Appendix A

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

Product Name: TRUE WIRELESS EARPHONES

Trade Mark: N/A

Test Model: Z10

Environmental Conditions

Temperature:	24.6℃
Relative Humidity:	56.4%
ATM Pressure:	101Kpa
Test Engineer:	Emiya lin
Supervised by:	Simba Haung

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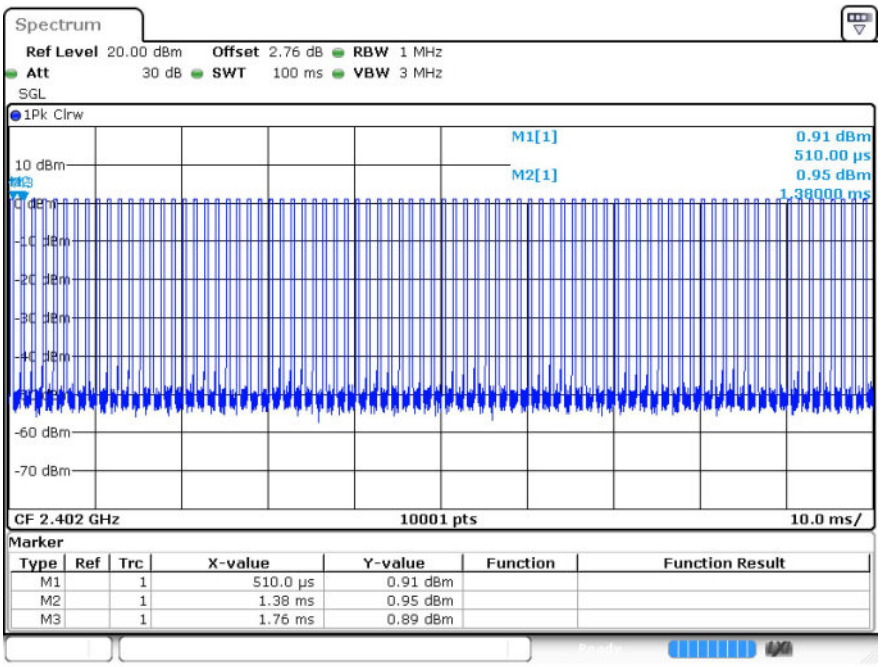
1 Duty Cycle

1.1 Test Result

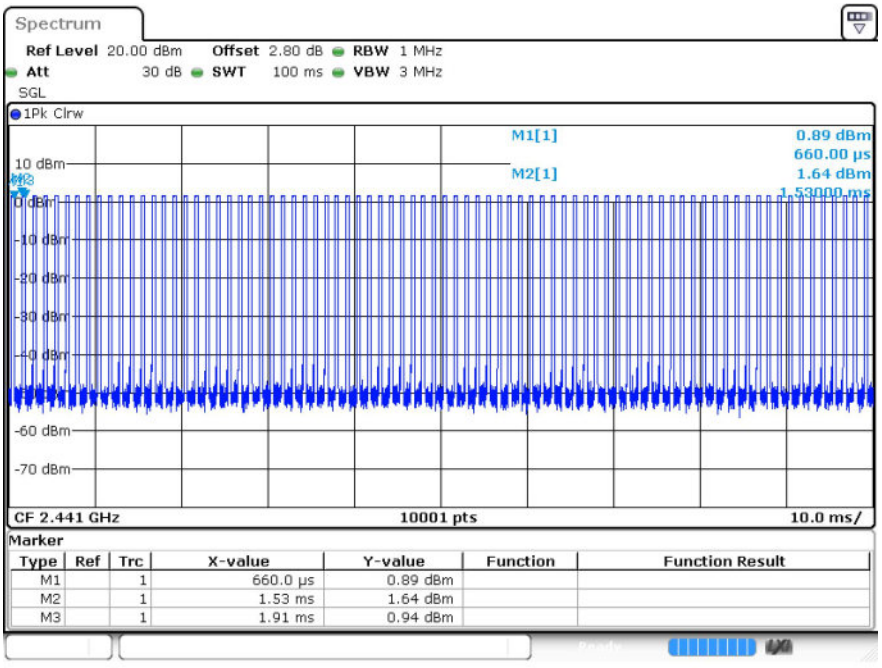
Mode	Frequency (MHz)	Duty Cycle (%)	Correction Factor	1/T (kHz)
1-DH1	2402	31.2	5.06	2.63
1-DH1	2441	31.2	5.06	2.63
1-DH1	2480	31.2	5.06	2.63
2-DH1	2402	32.01	4.95	2.56
2-DH1	2441	32	4.95	2.56
2-DH1	2480	32	4.95	2.56

1.2 Test Graphs

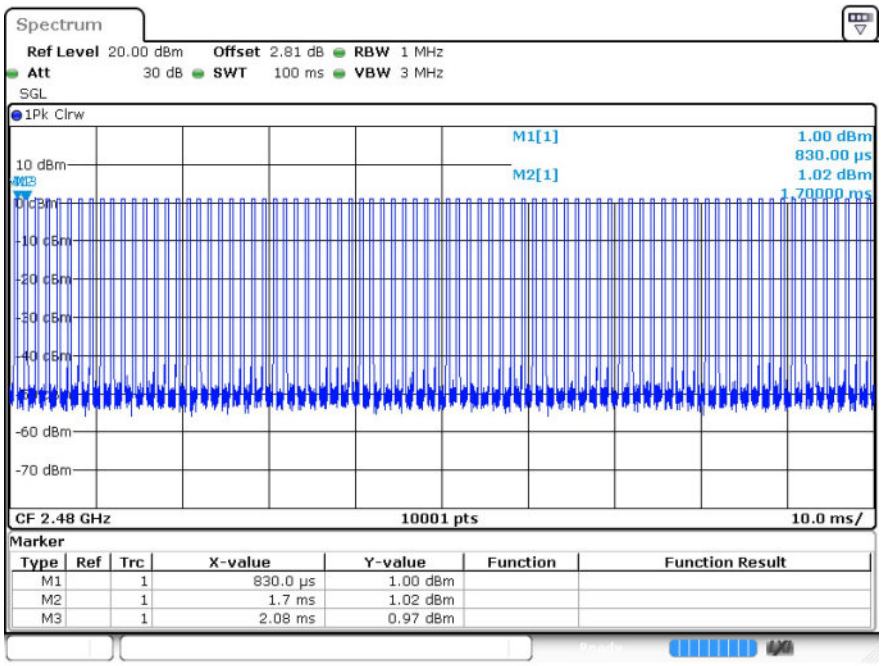
Test Graphs
1-DH1 2402MHz



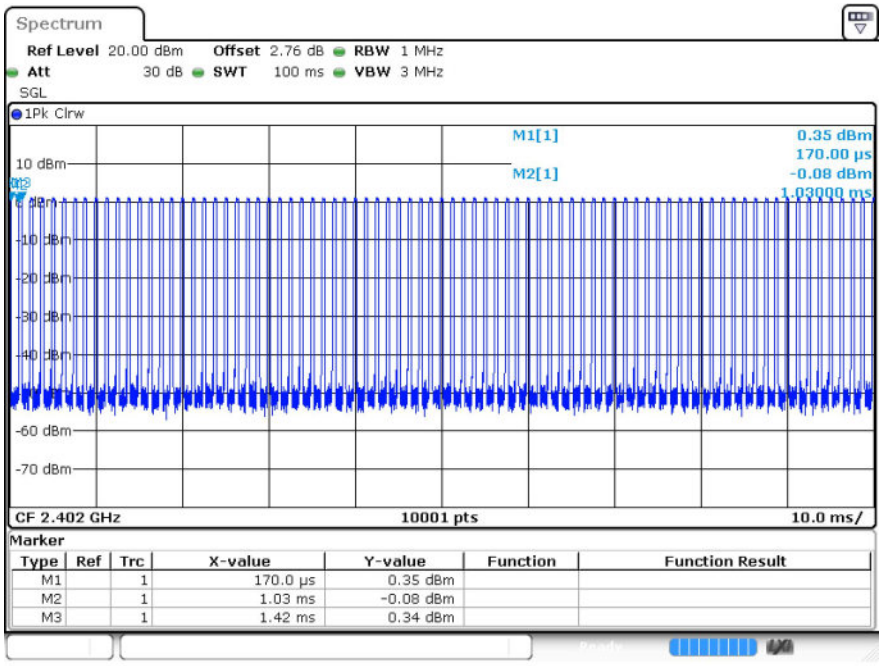
1-DH1 2441MHz



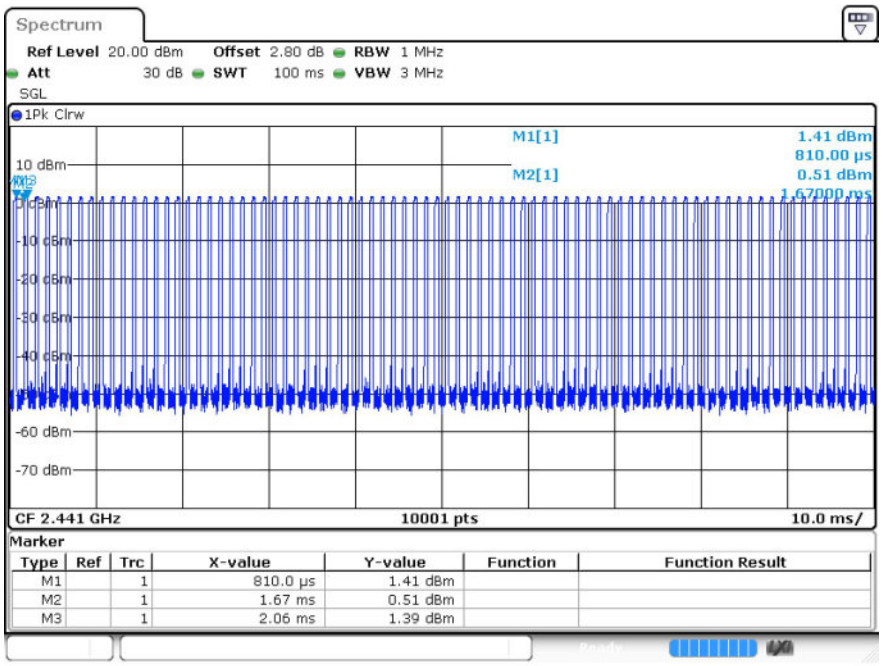
1-DH1 2480MHz



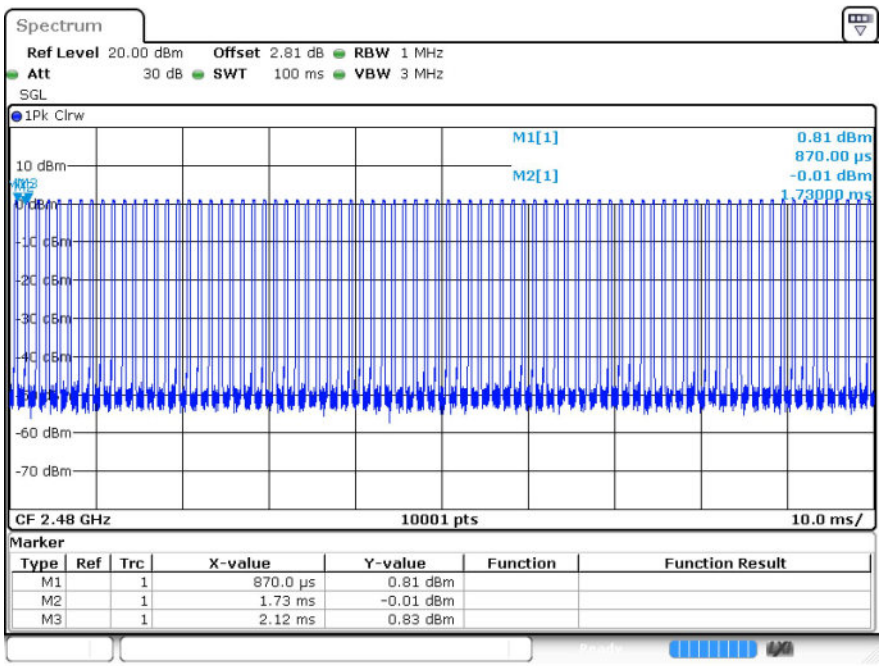
2-DH1 2402MHz



2-DH1 2441MHz



2-DH1 2480MHz

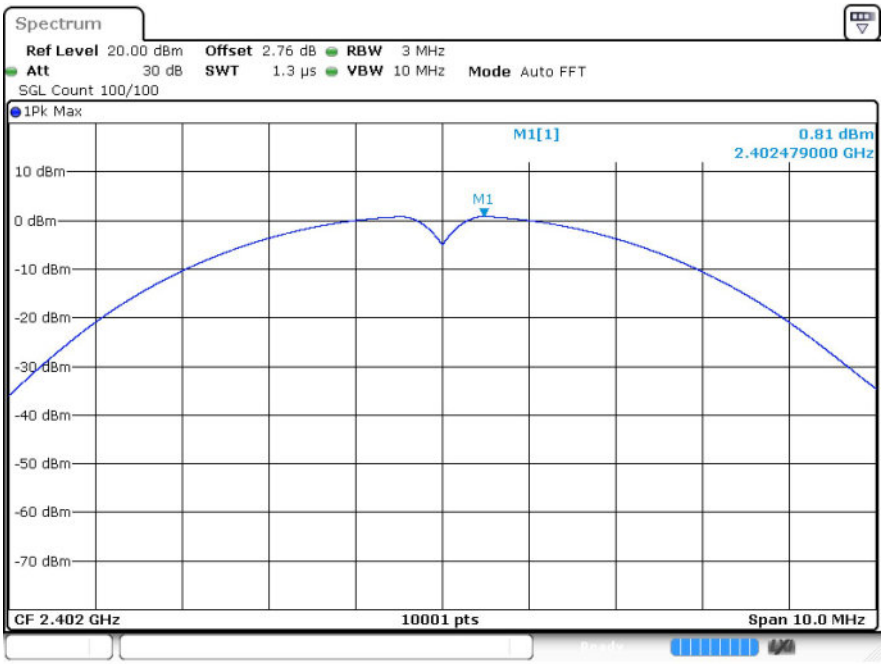
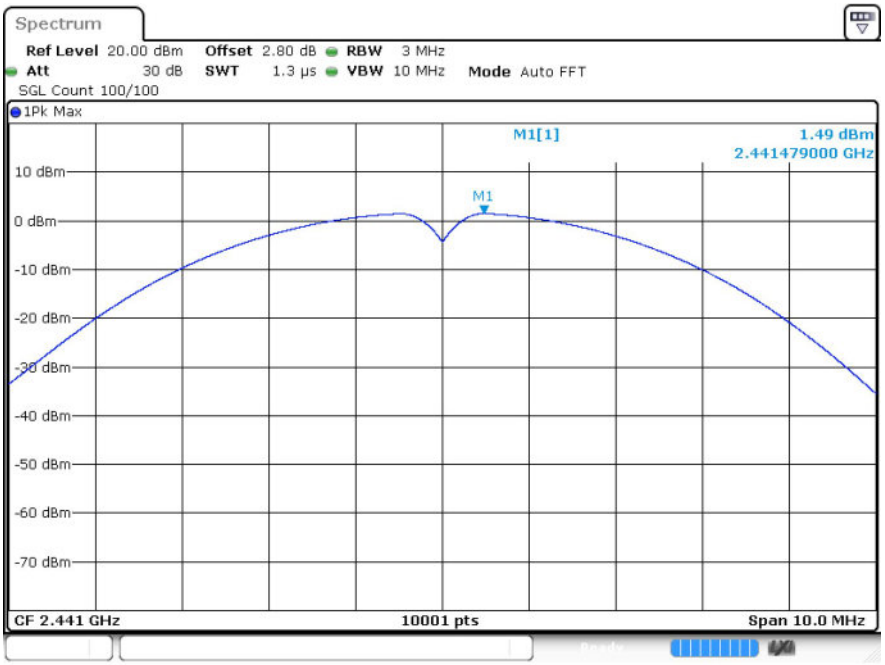


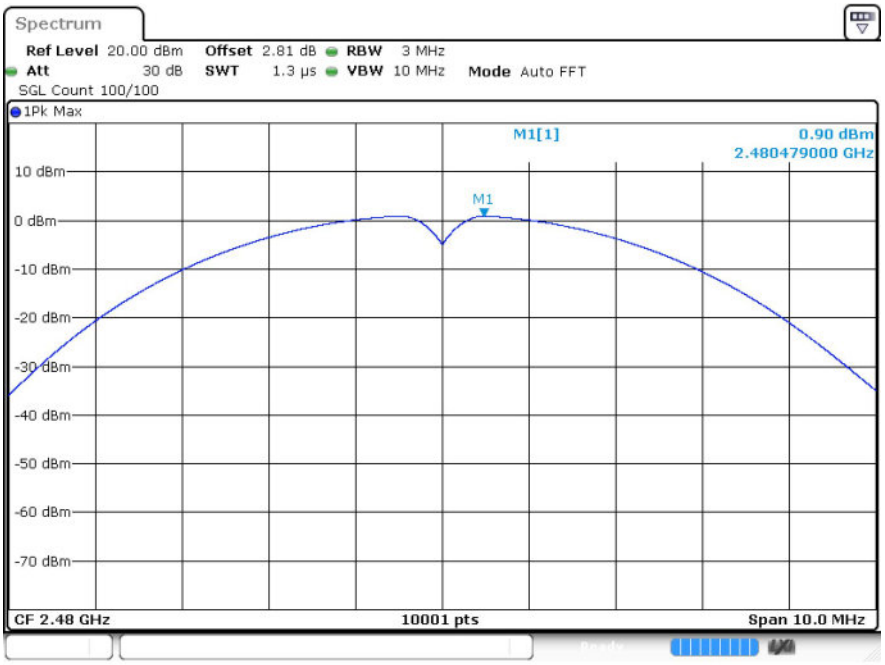
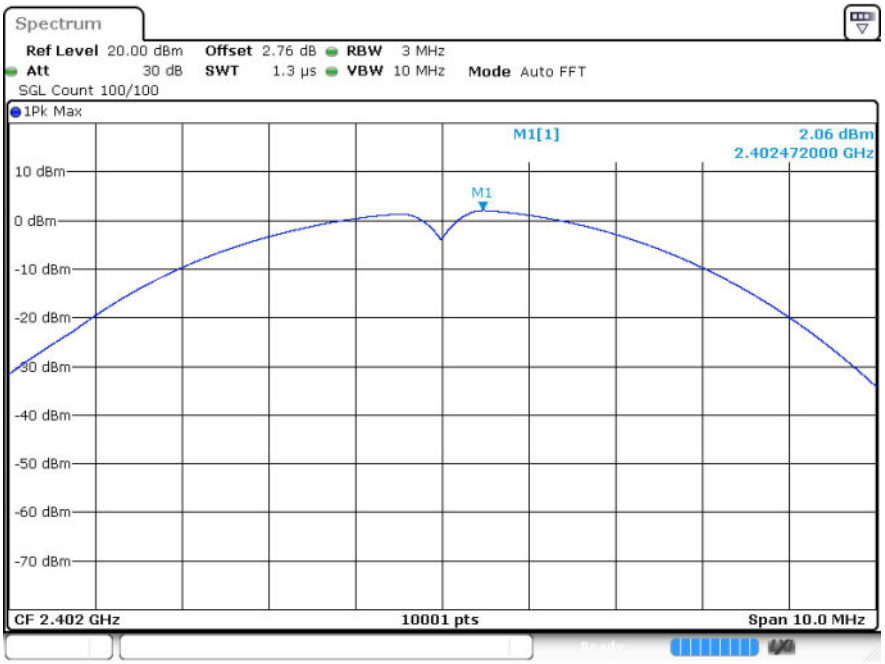
2 Maximum Conducted Peak Output Power

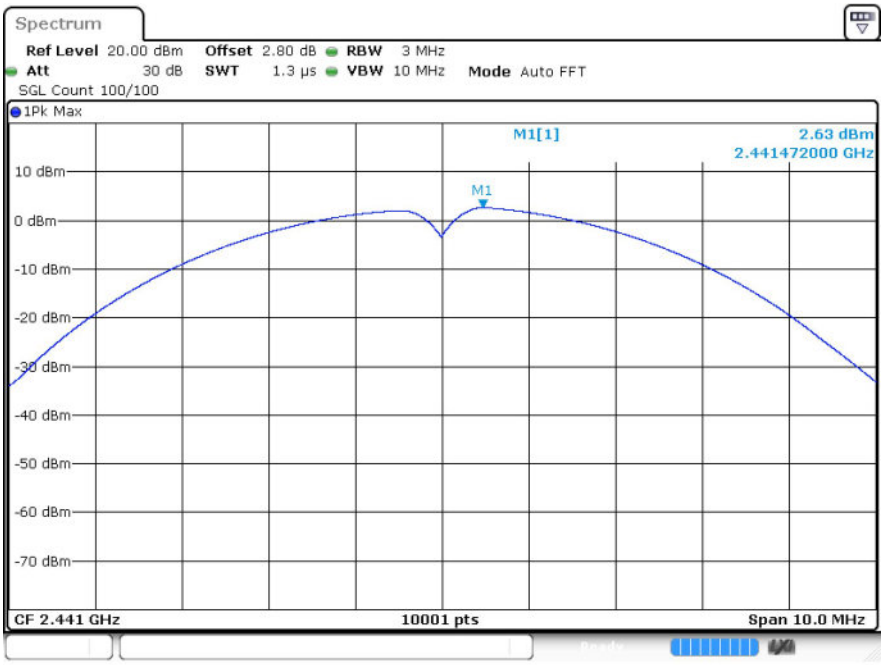
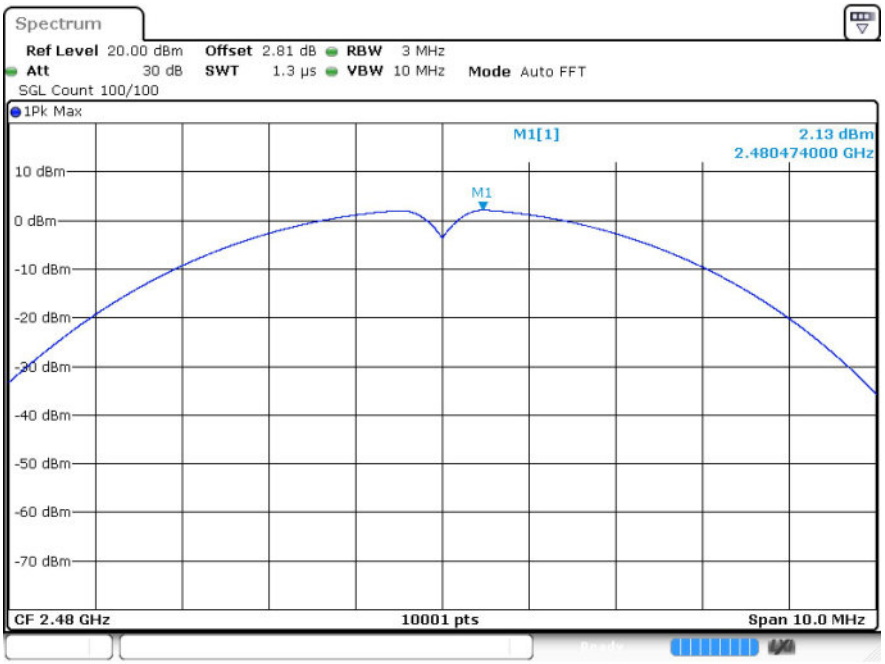
2.1 Test Result

Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	0.81	21	Pass
	MCH	1.49	21	Pass
	HCH	0.9	21	Pass
π/4DQPSK	LCH	2.06	21	Pass
	MCH	2.63	21	Pass
	HCH	2.13	21	Pass

2.2 Test Graphs

Test Graphs	
GFSK/LCH	
GFSK/MCH	

GFSK/HCH	
π/4DQPSK/LCH	

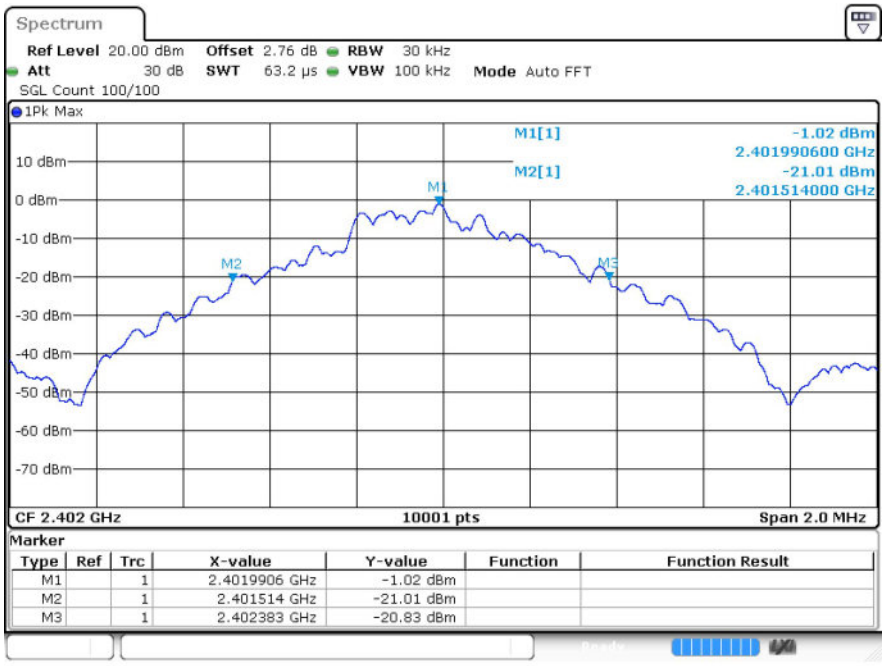
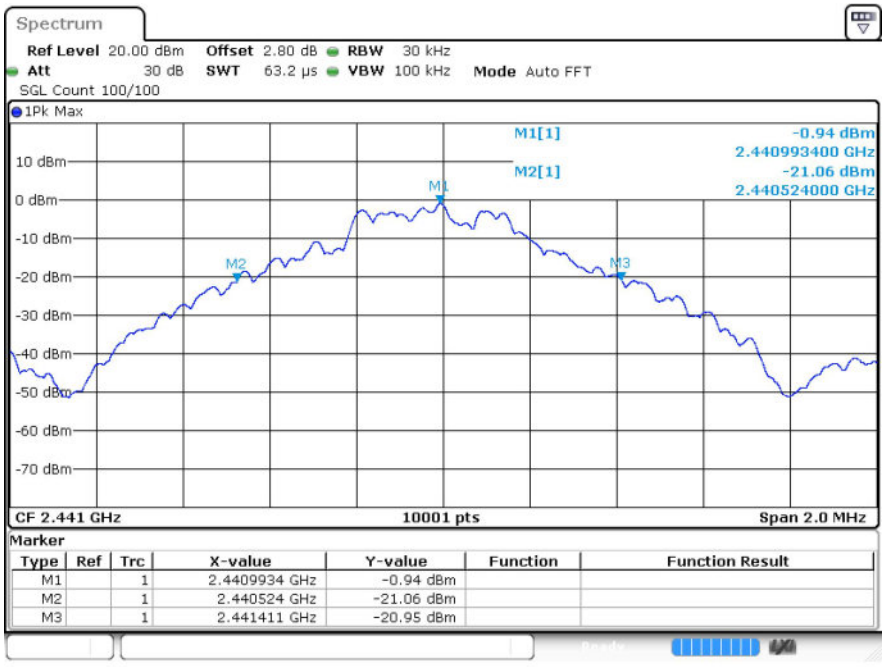
π/4DQPSK/MCH	
π/4DQPSK/HCH	

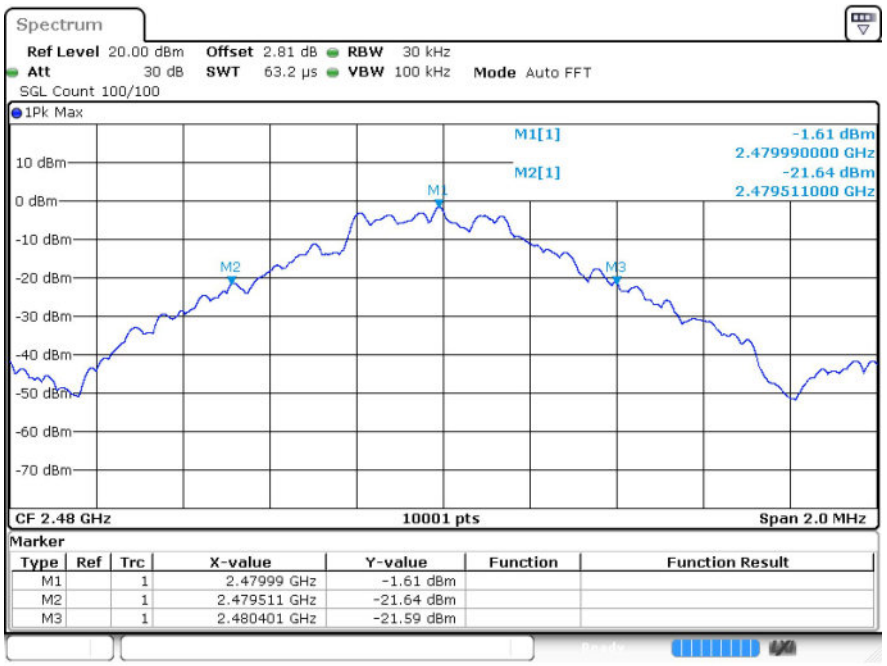
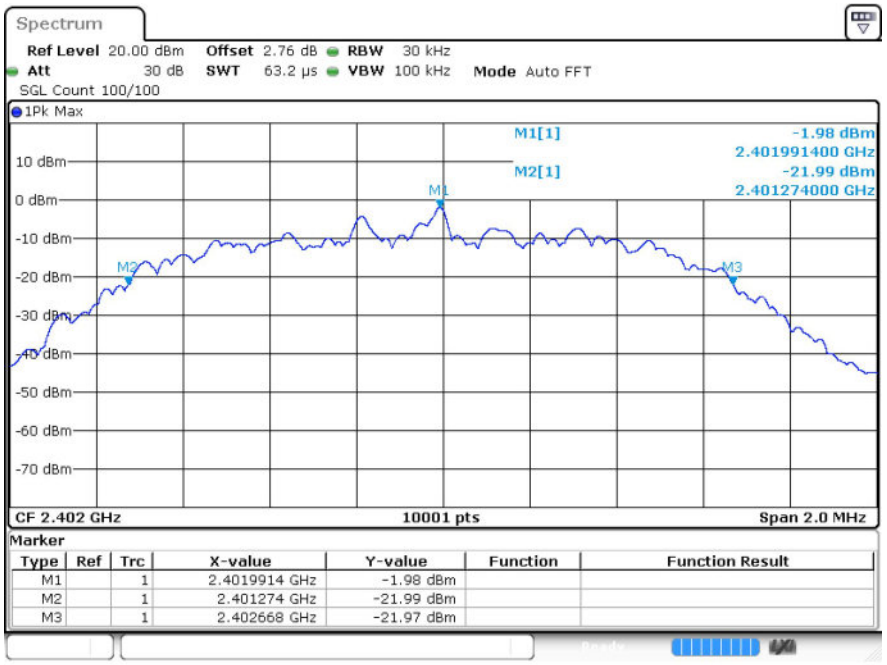
3 20dB Bandwidth

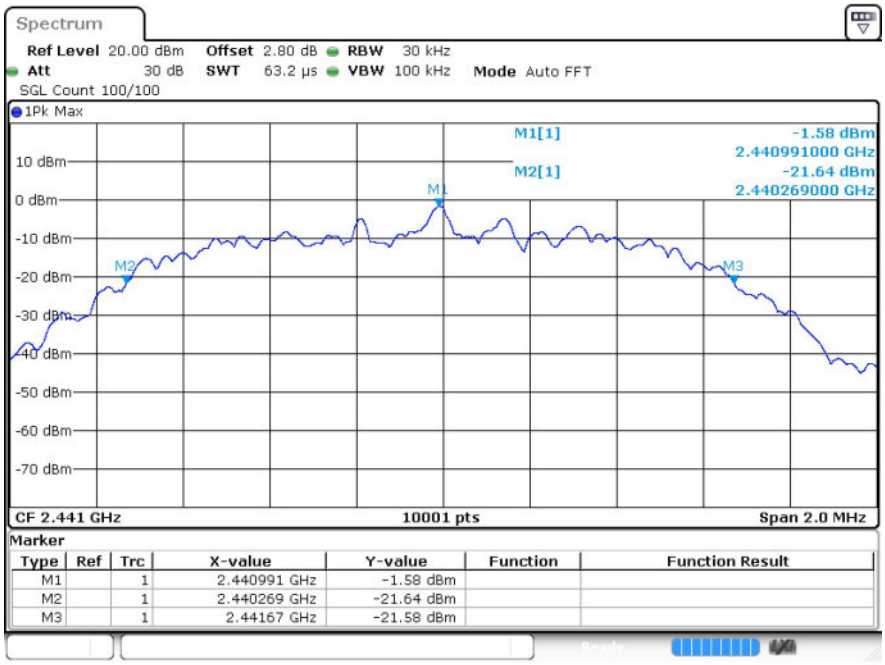
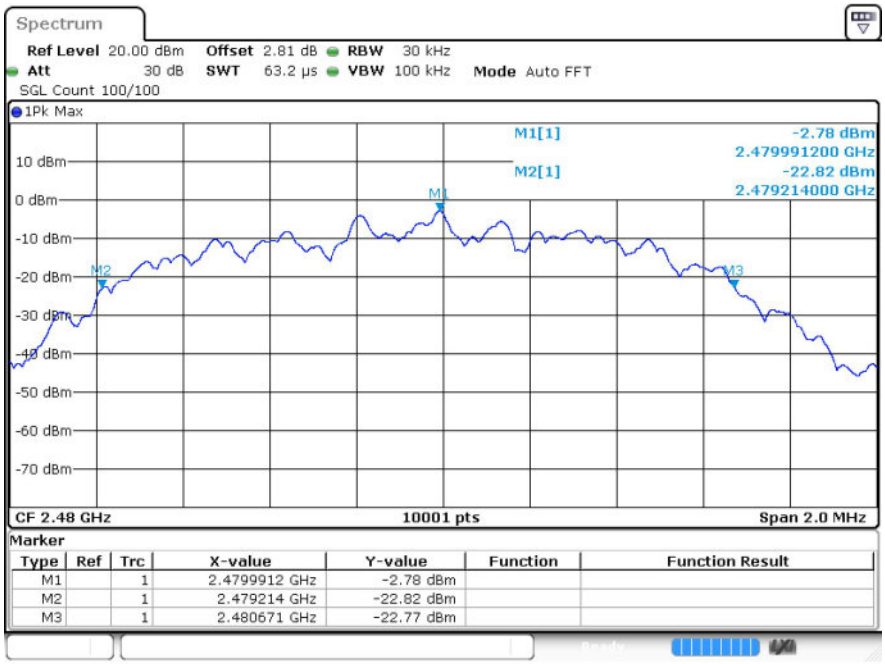
3.1 Test Result

Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.869	Not Specified	Pass
	MCH	0.886	Not Specified	Pass
	HCH	0.89	Not Specified	Pass
π/4DQPSK	LCH	1.394	Not Specified	Pass
	MCH	1.4	Not Specified	Pass
	HCH	1.457	Not Specified	Pass

3.2 Test Graphs

Test Graphs	
GFSK/LCH	
GFSK/MCH	

GFSK/HCH	
π/4DQPSK/LCH	

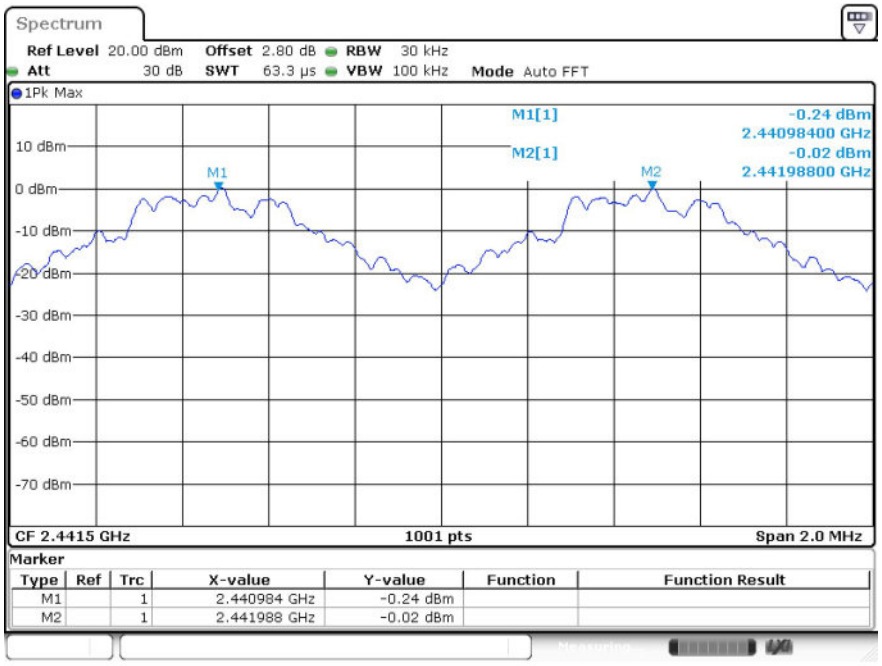
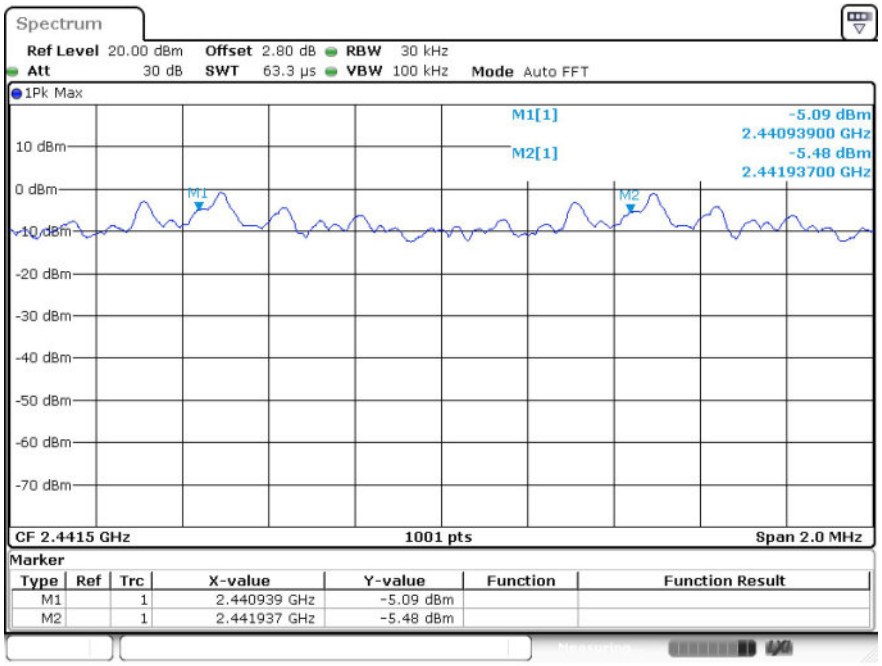
π/4DQPSK/MCH	
π/4DQPSK/HCH	

4 Carrier Frequency Separation

4.1 Test Result

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	MCH	1.004	0.591	Pass
π/4DQPSK	MCH	0.998	0.933	Pass

4.2 Test Graphs

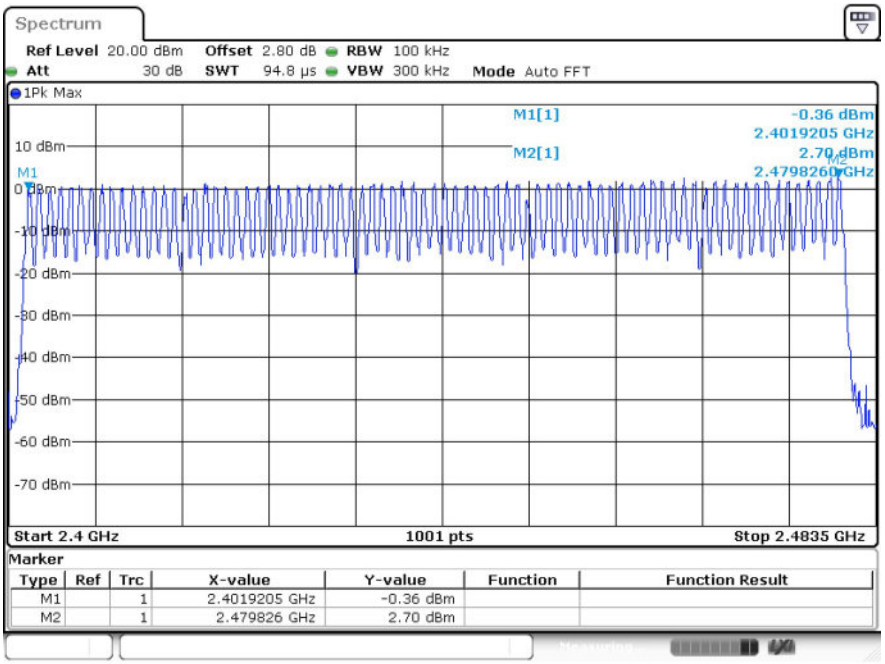
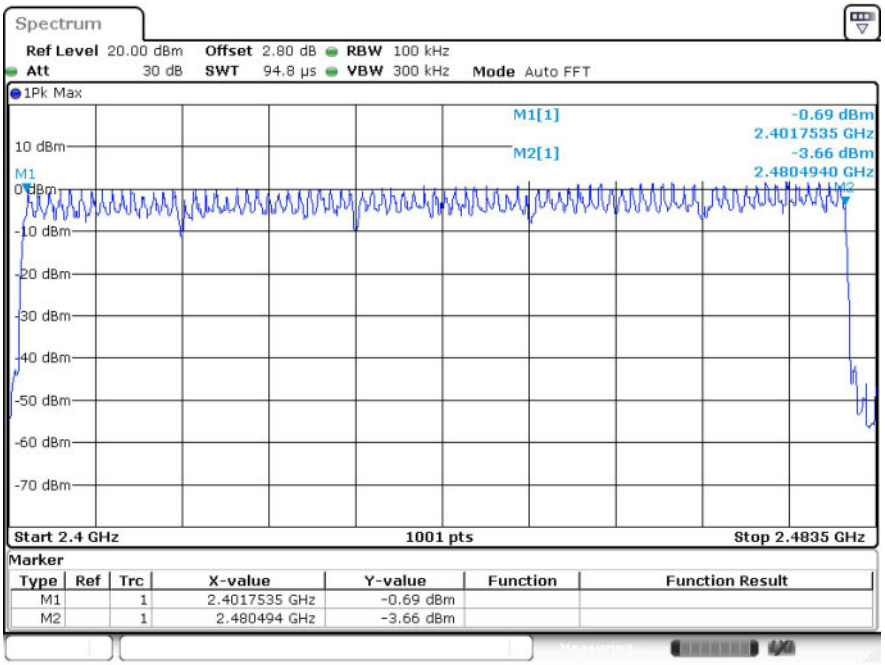
Test Graphs	
GFSK/MCH	
π/4DQPSK/MCH	

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

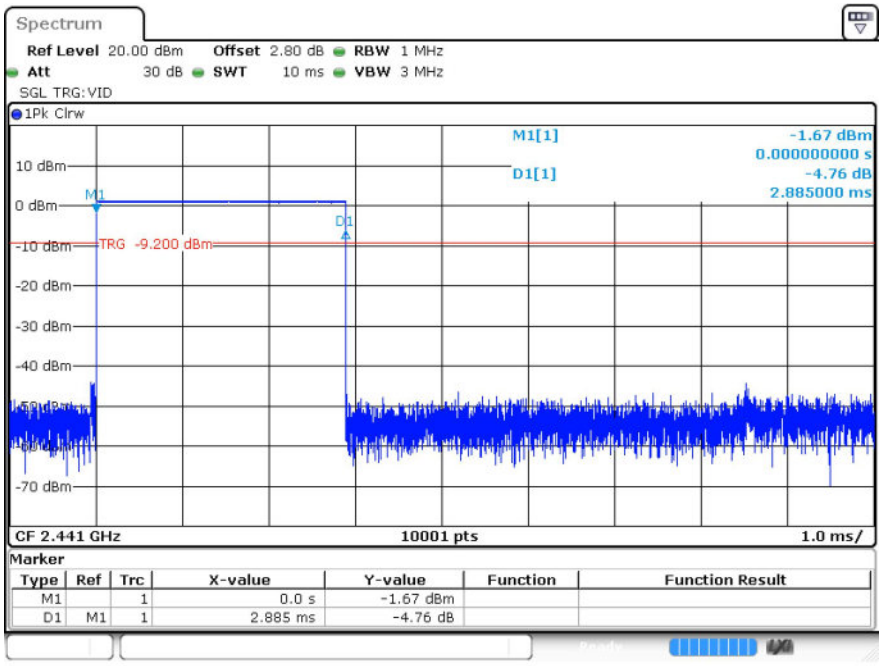
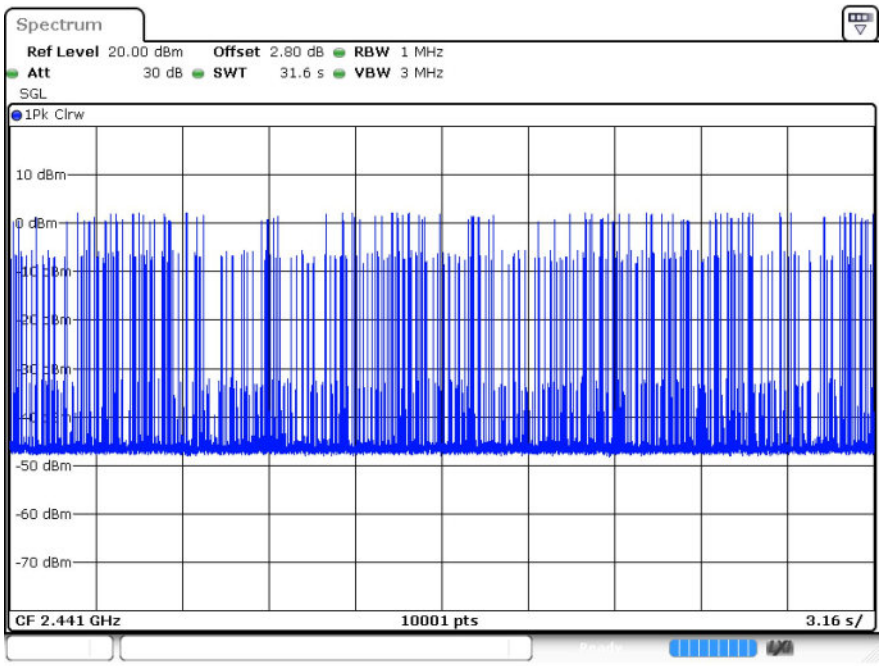
Test Graphs	
GFSK/Hop	
π/4DQPSK/Hop	

6 Dwell Time

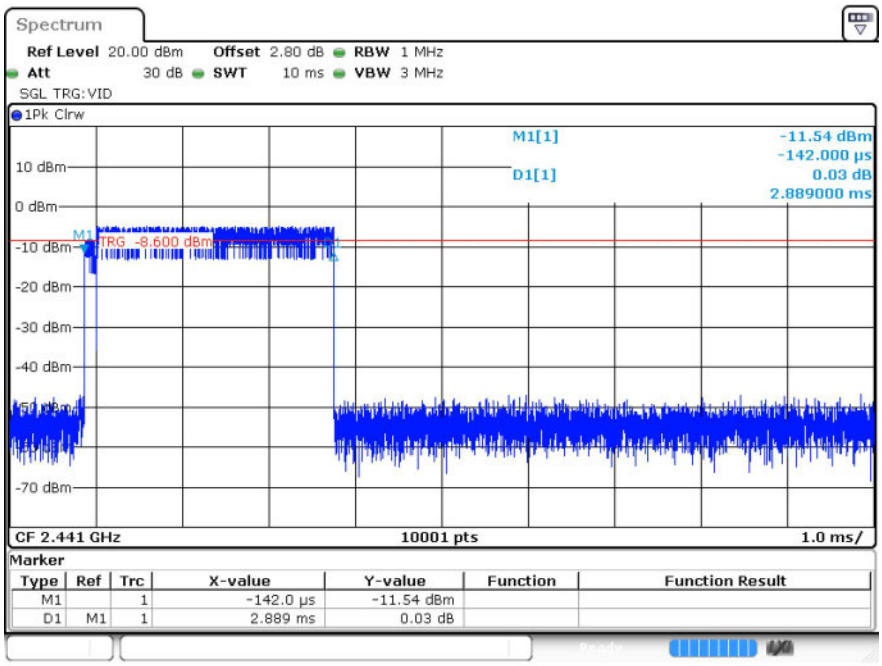
6.1 Test Result

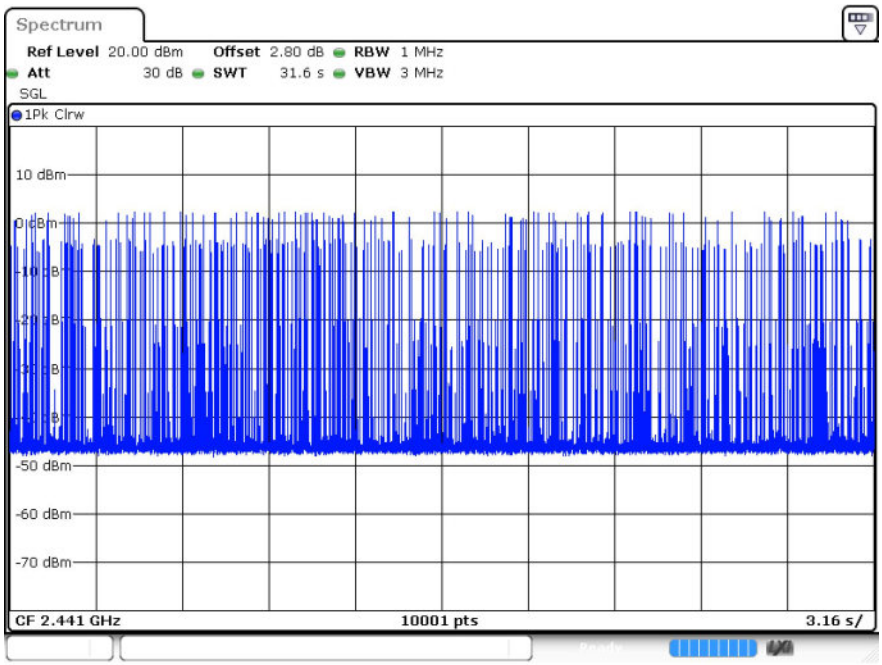
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[ms]	Limit [s]	Verdict
GFSK	DH5	MCH	2.885	106	305.81	0.4	Pass
π/4DQPSK	2DH5	MCH	2.889	111	320.679	0.4	Pass

6.2 Test Graphs

Test Graphs	
GFSK_DH5/MCH	 

π/4DQPSK
_2DH5/MCH



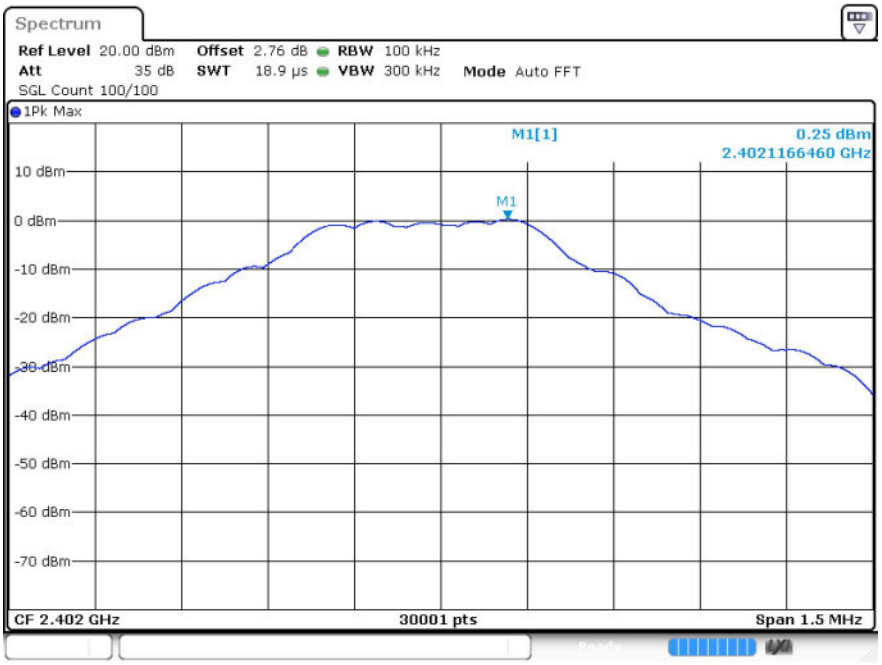
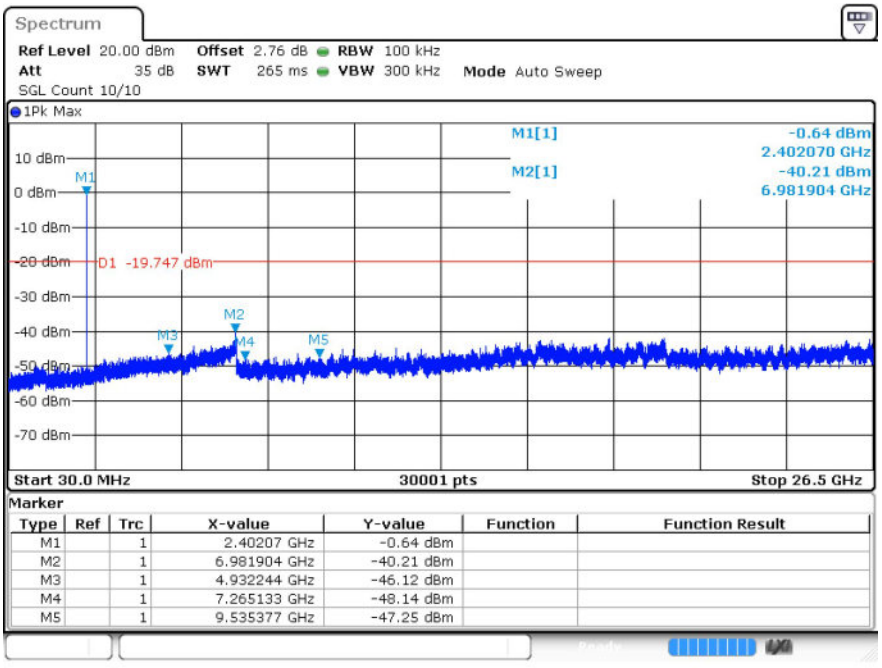


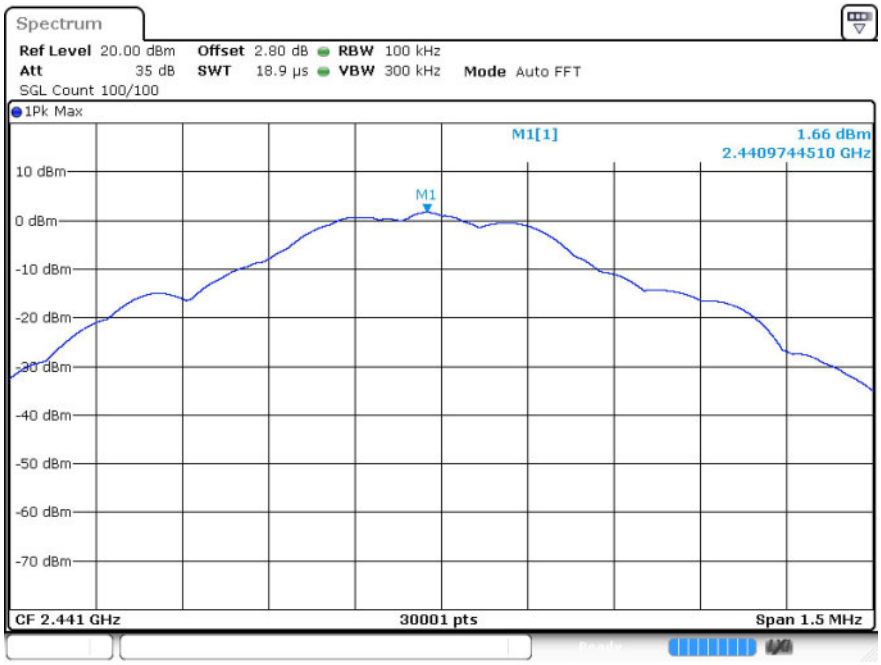
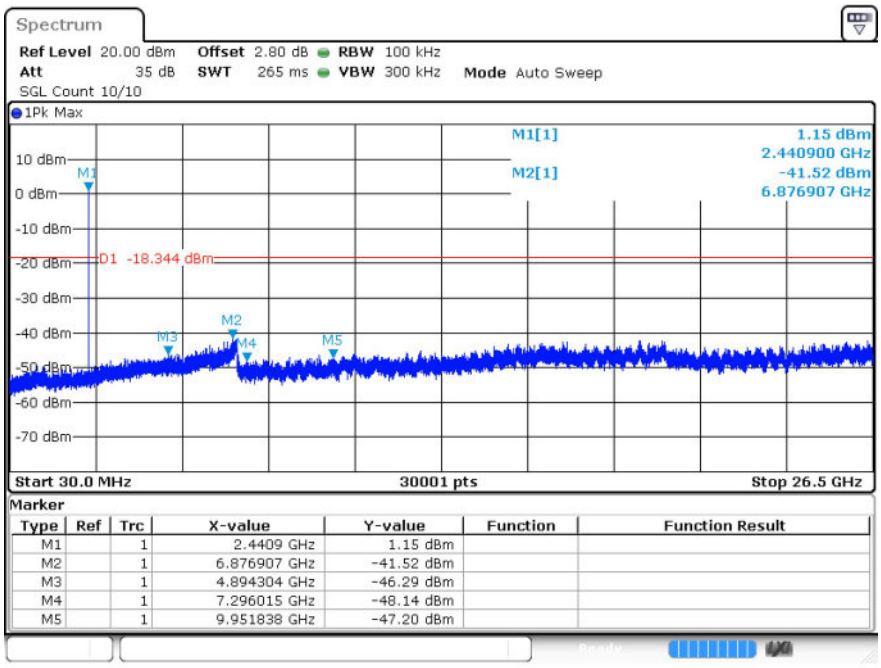
7 RF Conducted Spurious Emissions

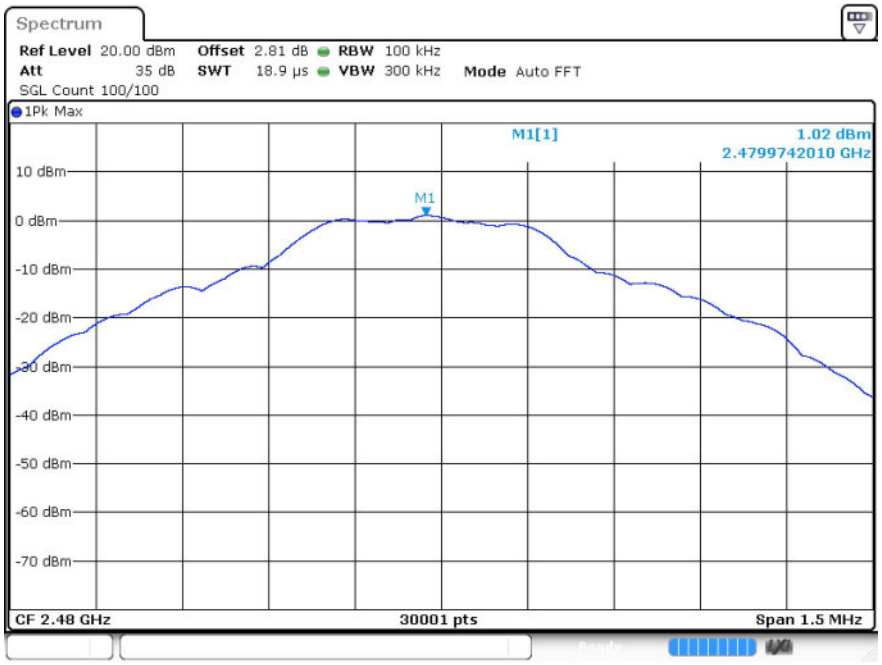
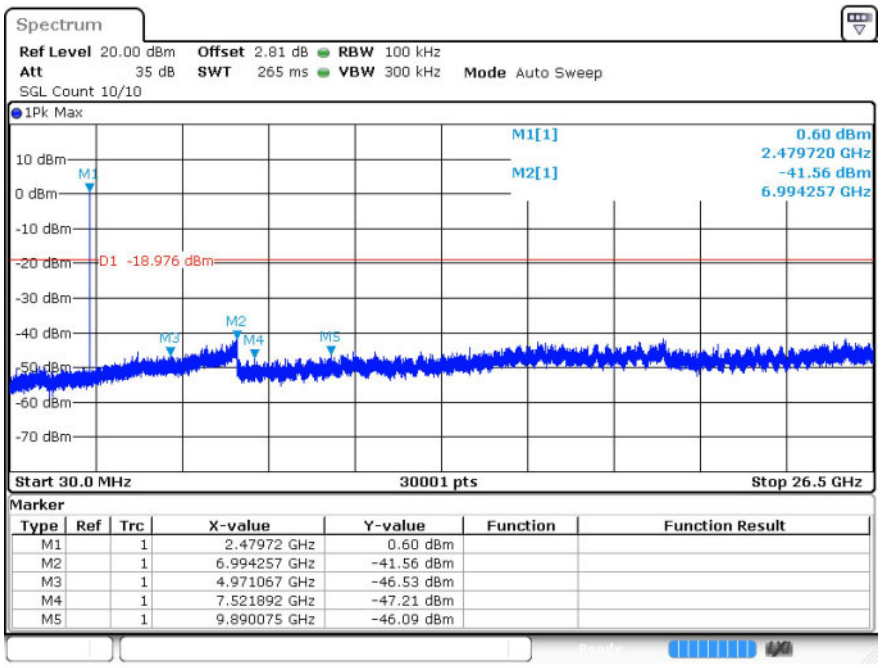
7.1 Test Result

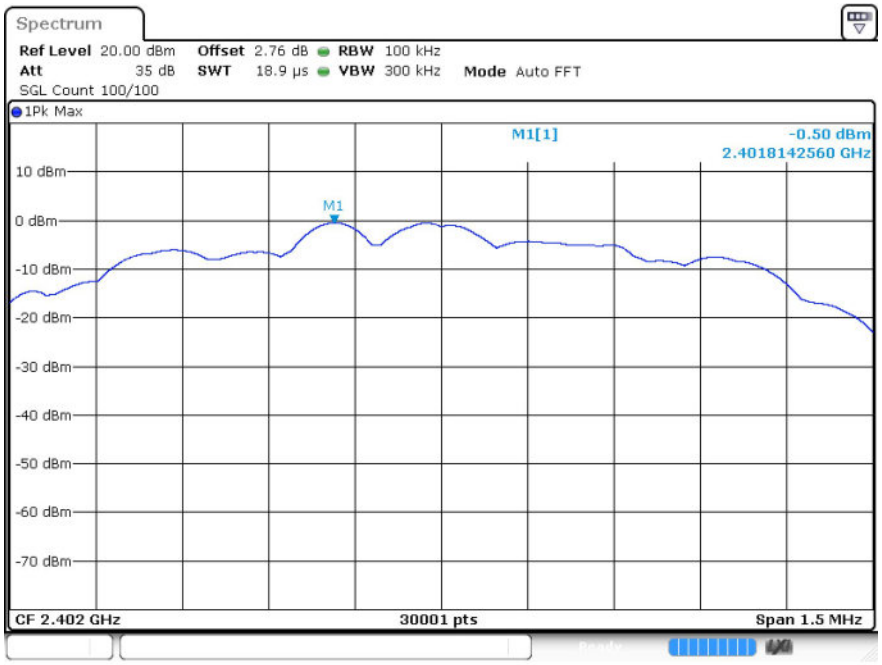
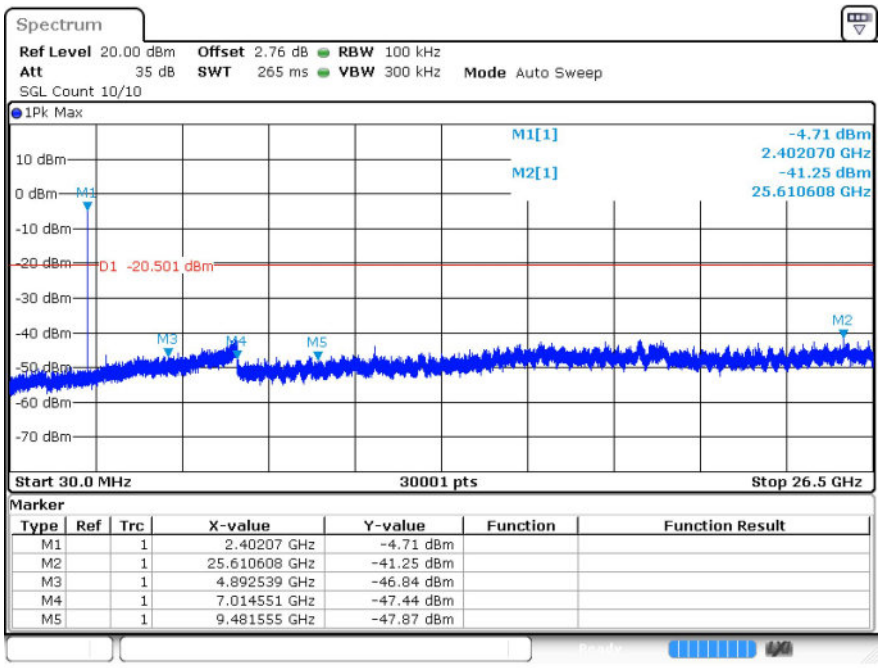
Mode	Channel	Max. Level [dBc]	Limit [dBc]	Verdict
GFSK	LCH	-40.45	-20	Pass
	MCH	-43.17	-20	Pass
	HCH	-42.58	-20	Pass
π/4DQPSK	LCH	-40.74	-20	Pass
	MCH	-42.19	-20	Pass
	HCH	-40.98	-20	Pass

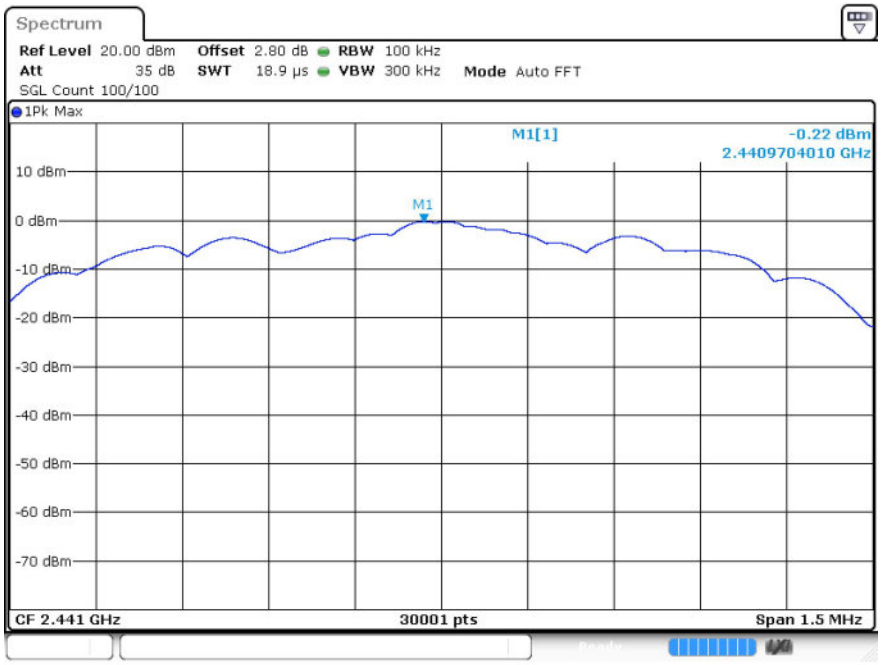
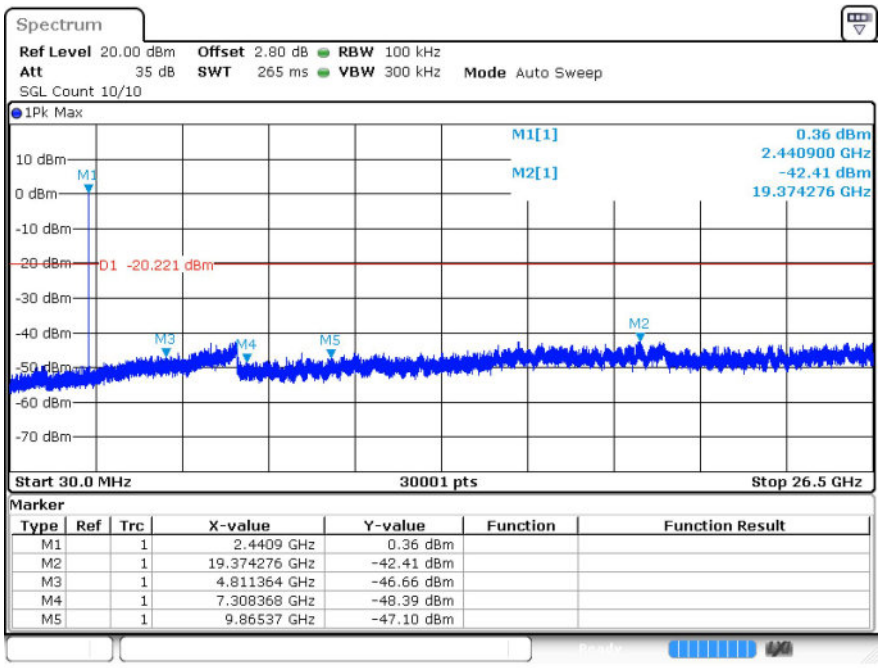
7.2 Test Graphs

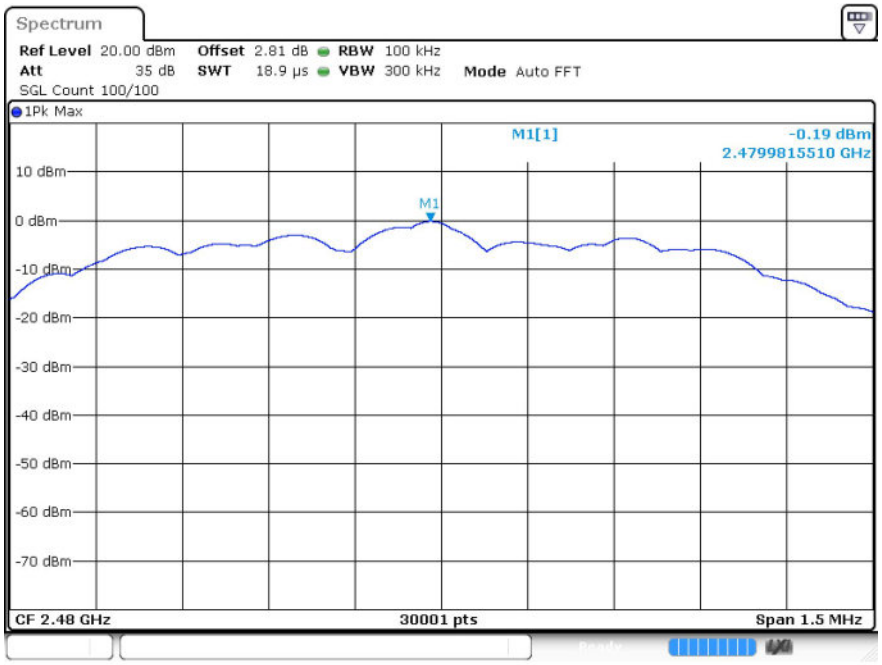
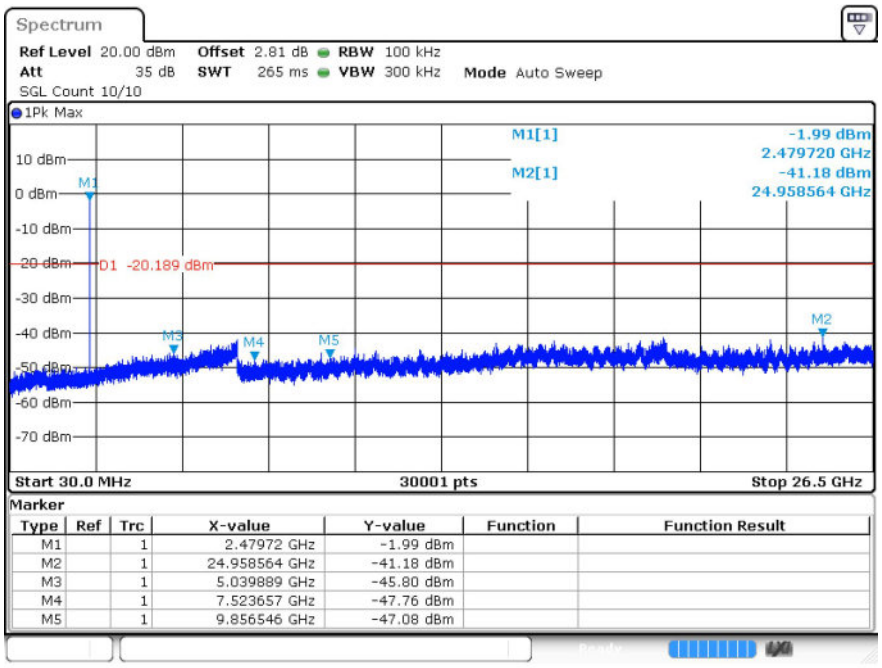
GFSK_LCH_Graphs	
Pref	
Puw	

GFSK_MCH_Graphs	
Pref	
Puw	

GFSK_HCH_Graphs	
Pref	
Puw	

π/4DQPSK_LCH_Graphs	
Pref	
Puw	

π/4DQPSK_MCH_Graphs	
Pref	
Puw	 Marker Type | Ref | Trc | X-value | Y-value | Function | Function Result M1 | 1 | 2.4409 GHz | 0.36 dBm M2 | 1 | 19.374276 GHz | -42.41 dBm M3 | 1 | 4.811364 GHz | -46.66 dBm M4 | 1 | 7.308368 GHz | -48.39 dBm M5 | 1 | 9.86537 GHz | -47.10 dBm

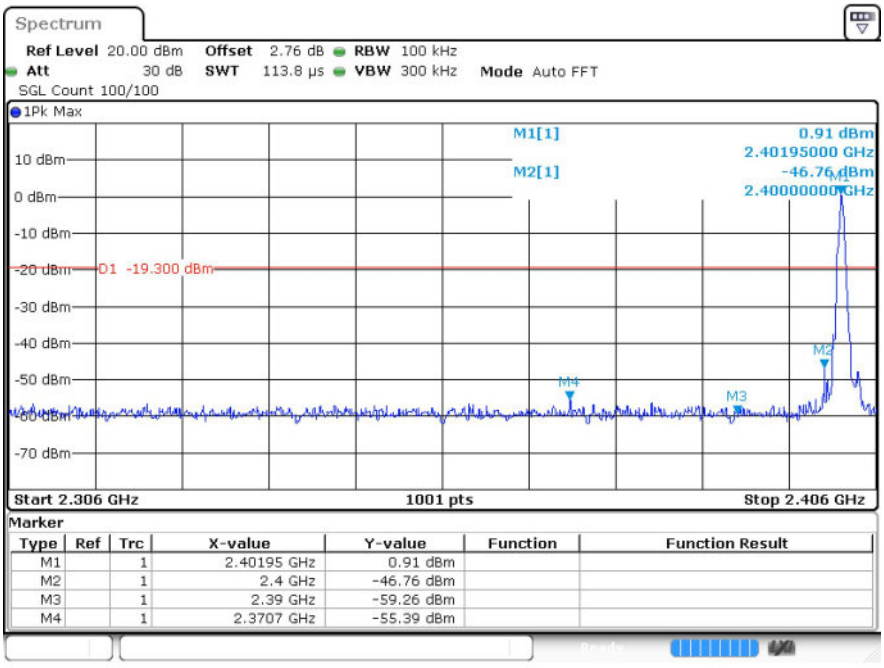
π/4DQPSK_HCH_Graphs	
Pref	
Puw	

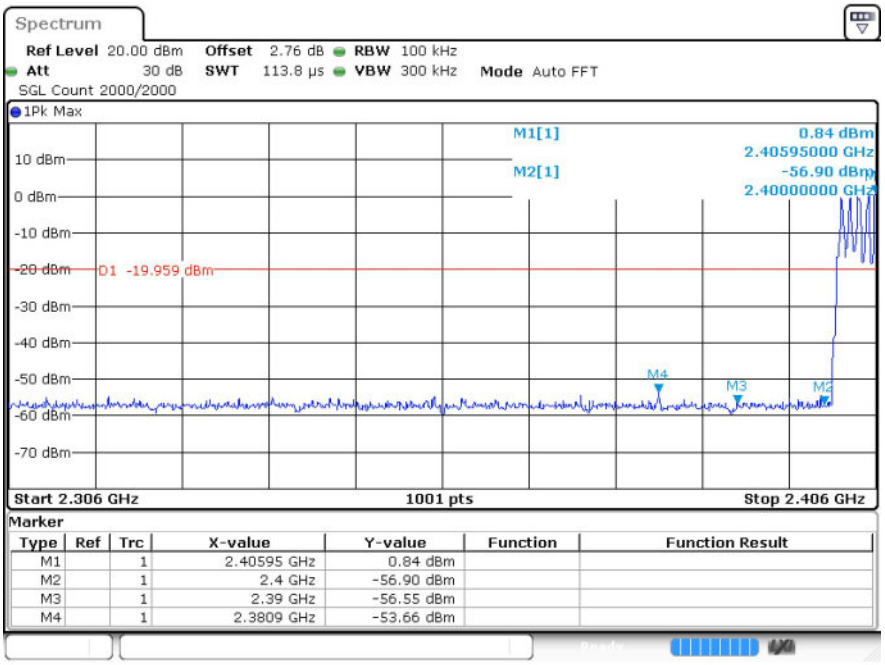
8 Band-edge for RF Conducted Emissions

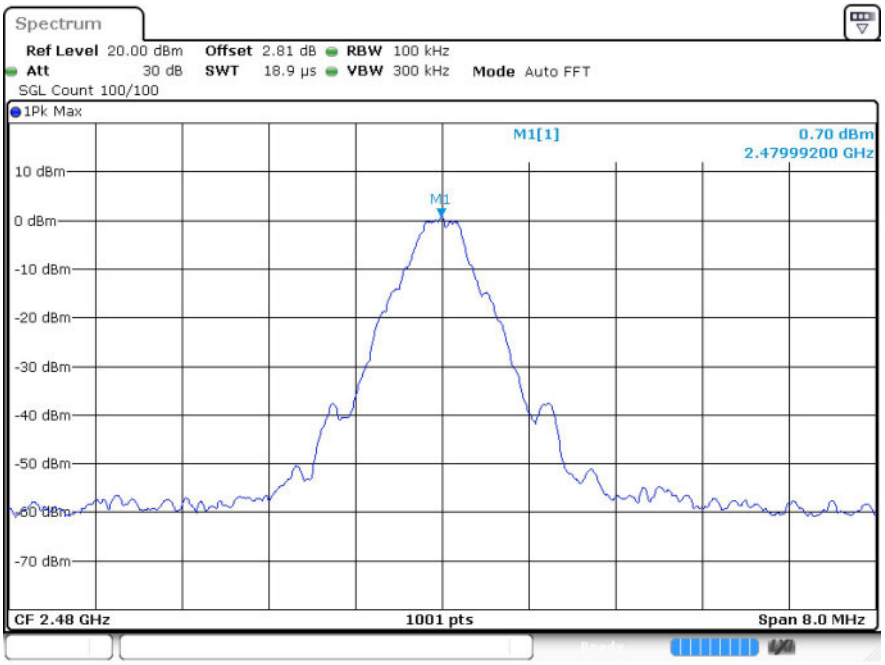
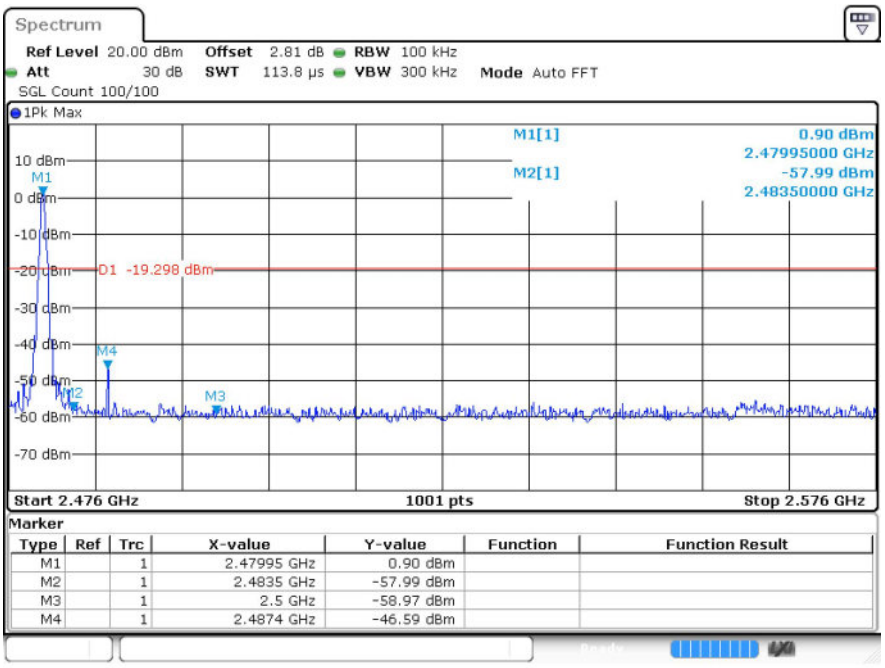
8.1 Test Result

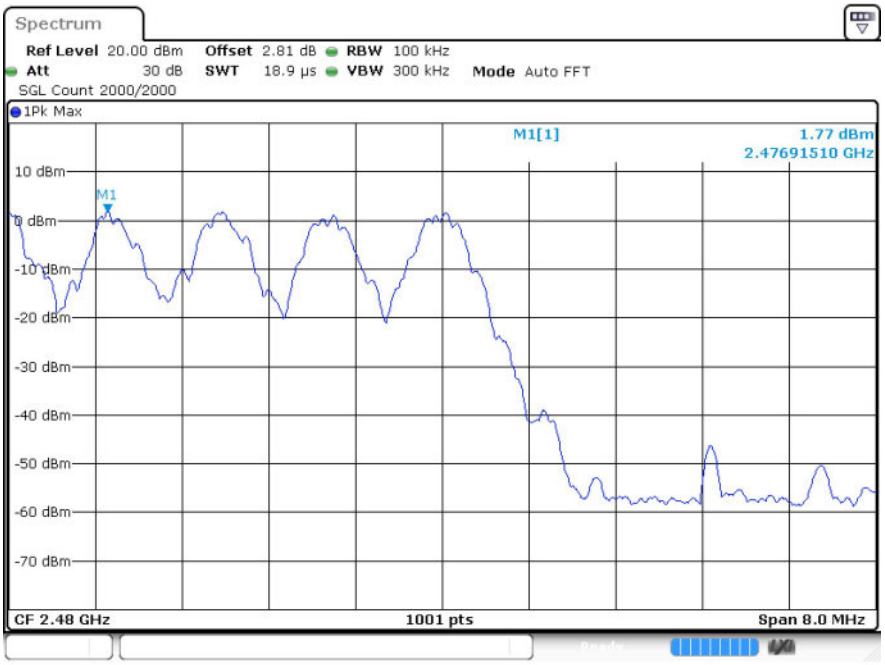
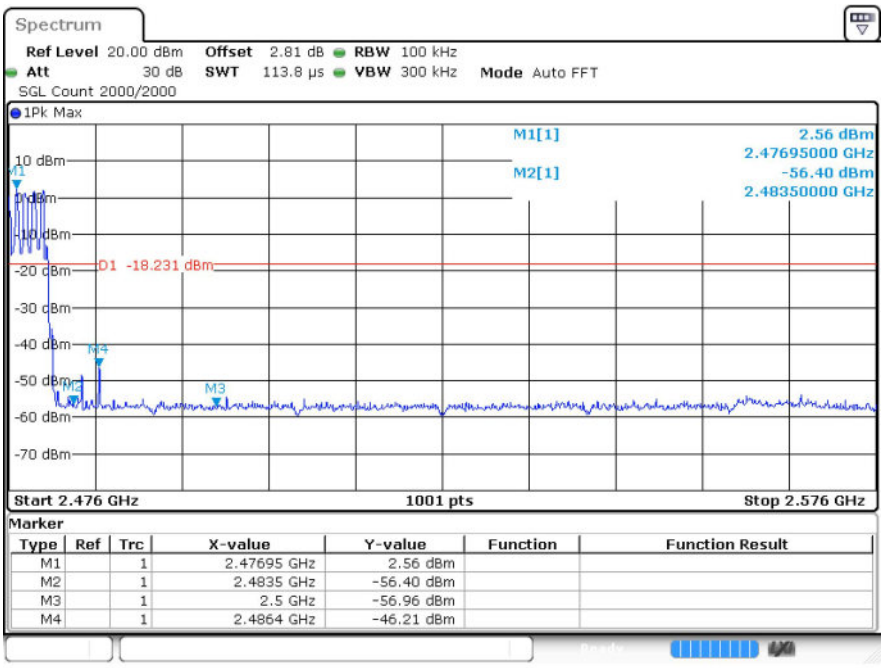
Mode	Channel	Carrier Frequency [MHz]	Frequency Hopping	Max Spurious Level [dBc]	Limit [dBc]	Verdict
GFSK	LCH	2402	Off	-56.08	-20	Pass
			On	-53.69	-20	Pass
	HCH	2480	Off	-47.29	-20	Pass
			On	-47.97	-20	Pass
π/4DQPSK	LCH	2402	Off	-55.66	-20	Pass
			On	-53.04	-20	Pass
	HCH	2480	Off	-47.26	-20	Pass
			On	-49.64	-20	Pass

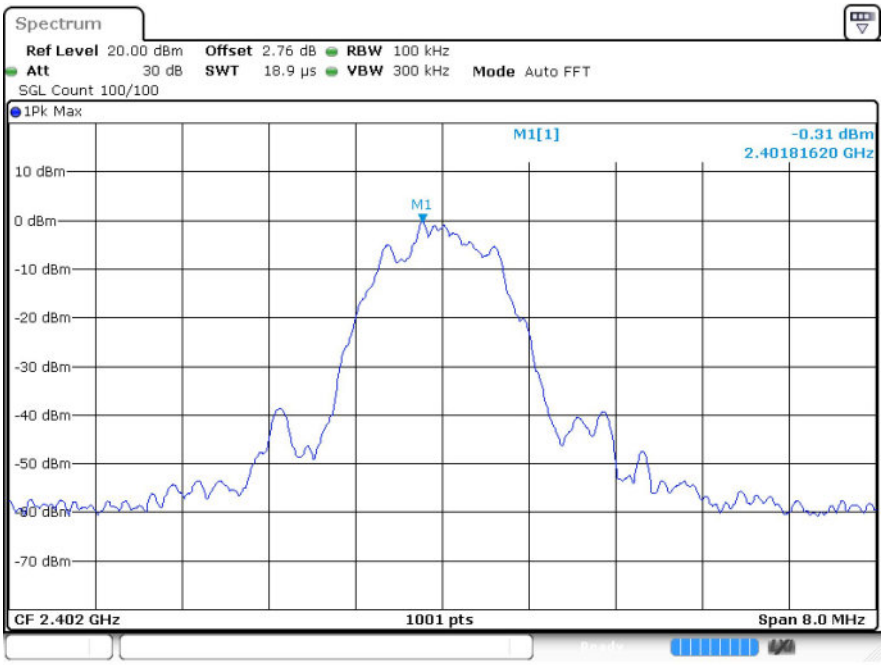
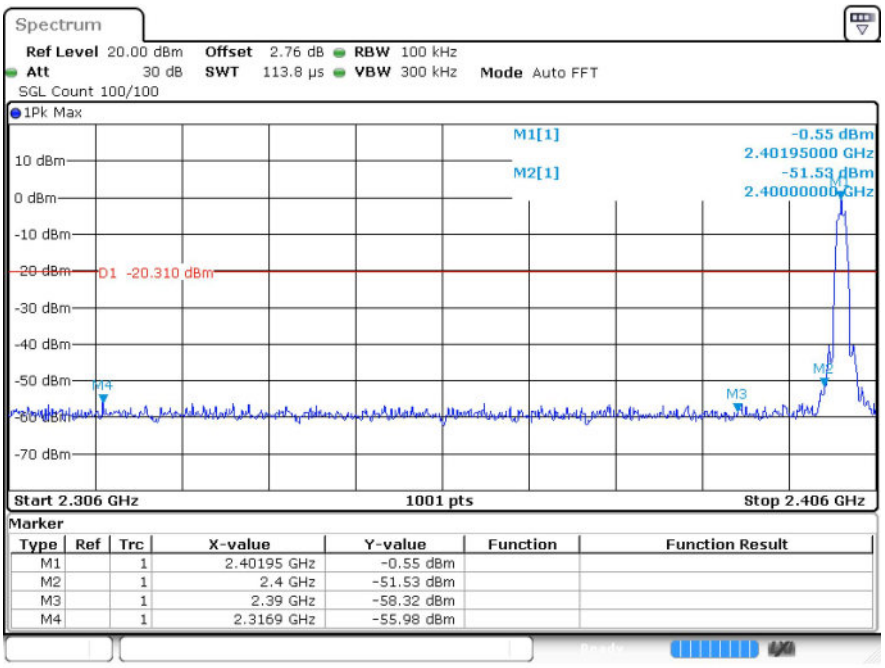
8.2 Test Graphs

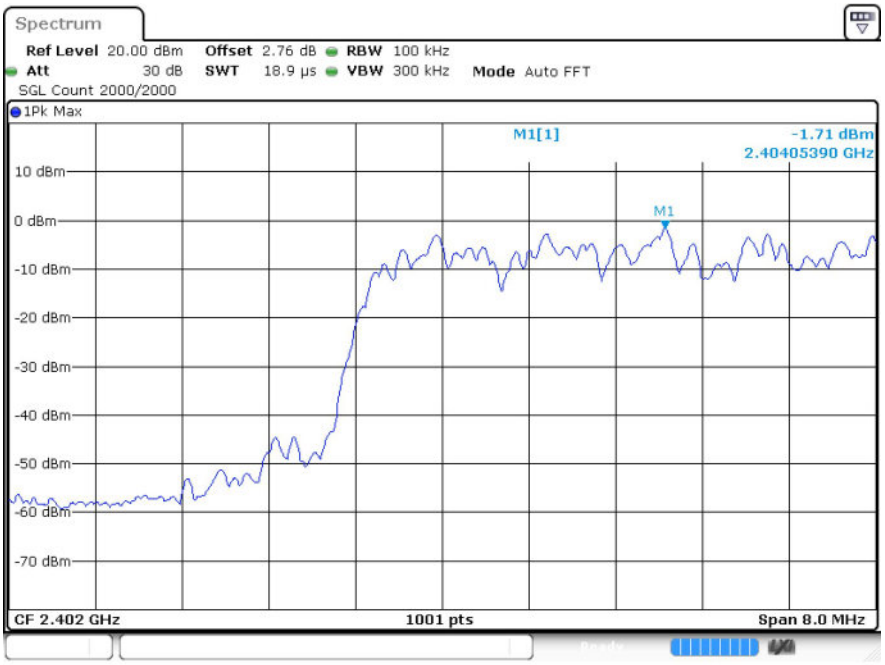
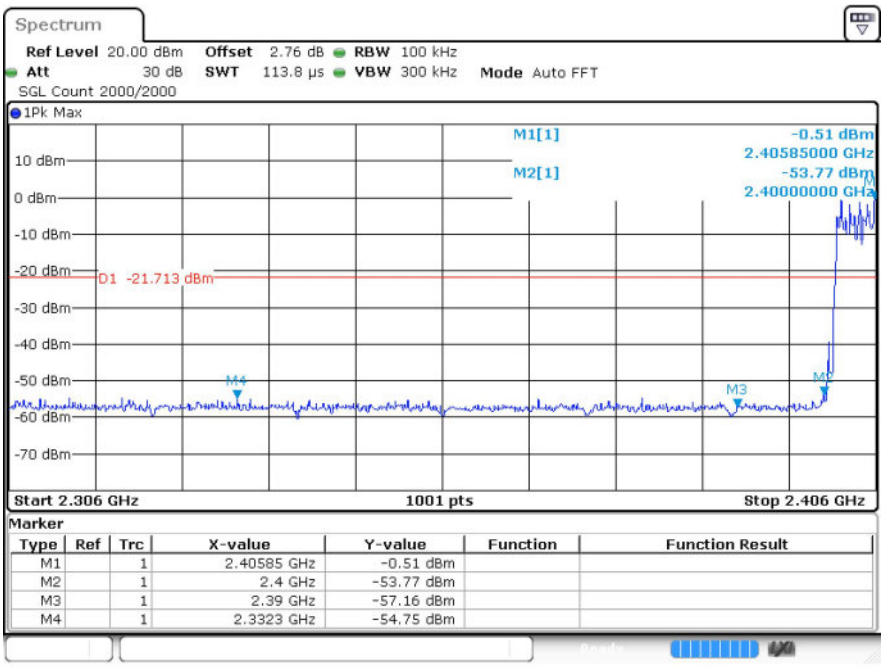
Test Graphs	
Pref	
GFSK/LCH/No Hop	

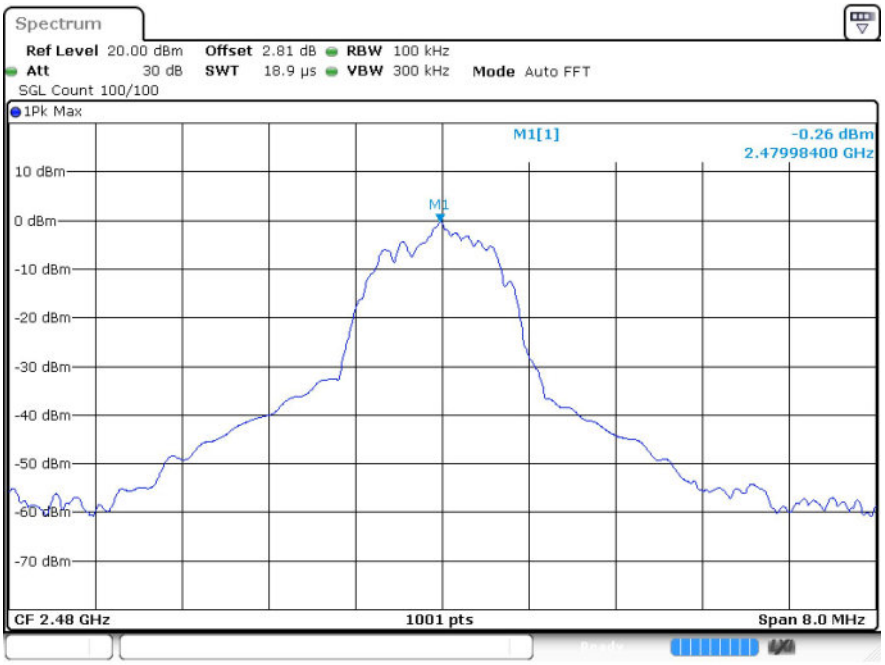
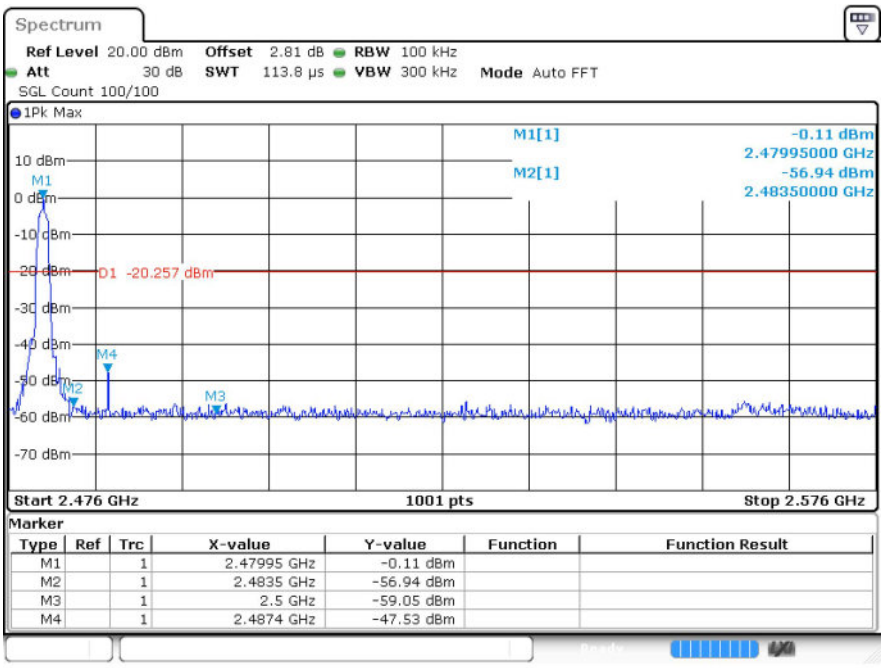
Ref	
GFSK/LCH/Hop	

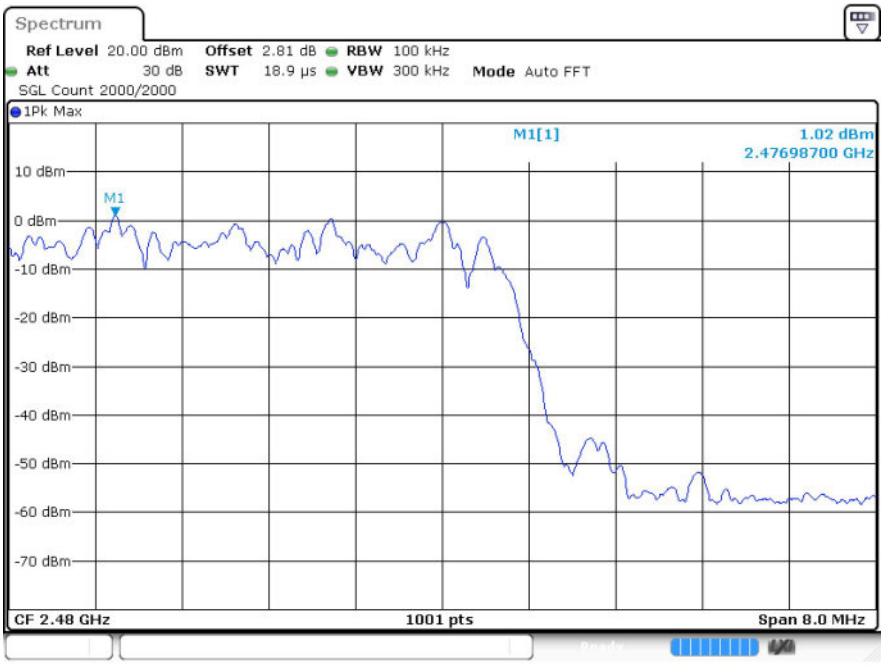
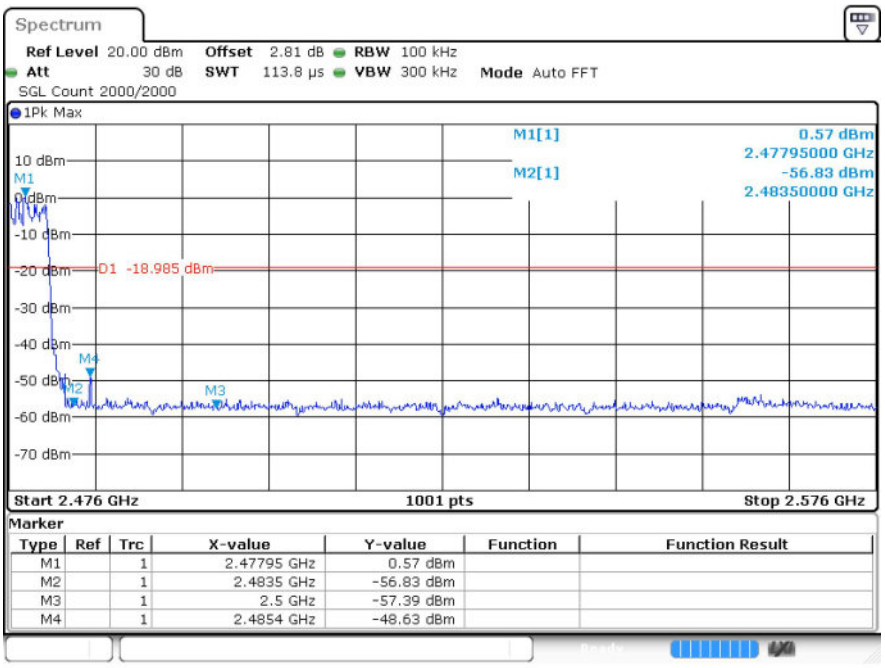
Ref	
GFSK/HCH/No Hop	 Marker Type Ref Trc X-value Y-value Function Function Result M1 1 2.47995 GHz 0.90 dBm M2 1 2.4835 GHz -57.99 dBm M3 1 2.5 GHz -58.97 dBm M4 1 2.4874 GHz -46.59 dBm

Ref.	
GFSK/HCH/Hop	 Marker Type Ref Trc X-value Y-value Function Function Result M1 1 2.47695 GHz 2.56 dBm M2 1 2.4835 GHz -56.40 dBm M3 1 2.5 GHz -56.96 dBm M4 1 2.4864 GHz -46.21 dBm

Ref	
π/4DQPSK/LCH/No Hop	

Ref	
π/4DQPSK/LCH/Hop	

Ref	
π/4DQPSK/HCH/No Hop	

Ref	
π/4DQPSK/HCH/Hop	

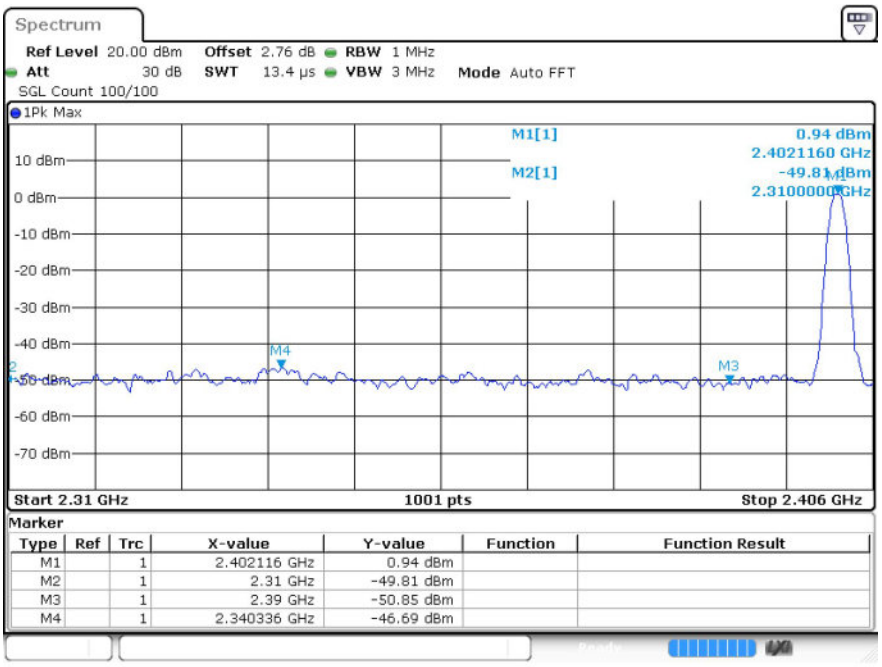
9 Restrict-band band-edge measurements

9.1 Test Result

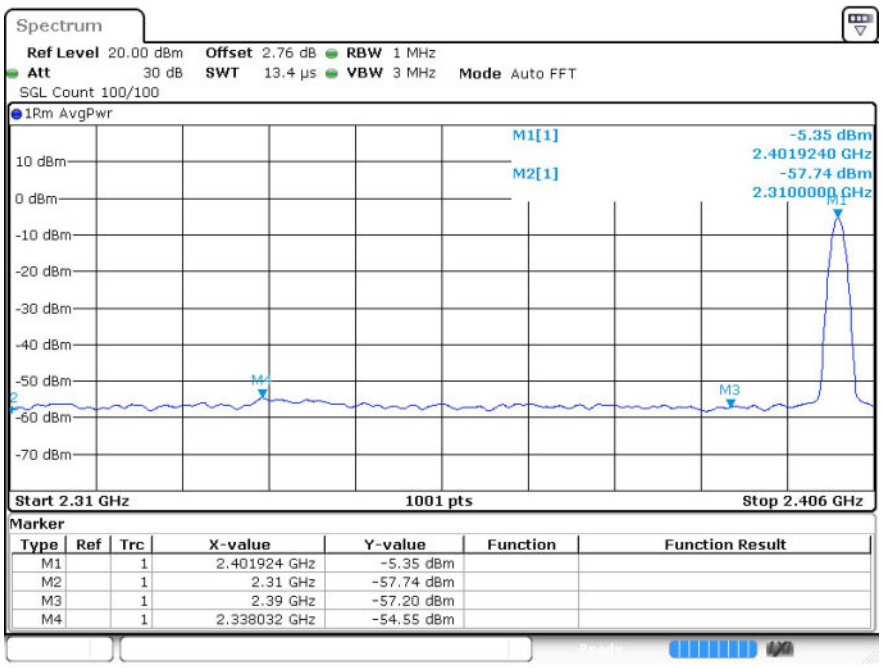
Test Mode	Hopping	Freq.	Power [dBm]	Gain	Duty Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-49.81	2.7	-	48.15	PEAK	74	Pass
	Off	2310.0	-57.74	2.7	5.06	45.28	AV	54	Pass
	Off	2340.336	-46.68	2.7	-	51.28	PEAK	74	Pass
	Off	2338.032	-54.55	2.7	5.06	48.47	AV	54	Pass
	Off	2390.0	-50.85	2.7	-	47.11	PEAK	74	Pass
	Off	2390.0	-57.2	2.7	5.06	45.82	AV	54	Pass
	Off	2483.5	-48.99	2.7	-	48.97	PEAK	74	Pass
	Off	2483.5	-55.99	2.7	5.06	47.03	AV	54	Pass
	Off	2487.4	-43.99	2.7	-	53.97	PEAK	74	Pass
	Off	2487.496	-55.15	2.7	5.06	47.87	AV	54	Pass
	Off	2500.0	-50.2	2.7	-	47.76	PEAK	74	Pass
	Off	2500.0	-56.89	2.7	5.06	46.13	AV	54	Pass
π/4DQPSK	Off	2310.0	-49.02	2.7	-	48.94	PEAK	74	Pass
	Off	2310.0	-56.1	2.7	4.95	46.81	AV	54	Pass
	Off	2339.184	-47.31	2.7	-	50.65	PEAK	74	Pass
	Off	2338.608	-54.57	2.7	4.95	48.34	AV	54	Pass
	Off	2390.0	-49.29	2.7	-	48.67	PEAK	74	Pass
	Off	2390.0	-56.83	2.7	4.95	46.08	AV	54	Pass
	Off	2483.5	-47.64	2.7	-	50.32	PEAK	74	Pass
	Off	2483.5	-56.03	2.7	4.95	46.88	AV	54	Pass
	Off	2487.4	-43.67	2.7	-	54.29	PEAK	74	Pass
	Off	2498.872	-54.77	2.7	4.95	48.14	AV	54	Pass
	Off	2500.0	-48.77	2.7	-	49.19	PEAK	74	Pass
	Off	2500.0	-55.83	2.7	4.95	47.08	AV	54	Pass

9.2 Test Graphs

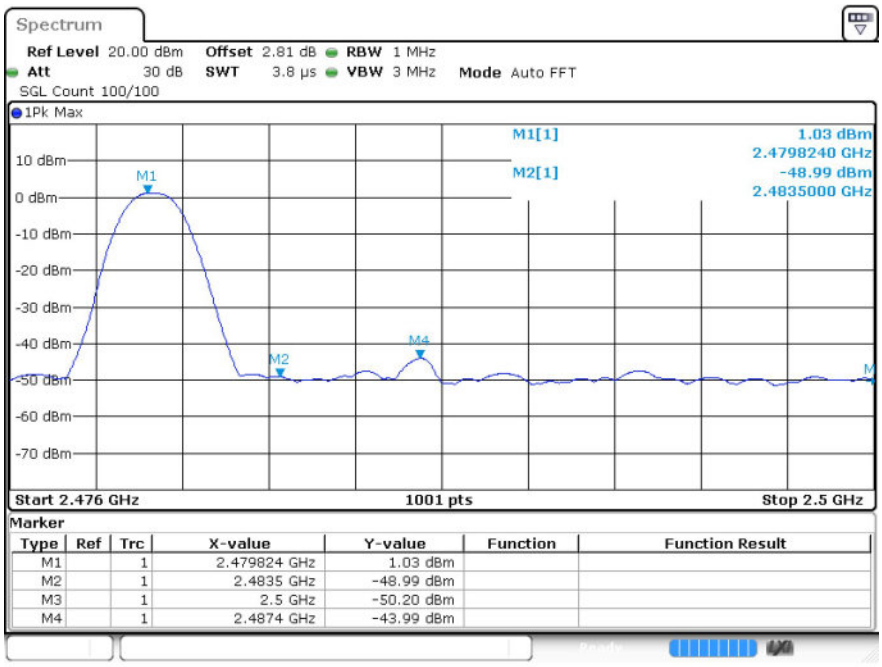
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (Low Channel)



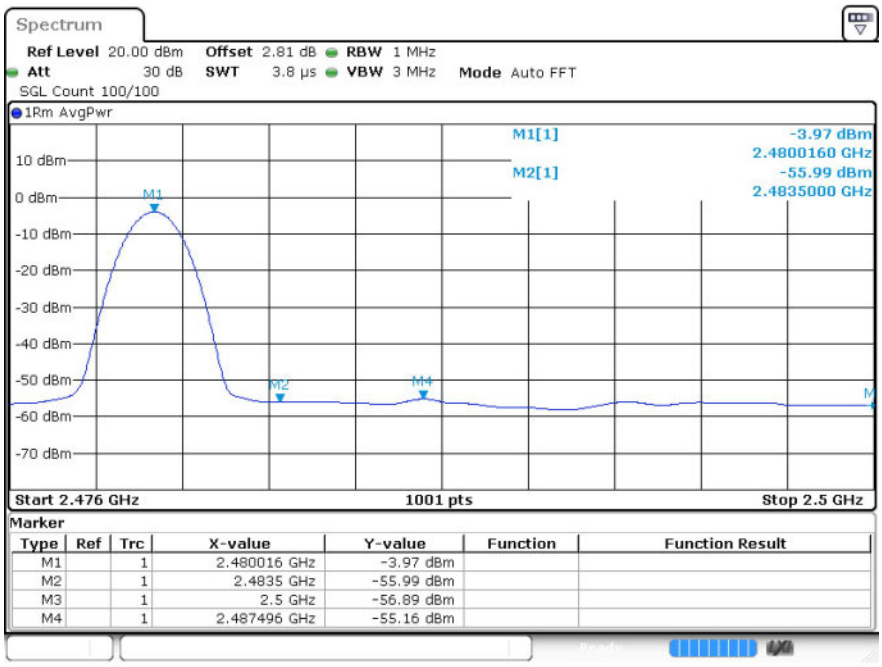
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (Low Channel)



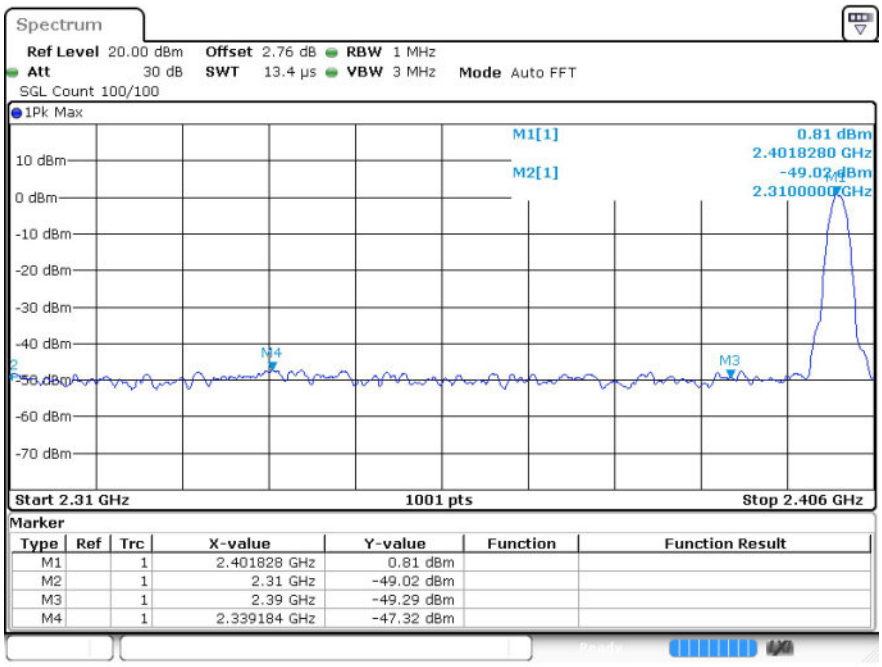
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (High Channel)



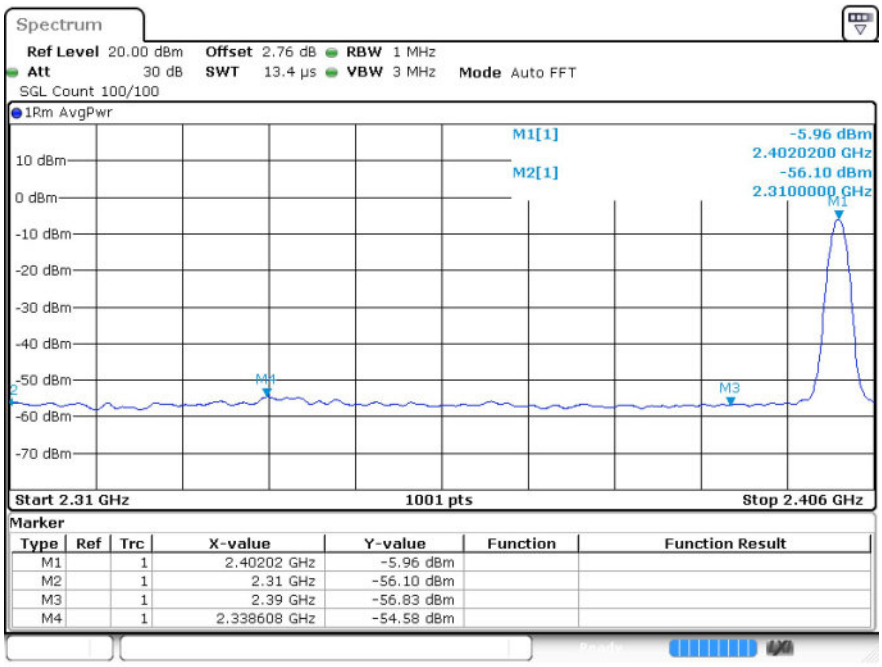
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (High Channel)



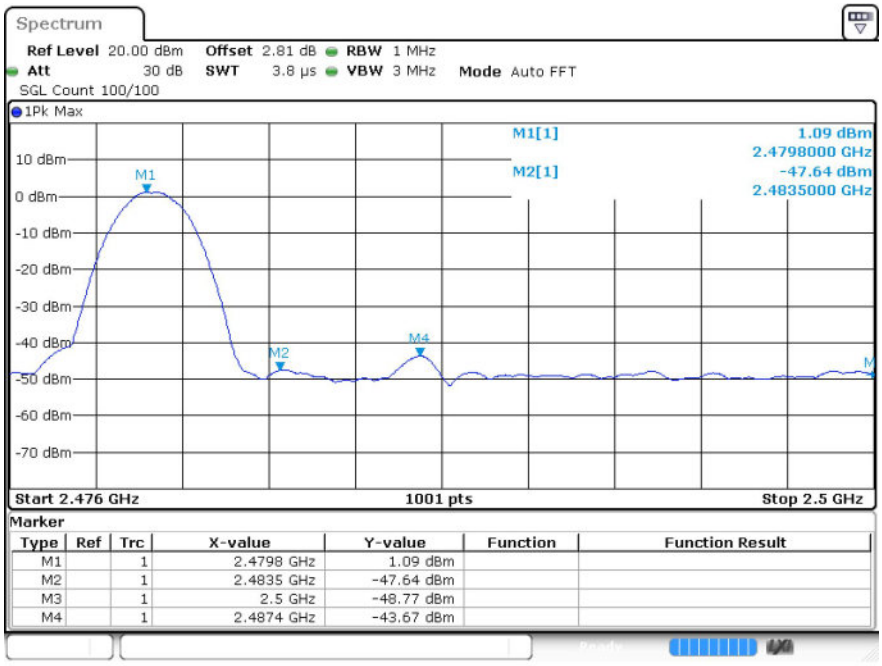
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (Low Channel)



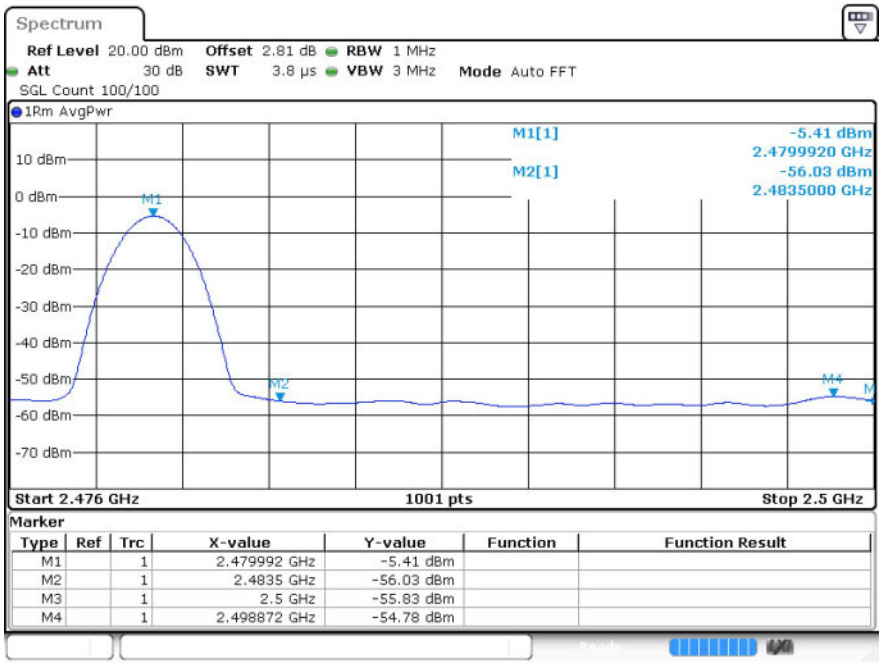
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (Low Channel)



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---