Appendix A

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

Product Name: FIBONACCI CLOCK

Trade Mark: FIBONAX

Test Model: PRACTICA

Environmental Conditions

Temperature:	25.6℃
Relative Humidity:	56.4%
ATM Pressure:	101Kpa
Test Engineer:	Emiya lin
Supervised by:	Simba Haung

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1 Duty Cycle

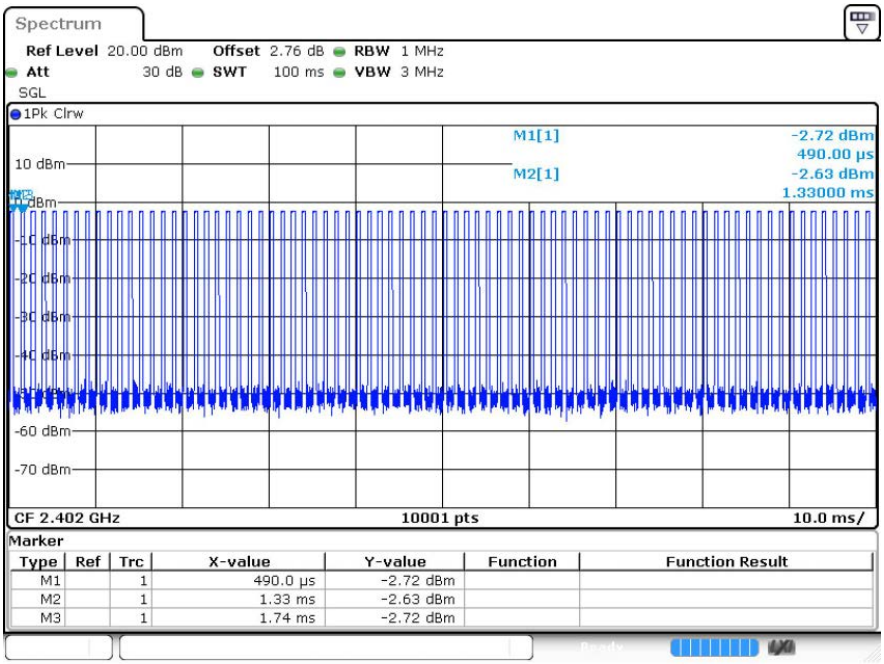
1.1 Test Result

Mode	Frequency (MHz)	Duty Cycle (%)	Correction Factor	1/T (kHz)
1-DH1	2402	34.26	4.65	2.44
1-DH1	2441	33.6	4.74	2.44
1-DH1	2480	33.61	4.74	2.44
2-DH1	2402	35.21	4.53	2.33
2-DH1	2441	34.4	4.63	2.38
2-DH1	2480	35.2	4.54	2.33
3-DH1	2402	35.08	4.55	2.33
3-DH1	2441	34.4	4.63	2.38
3-DH1	2480	34.4	4.63	2.38

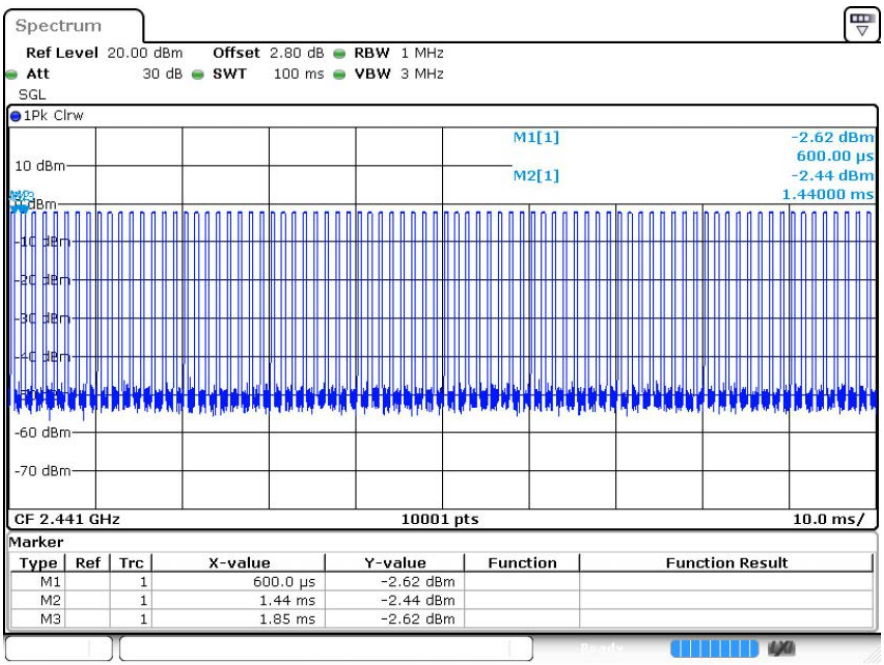
1.2 Test Graphs

Test Graphs

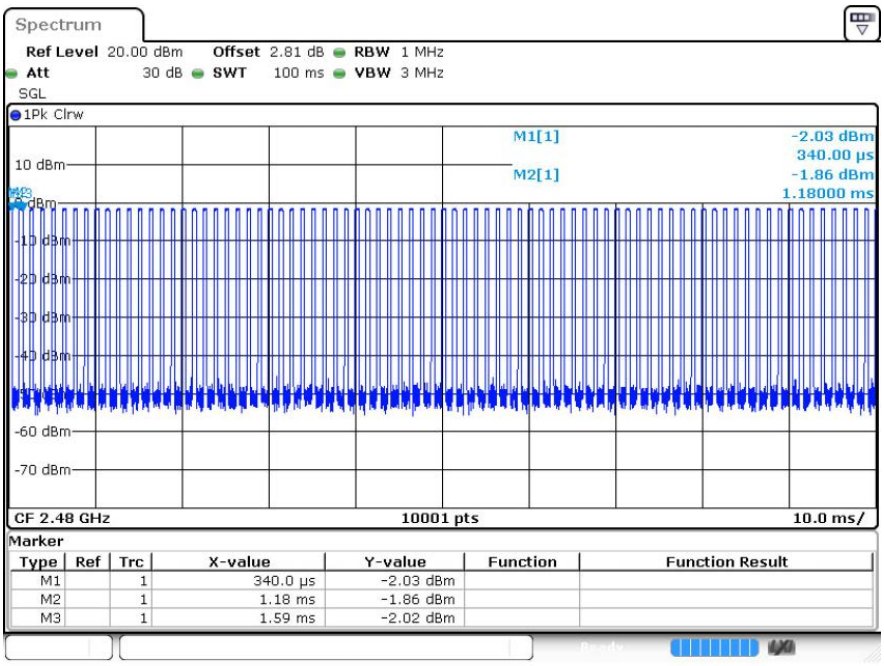
1-DH1 2402MHz



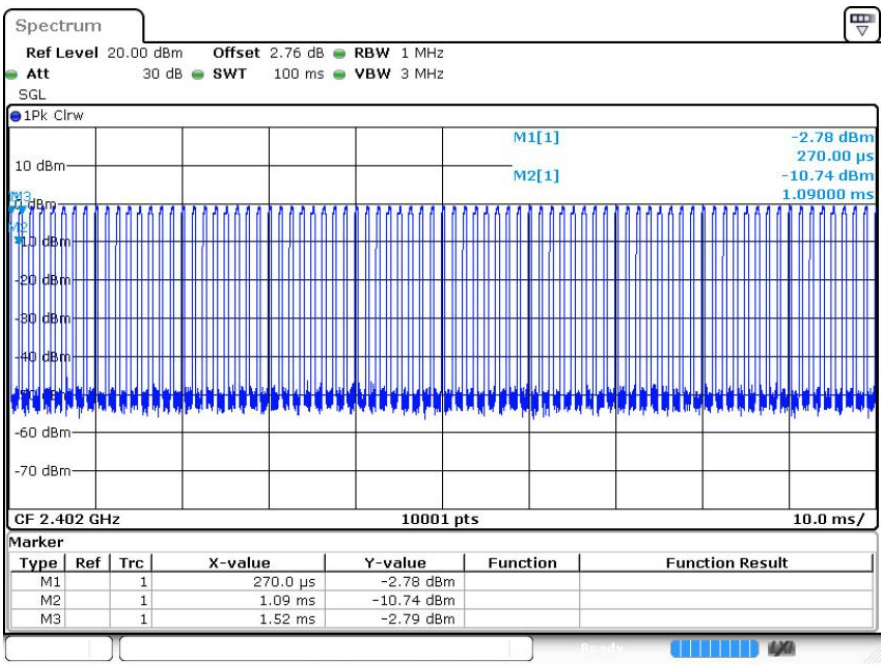
1-DH1 2441MHz



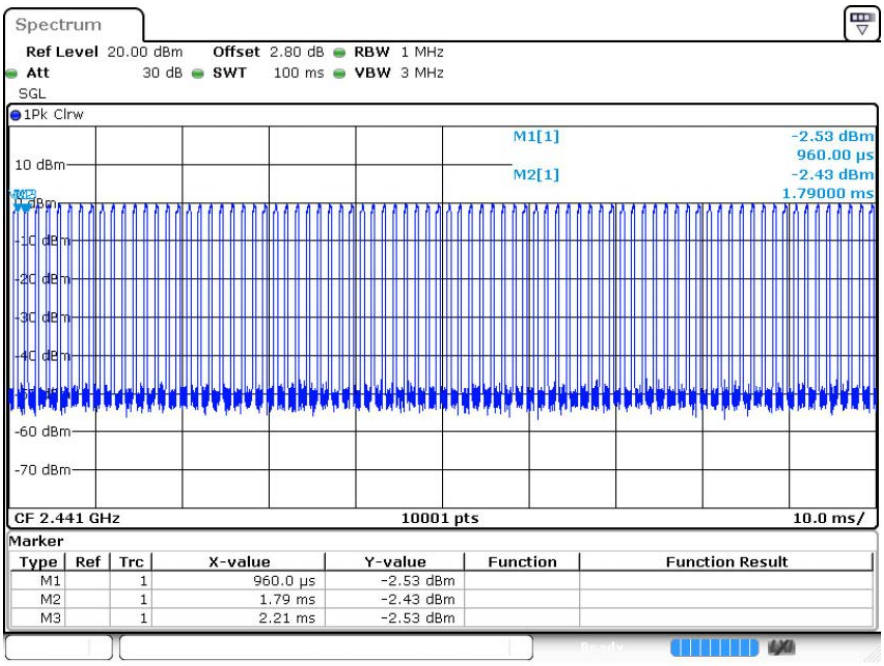
1-DH1 2480MHz



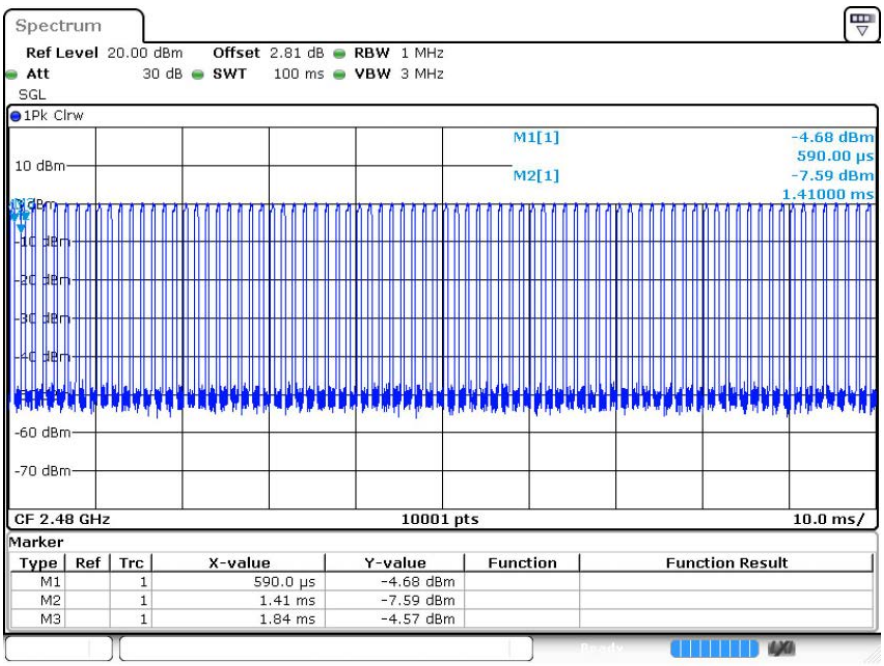
2-DH1 2402MHz



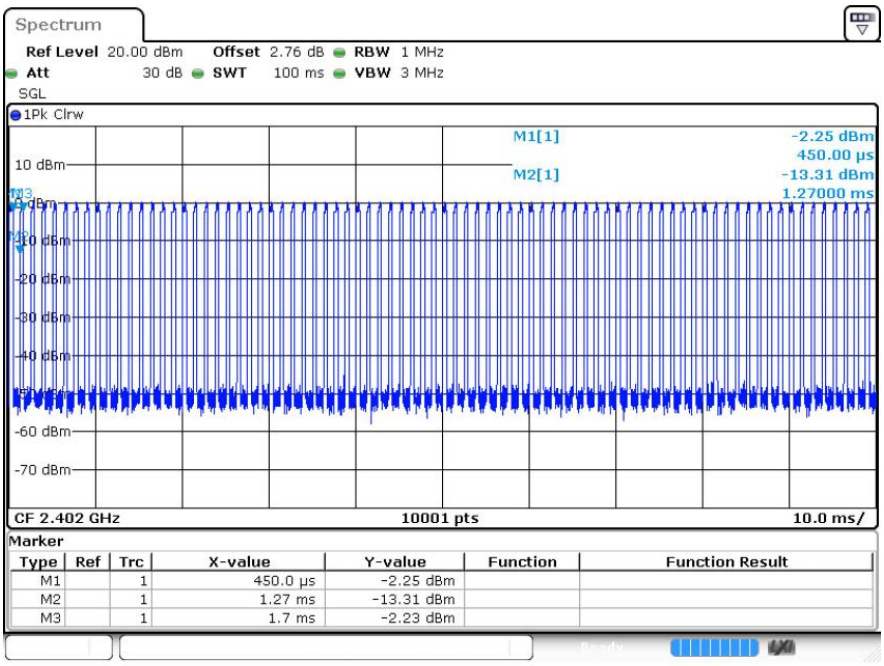
2-DH1 2441MHz



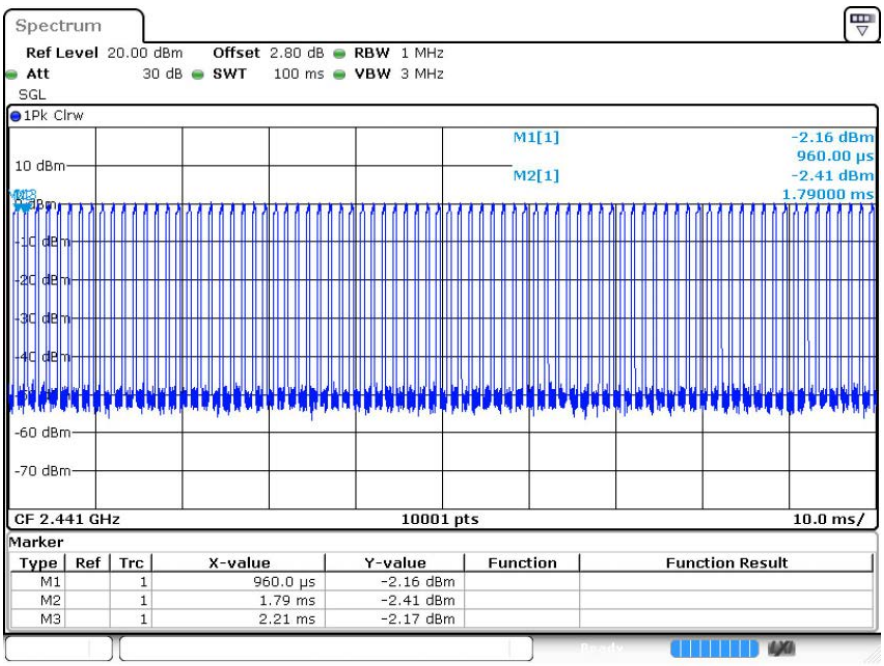
2-DH1 2480MHz



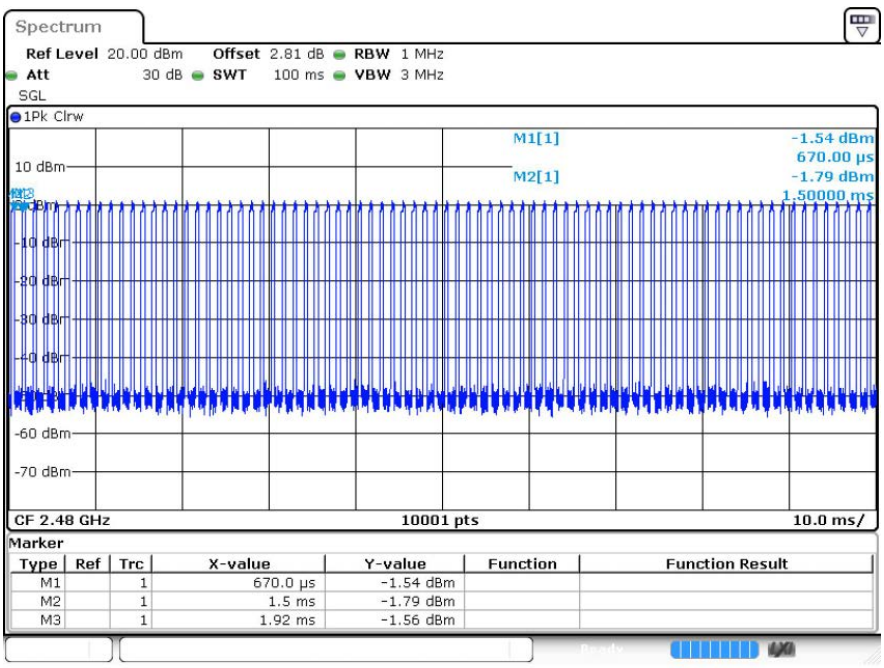
3-DH1 2402MHz



3-DH1 2441MHz



3-DH1 2480MHz

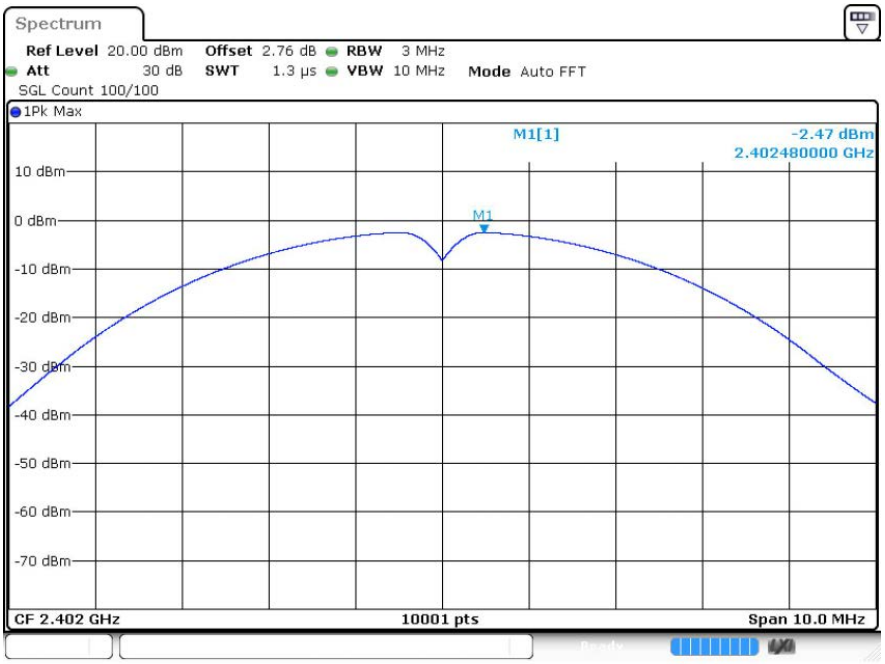
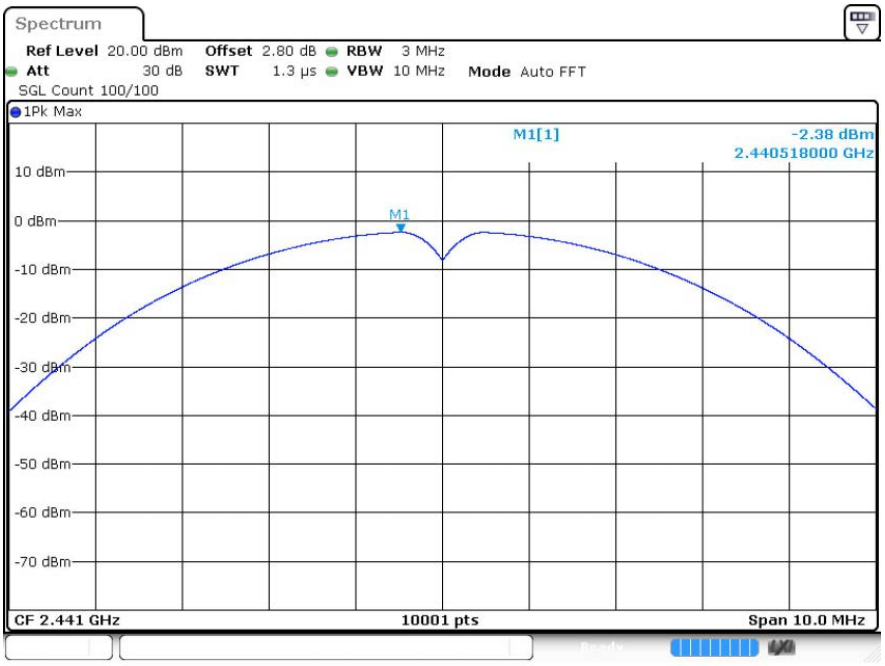


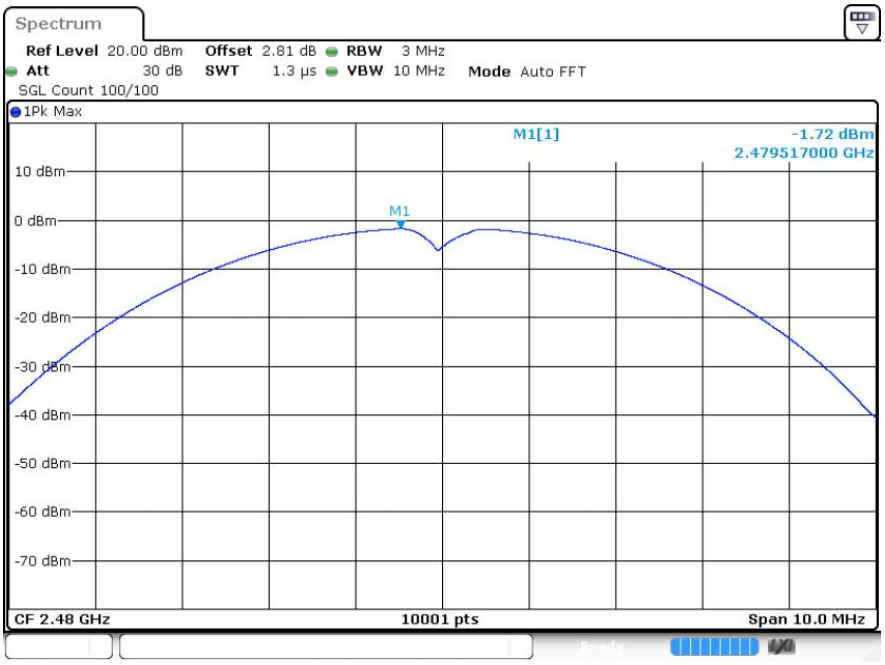
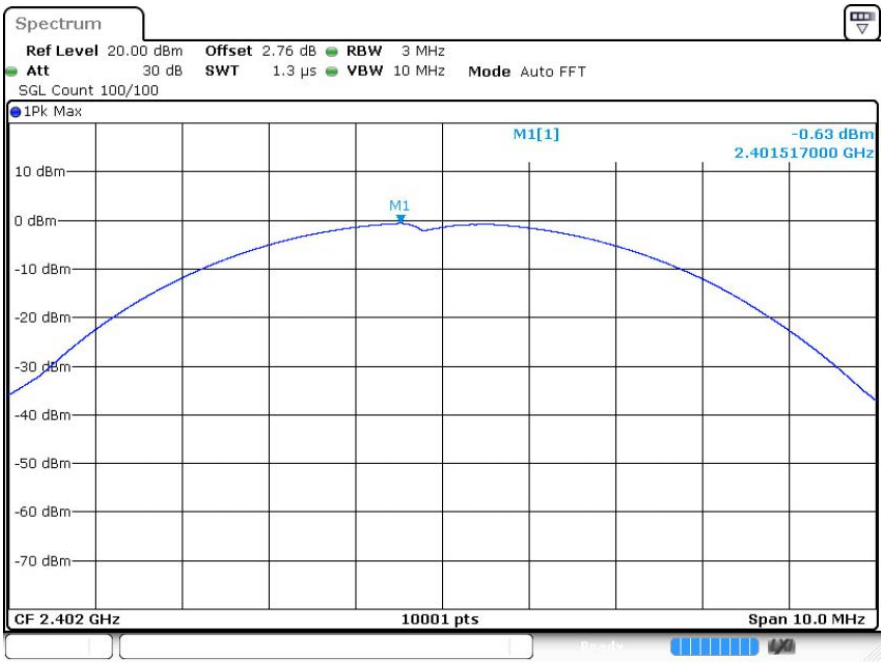
2 Maximum Conducted Peak Output Power

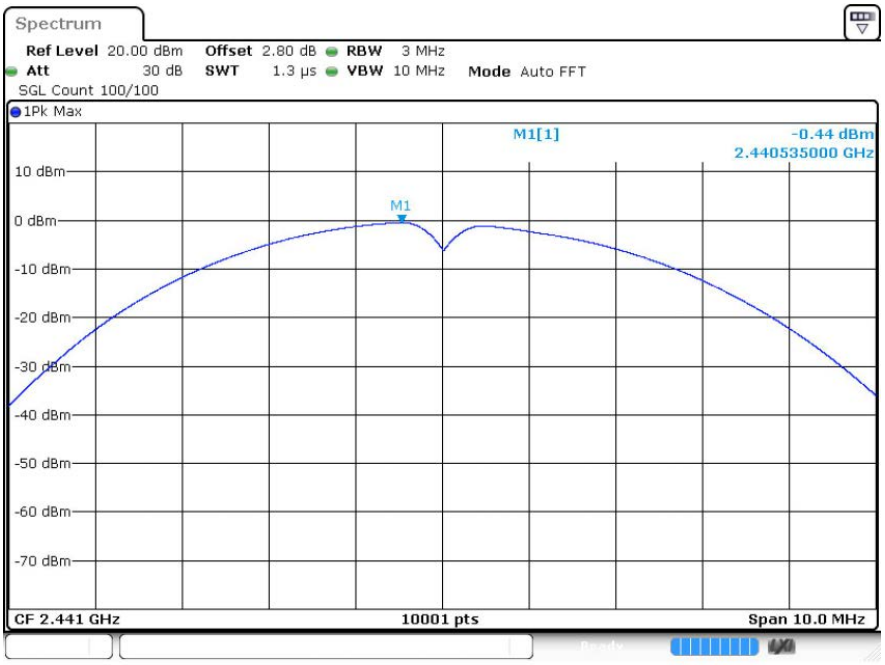
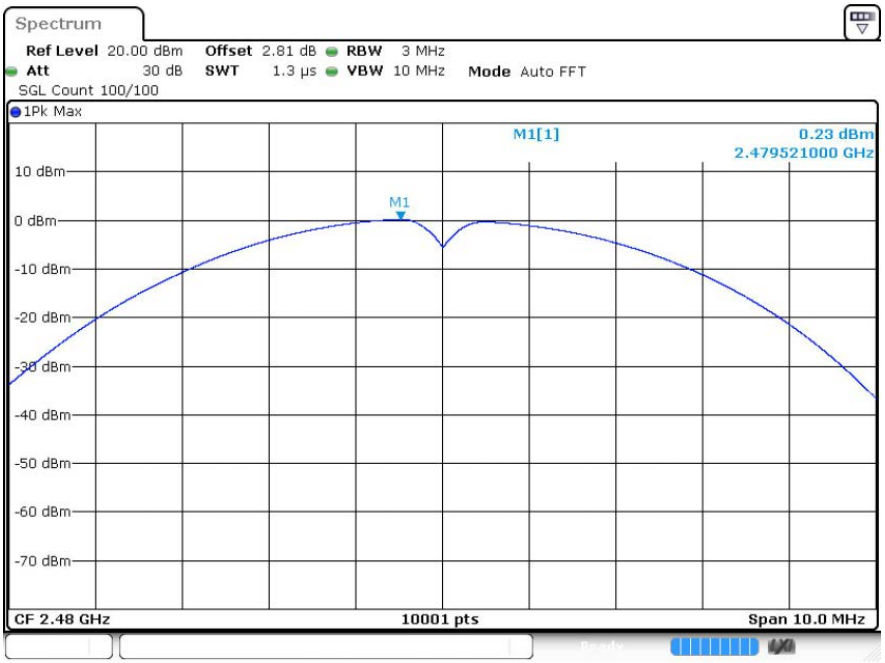
2.1 Test Result

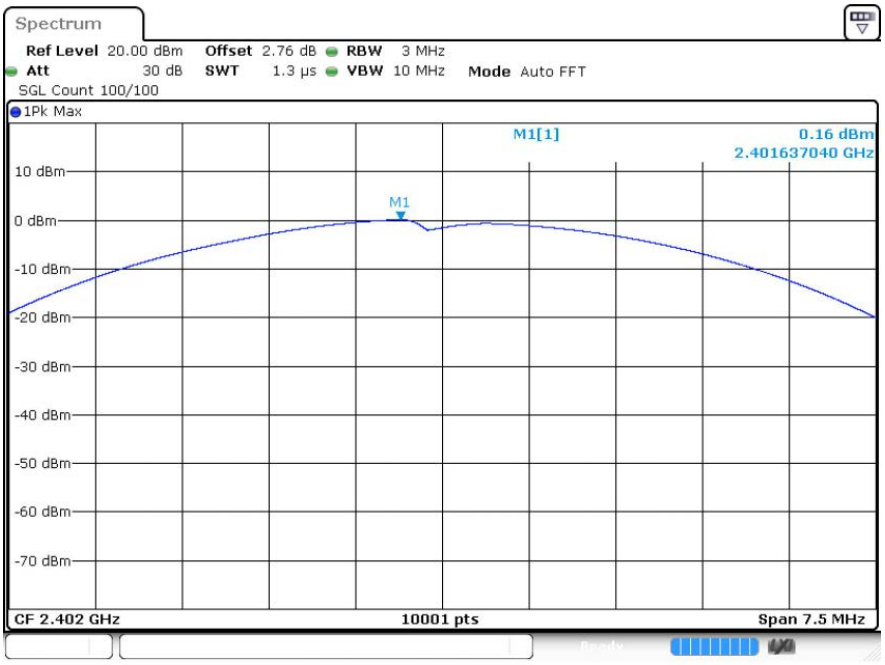
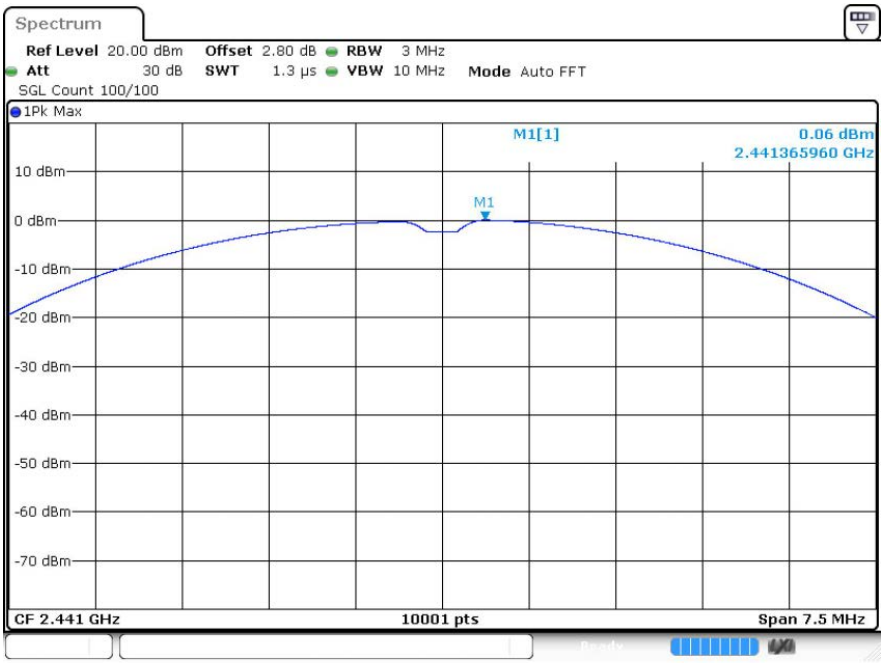
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-2.47	21	Pass
	MCH	-2.38	21	Pass
	HCH	-1.72	21	Pass
π/4DQPSK	LCH	-0.63	21	Pass
	MCH	-0.44	21	Pass
	HCH	0.23	21	Pass
8DPSK	LCH	0.16	21	Pass
	MCH	0.06	21	Pass
	HCH	0.15	21	Pass

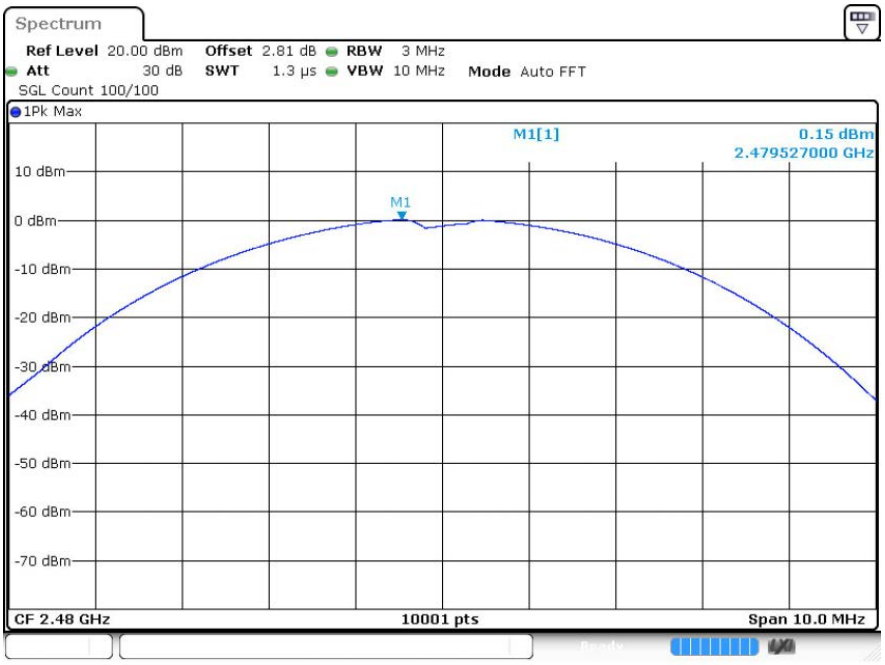
2.2 Test Graphs

Test Graphs	
GFSK/LCH	
GFSK/MCH	

GFSK/HCH	
π/4DQPSK/LCH	

π/4DQPSK/MCH	
π/4DQPSK/HCH	

8DPSK/LCH	
8DPSK/MCH	

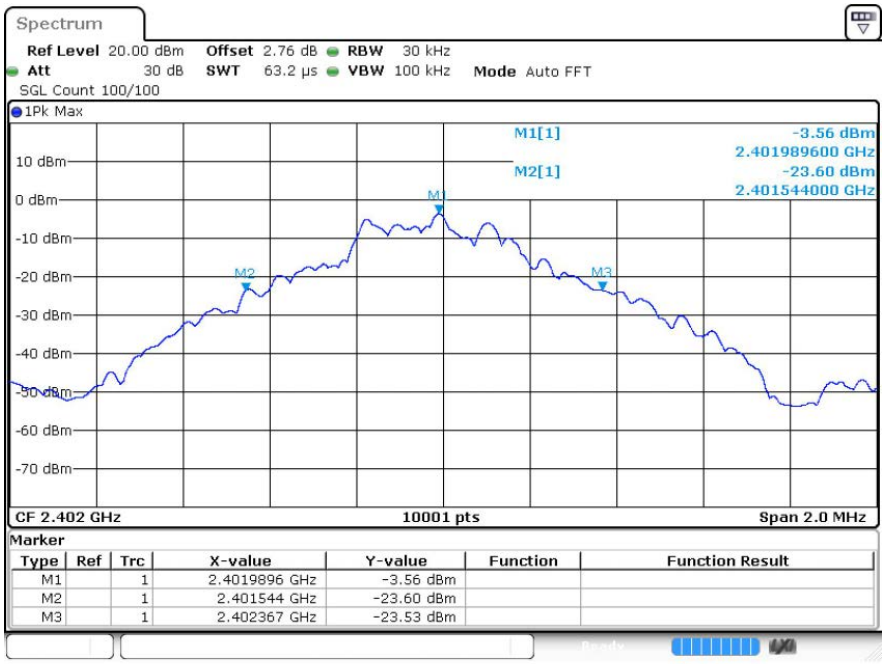
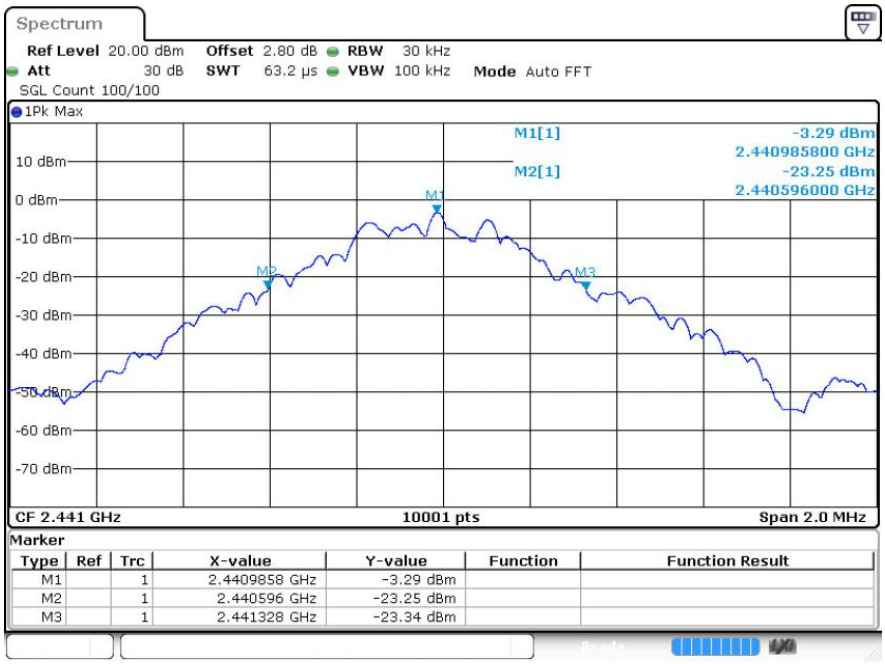
8DPSK/HCH	 Spectrum Ref Level 20.00 dBm Offset 2.81 dB RBW 3 MHz Att 30 dB SWT 1.3 µs VBW 10 MHz Mode Auto FFT SGL Count 100/100 1Pk Max M1[1] 0.15 dBm 2.479527000 GHz M1 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm -70 dBm CF 2.48 GHz 10001 pts Span 10.0 MHz

3 20dB Bandwidth

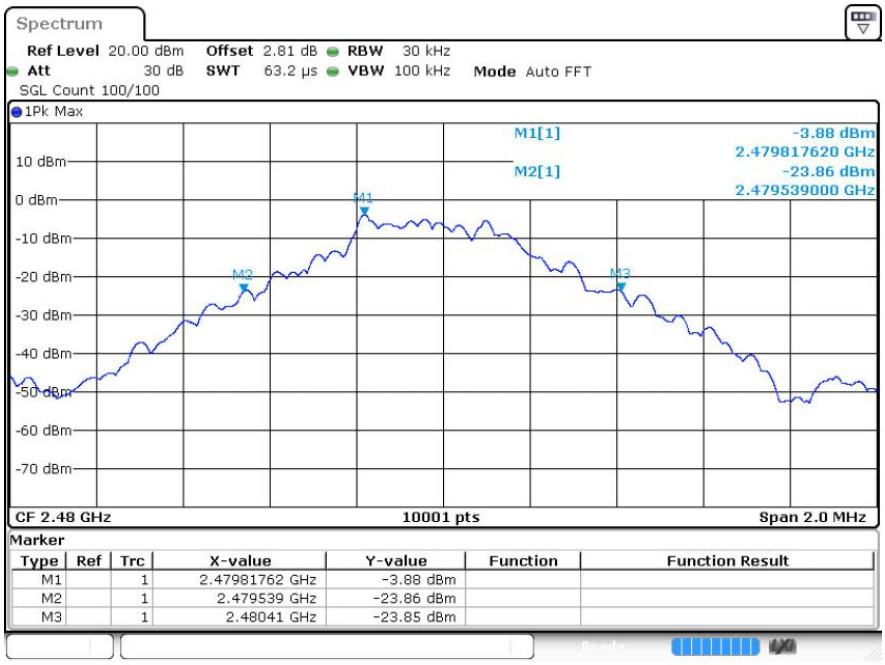
3.1 Test Result

Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.823	Not Specified	Pass
	MCH	0.732	Not Specified	Pass
	HCH	0.871	Not Specified	Pass
π/4DQPSK	LCH	1.226	Not Specified	Pass
	MCH	1.238	Not Specified	Pass
	HCH	1.226	Not Specified	Pass
8DPSK	LCH	1.199	Not Specified	Pass
	MCH	1.242	Not Specified	Pass
	HCH	1.241	Not Specified	Pass

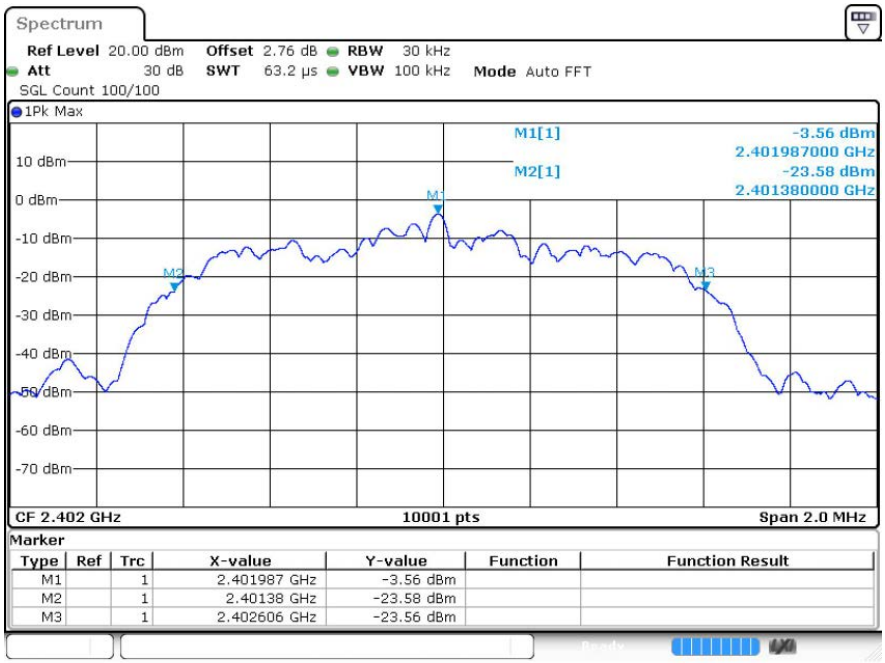
3.2 Test Graphs

Test Graphs	
GFSK/LCH	
GFSK/MCH	

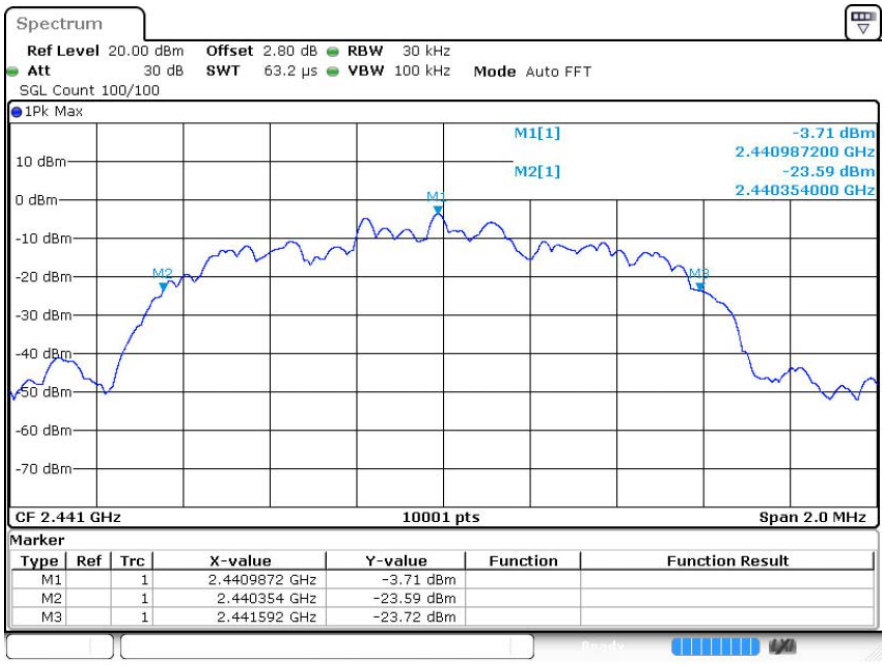
GFSK/HCH



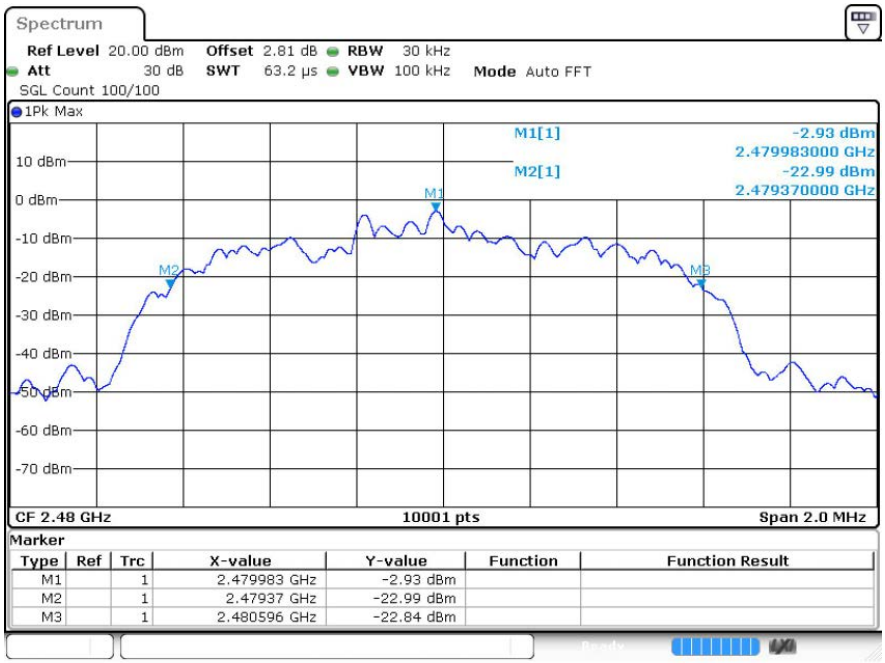
π/4DQPSK/LCH

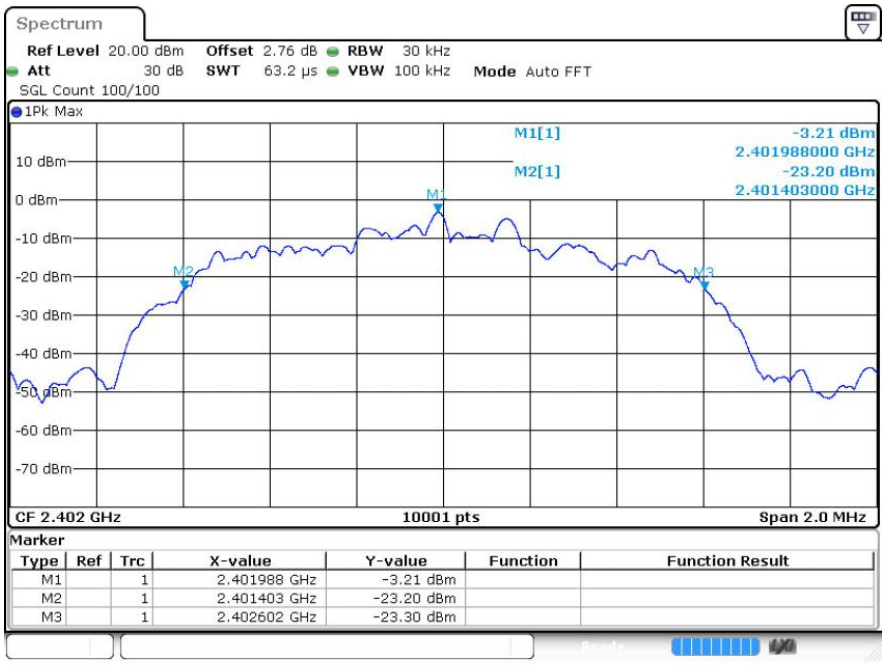
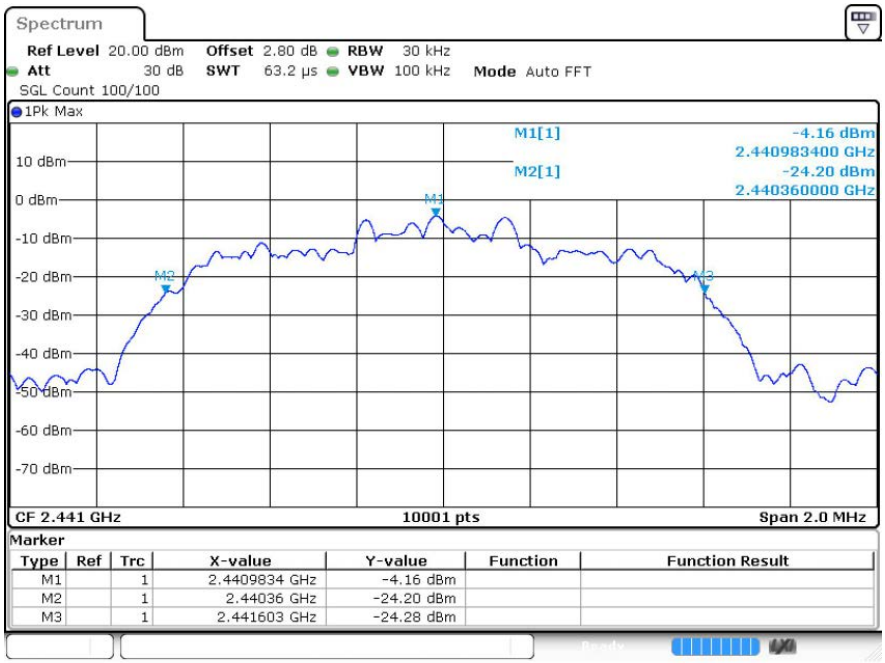


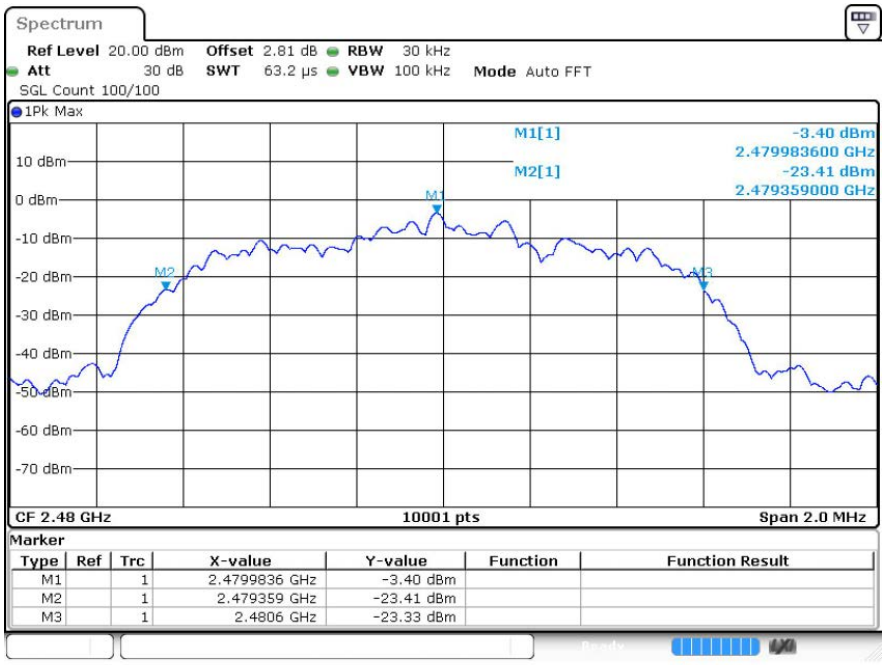
π/4DQPSK/MCH



π/4DQPSK/HCH



8DPSK/LCH	
8DPSK/MCH	

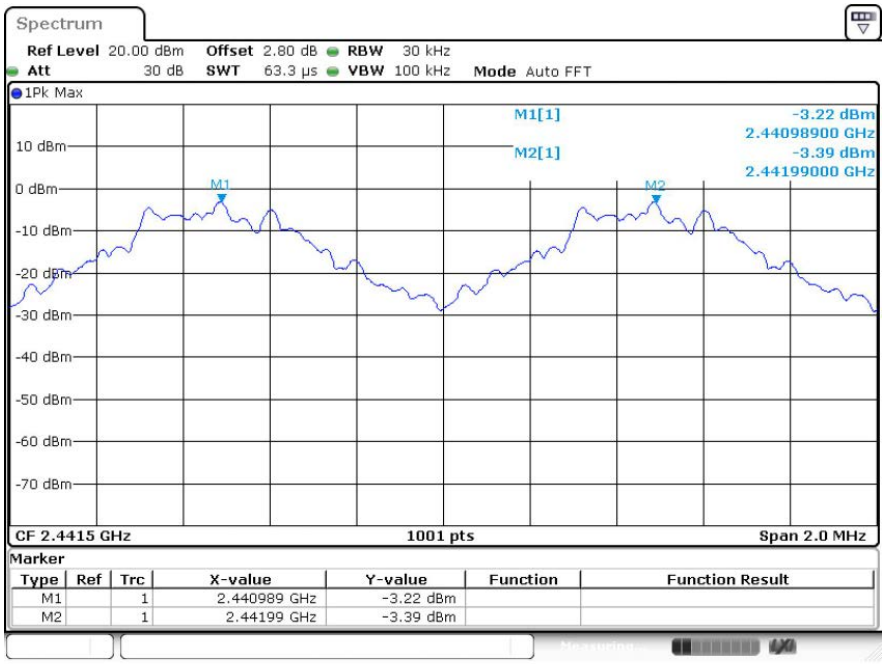
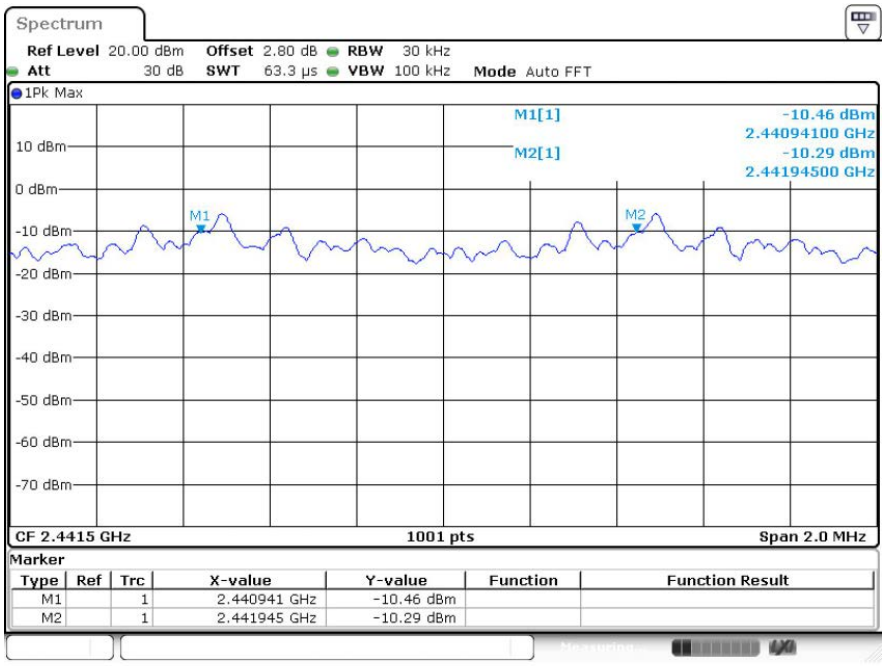
8DPSK/HCH	 Spectrum Ref Level 20.00 dBm Offset 2.81 dB RBW 30 kHz Att 30 dB SWT 63.2 µs VBW 100 kHz Mode Auto FFT SGL Count 100/100 1Pk Max M1[1] -3.40 dBm 2.479983600 GHz M2[1] -23.41 dBm 2.479359000 GHz 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm -70 dBm M1 M2 M3 CF 2.48 GHz 10001 pts Span 2.0 MHz Marker Type Ref Trc X-value Y-value Function Function Result M1 1 2.4799836 GHz -3.40 dBm M2 1 2.479359 GHz -23.41 dBm M3 1 2.4806 GHz -23.33 dBm

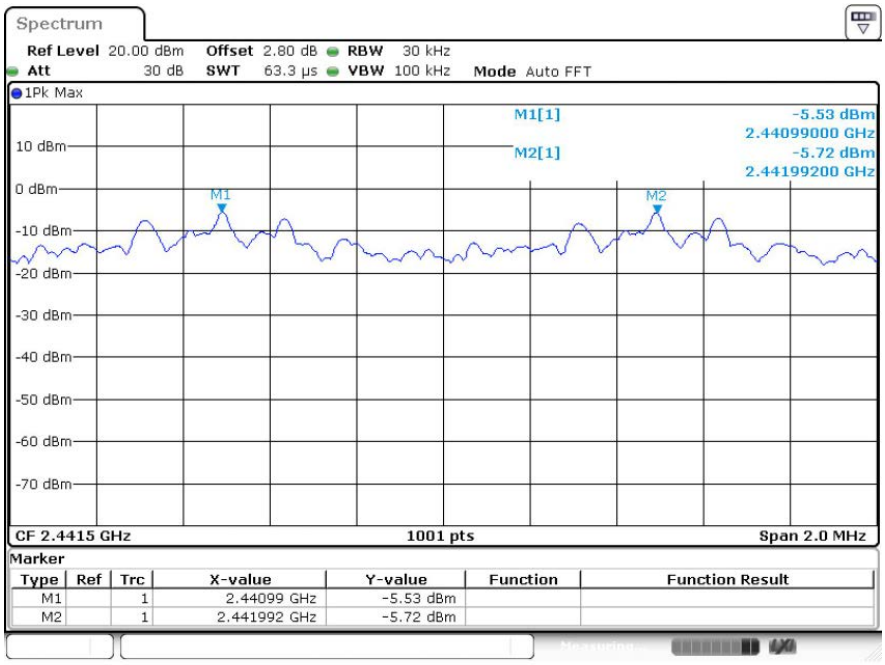
4 Carrier Frequency Separation

4.1 Test Result

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	MCH	1.001	0.488	Pass
π/4DQPSK	MCH	1.004	0.825	Pass
8DPSK	MCH	1.002	0.828	Pass

4.2 Test Graphs

Test Graphs	
GFSK/MCH	
π/4DQPSK/MCH	

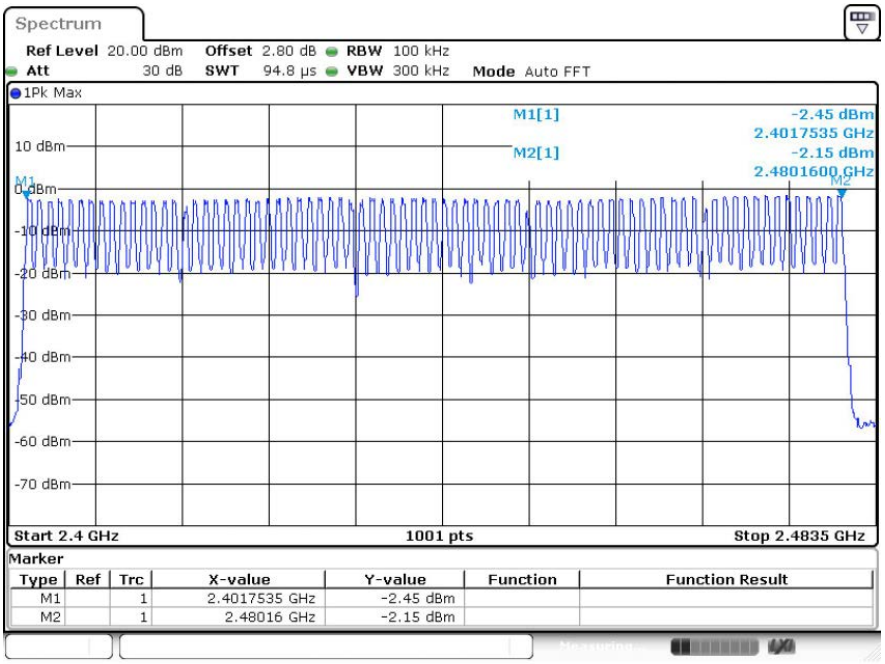
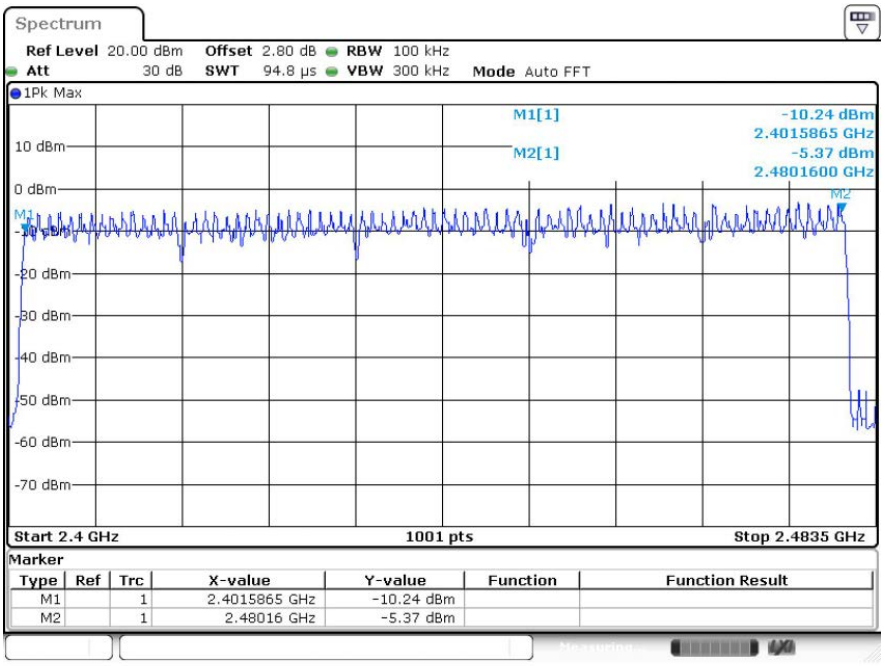
8DPSK/MCH	 Spectrum Ref Level 20.00 dBm Offset 2.80 dB RBW 30 kHz Att 30 dB SWT 63.3 µs VBW 100 kHz Mode Auto FFT 1Pk Max M1[1] -5.53 dBm 2.44099000 GHz M2[1] -5.72 dBm 2.44199200 GHz 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm -70 dBm M1 M2 CF 2.4415 GHz 1001 pts Span 2.0 MHz Marker Type Ref Trc X-value Y-value Function Function Result M1 1 2.44099 GHz -5.53 dBm M2 1 2.441992 GHz -5.72 dBm

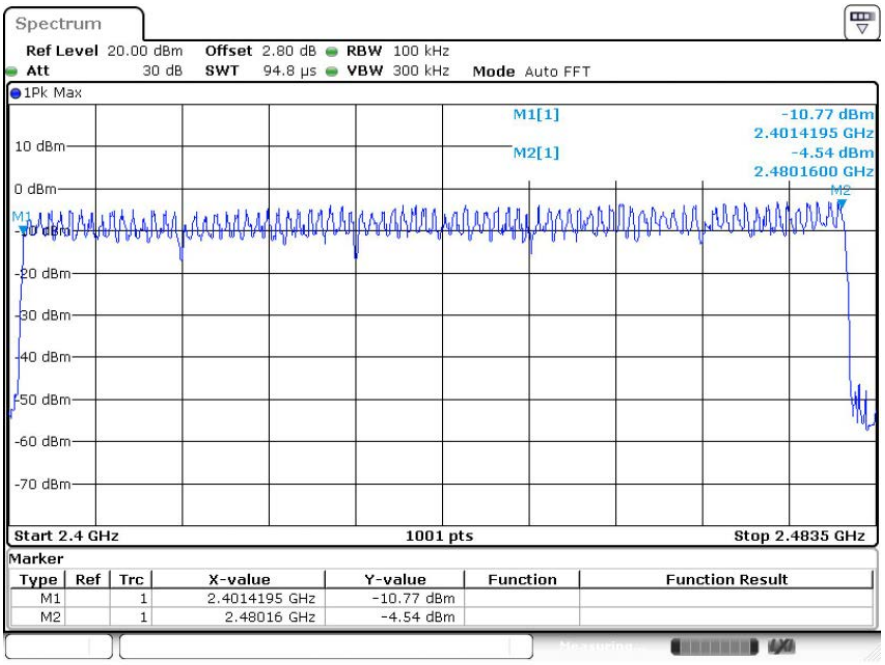
5 Hopping Channel Number

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	

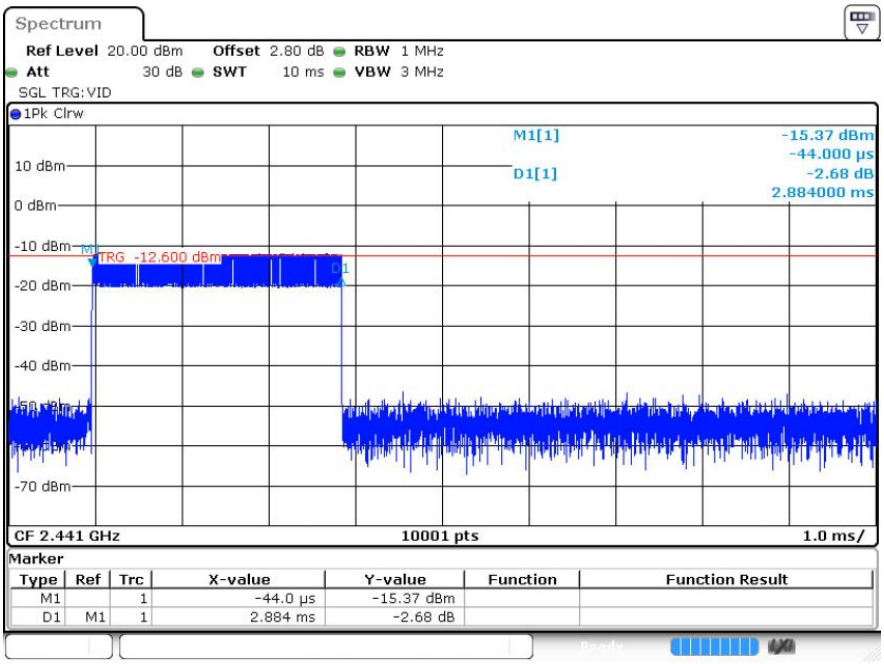
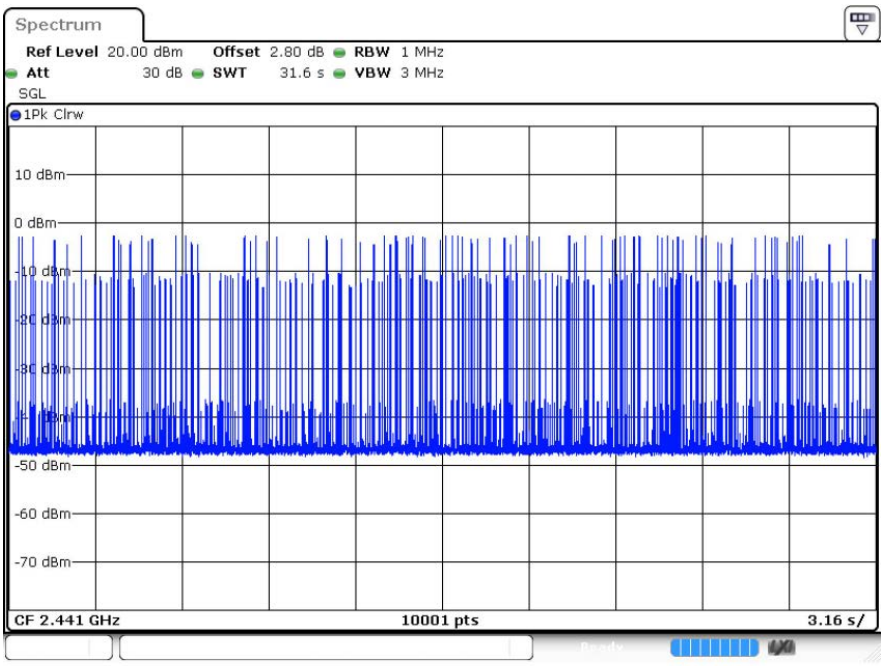
8DPSK/Hop	 Spectrum Ref Level 20.00 dBm Offset 2.80 dB RBW 100 kHz Att 30 dB SWT 94.8 µs VBW 300 kHz Mode Auto FFT 1Pk Max M1[1] -10.77 dBm 2.4014195 GHz M2[1] -4.54 dBm 2.4801600 GHz 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm -70 dBm Start 2.4 GHz 1001 pts Stop 2.4835 GHz Marker Type Ref Trc X-value Y-value Function Function Result M1 1 2.4014195 GHz -10.77 dBm M2 1 2.48016 GHz -4.54 dBm

6 Dwell Time

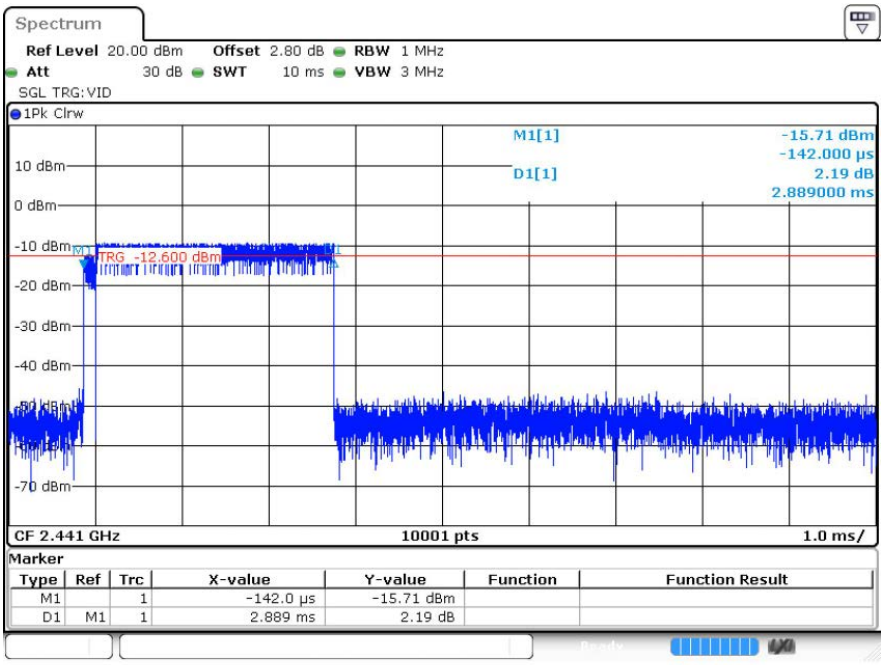
6.1 Test Result

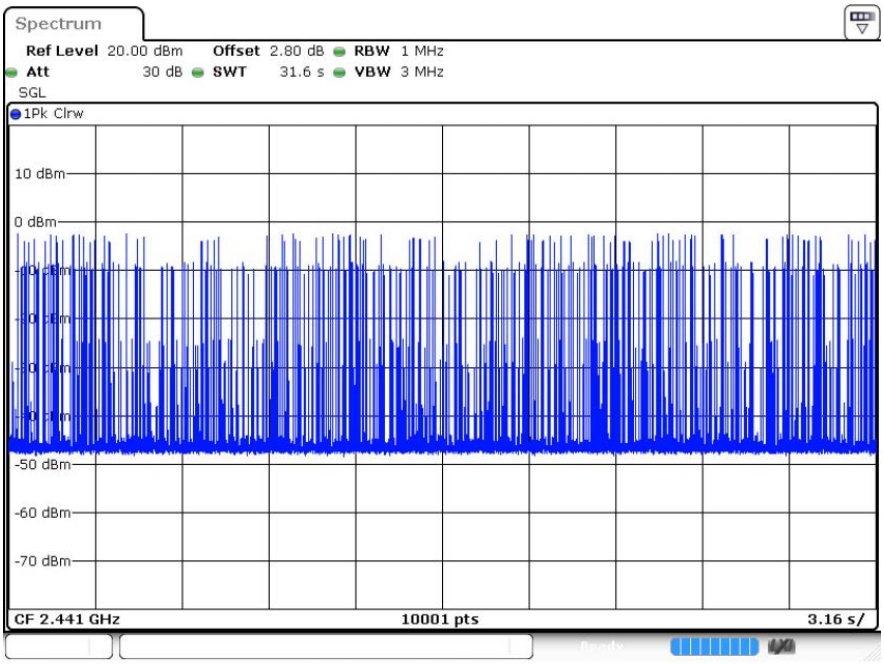
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[ms]	Limit [s]	Verdict
GFSK	DH5	MCH	2.884	101	291.284	0.4	Pass
π/4DQPSK	2DH5	MCH	2.889	110	317.79	0.4	Pass
8DPSK	3DH5	MCH	2.891	110	318.01	0.4	Pass

6.2 Test Graphs

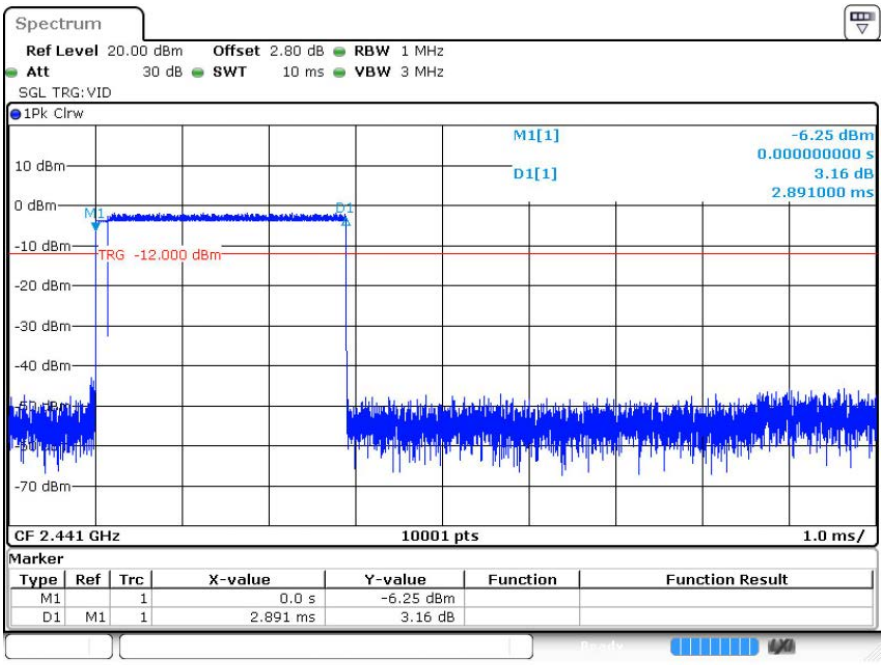
Test Graphs	
GFSK_DH5/MCH	 

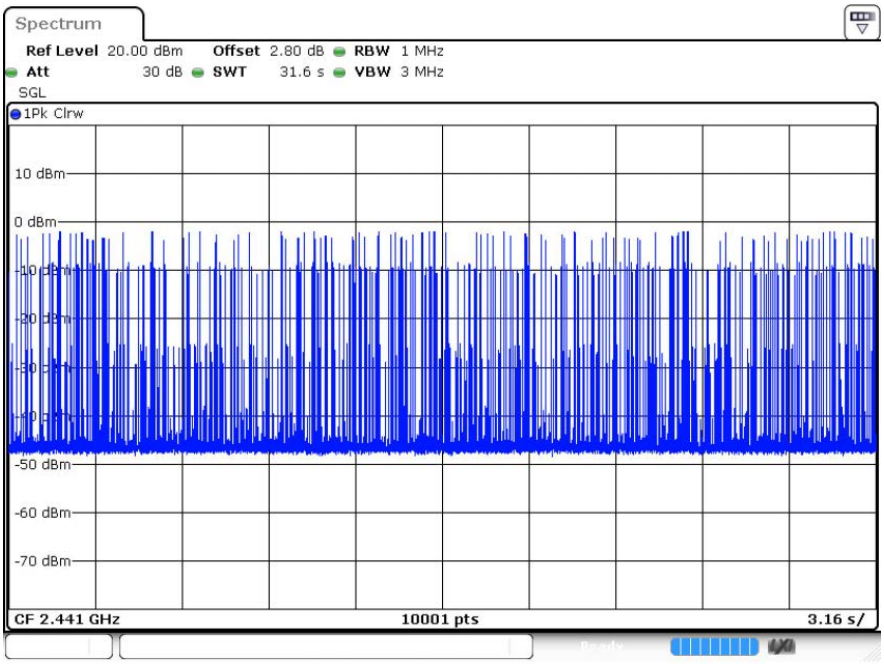
π/4DQPSK
_2DH5/MCH





8DPSK _3DH5/MCH



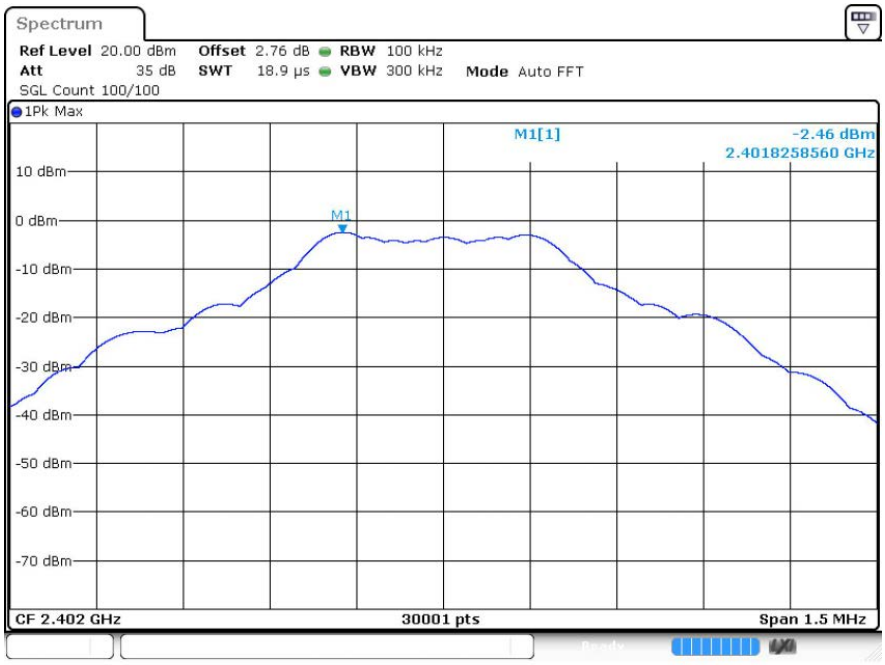
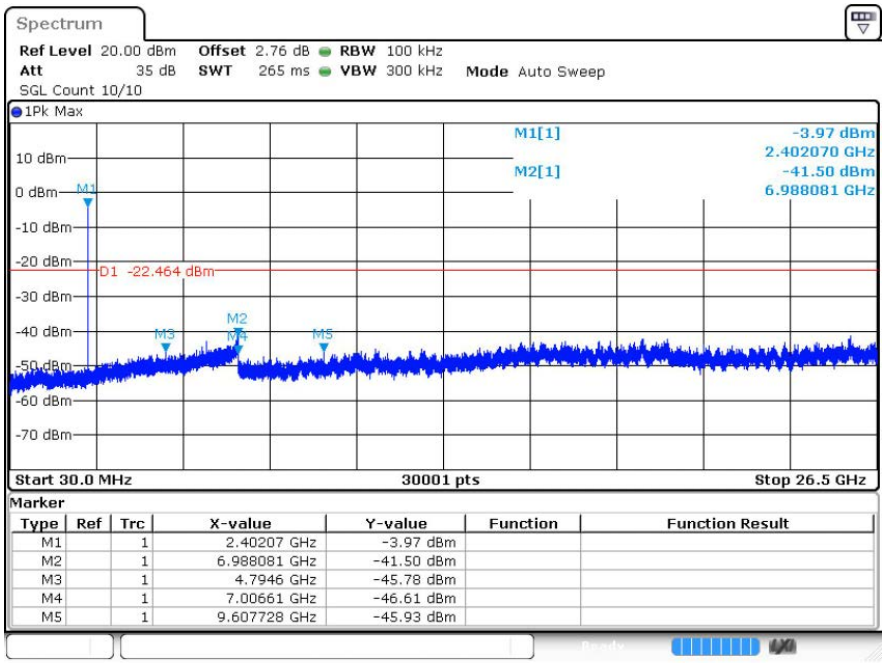


7 RF Conducted Spurious Emissions

7.1 Test Result

Mode	Channel	Max. Level [dBc]	Limit [dBc]	Verdict
GFSK	LCH	-39.04	-20	Pass
	MCH	-39.55	-20	Pass
	HCH	-39.03	-20	Pass
π/4DQPSK	LCH	-39.54	-20	Pass
	MCH	-38.89	-20	Pass
	HCH	-38.76	-20	Pass
8DPSK	LCH	-38.77	-20	Pass
	MCH	-38.98	-20	Pass
	HCH	-40.25	-20	Pass

7.2 Test Graphs

GFSK_LCH_Graphs	
Pref	
Puw	

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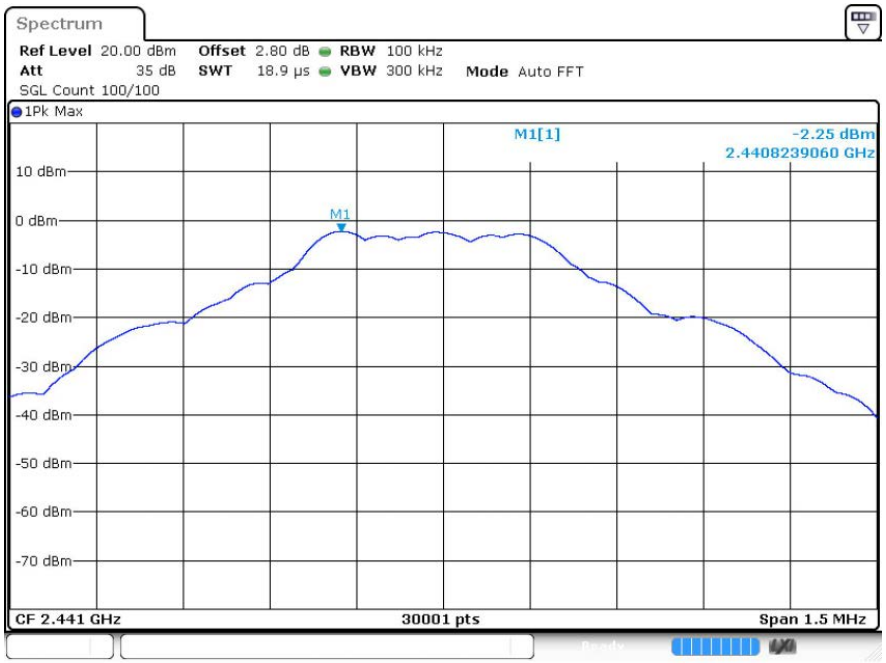
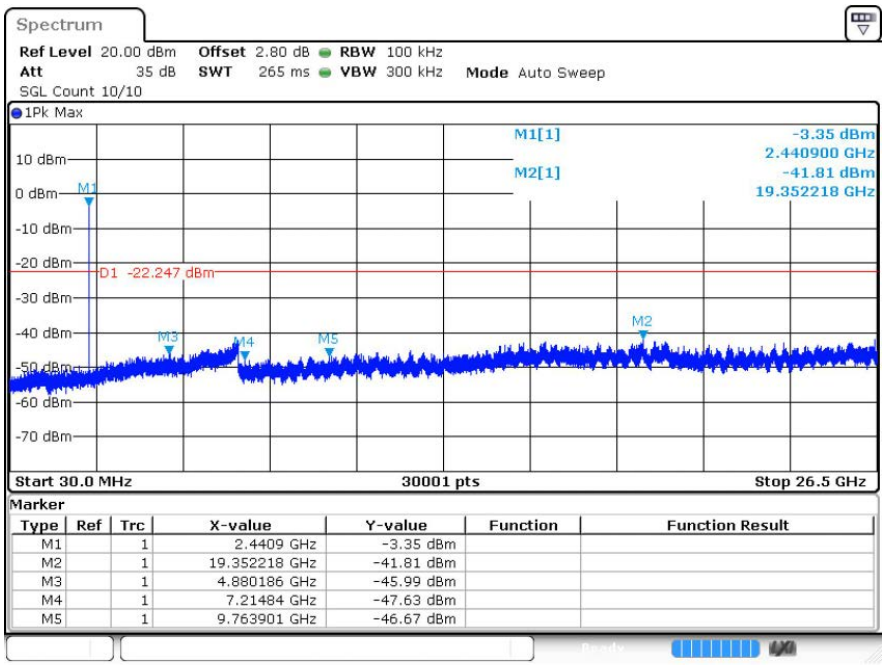
Pref	
Puw	

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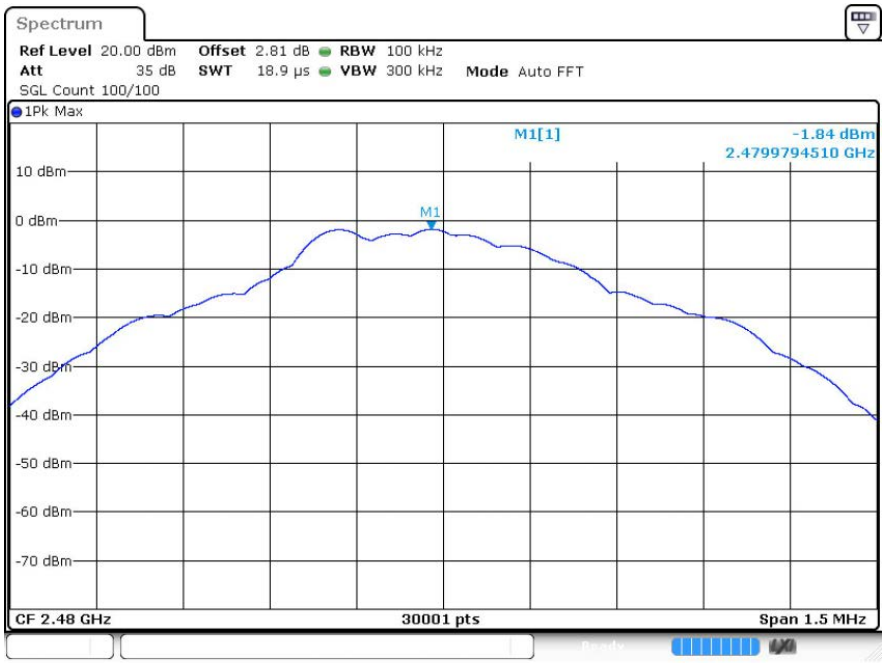
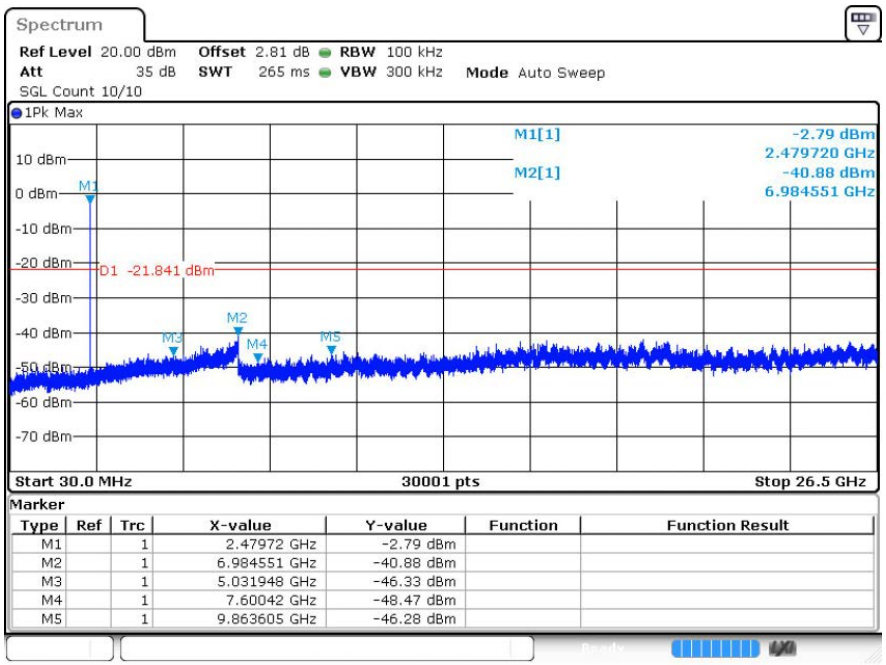
Pref	
Puw	

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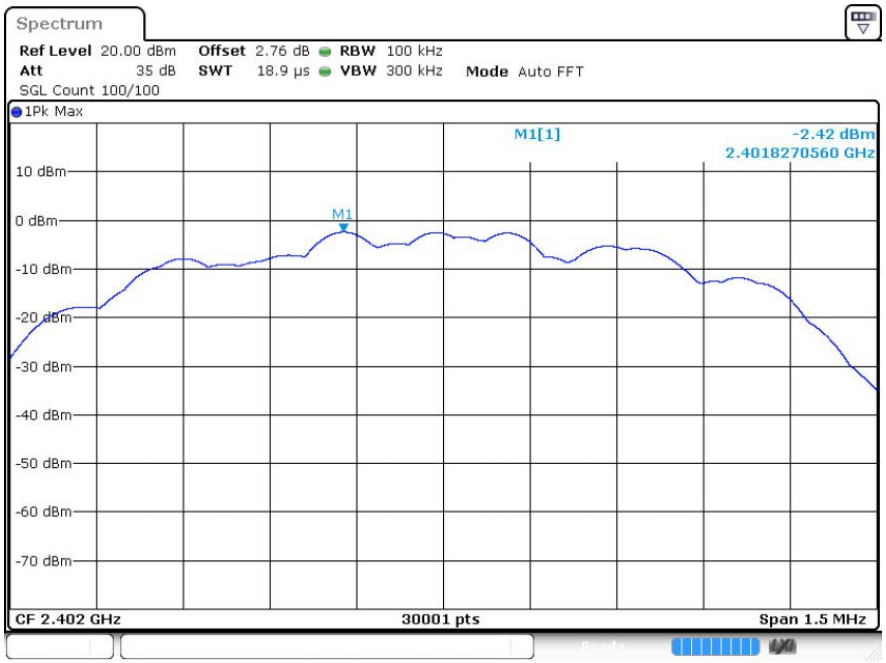
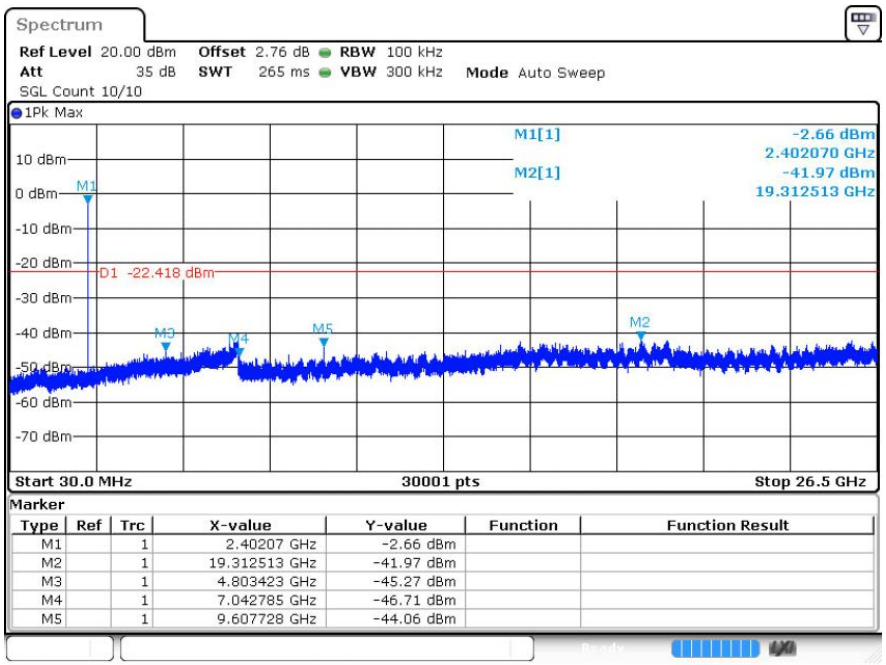
Pref	
Puw	

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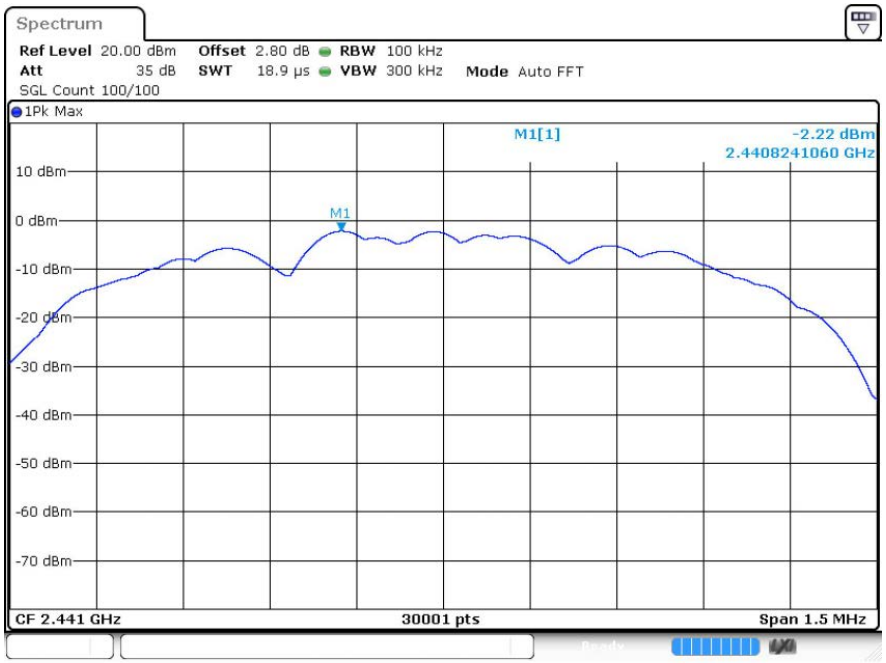
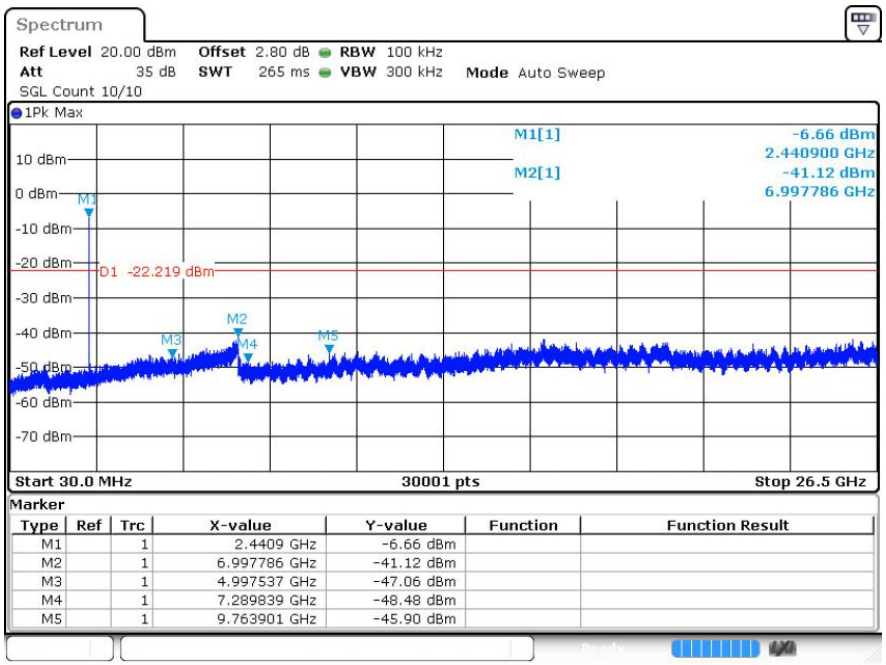
Pref	
Puw	

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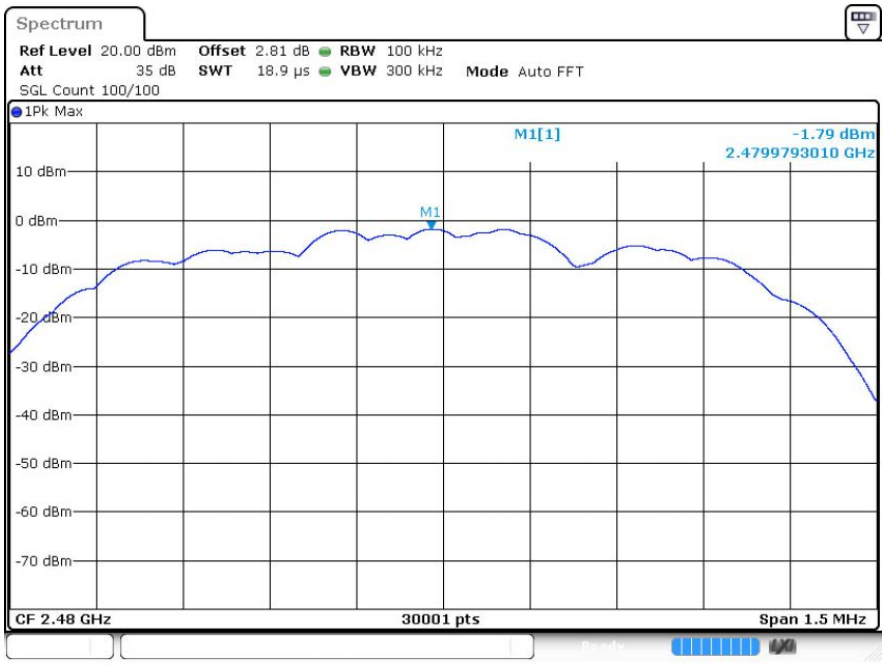
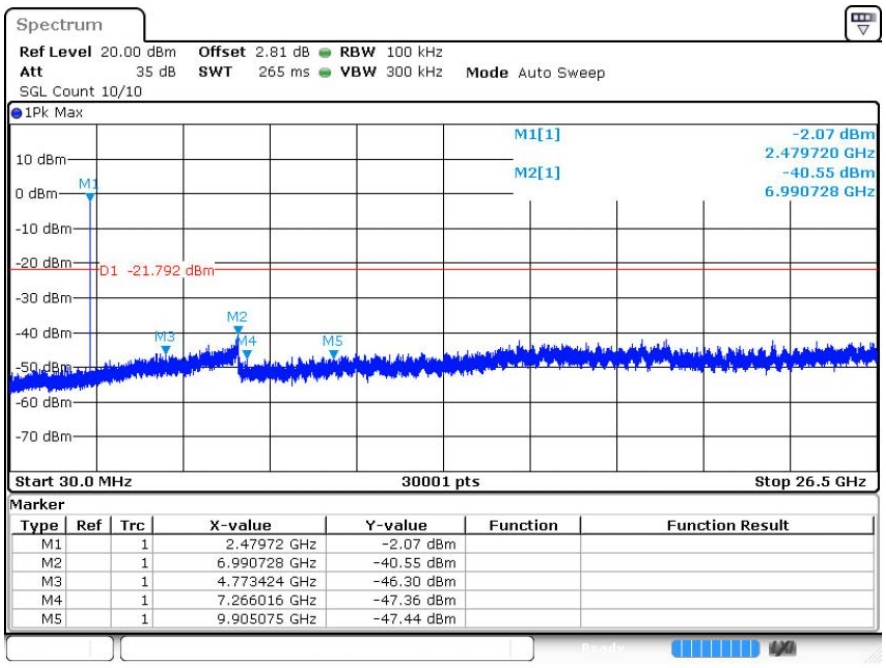
Pref	
Puw	

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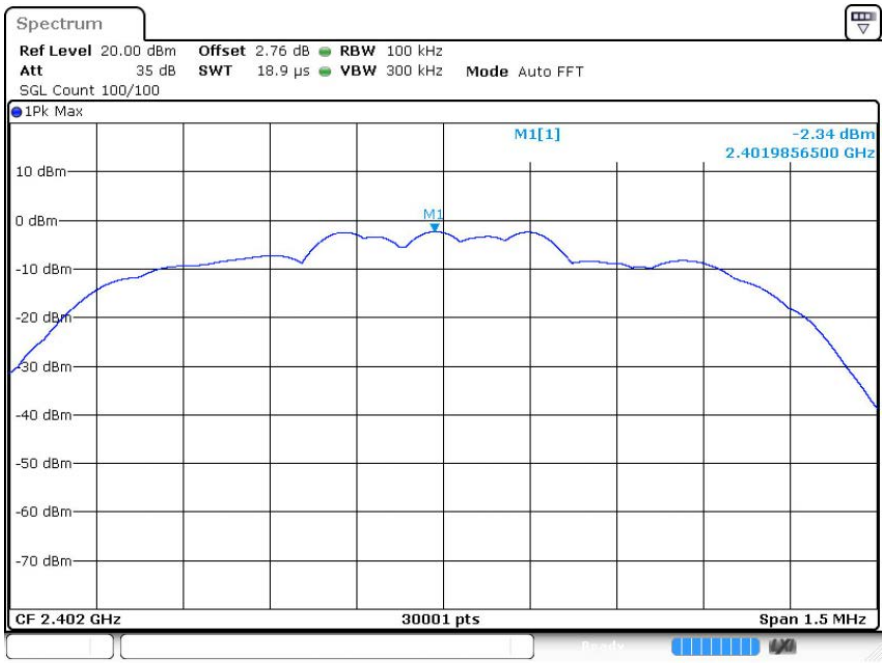
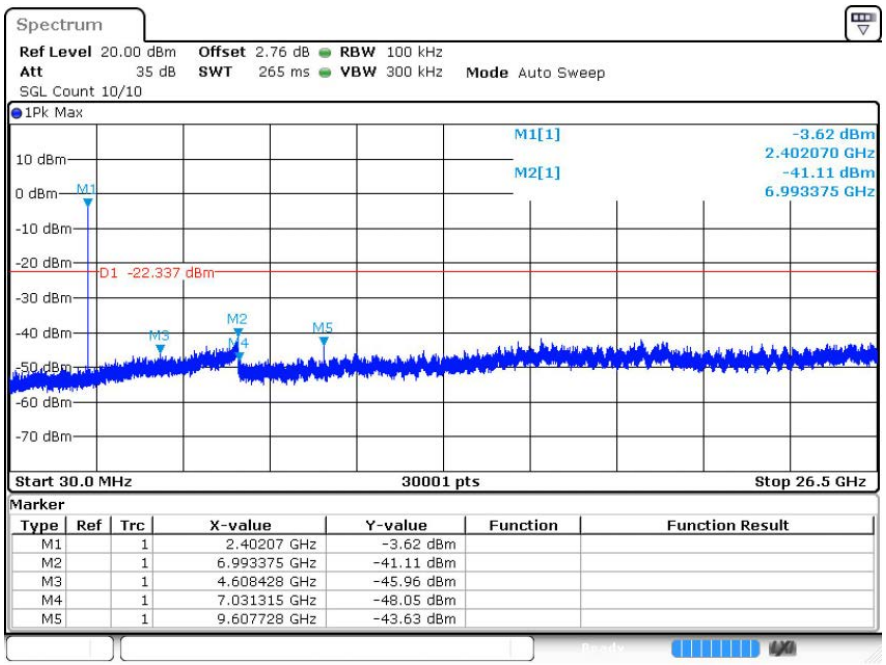
Pref	
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