Appendix A

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

Product Name: Portable Bluetooth Speaker

Trade Mark: EMERSON

Test Model: EMERSON EAS-3000

Environmental Conditions

Temperature:	24.2℃
Relative Humidity:	52.0%
ATM Pressure:	101Kpa
Test Engineer:	Simba Huang
Supervised by:	Seal Chen

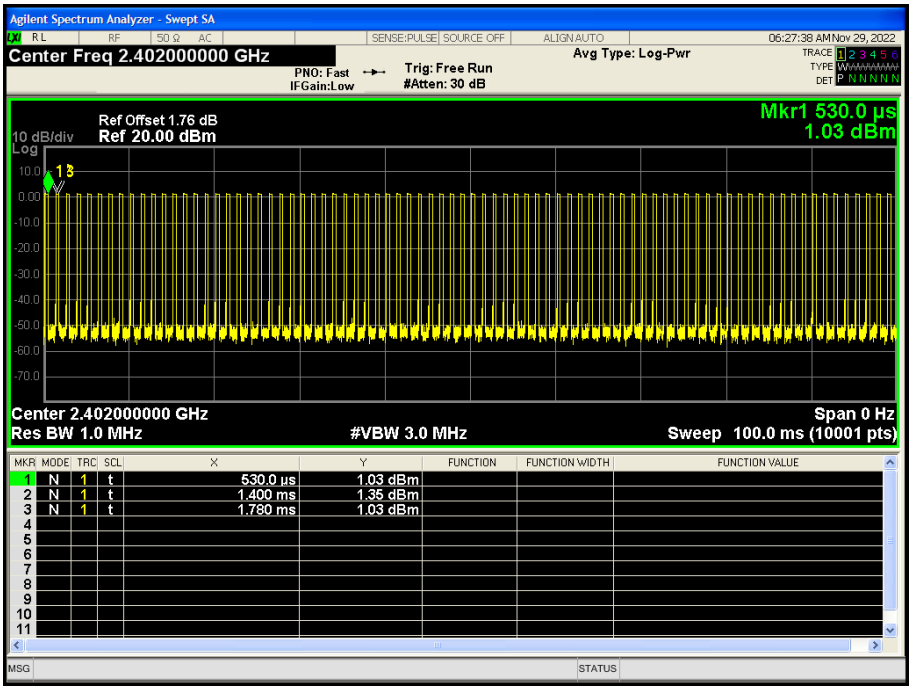
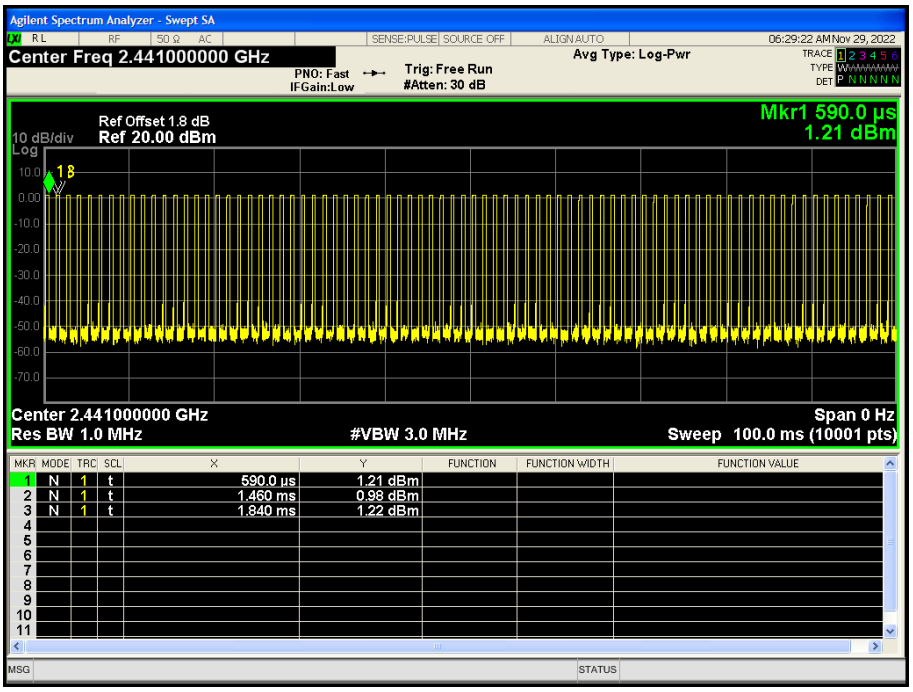
Contents

1 Duty Cycle

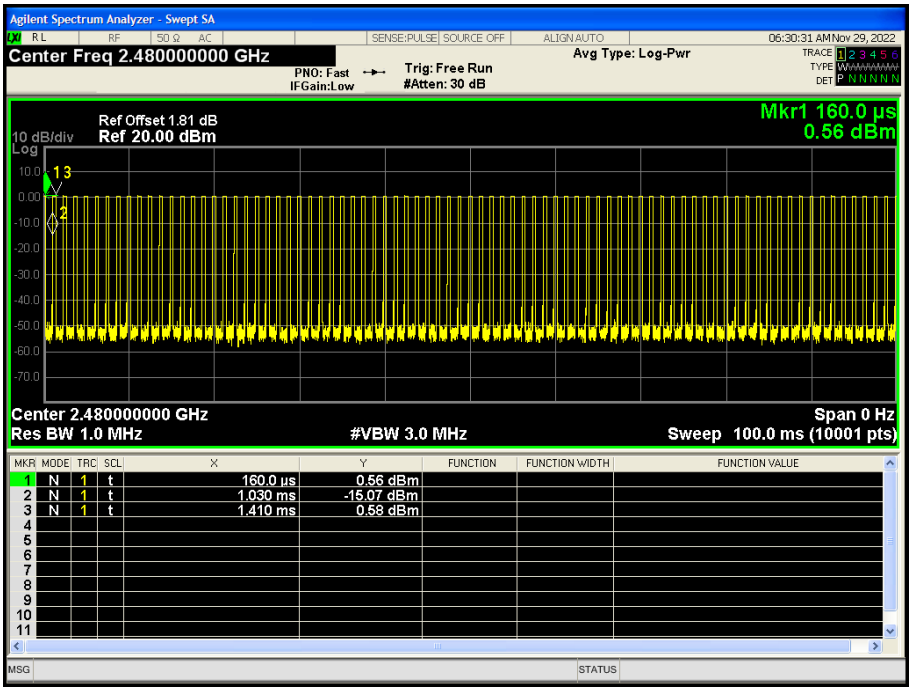
1.1 Test Result

Mode	Frequency (MHz)	Duty Cycle (%)	1/T (kHz)
1-DH1	2402	31.2	2.63
1-DH1	2441	31.2	2.63
1-DH1	2480	30.65	2.63
2-DH1	2402	31.9	2.63
2-DH1	2441	32	2.56
2-DH1	2480	32	2.56

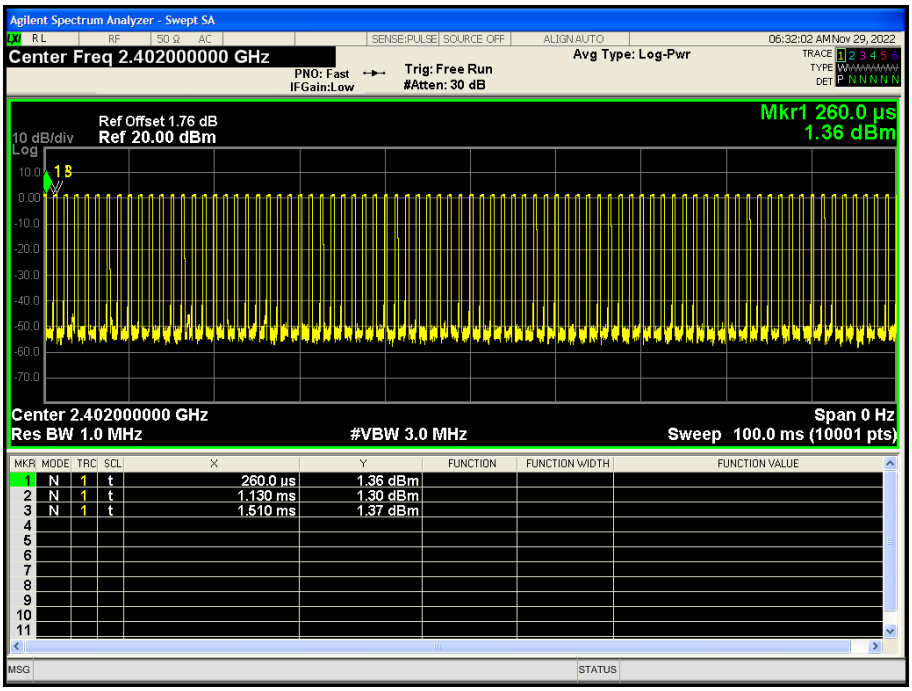
1.2 Test Graphs

Test Graphs
1-DH1 2402MHz

1-DH1 2441MHz


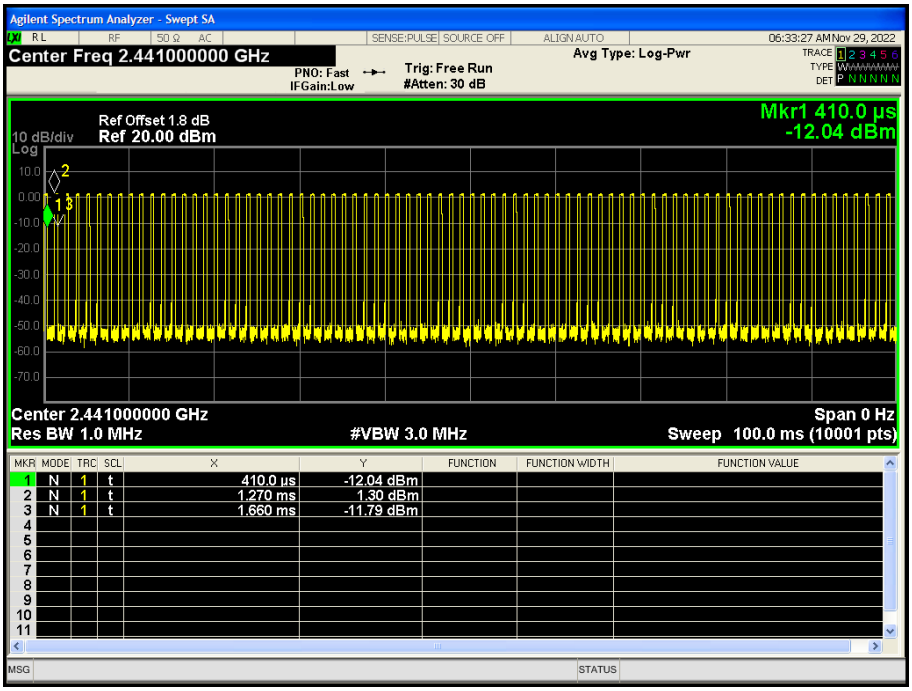
1-DH1 2480MHz



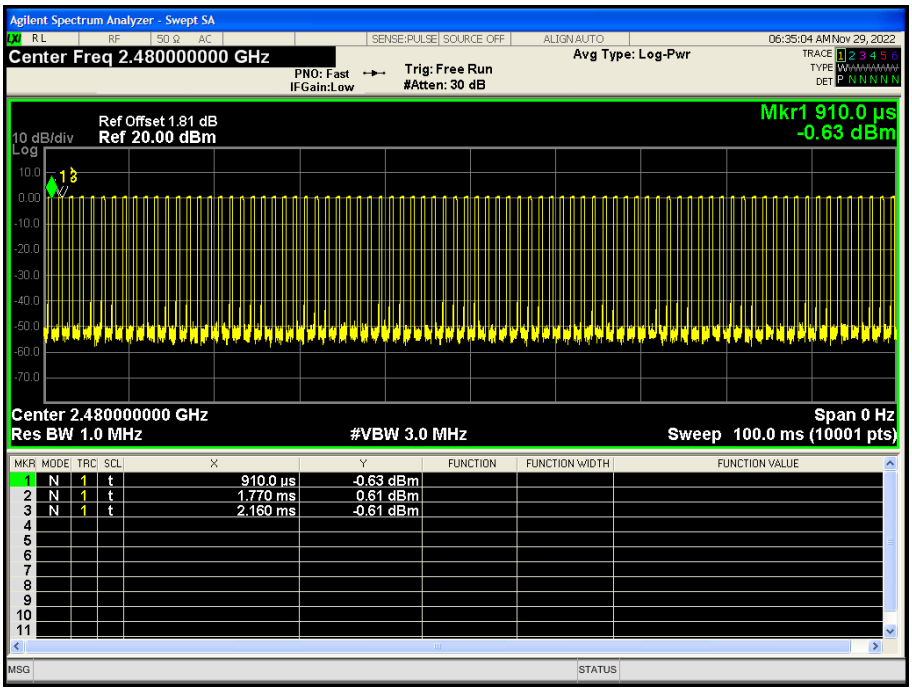
2-DH1 2402MHz



2-DH1 2441MHz



2-DH1 2480MHz

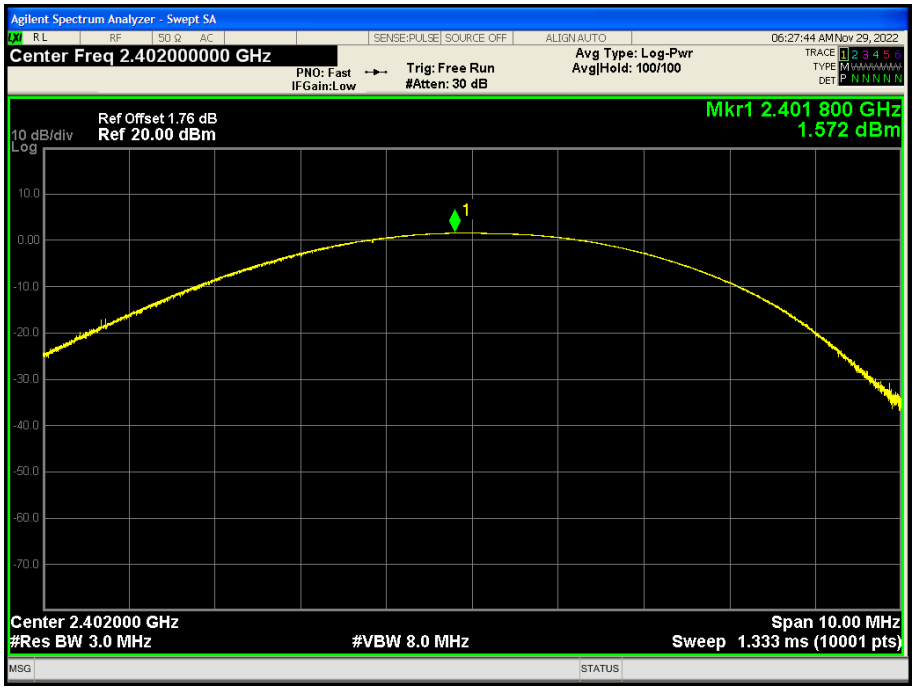
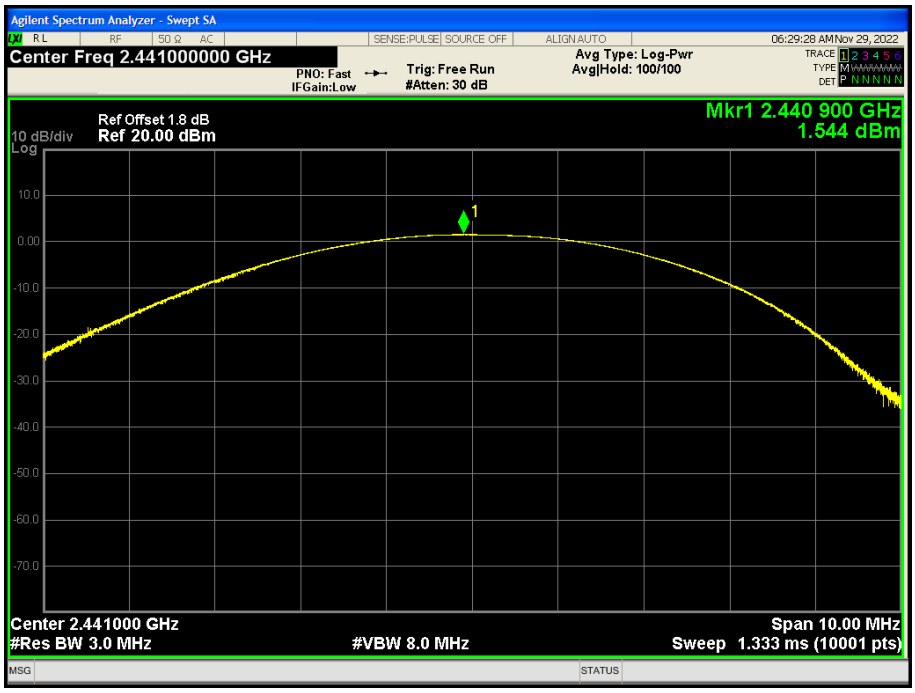


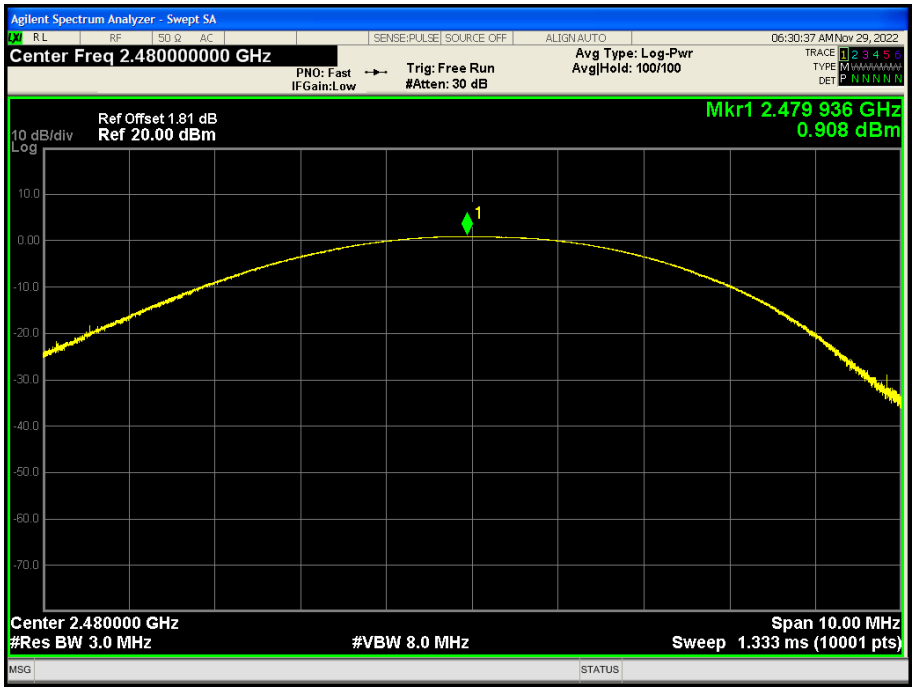
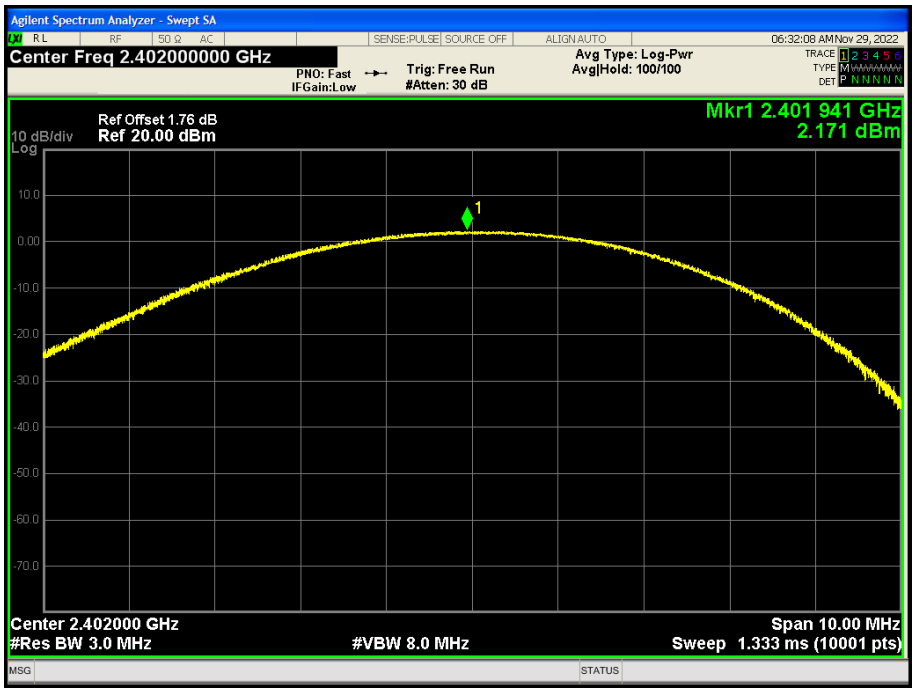
2 Maximum Conducted Peak Output Power

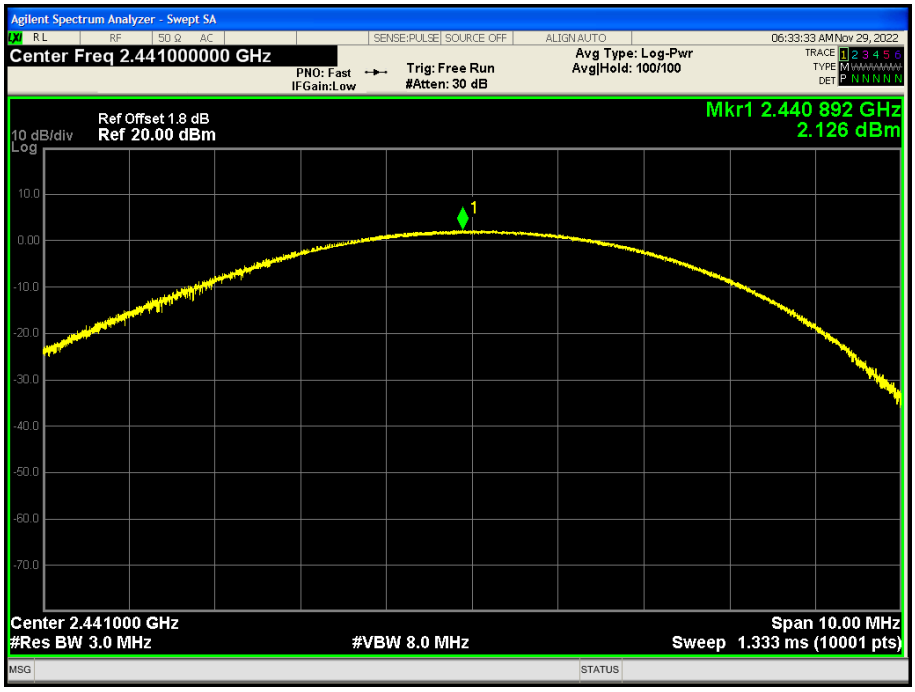
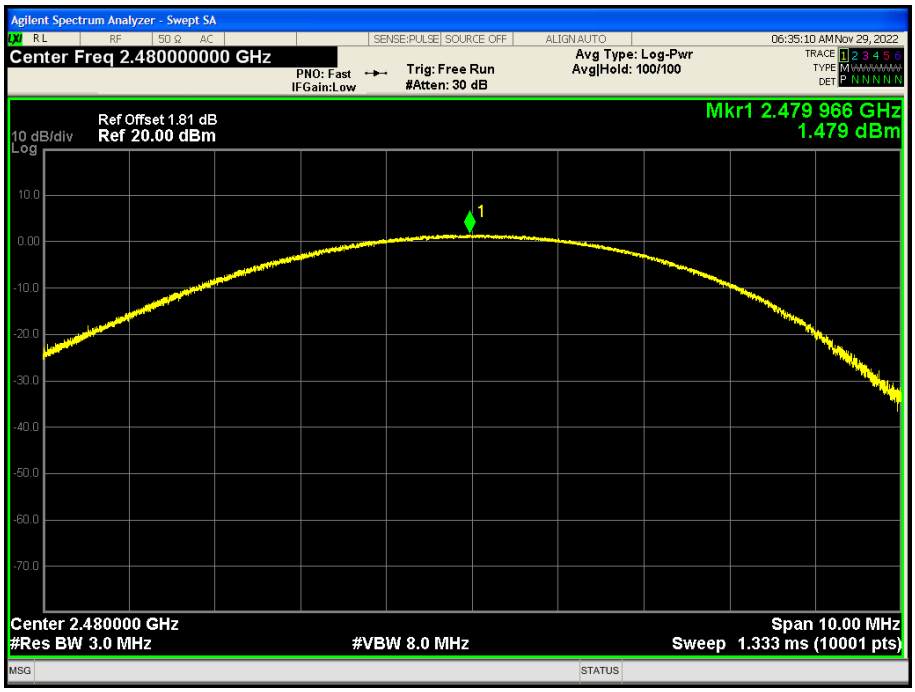
2.1 Test Result

Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	1.57	21	Pass
	MCH	1.54	21	Pass
	HCH	0.91	21	Pass
π/4DQPSK	LCH	2.17	21	Pass
	MCH	2.13	21	Pass
	HCH	1.48	21	Pass

2.2 Test Graphs

Test Graphs	
GFSK/LCH	
GFSK/MCH	

GFSK/HCH	
π/4DQPSK/LCH	

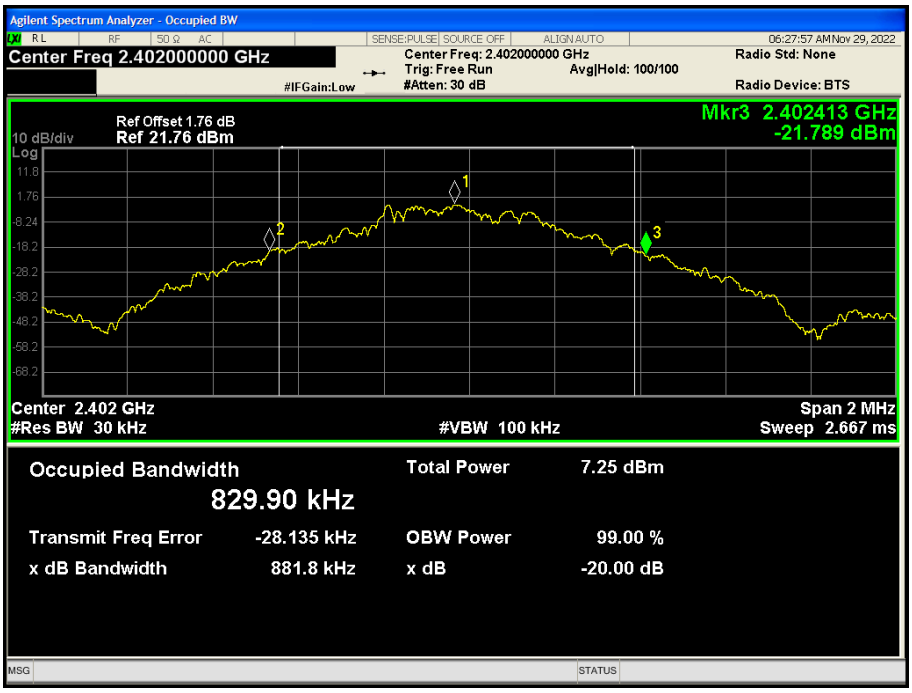
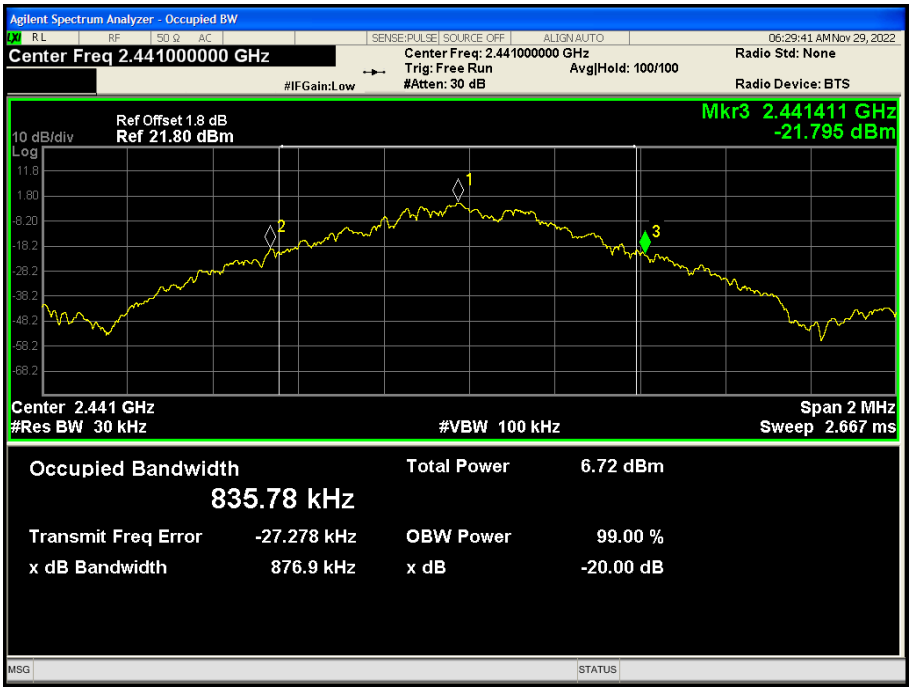
π/4DQPSK/MCH	
π/4DQPSK/HCH	

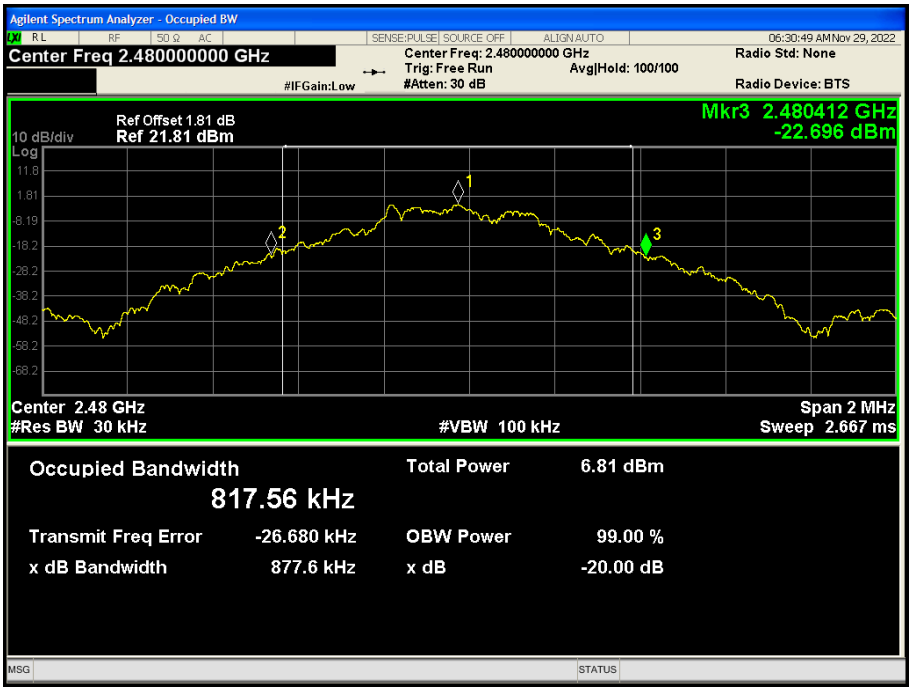
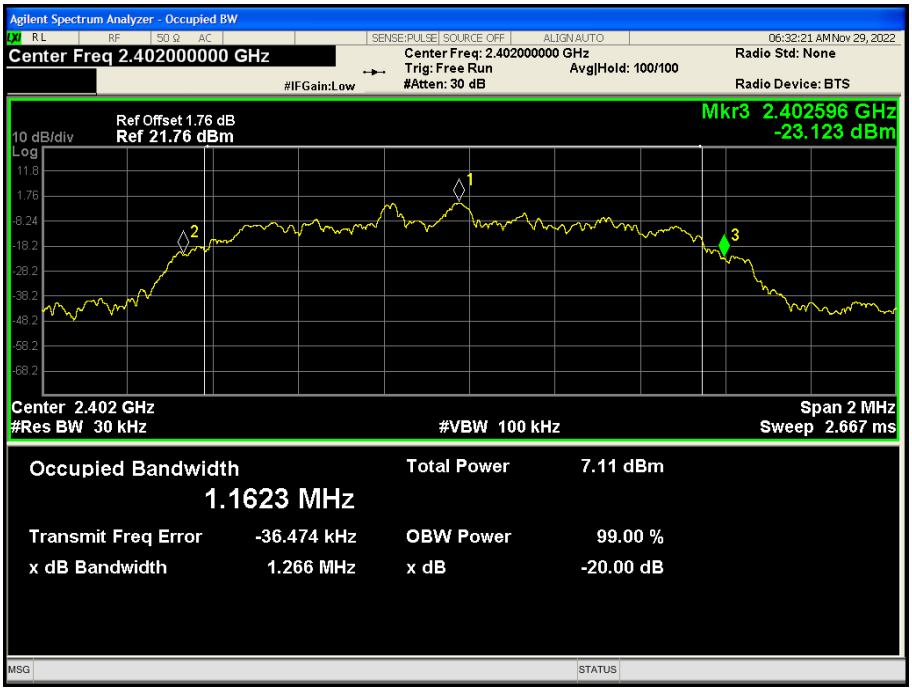
3 20dB Bandwidth

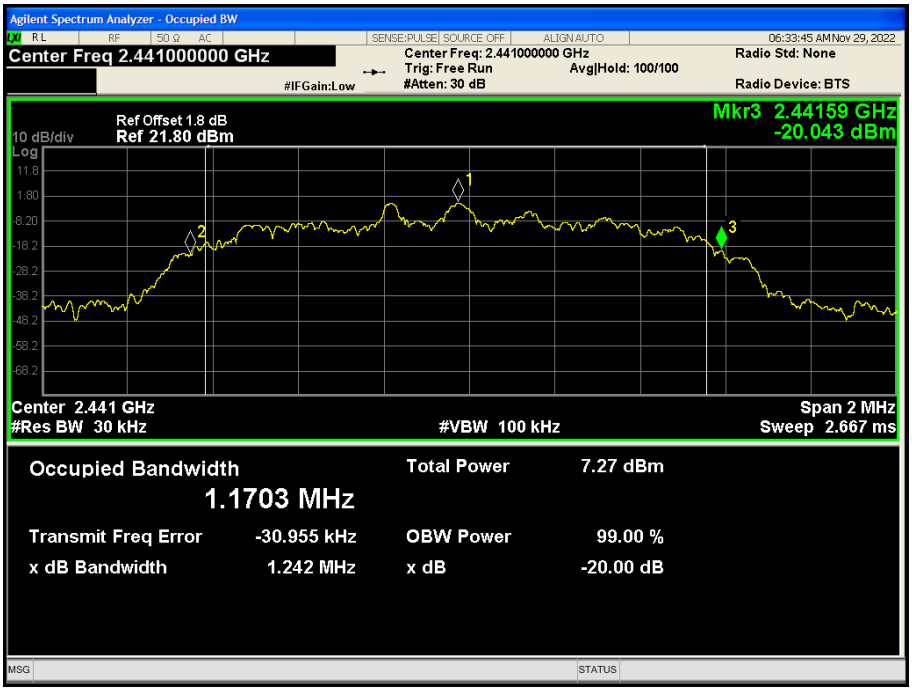
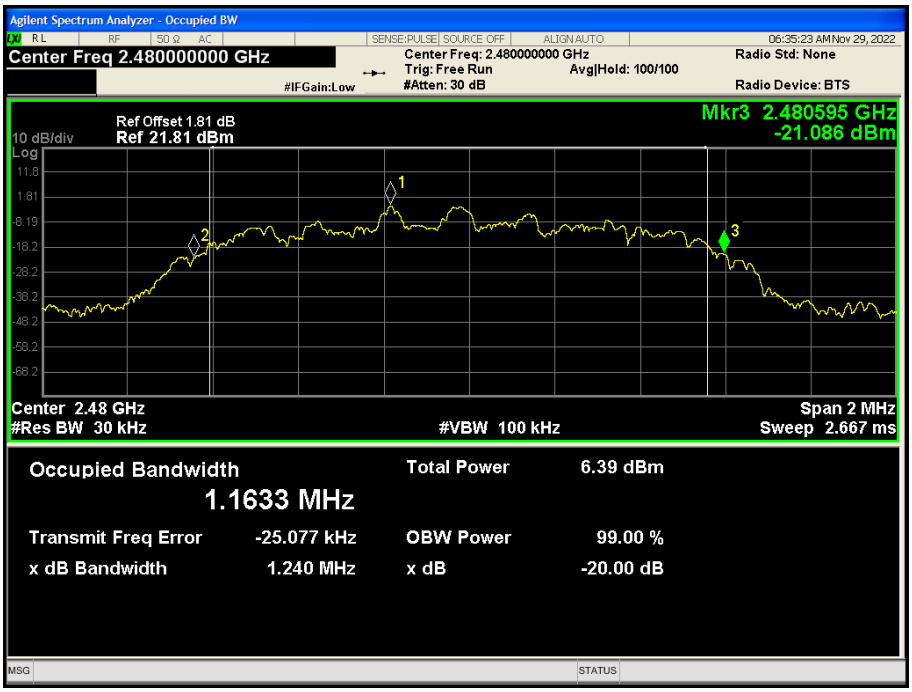
3.1 Test Result

Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.882	Not Specified	Pass
	MCH	0.877	Not Specified	Pass
	HCH	0.878	Not Specified	Pass
π/4DQPSK	LCH	1.266	Not Specified	Pass
	MCH	1.242	Not Specified	Pass
	HCH	1.24	Not Specified	Pass

3.2 Test Graphs

Test Graphs	
GFSK/LCH	
GFSK/MCH	

GFSK/HCH	
π/4DQPSK/LCH	

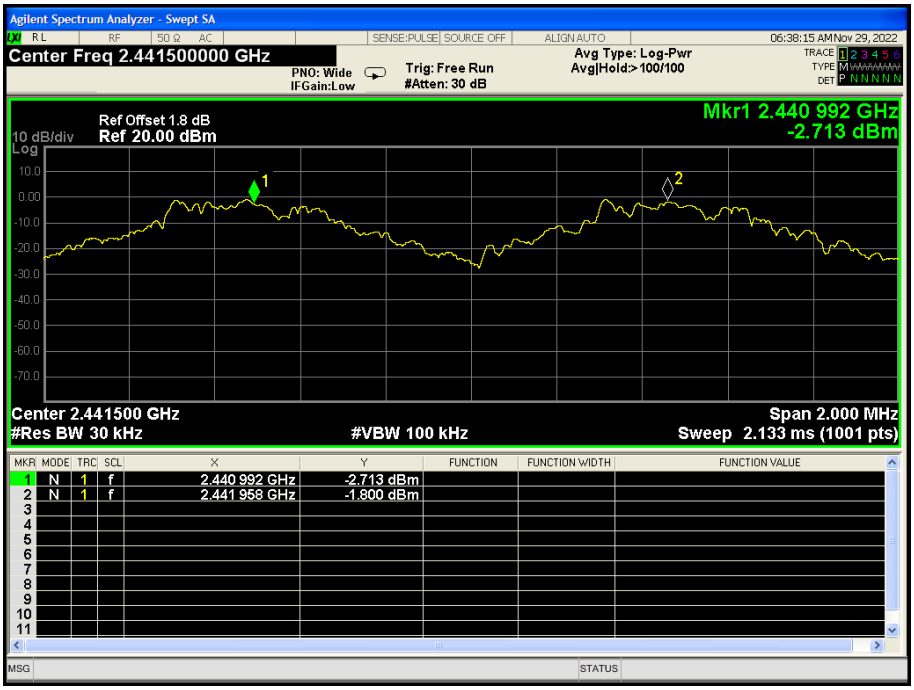
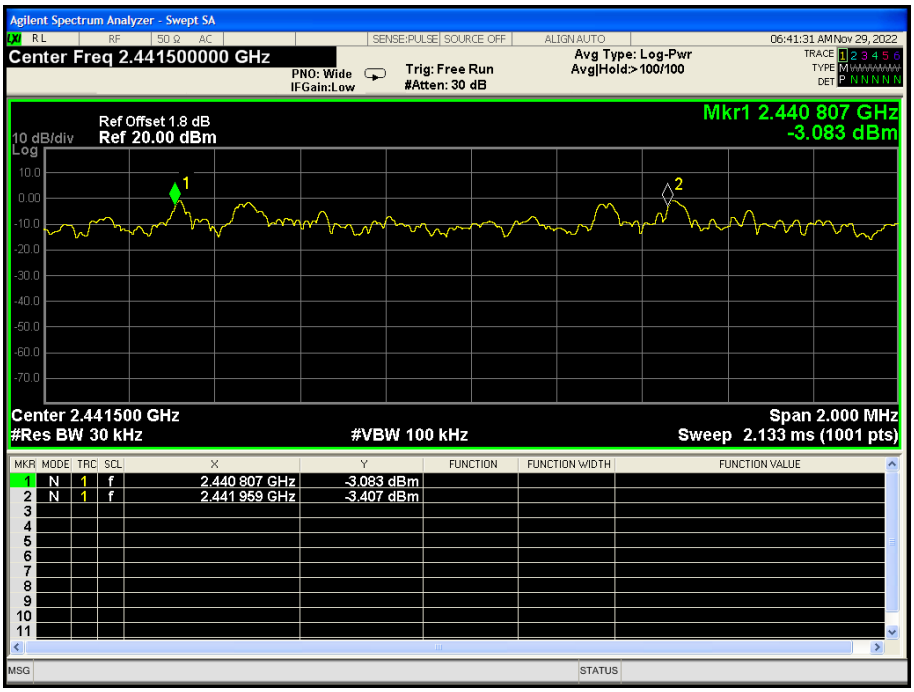
π/4DQPSK/MCH	
π/4DQPSK/HCH	

4 Carrier Frequency Separation

4.1 Test Result

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	MCH	0.966	0.585	Pass
π/4DQPSK	MCH	1.152	0.828	Pass

4.2 Test Graphs

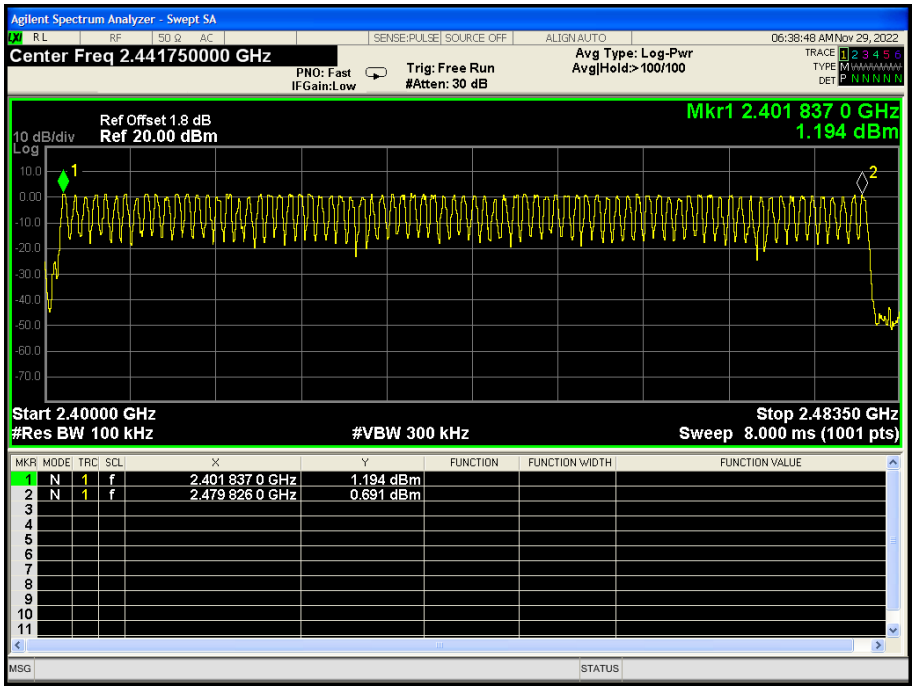
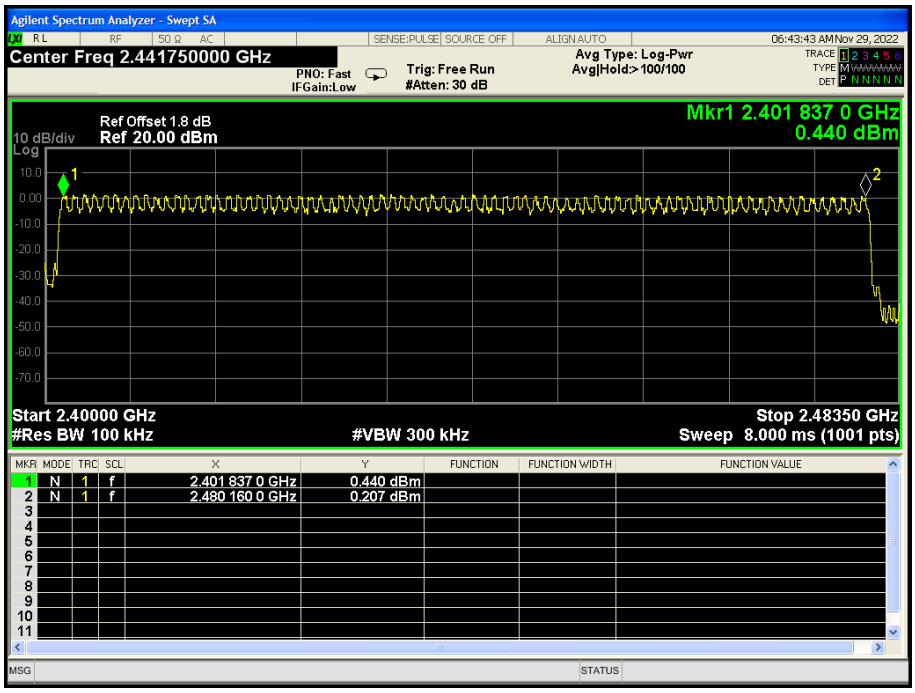
Test Graphs	
GFSK/MCH	
π/4DQPSK/MCH	

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

5.2 Test Graphs

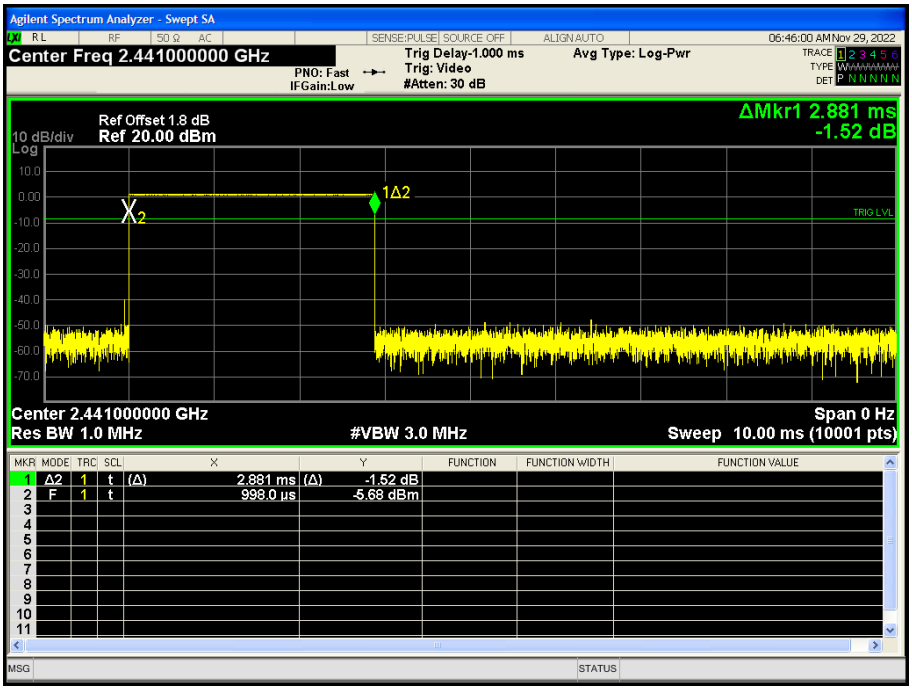
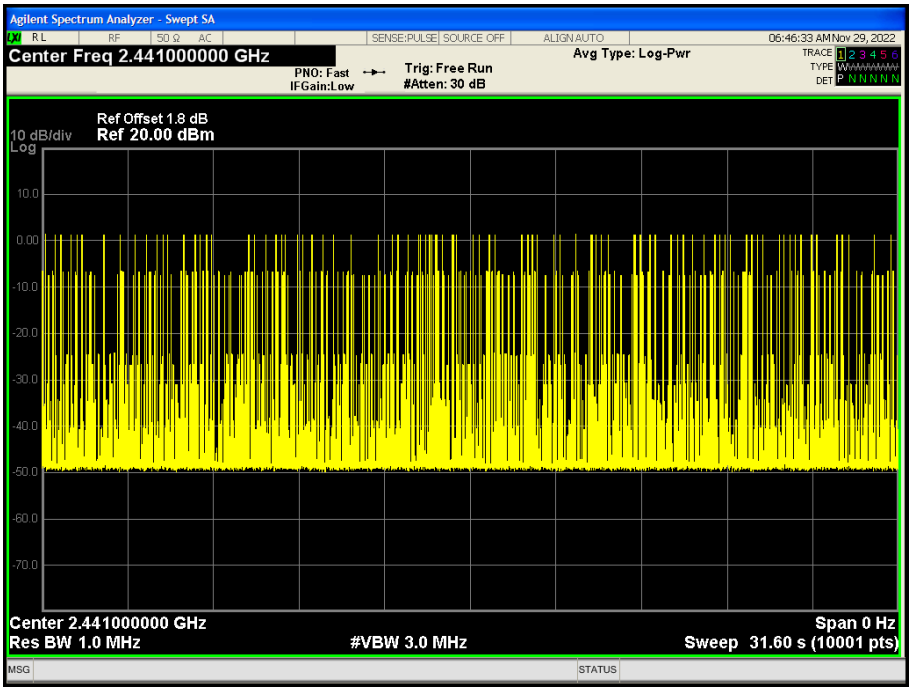
Test Graphs	
GFSK/Hop	
π/4DQPSK/Hop	

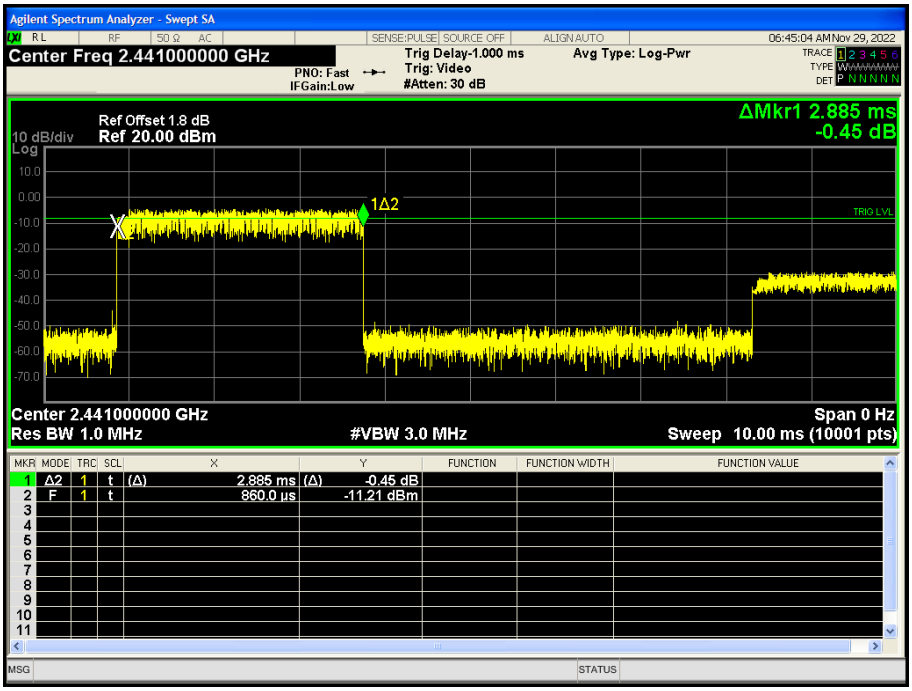
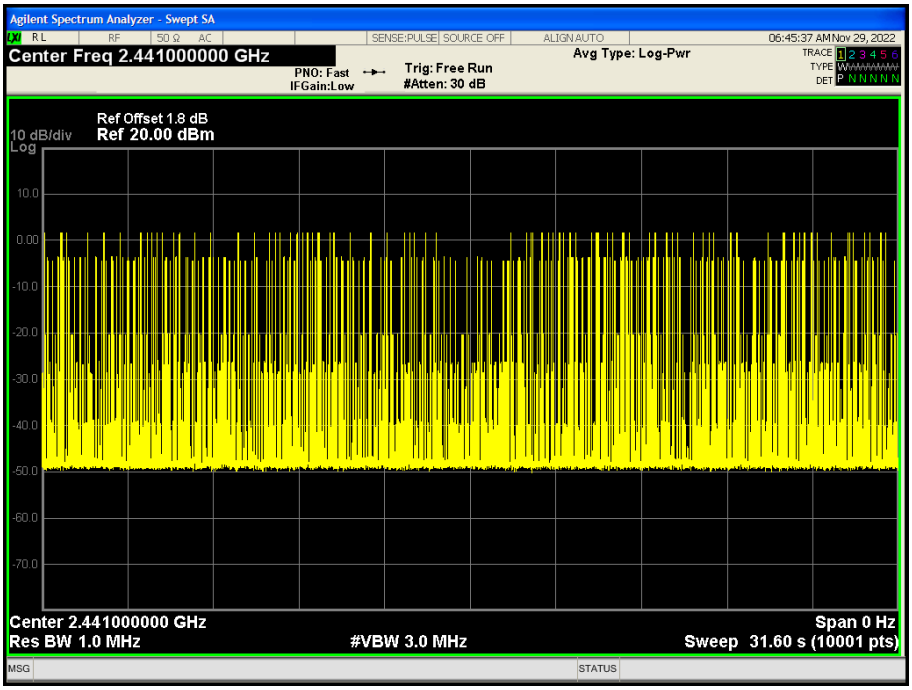
6 Dwell Time

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	2.881	102	293.862	0.4	Pass
π/4DQPSK	2DH5	MCH	2.885	89	256.765	0.4	Pass

6.2 Test Graphs

Test Graphs	
GFSK_DH5/MCH	 

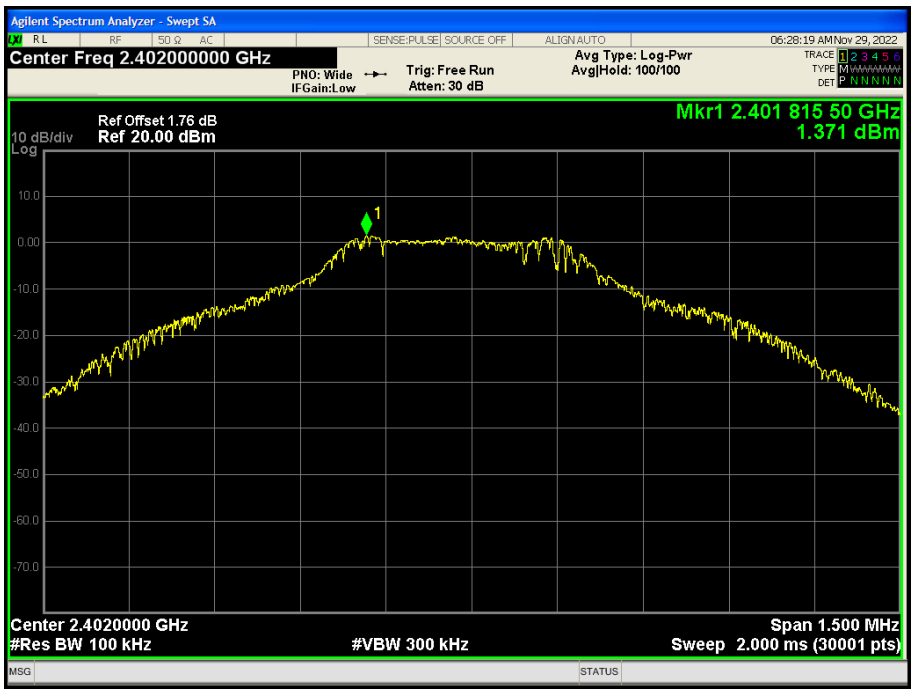
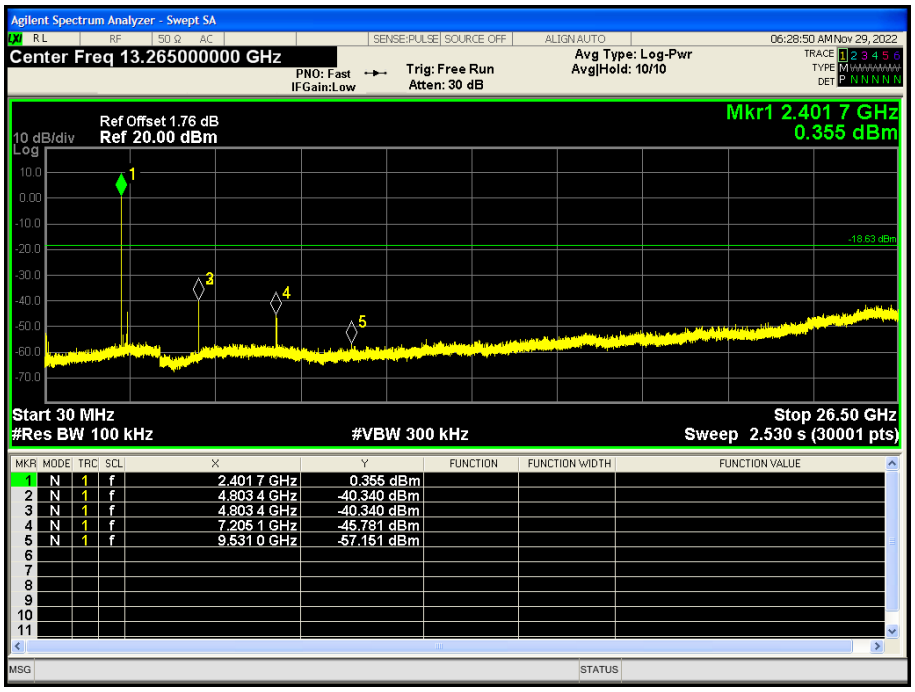
π/4DQPSK _2DH5/MCH	 

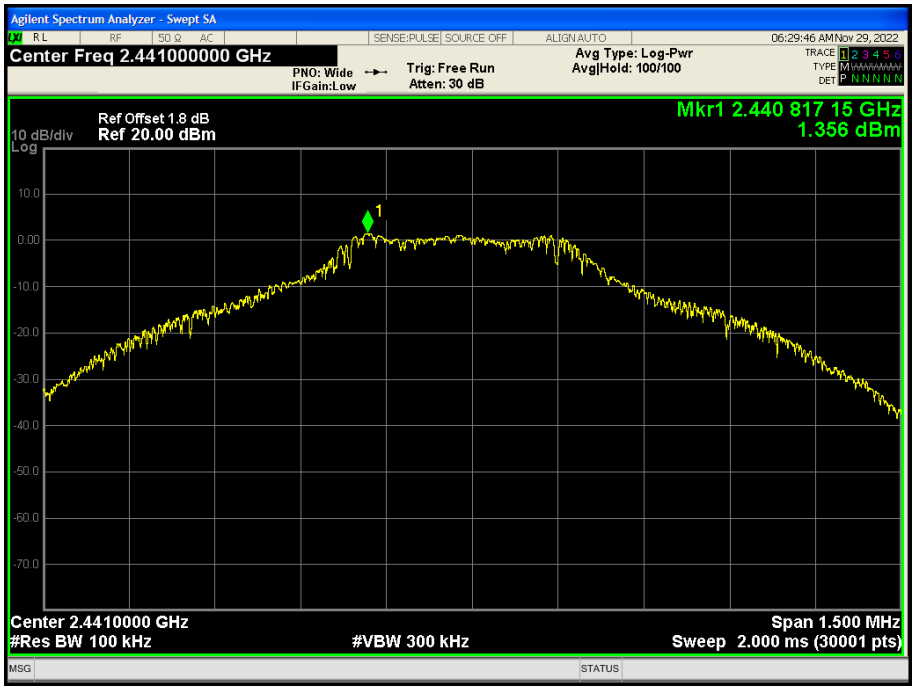
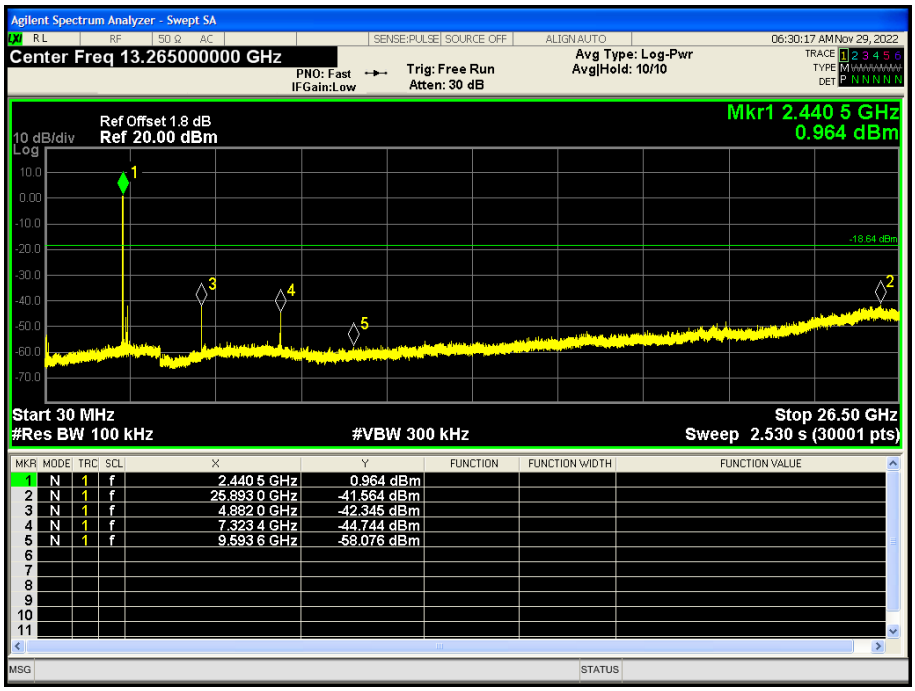
7 RF Conducted Spurious Emissions

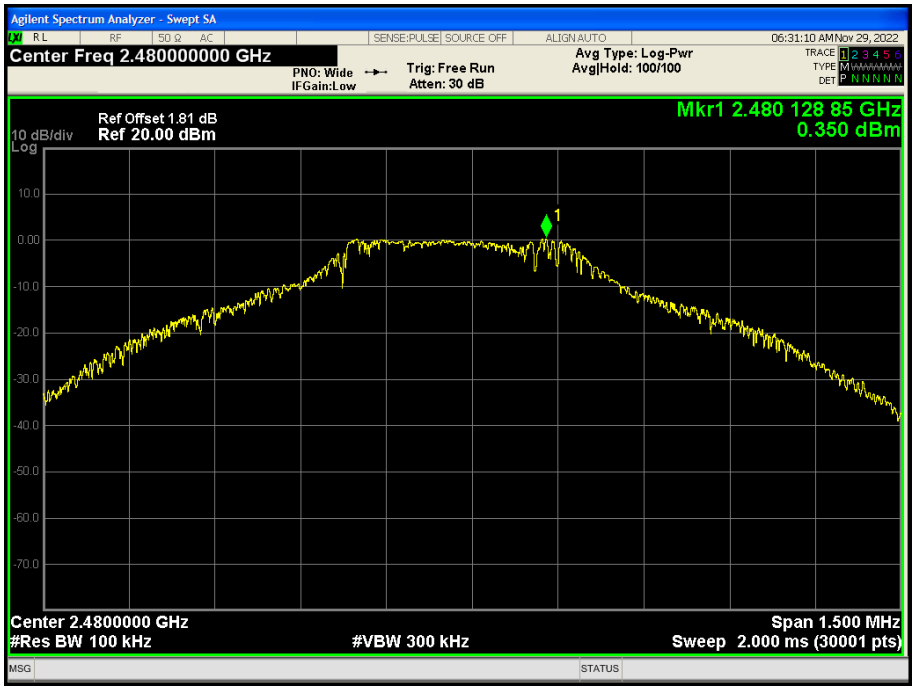
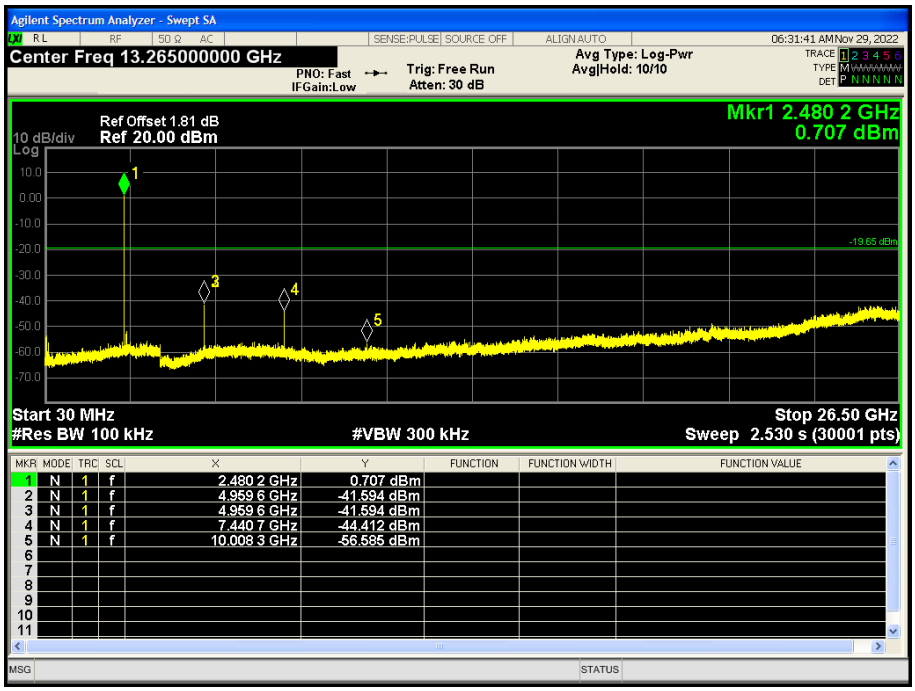
7.1 Test Result

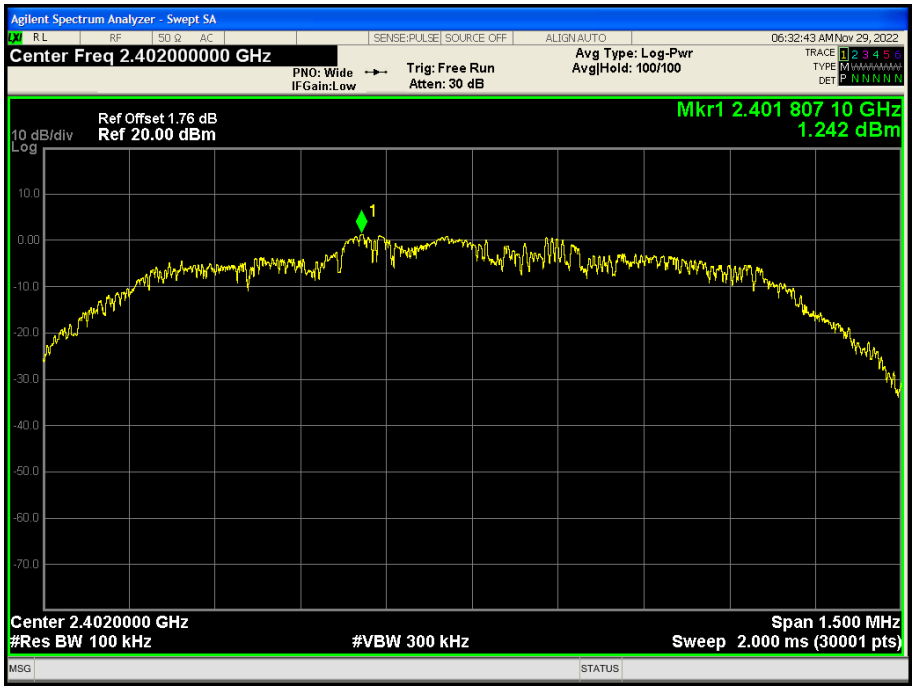
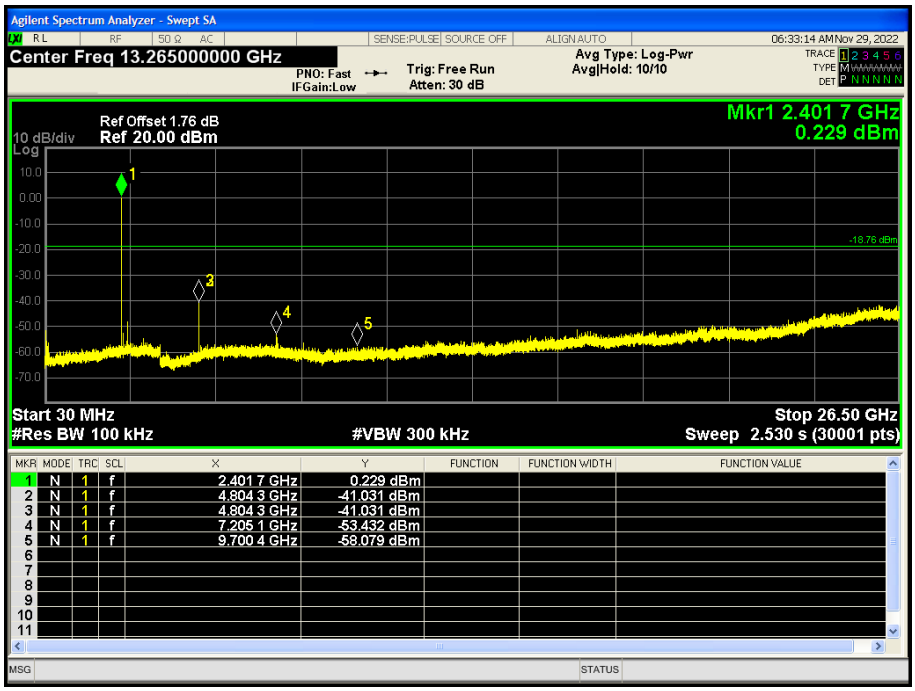
Mode	Channel	Max. Level [dBc]	Limit [dBc]	Verdict
GFSK	LCH	-41.71	-20	Pass
	MCH	-42.92	-20	Pass
	HCH	-41.94	-20	Pass
π/4DQPSK	LCH	-42.27	-20	Pass
	MCH	-42.87	-20	Pass
	HCH	-42.35	-20	Pass

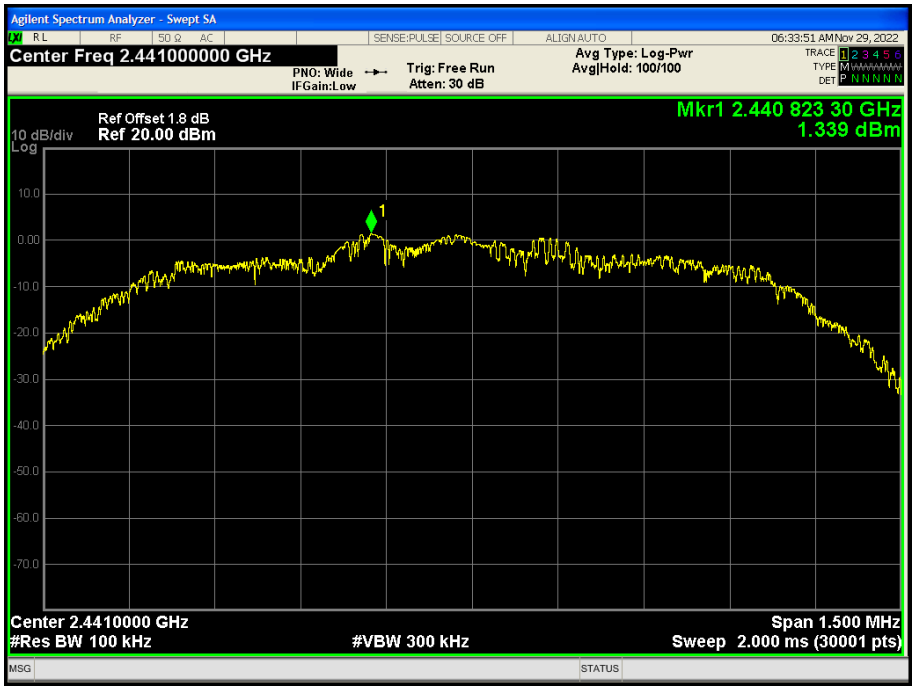
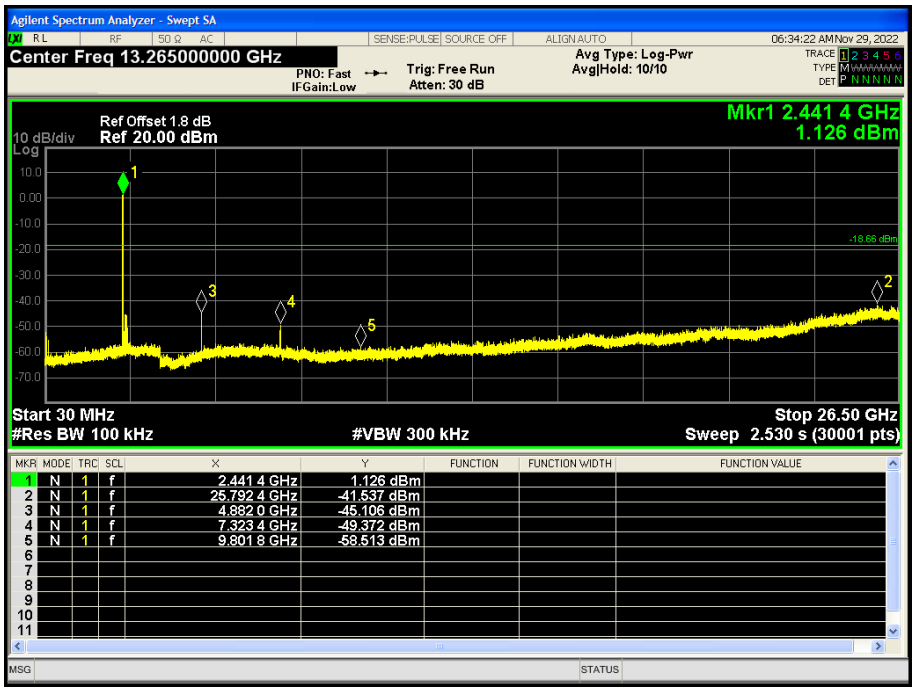
7.2 Test Graphs

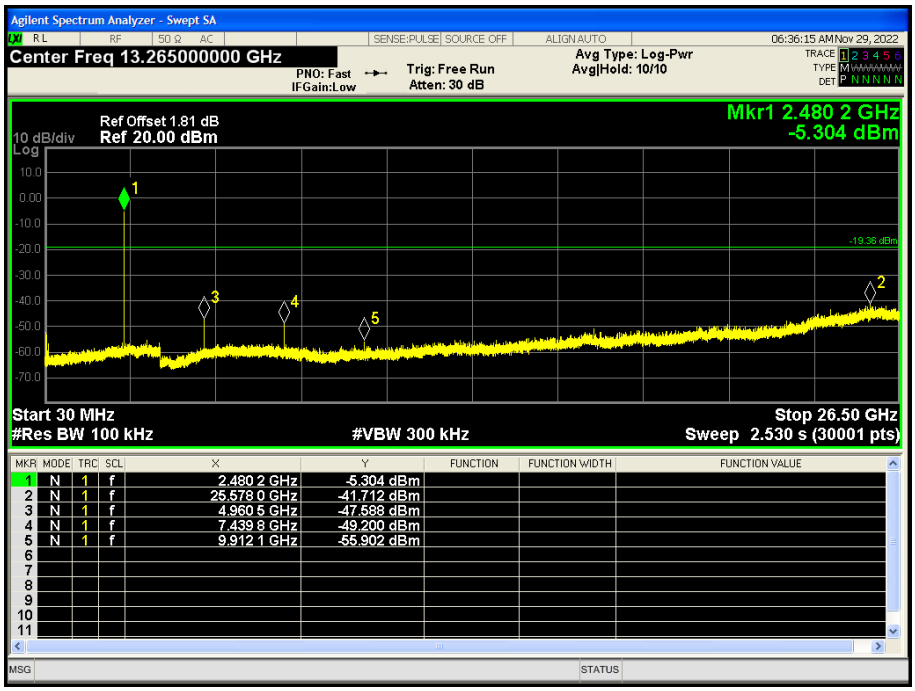
GFSK_LCH_Graphs	
Pref	
Puw	

GFSK_MCH_Graphs	
Pref	
Puw	

GFSK_HCH_Graphs	
Pref	
Puw	

π/4DQPSK_LCH_Graphs	
Pref	
Puw	

π/4DQPSK_MCH_Graphs	
Pref	
Puw	

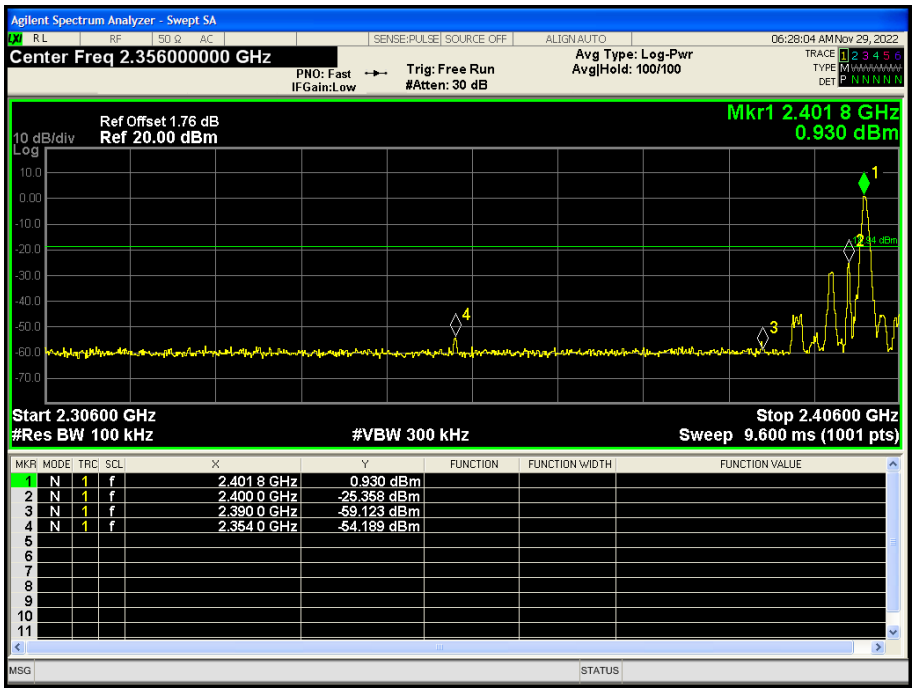
π/4DQPSK_HCH_Graphs	
Pref	
Puw	

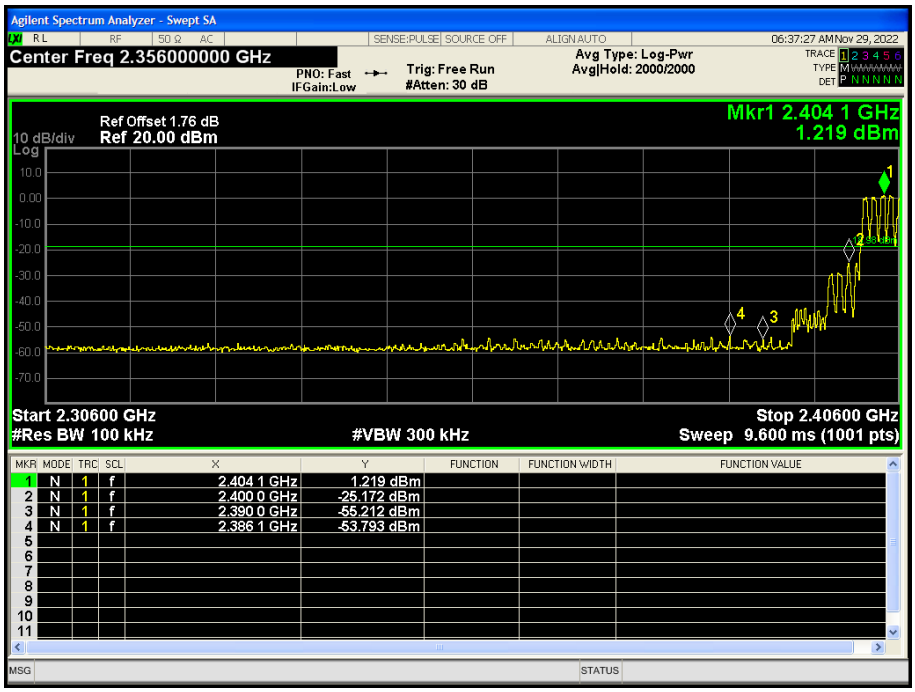
8 Band-edge for RF Conducted Emissions

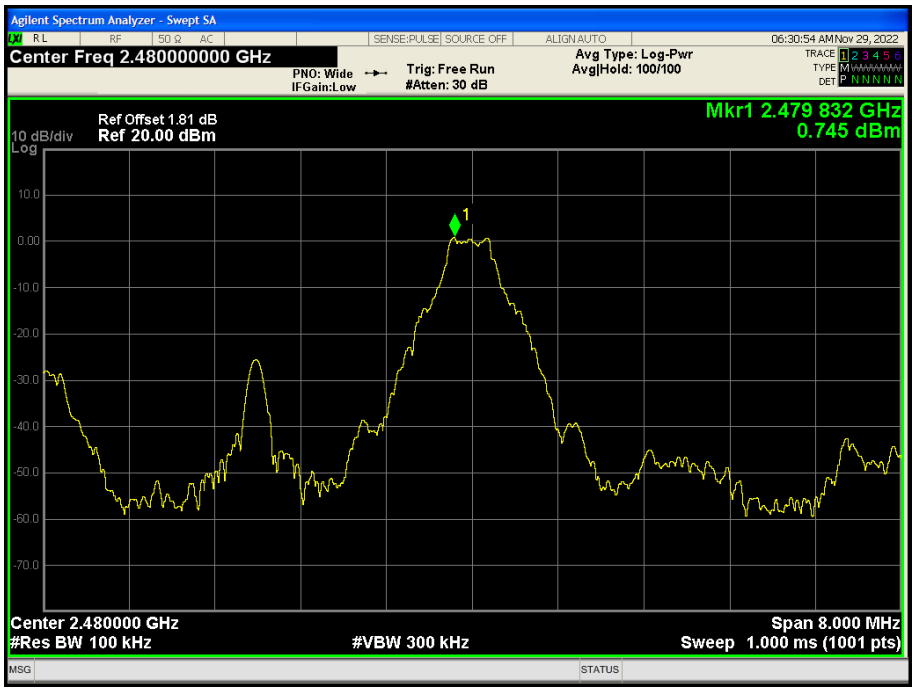
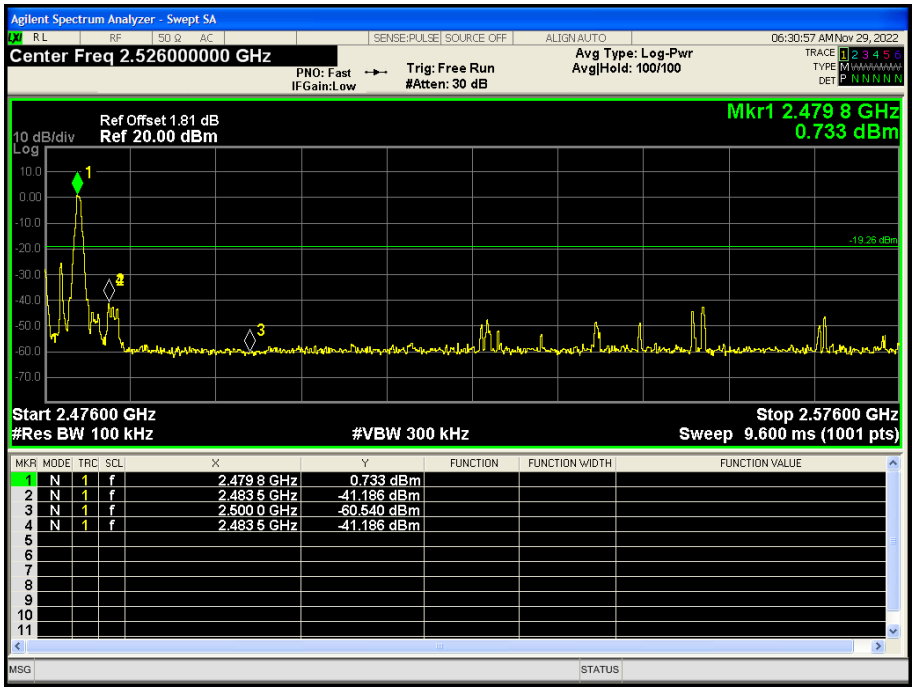
8.1 Test Result

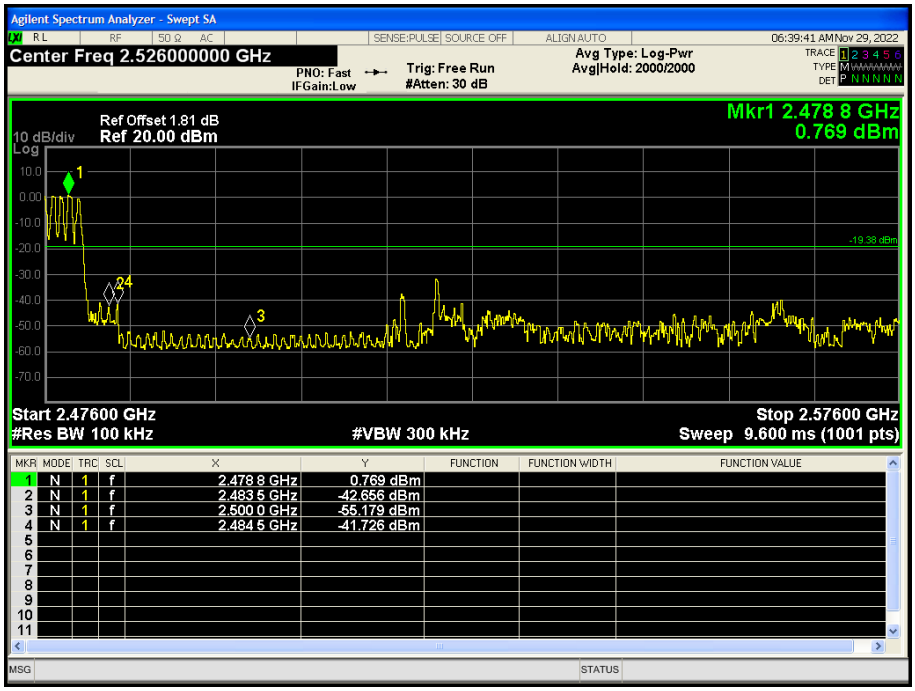
Mode	Channel	Carrier Frequency [MHz]	Frequency Hopping	Max Spurious Level [dBc]	Limit [dBc]	Verdict
GFSK	LCH	2402	Off	-55.24	-20	Pass
			On	-54.82	-20	Pass
	HCH	2480	Off	-41.93	-20	Pass
			On	-42.34	-20	Pass
π/4DQPSK	LCH	2402	Off	-56.27	-20	Pass
			On	-55.38	-20	Pass
	HCH	2480	Off	-42.49	-20	Pass
			On	-42.77	-20	Pass

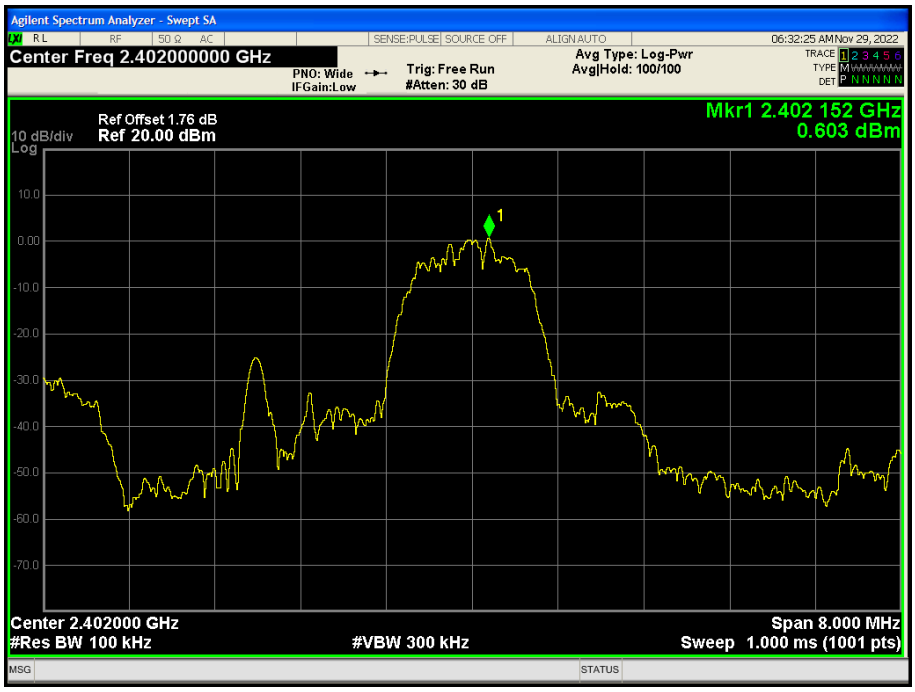
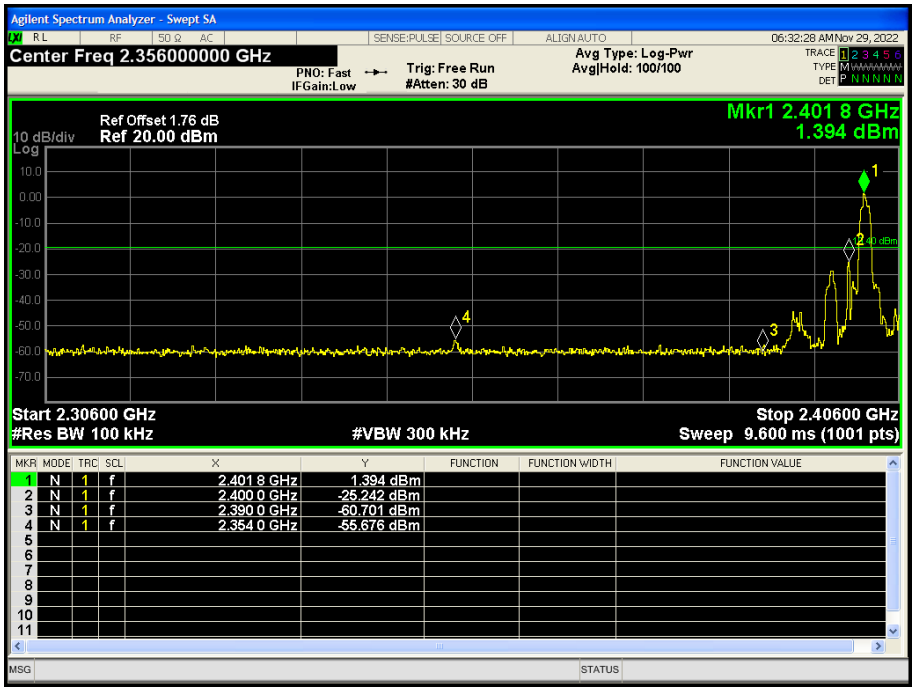
8.2 Test Graphs

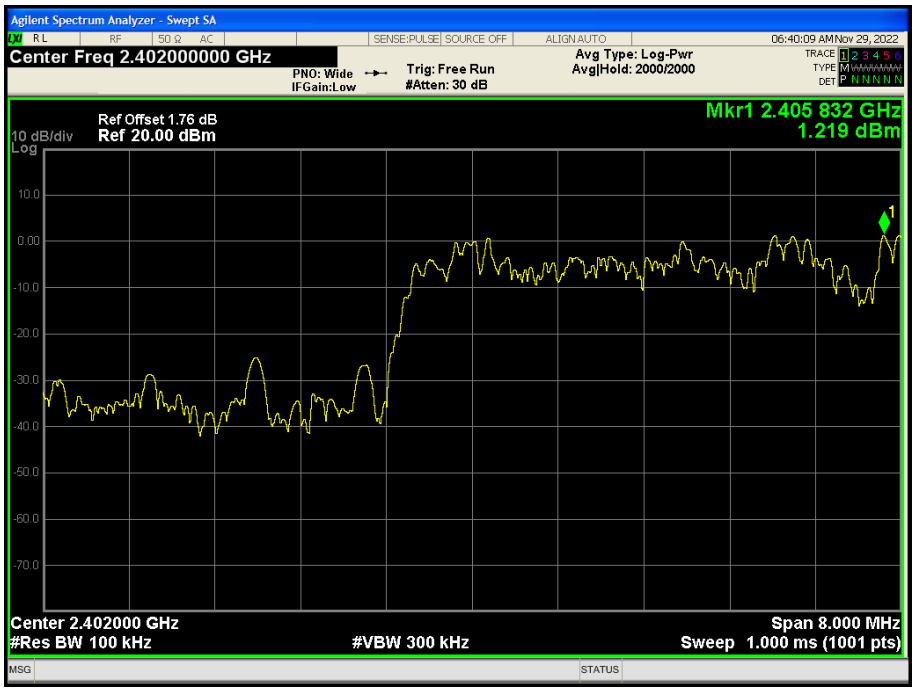
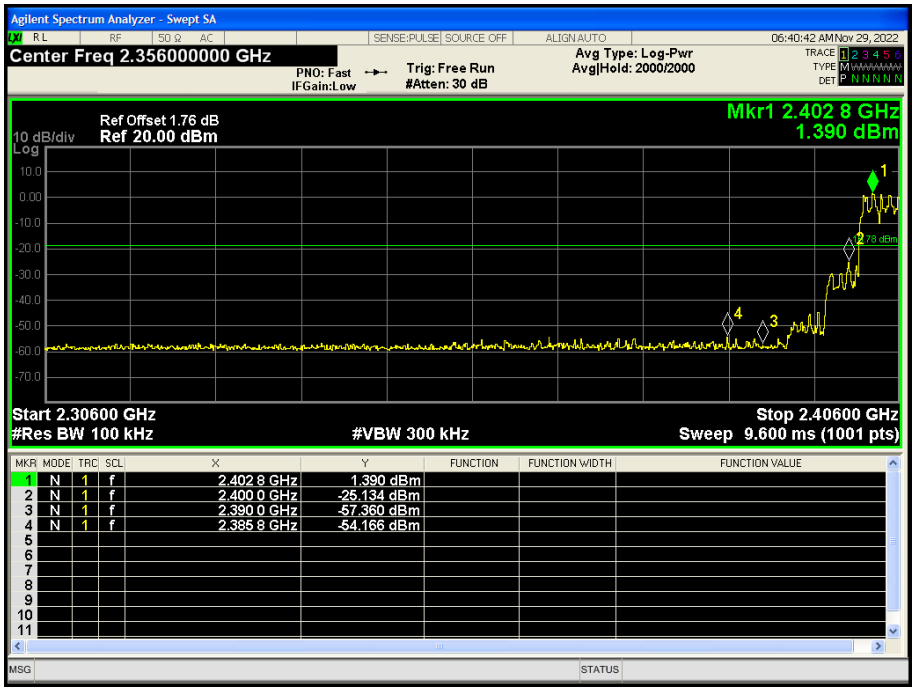
Test Graphs	
Pref	
GFSK/LCH/No Hop	

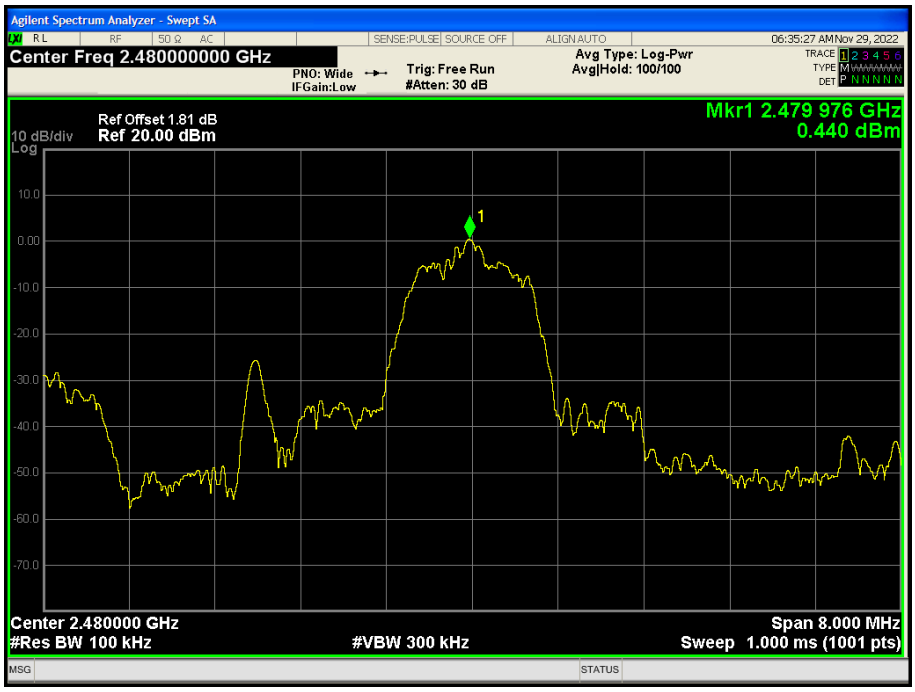
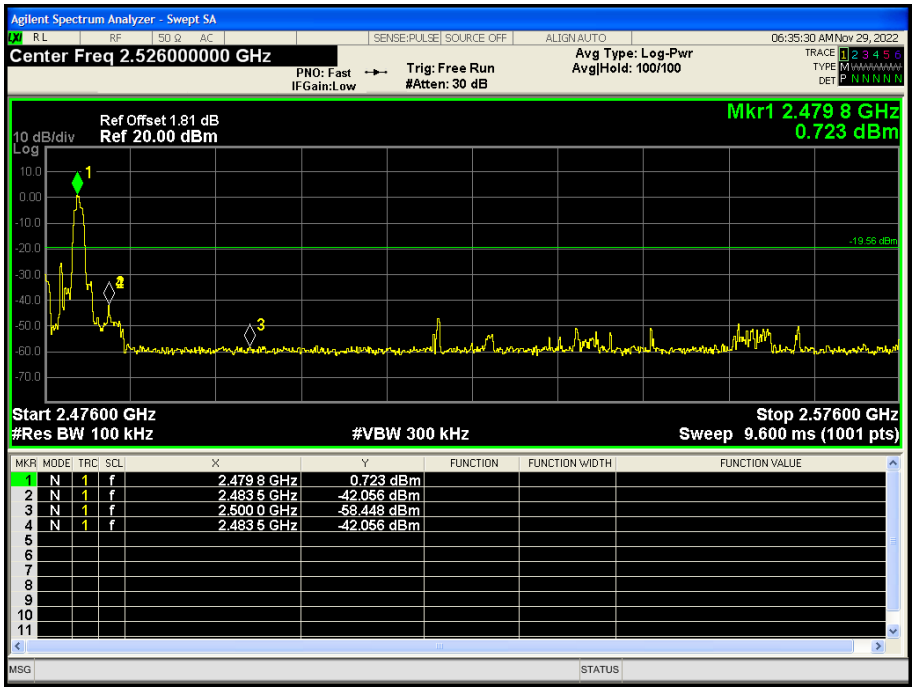
Ref	
GFSK/LCH/Hop	

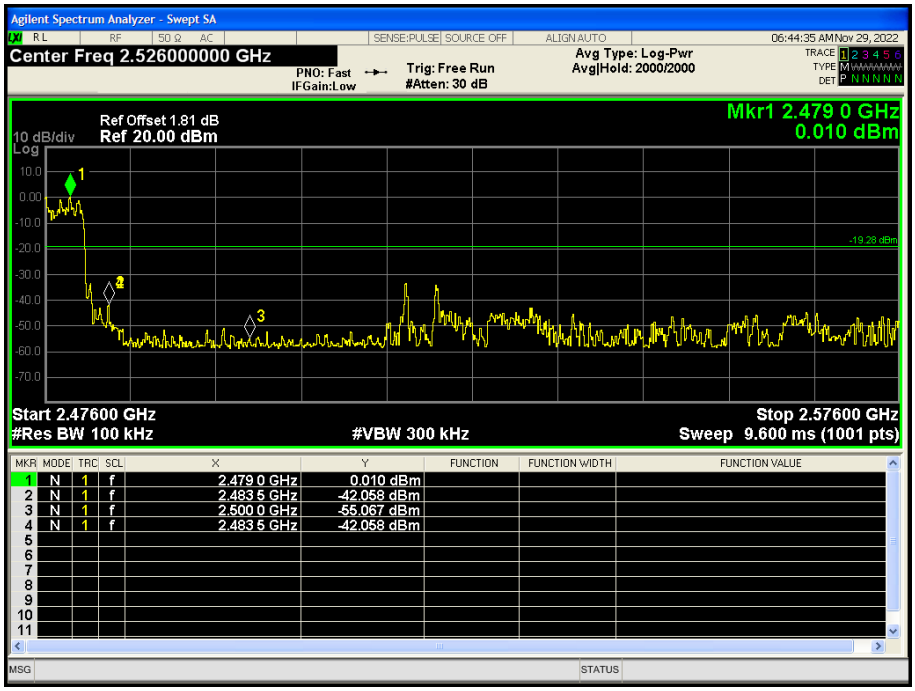
Ref	
GFSK/HCH/No Hop	

Ref.	
GFSK/HCH/Hop	

Ref	
π/4DQPSK/LCH/No Hop	

Ref	
π/4DQPSK/LCH/Hop	

Ref	
π/4DQPSK/HCH/No Hop	

Ref	
π/4DQPSK/HCH/Hop	

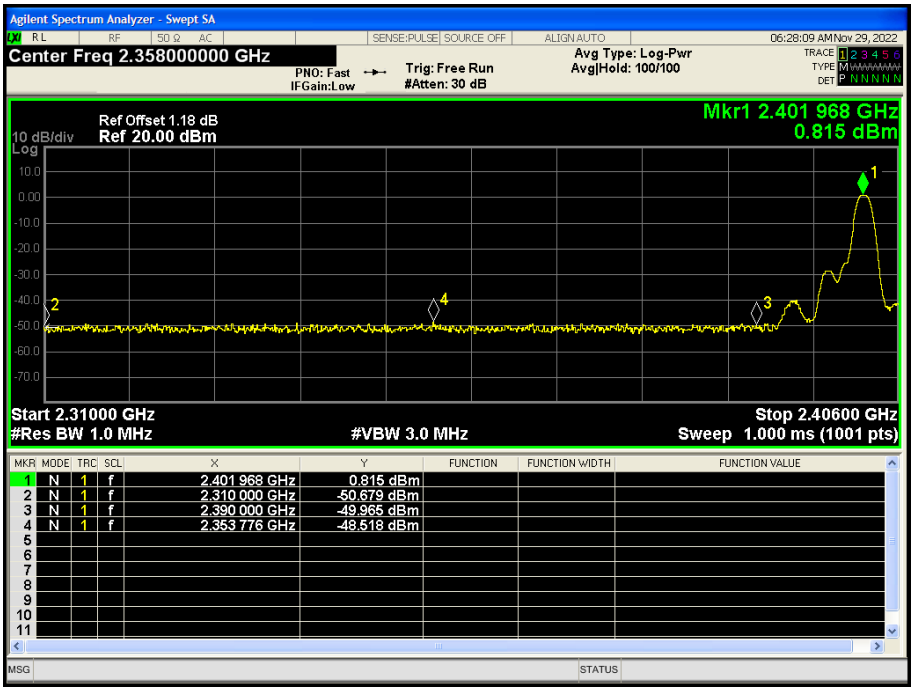
9 Restrict-band band-edge measurements

9.1 Test Result

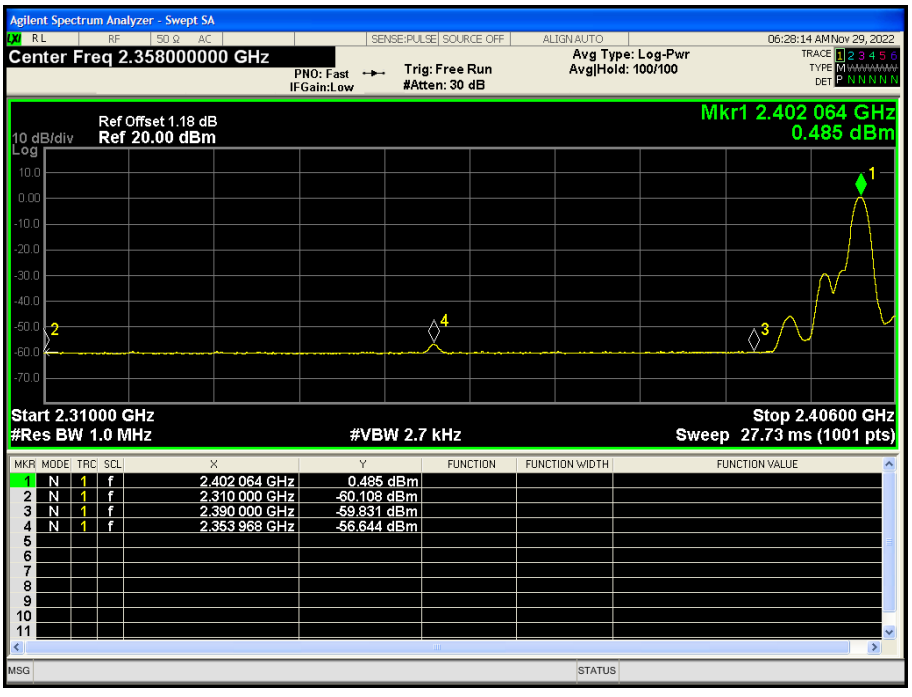
Test Mode	Hopping	Freq.	Power [dBm]	Gain	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-50.67	2	46.59	PEAK	74	Pass
	Off	2310.0	-60.1	2	37.16	AV	54	Pass
	Off	2353.776	-48.51	2	48.75	PEAK	74	Pass
	Off	2353.968	-56.64	2	40.62	AV	54	Pass
	Off	2390.0	-50.88	2	46.38	PEAK	74	Pass
	Off	2390.0	-59.78	2	37.48	AV	54	Pass
	Off	2483.5	-39.07	2	58.19	PEAK	74	Pass
	Off	2483.5	-44.89	2	52.37	AV	54	Pass
	Off	2483.632	-38.65	2	58.61	PEAK	74	Pass
	Off	2483.968	-43.42	2	53.84	AV	54	Pass
	Off	2500.0	-50.35	2	46.91	PEAK	74	Pass
	Off	2500.0	-59.54	2	37.72	AV	54	Pass
π/4DQPSK	Off	2310.0	-49.79	2	47.47	PEAK	74	Pass
	Off	2310.0	-60.4	2	36.86	AV	54	Pass
	Off	2333.616	-47.96	2	49.3	PEAK	74	Pass
	Off	2353.776	-57	2	40.26	AV	54	Pass
	Off	2390.0	-50.41	2	46.85	PEAK	74	Pass
	Off	2390.0	-59.9	2	37.36	AV	54	Pass
	Off	2483.5	-39.59	2	57.67	PEAK	74	Pass
	Off	2483.5	-46.89	2	50.37	AV	54	Pass
	Off	2483.656	-39.09	2	58.17	PEAK	74	Pass
	Off	2483.872	-45.44	2	51.82	AV	54	Pass
	Off	2500.0	-51.47	2	45.79	PEAK	74	Pass
	Off	2500.0	-59.74	2	37.52	AV	54	Pass

9.2 Test Graphs

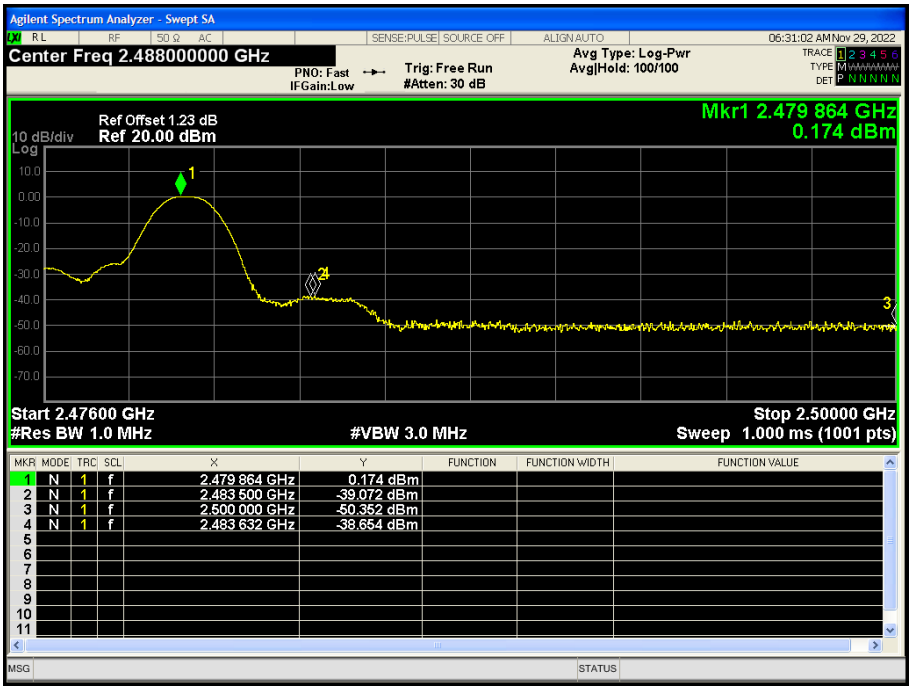
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (Low Channel)



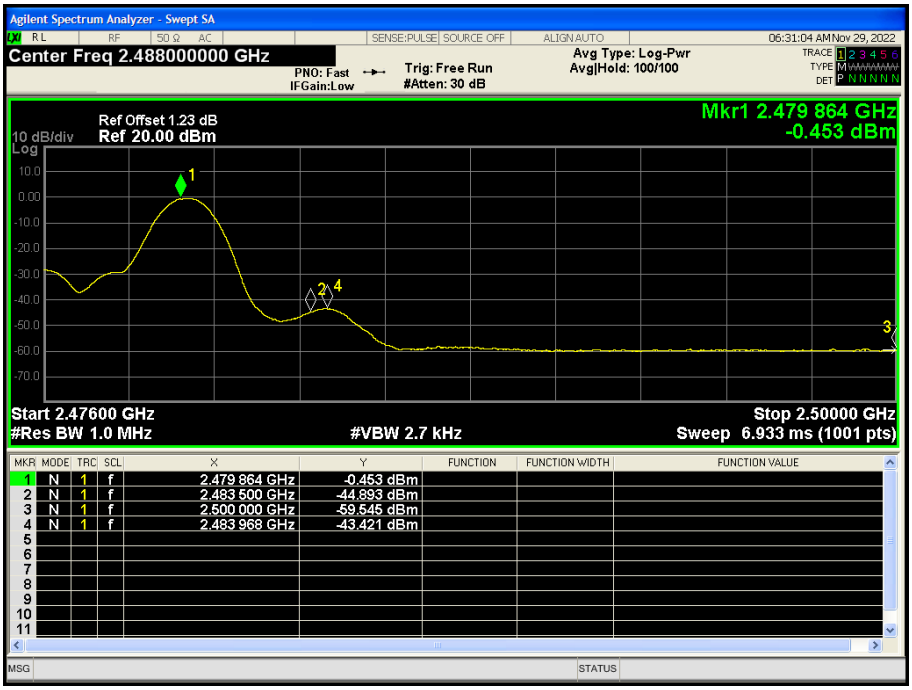
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (Low Channel)



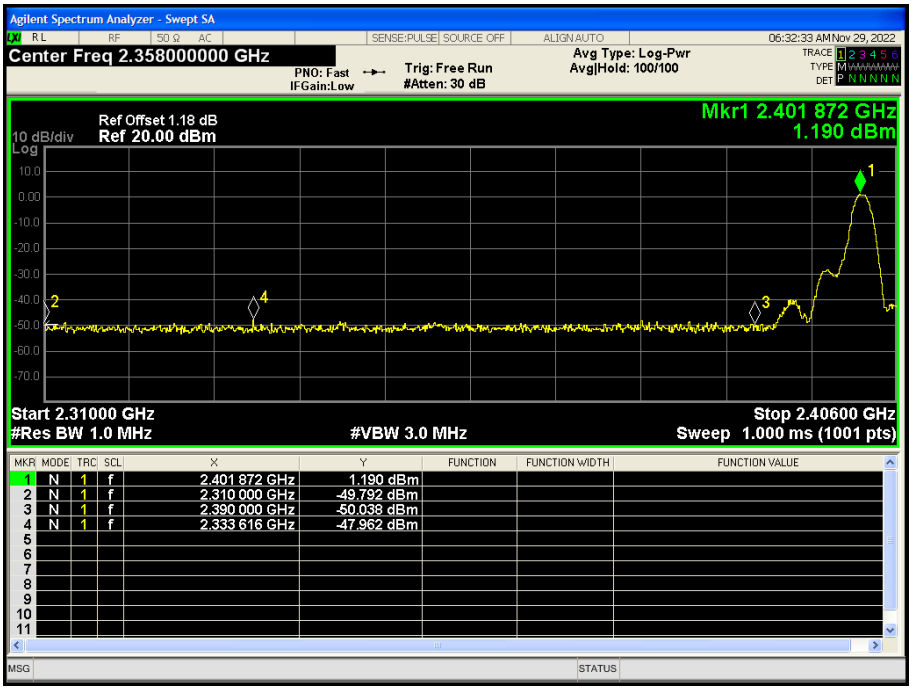
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (High Channel)



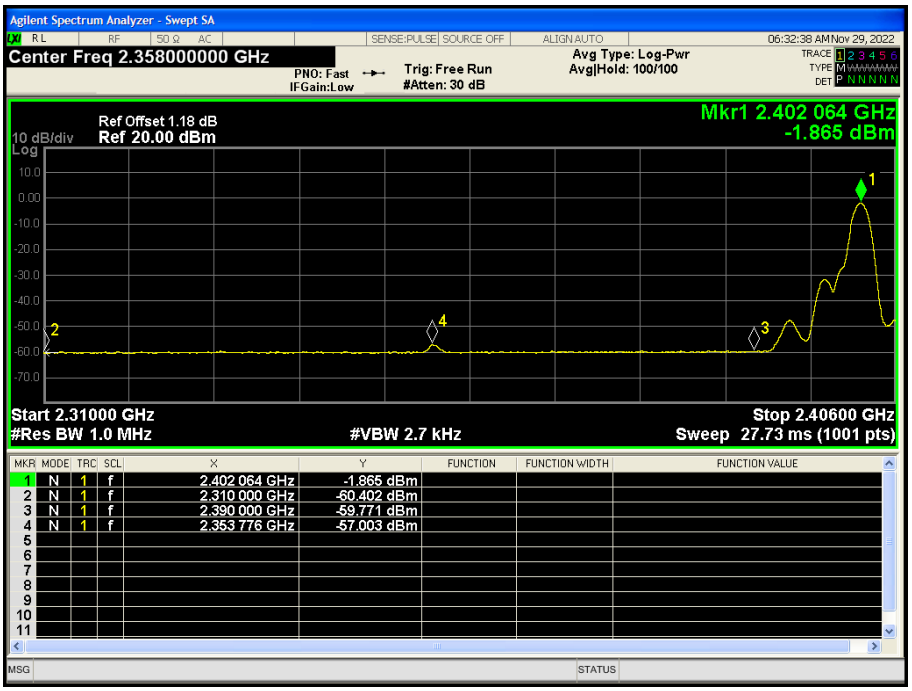
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (High Channel)



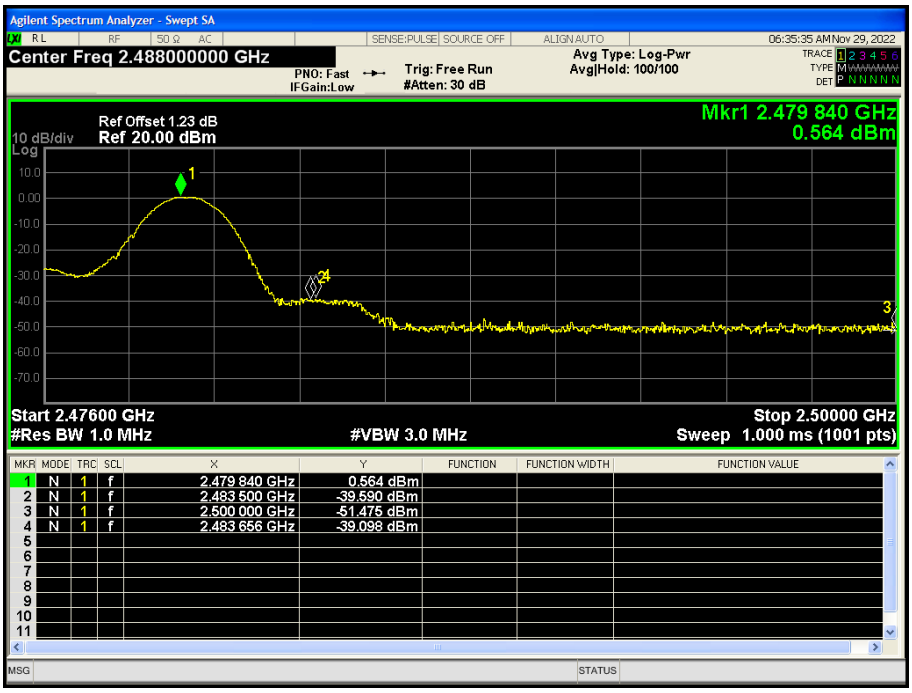
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (Low Channel)



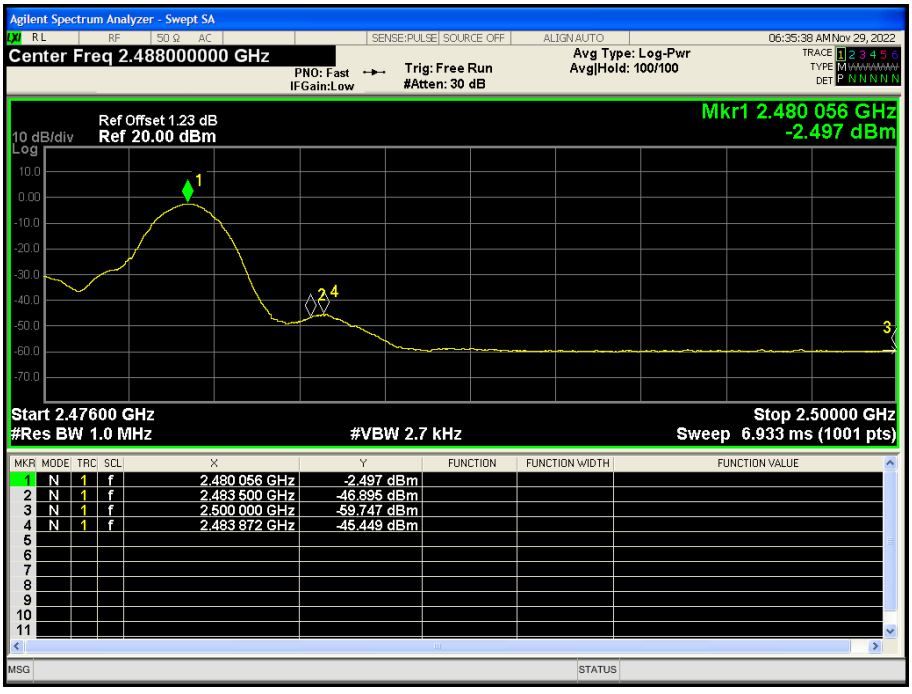
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (Low Channel)



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---