



Appendix A

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

Product Name: Wearable Bluetooth Speaker

Trade Mark: N/A

Test Model: M1

Environmental Conditions

Temperature:	25.8°C
Relative Humidity:	60.4%
ATM Pressure:	101Kpa
Test Engineer:	Emiya lin
Supervised by:	Simba Haung



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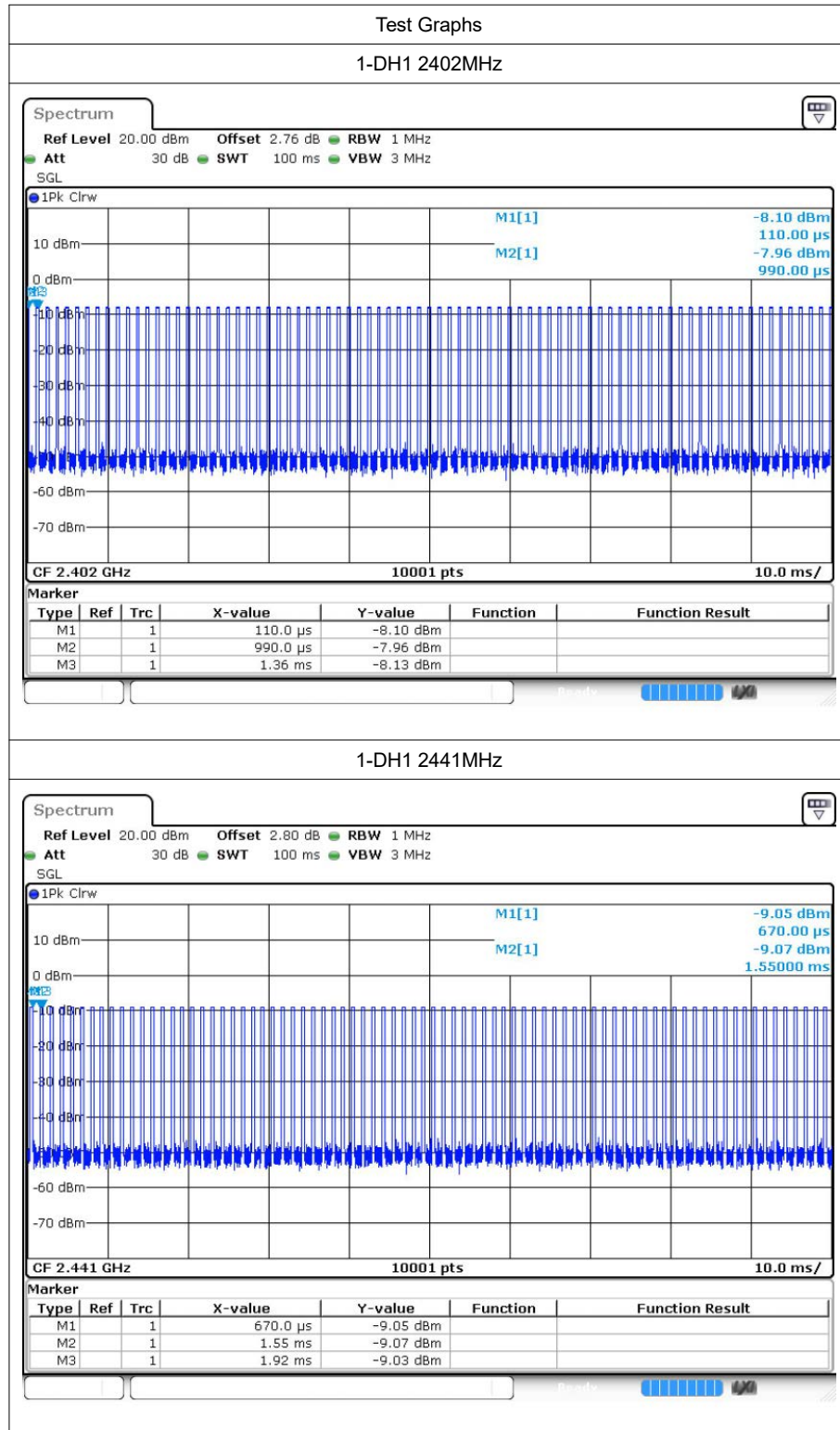
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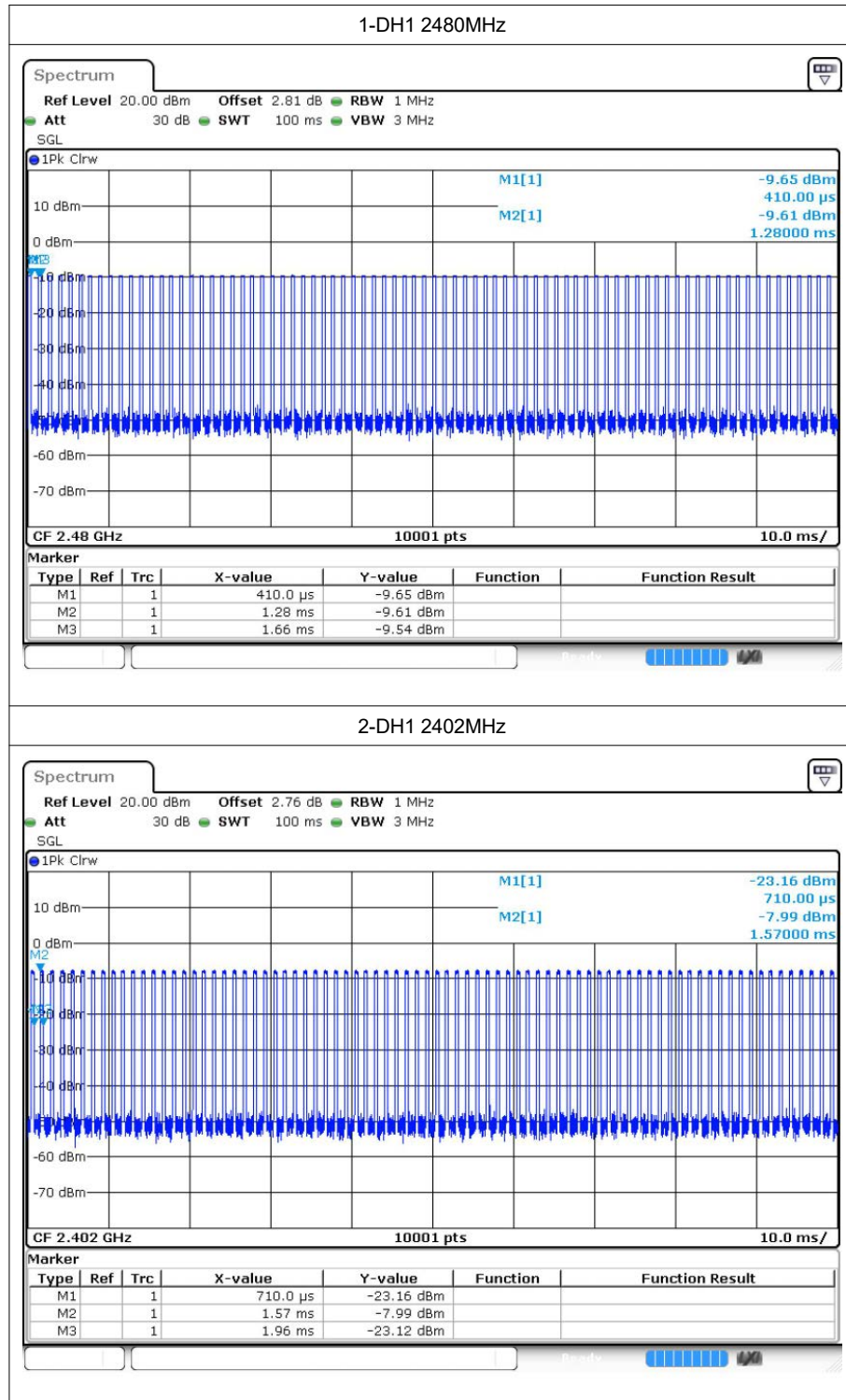
1 Duty Cycle

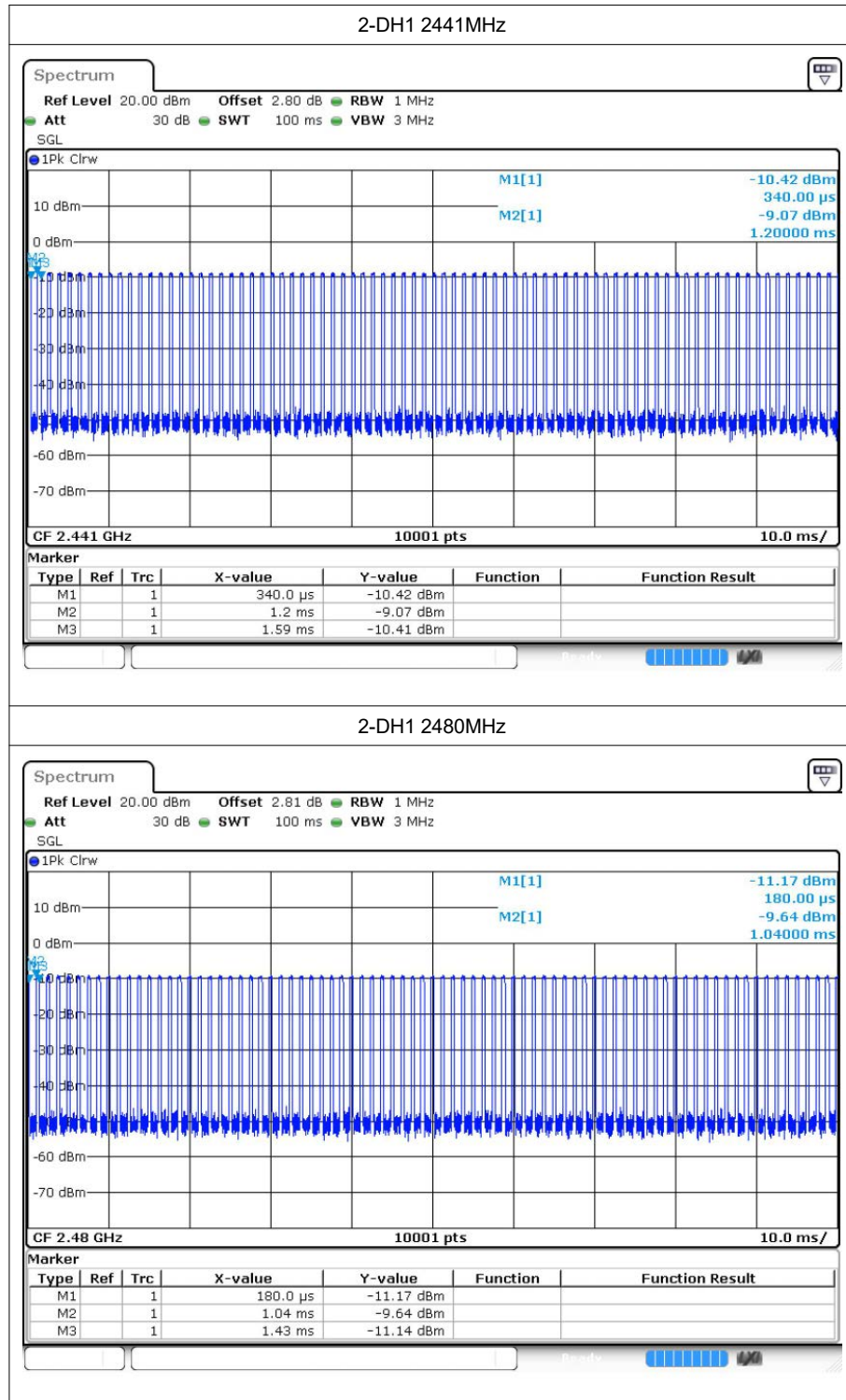
1.1 Test Result

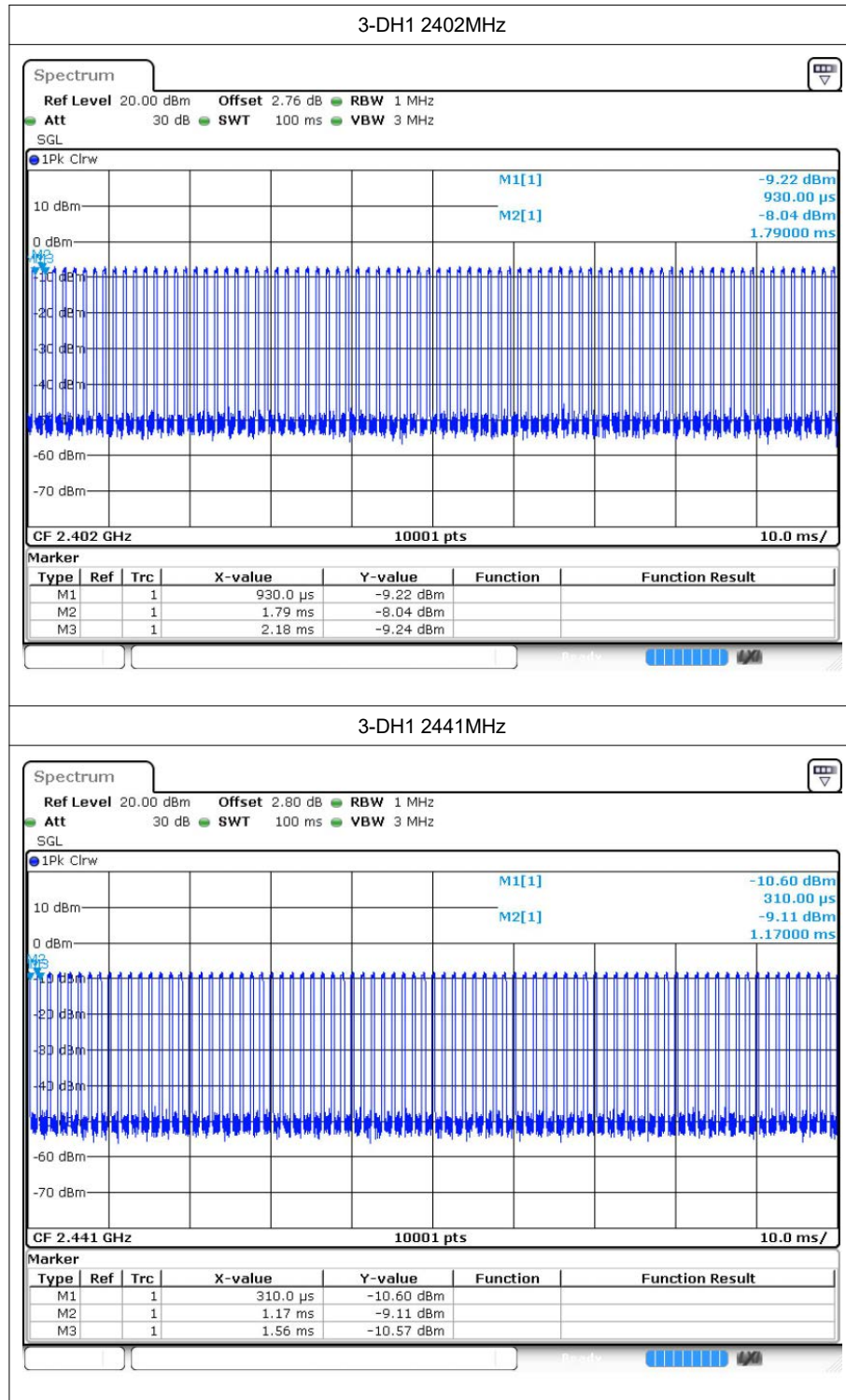
Mode	Frequency (MHz)	Duty Cycle (%)	Correction Factor	1/T (kHz)
1-DH1	2402	30.41	5.17	2.7
1-DH1	2441	30.4	5.17	2.7
1-DH1	2480	31.2	5.06	2.63
2-DH1	2402	31.6	5	2.56
2-DH1	2441	32.01	4.95	2.56
2-DH1	2480	32.01	4.95	2.56
3-DH1	2402	32	4.95	2.56
3-DH1	2441	32.01	4.95	2.56
3-DH1	2480	32.01	4.95	2.56

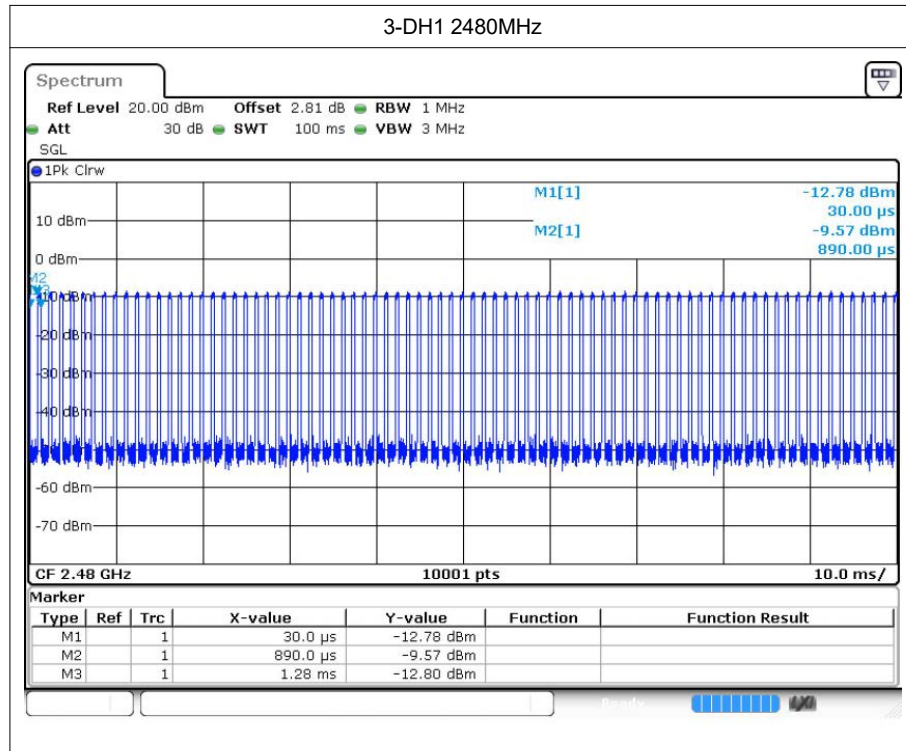
1.2 Test Graphs









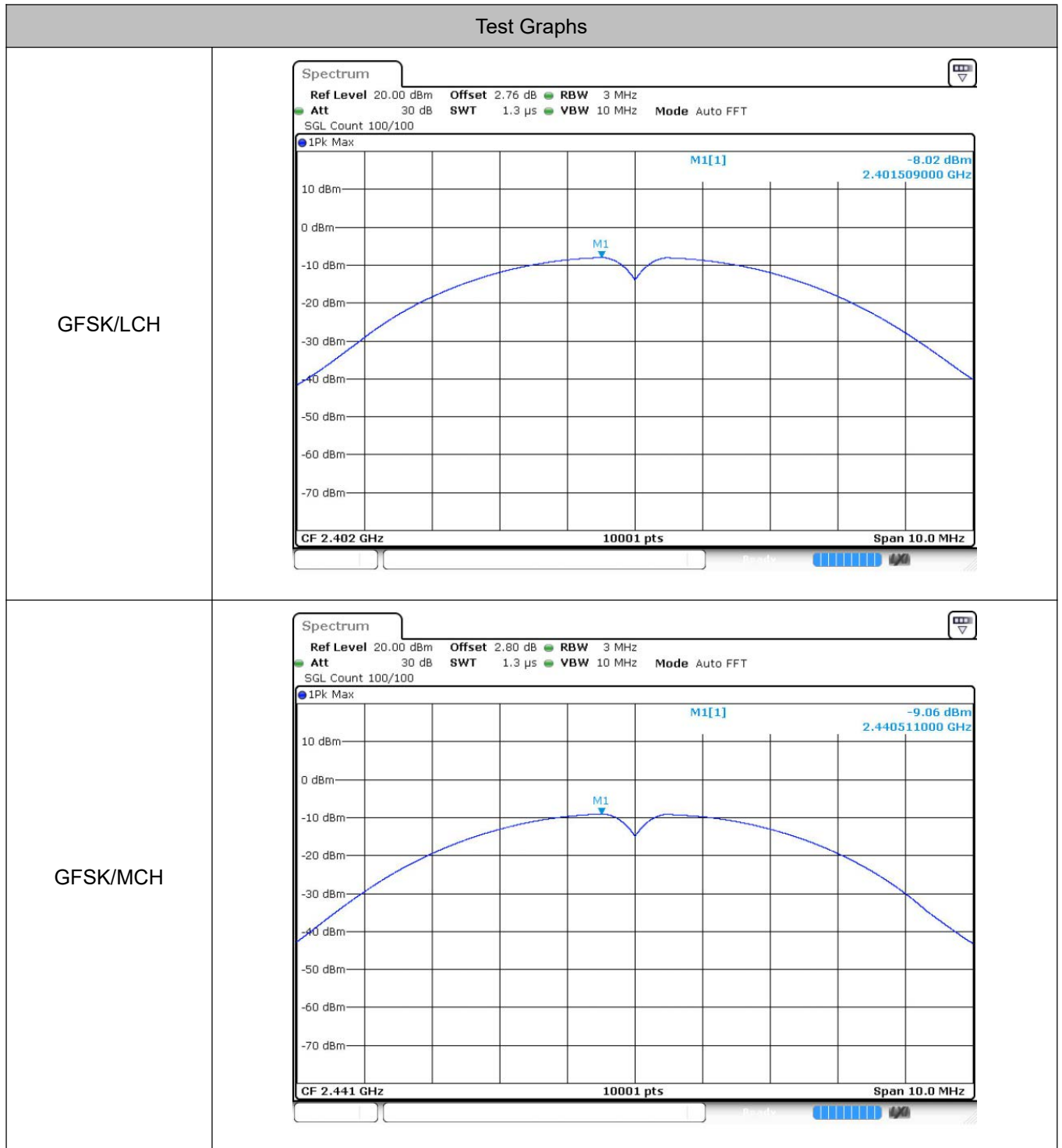


2 Maximum Conducted Peak Output Power

2.1 Test Result

Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-8.02	21	Pass
	MCH	-9.06	21	Pass
	HCH	-9.52	21	Pass
$\pi/4$ DQPSK	LCH	-7.59	21	Pass
	MCH	-8.81	21	Pass
	HCH	-9.01	21	Pass
8DPSK	LCH	-7.29	21	Pass
	MCH	-8.83	21	Pass
	HCH	-8.82	21	Pass

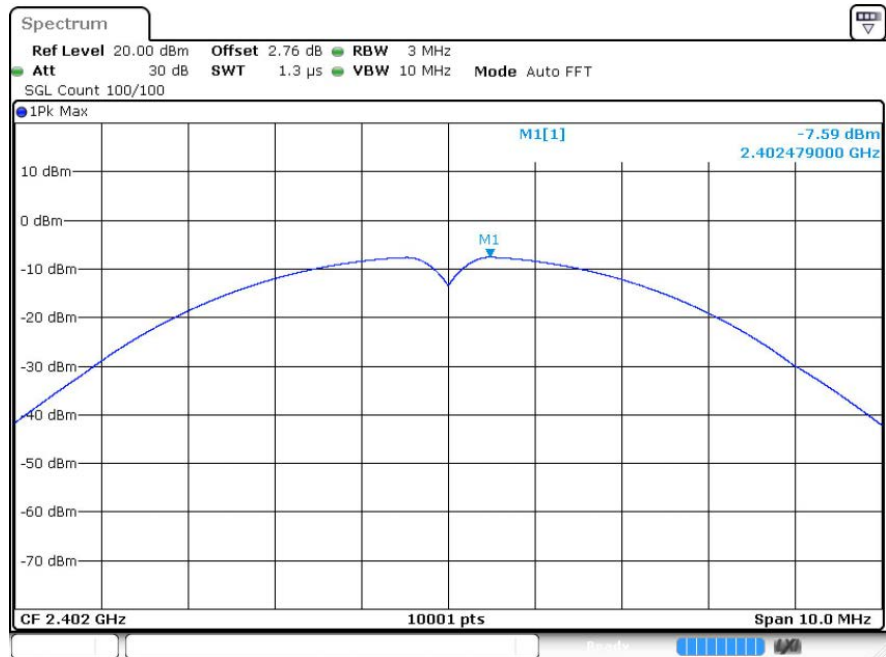
2.2 Test Graphs



GFSK/HCH



$\pi/4$ DQPSK/LCH



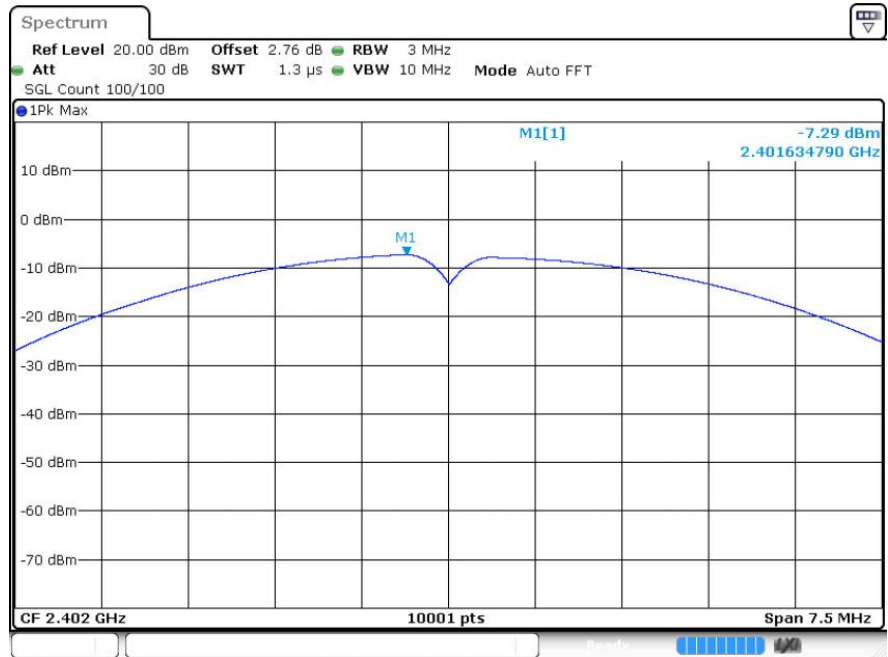
$\pi/4$ DQPSK/MCH



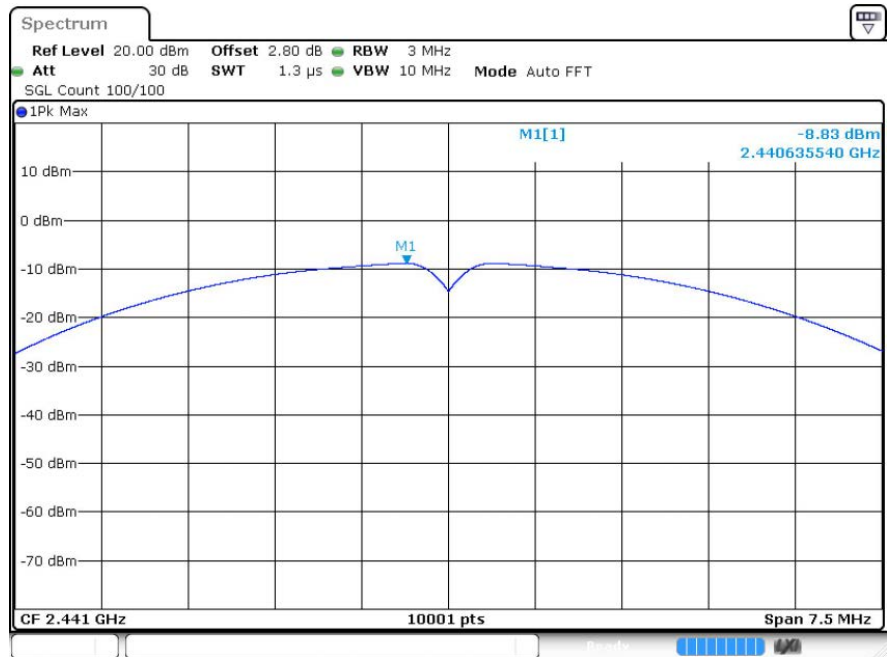
$\pi/4$ DQPSK/HCH



8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

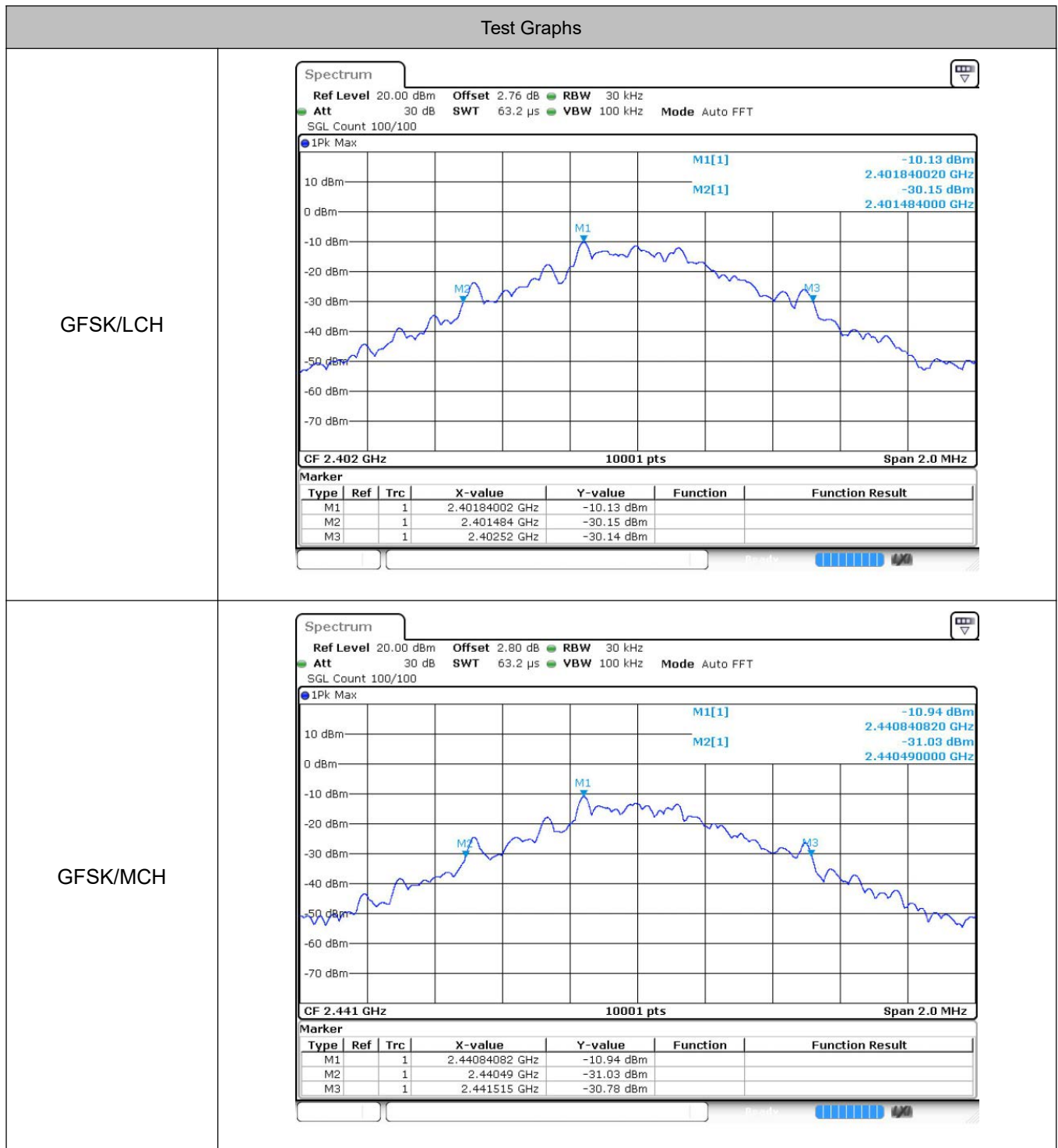


3 20dB Bandwidth

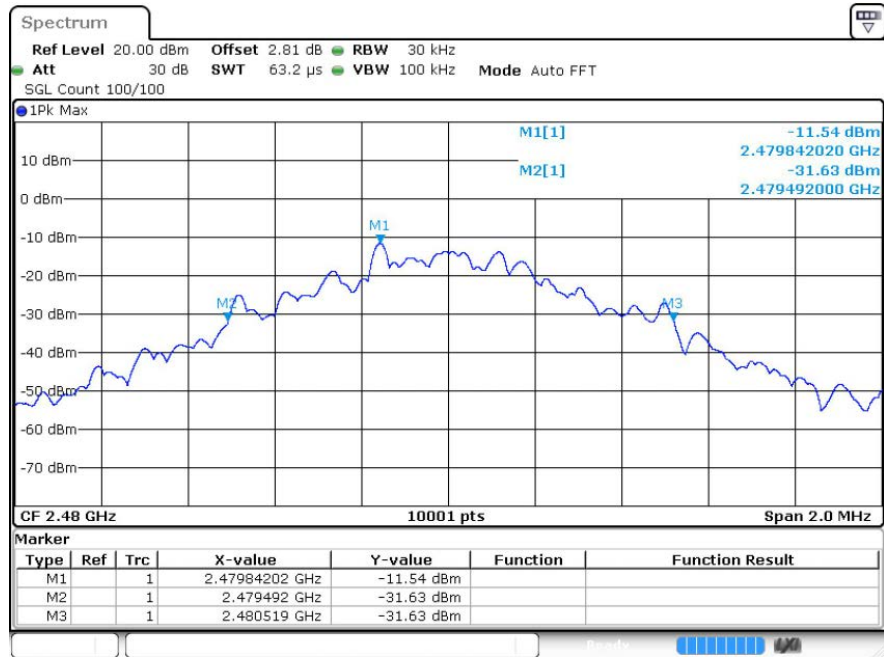
3.1 Test Result

Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.036	Not Specified	Pass
	MCH	1.025	Not Specified	Pass
	HCH	1.026	Not Specified	Pass
$\pi/4$ DQPSK	LCH	1.289	Not Specified	Pass
	MCH	1.242	Not Specified	Pass
	HCH	1.319	Not Specified	Pass
8DPSK	LCH	1.288	Not Specified	Pass
	MCH	1.233	Not Specified	Pass
	HCH	1.253	Not Specified	Pass

3.2 Test Graphs



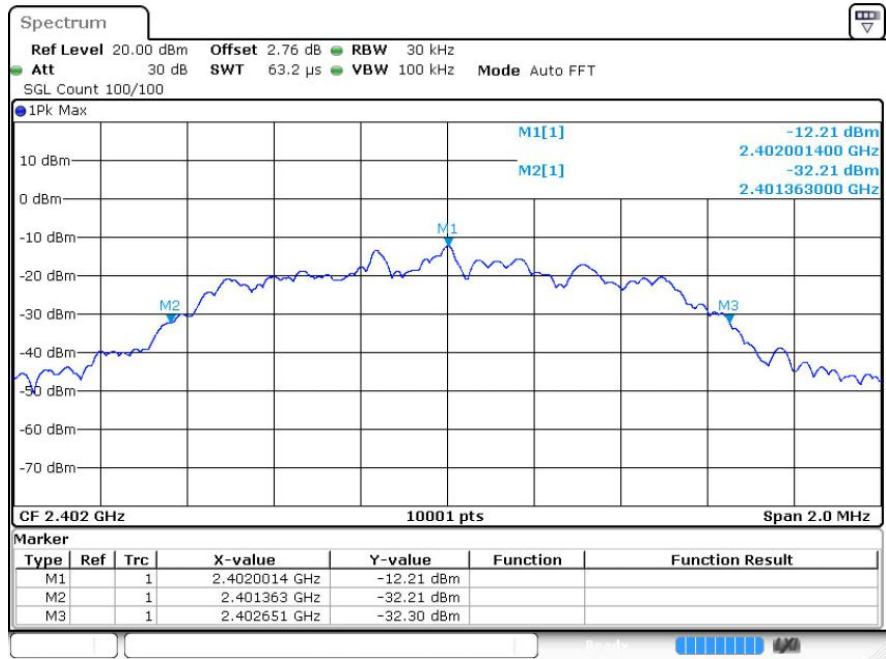
GFSK/HCH


 π /4DQPSK/LCH


$\pi/4$ DQPSK/MCH

 $\pi/4$ DQPSK/HCH

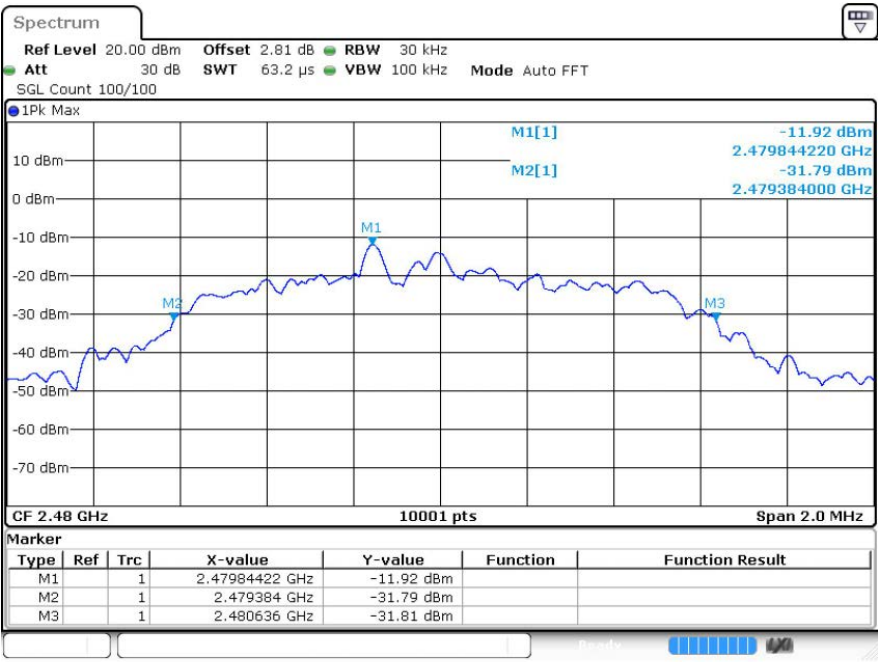

8DPSK/LCH



8DPSK/MCH



8DPSK/HCH



4 Carrier Frequency Separation

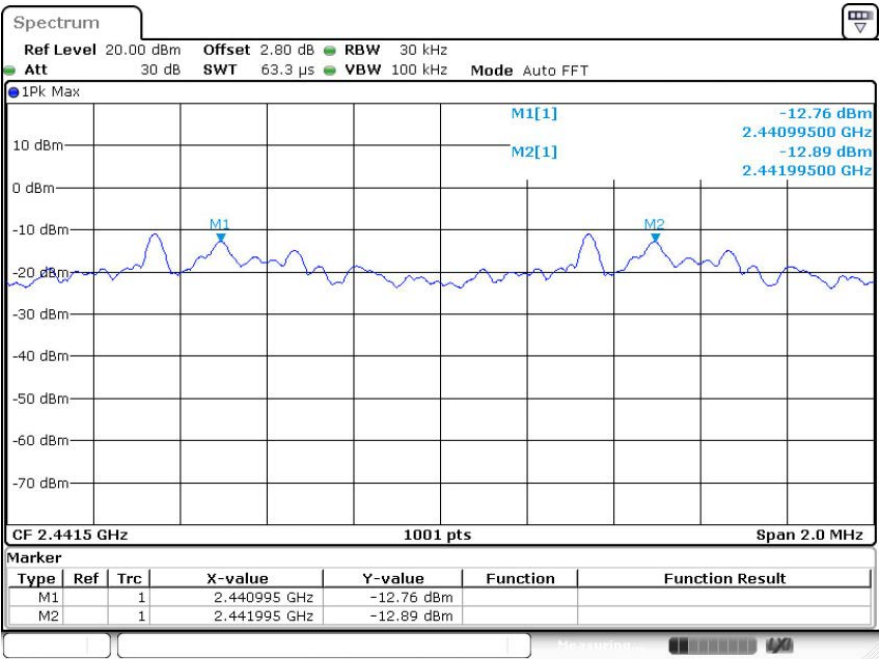
4.1 Test Result

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	MCH	1.005	0.683	Pass
$\pi/4$ DQPSK	MCH	0.986	0.828	Pass
8DPSK	MCH	1	0.822	Pass

4.2 Test Graphs



8DPSK/MCH

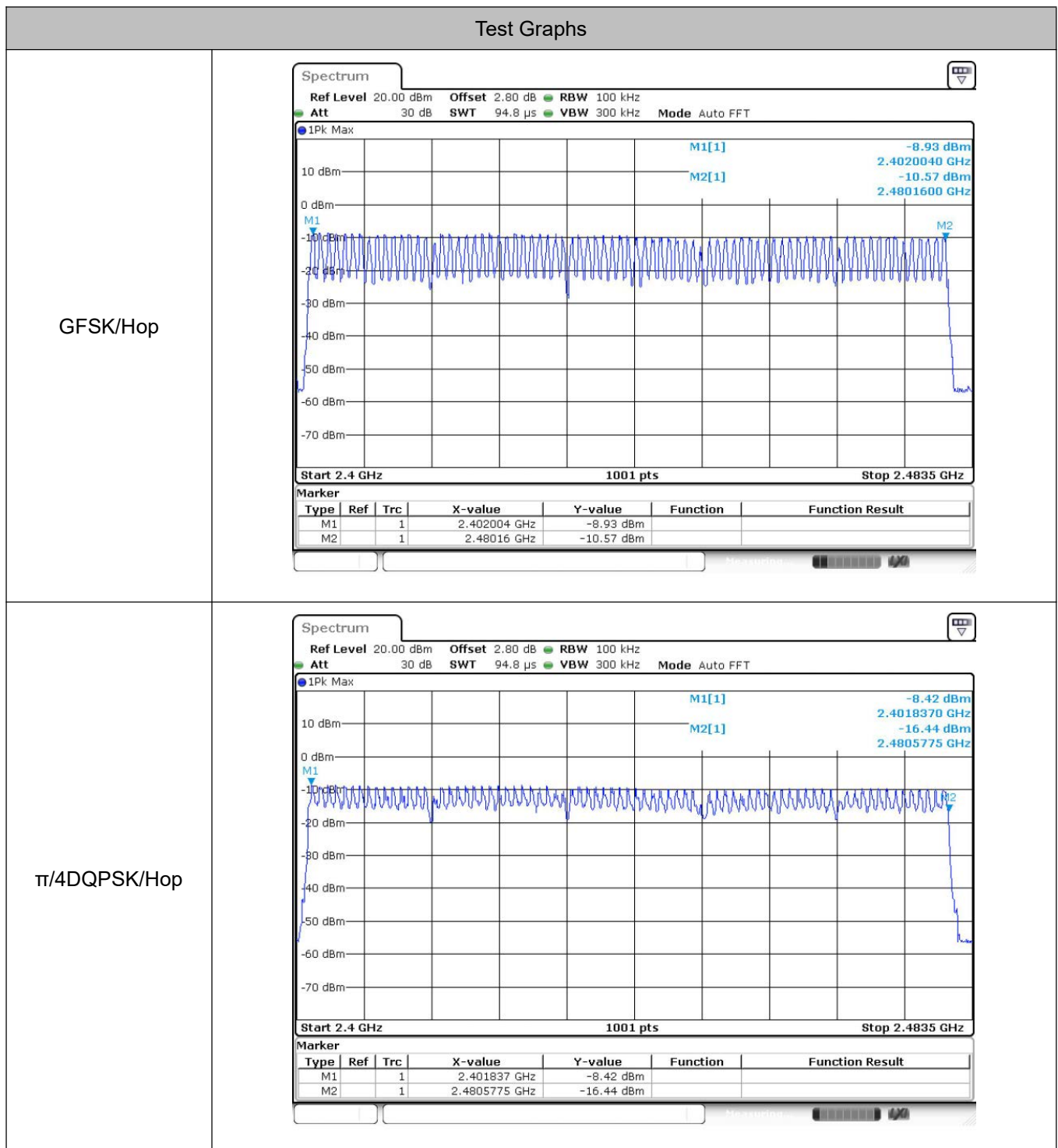


5 Hopping Channel Number

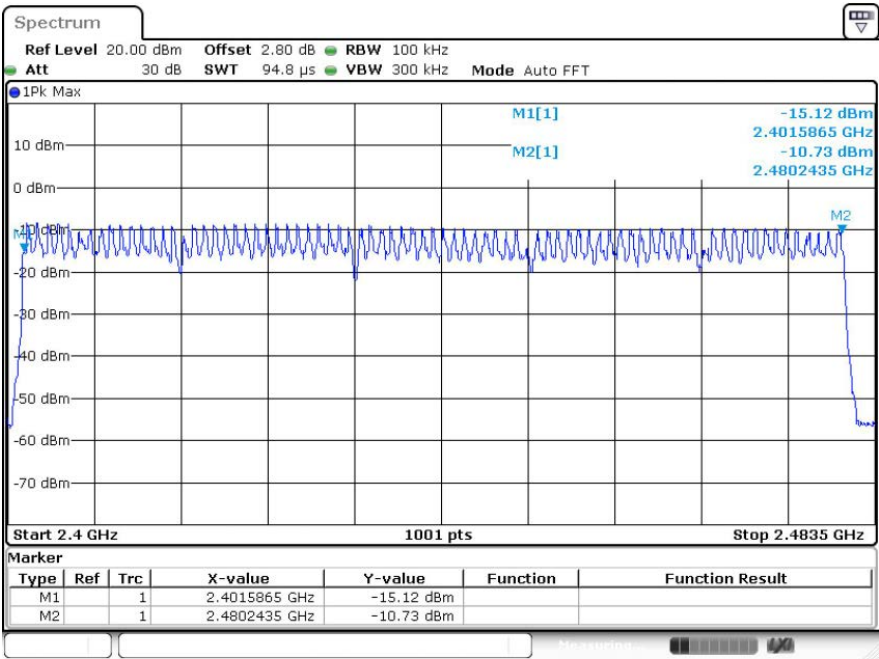
5.1 Test Result

Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	≥ 15	PASS
$\pi/4$ DQPSK	Hop	79	≥ 15	PASS
8DPSK	Hop	79	≥ 15	PASS

5.2 Test Graphs



8DPSK/Hop



6 Dwell Time

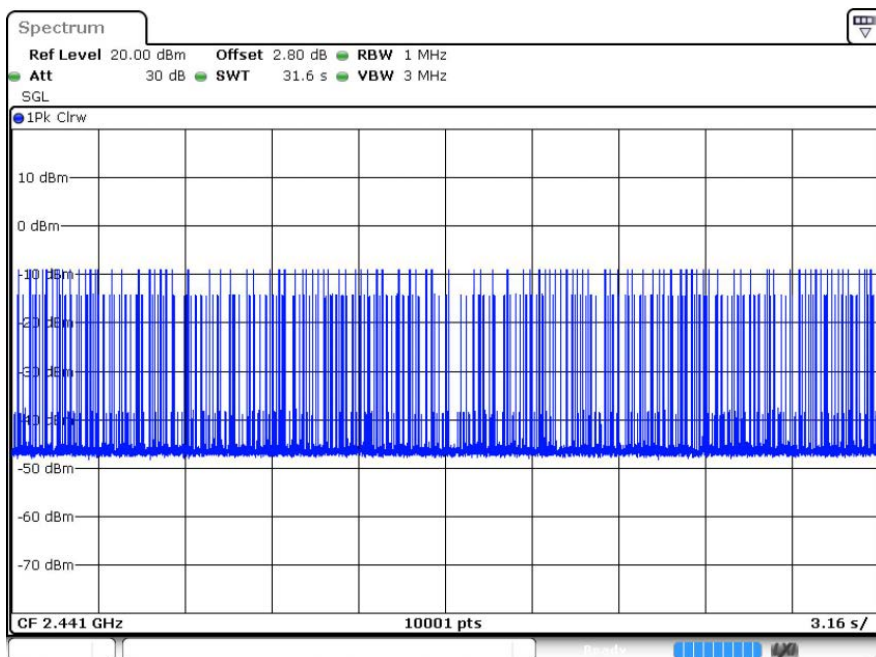
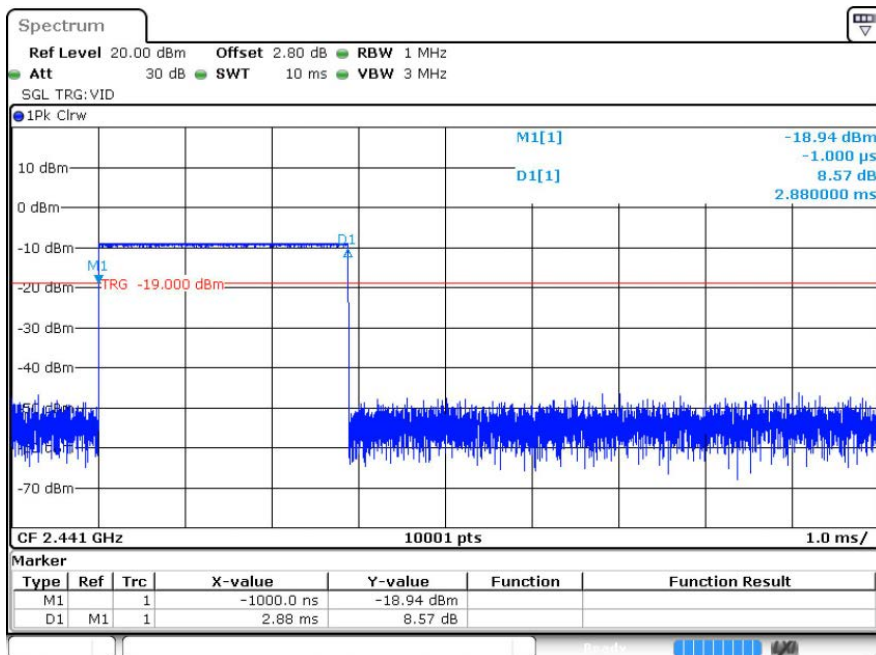
6.1 Test Result

Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[ms]	Limit [s]	Verdict
GFSK	DH5	MCH	2.88	132	380.16	0.4	Pass
$\pi/4$ DQPSK	2DH5	MCH	2.883	111	320.013	0.4	Pass
8DPSK	3DH5	MCH	2.887	100	288.7	0.4	Pass

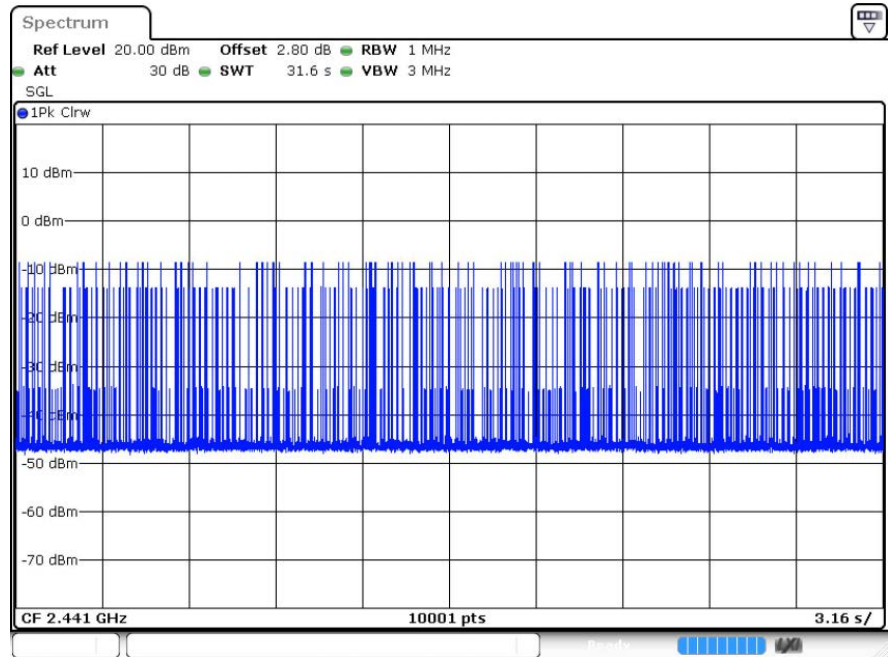
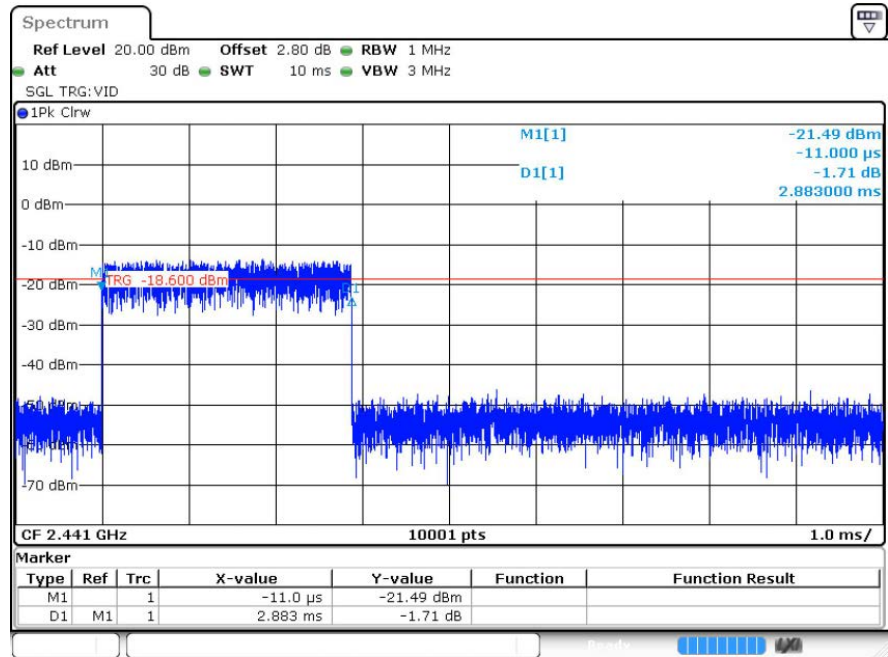
6.2 Test Graphs

Test Graphs

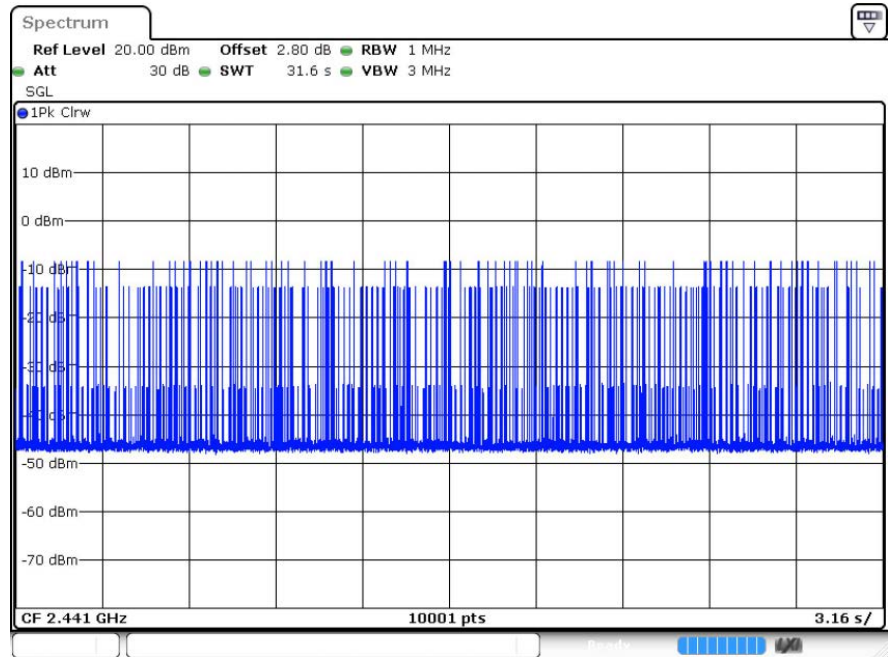
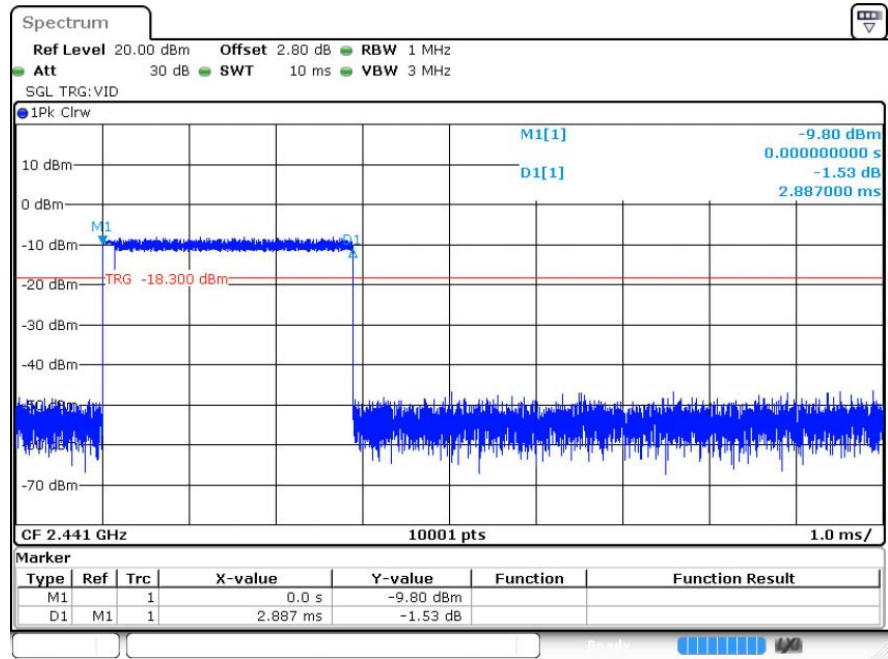
GFSK_DH5/MCH



$\pi/4$ DQPSK
_2DH5/MCH



8DPSK_3DH5/MCH



7 RF Conducted Spurious Emissions

7.1 Test Result

Mode	Channel	Max. Level [dBc]	Limit [dBc]	Verdict
GFSK	LCH	-31.25	-20	Pass
	MCH	-32	-20	Pass
	HCH	-31.24	-20	Pass
$\pi/4$ DQPSK	LCH	-32.52	-20	Pass
	MCH	-29.7	-20	Pass
	HCH	-31.83	-20	Pass
8DPSK	LCH	-32.77	-20	Pass
	MCH	-31.61	-20	Pass
	HCH	-29.02	-20	Pass

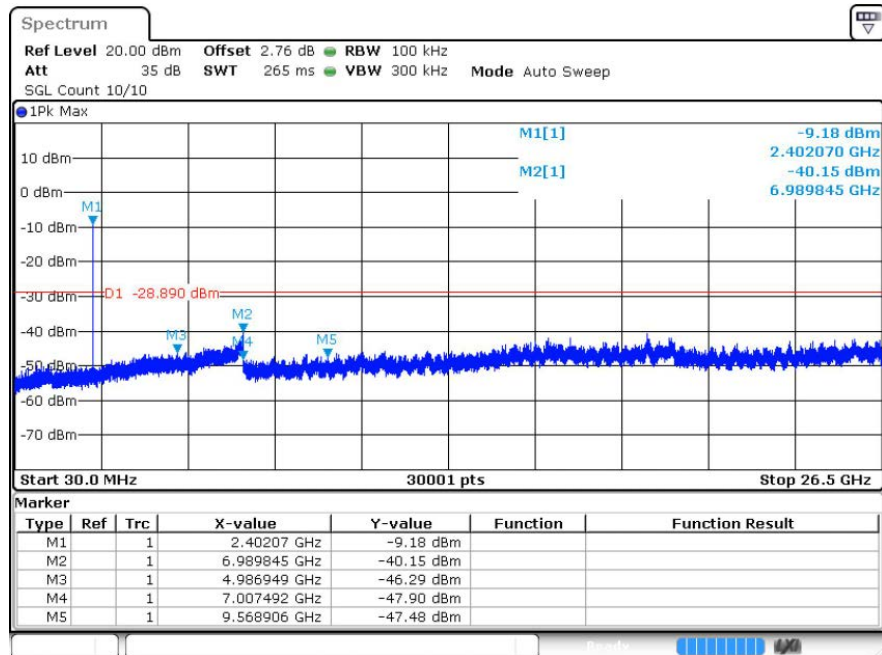
7.2 Test Graphs

GFSK_LCH_Graphs

Pref



Puw

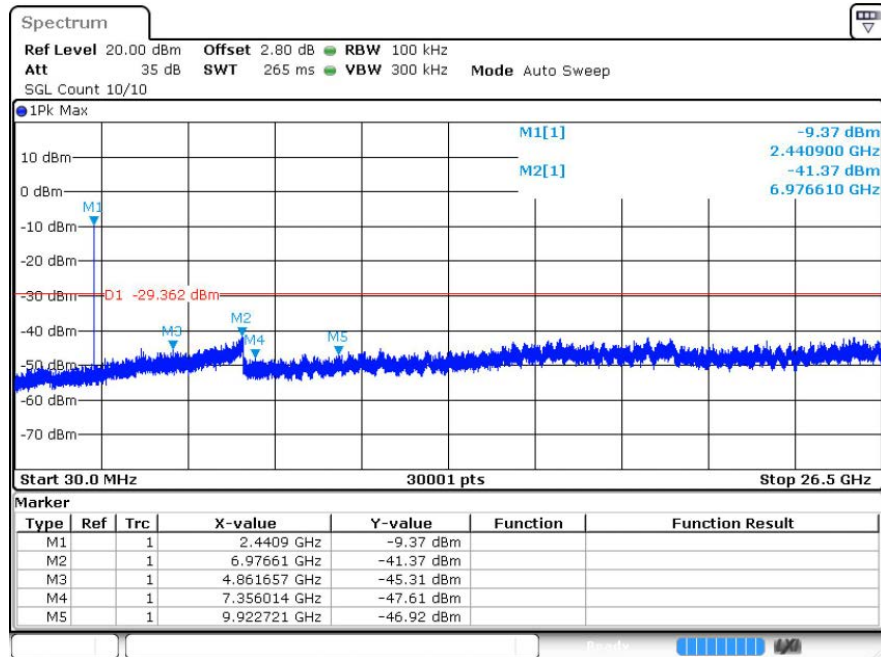


GFSK_MCH_Graphs

Pref



Puw

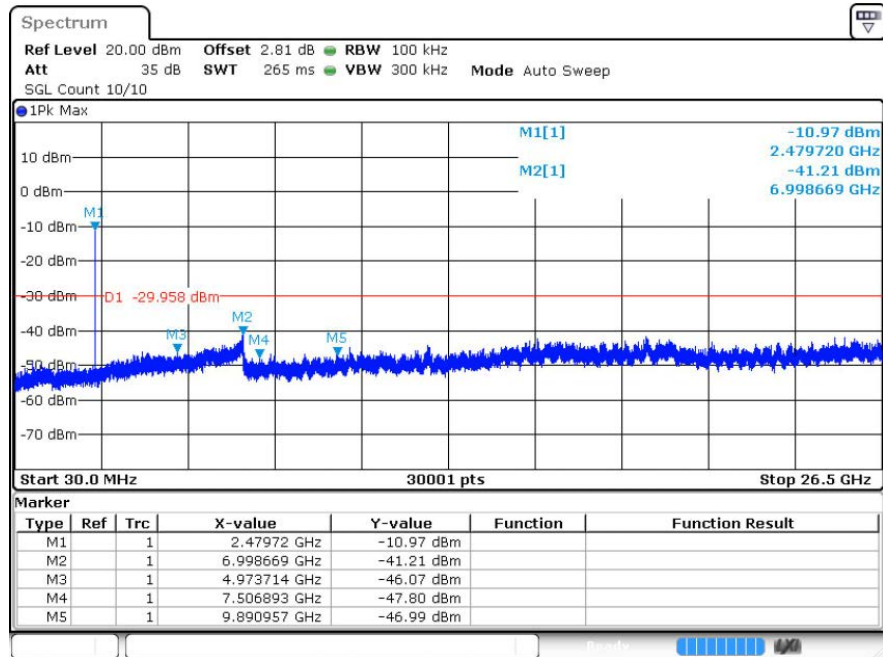


GFSK_HCH_Graphs

Pref

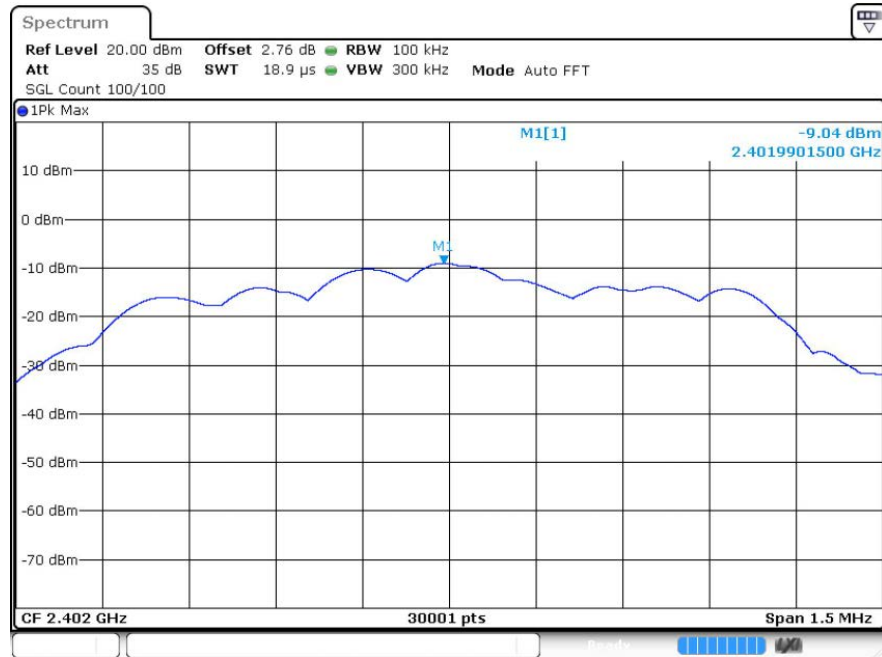


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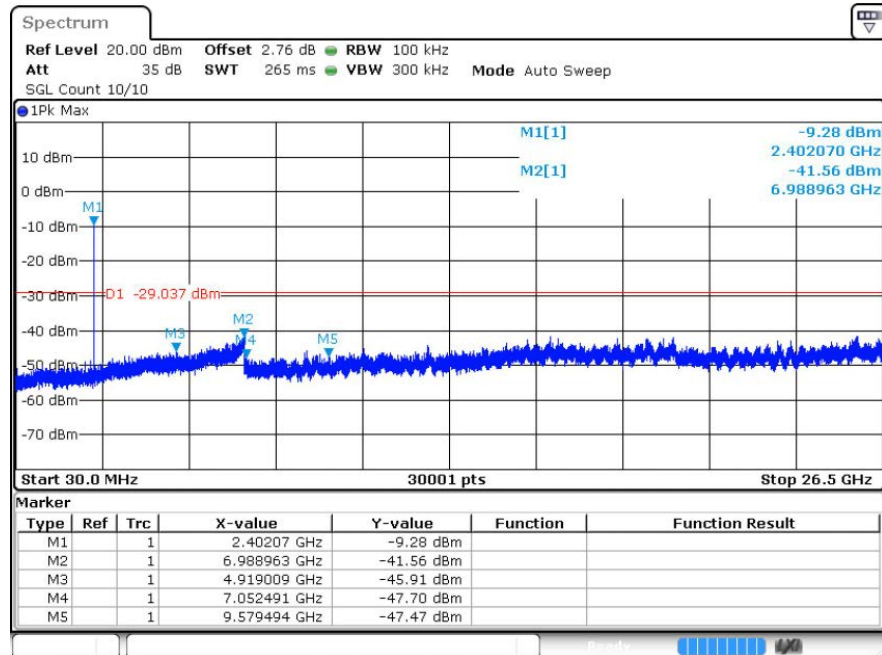


$\pi/4$ DQPSK_LCH_Graphs

Pref

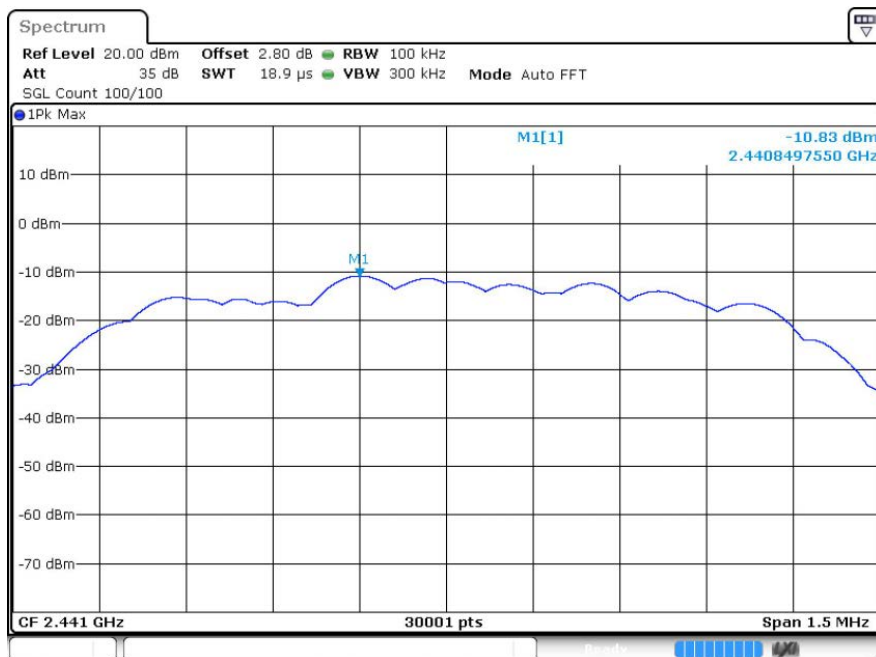


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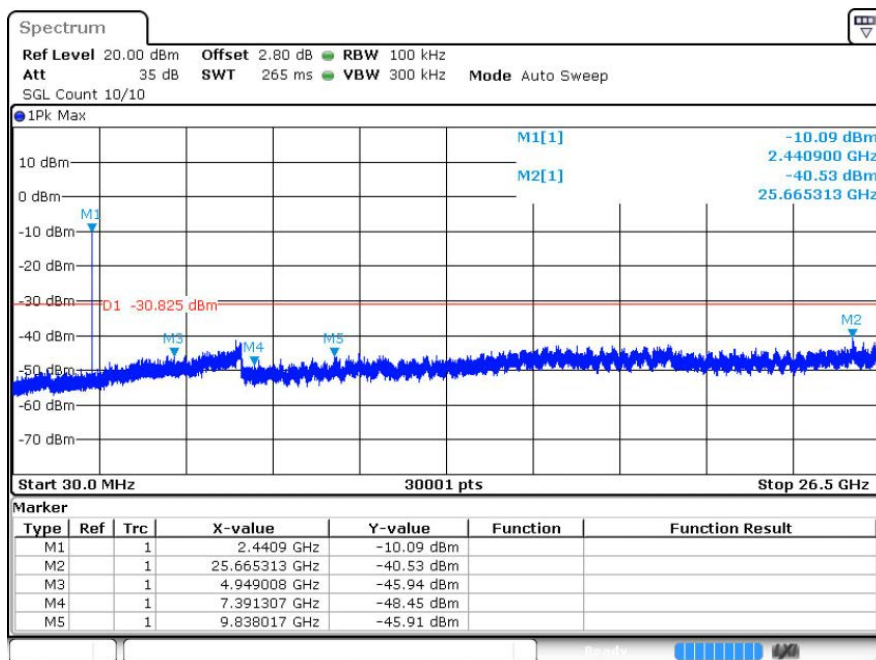


π /4DQPSK_MCH_Graphs

Pref

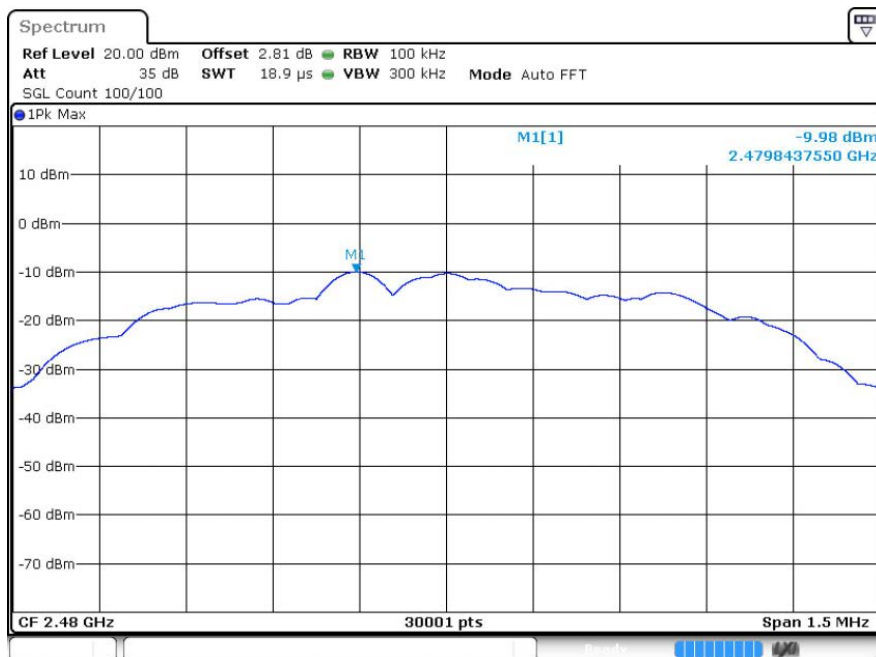


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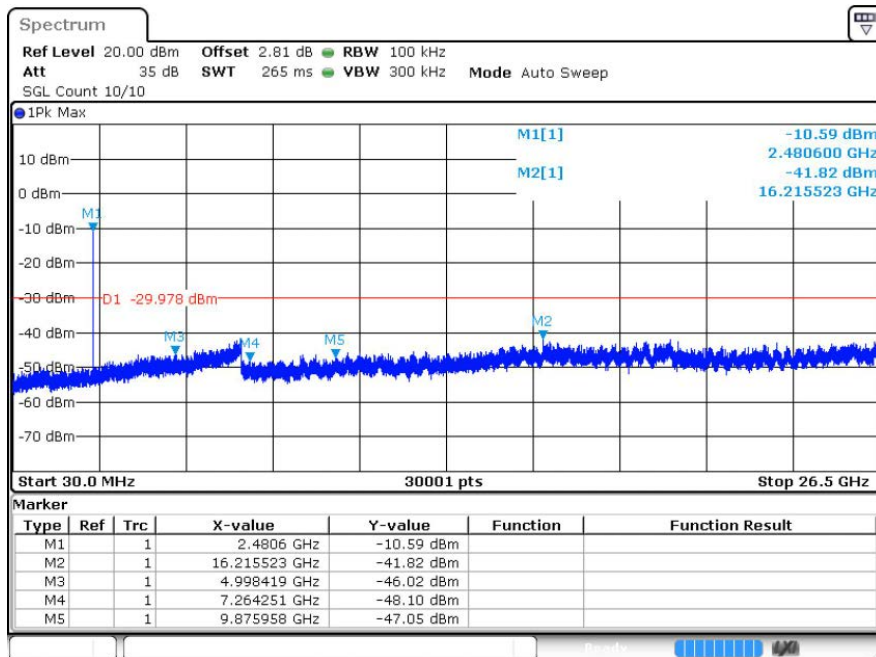


$\pi/4$ DQPSK_HCH_Graphs

Pref



Puw

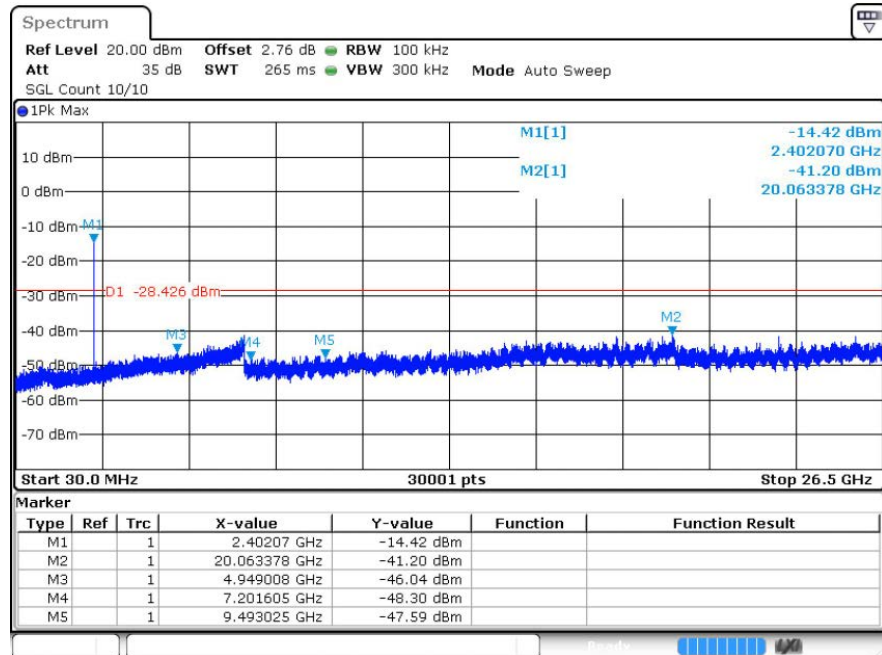


8DPSK_LCH_Graphs

Pref

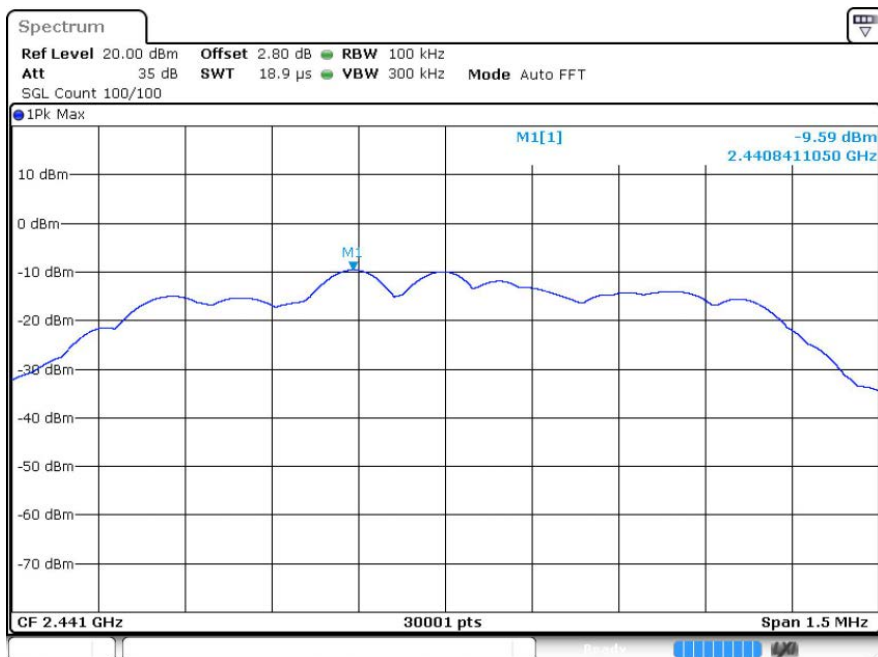


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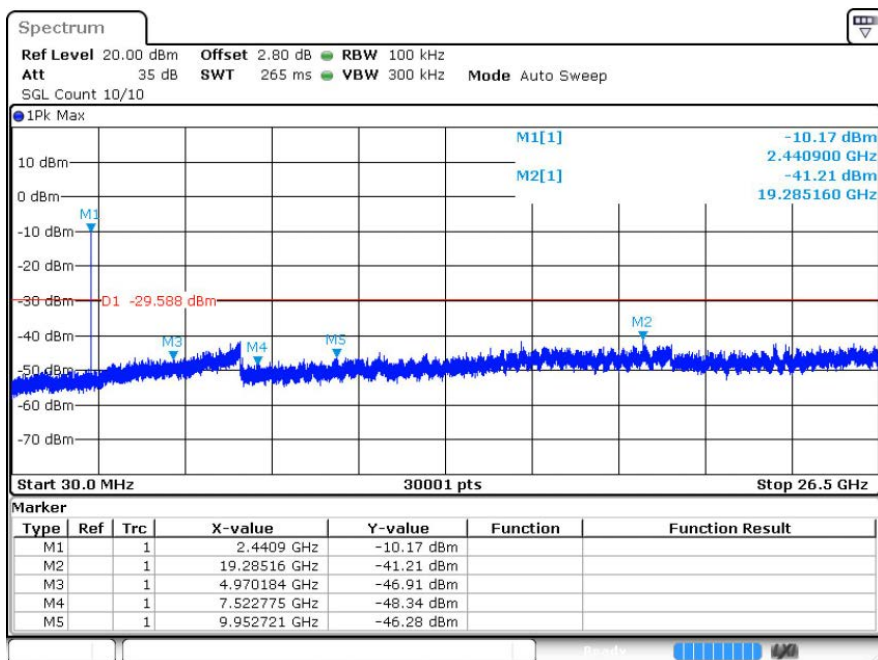


8DPSK_MCH_Graphs

Pref

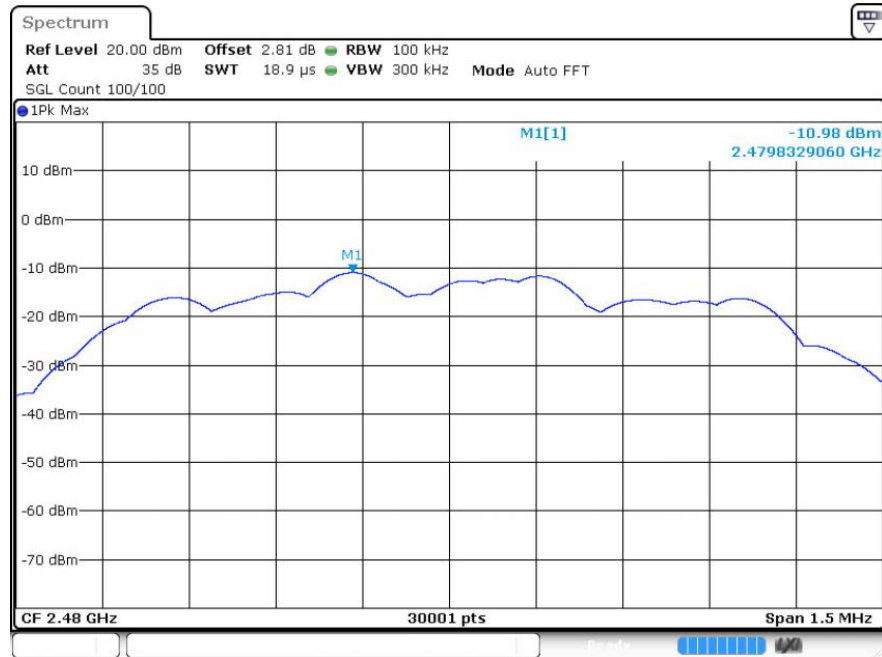


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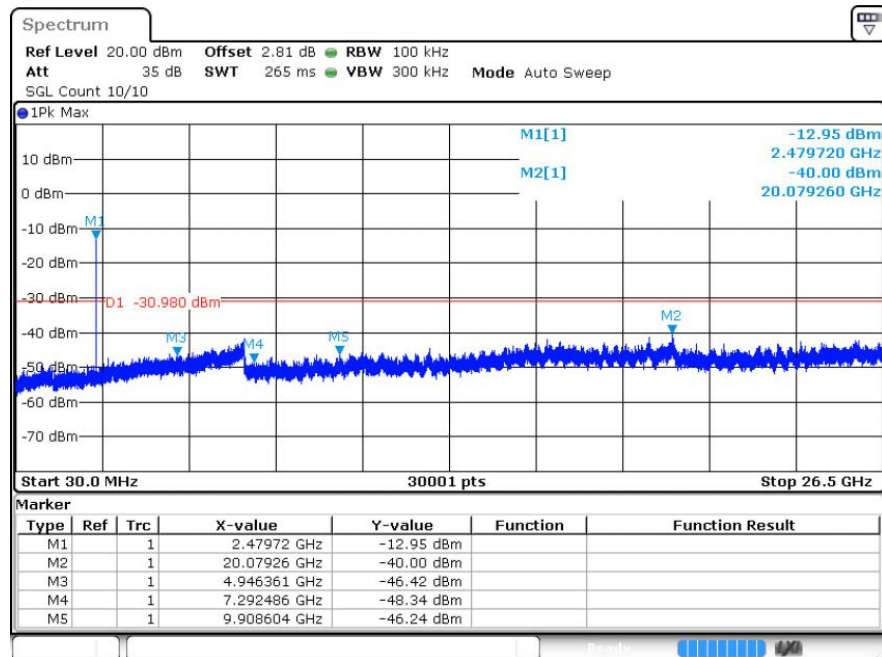


8DPSK_HCH_Graphs

Pref



Puw

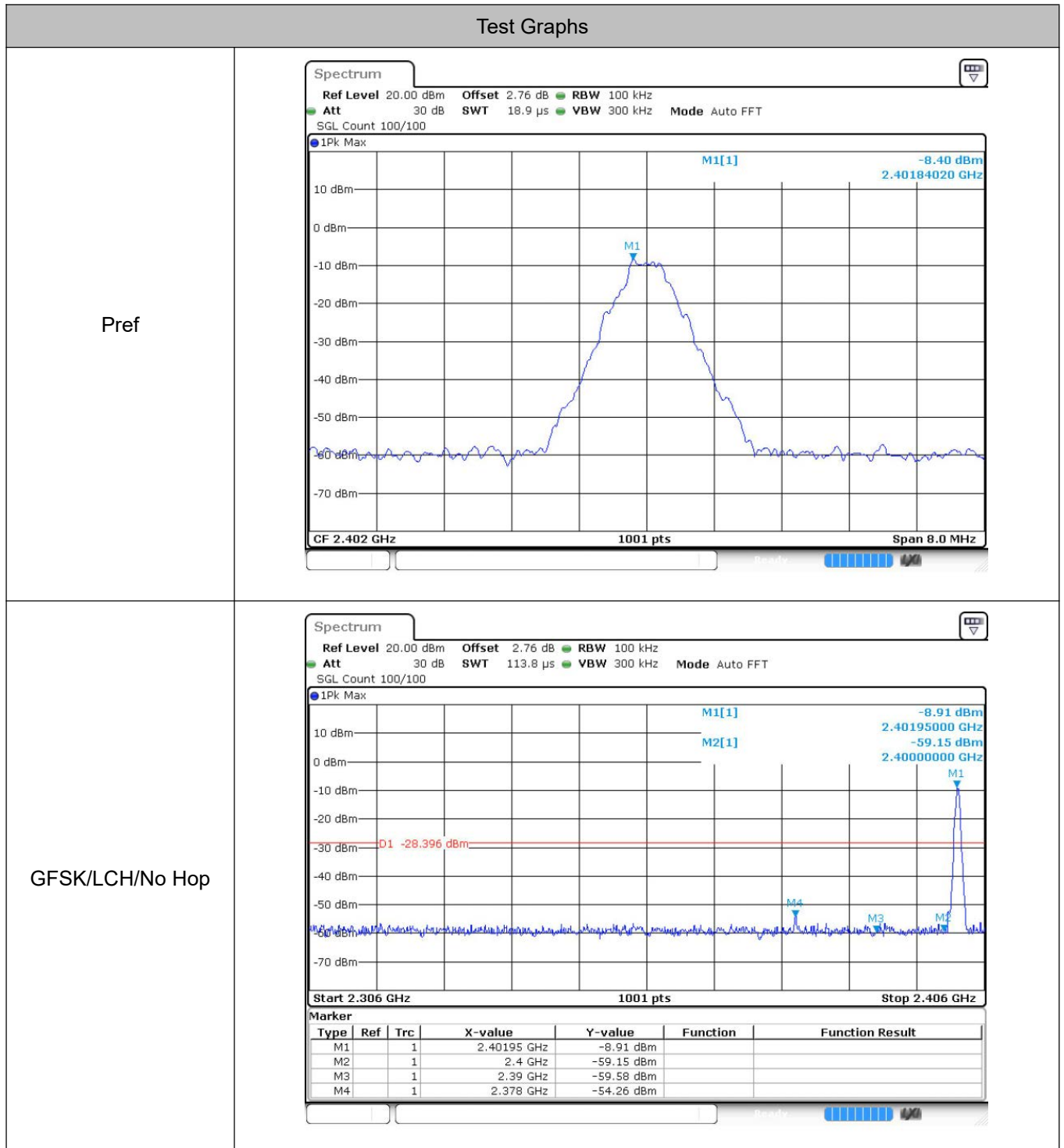


8 Band-edge for RF Conducted Emissions

8.1 Test Result

Mode	Channel	Carrier Frequency [MHz]	Frequency Hopping	Max Spurious Level [dBc]	Limit [dBc]	Verdict
GFSK	LCH	2402	Off	-45.86	-20	Pass
			On	-44.4	-20	Pass
	HCH	2480	Off	-45.95	-20	Pass
			On	-44.07	-20	Pass
$\pi/4$ DQPSK	LCH	2402	Off	-47.68	-20	Pass
			On	-45.5	-20	Pass
	HCH	2480	Off	-45.34	-20	Pass
			On	-44.52	-20	Pass
8DPSK	LCH	2402	Off	-46.43	-20	Pass
			On	-46.04	-20	Pass
	HCH	2480	Off	-45.97	-20	Pass
			On	-45.73	-20	Pass

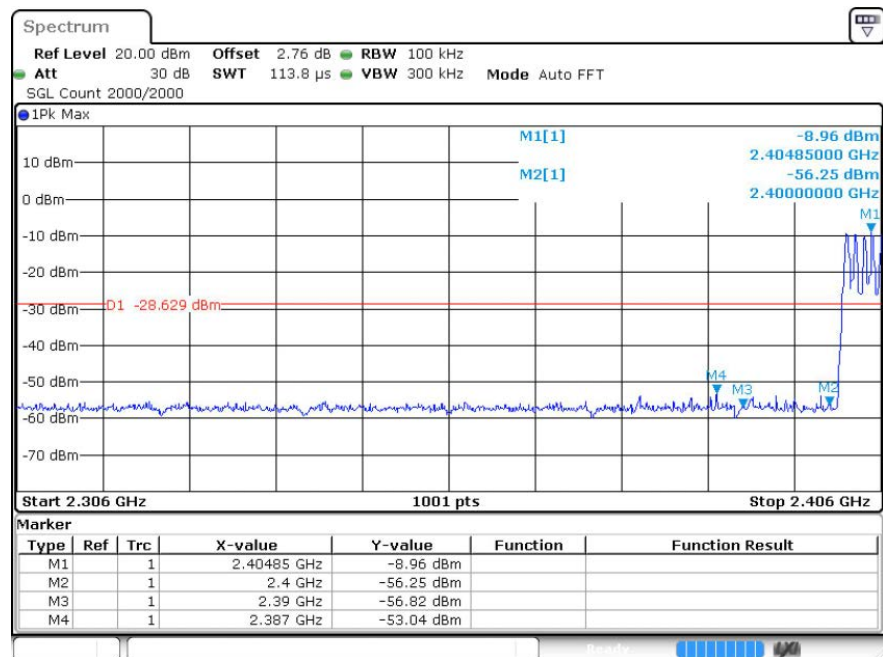
8.2 Test Graphs



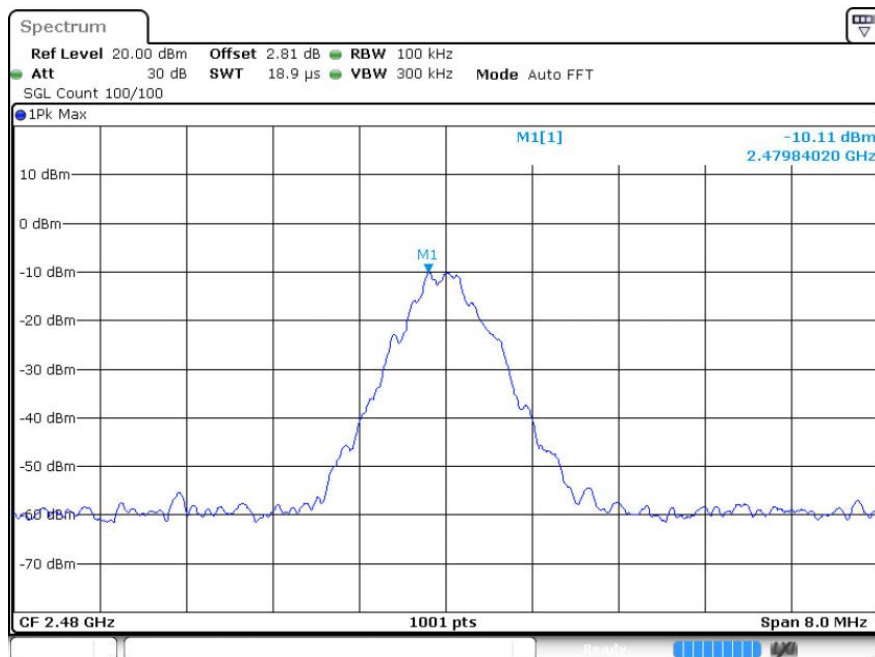
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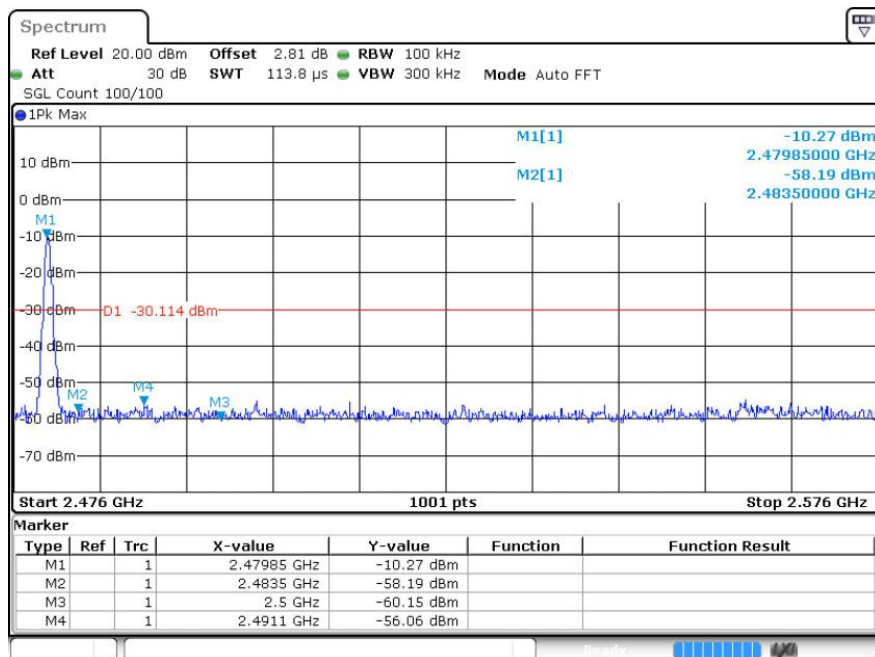
GFSK/LCH/Hop



Ref



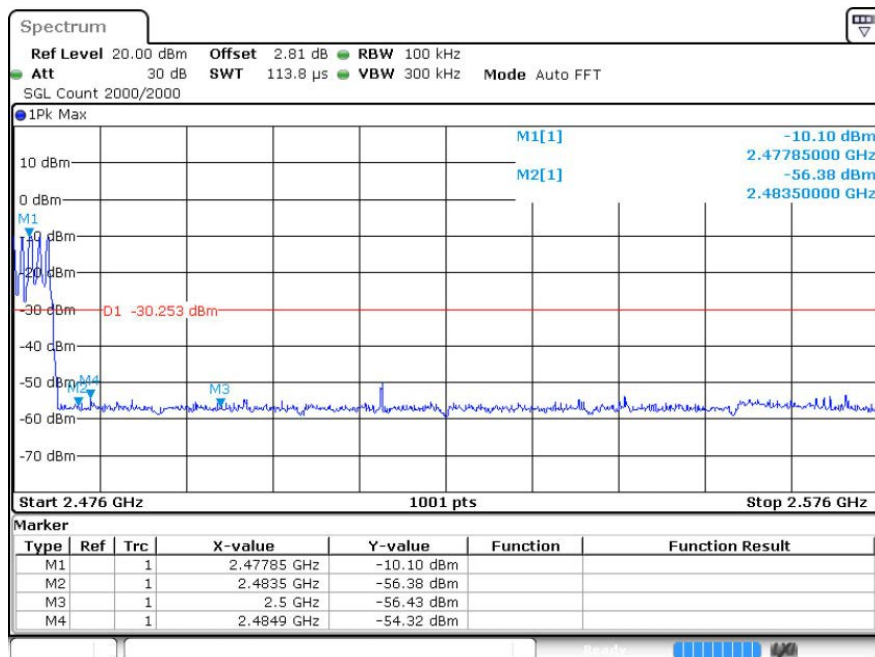
GFSK/HCH/No Hop



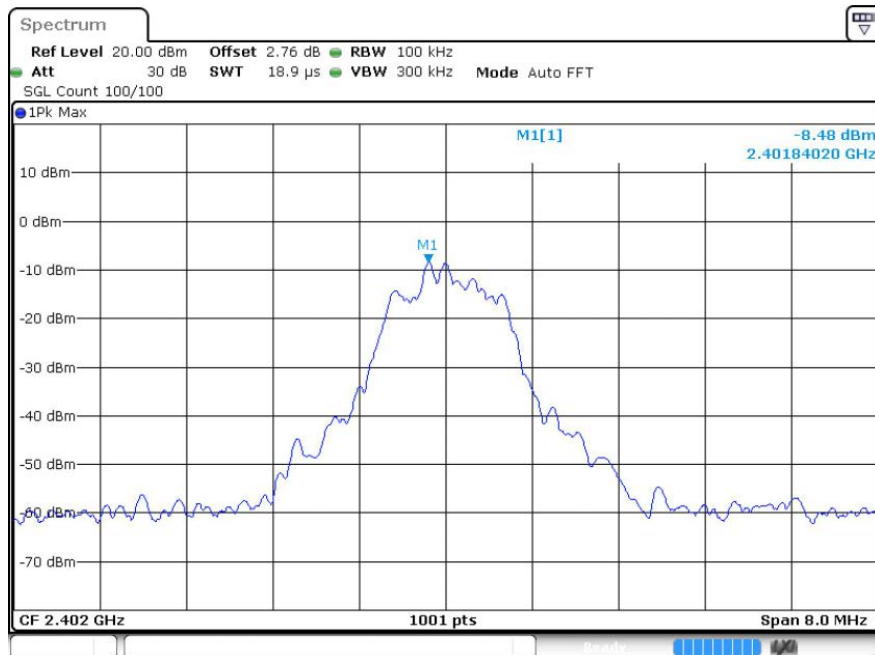
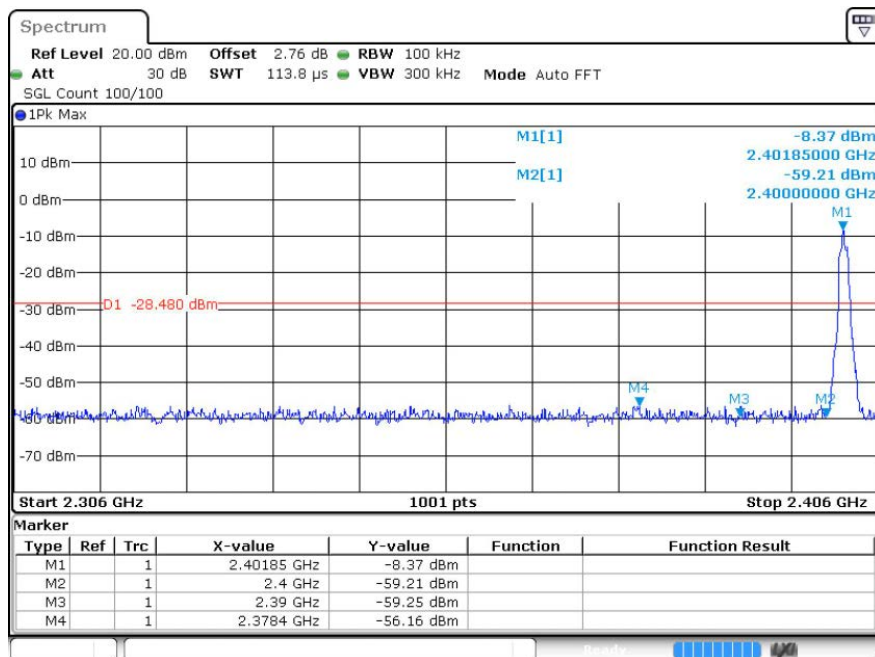
Ref.



GFSK/HCH/Hop



Ref


 $\pi/4$ DQPSK/LCH/No Hop


Ref


 $\pi/4$ DQPSK/LCH/Hop
