



Appendix A

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

Product Name: TWS

Trade Mark: JOXFEL

Test Model: K6

Environmental Conditions

Temperature:	24.6° C
Relative Humidity:	52.4%
ATM Pressure:	101Kpa
Test Engineer:	Simba Huang
Supervised by:	Seal Chen



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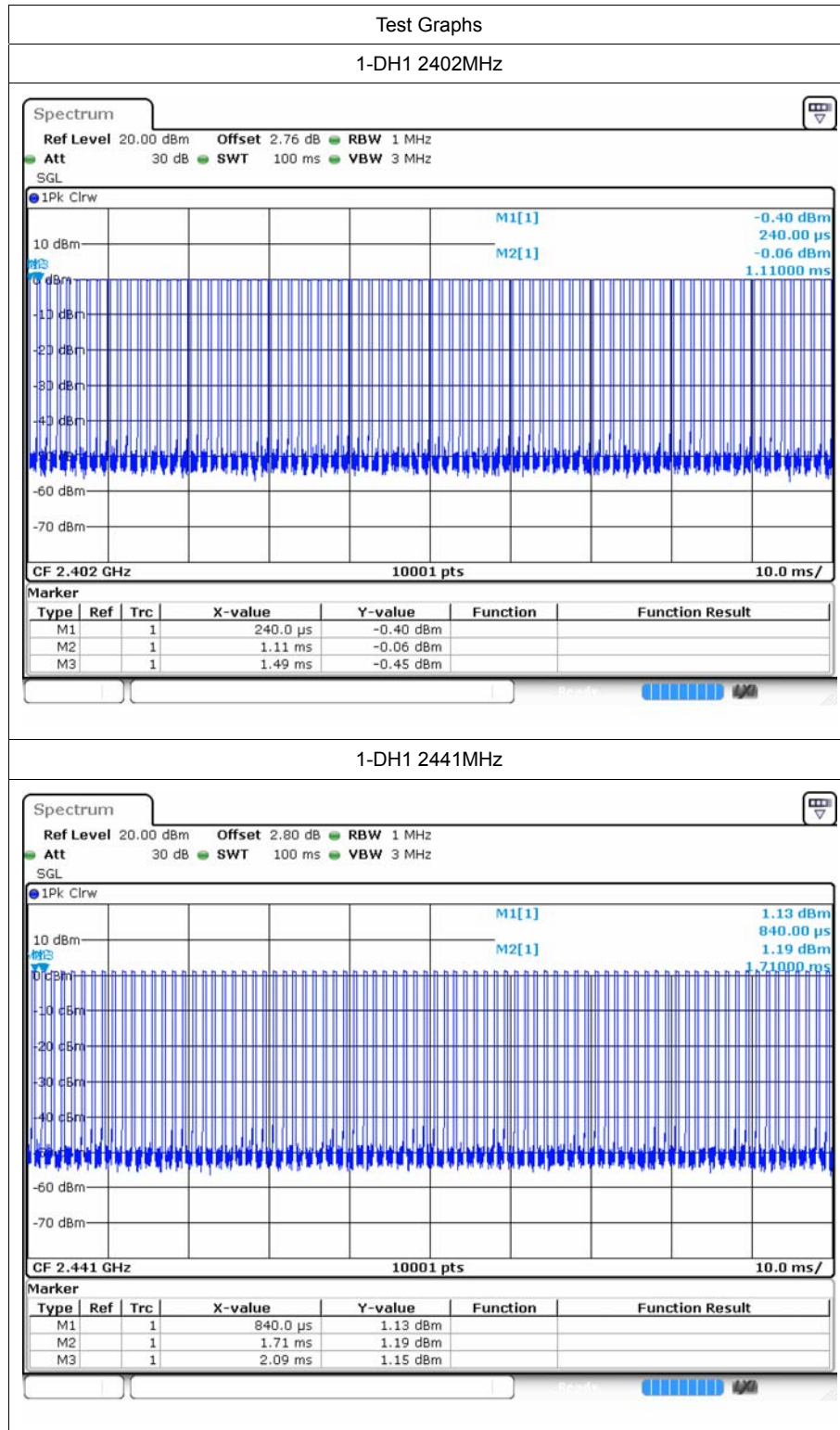


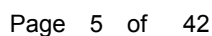
1 Duty Cycle

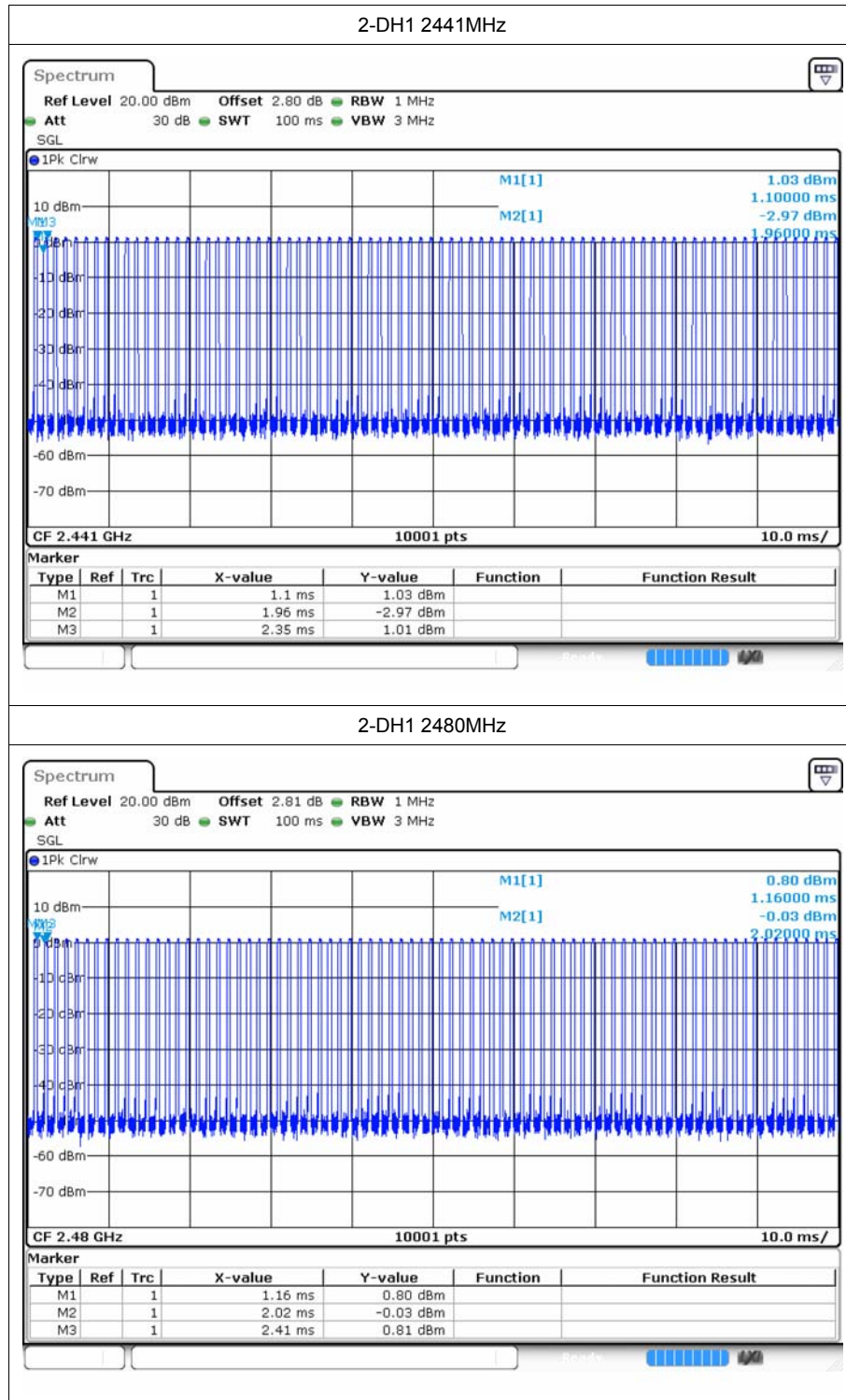
1.1 Test Result

Mode	Frequency (MHz)	Duty Cycle (%)	1/T (kHz)
1-DH1	2402	31.21	2.63
1-DH1	2441	31.2	2.63
1-DH1	2480	31.2	2.63
2-DH1	2402	32.01	2.56
2-DH1	2441	32.01	2.56
2-DH1	2480	32	2.56

1.2 Test Graphs





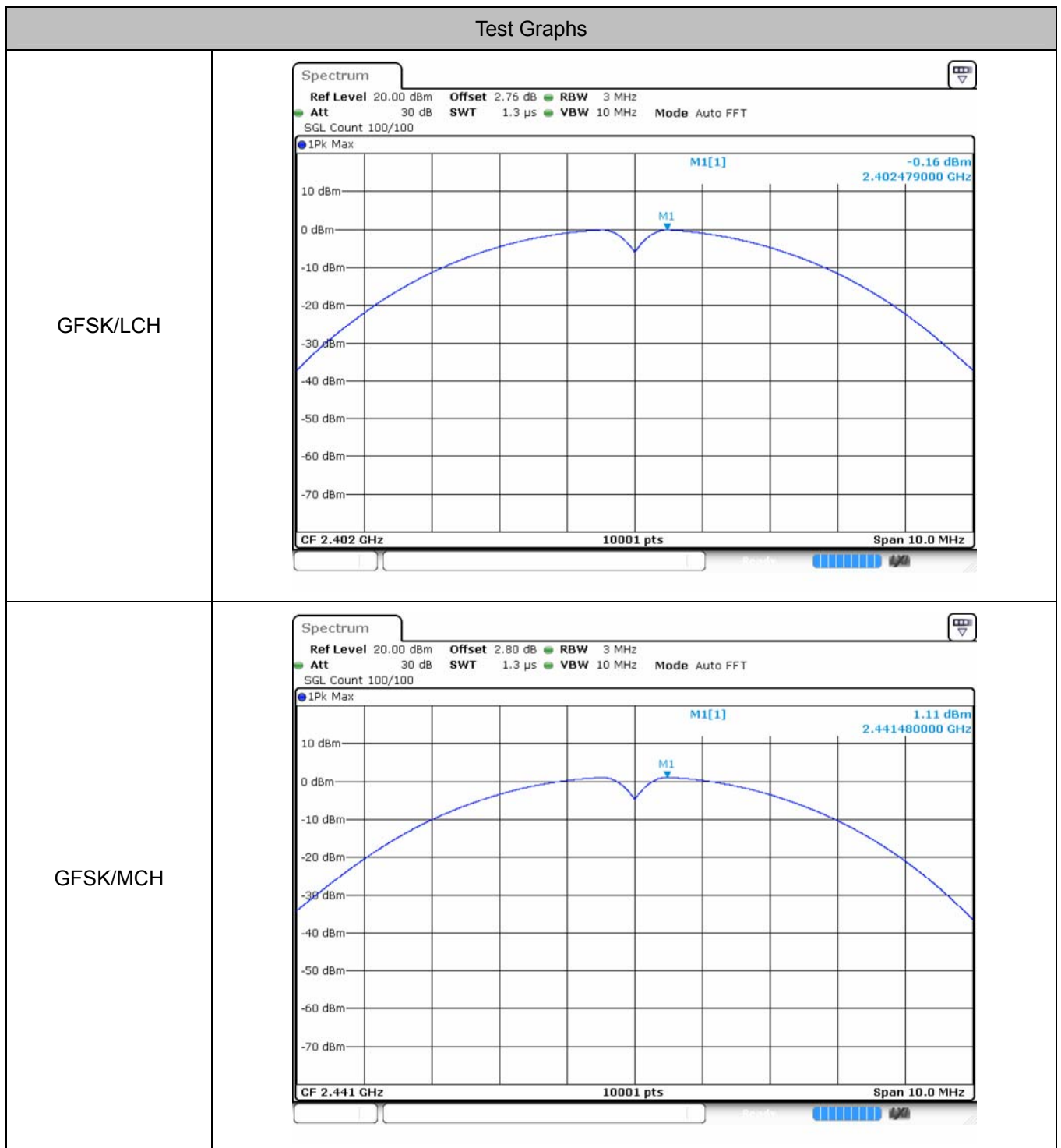


2 Maximum Conducted Peak Output Power

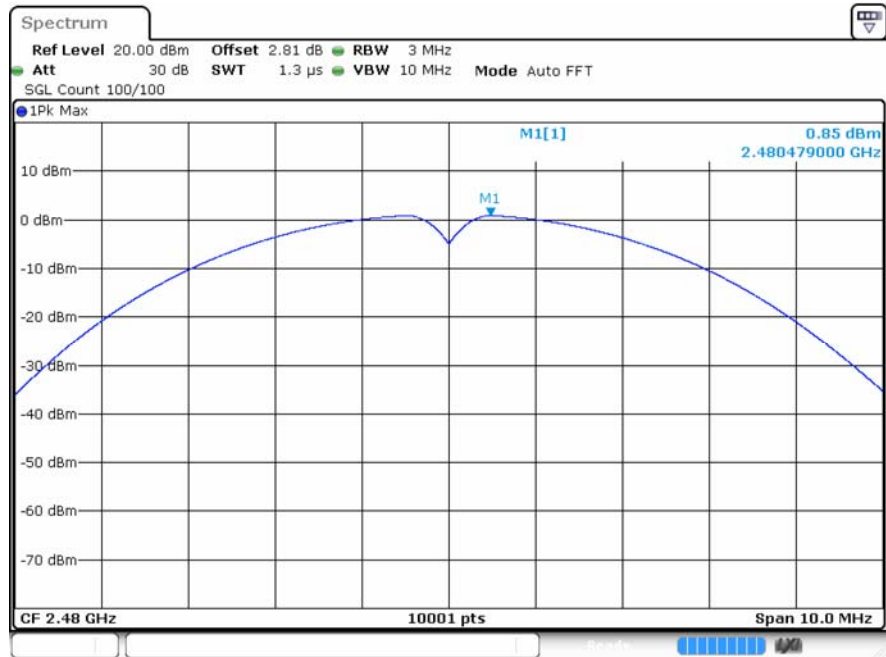
2.1 Test Result

Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-0.16	21	Pass
	MCH	1.11	21	Pass
	HCH	0.85	21	Pass
$\pi/4$ DQPSK	LCH	1.19	21	Pass
	MCH	2.27	21	Pass
	HCH	2.17	21	Pass

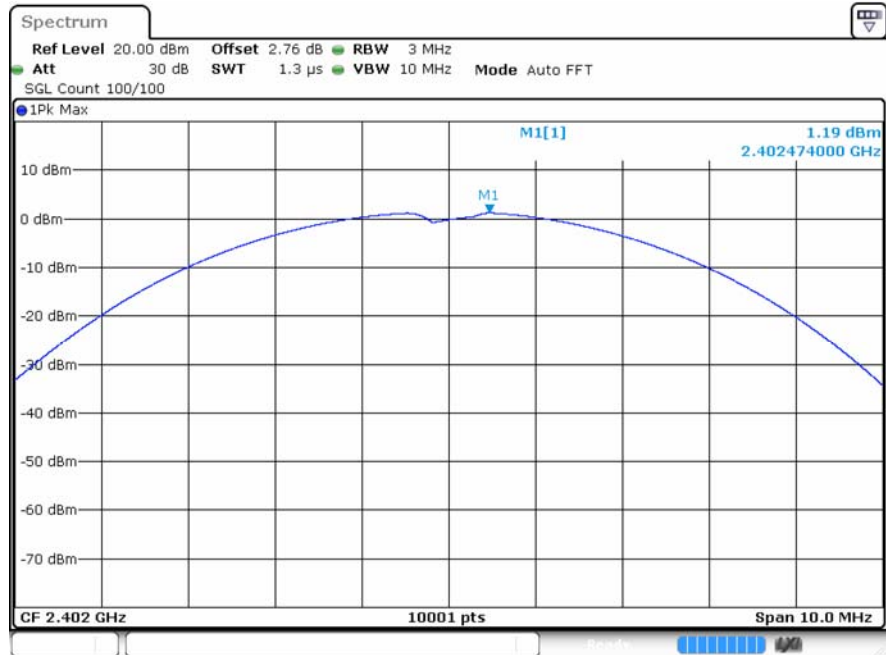
2.2 Test Graphs



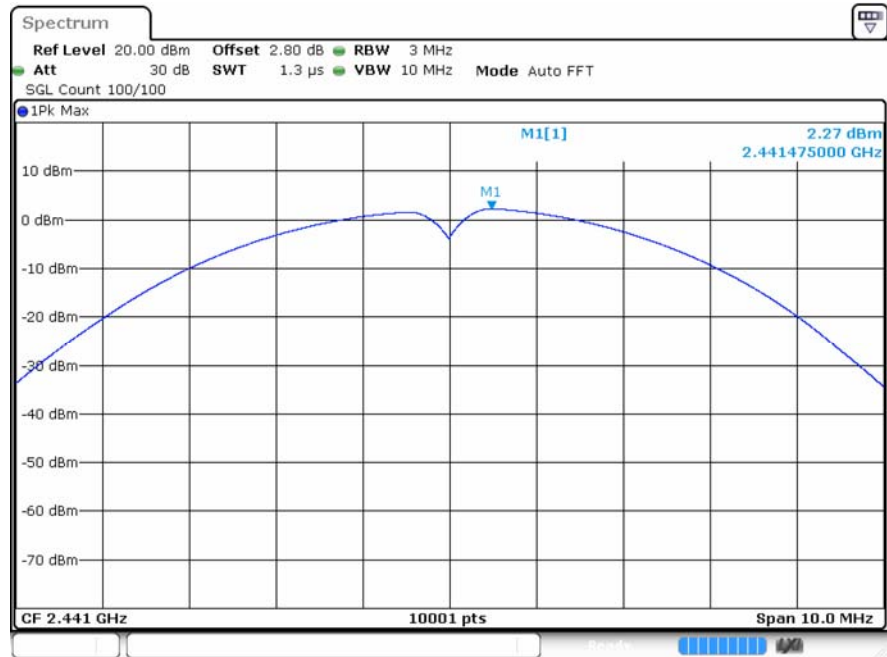
GFSK/HCH



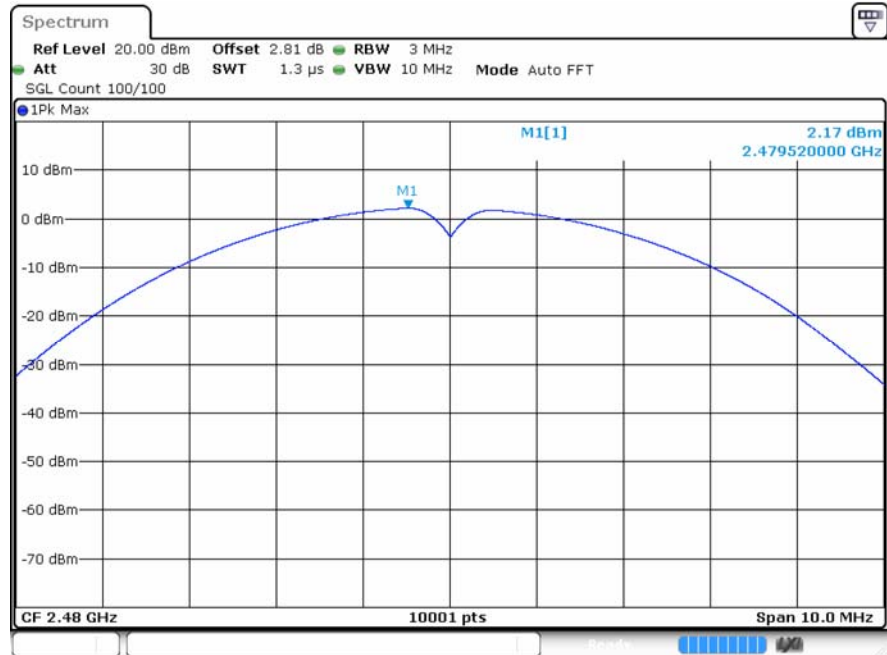
$\pi/4$ DQPSK/LCH



$\pi/4$ DQPSK/MCH



$\pi/4$ DQPSK/HCH

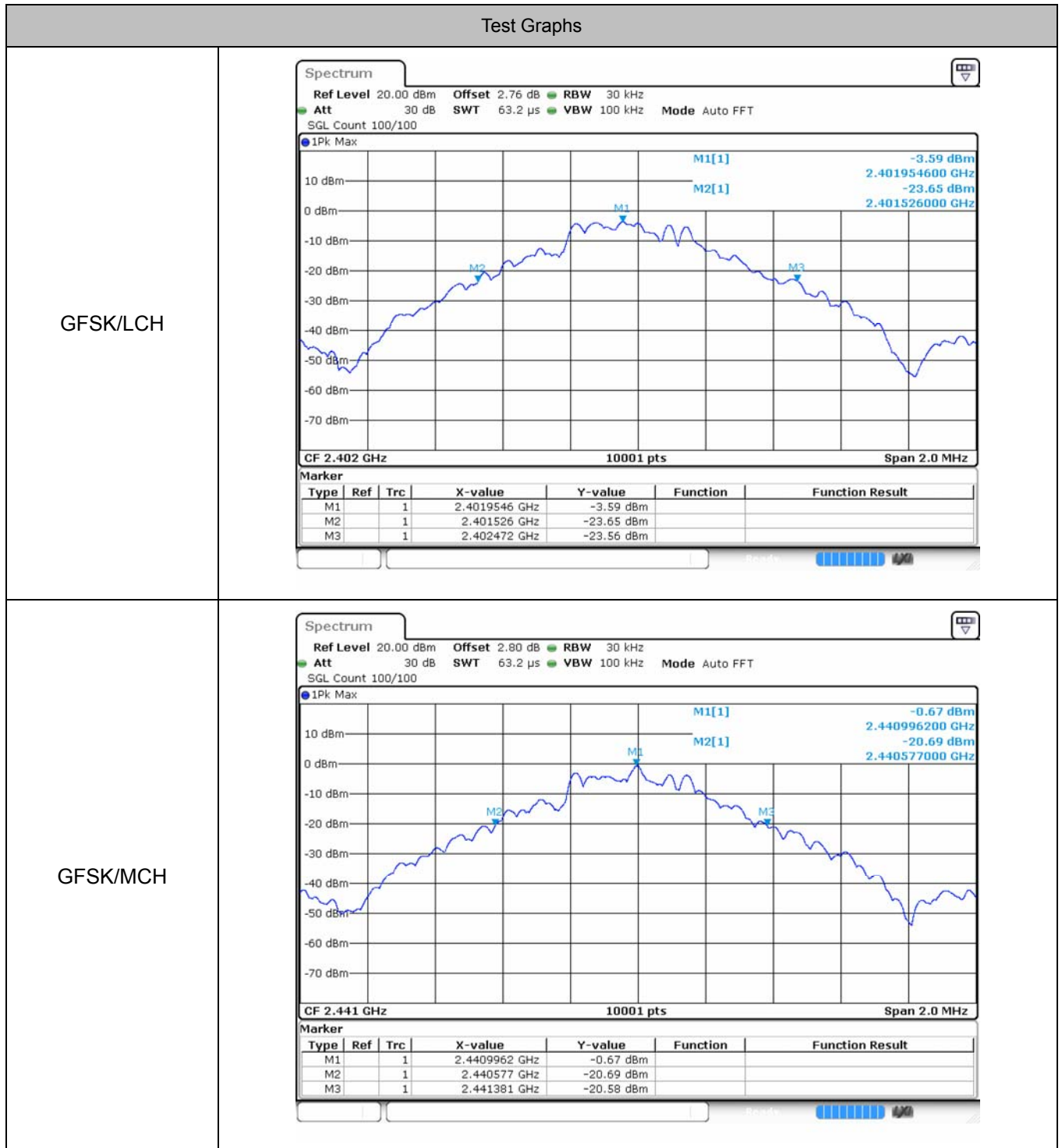


3 20dB Bandwidth

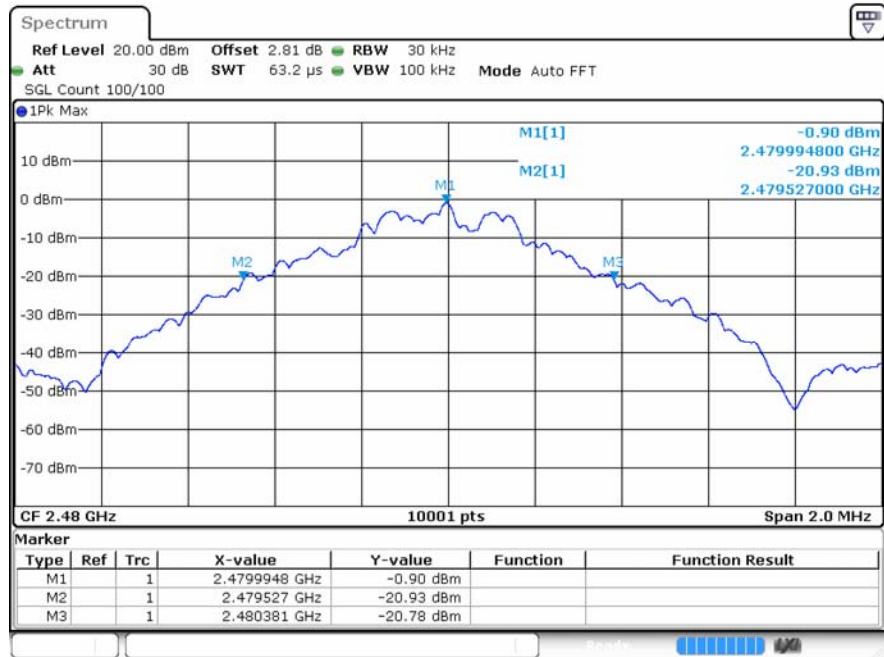
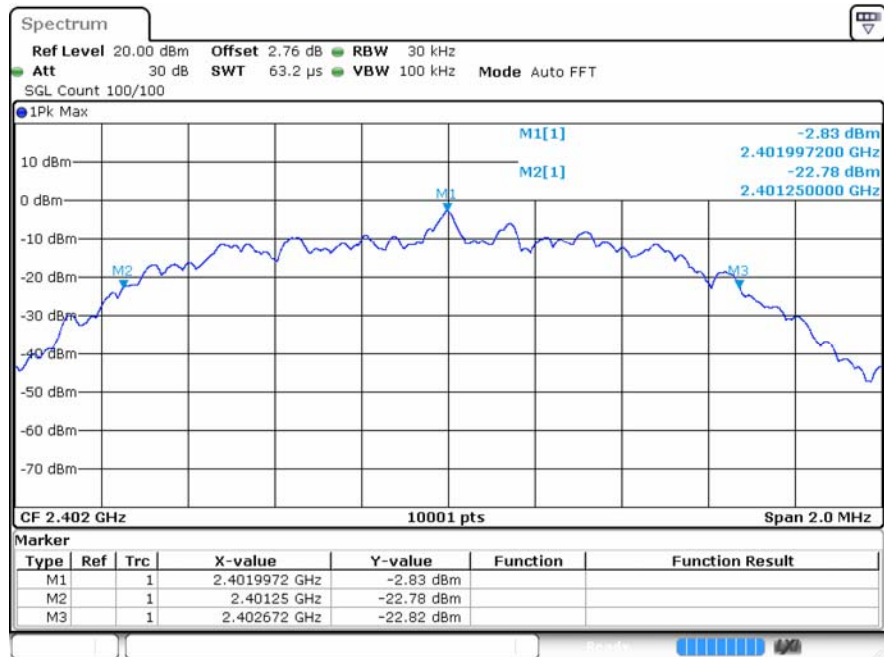
3.1 Test Result

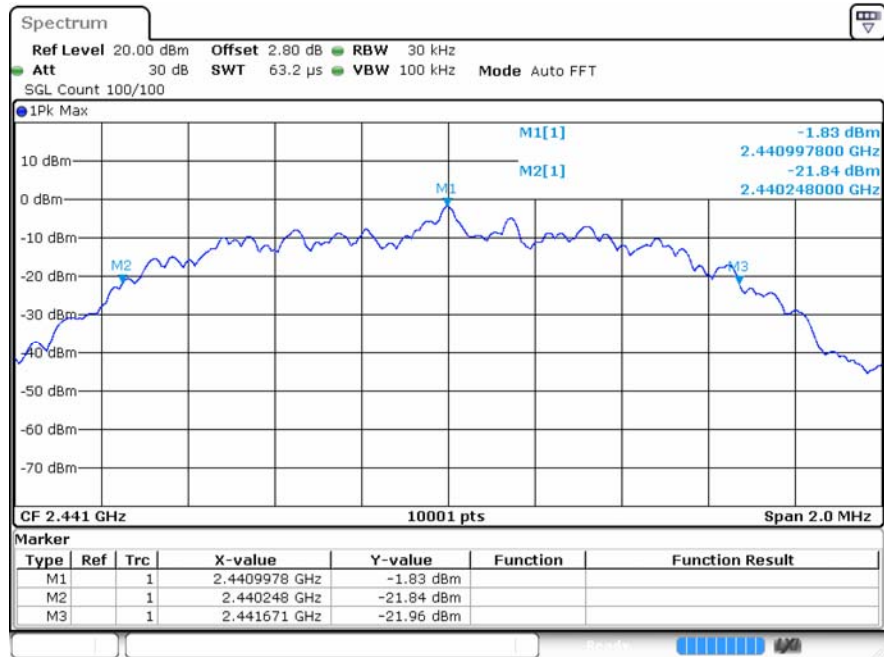
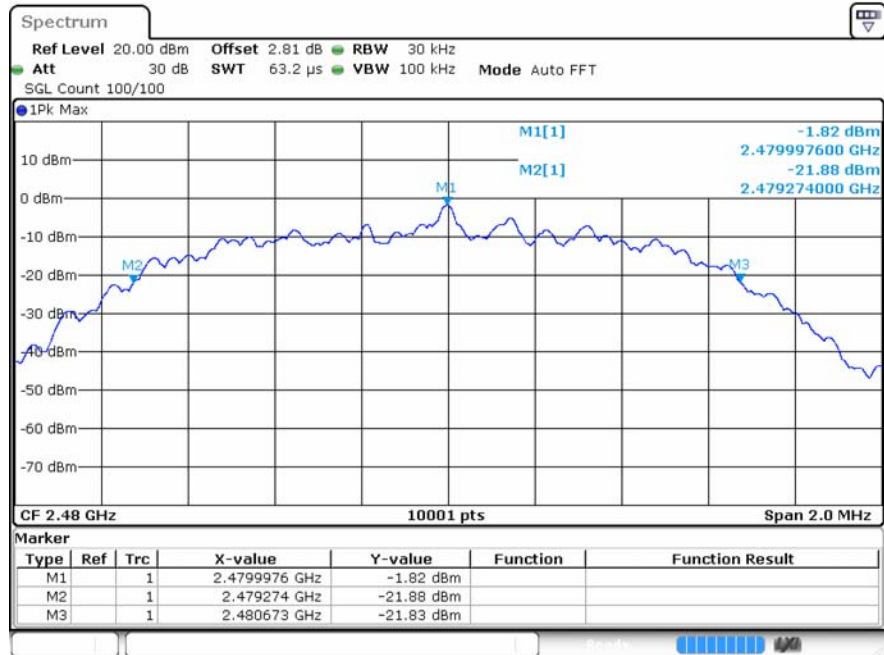
Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.946	Not Specified	Pass
	MCH	0.804	Not Specified	Pass
	HCH	0.854	Not Specified	Pass
$\pi/4$ DQPSK	LCH	1.422	Not Specified	Pass
	MCH	1.422	Not Specified	Pass
	HCH	1.398	Not Specified	Pass

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	1.001	0.536	Pass
$\pi/4$ DQPSK	MCH	0.971	0.948	Pass

4.2 Test Graphs

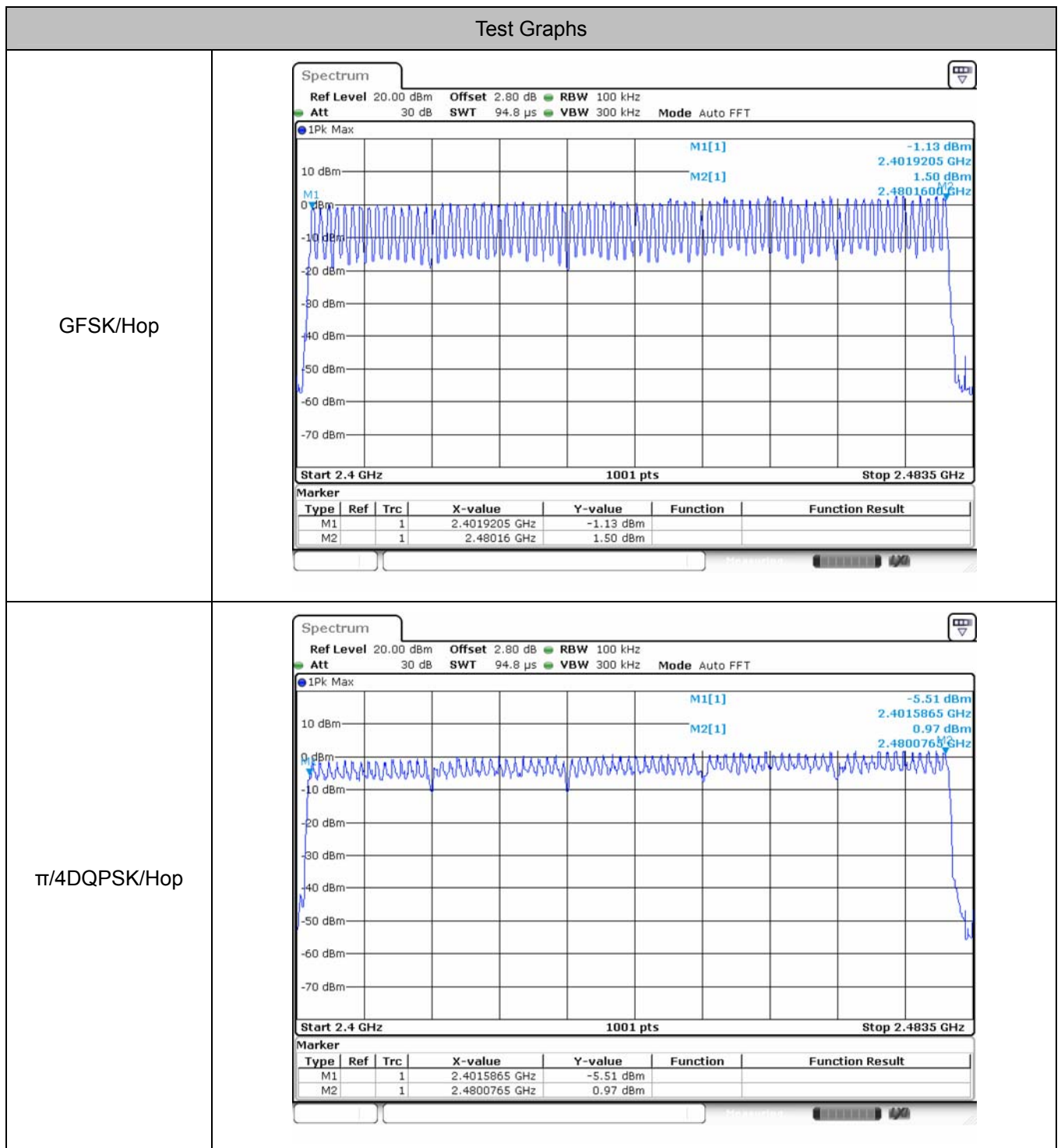


5 Hopping Channel Number

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

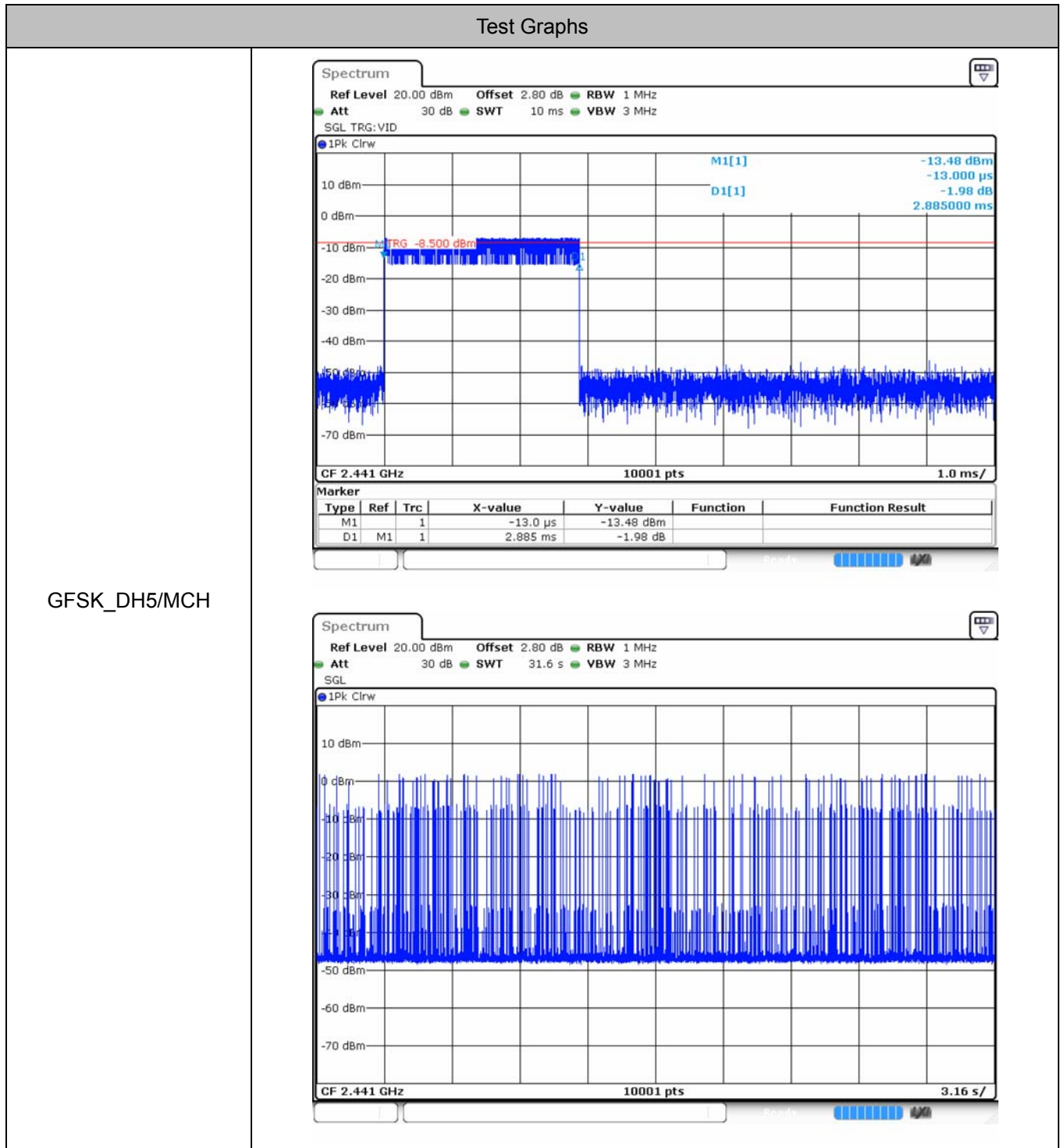


6 Dwell Time

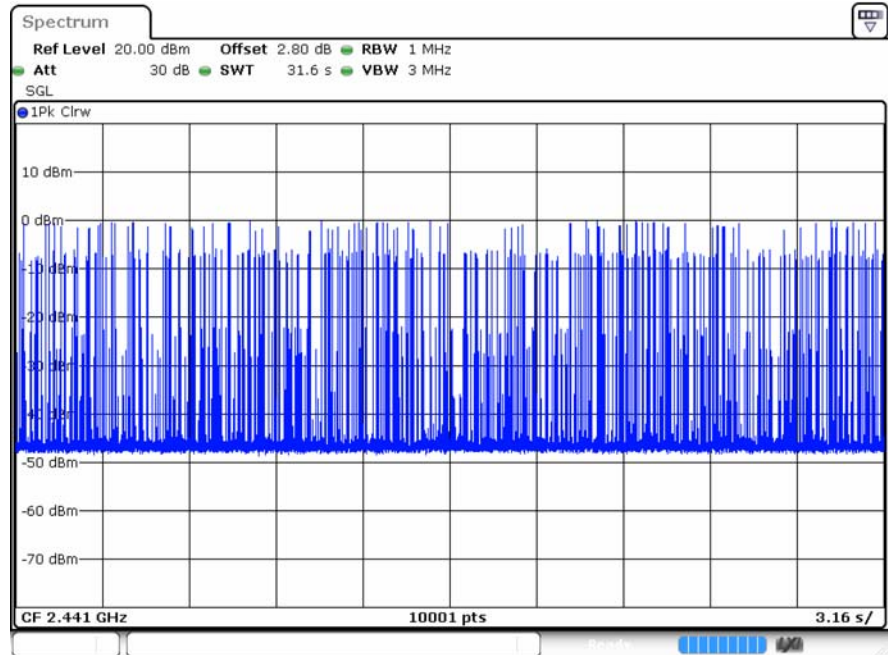
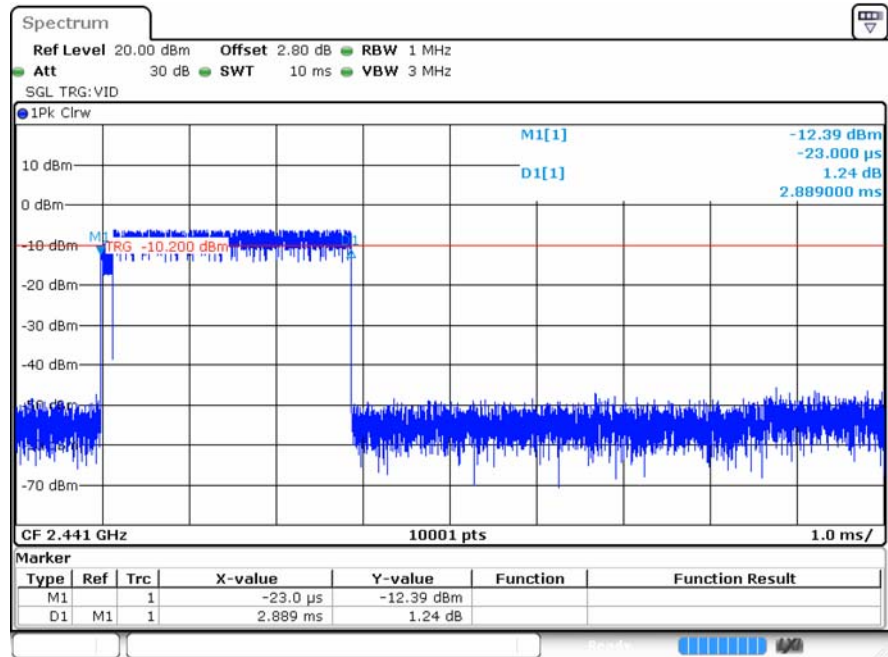
6.1 Test Result

Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[ms]	Limit [s]	Verdict
GFSK	DH5	MCH	2.885	102	294.27	0.4	Pass
$\pi/4$ DQPSK	2DH5	MCH	2.889	96	277.344	0.4	Pass

6.2 Test Graphs



$\pi/4$ DQPSK
_2DH5/MCH

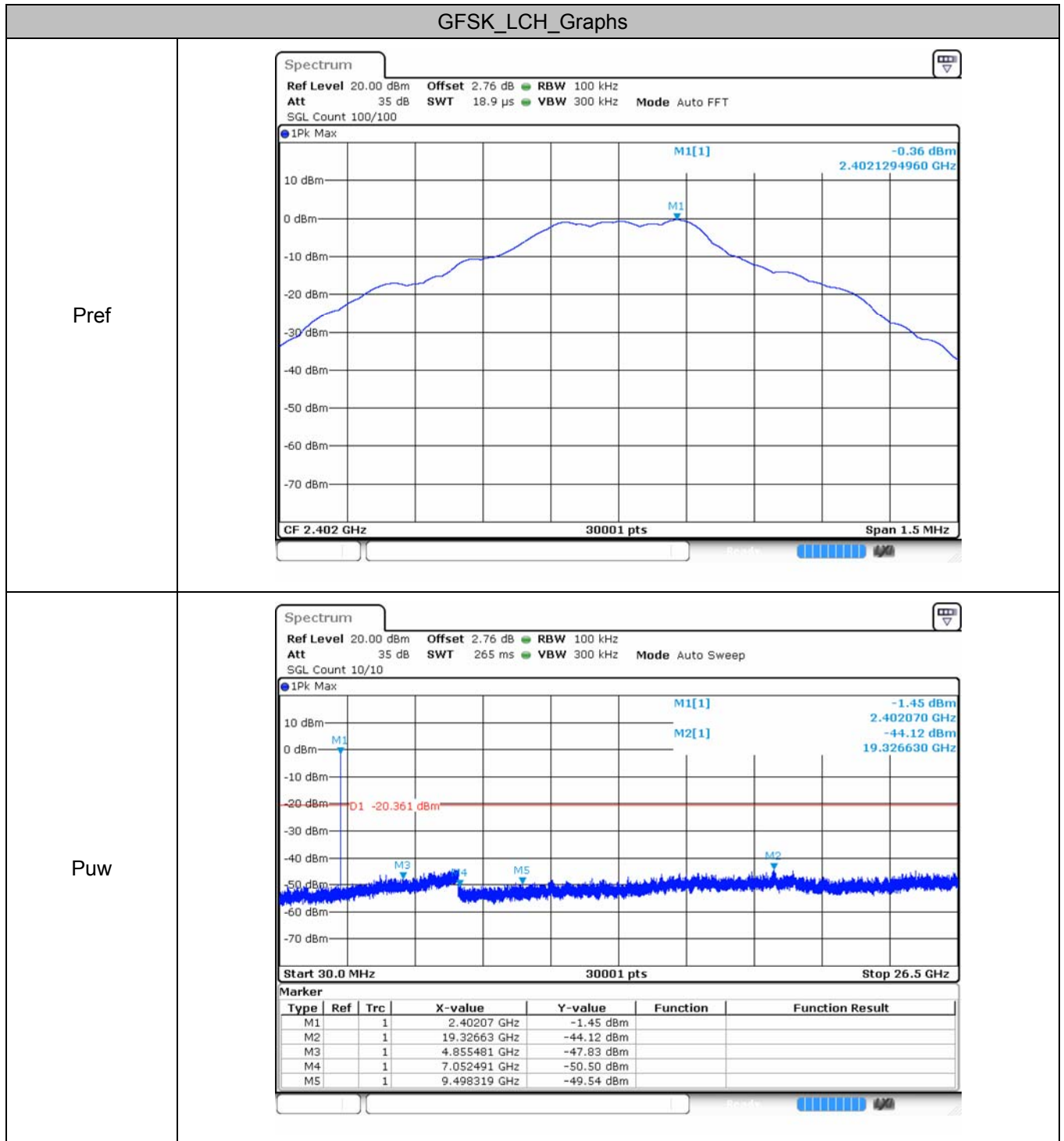


7 RF Conducted Spurious Emissions

7.1 Test Result

Mode	Channel	Max. Level [dBc]	Limit [dBc]	Verdict
GFSK	LCH	-43.75	-20	Pass
	MCH	-45.63	-20	Pass
	HCH	-44.68	-20	Pass
$\pi/4$ DQPSK	LCH	-41.59	-20	Pass
	MCH	-43.1	-20	Pass
	HCH	-43.54	-20	Pass

7.2 Test Graphs

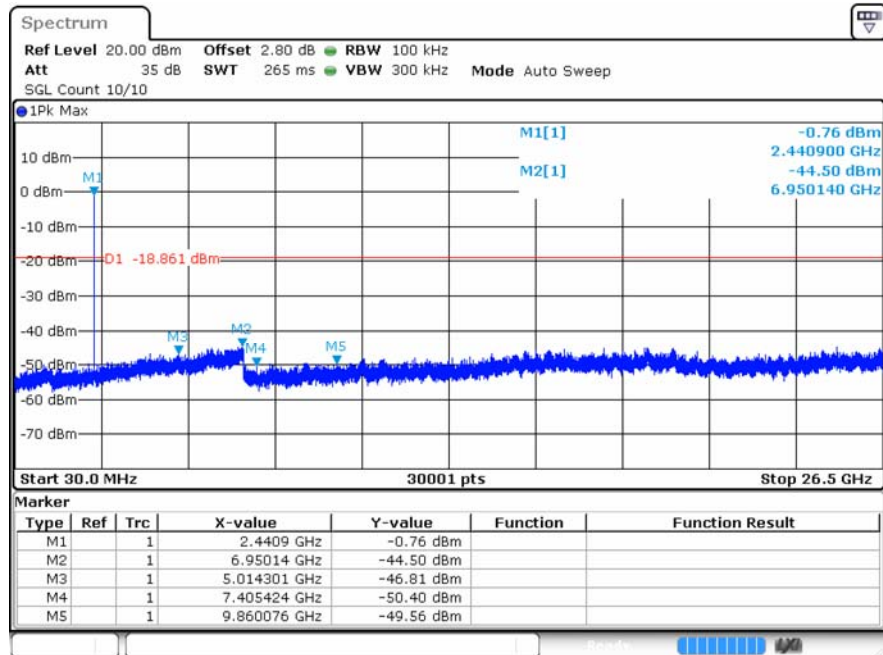


GFSK_MCH_Graphs

Pref



Puw

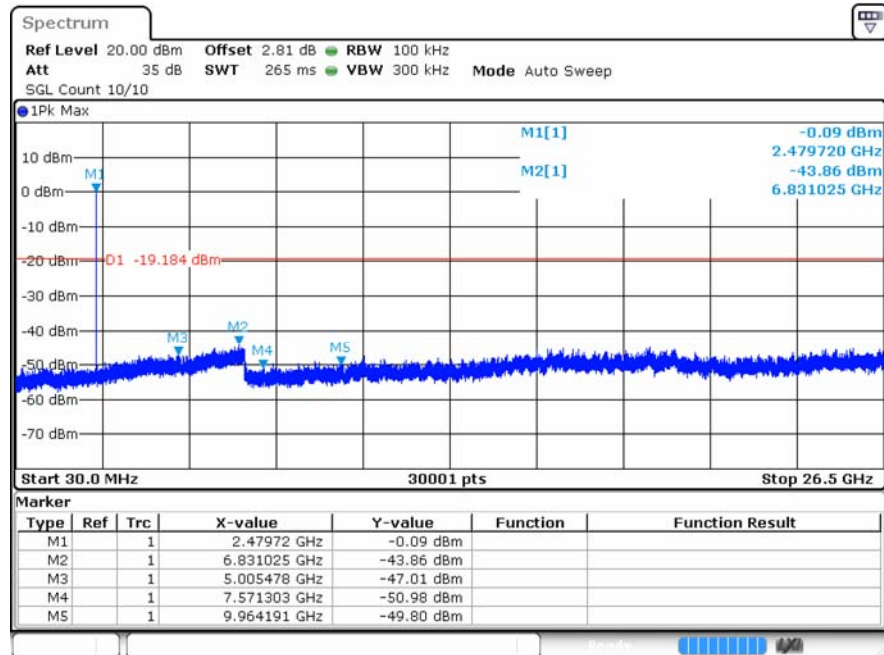


GFSK_HCH_Graphs

Pref

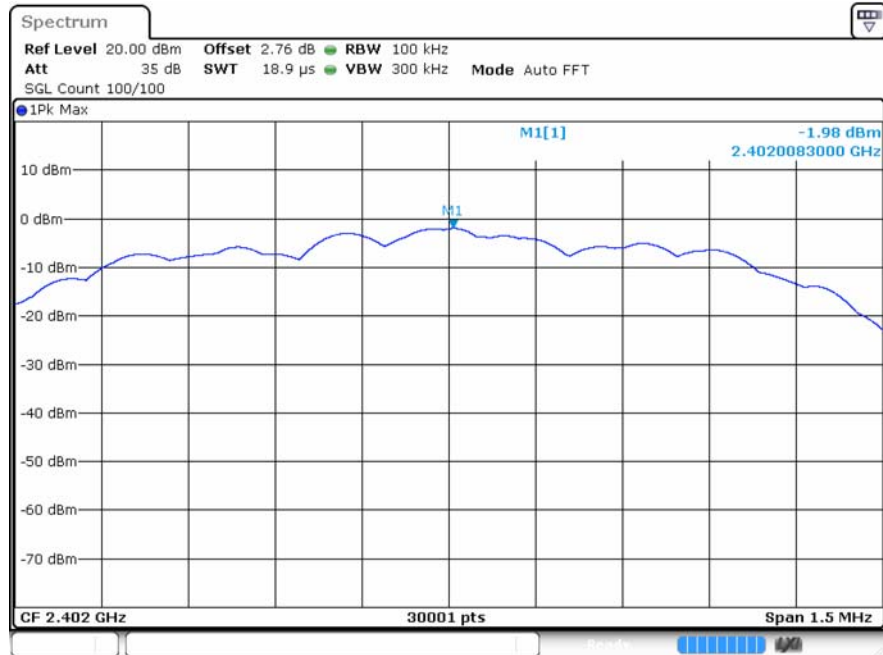


Puw

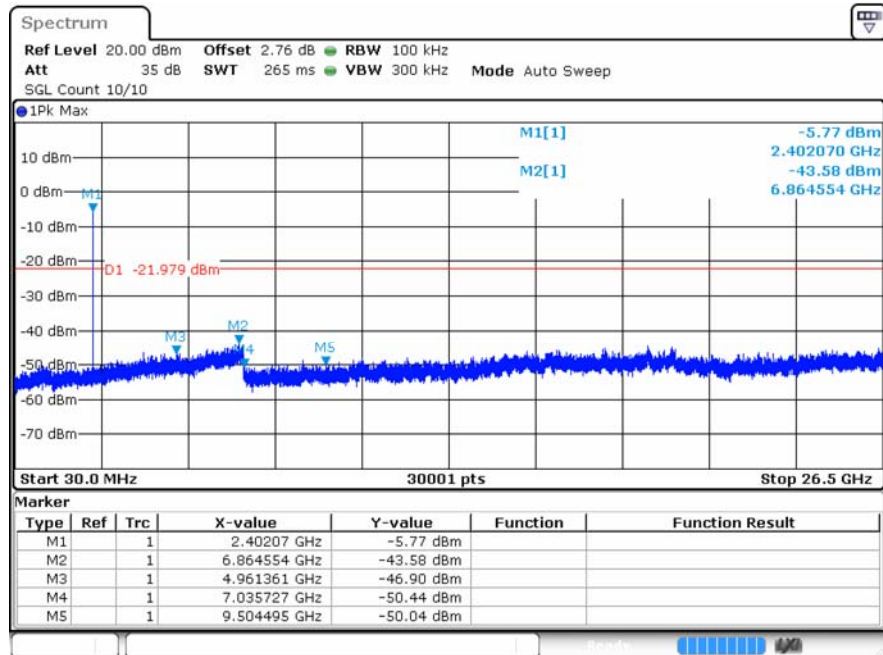


$\pi/4$ DQPSK_LCH_Graphs

Pref

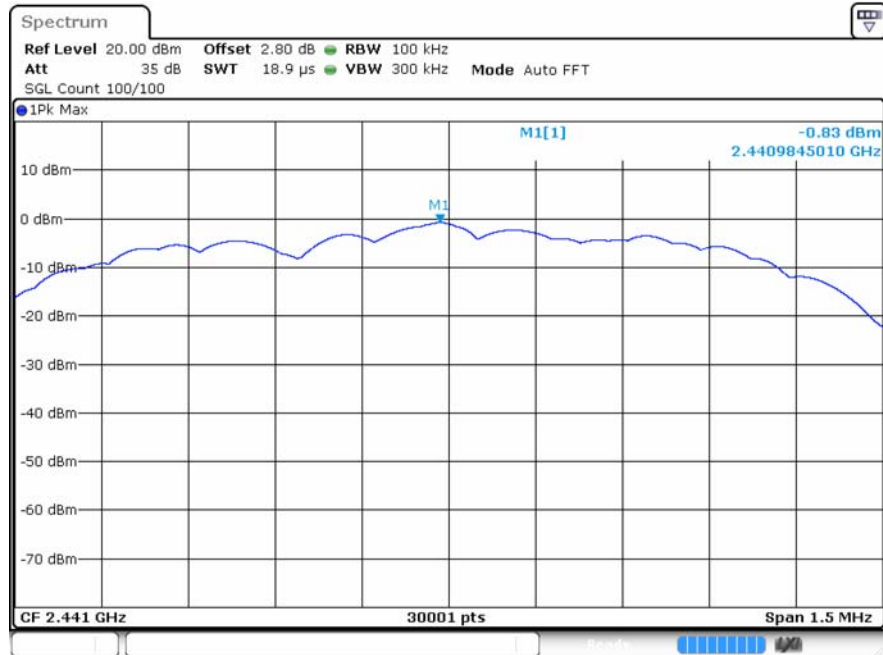


Puw

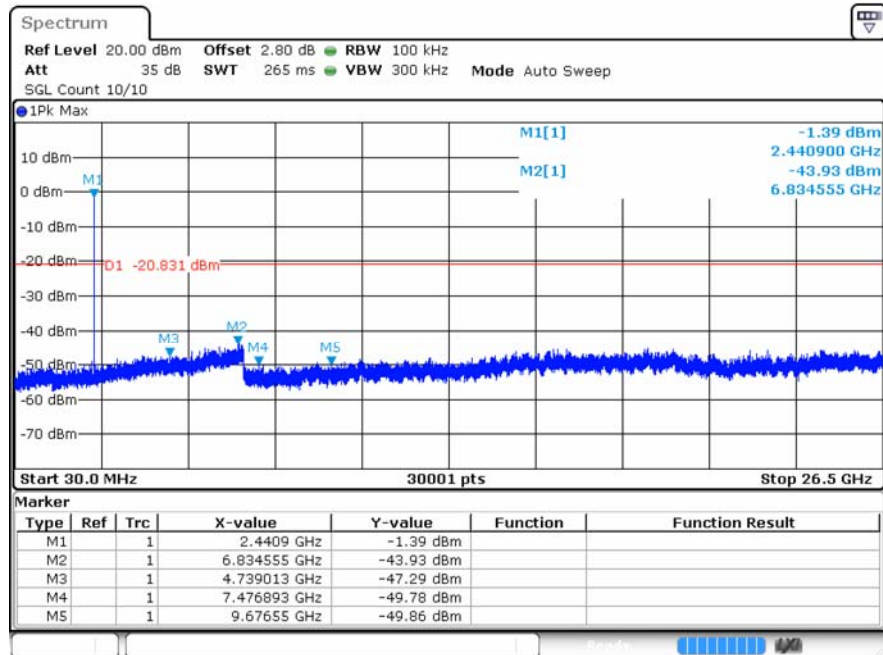


π /4DQPSK_MCH_Graphs

Pref

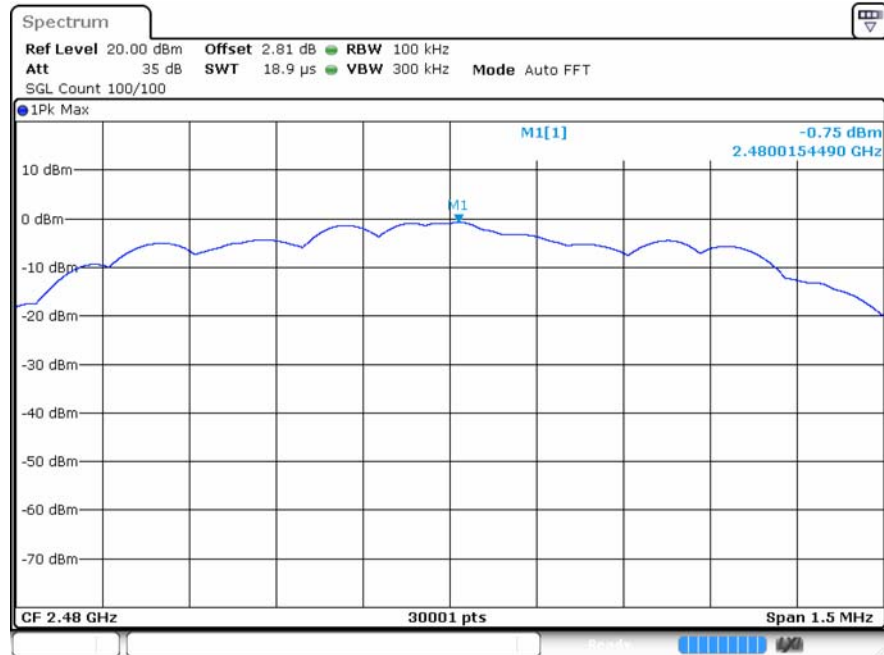


Puw

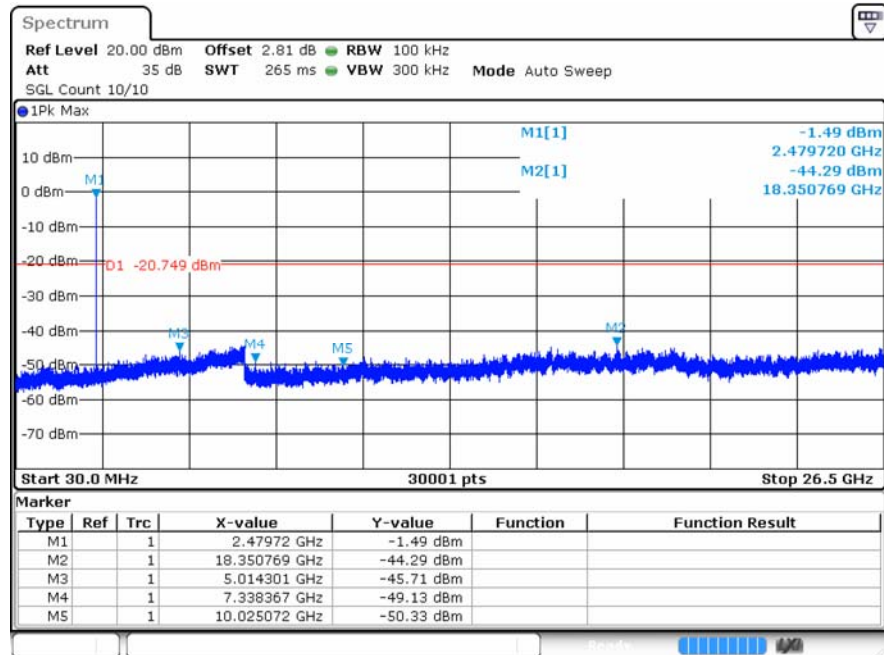


$\pi/4$ DQPSK_HCH_Graphs

Pref



Puw

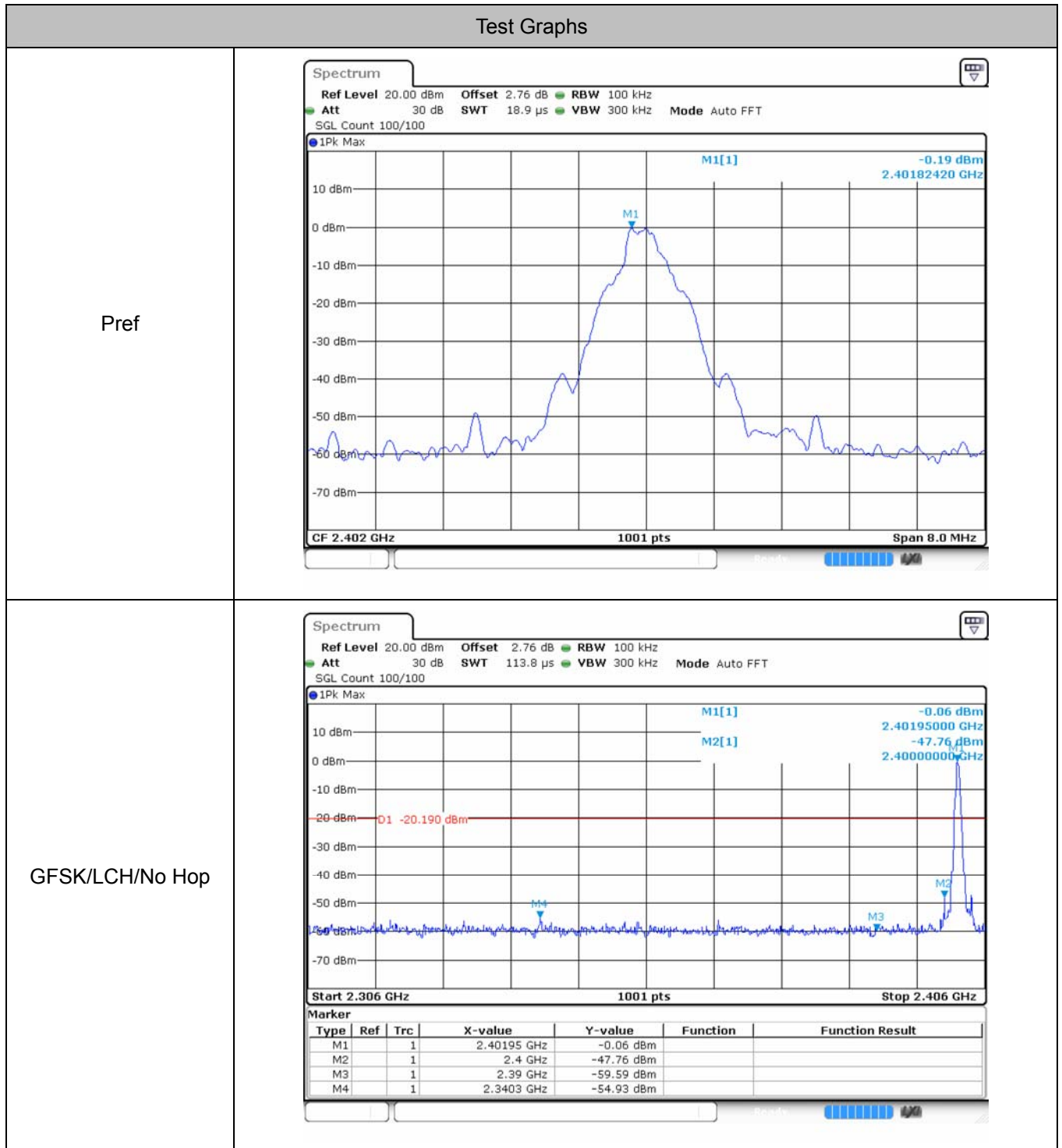


8 Band-edge for RF Conducted Emissions

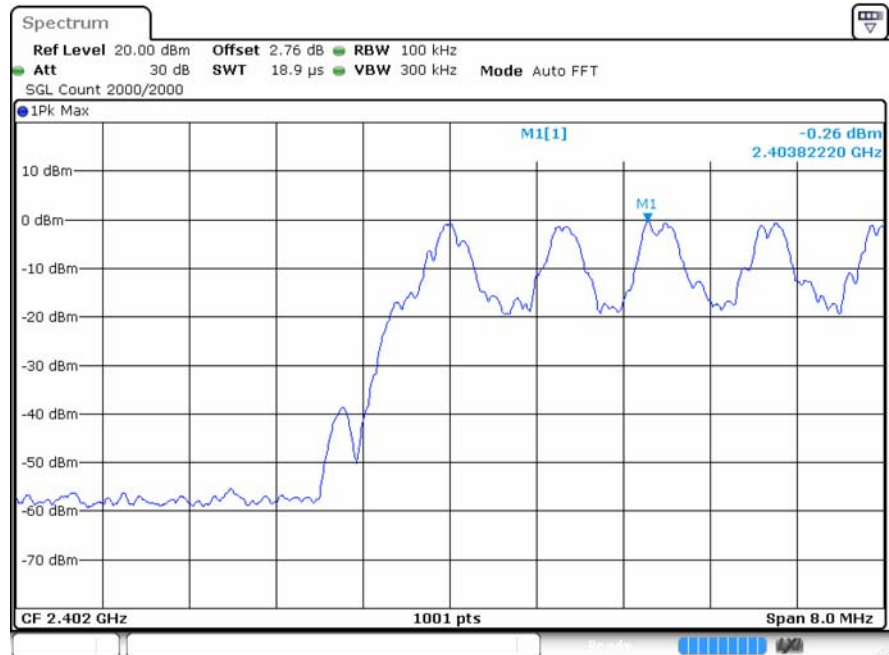
8.1 Test Result

Mode	Channel	Carrier Frequency [MHz]	Frequency Hopping	Max Spurious Level [dBc]	Limit [dBc]	Verdict
GFSK	LCH	2402	Off	-54.73	-20	Pass
			On	-54.82	-20	Pass
	HCH	2480	Off	-55.79	-20	Pass
			On	-48.3	-20	Pass
$\pi/4$ DQPSK	LCH	2402	Off	-54.54	-20	Pass
			On	-53.01	-20	Pass
	HCH	2480	Off	-45.6	-20	Pass
			On	-56.28	-20	Pass

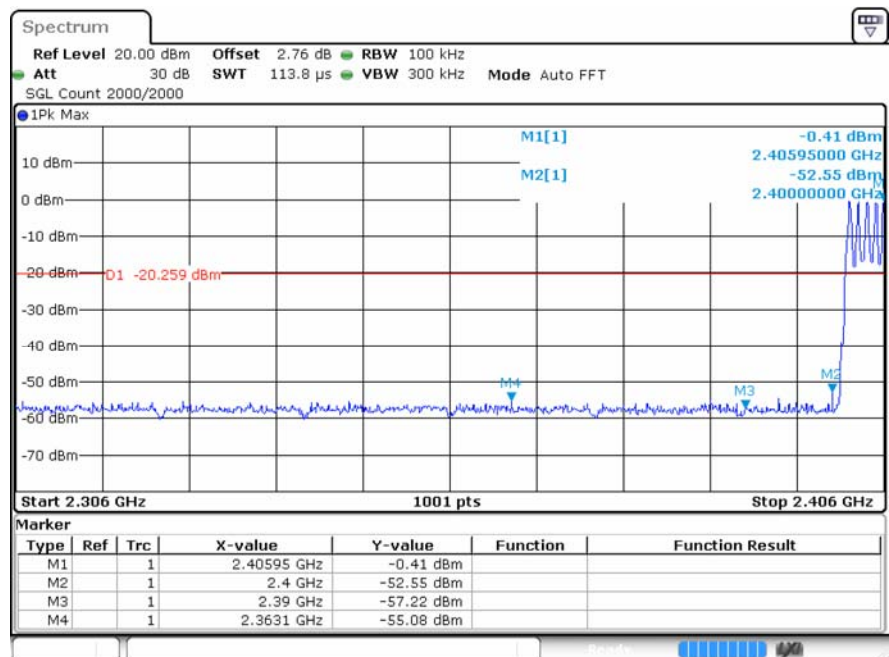
8.2 Test Graphs



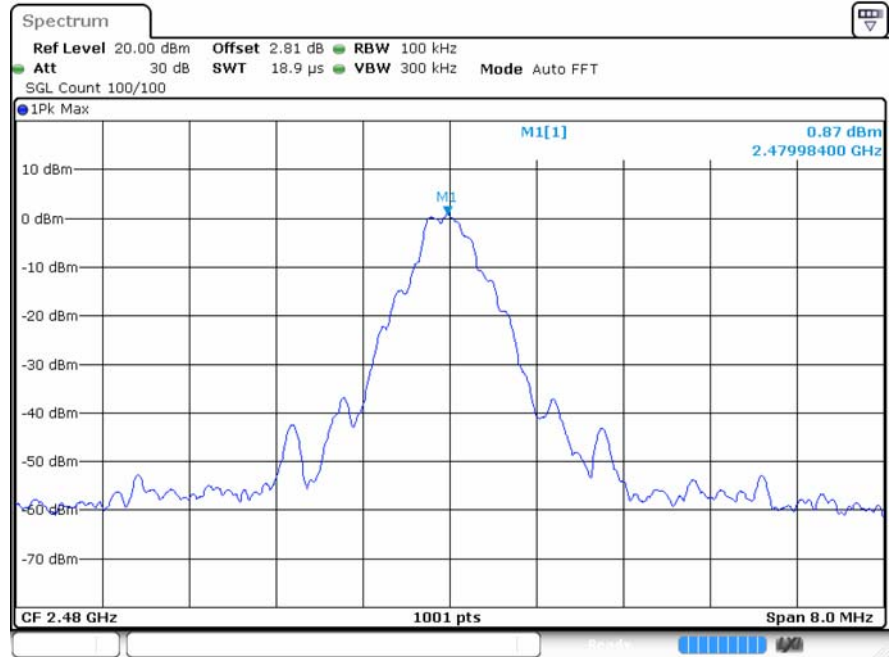
Ref



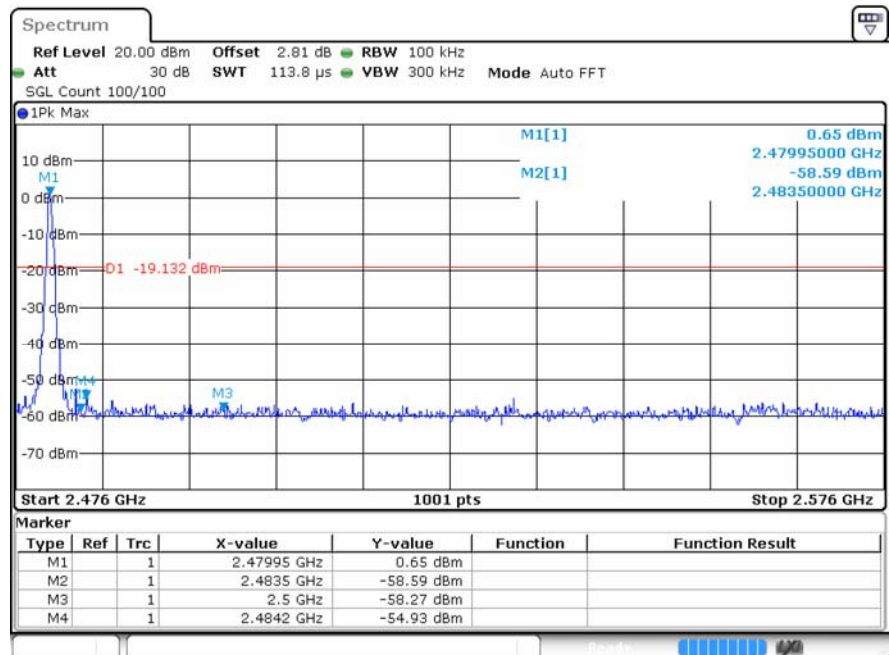
GFSK/LCH/Hop



Ref



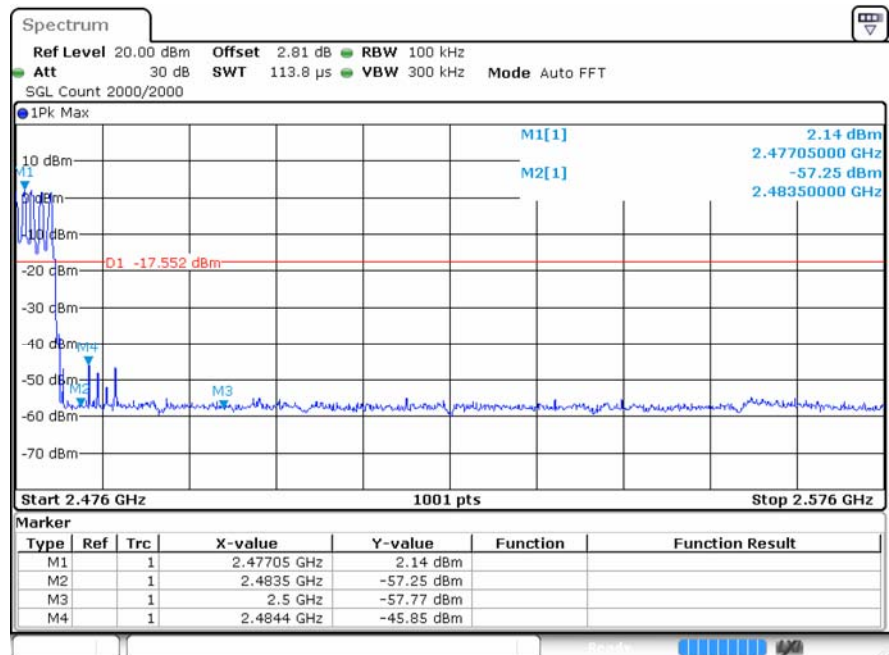
GFSK/HCH/No Hop



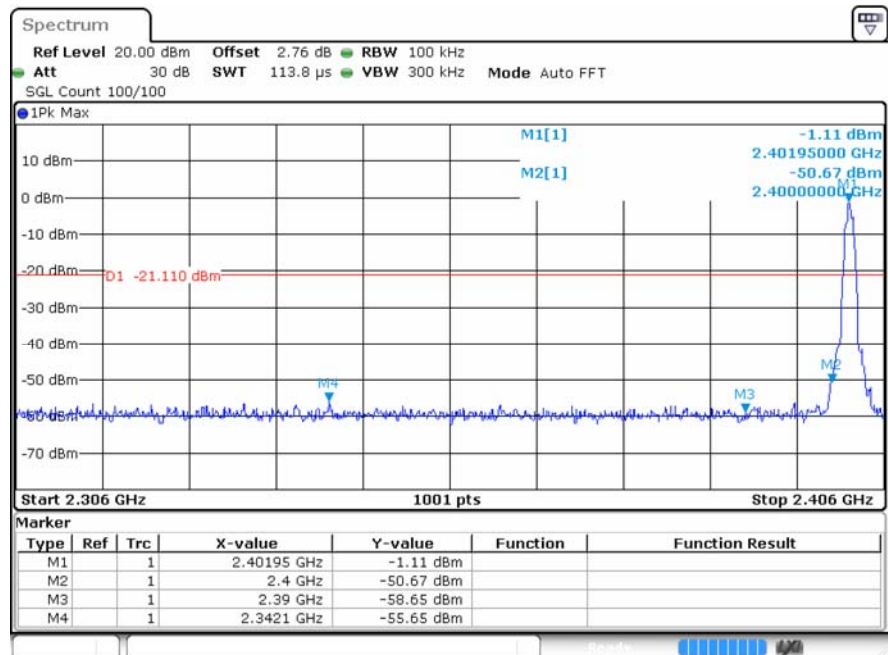
Ref.



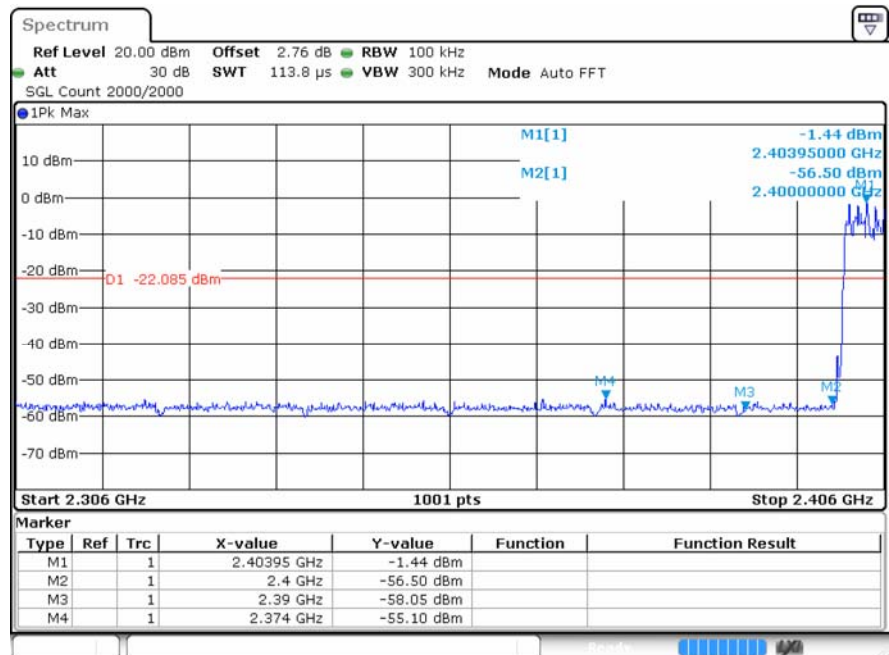
GFSK/HCH/Hop



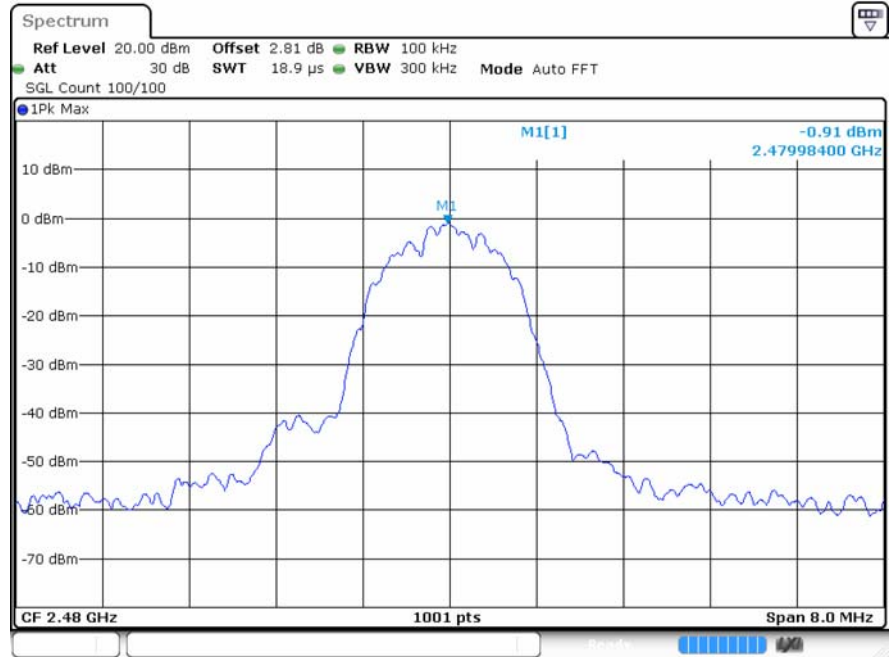
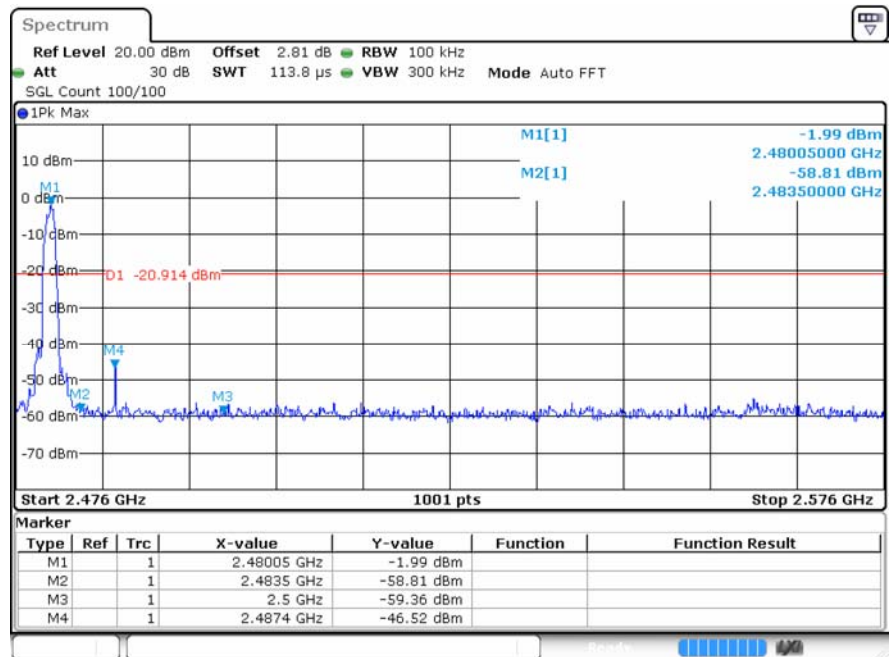
Ref


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


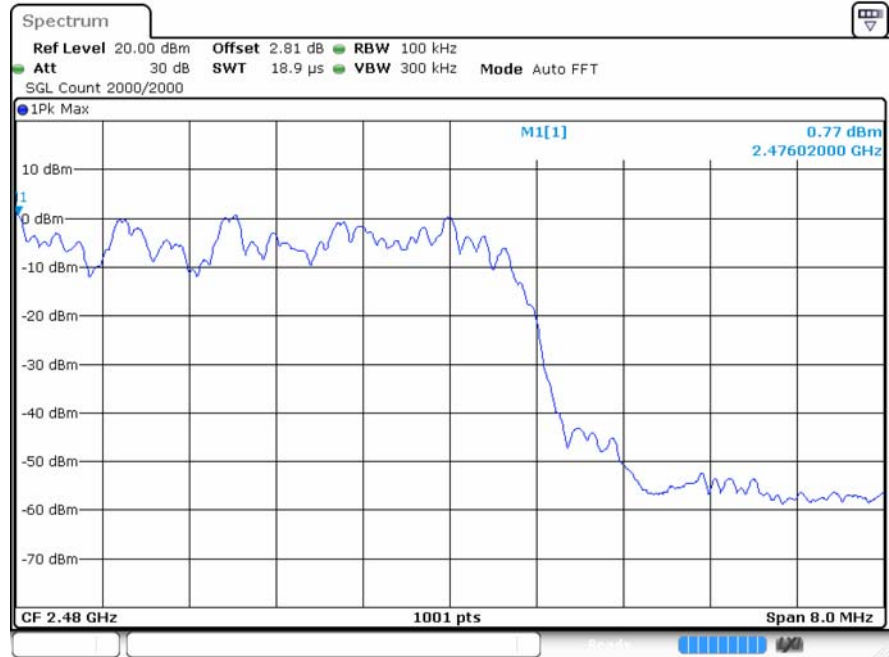
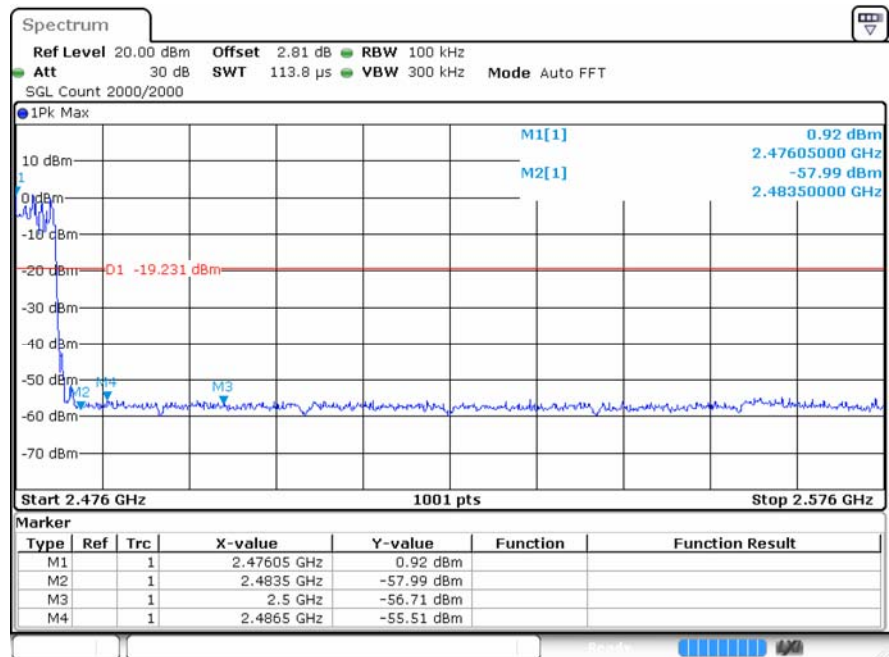
Ref


 $\pi/4$ DQPSK/LCH/Hop


Ref


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


Ref


 $\pi/4$ DQPSK/HCH/Hop


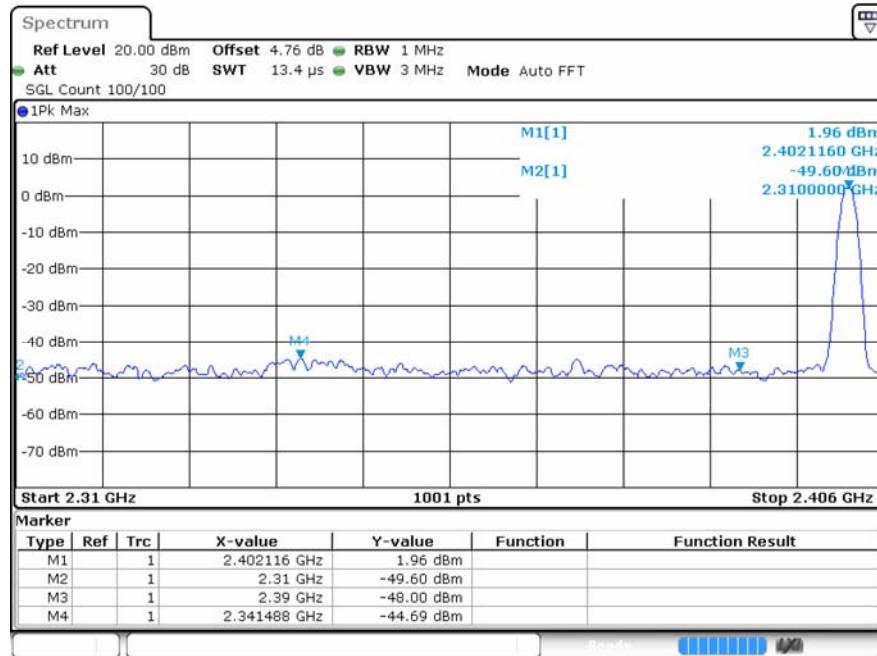
9 Restrict-band band-edge measurements

9.1 Test Result

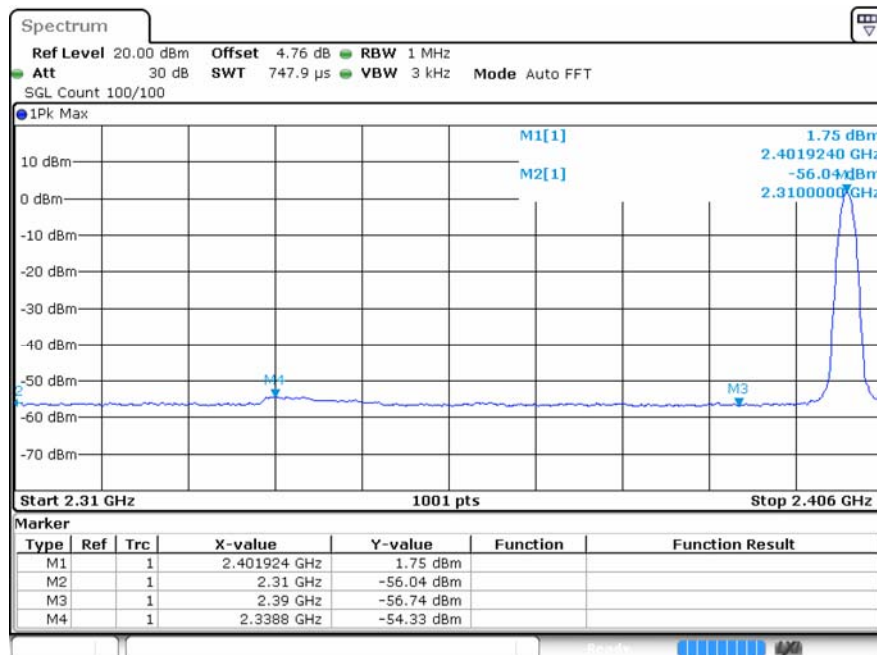
Test Mode	Hopping	Freq.	Power [dBm]	Gain	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-49.59	2	47.67	PEAK	74	Pass
	Off	2310.0	-56.03	2	41.23	AV	54	Pass
	Off	2341.488	-44.69	2	52.57	PEAK	74	Pass
	Off	2338.8	-54.33	2	42.93	AV	54	Pass
	Off	2390.0	-48	2	49.26	PEAK	74	Pass
	Off	2390.0	-56.73	2	40.53	AV	54	Pass
	Off	2483.5	-46.24	2	51.02	PEAK	74	Pass
	Off	2483.5	-54.48	2	42.78	AV	54	Pass
	Off	2487.232	-43.48	2	53.78	PEAK	74	Pass
	Off	2483.512	-54.48	2	42.78	AV	54	Pass
	Off	2500.0	-47.78	2	49.48	PEAK	74	Pass
	Off	2500.0	-55.62	2	41.64	AV	54	Pass
$\pi/4$ DQPSK	Off	2310.0	-46.6	2	50.66	PEAK	74	Pass
	Off	2310.0	-56.15	2	41.11	AV	54	Pass
	Off	2338.512	-44.24	2	53.02	PEAK	74	Pass
	Off	2337.936	-54.08	2	43.18	AV	54	Pass
	Off	2390.0	-46.73	2	50.53	PEAK	74	Pass
	Off	2390.0	-55.59	2	41.67	AV	54	Pass
	Off	2483.5	-45.59	2	51.67	PEAK	74	Pass
	Off	2483.5	-53.67	2	43.59	AV	54	Pass
	Off	2487.424	-41.74	2	55.52	PEAK	74	Pass
	Off	2483.512	-53.67	2	43.59	AV	54	Pass
	Off	2500.0	-48.96	2	48.3	PEAK	74	Pass
	Off	2500.0	-55.79	2	41.47	AV	54	Pass

9.2 Test Graphs

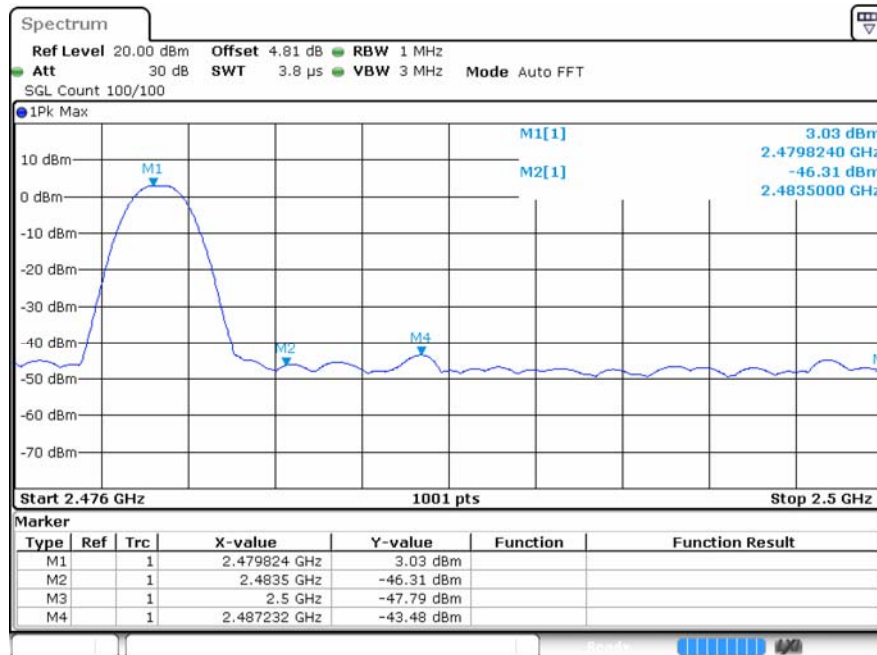
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (Low Channel)



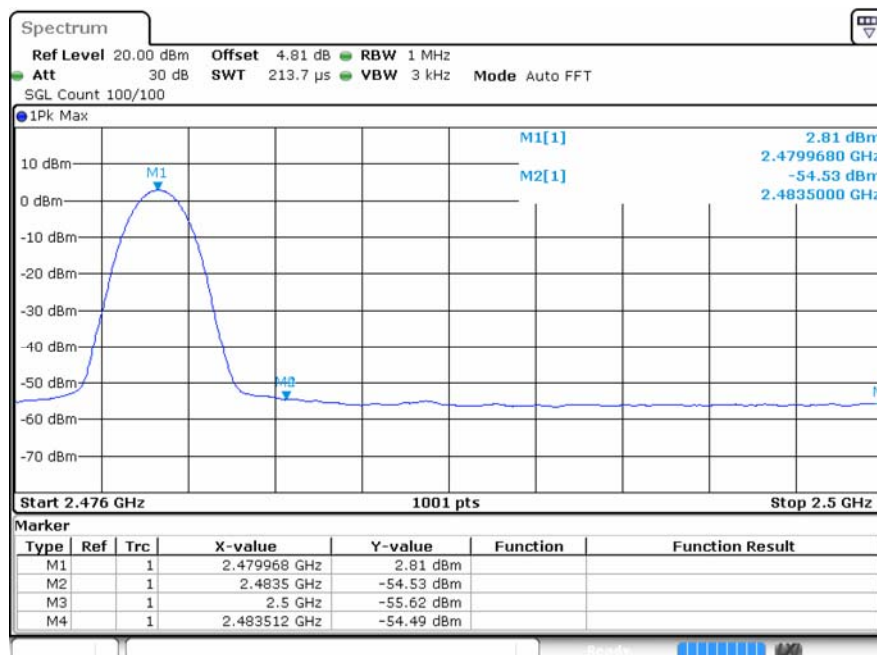
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (Low Channel)



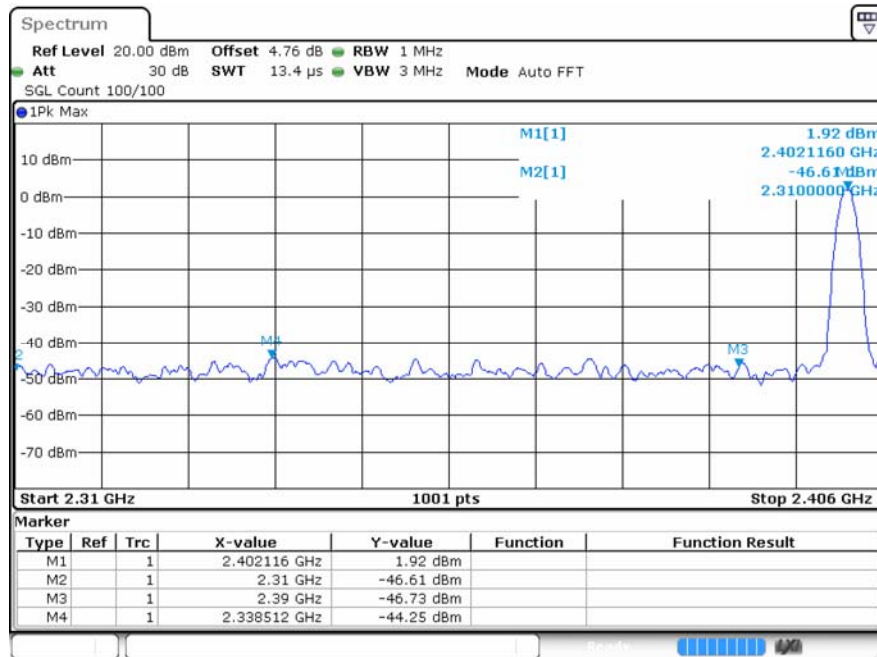
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (High Channel)



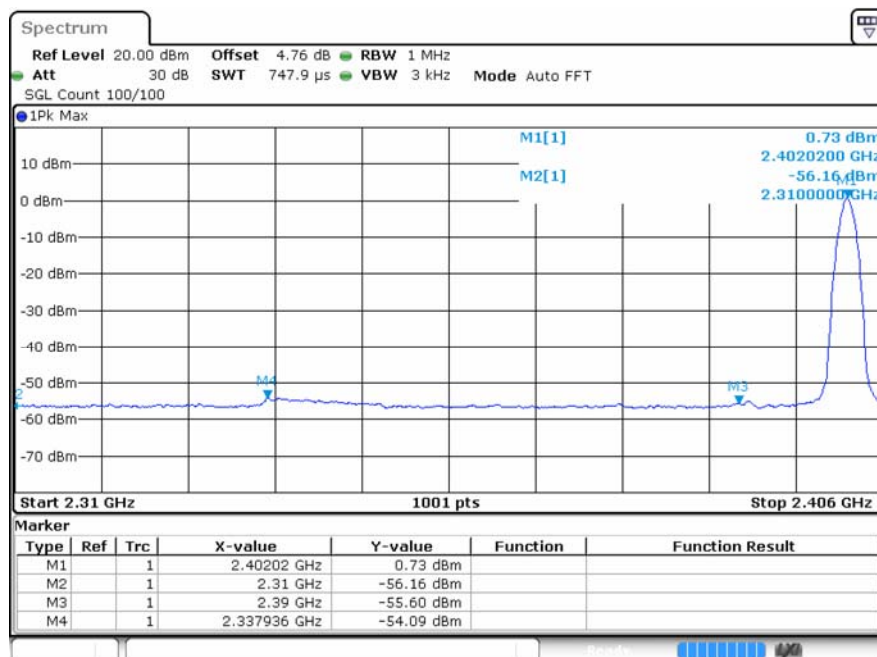
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (High Channel)



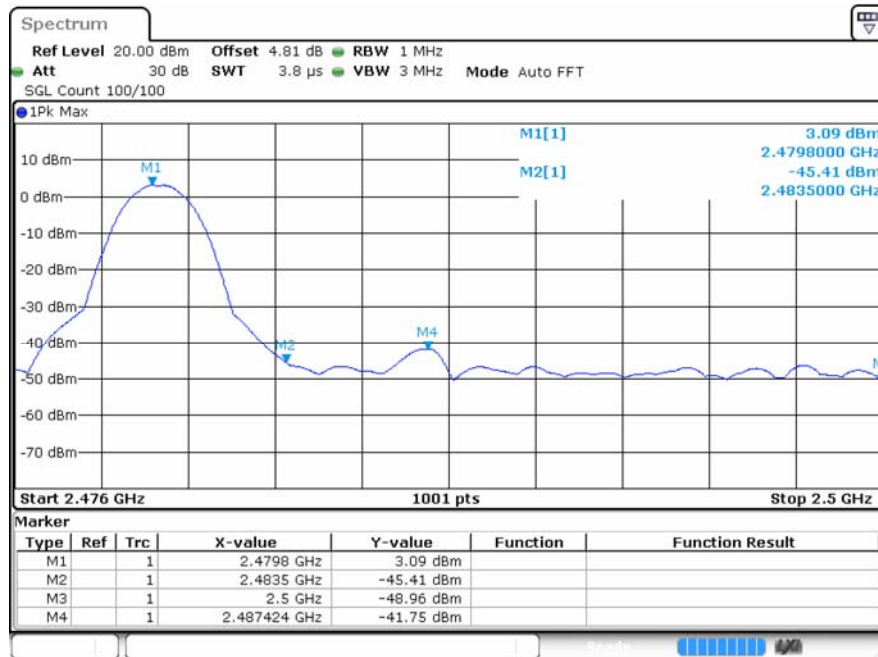
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (Low Channel)



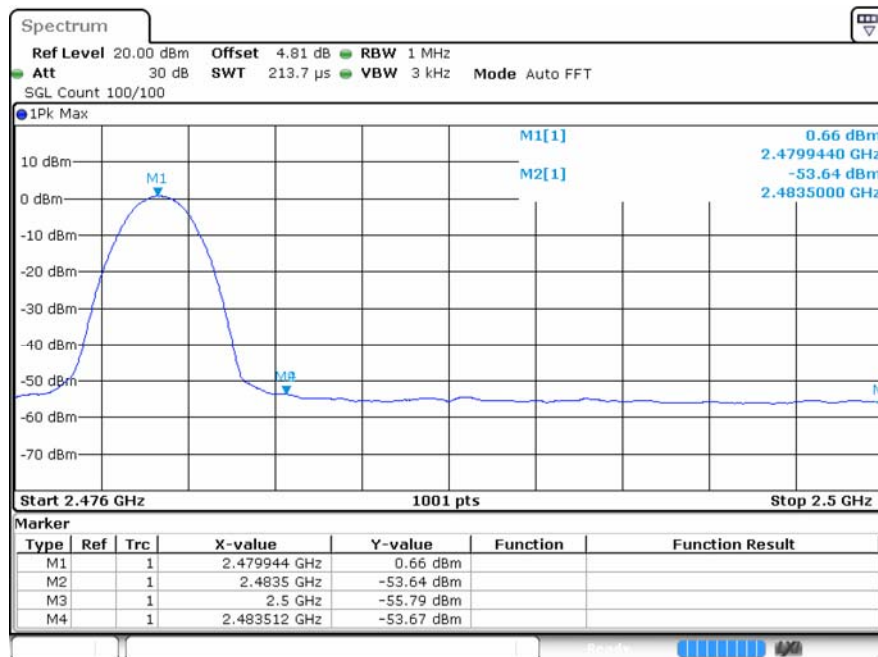
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (Low Channel)



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---