



Appendix A

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

Product Name: True Wireless sports Earbud

Trade Mark: AT&T

Test Model: EBT6-22547

Environmental Conditions

Temperature:	25.8℃
Relative Humidity:	52.4%
ATM Pressure:	101Kpa
Test Engineer:	Simba Huang
Supervised by:	Seal Chen



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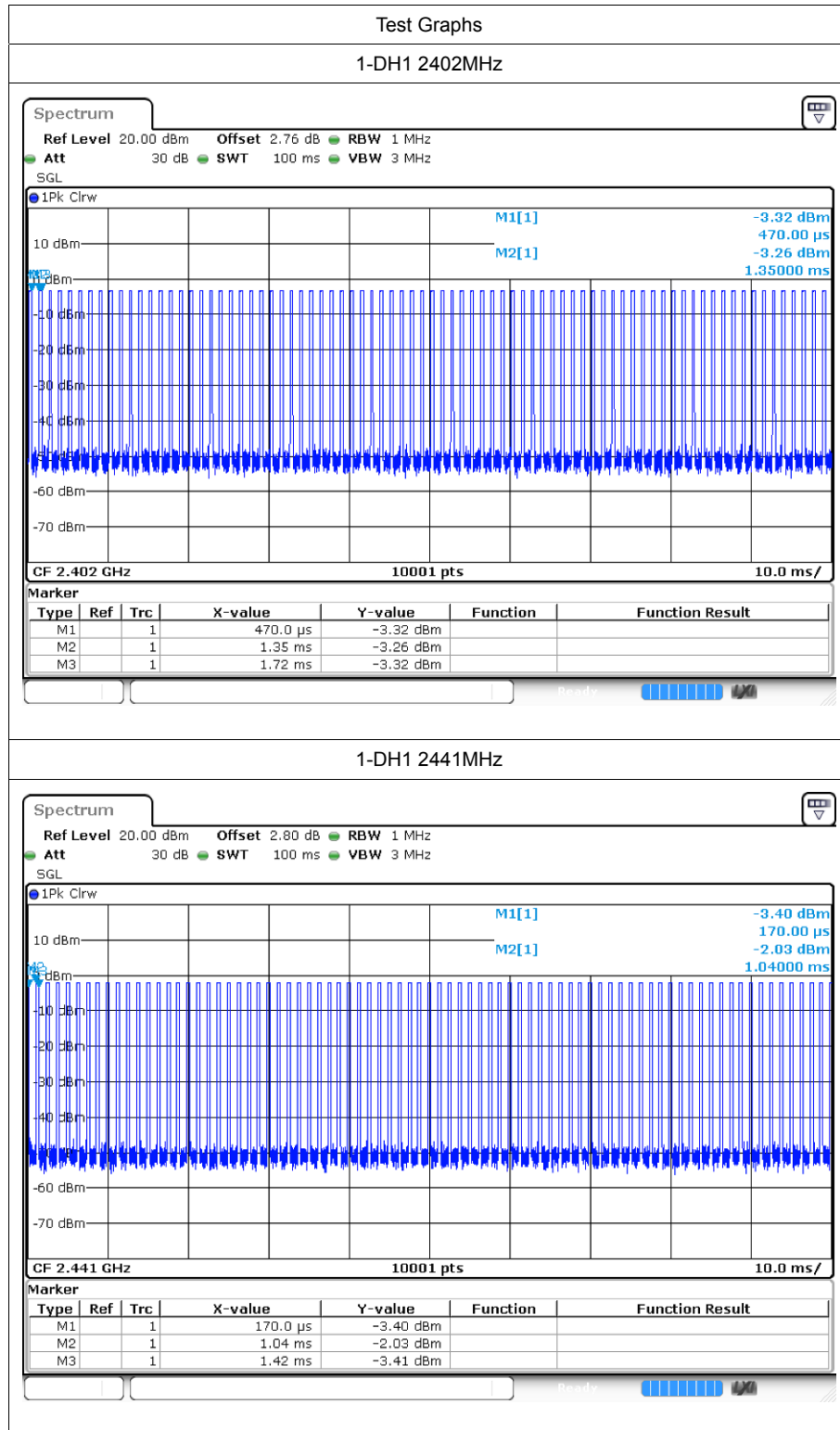
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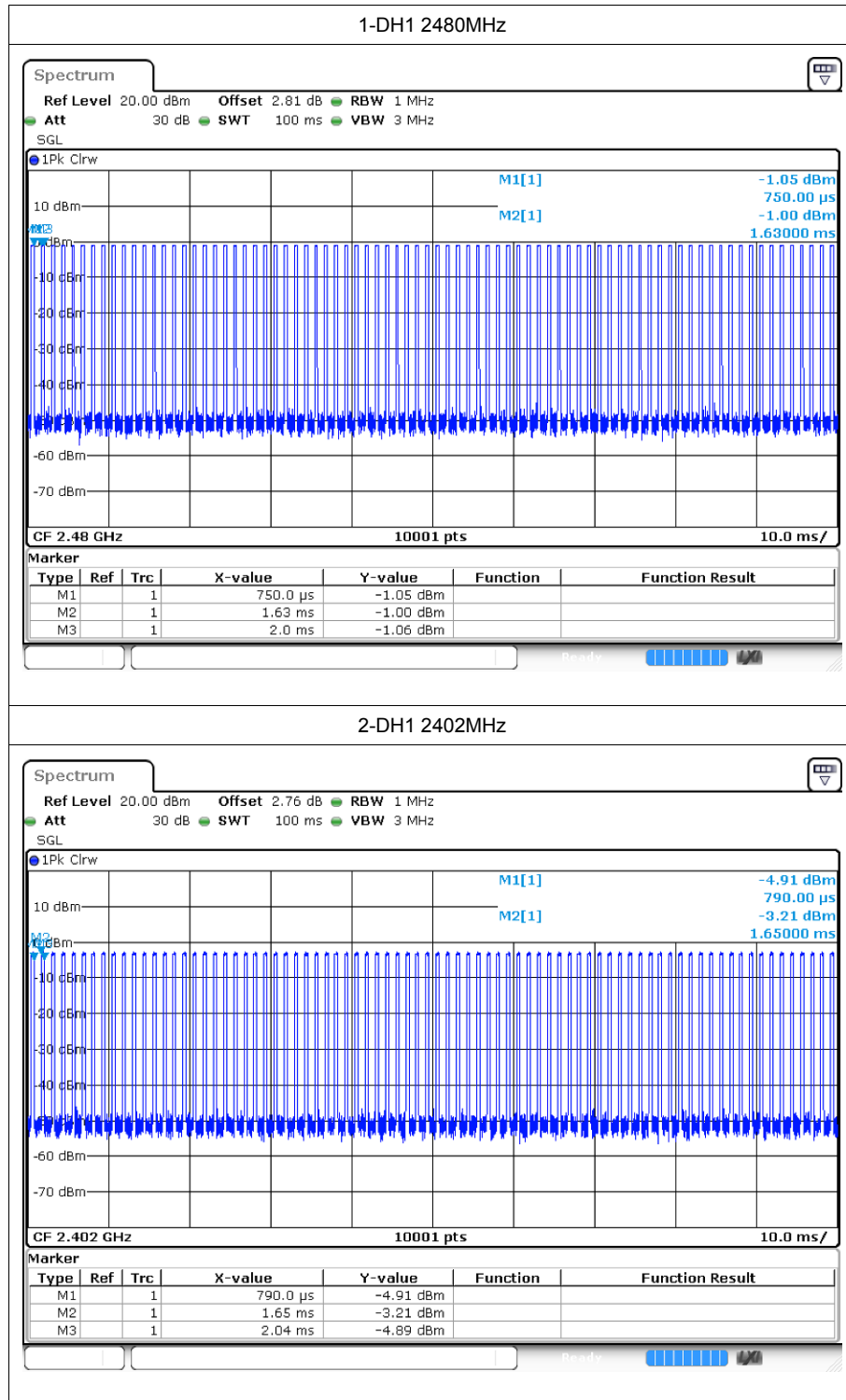
1 Duty Cycle

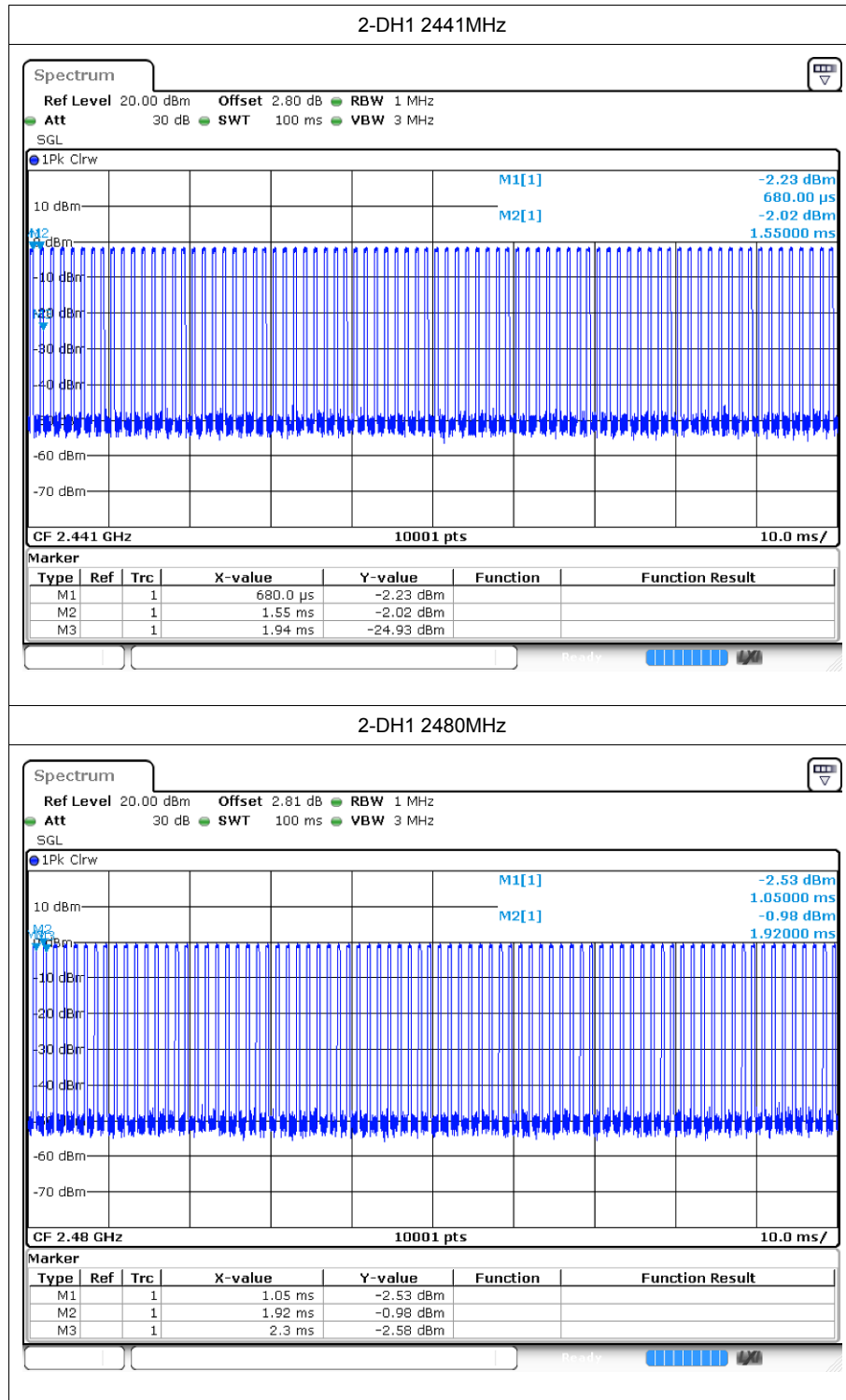
1.1 Test Result

Mode	Frequency (MHz)	Duty Cycle (%)	1/T (kHz)
1-DH1	2402	30.4	2.7
1-DH1	2441	31.21	2.63
1-DH1	2480	30.4	2.7
2-DH1	2402	32	2.56
2-DH1	2441	31.99	2.56
2-DH1	2480	31.2	2.63

1.2 Test Graphs





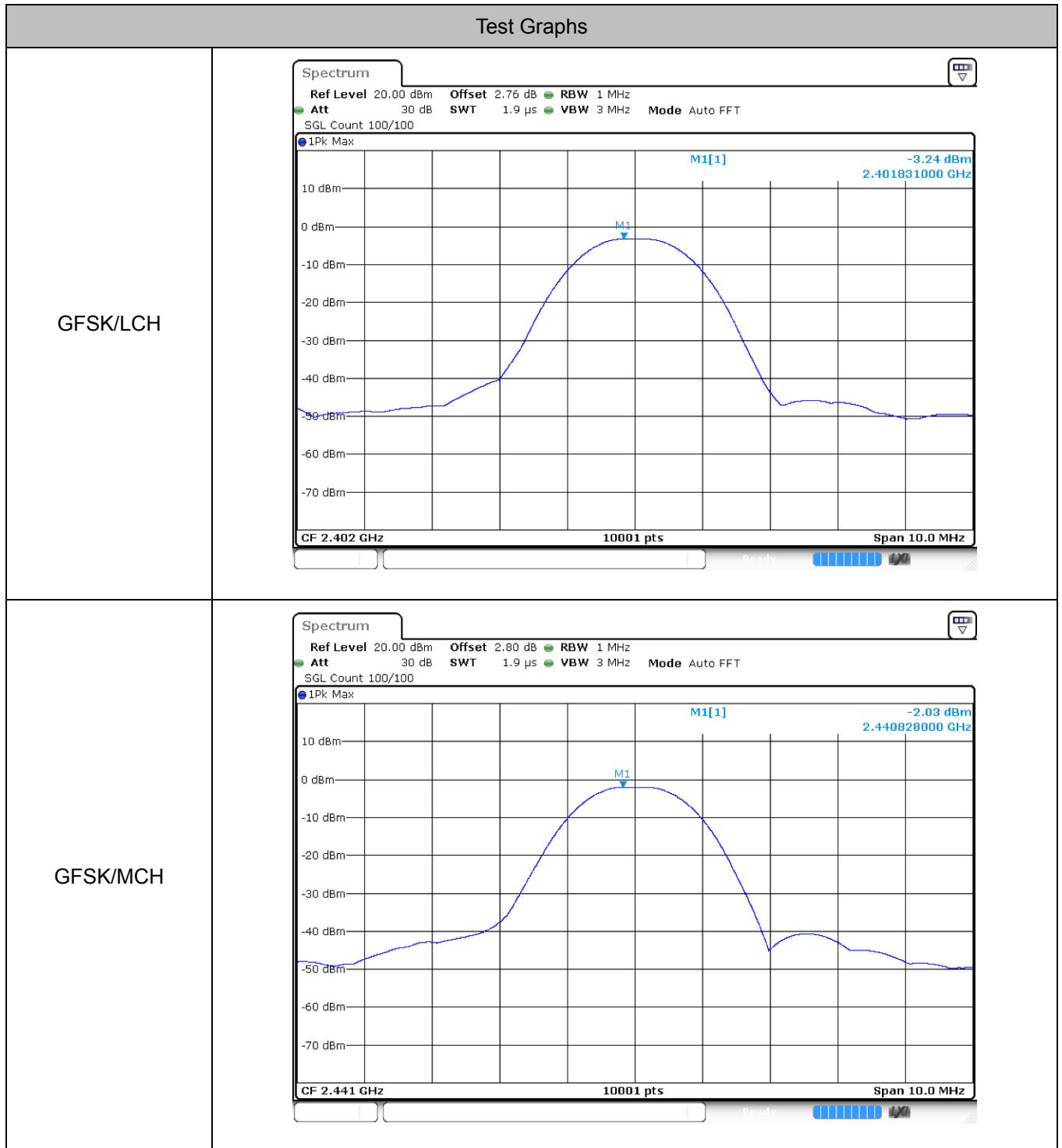


2 Maximum Conducted Peak Output Power

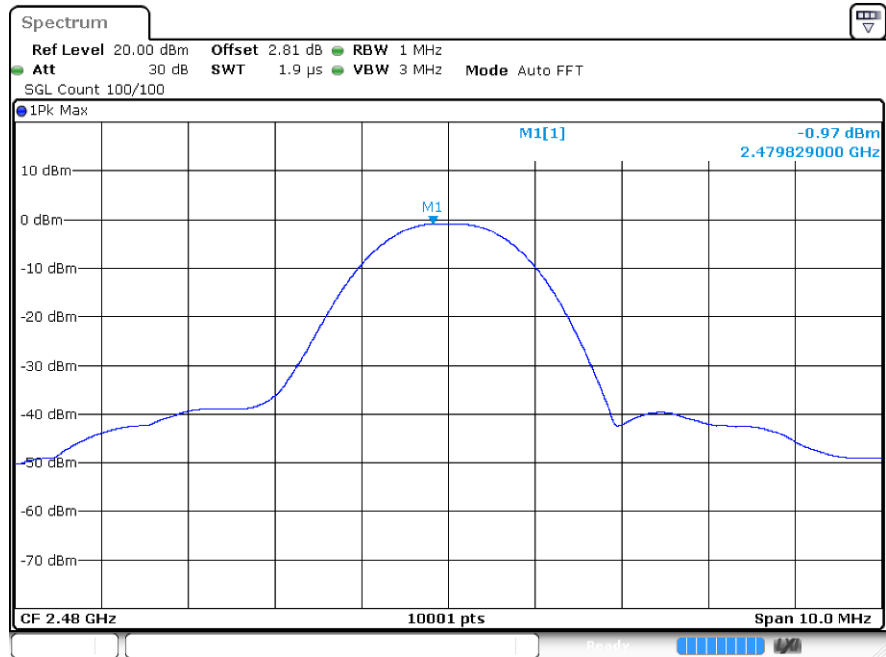
2.1 Test Result

Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-3.24	21	Pass
	MCH	-2.03	21	Pass
	HCH	-0.97	21	Pass
$\pi/4$ DQPSK	LCH	-2.77	21	Pass
	MCH	-1.46	21	Pass
	HCH	-0.72	21	Pass

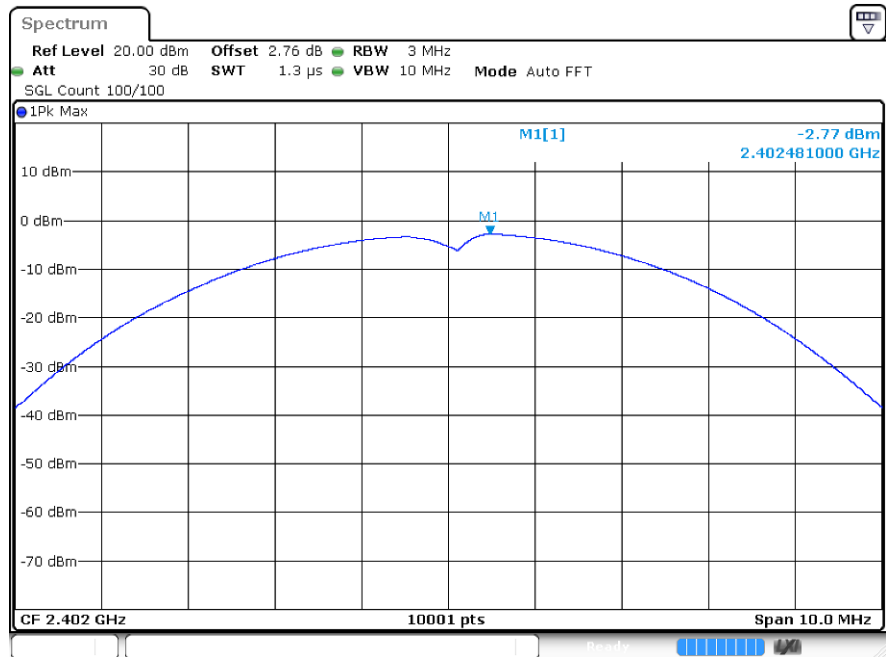
2.2 Test Graphs



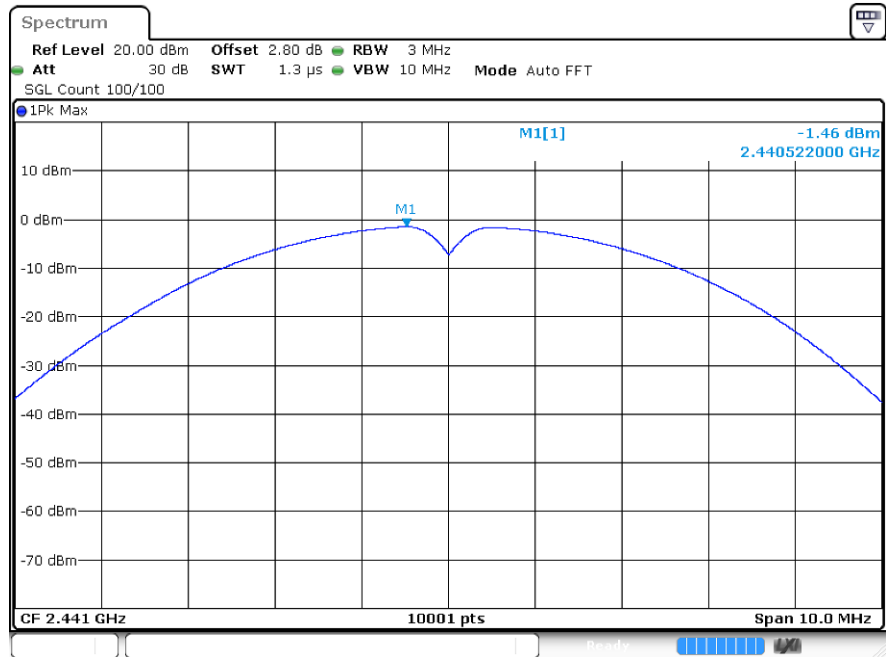
GFSK/HCH



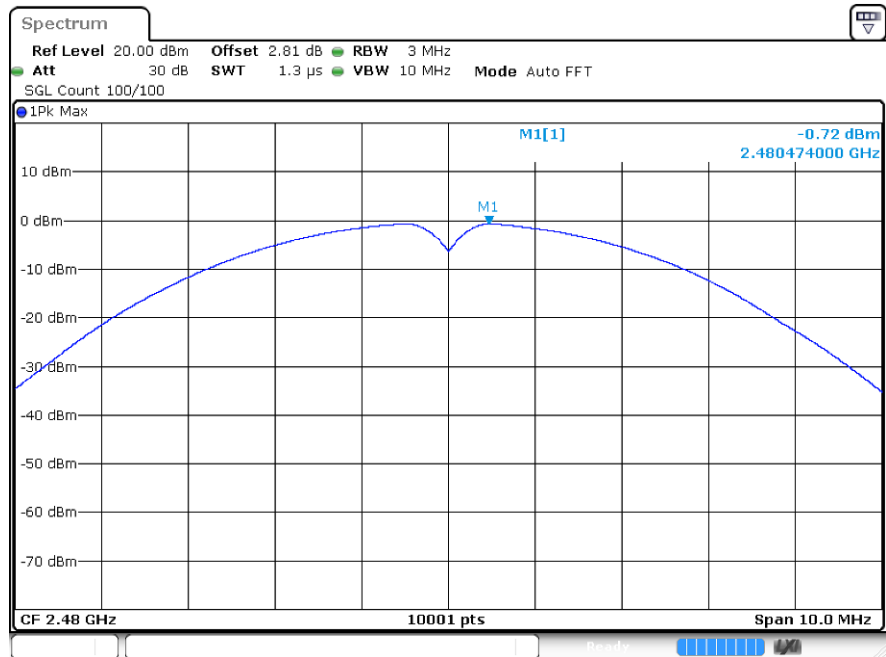
$\pi/4$ DQPSK/LCH



$\pi/4$ DQPSK/MCH



$\pi/4$ DQPSK/HCH

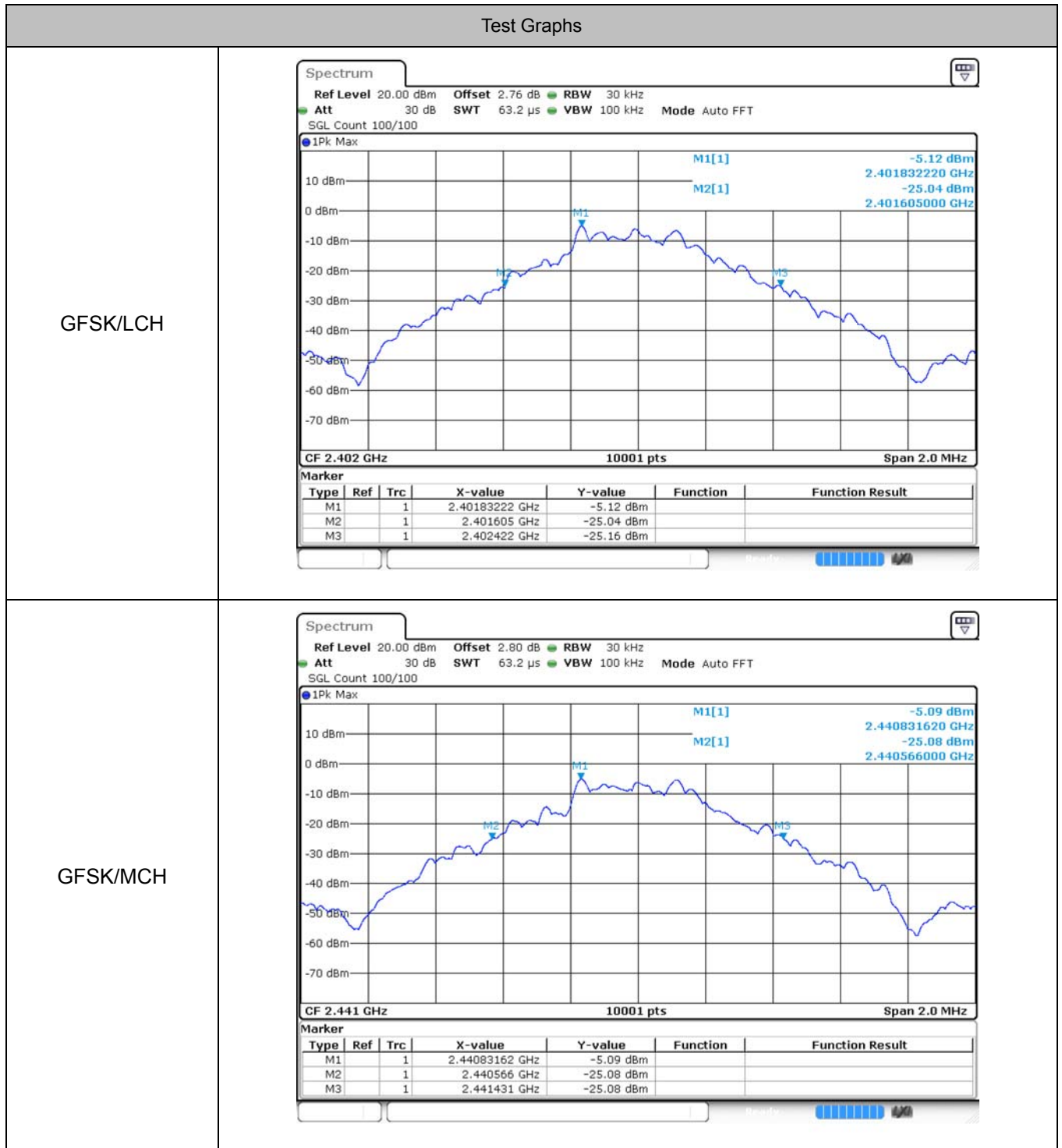


3 20dB Bandwidth

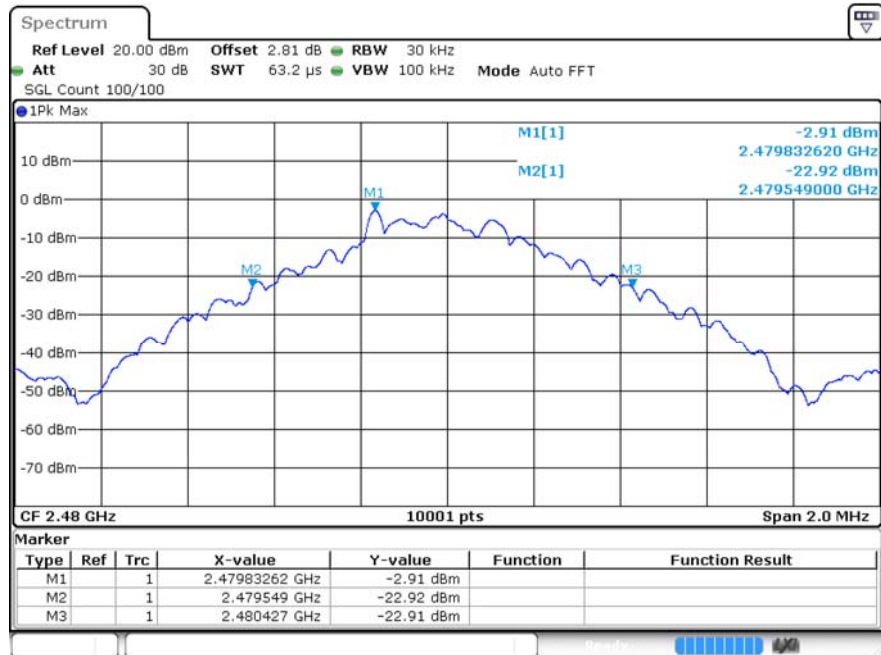
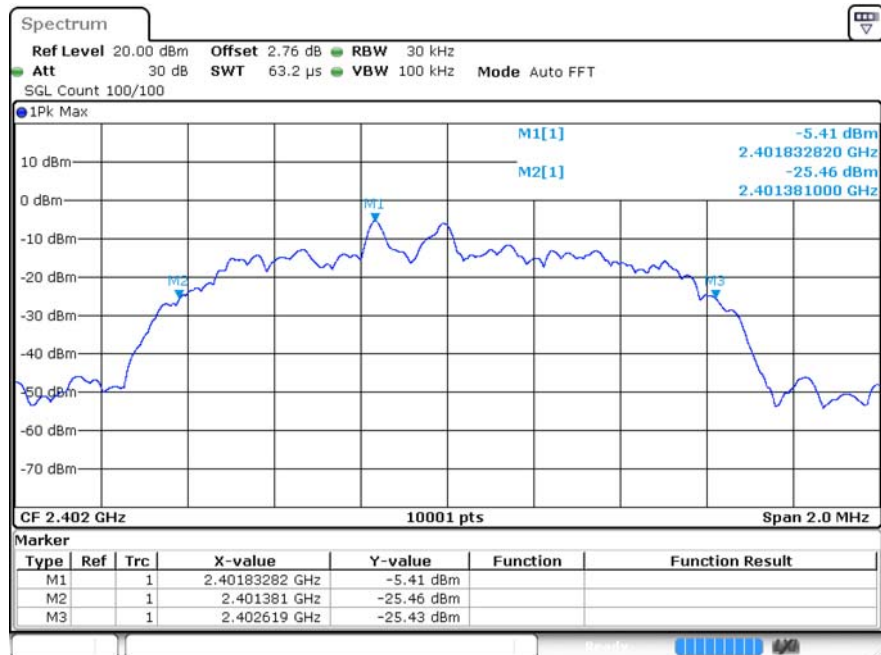
3.1 Test Result

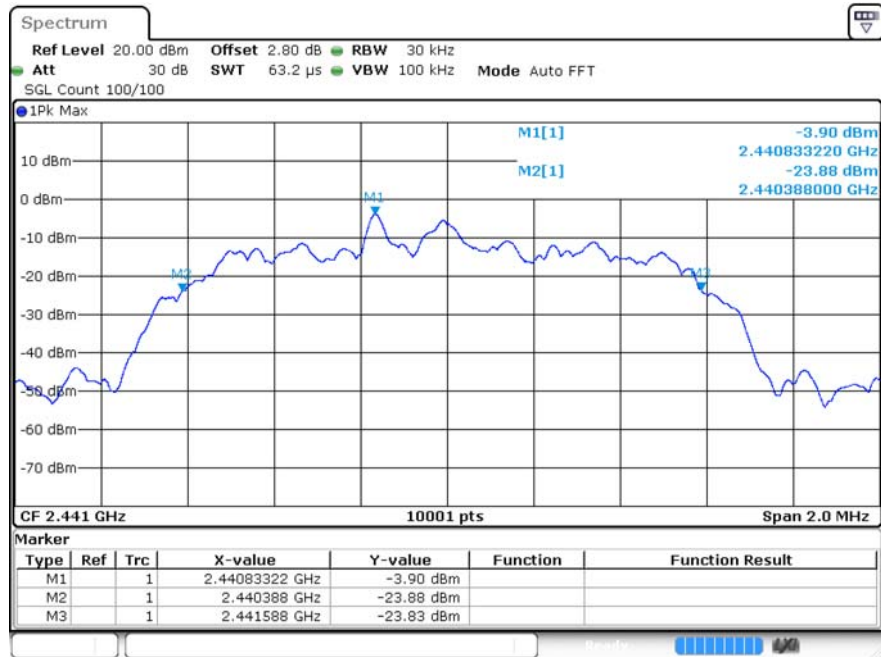
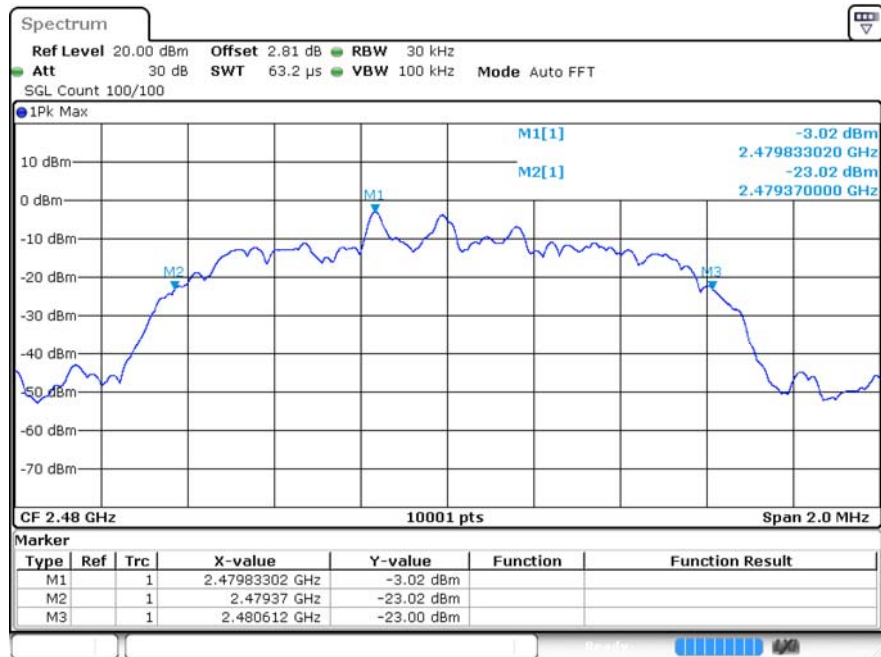
Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.817	Not Specified	Pass
	MCH	0.865	Not Specified	Pass
	HCH	0.878	Not Specified	Pass
$\pi/4$ DQPSK	LCH	1.237	Not Specified	Pass
	MCH	1.201	Not Specified	Pass
	HCH	1.242	Not Specified	Pass

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	0.577	Pass
$\pi/4$ DQPSK	MCH	0.843	0.801	Pass

4.2 Test Graphs

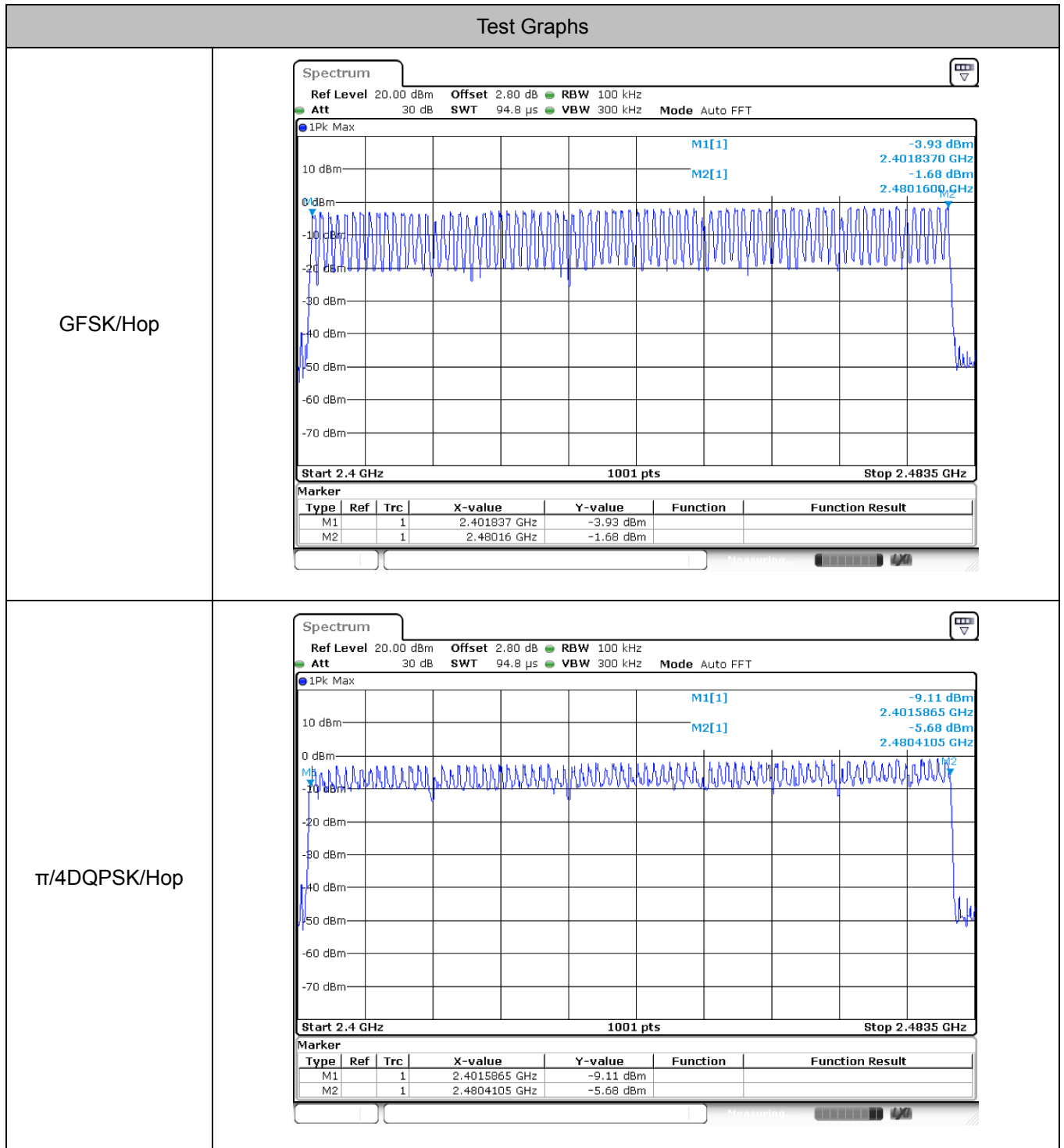


5 Hopping Channel Number

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

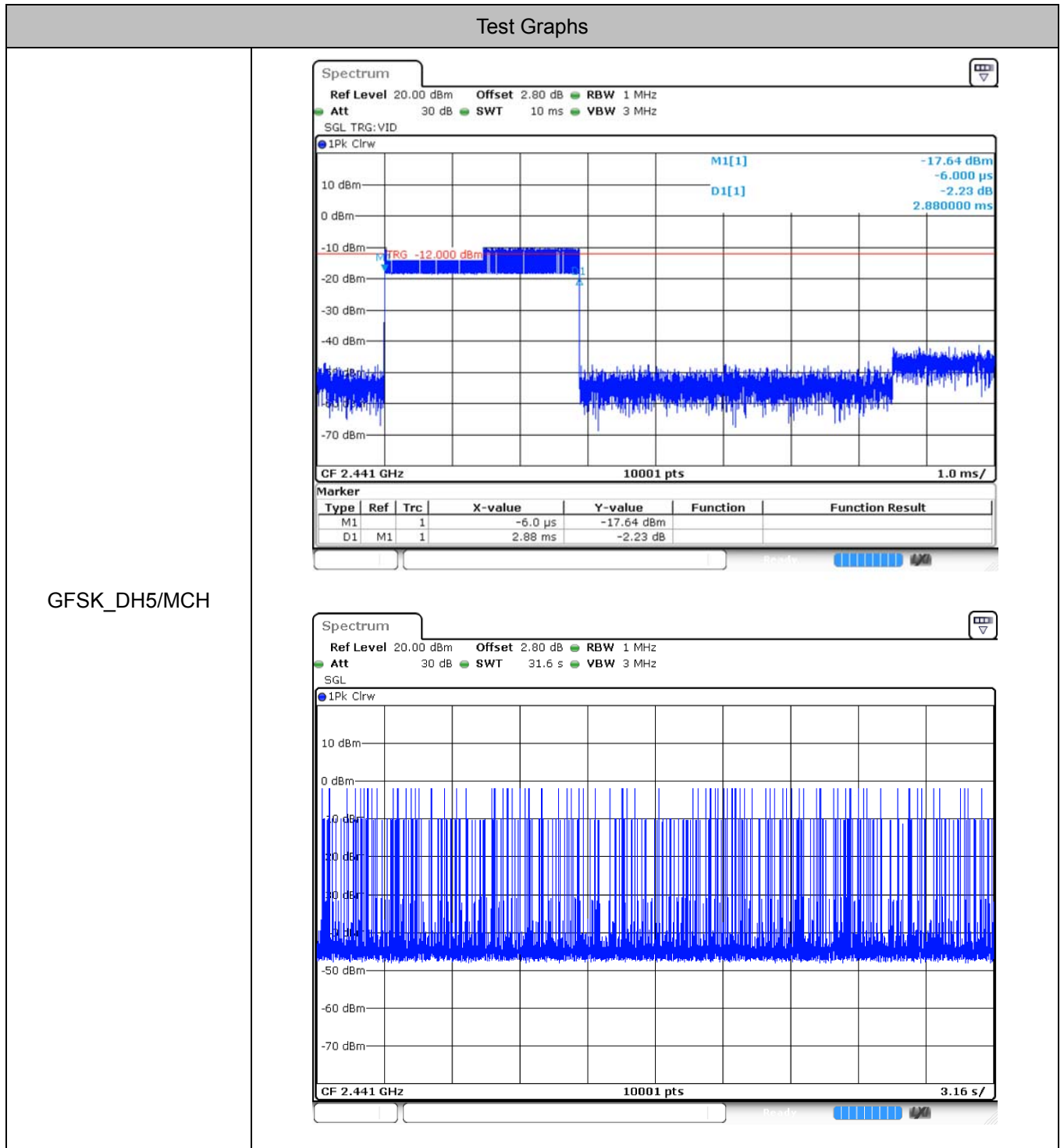


6 Dwell Time

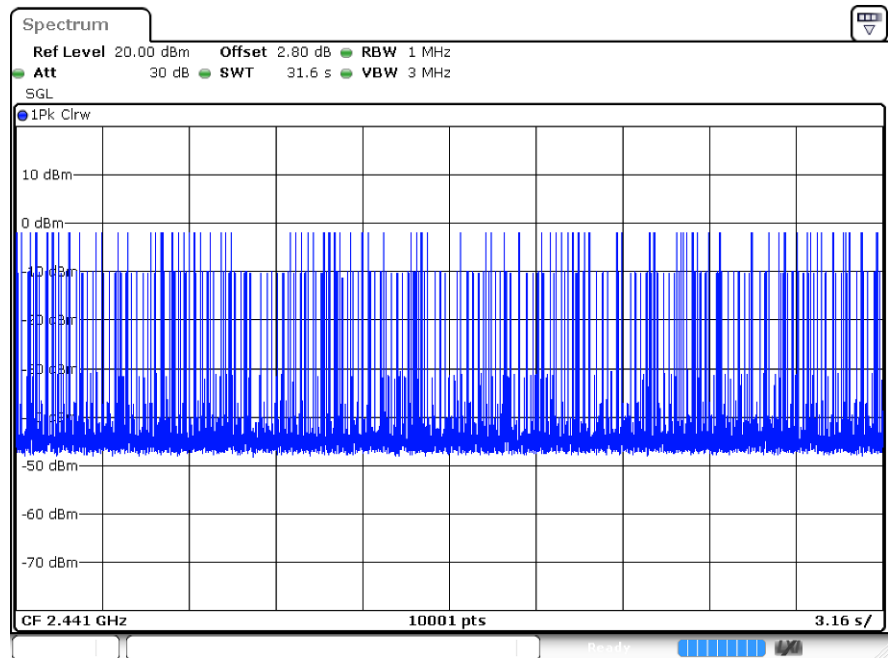
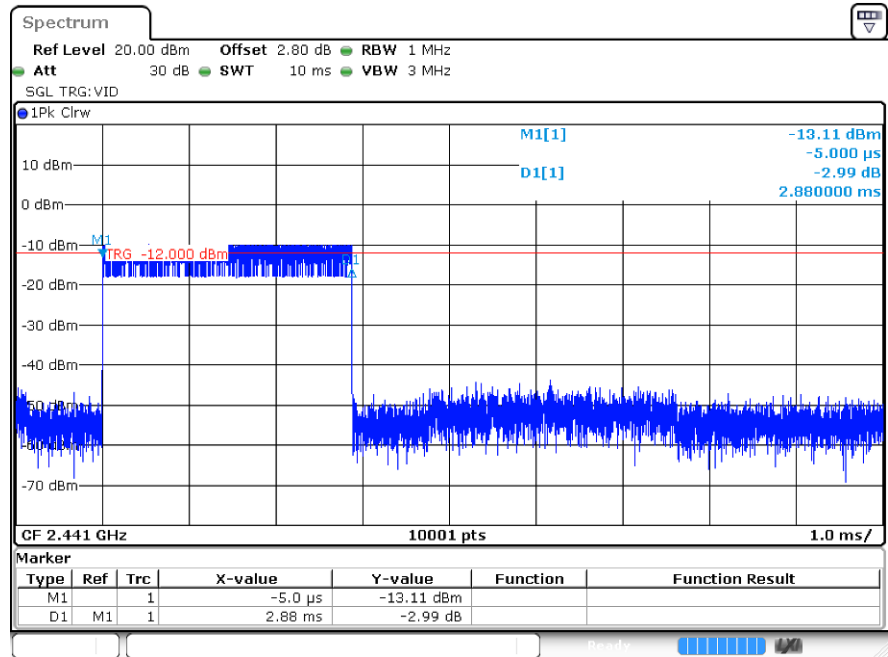
6.1 Test Result

Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	MCH	2.88	93	267.84	0.4	Pass
$\pi/4$ DQPSK	2DH5	MCH	2.88	108	311.04	0.4	Pass

6.2 Test Graphs



$\pi/4$ DQPSK
_2DH5/MCH

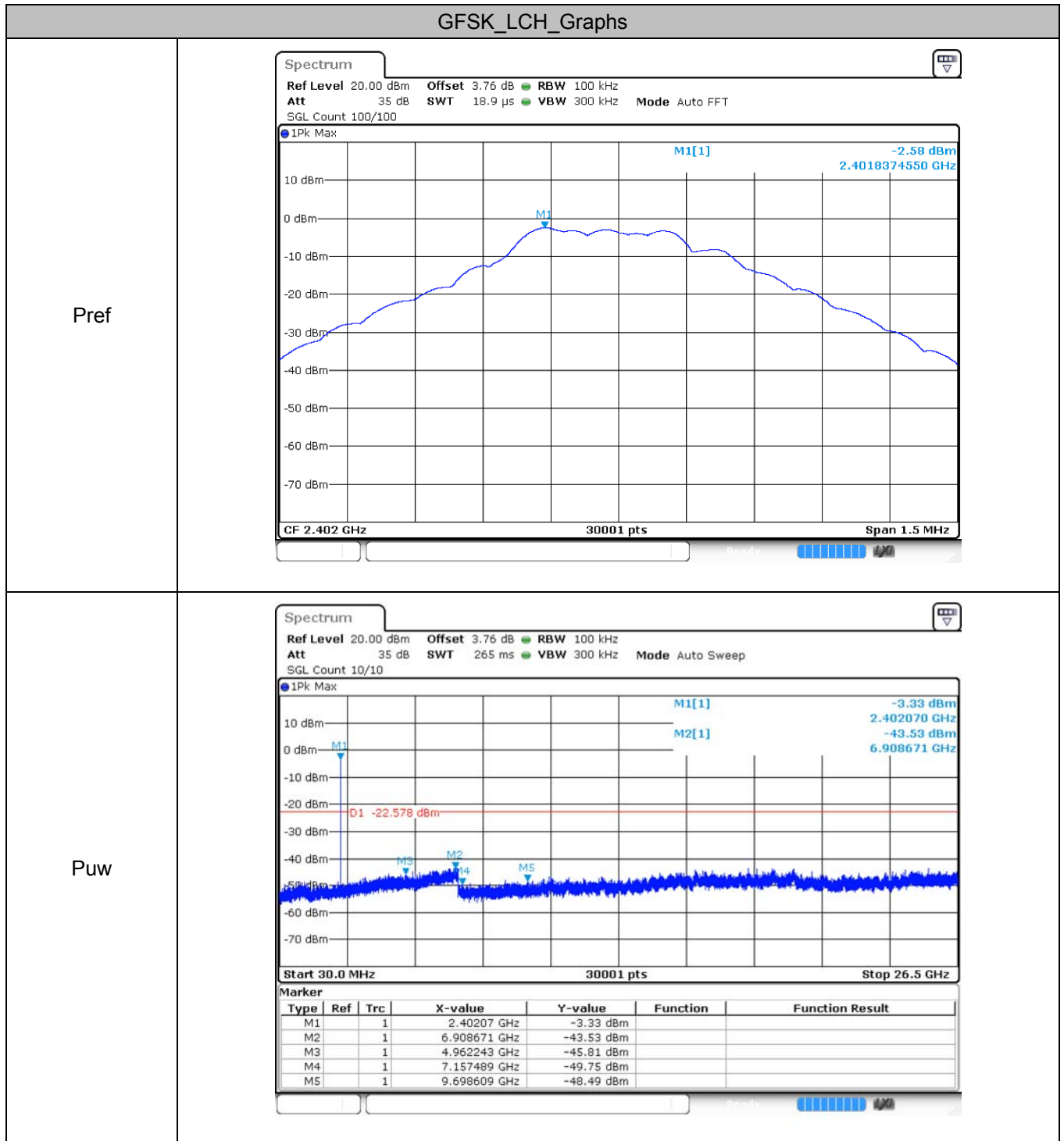


7 RF Conducted Spurious Emissions

7.1 Test Result

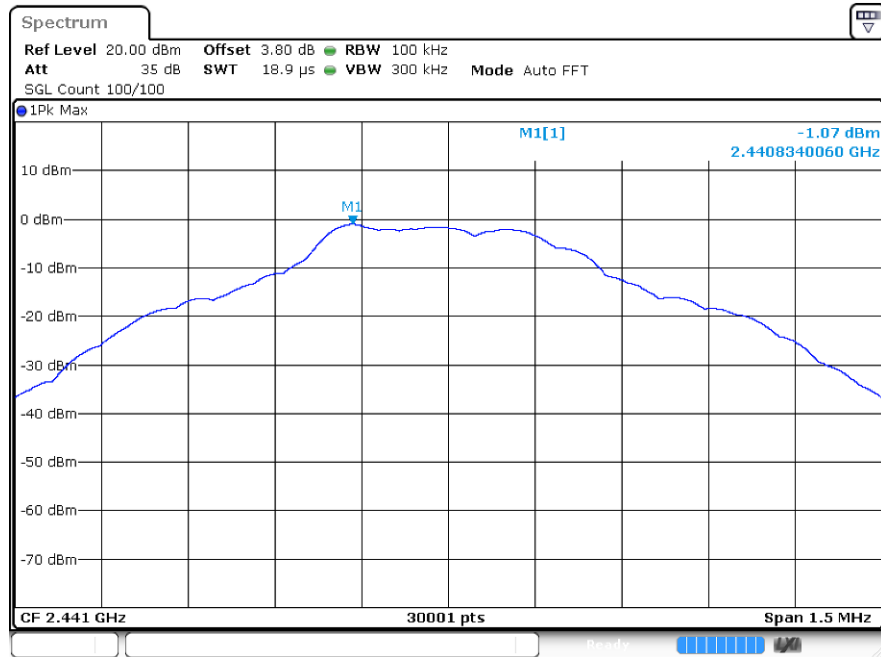
Mode	Channel	Max. Level [dBc]	Limit [dBc]	Verdict
GFSK	LCH	-40.95	-20	Pass
	MCH	-41.89	-20	Pass
	HCH	-42.53	-20	Pass
$\pi/4$ DQPSK	LCH	-40.06	-20	Pass
	MCH	-41.38	-20	Pass
	HCH	-41.78	-20	Pass

7.2 Test Graphs

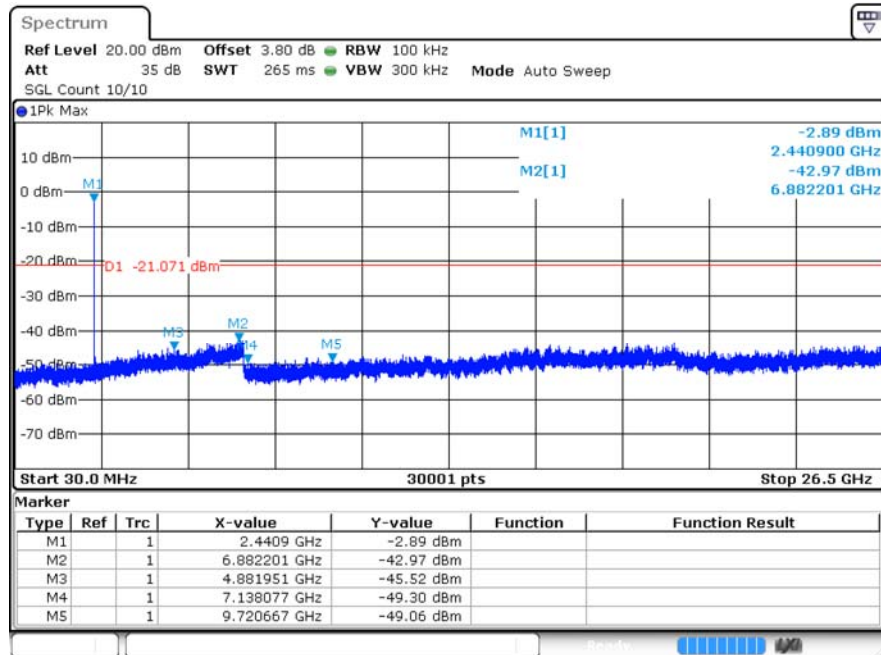


GFSK_MCH_Graphs

Pref

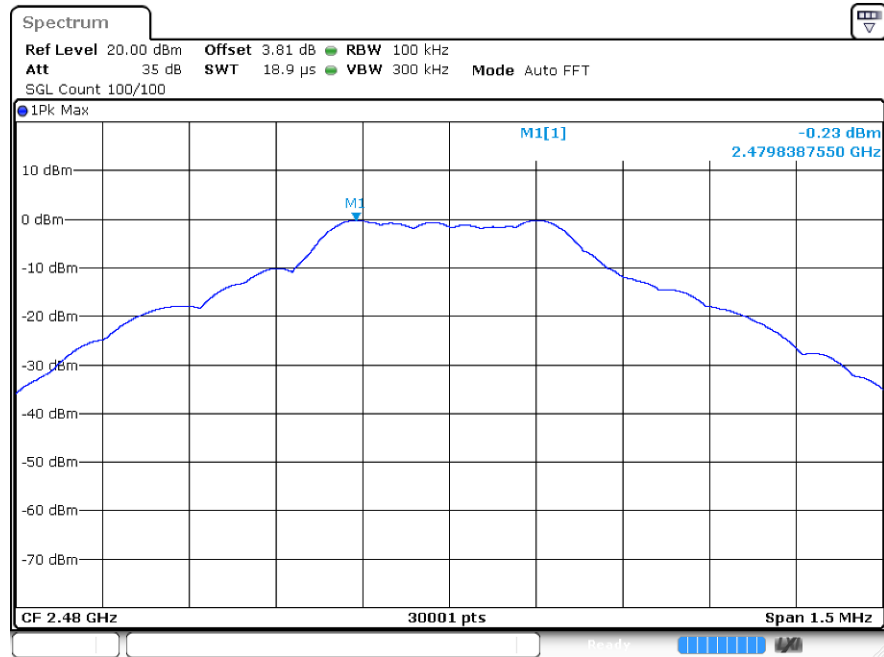


Puw

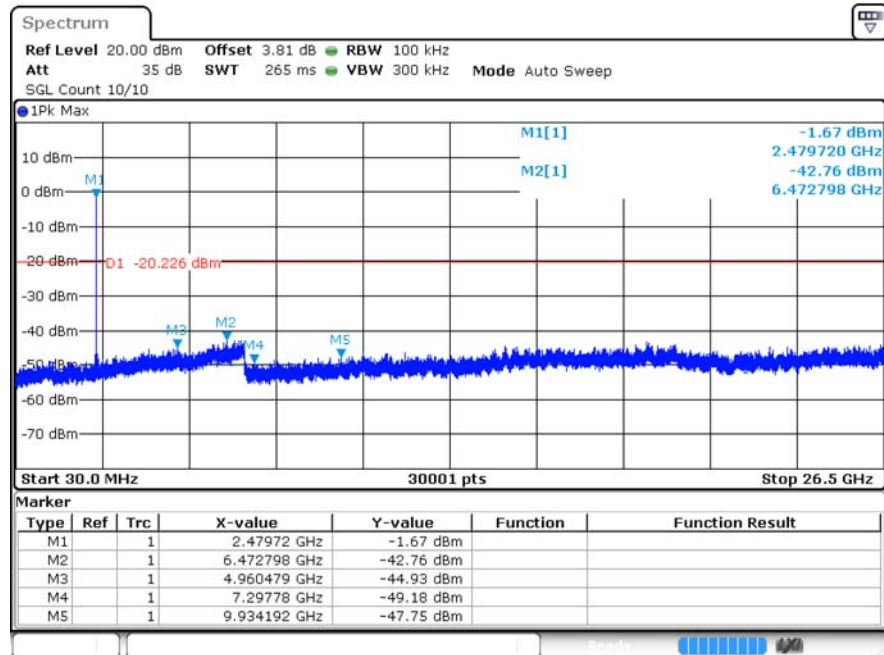


GFSK_HCH_Graphs

Pref

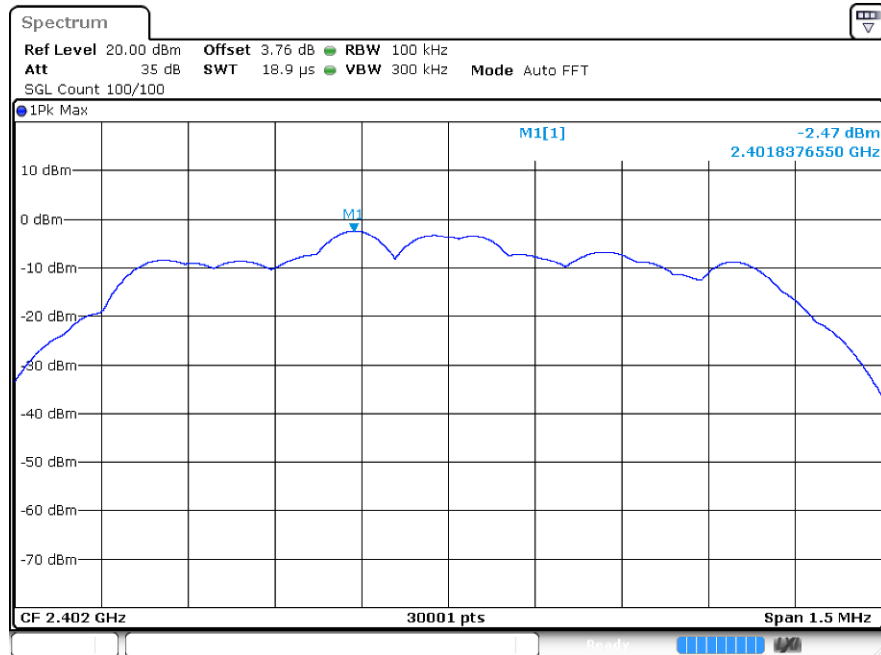


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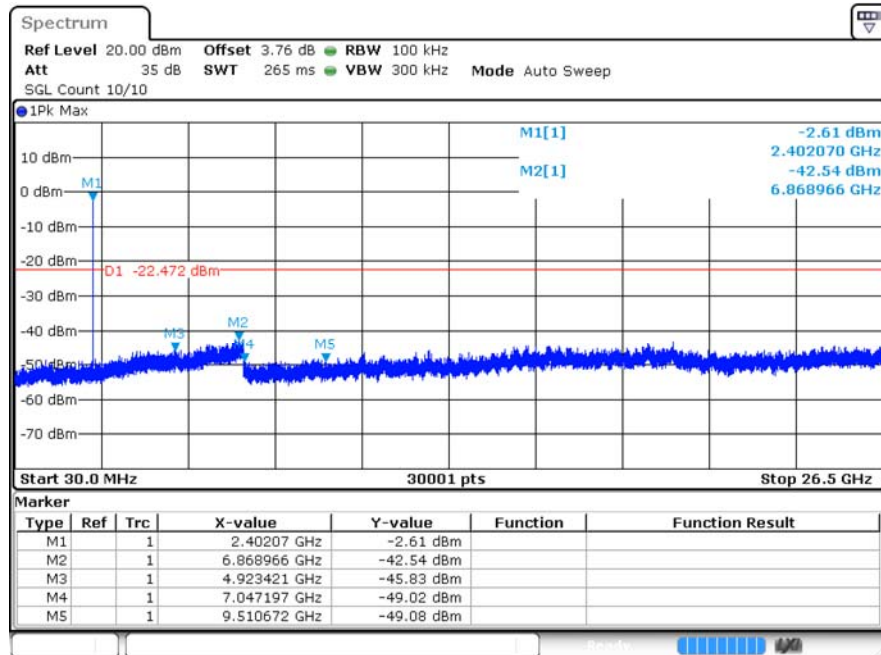


$\pi/4$ DQPSK_LCH_Graphs

Pref

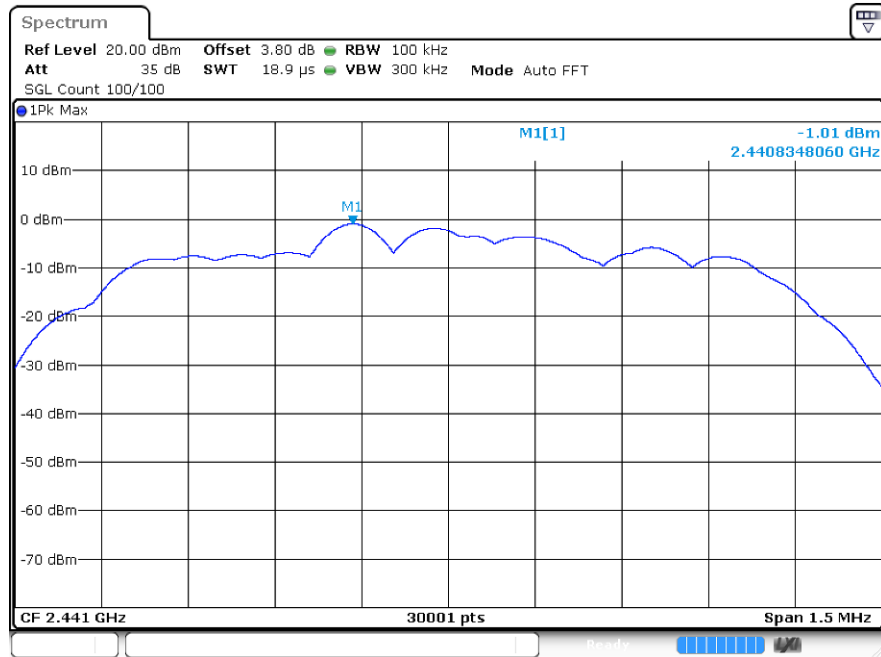


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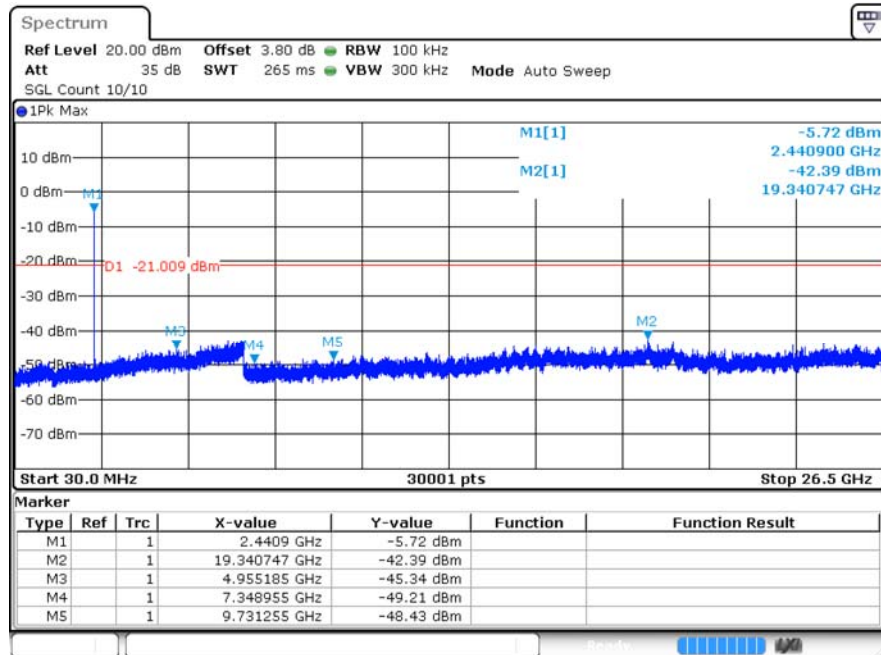


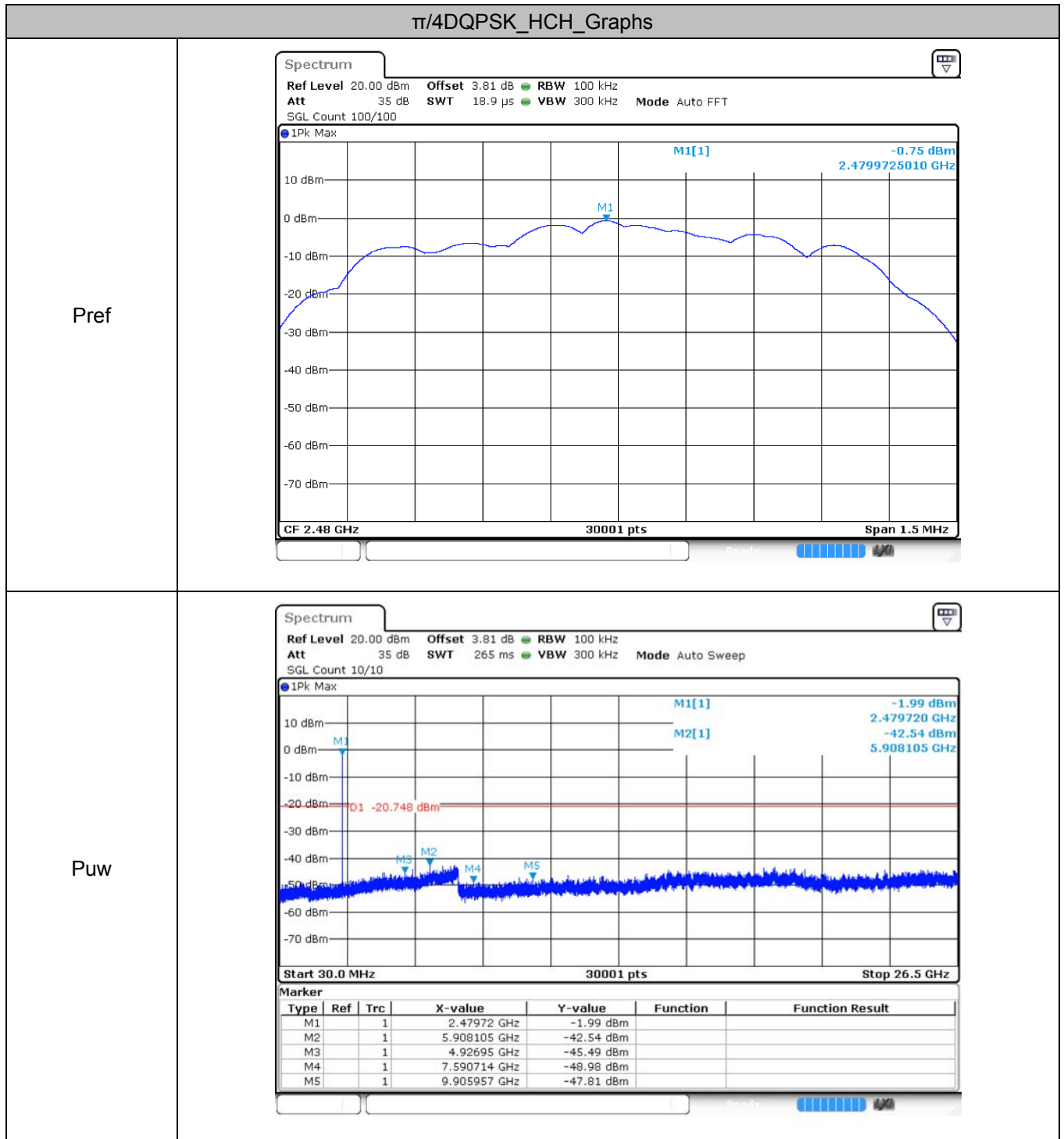
$\pi/4$ DQPSK_MCH_Graphs

Pref



Puw



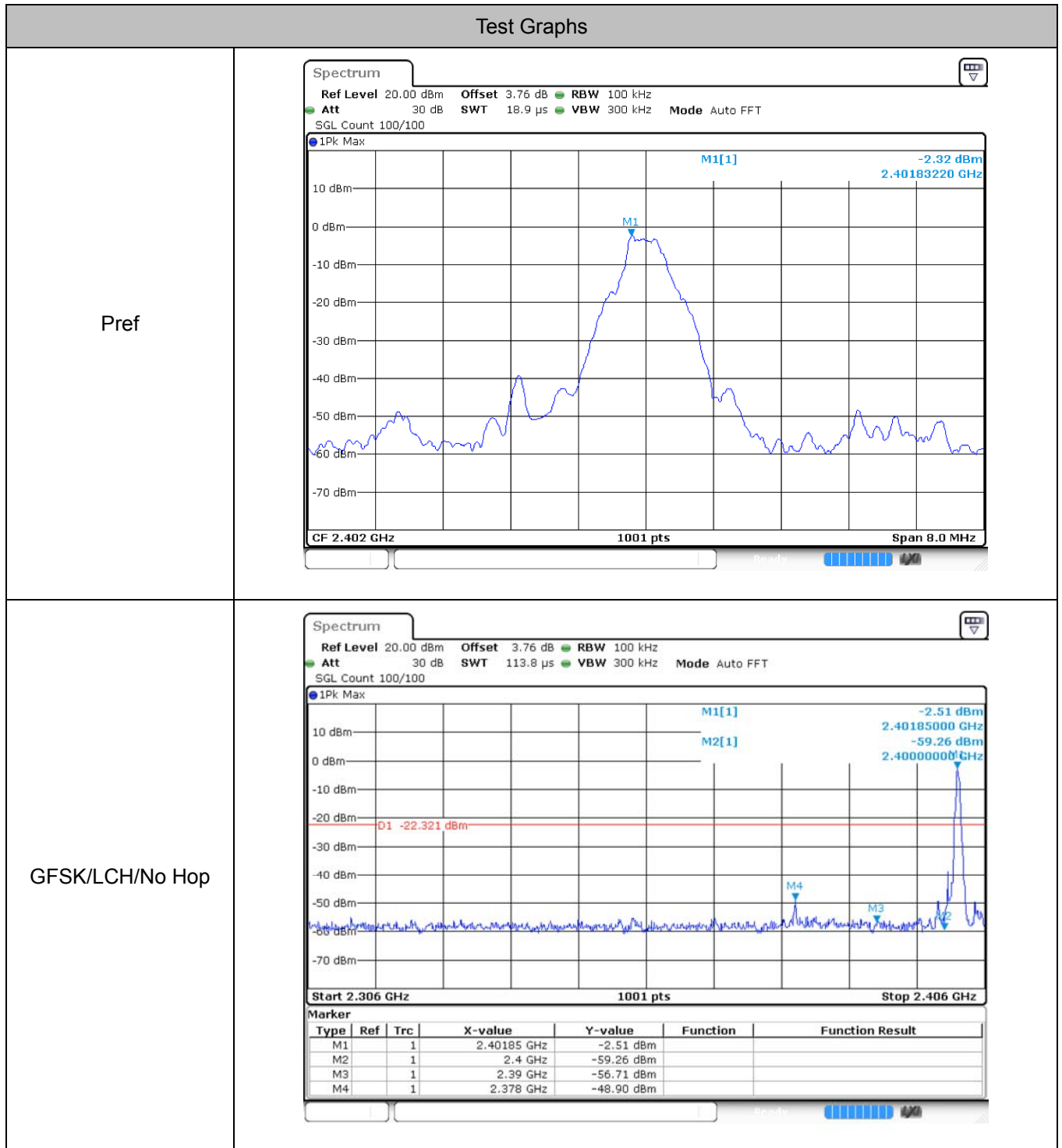


8 Band-edge for RF Conducted Emissions

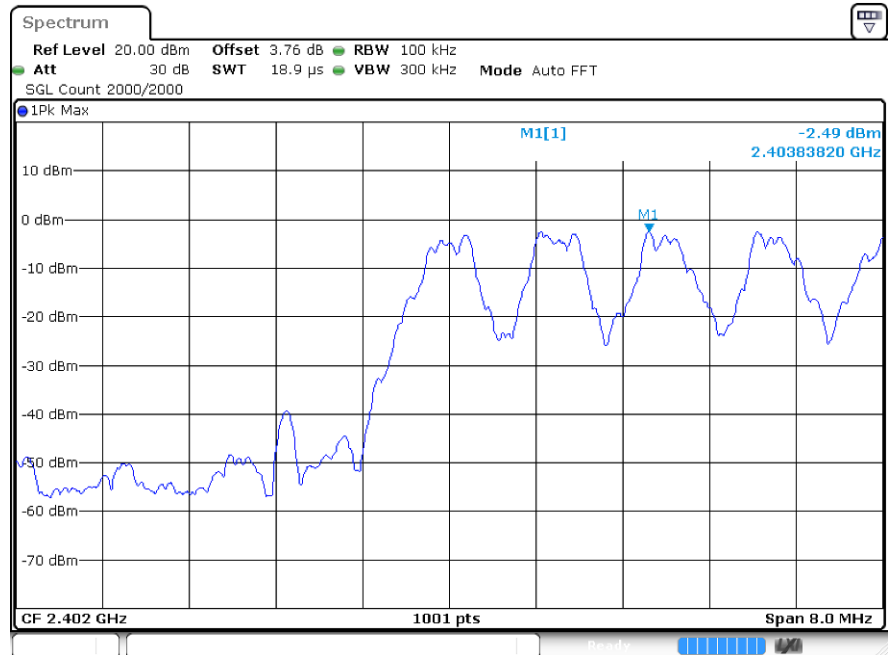
8.1 Test Result

Mode	Channel	Carrier Frequency [MHz]	Frequency Hopping	Max Spurious Level [dBc]	Limit [dBc]	Verdict
GFSK	LCH	2402	Off	-46.57	-20	Pass
			On	-47.95	-20	Pass
	HCH	2480	Off	-46.01	-20	Pass
			On	-45.61	-20	Pass
$\pi/4$ DQPSK	LCH	2402	Off	-46.97	-20	Pass
			On	-47.41	-20	Pass
	HCH	2480	Off	-46.6	-20	Pass
			On	-46.06	-20	Pass

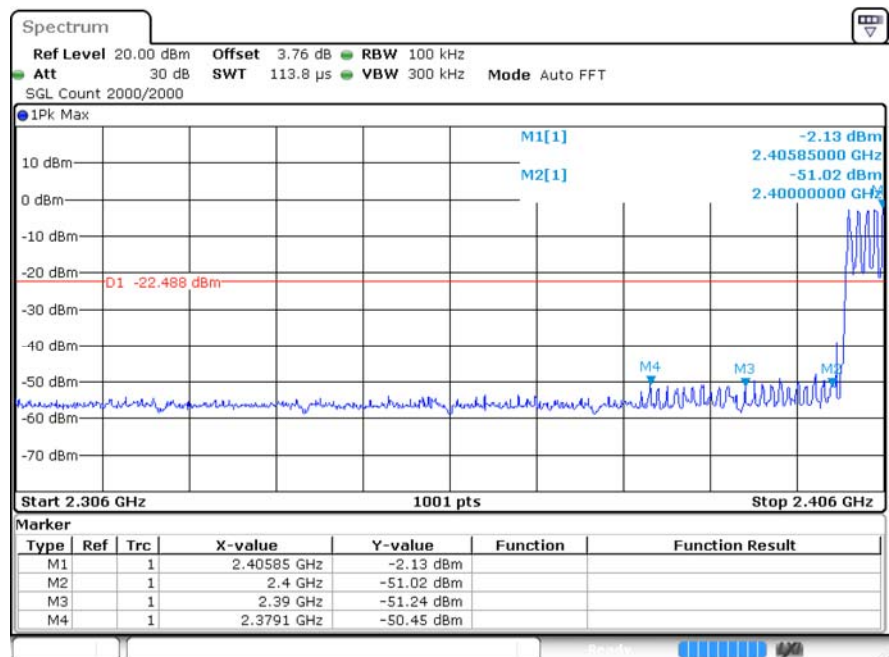
8.2 Test Graphs



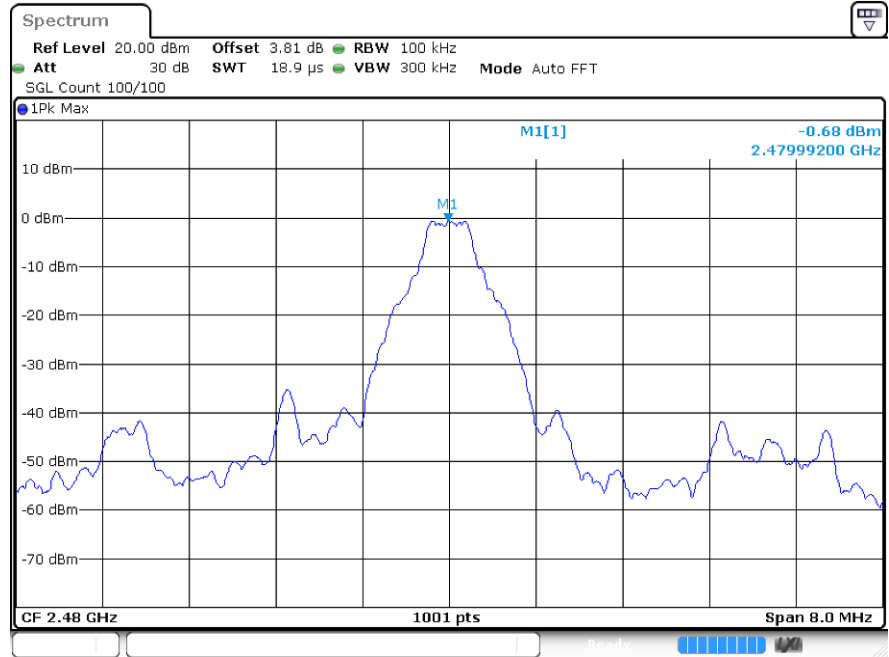
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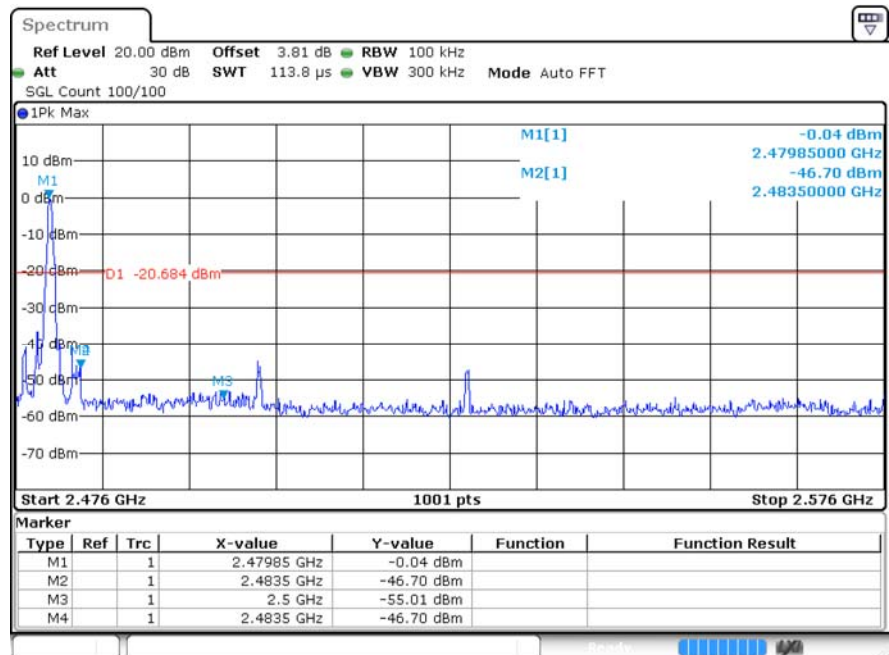
GFSK/LCH/Hop



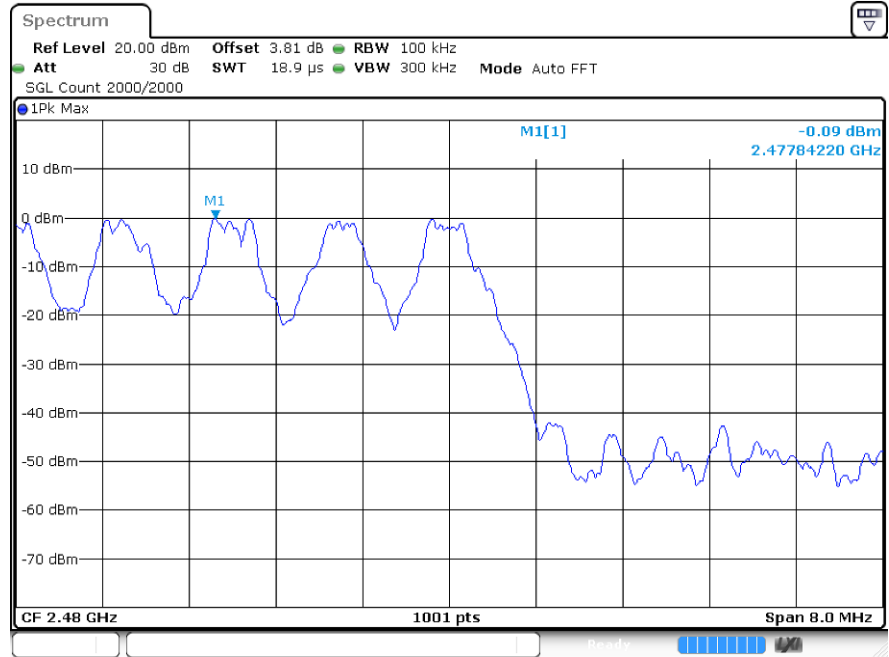
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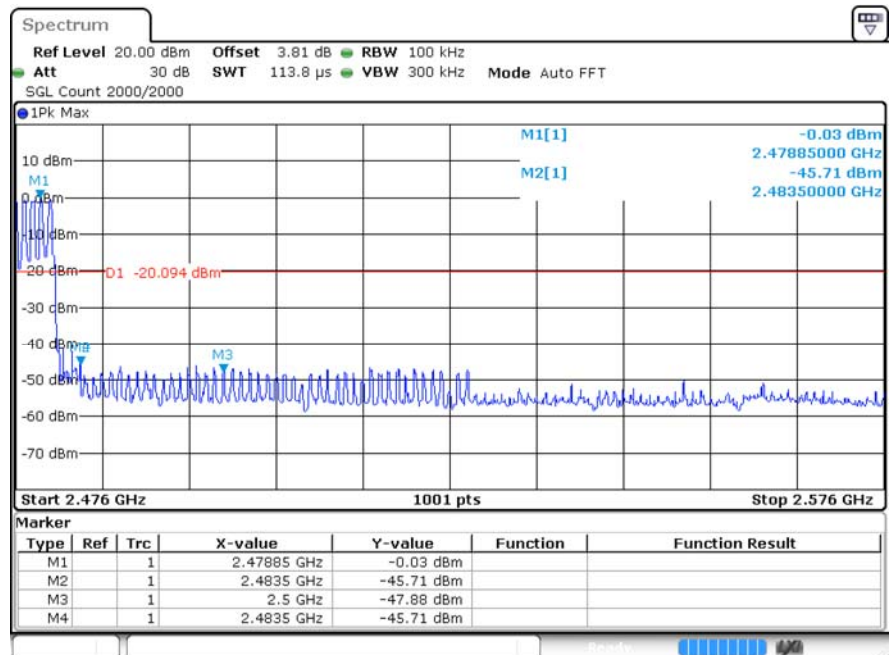
GFSK/HCH/No Hop



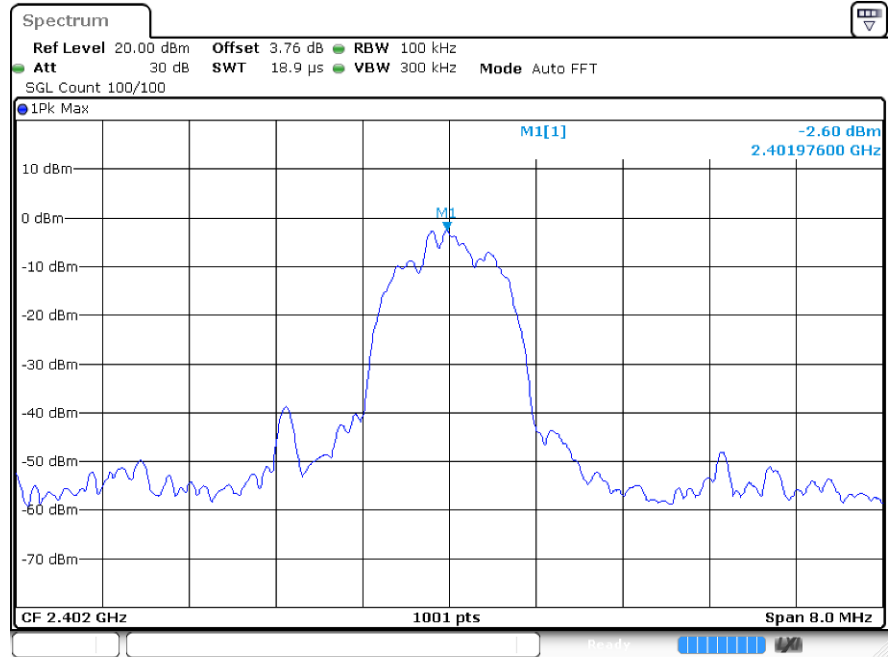
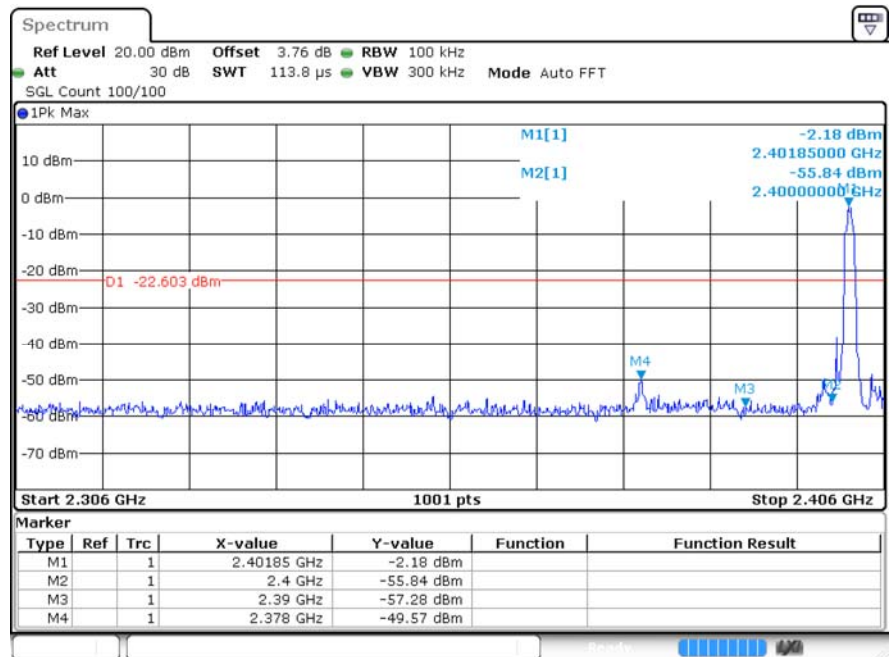
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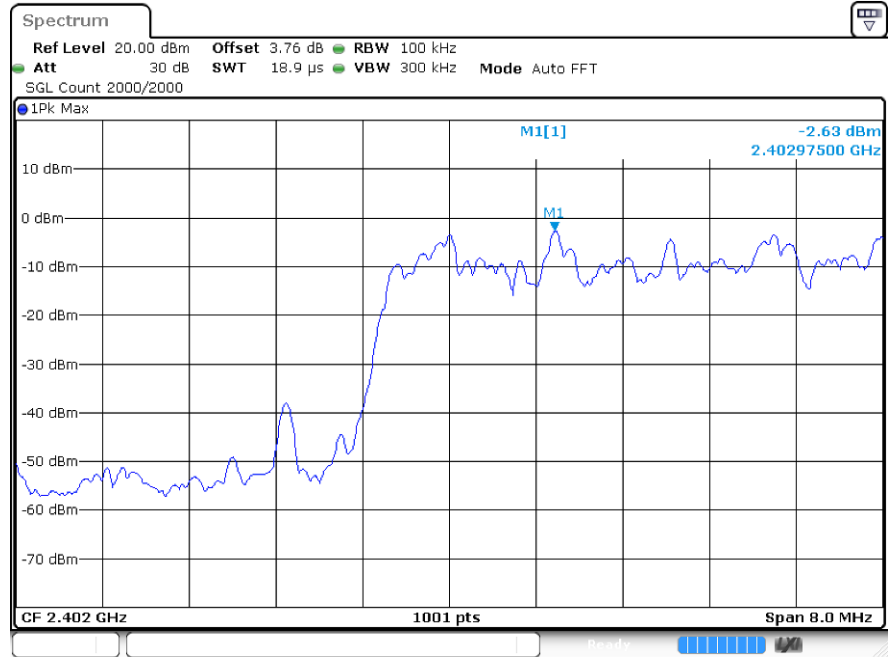
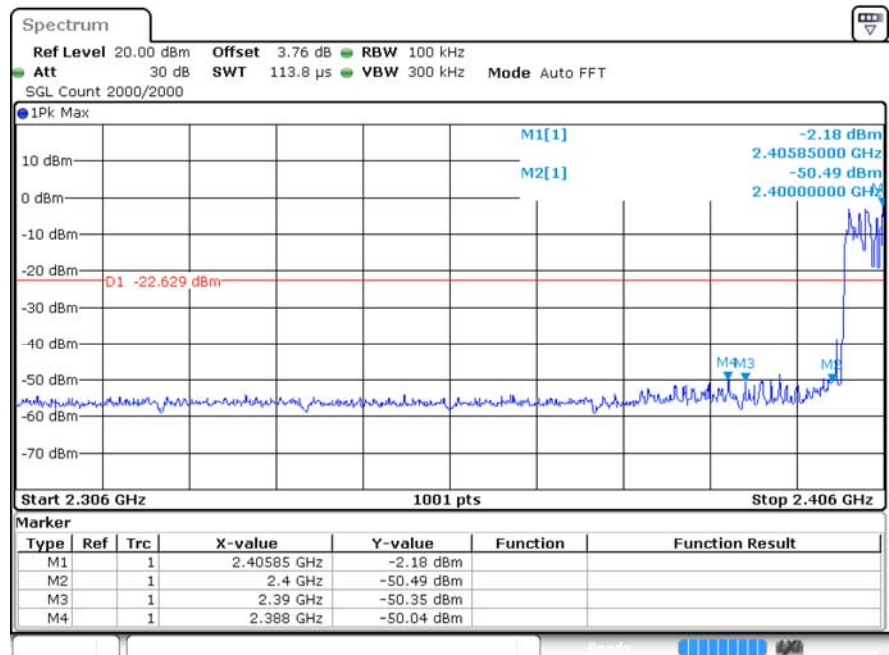
GFSK/HCH/Hop



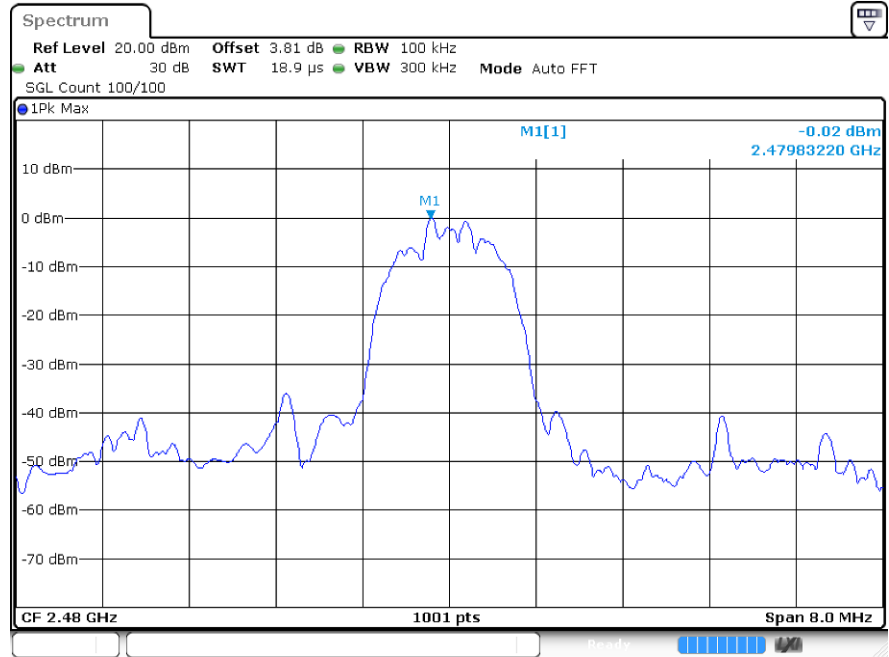
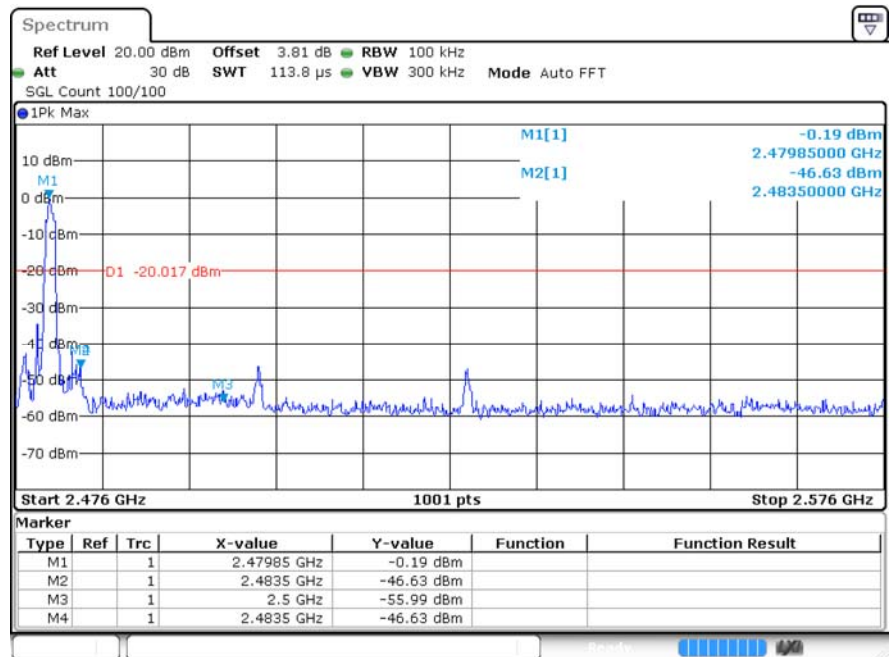
Ref


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


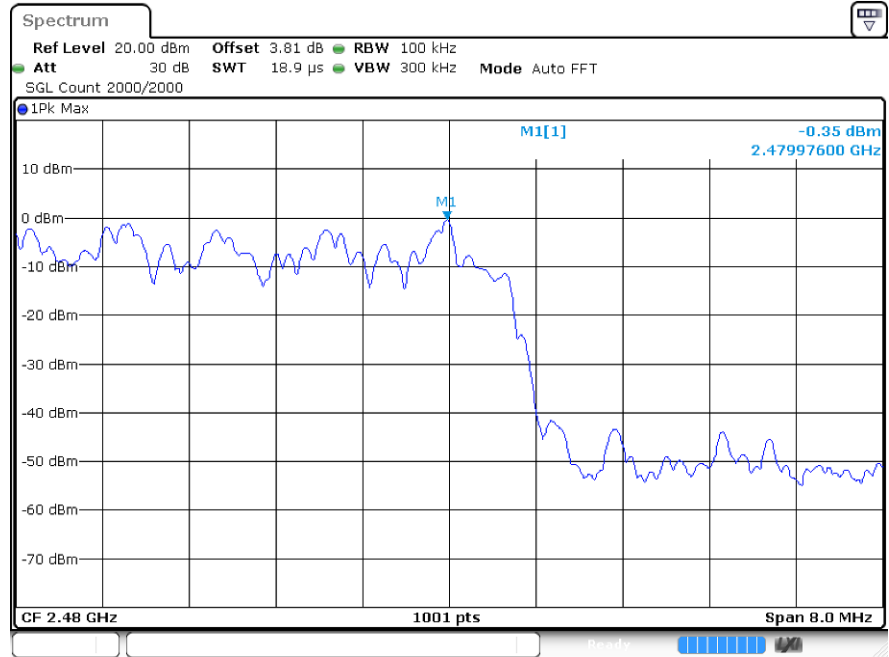
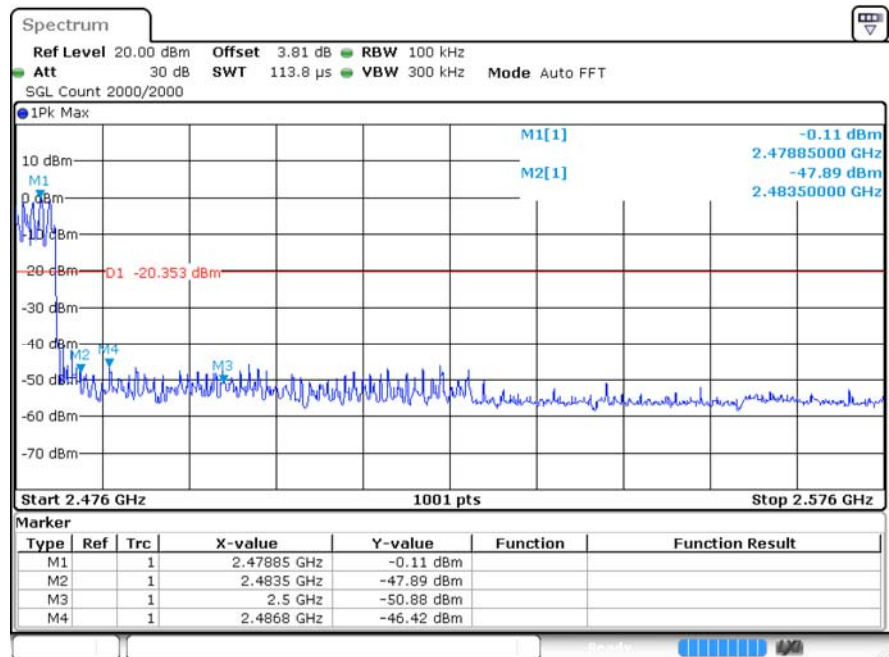
Ref


 $\pi/4$ DQPSK/LCH/Hop


Ref


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


Ref


 $\pi/4$ DQPSK/HCH/Hop


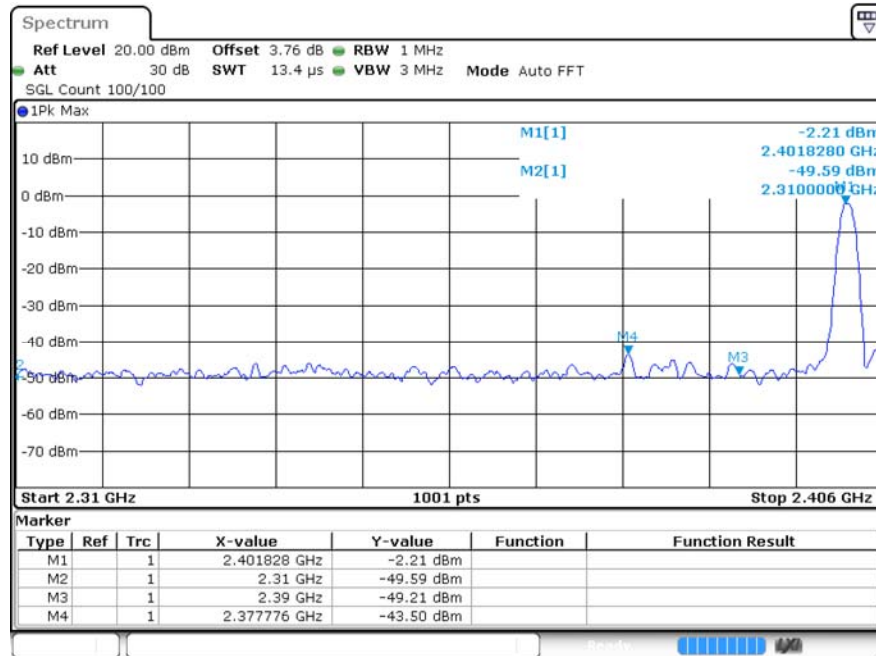
9 Restrict-band band-edge measurements

9.1 Test Result

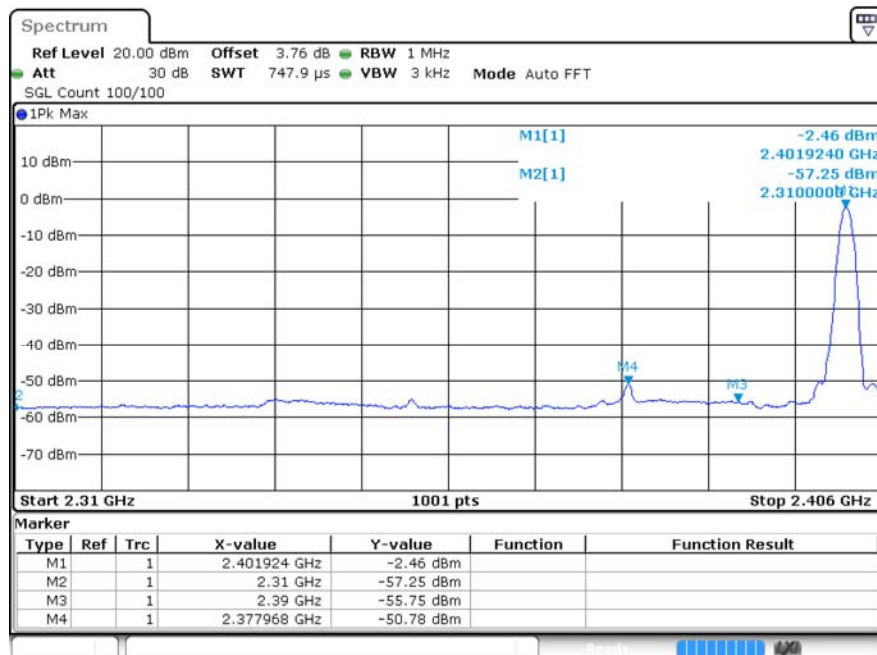
Test Mode	Hopping	Freq.	Power [dBm]	Gain	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-49.58	2	47.68	PEAK	74	Pass
	Off	2310.0	-57.25	2	40.01	AV	54	Pass
	Off	2377.776	-43.5	2	53.76	PEAK	74	Pass
	Off	2377.968	-50.78	2	46.48	AV	54	Pass
	Off	2390.0	-49.21	2	48.05	PEAK	74	Pass
	Off	2390.0	-55.74	2	41.52	AV	54	Pass
	Off	2483.5	-40.98	2	56.28	PEAK	74	Pass
	Off	2483.5	-46.56	2	50.7	AV	54	Pass
	Off	2483.512	-40.98	2	56.28	PEAK	74	Pass
	Off	2483.512	-46.56	2	50.7	AV	54	Pass
	Off	2500.0	-42.39	2	54.87	PEAK	74	Pass
	Off	2500.0	-53.52	2	43.74	AV	54	Pass
$\pi/4$ DQPSK	Off	2310.0	-47.71	2	49.55	PEAK	74	Pass
	Off	2310.0	-57.15	2	40.11	AV	54	Pass
	Off	2342.64	-45.07	2	52.19	PEAK	74	Pass
	Off	2377.968	-51.63	2	45.63	AV	54	Pass
	Off	2390.0	-48.09	2	49.17	PEAK	74	Pass
	Off	2390.0	-55.76	2	41.5	AV	54	Pass
	Off	2483.5	-43.44	2	53.82	PEAK	74	Pass
	Off	2483.5	-49.04	2	48.22	AV	54	Pass
	Off	2483.512	-43.44	2	53.82	PEAK	74	Pass
	Off	2483.512	-49.04	2	48.22	AV	54	Pass
	Off	2500.0	-46.69	2	50.57	PEAK	74	Pass
	Off	2500.0	-53.34	2	43.92	AV	54	Pass

9.2 Test Graphs

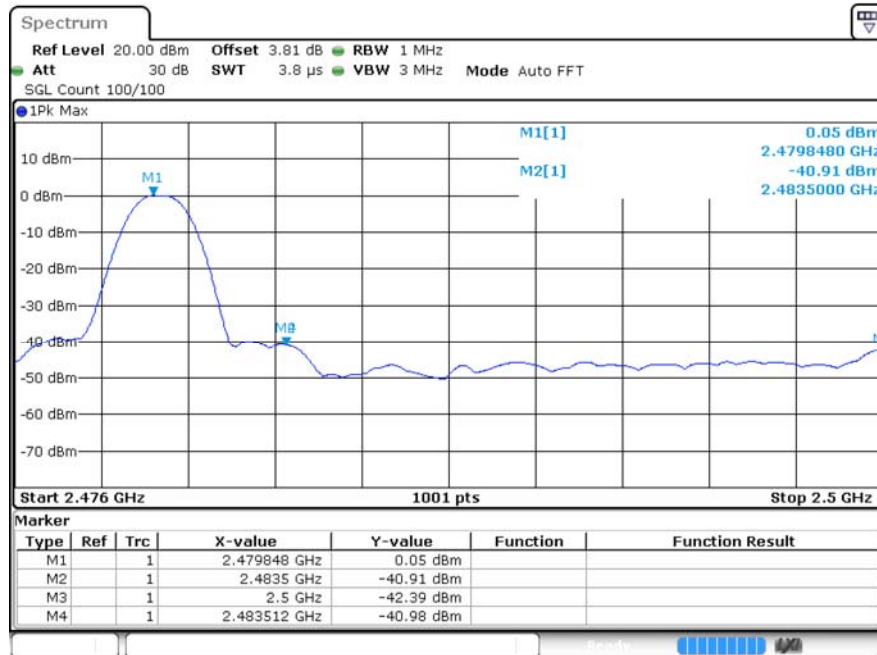
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (Low Channel)



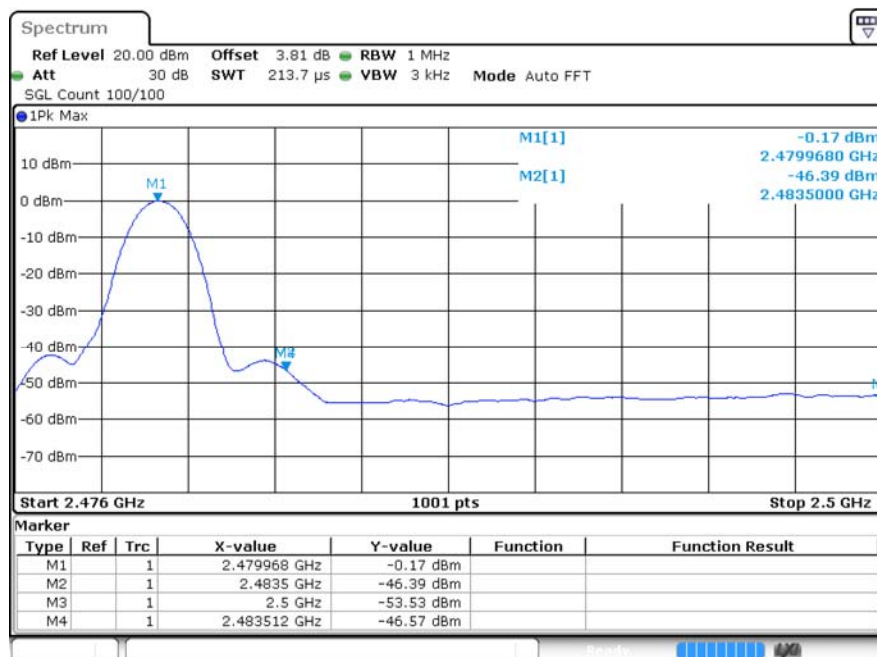
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (Low Channel)



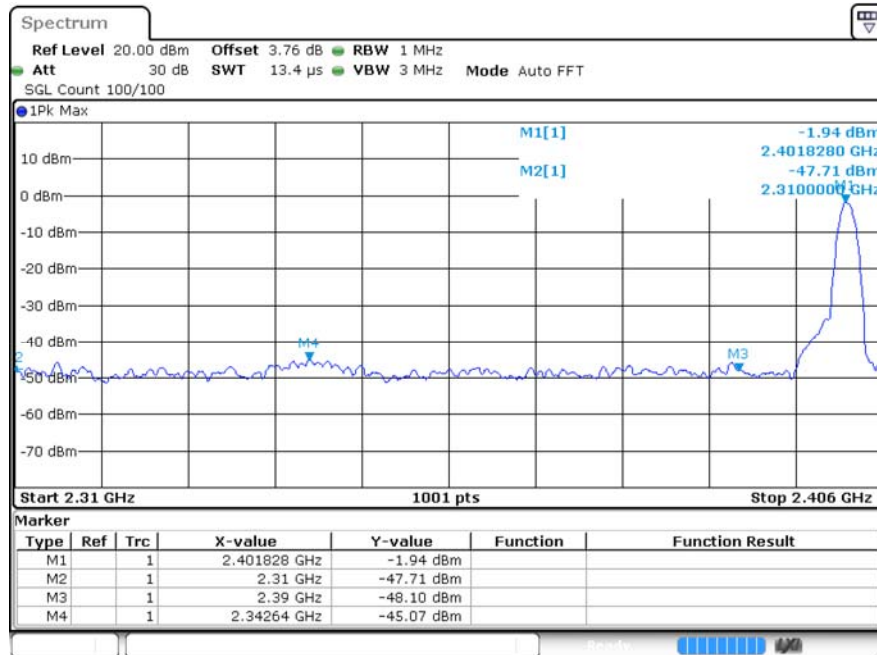
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (High Channel)



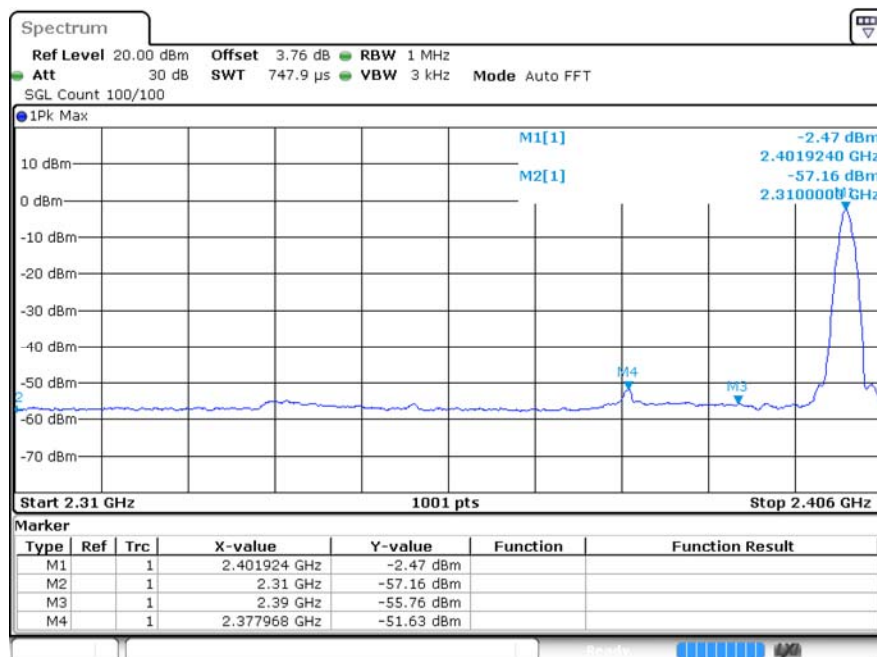
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (High Channel)



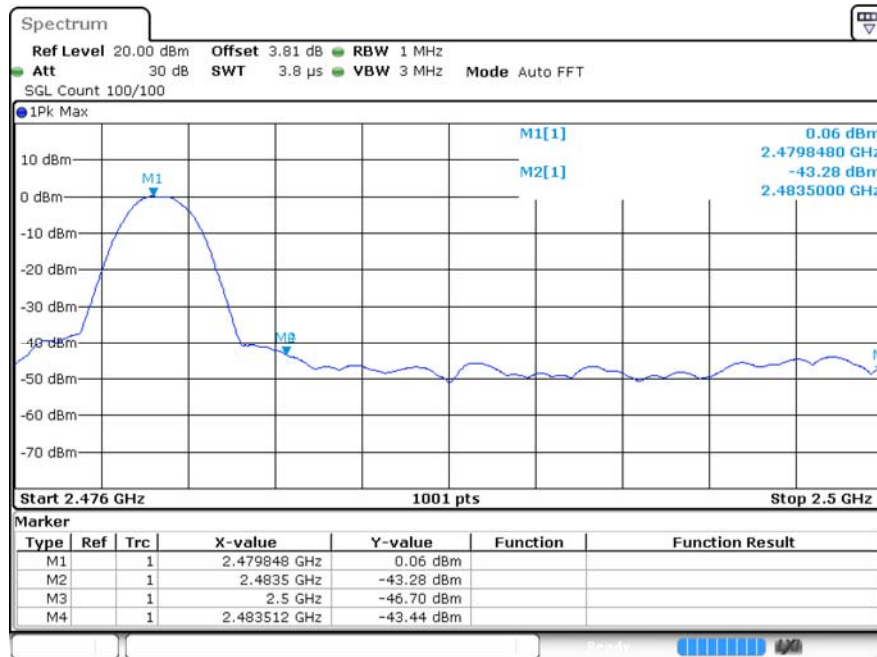
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (Low Channel)



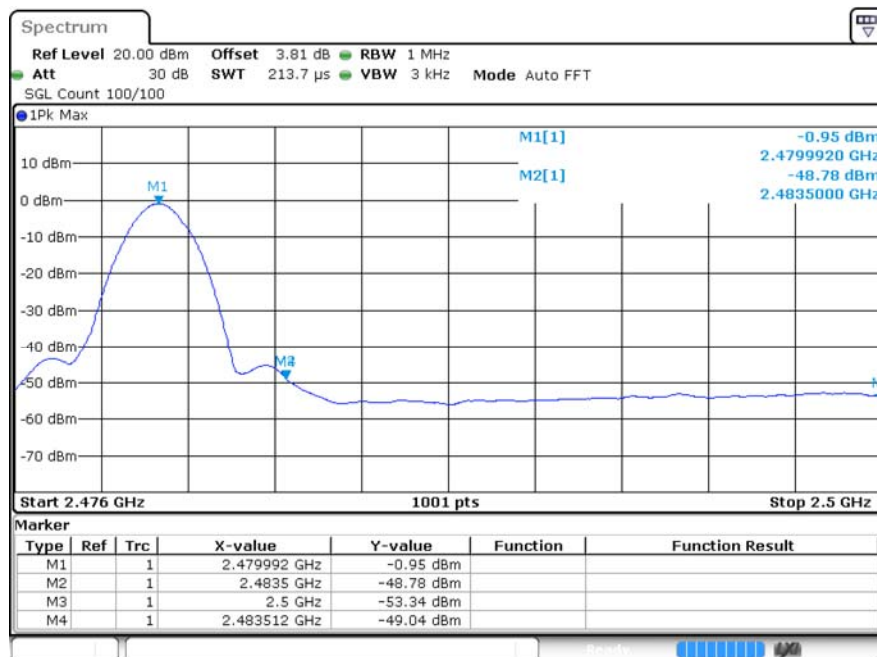
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (Low Channel)



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---