



Appendix A

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

Product Name: Earbuds

Trade Mark: N/A

Test Model: FBP-Bling

Environmental Conditions

Temperature:	25.6℃
Relative Humidity:	57.7%
ATM Pressure:	101Kpa
Test Engineer:	Simba Huang
Supervised by:	Seal Chen



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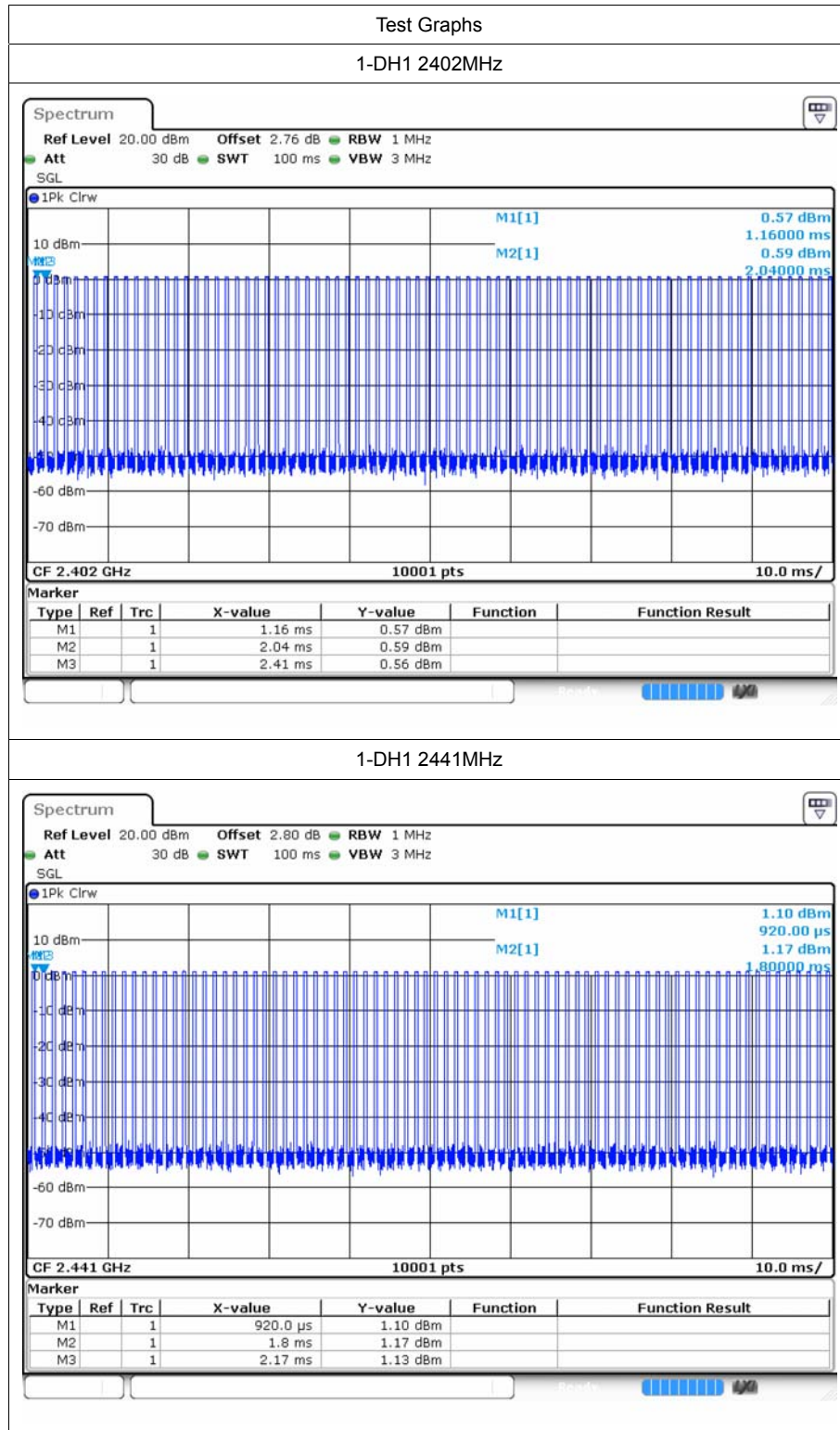
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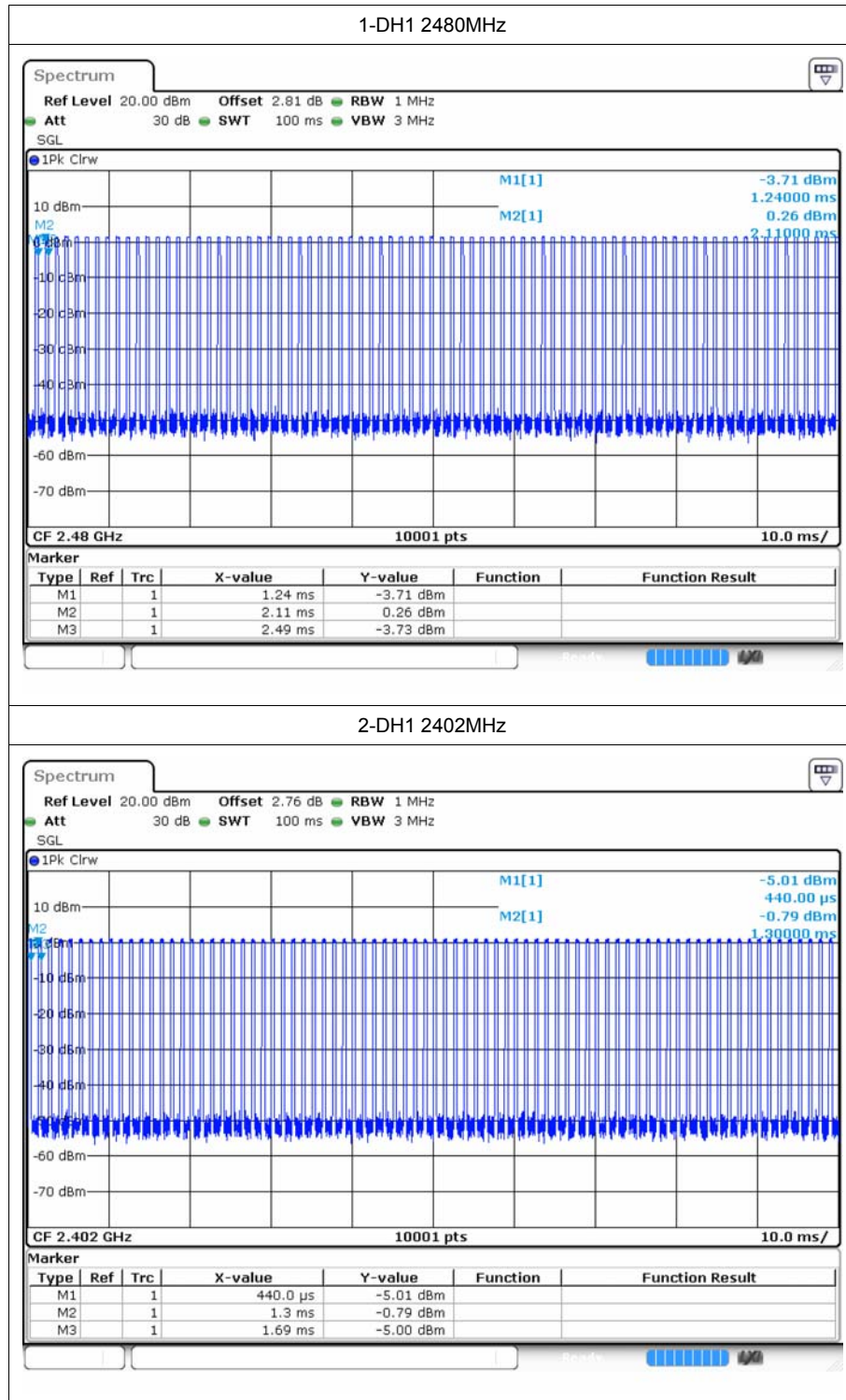
1 Duty Cycle

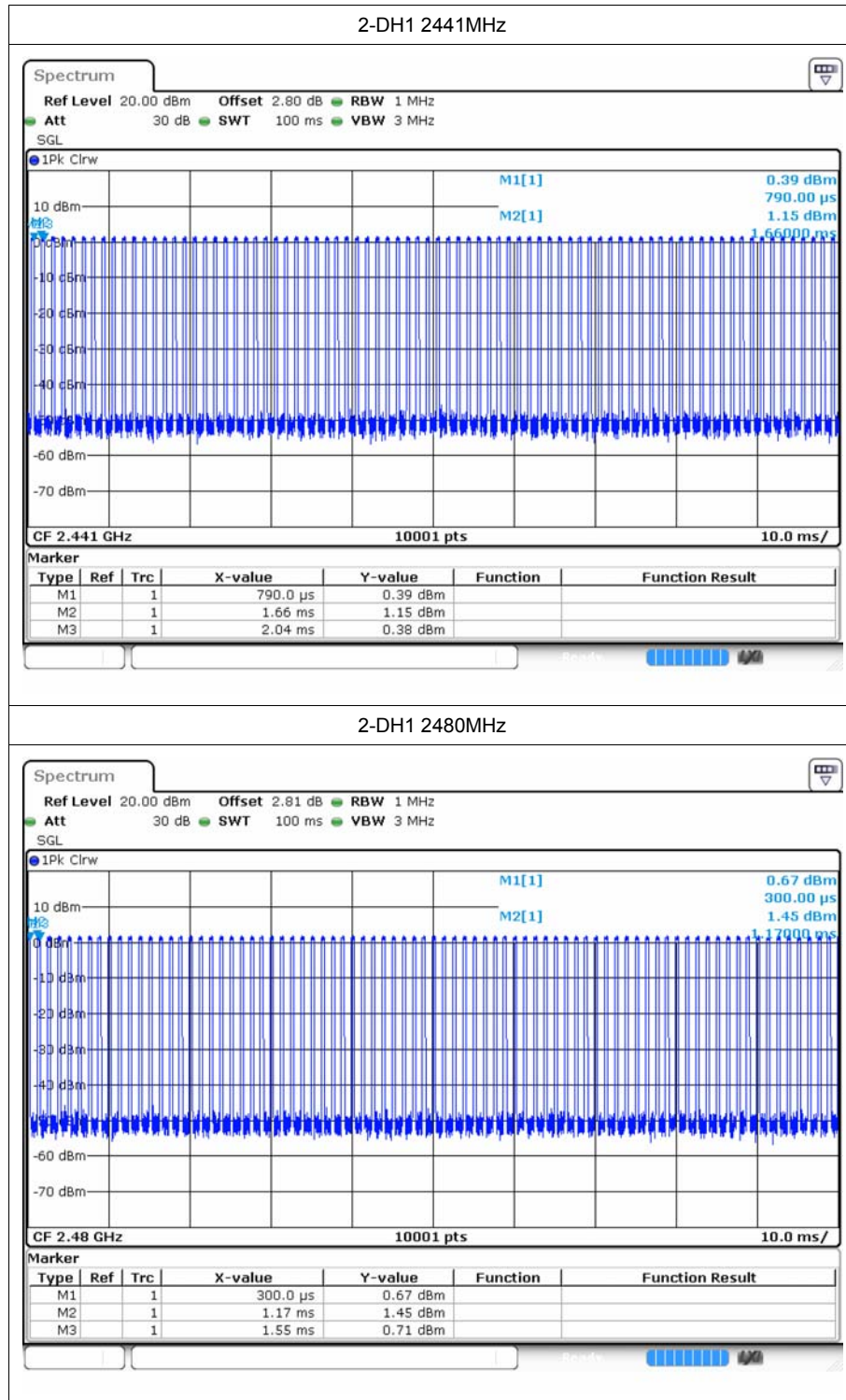
1.1 Test Result

Mode	Frequency (MHz)	Duty Cycle (%)	1/T (kHz)
1-DH1	2402	30.42	2.7
1-DH1	2441	30.4	2.7
1-DH1	2480	31.2	2.63
2-DH1	2402	32	2.56
2-DH1	2441	31.2	2.63
2-DH1	2480	31.21	2.63

1.2 Test Graphs





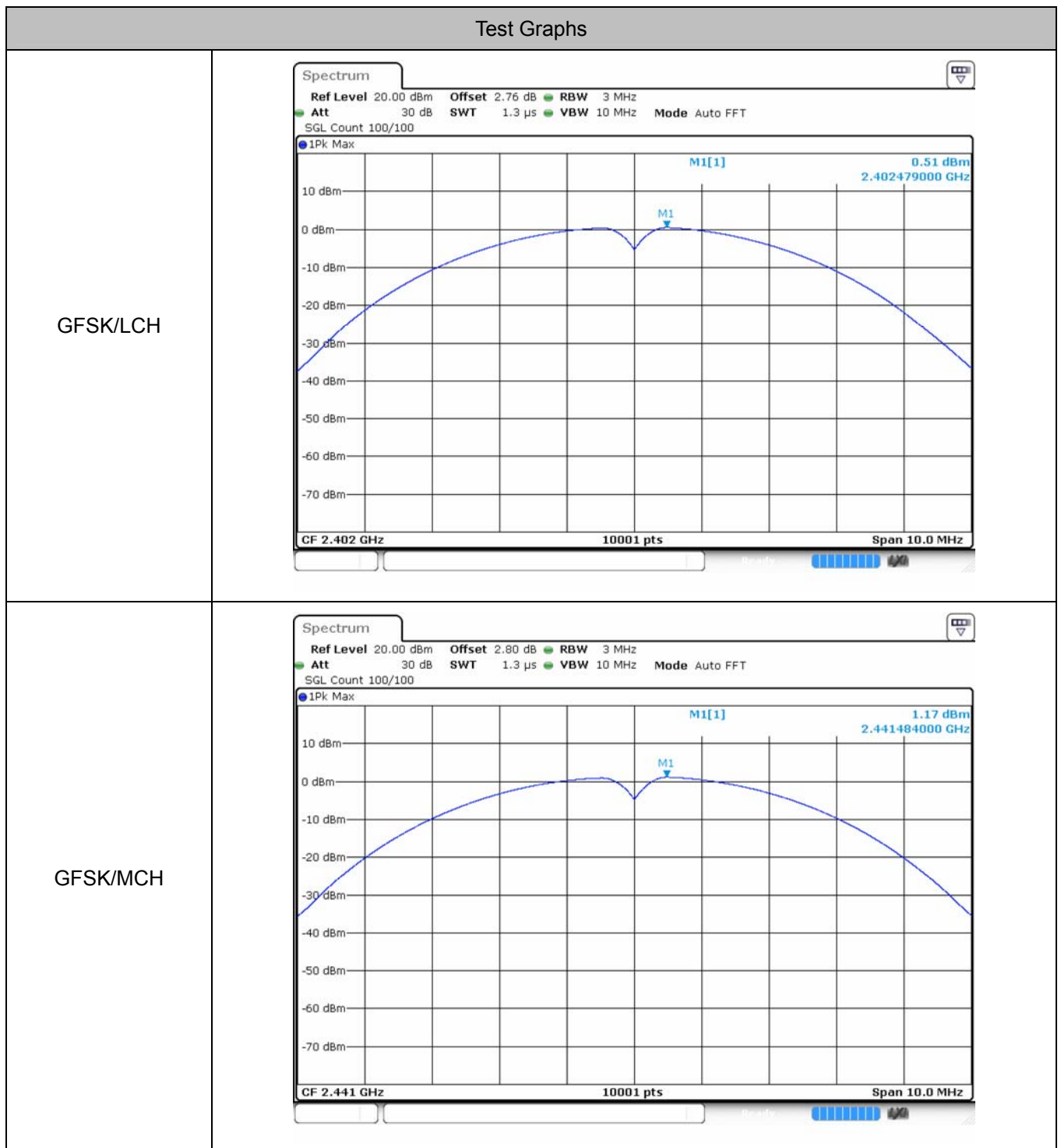


2 Maximum Conducted Peak Output Power

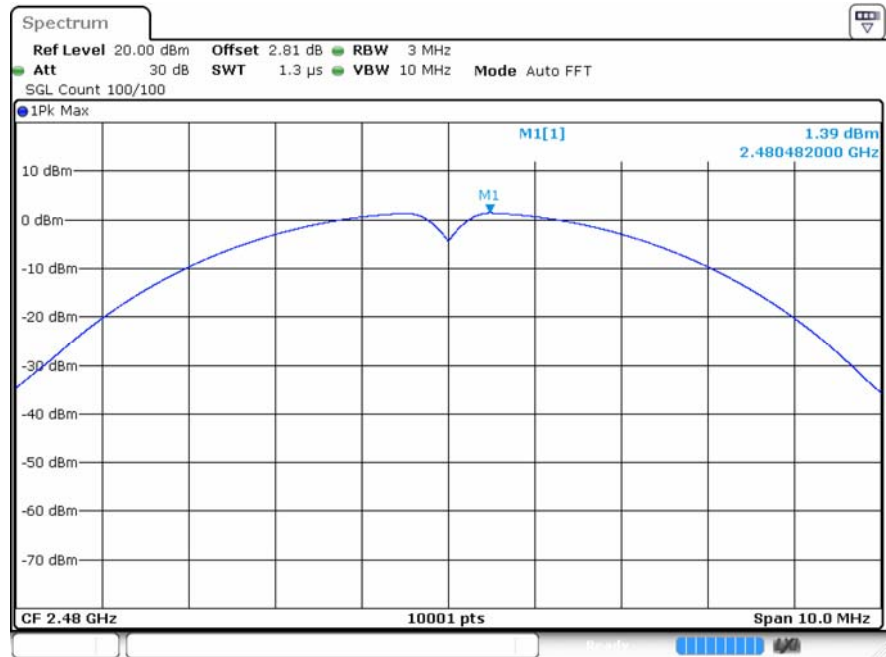
2.1 Test Result

Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	0.51	21	Pass
	MCH	1.17	21	Pass
	HCH	1.39	21	Pass
$\pi/4$ DQPSK	LCH	0.74	21	Pass
	MCH	1.59	21	Pass
	HCH	1.67	21	Pass

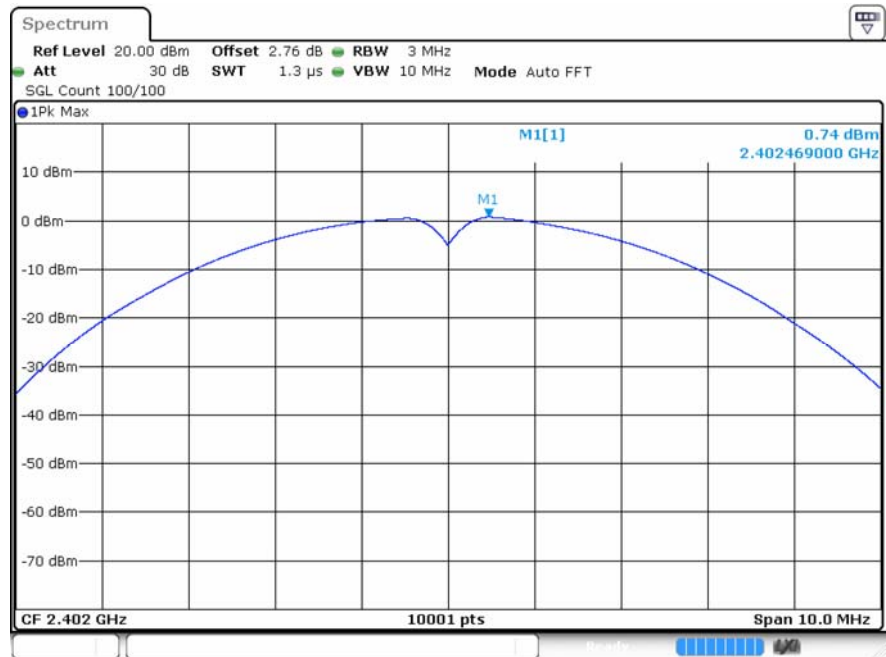
2.2 Test Graphs



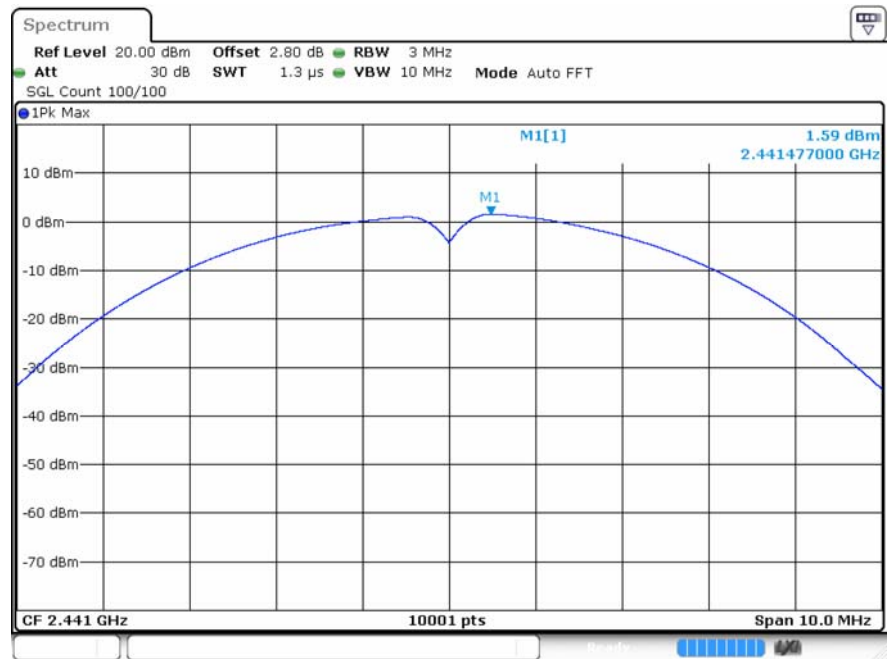
GFSK/HCH



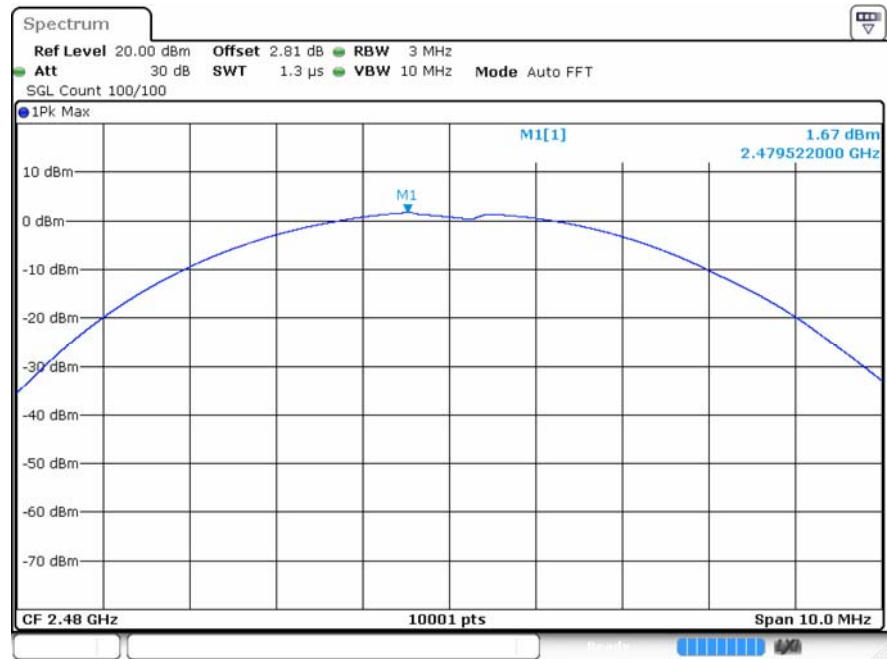
$\pi/4$ DQPSK/LCH



$\pi/4$ DQPSK/MCH



$\pi/4$ DQPSK/HCH

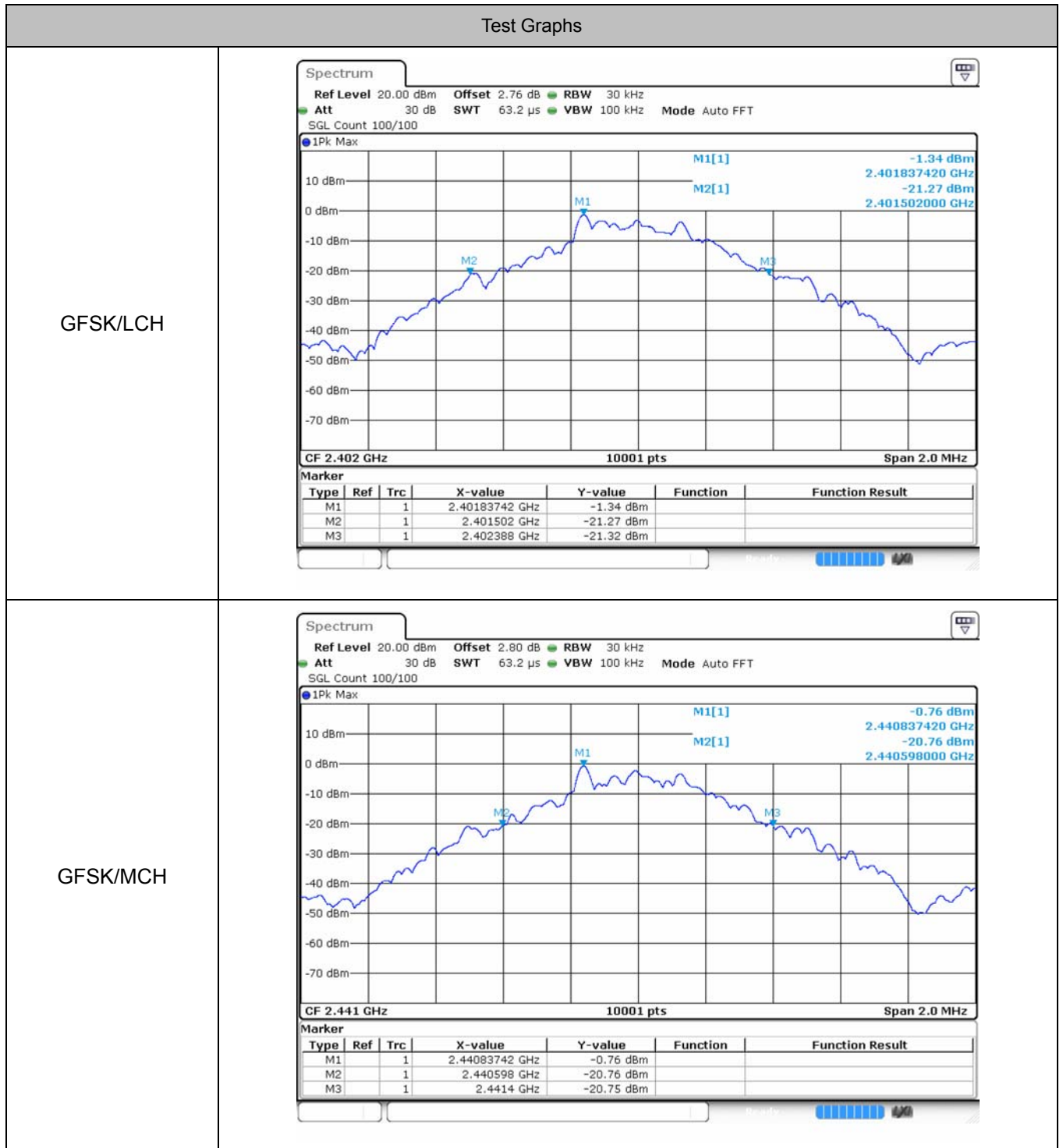


3 20dB Bandwidth

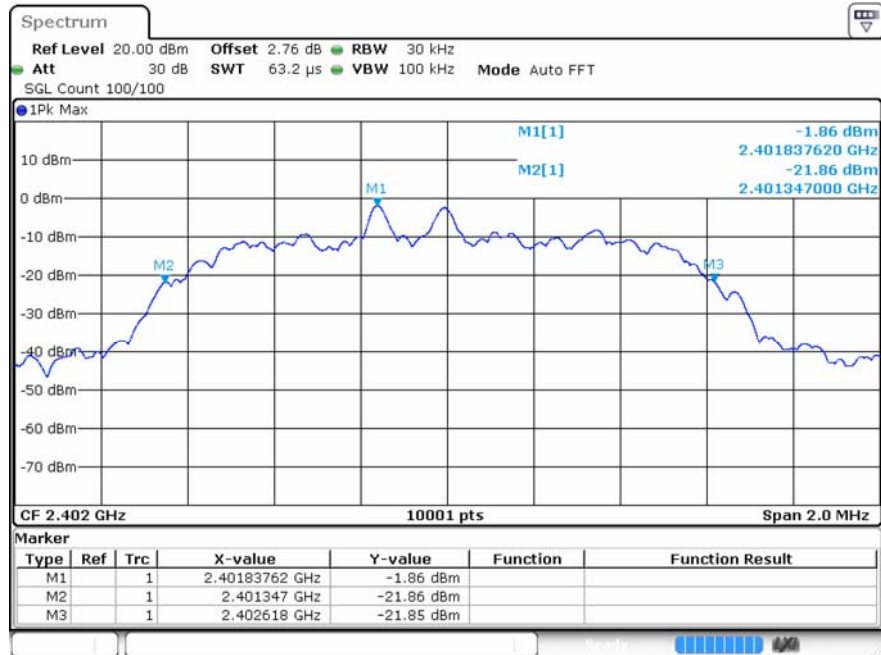
3.1 Test Result

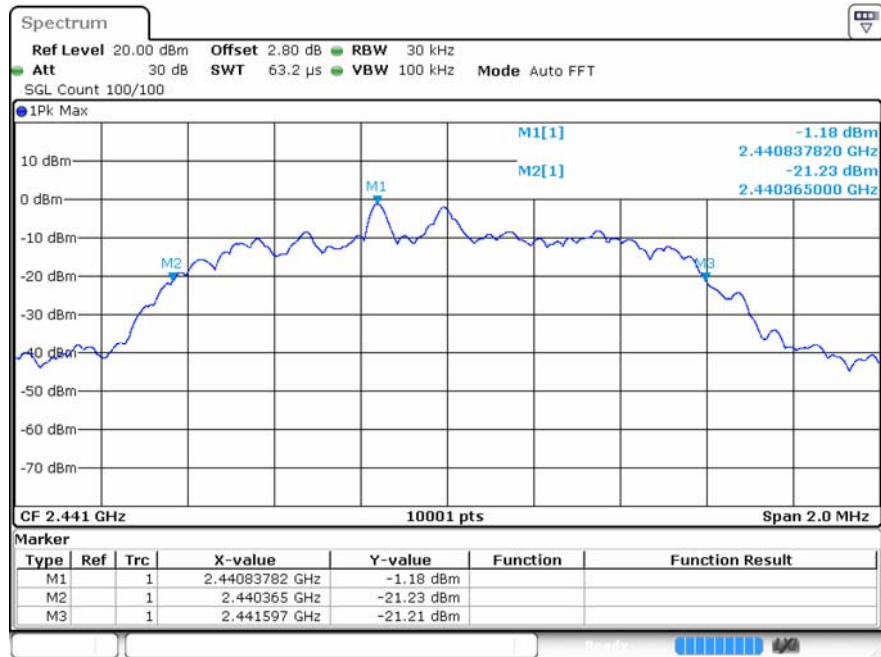
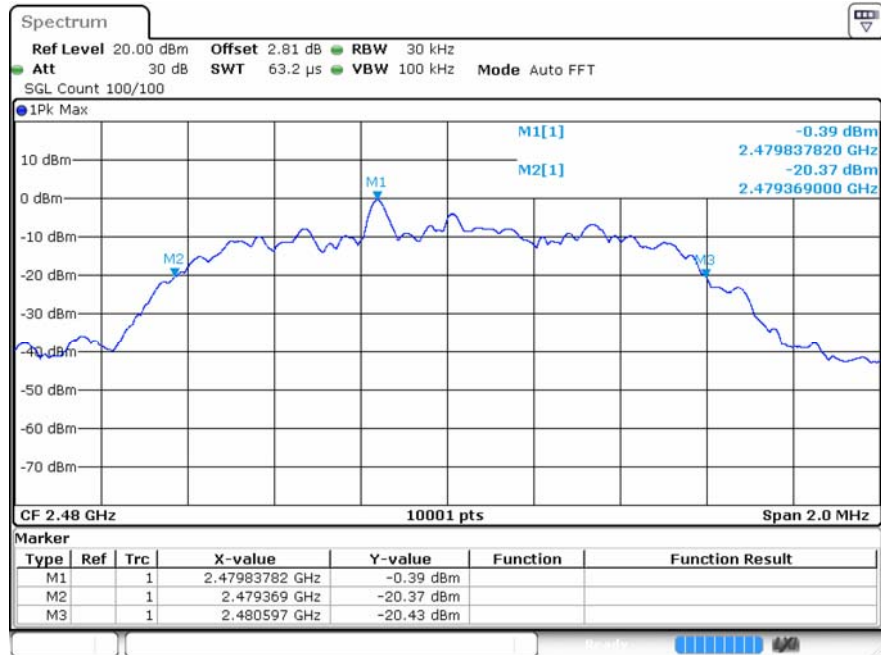
Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.886	Not Specified	Pass
	MCH	0.802	Not Specified	Pass
	HCH	0.922	Not Specified	Pass
$\pi/4$ DQPSK	LCH	1.271	Not Specified	Pass
	MCH	1.231	Not Specified	Pass
	HCH	1.228	Not Specified	Pass

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	0.988	0.535	Pass
$\pi/4$ DQPSK	MCH	1.002	0.821	Pass

4.2 Test Graphs

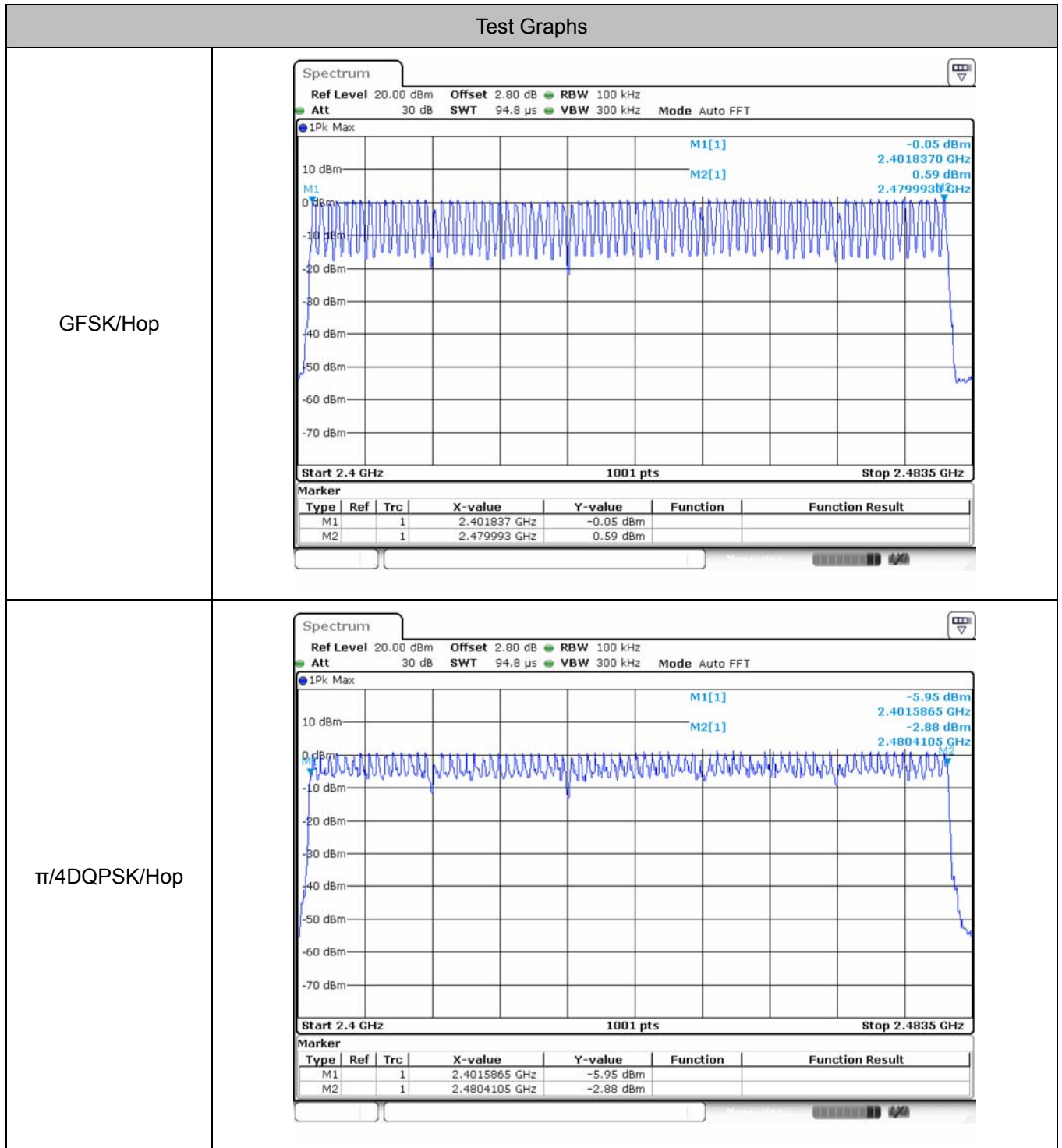


5 Hopping Channel Number

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

5.2 Test Graphs

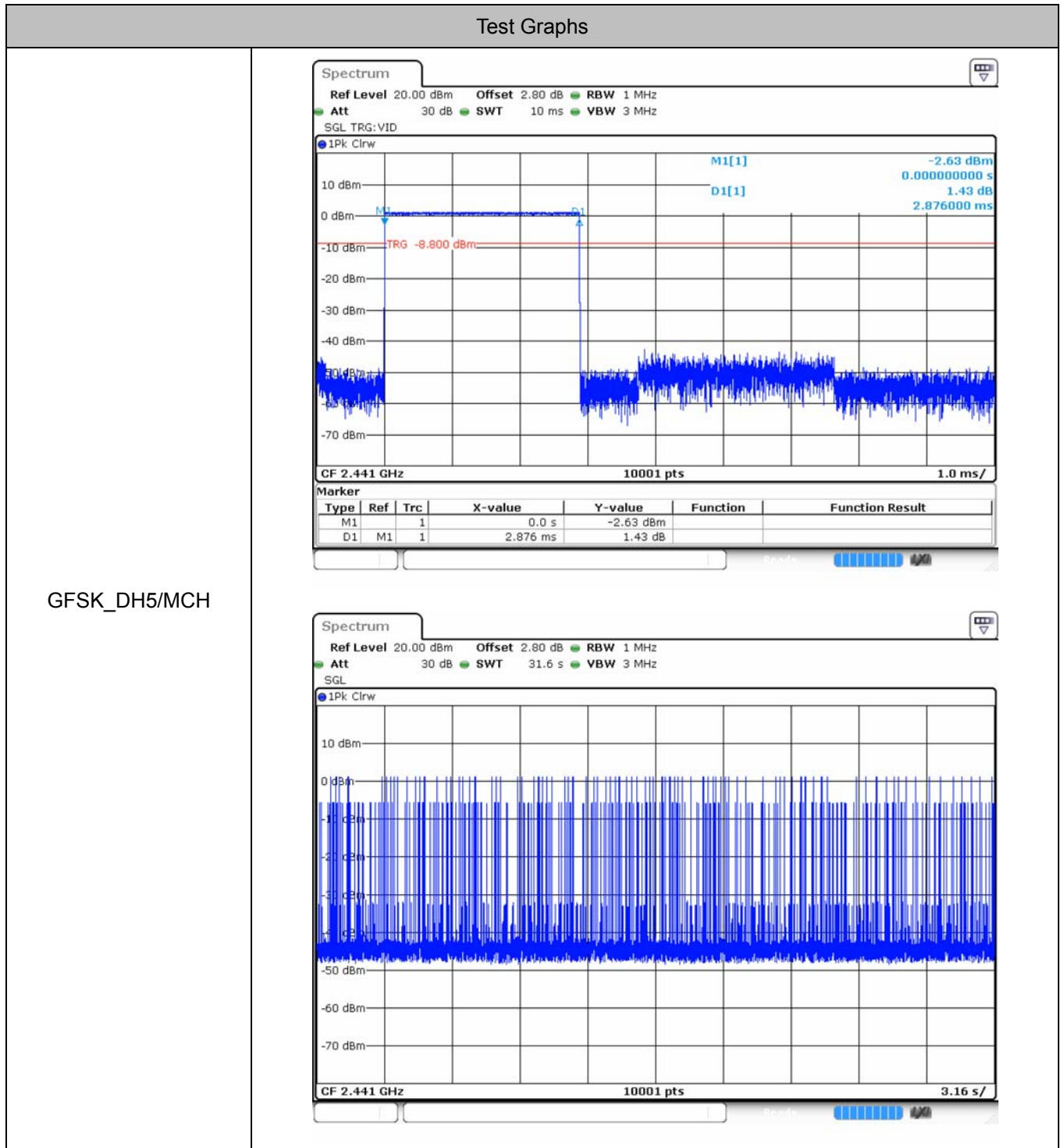


6 Dwell Time

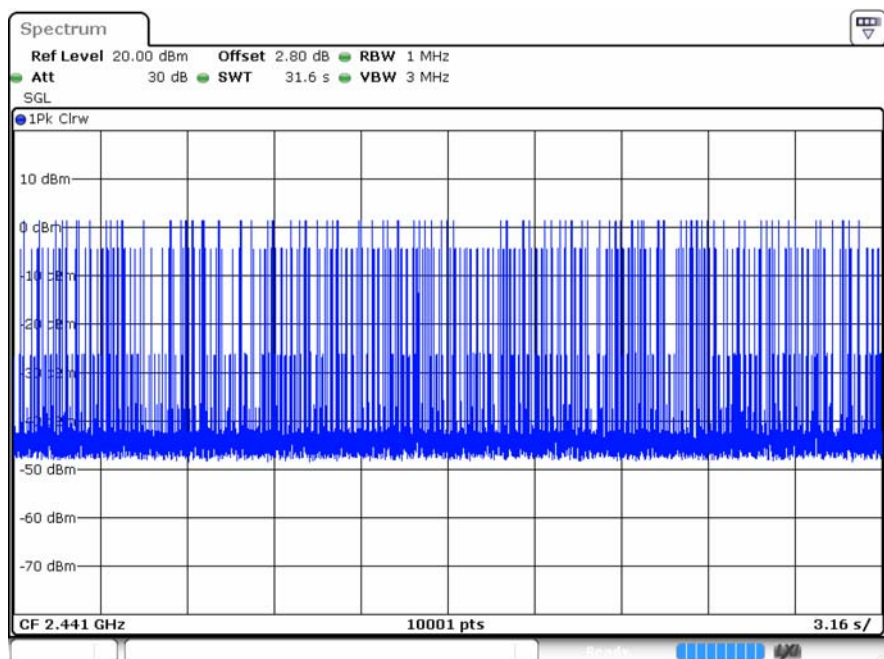
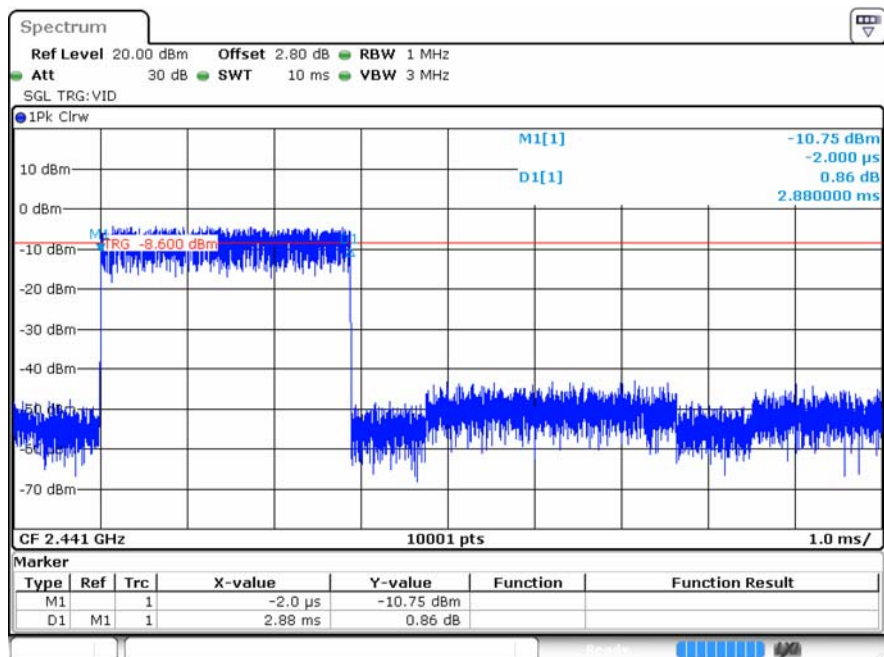
6.1 Test Result

Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[ms]	Limit [s]	Verdict
GFSK	DH5	MCH	2.876	97	278.972	0.4	Pass
$\pi/4$ DQPSK	2DH5	MCH	2.88	104	299.52	0.4	Pass

6.2 Test Graphs



$\pi/4$ DQPSK
_2DH5/MCH

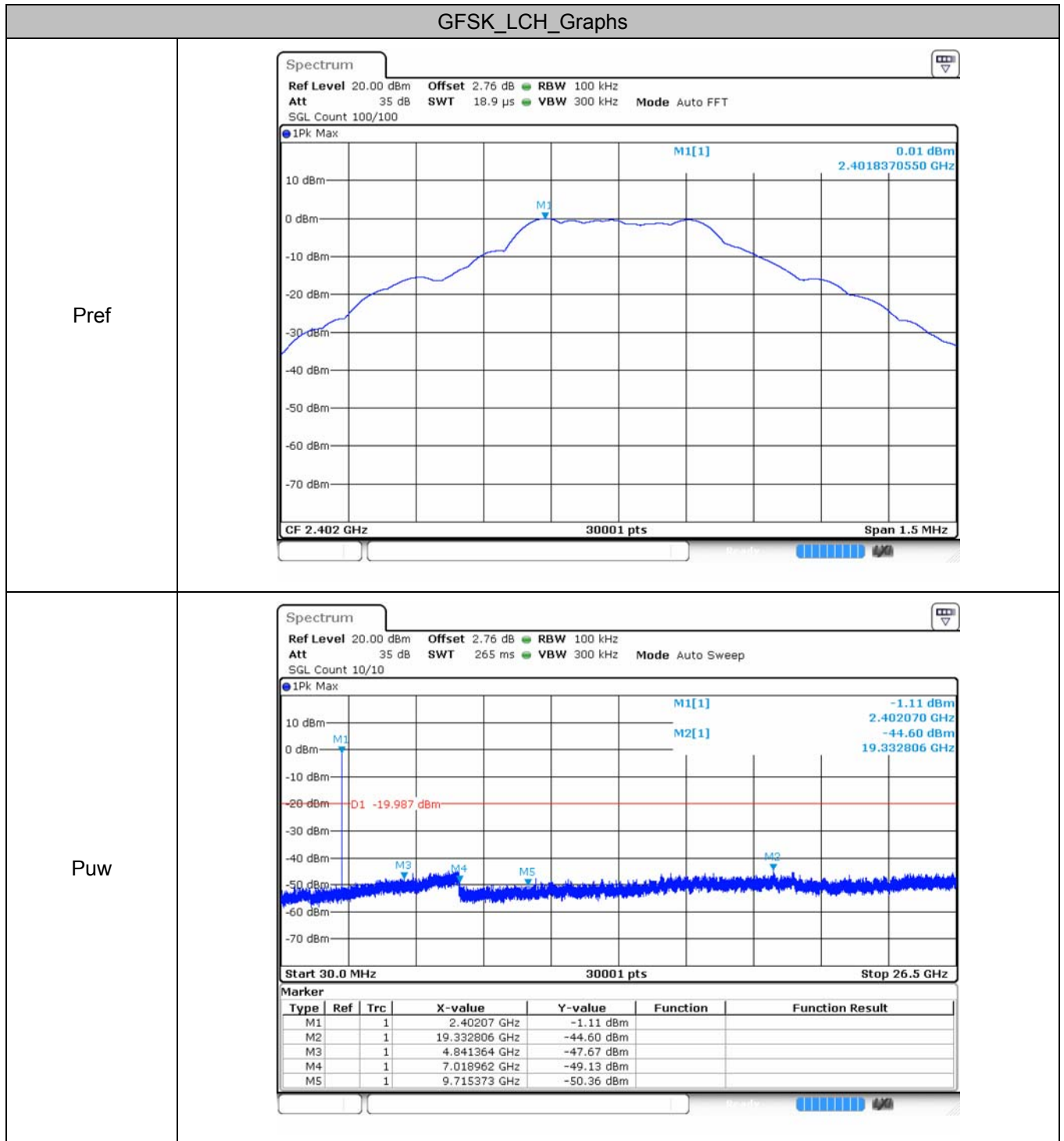


7 RF Conducted Spurious Emissions

7.1 Test Result

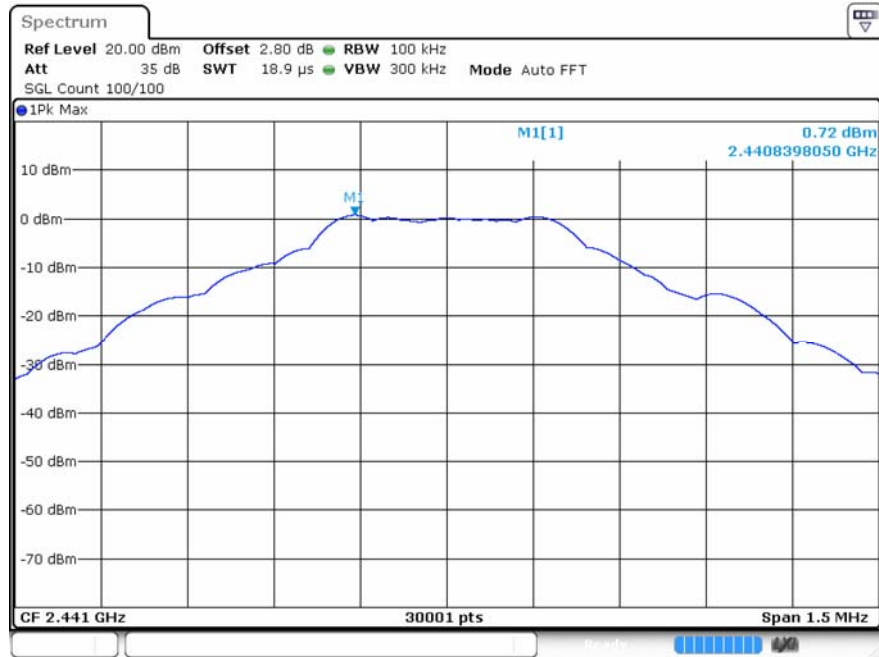
Mode	Channel	Max. Level [dBc]	Limit [dBc]	Verdict
GFSK	LCH	-44.6	-20	Pass
	MCH	-44.77	-20	Pass
	HCH	-45.57	-20	Pass
$\pi/4$ DQPSK	LCH	-44.47	-20	Pass
	MCH	-44.3	-20	Pass
	HCH	-44.32	-20	Pass

7.2 Test Graphs

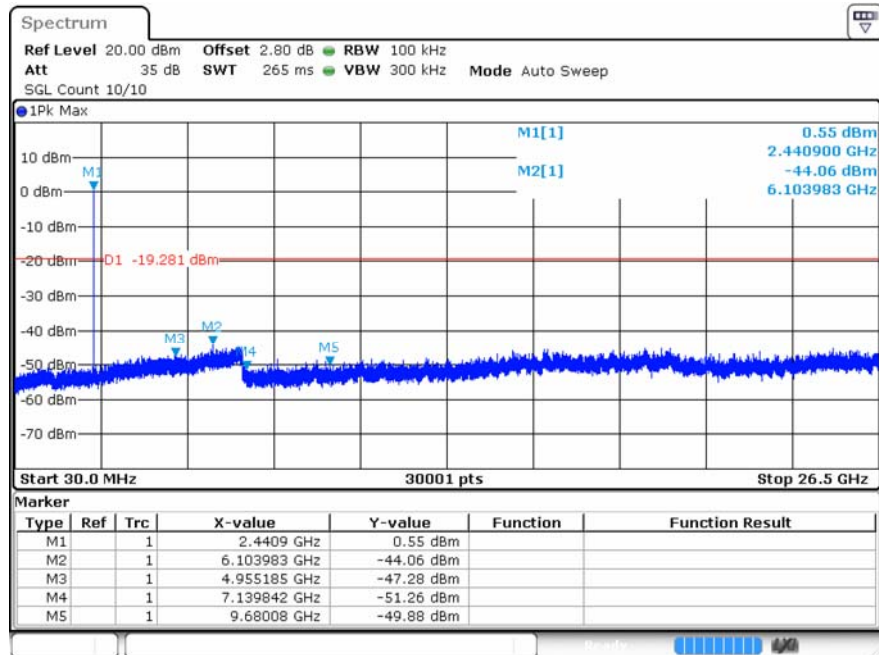


GFSK_MCH_Graphs

Pref

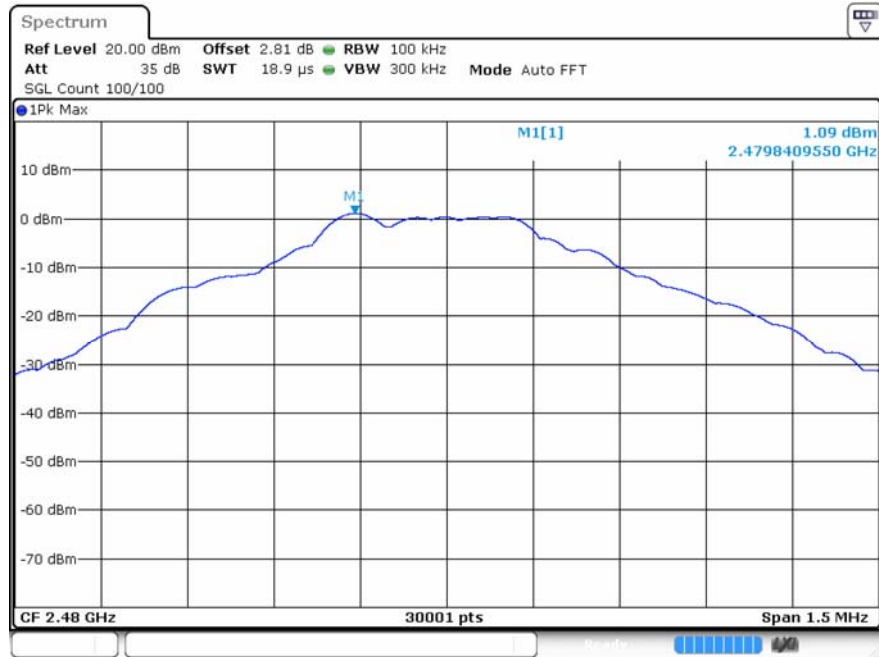


Puw

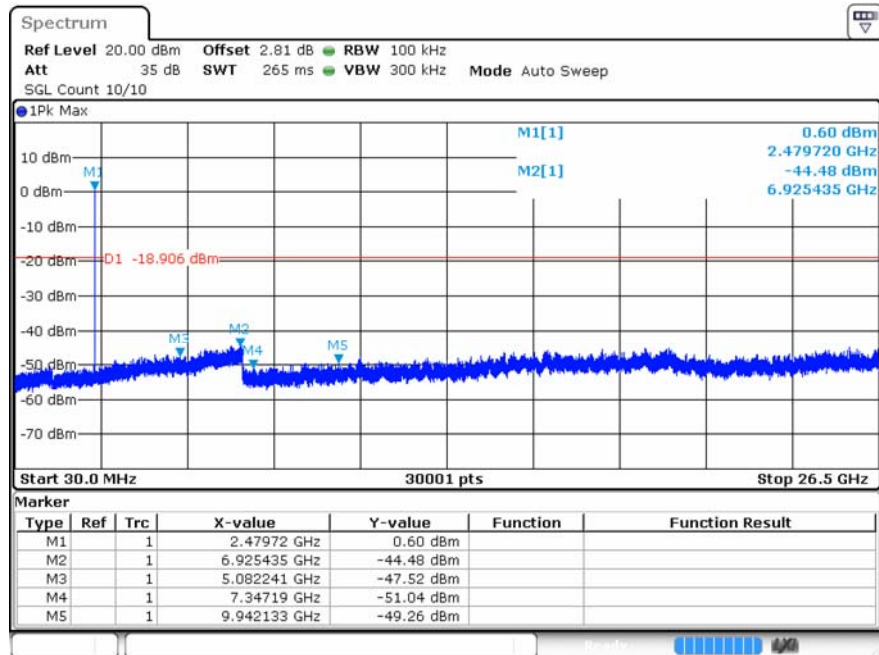


GFSK_HCH_Graphs

Pref

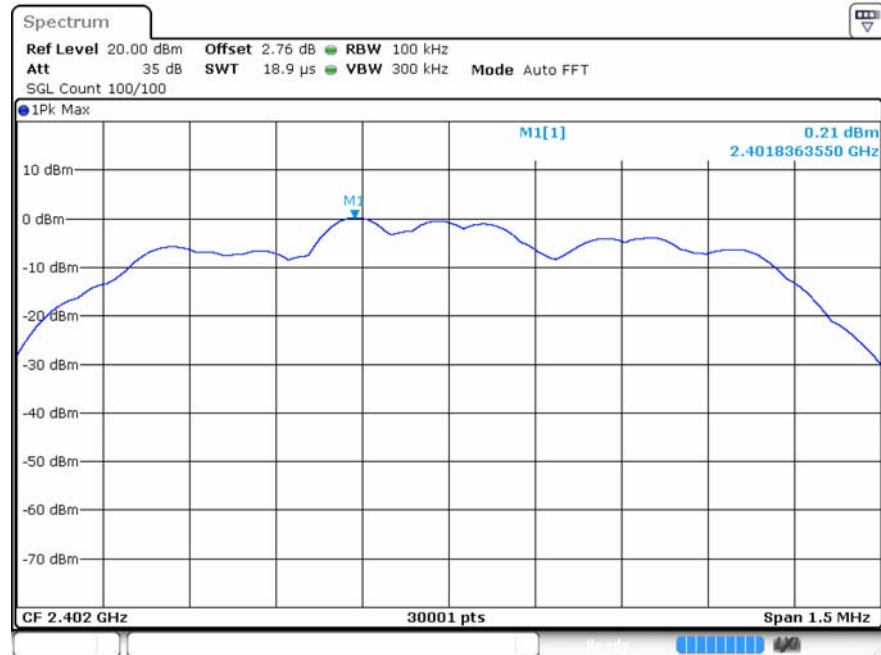


Puw

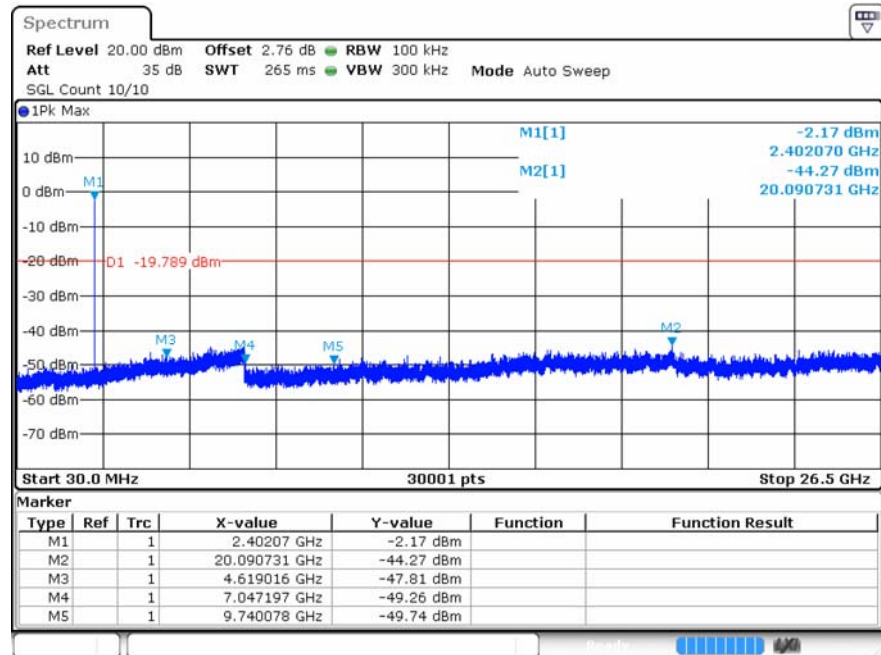


$\pi/4$ DQPSK_LCH_Graphs

Pref

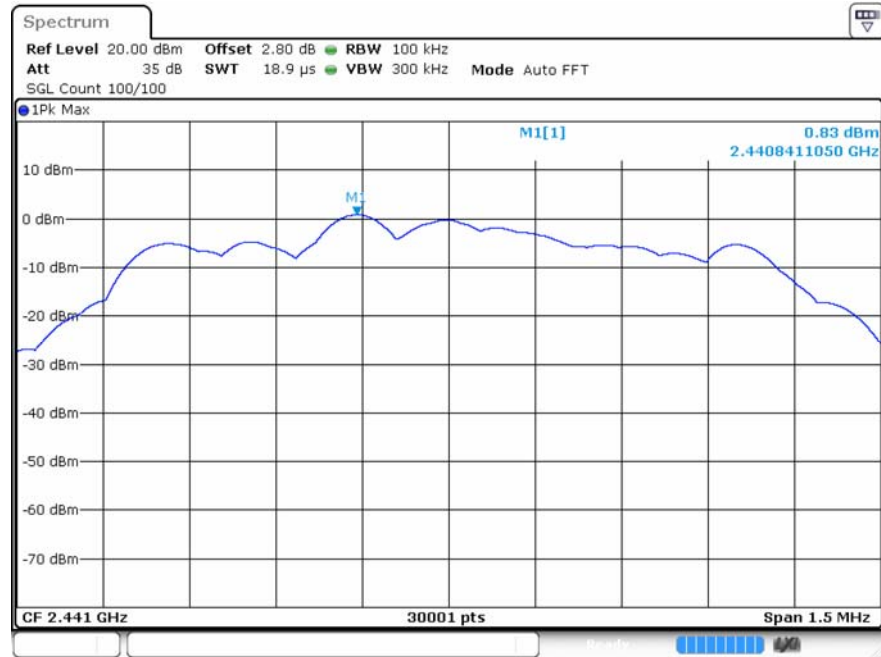


Puw

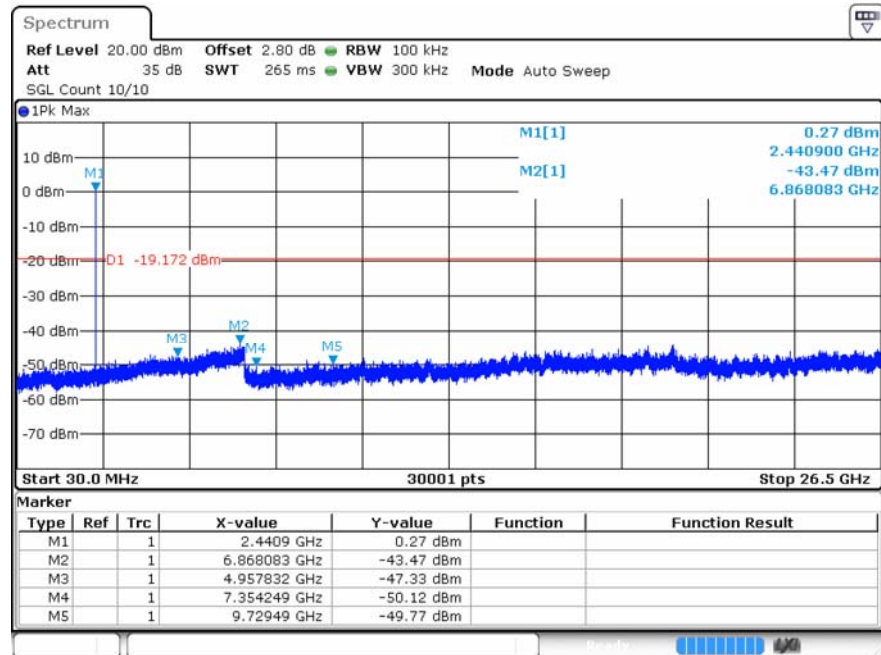


π /4DQPSK_MCH_Graphs

Pref

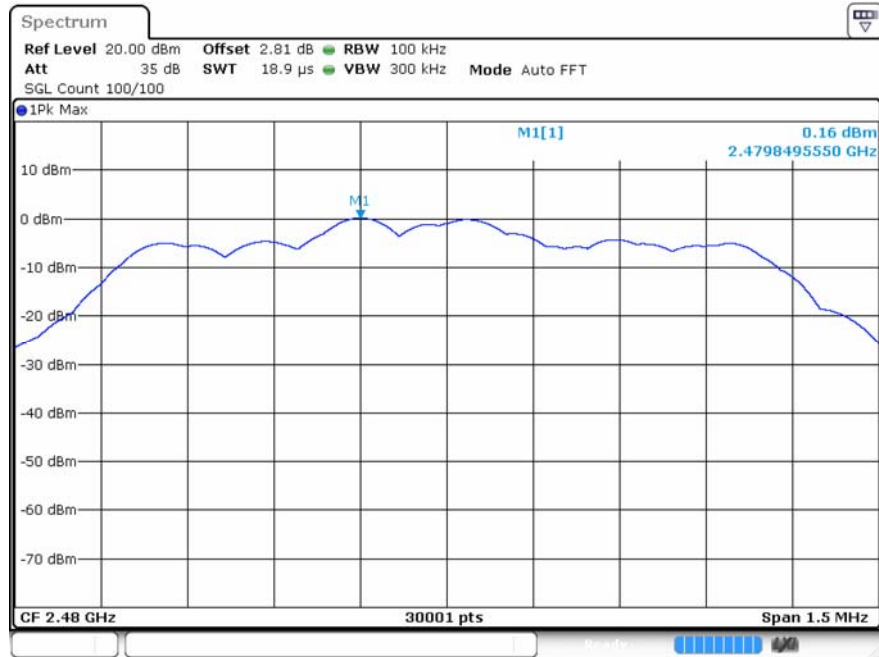


Puw

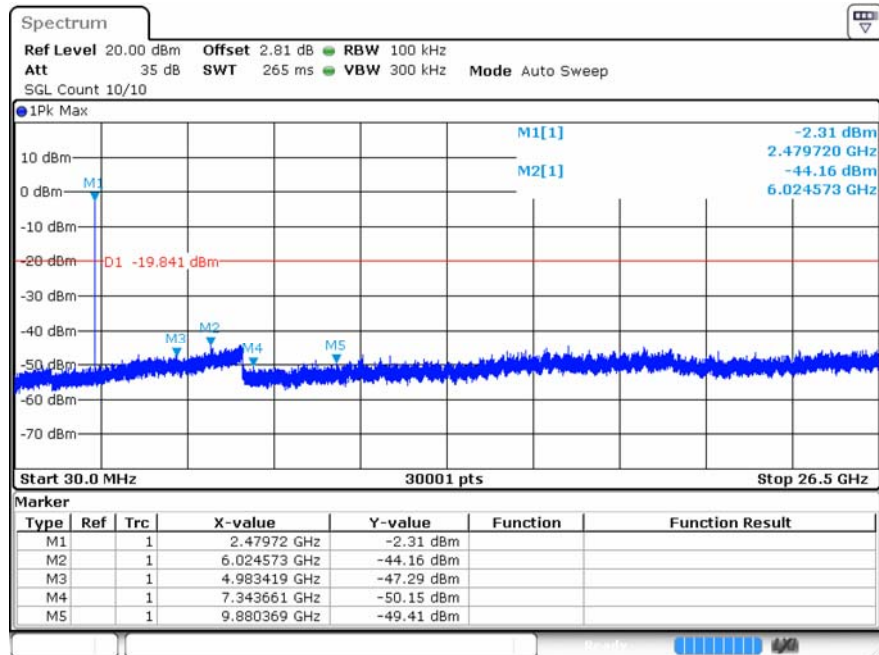


$\pi/4$ DQPSK_HCH_Graphs

Pref



Puw

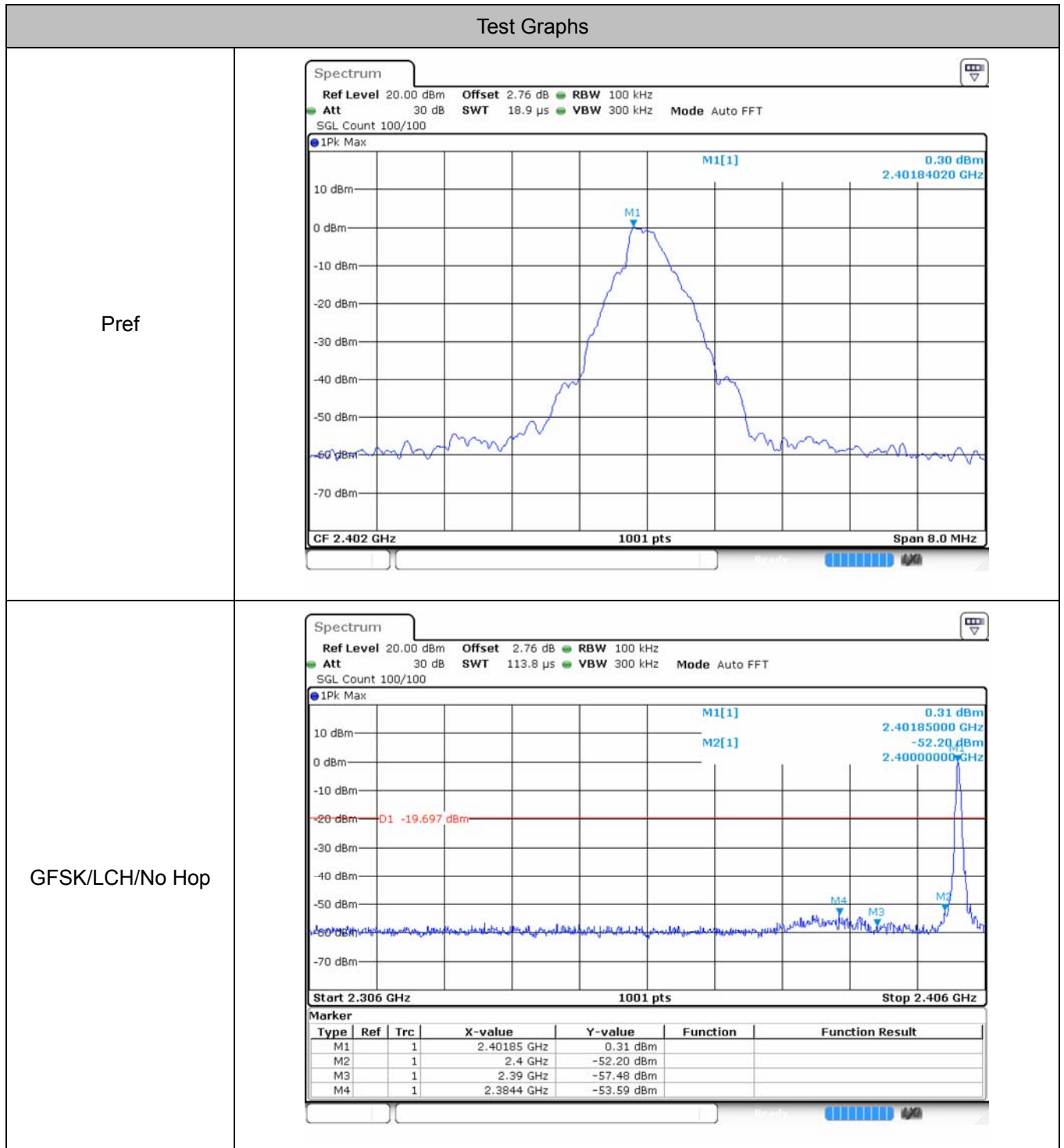


8 Band-edge for RF Conducted Emissions

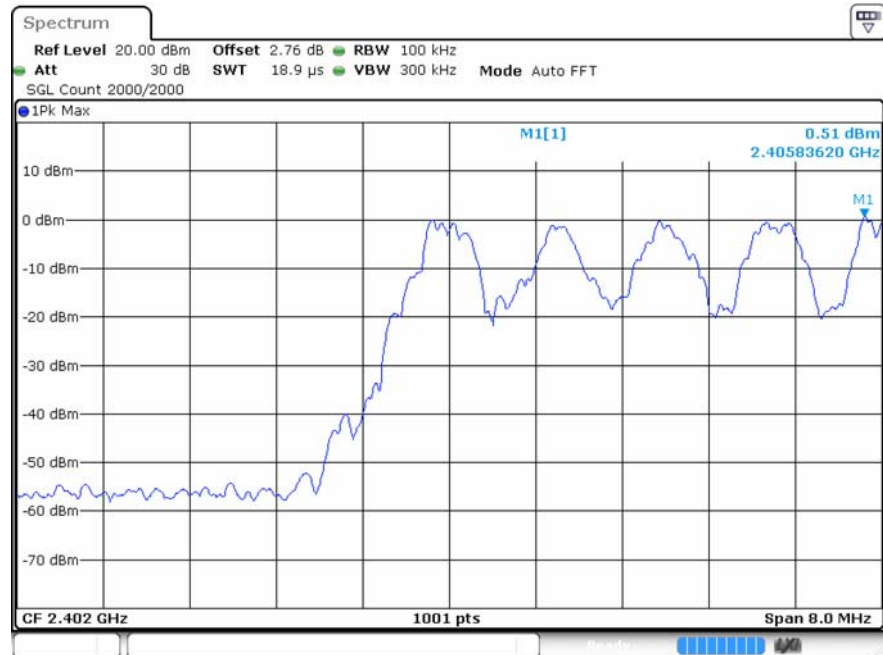
8.1 Test Result

Mode	Channel	Carrier Frequency [MHz]	Frequency Hopping	Max Spurious Level [dBc]	Limit [dBc]	Verdict
GFSK	LCH	2402	Off	-53.88	-20	Pass
			On	-53.91	-20	Pass
	HCH	2480	Off	-53.83	-20	Pass
			On	-52.68	-20	Pass
$\pi/4$ DQPSK	LCH	2402	Off	-52.97	-20	Pass
			On	-52.96	-20	Pass
	HCH	2480	Off	-52.2	-20	Pass
			On	-52.33	-20	Pass

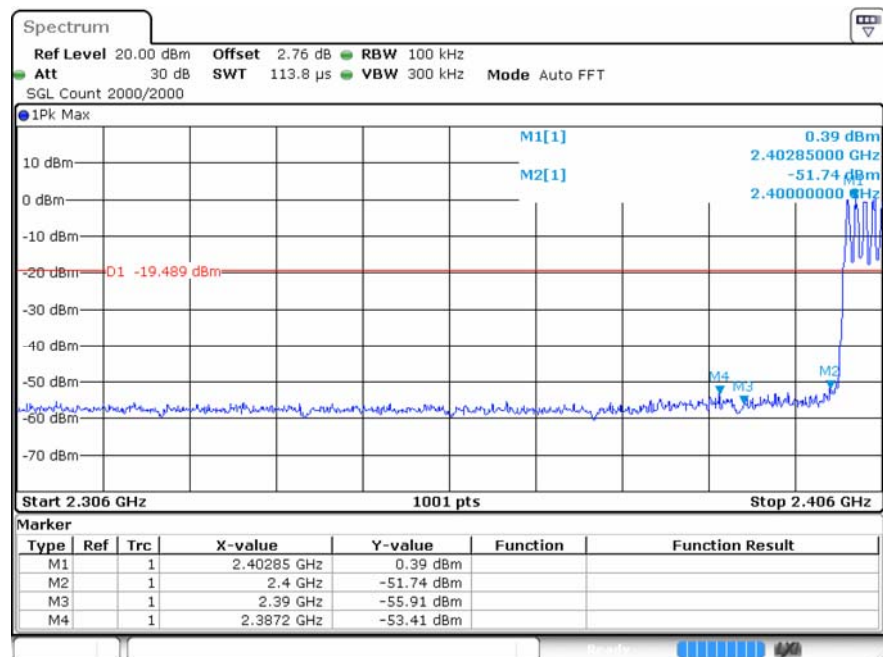
8.2 Test Graphs



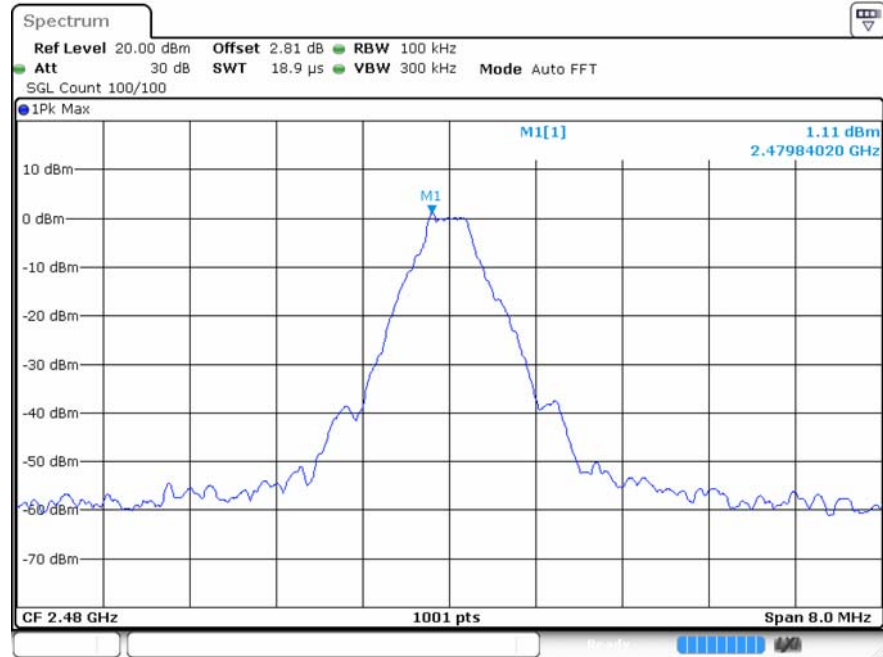
Ref



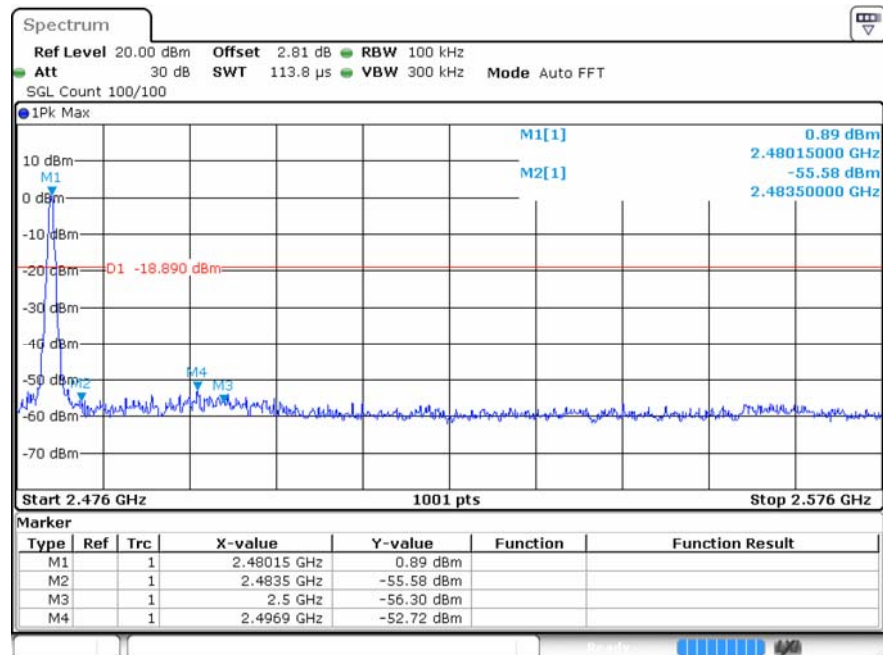
GFSK/LCH/Hop



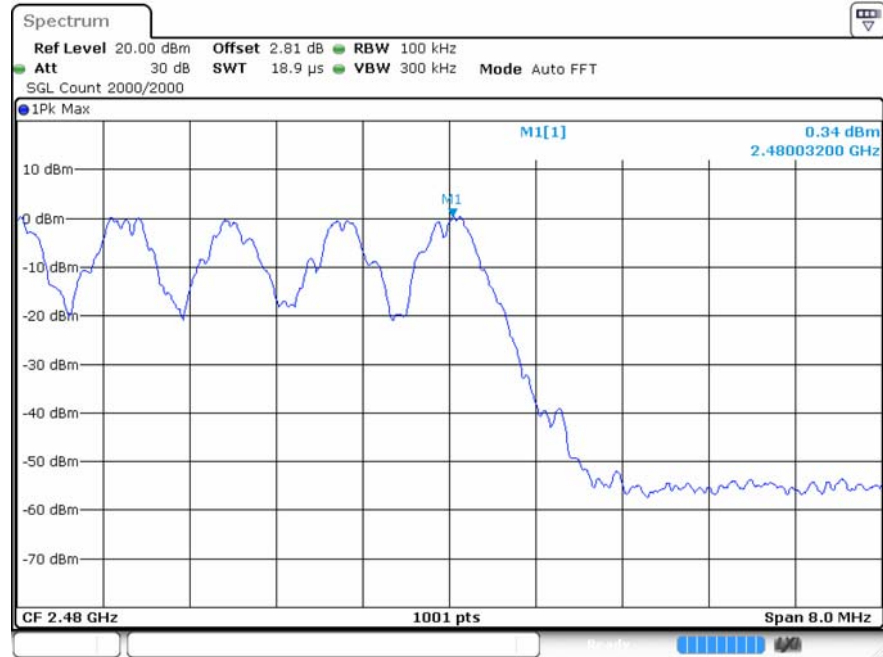
Ref



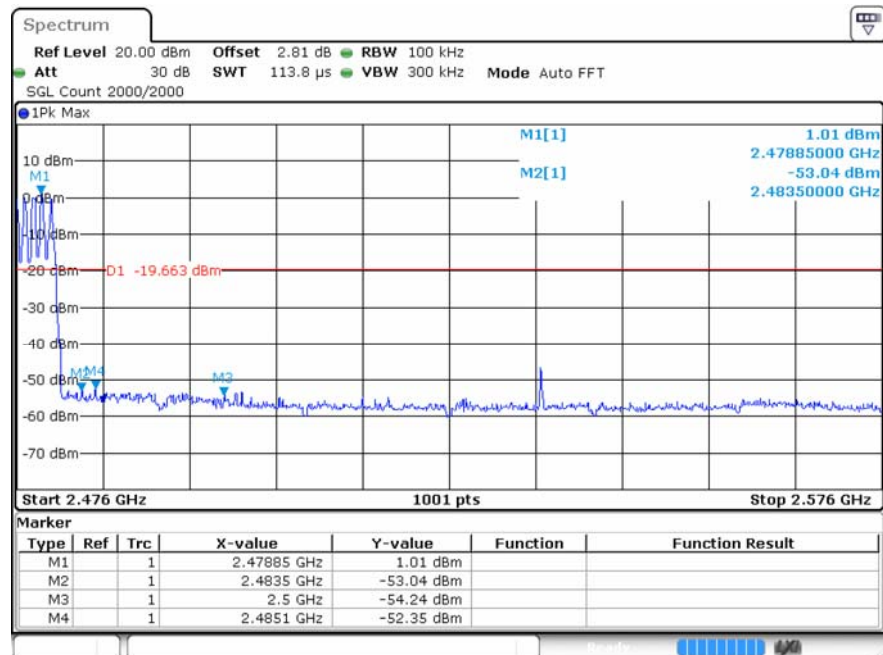
GFSK/HCH/No Hop



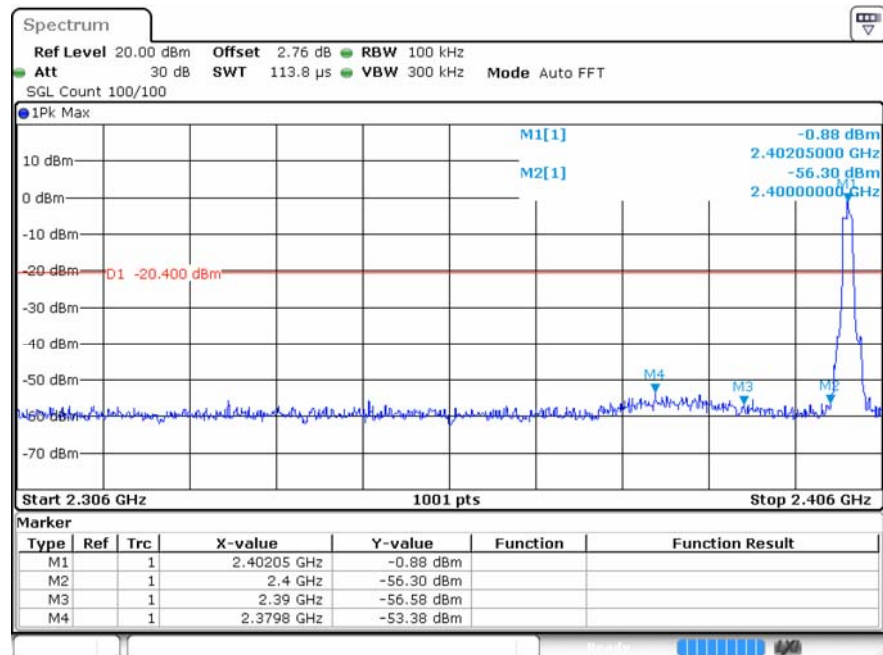
Ref.



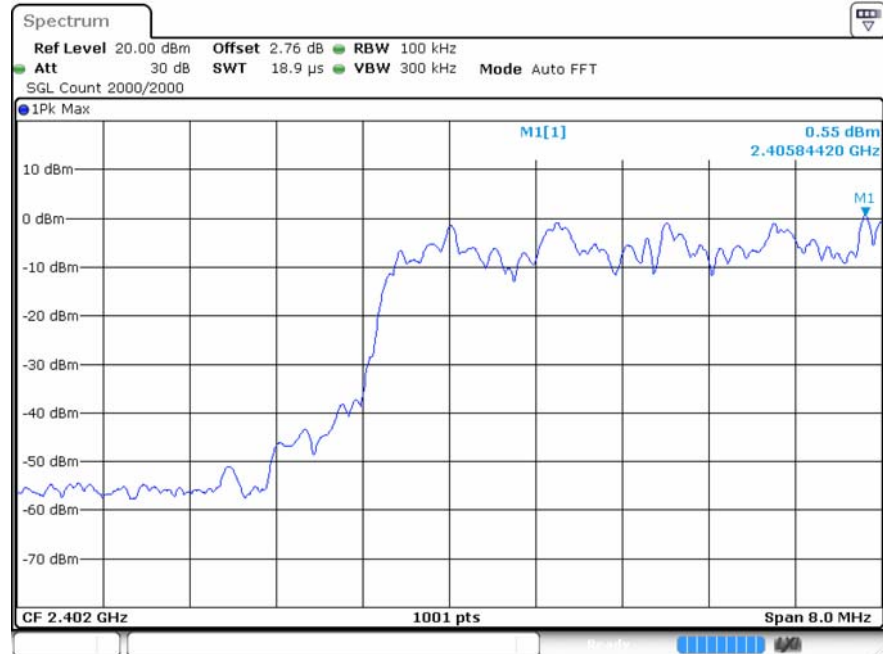
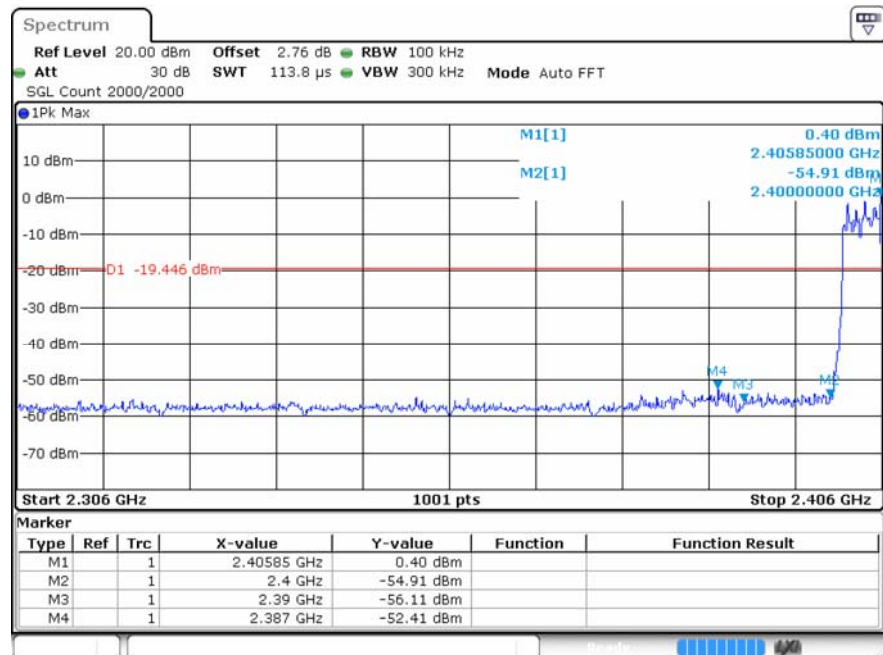
GFSK/HCH/Hop



Ref


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


Ref


 $\pi/4$ DQPSK/LCH/Hop


The screenshot displays a spectrum analyzer interface. At the top, the title 'Spectrum' is shown. Below it, various settings are listed: 'Ref Level' is 20.00 dBm, 'Offset' is 2.81 dB, 'RBW' is 100 kHz, 'Att' is 30 dB, 'SWT' is 18.9 μs, 'VBW' is 300 kHz, and 'Mode' is Auto FFT. The 'SGL Count' is 100/100. The main display area shows a spectrum plot with a blue line representing the signal. A peak is marked with a blue arrow and labeled 'M1'. The peak's frequency is 2.48000800 GHz and its power level is -0.65 dBm. The plot has a grid with frequency on the horizontal axis and power in dBm on the vertical axis. The horizontal axis is labeled 'CF 2.48 GHz' and 'Span 8.0 MHz'. The vertical axis ranges from -70 dBm to 10 dBm. The total number of points is 1001 pts.

Spectrum

Ref Level 20.00 dBm Offset 2.81 dB RBW 100 kHz
Att 30 dB SWT 113.8 μ s VBW 300 kHz Mode Auto FFT
SGL Count 100/100

1Pk Max

10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm

M1[1] 0.69 dBm 2.47985000 GHz
M2[1] -59.50 dBm 2.48350000 GHz

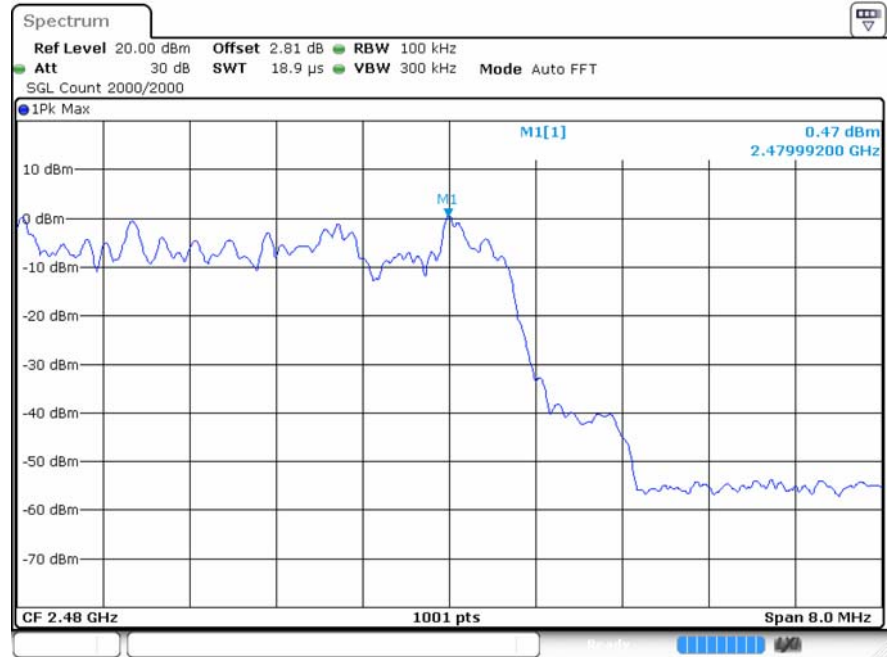
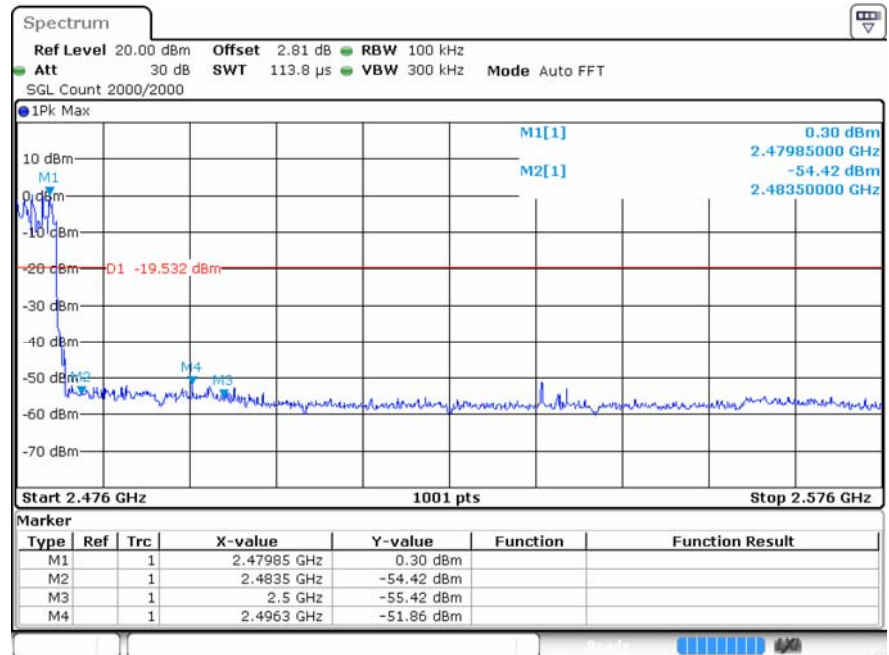
D1 -20.652 dBm

M4
M3

Start 2.476 GHz 1001 pts Stop 2.576 GHz

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.47985 GHz	0.69 dBm		
M2		1	2.4835 GHz	-59.50 dBm		
M3		1	2.5 GHz	-55.50 dBm		
M4		1	2.497 GHz	-52.85 dBm		

Ref


 $\pi/4$ DQPSK/HCH/Hop


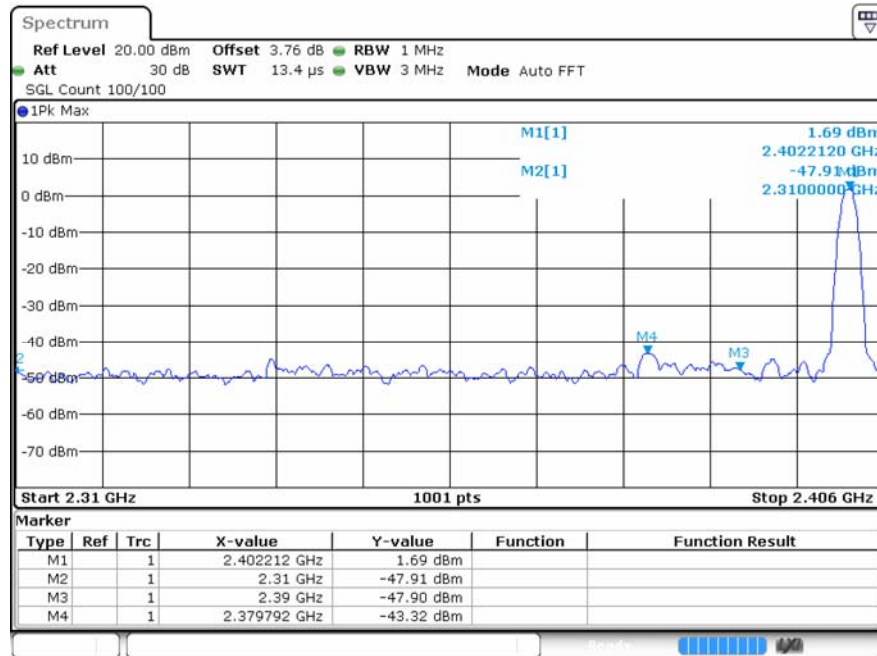
9 Restrict-band band-edge measurements

9.1 Test Result

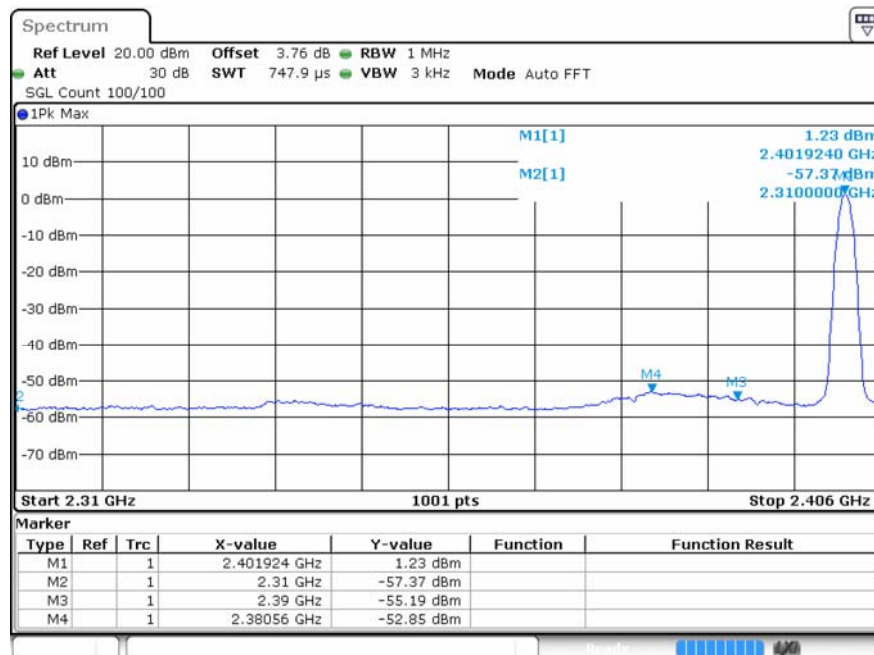
Test Mode	Hopping	Freq.	Power [dBm]	Gain	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-47.9	2.2	49.53	PEAK	74	Pass
	Off	2310.0	-57.37	2.2	40.06	AV	54	Pass
	Off	2379.792	-43.31	2.2	54.12	PEAK	74	Pass
	Off	2380.56	-52.84	2.2	44.59	AV	54	Pass
	Off	2390.0	-47.89	2.2	49.54	PEAK	74	Pass
	Off	2390.0	-55.18	2.2	42.25	AV	54	Pass
	Off	2483.5	-48.51	2.2	48.92	PEAK	74	Pass
	Off	2483.5	-55.42	2.2	42.01	AV	54	Pass
	Off	2500	-42.57	2.2	54.86	PEAK	74	Pass
	Off	2499.448	-52.32	2.2	45.11	AV	54	Pass
	Off	2500.0	-42.57	2.2	54.86	PEAK	74	Pass
	Off	2500.0	-53.16	2.2	44.27	AV	54	Pass
$\pi/4$ DQPSK	Off	2310.0	-47.98	2.2	49.45	PEAK	74	Pass
	Off	2310.0	-57.48	2.2	39.95	AV	54	Pass
	Off	2381.712	-42.99	2.2	54.44	PEAK	74	Pass
	Off	2383.152	-52.65	2.2	44.78	AV	54	Pass
	Off	2390.0	-46.61	2.2	50.82	PEAK	74	Pass
	Off	2390.0	-54.73	2.2	42.7	AV	54	Pass
	Off	2483.5	-46.66	2.2	50.77	PEAK	74	Pass
	Off	2483.5	-55.89	2.2	41.54	AV	54	Pass
	Off	2498.824	-42.46	2.2	54.97	PEAK	74	Pass
	Off	2499.328	-51.96	2.2	45.47	AV	54	Pass
	Off	2500.0	-46.25	2.2	51.18	PEAK	74	Pass
	Off	2500.0	-52.04	2.2	45.39	AV	54	Pass

9.2 Test Graphs

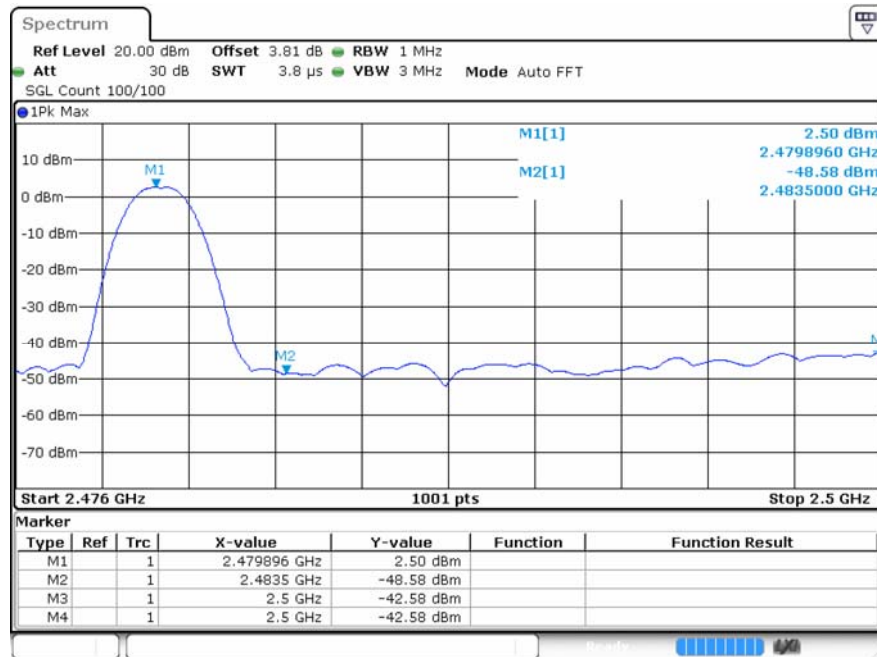
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (Low Channel)



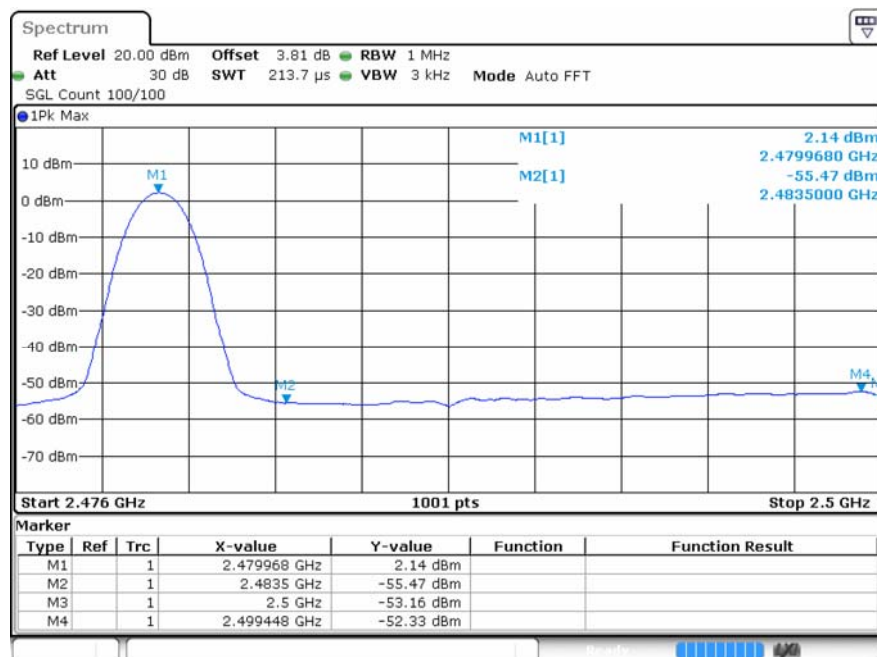
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (Low Channel)



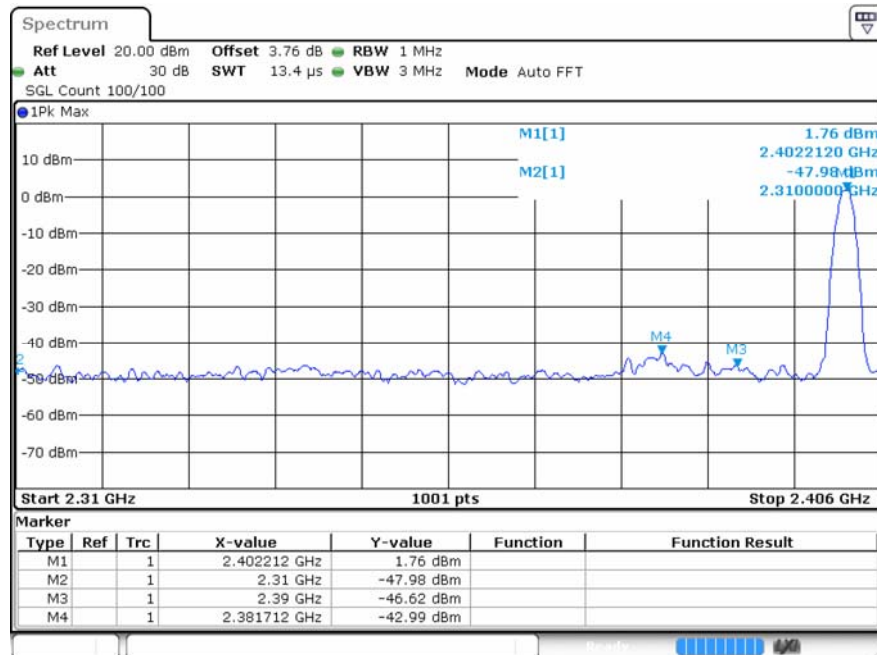
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (High Channel)



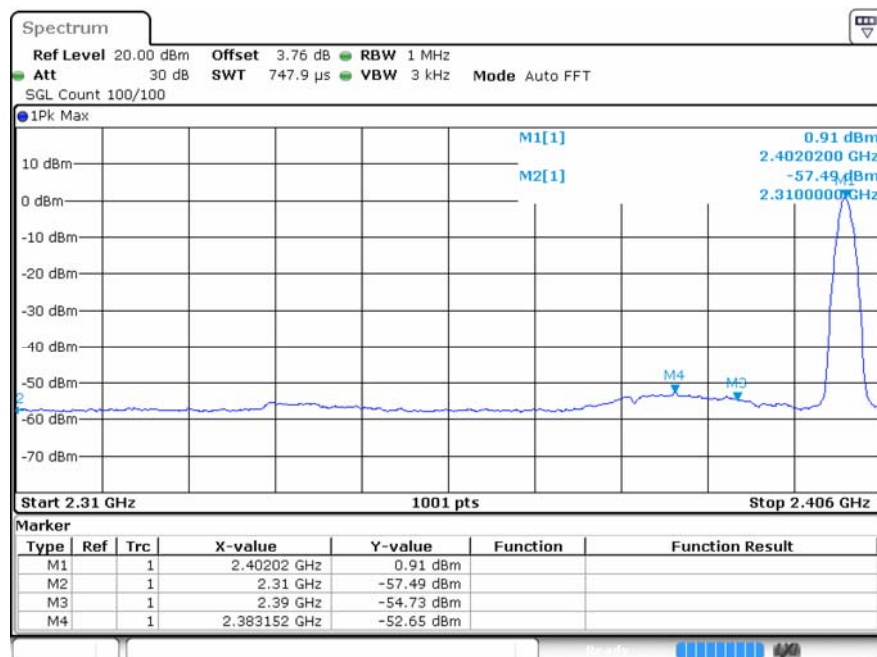
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (High Channel)



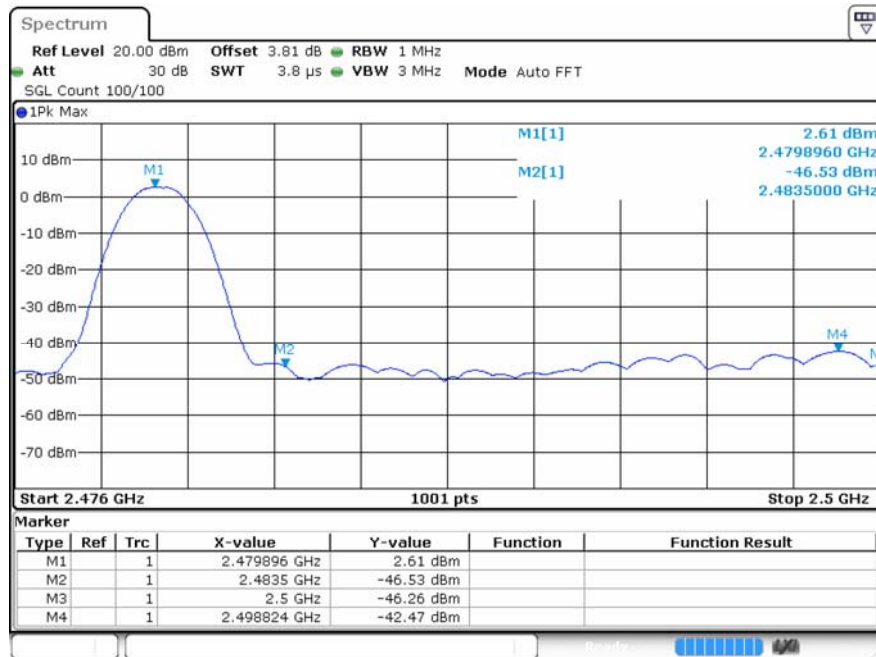
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (Low Channel)



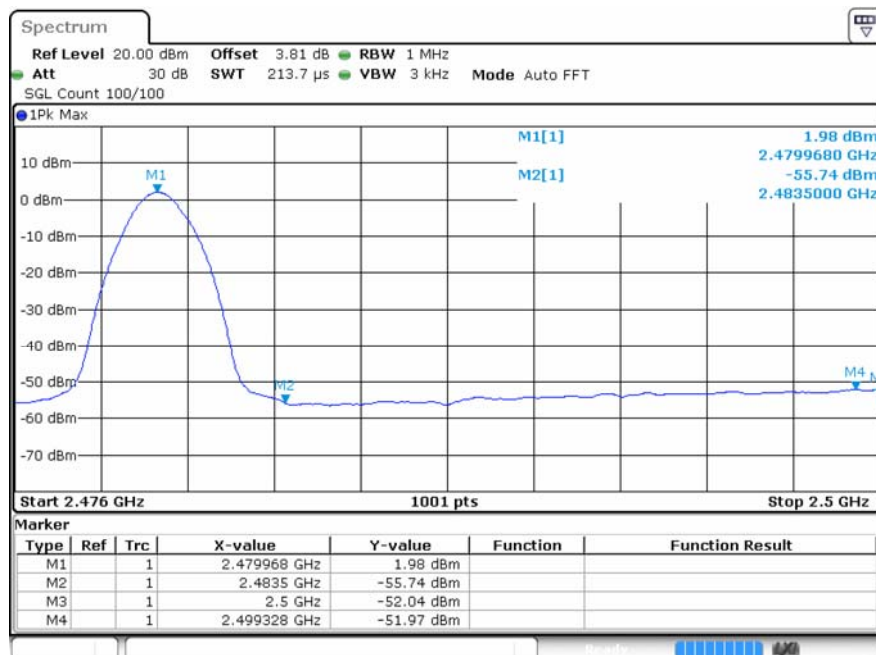
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (Low Channel)



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---