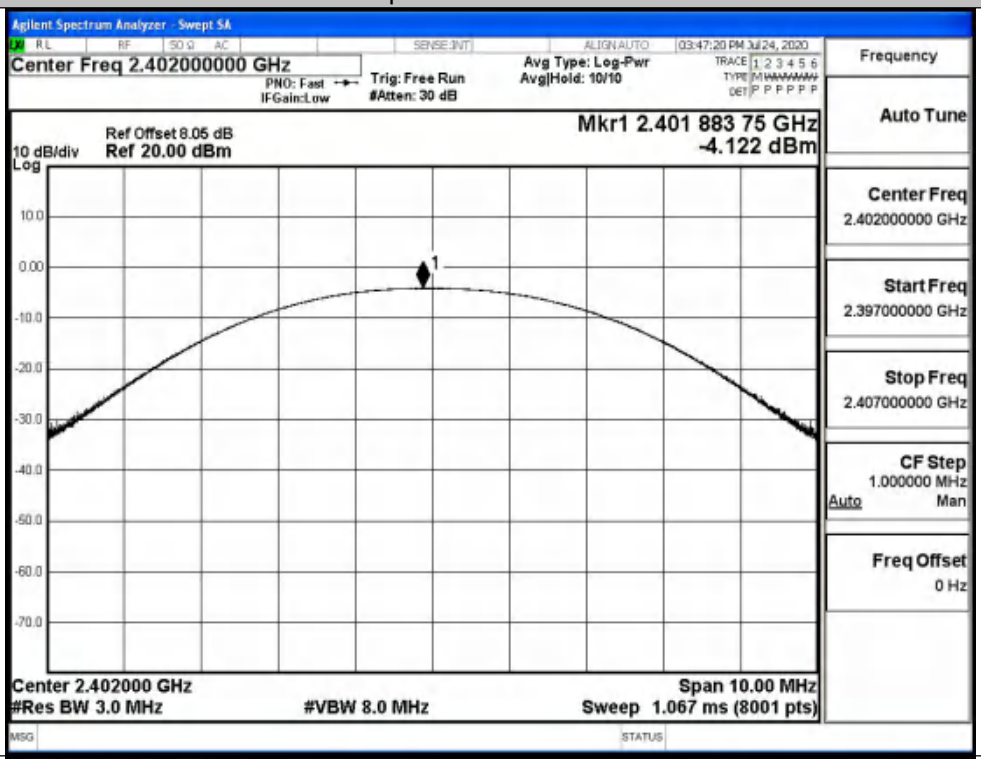
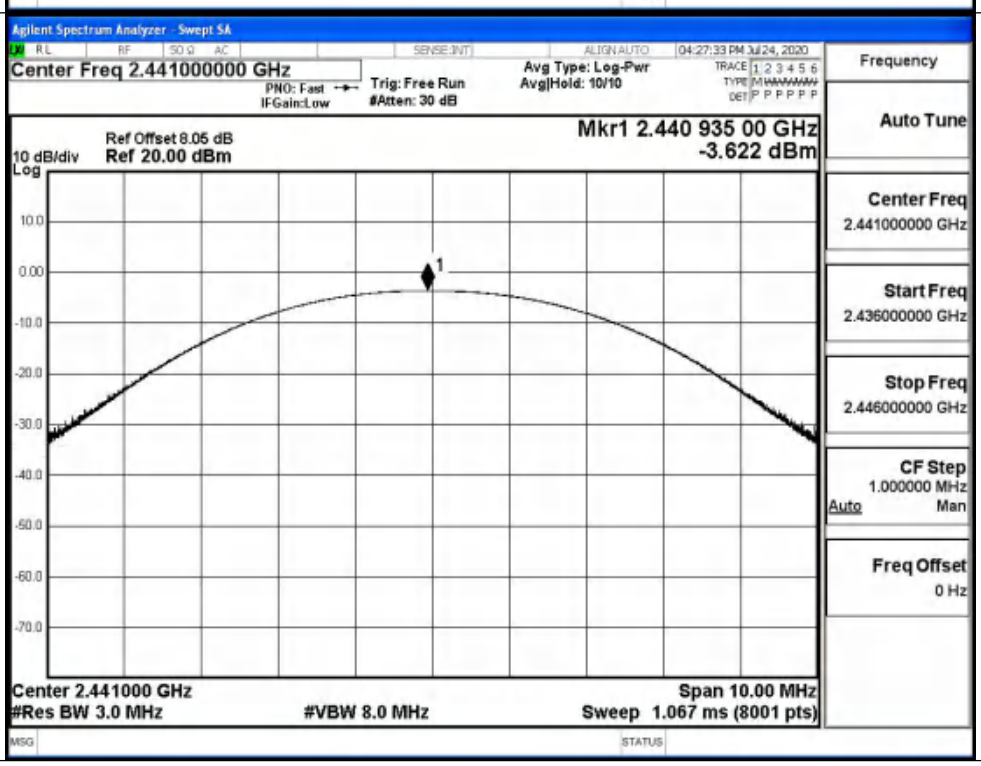
Appendix A
RF Test Data for BT V5.0(DSS) (Conducted Measurement)
Product Name: Bluetooth Headset
Trade Mark: QM
Test Model: X2

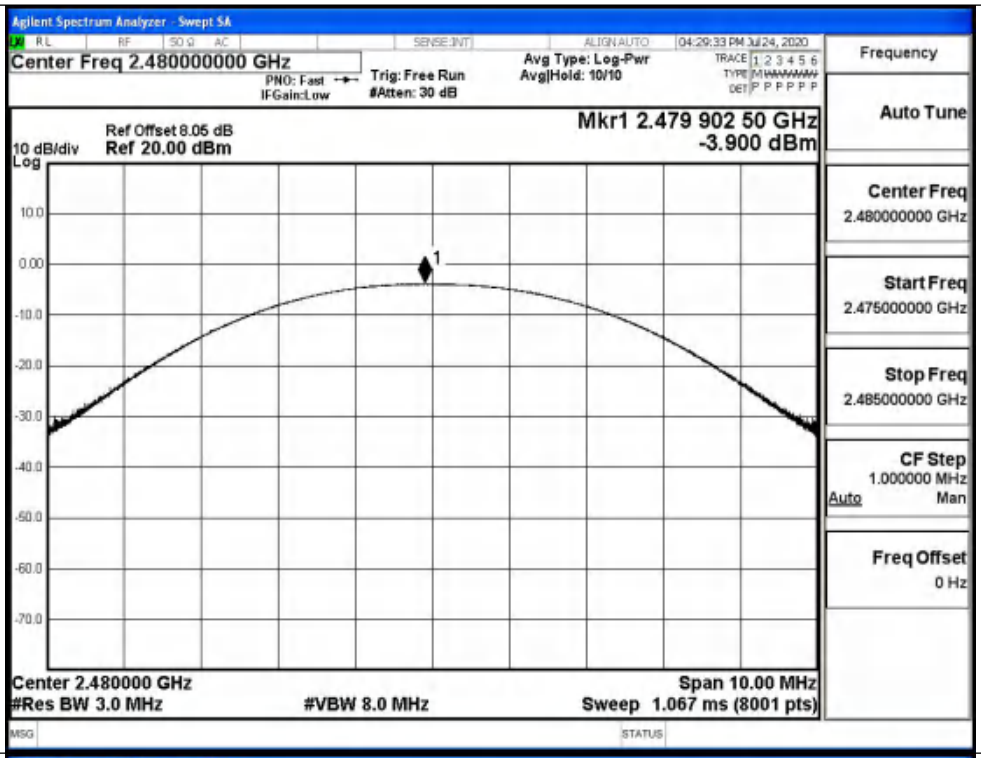
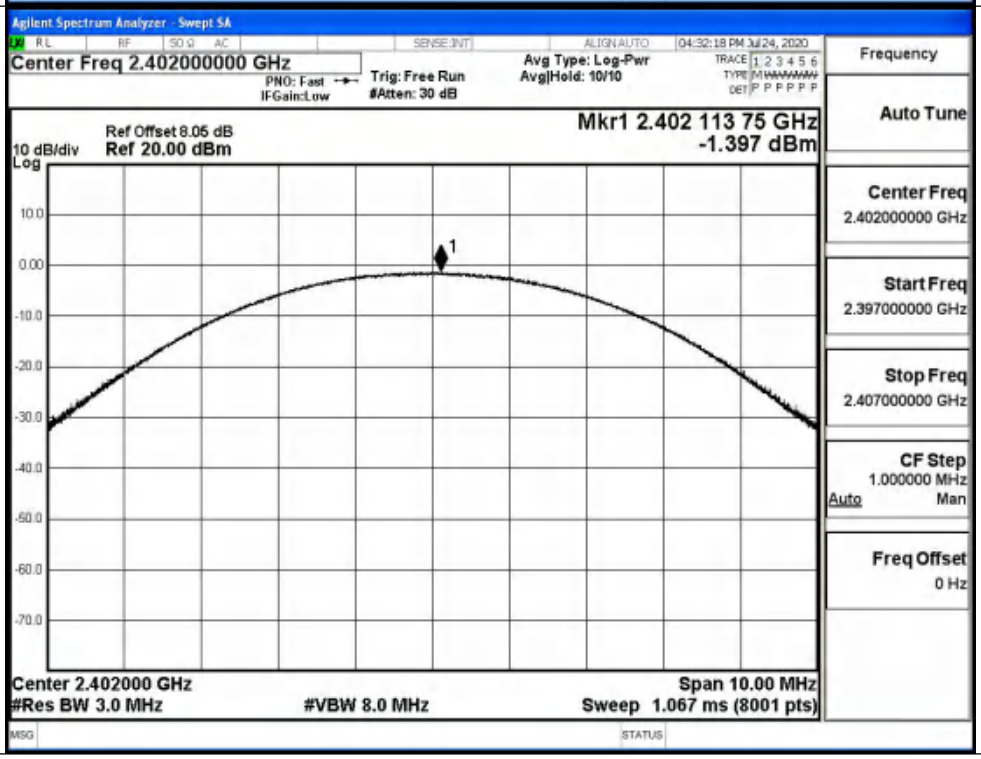
Environmental Conditions

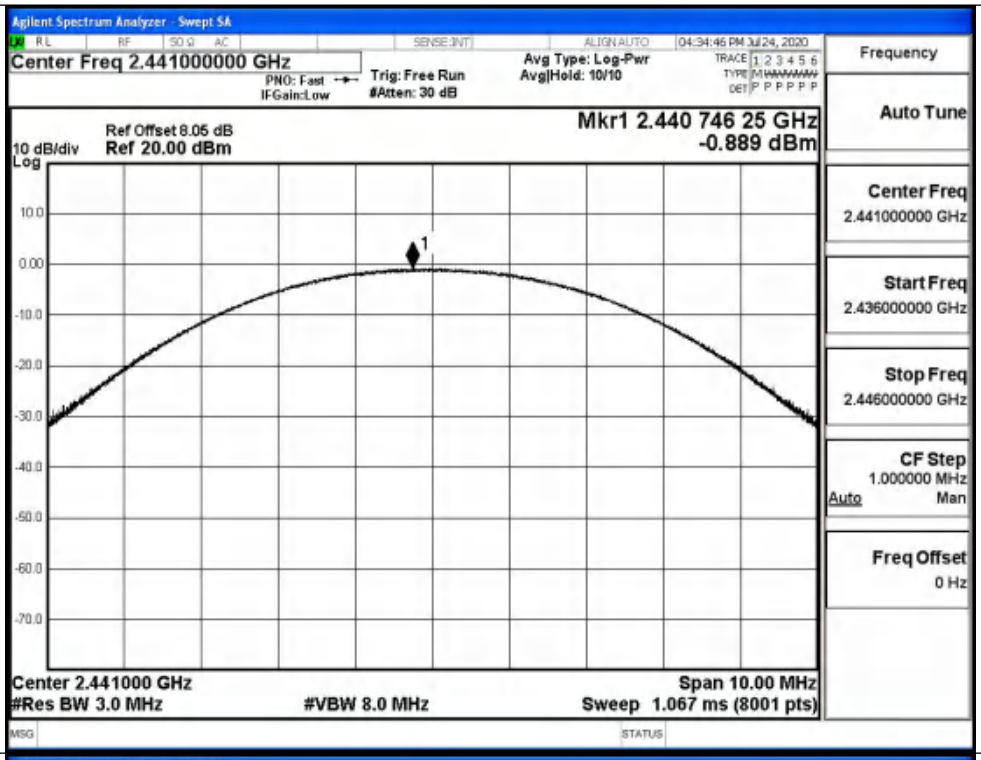
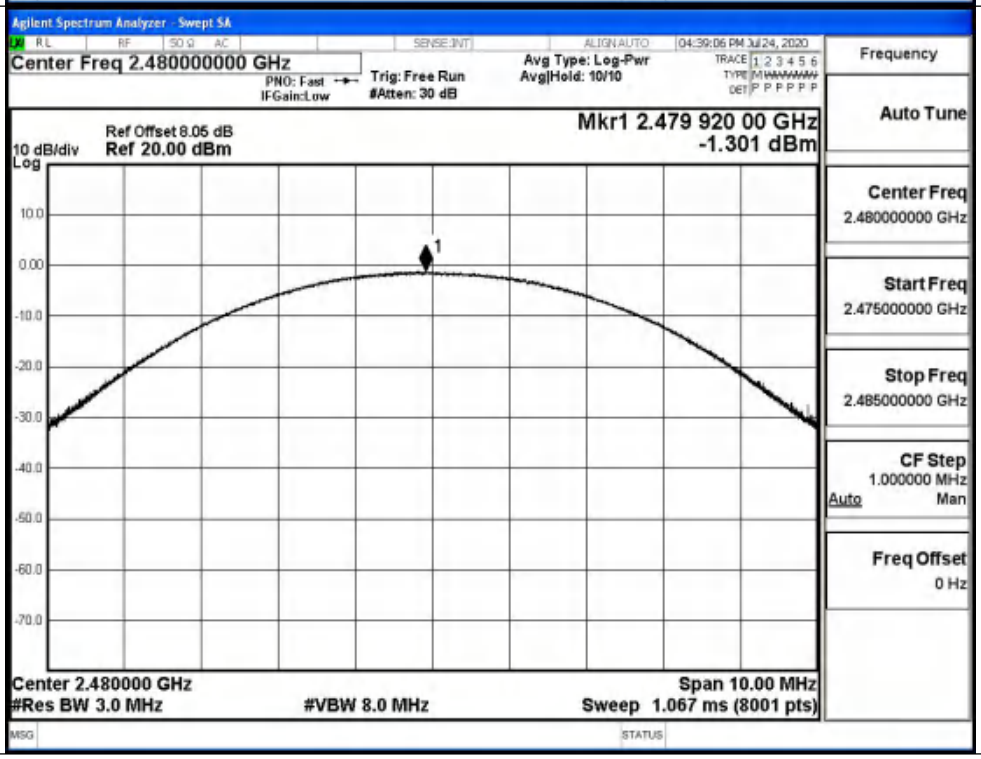
Temperature:	22.7 ° C
Relative Humidity:	53.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Jay Li
Supervised by:	Li Huan

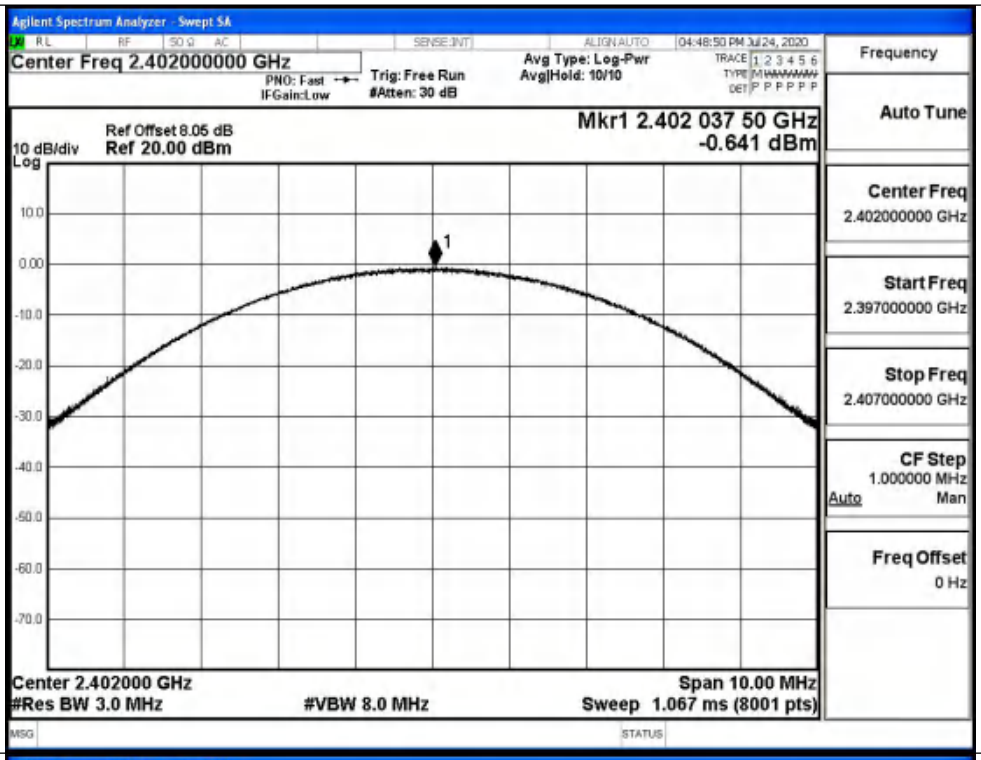
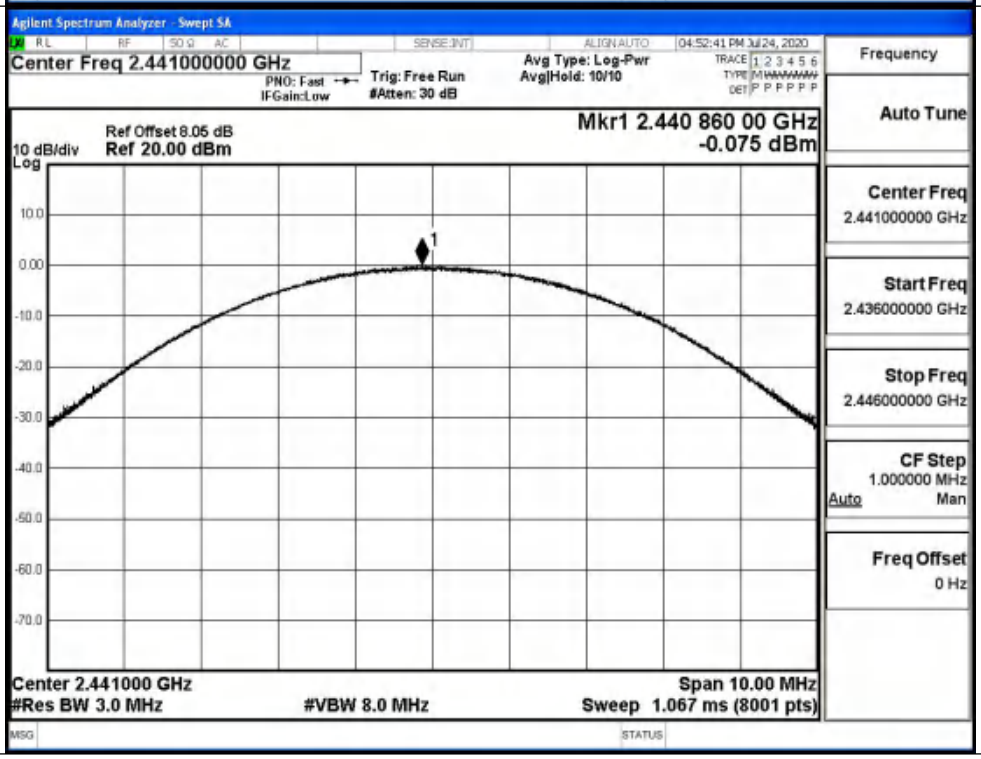
A.1 Maxmum Conducted Peak Output Power

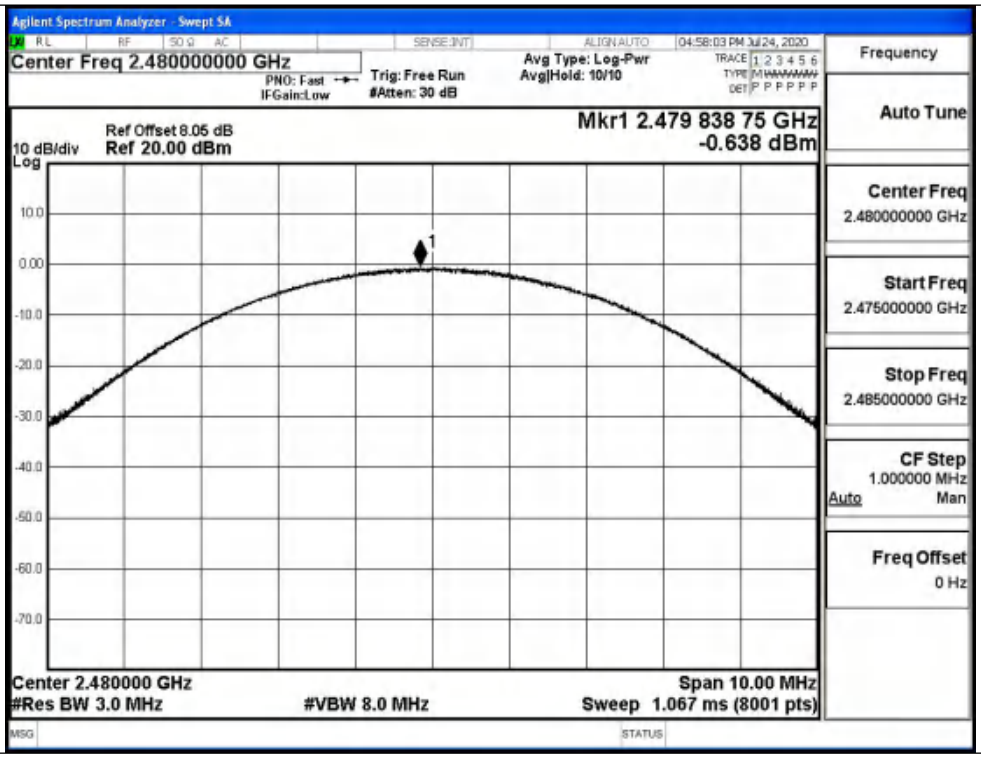
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-4.122	21	PASS
	MCH	-3.622	21	PASS
	HCH	-3.900	21	PASS
π/4DQPSK	LCH	-1.397	21	PASS
	MCH	-0.889	21	PASS
	HCH	-1.301	21	PASS
8DPSK	LCH	-0.641	21	PASS
	MCH	-0.075	21	PASS
	HCH	-0.638	21	PASS

Test Graphs		
GFSK/LCH		
GFSK/MCH		

GFSK/HCH		
π/4DQPSK/LCH		

π/4DQPSK/MCH	
π/4DQPSK/HCH	

8DPSK/LCH		
8DPSK/MCH		

8DPSK/HCH	

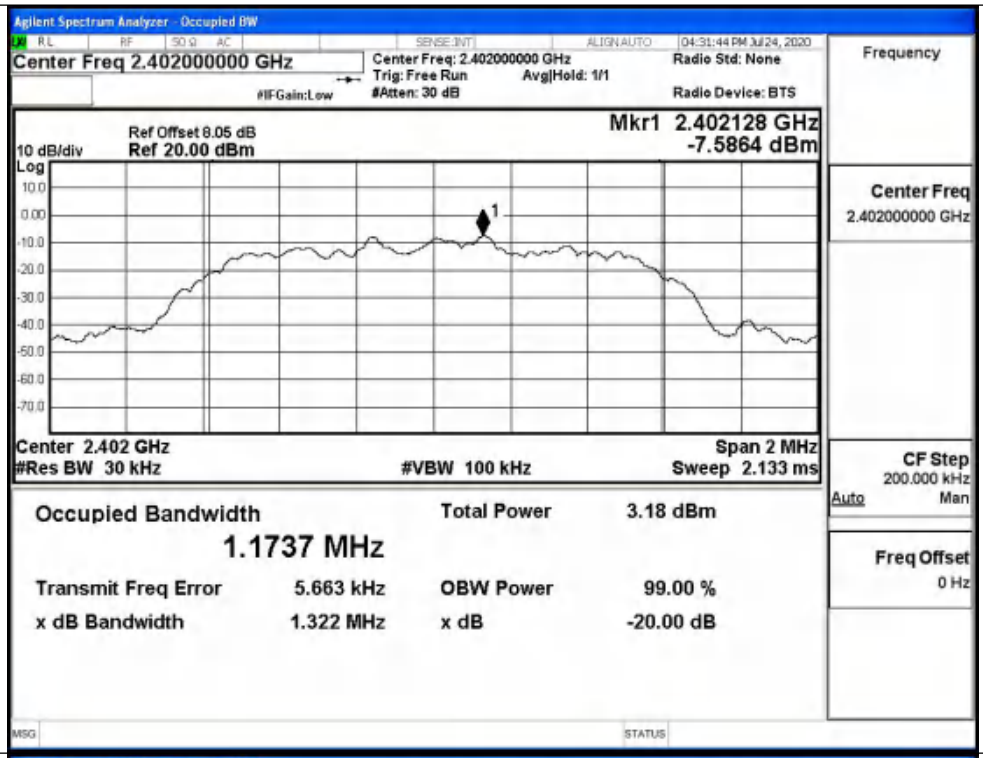
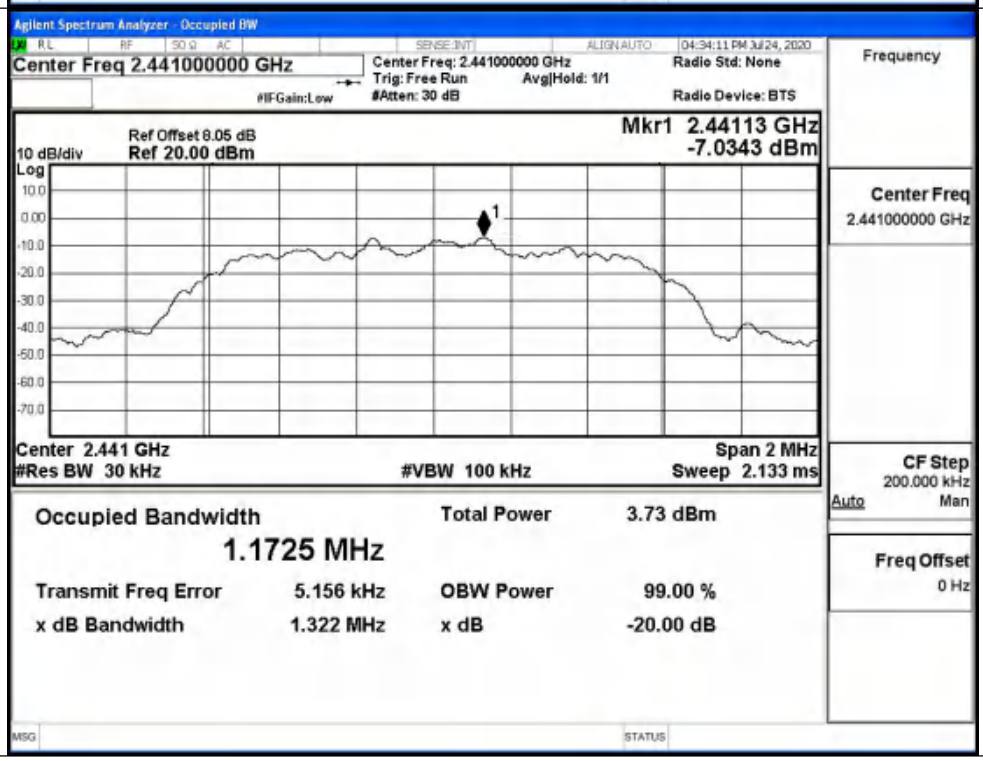
Agilent Spectrum Analyzer - Swept SA
Center Freq 2.480000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 10/10
04:58:03 PM Jul 24, 2020
Ref Offset 8.05 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 2.479 838 75 GHz
-0.638 dBm
Center 2.480000 GHz
#Res BW 3.0 MHz
#VBW 8.0 MHz
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

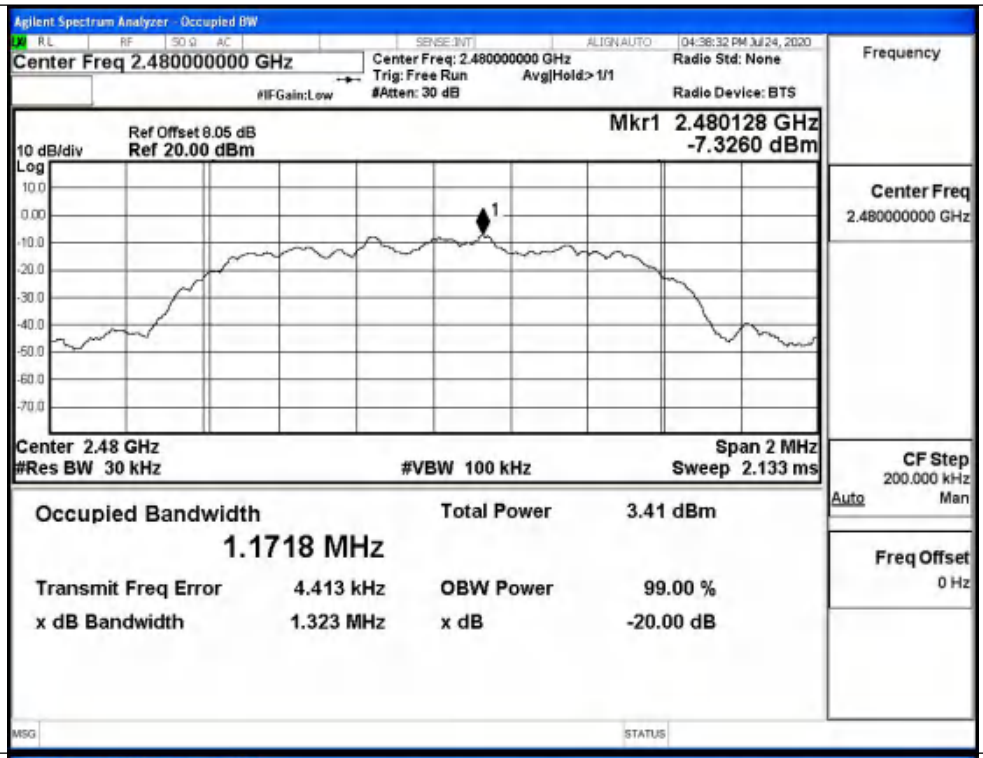
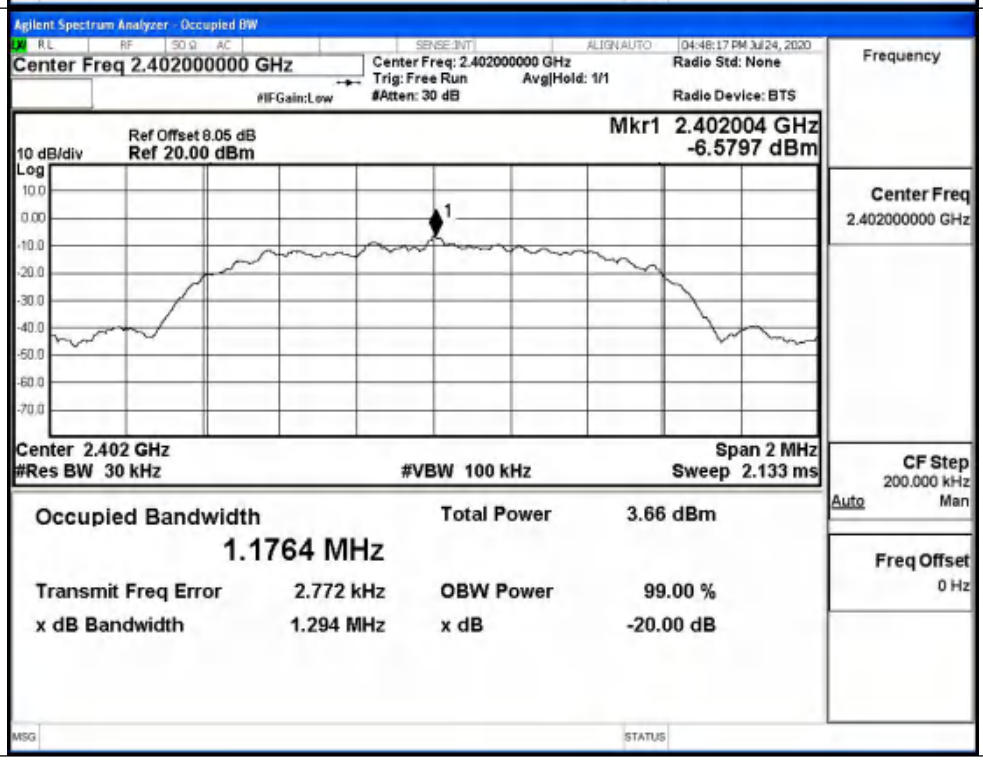
A.2 20dB Bandwidth

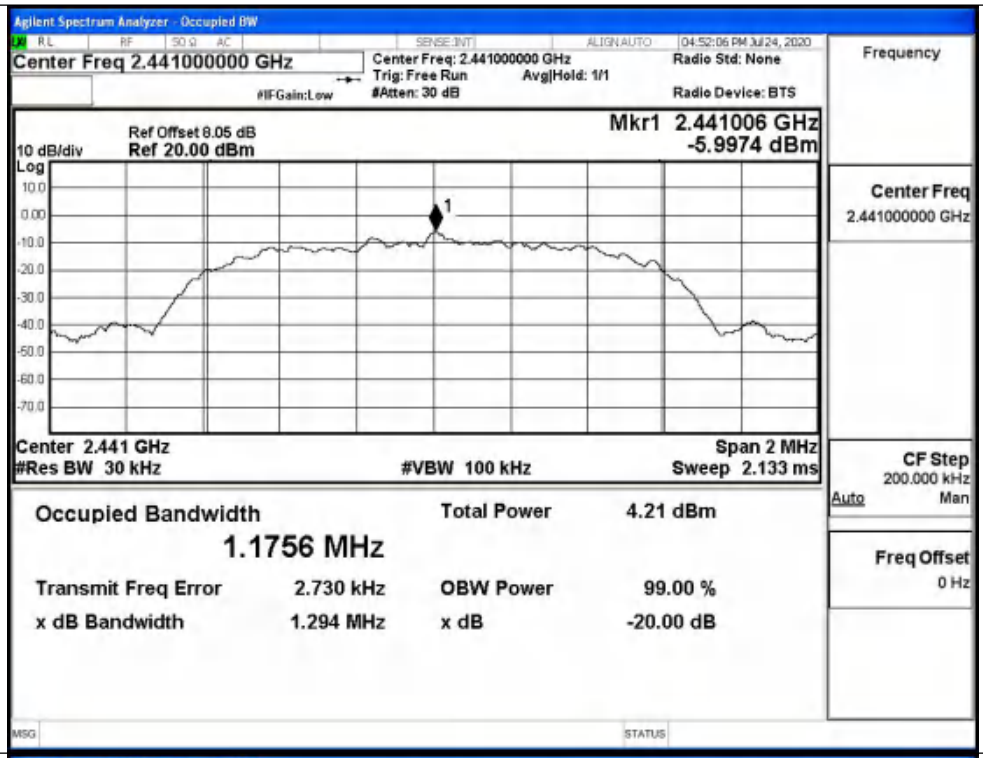
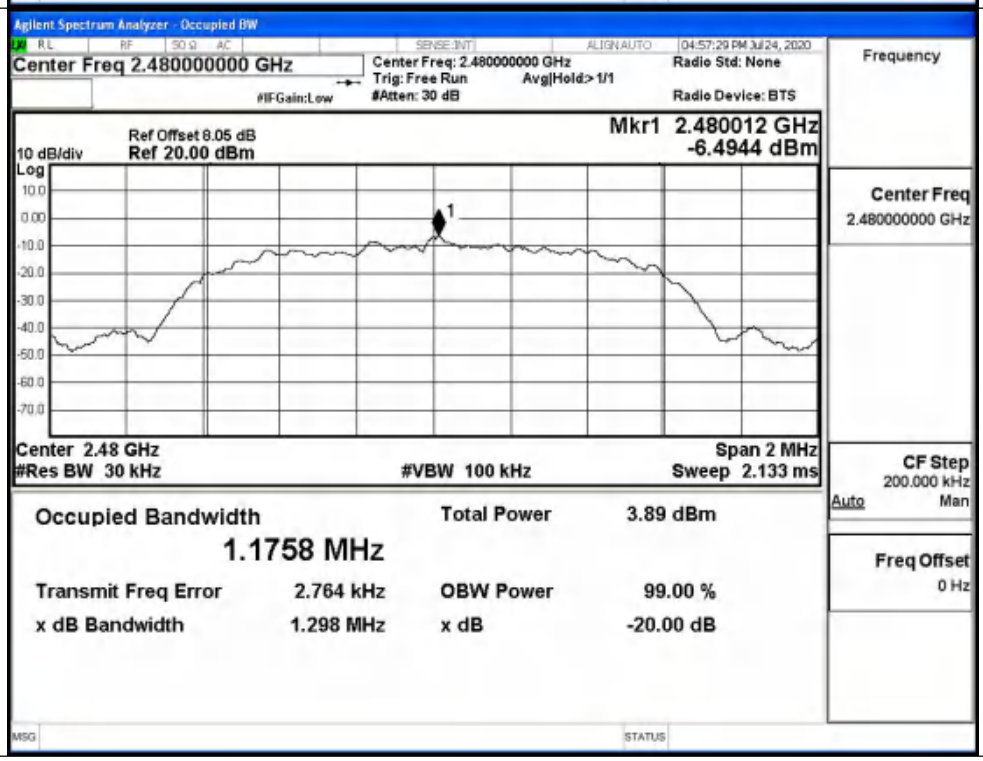
Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.9486	Not Specified	PASS
	MCH	0.9492	Not Specified	PASS
	HCH	0.9484	Not Specified	PASS
π/4DQPSK	LCH	1.322	Not Specified	PASS
	MCH	1.322	Not Specified	PASS
	HCH	1.323	Not Specified	PASS
8DPSK	LCH	1.294	Not Specified	PASS
	MCH	1.294	Not Specified	PASS
	HCH	1.298	Not Specified	PASS

Test Graphs	
GFSK/LCH	

GFSK/MCH	
GFSK/HCH	

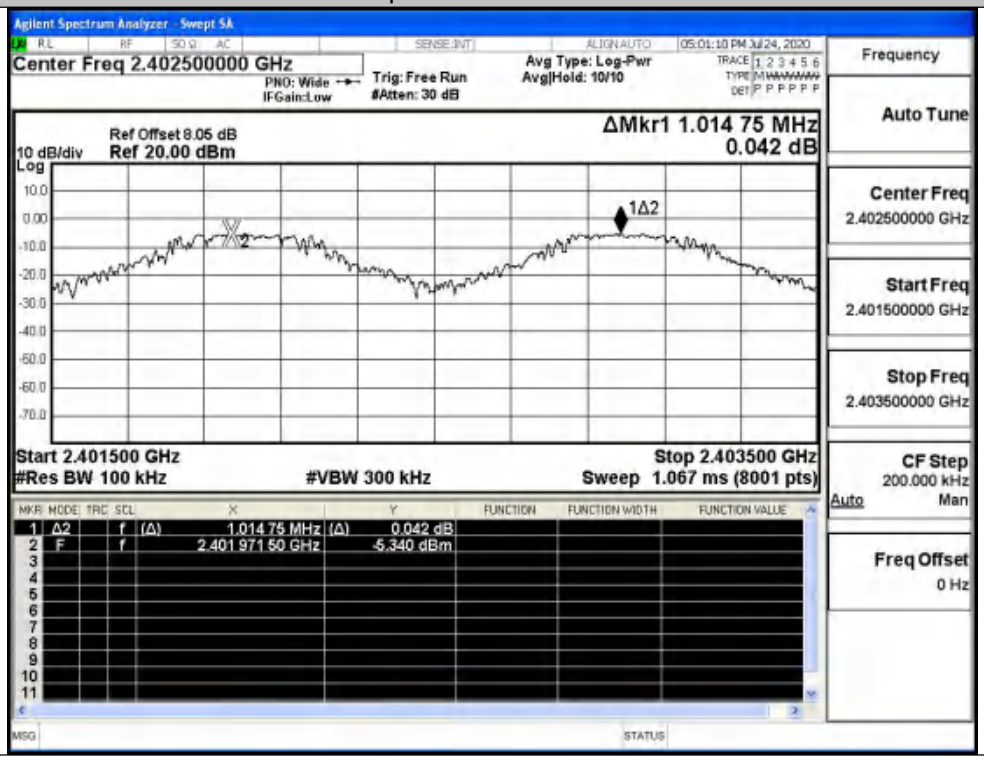
π/4DQPSK/LCH	
π/4DQPSK/MCH	

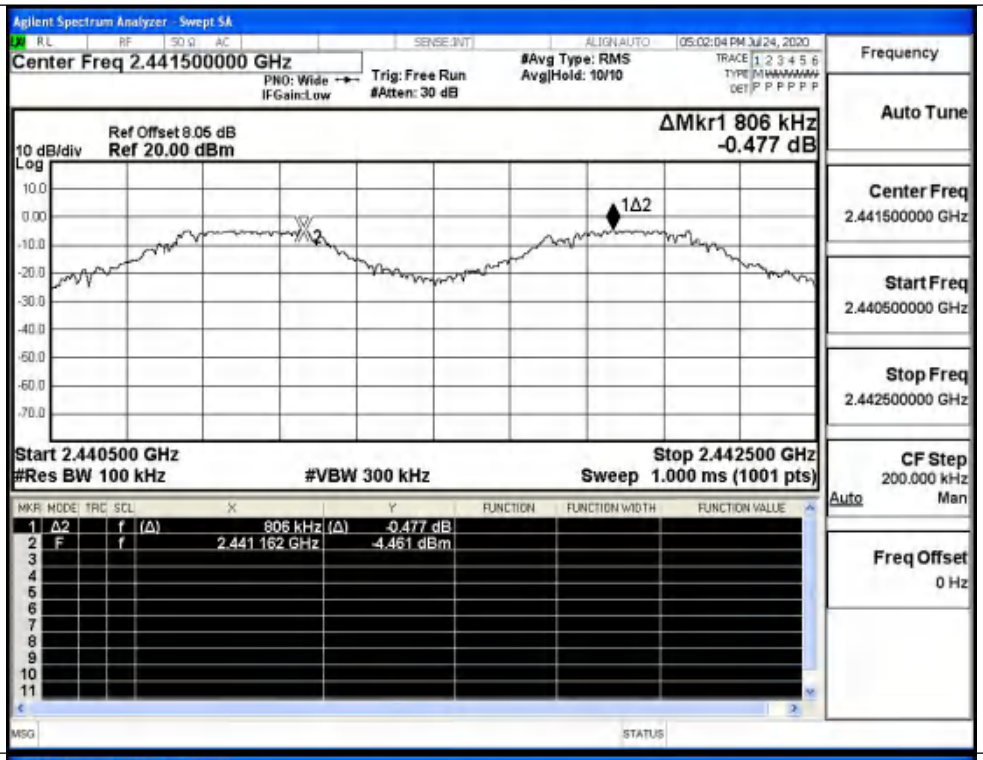
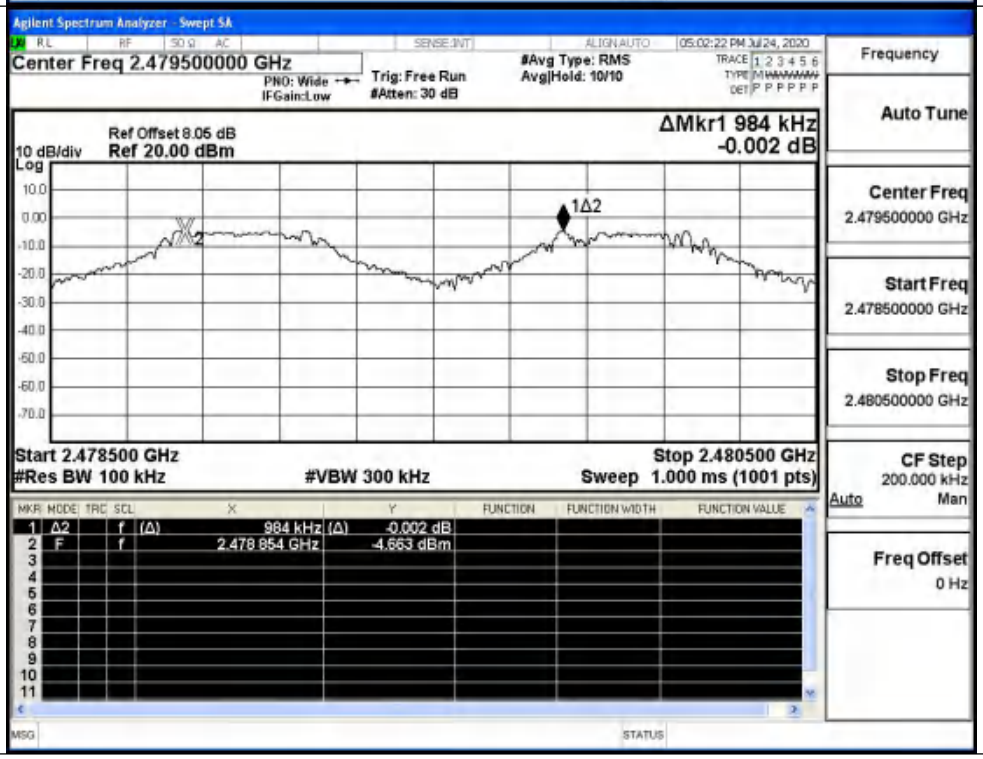
π/4DQPSK/HCH	
8DPSK/LCH	

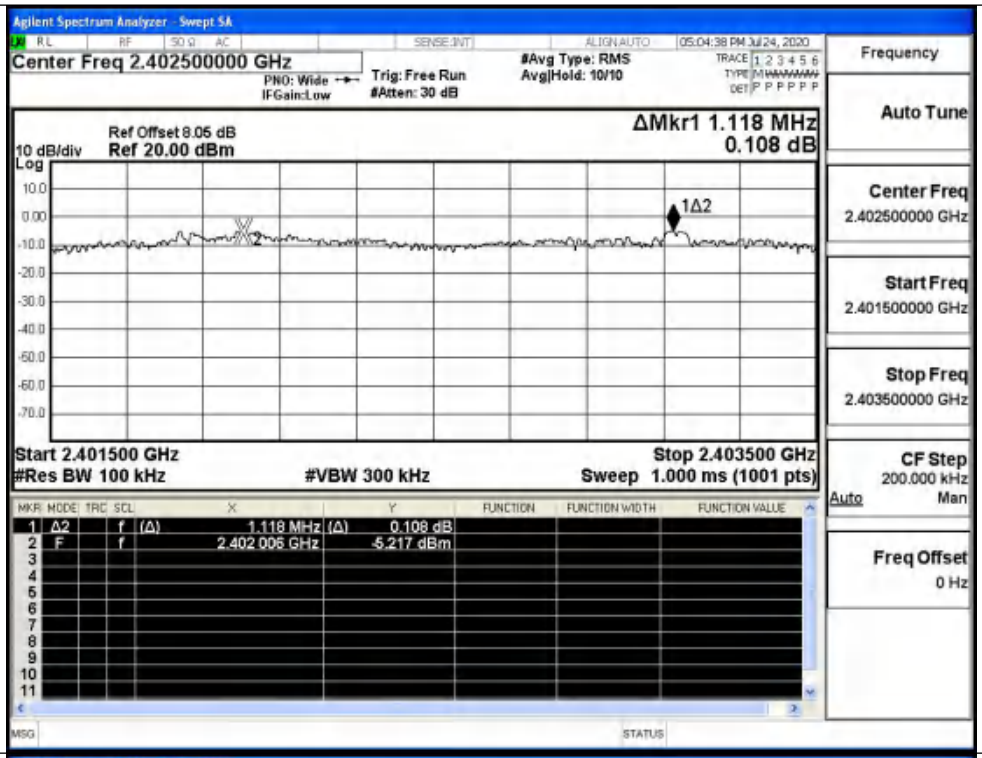
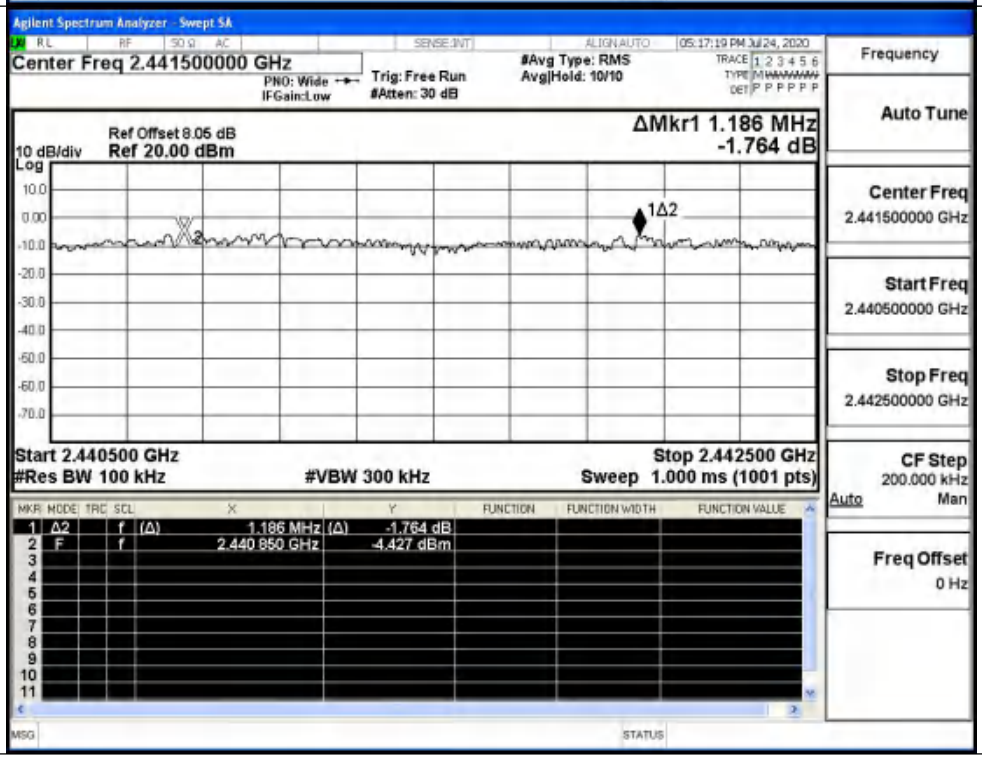
8DPSK/MCH	
8DPSK/HCH	

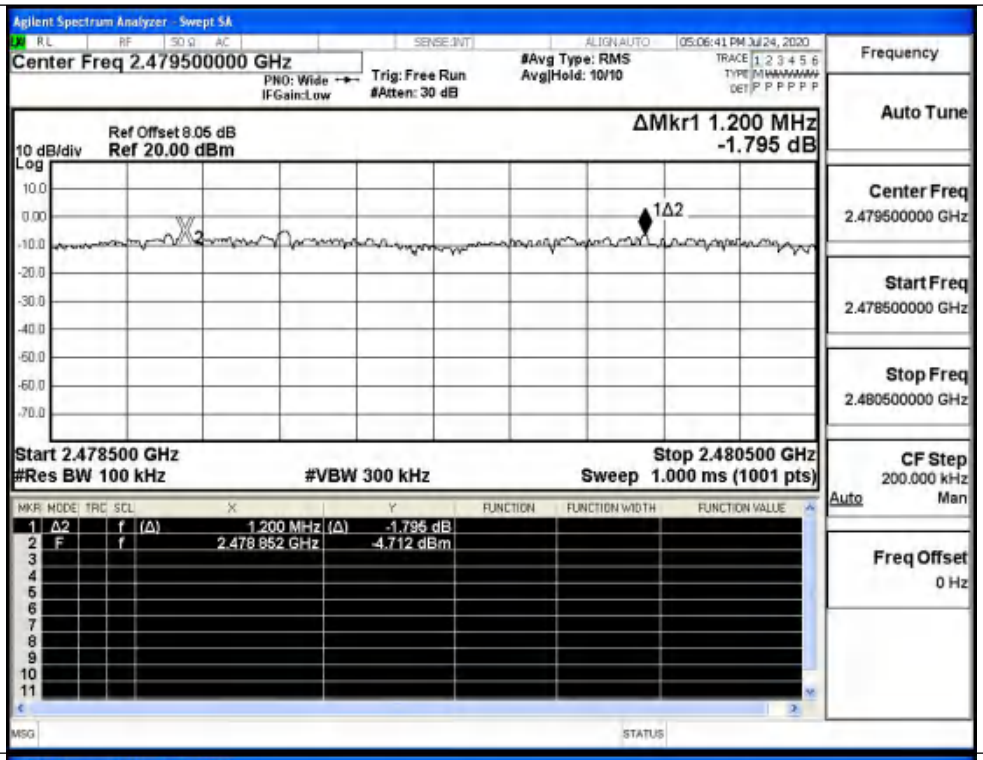
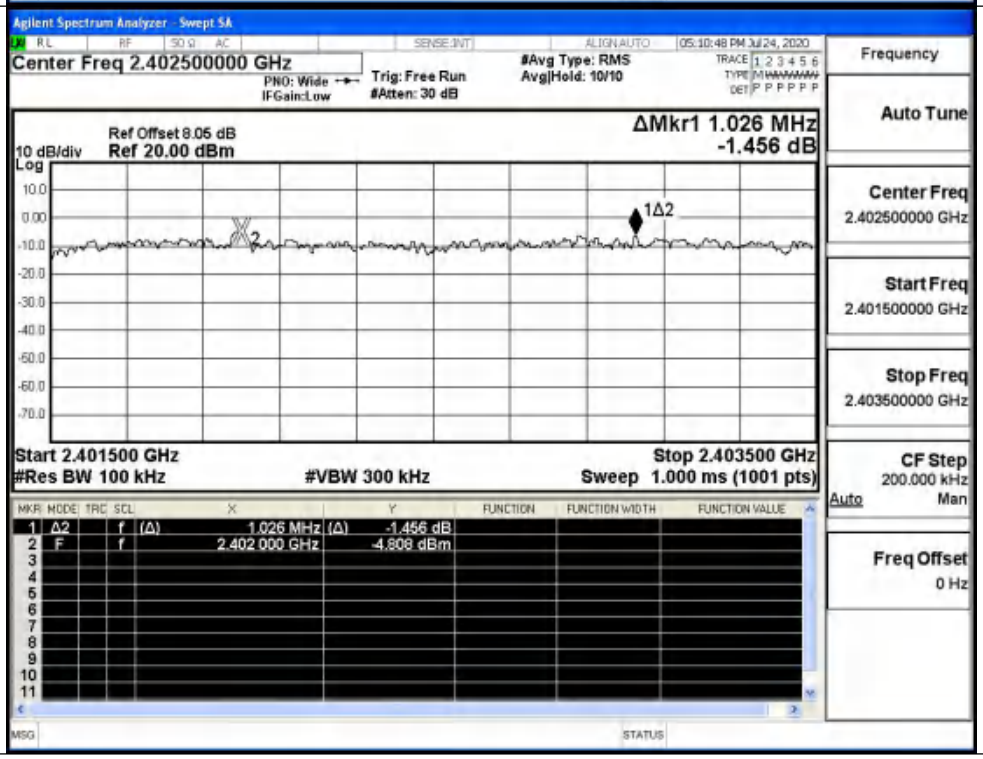
A.3 Carrier Frequency Separation

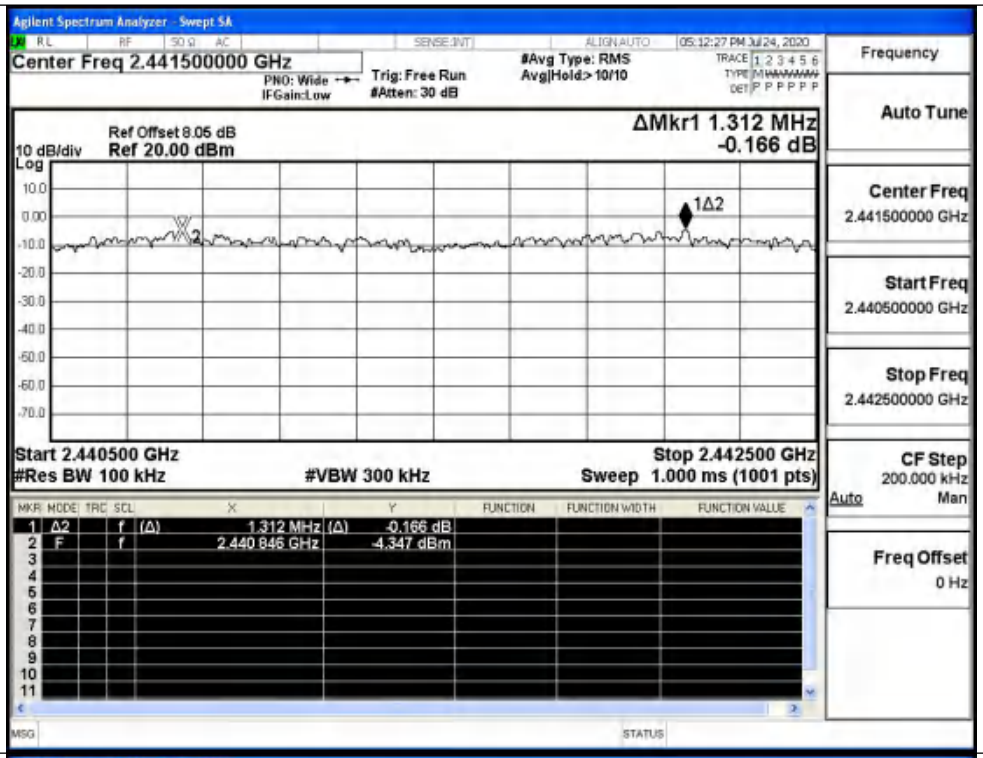
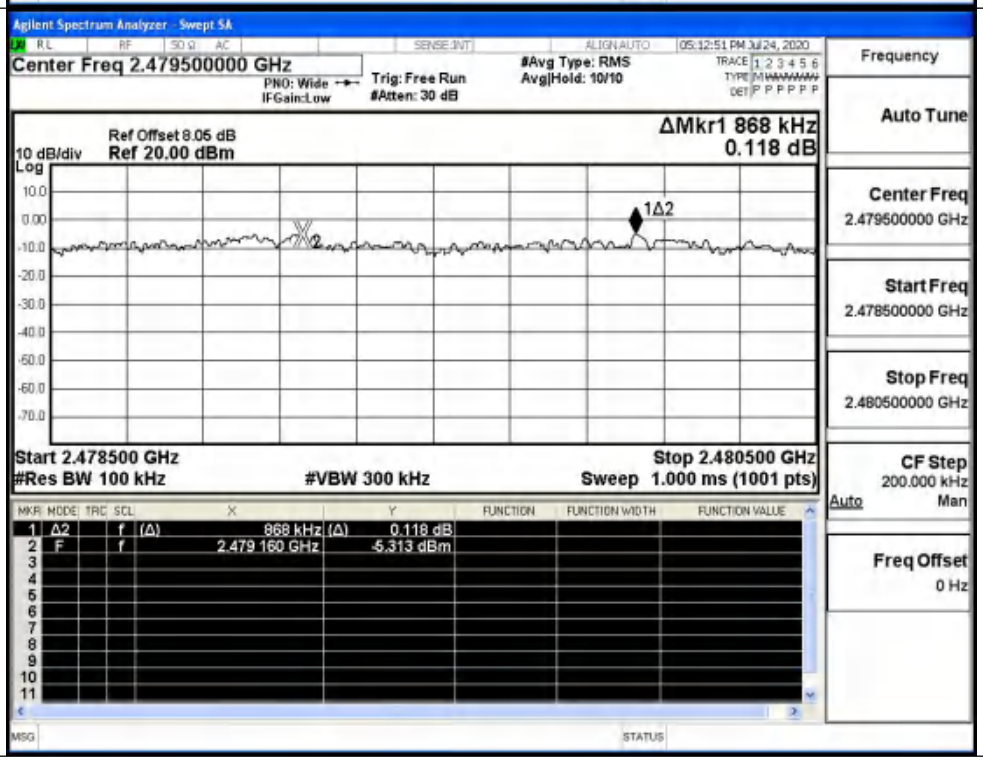
Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.015	0.633	PASS
	MCH	0.806	0.633	PASS
	HCH	0.984	0.633	PASS
π/4DQPSK	LCH	1.118	0.882	PASS
	MCH	1.186	0.882	PASS
	HCH	1.200	0.882	PASS
8DPSK	LCH	1.026	0.865	PASS
	MCH	1.312	0.865	PASS
	HCH	0.868	0.865	PASS

Test Graphs	
GFSK/LCH	

GFSK/MCH	
GFSK/HCH	

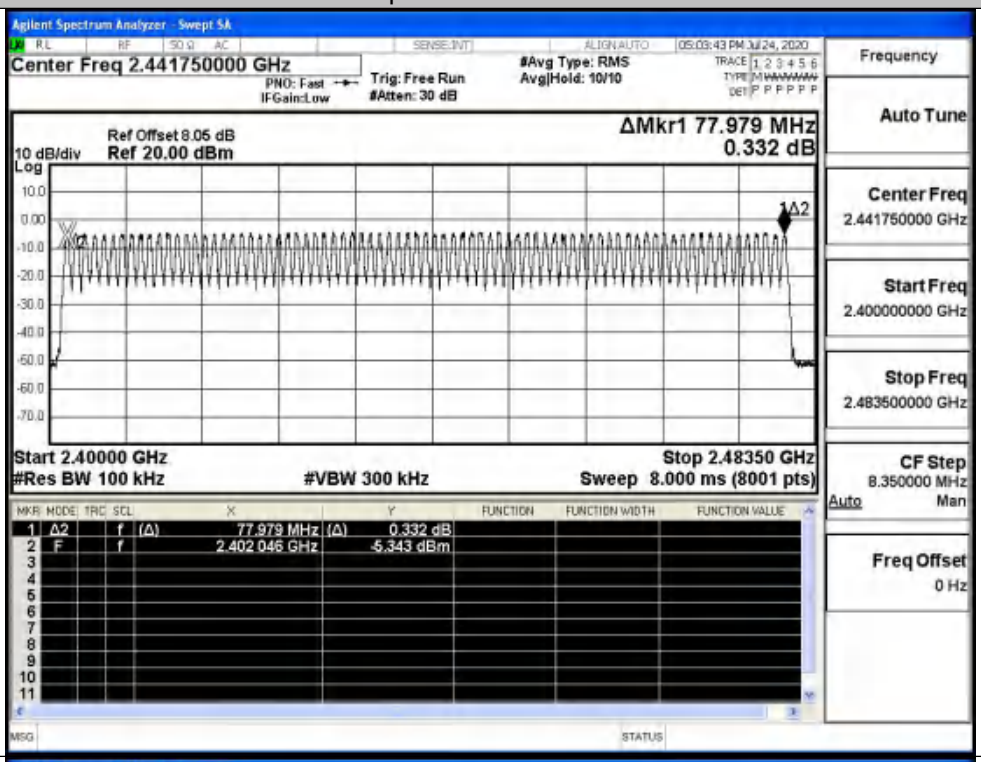
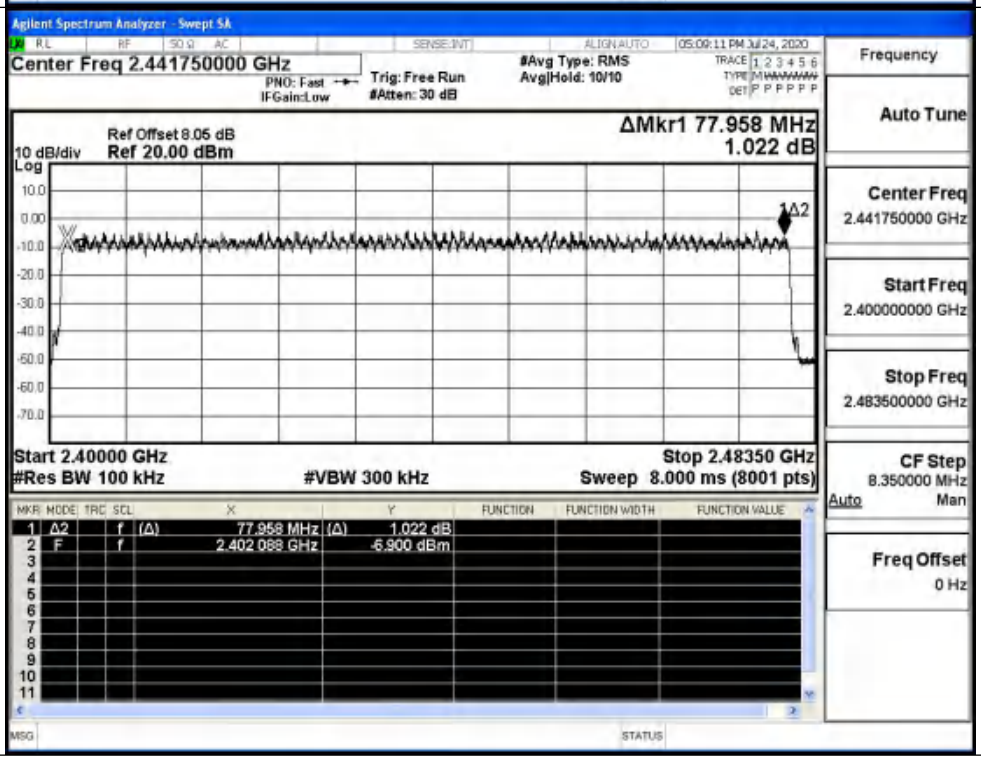
π/4DQPSK/LCH	
π/4DQPSK/MCH	

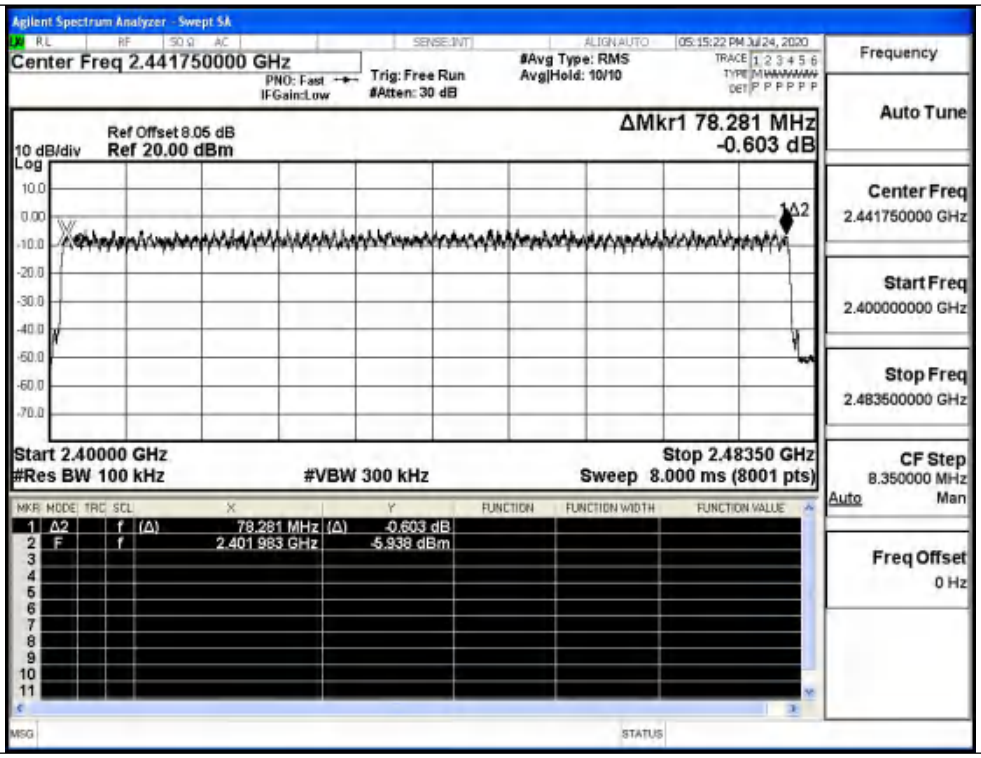
π/4DQPSK/HCH	
8DPSK/LCH	

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

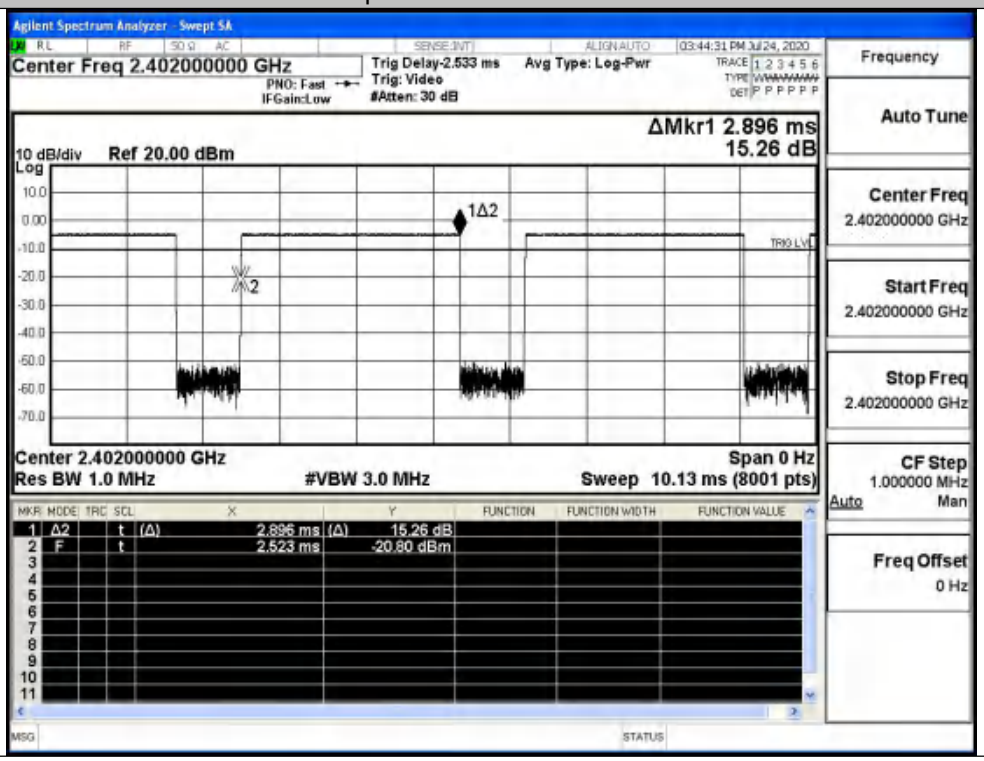
Test Graphs		
GFSK/Hop		
π/4DQPSK/Hop		

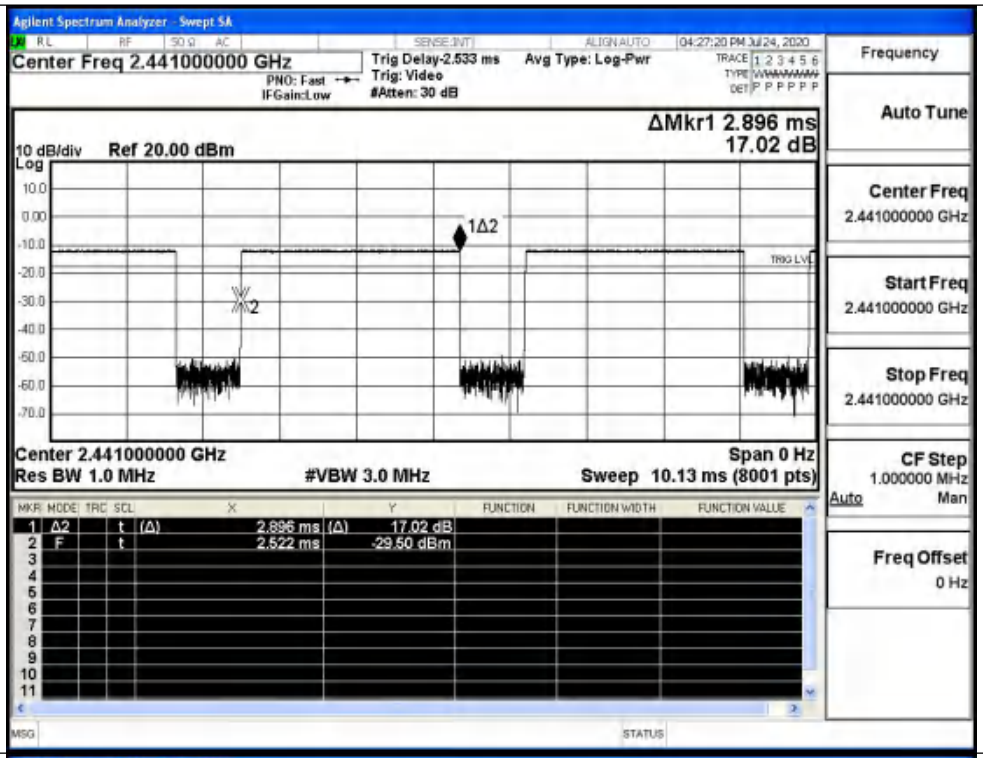
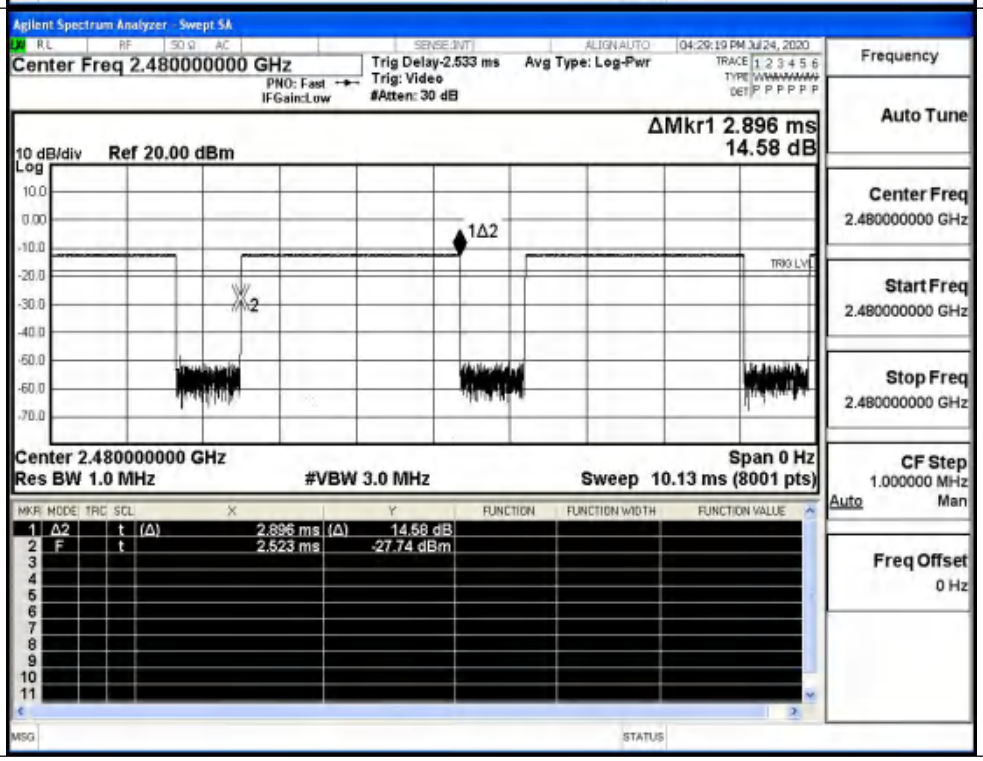
8DPSK/Hop	

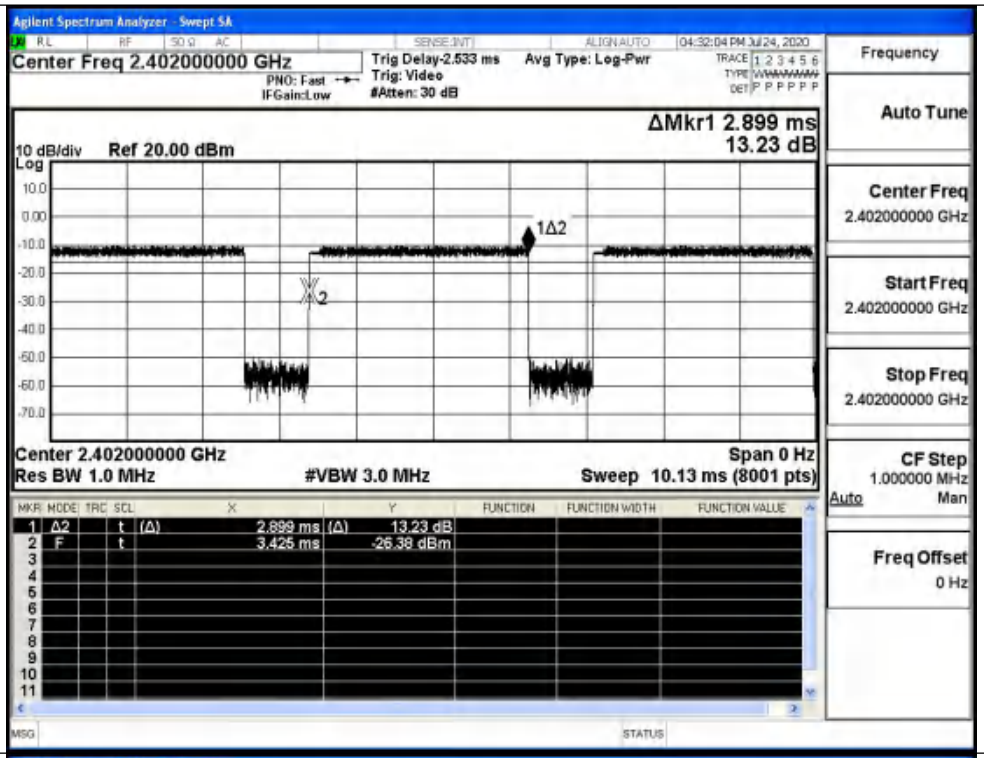
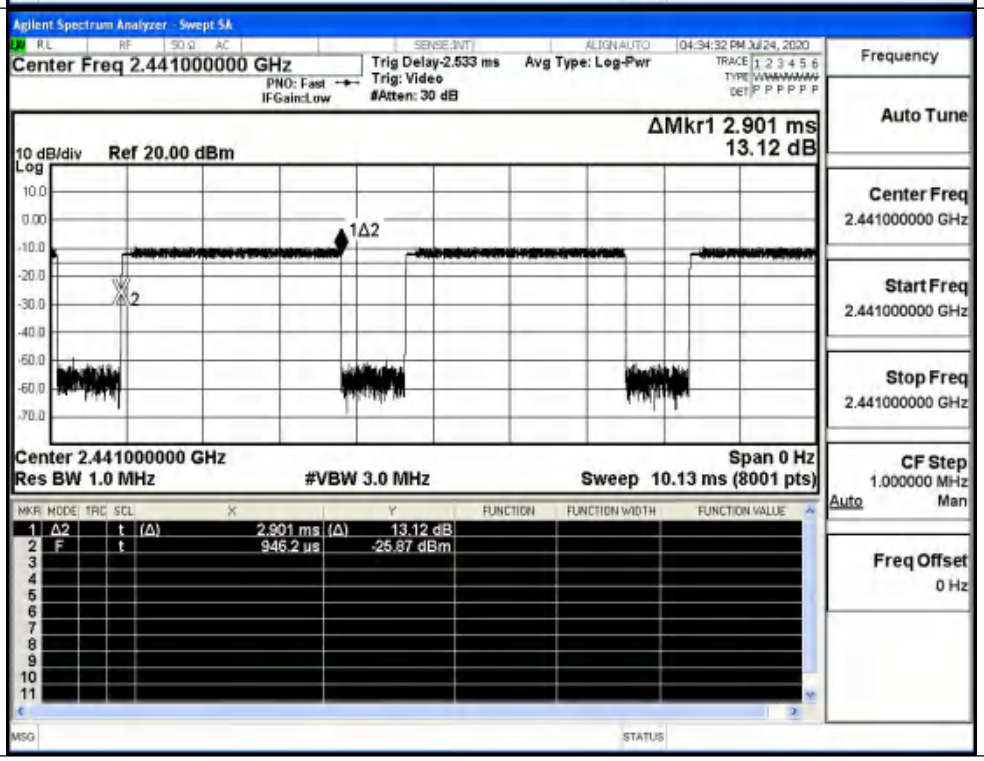
Agilent Spectrum Analyzer - Swept SA
Center Freq 2.441750000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 10/10
05:15:22 PM Jul 24, 2020
Ref Offset 8.05 dB
10 dB/div
Ref 20.00 dBm
Log
ΔMkr1 78.281 MHz
-0.603 dB
Start 2.40000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.48350 GHz
Sweep 8.000 ms (8001 pts)
1 Δ2 f (Δ) 78.281 MHz (Δ) -0.603 dB
2 F f 2.401 983 GHz -5.938 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

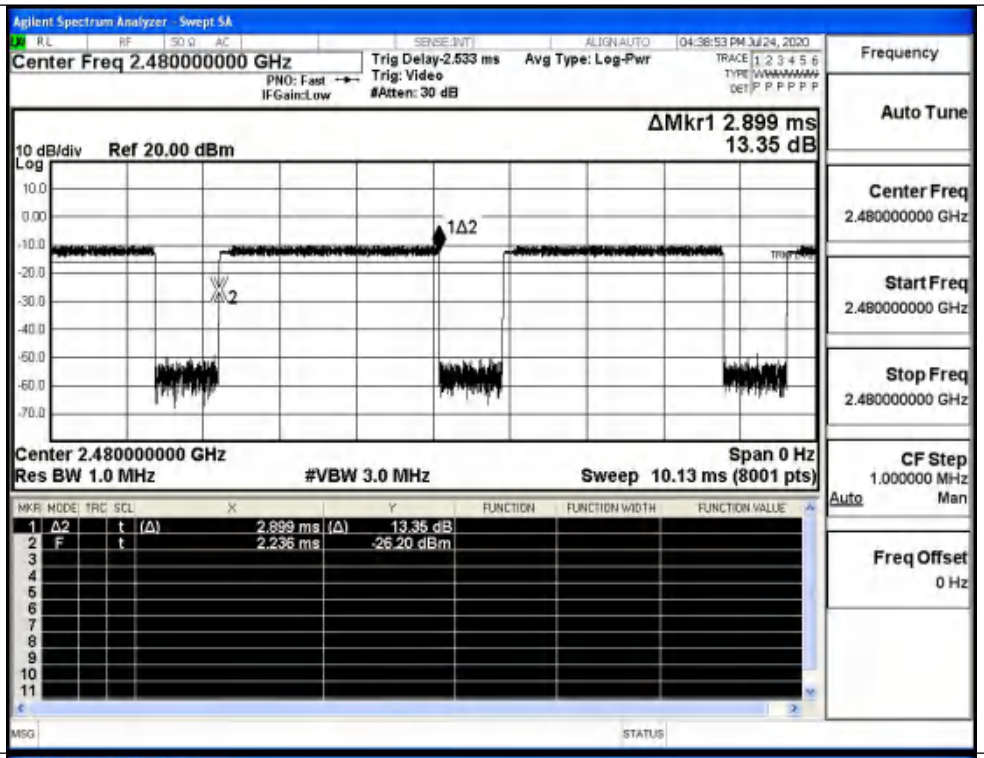
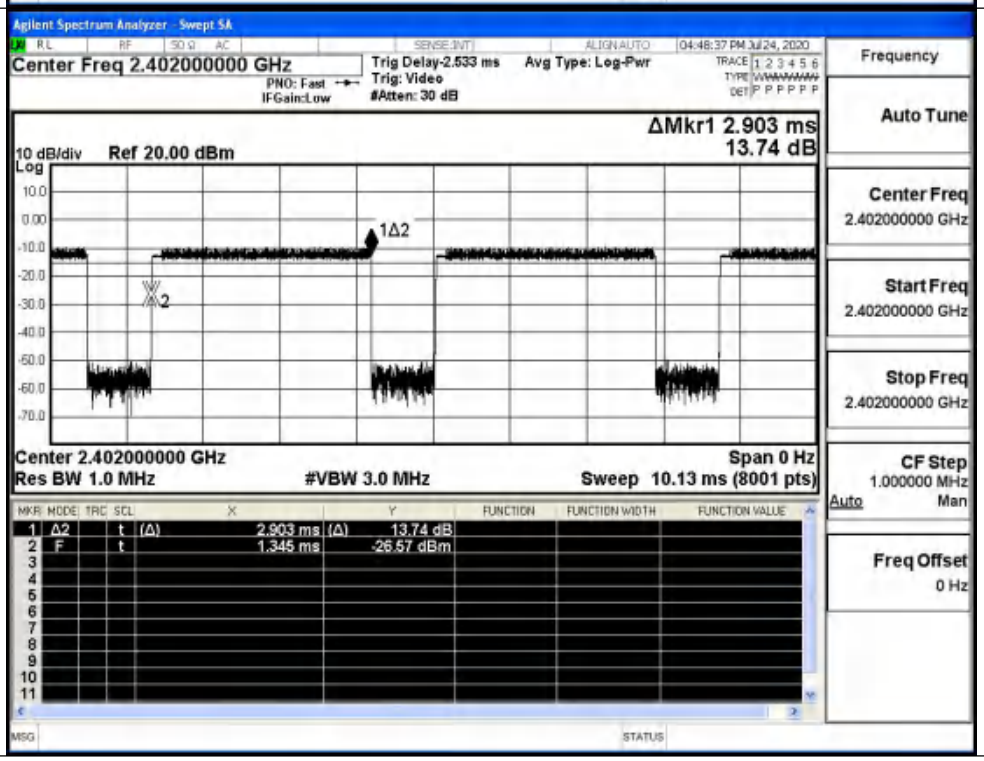
A.5 Dwell Time

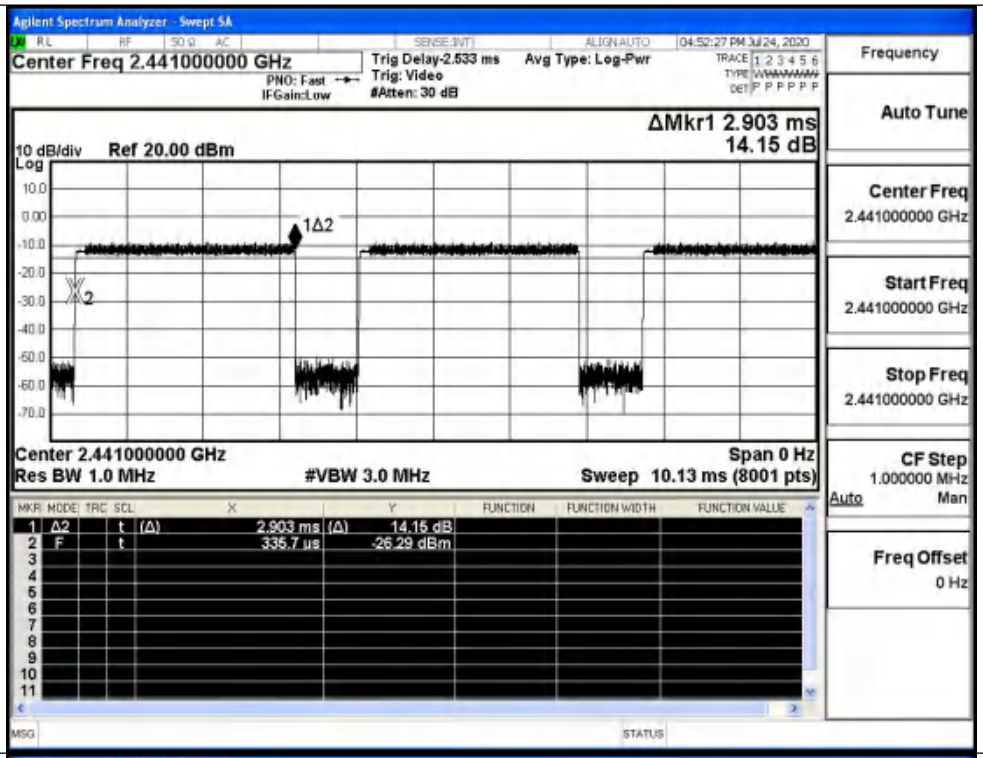
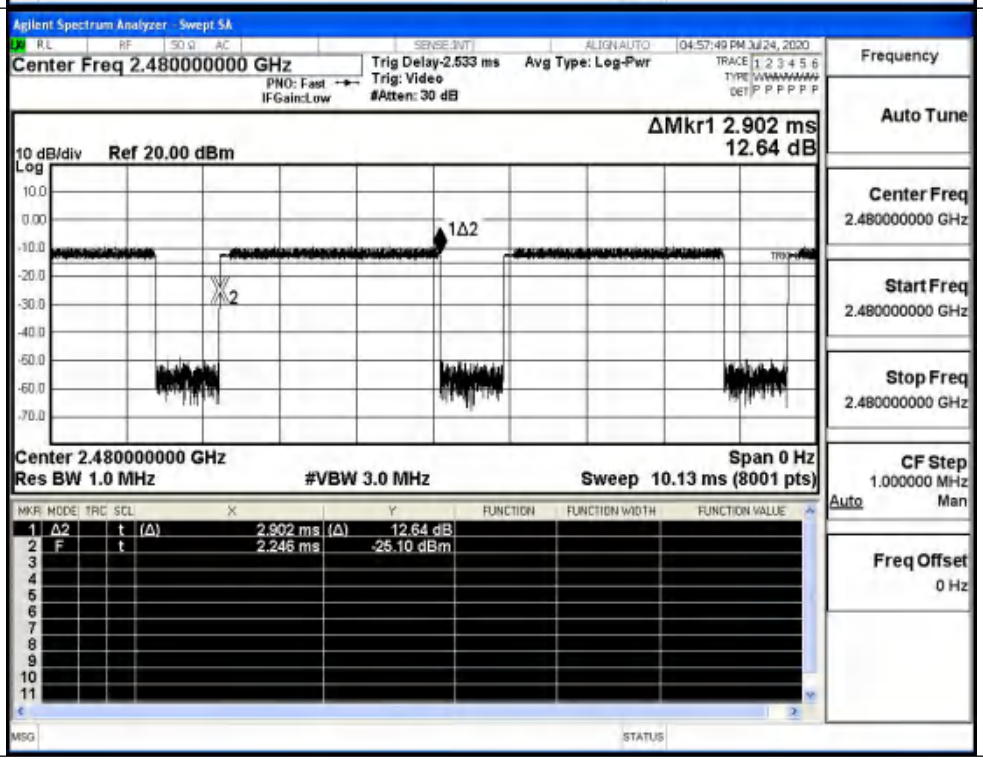
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.9	106.7	0.309	0.4	PASS
	DH5	MCH	2.9	106.7	0.309	0.4	PASS
	DH5	HCH	2.9	106.7	0.309	0.4	PASS
π/4DQPSK	2DH5	LCH	2.9	106.7	0.309	0.4	PASS
	2DH5	MCH	2.9	106.7	0.309	0.4	PASS
	2DH5	HCH	2.9	106.7	0.309	0.4	PASS
8DPSK	3DH5	LCH	2.9	106.7	0.309	0.4	PASS
	3DH5	MCH	2.9	106.7	0.309	0.4	PASS
	3DH5	HCH	2.9	106.7	0.309	0.4	PASS

Test Graphs	
GFSK_DH5/LCH	

GFSK_DH5/MCH	
GFSK_DH5/HCH	

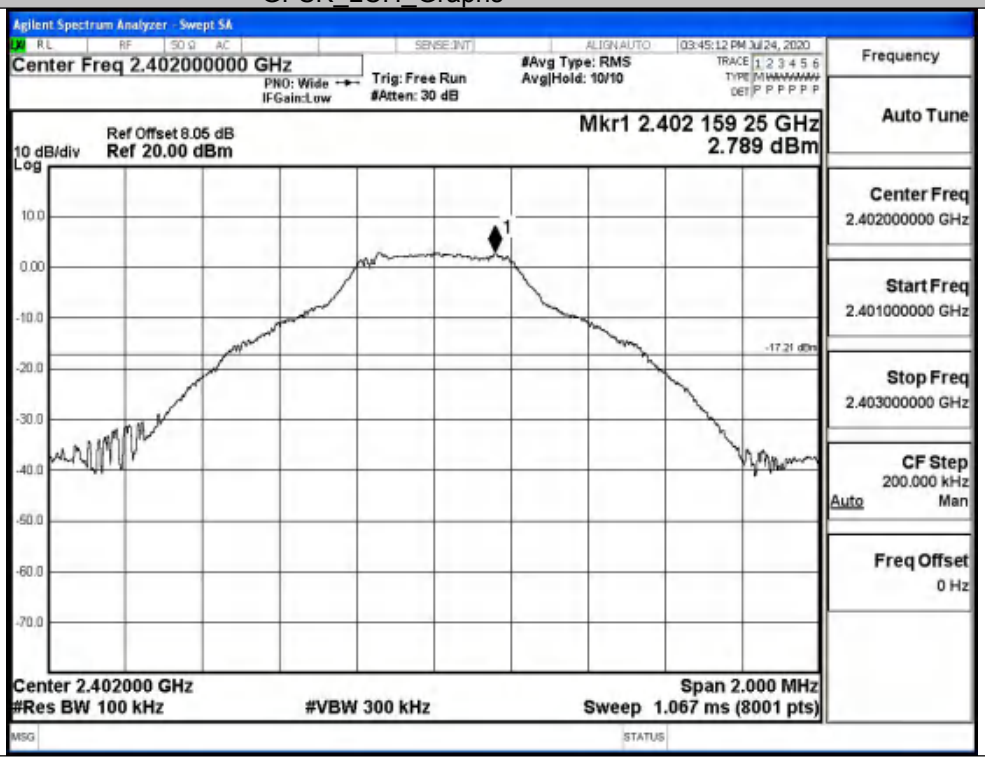
π/4DQPSK _2DH5/LCH	
π/4DQPSK _2DH5/MCH	

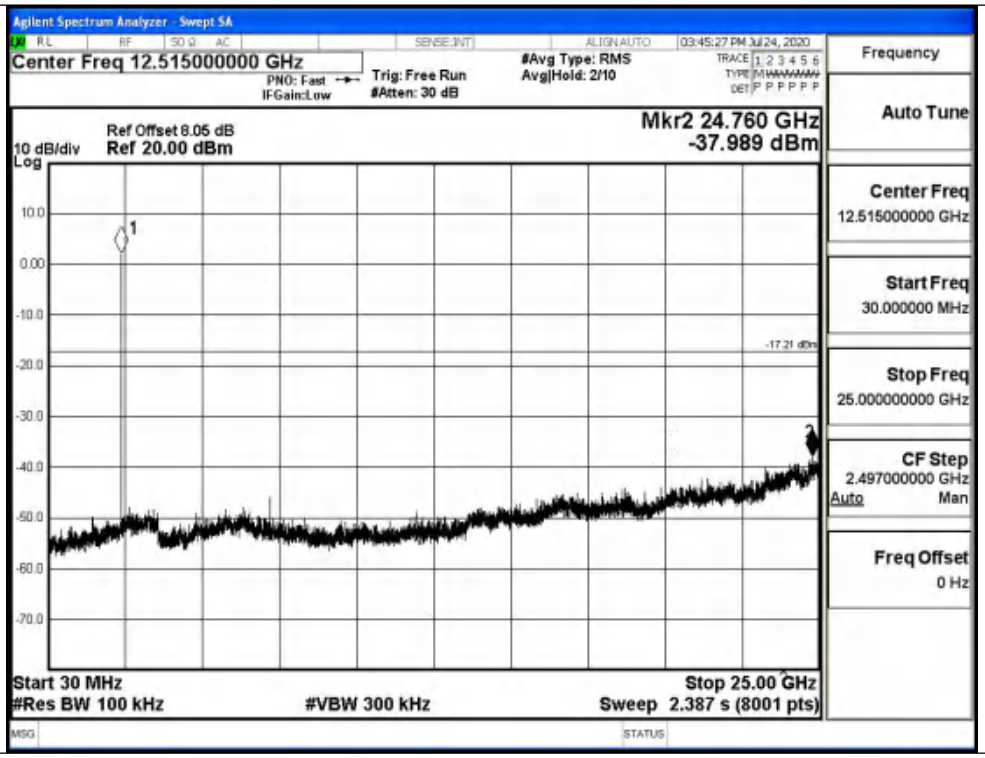
π/4DQPSK _2DH5/HCH	
8DPSK _3DH5/LCH	

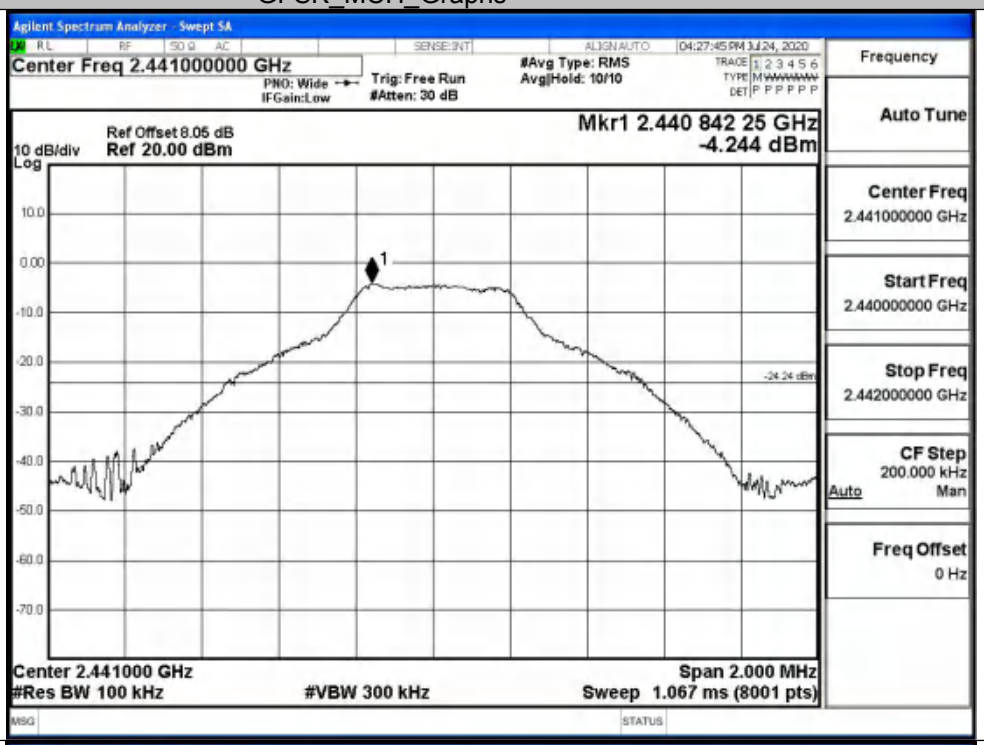
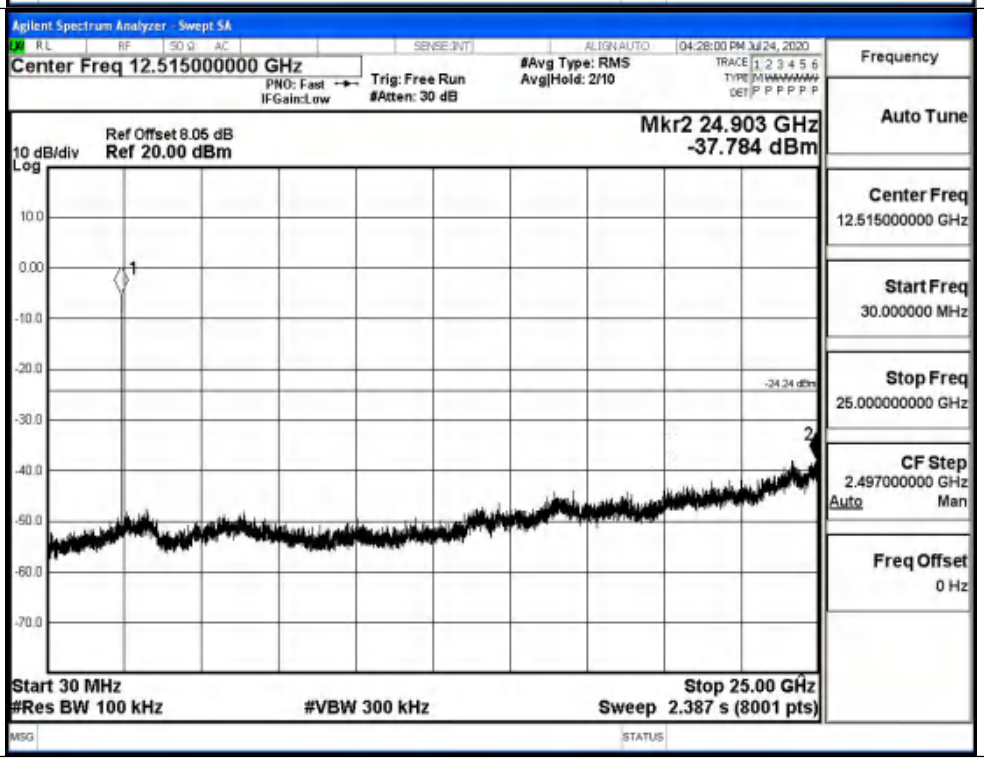
8DPSK _3DH5/MCH	
8DPSK _3DH5/HCH	

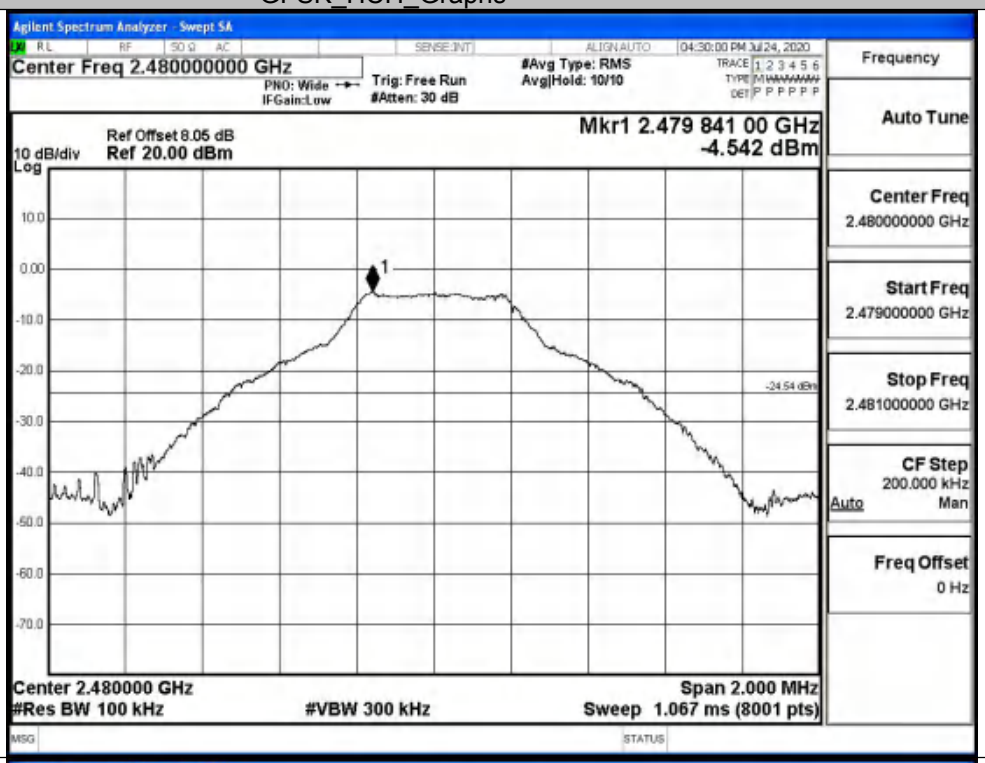
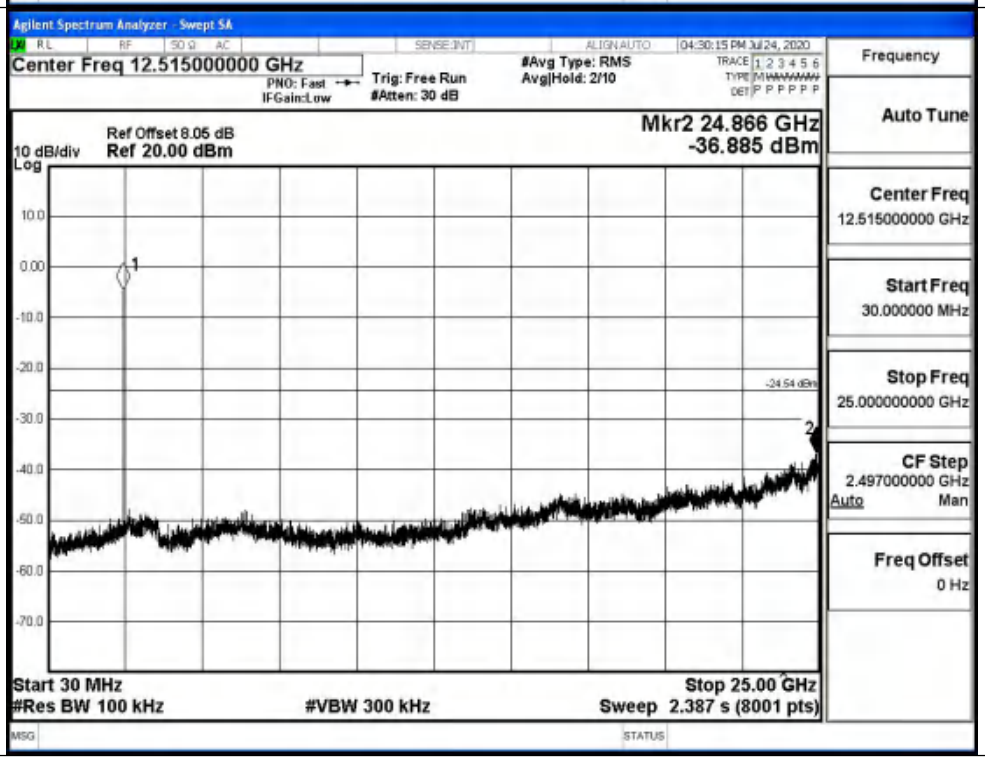
A.6 RF Conducted Spurious Emissions

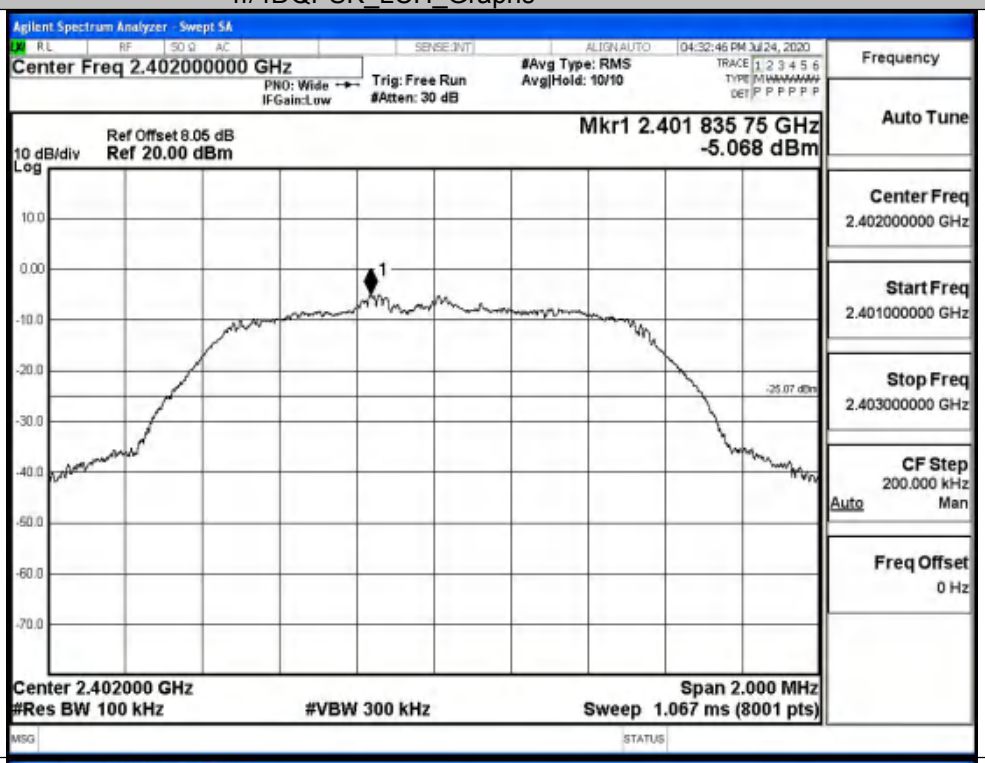
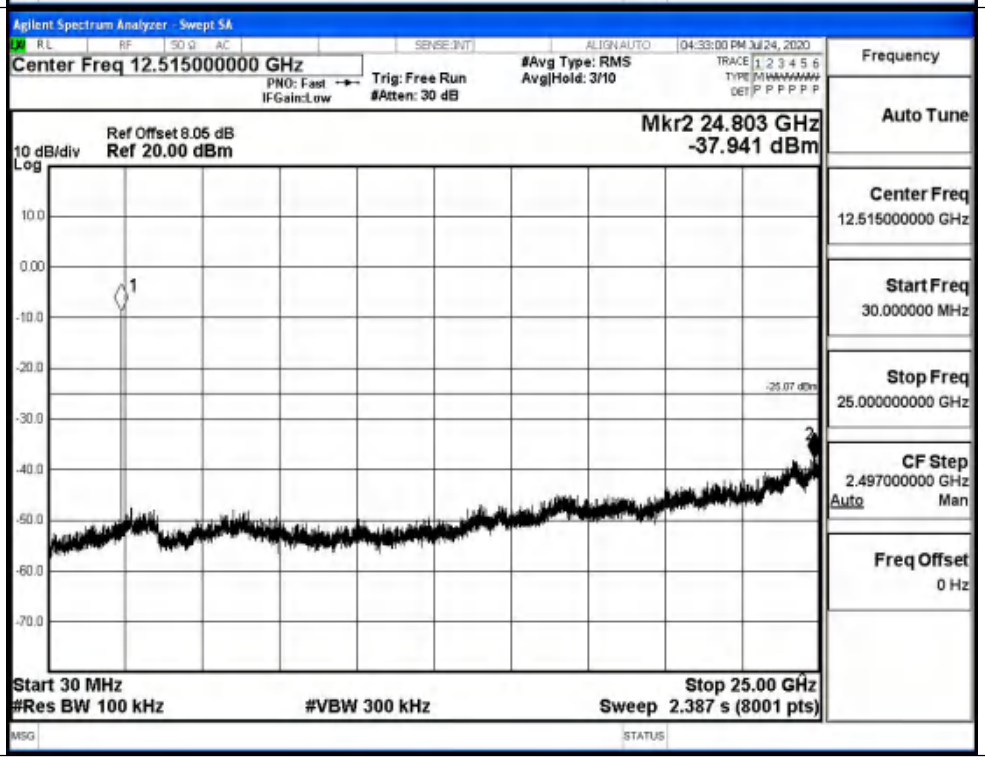
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2.789	-37.989	-17.211	PASS
	MCH	-4.244	-37.784	-24.244	PASS
	HCH	-4.542	-36.885	-24.542	PASS
π/4DQPSK	LCH	-5.068	-37.941	-25.068	PASS
	MCH	-4.432	-37.803	-24.432	PASS
	HCH	-4.784	-37.499	-24.784	PASS
8DPSK	LCH	-4.842	-37.968	-24.842	PASS
	MCH	-4.173	-37.503	-24.173	PASS
	HCH	-4.482	-37.485	-24.482	PASS

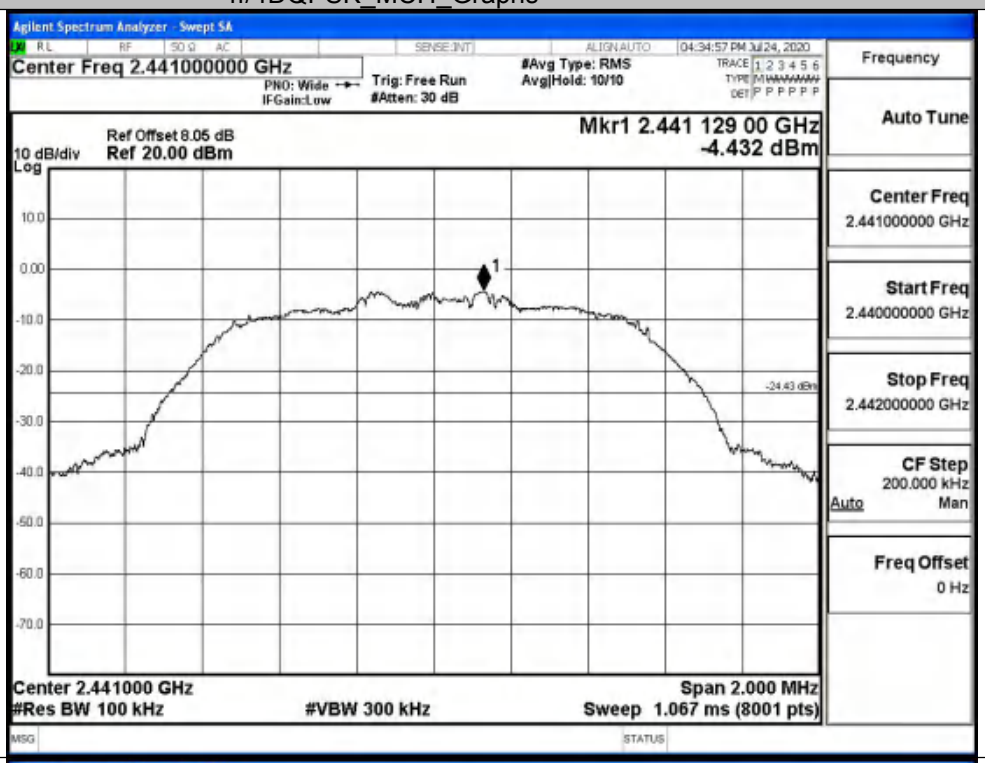
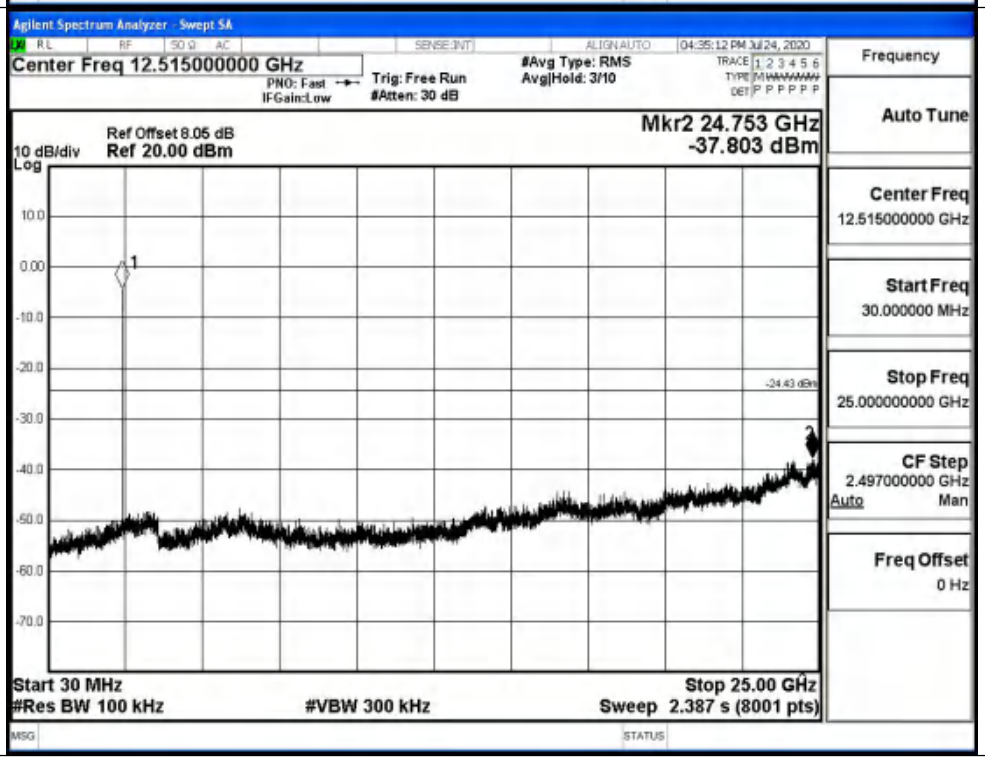
GFSK_LCH_Graphs	
Pref	

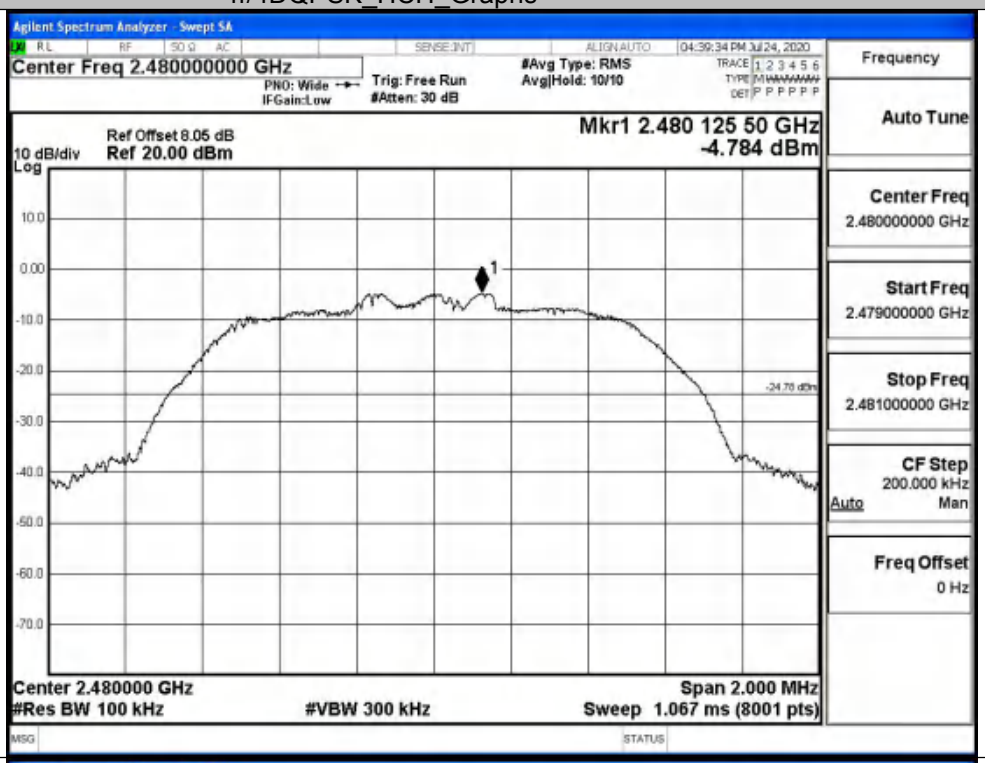
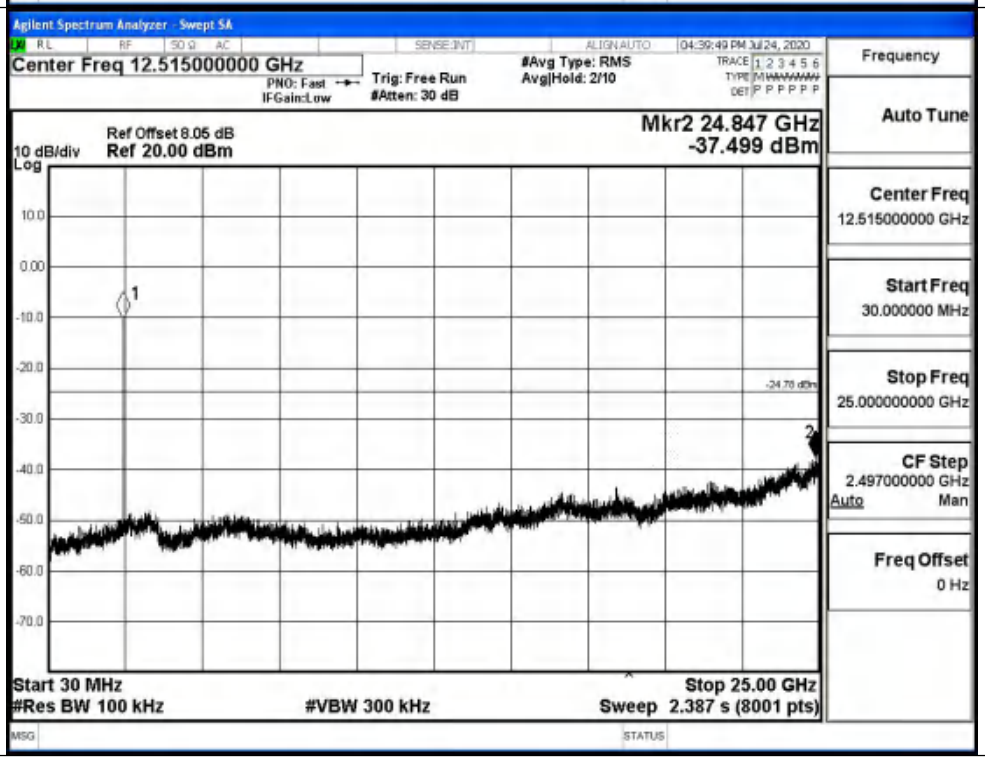
Puw	 Agilent Spectrum Analyzer - Swept SA Center Freq 12.515000000 GHz PNO: Fast IFGain:Low Trig: Free Run #Atten: 30 dB #Avg Type: RMS Avg|Hold: 2/10 03:45:27 PM Jul 24, 2020 Ref Offset 8.05 dB 10 dB/div Log Ref 20.00 dBm Mkr2 24.760 GHz -37.989 dBm Start 30 MHz #Res BW 100 kHz #VBW 300 kHz Stop 25.00 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	

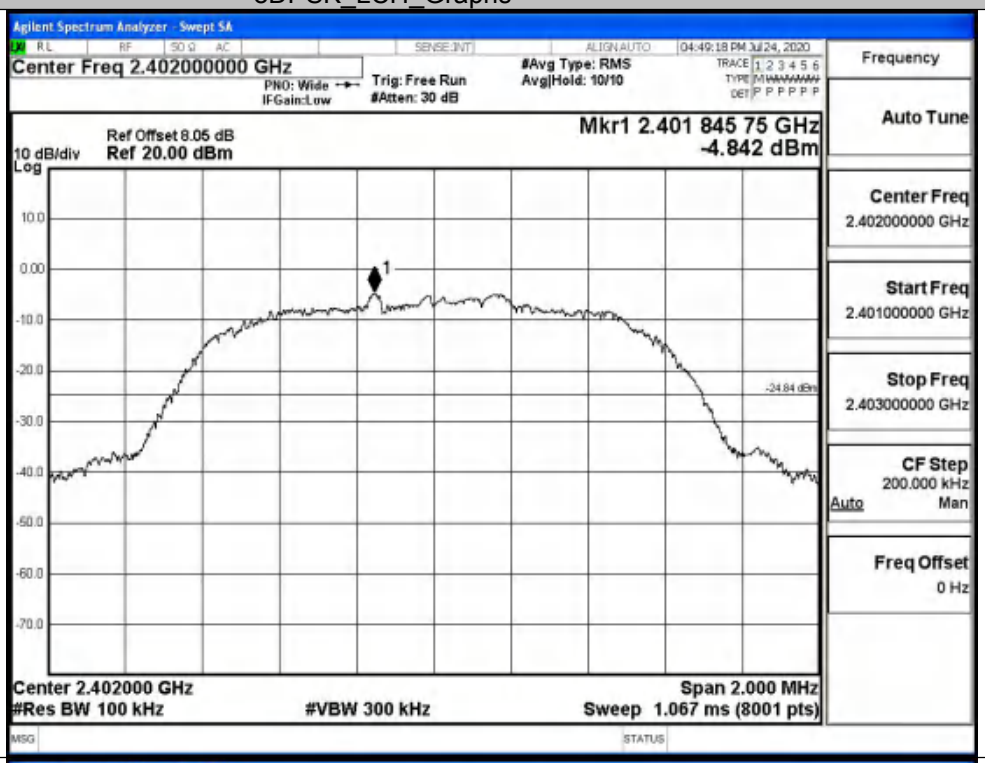
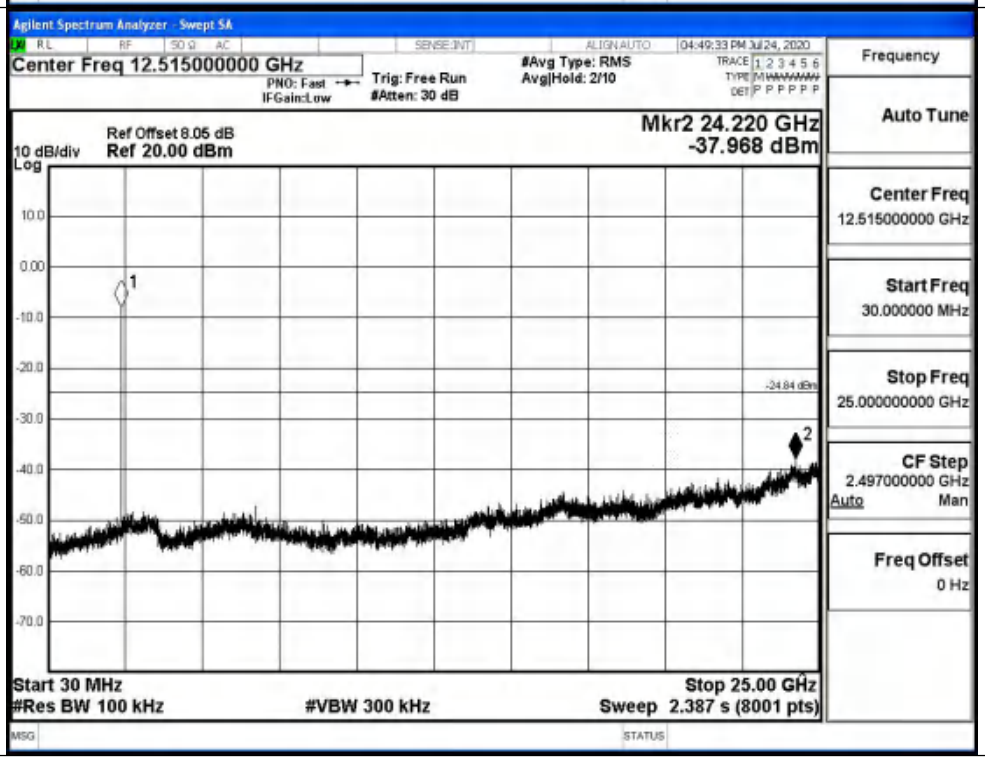
GFSK_MCH_Graphs		
Pref		
Puw		

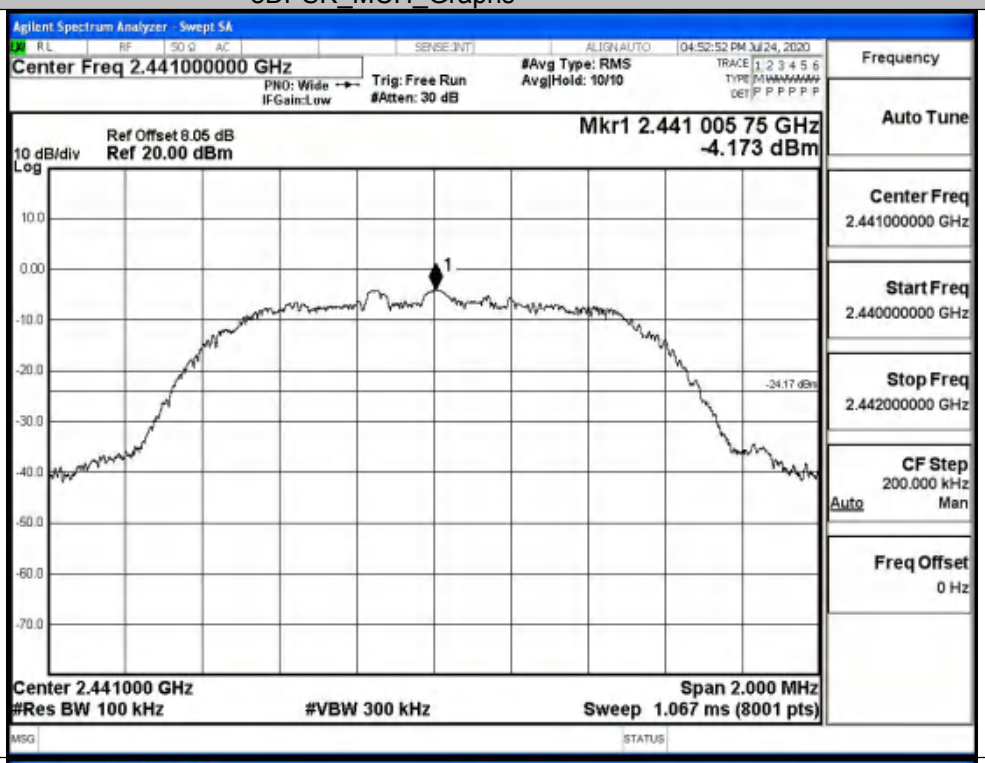
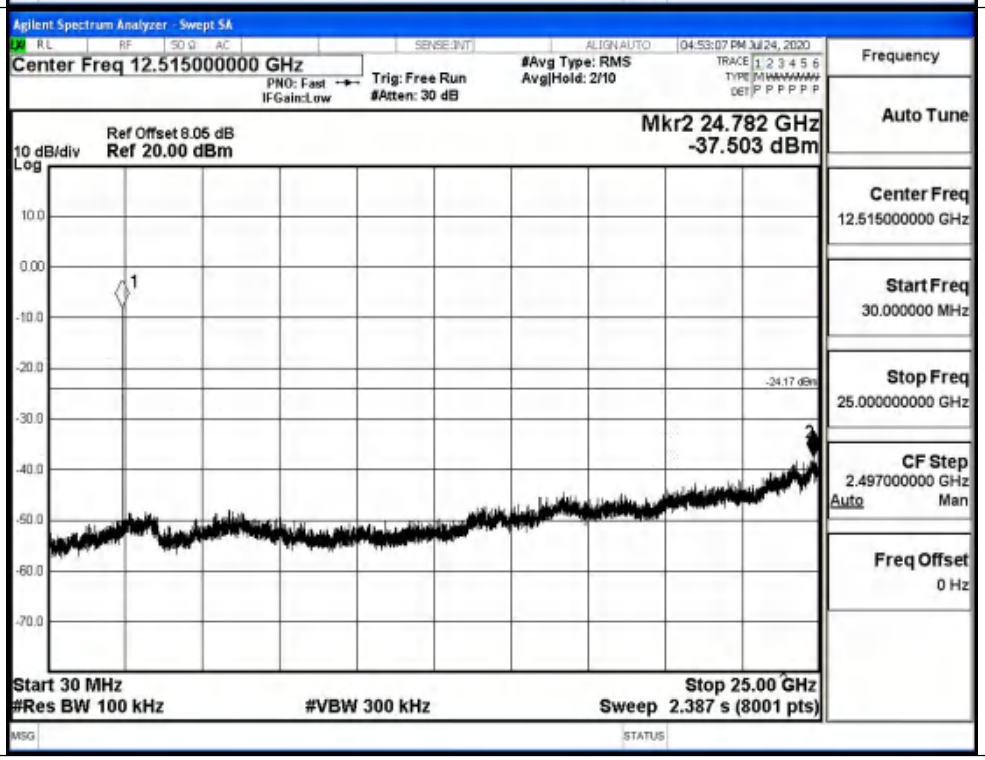
GFSK_HCH_Graphs			
Pref			
Puw			

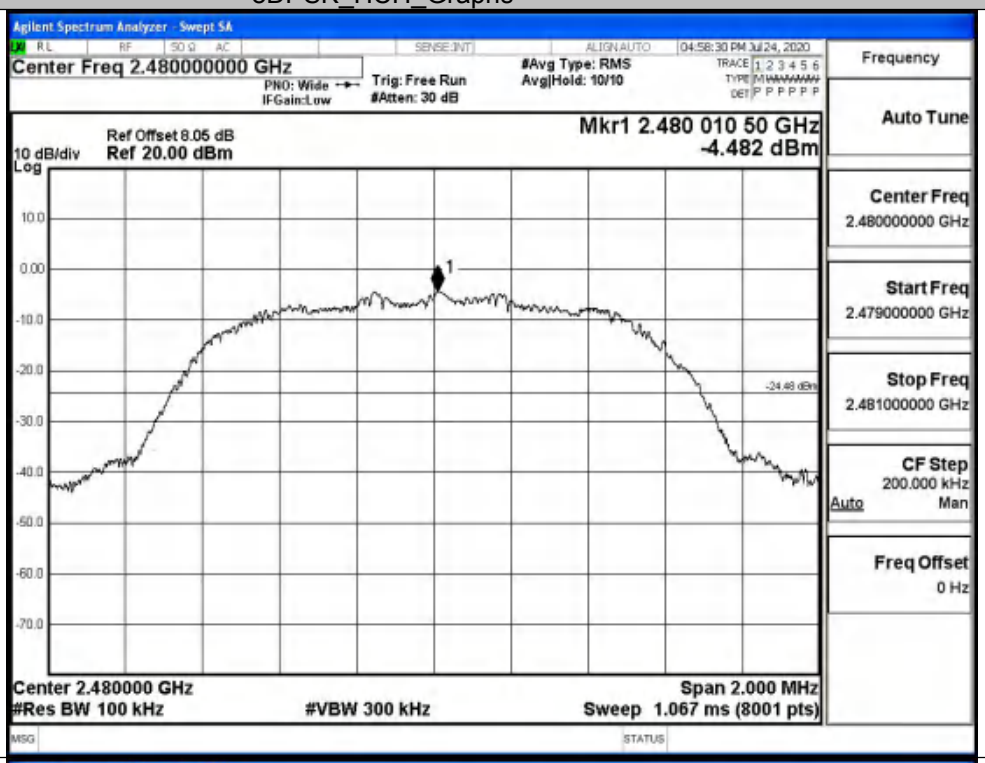
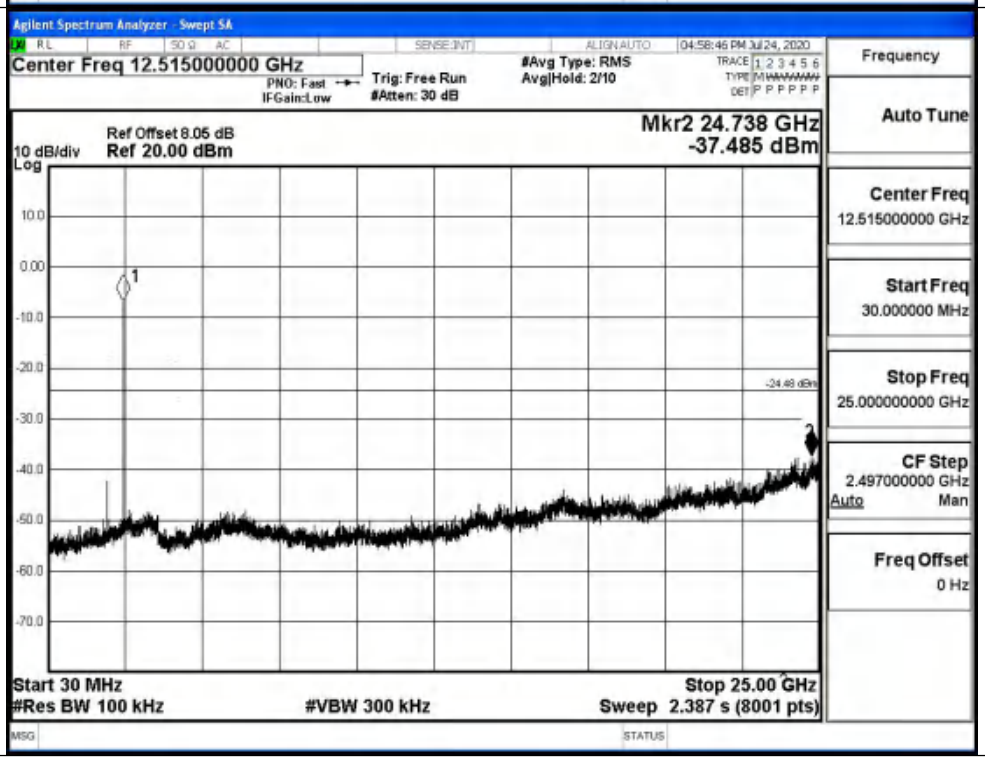
π/4DQPSK_LCH_Graphs			
Pref			
Puw			

π/4DQPSK_MCH_Graphs		
Pref		
Puw		

π/4DQPSK_HCH_Graphs			
Pref			
Puw			

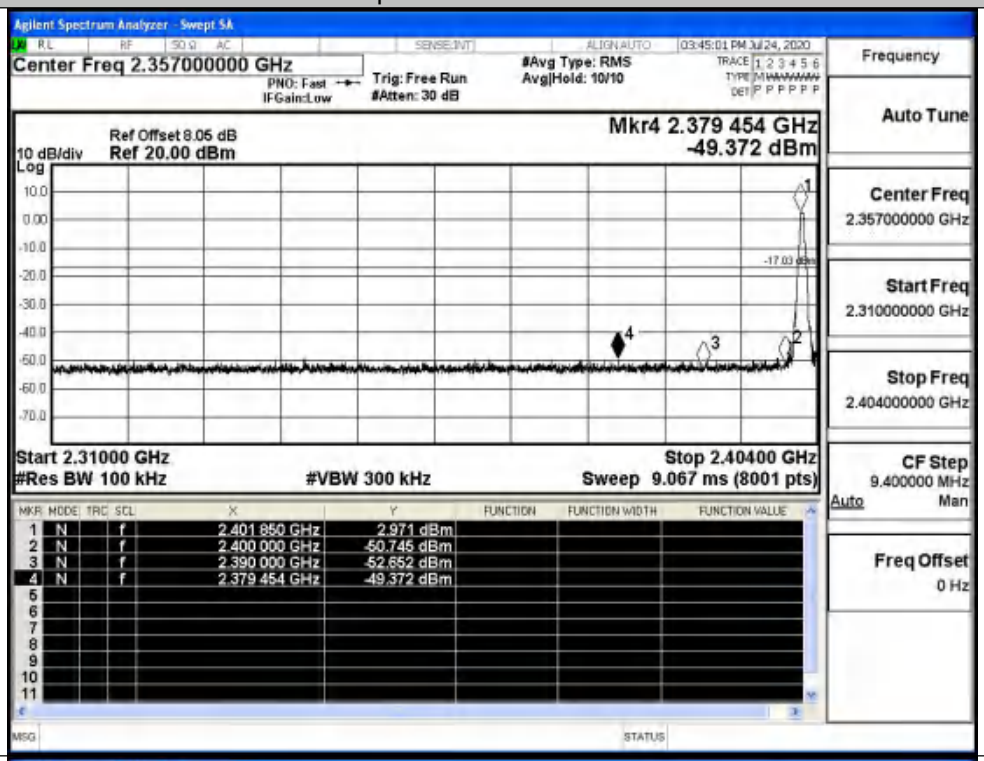
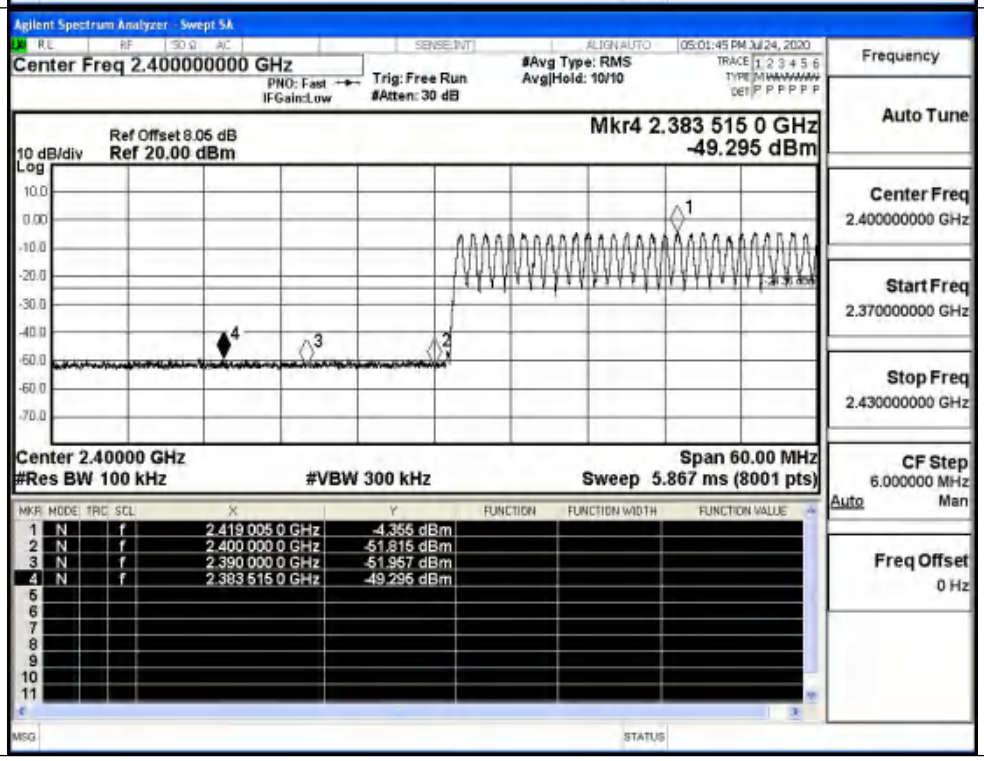
8DPSK_LCH_Graphs			
Pref			
Puw			

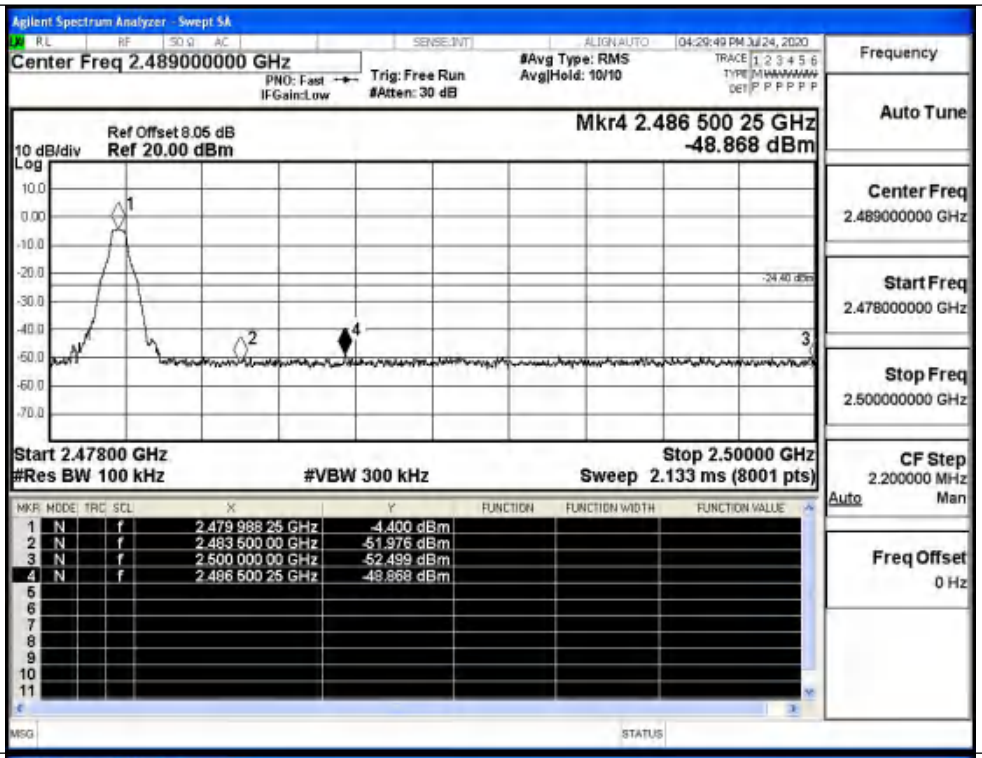
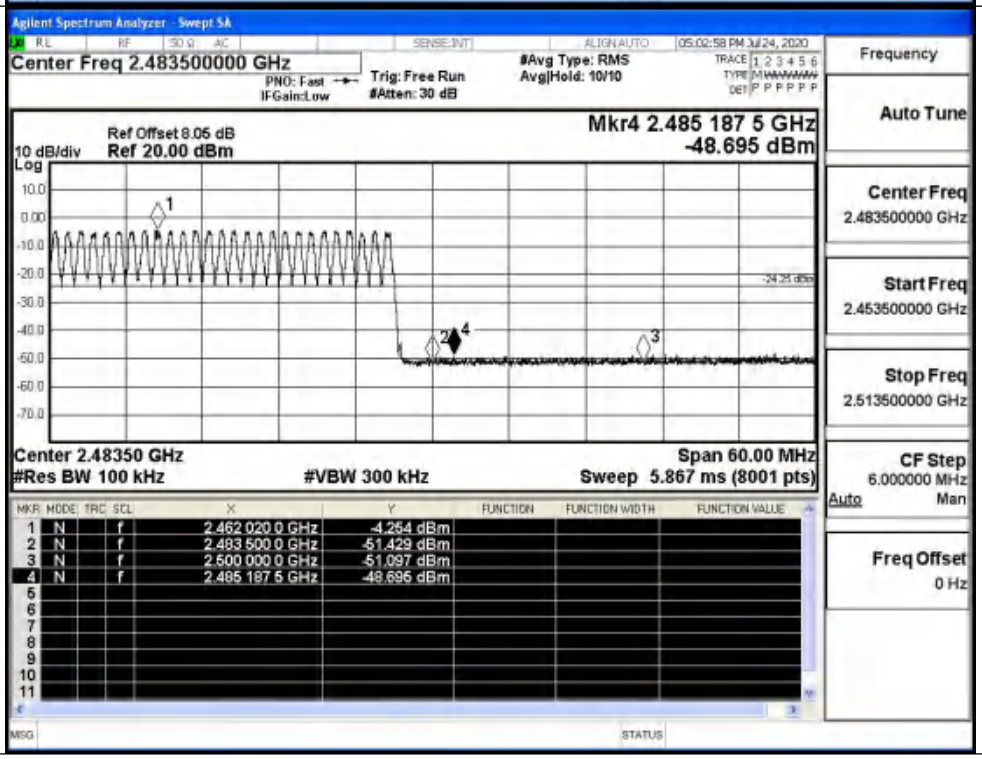
8DPSK_MCH_Graphs			
Pref			
Puw			

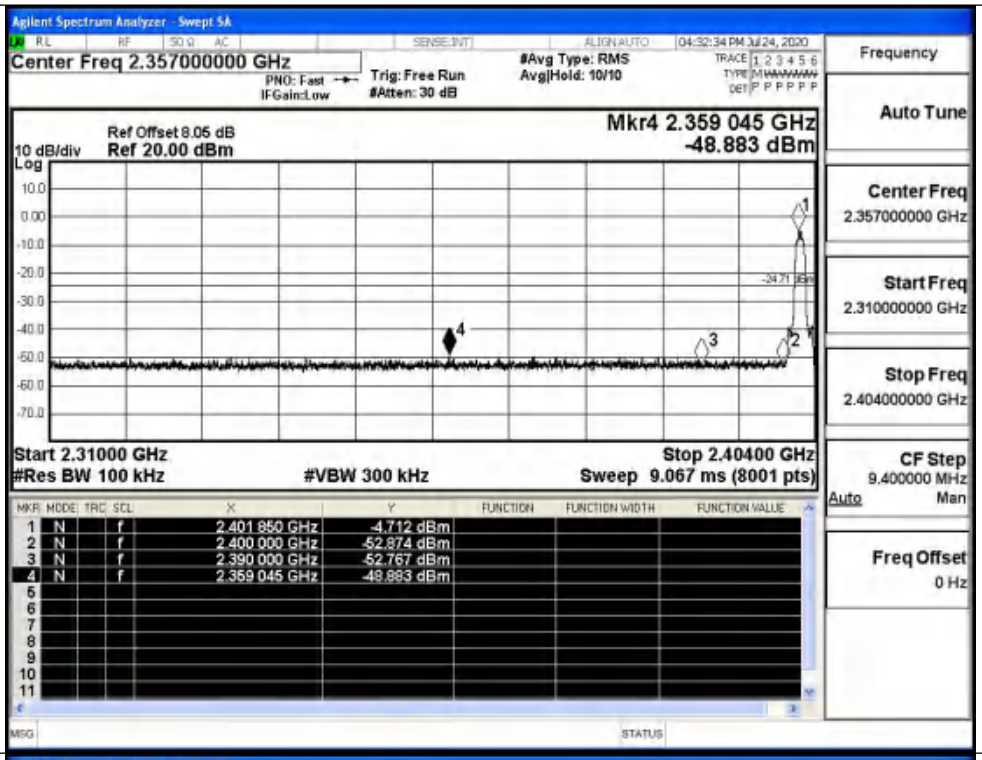
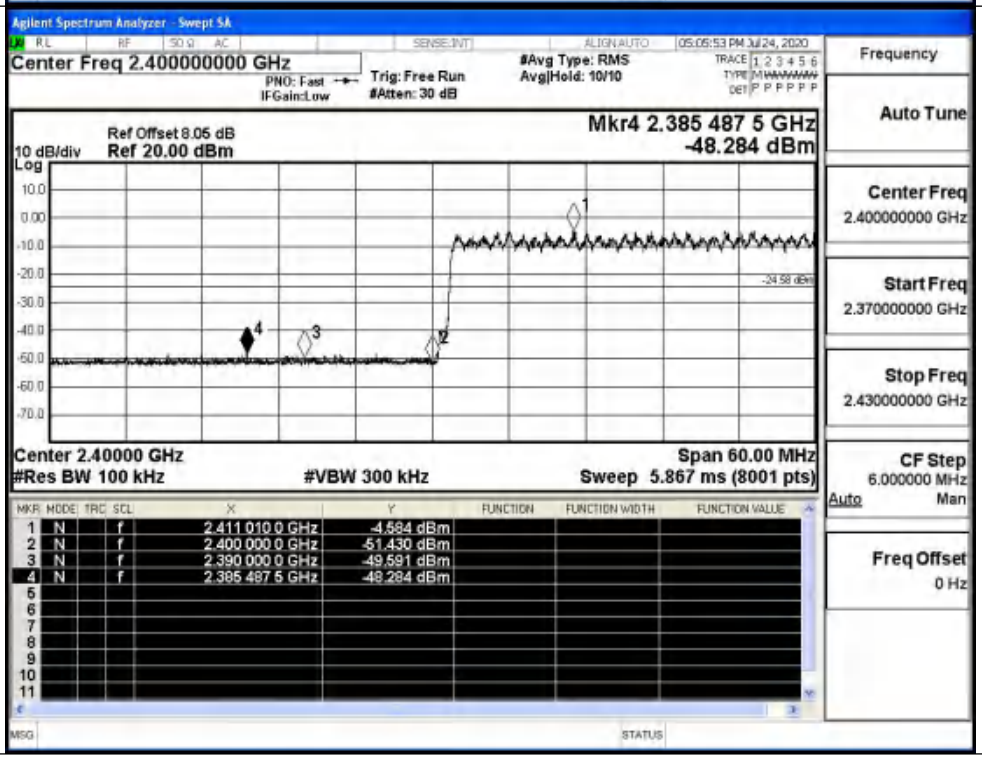
8DPSK_HCH_Graphs		
Pref		
Puw		

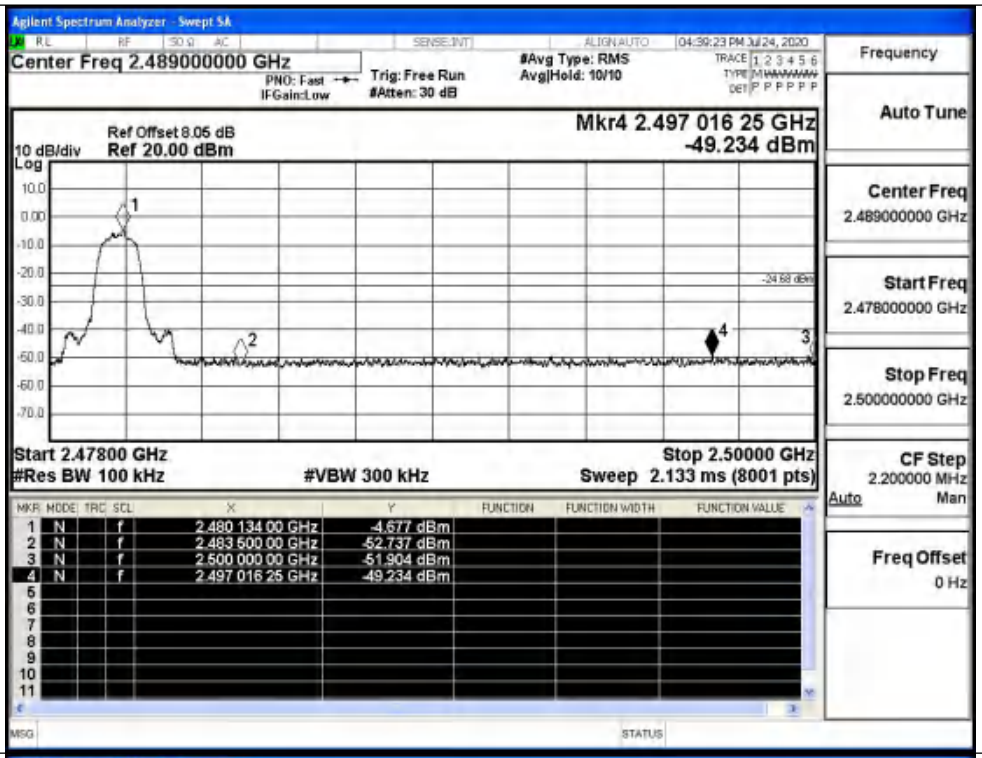
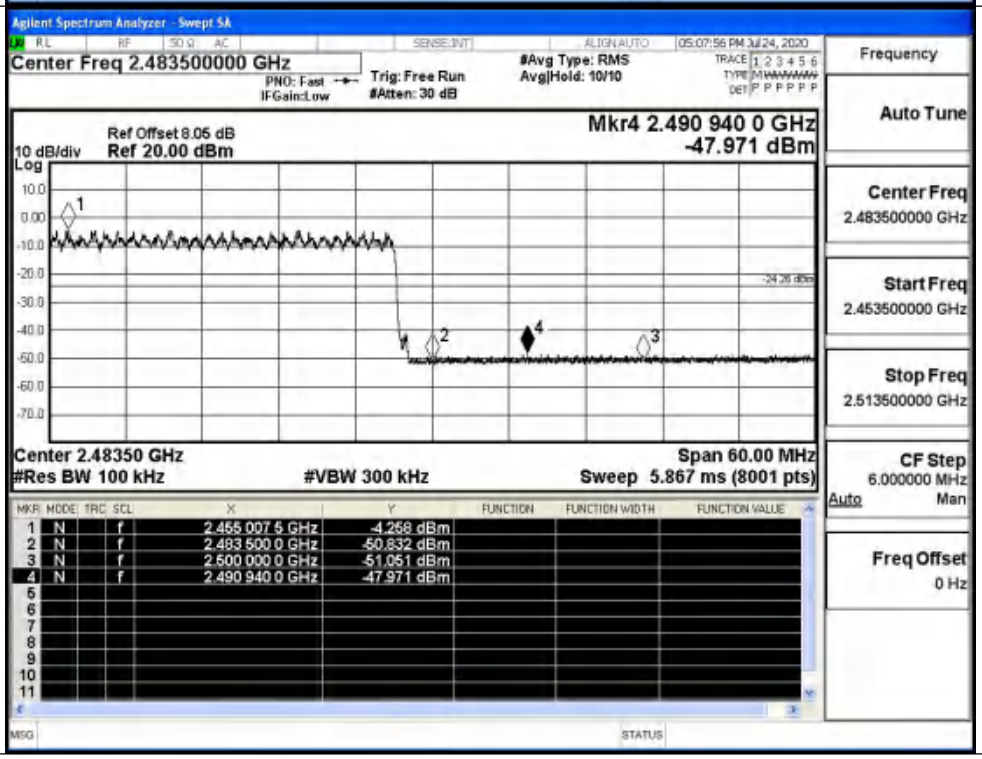
A.7 Band-edge for RF Conducted Emissions

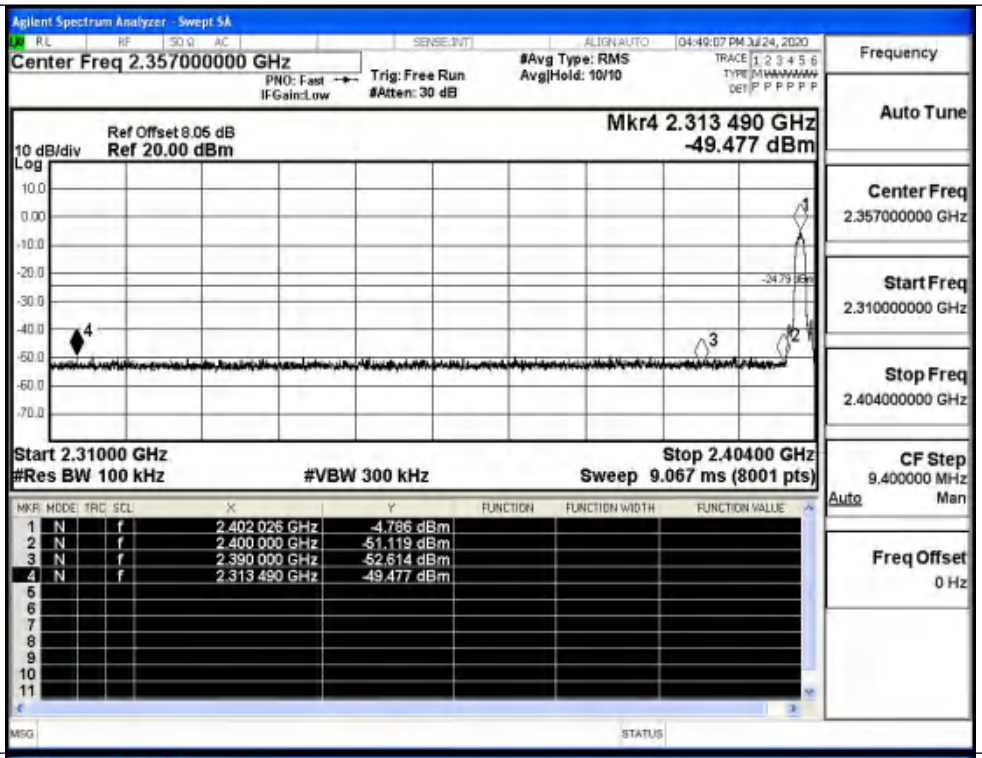
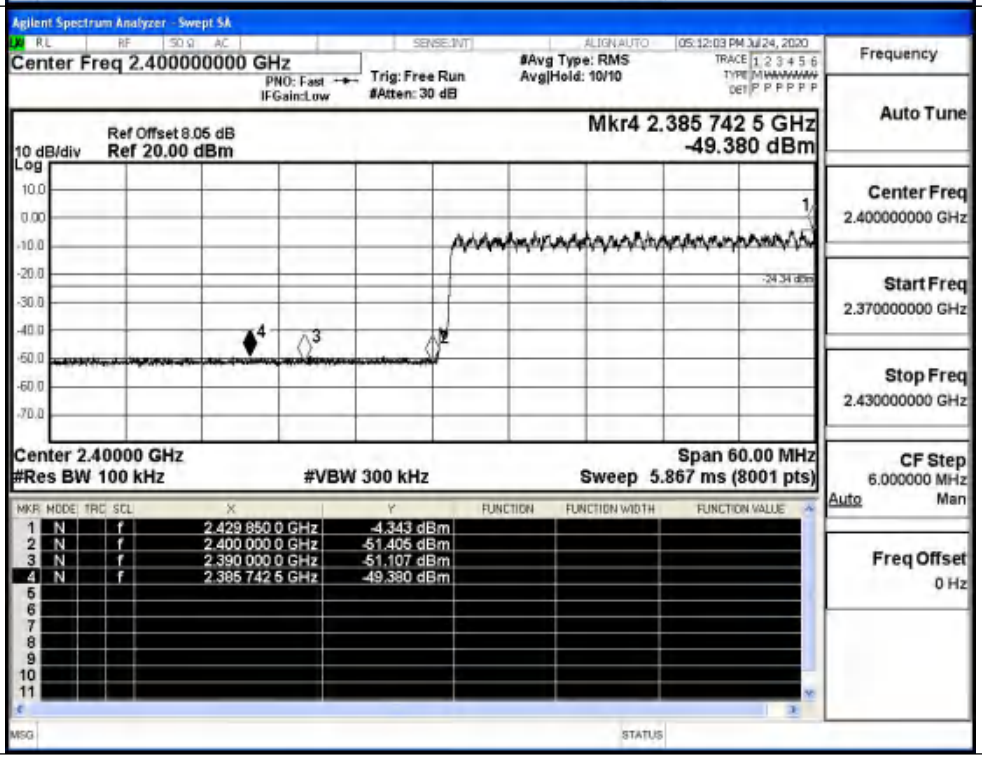
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	2.971	Off	-49.372	-17.03	PASS
			-4.355	On	-49.295	-24.36	PASS
	HCH	2480	-4.400	Off	-48.868	-24.4	PASS
			-4.254	On	-48.695	-24.25	PASS
π/4DQPSK	LCH	2402	-4.712	Off	-48.883	-24.71	PASS
			-4.584	On	-48.284	-24.58	PASS
	HCH	2480	-4.677	Off	-49.234	-24.68	PASS
			-4.258	On	-47.971	-24.26	PASS
8DPSK	LCH	2402	-4.786	Off	-49.477	-24.79	PASS
			-4.343	On	-49.380	-24.34	PASS
	HCH	2480	-4.441	Off	-48.899	-24.44	PASS
			-4.375	On	-47.878	-24.38	PASS

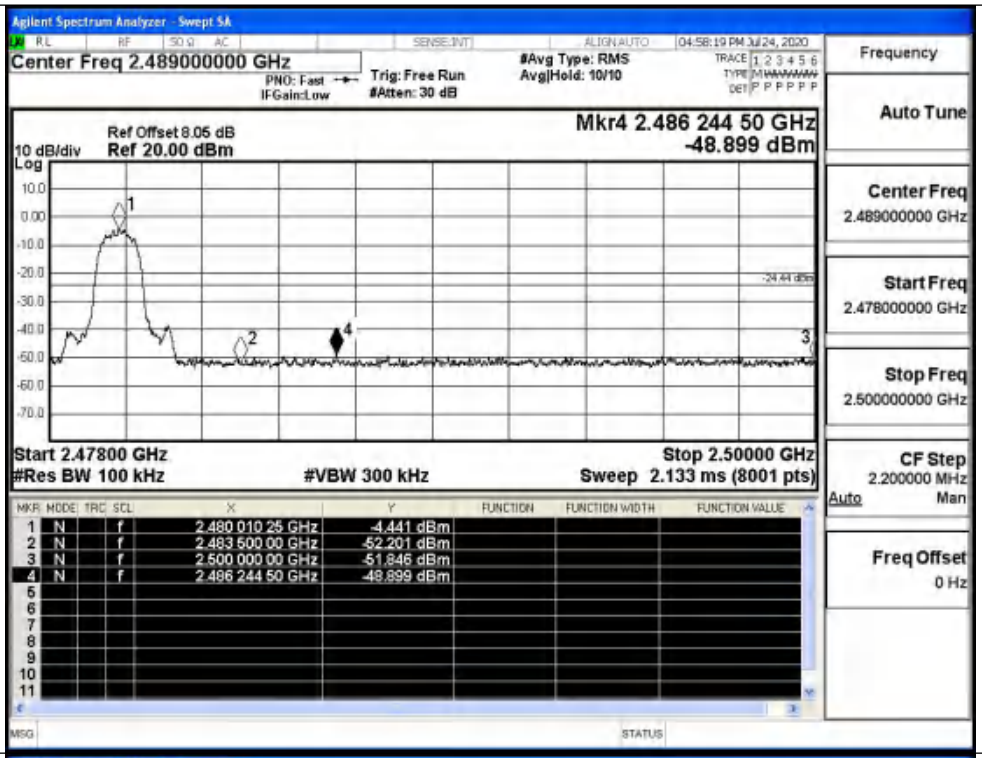
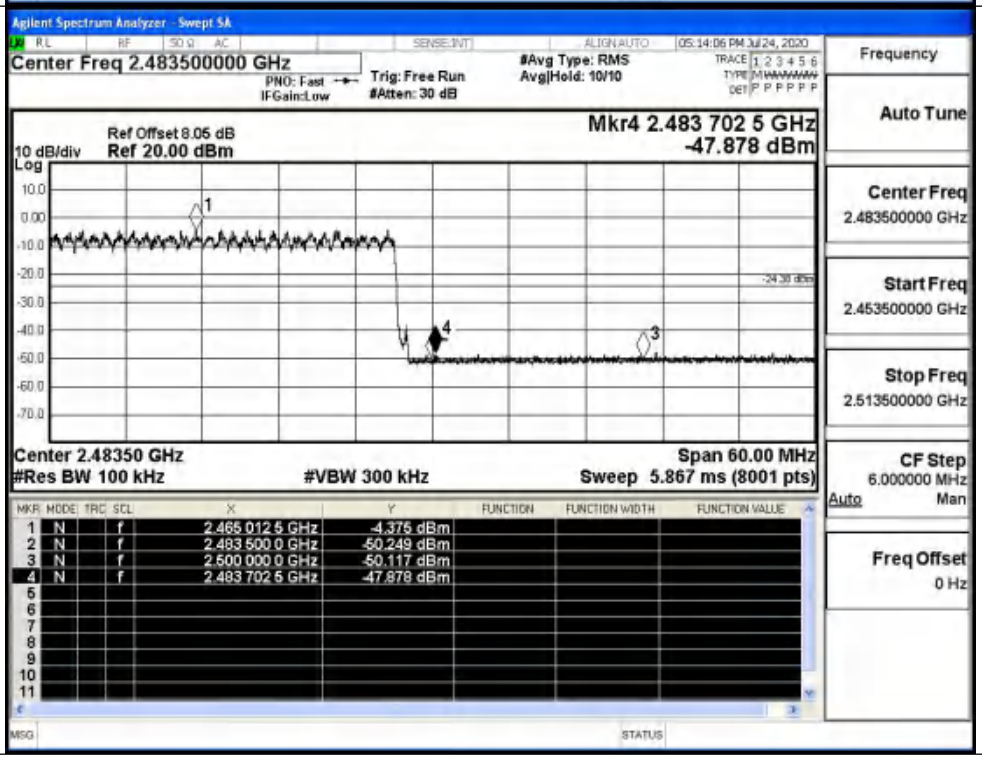
Test Graphs		
GFSK/LCH/No Hop		
GFSK/LCH/Hop		

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	

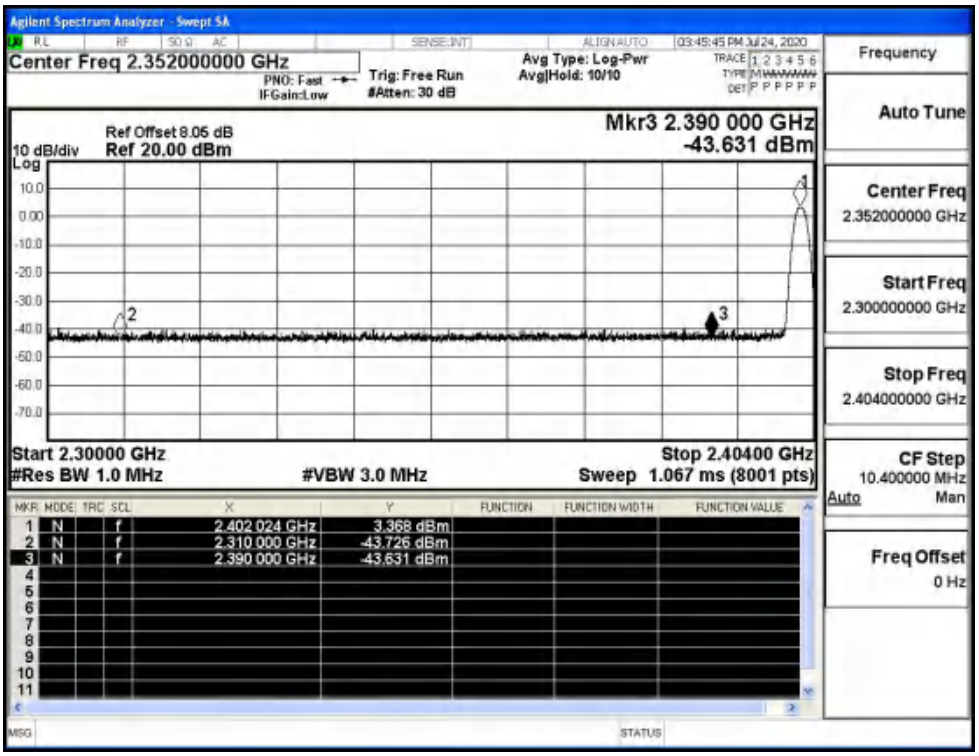
8DPSK/LCH/No Hop	
8DPSK/LCH/Hop	

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

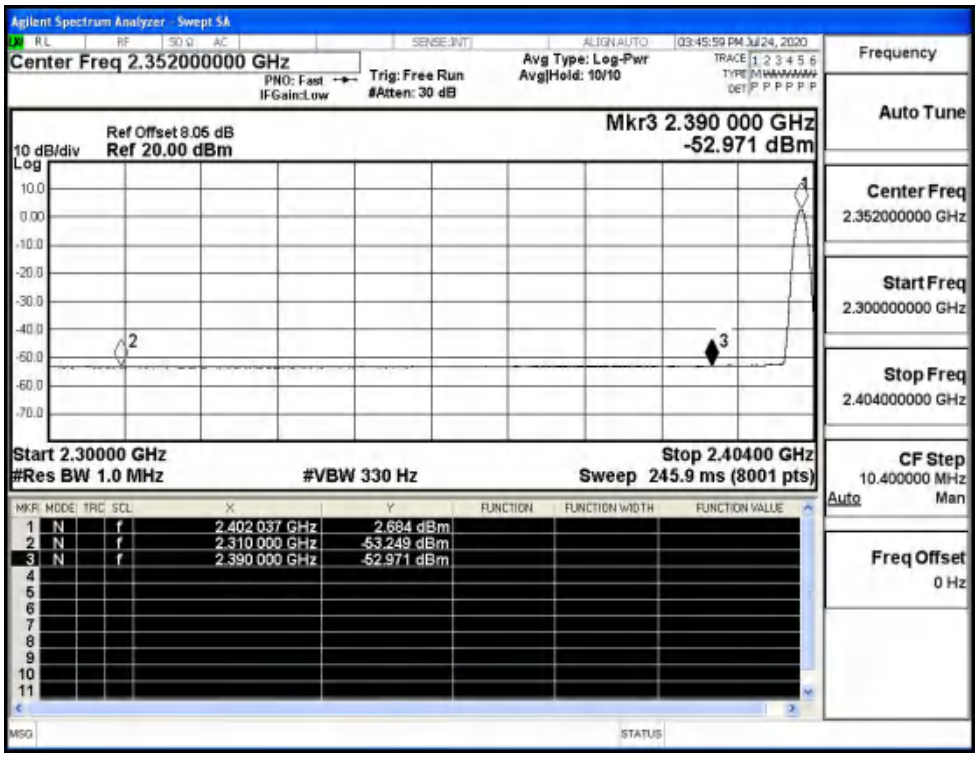
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-43.73	2.5	0	54.00	PEAK	74	PASS
	Off	2310.0	-53.25	2.5	0	44.48	AV	54	PASS
	Off	2390.0	-43.63	2.5	0	54.10	PEAK	74	PASS
	Off	2390.0	-52.97	2.5	0	44.76	AV	54	PASS
	Off	2483.5	-42.06	2.5	0	55.67	PEAK	74	PASS
	Off	2483.5	-52.40	2.5	0	45.33	AV	54	PASS
	Off	2500.0	-42.61	2.5	0	55.12	PEAK	74	PASS
	Off	2500.0	-52.26	2.5	0	45.47	AV	54	PASS
π/4DQPSK	Off	2310.0	-42.44	2.5	0	55.29	PEAK	74	PASS
	Off	2310.0	-53.15	2.5	0	44.58	AV	54	PASS
	Off	2390.0	-43.74	2.5	0	53.99	PEAK	74	PASS
	Off	2390.0	-52.97	2.5	0	44.76	AV	54	PASS
	Off	2483.5	-41.83	2.5	0	55.90	PEAK	74	PASS
	Off	2483.5	-52.33	2.5	0	45.40	AV	54	PASS
	Off	2500.0	-40.52	2.5	0	57.21	PEAK	74	PASS
	Off	2500.0	-52.23	2.5	0	45.50	AV	54	PASS
8DPSK	Off	2310.0	-43.68	2.5	0	54.05	PEAK	74	PASS
	Off	2310.0	-53.31	2.5	0	44.42	AV	54	PASS
	Off	2390.0	-42.45	2.5	0	55.28	PEAK	74	PASS
	Off	2390.0	-52.74	2.5	0	44.99	AV	54	PASS
	Off	2483.5	-41.96	2.5	0	55.77	PEAK	74	PASS
	Off	2483.5	-52.42	2.5	0	45.31	AV	54	PASS
	Off	2500.0	-42.61	2.5	0	55.12	PEAK	74	PASS
	Off	2500.0	-52.28	2.5	0	45.45	AV	54	PASS

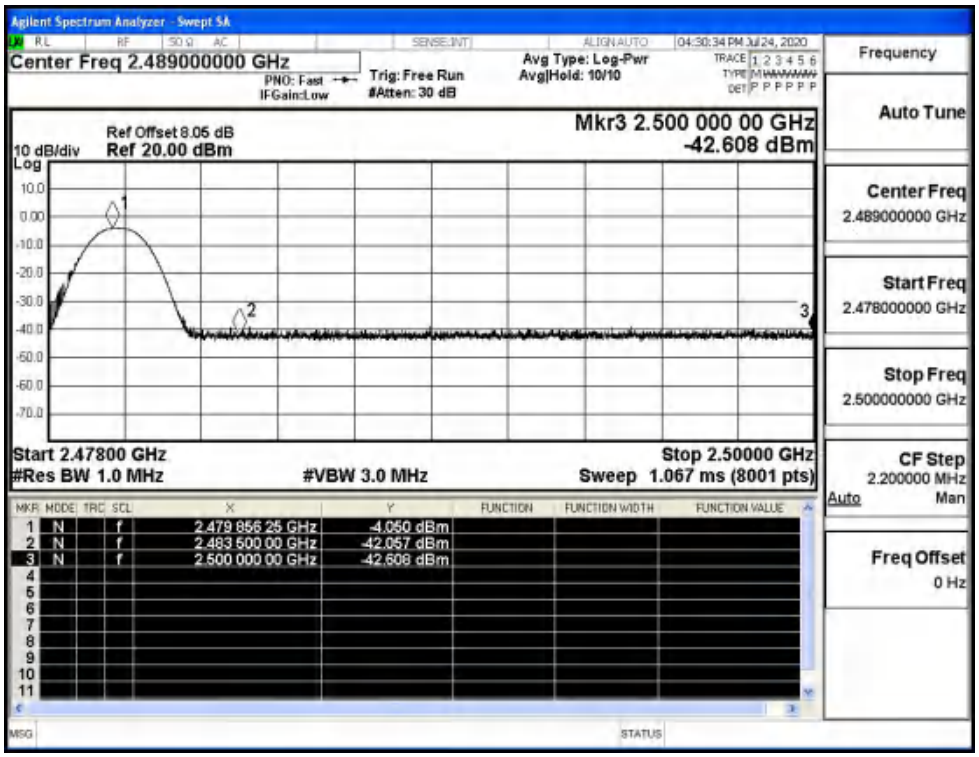
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (Low Channel)



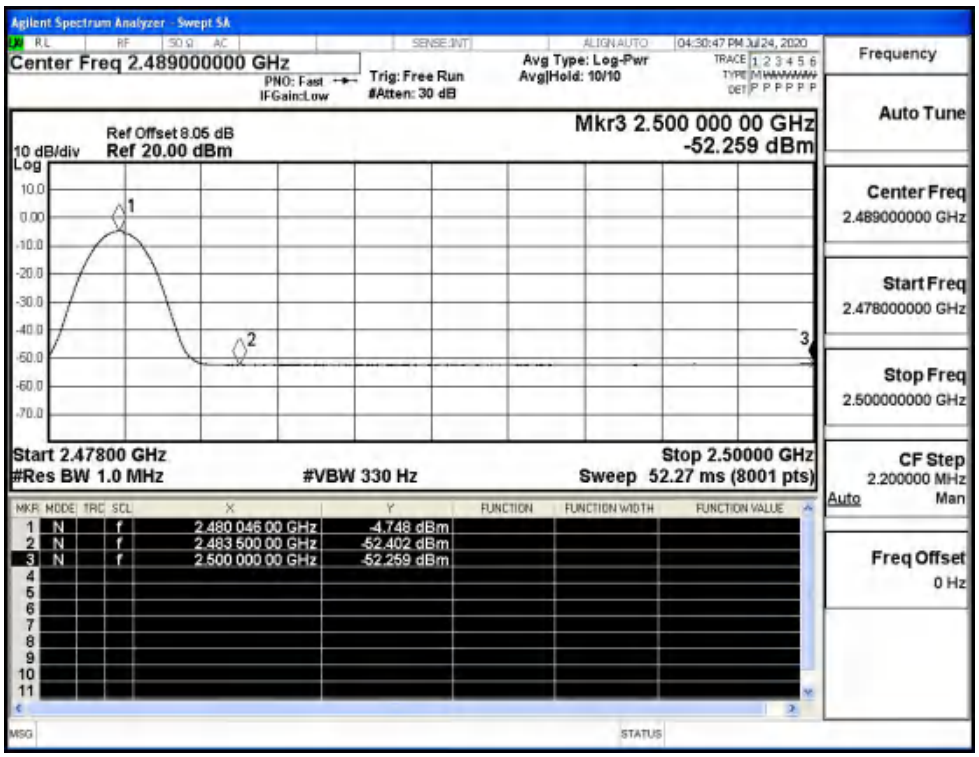
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (Low Channel)



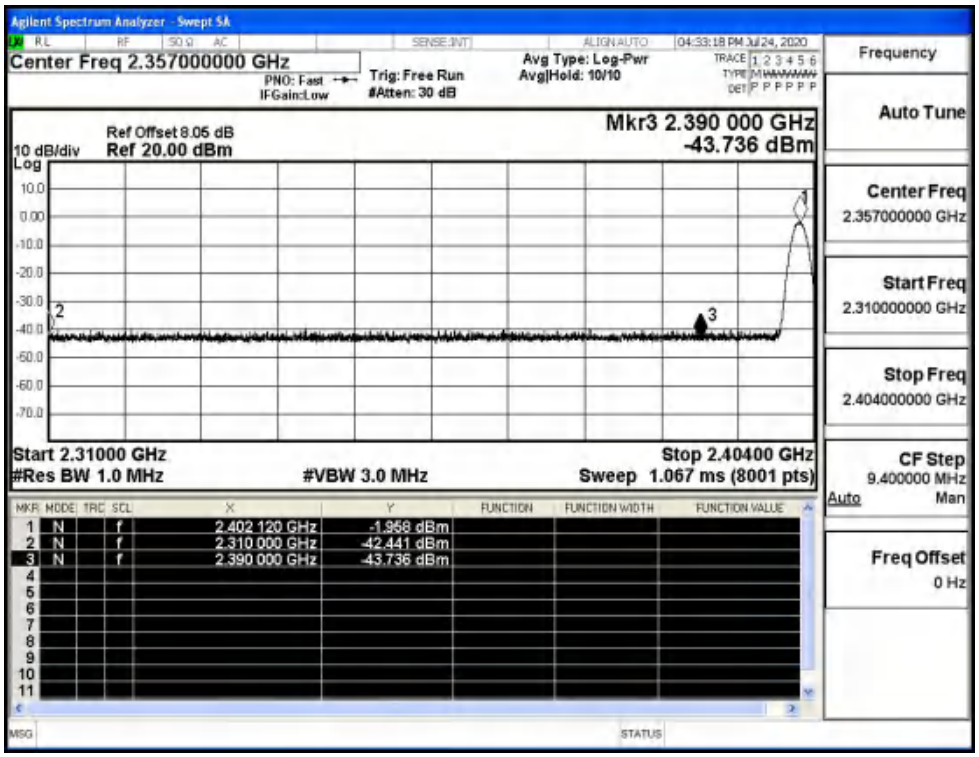
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (High Channel)



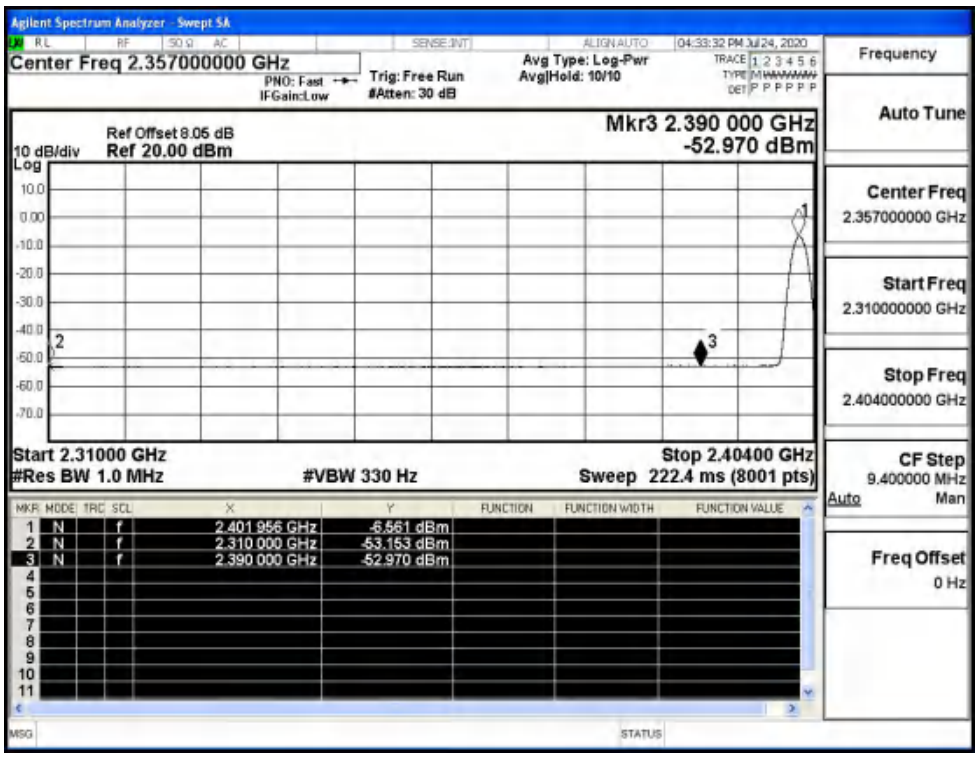
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (High Channel)



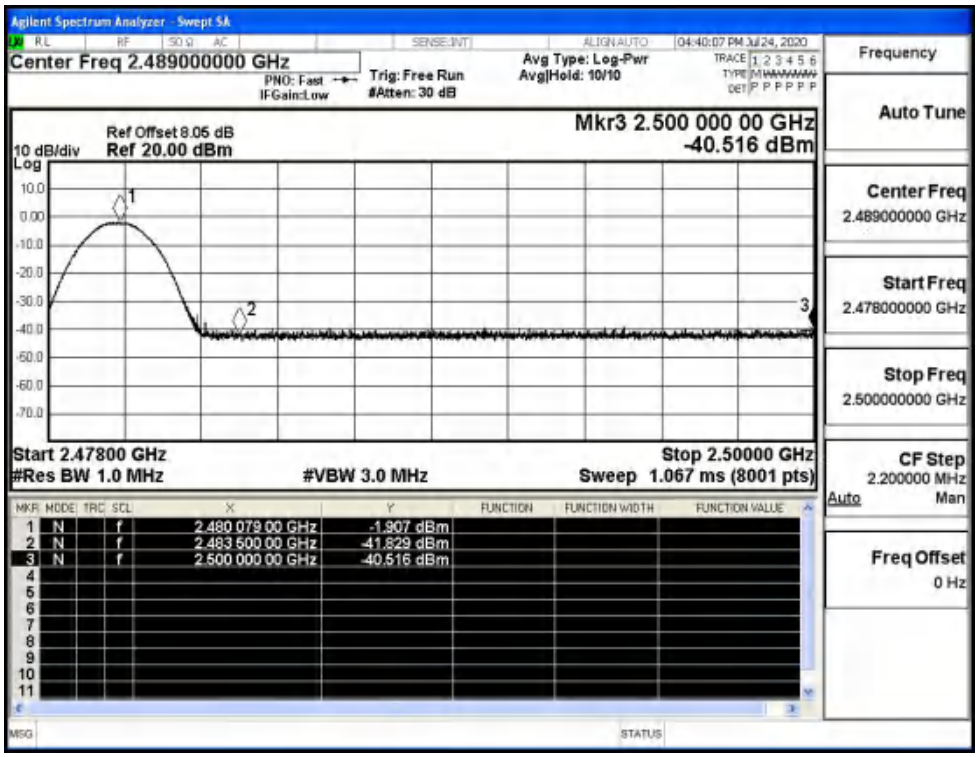
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (Low Channel)



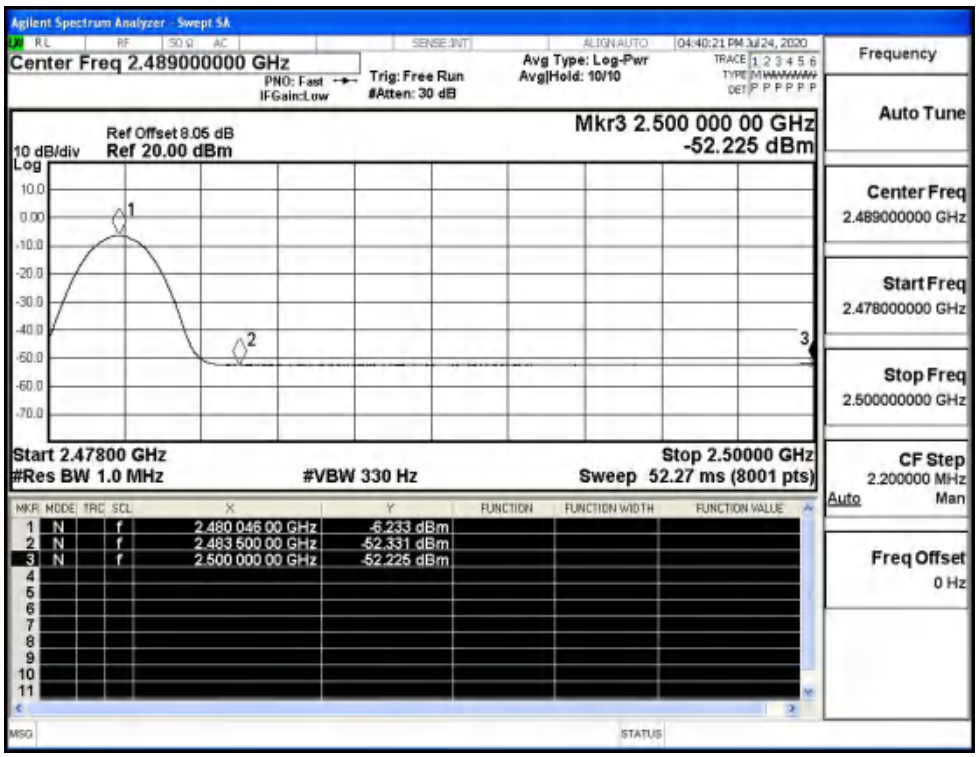
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (Low Channel)



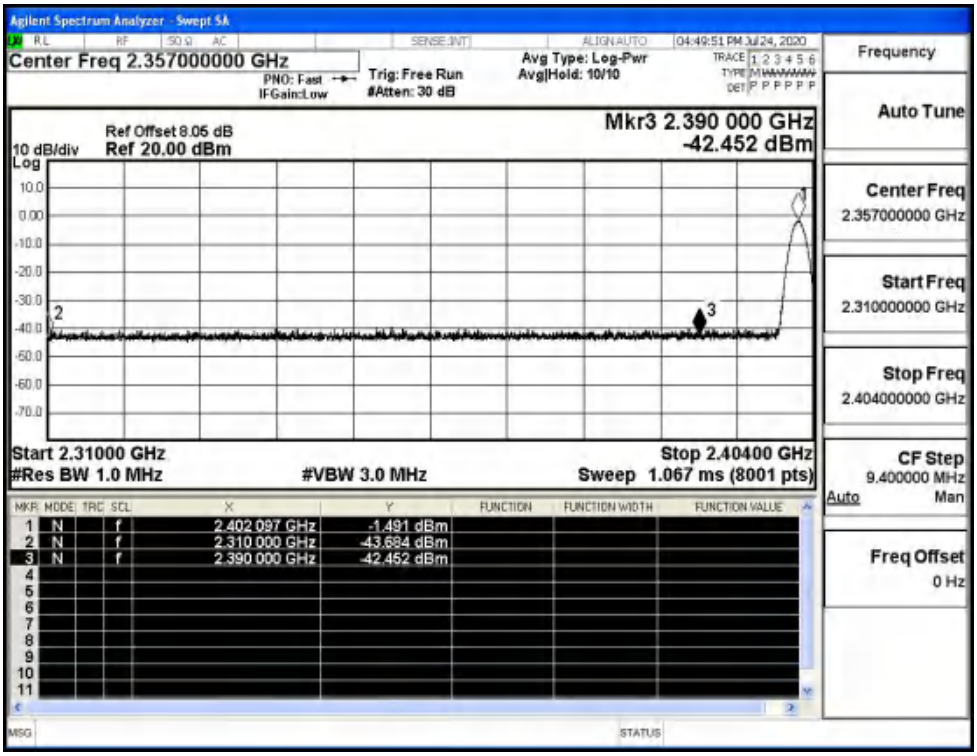
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (High Channel)



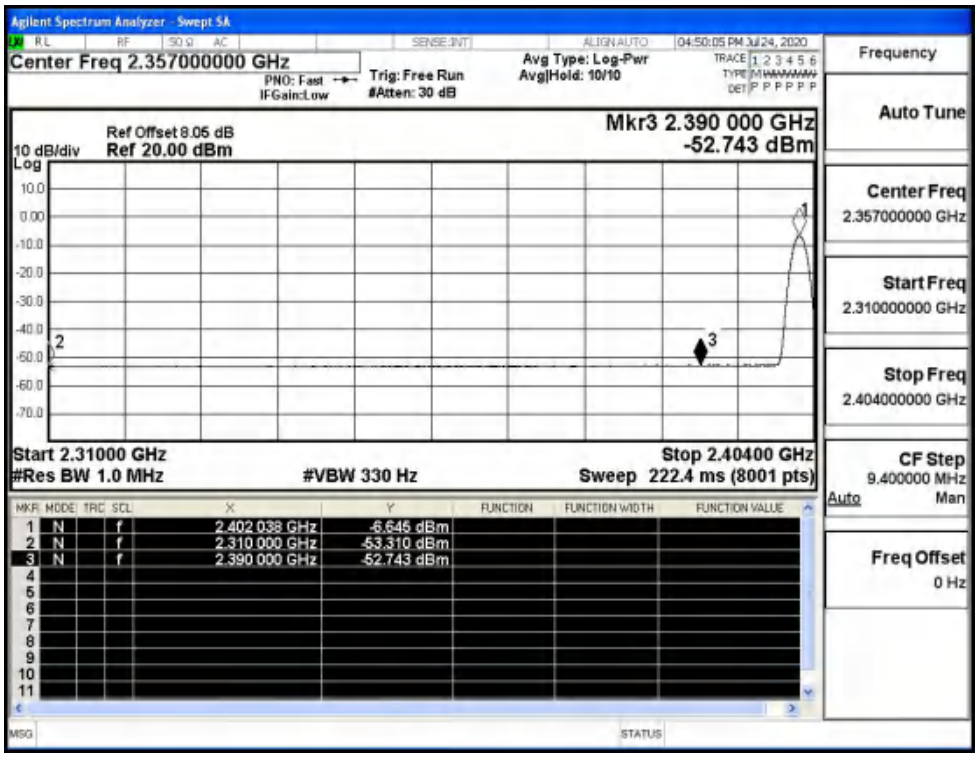
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (High Channel)



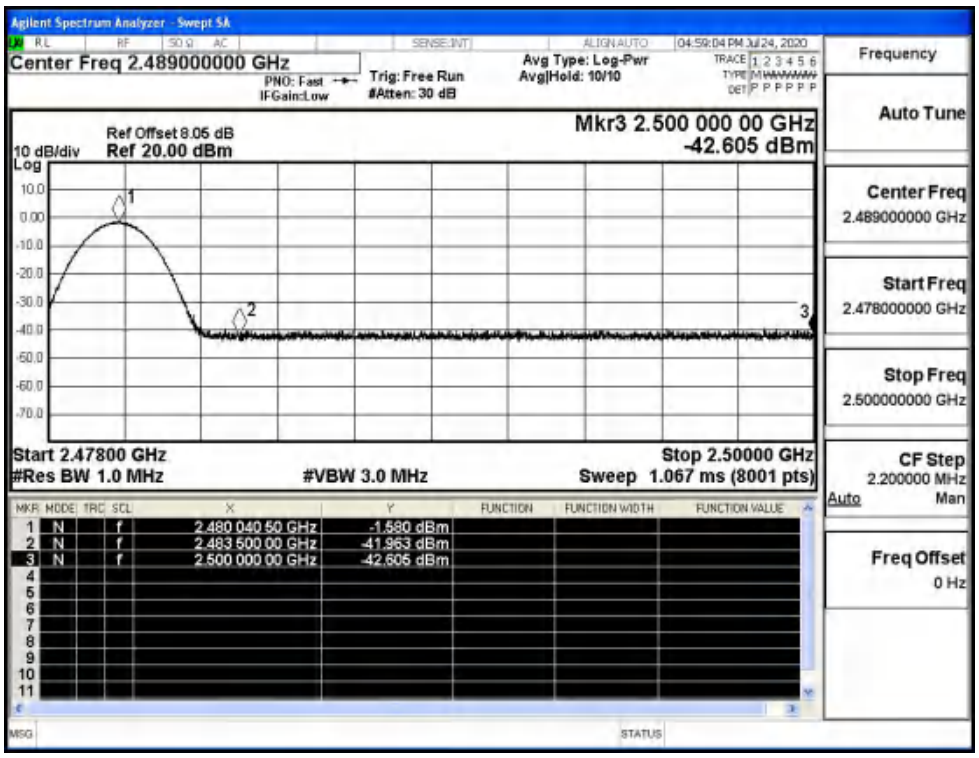
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)