



Appendix A

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

Product Name: Wireless speaker

Trade Mark: HOPESTAR

Test Model: H60

Environmental Conditions

Temperature:	26.4℃
Relative Humidity:	53.6%
ATM Pressure:	101Kpa
Test Engineer:	Emiya lin
Supervised by:	Simba Haung



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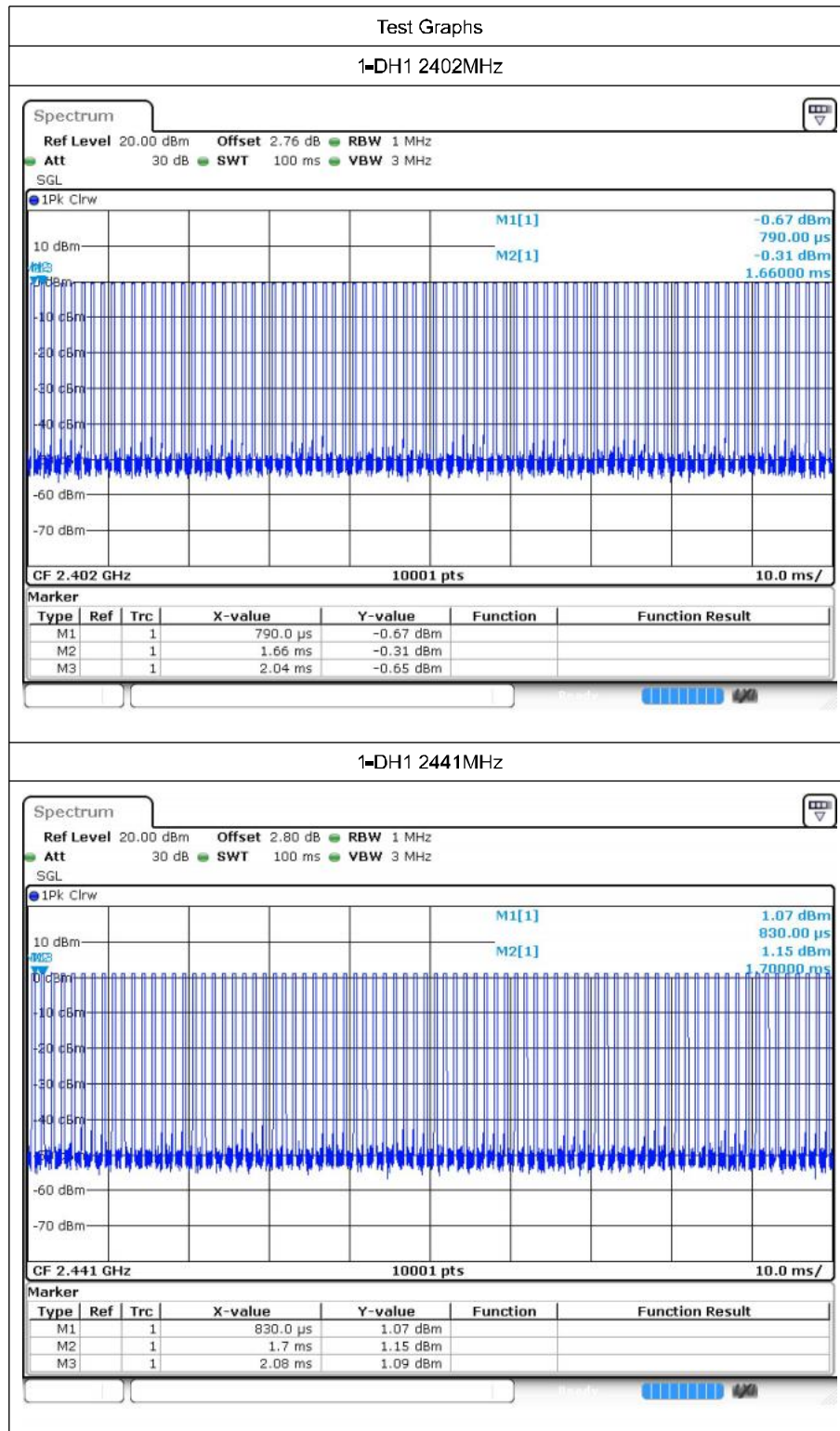


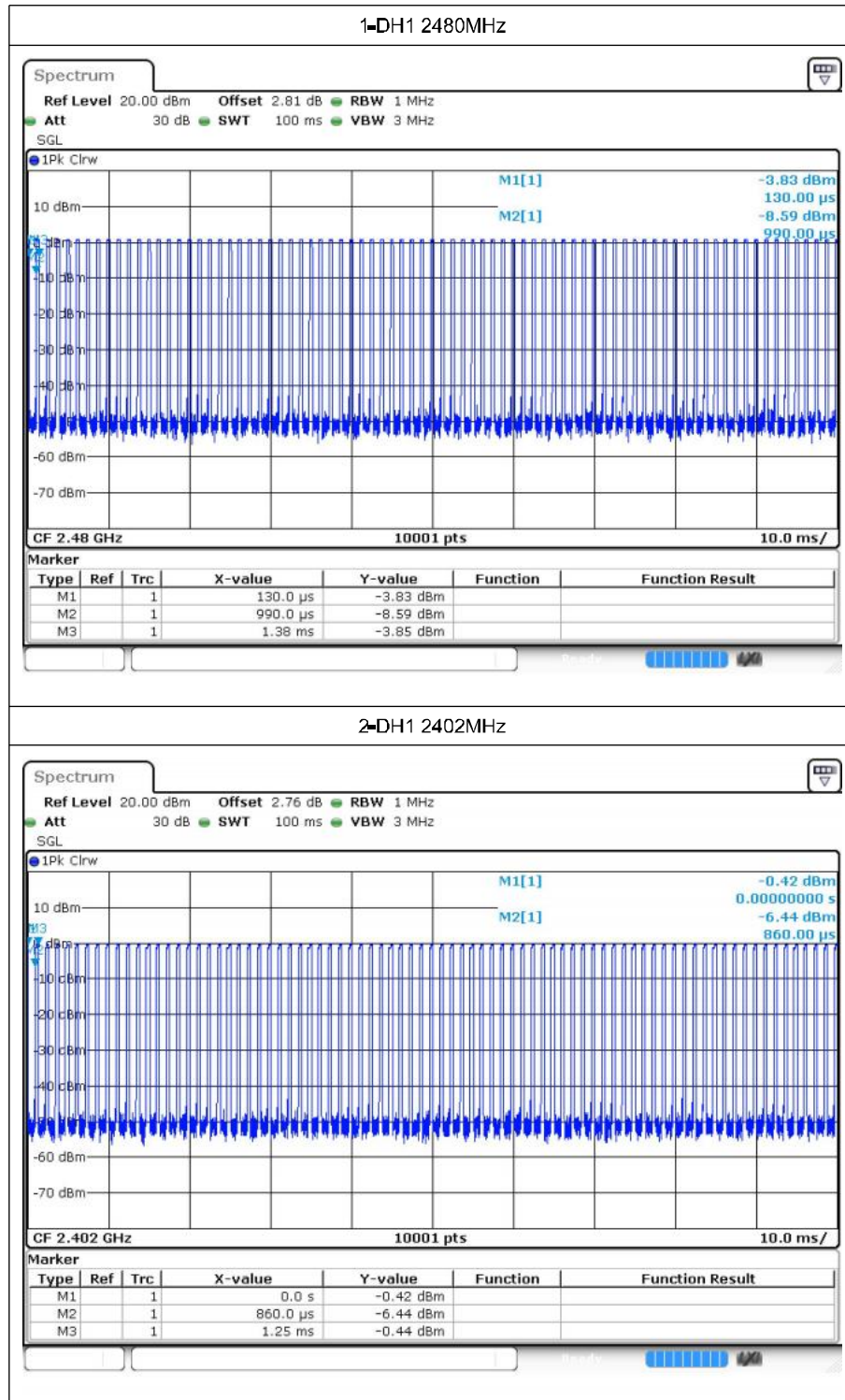
1 Duty Cycle

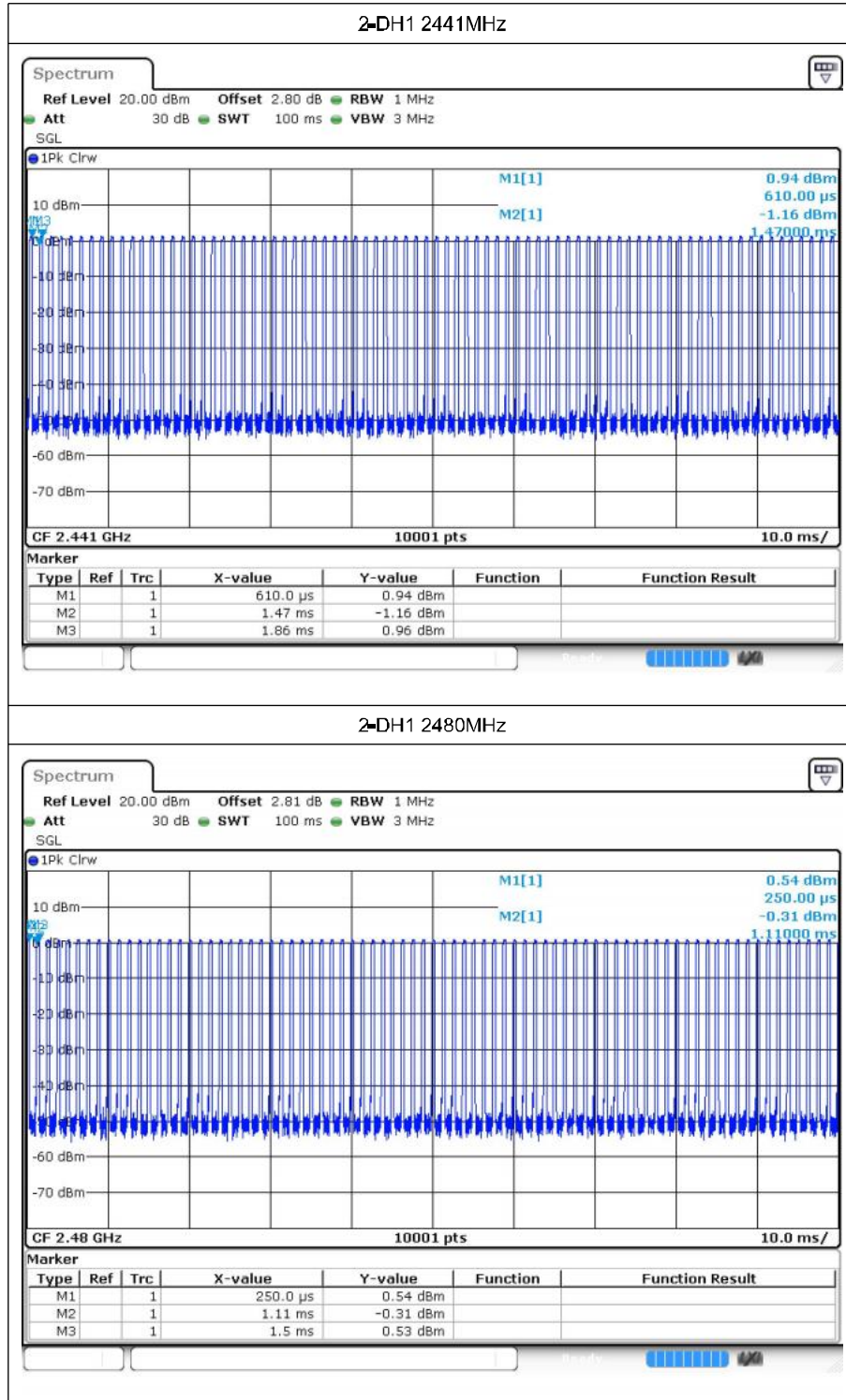
1.1 Test Result

Mode	Frequency (MHz)	Duty Cycle (%)	Correction Factor	1/T (kHz)
1-DH1	2402	31.2	5.06	2.63
1-DH1	2441	31.57	5.01	2.63
1-DH1	2480	31.56	5.01	2.56
2-DH1	2402	32.05	4.94	2.56
2-DH1	2441	32.01	4.95	2.56
2-DH1	2480	32.01	4.95	2.56

1.2 Test Graphs





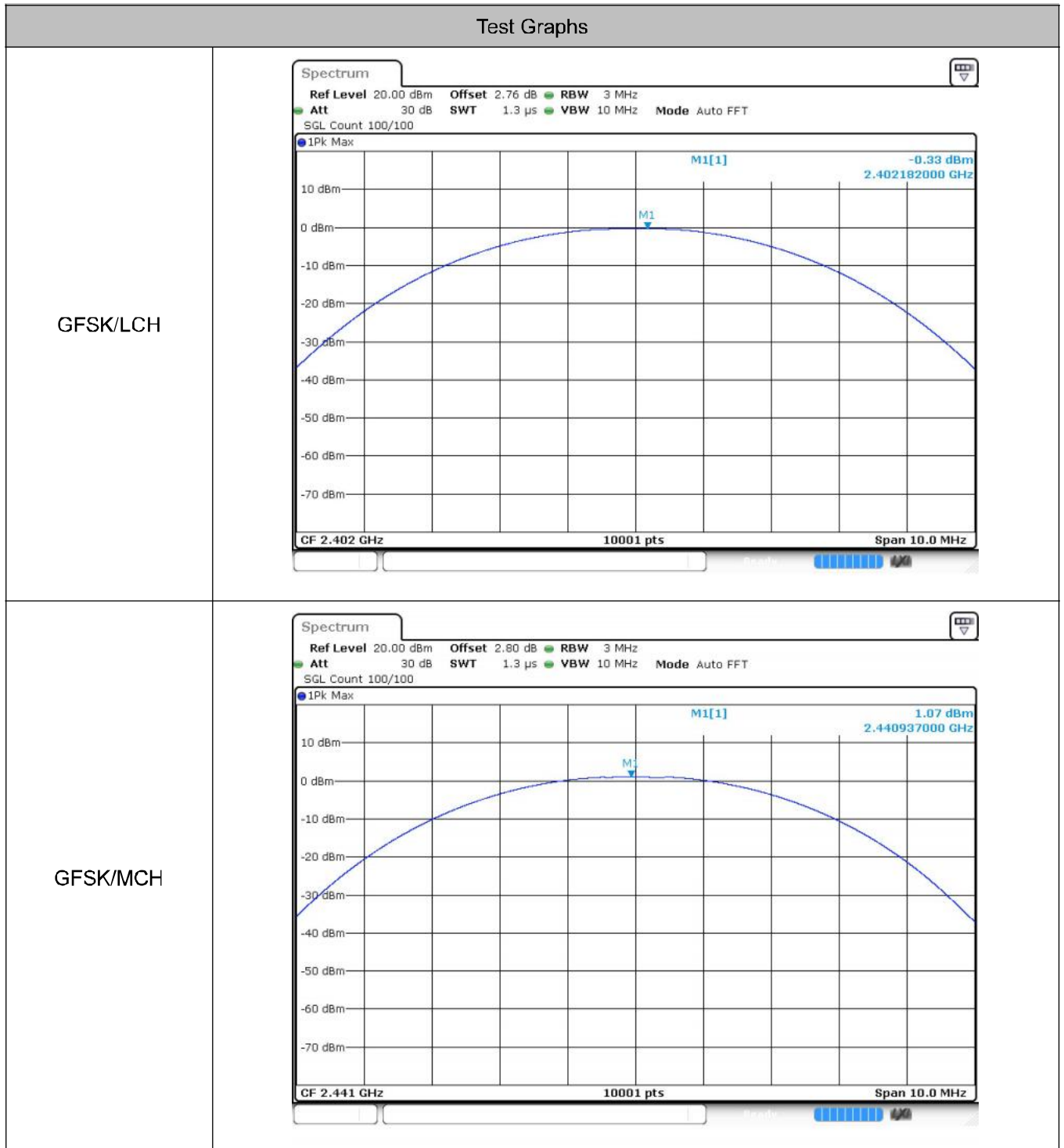


2 Maximum Conducted Peak Output Power

2.1 Test Result

Mode	Channel	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-0.33	21	Pass
	MCH	1.07	21	Pass
	HCH	0.54	21	Pass
$\pi/4$ DQPSK	LCH	0.65	21	Pass
	MCH	2.02	21	Pass
	HCH	1.57	21	Pass

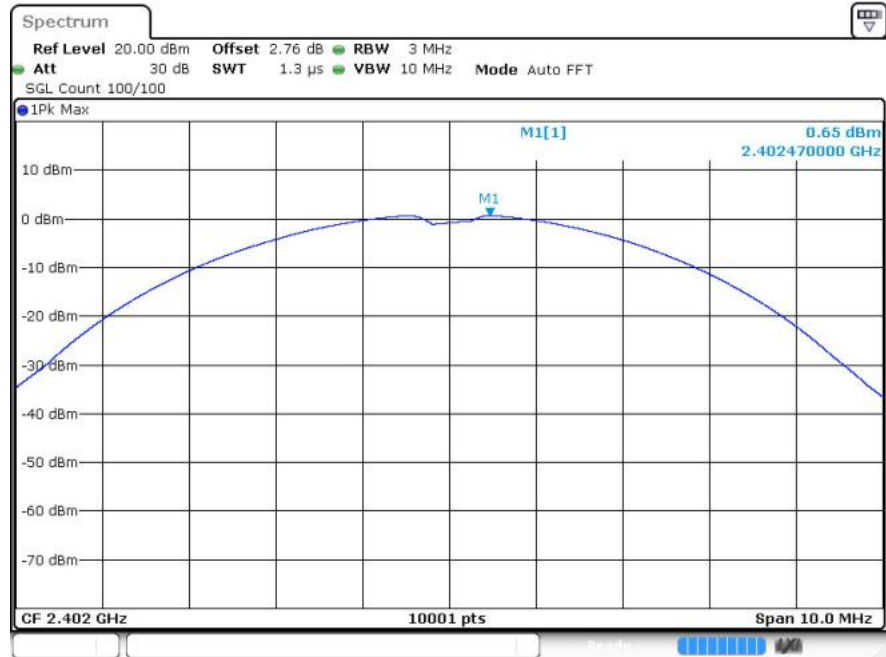
2.2 Test Graphs



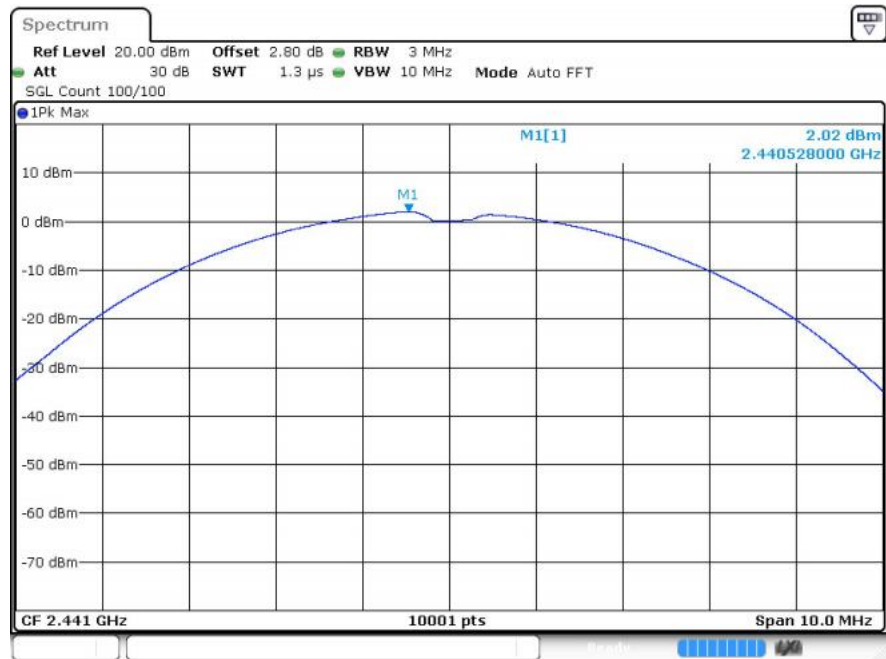
GFSK/HCH



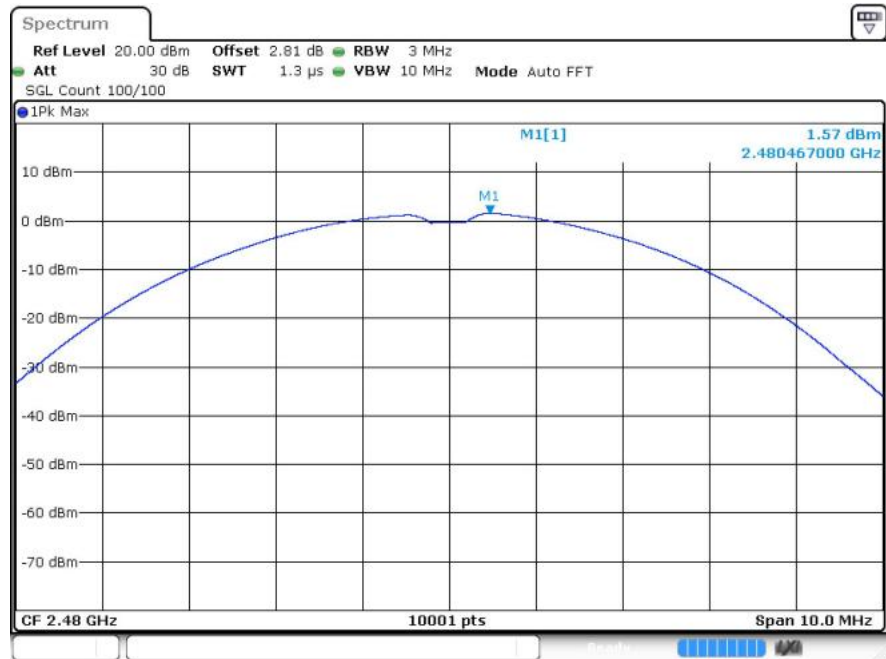
$\pi/4$ DQPSK/LCH



$\pi/4$ DQPSK/MCH



$\pi/4$ DQPSK/HCH

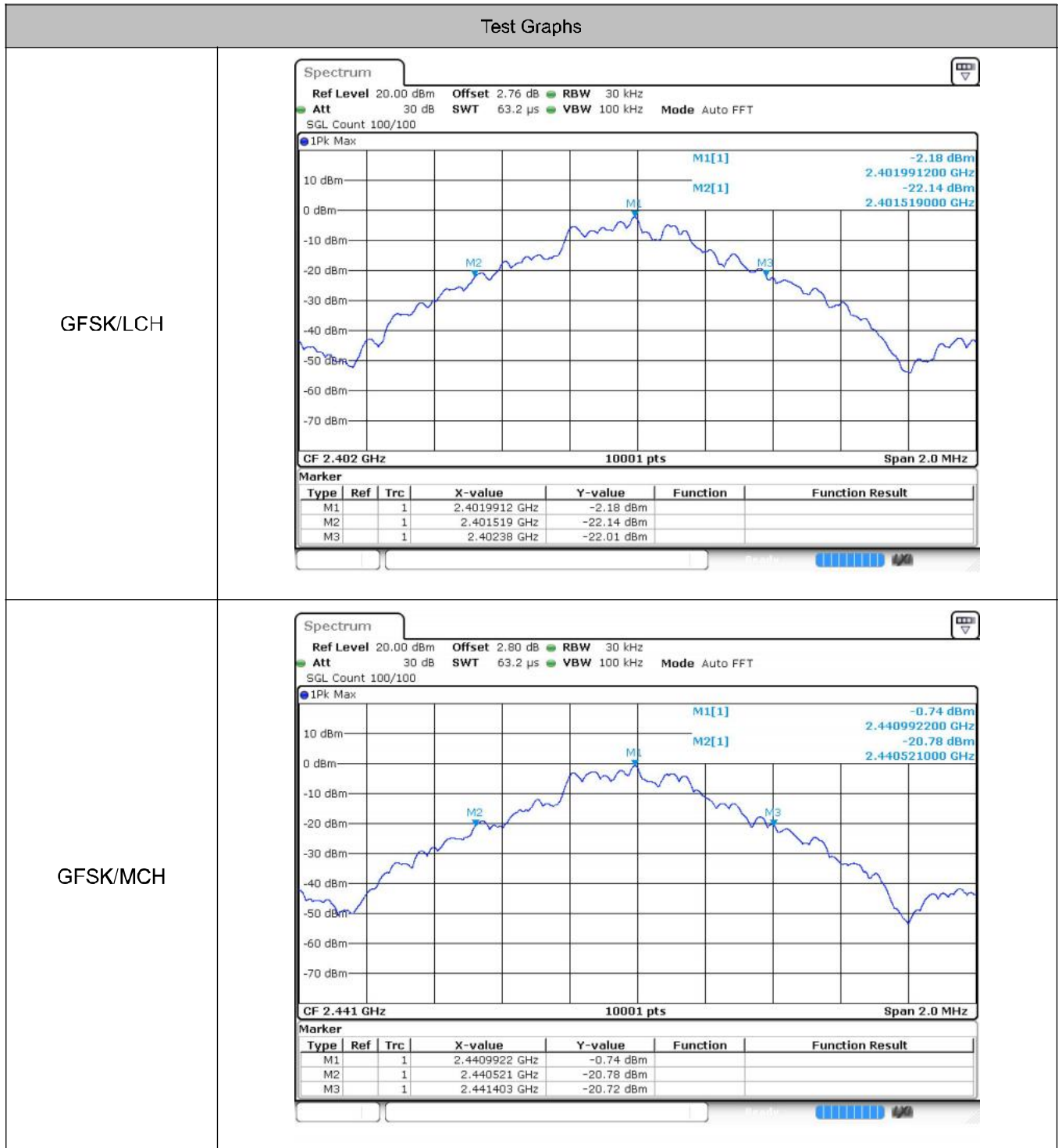


3 20dB Bandwidth

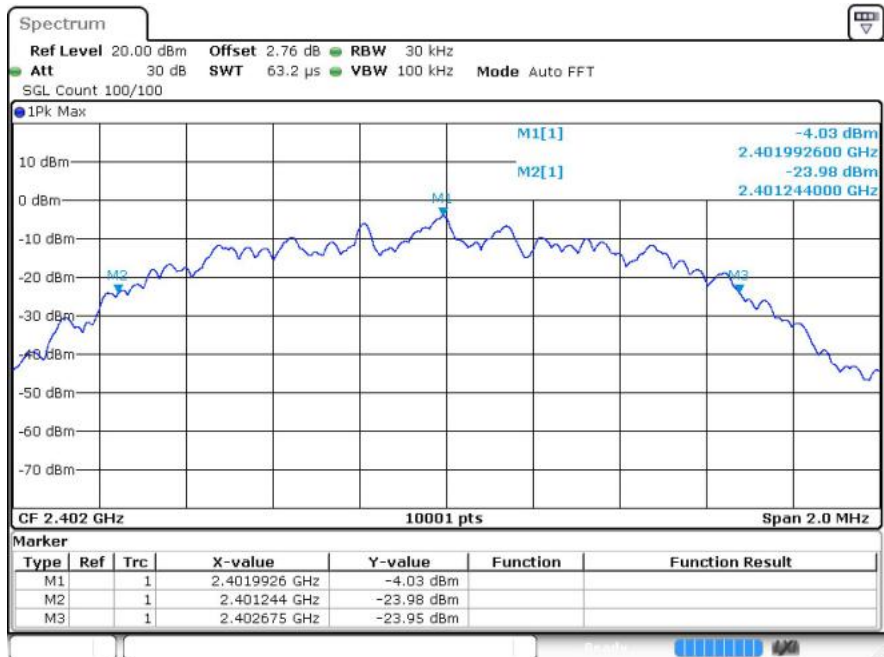
3.1 Test Result

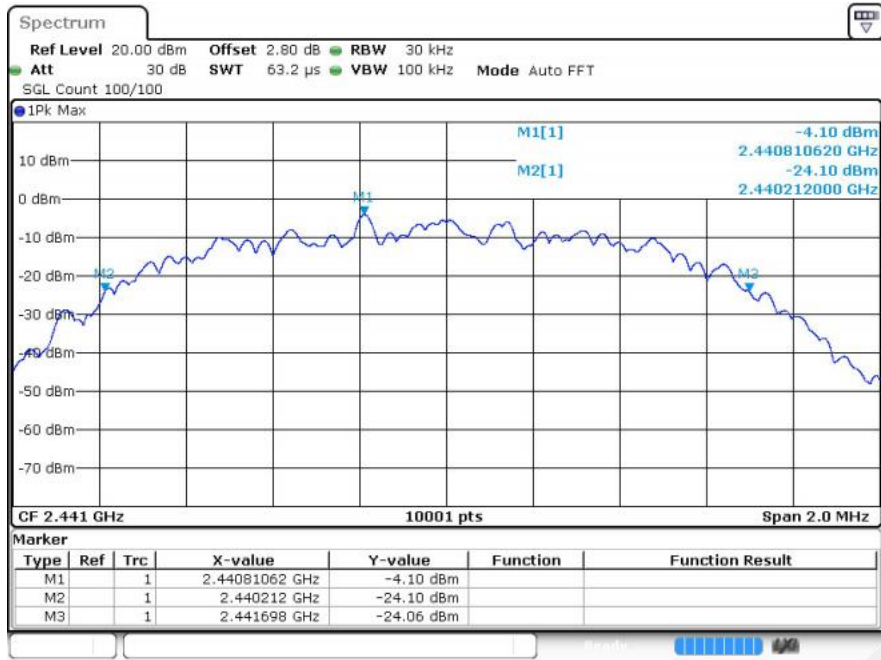
Mode	Channel	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.862	Not Specified	Pass
	MCH	0.882	Not Specified	Pass
	HCH	0.925	Not Specified	Pass
$\pi/4$ DQPSK	LCH	1.432	Not Specified	Pass
	MCH	1.486	Not Specified	Pass
	HCH	1.43	Not Specified	Pass

3.2 Test Graphs



GFSK/HCH


 π /4DQPSK/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	0.588	Pass
$\pi/4$ DQPSK	MCH	1.05	0.991	Pass

4.2 Test Graphs

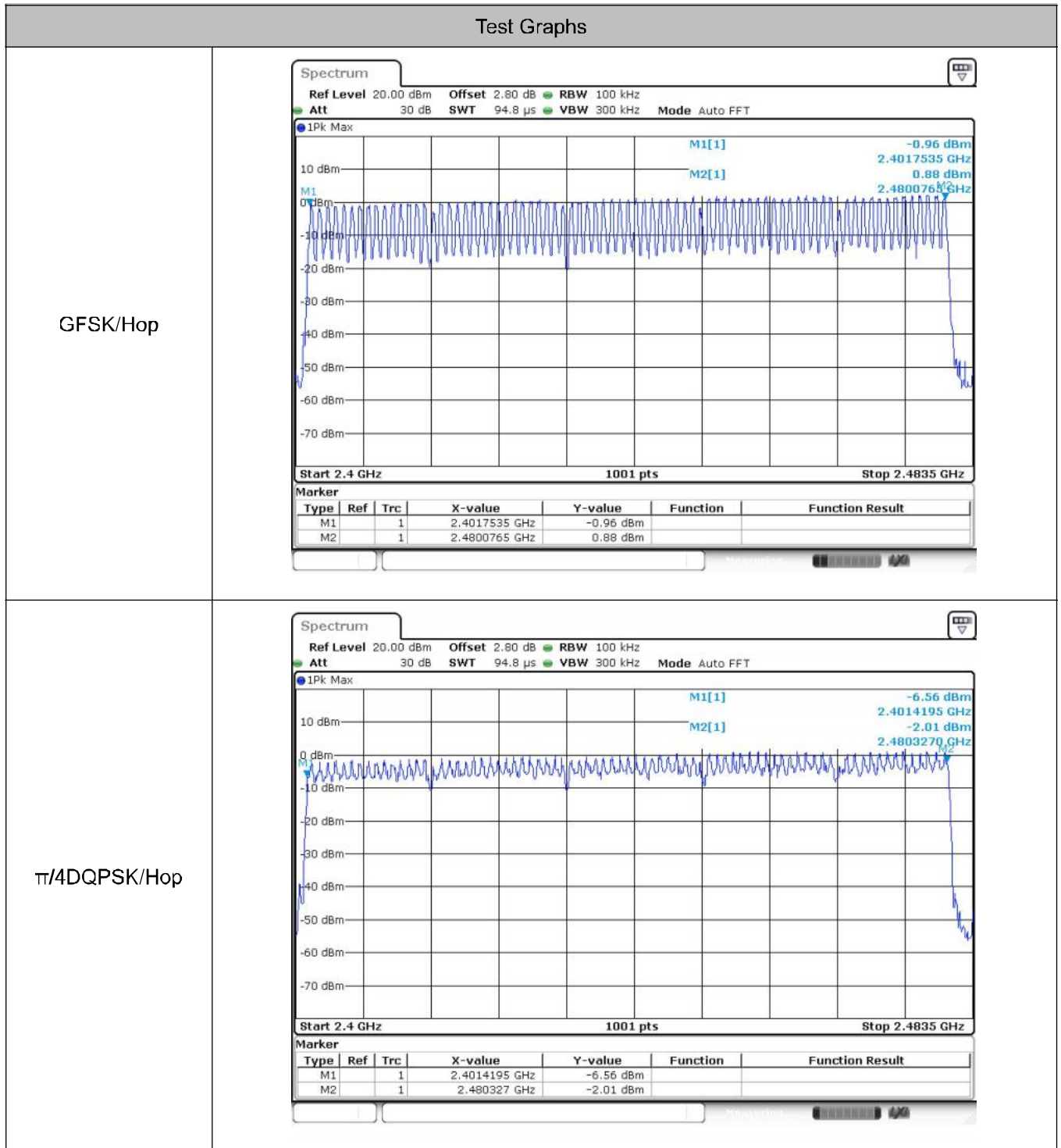


5 Hopping Channel Number

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

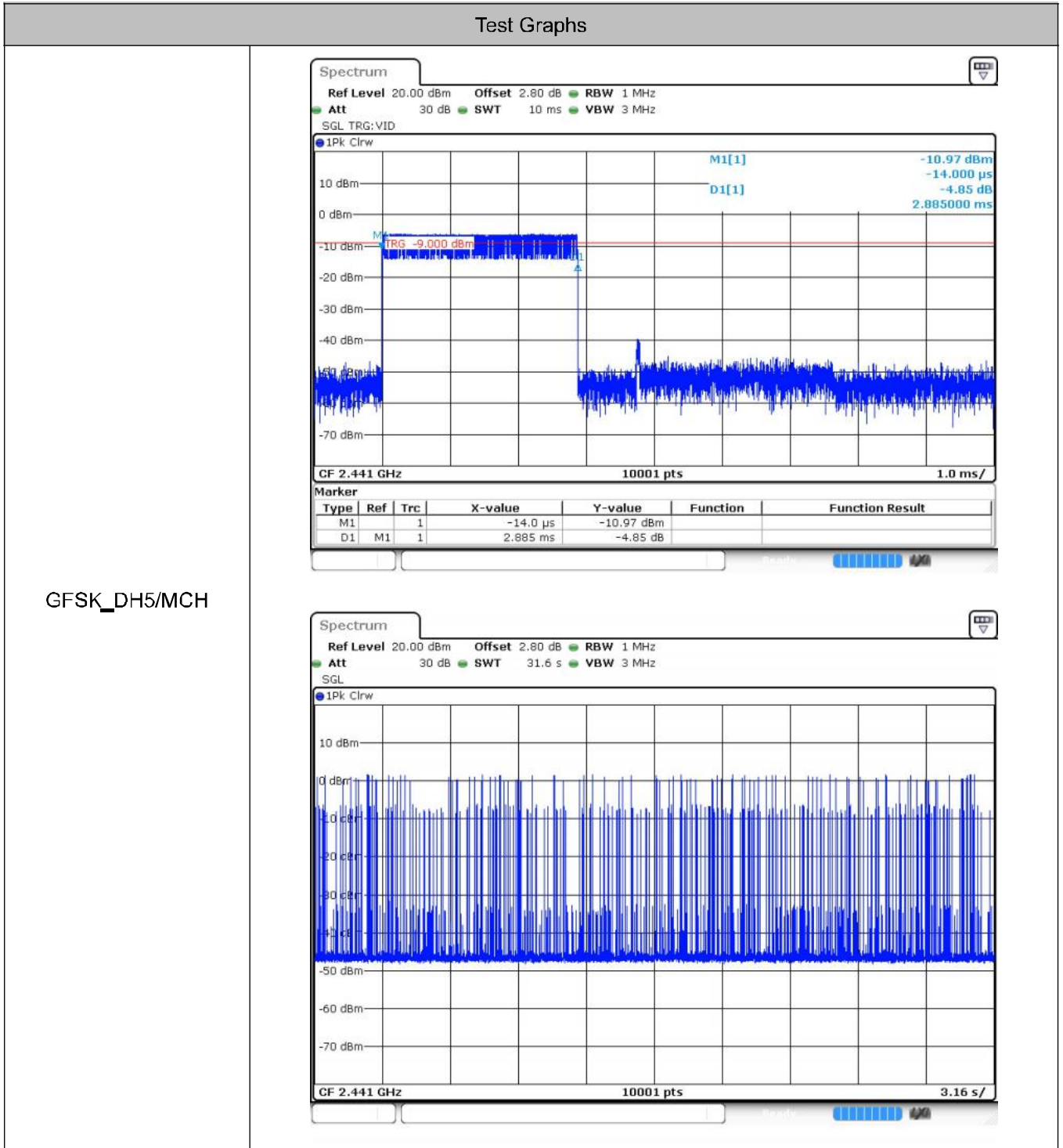


6 Dwell Time

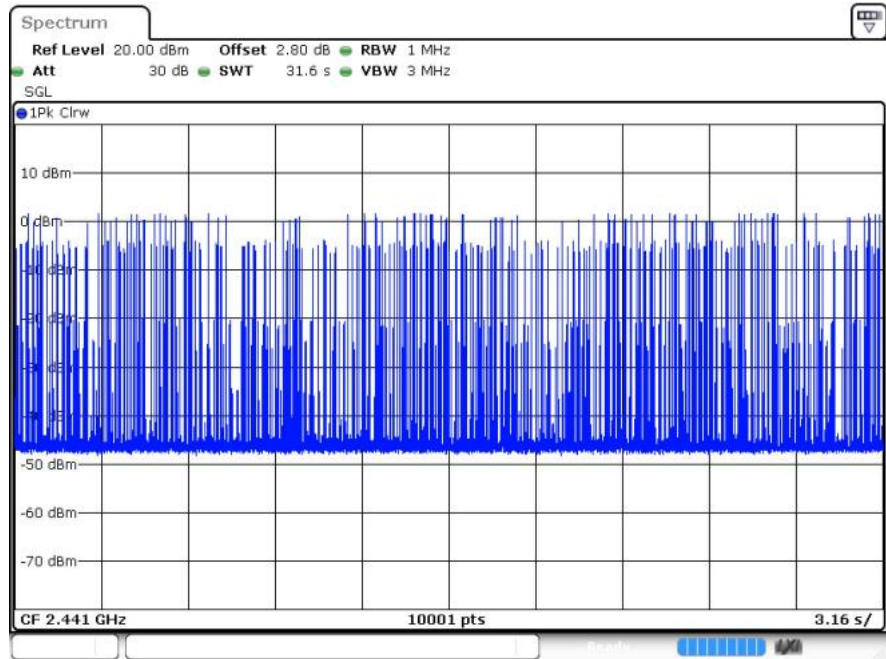
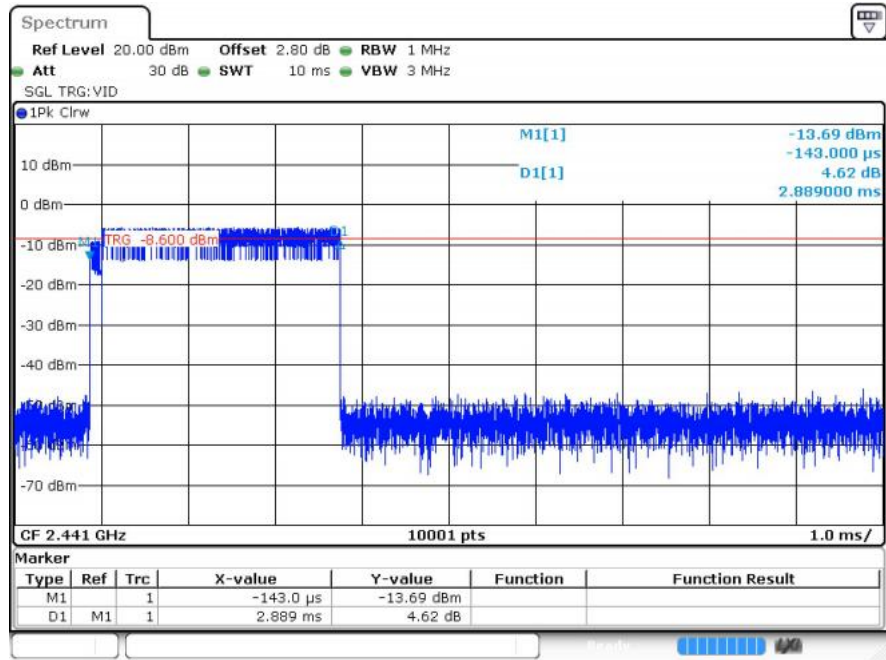
6.1 Test Result

Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[ms]	Limit [s]	Verdict
GFSK	DH5	MCH	2.885	100	288.5	0.4	Pass
$\pi/4$ DQPSK	2DH5	MCH	2.889	102	294.678	0.4	Pass

6.2 Test Graphs



$\pi/4$ DQPSK
_2DH5/MCH

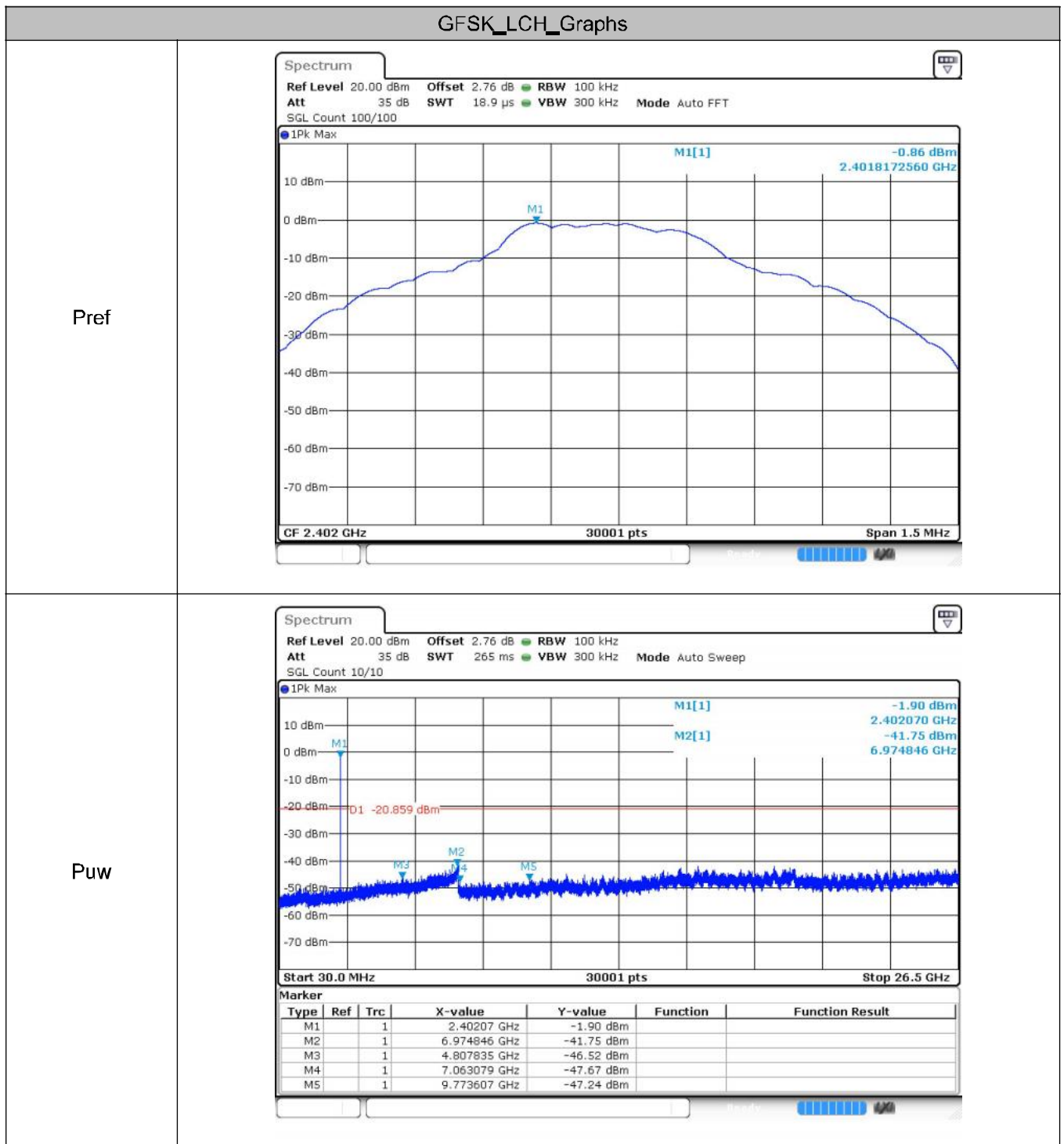


7 RF Conducted Spurious Emissions

7.1 Test Result

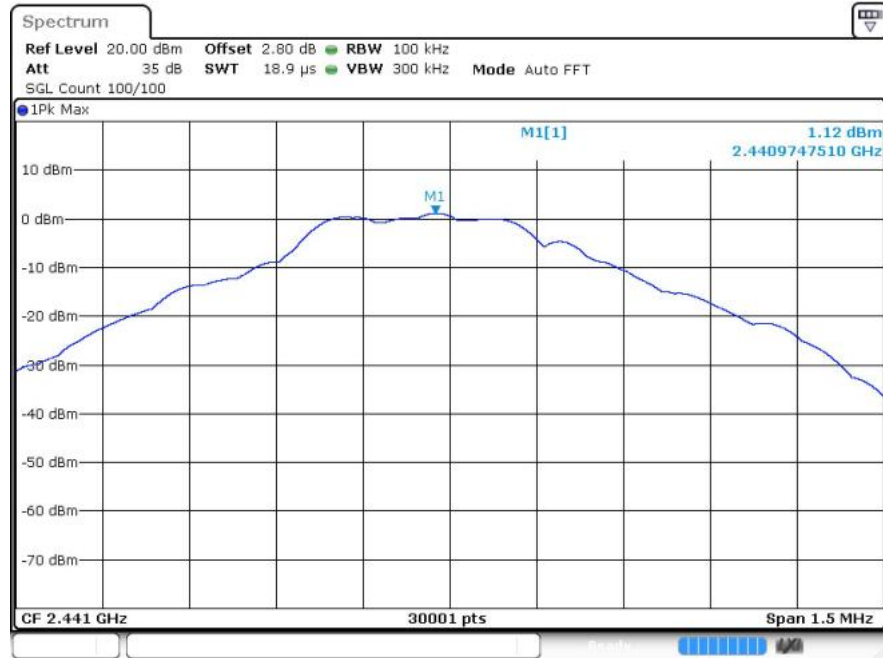
Mode	Channel	Max. Level [dBc]	Limit [dBc]	Verdict
GFSK	LCH	-40.89	-20	Pass
	MCH	-42.93	-20	Pass
	HCH	-40.68	-20	Pass
$\pi/4$ DQPSK	LCH	-40.18	-20	Pass
	MCH	-41.35	-20	Pass
	HCH	-40.17	-20	Pass

7.2 Test Graphs

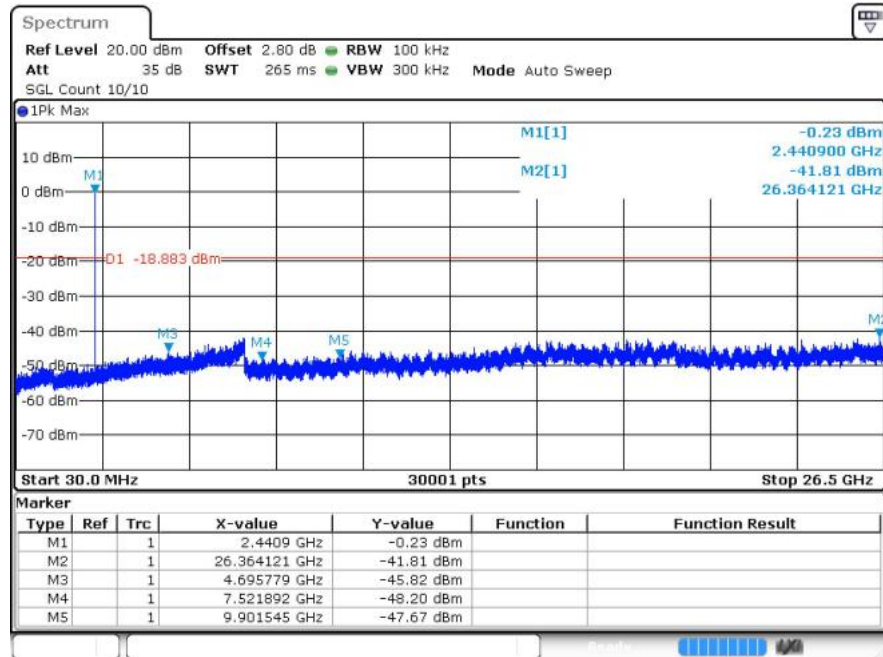


GFSK_MCH_Graphs

Pref



Puw

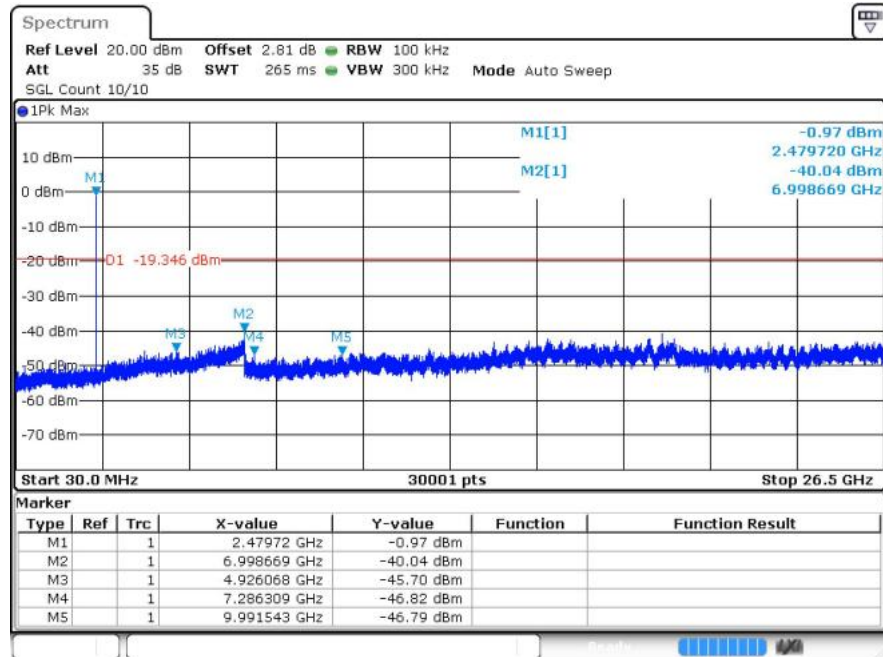


GFSK_HCH_Graphs

Pref

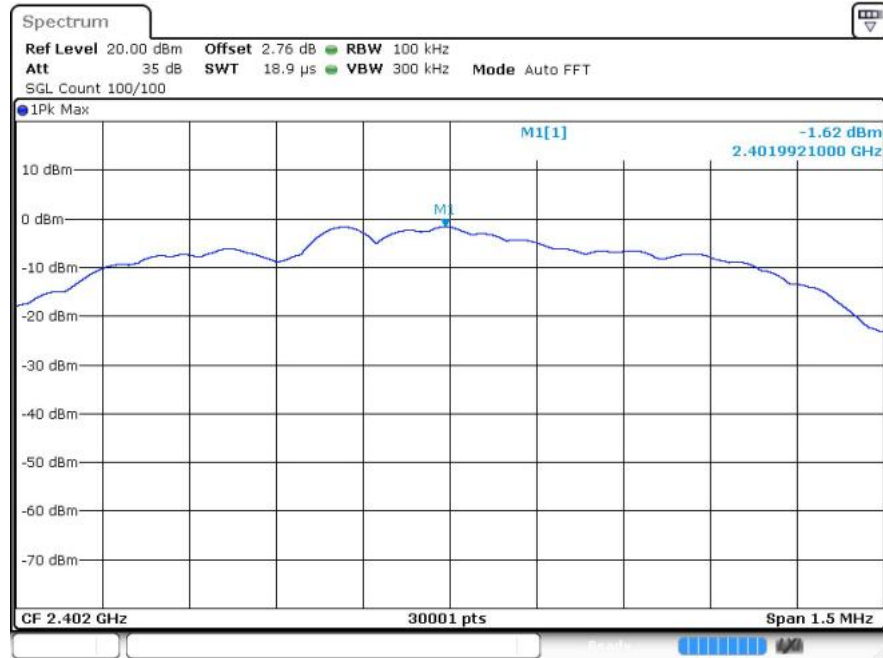


Puw

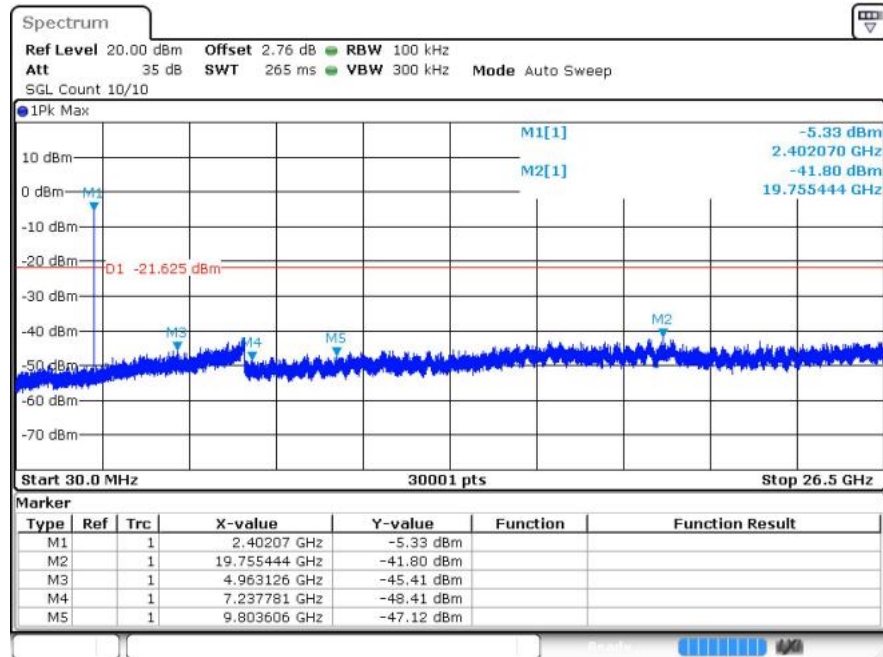


$\pi/4$ DQPSK_LCH_Graphs

Pref

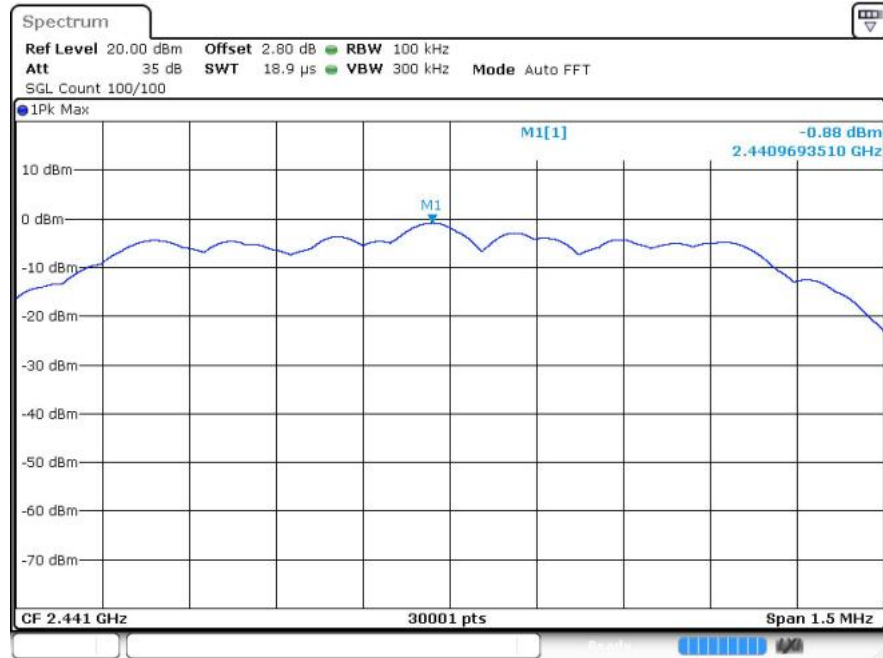


Puw

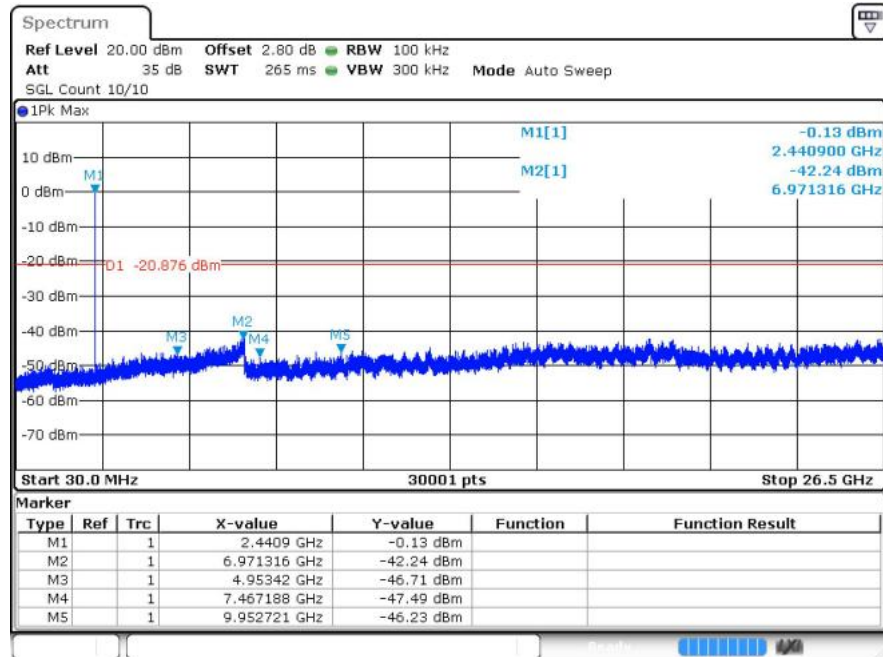


$\pi/4$ DQPSK_MCH_Graphs

Pref

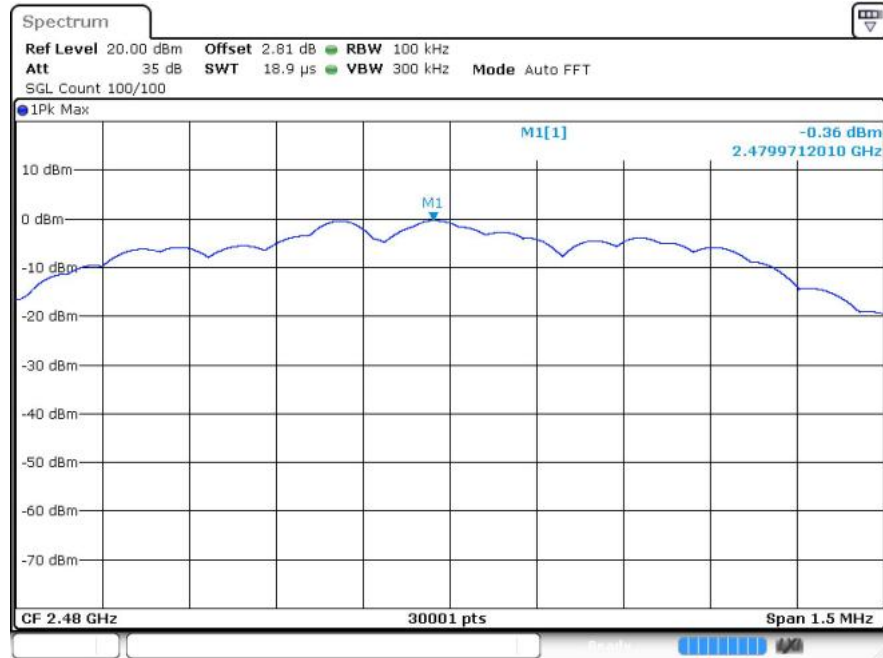


Puw

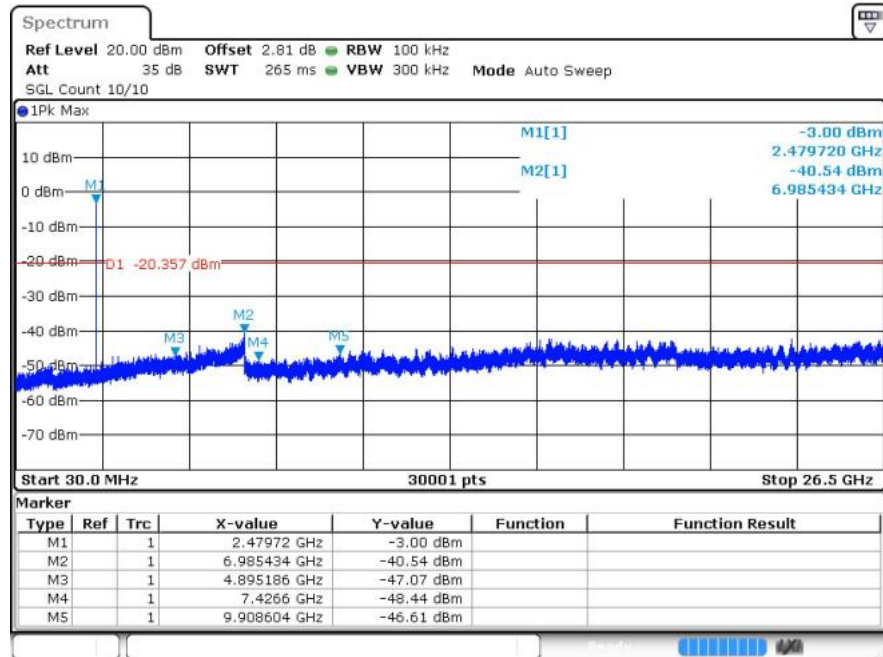


$\pi/4$ DQPSK_HCH_Graphs

Pref



Puw

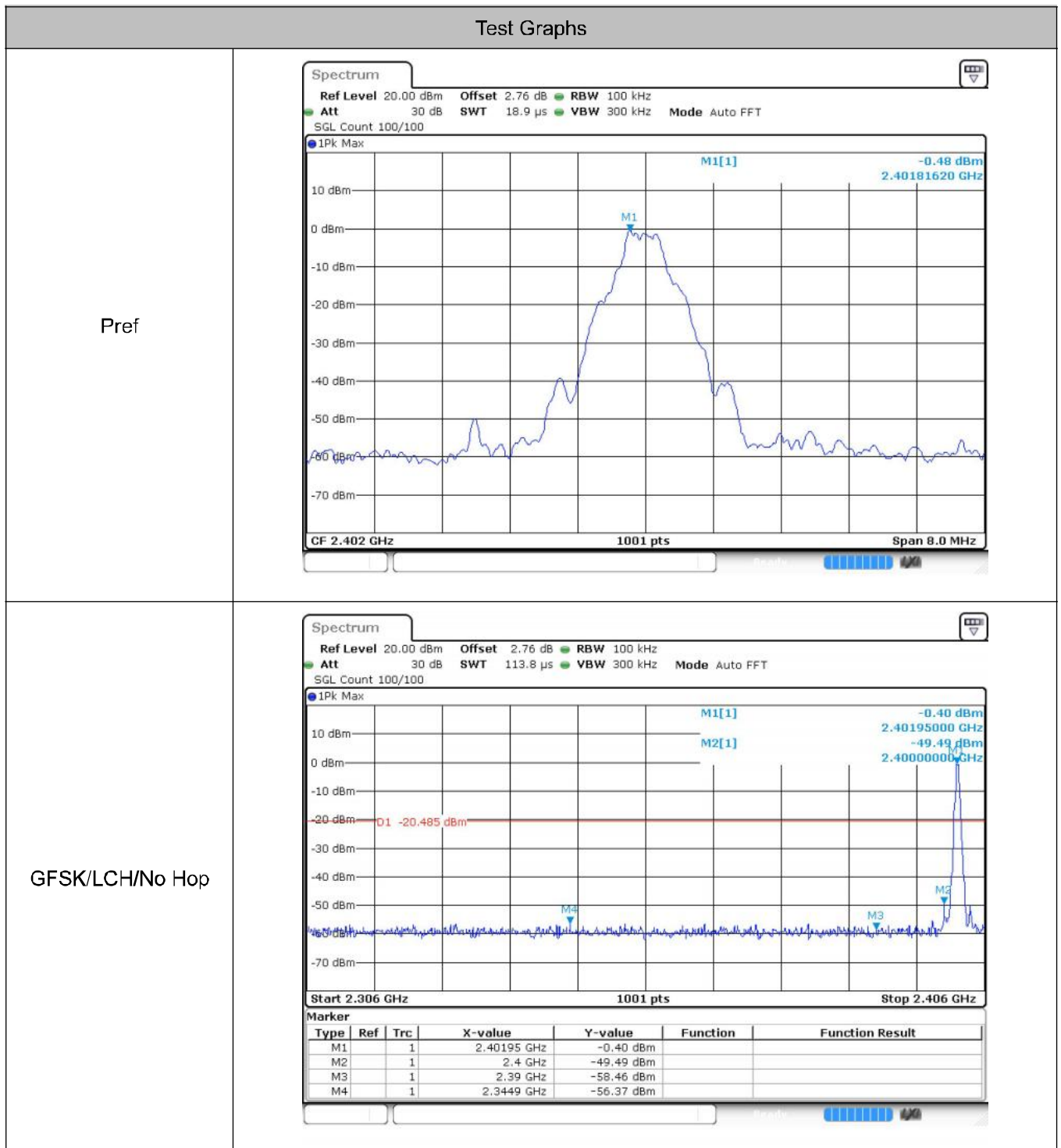


8 Band-edge for RF Conducted Emissions

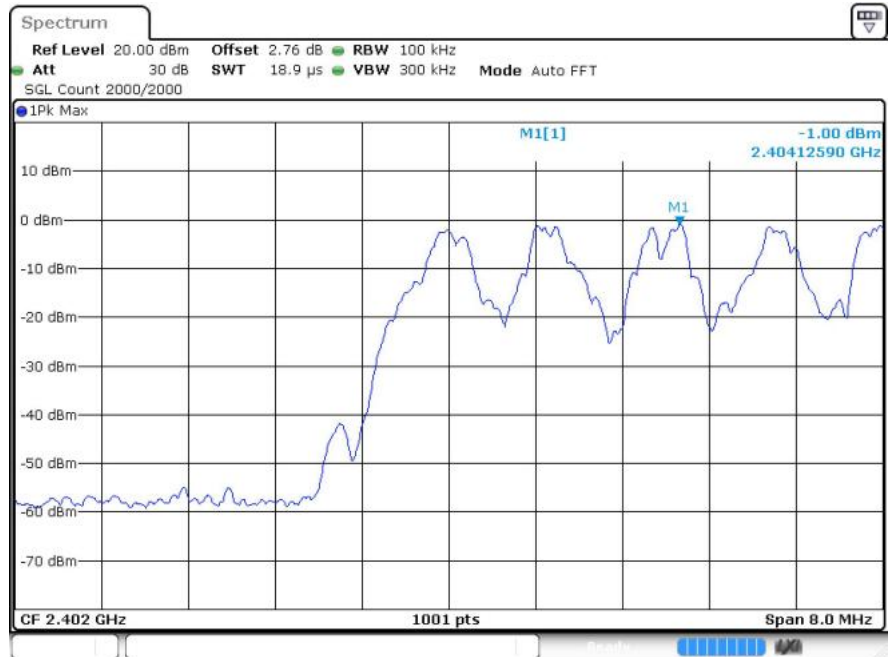
8.1 Test Result

Mode	Channel	Carrier Frequency [MHz]	Frequency Hopping	Max Spurious Level [dBc]	Limit [dBc]	Verdict
GFSK	LCH	2402	Off	-55.88	-20	Pass
			On	-52.82	-20	Pass
	HCH	2480	Off	-46.94	-20	Pass
			On	-51.75	-20	Pass
$\pi/4$ DQPSK	LCH	2402	Off	-53.27	-20	Pass
			On	-52.49	-20	Pass
	HCH	2480	Off	-45.75	-20	Pass
			On	-55.48	-20	Pass

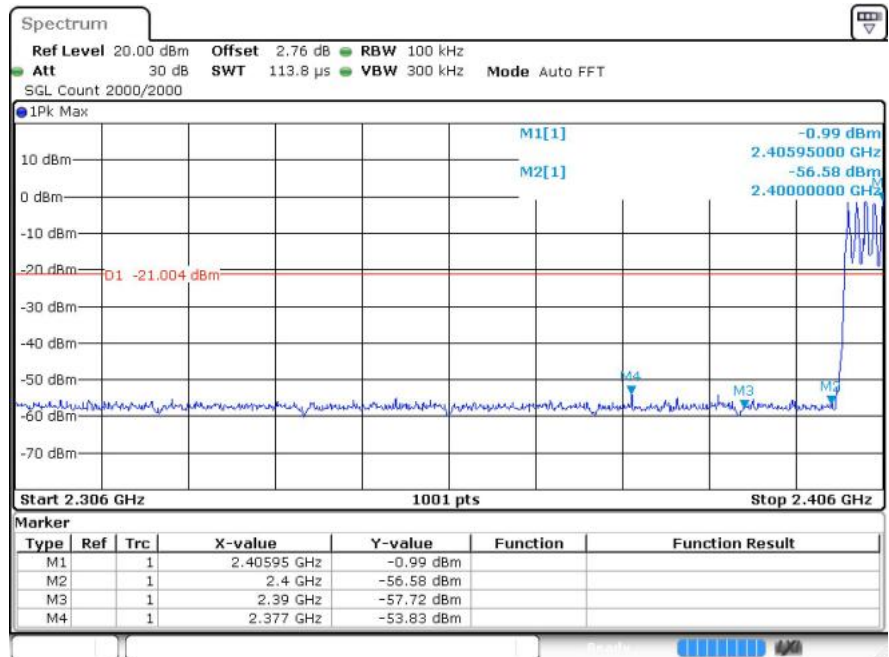
8.2 Test Graphs



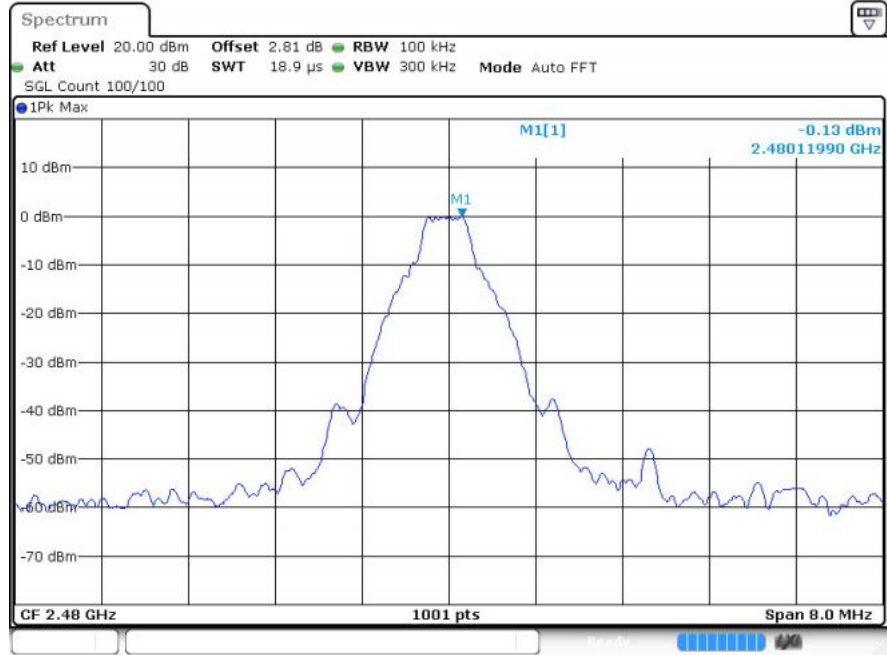
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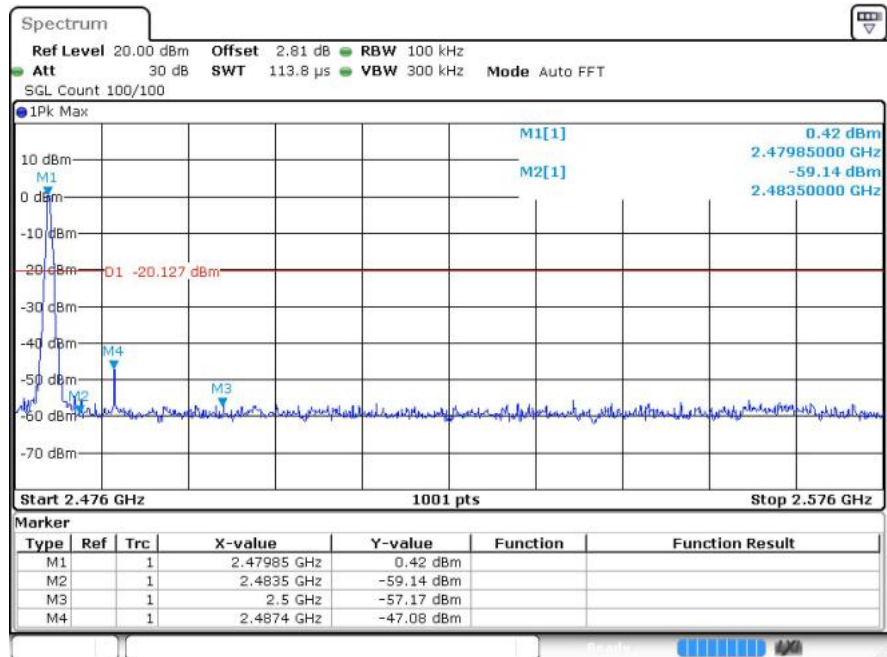
GFSK/LCH/Hop



Ref



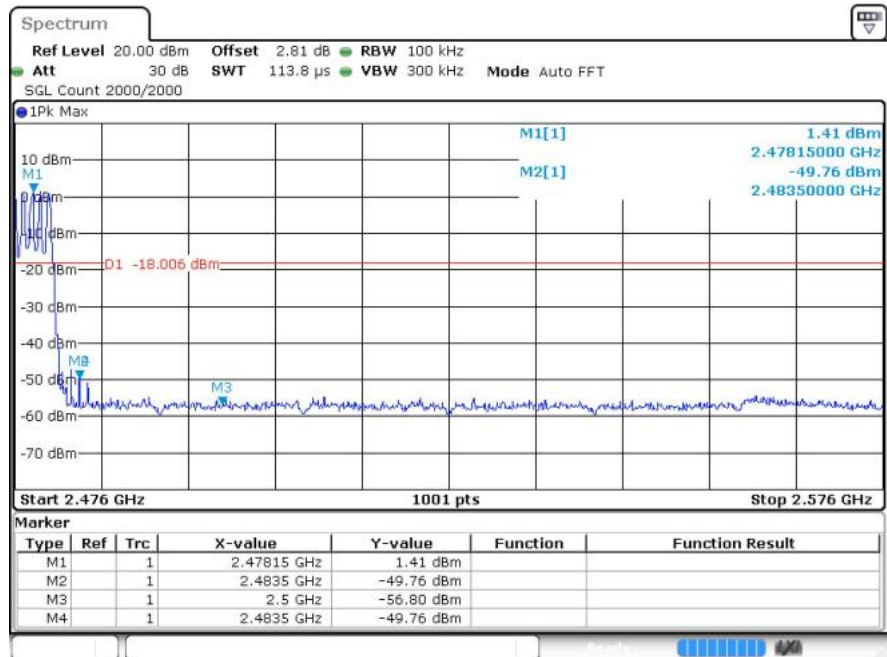
GFSK/HCH/No Hop

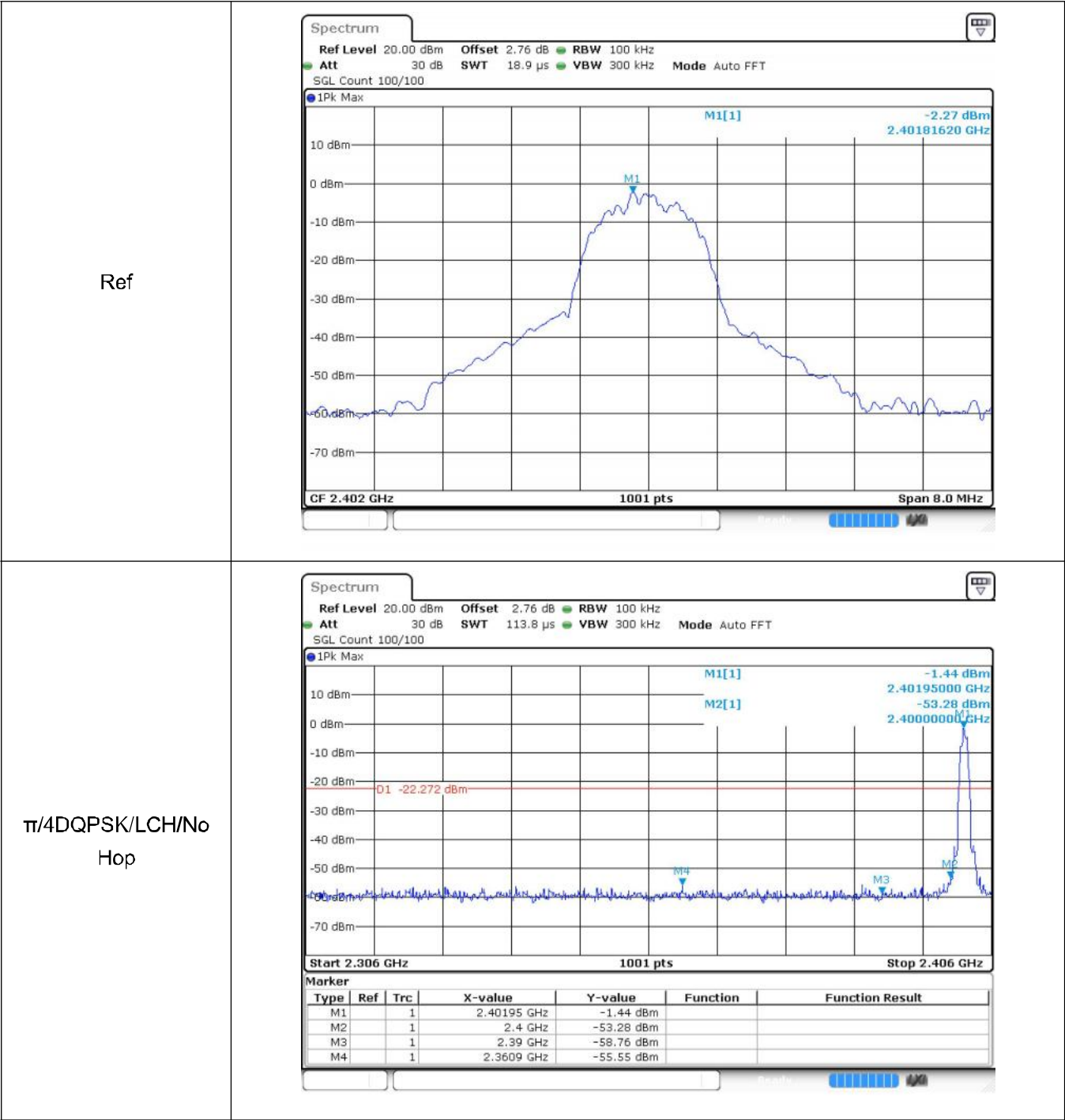


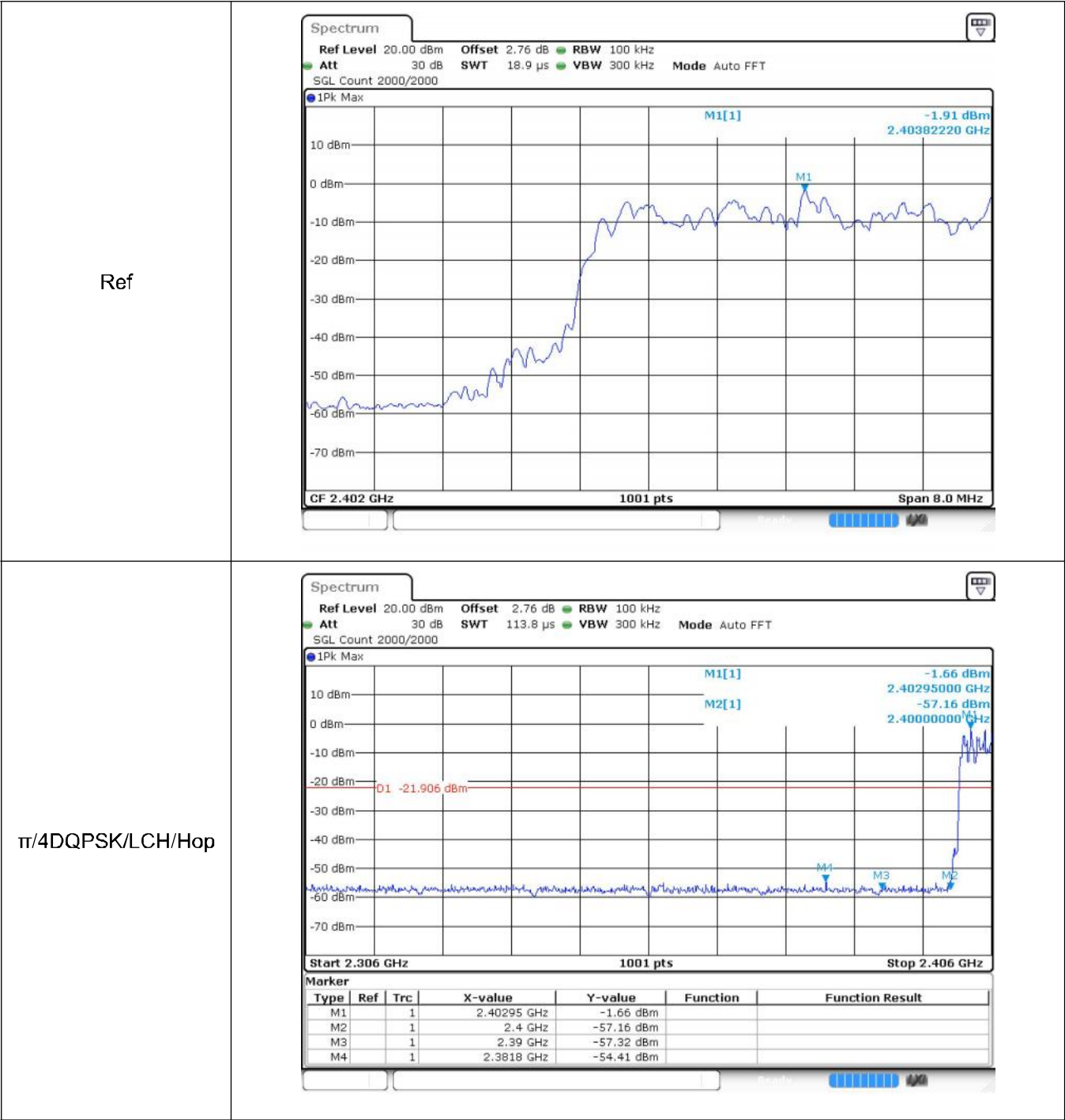
Ref.



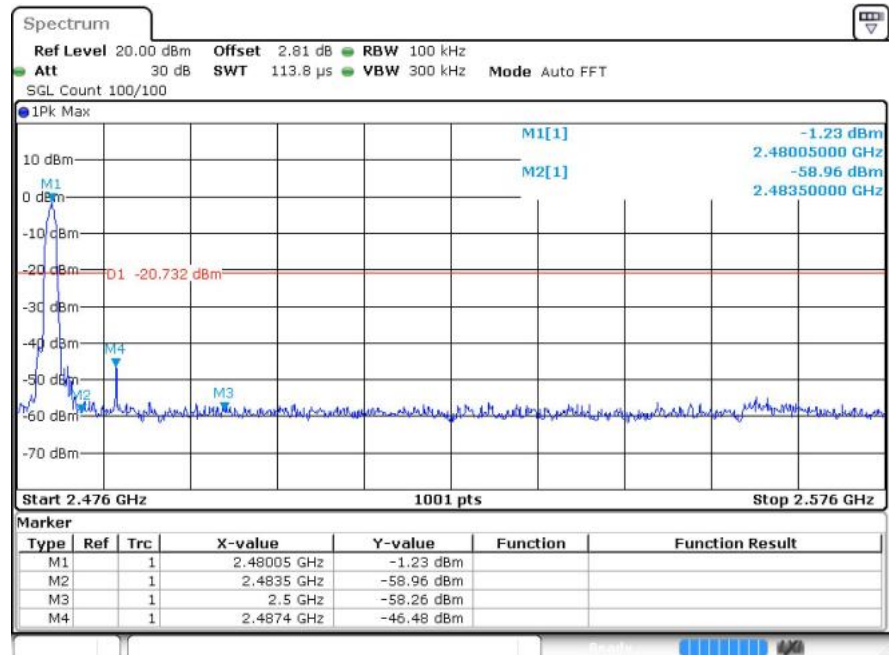
GFSK/HCH/Hop



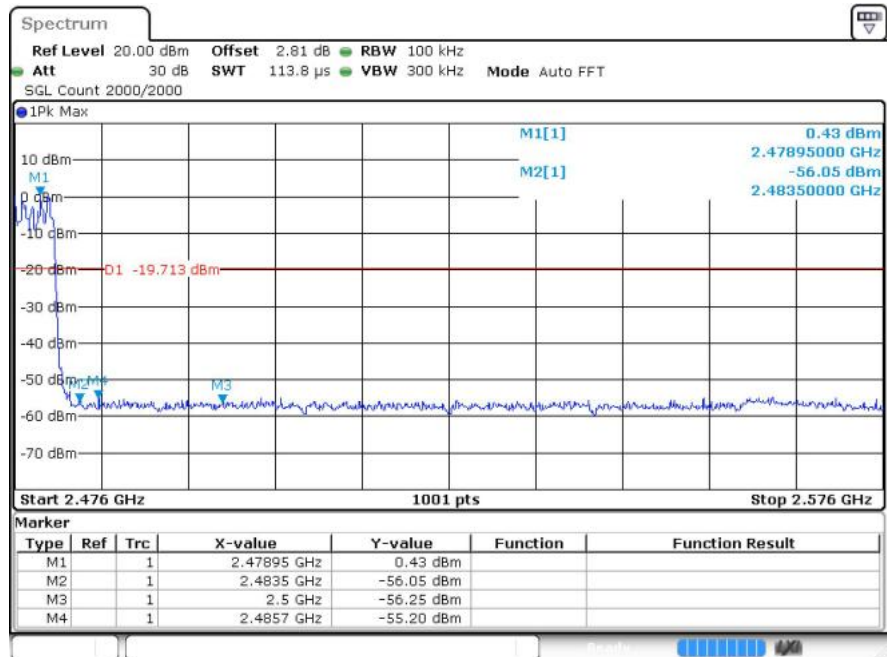




Ref


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


Ref


 $\pi/4$ DQPSK/HCH/Hop


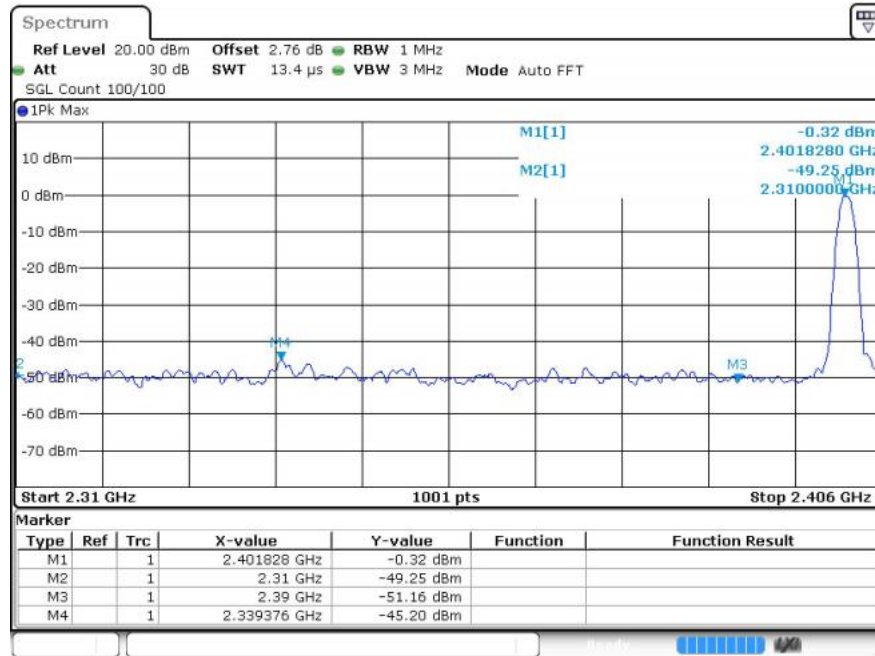
9 Restrict-band band-edge measurements

9.1 Test Result

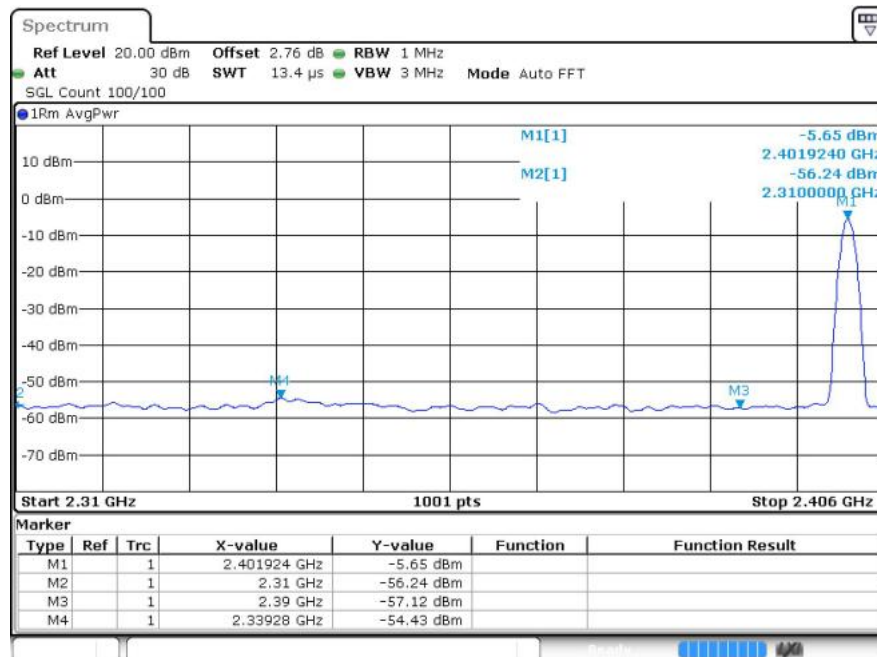
Test Mode	Hopping	Freq.	Power [dBm]	Gain	Duty Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-49.25	2	-	48.01	PEAK	74	Pass
	Off	2310.0	-56.24	2	5.06	46.08	AV	54	Pass
	Off	2339.376	-45.2	2	-	52.06	PEAK	74	Pass
	Off	2339.28	-54.43	2	5.06	47.89	AV	54	Pass
	Off	2390.0	-51.16	2	-	46.1	PEAK	74	Pass
	Off	2390.0	-57.12	2	5.06	45.2	AV	54	Pass
	Off	2483.5	-50.33	2	-	46.93	PEAK	74	Pass
	Off	2483.5	-55.92	2	5.01	46.35	AV	54	Pass
	Off	2487.376	-44.16	2	-	53.1	PEAK	74	Pass
	Off	2496.52	-55.59	2	5.01	46.68	AV	54	Pass
	Off	2500.0	-49.01	2	-	48.25	PEAK	74	Pass
	Off	2500.0	-57.4	2	5.01	44.87	AV	54	Pass
$\pi/4$ DQPSK	Off	2310.0	-48.67	2	-	48.59	PEAK	74	Pass
	Off	2310.0	-56.6	2	4.94	45.6	AV	54	Pass
	Off	2389.68	-47.35	2	-	49.91	PEAK	74	Pass
	Off	2339.28	-54.57	2	4.94	47.63	AV	54	Pass
	Off	2390.0	-47.76	2	-	49.5	PEAK	74	Pass
	Off	2390.0	-56.49	2	4.94	45.71	AV	54	Pass
	Off	2483.5	-48.15	2	-	49.11	PEAK	74	Pass
	Off	2483.5	-56.78	2	4.95	45.43	AV	54	Pass
	Off	2493.4	-43.78	2	-	53.48	PEAK	74	Pass
	Off	2487.568	-55.46	2	4.95	46.75	AV	54	Pass
	Off	2500.0	-47.33	2	-	49.93	PEAK	74	Pass
	Off	2500.0	-56.92	2	4.95	45.29	AV	54	Pass

9.2 Test Graphs

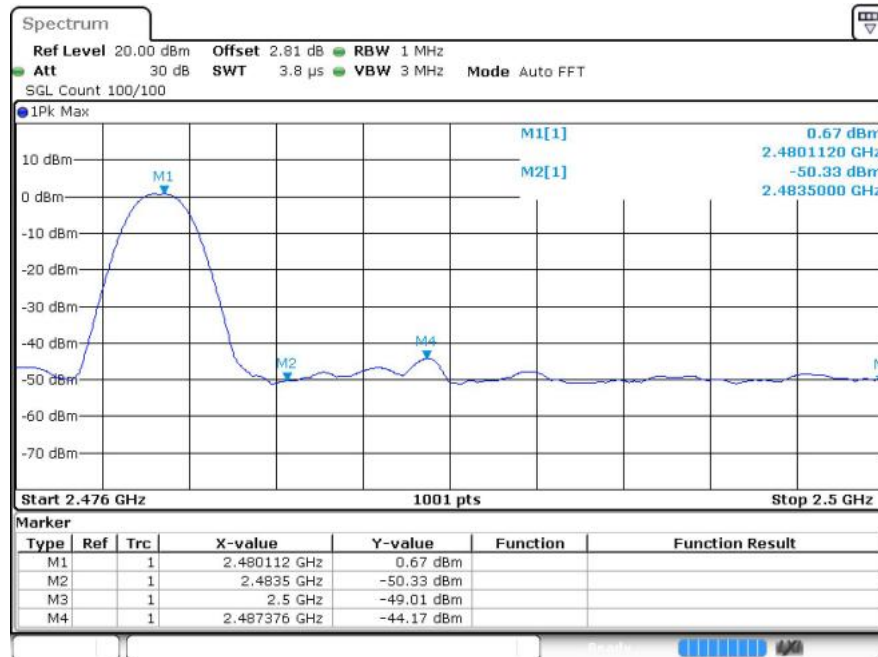
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



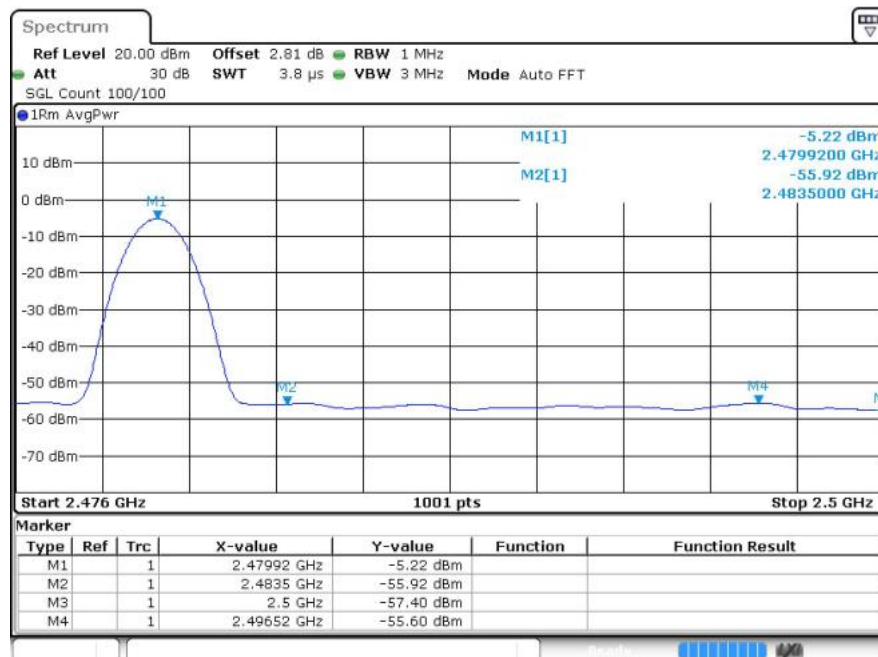
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)



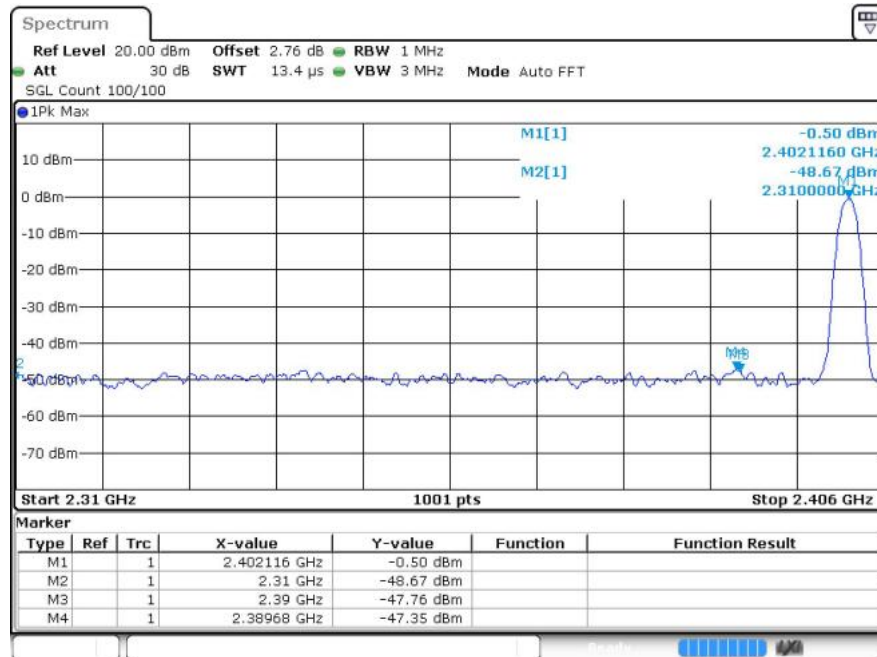
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)



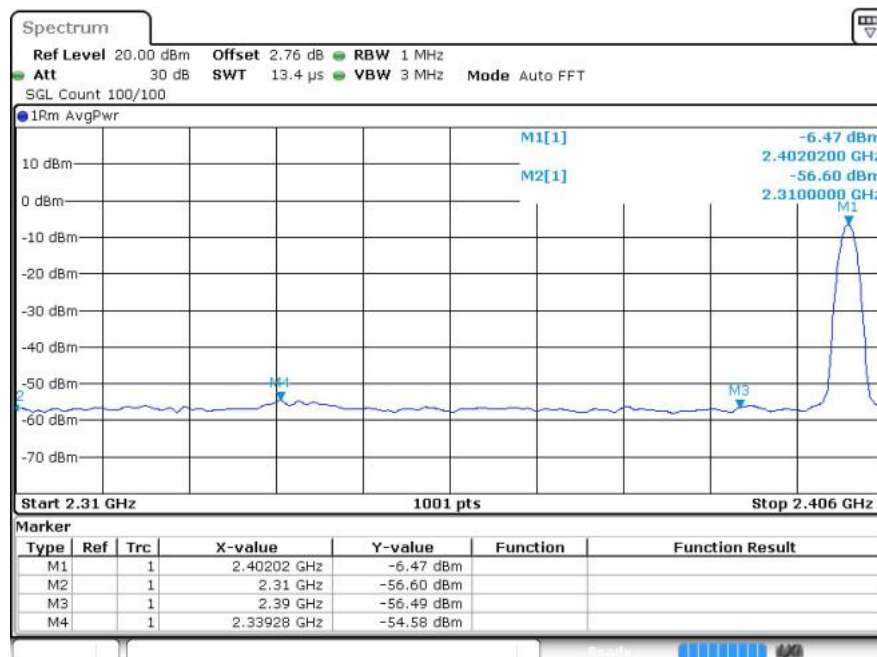
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)



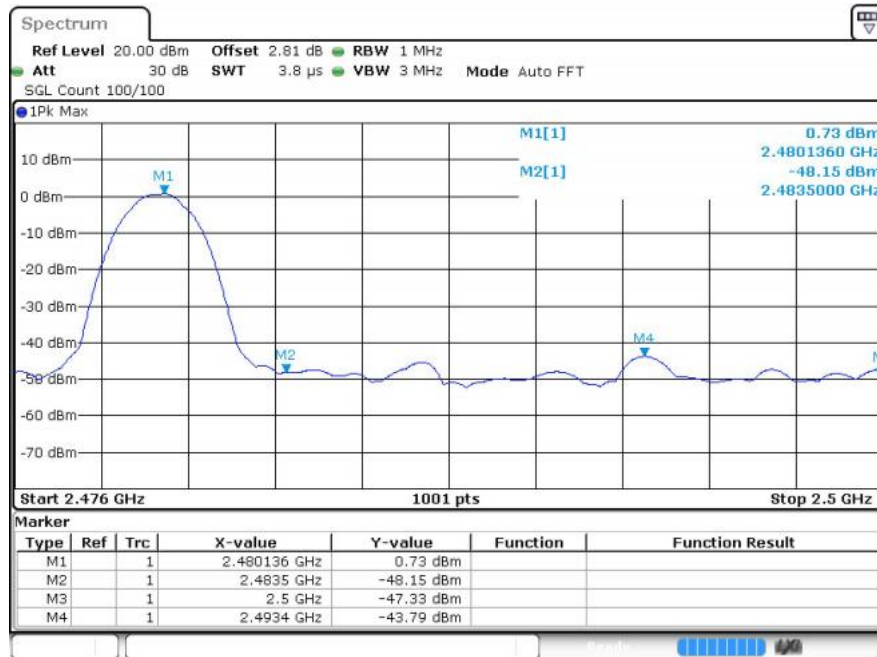
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (Low Channel)



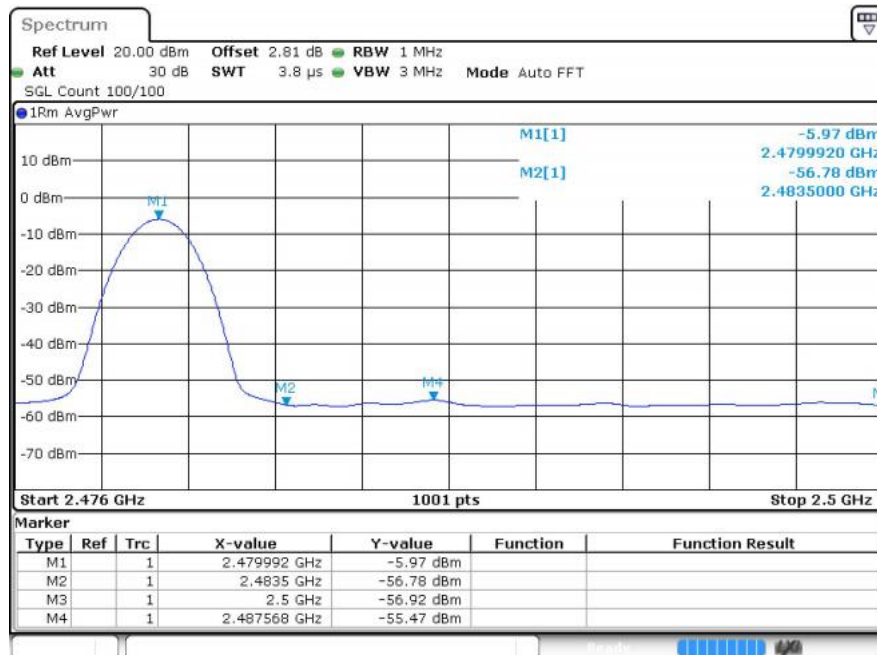
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (Low Channel)



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—