Appendix A

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

Product Name: Wireless speaker with Light

Trade Mark: AT&T

Test Model: EBS-211228

Environmental Conditions

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

Contents

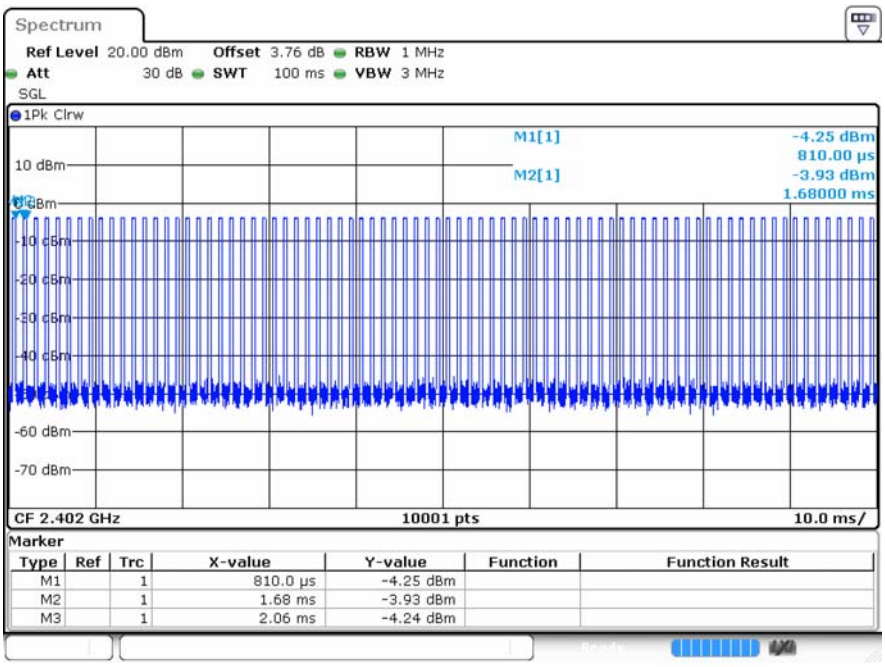
1 Duty Cycle

1.1 Test Result

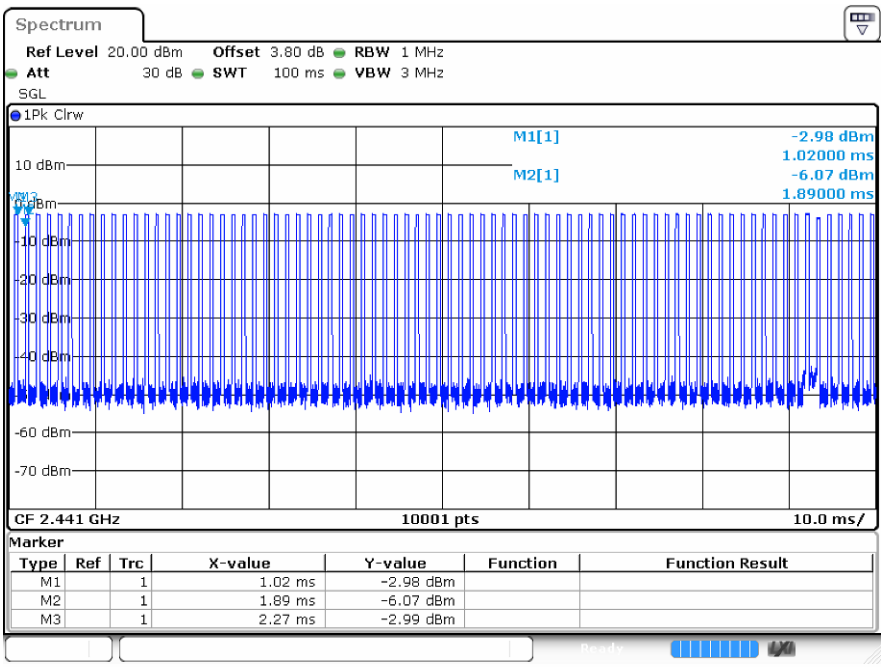
Mode	Frequency (MHz)	Duty Cycle (%)	1/T (kHz)
1-DH1	2402	31.2	2.63
1-DH1	2441	31.2	2.63
1-DH1	2480	31.21	2.63
2-DH1	2402	32	2.56
2-DH1	2441	31.21	2.63
2-DH1	2480	31.2	2.63

1.2 Test Graphs

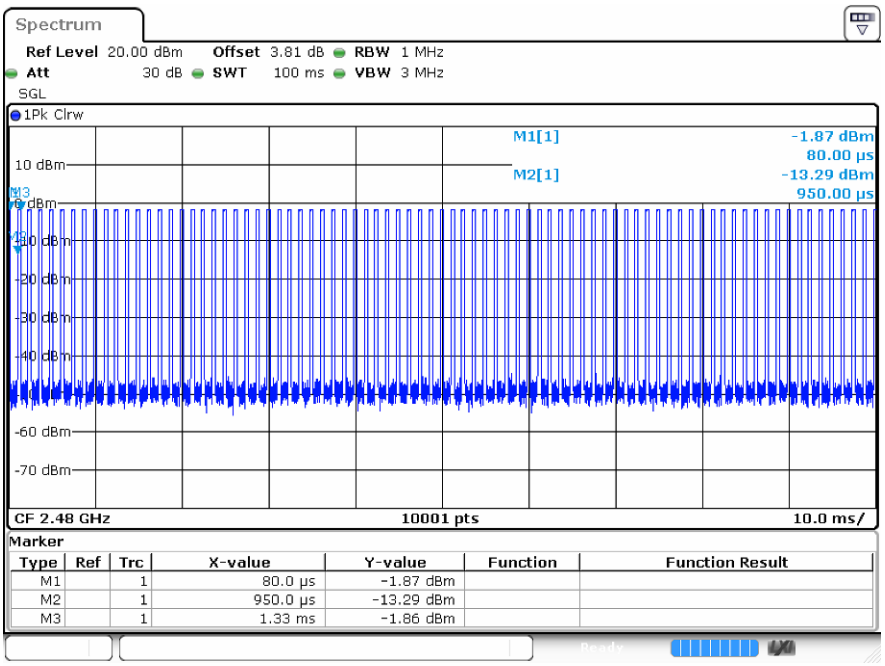
Test Graphs
1-DH1 2402MHz



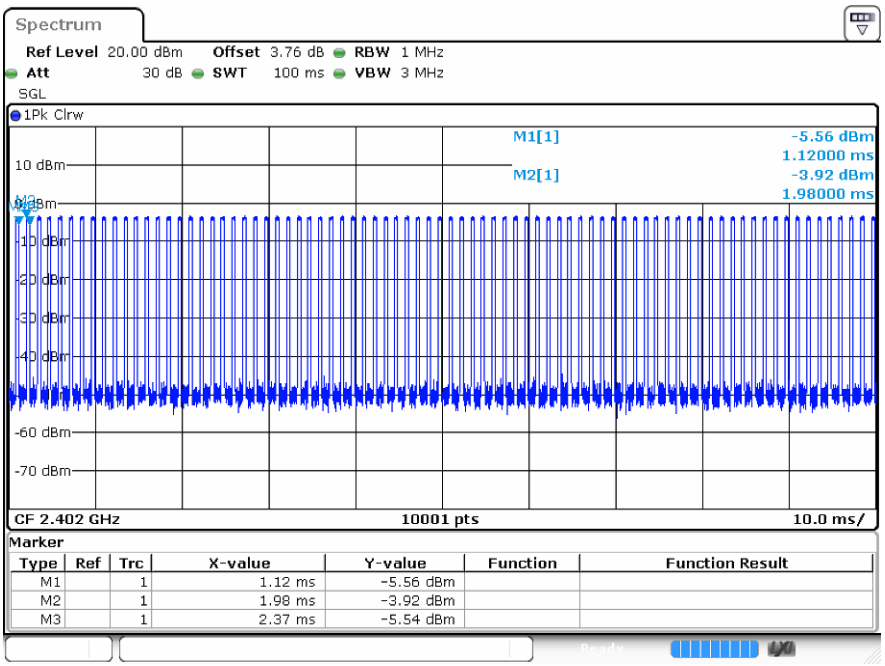
1-DH1 2441MHz



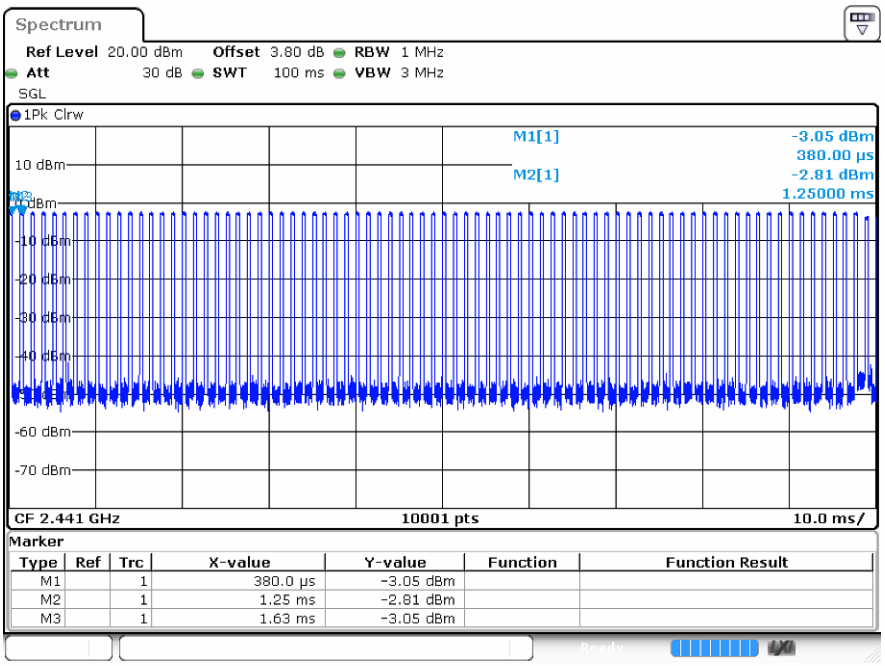
1-DH1 2480MHz



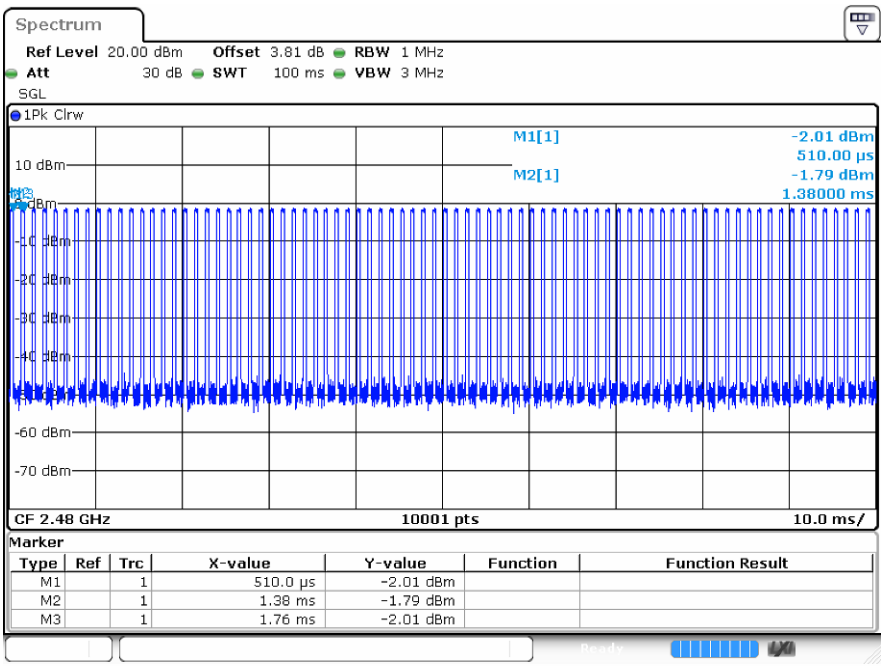
2-DH1 2402MHz



2-DH1 2441MHz



2-DH1 2480MHz

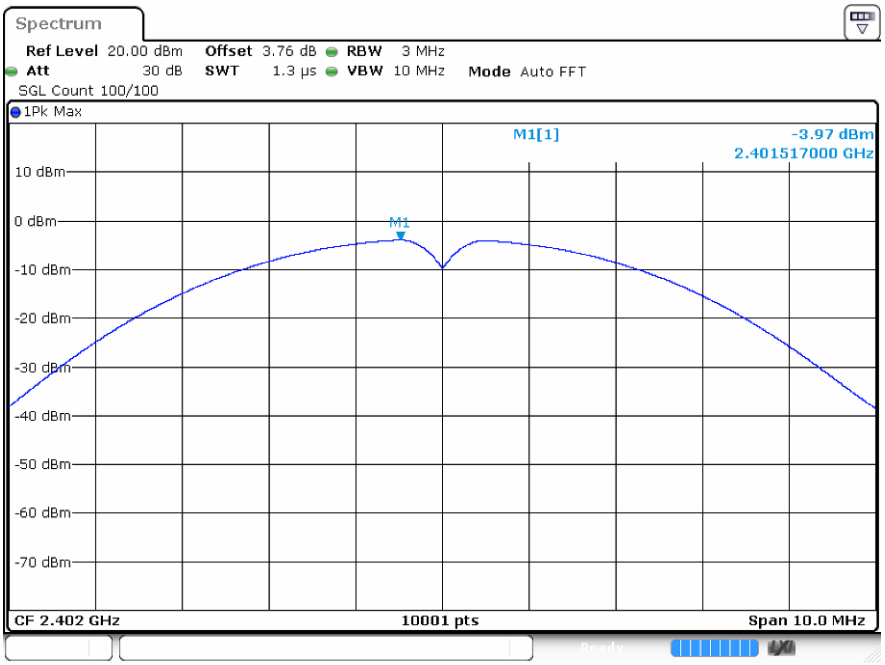
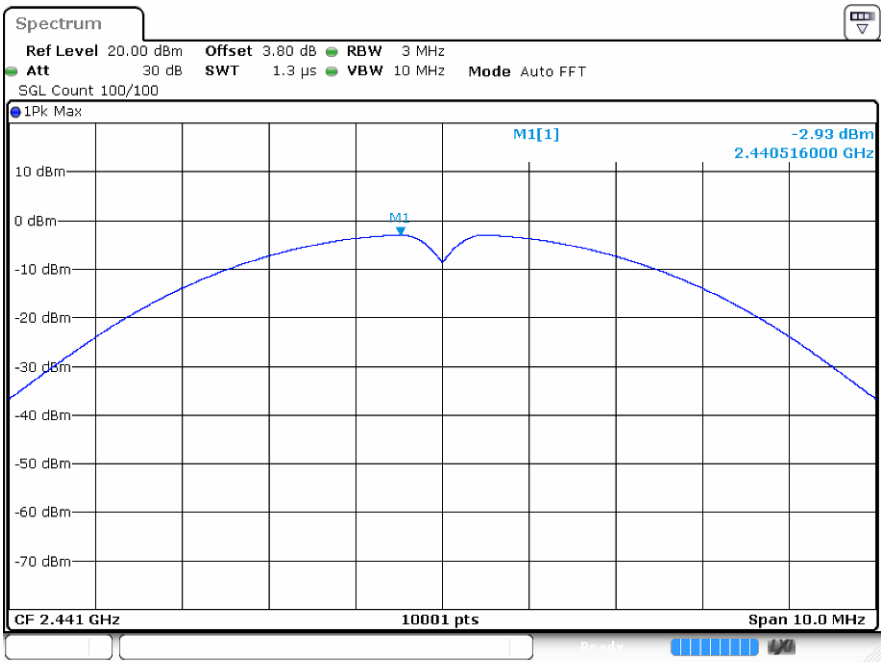


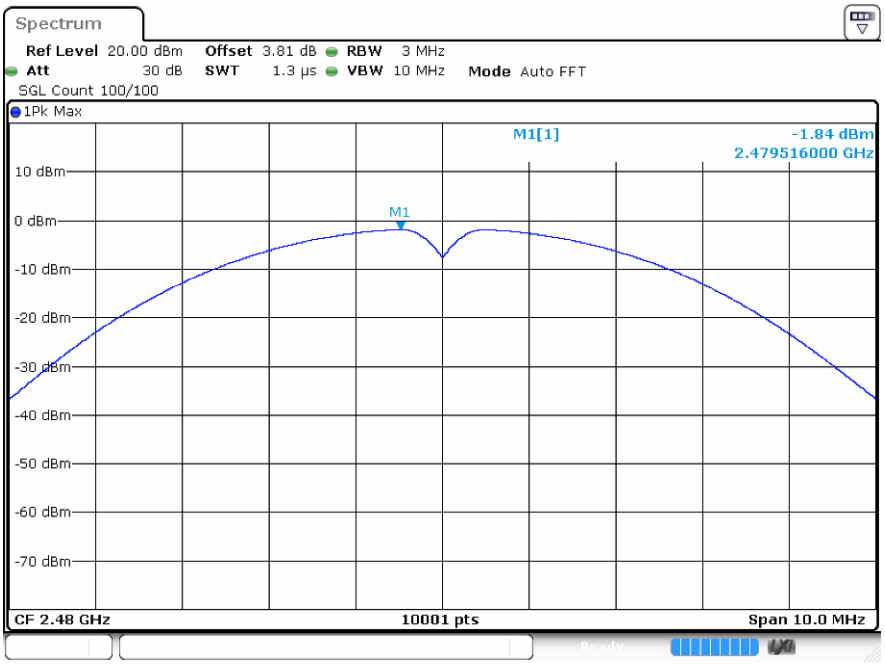
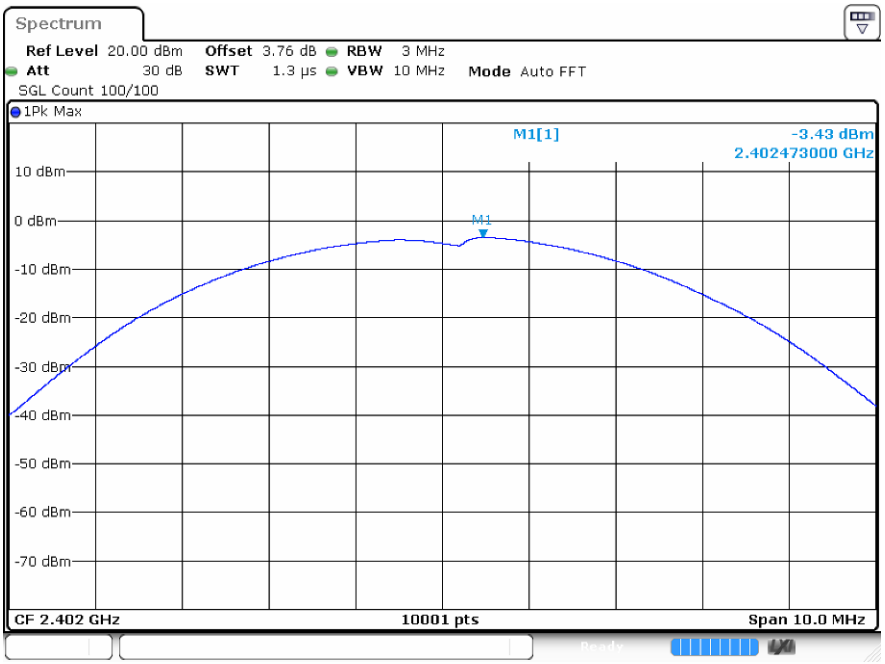
2 Maximum Conducted Peak Output Power

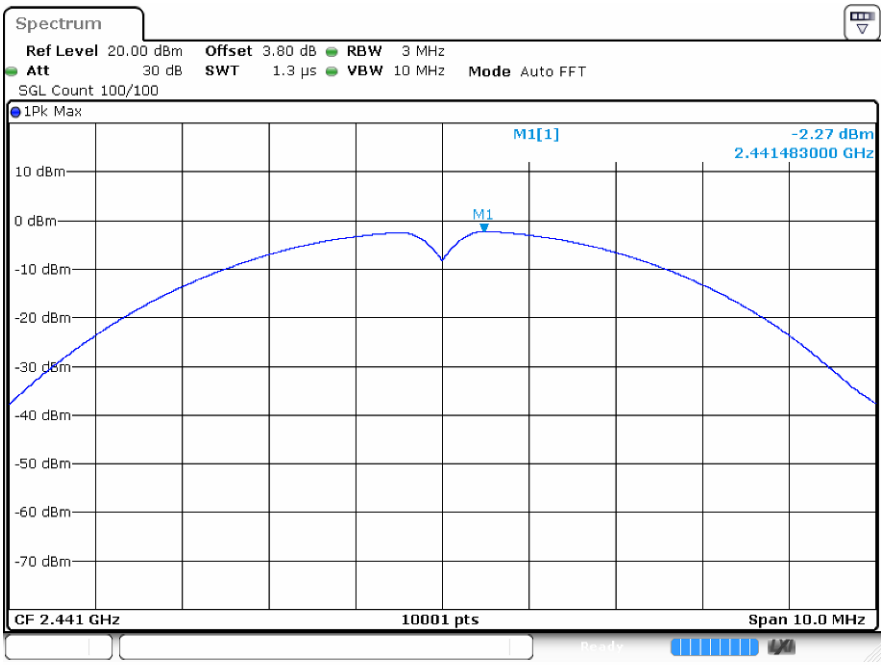
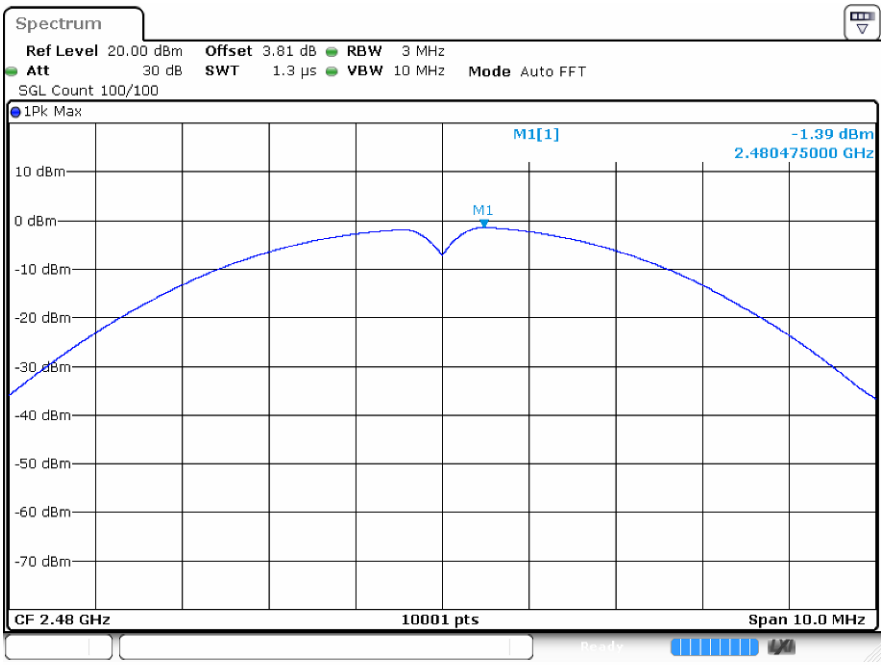
2.1 Test Result

Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-3.97	21	Pass
	MCH	-2.93	21	Pass
	HCH	-1.84	21	Pass
π/4DQPSK	LCH	-3.43	21	Pass
	MCH	-2.27	21	Pass
	HCH	-1.39	21	Pass

2.2 Test Graphs

Test Graphs	
GFSK/LCH	
GFSK/MCH	

GFSK/HCH	
π/4DQPSK/LCH	

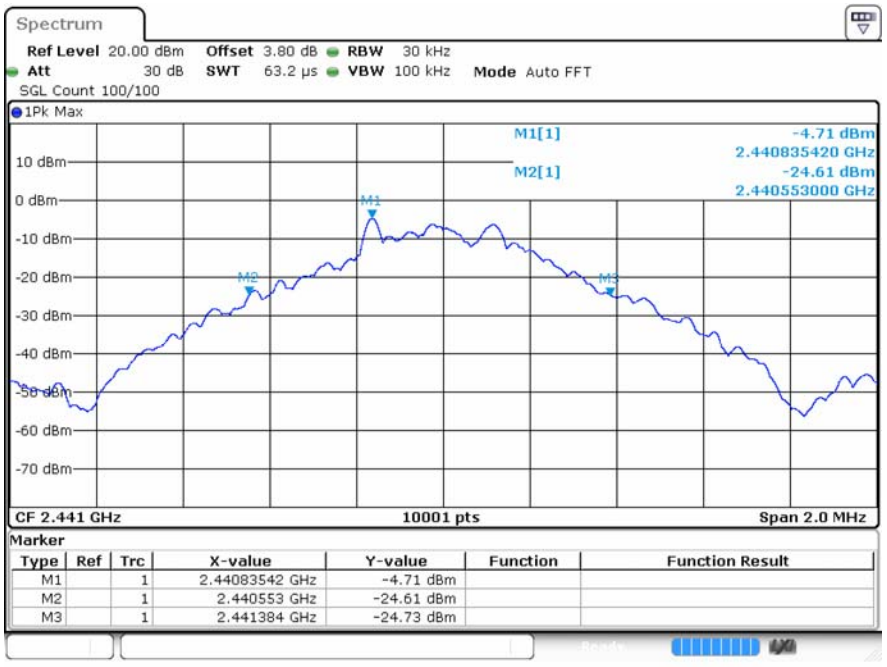
π/4DQPSK/MCH	
π/4DQPSK/HCH	

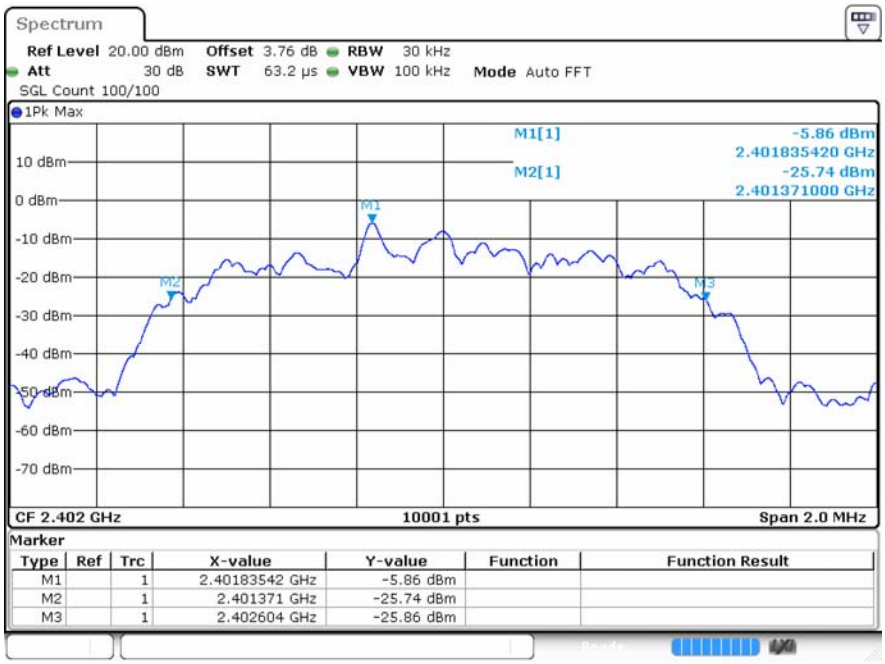
3 20dB Bandwidth

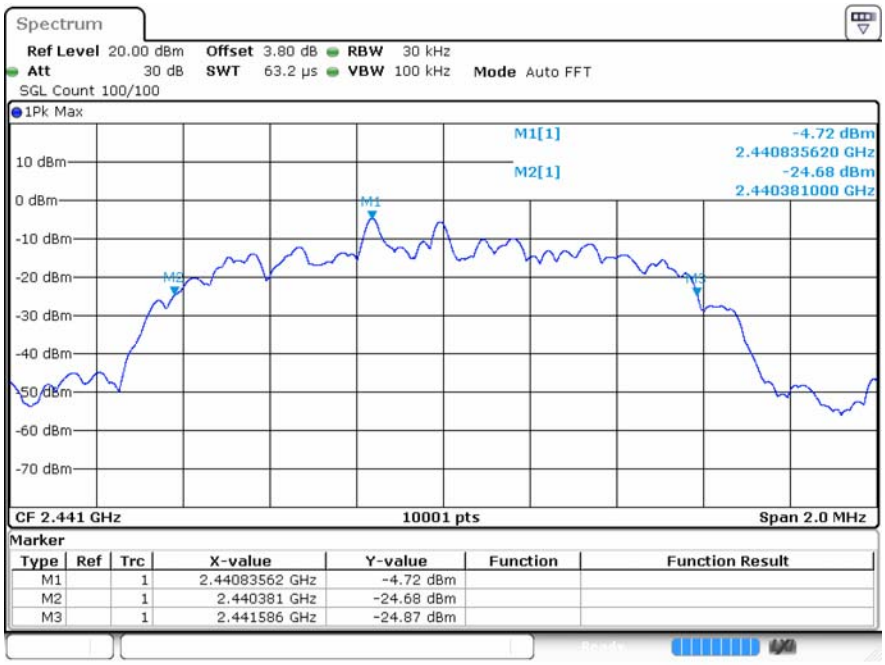
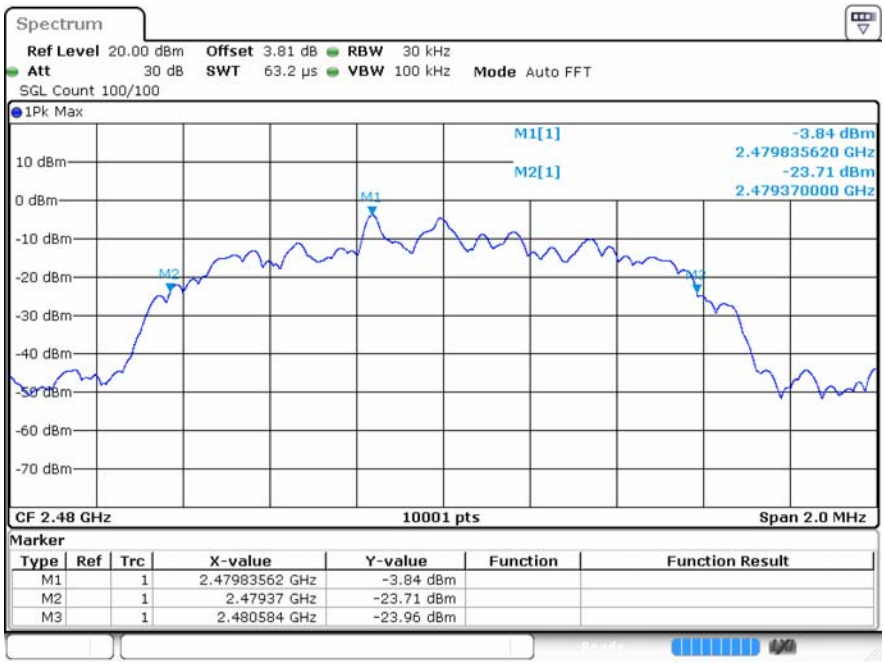
3.1 Test Result

Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.876	Not Specified	Pass
	MCH	0.831	Not Specified	Pass
	HCH	0.851	Not Specified	Pass
π/4DQPSK	LCH	1.233	Not Specified	Pass
	MCH	1.205	Not Specified	Pass
	HCH	1.214	Not Specified	Pass

3.2 Test Graphs

Test Graphs	
GFSK/LCH	
GFSK/MCH	

GFSK/HCH	
π/4DQPSK/LCH	

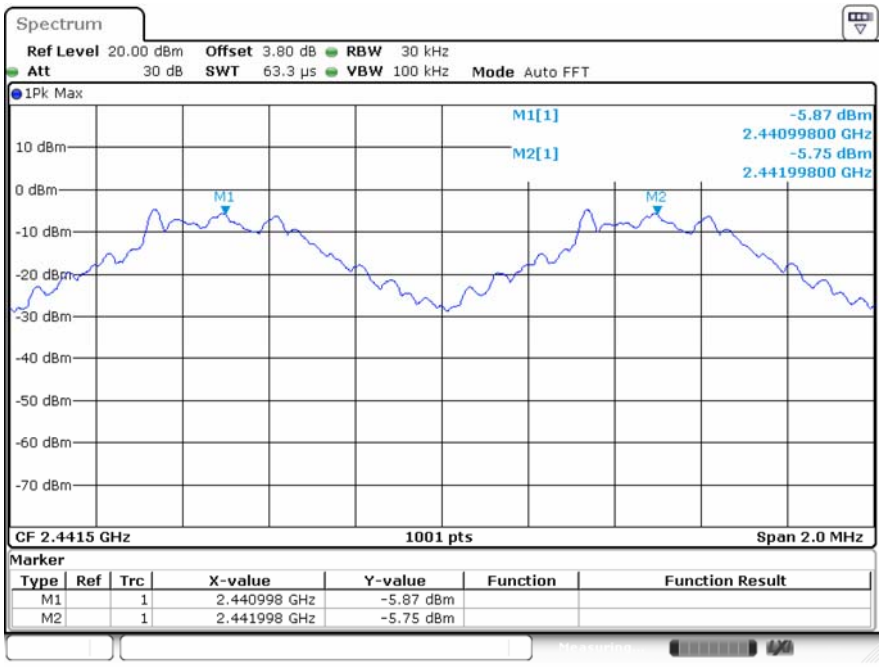
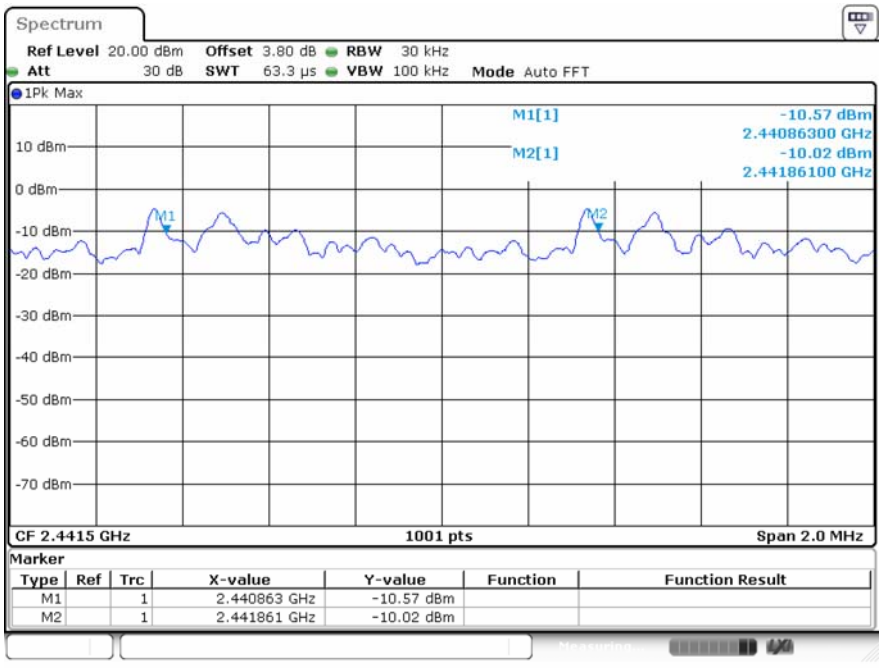
π/4DQPSK/MCH	
π/4DQPSK/HCH	

4 Carrier Frequency Separation

4.1 Test Result

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	MCH	1	0.554	Pass
π/4DQPSK	MCH	0.998	0.803	Pass

4.2 Test Graphs

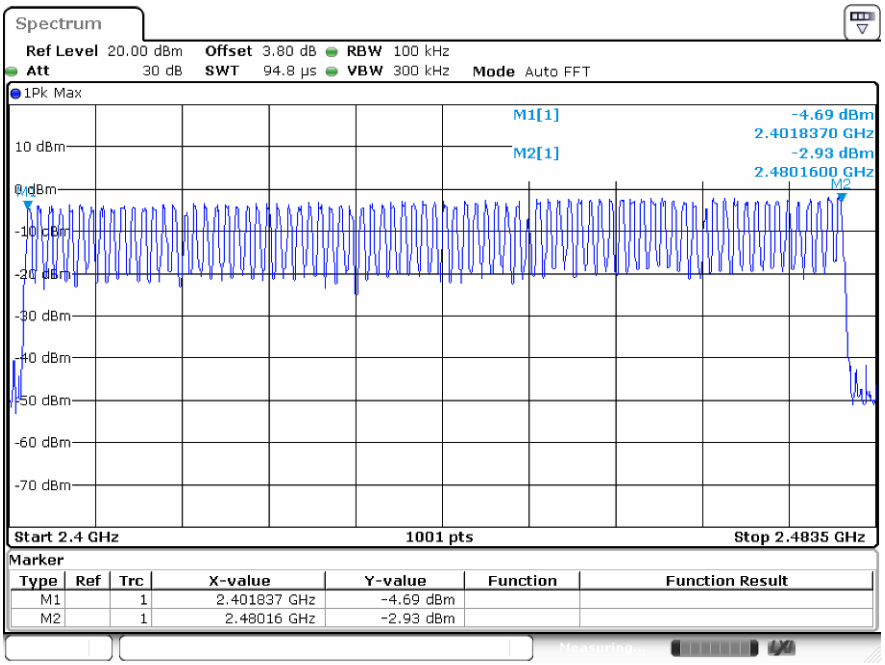
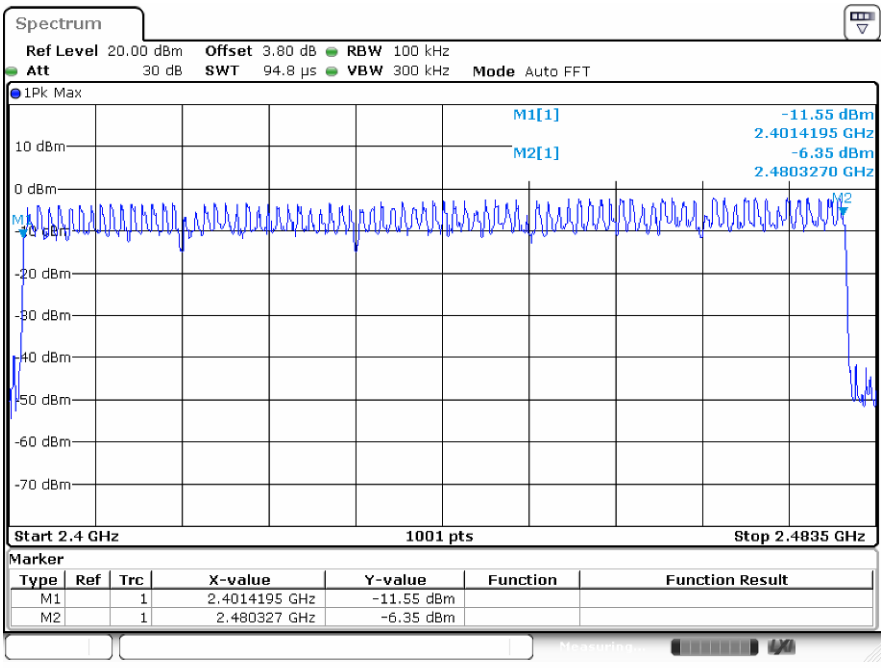
Test Graphs	
GFSK/MCH	
π/4DQPSK/MCH	

5 Hopping Channel Number

5.1 Test Result

Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	>=15	PASS
π/4DQPSK	Hop	79	>=15	PASS

5.2 Test Graphs

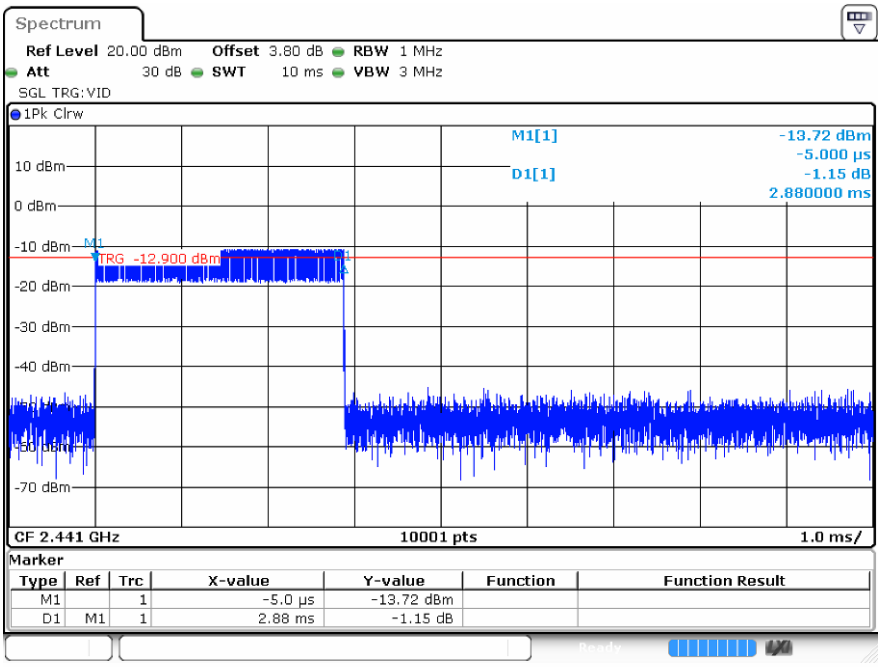
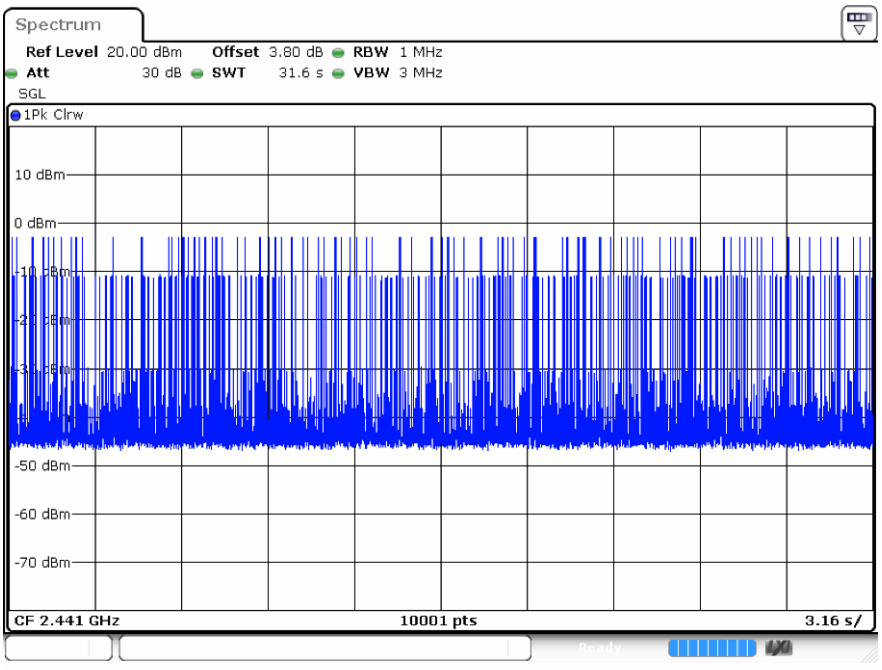
Test Graphs	
GFSK/Hop	
π/4DQPSK/Hop	

6 Dwell Time

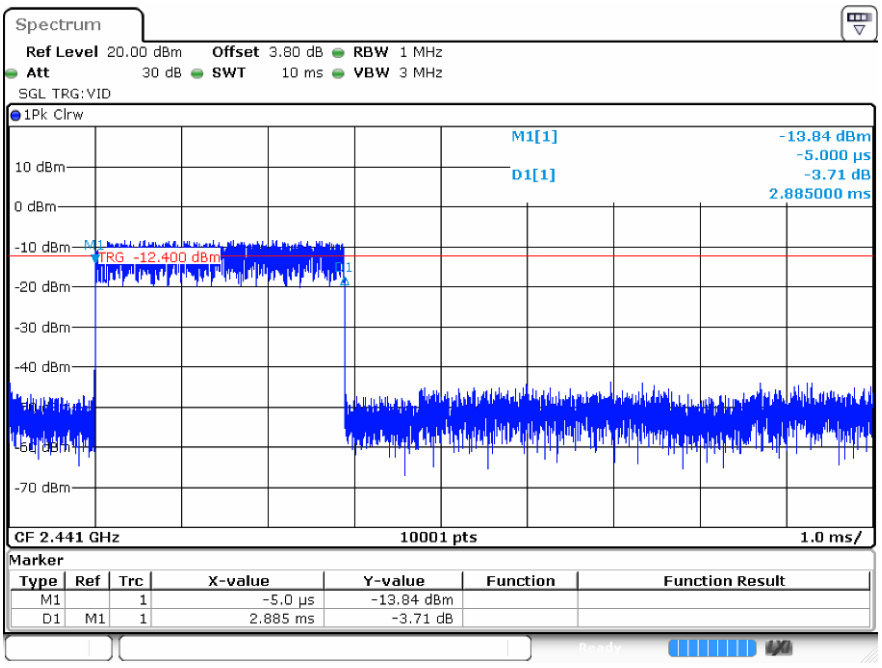
6.1 Test Result

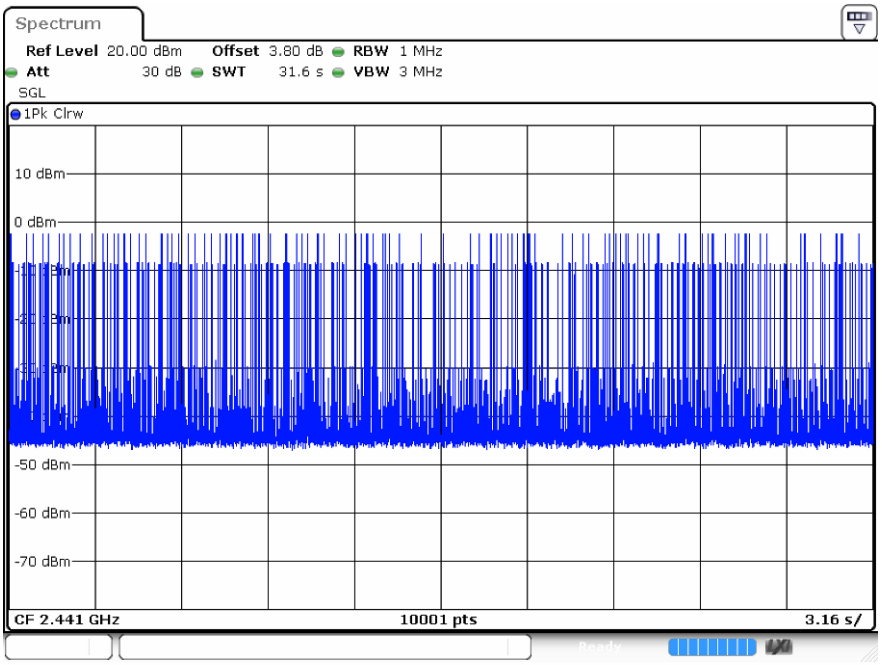
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[ms]	Limit [s]	Verdict
GFSK	DH5	MCH	2.88	110	316.8	0.4	Pass
π/4DQPSK	2DH5	MCH	2.885	110	317.35	0.4	Pass

6.2 Test Graphs

Test Graphs	
GFSK_DH5/MCH	 

π/4DQPSK
_2DH5/MCH



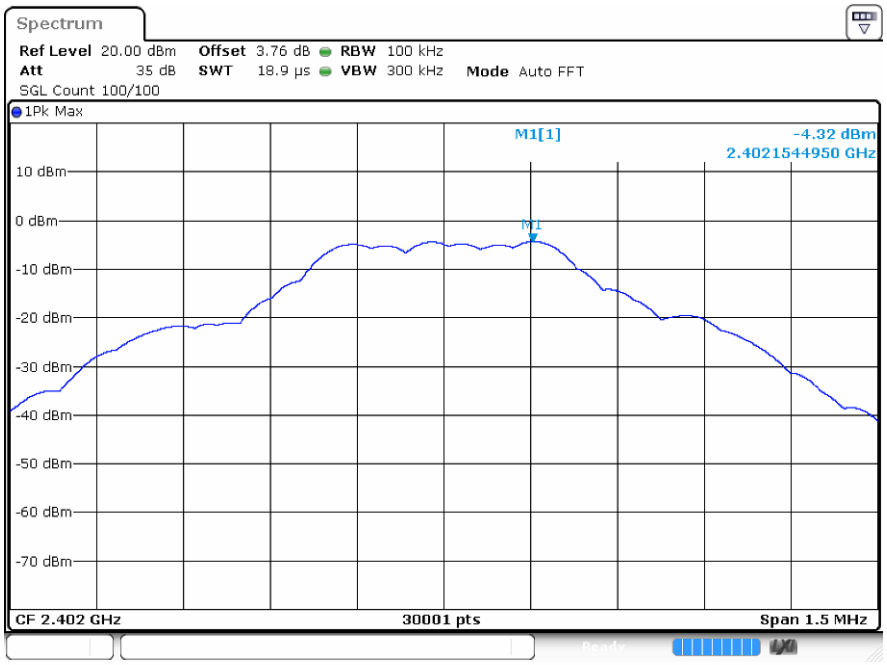
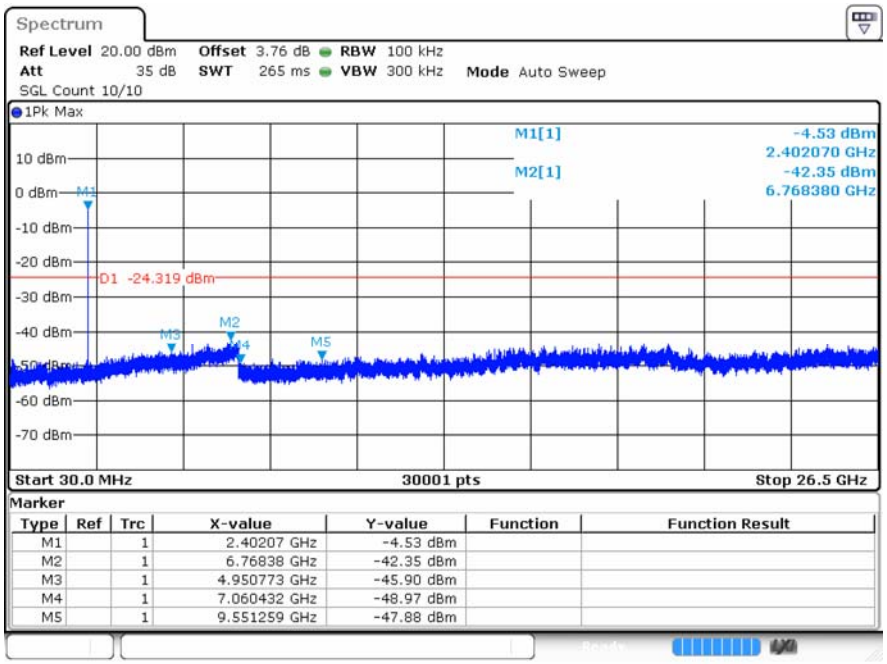


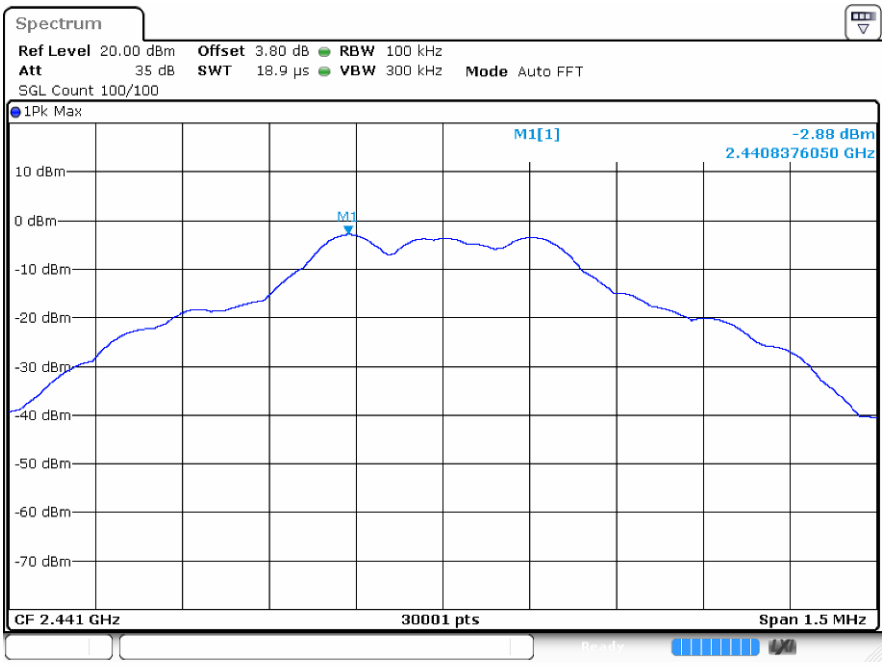
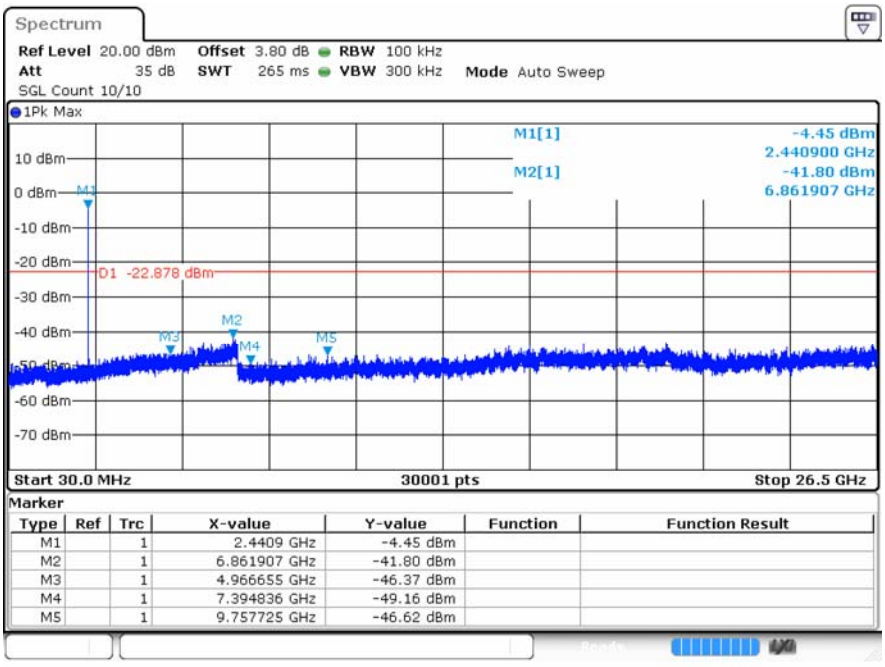
7 RF Conducted Spurious Emissions

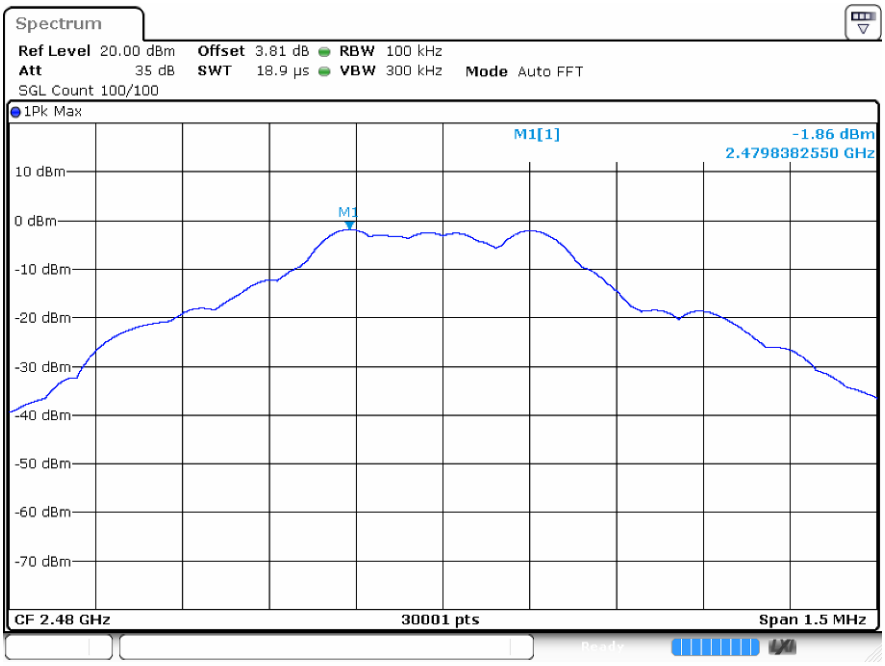
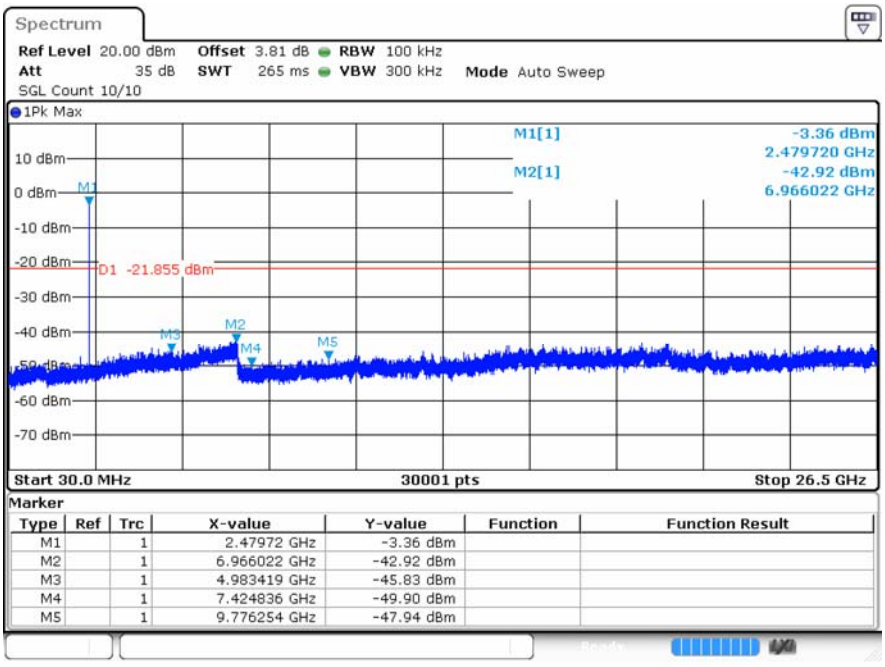
7.1 Test Result

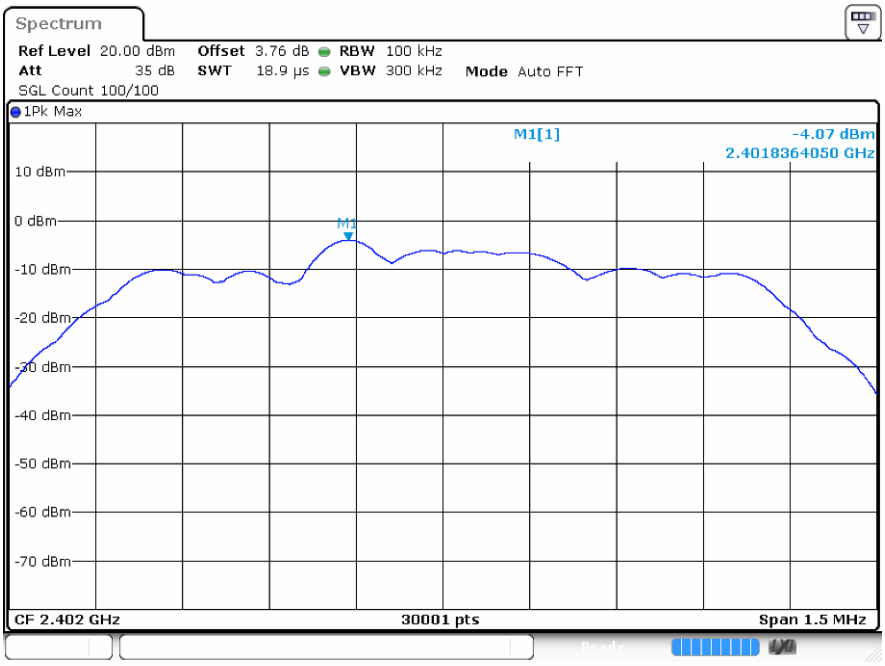
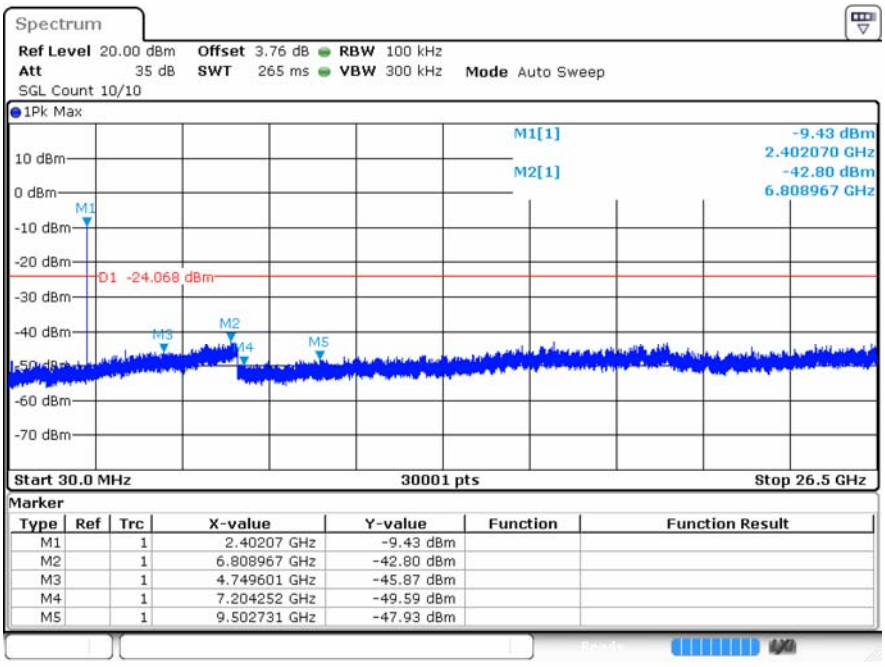
Mode	Channel	Max. Level [dBc]	Limit [dBc]	Verdict
GFSK	LCH	-38.02	-20	Pass
	MCH	-38.91	-20	Pass
	HCH	-41.05	-20	Pass
π/4DQPSK	LCH	-38.73	-20	Pass
	MCH	-39.96	-20	Pass
	HCH	-40.28	-20	Pass

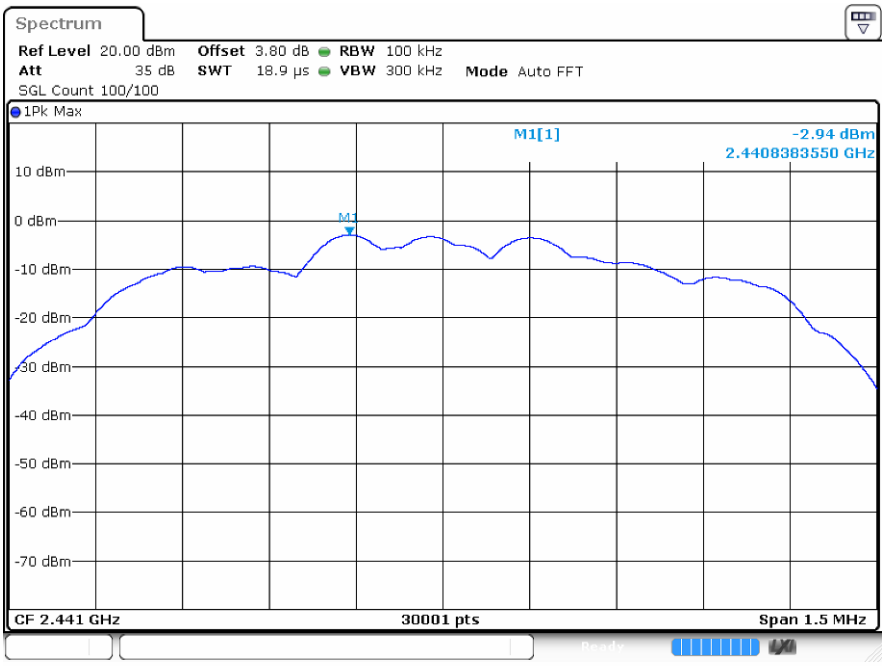
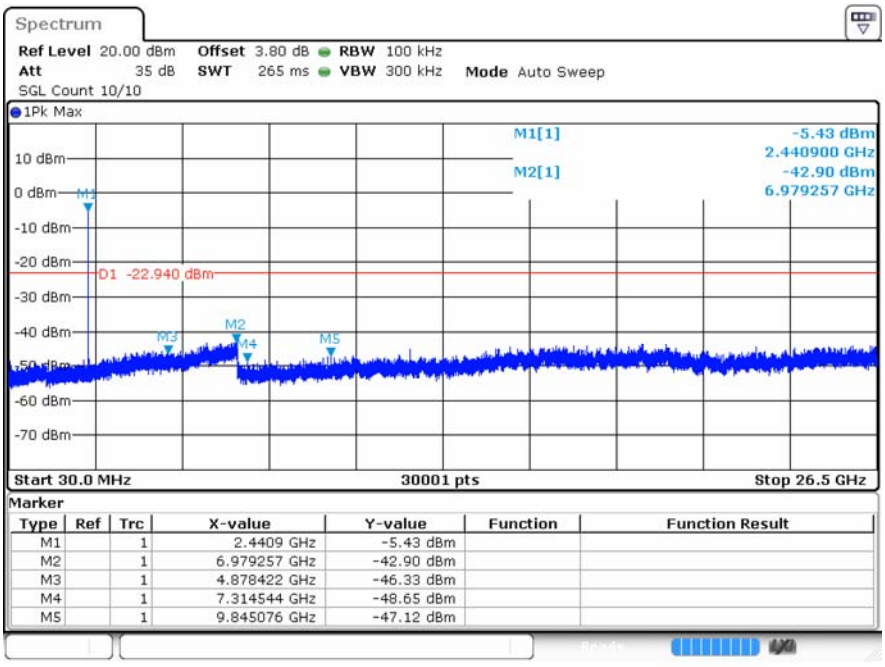
7.2 Test Graphs

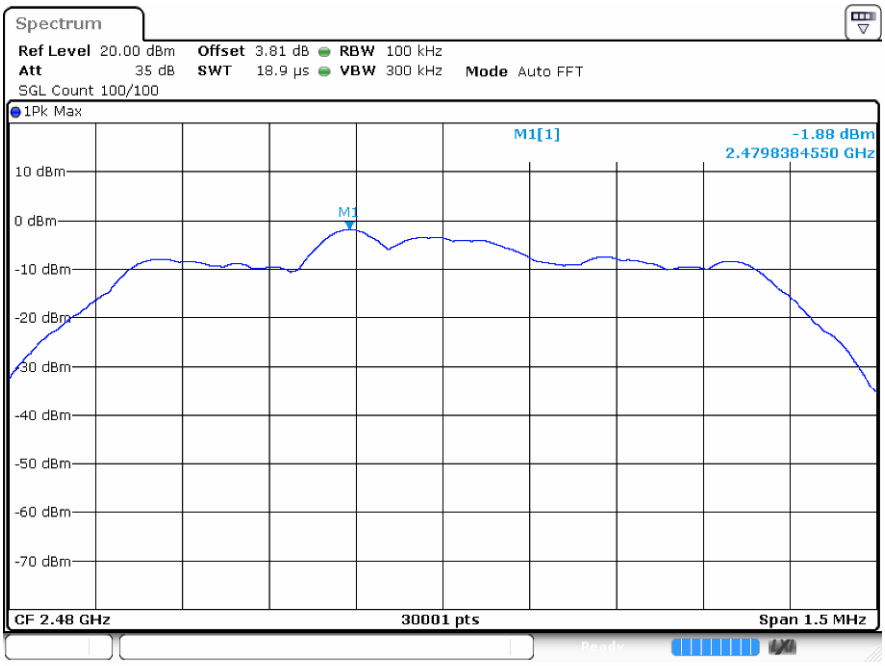
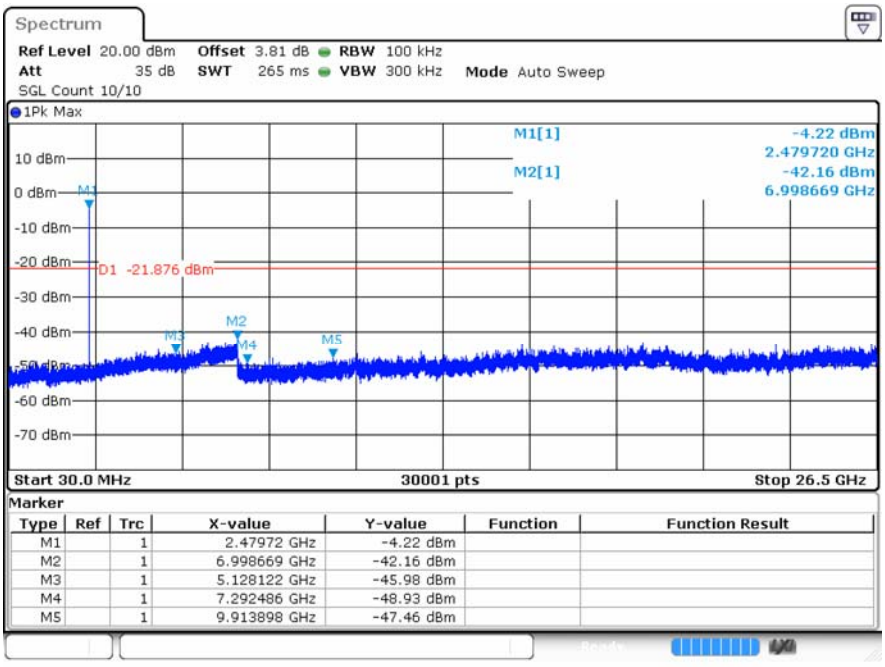
GFSK_LCH_Graphs	
Pref	
Puw	

GFSK_MCH_Graphs	
Pref	
Puw	

GFSK_HCH_Graphs	
Pref	
Puw	

π/4DQPSK_LCH_Graphs	
Pref	
Puw	 Marker Type | Ref | Trc | X-value | Y-value | Function | Function Result M1 | | 1 | 2.40207 GHz | -9.43 dBm | | M2 | | 1 | 6.808967 GHz | -42.80 dBm | | M3 | | 1 | 4.749601 GHz | -45.87 dBm | | M4 | | 1 | 7.204252 GHz | -49.59 dBm | | M5 | | 1 | 9.502731 GHz | -47.93 dBm | |

π/4DQPSK_MCH_Graphs	
Pref	
Puw	

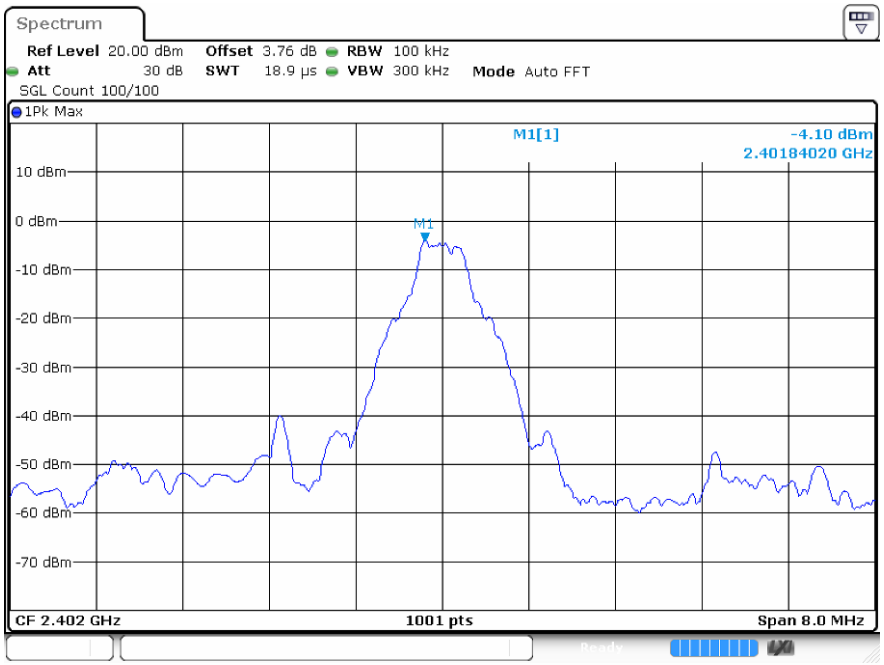
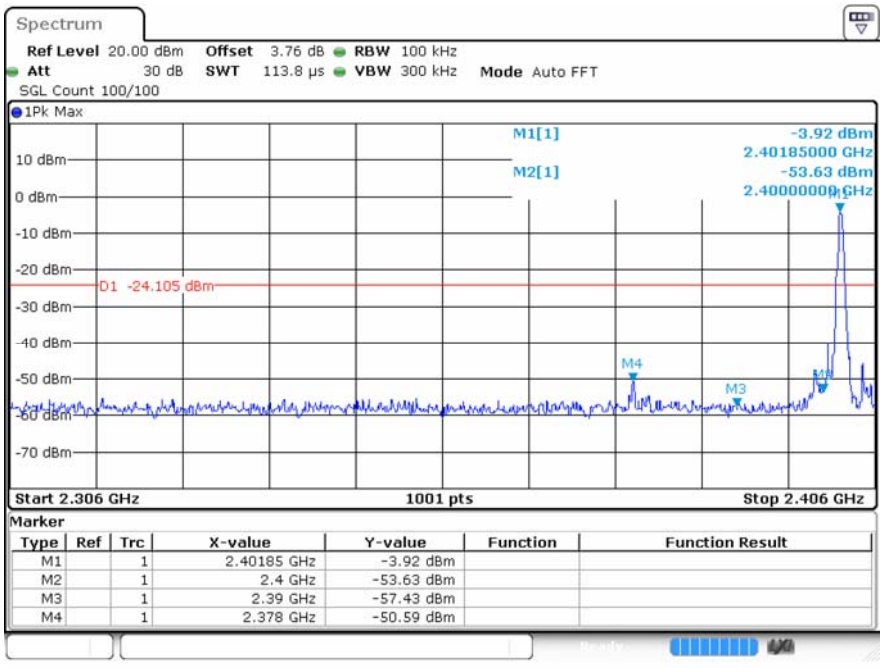
π/4DQPSK_HCH_Graphs	
Pref	
Puw	

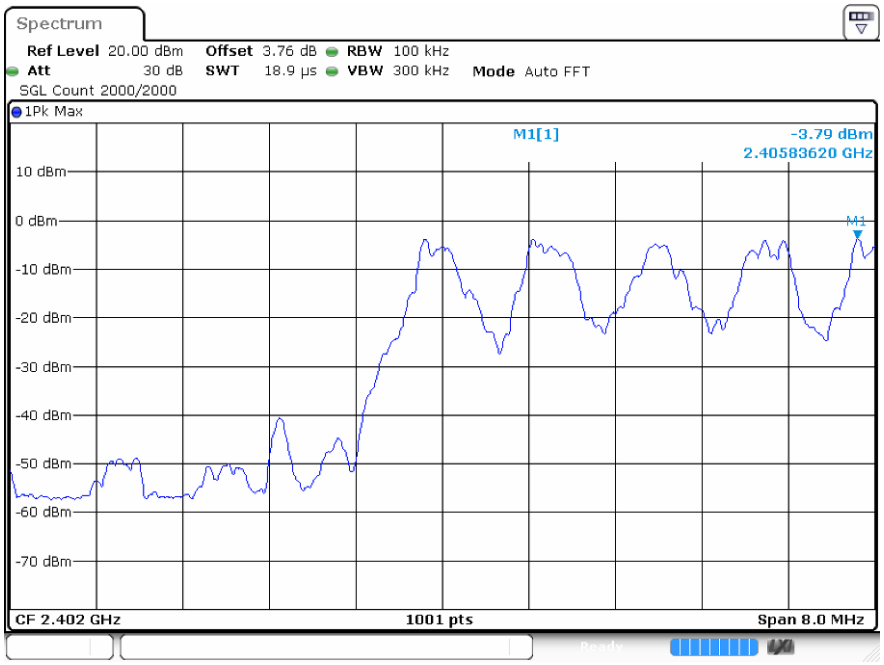
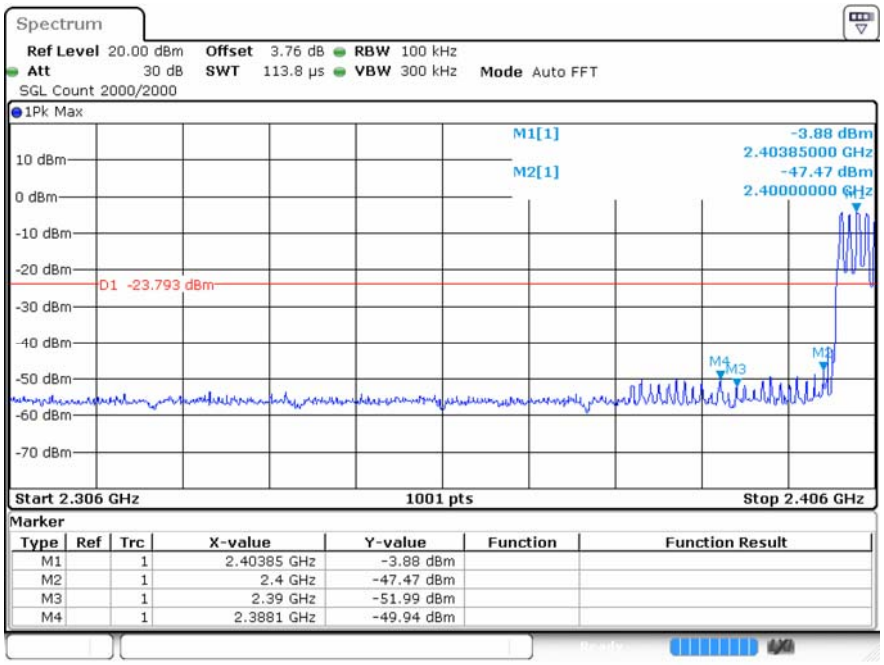
8 Band-edge for RF Conducted Emissions

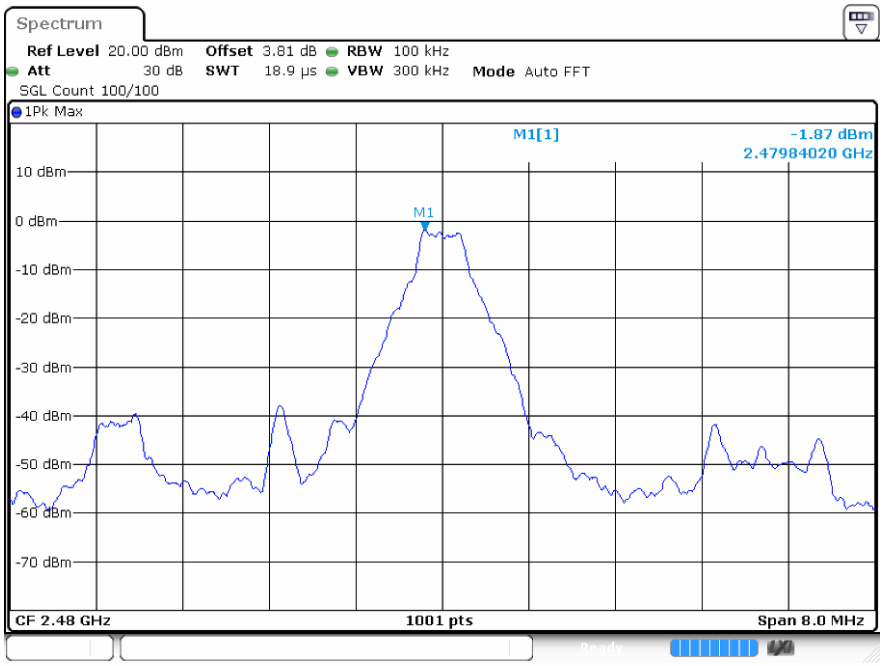
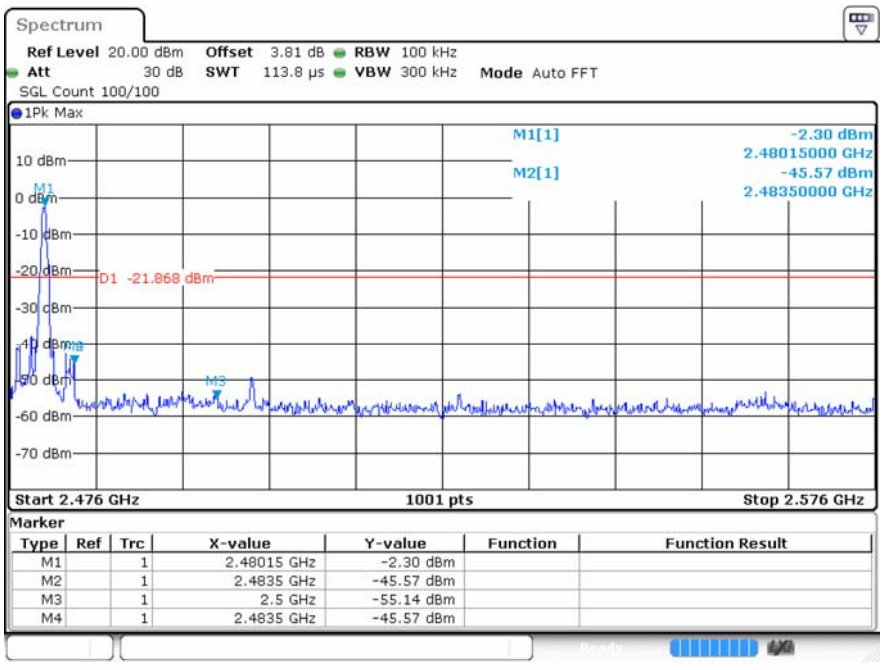
8.1 Test Result

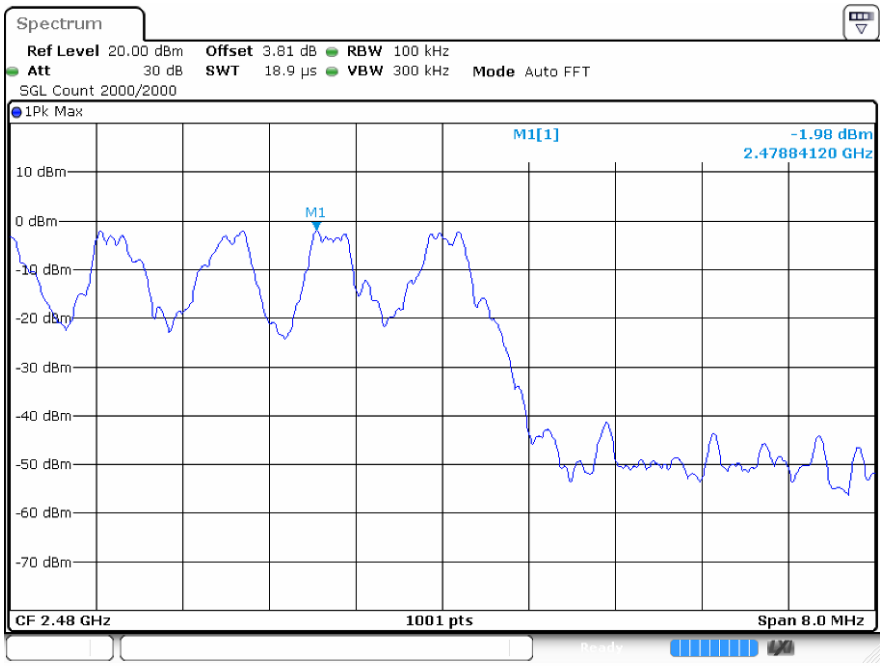
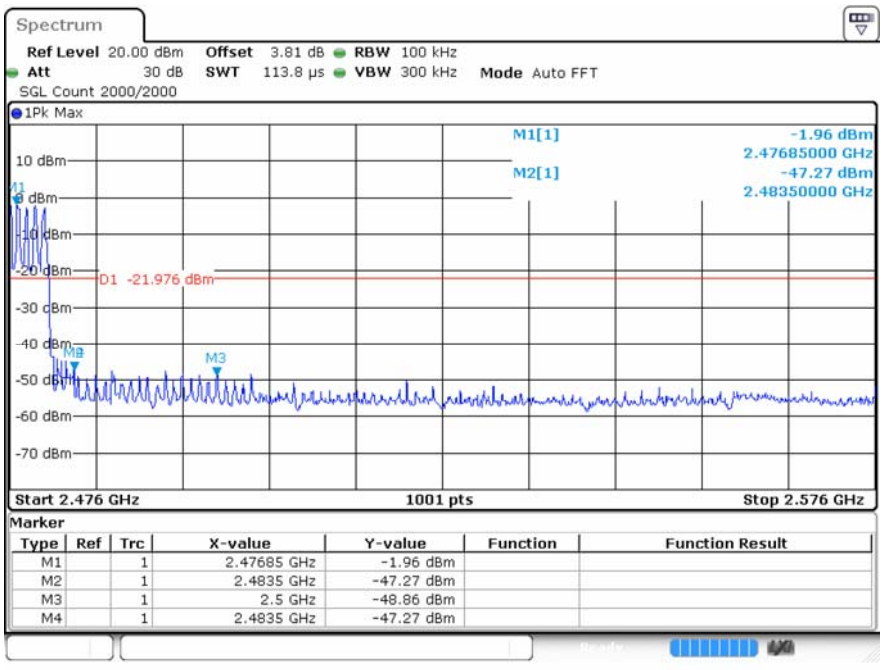
Mode	Channel	Carrier Frequency [MHz]	Frequency Hopping	Max Spurious Level [dBc]	Limit [dBc]	Verdict
GFSK	LCH	2402	Off	-46.48	-20	Pass
			On	-46.15	-20	Pass
	HCH	2480	Off	-43.69	-20	Pass
			On	-45.29	-20	Pass
π/4DQPSK	LCH	2402	Off	-47.21	-20	Pass
			On	-45.75	-20	Pass
	HCH	2480	Off	-44.66	-20	Pass
			On	-46.02	-20	Pass

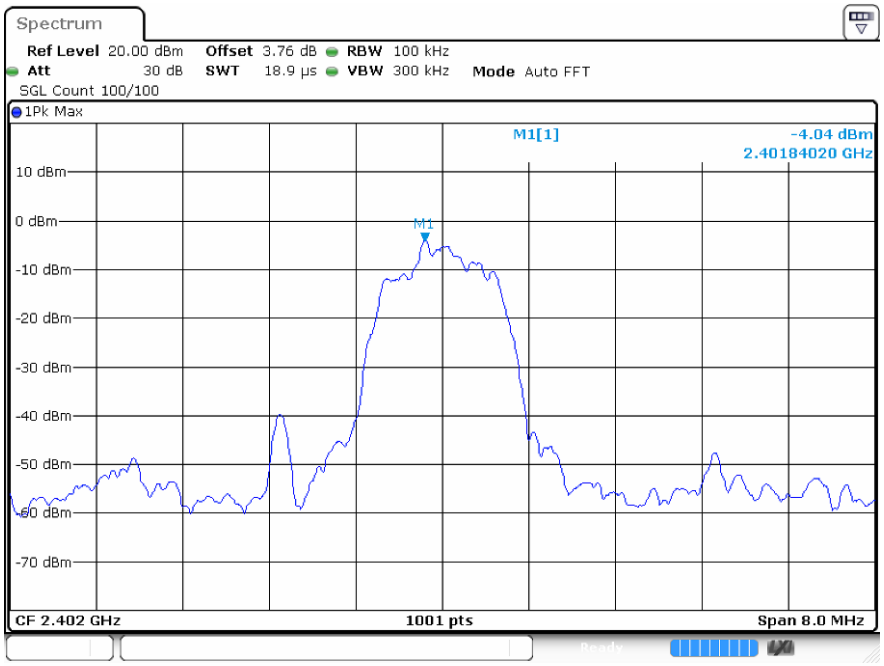
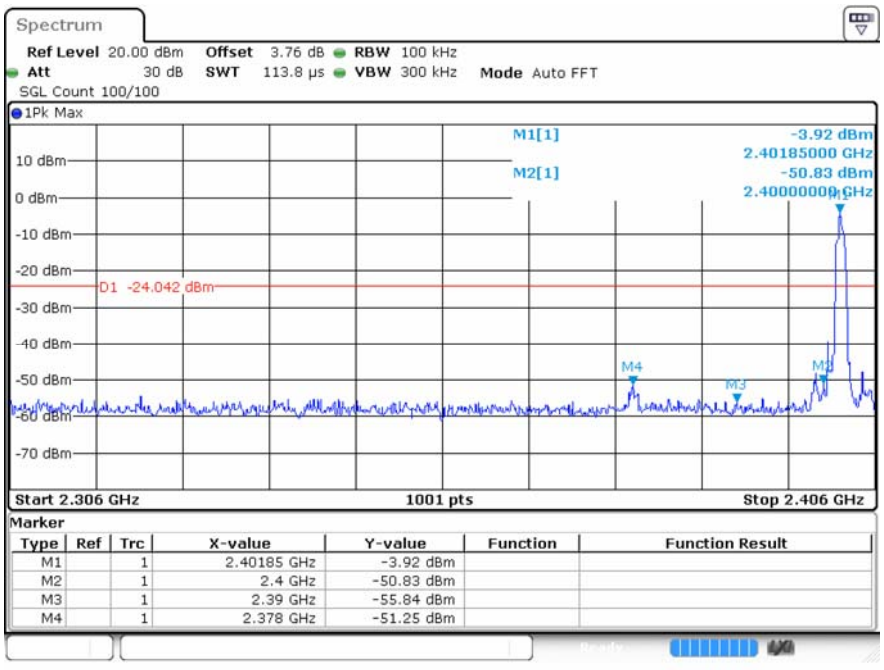
8.2 Test Graphs

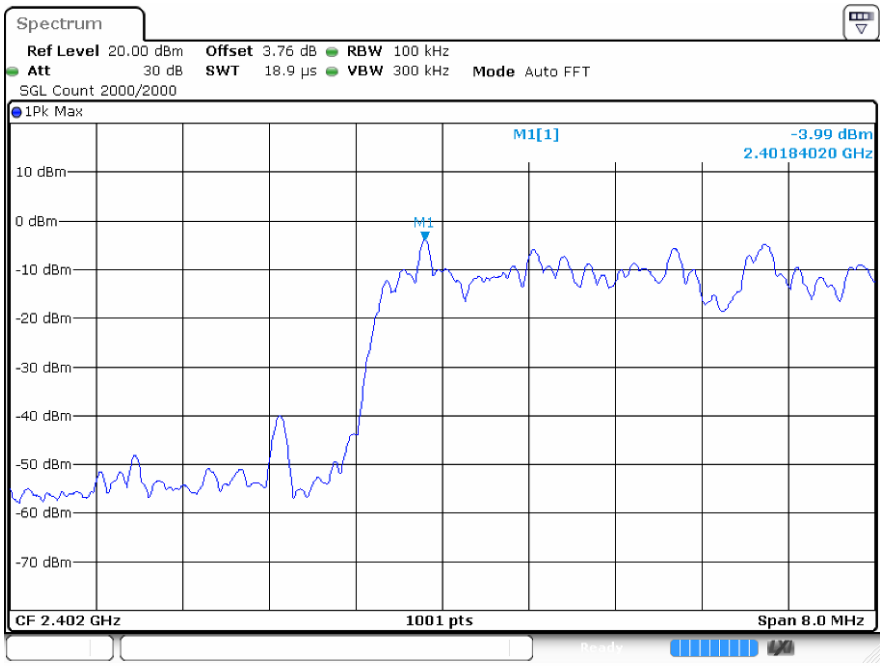
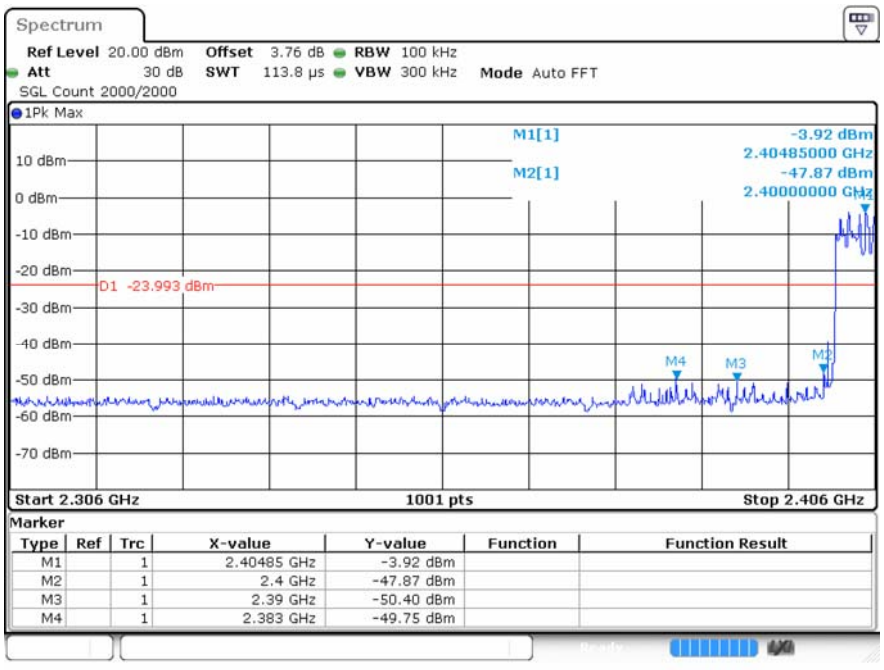
Test Graphs	
Pref	
GFSK/LCH/No Hop	

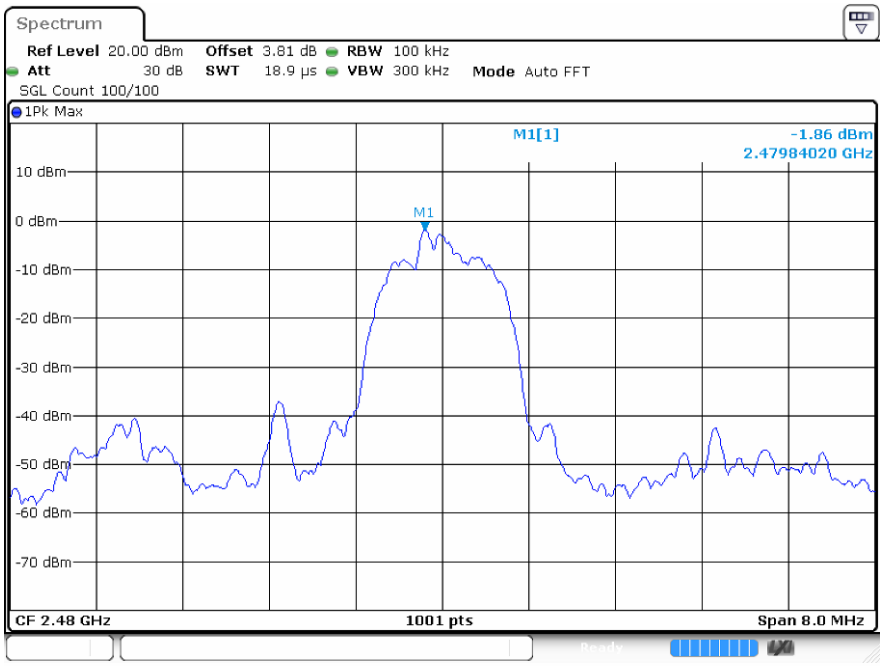
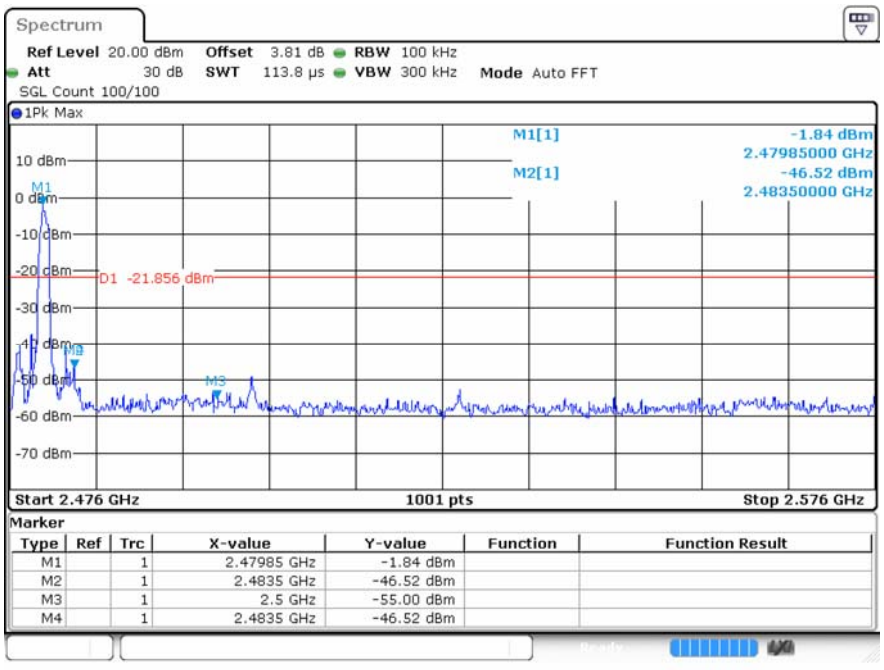
Ref	
GFSK/LCH/Hop	

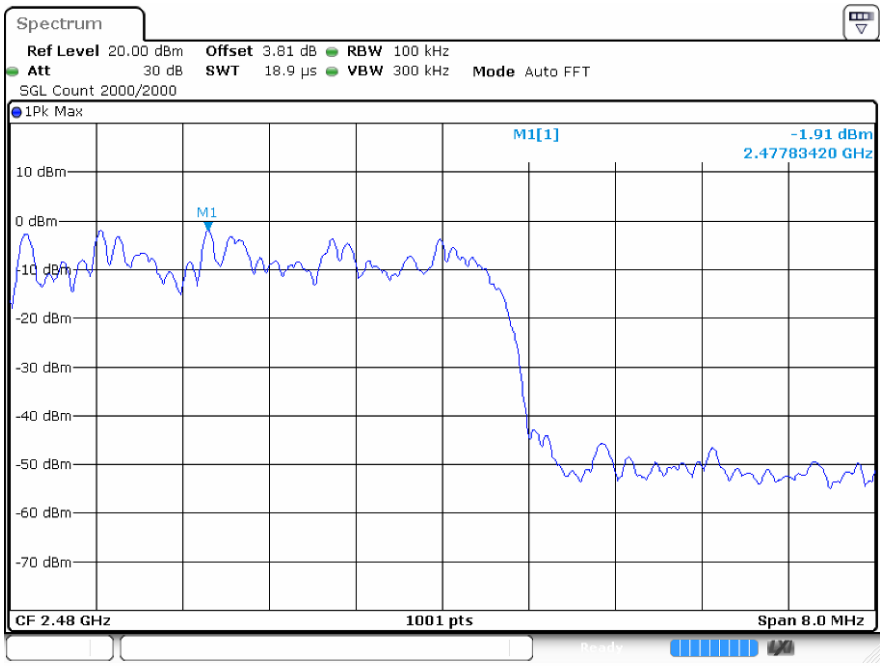
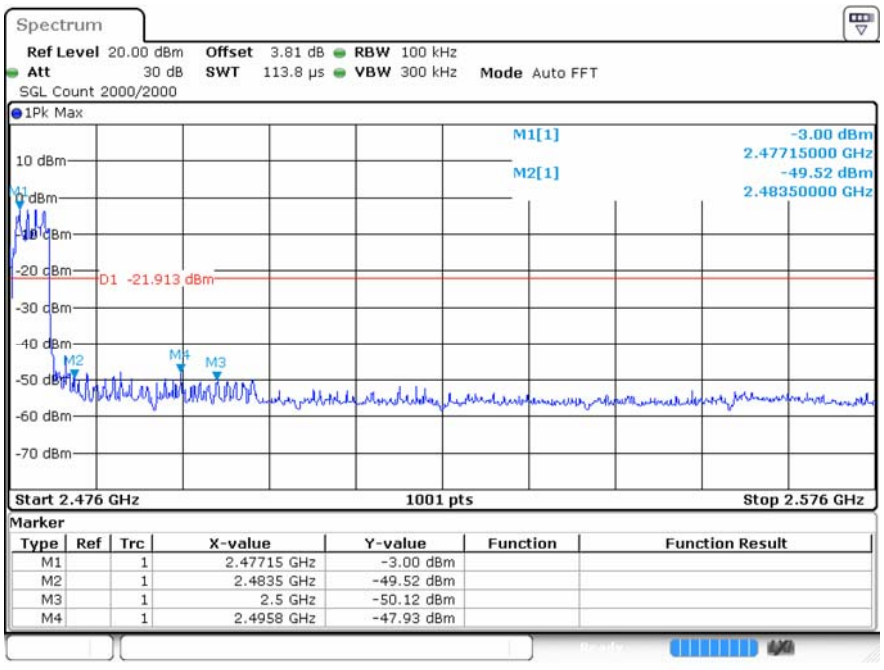
Ref	
GFSK/HCH/No Hop	

Ref.	
GFSK/HCH/Hop	

Ref	
π/4DQPSK/LCH/No Hop	

Ref	
π/4DQPSK/LCH/Hop	

Ref	
π/4DQPSK/HCH/No Hop	

Ref	
π/4DQPSK/HCH/Hop	

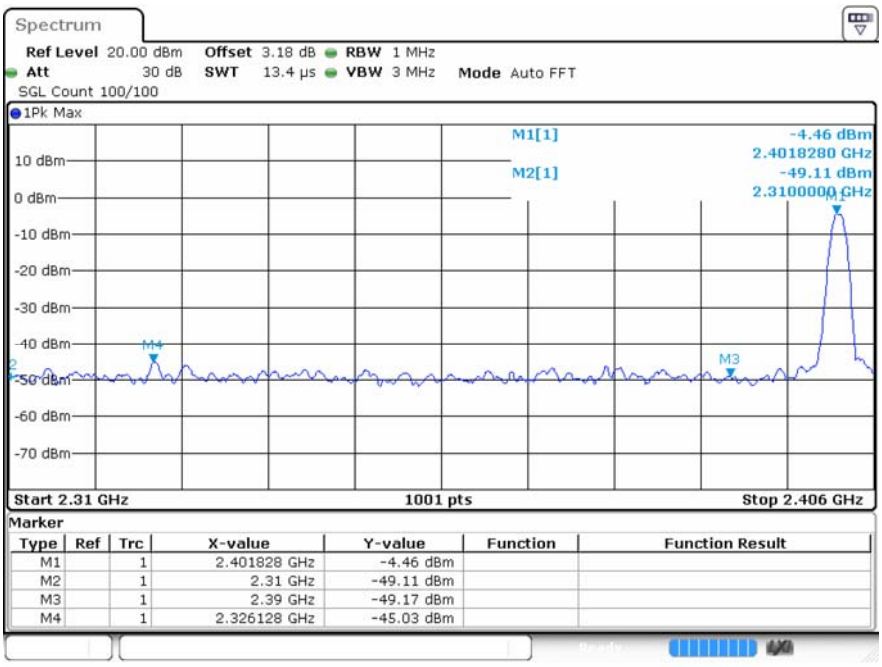
9 Restrict-band band-edge measurements

9.1 Test Result

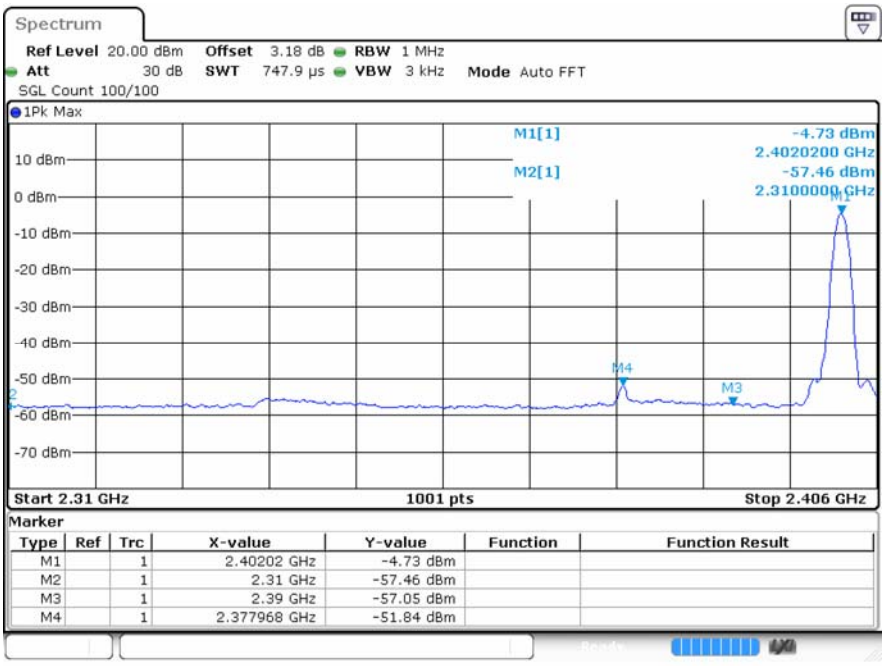
Test Mode	Hopping	Freq.	Power [dBm]	Gain	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-49.1	2	48.16	PEAK	74	Pass
	Off	2310.0	-57.46	2	39.8	AV	54	Pass
	Off	2326.128	-45.02	2	52.24	PEAK	74	Pass
	Off	2377.968	-51.83	2	45.43	AV	54	Pass
	Off	2390.0	-49.16	2	48.1	PEAK	74	Pass
	Off	2390.0	-57.05	2	40.21	AV	54	Pass
	Off	2483.5	-42.23	2	55.03	PEAK	74	Pass
	Off	2483.5	-47.07	2	50.19	AV	54	Pass
	Off	2483.512	-42.23	2	55.03	PEAK	74	Pass
	Off	2483.512	-47.07	2	50.19	AV	54	Pass
	Off	2500.0	-48.96	2	48.3	PEAK	74	Pass
	Off	2500.0	-55.29	2	41.97	AV	54	Pass
π/4DQPSK	Off	2310.0	-48.68	2	48.58	PEAK	74	Pass
	Off	2310.0	-56.98	2	40.28	AV	54	Pass
	Off	2377.776	-45.39	2	51.87	PEAK	74	Pass
	Off	2377.872	-51.73	2	45.53	AV	54	Pass
	Off	2390.0	-50.45	2	46.81	PEAK	74	Pass
	Off	2390.0	-56.83	2	40.43	AV	54	Pass
	Off	2483.5	-42.73	2	54.53	PEAK	74	Pass
	Off	2483.5	-49.78	2	47.48	AV	54	Pass
	Off	2483.512	-42.73	2	54.53	PEAK	74	Pass
	Off	2483.512	-49.78	2	47.48	AV	54	Pass
	Off	2500.0	-46.62	2	50.64	PEAK	74	Pass
	Off	2500.0	-55.09	2	42.17	AV	54	Pass

9.2 Test Graphs

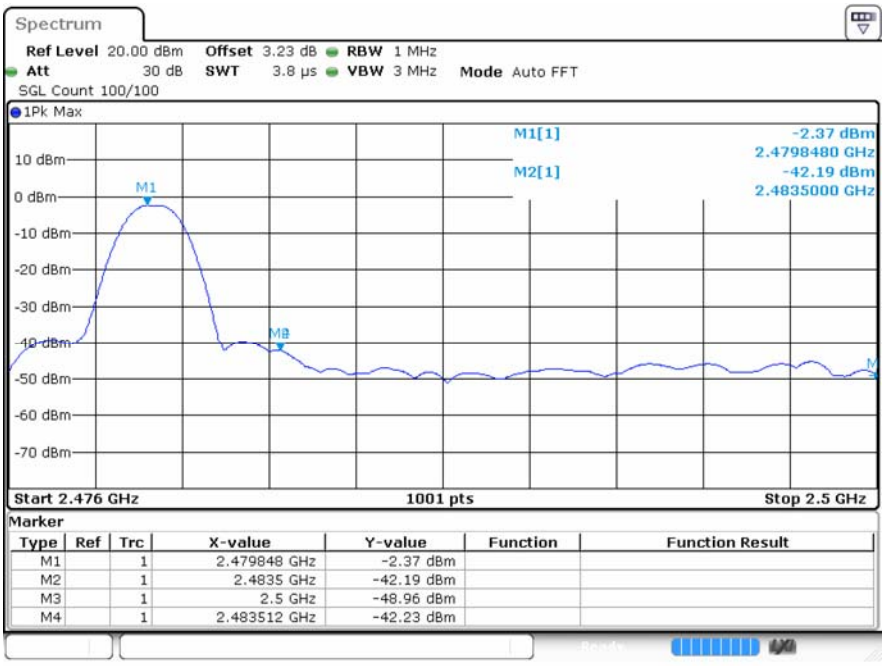
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (Low Channel)



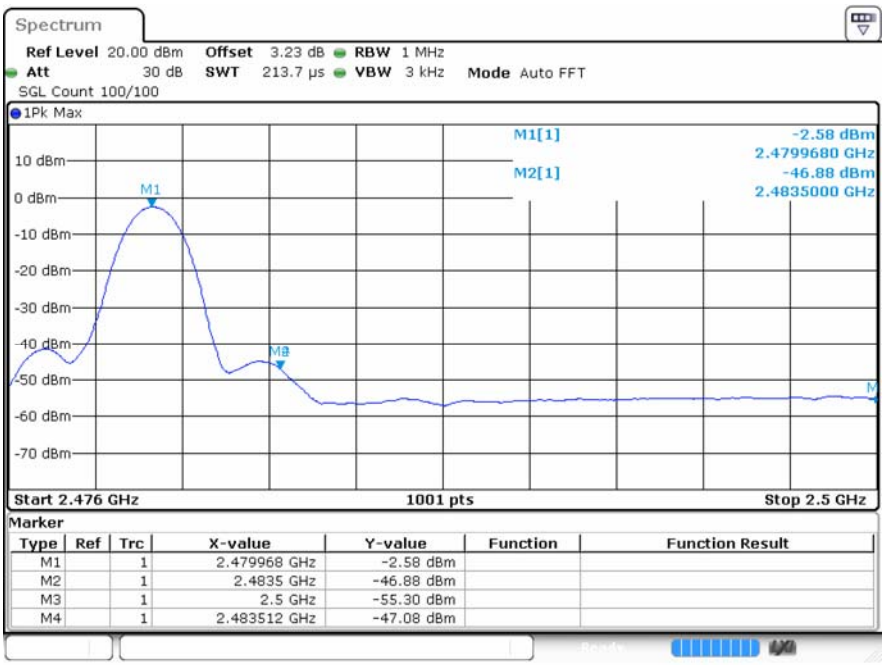
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (Low Channel)



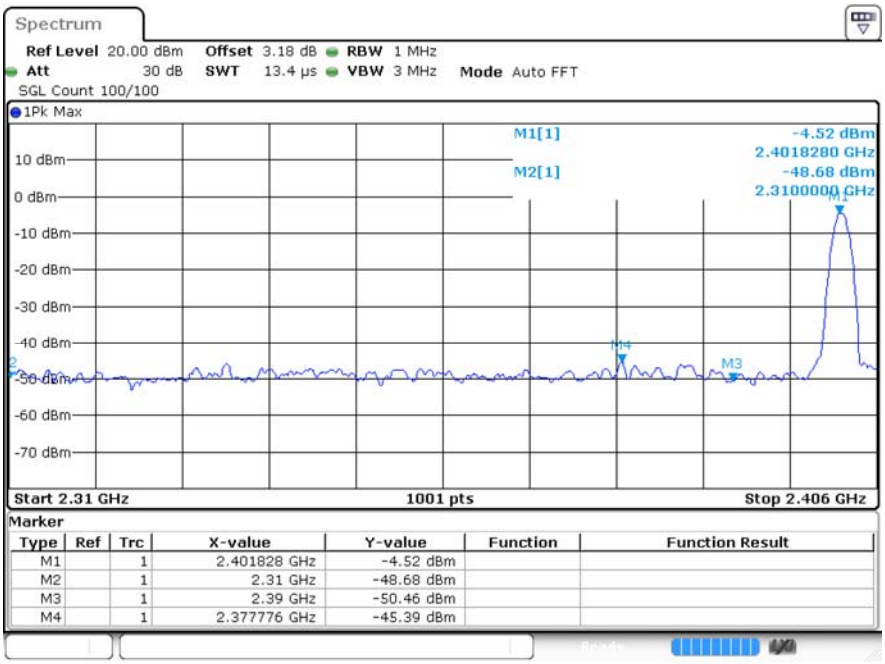
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (High Channel)



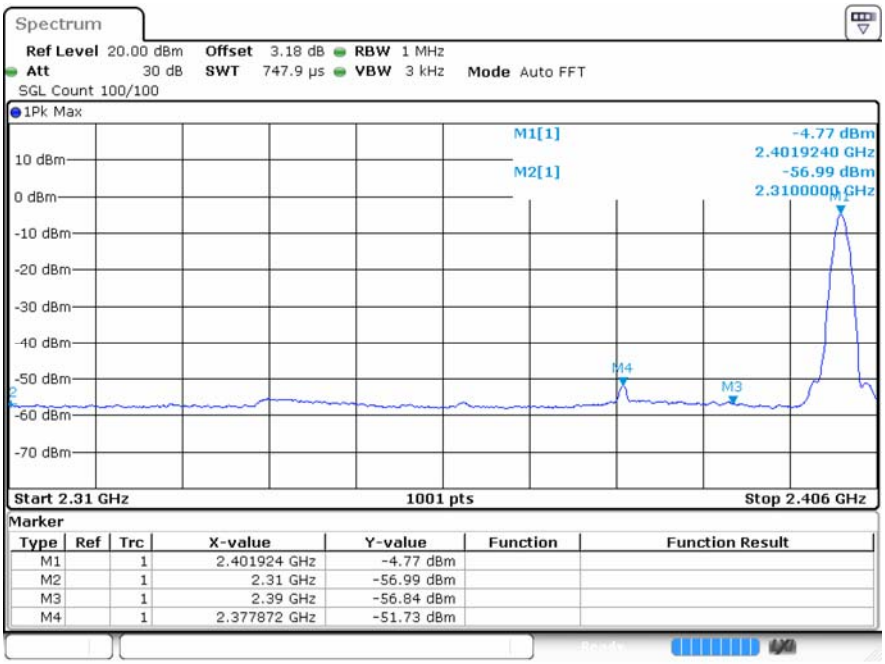
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (High Channel)



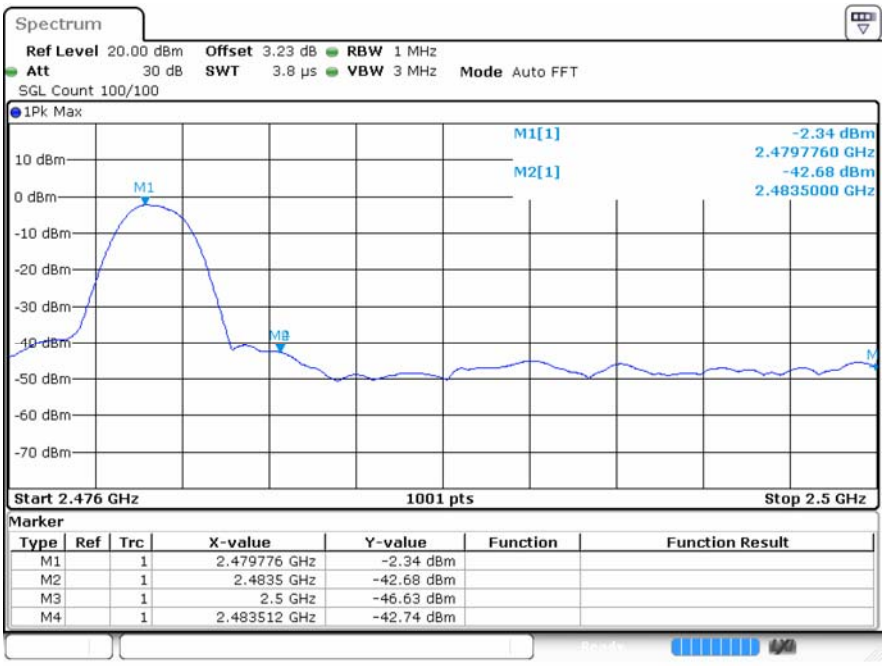
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (Low Channel)



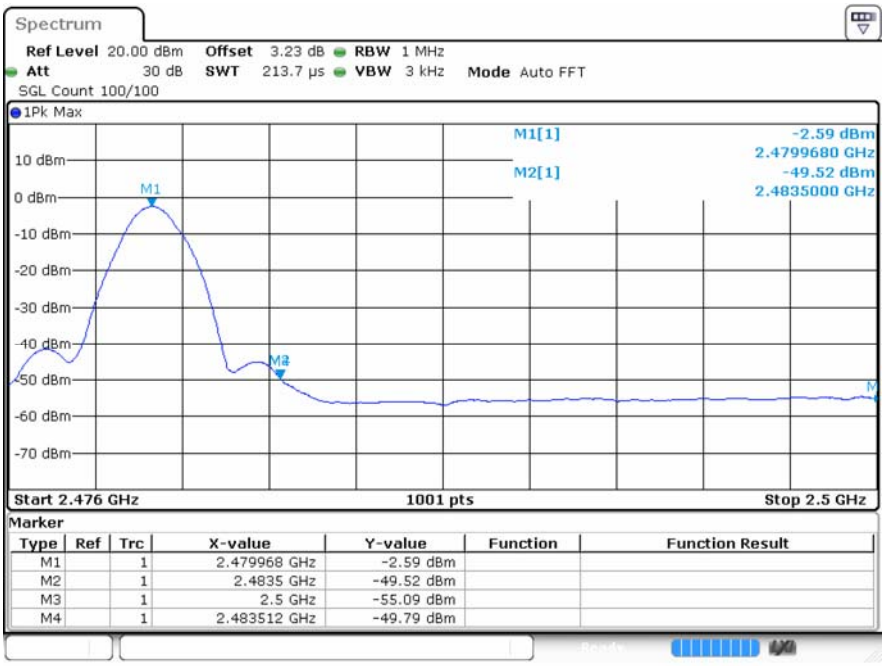
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (Low Channel)



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---