Appendix A

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

Product Name: Bluetooth Adapter

Trade Mark: N/A

Test Model: AS-101

Environmental Conditions

Temperature:	25.5℃
Relative Humidity:	52.3%
ATM Pressure:	101Kpa
Test Engineer:	Emiya lin
Supervised by:	Simba Haung

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1 Duty Cycle

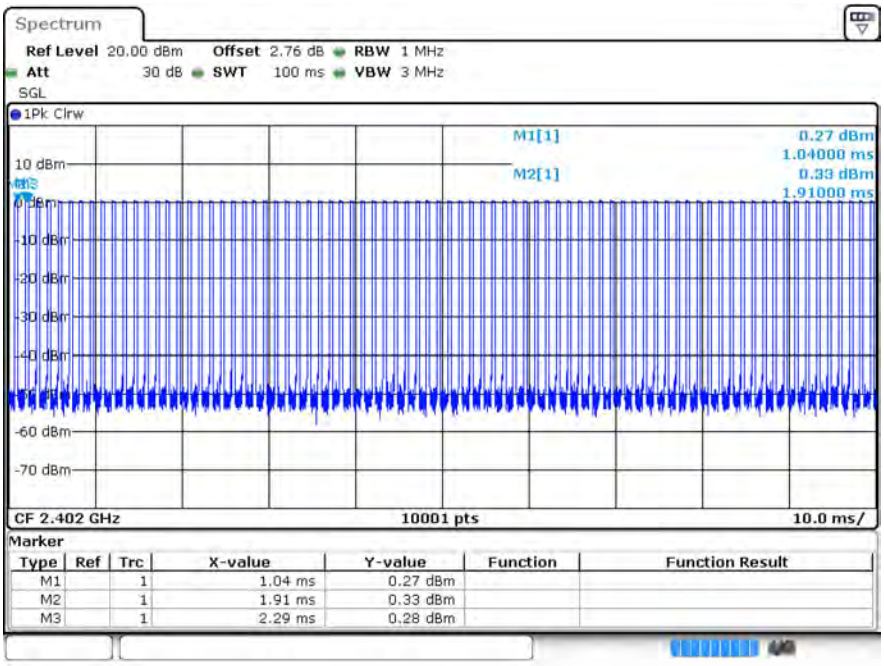
1.1 Test Result

Mode	Frequency (MHz)	Duty Cycle (%)	Correction Factor	1/T (kHz)
1-DH1	2402	31.2	5.06	2.63
1-DH1	2441	31.21	5.06	2.63
1-DH1	2480	31.76	4.98	2.56
2-DH1	2402	32.01	4.95	2.56
2-DH1	2441	32.06	4.94	2.56
2-DH1	2480	32	4.95	2.56
3-DH1	2402	32.01	4.95	2.56
3-DH1	2441	32.01	4.95	2.56
3-DH1	2480	32.01	4.95	2.56

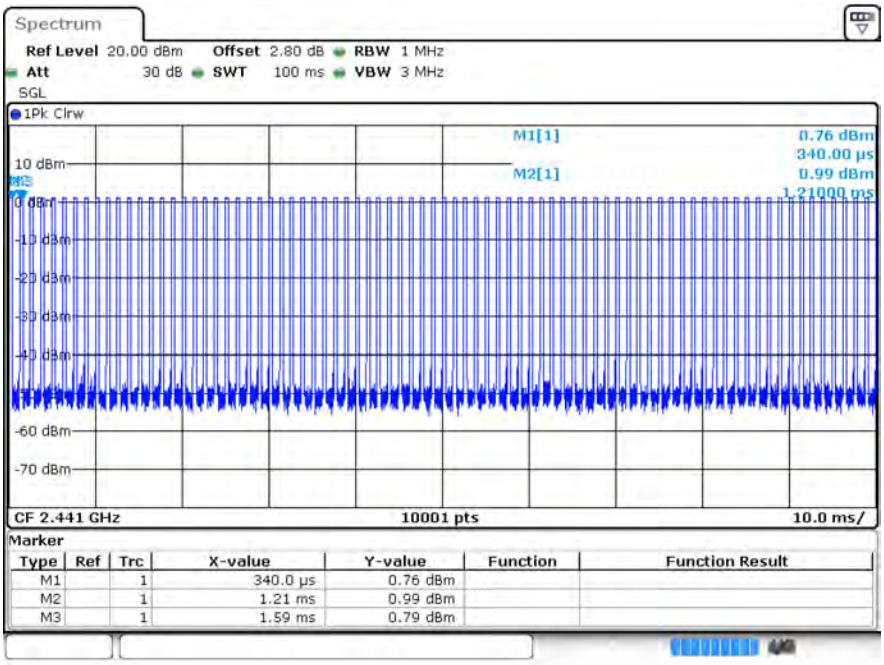
1.2 Test Graphs

Test Graphs

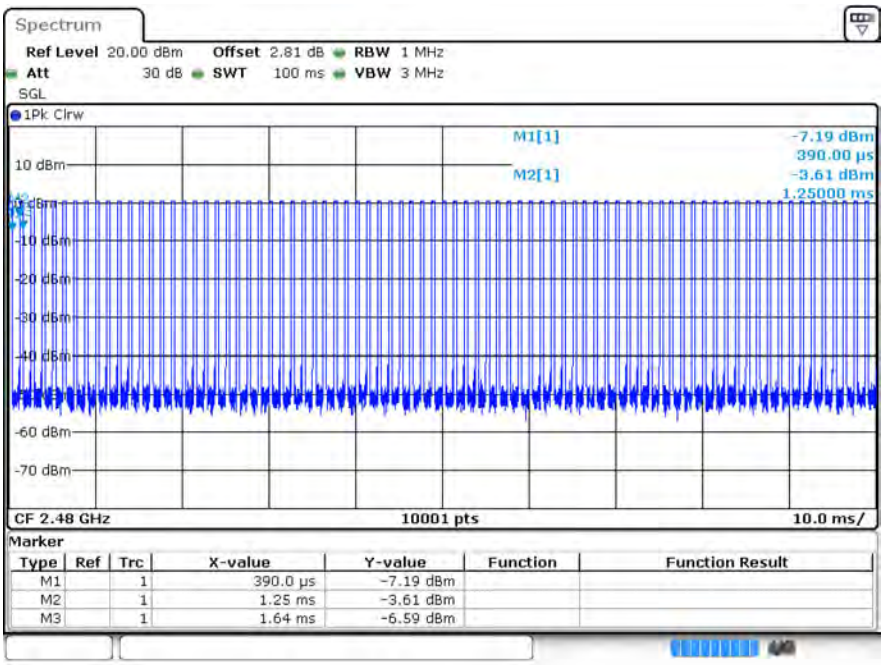
1-DH1 2402MHz



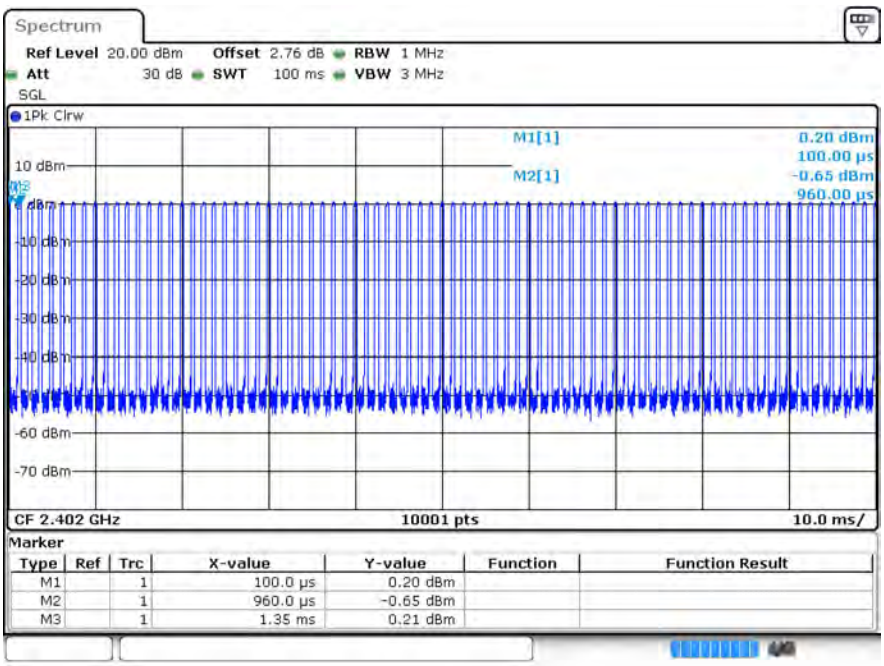
1-DH1 2441MHz



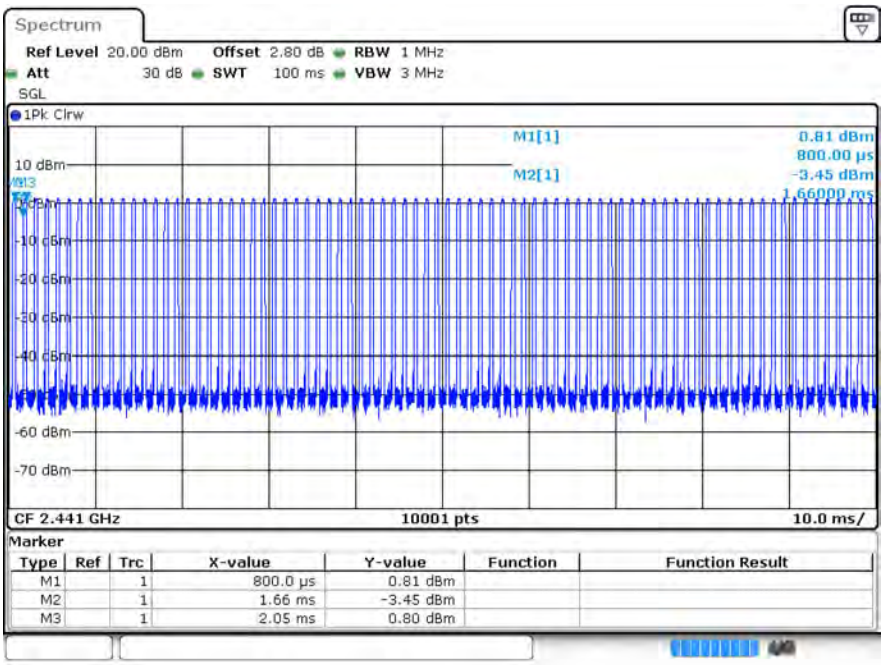
1-DH1 2480MHz



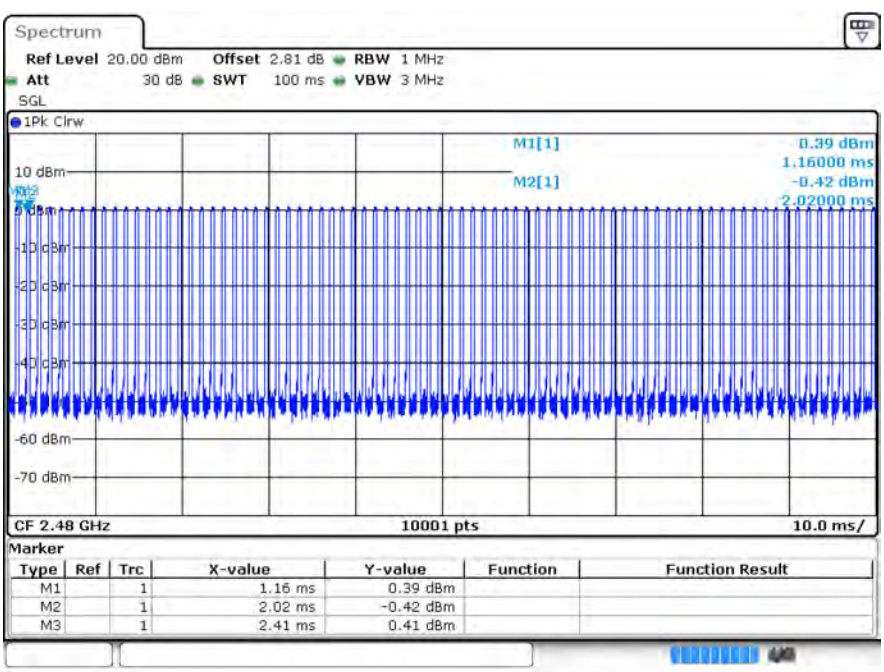
2-DH1 2402MHz



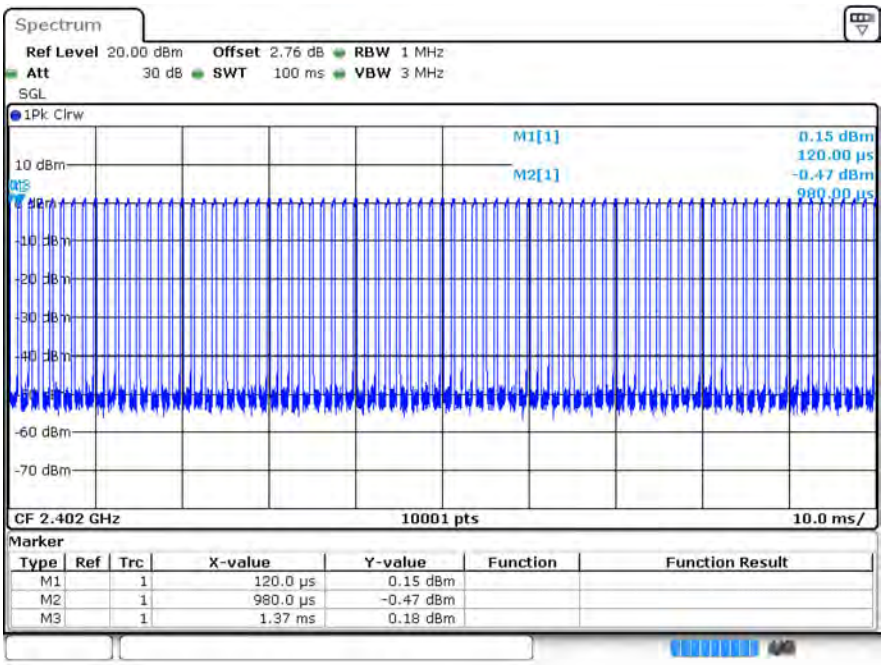
2-DH1 2441MHz



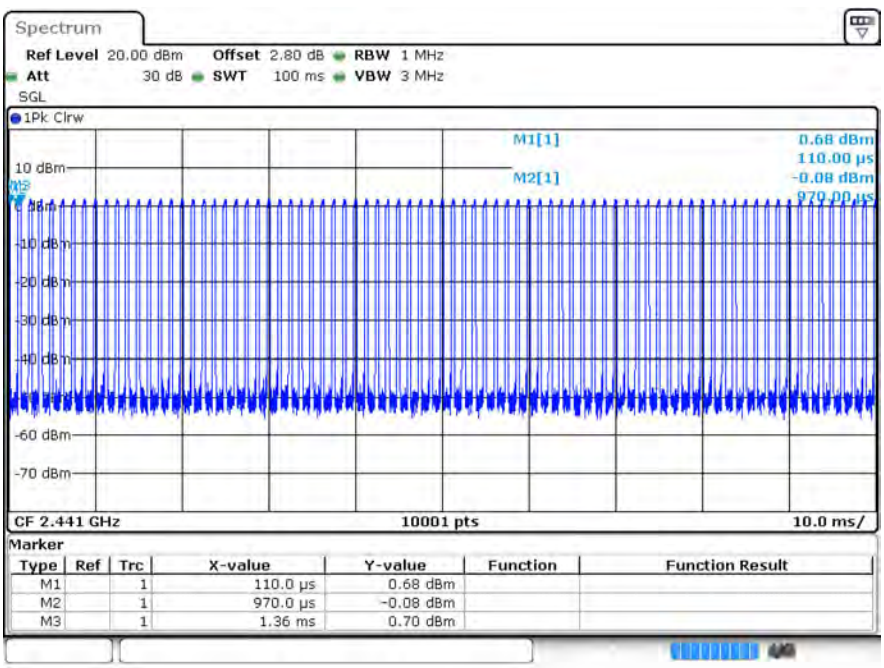
2-DH1 2480MHz



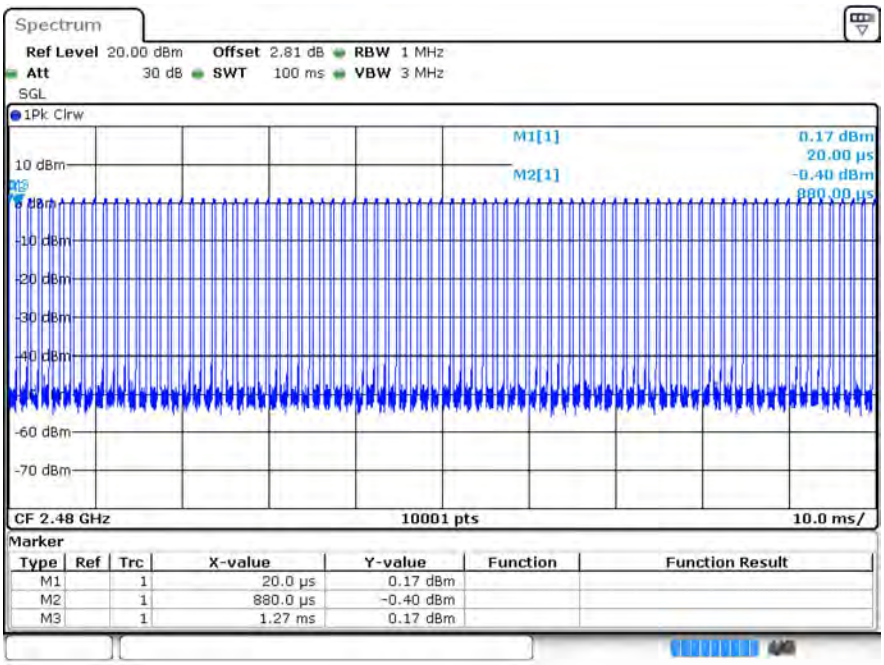
3-DH1 2402MHz



3-DH1 2441MHz



3-DH1 2480MHz

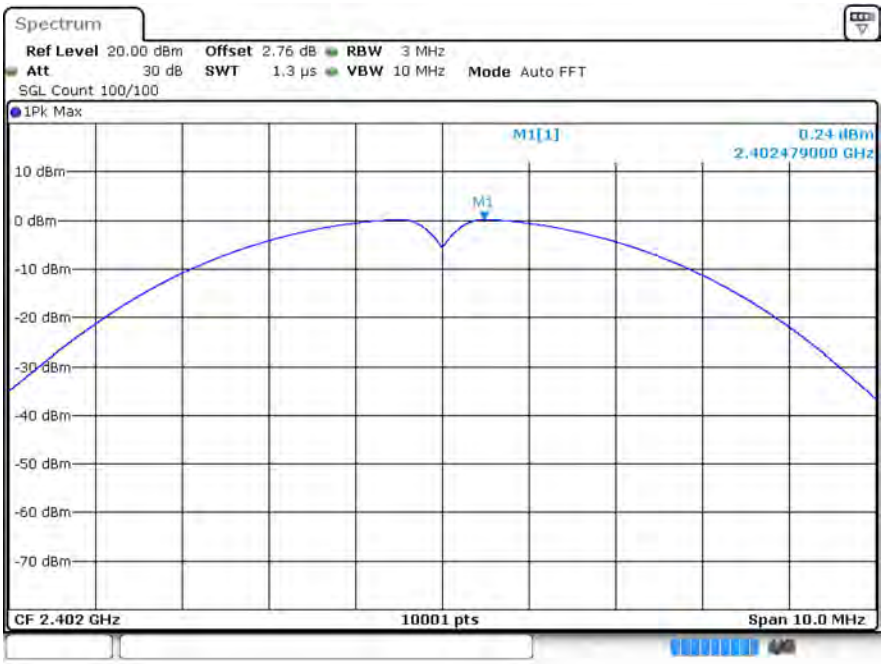
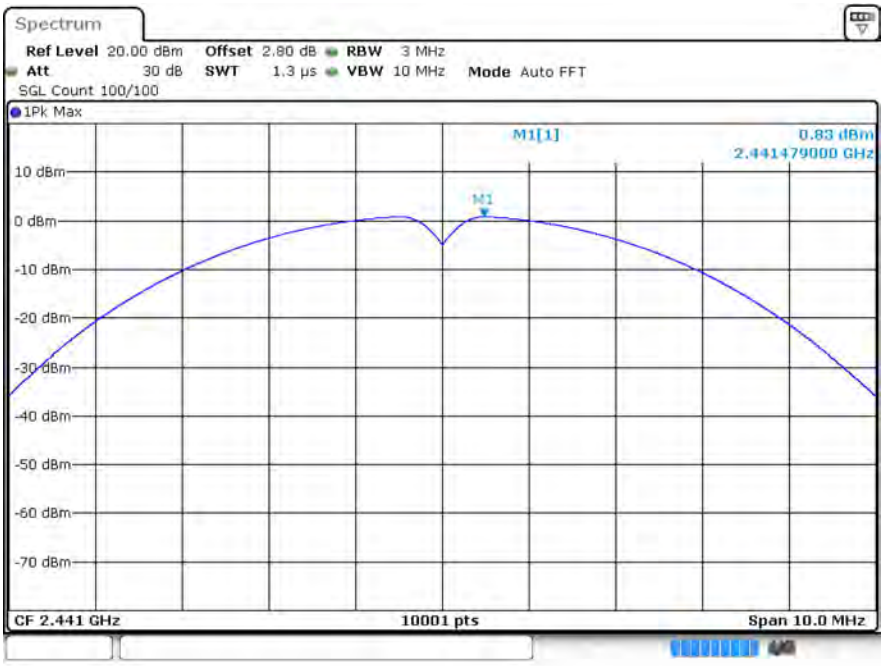


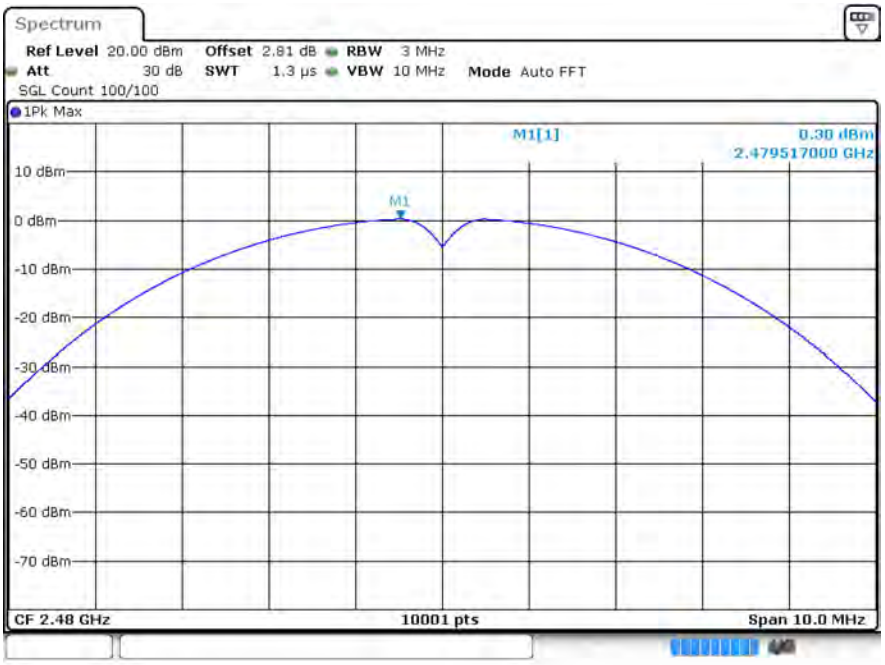
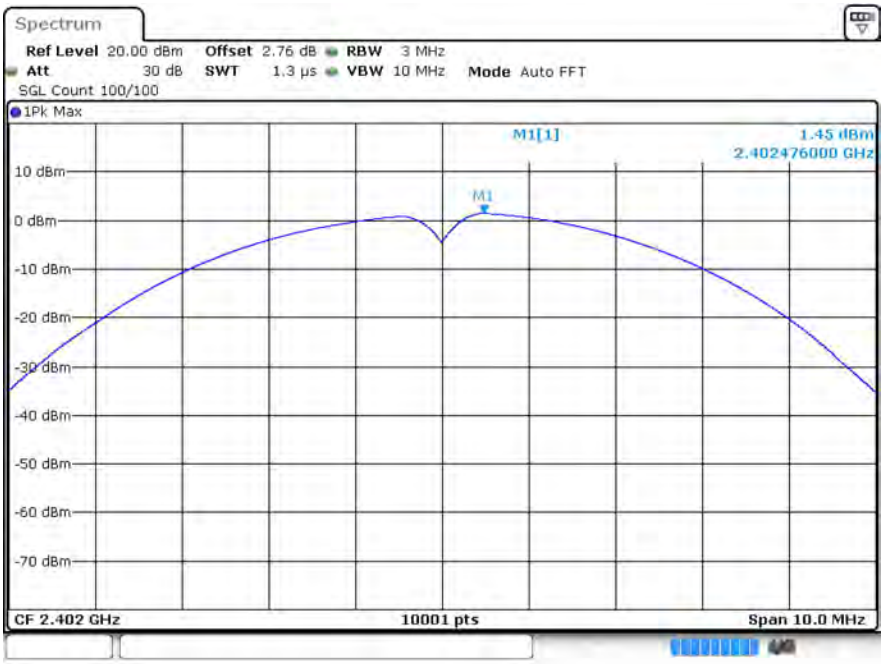
2 Maximum Conducted Peak Output Power

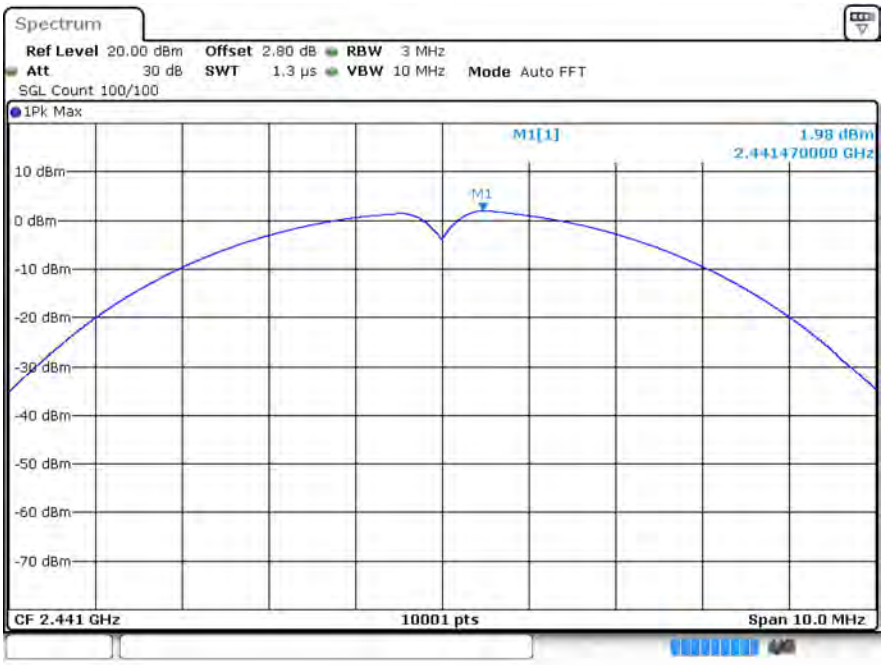
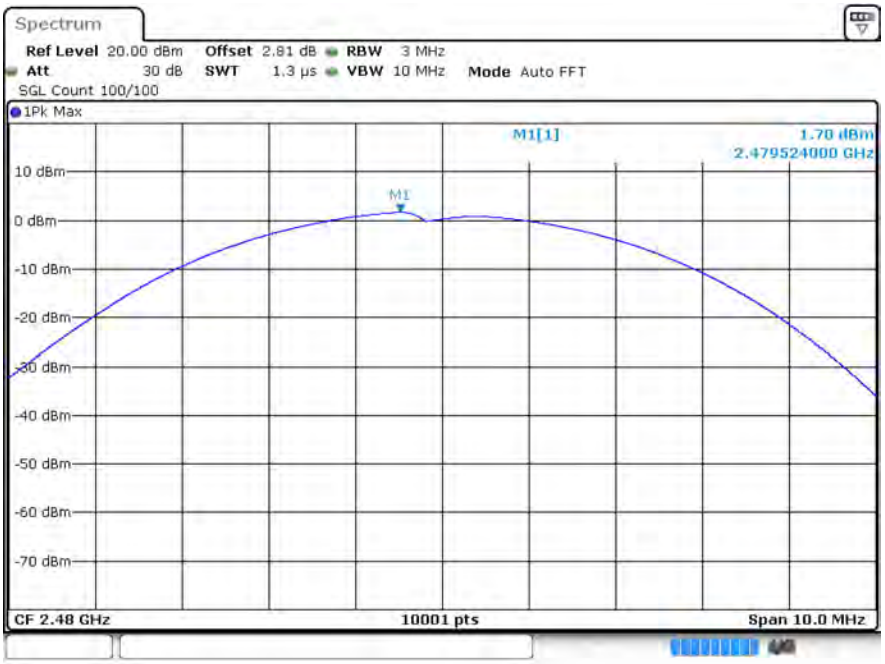
2.1 Test Result

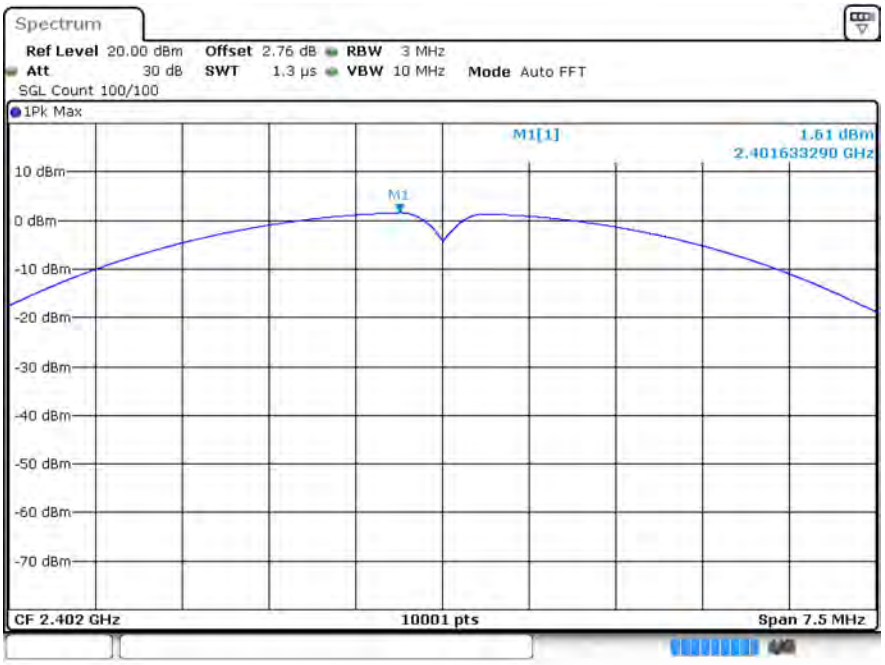
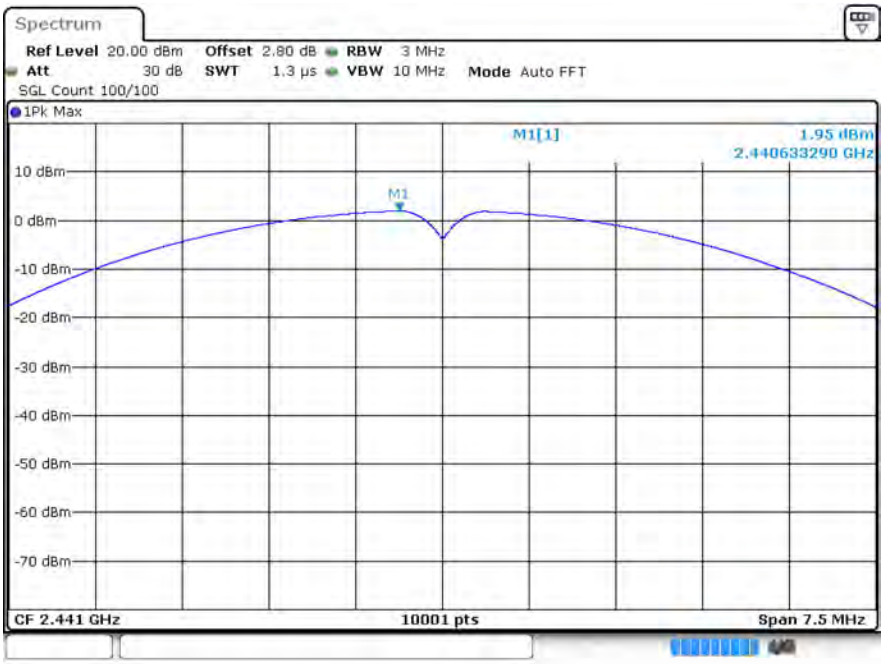
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	0.24	21	Pass
	MCH	0.83	21	Pass
	HCH	0.3	21	Pass
π/4DQPSK	LCH	1.45	21	Pass
	MCH	1.98	21	Pass
	HCH	1.7	21	Pass
8DPSK	LCH	1.61	21	Pass
	MCH	1.95	21	Pass
	HCH	1.29	21	Pass

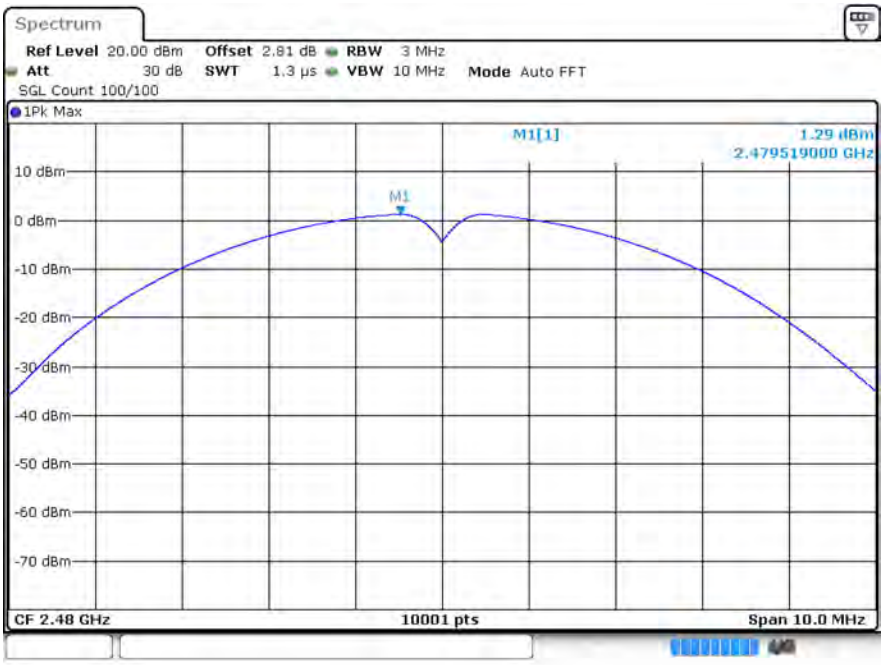
2.2 Test Graphs

Test Graphs	
GFSK/LCH	
GFSK/MCH	

GFSK/HCH	
π/4DQPSK/LCH	

π/4DQPSK/MCH	
π/4DQPSK/HCH	

8DPSK/LCH	
8DPSK/MCH	

8DPSK/HCH	

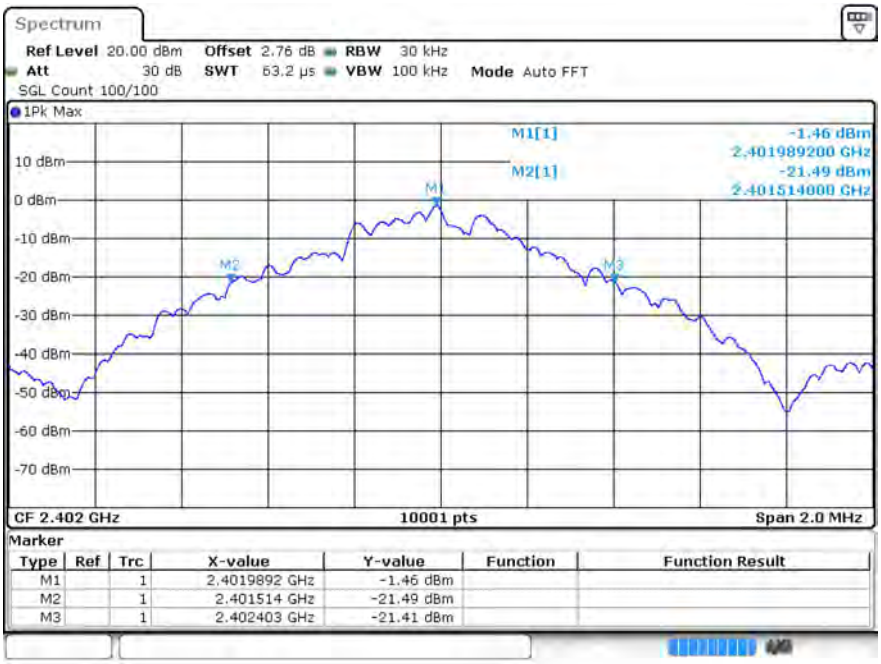
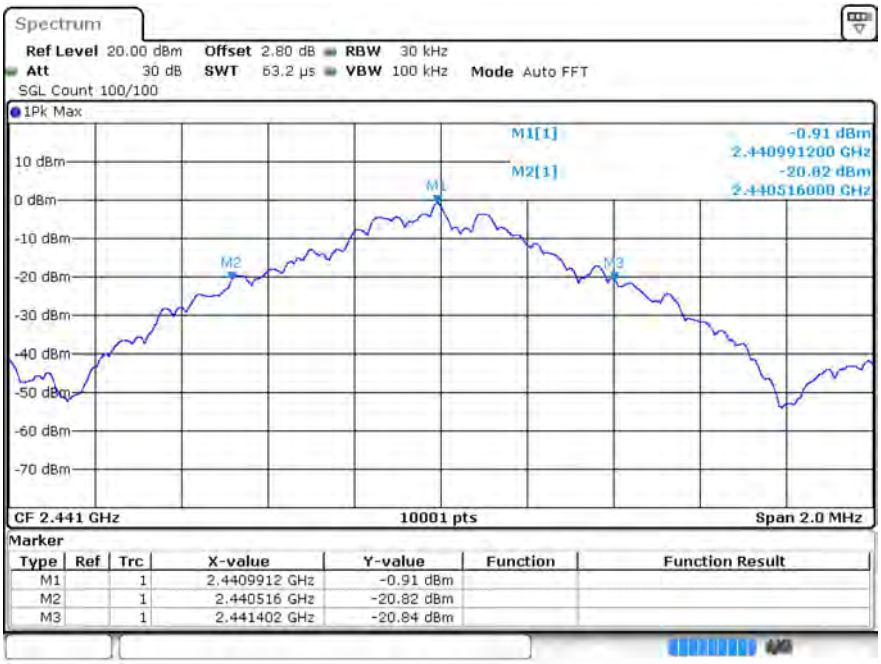
Spectrum
Ref Level 20.00 dBm Offset 2.81 dB RBW 3 MHz
Att 30 dB SWT 1.3 µs VBW 10 MHz Mode Auto FFT
SGL Count 100/100
1Pk Max
M1[1] 1.29 dBm
2.479519000 GHz
M1
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
CF 2.48 GHz
10001 pts
Span 10.0 MHz

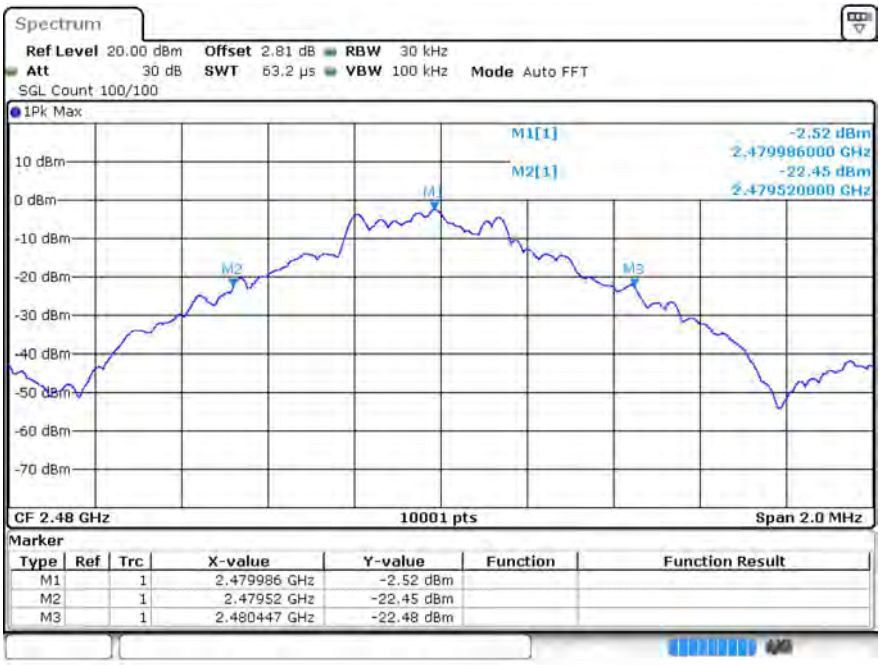
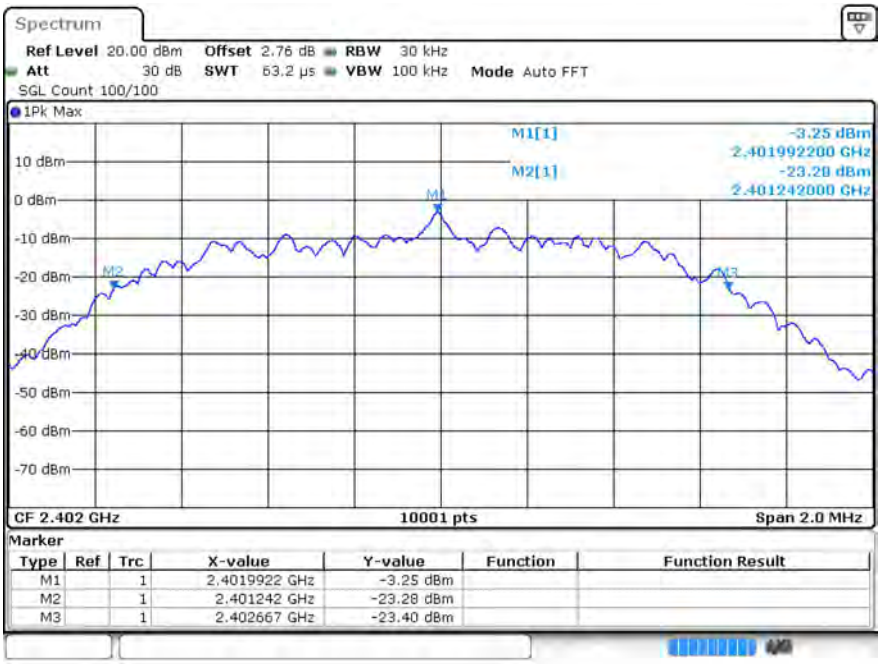
3 20dB Bandwidth

3.1 Test Result

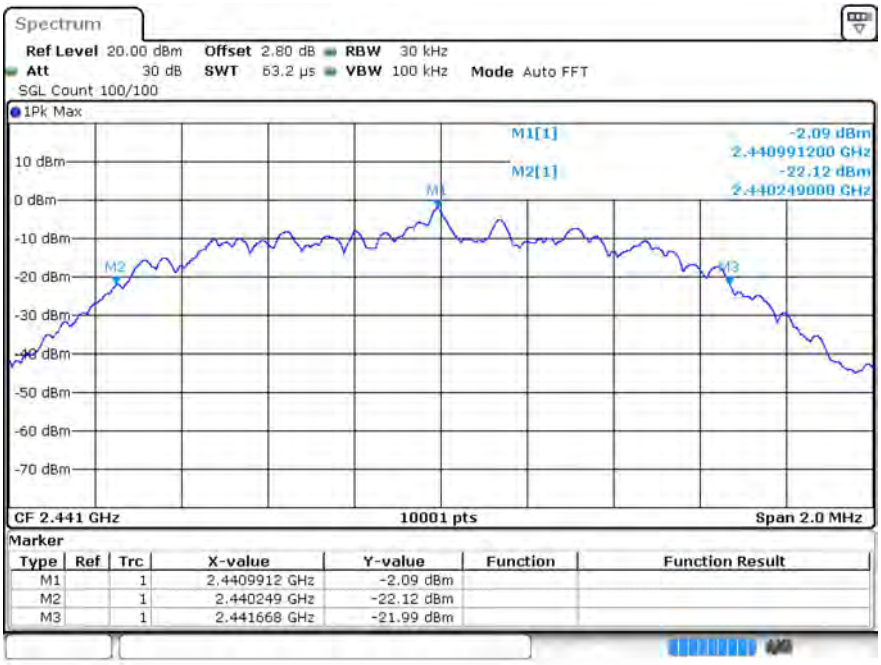
Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.889	Not Specified	Pass
	MCH	0.887	Not Specified	Pass
	HCH	0.927	Not Specified	Pass
π/4DQPSK	LCH	1.424	Not Specified	Pass
	MCH	1.419	Not Specified	Pass
	HCH	1.393	Not Specified	Pass
8DPSK	LCH	1.424	Not Specified	Pass
	MCH	1.437	Not Specified	Pass
	HCH	1.43	Not Specified	Pass

3.2 Test Graphs

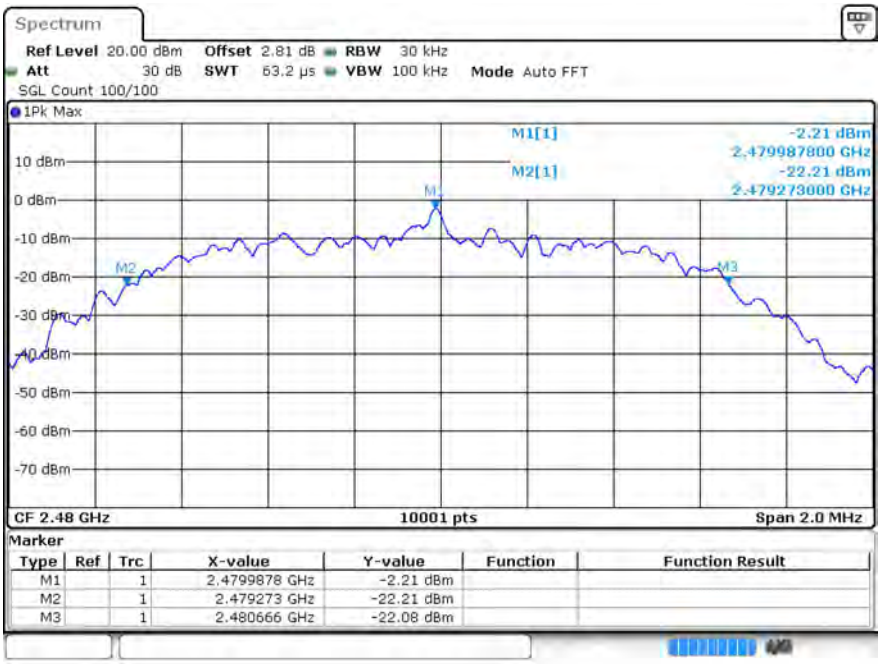
Test Graphs	
GFSK/LCH	
GFSK/MCH	

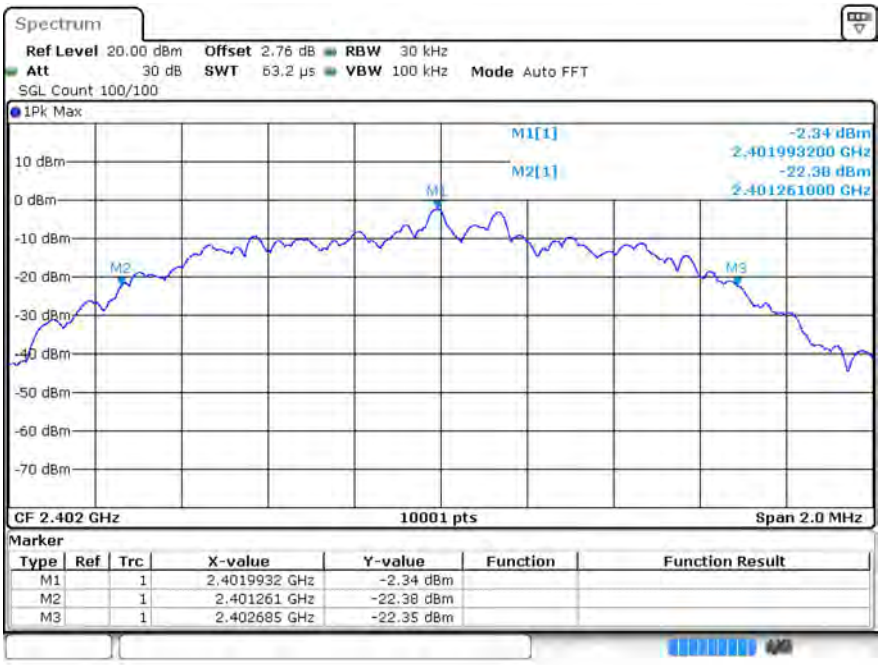
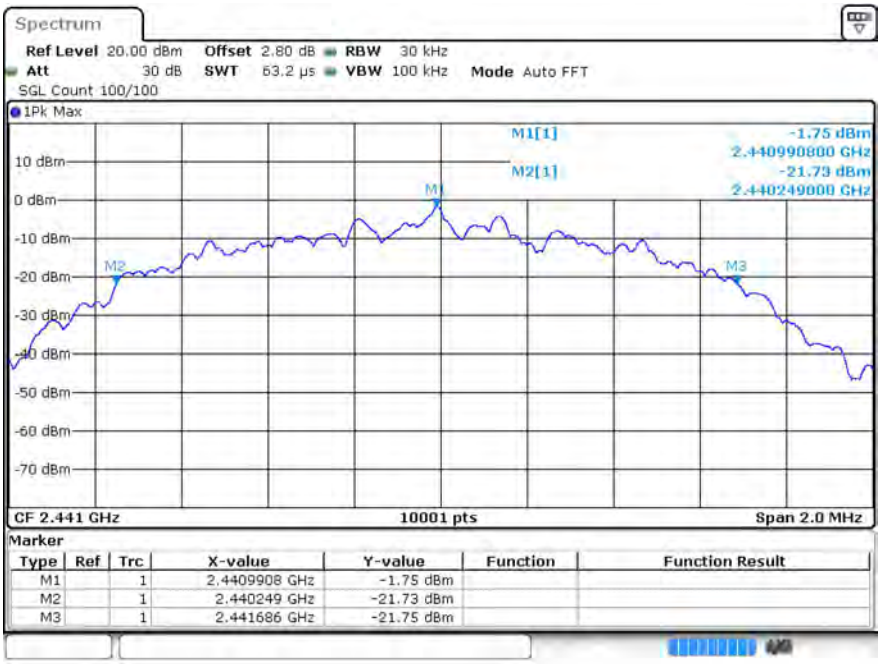
GFSK/HCH	
π/4DQPSK/LCH	

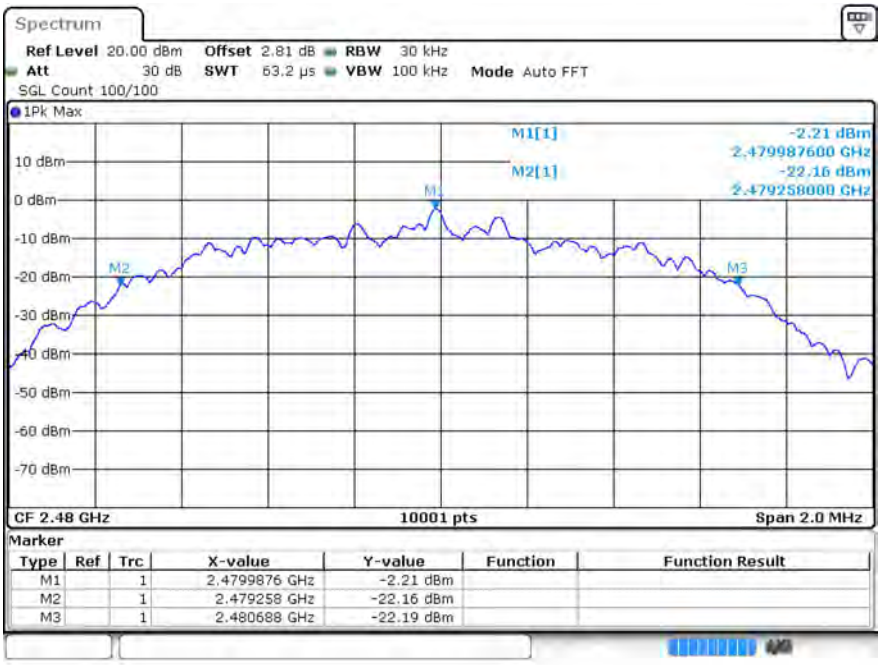
π/4DQPSK/MCH



π/4DQPSK/HCH



8DPSK/LCH	
8DPSK/MCH	

8DPSK/HCH	

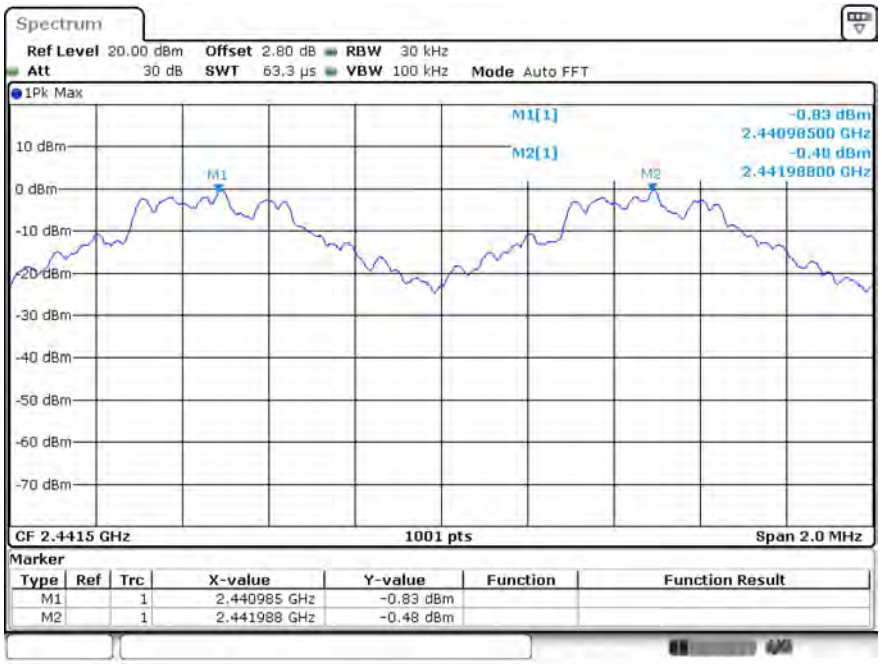
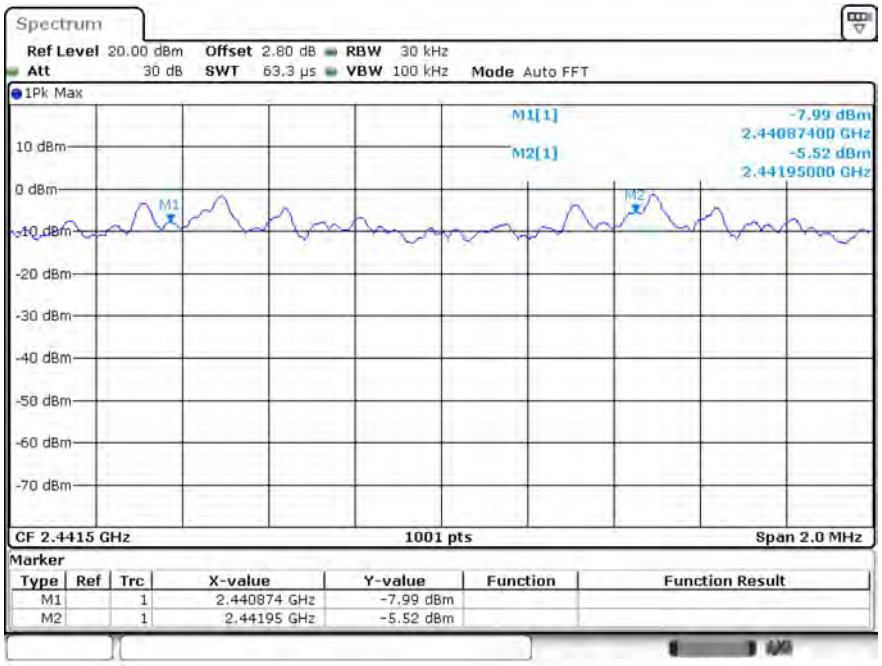
Spectrum
Ref Level 20.00 dBm Offset 2.81 dB RBW 30 kHz
Att 30 dB SWT 63.2 µs VBW 100 kHz Mode Auto FFT
SGL Count 100/100
1Pk Max
M1[1] -2.21 dBm 2.479987600 GHz
M2[1] -22.16 dBm 2.479258000 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
M2
M3
CF 2.48 GHz
10001 pts
Span 2.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.4799876 GHz -2.21 dBm
M2 1 2.479258 GHz -22.16 dBm
M3 1 2.480688 GHz -22.19 dBm

4 Carrier Frequency Separation

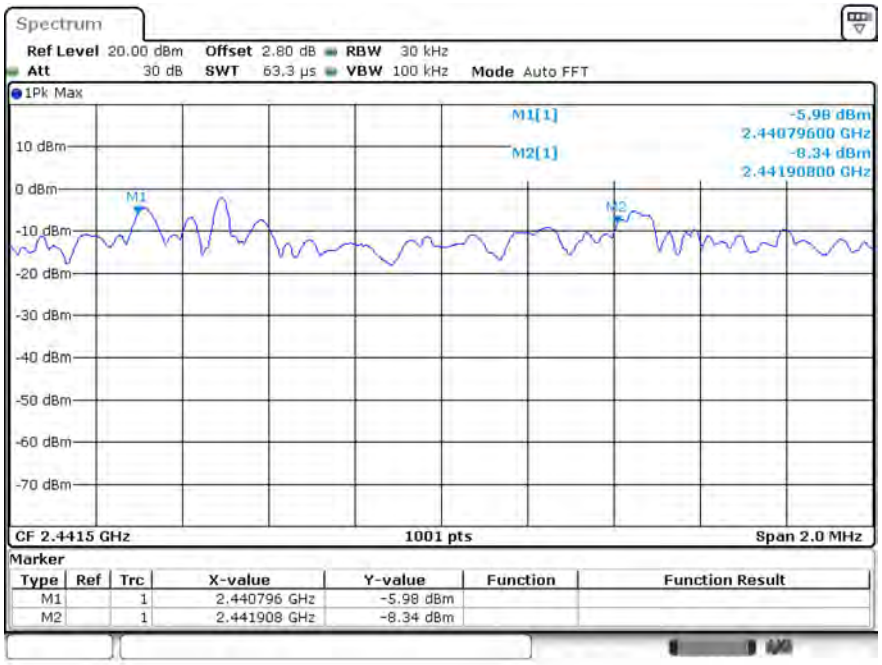
4.1 Test Result

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	MCH	1.003	0.591	Pass
π/4DQPSK	MCH	1.076	0.946	Pass
8DPSK	MCH	1.112	0.958	Pass

4.2 Test Graphs

Test Graphs	
GFSK/MCH	
π/4DQPSK/MCH	

8DPSK/MCH

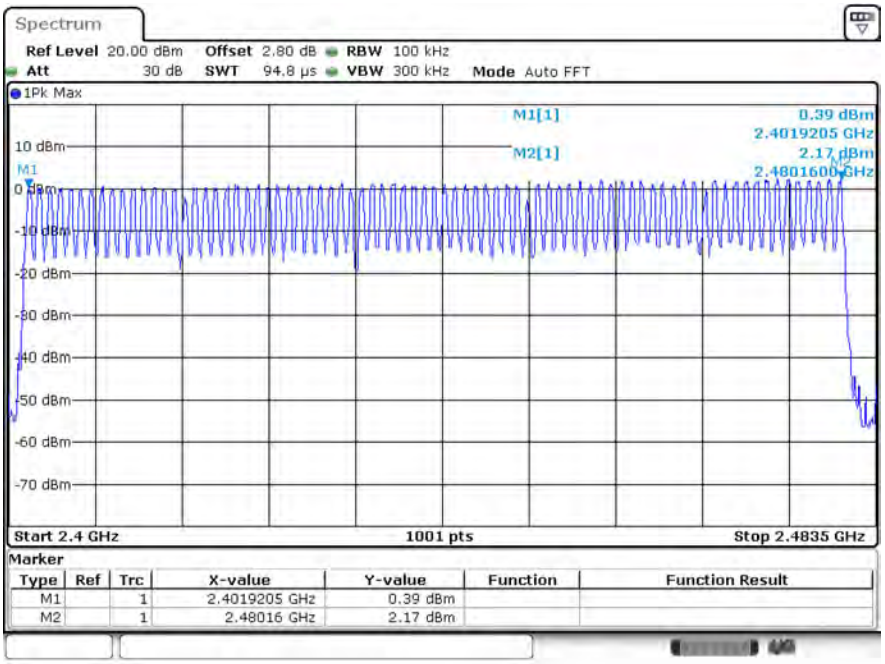
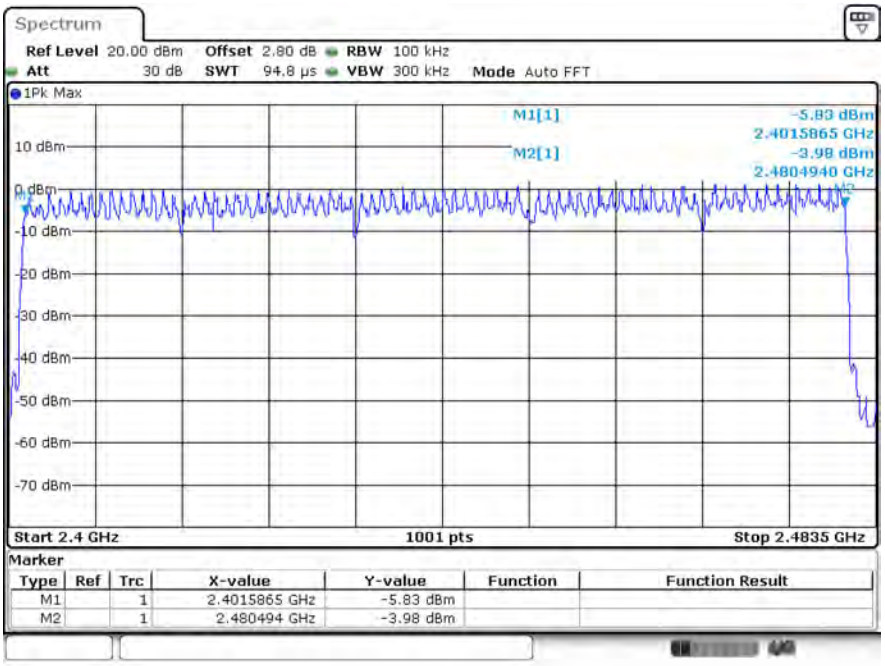

Spectrum
Ref Level 20.00 dBm Offset 2.80 dB RBW 30 kHz
Att 30 dB SWT 63.3 µs VBW 100 kHz Mode Auto FFT
1Pk Max
M1[1] -5.98 dBm
2.44079600 GHz
M2[1] -8.34 dBm
2.44190800 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
M2
CF 2.4415 GHz
1001 pts
Span 2.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.440796 GHz -5.98 dBm
M2 1 2.441908 GHz -8.34 dBm

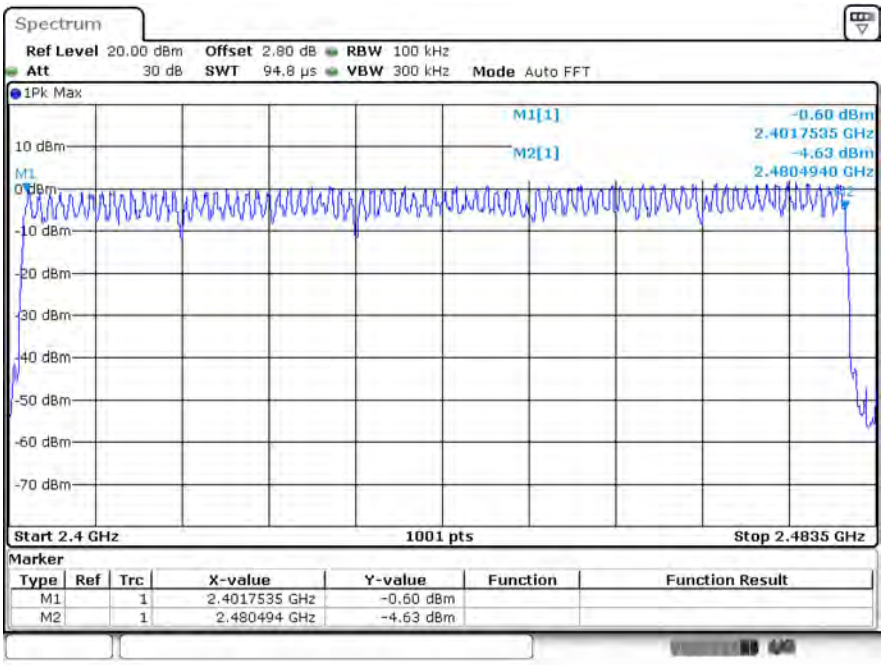
5 Hopping Channel Number

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	

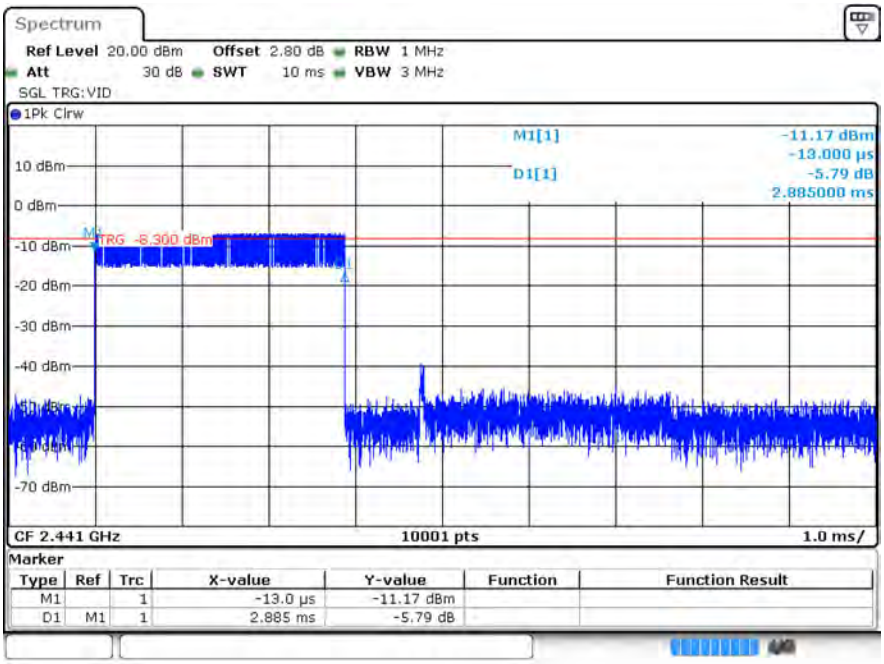
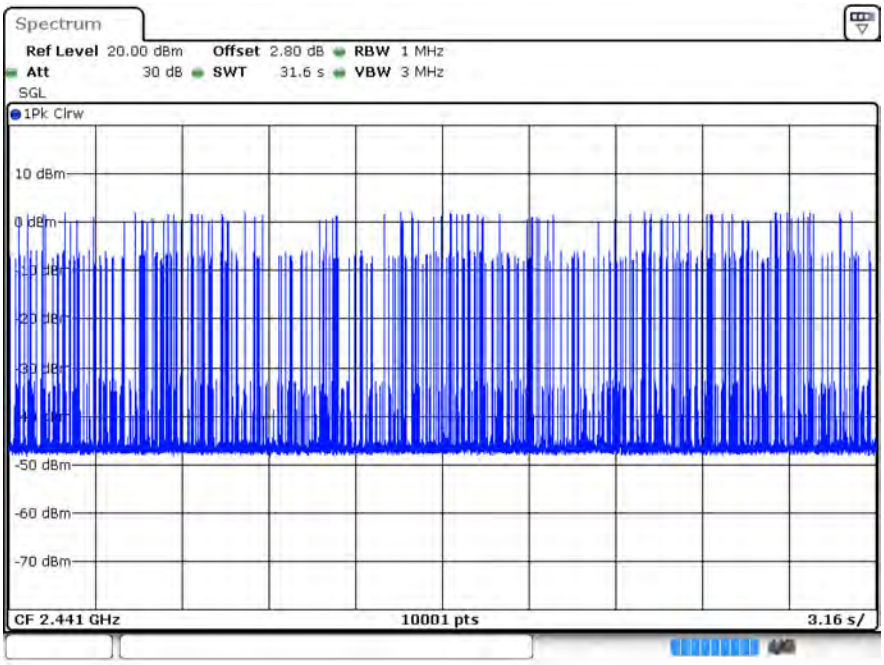
Spectrum
Ref Level 20.00 dBm Offset 2.80 dB RBW 100 kHz
Att 30 dB SWT 94.8 µs VBW 300 kHz Mode Auto FFT
1Pk Max
M1[1] -0.60 dBm 2.4017535 GHz
M2[1] -4.63 dBm 2.4804940 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
Start 2.4 GHz 1001 pts Stop 2.4835 GHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.4017535 GHz -0.60 dBm
M2 1 2.480494 GHz -4.63 dBm

6 Dwell Time

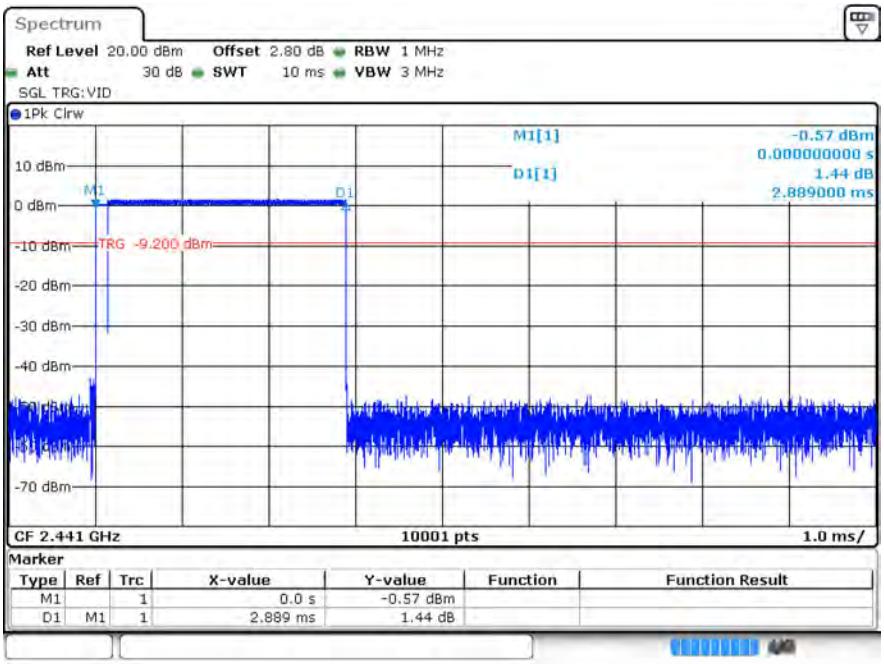
6.1 Test Result

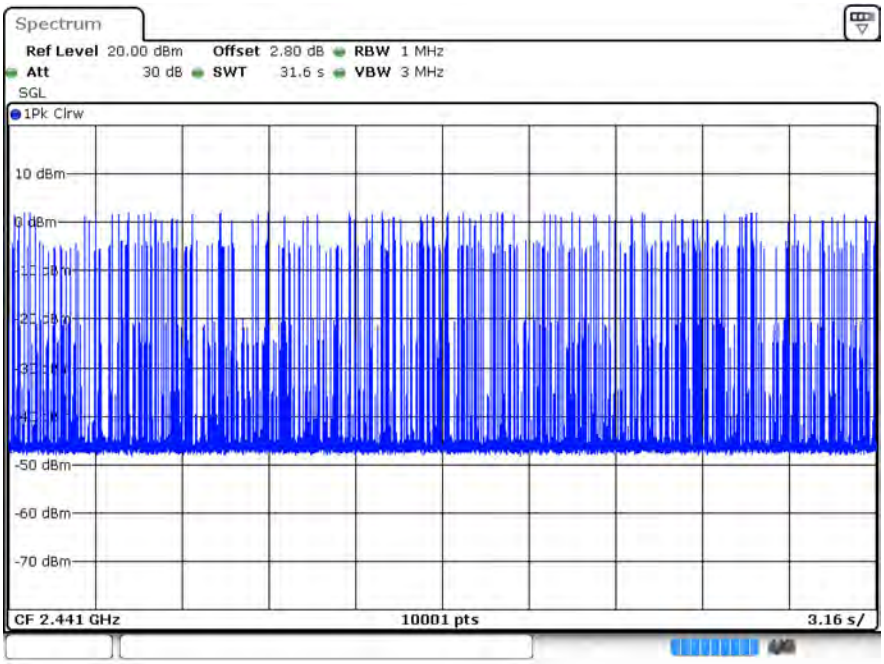
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[ms]	Limit [s]	Verdict
GFSK	DH5	MCH	2.885	99	285.615	0.4	Pass
π/4DQPSK	2DH5	MCH	2.889	102	294.678	0.4	Pass
8DPSK	3DH5	MCH	2.891	108	312.228	0.4	Pass

6.2 Test Graphs

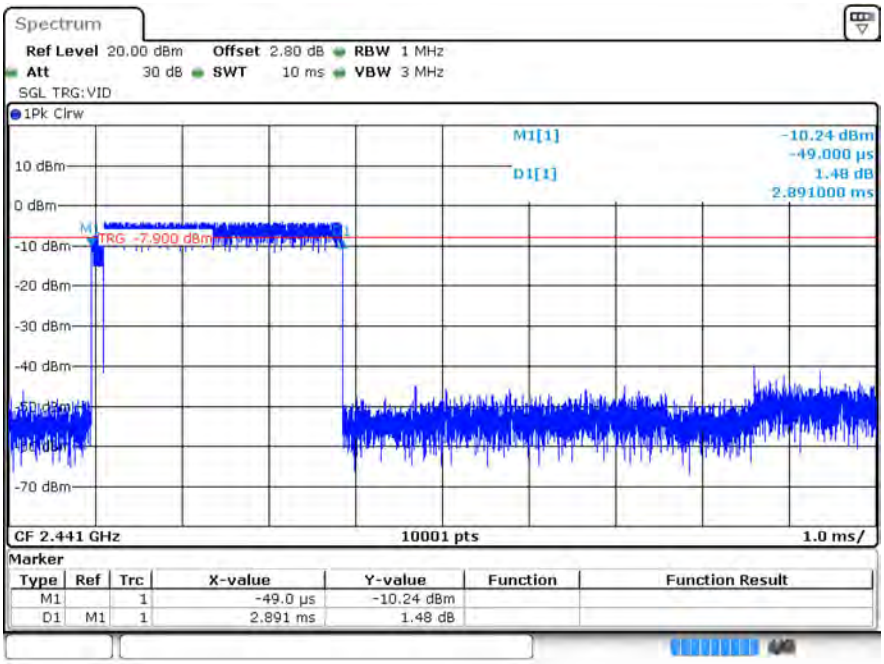
Test Graphs	
GFSK_DH5/MCH	 

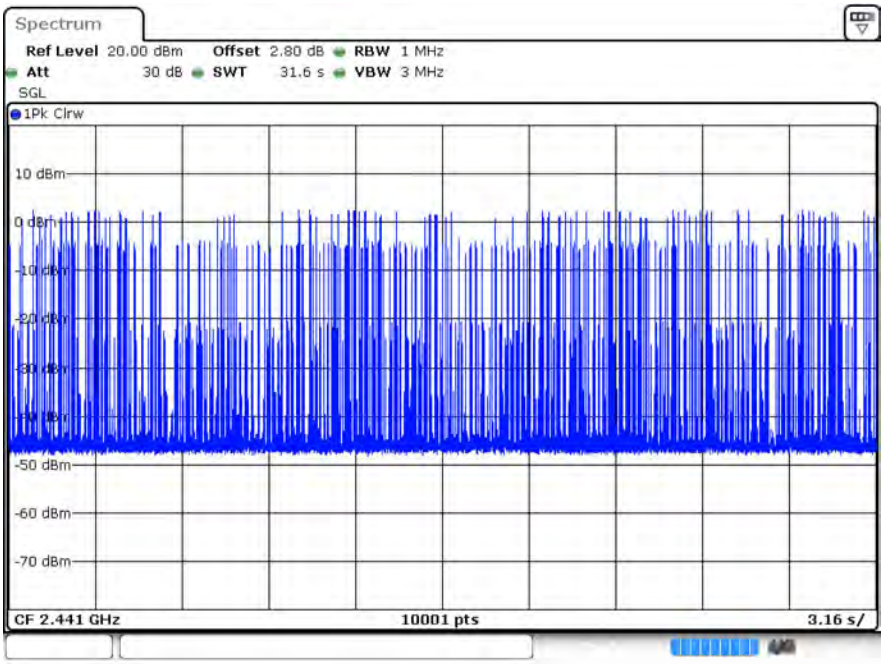
π/4DQPSK
_2DH5/MCH





8DPSK _3DH5/MCH



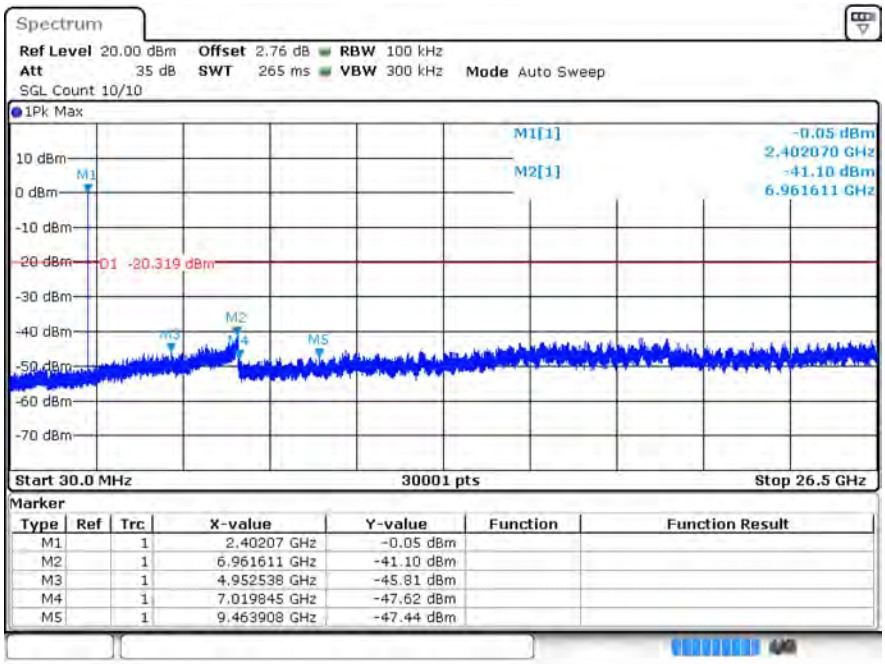


7 RF Conducted Spurious Emissions

7.1 Test Result

Mode	Channel	Max. Level [dBc]	Limit [dBc]	Verdict
GFSK	LCH	-40.78	-20	Pass
	MCH	-42.05	-20	Pass
	HCH	-40.55	-20	Pass
π/4DQPSK	LCH	-40.28	-20	Pass
	MCH	-39.86	-20	Pass
	HCH	-40.73	-20	Pass
8DPSK	LCH	-40.29	-20	Pass
	MCH	-40.02	-20	Pass
	HCH	-41.43	-20	Pass

7.2 Test Graphs

GFSK_LCH_Graphs	
Pref	
Puw	

GFSK_MCH_Graphs	
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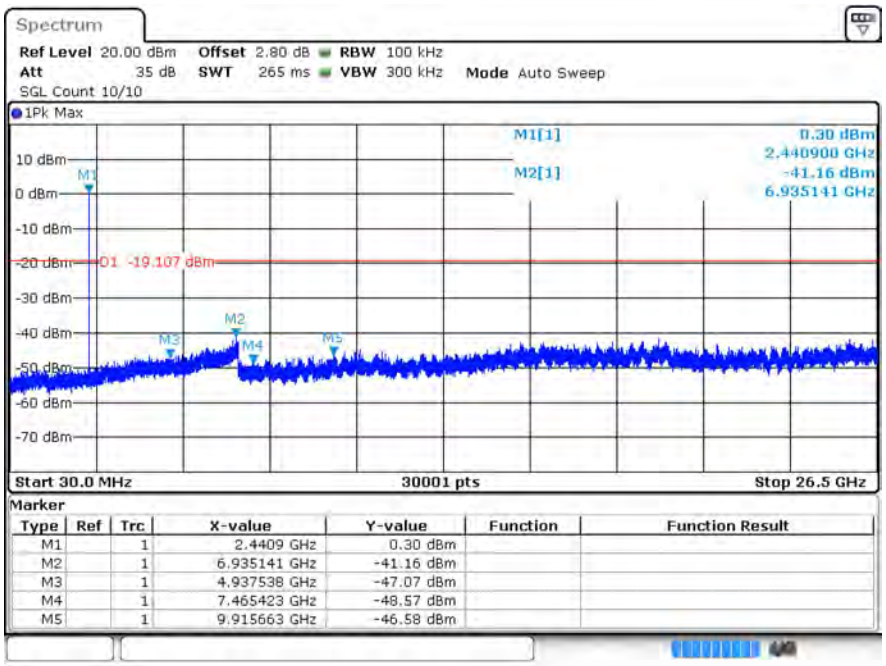
Puw	

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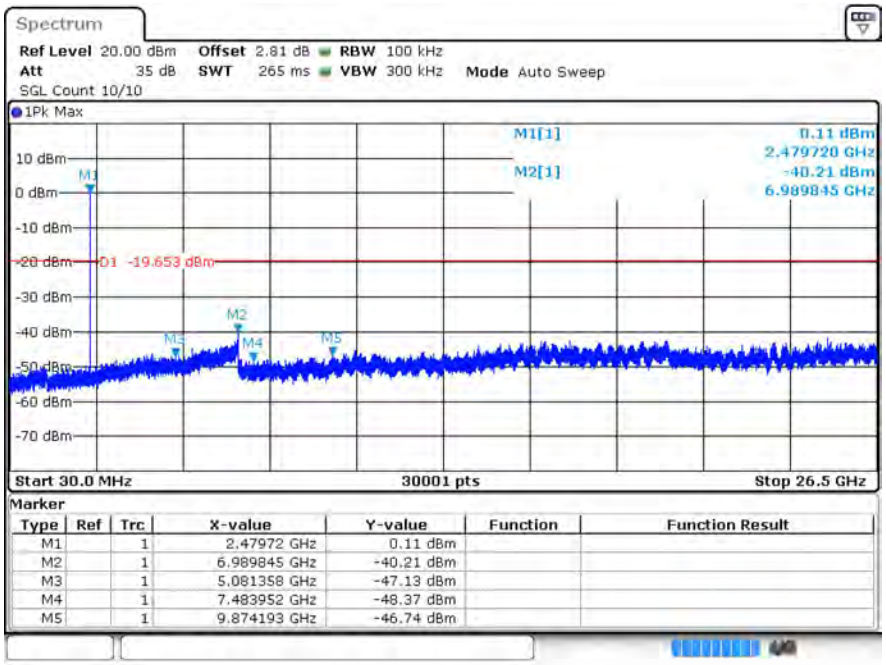
Puw	

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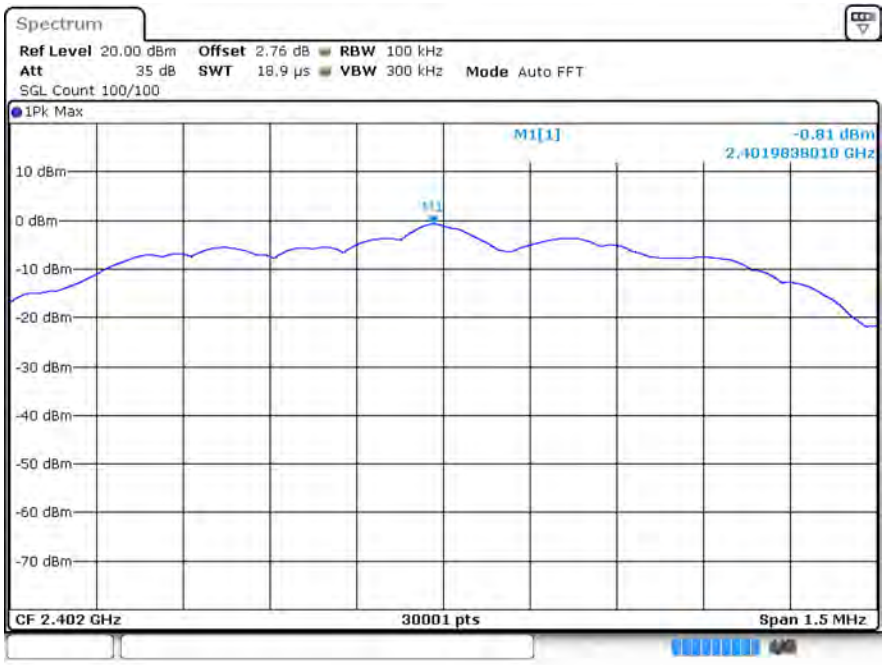
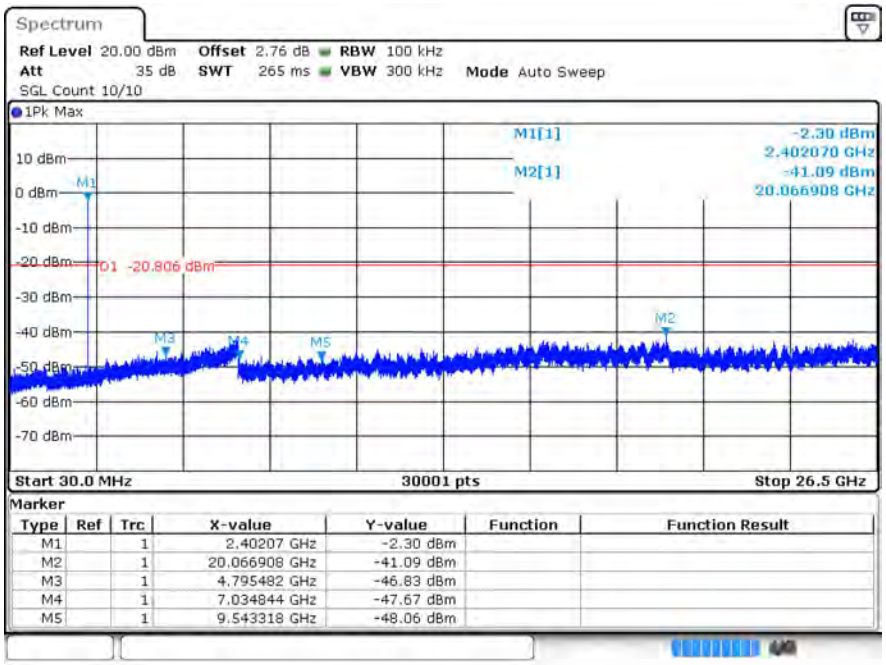
Pref	
Puw	

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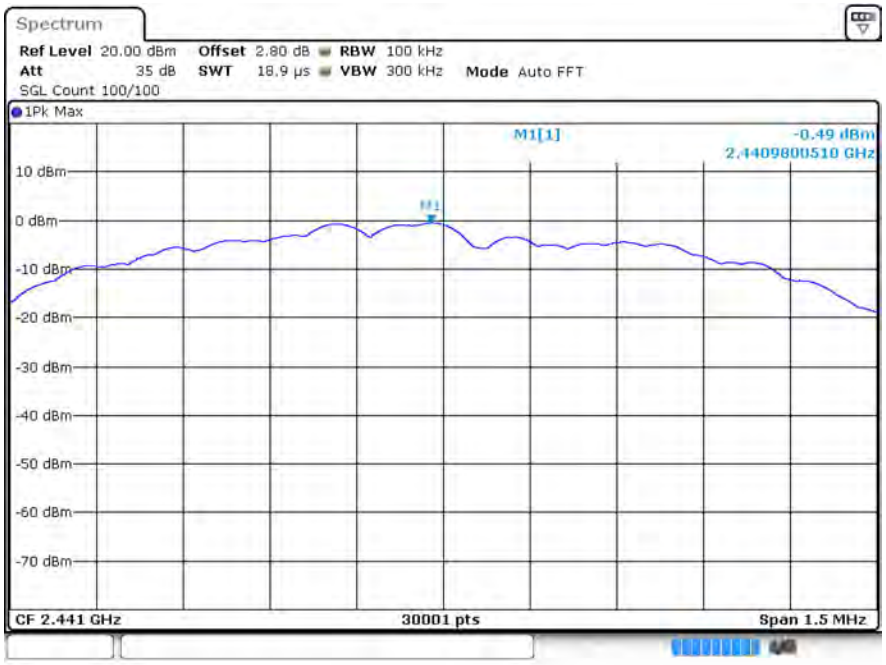
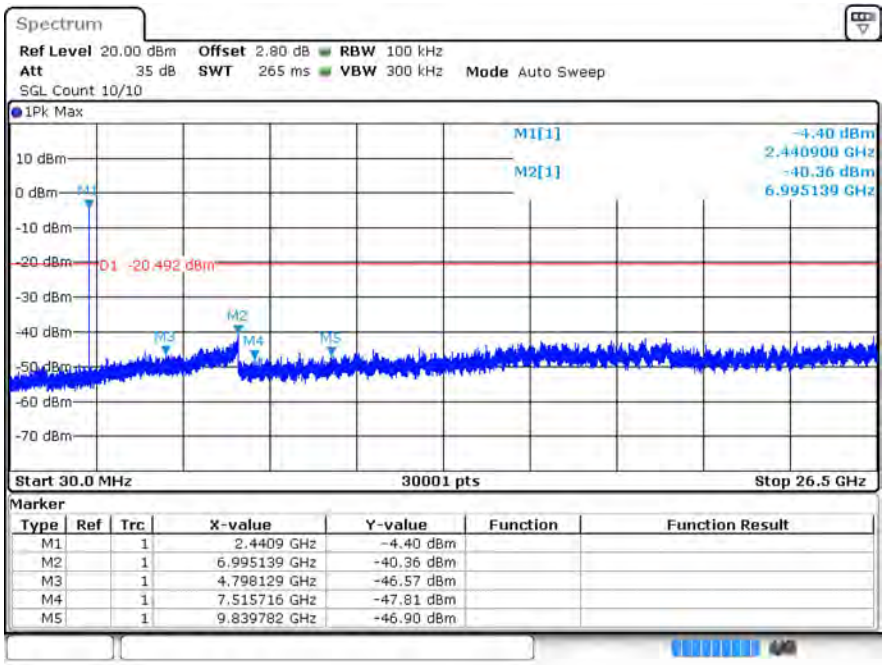
Pref	
Puw	

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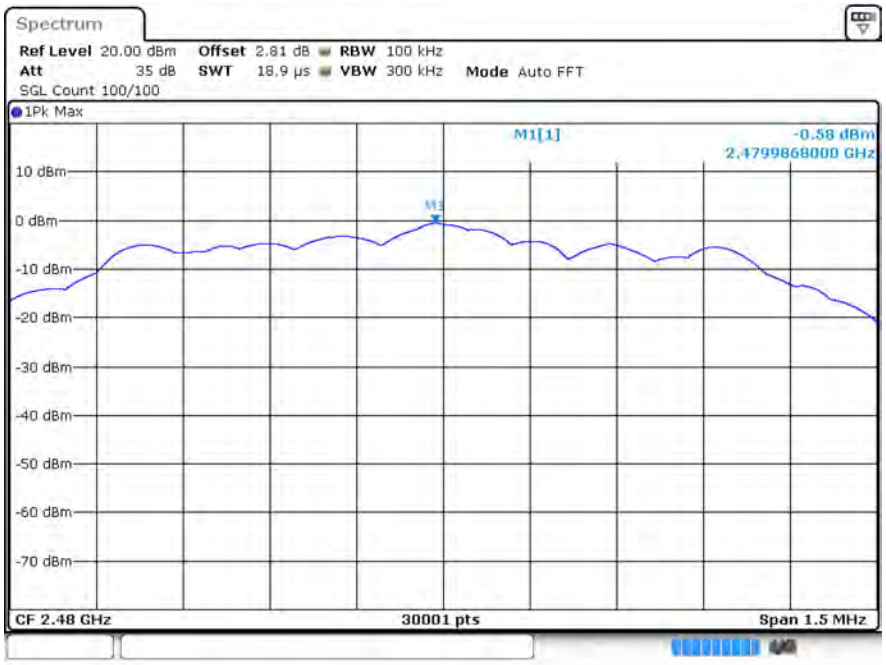
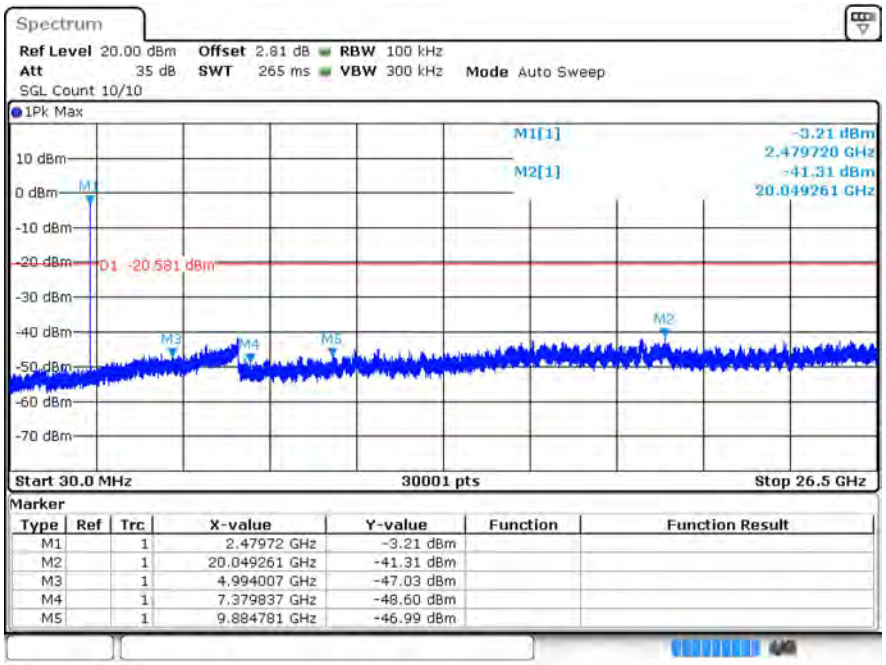
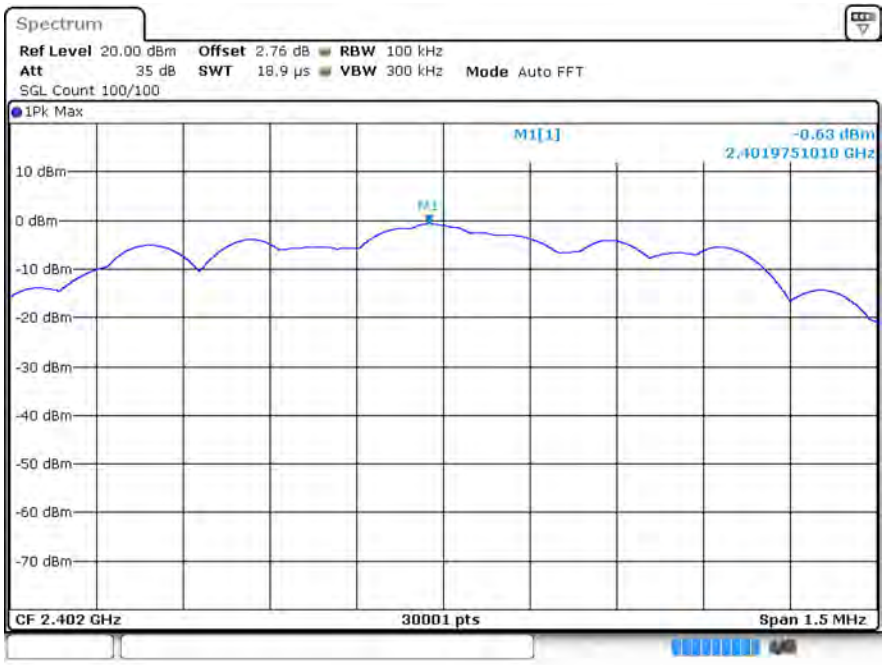
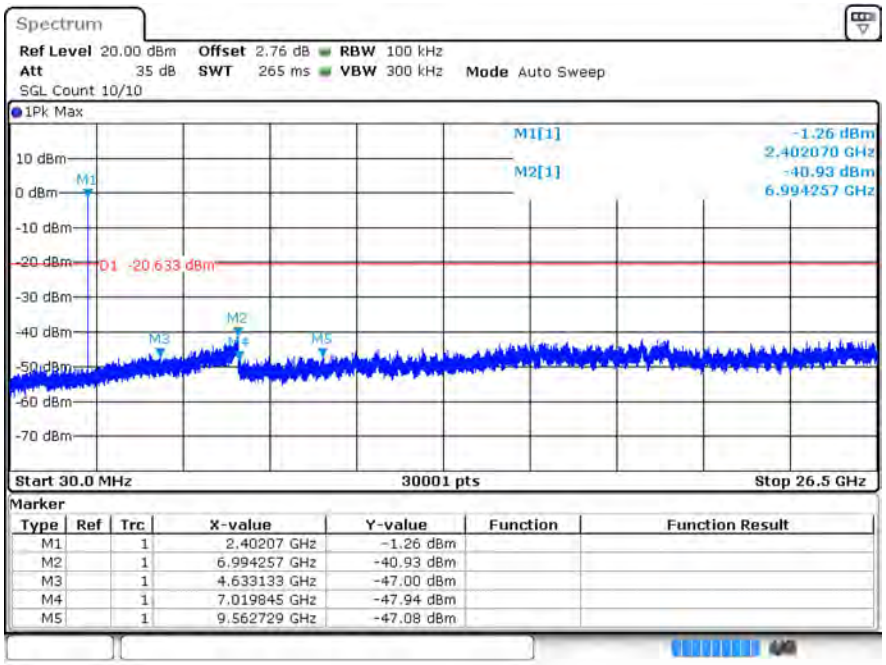
Pref	
Puw	

8DPSK_LCH_Graphs	
Pref	
Puw	

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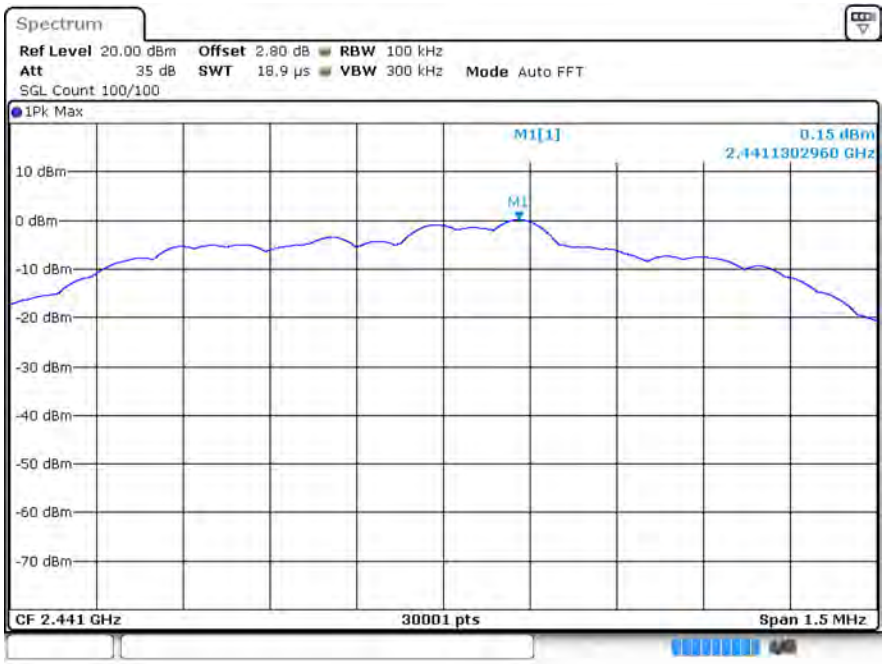
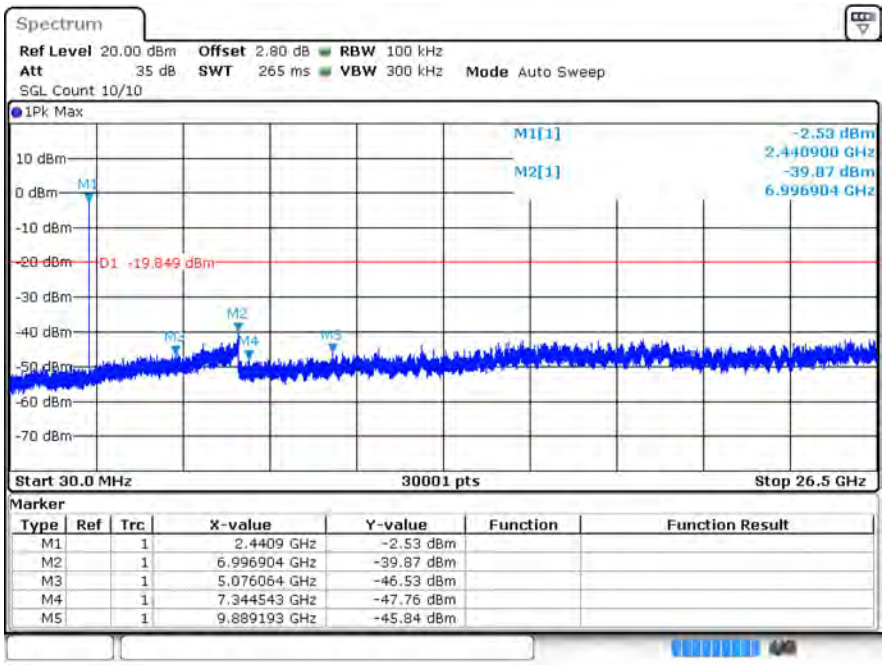
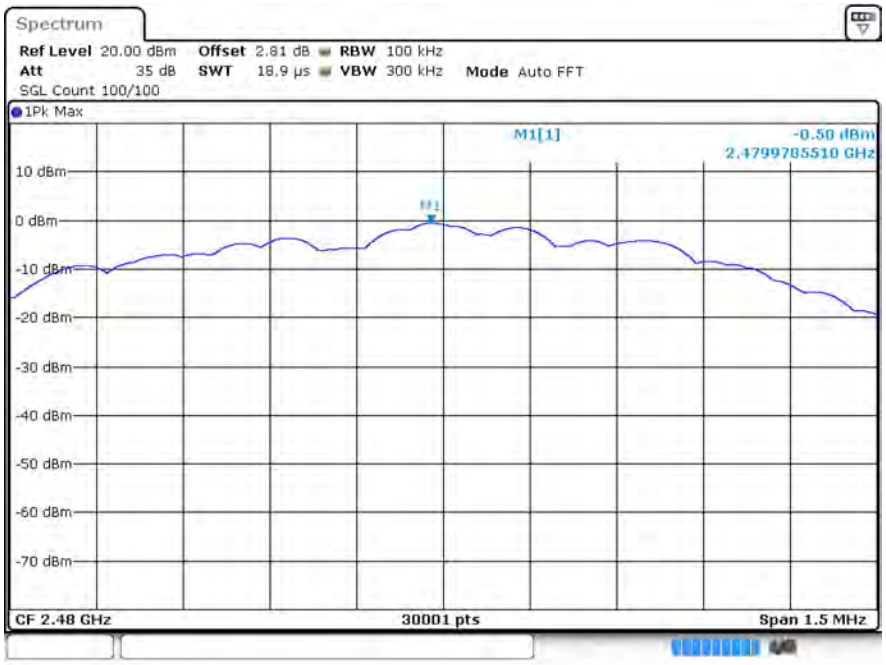
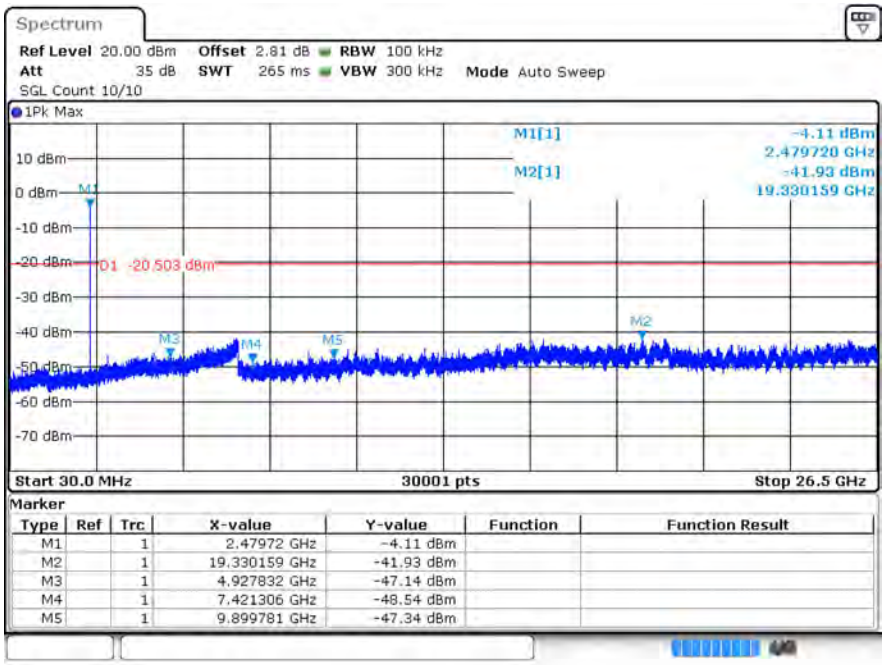
Pref	
Puw	

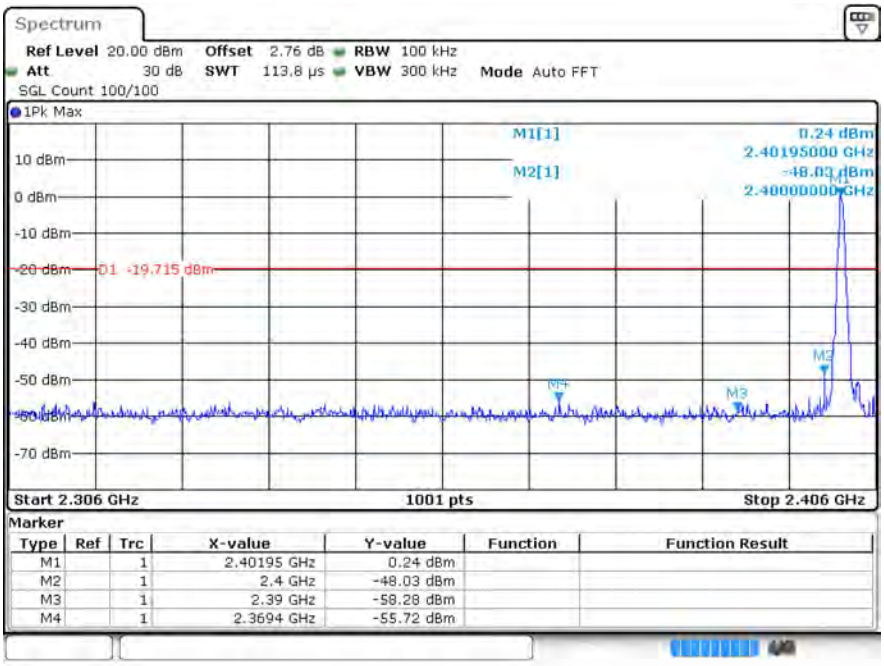
8DPSK_HCH_Graphs	
Pref	
Puw	

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	-55.99	-20	Pass
			On	-54.37	-20	Pass
	HCH	2480	Off	-51.61	-20	Pass
			On	-57.84	-20	Pass
π/4DQPSK	LCH	2402	Off	-54.04	-20	Pass
			On	-54.6	-20	Pass
	HCH	2480	Off	-53.38	-20	Pass
			On	-56.3	-20	Pass
8DPSK	LCH	2402	Off	-54.17	-20	Pass
			On	-53.96	-20	Pass
	HCH	2480	Off	-55.64	-20	Pass
			On	-49.01	-20	Pass

8.2 Test Graphs

Test Graphs	
Pref	
GFSK/LCH/No Hop	

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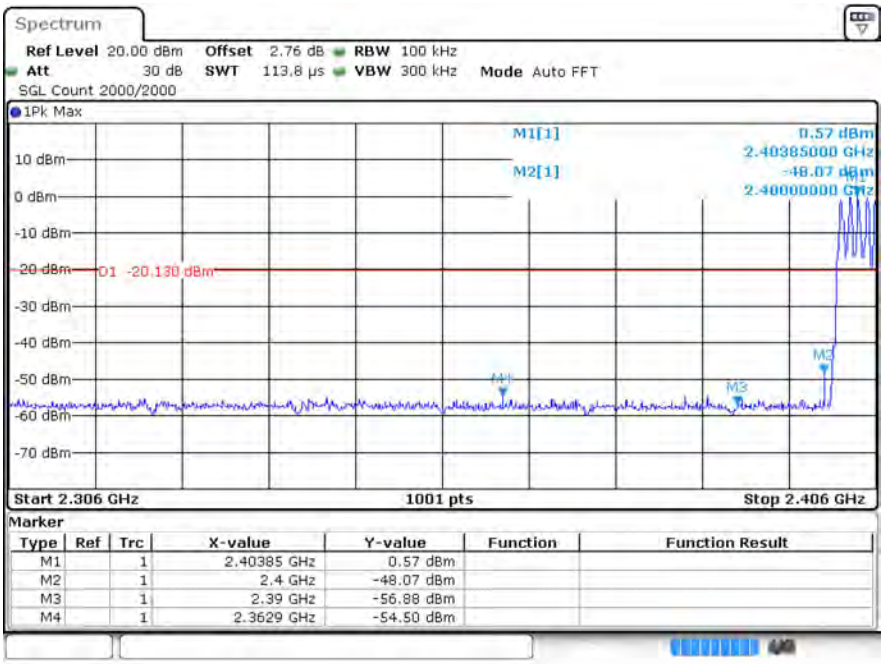
GFSK/LCH/Hop	

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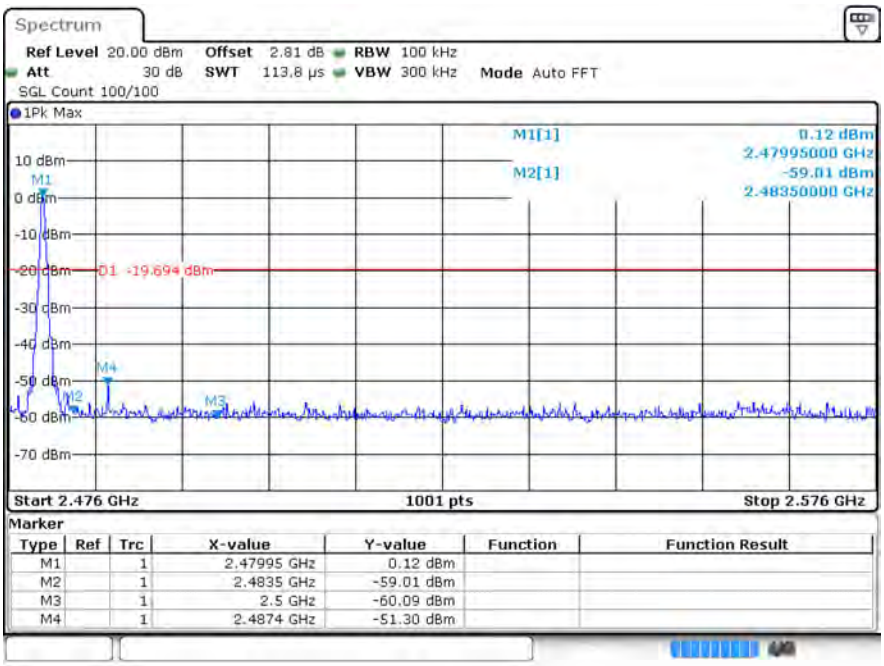
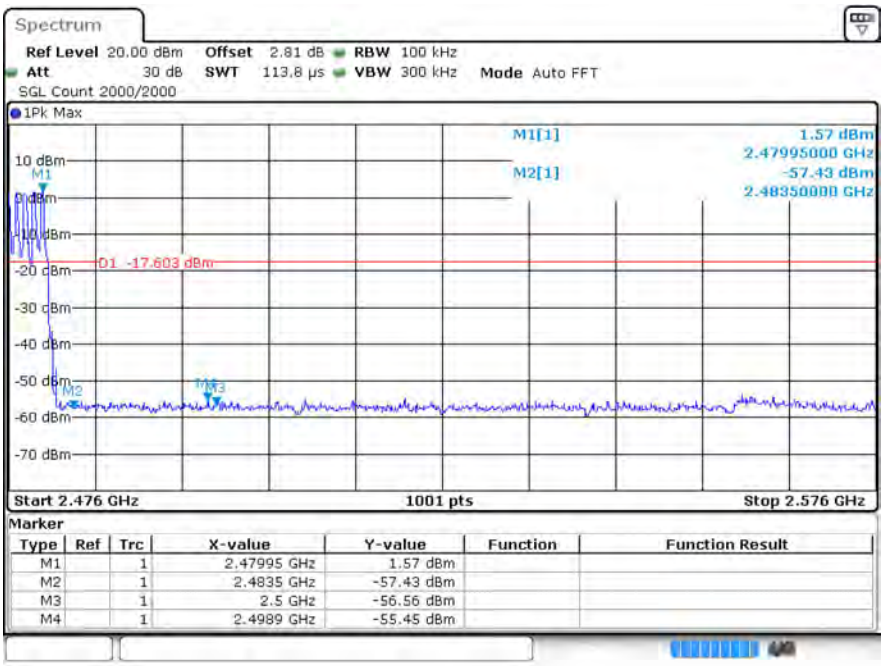
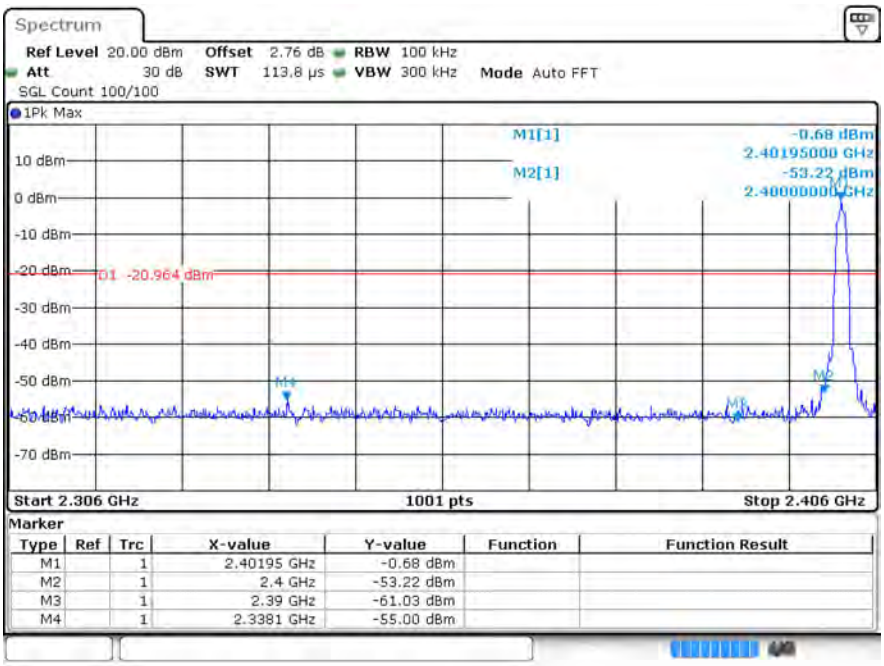
GFSK/HCH/No Hop	

Ref.	
GFSK/HCH/Hop	

Ref	
π/4DQPSK/LCH/No Hop	

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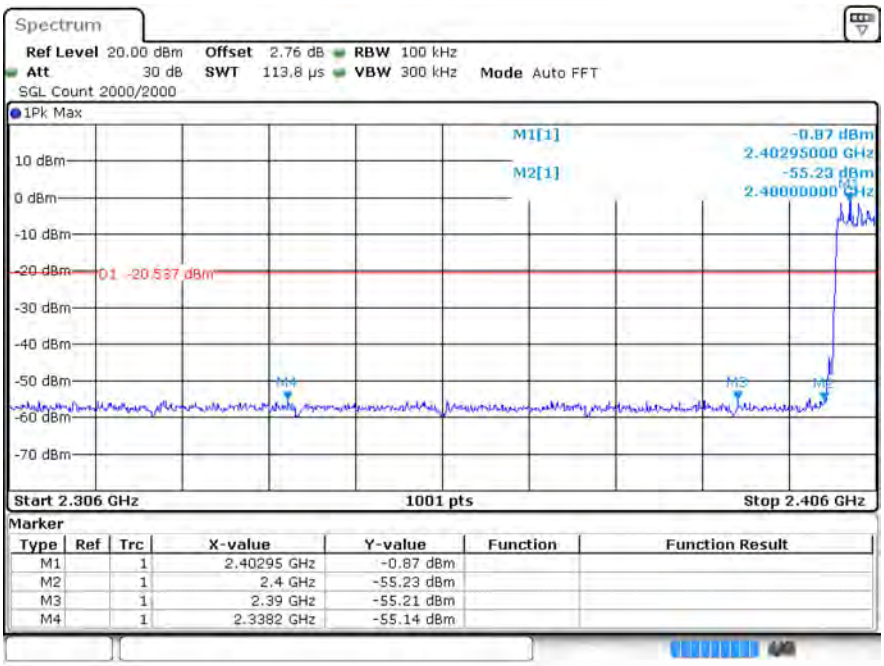
π/4DQPSK/LCH/Hop	

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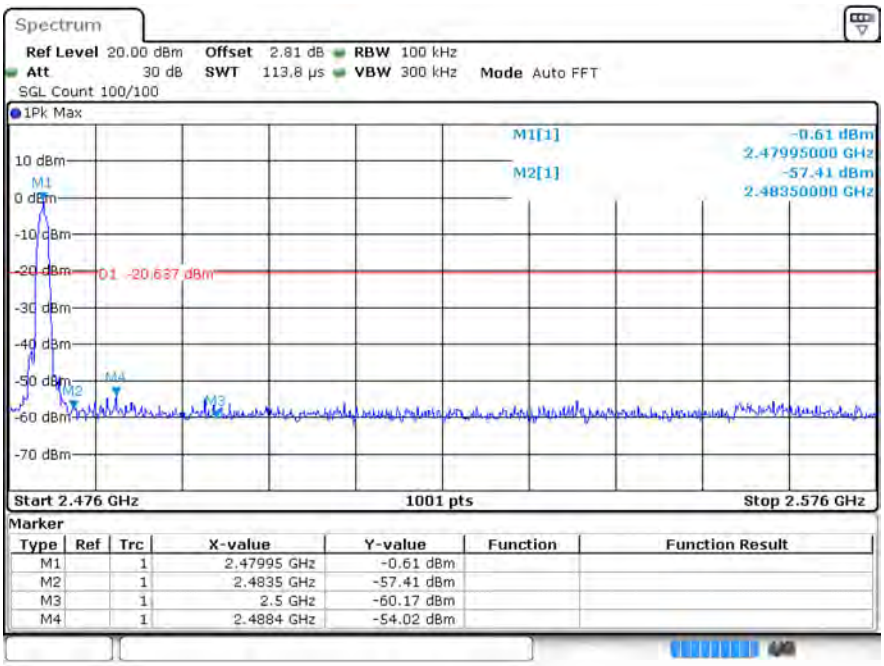
π/4DQPSK/HCH/No Hop	

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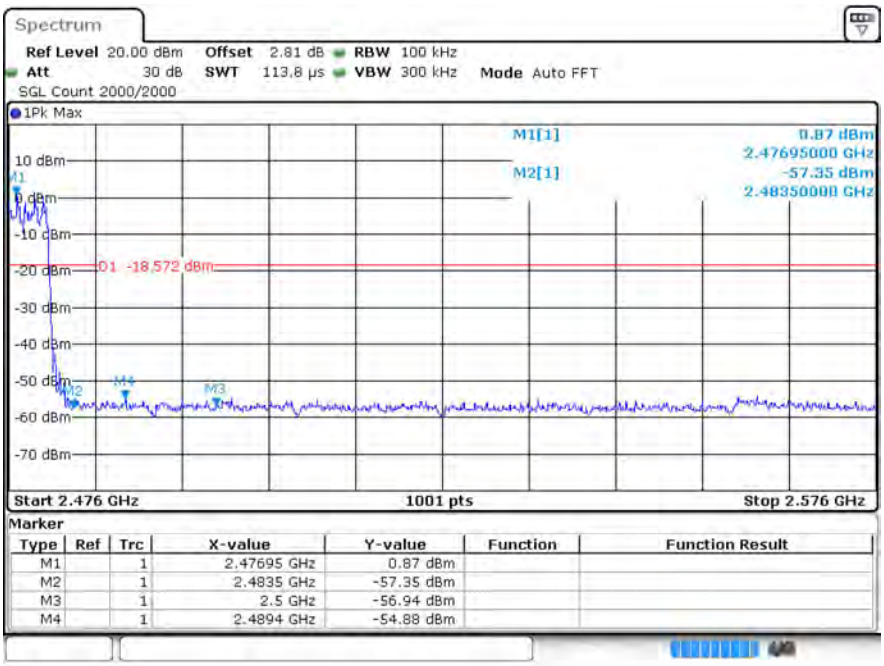
π/4DQPSK/HCH/Hop	

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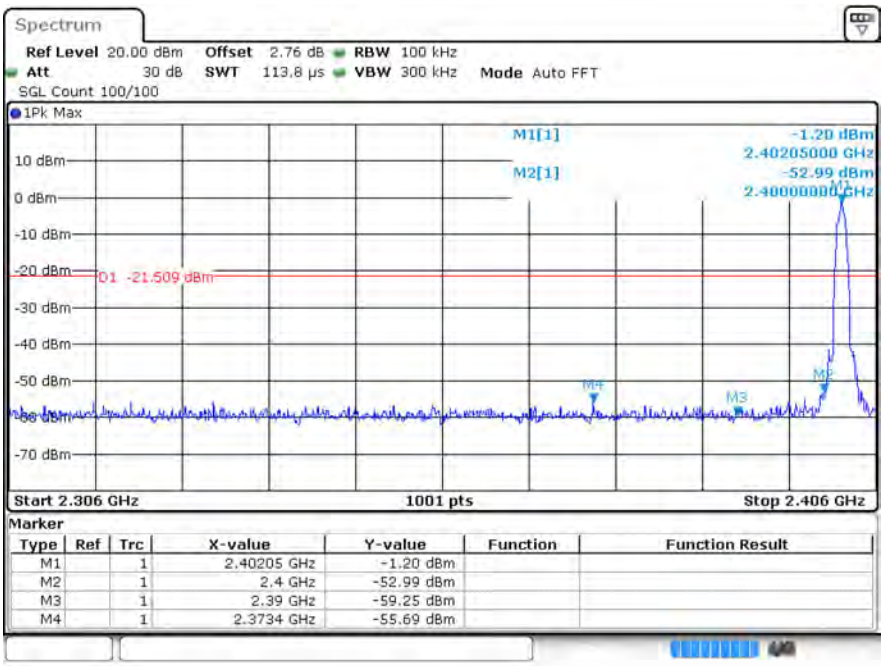
8DPSK/LCH/No Hop	

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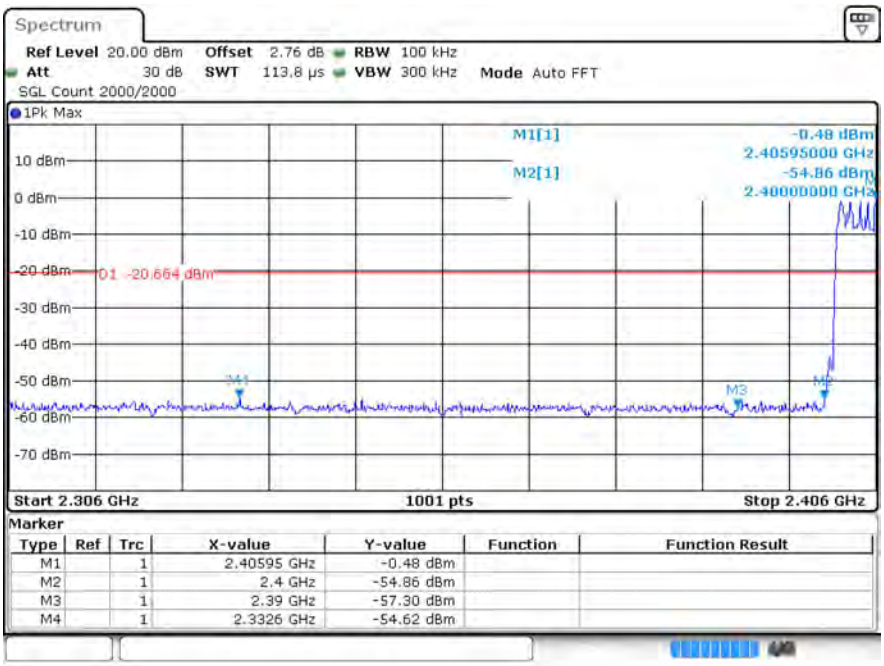
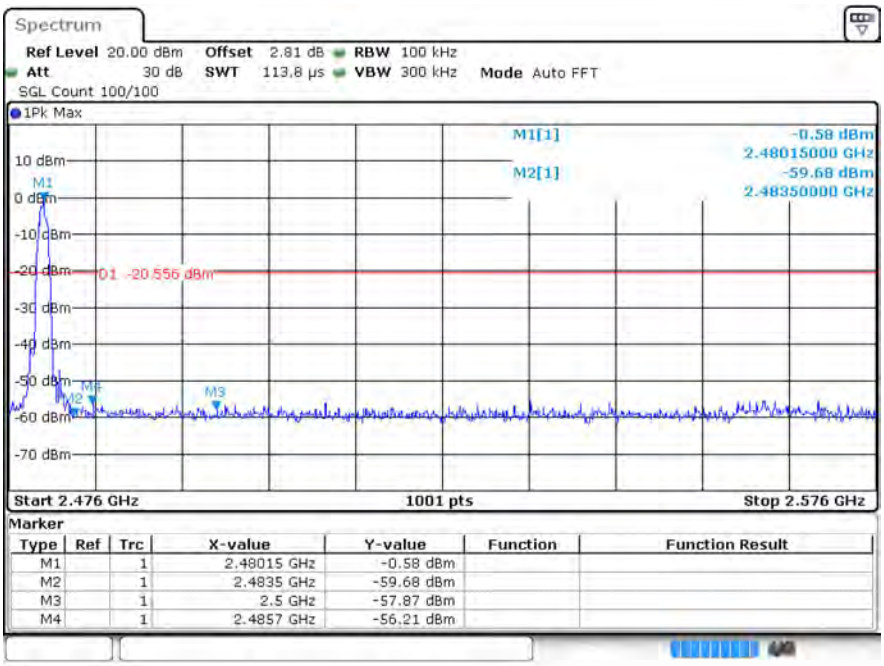
8DPSK/LCH/Hop	

Ref	
8DPSK/HCH/No Hop	

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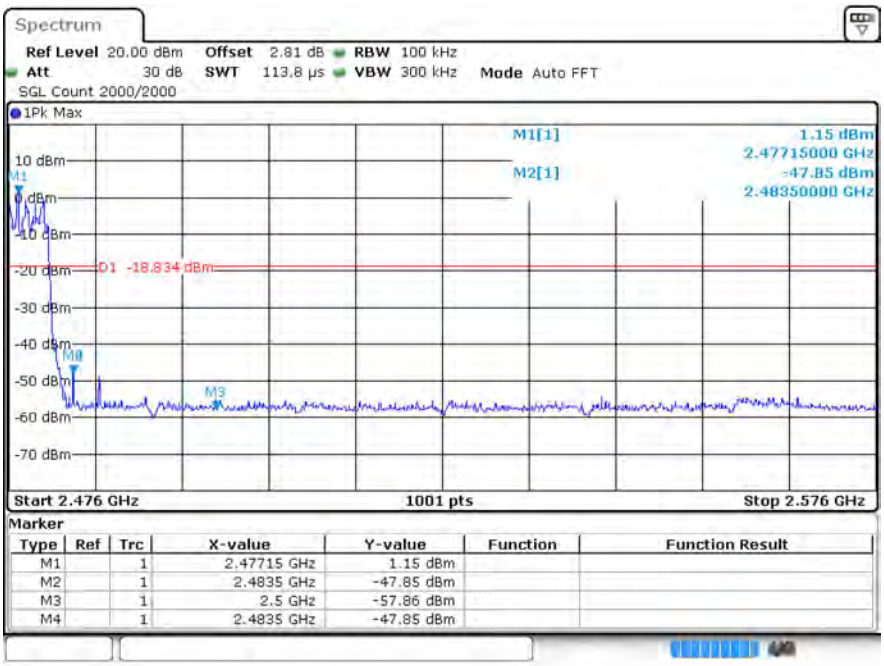
8DPSK/HCH/Hop	

9 Restrict-band band-edge measurements

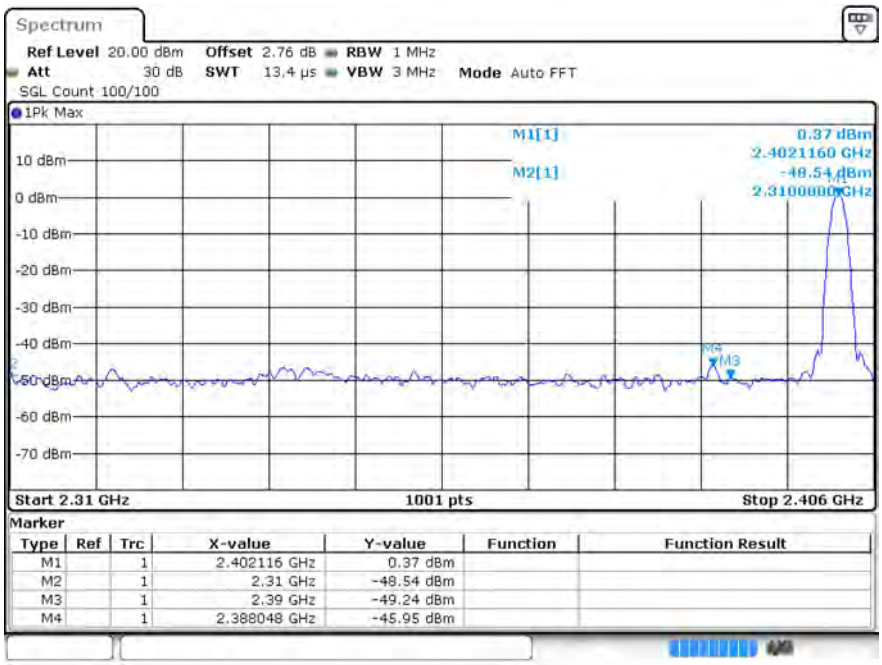
9.1 Test Result

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Duty Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-48.54	2	-	48.72	PEAK	74	Pass
	Off	2310.0	-57.36	2	5.06	44.96	AV	54	Pass
	Off	2388.048	-45.94	2	-	51.32	PEAK	74	Pass
	Off	2340.528	-54.78	2	5.06	47.54	AV	54	Pass
	Off	2390.0	-49.24	2	-	48.02	PEAK	74	Pass
	Off	2390.0	-57.21	2	5.06	45.11	AV	54	Pass
	Off	2483.5	-48.25	2	-	49.01	PEAK	74	Pass
	Off	2483.5	-57.3	2	4.98	44.94	AV	54	Pass
	Off	2483.632	-48.04	2	-	49.22	PEAK	74	Pass
	Off	2485.288	-55.79	2	4.98	46.45	AV	54	Pass
	Off	2500.0	-51.2	2	-	46.06	PEAK	74	Pass
	Off	2500.0	-56.59	2	4.98	45.65	AV	54	Pass
π/4DQPSK	Off	2310.0	-49.76	2	-	47.5	PEAK	74	Pass
	Off	2310.0	-56.92	2	4.95	45.29	AV	54	Pass
	Off	2322.288	-46.19	2	-	51.07	PEAK	74	Pass
	Off	2340.144	-54.75	2	4.95	47.46	AV	54	Pass
	Off	2390.0	-50.38	2	-	46.88	PEAK	74	Pass
	Off	2390.0	-56.88	2	4.95	45.33	AV	54	Pass
	Off	2483.5	-47.88	2	-	49.38	PEAK	74	Pass
	Off	2483.5	-57.38	2	4.95	44.83	AV	54	Pass
	Off	2496.184	-47.14	2	-	50.12	PEAK	74	Pass
	Off	2490.88	-55.69	2	4.95	46.52	AV	54	Pass
	Off	2500.0	-47.99	2	-	49.27	PEAK	74	Pass
	Off	2500.0	-56.6	2	4.95	45.61	AV	54	Pass
8DPSK	Off	2310.0	-50.89	2	-	46.37	PEAK	74	Pass
	Off	2310.0	-56.52	2	4.95	45.69	AV	54	Pass
	Off	2383.536	-46.03	2	-	51.23	PEAK	74	Pass
	Off	2341.488	-54.24	2	4.95	47.97	AV	54	Pass

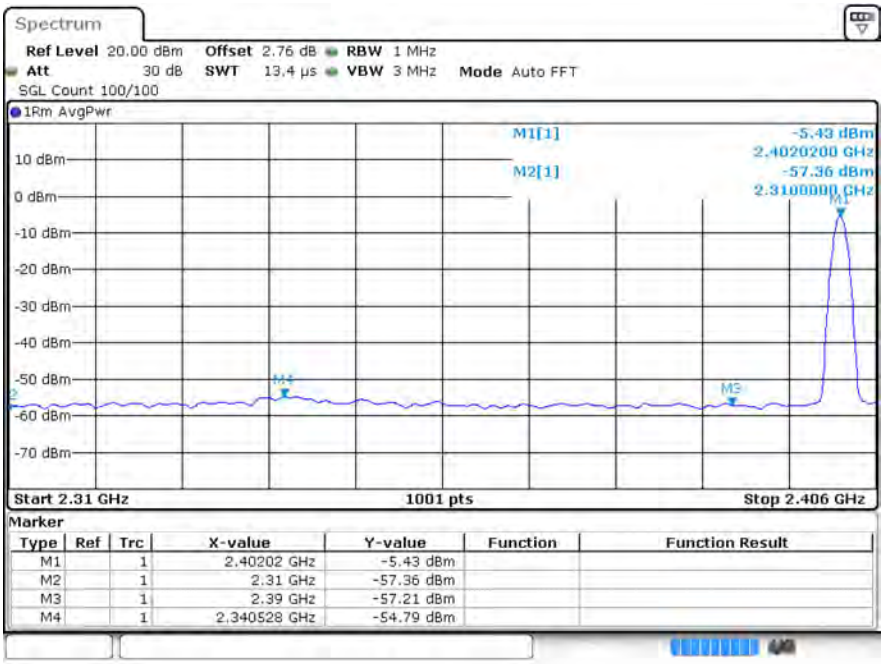
	Off	2390.0	-49.56	2	-	47.7	PEAK	74	Pass
	Off	2390.0	-56.52	2	4.95	45.69	AV	54	Pass
	Off	2483.5	-46.8	2	-	50.46	PEAK	74	Pass
	Off	2483.5	-56.06	2	4.95	46.15	AV	54	Pass
	Off	2483.512	-46.92	2	-	50.34	PEAK	74	Pass
	Off	2487.448	-55.11	2	4.95	47.1	AV	54	Pass
	Off	2500.0	-50.19	2	-	47.07	PEAK	74	Pass
	Off	2500.0	-56.38	2	4.95	45.83	AV	54	Pass

9.2 Test Graphs

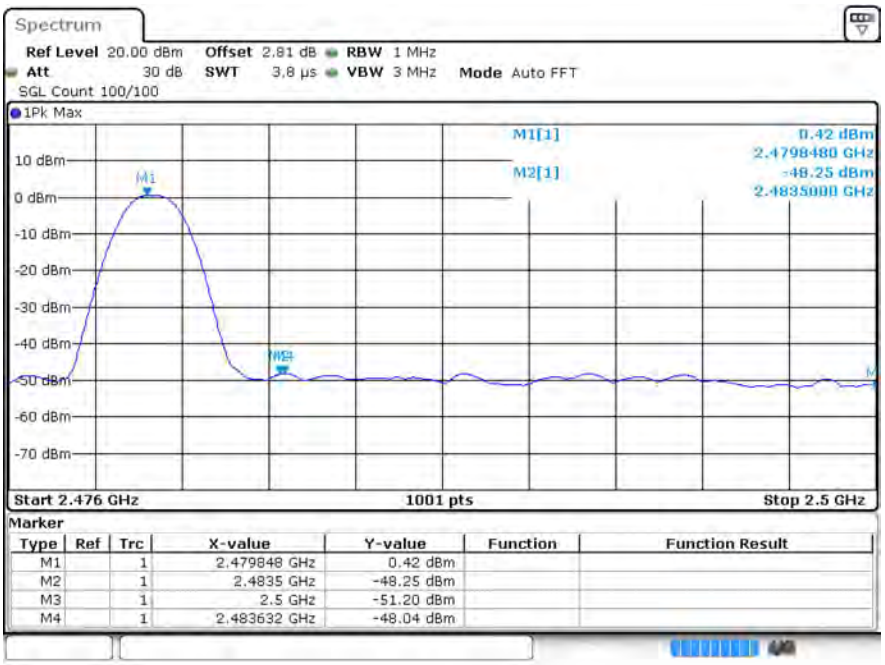
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (Low Channel)



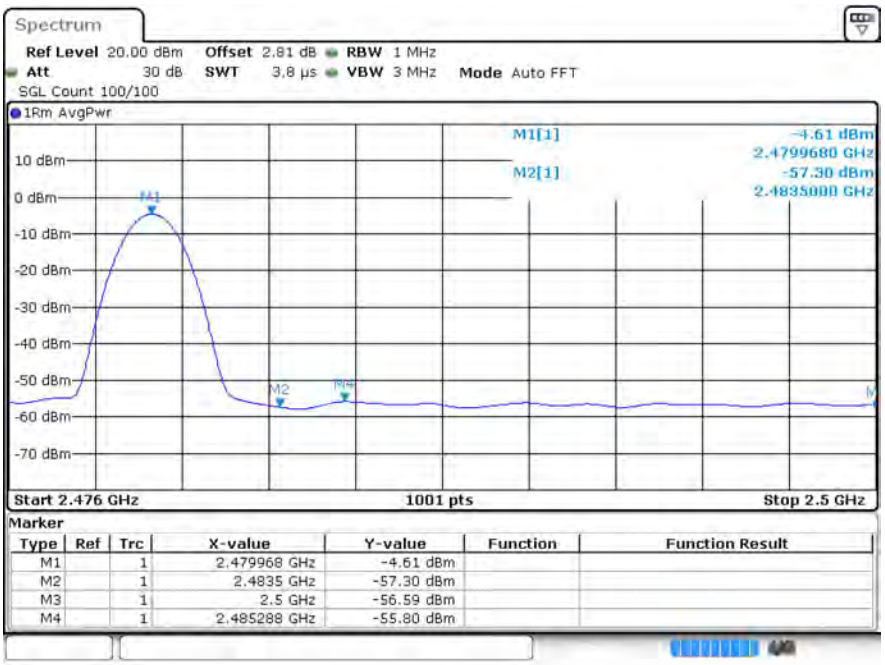
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (Low Channel)



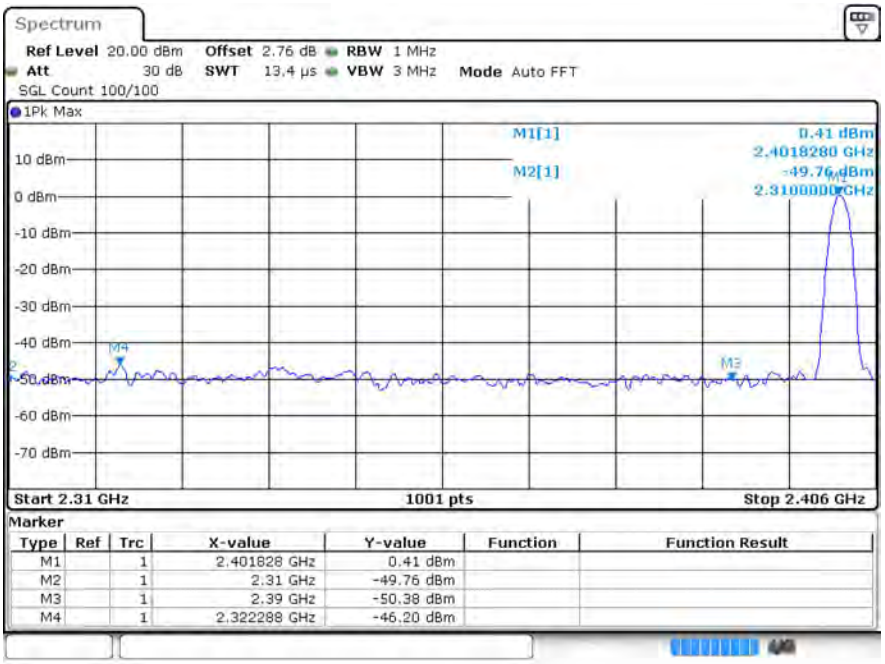
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (High Channel)



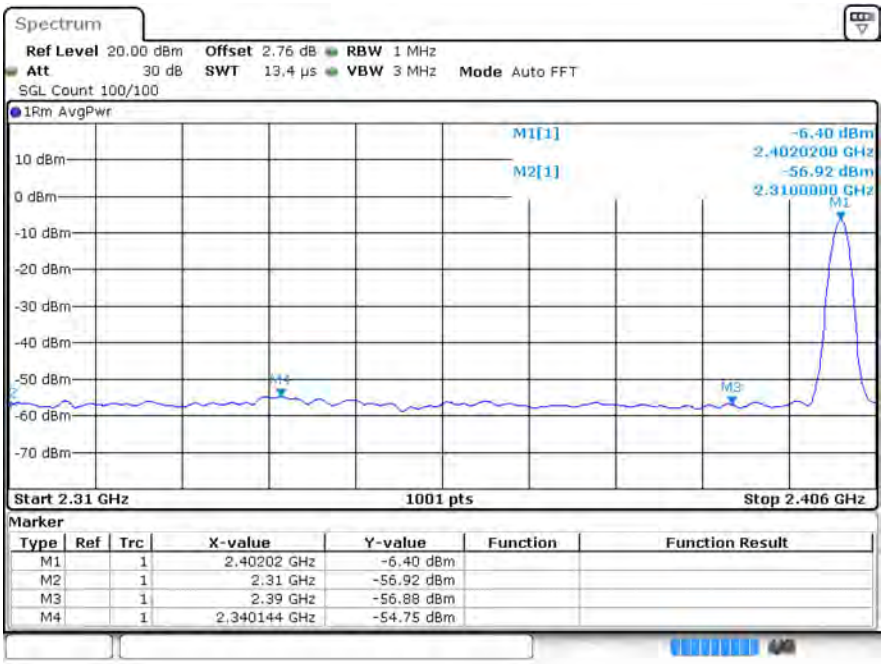
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (High Channel)



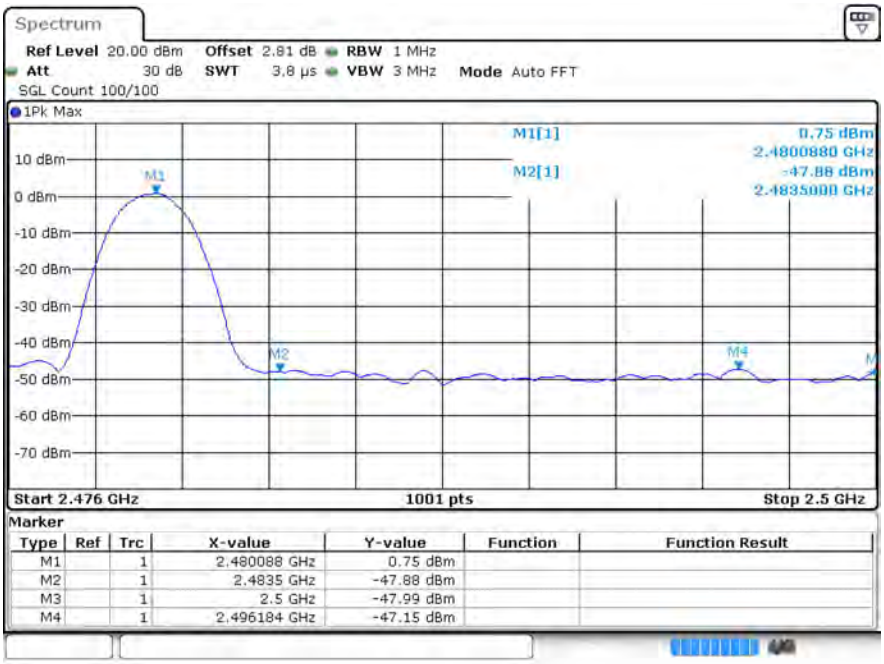
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (Low Channel)



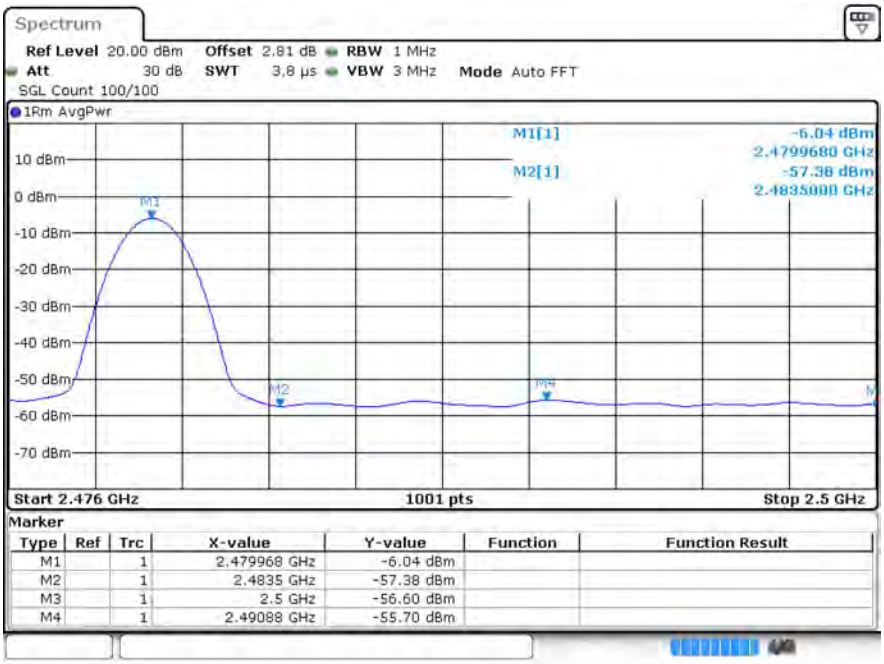
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (Low Channel)



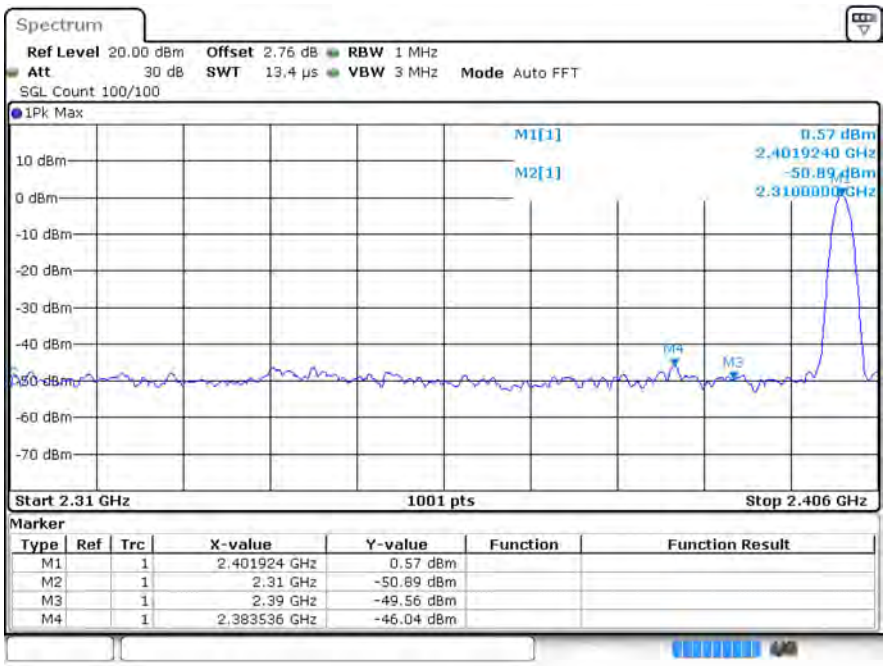
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (High Channel)



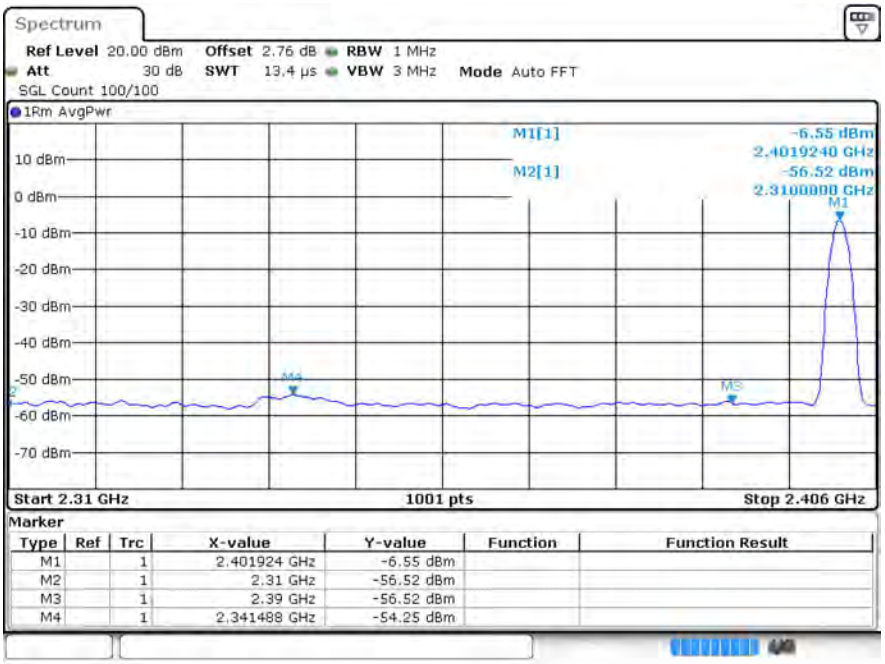
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (High Channel)



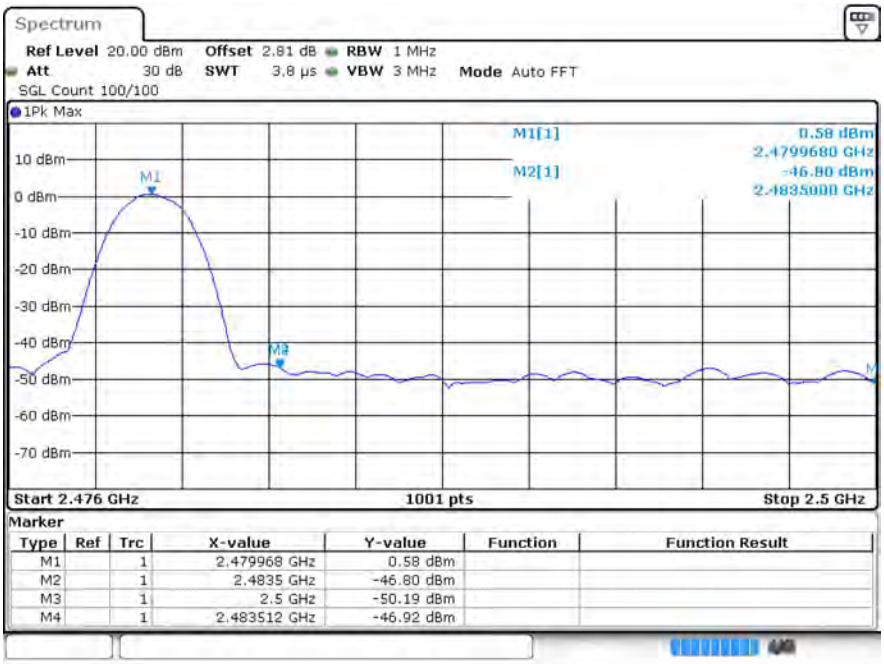
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



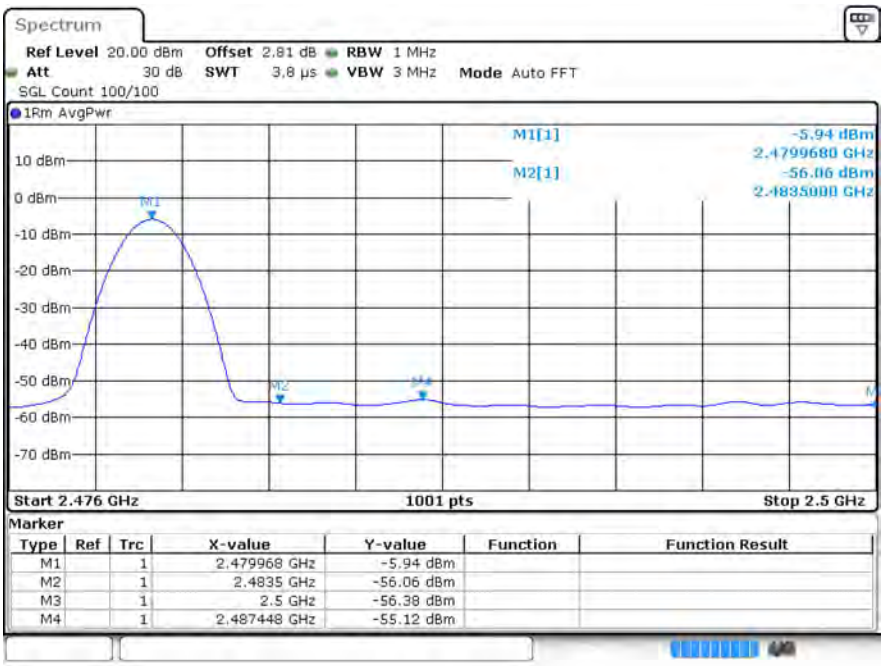
Restrict-band band-edge measurements_Hopping Off_8DPSK_Average (Low Channel)



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



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



---The End---