Appendix A

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

Product Name: Hybrid ANC Bluetooth headphone

Trade Mark: N/A

Test Model: MIXX StreamQ C4

Environmental Conditions

Temperature:	25.5℃
Relative Humidity:	52.5%
ATM Pressure:	101Kpa
Test Engineer:	Simba Huang
Supervised by:	Seal Chen

Contents

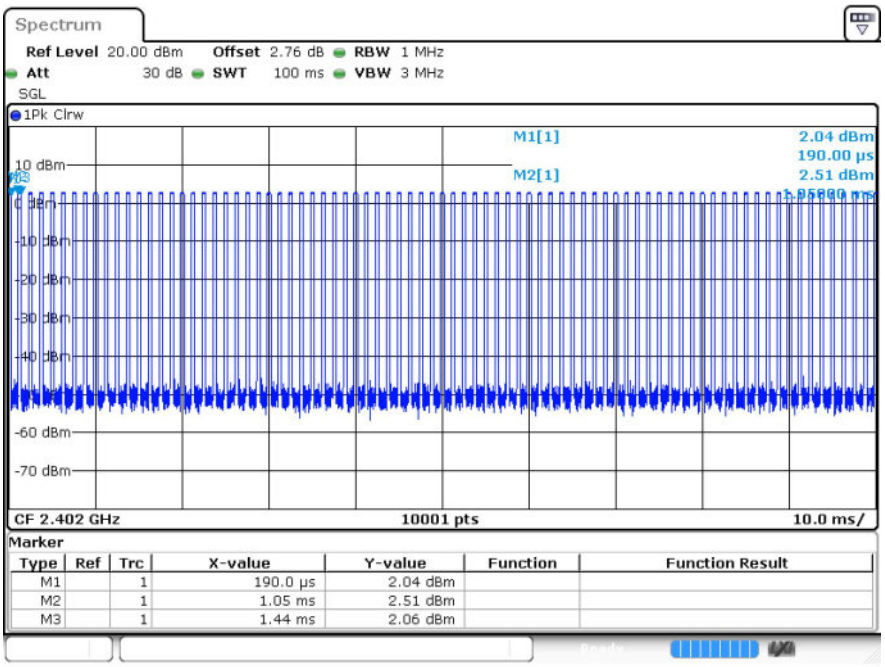
1 Duty Cycle

1.1 Test Result

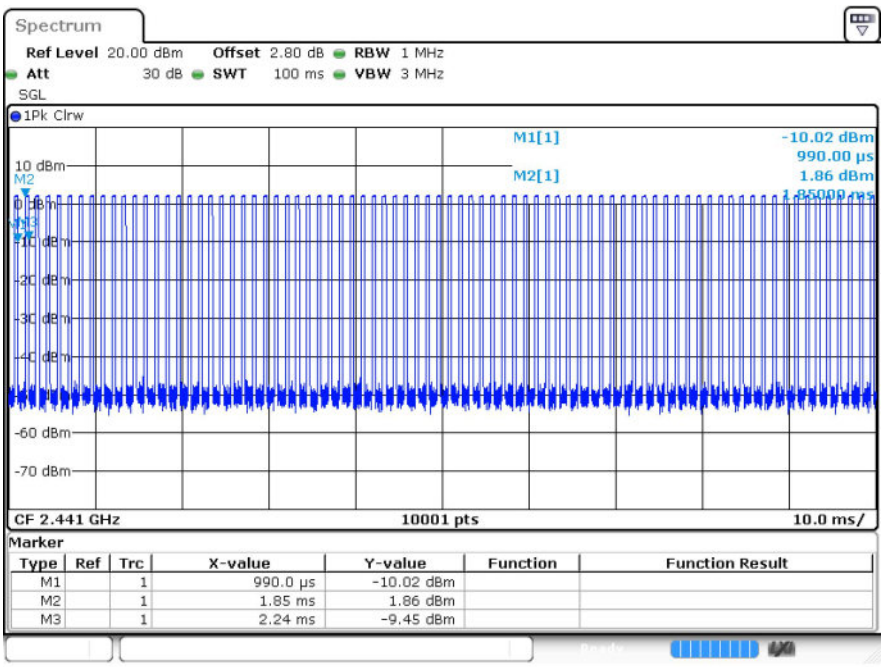
Mode	Frequency (MHz)	Duty Cycle (%)	1/T (kHz)
1-DH1	2402	32.01	2.56
1-DH1	2441	32	2.56
1-DH1	2480	31.2	2.63
2-DH1	2402	32.01	2.56
2-DH1	2441	32.27	2.5
2-DH1	2480	32	2.56
3-DH1	2402	32.8	2.5
3-DH1	2441	32.42	2.5
3-DH1	2480	32.8	2.5

1.2 Test Graphs

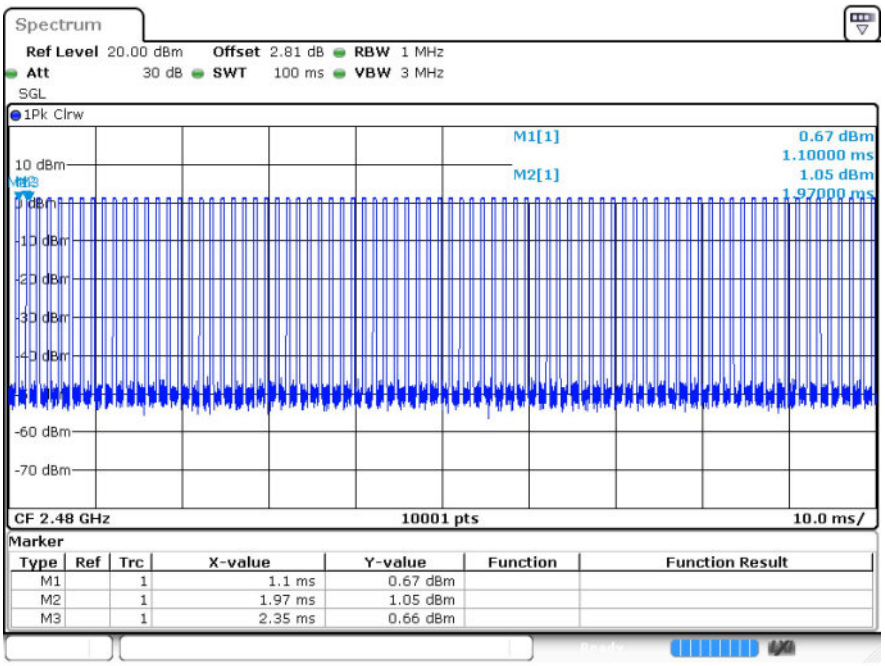
Test Graphs
1-DH1 2402MHz



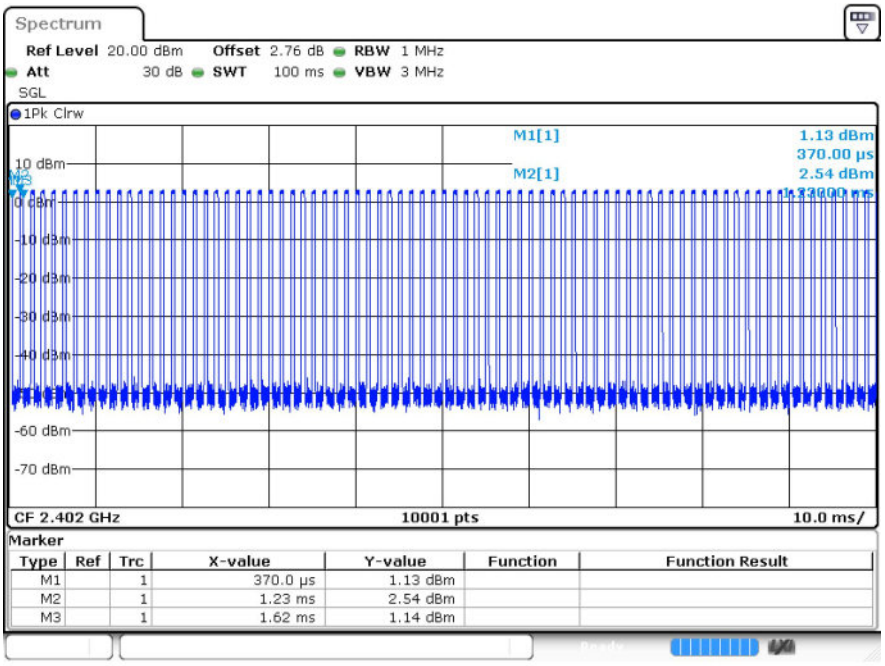
1-DH1 2441MHz



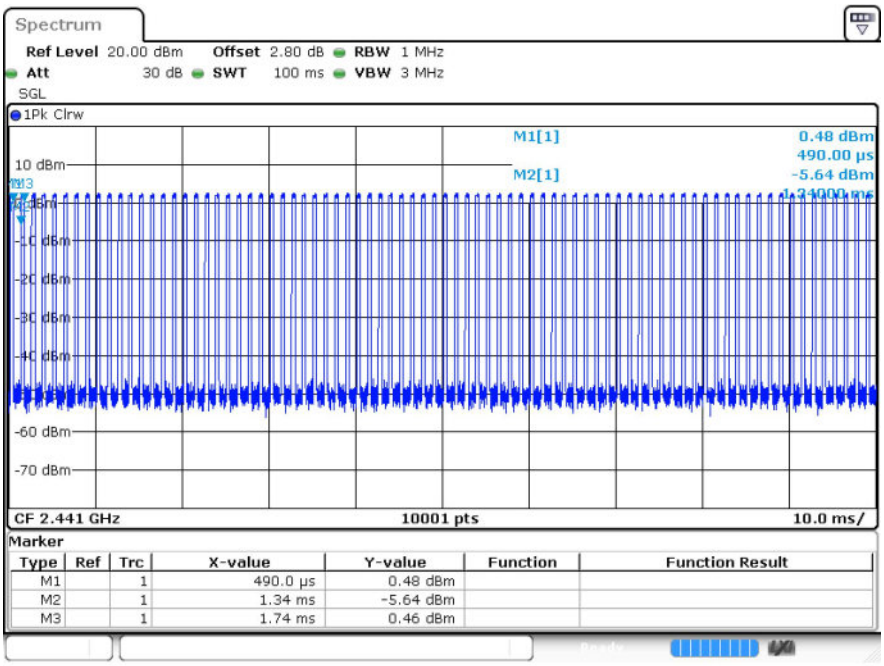
1-DH1 2480MHz



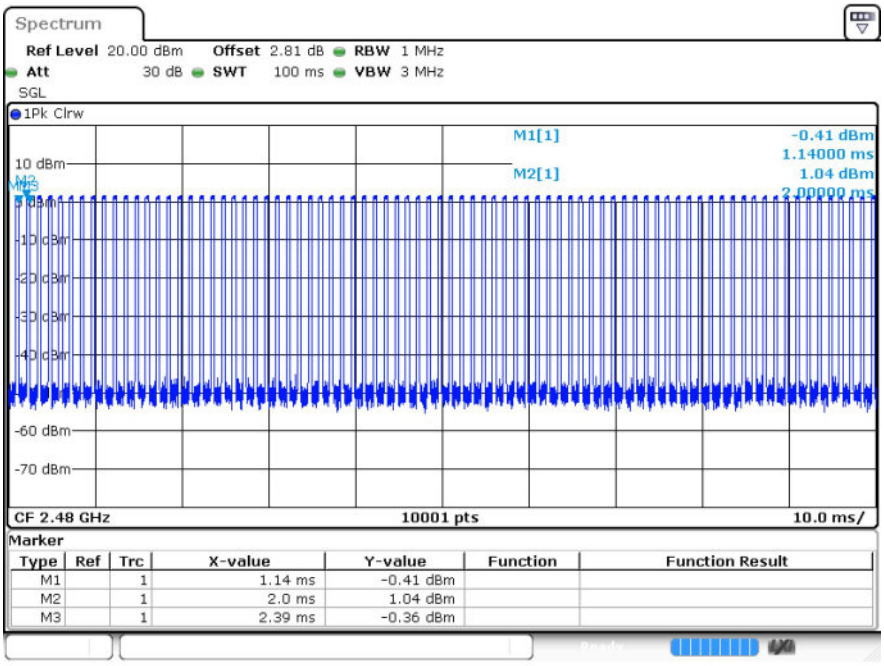
2-DH1 2402MHz



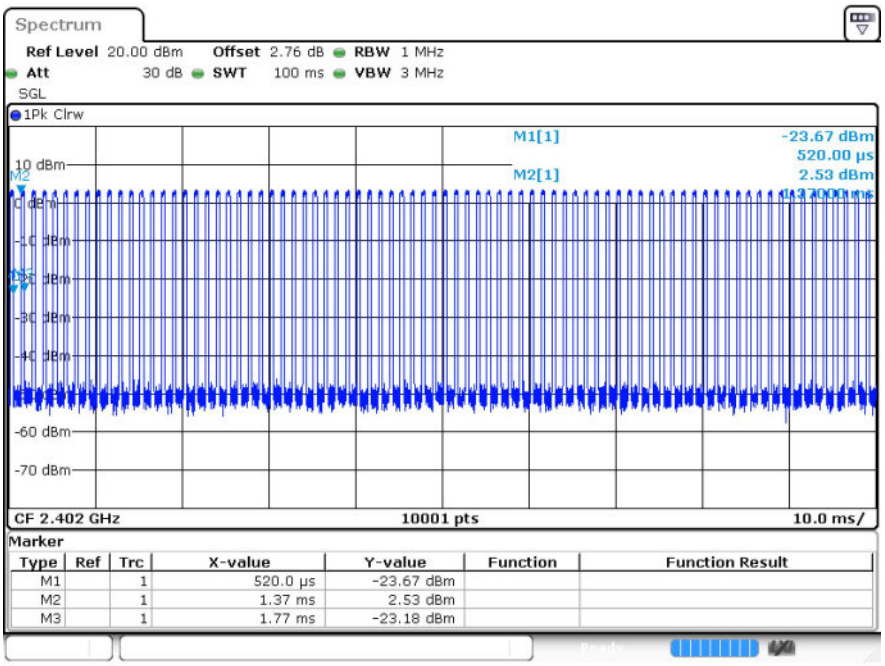
2-DH1 2441MHz



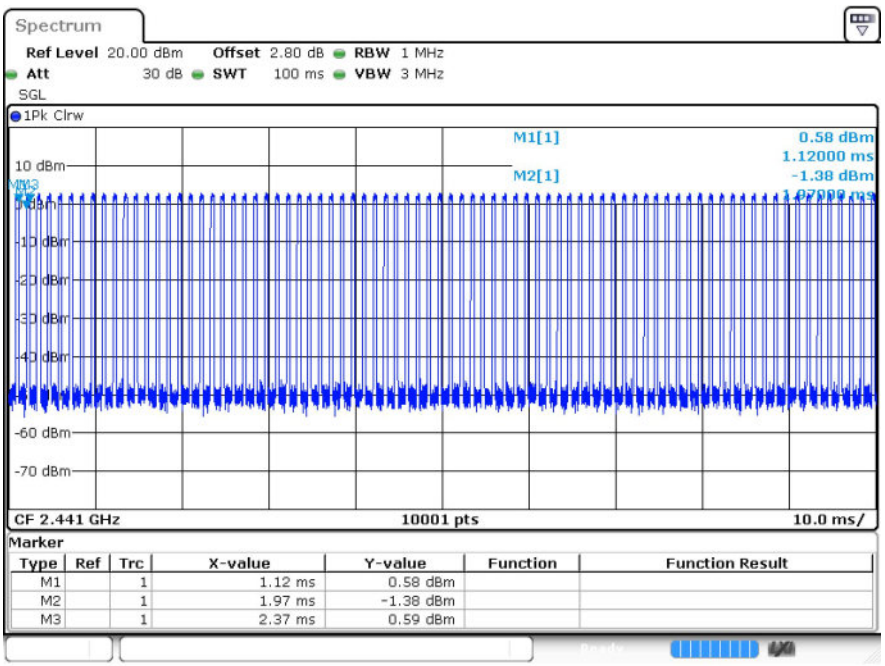
2-DH1 2480MHz



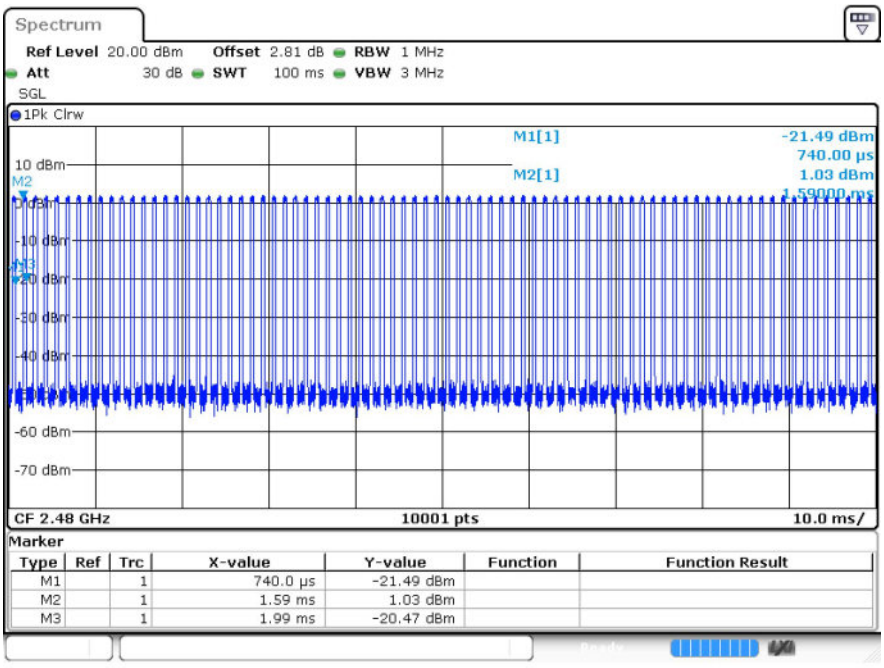
3-DH1 2402MHz



3-DH1 2441MHz



3-DH1 2480MHz

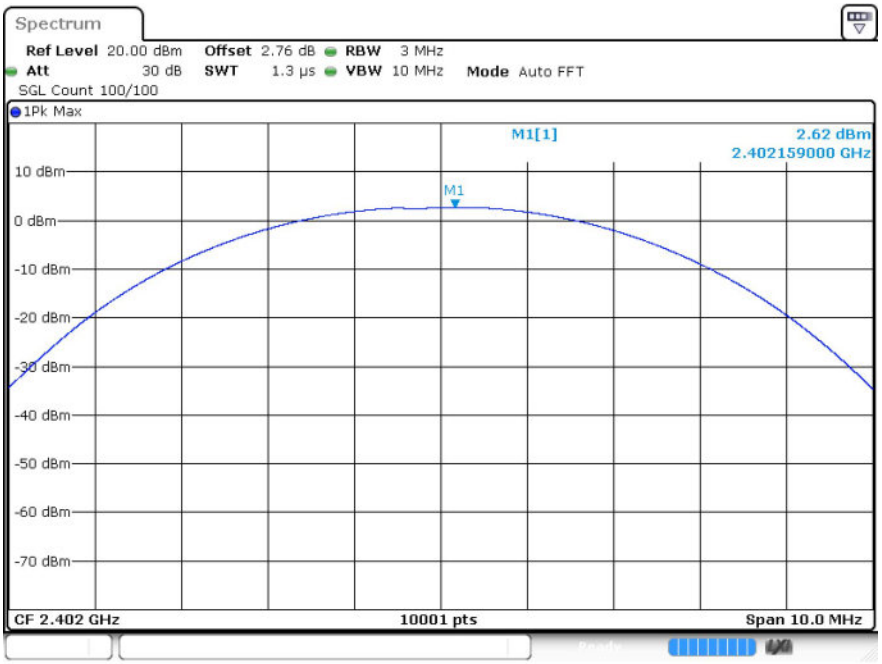
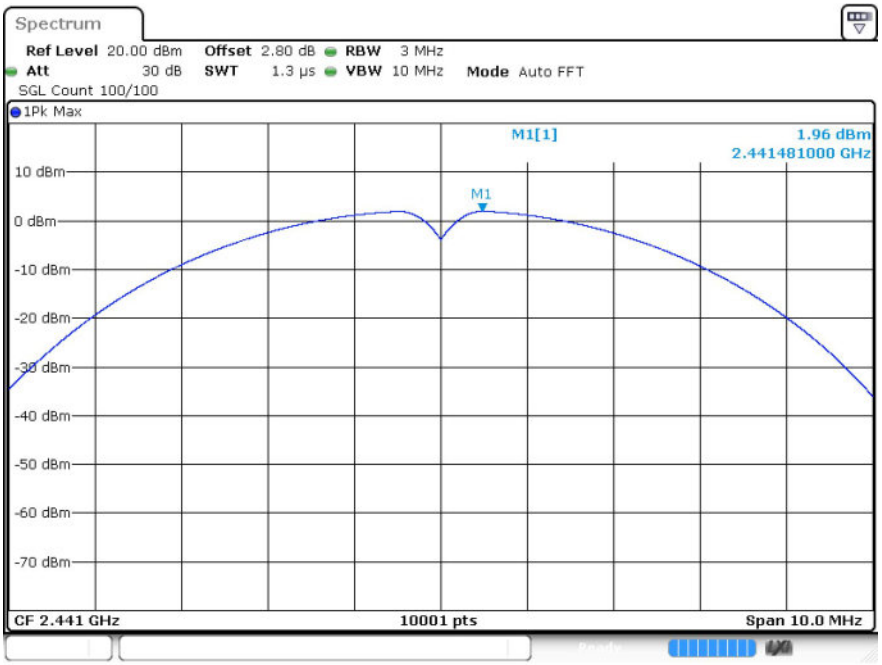


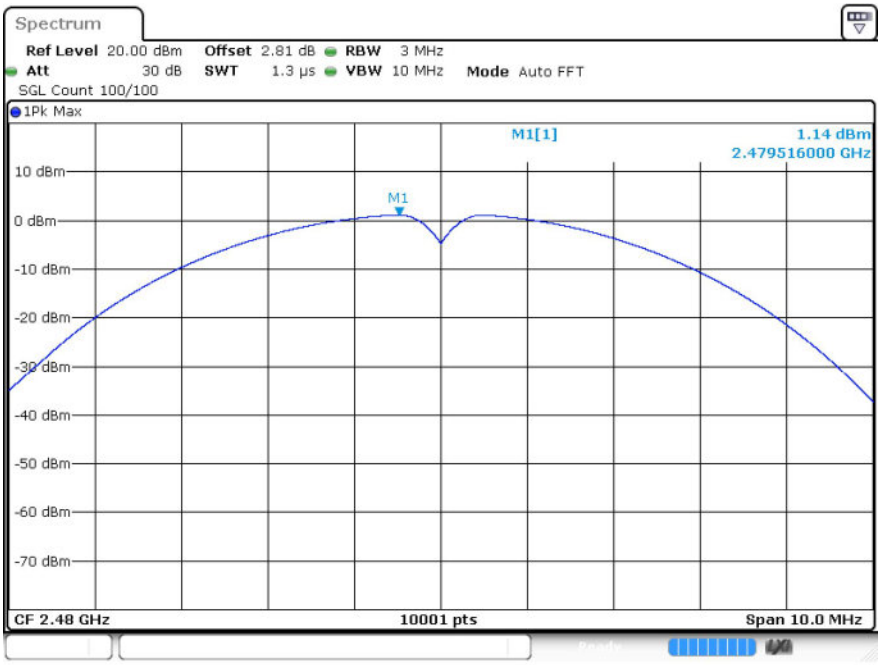
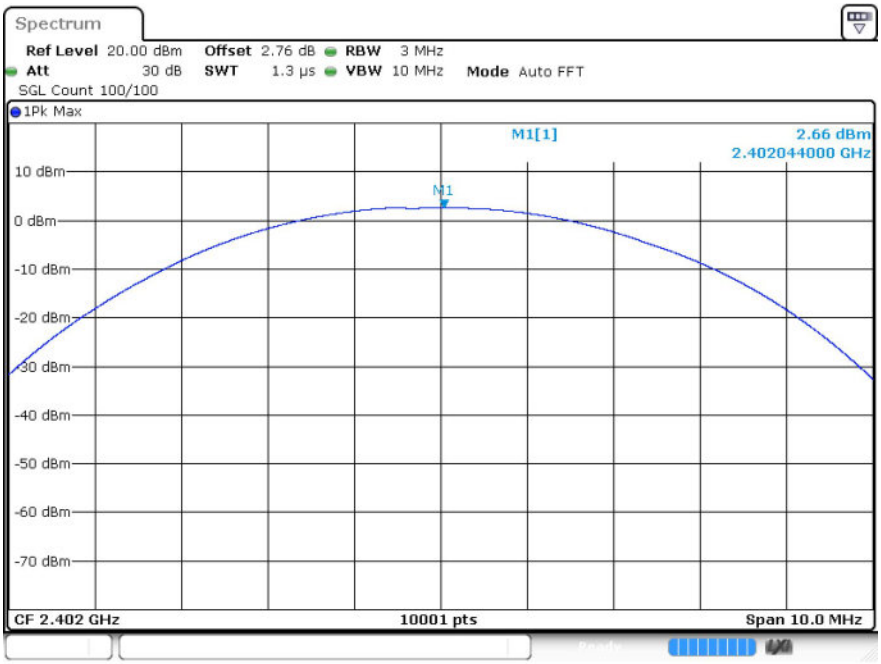
2 Maximum Conducted Peak Output Power

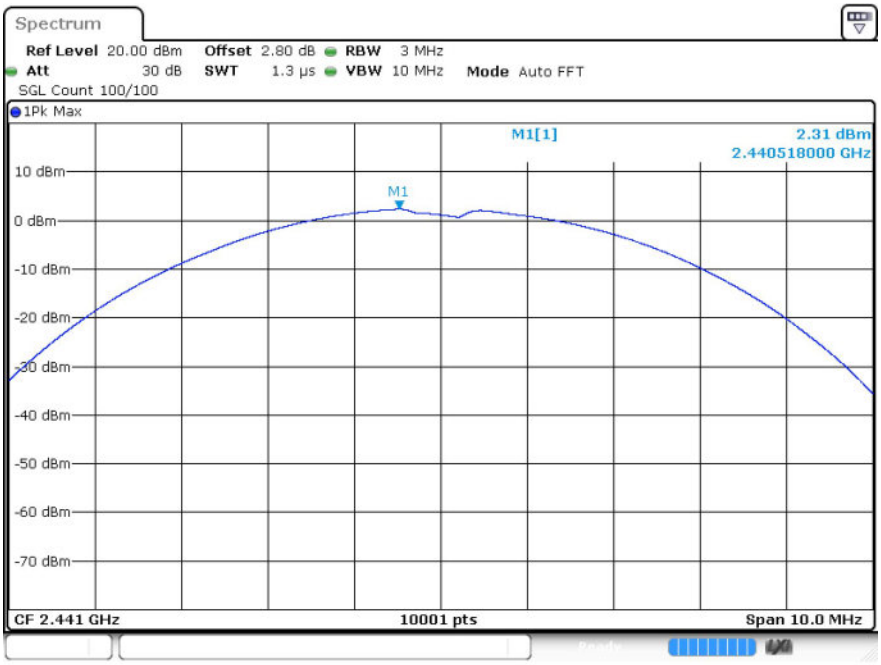
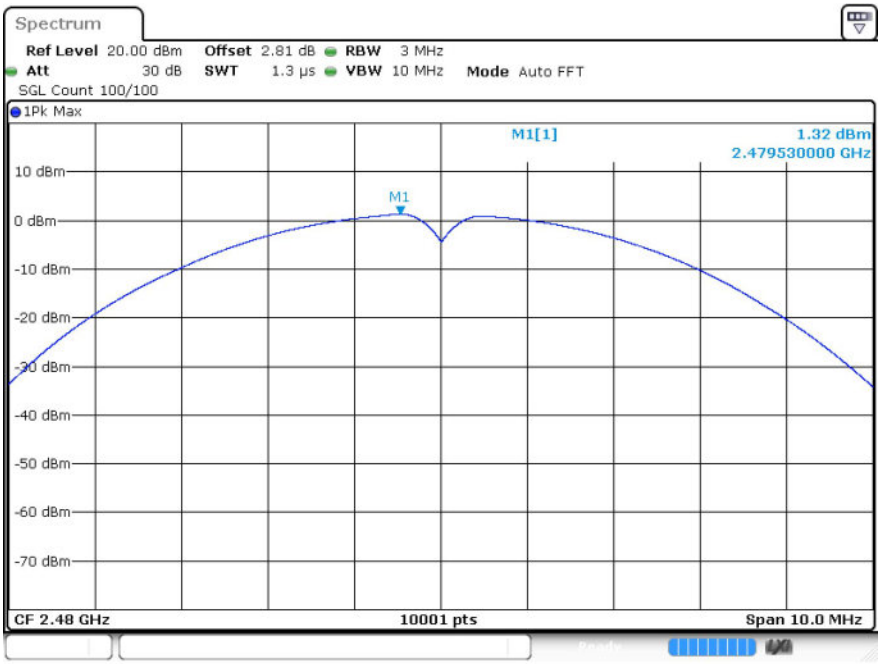
2.1 Test Result

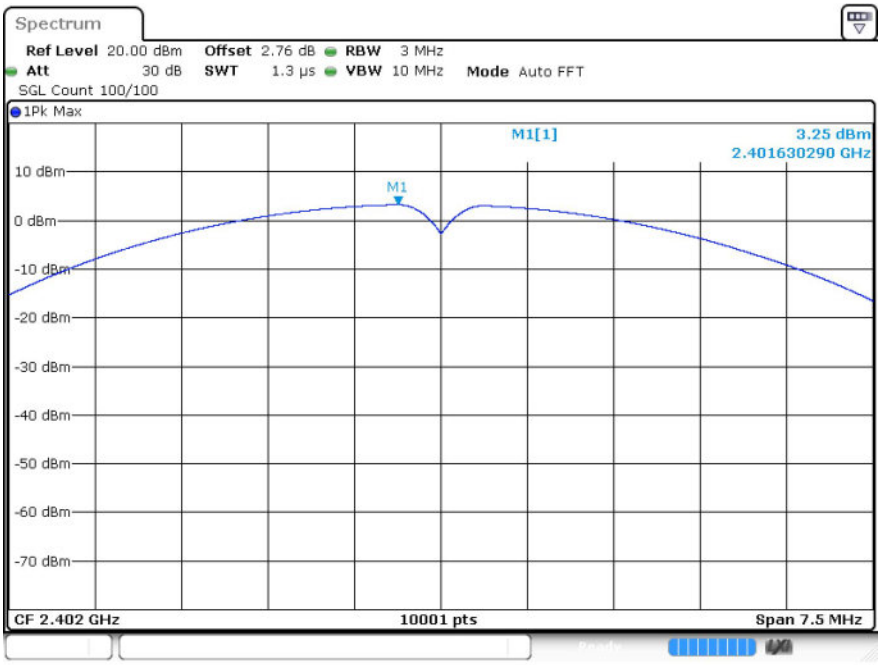
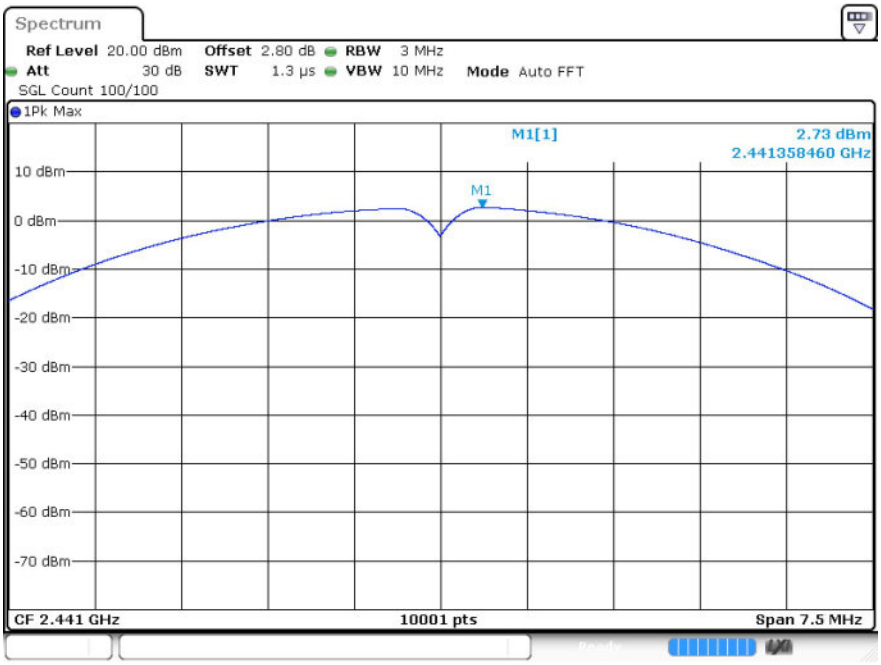
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2.62	21	Pass
	MCH	1.96	21	Pass
	HCH	1.14	21	Pass
π/4DQPSK	LCH	2.66	21	Pass
	MCH	2.31	21	Pass
	HCH	1.32	21	Pass
8DPSK	LCH	3.25	21	Pass
	MCH	2.73	21	Pass
	HCH	1.53	21	Pass

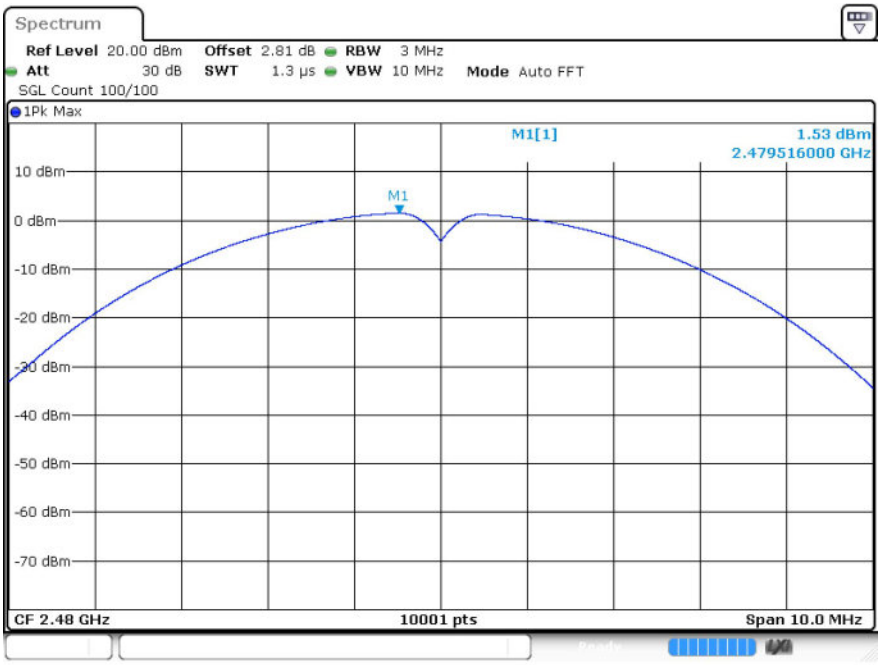
2.2 Test Graphs

Test Graphs	
GFSK/LCH	
GFSK/MCH	

GFSK/HCH	
π/4DQPSK/LCH	

π/4DQPSK/MCH	
π/4DQPSK/HCH	

8DPSK/LCH	
8DPSK/MCH	

8DPSK/HCH	

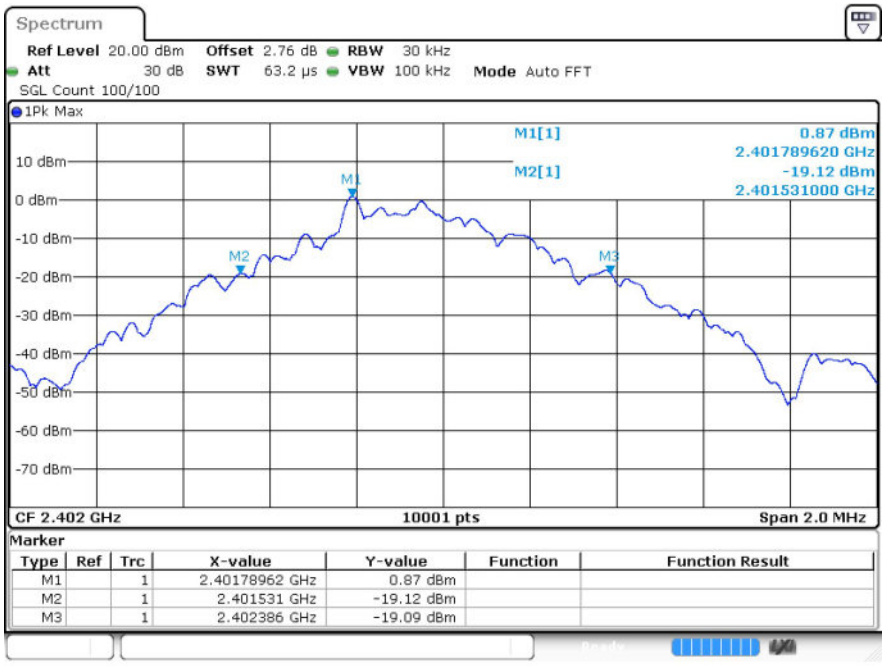
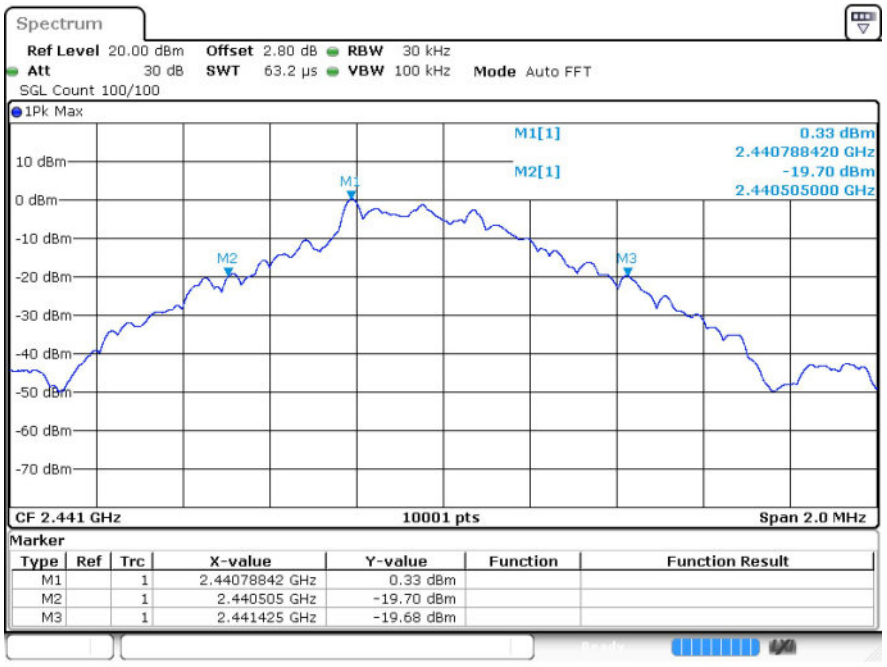
Spectrum
Ref Level 20.00 dBm Offset 2.81 dB RBW 3 MHz
Att 30 dB SWT 1.3 µs VBW 10 MHz Mode Auto FFT
SGL Count 100/100
1Pk Max
M1[1] 1.53 dBm
2.479516000 GHz
M1
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
CF 2.48 GHz
10001 pts
Span 10.0 MHz

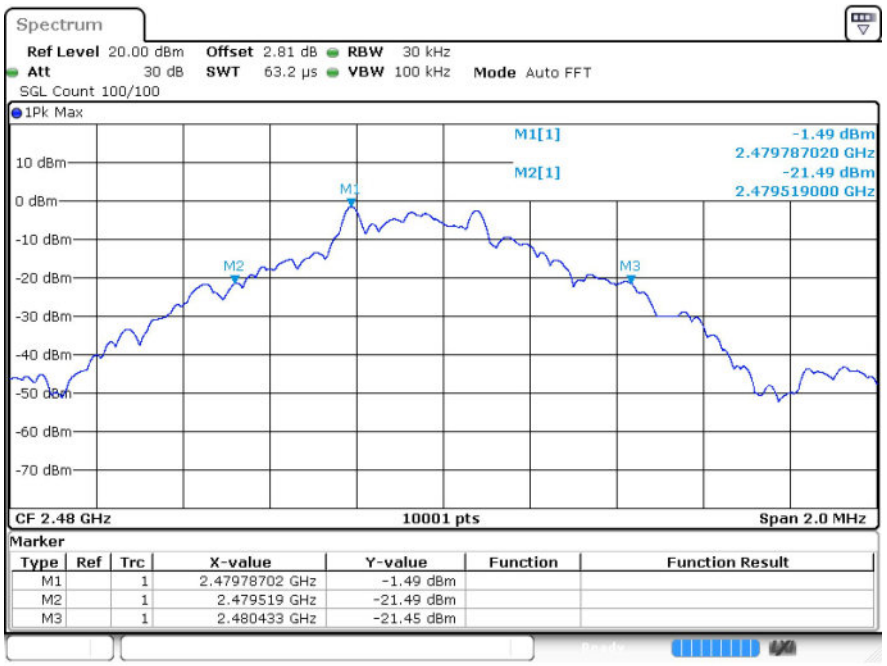
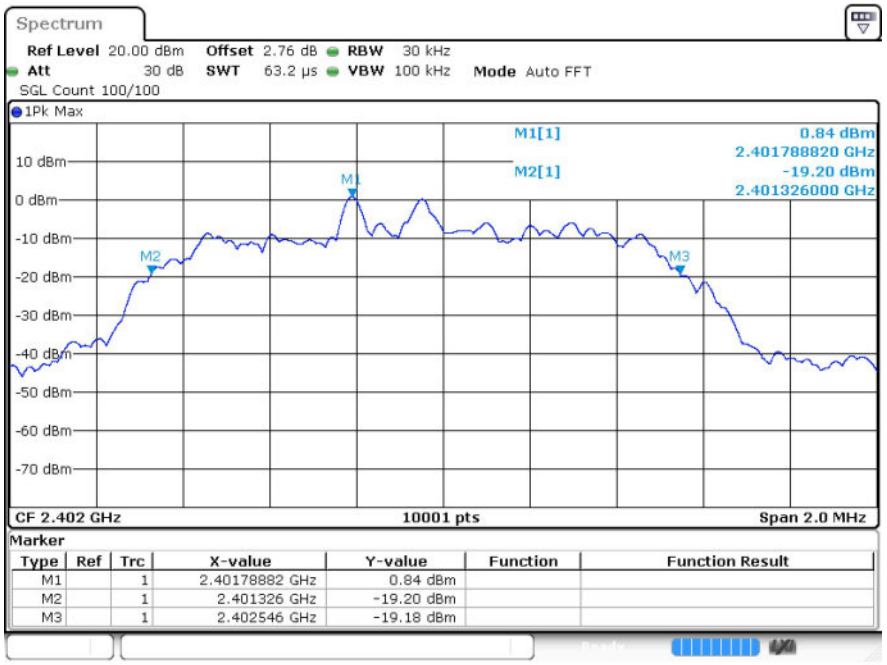
3 20dB Bandwidth

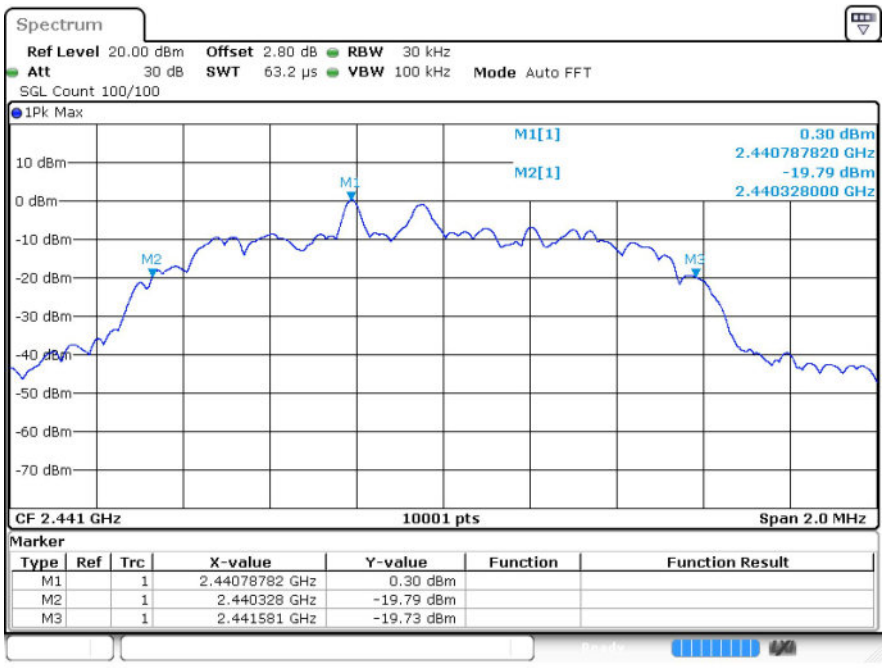
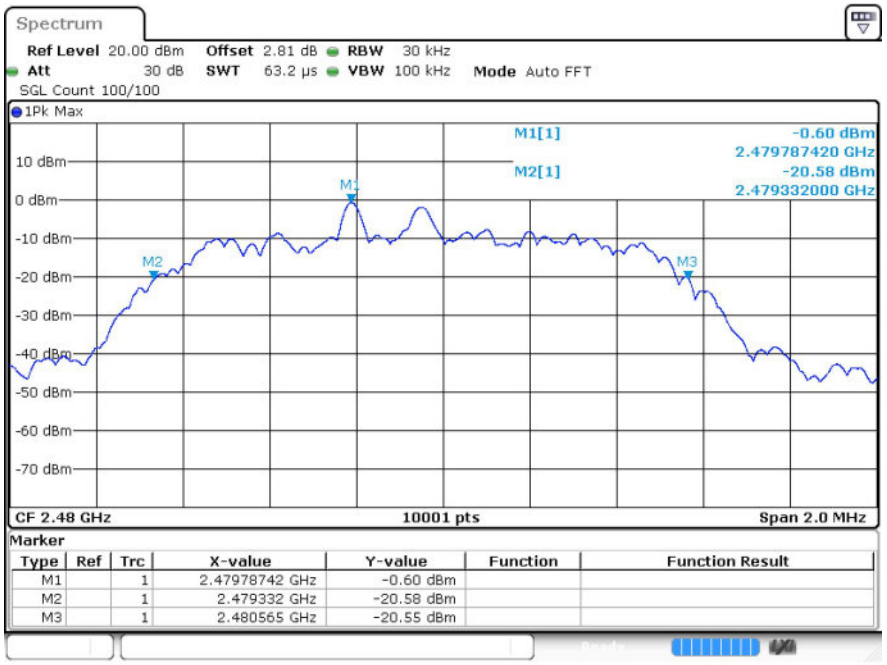
3.1 Test Result

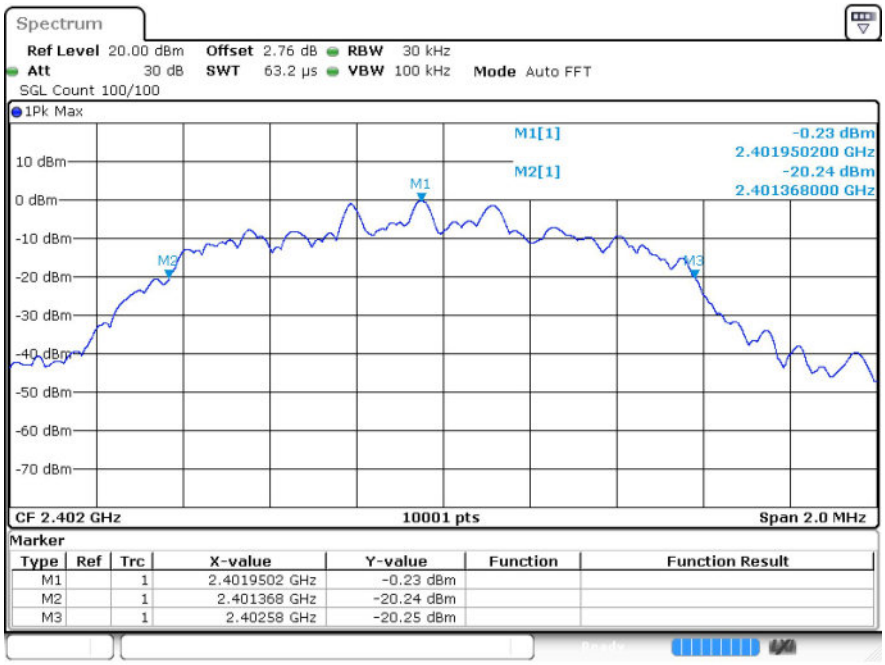
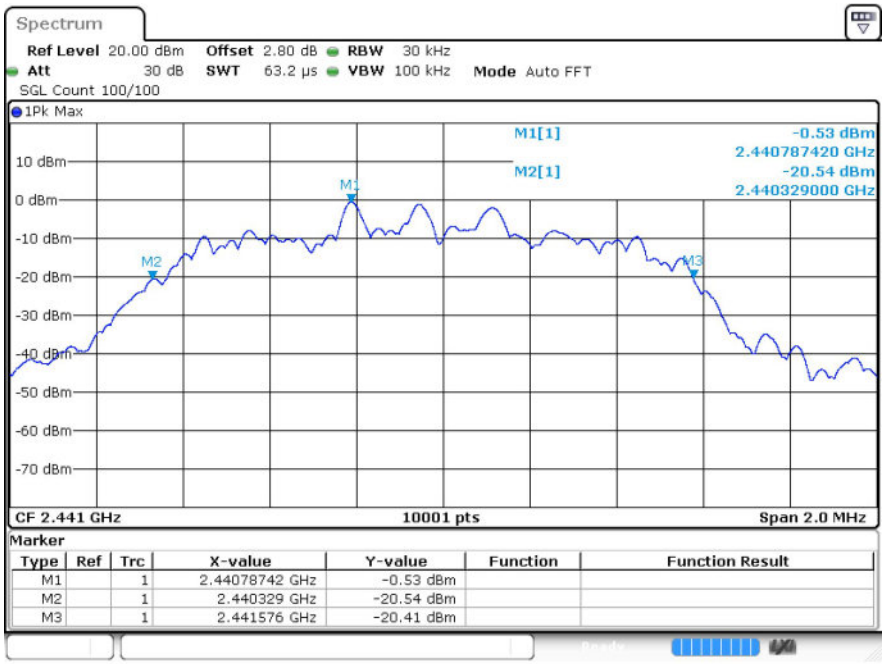
Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.856	Not Specified	Pass
	MCH	0.92	Not Specified	Pass
	HCH	0.914	Not Specified	Pass
π/4DQPSK	LCH	1.22	Not Specified	Pass
	MCH	1.252	Not Specified	Pass
	HCH	1.233	Not Specified	Pass
8DPSK	LCH	1.212	Not Specified	Pass
	MCH	1.247	Not Specified	Pass
	HCH	1.217	Not Specified	Pass

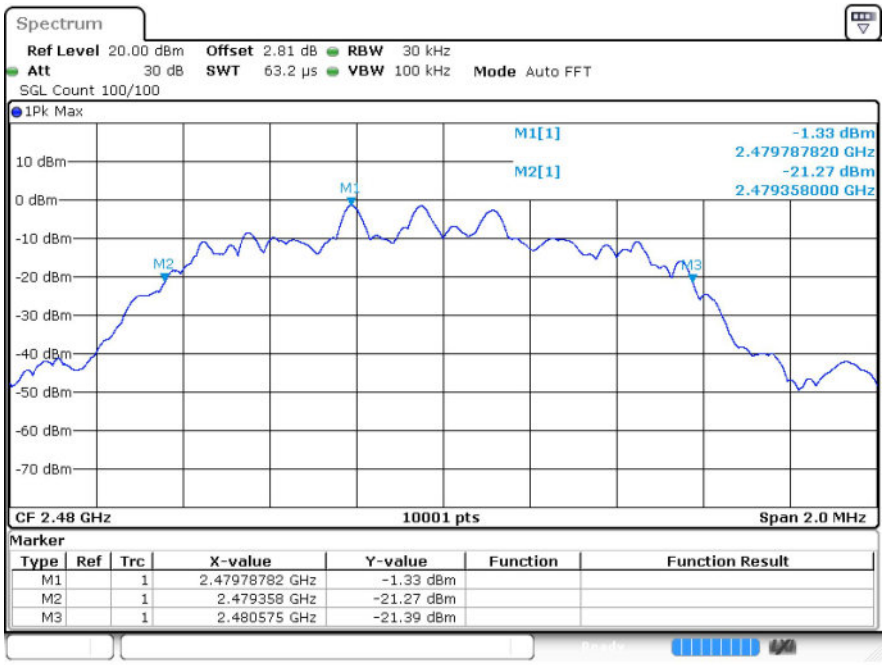
3.2 Test Graphs

Test Graphs	
GFSK/LCH	
GFSK/MCH	

GFSK/HCH	
π/4DQPSK/LCH	

π/4DQPSK/MCH	
π/4DQPSK/HCH	

8DPSK/LCH	
8DPSK/MCH	

8DPSK/HCH	

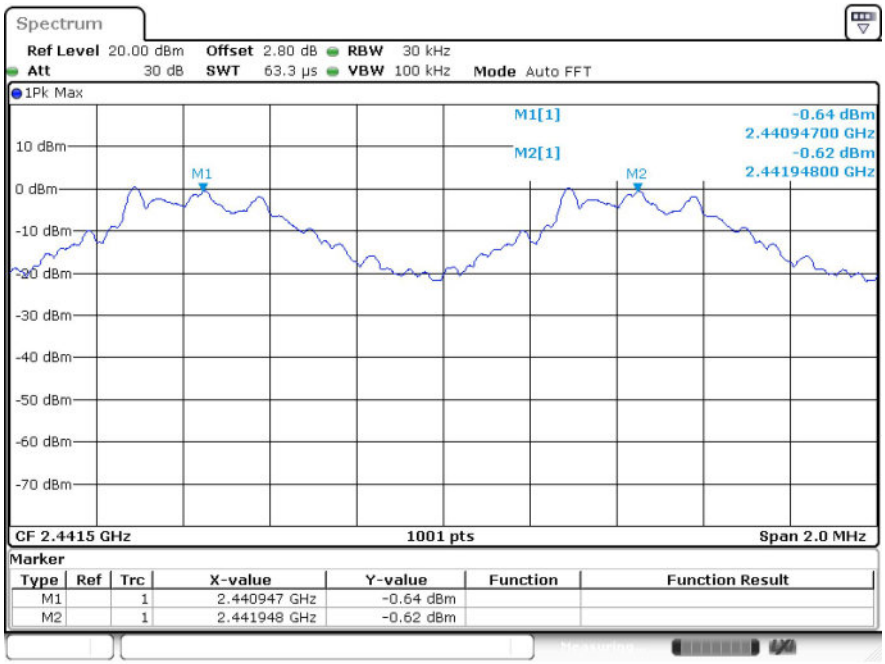
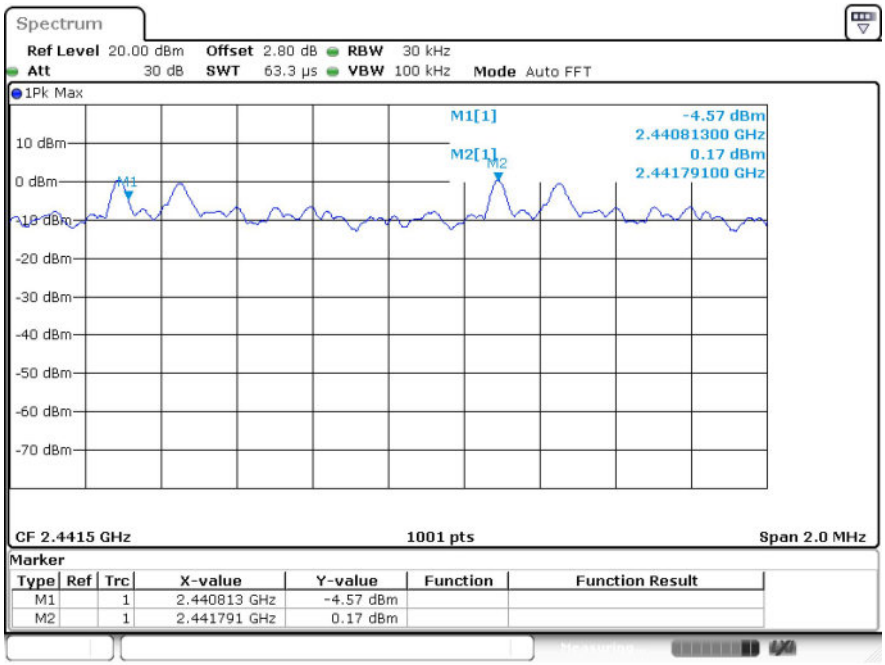
Spectrum
Ref Level 20.00 dBm Offset 2.81 dB RBW 30 kHz
Att 30 dB SWT 63.2 µs VBW 100 kHz Mode Auto FFT
SGL Count 100/100
1Pk Max
M1[1] -1.33 dBm
2.479787820 GHz
M2[1] -21.27 dBm
2.479358000 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
CF 2.48 GHz
10001 pts
Span 2.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.47978782 GHz -1.33 dBm
M2 1 2.479358 GHz -21.27 dBm
M3 1 2.480575 GHz -21.39 dBm

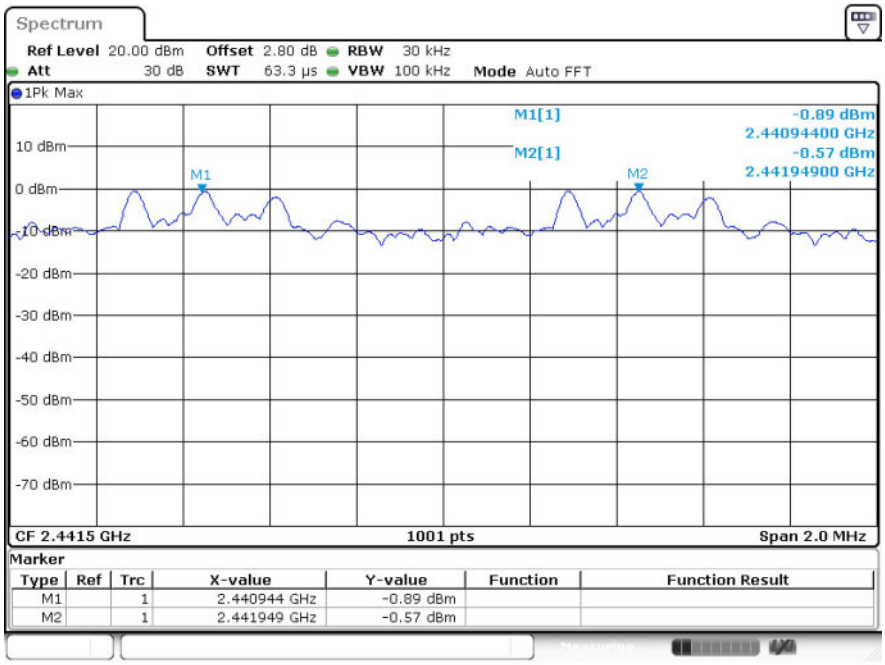
4 Carrier Frequency Separation

4.1 Test Result

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	MCH	1.001	0.613	Pass
π/4DQPSK	MCH	0.978	0.835	Pass
8DPSK	MCH	1.005	0.831	Pass

4.2 Test Graphs

Test Graphs	
GFSK/MCH	
π/4DQPSK/MCH	

8DPSK/MCH	

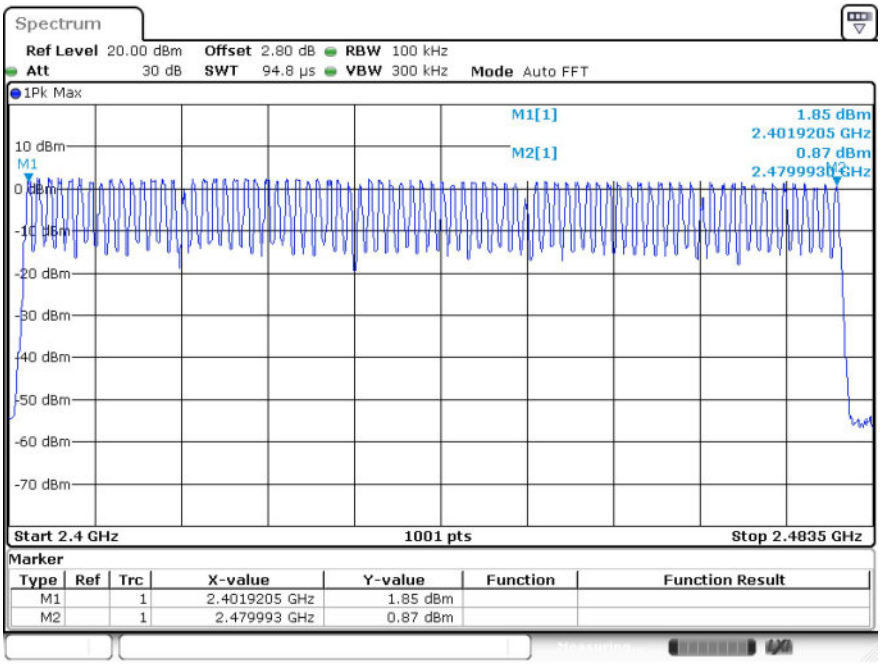
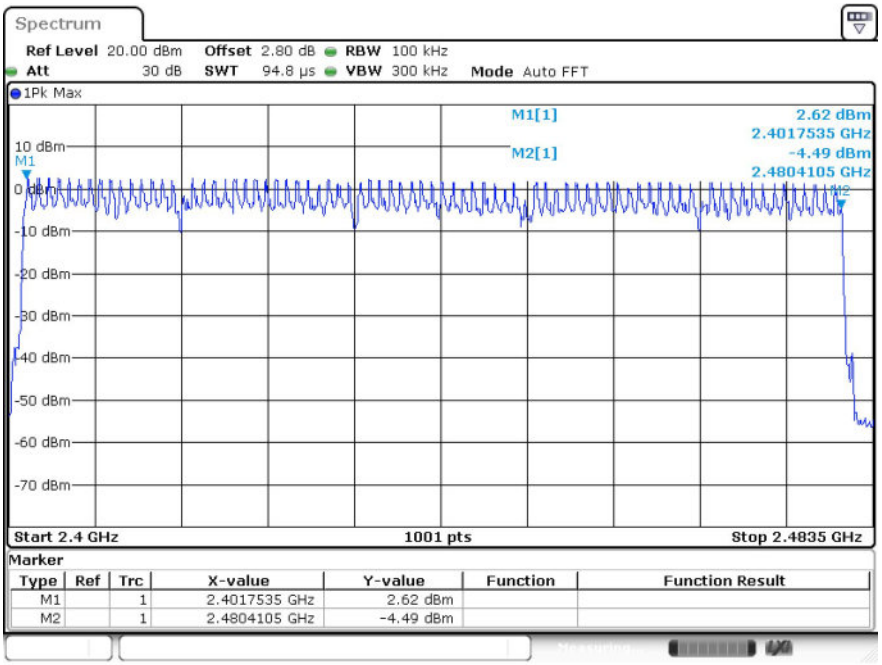
Spectrum
Ref Level 20.00 dBm Offset 2.80 dB RBW 30 kHz
Att 30 dB SWT 63.3 µs VBW 100 kHz Mode Auto FFT
1Pk Max
M1[1] -0.89 dBm
2.44094400 GHz
M2[1] -0.57 dBm
2.44194900 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
M2
CF 2.4415 GHz
1001 pts
Span 2.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.440944 GHz -0.89 dBm
M2 1 2.441949 GHz -0.57 dBm

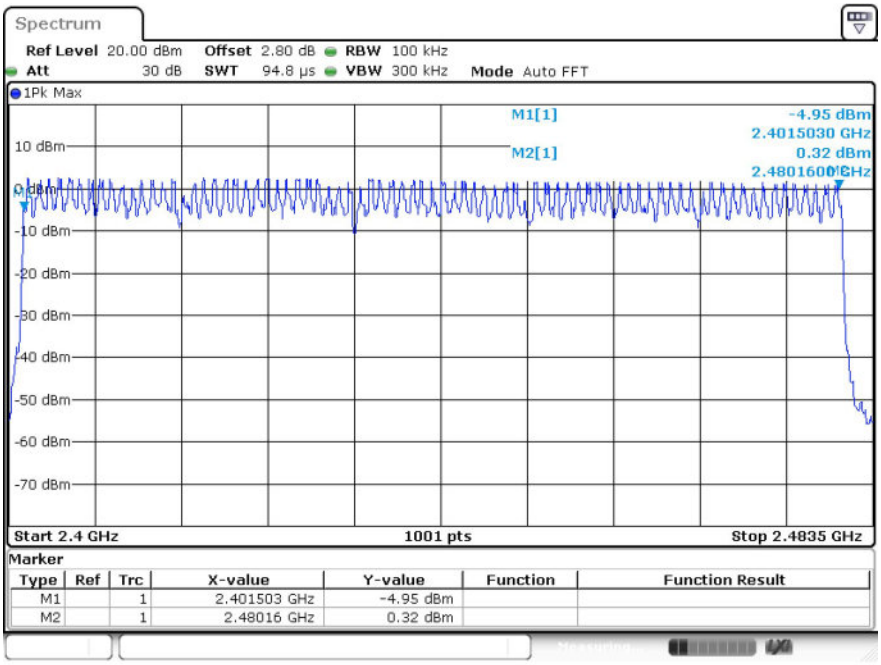
5 Hopping Channel Number

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	

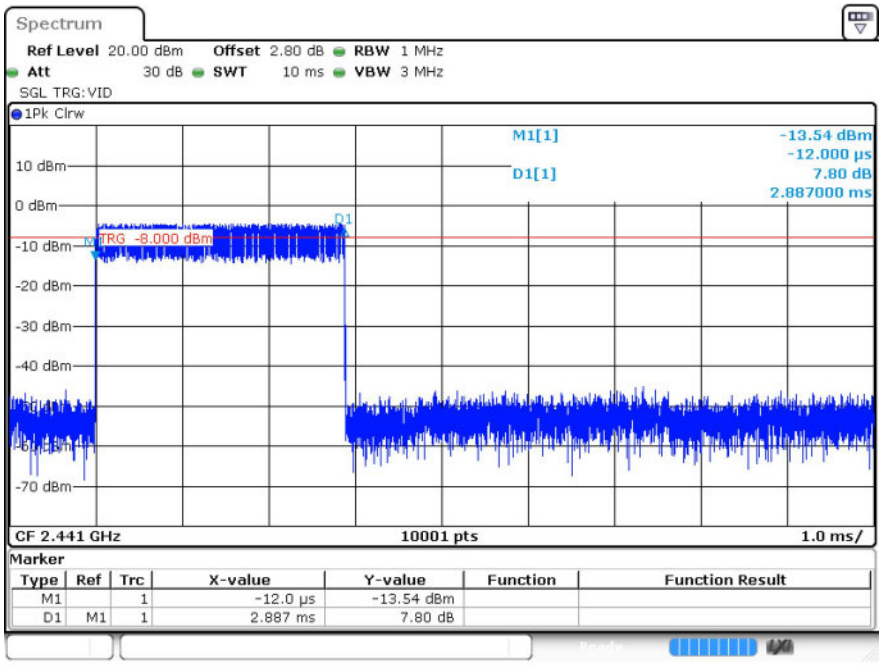
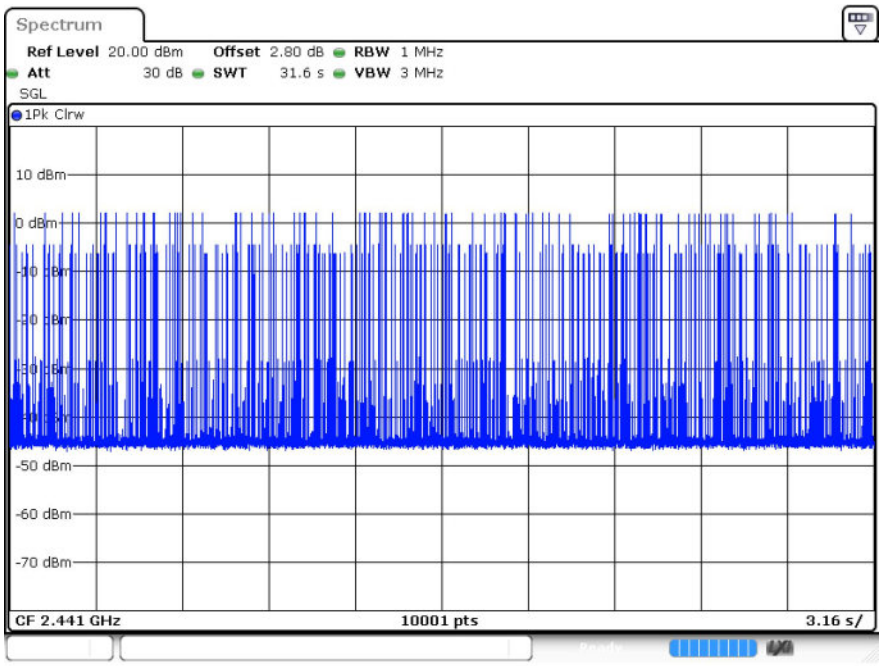
Spectrum
Ref Level 20.00 dBm Offset 2.80 dB RBW 100 kHz
Att 30 dB SWT 94.8 µs VBW 300 kHz Mode Auto FFT
1Pk Max
M1[1] -4.95 dBm
2.4015030 GHz
M2[1] 0.32 dBm
2.4801600 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
Start 2.4 GHz
1001 pts
Stop 2.4835 GHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.401503 GHz -4.95 dBm
M2 1 2.48016 GHz 0.32 dBm

6 Dwell Time

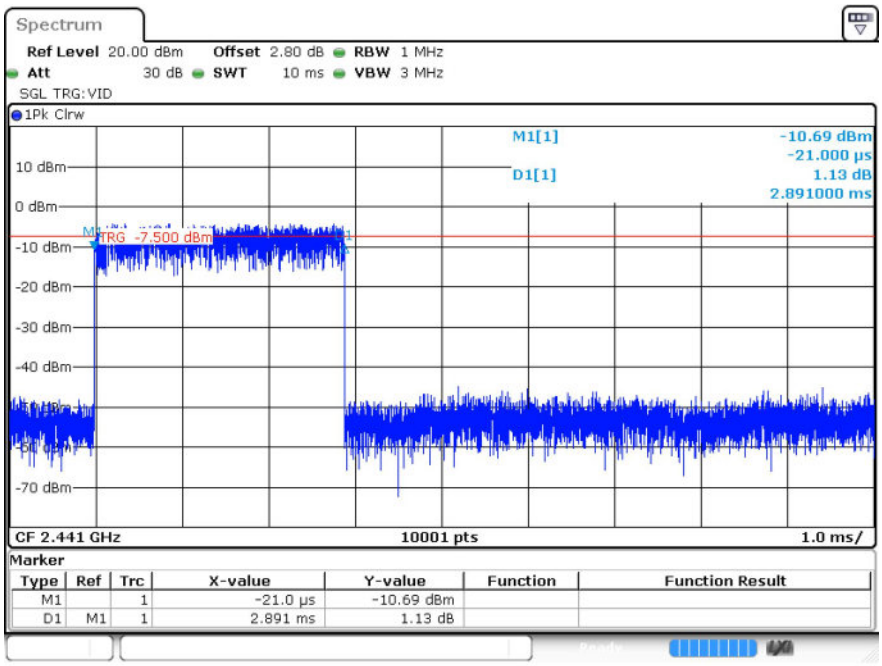
6.1 Test Result

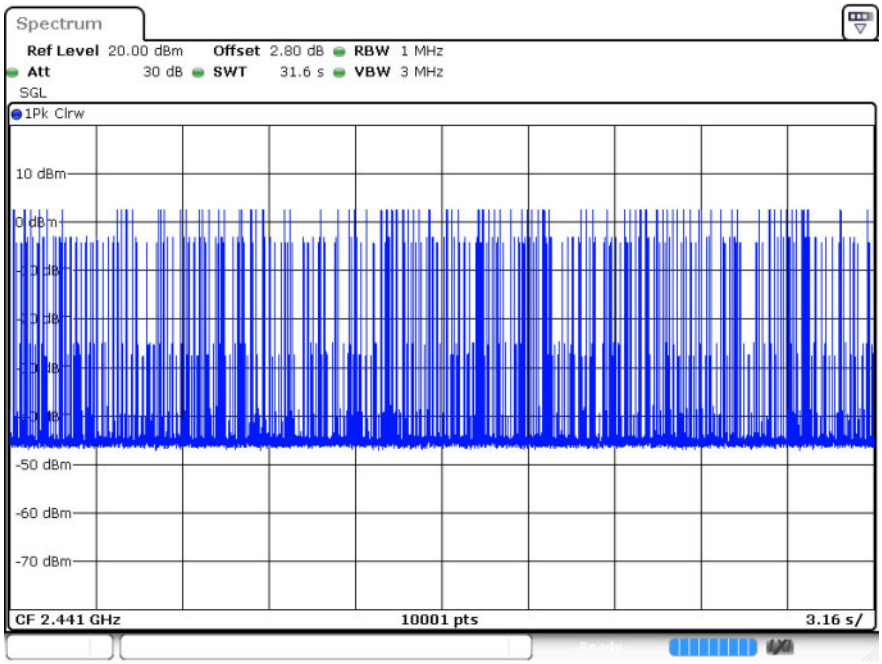
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[ms]	Limit [s]	Verdict
GFSK	DH5	MCH	2.887	99	285.813	0.4	Pass
π/4DQPSK	2DH5	MCH	2.891	111	320.901	0.4	Pass
8DPSK	3DH5	MCH	2.893	111	321.123	0.4	Pass

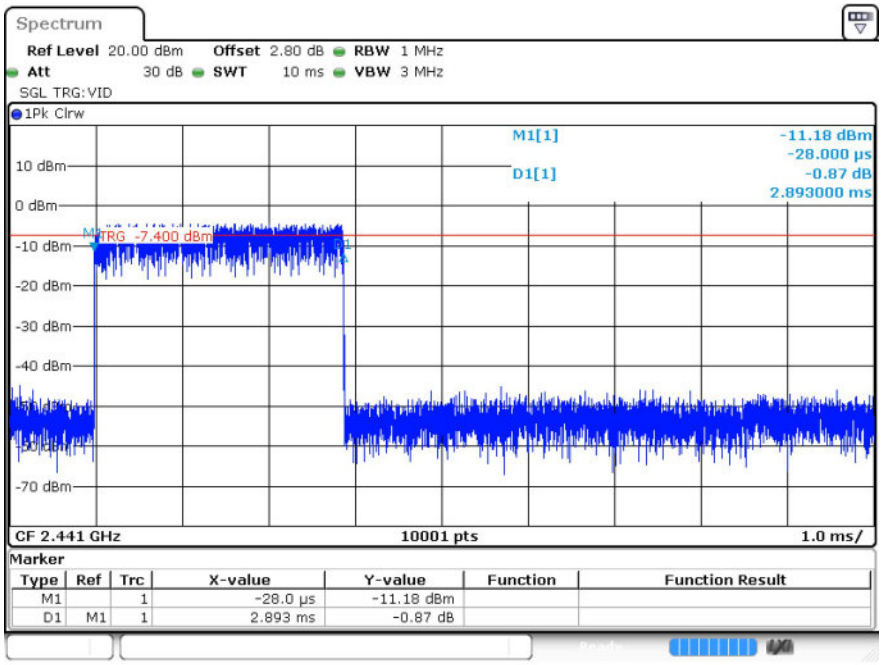
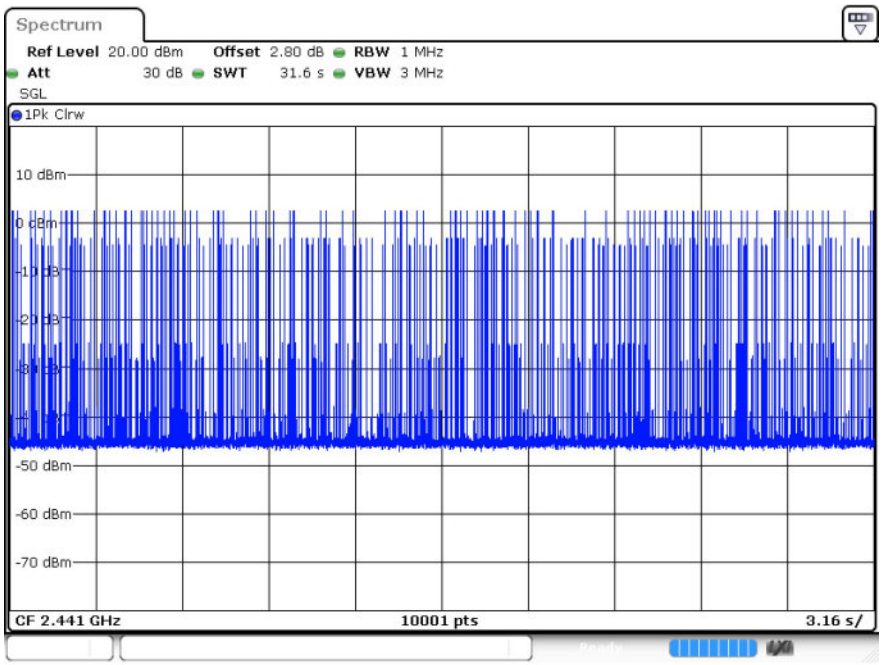
6.2 Test Graphs

Test Graphs	
GFSK_DH5/MCH	 

π/4DQPSK
_2DH5/MCH





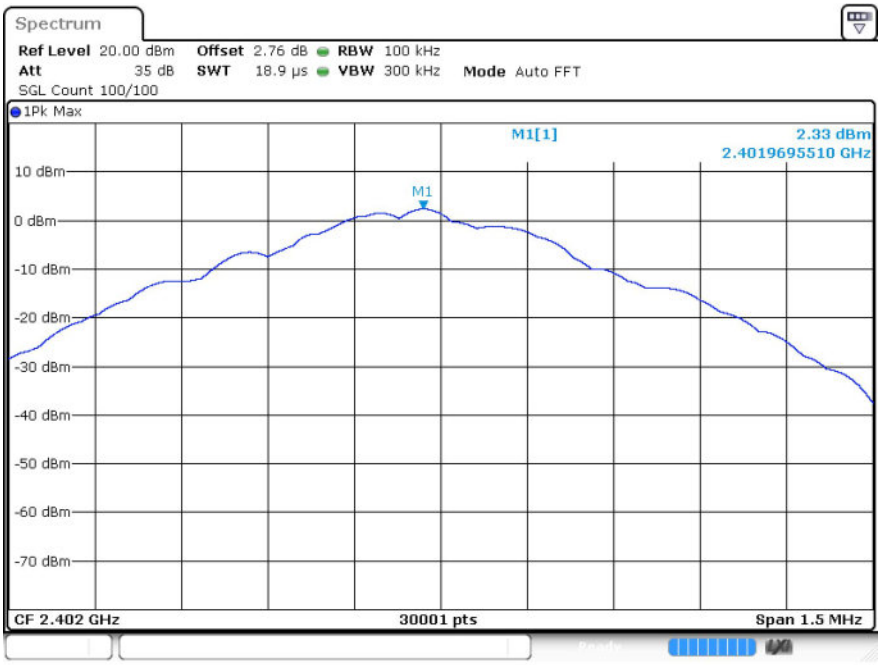
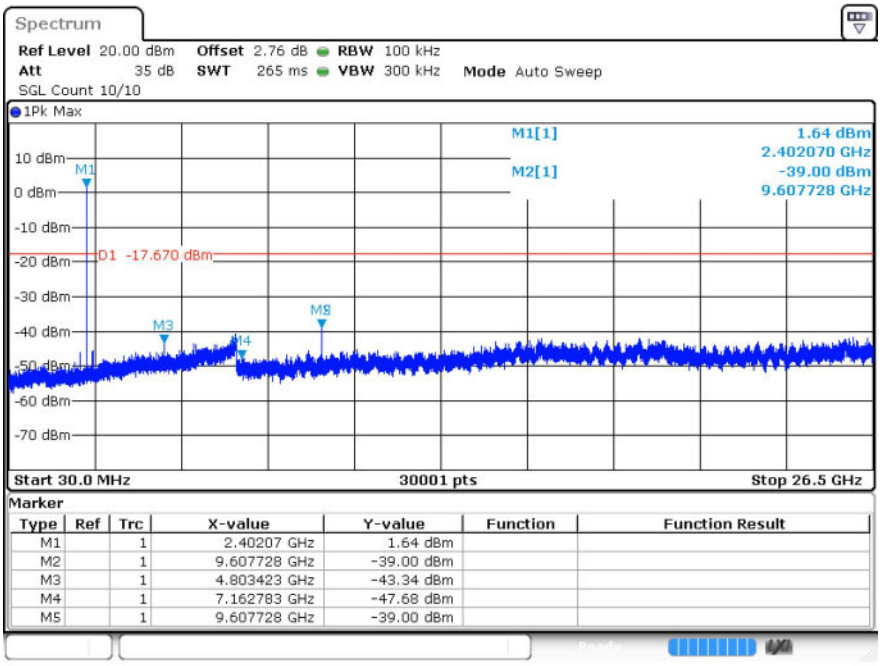
8DPSK _3DH5/MCH	 

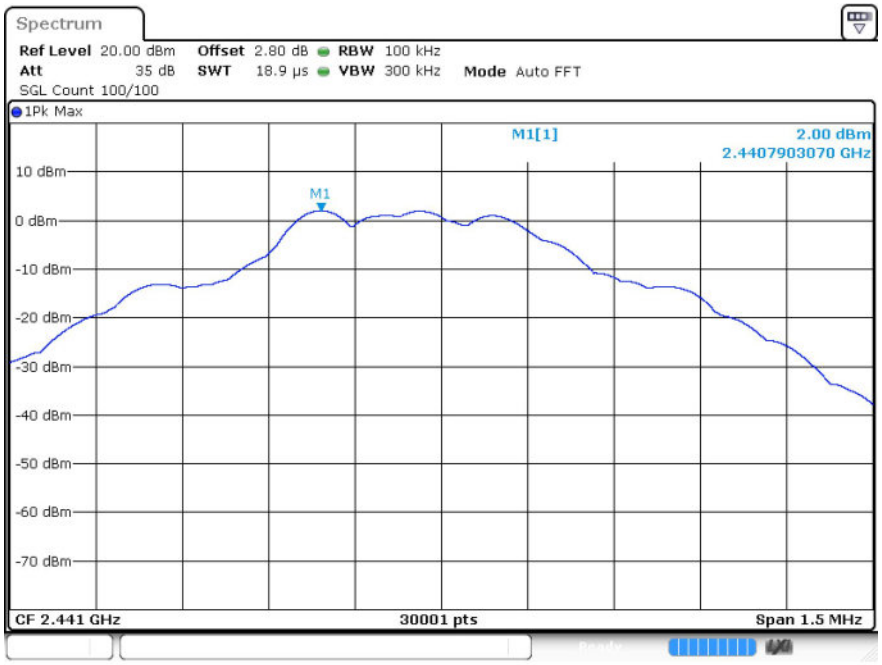
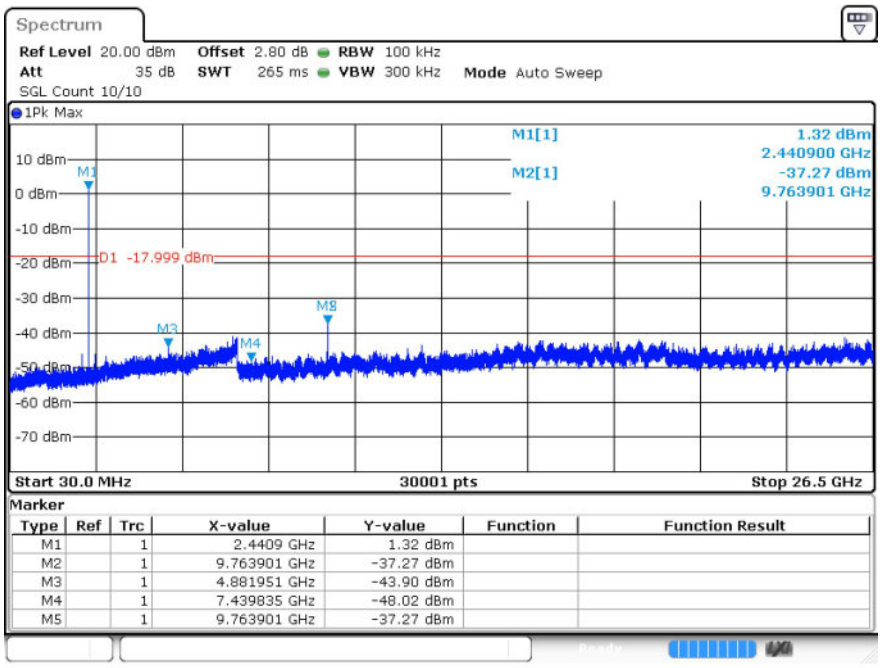
7 RF Conducted Spurious Emissions

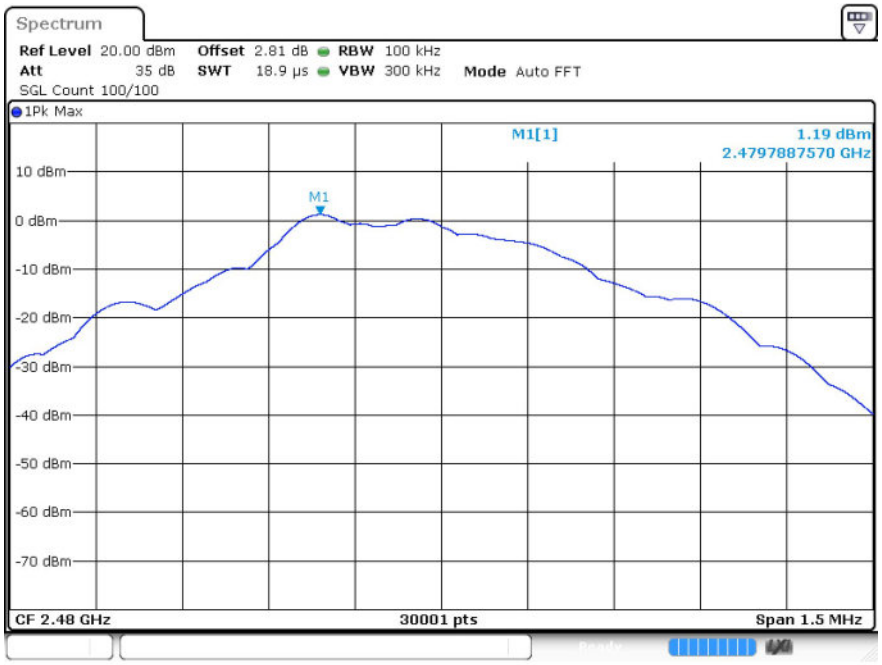
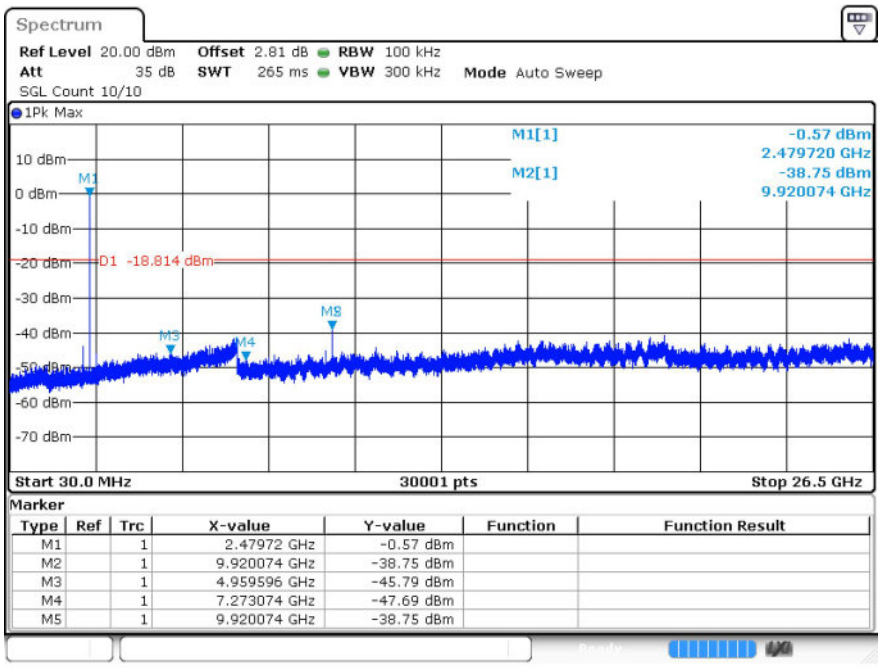
7.1 Test Result

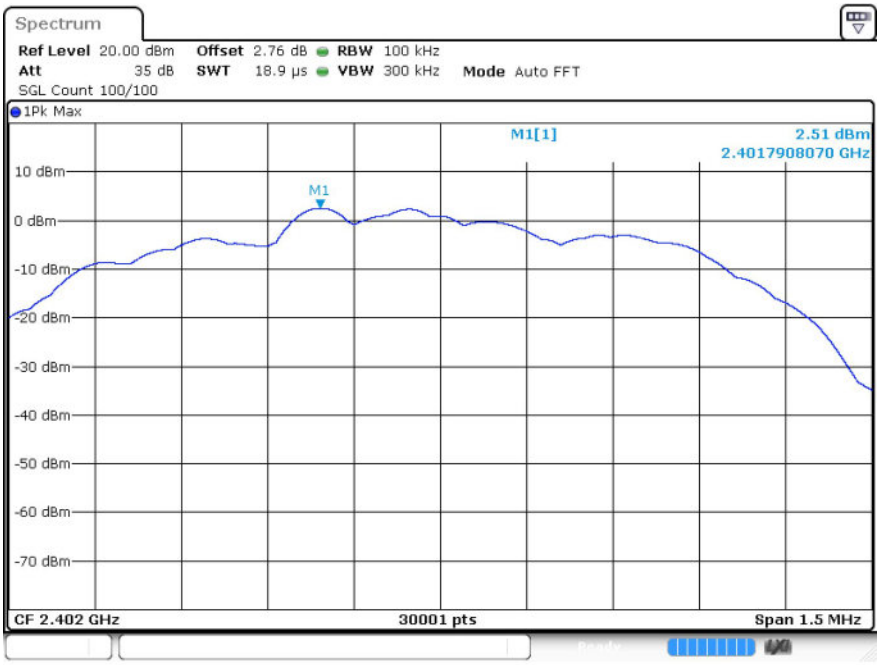
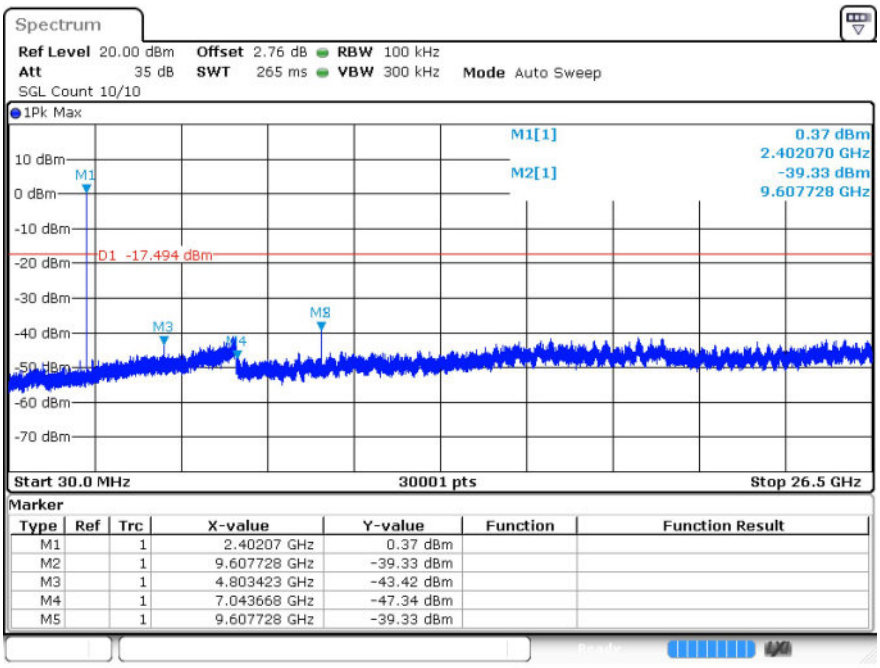
Mode	Channel	Max. Level [dBc]	Limit [dBc]	Verdict
GFSK	LCH	-41.32	-20	Pass
	MCH	-39.26	-20	Pass
	HCH	-39.93	-20	Pass
π/4DQPSK	LCH	-41.83	-20	Pass
	MCH	-40.57	-20	Pass
	HCH	-39.14	-20	Pass
8DPSK	LCH	-40.84	-20	Pass
	MCH	-39.48	-20	Pass
	HCH	-39.63	-20	Pass

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	

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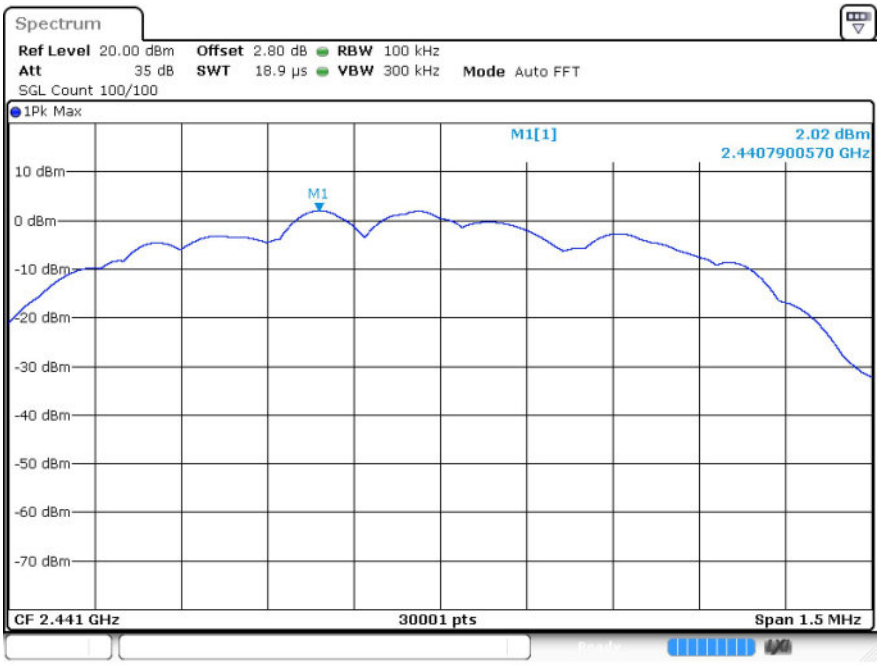
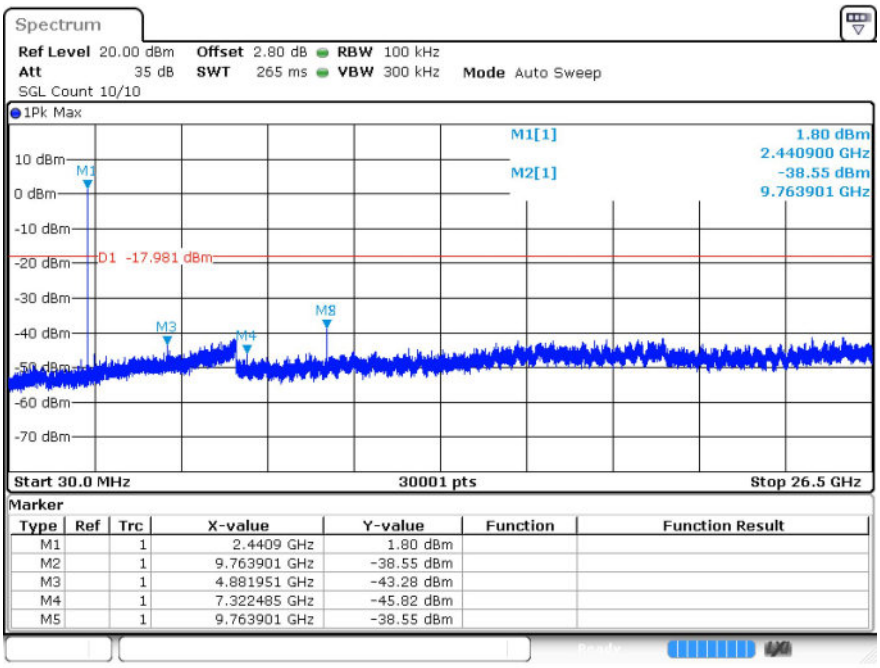
Pref	
Puw	

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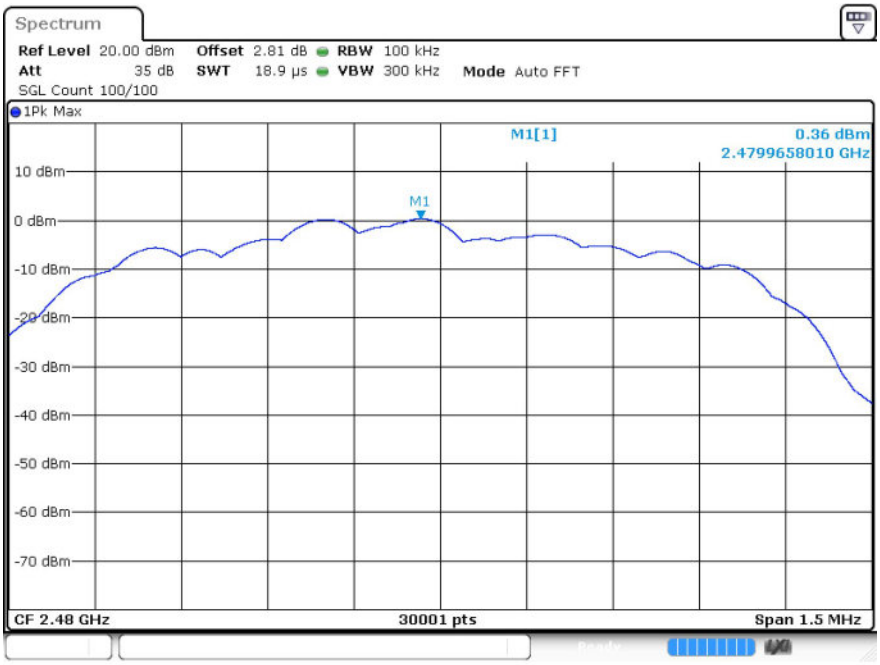
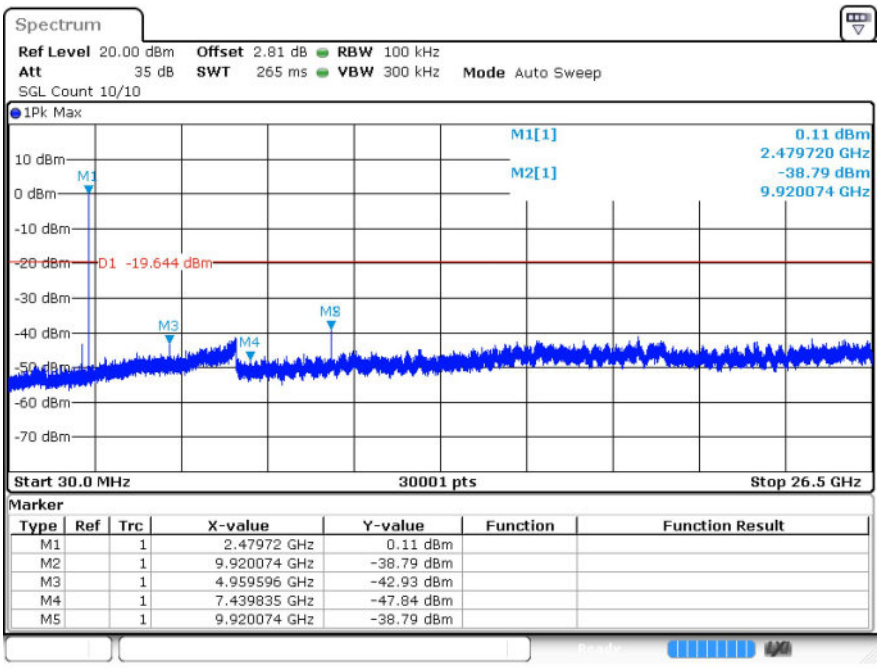
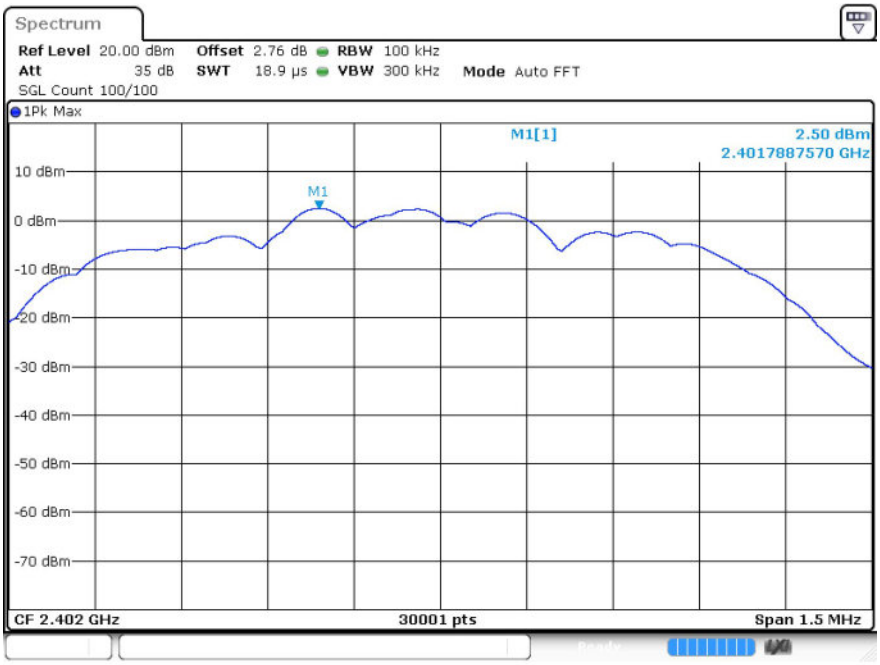
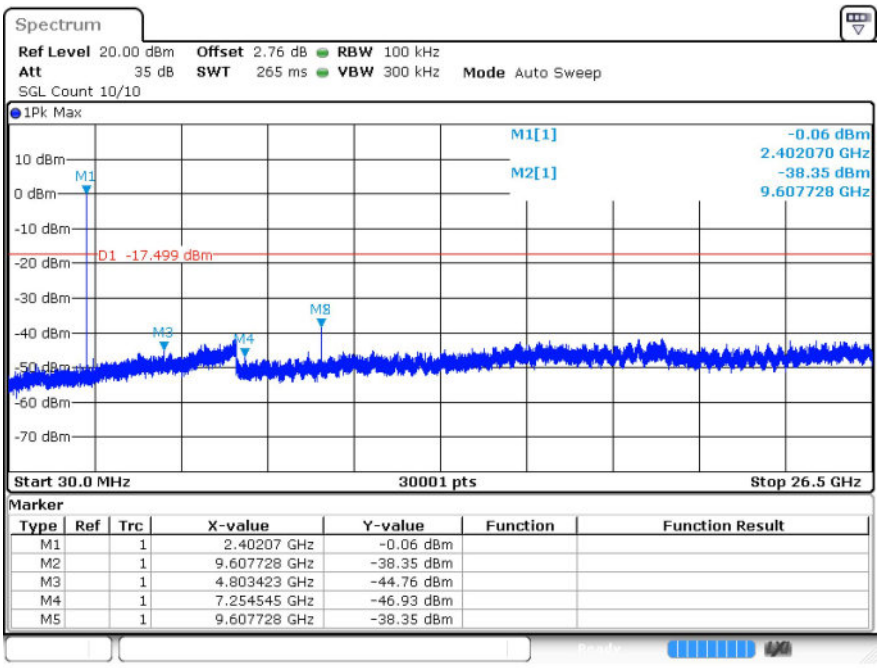
Pref	
Puw	

8DPSK_LCH_Graphs	
Pref	
Puw	

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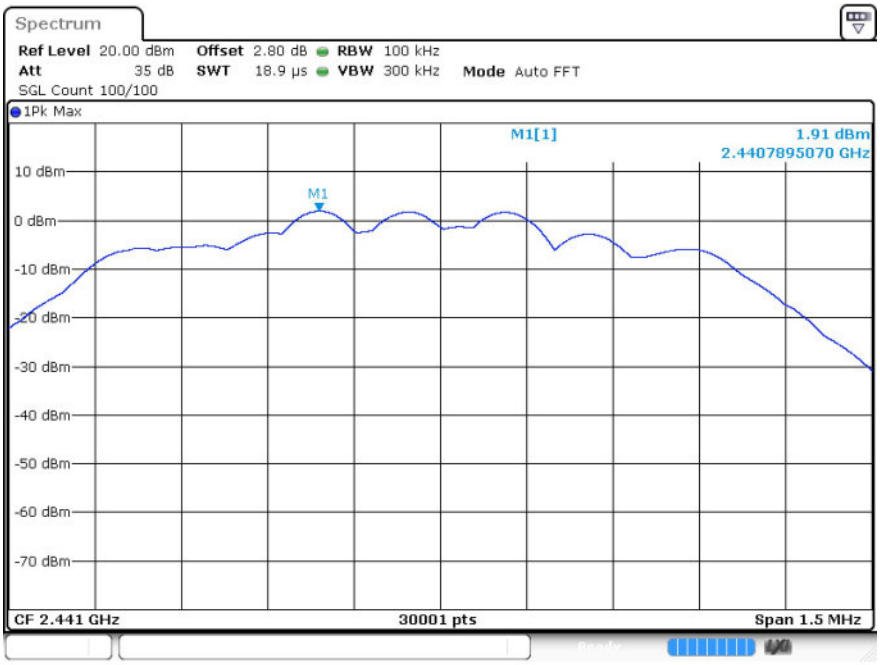
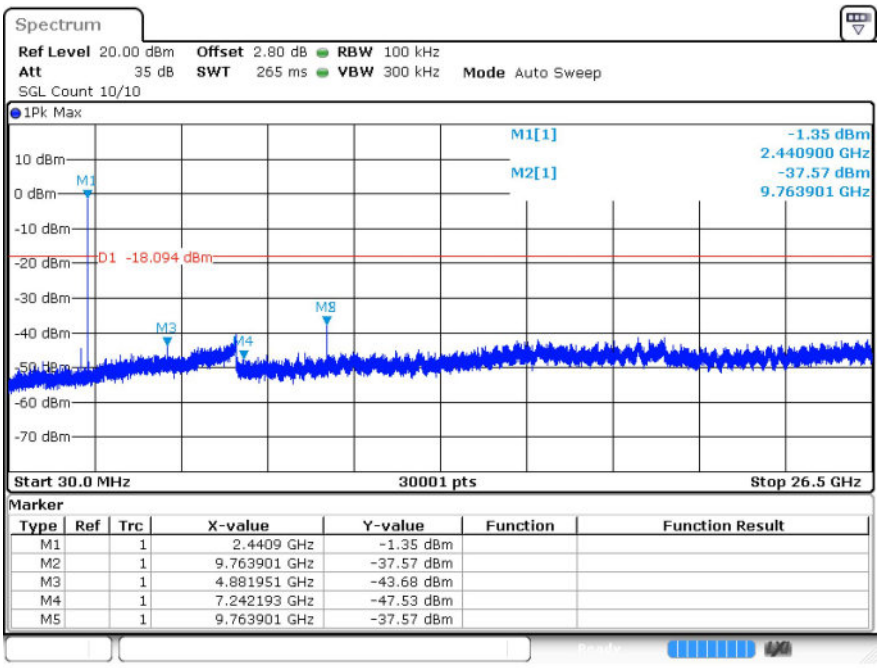
Pref	
Puw	

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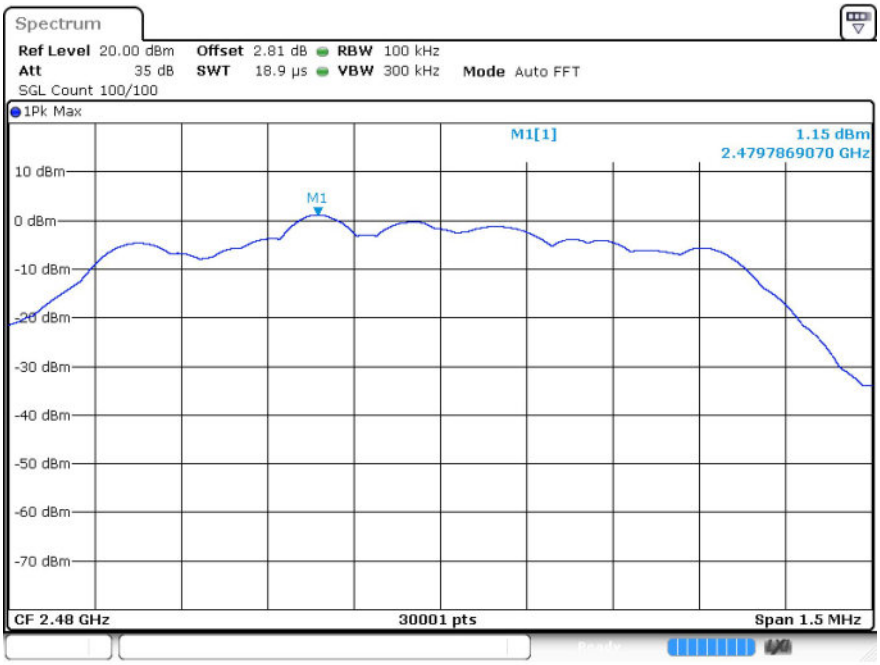
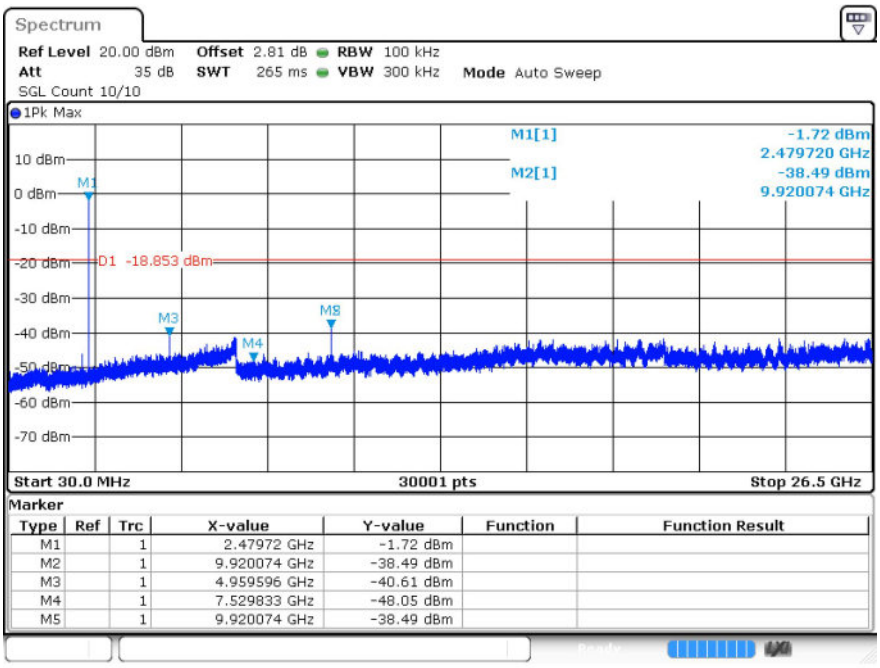
Pref	
Puw	

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	-57.76	-20	Pass
			On	-53.1	-20	Pass
	HCH	2480	Off	-56.29	-20	Pass
			On	-53.17	-20	Pass
π/4DQPSK	LCH	2402	Off	-55.96	-20	Pass
			On	-53	-20	Pass
	HCH	2480	Off	-55.99	-20	Pass
			On	-52.99	-20	Pass
8DPSK	LCH	2402	Off	-57.44	-20	Pass
			On	-52.09	-20	Pass
	HCH	2480	Off	-54.52	-20	Pass
			On	-52.48	-20	Pass