Appendix A

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

Product Name: Wireless Earphone

Trade Mark: OSCAL

Test Model: HiBuds 6

Environmental Conditions

Temperature:	24.9℃
Relative Humidity:	52.3%
ATM Pressure:	101Kpa
Test Engineer:	Emiya lin
Supervised by:	Simba Haung

Contents

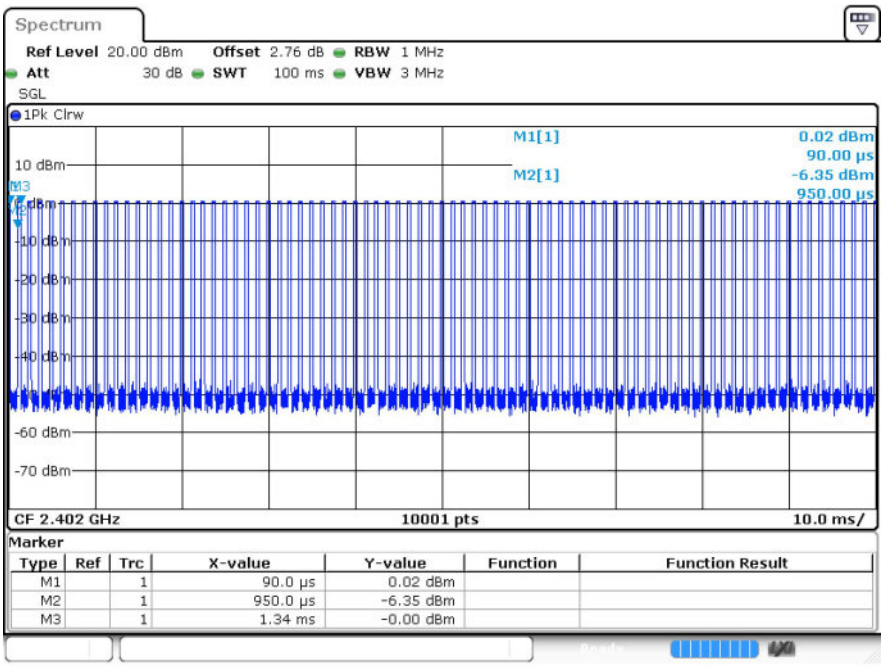
1 Duty Cycle

1.1 Test Result

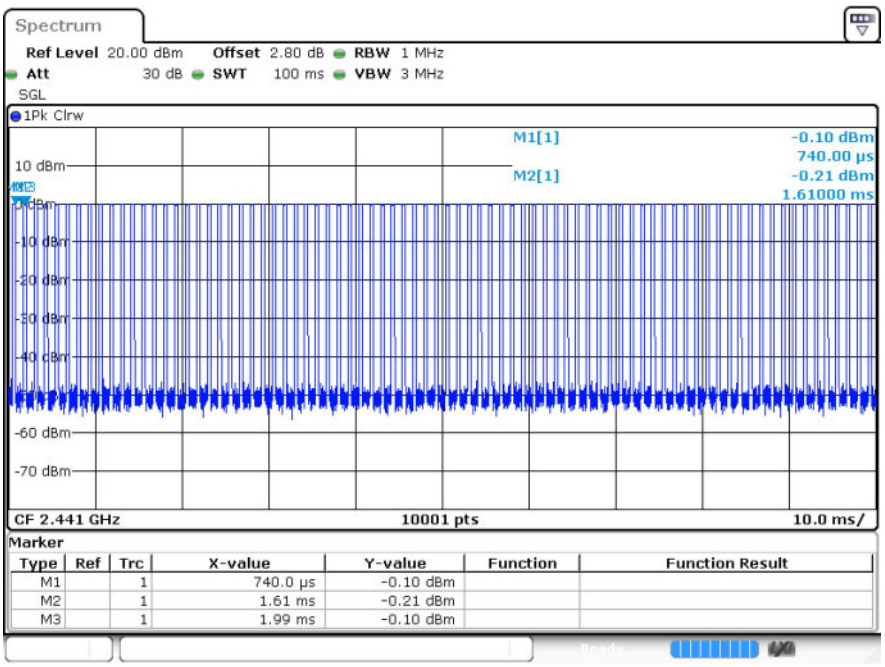
Mode	Frequency (MHz)	Duty Cycle (%)	Correction Factor	1/T (kHz)
1-DH1	2402	32.01	4.95	2.56
1-DH1	2441	31.2	5.06	2.63
1-DH1	2480	32.01	4.95	2.56
2-DH1	2402	32	4.95	2.56
2-DH1	2441	32.8	4.84	2.5
2-DH1	2480	32	4.95	2.56

1.2 Test Graphs

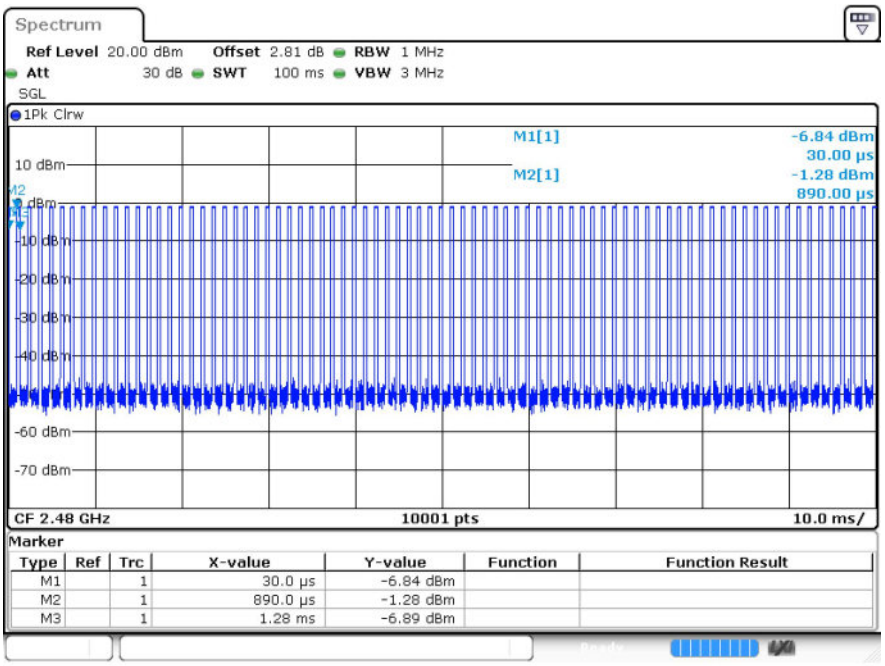
Test Graphs
1-DH1 2402MHz



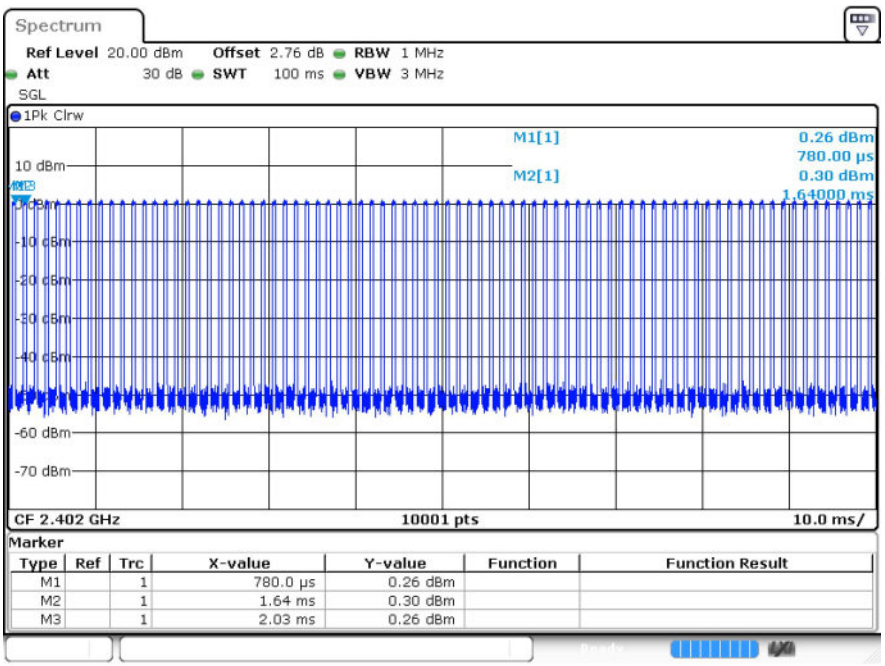
1-DH1 2441MHz



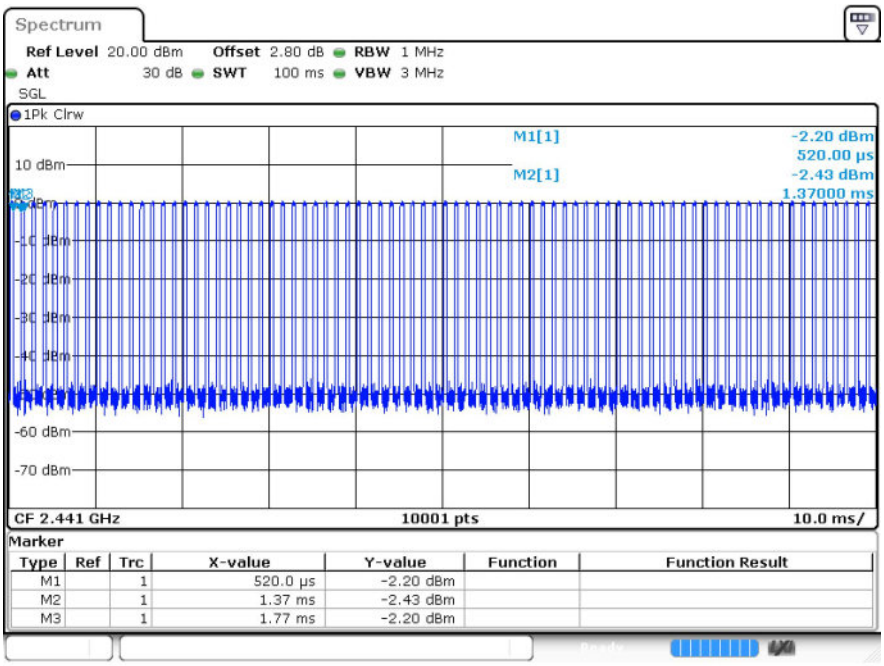
1-DH1 2480MHz



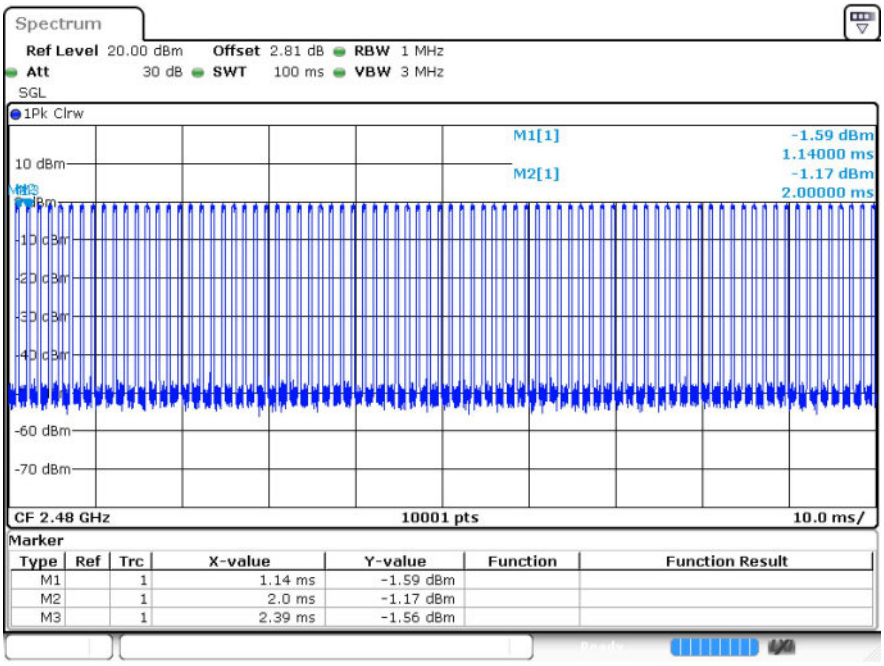
2-DH1 2402MHz



2-DH1 2441MHz



2-DH1 2480MHz

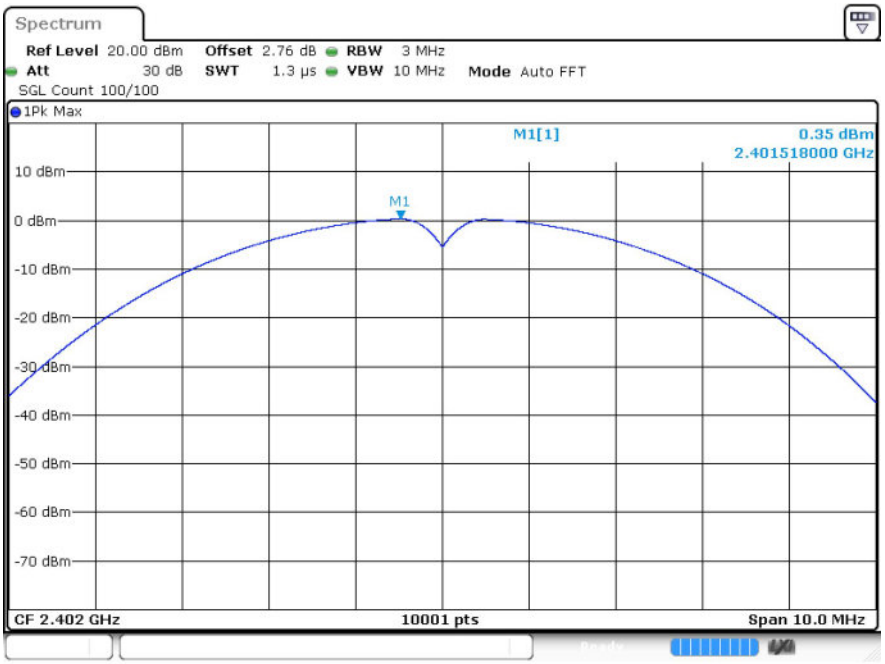
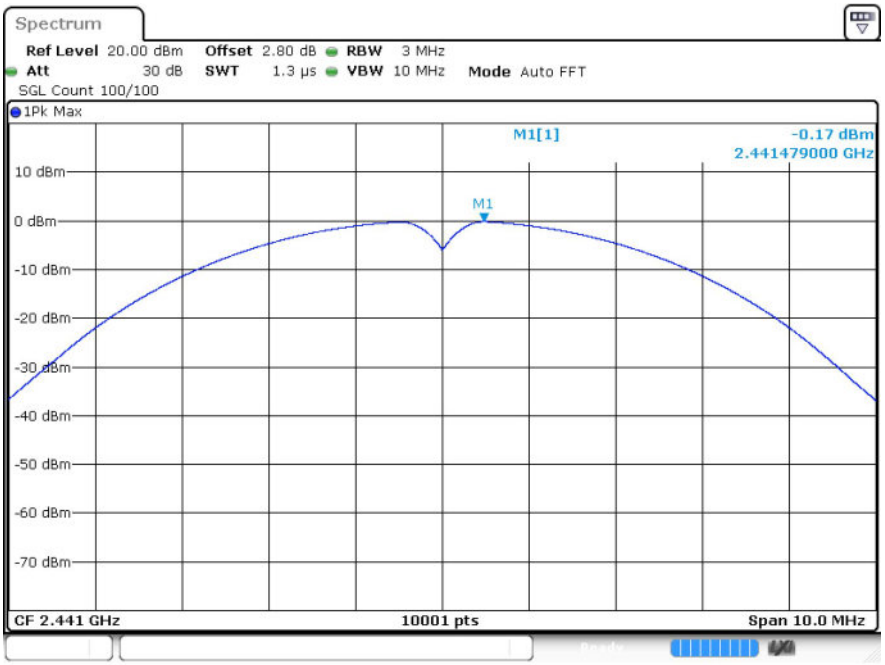


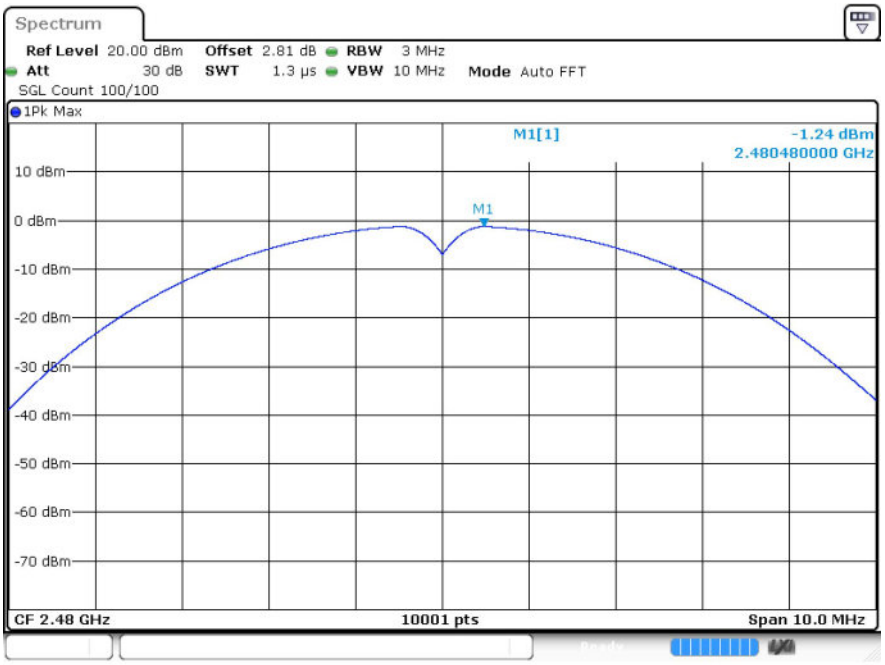
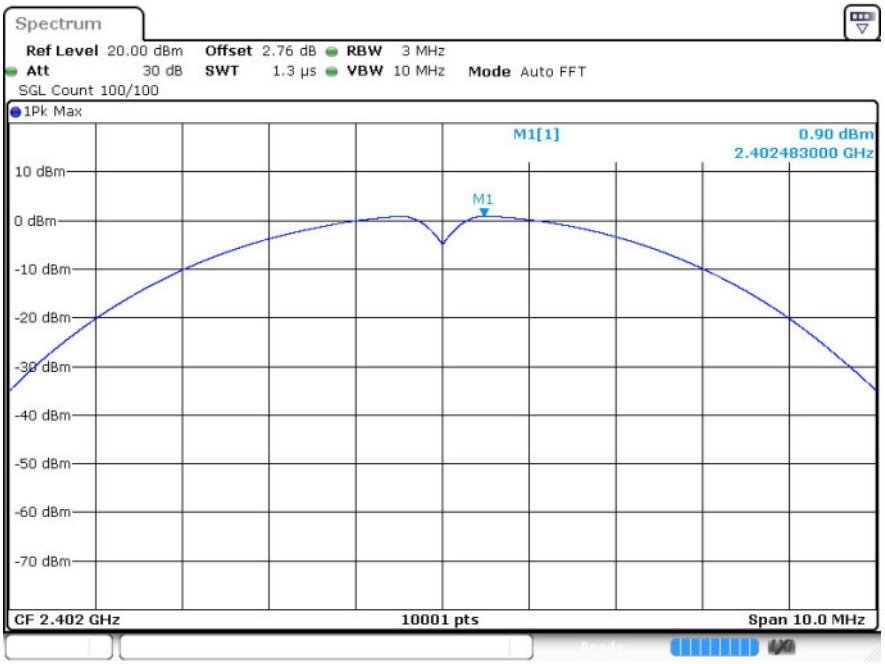
2 Maximum Conducted Peak Output Power

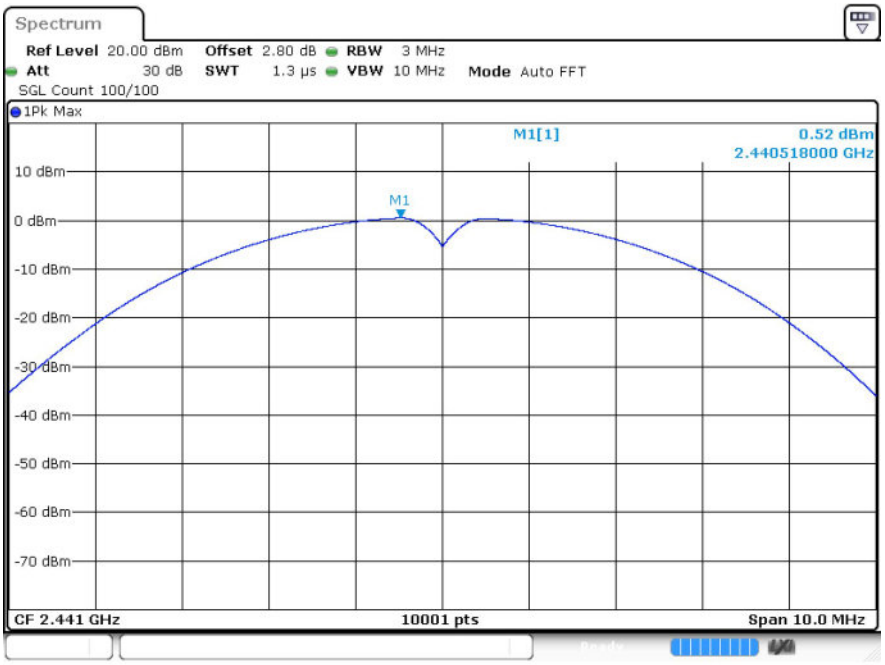
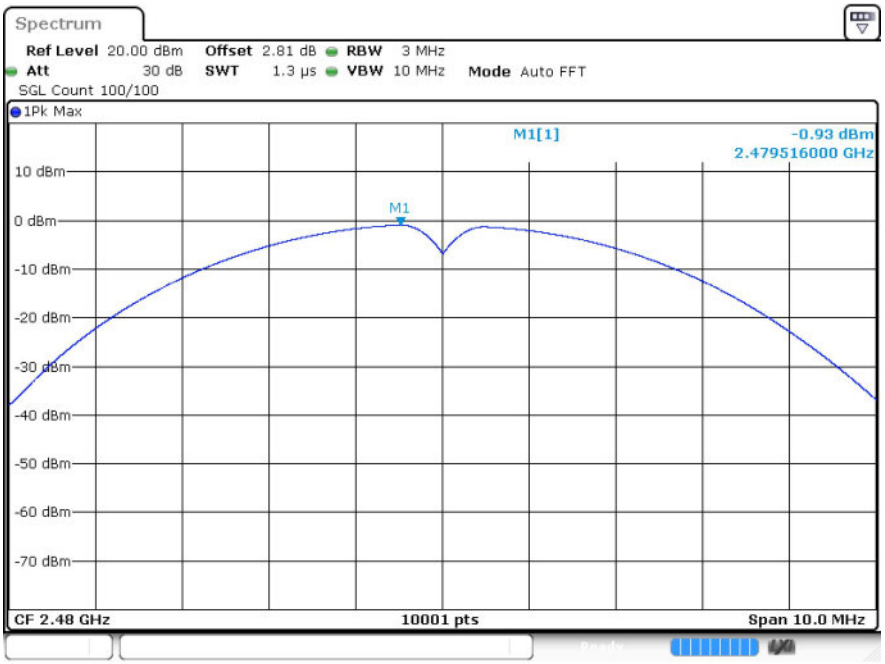
2.1 Test Result

Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	0.35	21	Pass
	MCH	-0.17	21	Pass
	HCH	-1.24	21	Pass
π/4DQPSK	LCH	0.9	21	Pass
	MCH	0.52	21	Pass
	HCH	-0.93	21	Pass

2.2 Test Graphs

Test Graphs	
GFSK/LCH	
GFSK/MCH	

GFSK/HCH	
π/4DQPSK/LCH	

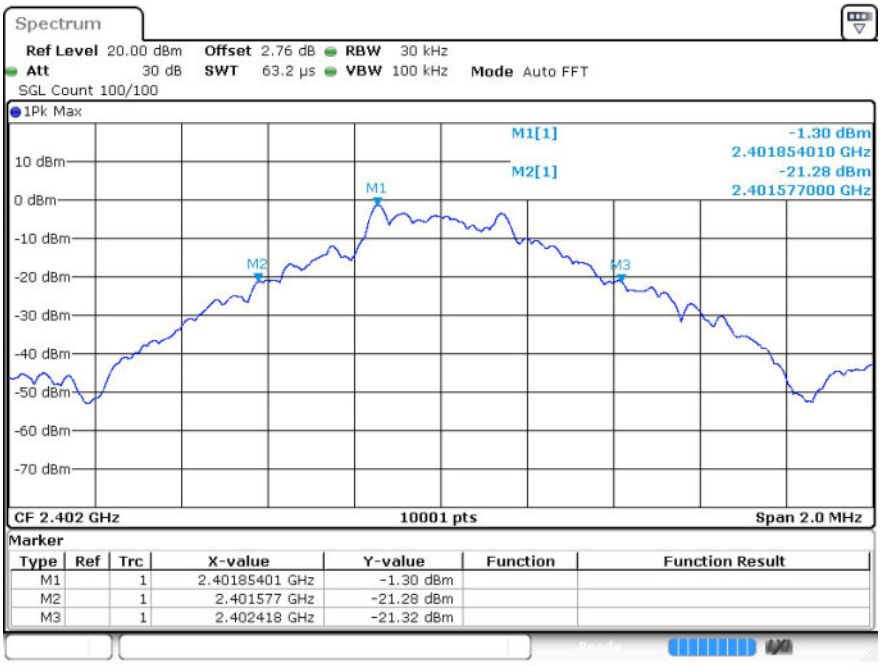
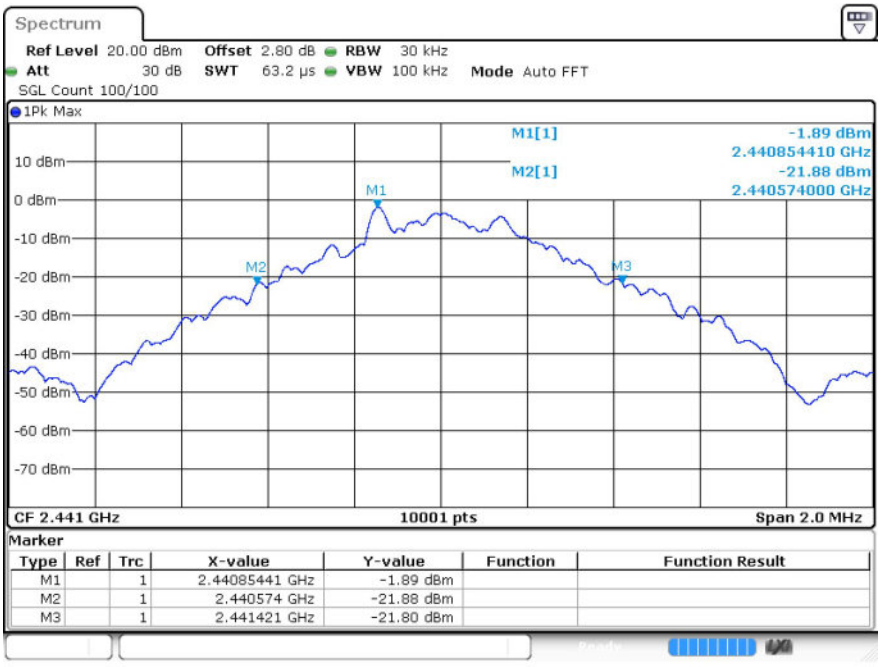
π/4DQPSK/MCH	
π/4DQPSK/HCH	

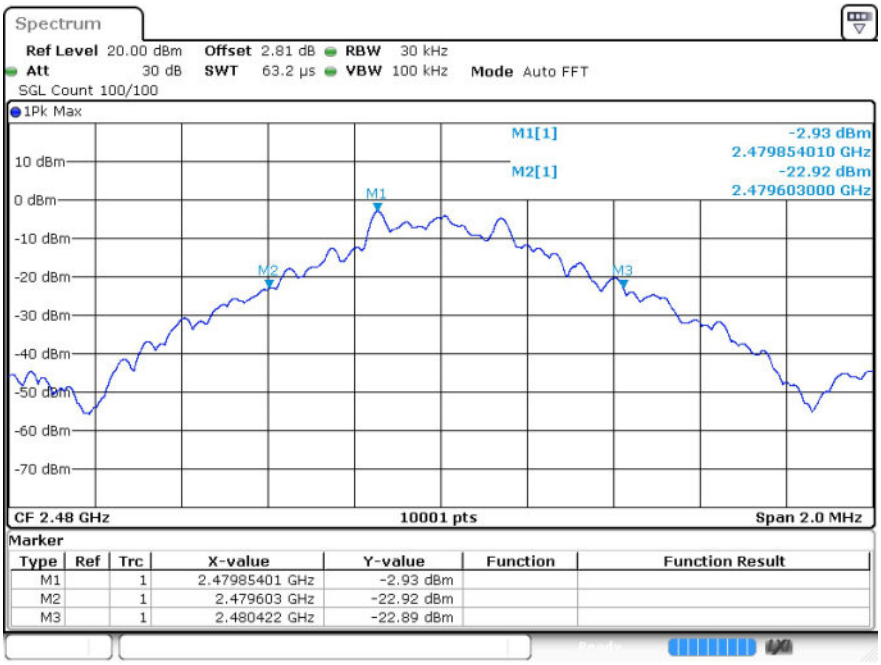
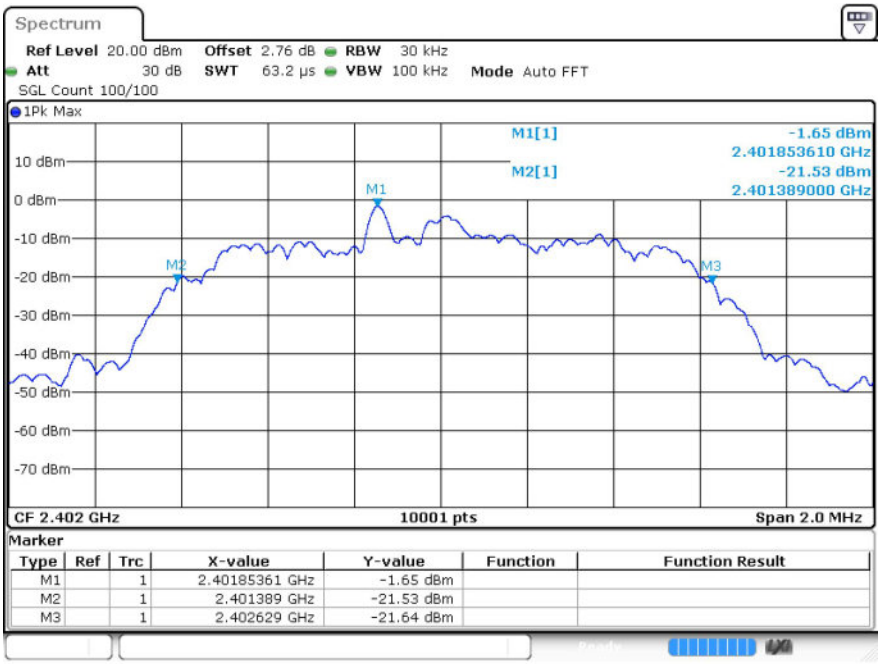
3 20dB Bandwidth

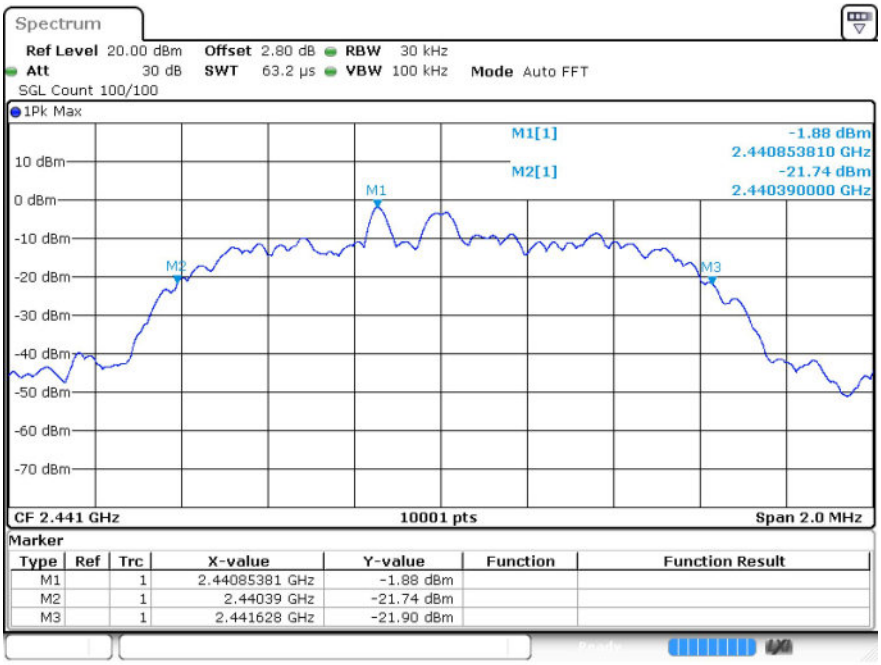
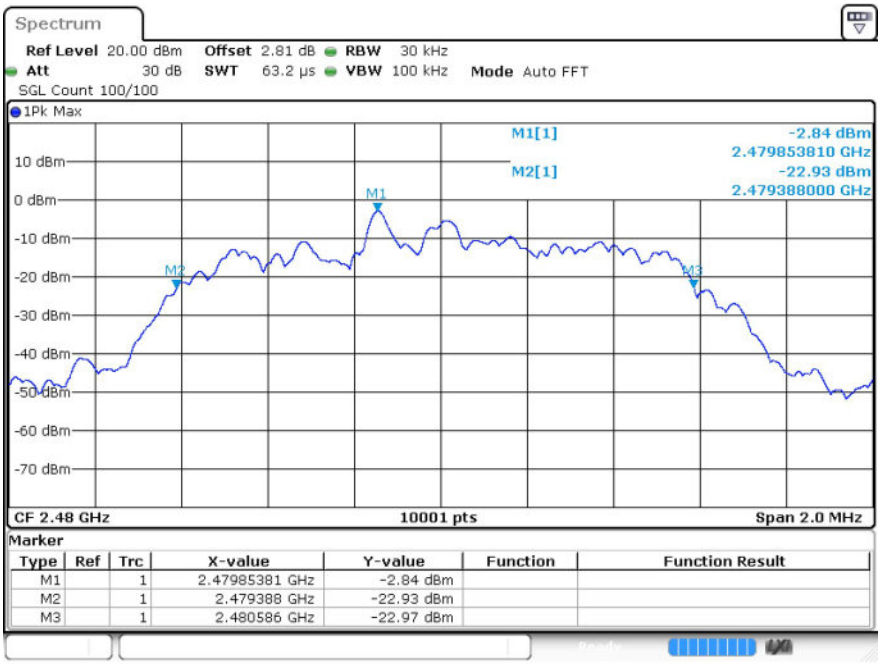
3.1 Test Result

Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.841	Not Specified	Pass
	MCH	0.847	Not Specified	Pass
	HCH	0.819	Not Specified	Pass
π/4DQPSK	LCH	1.24	Not Specified	Pass
	MCH	1.238	Not Specified	Pass
	HCH	1.197	Not Specified	Pass

3.2 Test Graphs

Test Graphs	
GFSK/LCH	
GFSK/MCH	

GFSK/HCH	
π/4DQPSK/LCH	

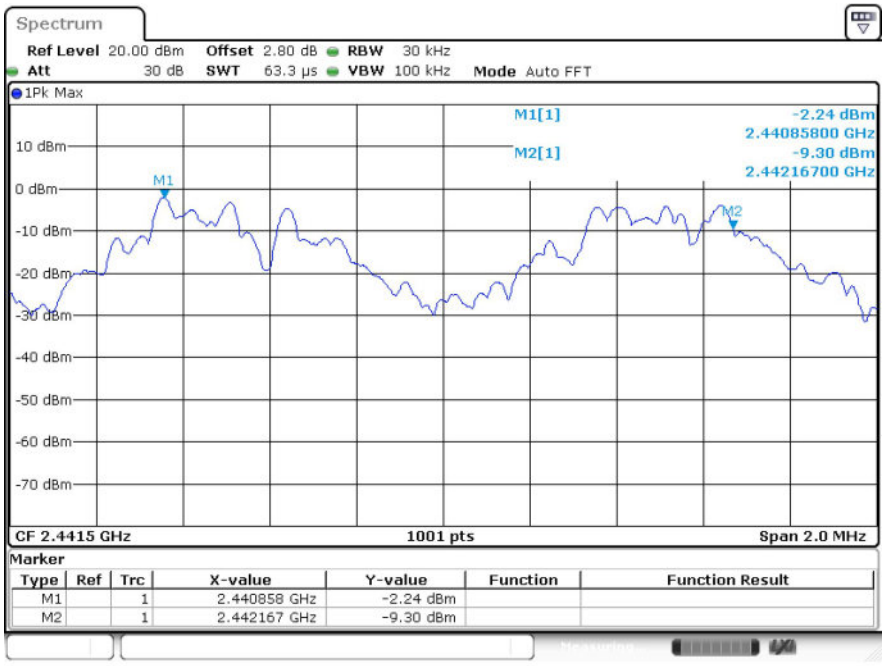
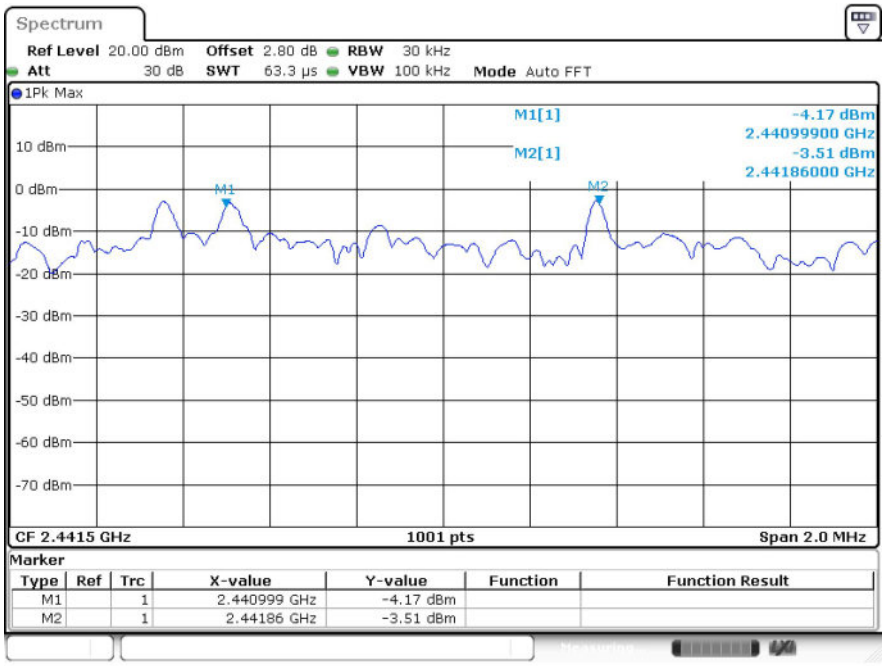
π/4DQPSK/MCH	
π/4DQPSK/HCH	

4 Carrier Frequency Separation

4.1 Test Result

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	MCH	1.309	0.565	Pass
π/4DQPSK	MCH	0.861	0.825	Pass

4.2 Test Graphs

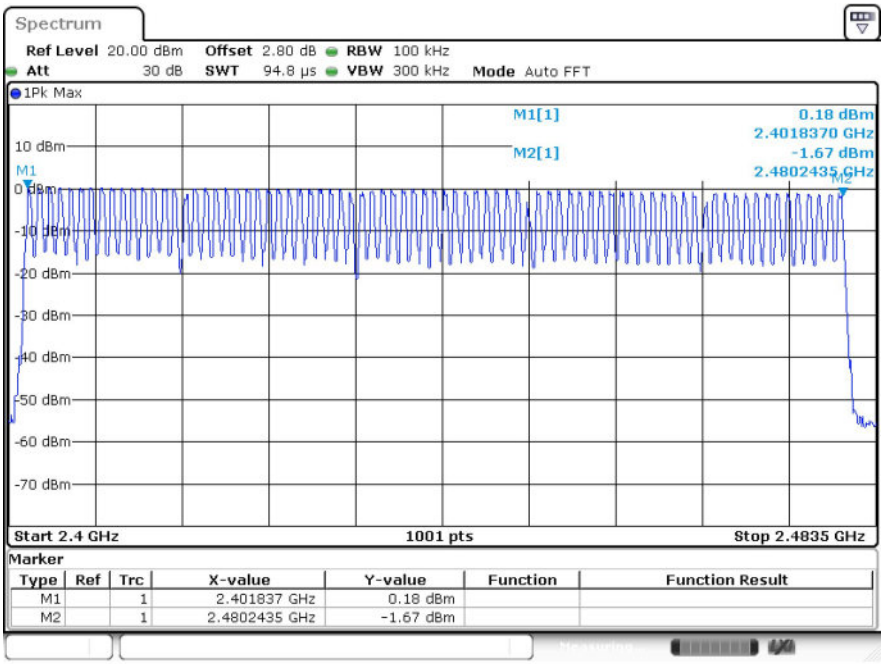
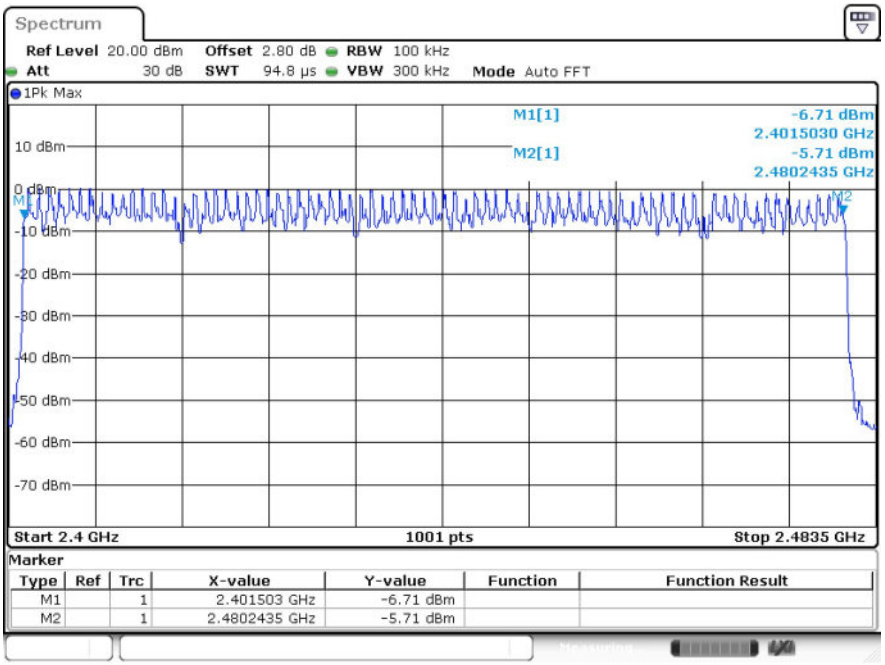
Test Graphs	
GFSK/MCH	
π/4DQPSK/MCH	

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

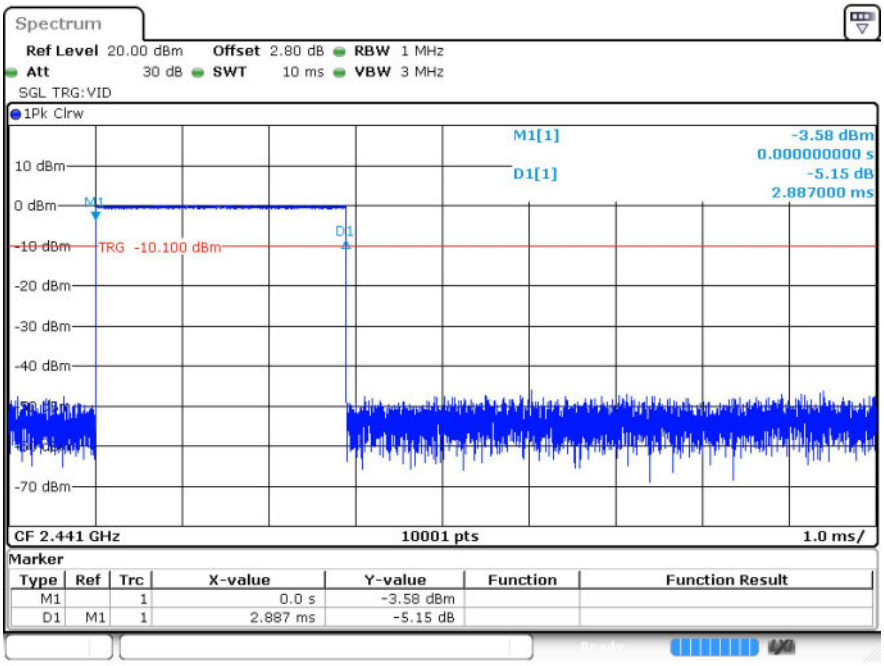
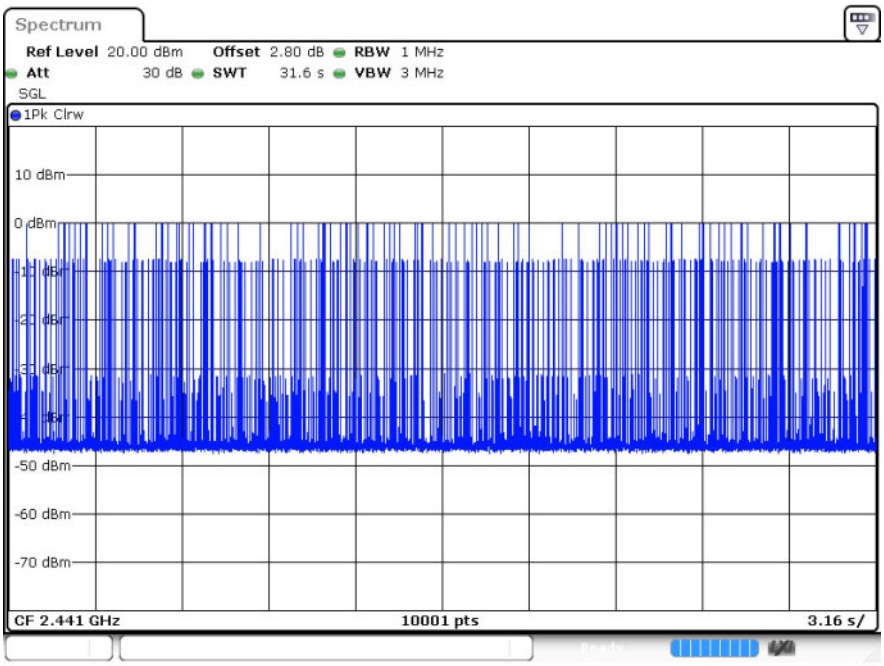
Test Graphs	
GFSK/Hop	
π/4DQPSK/Hop	

6 Dwell Time

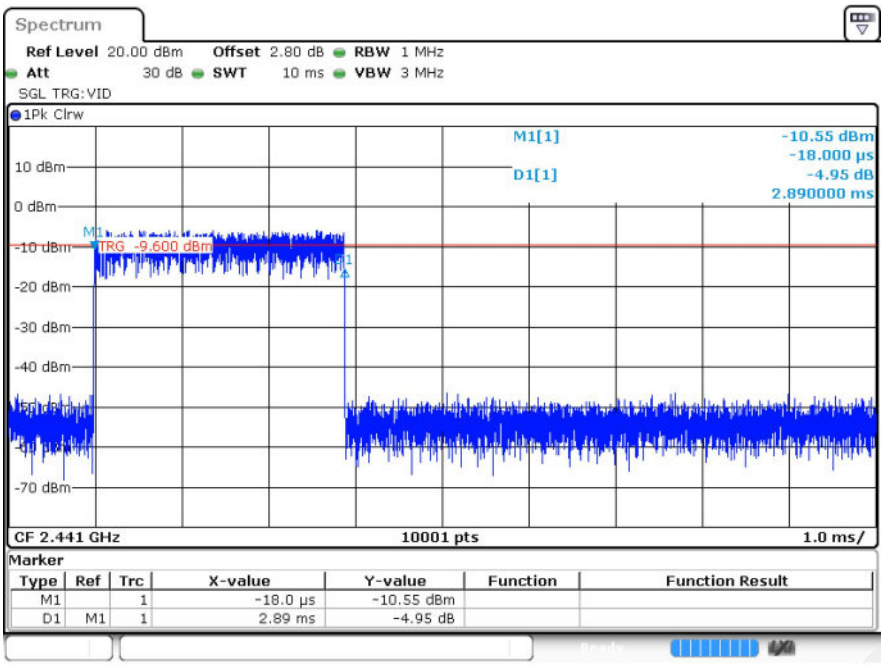
6.1 Test Result

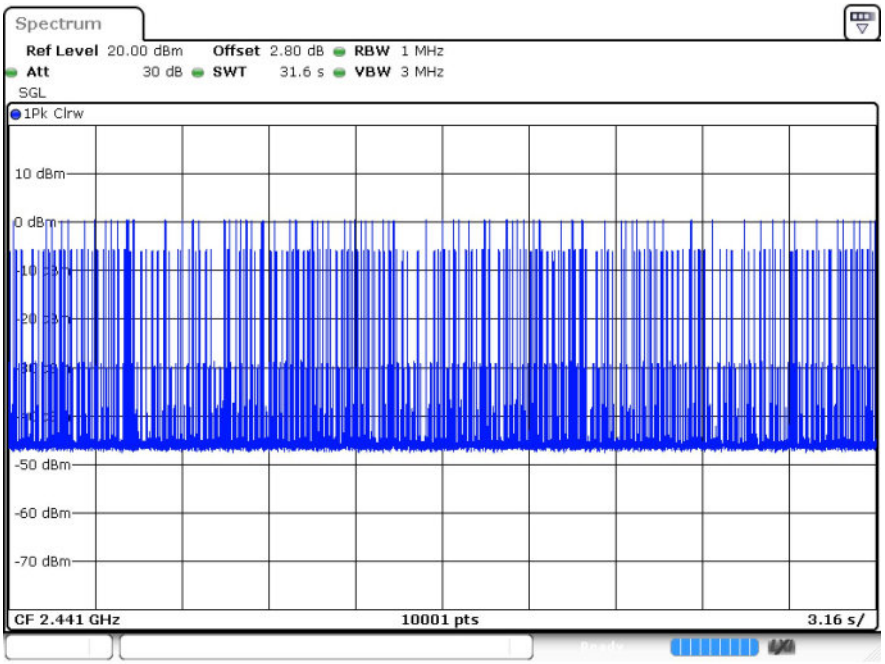
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[ms]	Limit [s]	Verdict
GFSK	DH5	MCH	2.887	104	300.248	0.4	Pass
π/4DQPSK	2DH5	MCH	2.89	91	262.99	0.4	Pass

6.2 Test Graphs

Test Graphs	
GFSK_DH5/MCH	 

π/4DQPSK
_2DH5/MCH



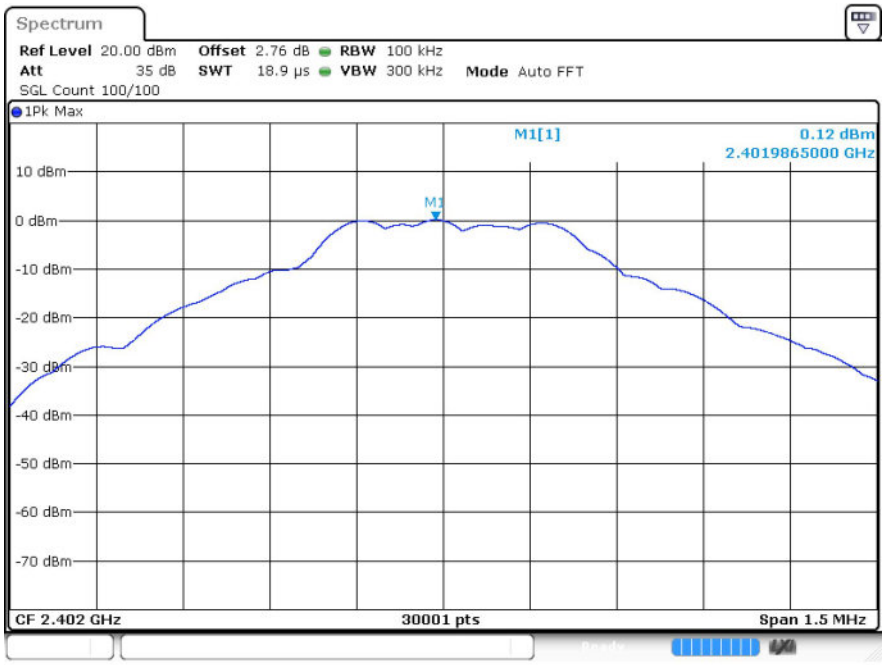
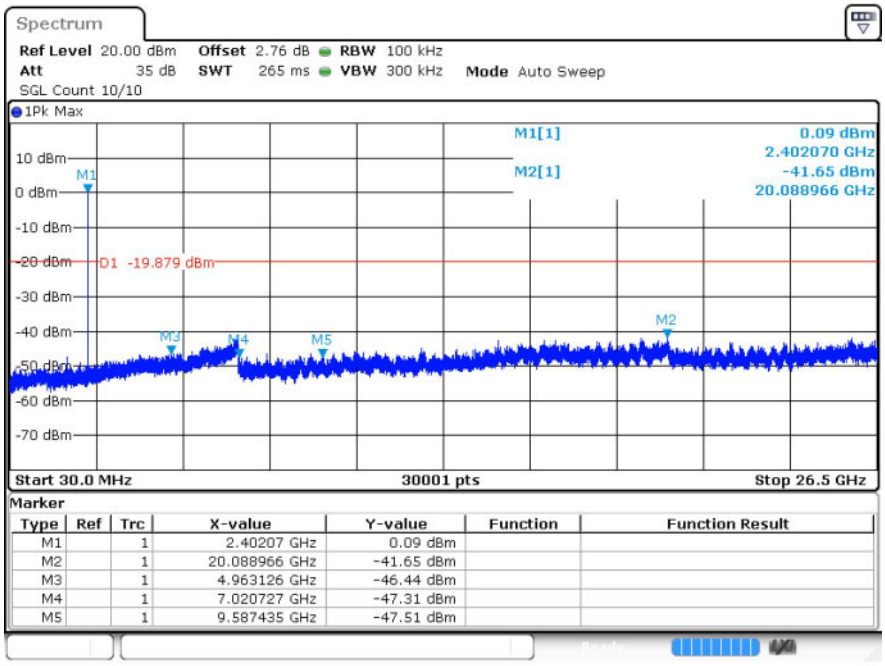


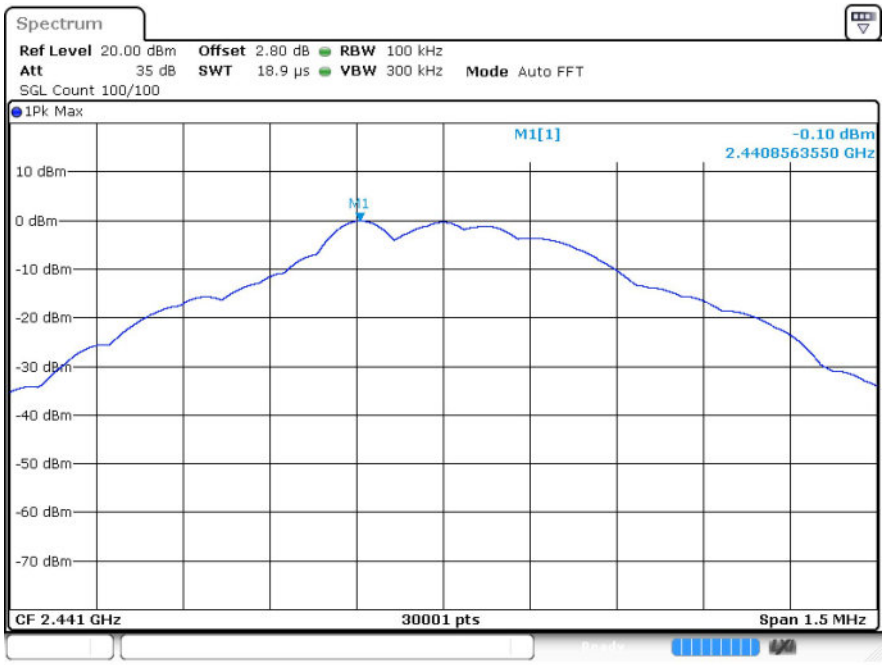
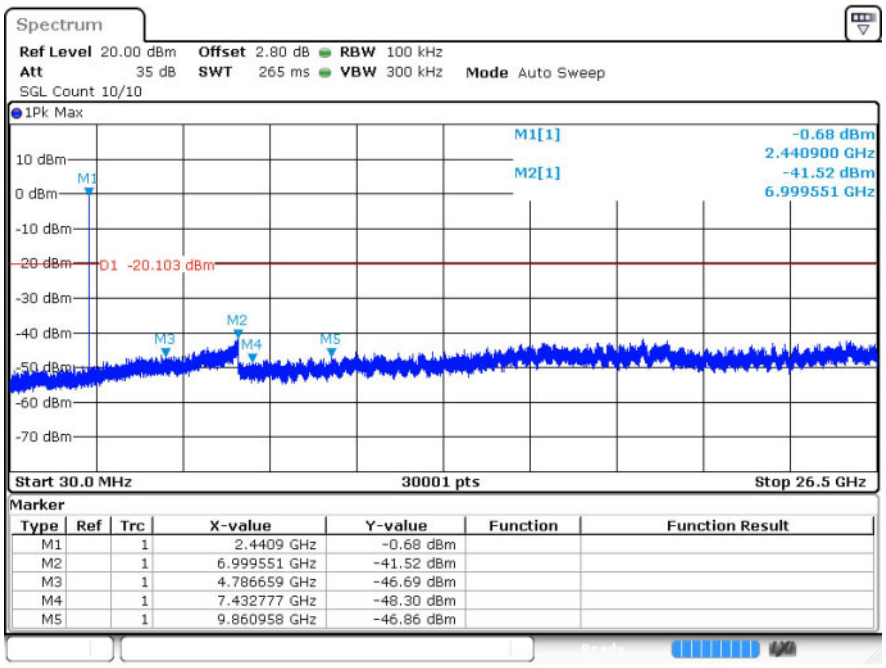
7 RF Conducted Spurious Emissions

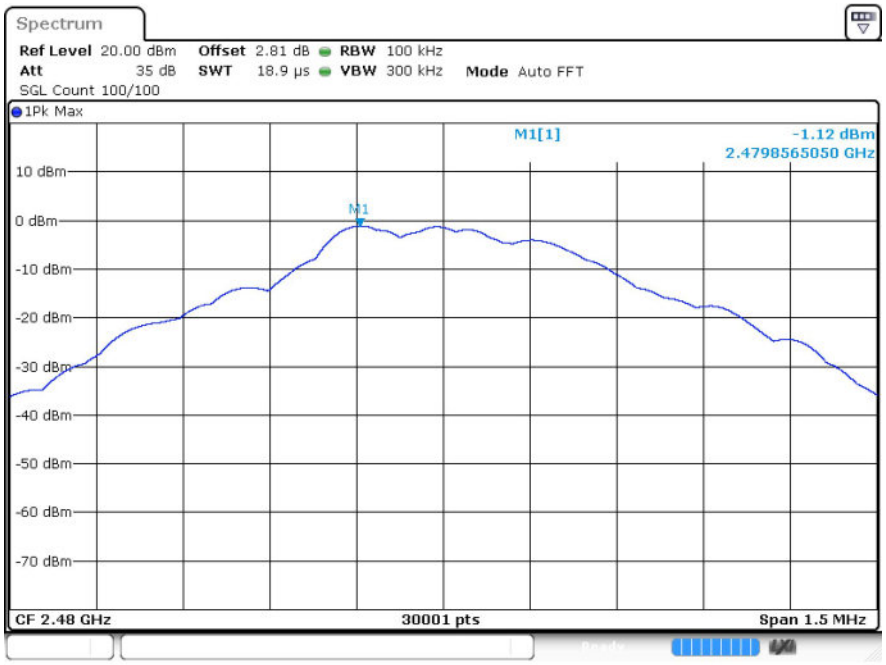
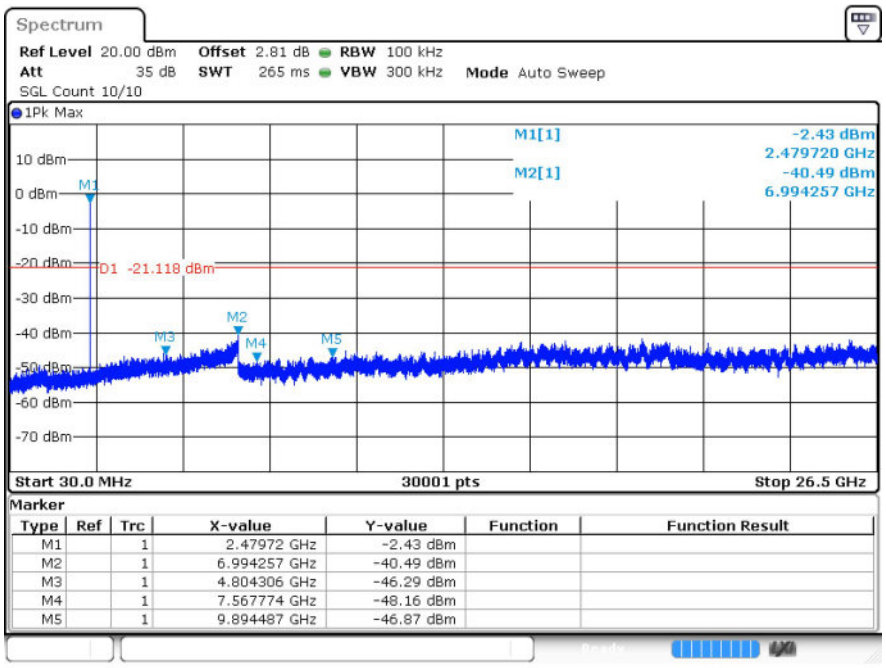
7.1 Test Result

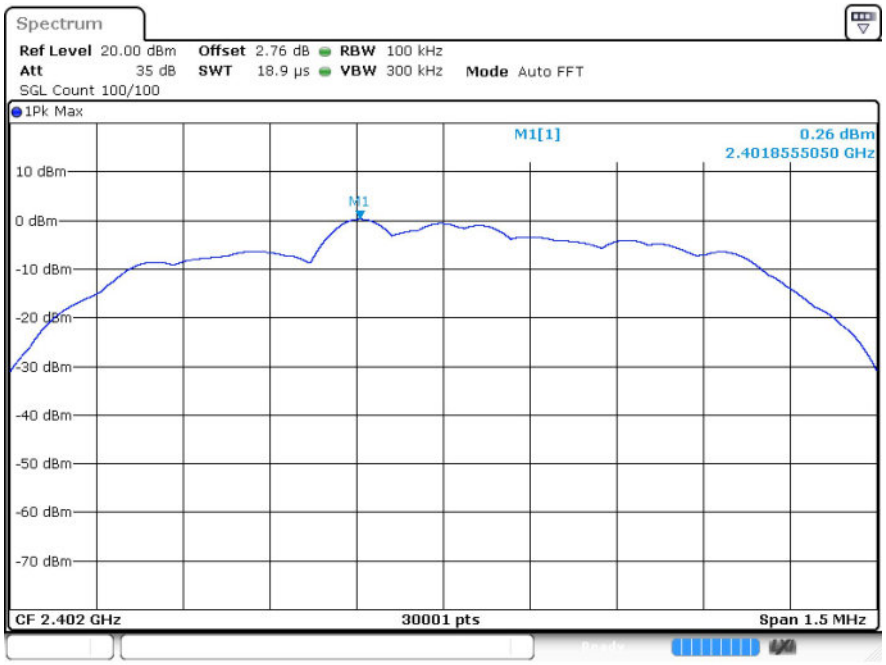
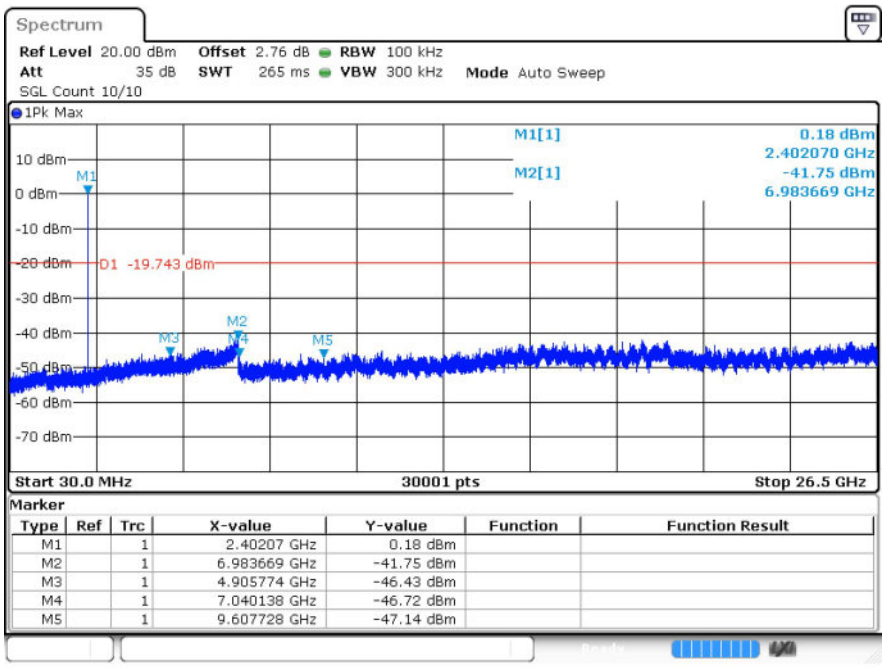
Mode	Channel	Max. Level [dBc]	Limit [dBc]	Verdict
GFSK	LCH	-41.77	-20	Pass
	MCH	-41.42	-20	Pass
	HCH	-39.37	-20	Pass
π/4DQPSK	LCH	-42.01	-20	Pass
	MCH	-40.95	-20	Pass
	HCH	-38.45	-20	Pass

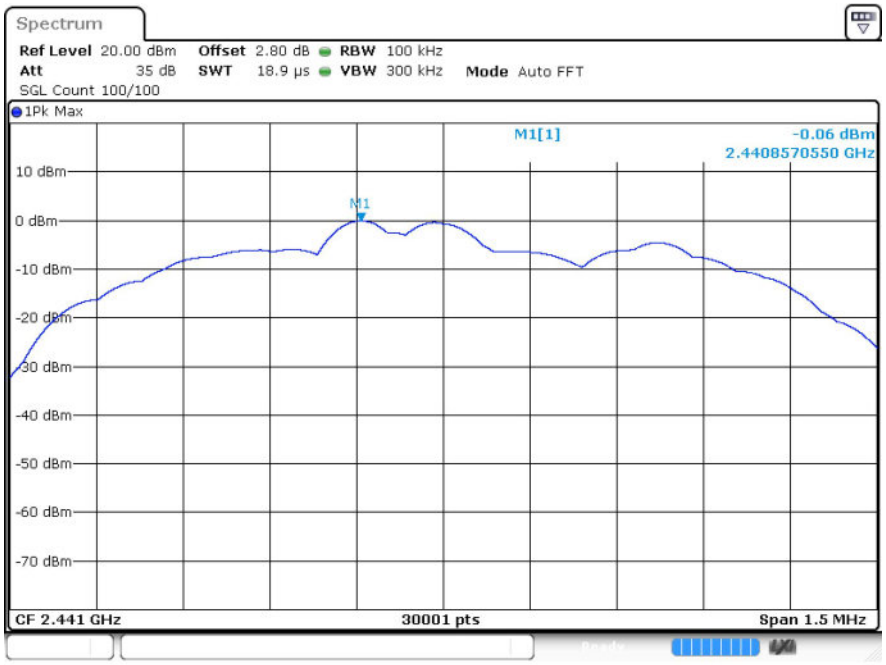
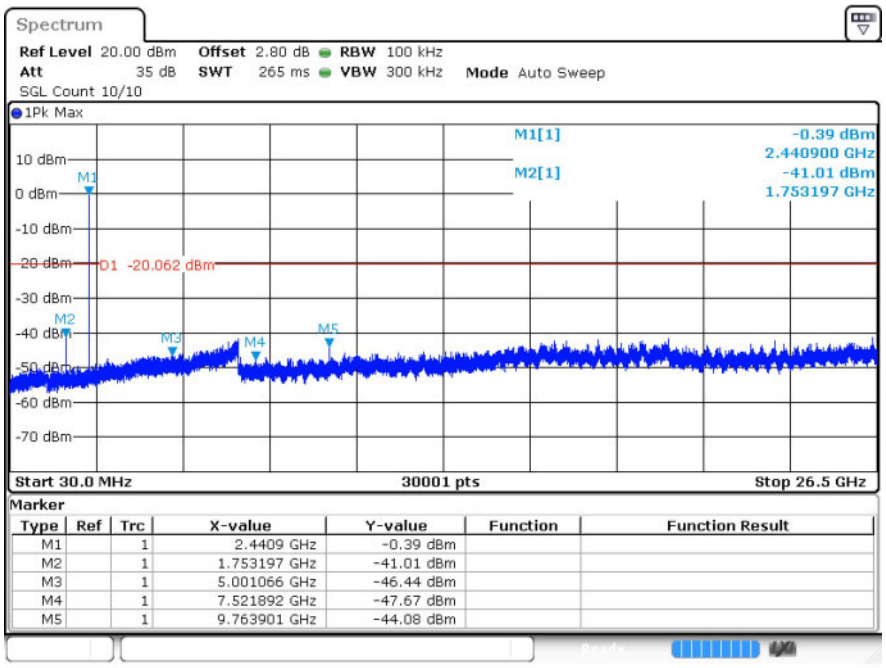
7.2 Test Graphs

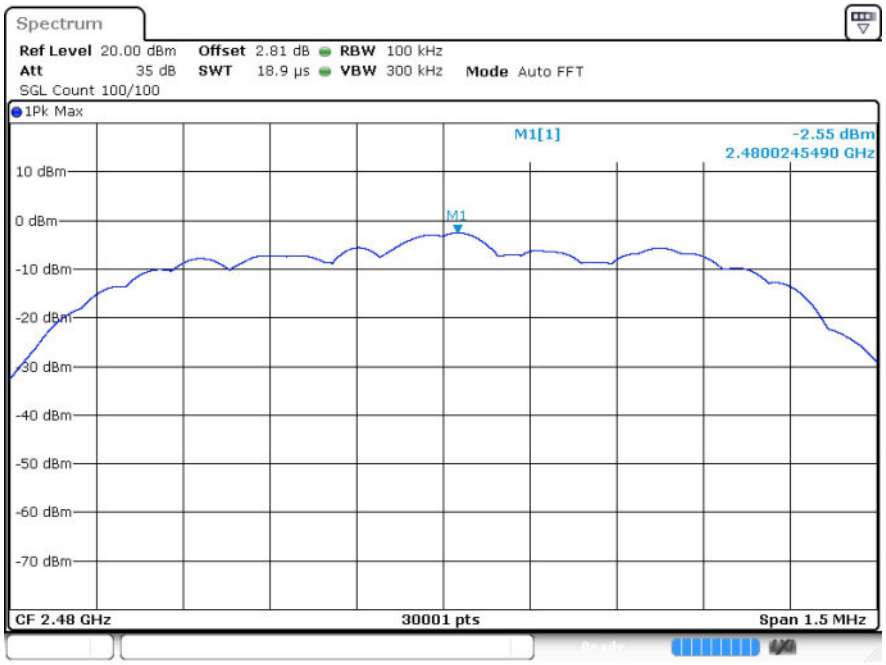
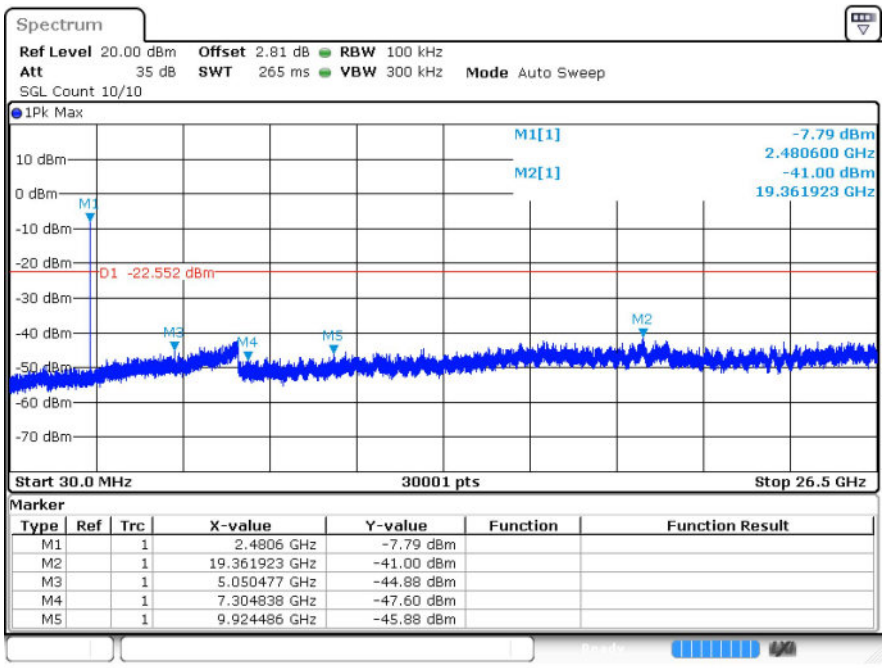
GFSK_LCH_Graphs	
Pref	
Puw	

GFSK_MCH_Graphs	
Pref	
Puw	 Marker Type | Ref | Trc | X-value | Y-value | Function | Function Result M1 | 1 | 2.4409 GHz | -0.68 dBm M2 | 1 | 6.999551 GHz | -41.52 dBm M3 | 1 | 4.786659 GHz | -46.69 dBm M4 | 1 | 7.432777 GHz | -48.30 dBm M5 | 1 | 9.860958 GHz | -46.86 dBm

GFSK_HCH_Graphs	
Pref	
Puw	

π/4DQPSK_LCH_Graphs	
Pref	
Puw	

π/4DQPSK_MCH_Graphs	
Pref	
Puw	

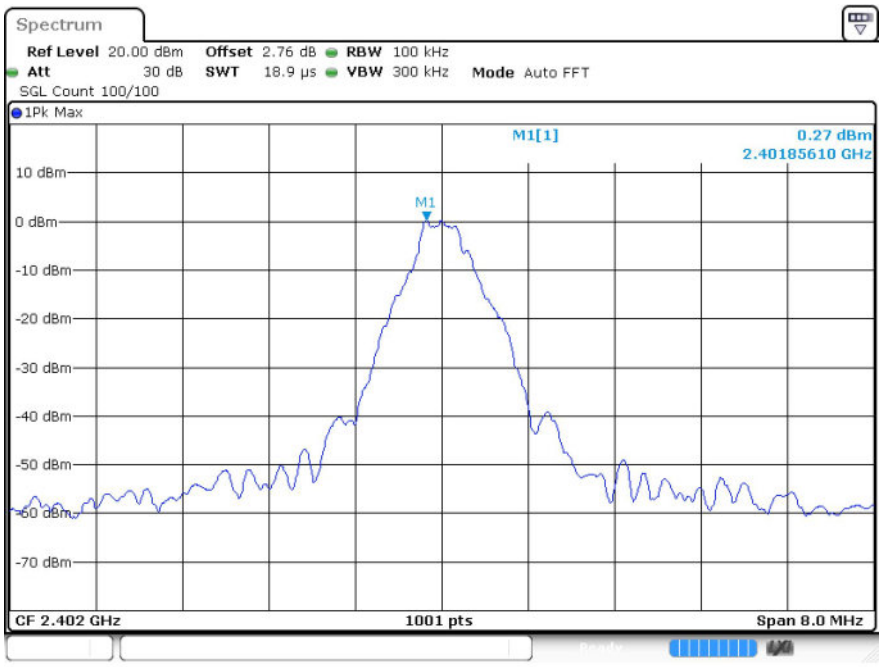
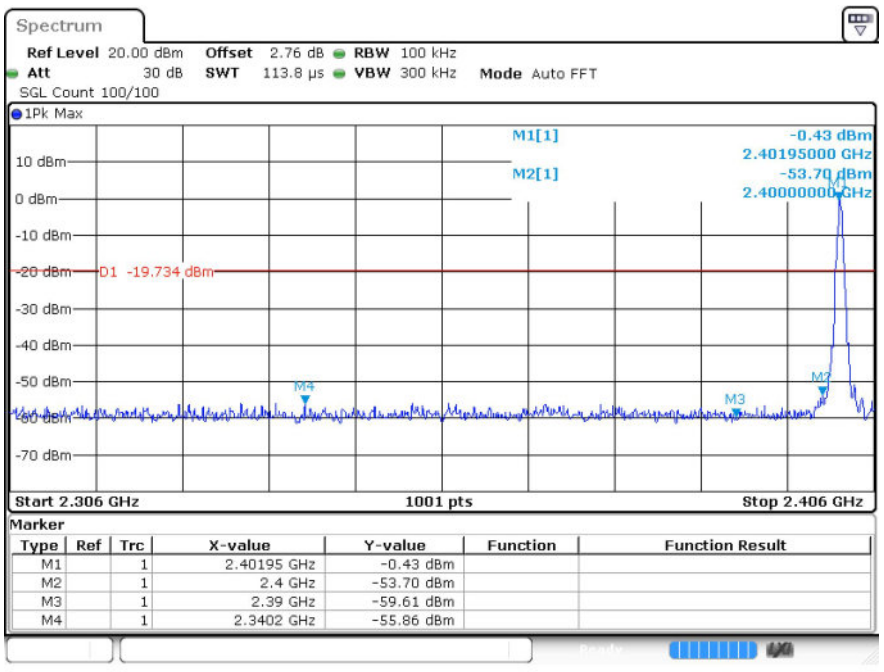
π/4DQPSK_HCH_Graphs	
Pref	
Puw	

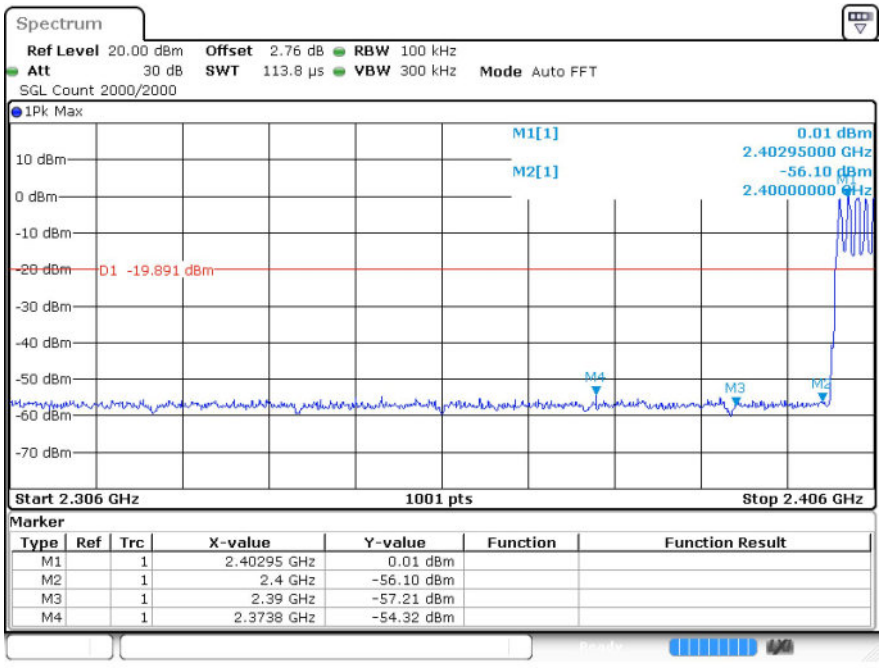
8 Band-edge for RF Conducted Emissions

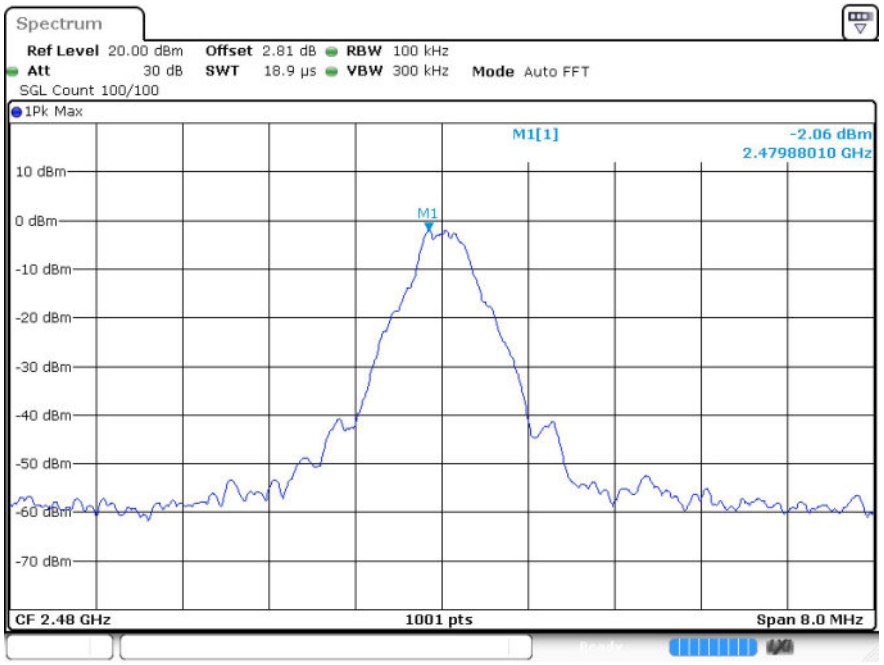
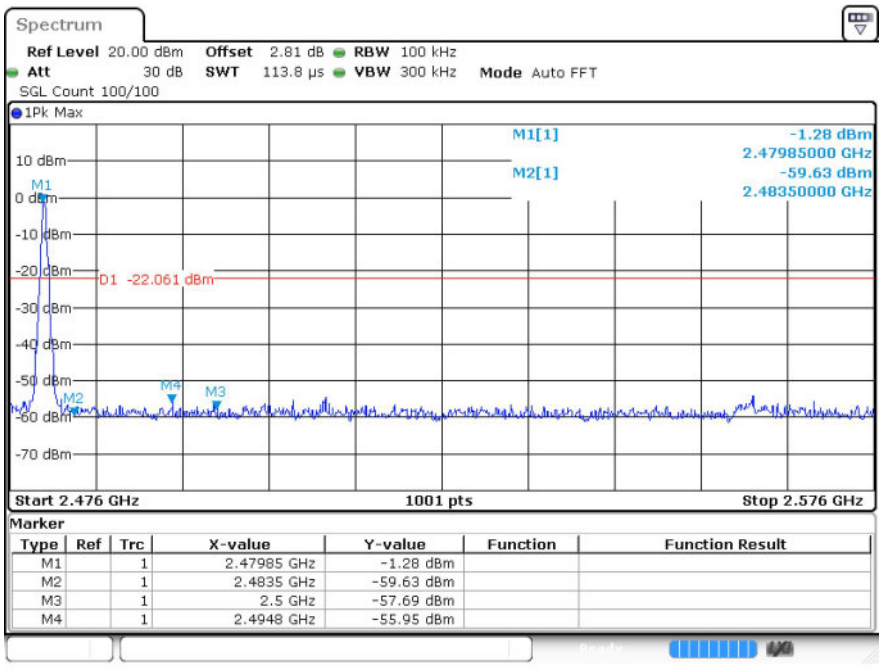
8.1 Test Result

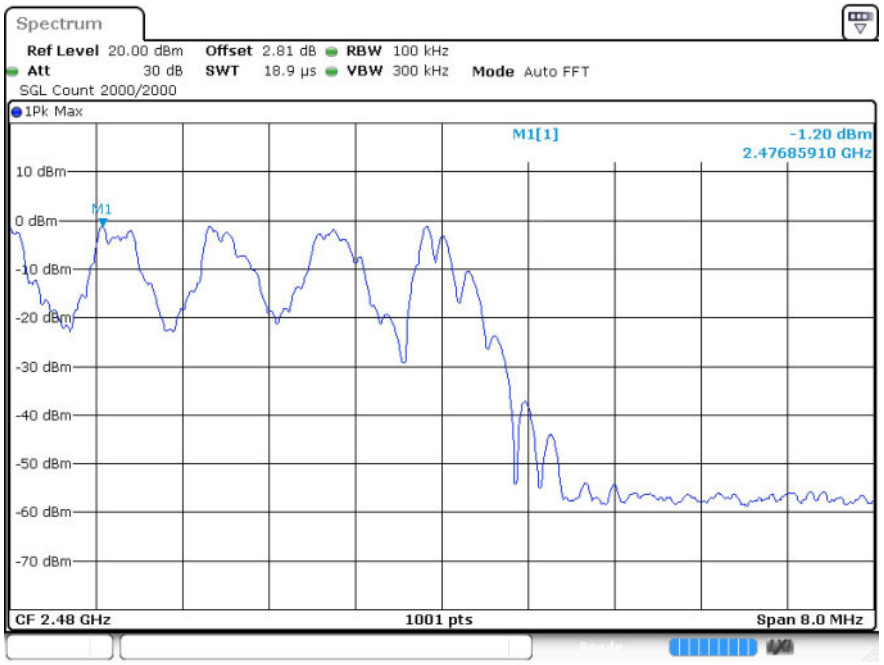
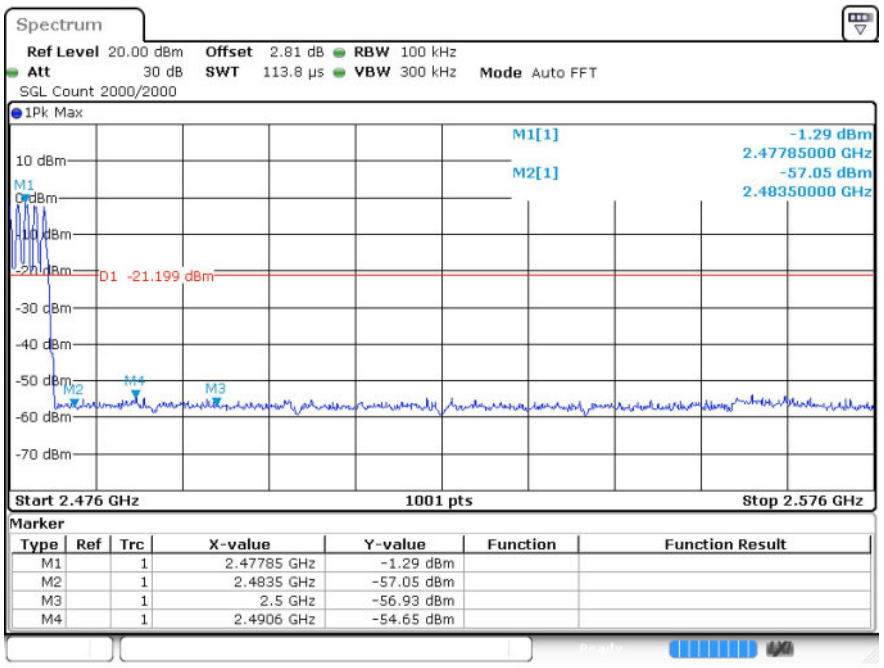
Mode	Channel	Carrier Frequency [MHz]	Frequency Hopping	Max Spurious Level [dBc]	Limit [dBc]	Verdict
GFSK	LCH	2402	Off	-56.12	-20	Pass
			On	-54.42	-20	Pass
	HCH	2480	Off	-53.88	-20	Pass
			On	-53.45	-20	Pass
π/4DQPSK	LCH	2402	Off	-55.52	-20	Pass
			On	-55.24	-20	Pass
	HCH	2480	Off	-54.43	-20	Pass
			On	-51.85	-20	Pass

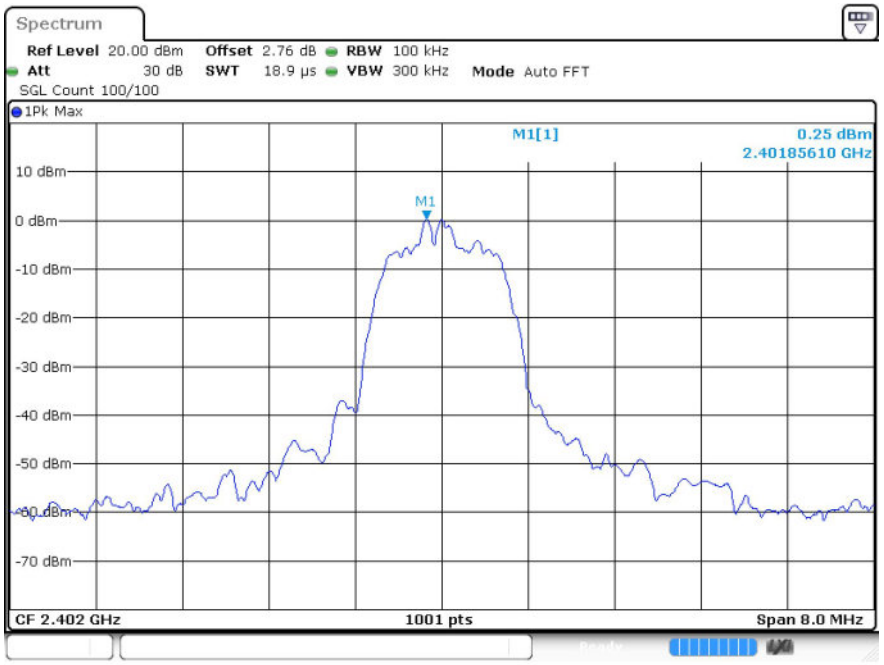
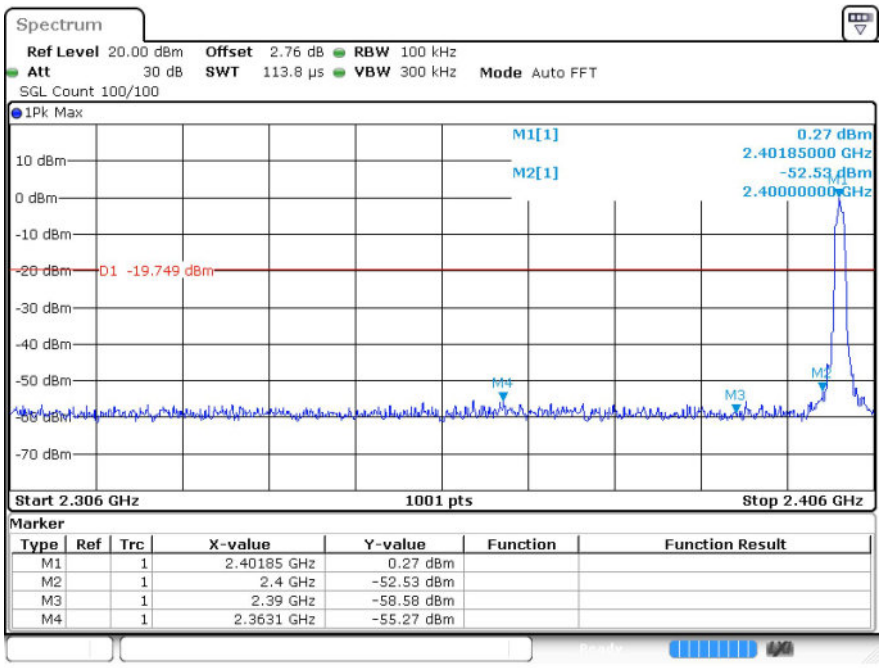
8.2 Test Graphs

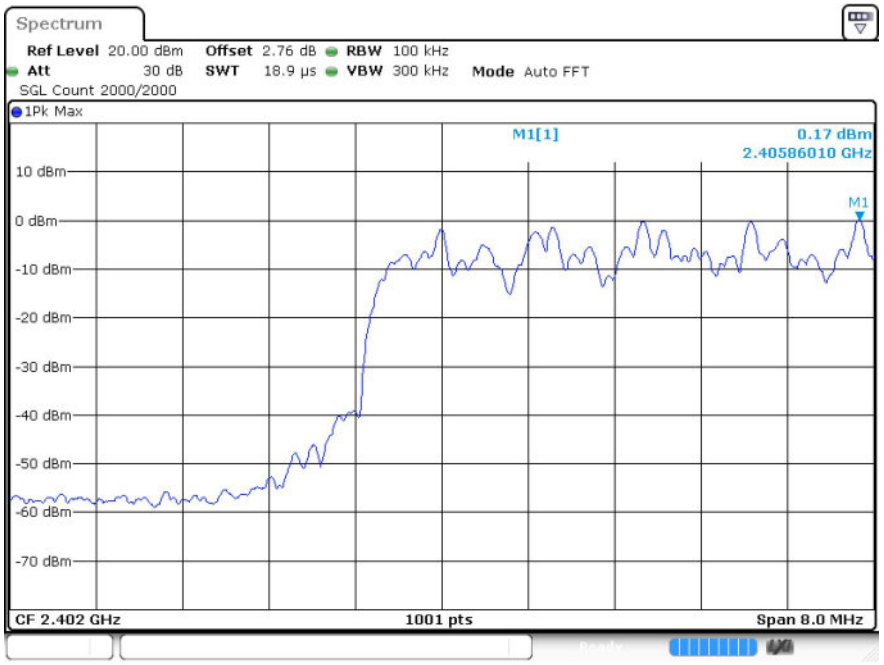
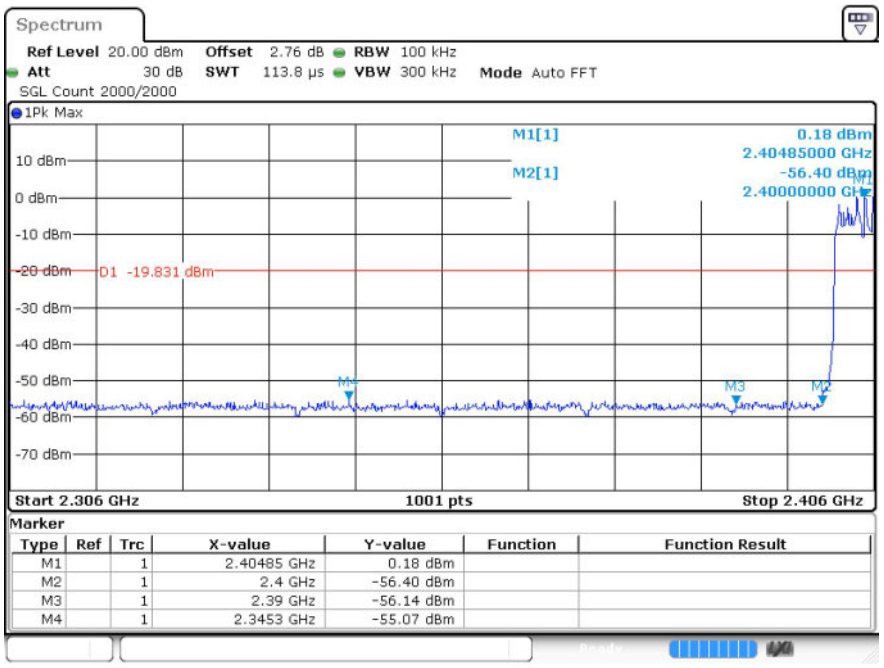
Test Graphs	
Pref	
GFSK/LCH/No Hop	

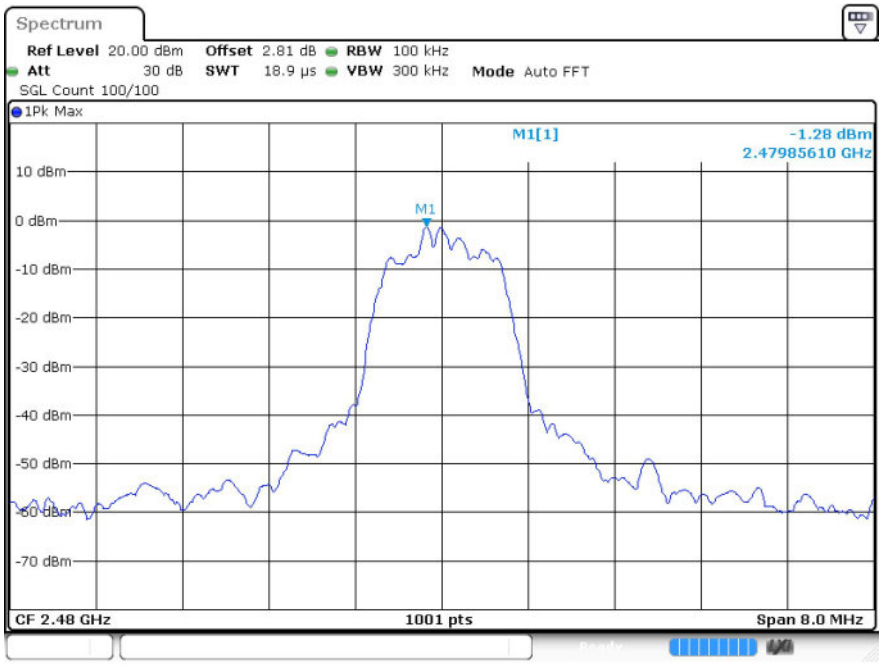
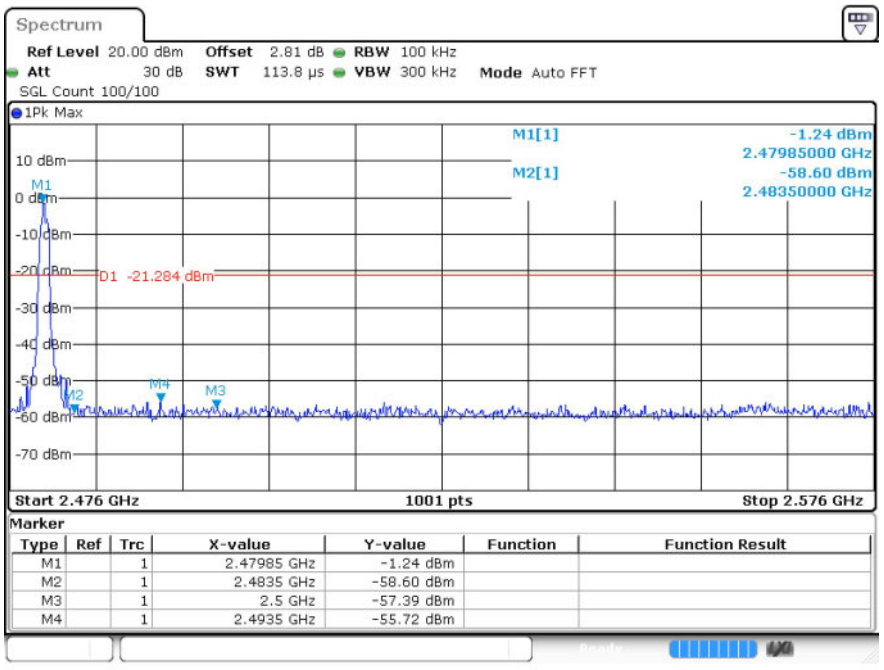
Ref	
GFSK/LCH/Hop	

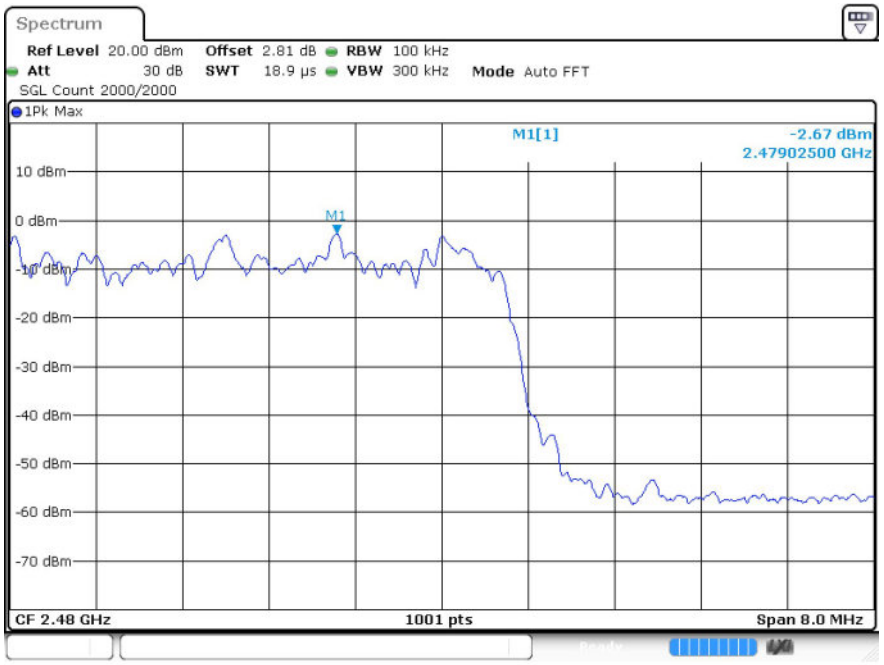
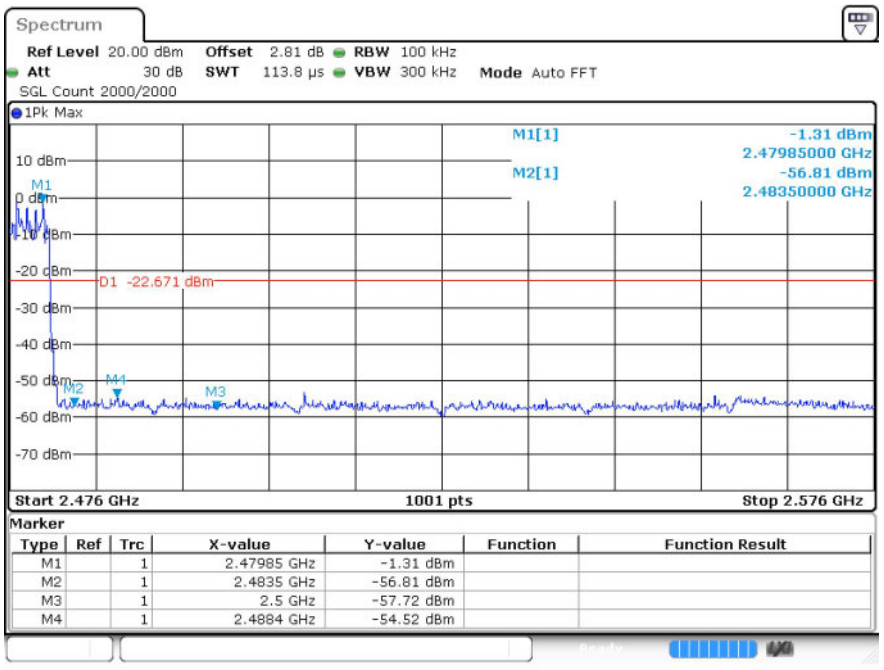
Ref	
GFSK/HCH/No Hop	

Ref.	
GFSK/HCH/Hop	 Marker Type Ref Trc X-value Y-value Function Function Result M1 1 2.47785 GHz -1.29 dBm M2 1 2.4835 GHz -57.05 dBm M3 1 2.5 GHz -56.93 dBm M4 1 2.4906 GHz -54.65 dBm

Ref	
π/4DQPSK/LCH/No Hop	

Ref	
π/4DQPSK/LCH/Hop	

Ref	
π/4DQPSK/HCH/No Hop	

Ref	
π/4DQPSK/HCH/Hop	 Marker Type Ref Trc X-value Y-value Function Function Result M1 1 2.47985 GHz -1.31 dBm M2 1 2.4835 GHz -56.81 dBm M3 1 2.5 GHz -57.72 dBm M4 1 2.4884 GHz -54.52 dBm

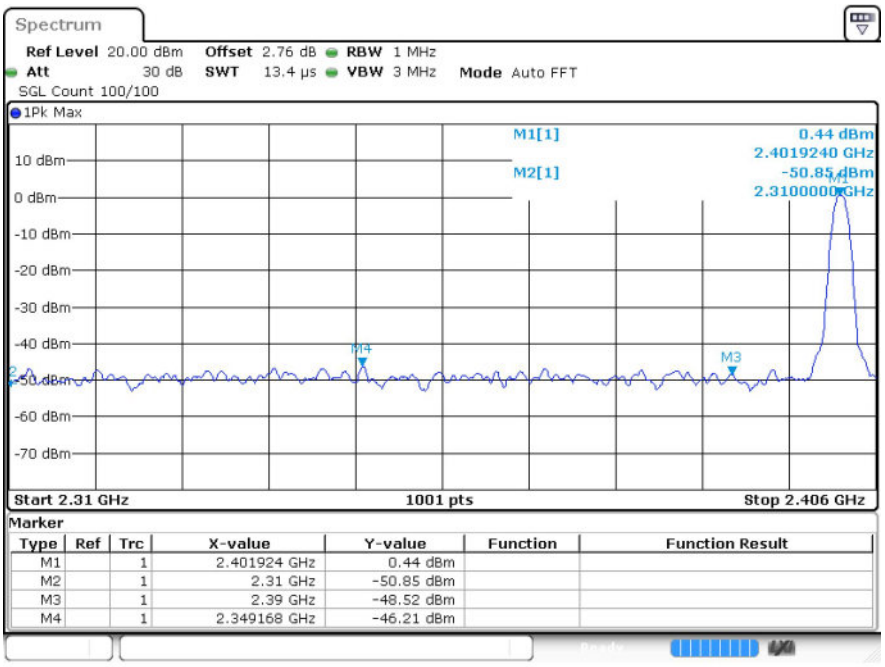
9 Restrict-band band-edge measurements

9.1 Test Result

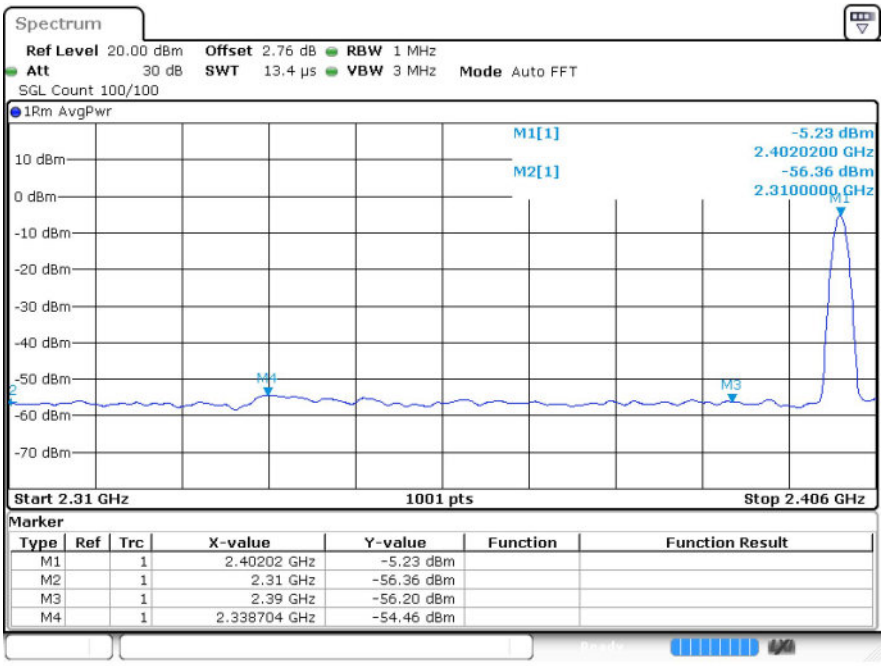
Test Mode	Hopping	Freq.	Power [dBm]	Gain	Duty Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-50.85	2	-	46.41	PEAK	74	Pass
	Off	2310.0	-56.36	2	4.95	45.85	AV	54	Pass
	Off	2349.168	-46.2	2	-	51.06	PEAK	74	Pass
	Off	2338.704	-54.46	2	4.95	47.75	AV	54	Pass
	Off	2390.0	-48.52	2	-	48.74	PEAK	74	Pass
	Off	2390.0	-56.2	2	4.95	46.01	AV	54	Pass
	Off	2483.5	-48.77	2	-	48.49	PEAK	74	Pass
	Off	2483.5	-55.94	2	4.95	46.27	AV	54	Pass
	Off	2497.288	-47.58	2	-	49.68	PEAK	74	Pass
	Off	2484.016	-55.54	2	4.95	46.67	AV	54	Pass
	Off	2500.0	-48.56	2	-	48.7	PEAK	74	Pass
	Off	2500.0	-55.96	2	4.95	46.25	AV	54	Pass
π/4DQPSK	Off	2310.0	-48.98	2	-	48.28	PEAK	74	Pass
	Off	2310.0	-56.31	2	4.95	45.9	AV	54	Pass
	Off	2373.84	-45.78	2	-	51.48	PEAK	74	Pass
	Off	2338.32	-54.18	2	4.95	48.03	AV	54	Pass
	Off	2390.0	-50.38	2	-	46.88	PEAK	74	Pass
	Off	2390.0	-56.48	2	4.95	45.73	AV	54	Pass
	Off	2483.5	-47.91	2	-	49.35	PEAK	74	Pass
	Off	2483.5	-57.41	2	4.95	44.8	AV	54	Pass
	Off	2487.208	-46.76	2	-	50.5	PEAK	74	Pass
	Off	2499.664	-55.2	2	4.95	47.01	AV	54	Pass
	Off	2500.0	-50.19	2	-	47.07	PEAK	74	Pass
	Off	2500.0	-55.26	2	4.95	46.95	AV	54	Pass

9.2 Test Graphs

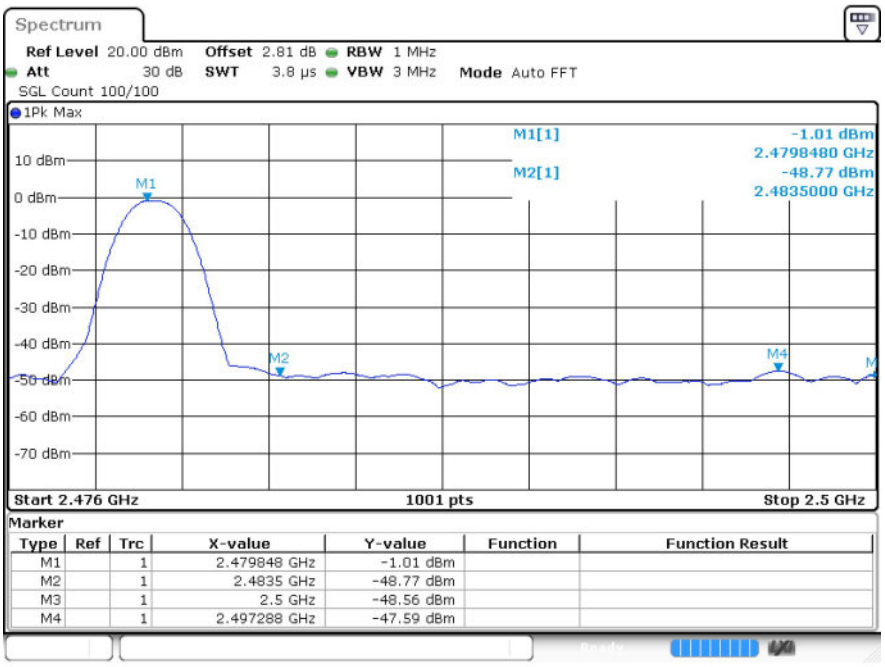
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (Low Channel)



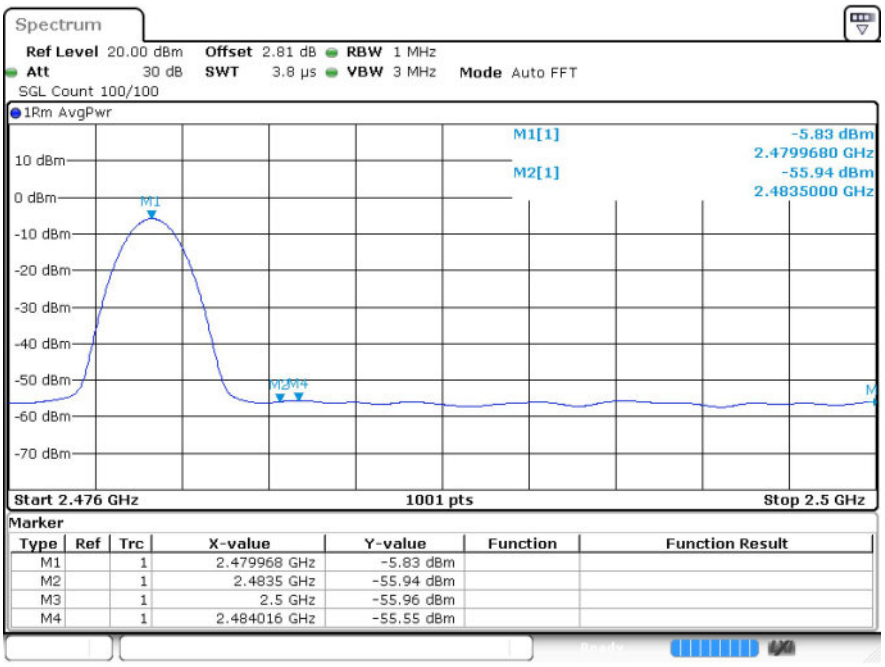
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (Low Channel)



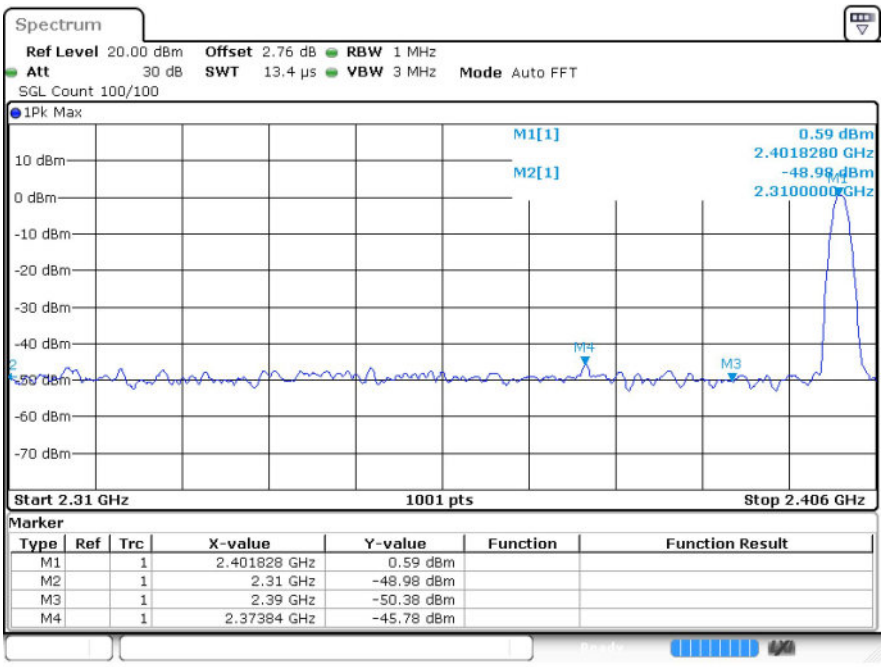
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (High Channel)



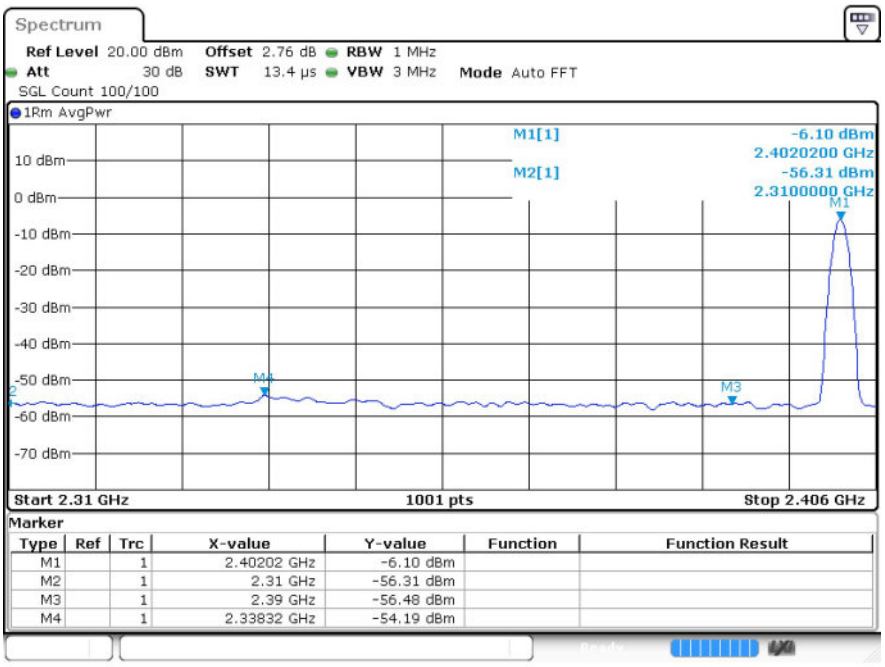
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (High Channel)



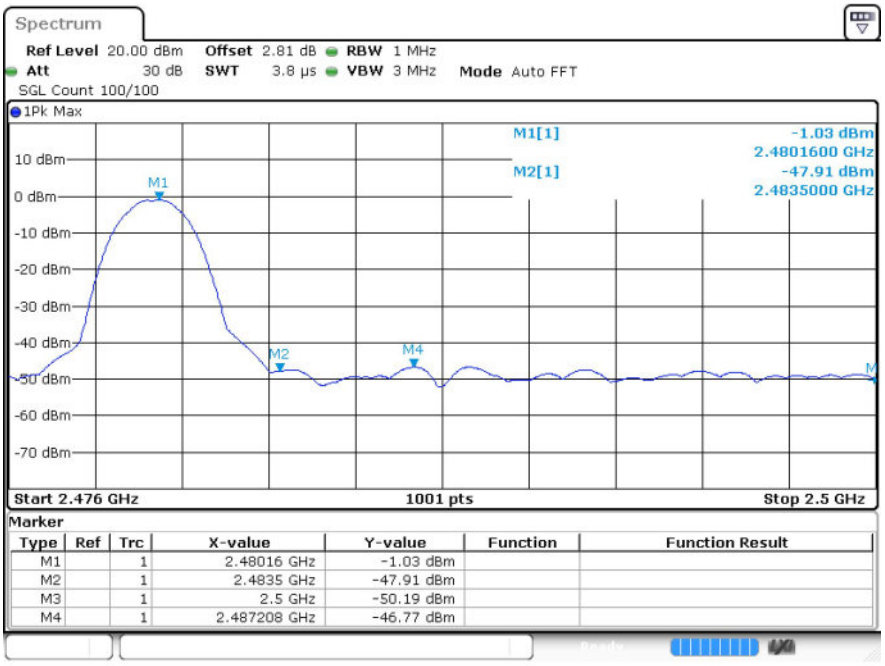
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (Low Channel)



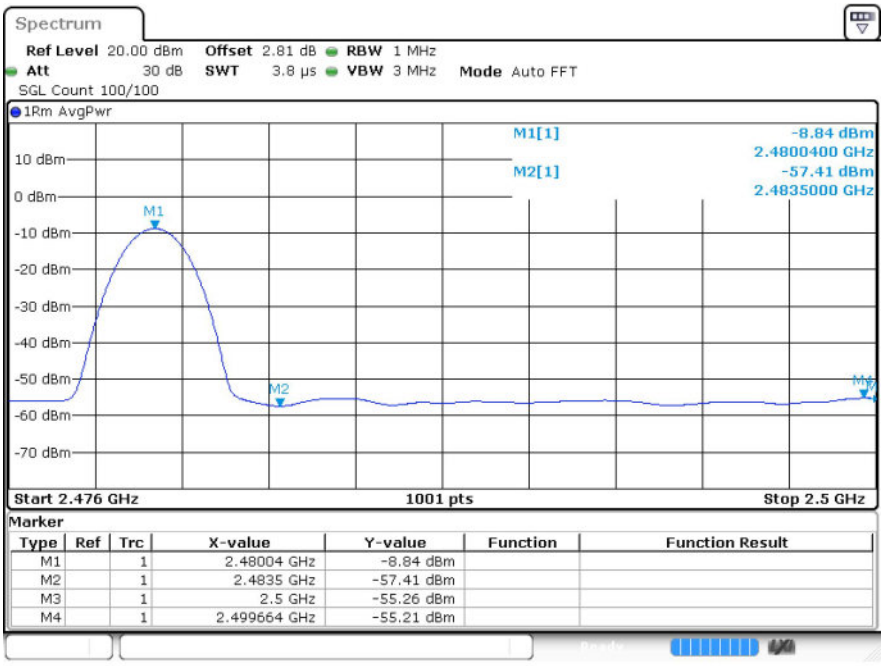
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (Low Channel)



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---