Appendix A

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

Product Name: Bluetooth stereo

Trade Mark: N/A

Test Model: k10

Environmental Conditions

Temperature:	26.2℃
Relative Humidity:	54.9%
ATM Pressure:	101Kpa
Test Engineer:	Emiya lin
Supervised by:	Simba Haung

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1 Duty Cycle

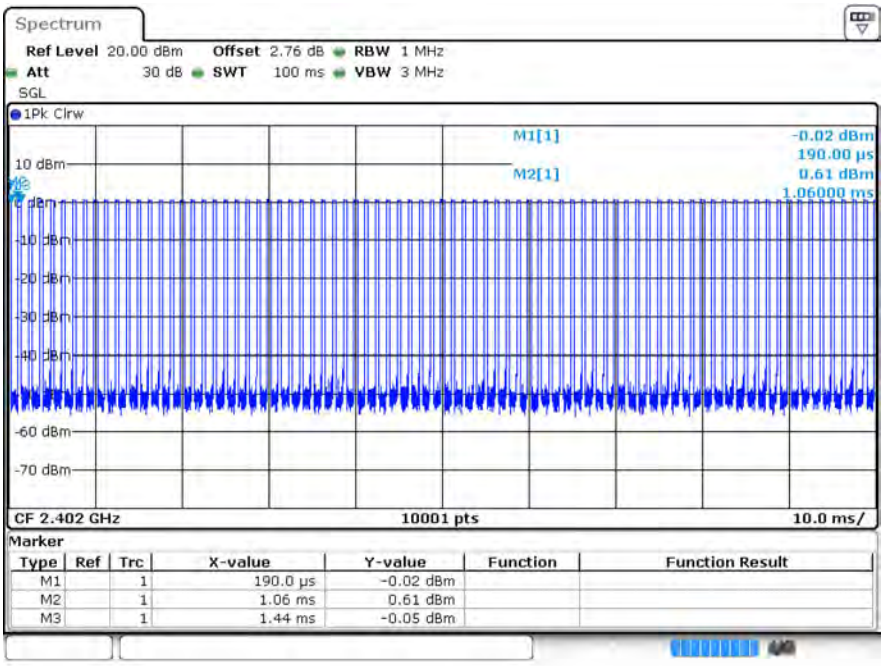
1.1 Test Result

Mode	Frequency (MHz)	Duty Cycle (%)	Correction Factor	1/T (kHz)
1-DH1	2402	31.21	5.06	2.63
1-DH1	2441	31.2	5.06	2.63
1-DH1	2480	31.21	5.06	2.63
2-DH1	2402	32.02	4.95	2.5
2-DH1	2441	32.01	4.95	2.56
2-DH1	2480	32	4.95	2.56
3-DH1	2402	32.05	4.94	2.56
3-DH1	2441	32	4.95	2.56
3-DH1	2480	32	4.95	2.56

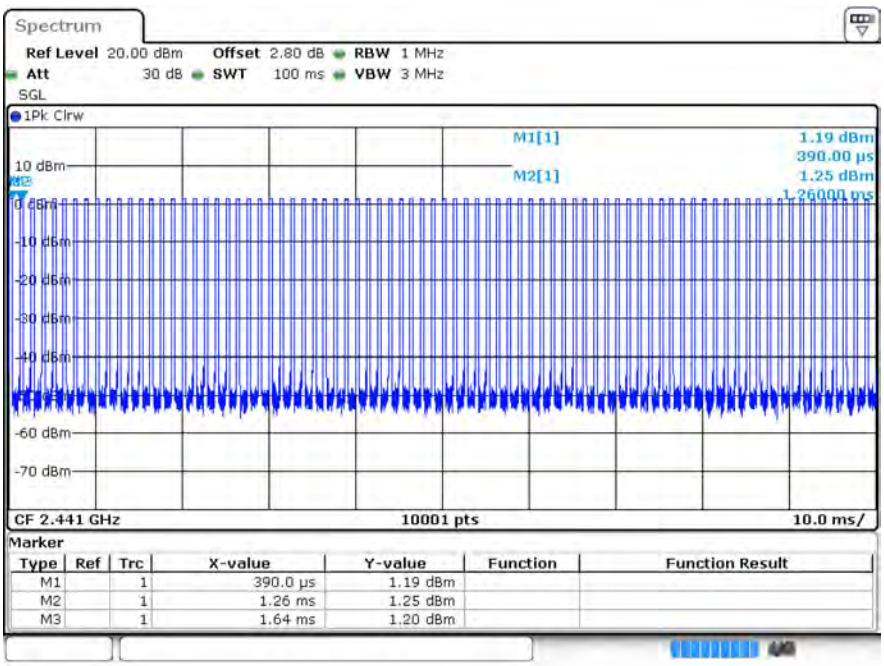
1.2 Test Graphs

Test Graphs

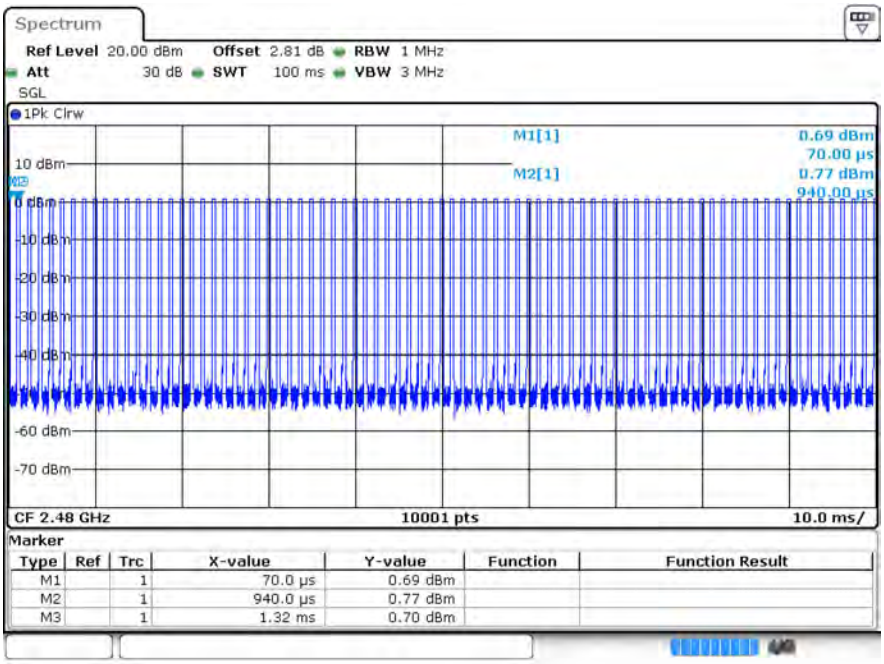
1-DH1 2402MHz



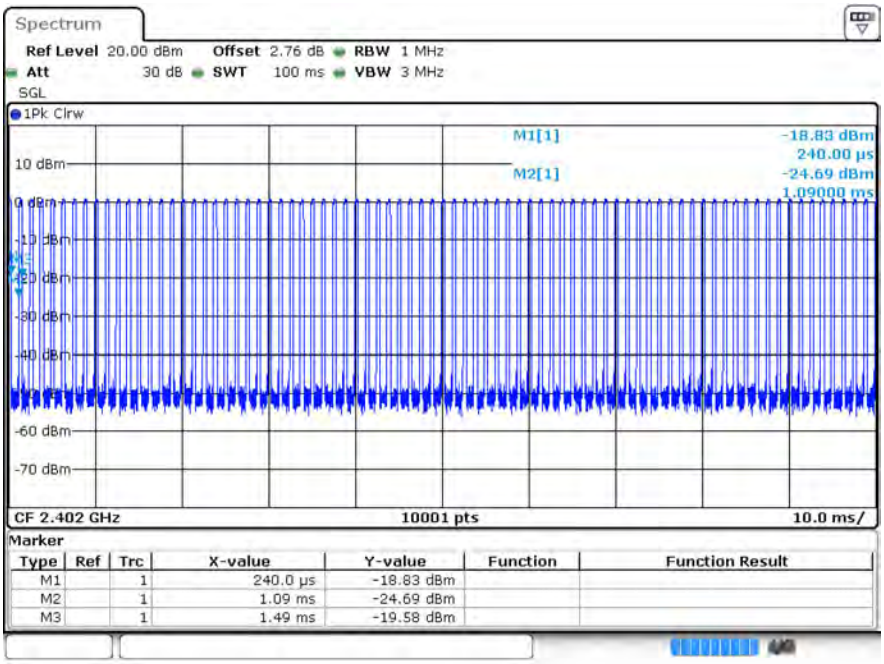
1-DH1 2441MHz



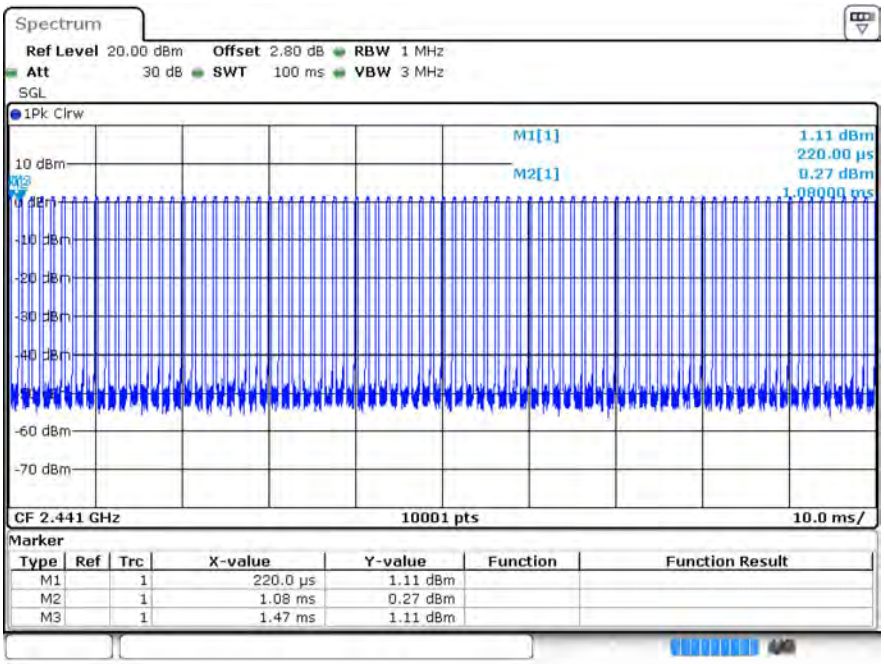
1-DH1 2480MHz



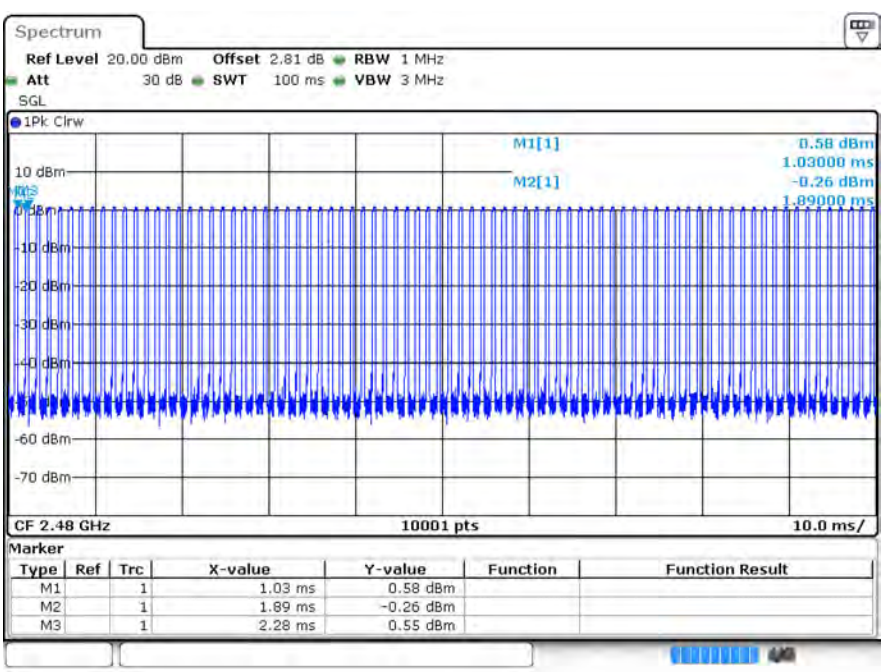
2-DH1 2402MHz



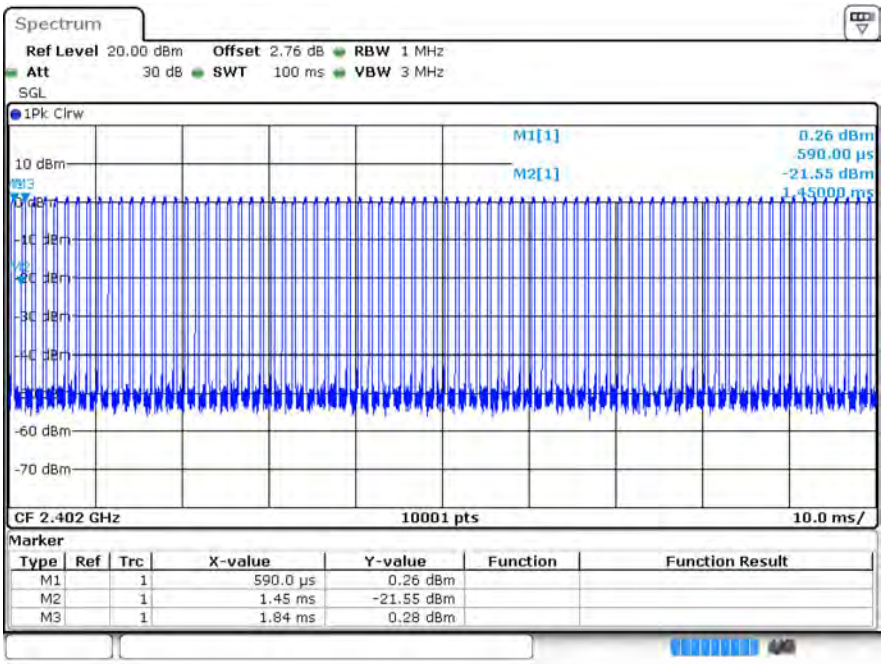
2-DH1 2441MHz



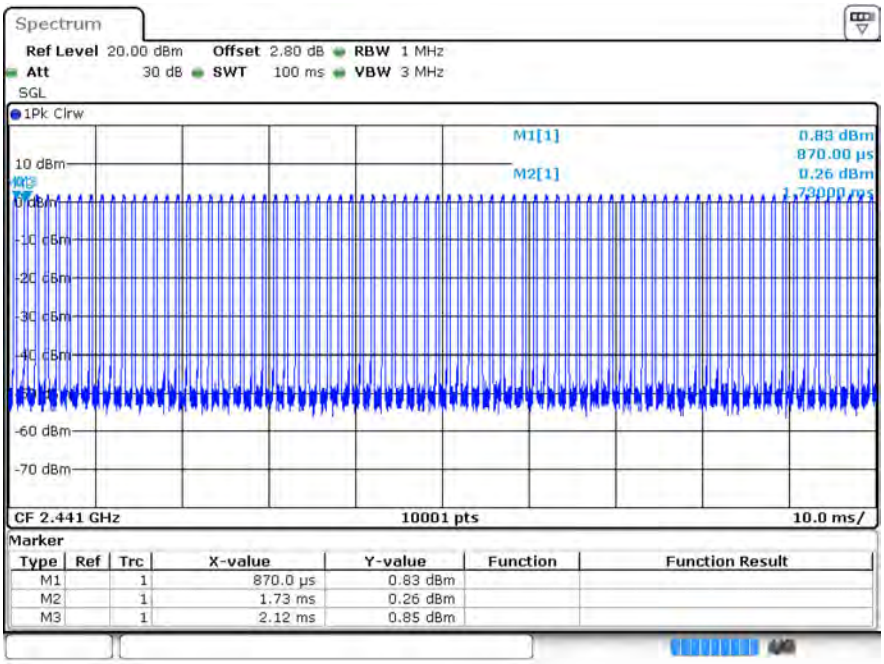
2-DH1 2480MHz



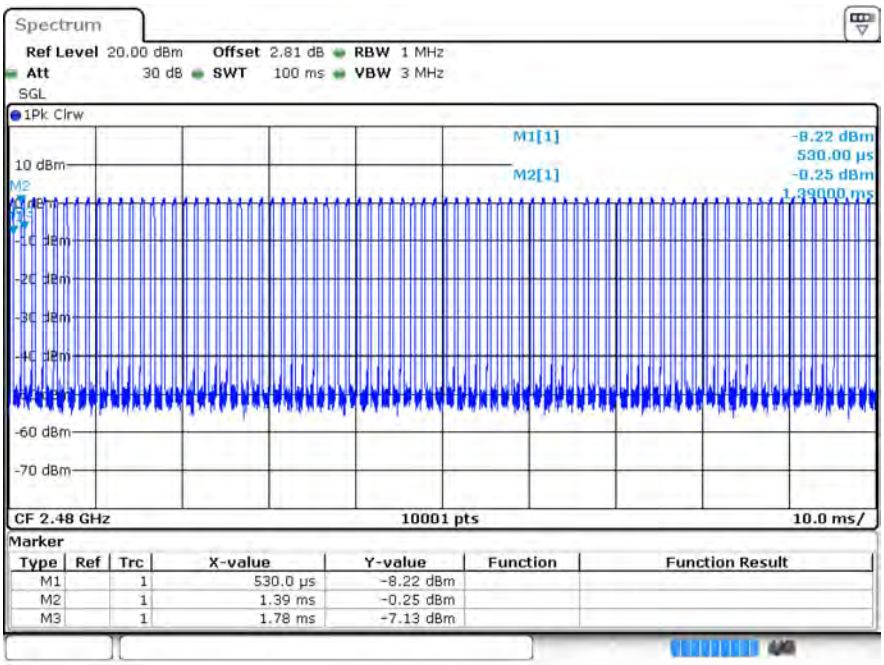
3-DH1 2402MHz



3-DH1 2441MHz



3-DH1 2480MHz

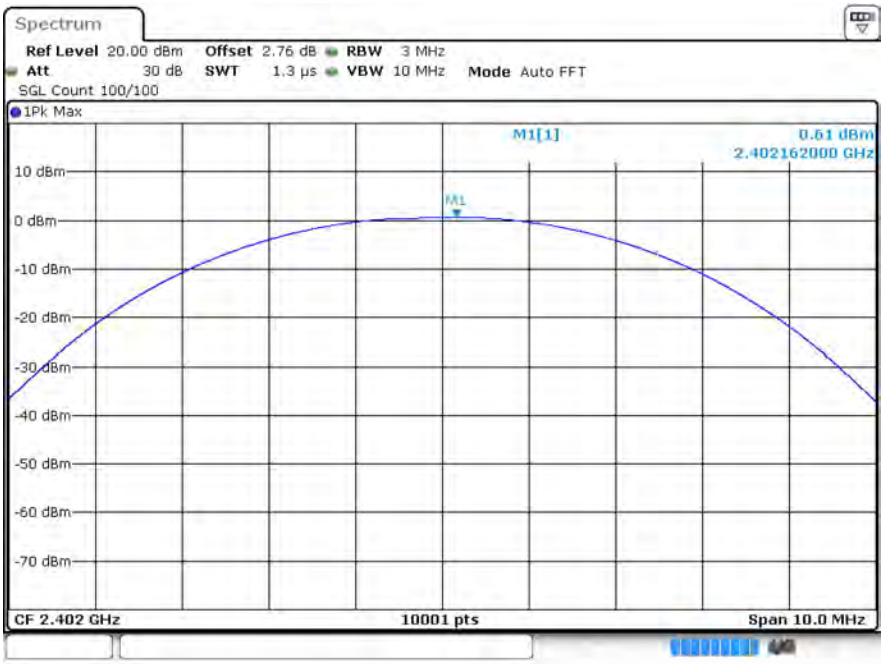
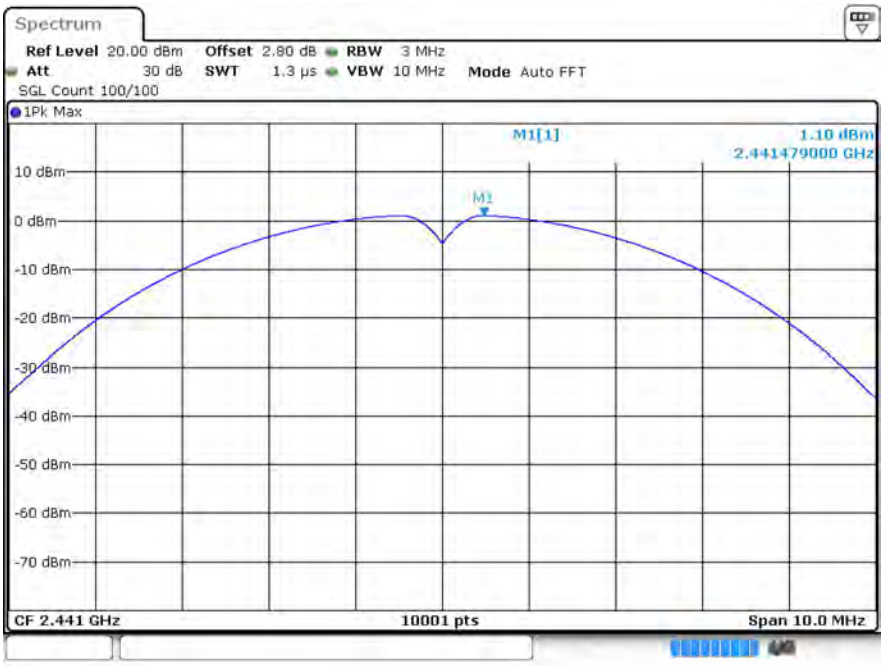


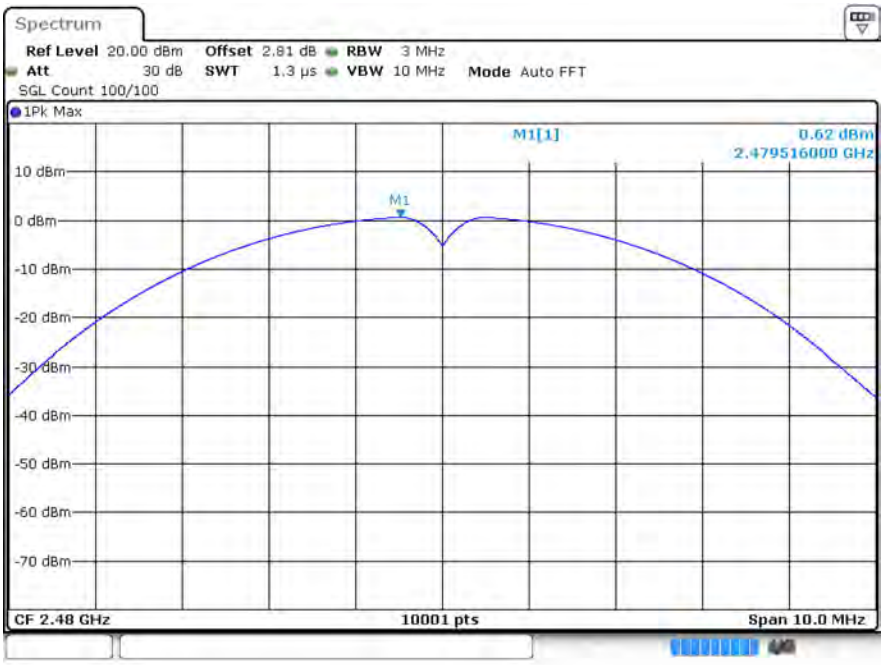
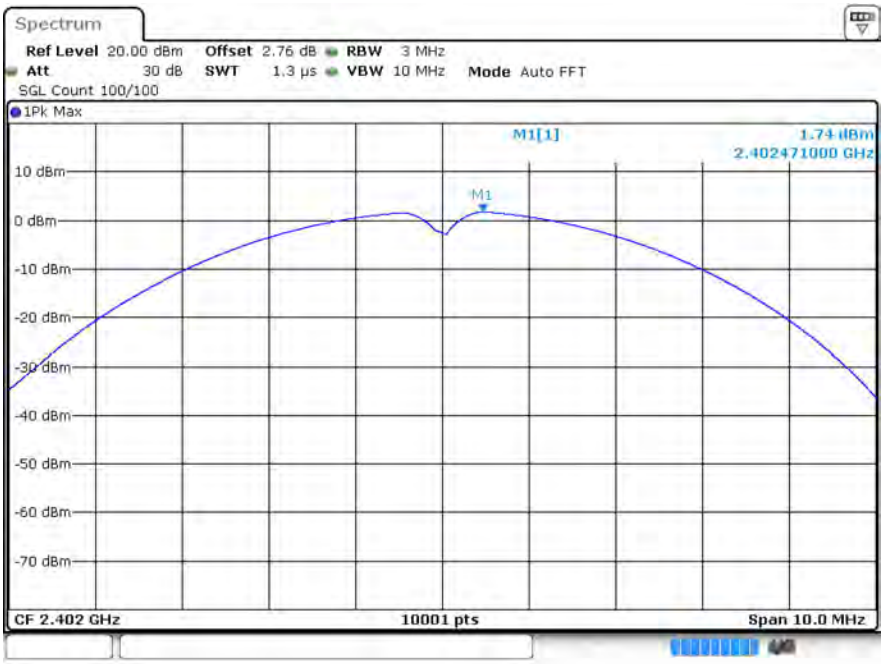
2 Maximum Conducted Peak Output Power

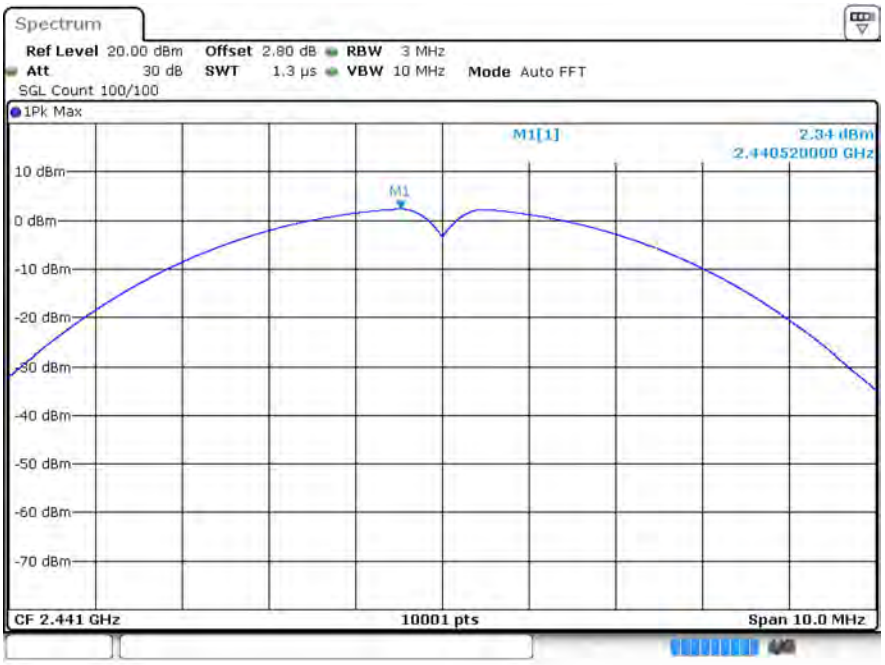
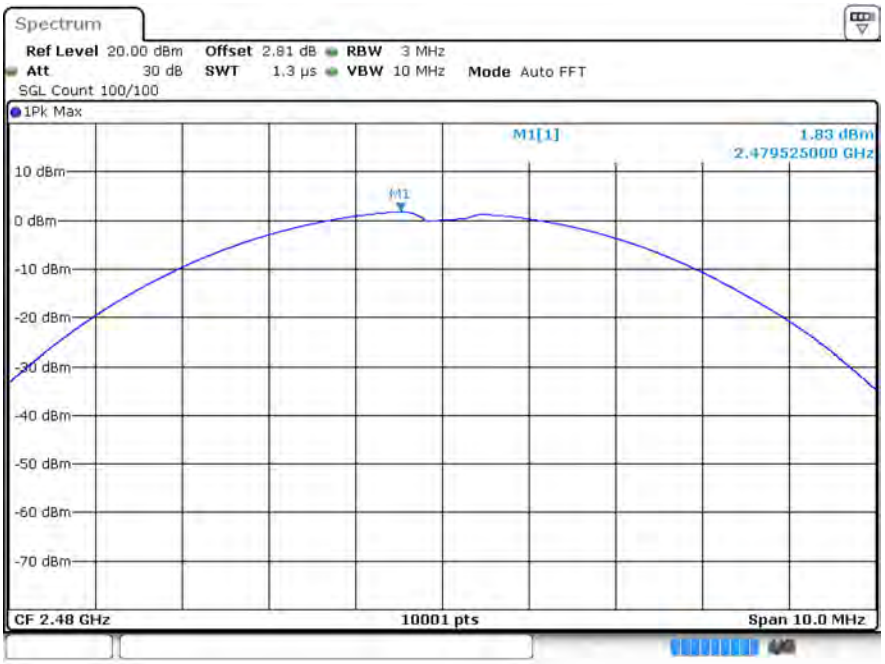
2.1 Test Result

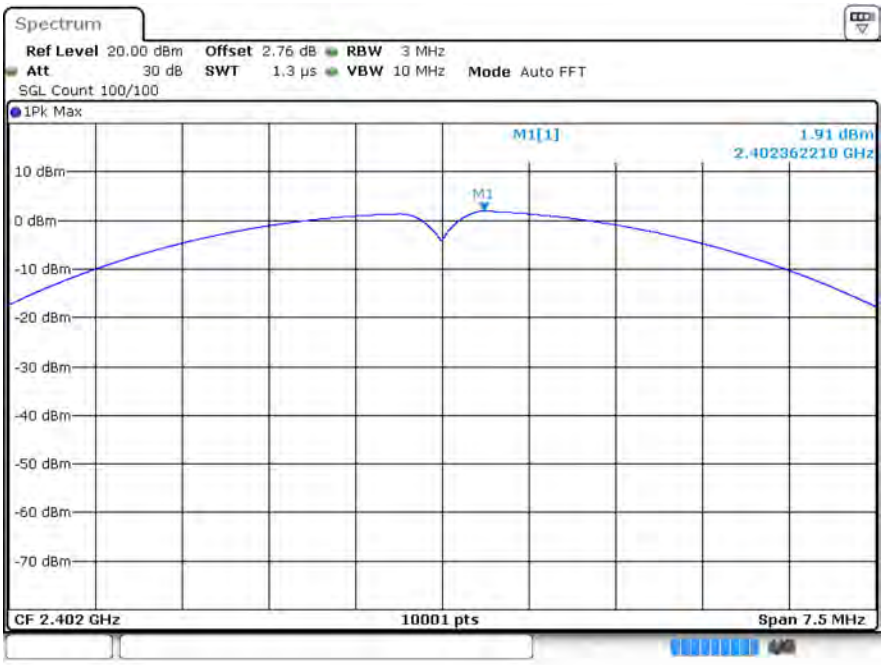
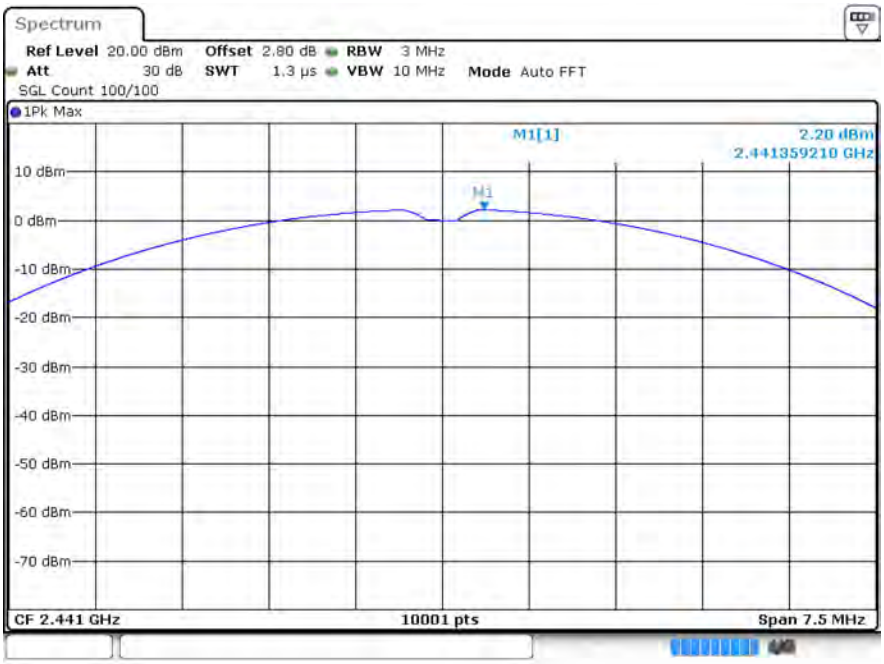
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	0.61	21	Pass
	MCH	1.1	21	Pass
	HCH	0.62	21	Pass
π/4DQPSK	LCH	1.74	21	Pass
	MCH	2.34	21	Pass
	HCH	1.83	21	Pass
8DPSK	LCH	1.91	21	Pass
	MCH	2.2	21	Pass
	HCH	1.91	21	Pass

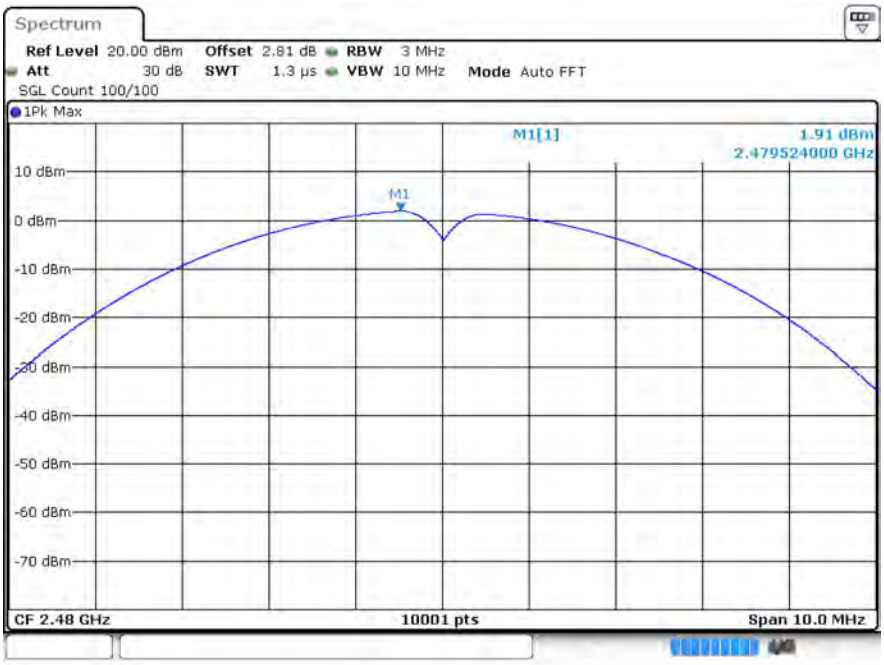
2.2 Test Graphs

Test Graphs	
GFSK/LCH	
GFSK/MCH	

GFSK/HCH	
π/4DQPSK/LCH	

π/4DQPSK/MCH	
π/4DQPSK/HCH	

8DPSK/LCH	
8DPSK/MCH	

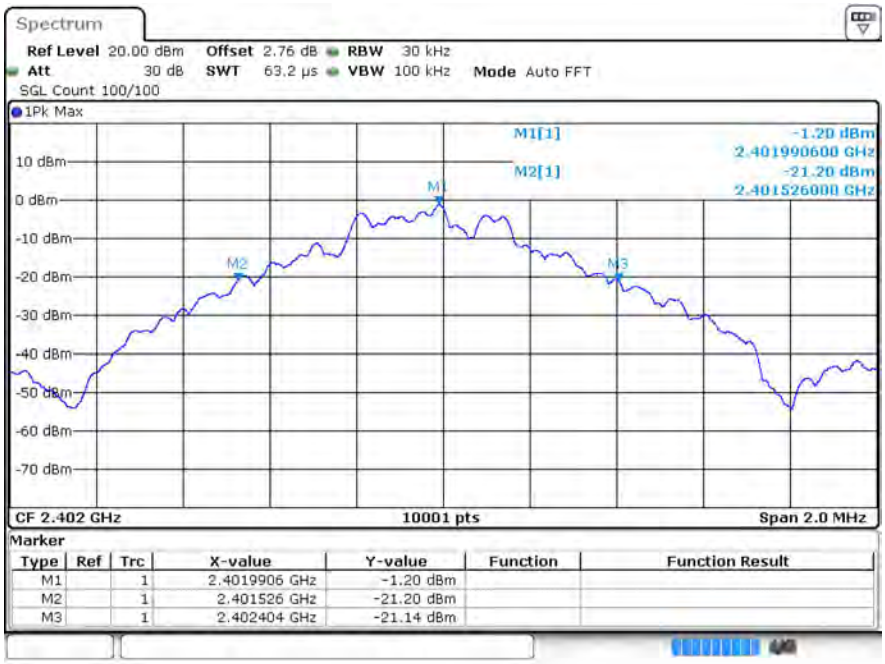
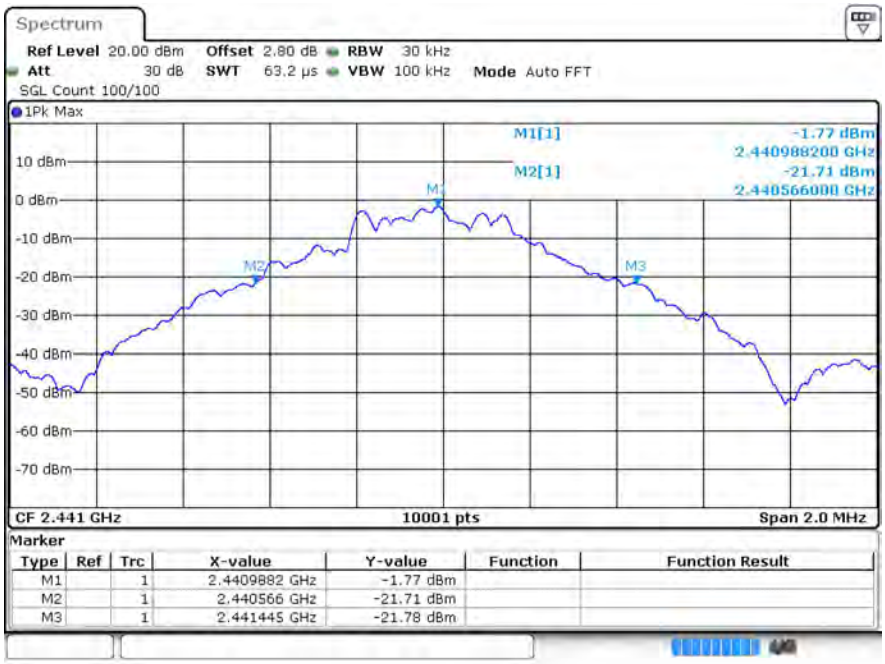
8DPSK/HCH	 Spectrum Ref Level 20.00 dBm Offset 2.81 dB RBW 3 MHz Att 30 dB SWT 1.3 µs VBW 10 MHz Mode Auto FFT SGL Count 100/100 1Pk Max M1[1] 1.91 dBm 2.479524000 GHz M1 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm -70 dBm CF 2.48 GHz 10001 pts Span 10.0 MHz

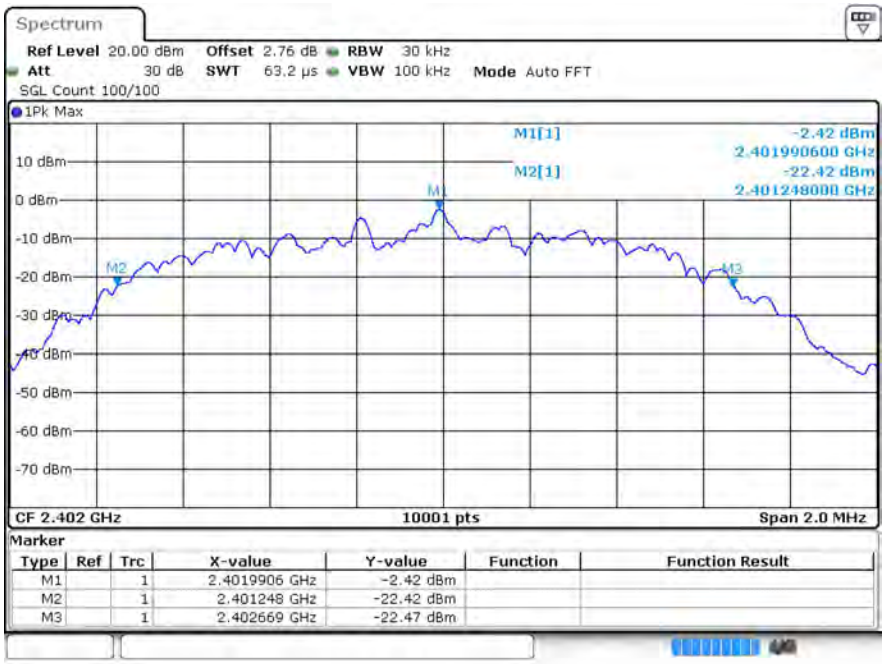
3 20dB Bandwidth

3.1 Test Result

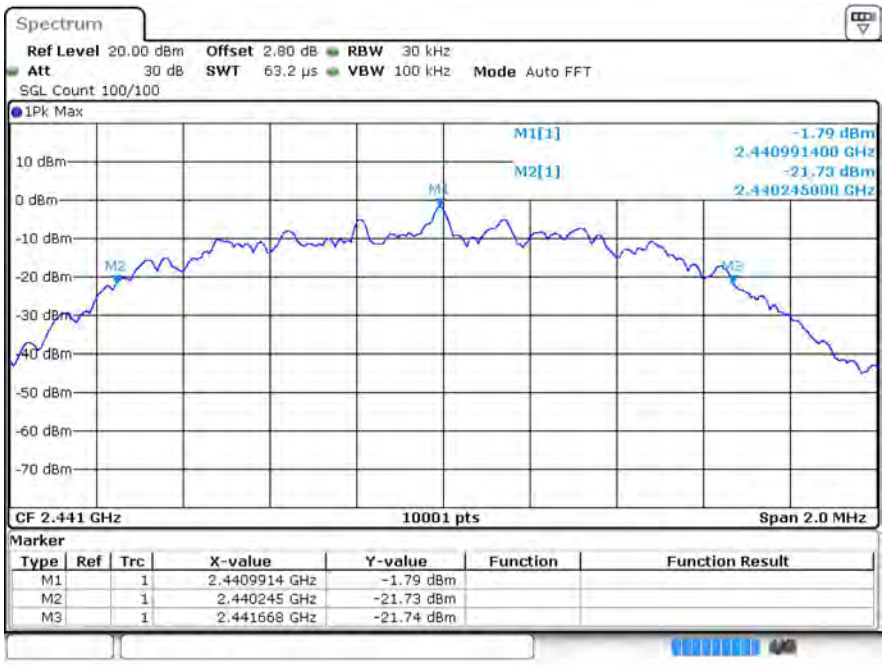
Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.878	Not Specified	Pass
	MCH	0.879	Not Specified	Pass
	HCH	0.885	Not Specified	Pass
π/4DQPSK	LCH	1.421	Not Specified	Pass
	MCH	1.424	Not Specified	Pass
	HCH	1.409	Not Specified	Pass
8DPSK	LCH	1.416	Not Specified	Pass
	MCH	1.411	Not Specified	Pass
	HCH	1.417	Not Specified	Pass

3.2 Test Graphs

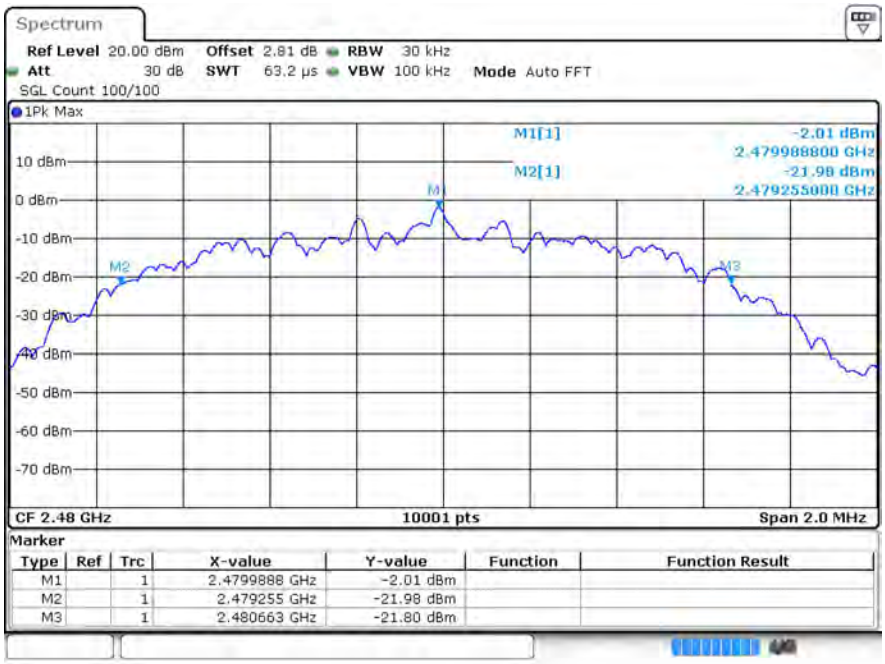
Test Graphs	
GFSK/LCH	
GFSK/MCH	

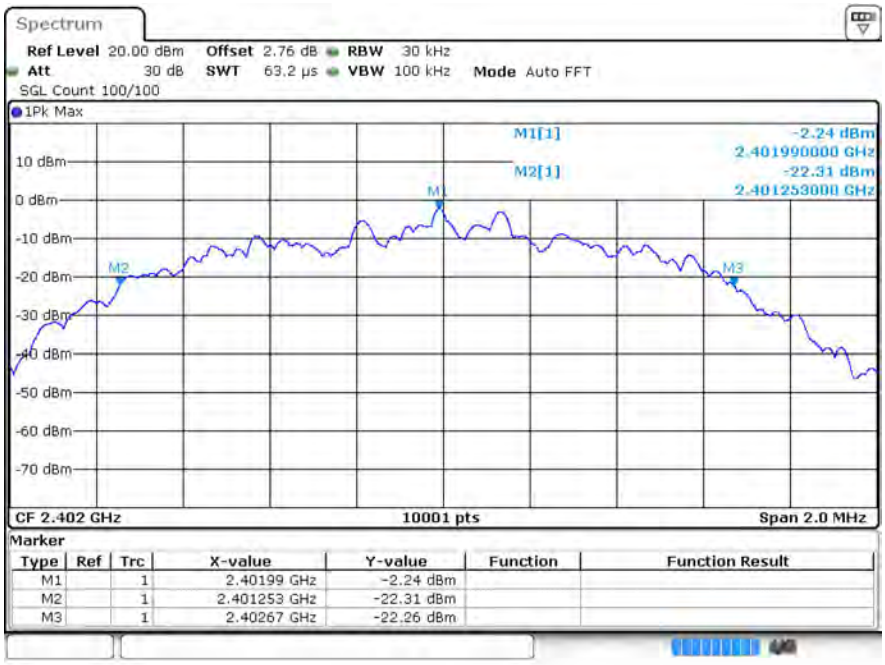
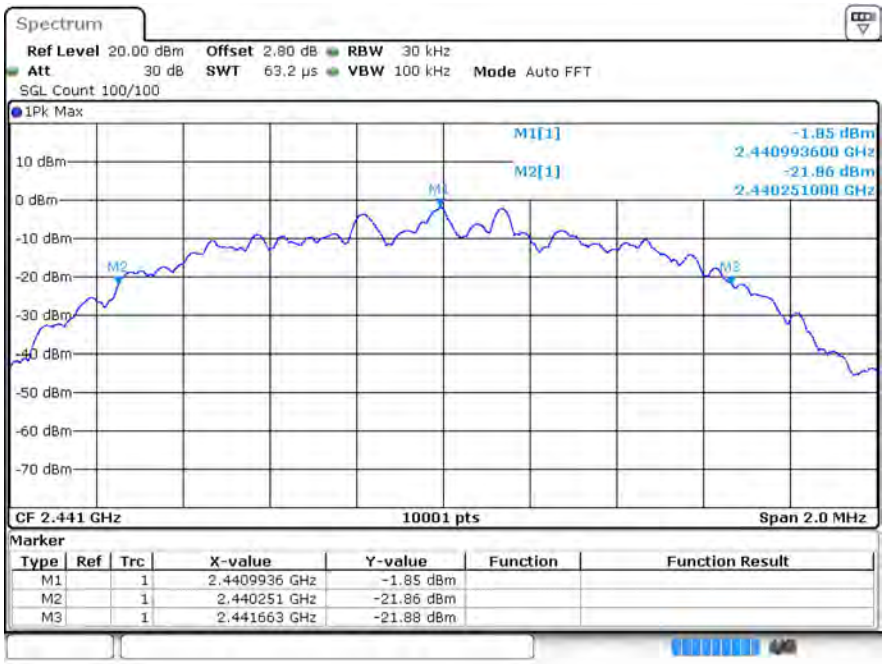
GFSK/HCH	
π/4DQPSK/LCH	

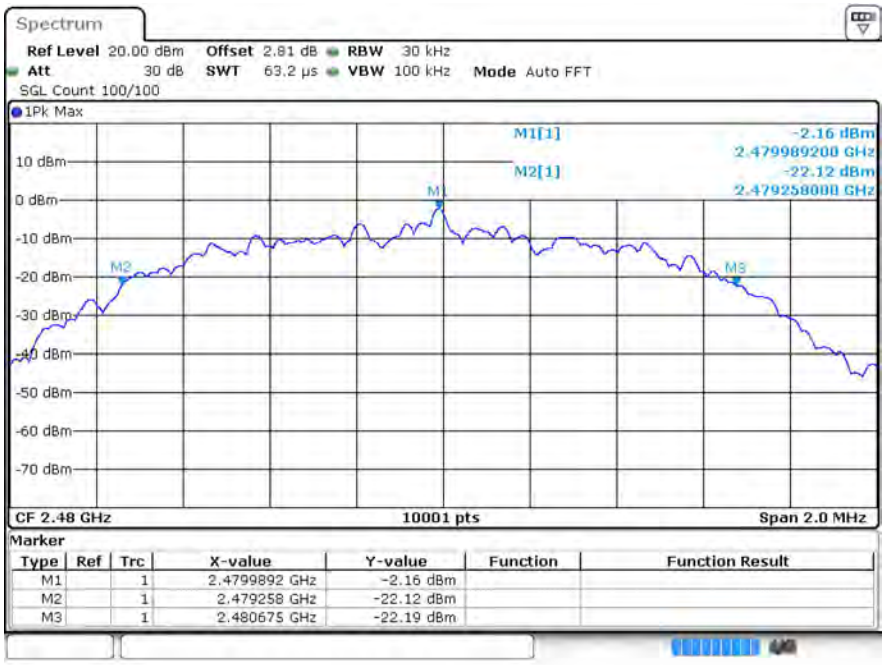
π/4DQPSK/MCH



π/4DQPSK/HCH



8DPSK/LCH	
8DPSK/MCH	

8DPSK/HCH	

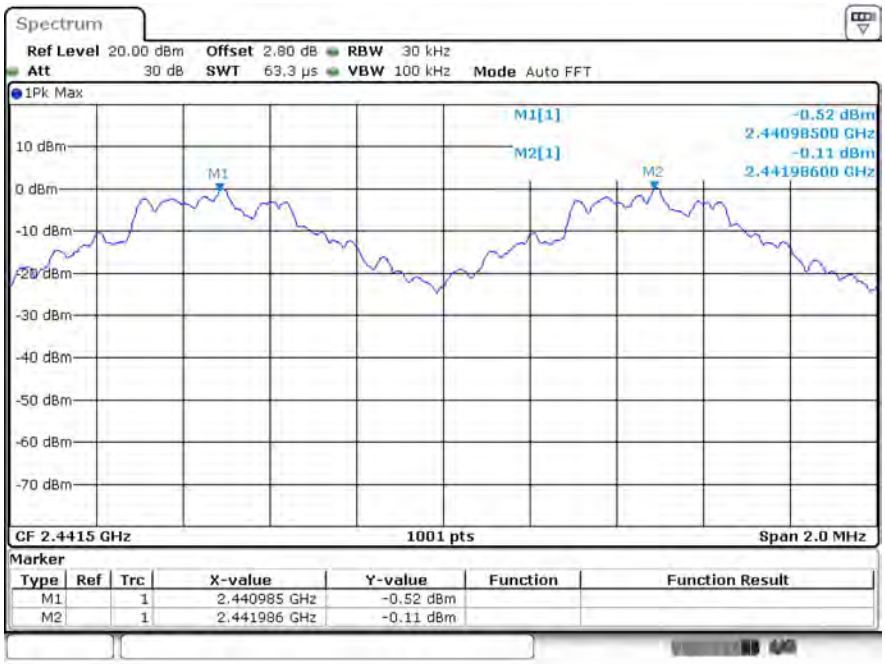
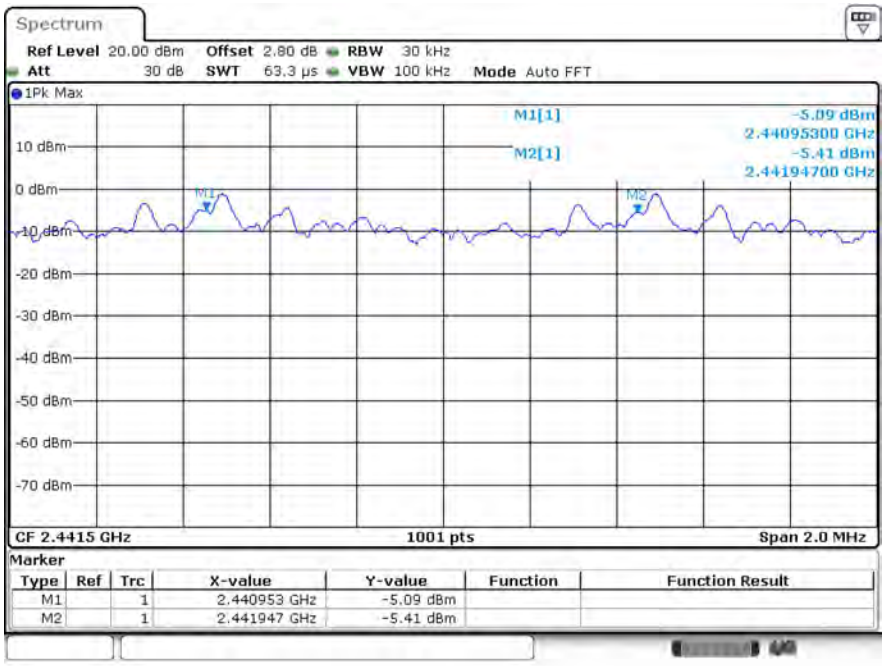
Spectrum
Ref Level 20.00 dBm Offset 2.81 dB RBW 30 kHz
Att 30 dB SWT 63.2 µs VBW 100 kHz Mode Auto FFT
SGL Count 100/100
1Pk Max
M1[1] -2.16 dBm 2.479989200 GHz
M2[1] -22.12 dBm 2.479258000 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
M2
M3
CF 2.48 GHz
10001 pts
Span 2.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.4799892 GHz -2.16 dBm
M2 1 2.479258 GHz -22.12 dBm
M3 1 2.480675 GHz -22.19 dBm

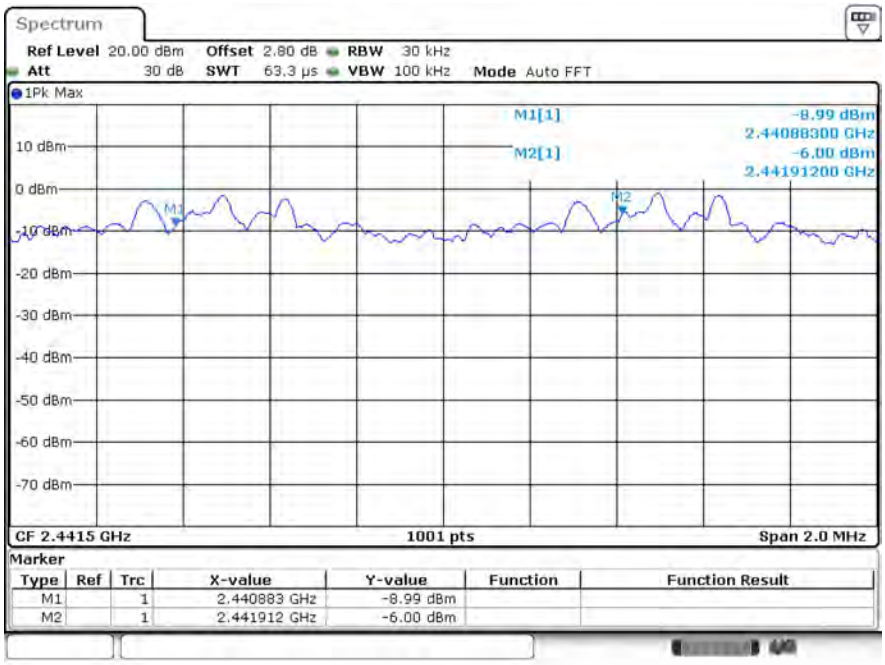
4 Carrier Frequency Separation

4.1 Test Result

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	MCH	1.001	0.586	Pass
π/4DQPSK	MCH	0.994	0.949	Pass
8DPSK	MCH	1.029	0.941	Pass

4.2 Test Graphs

Test Graphs	
GFSK/MCH	
π/4DQPSK/MCH	

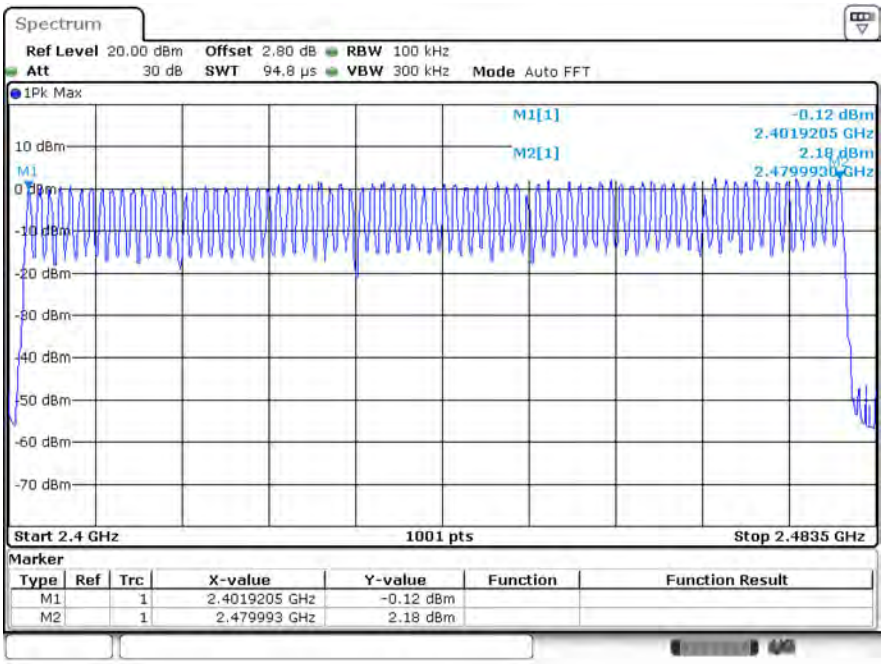
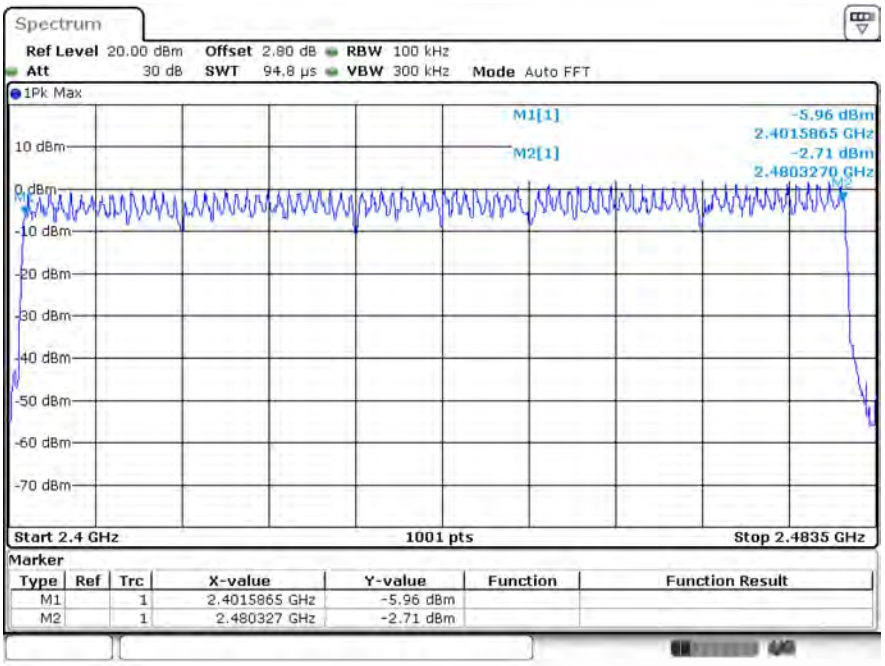
8DPSK/MCH	 Spectrum Ref Level 20.00 dBm Offset 2.80 dB RBW 30 kHz Att 30 dB SWT 63.3 µs VBW 100 kHz Mode Auto FFT 1Pk Max M1[1] -8.99 dBm 2.44088300 GHz M2[1] -6.00 dBm 2.44191200 GHz 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm -70 dBm CF 2.4415 GHz 1001 pts Span 2.0 MHz Marker Type Ref Trc X-value Y-value Function Function Result M1 1 2.440883 GHz -8.99 dBm M2 1 2.441912 GHz -6.00 dBm

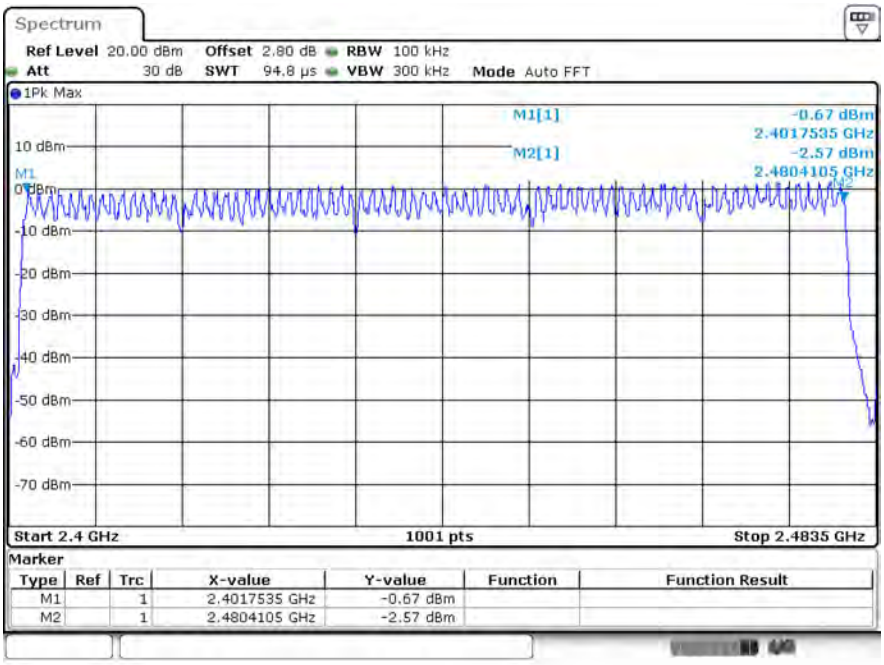
5 Hopping Channel Number

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
8DPSK	Hop	79	>=15	PASS

5.2 Test Graphs

Test Graphs	
GFSK/Hop	
π/4DQPSK/Hop	

8DPSK/Hop	

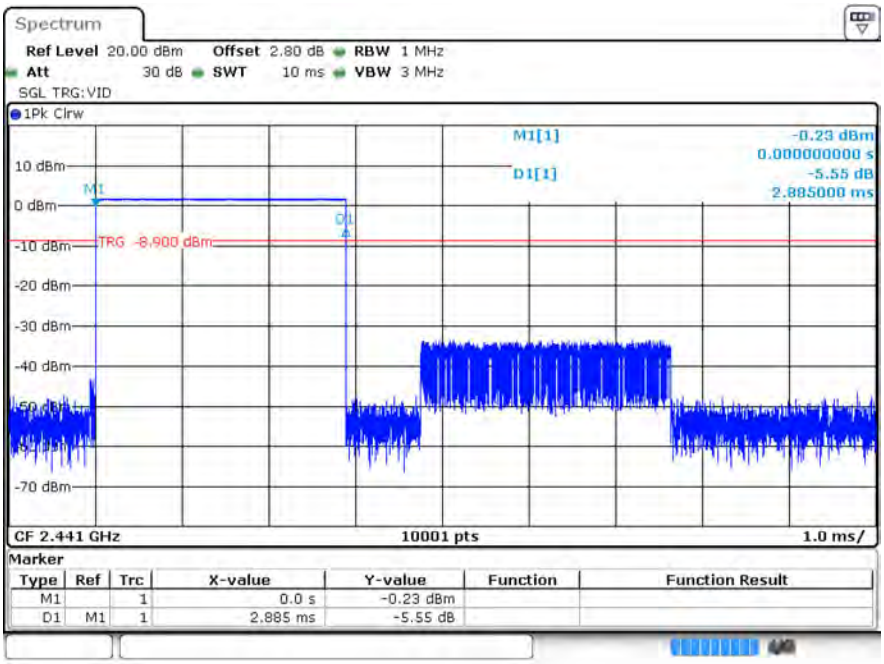
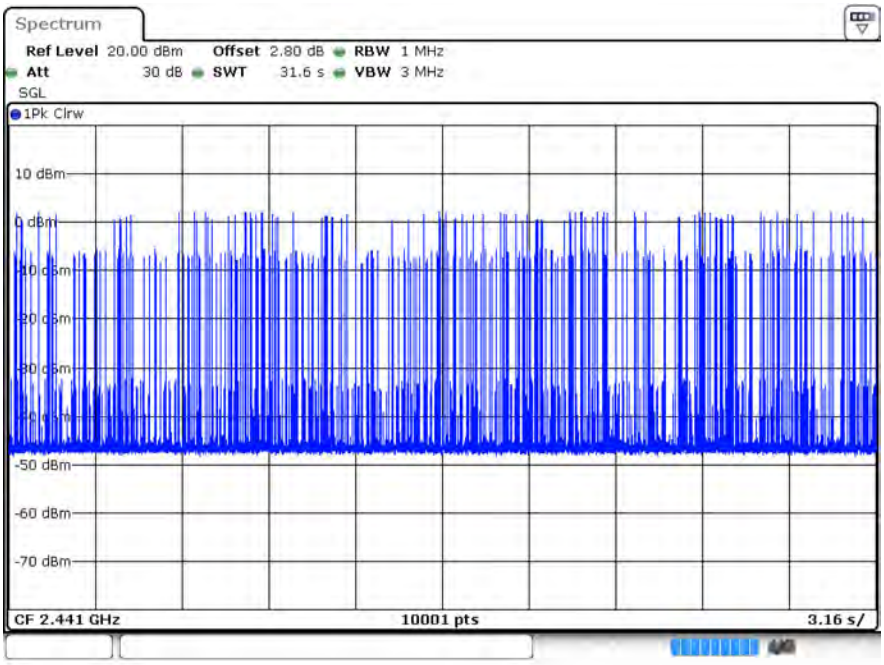
Spectrum
Ref Level 20.00 dBm Offset 2.80 dB RBW 100 kHz
Att 30 dB SWT 94.8 µs VBW 300 kHz Mode Auto FFT
1Pk Max
M1[1] -0.67 dBm 2.4017535 GHz
M2[1] -2.57 dBm 2.4804105 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
Start 2.4 GHz 1001 pts Stop 2.4835 GHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.4017535 GHz -0.67 dBm
M2 1 2.4804105 GHz -2.57 dBm

6 Dwell Time

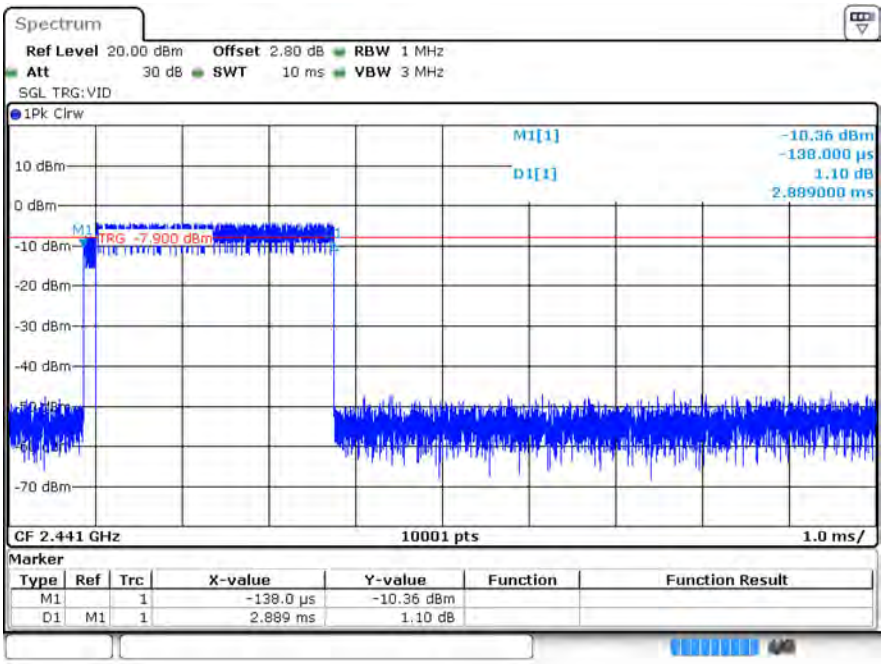
6.1 Test Result

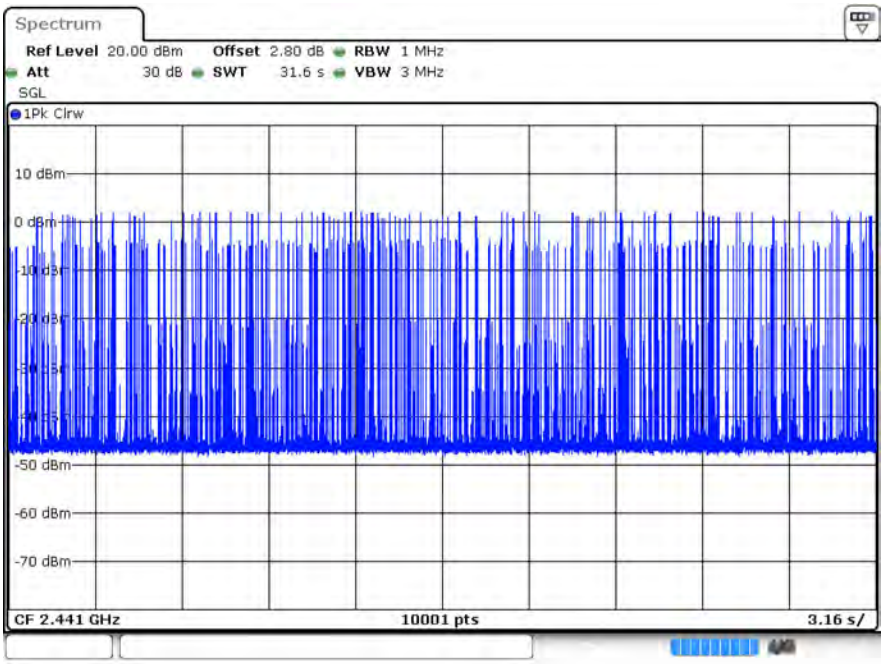
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[ms]	Limit [s]	Verdict
GFSK	DH5	MCH	2.885	101	291.385	0.4	Pass
π/4DQPSK	2DH5	MCH	2.889	114	329.346	0.4	Pass
8DPSK	3DH5	MCH	2.891	115	332.465	0.4	Pass

6.2 Test Graphs

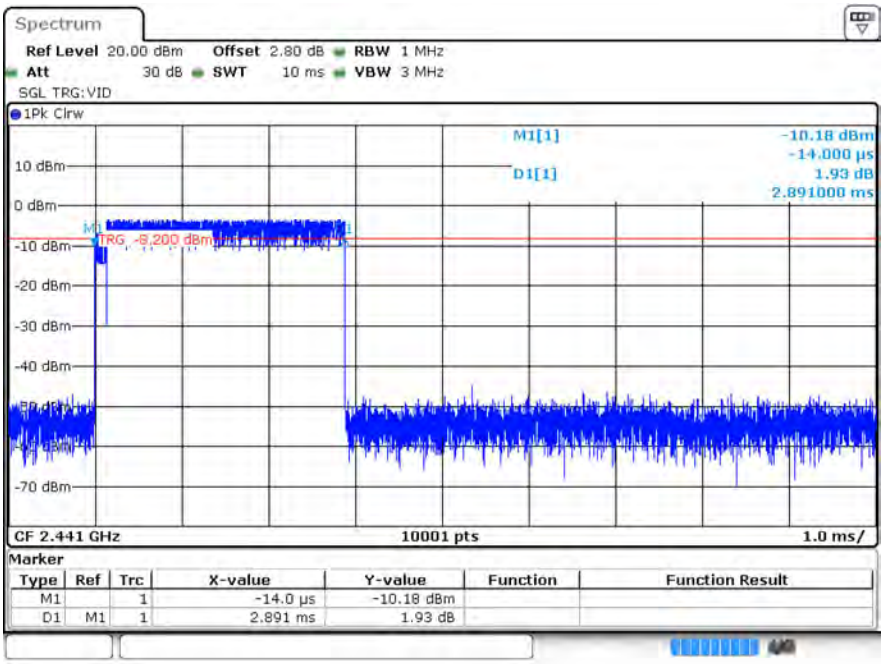
Test Graphs	
GFSK_DH5/MCH	 

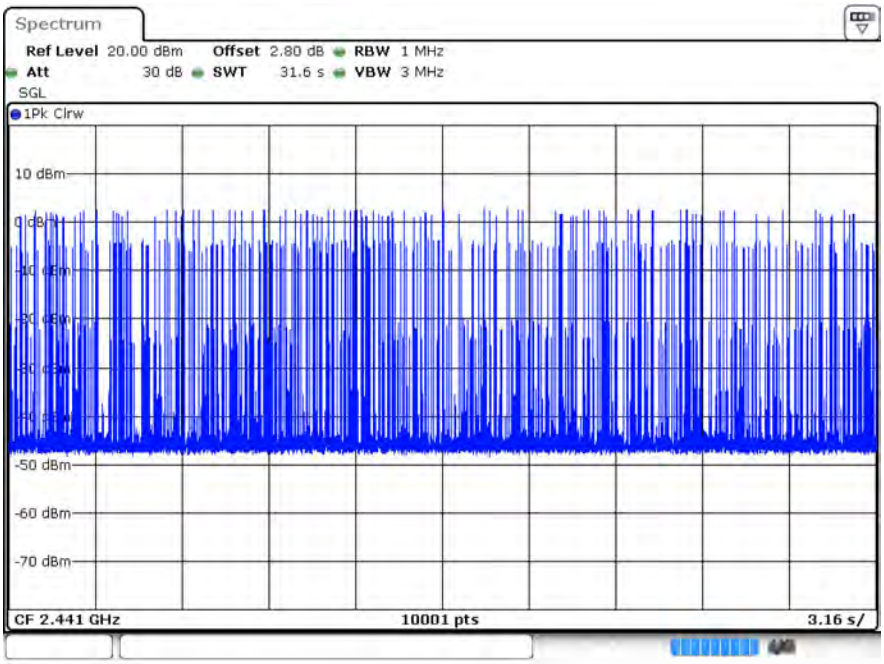
π/4DQPSK
_2DH5/MCH





8DPSK _3DH5/MCH



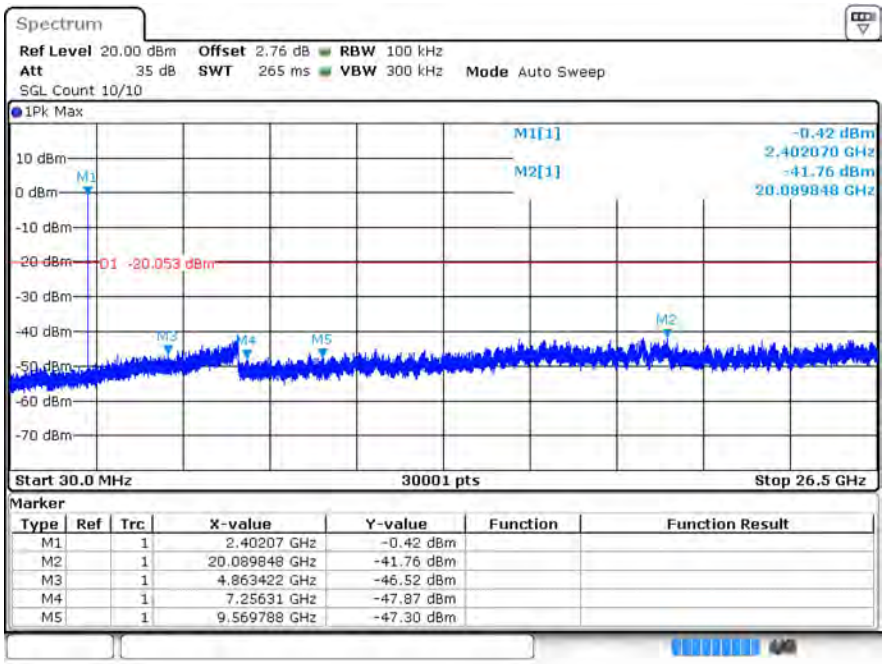


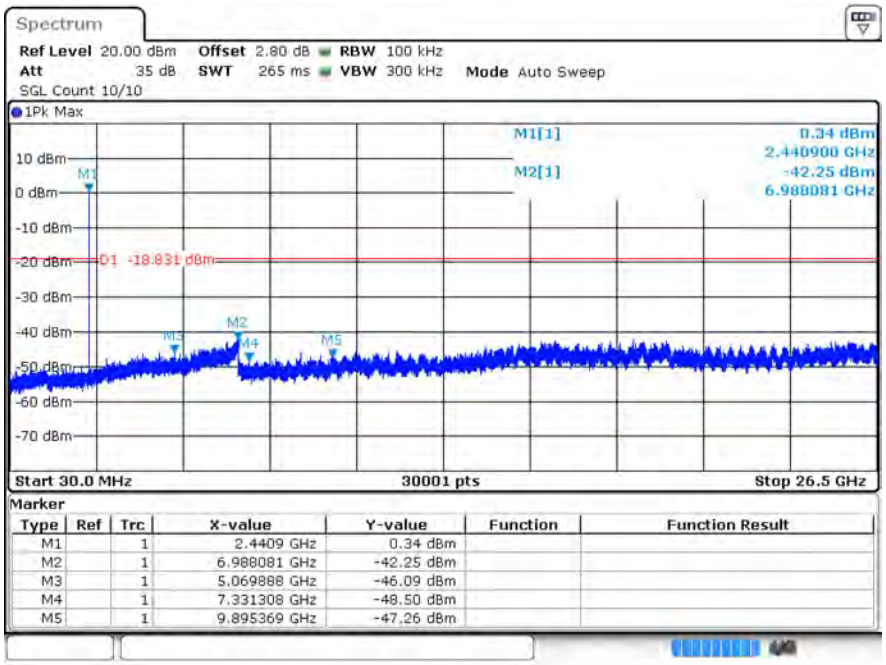
7 RF Conducted Spurious Emissions

7.1 Test Result

Mode	Channel	Max. Level [dBc]	Limit [dBc]	Verdict
GFSK	LCH	-41.7	-20	Pass
	MCH	-43.42	-20	Pass
	HCH	-41.56	-20	Pass
π/4DQPSK	LCH	-40.47	-20	Pass
	MCH	-42.08	-20	Pass
	HCH	-41.03	-20	Pass
8DPSK	LCH	-41.32	-20	Pass
	MCH	-42.2	-20	Pass
	HCH	-41.2	-20	Pass

7.2 Test Graphs

GFSK_LCH_Graphs	
Pref	
Puw	

GFSK_MCH_Graphs	
Pref	
Puw	

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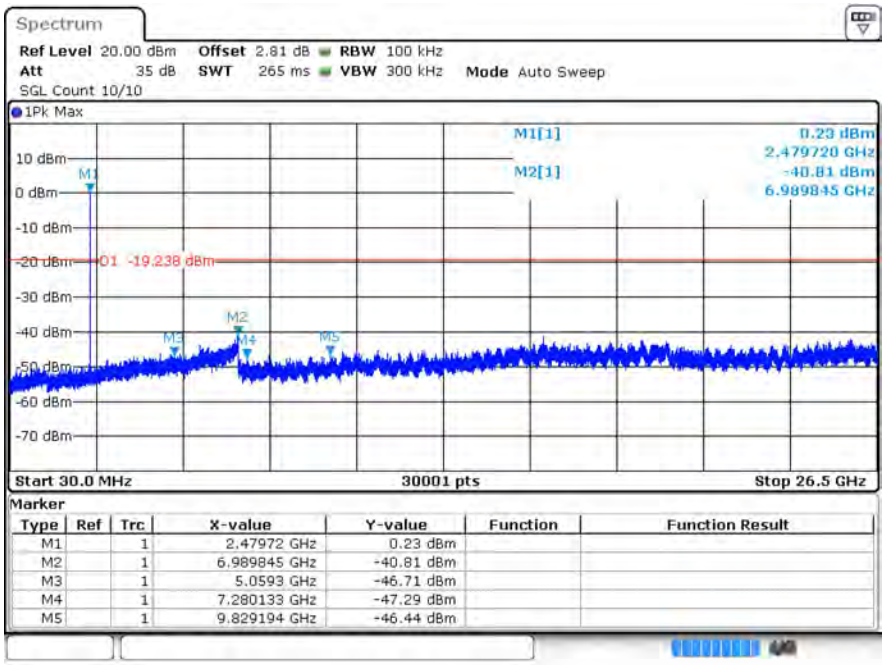
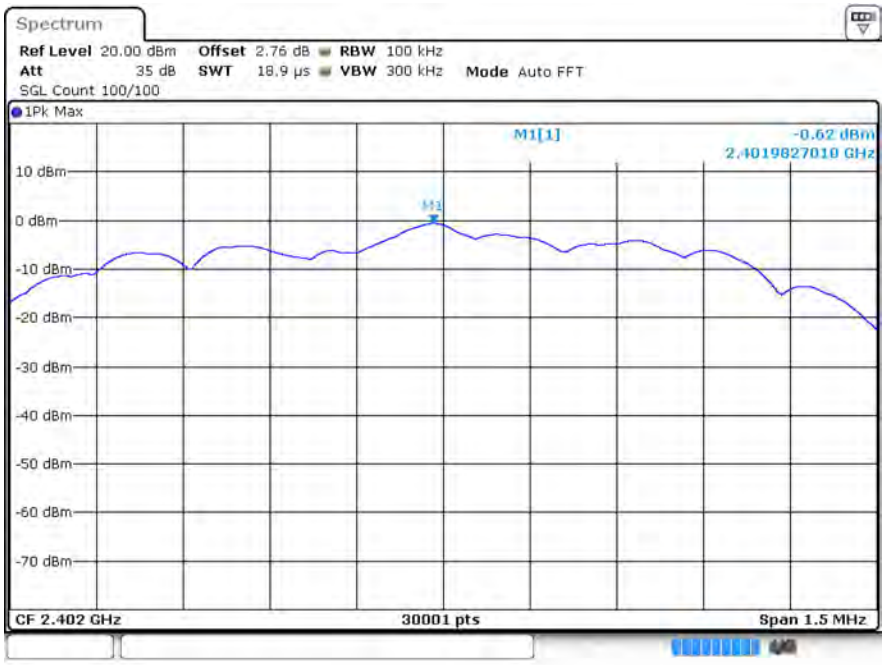
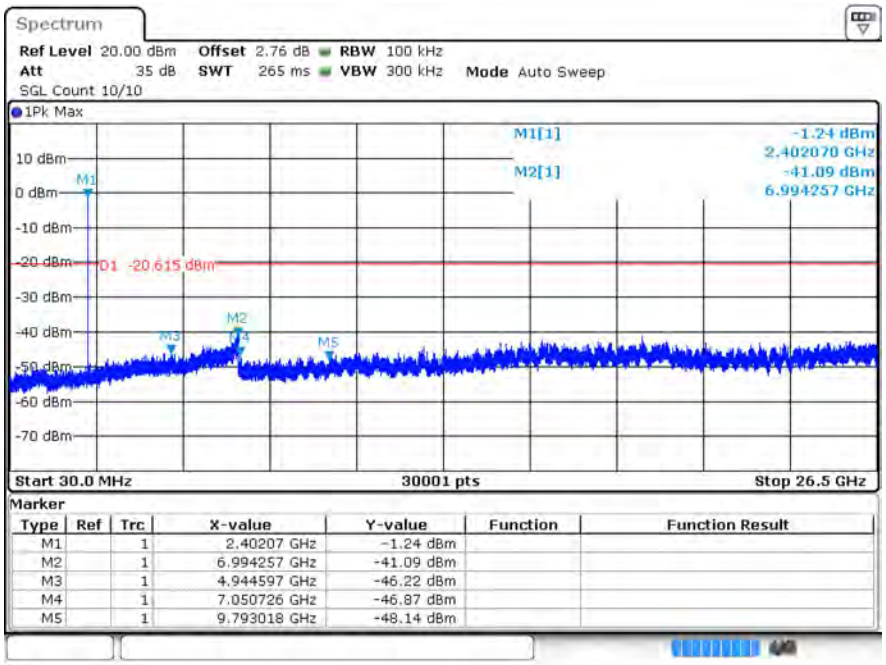
Puw	

π/4DQPSK_LCH_Graphs	
Pref	
Puw	

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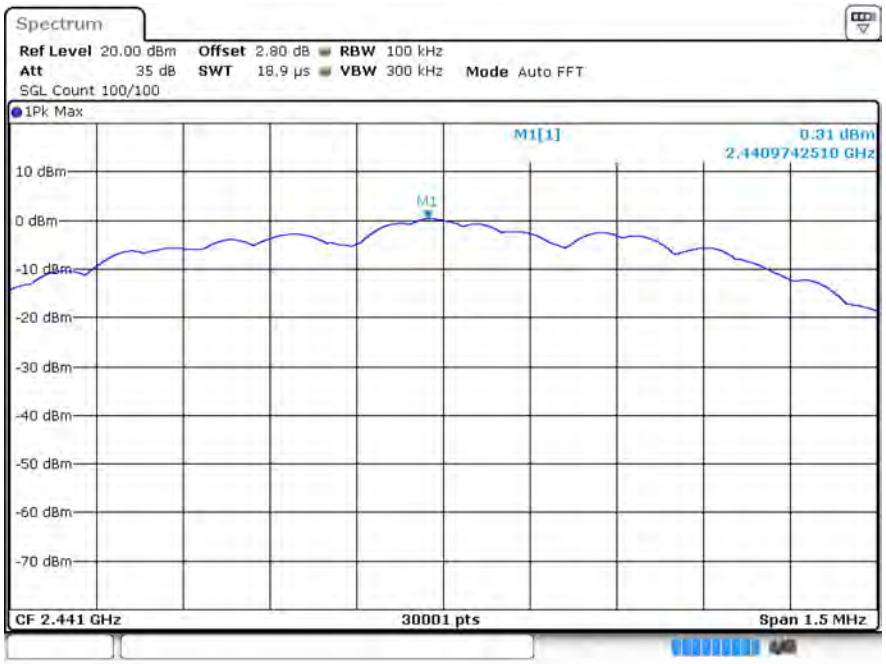
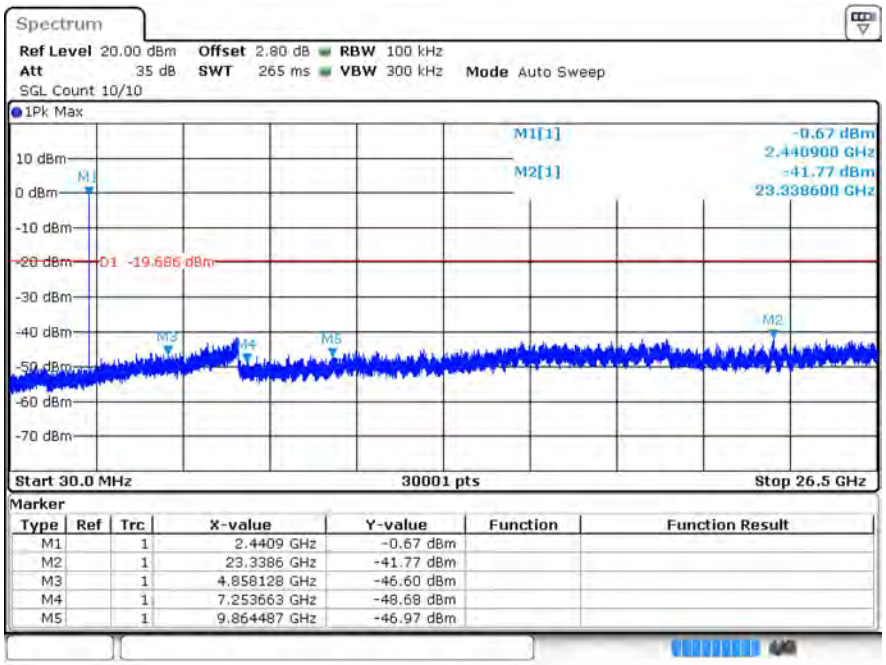
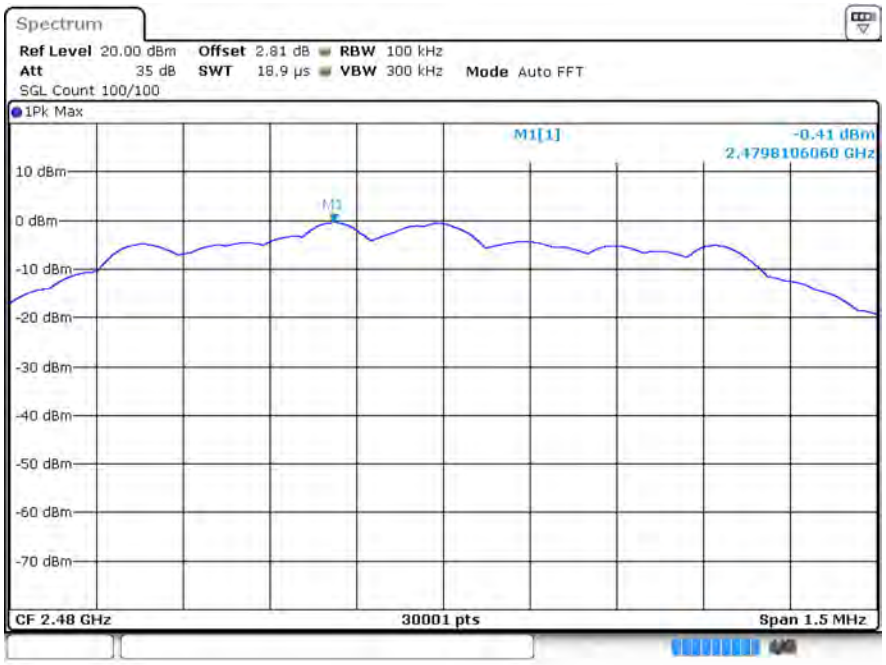
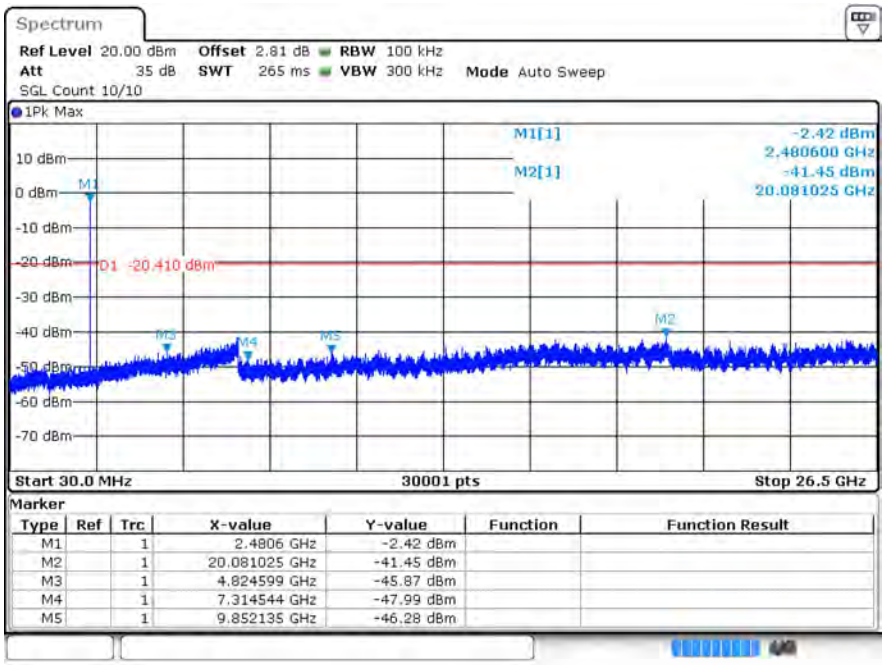
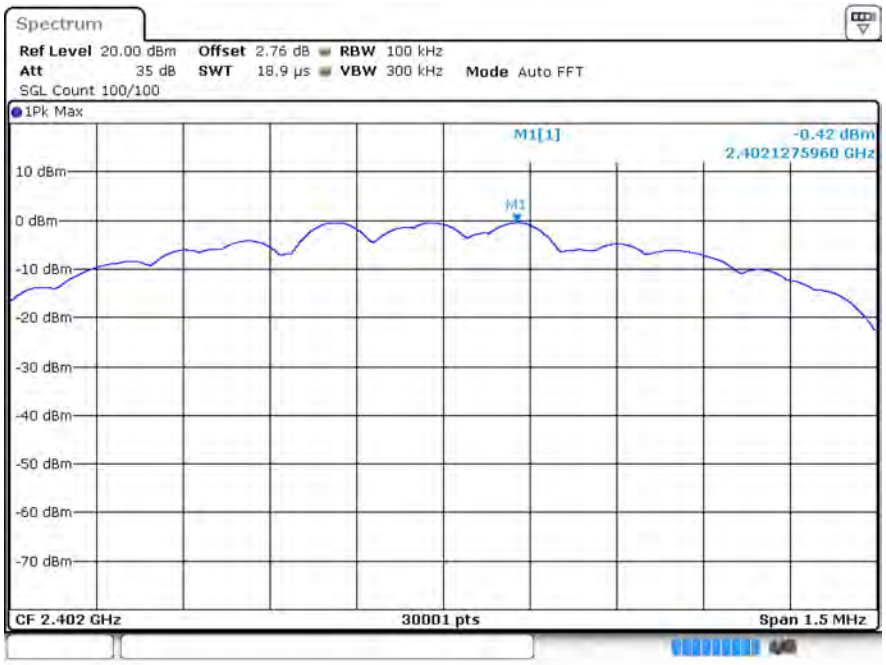
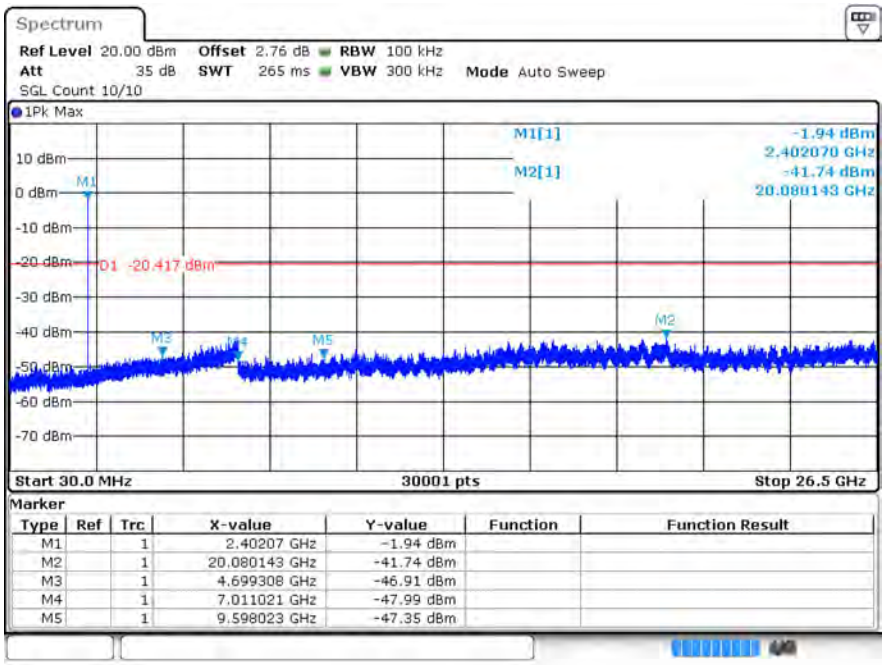
Pref	
Puw	 Marker Type | Ref | Trc | X-value | Y-value | Function | Function Result M1 | 1 | 2.4409 GHz | -0.67 dBm M2 | 1 | 23.3386 GHz | -41.77 dBm M3 | 1 | 4.858128 GHz | -46.60 dBm M4 | 1 | 7.253663 GHz | -48.68 dBm M5 | 1 | 9.864487 GHz | -46.97 dBm

π/4DQPSK_HCH_Graphs	
Pref	
Puw	

8DPSK_LCH_Graphs	
Pref	
Puw	

8DPSK_MCH_Graphs	
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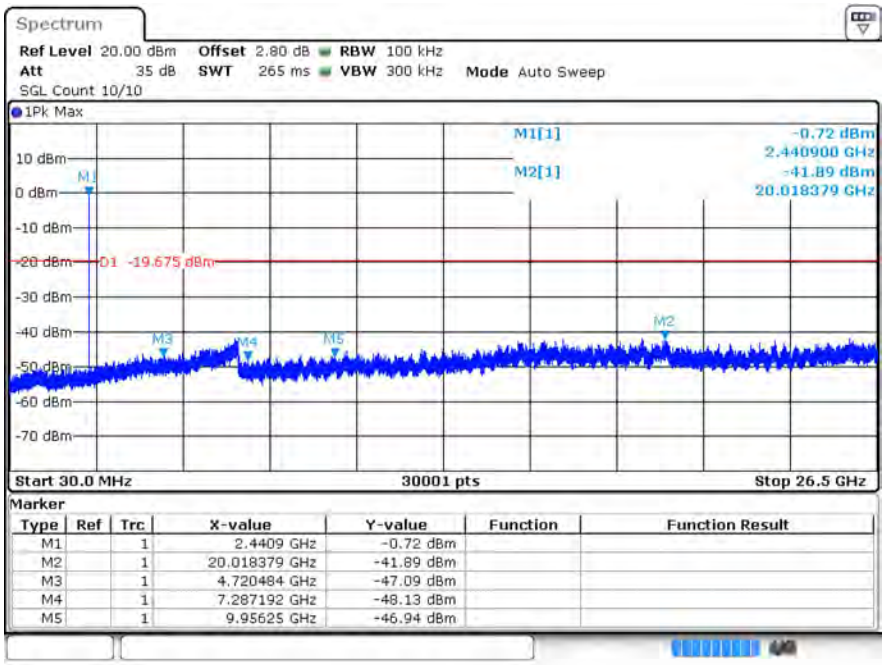
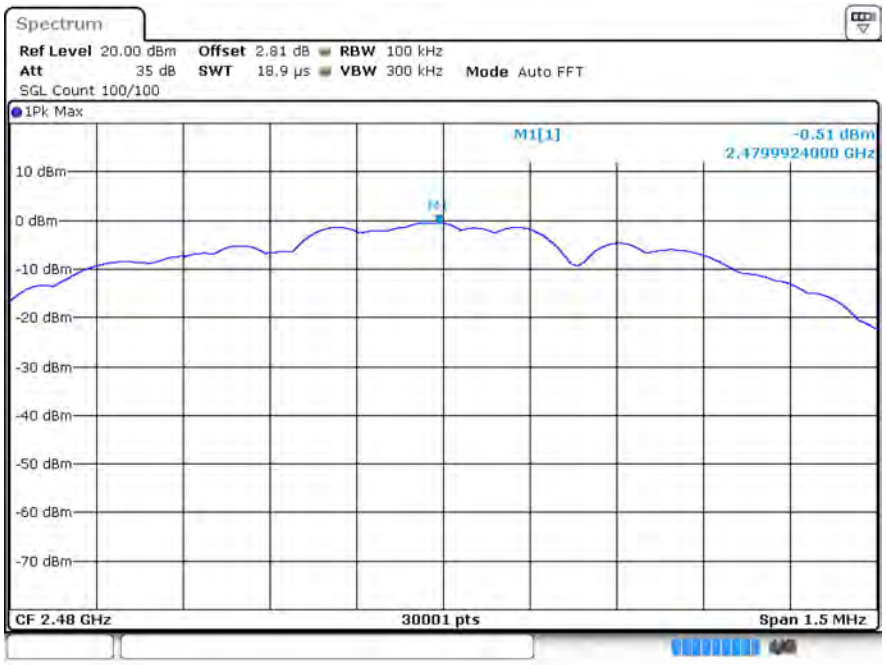
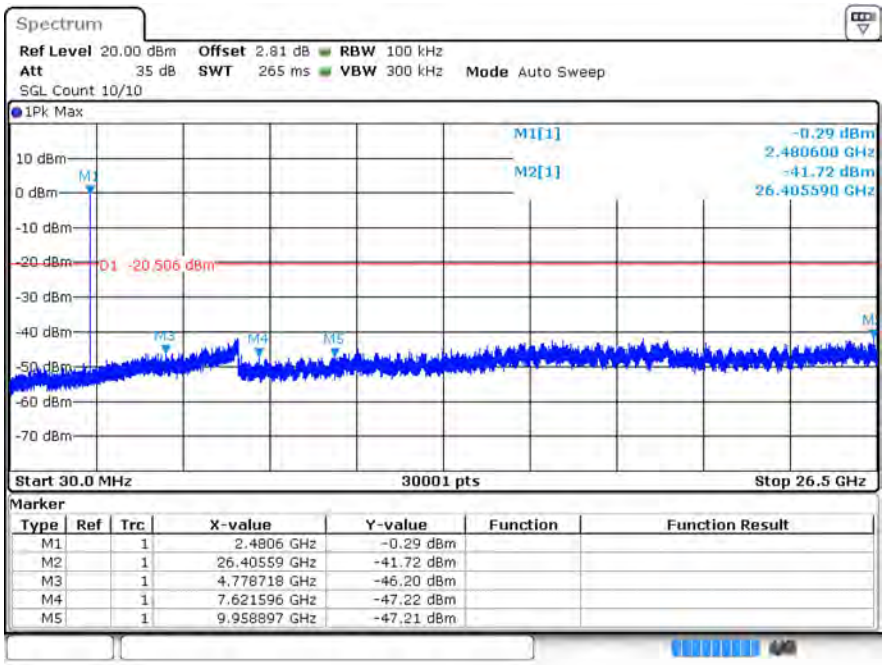
Puw	

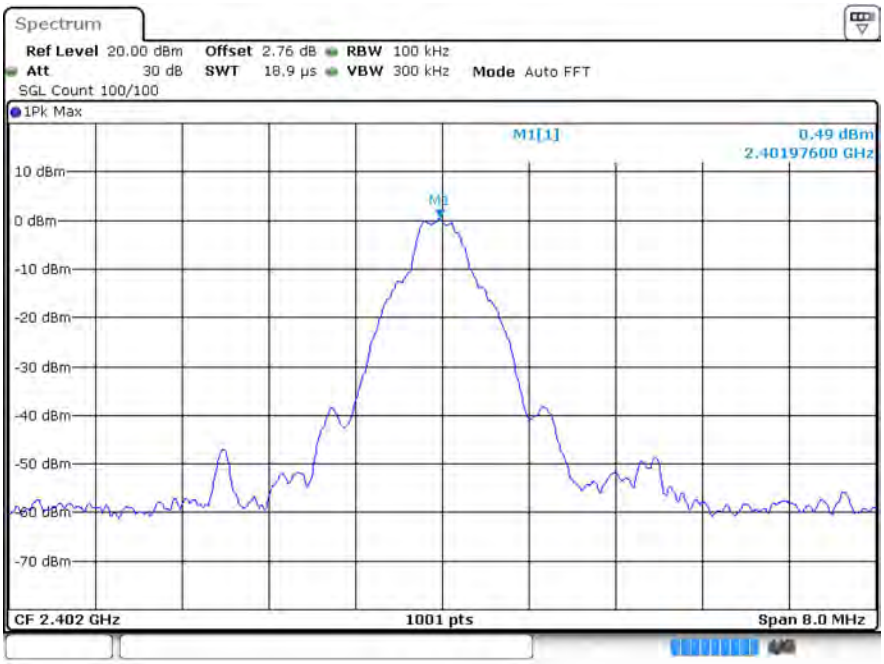
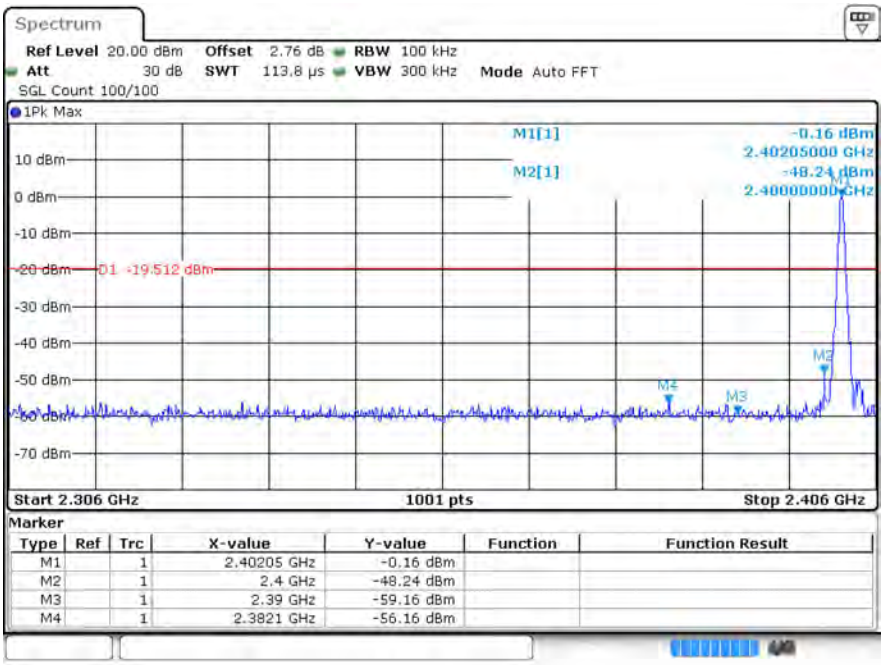
8DPSK_HCH_Graphs	
Pref	
Puw	

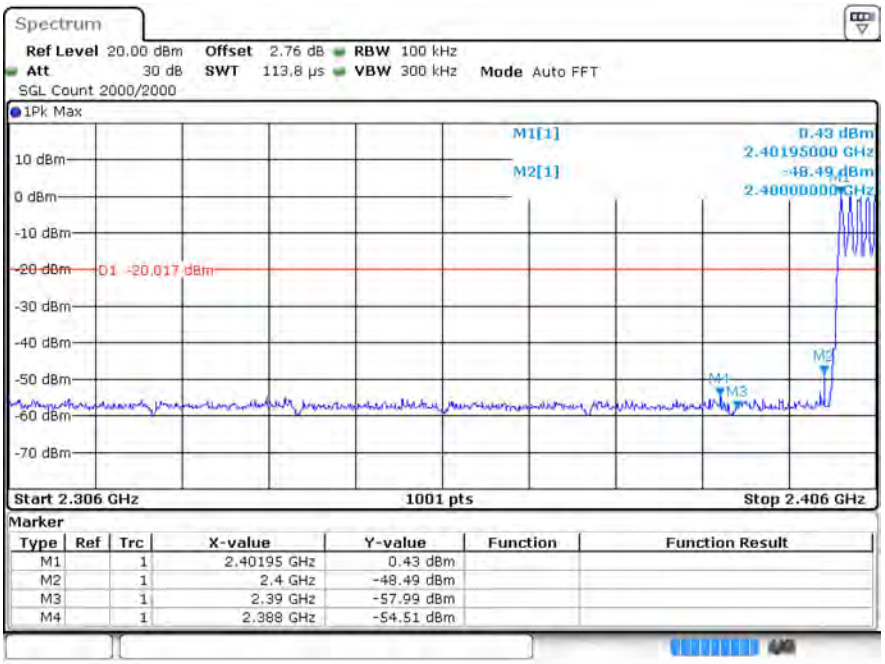
8 Band-edge for RF Conducted Emissions

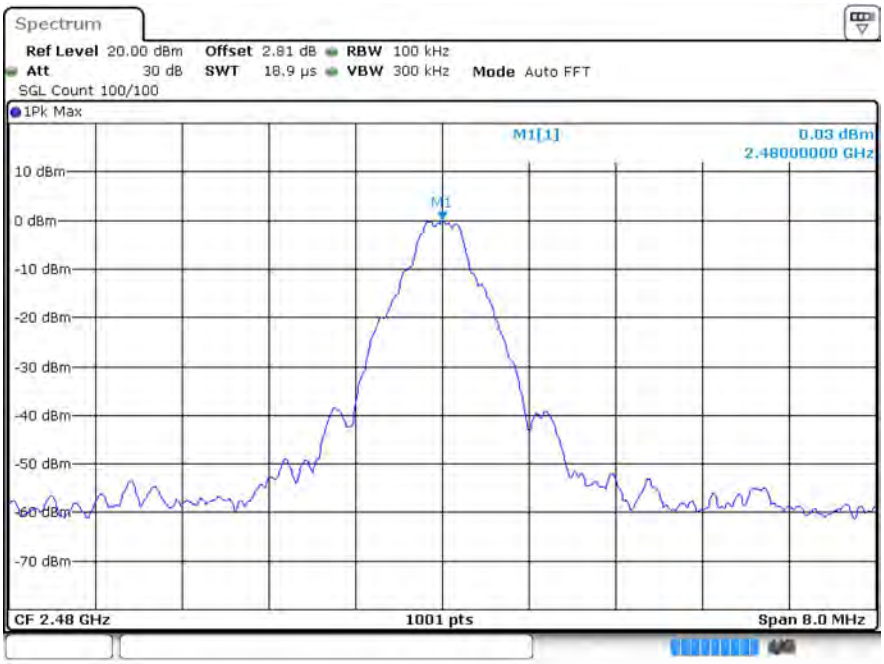
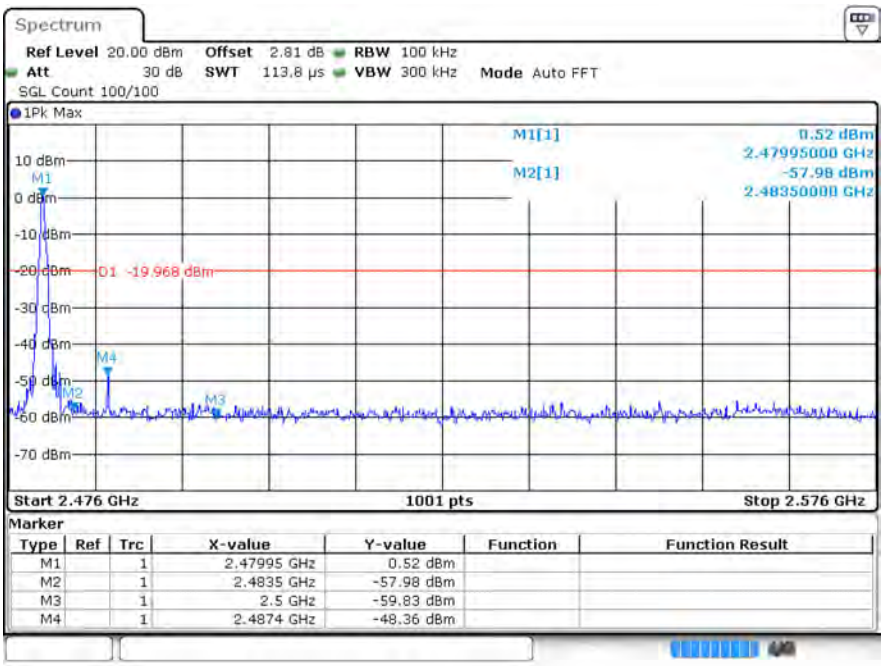
8.1 Test Result

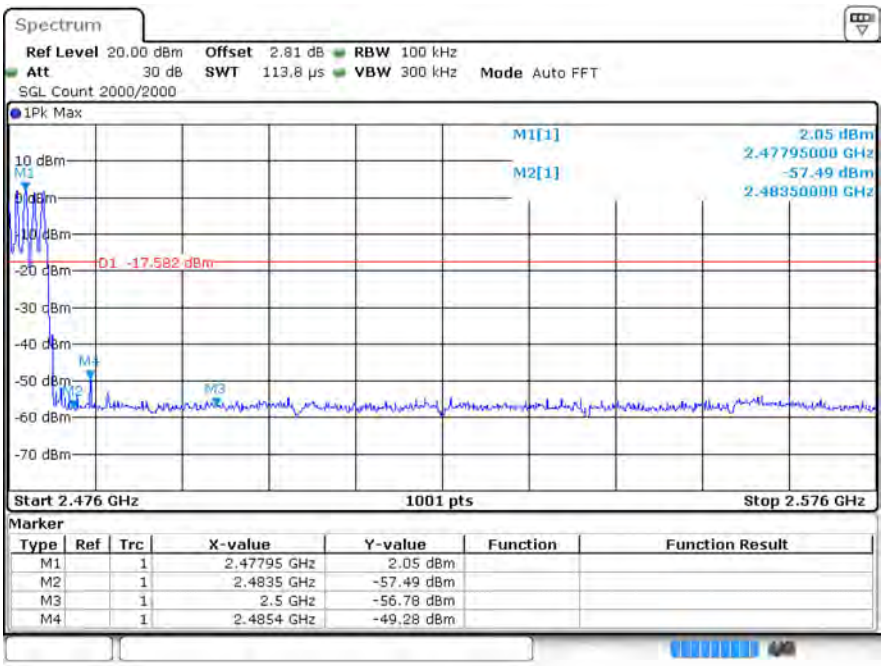
Mode	Channel	Carrier Frequency [MHz]	Frequency Hopping	Max Spurious Level [dBc]	Limit [dBc]	Verdict
GFSK	LCH	2402	Off	-56.65	-20	Pass
			On	-54.49	-20	Pass
	HCH	2480	Off	-48.39	-20	Pass
			On	-51.69	-20	Pass
π/4DQPSK	LCH	2402	Off	-54.42	-20	Pass
			On	-53.76	-20	Pass
	HCH	2480	Off	-55.94	-20	Pass
			On	-47.09	-20	Pass
8DPSK	LCH	2402	Off	-54.73	-20	Pass
			On	-53.89	-20	Pass
	HCH	2480	Off	-55.15	-20	Pass
			On	-55.55	-20	Pass

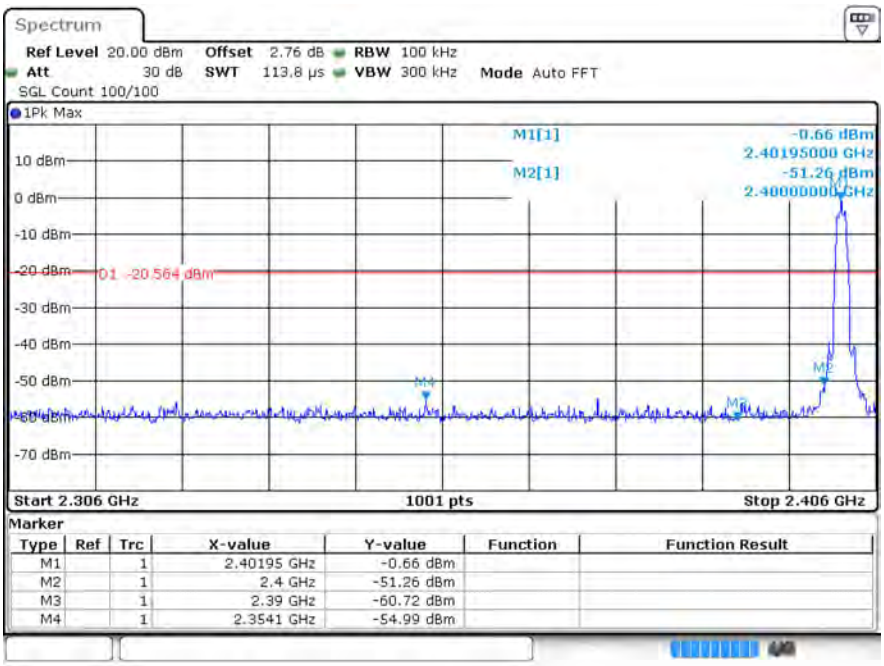
8.2 Test Graphs

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	

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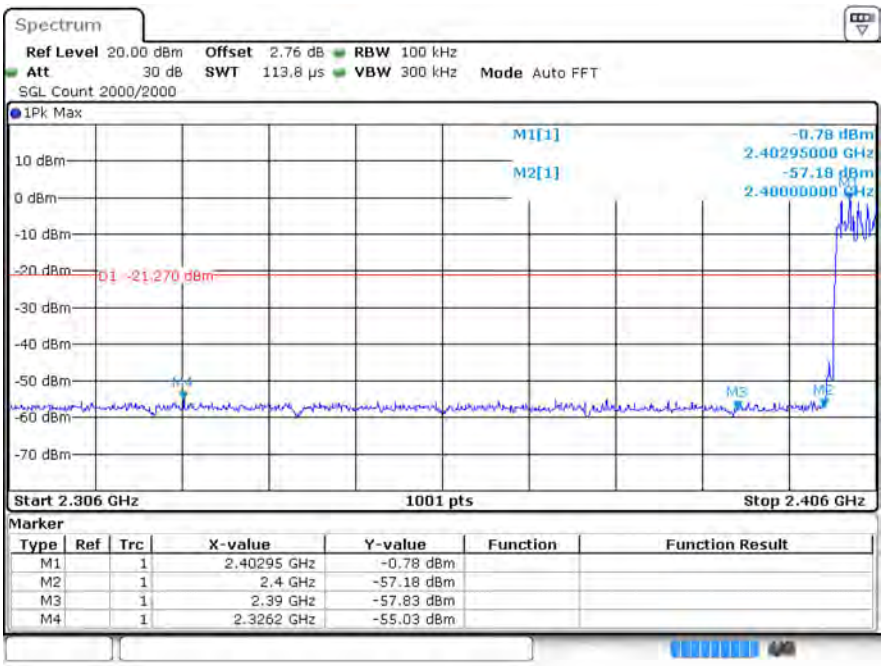
π/4DQPSK/LCH/Hop	

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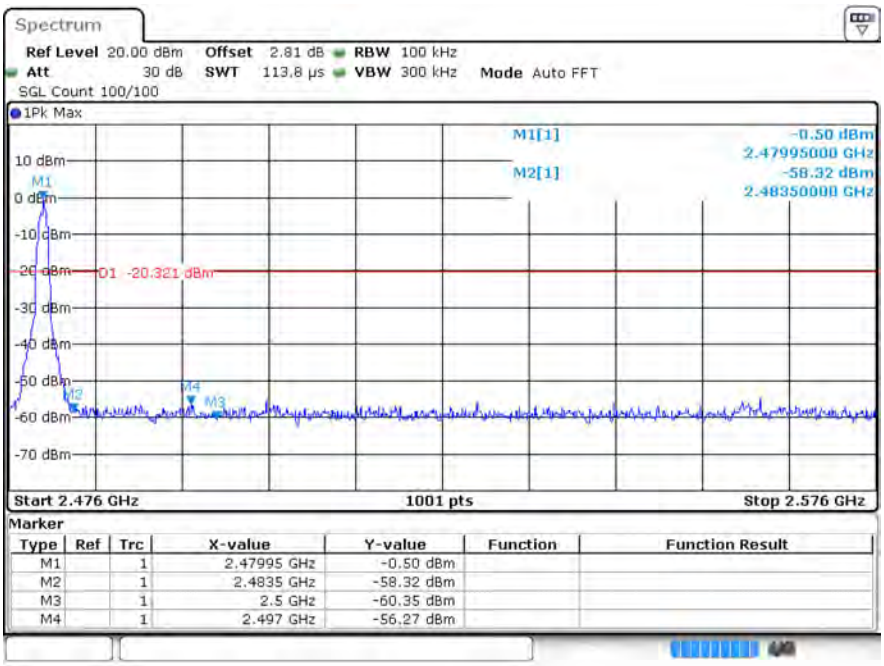
π/4DQPSK/HCH/No Hop	

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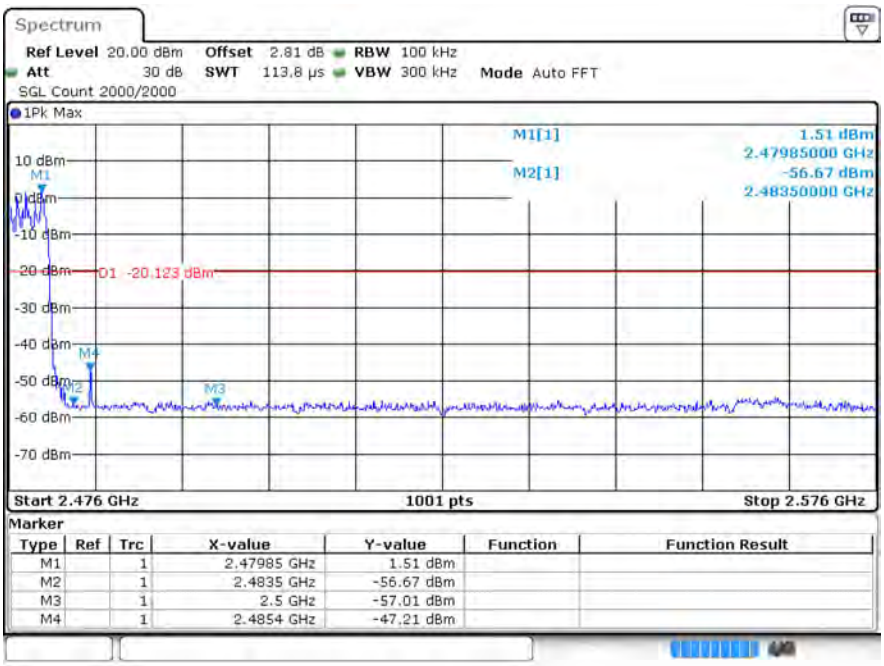
π/4DQPSK/HCH/Hop	

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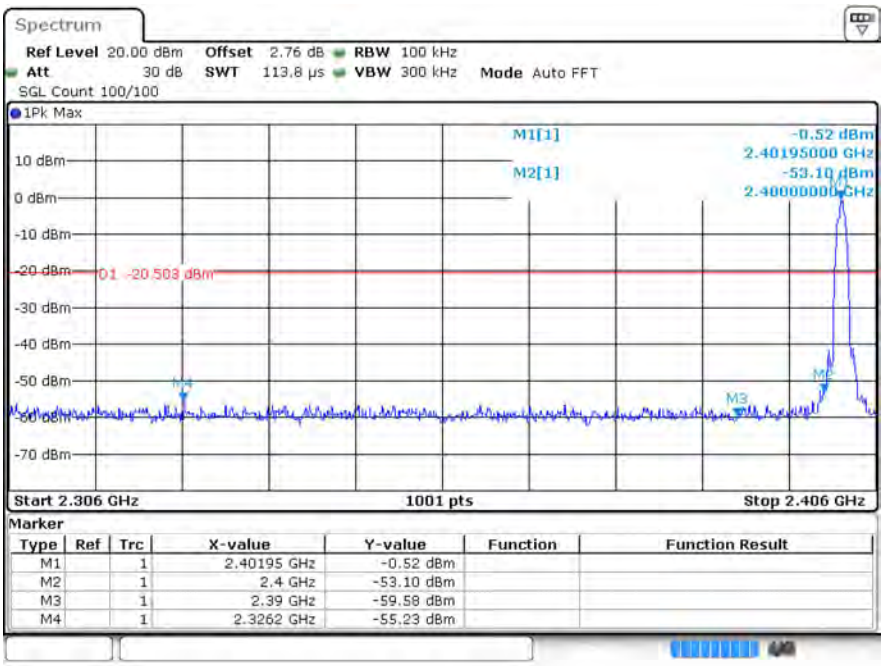
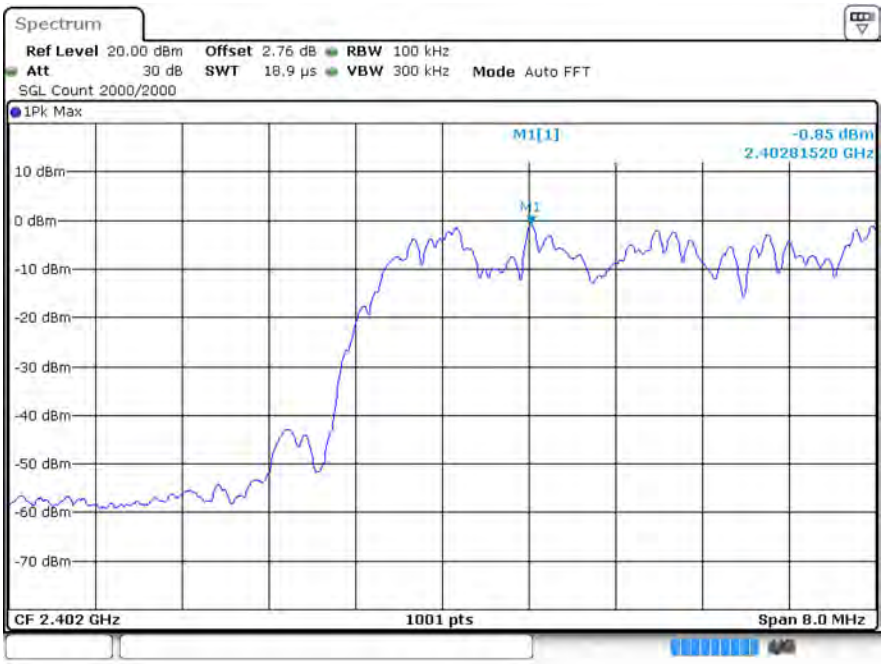
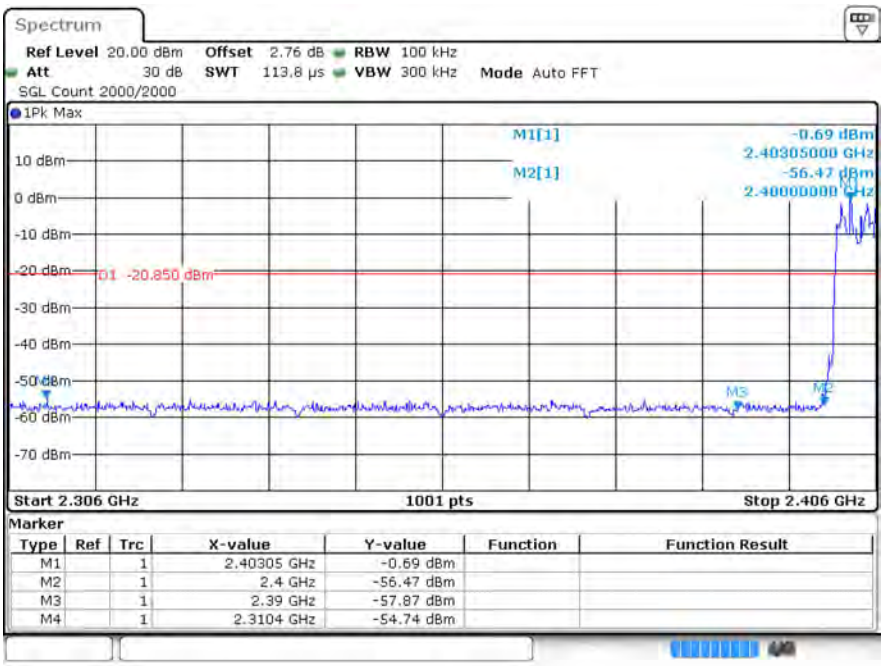
8DPSK/LCH/No Hop	

Ref	
8DPSK/LCH/Hop	

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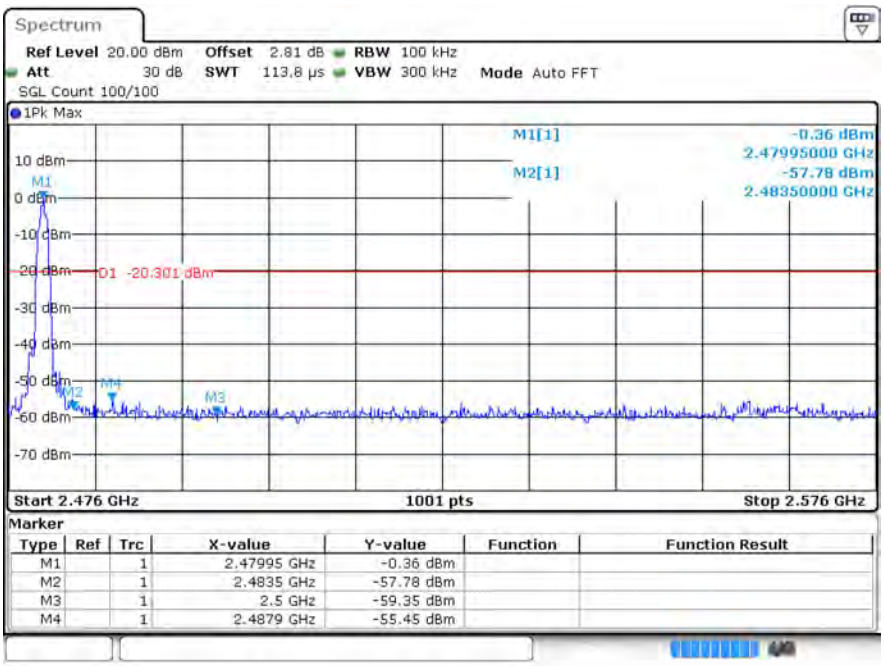
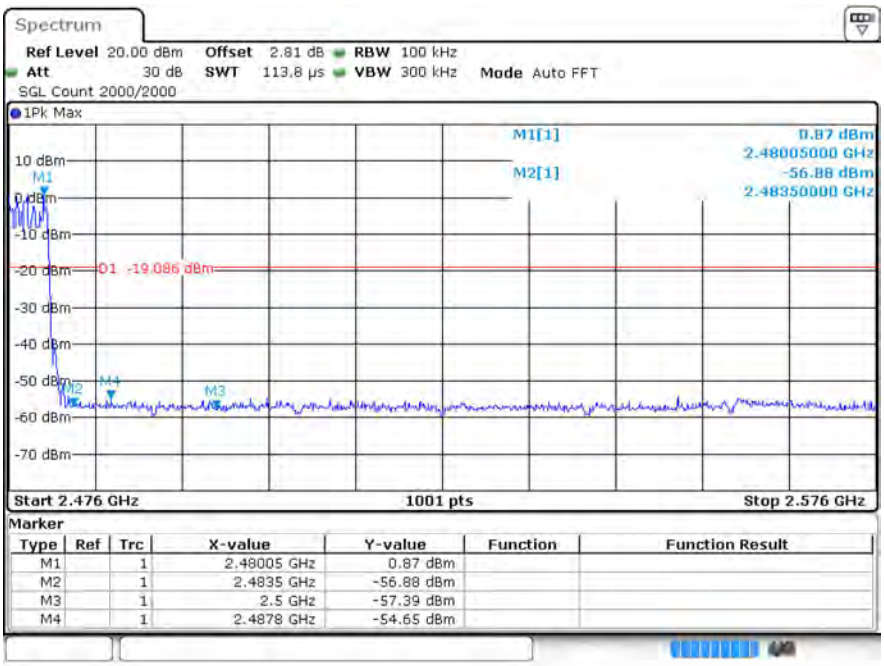
8DPSK/HCH/No Hop	

Ref	
8DPSK/HCH/Hop	

9 Restrict-band band-edge measurements

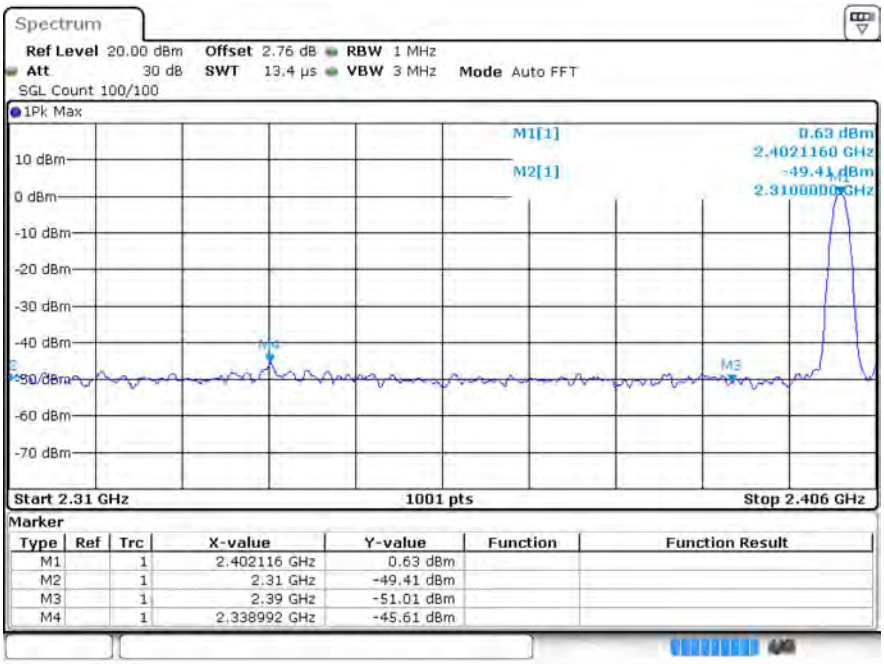
9.1 Test Result

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Duty Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-49.41	2	-	47.85	PEAK	74	Pass
	Off	2310.0	-57.1	2	5.06	45.22	AV	54	Pass
	Off	2338.992	-45.6	2	-	51.66	PEAK	74	Pass
	Off	2342.16	-53.9	2	5.06	48.42	AV	54	Pass
	Off	2390.0	-51.01	2	-	46.25	PEAK	74	Pass
	Off	2390.0	-56.69	2	5.06	45.63	AV	54	Pass
	Off	2483.5	-50.52	2	-	46.74	PEAK	74	Pass
	Off	2483.5	-56.07	2	5.06	46.25	AV	54	Pass
	Off	2496.832	-47.91	2	-	49.35	PEAK	74	Pass
	Off	2487.352	-54.57	2	5.06	47.75	AV	54	Pass
	Off	2500.0	-50.13	2	-	47.13	PEAK	74	Pass
	Off	2500.0	-56.91	2	5.06	45.41	AV	54	Pass
π/4DQPSK	Off	2310.0	-51.1	2	-	46.16	PEAK	74	Pass
	Off	2310.0	-57.39	2	4.95	44.82	AV	54	Pass
	Off	2339.376	-46.08	2	-	51.18	PEAK	74	Pass
	Off	2339.664	-54.52	2	4.95	47.69	AV	54	Pass
	Off	2390.0	-50.35	2	-	46.91	PEAK	74	Pass
	Off	2390.0	-58.37	2	4.95	43.84	AV	54	Pass
	Off	2483.5	-50.16	2	-	47.1	PEAK	74	Pass
	Off	2483.5	-55.84	2	4.95	46.37	AV	54	Pass
	Off	2493.592	-46	2	-	51.26	PEAK	74	Pass
	Off	2483.752	-55.71	2	4.95	46.5	AV	54	Pass
	Off	2500.0	-49.61	2	-	47.65	PEAK	74	Pass
	Off	2500.0	-56.02	2	4.95	46.19	AV	54	Pass
8DPSK	Off	2310.0	-51	2	-	46.26	PEAK	74	Pass
	Off	2310.0	-56.99	2	4.94	45.21	AV	54	Pass
	Off	2342.448	-45.98	2	-	51.28	PEAK	74	Pass
	Off	2339.856	-54.28	2	4.94	47.92	AV	54	Pass

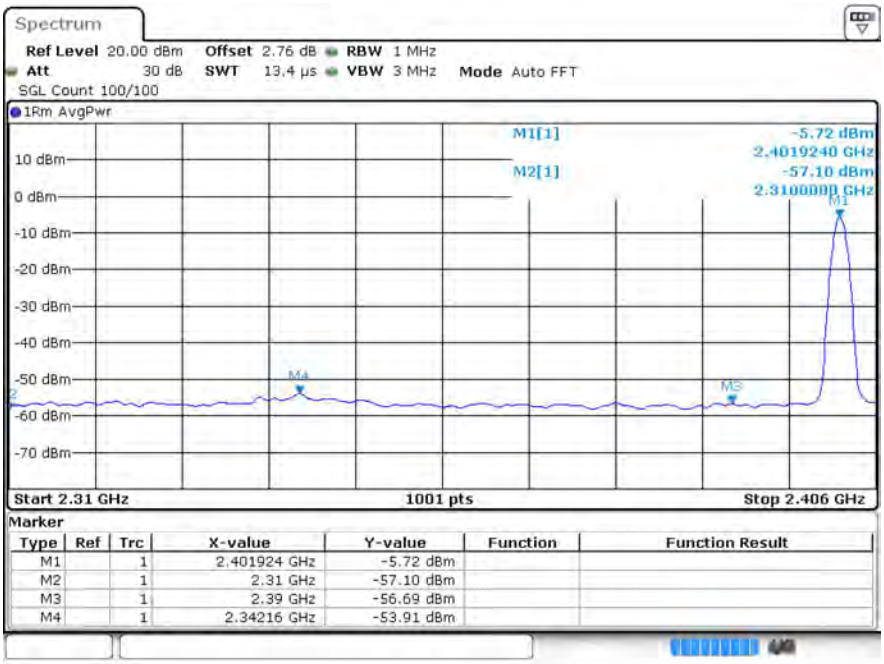
	Off	2390.0	-51	2	-	46.26	PEAK	74	Pass
	Off	2390.0	-56.87	2	4.94	45.33	AV	54	Pass
	Off	2483.5	-47.31	2	-	49.95	PEAK	74	Pass
	Off	2483.5	-55.26	2	4.95	46.95	AV	54	Pass
	Off	2487.376	-43.2	2	-	54.06	PEAK	74	Pass
	Off	2483.8	-55.04	2	4.95	47.17	AV	54	Pass
	Off	2500.0	-49.94	2	-	47.32	PEAK	74	Pass
	Off	2500.0	-56.53	2	4.95	45.68	AV	54	Pass

9.2 Test Graphs

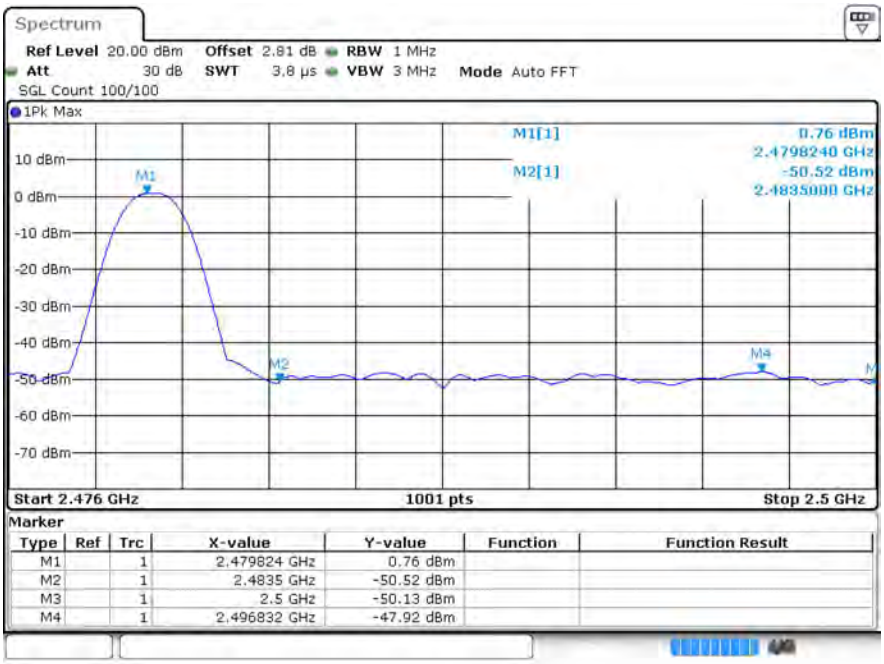
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (Low Channel)



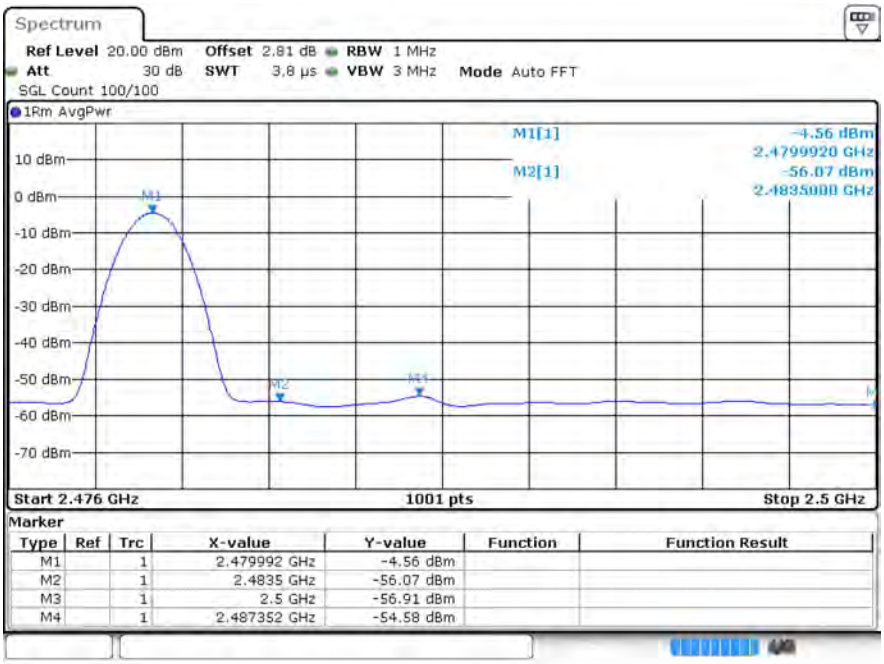
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (Low Channel)



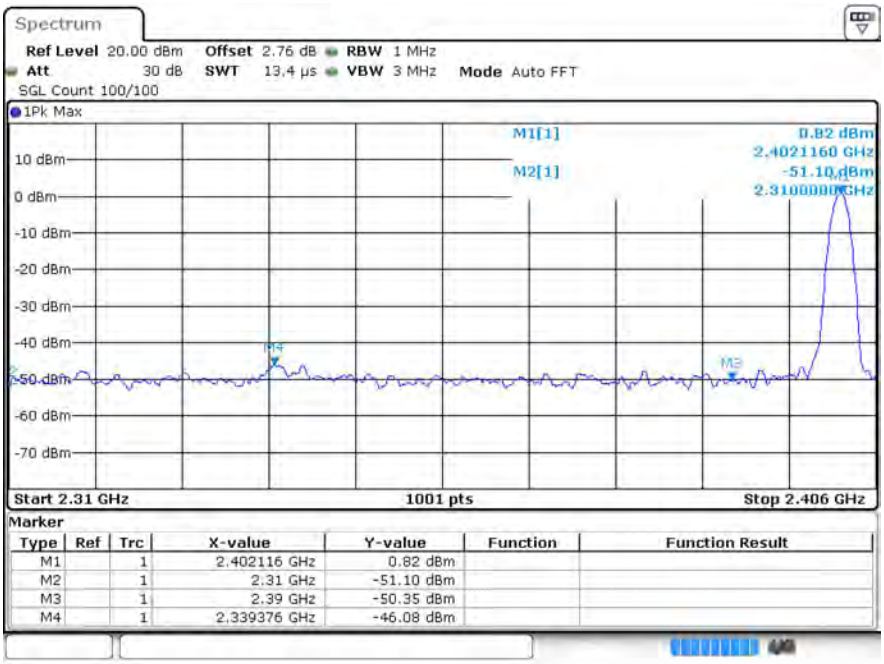
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (High Channel)



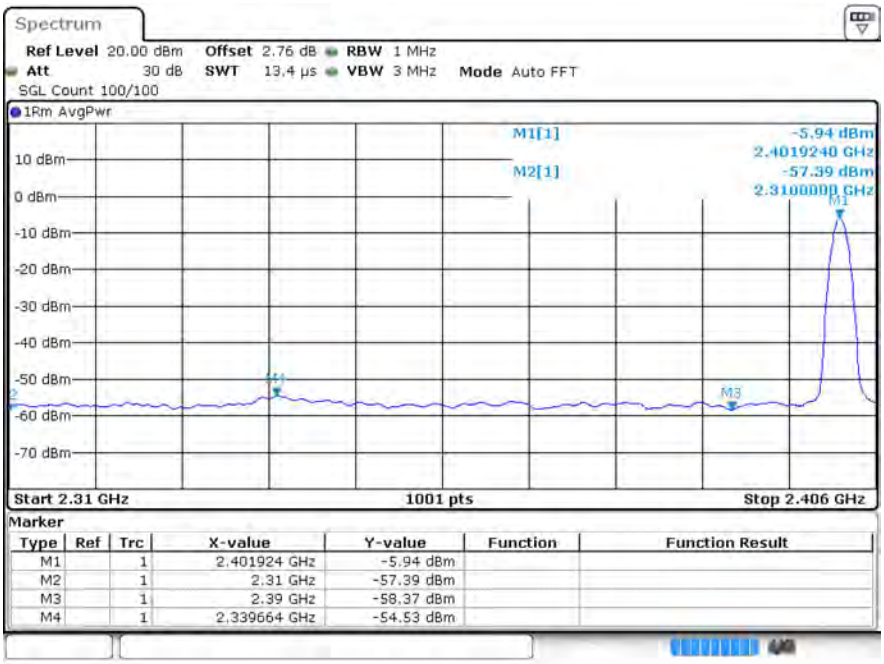
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (High Channel)



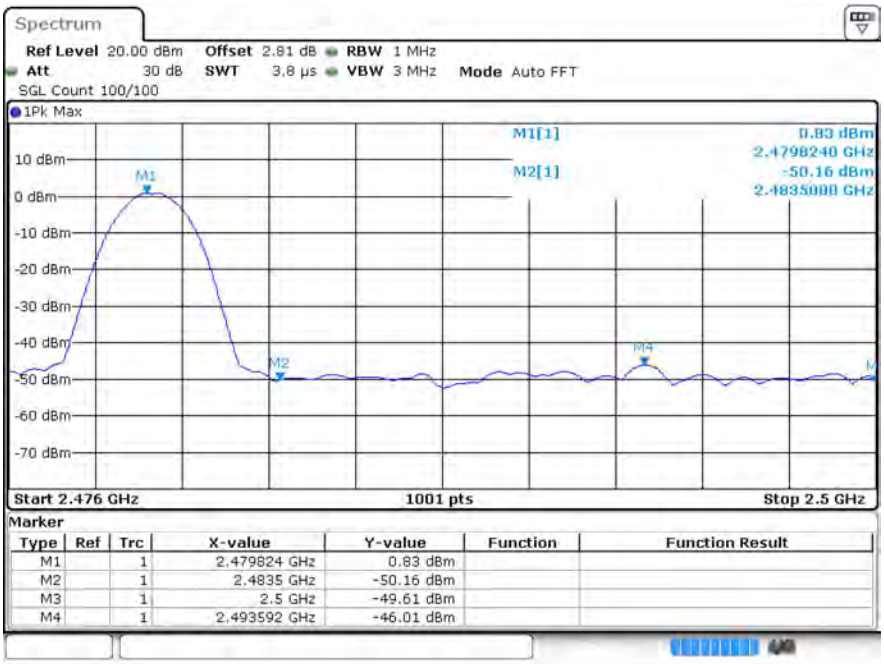
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (Low Channel)



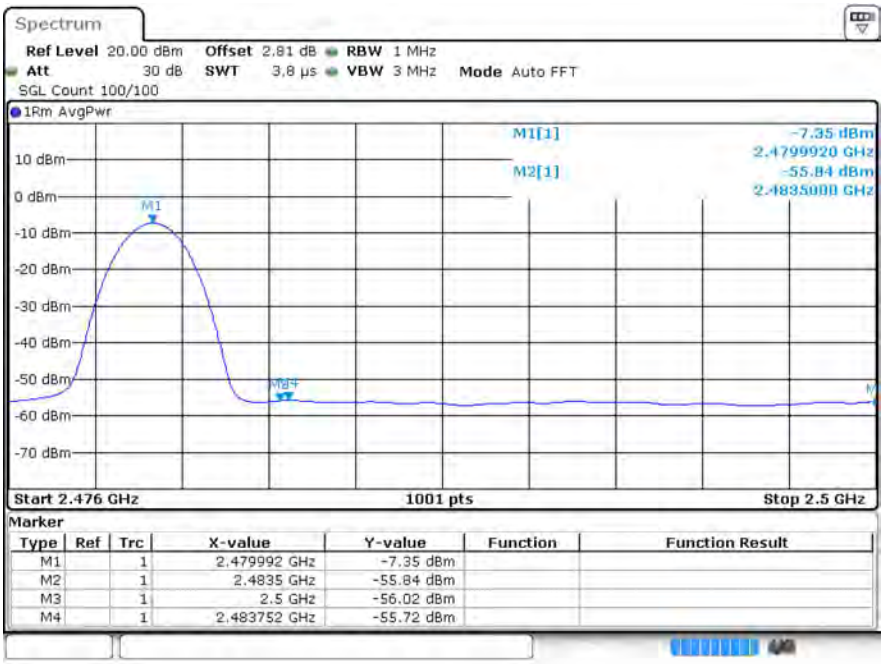
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (Low Channel)



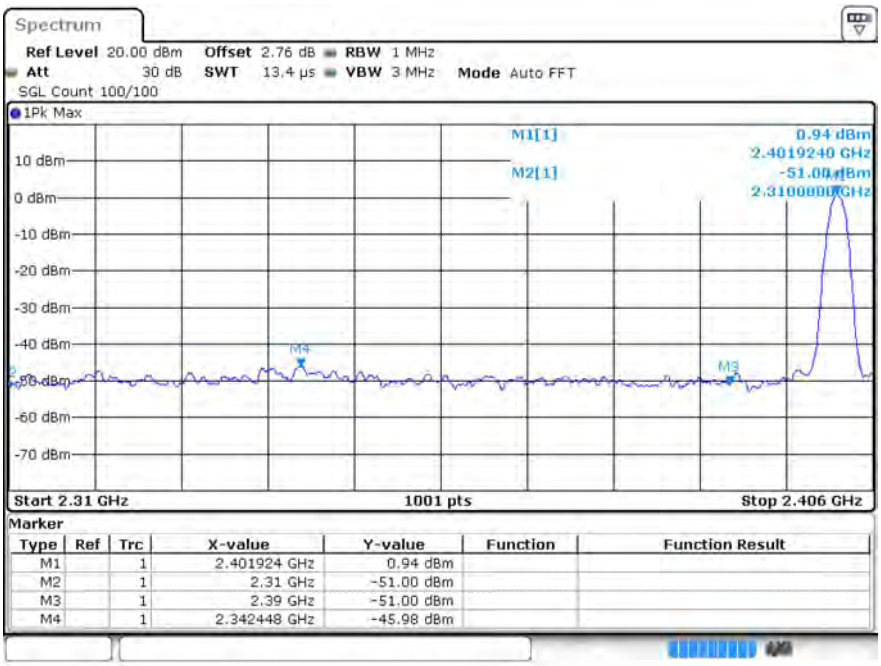
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (High Channel)



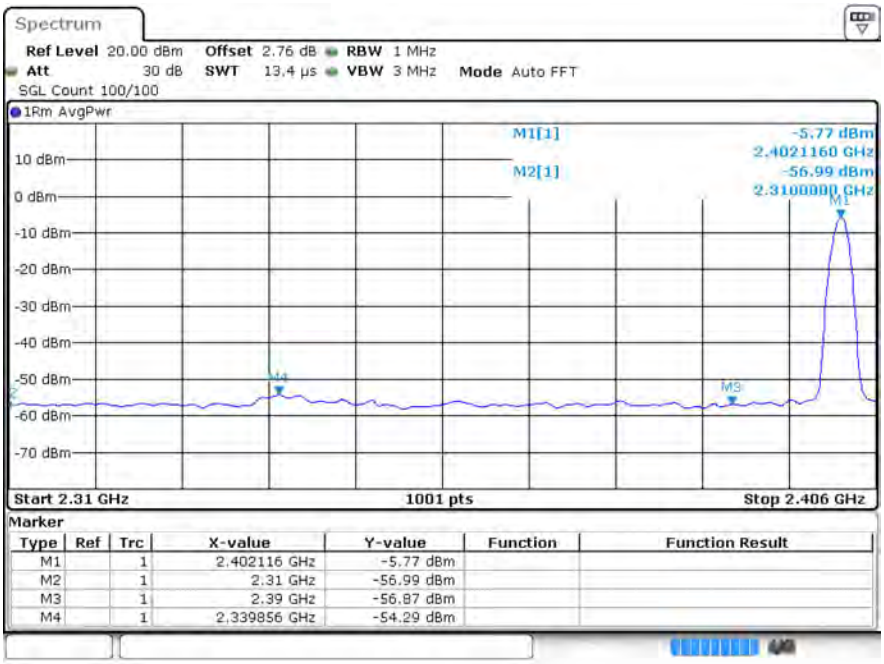
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (High Channel)



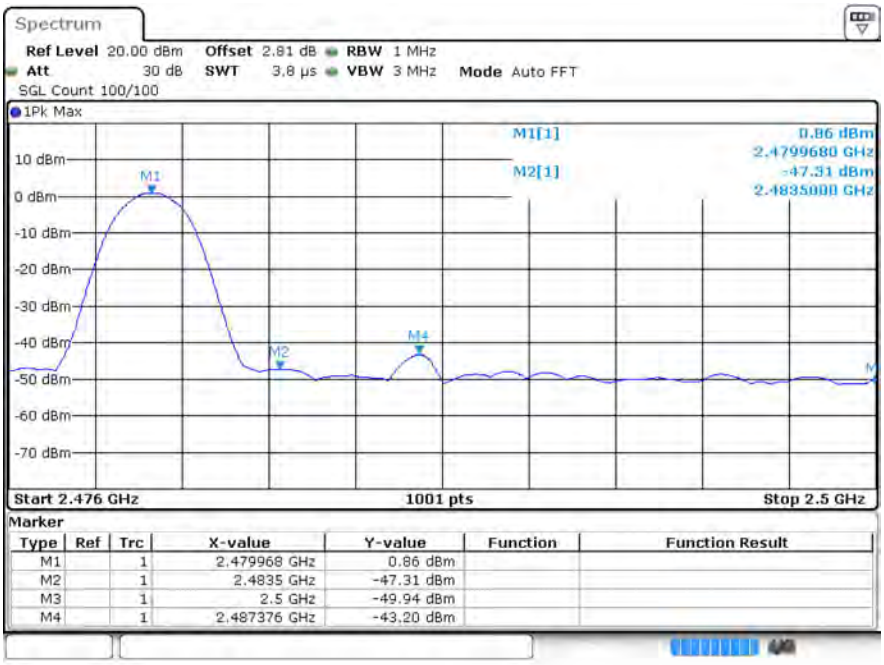
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



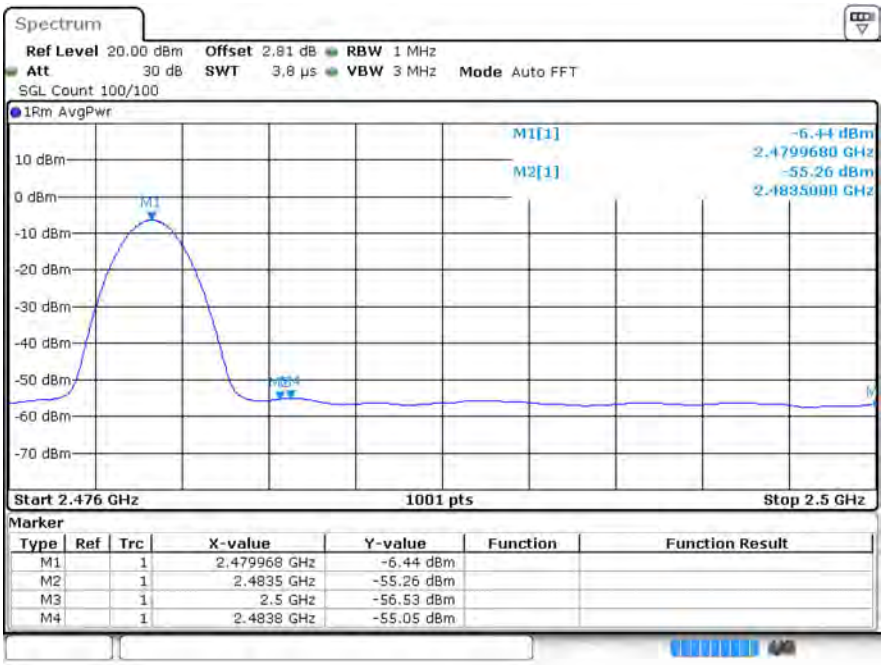
Restrict-band band-edge measurements_Hopping Off_8DPSK_Average (Low Channel)



Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (High Channel)



Restrict-band band-edge measurements_Hopping Off_8DPSK_Average (High Channel)



---The End---