



Appendix A

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

Product Name: Clear sound true wireless bluetooth speaker

Trade Mark: N/A

Test Model: WE-SPK-Clear

Environmental Conditions

Temperature:	19.8℃
Relative Humidity:	51.3%
ATM Pressure:	101Kpa
Test Engineer:	Simba Huang
Supervised by:	Seal Chen

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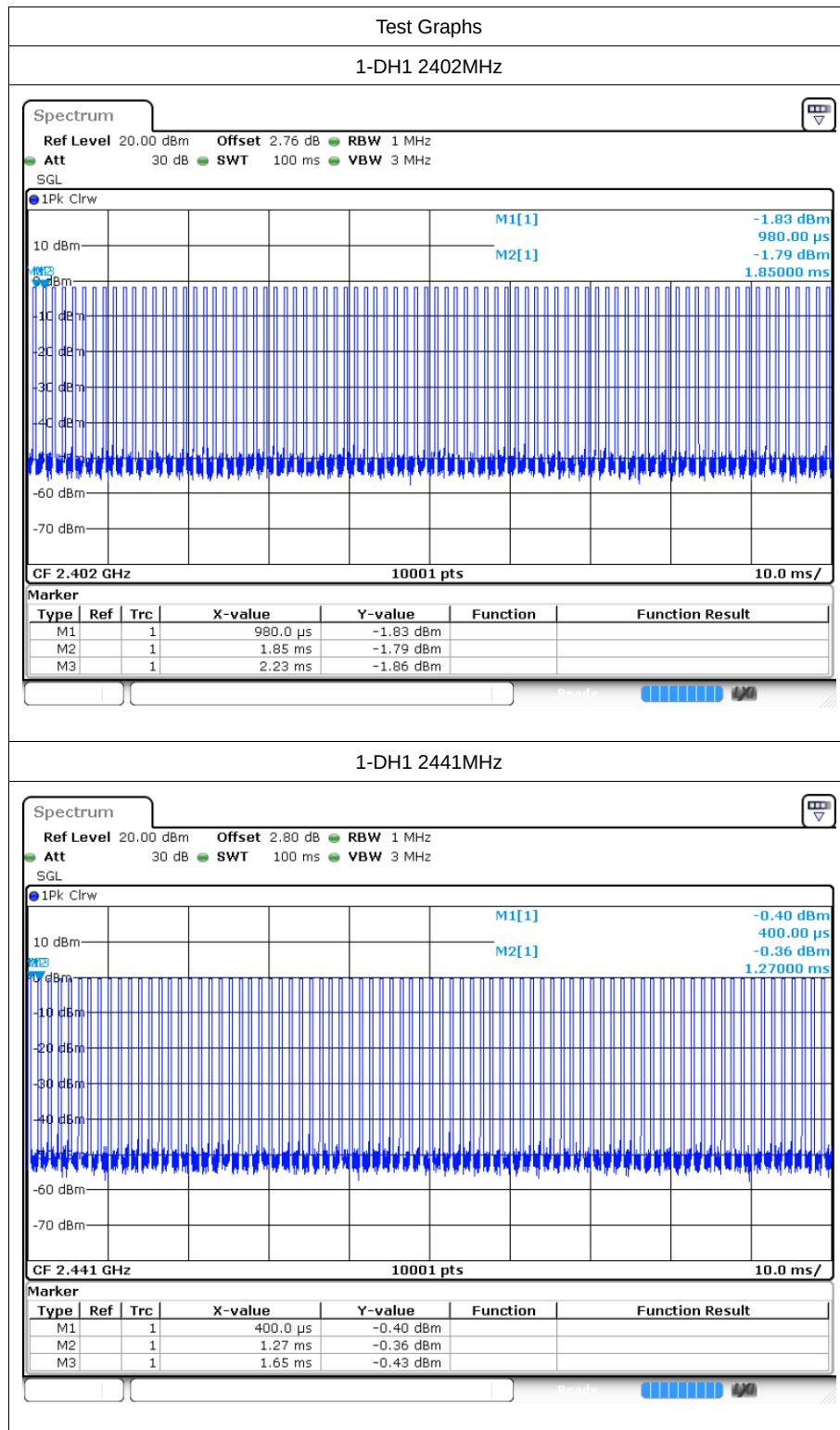
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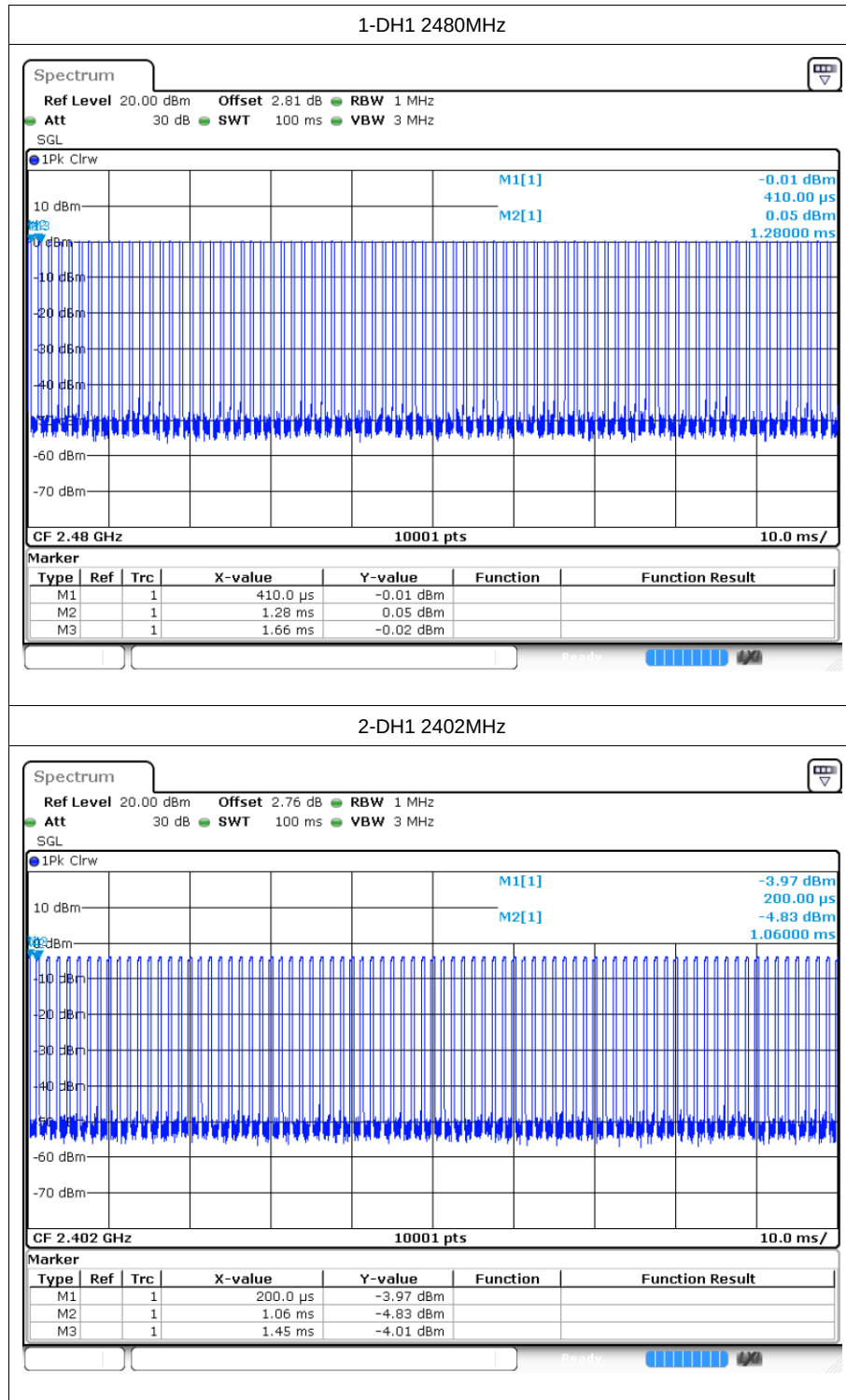
1 Duty Cycle

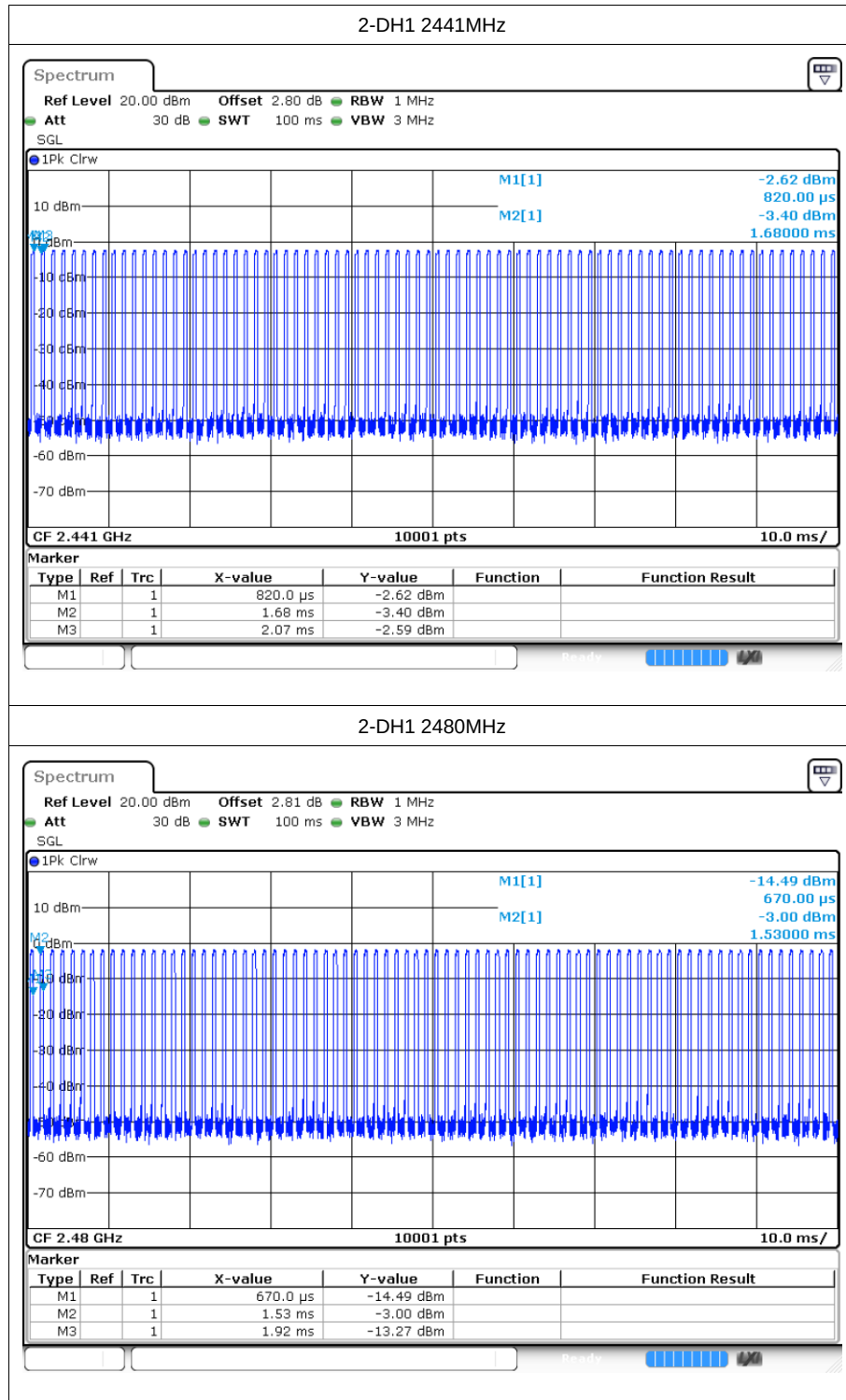
1.1 Test Result

Mode	Frequency (MHz)	Duty Cycle (%)	1/T (kHz)
1-DH1	2402	31.2	2.63
1-DH1	2441	31.6	2.63
1-DH1	2480	31.2	2.63
2-DH1	2402	32.01	2.56
2-DH1	2441	32	2.56
2-DH1	2480	32	2.56

1.2 Test Graphs





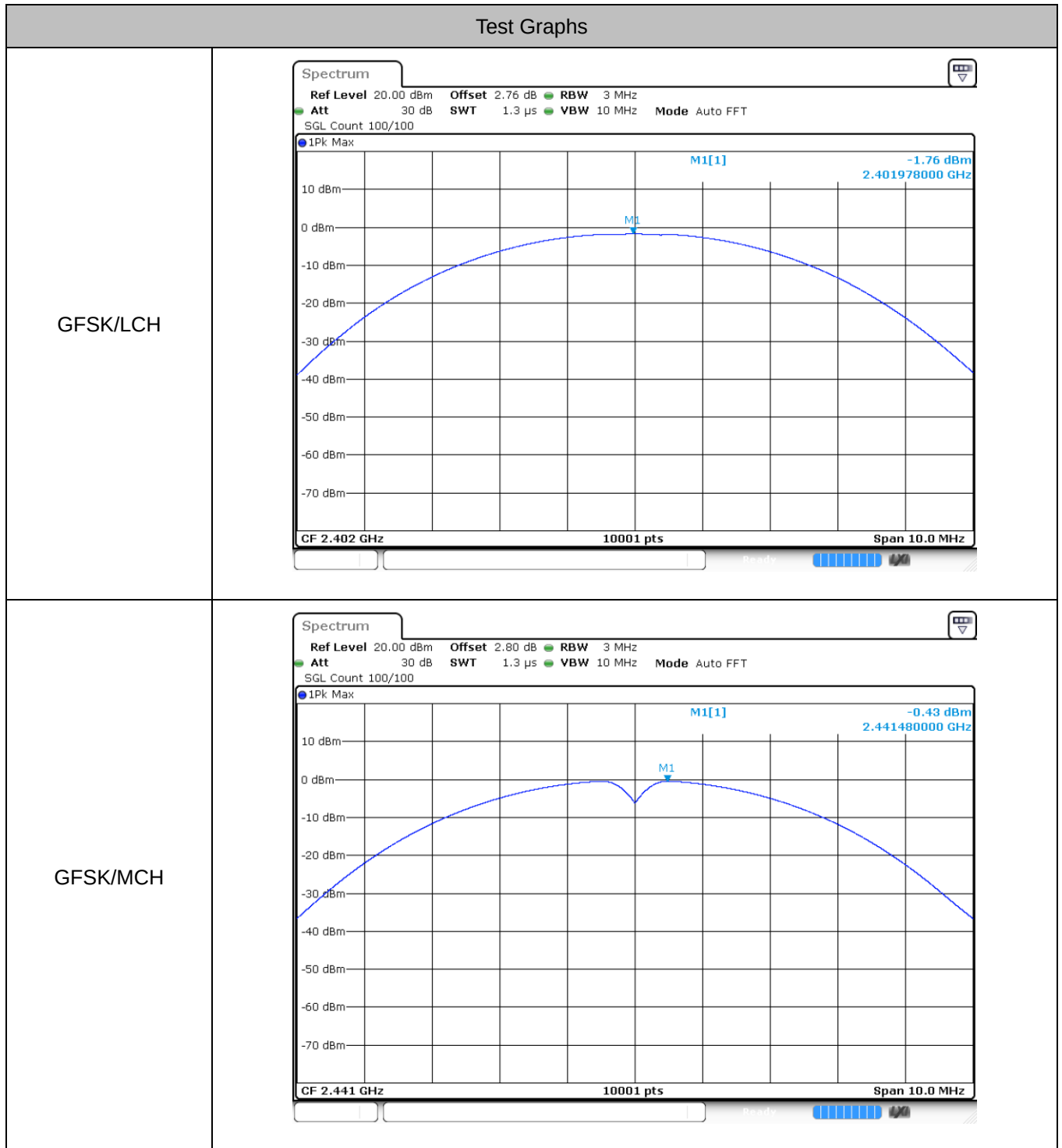


2 Maximum Conducted Peak Output Power

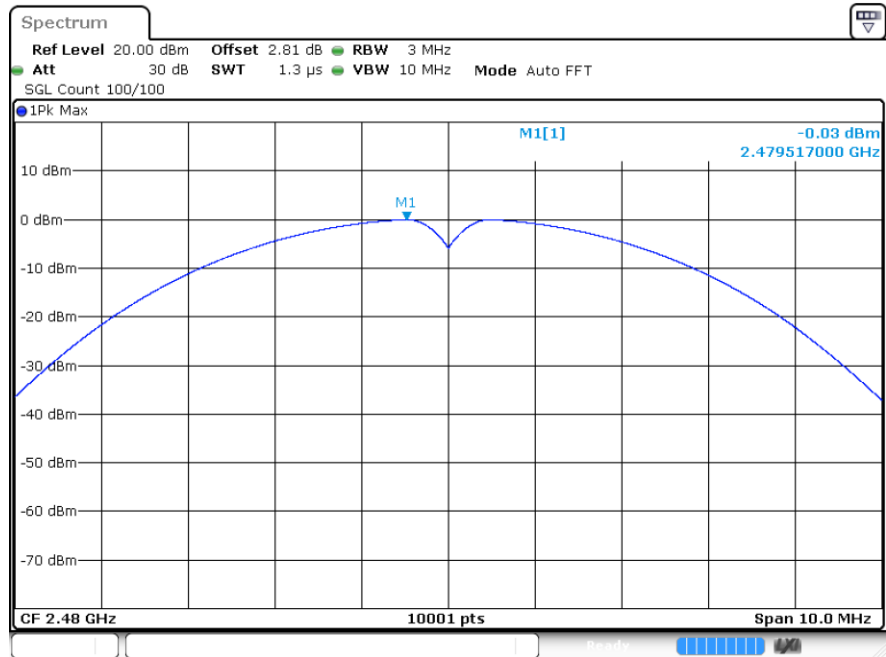
2.1 Test Result

Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-1.76	21	Pass
	MCH	-0.43	21	Pass
	HCH	-0.03	21	Pass
$\pi/4$ DQPSK	LCH	-2.73	21	Pass
	MCH	-1.29	21	Pass
	HCH	-0.89	21	Pass

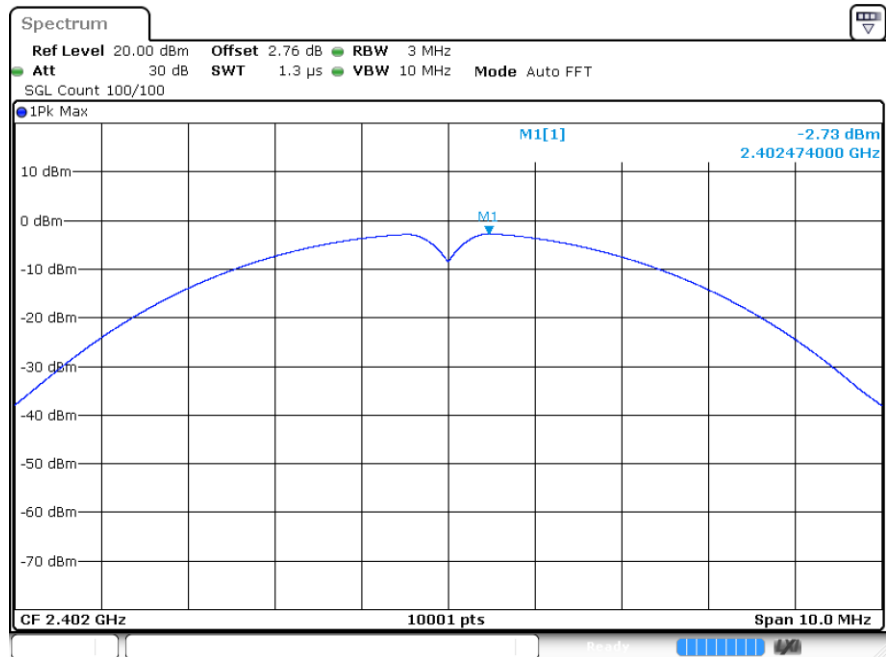
2.2 Test Graphs



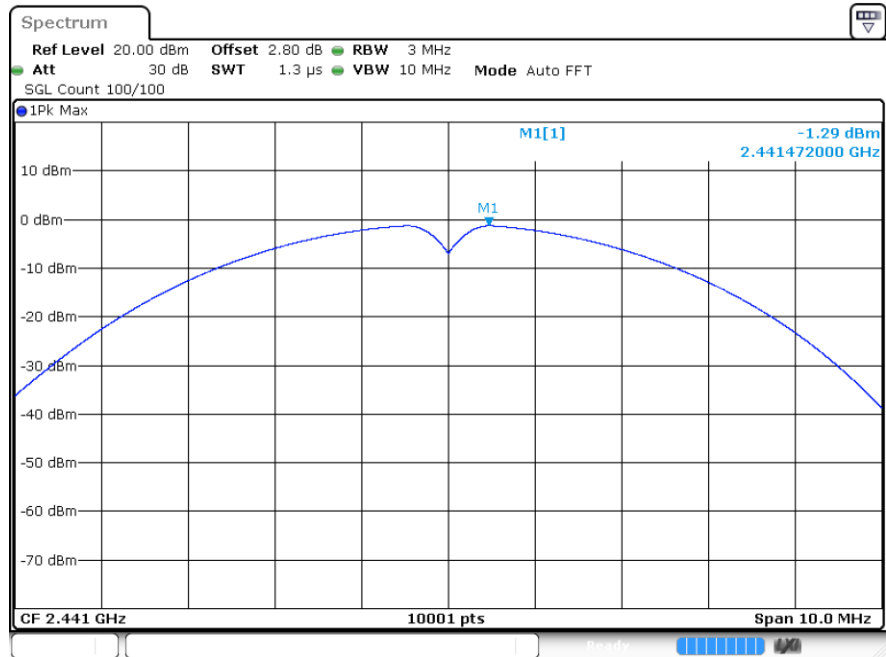
GFSK/HCH



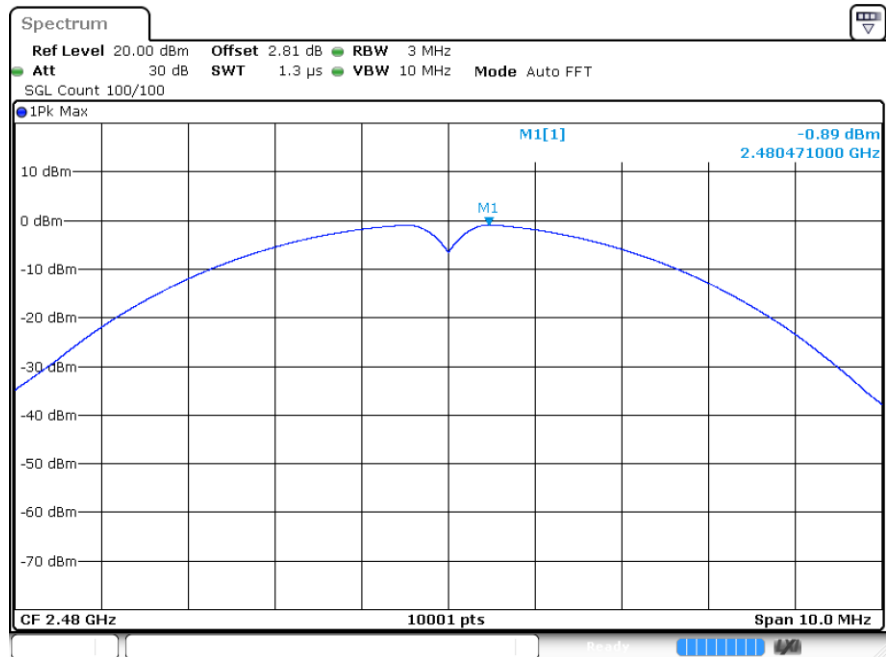
$\pi/4$ DQPSK/LCH



$\pi/4$ DQPSK/MCH



$\pi/4$ DQPSK/HCH

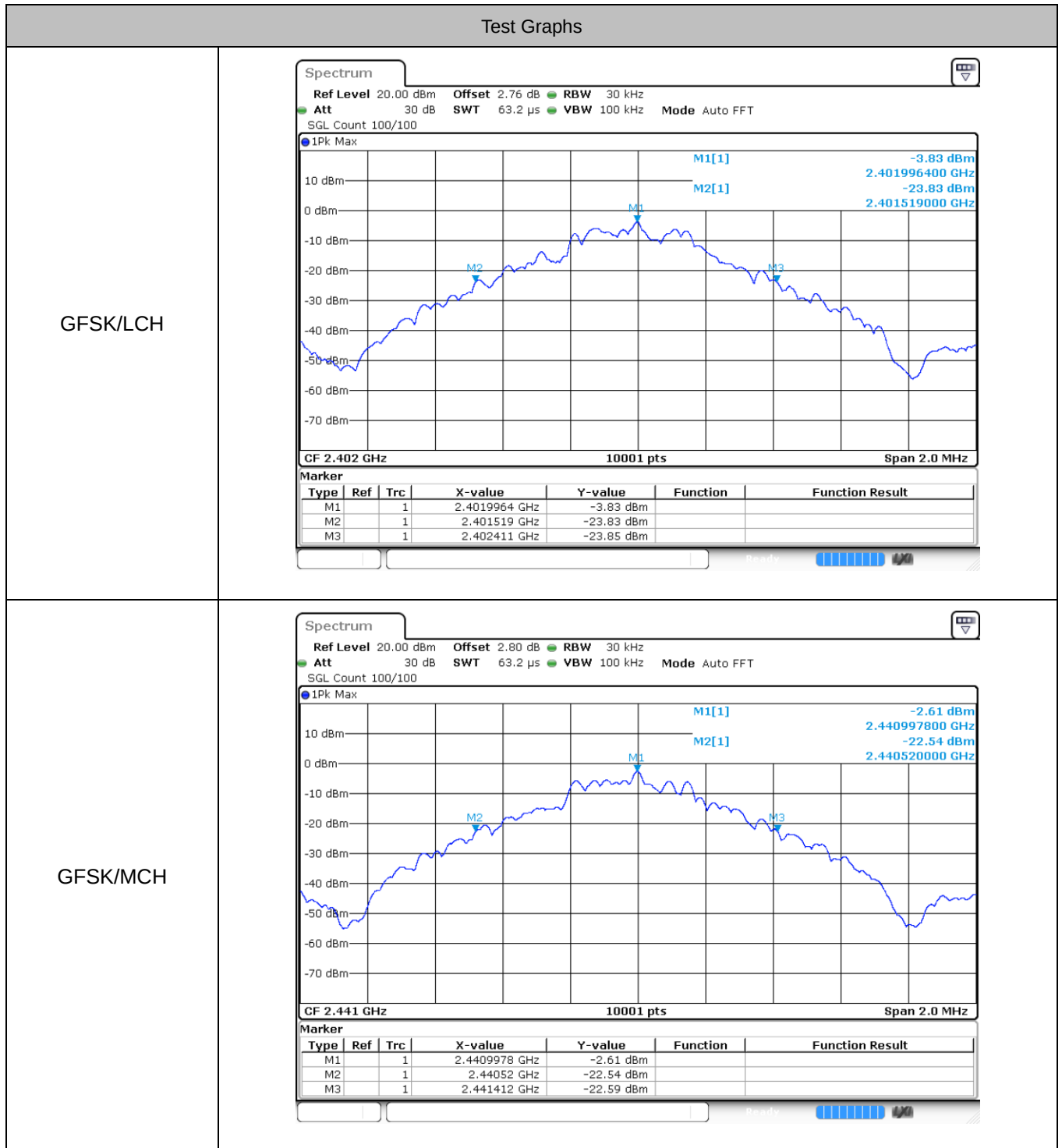


3 20dB Bandwidth

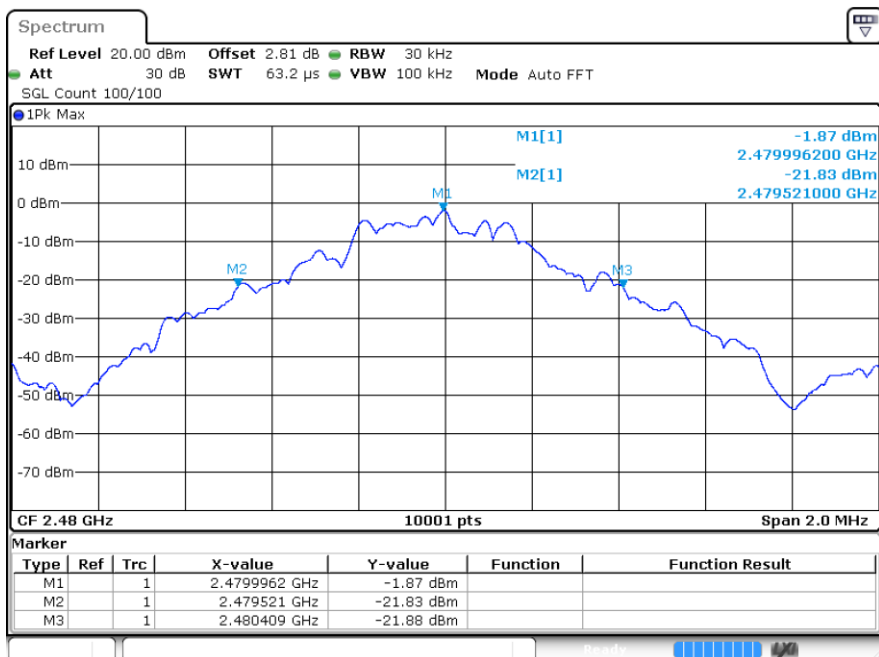
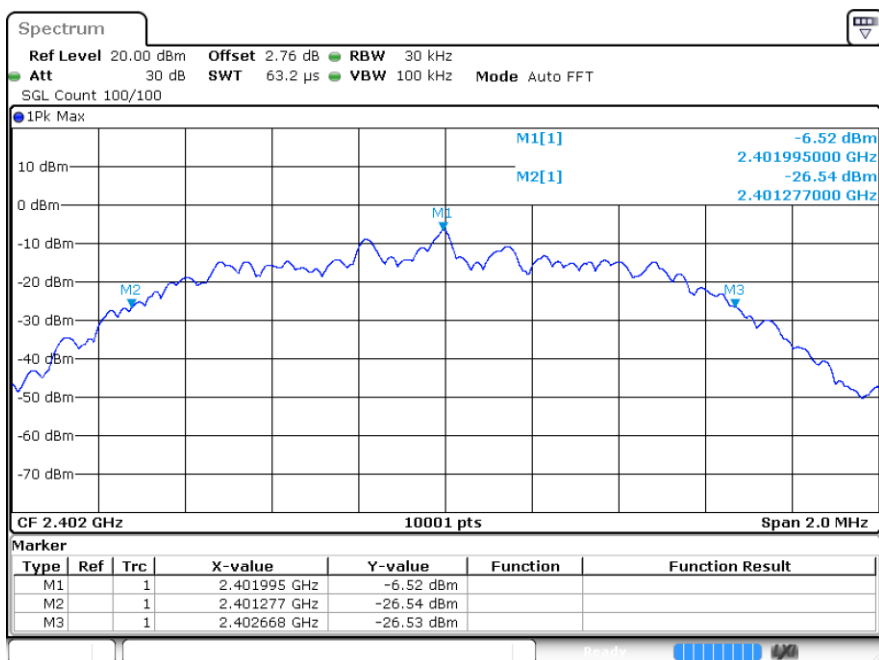
3.1 Test Result

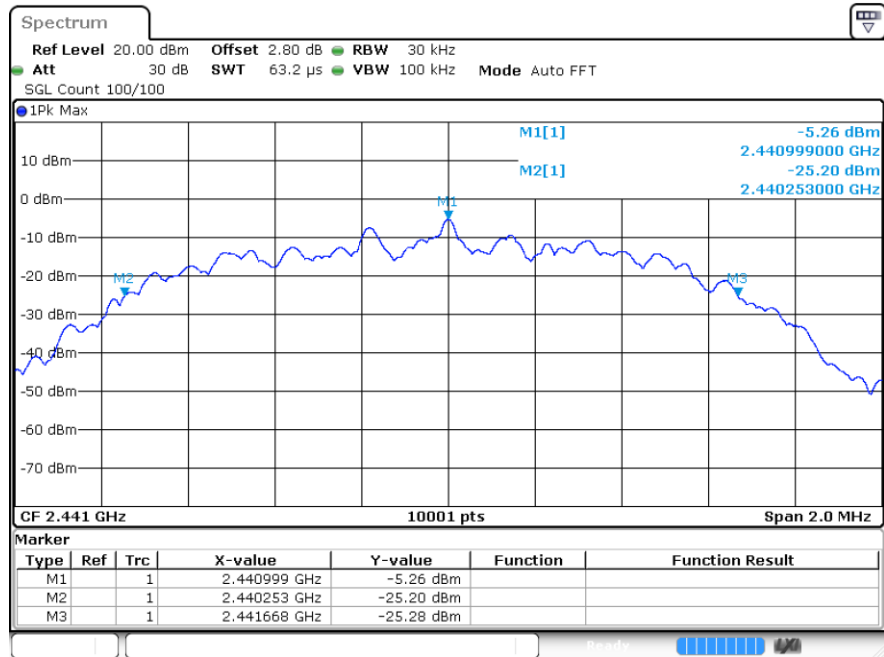
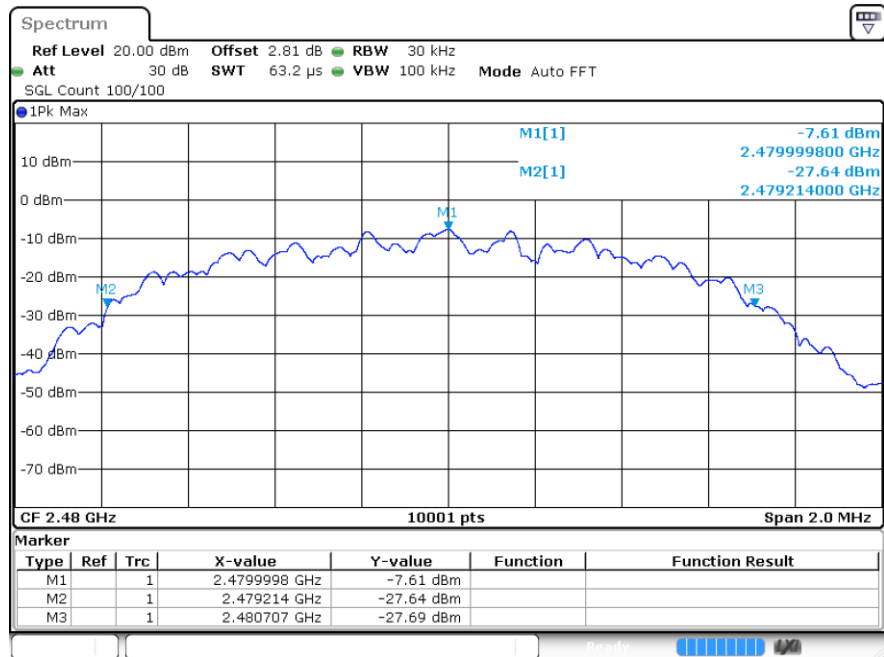
Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.892	Not Specified	Pass
	MCH	0.892	Not Specified	Pass
	HCH	0.888	Not Specified	Pass
$\pi/4$ DQPSK	LCH	1.391	Not Specified	Pass
	MCH	1.415	Not Specified	Pass
	HCH	1.492	Not Specified	Pass

3.2 Test Graphs



GFSK/HCH


 $\pi/4$ DQPSK/LCH


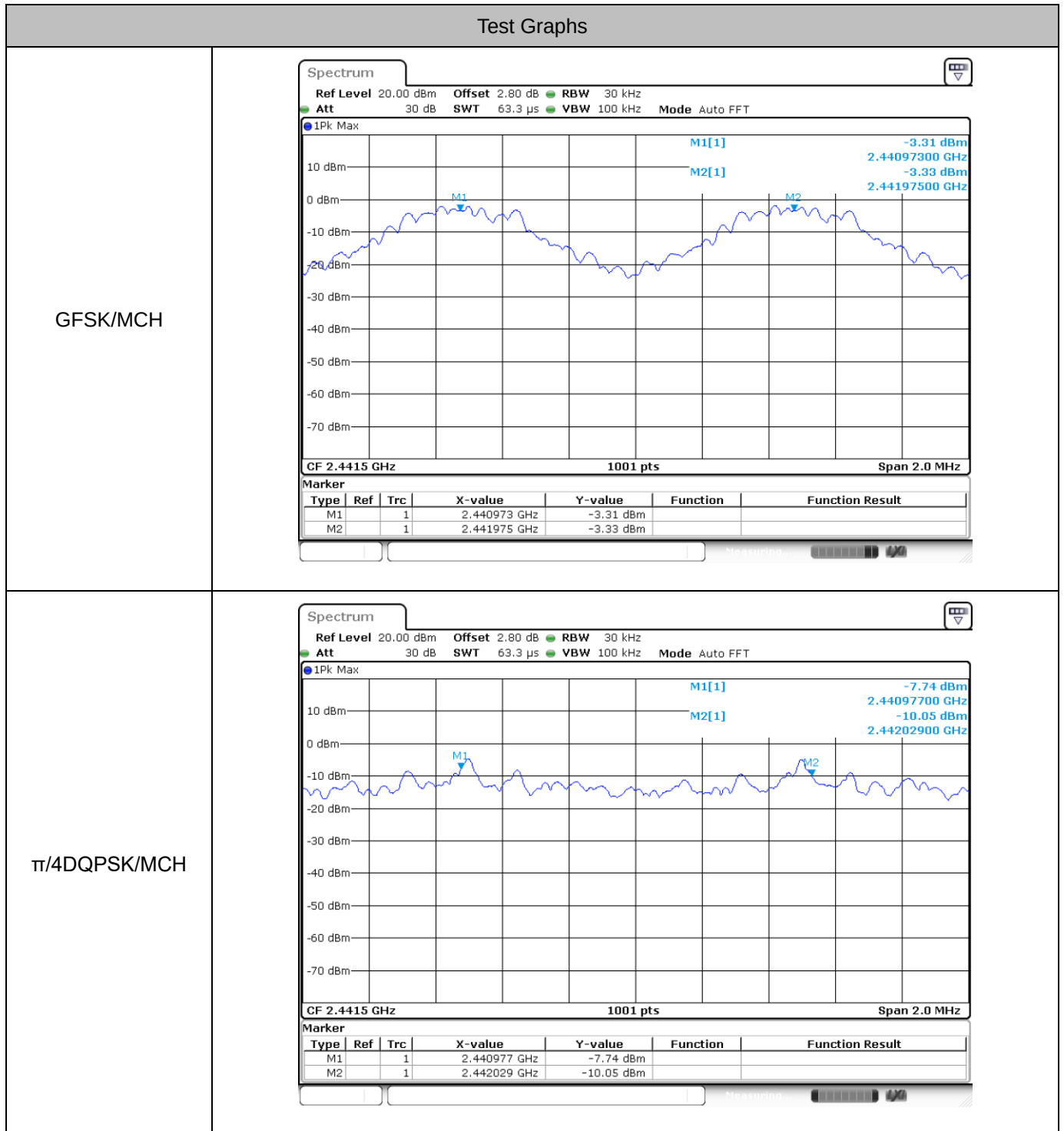
$\pi/4$ DQPSK/MCH

 $\pi/4$ DQPSK/HCH


4 Carrier Frequency Separation

4.1 Test Result

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	MCH	1.002	0.595	Pass
$\pi/4$ DQPSK	MCH	1.052	0.943	Pass

4.2 Test Graphs

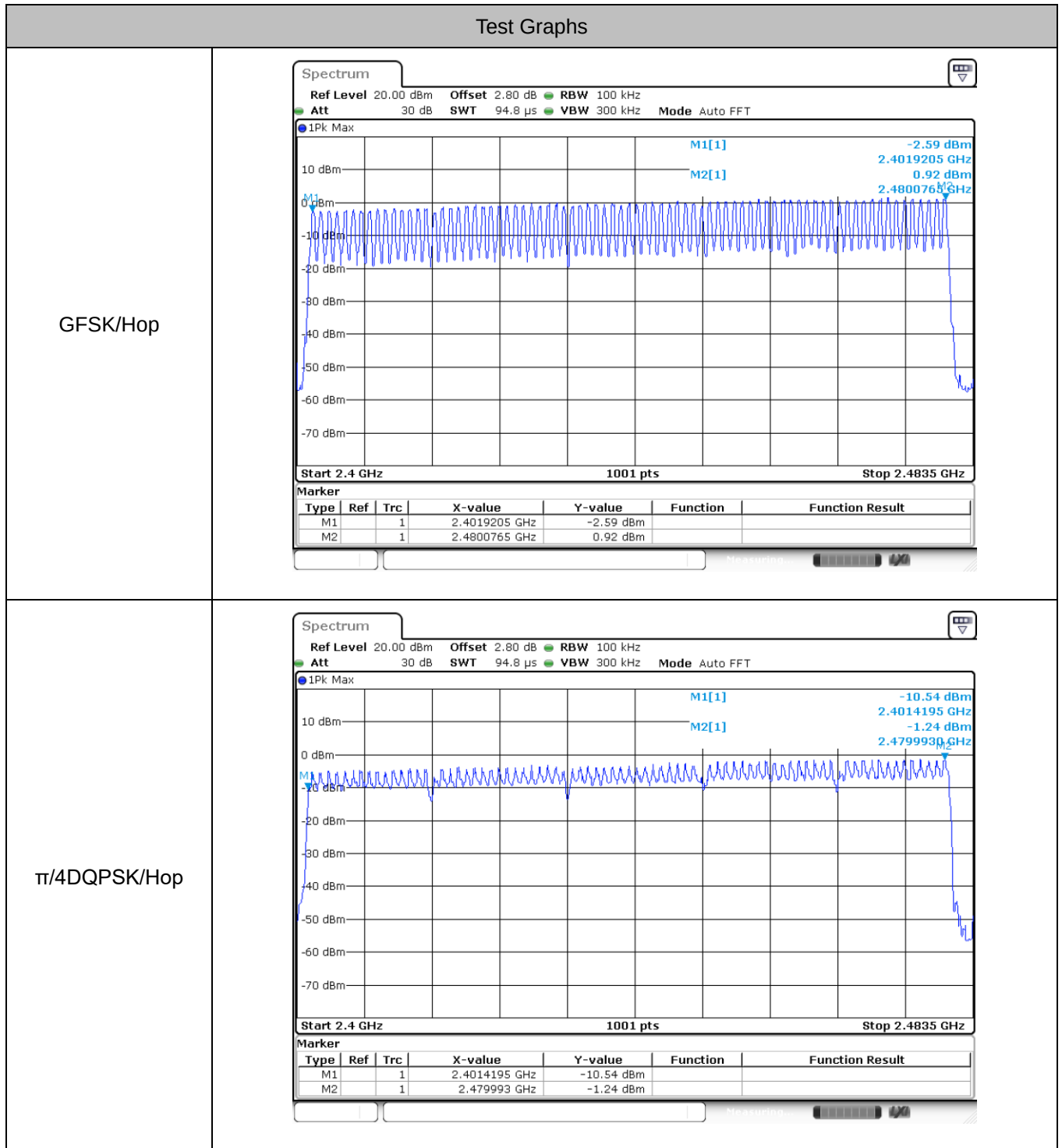


5 Hopping Channel Number

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

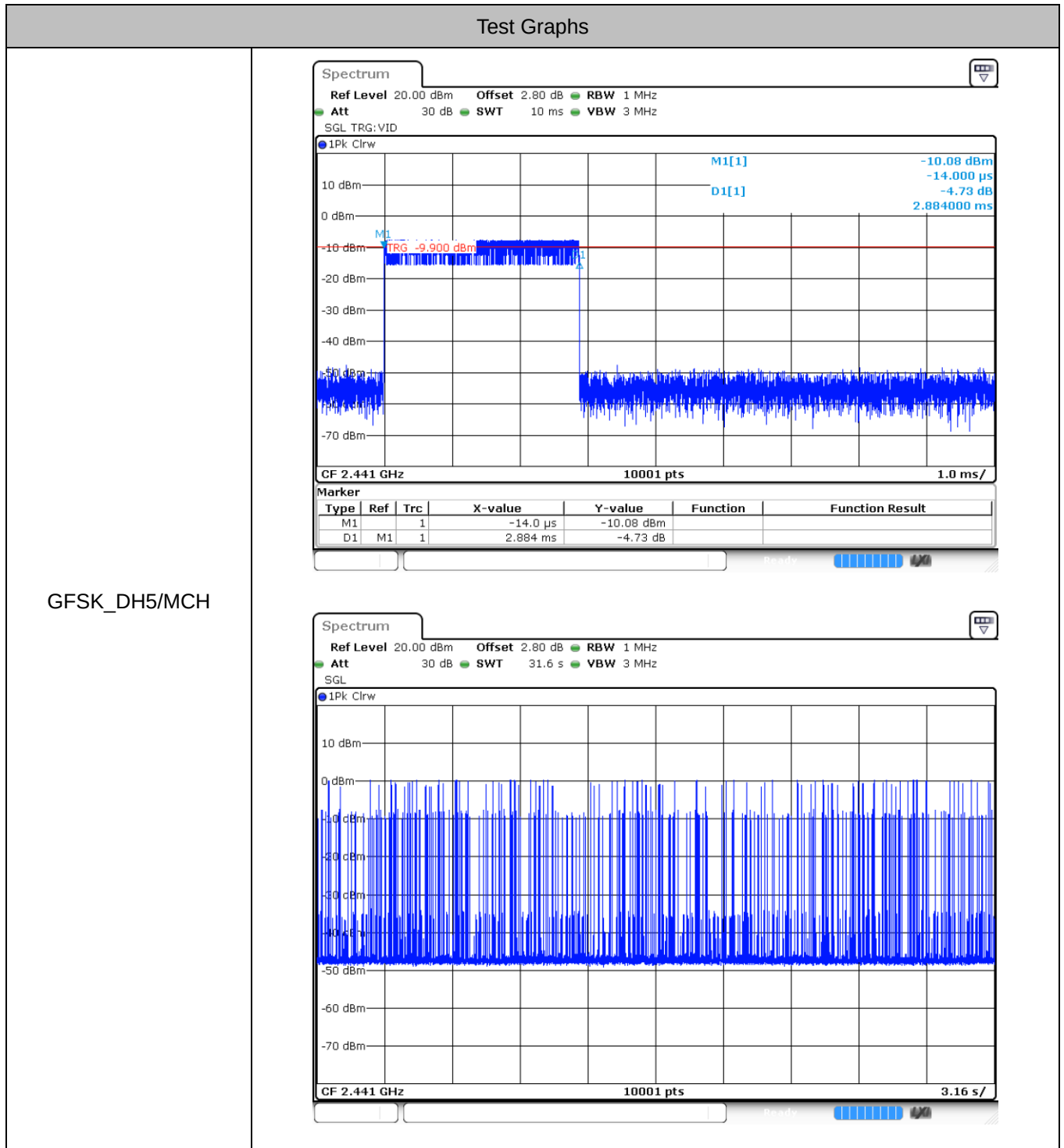


6 Dwell Time

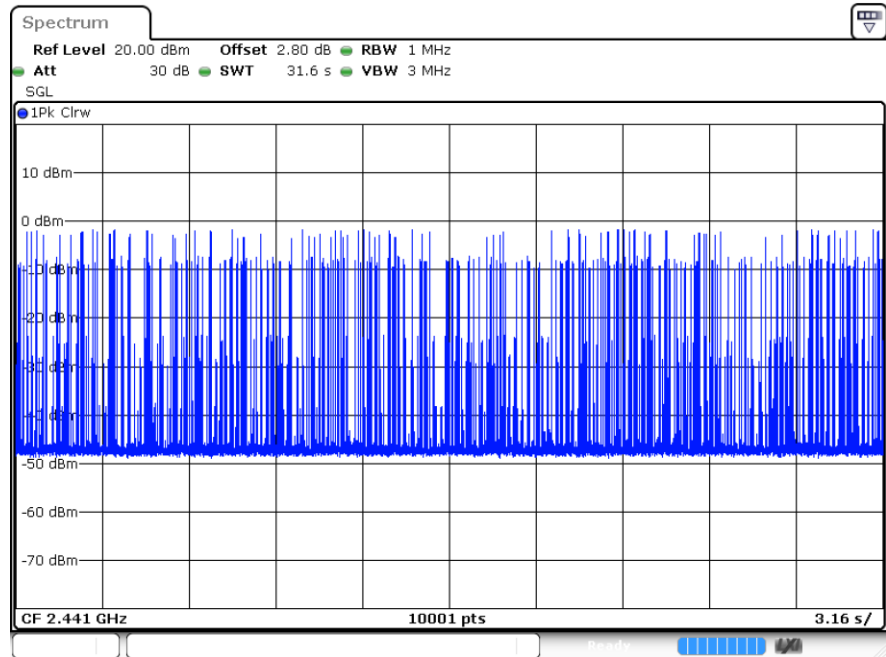
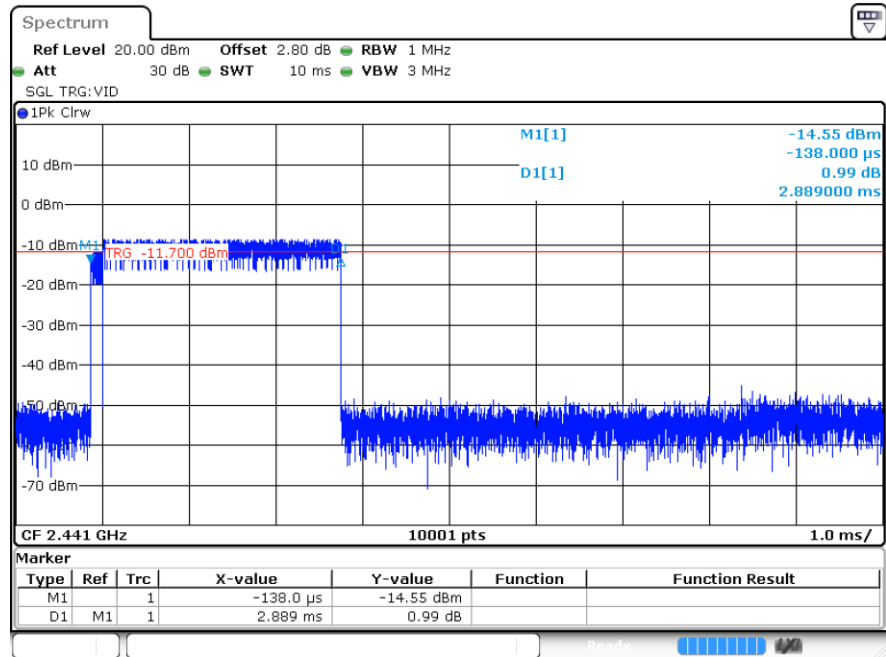
6.1 Test Result

Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[ms]	Limit [s]	Verdict
GFSK	DH5	MCH	2.884	102	294.168	0.4	Pass
$\pi/4$ DQPSK	2DH5	MCH	2.889	98	283.122	0.4	Pass

6.2 Test Graphs



$\pi/4$ DQPSK
_2DH5/MCH

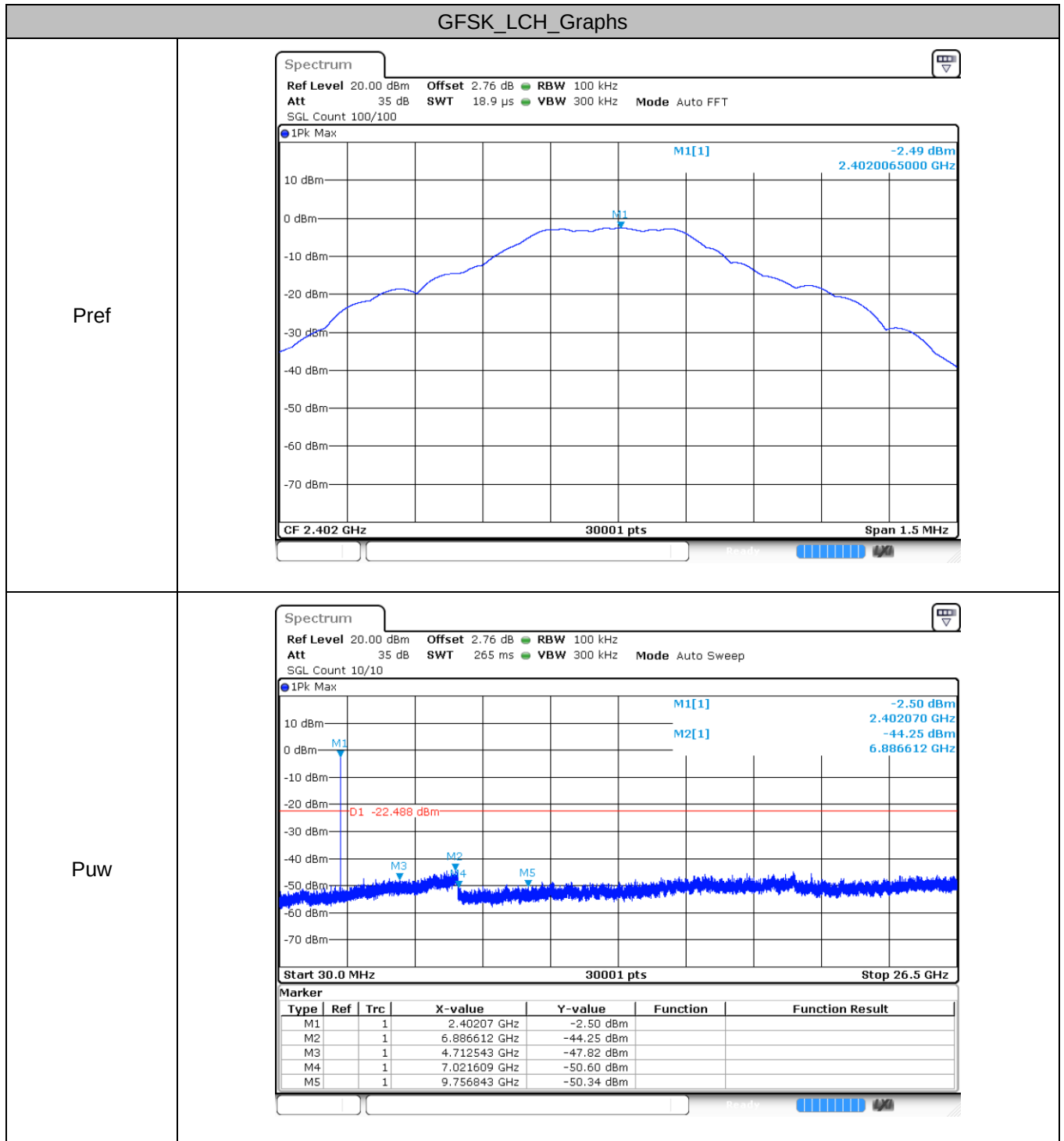


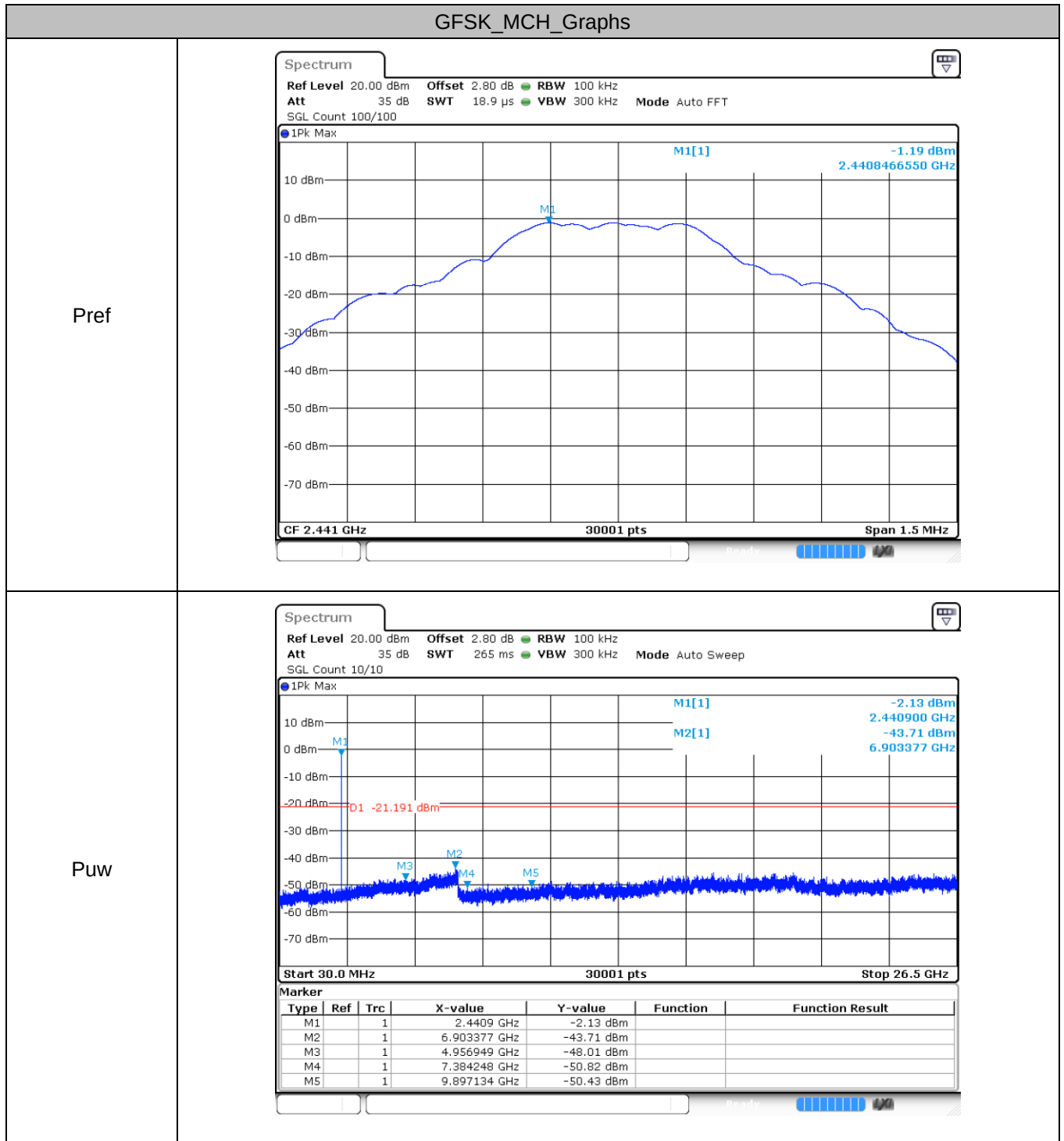
7 RF Conducted Spurious Emissions

7.1 Test Result

Mode	Channel	Max. Level [dBc]	Limit [dBc]	Verdict
GFSK	LCH	-41.76	-20	Pass
	MCH	-42.51	-20	Pass
	HCH	-43.91	-20	Pass
π /4DQPSK	LCH	-39.13	-20	Pass
	MCH	-40.86	-20	Pass
	HCH	-41.42	-20	Pass

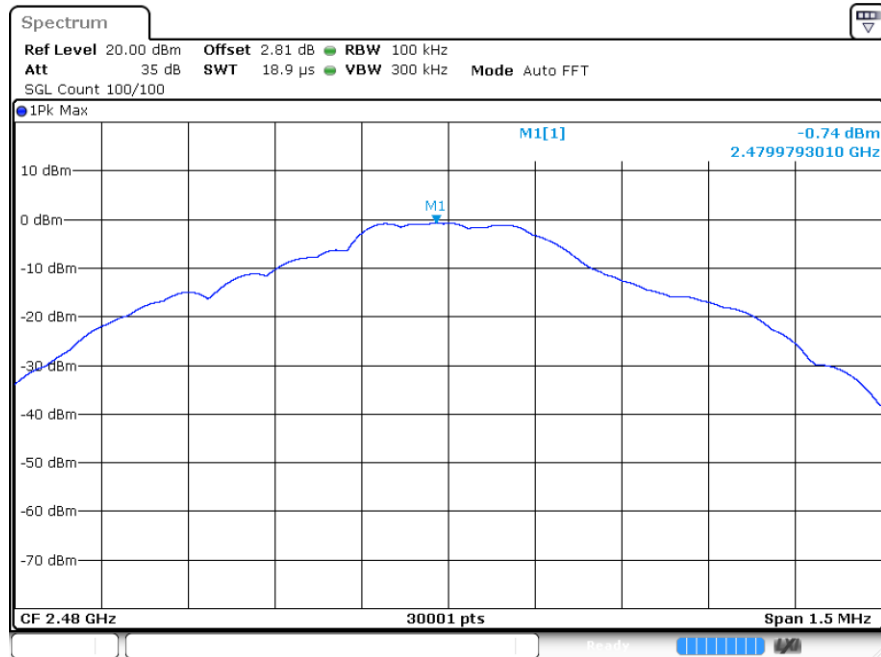
7.2 Test Graphs



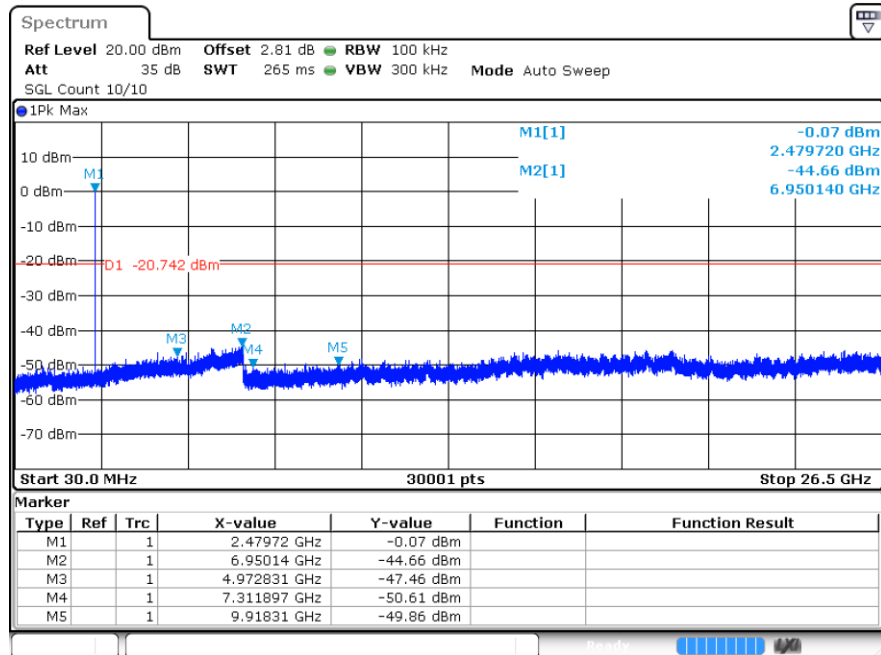


GFSK_HCH_Graphs

Pref

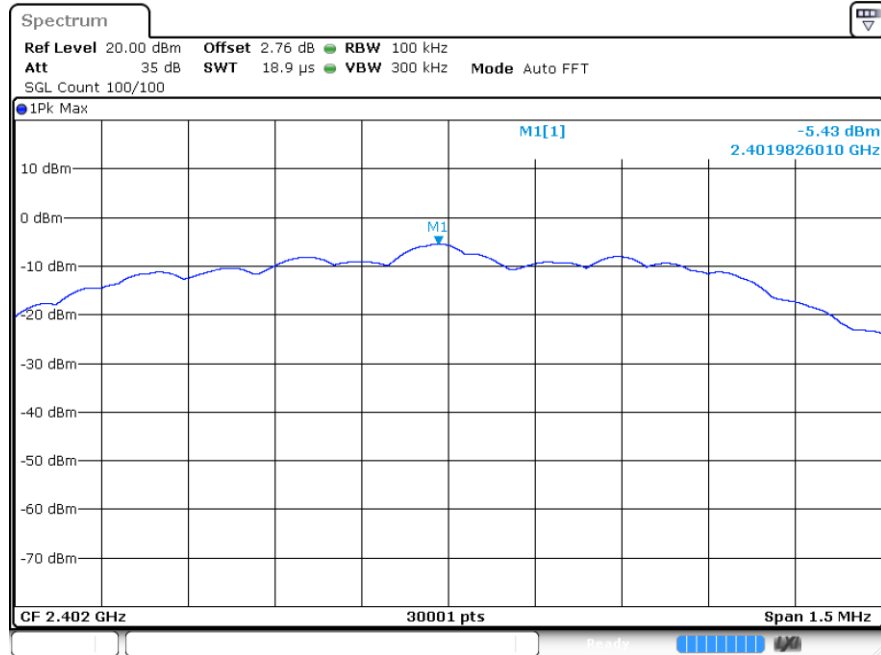


Puw

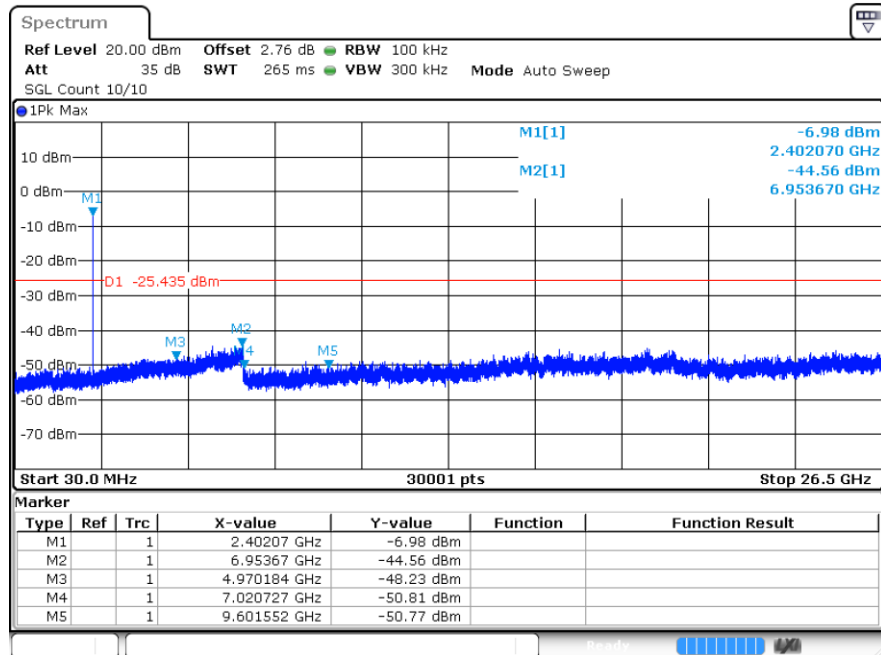


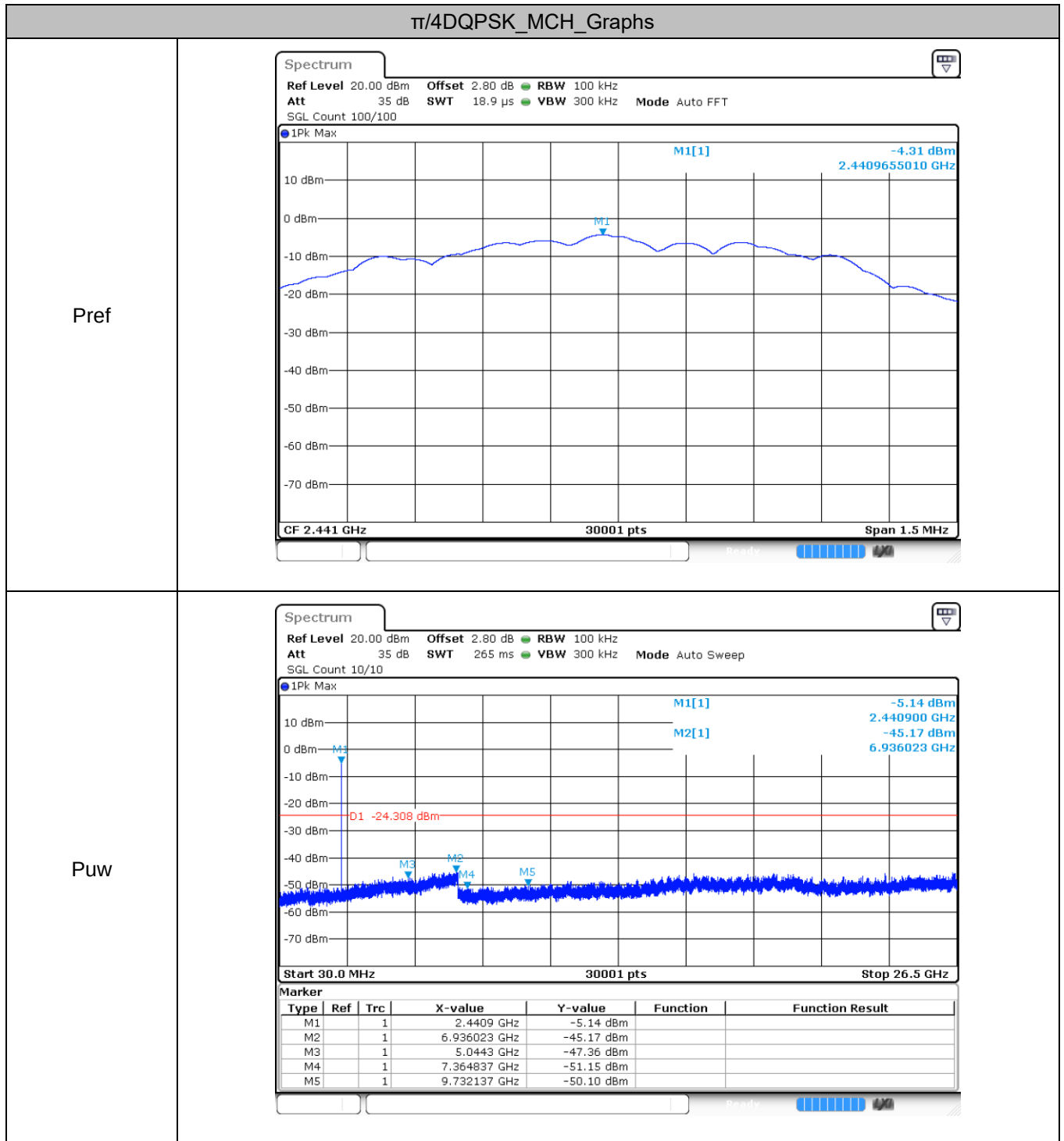
$\pi/4$ DQPSK_LCH_Graphs

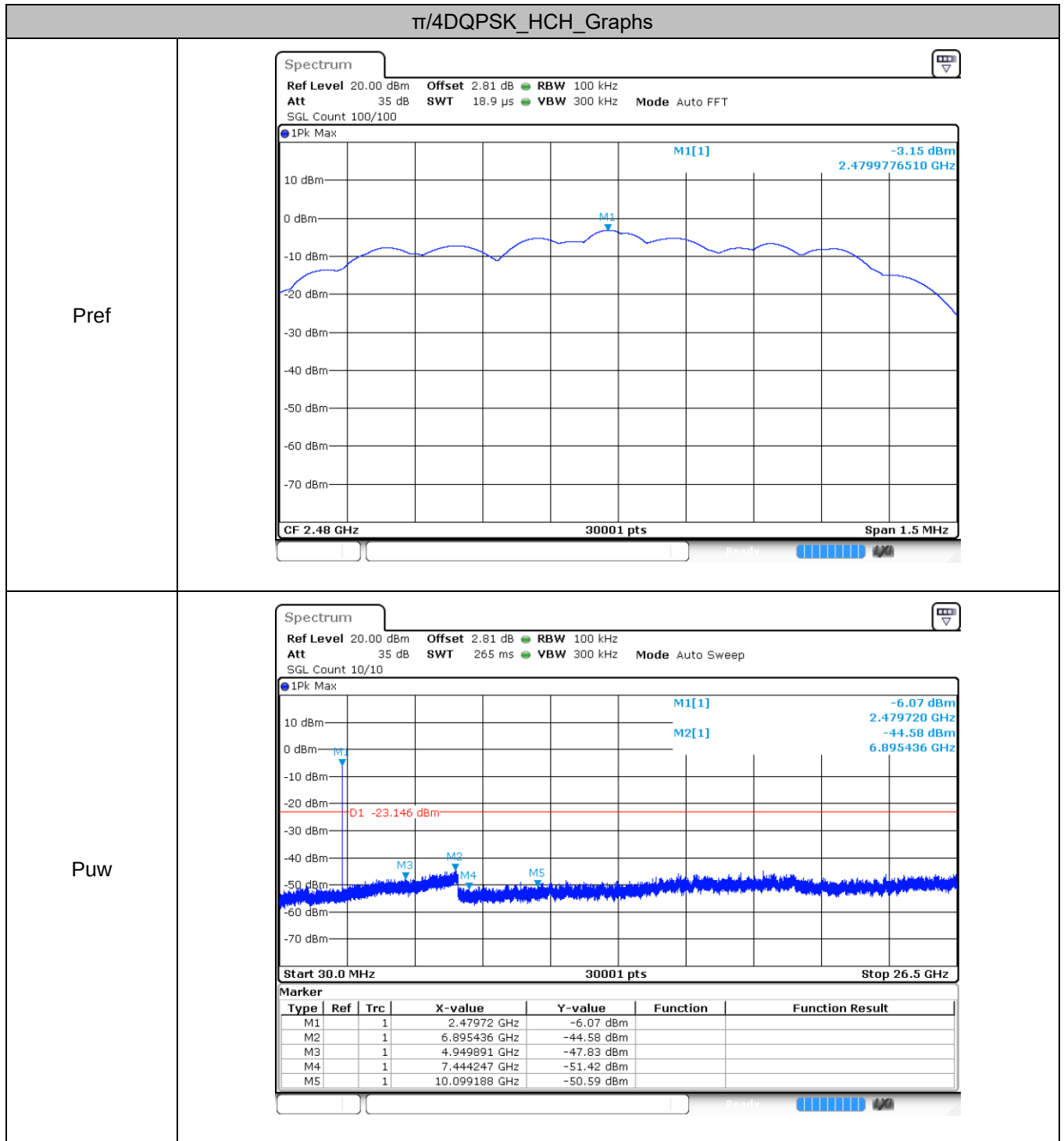
Pref



Puw





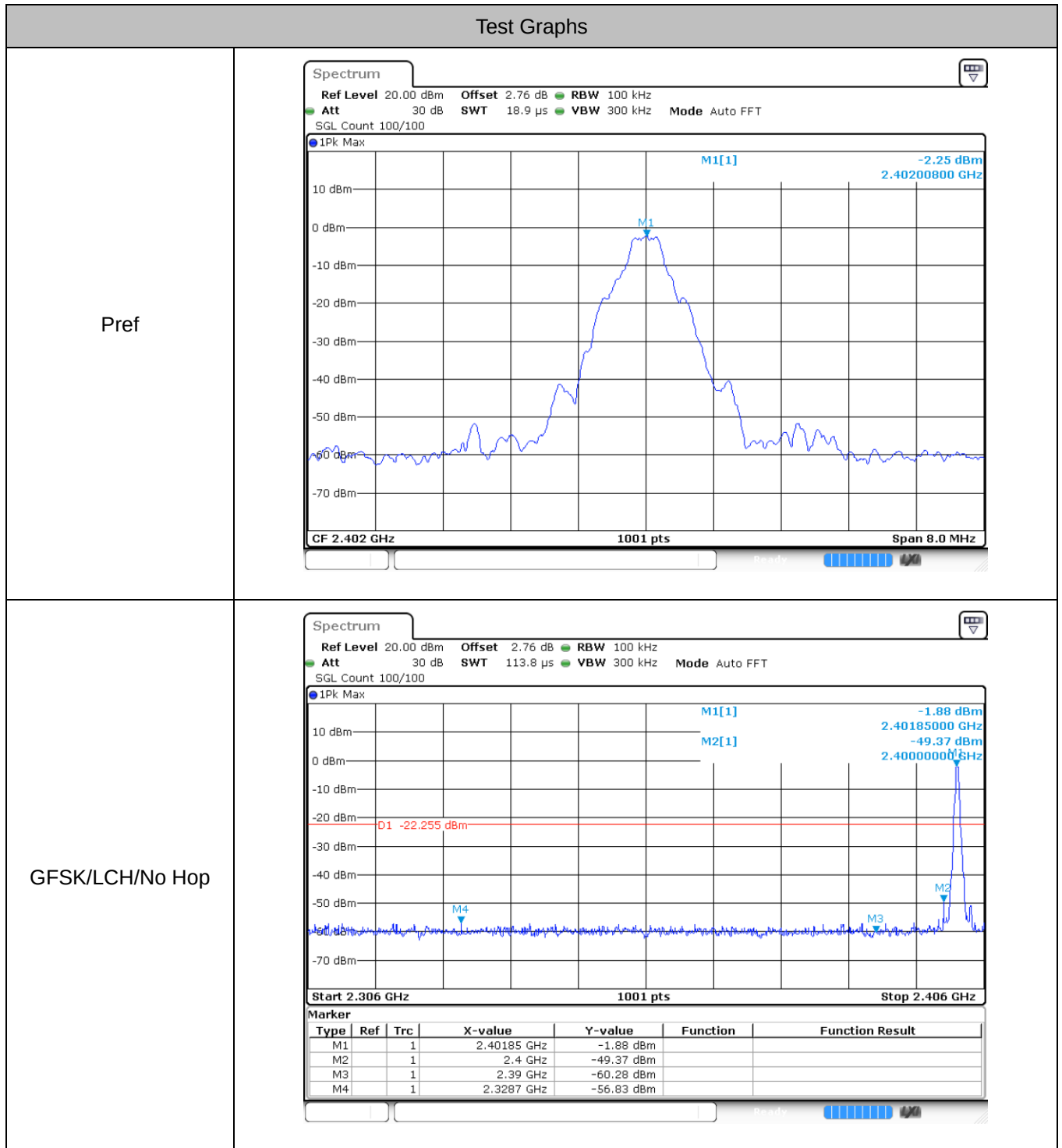


8 Band-edge for RF Conducted Emissions

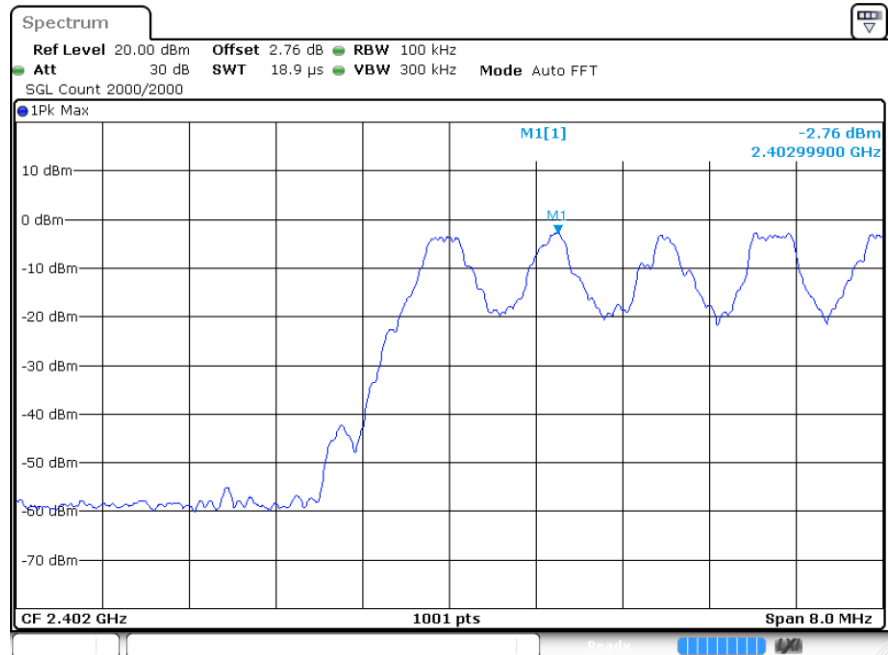
8.1 Test Result

Mode	Channel	Carrier Frequency [MHz]	Frequency Hopping	Max Spurious Level [dBc]	Limit [dBc]	Verdict
GFSK	LCH	2402	Off	-54.57	-20	Pass
			On	-51.73	-20	Pass
	HCH	2480	Off	-56.75	-20	Pass
			On	-57.12	-20	Pass
$\pi/4$ DQPSK	LCH	2402	Off	-51.05	-20	Pass
			On	-49.05	-20	Pass
	HCH	2480	Off	-46.62	-20	Pass
			On	-46.73	-20	Pass

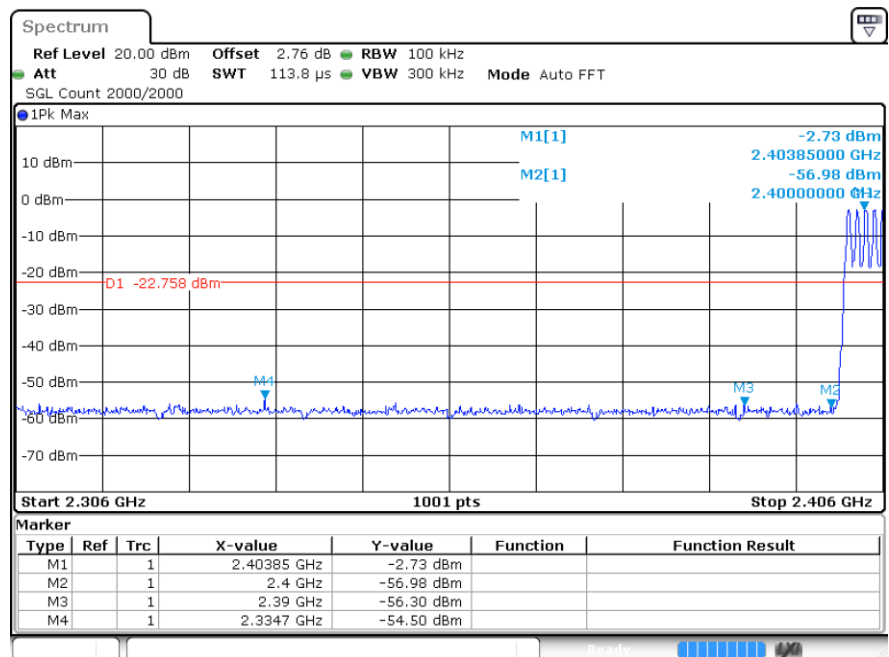
8.2 Test Graphs



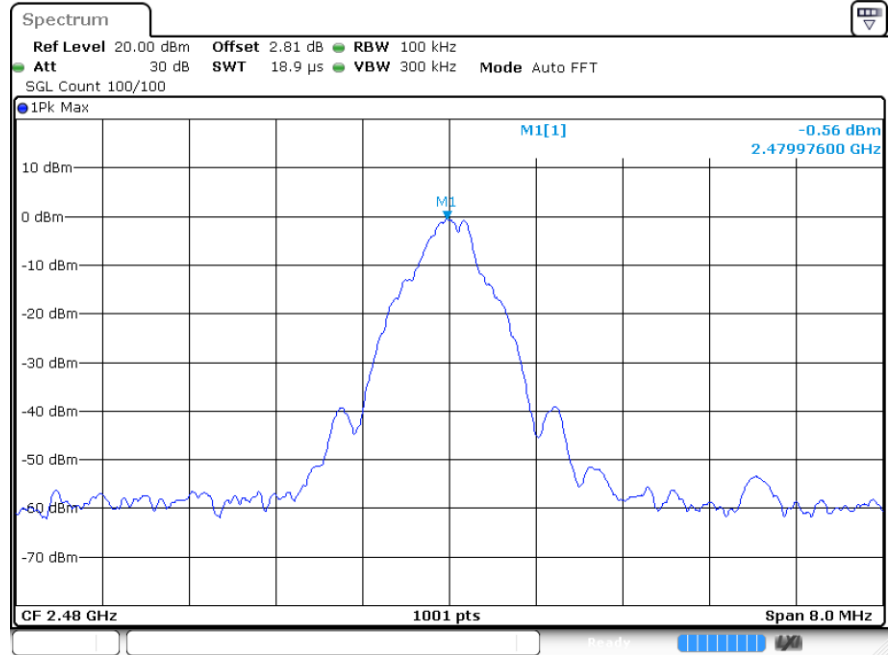
Ref



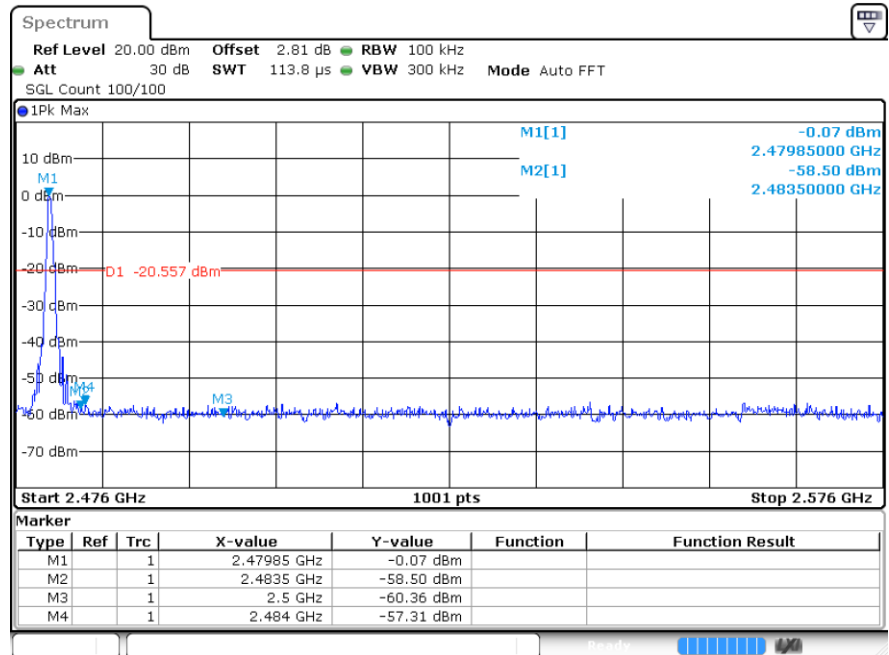
GFSK/LCH/Hop



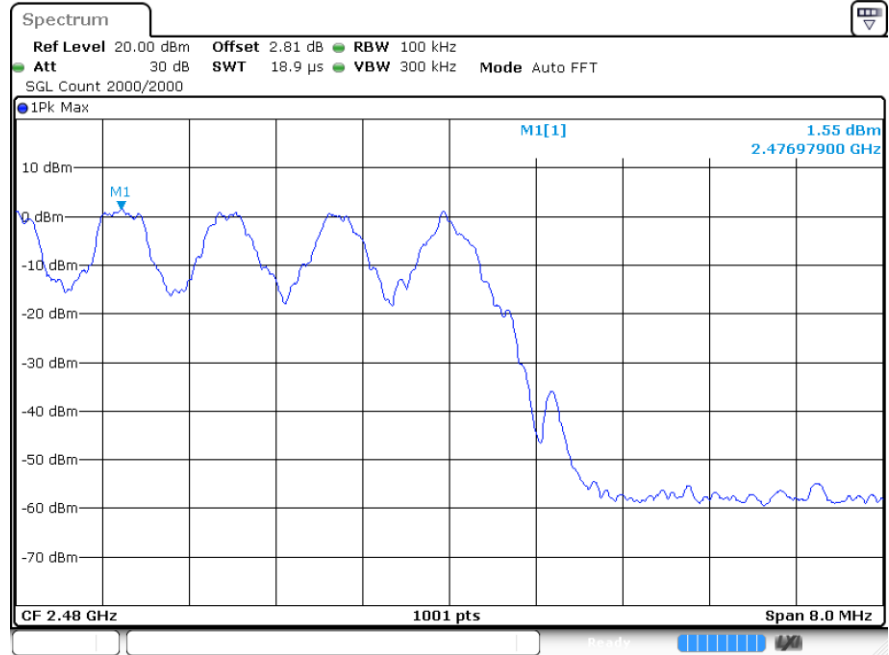
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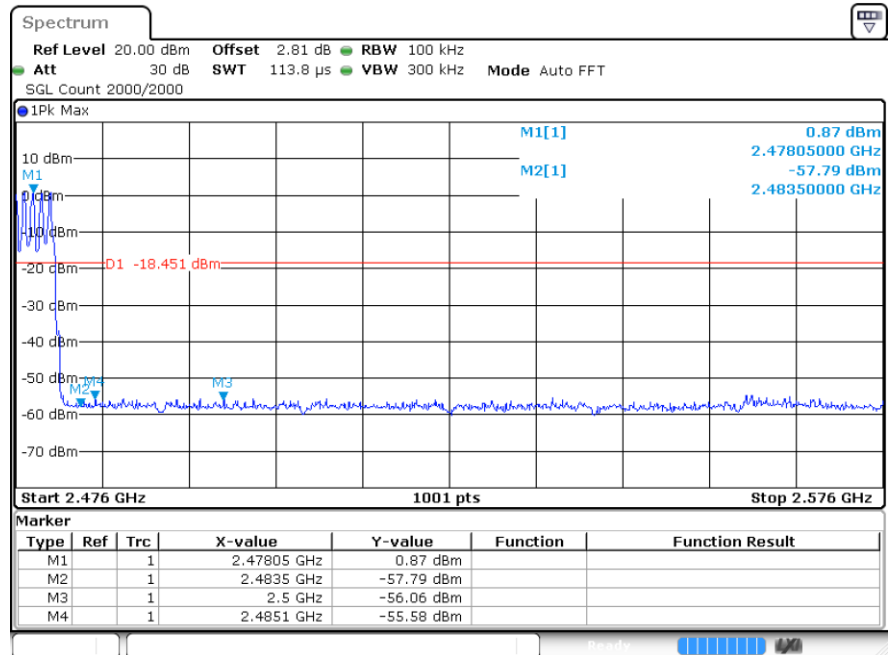
GFSK/HCH/No Hop



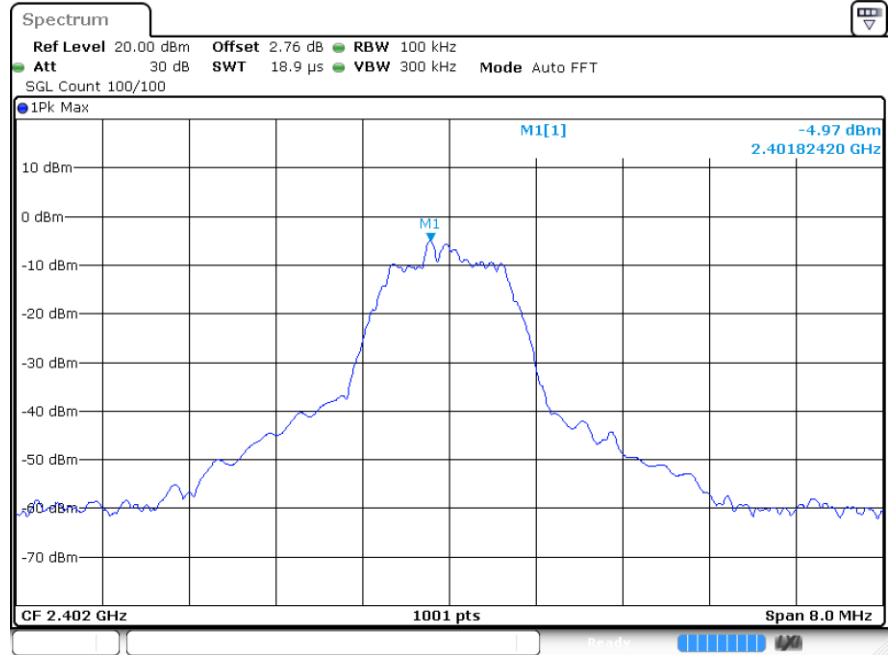
Ref.



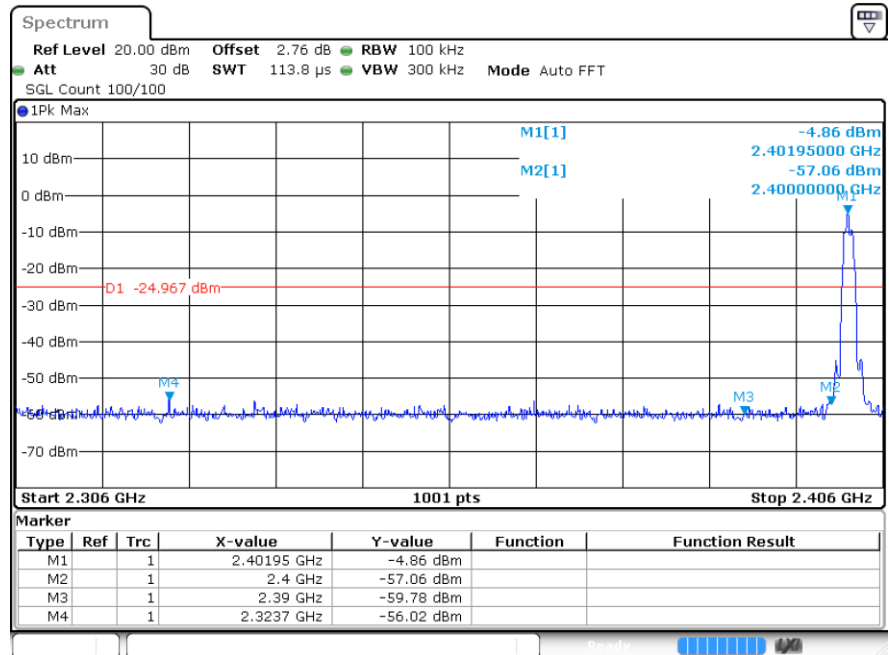
GFSK/HCH/Hop



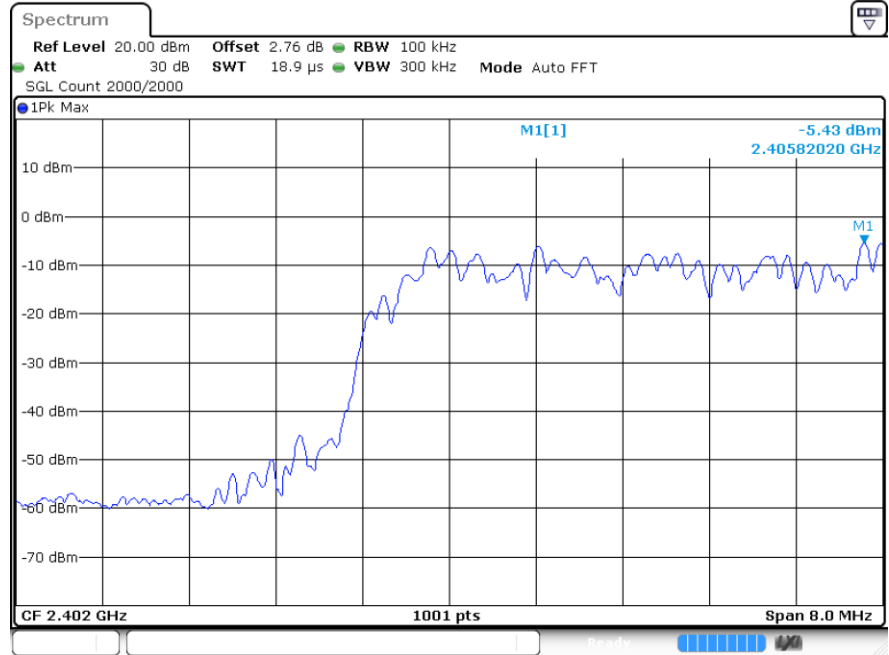
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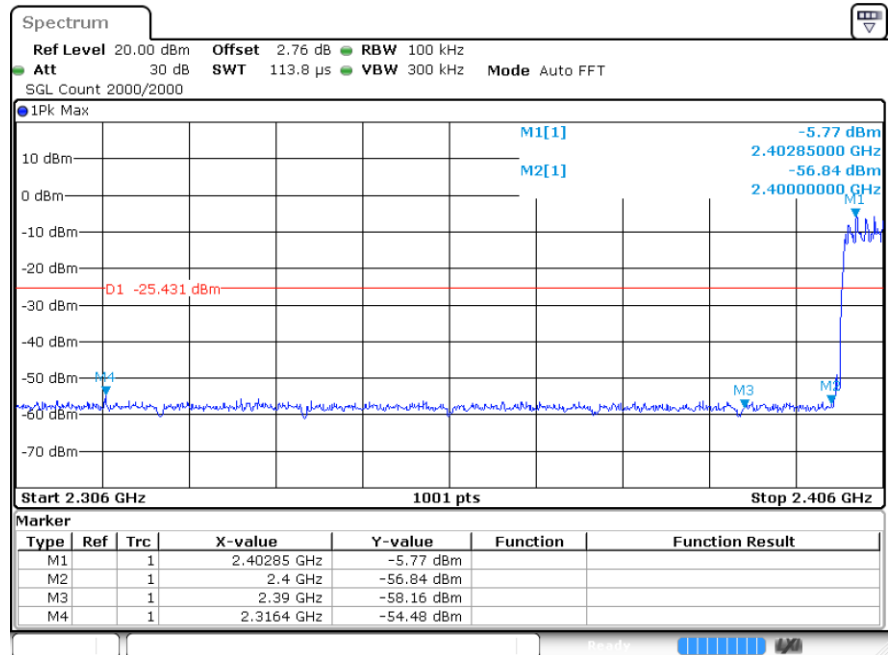
$\pi/4$ DQPSK/LCH/No
Hop



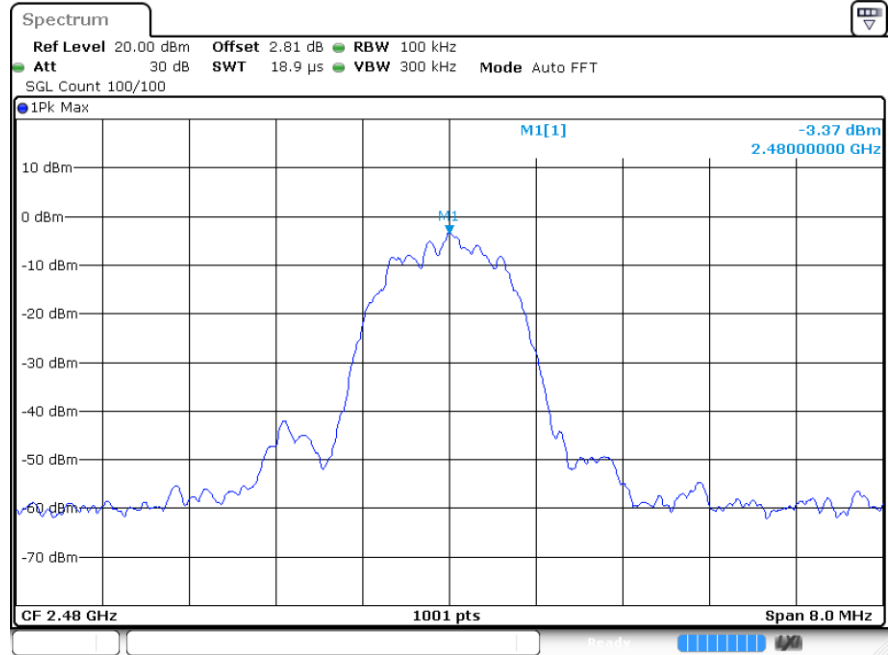
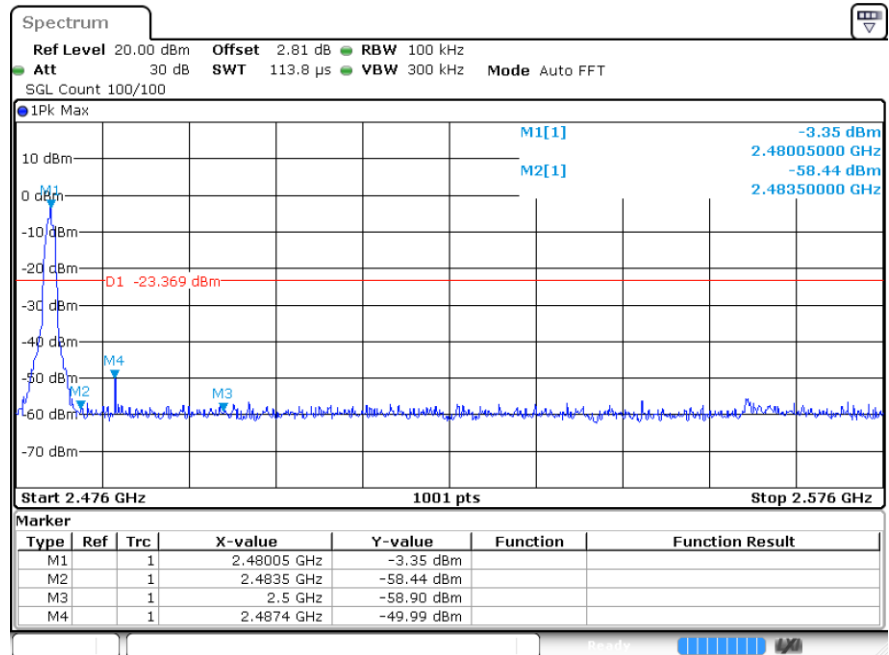
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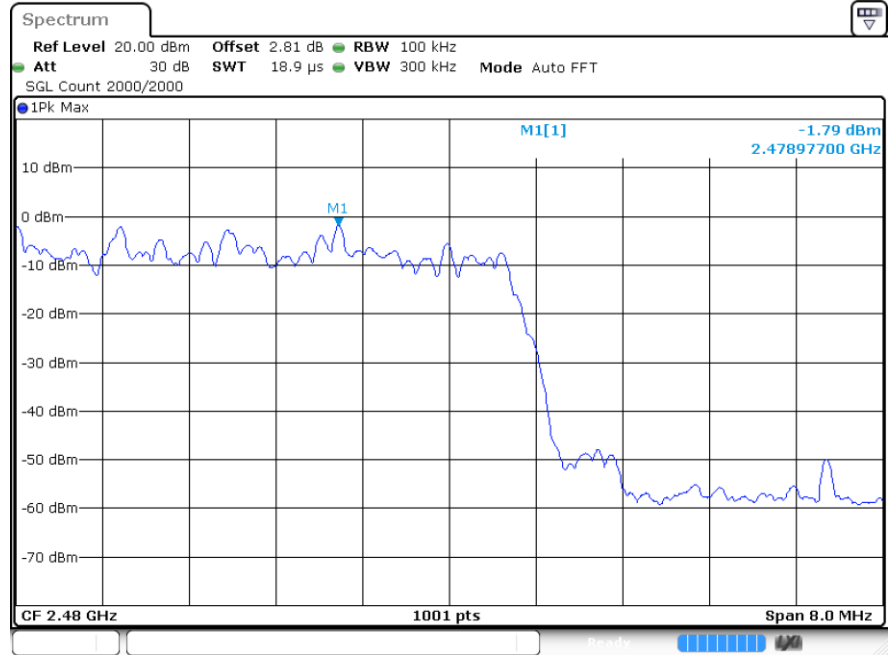
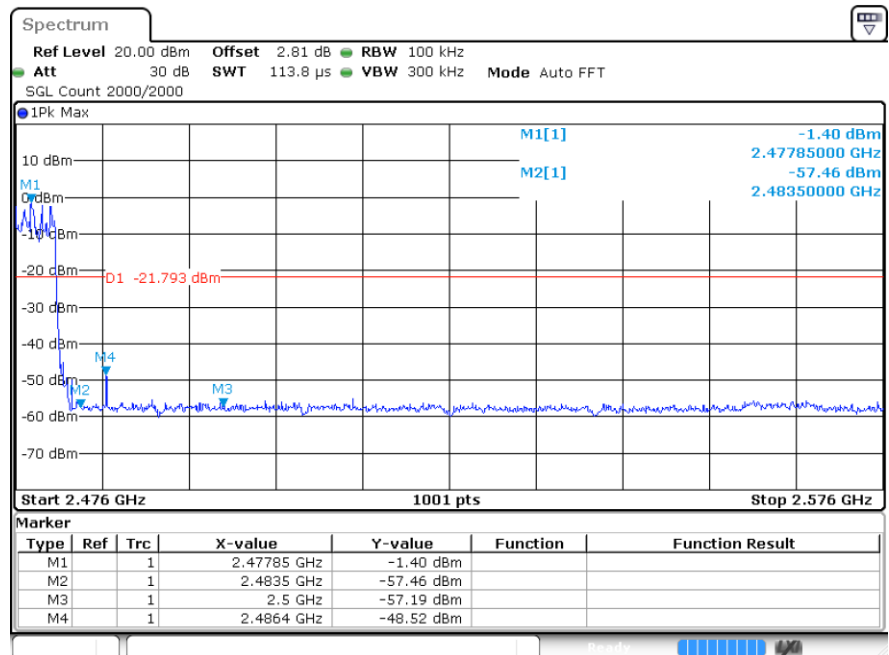
$\pi/4$ DQPSK/LCH/Hop



Ref


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


Ref


 $\pi/4$ DQPSK/HCH/Hop


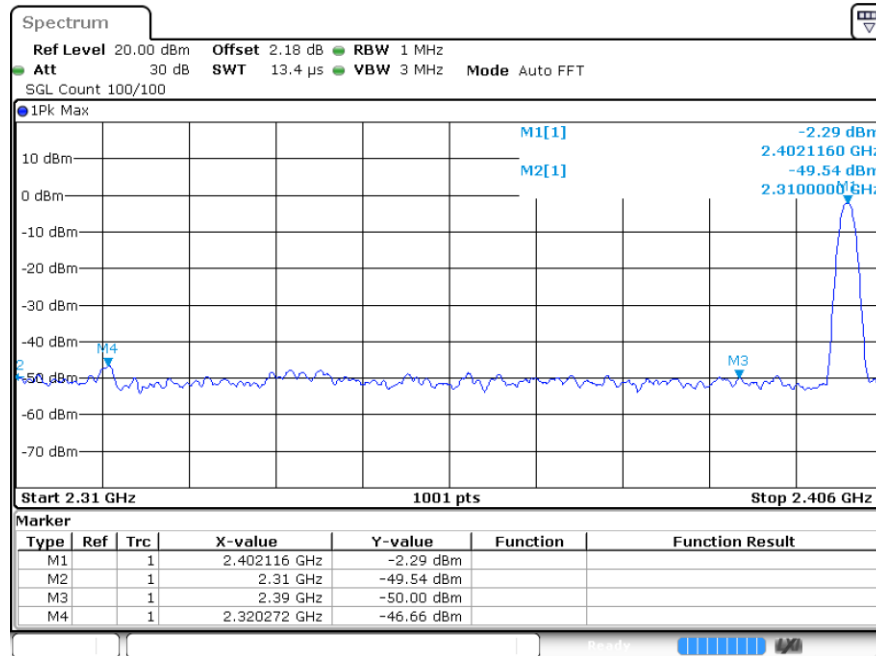
9 Restrict-band band-edge measurements

9.1 Test Result

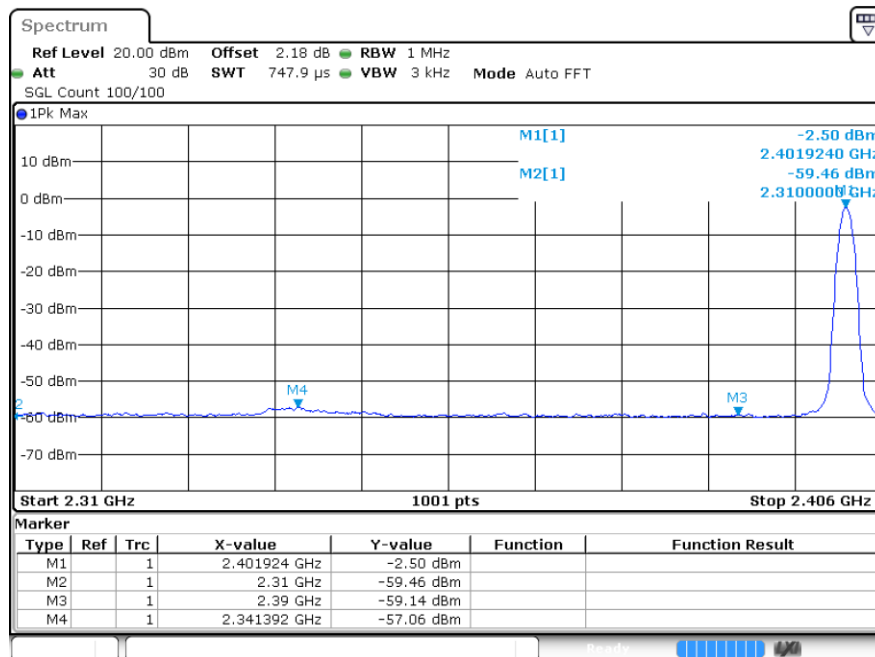
Test Mode	Hopping	Freq.	Power [dBm]	Gain	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-49.53	2	47.73	PEAK	74	Pass
	Off	2310.0	-59.46	2	37.8	AV	54	Pass
	Off	2320.272	-46.65	2	50.61	PEAK	74	Pass
	Off	2341.392	-57.06	2	40.2	AV	54	Pass
	Off	2390.0	-50	2	47.26	PEAK	74	Pass
	Off	2390.0	-59.13	2	38.13	AV	54	Pass
	Off	2483.5	-51.83	2	45.43	PEAK	74	Pass
	Off	2483.5	-57.99	2	39.27	AV	54	Pass
	Off	2491.888	-48.41	2	48.85	PEAK	74	Pass
	Off	2487.4	-57.94	2	39.32	AV	54	Pass
	Off	2500.0	-51.75	2	45.51	PEAK	74	Pass
	Off	2500.0	-59.14	2	38.12	AV	54	Pass
$\pi/4$ DQPSK	Off	2310.0	-51.14	2	46.12	PEAK	74	Pass
	Off	2310.0	-59.15	2	38.11	AV	54	Pass
	Off	2389.584	-47.58	2	49.68	PEAK	74	Pass
	Off	2339.76	-57.28	2	39.98	AV	54	Pass
	Off	2390.0	-49.32	2	47.94	PEAK	74	Pass
	Off	2390.0	-59.36	2	37.9	AV	54	Pass
	Off	2483.5	-48.74	2	48.52	PEAK	74	Pass
	Off	2483.5	-58.12	2	39.14	AV	54	Pass
	Off	2487.232	-46.93	2	50.33	PEAK	74	Pass
	Off	2485.024	-57.9	2	39.36	AV	54	Pass
	Off	2500.0	-50.4	2	46.86	PEAK	74	Pass
	Off	2500.0	-58.62	2	38.64	AV	54	Pass

9.2 Test Graphs

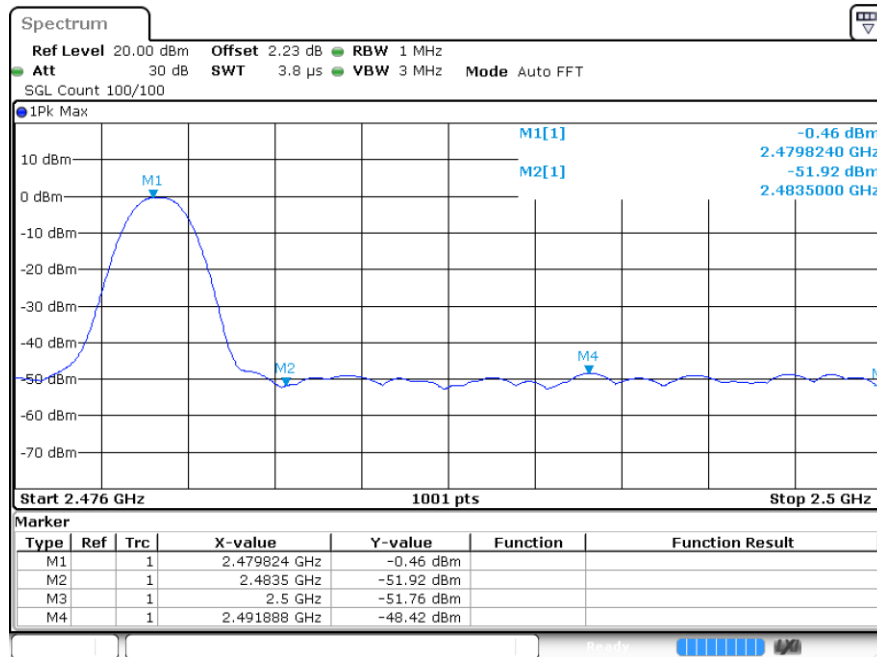
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (Low Channel)



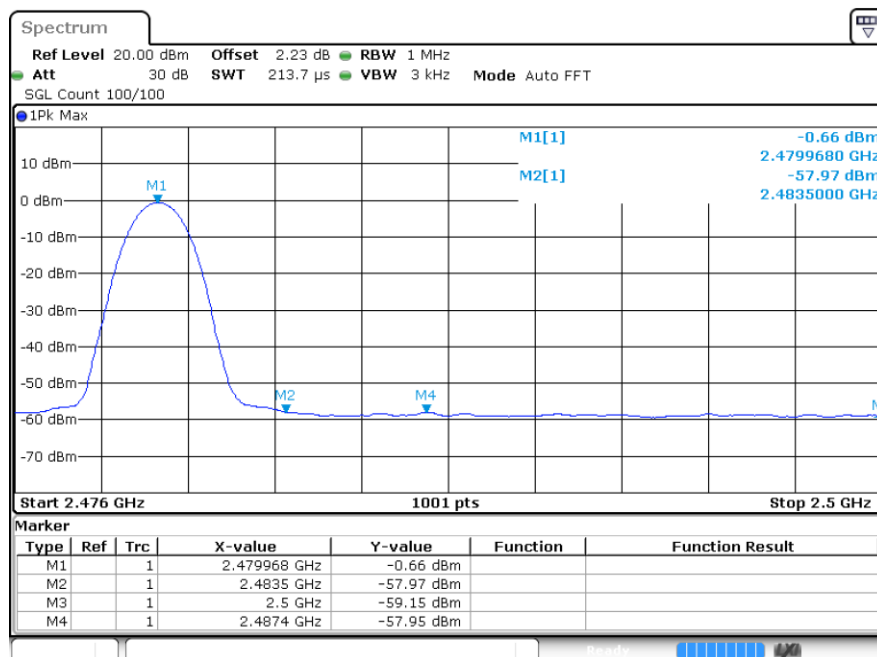
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (Low Channel)



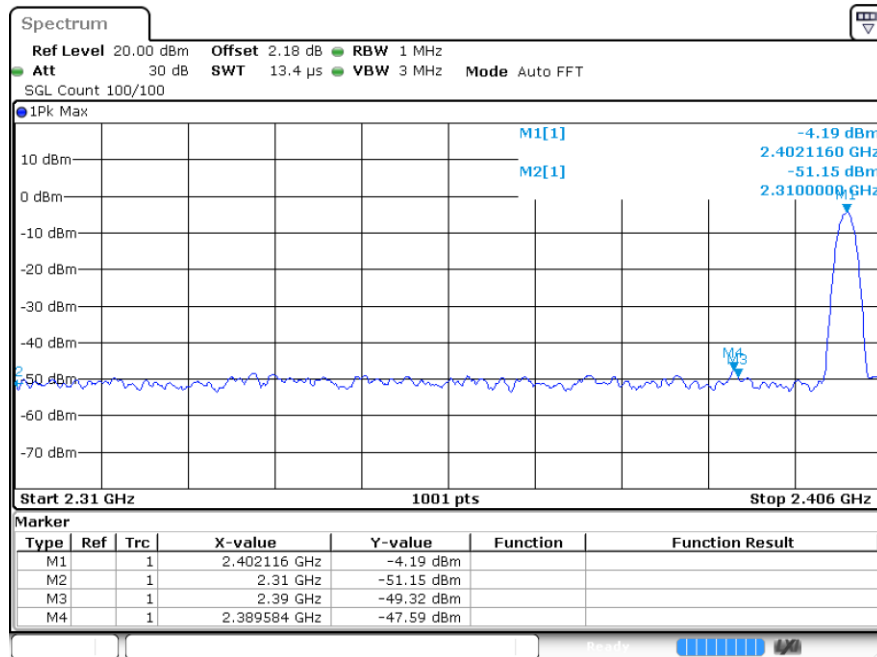
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (High Channel)



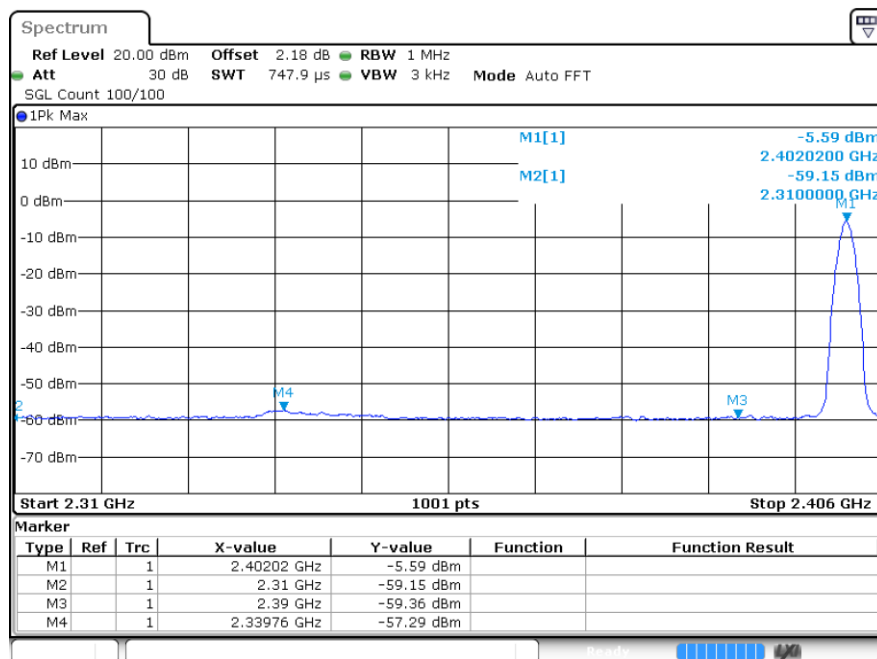
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (High Channel)



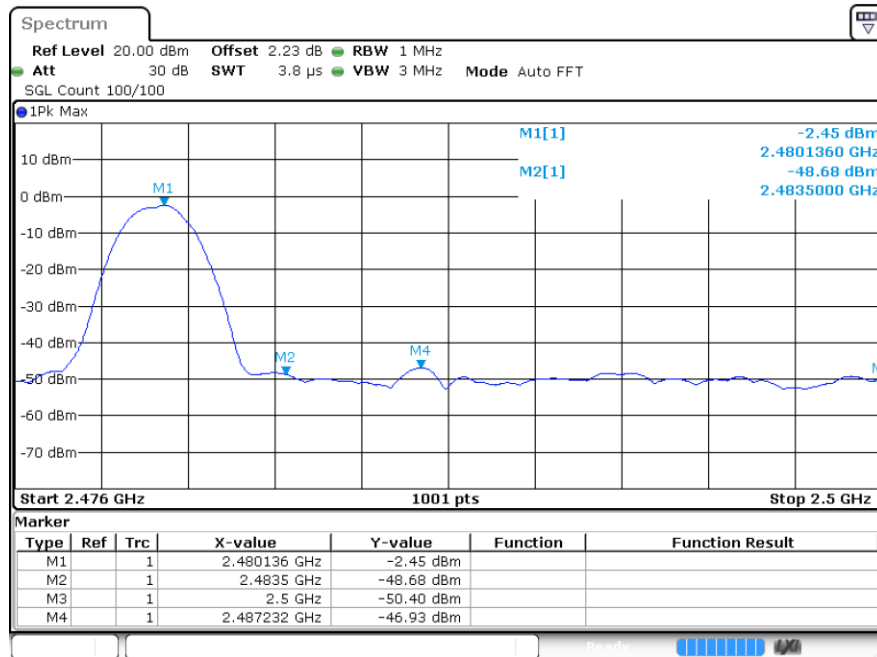
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (Low Channel)



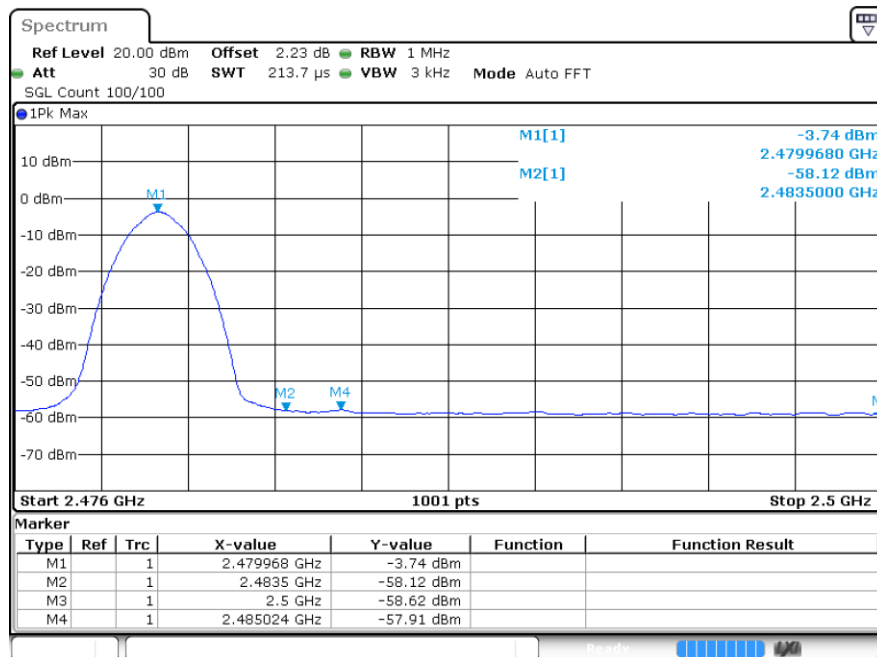
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (Low Channel)



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---