Appendix A

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

Product Name: Bluetooth Earphones

Trade Mark: N/A

Test Model: D902

Environmental Conditions

Temperature:	24.8℃
Relative Humidity:	52.3%
ATM Pressure:	101Kpa
Test Engineer:	Emiya lin
Supervised by:	Simba Haung

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1 Duty Cycle

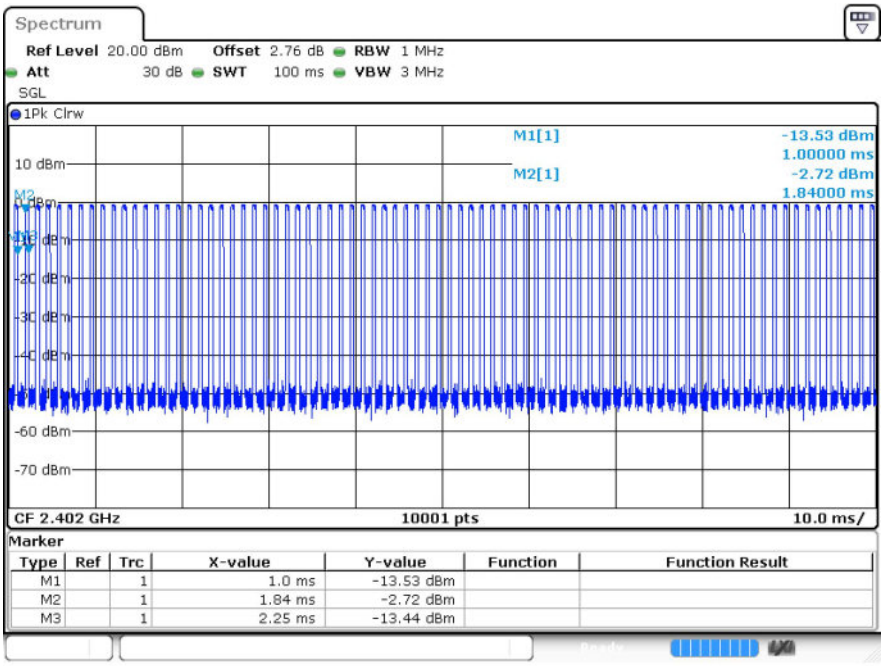
1.1 Test Result

Mode	Frequency (MHz)	Duty Cycle (%)	Correction Factor	1/T (kHz)
1-DH1	2402	33.6	4.74	2.44
1-DH1	2441	33.6	4.74	2.44
1-DH1	2480	33.61	4.74	2.44
2-DH1	2402	34.41	4.63	2.38
2-DH1	2441	34.41	4.63	2.38
2-DH1	2480	34.36	4.64	2.38
3-DH1	2402	34.4	4.63	2.38
3-DH1	2441	34.58	4.61	2.33
3-DH1	2480	34.4	4.63	2.38

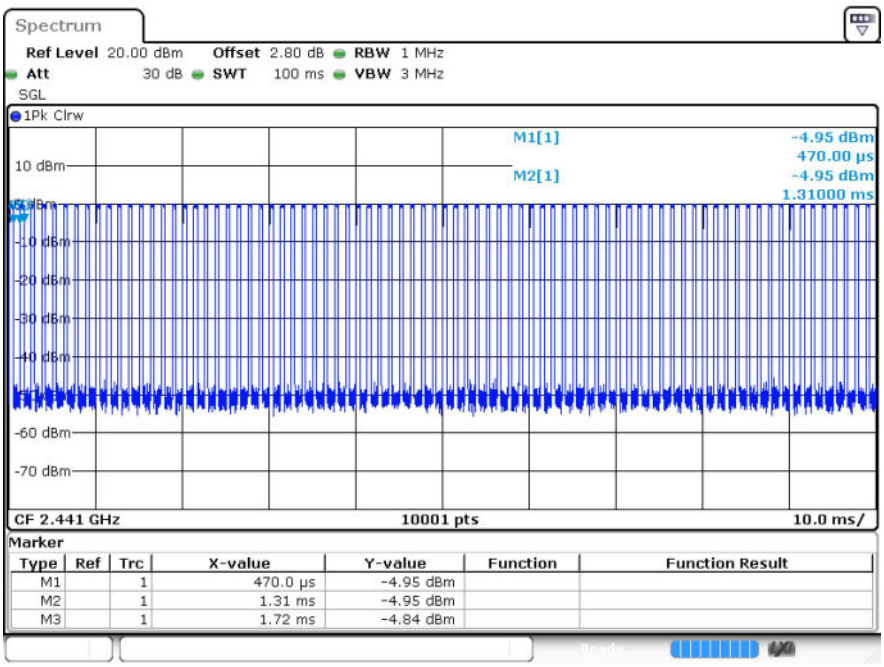
1.2 Test Graphs

Test Graphs

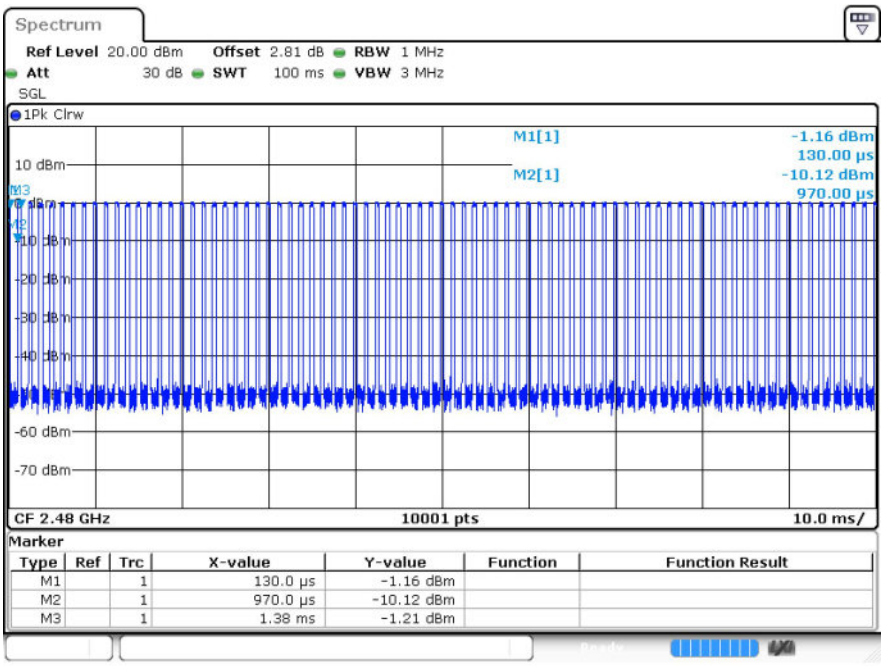
1-DH1 2402MHz



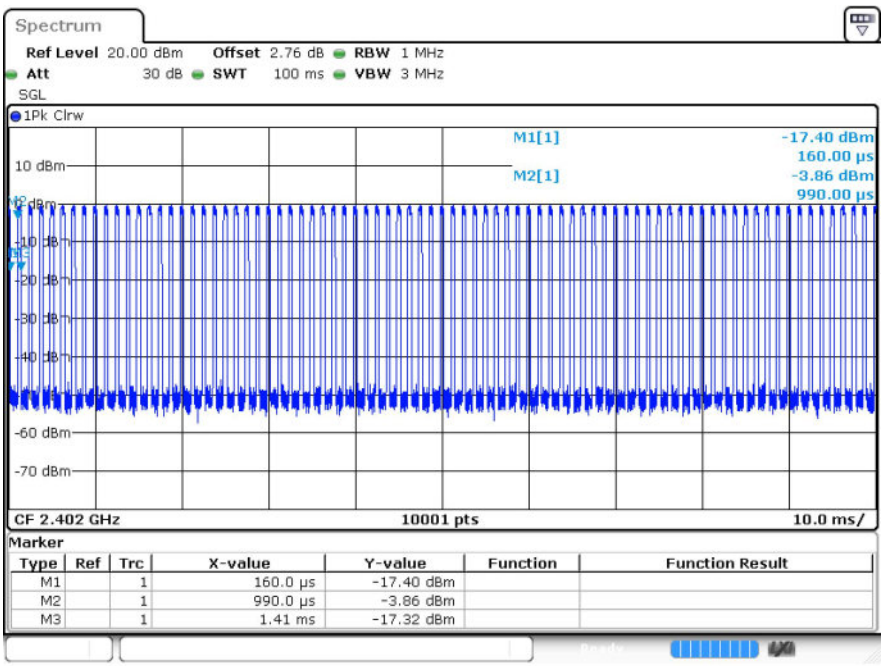
1-DH1 2441MHz



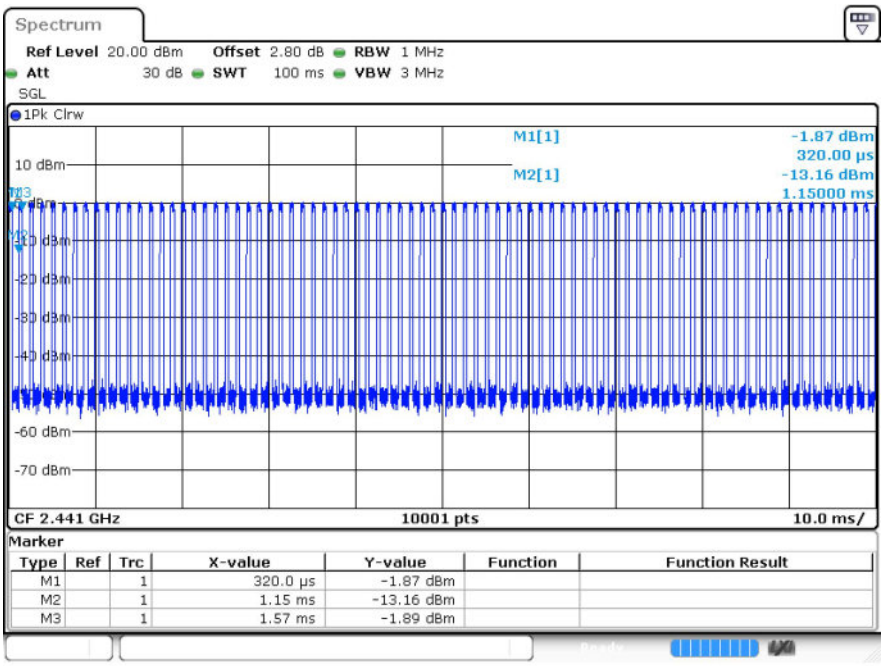
1-DH1 2480MHz



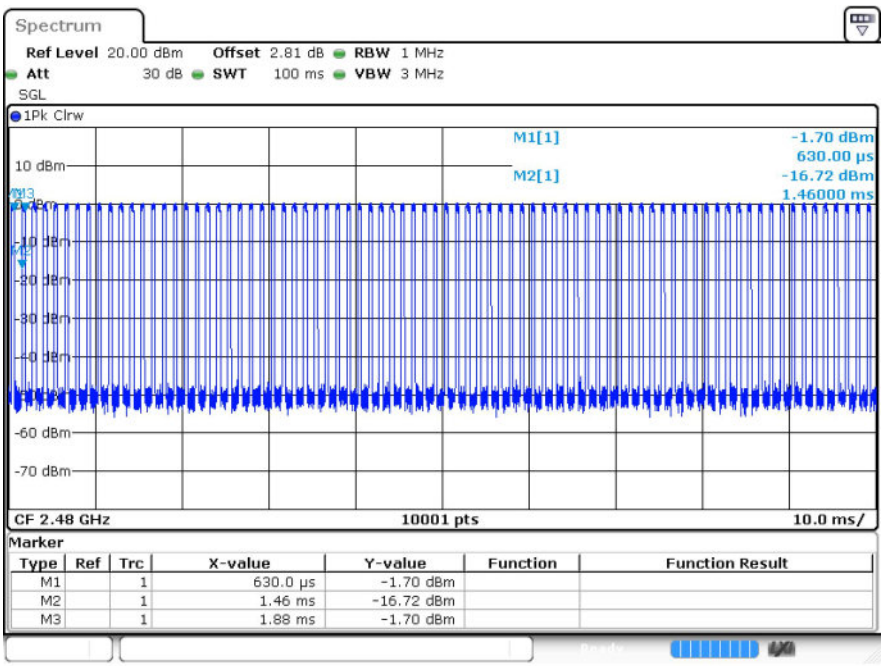
2-DH1 2402MHz



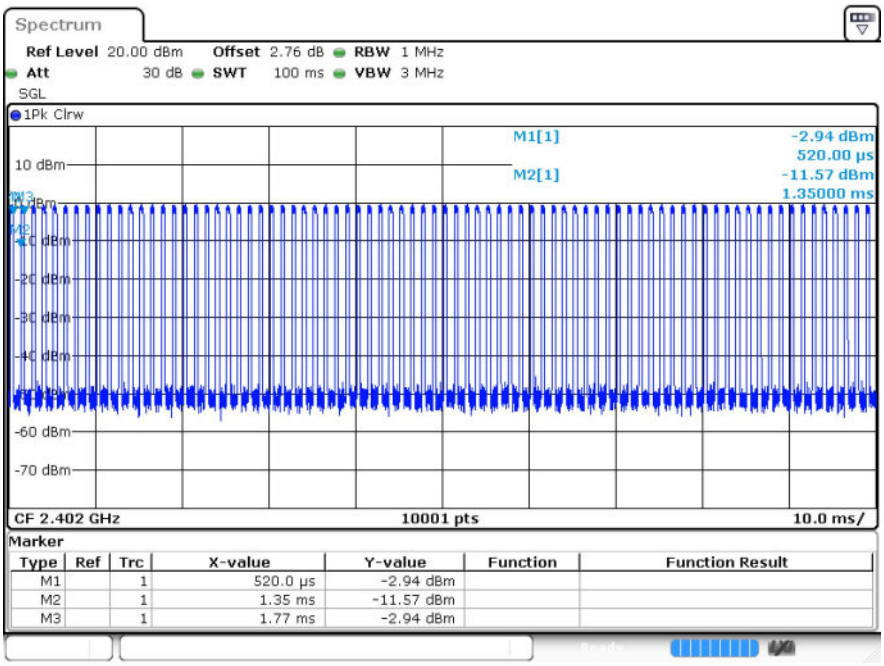
2-DH1 2441MHz



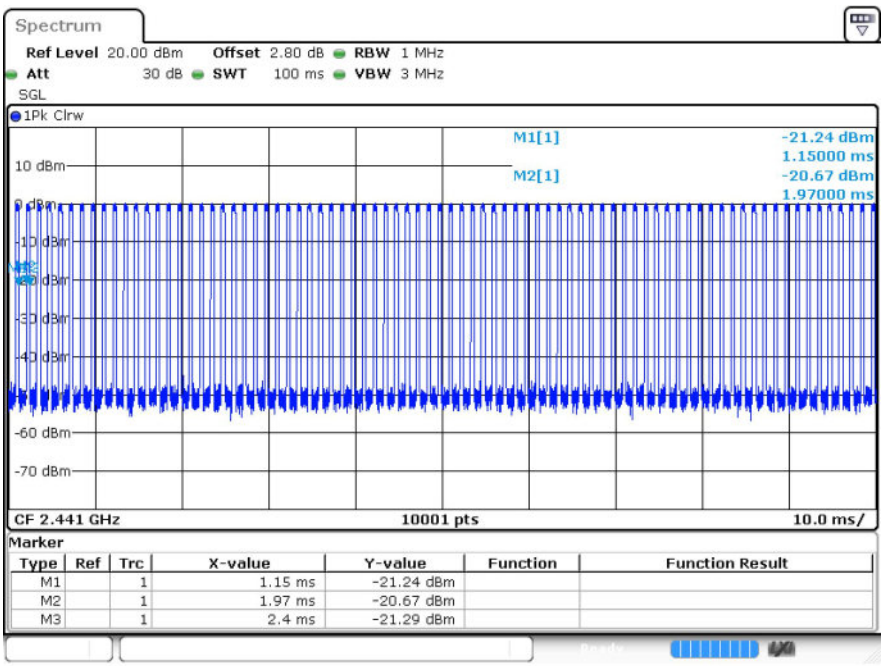
2-DH1 2480MHz



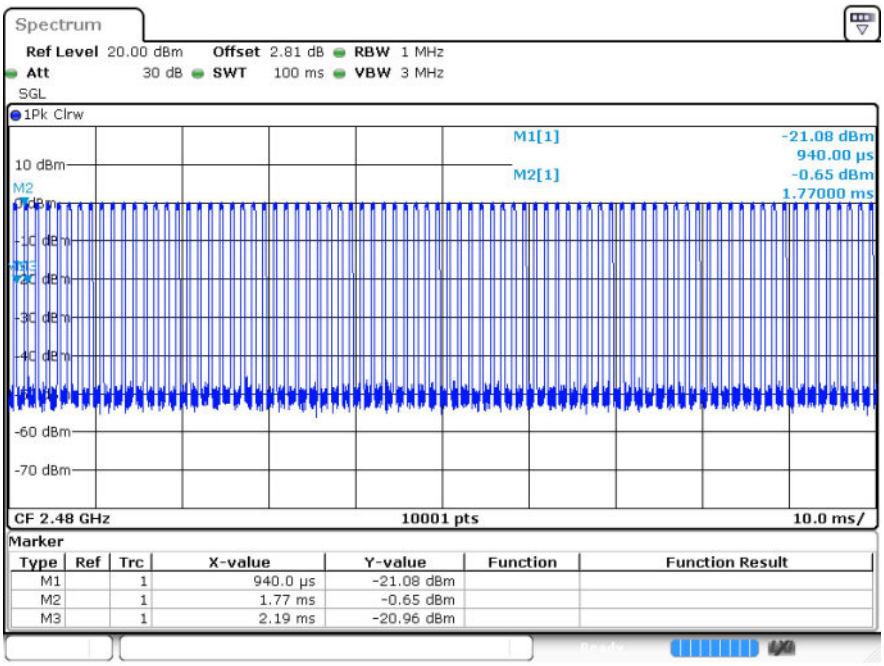
3-DH1 2402MHz



3-DH1 2441MHz



3-DH1 2480MHz

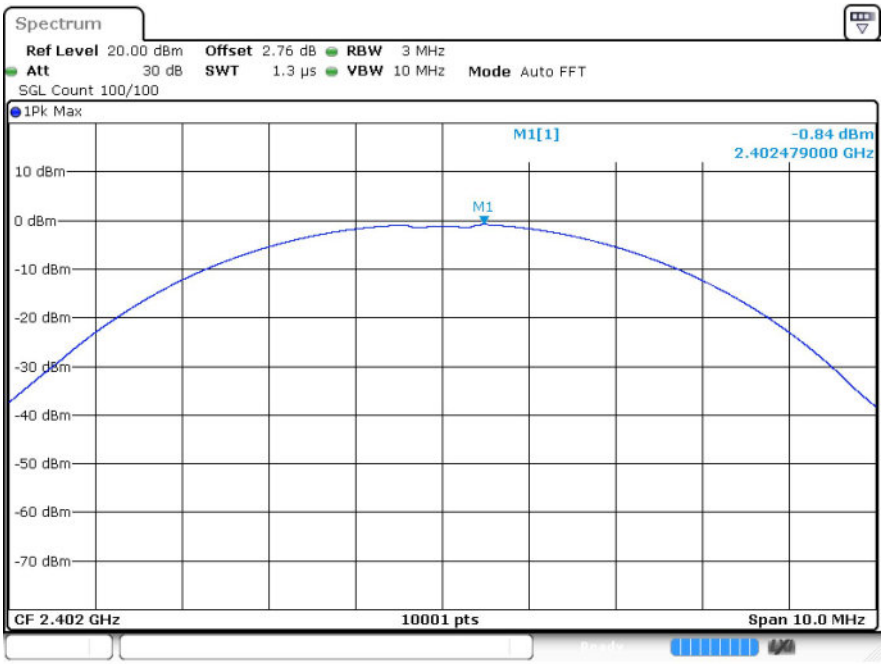
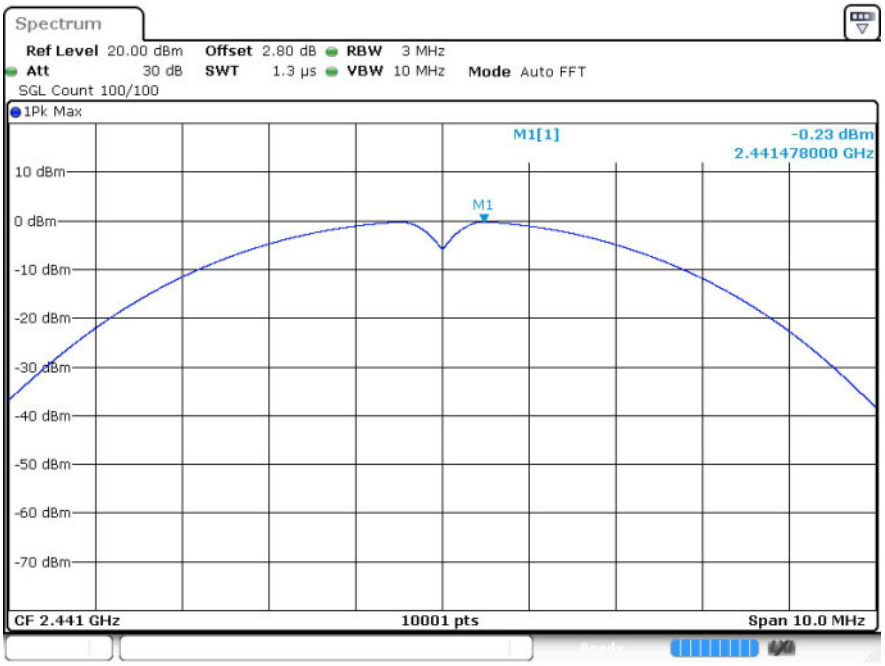


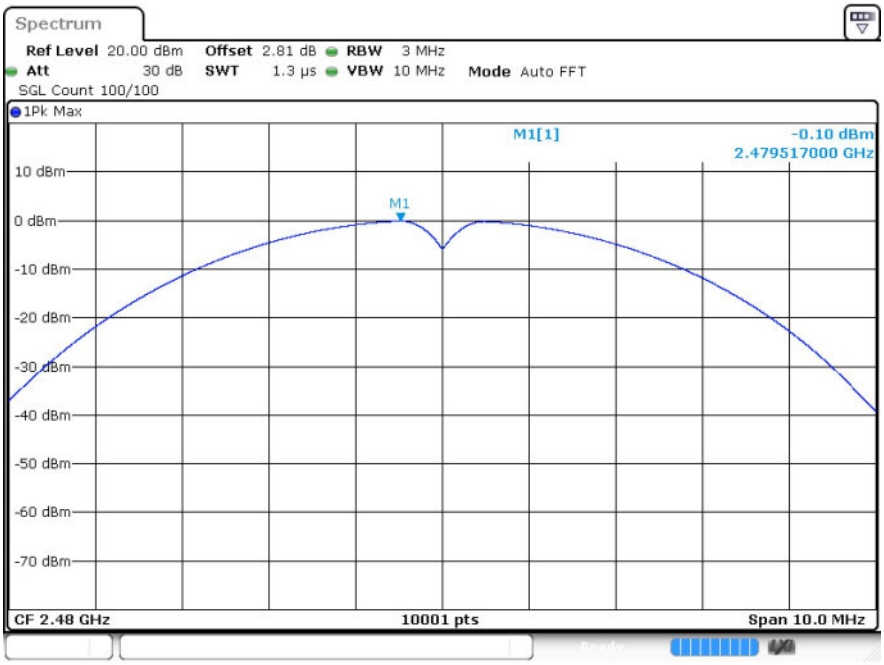
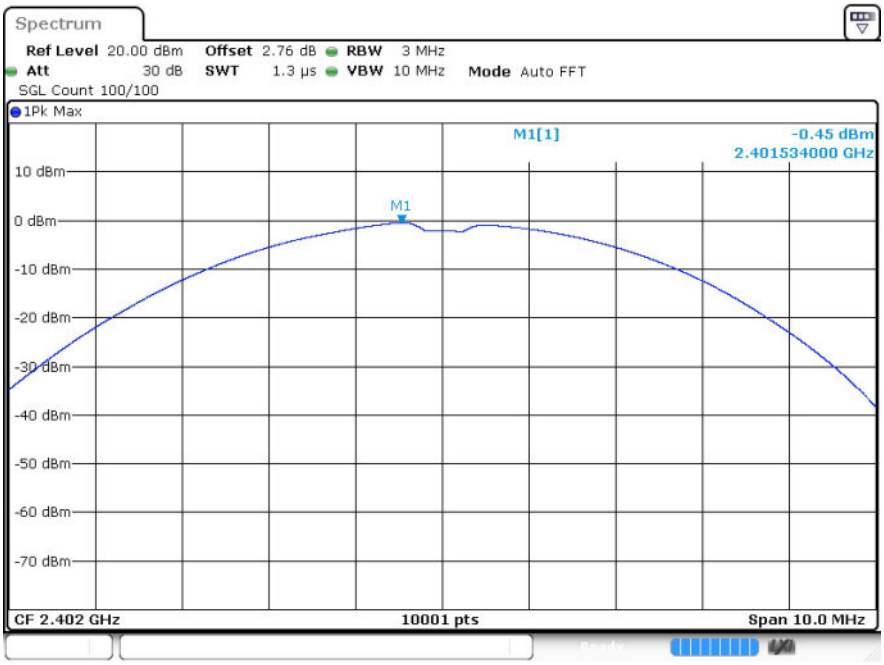
2 Maximum Conducted Peak Output Power

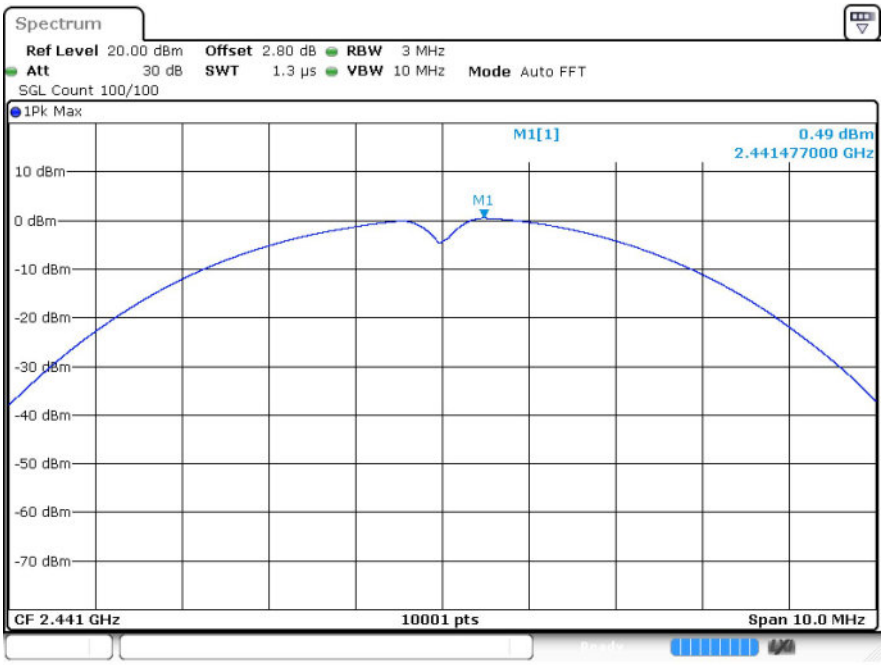
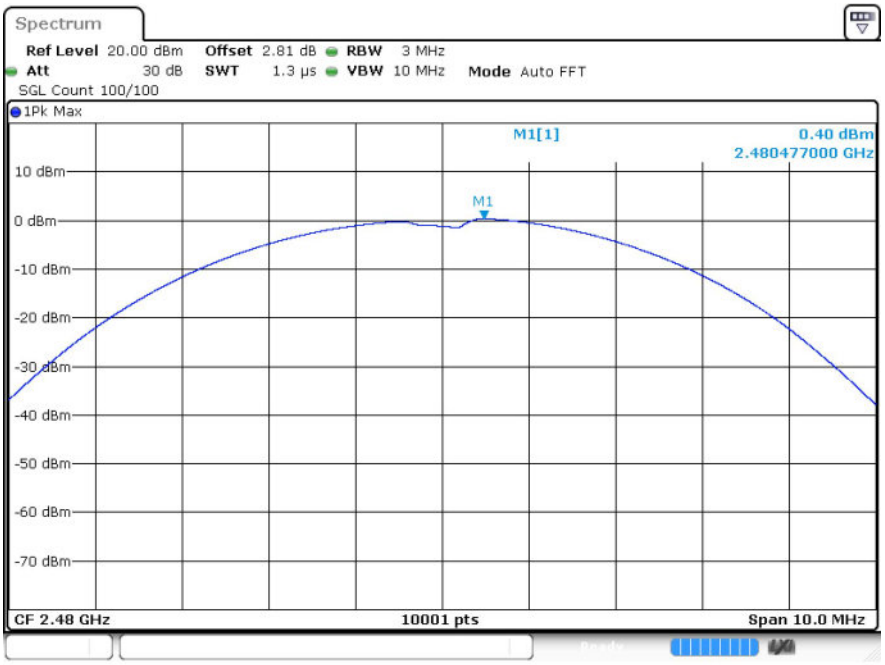
2.1 Test Result

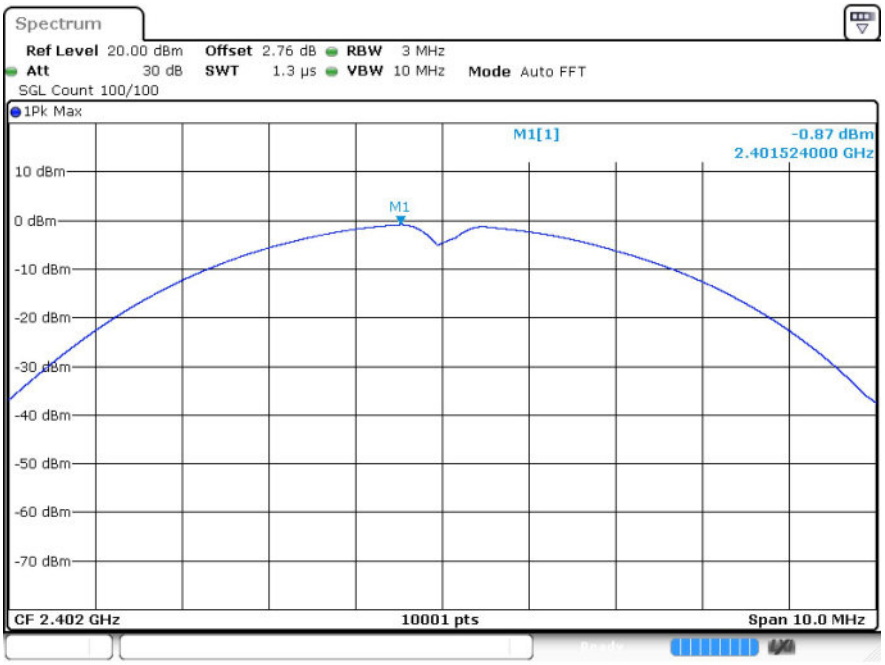
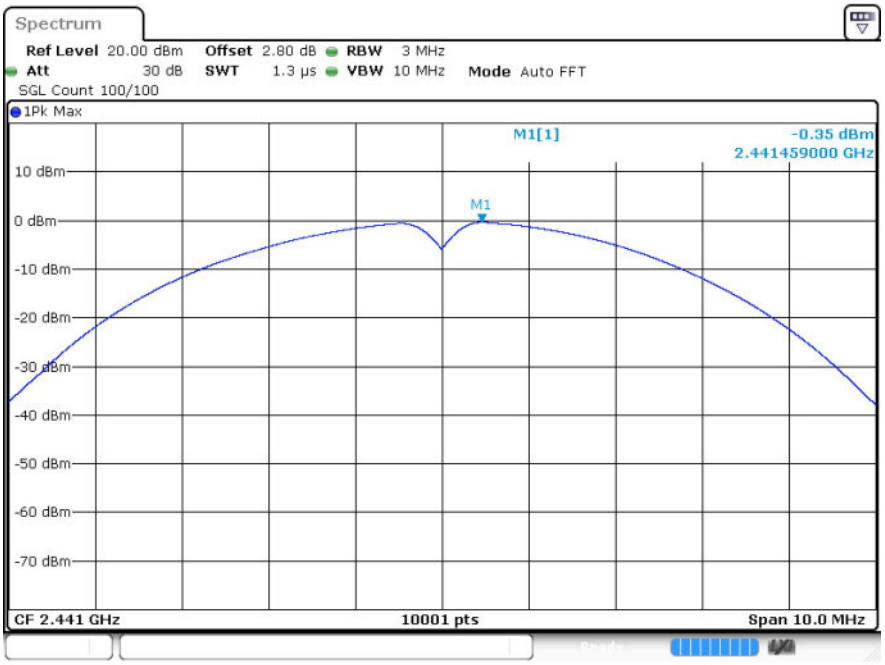
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-0.84	21	Pass
	MCH	-0.23	21	Pass
	HCH	-0.1	21	Pass
π/4DQPSK	LCH	-0.45	21	Pass
	MCH	0.49	21	Pass
	HCH	0.4	21	Pass
8DPSK	LCH	-0.87	21	Pass
	MCH	-0.35	21	Pass
	HCH	0.4	21	Pass

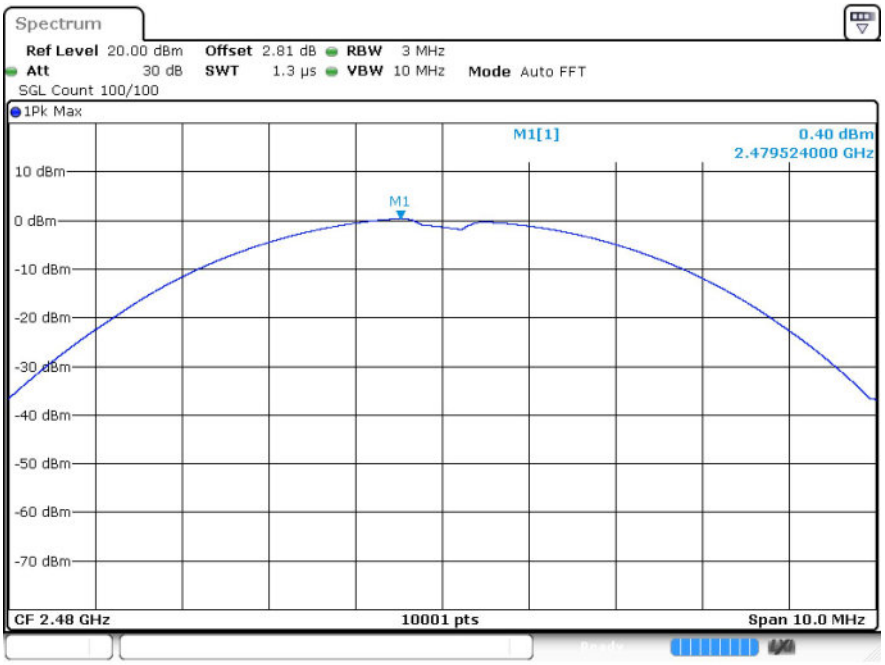
2.2 Test Graphs

Test Graphs	
GFSK/LCH	
GFSK/MCH	

GFSK/HCH	
π/4DQPSK/LCH	

π/4DQPSK/MCH	
π/4DQPSK/HCH	

8DPSK/LCH	
8DPSK/MCH	

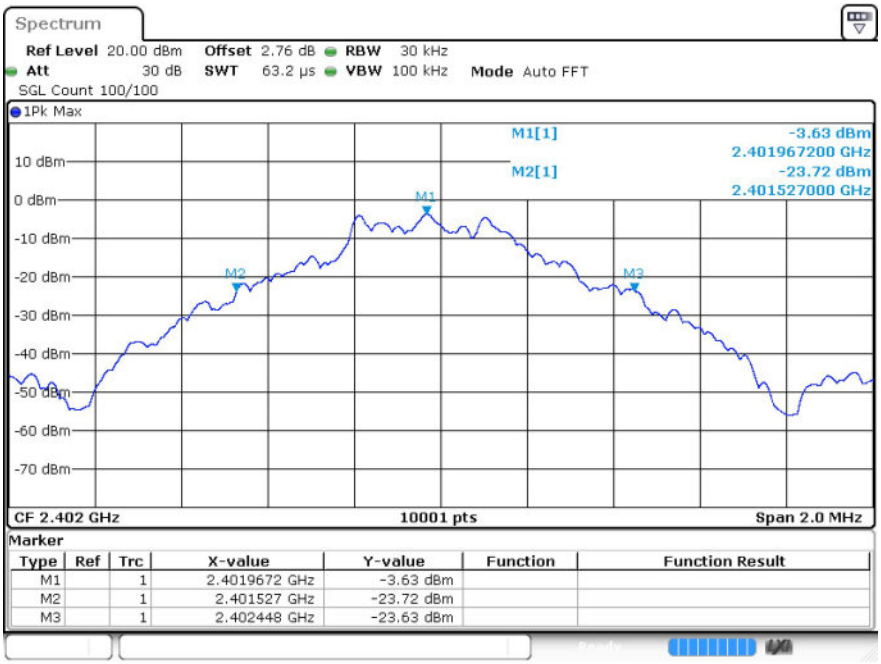
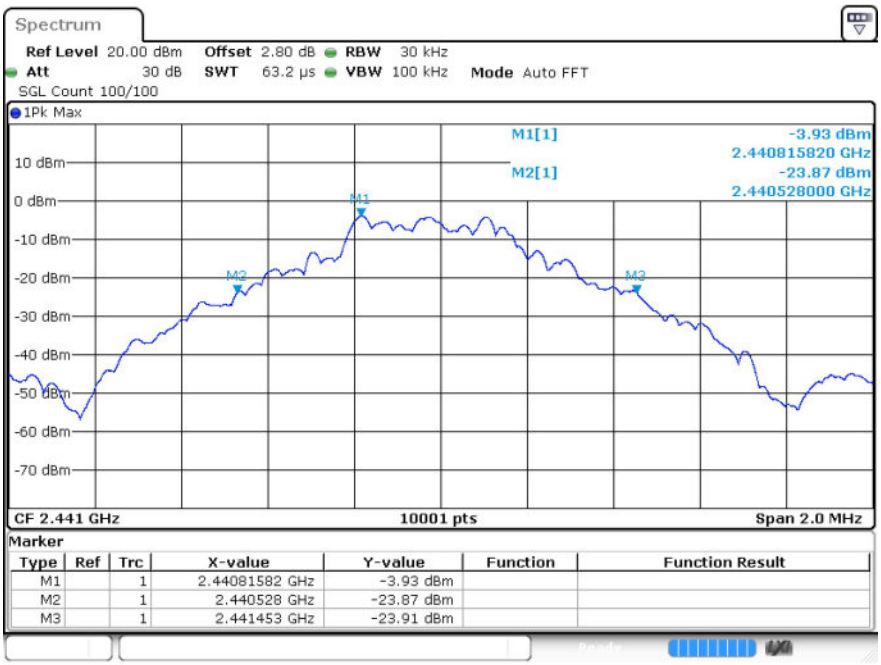
8DPSK/HCH	 Spectrum Ref Level 20.00 dBm Offset 2.81 dB RBW 3 MHz Att 30 dB SWT 1.3 µs VBW 10 MHz Mode Auto FFT SGL Count 100/100 1Pk Max M1[1] 0.40 dBm 2.479524000 GHz M1 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm -70 dBm CF 2.48 GHz 10001 pts Span 10.0 MHz

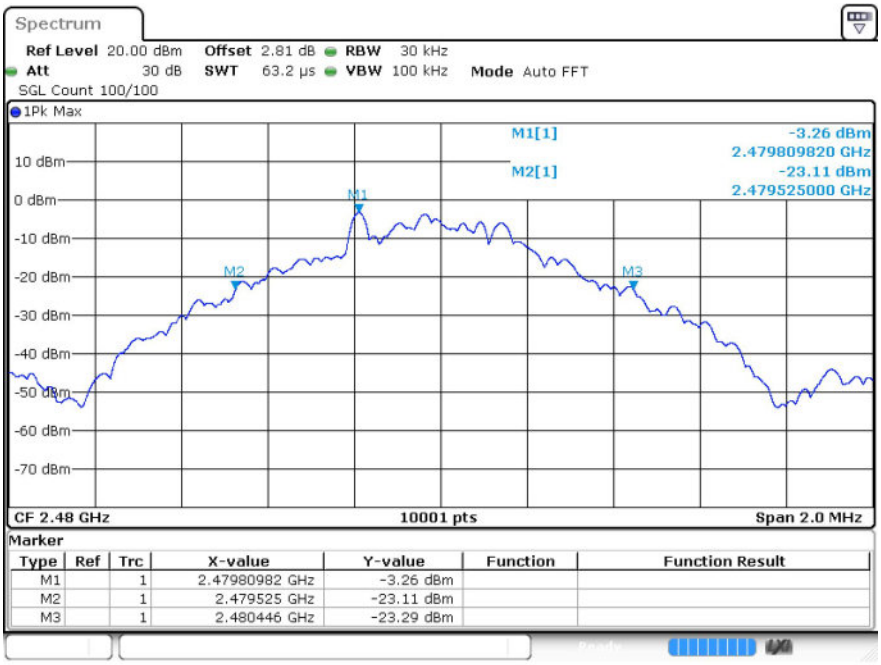
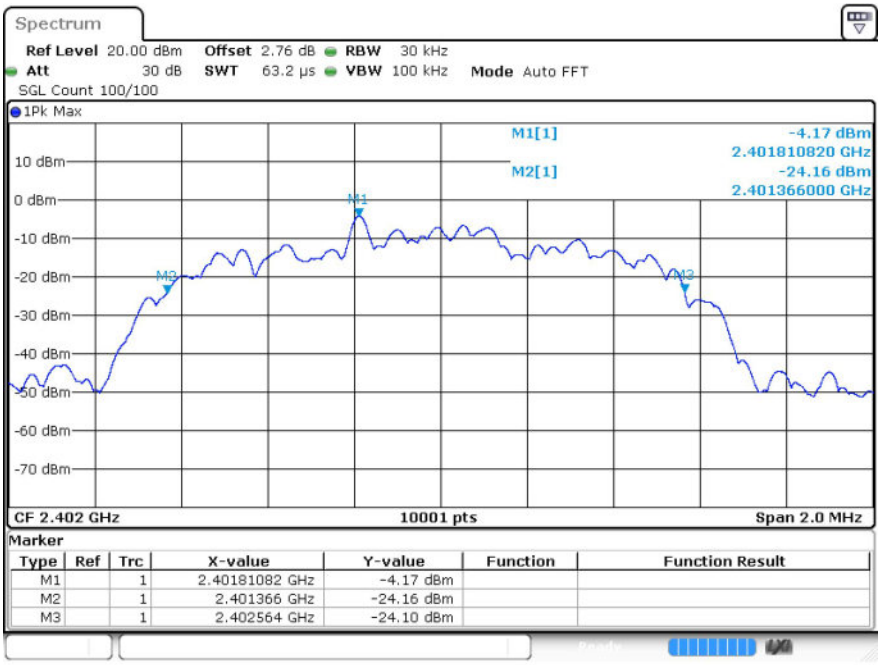
3 20dB Bandwidth

3.1 Test Result

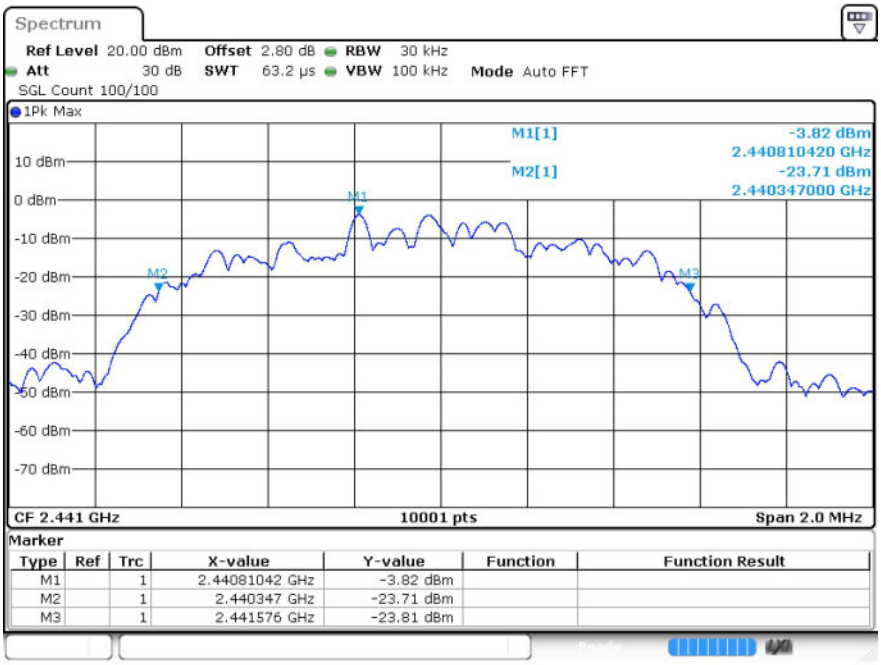
Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.92	Not Specified	Pass
	MCH	0.926	Not Specified	Pass
	HCH	0.921	Not Specified	Pass
π/4DQPSK	LCH	1.198	Not Specified	Pass
	MCH	1.229	Not Specified	Pass
	HCH	1.246	Not Specified	Pass
8DPSK	LCH	1.205	Not Specified	Pass
	MCH	1.198	Not Specified	Pass
	HCH	1.203	Not Specified	Pass

3.2 Test Graphs

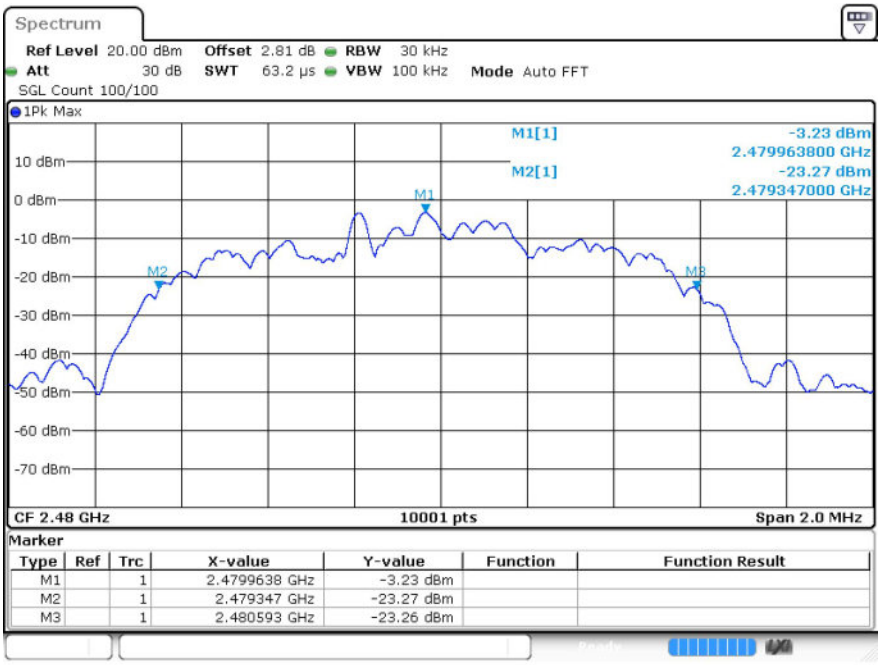
Test Graphs	
GFSK/LCH	
GFSK/MCH	

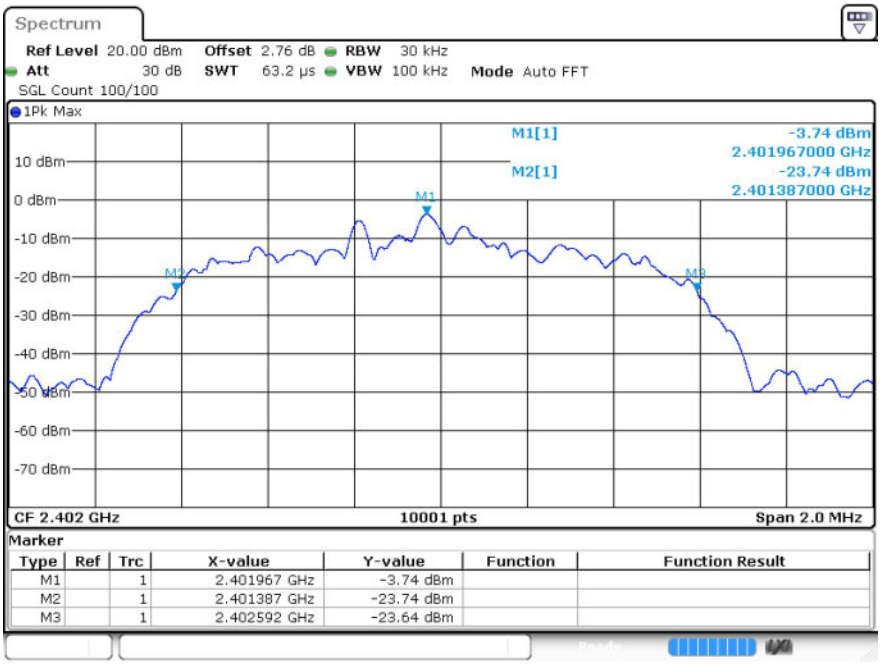
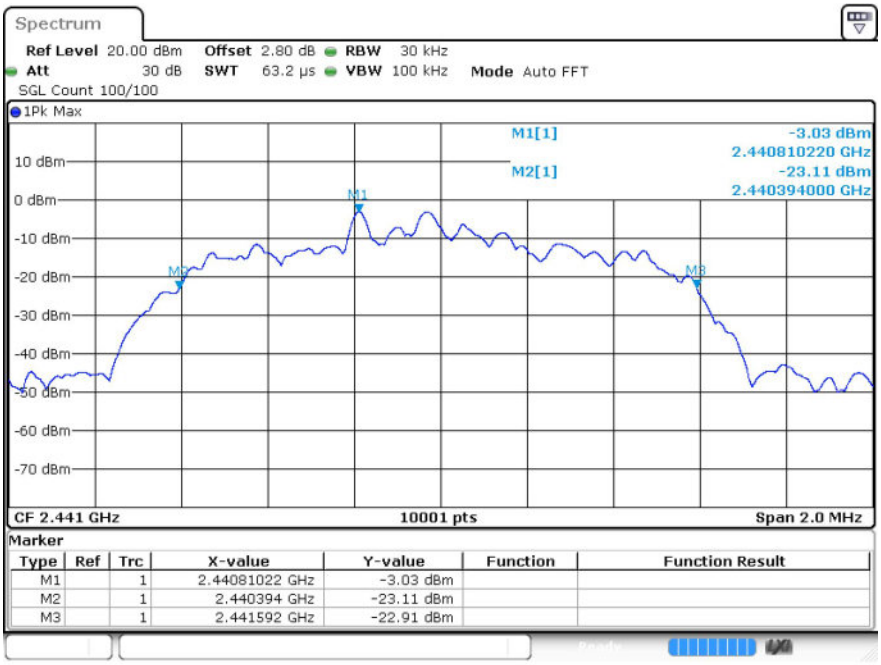
GFSK/HCH	
π/4DQPSK/LCH	

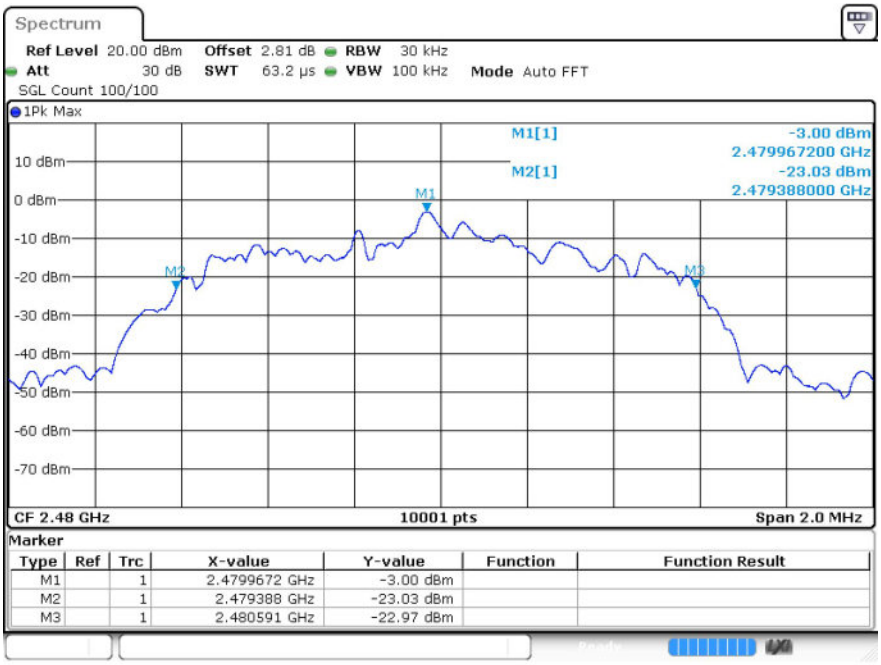
π/4DQPSK/MCH



π/4DQPSK/HCH



8DPSK/LCH	
8DPSK/MCH	

8DPSK/HCH	

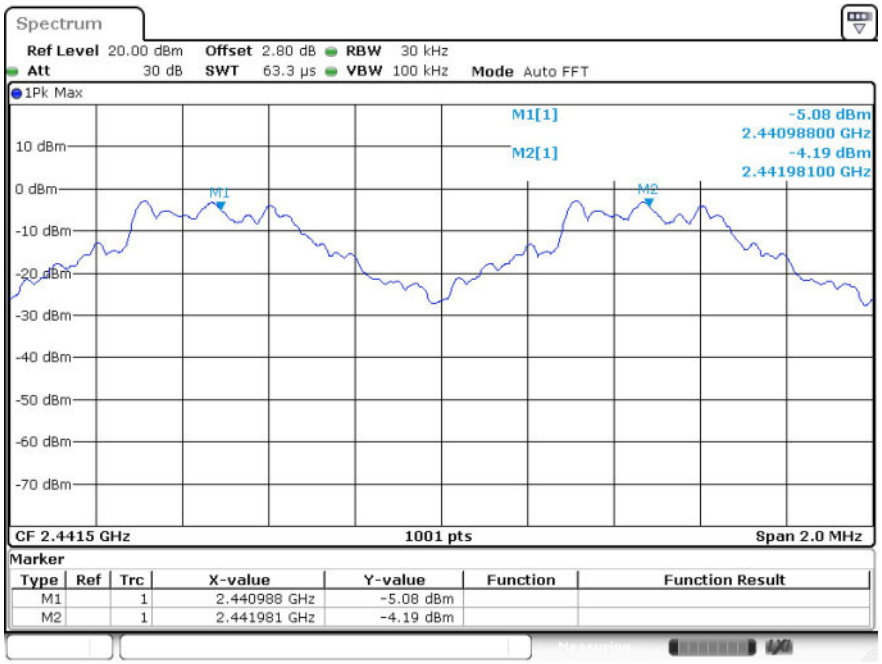
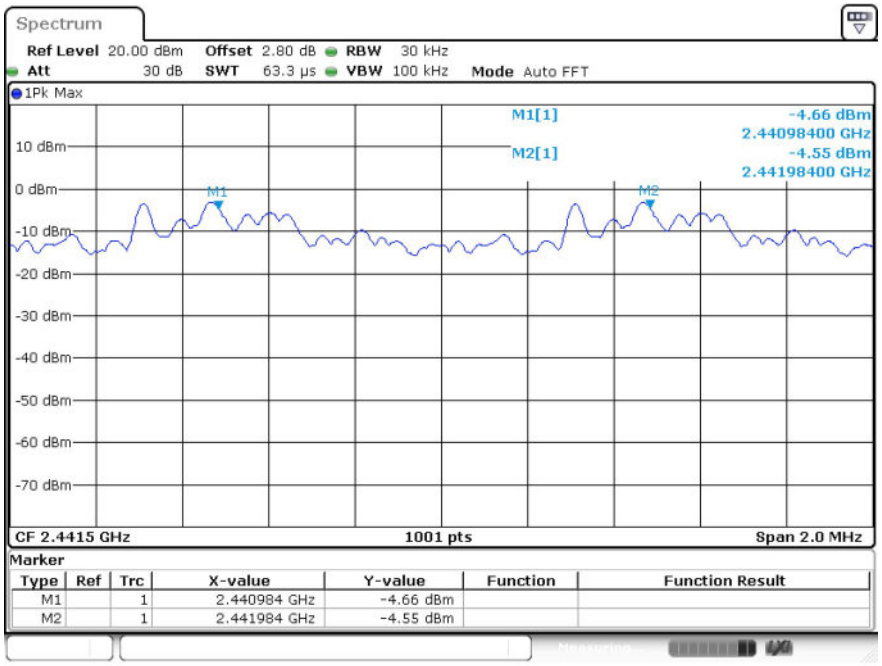
Spectrum
Ref Level 20.00 dBm Offset 2.81 dB RBW 30 kHz
Att 30 dB SWT 63.2 µs VBW 100 kHz Mode Auto FFT
SGL Count 100/100
1Pk Max
M1[1] -3.00 dBm 2.479967200 GHz
M2[1] -23.03 dBm 2.479388000 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
M2
M3
CF 2.48 GHz
10001 pts
Span 2.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.4799672 GHz -3.00 dBm
M2 1 2.479388 GHz -23.03 dBm
M3 1 2.480591 GHz -22.97 dBm

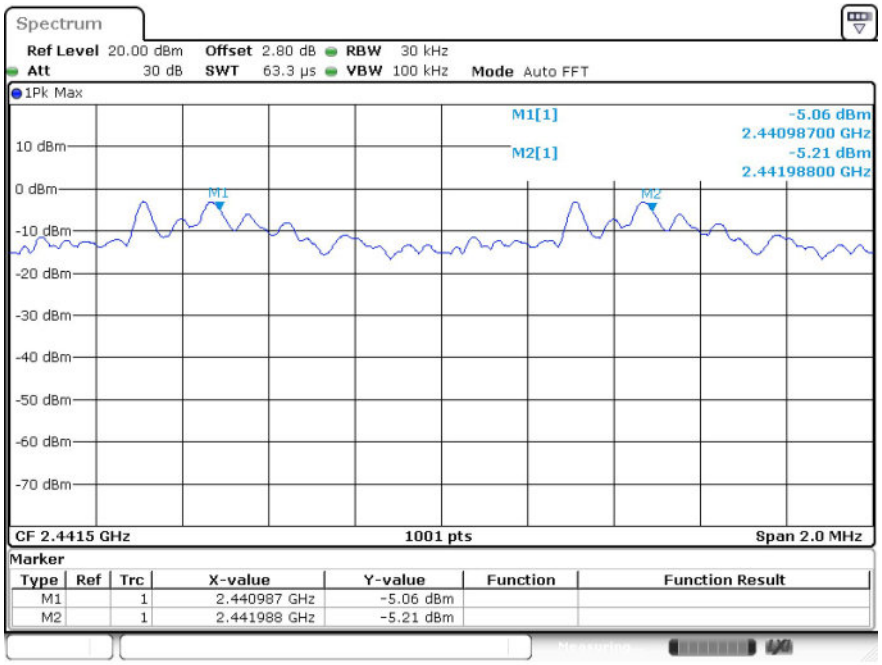
4 Carrier Frequency Separation

4.1 Test Result

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	MCH	0.993	0.617	Pass
π/4DQPSK	MCH	1	0.819	Pass
8DPSK	MCH	1.001	0.799	Pass

4.2 Test Graphs

Test Graphs	
GFSK/MCH	
π/4DQPSK/MCH	

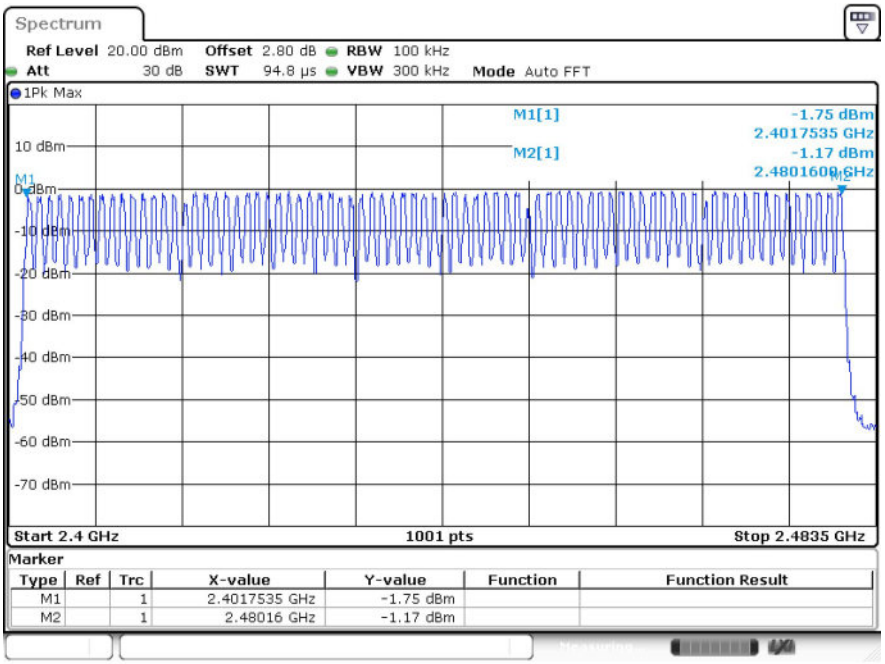
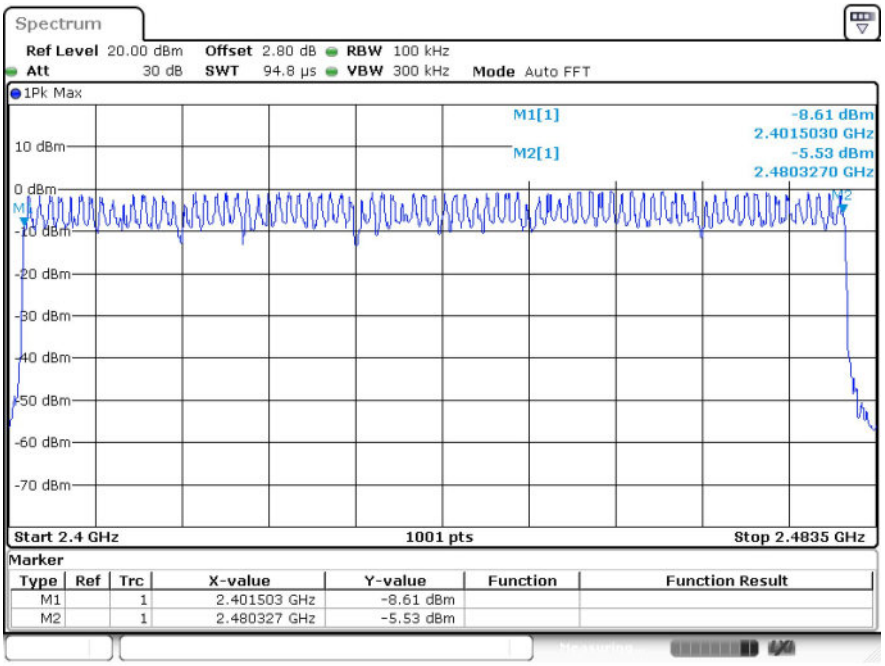
8DPSK/MCH	 Spectrum Ref Level 20.00 dBm Offset 2.80 dB RBW 30 kHz Att 30 dB SWT 63.3 µs VBW 100 kHz Mode Auto FFT 1Pk Max M1[1] -5.06 dBm 2.44098700 GHz M2[1] -5.21 dBm 2.44198800 GHz 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm -70 dBm CF 2.4415 GHz 1001 pts Span 2.0 MHz Marker Type Ref Trc X-value Y-value Function Function Result M1 1 2.440987 GHz -5.06 dBm M2 1 2.441988 GHz -5.21 dBm

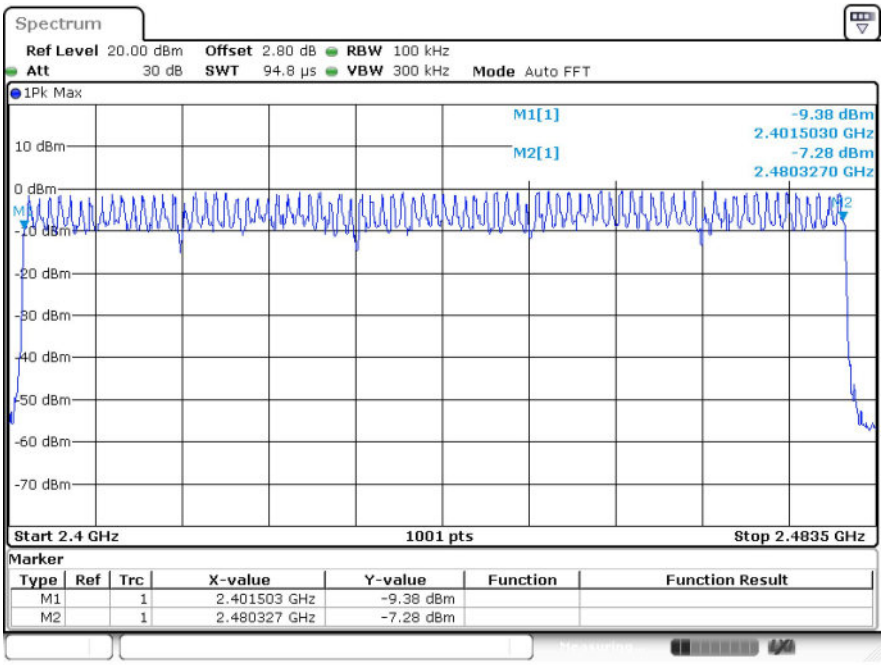
5 Hopping Channel Number

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	

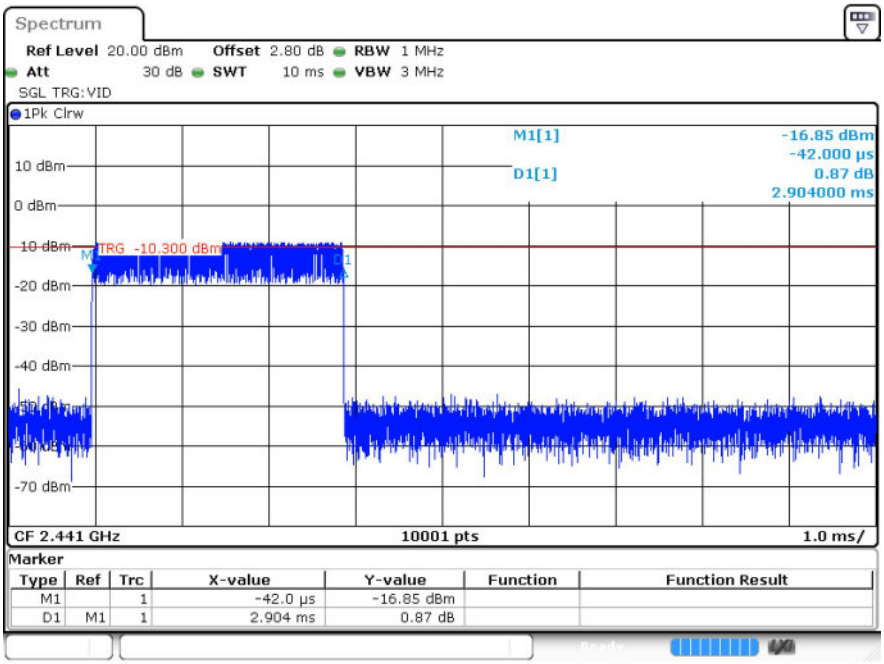
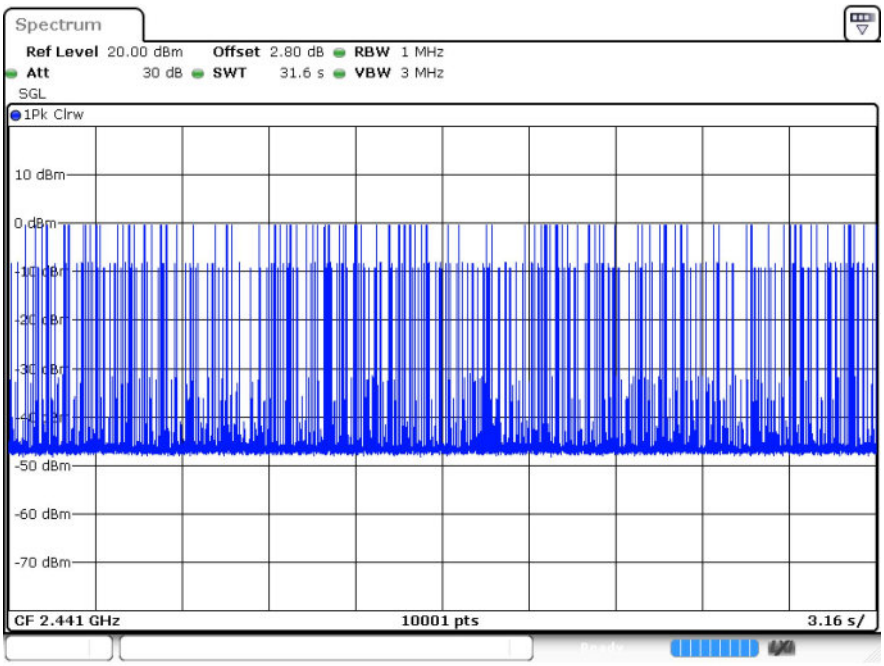
8DPSK/Hop	 Spectrum Ref Level 20.00 dBm Offset 2.80 dB RBW 100 kHz Att 30 dB SWT 94.8 µs VBW 300 kHz Mode Auto FFT 1Pk Max M1[1] -9.38 dBm 2.4015030 GHz M2[1] -7.28 dBm 2.4803270 GHz 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm -70 dBm Start 2.4 GHz 1001 pts Stop 2.4835 GHz Marker Type Ref Trc X-value Y-value Function Function Result M1 1 2.401503 GHz -9.38 dBm M2 1 2.480327 GHz -7.28 dBm

6 Dwell Time

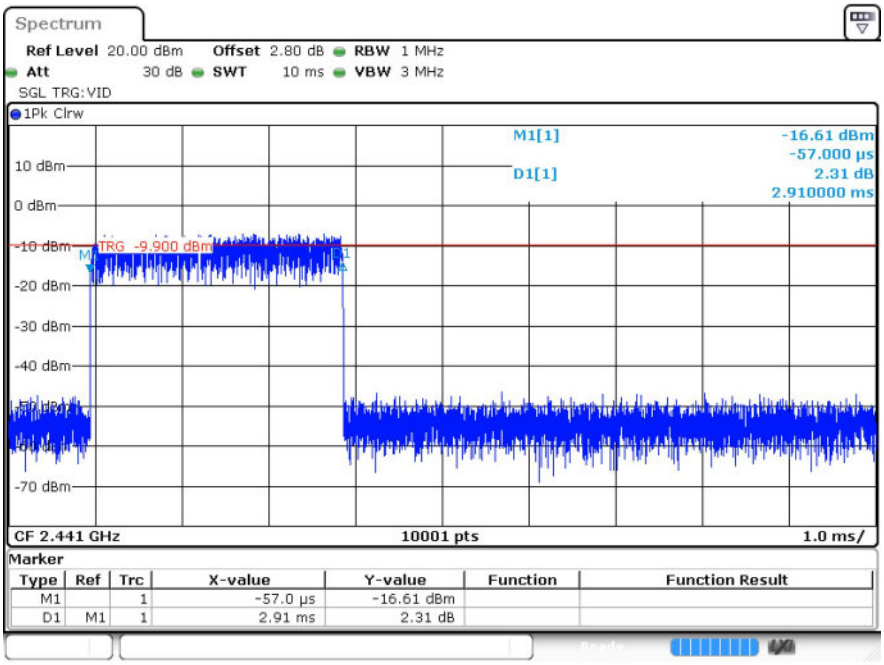
6.1 Test Result

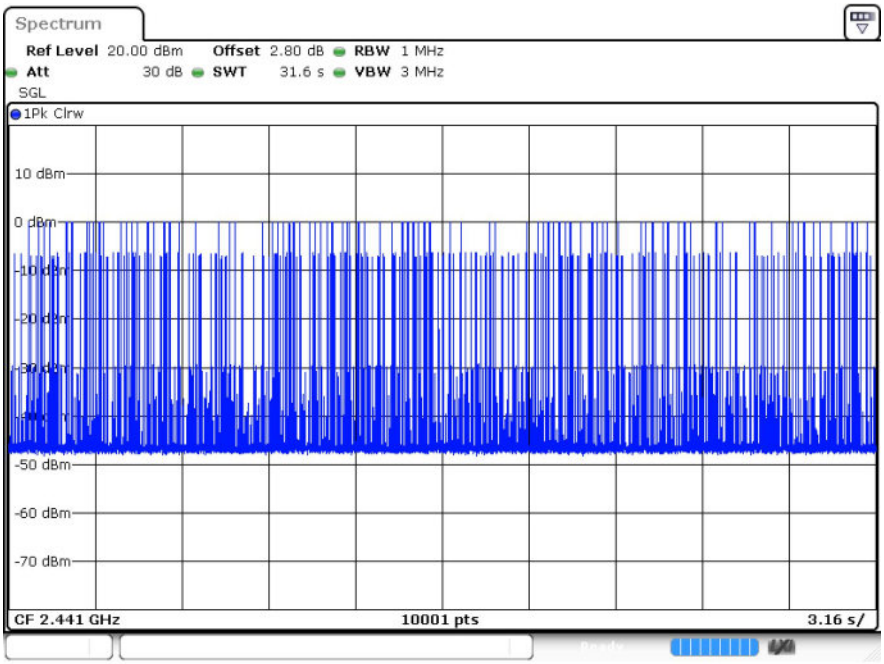
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[ms]	Limit [s]	Verdict
GFSK	DH5	MCH	2.904	116	336.864	0.4	Pass
π/4DQPSK	2DH5	MCH	2.91	115	334.65	0.4	Pass
8DPSK	3DH5	MCH	2.912	115	334.88	0.4	Pass

6.2 Test Graphs

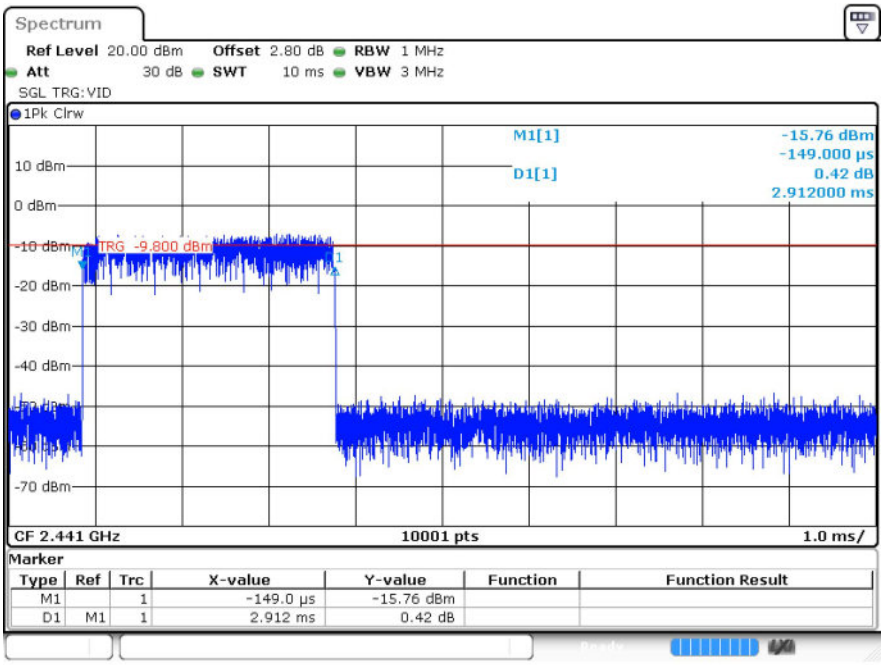
Test Graphs	
GFSK_DH5/MCH	 

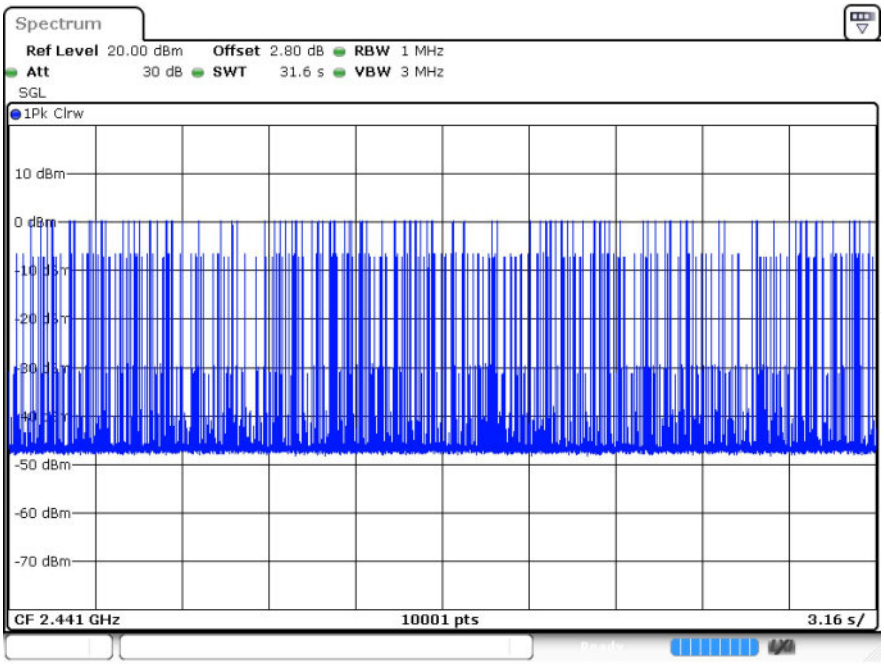
π/4DQPSK
_2DH5/MCH





8DPSK _3DH5/MCH



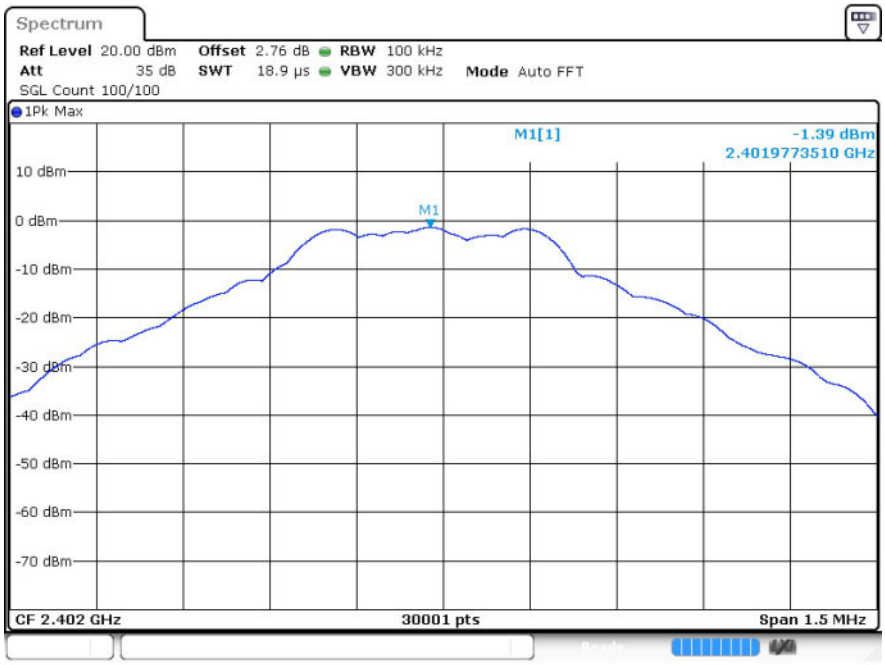
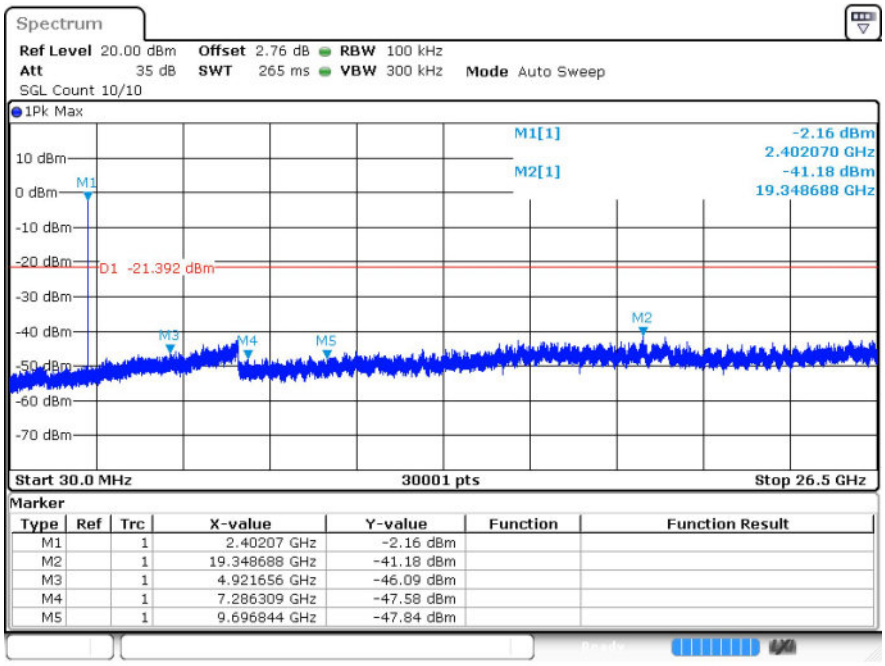


7 RF Conducted Spurious Emissions

7.1 Test Result

Mode	Channel	Max. Level [dBc]	Limit [dBc]	Verdict
GFSK	LCH	-39.78	-20	Pass
	MCH	-40.5	-20	Pass
	HCH	-41.01	-20	Pass
π/4DQPSK	LCH	-40.3	-20	Pass
	MCH	-39.77	-20	Pass
	HCH	-40.22	-20	Pass
8DPSK	LCH	-39.07	-20	Pass
	MCH	-40.41	-20	Pass
	HCH	-40.35	-20	Pass

7.2 Test Graphs

GFSK_LCH_Graphs	
Pref	
Puw	

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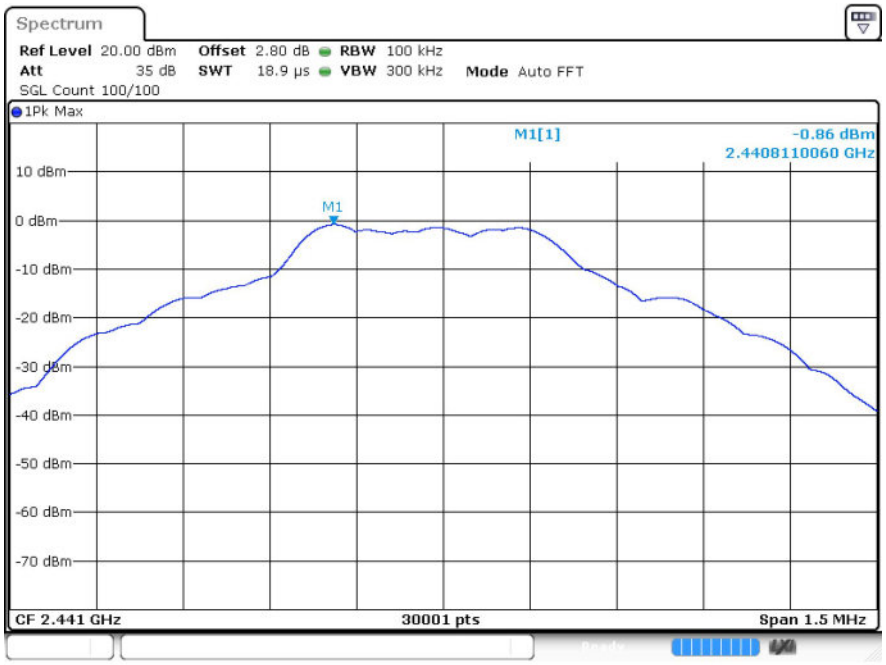
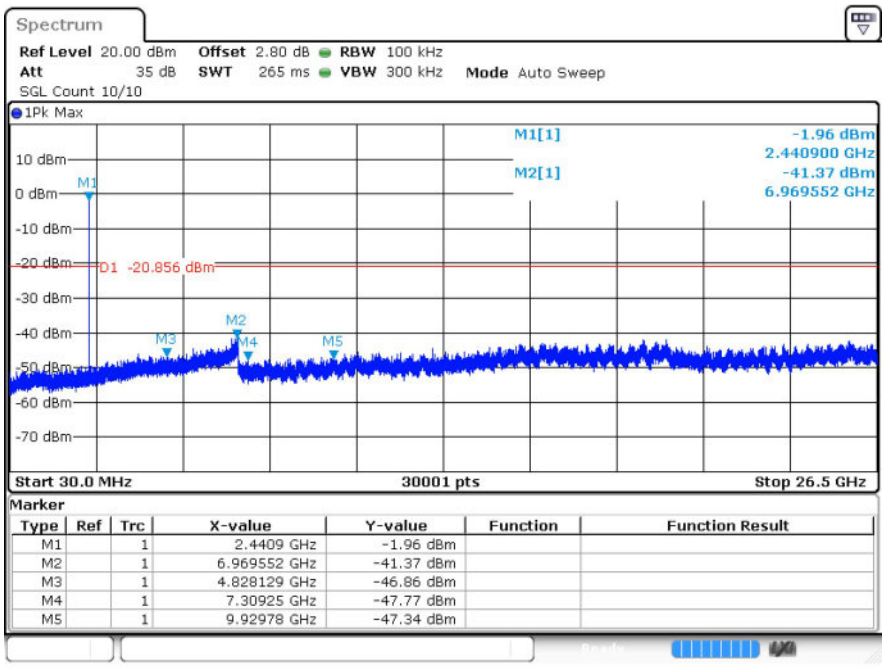
Pref	
Puw	

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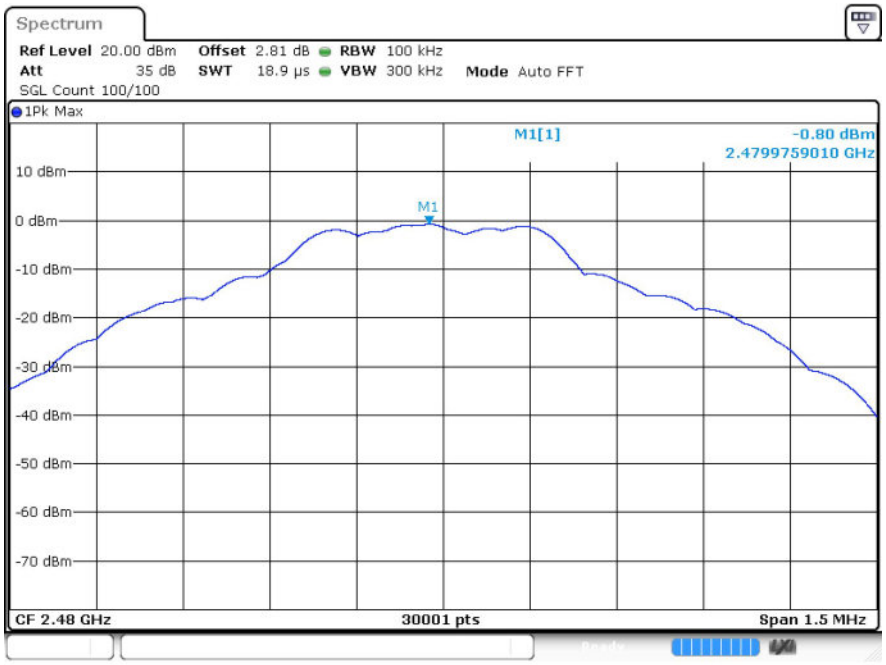
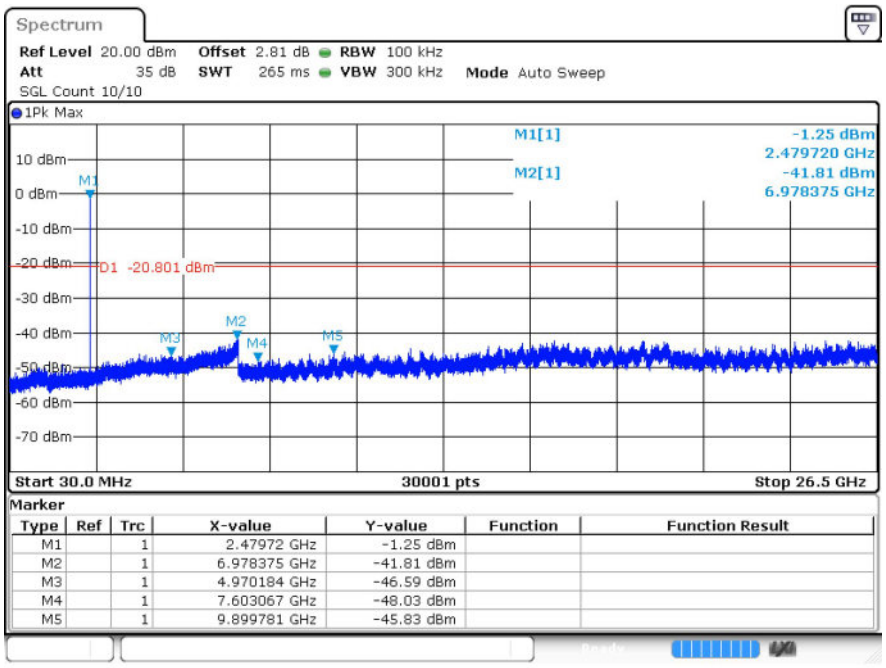
Pref	
Puw	

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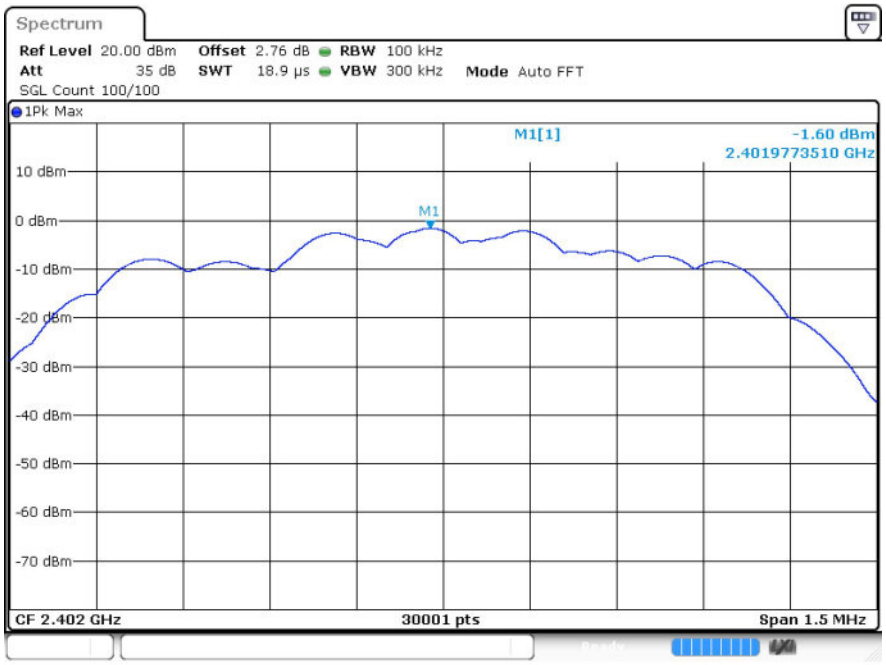
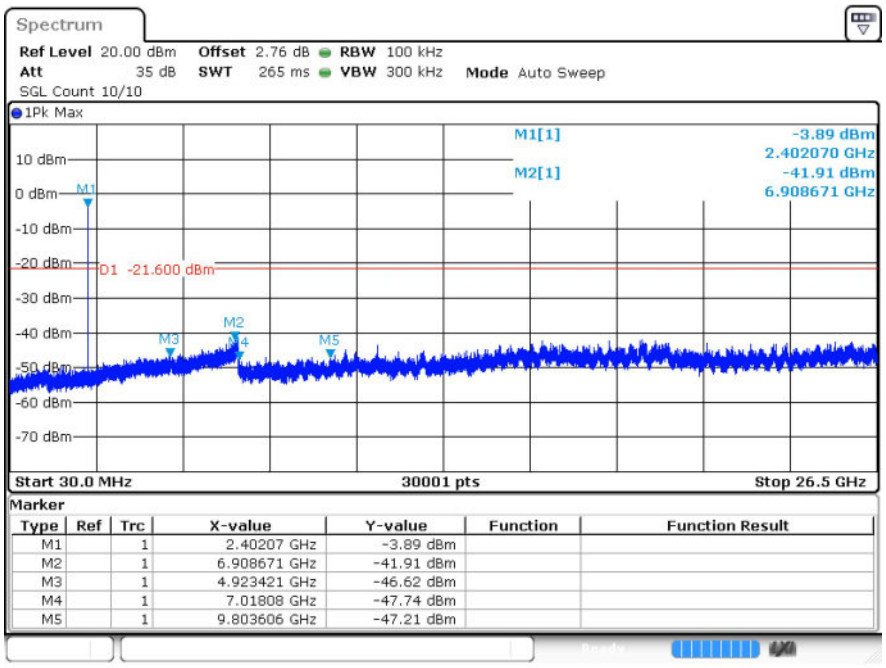
Pref	
Puw	

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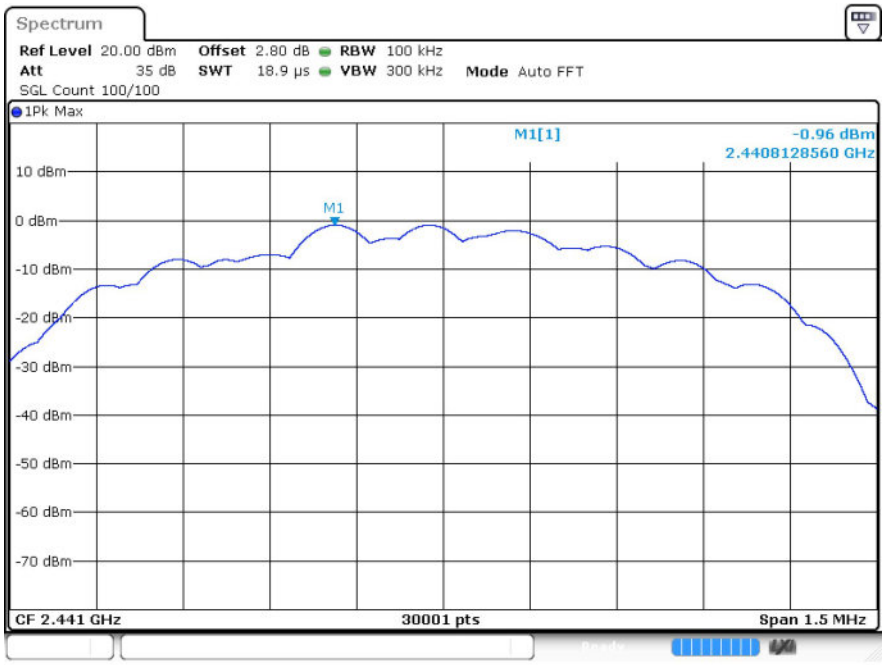
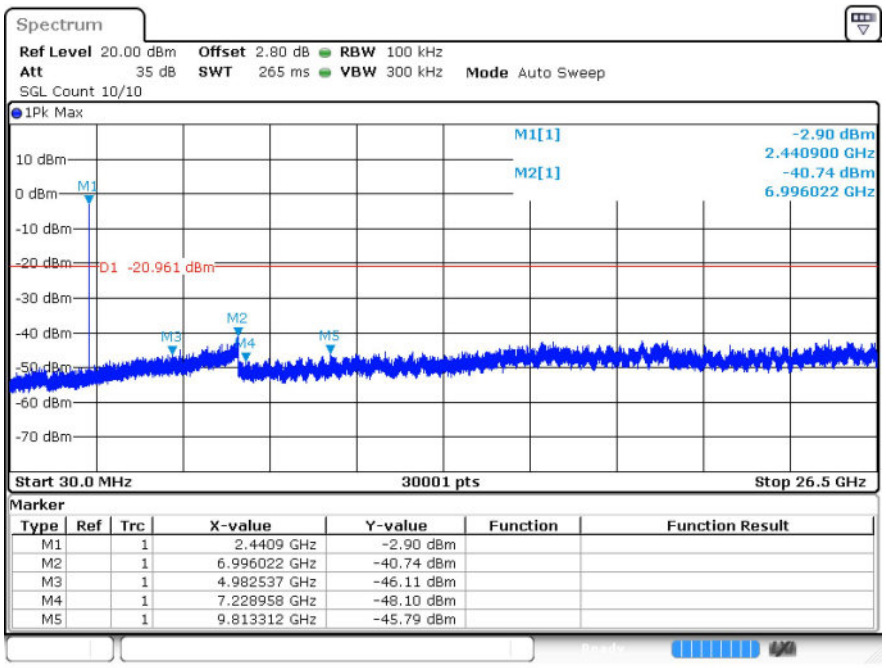
Pref	
Puw	

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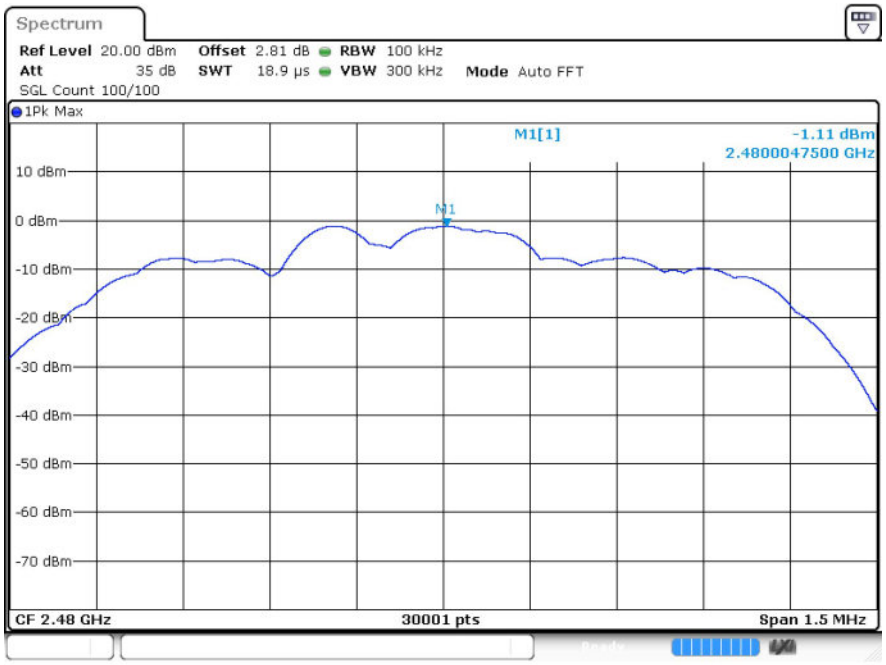
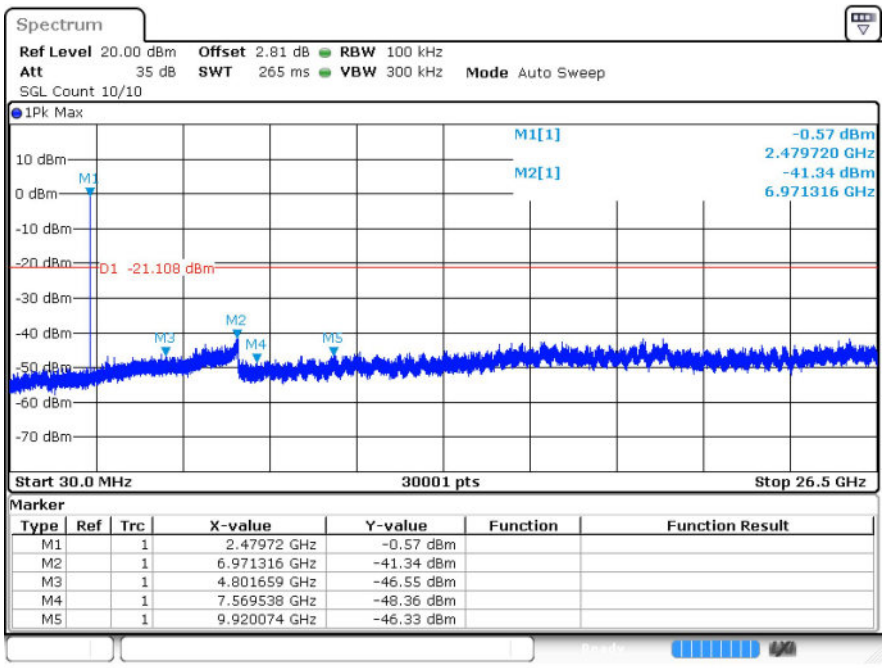
Pref	
Puw	

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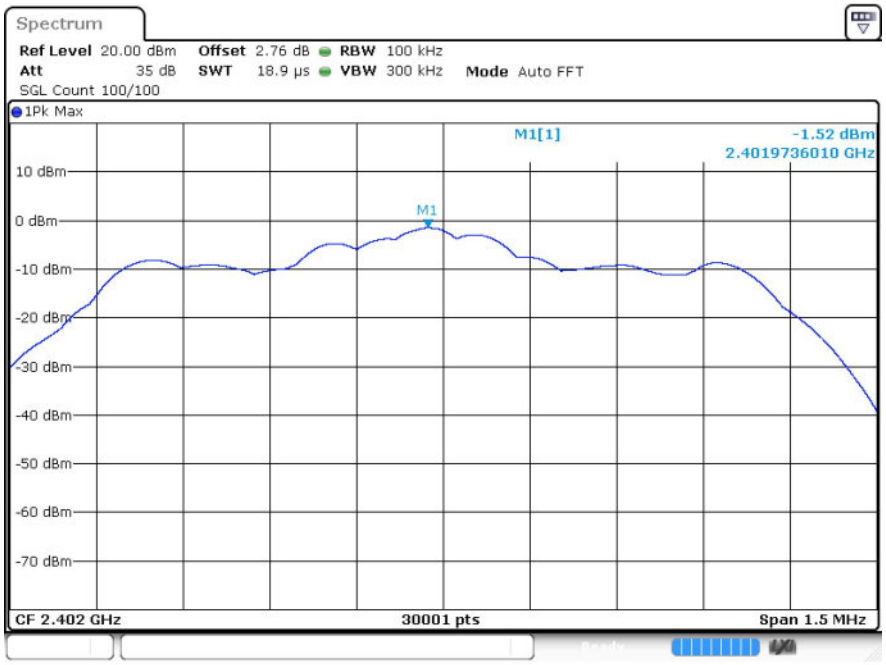
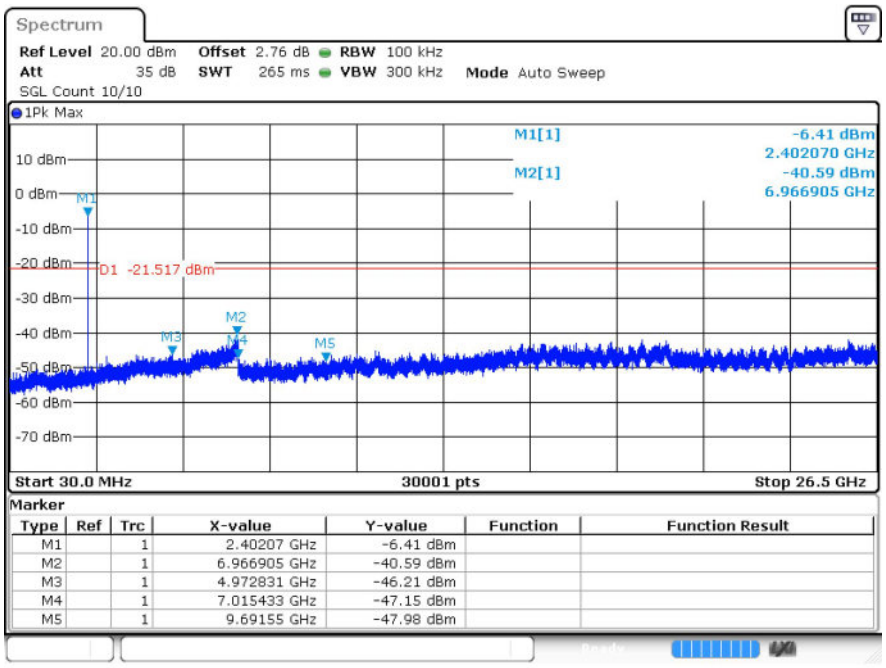
Pref	
Puw	

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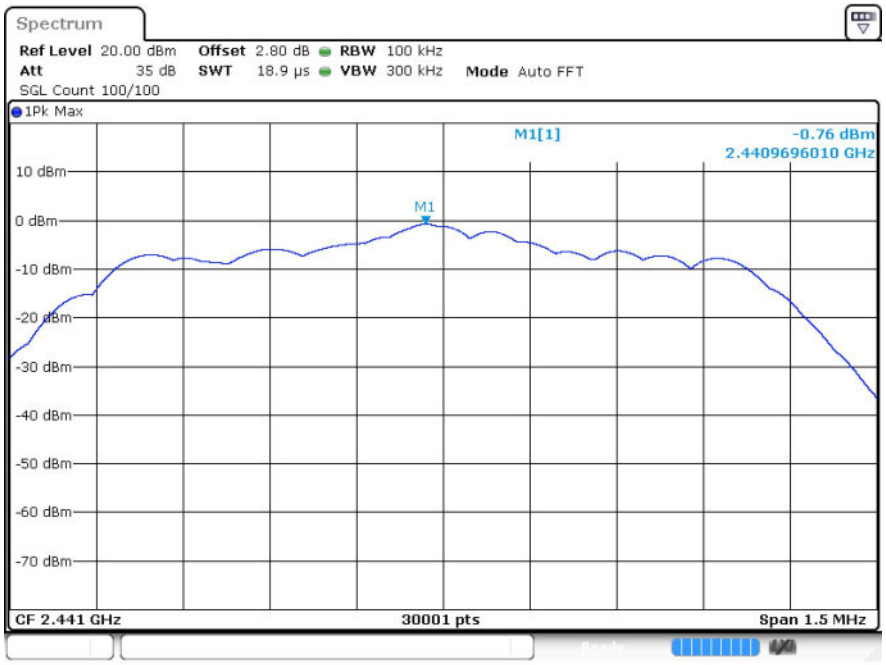
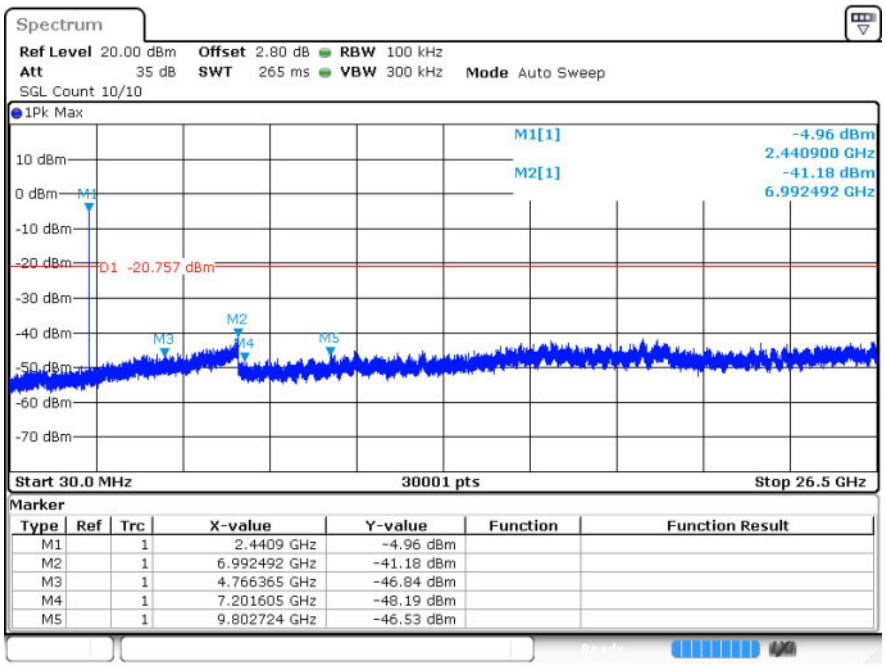
Pref	
Puw	

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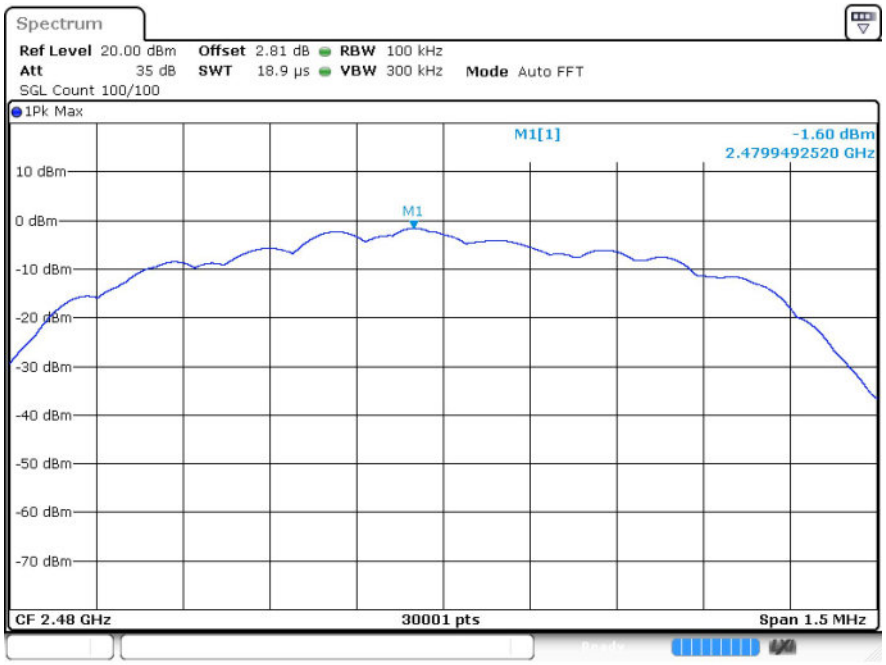
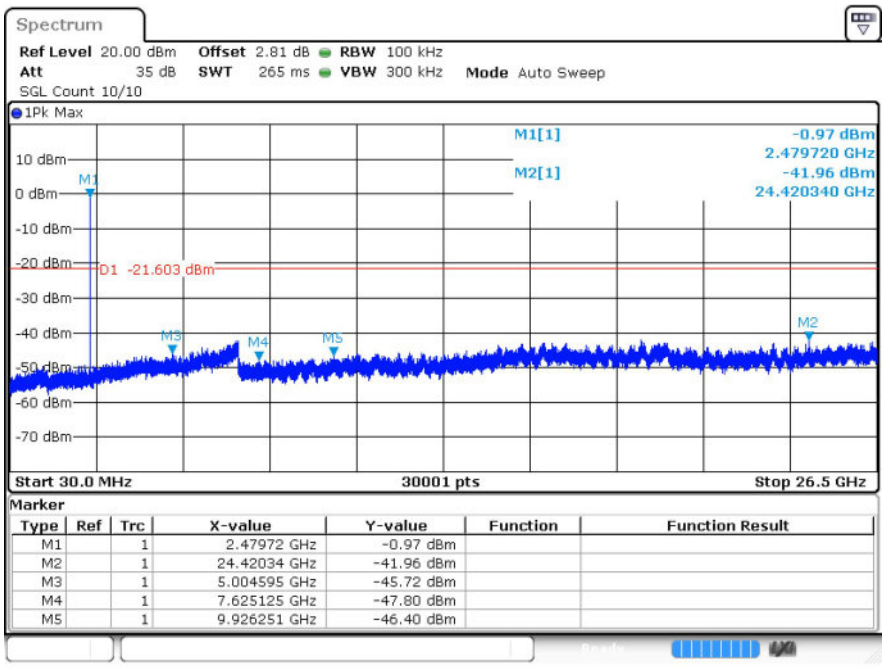
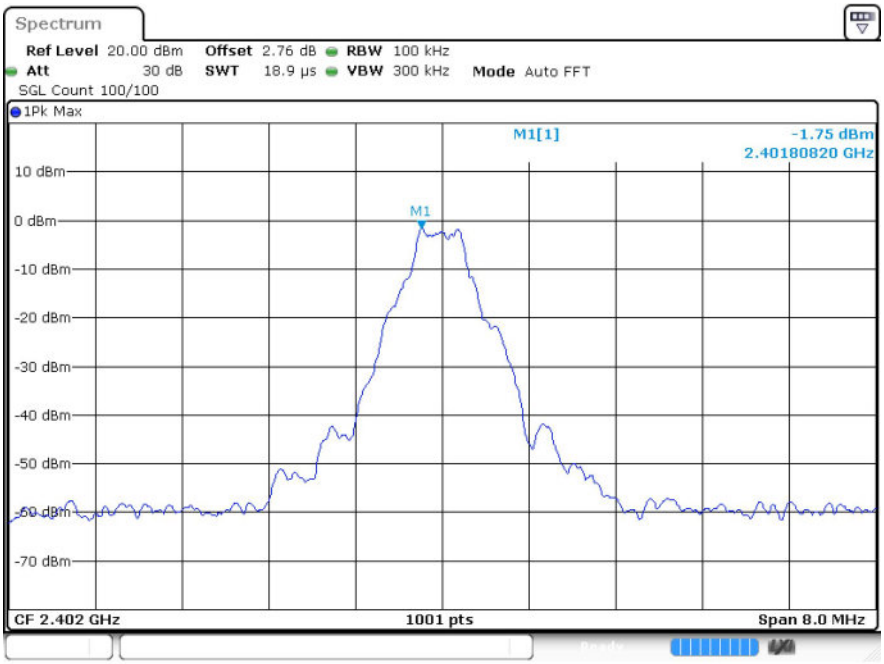
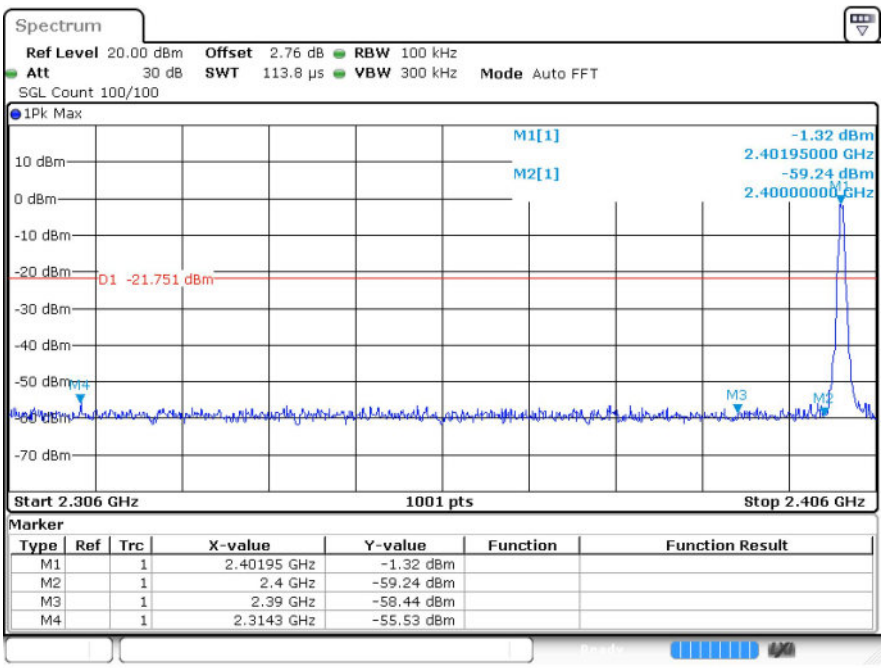
Pref	
Puw	

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	-53.78	-20	Pass
			On	-52.54	-20	Pass
	HCH	2480	Off	-52.3	-20	Pass
			On	-53.3	-20	Pass
π/4DQPSK	LCH	2402	Off	-52.49	-20	Pass
			On	-53.8	-20	Pass
	HCH	2480	Off	-53.87	-20	Pass
			On	-53.82	-20	Pass
8DPSK	LCH	2402	Off	-53.58	-20	Pass
			On	-53.42	-20	Pass
	HCH	2480	Off	-54.51	-20	Pass
			On	-52.85	-20	Pass

8.2 Test Graphs

Test Graphs	
Pref	
GFSK/LCH/No Hop