Appendix A

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

Product Name: bluetooth speaker

Trade Mark: N/A

Test Model: BVK-3317

Environmental Conditions

Temperature:	26.5℃
Relative Humidity:	54.0%
ATM Pressure:	101Kpa
Test Engineer:	Emiya lin
Supervised by:	Simba Haung

Contents

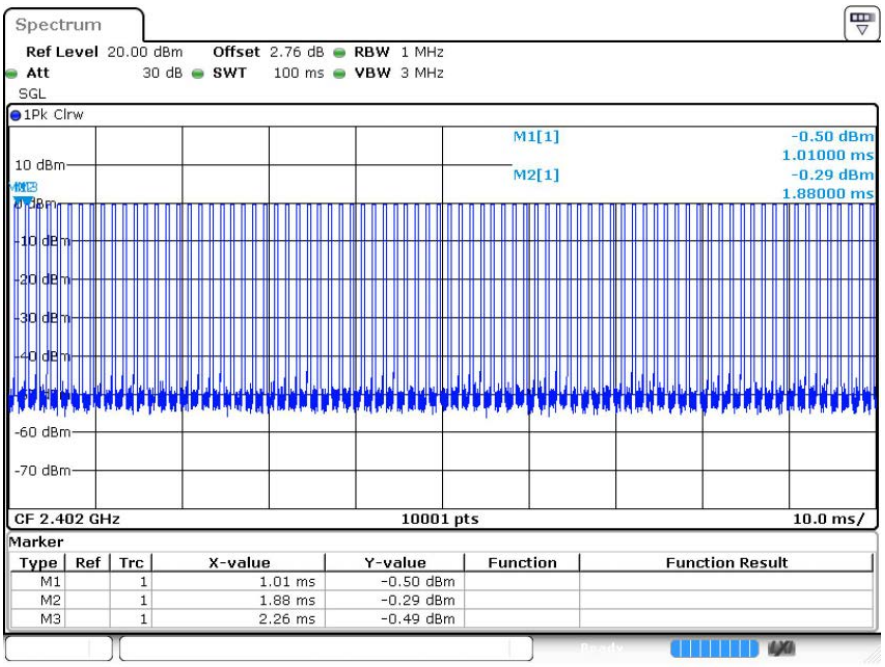
1 Duty Cycle

1.1 Test Result

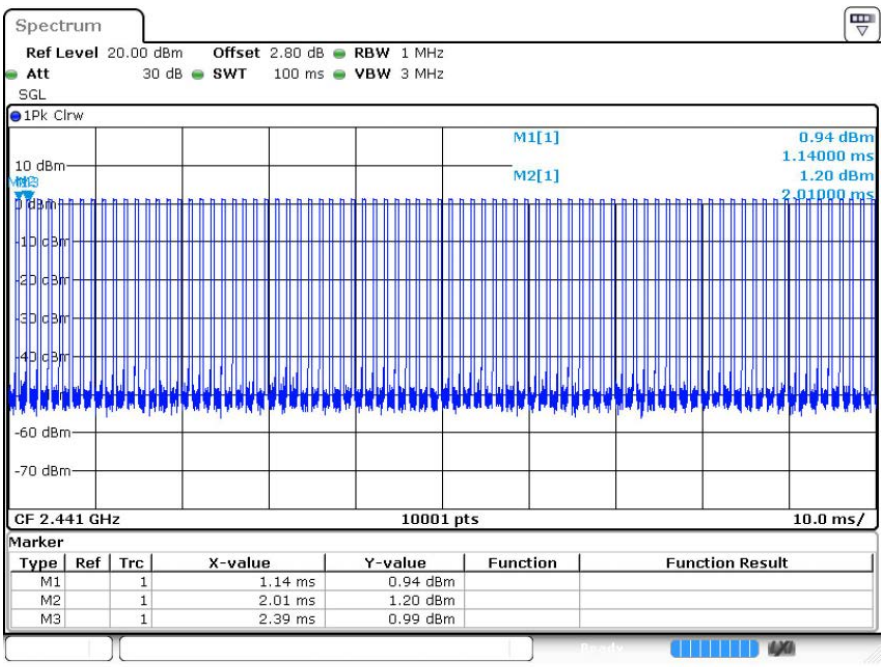
Mode	Frequency (MHz)	Duty Cycle (%)	Correction Factor	1/T (kHz)
1-DH1	2402	31.2	5.06	2.63
1-DH1	2441	31.2	5.06	2.63
1-DH1	2480	31.2	5.06	2.63
2-DH1	2402	32	4.95	2.56
2-DH1	2441	32	4.95	2.56
2-DH1	2480	32.01	4.95	2.56
3-DH1	2402	32	4.95	2.56
3-DH1	2441	32.01	4.95	2.56
3-DH1	2480	32	4.95	2.56

1.2 Test Graphs

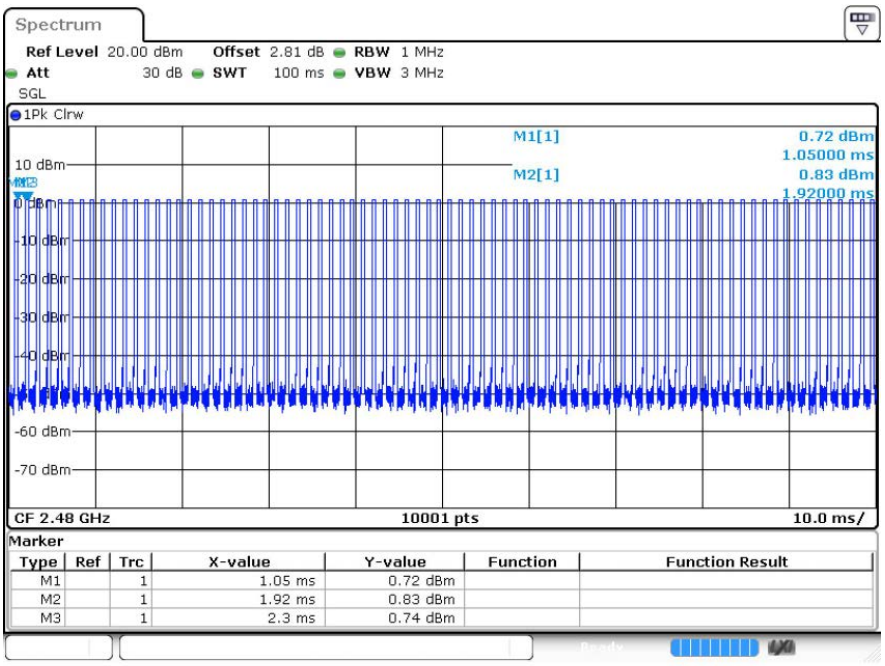
Test Graphs
1-DH1 2402MHz



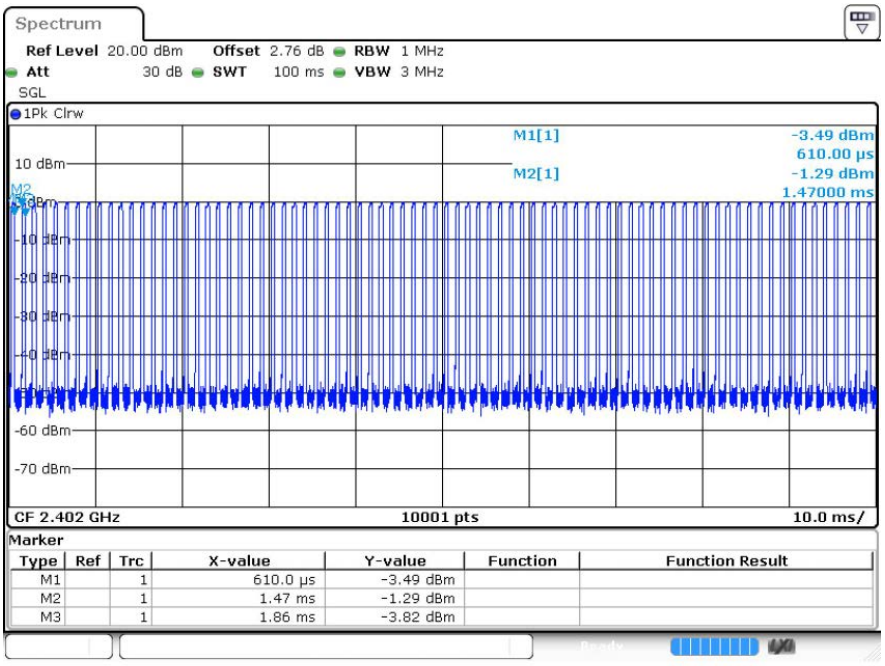
1-DH1 2441MHz



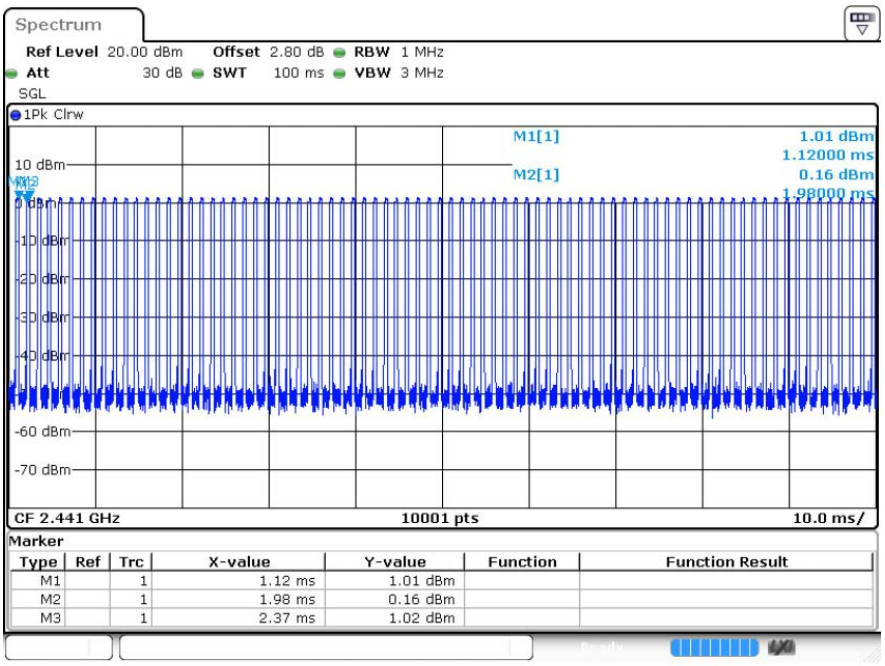
1-DH1 2480MHz



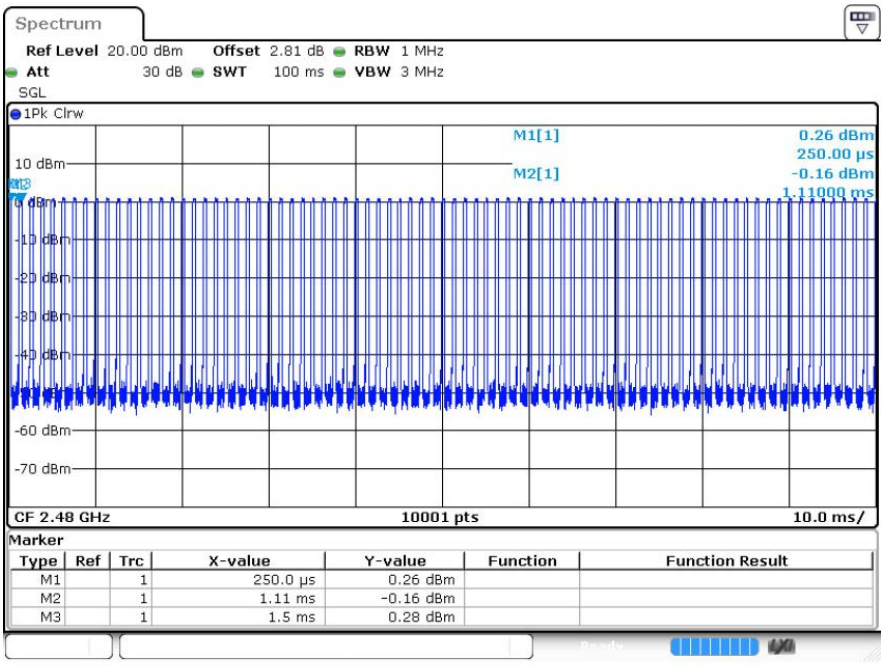
2-DH1 2402MHz



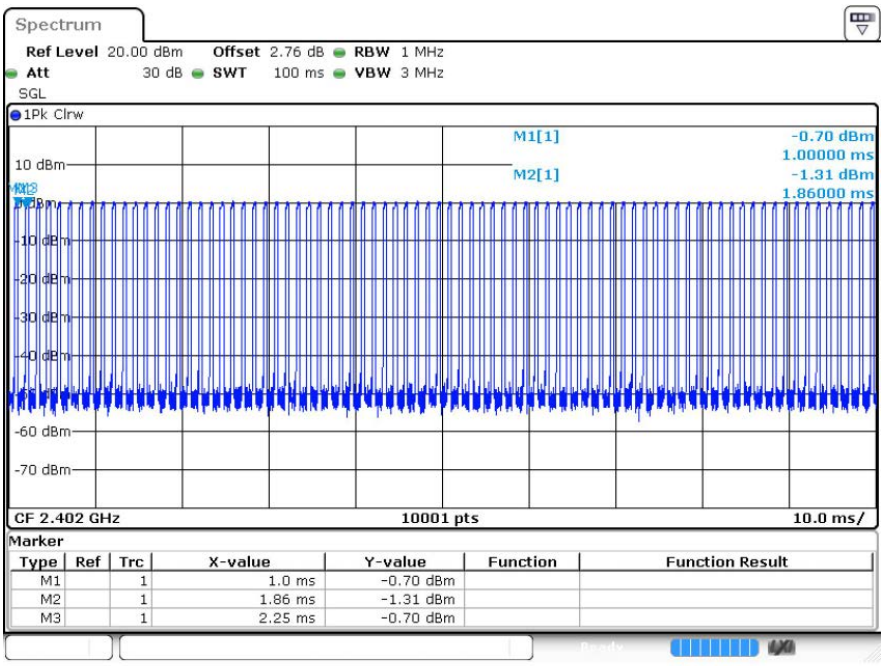
2-DH1 2441MHz



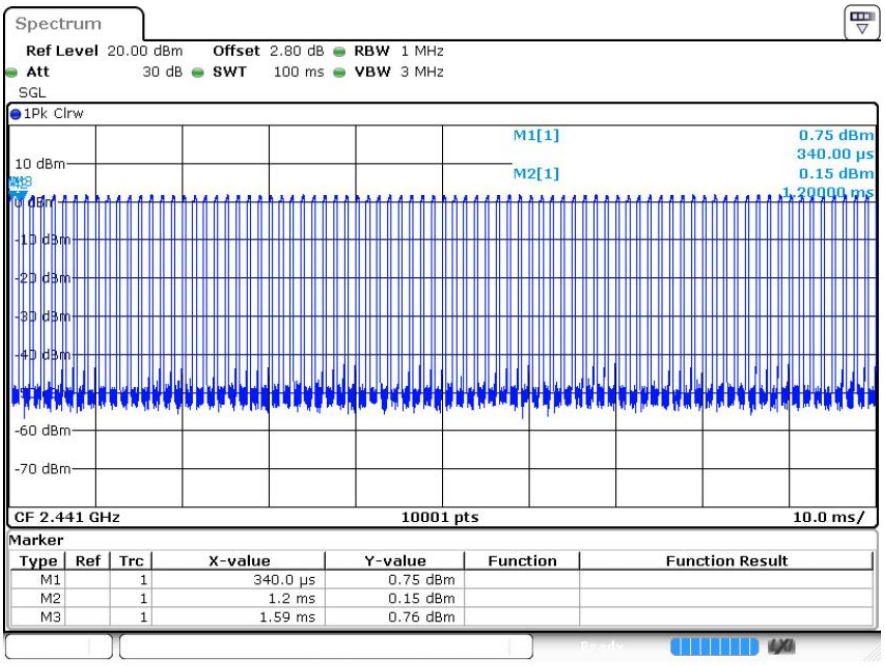
2-DH1 2480MHz



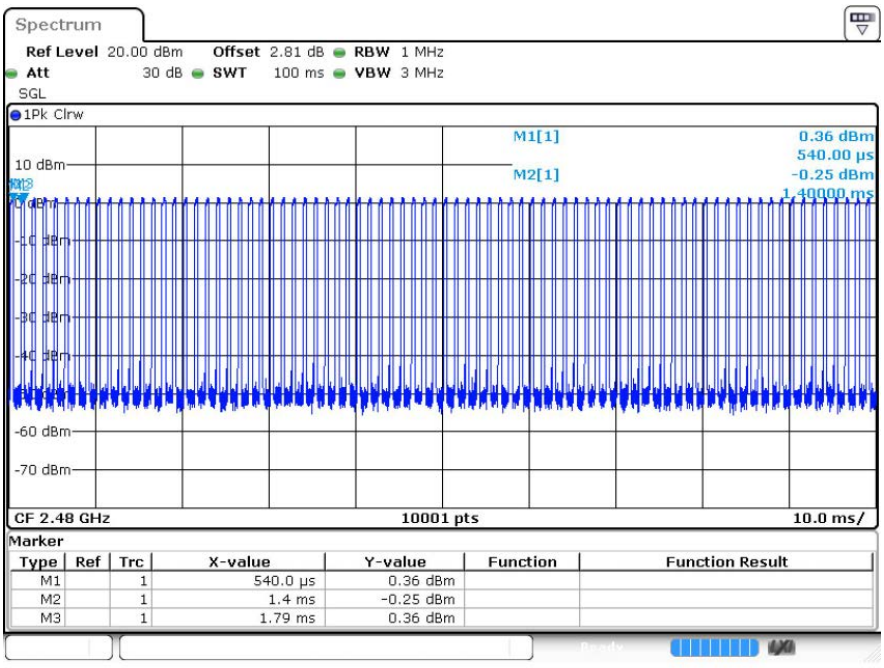
3-DH1 2402MHz



3-DH1 2441MHz



3-DH1 2480MHz

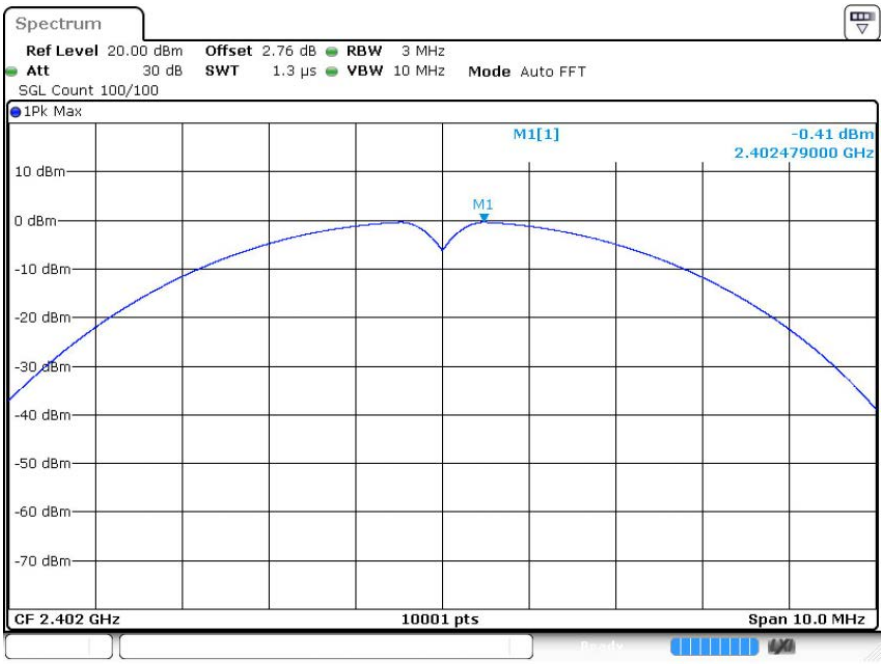
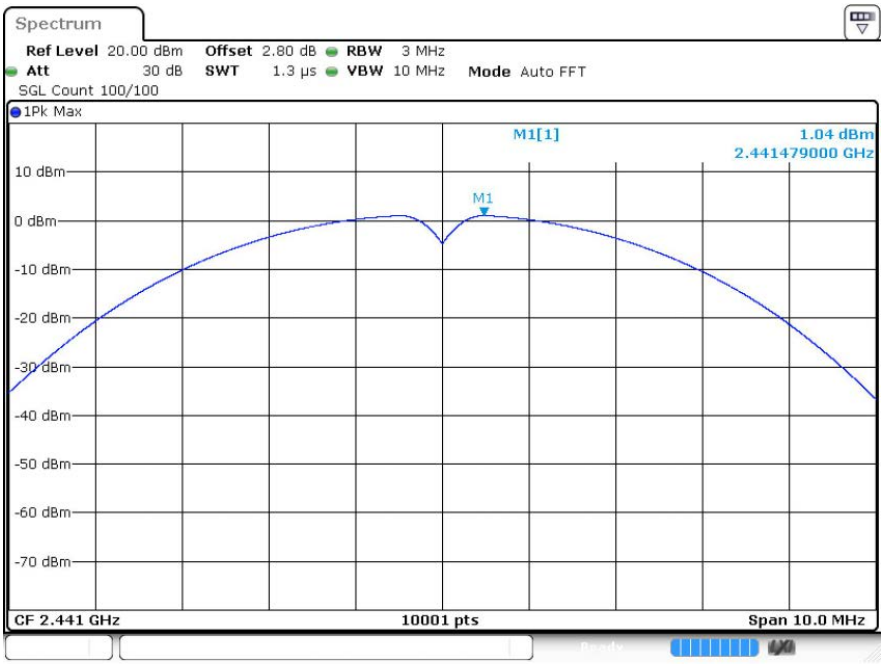


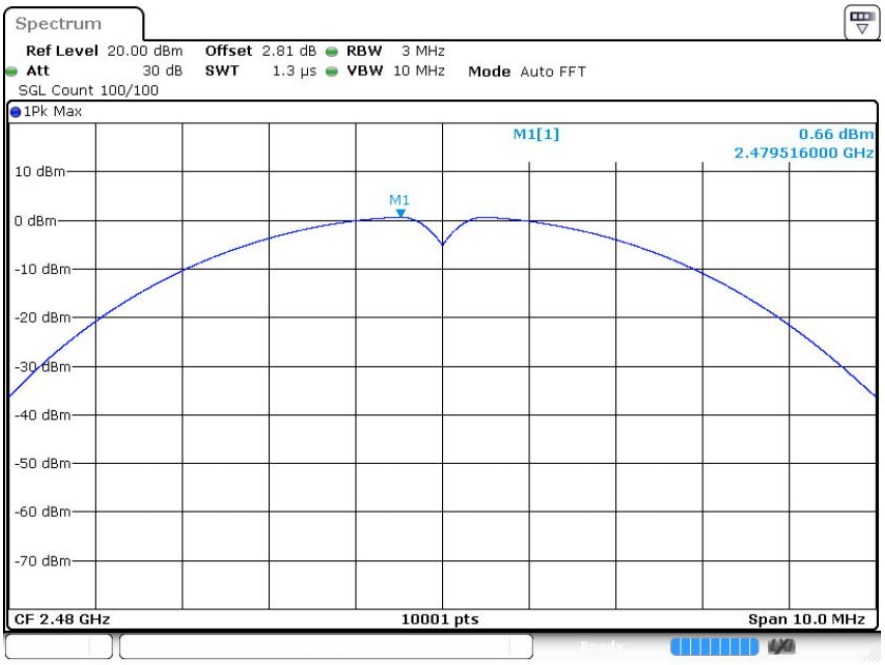
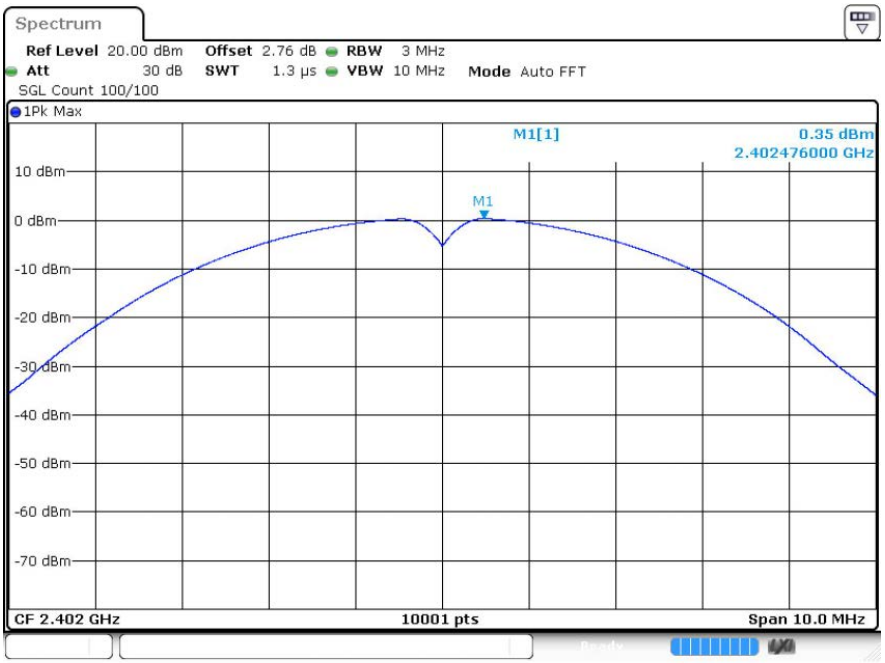
2 Maximum Conducted Peak Output Power

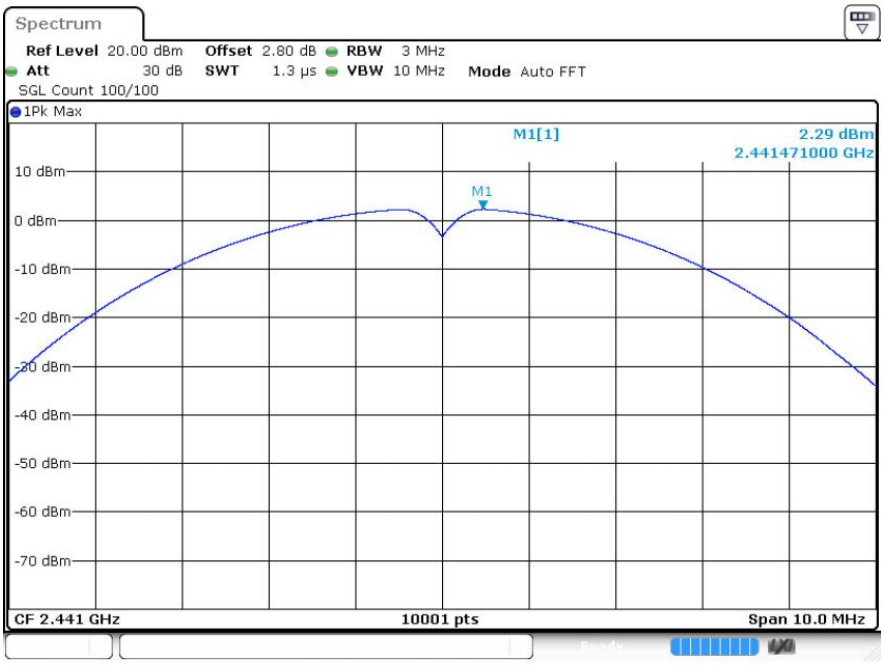
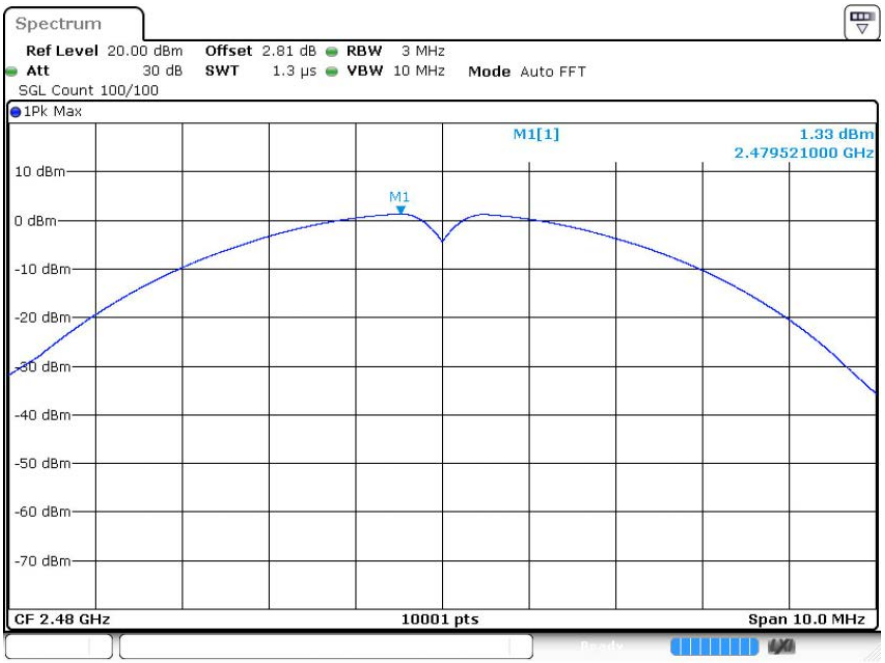
2.1 Test Result

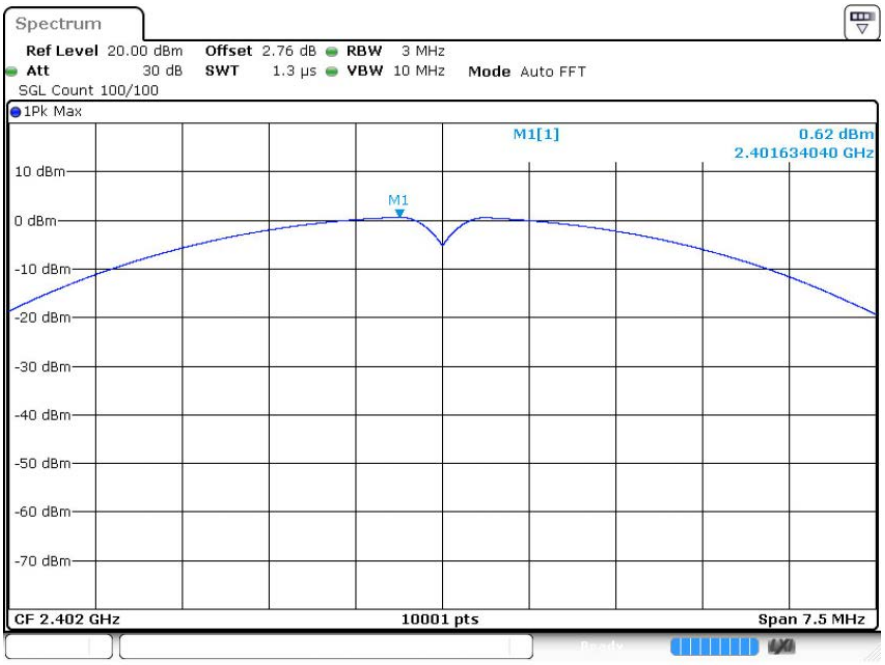
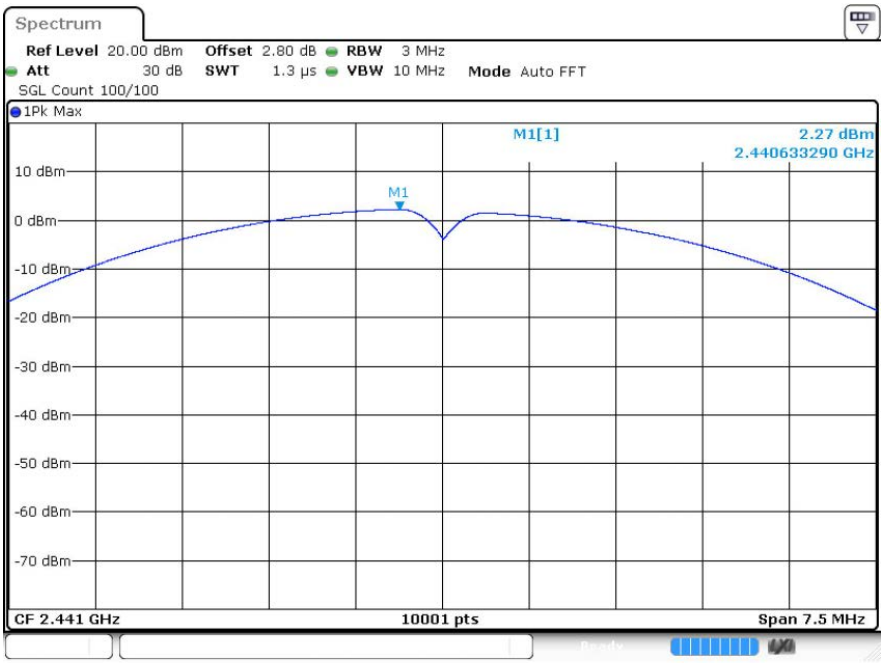
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-0.41	21	Pass
	MCH	1.04	21	Pass
	HCH	0.66	21	Pass
π/4DQPSK	LCH	0.35	21	Pass
	MCH	2.29	21	Pass
	HCH	1.33	21	Pass
8DPSK	LCH	0.62	21	Pass
	MCH	2.27	21	Pass
	HCH	1.83	21	Pass

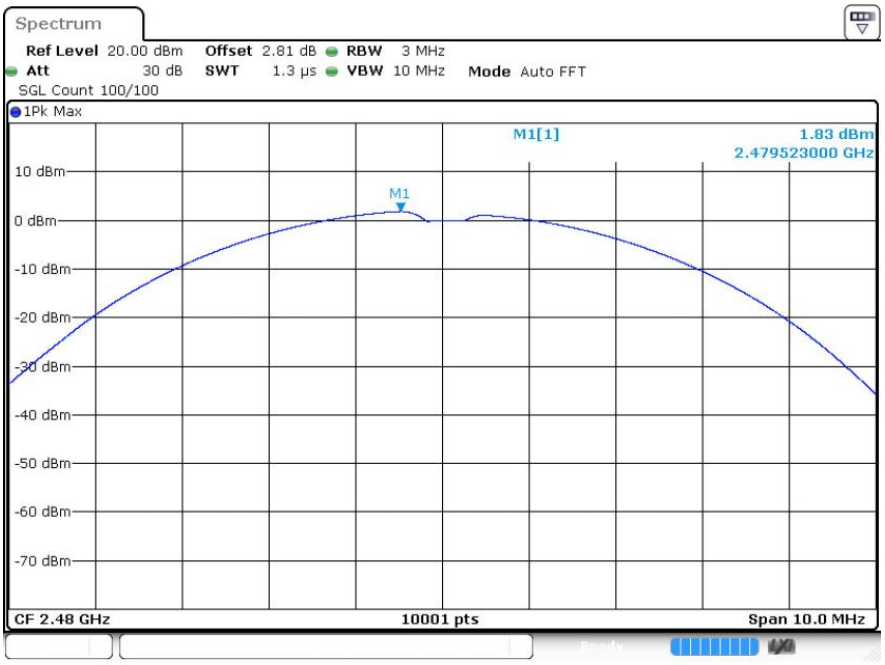
2.2 Test Graphs

Test Graphs	
GFSK/LCH	
GFSK/MCH	

GFSK/HCH	
π/4DQPSK/LCH	

π/4DQPSK/MCH	
π/4DQPSK/HCH	

8DPSK/LCH	
8DPSK/MCH	

8DPSK/HCH	

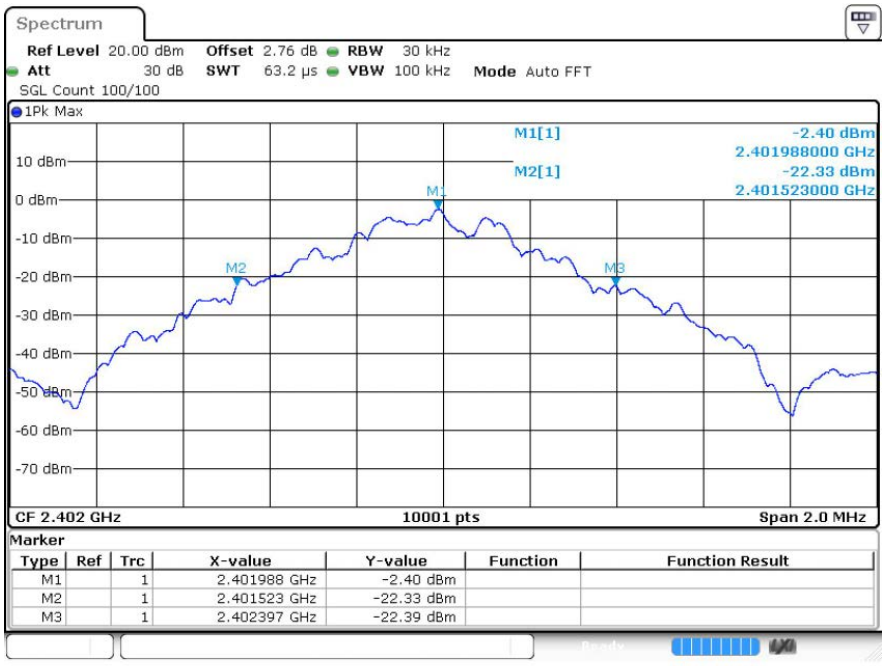
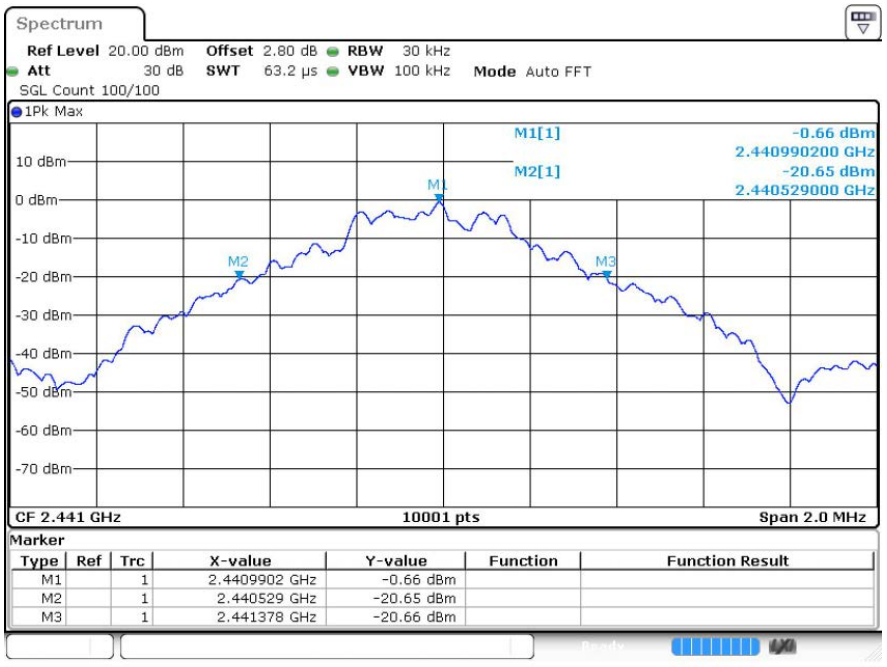
Spectrum
Ref Level 20.00 dBm Offset 2.81 dB RBW 3 MHz
Att 30 dB SWT 1.3 µs VBW 10 MHz Mode Auto FFT
SGL Count 100/100
1Pk Max
M1[1] 1.83 dBm
2.479523000 GHz
M1
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
CF 2.48 GHz
10001 pts
Span 10.0 MHz

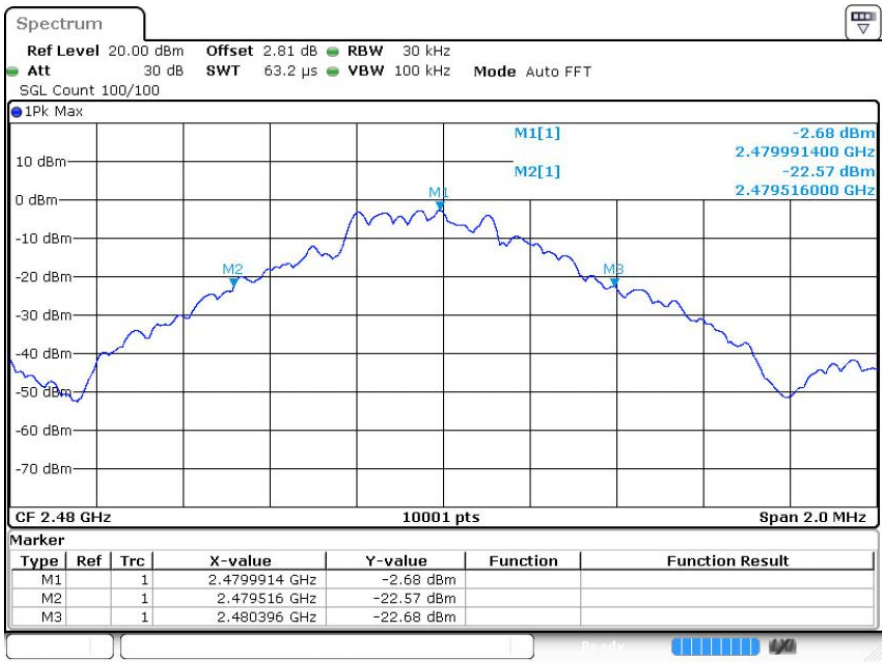
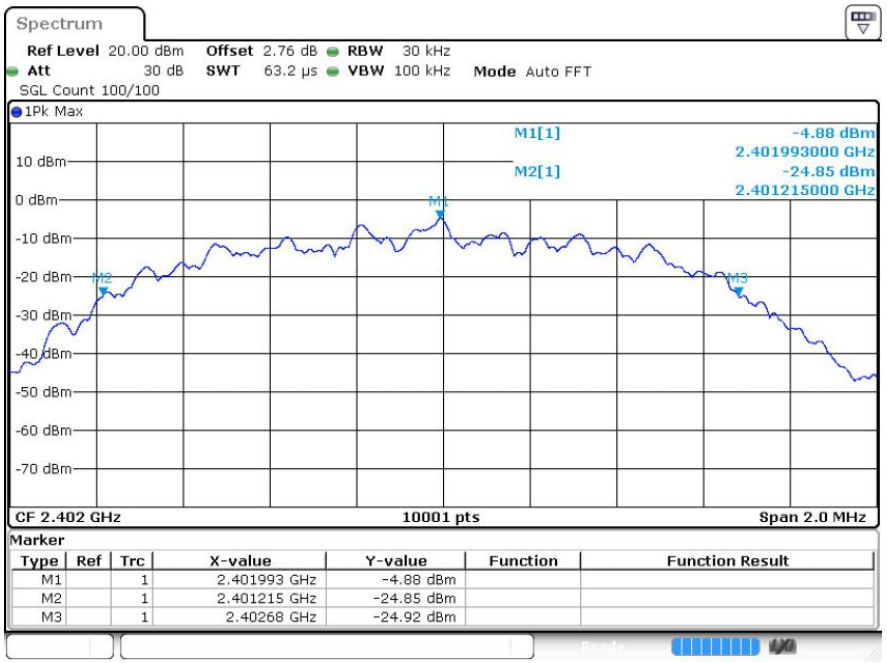
3 20dB Bandwidth

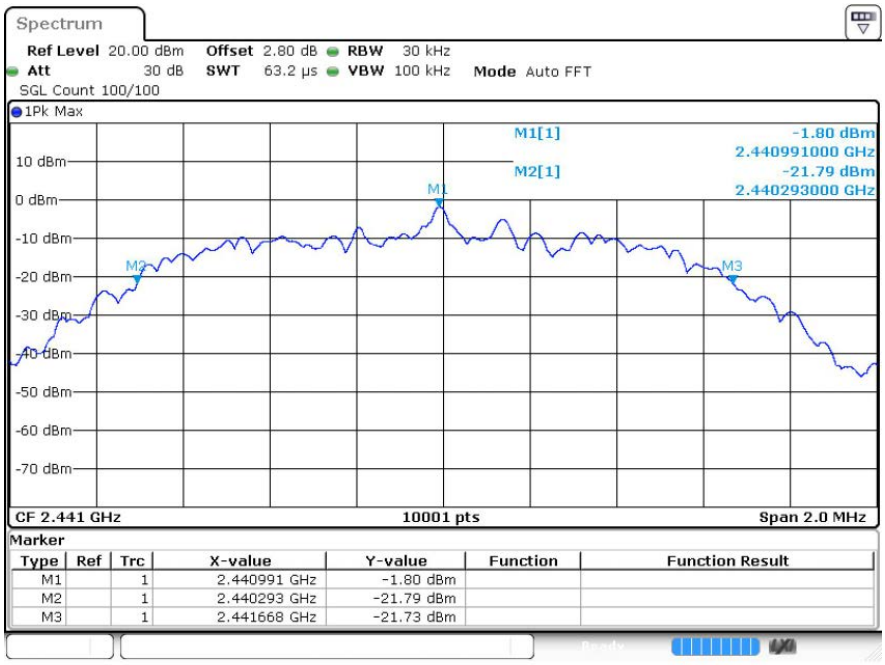
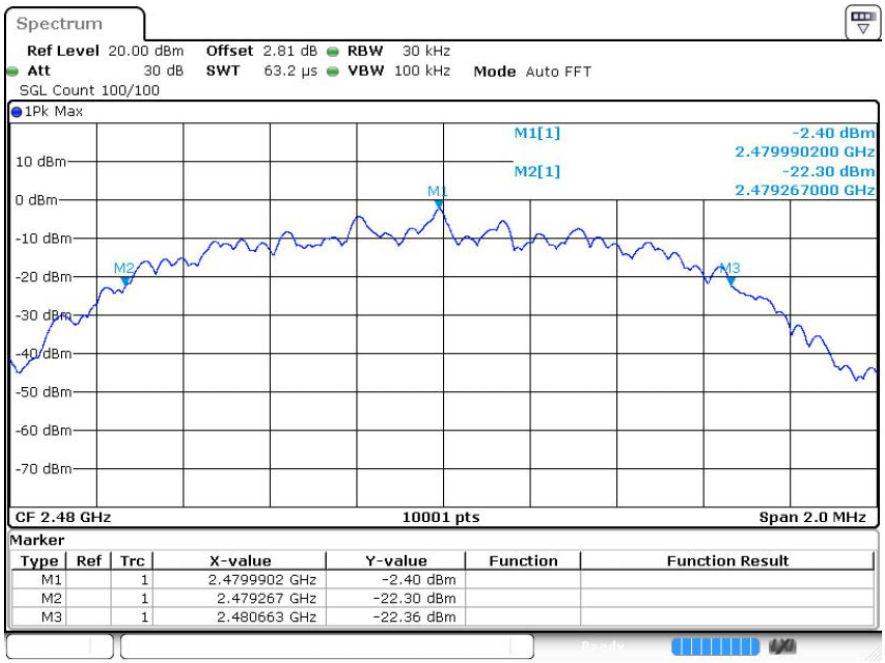
3.1 Test Result

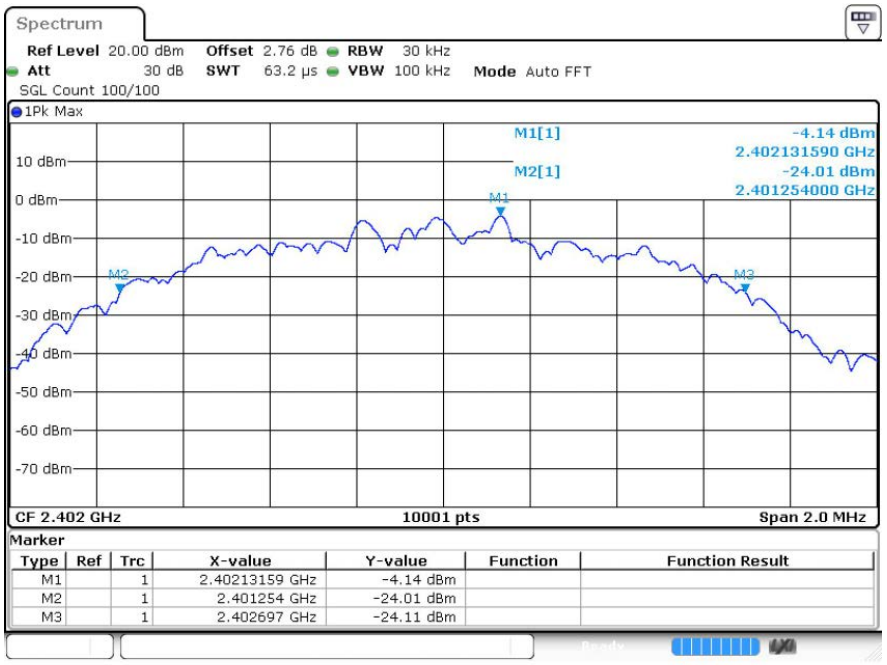
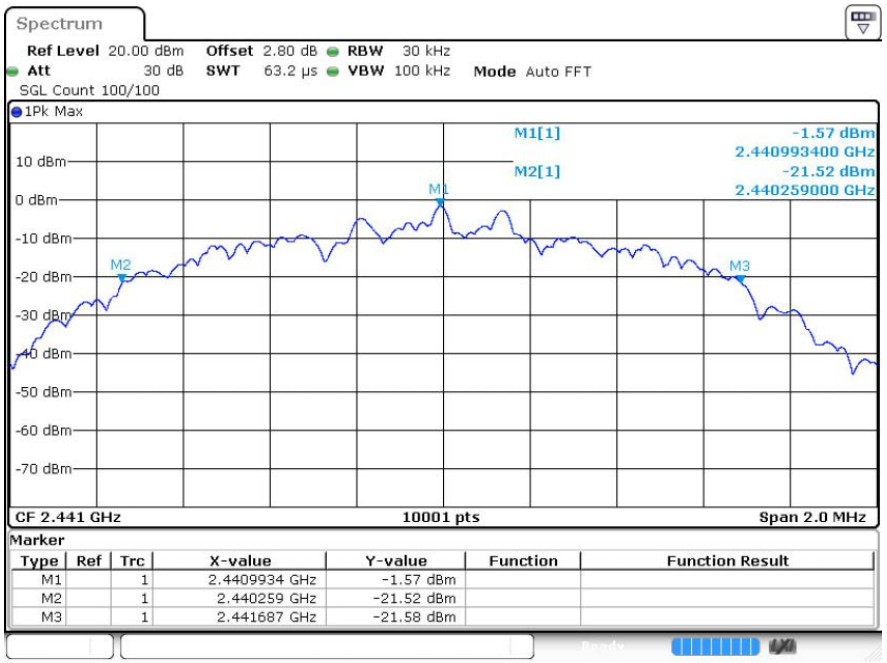
Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.874	Not Specified	Pass
	MCH	0.849	Not Specified	Pass
	HCH	0.88	Not Specified	Pass
π/4DQPSK	LCH	1.465	Not Specified	Pass
	MCH	1.375	Not Specified	Pass
	HCH	1.396	Not Specified	Pass
8DPSK	LCH	1.443	Not Specified	Pass
	MCH	1.428	Not Specified	Pass
	HCH	1.441	Not Specified	Pass

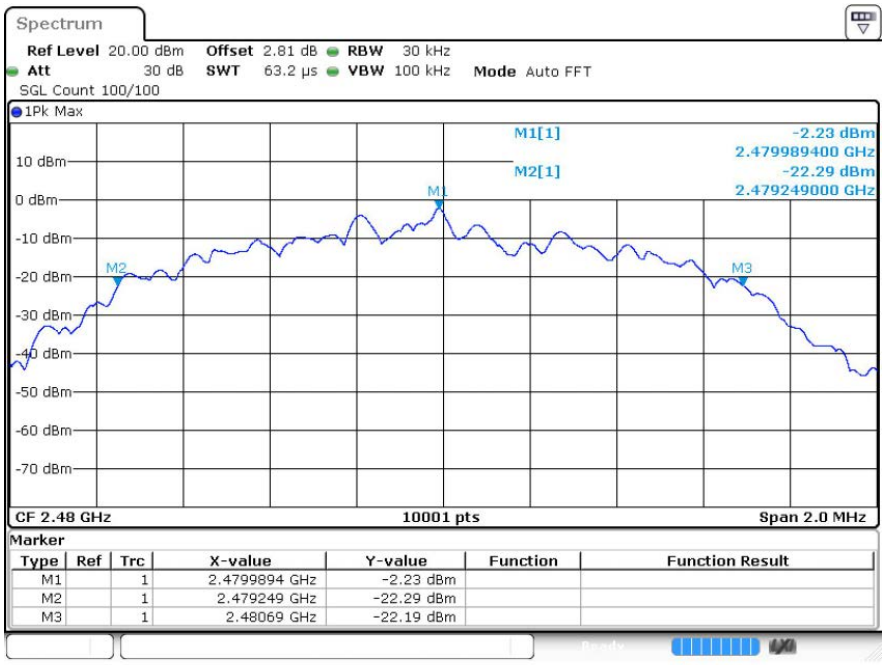
3.2 Test Graphs

Test Graphs	
GFSK/LCH	
GFSK/MCH	

GFSK/HCH	
π/4DQPSK/LCH	

π/4DQPSK/MCH	
π/4DQPSK/HCH	

8DPSK/LCH	
8DPSK/MCH	

8DPSK/HCH	

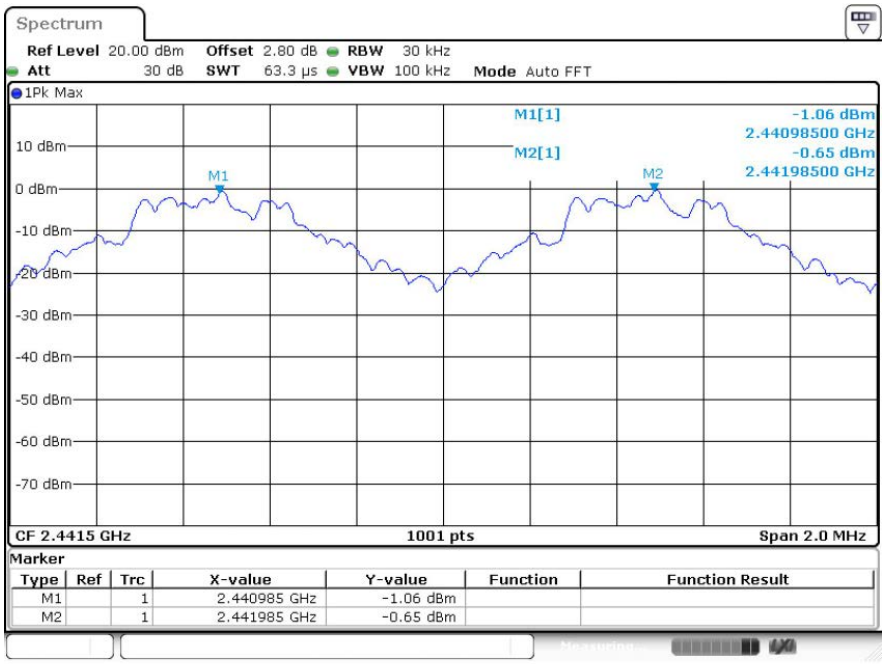
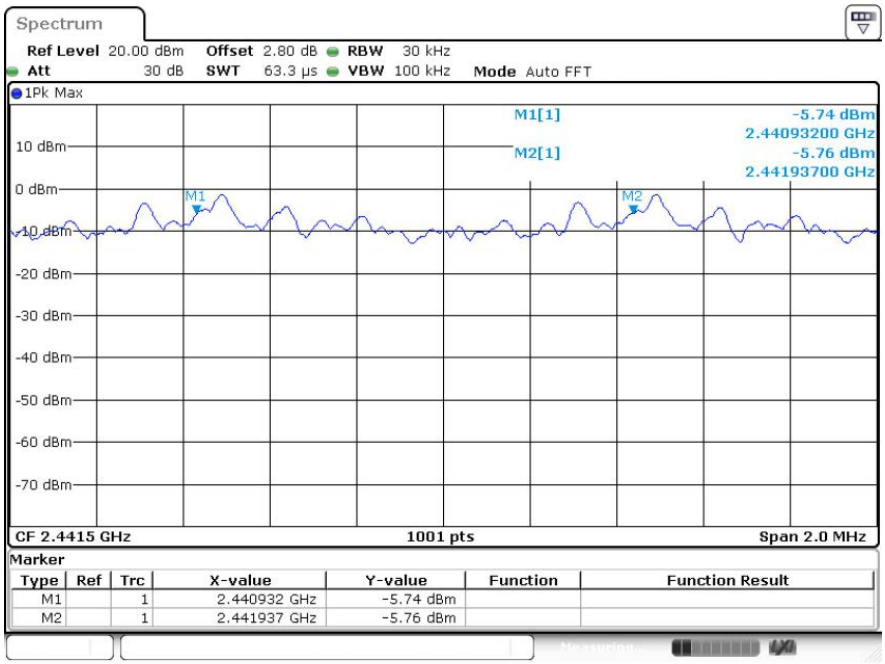
Spectrum
Ref Level 20.00 dBm Offset 2.81 dB RBW 30 kHz
Att 30 dB SWT 63.2 µs VBW 100 kHz Mode Auto FFT
SGL Count 100/100
1Pk Max
M1[1] -2.23 dBm
2.479989400 GHz
M2[1] -22.29 dBm
2.479249000 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
M2
M3
CF 2.48 GHz
10001 pts
Span 2.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.4799894 GHz -2.23 dBm
M2 1 2.479249 GHz -22.29 dBm
M3 1 2.48069 GHz -22.19 dBm

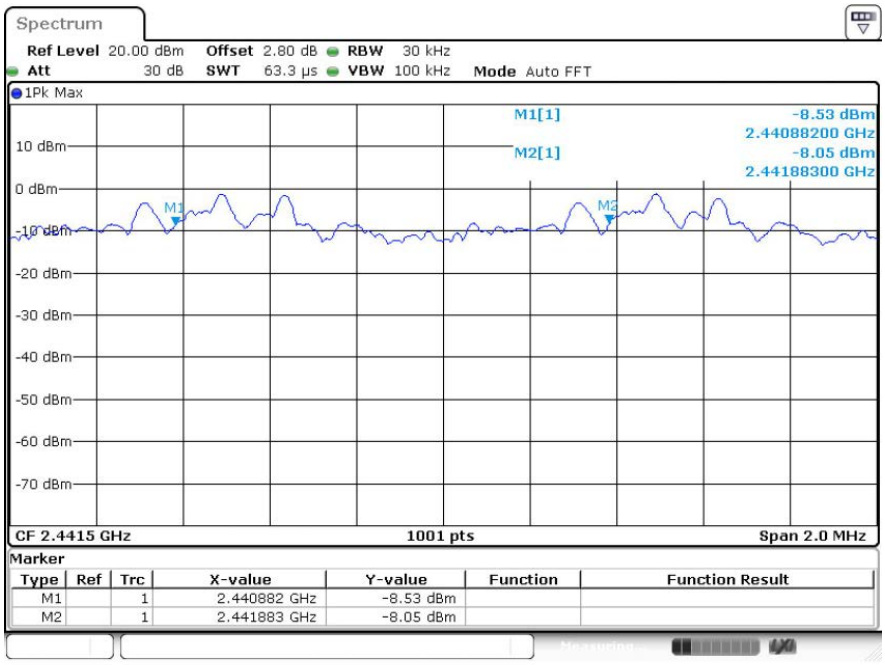
4 Carrier Frequency Separation

4.1 Test Result

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	MCH	1	0.566	Pass
π/4DQPSK	MCH	1.005	0.917	Pass
8DPSK	MCH	1.001	0.952	Pass

4.2 Test Graphs

Test Graphs	
GFSK/MCH	
π/4DQPSK/MCH	

8DPSK/MCH	

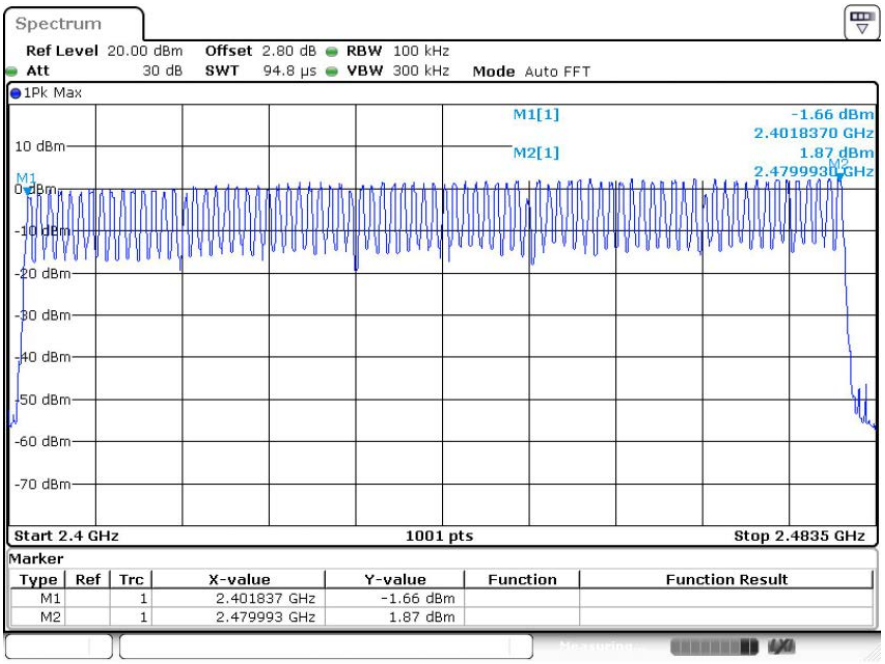
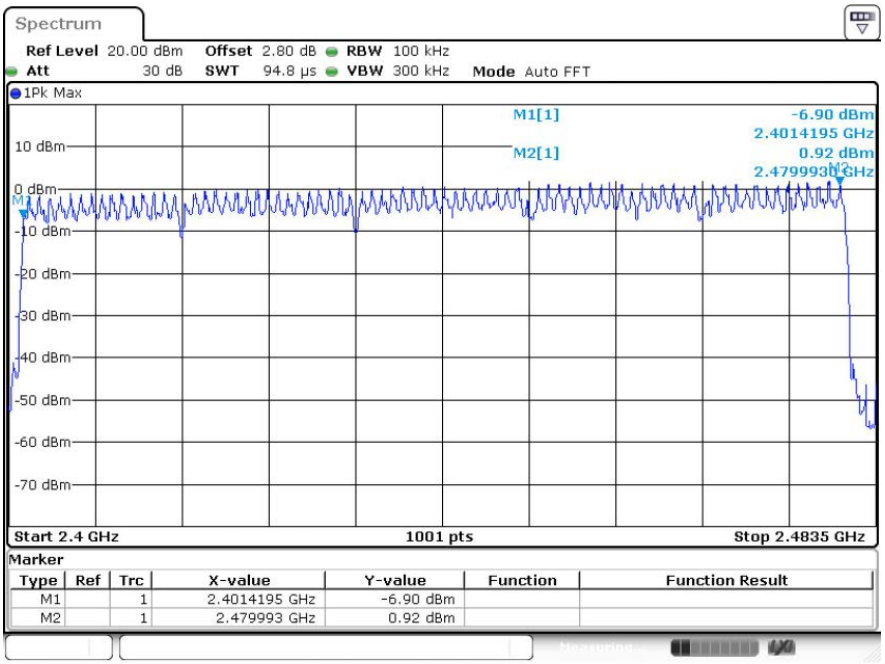
Spectrum
Ref Level 20.00 dBm Offset 2.80 dB RBW 30 kHz
Att 30 dB SWT 63.3 µs VBW 100 kHz Mode Auto FFT
1Pk Max
M1[1] -8.53 dBm
2.44088200 GHz
M2[1] -8.05 dBm
2.44188300 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
M2
CF 2.4415 GHz
1001 pts
Span 2.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.440882 GHz -8.53 dBm
M2 1 2.441883 GHz -8.05 dBm

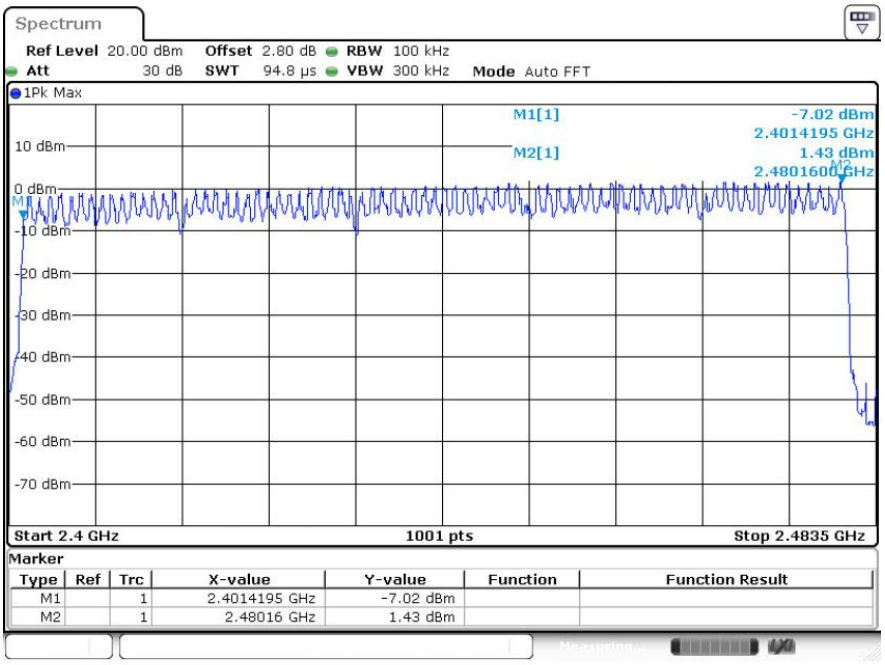
5 Hopping Channel Number

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	

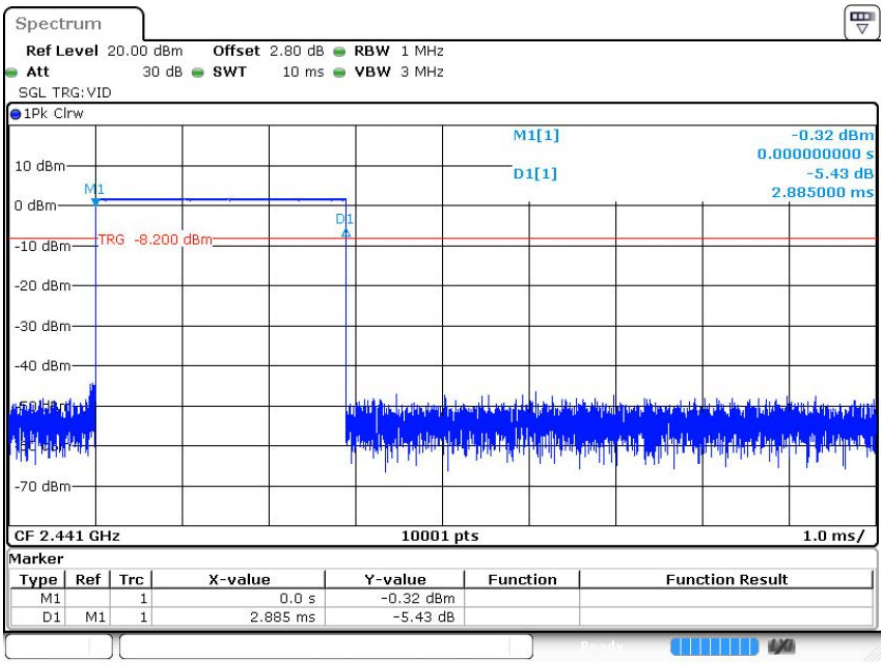
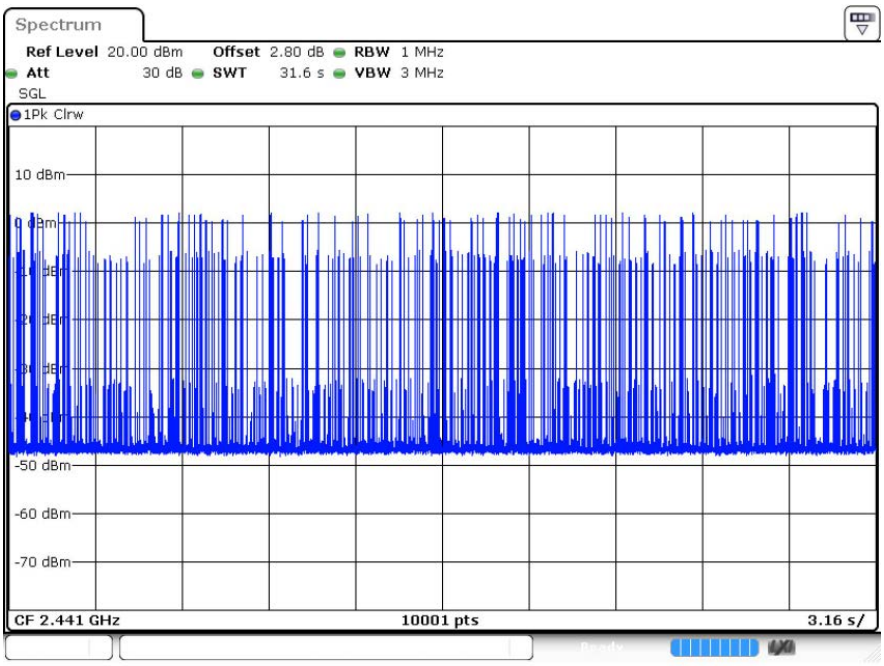
Spectrum
Ref Level 20.00 dBm Offset 2.80 dB RBW 100 kHz
Att 30 dB SWT 94.8 µs VBW 300 kHz Mode Auto FFT
1Pk Max
M1[1] -7.02 dBm
2.4014195 GHz
M2[1] 1.43 dBm
2.48016000 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
Start 2.4 GHz
1001 pts
Stop 2.4835 GHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.4014195 GHz -7.02 dBm
M2 1 2.48016 GHz 1.43 dBm

6 Dwell Time

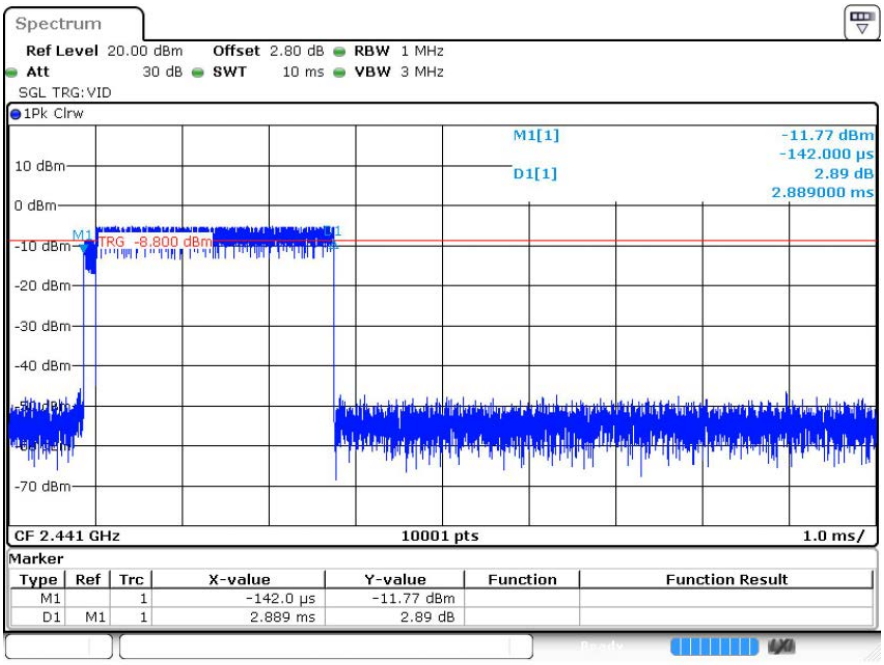
6.1 Test Result

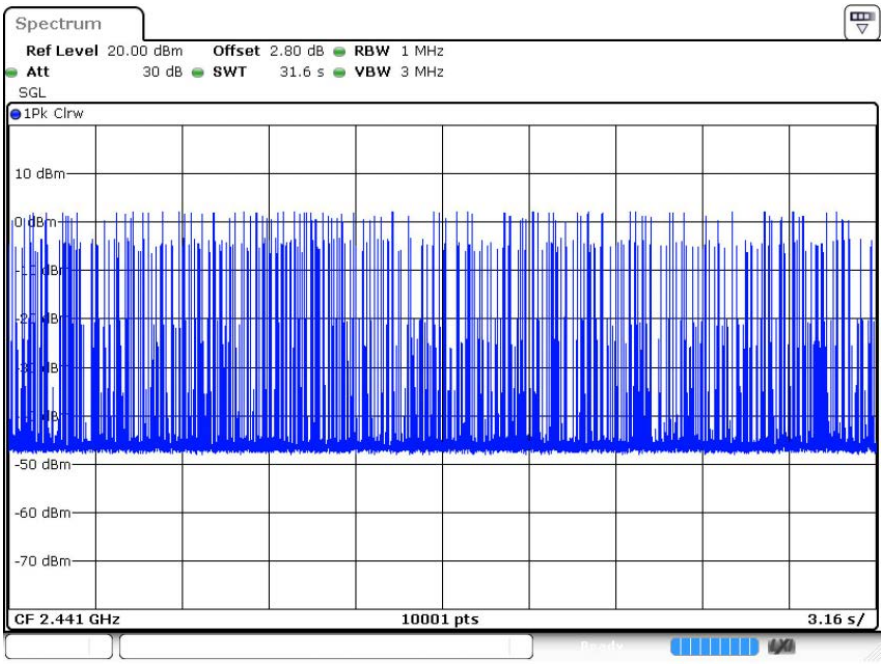
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[ms]	Limit [s]	Verdict
GFSK	DH5	MCH	2.885	104	300.04	0.4	Pass
π/4DQPSK	2DH5	MCH	2.889	112	323.568	0.4	Pass
8DPSK	3DH5	MCH	2.892	103	297.876	0.4	Pass

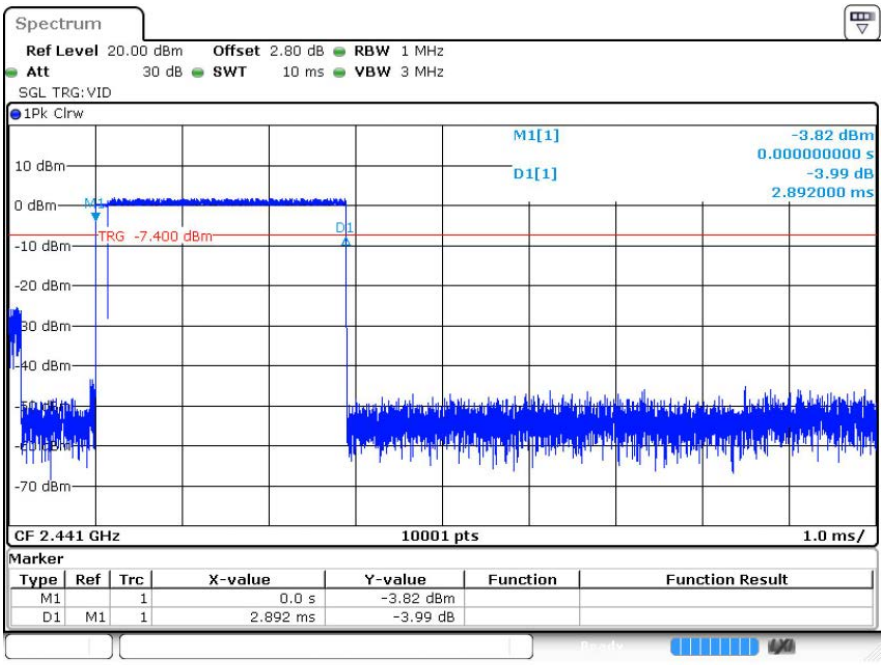
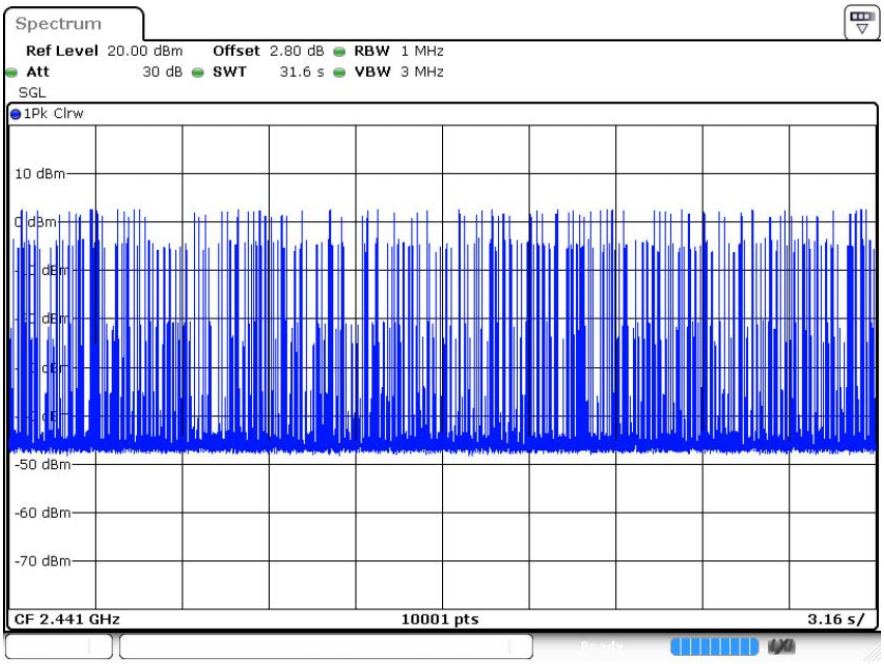
6.2 Test Graphs

Test Graphs	
GFSK_DH5/MCH	 

π/4DQPSK
_2DH5/MCH





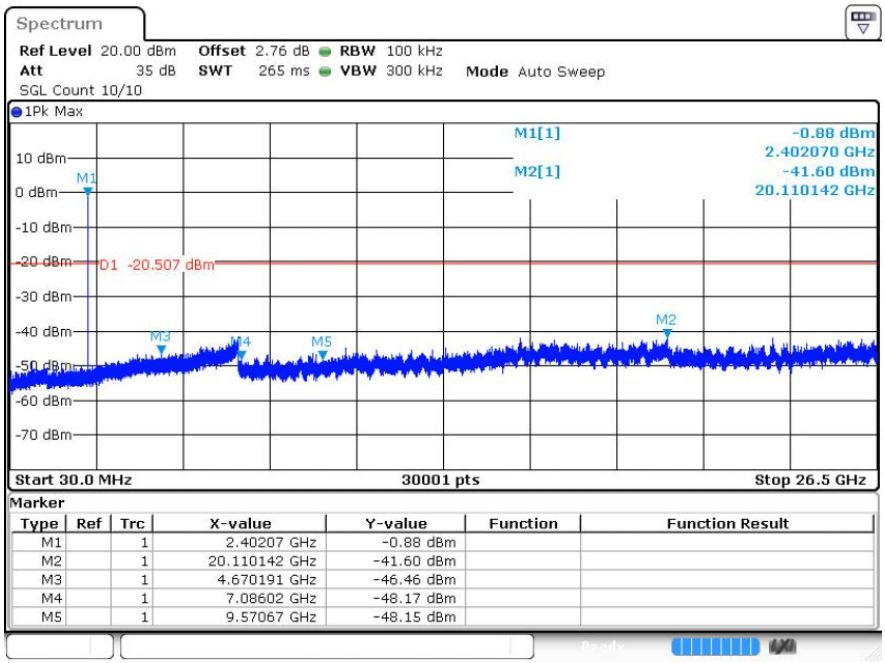
8DPSK _3DH5/MCH	 

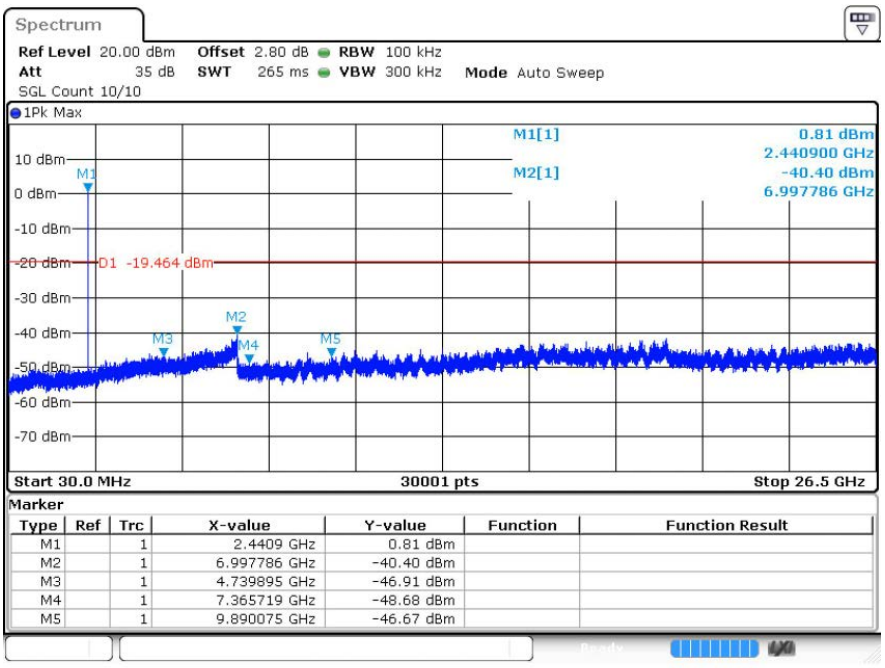
7 RF Conducted Spurious Emissions

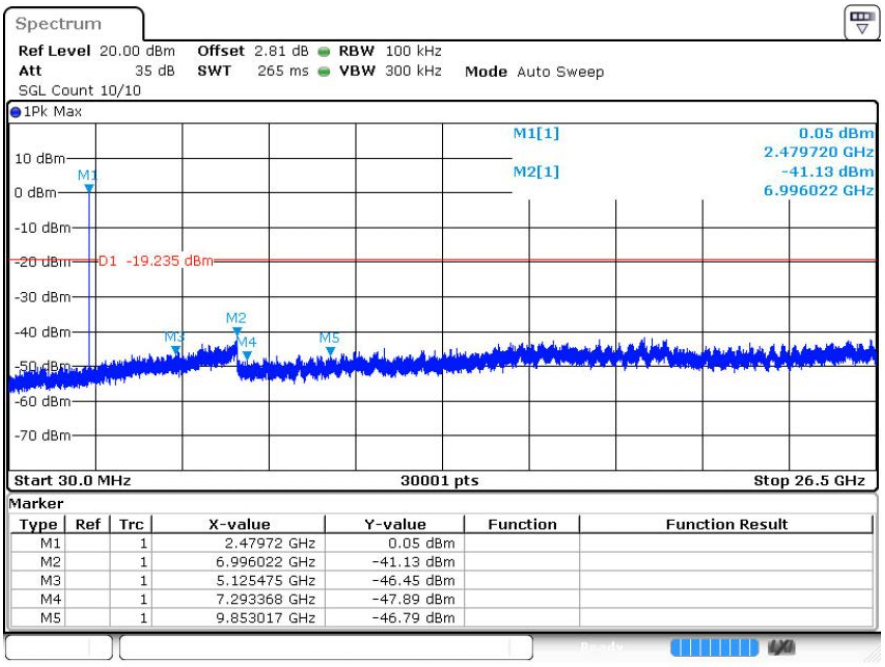
7.1 Test Result

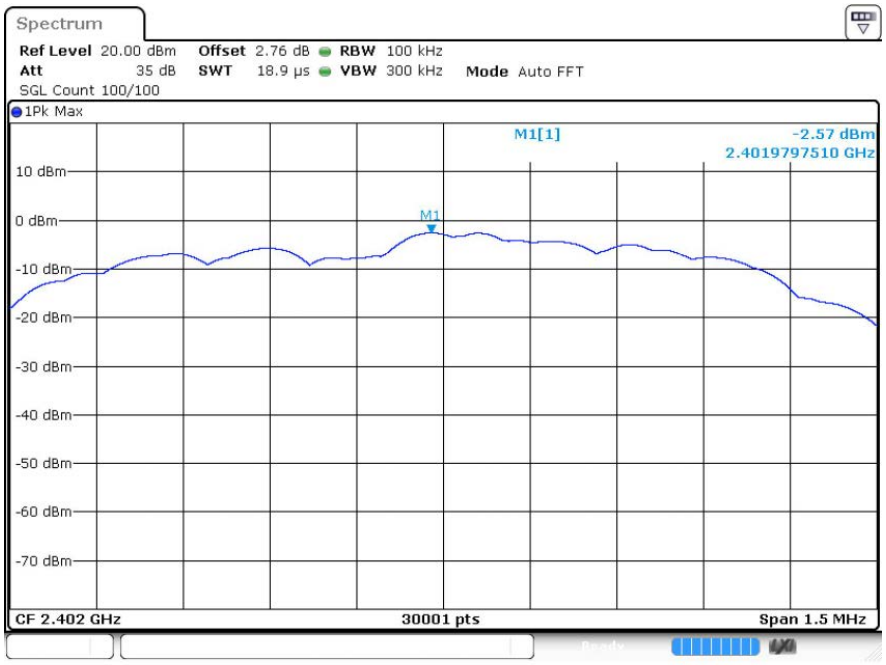
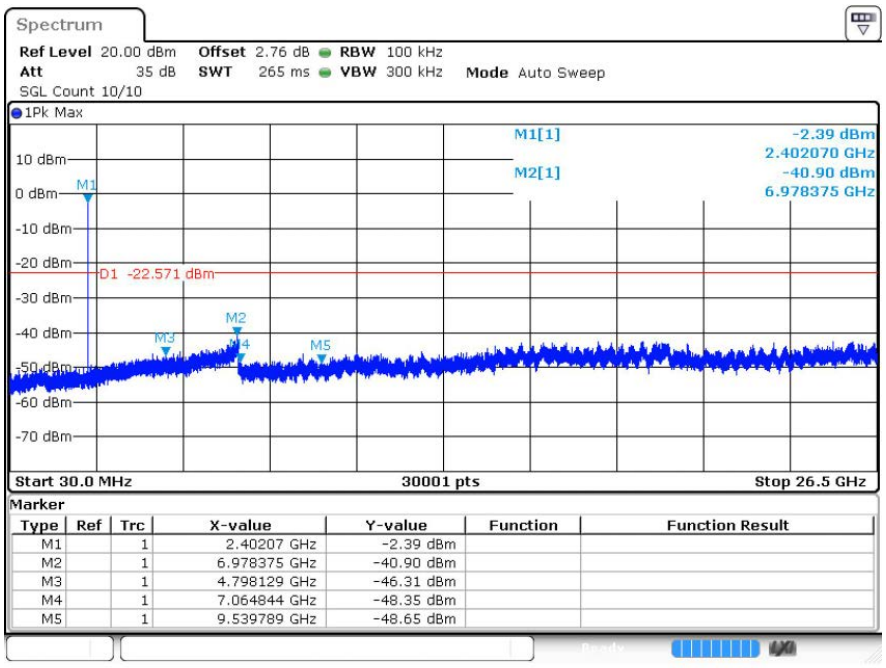
Mode	Channel	Max. Level [dBc]	Limit [dBc]	Verdict
GFSK	LCH	-41.09	-20	Pass
	MCH	-40.93	-20	Pass
	HCH	-41.88	-20	Pass
π/4DQPSK	LCH	-38.32	-20	Pass
	MCH	-40.66	-20	Pass
	HCH	-40.35	-20	Pass
8DPSK	LCH	-40.01	-20	Pass
	MCH	-40.49	-20	Pass
	HCH	-40.4	-20	Pass

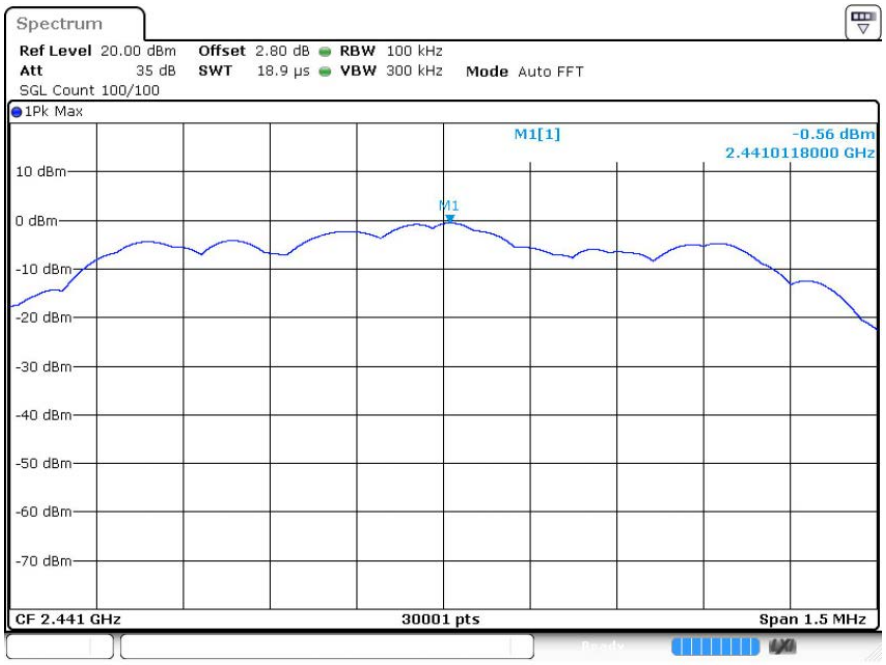
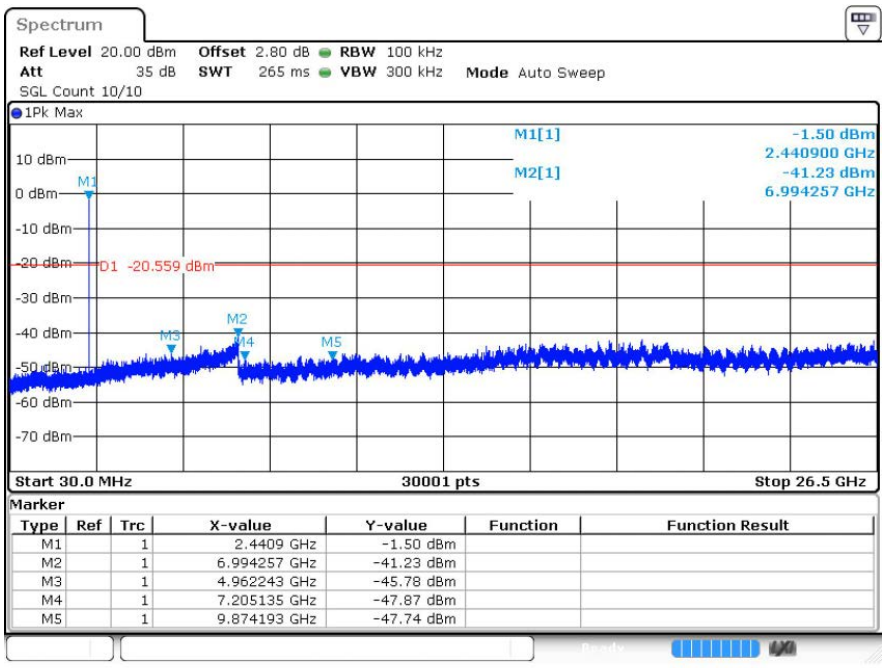
7.2 Test Graphs

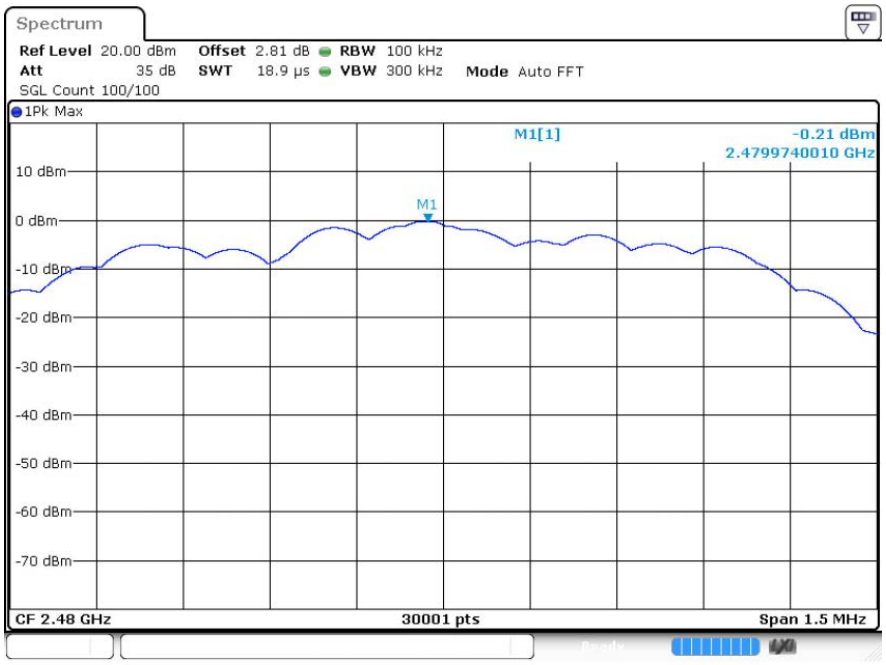
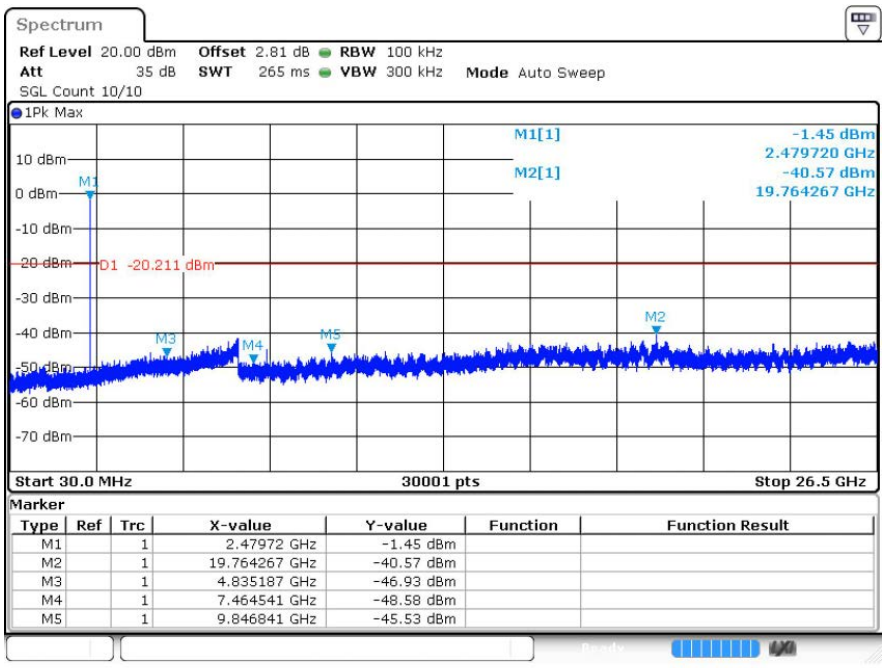
GFSK_LCH_Graphs	
Pref	
Puw	

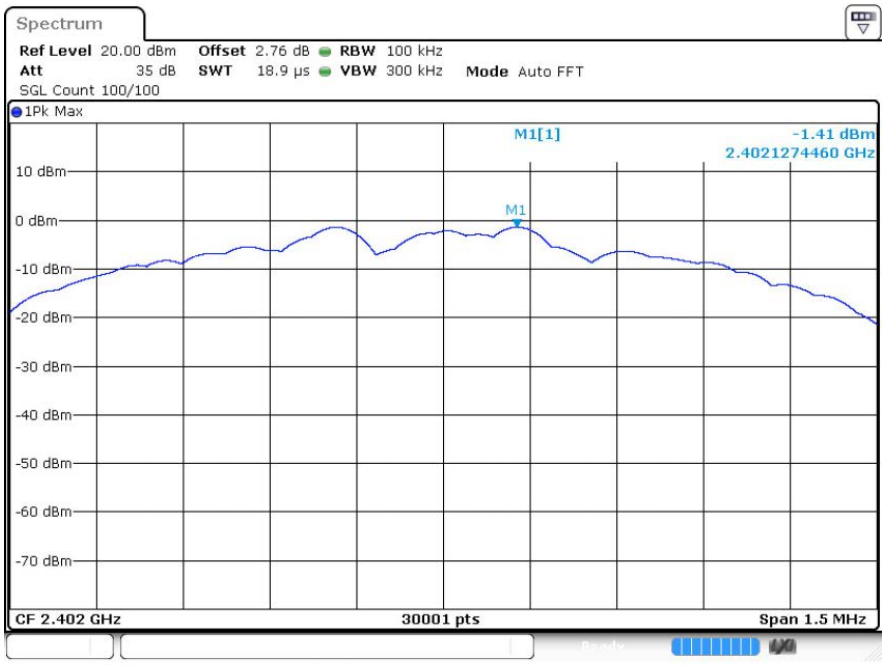
GFSK_MCH_Graphs	
Pref	
Puw	

GFSK_HCH_Graphs	
Pref	
Puw	

π/4DQPSK_LCH_Graphs	
Pref	
Puw	

π/4DQPSK_MCH_Graphs	
Pref	
Puw	 Marker Type | Ref | Trc | X-value | Y-value | Function | Function Result M1 | 1 | 2.4409 GHz | -1.50 dBm M2 | 1 | 6.994257 GHz | -41.23 dBm M3 | 1 | 4.962243 GHz | -45.78 dBm M4 | 1 | 7.205135 GHz | -47.87 dBm M5 | 1 | 9.874193 GHz | -47.74 dBm

π/4DQPSK_HCH_Graphs	
Pref	
Puw	

8DPSK_LCH_Graphs	
Pref	
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