



Appendix A

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

Product Name: Wireless Earphones

Trade Mark: N/A

Test Model: G10

Environmental Conditions

Temperature:	24.5℃
Relative Humidity:	52.3%
ATM Pressure:	101Kpa
Test Engineer:	Emiya lin
Supervised by:	Simba Haung

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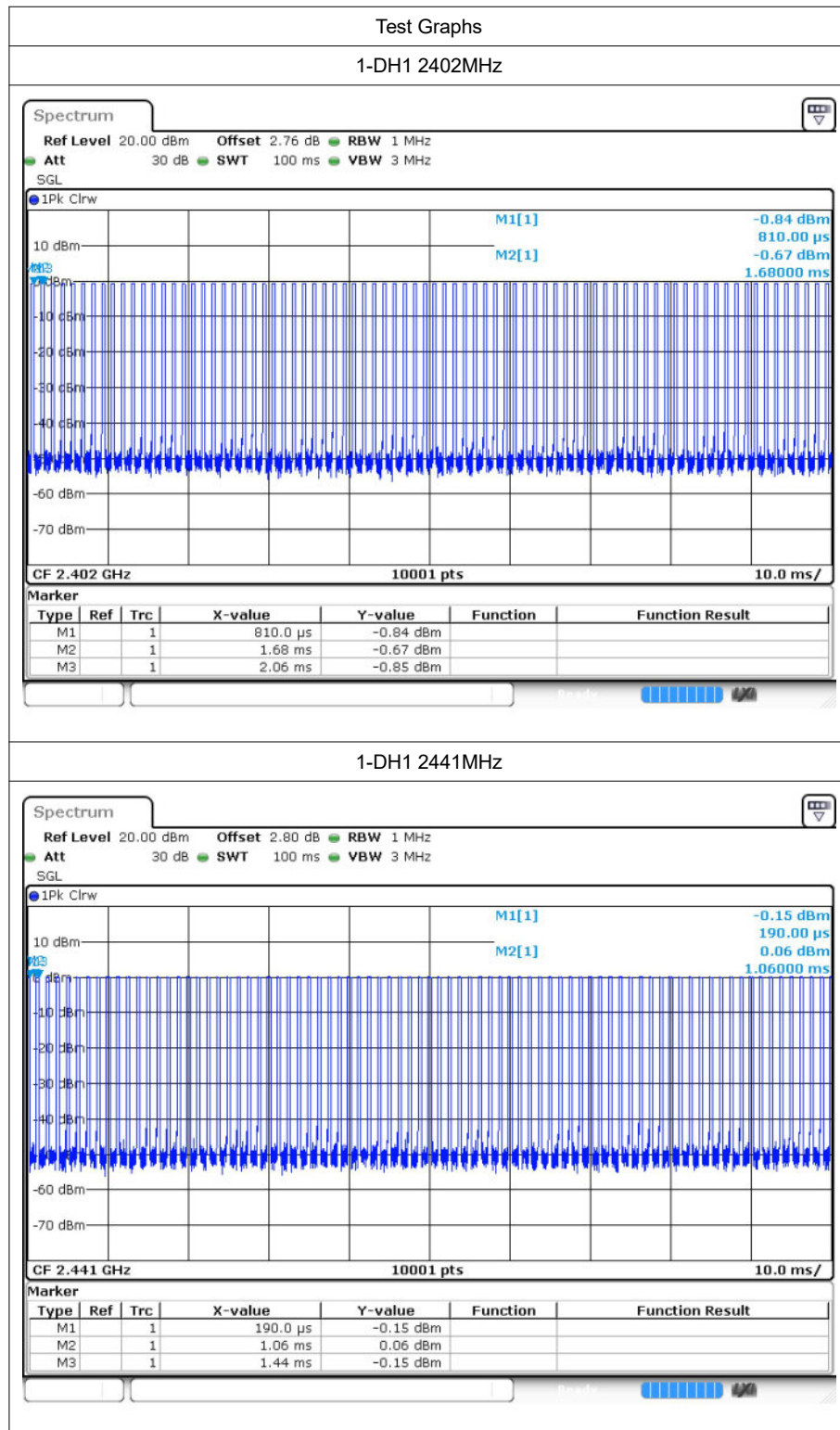
1 Duty Cycle

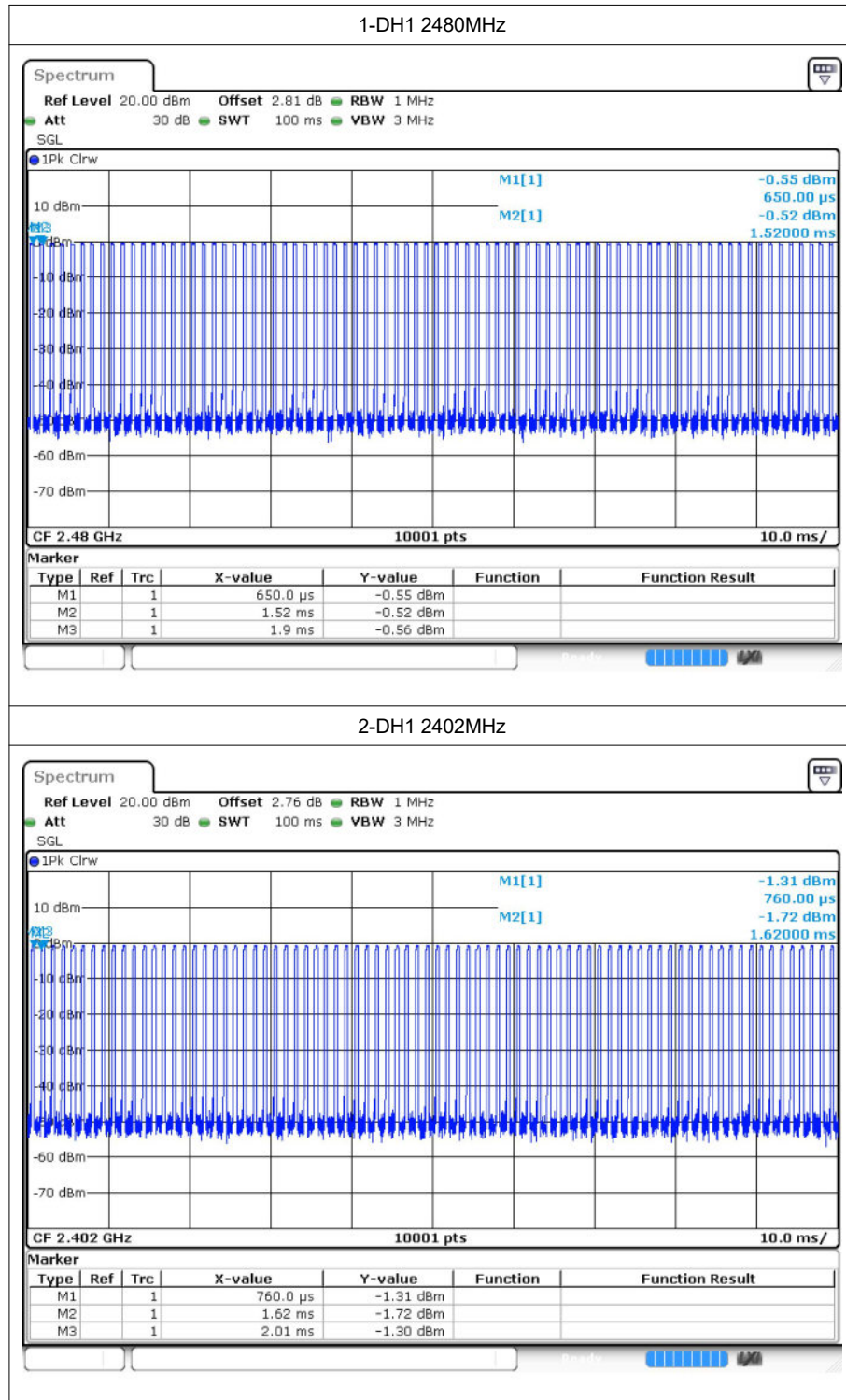
1.1 Test Result

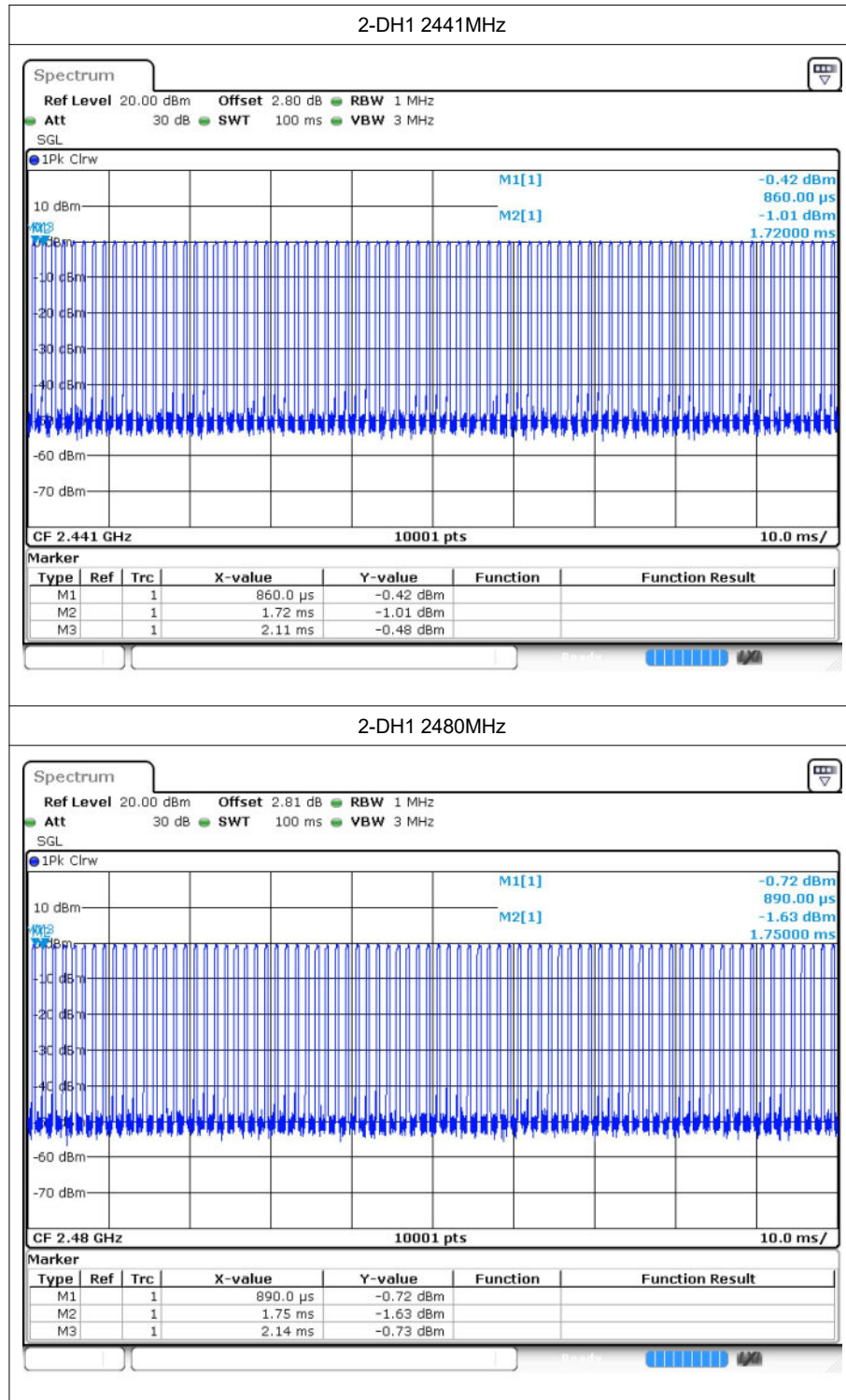
Mode	Frequency (MHz)	Duty Cycle (%)	Correction Factor	1/T (kHz)
1-DH1	2402	31.2	5.06	2.63
1-DH1	2441	31.21	5.06	2.63
1-DH1	2480	31.2	5.06	2.63
2-DH1	2402	32	4.95	2.56
2-DH1	2441	32	4.95	2.56
2-DH1	2480	32	4.95	2.56

Note: Left and right ear have been tested and the only shows the worst case mode.

1.2 Test Graphs







2 Maximum Conducted Peak Output Power

2.1 Test Result

Left:

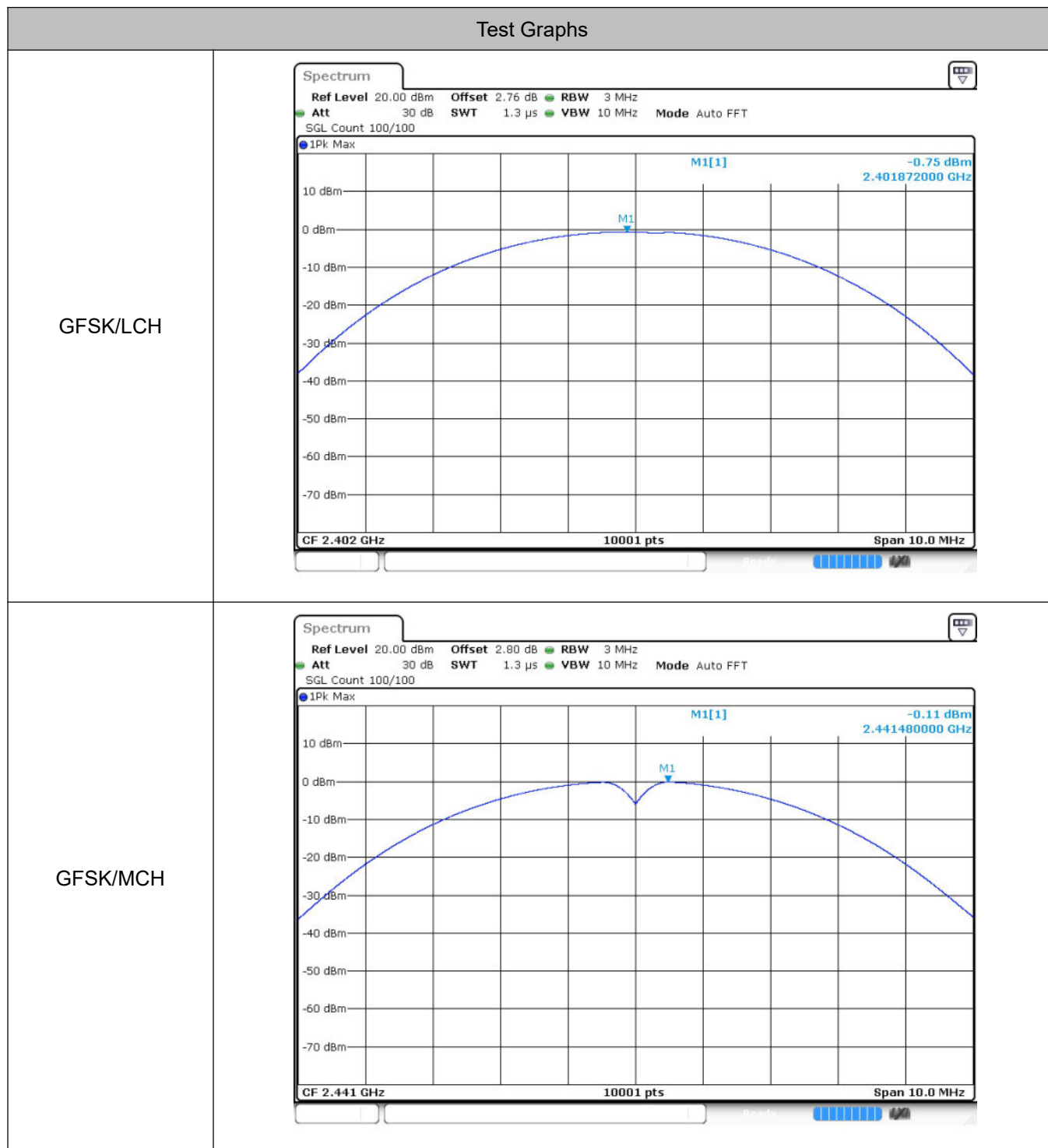
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-0.75	21	Pass
	MCH	-0.11	21	Pass
	HCH	-0.69	21	Pass
$\pi/4$ DQPSK	LCH	0.38	21	Pass
	MCH	0.52	21	Pass
	HCH	0.39	21	Pass

Right:

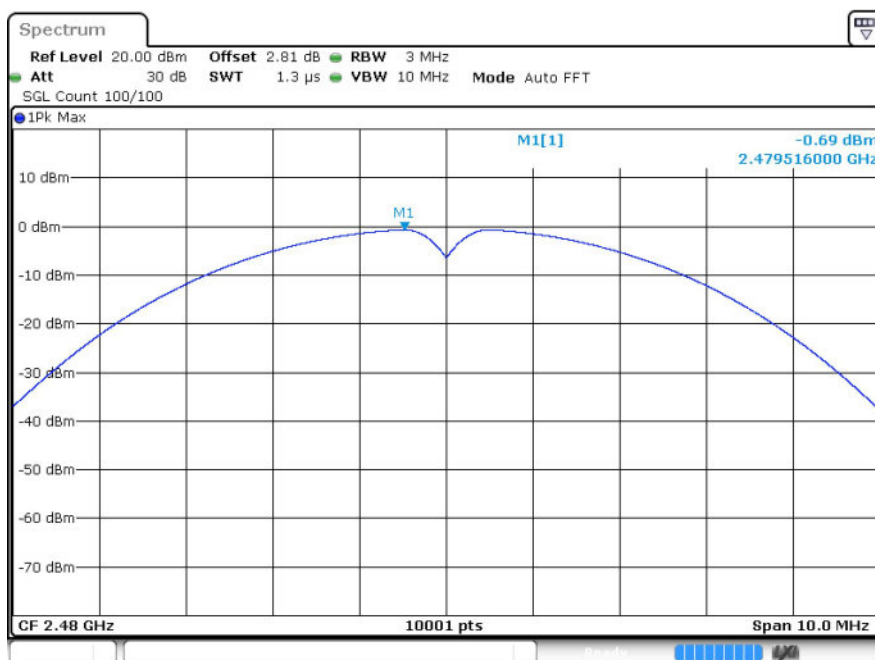
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-1.77	21	Pass
	MCH	-1.77	21	Pass
	HCH	-2.23	21	Pass
$\pi/4$ DQPSK	LCH	-1.4	21	Pass
	MCH	-1.22	21	Pass
	HCH	-1.67	21	Pass

2.2 Test Graphs

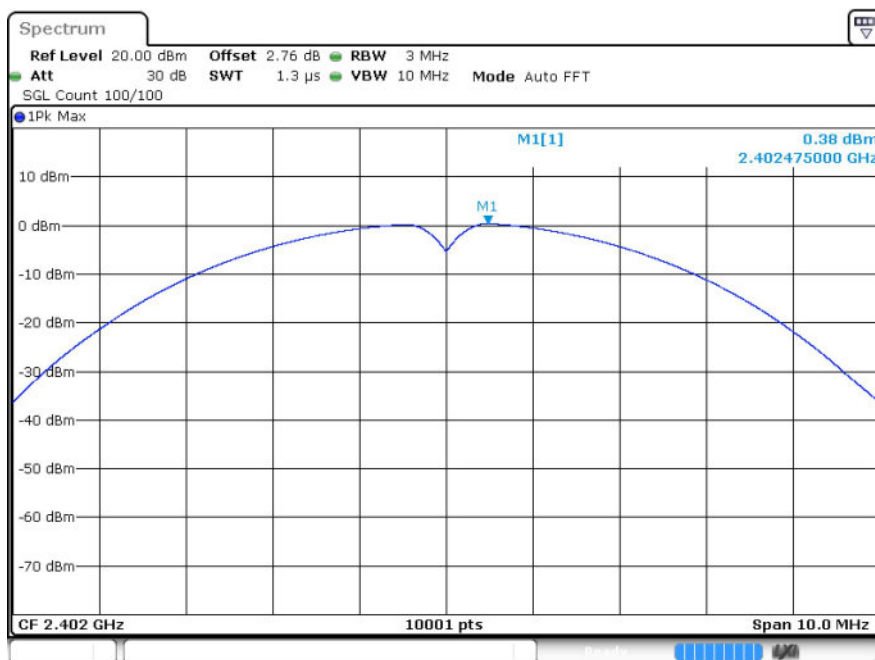
Left:

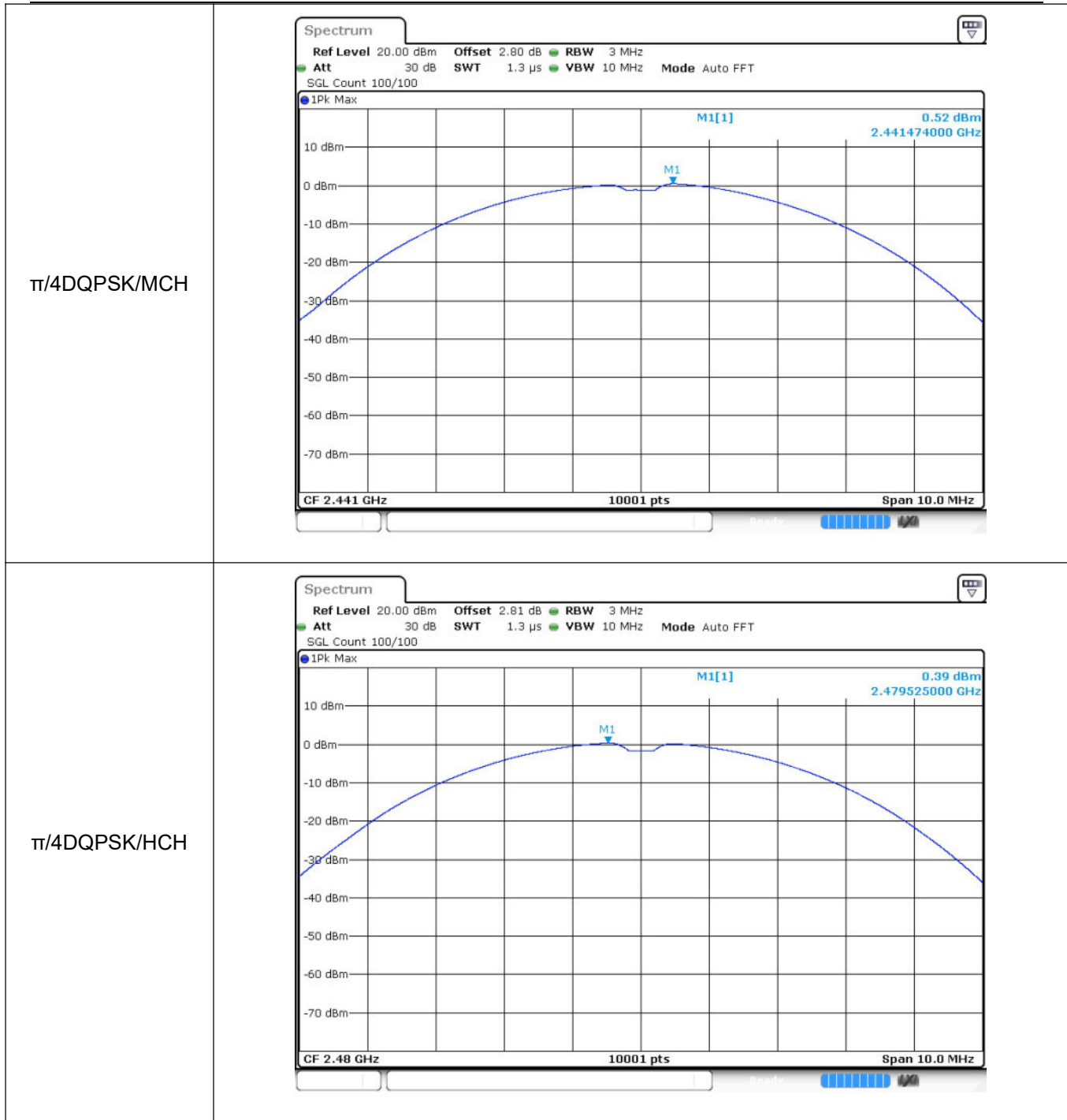


GFSK/HCH

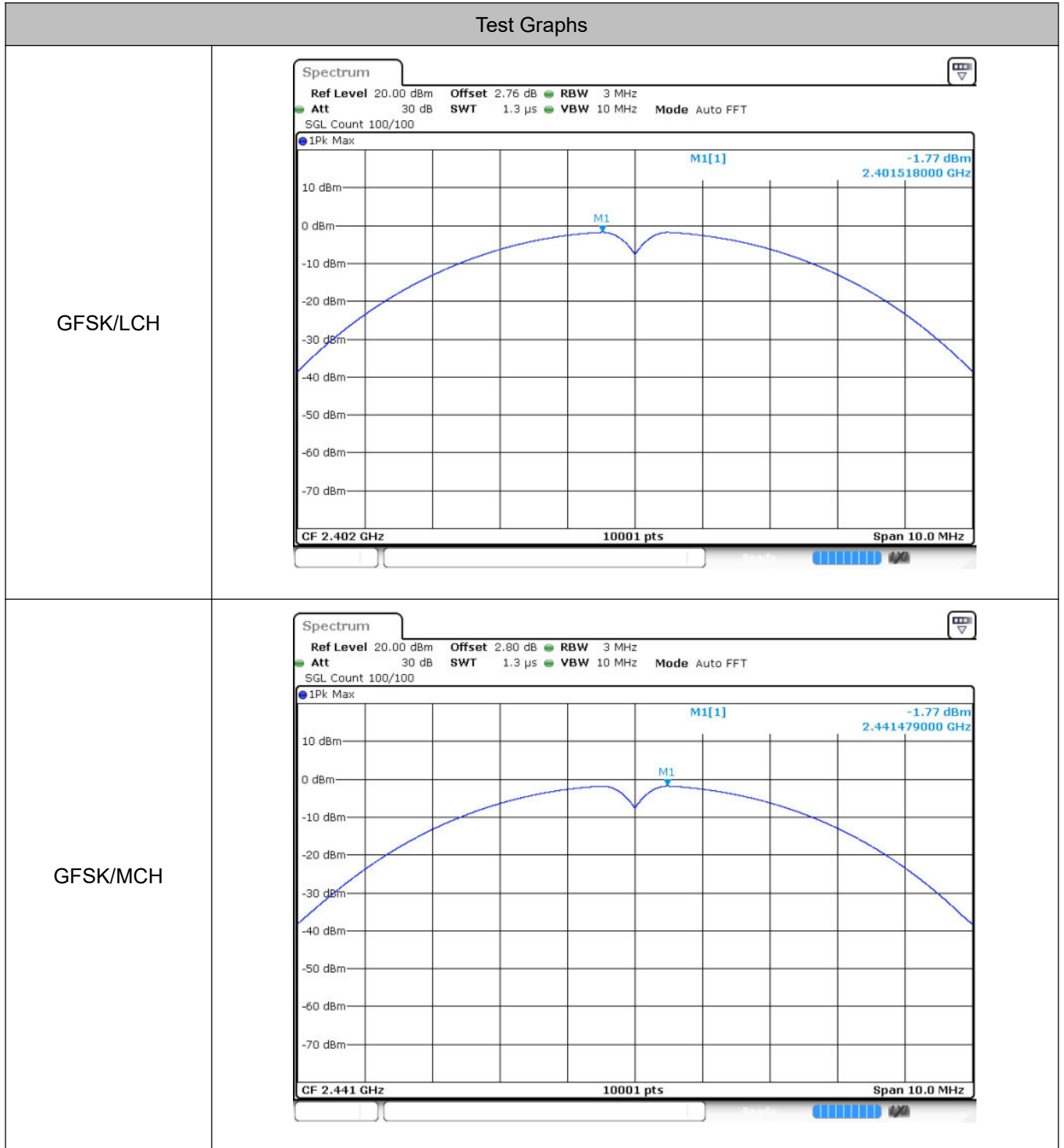


$\pi/4$ DQPSK/LCH

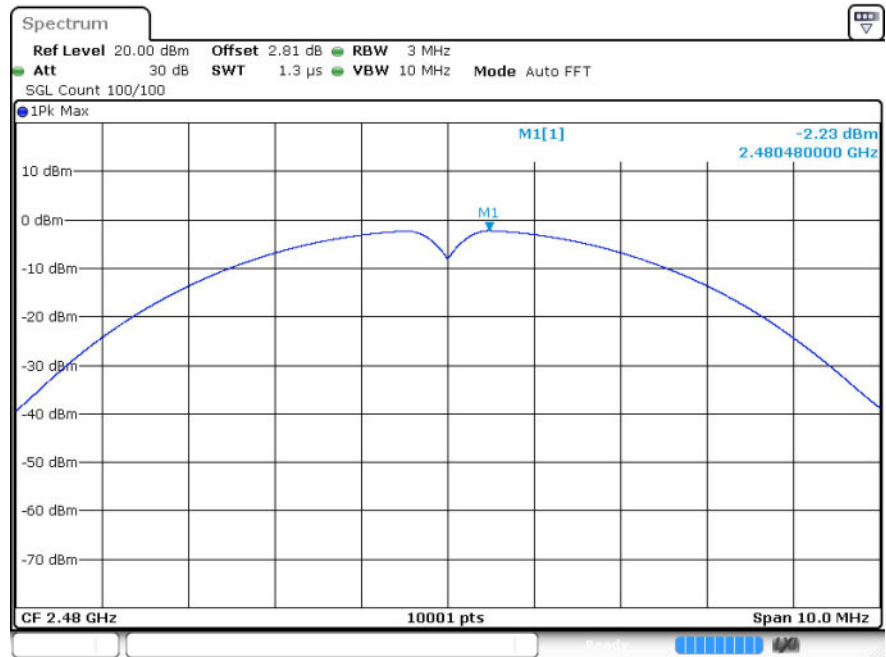




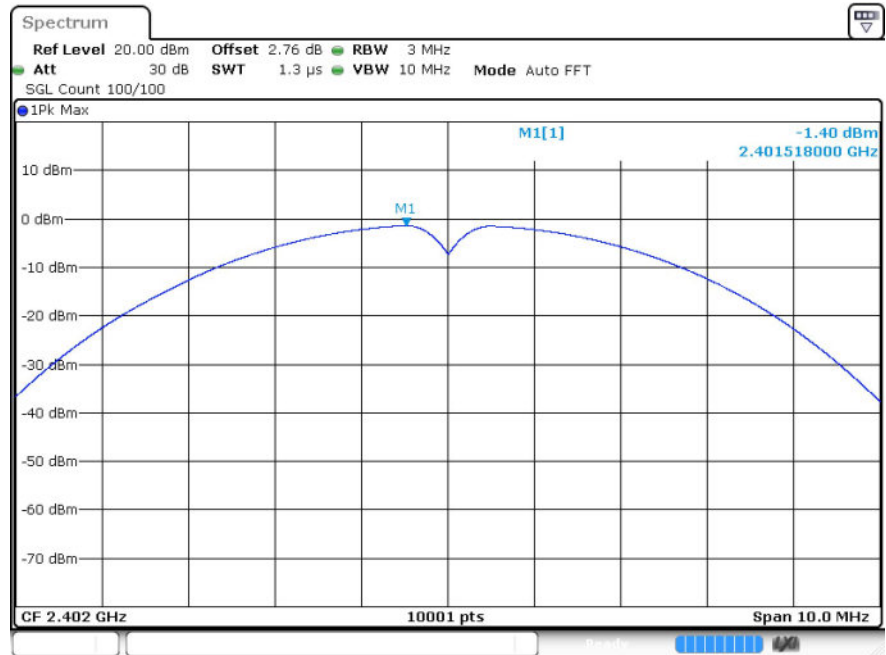
Right:



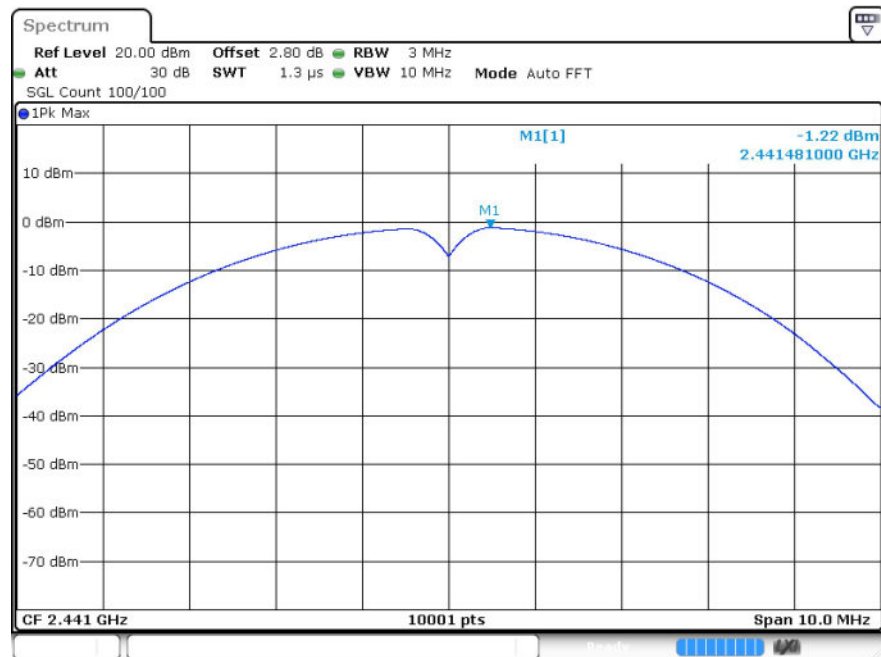
GFSK/HCH



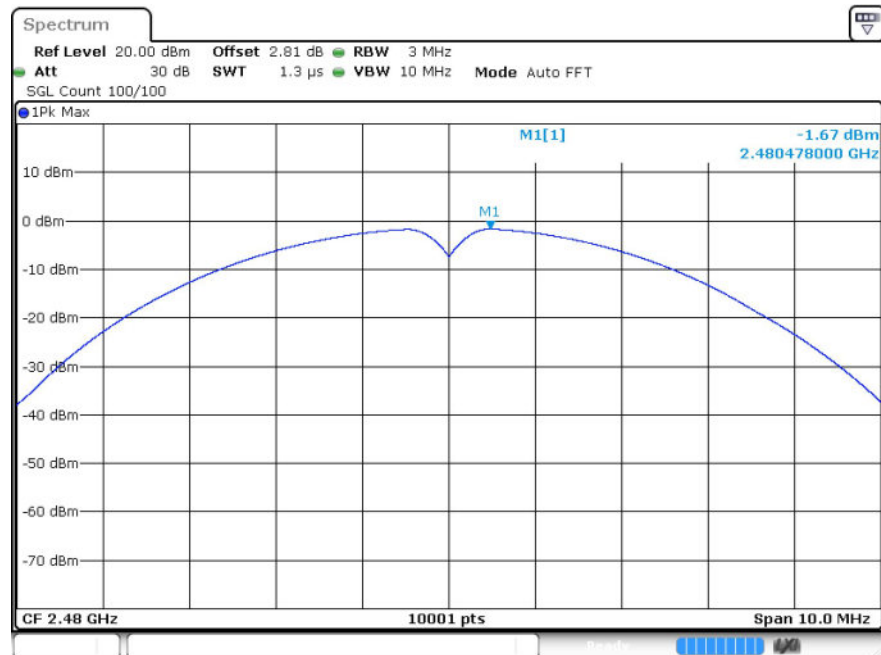
$\pi/4$ DQPSK/LCH



$\pi/4$ DQPSK/MCH



$\pi/4$ DQPSK/HCH



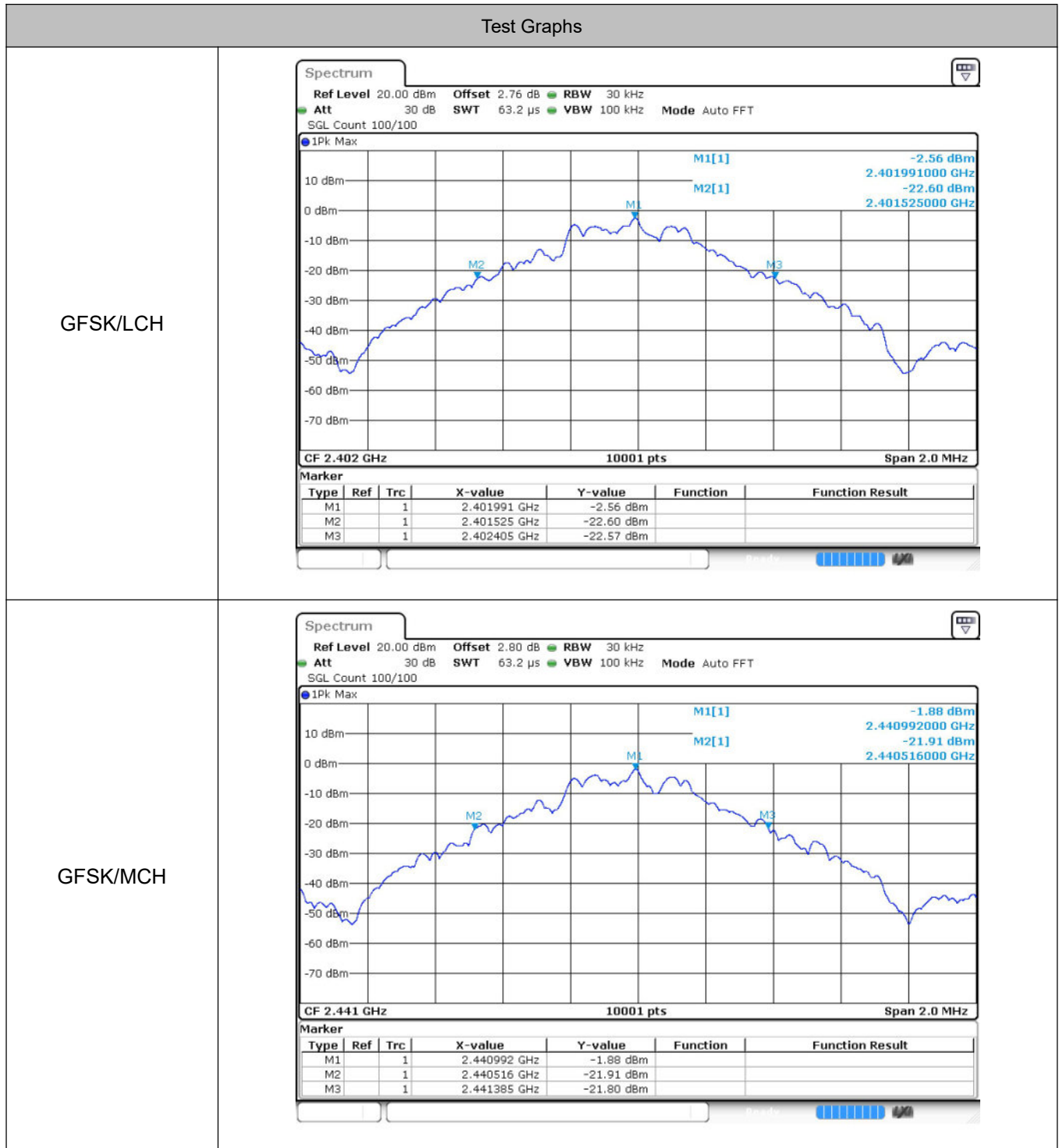
3 20dB Bandwidth

3.1 Test Result

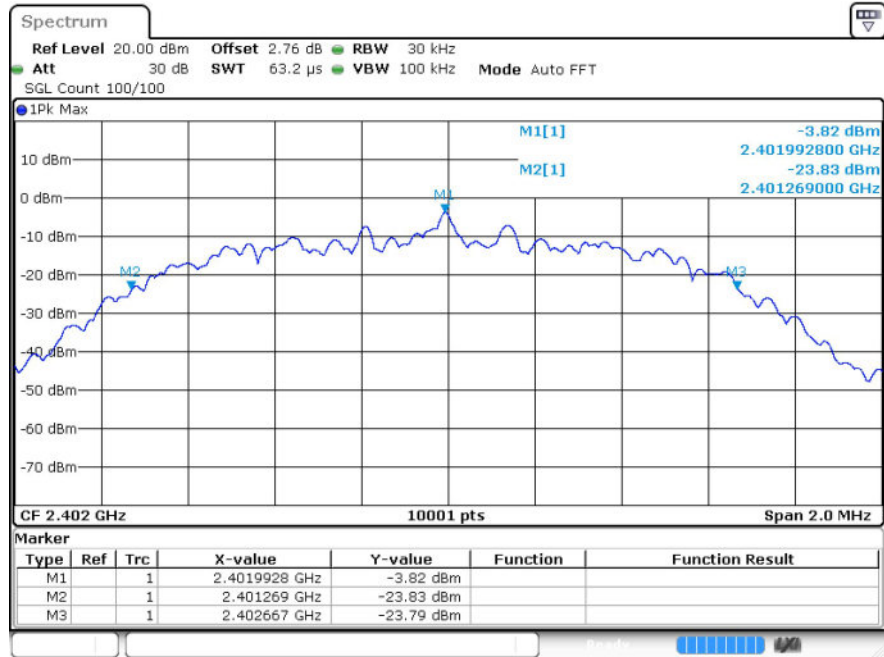
Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.88	Not Specified	Pass
	MCH	0.869	Not Specified	Pass
	HCH	0.891	Not Specified	Pass
$\pi/4$ DQPSK	LCH	1.398	Not Specified	Pass
	MCH	1.43	Not Specified	Pass
	HCH	1.452	Not Specified	Pass

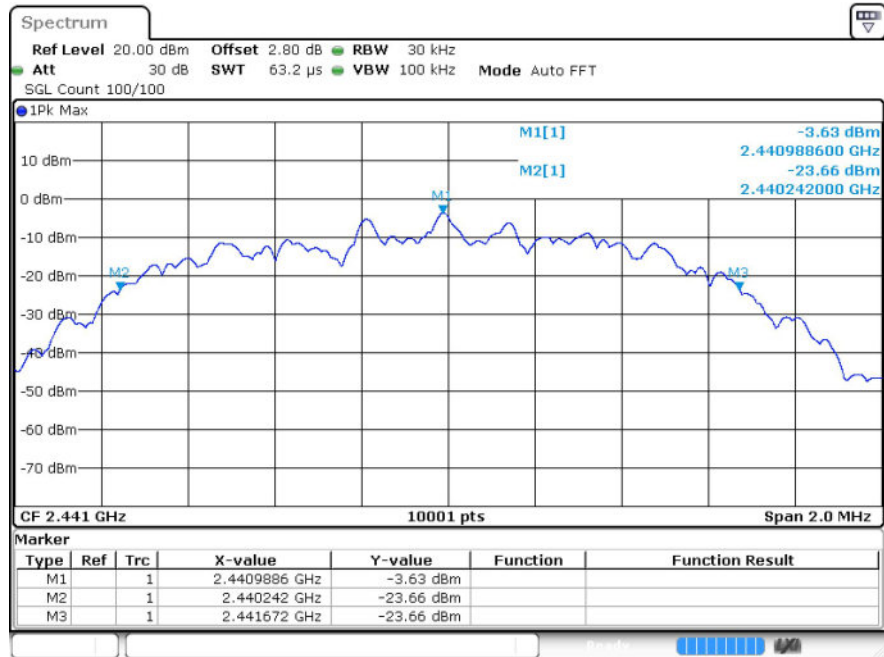
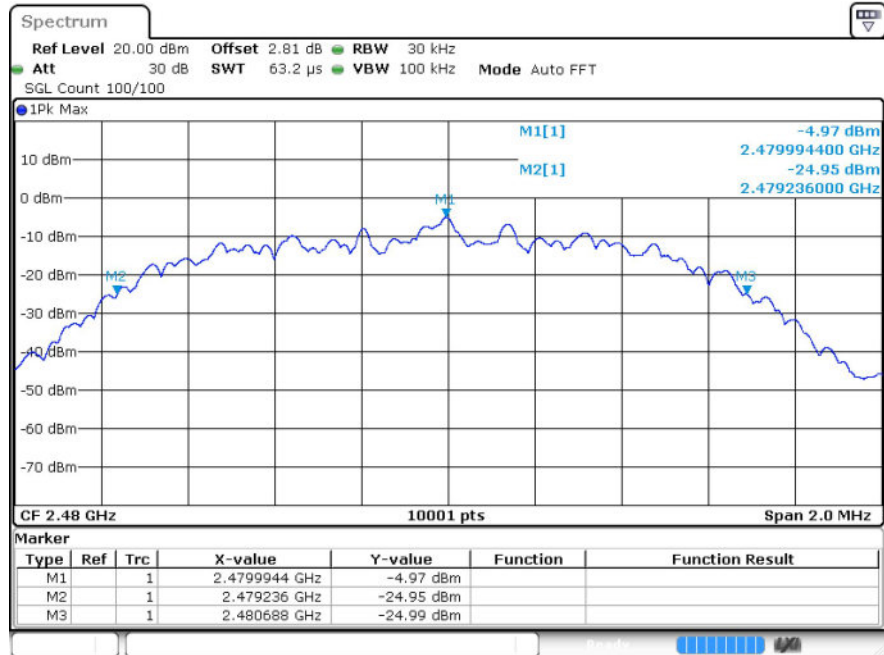
Note: Left and right ear have been tested and the only shows the worst case mode.

3.2 Test Graphs



GFSK/HCH


 $\pi/4$ DQPSK/LCH


$\pi/4$ DQPSK/MCH

 $\pi/4$ DQPSK/HCH


4 Carrier Frequency Separation

4.1 Test Result

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	MCH	0.999	0.579	Pass
$\pi/4$ DQPSK	MCH	0.996	0.953	Pass

Note: Left and right ear have been tested and the only shows the worst case mode.

4.2 Test Graphs



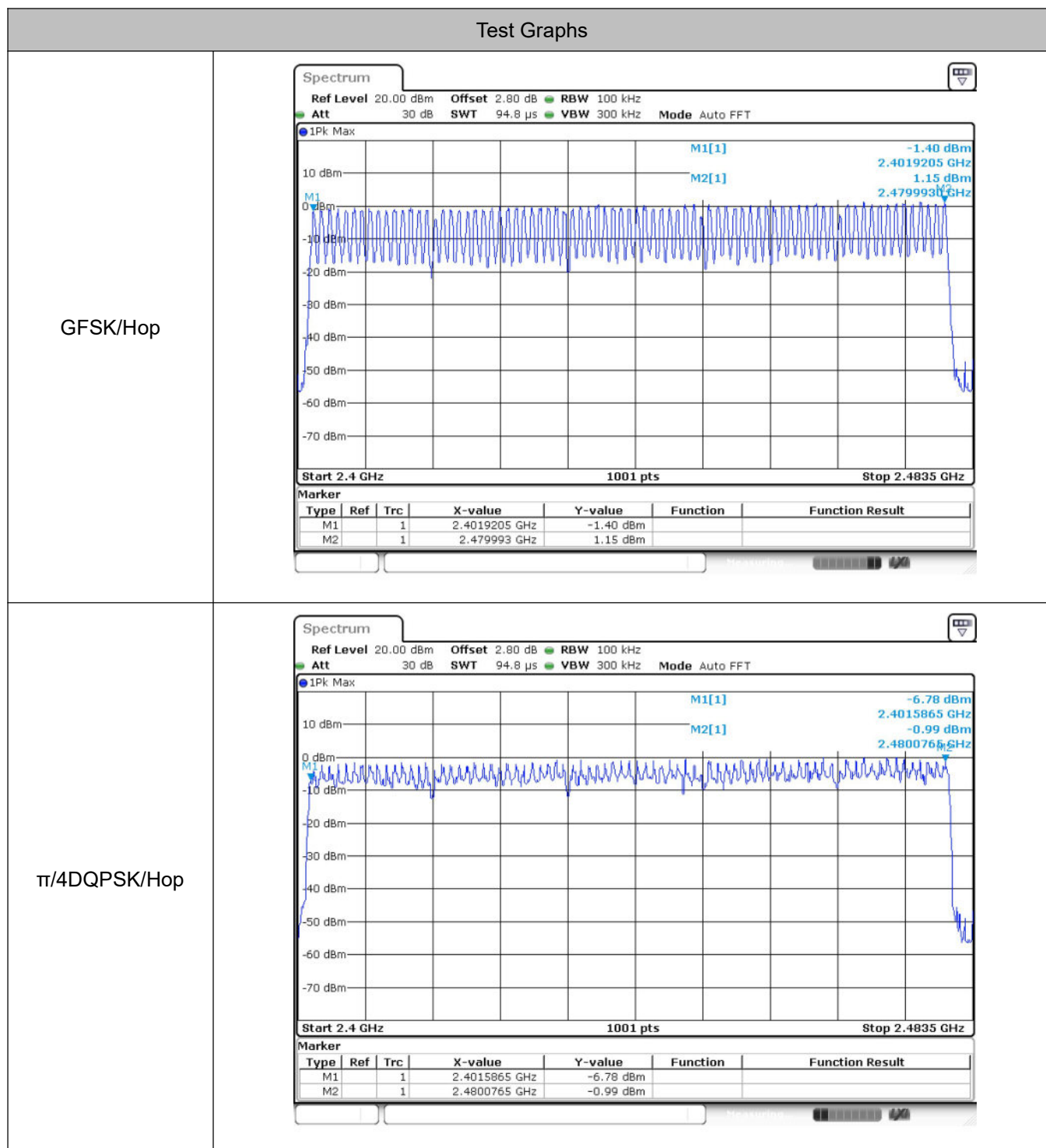
5 Hopping Channel Number

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

Note: Left and right ear have been tested and the only shows the worst case mode.

5.2 Test Graphs



6 Dwell Time

6.1 Test Result

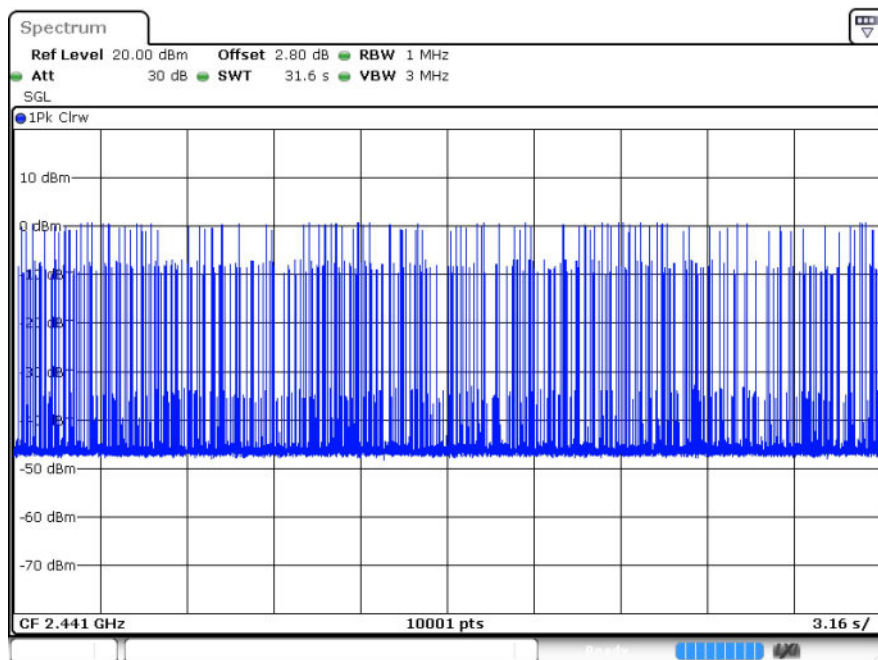
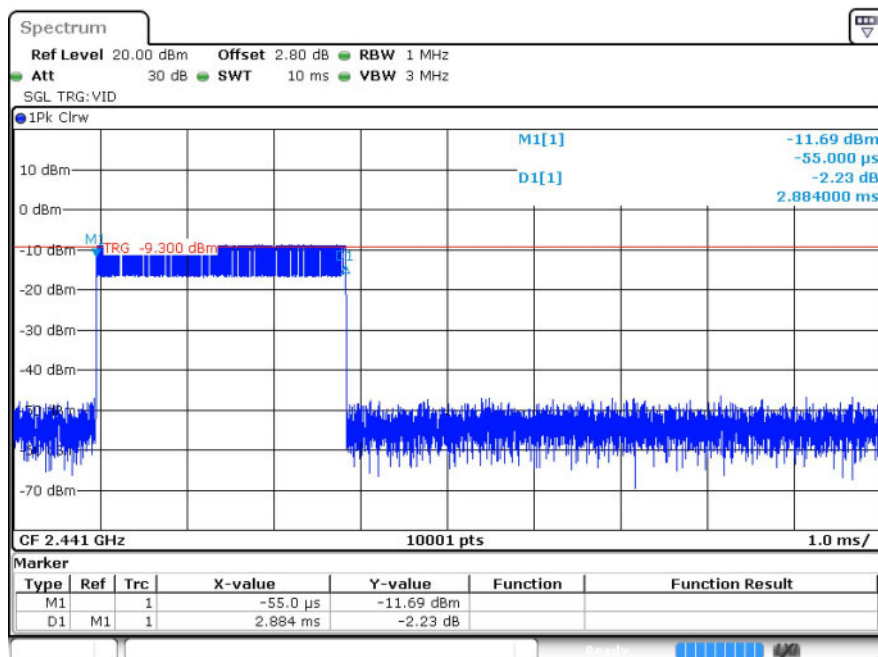
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[ms]	Limit [s]	Verdict
GFSK	DH5	MCH	2.884	107	308.588	0.4	Pass
$\pi/4$ DQPSK	2DH5	MCH	2.889	114	329.346	0.4	Pass

Note: Left and right ear have been tested and the only shows the worst case mode.

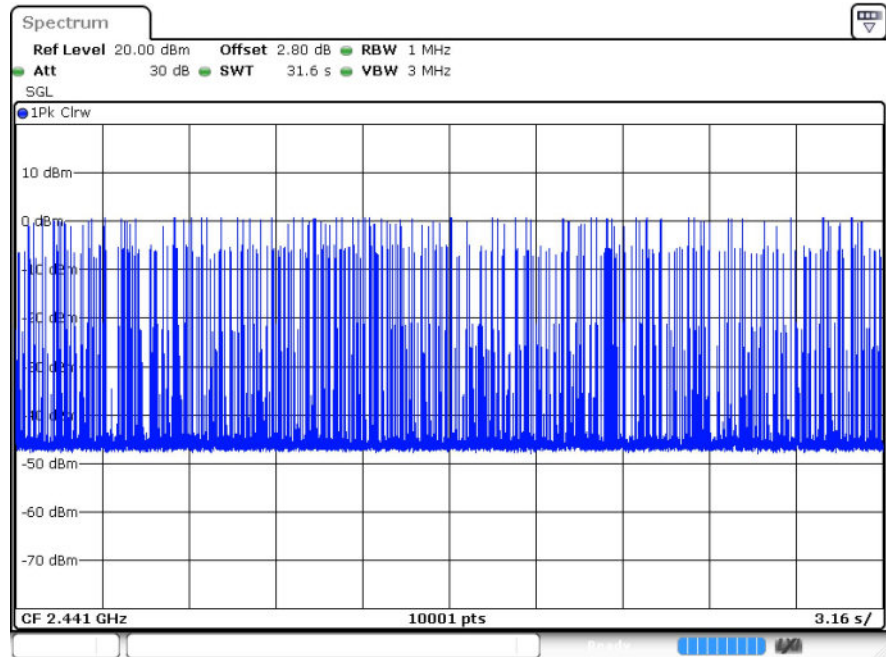
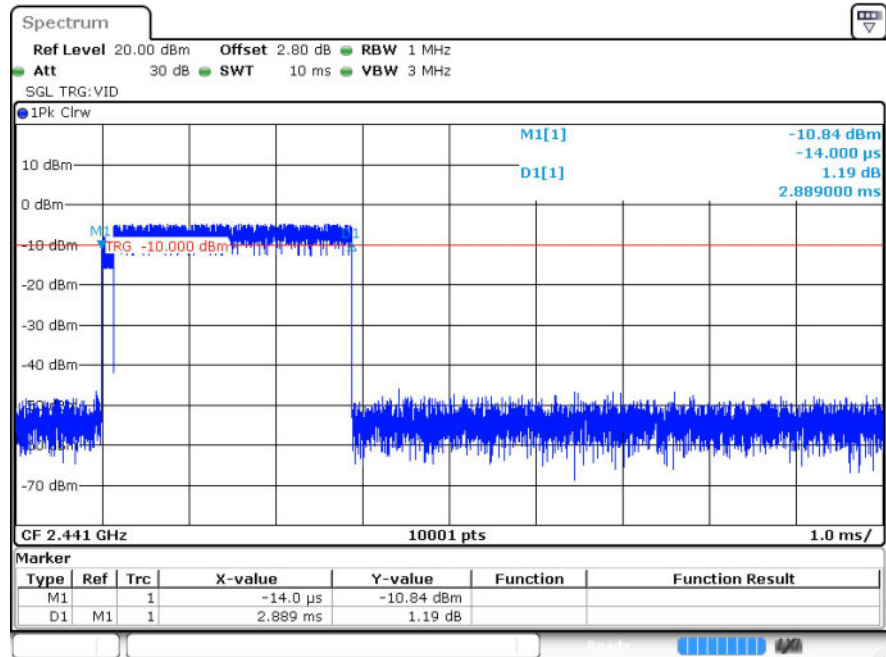
6.2 Test Graphs

Test Graphs

GFSK_DH5/MCH



$\pi/4$ DQPSK
_2DH5/MCH



7 RF Conducted Spurious Emissions

7.1 Test Result

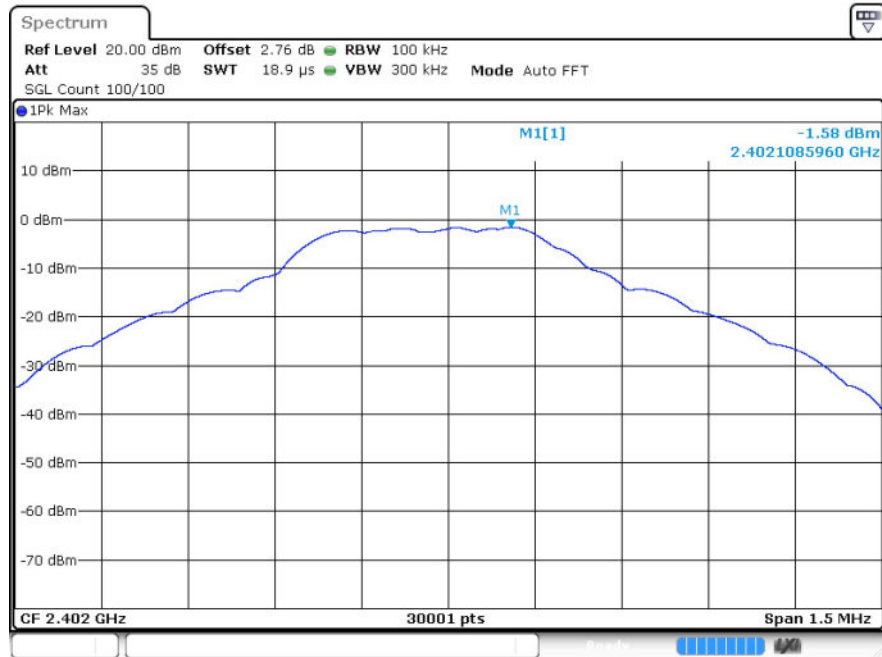
Mode	Channel	Max. Level [dBc]	Limit [dBc]	Verdict
GFSK	LCH	-39.69	-20	Pass
	MCH	-41.15	-20	Pass
	HCH	-39.98	-20	Pass
$\pi/4$ DQPSK	LCH	-38.92	-20	Pass
	MCH	-38.66	-20	Pass
	HCH	-40.09	-20	Pass

Note: Left and right ear have been tested and the only shows the worst case mode.

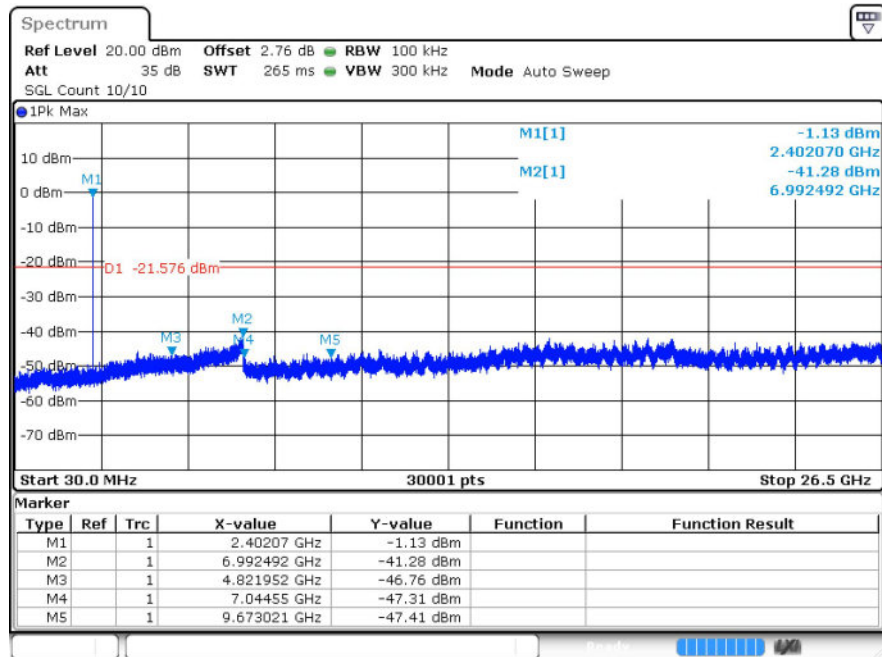
7.2 Test Graphs

GFSK_LCH_Graphs

Pref

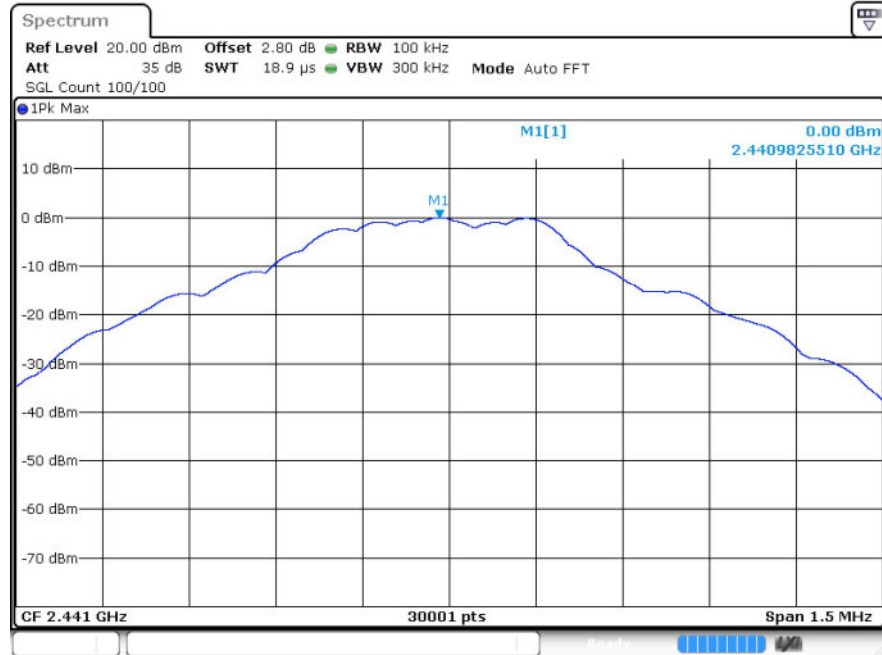


Puw

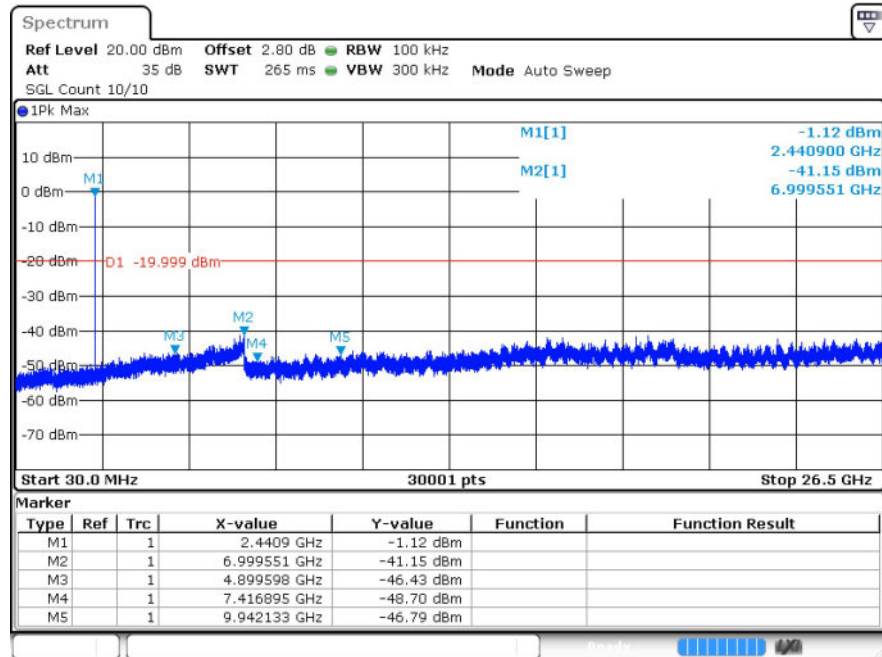


GFSK_MCH_Graphs

Pref

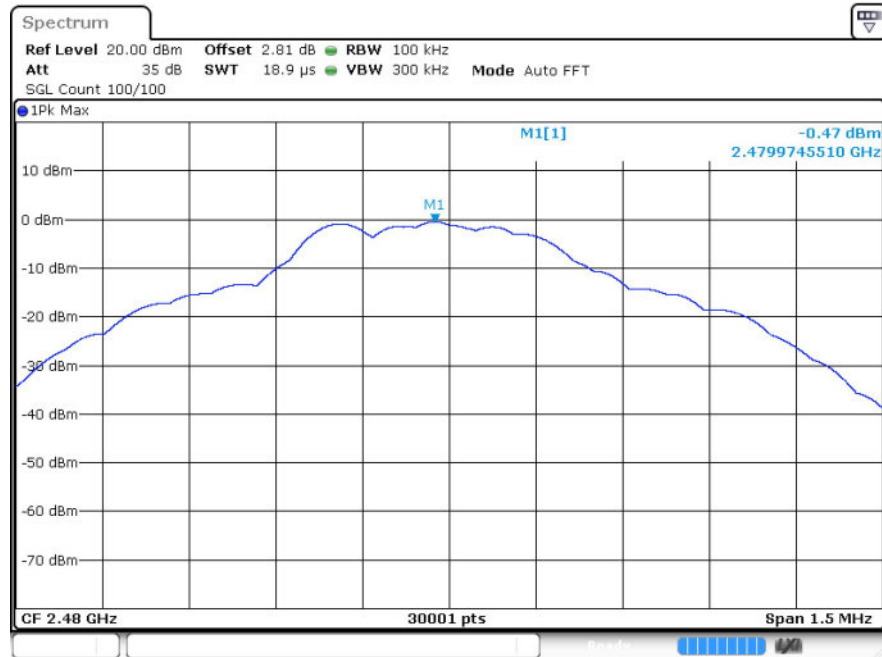


Puw

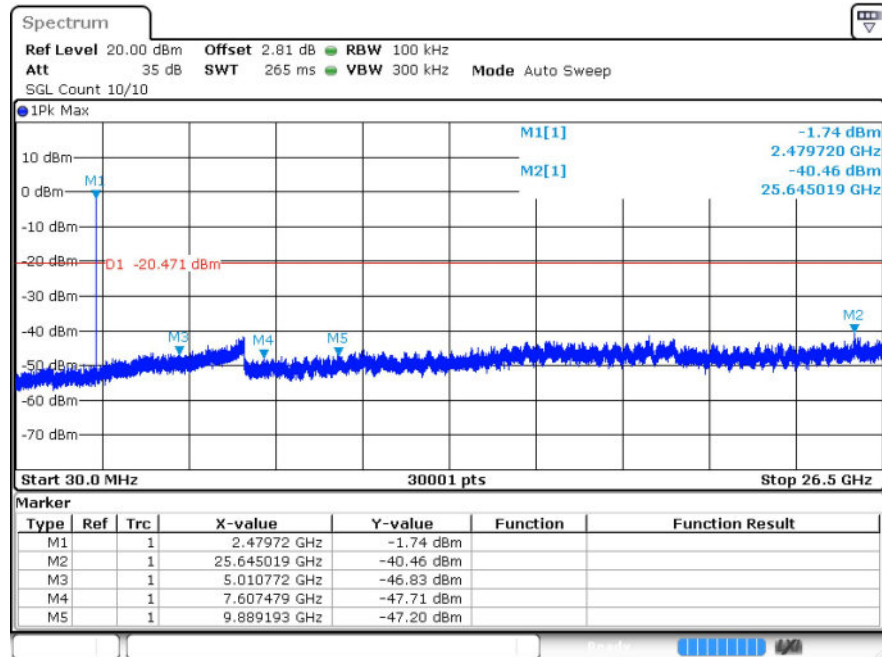


GFSK_HCH_Graphs

Pref

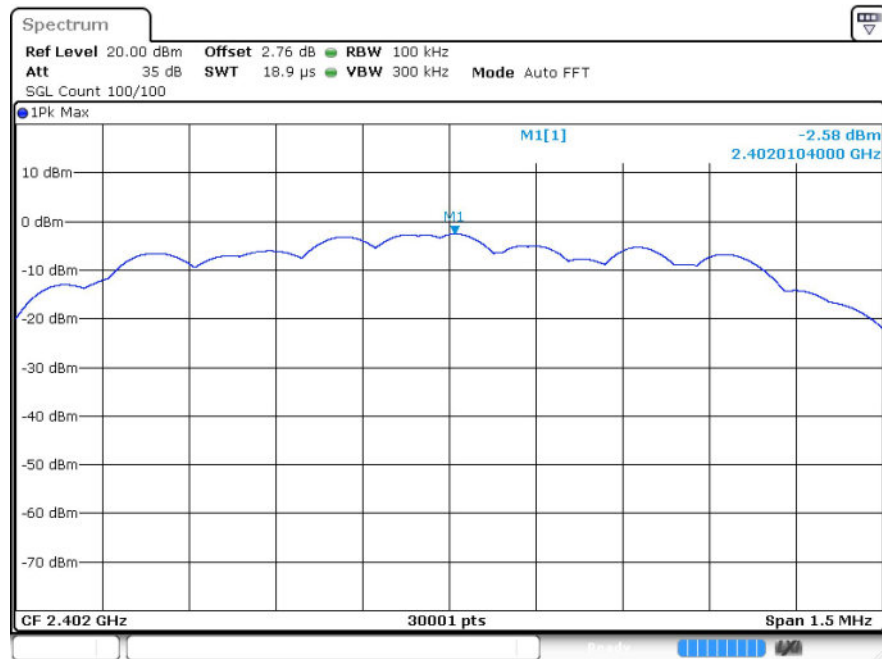


Puw

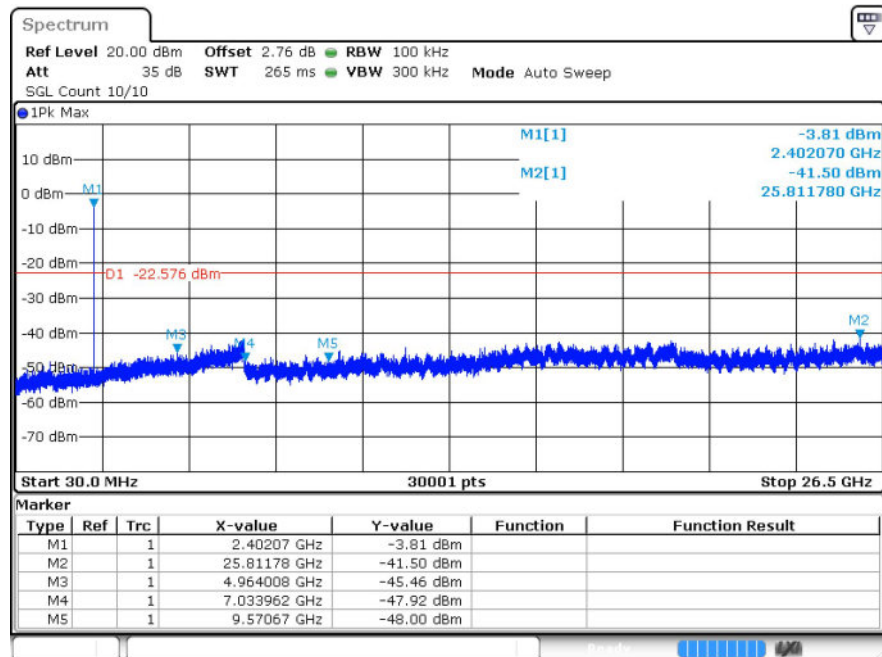


$\pi/4$ DQPSK_LCH_Graphs

Pref

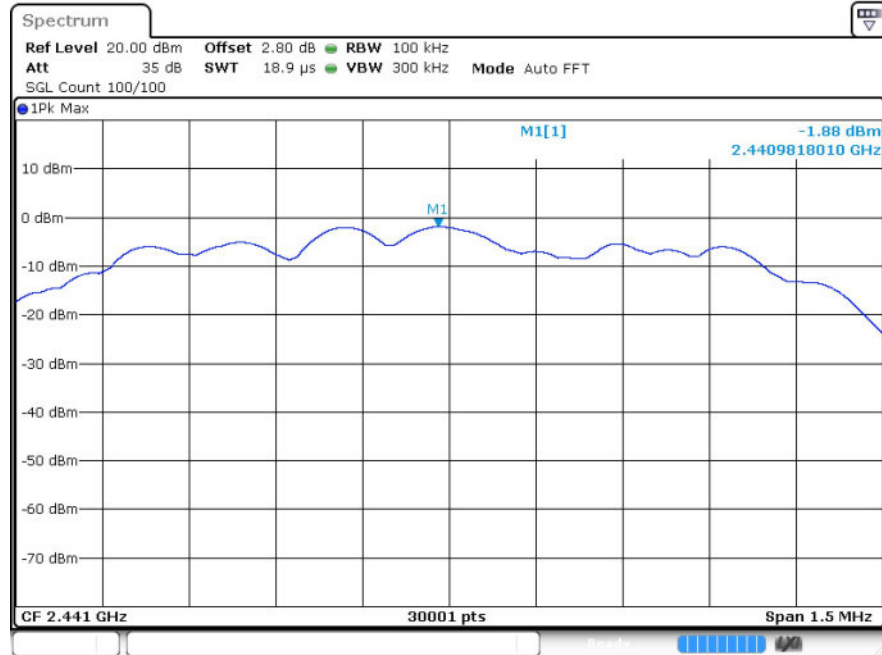


Puw

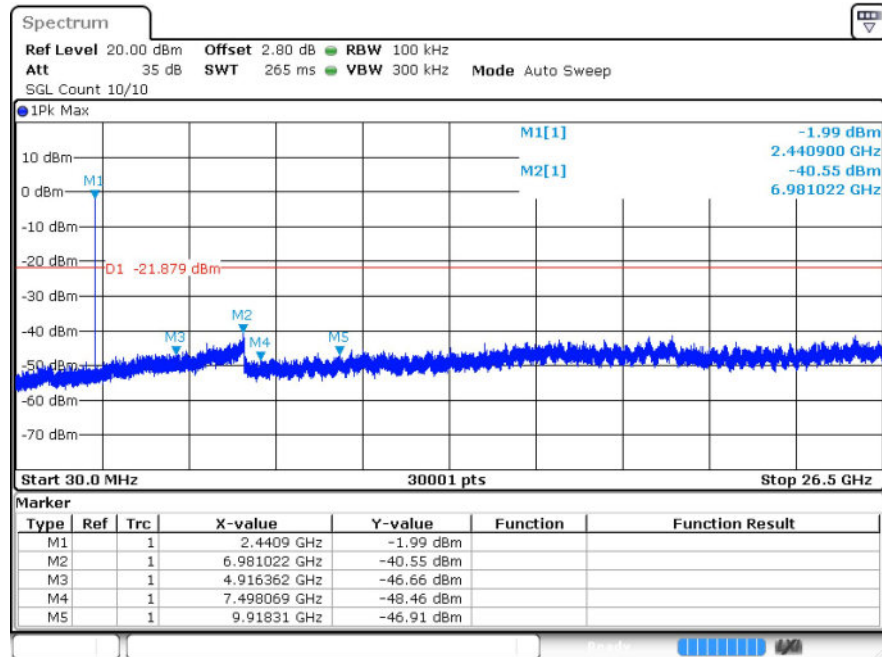


π /4DQPSK_MCH_Graphs

Pref

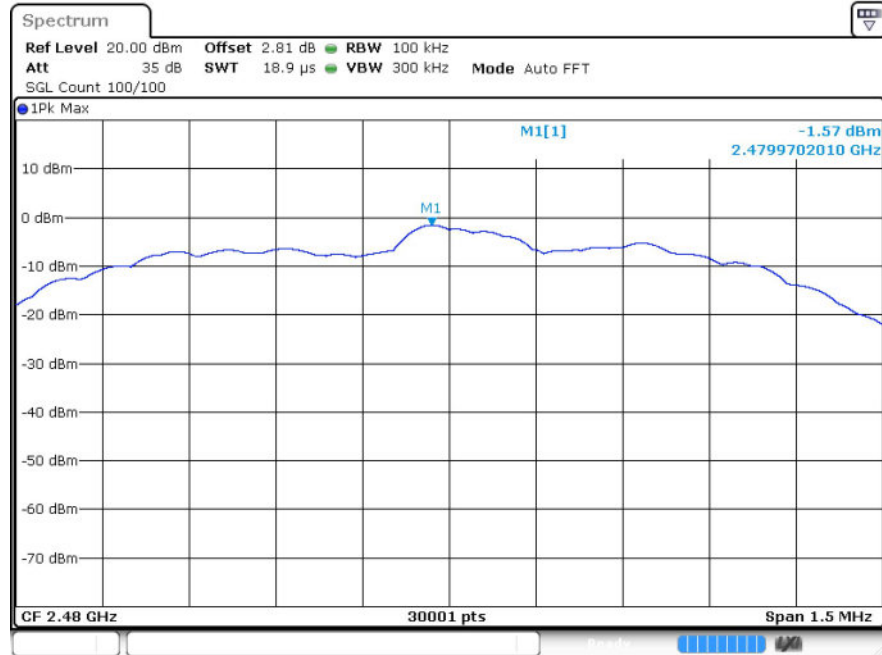


Puw

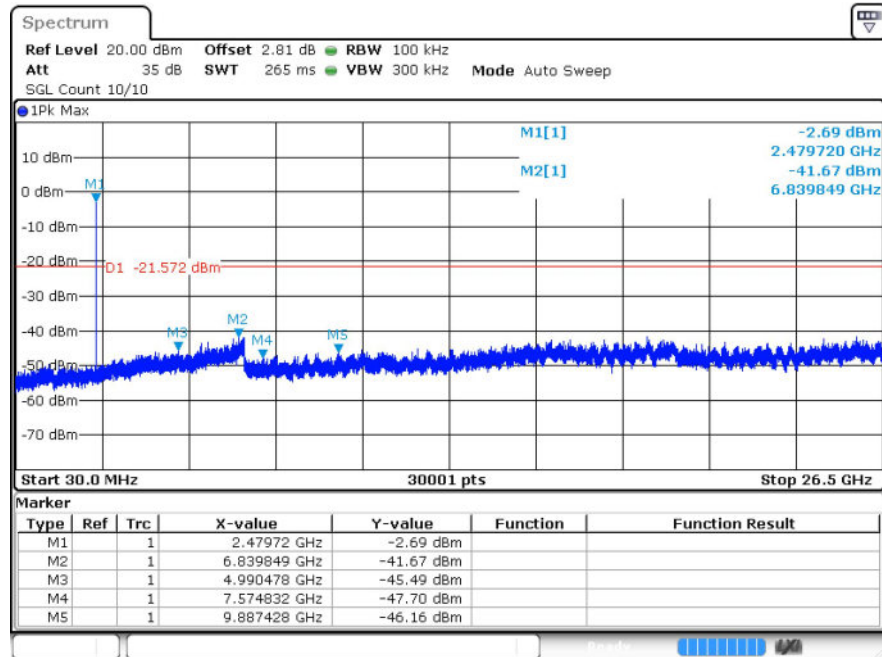


$\pi/4$ DQPSK_HCH_Graphs

Pref



Puw



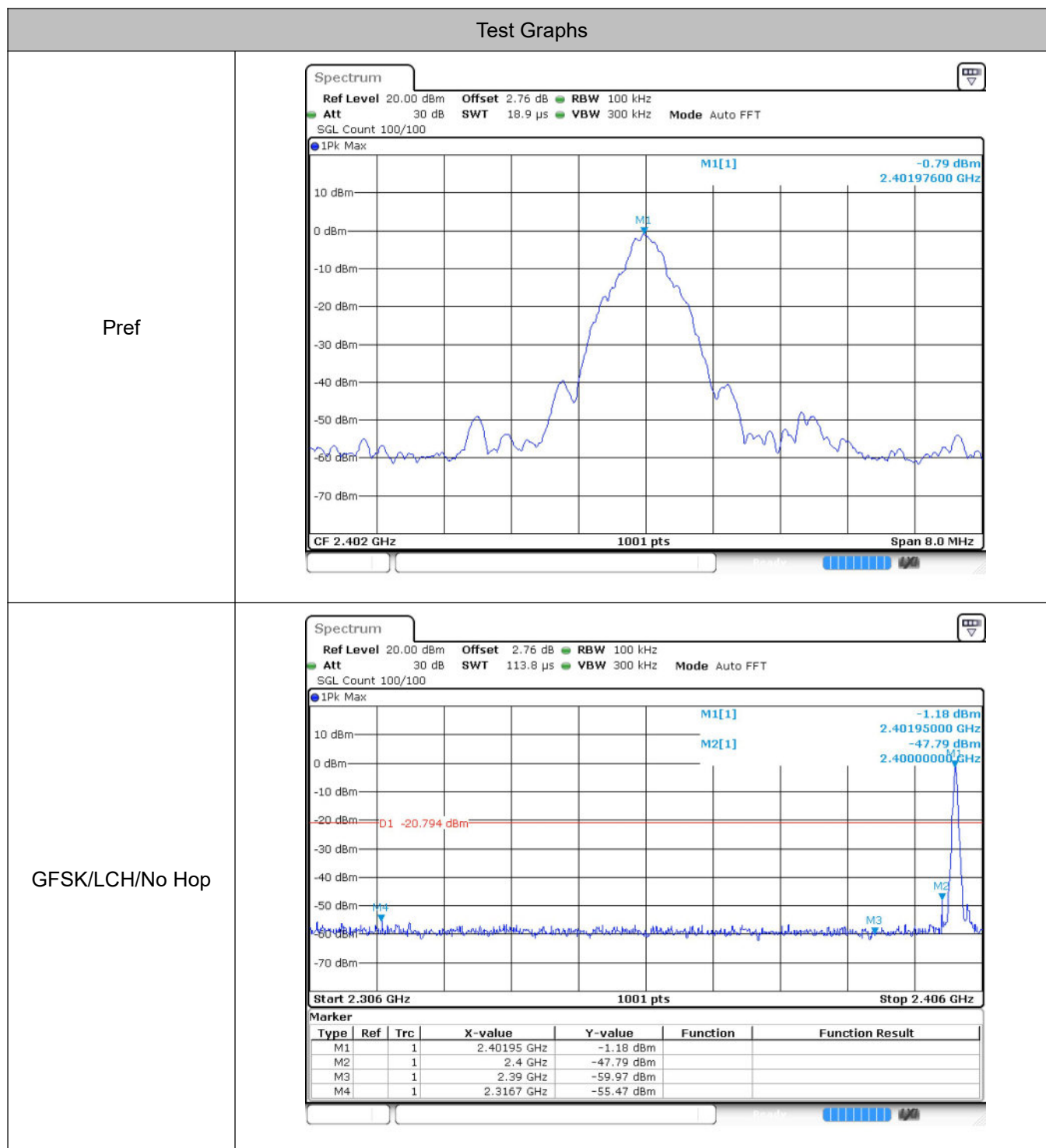
8 Band-edge for RF Conducted Emissions

8.1 Test Result

Mode	Channel	Carrier Frequency [MHz]	Frequency Hopping	Max Spurious Level [dBc]	Limit [dBc]	Verdict
GFSK	LCH	2402	Off	-54.67	-20	Pass
			On	-53.23	-20	Pass
	HCH	2480	Off	-45.1	-20	Pass
			On	-55.31	-20	Pass
$\pi/4$ DQPSK	LCH	2402	Off	-52.8	-20	Pass
			On	-51.62	-20	Pass
	HCH	2480	Off	-48.93	-20	Pass
			On	-44.06	-20	Pass

Note: Left and right ear have been tested and the only shows the worst case mode.

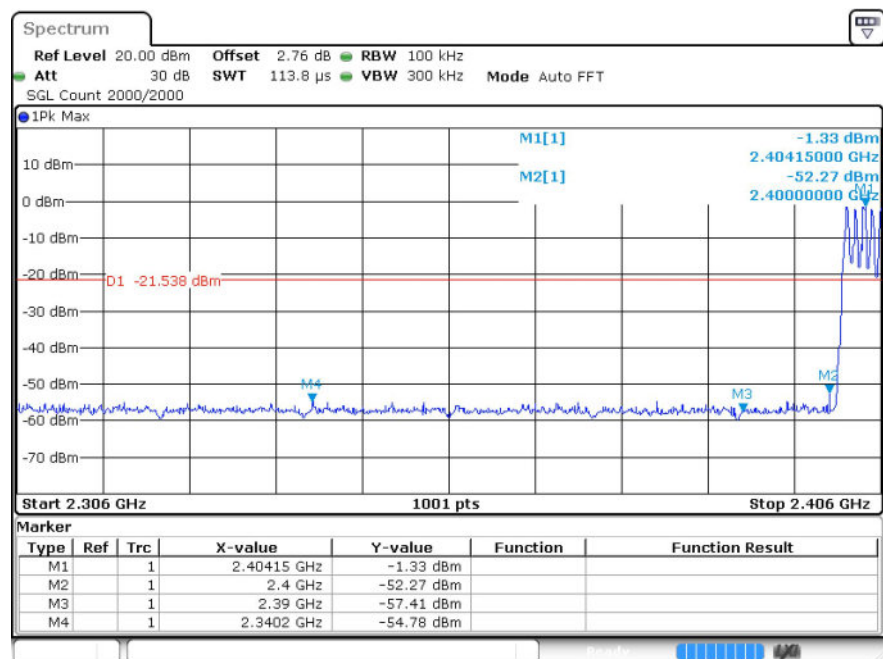
8.2 Test Graphs



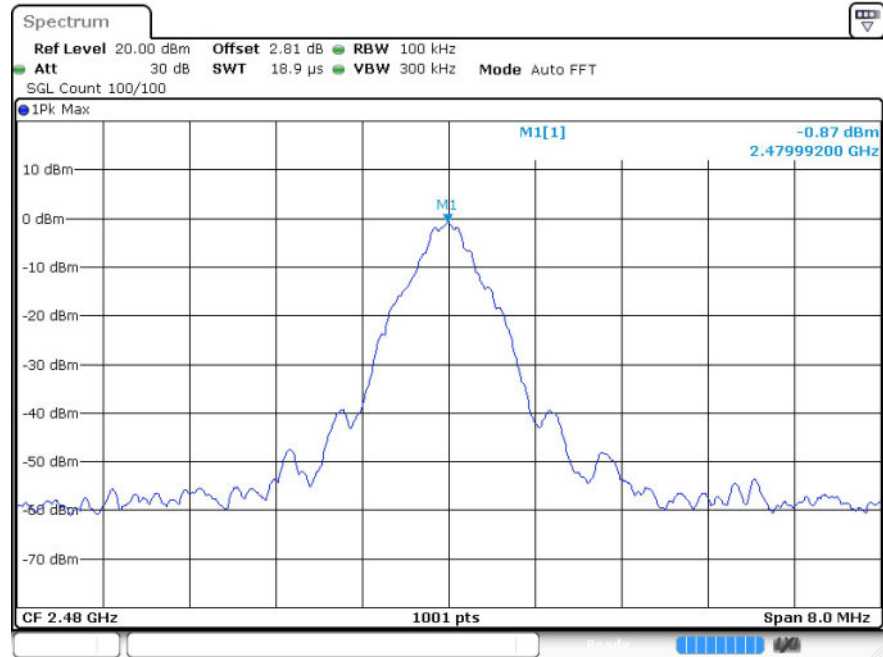
Ref



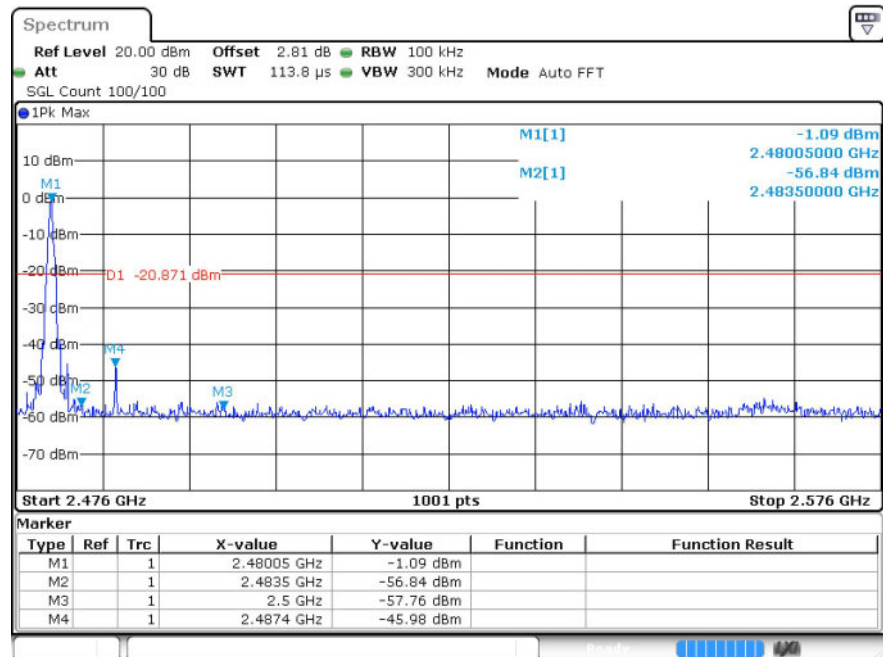
GFSK/LCH/Hop



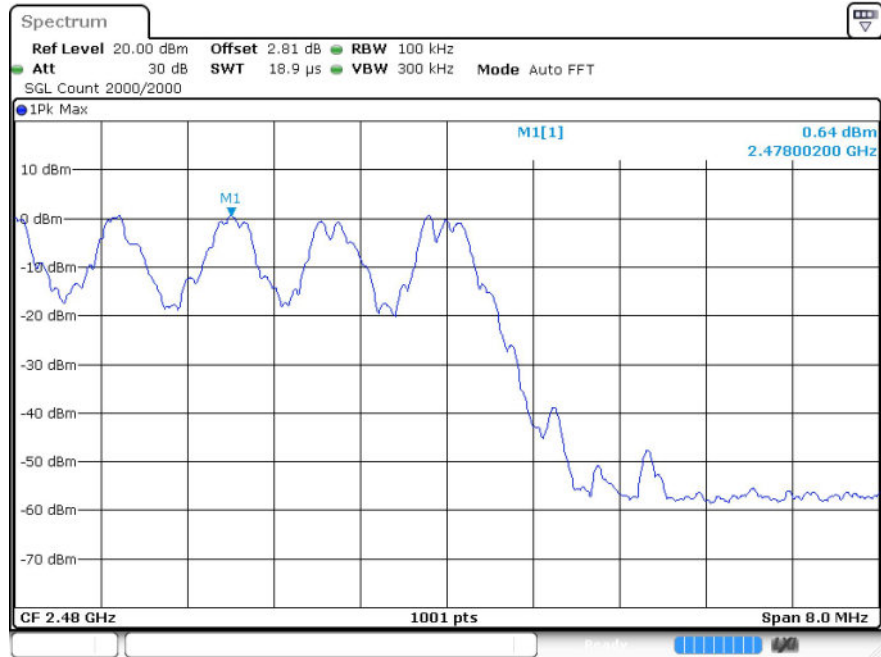
Ref



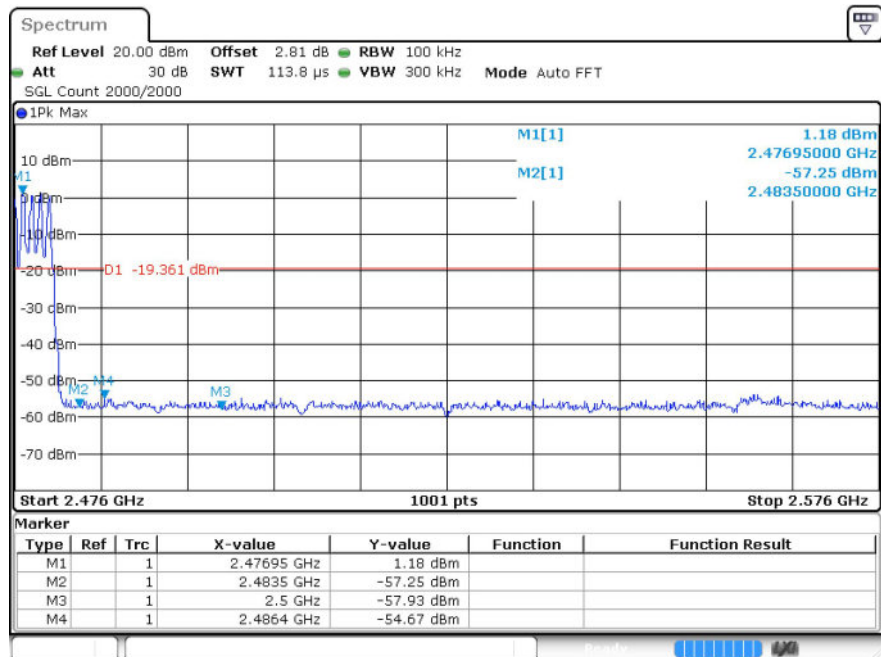
GFSK/HCH/No Hop



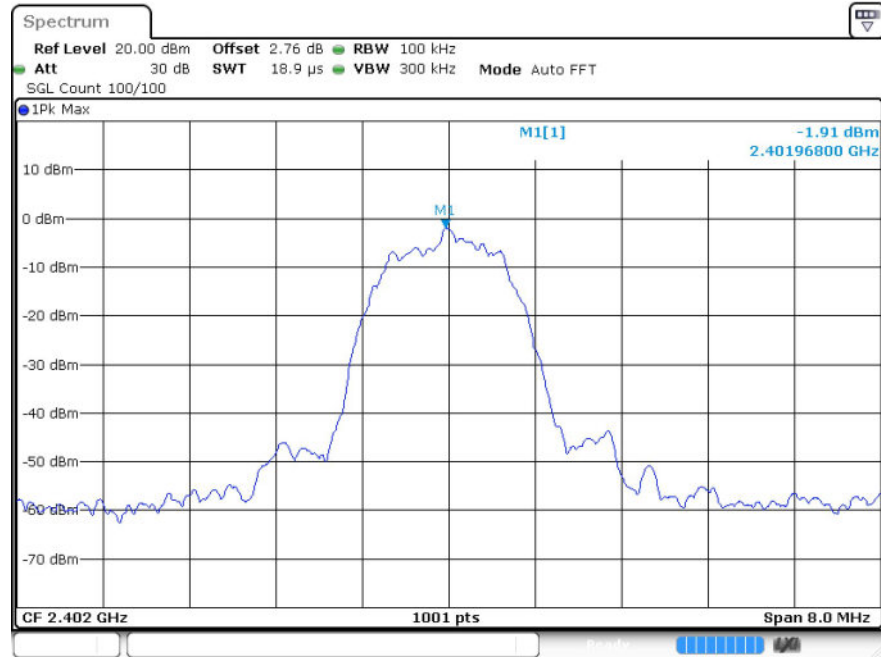
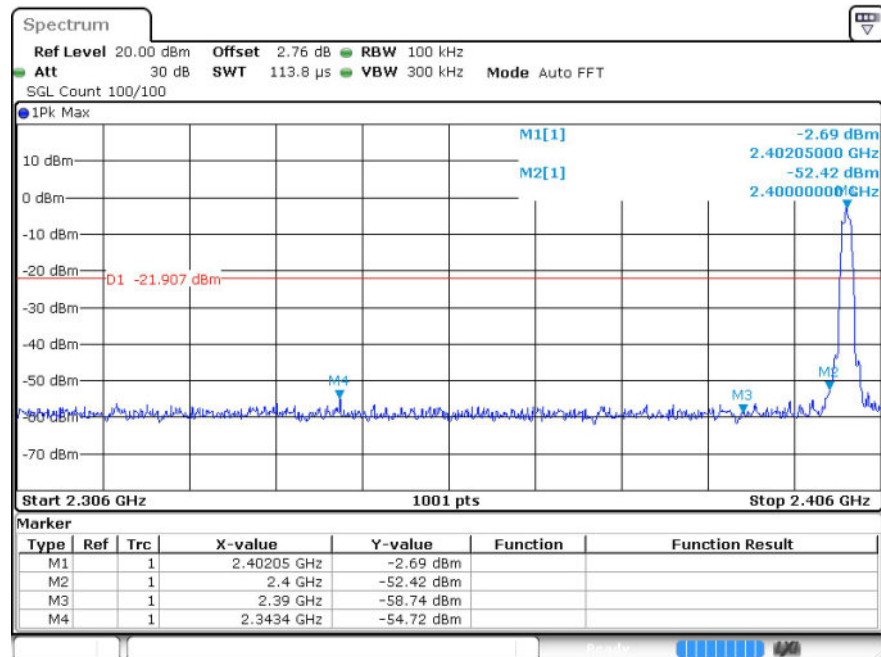
Ref.



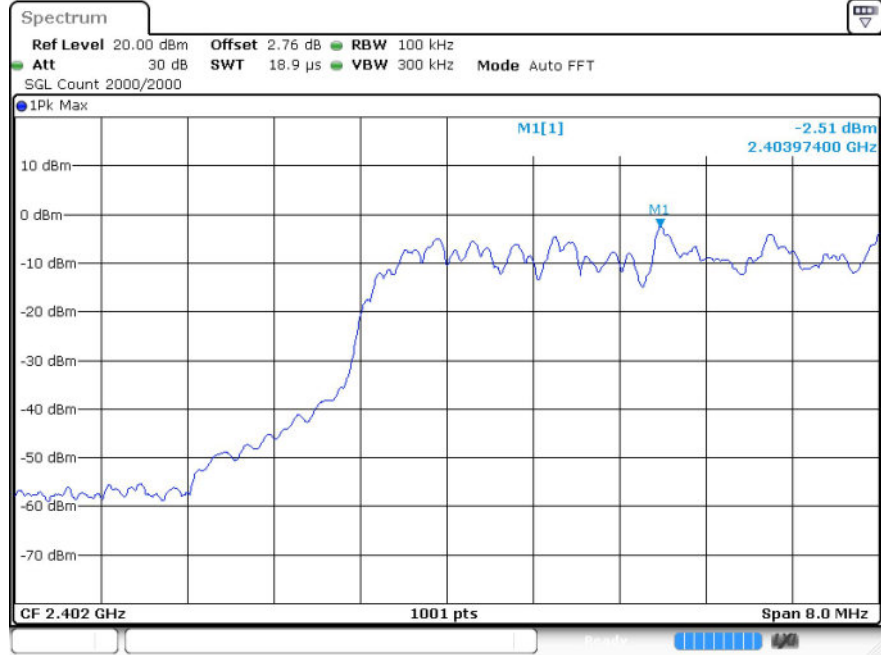
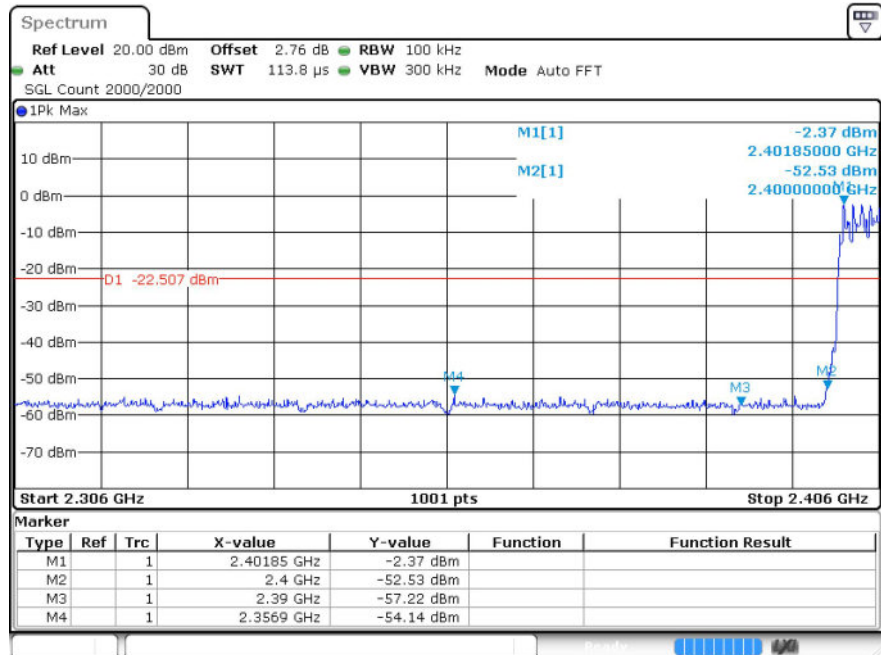
GFSK/HCH/Hop



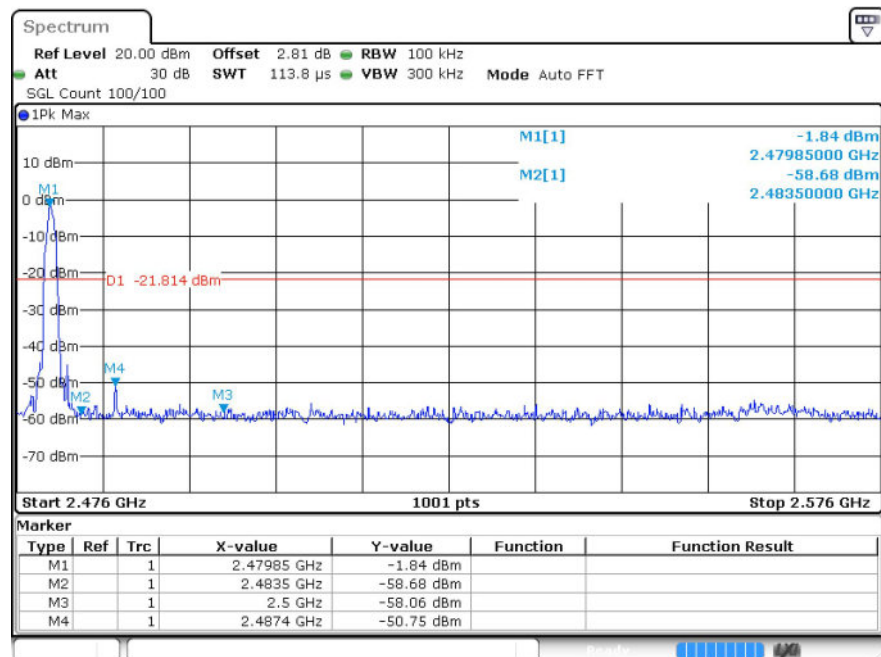
Ref


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


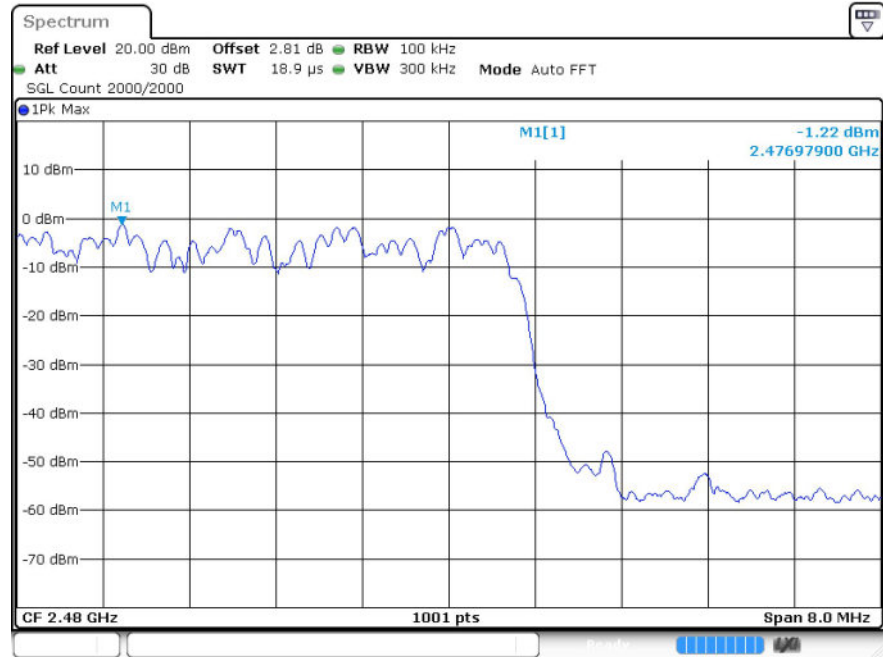
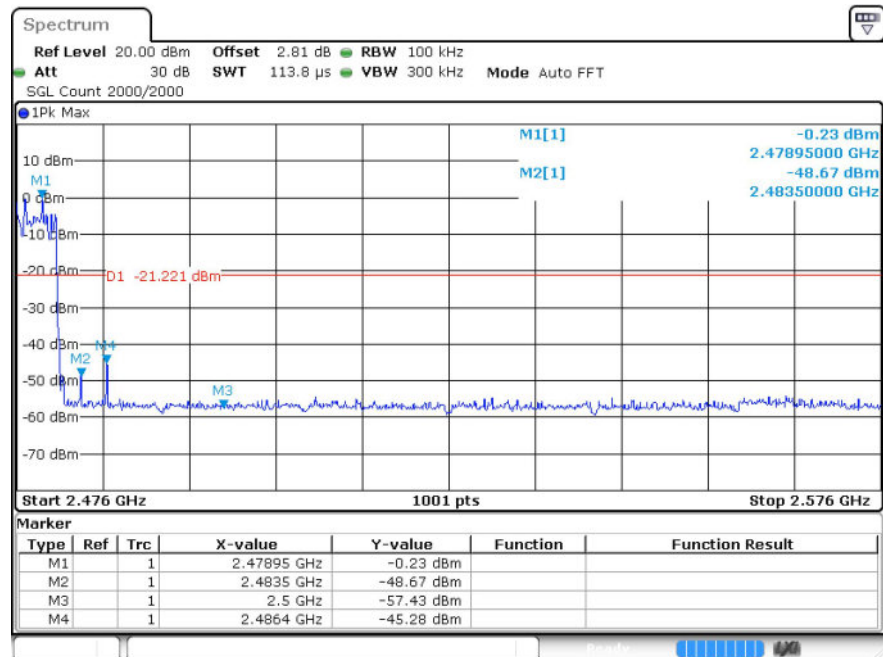
Ref


 $\pi/4$ DQPSK/LCH/Hop


Ref


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


Ref


 $\pi/4$ DQPSK/HCH/Hop


9 Restrict-band band-edge measurements

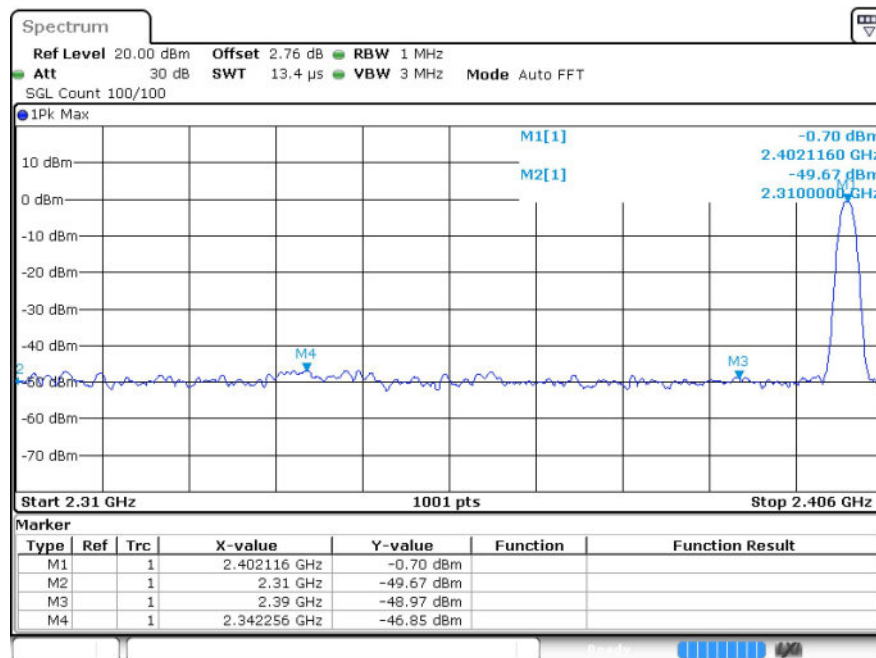
9.1 Test Result

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Duty Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-49.67	3.0	-	48.56	PEAK	74	Pass
	Off	2310.0	-57.07	3.0	5.06	46.22	AV	54	Pass
	Off	2342.256	-46.84	3.0	-	51.39	PEAK	74	Pass
	Off	2339.568	-54.62	3.0	5.06	48.67	AV	54	Pass
	Off	2390.0	-48.97	3.0	-	49.26	PEAK	74	Pass
	Off	2390.0	-57.6	3.0	5.06	45.69	AV	54	Pass
	Off	2483.5	-47.58	3.0	-	50.65	PEAK	74	Pass
	Off	2483.5	-55.88	3.0	5.06	47.41	AV	54	Pass
	Off	2495.392	-45.37	3.0	-	52.86	PEAK	74	Pass
	Off	2487.304	-55.11	3.0	5.06	48.18	AV	54	Pass
	Off	2500.0	-48.02	3.0	-	50.21	PEAK	74	Pass
	Off	2500.0	-56.44	3.0	5.06	46.85	AV	54	Pass
$\pi/4$ DQPSK	Off	2310.0	-48.37	3.0	-	49.86	PEAK	74	Pass
	Off	2310.0	-56.93	3.0	4.95	46.25	AV	54	Pass
	Off	2340.528	-46.69	3.0	-	51.54	PEAK	74	Pass
	Off	2339.856	-54.36	3.0	4.95	48.82	AV	54	Pass
	Off	2390.0	-50.11	3.0	-	48.12	PEAK	74	Pass
	Off	2390.0	-56.62	3.0	4.95	46.56	AV	54	Pass
	Off	2483.5	-47.79	3.0	-	50.44	PEAK	74	Pass
	Off	2483.5	-55.86	3.0	4.95	47.32	AV	54	Pass
	Off	2493.928	-45.6	3.0	-	52.63	PEAK	74	Pass
	Off	2487.496	-55.38	3.0	4.95	47.80	AV	54	Pass
	Off	2500.0	-48.84	3.0	-	49.39	PEAK	74	Pass
	Off	2500.0	-56.15	3.0	4.95	47.03	AV	54	Pass

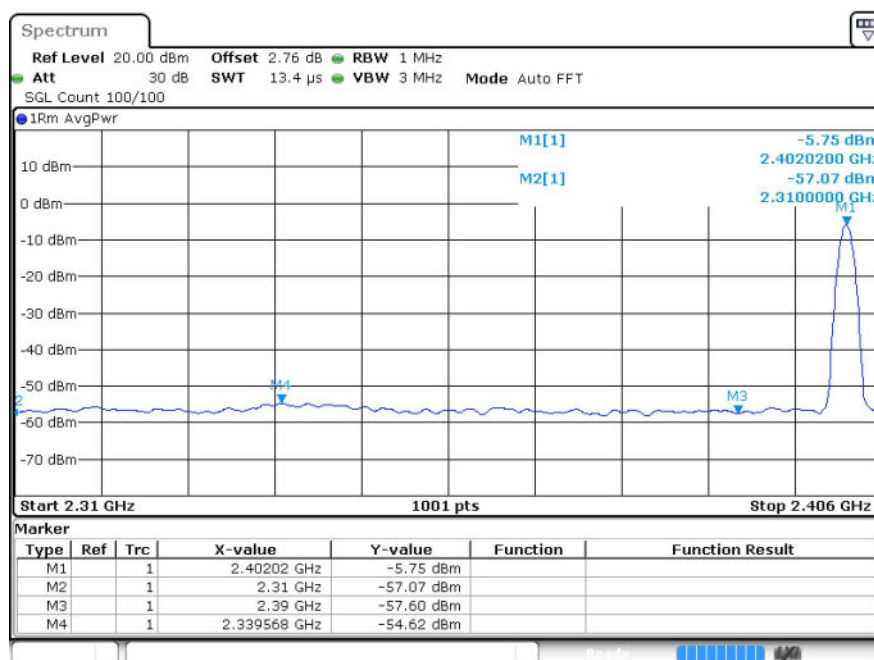
Note: Left and right ear have been tested and the only shows the worst case mode.

9.2 Test Graphs

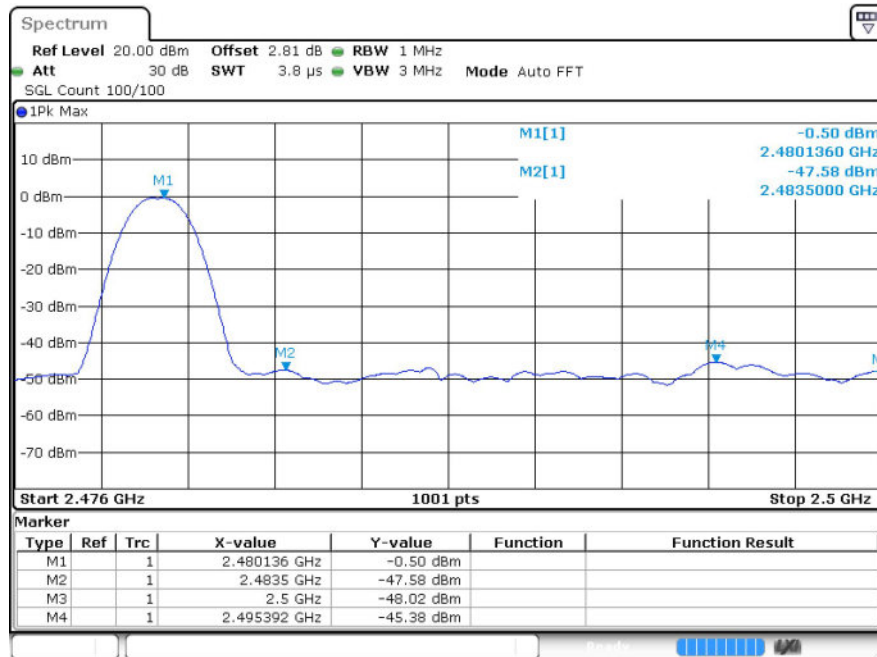
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (Low Channel)



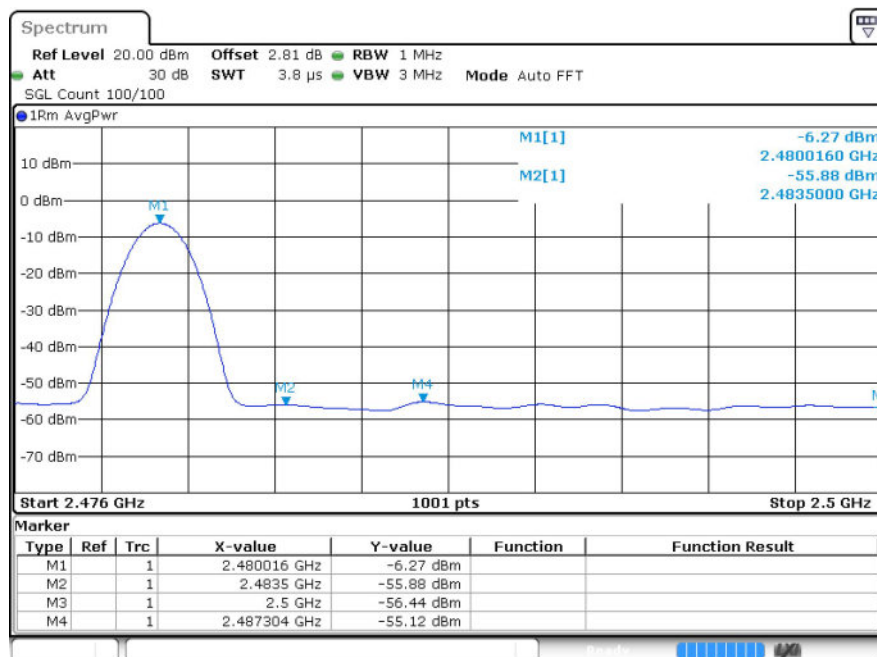
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (Low Channel)



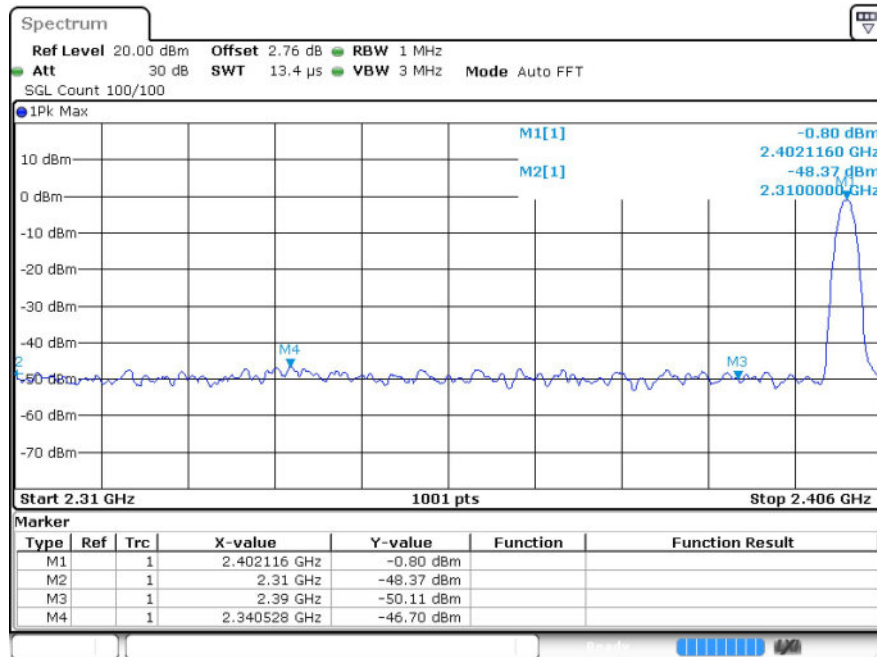
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (High Channel)



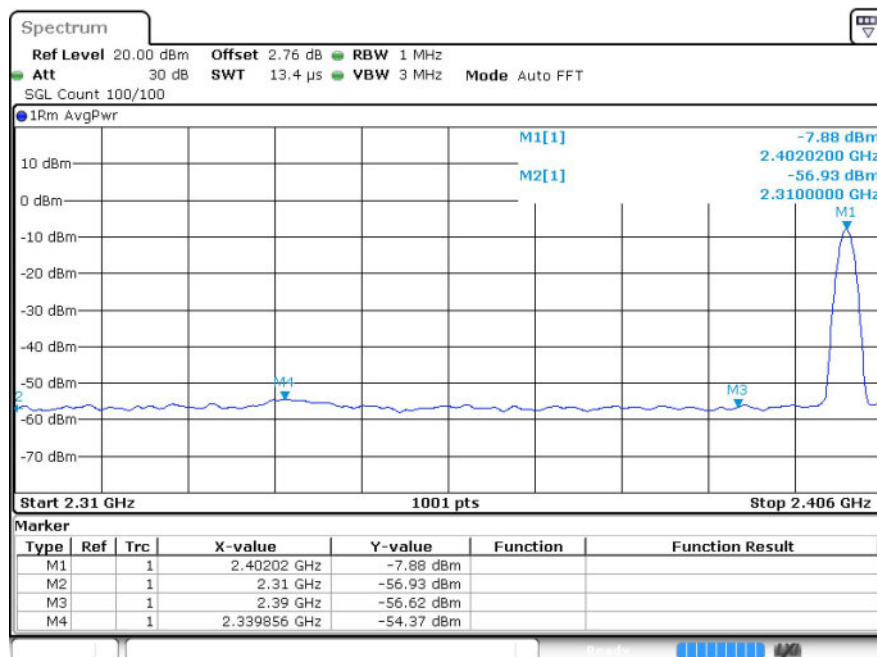
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (High Channel)



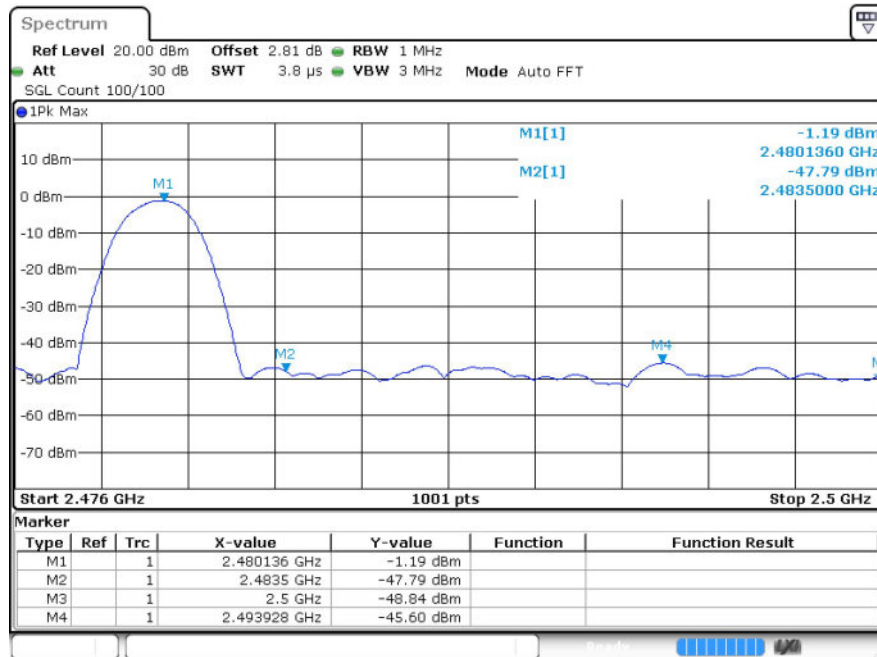
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (Low Channel)



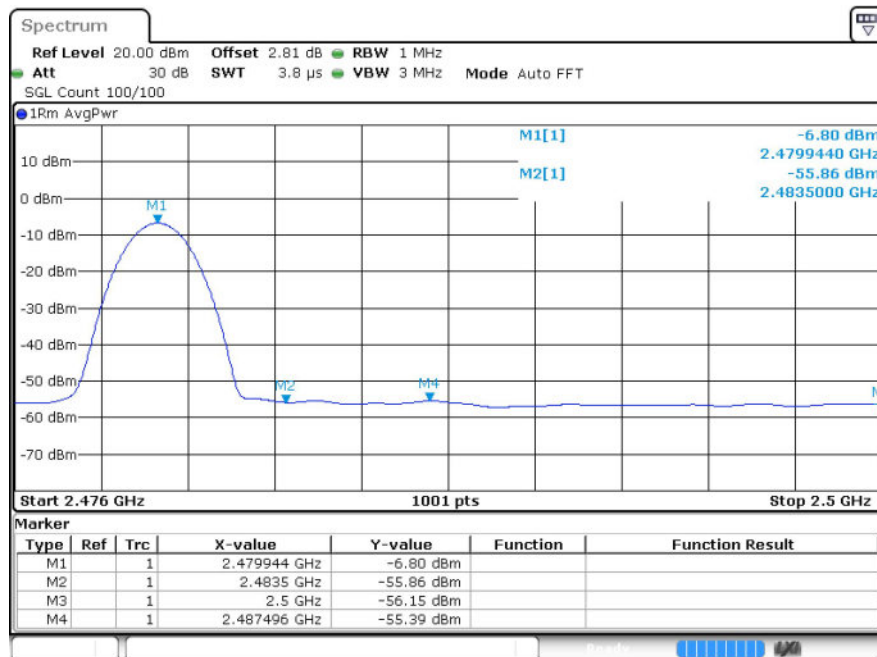
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (Low Channel)



Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (High Channel)



Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (High Channel)



---The End---