



Appendix A

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

Product Name: Bluetooth Headphone

Trade Mark: LBZJ

Test Model: E-Buds Air

Environmental Conditions

Temperature:	20.6℃
Relative Humidity:	51.3%
ATM Pressure:	101Kpa
Test Engineer:	Simba Huang
Supervised by:	Seal Chen



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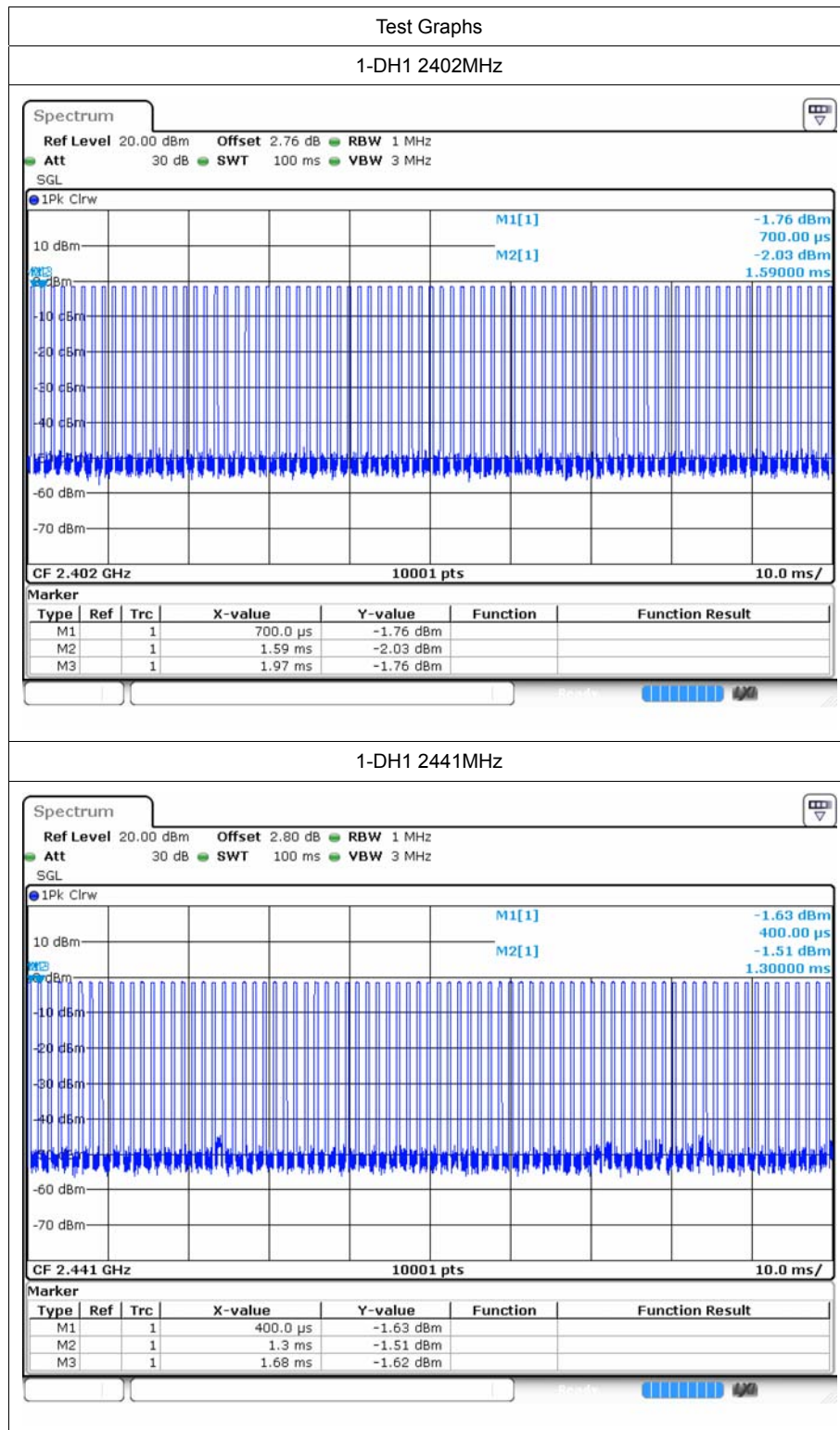
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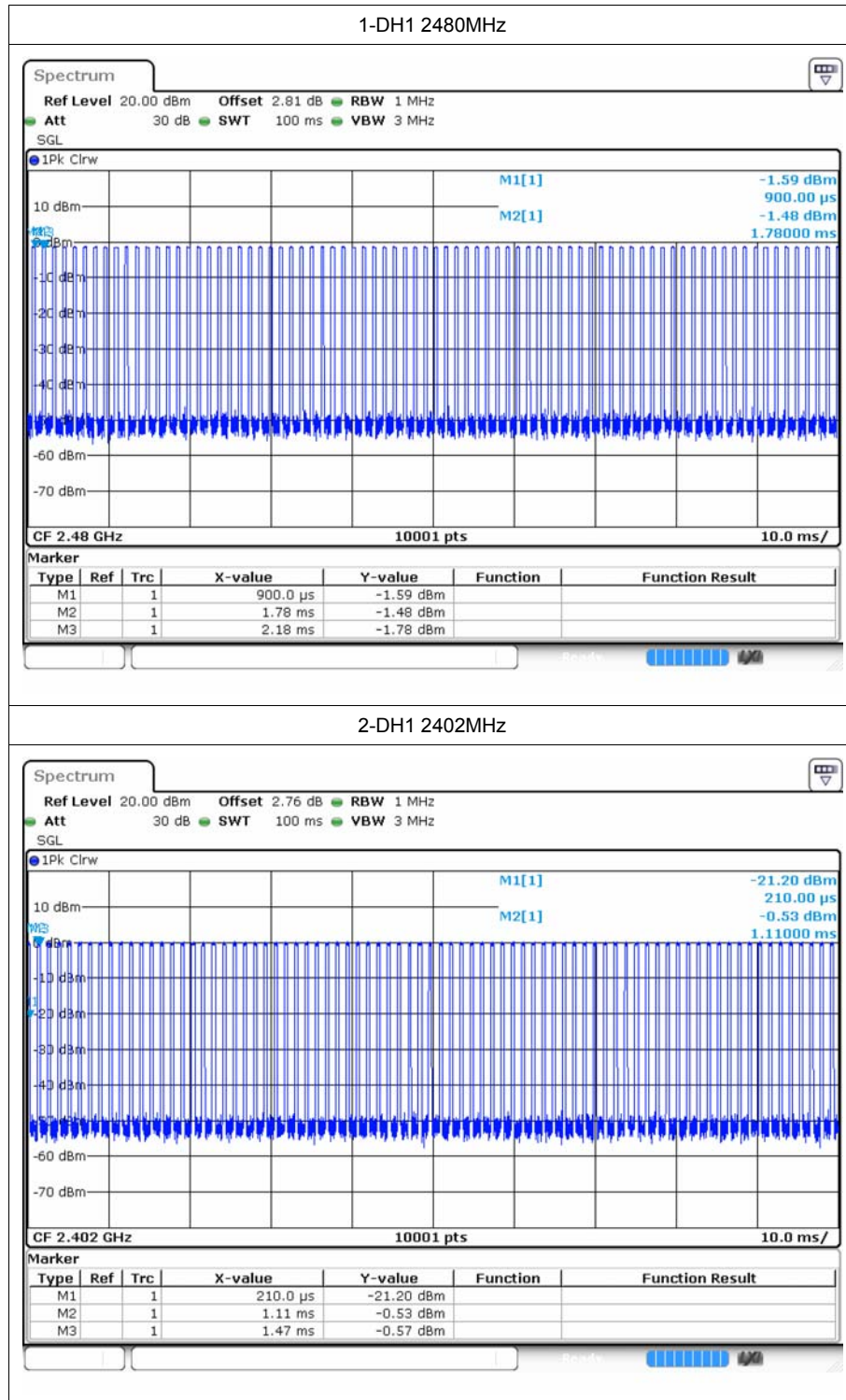
1 Duty Cycle

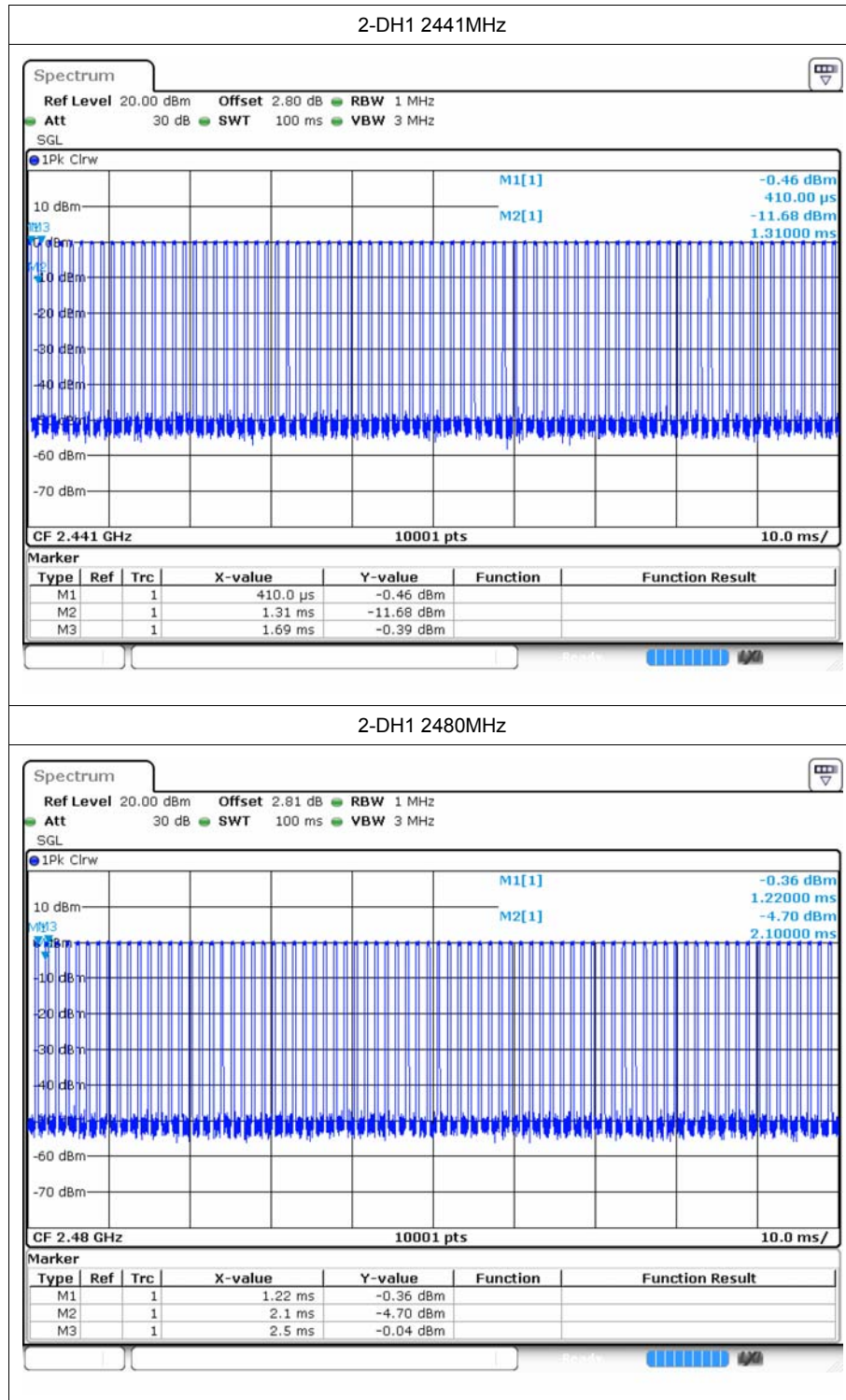
1.1 Test Result

Mode	Frequency (MHz)	Duty Cycle (%)	1/T (kHz)
1-DH1	2402	31.17	2.63
1-DH1	2441	31.11	2.63
1-DH1	2480	30.94	2.5
2-DH1	2402	30.96	2.78
2-DH1	2441	30.96	2.63
2-DH1	2480	30.71	2.5

1.2 Test Graphs







2 Maximum Conducted Peak Output Power

2.1 Test Result

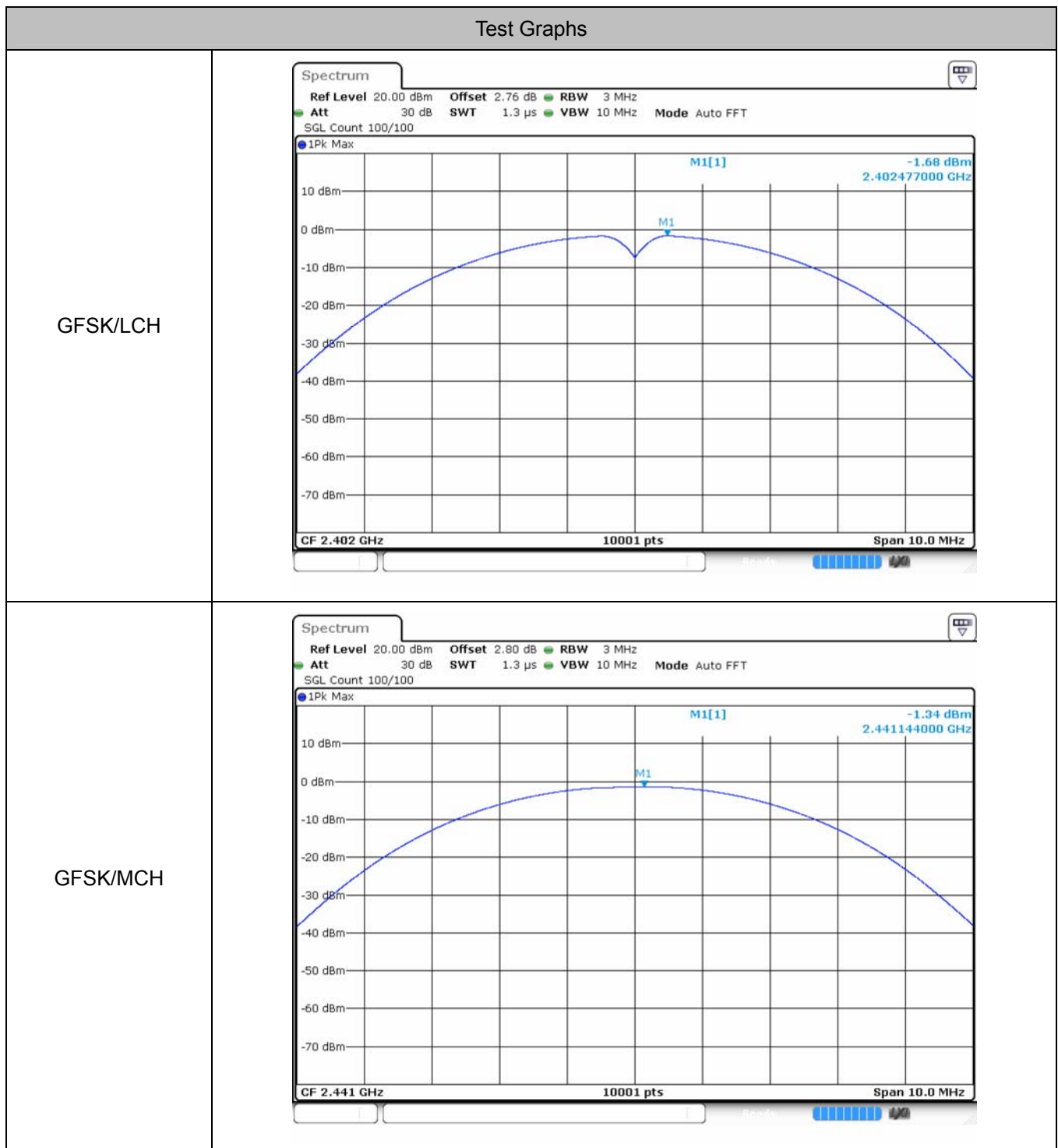
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-1.68	19	Pass
	MCH	-1.34	19	Pass
	HCH	-1.52	19	Pass
$\pi/4$ DQPSK	LCH	0.51	19	Pass
	MCH	0.06	19	Pass
	HCH	0.52	19	Pass

Note:

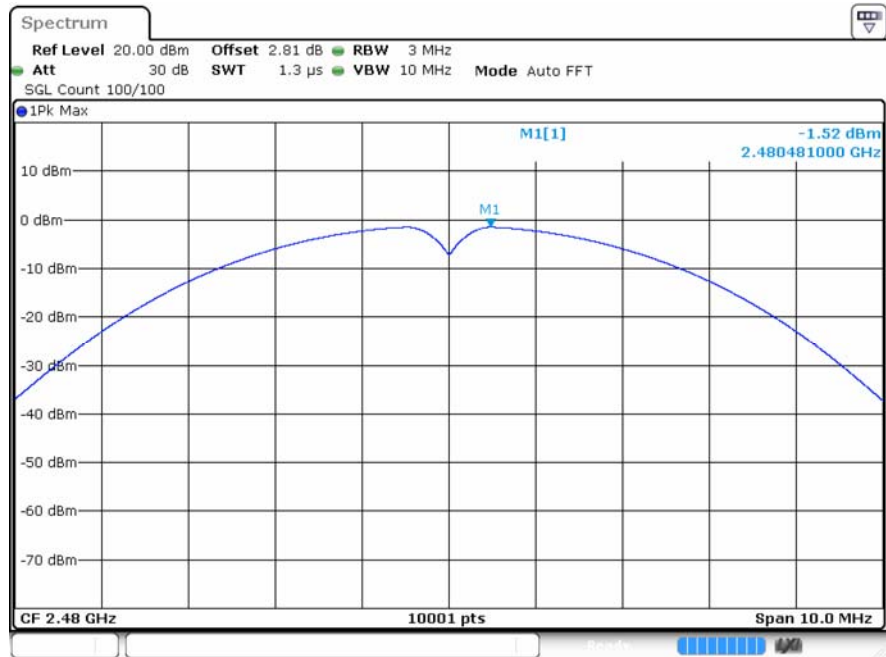
Antenna gain=8 dBi

Limit=21-(8-6) dBm=19dBm

2.2 Test Graphs



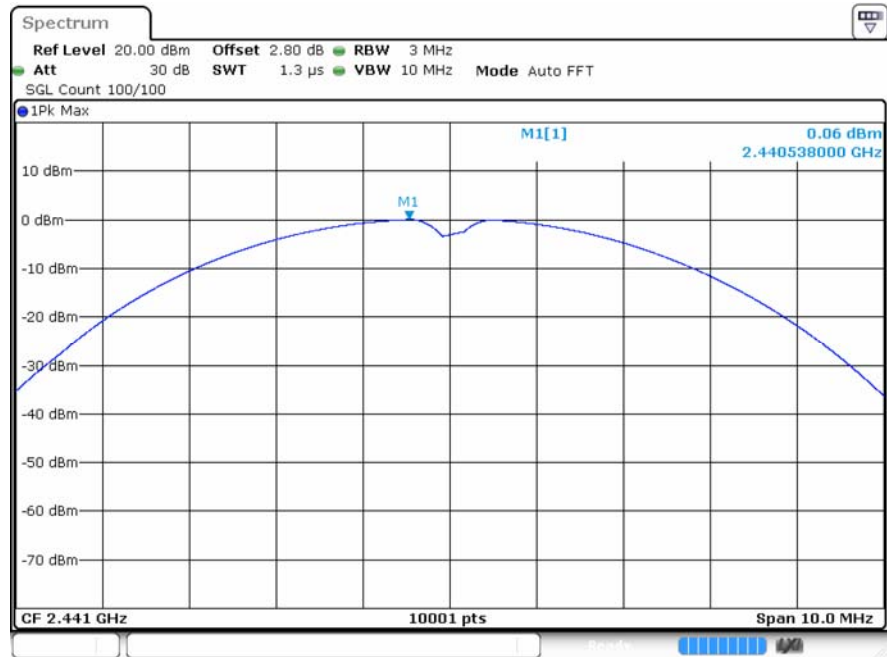
GFSK/HCH



$\pi/4$ DQPSK/LCH



$\pi/4$ DQPSK/MCH



$\pi/4$ DQPSK/HCH

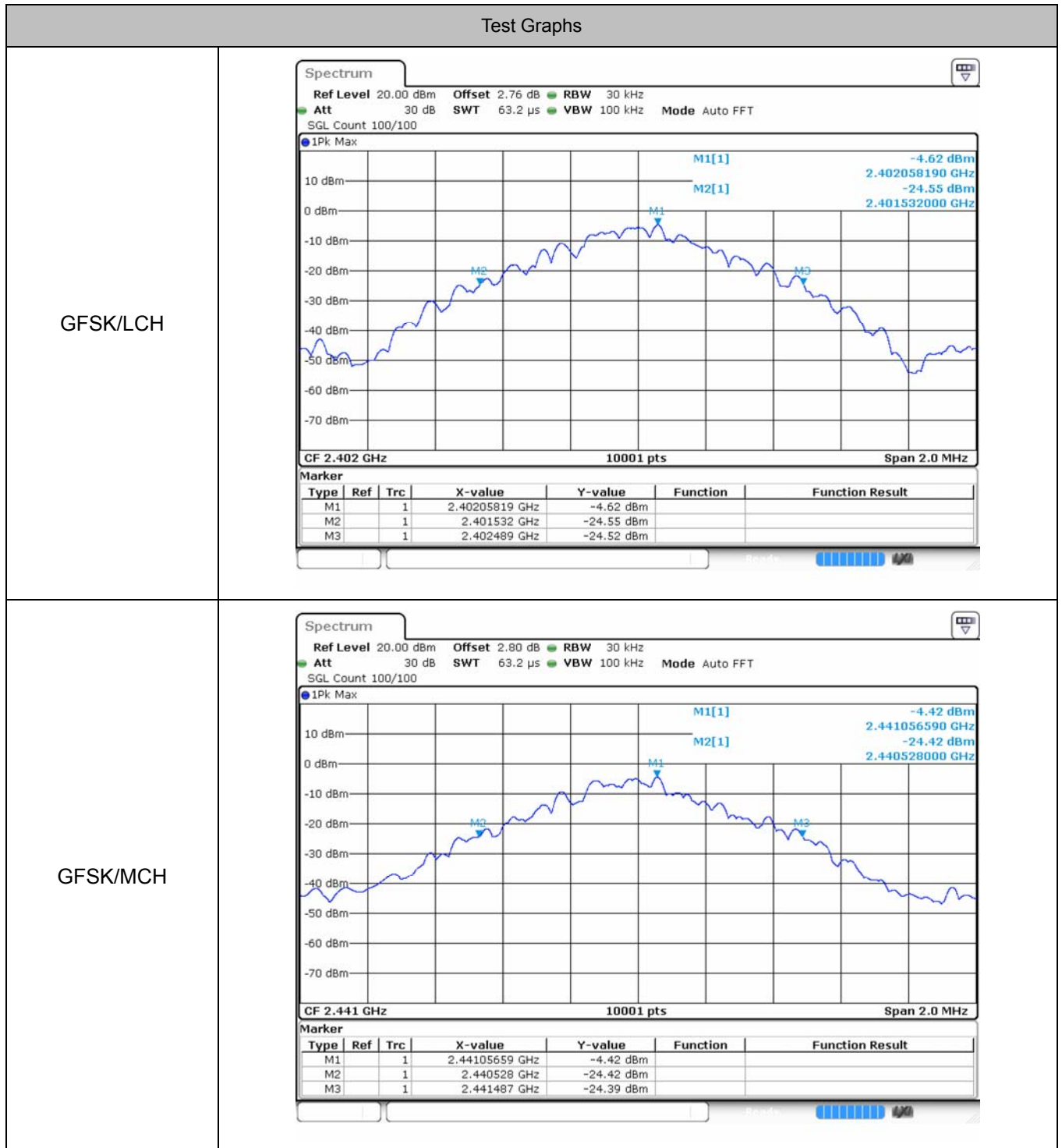


3 20dB Bandwidth

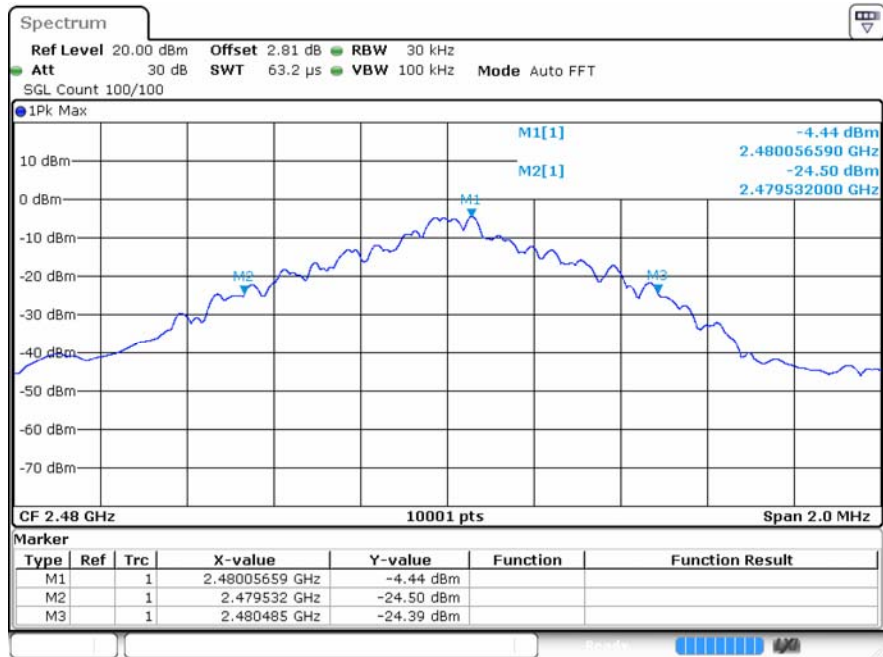
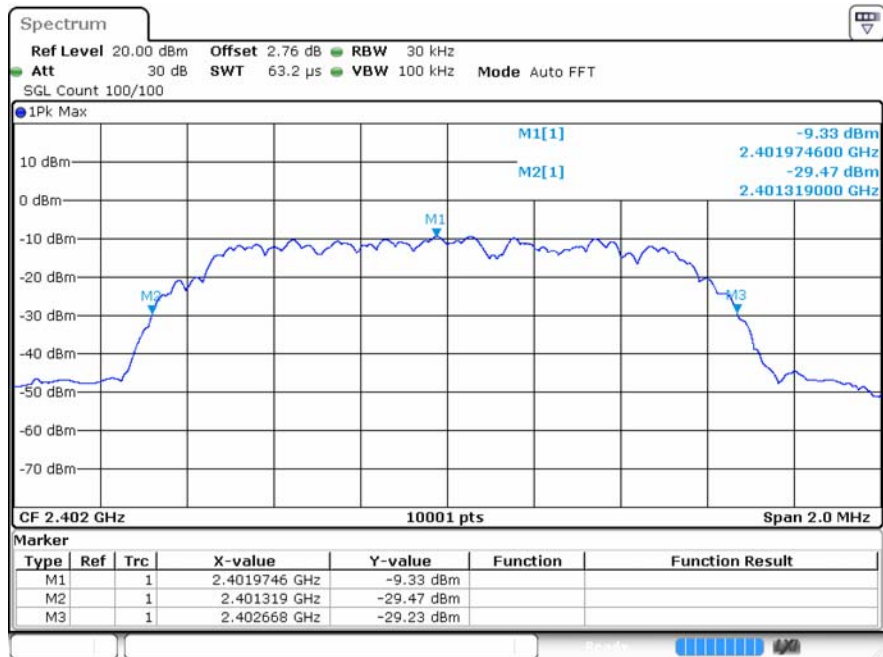
3.1 Test Result

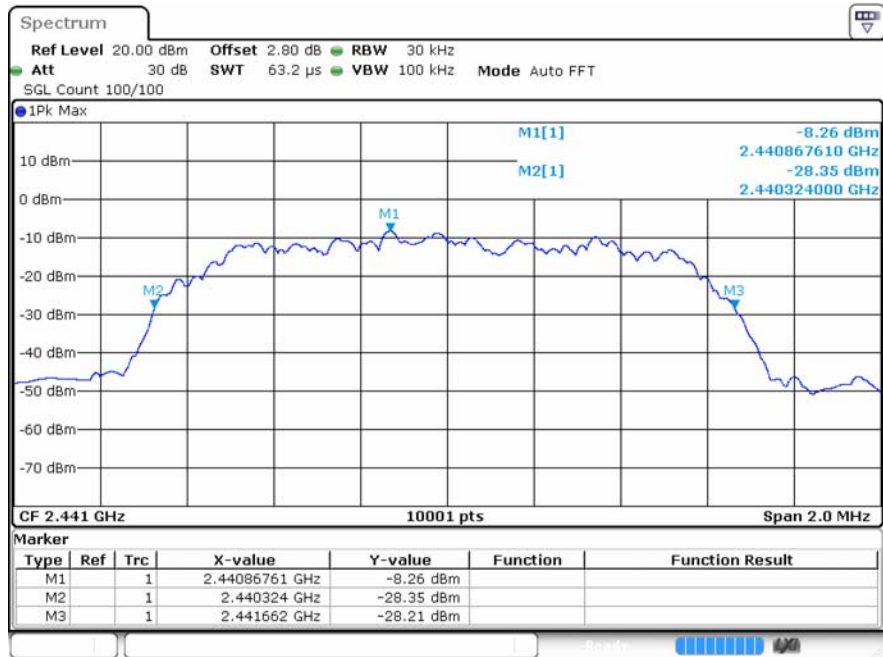
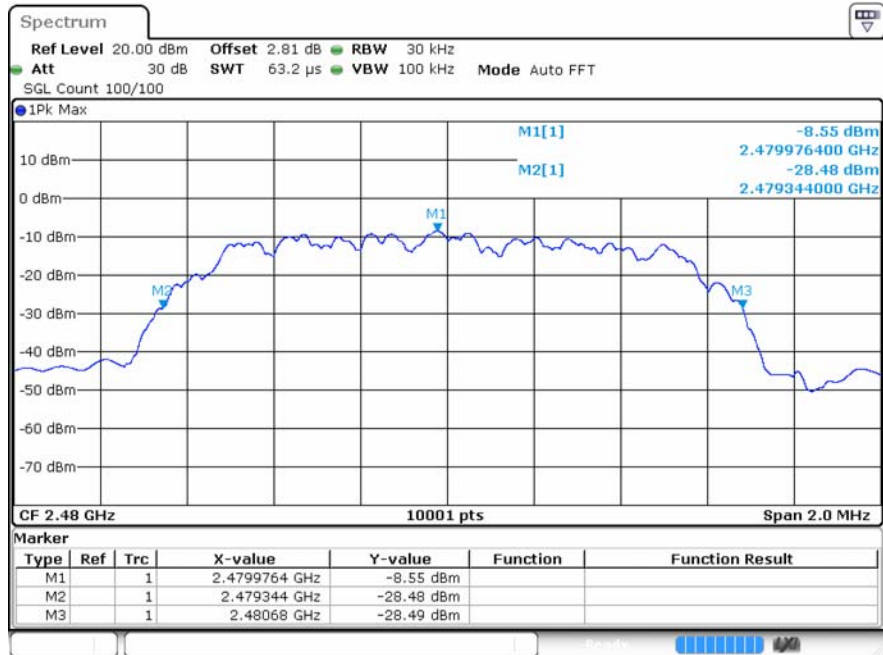
Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.958	Not Specified	Pass
	MCH	0.959	Not Specified	Pass
	HCH	0.953	Not Specified	Pass
$\pi/4$ DQPSK	LCH	1.349	Not Specified	Pass
	MCH	1.338	Not Specified	Pass
	HCH	1.337	Not Specified	Pass

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	0.639	Pass
$\pi/4$ DQPSK	MCH	0.95	0.892	Pass

4.2 Test Graphs

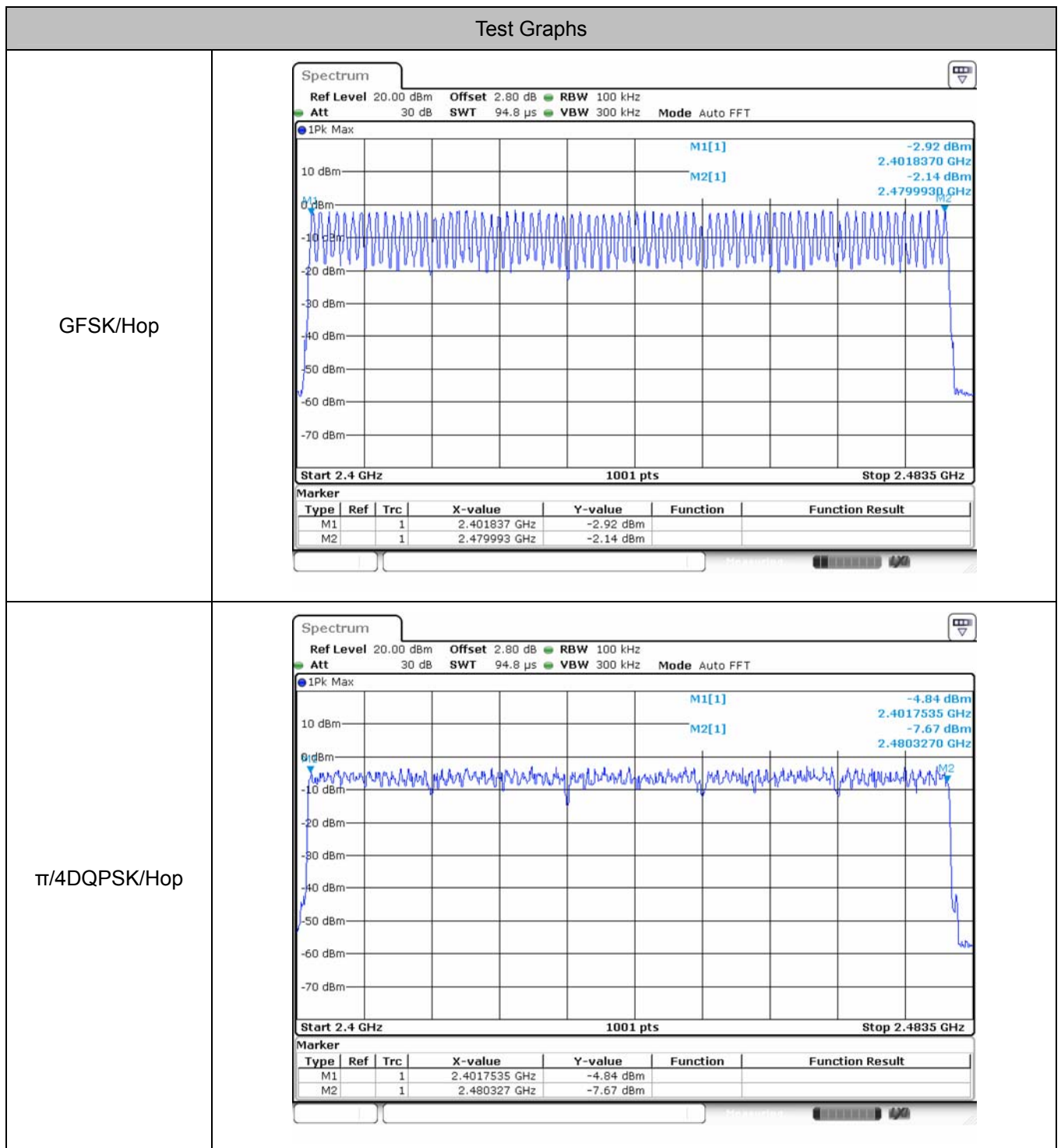


5 Hopping Channel Number

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

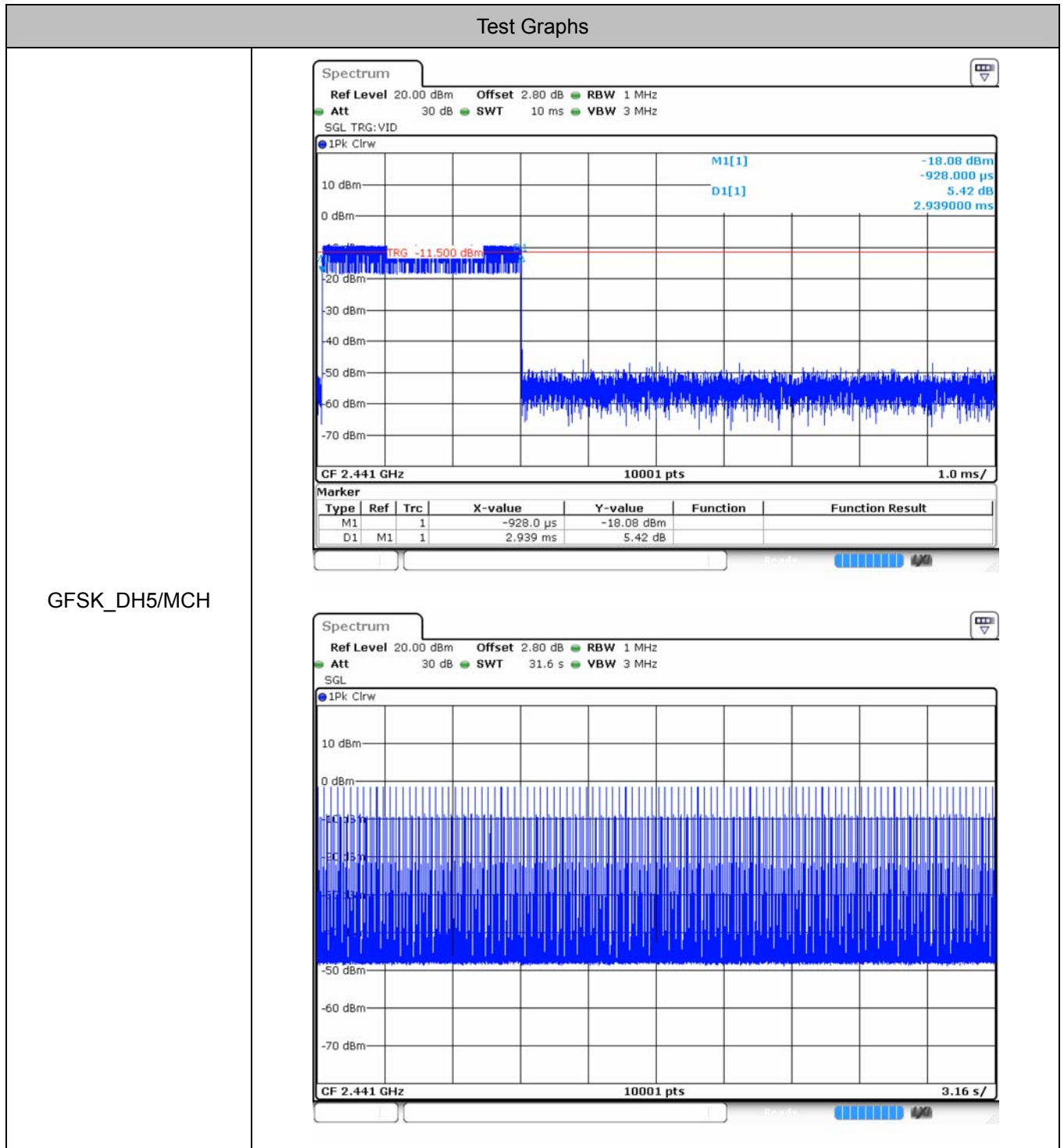


6 Dwell Time

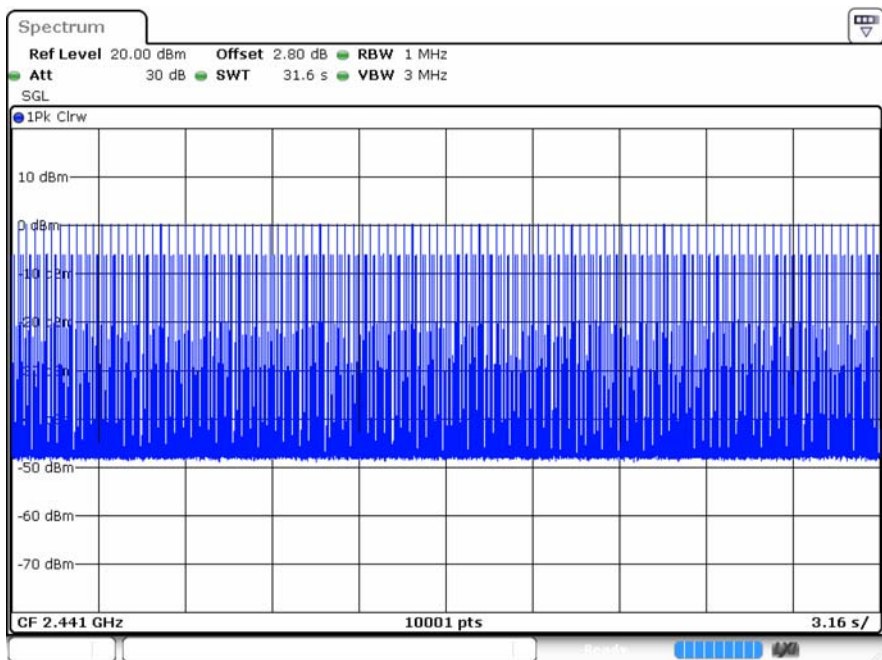
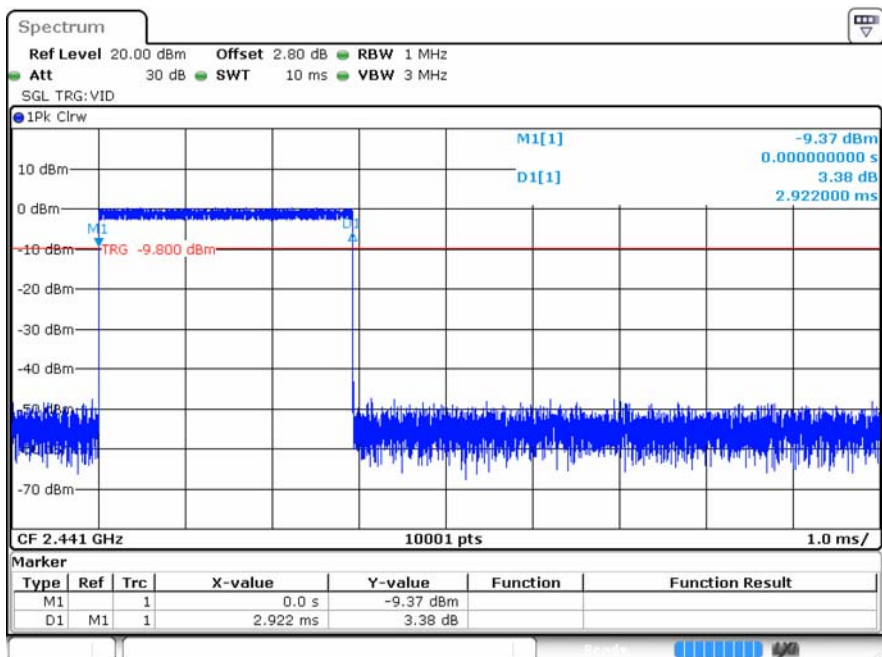
6.1 Test Result

Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[ms]	Limit [s]	Verdict
GFSK	DH5	MCH	2.939	104	305.656	0.4	Pass
$\pi/4$ DQPSK	2DH5	MCH	2.922	103	300.966	0.4	Pass

6.2 Test Graphs



$\pi/4$ DQPSK
_2DH5/MCH

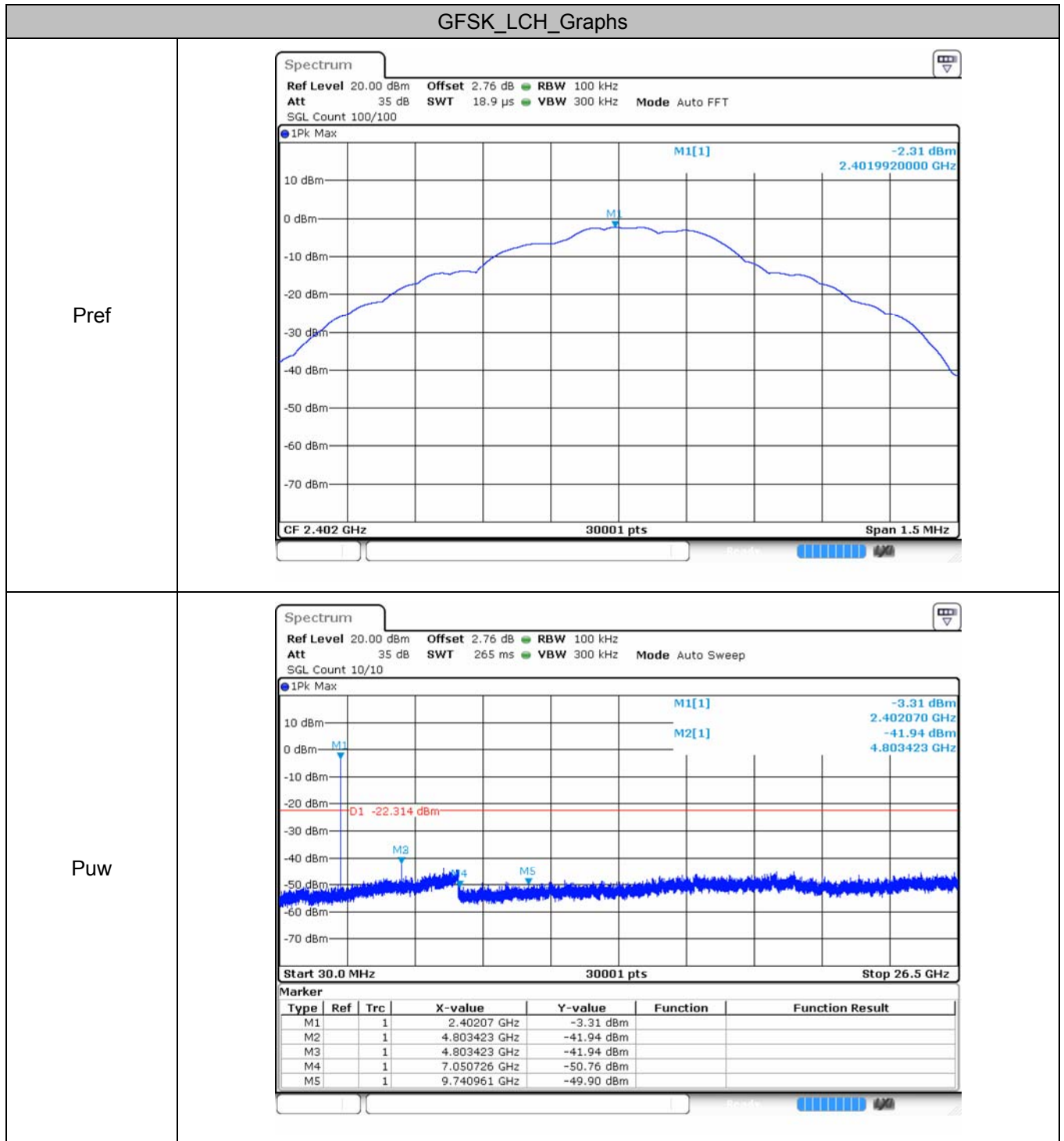


7 RF Conducted Spurious Emissions

7.1 Test Result

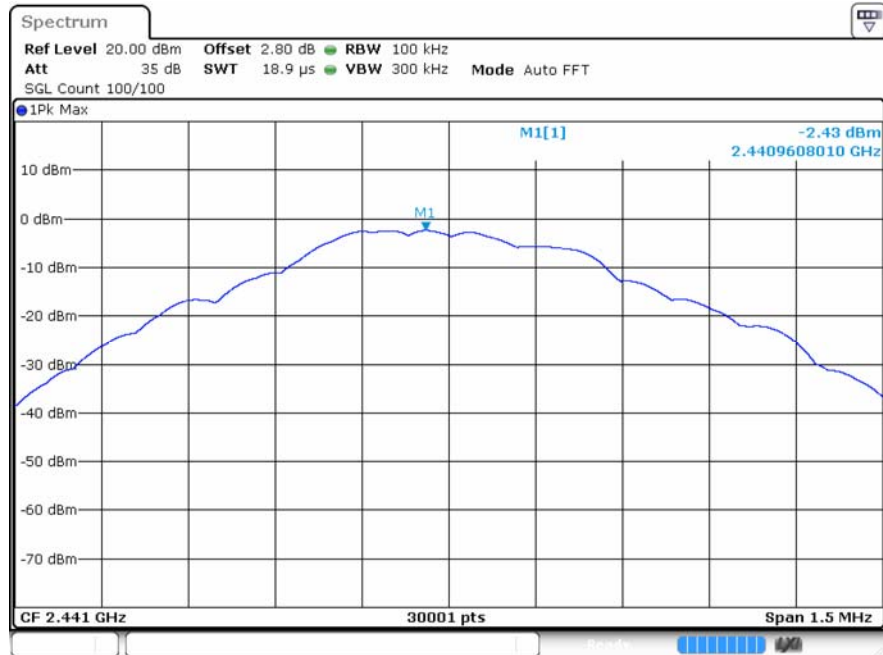
Mode	Channel	Max. Level [dBc]	Limit [dBc]	Verdict
GFSK	LCH	-39.62	-20	Pass
	MCH	-39.32	-20	Pass
	HCH	-42.15	-20	Pass
$\pi/4$ DQPSK	LCH	-36.27	-20	Pass
	MCH	-37.32	-20	Pass
	HCH	-36.28	-20	Pass

7.2 Test Graphs

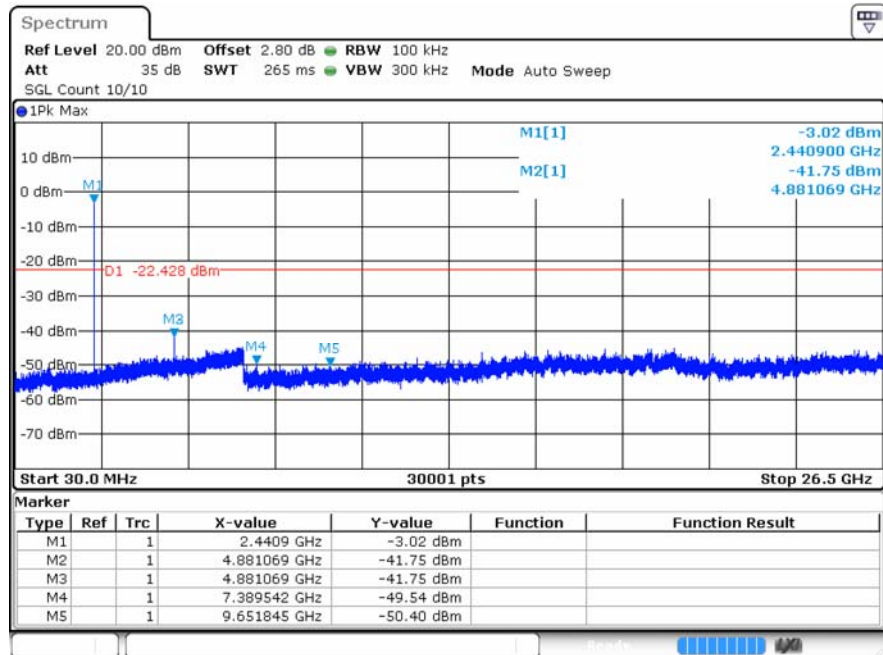


GFSK_MCH_Graphs

Pref

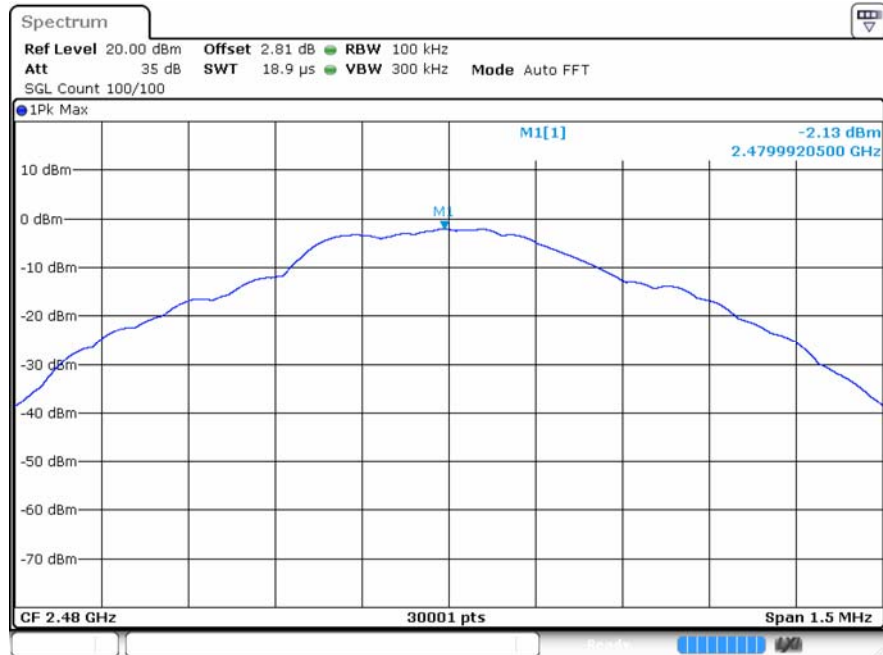


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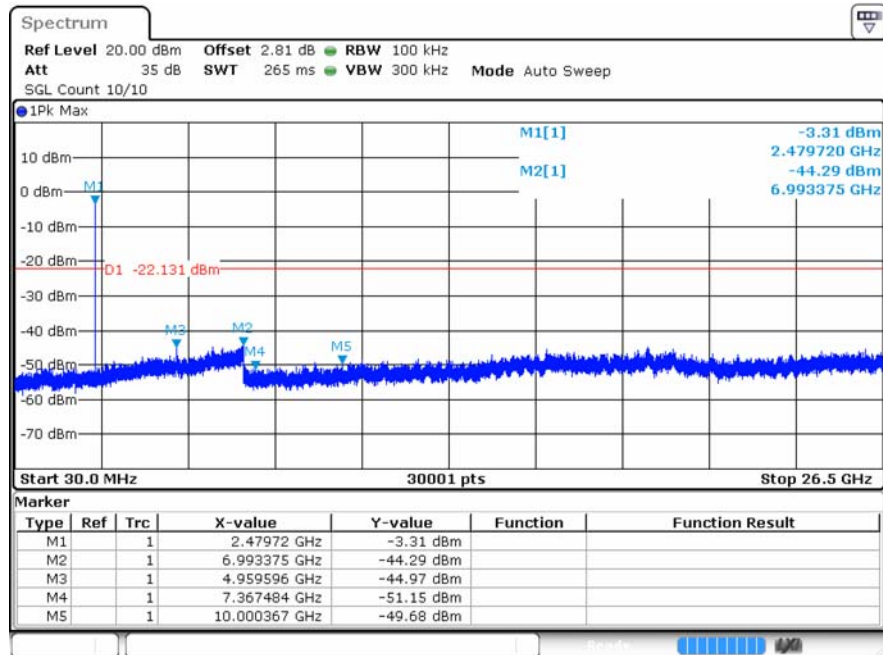


GFSK_HCH_Graphs

Pref

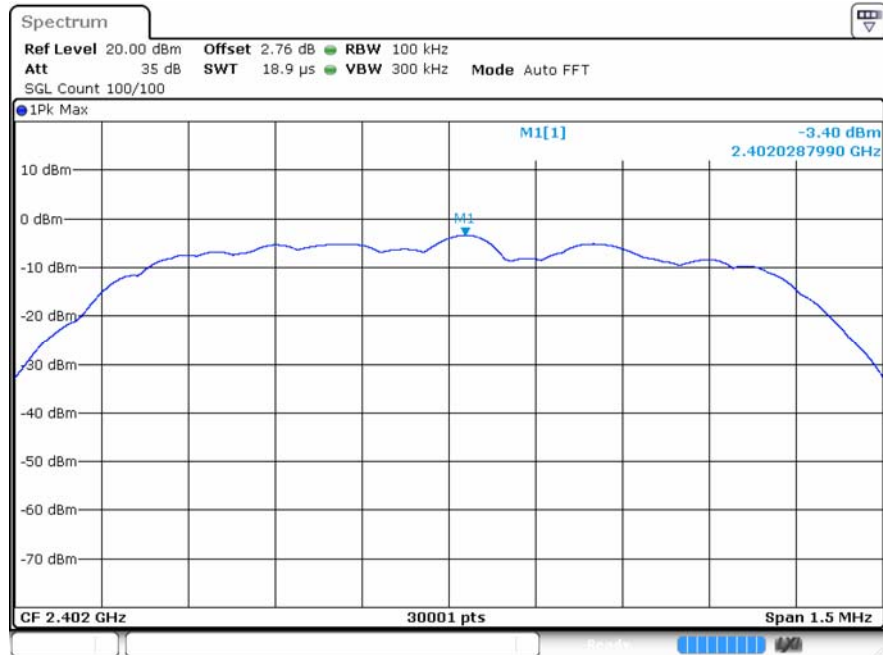


Puw

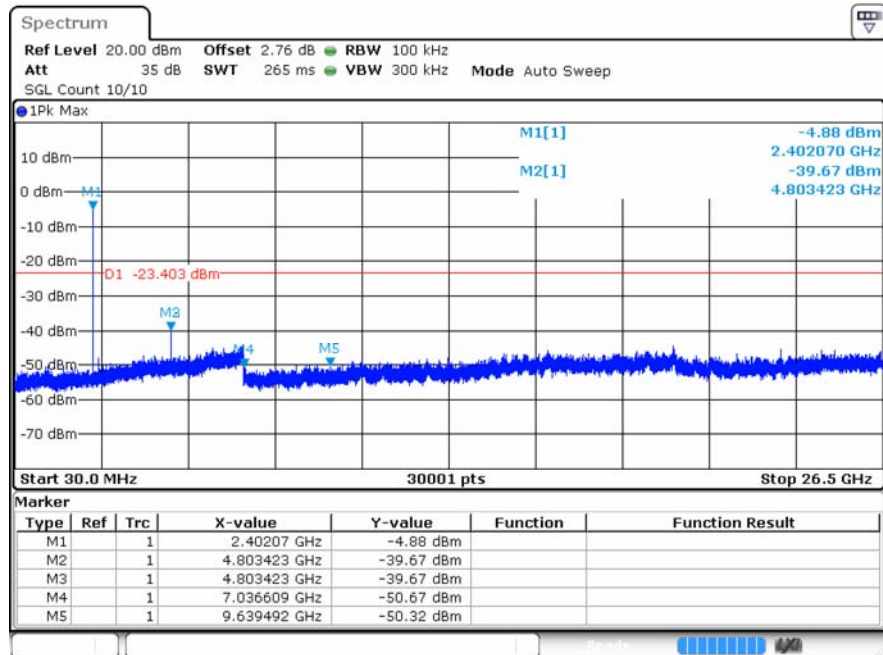


$\pi/4$ DQPSK_LCH_Graphs

Pref

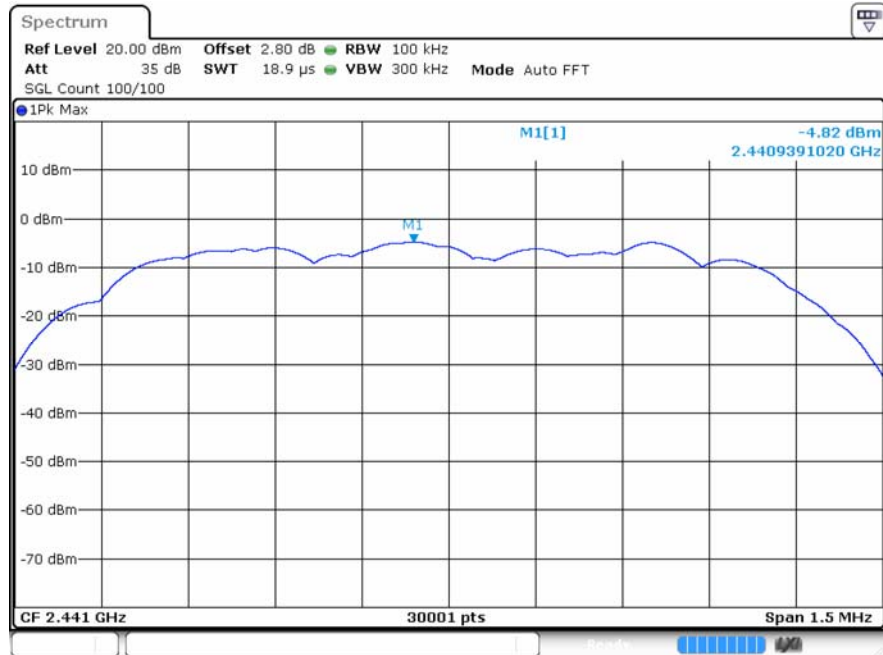


Puw

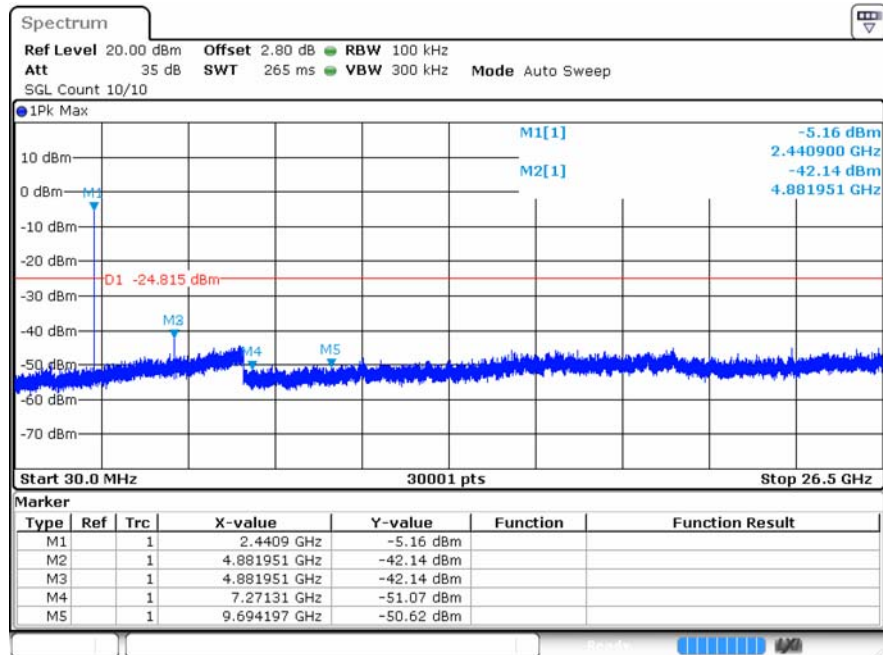


$\pi/4$ DQPSK_MCH_Graphs

Pref

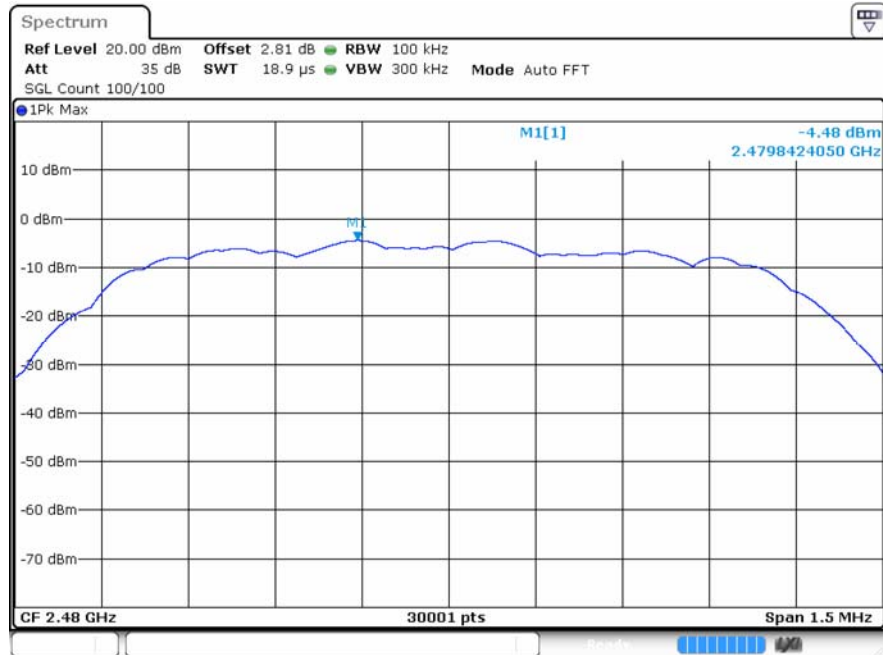


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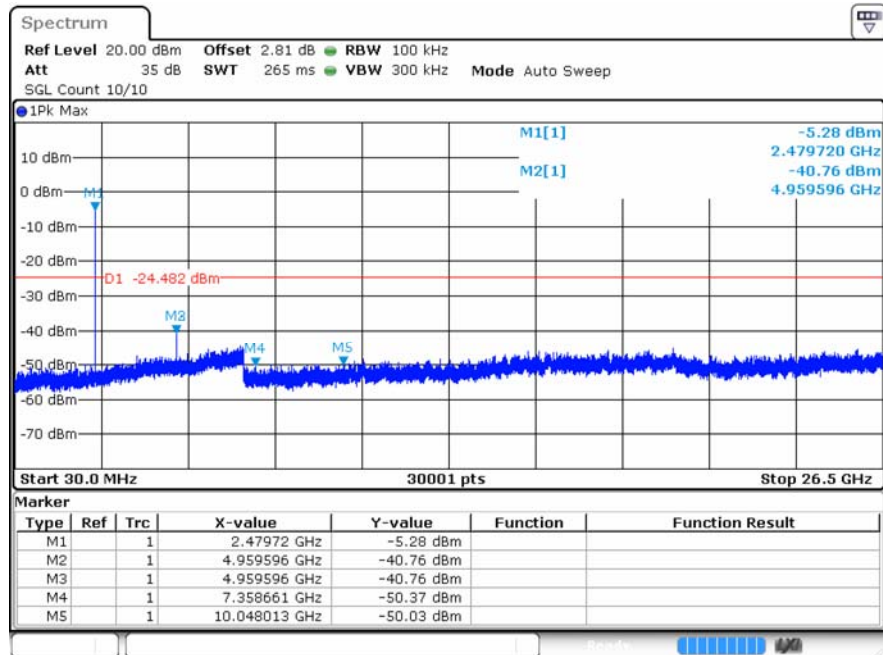


$\pi/4$ DQPSK_HCH_Graphs

Pref



Puw

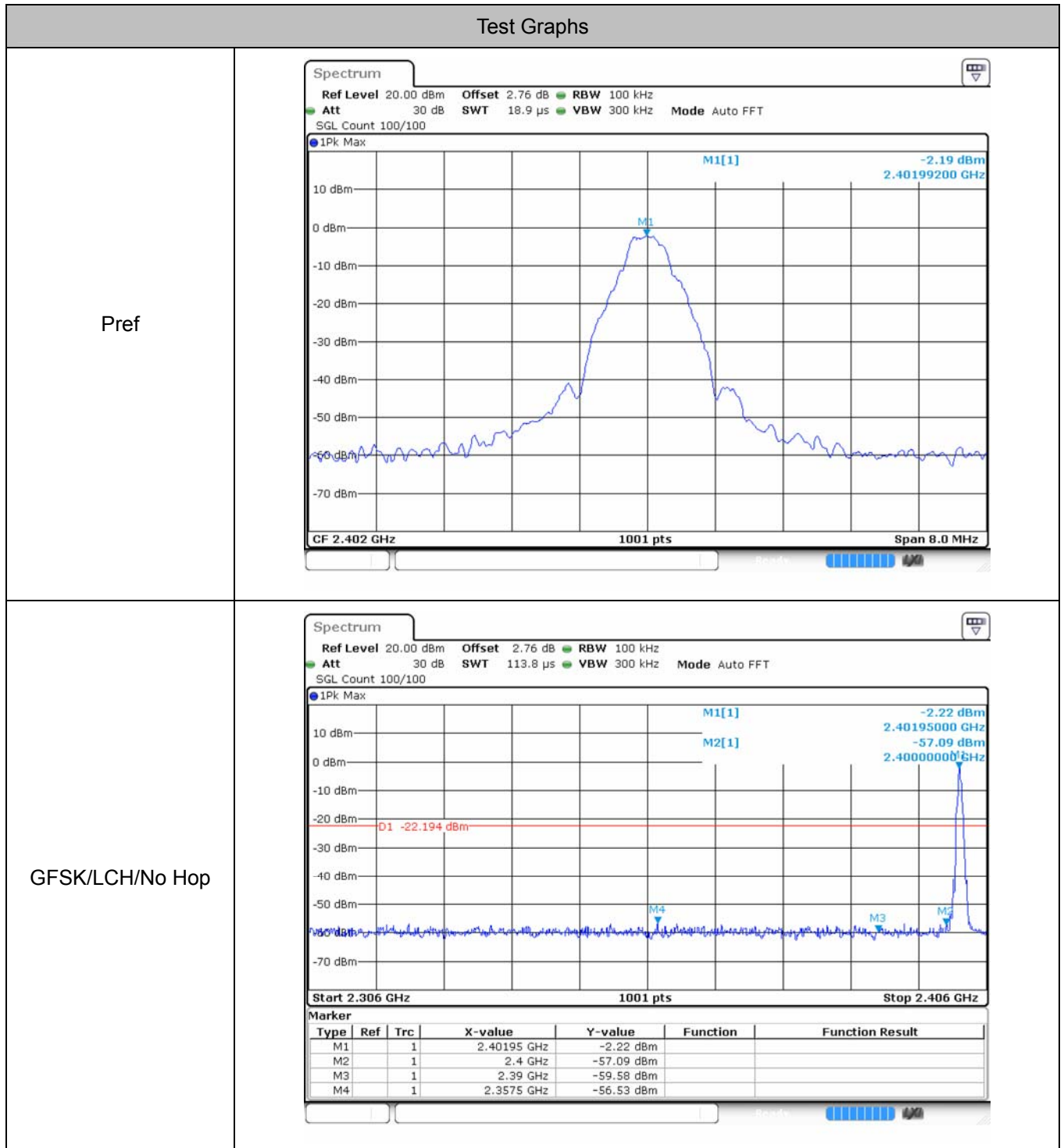


8 Band-edge for RF Conducted Emissions

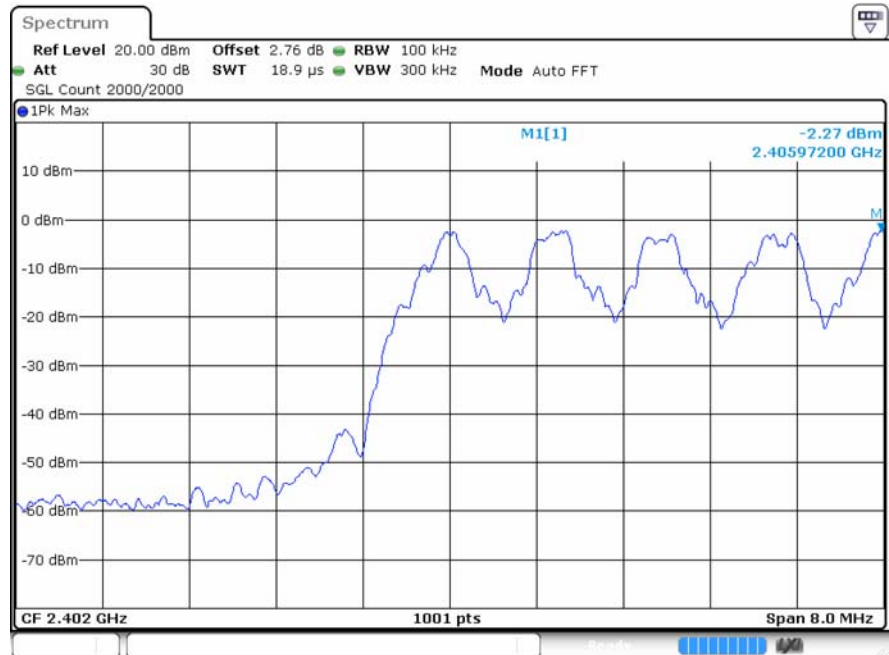
8.1 Test Result

Mode	Channel	Carrier Frequency [MHz]	Frequency Hopping	Max Spurious Level [dBc]	Limit [dBc]	Verdict
GFSK	LCH	2402	Off	-54.34	-20	Pass
			On	-53.2	-20	Pass
	HCH	2480	Off	-55.3	-20	Pass
			On	-52.06	-20	Pass
$\pi/4$ DQPSK	LCH	2402	Off	-53.3	-20	Pass
			On	-52.18	-20	Pass
	HCH	2480	Off	-53.27	-20	Pass
			On	-51.79	-20	Pass

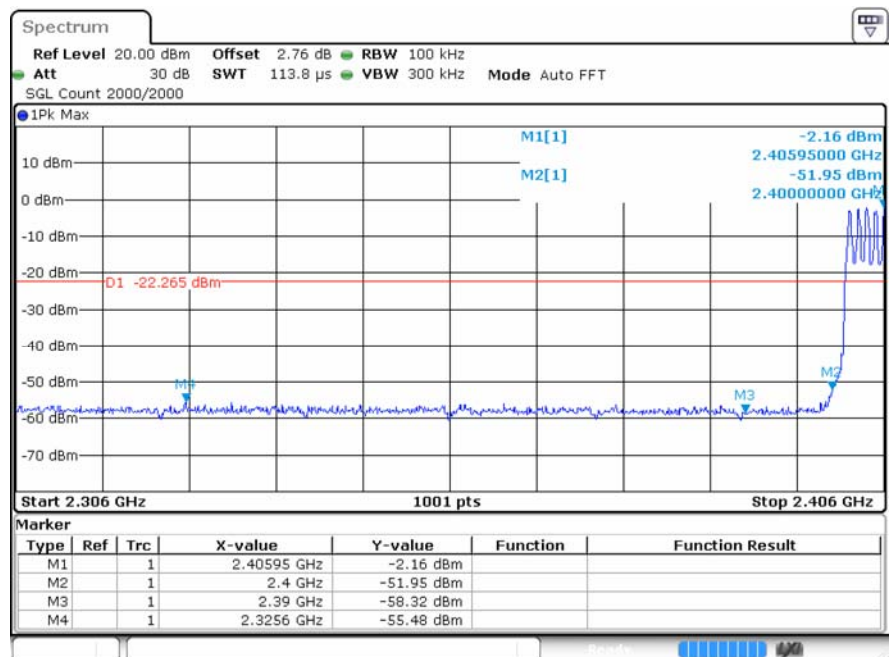
8.2 Test Graphs



Ref



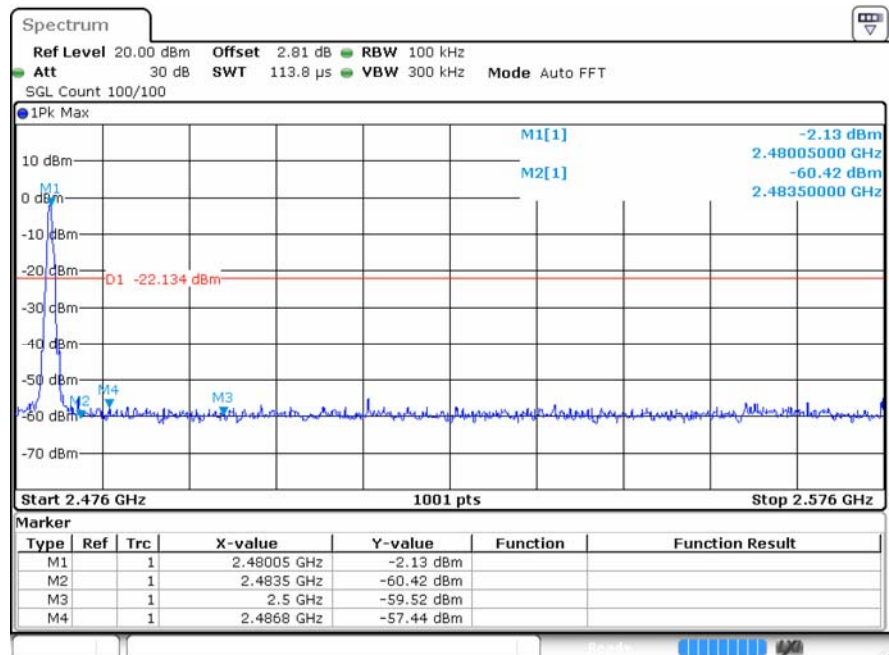
GFSK/LCH/Hop



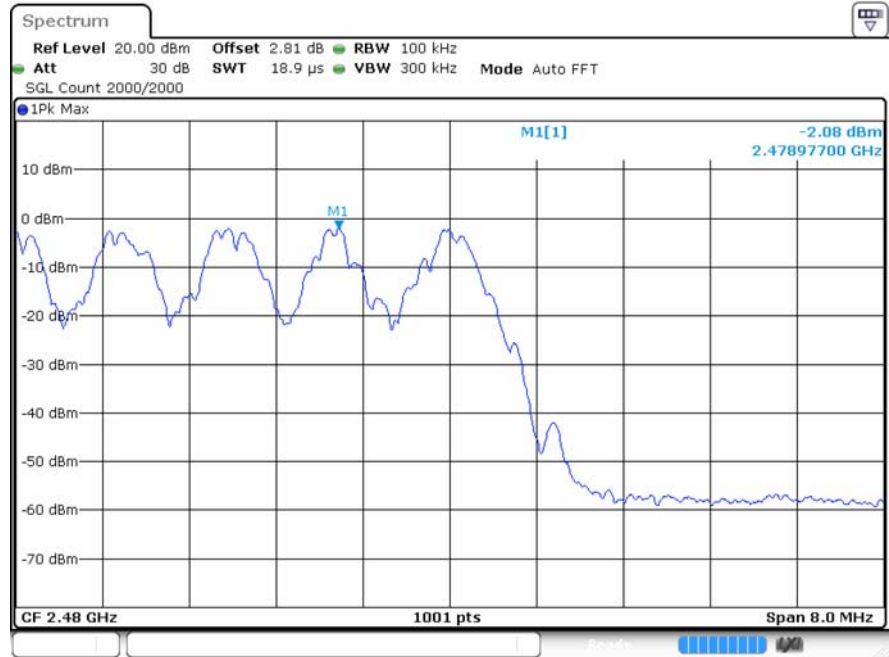
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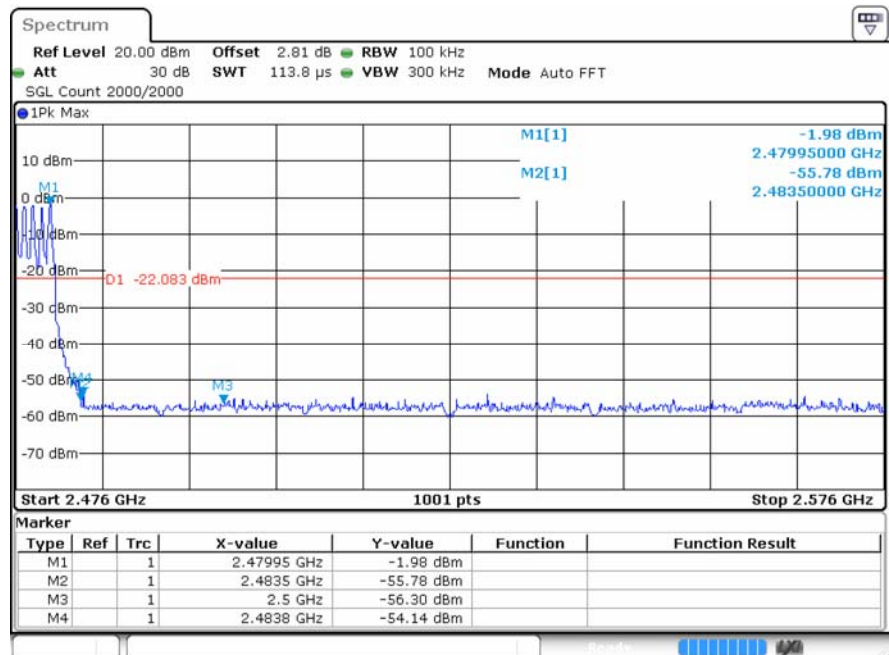
GFSK/HCH/No Hop



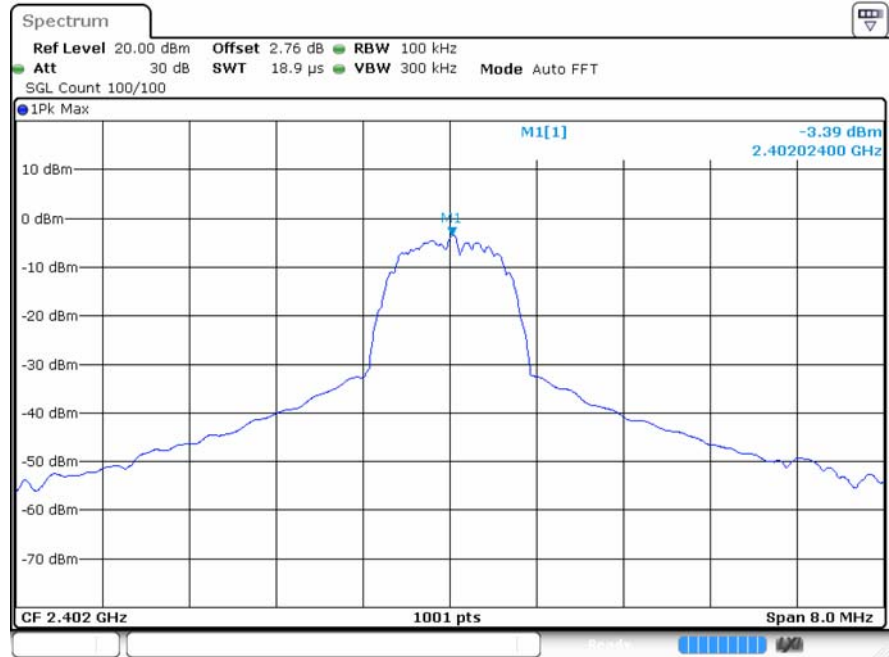
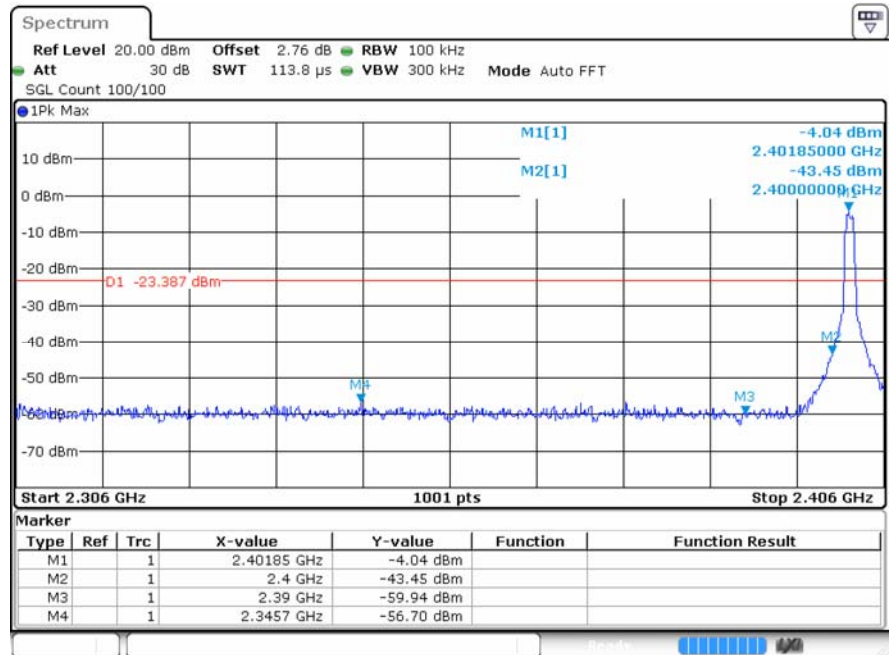
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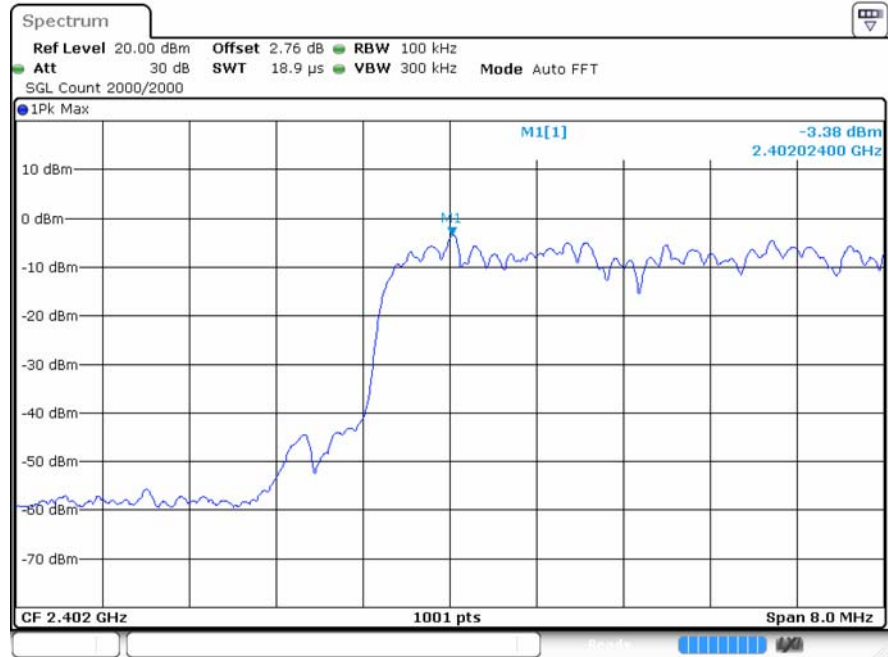
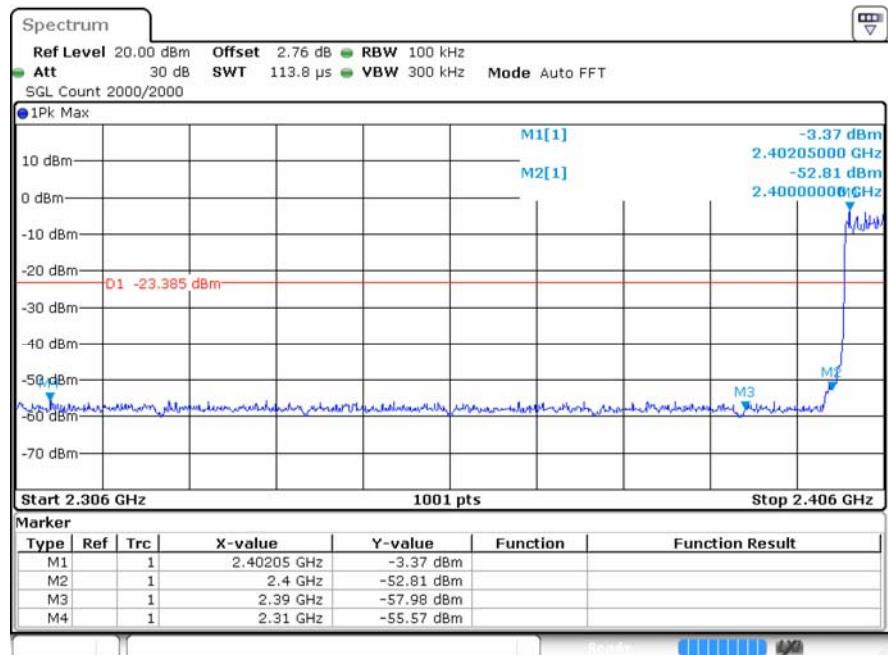
GFSK/HCH/Hop



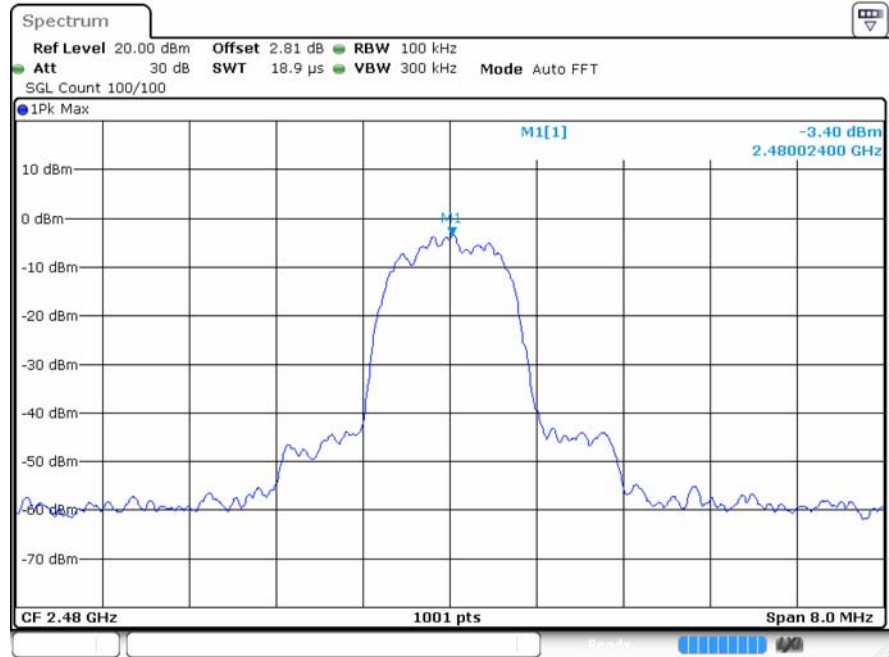
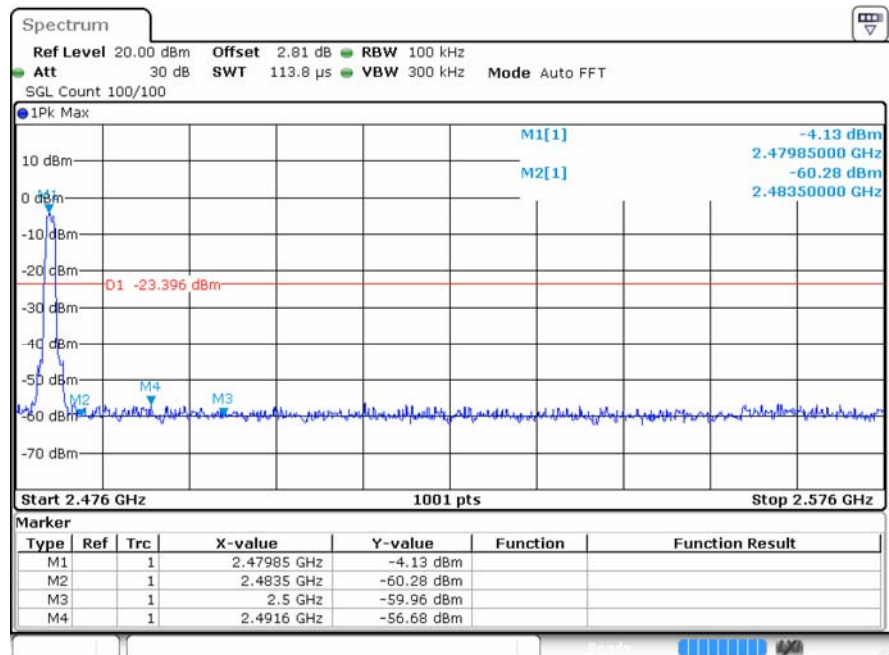
Ref


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


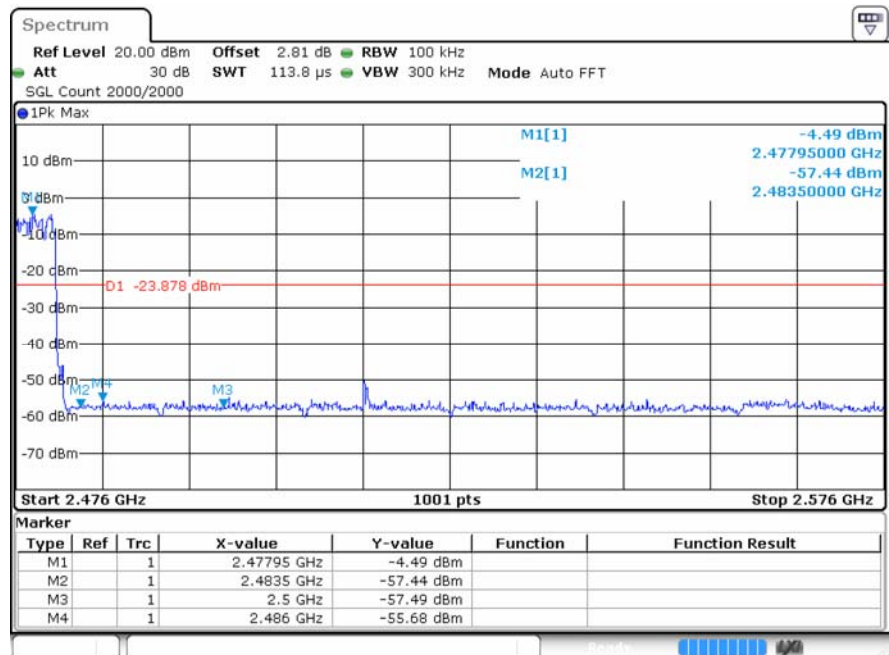
Ref


 $\pi/4$ DQPSK/LCH/Hop


Ref


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


Ref


 $\pi/4$ DQPSK/HCH/Hop


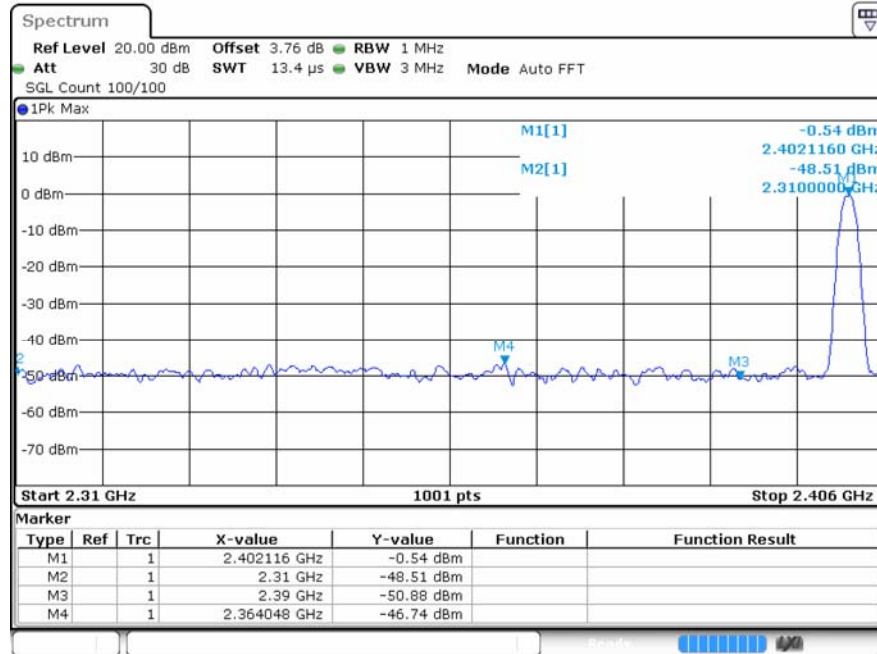
9 Restrict-band band-edge measurements

9.1 Test Result

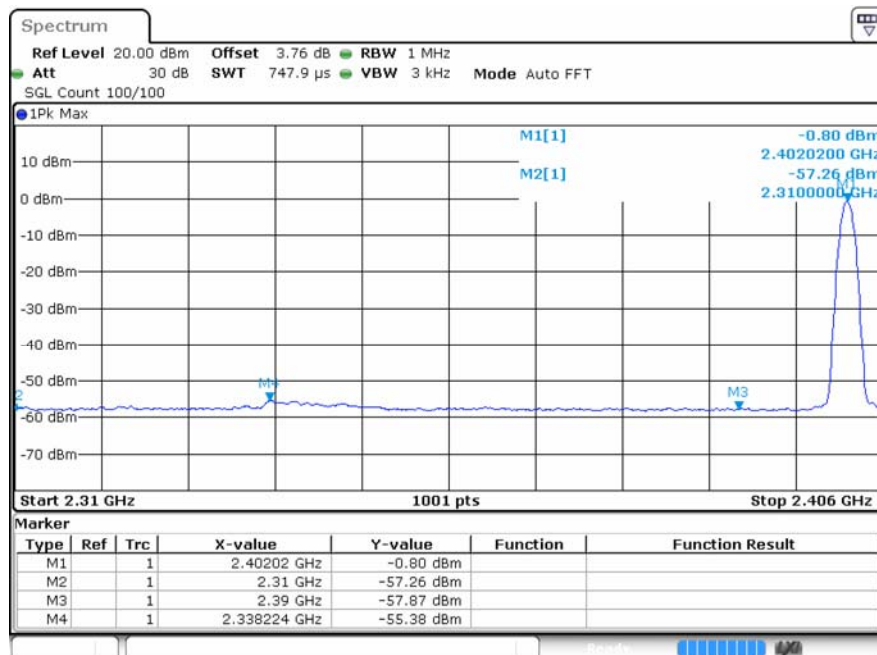
Test Mode	Hopping	Freq.	Power [dBm]	Gain	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-48.5	8	54.76	PEAK	74	Pass
	Off	2310.0	-57.26	8	46	AV	54	Pass
	Off	2364.048	-46.73	8	56.53	PEAK	74	Pass
	Off	2338.224	-55.37	8	47.89	AV	54	Pass
	Off	2390.0	-50.88	8	52.38	PEAK	74	Pass
	Off	2390.0	-57.86	8	45.4	AV	54	Pass
	Off	2483.5	-49.87	8	53.39	PEAK	74	Pass
	Off	2483.5	-57.03	8	46.23	AV	54	Pass
	Off	2499.064	-46.79	8	56.47	PEAK	74	Pass
	Off	2485.624	-56.57	8	46.69	AV	54	Pass
	Off	2500.0	-49.07	8	54.19	PEAK	74	Pass
	Off	2500.0	-57.39	8	45.87	AV	54	Pass
$\pi/4$ DQPSK	Off	2310.0	-49.8	8	53.46	PEAK	74	Pass
	Off	2310.0	-57.74	8	45.52	AV	54	Pass
	Off	2342.352	-45.68	8	57.58	PEAK	74	Pass
	Off	2339.664	-55.74	8	47.52	AV	54	Pass
	Off	2390.0	-47.71	8	55.55	PEAK	74	Pass
	Off	2390.0	-57.92	8	45.34	AV	54	Pass
	Off	2483.5	-48.58	8	54.68	PEAK	74	Pass
	Off	2483.5	-56.17	8	47.09	AV	54	Pass
	Off	2496.712	-46.49	8	56.77	PEAK	74	Pass
	Off	2483.512	-56.17	8	47.09	AV	54	Pass
	Off	2500.0	-49.27	8	53.99	PEAK	74	Pass
	Off	2500.0	-57.63	8	45.63	AV	54	Pass

9.2 Test Graphs

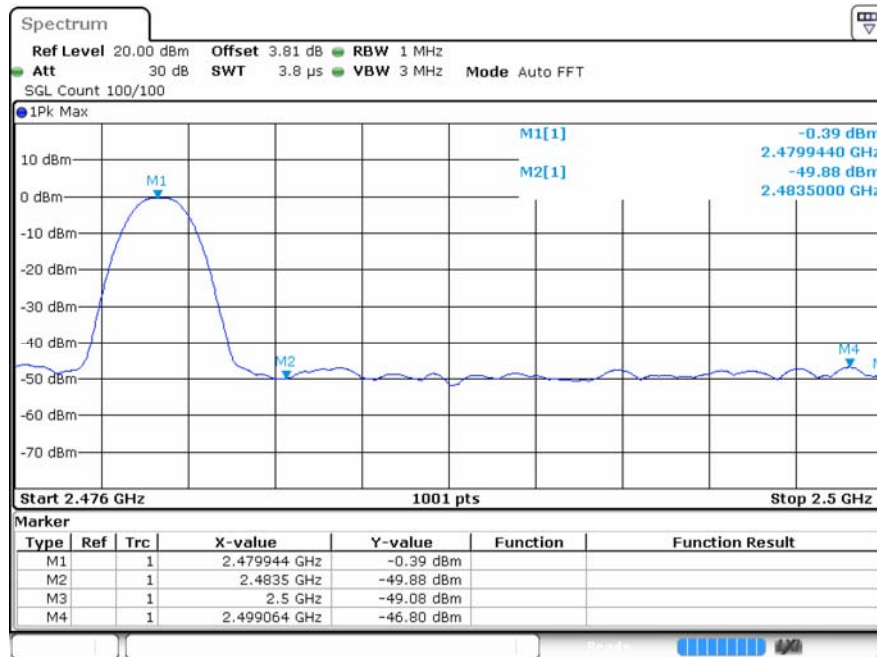
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (Low Channel)



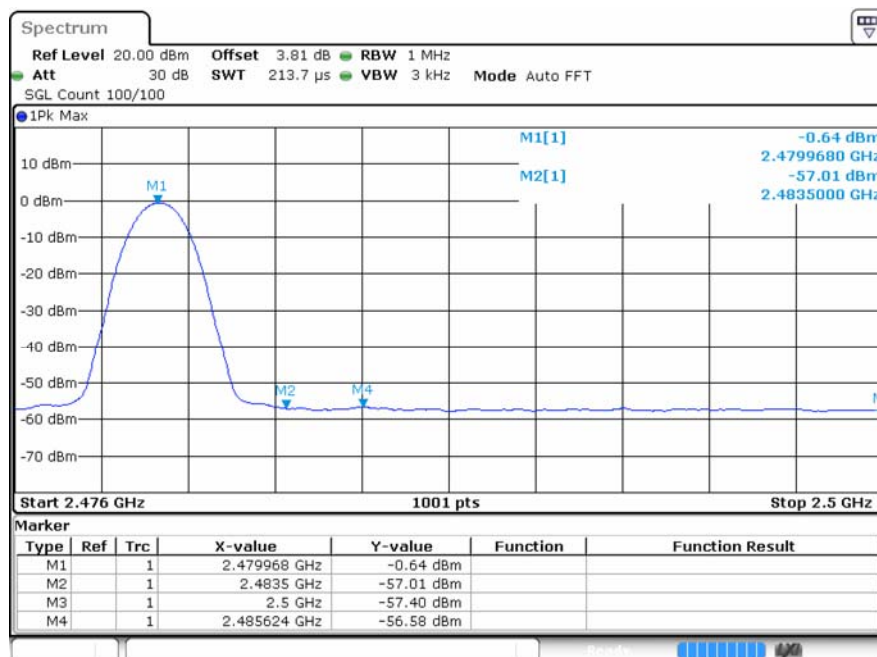
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (Low Channel)



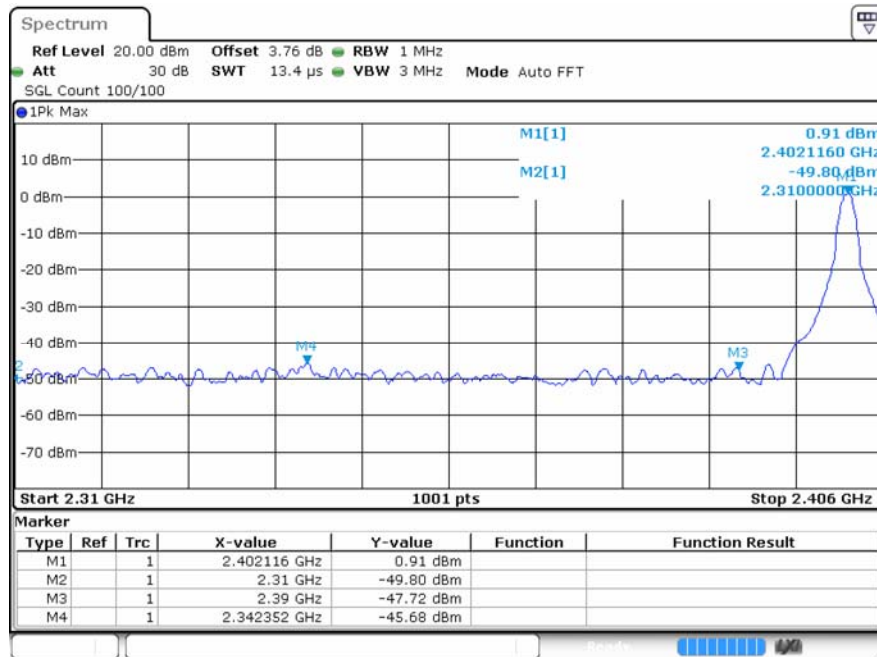
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (High Channel)



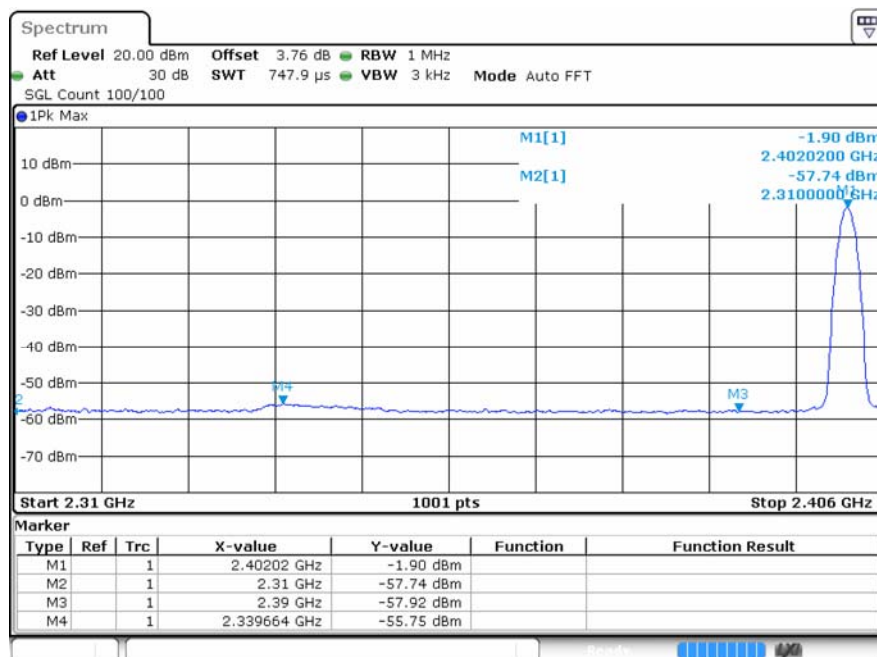
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (High Channel)



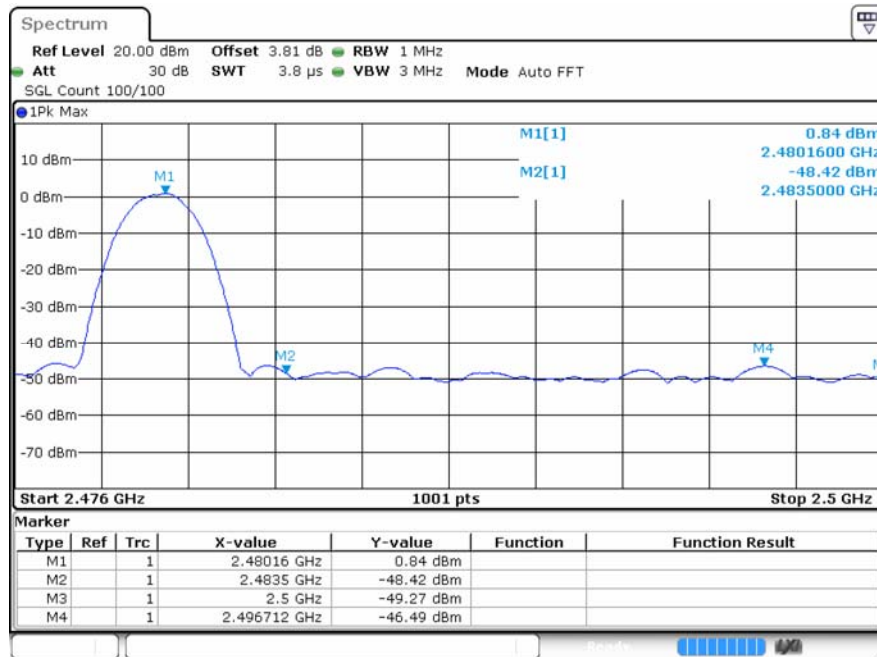
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (Low Channel)



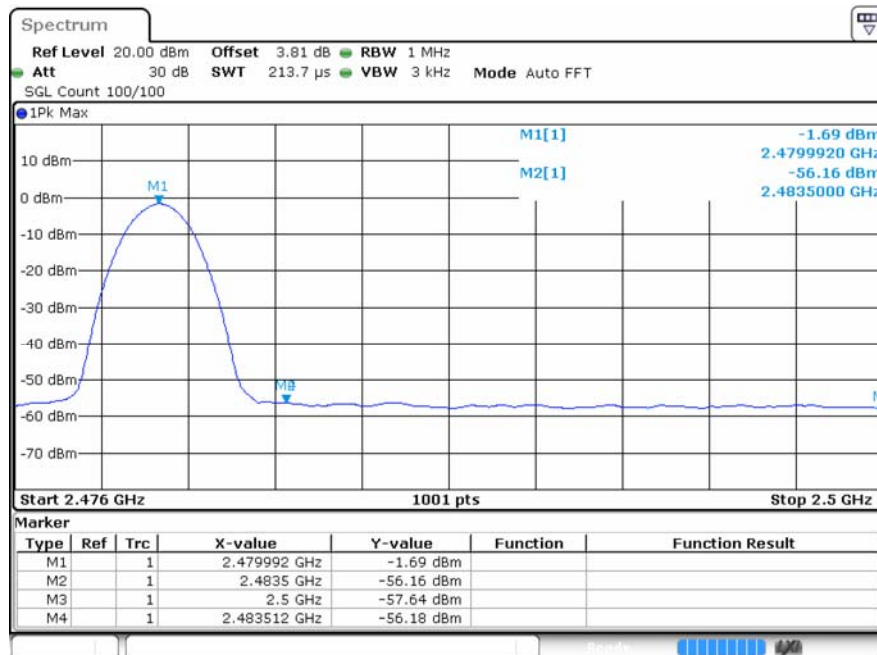
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (Low Channel)



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---