Appendix A

RF Test Data for BT V5.0(BDR/EDR) (Conducted Measurement)

Product Name: Remote Control Car

Trade Mark: HELIWAY

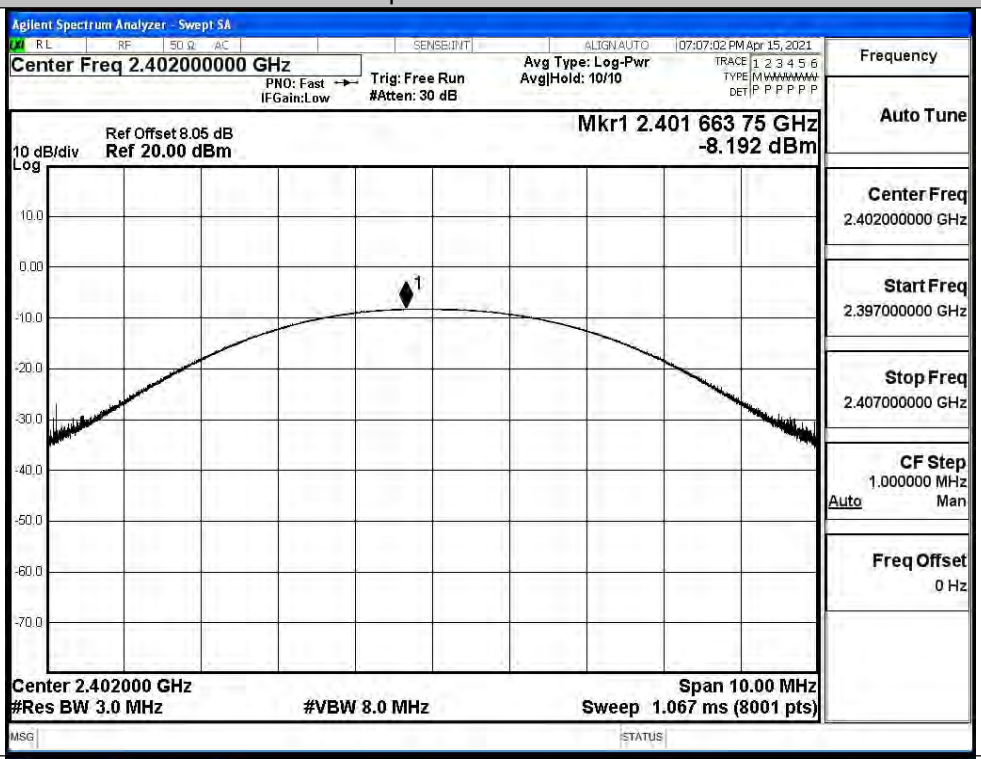
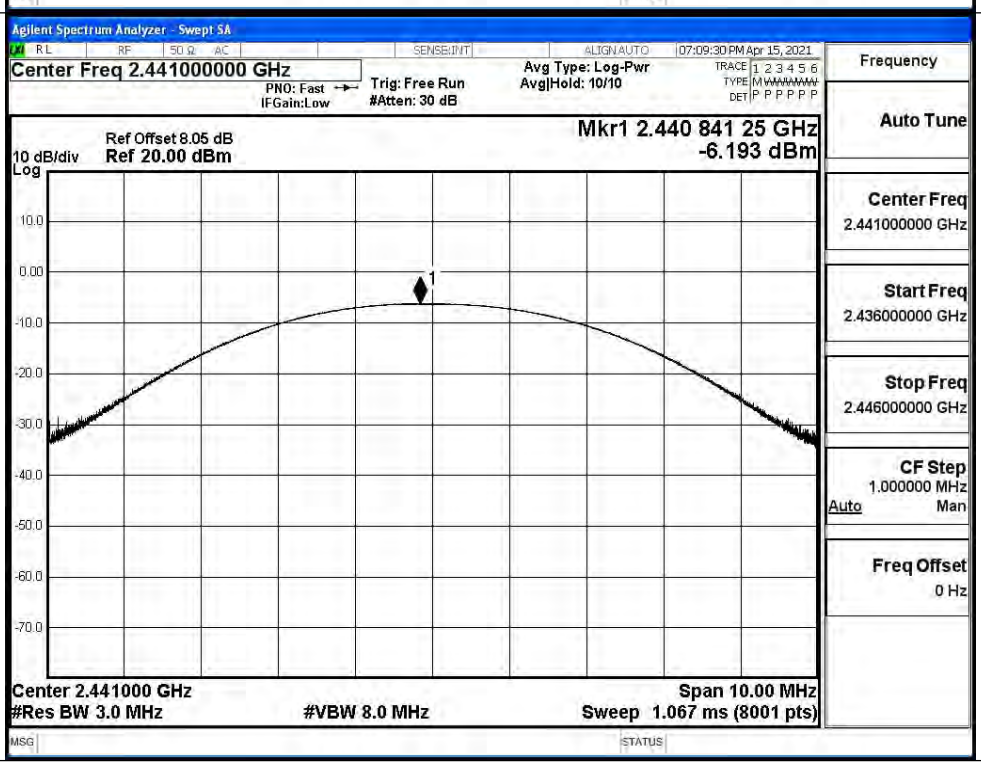
Test Model: F6BC

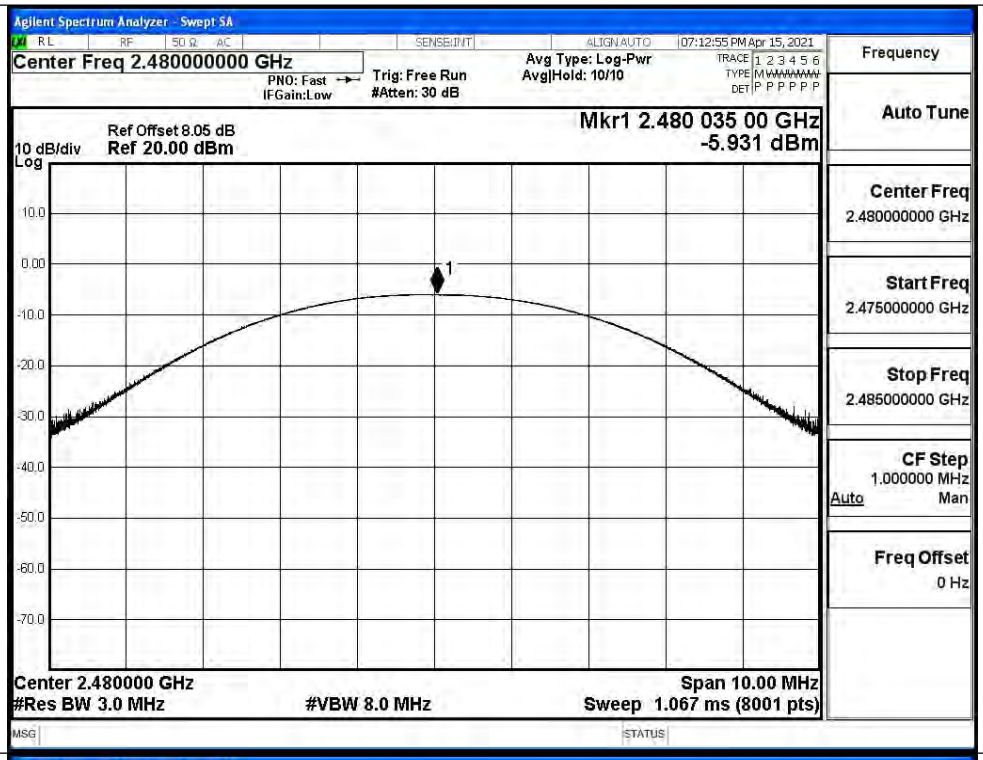
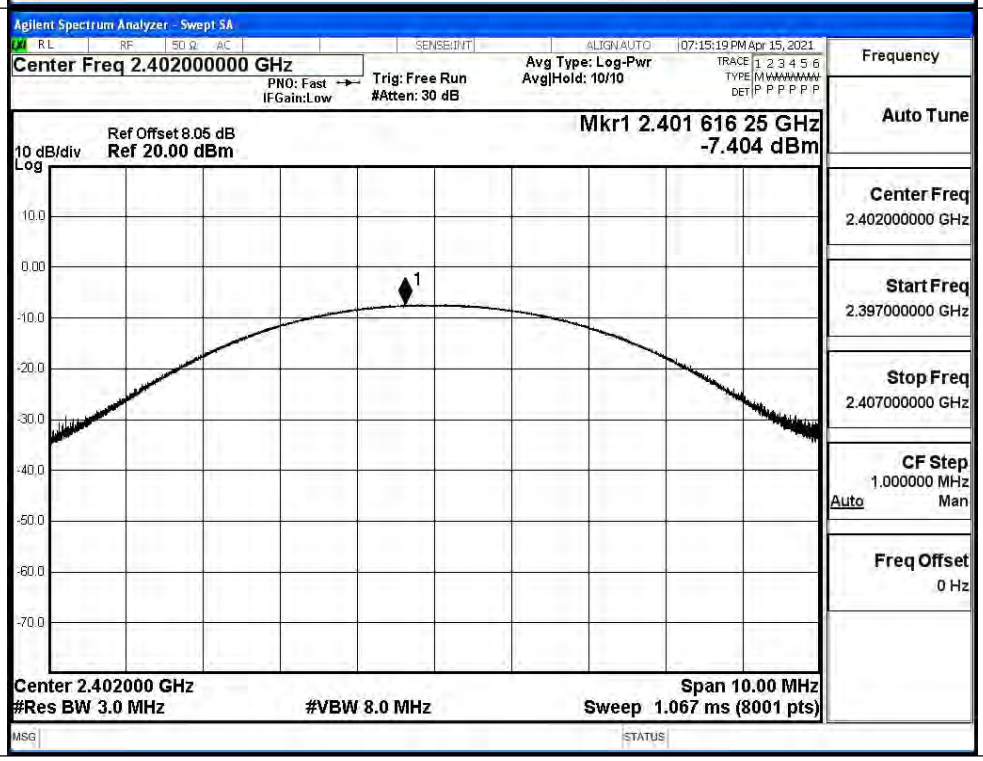
Environmental Conditions

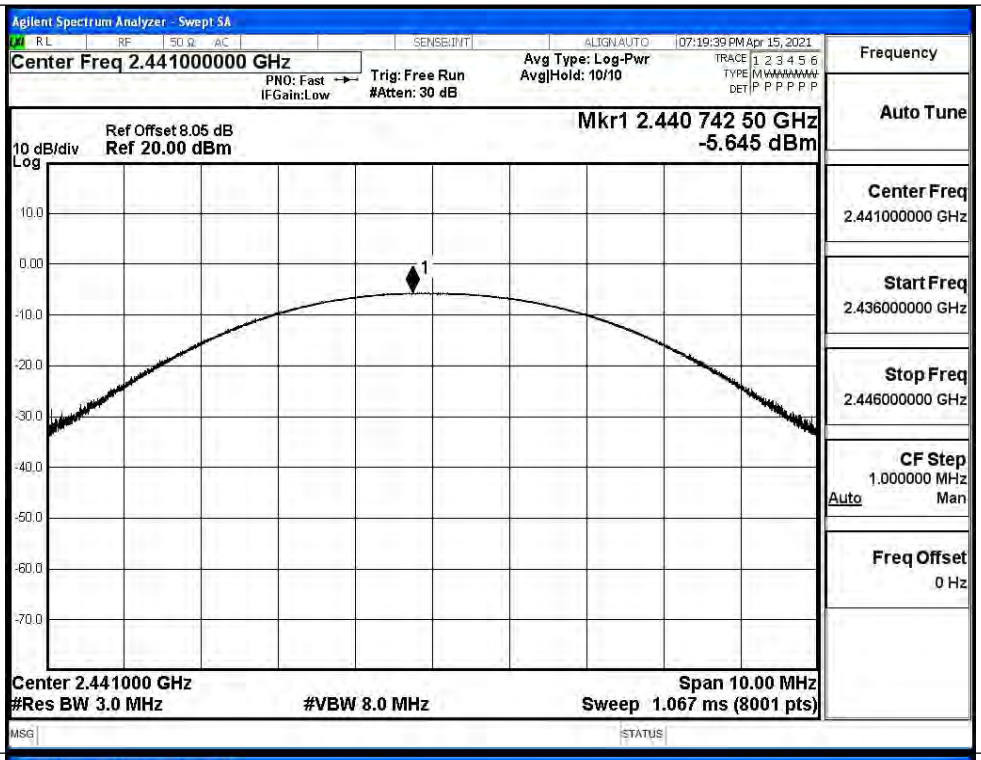
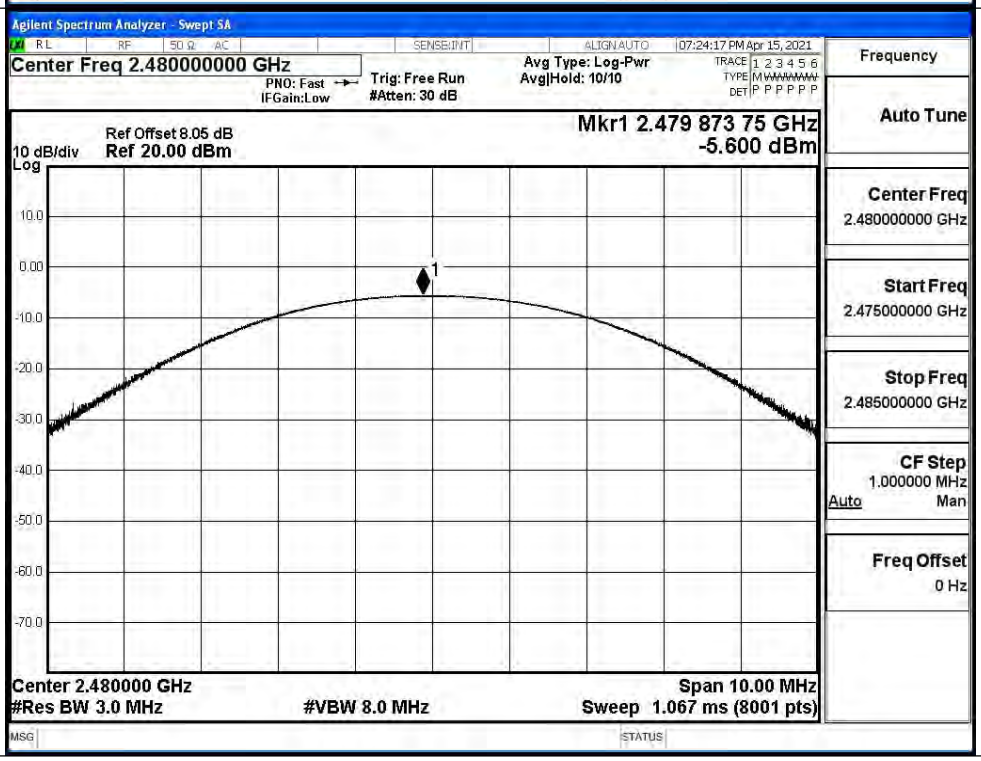
Temperature:	24.6° C
Relative Humidity:	54.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Jay Li
Supervised by:	Li Huan

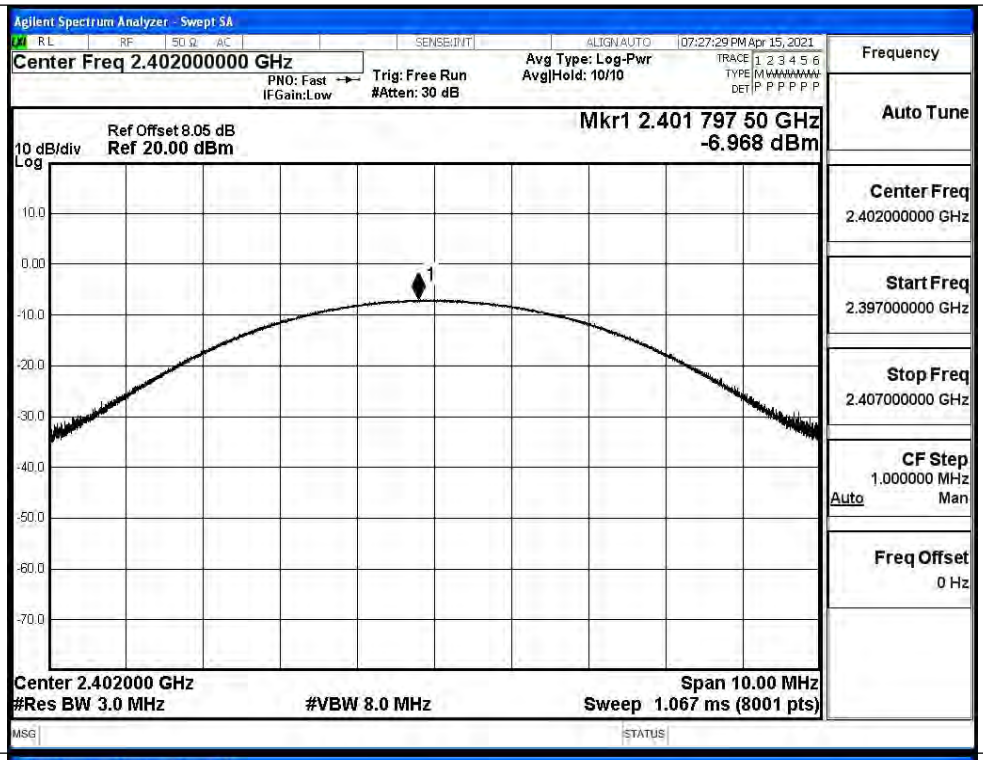
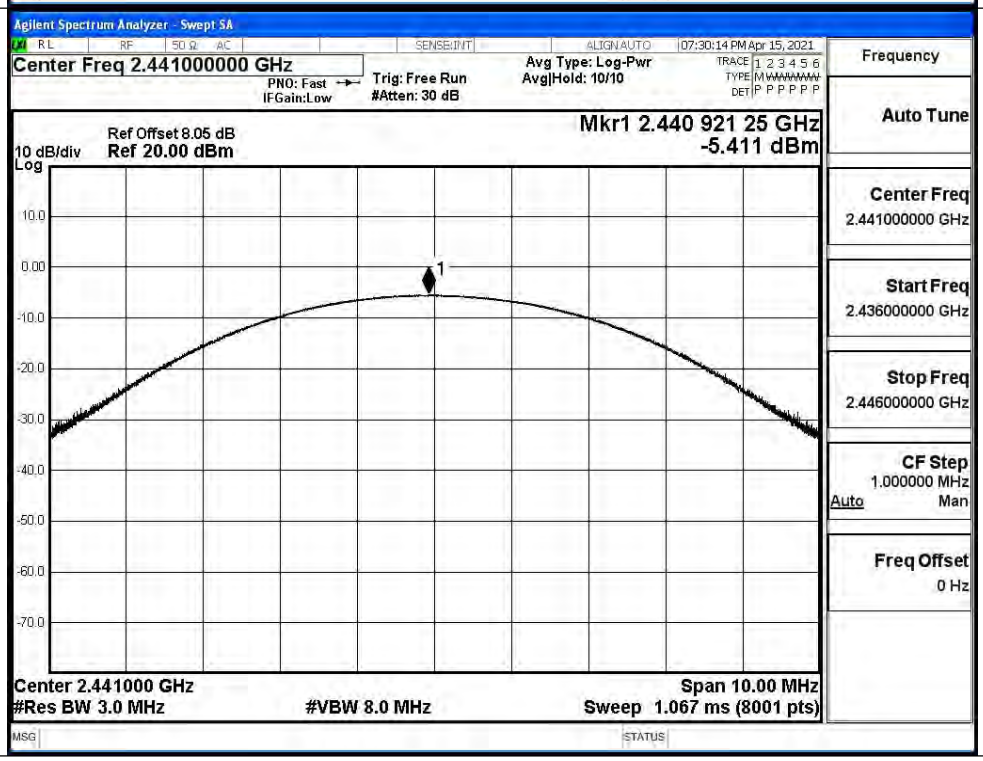
A.1 Maxmum Conducted Peak Output Power

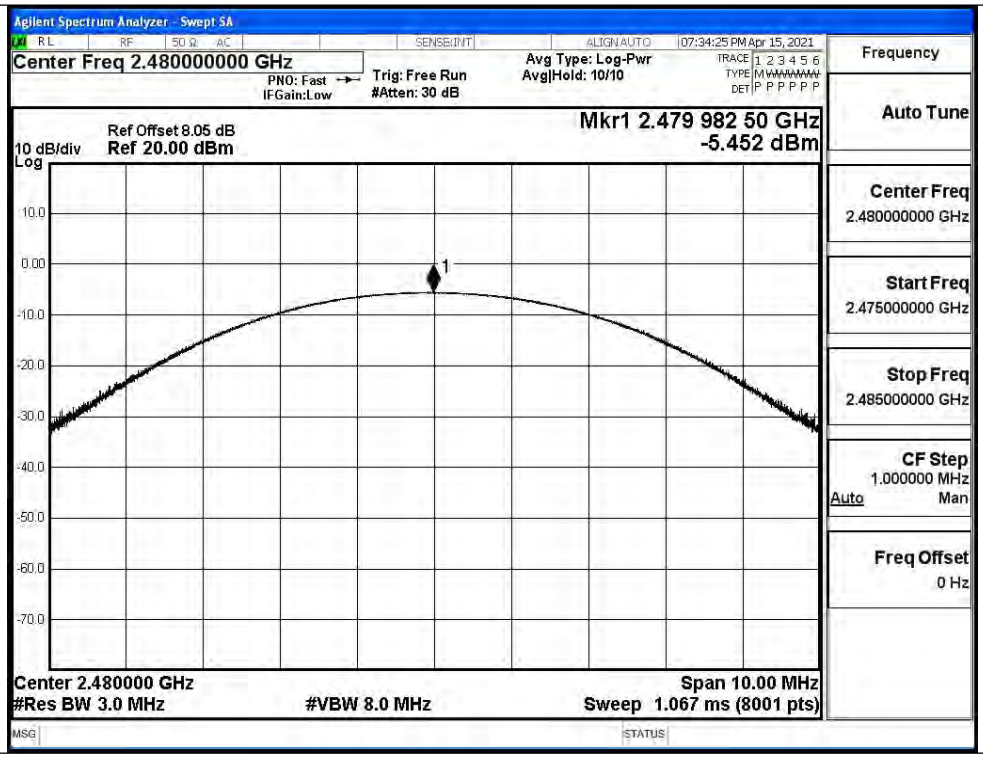
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-8.192	21	PASS
	MCH	-6.193	21	PASS
	HCH	-5.931	21	PASS
π/4DQPSK	LCH	-7.404	21	PASS
	MCH	-5.645	21	PASS
	HCH	-5.600	21	PASS
8DPSK	LCH	-6.968	21	PASS
	MCH	**-5.411**	21	PASS
	HCH	-5.452	21	PASS

Test Graphs		
GFSK/LCH		
GFSK/MCH		

GFSK/HCH	
π/4DQPSK/LCH	

π/4DQPSK/MCH		
π/4DQPSK/HCH		

8DPSK/LCH		
8DPSK/MCH		

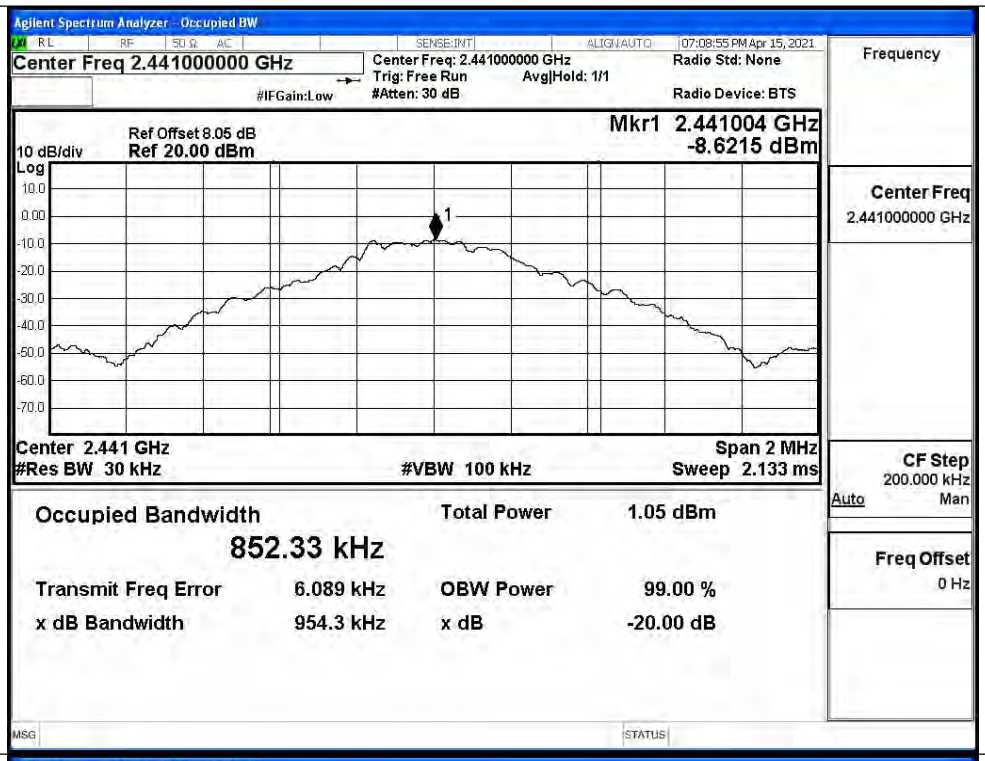
8DPSK/HCH		

Agilent Spectrum Analyzer - Swept SA
Center Freq 2.480000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 10/10
07:34:25 PM Apr 15, 2021
Ref Offset 8.05 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr1 2.479 982 50 GHz
-5.452 dBm
Center 2.480000 GHz
#Res BW 3.0 MHz
#VBW 8.0 MHz
Span 10.00 MHz
Sweep 1.067 ms (8001 pts)
Frequency
Auto Tune
Center Freq
2.480000000 GHz
Start Freq
2.475000000 GHz
Stop Freq
2.485000000 GHz
CF Step
1.000000 MHz
Auto
Man
Freq Offset
0 Hz

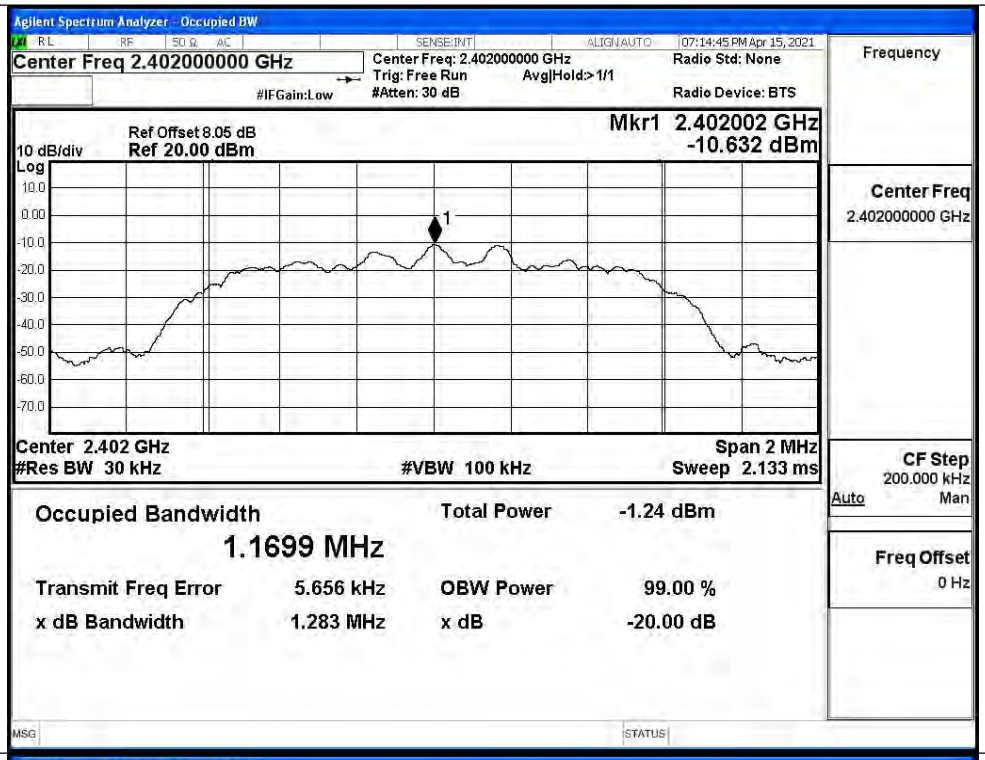
A.2 20dB Bandwidth

Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.9549	Not Specified	PASS
	MCH	0.9543	Not Specified	PASS
	HCH	0.9579	Not Specified	PASS
π/4DQPSK	LCH	1.283	Not Specified	PASS
	MCH	1.317	Not Specified	PASS
	HCH	1.321	Not Specified	PASS
8DPSK	LCH	1.300	Not Specified	PASS
	MCH	1.305	Not Specified	PASS
	HCH	1.313	Not Specified	PASS

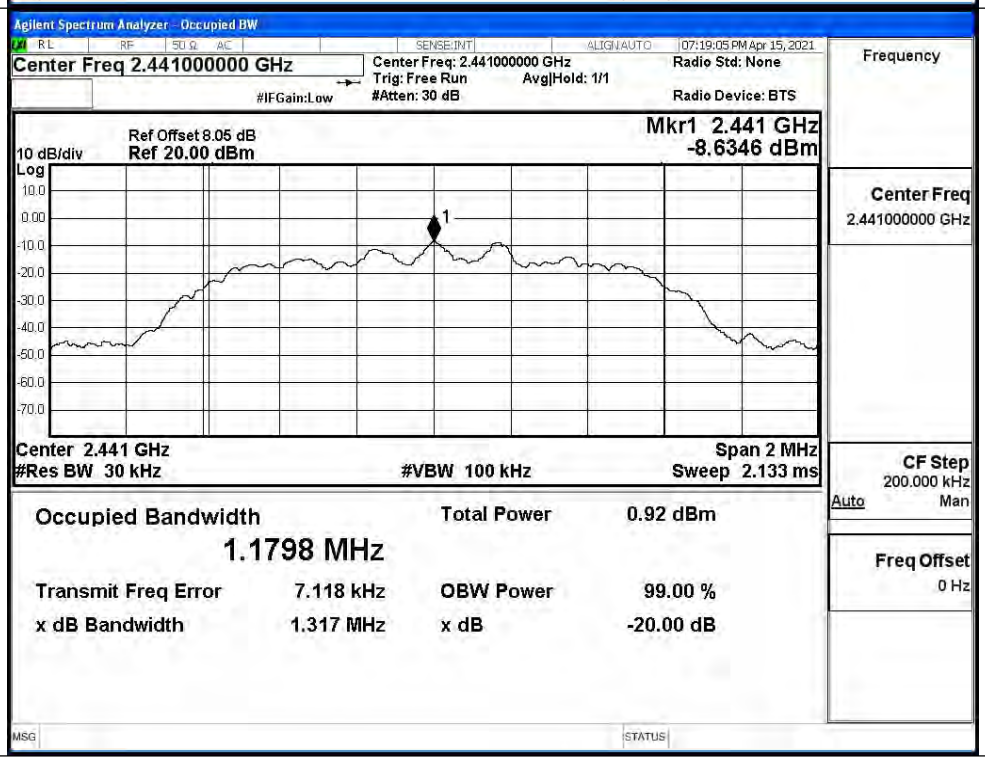
Test Graphs	
GFSK/LCH	

GFSK/MCH	
GFSK/HCH	

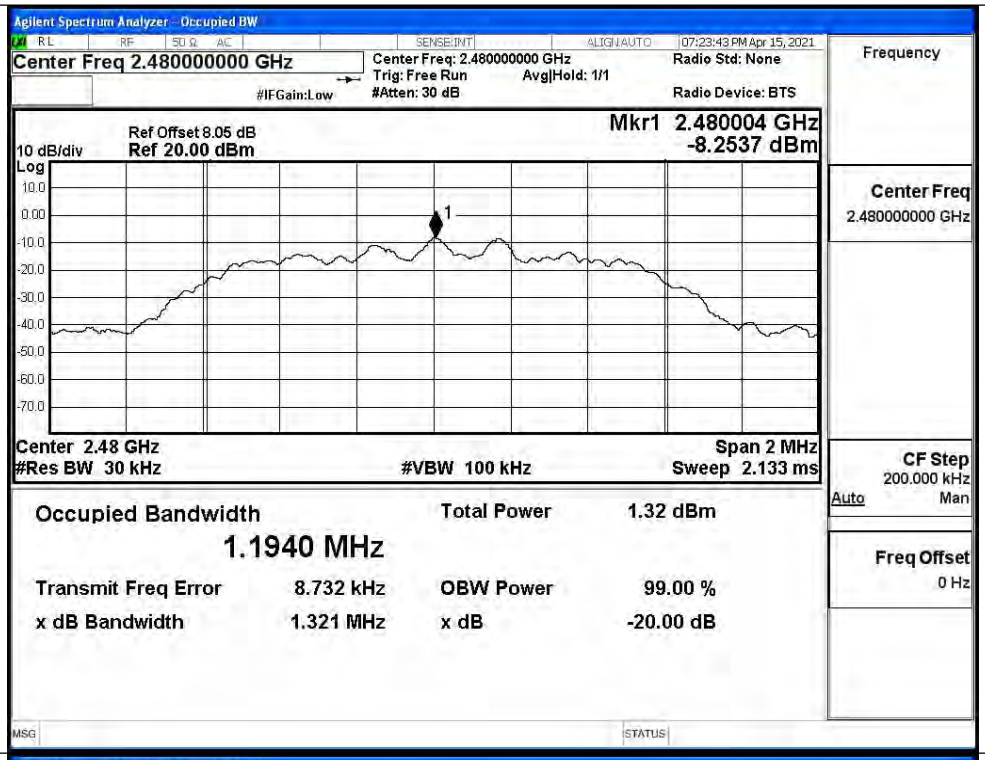
π/4DQPSK/LCH



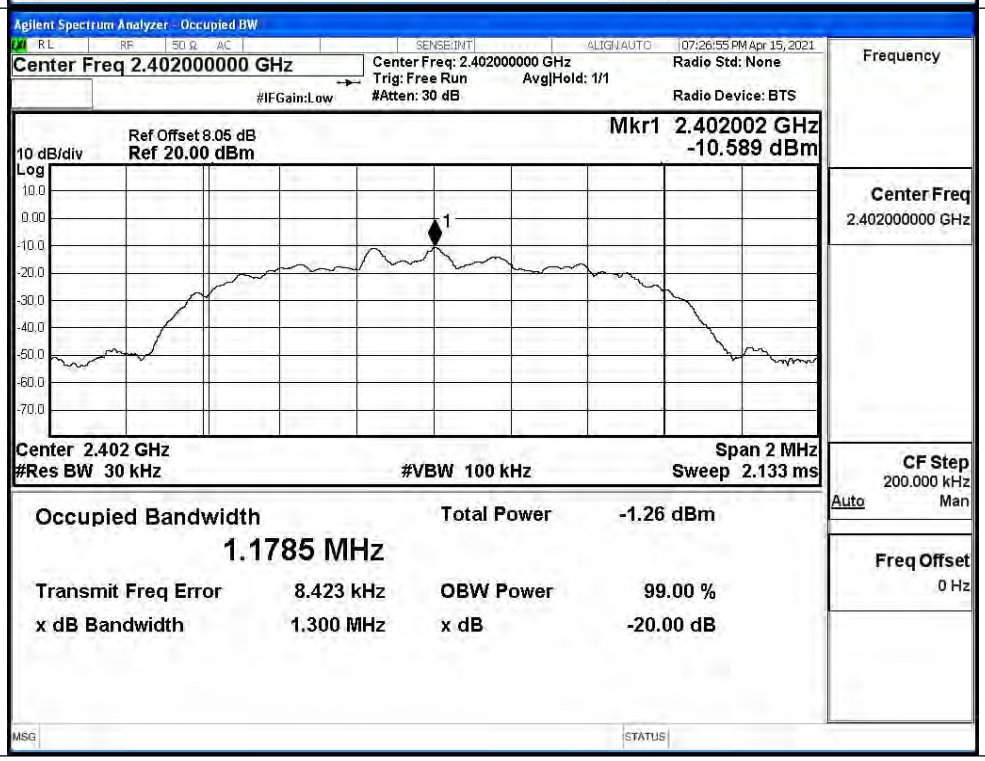
π/4DQPSK/MCH

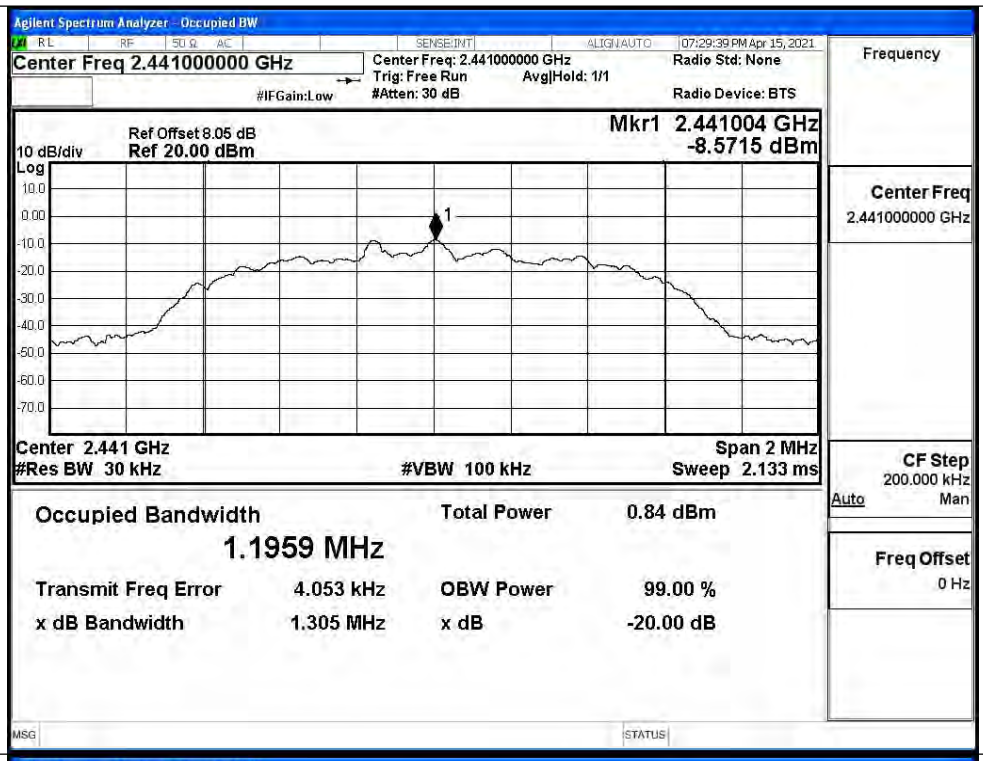
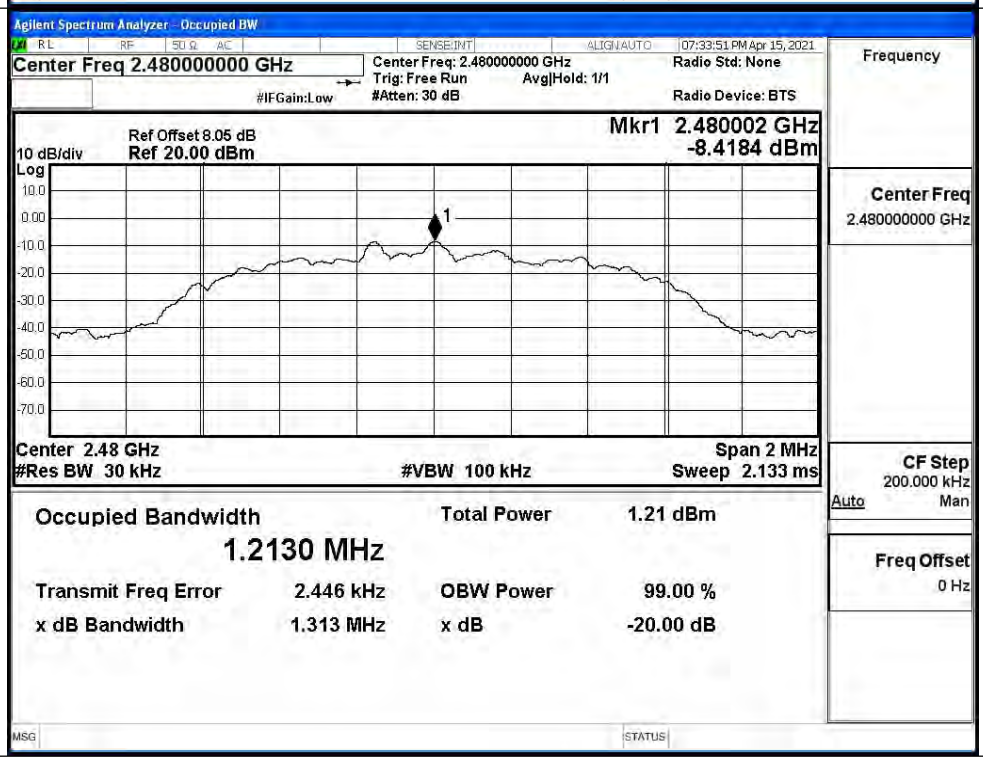


π/4DQPSK/HCH



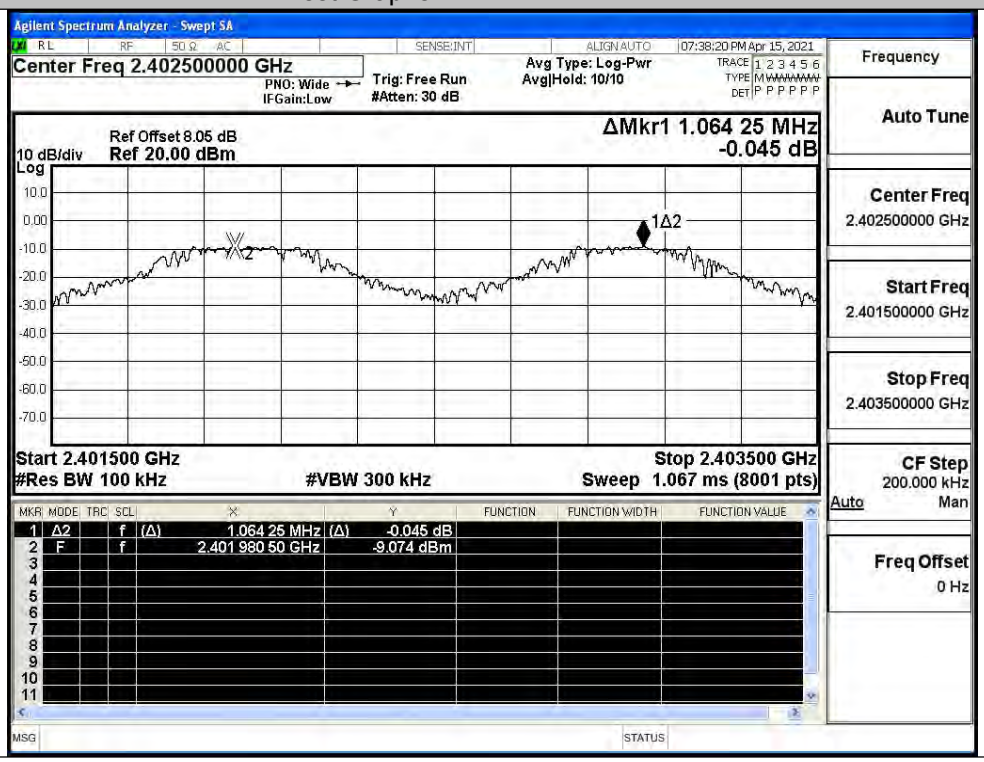
8DPSK/LCH



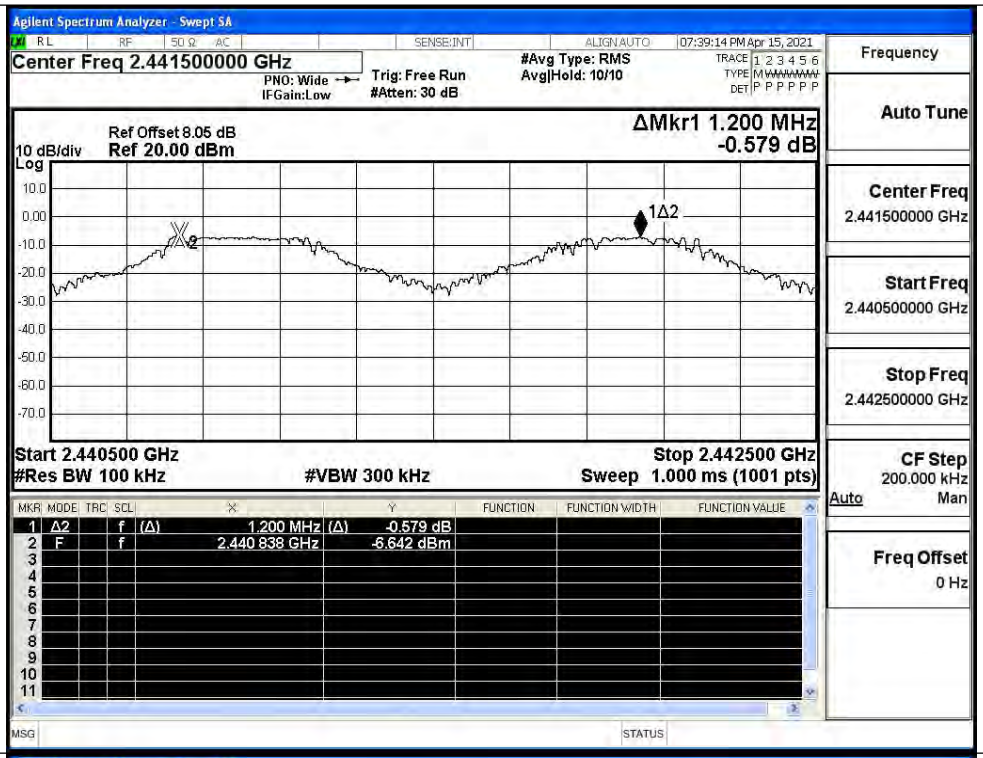
8DPSK/MCH		
8DPSK/HCH		

A.3 Carrier Frequency Separation

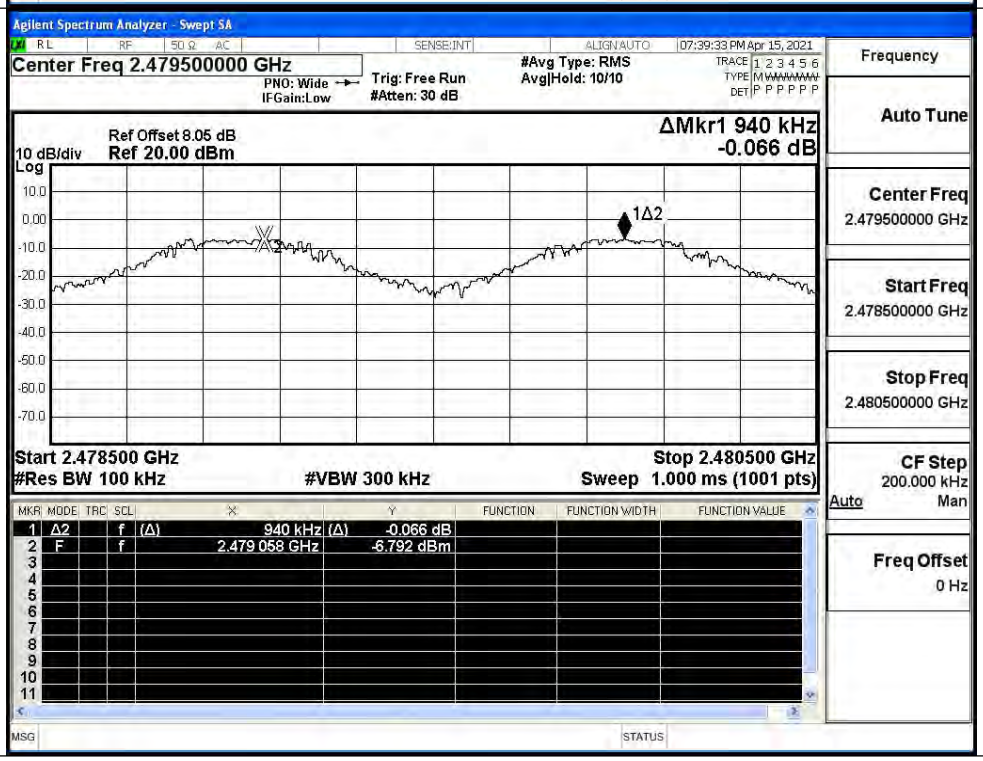
Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.064	0.637	PASS
	MCH	1.200	0.636	PASS
	HCH	0.940	0.639	PASS
π/4DQPSK	LCH	0.998	0.855	PASS
	MCH	1.002	0.878	PASS
	HCH	0.996	0.881	PASS
8DPSK	LCH	1.056	0.867	PASS
	MCH	1.012	0.870	PASS
	HCH	1.216	0.875	PASS

Test Graphs		
GFSK/LCH		

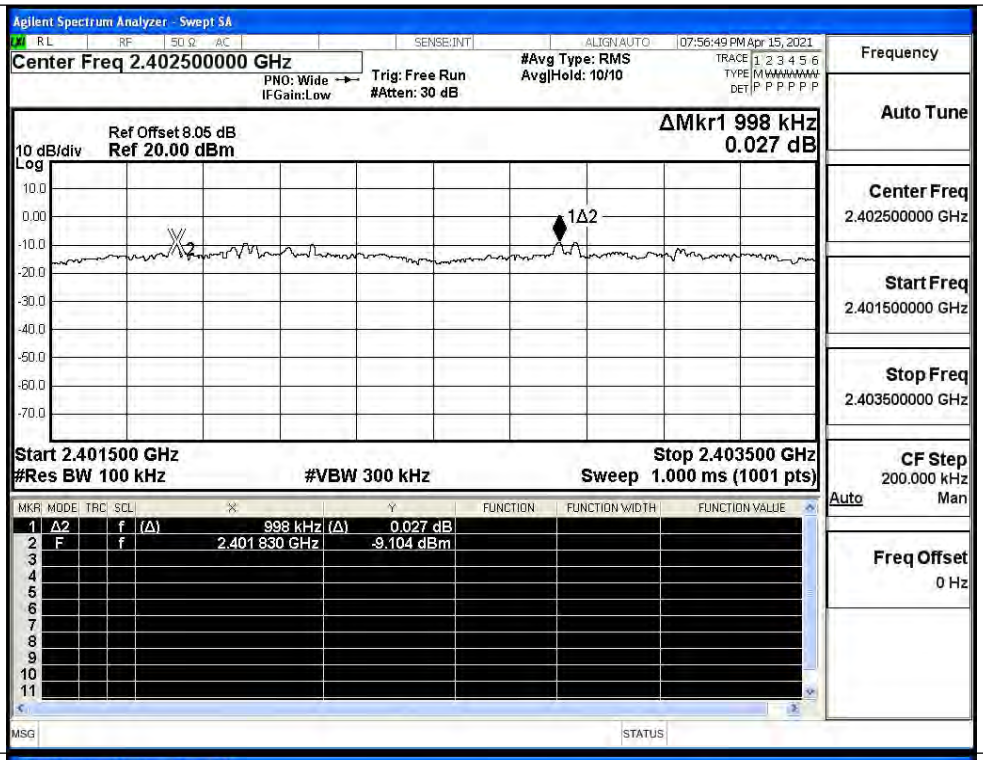
GFSK/MCH



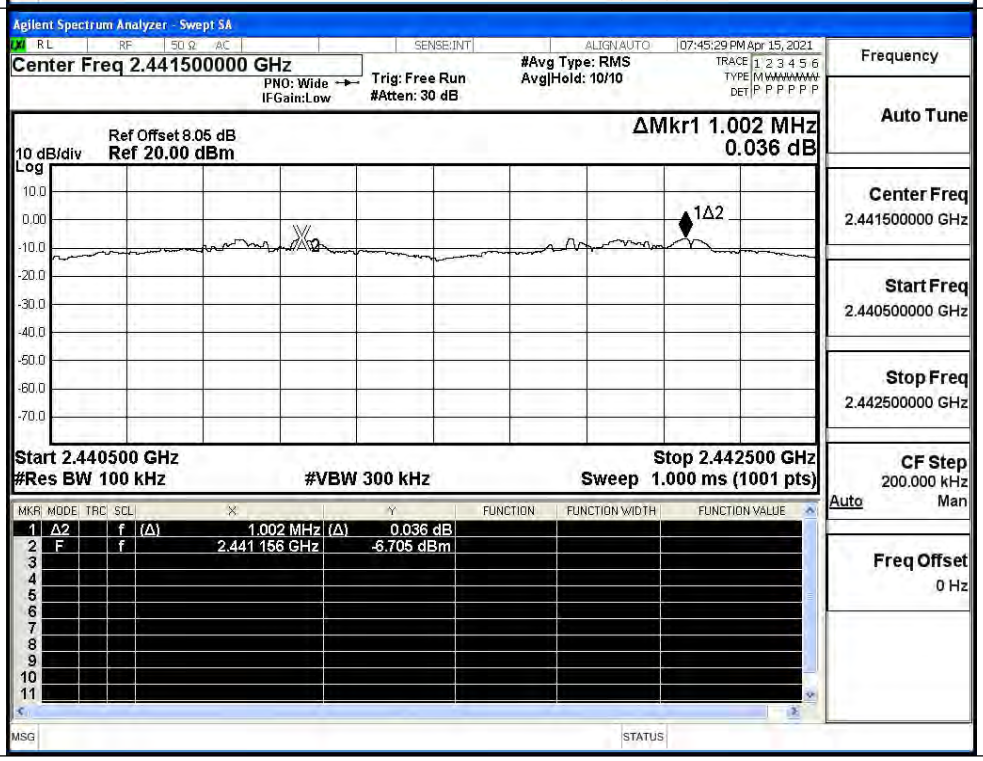
GFSK/HCH



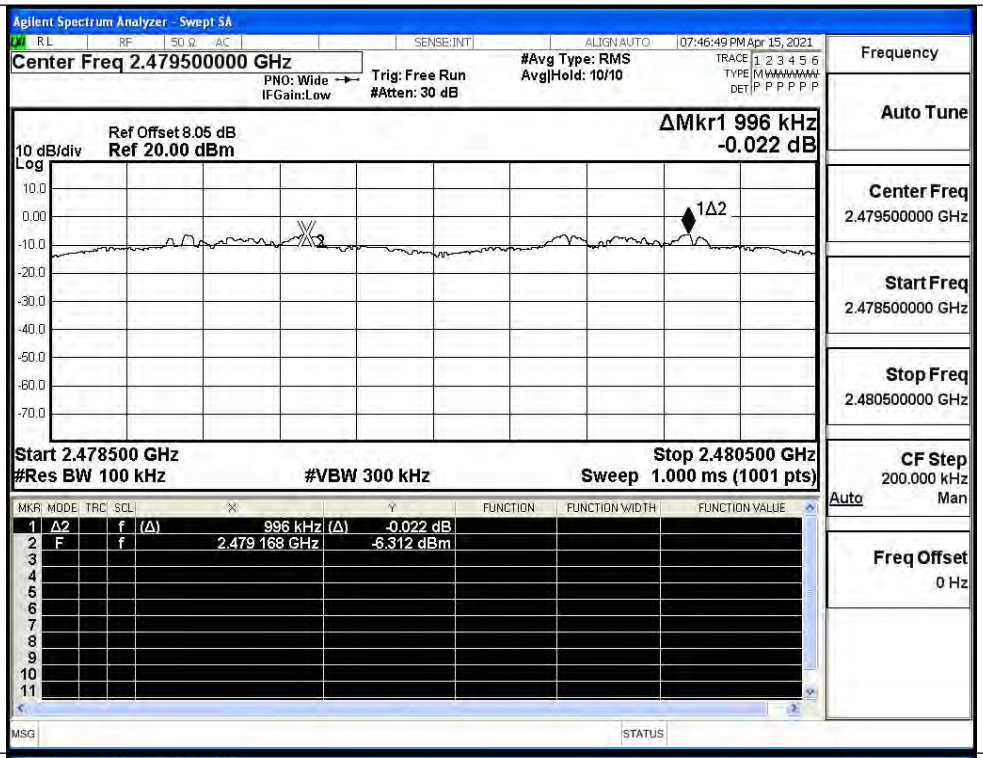
π/4DQPSK/LCH



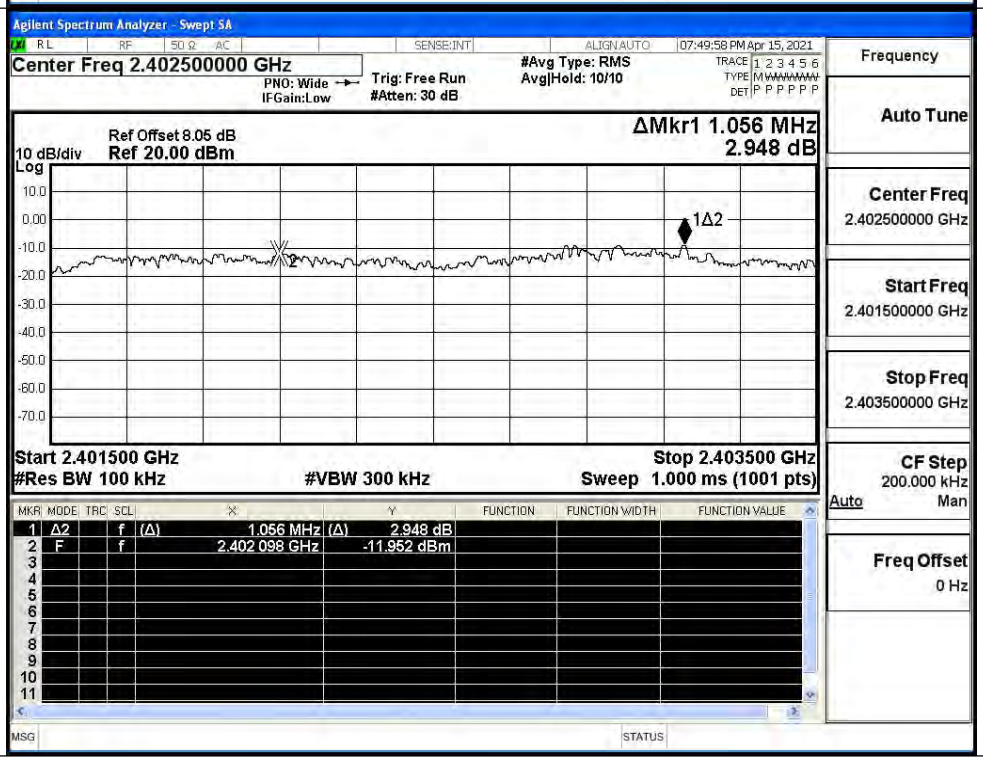
π/4DQPSK/MCH

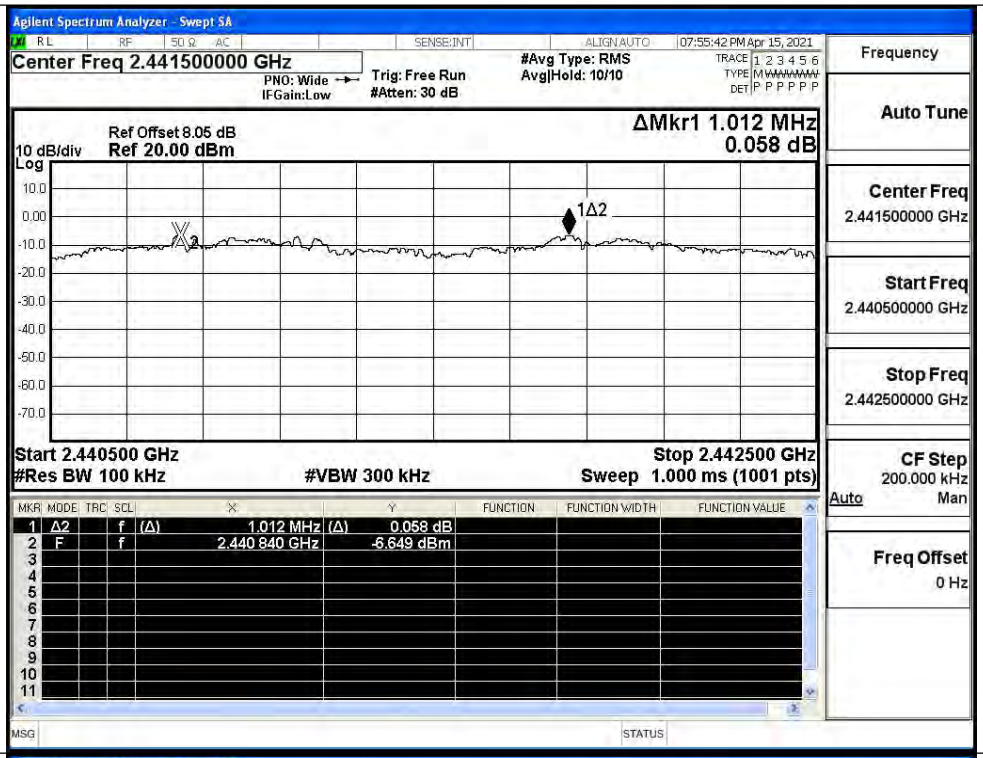
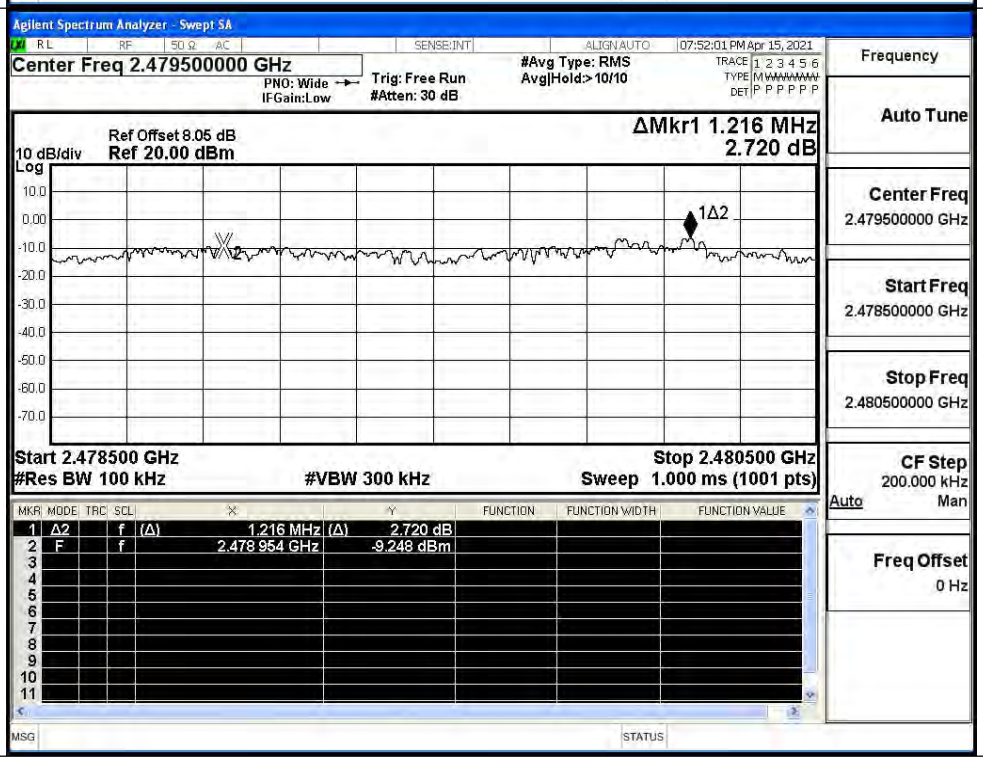


π/4DQPSK/HCH



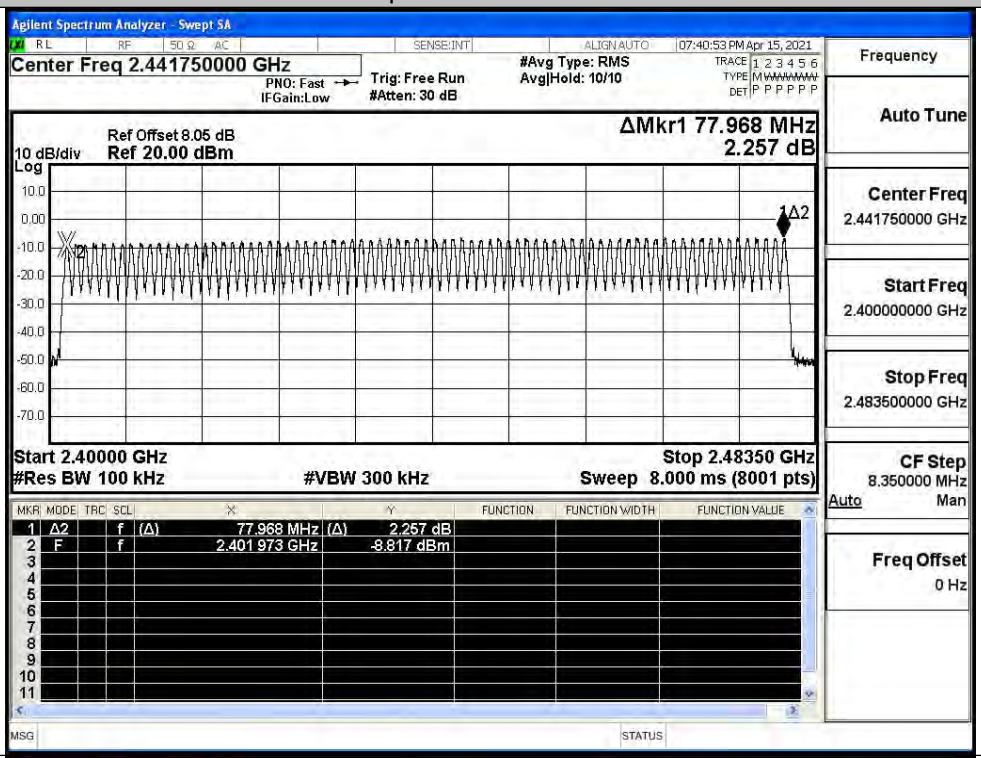
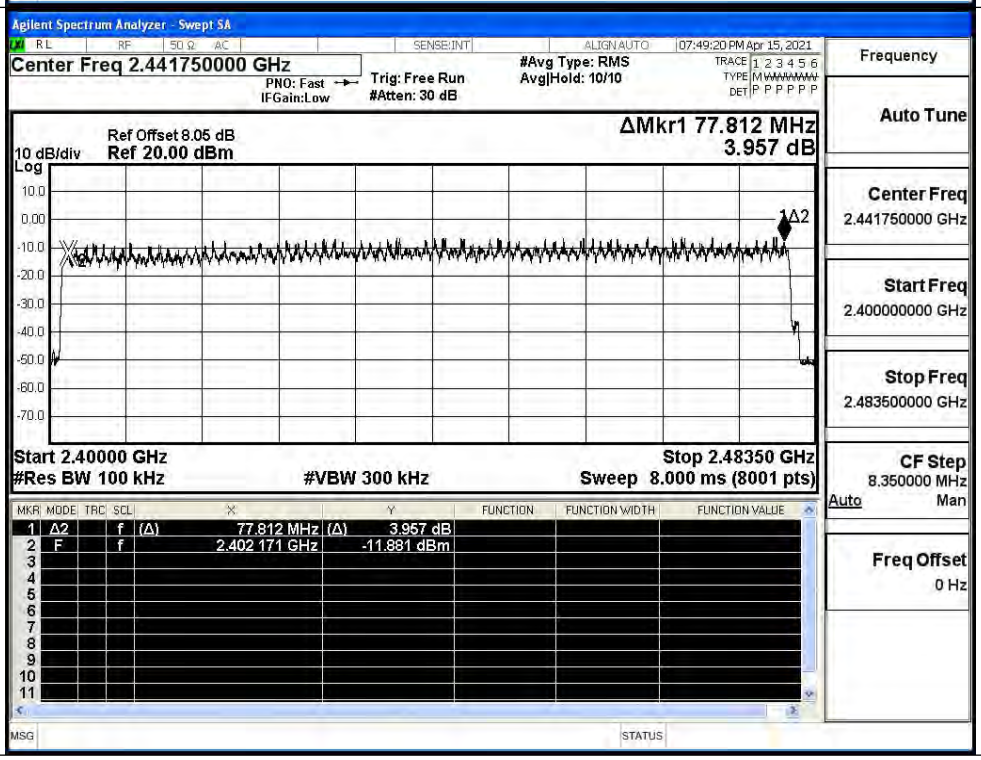
8DPSK/LCH

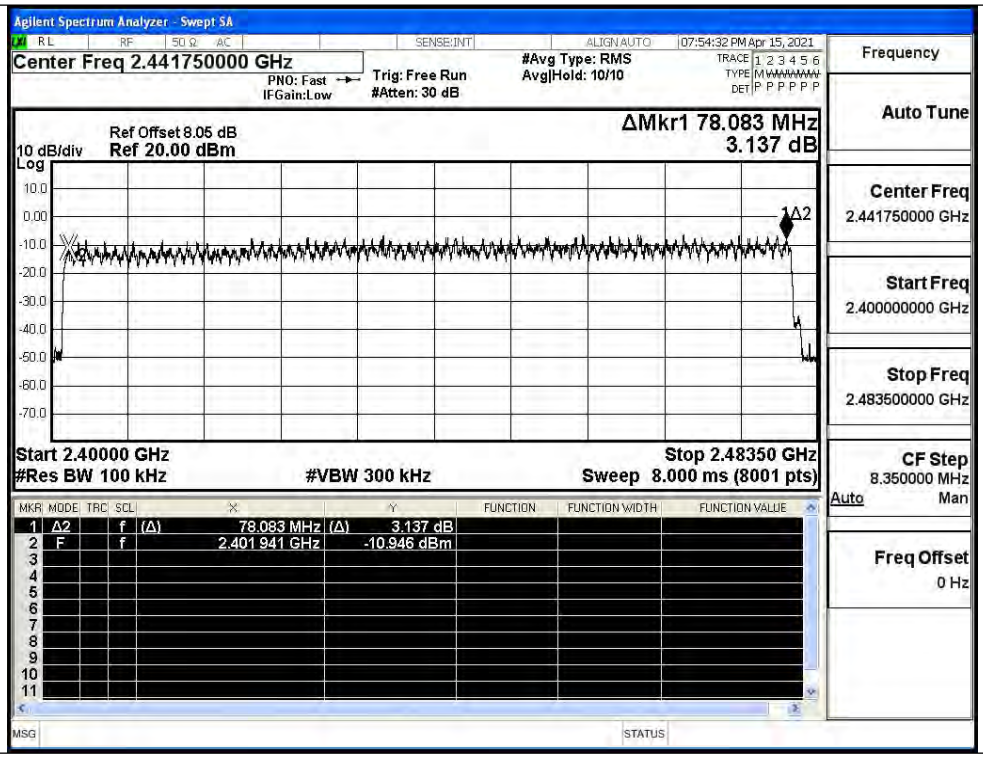


8DPSK/MCH		
8DPSK/HCH		

A.4 Hopping Channel Number

Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	>=15	PASS
π/4DQPSK	Hop	79	>=15	PASS
8DPSK	Hop	79	>=15	PASS

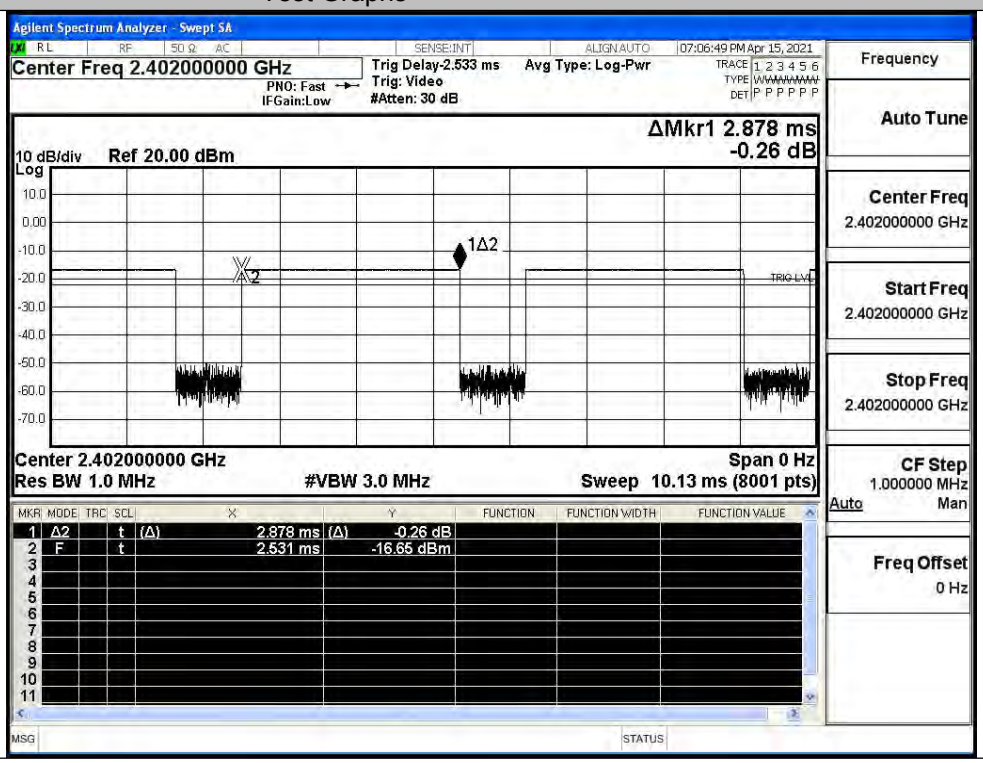
Test Graphs		
GFSK/Hop		
π/4DQPSK/Hop		

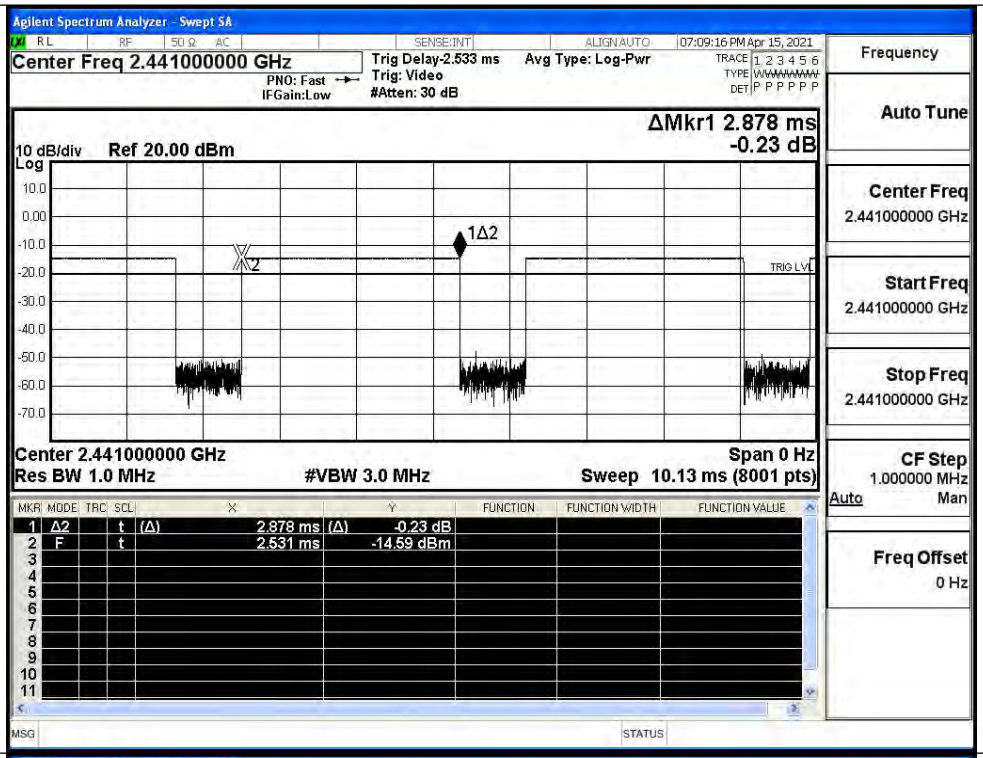
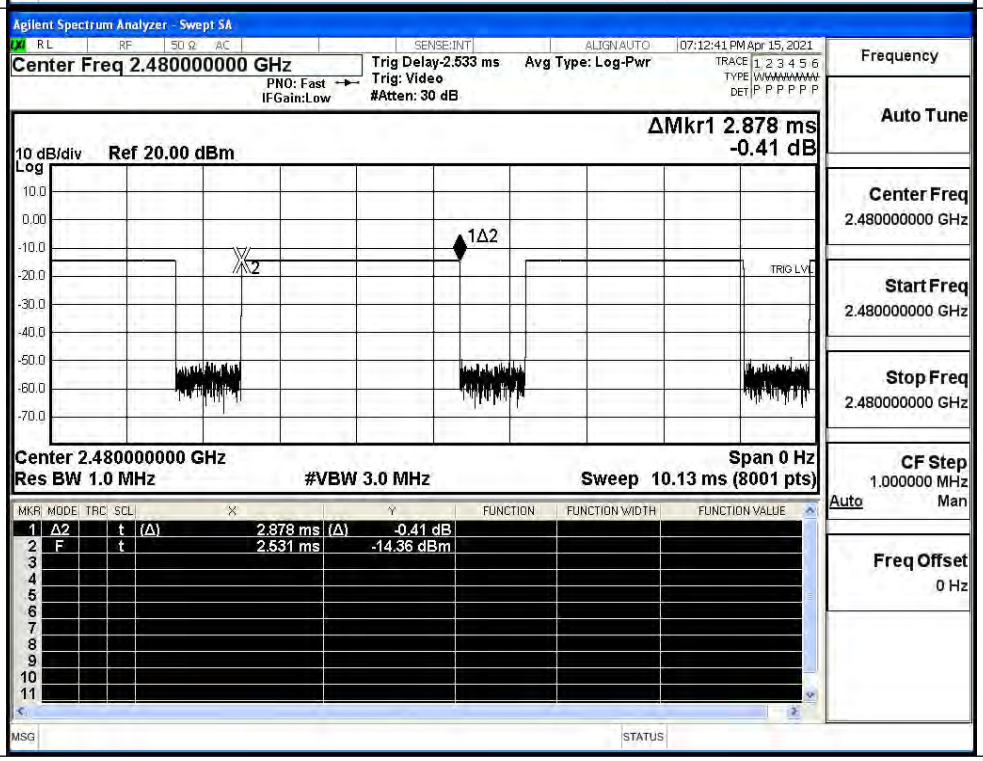
8DPSK/Hop	

Agilent Spectrum Analyzer - Swept SA
Center Freq 2.441750000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 10/10
07:54:32 PM Apr 15, 2021
Ref Offset 8.05 dB
10 dB/div
Ref 20.00 dBm
ΔMkr1 78.083 MHz
3.137 dB
Start 2.40000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.48350 GHz
Sweep 8.000 ms (8001 pts)
1 Δ2 f (Δ) 78.083 MHz (Δ) 3.137 dB
2 F f 2.401 941 GHz -10.946 dBm
Frequency
Auto Tune
Center Freq
2.441750000 GHz
Start Freq
2.400000000 GHz
Stop Freq
2.483500000 GHz
CF Step
8.350000 MHz
Auto Man
Freq Offset
0 Hz

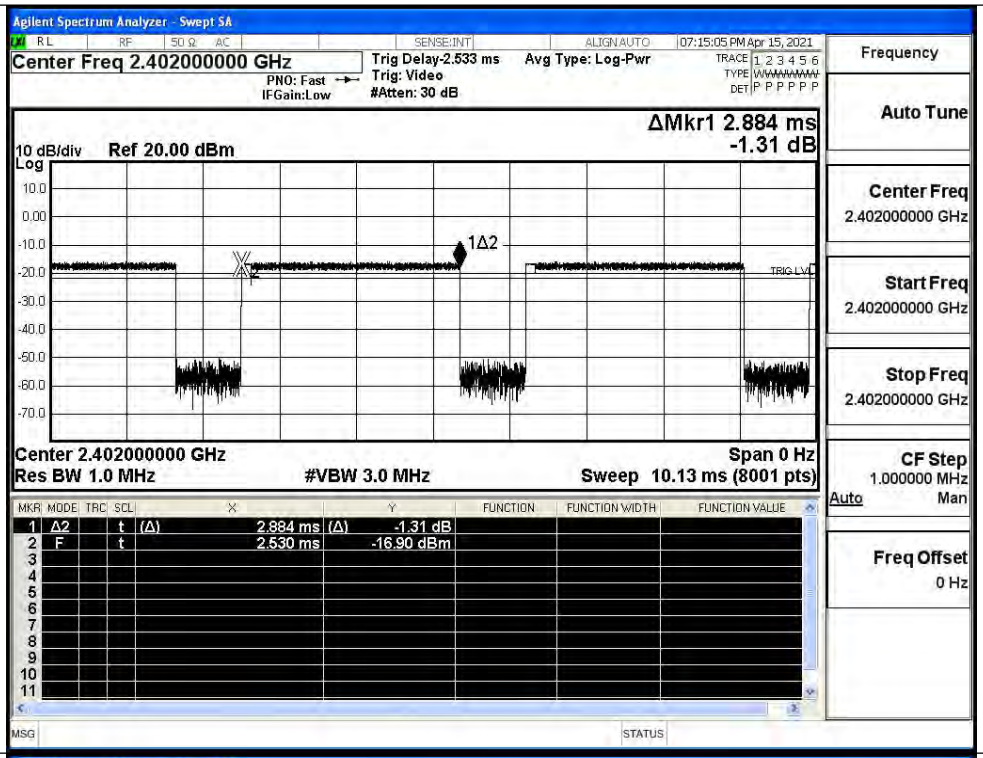
A.5 Dwell Time

Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.88	106.7	0.307	0.4	PASS
	DH5	MCH	2.88	106.7	0.307	0.4	PASS
	DH5	HCH	2.88	106.7	0.307	0.4	PASS
π/4DQPSK	2DH5	LCH	2.88	106.7	0.307	0.4	PASS
	2DH5	MCH	2.88	106.7	0.307	0.4	PASS
	2DH5	HCH	2.88	106.7	0.307	0.4	PASS
8DPSK	3DH5	LCH	2.89	106.7	0.308	0.4	PASS
	3DH5	MCH	2.89	106.7	0.308	0.4	PASS
	3DH5	HCH	2.89	106.7	0.308	0.4	PASS

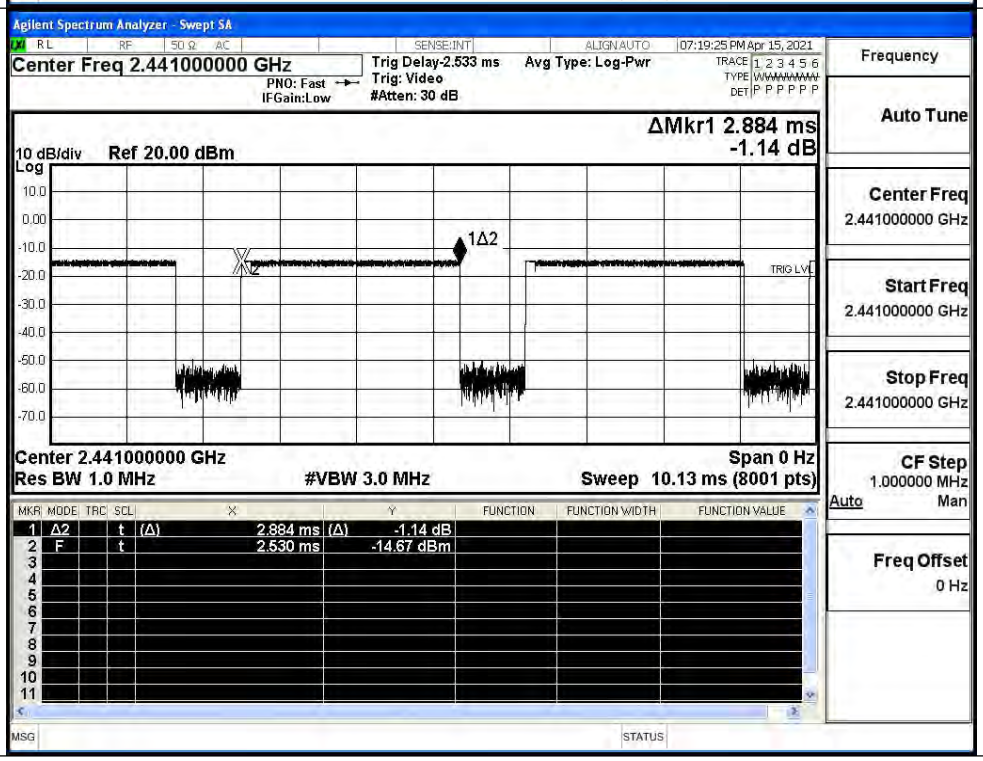
Test Graphs	
GFSK_DH5/LCH	

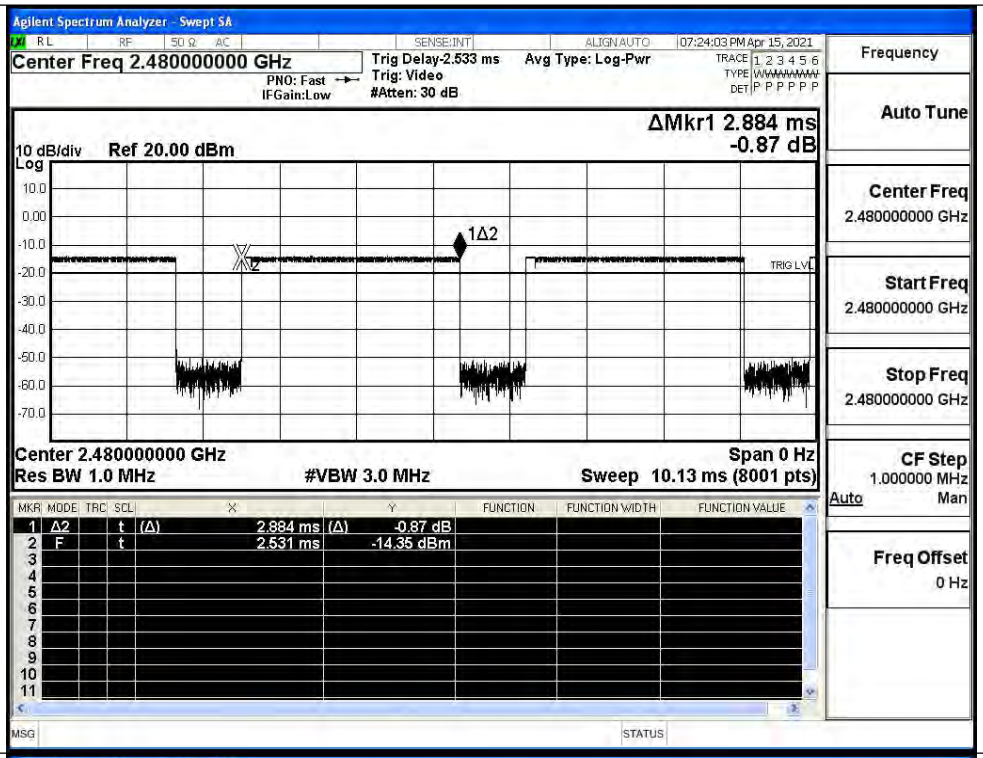
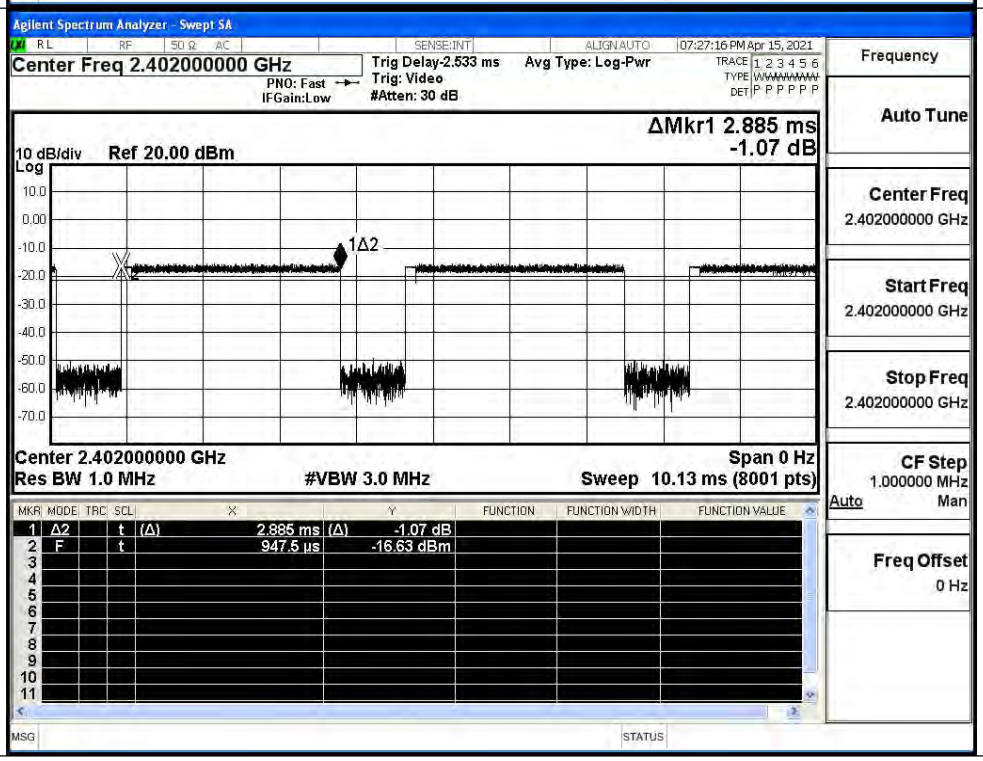
GFSK_DH5/MCH	
GFSK_DH5/HCH	

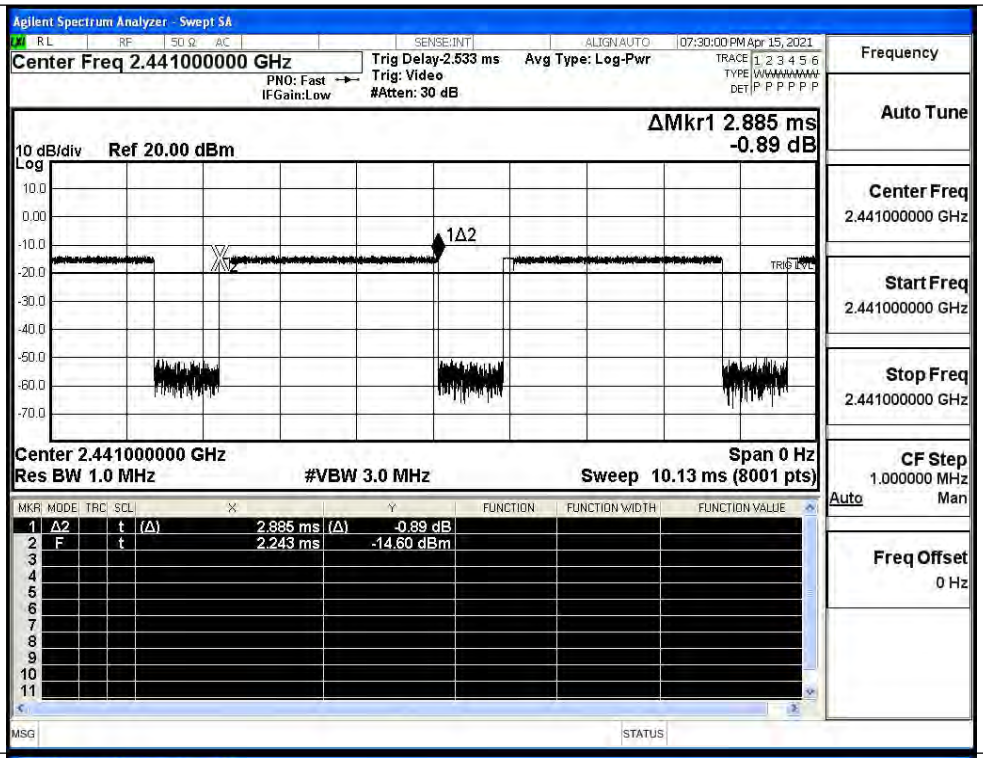
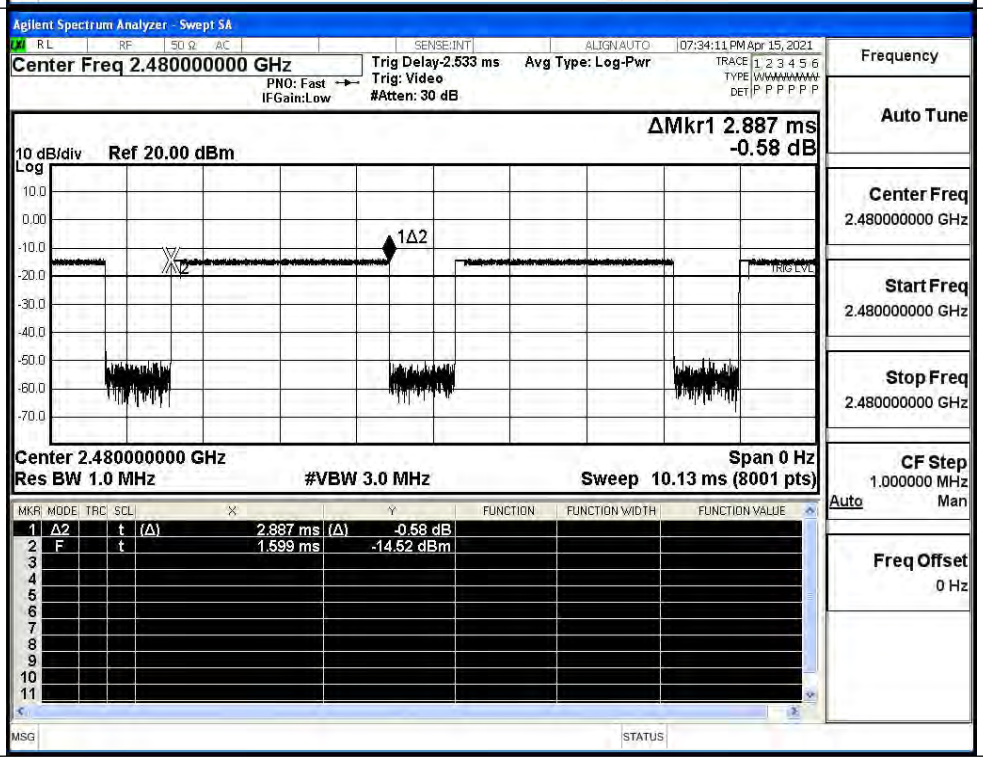
π/4DQPSK
_2DH5/LCH



π/4DQPSK
_2DH5/MCH

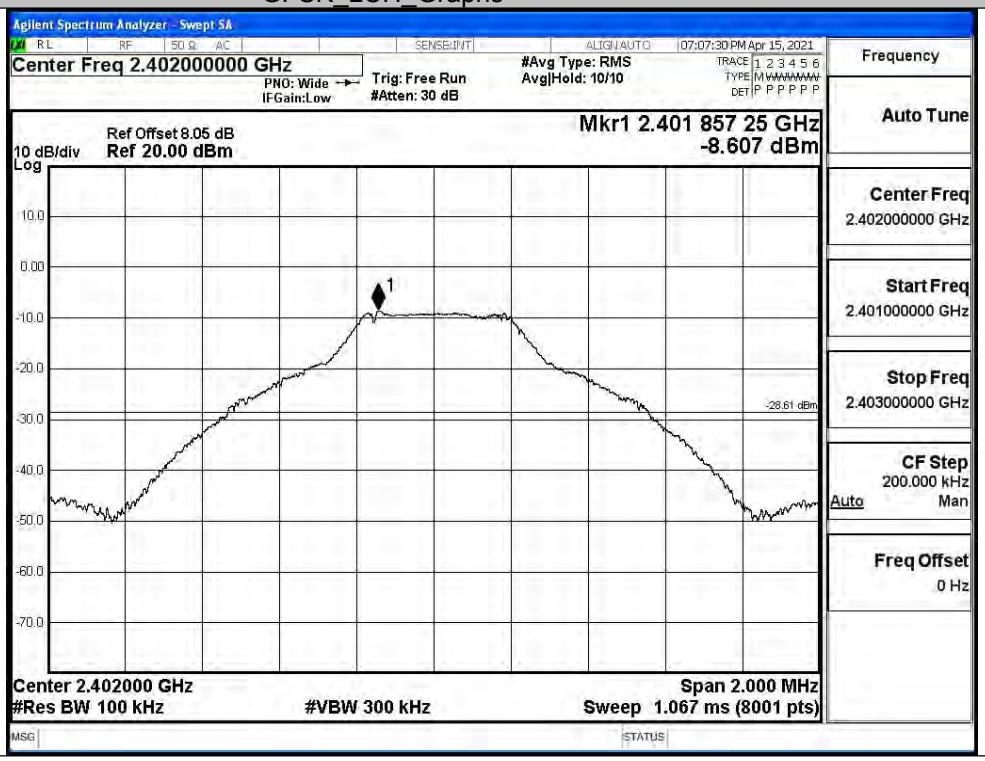


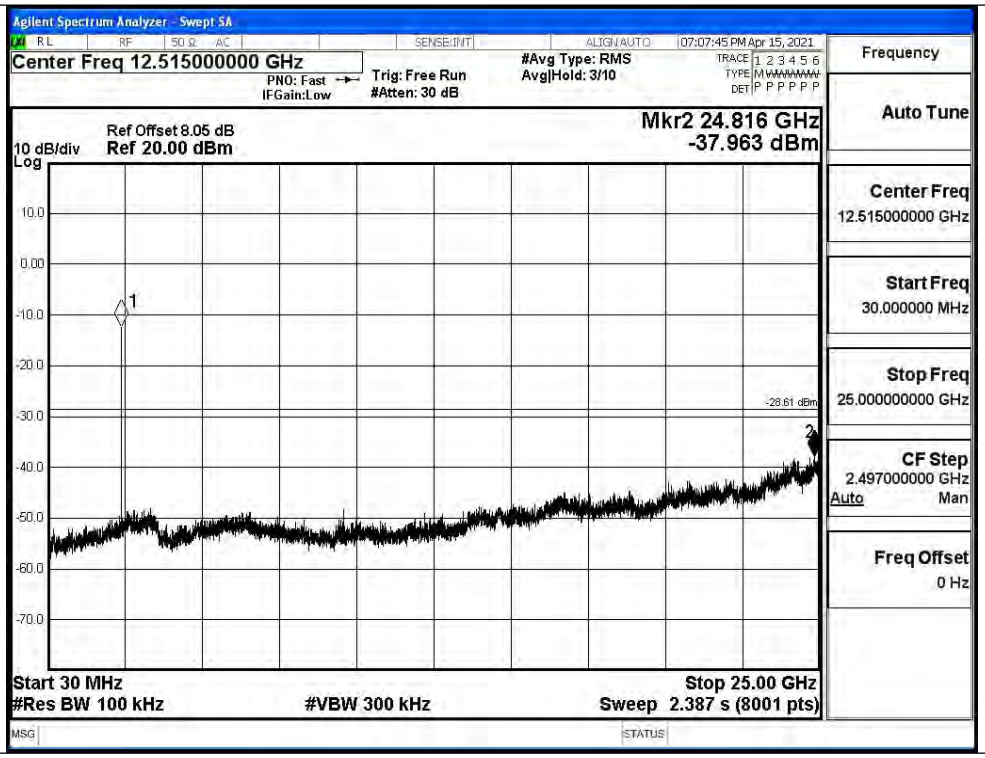
π/4DQPSK _2DH5/HCH	
8DPSK _3DH5/LCH	

8DPSK _3DH5/MCH	
8DPSK _3DH5/HCH	

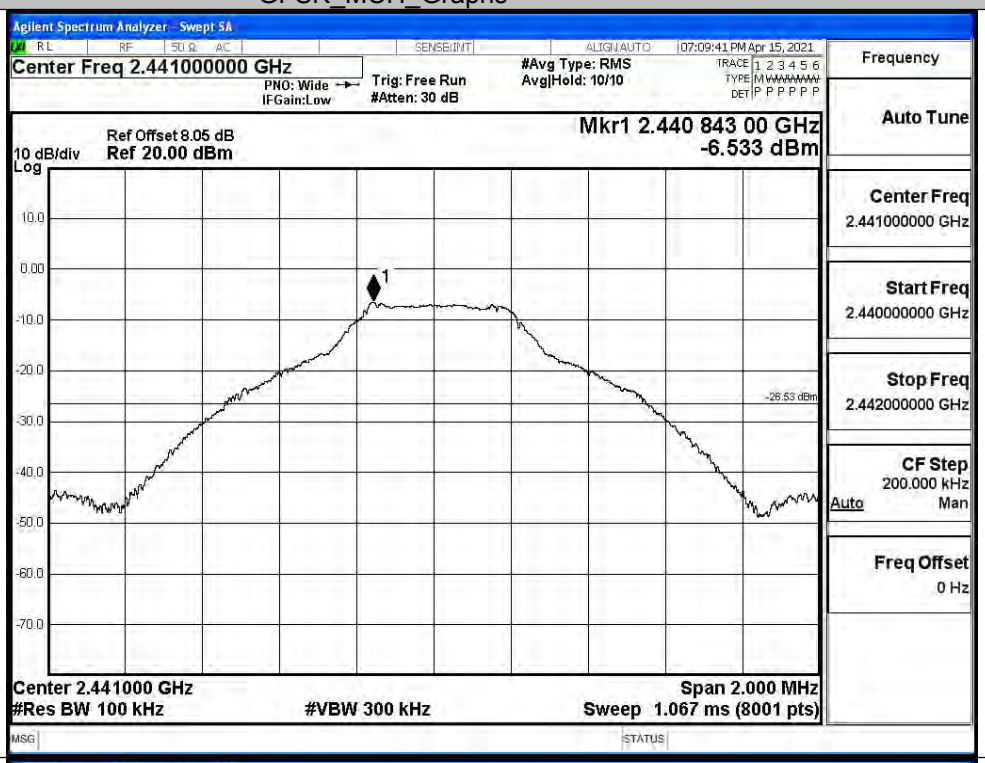
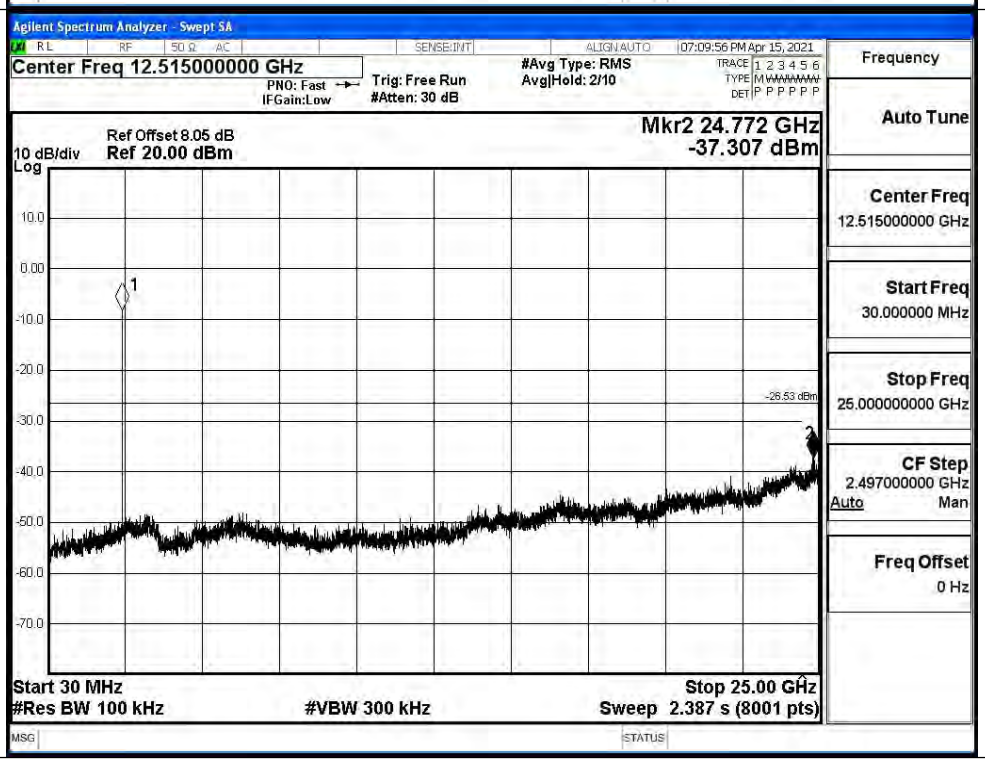
A.6 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-8.607	-37.963	-28.607	PASS
	MCH	-6.533	-37.307	-26.533	PASS
	HCH	-6.233	-38.378	-26.233	PASS
π/4DQPSK	LCH	-8.598	-38.275	-28.598	PASS
	MCH	-6.518	-37.550	-26.518	PASS
	HCH	-6.221	-37.971	-26.221	PASS
8DPSK	LCH	-8.873	-37.516	-28.873	PASS
	MCH	-6.423	-37.337	-26.423	PASS
	HCH	-6.247	-37.503	-26.247	PASS

GFSK_LCH_Graphs		
Pref		

Puw		

Agilent Spectrum Analyzer - Swept SA
Center Freq 12.515000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 3/10
07:07:45 PM Apr 15, 2021
Ref Offset 8.05 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr2 24.816 GHz
-37.963 dBm
-28.61 dBm
Start 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.00 GHz
Sweep 2.387 s (8001 pts)
Frequency
Auto Tune
Center Freq
12.515000000 GHz
Start Freq
30.000000 MHz
Stop Freq
25.000000000 GHz
CF Step
2.497000000 GHz
Auto
Man
Freq Offset
0 Hz

GFSK_MCH_Graphs			
Pref			
Puw			

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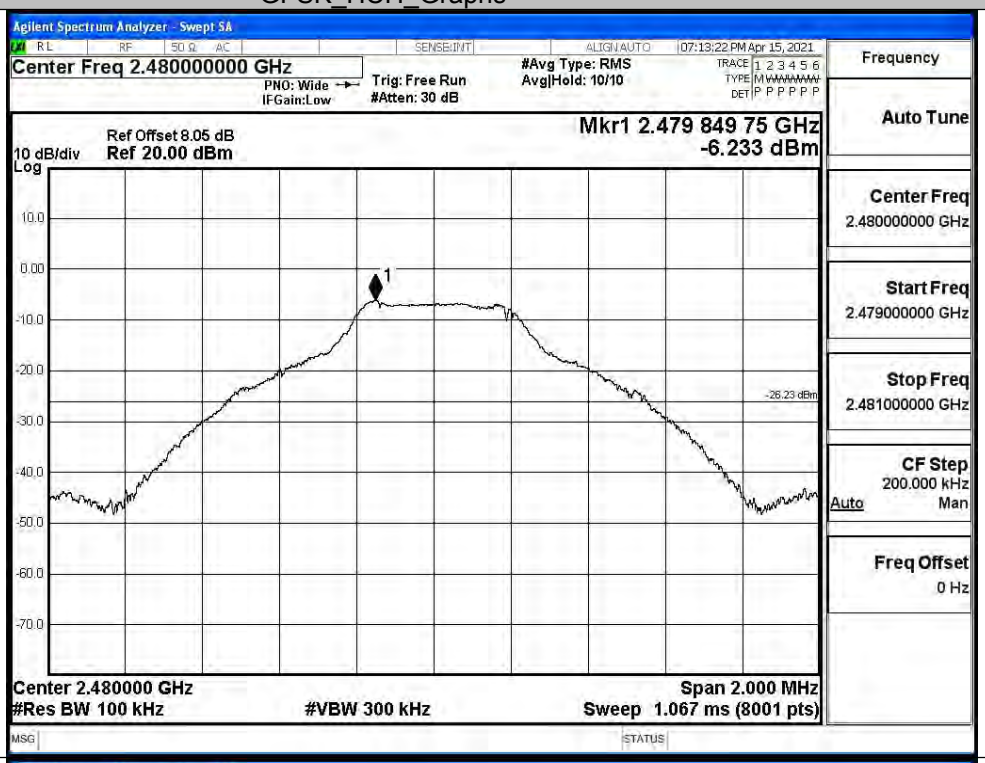
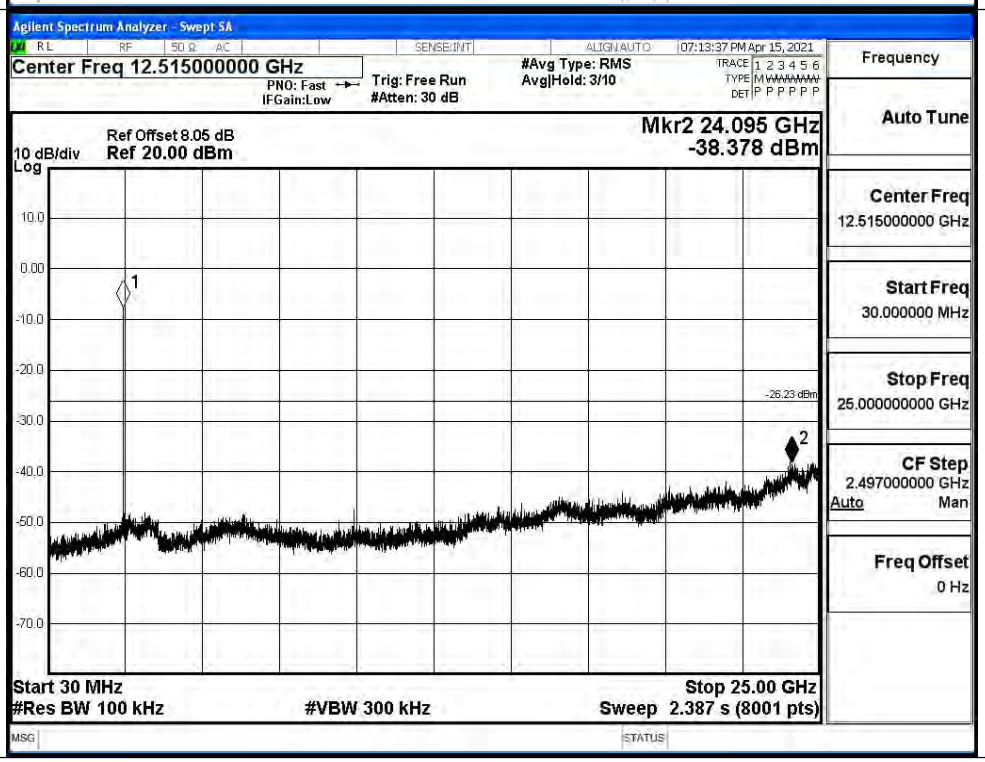
Pref		
Puw		

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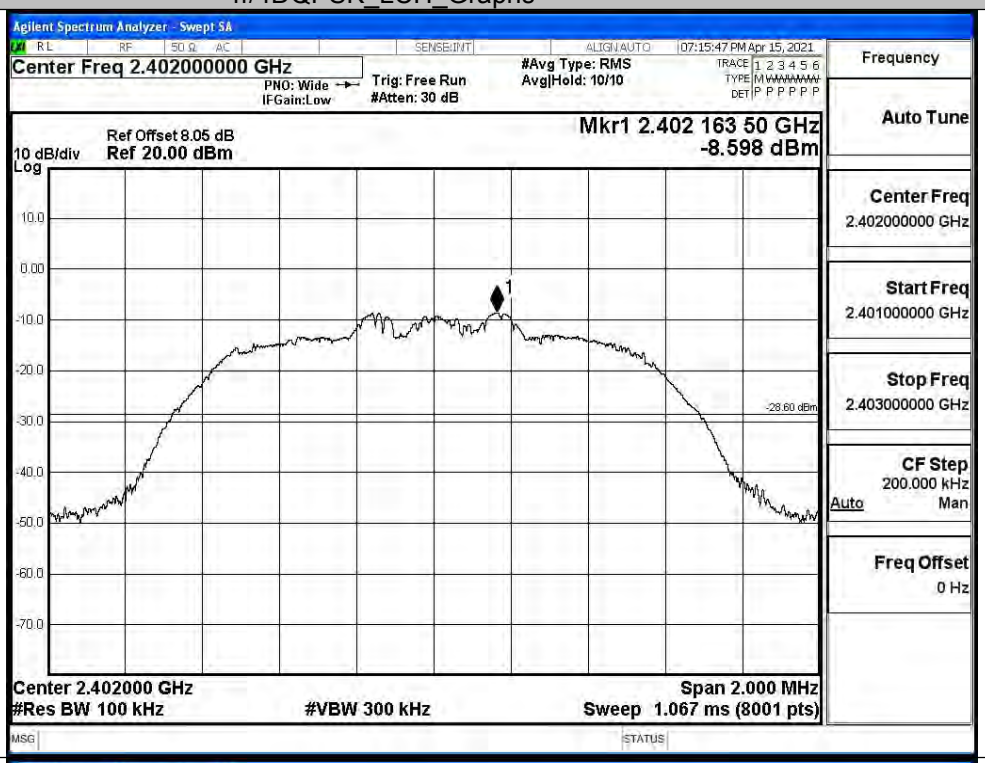
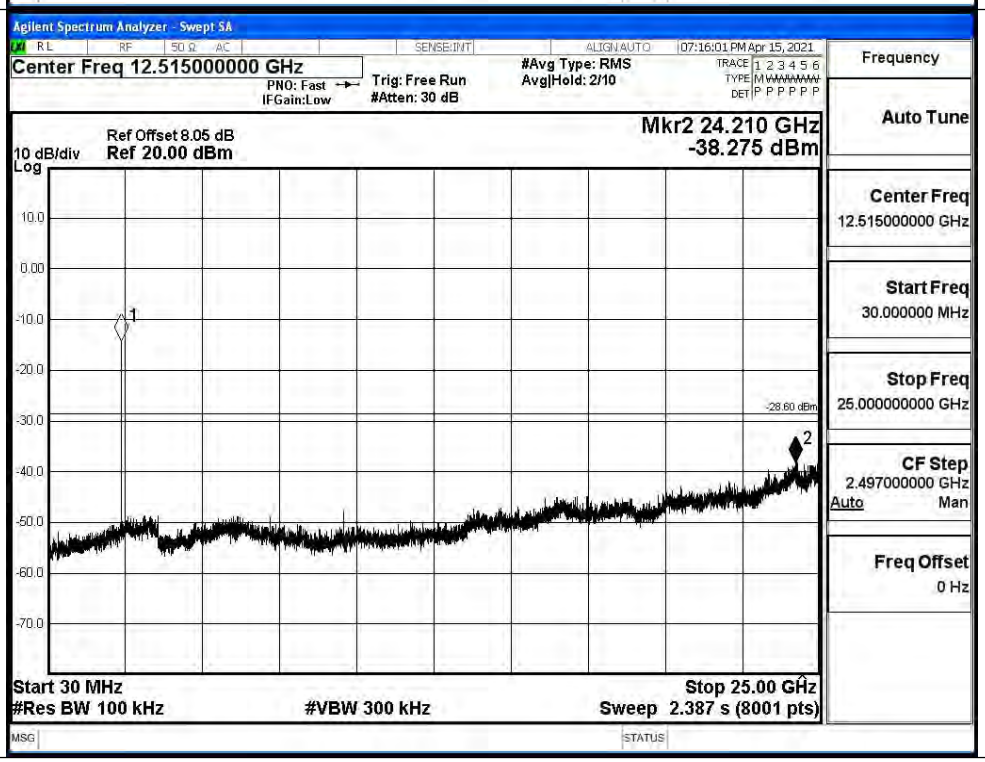
Pref		
Puw		

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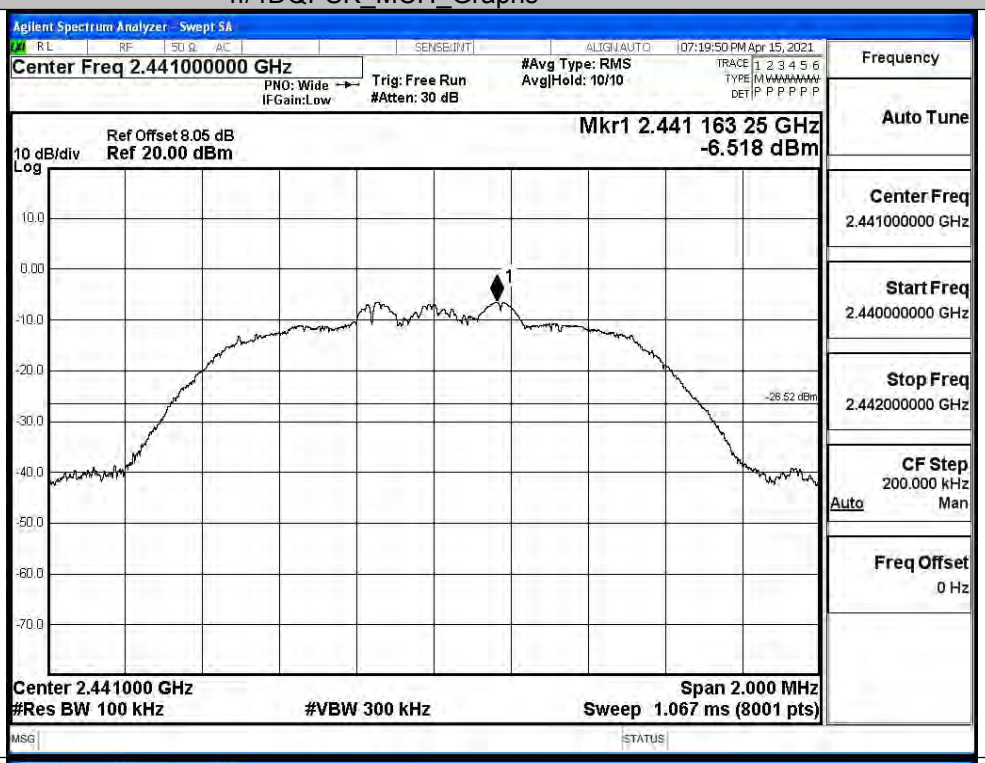
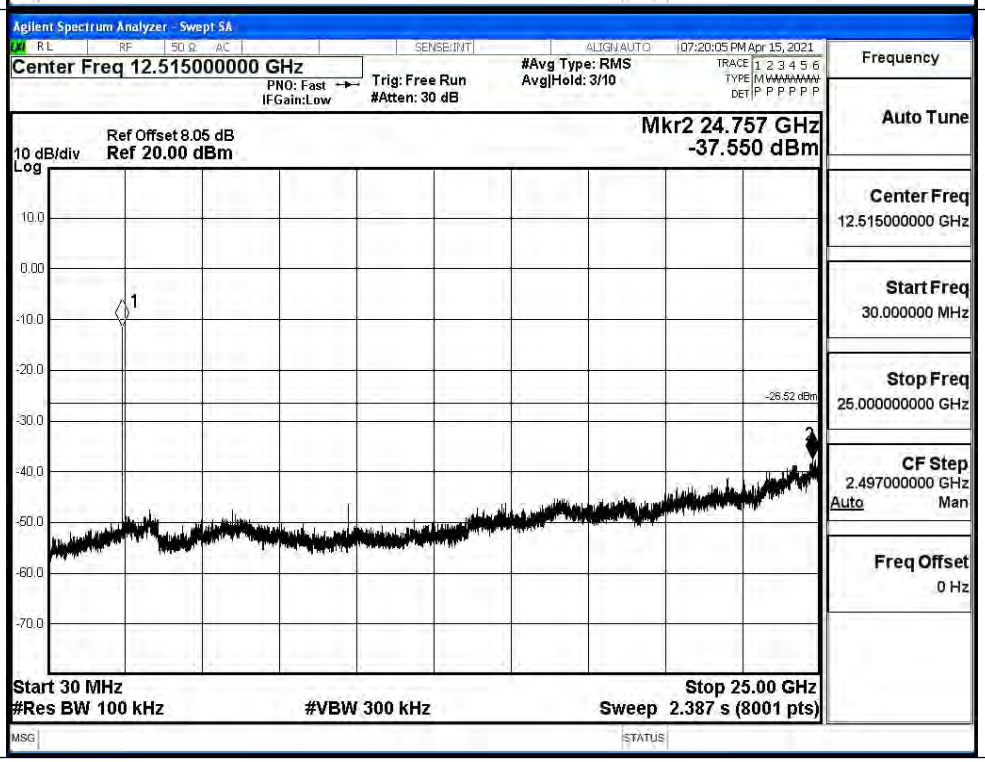
Pref			
Puw			

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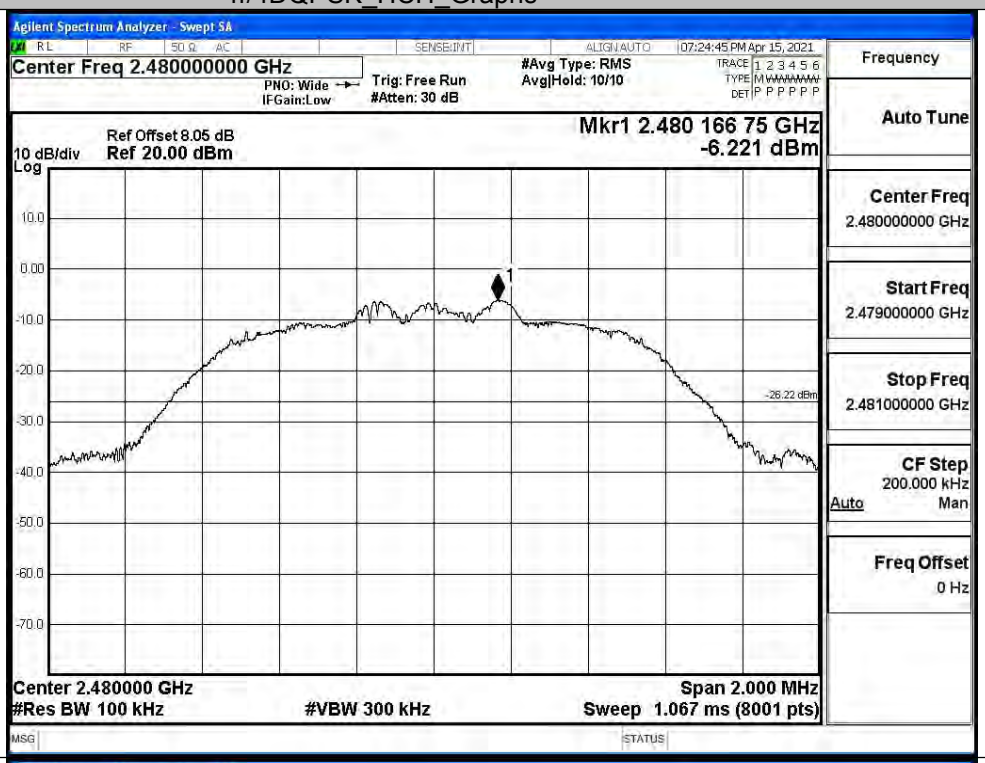
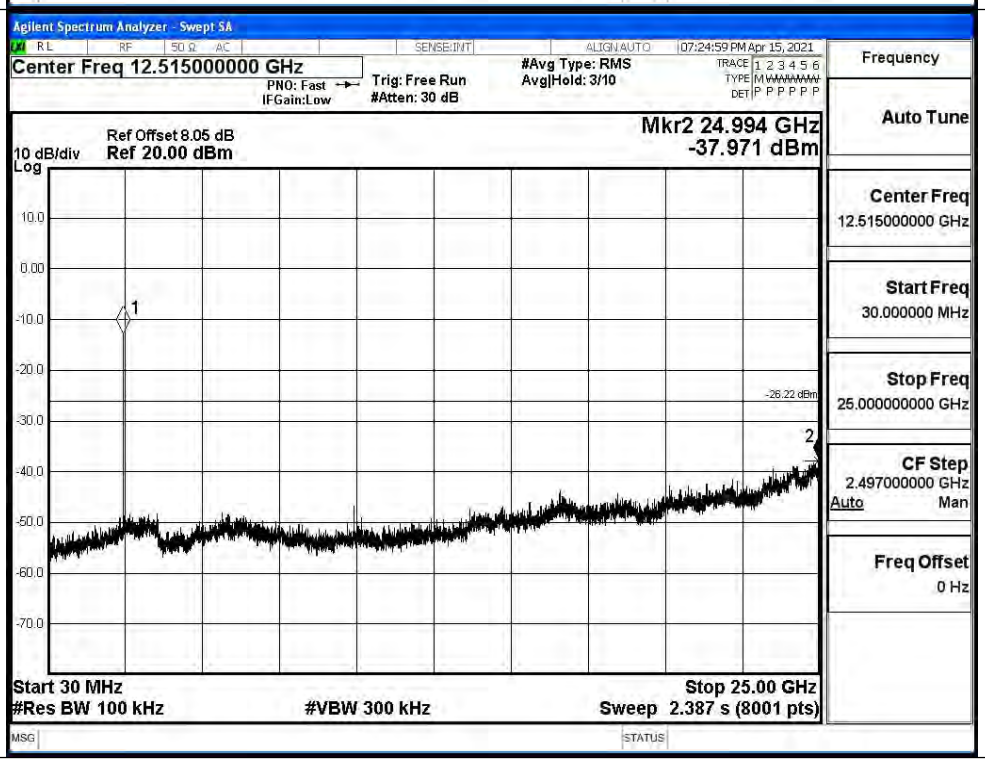
Pref		
Puw		

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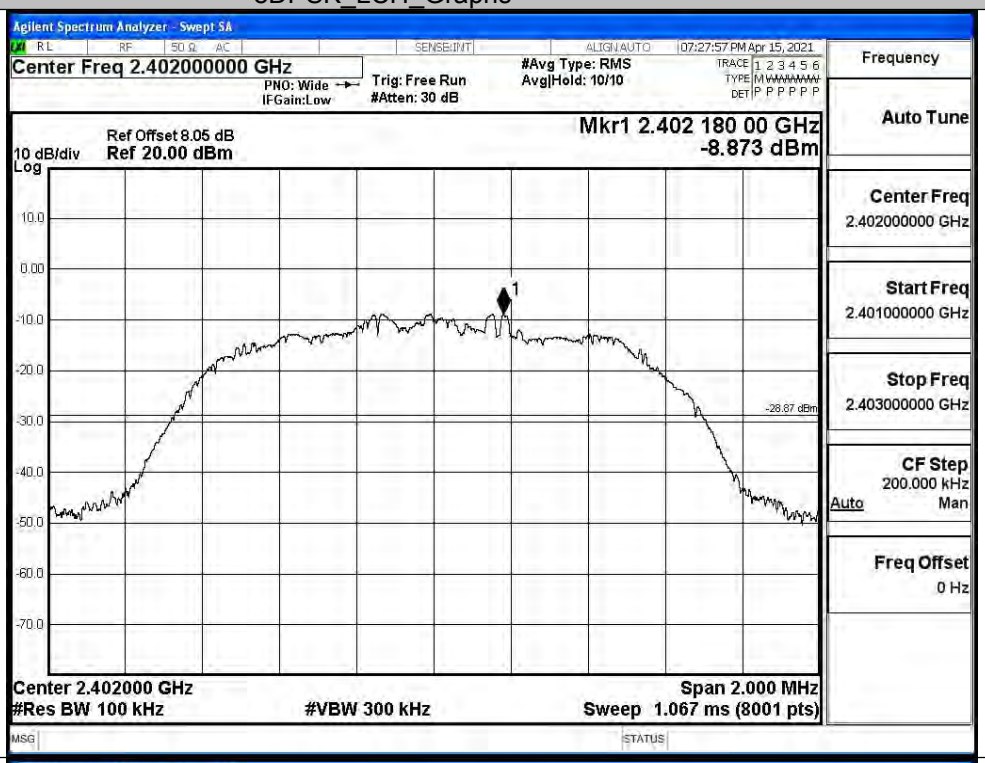
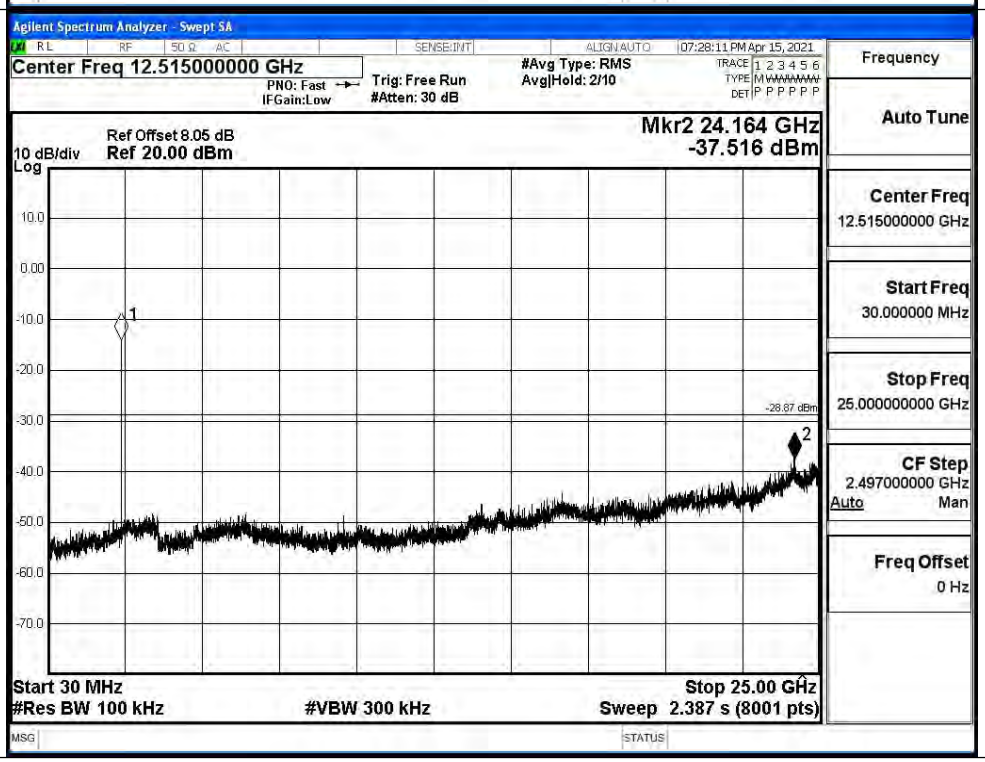
Pref		
Puw		

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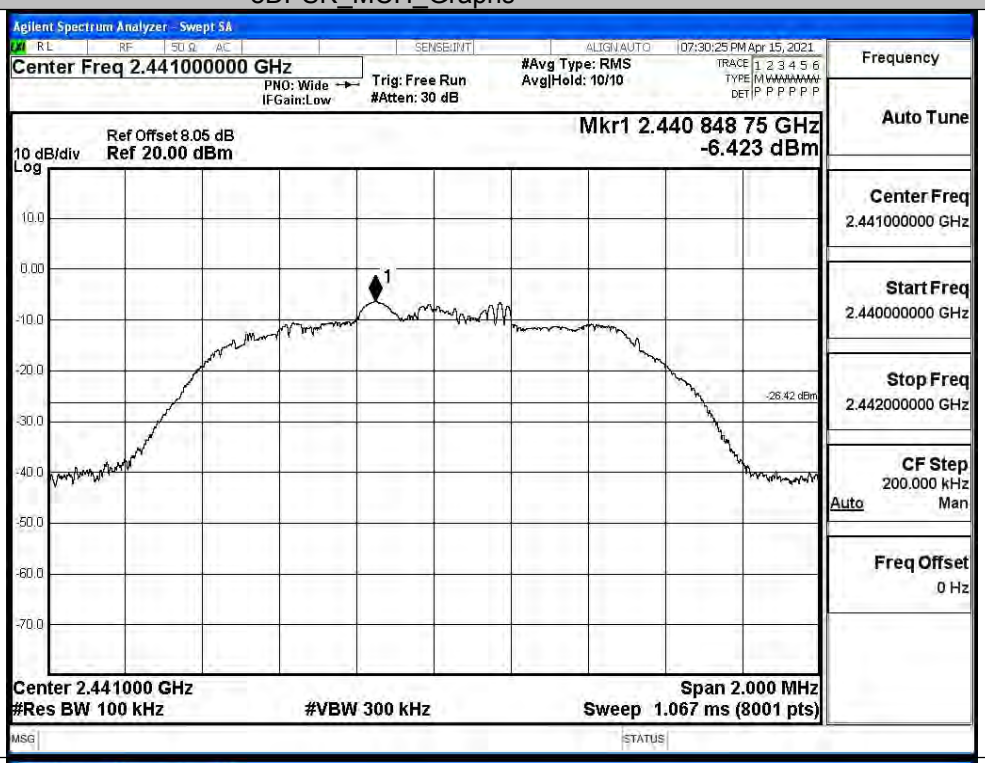
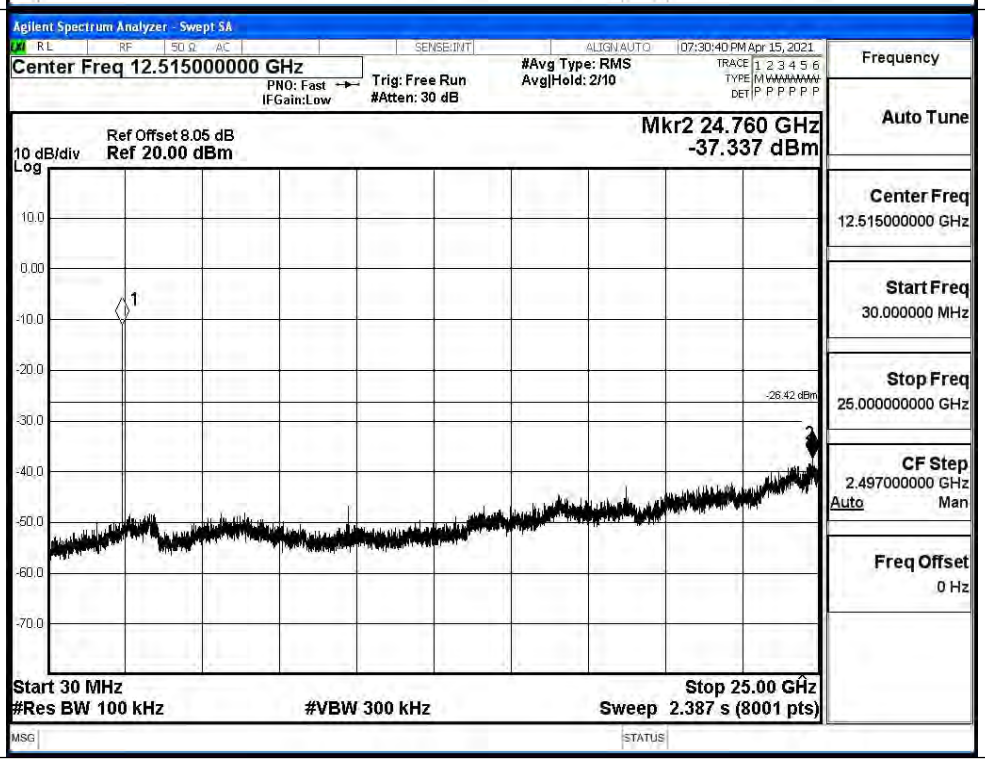
Pref		
Puw		

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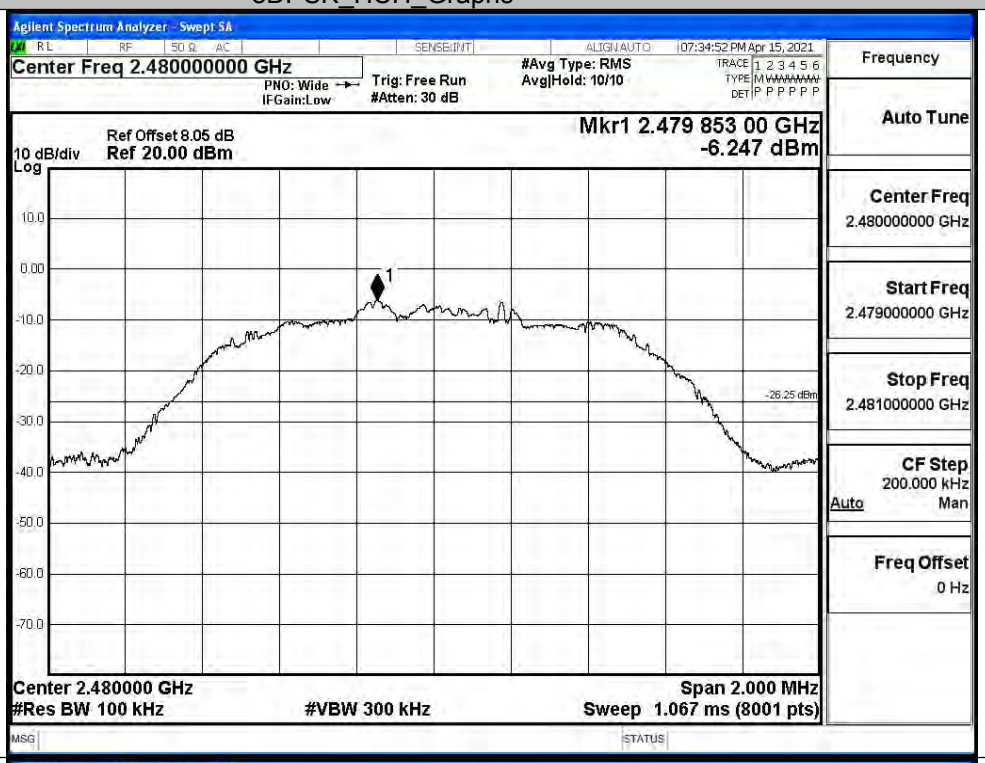
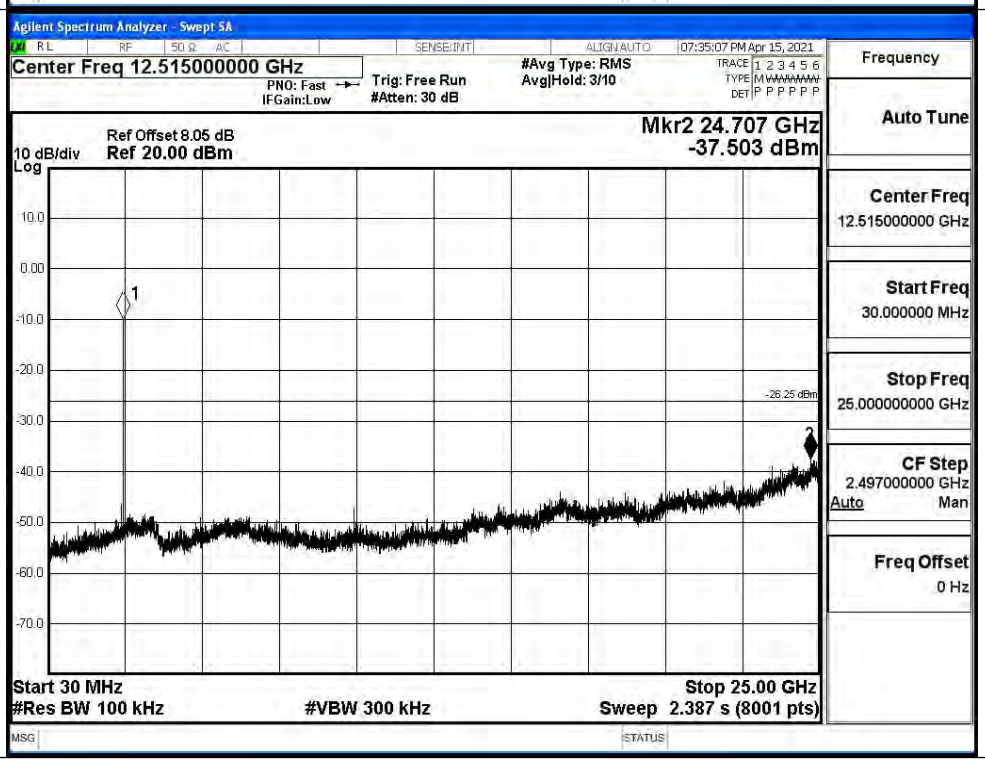
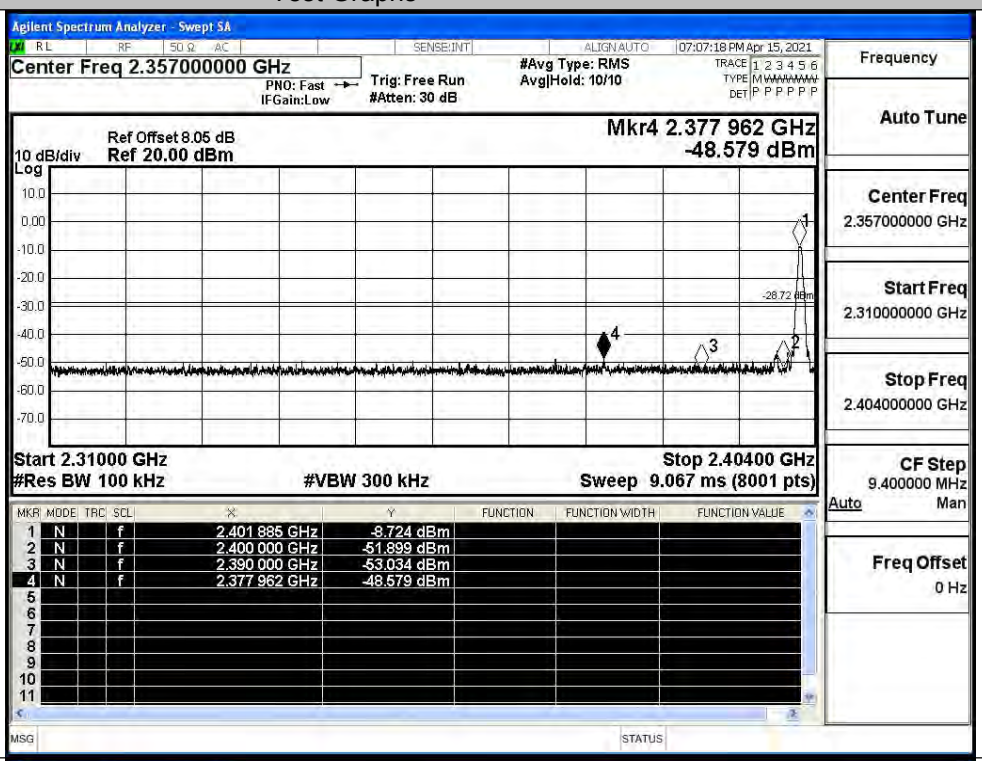
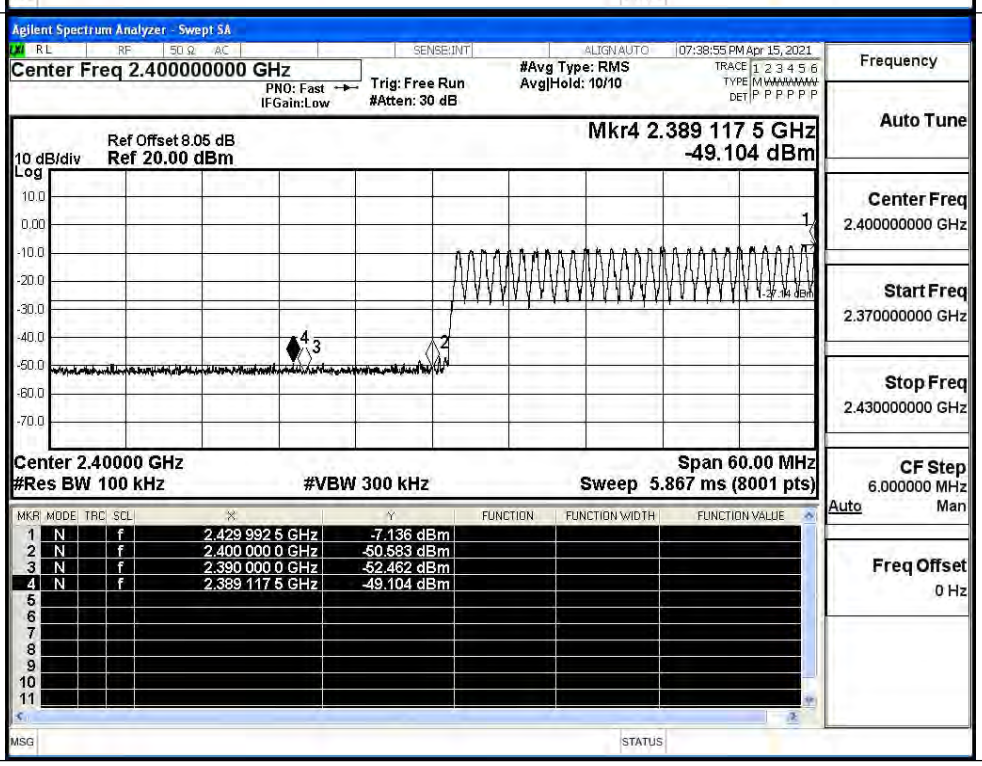
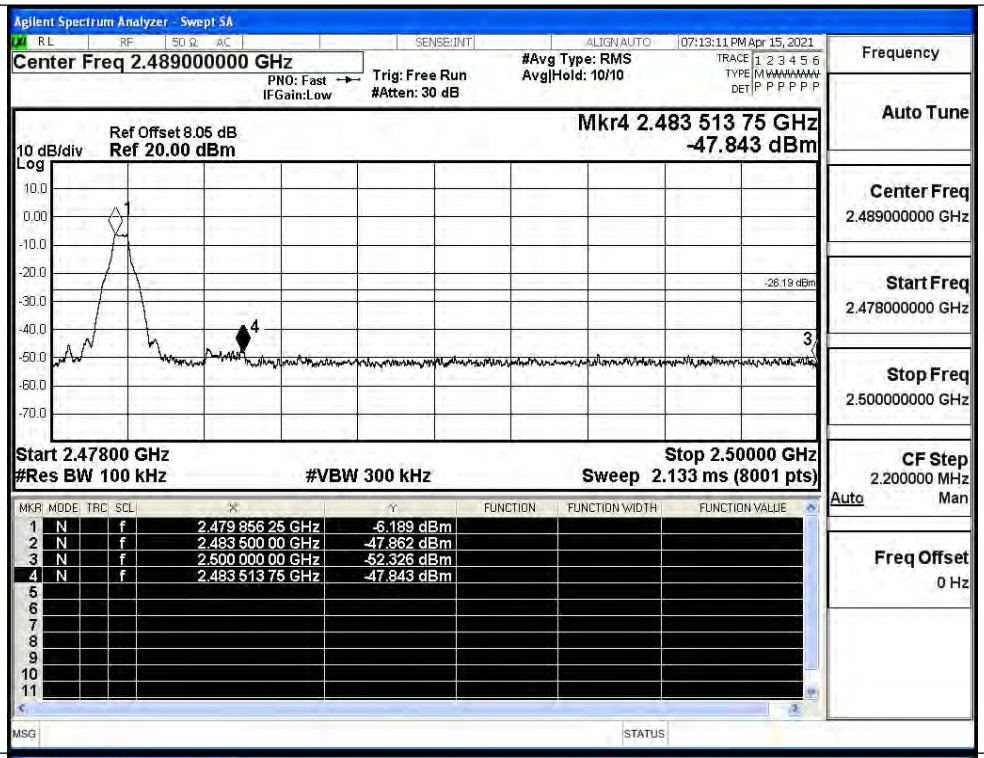
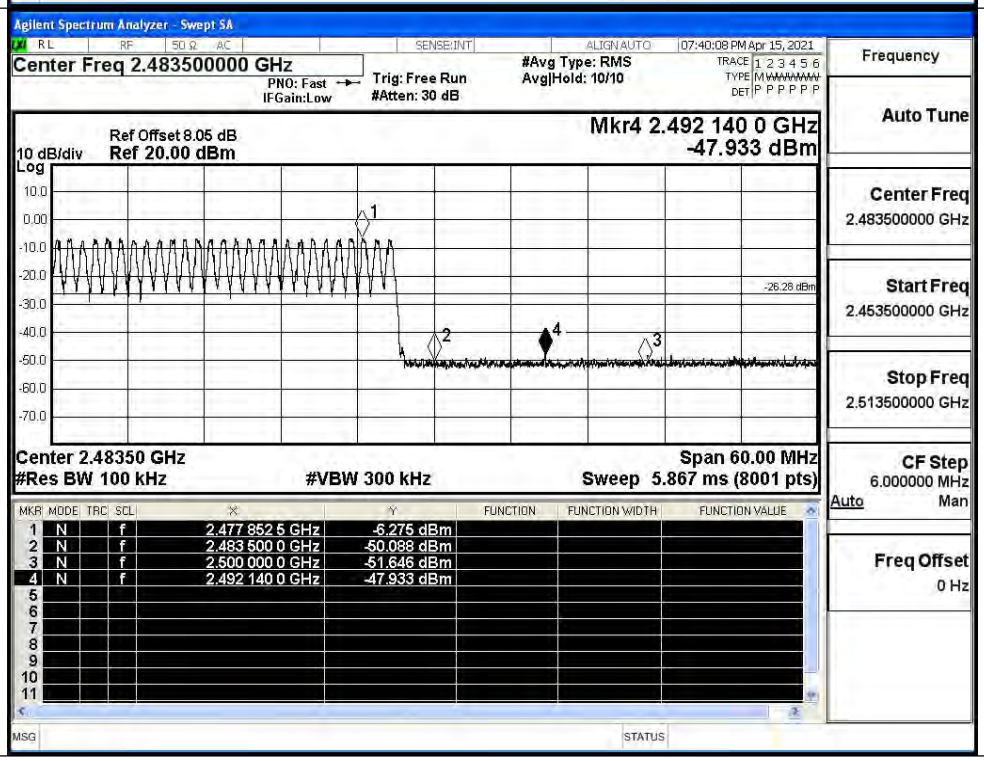
Pref			
Puw			

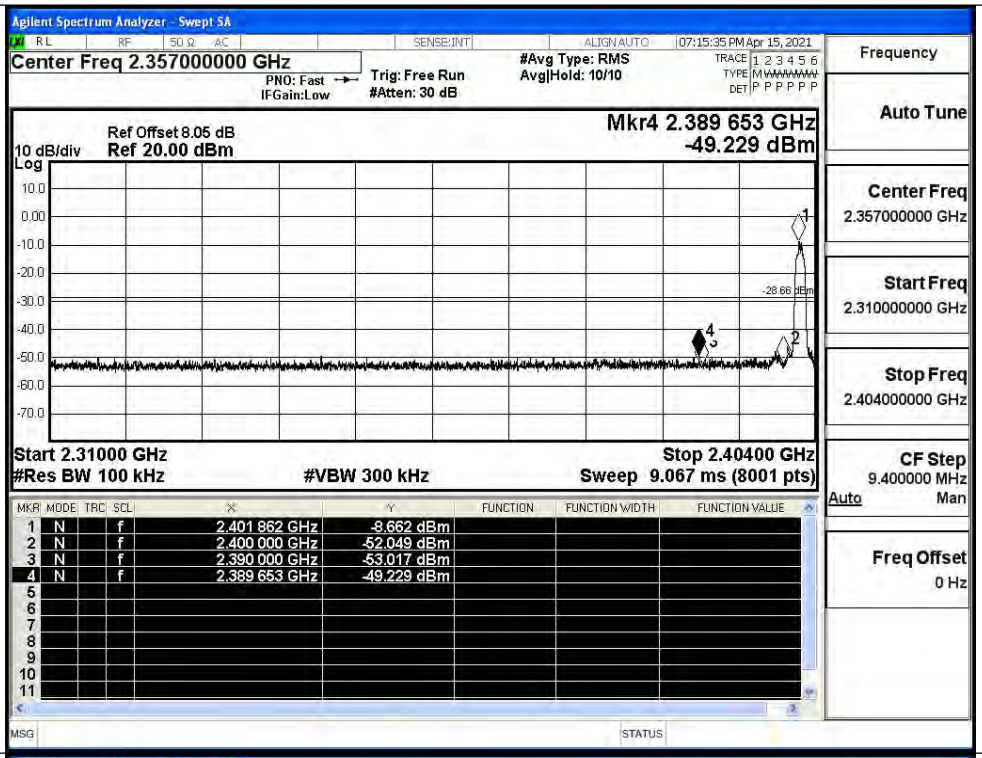
A.7 Band-edge for RF Conducted Emissions

Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	-8.724	Off	-48.579	-28.72	PASS
			-7.136	On	-49.104	-27.14	PASS
	HCH	2480	-6.189	Off	-47.843	-26.19	PASS
			-6.275	On	-47.933	-26.28	PASS
π/4DQPSK	LCH	2402	-8.662	Off	-49.229	-28.66	PASS
			-7.841	On	-48.614	-27.84	PASS
	HCH	2480	-6.183	Off	-49.208	-26.18	PASS
			-6.323	On	-48.071	-26.32	PASS
8DPSK	LCH	2402	-8.543	Off	-49.176	-28.54	PASS
			-7.169	On	-49.147	-27.17	PASS
	HCH	2480	-6.241	Off	-48.611	-26.24	PASS
			-6.391	On	-48.103	-26.39	PASS

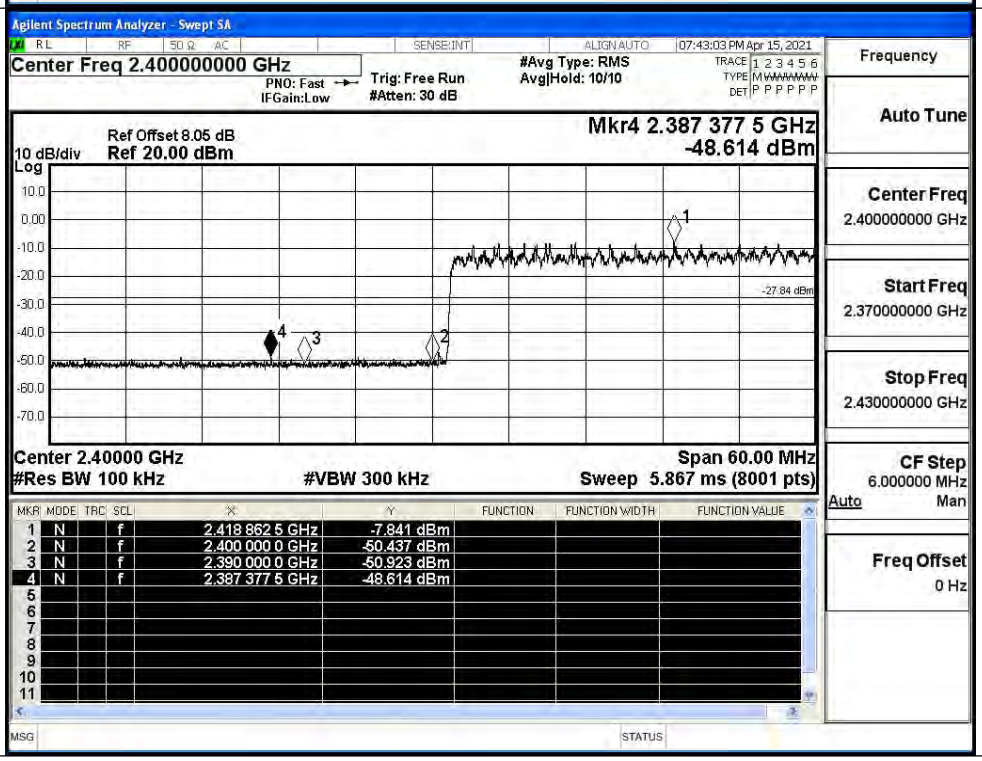
Test Graphs	
GFSK/LCH/No Hop	
GFSK/LCH/Hop	

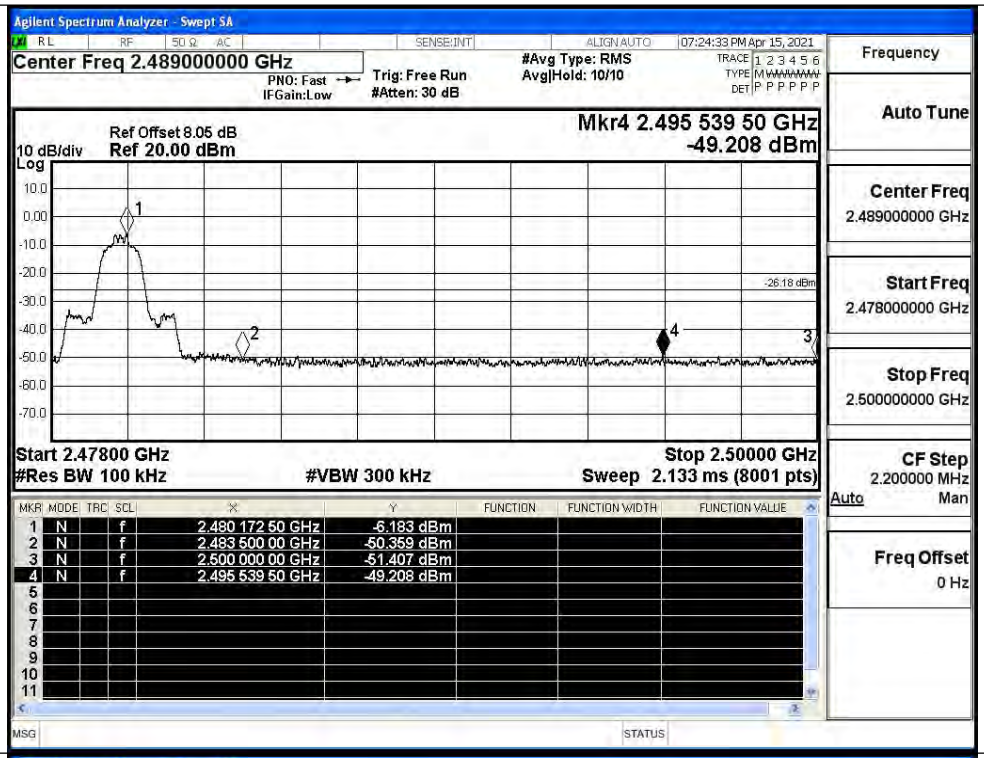
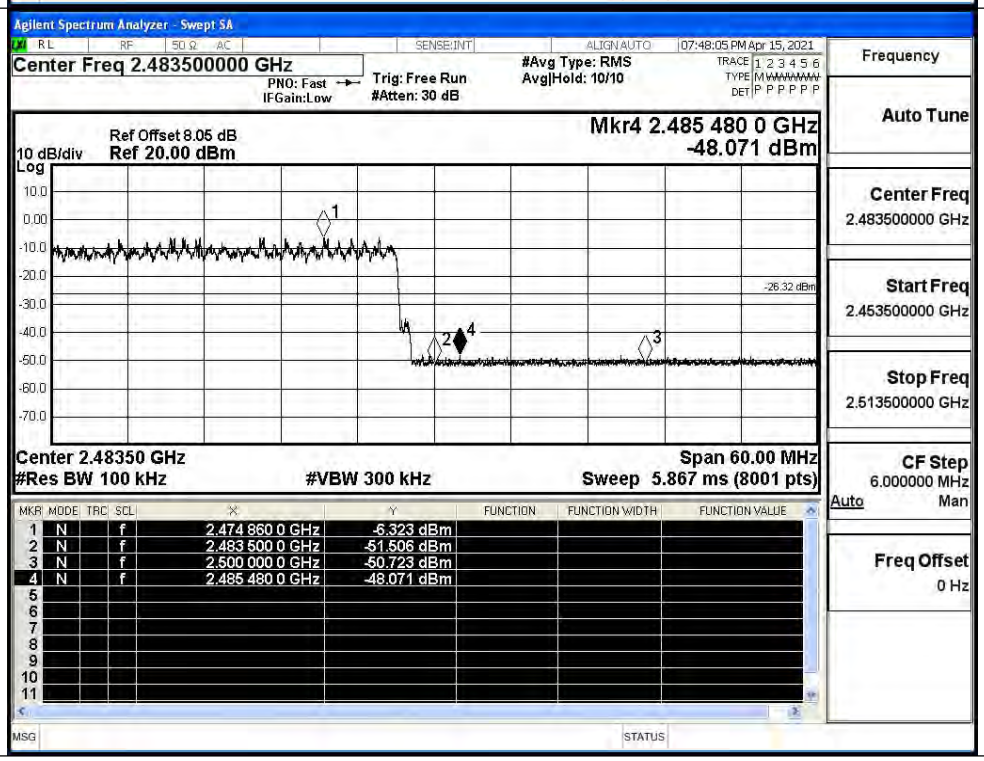
GFSK/HCH/No Hop	
GFSK/HCH/Hop	

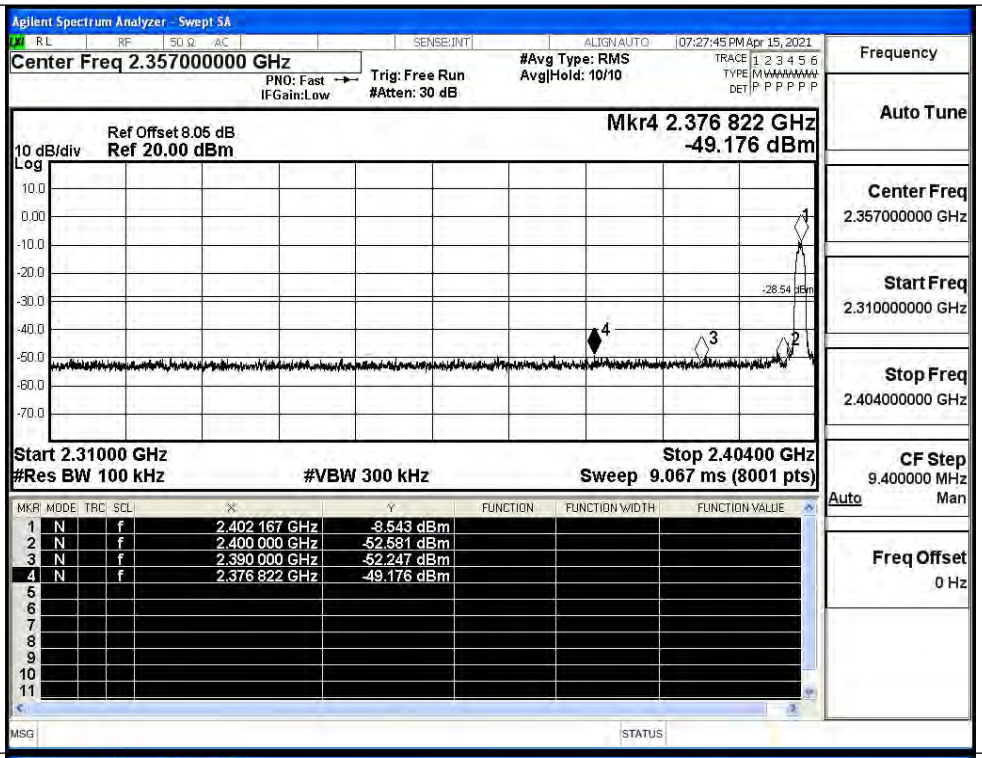
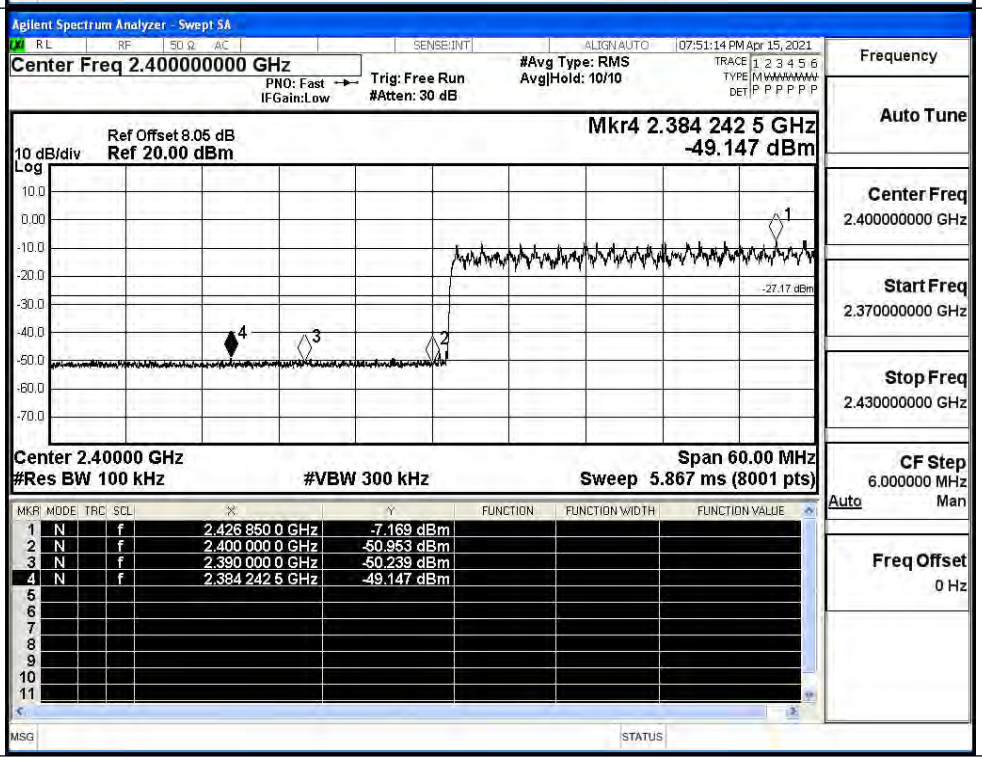
π/4DQPSK/LCH/No Hop

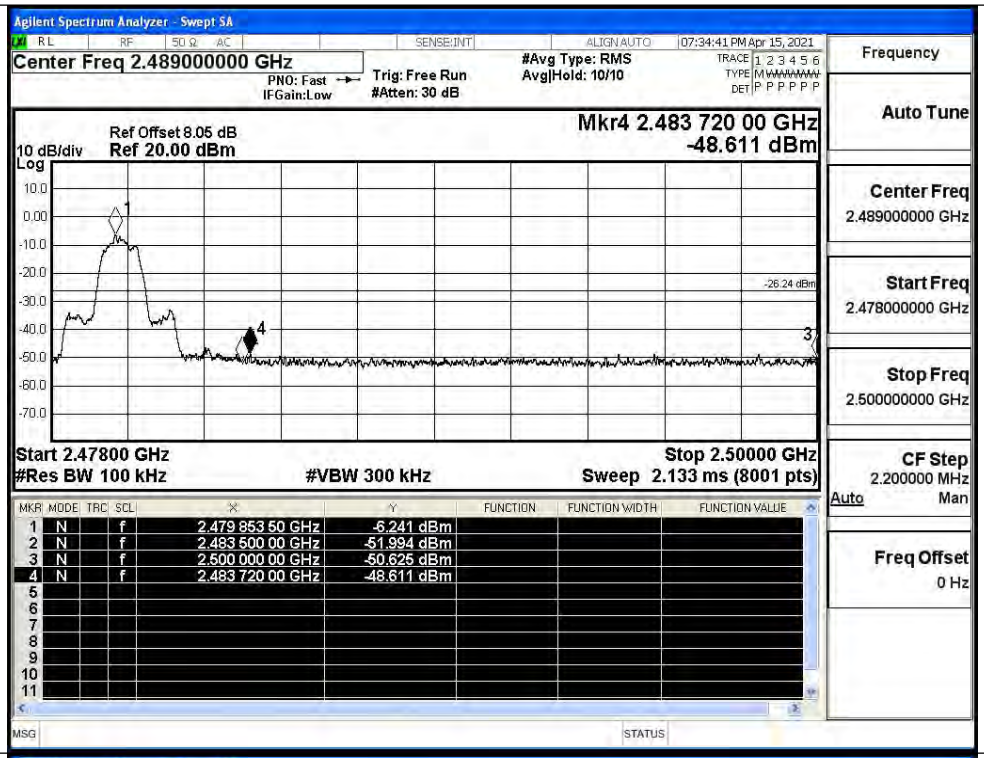
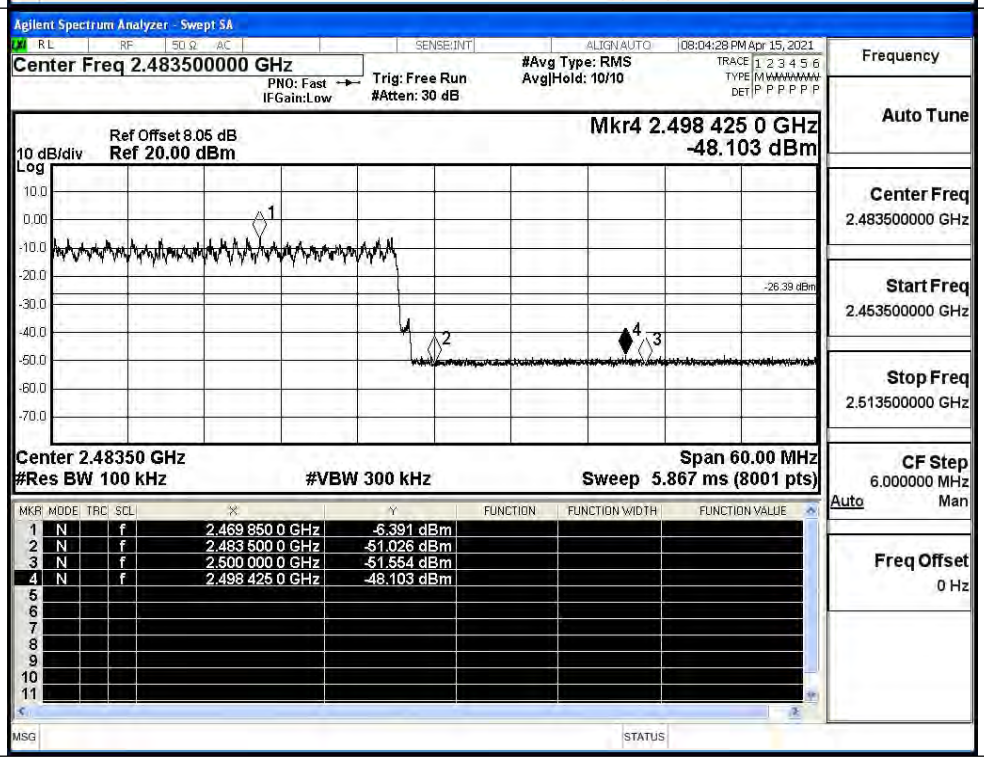


π/4DQPSK/LCH/Hop



π/4DQPSK/HCH/No Hop	
π/4DQPSK/HCH/Hop	

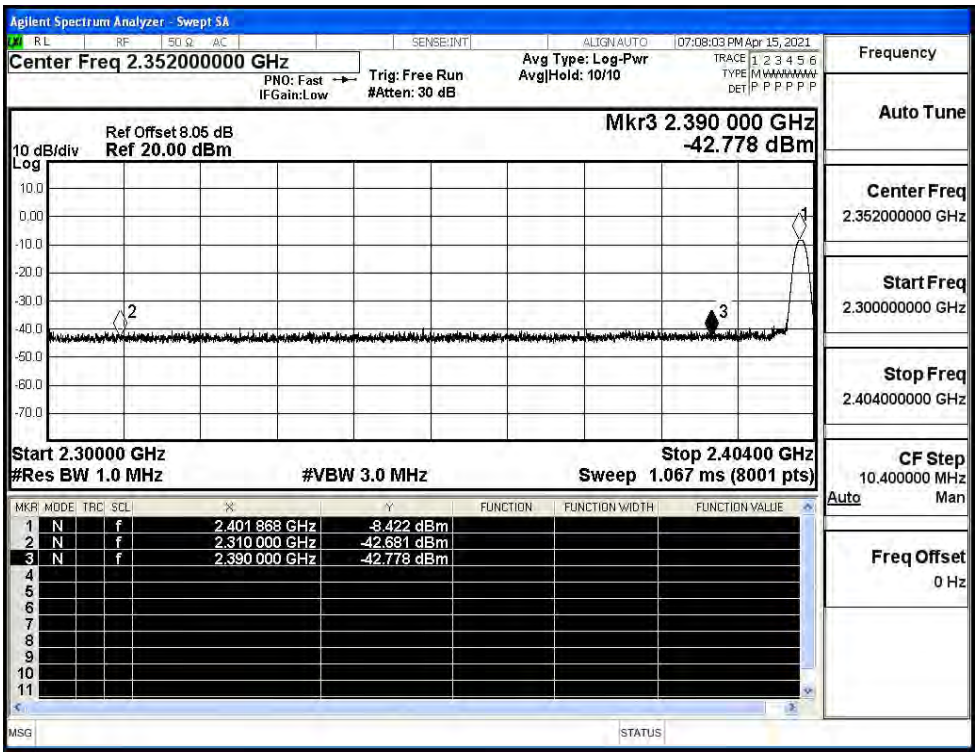
8DPSK/LCH/No Hop	
8DPSK/LCH/Hop	

8DPSK/HCH/No Hop	
8DPSK/HCH/Hop	

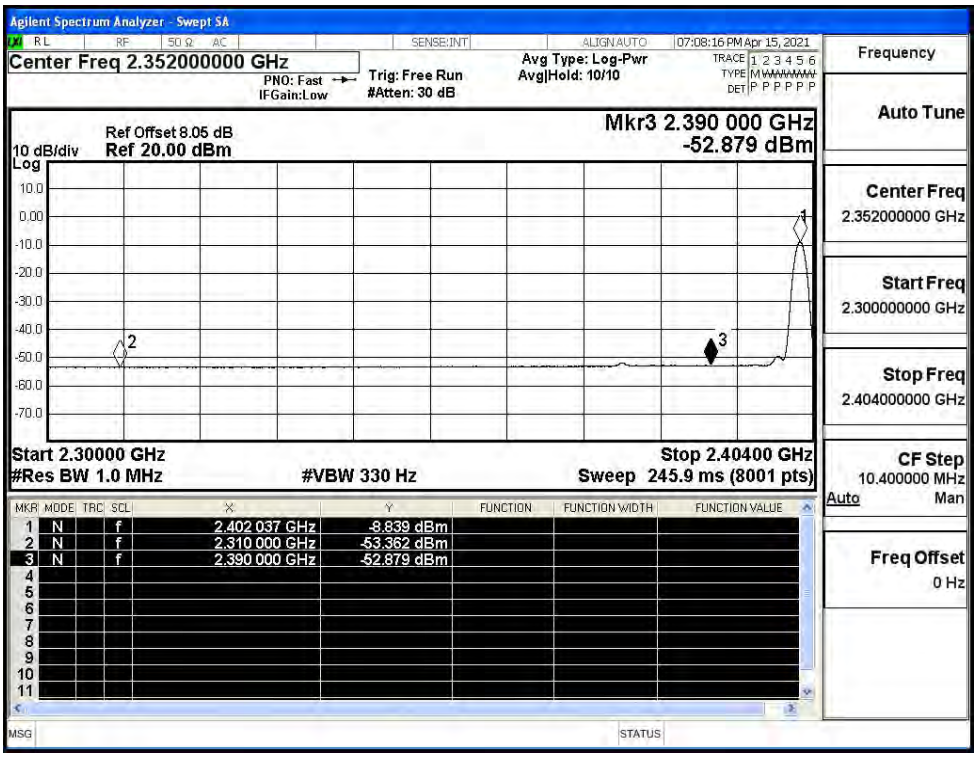
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-42.68	2.0	0	54.55	PEAK	74	PASS
	Off	2310.0	-53.36	2.0	0	43.87	AV	54	PASS
	Off	2390.0	-42.78	2.0	0	54.45	PEAK	74	PASS
	Off	2390.0	-52.88	2.0	0	44.35	AV	54	PASS
	Off	2483.5	-40.32	2.0	0	56.91	PEAK	74	PASS
	Off	2483.5	-50.28	2.0	0	46.95	AV	54	PASS
	Off	2500.0	-41.27	2.0	0	55.96	PEAK	74	PASS
	Off	2500.0	-52.11	2.0	0	45.12	AV	54	PASS
π/4DQPSK	Off	2310.0	-43.53	2.0	0	53.70	PEAK	74	PASS
	Off	2310.0	-53.31	2.0	0	43.92	AV	54	PASS
	Off	2390.0	-43.20	2.0	0	54.03	PEAK	74	PASS
	Off	2390.0	-53.01	2.0	0	44.22	AV	54	PASS
	Off	2483.5	-41.28	2.0	0	55.95	PEAK	74	PASS
	Off	2483.5	-50.83	2.0	0	46.40	AV	54	PASS
	Off	2500.0	-42.59	2.0	0	54.64	PEAK	74	PASS
	Off	2500.0	-52.13	2.0	0	45.10	AV	54	PASS
8DPSK	Off	2310.0	-41.75	2.0	0	55.48	PEAK	74	PASS
	Off	2310.0	-53.43	2.0	0	43.80	AV	54	PASS
	Off	2390.0	-43.86	2.0	0	53.37	PEAK	74	PASS
	Off	2390.0	-52.96	2.0	0	44.27	AV	54	PASS
	Off	2483.5	-40.79	2.0	0	56.44	PEAK	74	PASS
	Off	2483.5	-50.91	2.0	0	46.32	AV	54	PASS
	Off	2500.0	-42.55	2.0	0	54.68	PEAK	74	PASS
	Off	2500.0	-51.87	2.0	0	45.36	AV	54	PASS

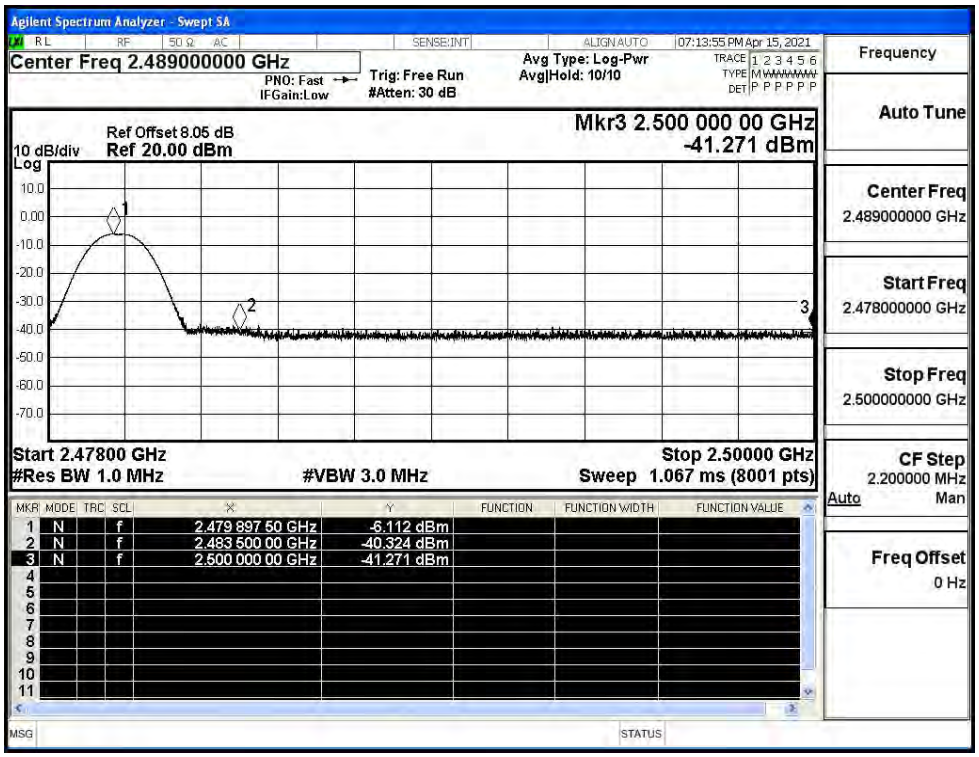
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (Low Channel)



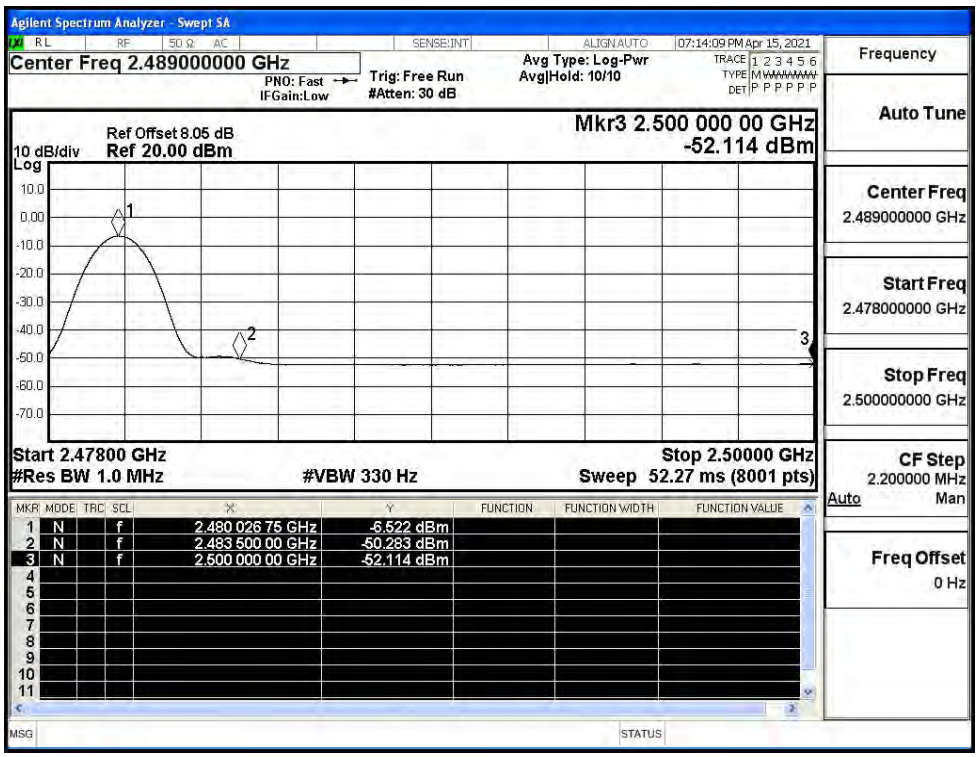
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (Low Channel)



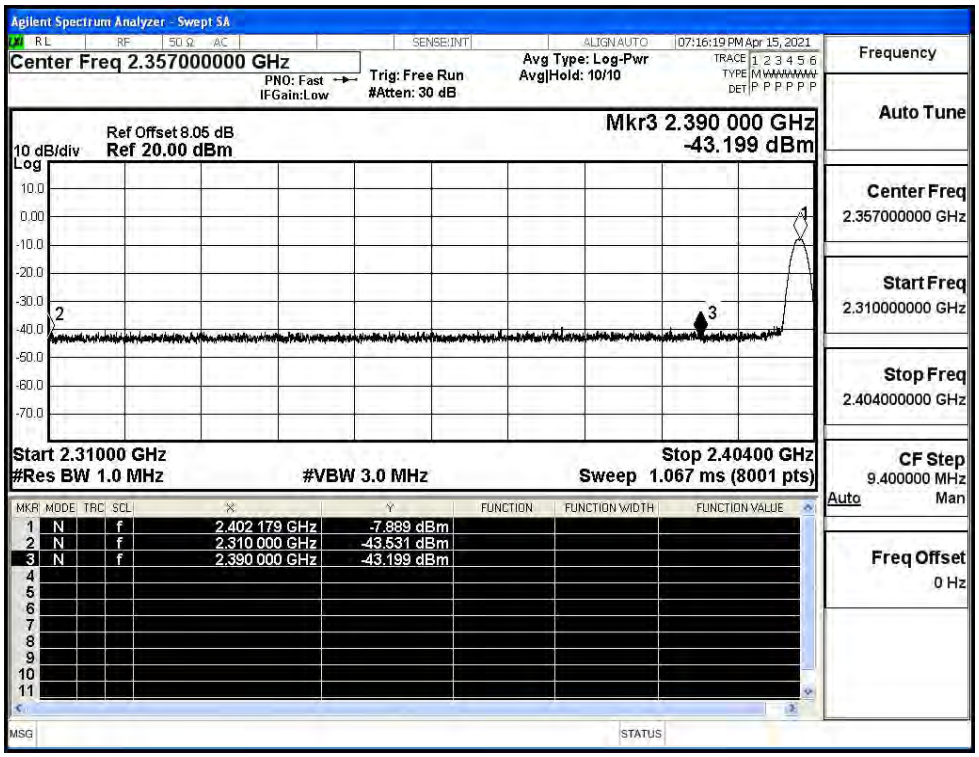
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (High Channel)



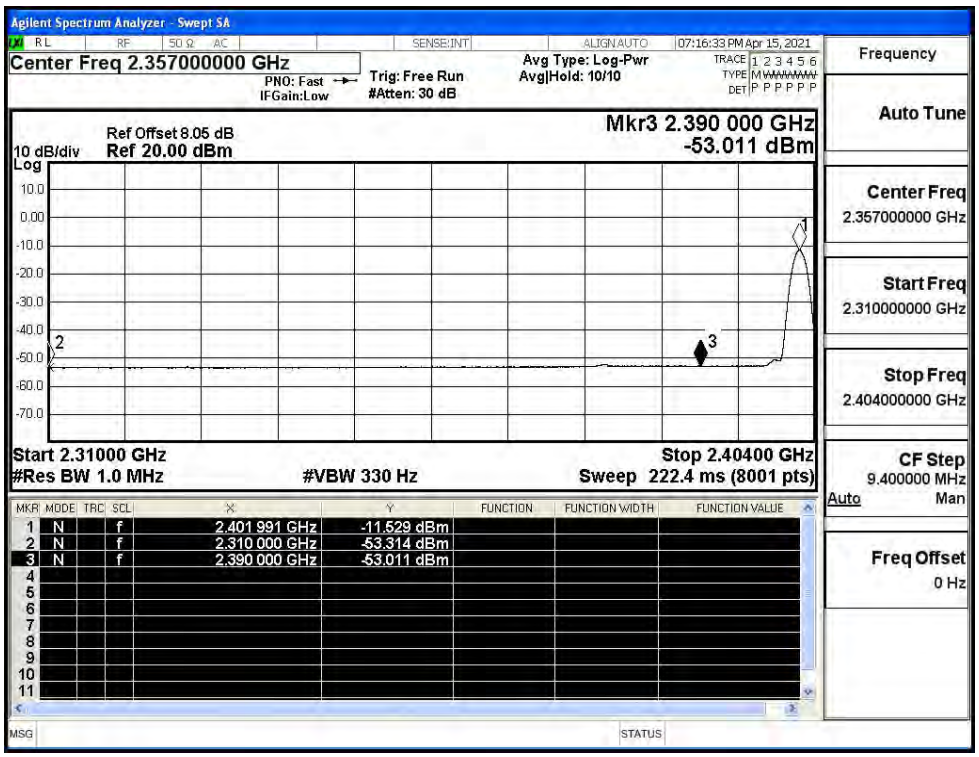
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (High Channel)



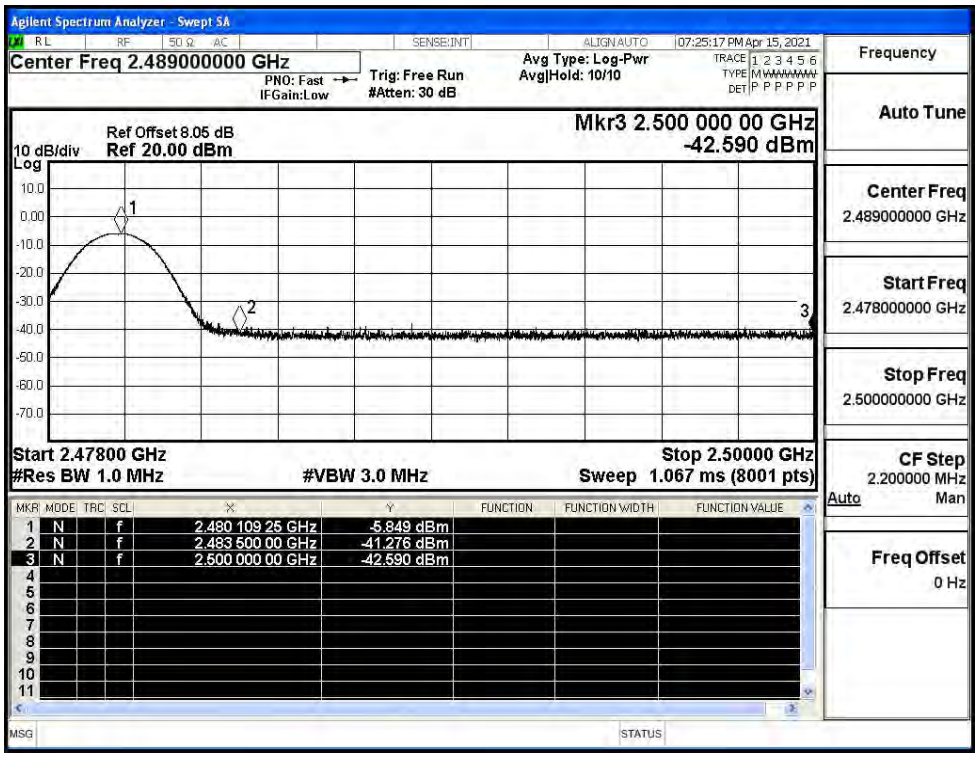
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (Low Channel)



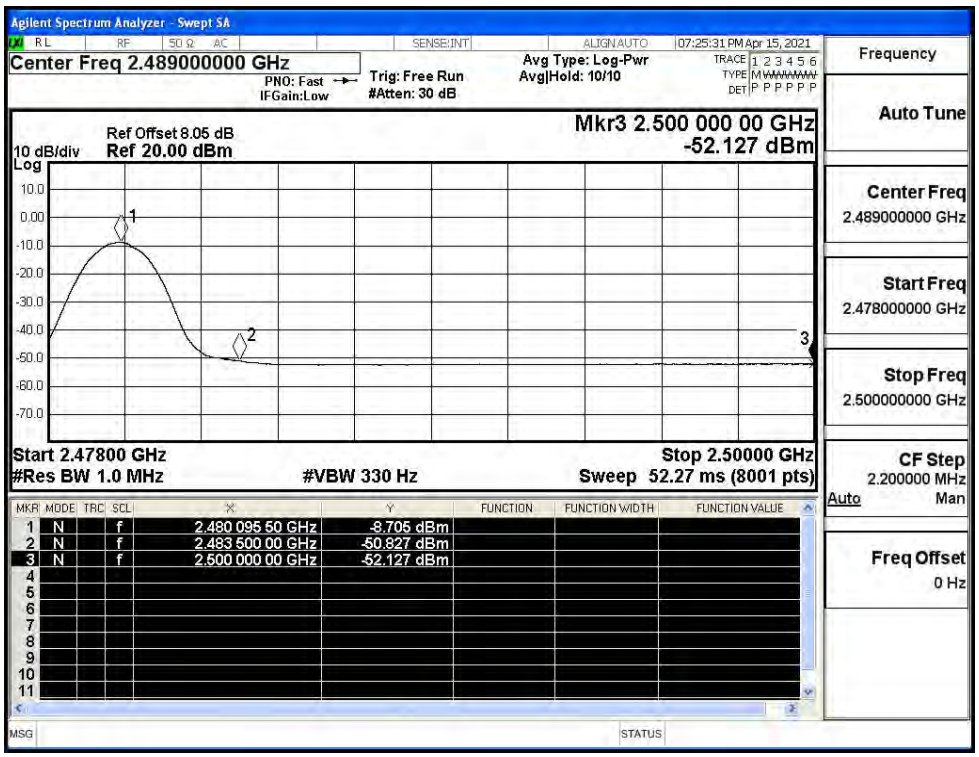
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (Low Channel)



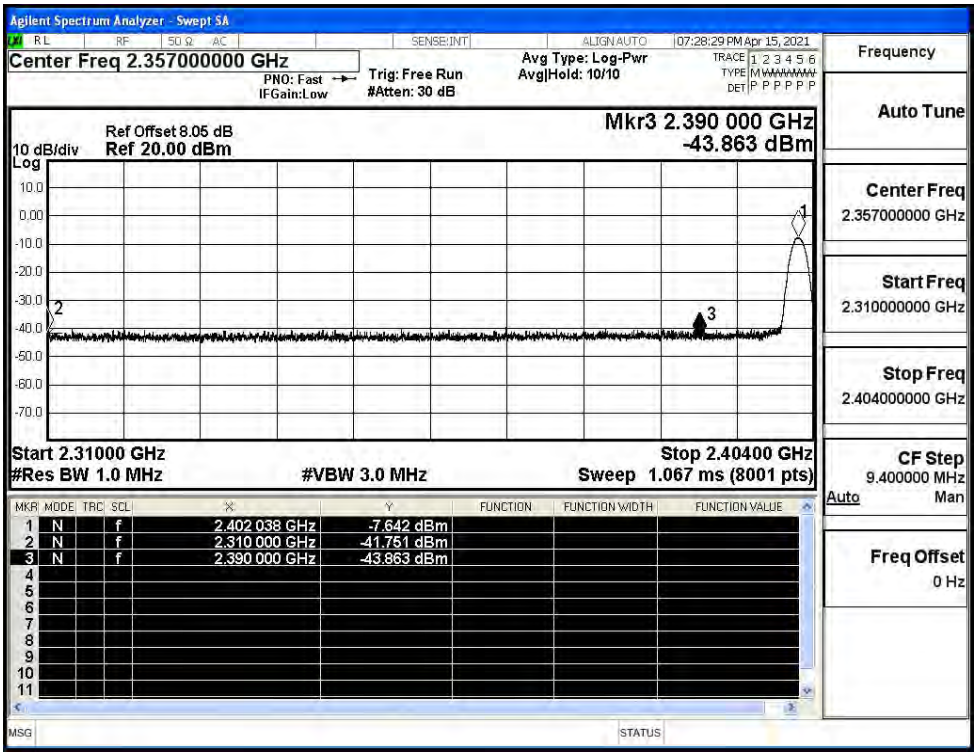
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (High Channel)



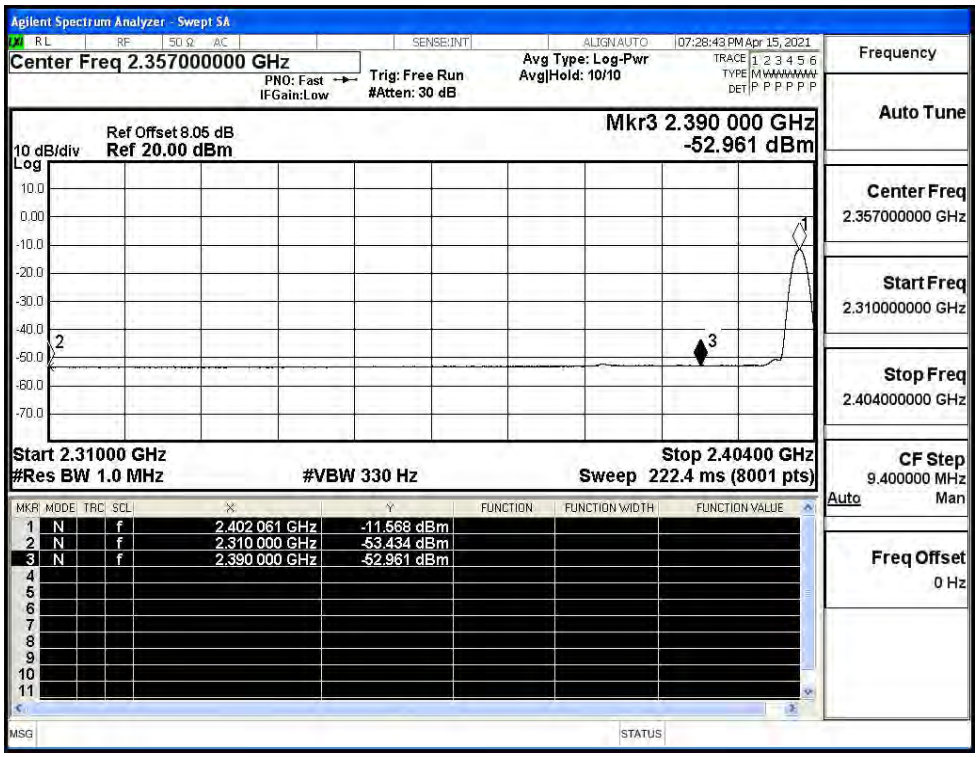
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (High Channel)



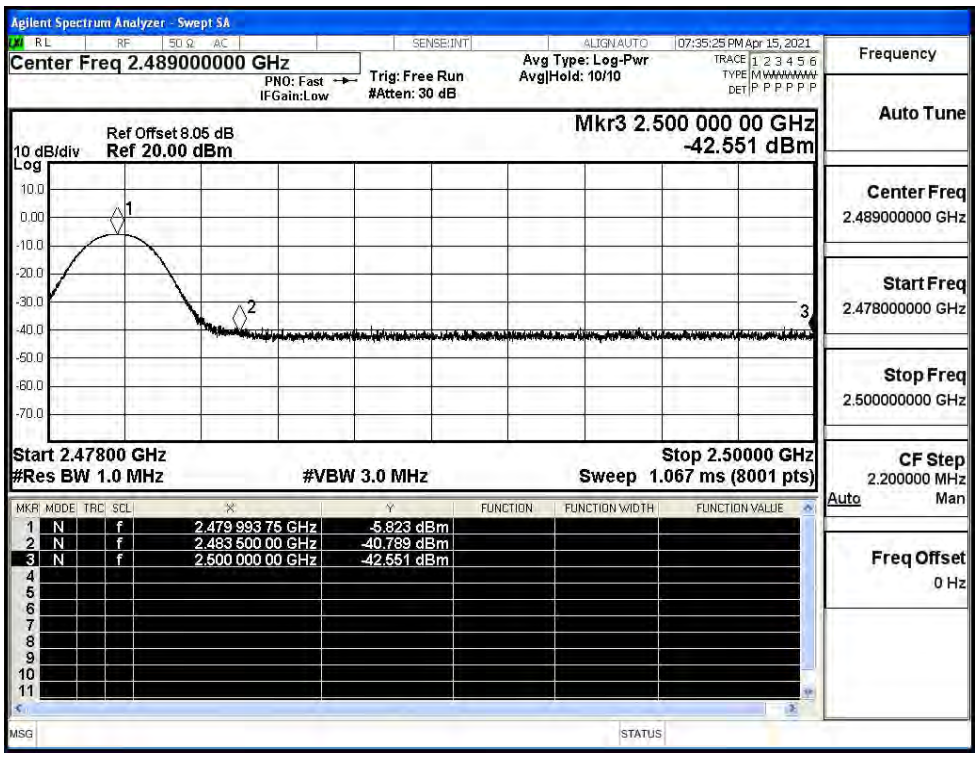
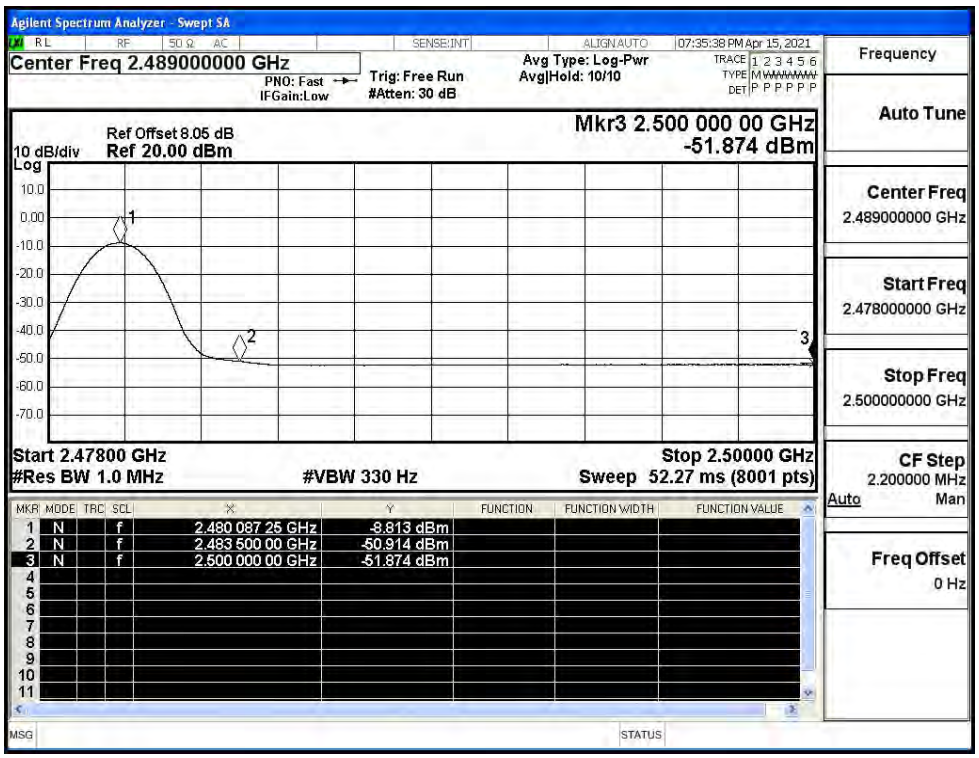
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



Restrict-band band-edge measurements_Hopping Off_8DPSK_Average (Low Channel)



Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (High Channel)



Restrict-band band-edge measurements_Hopping Off_8DPSK_Average (High Channel)