



Appendix A

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

Product Name: TWS

Trade Mark: Smrpmo

Test Model: K9

Environmental Conditions

Temperature:	24.6° C
Relative Humidity:	52.4%
ATM Pressure:	101Kpa
Test Engineer:	Simba Huang
Supervised by:	Seal Chen



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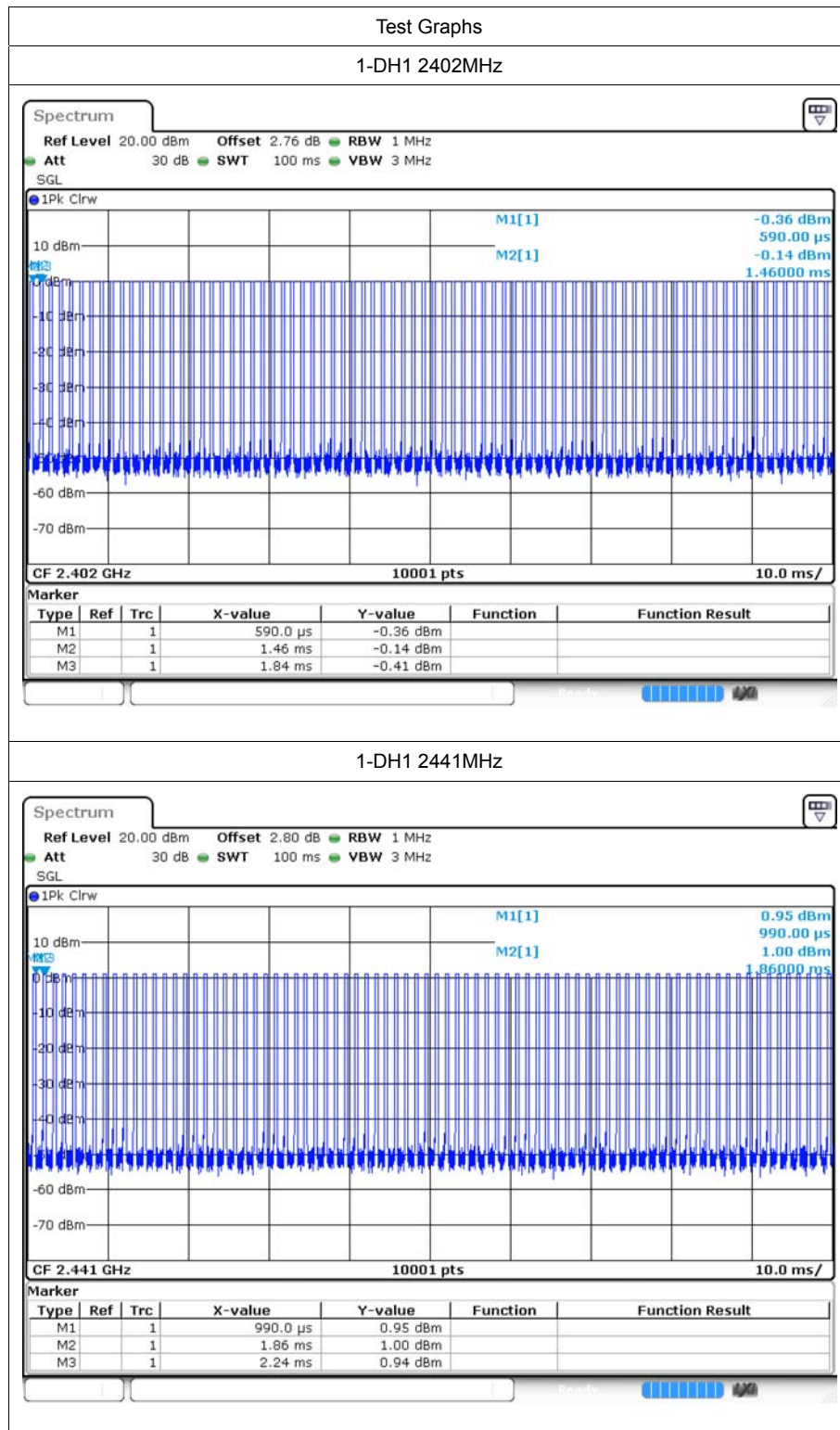
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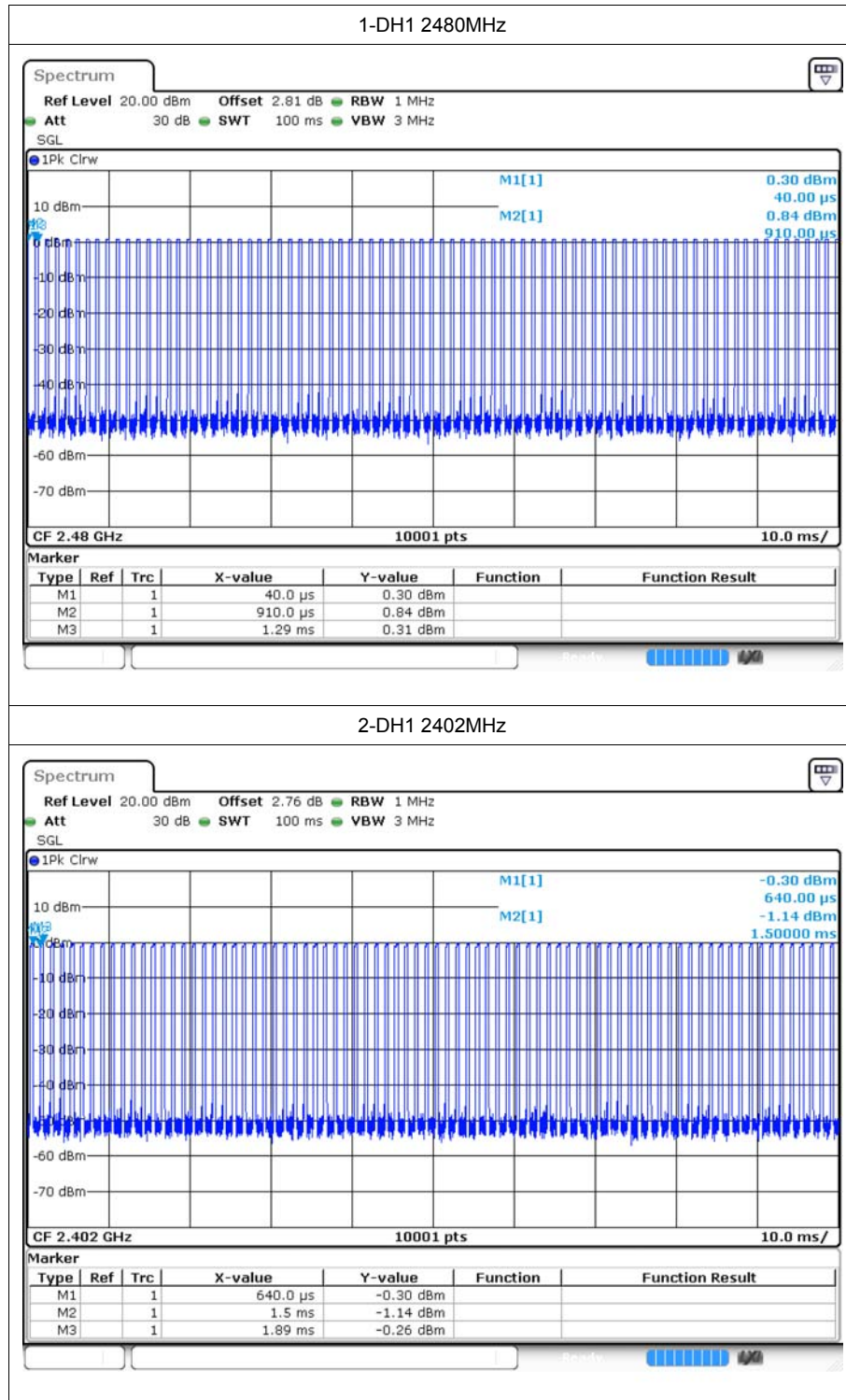
1 Duty Cycle

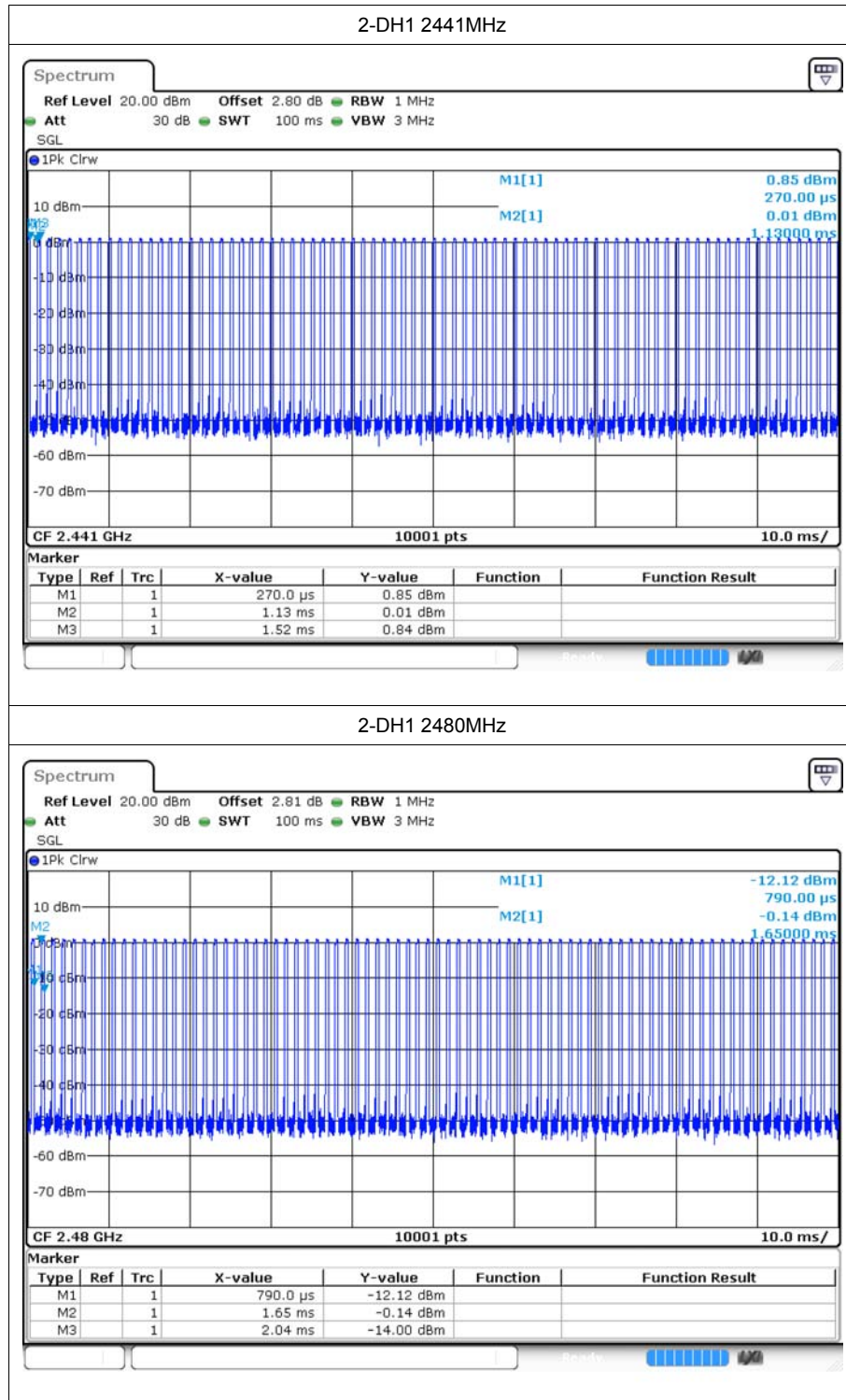
1.1 Test Result

Mode	Frequency (MHz)	Duty Cycle (%)	1/T (kHz)
1-DH1	2402	31.2	2.63
1-DH1	2441	31.2	2.63
1-DH1	2480	31.21	2.63
2-DH1	2402	32	2.56
2-DH1	2441	32.01	2.56
2-DH1	2480	32	2.56

1.2 Test Graphs





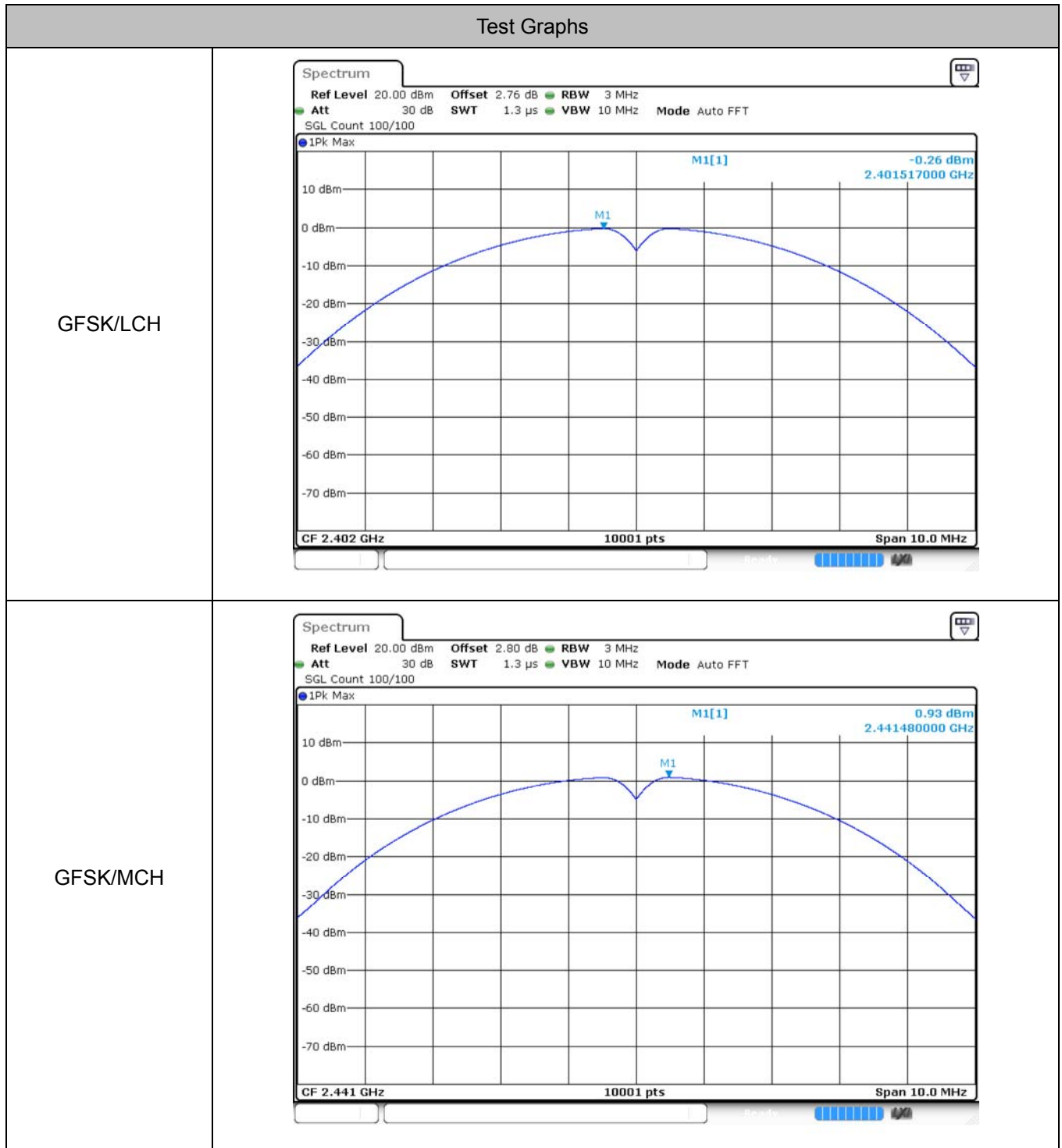


2 Maximum Conducted Peak Output Power

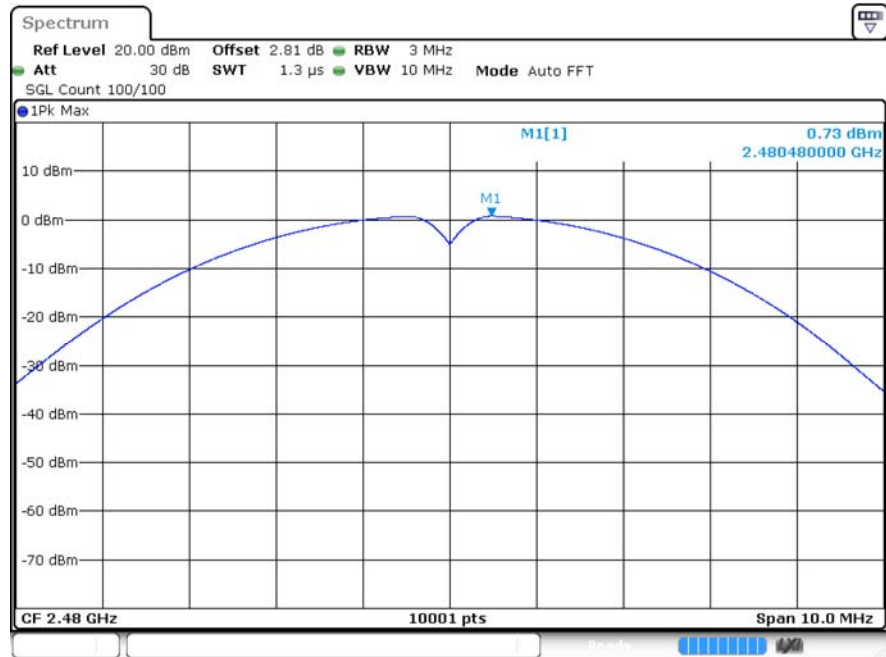
2.1 Test Result

Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-0.26	21	Pass
	MCH	0.93	21	Pass
	HCH	0.73	21	Pass
$\pi/4$ DQPSK	LCH	1.05	21	Pass
	MCH	2.09	21	Pass
	HCH	1.74	21	Pass

2.2 Test Graphs



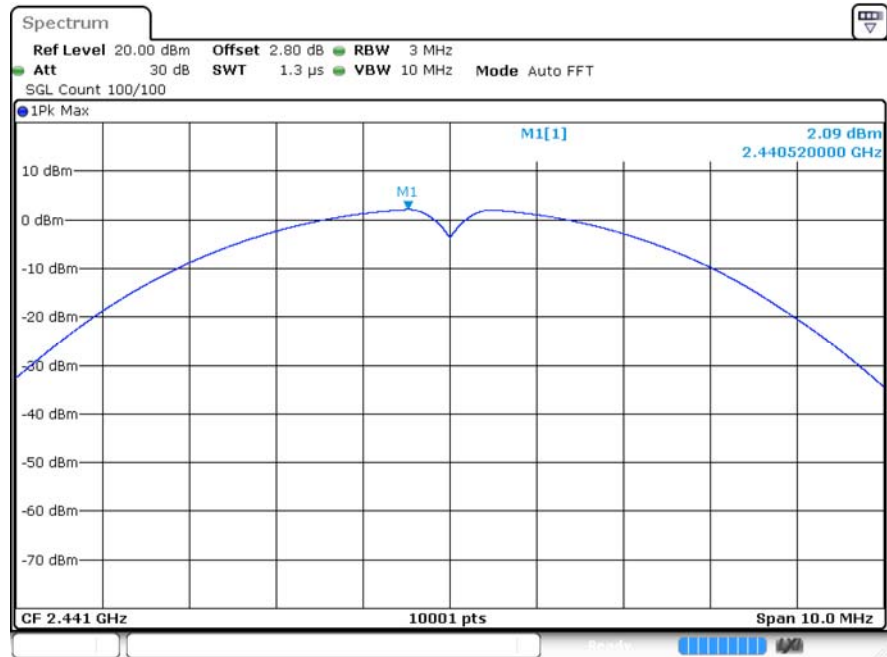
GFSK/HCH



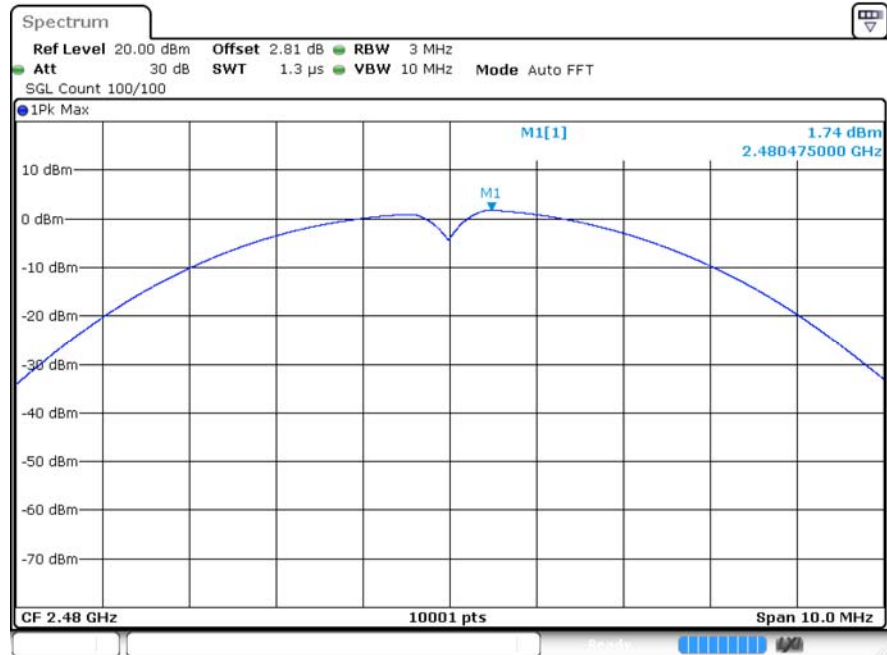
$\pi/4$ DQPSK/LCH



$\pi/4$ DQPSK/MCH



$\pi/4$ DQPSK/HCH

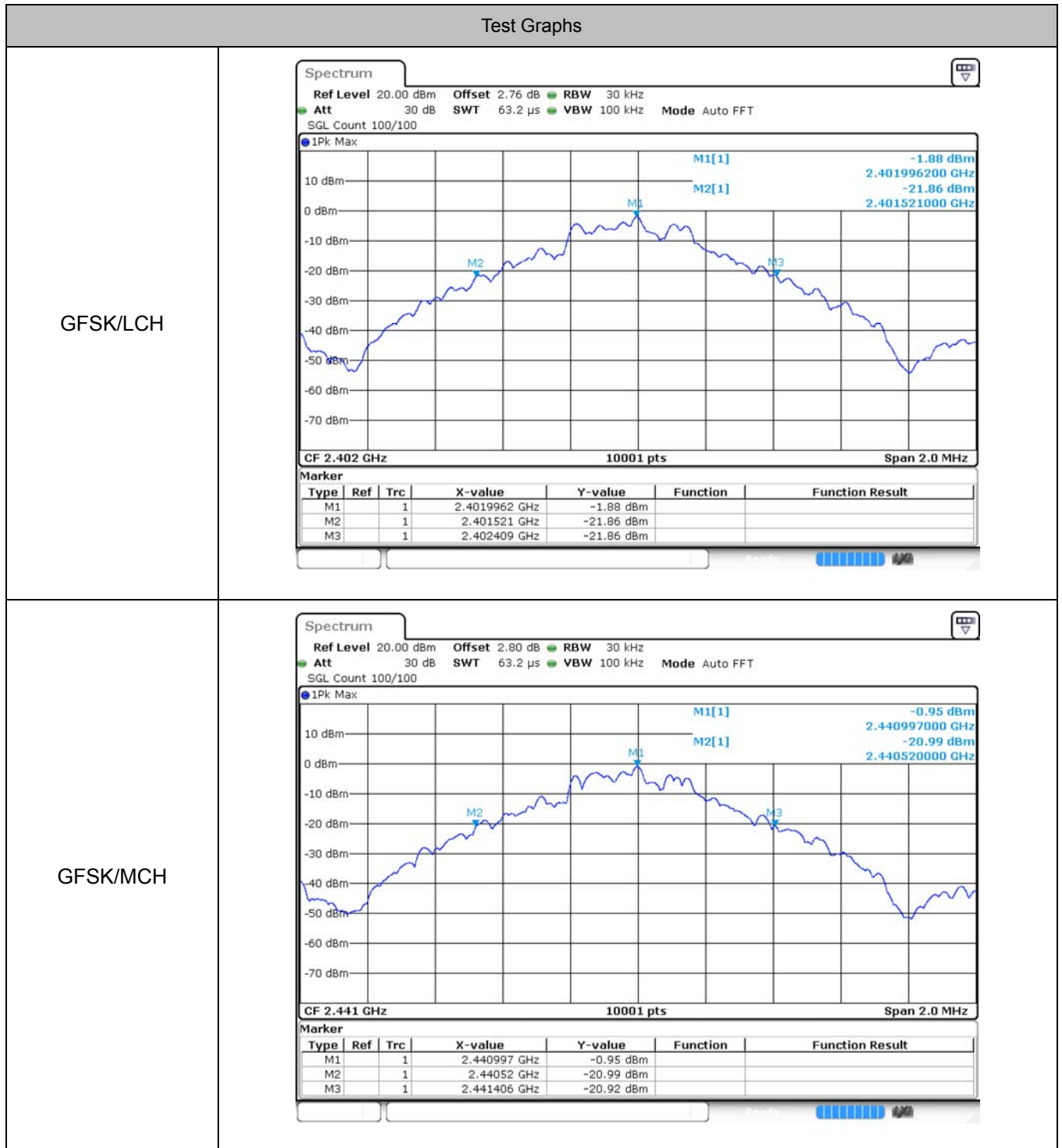


3 20dB Bandwidth

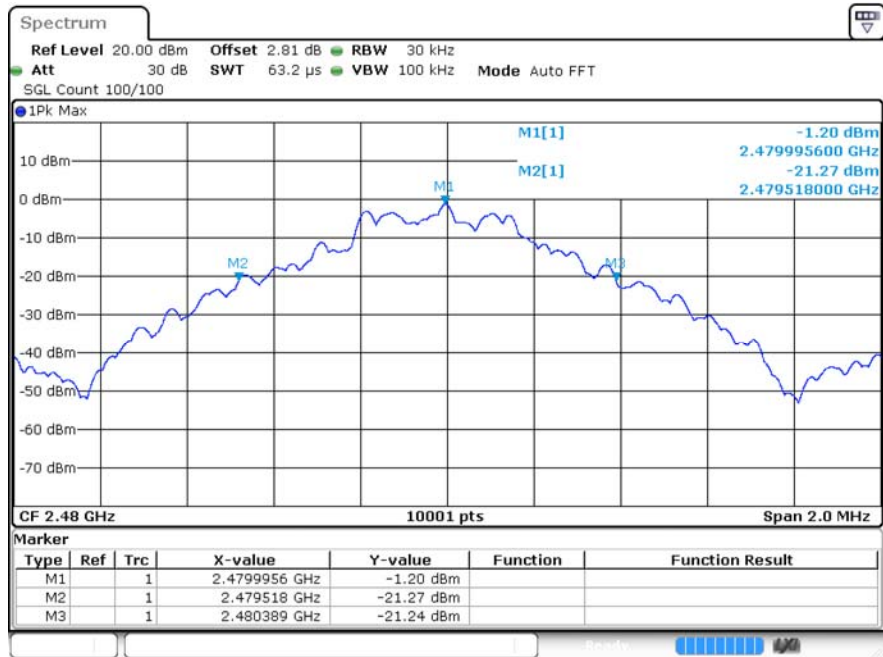
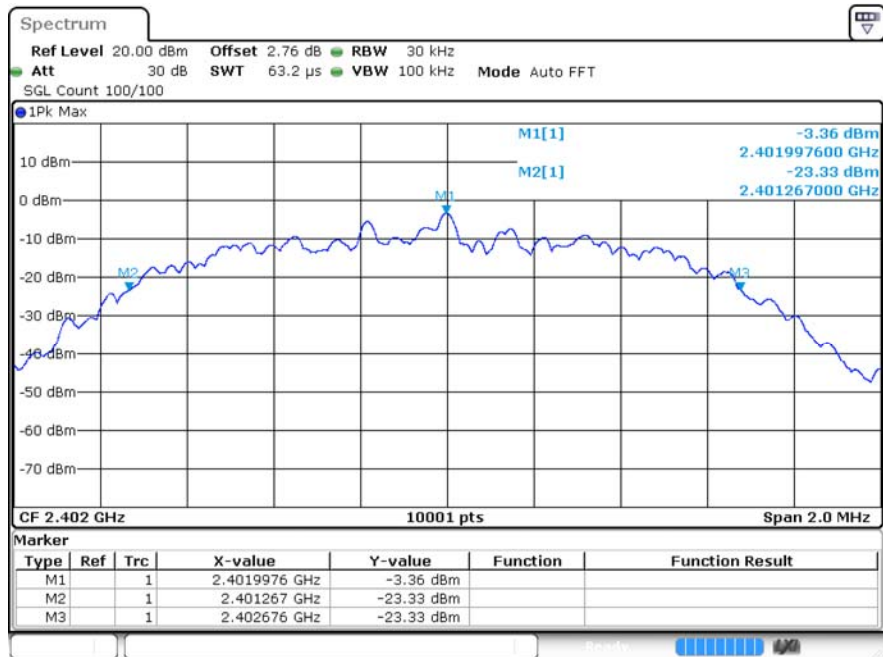
3.1 Test Result

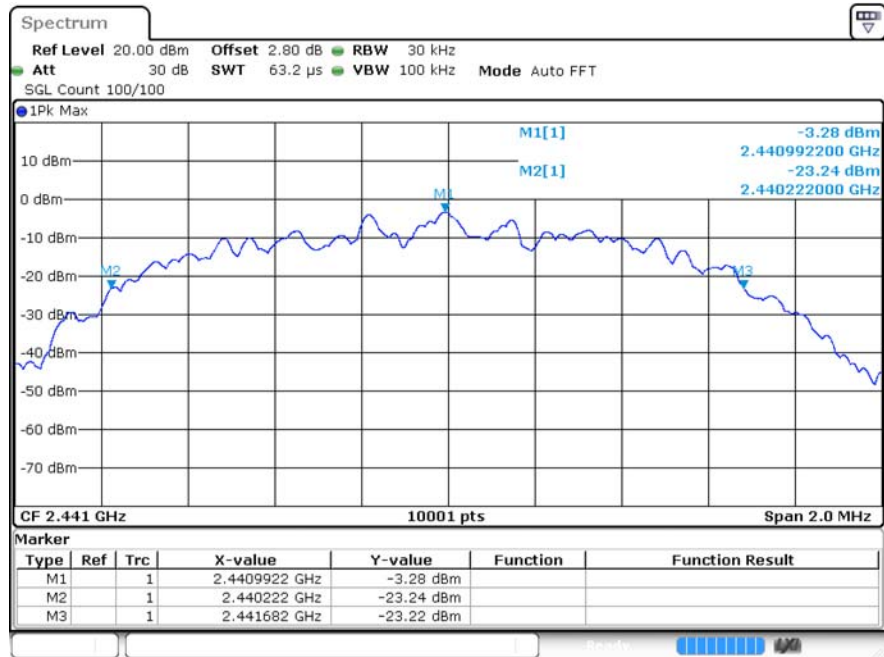
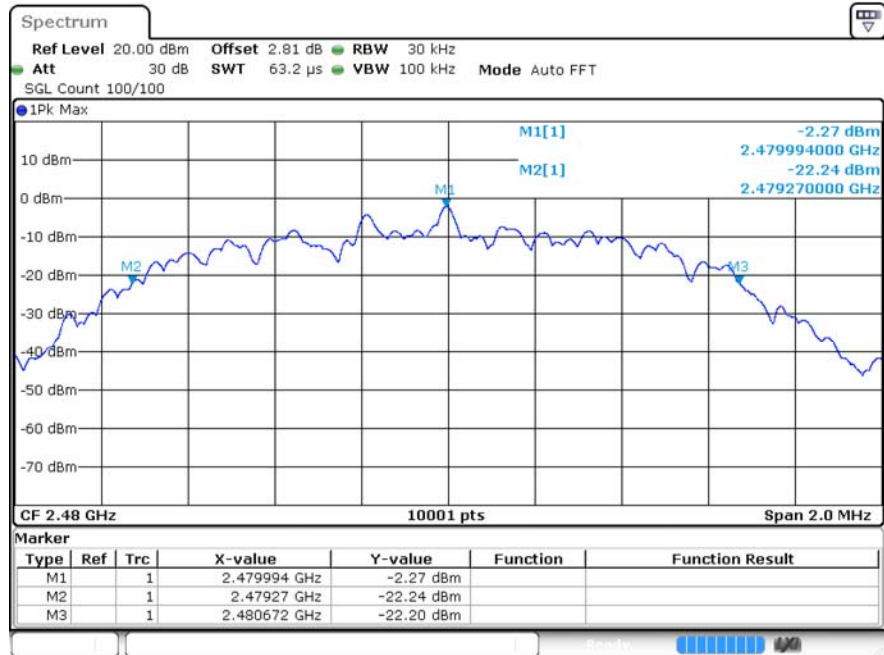
Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.888	Not Specified	Pass
	MCH	0.886	Not Specified	Pass
	HCH	0.87	Not Specified	Pass
$\pi/4$ DQPSK	LCH	1.41	Not Specified	Pass
	MCH	1.461	Not Specified	Pass
	HCH	1.403	Not Specified	Pass

3.2 Test Graphs



GFSK/HCH


 $\pi/4$ DQPSK/LCH


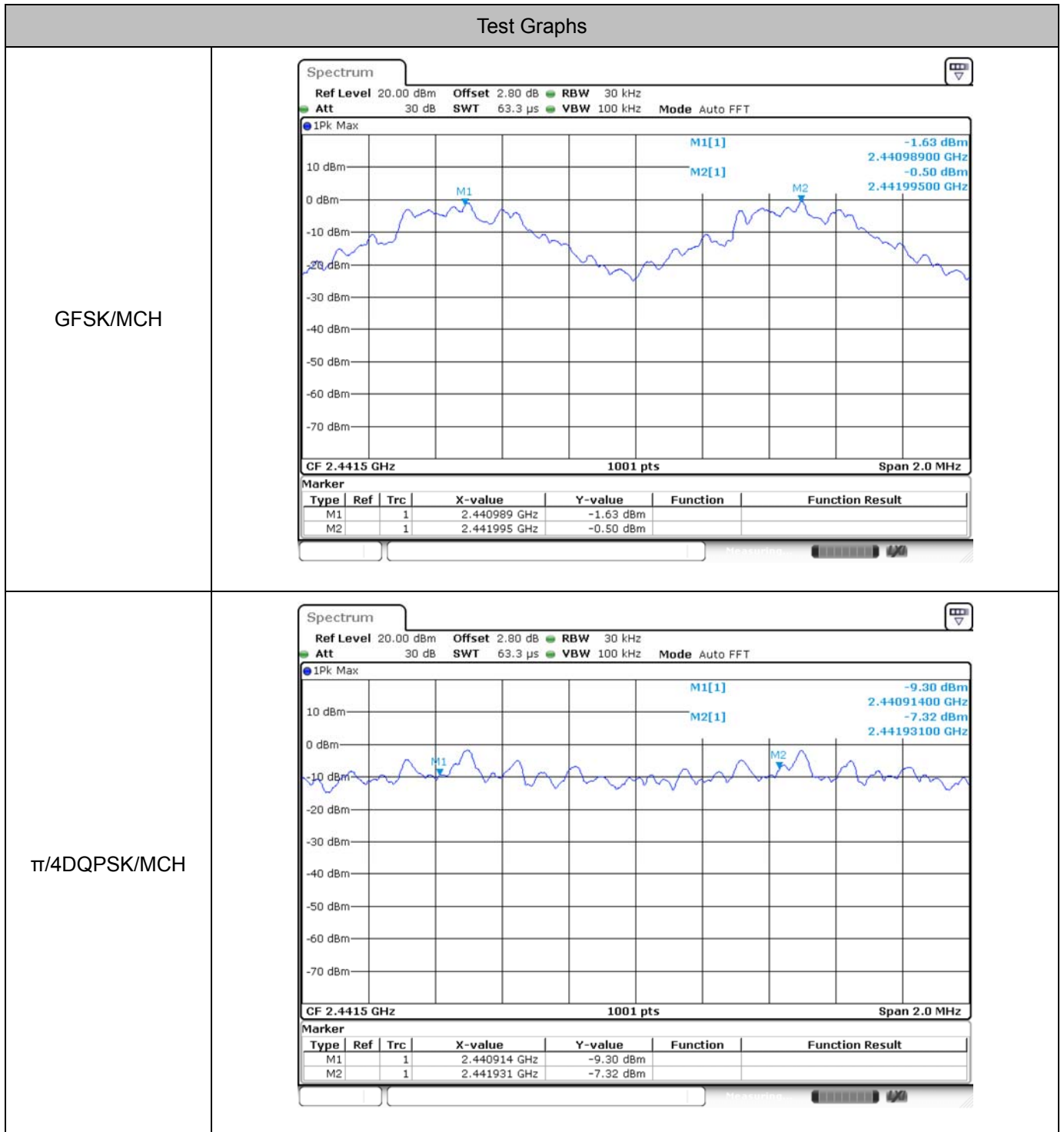
$\pi/4$ DQPSK/MCH

 $\pi/4$ DQPSK/HCH


4 Carrier Frequency Separation

4.1 Test Result

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	MCH	1.006	0.591	Pass
$\pi/4$ DQPSK	MCH	1.017	0.974	Pass

4.2 Test Graphs

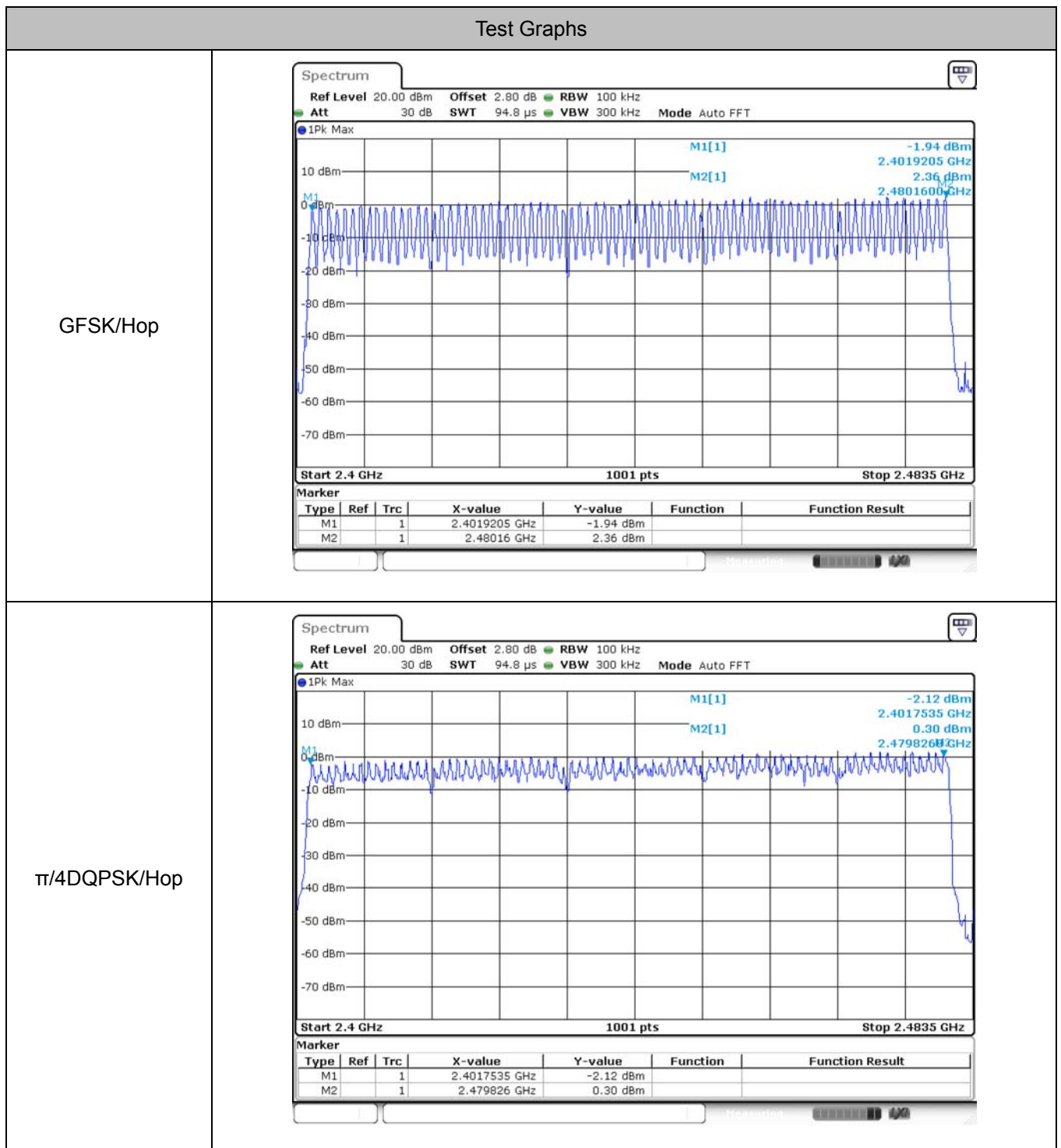


5 Hopping Channel Number

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

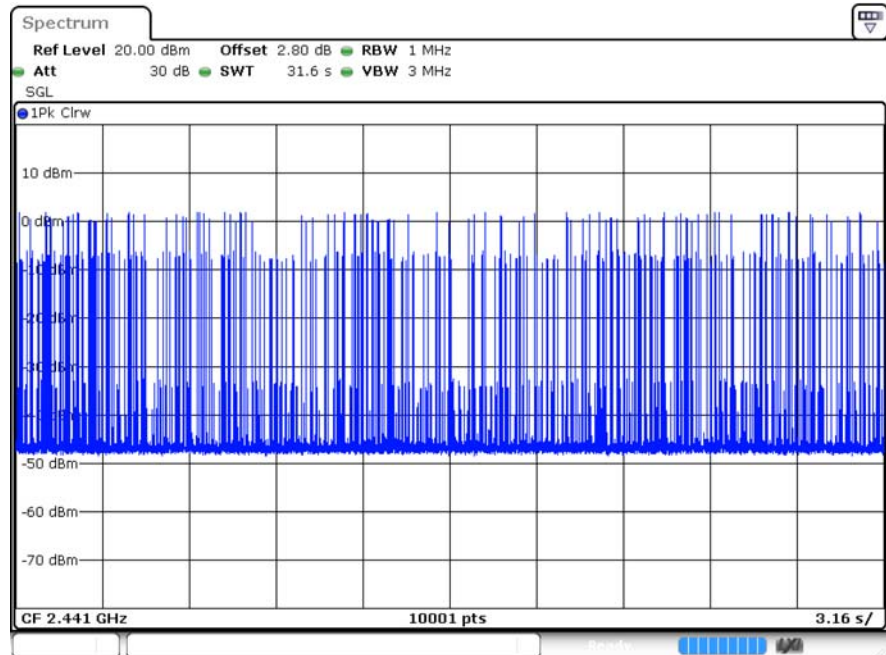
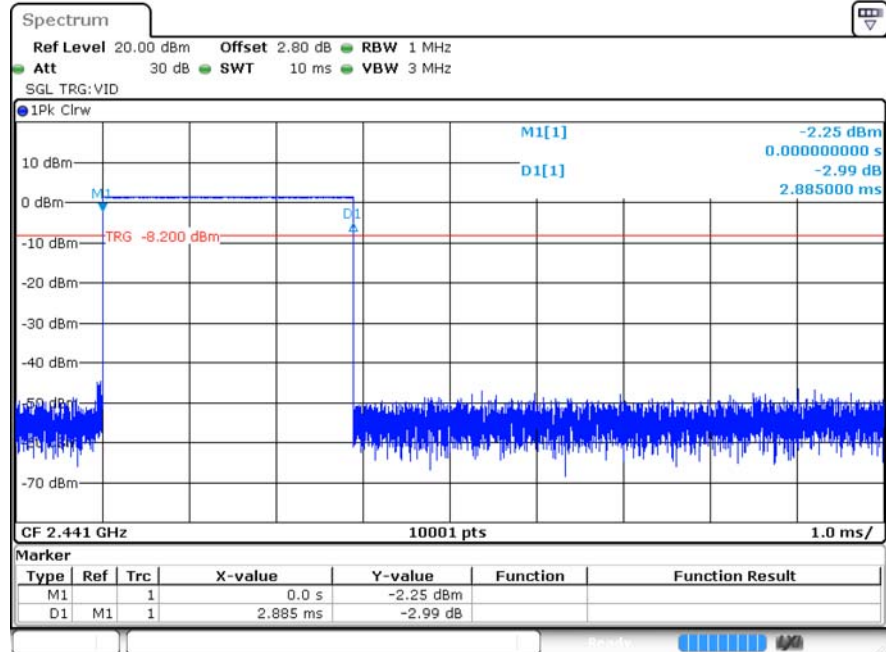
6.1 Test Result

Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[ms]	Limit [s]	Verdict
GFSK	DH5	MCH	2.885	106	305.81	0.4	Pass
$\pi/4$ DQPSK	2DH5	MCH	2.89	107	309.23	0.4	Pass

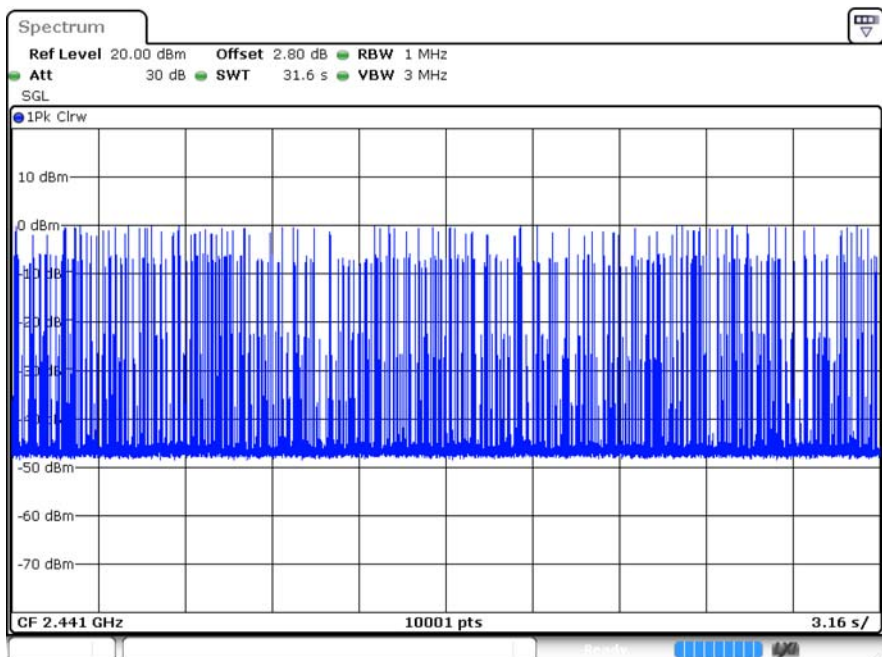
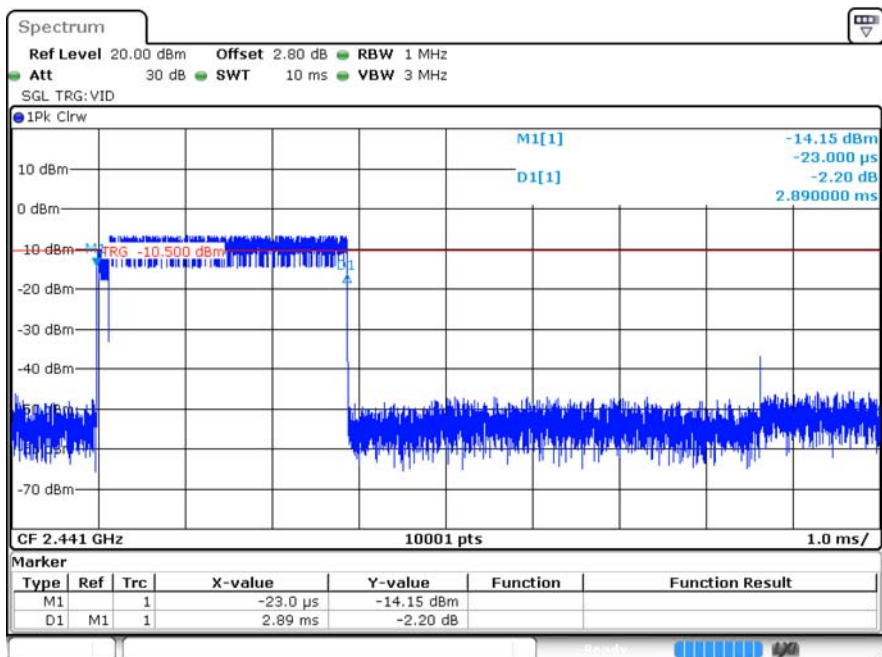
6.2 Test Graphs

Test Graphs

GFSK_DH5/MCH



$\pi/4$ DQPSK
_2DH5/MCH

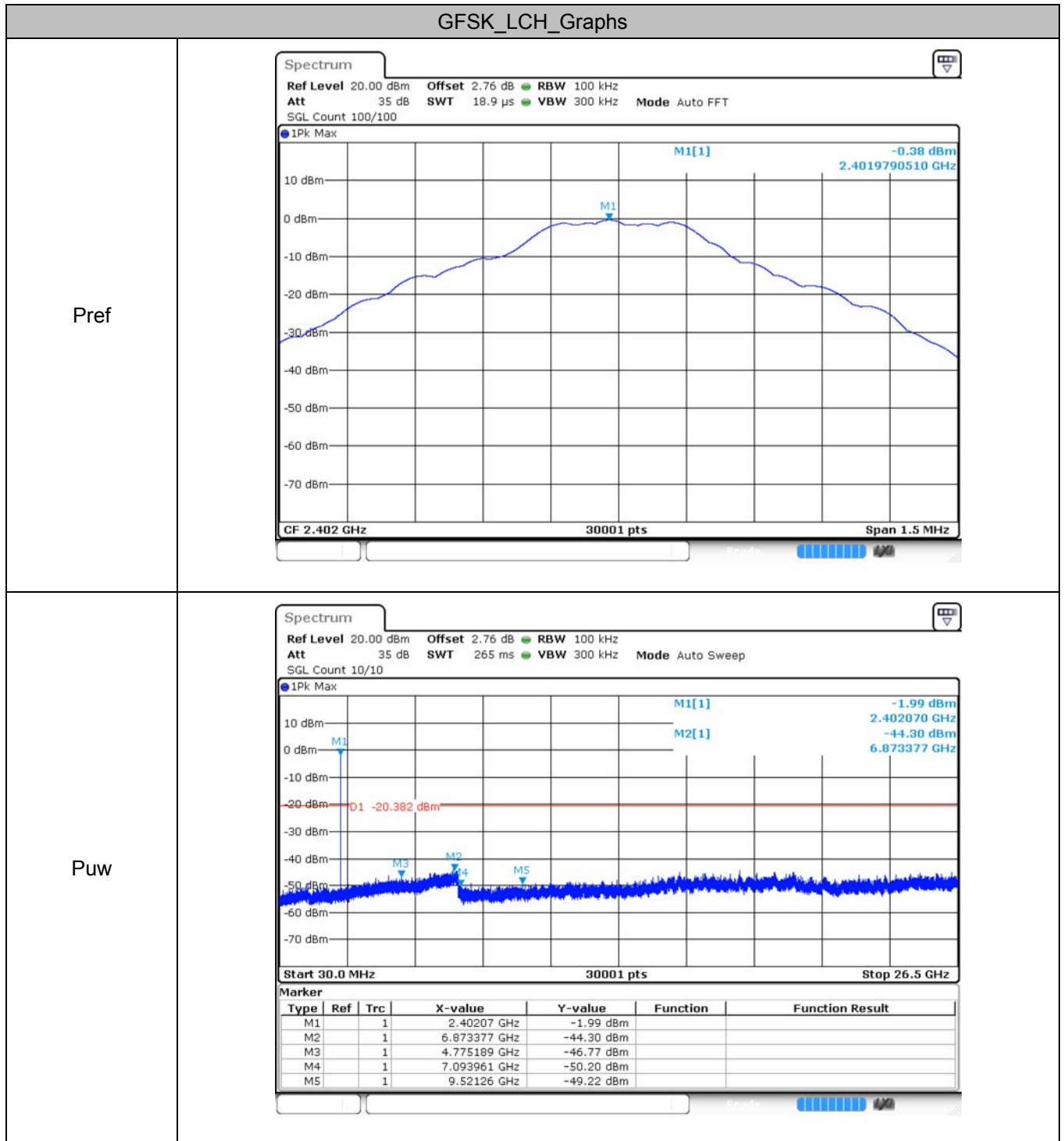


7 RF Conducted Spurious Emissions

7.1 Test Result

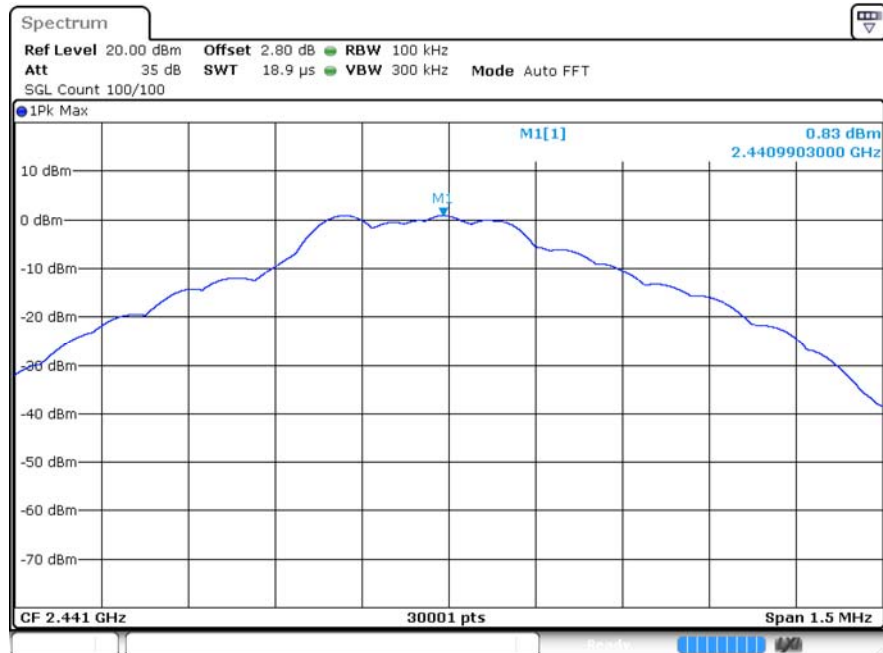
Mode	Channel	Max. Level [dBc]	Limit [dBc]	Verdict
GFSK	LCH	-43.91	-20	Pass
	MCH	-44.99	-20	Pass
	HCH	-45.01	-20	Pass
$\pi/4$ DQPSK	LCH	-43.13	-20	Pass
	MCH	-42.98	-20	Pass
	HCH	-43.56	-20	Pass

7.2 Test Graphs

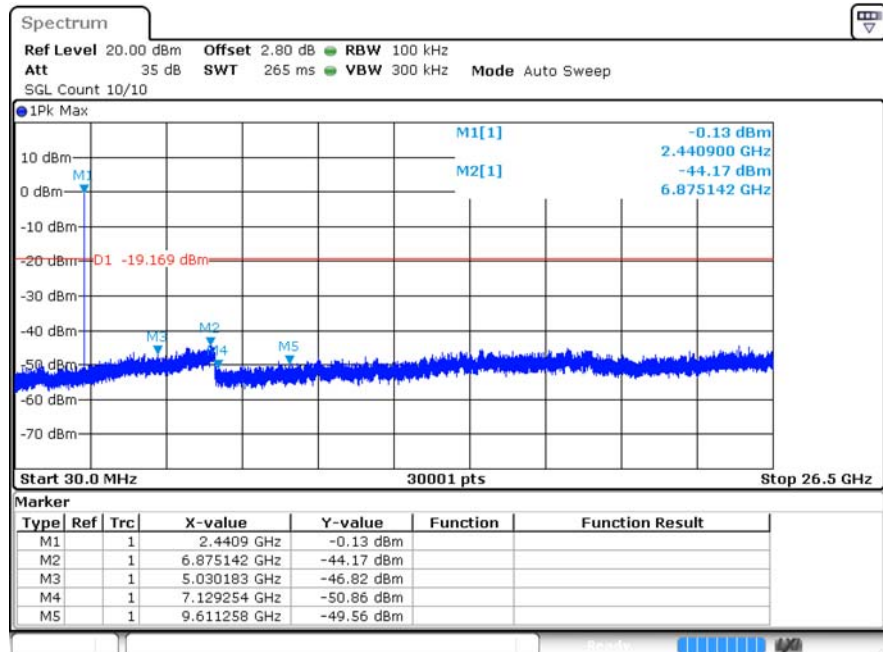


GFSK_MCH_Graphs

Pref

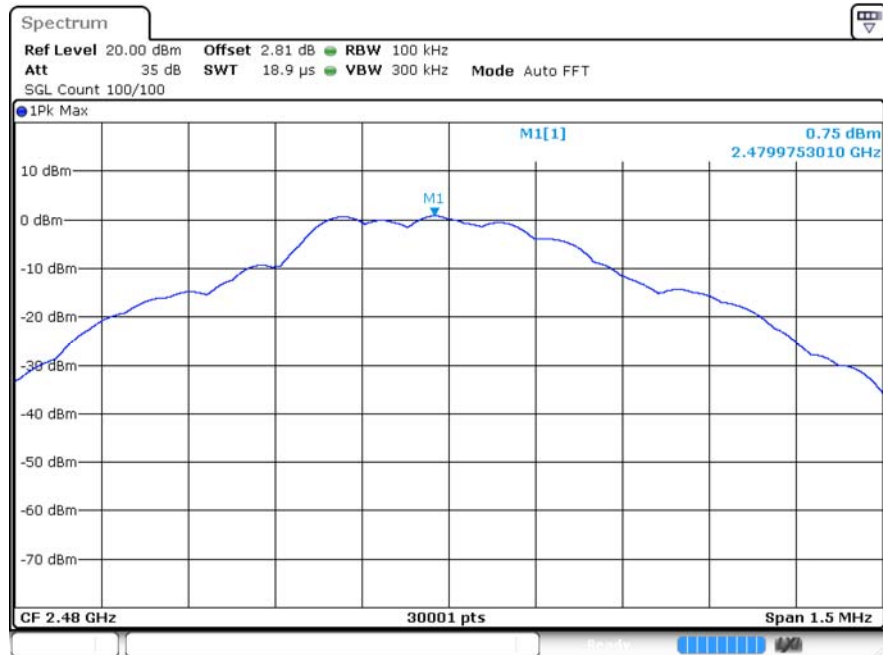


Puw

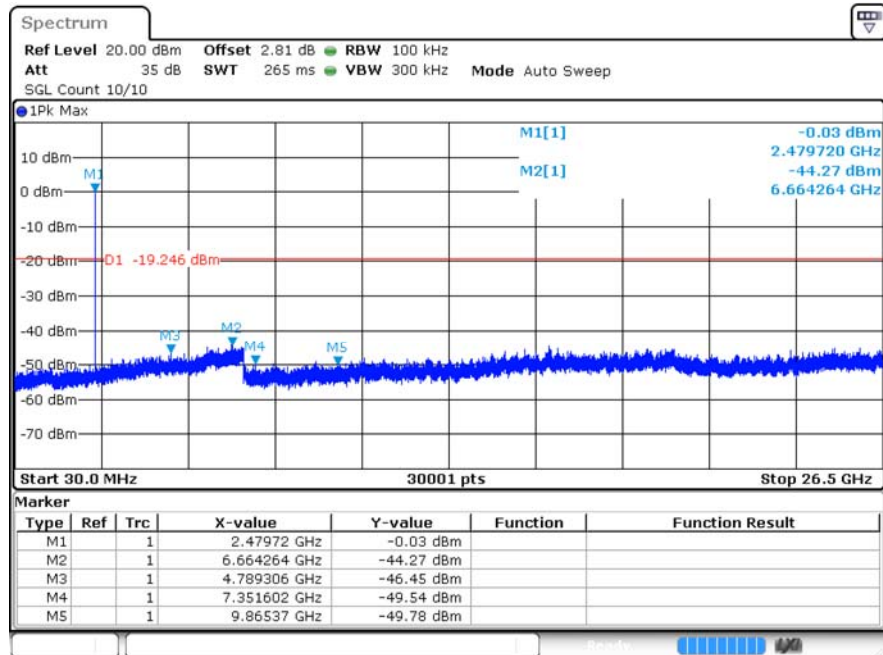


GFSK_HCH_Graphs

Pref

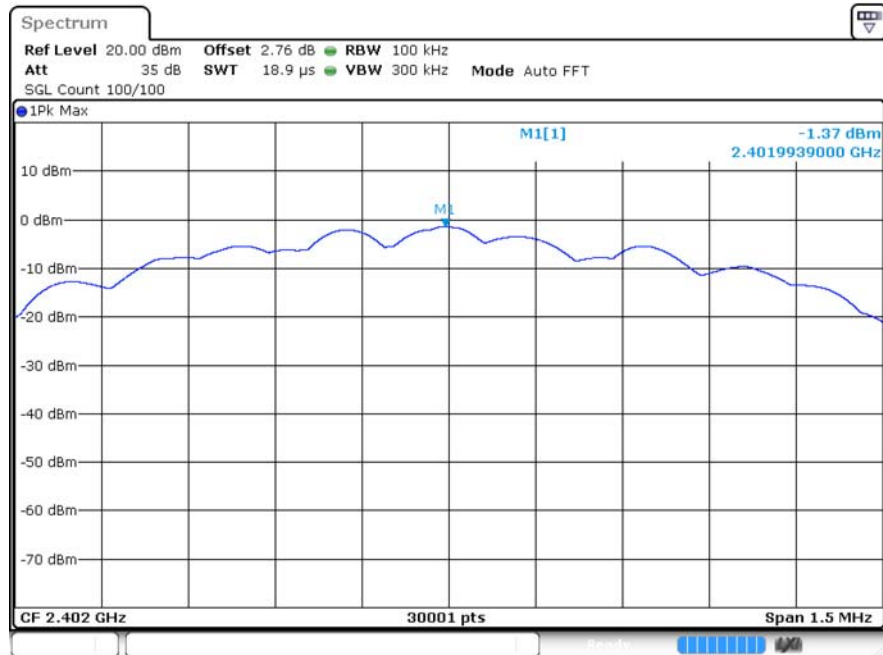


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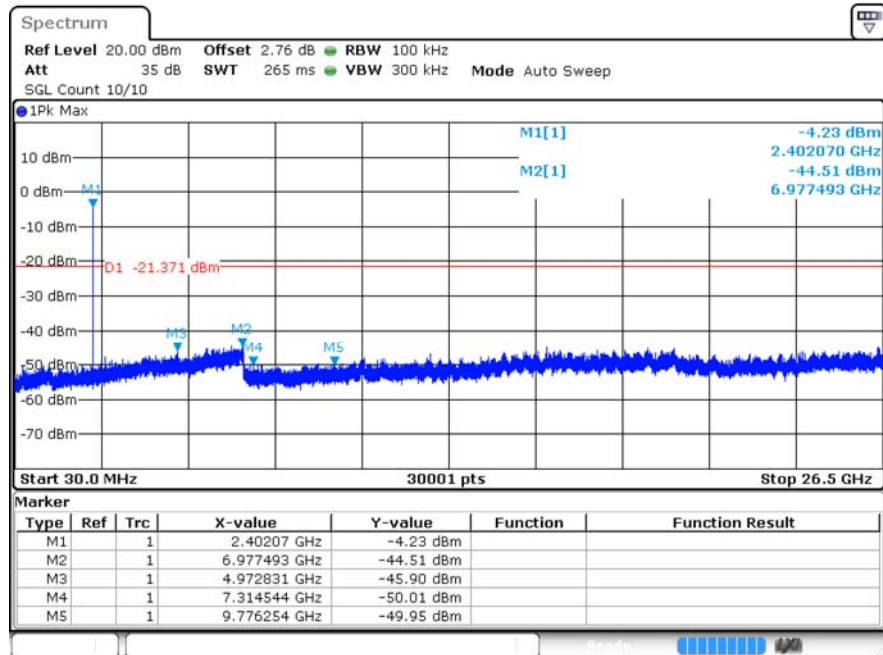


$\pi/4$ DQPSK_LCH_Graphs

Pref

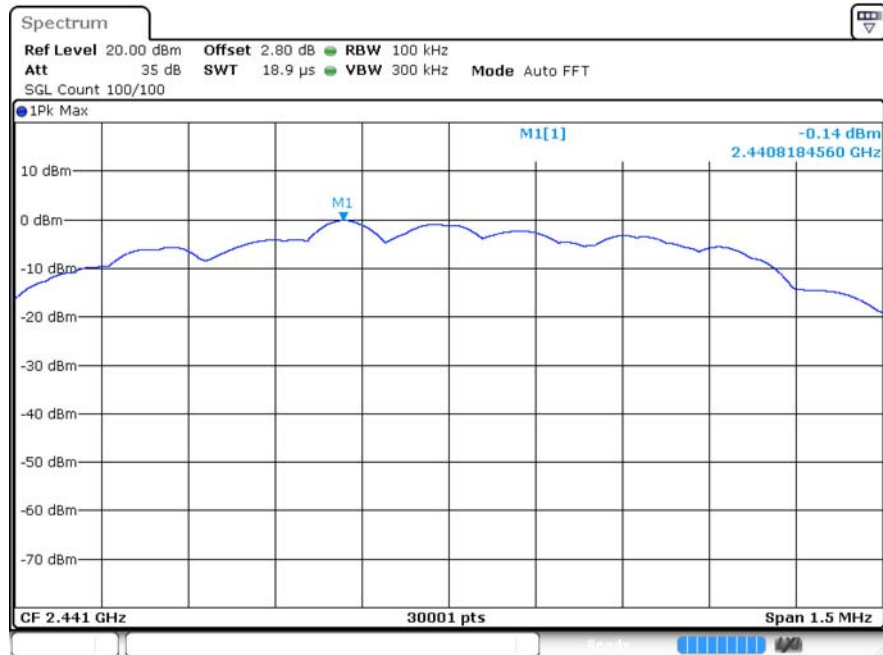


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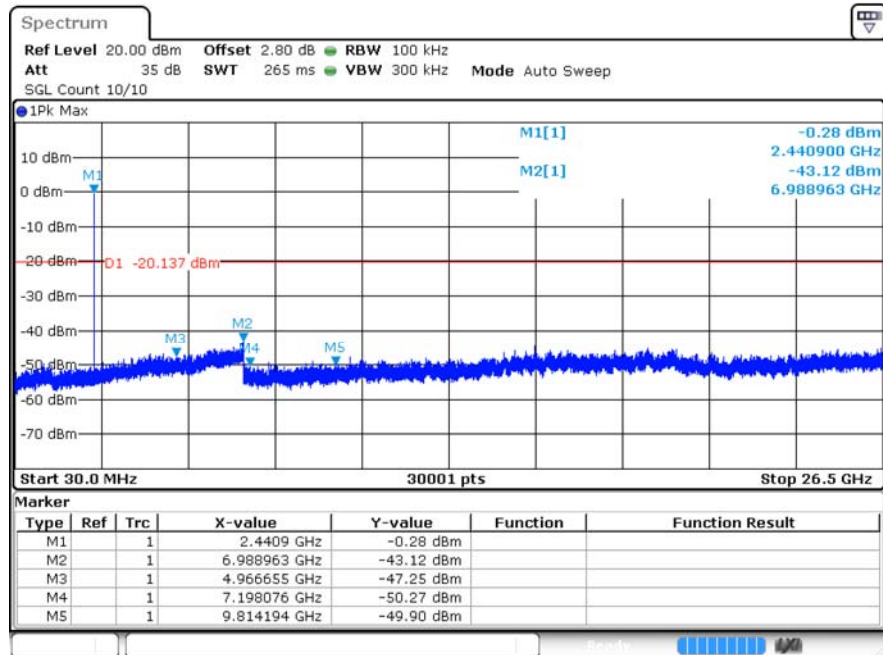


$\pi/4$ DQPSK_MCH_Graphs

Pref

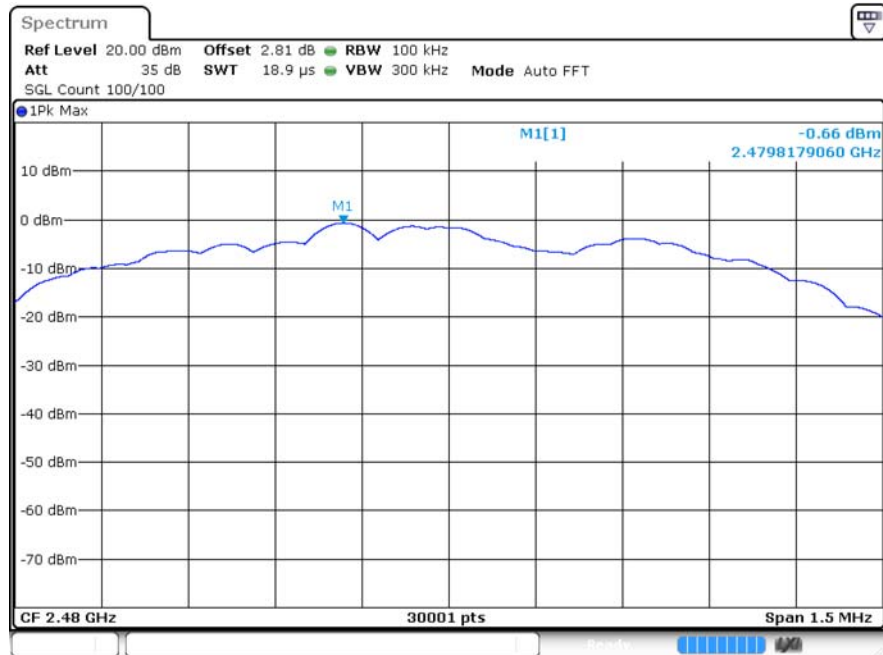


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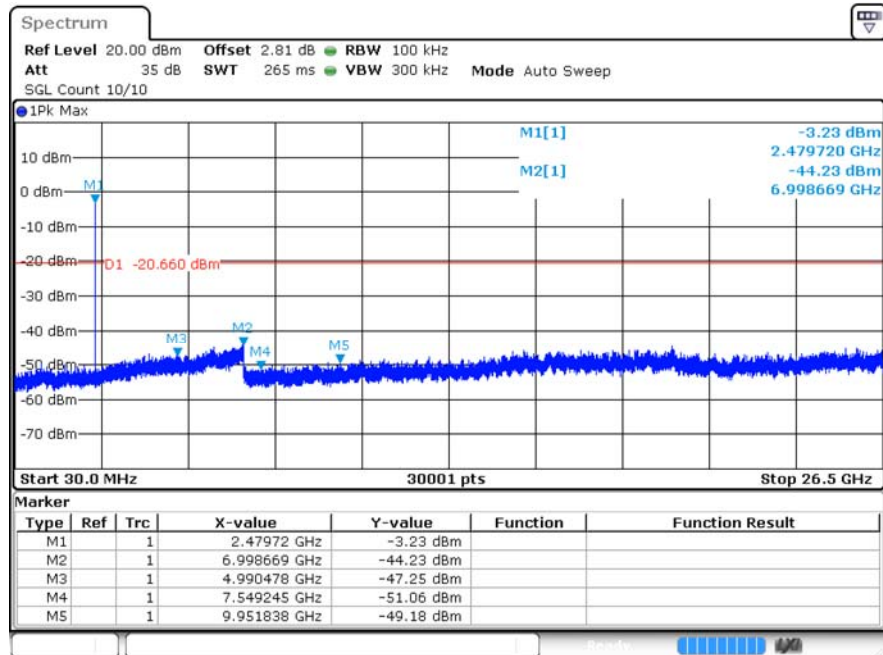


$\pi/4$ DQPSK_HCH_Graphs

Pref



Puw

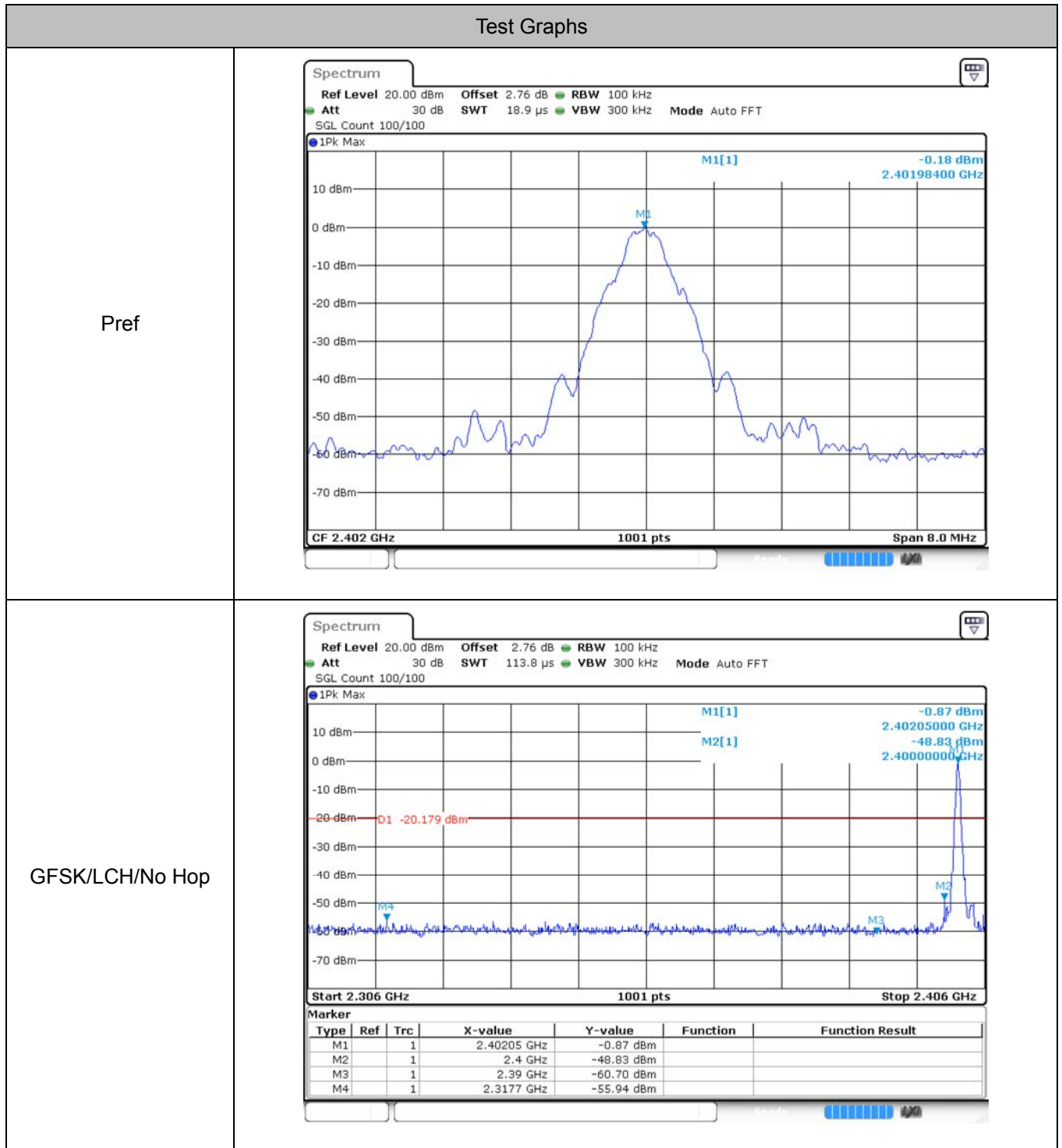


8 Band-edge for RF Conducted Emissions

8.1 Test Result

Mode	Channel	Carrier Frequency [MHz]	Frequency Hopping	Max Spurious Level [dBc]	Limit [dBc]	Verdict
GFSK	LCH	2402	Off	-55.75	-20	Pass
			On	-54.39	-20	Pass
	HCH	2480	Off	-47.54	-20	Pass
			On	-49.66	-20	Pass
$\pi/4$ DQPSK	LCH	2402	Off	-55.23	-20	Pass
			On	-53.25	-20	Pass
	HCH	2480	Off	-48.36	-20	Pass
			On	-55.73	-20	Pass

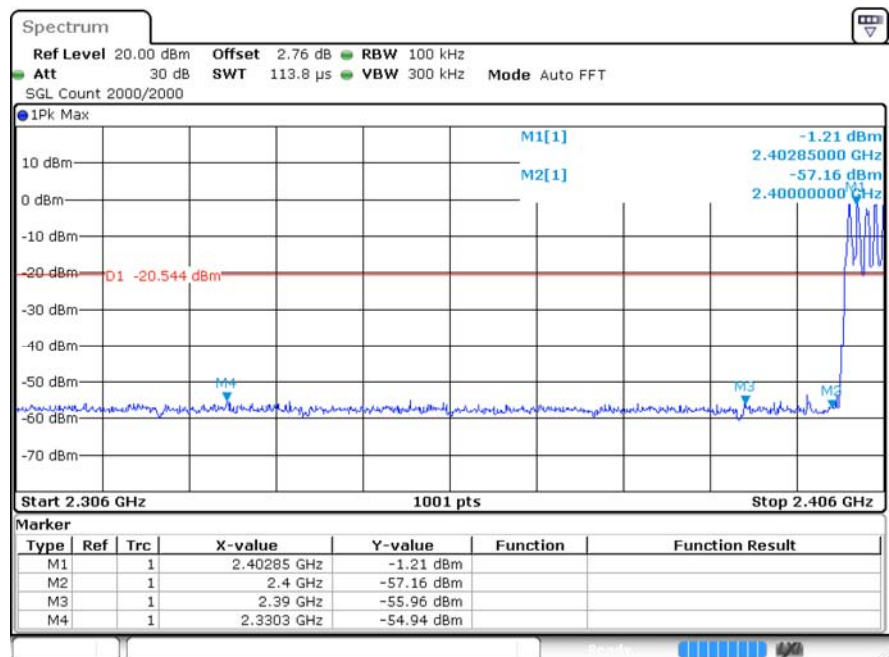
8.2 Test Graphs



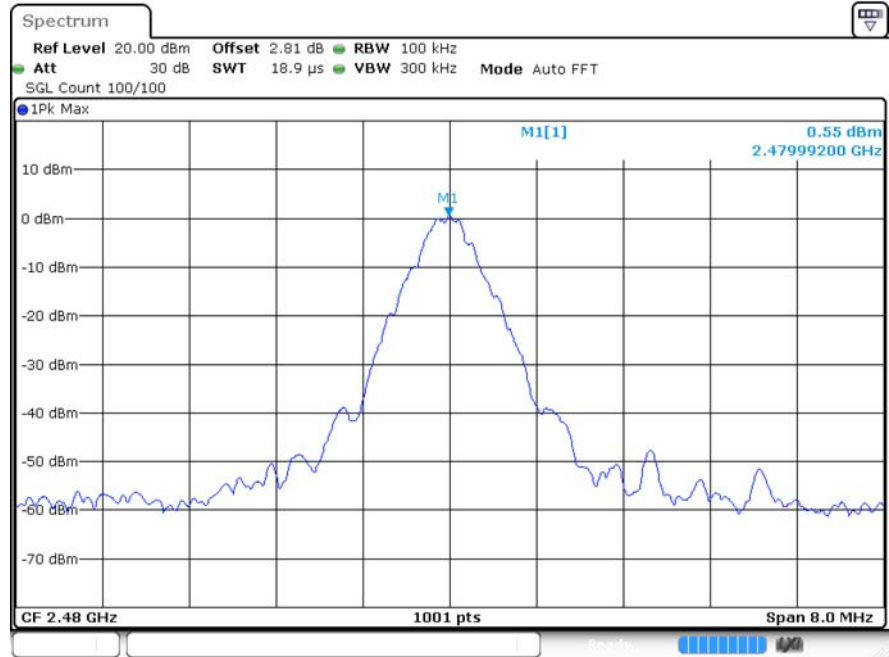
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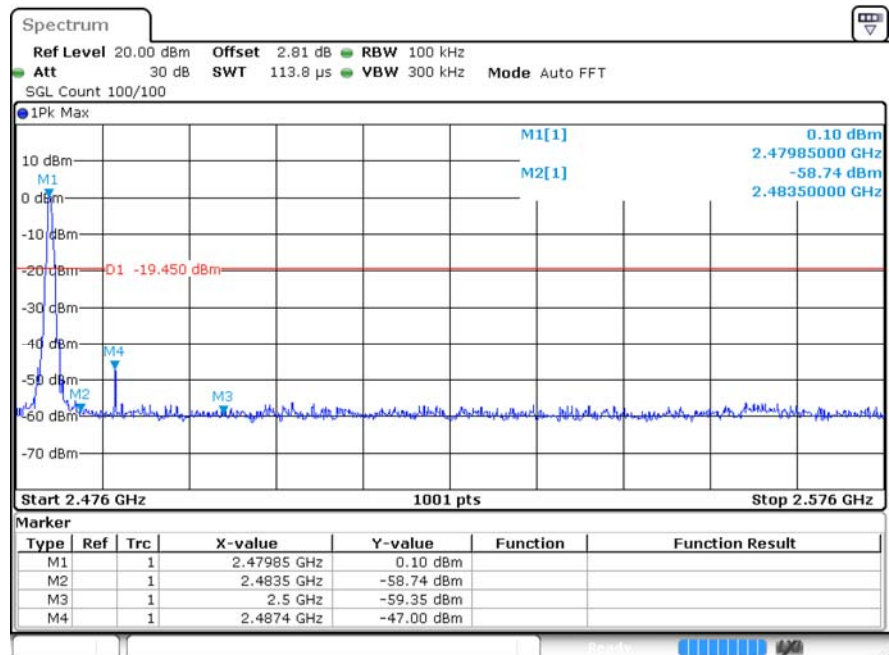
GFSK/LCH/Hop



Ref



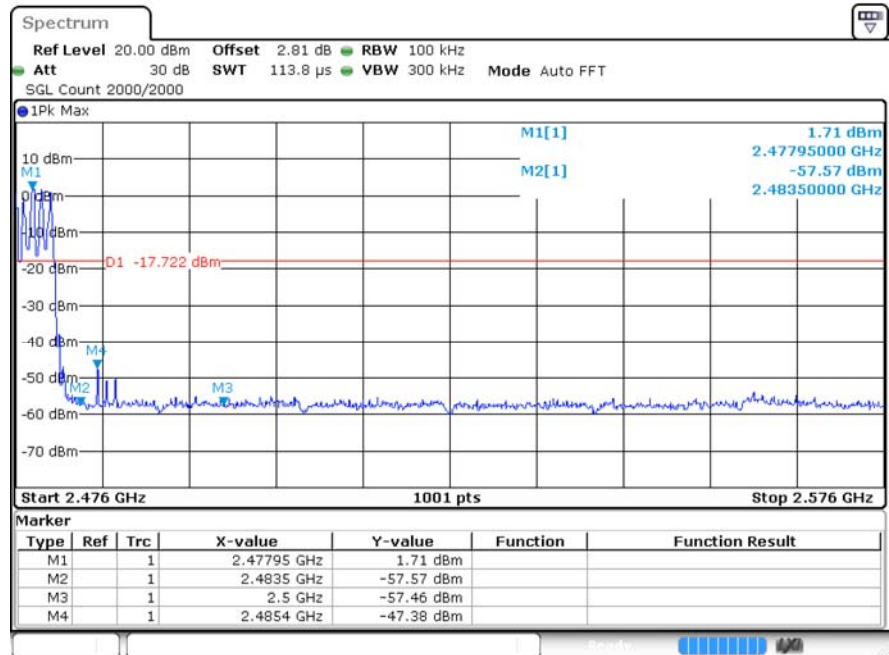
GFSK/HCH/No Hop



Ref.



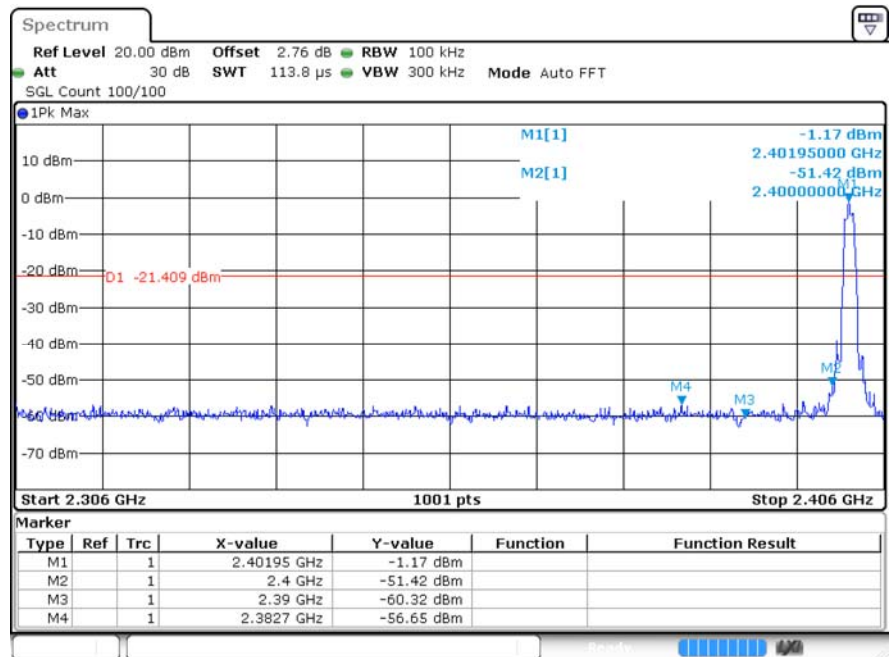
GFSK/HCH/Hop



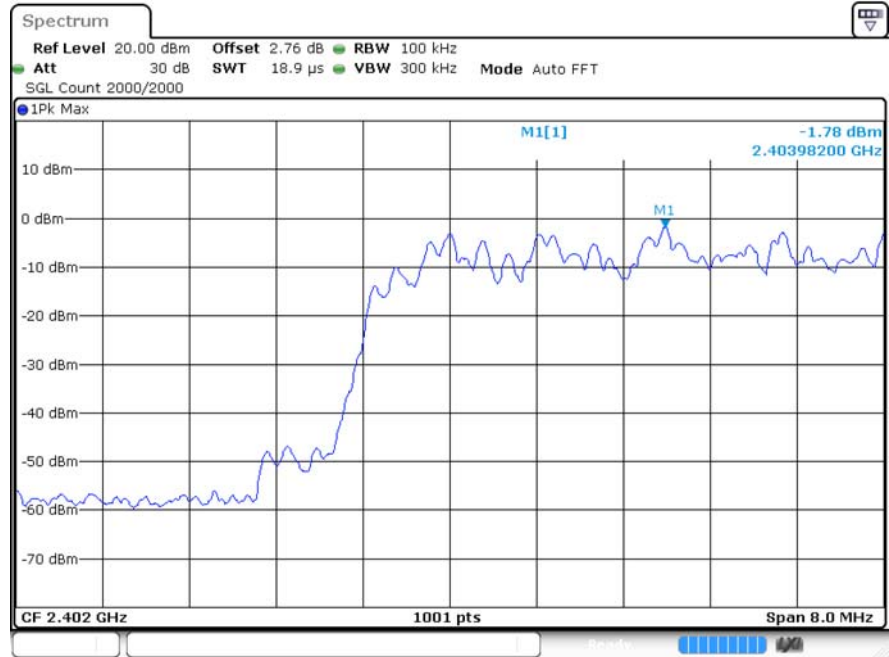
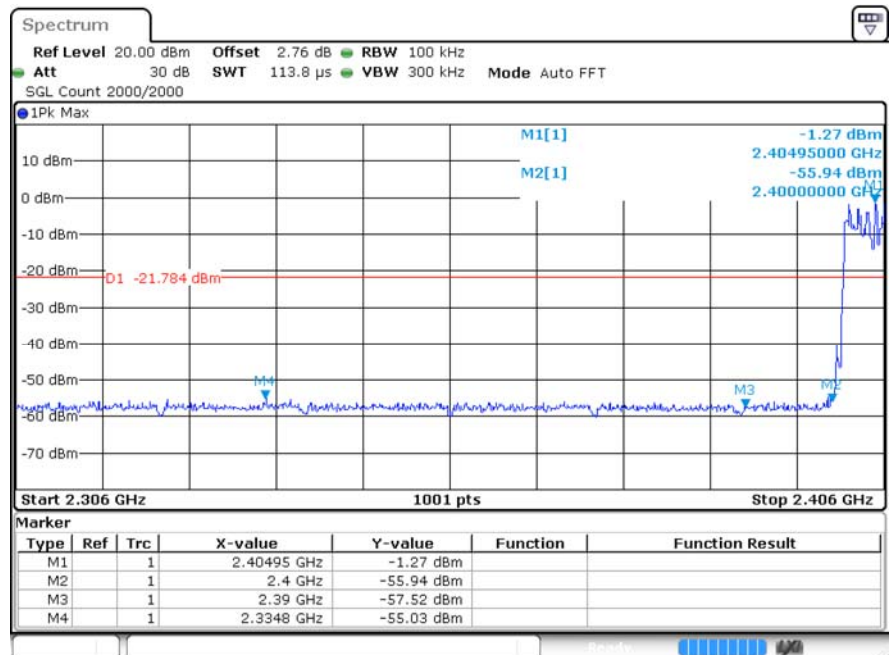
Ref



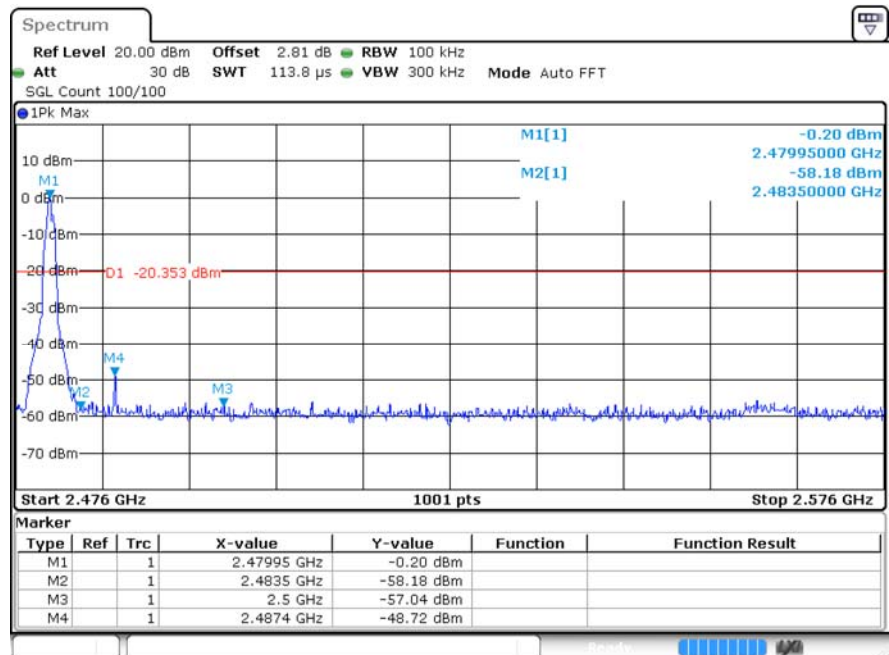
$\pi/4$ DQPSK/LCH/No
Hop



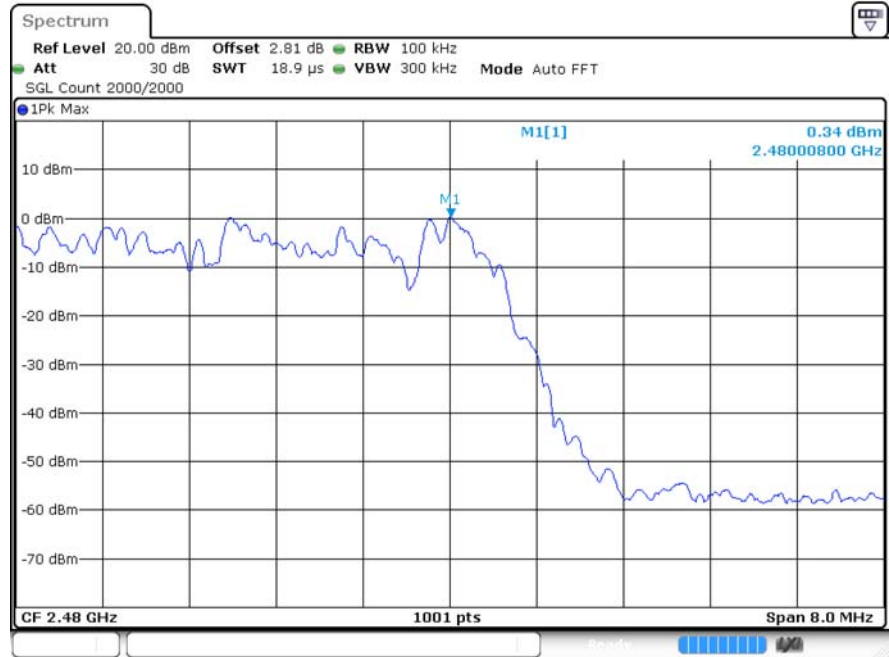
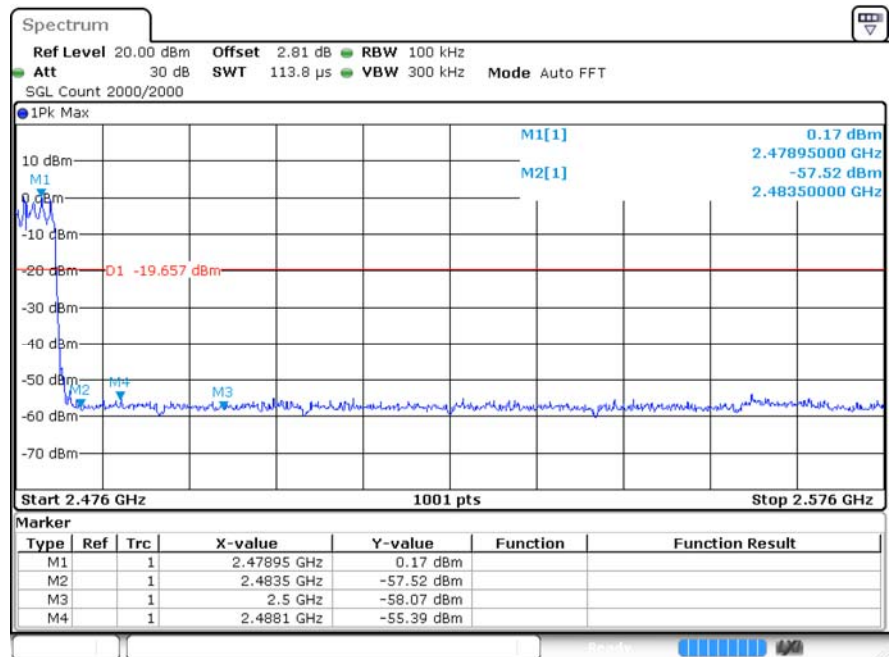
Ref


 $\pi/4$ DQPSK/LCH/Hop


Ref


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


Ref


 $\pi/4$ DQPSK/HCH/Hop


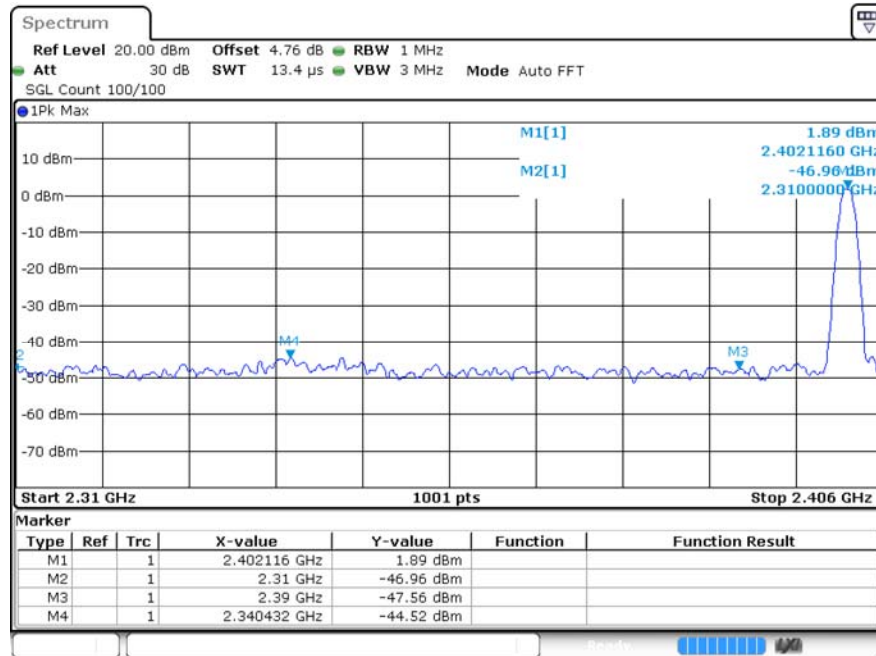
9 Restrict-band band-edge measurements

9.1 Test Result

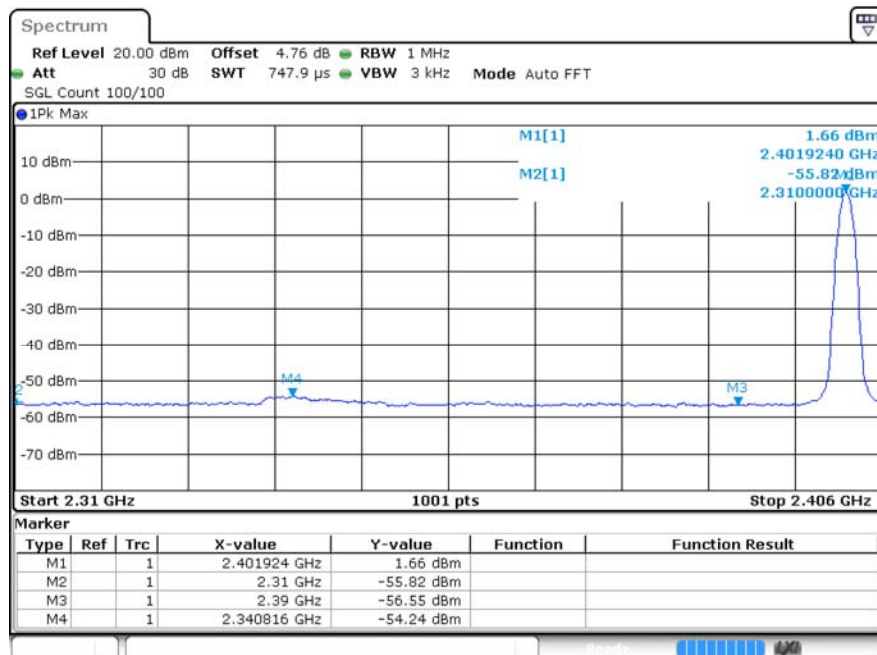
Test Mode	Hopping	Freq.	Power [dBm]	Gain	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-46.96	2	50.3	PEAK	74	Pass
	Off	2310.0	-55.81	2	41.45	AV	54	Pass
	Off	2340.432	-44.52	2	52.74	PEAK	74	Pass
	Off	2340.816	-54.23	2	43.03	AV	54	Pass
	Off	2390.0	-47.56	2	49.7	PEAK	74	Pass
	Off	2390.0	-56.54	2	40.72	AV	54	Pass
	Off	2483.5	-48.01	2	49.25	PEAK	74	Pass
	Off	2483.5	-54.37	2	42.89	AV	54	Pass
	Off	2494.432	-46.01	2	51.25	PEAK	74	Pass
	Off	2483.512	-54.37	2	42.89	AV	54	Pass
	Off	2500.0	-47.84	2	49.42	PEAK	74	Pass
	Off	2500.0	-56.15	2	41.11	AV	54	Pass
$\pi/4$ DQPSK	Off	2310.0	-47.95	2	49.31	PEAK	74	Pass
	Off	2310.0	-56.16	2	41.1	AV	54	Pass
	Off	2340.336	-42.94	2	54.32	PEAK	74	Pass
	Off	2338.128	-54.16	2	43.1	AV	54	Pass
	Off	2390.0	-49.35	2	47.91	PEAK	74	Pass
	Off	2390.0	-55.98	2	41.28	AV	54	Pass
	Off	2483.5	-47.66	2	49.6	PEAK	74	Pass
	Off	2483.5	-53.69	2	43.57	AV	54	Pass
	Off	2487.424	-43.91	2	53.35	PEAK	74	Pass
	Off	2483.512	-53.69	2	43.57	AV	54	Pass
	Off	2500.0	-49.26	2	48	PEAK	74	Pass
	Off	2500.0	-55.65	2	41.61	AV	54	Pass

9.2 Test Graphs

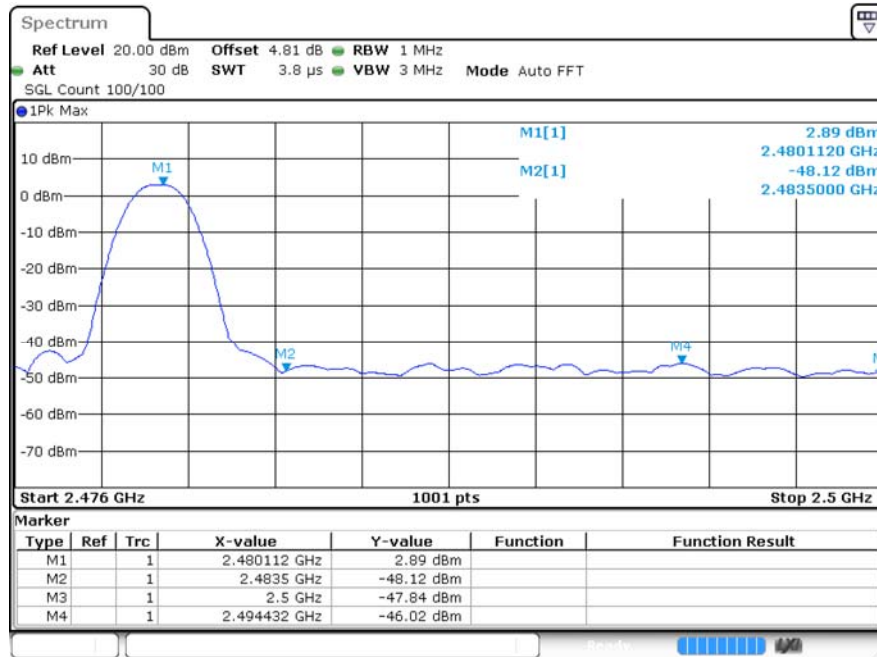
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (Low Channel)



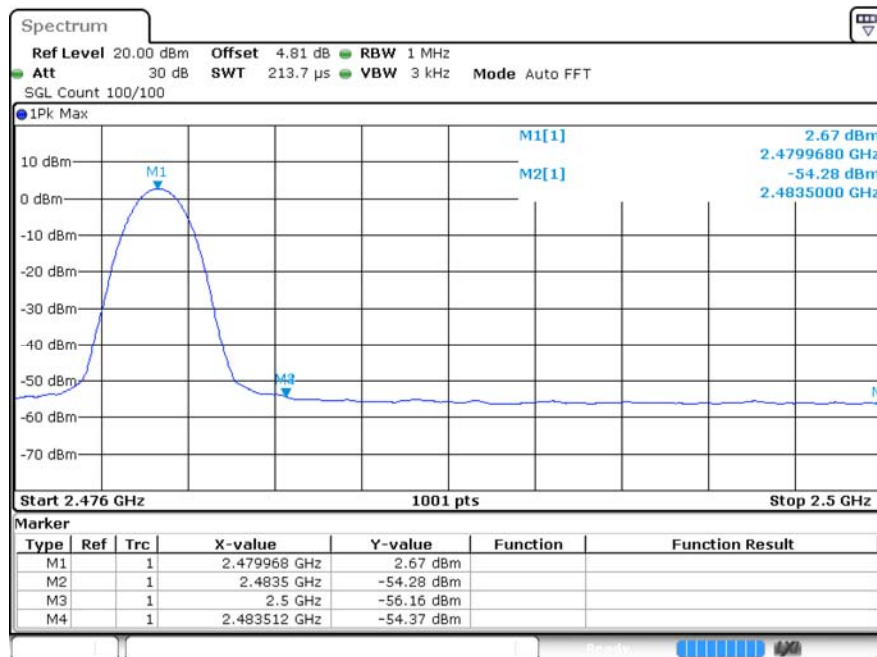
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (Low Channel)



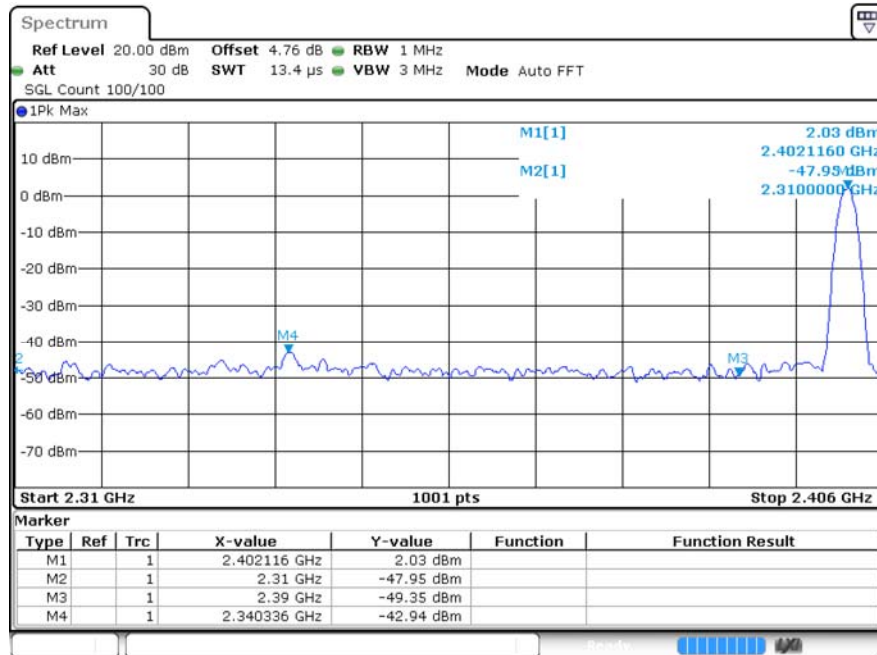
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (High Channel)



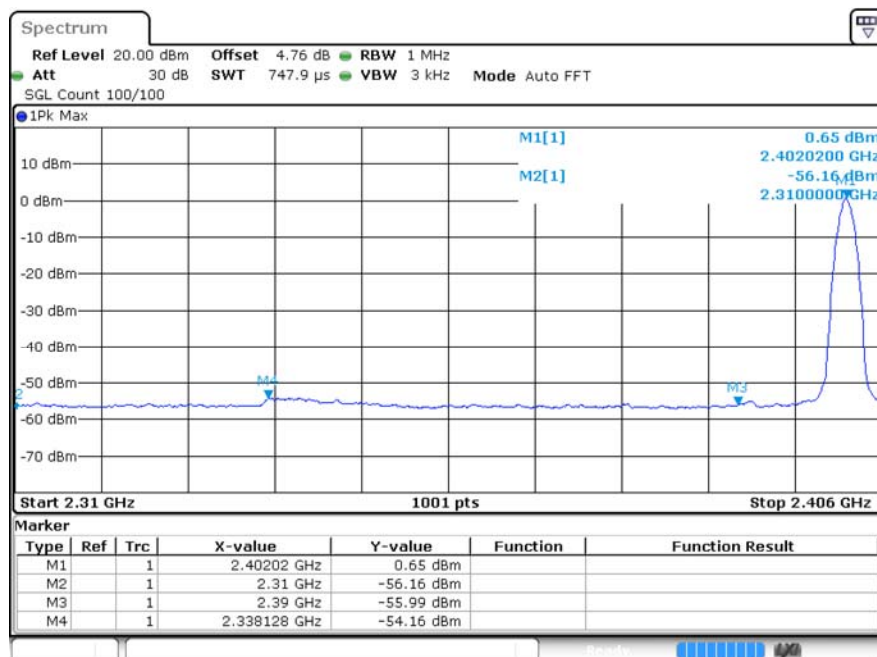
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (High Channel)



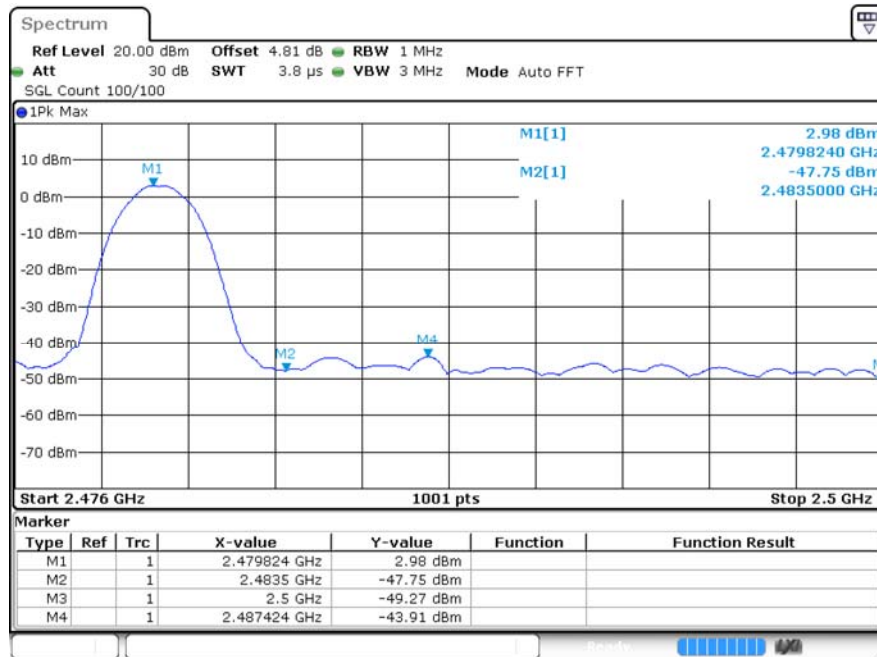
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (Low Channel)



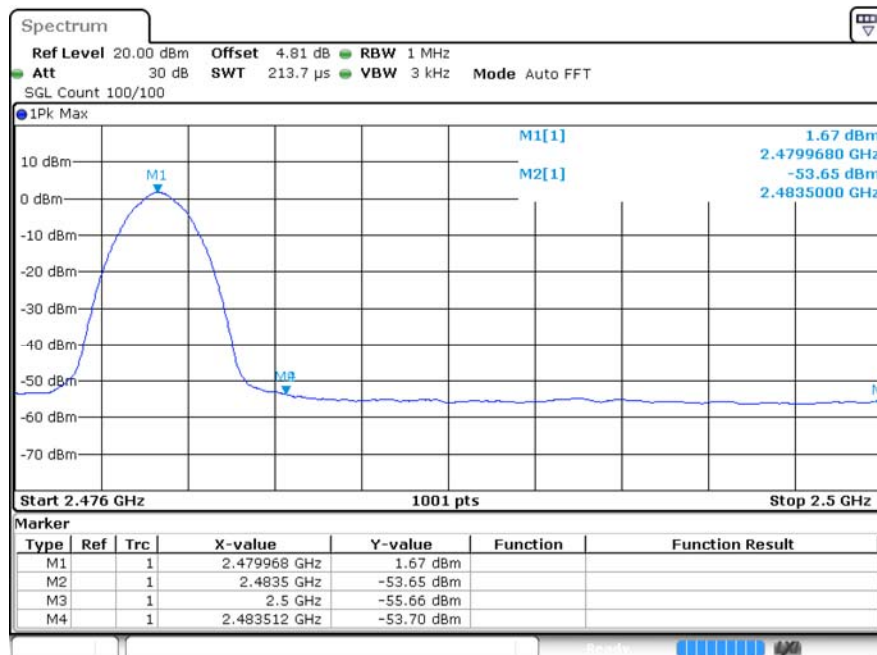
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (Low Channel)



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---