Appendix A

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

Product Name: Bluetooth Speaker

Trade Mark: ROYQUEEN

Test Model: G180

Environmental Conditions

Temperature:	25.4℃
Relative Humidity:	52.3%
ATM Pressure:	101Kpa
Test Engineer:	Simba Huang
Supervised by:	Seal Chen

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1 Duty Cycle

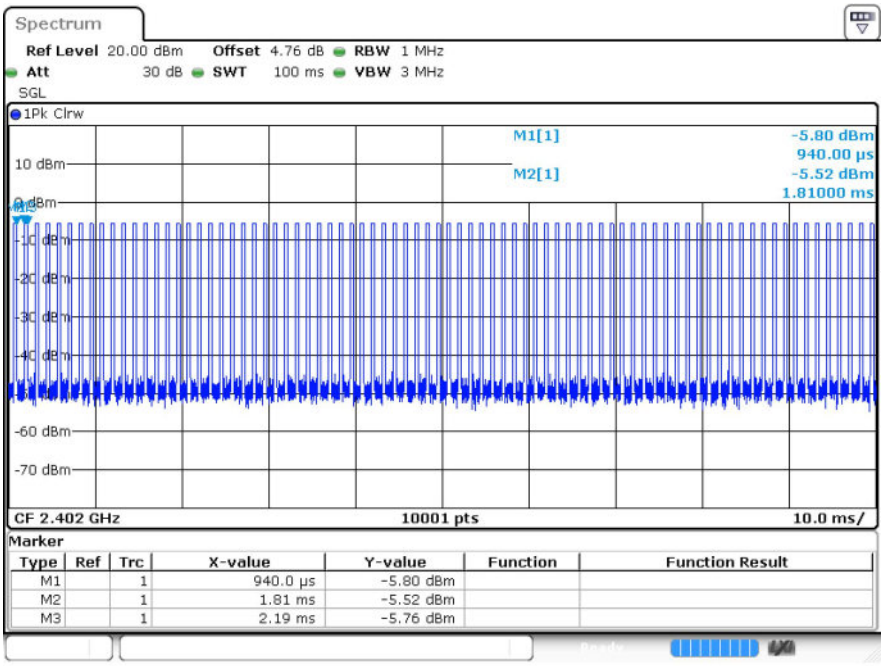
1.1 Test Result

Mode	Frequency (MHz)	Duty Cycle (%)	1/T (kHz)
1-DH1	2402	31.2	2.63
1-DH1	2441	30.4	2.7
1-DH1	2480	31.21	2.63
2-DH1	2402	31.2	2.63
2-DH1	2441	31.21	2.63
2-DH1	2480	32.01	2.56
3-DH1	2402	32.01	2.56
3-DH1	2441	32	2.56
3-DH1	2480	32	2.56

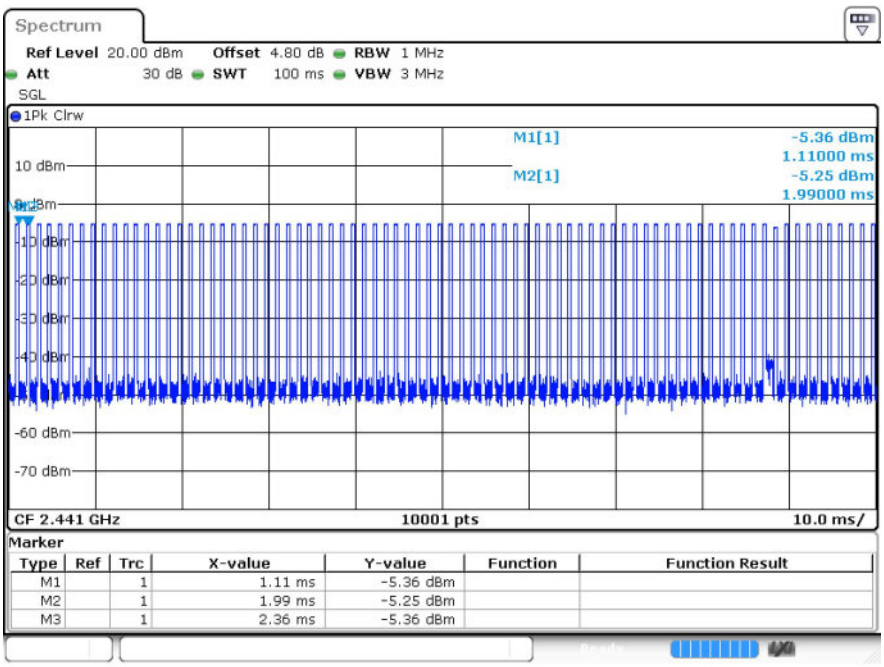
1.2 Test Graphs

Test Graphs

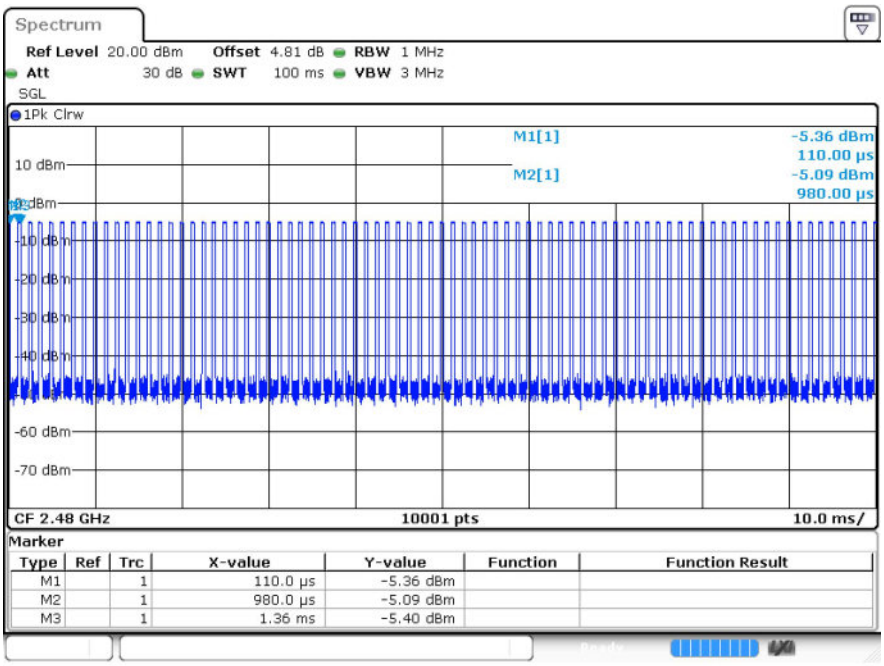
1-DH1 2402MHz



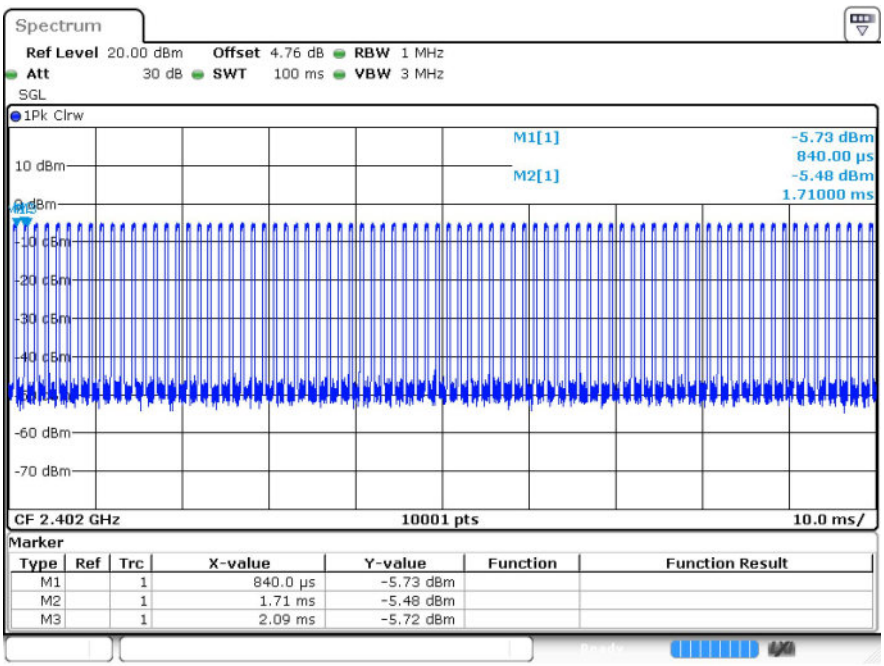
1-DH1 2441MHz



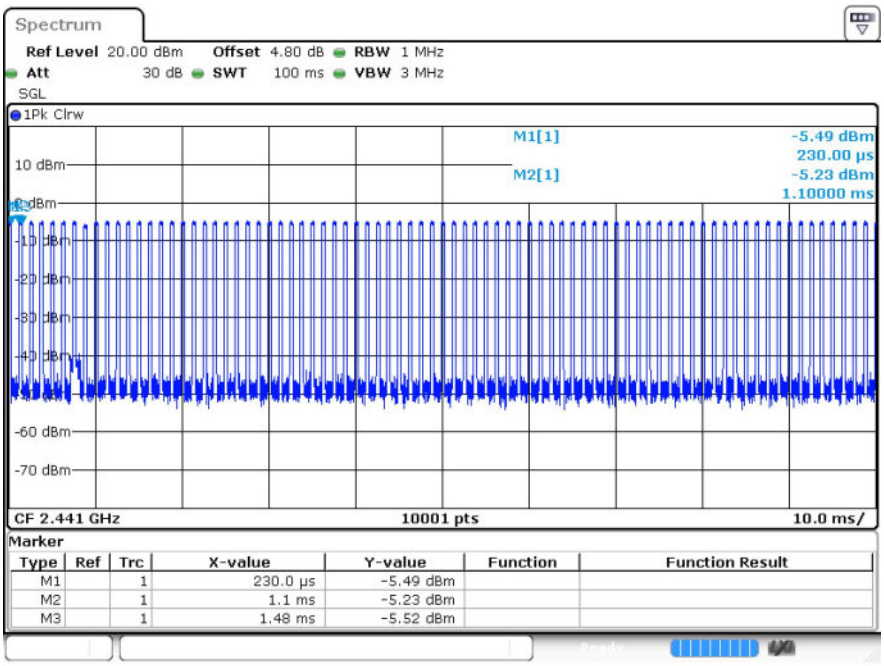
1-DH1 2480MHz



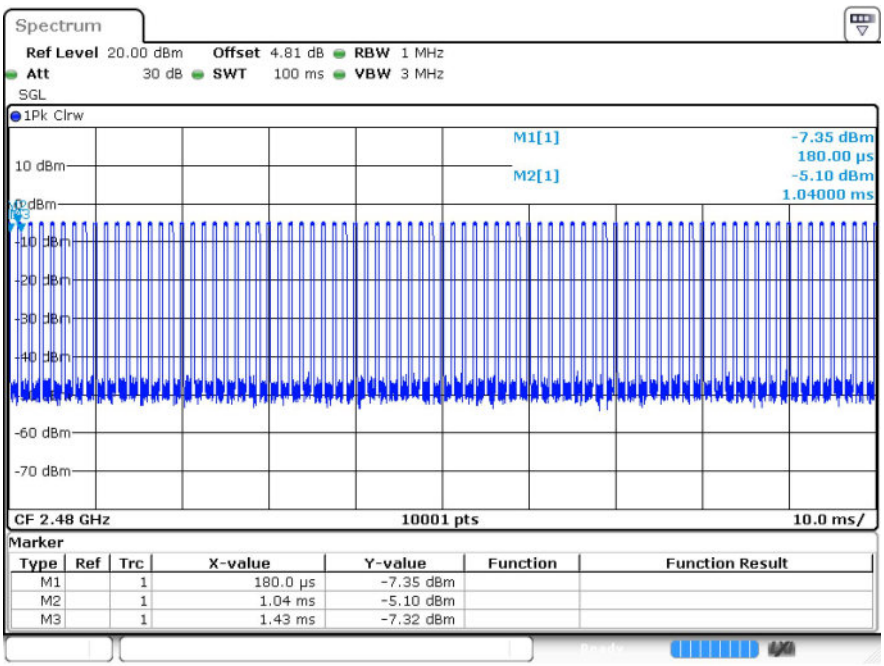
2-DH1 2402MHz



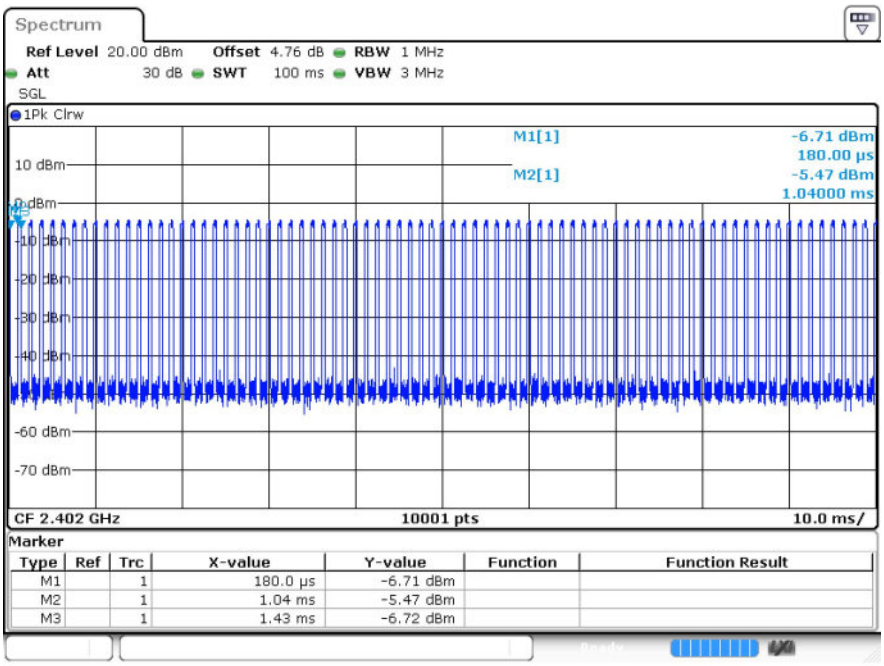
2-DH1 2441MHz



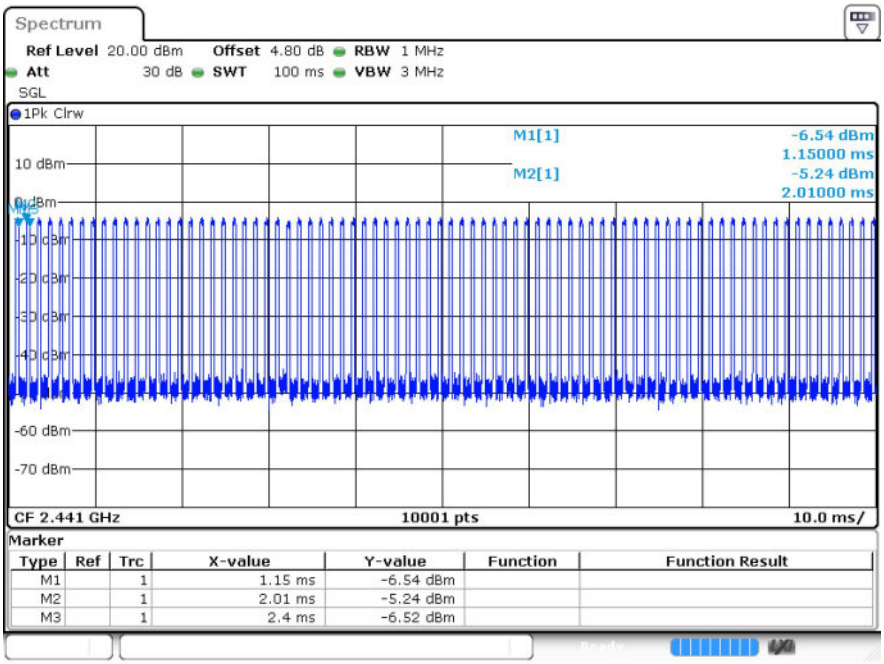
2-DH1 2480MHz



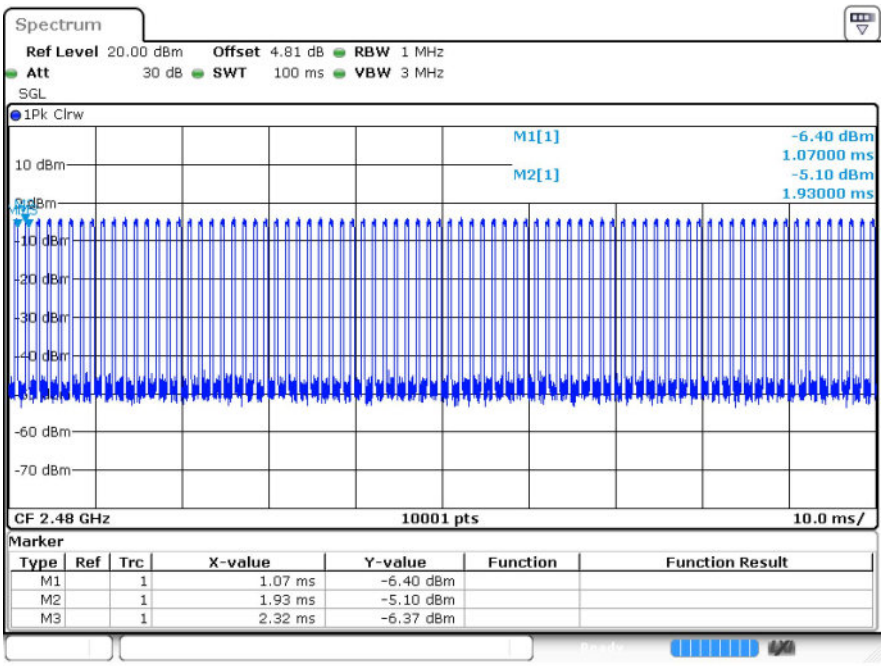
3-DH1 2402MHz



3-DH1 2441MHz



3-DH1 2480MHz

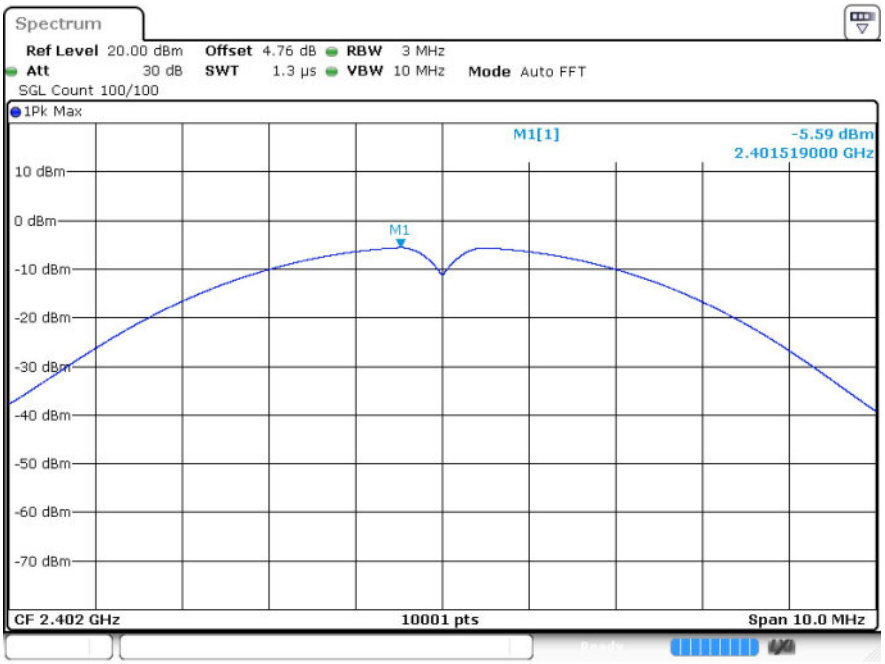
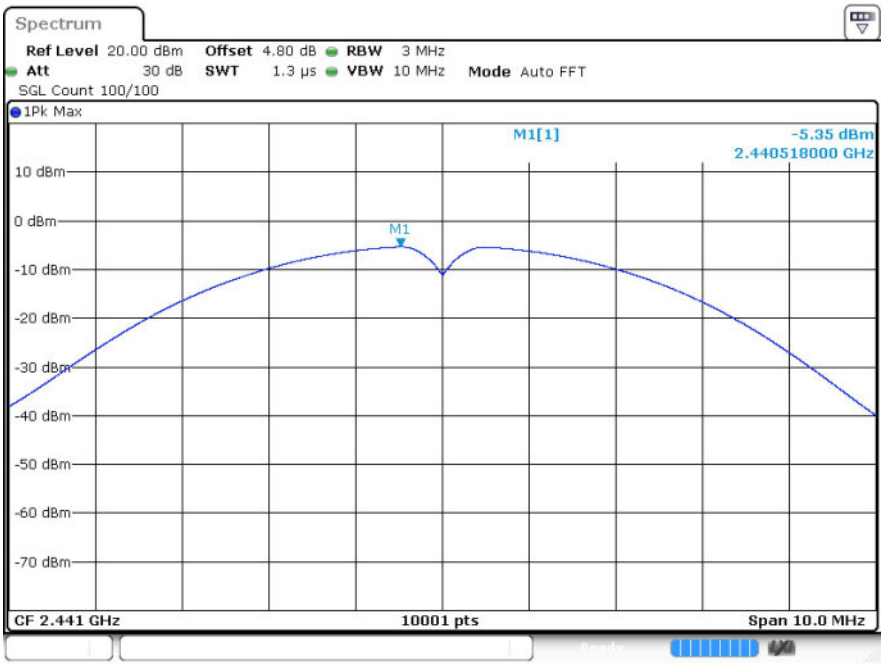


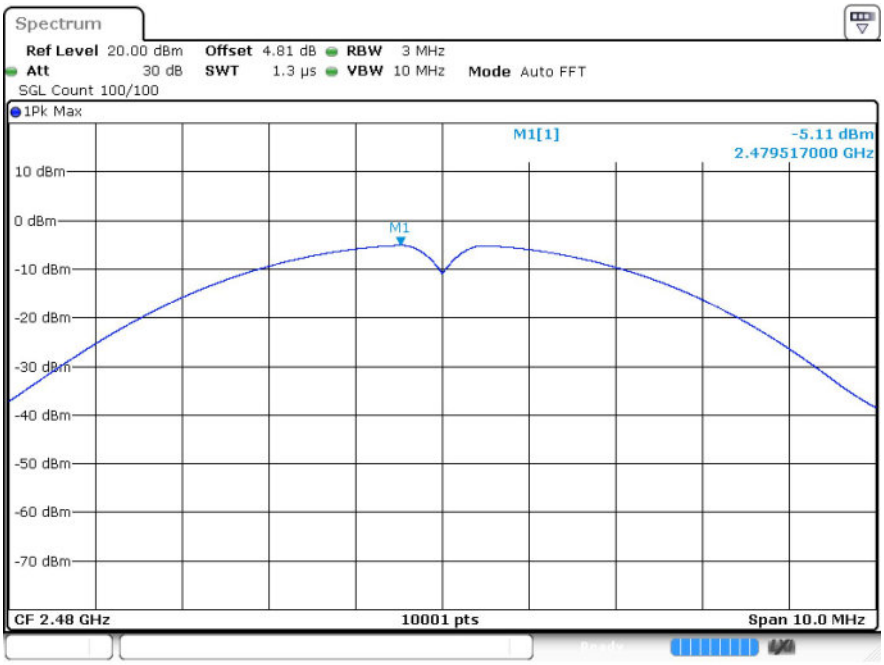
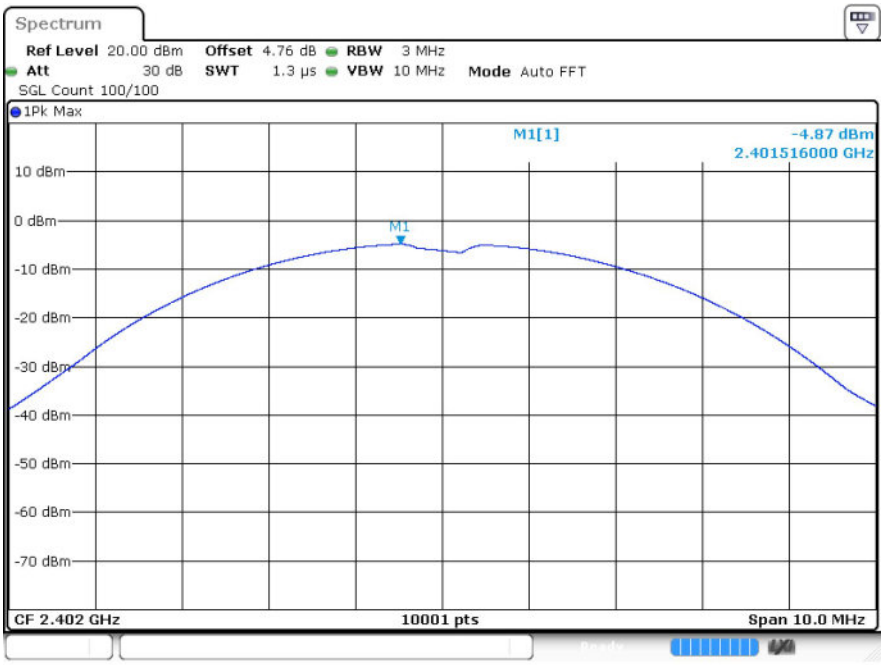
2 Maximum Conducted Peak Output Power

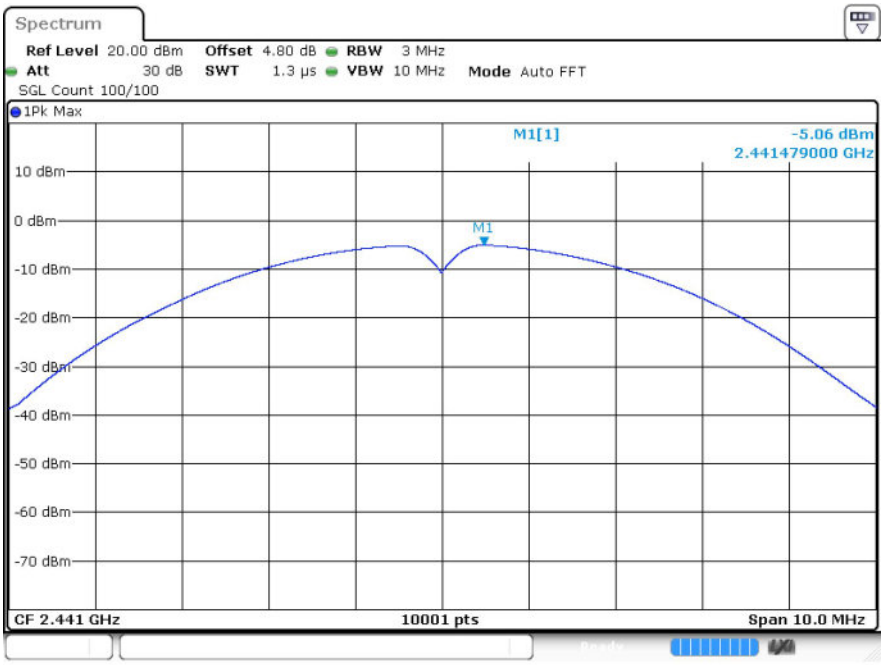
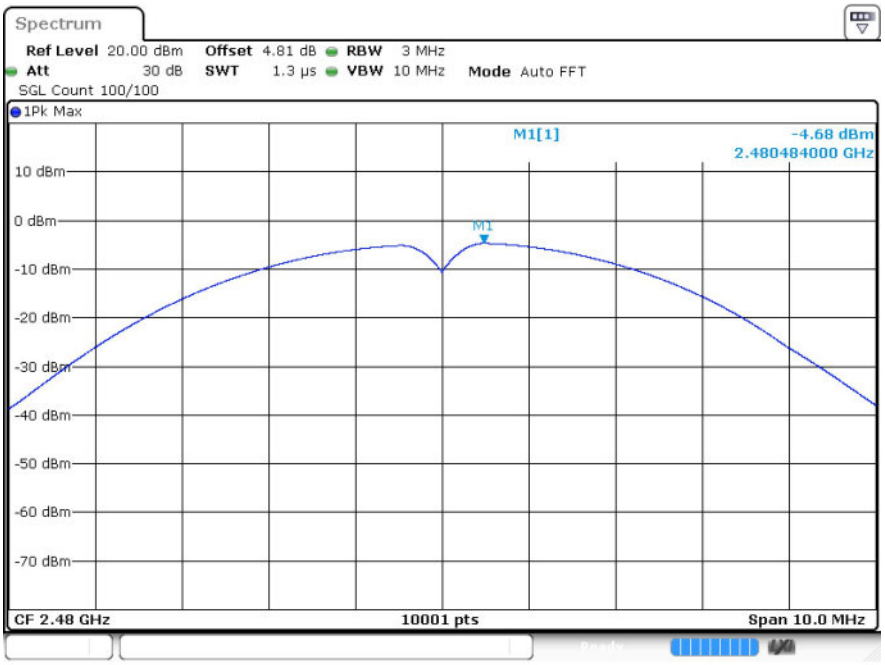
2.1 Test Result

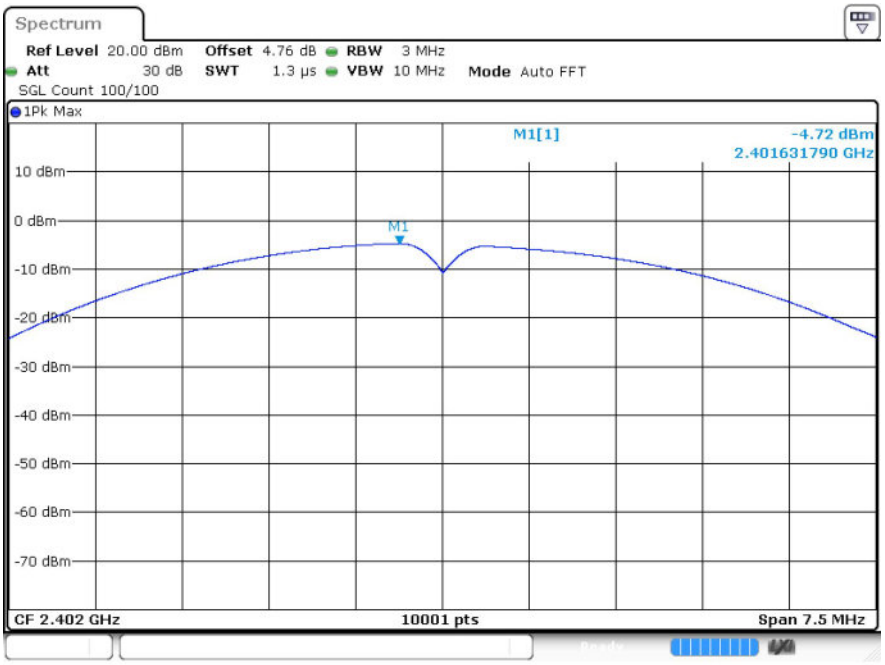
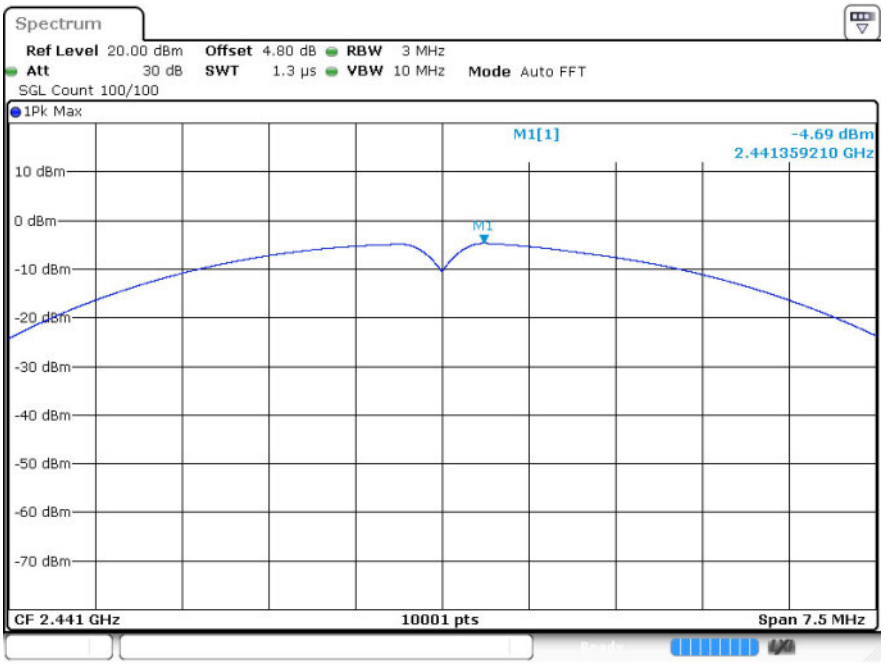
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-5.59	21	Pass
	MCH	-5.35	21	Pass
	HCH	-5.11	21	Pass
π/4DQPSK	LCH	-4.87	21	Pass
	MCH	-5.06	21	Pass
	HCH	-4.68	21	Pass
8DPSK	LCH	-4.72	21	Pass
	MCH	-4.69	21	Pass
	HCH	-4.27	21	Pass

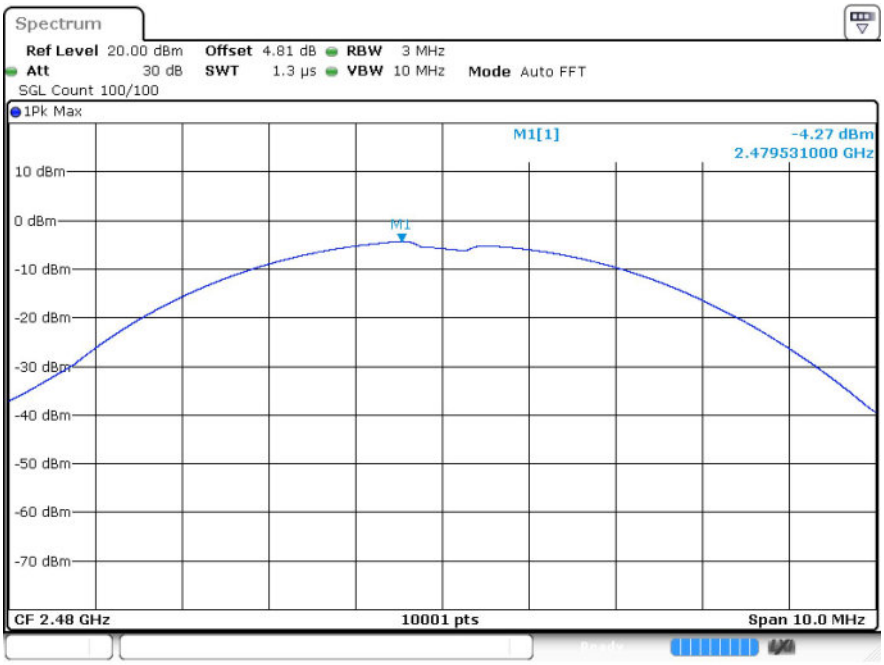
2.2 Test Graphs

Test Graphs	
GFSK/LCH	
GFSK/MCH	

GFSK/HCH	
π/4DQPSK/LCH	

π/4DQPSK/MCH	
π/4DQPSK/HCH	

8DPSK/LCH	
8DPSK/MCH	

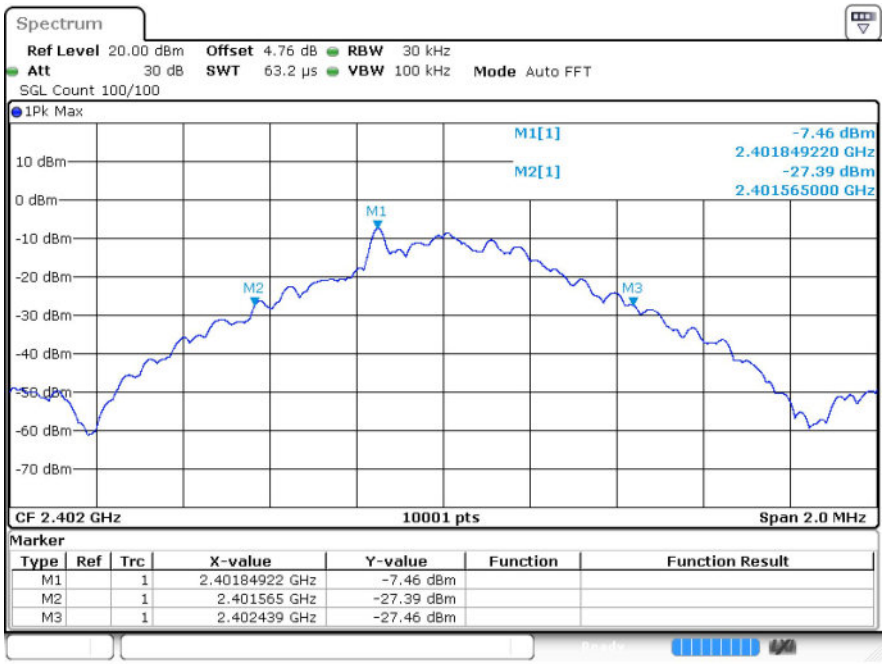
8DPSK/HCH	 Spectrum Ref Level 20.00 dBm Offset 4.81 dB RBW 3 MHz Att 30 dB SWT 1.3 µs VBW 10 MHz Mode Auto FFT SGL Count 100/100 1Pk Max M1[1] -4.27 dBm 2.479531000 GHz 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm -70 dBm CF 2.48 GHz 10001 pts Span 10.0 MHz

3 20dB Bandwidth

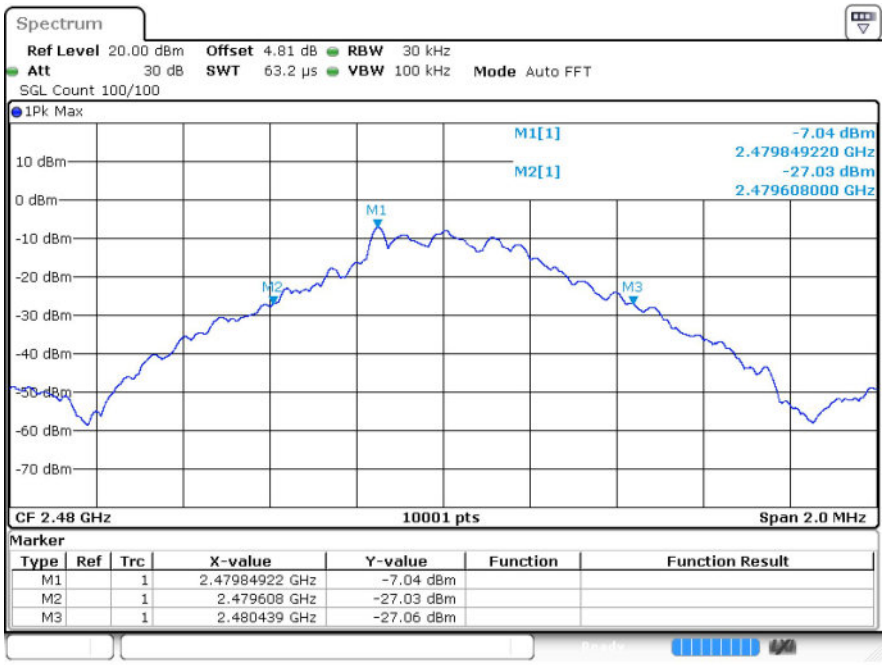
3.1 Test Result

Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.874	Not Specified	Pass
	MCH	0.854	Not Specified	Pass
	HCH	0.831	Not Specified	Pass
π/4DQPSK	LCH	1.215	Not Specified	Pass
	MCH	1.246	Not Specified	Pass
	HCH	1.234	Not Specified	Pass
8DPSK	LCH	1.244	Not Specified	Pass
	MCH	1.208	Not Specified	Pass
	HCH	1.196	Not Specified	Pass

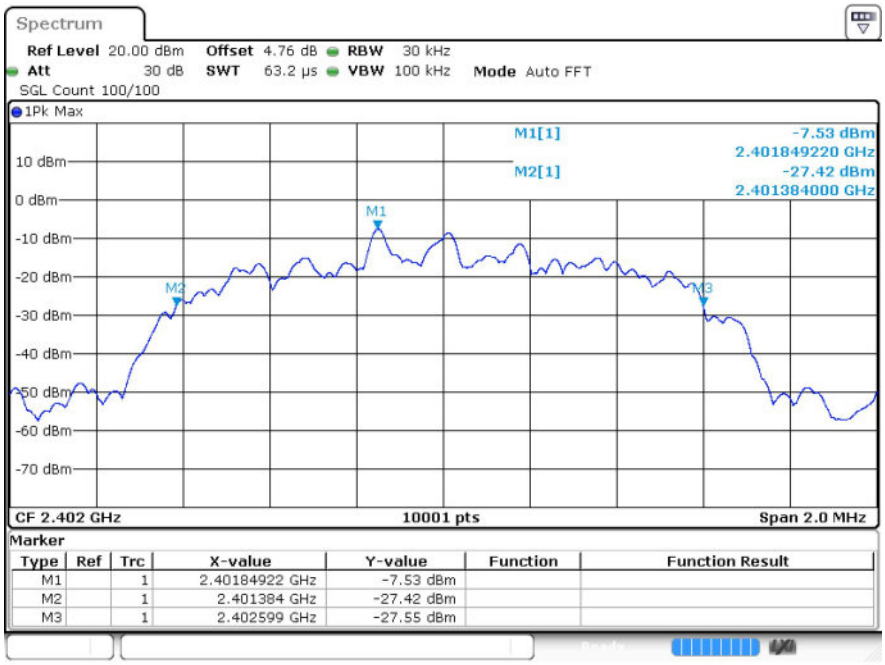
3.2 Test Graphs

Test Graphs	
GFSK/LCH	
GFSK/MCH	

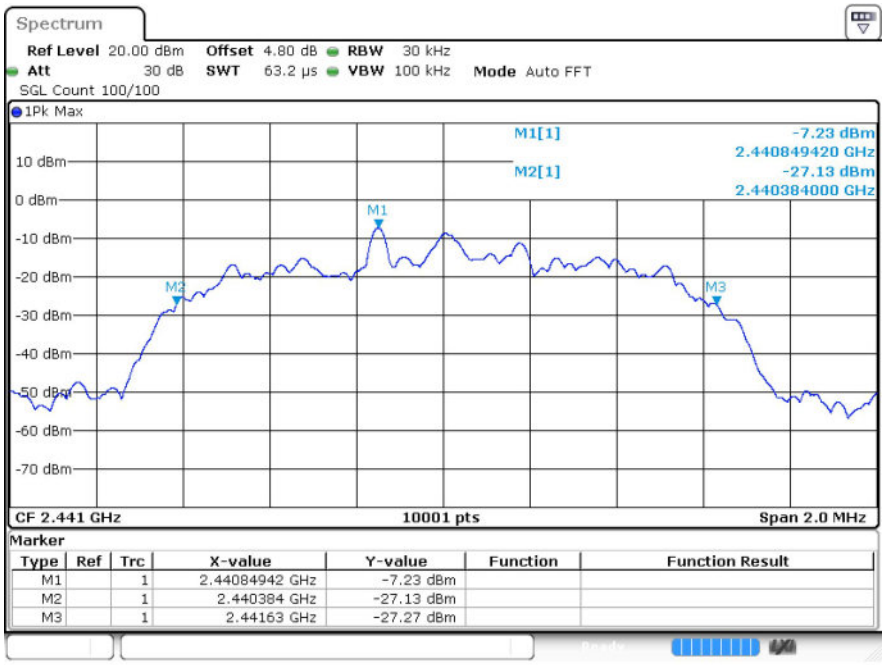
GFSK/HCH



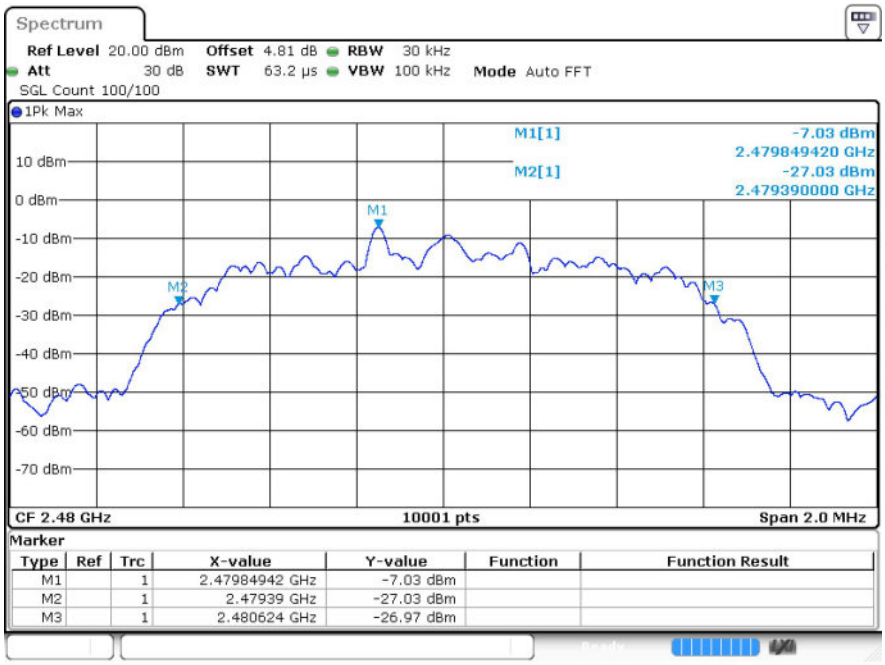
π/4DQPSK/LCH

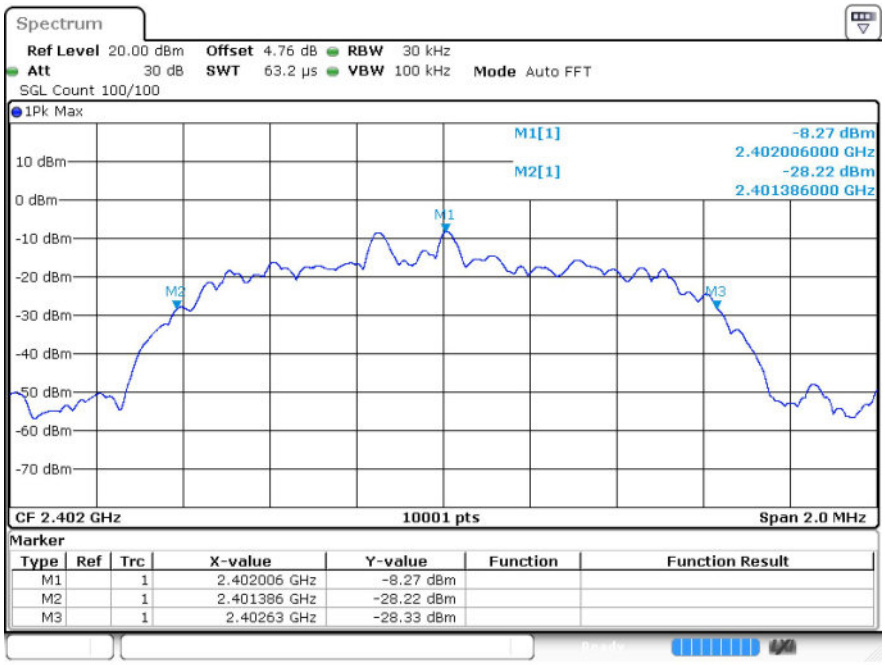
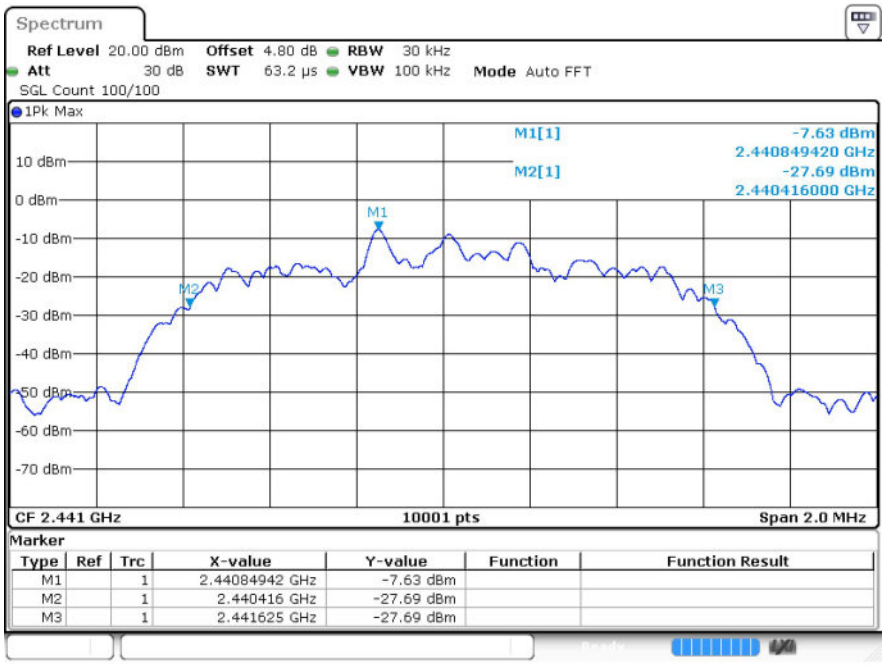


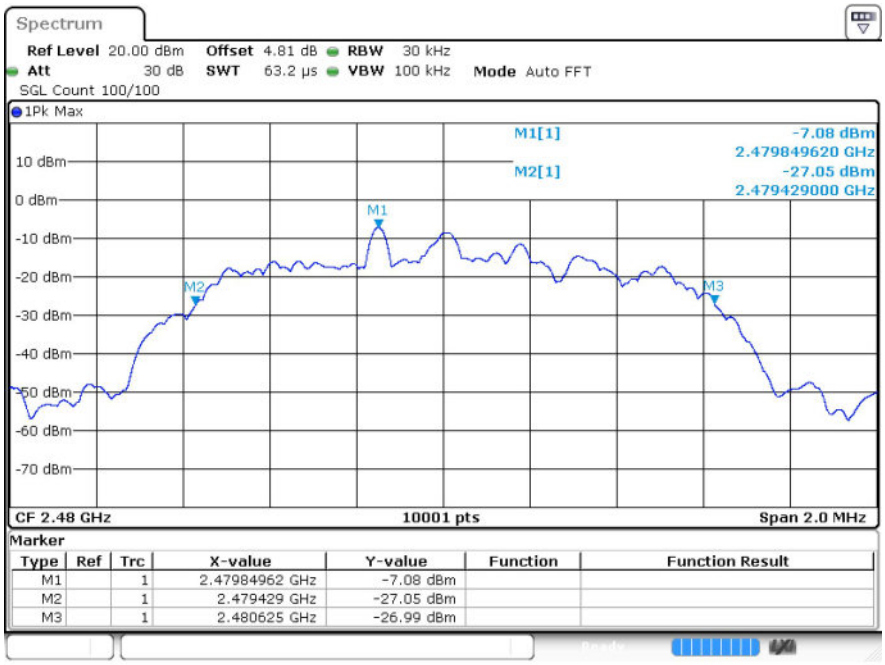
π/4DQPSK/MCH



π/4DQPSK/HCH



8DPSK/LCH	
8DPSK/MCH	

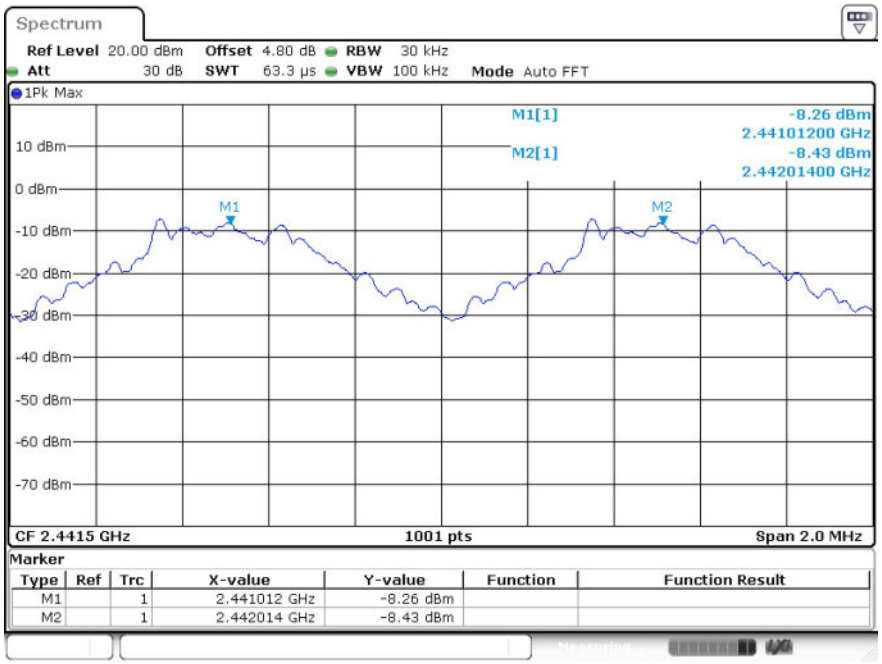
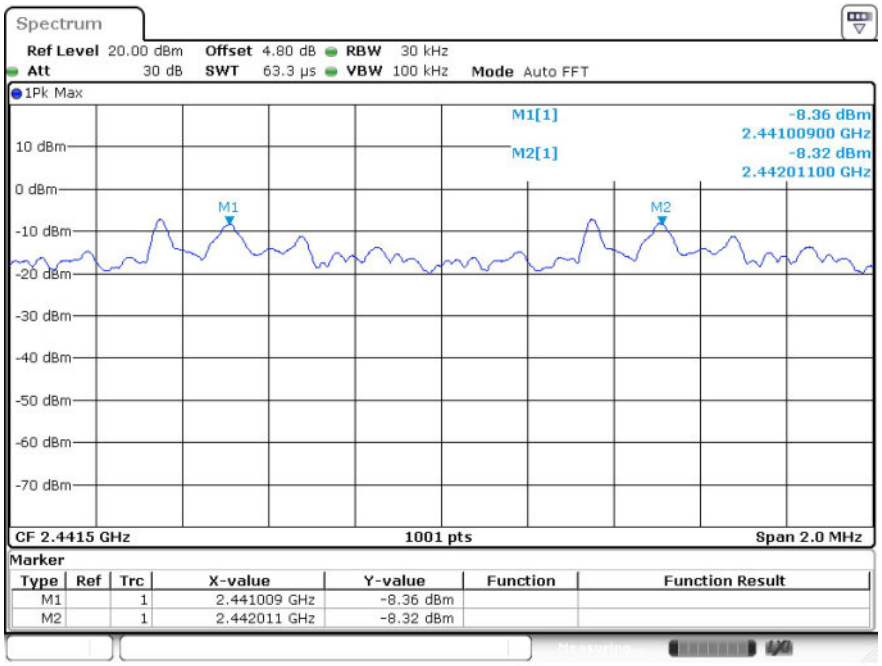
8DPSK/HCH	 Spectrum Ref Level 20.00 dBm Offset 4.81 dB RBW 30 kHz Att 30 dB SWT 63.2 µs VBW 100 kHz Mode Auto FFT SGL Count 100/100 1Pk Max M1[1] -7.08 dBm 2.479849620 GHz M2[1] -27.05 dBm 2.479429000 GHz 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm -70 dBm M1 M2 M3 CF 2.48 GHz 10001 pts Span 2.0 MHz Marker Type Ref Trc X-value Y-value Function Function Result M1 1 2.47984962 GHz -7.08 dBm M2 1 2.479429 GHz -27.05 dBm M3 1 2.480625 GHz -26.99 dBm

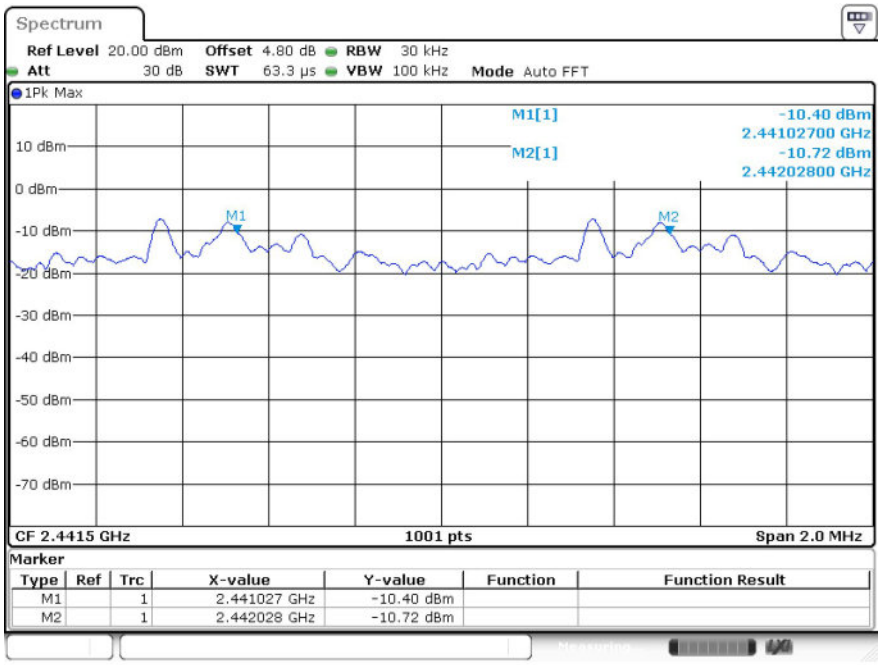
4 Carrier Frequency Separation

4.1 Test Result

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	MCH	1.002	0.569	Pass
π/4DQPSK	MCH	1.002	0.831	Pass
8DPSK	MCH	1.001	0.805	Pass

4.2 Test Graphs

Test Graphs	
GFSK/MCH	
π/4DQPSK/MCH	

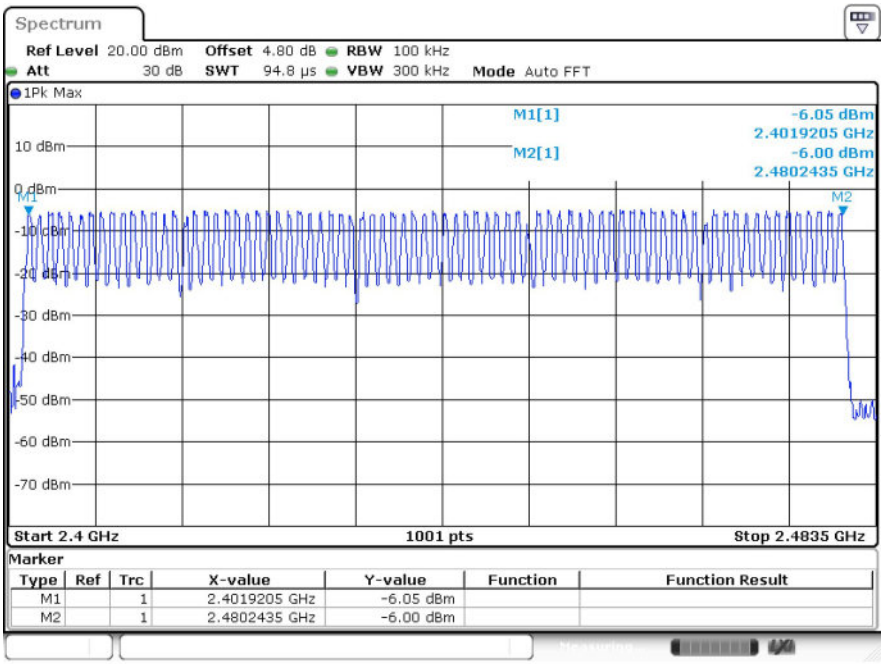
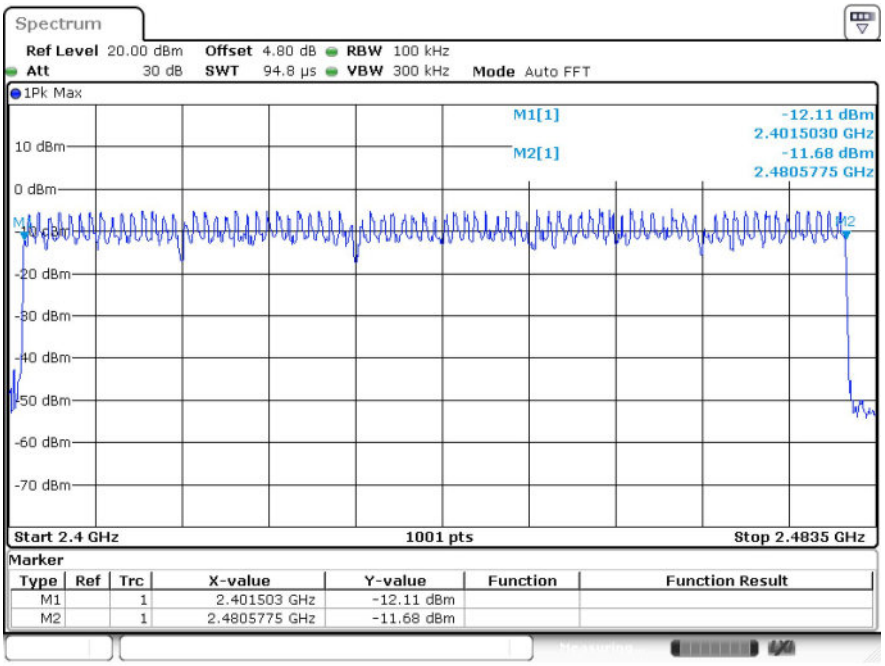
8DPSK/MCH	 Spectrum Ref Level 20.00 dBm Offset 4.80 dB RBW 30 kHz Att 30 dB SWT 63.3 µs VBW 100 kHz Mode Auto FFT 1Pk Max M1[1] -10.40 dBm 2.44102700 GHz M2[1] -10.72 dBm 2.44202800 GHz 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm -70 dBm M1 M2 CF 2.4415 GHz 1001 pts Span 2.0 MHz Marker Type Ref Trc X-value Y-value Function Function Result M1 1 2.441027 GHz -10.40 dBm M2 1 2.442028 GHz -10.72 dBm

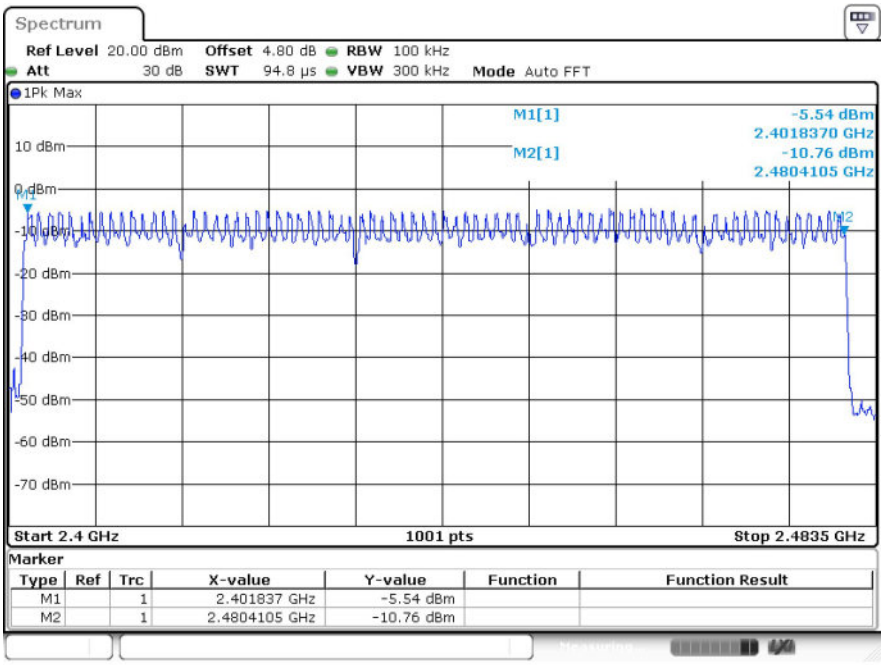
5 Hopping Channel Number

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	

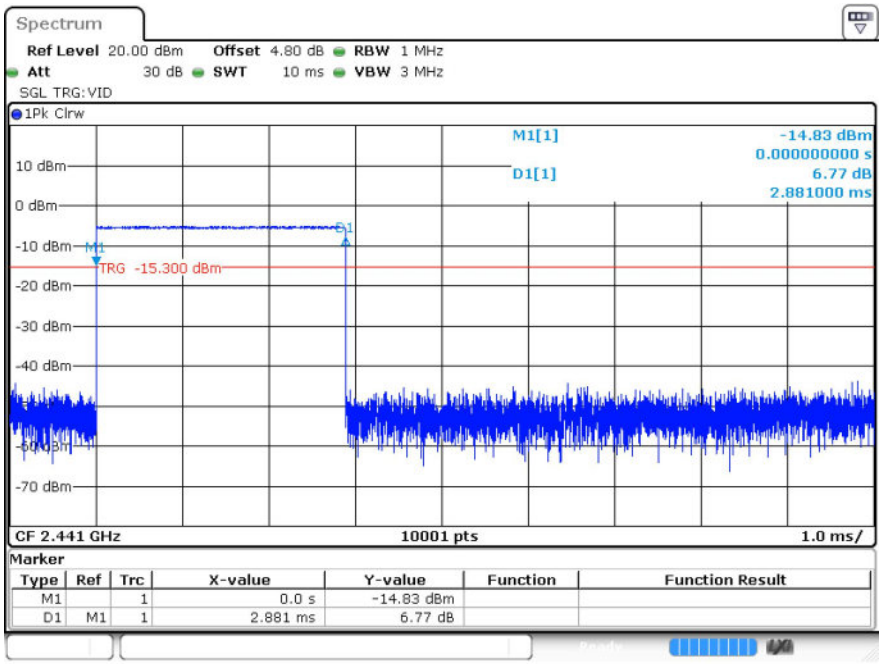
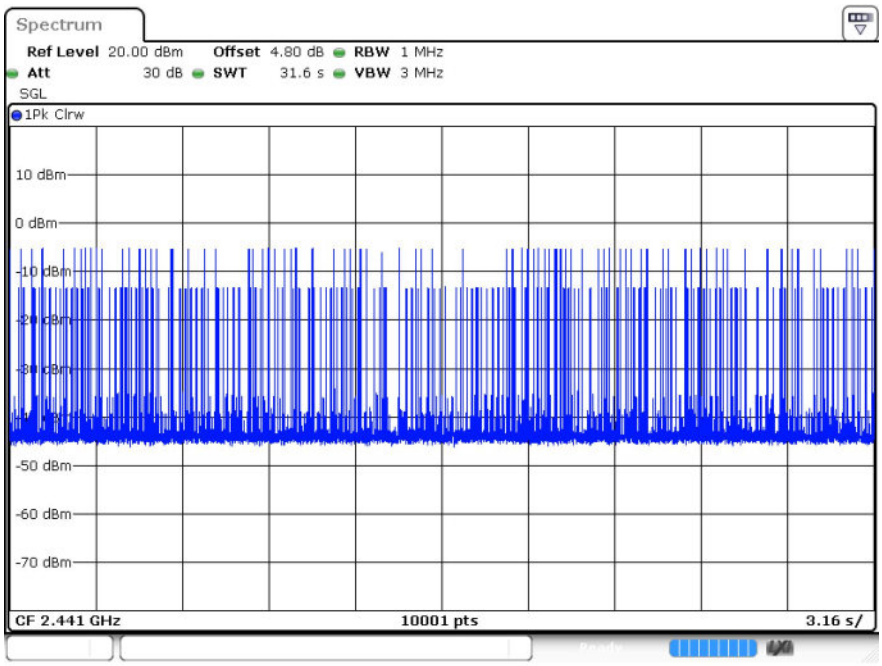
Spectrum
Ref Level 20.00 dBm Offset 4.80 dB RBW 100 kHz
Att 30 dB SWT 94.8 µs VBW 300 kHz Mode Auto FFT
1Pk Max
M1[1] -5.54 dBm 2.4018370 GHz
M2[1] -10.76 dBm 2.4804105 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
Start 2.4 GHz 1001 pts Stop 2.4835 GHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.401837 GHz -5.54 dBm
M2 1 2.4804105 GHz -10.76 dBm

6 Dwell Time

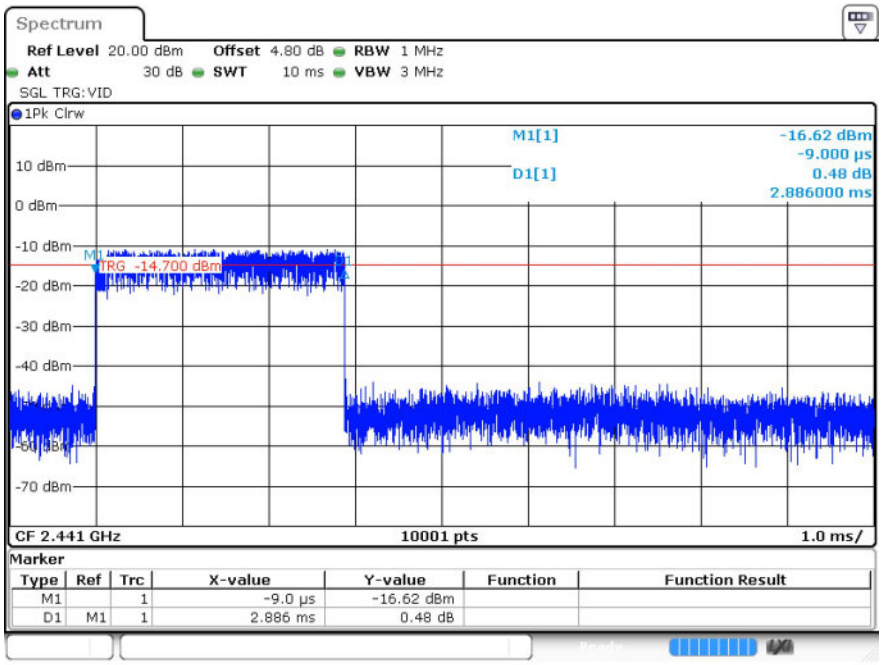
6.1 Test Result

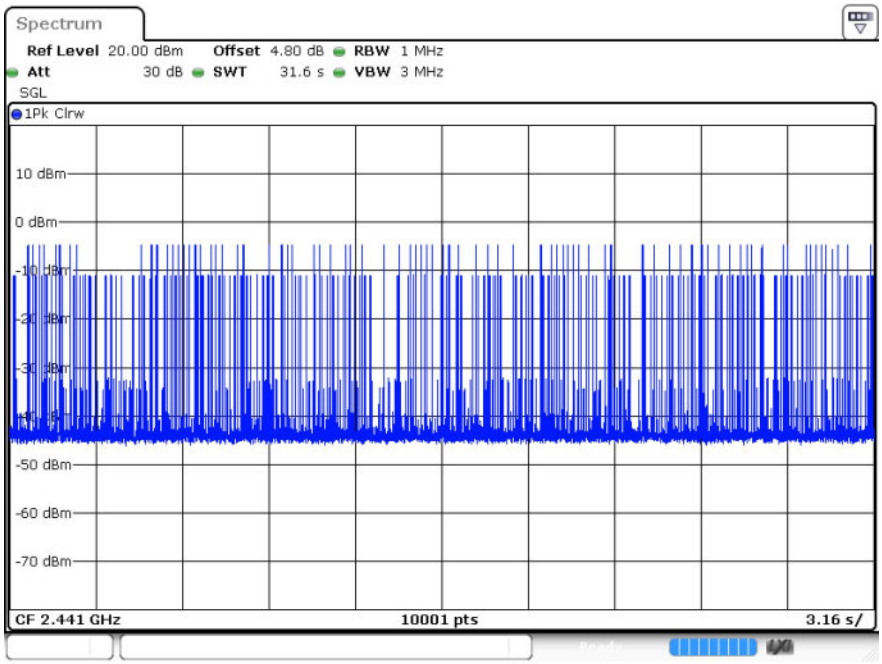
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[ms]	Limit [s]	Verdict
GFSK	DH5	MCH	2.881	94	270.814	0.4	Pass
π/4DQPSK	2DH5	MCH	2.886	92	265.512	0.4	Pass
8DPSK	3DH5	MCH	2.888	94	271.472	0.4	Pass

6.2 Test Graphs

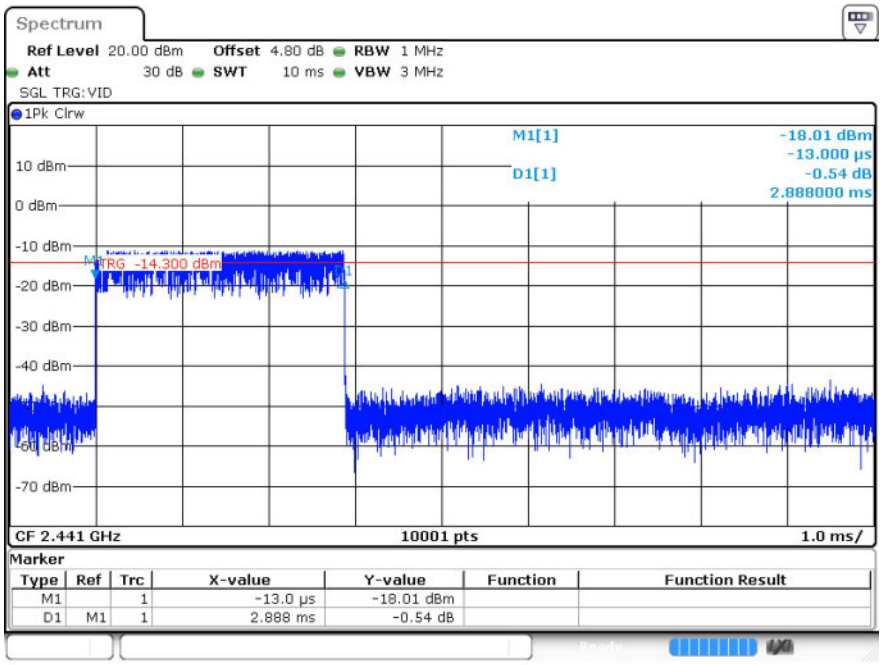
Test Graphs	
GFSK_DH5/MCH	 

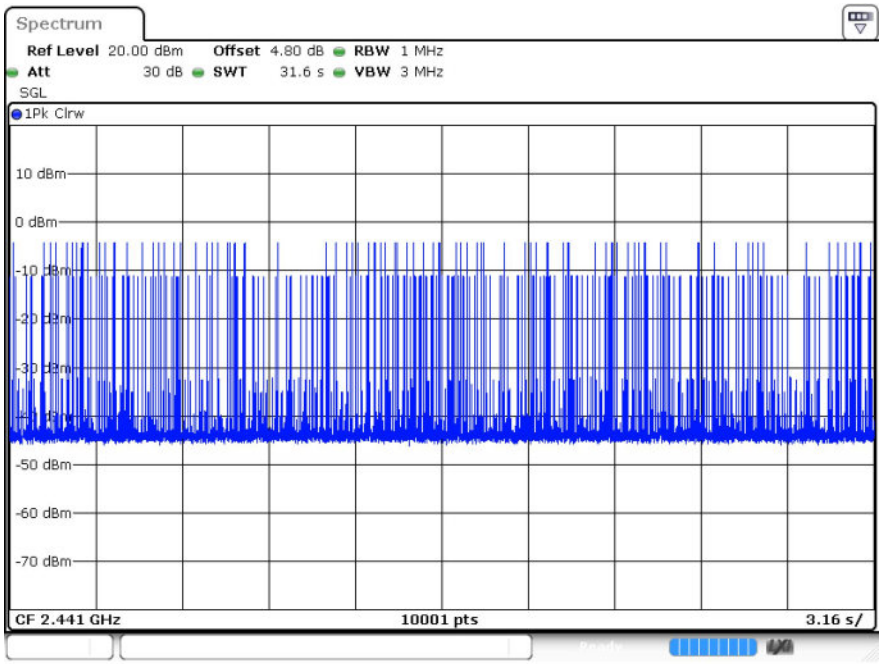
π/4DQPSK
_2DH5/MCH





8DPSK _3DH5/MCH



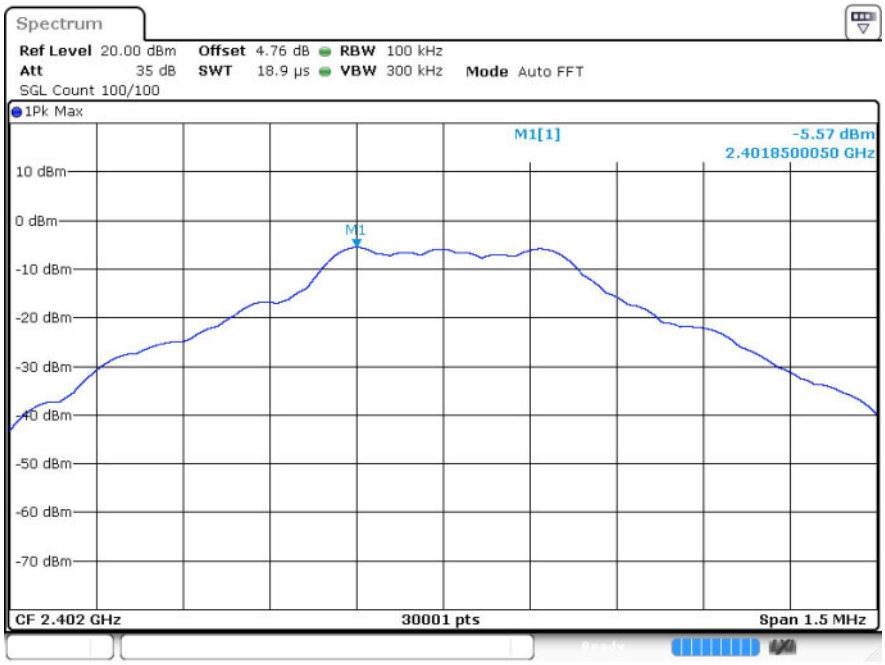
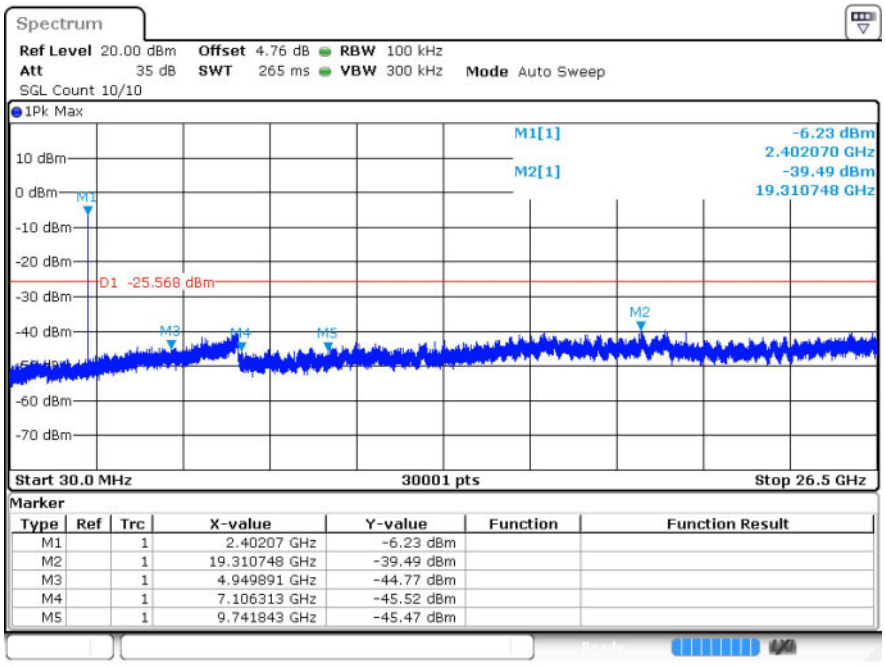


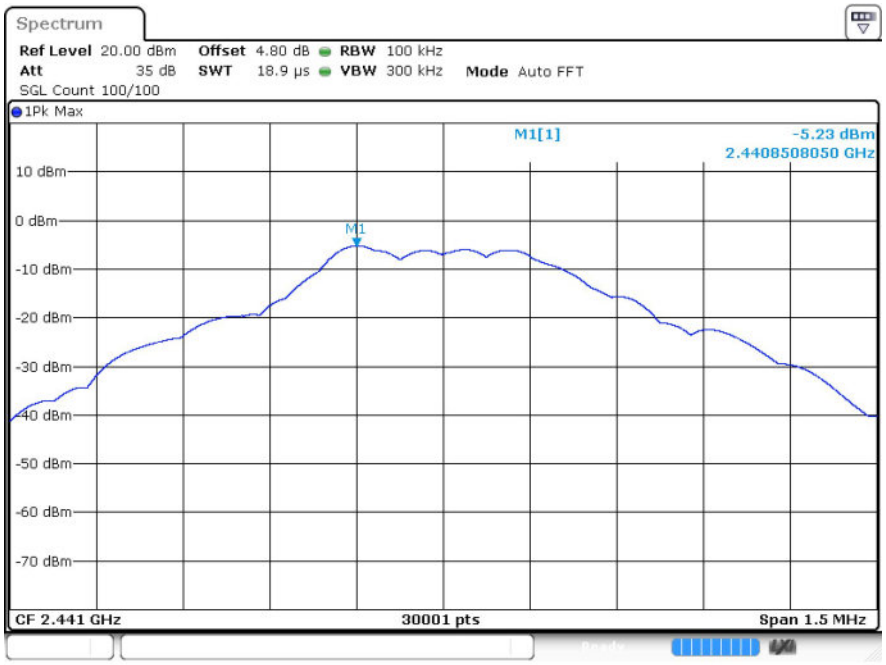
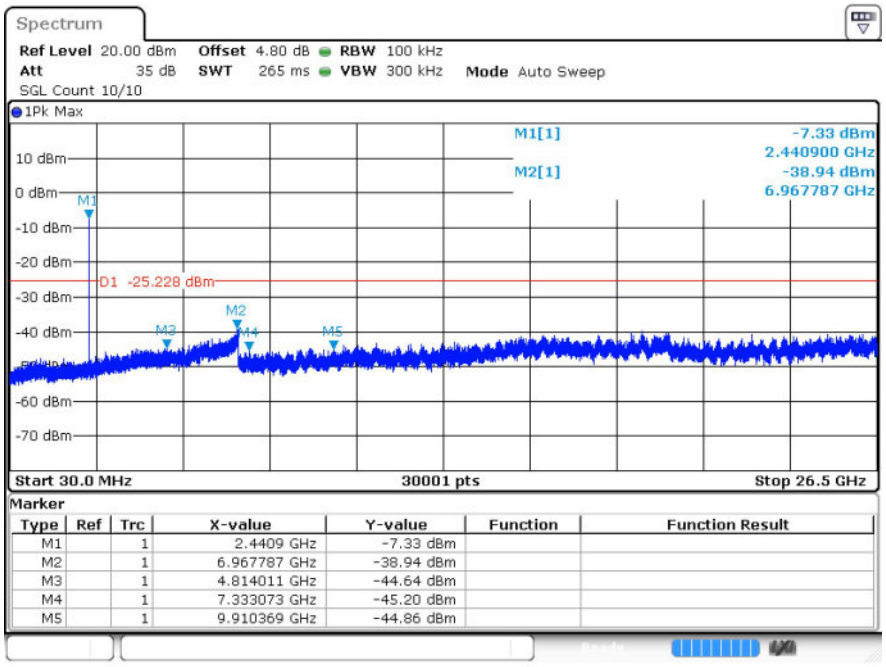
7 RF Conducted Spurious Emissions

7.1 Test Result

Mode	Channel	Max. Level [dBc]	Limit [dBc]	Verdict
GFSK	LCH	-33.92	-20	Pass
	MCH	-33.7	-20	Pass
	HCH	-32.59	-20	Pass
π/4DQPSK	LCH	-33.87	-20	Pass
	MCH	-33.08	-20	Pass
	HCH	-34.12	-20	Pass
8DPSK	LCH	-33.78	-20	Pass
	MCH	-32.62	-20	Pass
	HCH	-34	-20	Pass

7.2 Test Graphs

GFSK_LCH_Graphs	
Pref	
Puw	

GFSK_MCH_Graphs	
Pref	
Puw	

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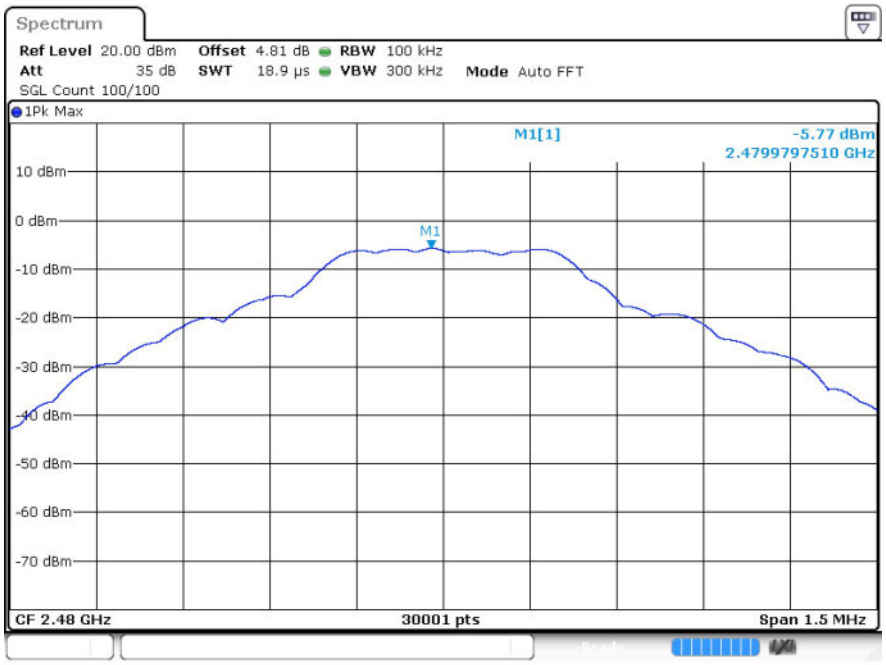
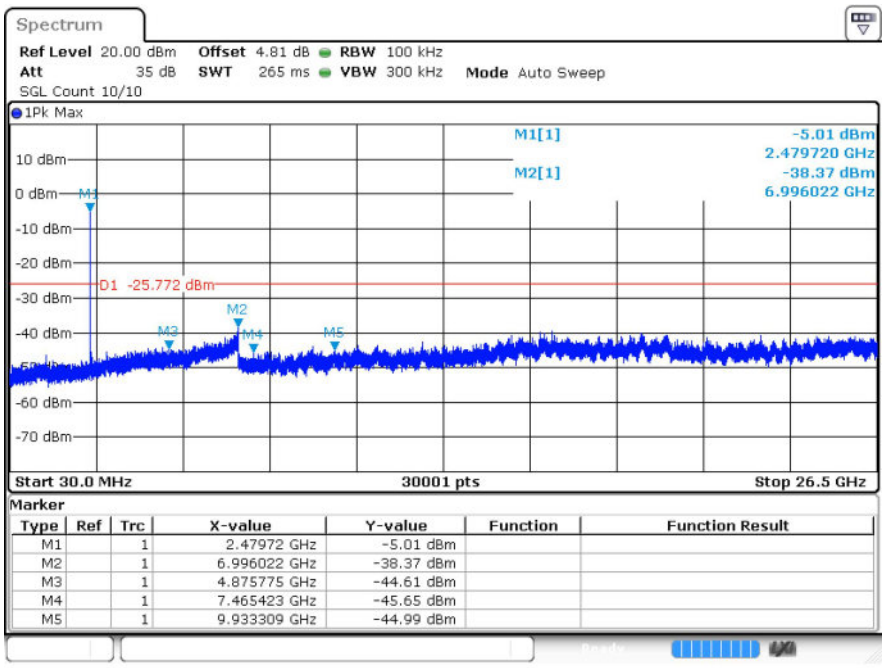
Pref	
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