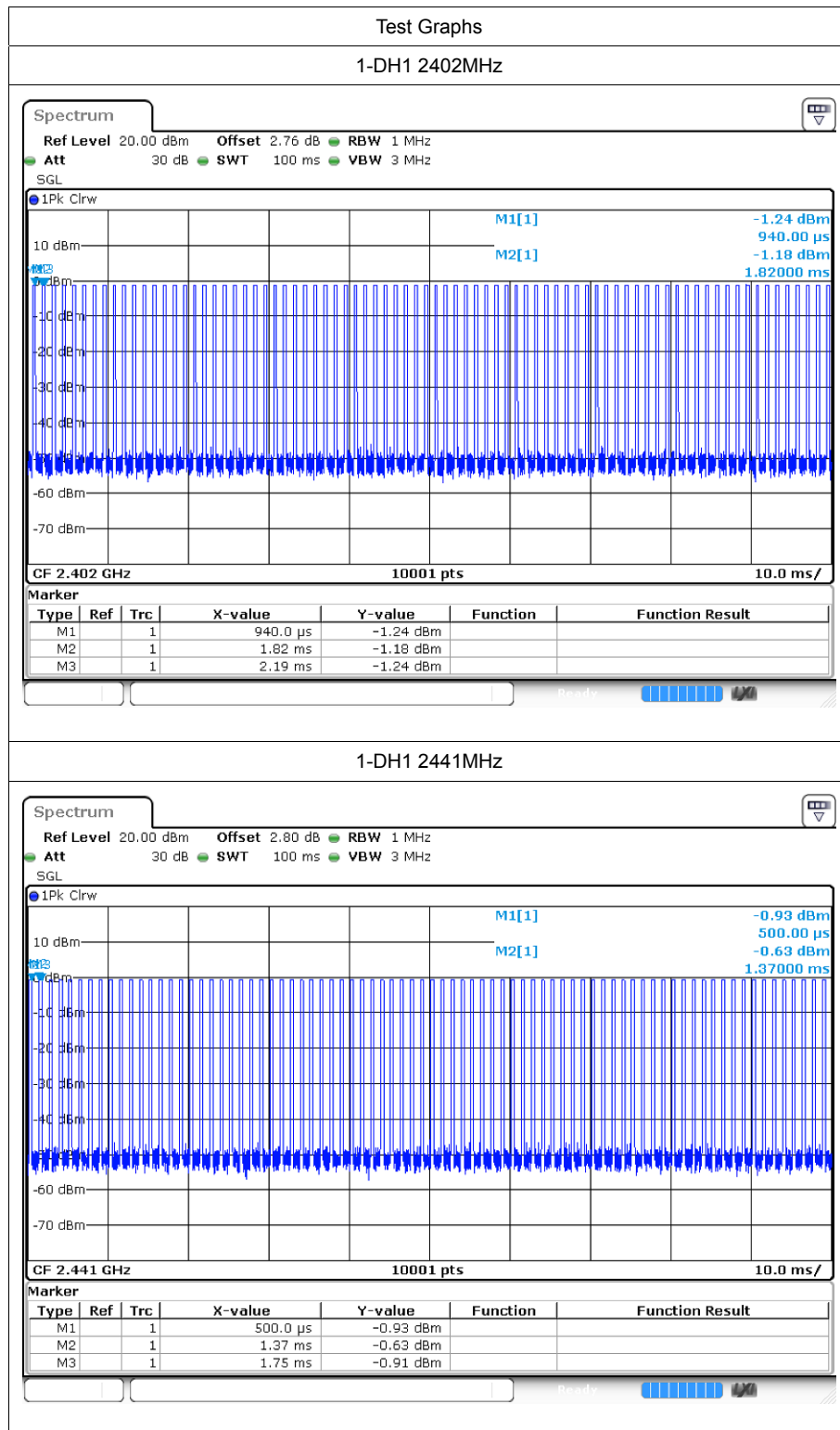


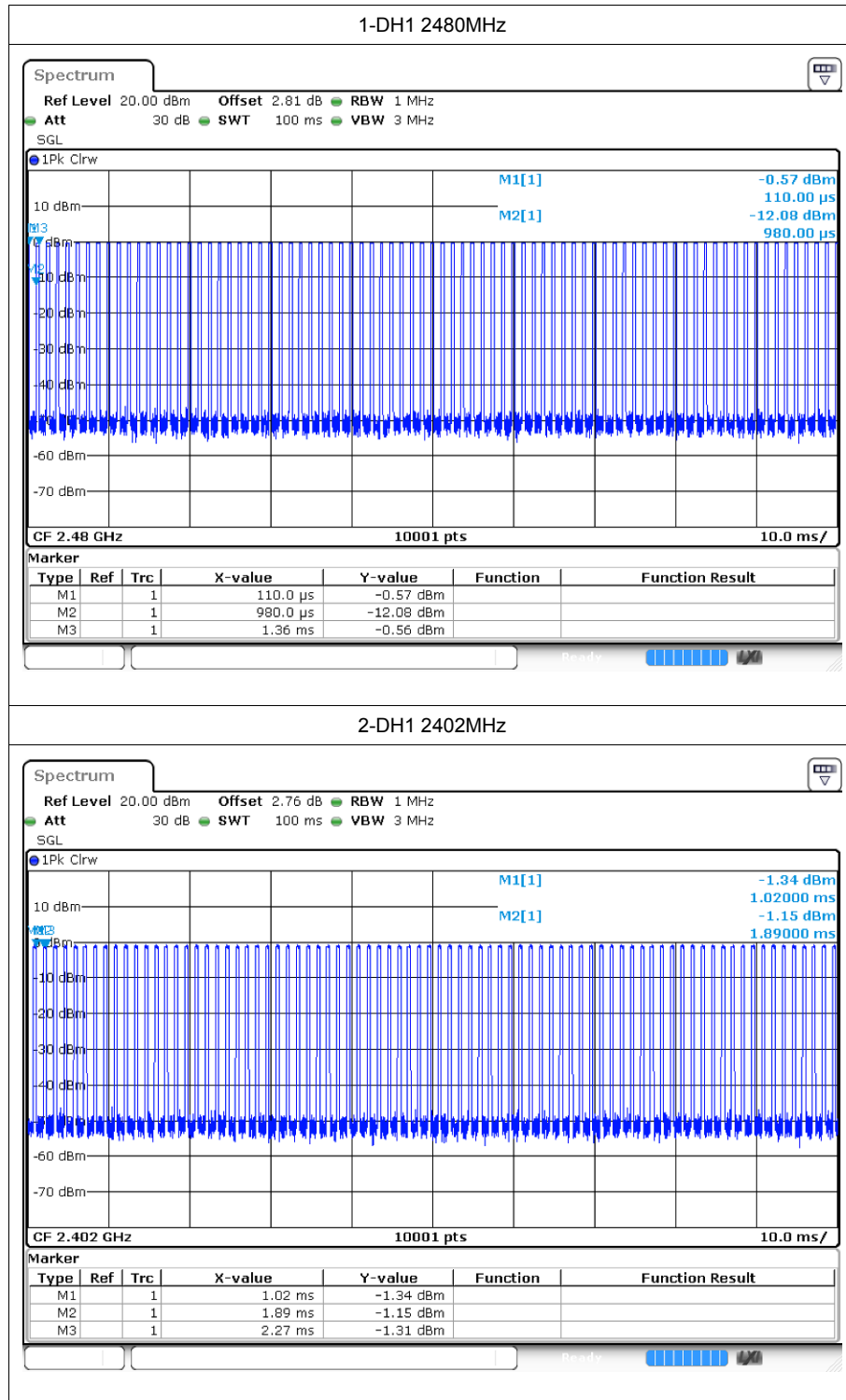
1 Duty Cycle

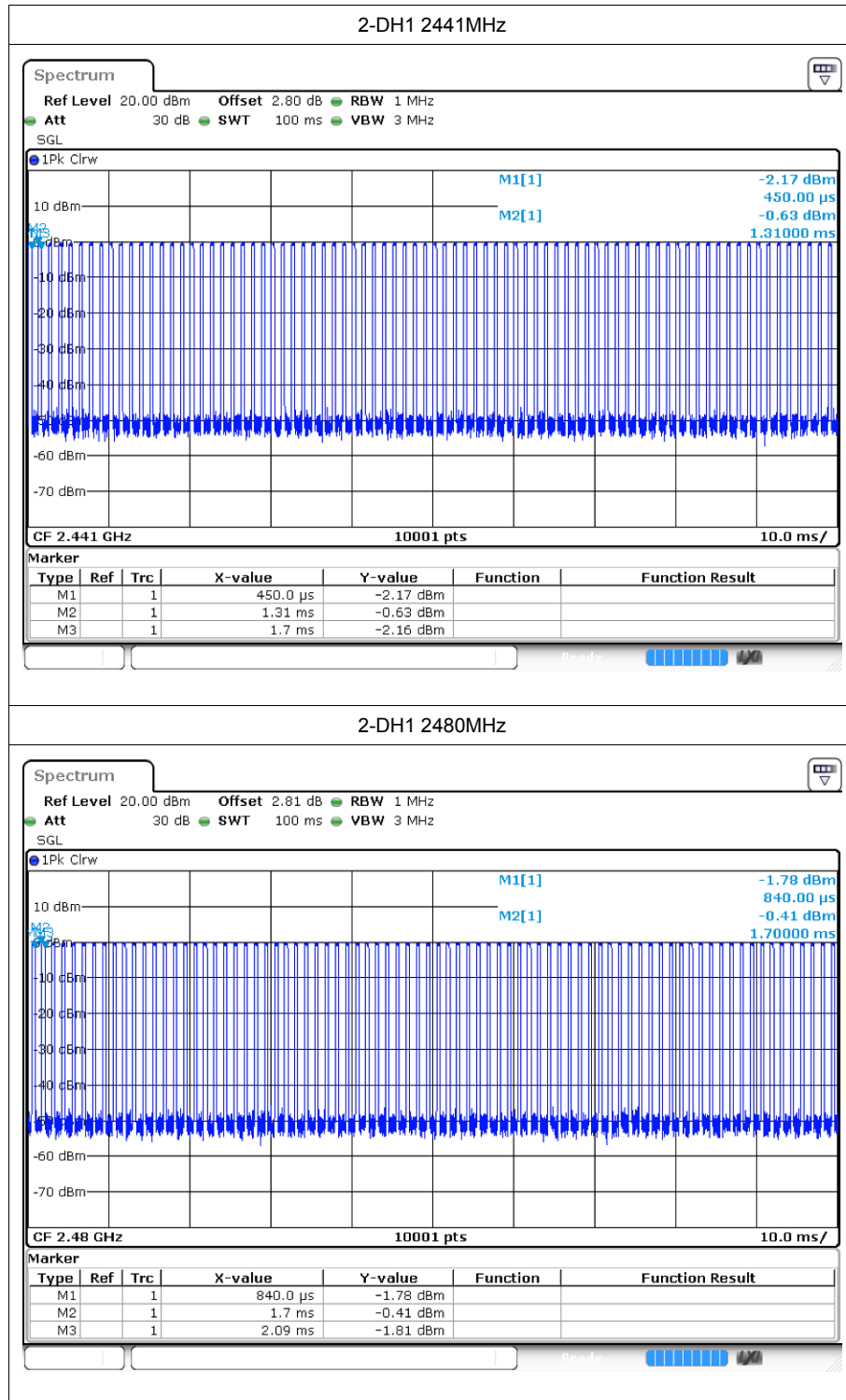
1.1 Test Result

Mode	Frequency (MHz)	Duty Cycle (%)	1/T (kHz)
1-DH1	2402	30.4	2.7
1-DH1	2441	31.2	2.63
1-DH1	2480	31.21	2.63
2-DH1	2402	31.2	2.63
2-DH1	2441	32	2.56
2-DH1	2480	32	2.56

1.2 Test Graphs





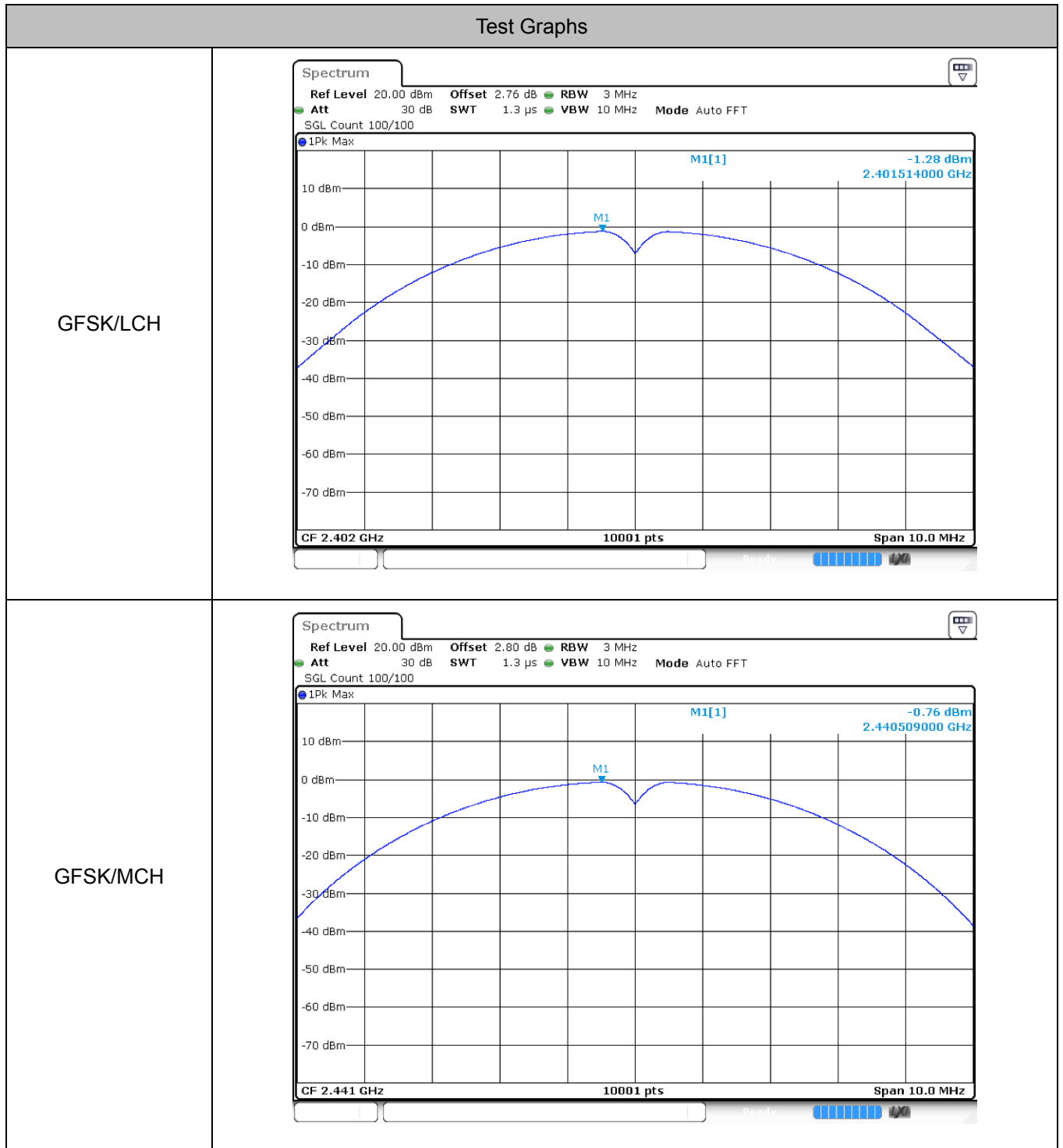


2 Maximum Conducted Peak Output Power

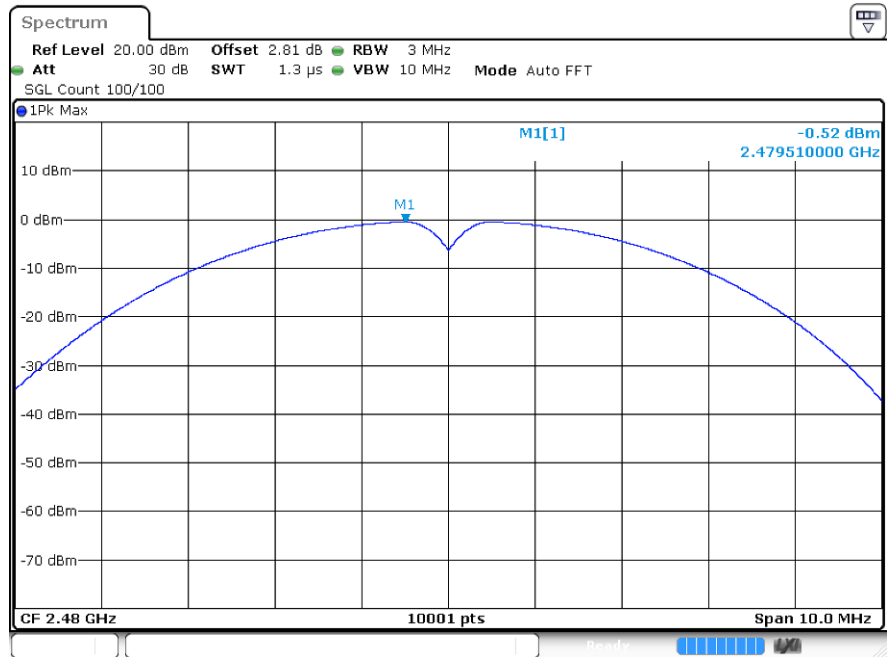
2.1 Test Result

Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-1.28	21	Pass
	MCH	-0.76	21	Pass
	HCH	-0.52	21	Pass
$\pi/4$ DQPSK	LCH	-0.69	21	Pass
	MCH	-0.34	21	Pass
	HCH	-0.04	21	Pass

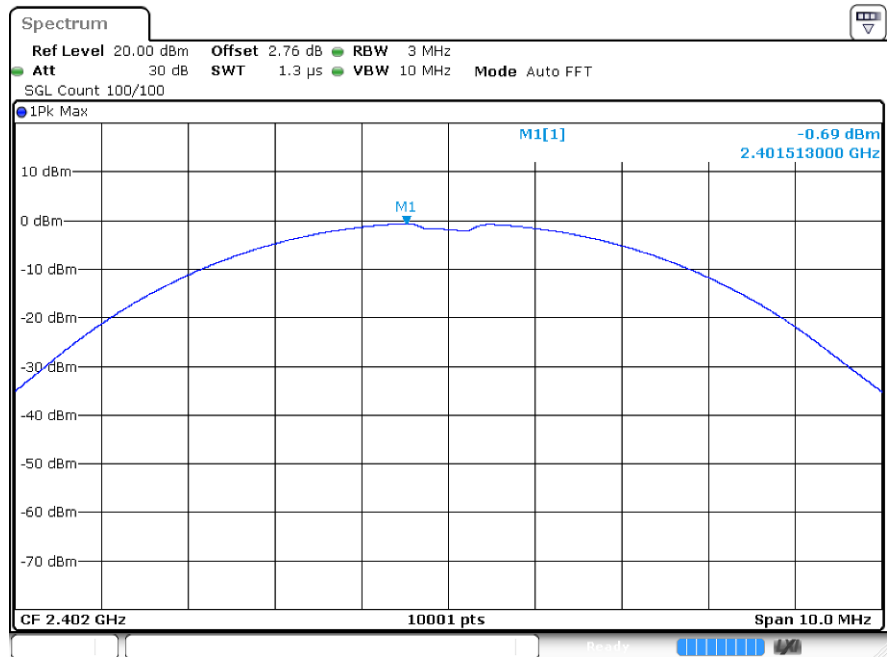
2.2 Test Graphs



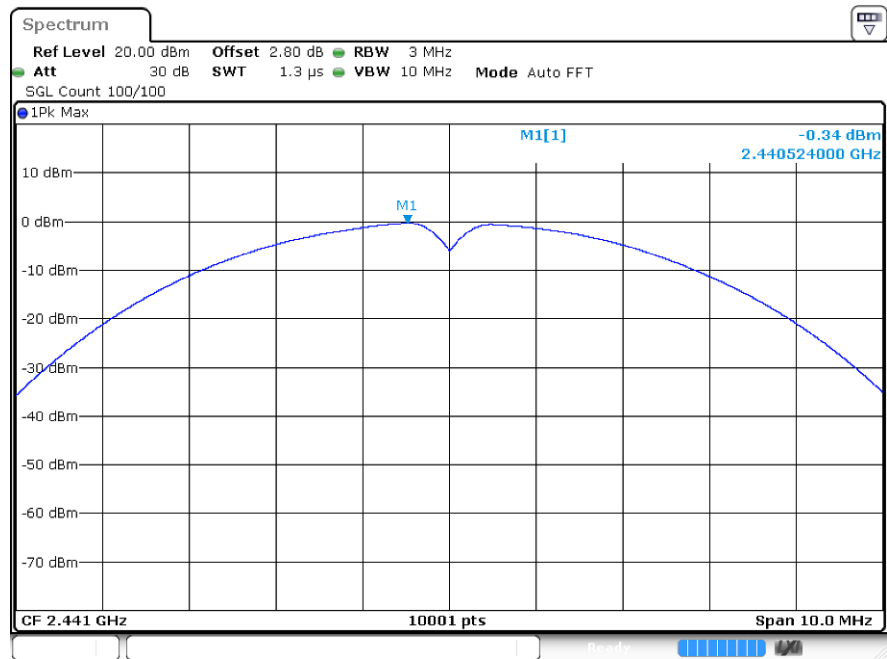
GFSK/HCH



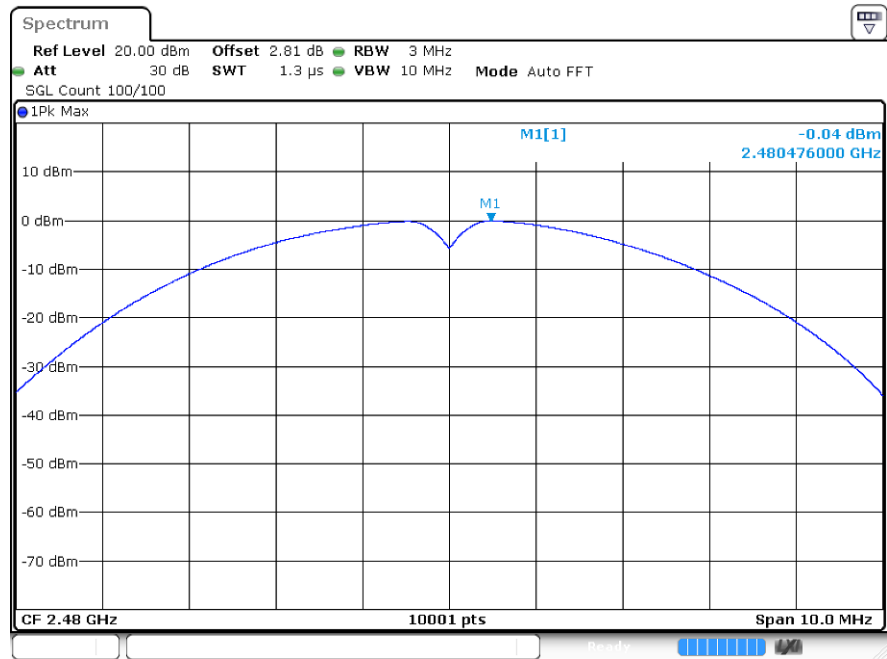
$\pi/4$ DQPSK/LCH



$\pi/4$ DQPSK/MCH



$\pi/4$ DQPSK/HCH

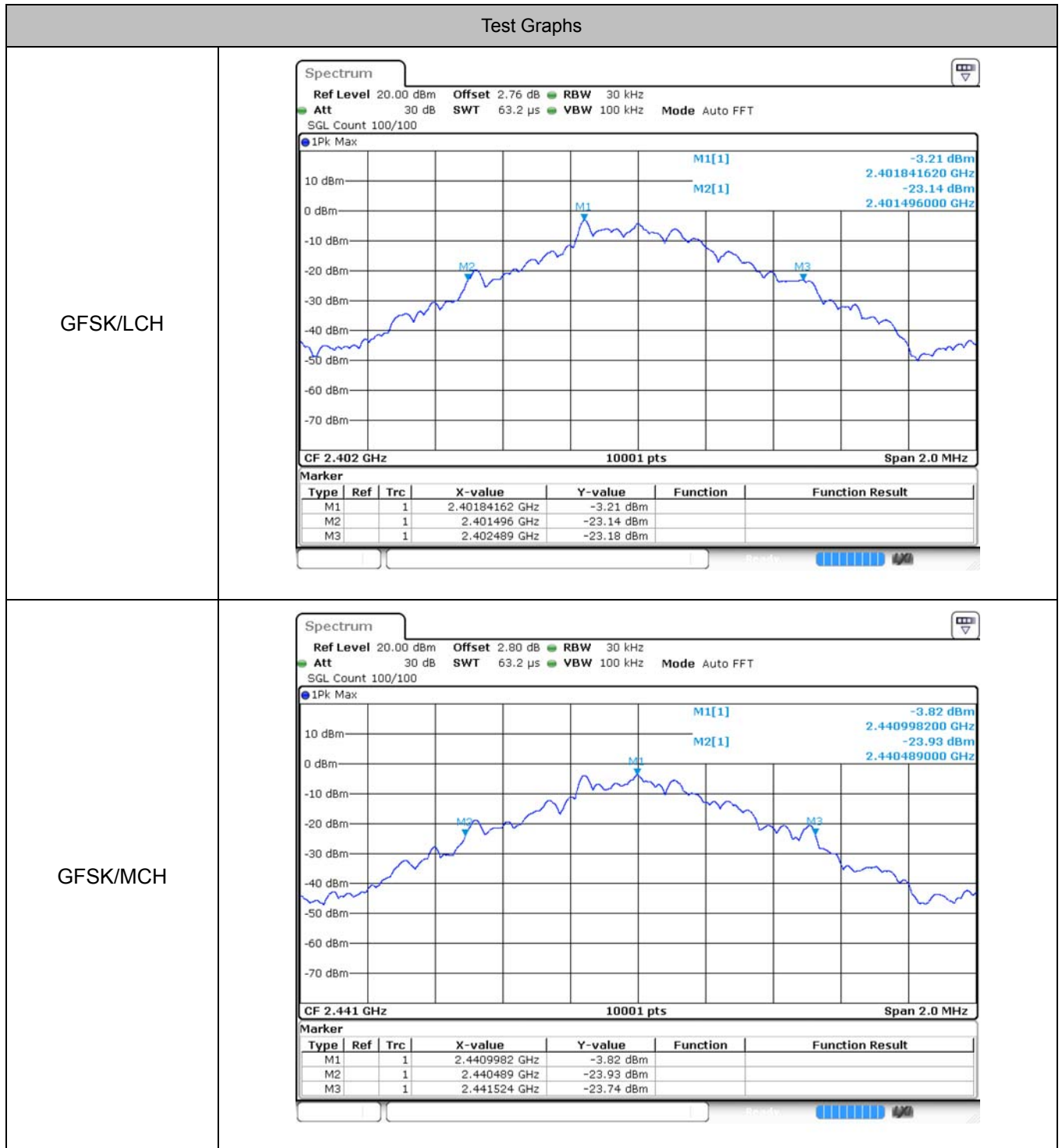


3 20dB Bandwidth

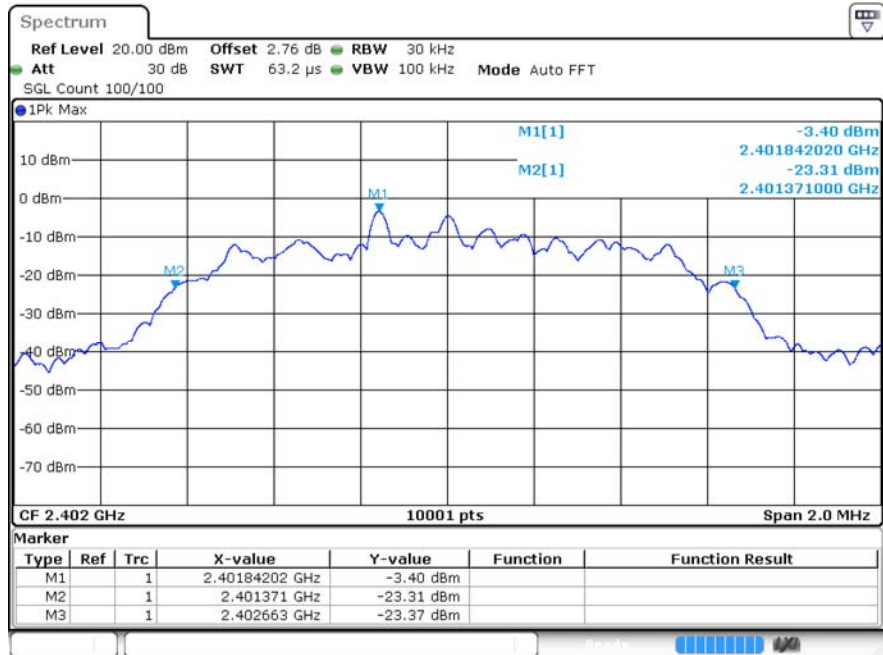
3.1 Test Result

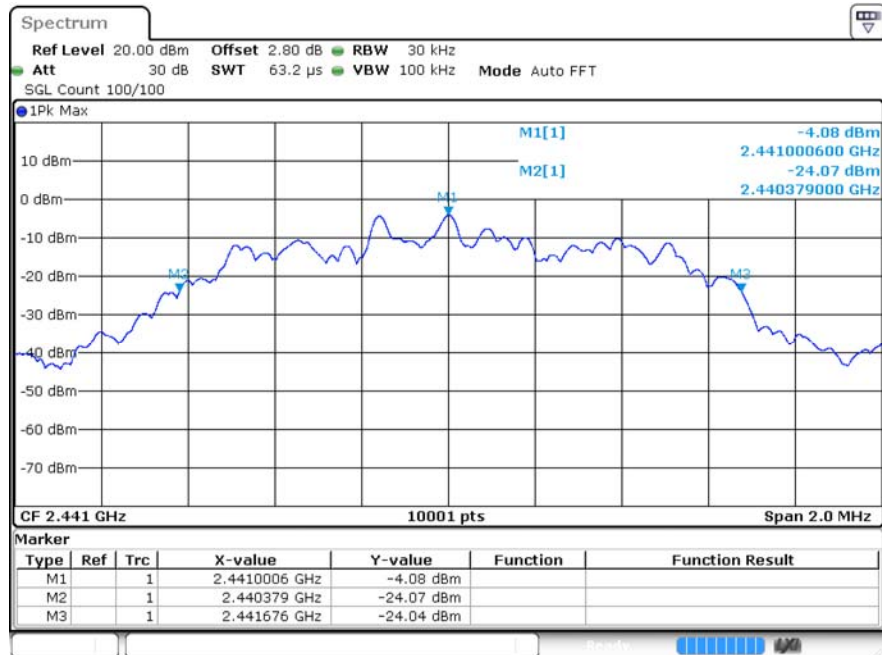
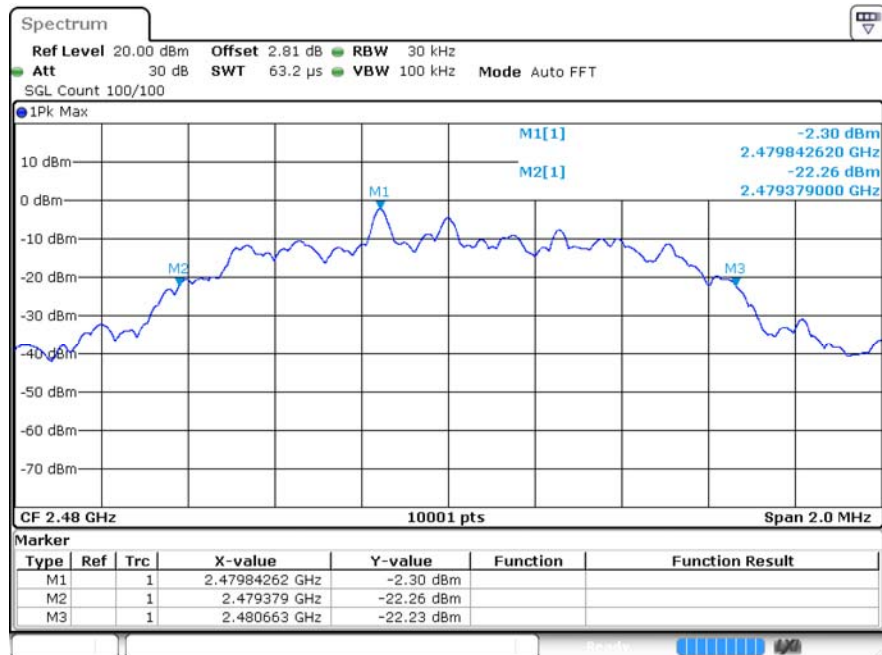
Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.994	Not Specified	Pass
	MCH	1.035	Not Specified	Pass
	HCH	1.038	Not Specified	Pass
$\pi/4$ DQPSK	LCH	1.292	Not Specified	Pass
	MCH	1.297	Not Specified	Pass
	HCH	1.284	Not Specified	Pass

3.2 Test Graphs



GFSK/HCH


 $\pi/4$ DQPSK/LCH


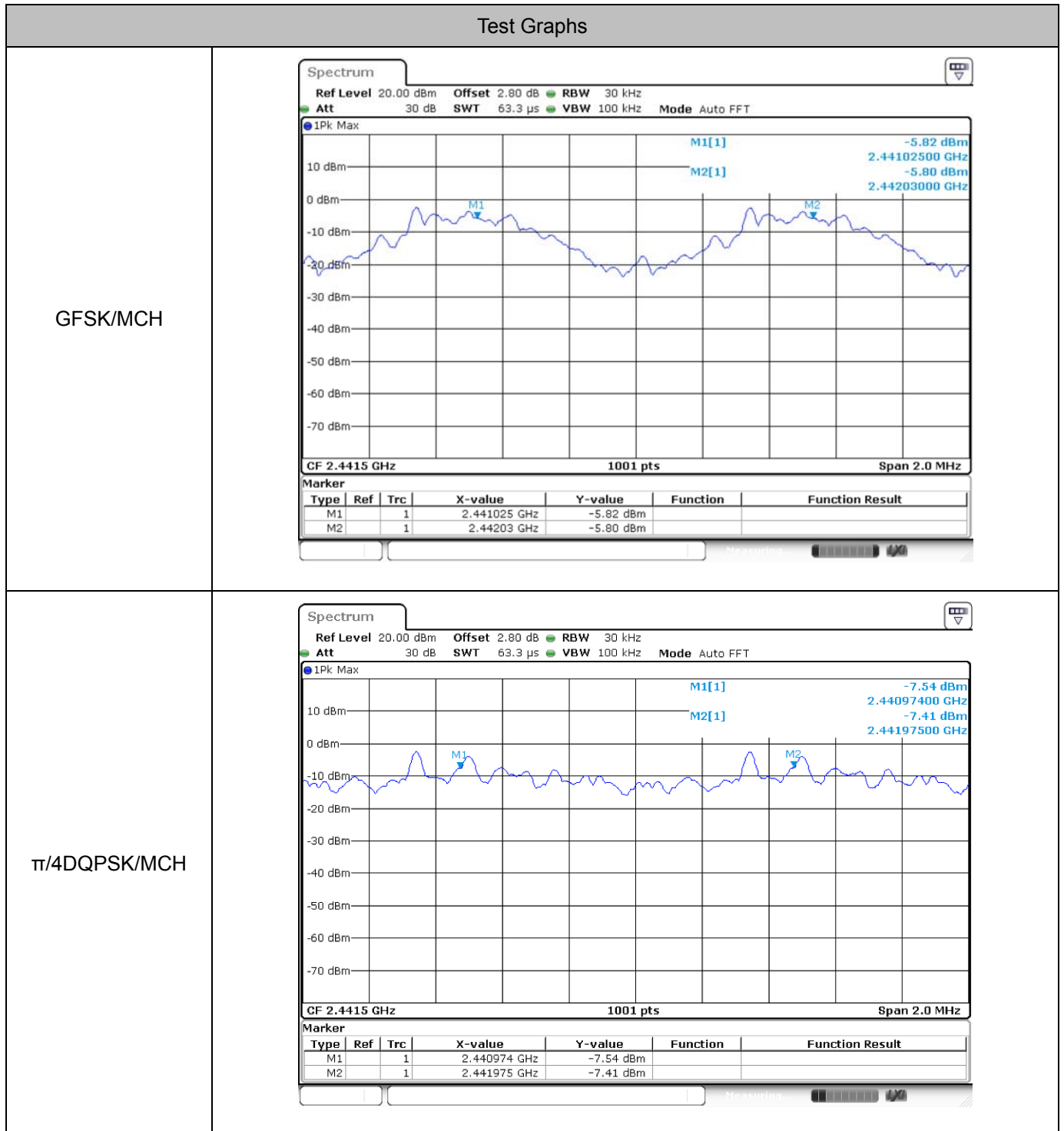
$\pi/4$ DQPSK/MCH

 $\pi/4$ DQPSK/HCH


4 Carrier Frequency Separation

4.1 Test Result

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	MCH	1.005	0.69	Pass
$\pi/4$ DQPSK	MCH	1.001	0.865	Pass

4.2 Test Graphs

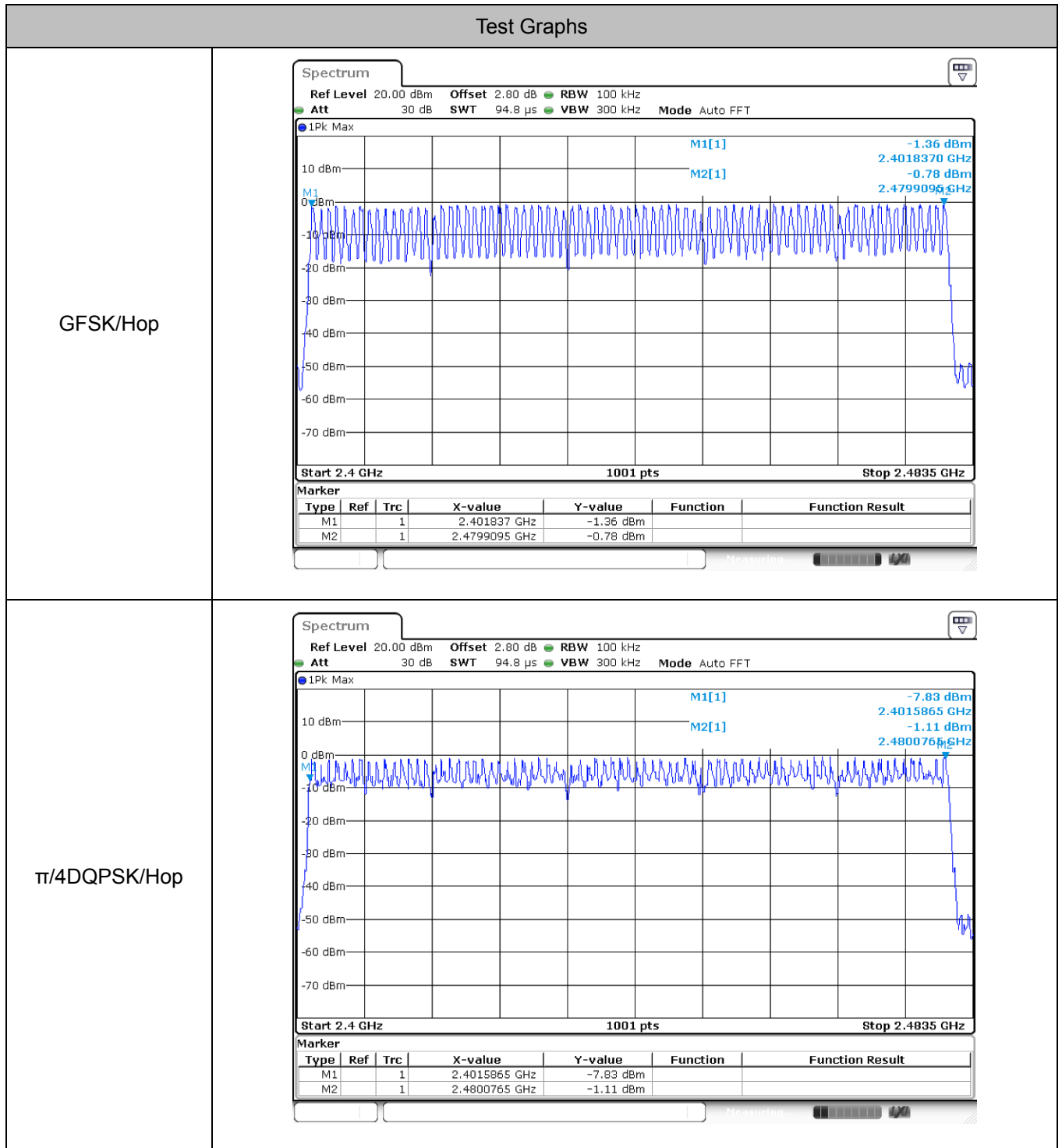


5 Hopping Channel Number

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

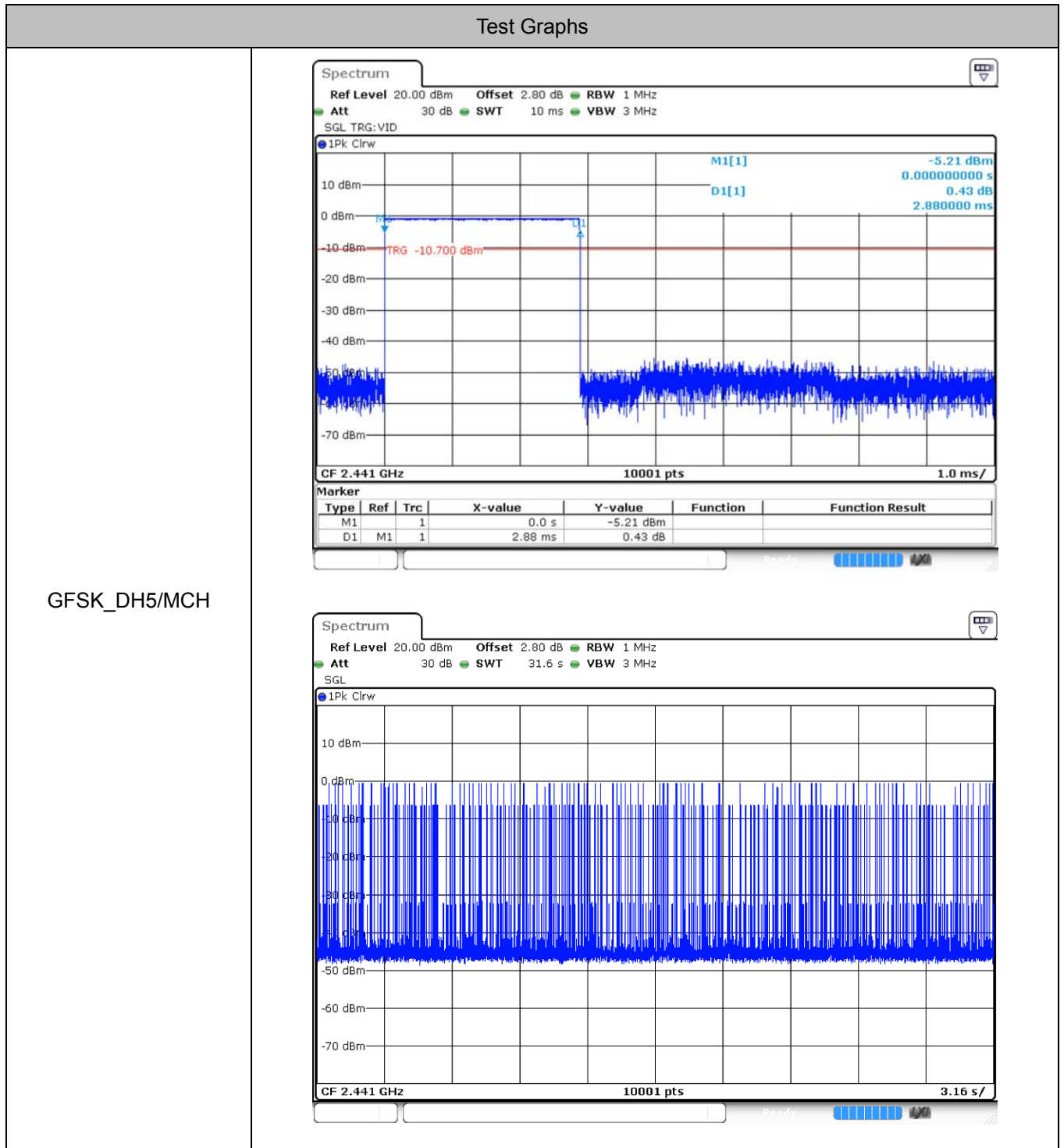


6 Dwell Time

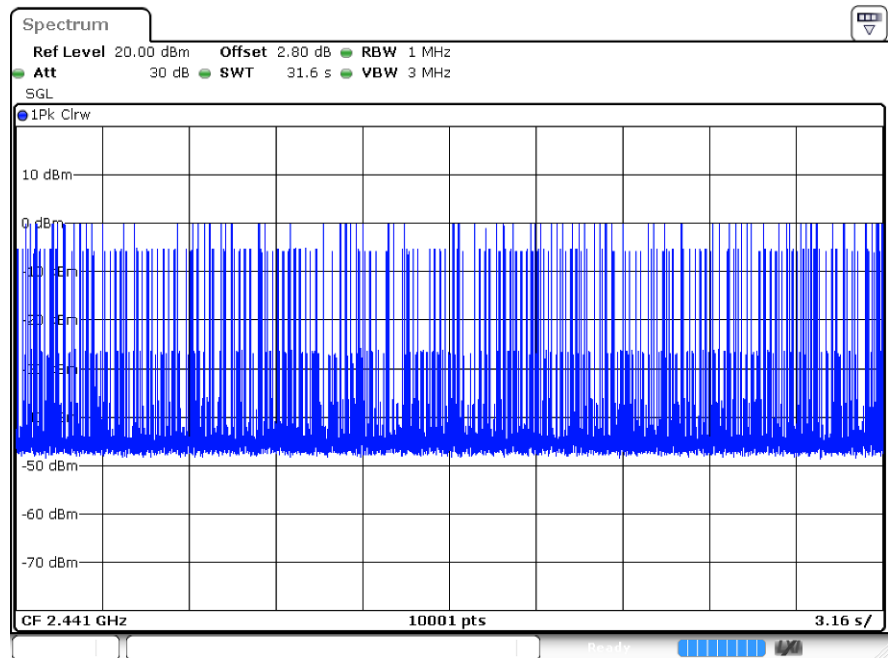
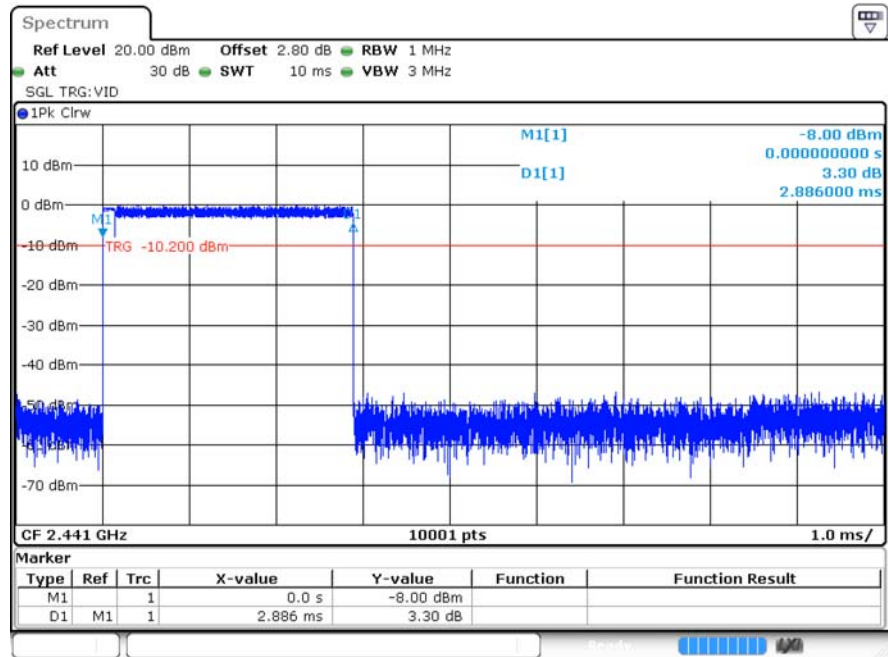
6.1 Test Result

Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[ms]	Limit [s]	Verdict
GFSK	DH5	MCH	2.88	112	322.56	0.4	Pass
$\pi/4$ DQPSK	2DH5	MCH	2.886	99	285.714	0.4	Pass

6.2 Test Graphs



$\pi/4$ DQPSK
_2DH5/MCH

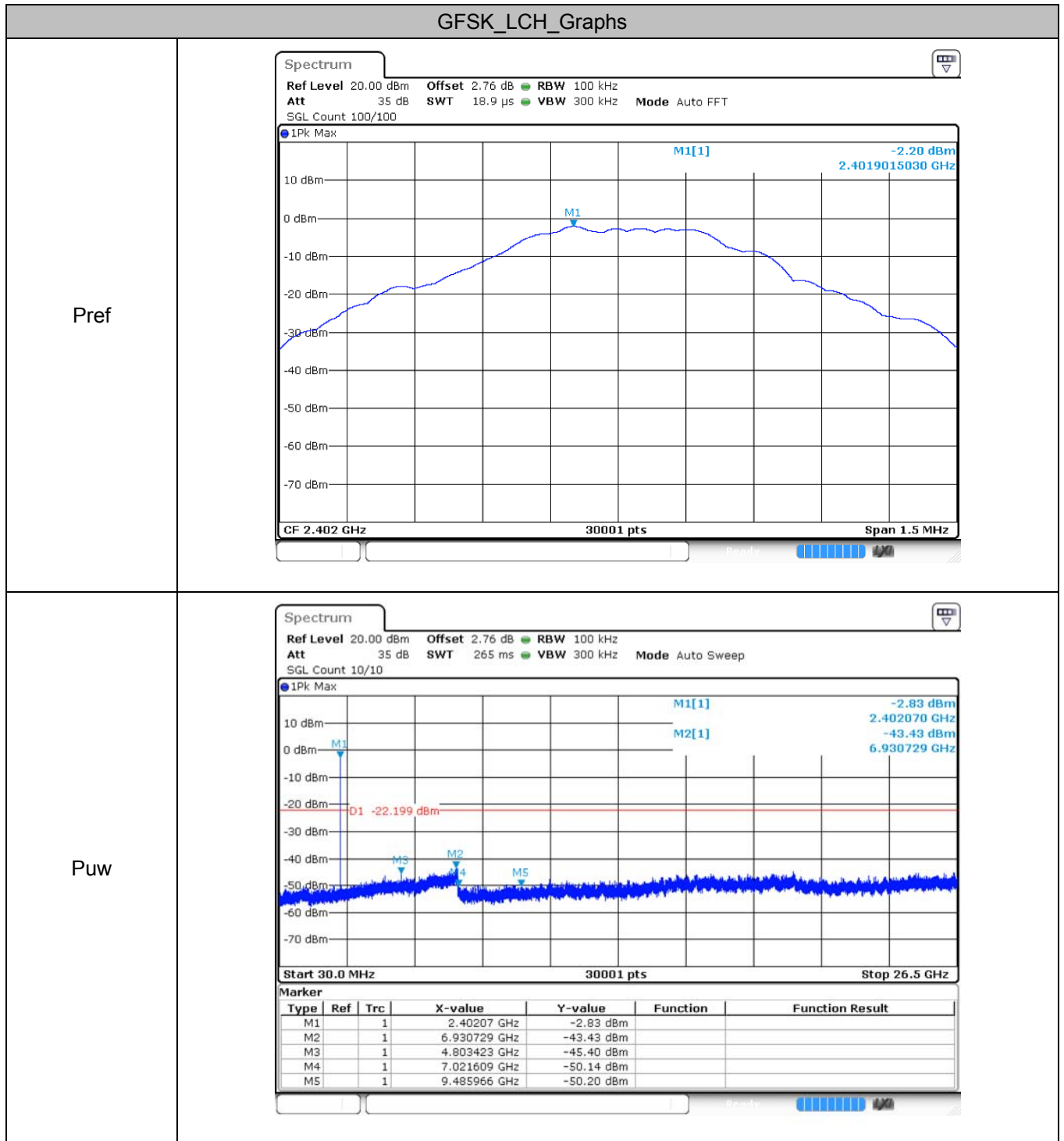


7 RF Conducted Spurious Emissions

7.1 Test Result

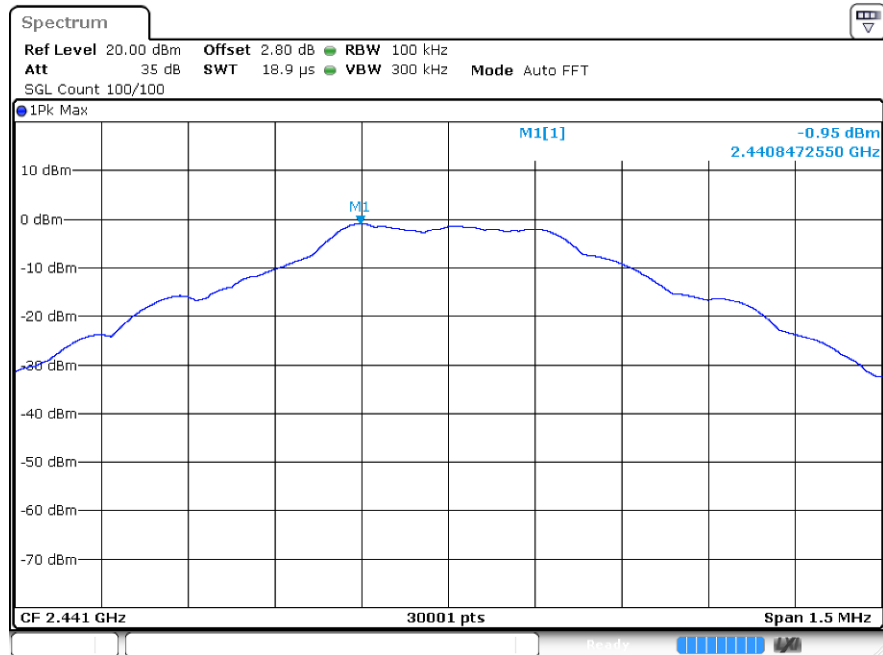
Mode	Channel	Max. Level [dBc]	Limit [dBc]	Verdict
GFSK	LCH	-41.22	-20	Pass
	MCH	-43.22	-20	Pass
	HCH	-42.37	-20	Pass
$\pi/4$ DQPSK	LCH	-41.53	-20	Pass
	MCH	-43.42	-20	Pass
	HCH	-42.81	-20	Pass

7.2 Test Graphs

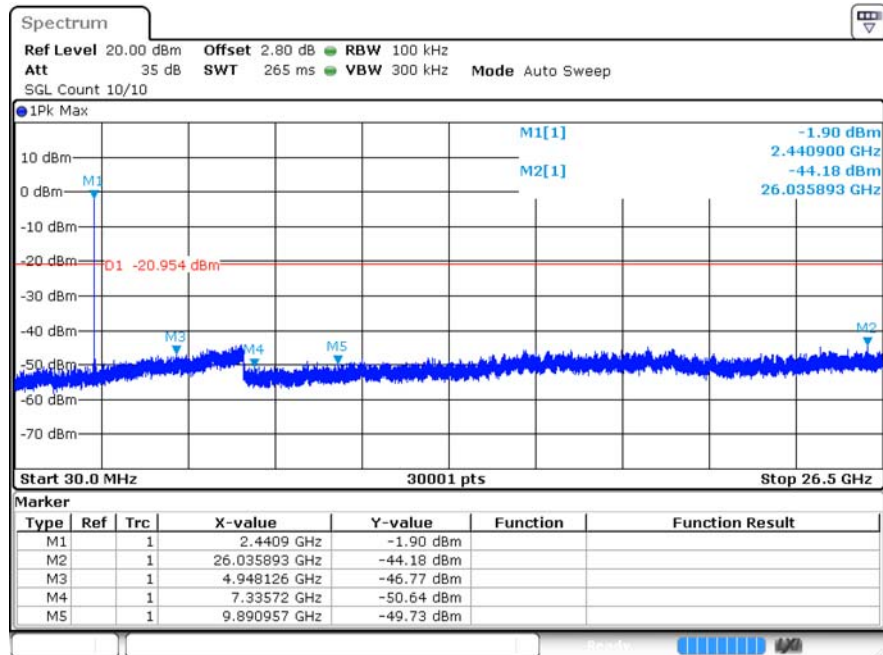


GFSK_MCH_Graphs

Pref

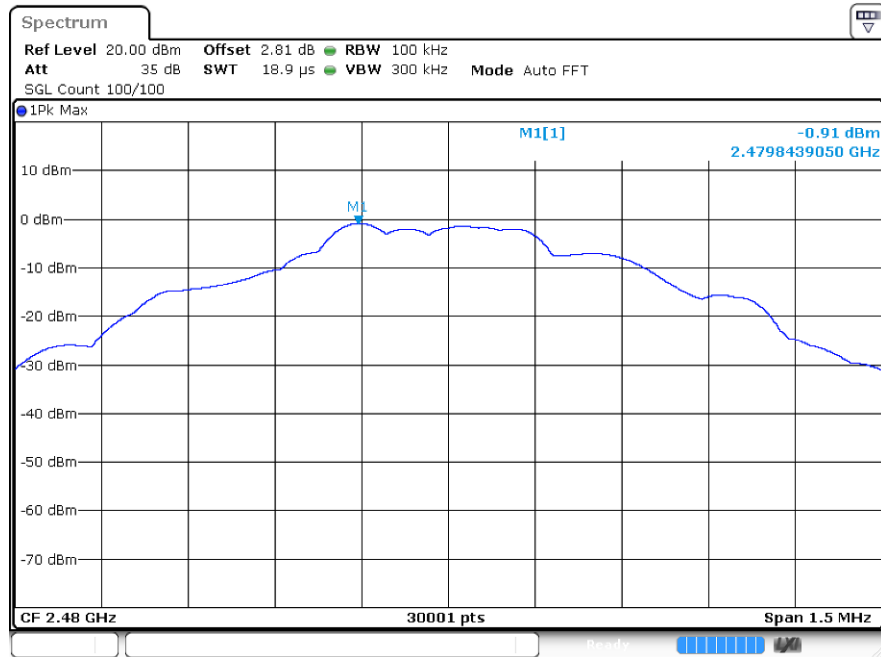


Puw

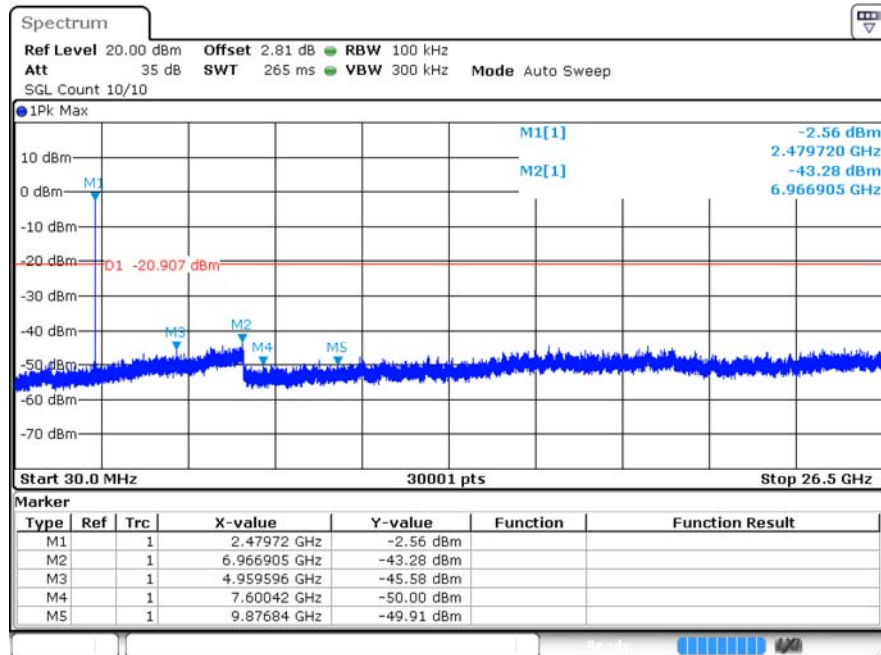


GFSK_HCH_Graphs

Pref

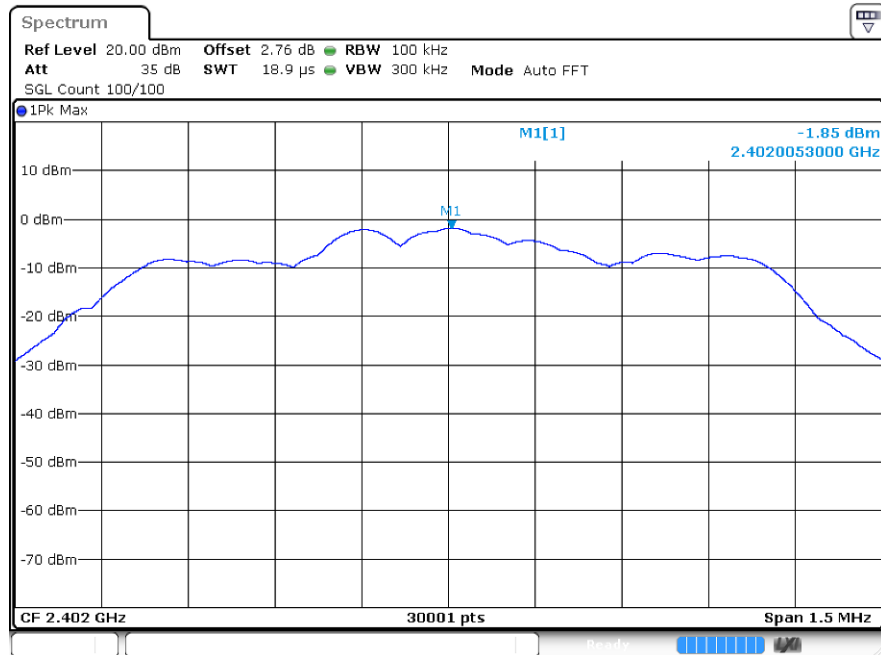


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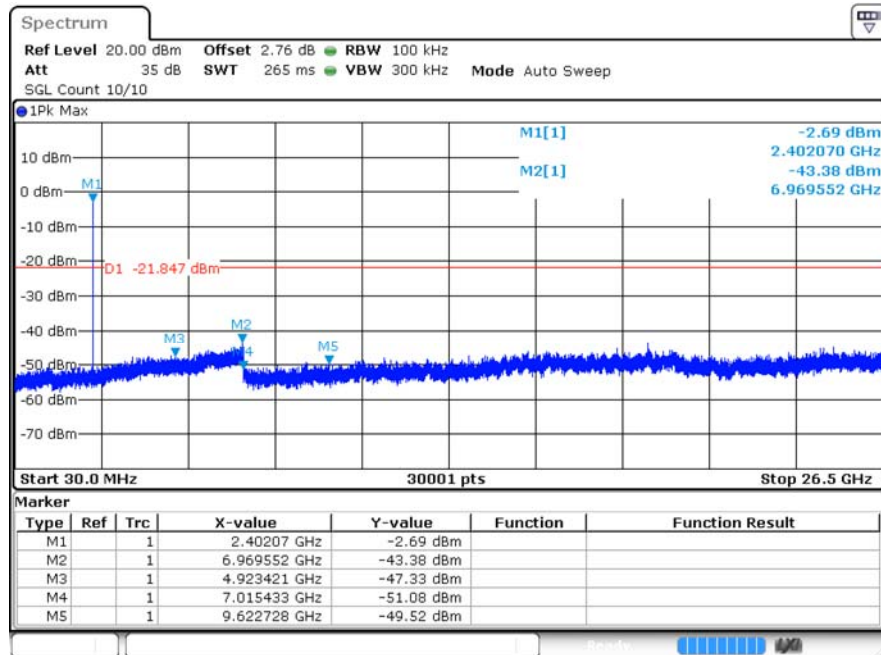


$\pi/4$ DQPSK_LCH_Graphs

Pref

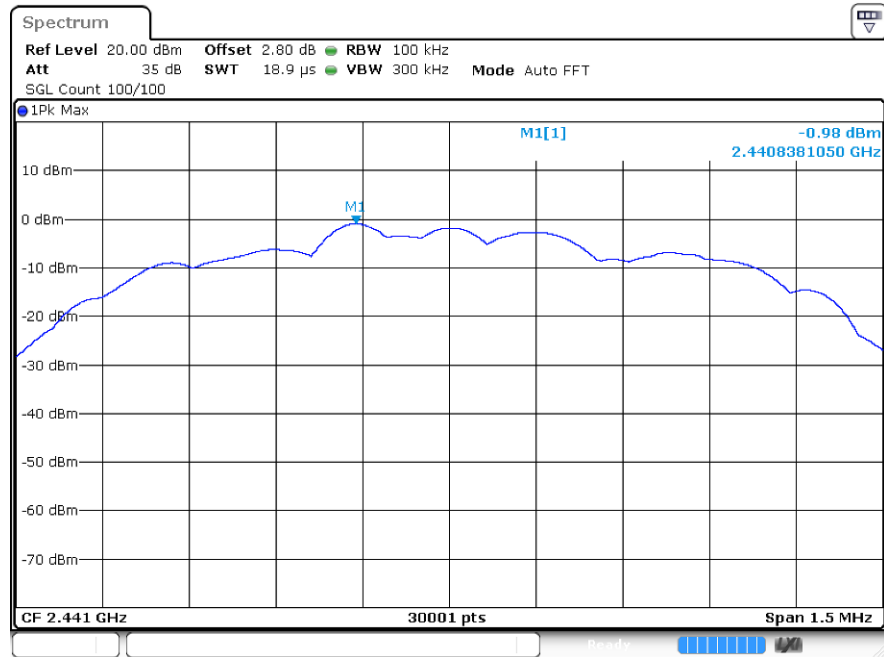


Puw

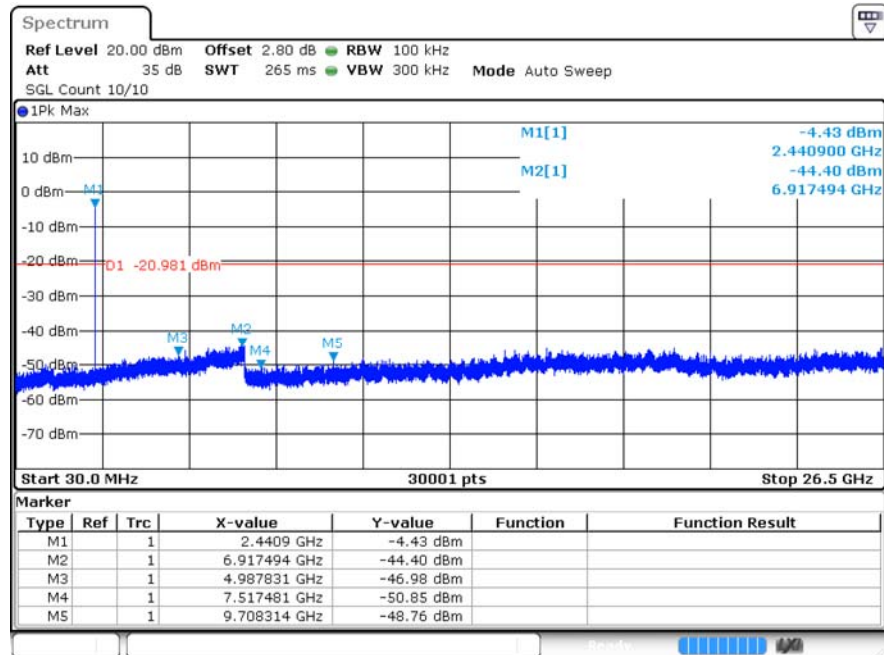


$\pi/4$ DQPSK_MCH_Graphs

Pref

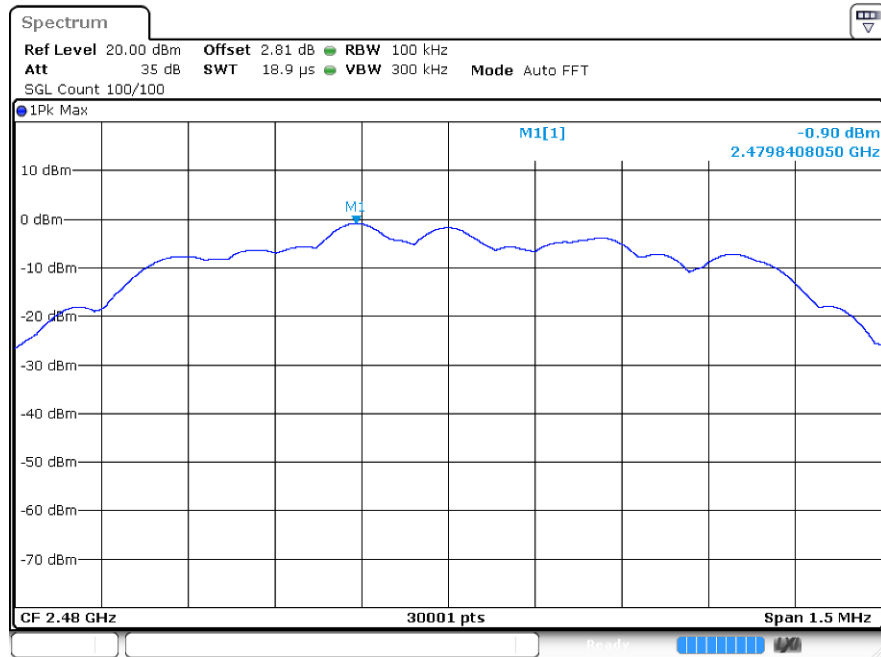


Puw

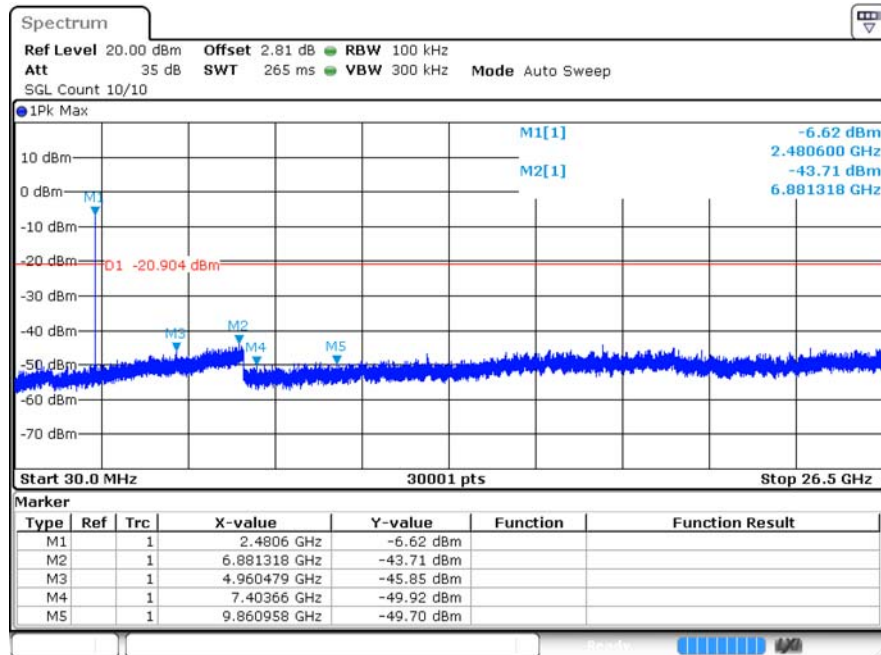


$\pi/4$ DQPSK_HCH_Graphs

Pref



Puw

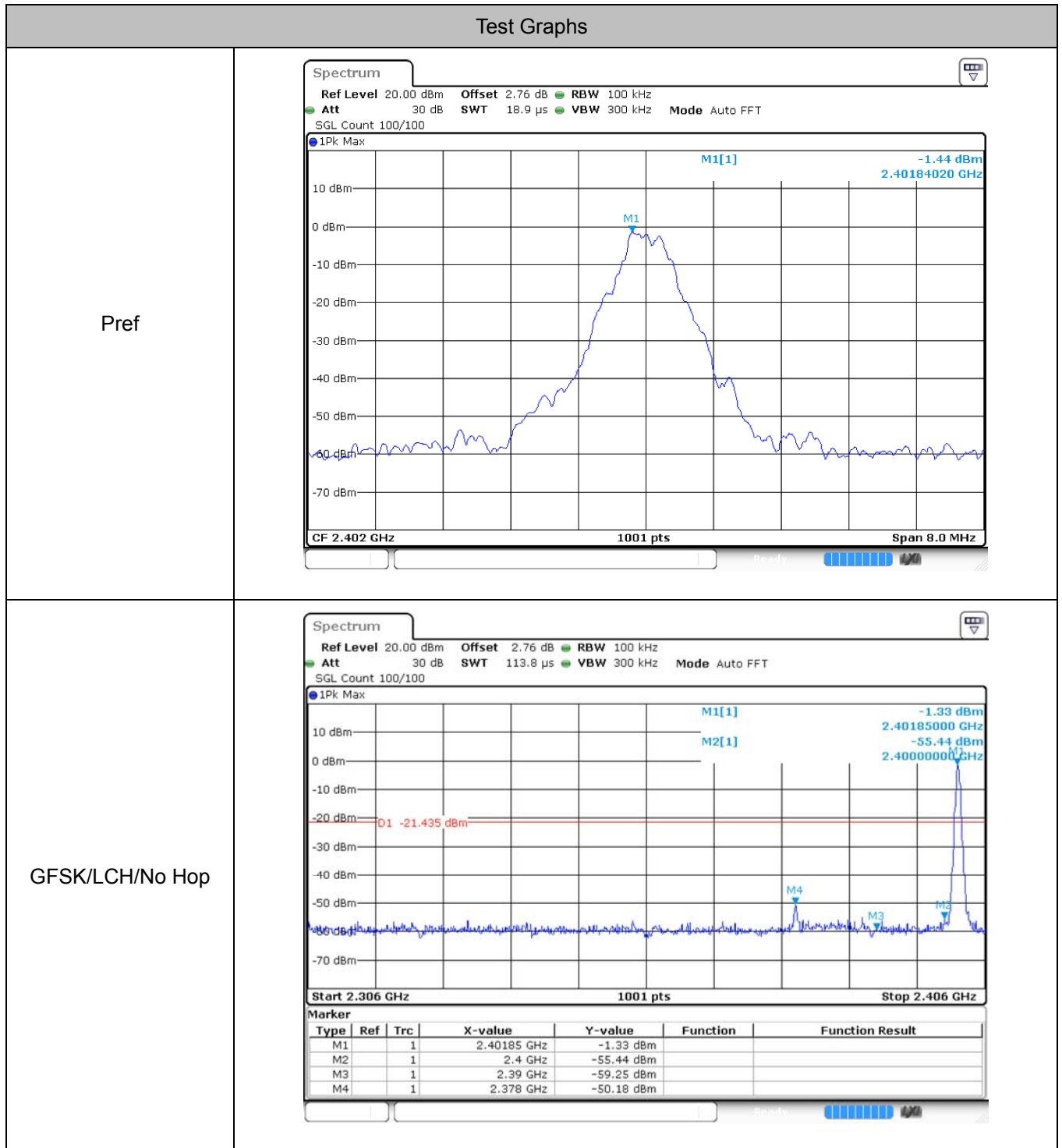


8 Band-edge for RF Conducted Emissions

8.1 Test Result

Mode	Channel	Carrier Frequency [MHz]	Frequency Hopping	Max Spurious Level [dBc]	Limit [dBc]	Verdict
GFSK	LCH	2402	Off	-48.73	-20	Pass
			On	-47.81	-20	Pass
	HCH	2480	Off	-53.38	-20	Pass
			On	-46.07	-20	Pass
$\pi/4$ DQPSK	LCH	2402	Off	-47.14	-20	Pass
			On	-47.77	-20	Pass
	HCH	2480	Off	-54.05	-20	Pass
			On	-46.86	-20	Pass

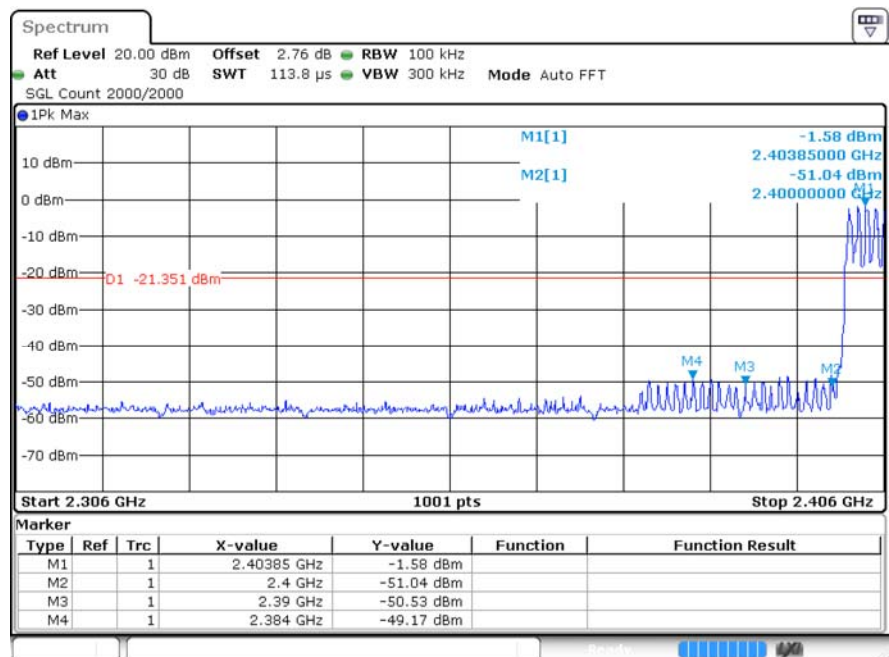
8.2 Test Graphs



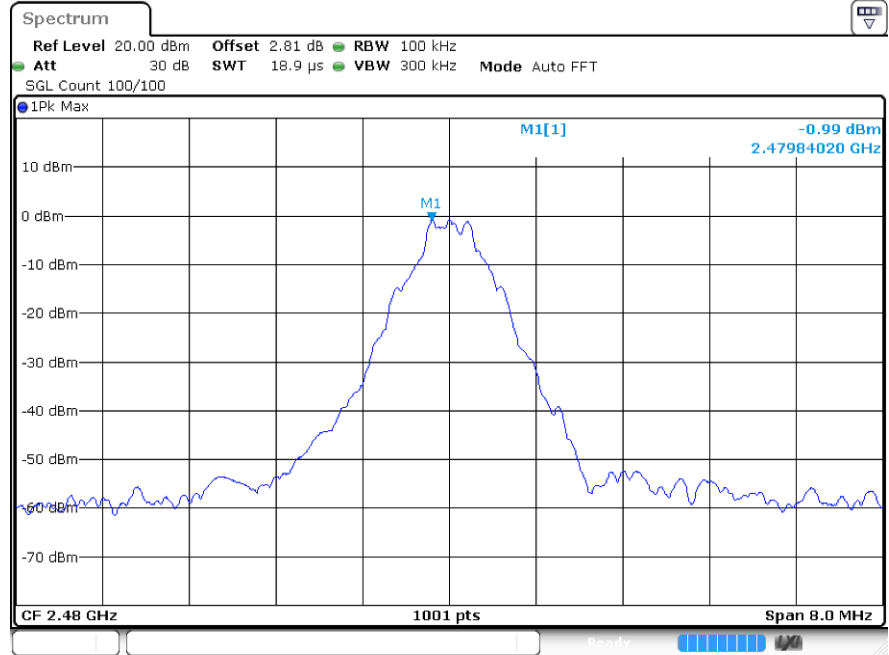
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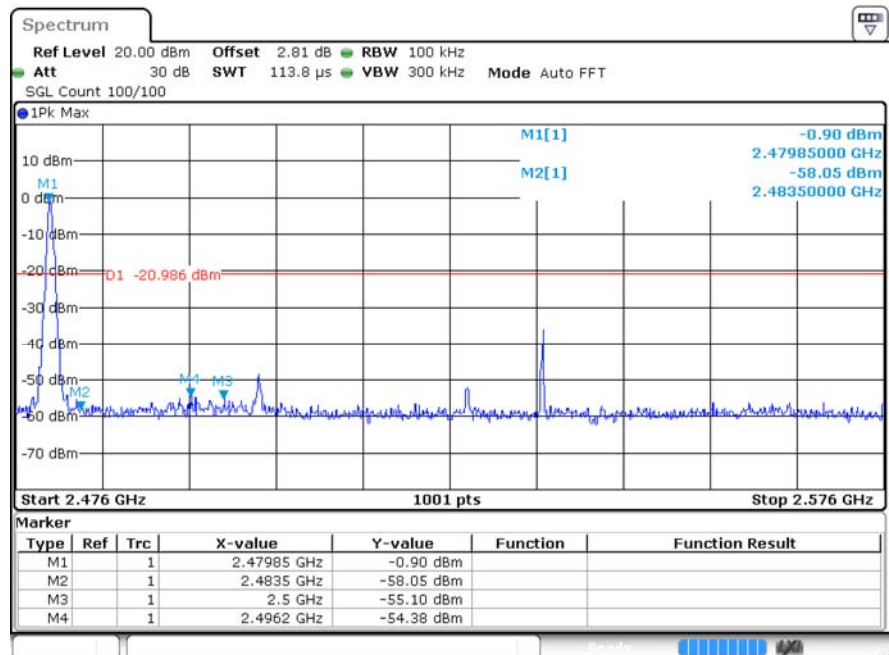
GFSK/LCH/Hop



Ref



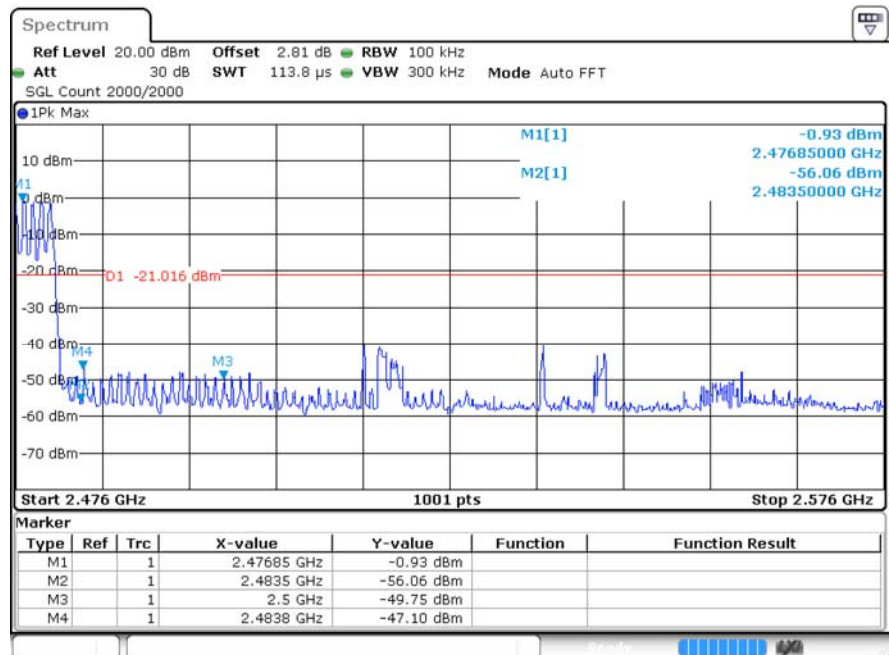
GFSK/HCH/No Hop



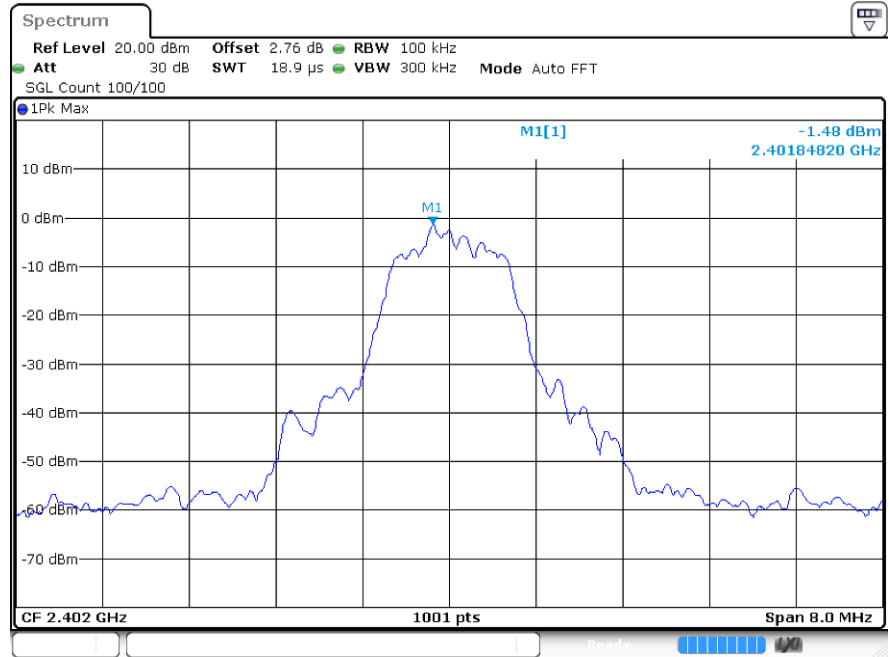
Ref.



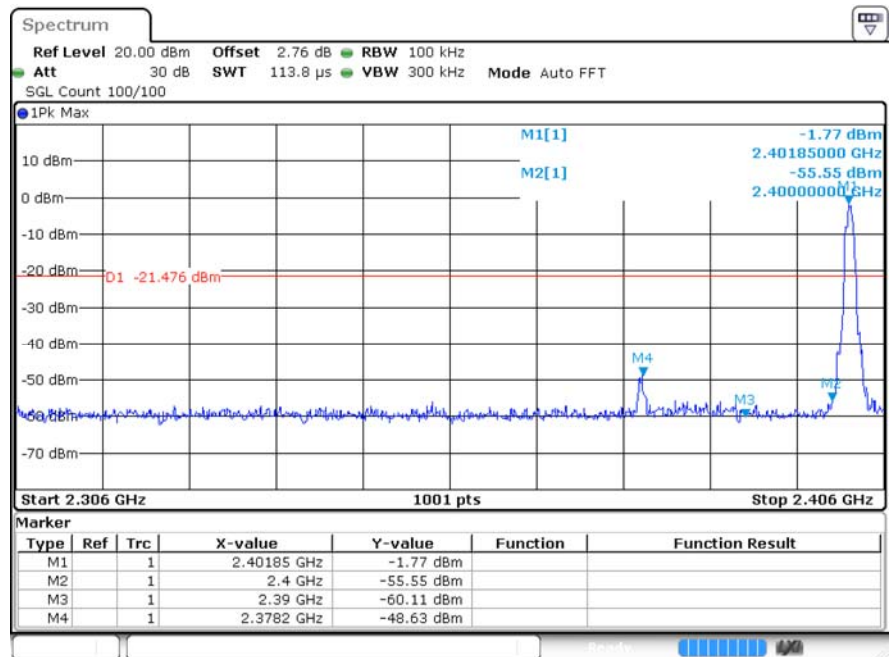
GFSK/HCH/Hop



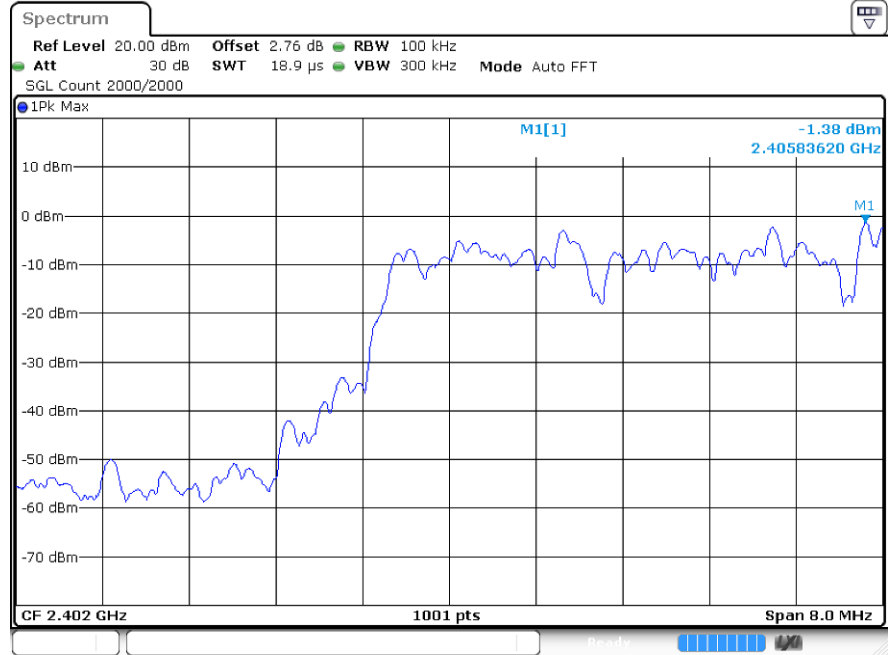
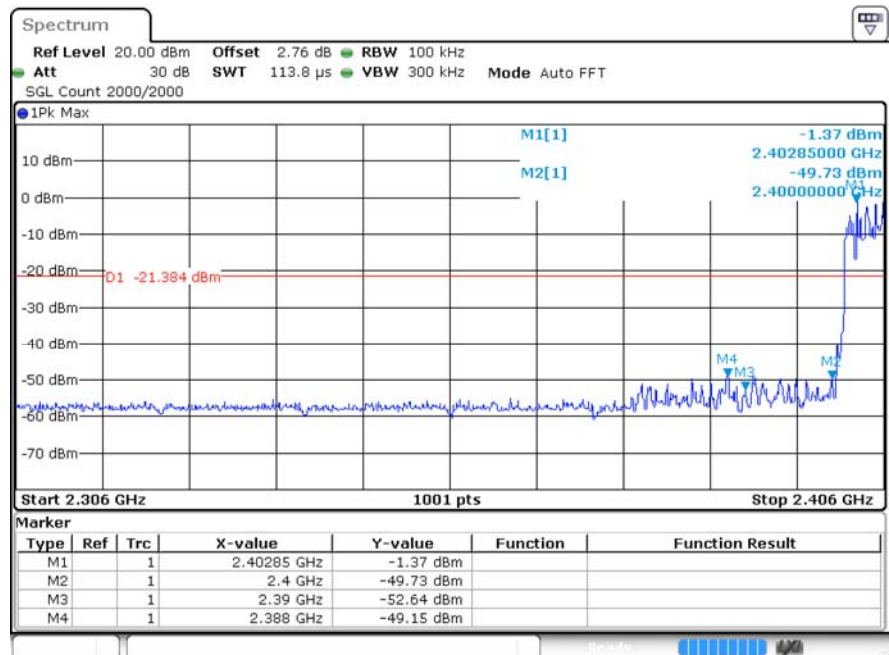
Ref



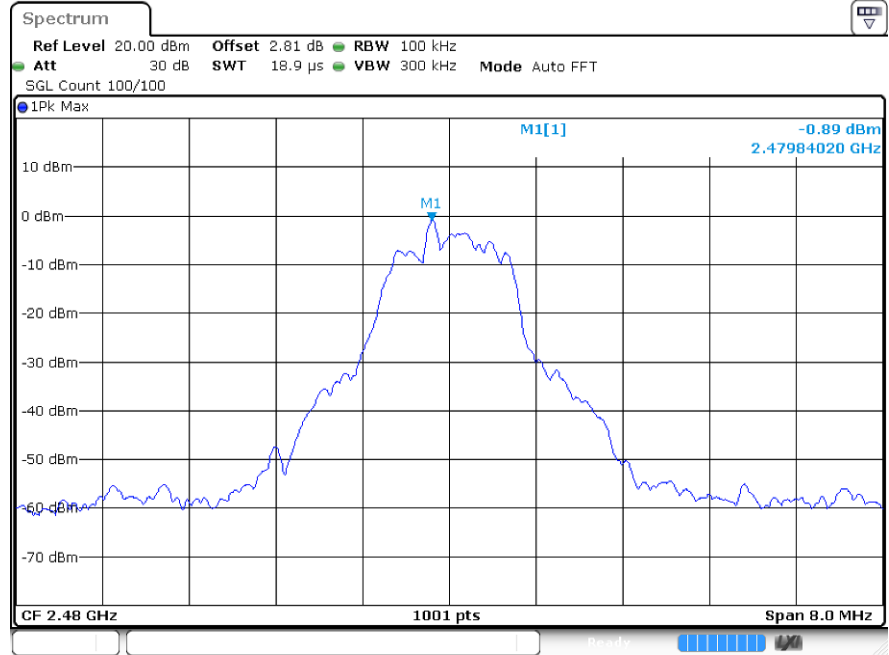
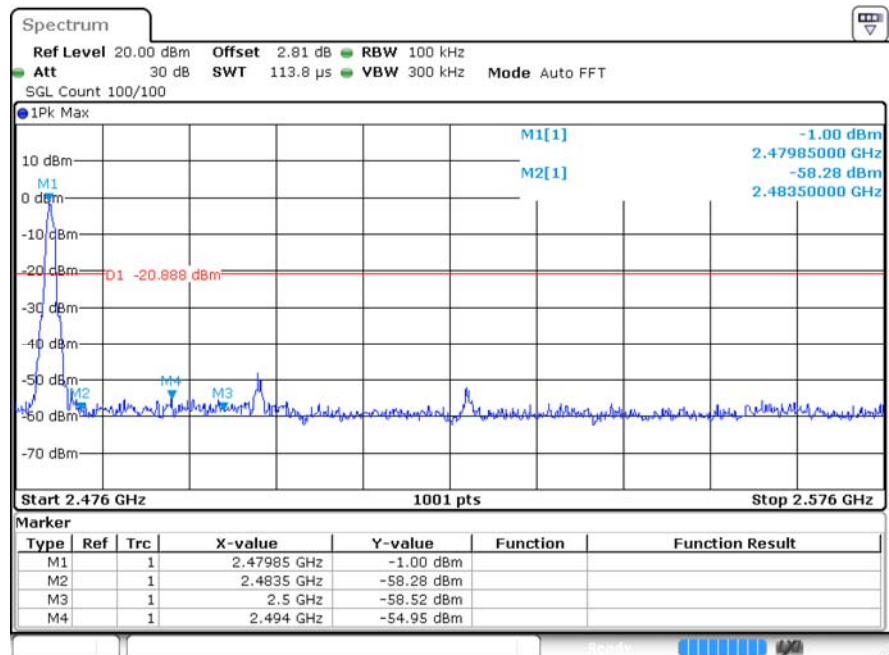
$\pi/4$ DQPSK/LCH/No
Hop



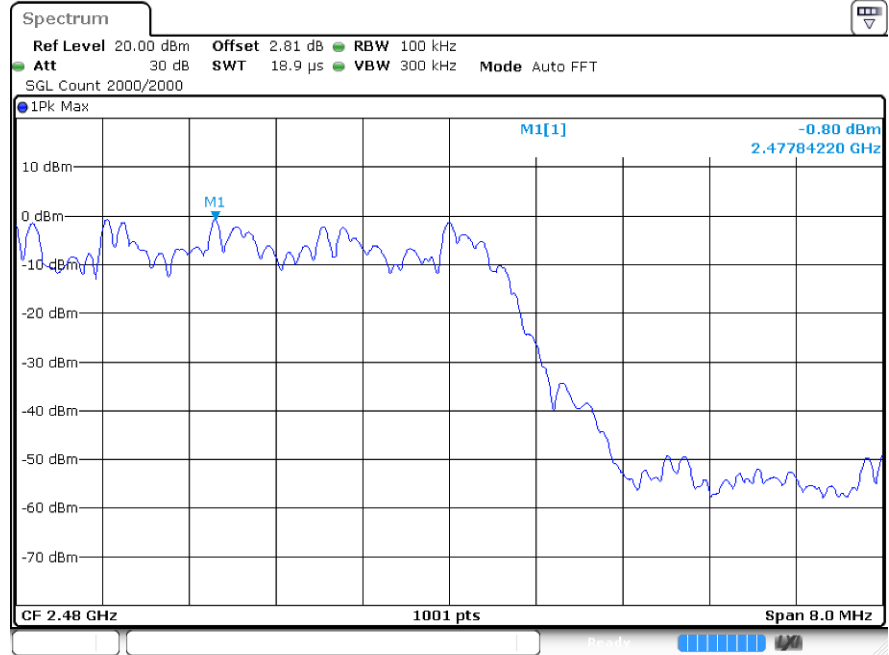
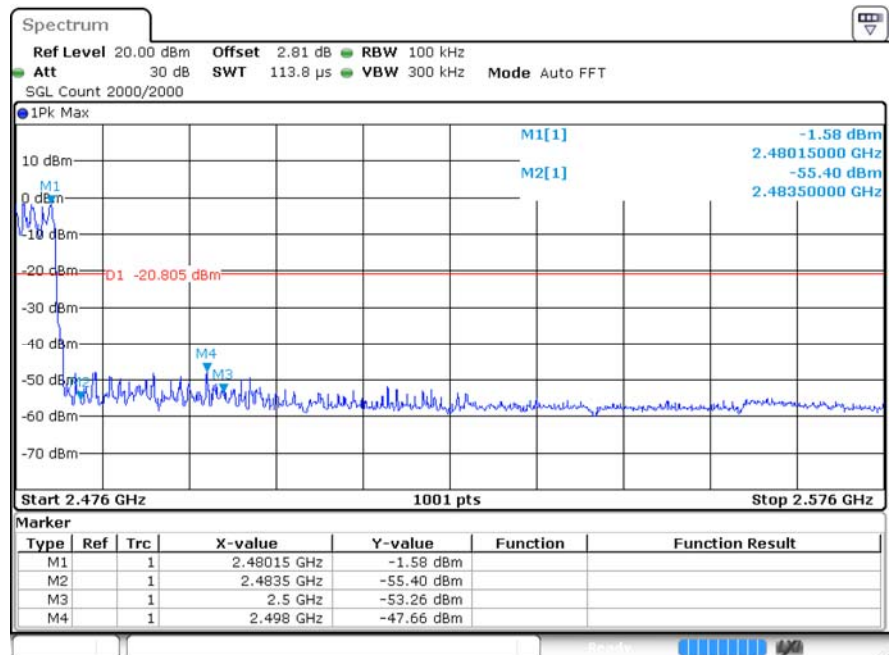
Ref


 $\pi/4$ DQPSK/LCH/Hop


Ref


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


Ref


 $\pi/4$ DQPSK/HCH/Hop


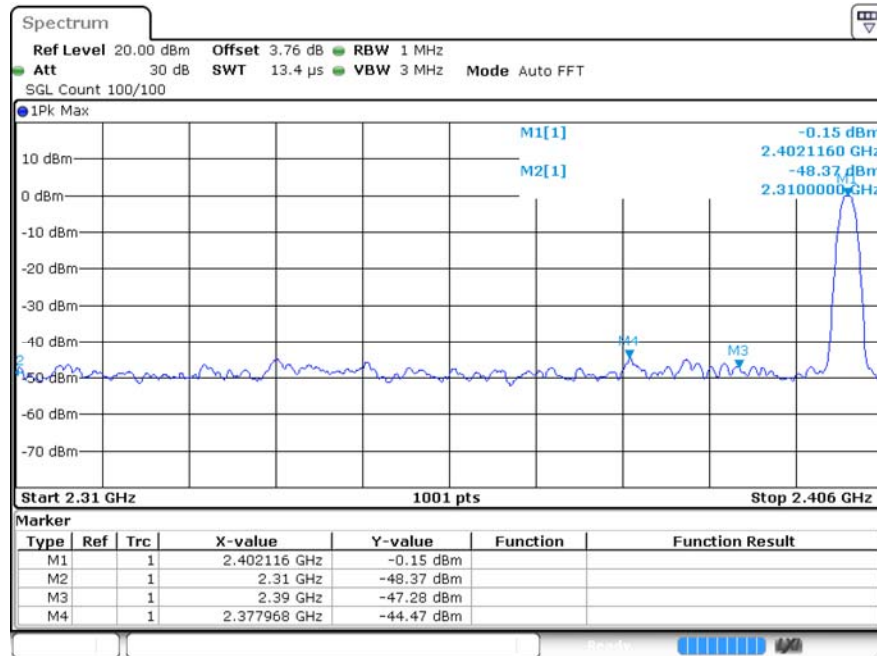
9 Restrict-band band-edge measurements

9.1 Test Result

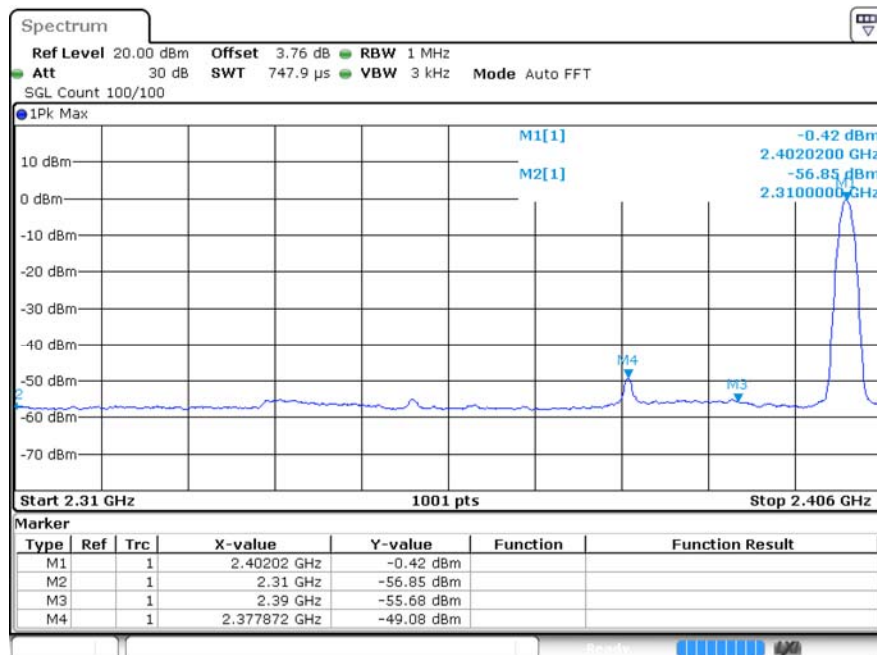
Test Mode	Hopping	Freq.	Power [dBm]	Gain	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-48.36	2	48.9	PEAK	74	Pass
	Off	2310.0	-56.85	2	40.41	AV	54	Pass
	Off	2377.968	-44.46	2	52.8	PEAK	74	Pass
	Off	2377.872	-49.07	2	48.19	AV	54	Pass
	Off	2390.0	-47.28	2	49.98	PEAK	74	Pass
	Off	2390.0	-55.67	2	41.59	AV	54	Pass
	Off	2483.5	-47.77	2	49.49	PEAK	74	Pass
	Off	2483.5	-55.94	2	41.32	AV	54	Pass
	Off	2497.312	-44.23	2	53.03	PEAK	74	Pass
	Off	2499.712	-54.35	2	42.91	AV	54	Pass
	Off	2500.0	-48.53	2	48.73	PEAK	74	Pass
	Off	2500.0	-54.55	2	42.71	AV	54	Pass
$\pi/4$ DQPSK	Off	2310.0	-48.76	2	48.5	PEAK	74	Pass
	Off	2310.0	-57.12	2	40.14	AV	54	Pass
	Off	2377.776	-43.78	2	53.48	PEAK	74	Pass
	Off	2377.968	-49.62	2	47.64	AV	54	Pass
	Off	2390.0	-50.24	2	47.02	PEAK	74	Pass
	Off	2390.0	-55.76	2	41.5	AV	54	Pass
	Off	2483.5	-44.02	2	53.24	PEAK	74	Pass
	Off	2483.5	-55.71	2	41.55	AV	54	Pass
	Off	2483.632	-43.85	2	53.41	PEAK	74	Pass
	Off	2499.112	-54.25	2	43.01	AV	54	Pass
	Off	2500.0	-47.47	2	49.79	PEAK	74	Pass
	Off	2500.0	-54.84	2	42.42	AV	54	Pass

9.2 Test Graphs

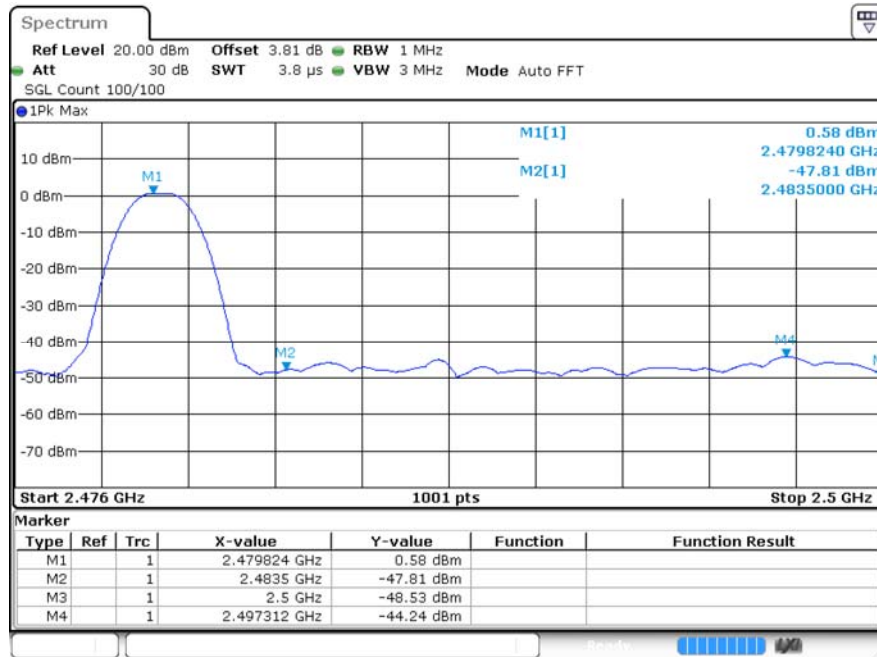
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (Low Channel)



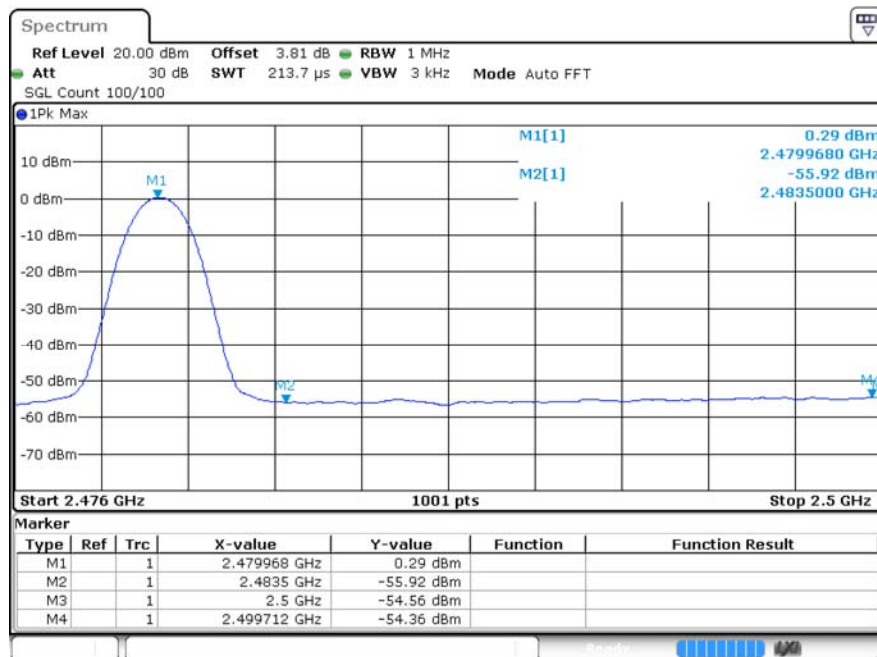
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (Low Channel)



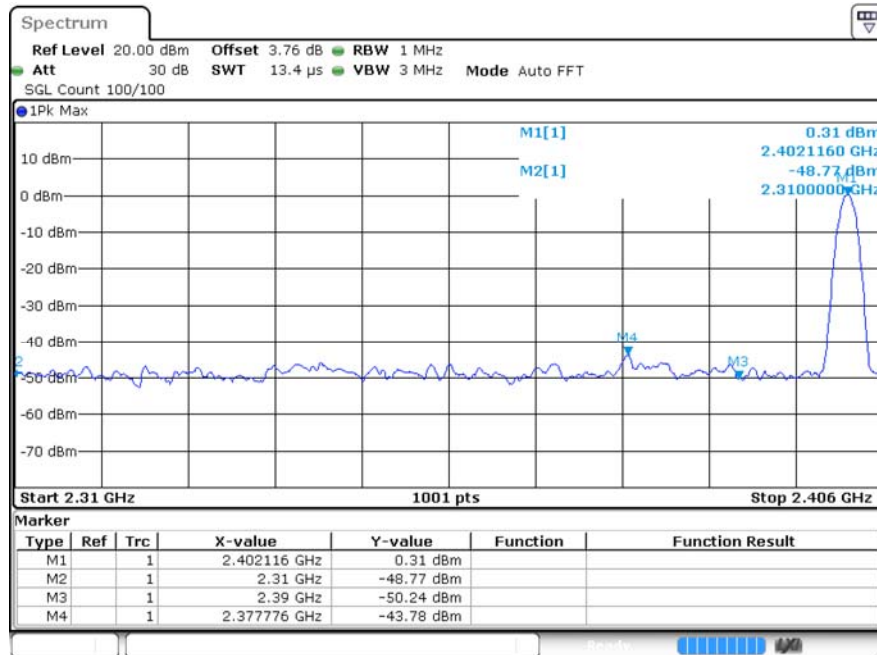
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (High Channel)



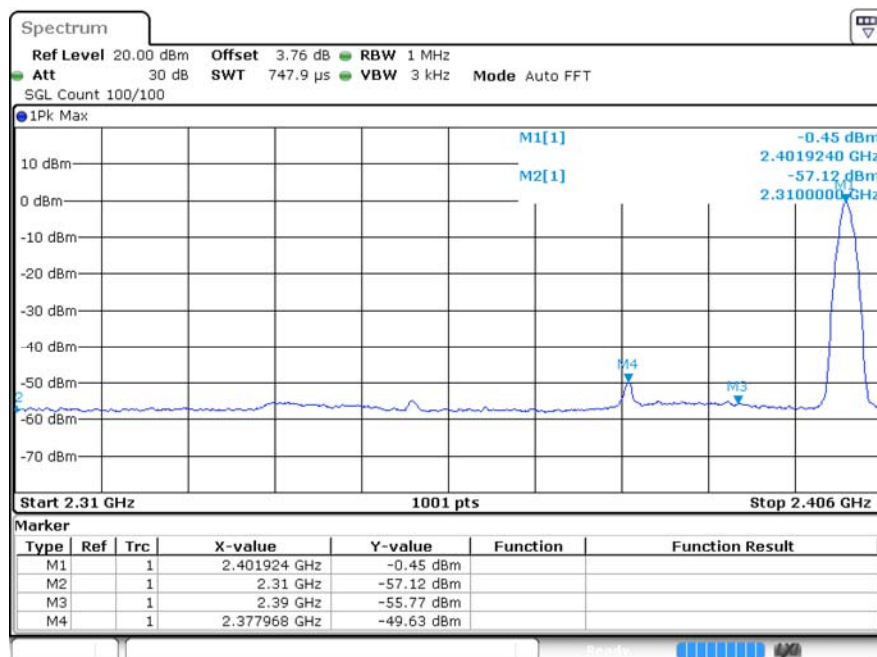
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (High Channel)



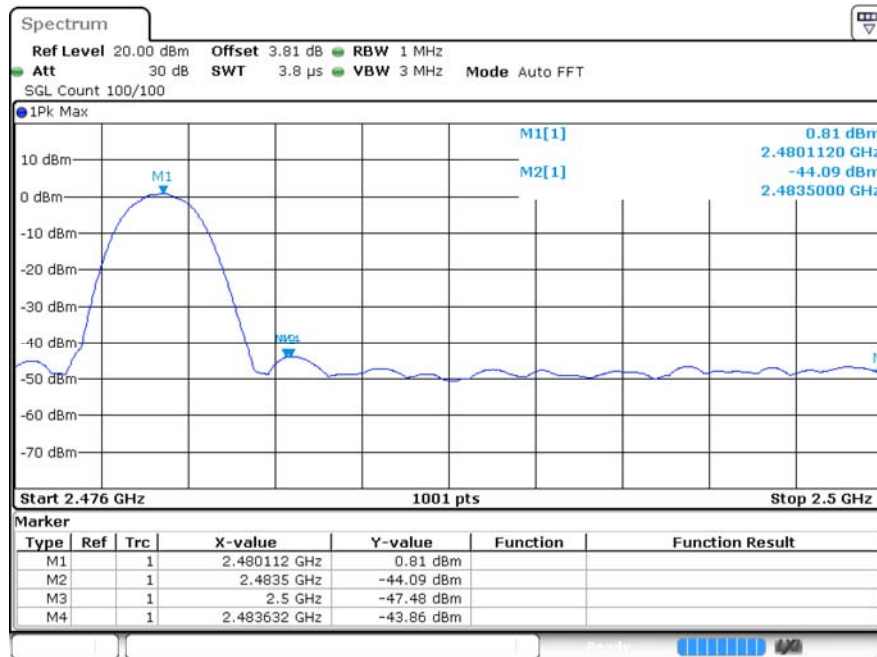
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (Low Channel)



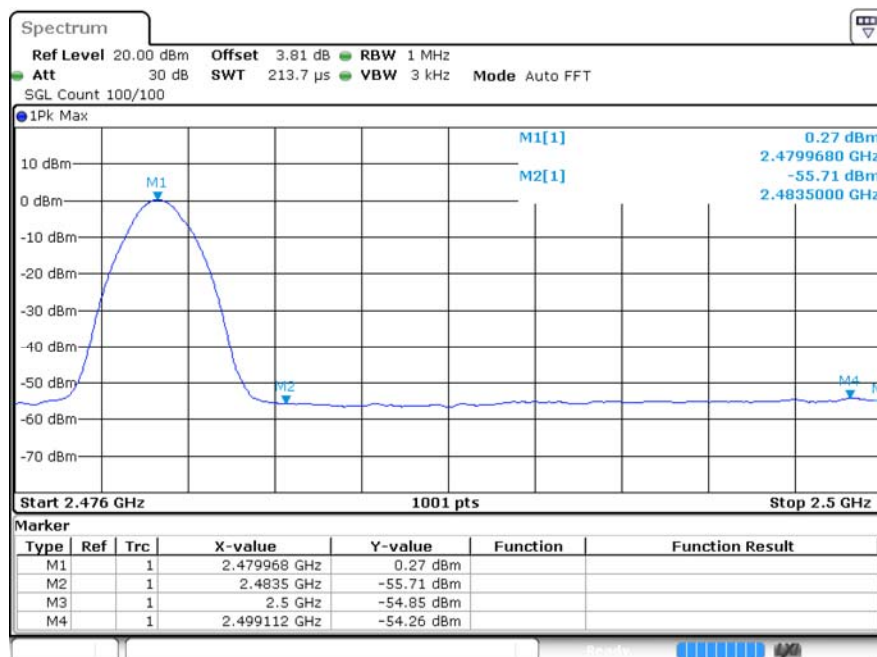
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (Low Channel)



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---