



Appendix A

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

Product Name: Earbuds

Trade Mark: NEOQOQO™

Test Model: X5

Environmental Conditions

Temperature:	25.3° C
Relative Humidity:	52.5%
ATM Pressure:	101Kpa
Test Engineer:	Simba Huang
Supervised by:	Seal Chen



Contents

Page

COVER PAGE

1	Duty Cycle	3
1.1	Test Result.....	3
1.2	Test Graphs	4
2	Maximum Conducted Peak Output Power	7
2.1	Test Result.....	7
2.2	Test Graphs	8
3	20dB Bandwidth	11
3.1	Test Result.....	11
3.2	Test Graphs	12
4	Carrier Frequency Separation	15
4.1	Test Result.....	15
4.2	Test Graphs	16
5	Hopping Channel Number.....	17
5.1	Test Result.....	17
5.2	Test Graphs	18
6	Dwell Time	19
6.1	Test Result.....	19
6.2	Test Graphs	20
7	RF Conducted Spurious Emissions.....	22
7.1	Test Result.....	22
7.2	Test Graphs	23
8	Band-edge for RF Conducted Emissions	29
8.1	Test Result.....	29
8.2	Test Graphs	30
9	Restrict-band band-edge measurements	38
9.1	Test Result.....	38
9.2	Test Graphs	39

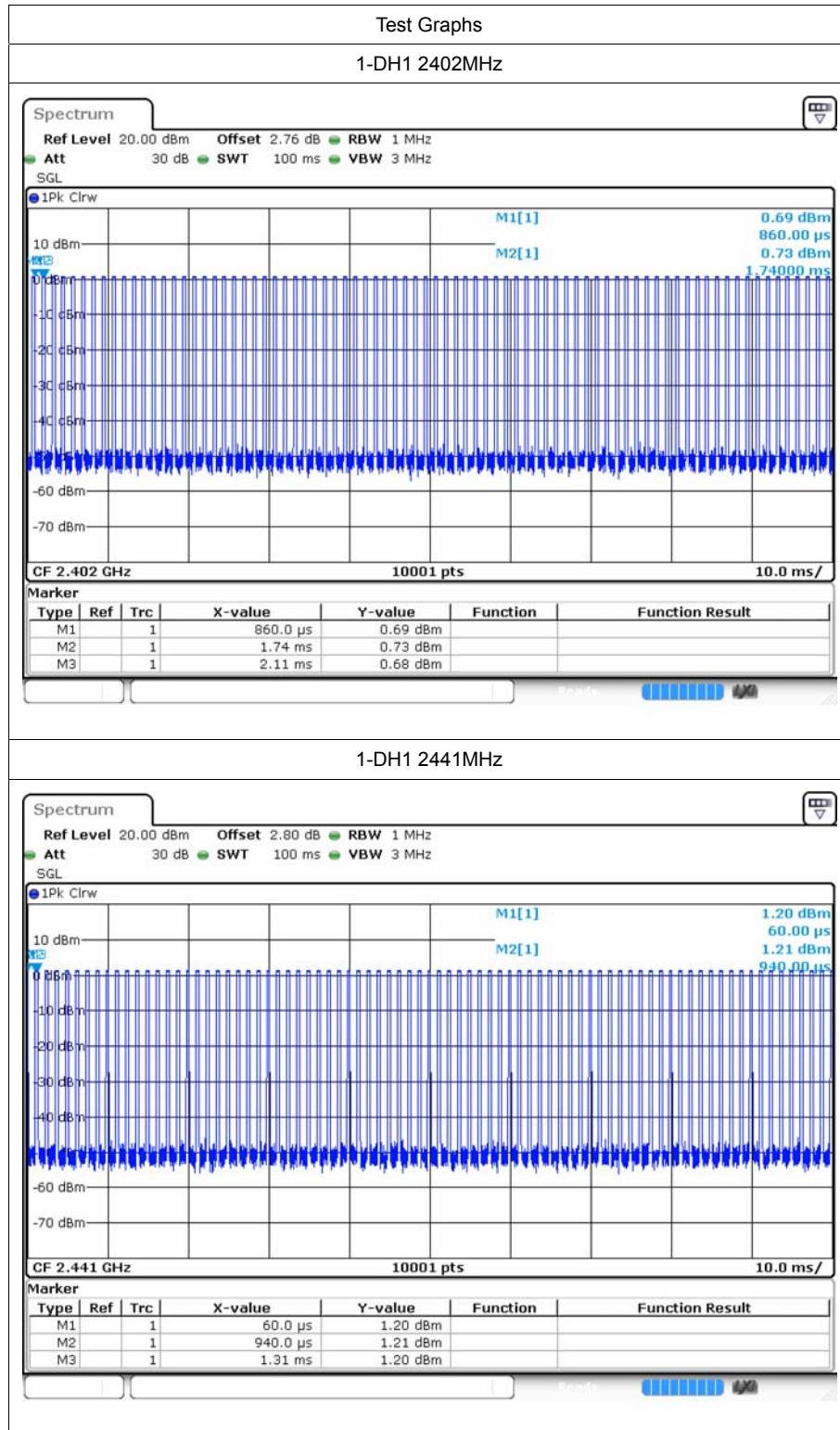


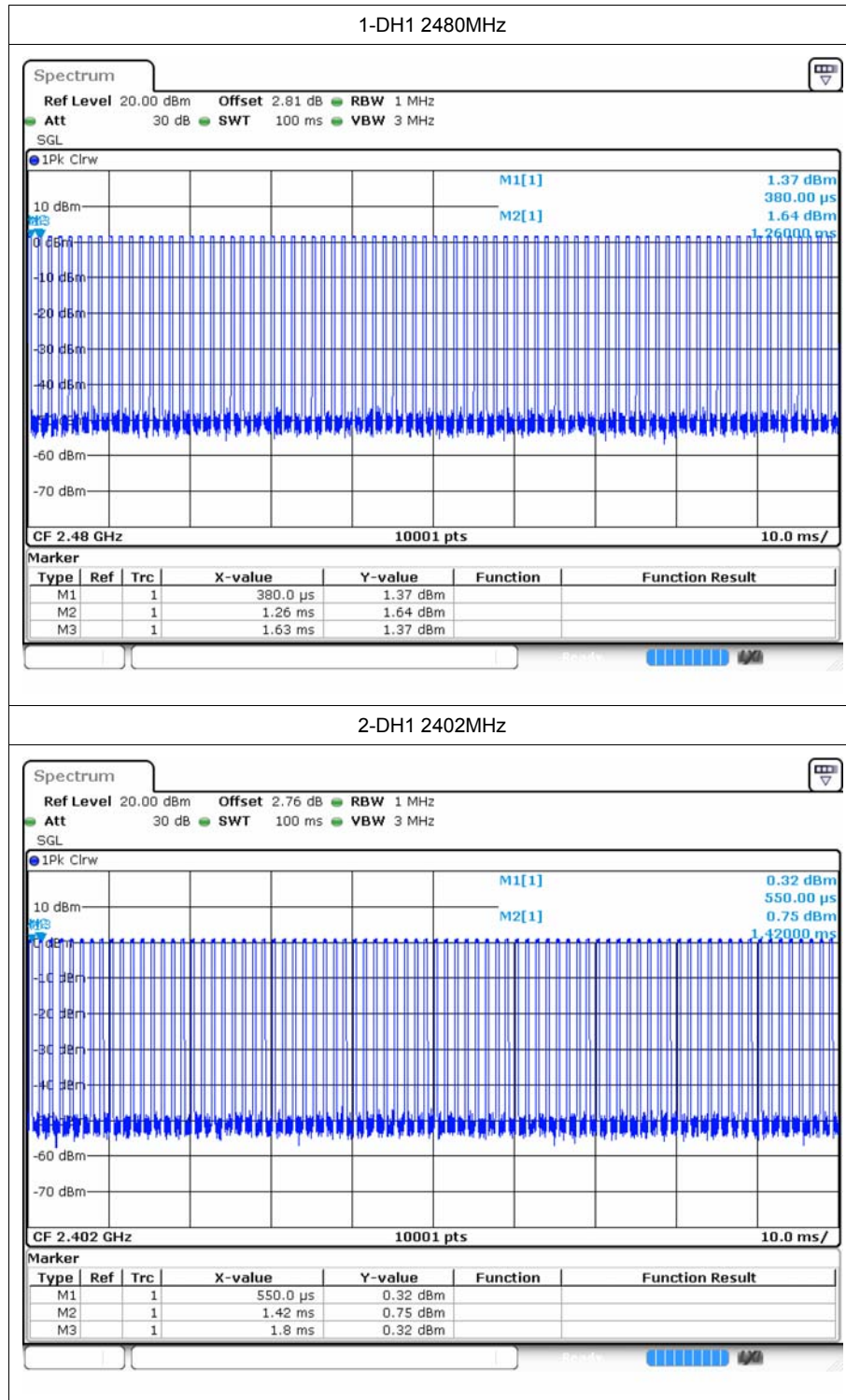
1 Duty Cycle

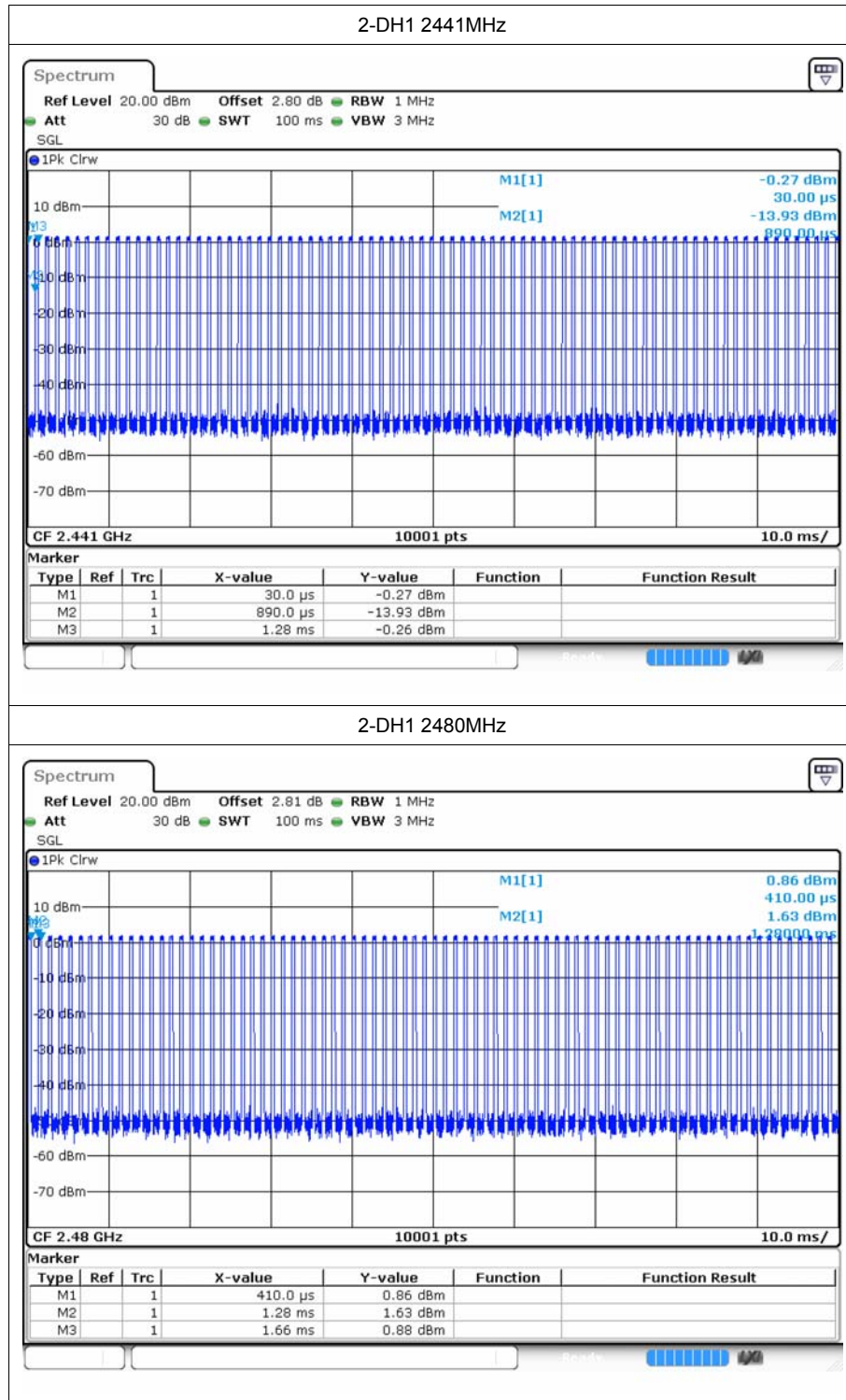
1.1 Test Result

Mode	Frequency (MHz)	Duty Cycle (%)	1/T (kHz)
1-DH1	2402	30.4	2.7
1-DH1	2441	30.41	2.7
1-DH1	2480	30.4	2.7
2-DH1	2402	31.2	2.63
2-DH1	2441	32.01	2.56
2-DH1	2480	31.21	2.63

1.2 Test Graphs





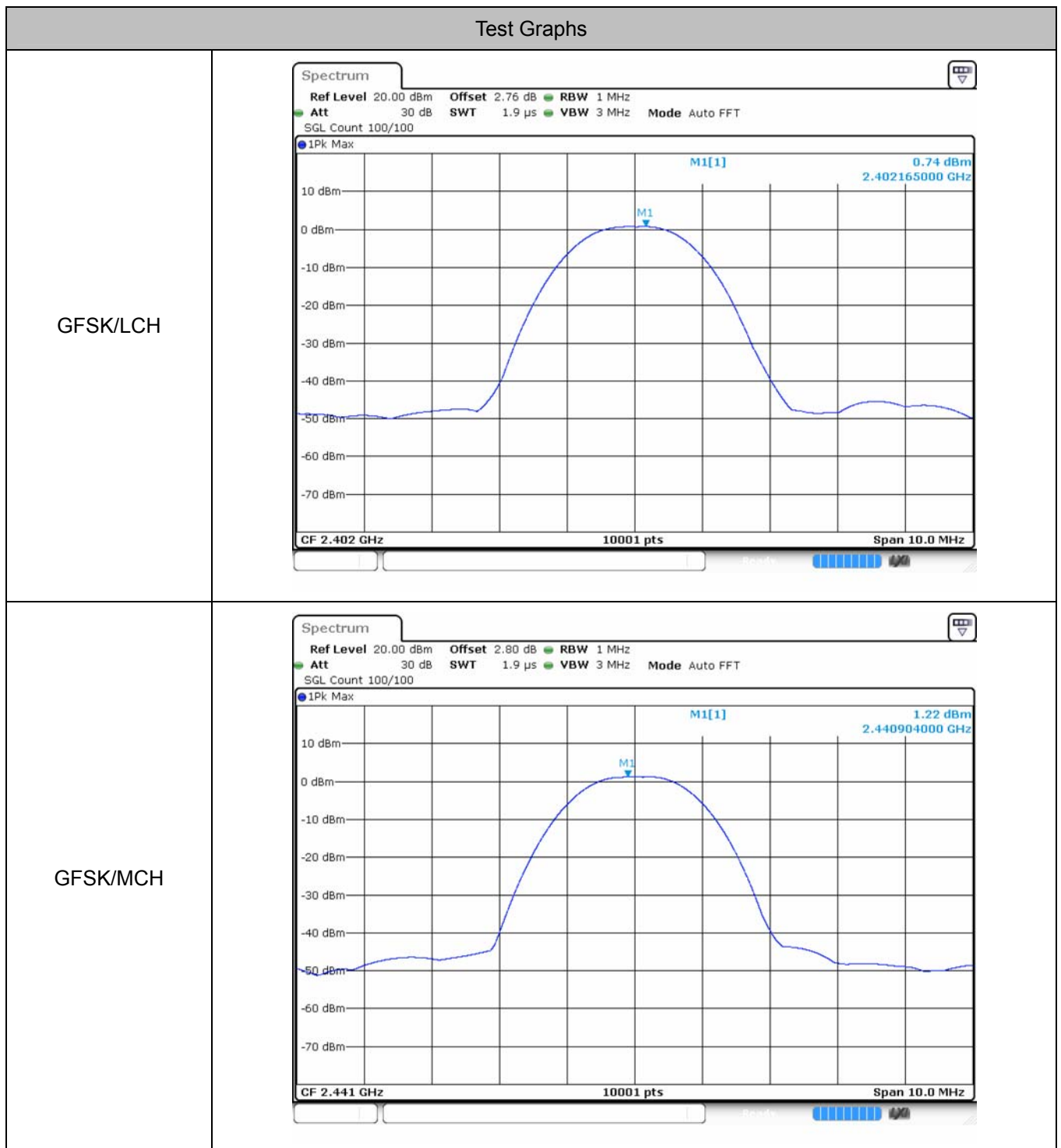


2 Maximum Conducted Peak Output Power

2.1 Test Result

Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	0.74	21	Pass
	MCH	1.22	21	Pass
	HCH	1.63	21	Pass
$\pi/4$ DQPSK	LCH	0.69	21	Pass
	MCH	1.40	21	Pass
	HCH	1.82	21	Pass

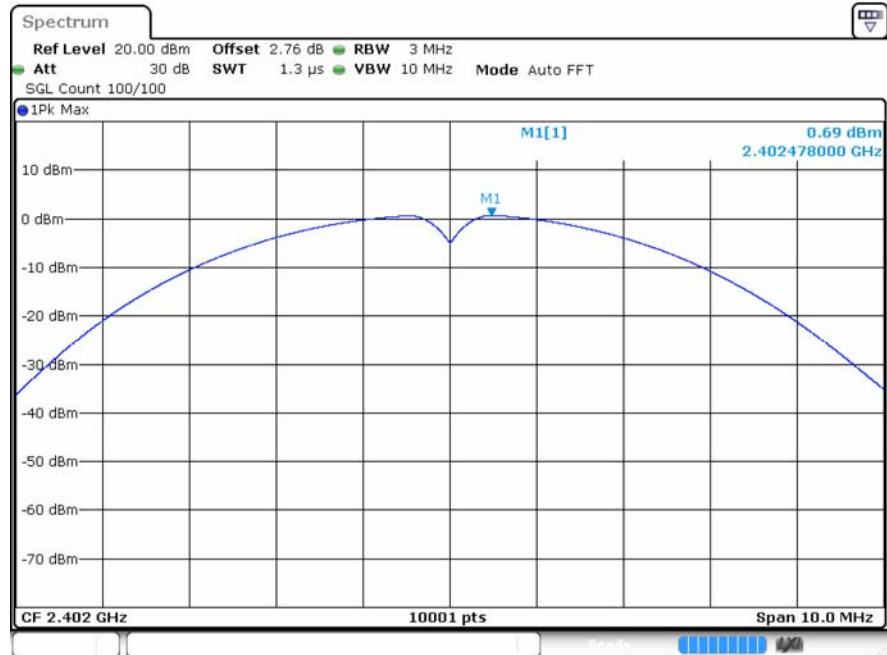
2.2 Test Graphs



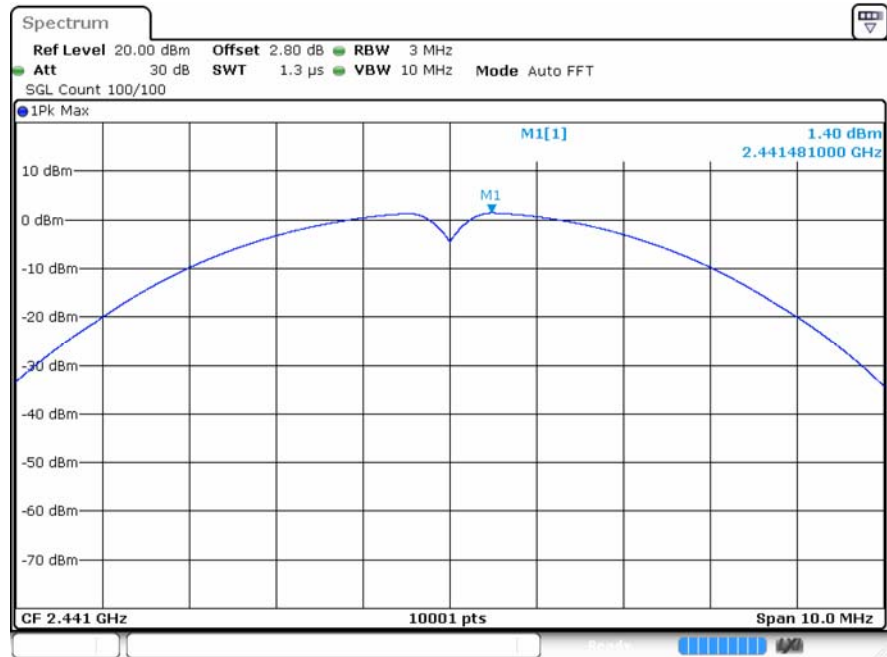
GFSK/HCH



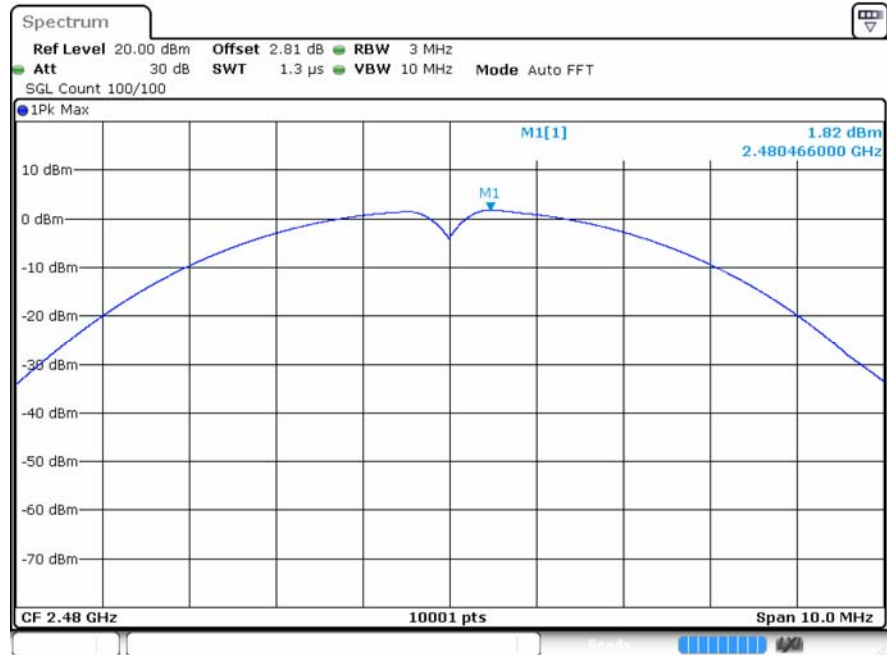
$\pi/4$ DQPSK/LCH



$\pi/4$ DQPSK/MCH



$\pi/4$ DQPSK/HCH

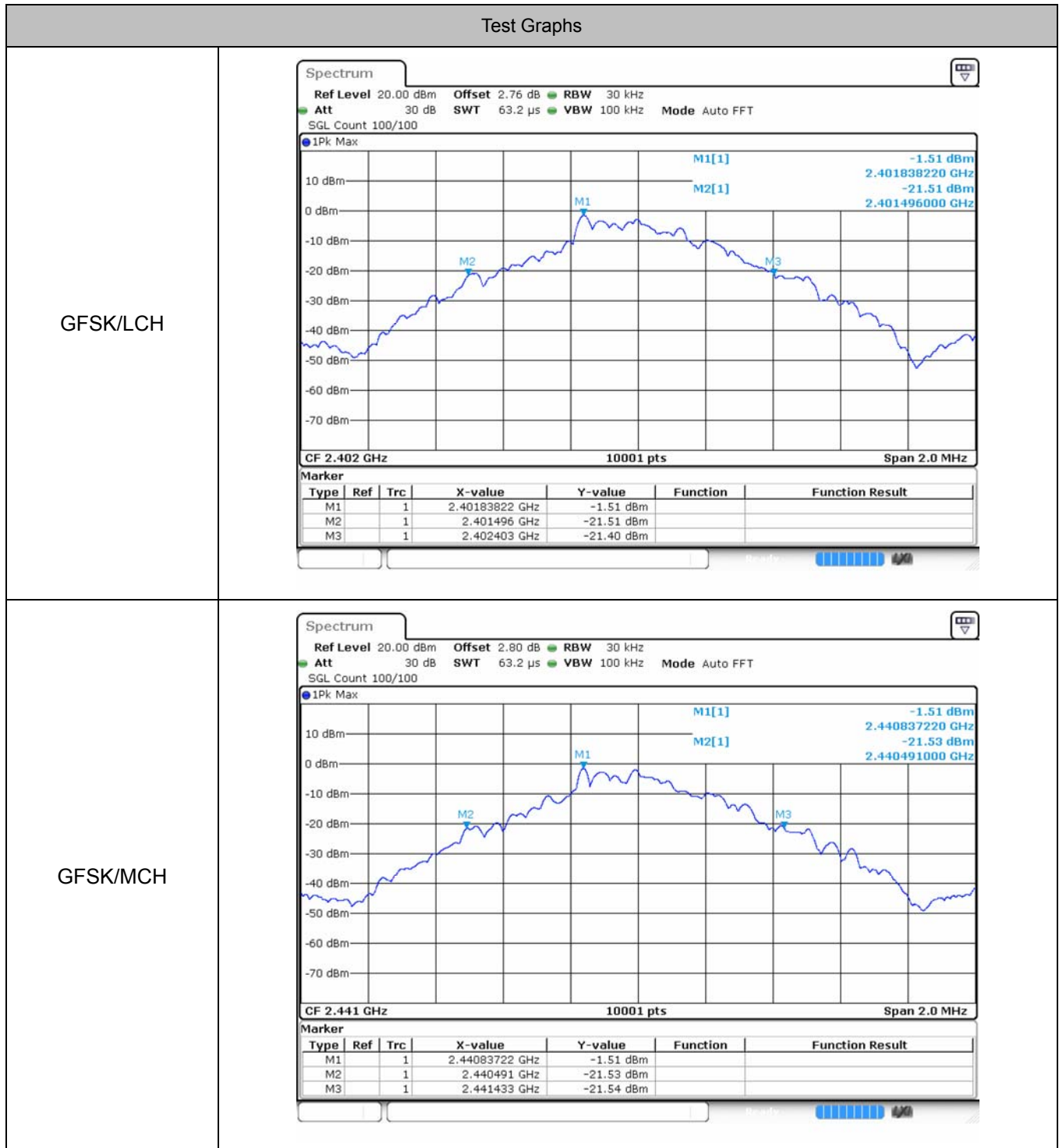


3 20dB Bandwidth

3.1 Test Result

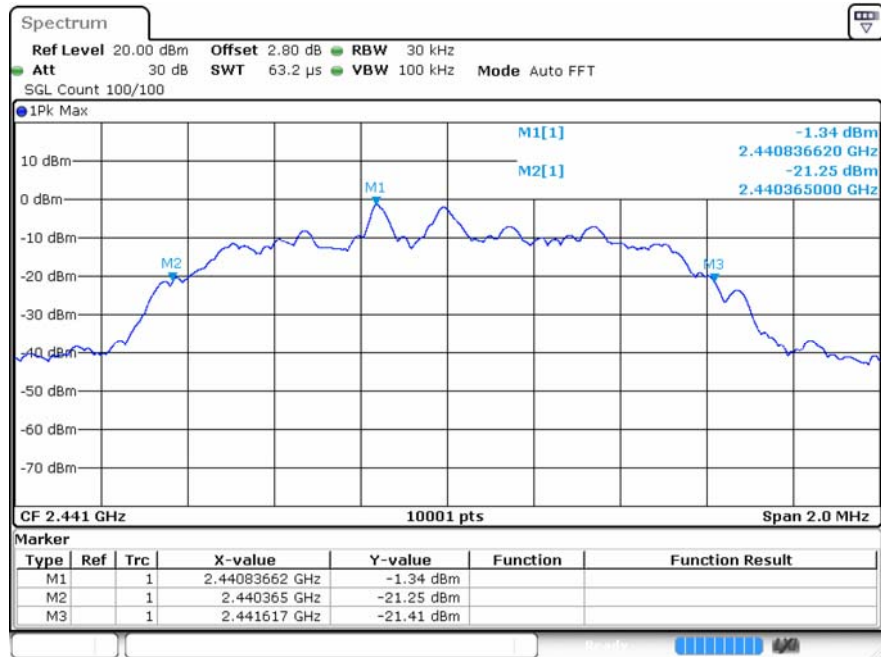
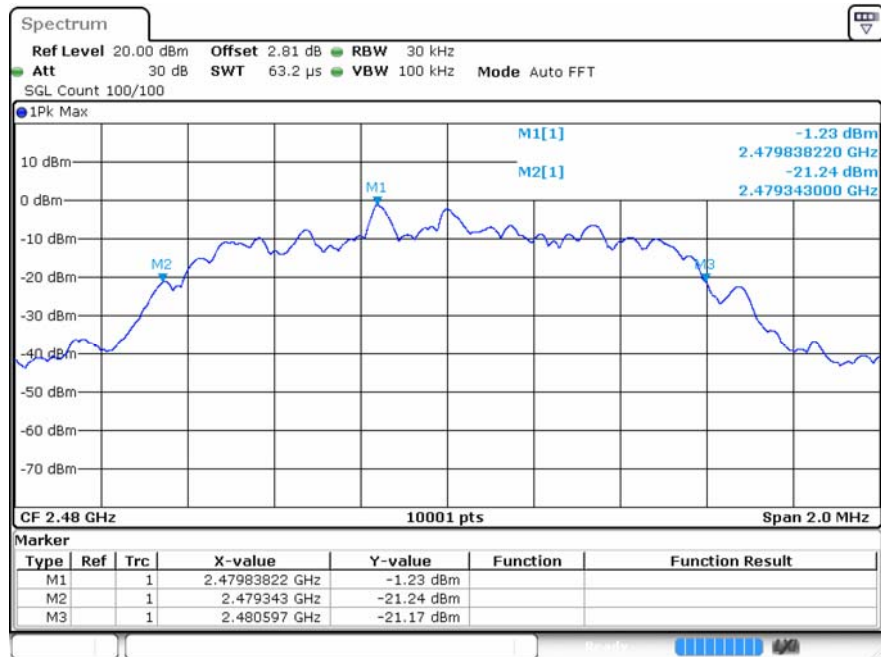
Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.907	Not Specified	Pass
	MCH	0.942	Not Specified	Pass
	HCH	0.861	Not Specified	Pass
$\pi/4$ DQPSK	LCH	1.225	Not Specified	Pass
	MCH	1.252	Not Specified	Pass
	HCH	1.254	Not Specified	Pass

3.2 Test Graphs



GFSK/HCH


 $\pi/4$ DQPSK/LCH

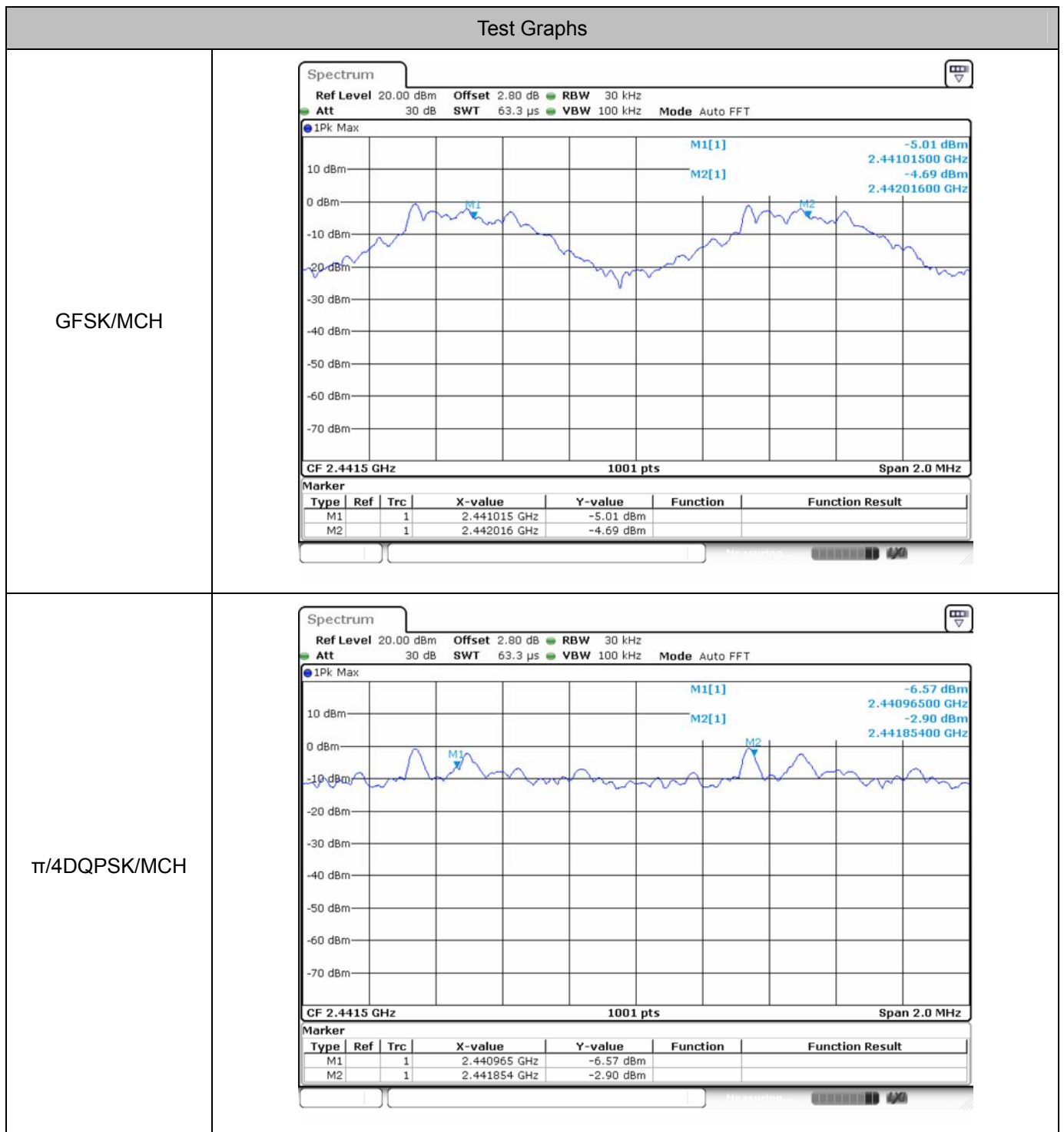

$\pi/4$ DQPSK/MCH

 $\pi/4$ DQPSK/HCH


4 Carrier Frequency Separation

4.1 Test Result

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	MCH	1.001	0.628	Pass
$\pi/4$ DQPSK	MCH	0.889	0.835	Pass

4.2 Test Graphs

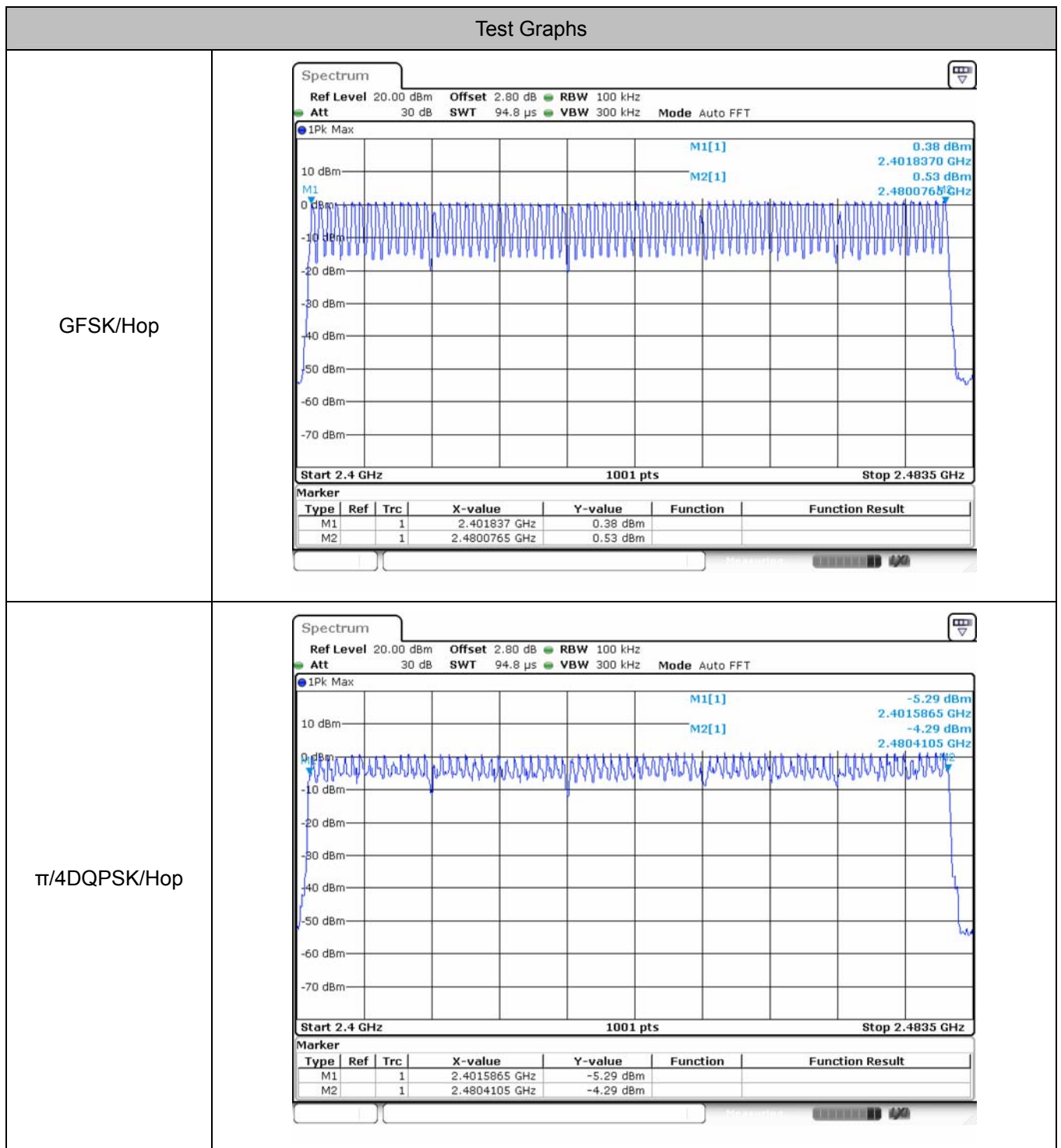


5 Hopping Channel Number

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

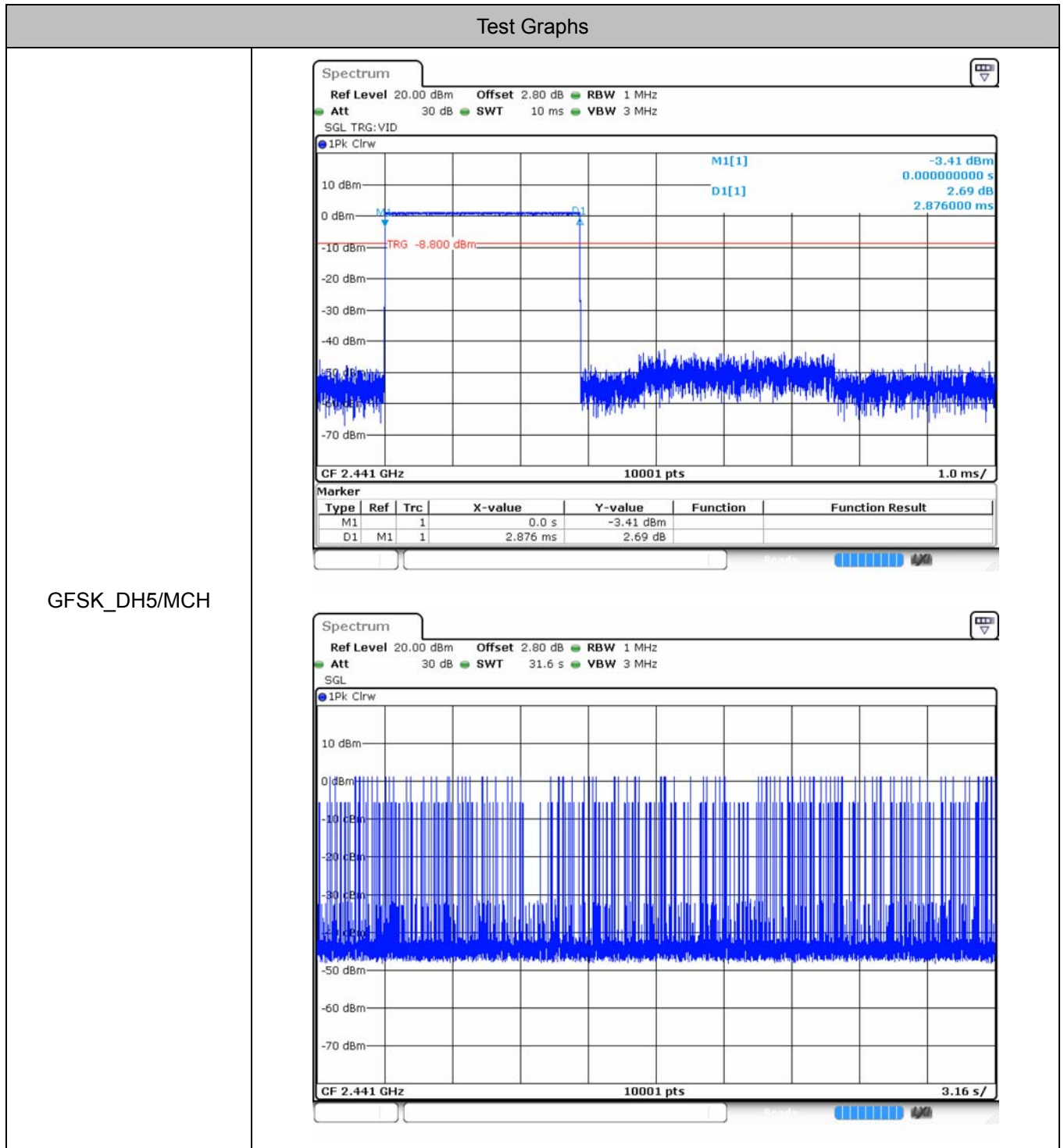


6 Dwell Time

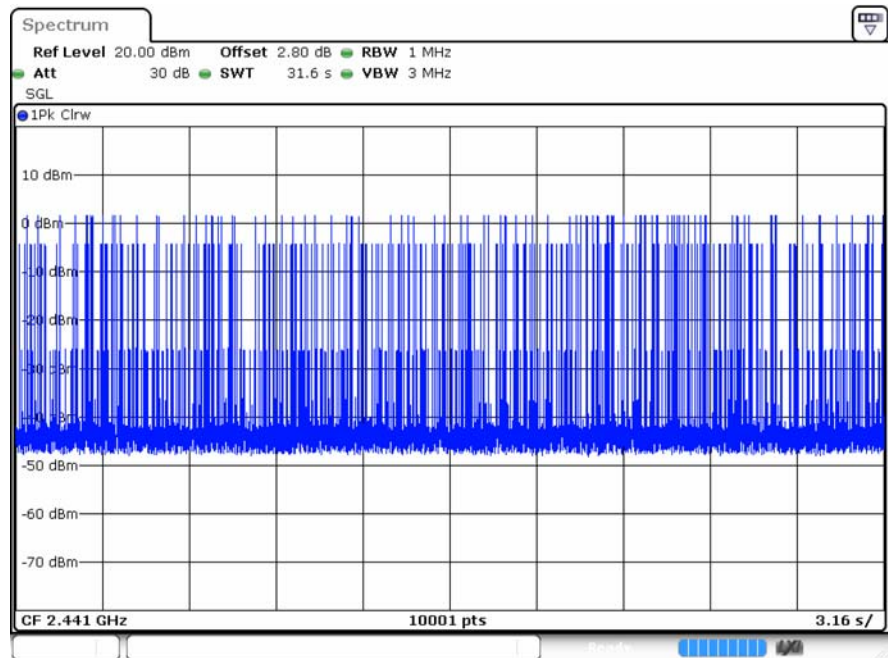
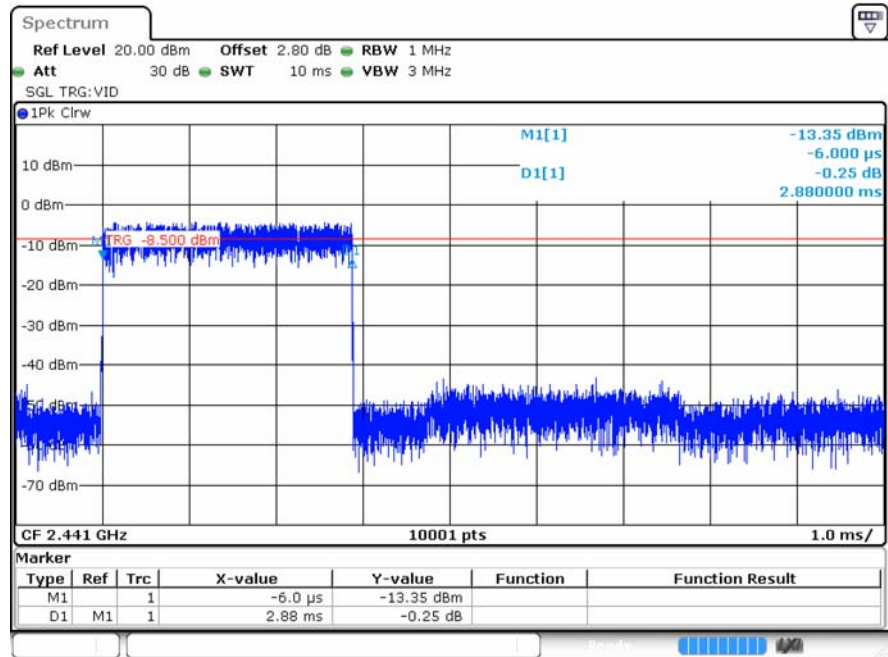
6.1 Test Result

Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[ms]	Limit [s]	Verdict
GFSK	DH5	MCH	2.876	110	316.36	0.4	Pass
$\pi/4$ DQPSK	2DH5	MCH	2.88	96	276.48	0.4	Pass

6.2 Test Graphs



$\pi/4$ DQPSK
_2DH5/MCH

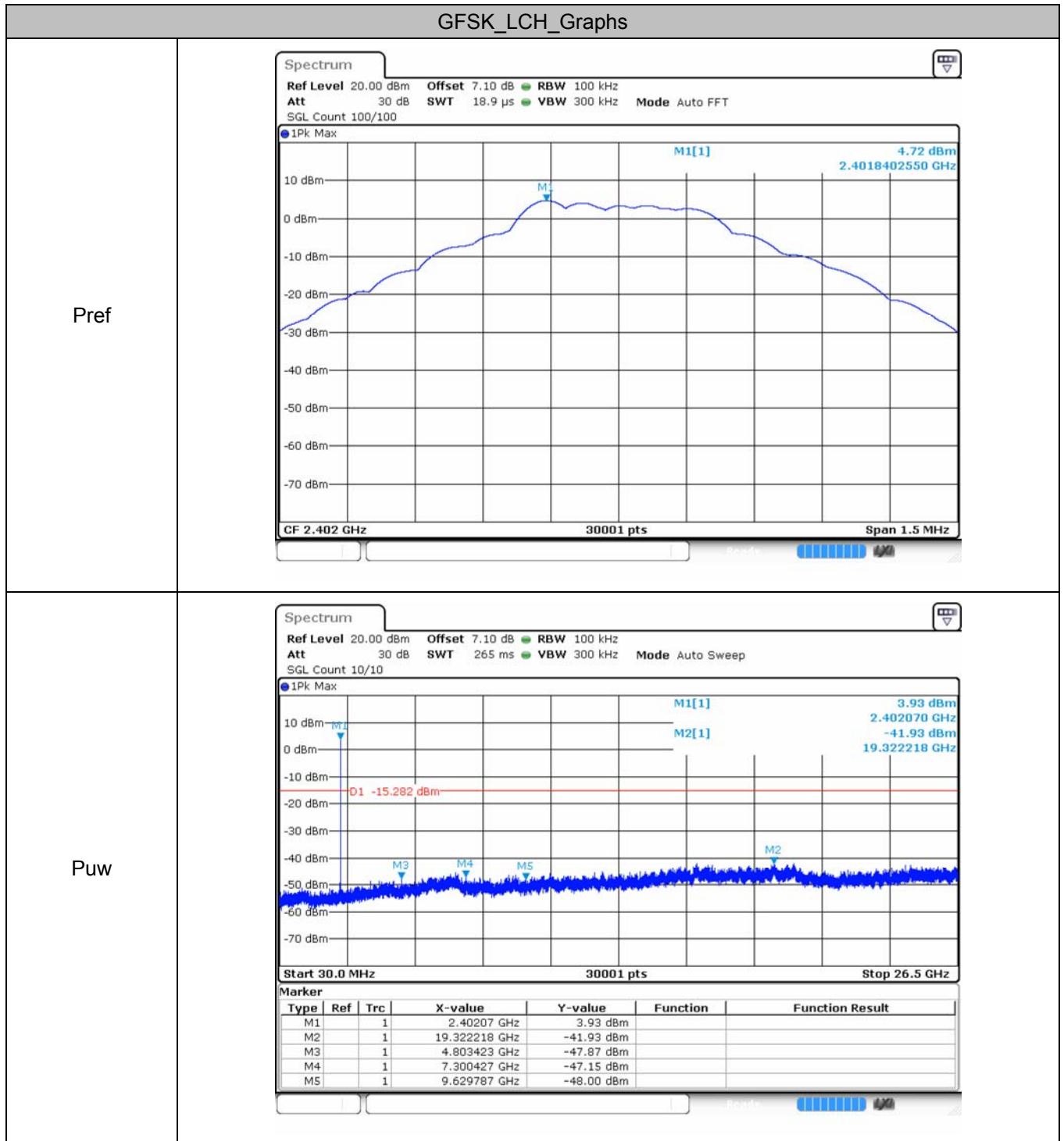


7 RF Conducted Spurious Emissions

7.1 Test Result

Mode	Channel	Max. Level [dBc]	Limit [dBc]	Verdict
GFSK	LCH	-46.64	-20	Pass
	MCH	-46.22	-20	Pass
	HCH	-46.79	-20	Pass
$\pi/4$ DQPSK	LCH	-45.8	-20	Pass
	MCH	-45.84	-20	Pass
	HCH	-46.62	-20	Pass

7.2 Test Graphs

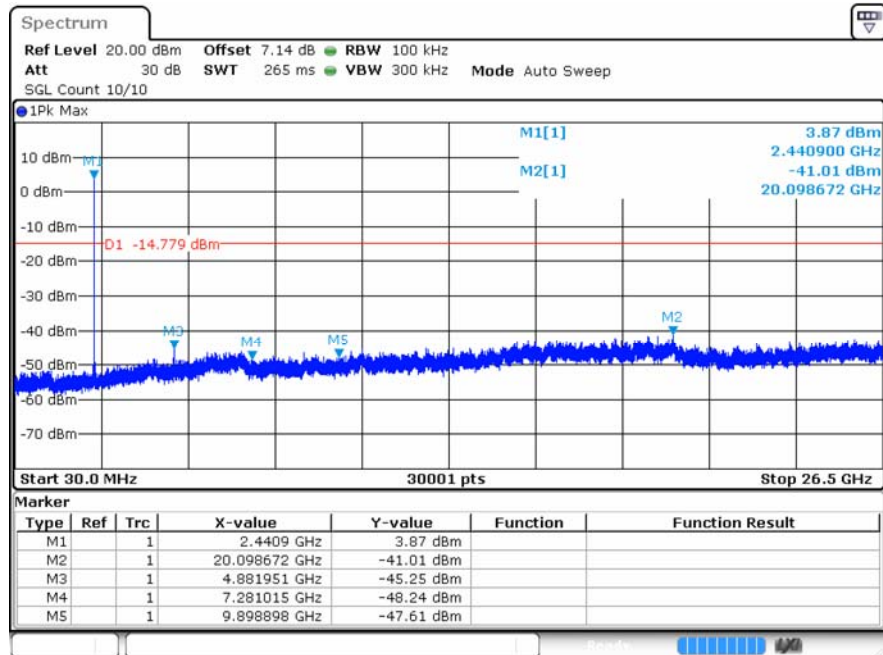


GFSK_MCH_Graphs

Pref



Puw

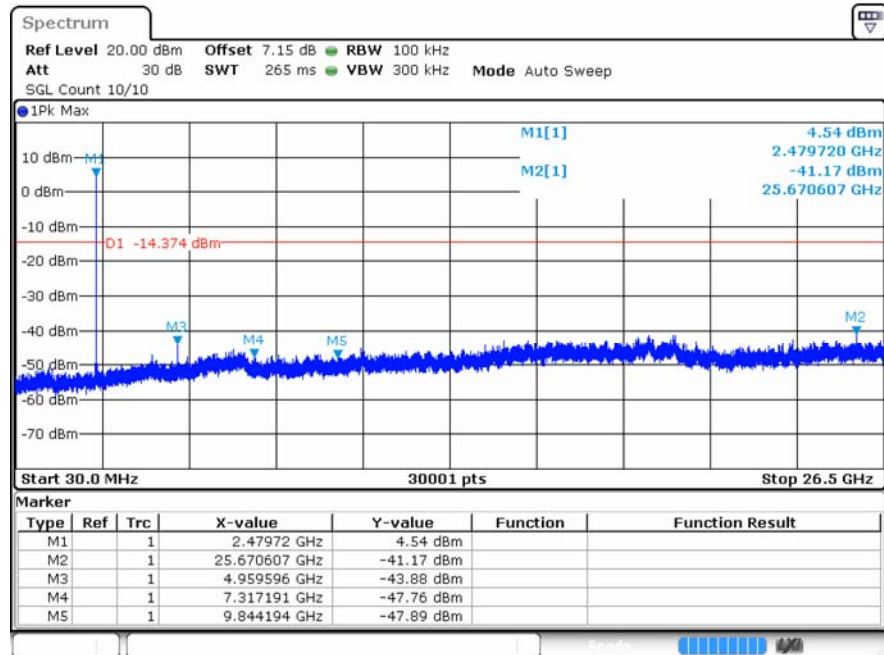


GFSK_HCH_Graphs

Pref

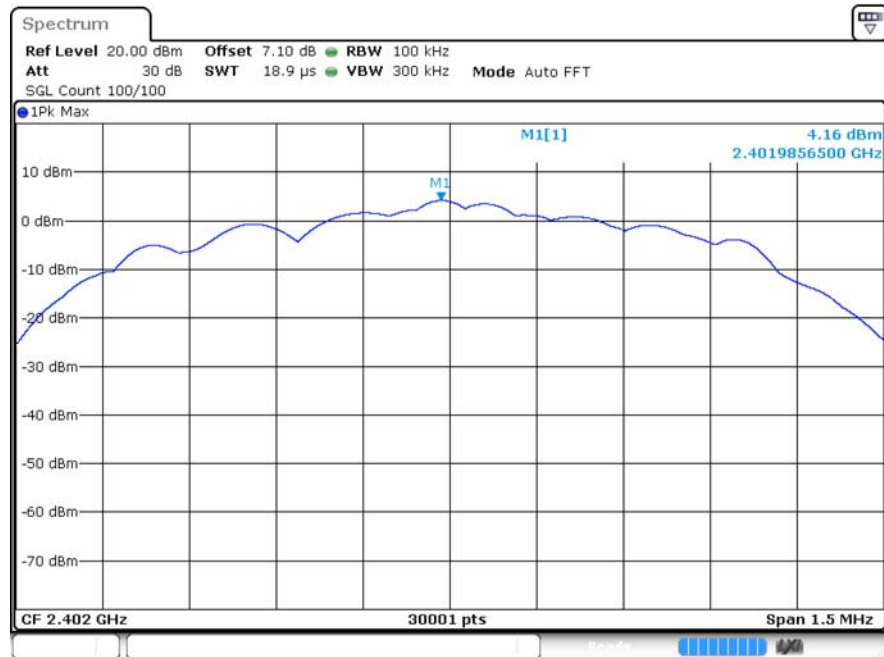


Puw

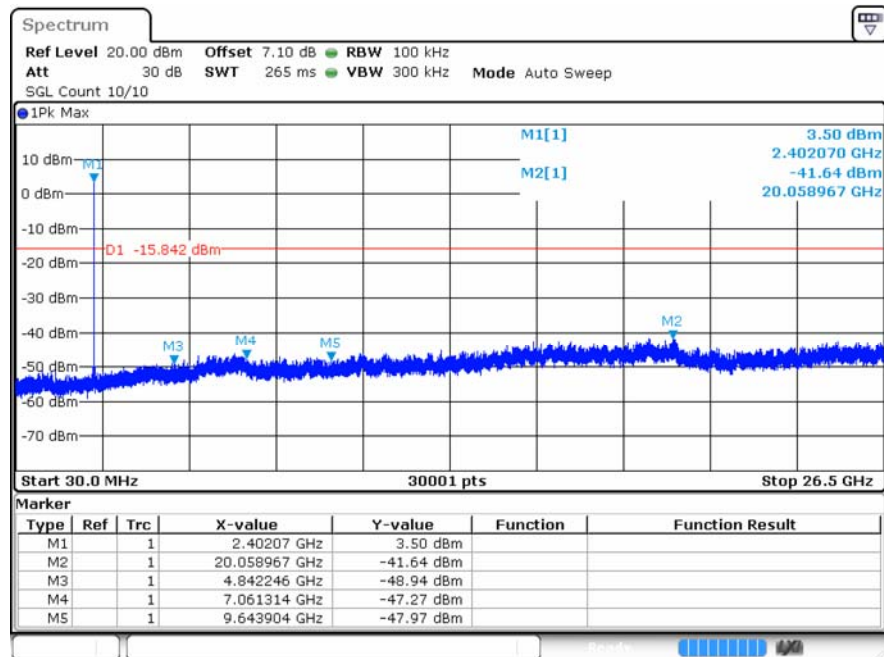


$\pi/4$ DQPSK_LCH_Graphs

Pref

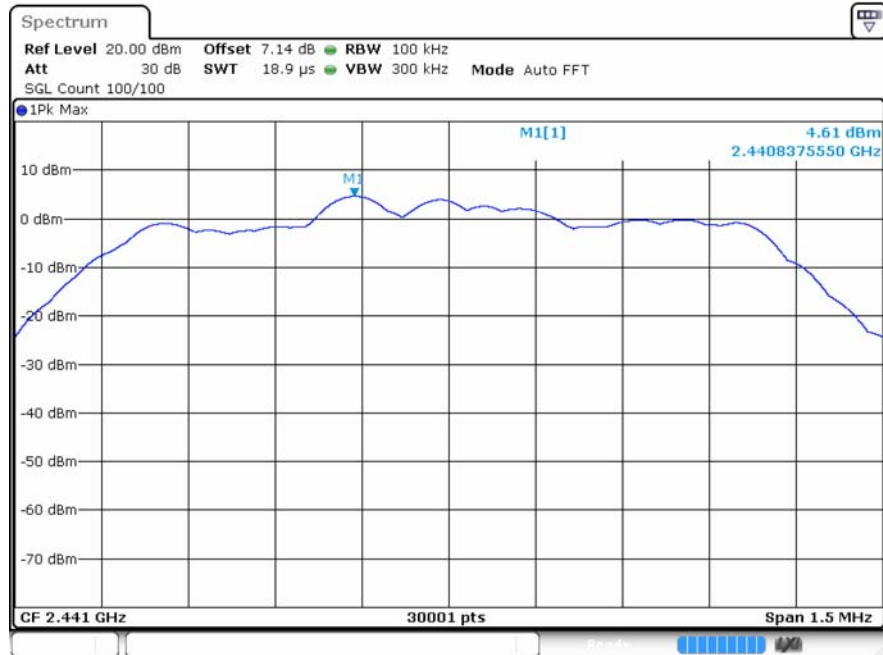


Puw

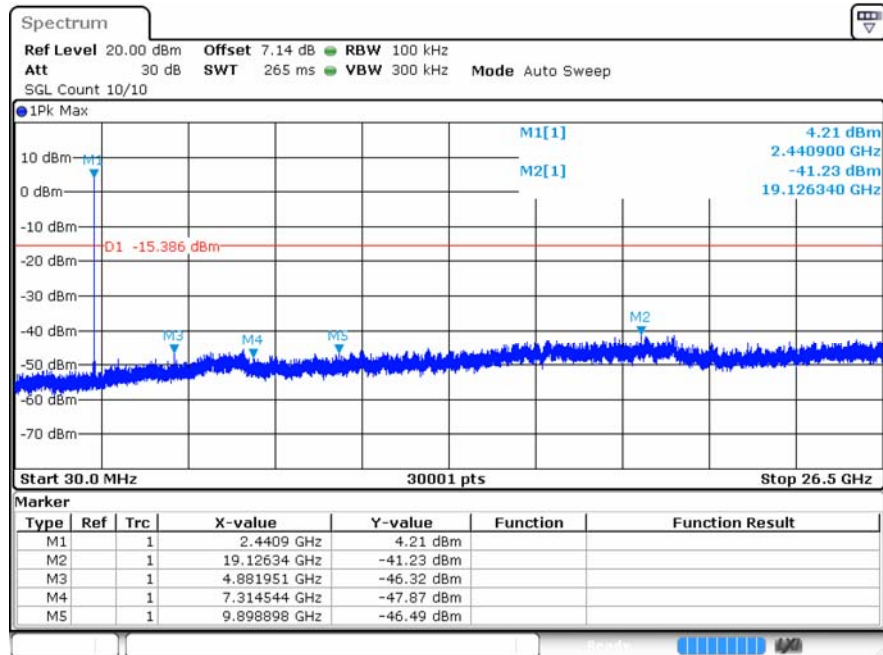


$\pi/4$ DQPSK_MCH_Graphs

Pref

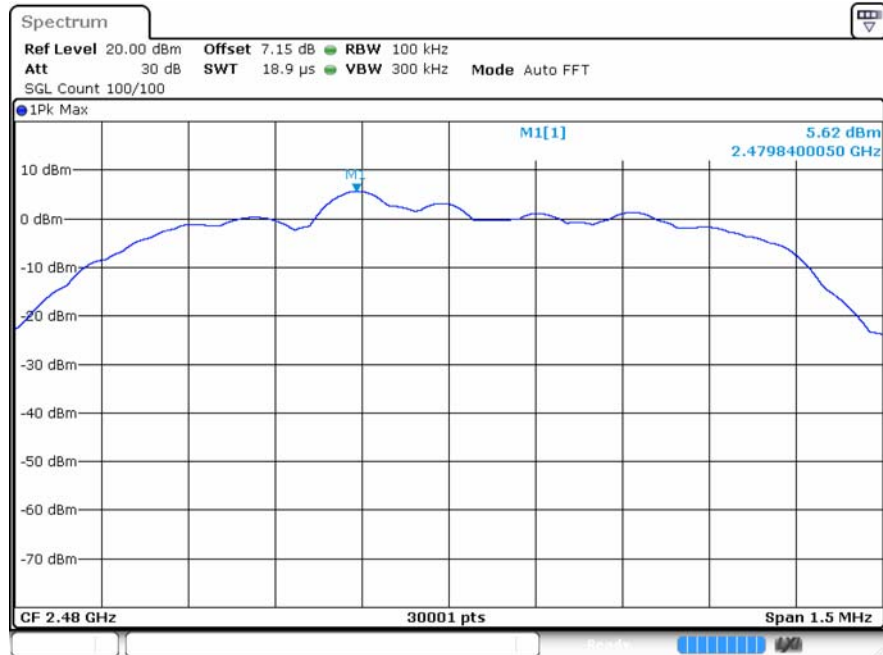


Puw

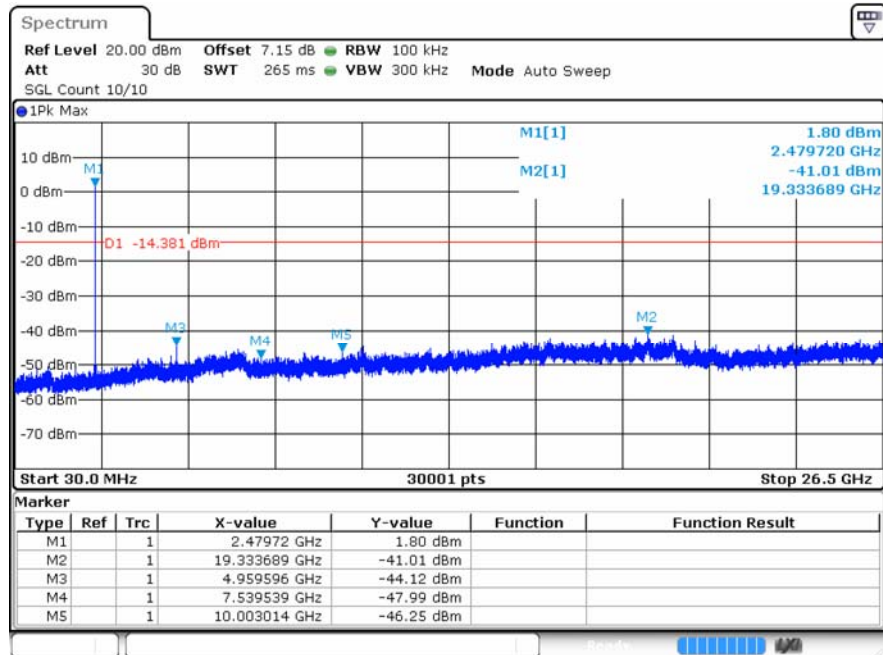


$\pi/4$ DQPSK_HCH_Graphs

Pref



Puw

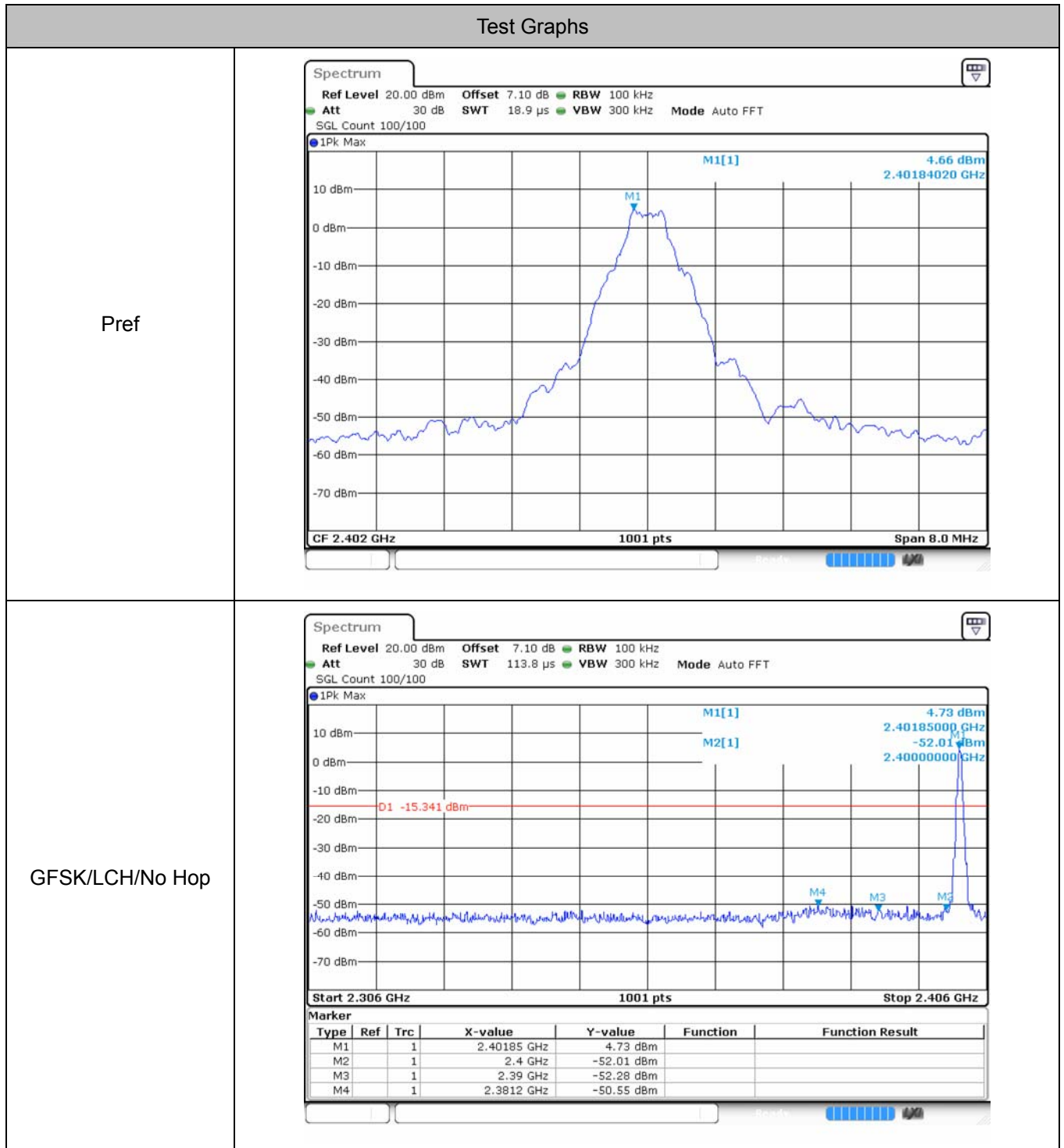


8 Band-edge for RF Conducted Emissions

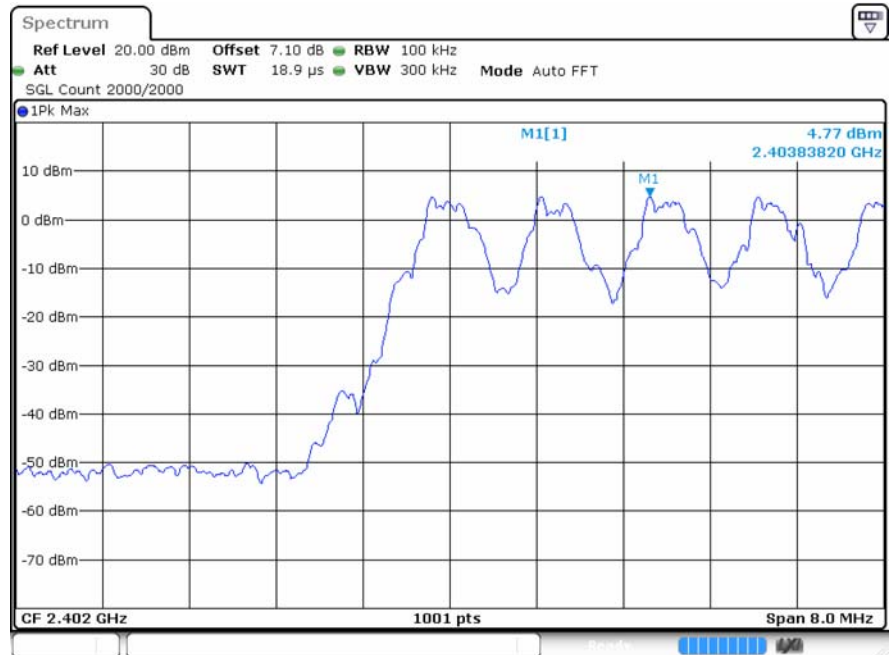
8.1 Test Result

Mode	Channel	Carrier Frequency [MHz]	Frequency Hopping	Max Spurious Level [dBc]	Limit [dBc]	Verdict
GFSK	LCH	2402	Off	-55.2	-20	Pass
			On	-54.37	-20	Pass
	HCH	2480	Off	-54.1	-20	Pass
			On	-53.2	-20	Pass
$\pi/4$ DQPSK	LCH	2402	Off	-53.9	-20	Pass
			On	-52.89	-20	Pass
	HCH	2480	Off	-53.91	-20	Pass
			On	-52.84	-20	Pass

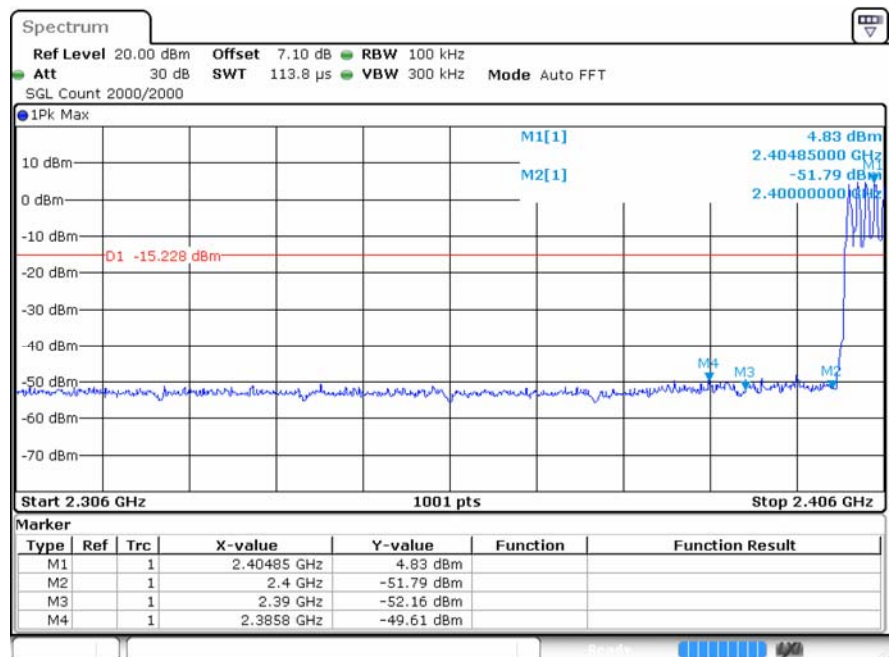
8.2 Test Graphs



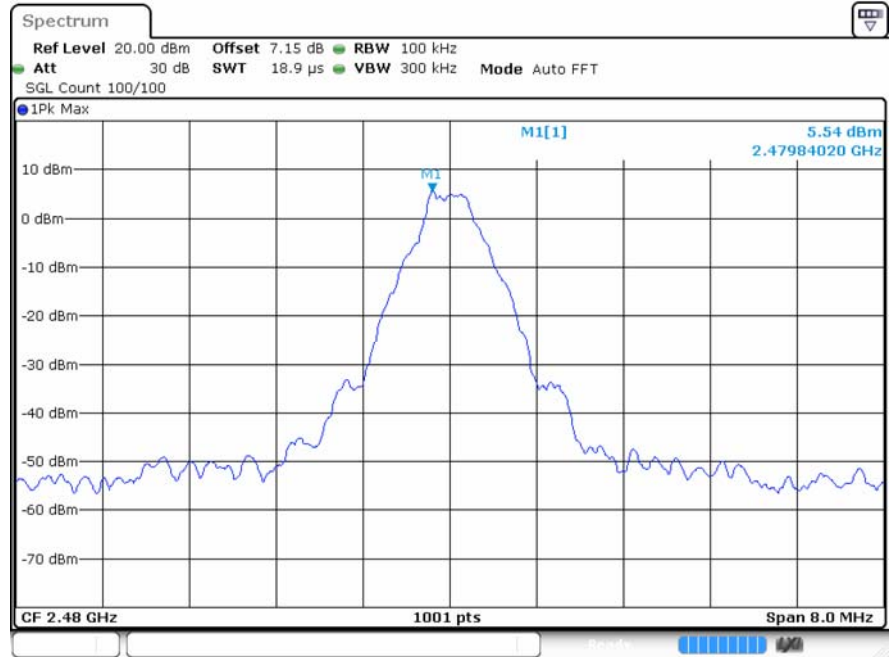
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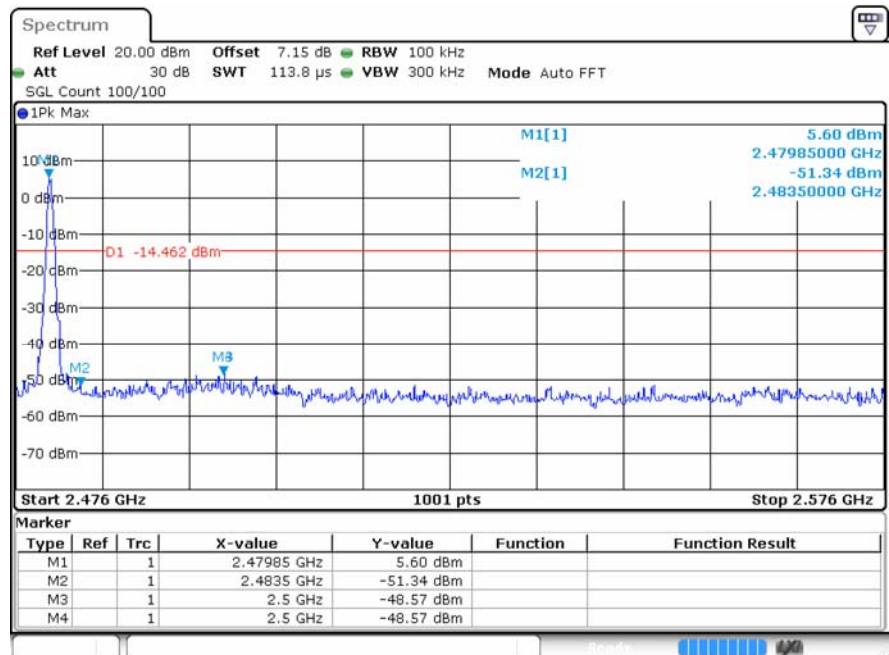
GFSK/LCH/Hop



Ref



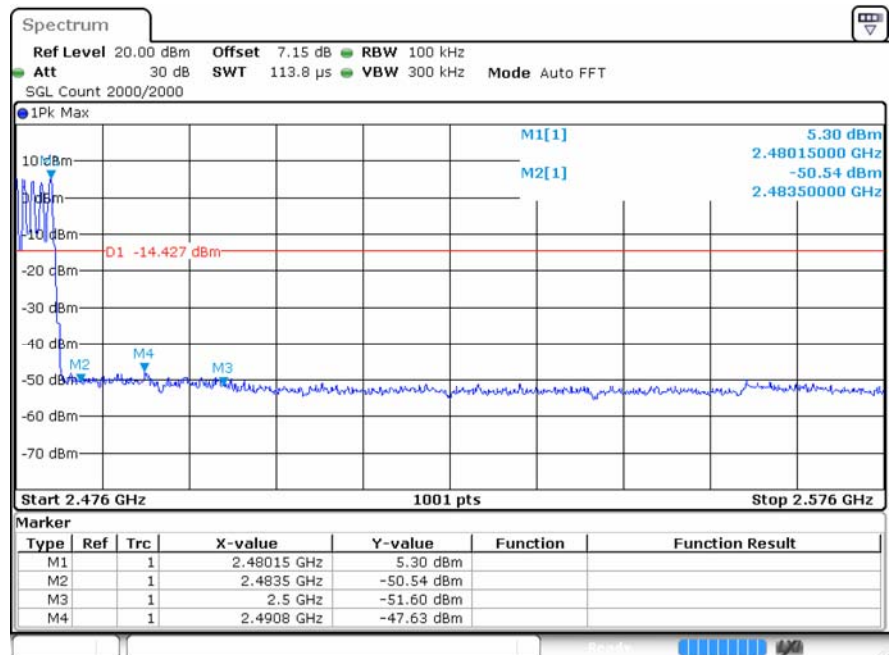
GFSK/HCH/No Hop



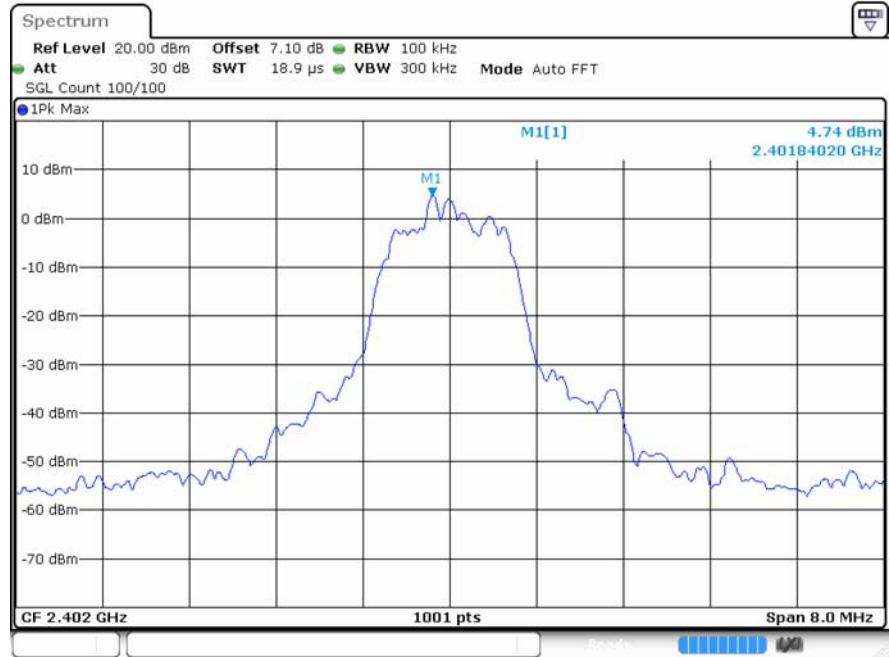
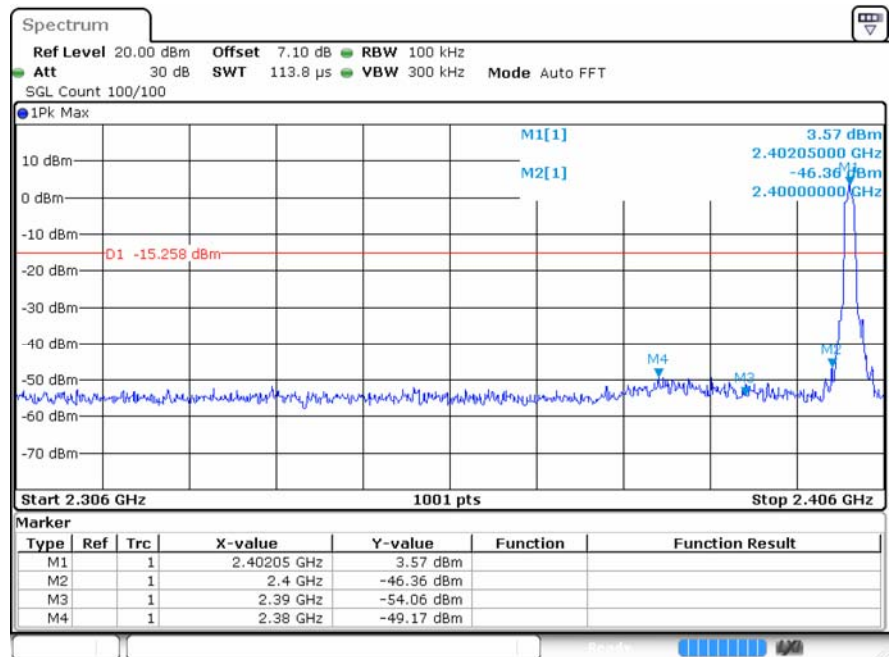
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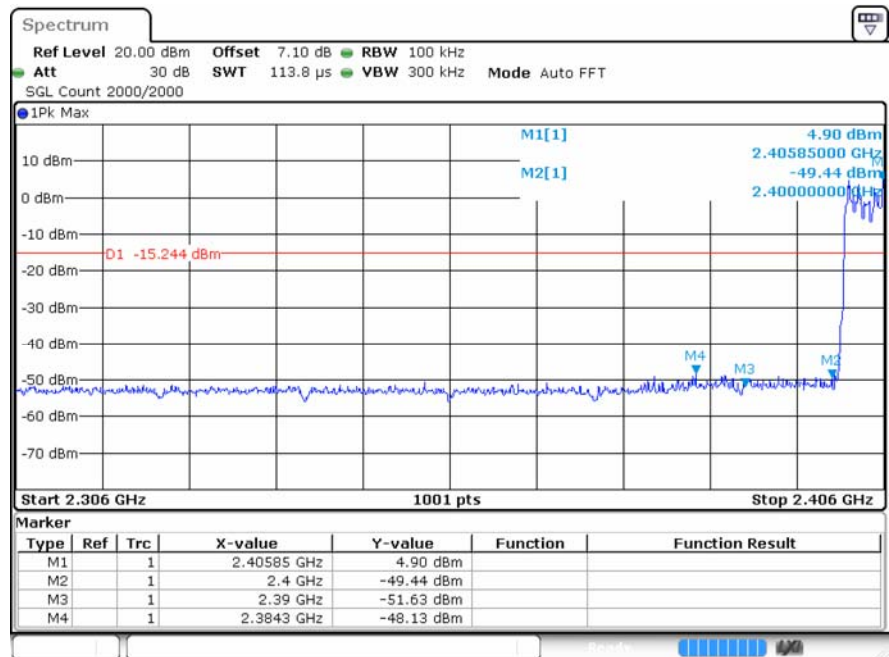
GFSK/HCH/Hop



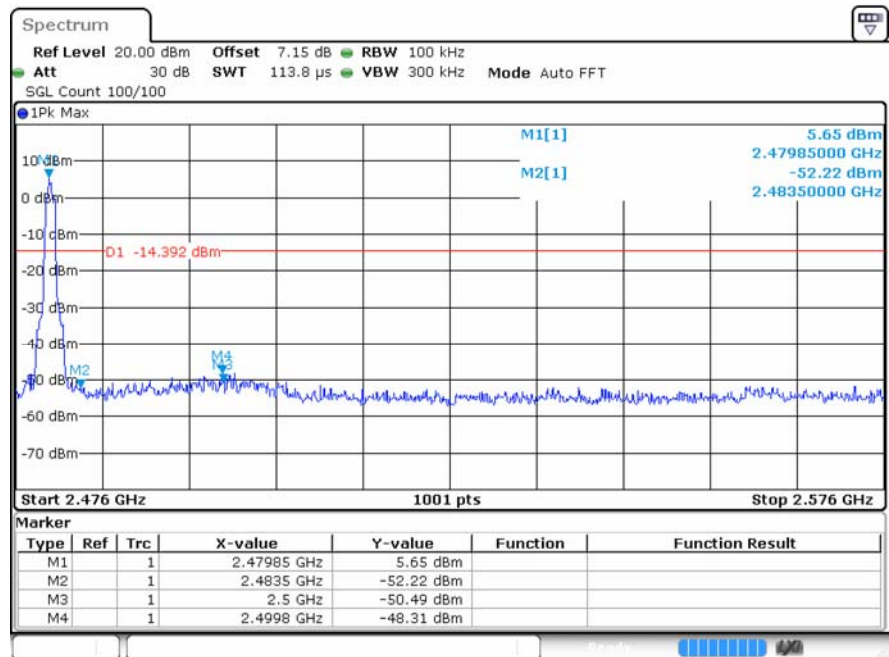
Ref


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


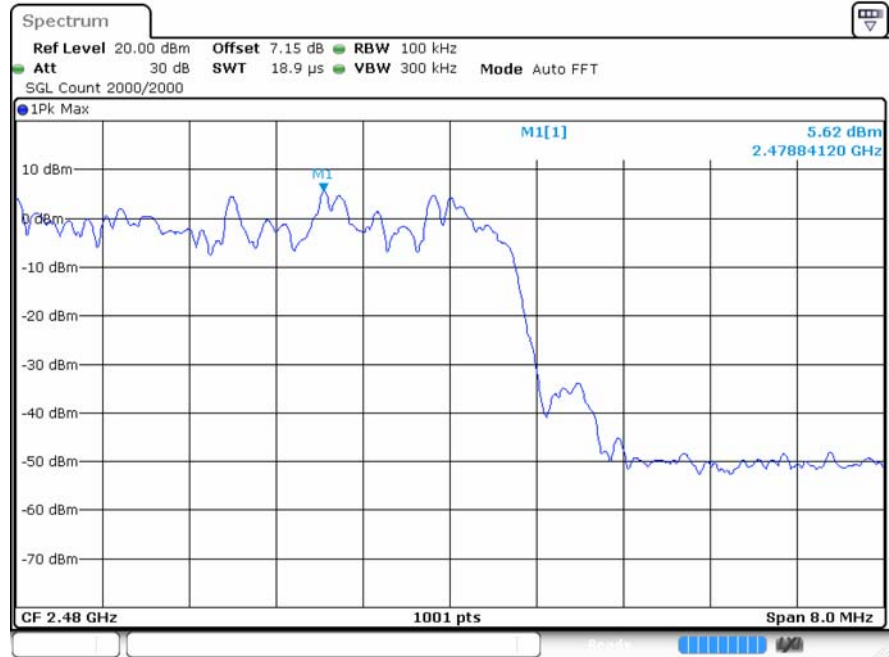
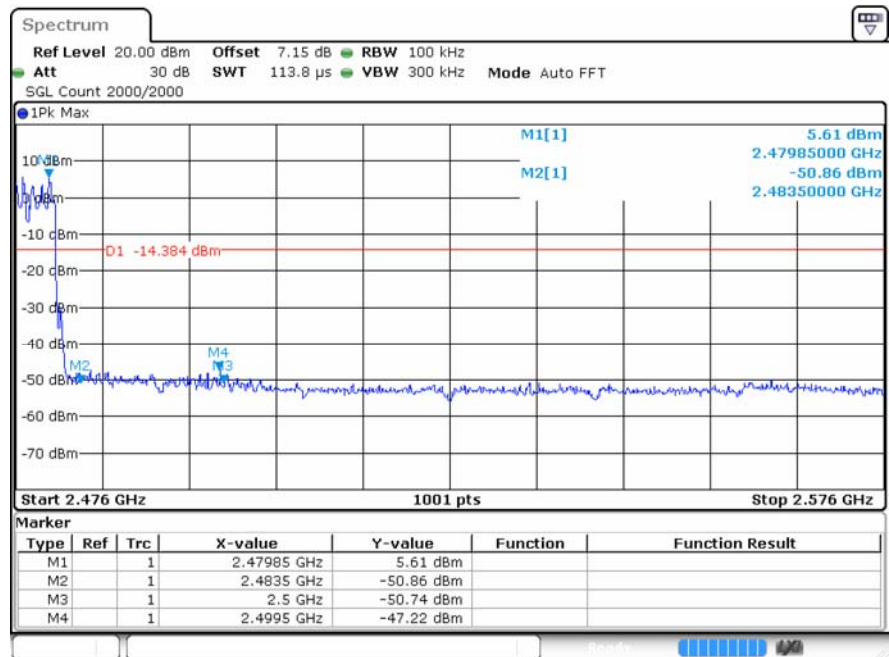
Ref


 $\pi/4$ DQPSK/LCH/Hop


Ref


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


Ref


 $\pi/4$ DQPSK/HCH/Hop


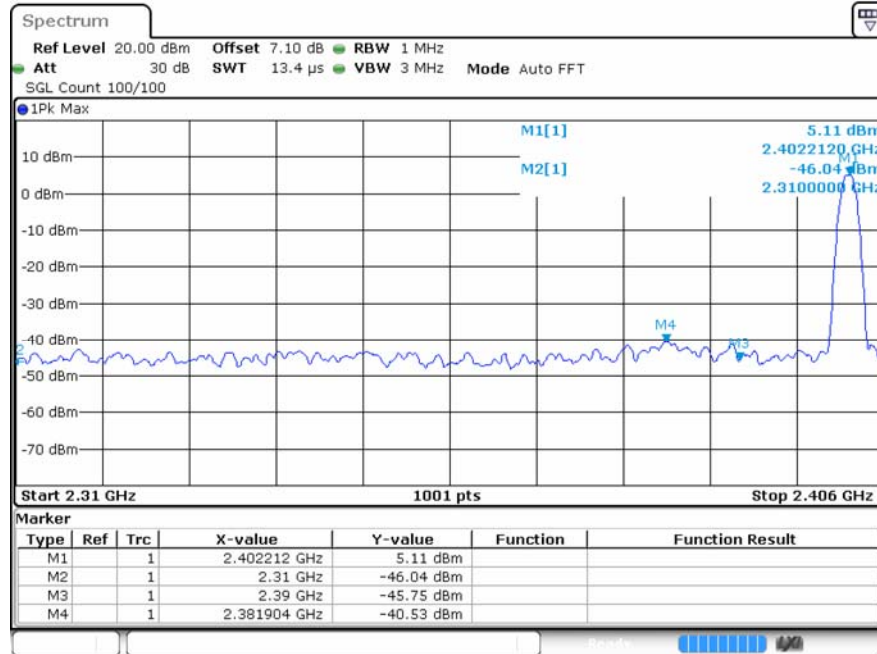
9 Restrict-band band-edge measurements

9.1 Test Result

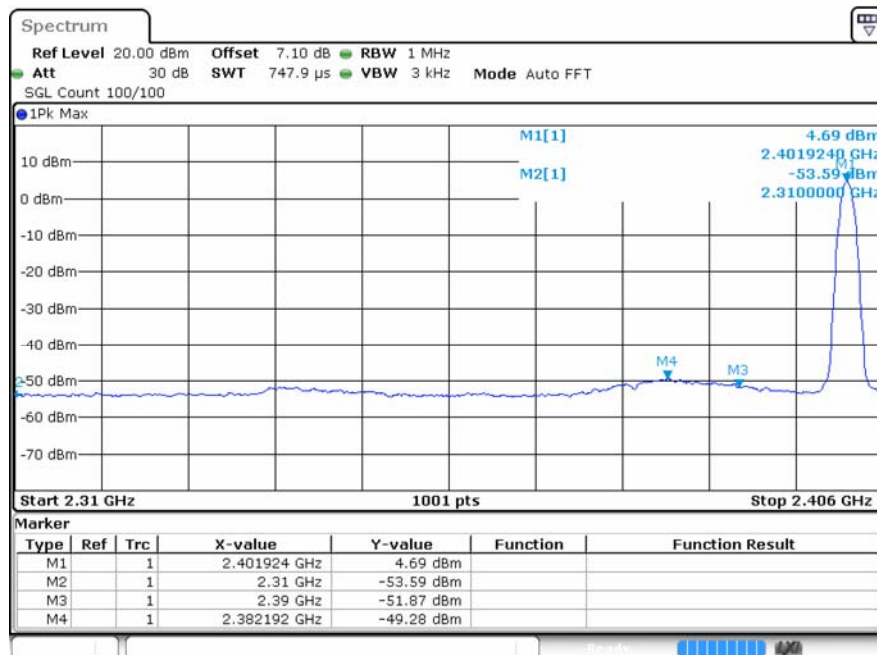
Test Mode	Hopping	Freq.	Power [dBm]	Gain	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-46.04	4.34	53.56	PEAK	74	Pass
	Off	2310.0	-53.58	4.34	46.02	AV	54	Pass
	Off	2381.904	-40.53	4.34	59.07	PEAK	74	Pass
	Off	2382.192	-49.28	4.34	50.32	AV	54	Pass
	Off	2390.0	-45.74	4.34	53.86	PEAK	74	Pass
	Off	2390.0	-51.87	4.34	47.73	AV	54	Pass
	Off	2483.5	-45.19	4.34	54.41	PEAK	74	Pass
	Off	2483.5	-51.52	4.34	48.08	AV	54	Pass
	Off	2500	-40.36	4.34	59.24	PEAK	74	Pass
	Off	2499.352	-48.67	4.34	50.93	AV	54	Pass
	Off	2500.0	-40.36	4.34	59.24	PEAK	74	Pass
	Off	2500.0	-49.42	4.34	50.18	AV	54	Pass
$\pi/4$ DQPSK	Off	2310.0	-43.95	4.34	55.65	PEAK	74	Pass
	Off	2310.0	-53.65	4.34	45.95	AV	54	Pass
	Off	2380.176	-38.94	4.34	60.66	PEAK	74	Pass
	Off	2382	-49.61	4.34	49.99	AV	54	Pass
	Off	2390.0	-41.92	4.34	57.68	PEAK	74	Pass
	Off	2390.0	-51.35	4.34	48.25	AV	54	Pass
	Off	2483.5	-42.51	4.34	57.09	PEAK	74	Pass
	Off	2483.5	-52.24	4.34	47.36	AV	54	Pass
	Off	2496.712	-40.13	4.34	59.47	PEAK	74	Pass
	Off	2498.848	-48.73	4.34	50.87	AV	54	Pass
	Off	2500.0	-43.56	4.34	56.04	PEAK	74	Pass
	Off	2500.0	-49	4.34	50.6	AV	54	Pass

9.2 Test Graphs

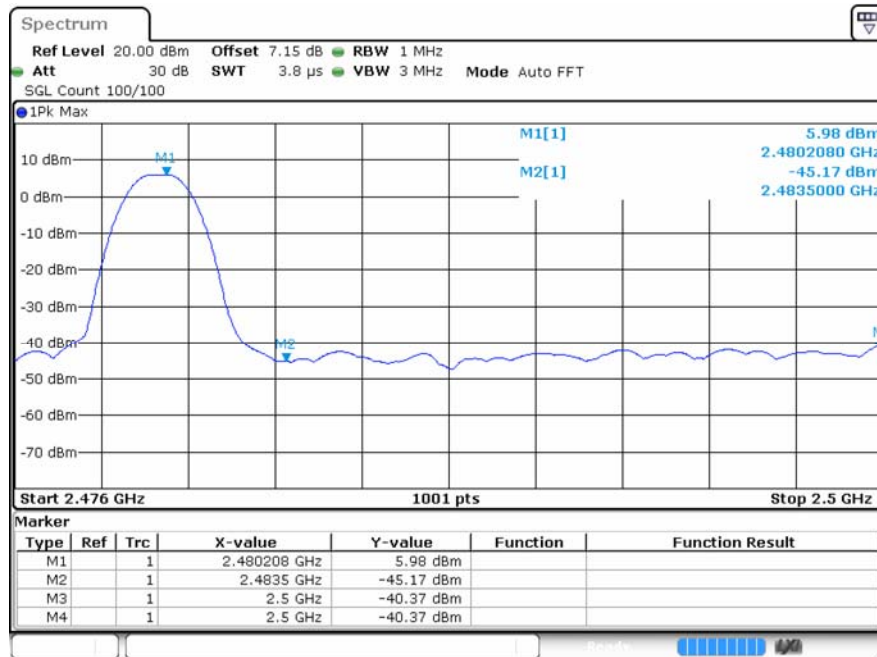
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (Low Channel)



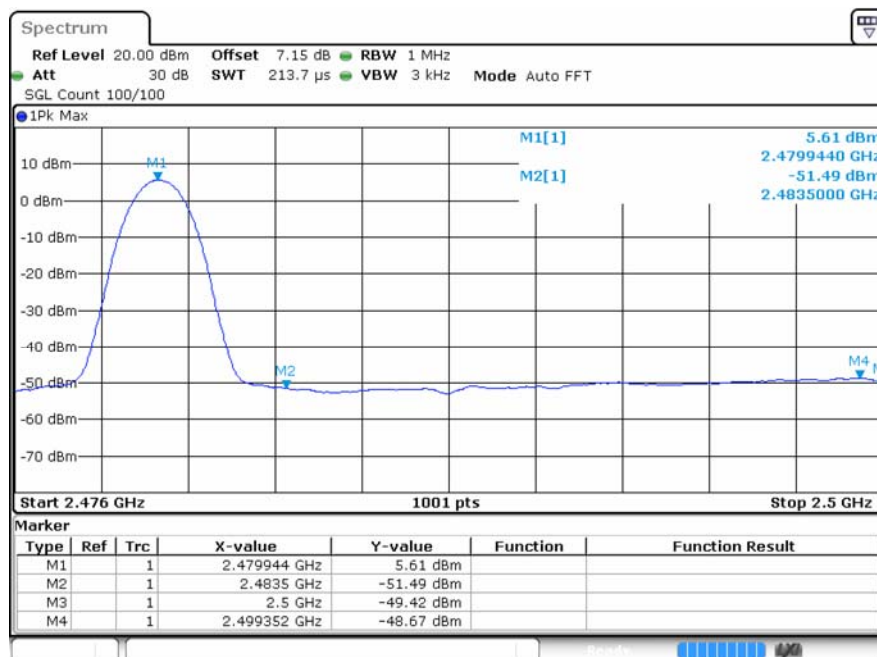
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (Low Channel)



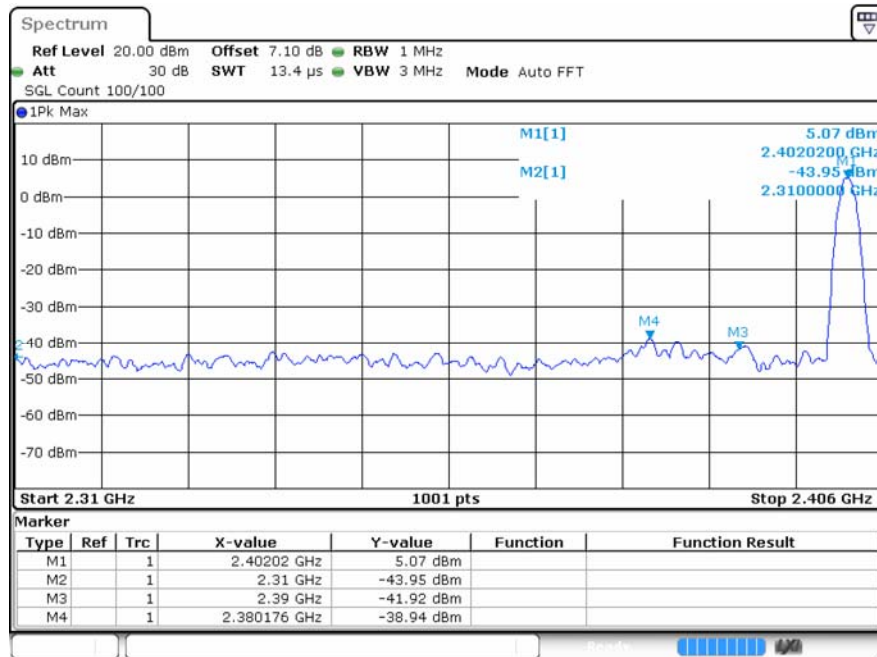
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (High Channel)



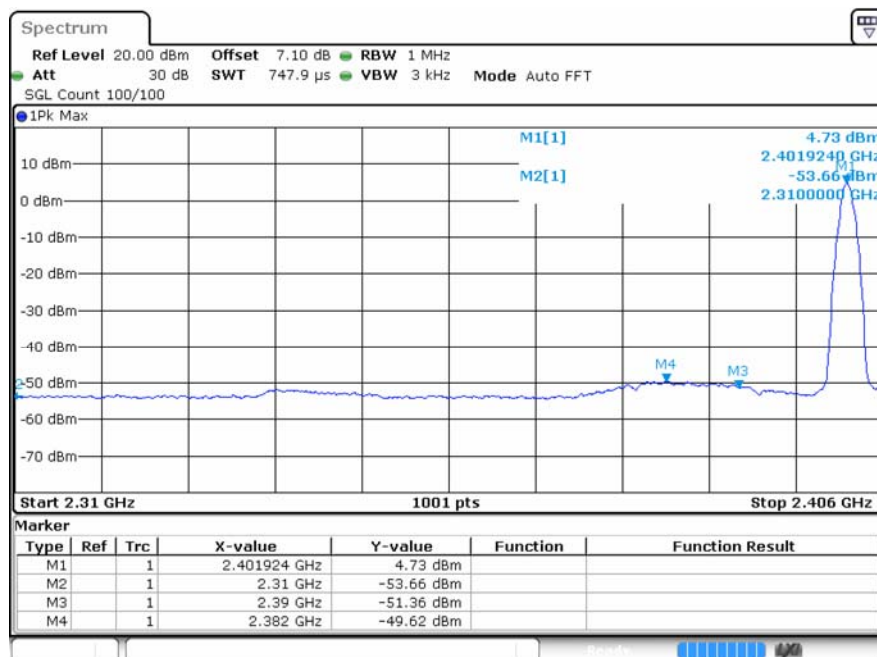
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (High Channel)



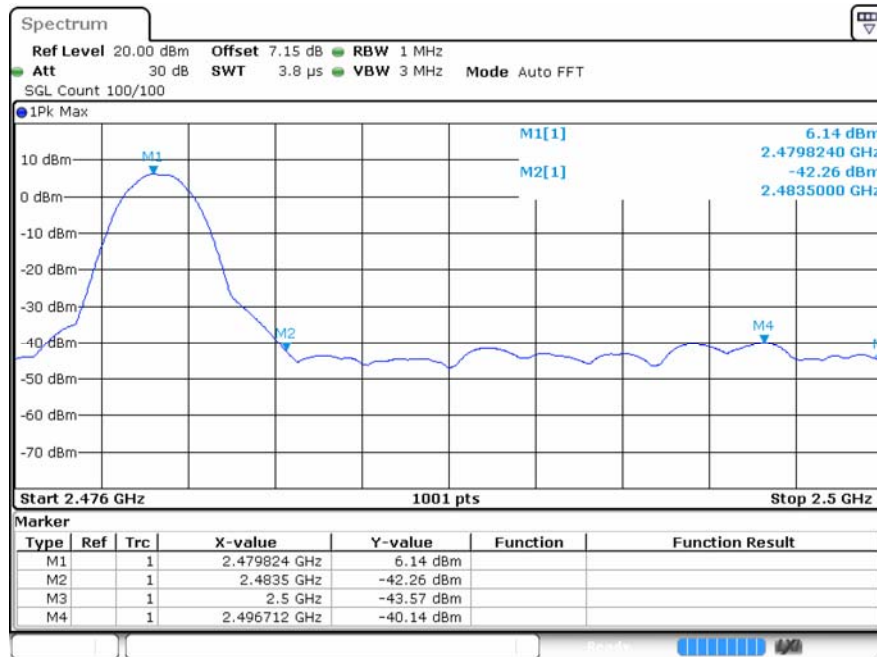
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (Low Channel)



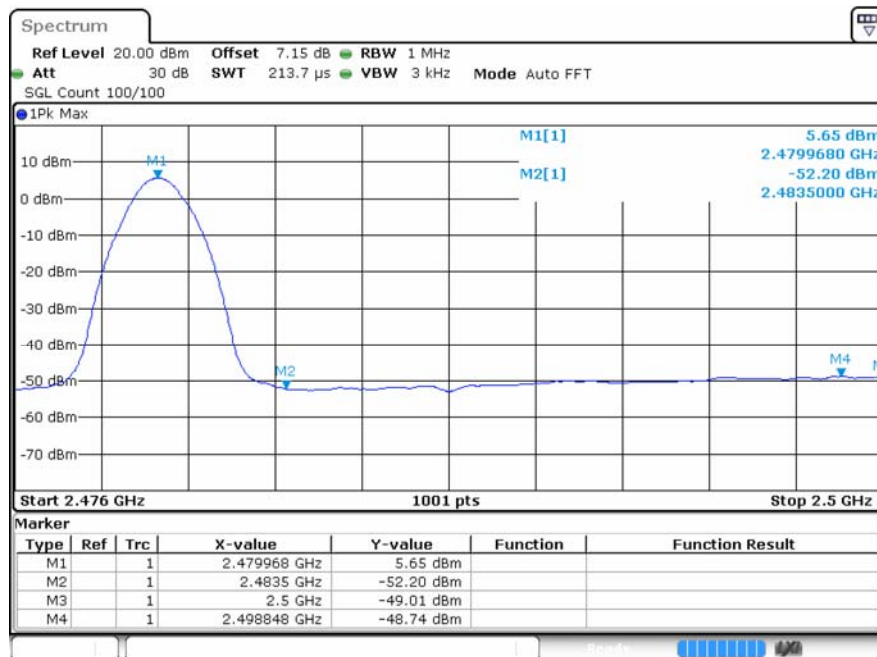
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (Low Channel)



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---