



Appendix A

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

Product Name: Translation Earbuds

Trade Mark: N/A

Test Model: SX-219

Environmental Conditions

Temperature:	24.5℃
Relative Humidity:	52.7%
ATM Pressure:	101Kpa
Test Engineer:	Emiya lin
Supervised by:	Simba Haung

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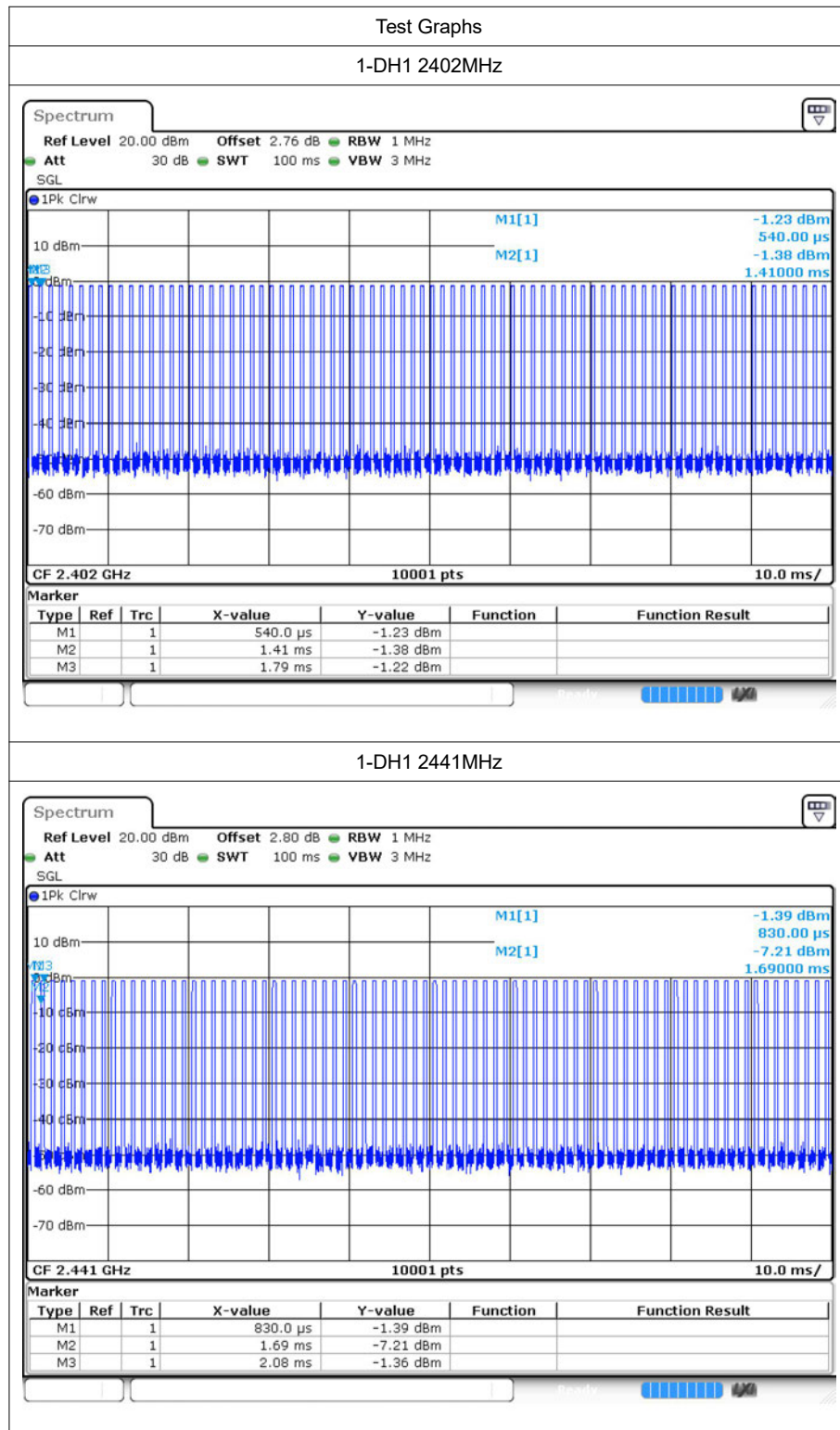
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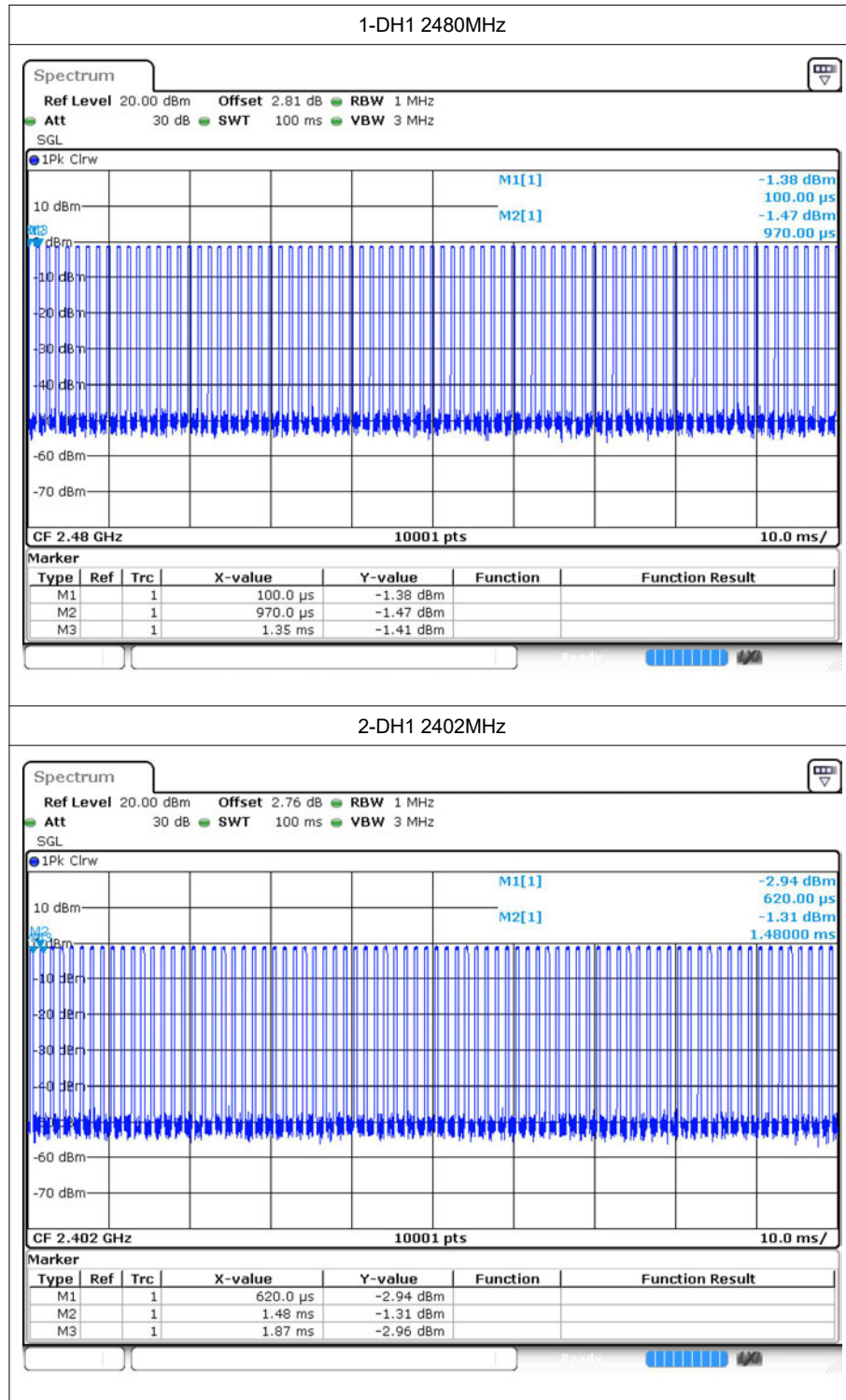
1 Duty Cycle

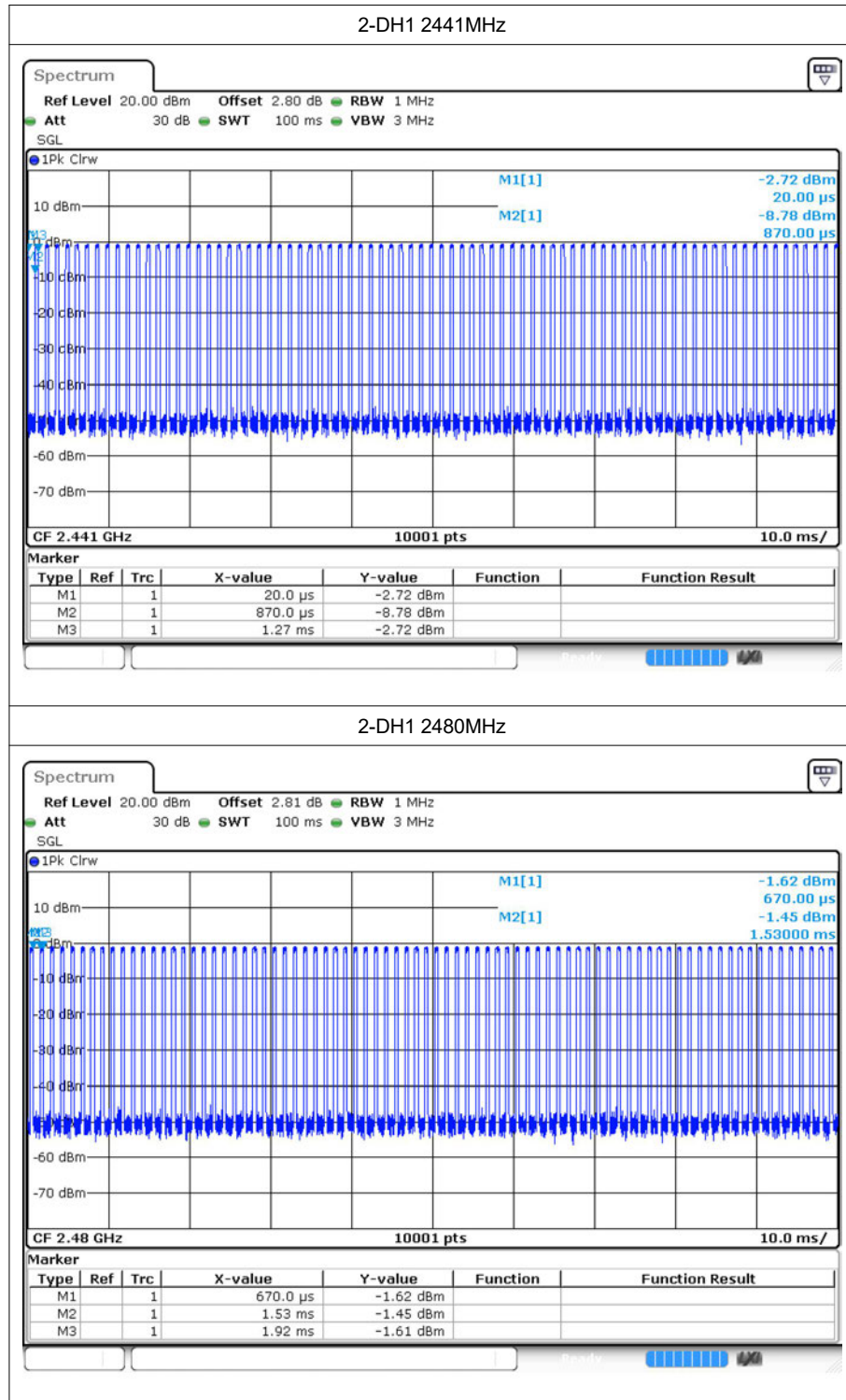
1.1 Test Result

Mode	Frequency (MHz)	Duty Cycle (%)	Correction Factor	1/T (kHz)
1-DH1	2402	31.2	5.06	2.63
1-DH1	2441	32	4.95	2.56
1-DH1	2480	31.21	5.06	2.63
2-DH1	2402	32	4.95	2.56
2-DH1	2441	32.81	4.84	2.5
2-DH1	2480	32	4.95	2.56

1.2 Test Graphs





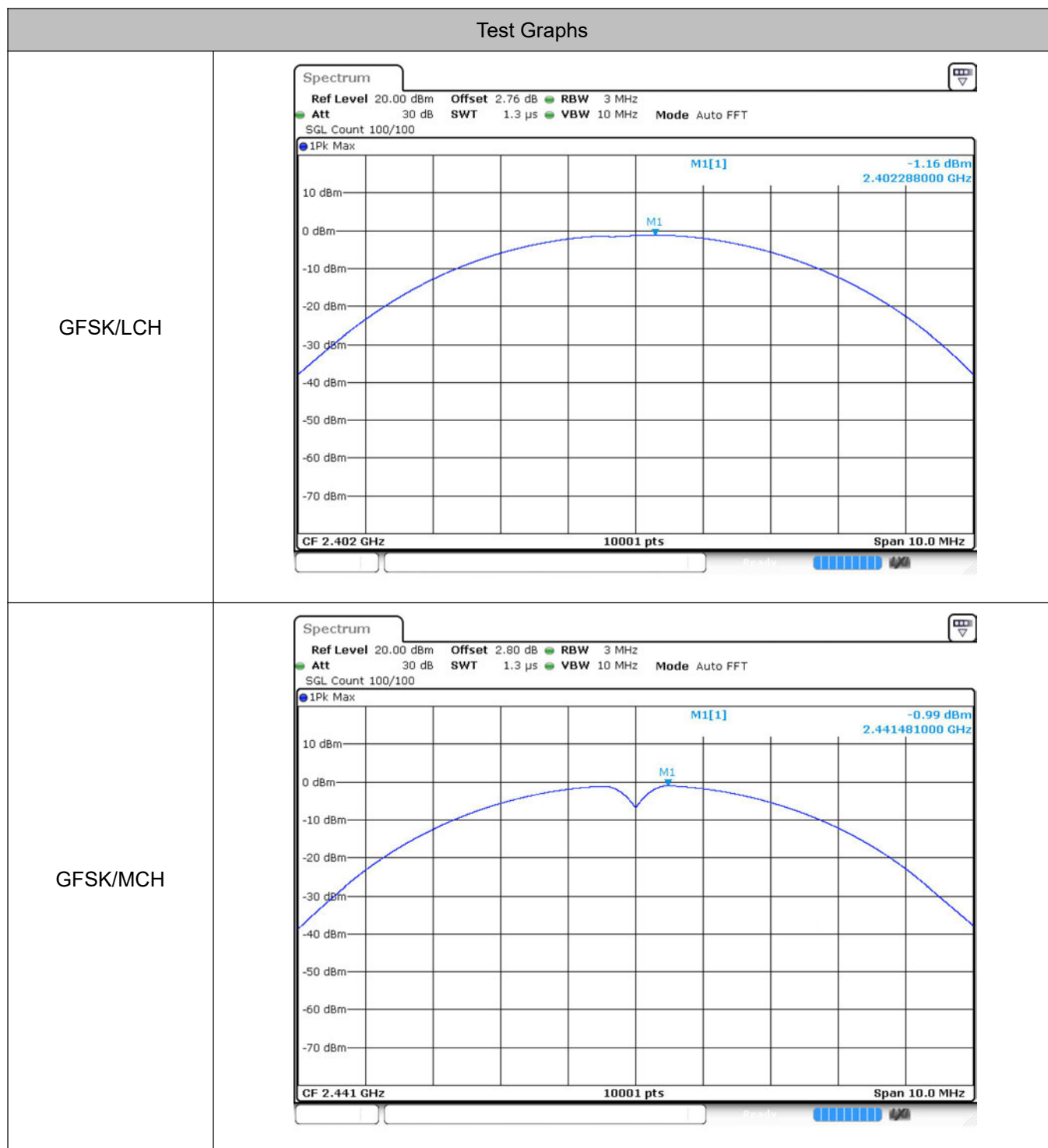


2 Maximum Conducted Peak Output Power

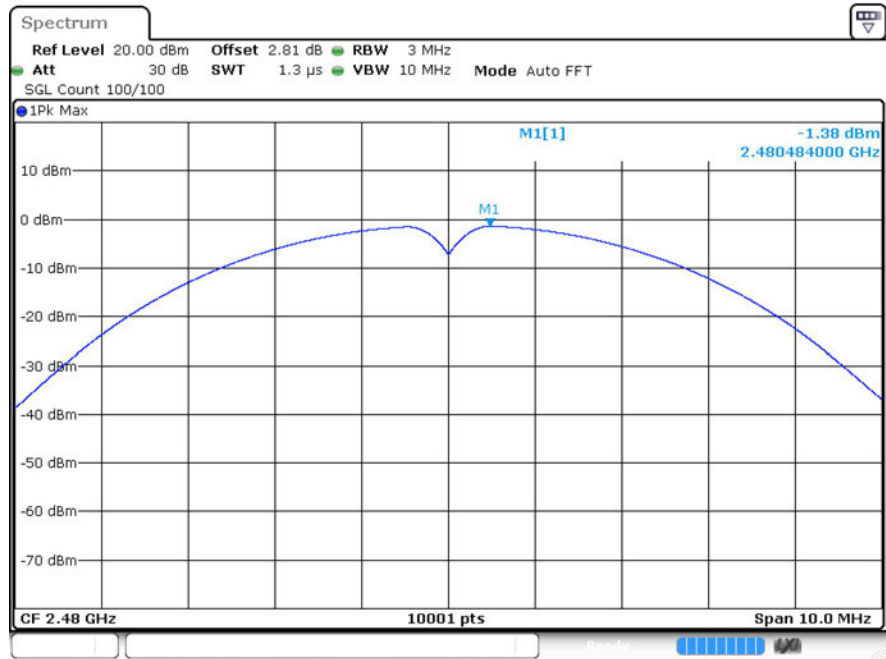
2.1 Test Result

Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-1.16	21	Pass
	MCH	-0.99	21	Pass
	HCH	-1.38	21	Pass
$\pi/4$ DQPSK	LCH	-0.83	21	Pass
	MCH	-0.44	21	Pass
	HCH	-0.95	21	Pass

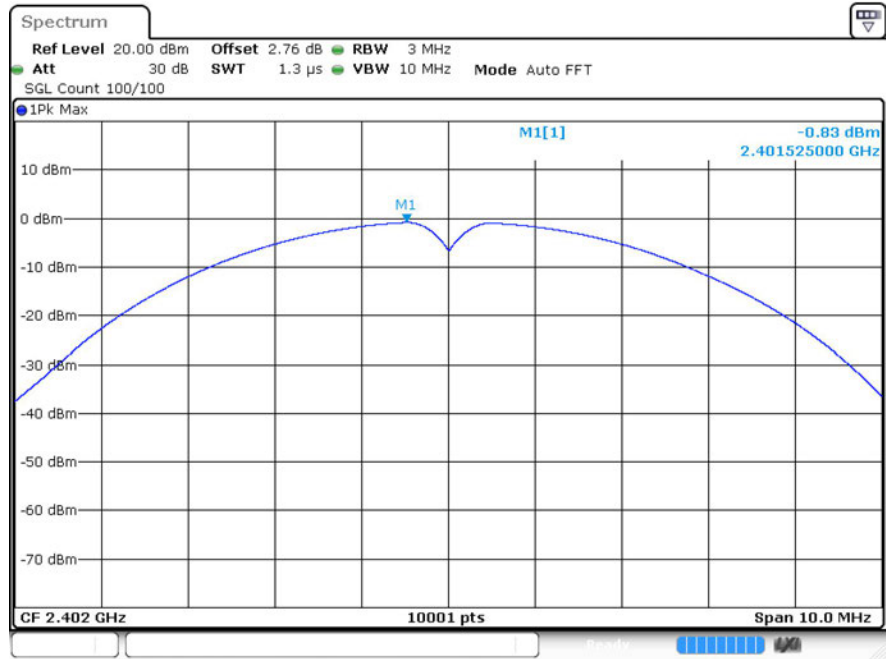
2.2 Test Graphs



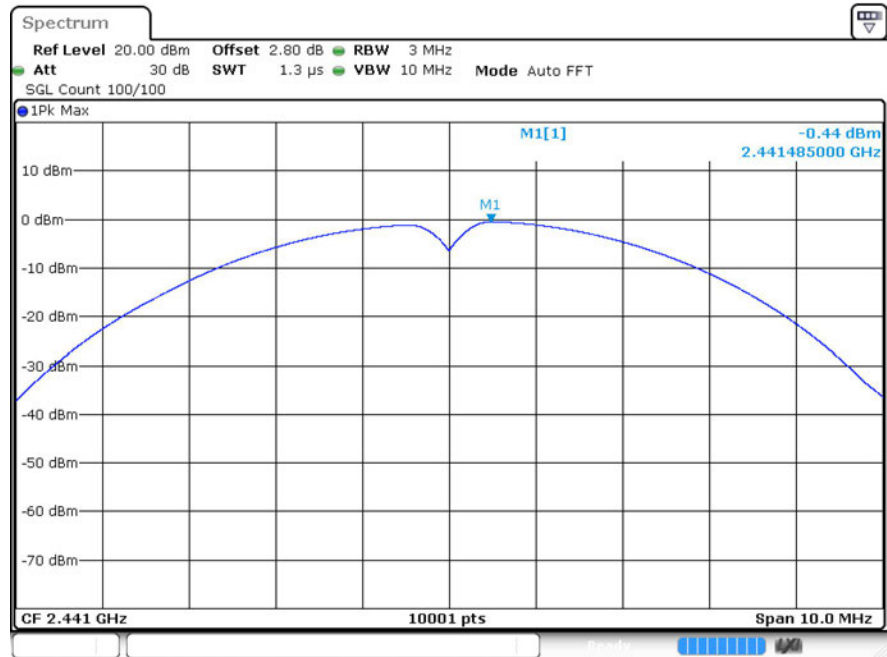
GFSK/HCH



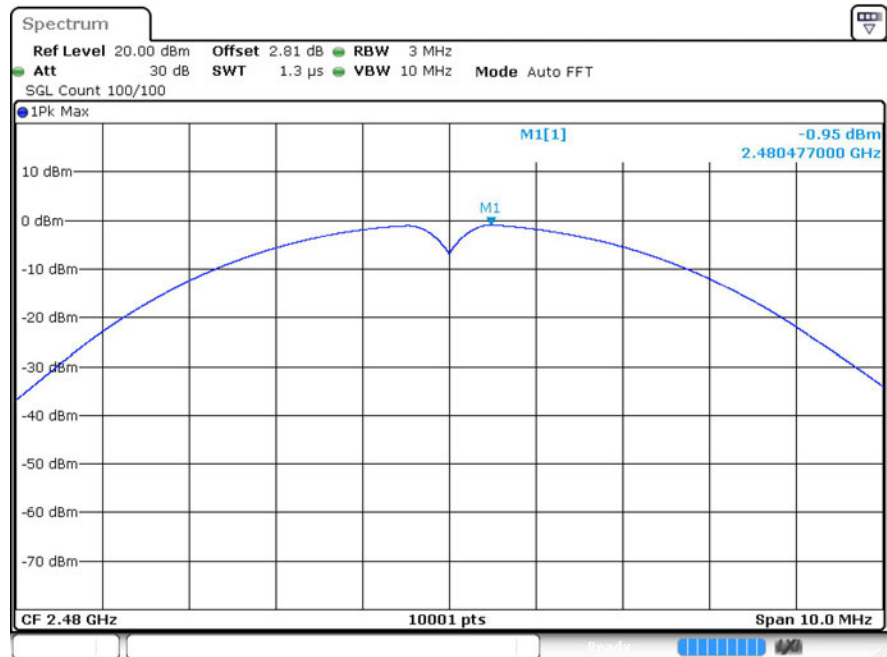
$\pi/4$ DQPSK/LCH



$\pi/4$ DQPSK/MCH



$\pi/4$ DQPSK/HCH

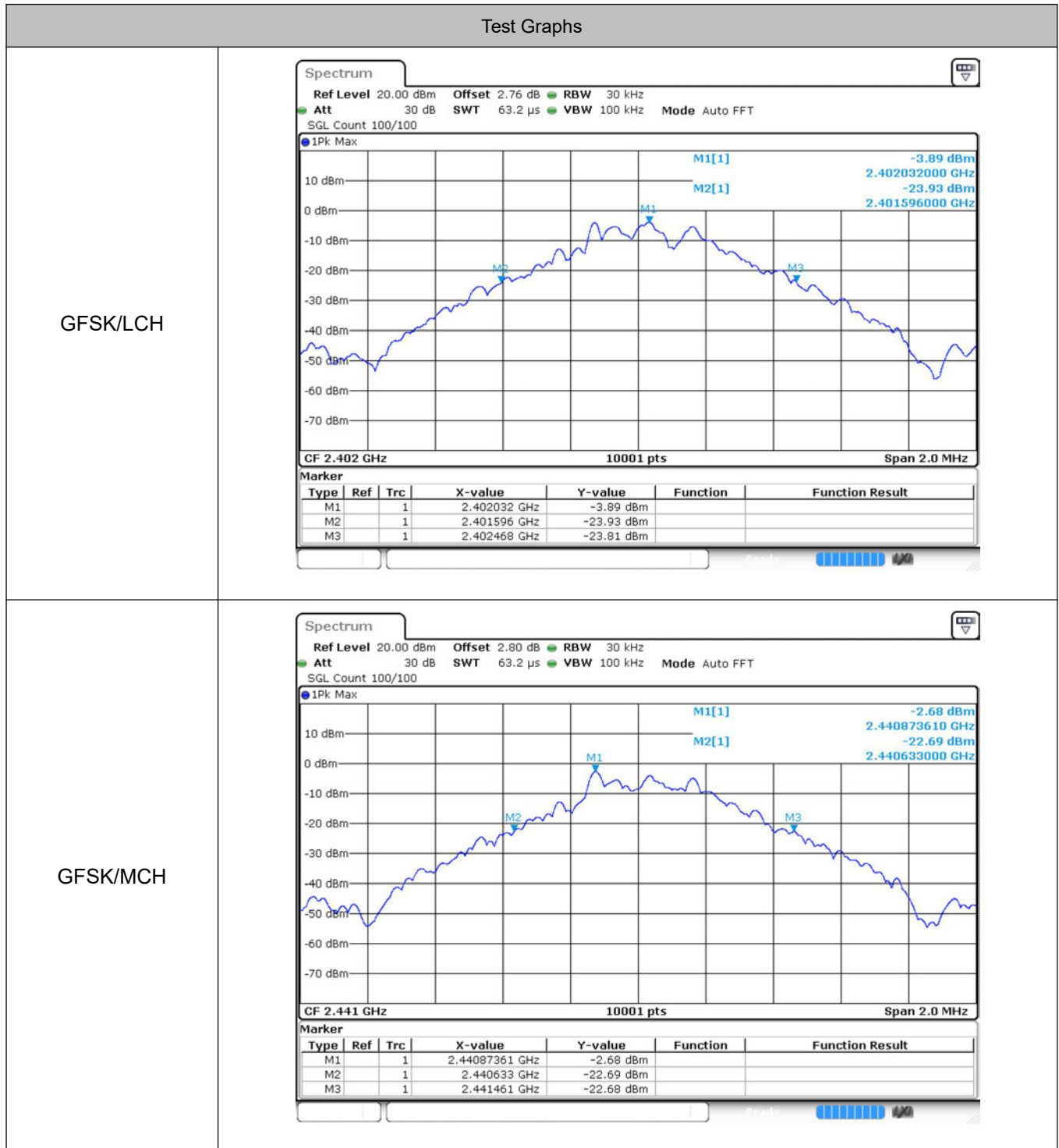


3 20dB Bandwidth

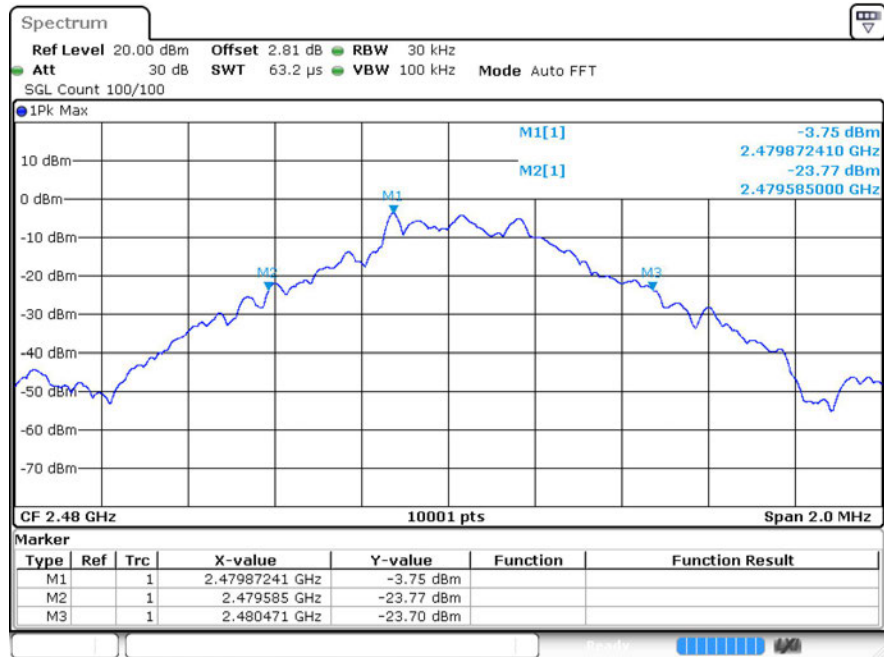
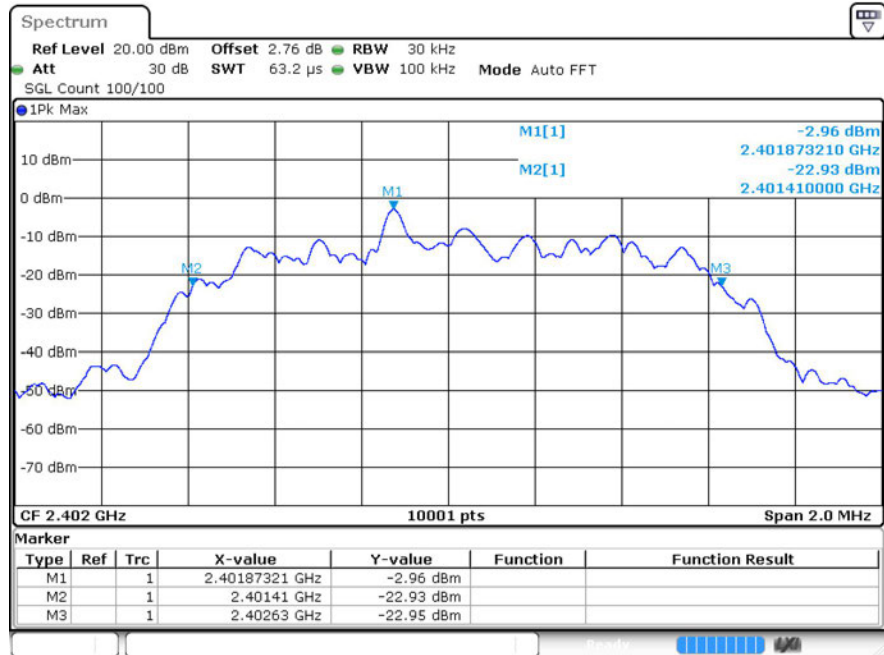
3.1 Test Result

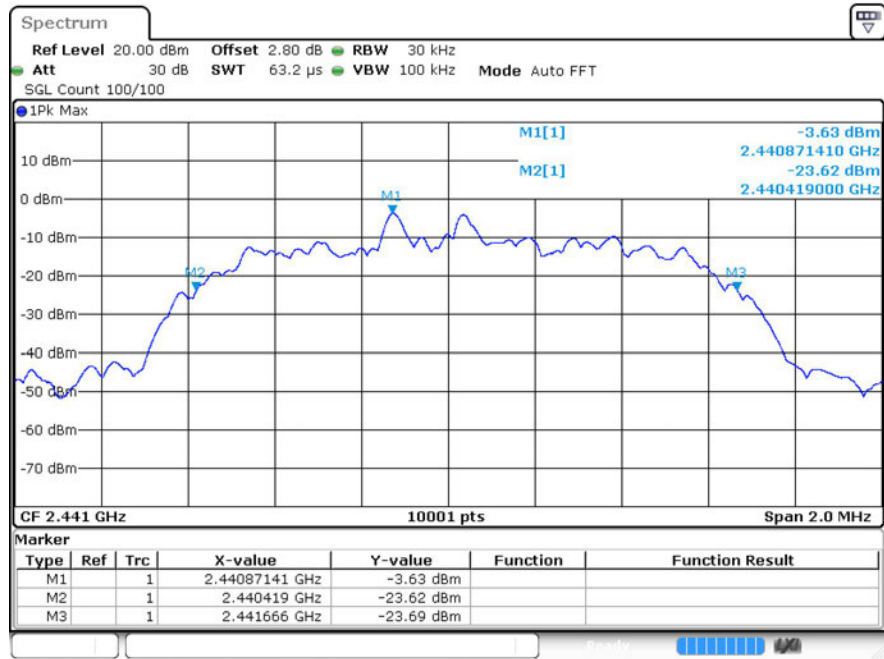
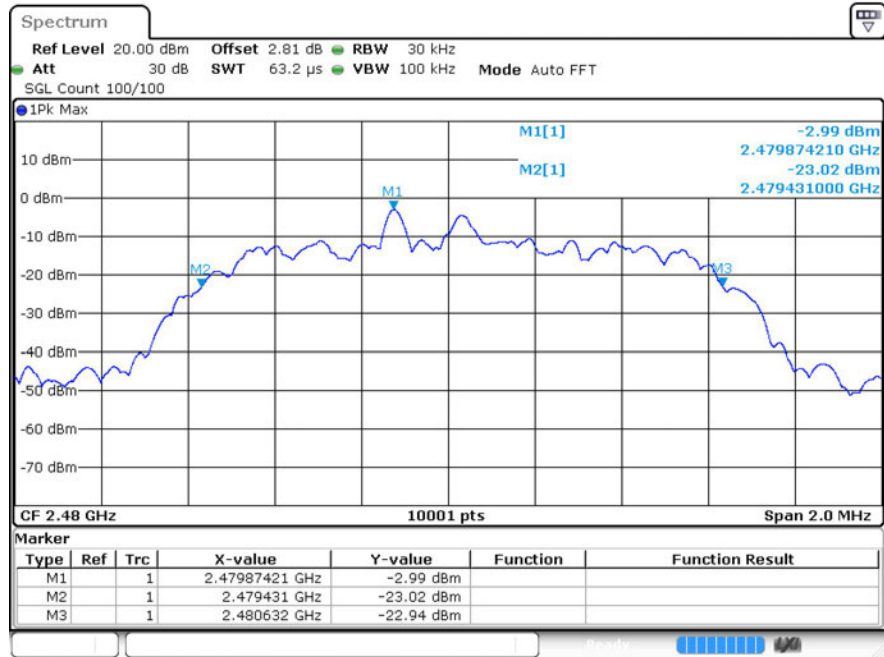
Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.872	Not Specified	Pass
	MCH	0.828	Not Specified	Pass
	HCH	0.886	Not Specified	Pass
$\pi/4$ DQPSK	LCH	1.22	Not Specified	Pass
	MCH	1.247	Not Specified	Pass
	HCH	1.201	Not Specified	Pass

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	0.999	0.552	Pass
$\pi/4$ DQPSK	MCH	1.002	0.831	Pass

4.2 Test Graphs

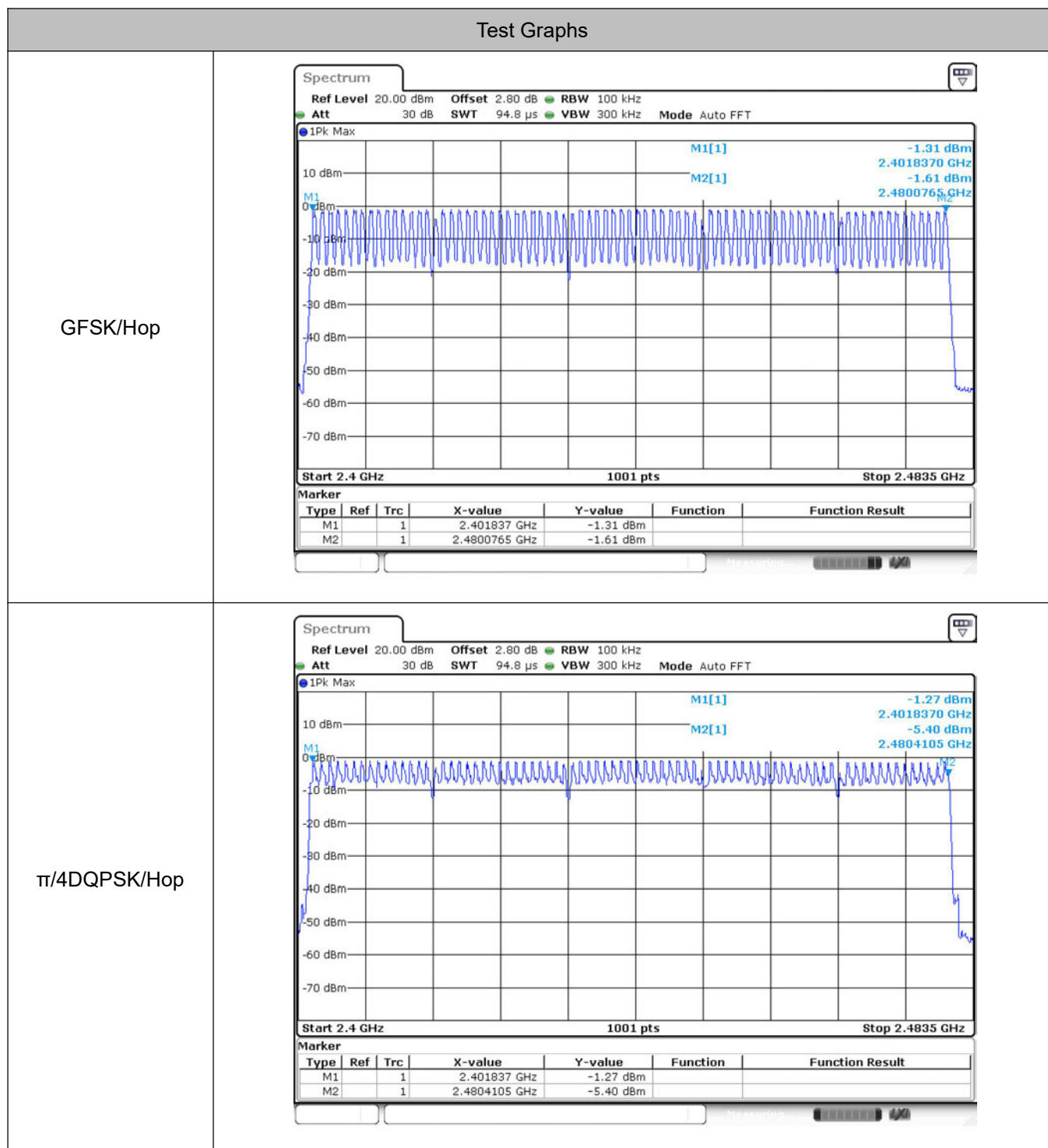


5 Hopping Channel Number

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

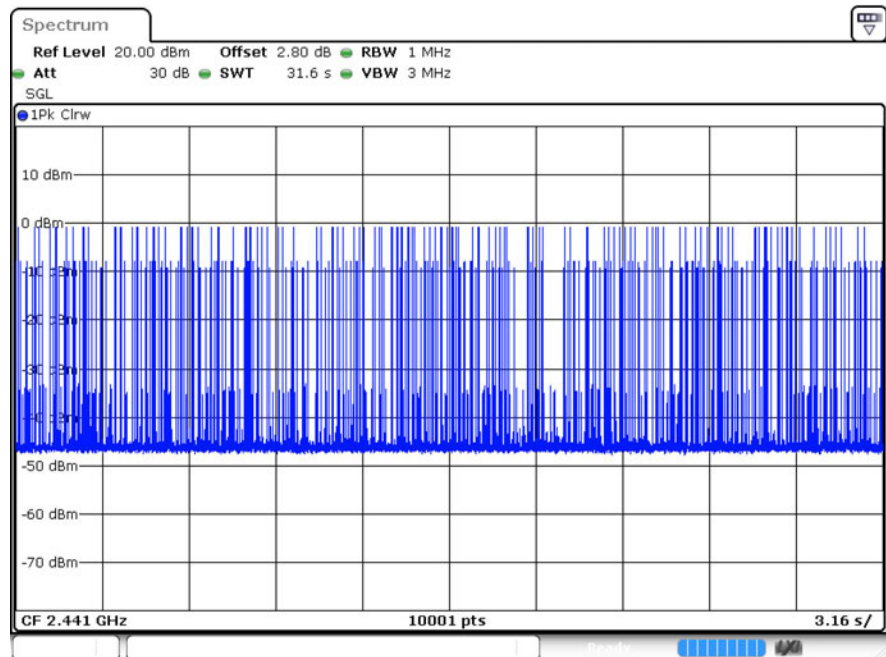
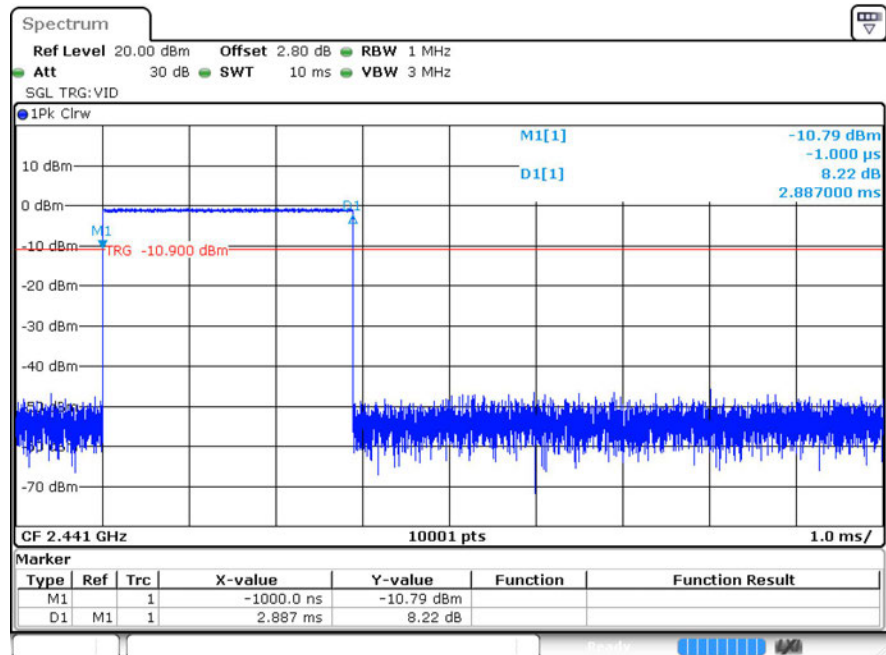
6.1 Test Result

Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[ms]	Limit [s]	Verdict
GFSK	DH5	MCH	2.887	130	375.31	0.4	Pass
$\pi/4$ DQPSK	2DH5	MCH	2.891	89	257.299	0.4	Pass

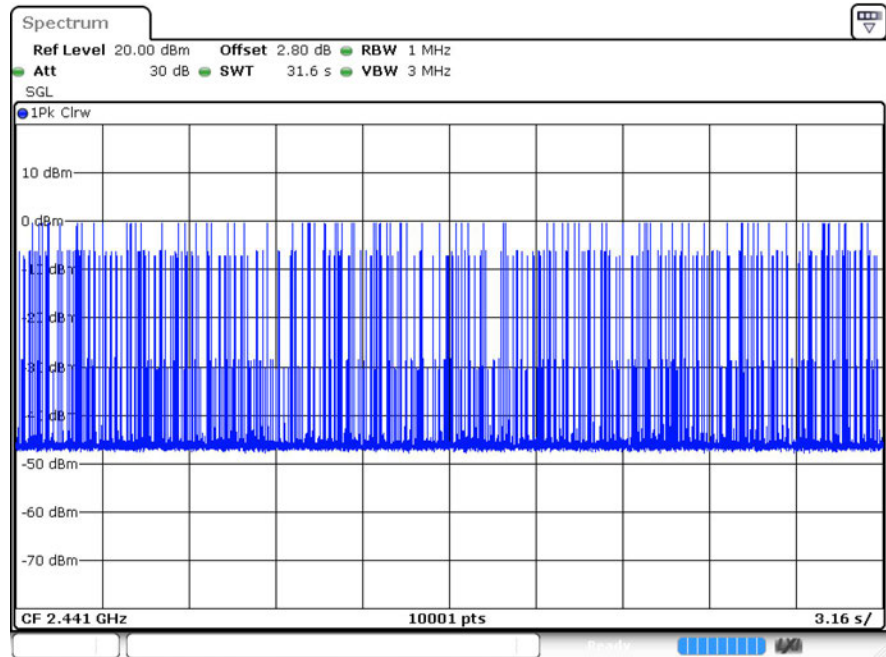
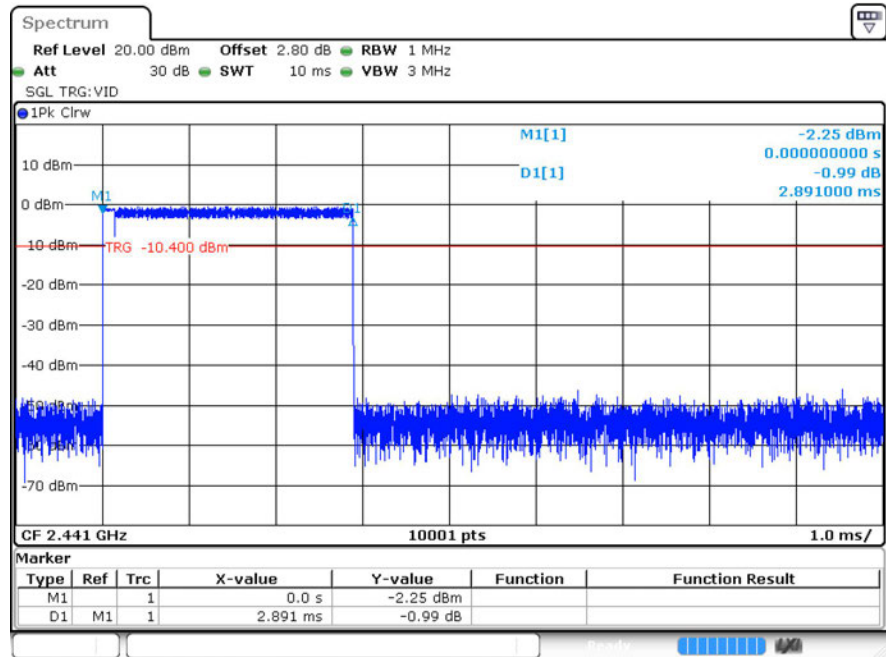
6.2 Test Graphs

Test Graphs

GFSK_DH5/MCH



$\pi/4$ DQPSK
_2DH5/MCH



7 RF Conducted Spurious Emissions

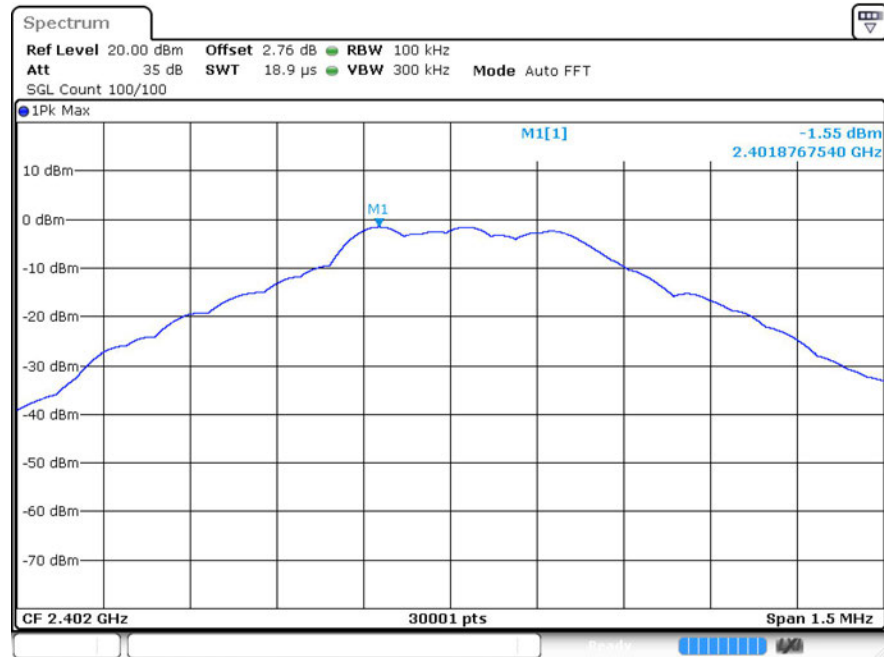
7.1 Test Result

Mode	Channel	Max. Level [dBc]	Limit [dBc]	Verdict
GFSK	LCH	-40.27	-20	Pass
	MCH	-40.54	-20	Pass
	HCH	-38.92	-20	Pass
$\pi/4$ DQPSK	LCH	-39.78	-20	Pass
	MCH	-39.9	-20	Pass
	HCH	-40.36	-20	Pass

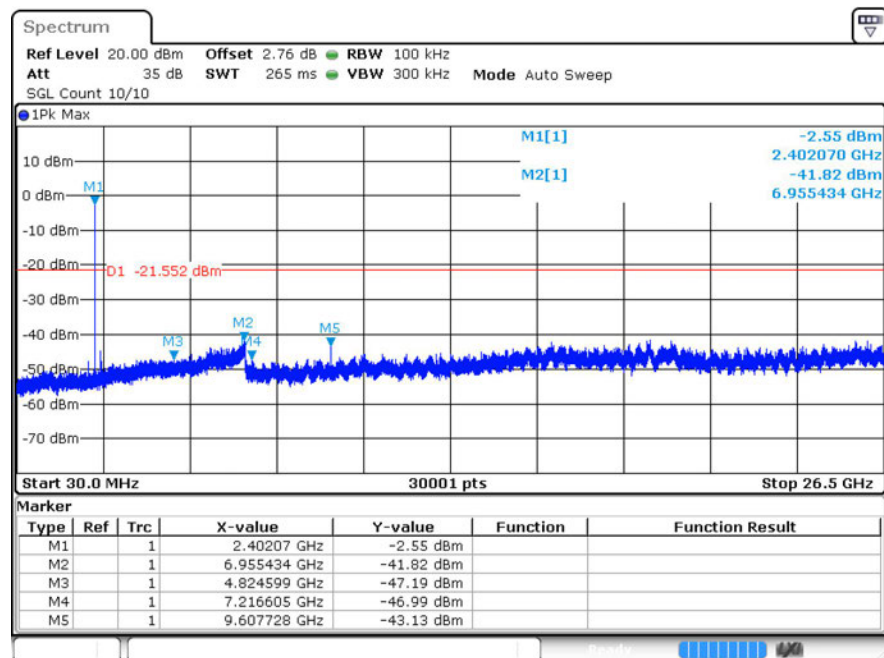
7.2 Test Graphs

GFSK_LCH_Graphs

Pref

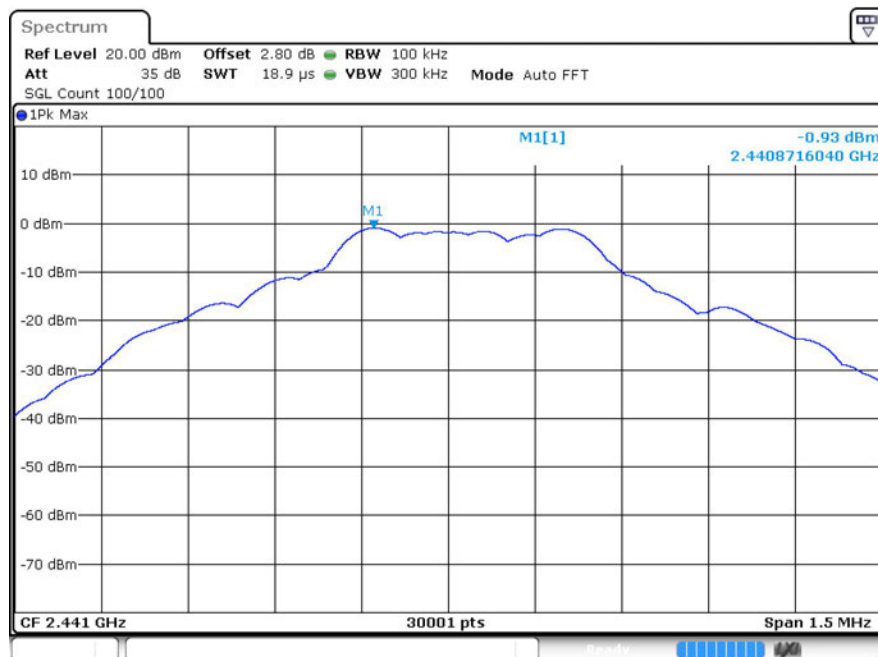


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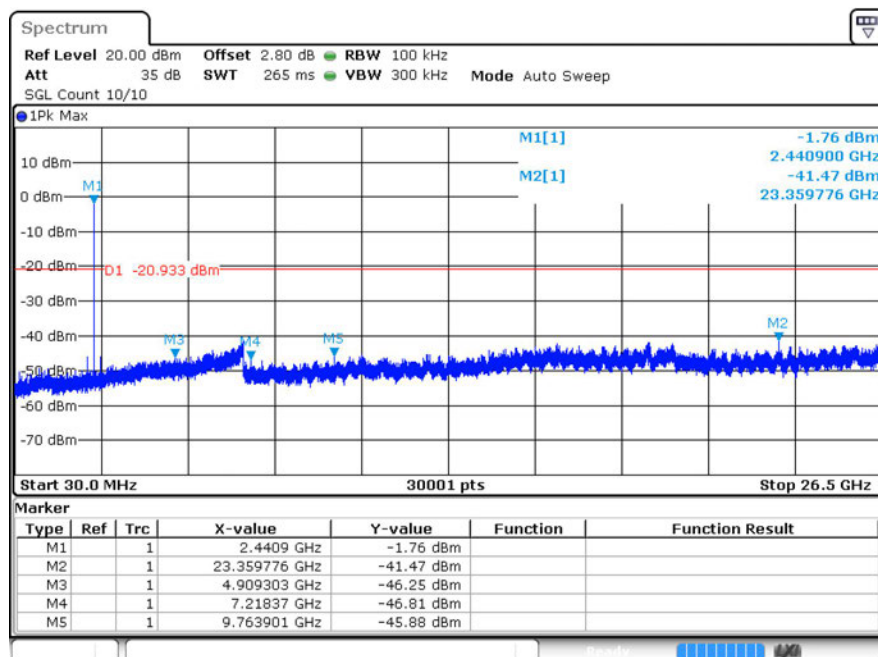


GFSK_MCH_Graphs

Pref

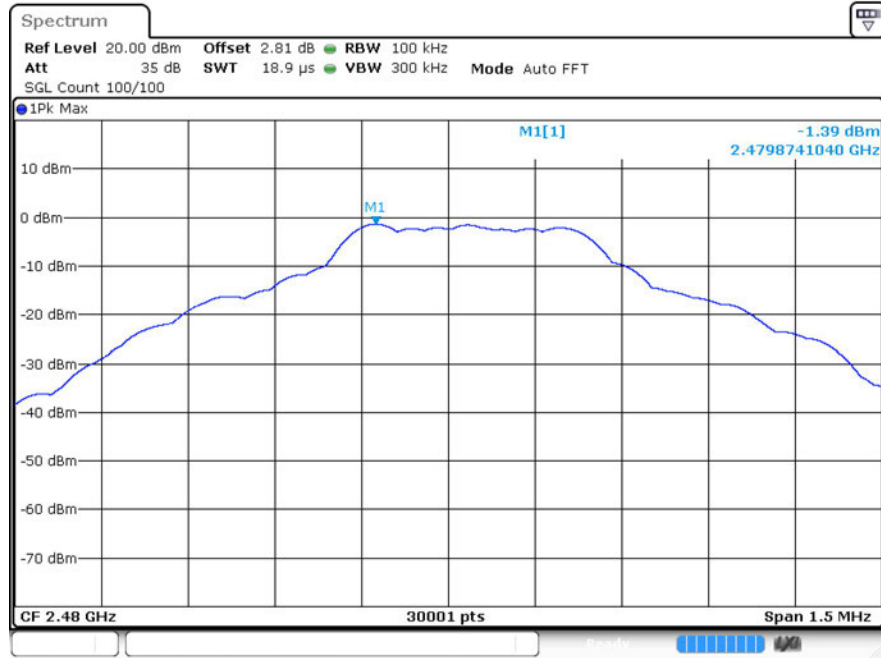


Puw

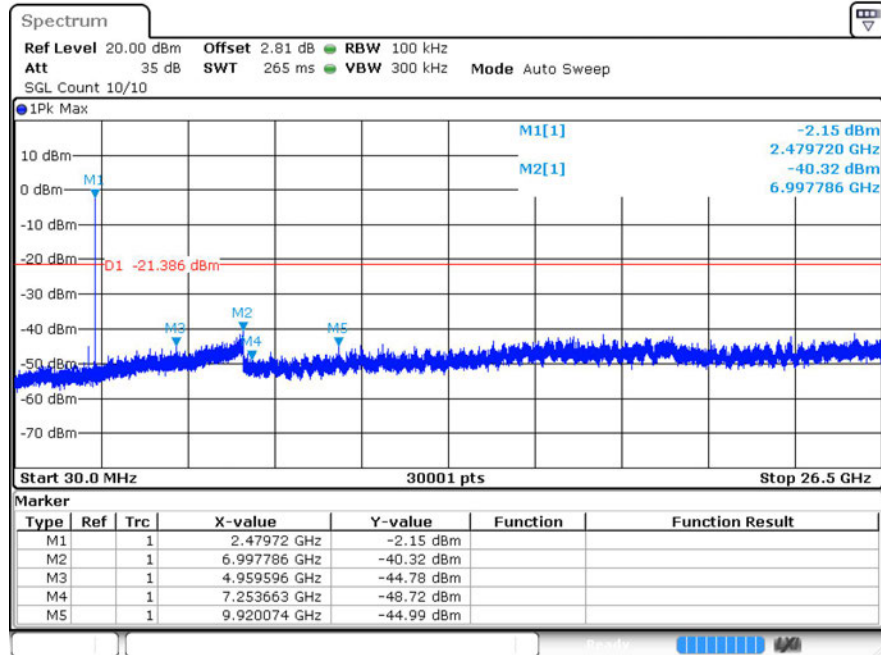


GFSK_HCH_Graphs

Pref

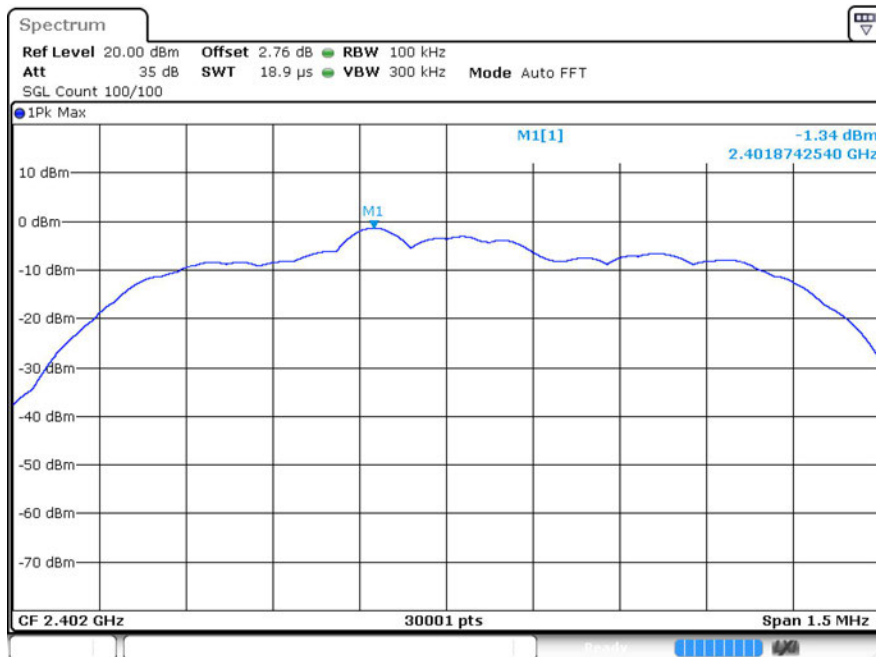


Puw

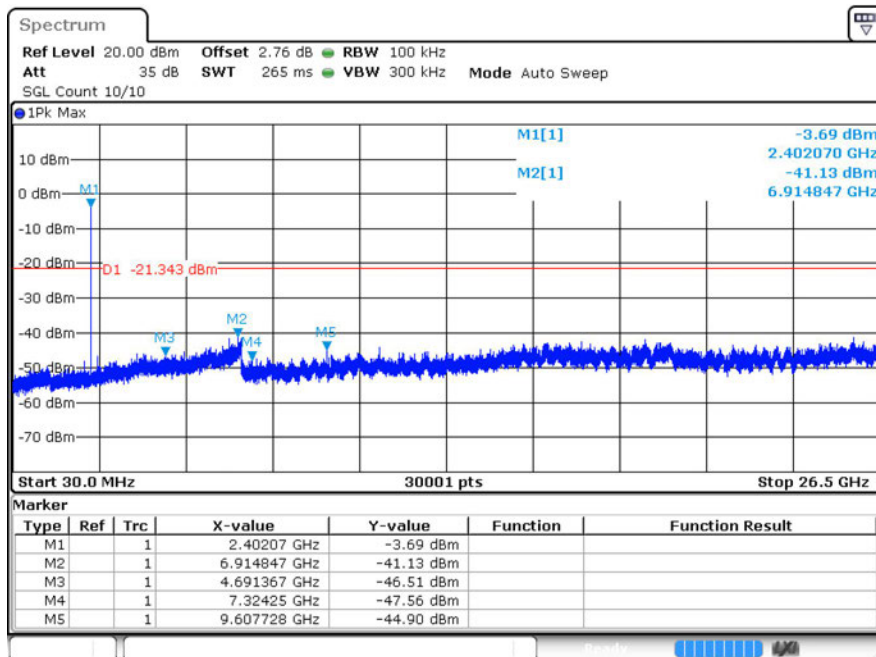


$\pi/4$ DQPSK_LCH_Graphs

Pref

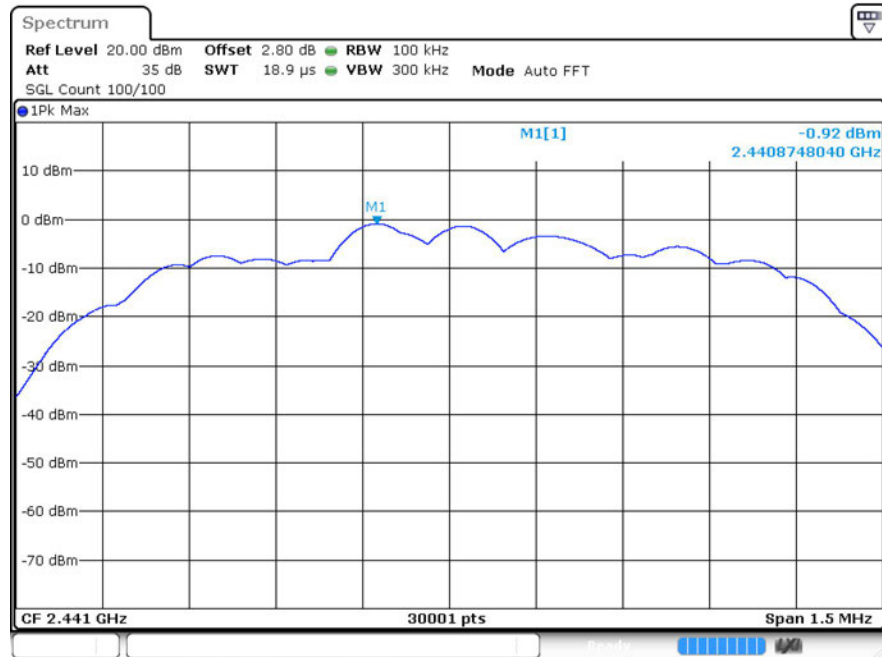


Puw

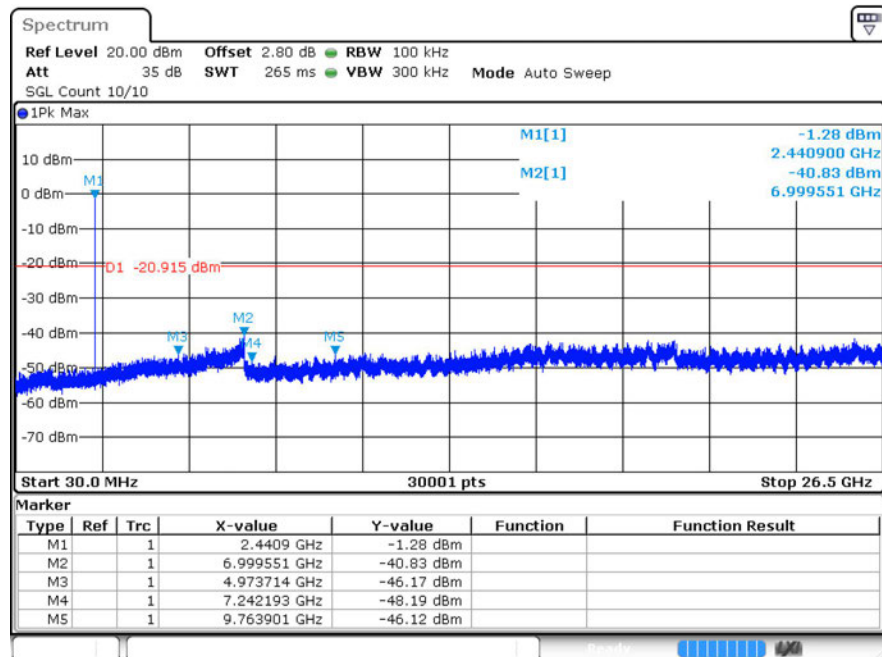


π /4DQPSK_MCH_Graphs

Pref

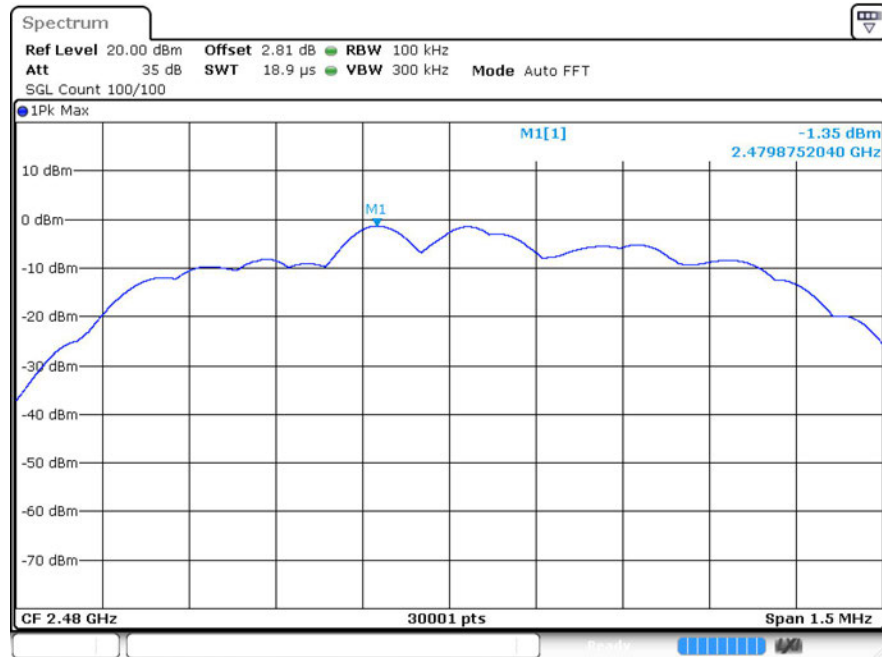


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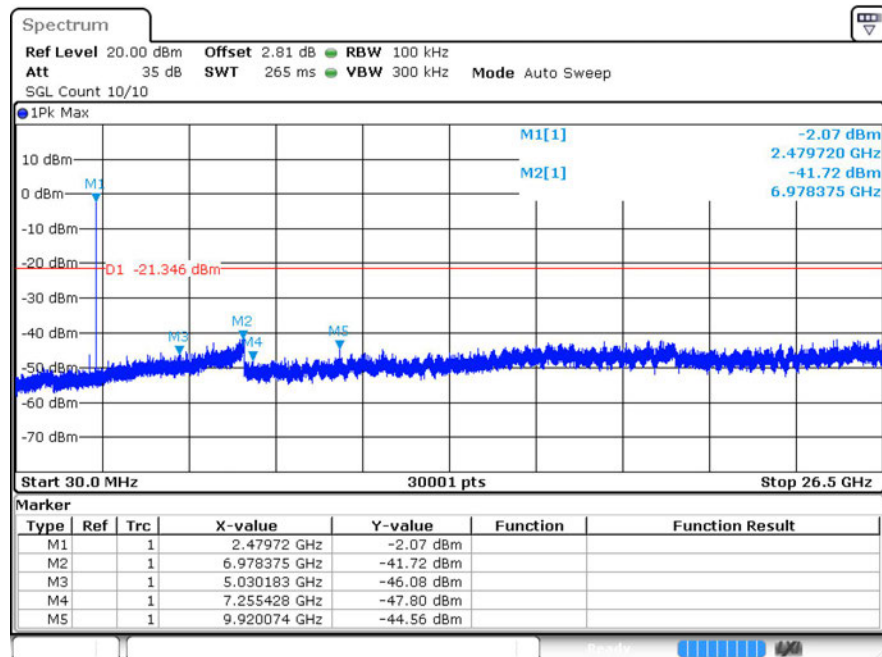


$\pi/4$ DQPSK_HCH_Graphs

Pref



Puw

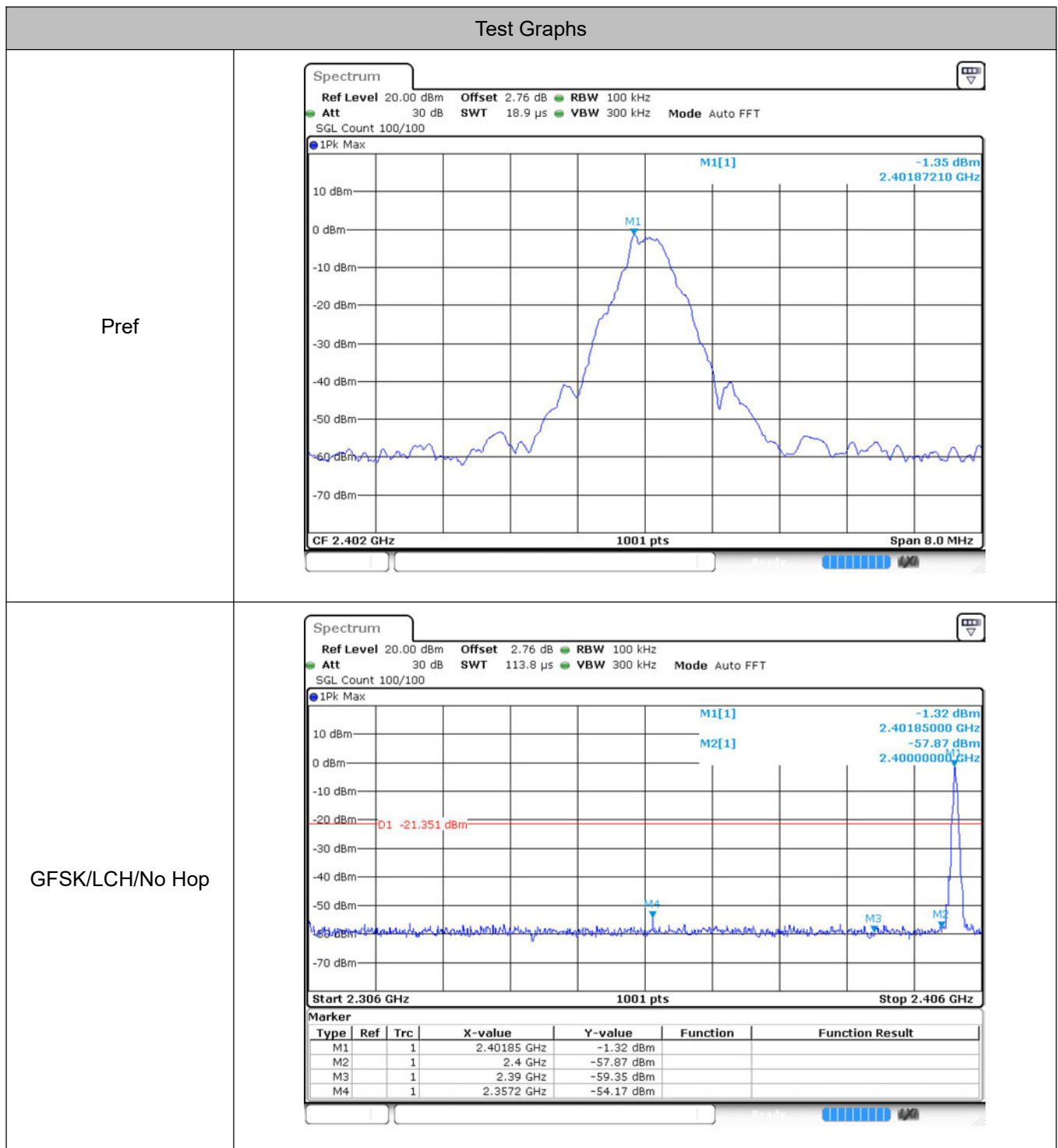


8 Band-edge for RF Conducted Emissions

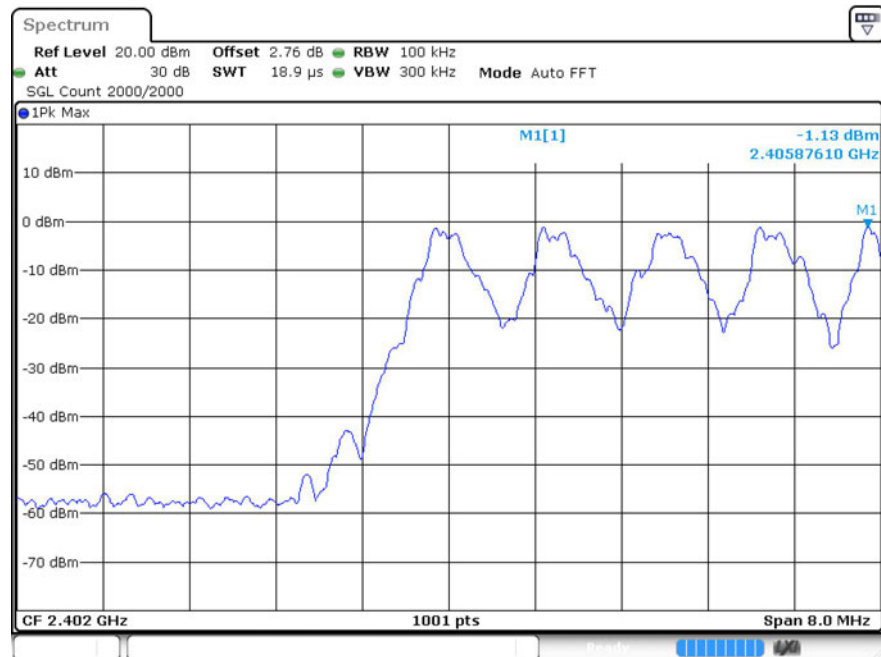
8.1 Test Result

Mode	Channel	Carrier Frequency [MHz]	Frequency Hopping	Max Spurious Level [dBc]	Limit [dBc]	Verdict
GFSK	LCH	2402	Off	-52.82	-20	Pass
			On	-51.61	-20	Pass
	HCH	2480	Off	-53.79	-20	Pass
			On	-51.78	-20	Pass
$\pi/4$ DQPSK	LCH	2402	Off	-54.8	-20	Pass
			On	-52	-20	Pass
	HCH	2480	Off	-53.98	-20	Pass
			On	-52.97	-20	Pass

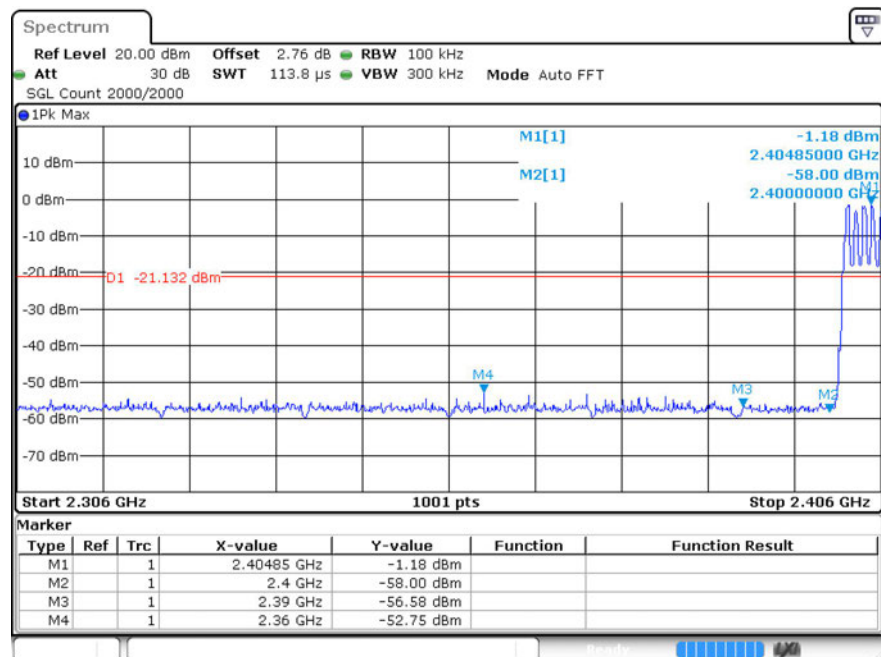
8.2 Test Graphs



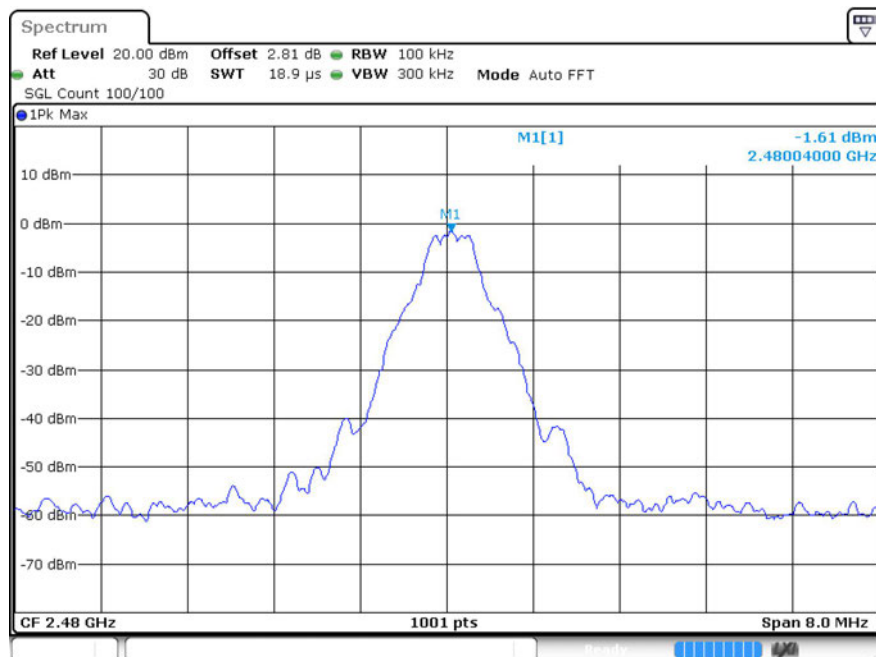
Ref



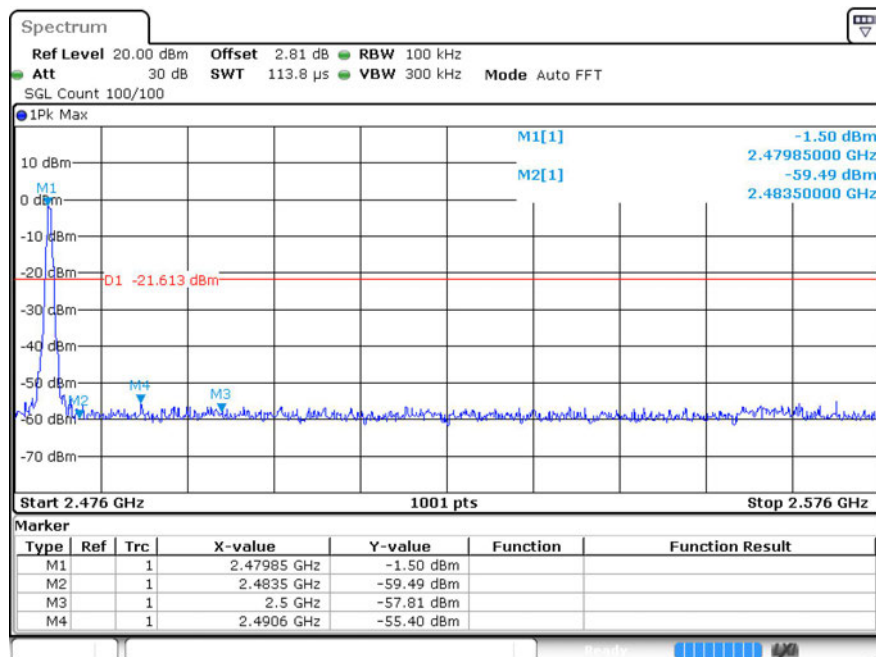
GFSK/LCH/Hop



Ref



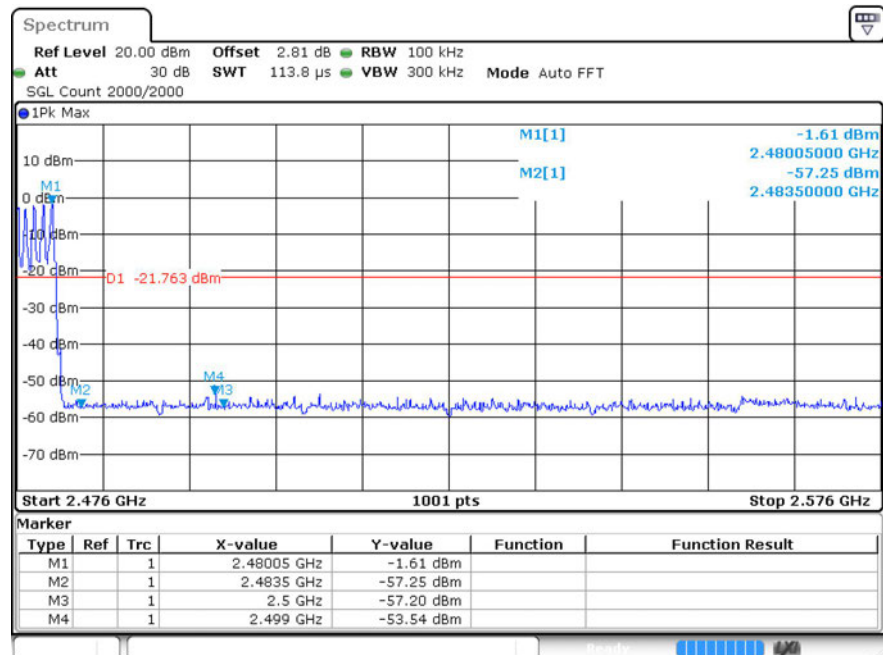
GFSK/HCH/No Hop



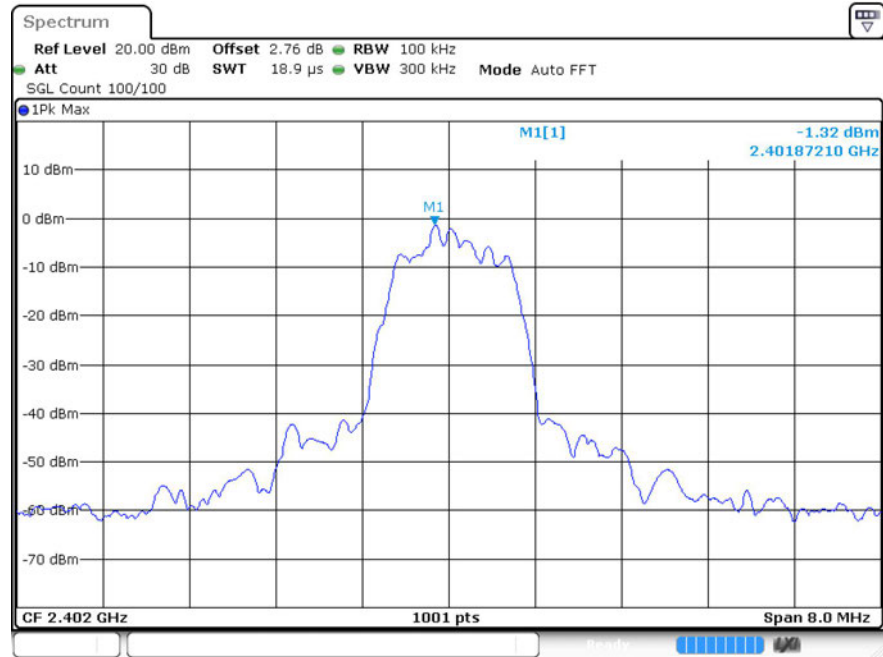
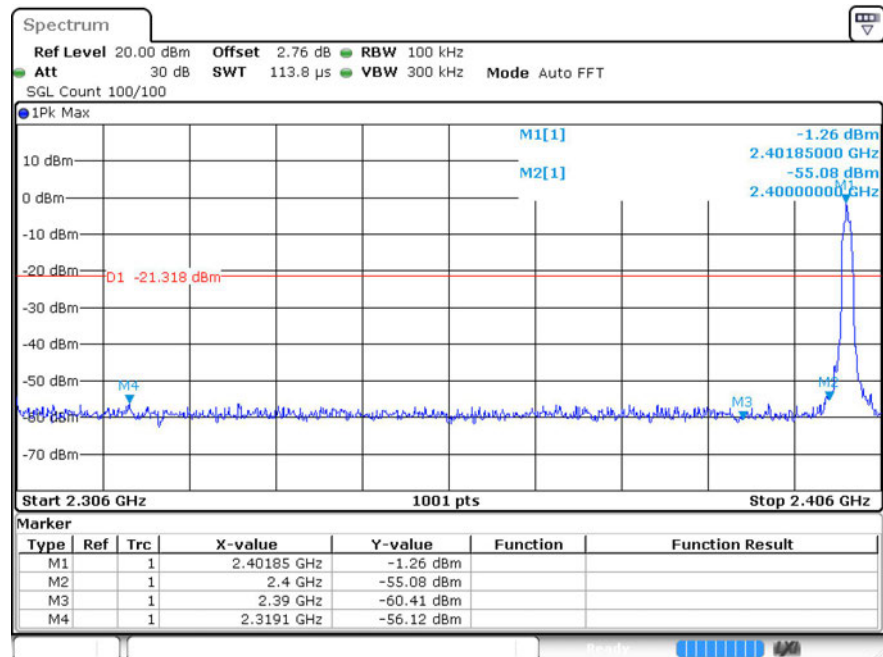
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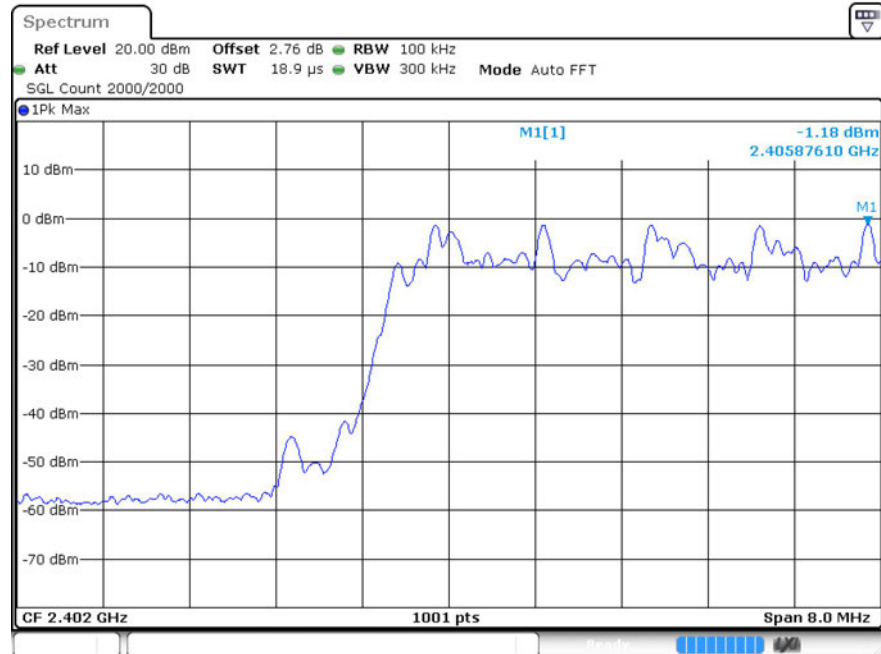
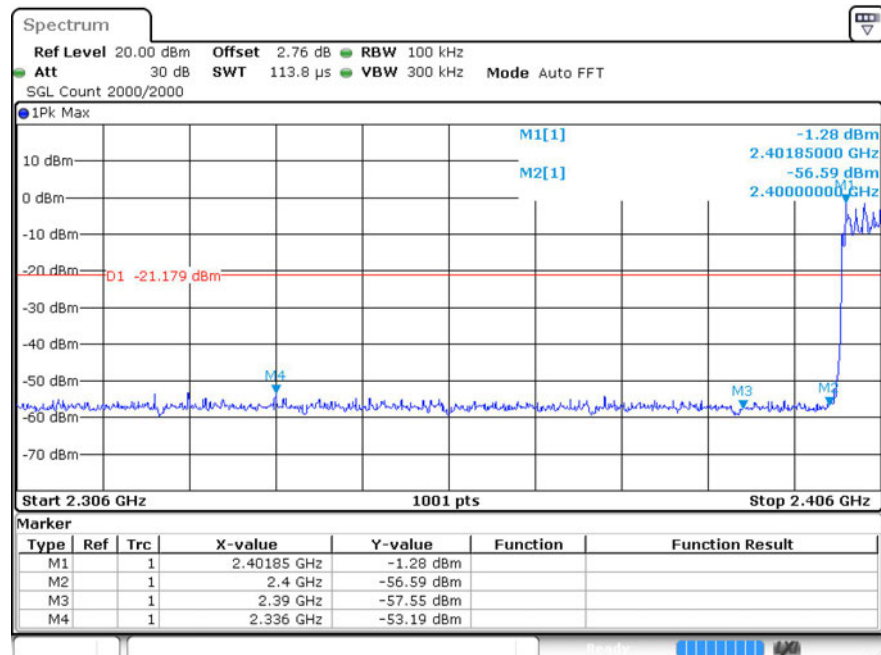
GFSK/HCH/Hop

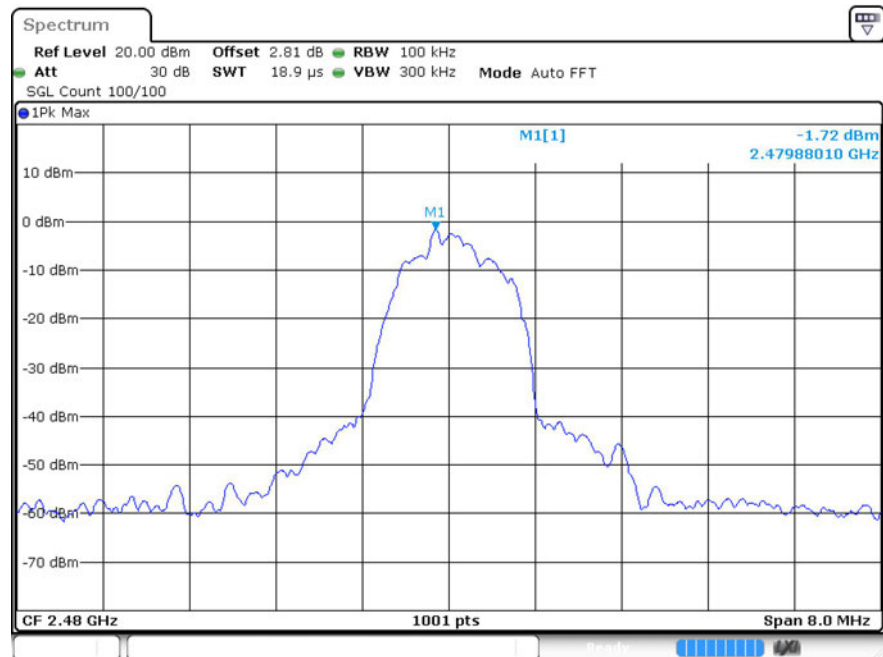


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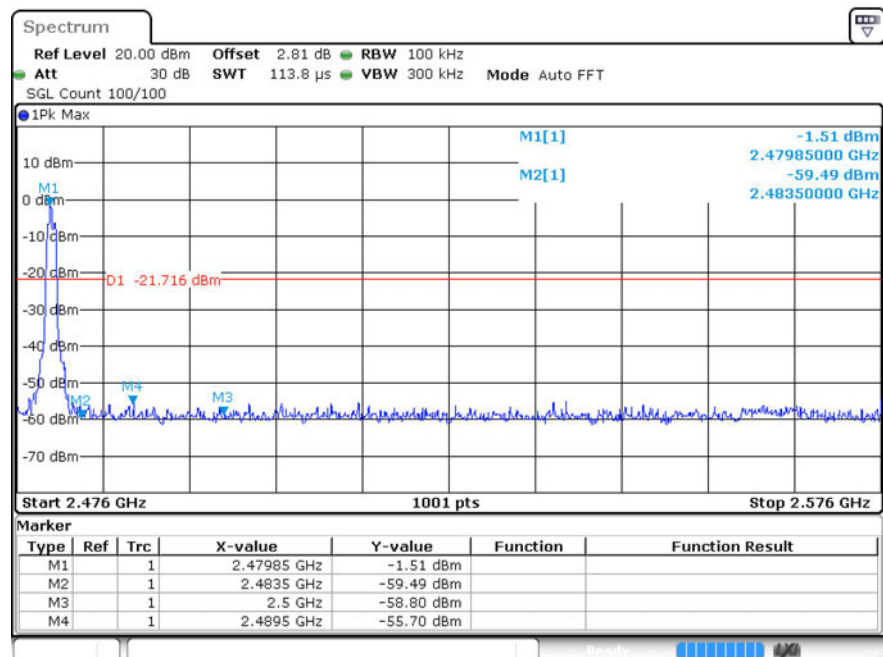

 $\pi/4$ DQPSK/LCH/No
Hop


Ref

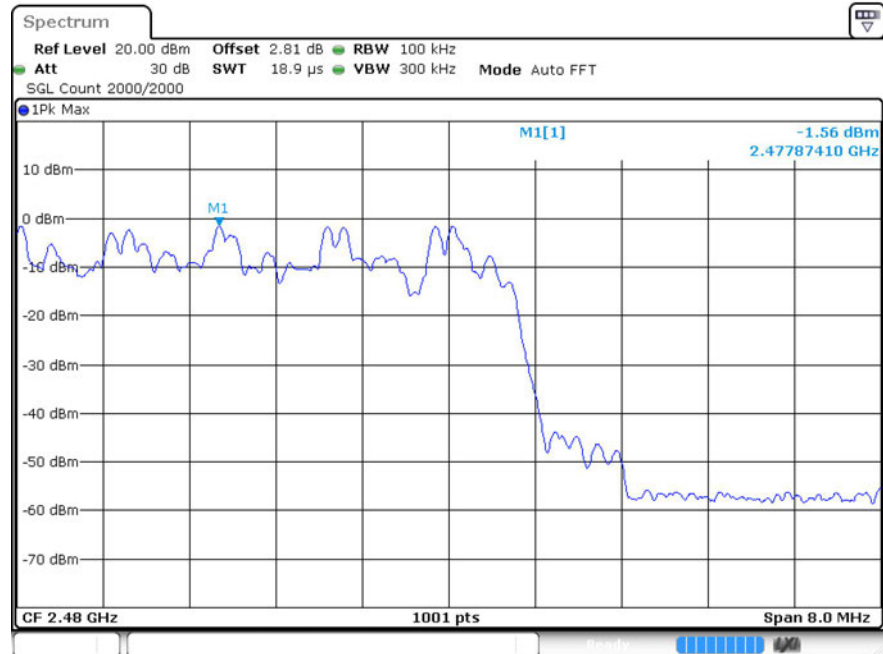
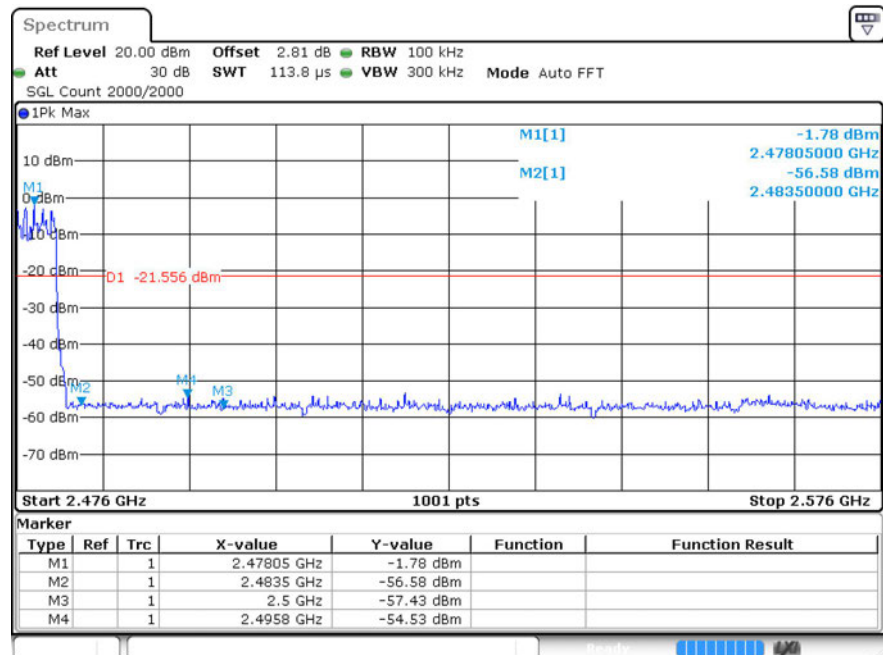

 $\pi/4$ DQPSK/LCH/Hop




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



Ref


 $\pi/4$ DQPSK/HCH/Hop


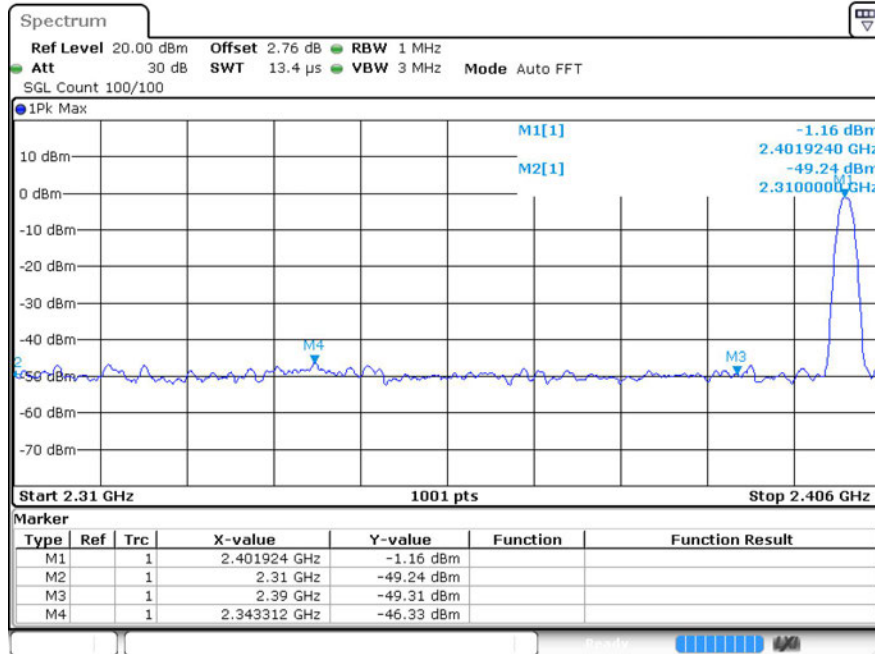
9 Restrict-band band-edge measurements

9.1 Test Result

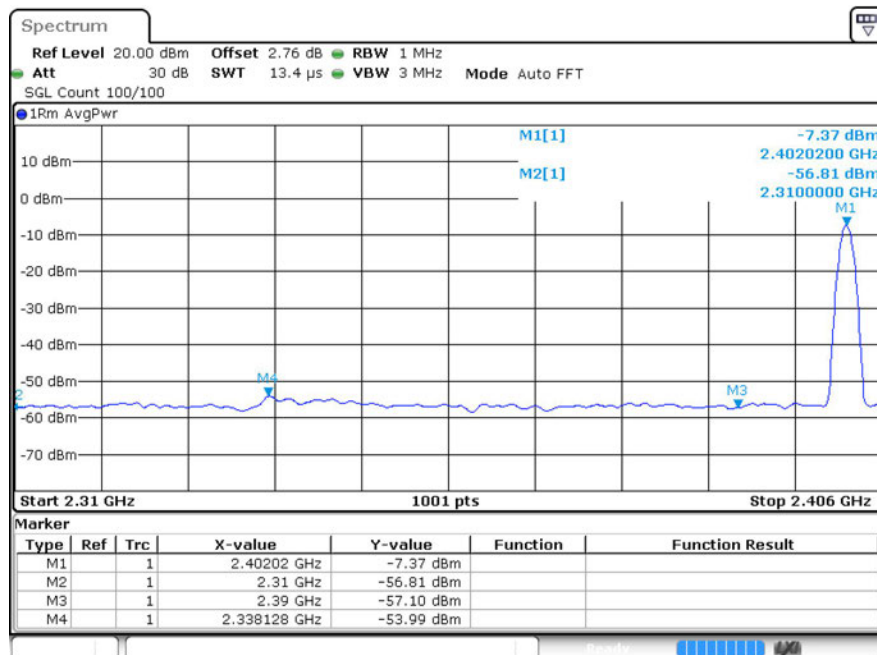
Test Mode	Hopping	Freq.	Power [dBm]	Gain	Duty Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-49.24	2.7	-	48.69	PEAK	74	Pass
	Off	2310.0	-56.81	2.7	5.06	46.18	AV	54	Pass
	Off	2343.312	-46.33	2.7	-	51.6	PEAK	74	Pass
	Off	2338.128	-53.99	2.7	5.06	49	AV	54	Pass
	Off	2390.0	-49.31	2.7	-	48.62	PEAK	74	Pass
	Off	2390.0	-57.1	2.7	5.06	45.89	AV	54	Pass
	Off	2483.5	-49.64	2.7	-	48.29	PEAK	74	Pass
	Off	2483.5	-55.86	2.7	5.06	47.13	AV	54	Pass
	Off	2486.92	-47.59	2.7	-	50.34	PEAK	74	Pass
	Off	2485	-55.75	2.7	5.06	47.24	AV	54	Pass
	Off	2500.0	-51.1	2.7	-	46.83	PEAK	74	Pass
	Off	2500.0	-56.36	2.7	5.06	46.63	AV	54	Pass
$\pi/4$ DQPSK	Off	2310.0	-49.28	2.7	-	48.65	PEAK	74	Pass
	Off	2310.0	-56.35	2.7	4.95	46.53	AV	54	Pass
	Off	2338.128	-46.18	2.7	-	51.75	PEAK	74	Pass
	Off	2338.608	-53.83	2.7	4.95	49.05	AV	54	Pass
	Off	2390.0	-50.78	2.7	-	47.15	PEAK	74	Pass
	Off	2390.0	-56.51	2.7	4.95	46.37	AV	54	Pass
	Off	2483.5	-50.19	2.7	-	47.74	PEAK	74	Pass
	Off	2483.5	-56.18	2.7	4.95	46.7	AV	54	Pass
	Off	2493.544	-47.98	2.7	-	49.95	PEAK	74	Pass
	Off	2495.92	-55.65	2.7	4.95	47.23	AV	54	Pass
	Off	2500.0	-50.57	2.7	-	47.36	PEAK	74	Pass
	Off	2500.0	-56.26	2.7	4.95	46.62	AV	54	Pass

9.2 Test Graphs

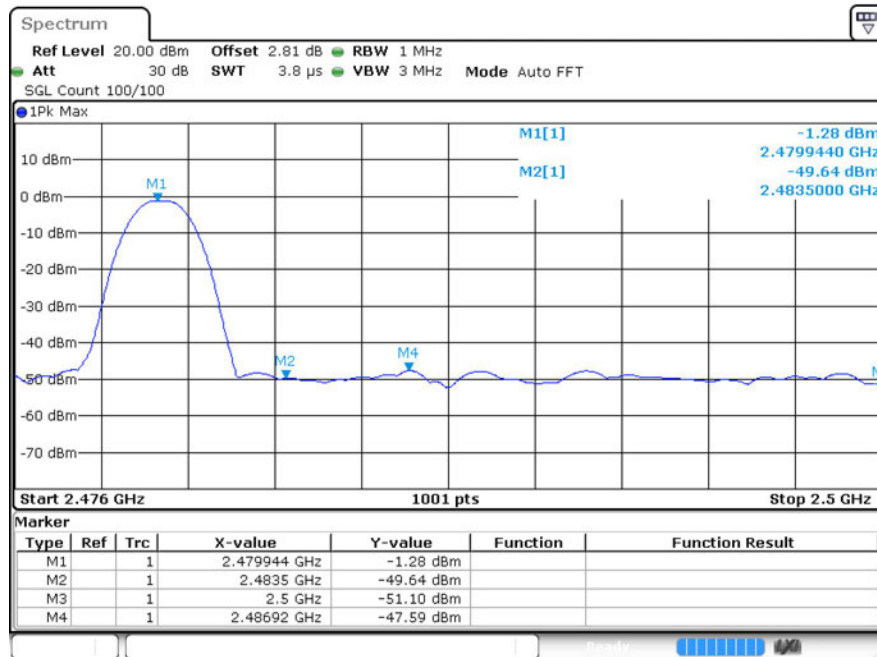
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (Low Channel)



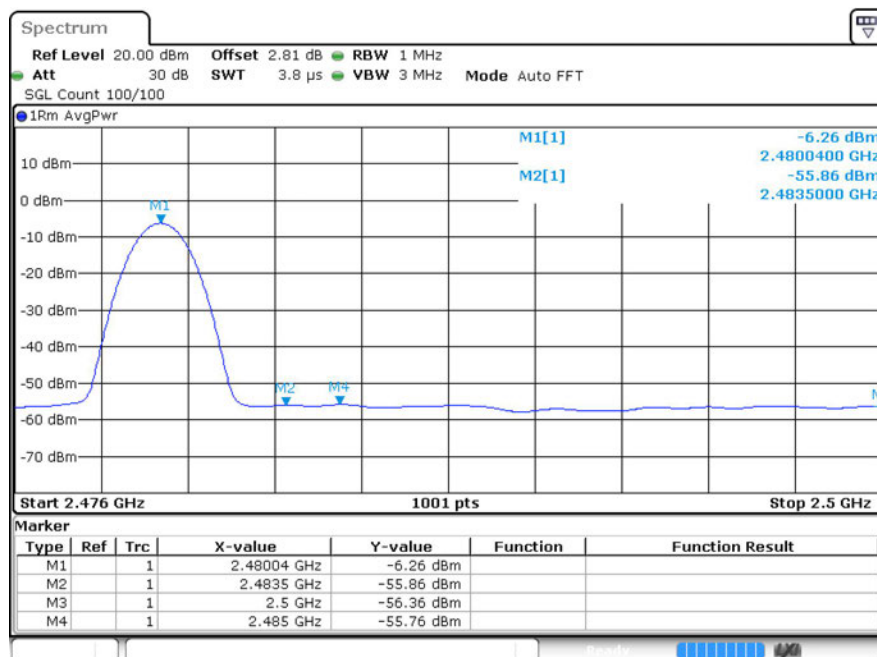
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (Low Channel)



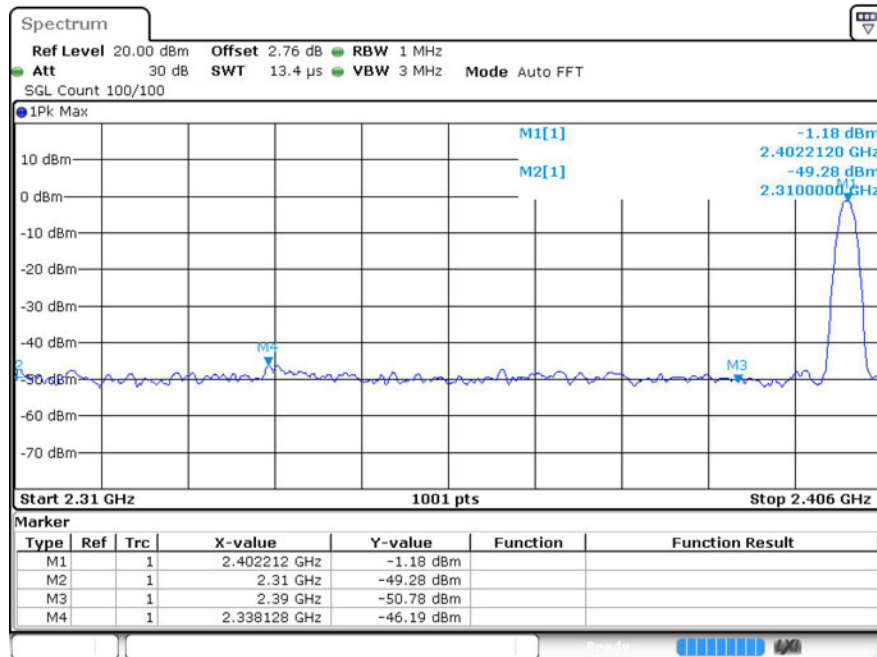
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (High Channel)



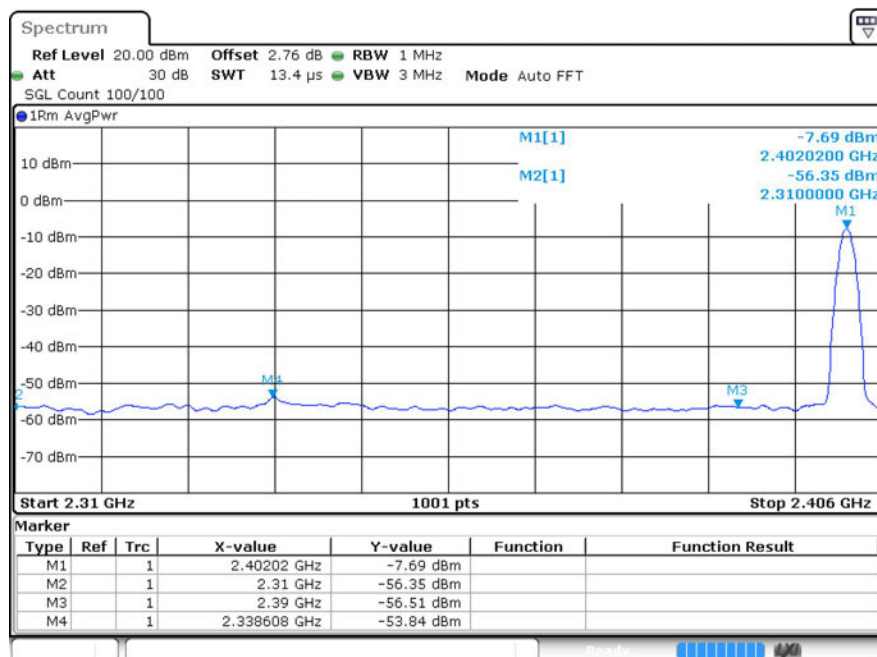
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (High Channel)



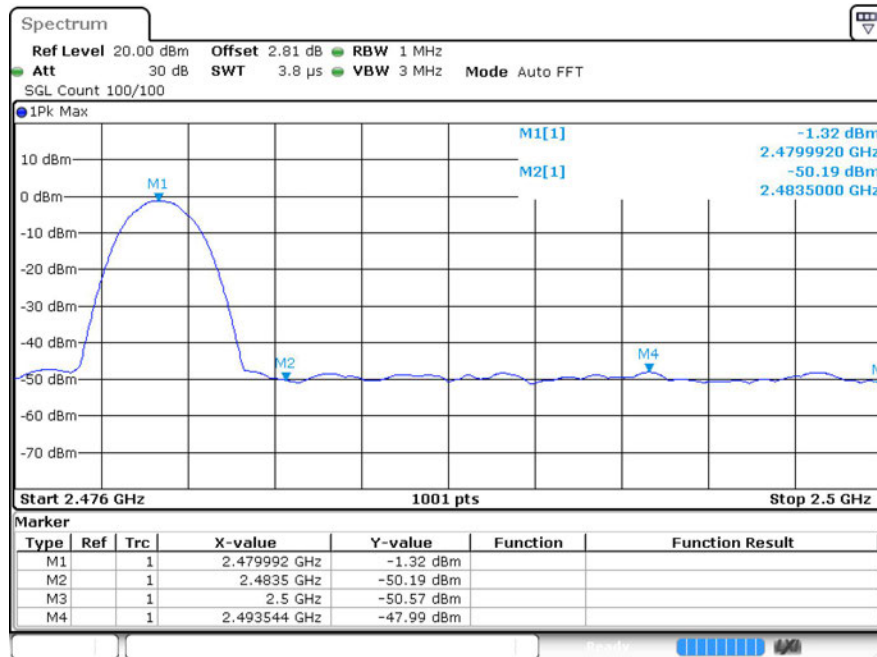
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (Low Channel)



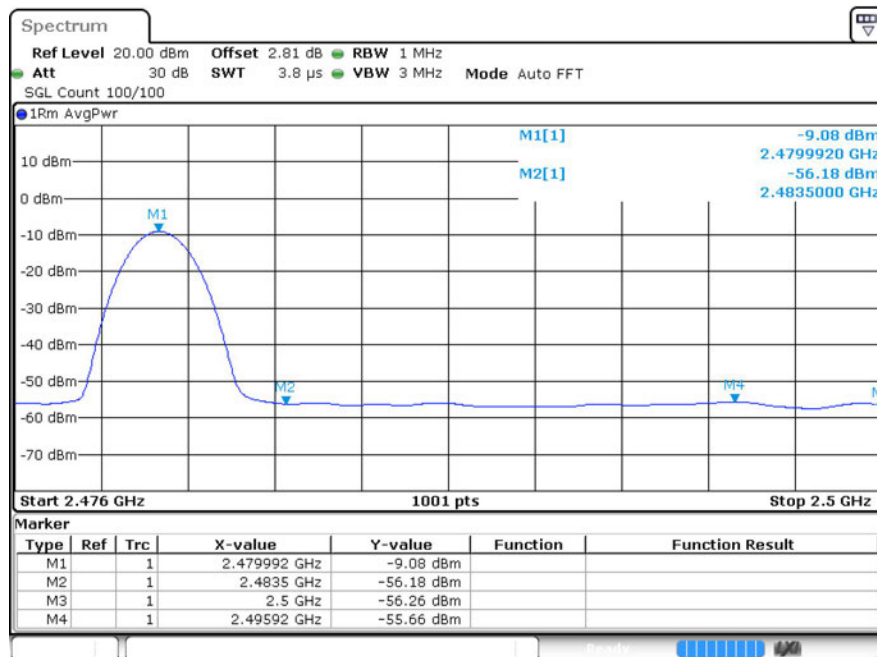
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (Low Channel)



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---