Appendix A

RF Test Data for BT V5.0(DSS) (Conducted Measurement)

Product Name: Everly Bluetooth® Speaker

Trade Mark: Gemline

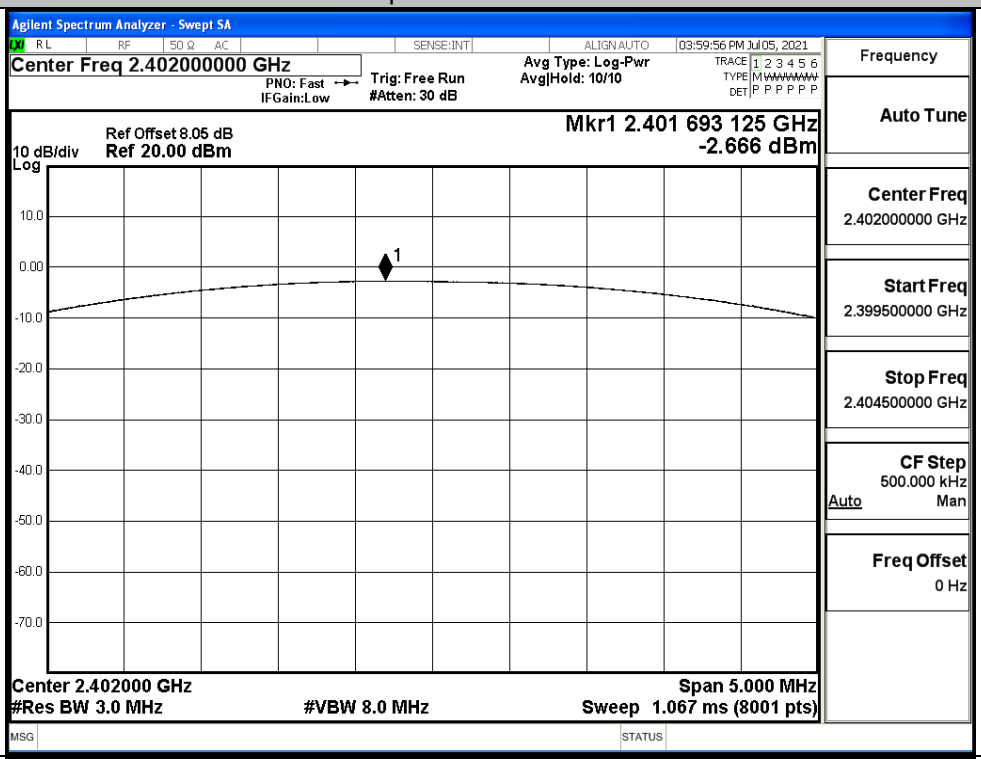
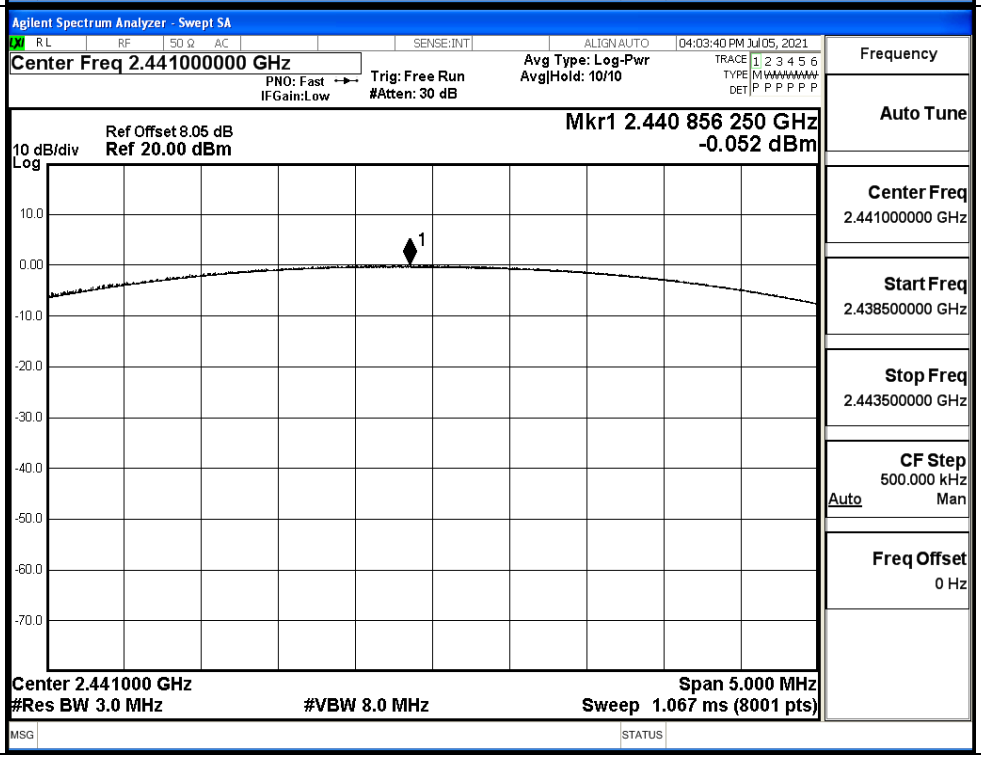
Test Model: 101131-100B

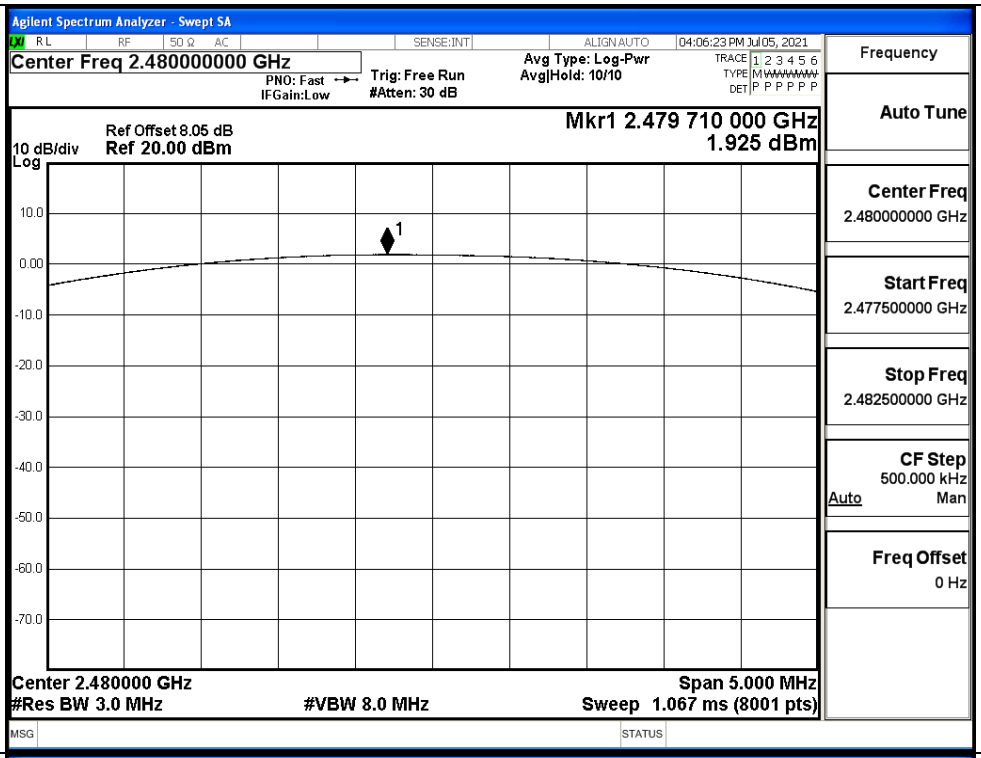
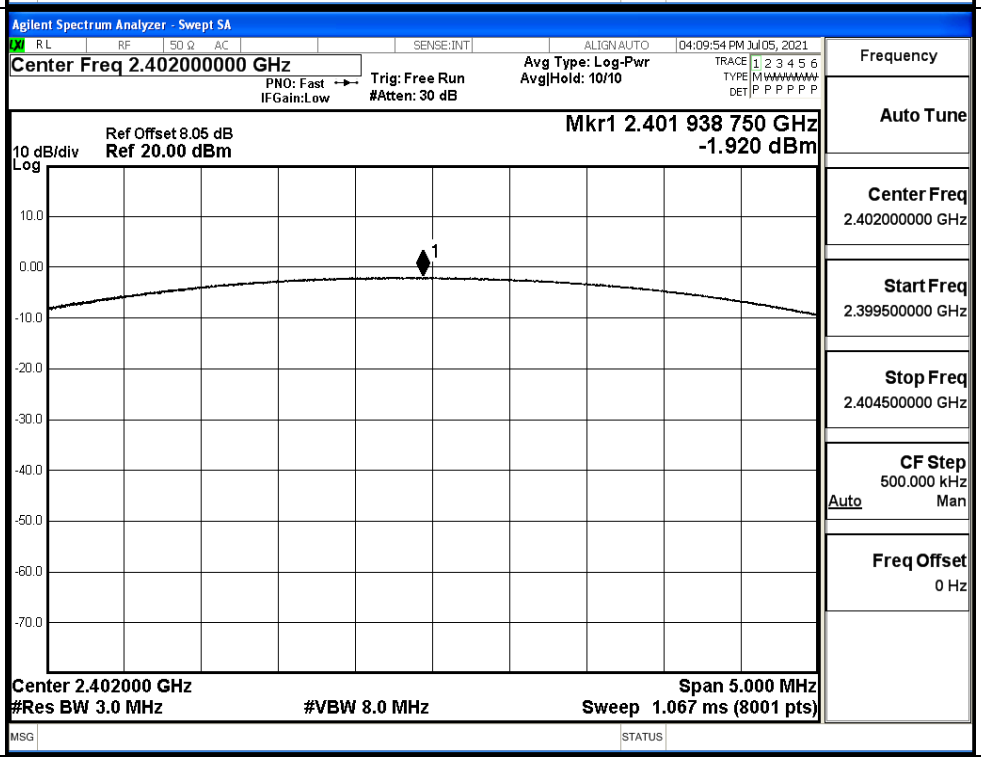
Environmental Conditions

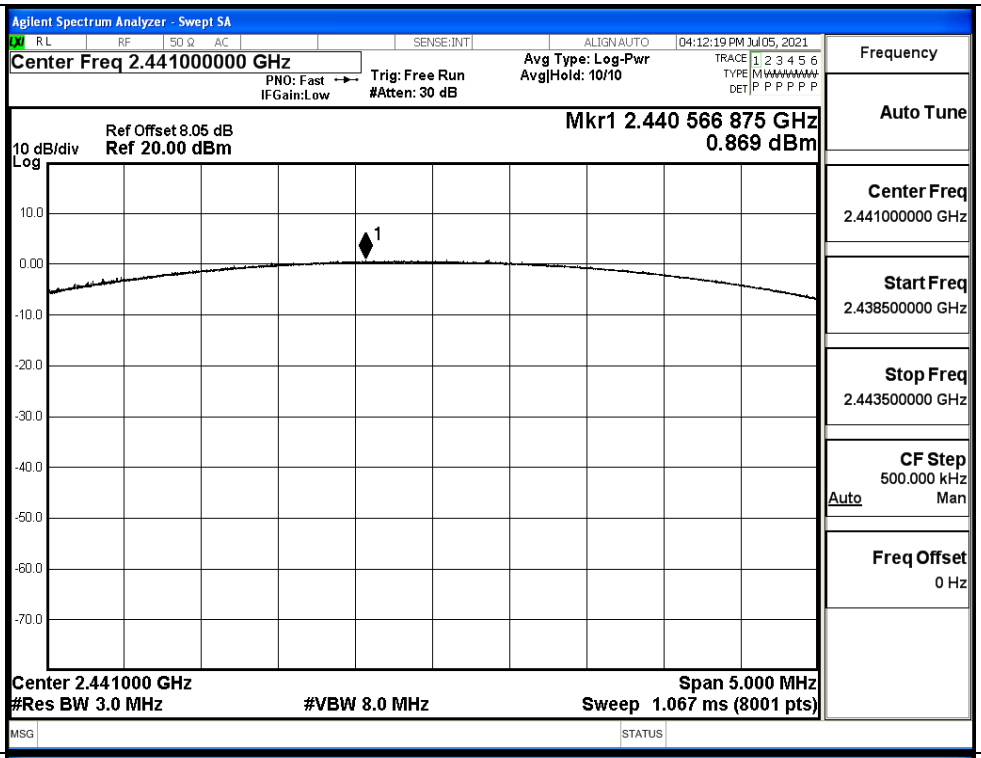
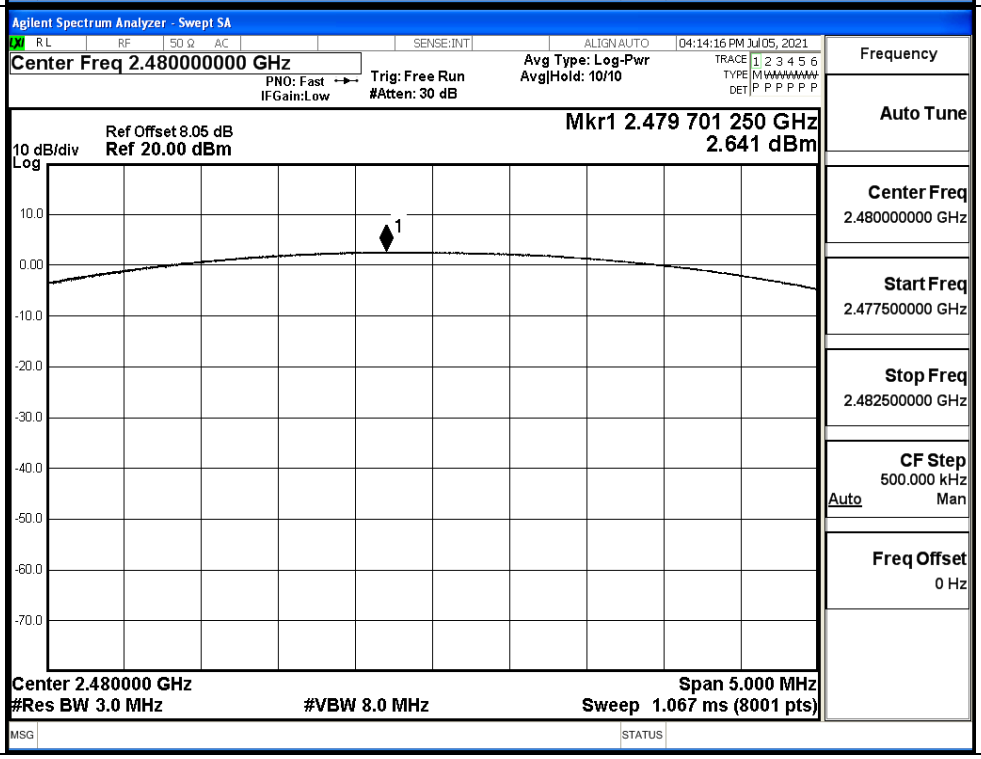
Temperature:	23.7℃
Relative Humidity:	51.9%
ATM Pressure:	100.0 kPa
Test Engineer:	Kay Hu
Supervised by:	Li Huan

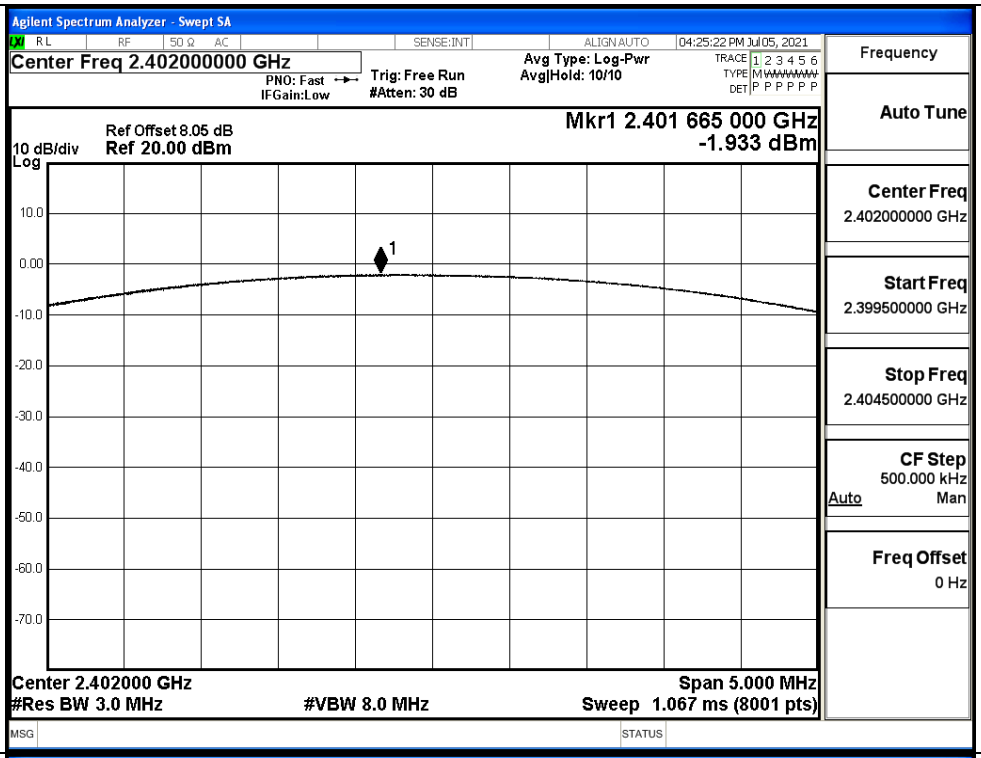
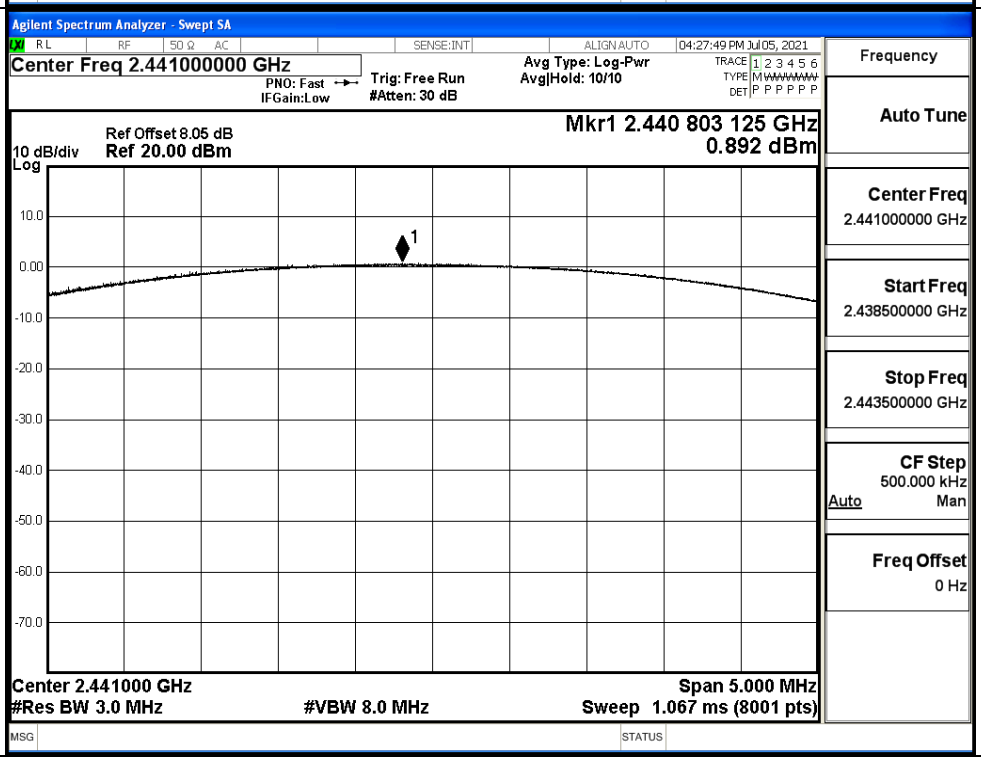
A.1 Maxmum Conducted Peak Output Power

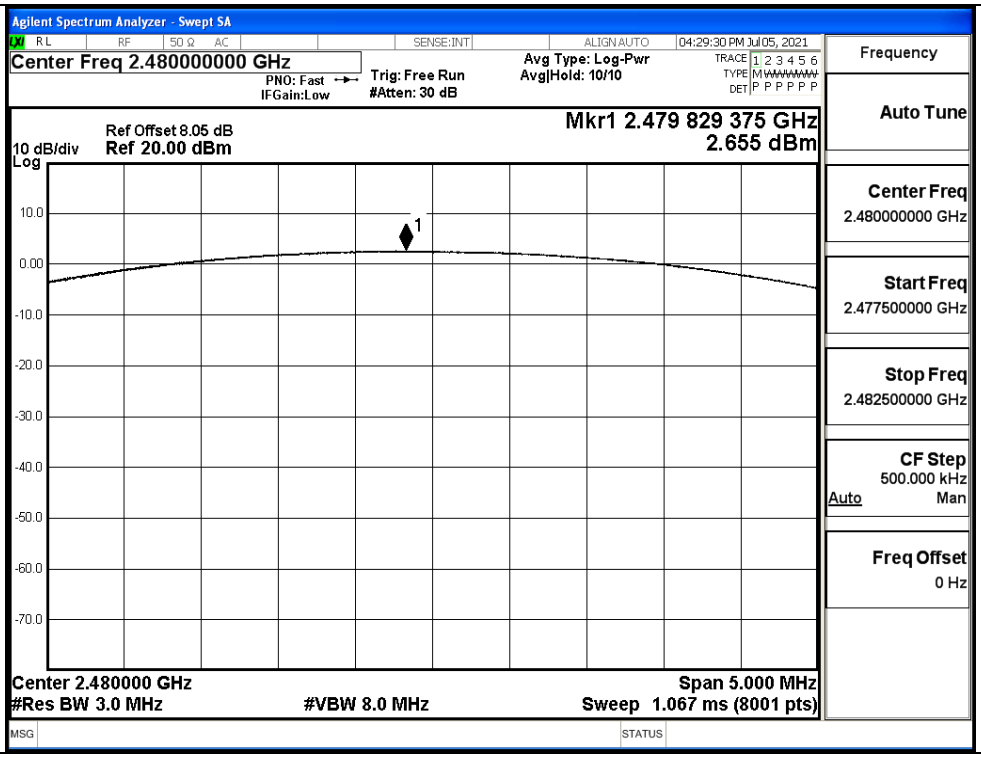
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-2.666	21	PASS
	MCH	-0.052	21	PASS
	HCH	1.925	21	PASS
π/4DQPSK	LCH	-1.920	21	PASS
	MCH	0.869	21	PASS
	HCH	2.641	21	PASS
8DPSK	LCH	-1.933	21	PASS
	MCH	0.892	21	PASS
	HCH	2.655	21	PASS

Test Graphs		
GFSK/LCH		
GFSK/MCH		

GFSK/HCH	
π/4DQPSK/LCH	

π/4DQPSK/MCH		
π/4DQPSK/HCH		

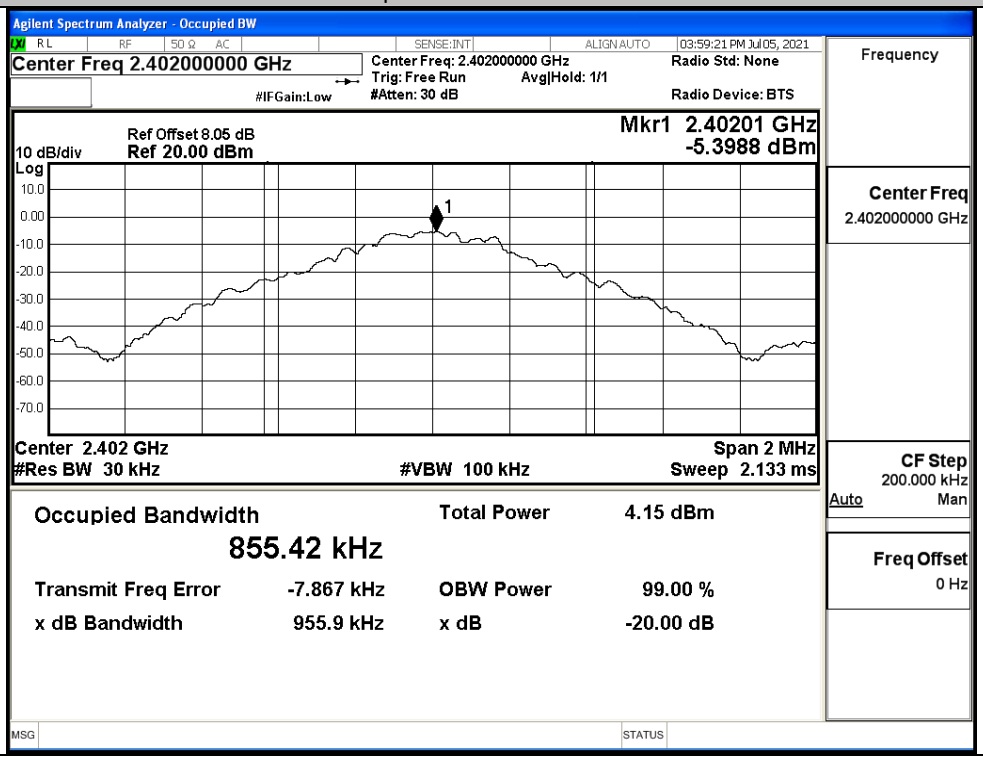
8DPSK/LCH	
8DPSK/MCH	

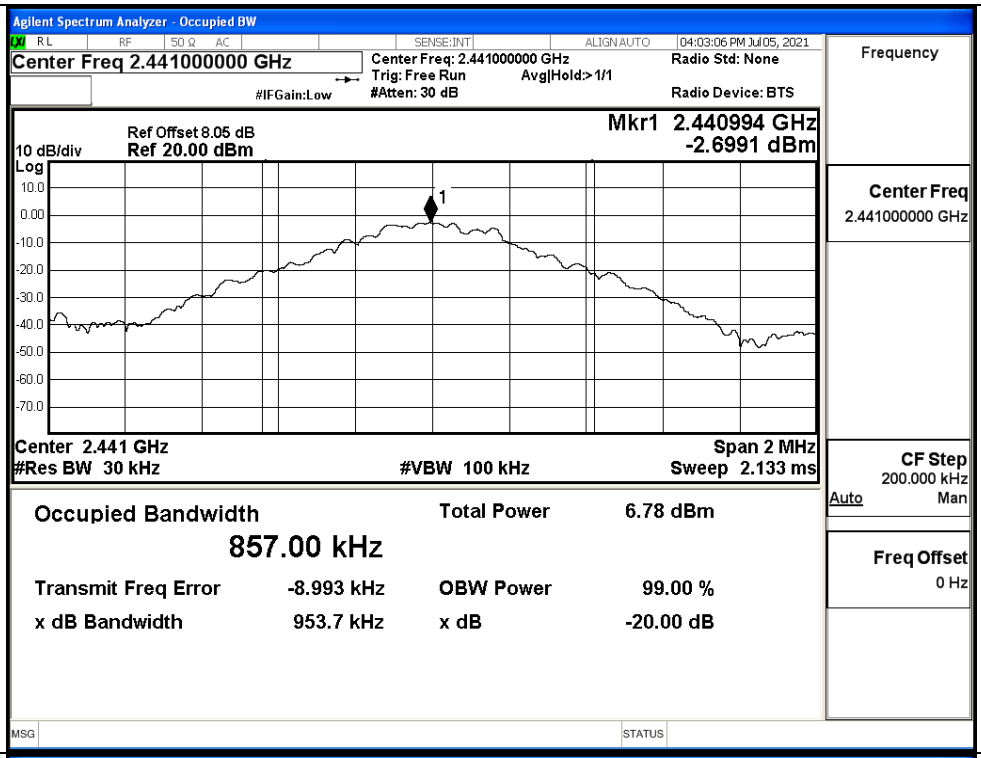
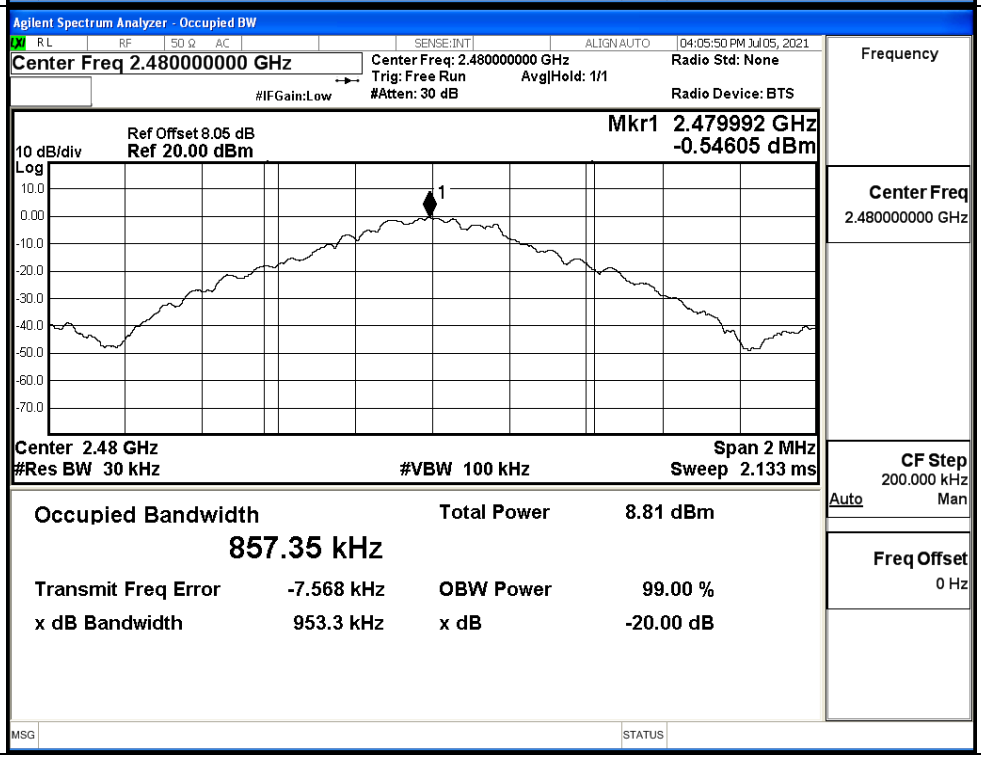
8DPSK/HCH	

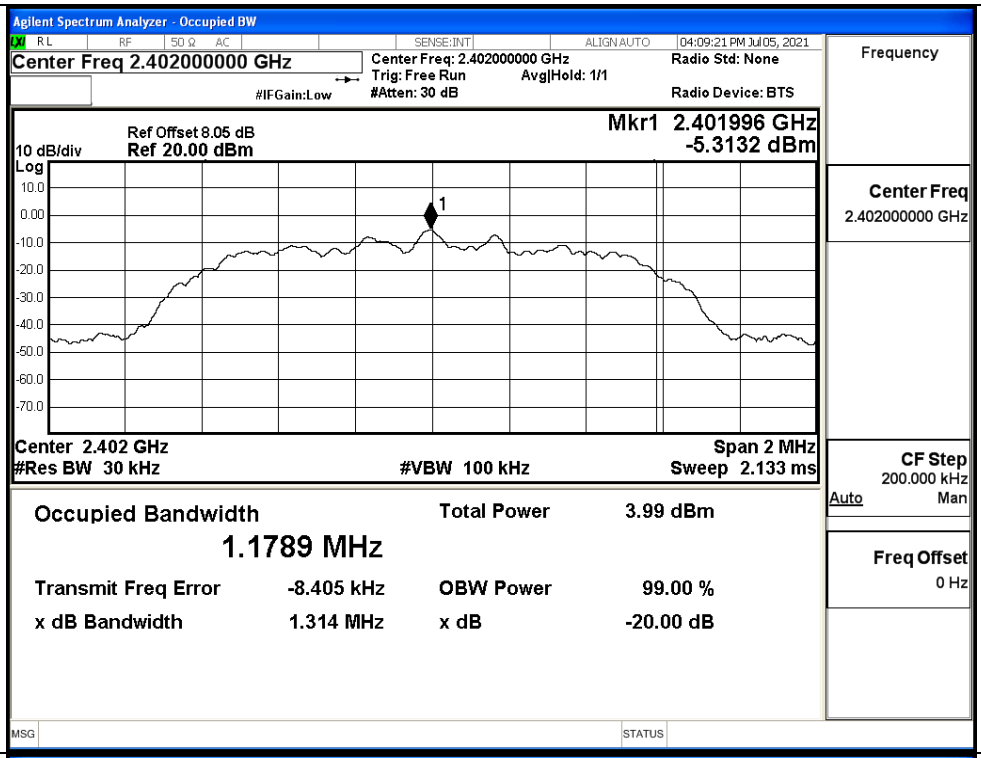
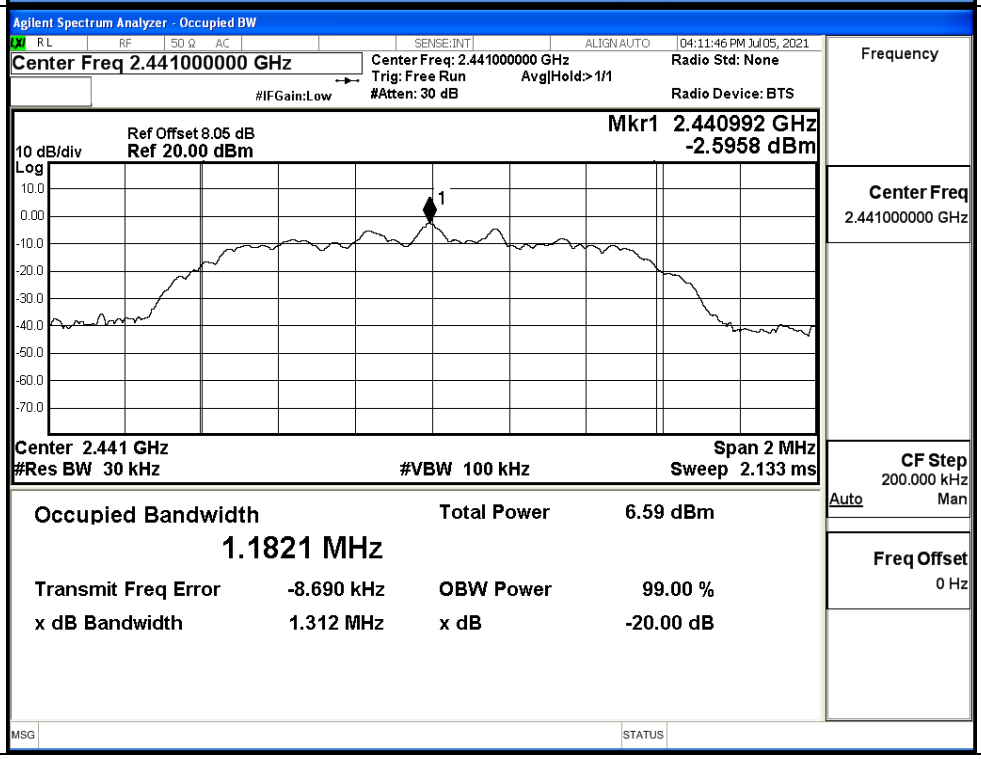
Agilent Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
04:29:30 PM Jul 05, 2021
Center Freq 2.480000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 10/10
TRACE 1 2 3 4 5 6
TYPE M
DET P P P P P
Ref Offset 8.05 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 2.479 829 375 GHz
2.655 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Center 2.480000 GHz
#Res BW 3.0 MHz
#VBW 8.0 MHz
Span 5.000 MHz
Sweep 1.067 ms (8001 pts)
MSG
STATUS
Frequency
Auto Tune
Center Freq
2.480000000 GHz
Start Freq
2.477500000 GHz
Stop Freq
2.482500000 GHz
CF Step
500.000 kHz
Auto
Man
Freq Offset
0 Hz

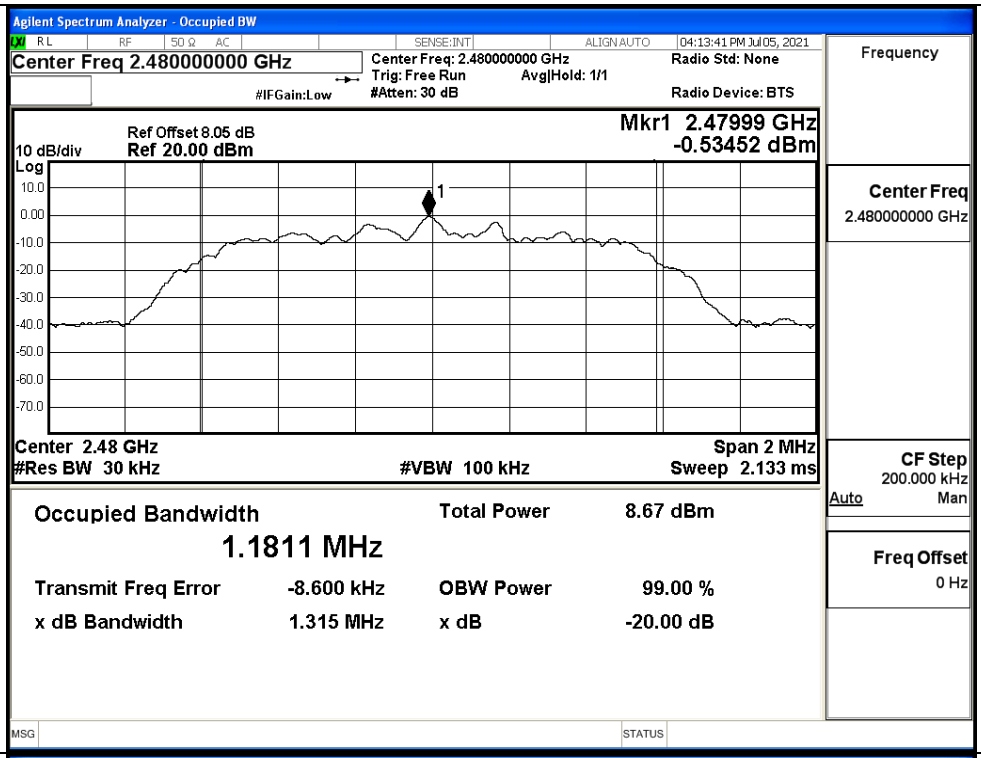
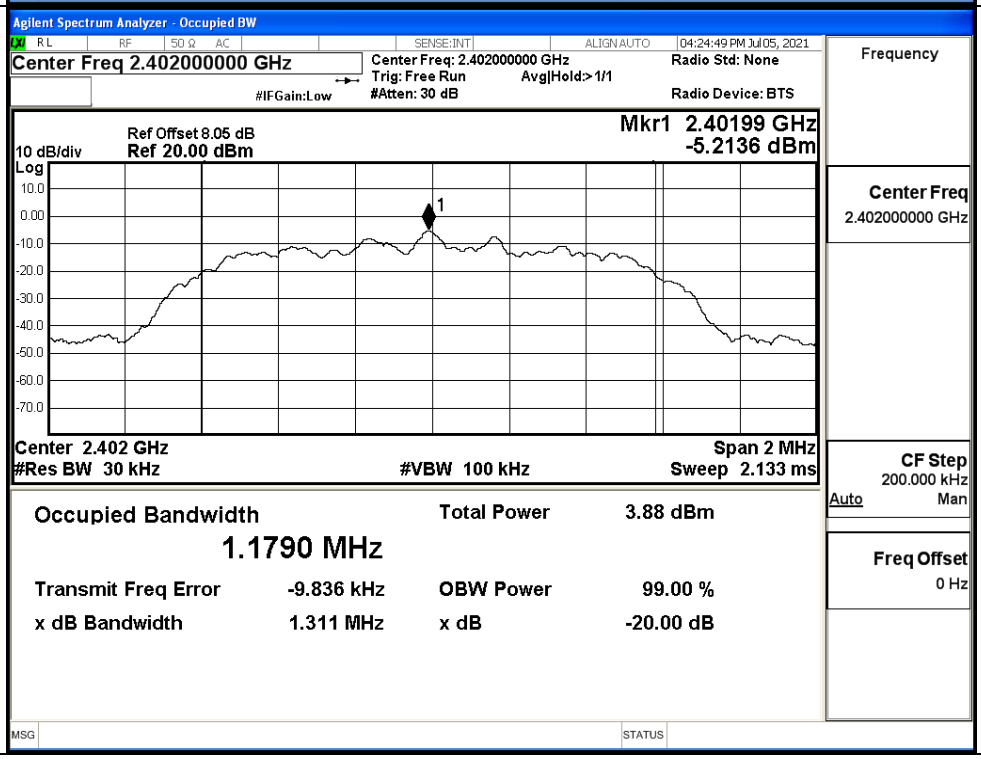
A.2 20dB Bandwidth

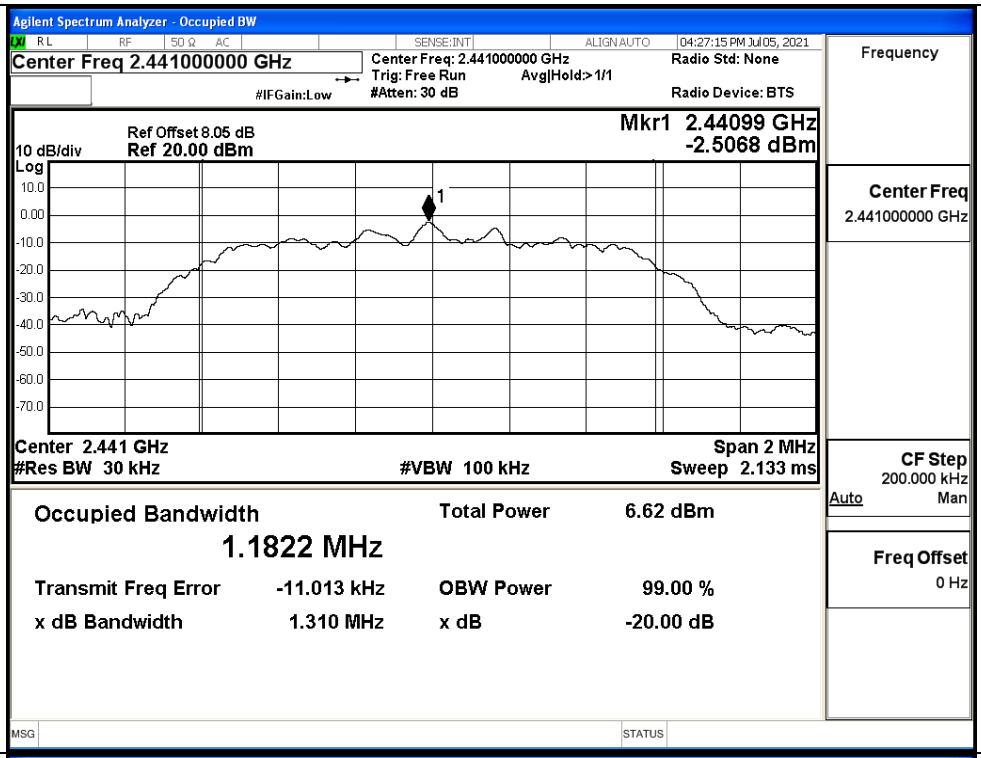
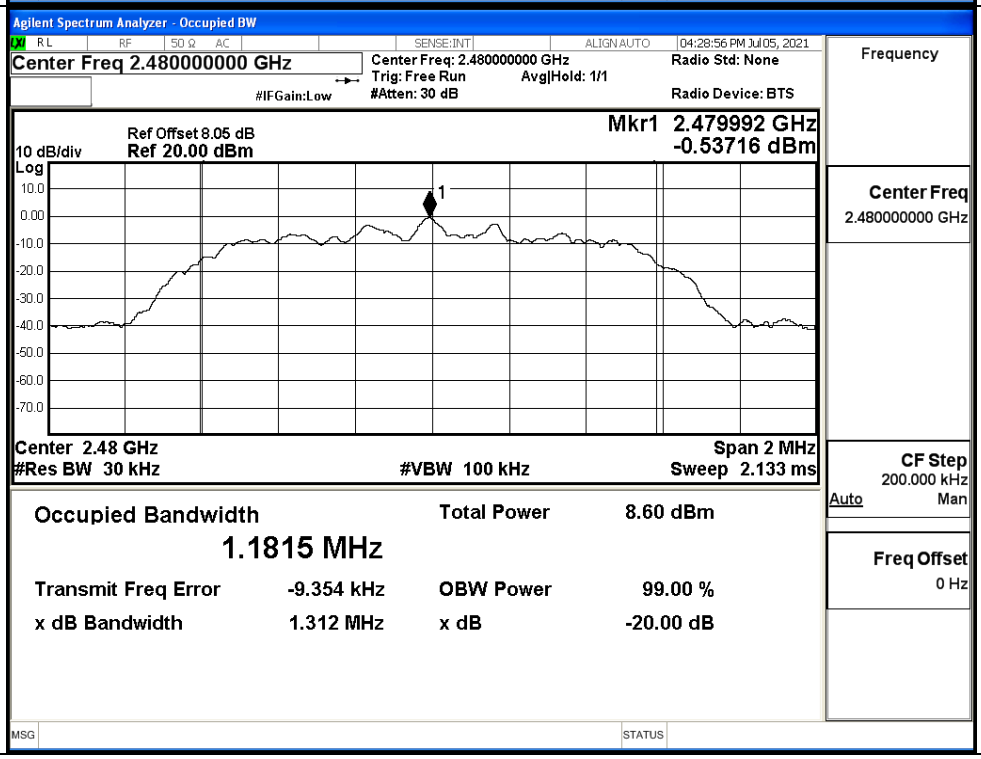
Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.9559	Not Specified	PASS
	MCH	0.9537	Not Specified	PASS
	HCH	0.9533	Not Specified	PASS
π/4DQPSK	LCH	1.314	Not Specified	PASS
	MCH	1.312	Not Specified	PASS
	HCH	1.315	Not Specified	PASS
8DPSK	LCH	1.311	Not Specified	PASS
	MCH	1.310	Not Specified	PASS
	HCH	1.312	Not Specified	PASS

Test Graphs	
GFSK/LCH	

GFSK/MCH	
GFSK/HCH	

π/4DQPSK/LCH	
π/4DQPSK/MCH	

π/4DQPSK/HCH	
8DPSK/LCH	

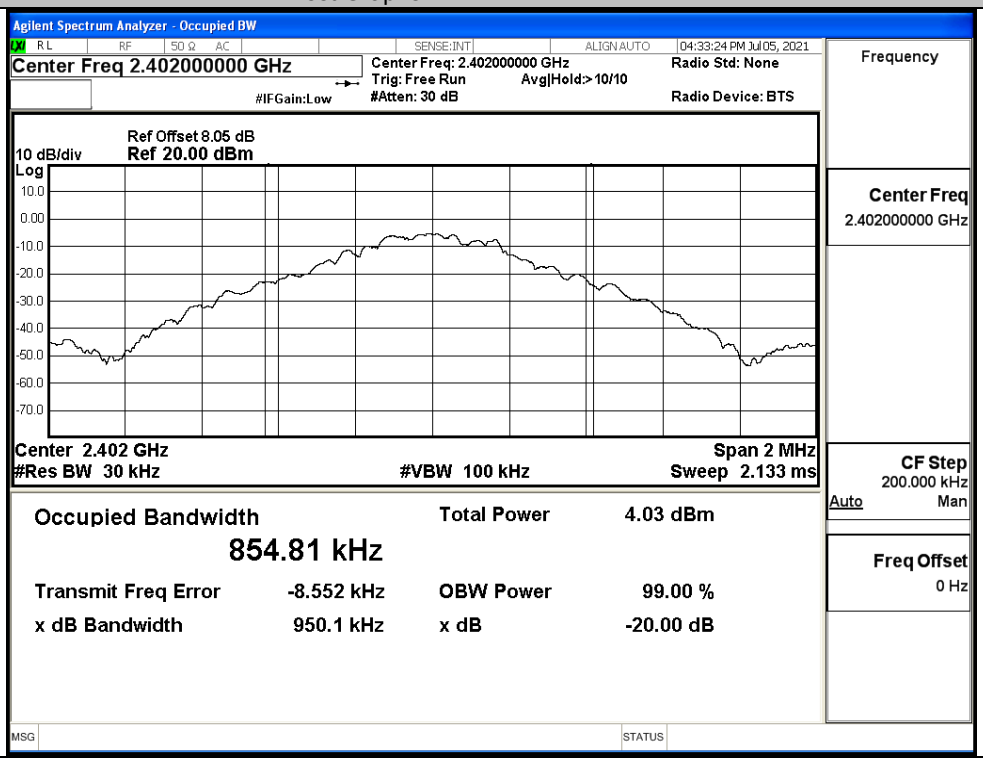
8DPSK/MCH	
8DPSK/HCH	

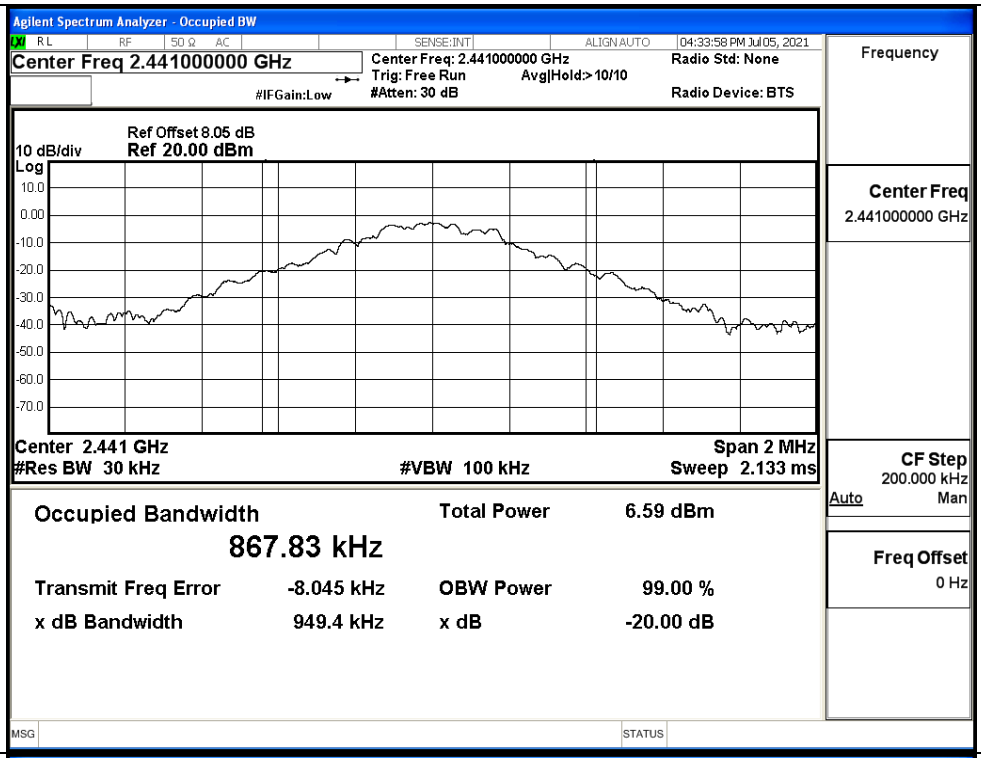
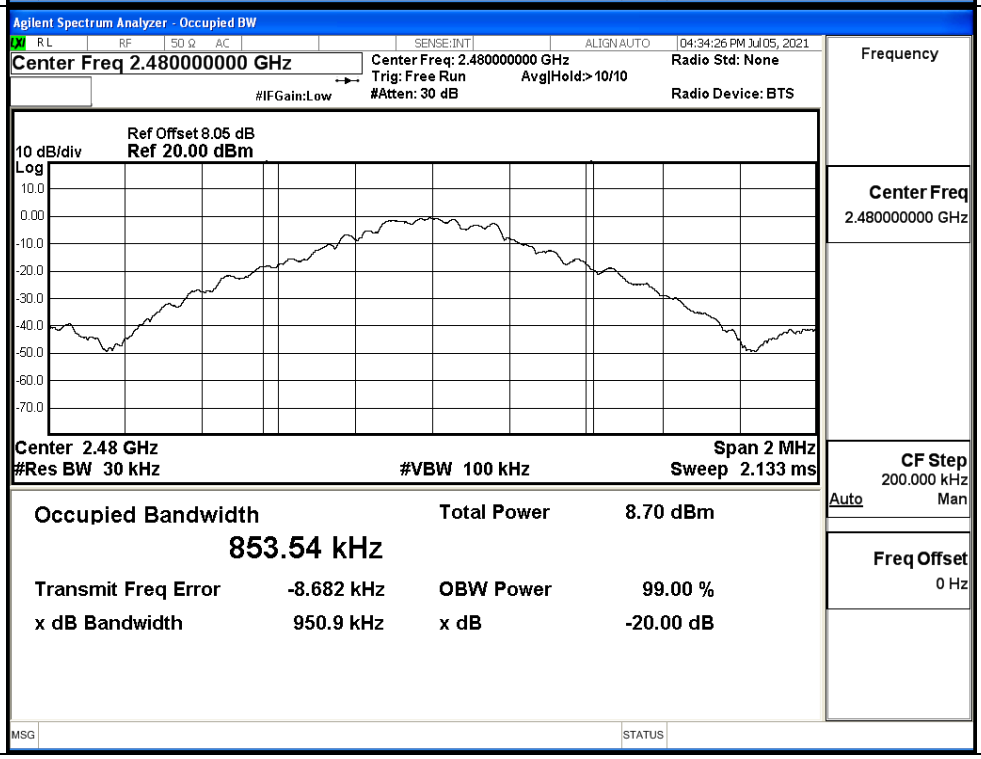
A.2 Occupied Bandwidth

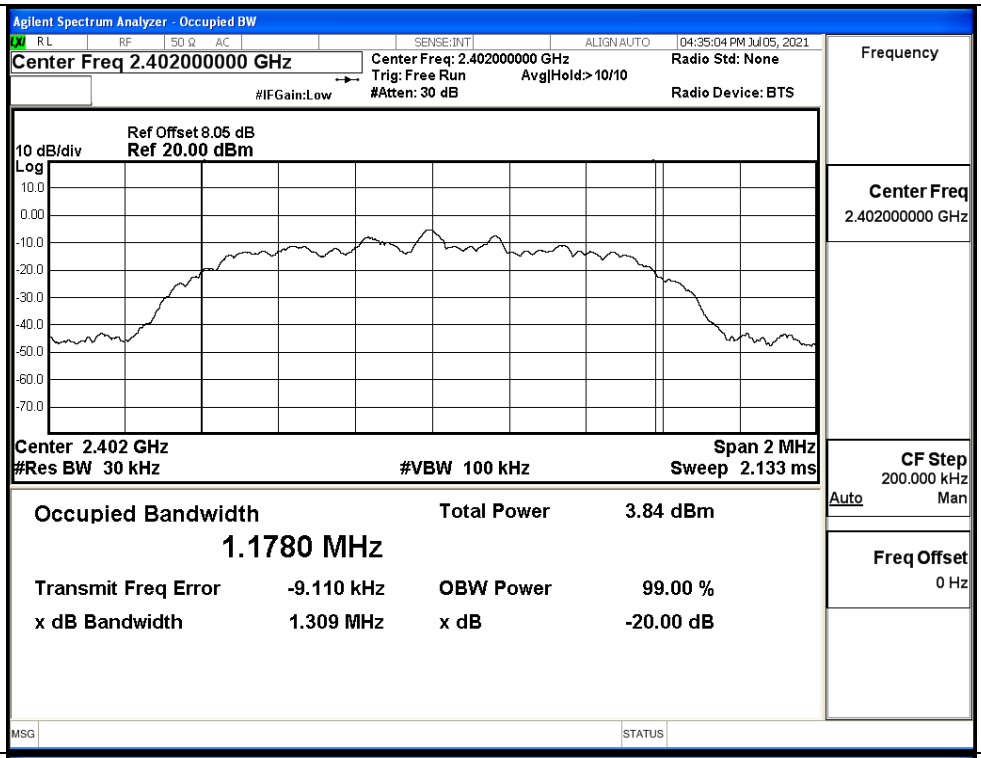
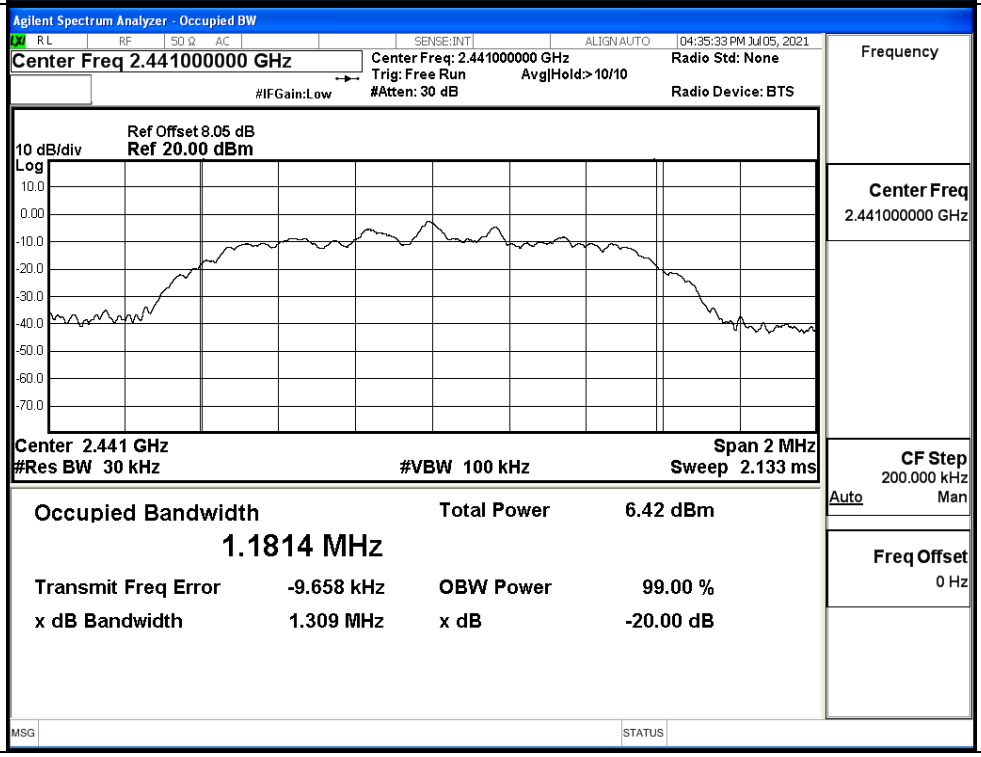
Mode	Channel.	Occupied Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.85481	Not Specified	PASS
	MCH	0.86783	Not Specified	PASS
	HCH	0.85354	Not Specified	PASS
π/4DQPSK	LCH	1.1780	Not Specified	PASS
	MCH	1.1814	Not Specified	PASS
	HCH	1.1813	Not Specified	PASS
8DPSK	LCH	1.1796	Not Specified	PASS
	MCH	1.1823	Not Specified	PASS
	HCH	1.1790	Not Specified	PASS

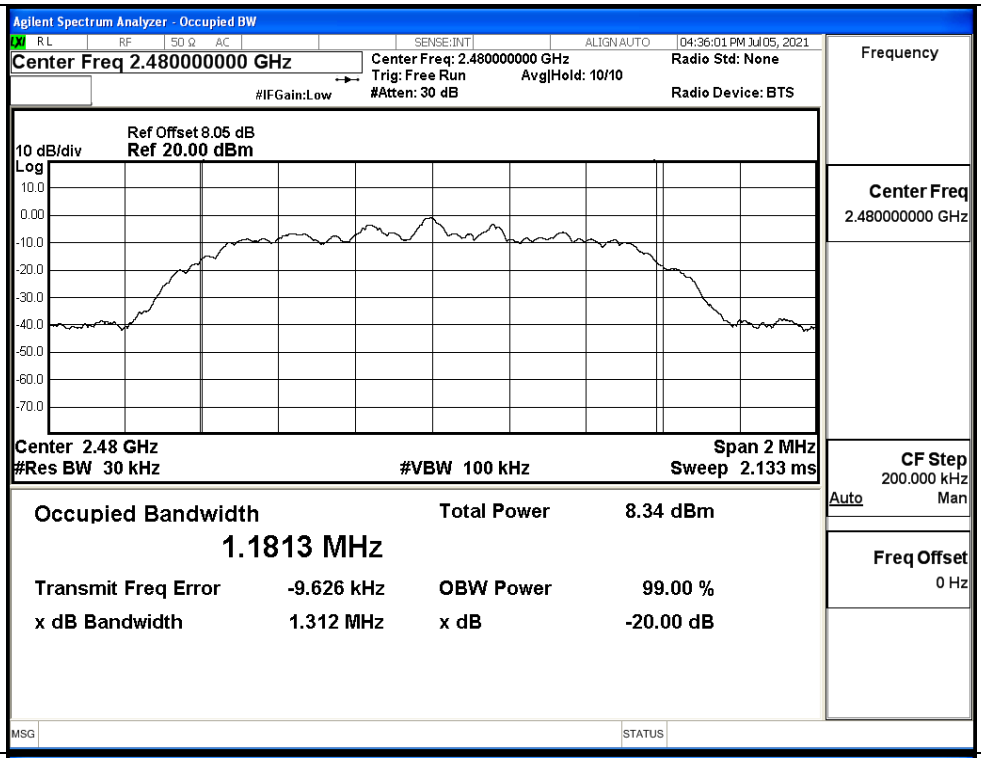
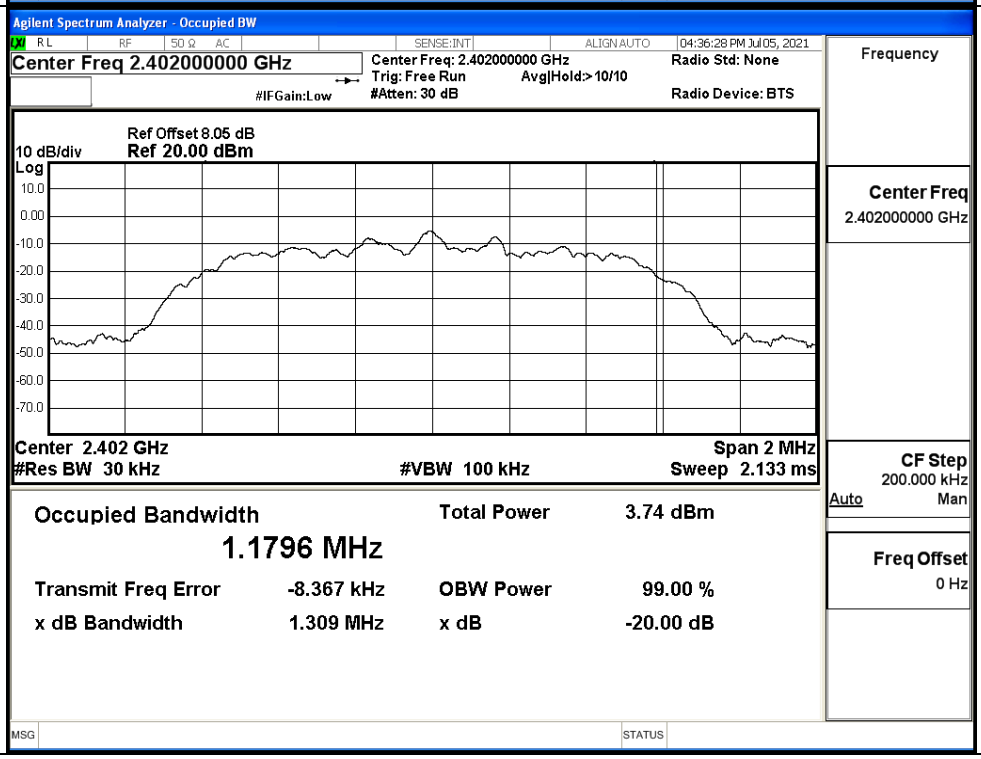
Test Graphs

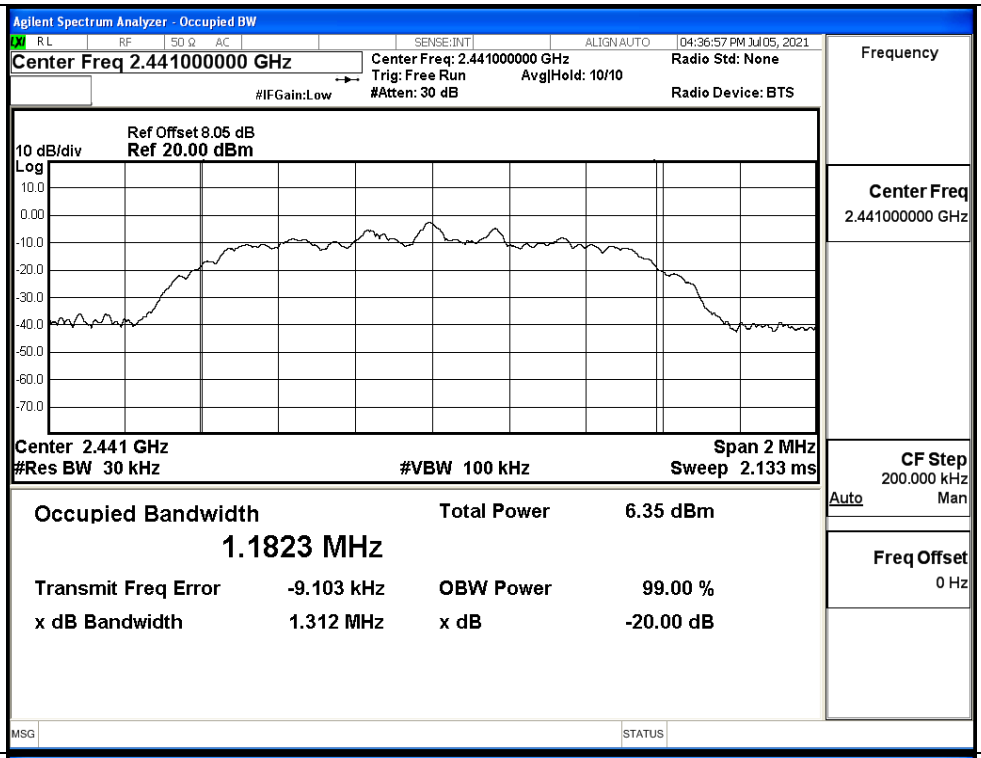
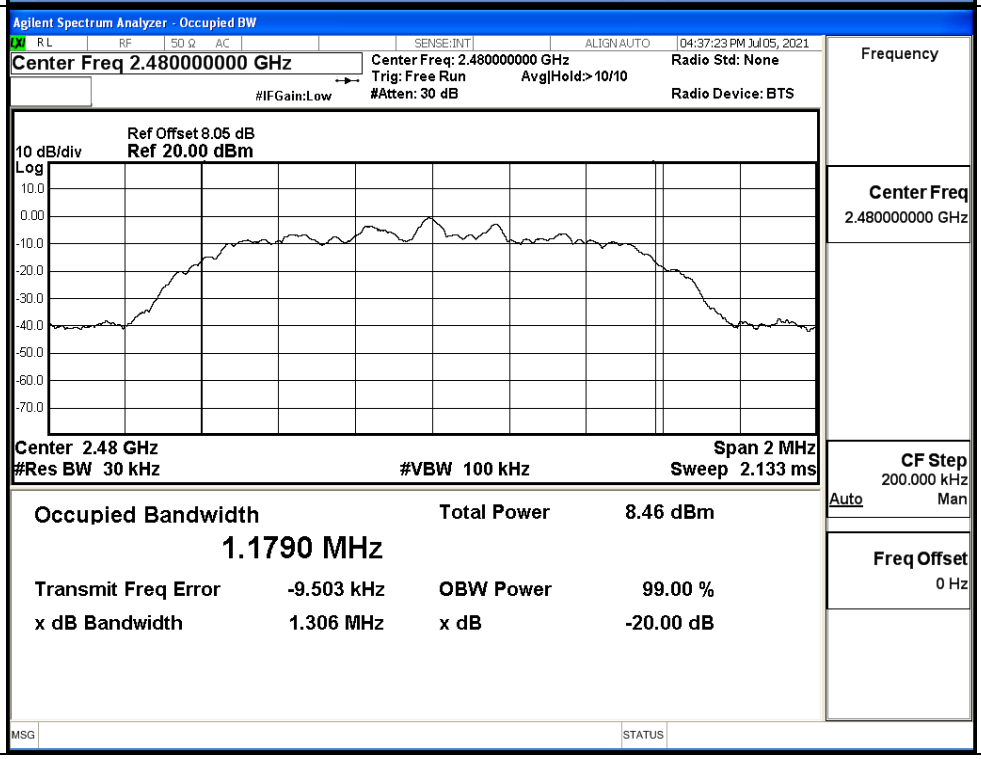
GFSK/LCH



GFSK/MCH	
GFSK/HCH	

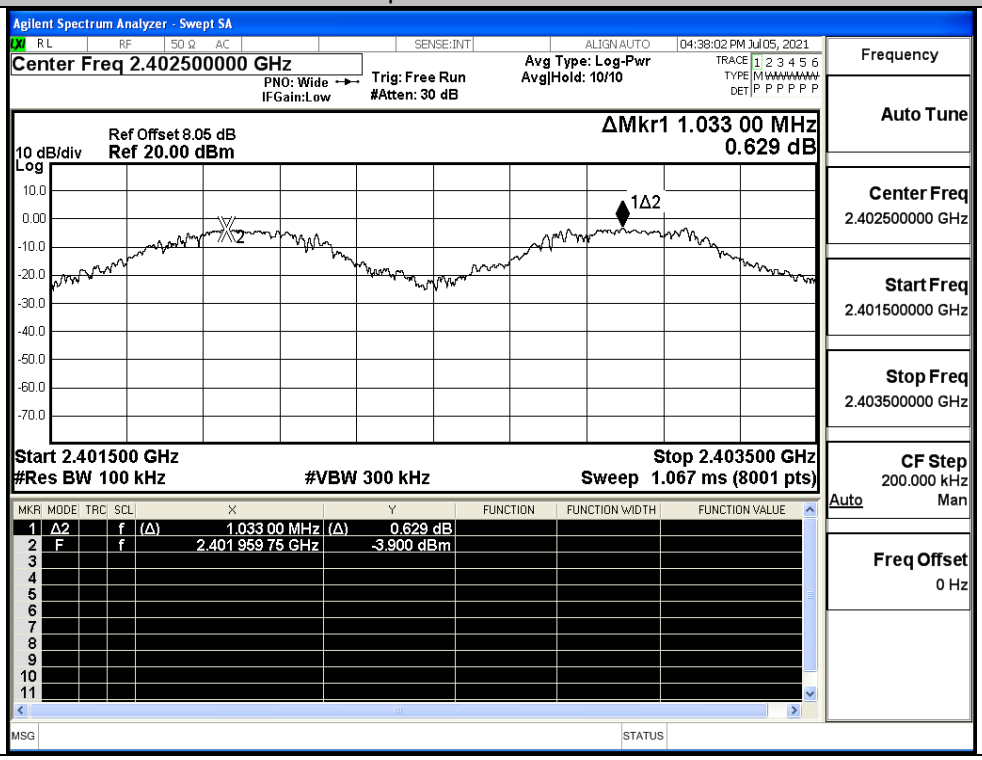
π/4DQPSK/LCH	
π/4DQPSK/MCH	

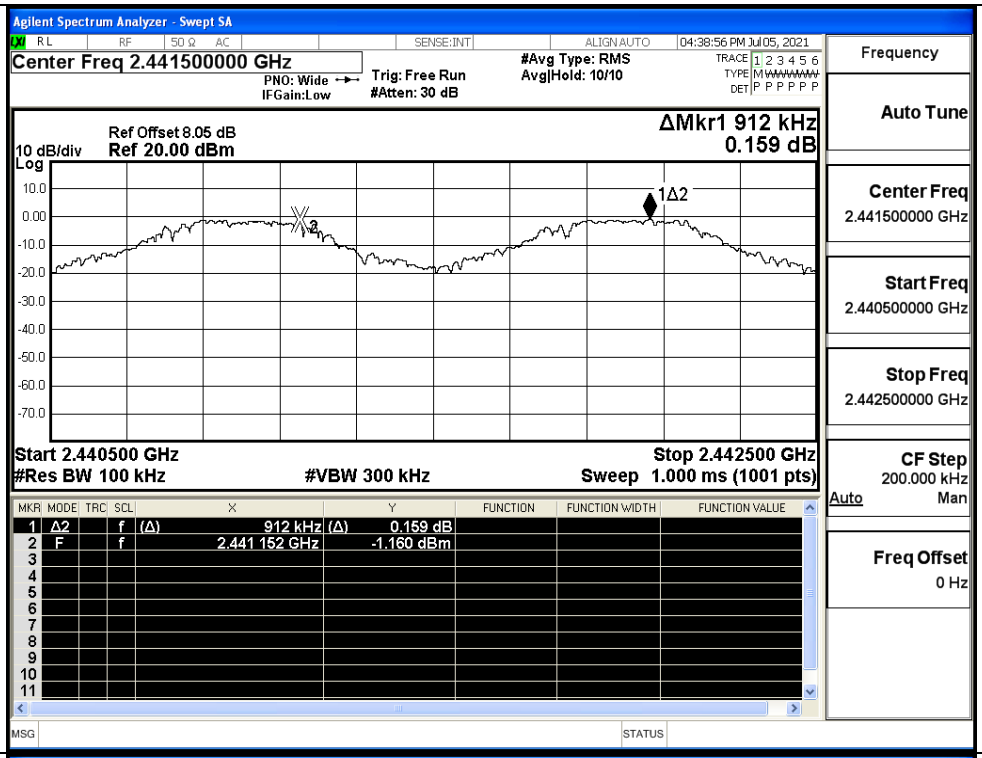
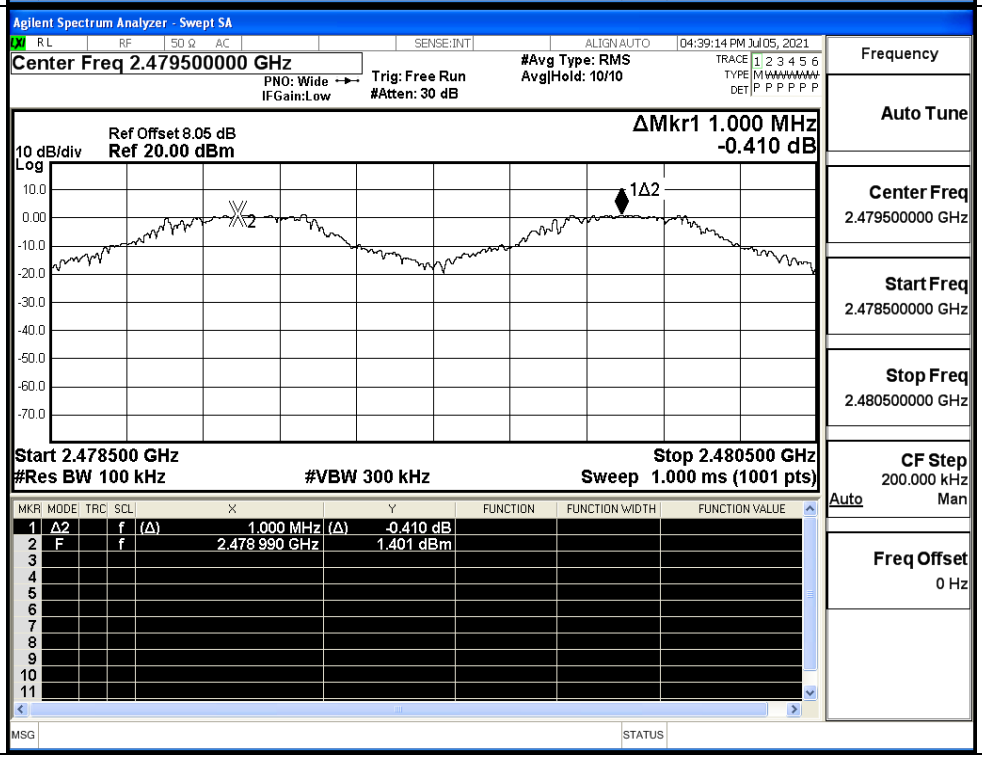
π/4DQPSK/HCH	
8DPSK/LCH	

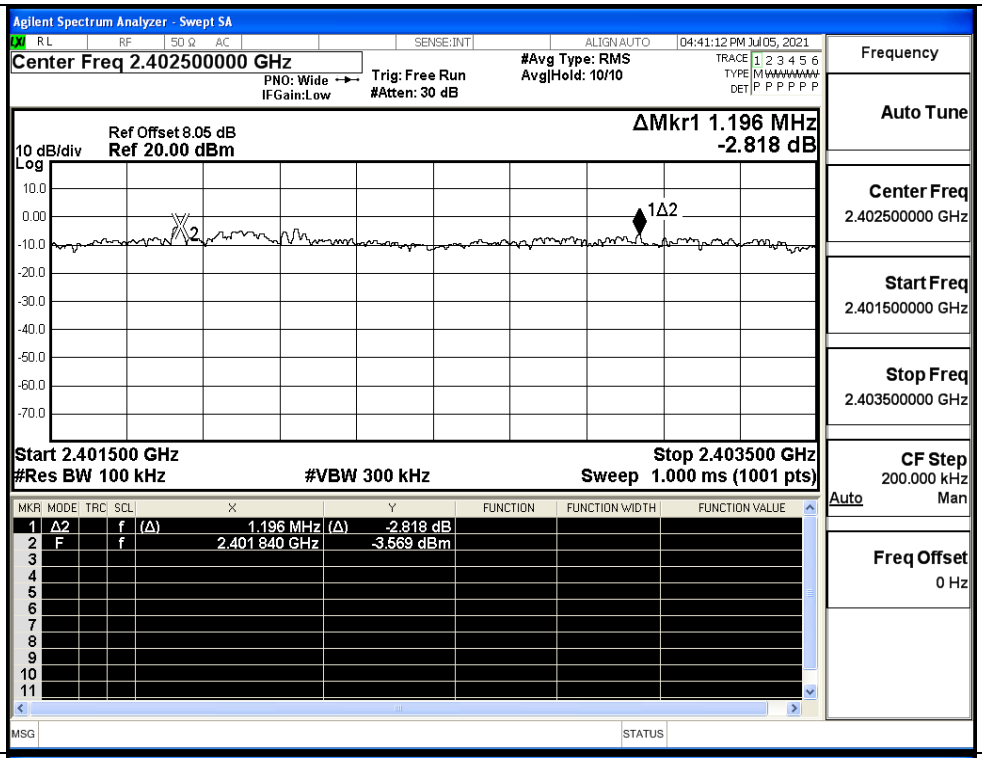
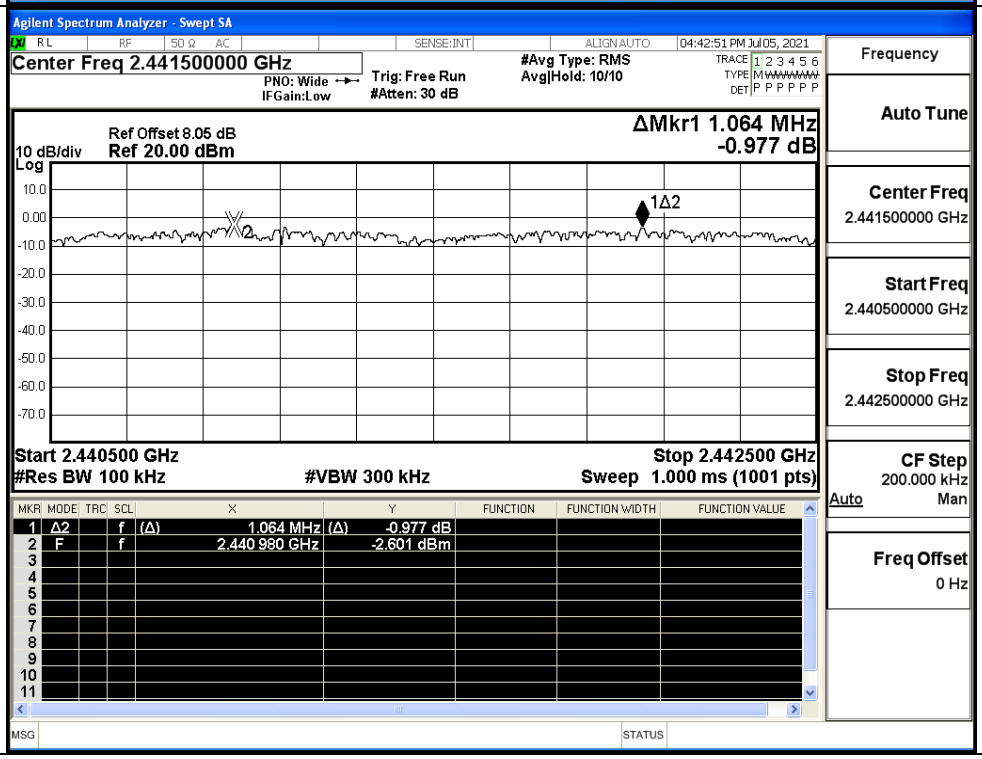
8DPSK/MCH	
8DPSK/HCH	

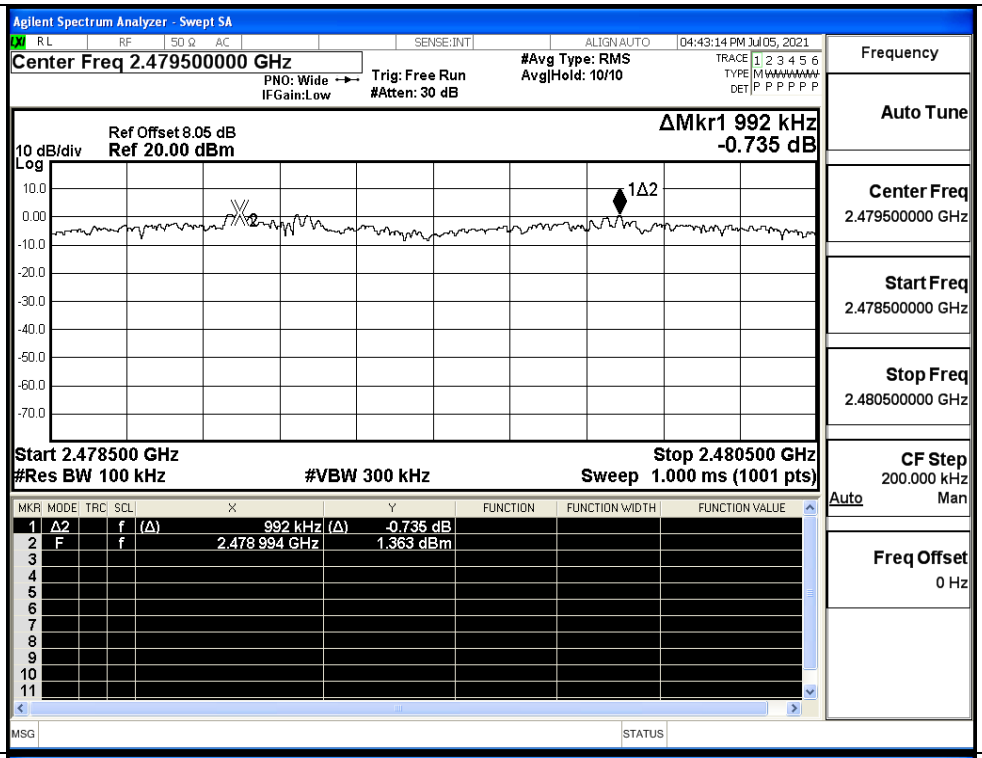
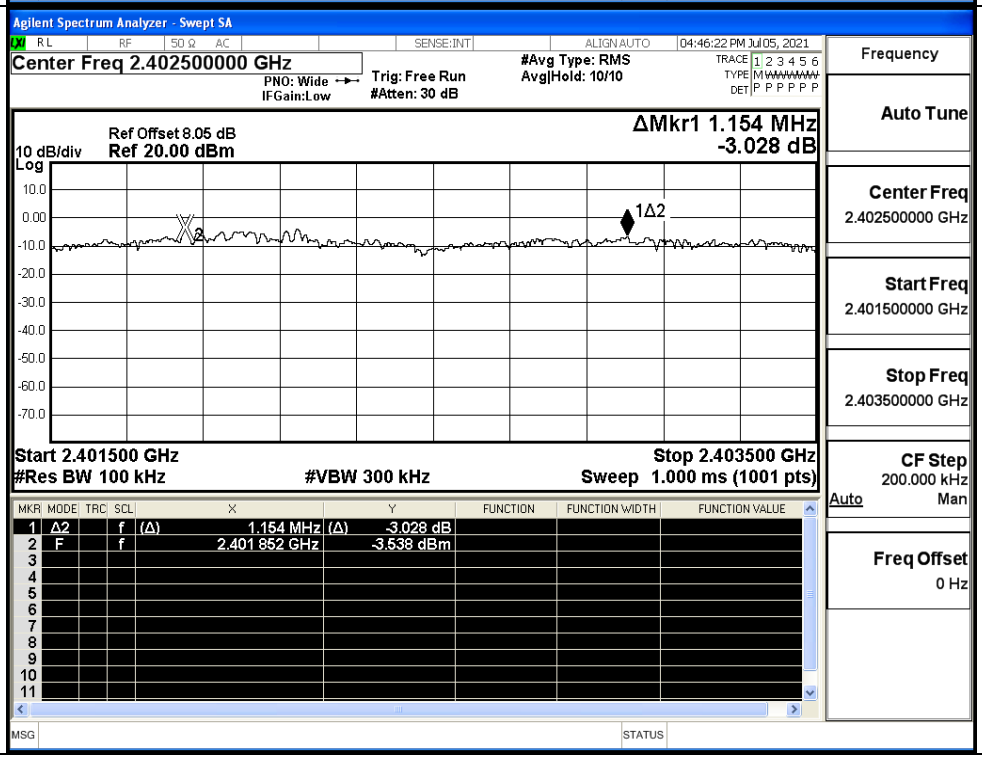
A.3 Carrier Frequency Separation

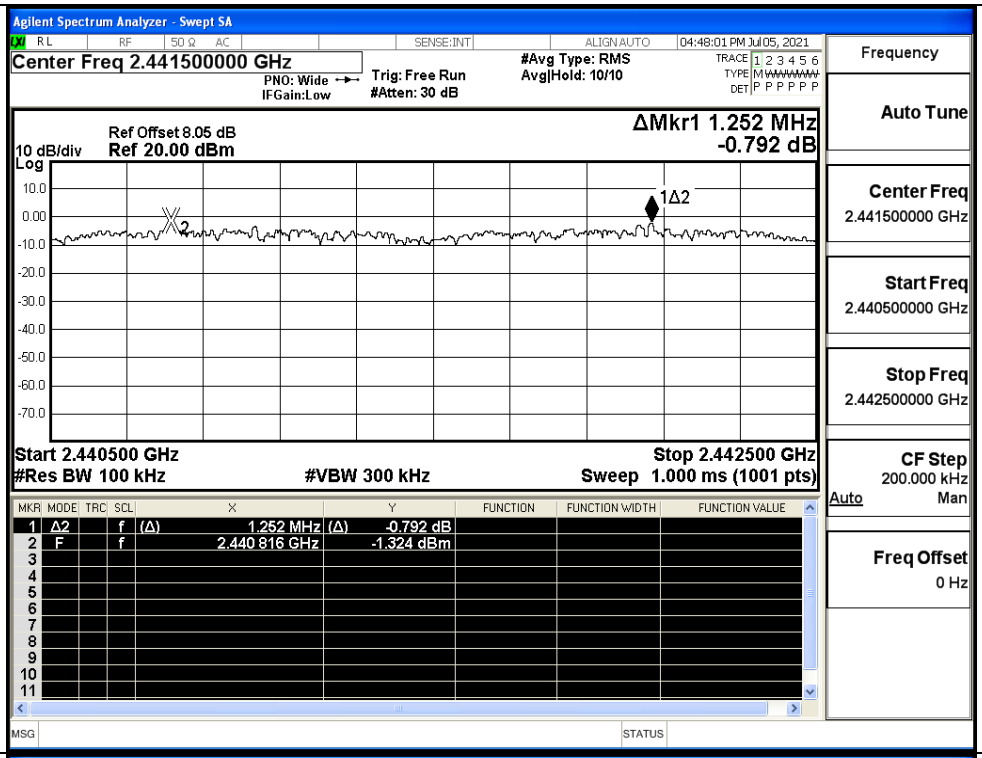
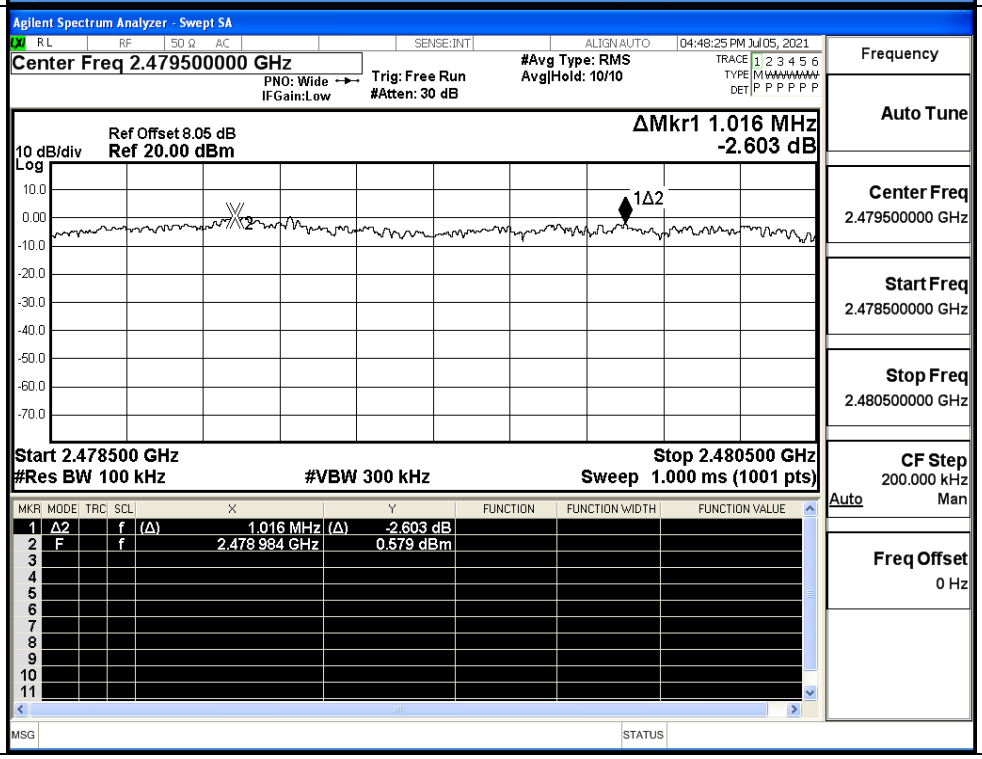
Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.033	0.637	PASS
	MCH	0.912	0.637	PASS
	HCH	1.000	0.637	PASS
π/4DQPSK	LCH	1.196	0.877	PASS
	MCH	1.064	0.877	PASS
	HCH	0.992	0.877	PASS
8DPSK	LCH	1.154	0.875	PASS
	MCH	1.252	0.875	PASS
	HCH	1.016	0.875	PASS

Test Graphs	
GFSK/LCH	

GFSK/MCH	
GFSK/HCH	

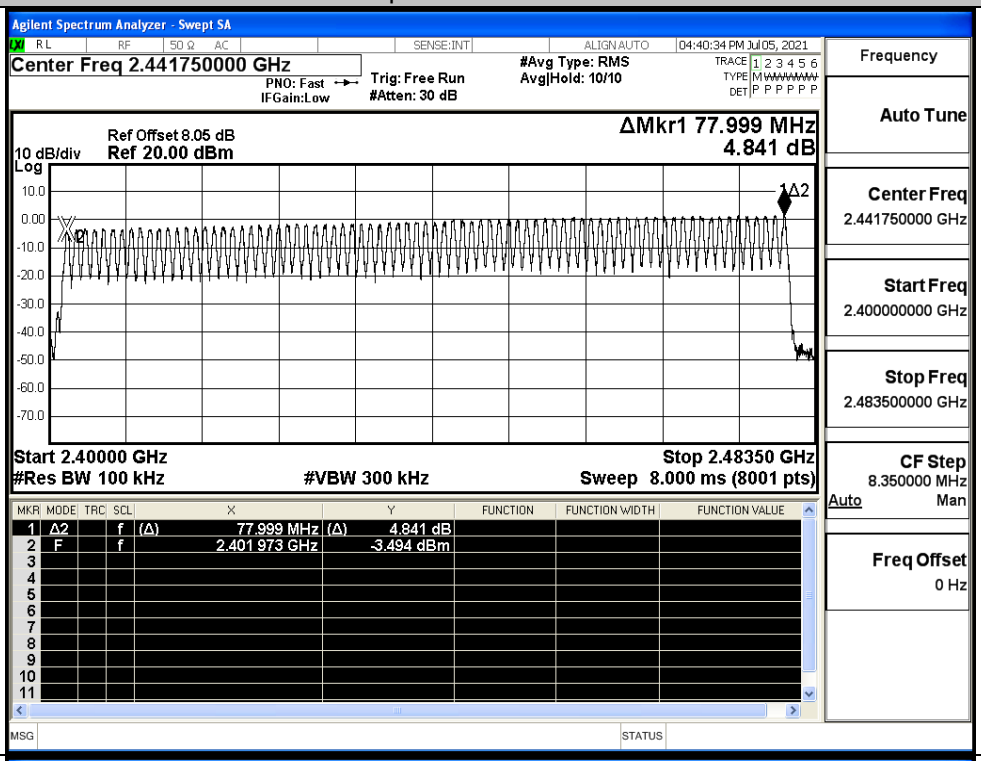
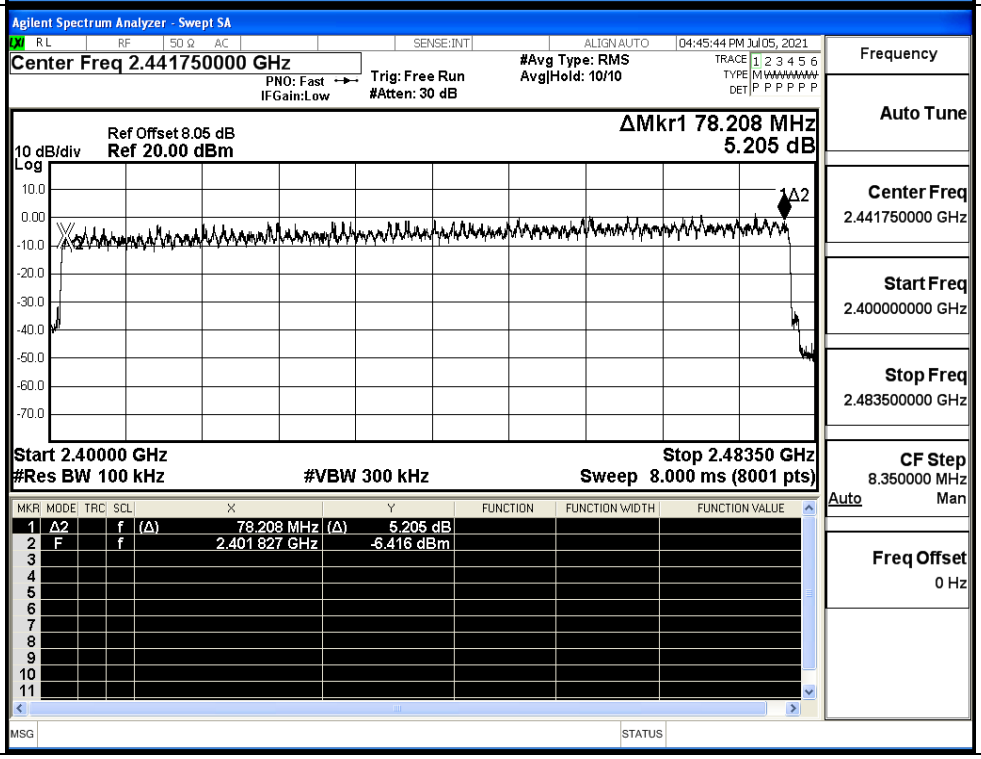
π/4DQPSK/LCH	
π/4DQPSK/MCH	

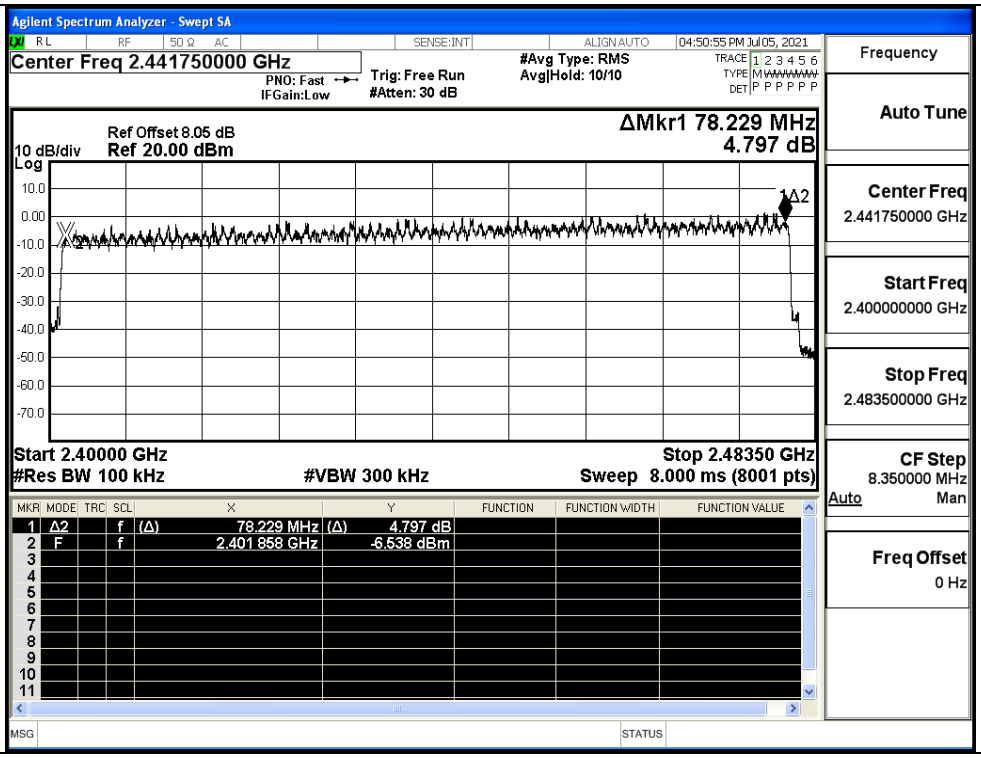
π/4DQPSK/HCH	
8DPSK/LCH	

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	

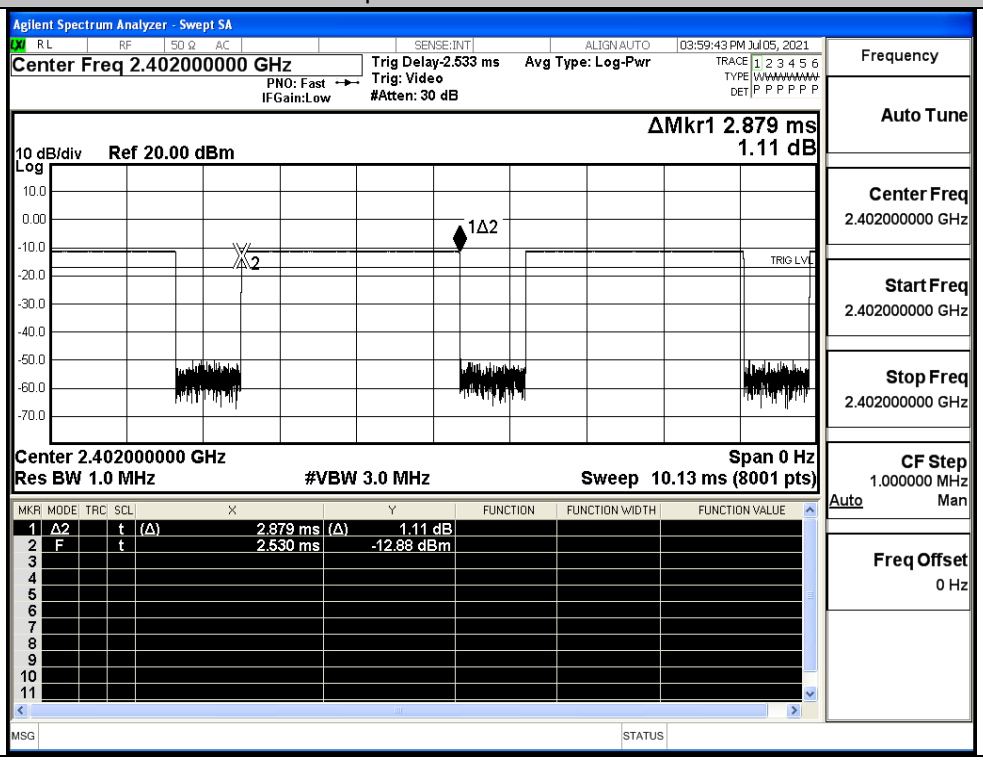
Agilent Spectrum Analyzer - Swept SA
Center Freq 2.441750000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 10/10
04:50:55 PM Jul 05, 2021
Ref Offset 8.05 dB
10 dB/div
Log
Ref 20.00 dBm
ΔMkr1 78.229 MHz
4.797 dB
Start 2.40000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.48350 GHz
Sweep 8.000 ms (8001 pts)
1 Δ2 f (Δ) 78.229 MHz (Δ) 4.797 dB
2 F f 2.401 858 GHz -6.538 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

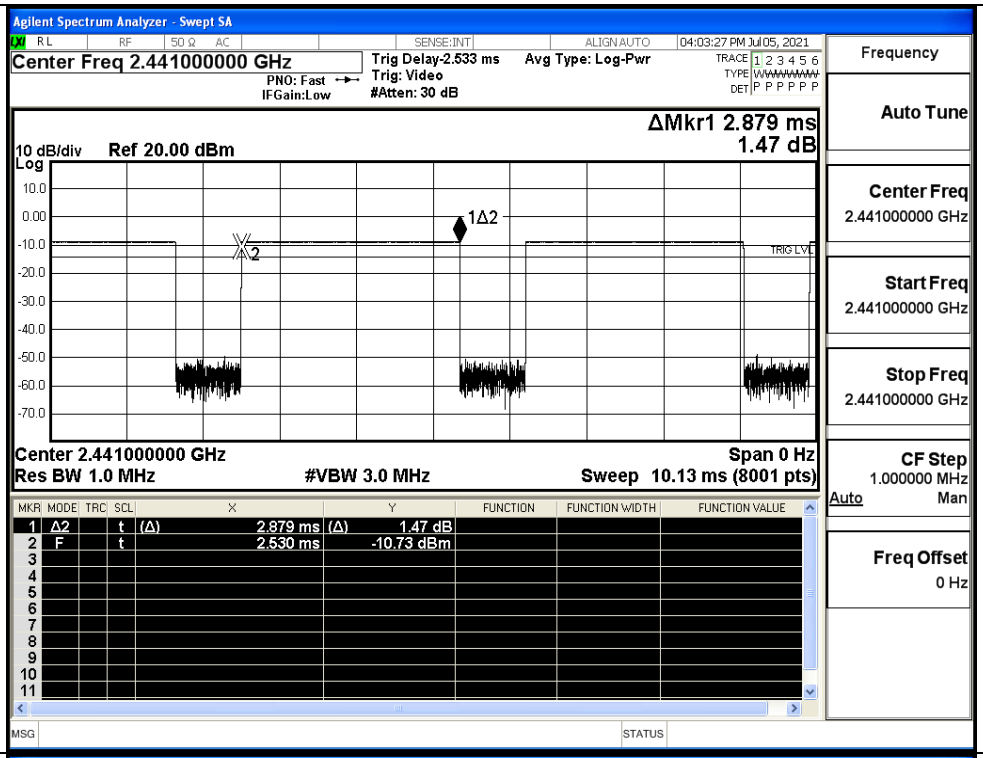
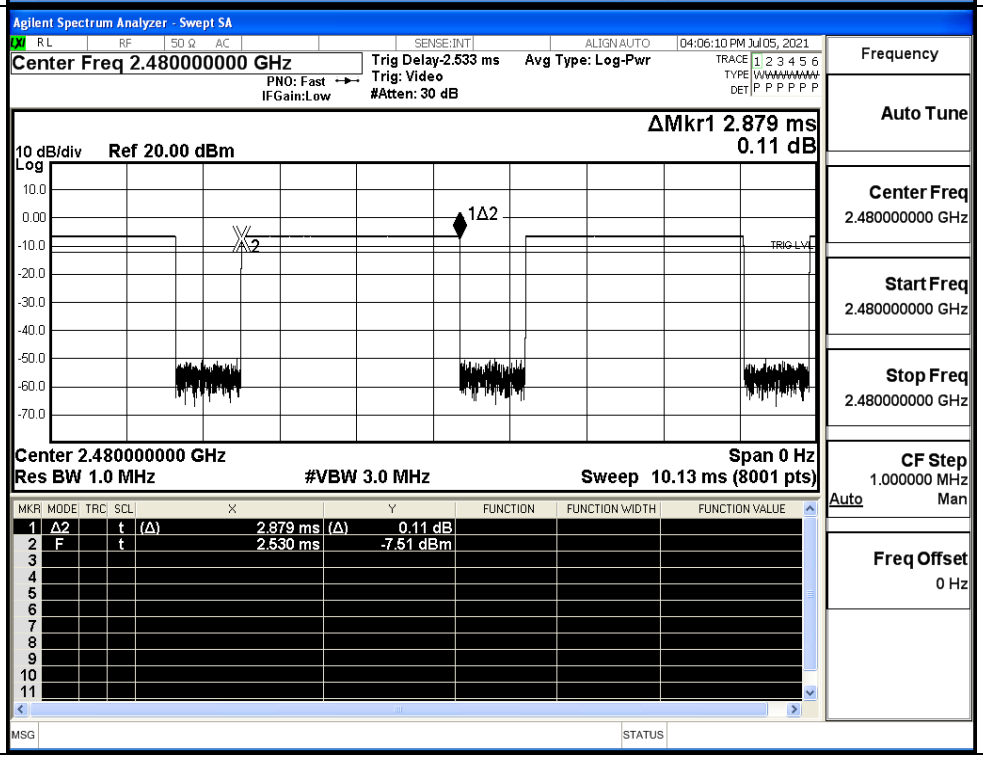
A.5 Dwell Time

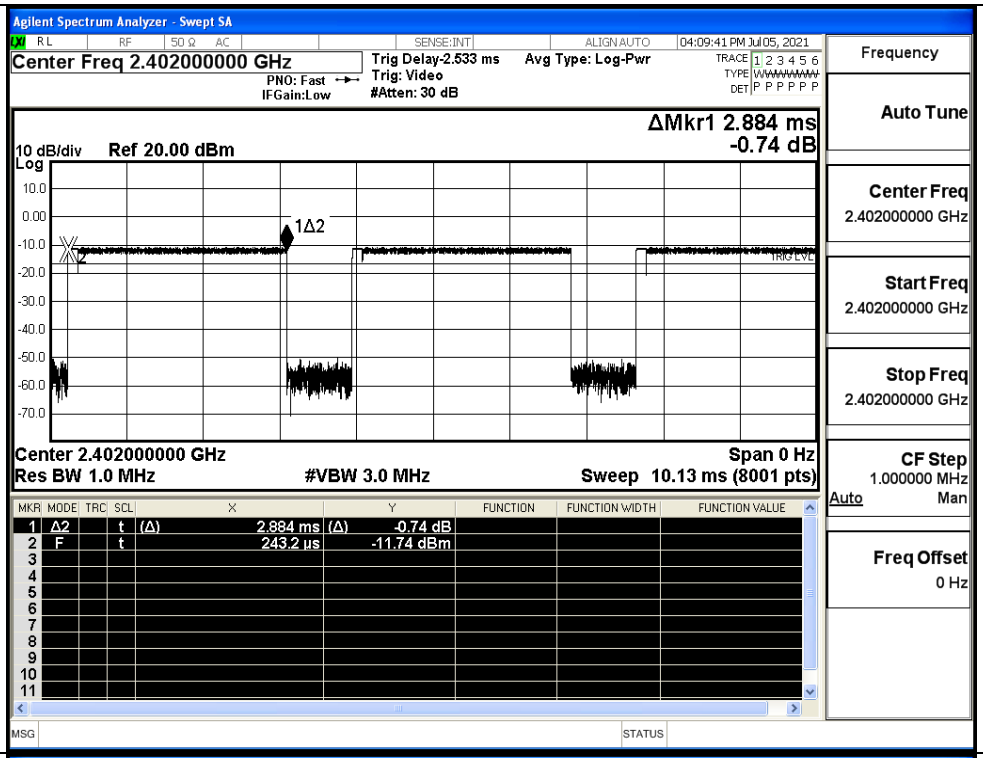
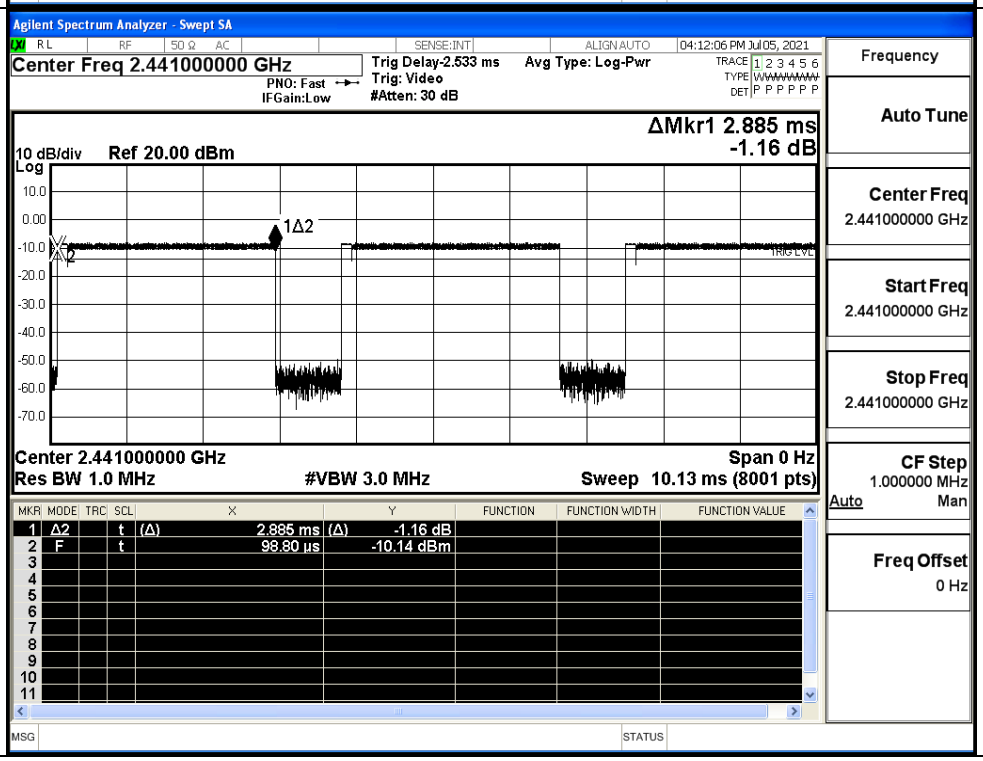
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.88	106.7	0.307	0.4	PASS
	DH5	MCH	2.88	106.7	0.307	0.4	PASS
	DH5	HCH	2.88	106.7	0.307	0.4	PASS
π/4DQPSK	2DH5	LCH	2.88	106.7	0.307	0.4	PASS
	2DH5	MCH	2.88	106.7	0.308	0.4	PASS
	2DH5	HCH	2.88	106.7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

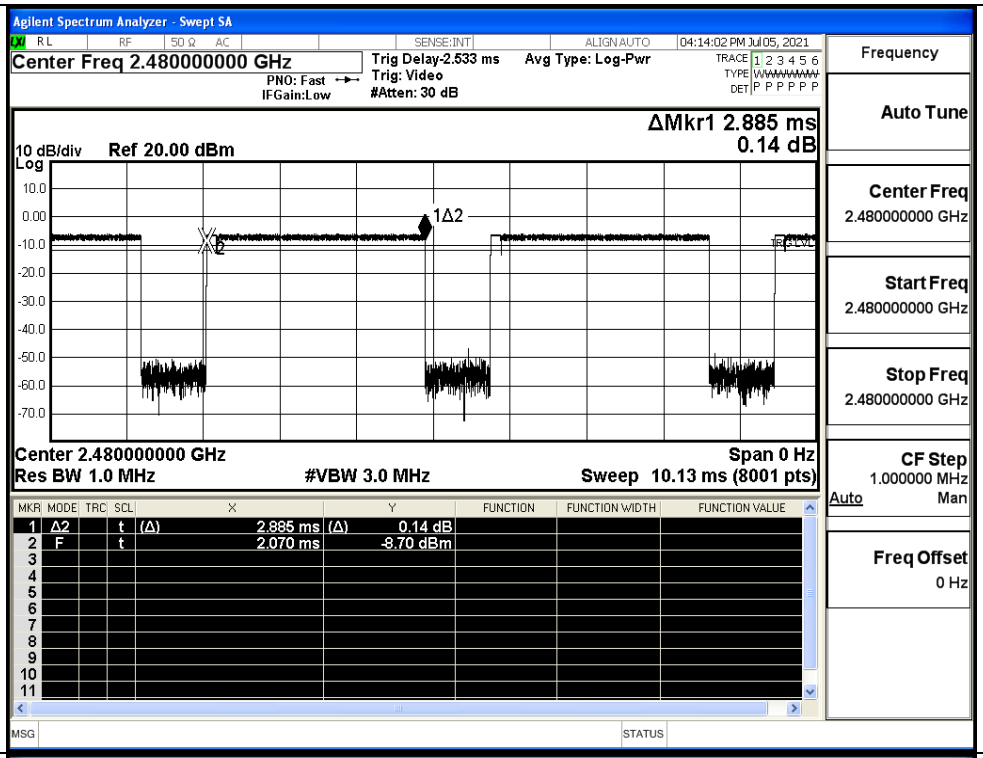
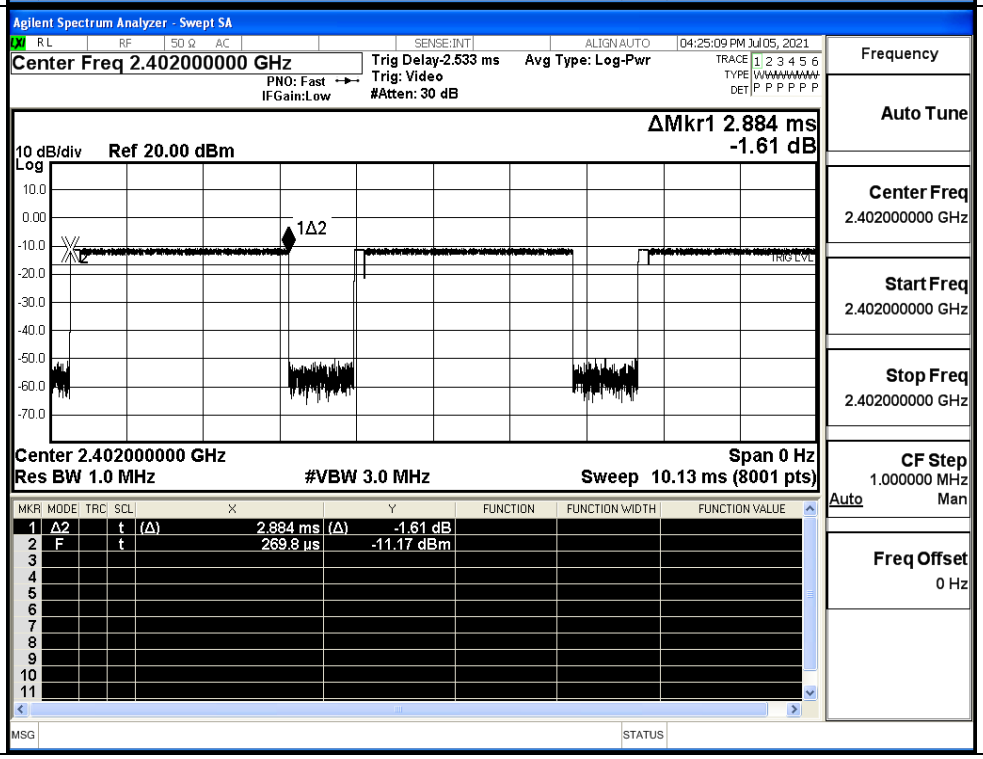
Test Graphs

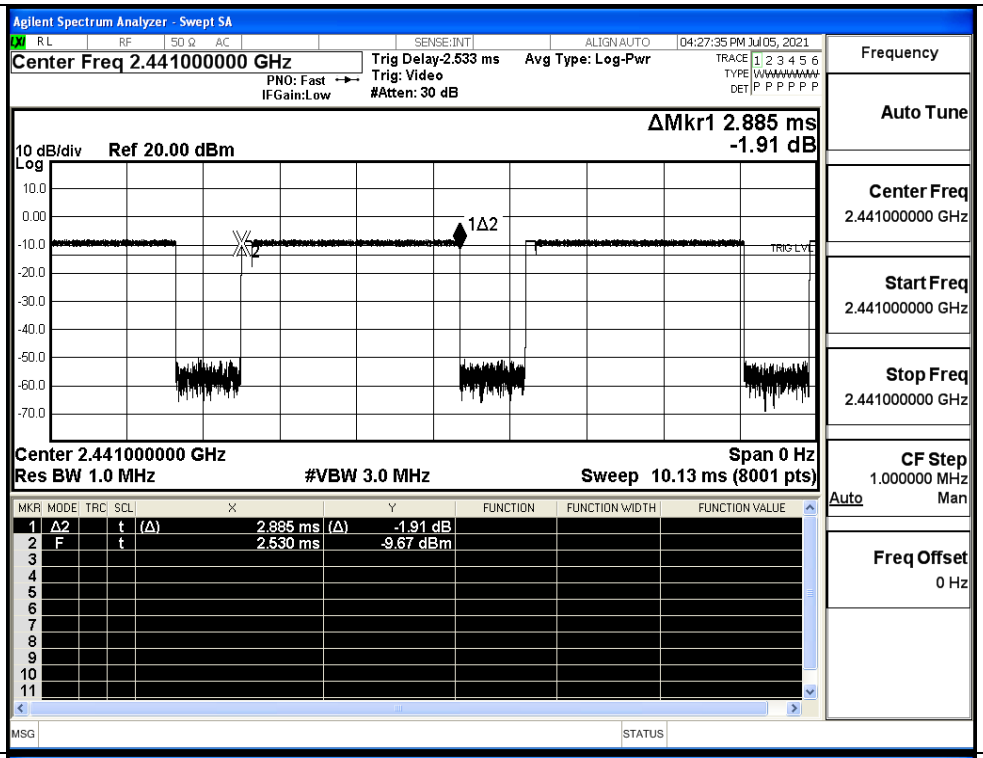
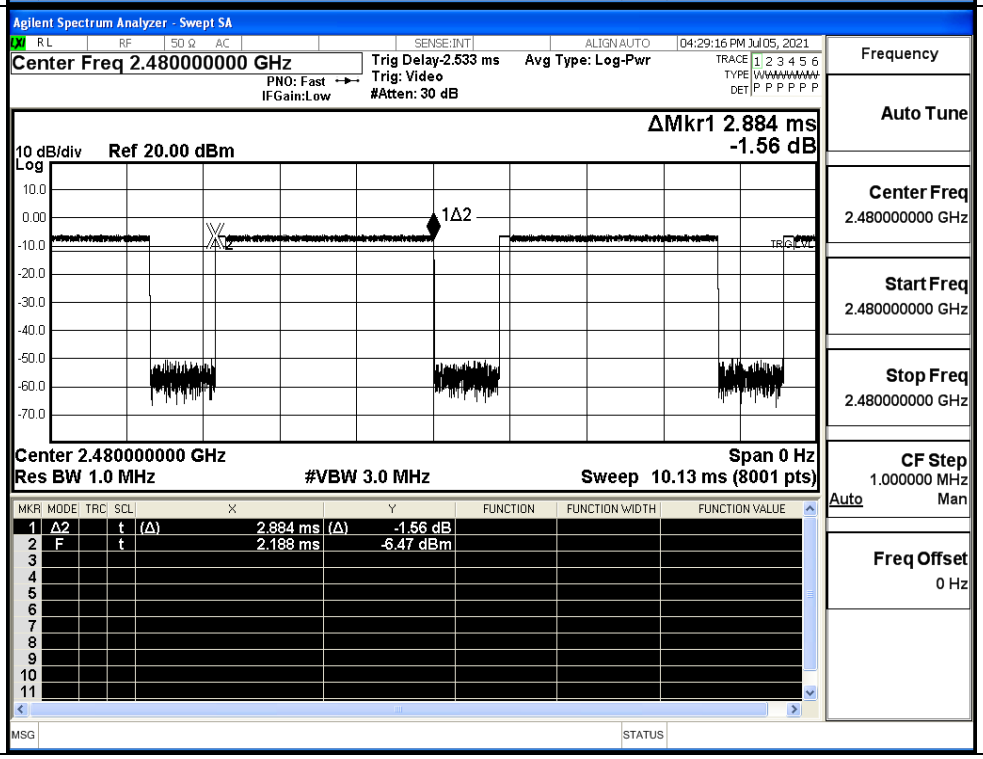
GFSK_DH5/LCH



GFSK_DH5/MCH	
GFSK_DH5/HCH	

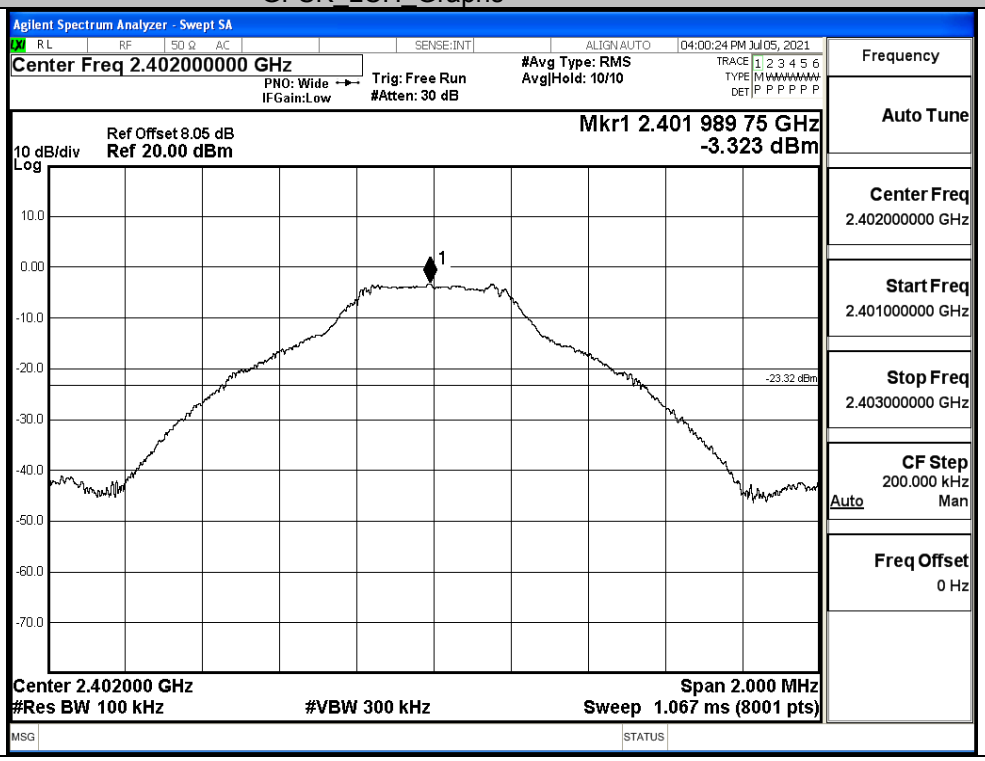
π/4DQPSK _2DH5/LCH	
π/4DQPSK _2DH5/MCH	

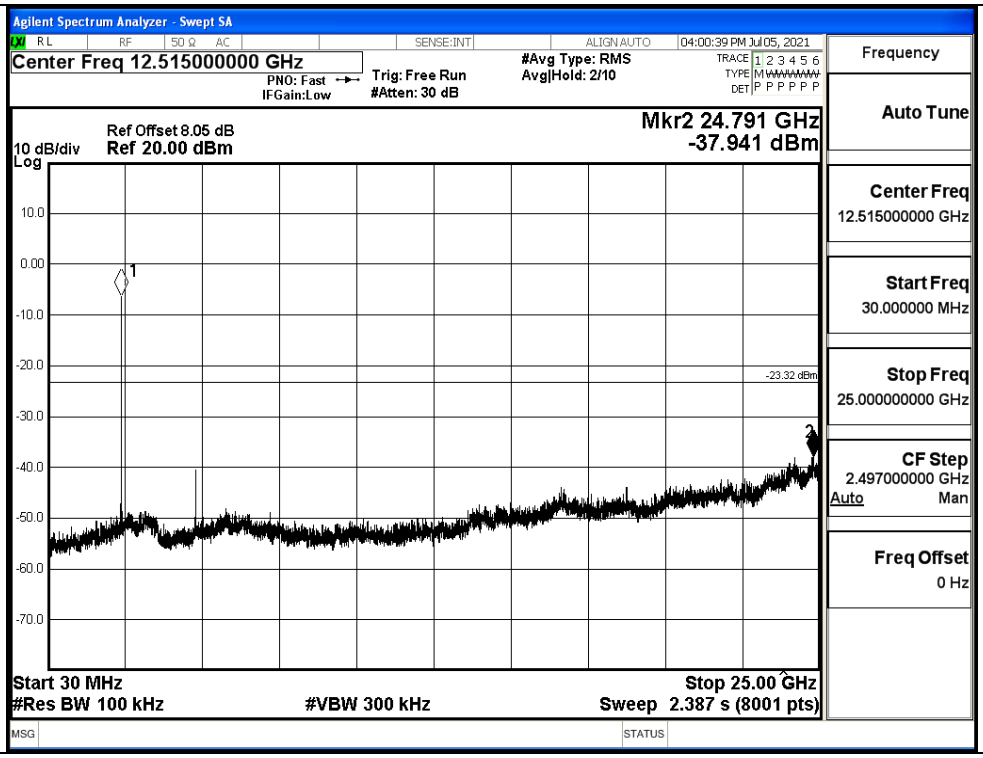
π/4DQPSK _2DH5/HCH	
8DPSK _3DH5/LCH	

8DPSK _3DH5/MCH	
8DPSK _3DH5/HCH	

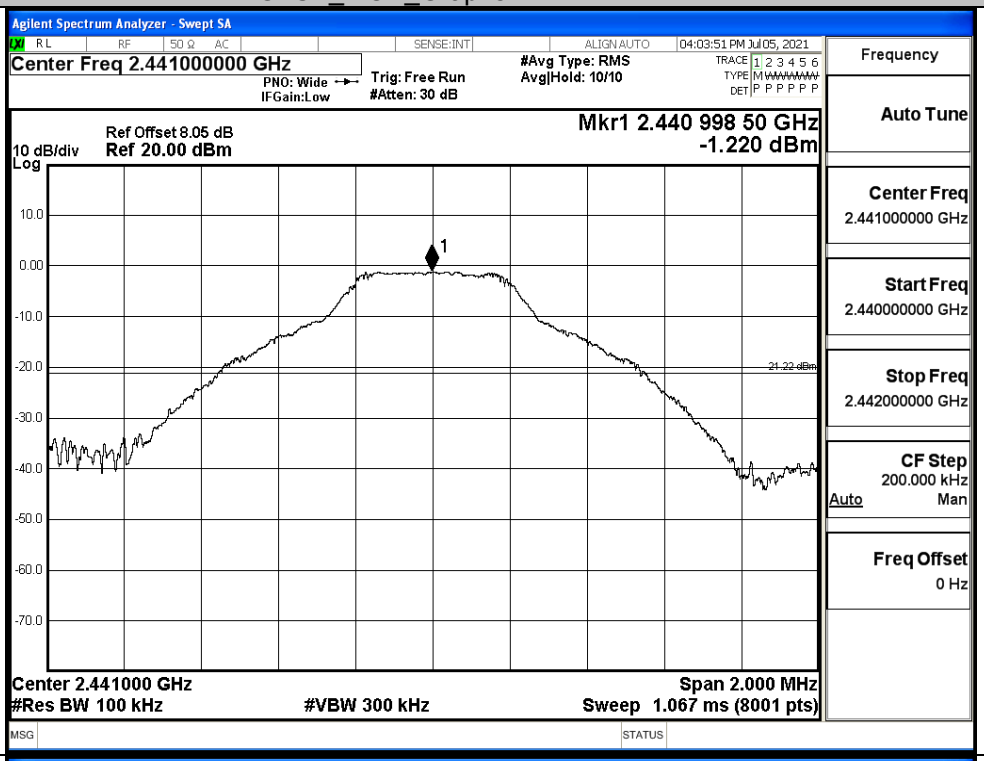
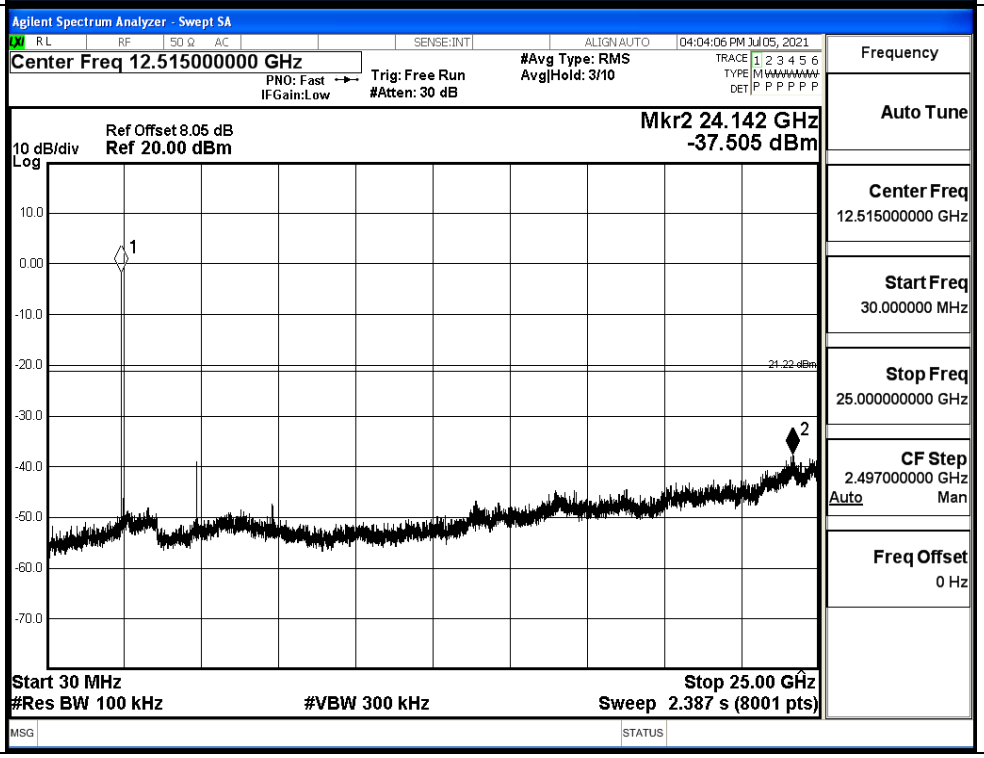
A.6 RF Conducted Spurious Emissions

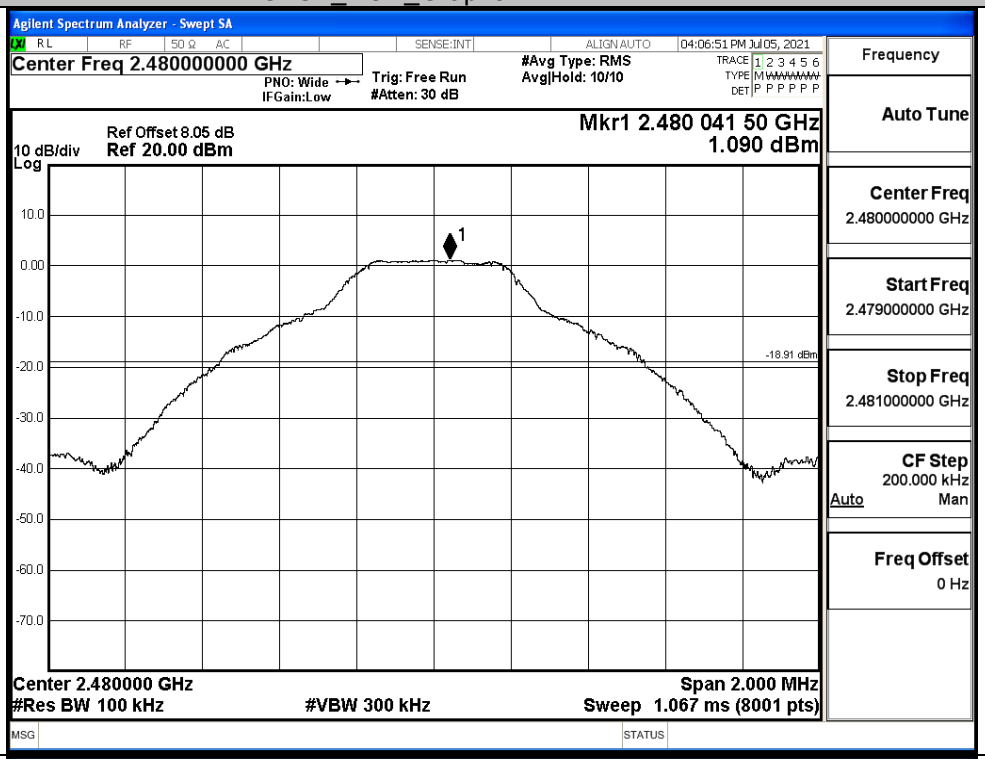
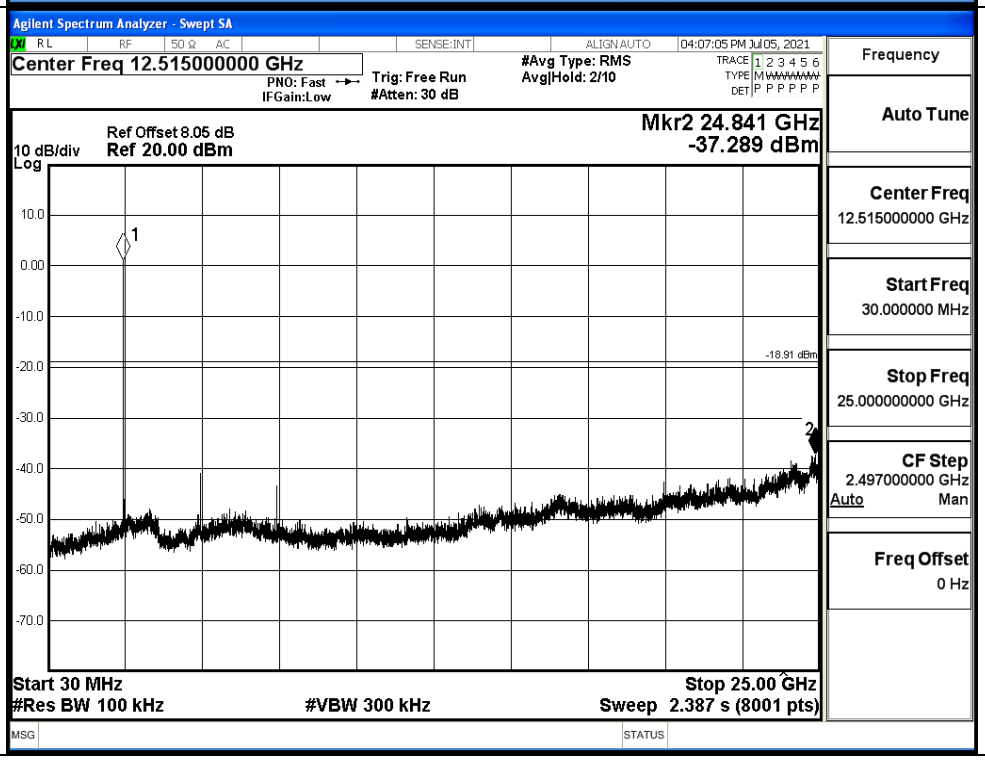
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-3.323	-37.941	-23.323	PASS
	MCH	-1.22	-37.505	-21.220	PASS
	HCH	1.09	-37.289	-18.910	PASS
π/4DQPSK	LCH	-3.567	-37.711	-23.567	PASS
	MCH	-0.621	-38.214	-20.621	PASS
	HCH	1.457	-38.045	-18.543	PASS
8DPSK	LCH	-3.369	-38.145	-23.369	PASS
	MCH	-0.408	-37.874	-20.408	PASS
	HCH	1.33	-37.304	-18.670	PASS

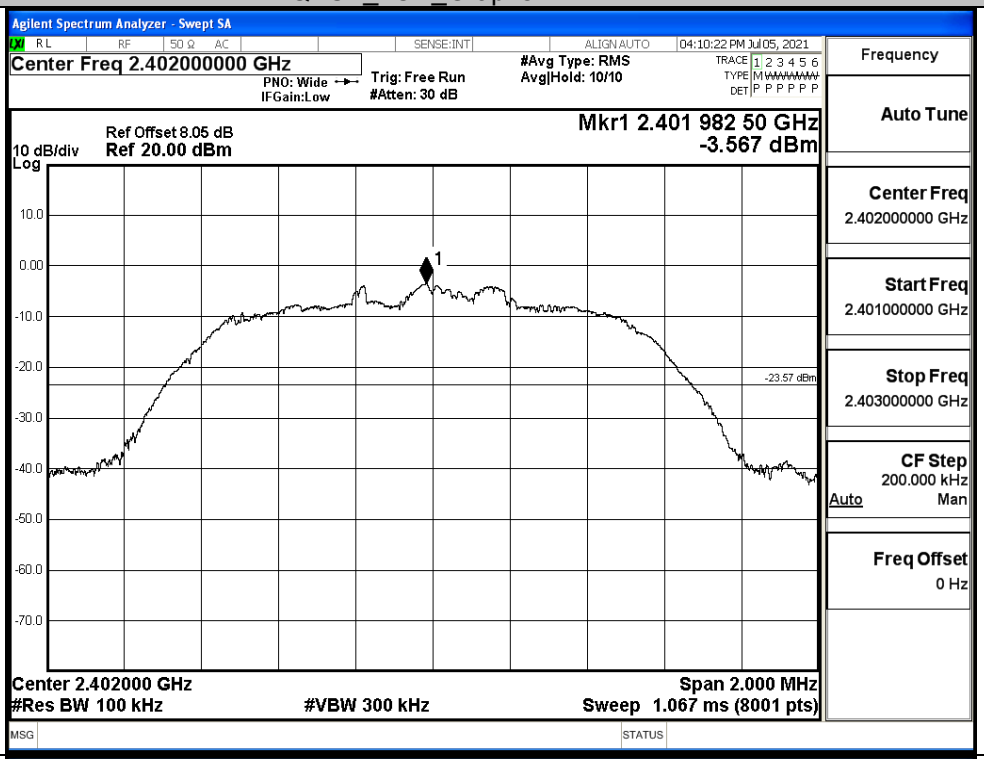
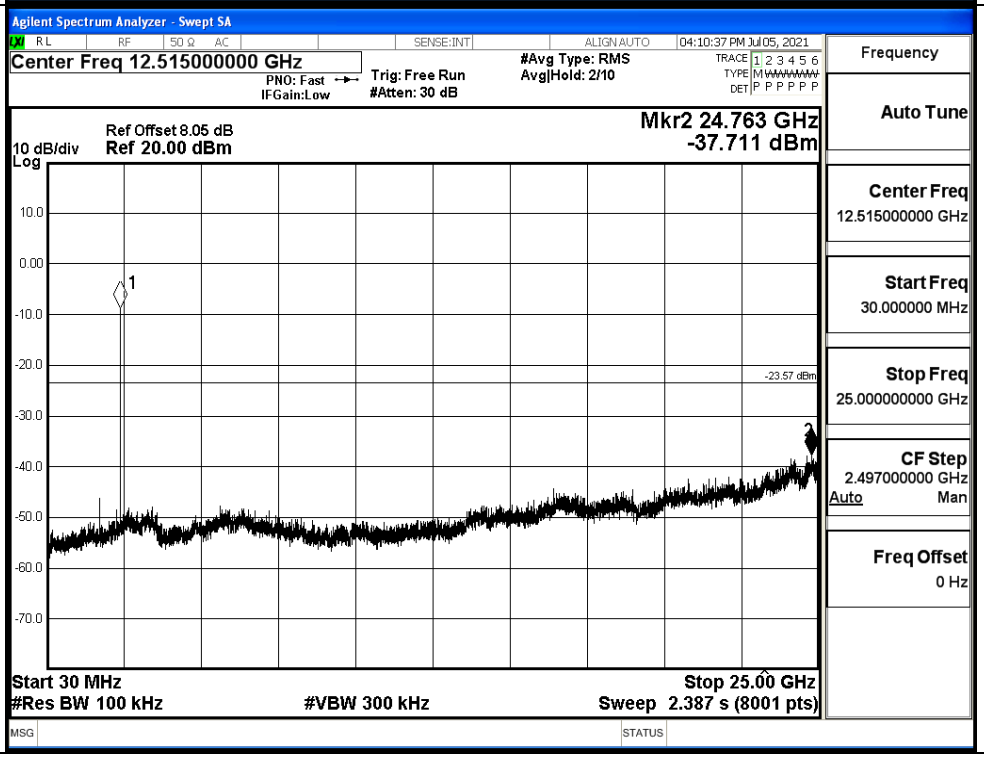
GFSK_LCH_Graphs	
Pref	

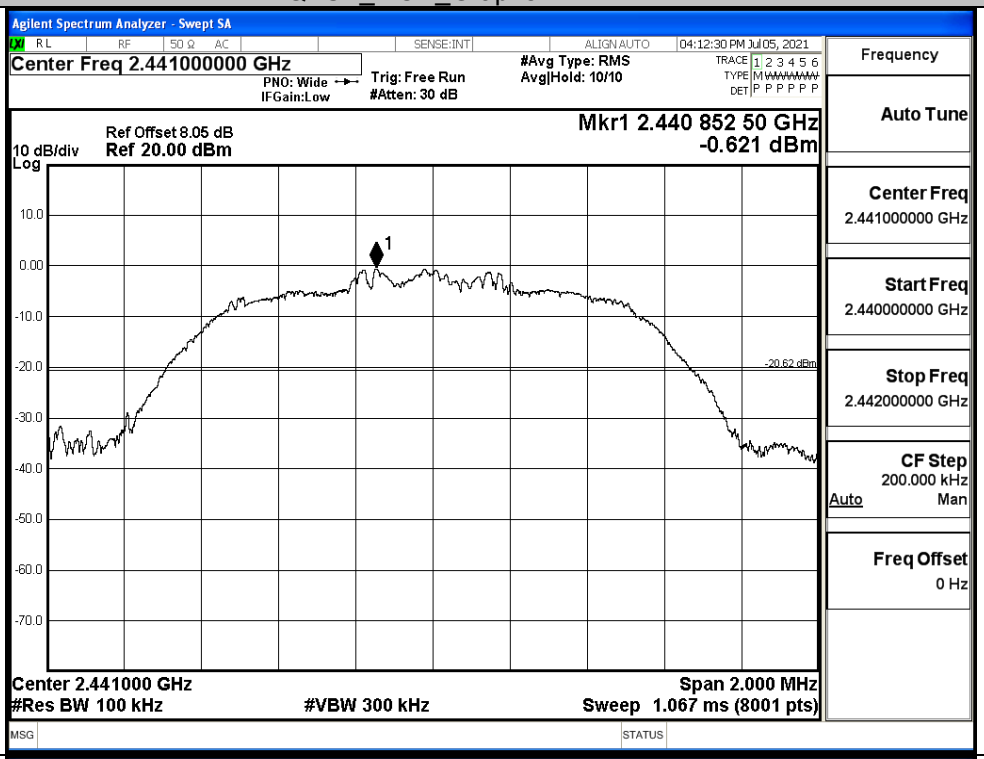
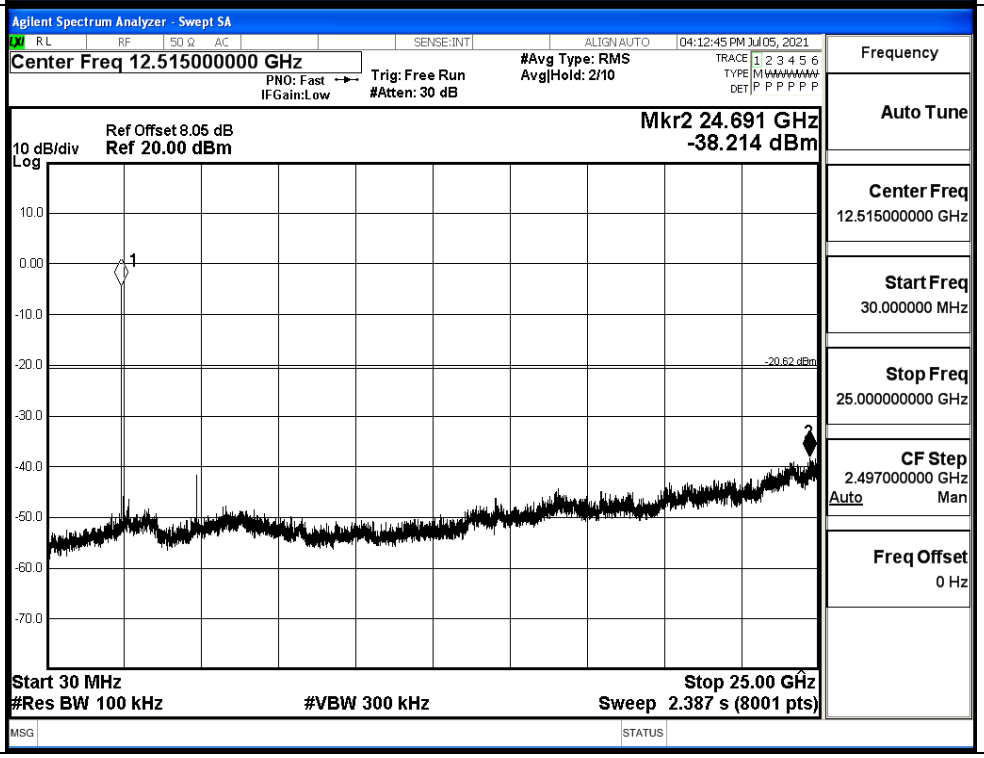
Puw		

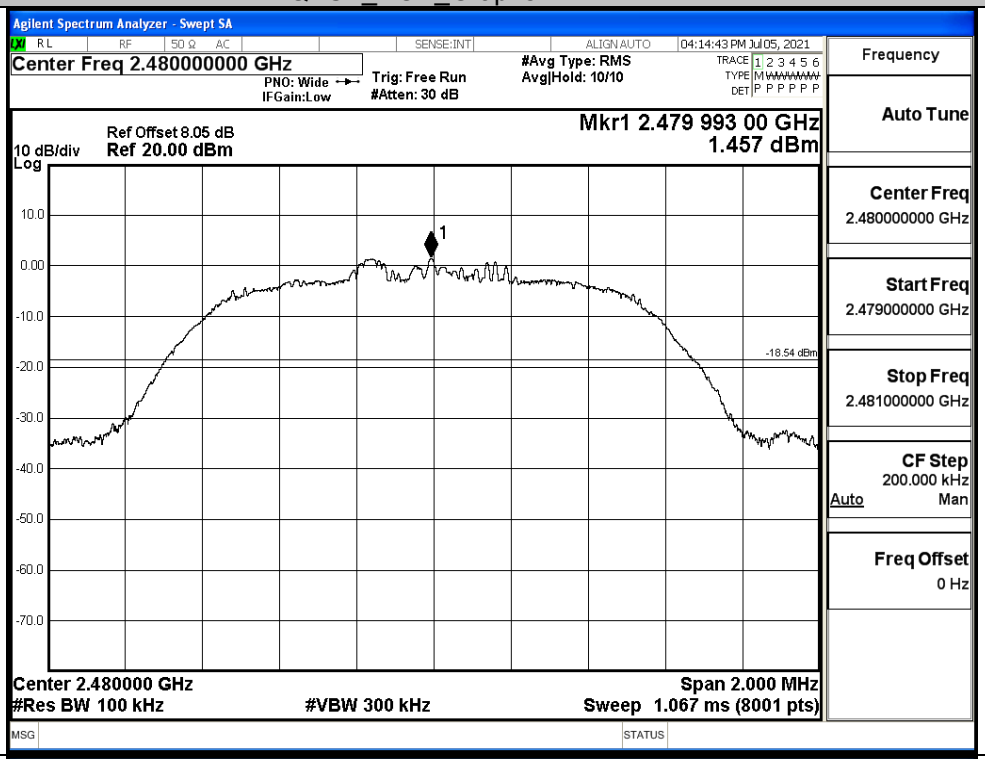
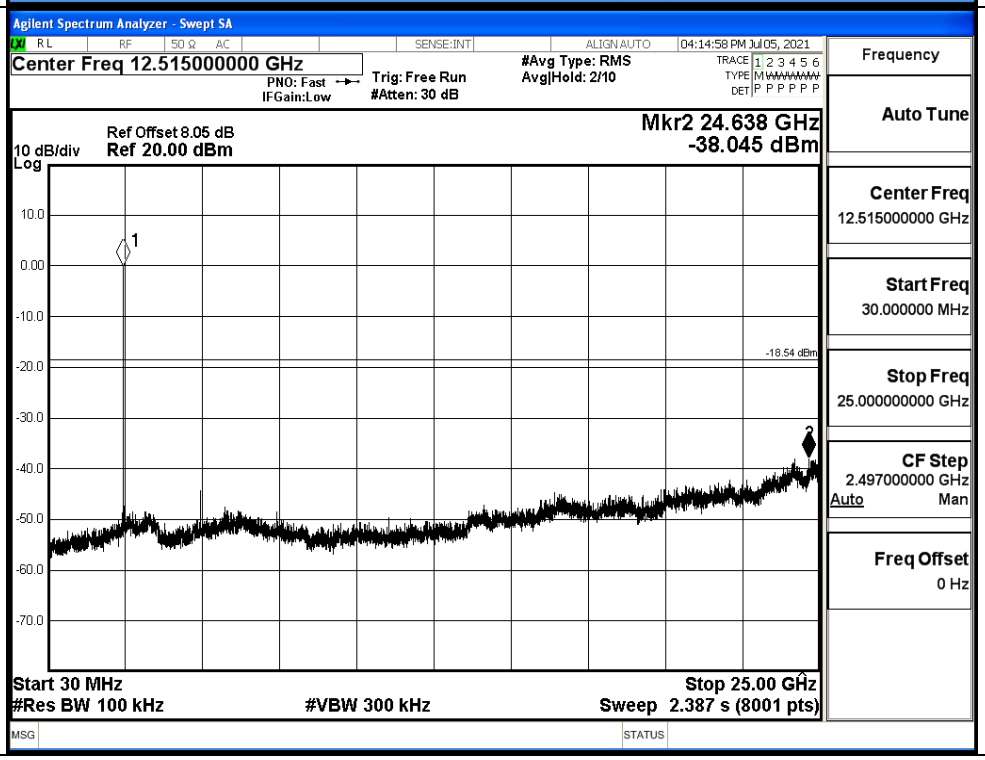
Agilent Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
04:00:39 PM Jul 05, 2021
Center Freq 12.515000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 2/10
TRACE 1 2 3 4 5 6
TYPE M
DET P P P P P
Ref Offset 8.05 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr2 24.791 GHz
-37.941 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-23.32 dBm
Start 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.00 GHz
Sweep 2.387 s (8001 pts)
MSG
STATUS
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

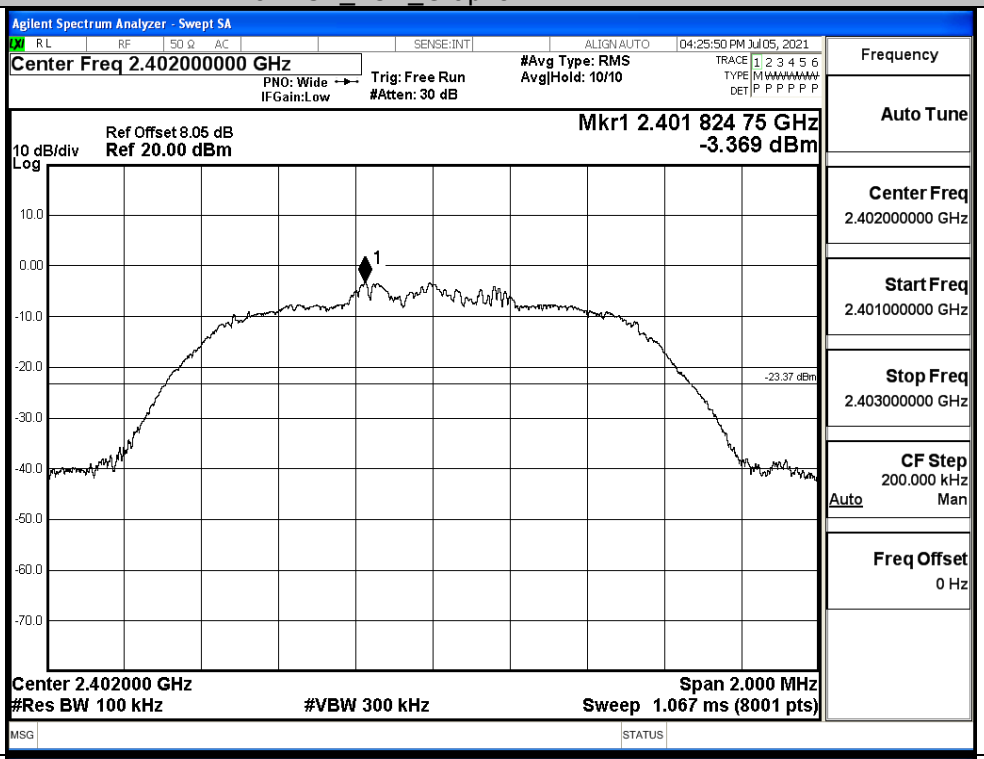
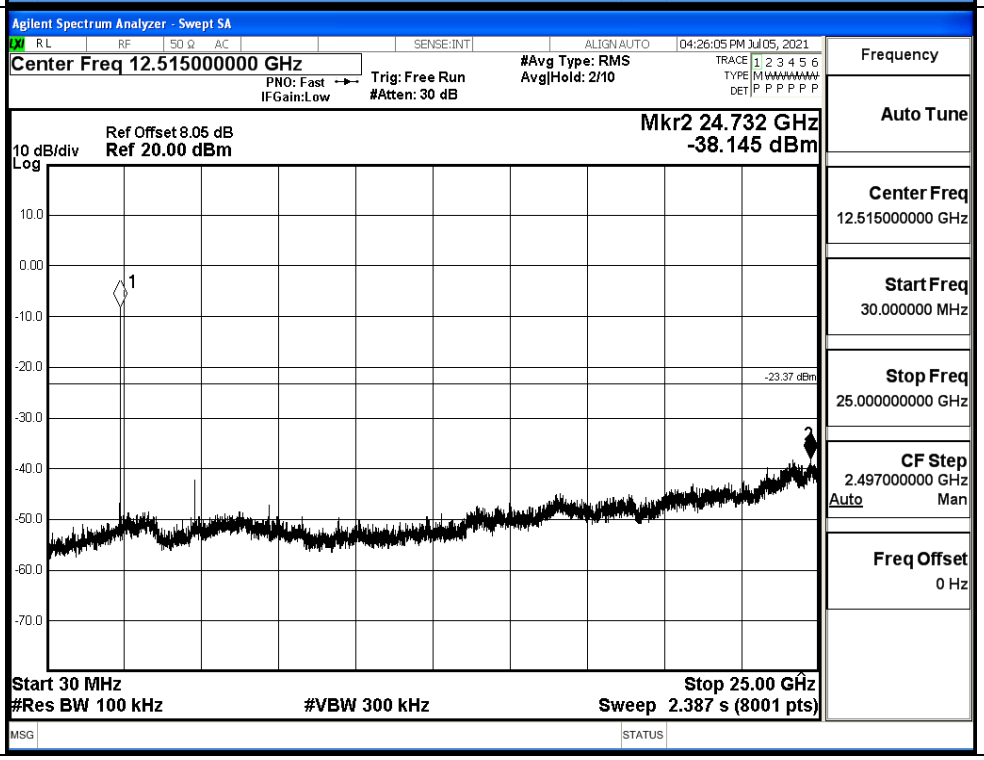
GFSK_MCH_Graphs		
Pref		
Puw		

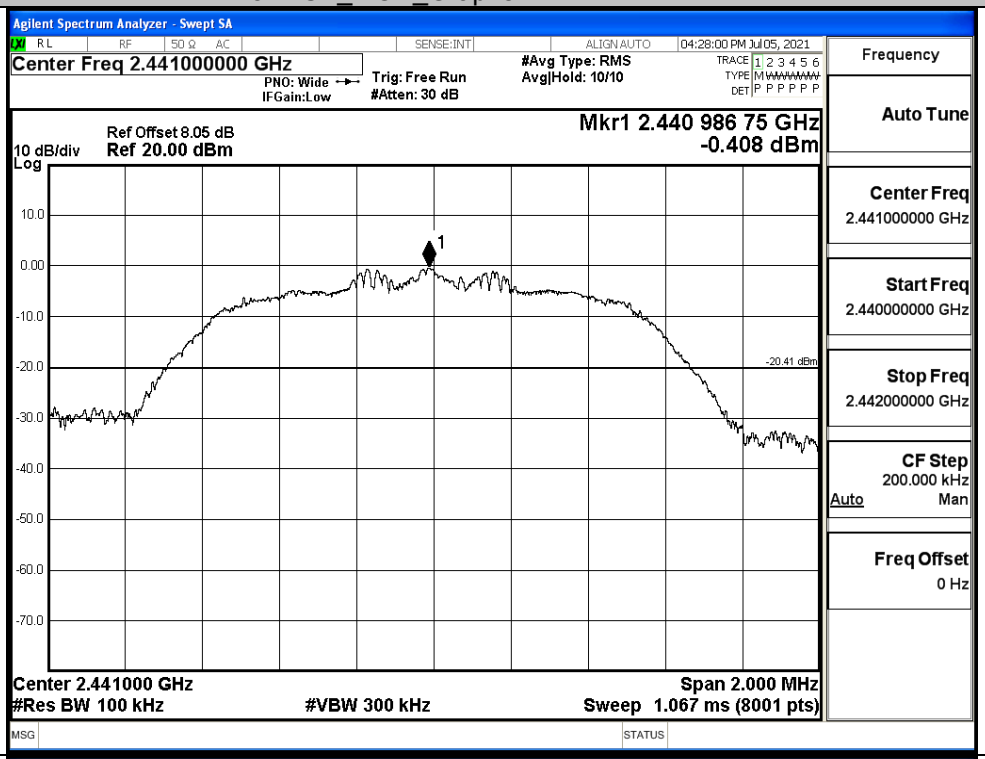
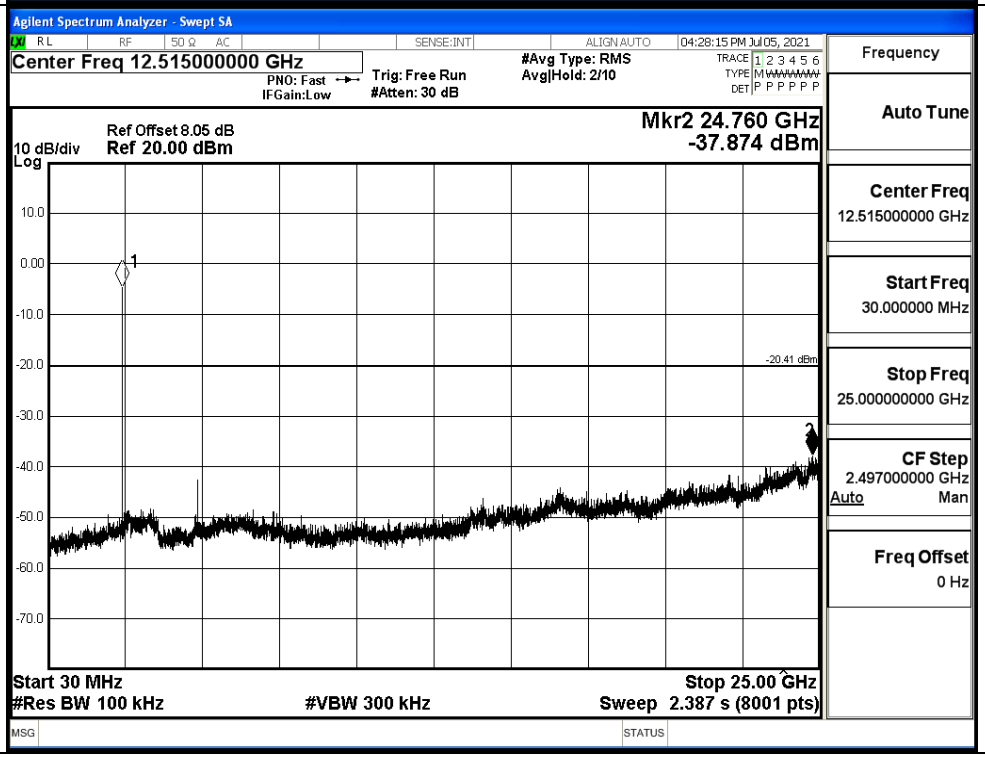
GFSK_HCH_Graphs		
Pref		
Puw		

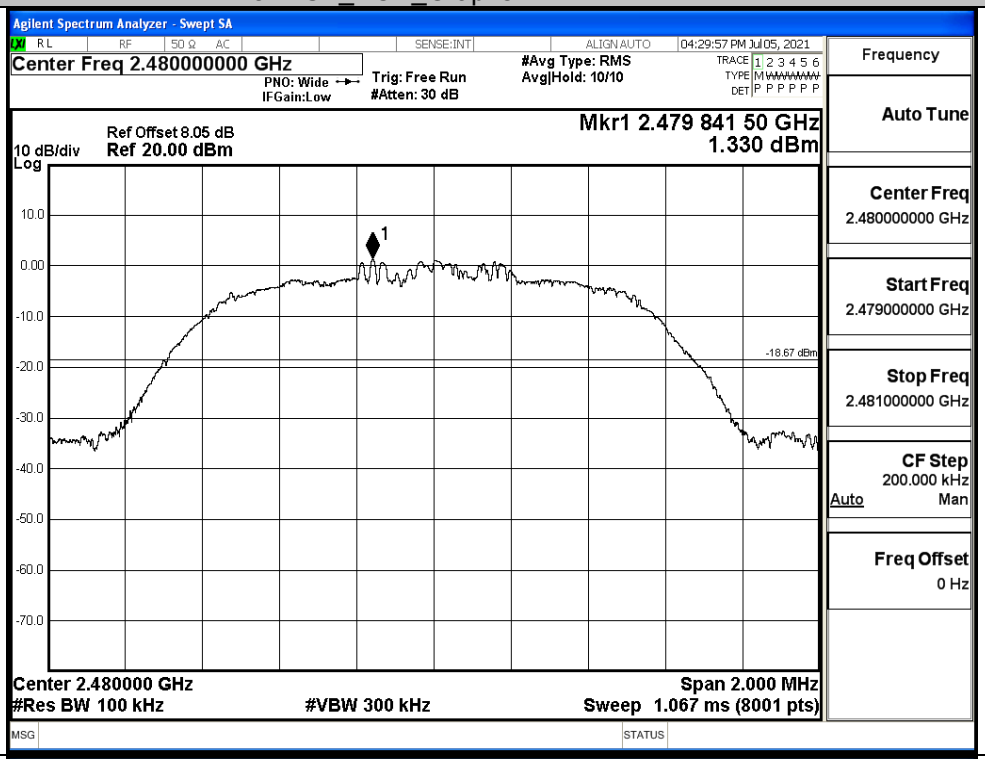
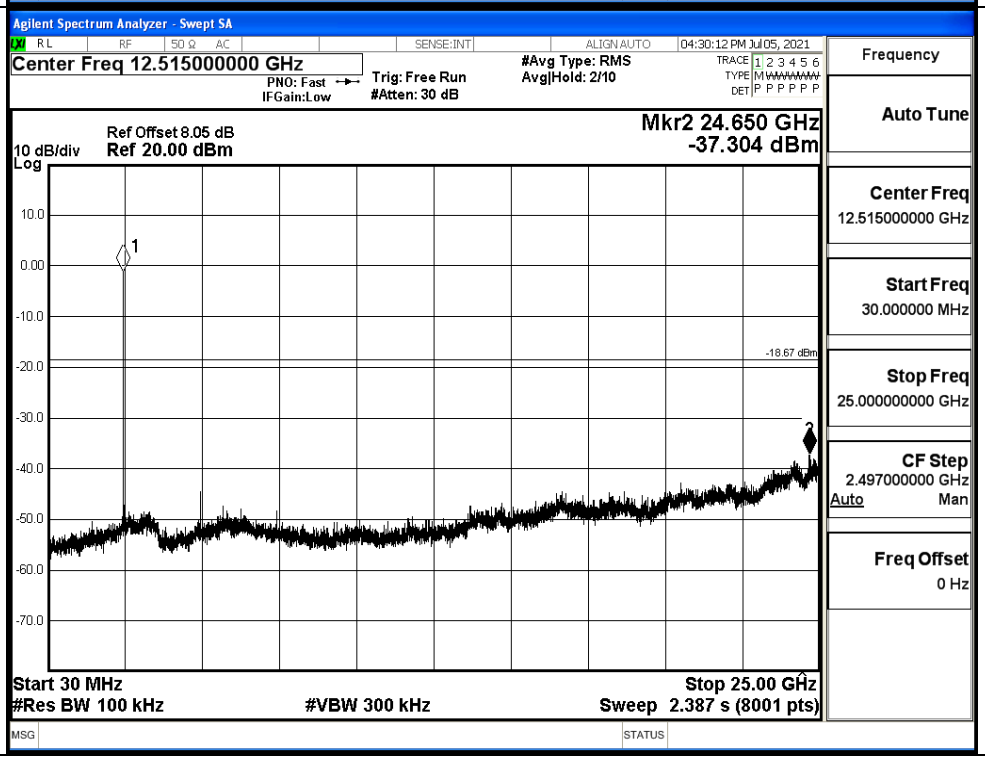
π/4DQPSK_LCH_Graphs		
Pref		
Puw		

π/4DQPSK_MCH_Graphs		
Pref		
Puw		

π/4DQPSK_HCH_Graphs		
Pref		
Puw		

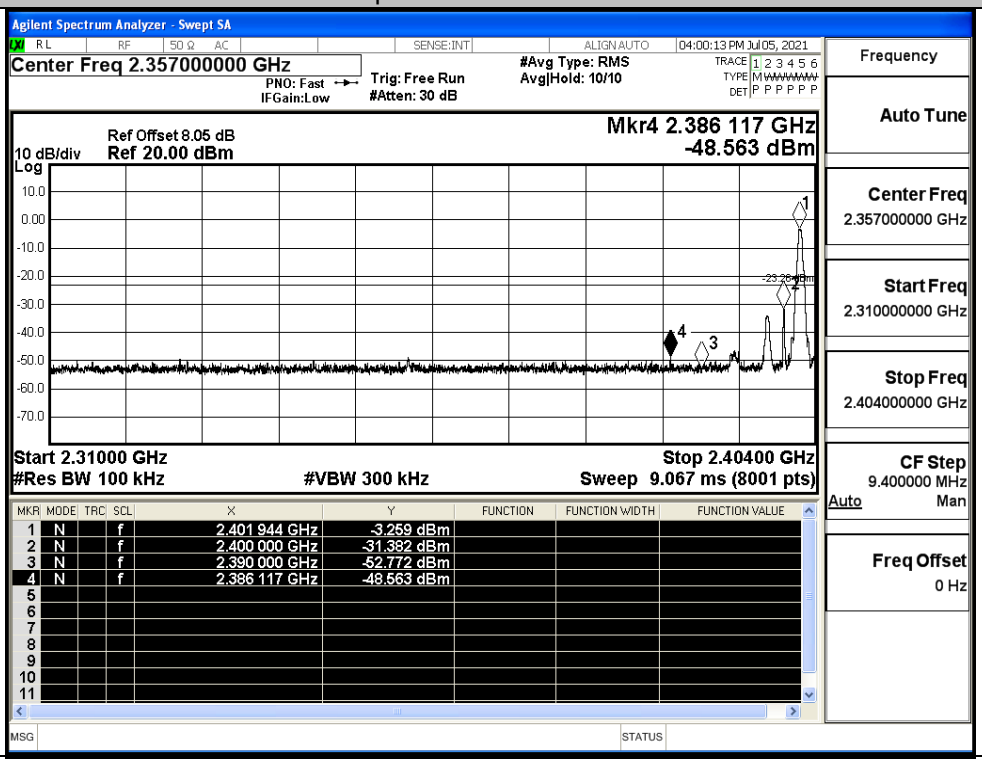
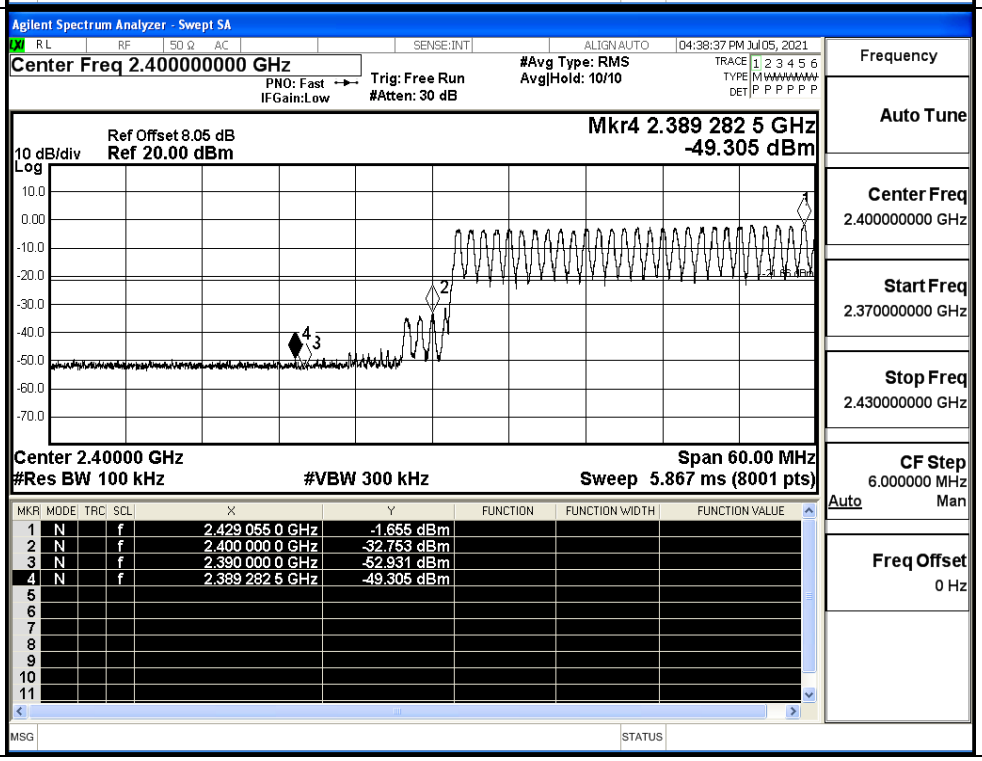
8DPSK_LCH_Graphs		
Pref		
Puw		

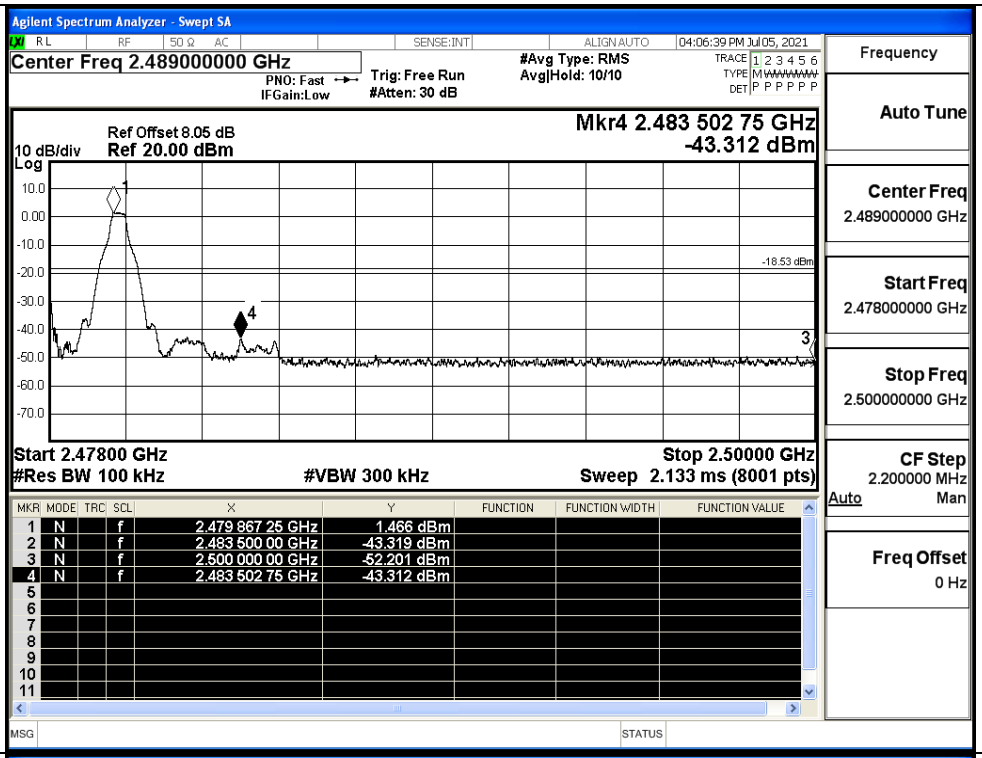
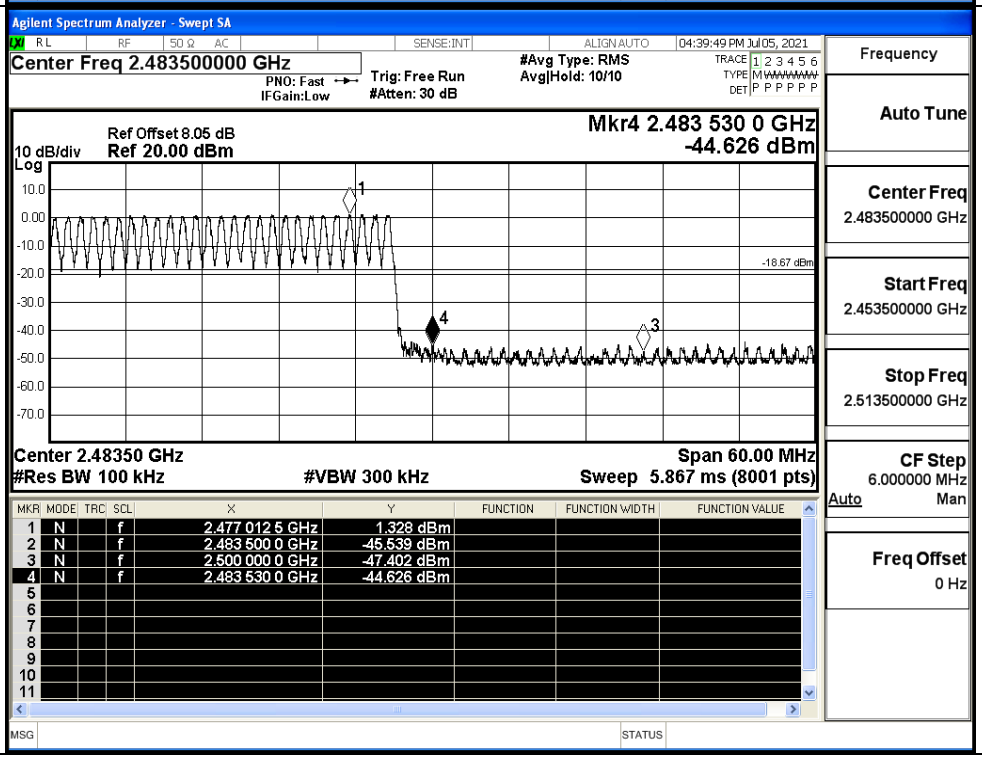
8DPSK_MCH_Graphs		
Pref		
Puw		

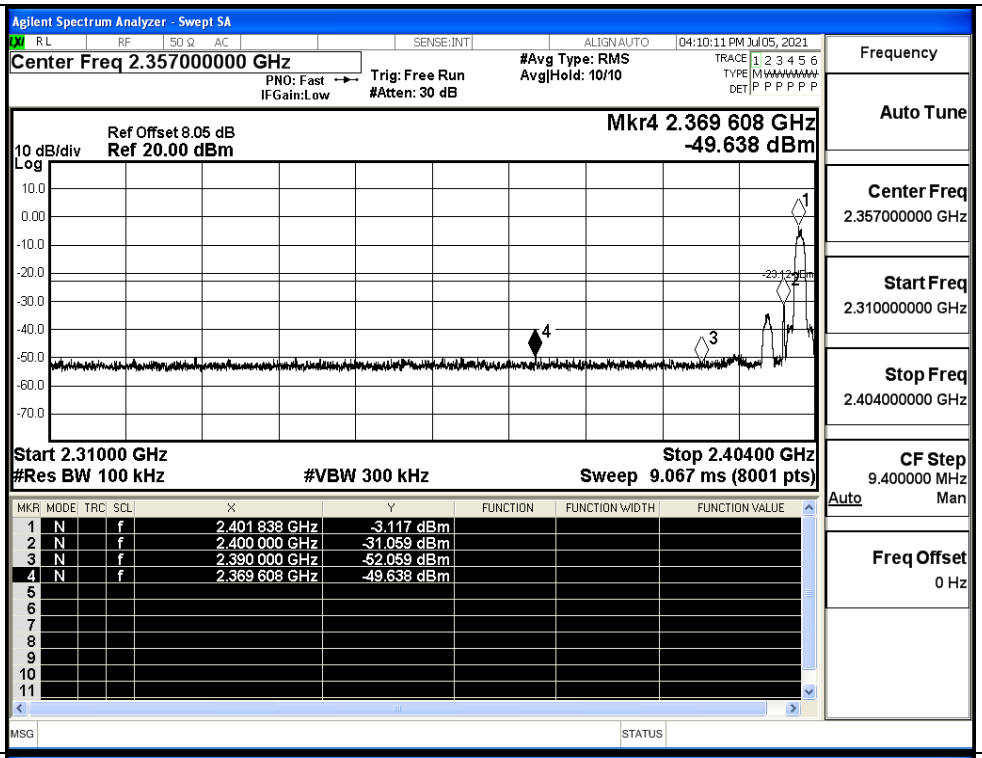
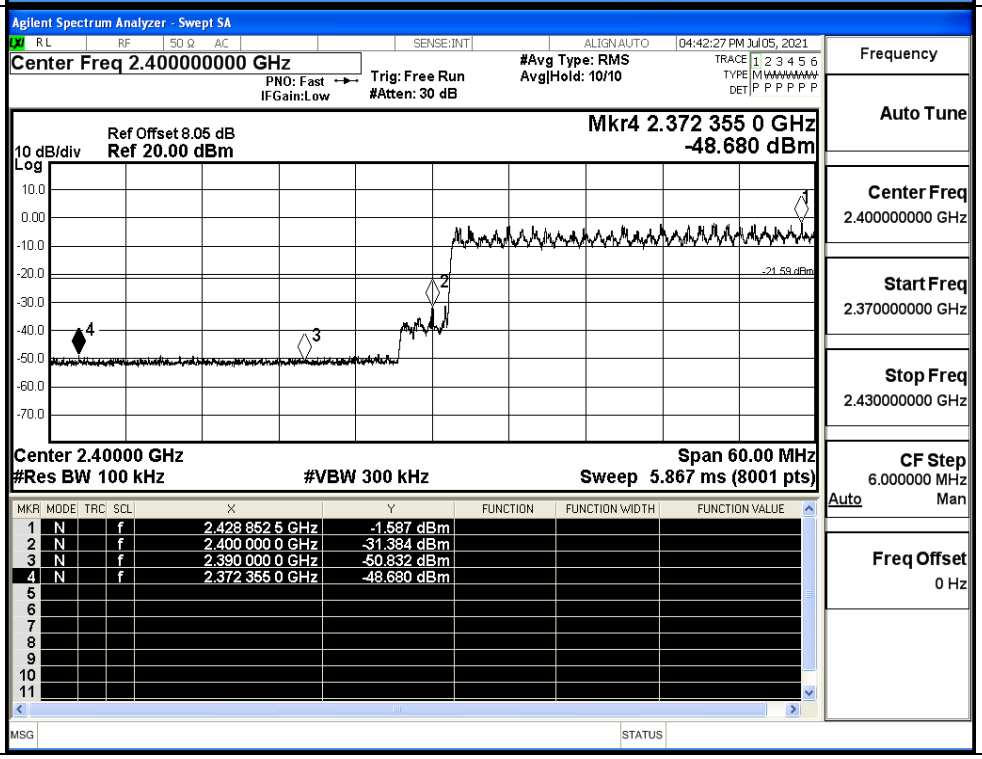
8DPSK_HCH_Graphs		
Pref		
Puw		

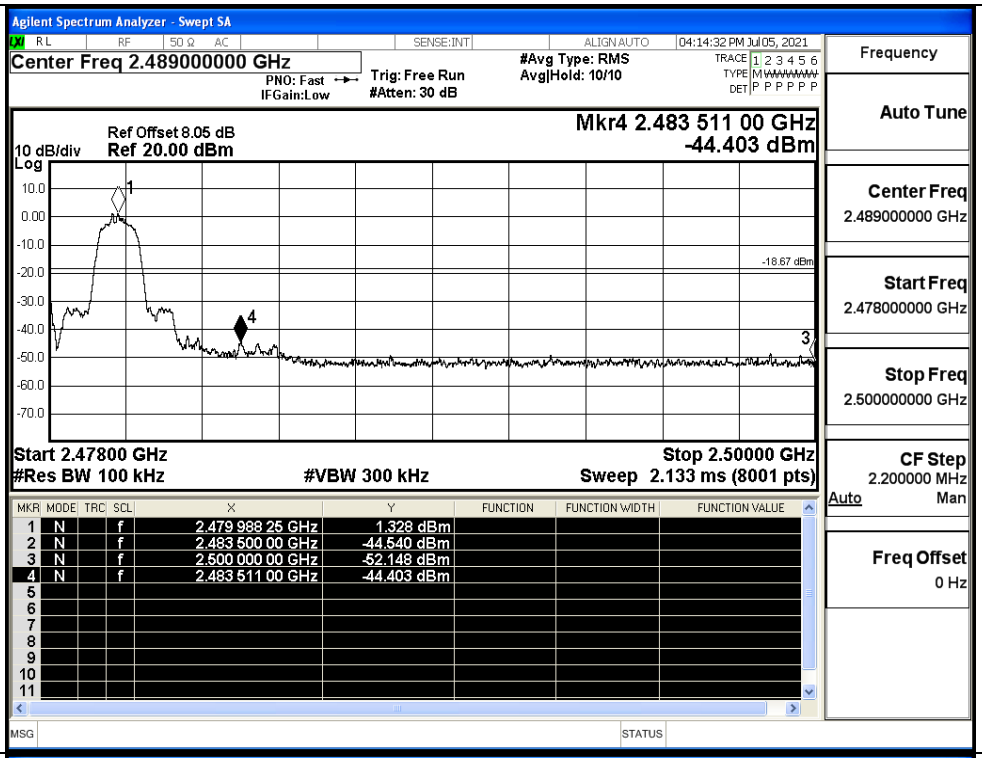
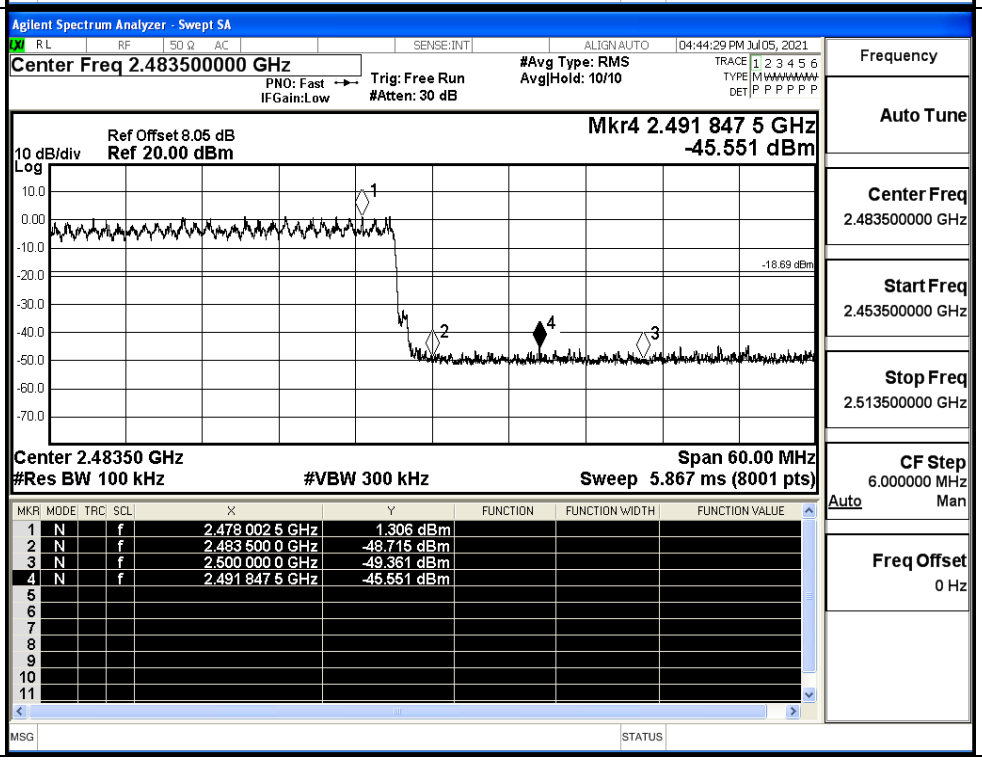
A.7 Band-edge for RF Conducted Emissions

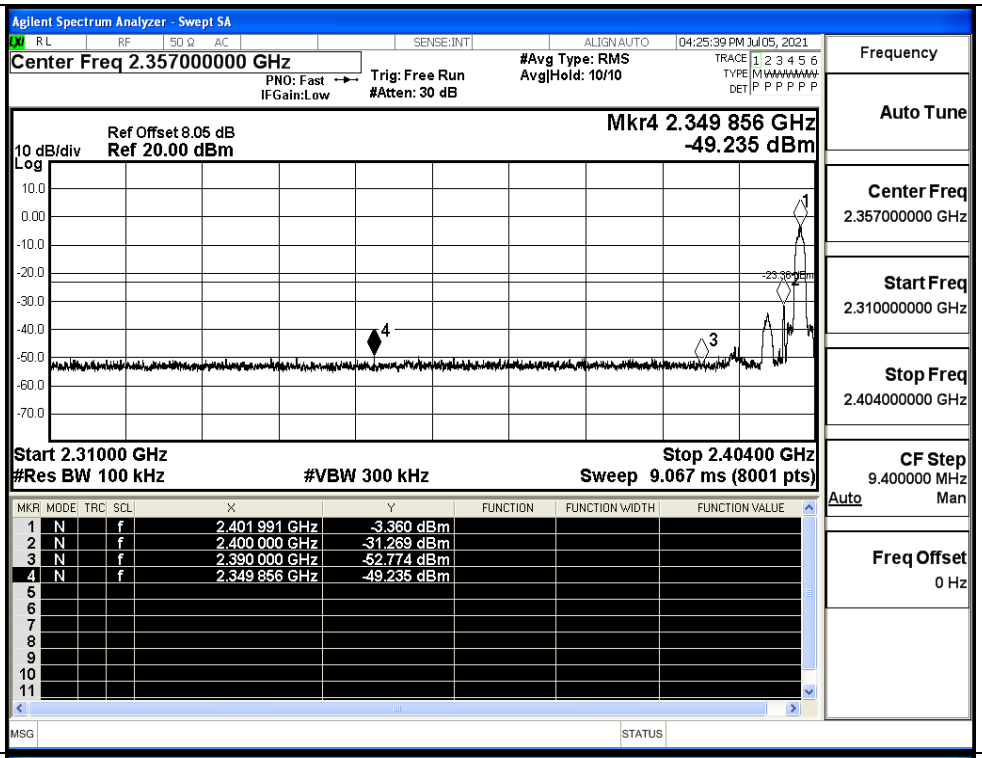
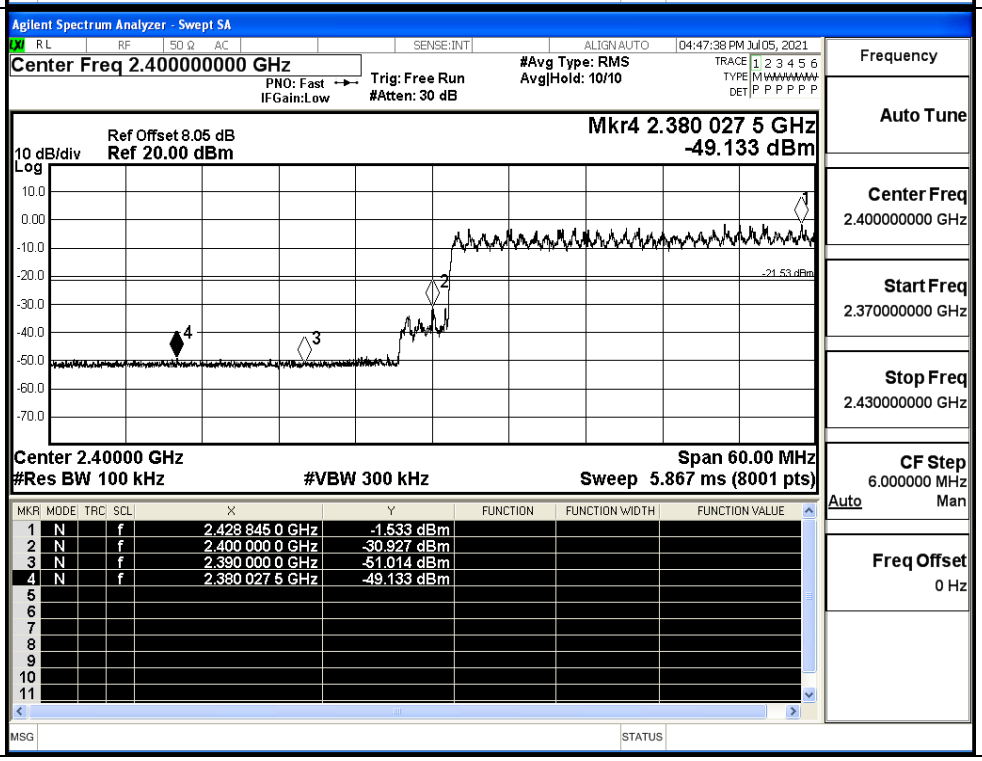
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	-3.259	Off	-48.563	-23.26	PASS
			-1.655	On	-49.305	-21.66	PASS
	HCH	2480	1.466	Off	-43.312	-18.53	PASS
			1.328	On	-44.626	-18.67	PASS
π/4DQPSK	LCH	2402	-3.117	Off	-49.638	-23.12	PASS
			-1.587	On	-48.680	-21.59	PASS
	HCH	2480	1.328	Off	-44.403	-18.67	PASS
			1.306	On	-45.551	-18.69	PASS
8DPSK	LCH	2402	-3.360	Off	-49.235	-23.36	PASS
			-1.533	On	-49.133	-21.53	PASS
	HCH	2480	1.748	Off	-44.988	-18.25	PASS
			1.373	On	-45.756	-18.63	PASS

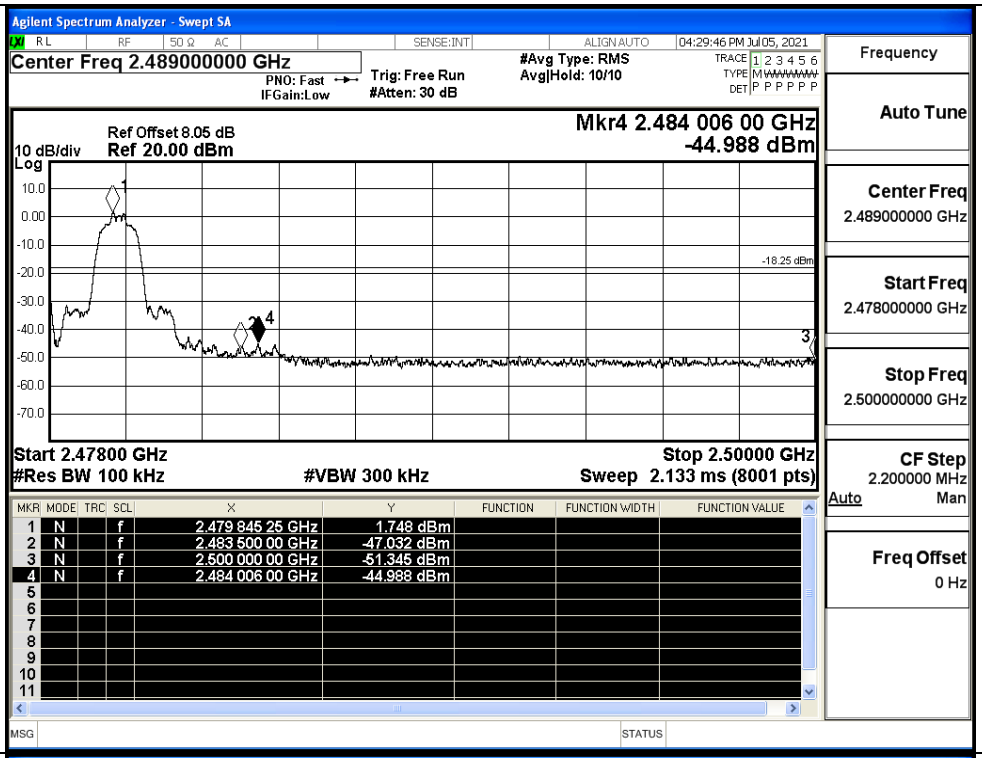
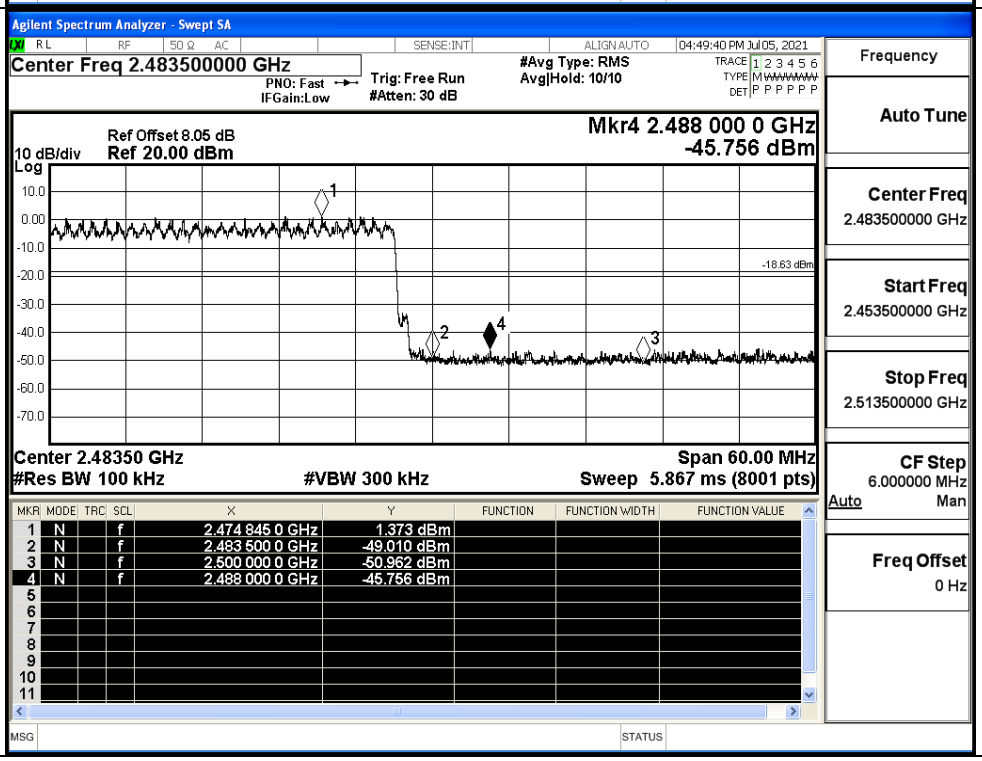
Test Graphs	
GFSK/LCH/No Hop	
GFSK/LCH/Hop	

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	

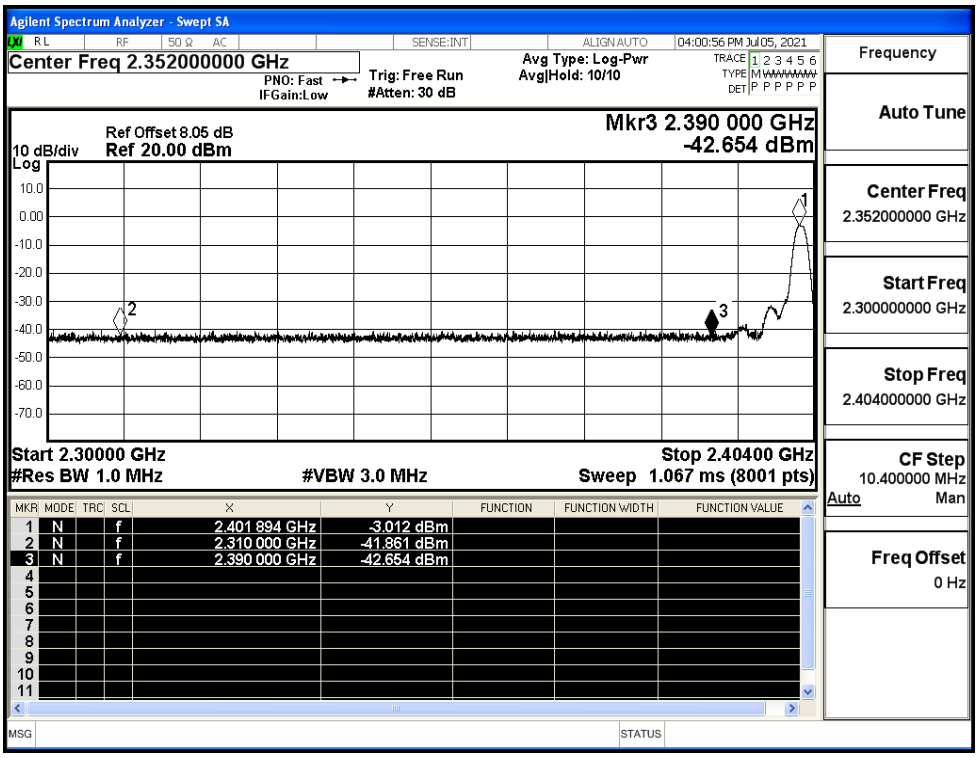
8DPSK/LCH/No Hop	
8DPSK/LCH/Hop	

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

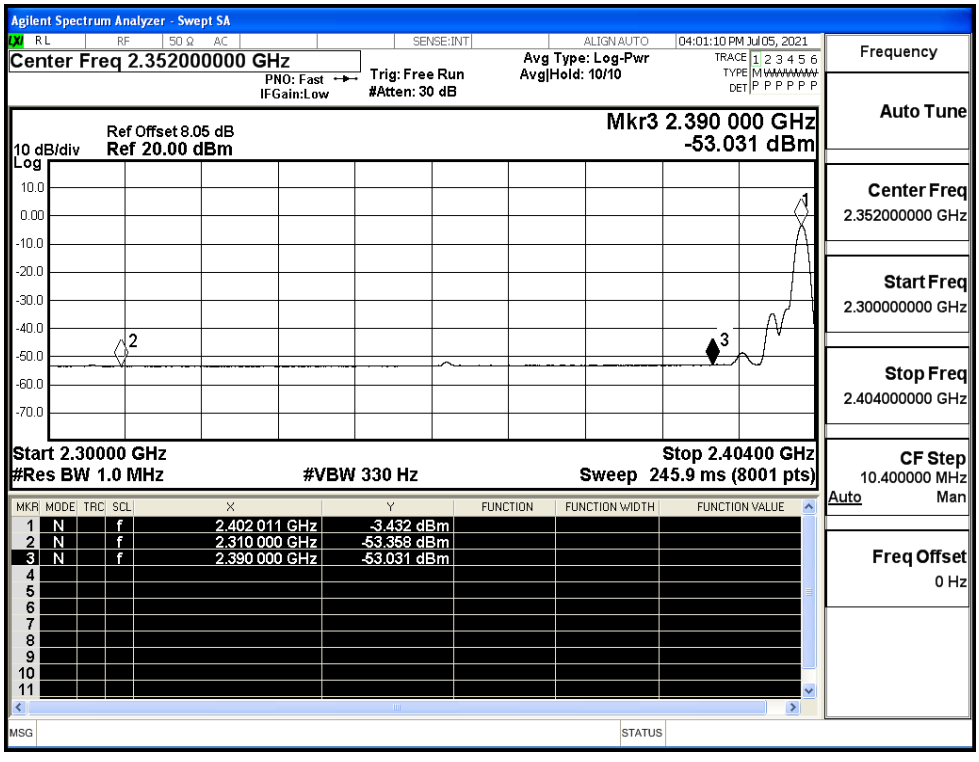
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-41.86	2.0	0	55.37	PEAK	74	PASS
	Off	2310.0	-53.36	2.0	0	43.87	AV	54	PASS
	Off	2390.0	-42.65	2.0	0	54.58	PEAK	74	PASS
	Off	2390.0	-53.03	2.0	0	44.20	AV	54	PASS
	Off	2483.5	-37.63	2.0	0	59.60	PEAK	74	PASS
	Off	2483.5	-47.25	2.0	0	49.98	AV	54	PASS
	Off	2500.0	-42.98	2.0	0	54.25	PEAK	74	PASS
	Off	2500.0	-52.33	2.0	0	44.90	AV	54	PASS
π/4DQPSK	Off	2310.0	-42.10	2.0	0	55.13	PEAK	74	PASS
	Off	2310.0	-53.37	2.0	0	43.86	AV	54	PASS
	Off	2390.0	-43.08	2.0	0	54.15	PEAK	74	PASS
	Off	2390.0	-52.96	2.0	0	44.27	AV	54	PASS
	Off	2483.5	-40.53	2.0	0	56.70	PEAK	74	PASS
	Off	2483.5	-48.72	2.0	0	48.51	AV	54	PASS
	Off	2500.0	-42.83	2.0	0	54.40	PEAK	74	PASS
	Off	2500.0	-52.35	2.0	0	44.88	AV	54	PASS
8DPSK	Off	2310.0	-42.97	2.0	0	54.26	PEAK	74	PASS
	Off	2310.0	-53.39	2.0	0	43.84	AV	54	PASS
	Off	2390.0	-42.19	2.0	0	55.04	PEAK	74	PASS
	Off	2390.0	-53.09	2.0	0	44.14	AV	54	PASS
	Off	2483.5	-38.35	2.0	0	58.88	PEAK	74	PASS
	Off	2483.5	-48.74	2.0	0	48.49	AV	54	PASS
	Off	2500.0	-41.39	2.0	0	55.84	PEAK	74	PASS
	Off	2500.0	-52.32	2.0	0	44.91	AV	54	PASS

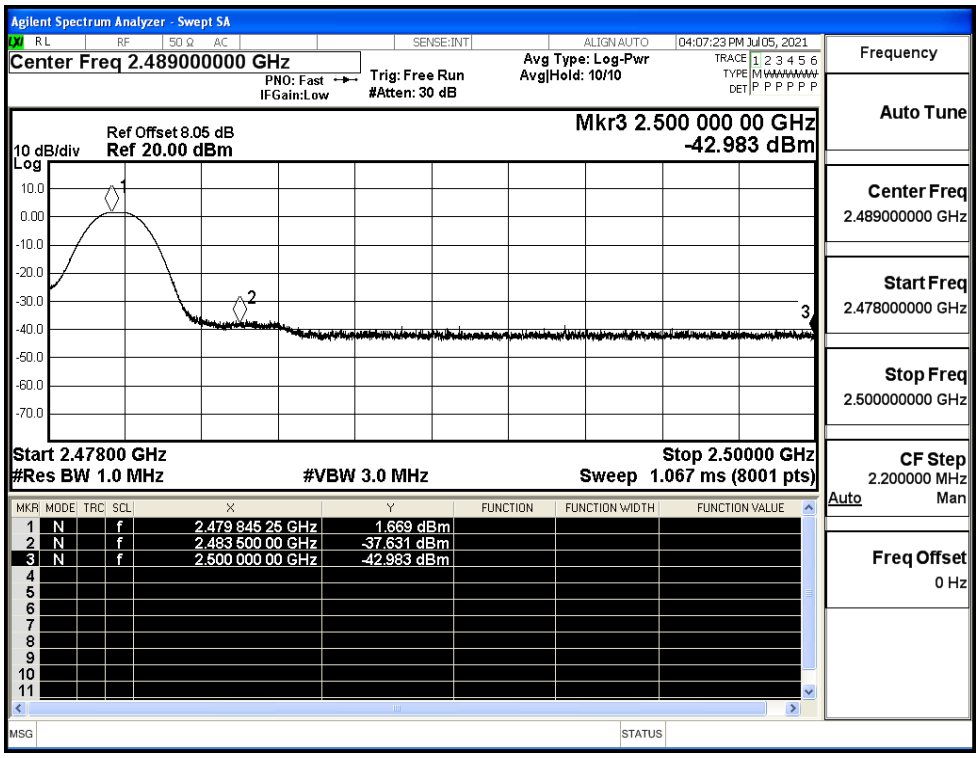
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (Low Channel)



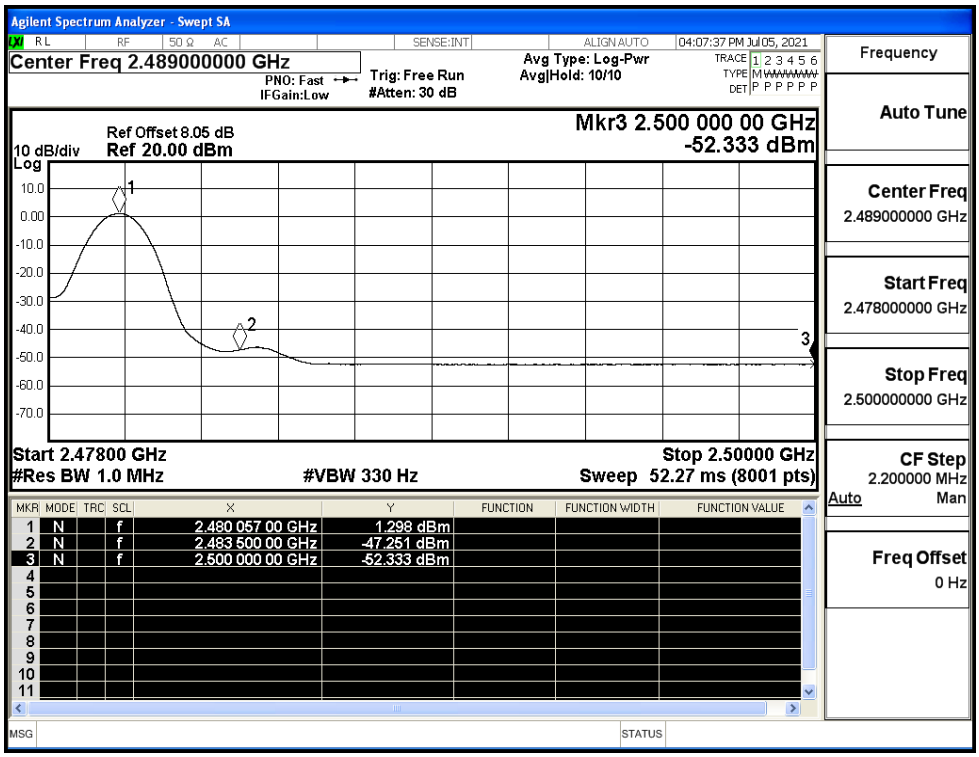
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (Low Channel)



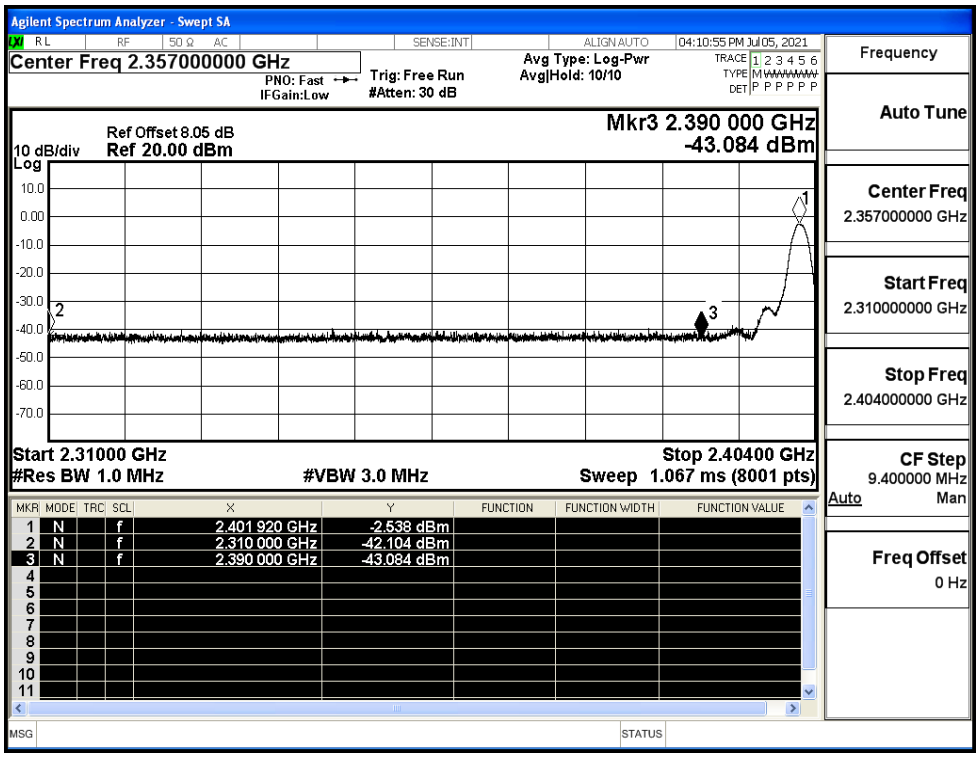
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (High Channel)



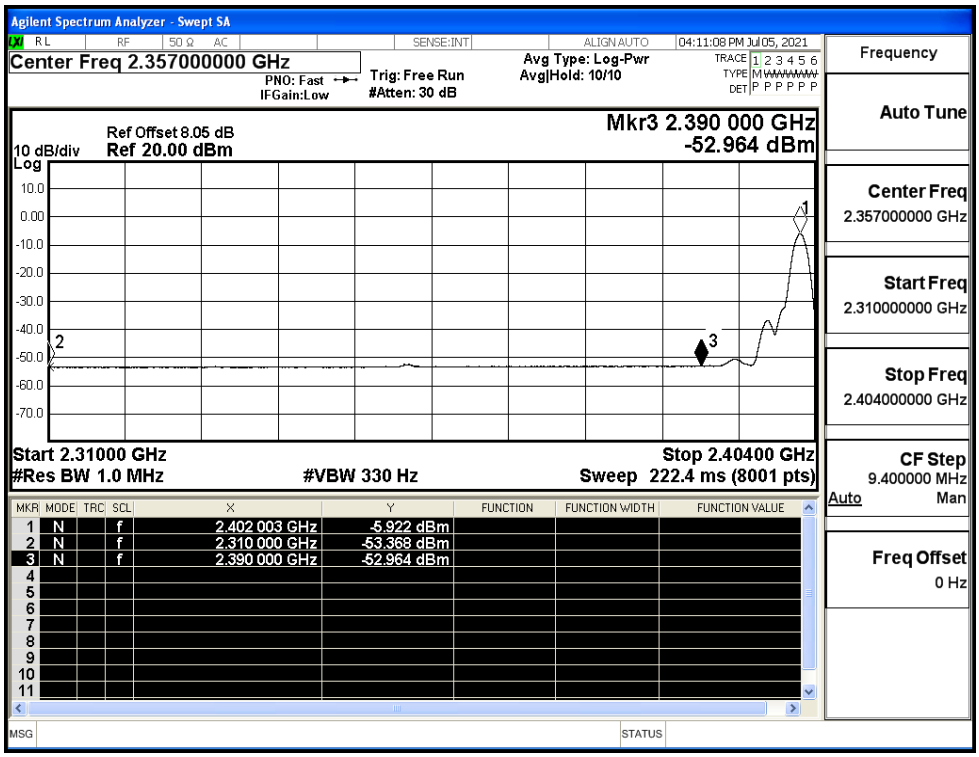
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (High Channel)



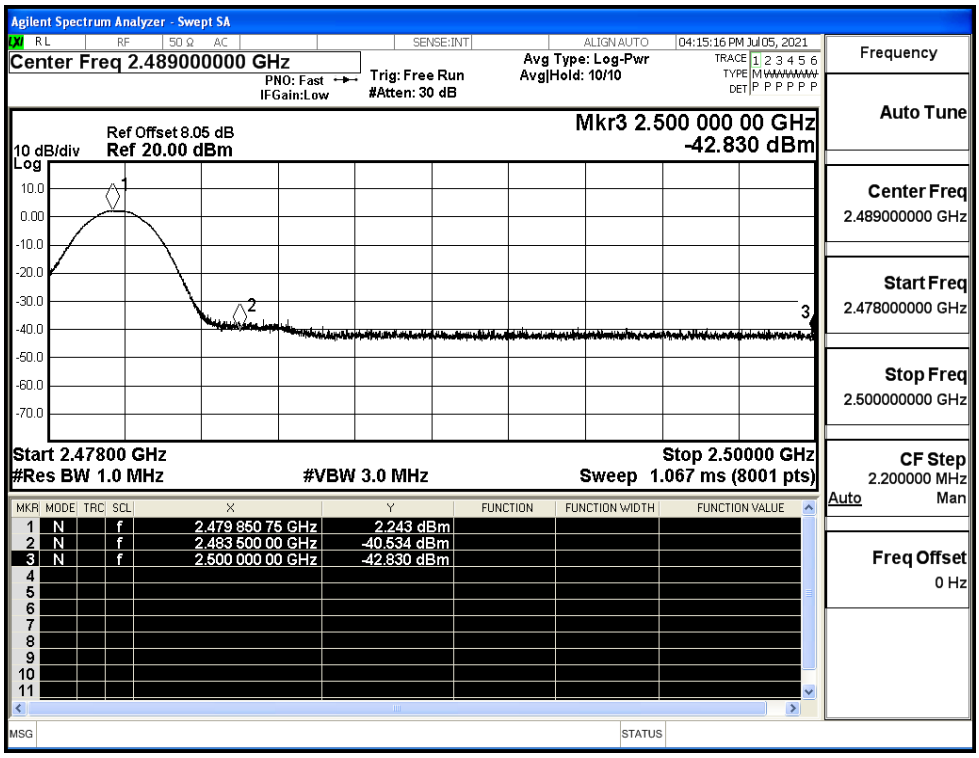
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (Low Channel)



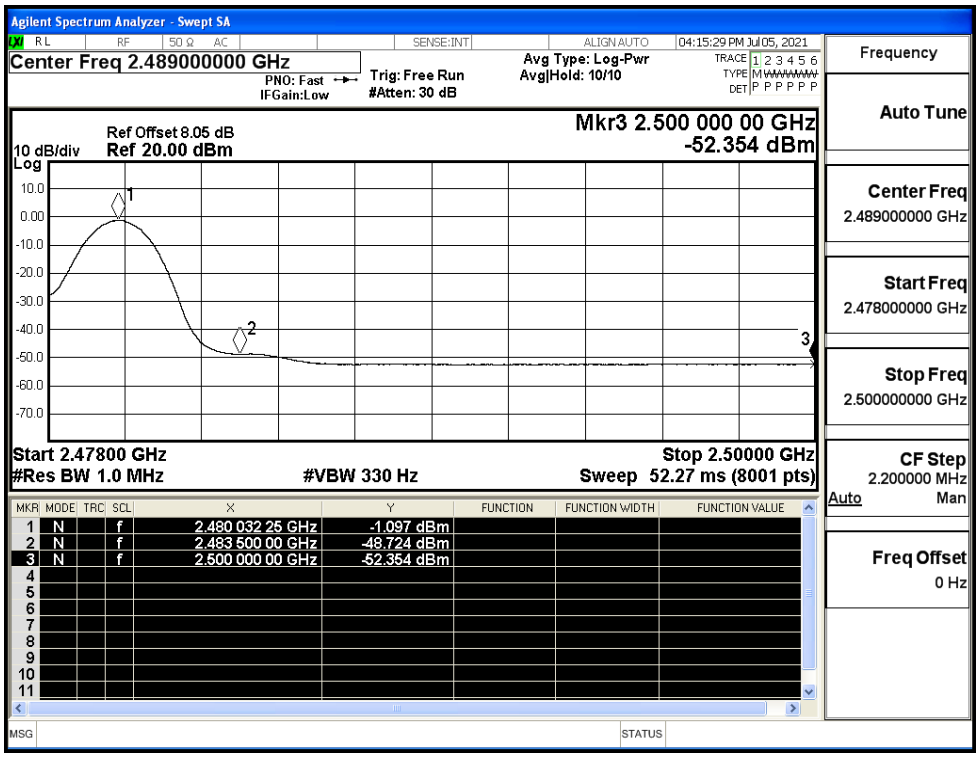
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (Low Channel)



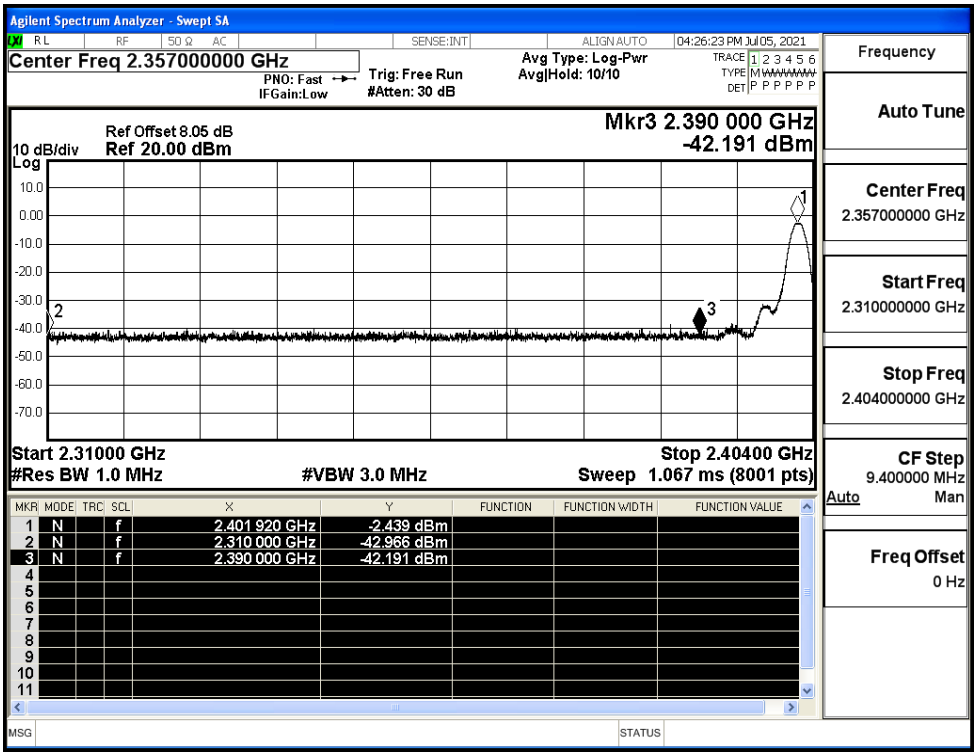
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (High Channel)



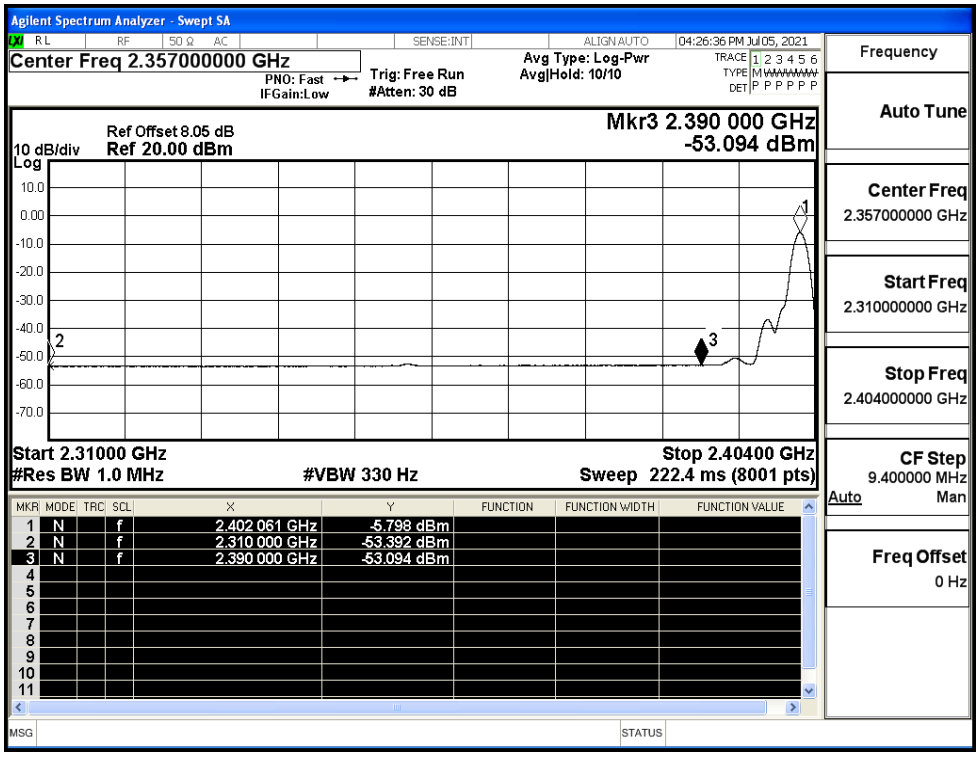
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (High Channel)



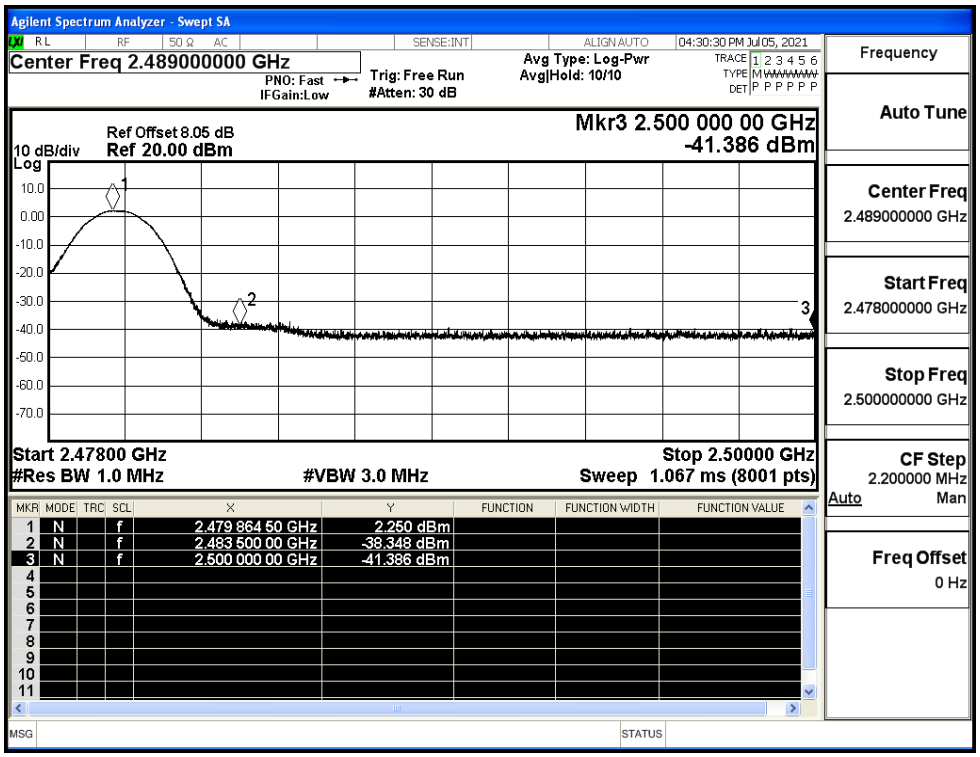
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)