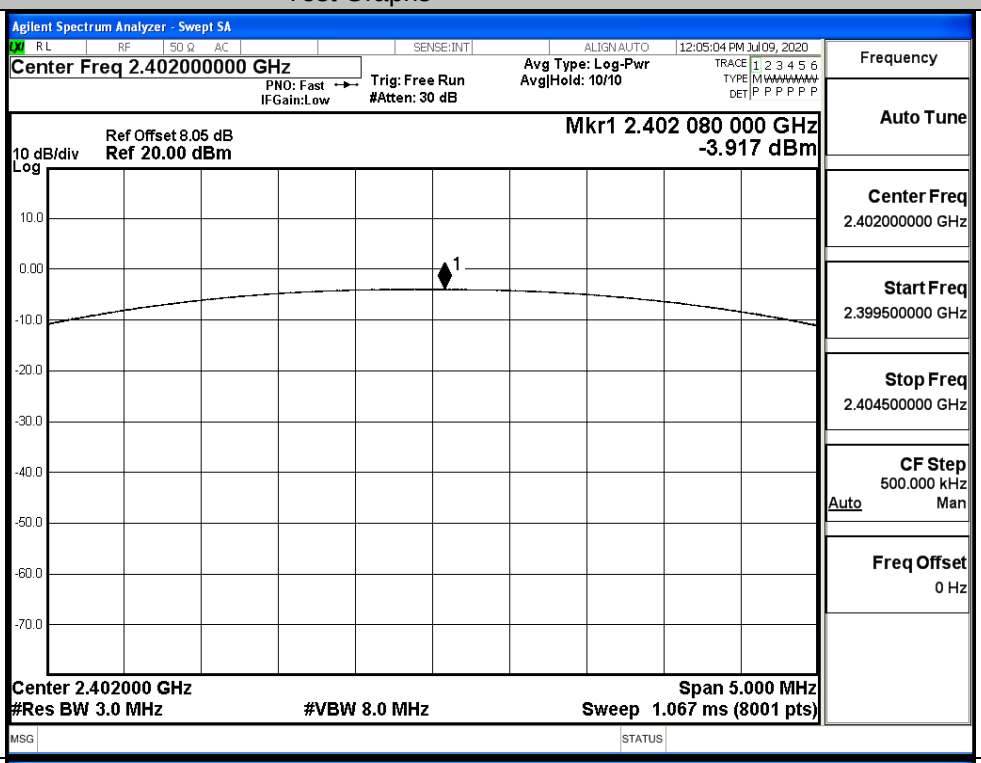
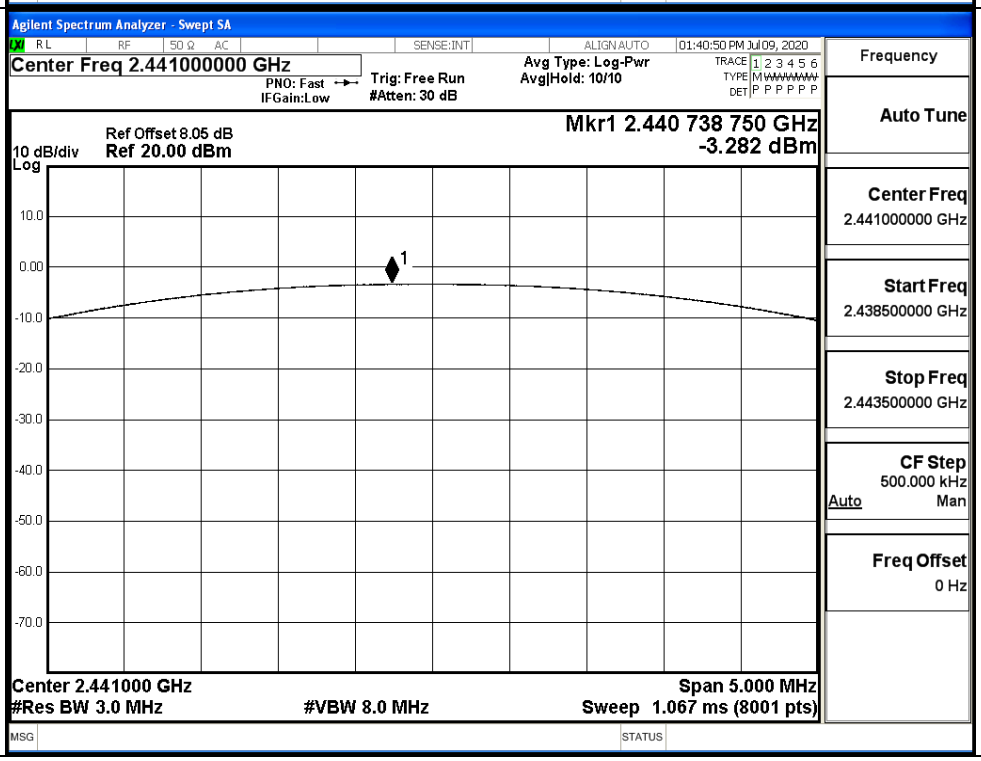
Appendix A
RF Test Data for BT V5.0(BDR/EDR) (Conducted Measurement)
Product Name: Communicator
Trade Mark: N/A
Test Model: Communicator 3

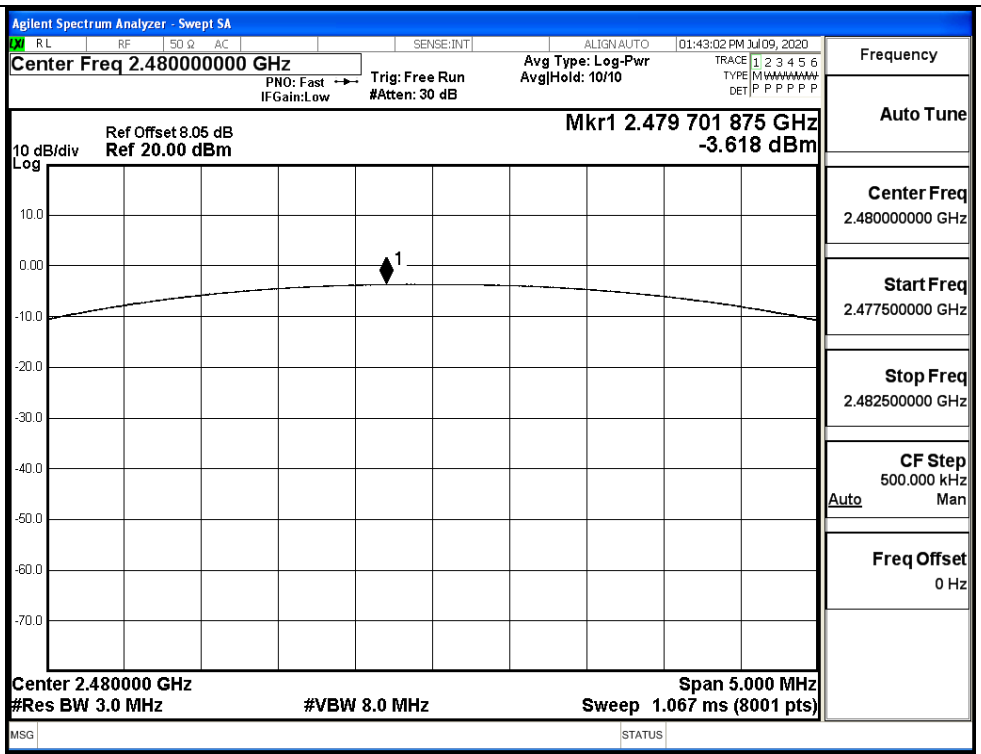
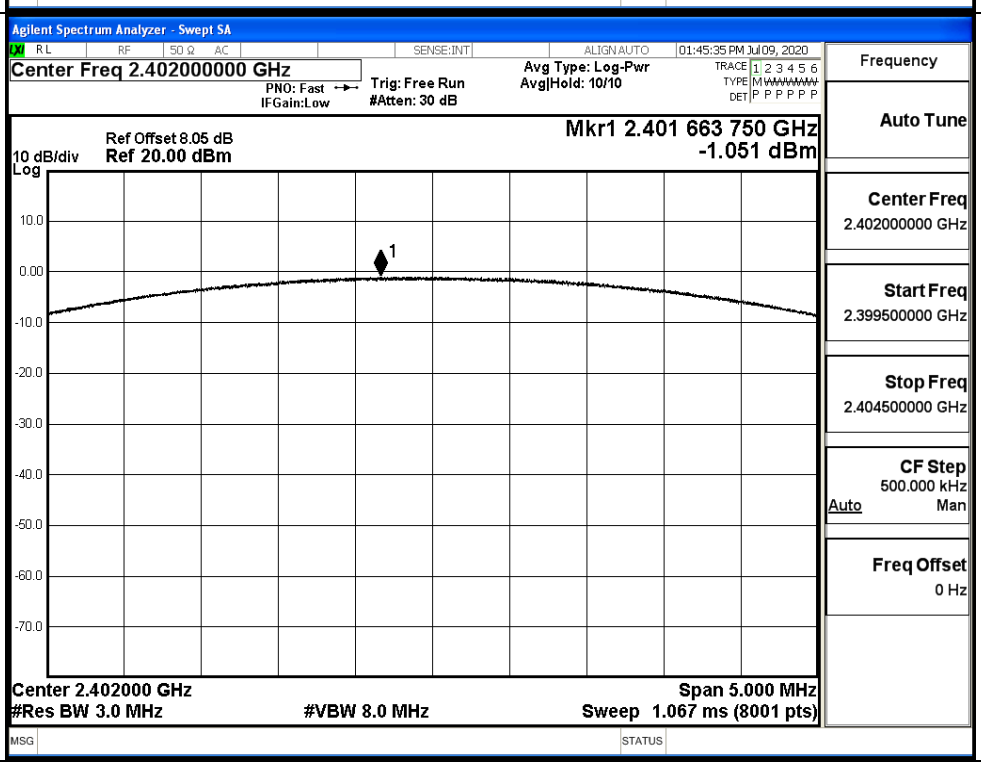
Environmental Conditions

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

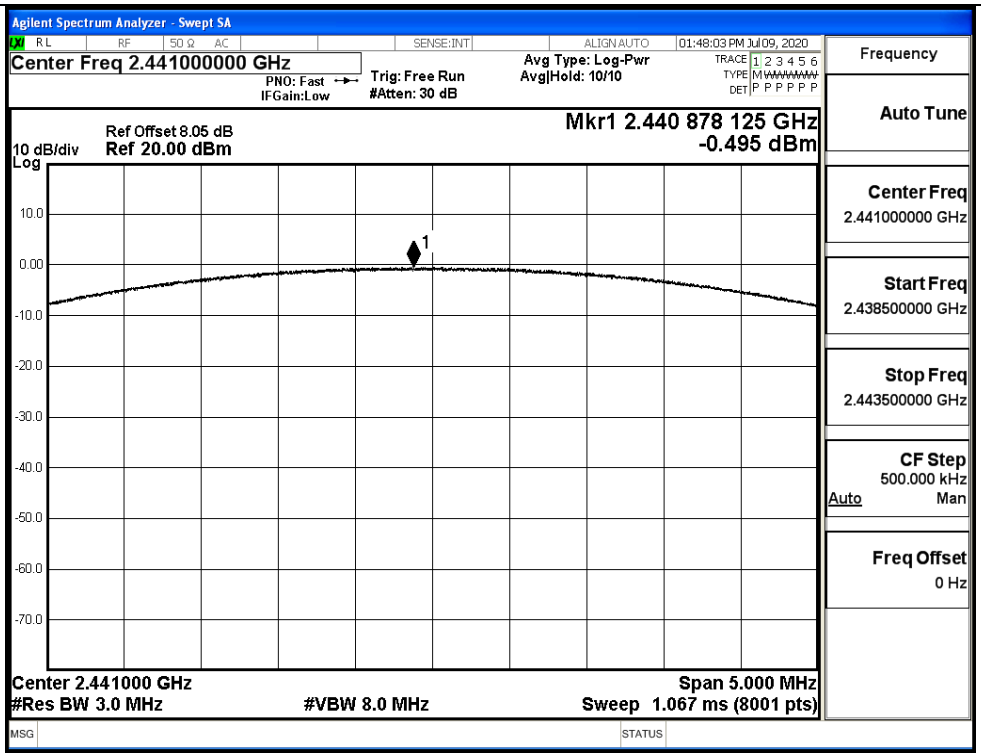
A.1 Maxmum Conducted Peak Output Power

Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-3.917	30	PASS
	MCH	-3.282	30	PASS
	HCH	-3.618	30	PASS
π/4DQPSK	LCH	-1.051	21	PASS
	MCH	-0.495	21	PASS
	HCH	-0.973	21	PASS
8DPSK	LCH	-0.209	21	PASS
	MCH	0.296	21	PASS
	HCH	-0.247	21	PASS

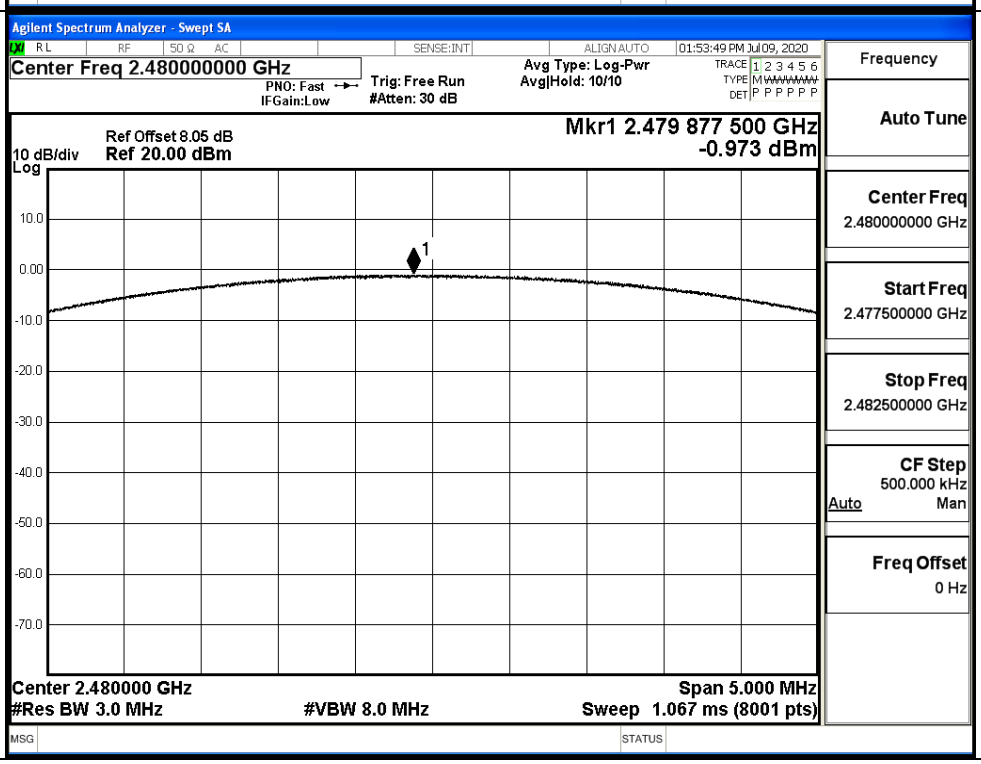
Test Graphs	
GFSK/LCH	
GFSK/MCH	

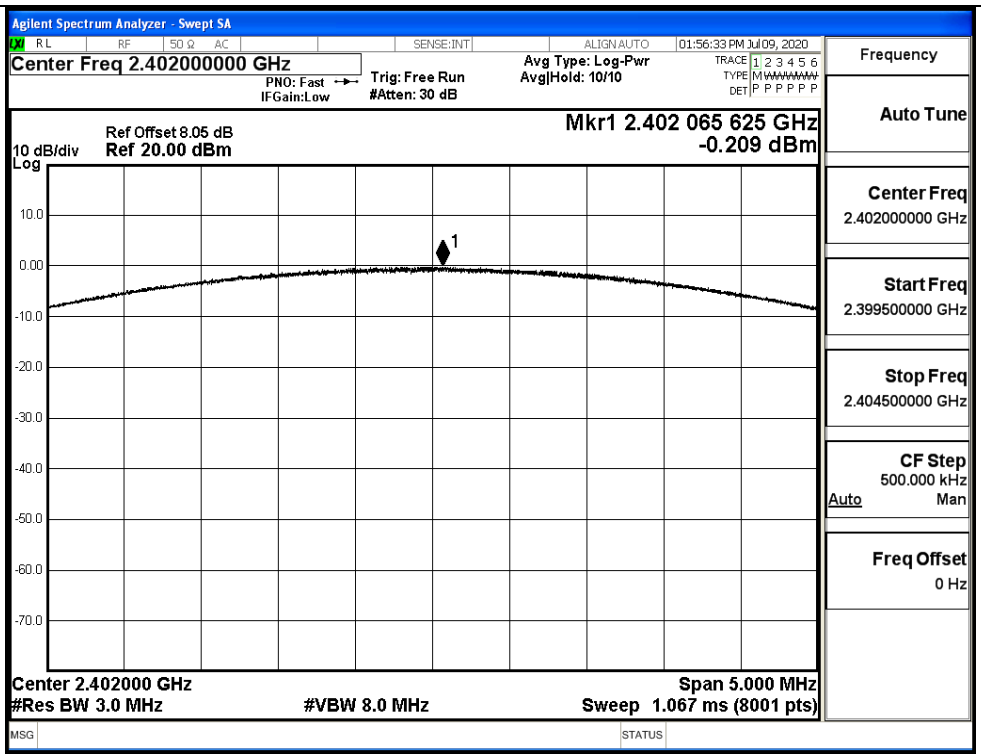
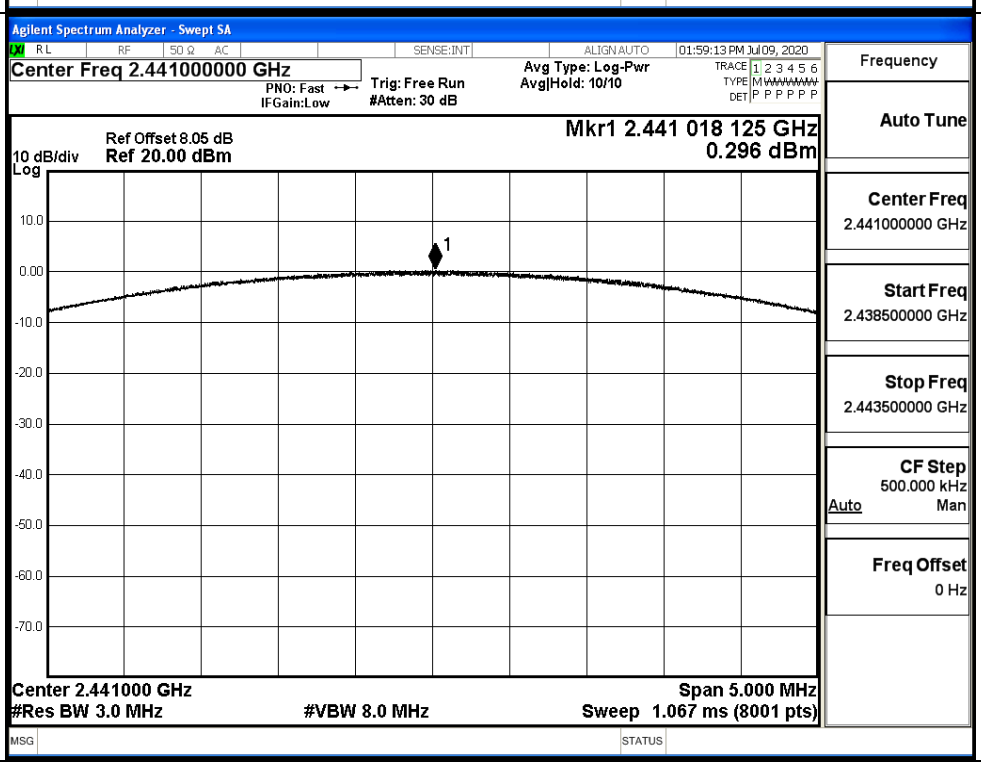
GFSK/HCH	
π/4DQPSK/LCH	

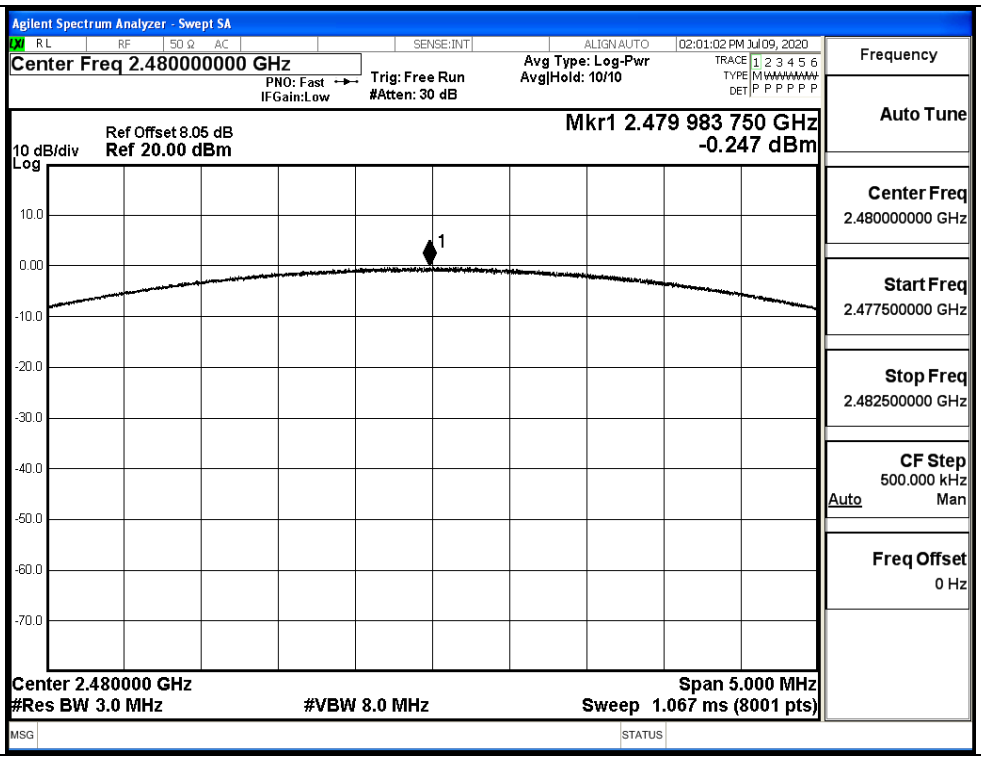
π/4DQPSK/MCH



π/4DQPSK/HCH



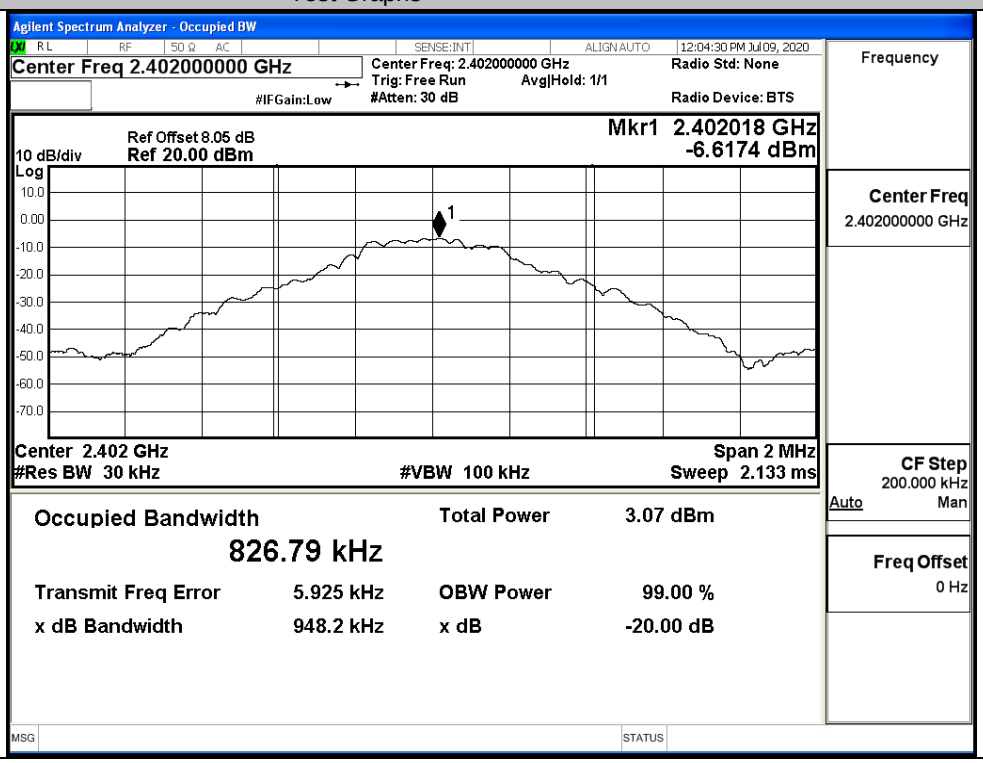
8DPSK/LCH	
8DPSK/MCH	

8DPSK/HCH	

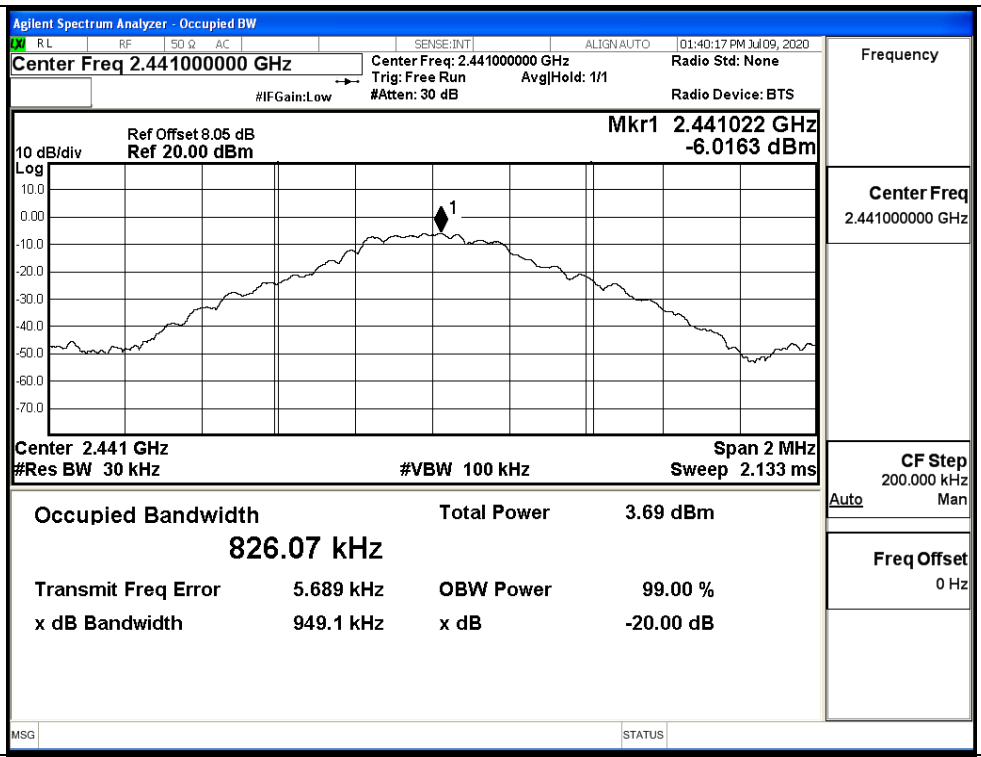
Agilent Spectrum Analyzer - Swept SA
Center Freq 2.480000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 10/10
02:01:02 PM Jul 09, 2020
Ref Offset 8.05 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr1 2.479 983 750 GHz
-0.247 dBm
Center 2.480000 GHz
#Res BW 3.0 MHz
#VBW 8.0 MHz
Span 5.000 MHz
Sweep 1.067 ms (8001 pts)
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

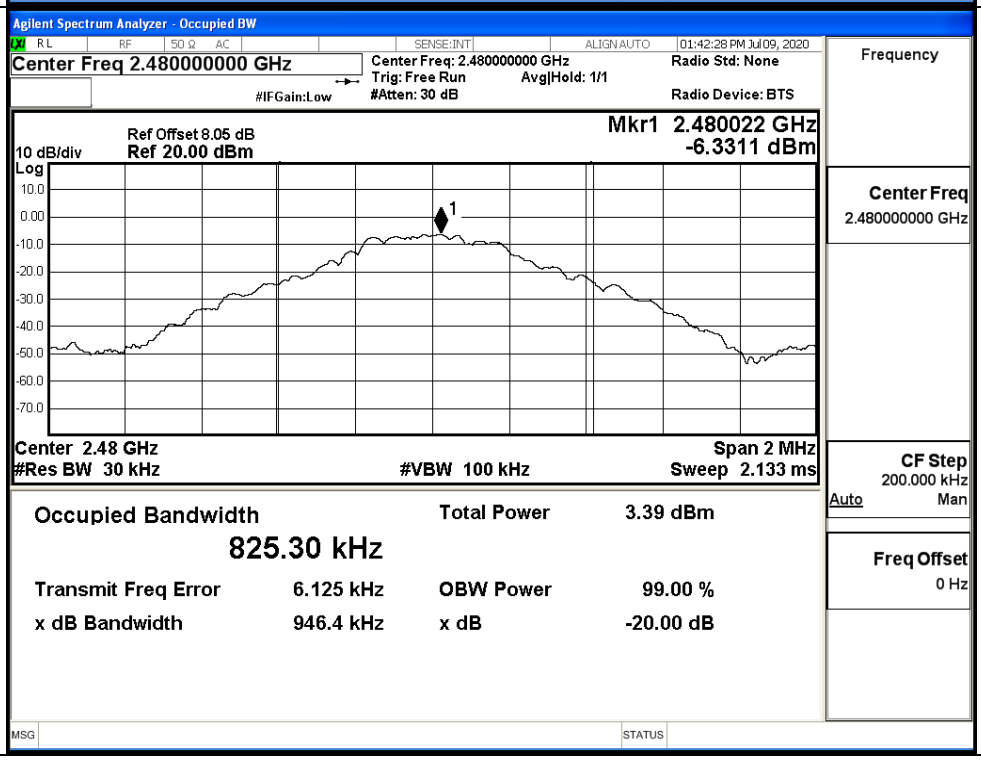
Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.9482	Not Specified	PASS
	MCH	0.9491	Not Specified	PASS
	HCH	0.9464	Not Specified	PASS
π/4DQPSK	LCH	1.321	Not Specified	PASS
	MCH	1.323	Not Specified	PASS
	HCH	1.323	Not Specified	PASS
8DPSK	LCH	1.290	Not Specified	PASS
	MCH	1.289	Not Specified	PASS
	HCH	1.292	Not Specified	PASS

Test Graphs	
GFSK/LCH	

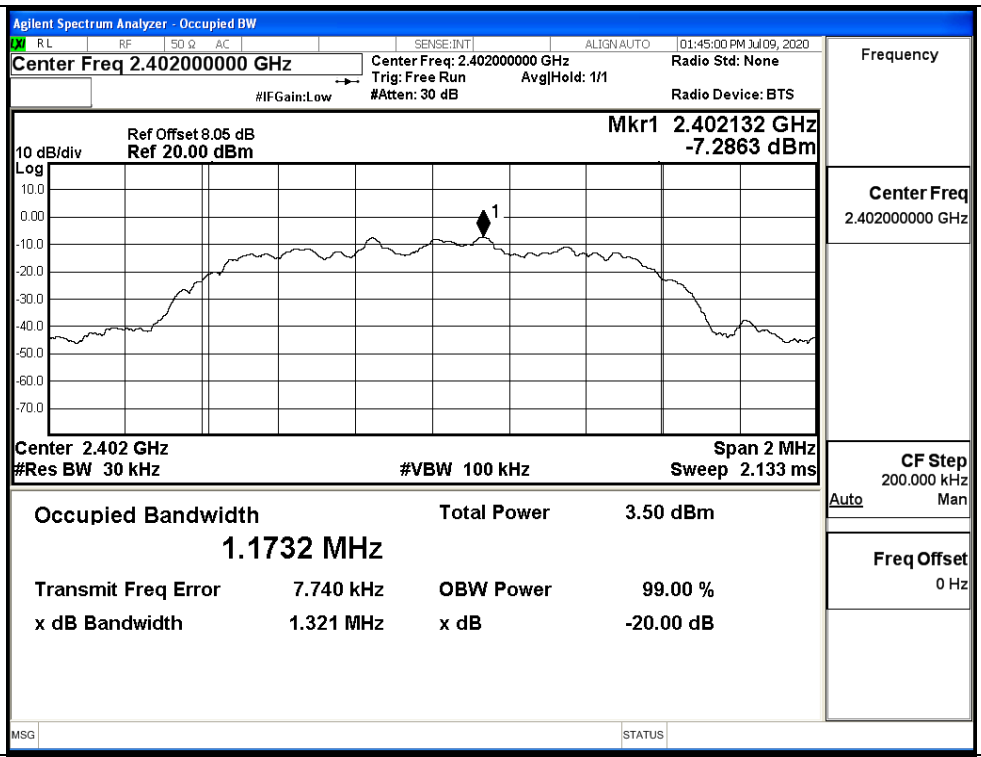
GFSK/MCH



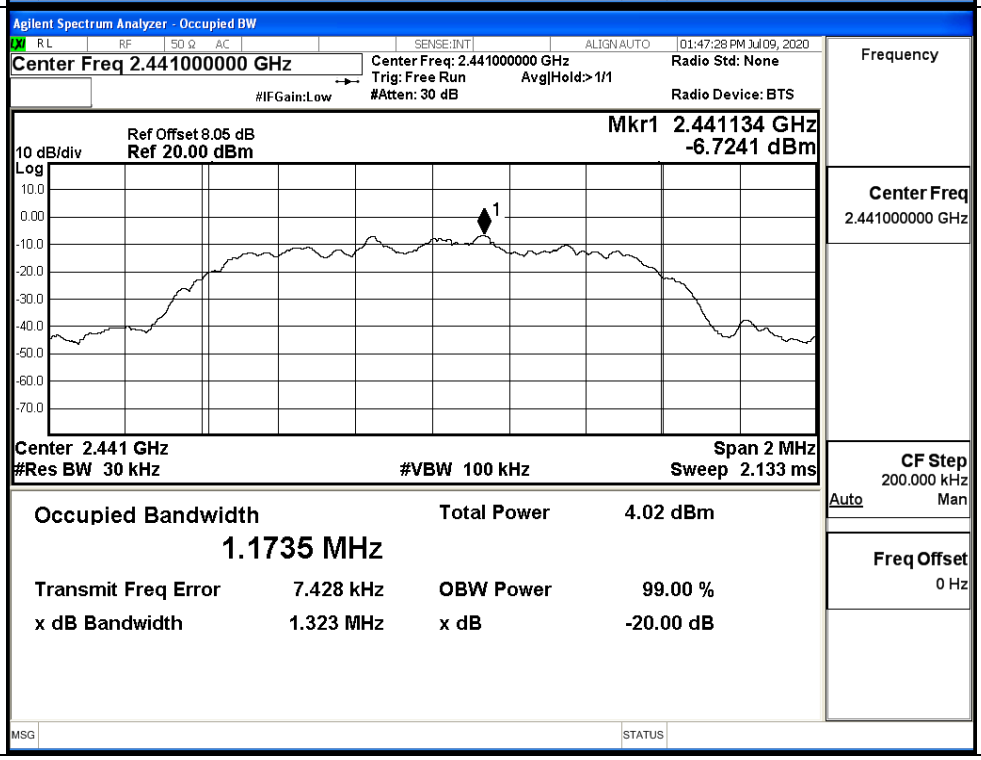
GFSK/HCH



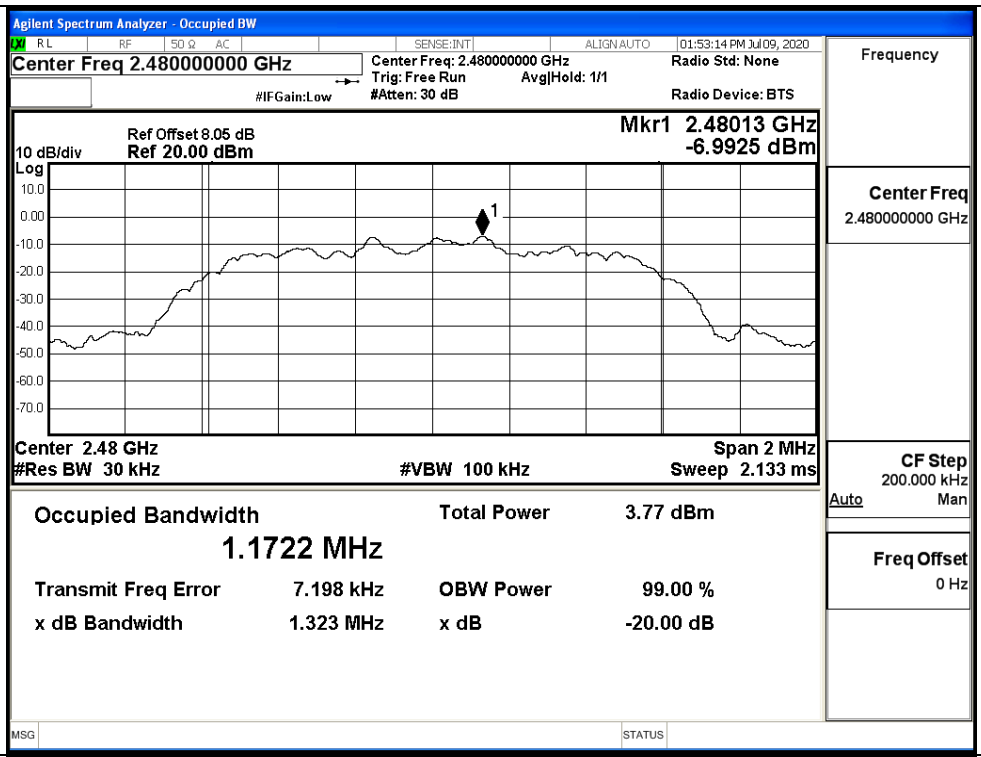
π/4DQPSK/LCH



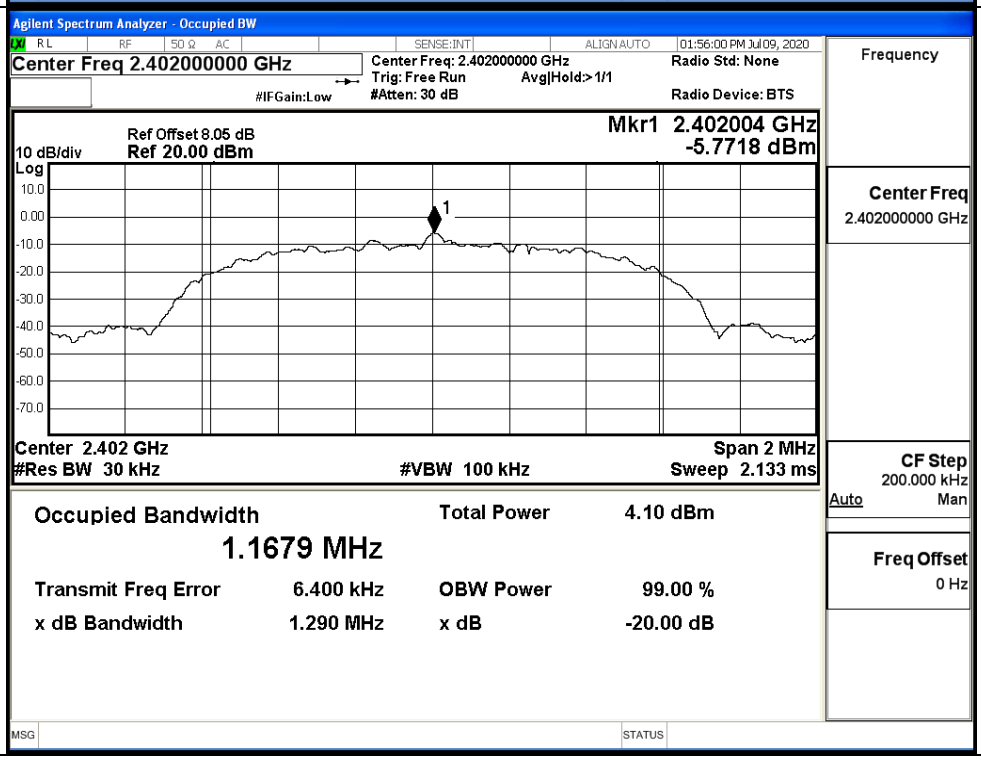
π/4DQPSK/MCH

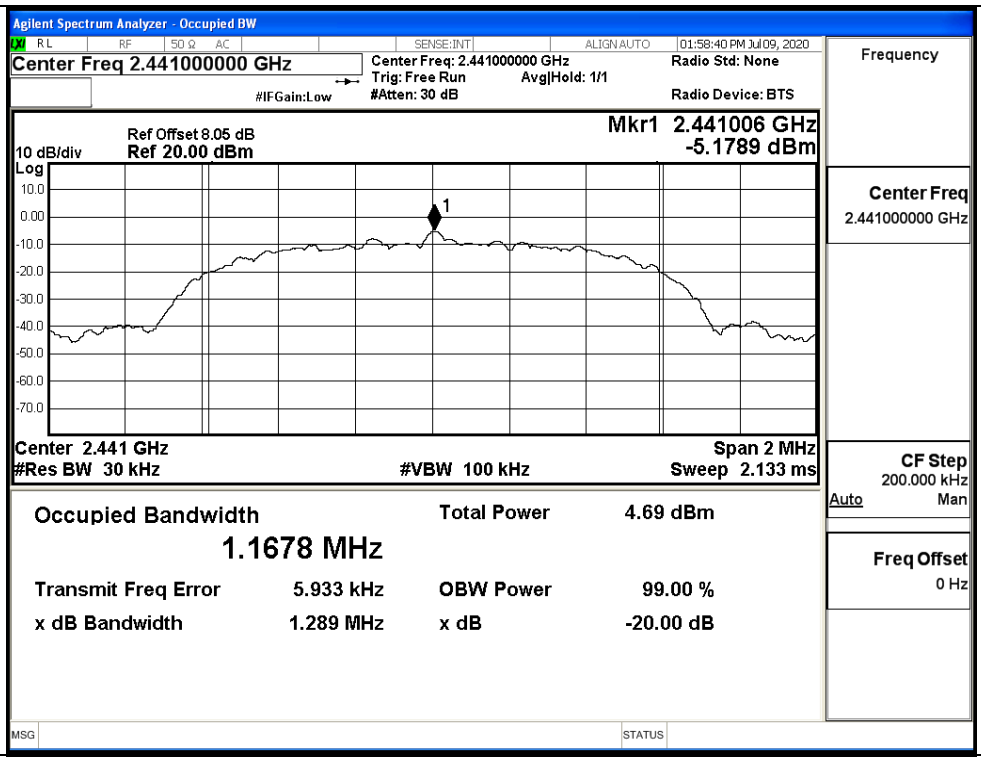
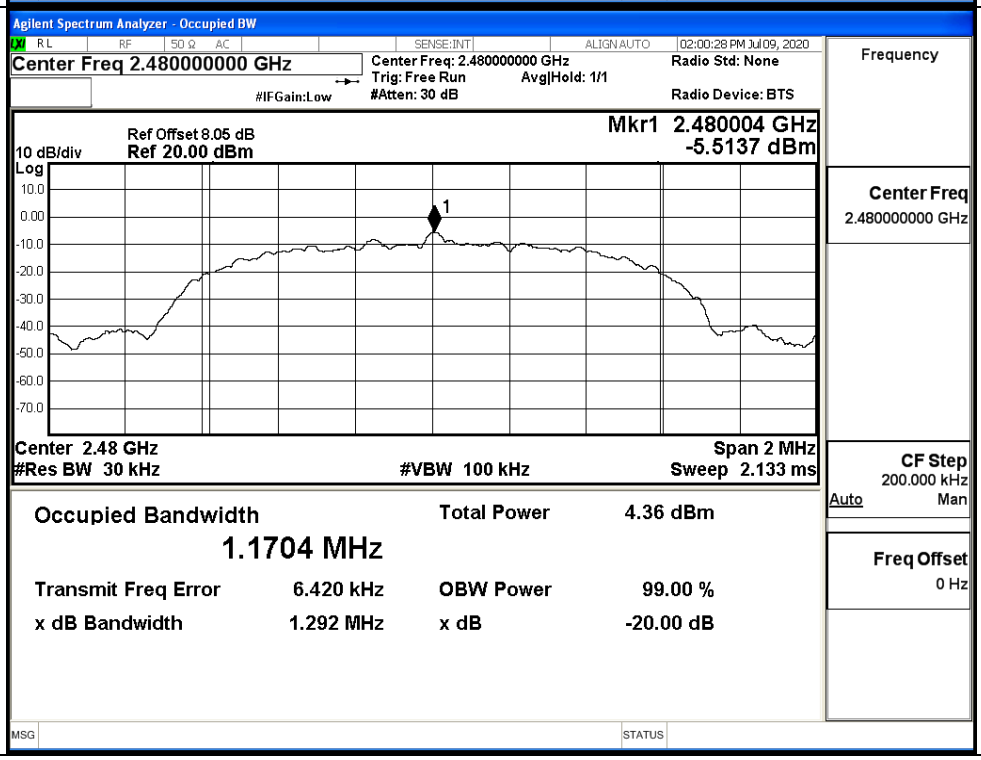


π/4DQPSK/HCH



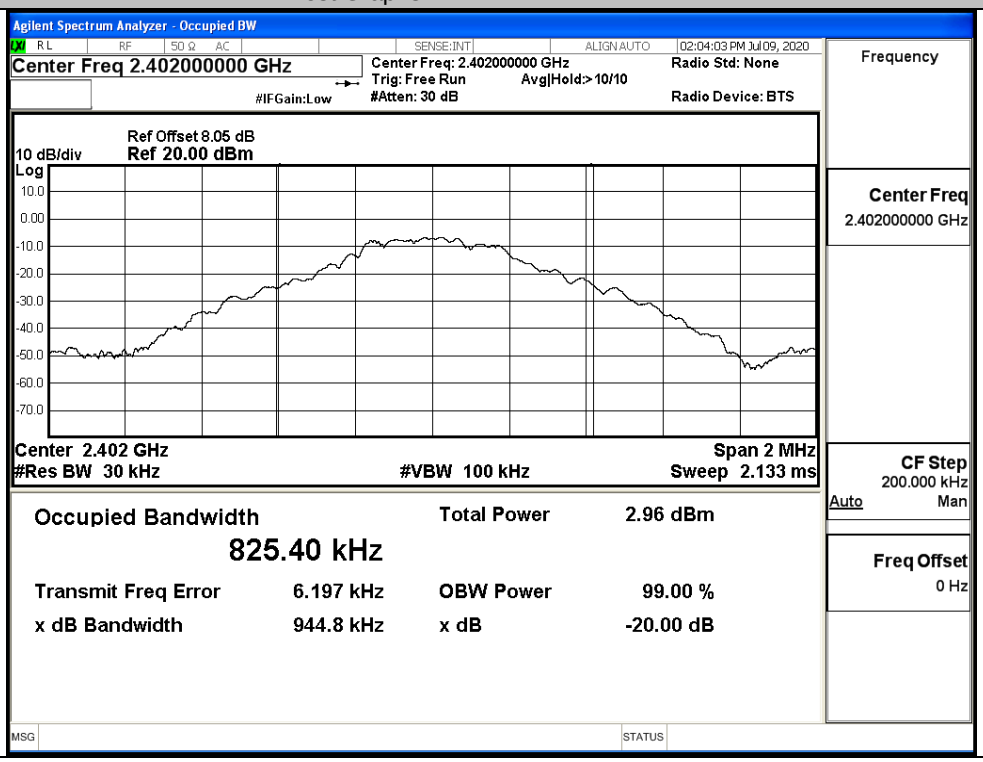
8DPSK/LCH



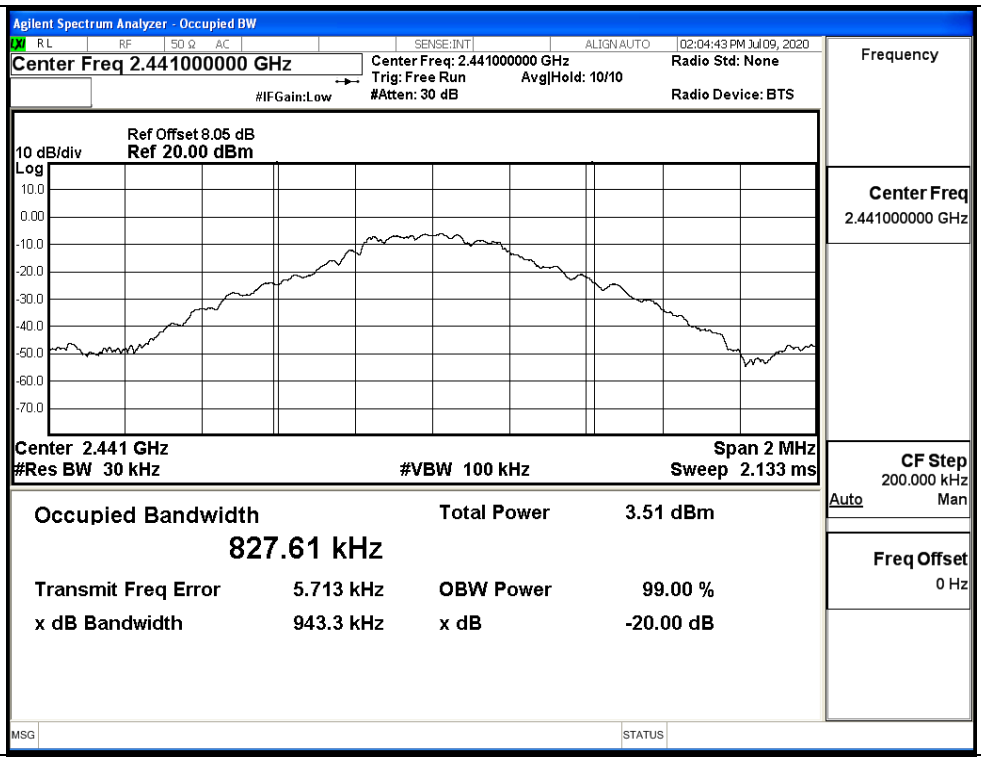
8DPSK/MCH	
8DPSK/HCH	

A.3 Occupied Bandwidth

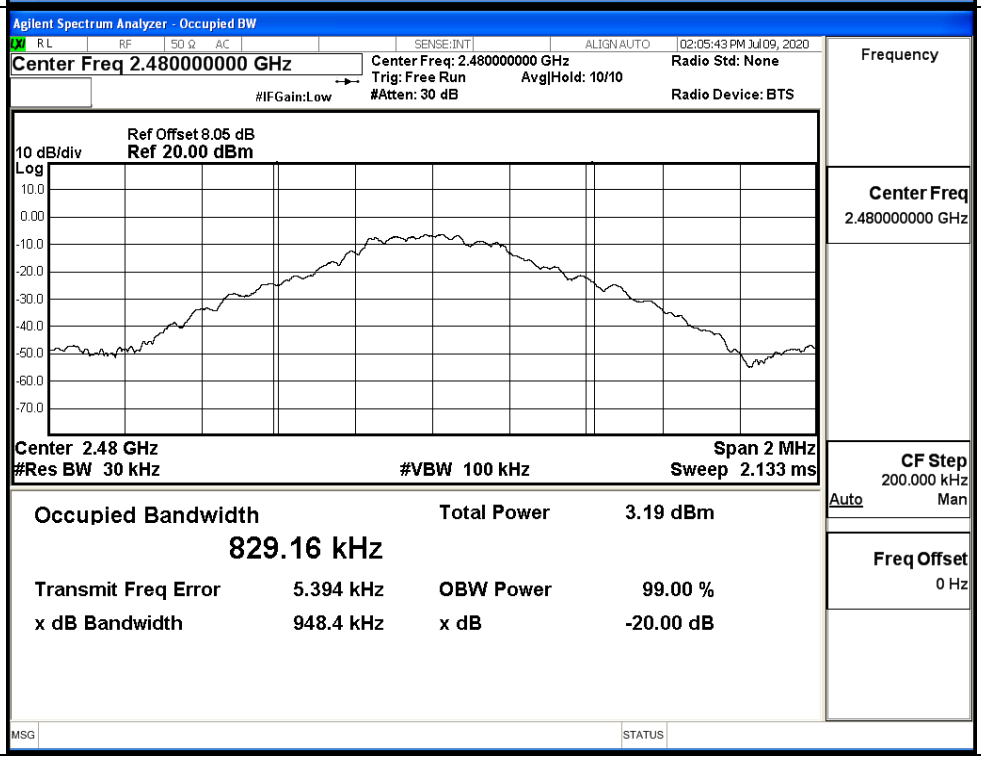
Mode	Channel.	Occupied Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.82540	Not Specified	PASS
	MCH	0.82761	Not Specified	PASS
	HCH	0.82916	Not Specified	PASS
π/4DQPSK	LCH	1.1732	Not Specified	PASS
	MCH	1.1755	Not Specified	PASS
	HCH	1.1767	Not Specified	PASS
8DPSK	LCH	1.1699	Not Specified	PASS
	MCH	1.1654	Not Specified	PASS
	HCH	1.1735	Not Specified	PASS

Test Graphs	
GFSK/LCH	

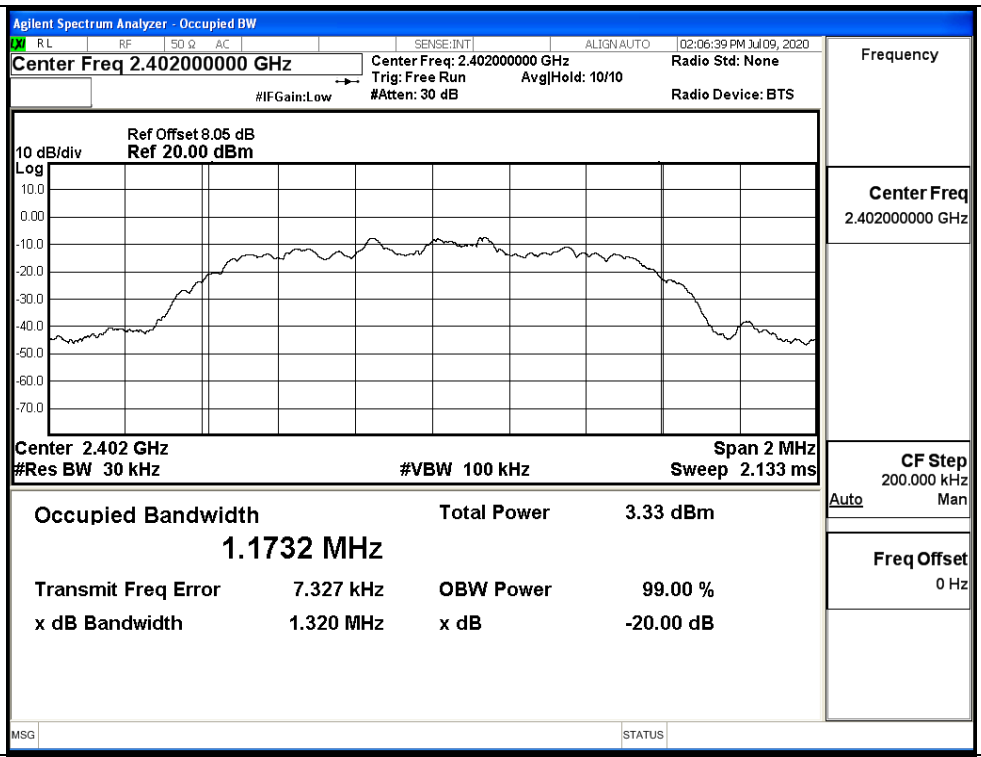
GFSK/MCH



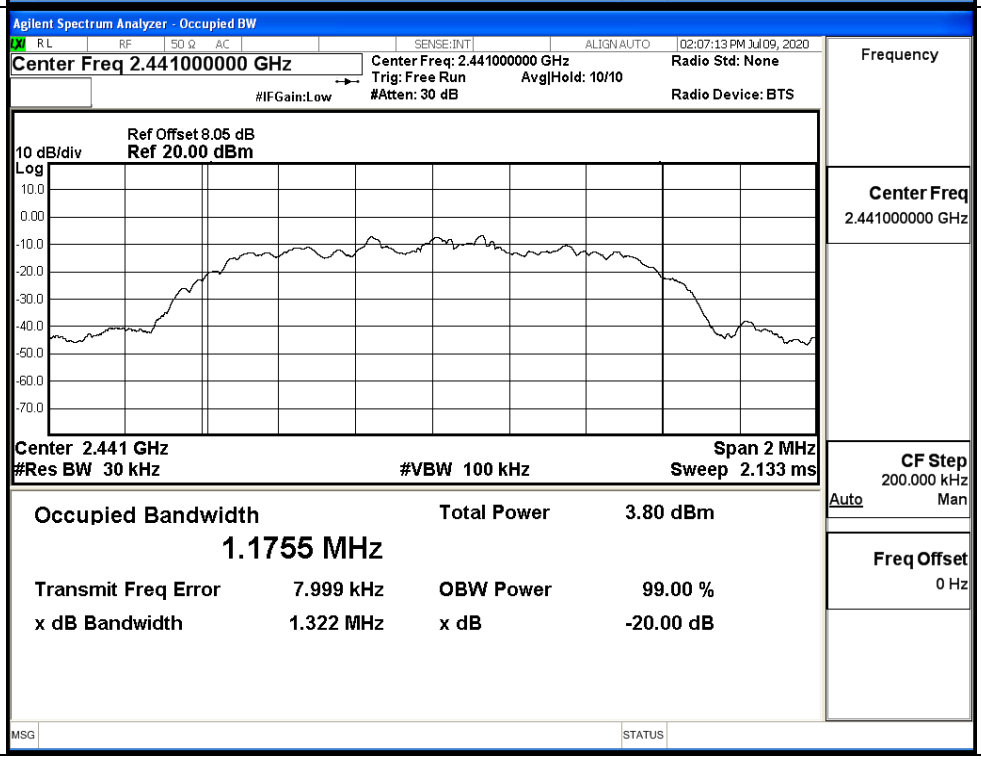
GFSK/HCH



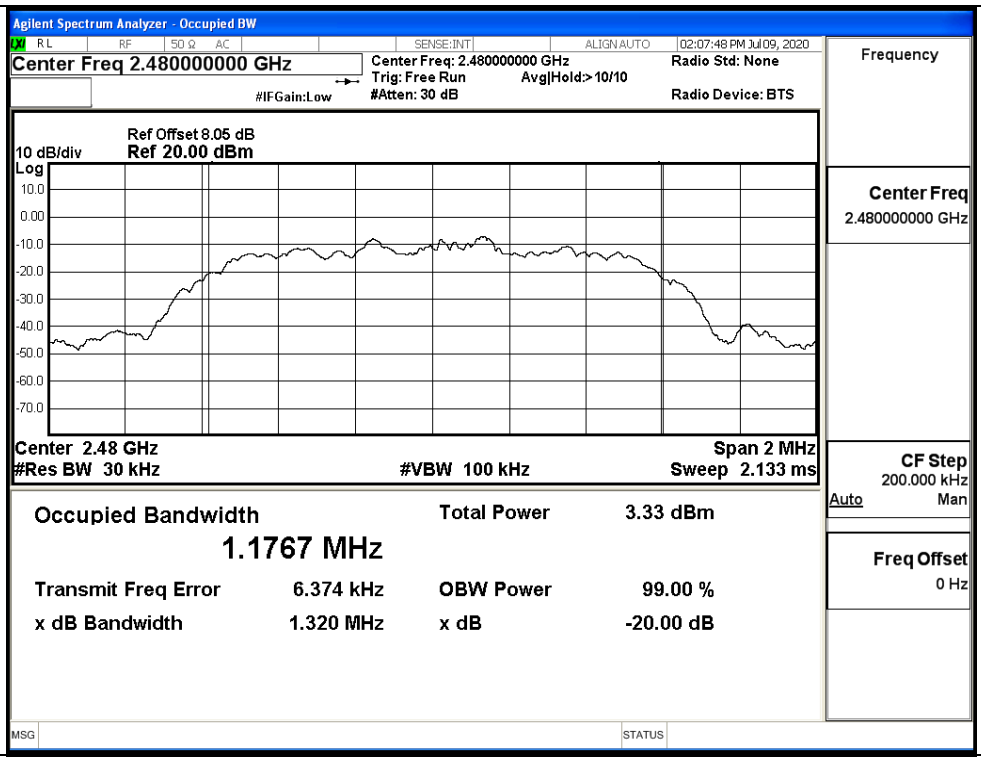
π/4DQPSK/LCH



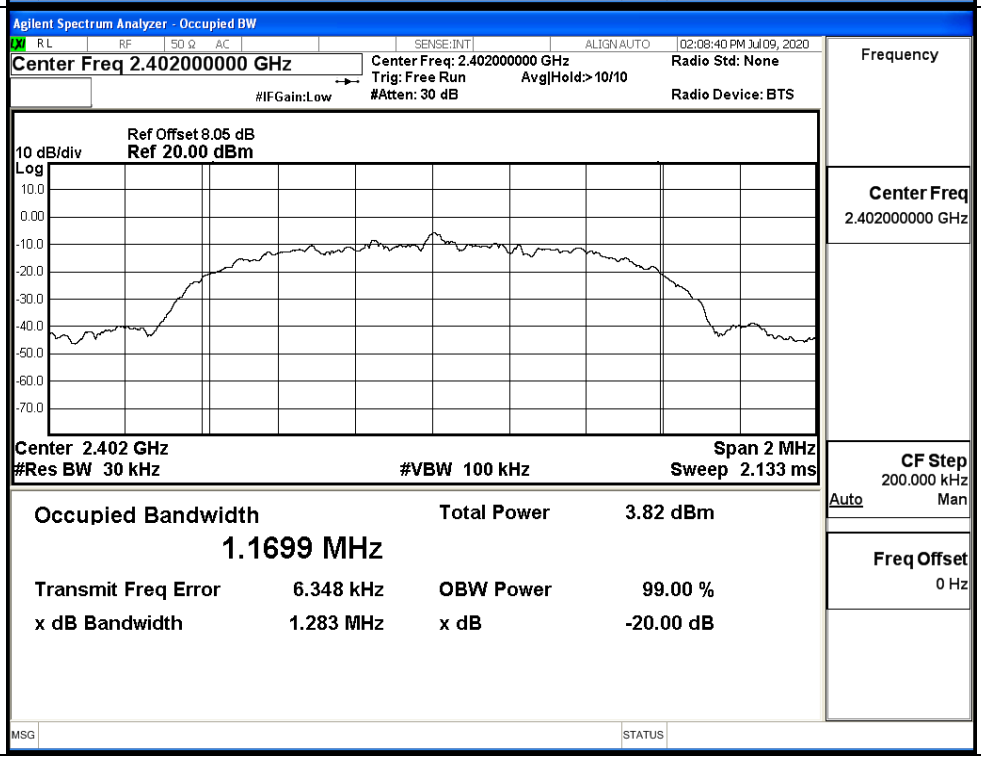
π/4DQPSK/MCH

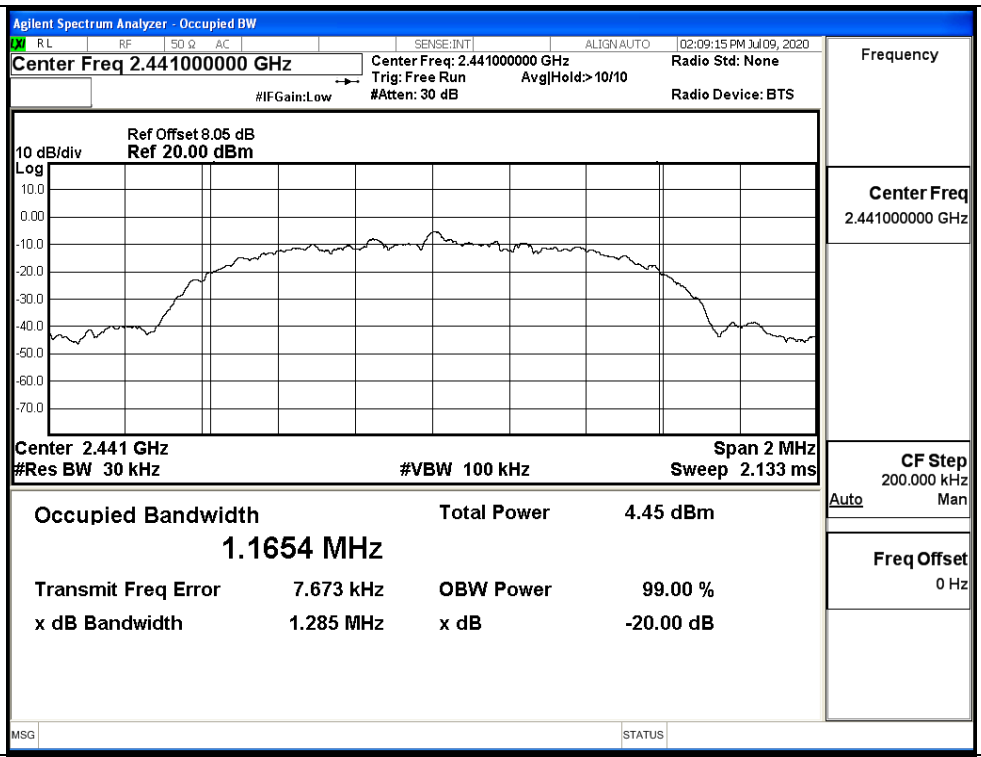
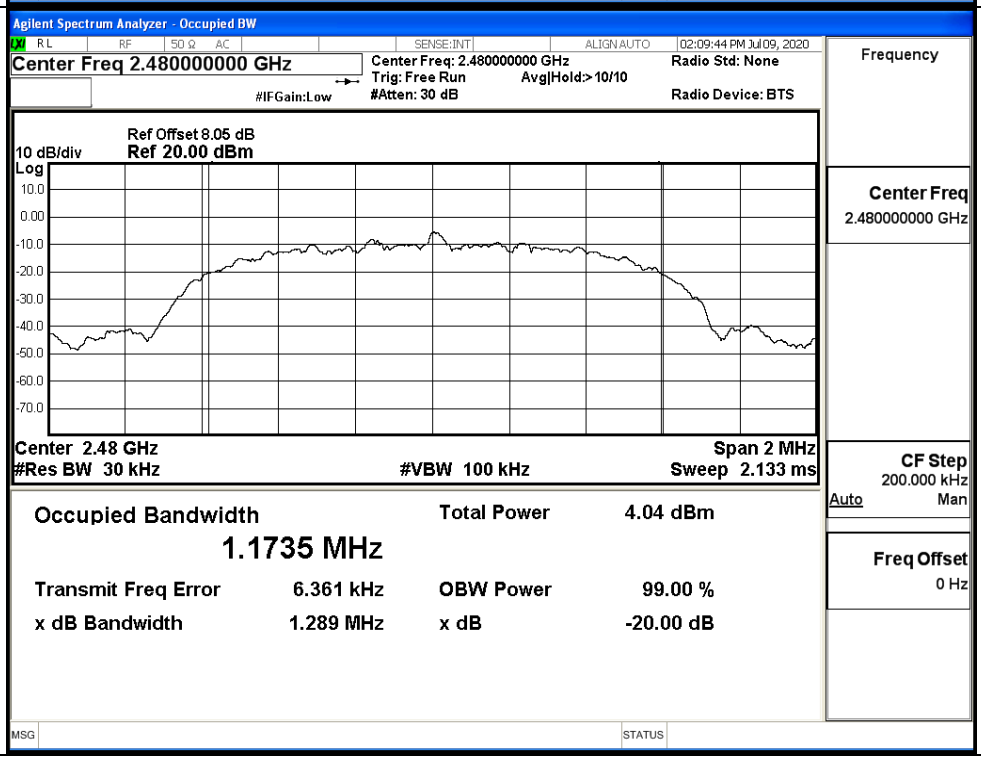


π/4DQPSK/HCH



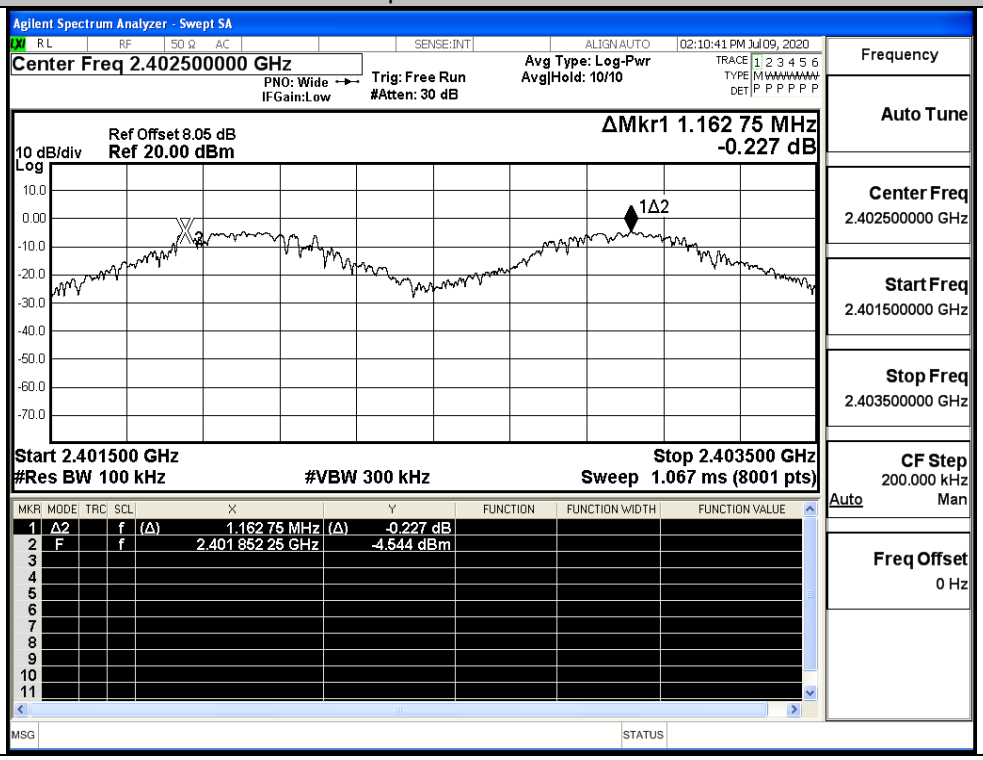
8DPSK/LCH

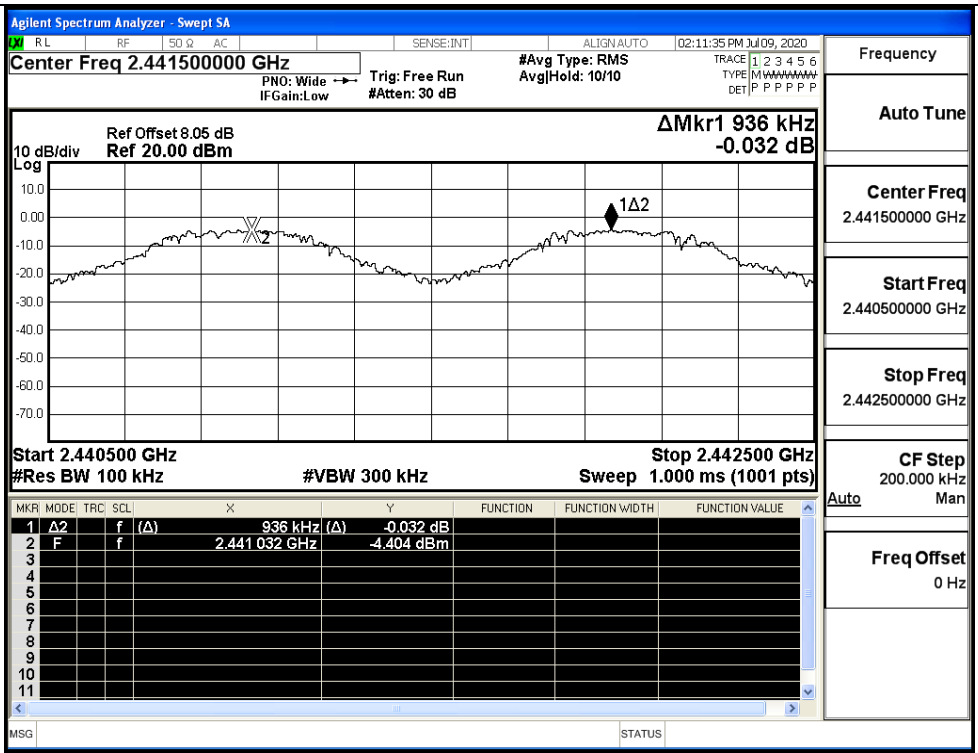
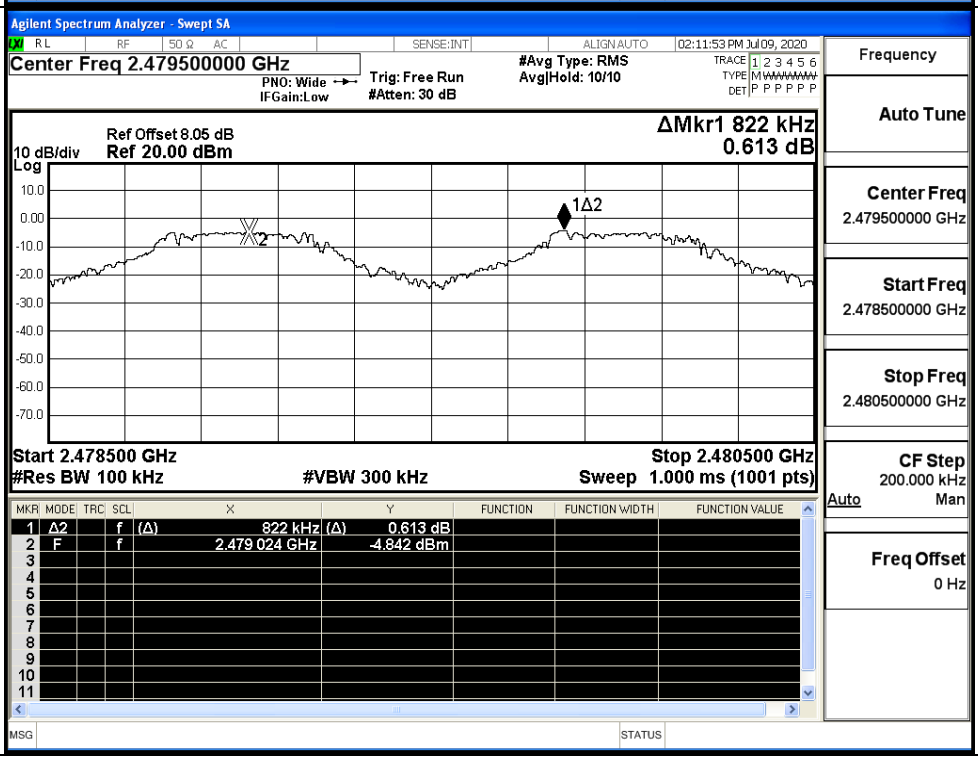


8DPSK/MCH	
8DPSK/HCH	

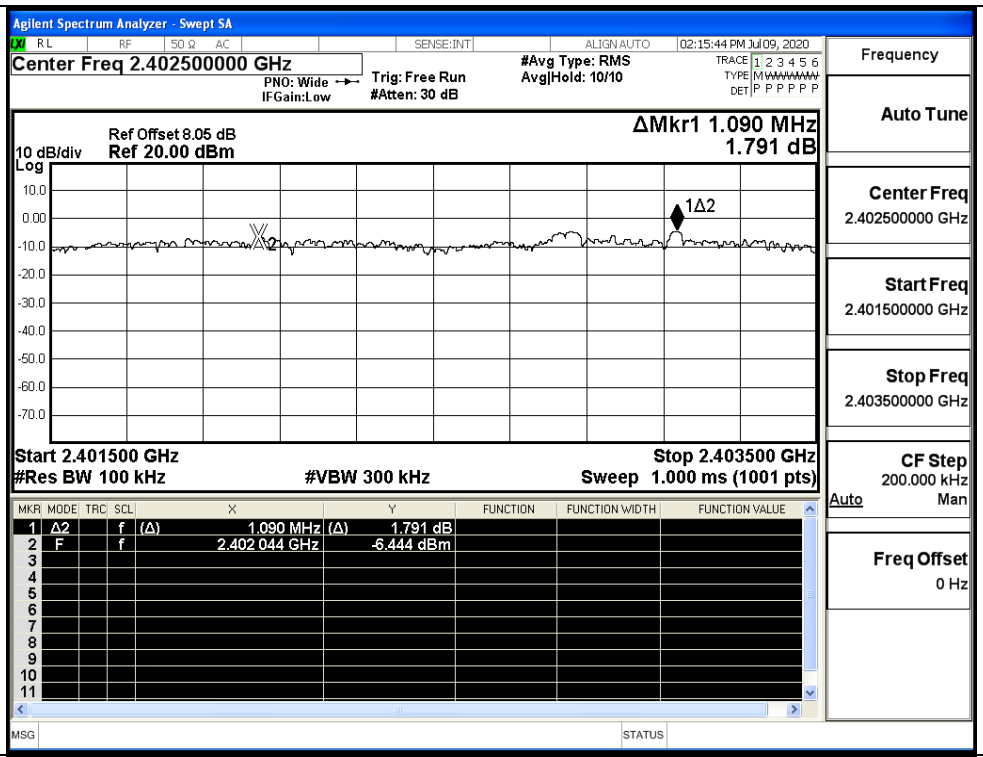
A.4 Carrier Frequency Separation

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.163	0.633	PASS
	MCH	0.936	0.633	PASS
	HCH	0.822	0.633	PASS
π/4DQPSK	LCH	1.090	0.882	PASS
	MCH	1.290	0.882	PASS
	HCH	0.986	0.882	PASS
8DPSK	LCH	1.140	0.861	PASS
	MCH	1.040	0.861	PASS
	HCH	0.952	0.861	PASS

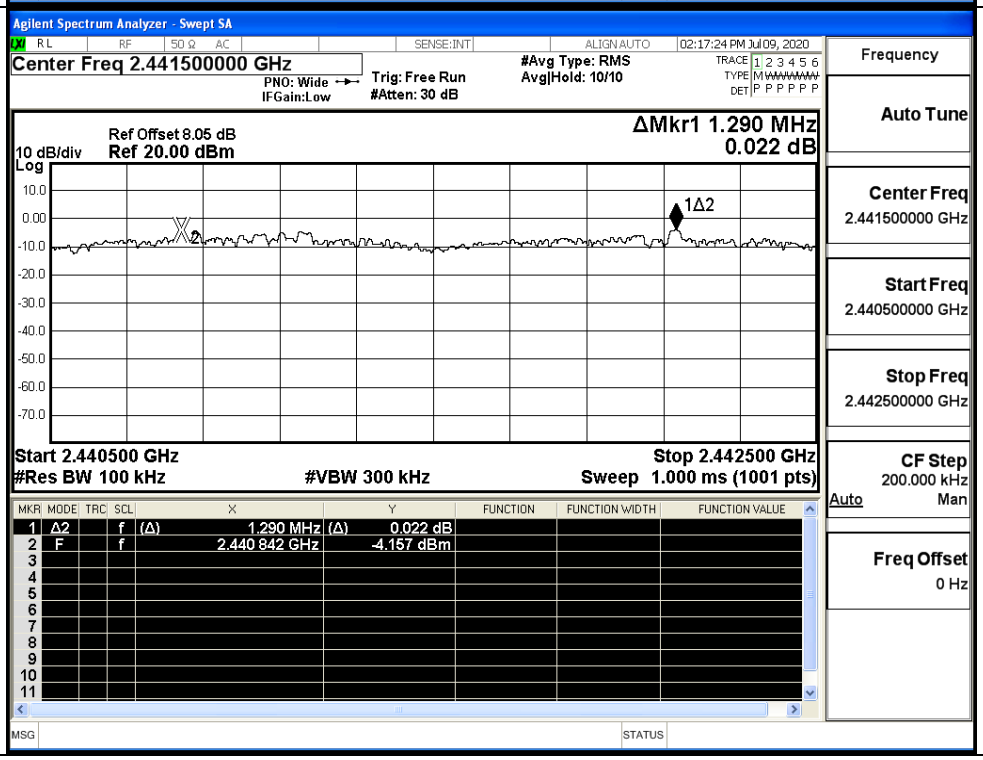
Test Graphs		
GFSK/LCH		

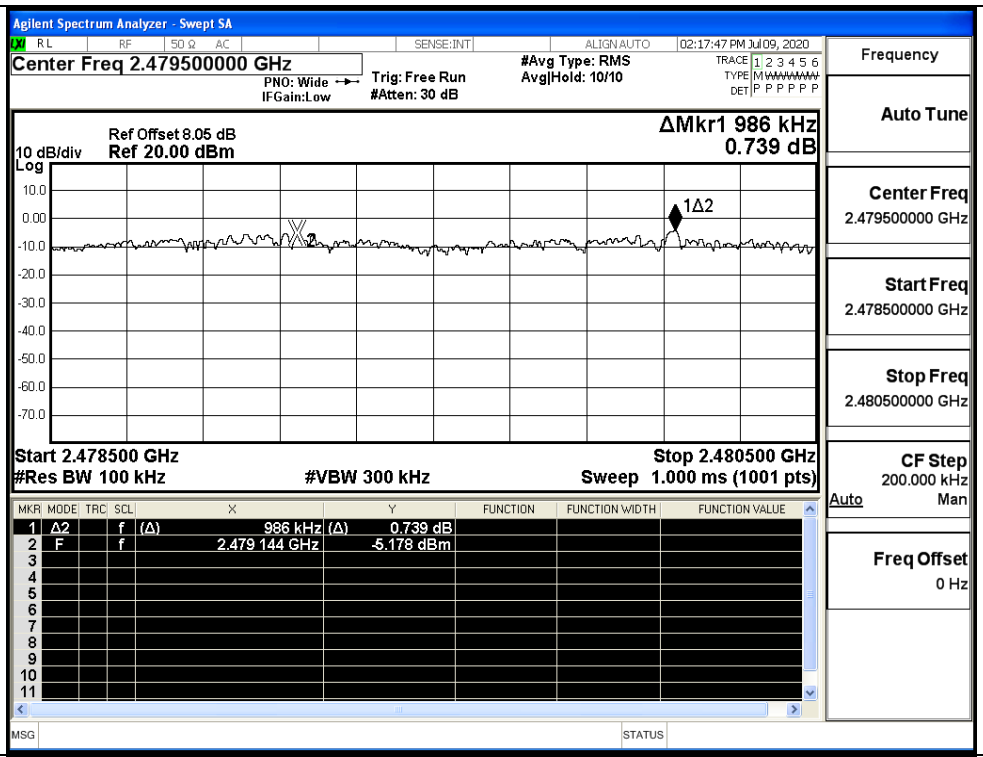
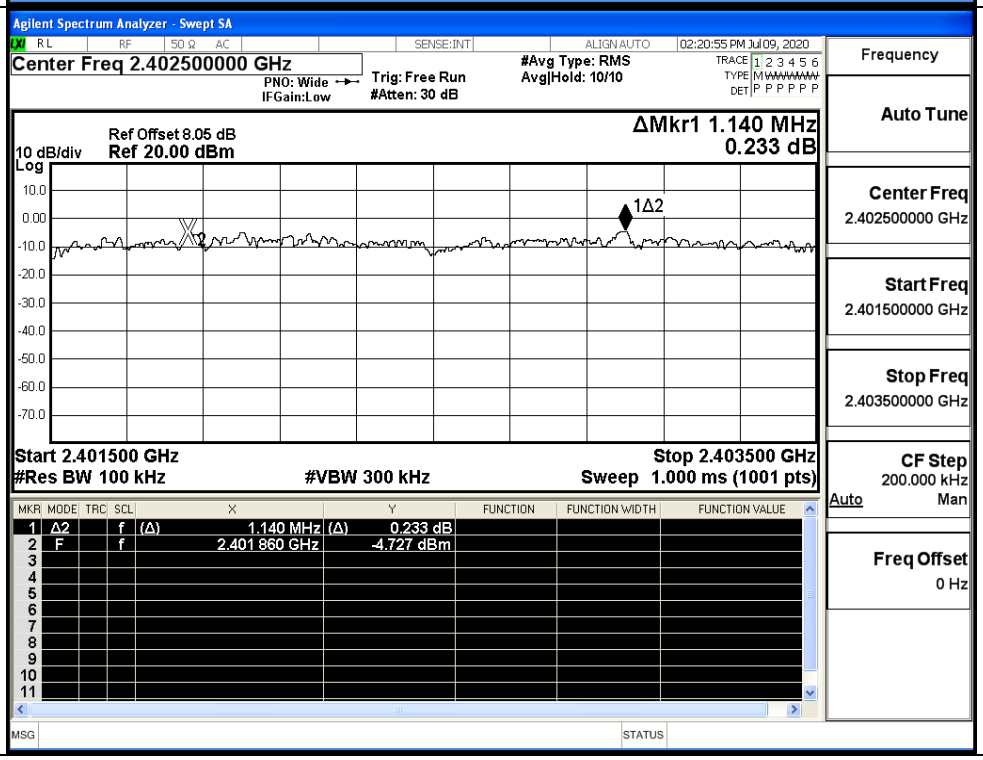
GFSK/MCH	
GFSK/HCH	

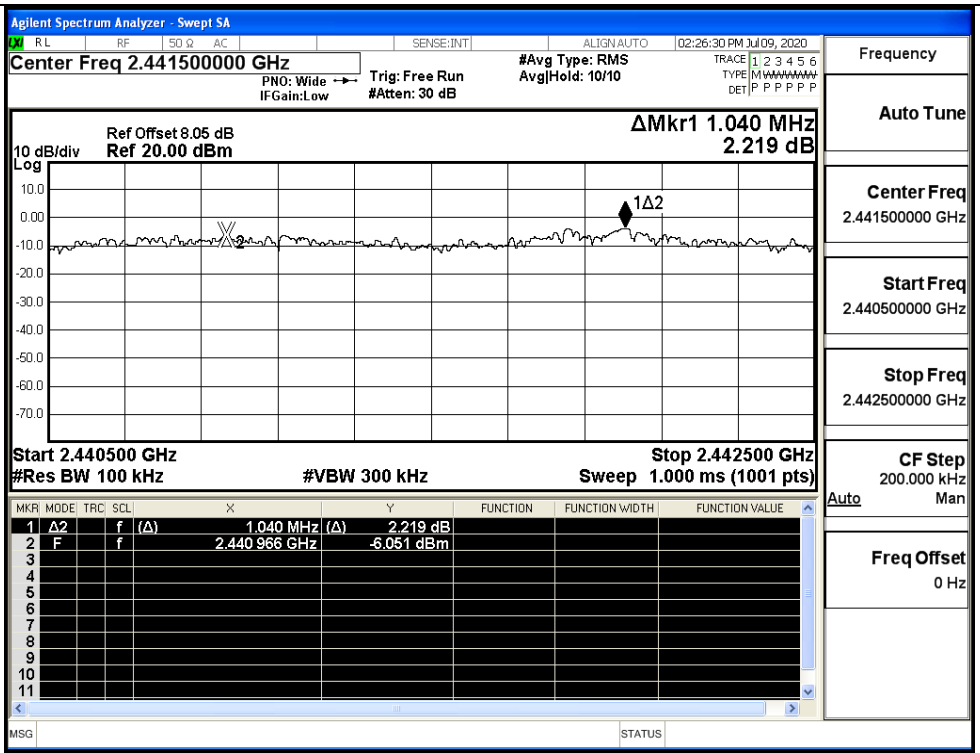
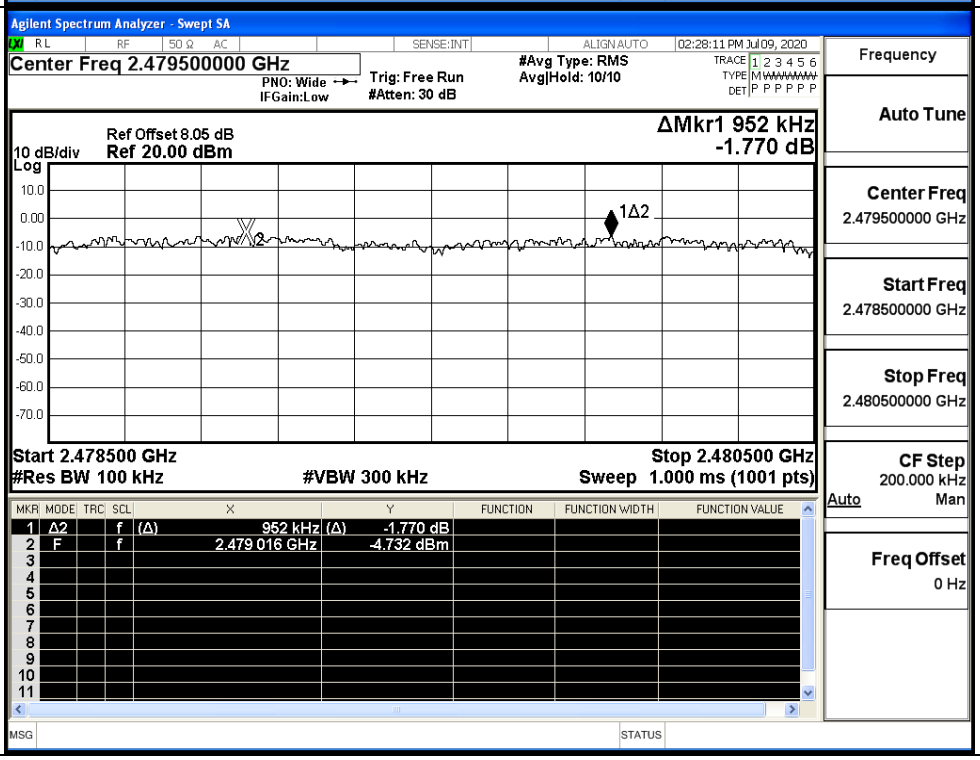
π/4DQPSK/LCH



π/4DQPSK/MCH

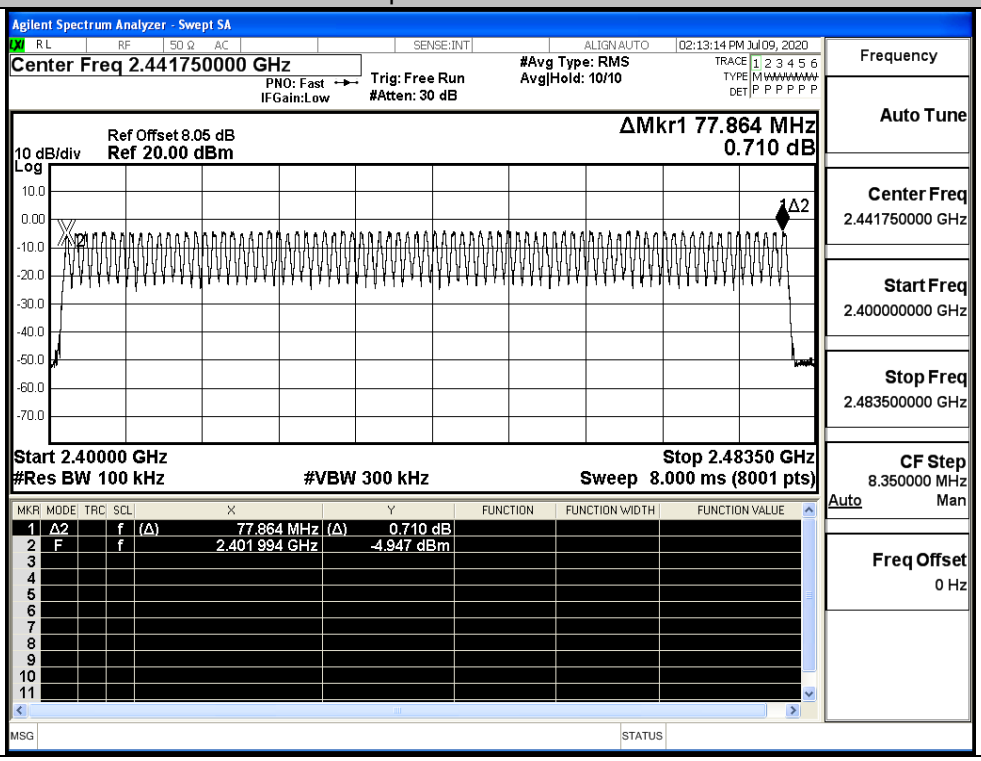


π/4DQPSK/HCH		
8DPSK/LCH		

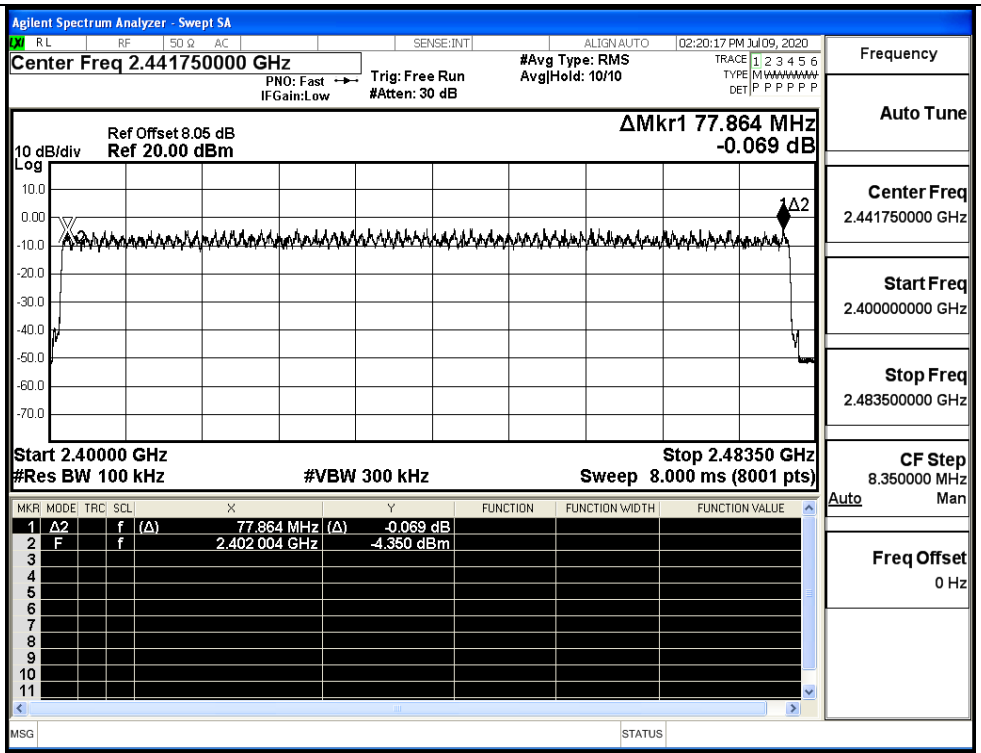
8DPSK/MCH	
8DPSK/HCH	

A.5 Hopping Channel Number

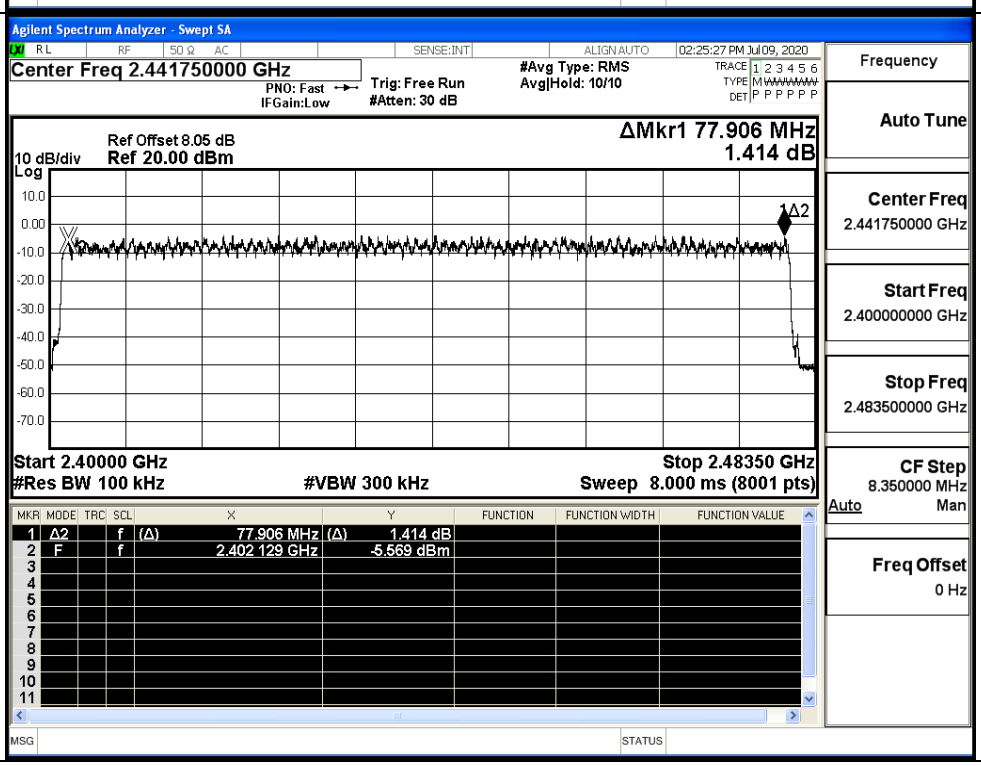
Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	>=15	PASS
π/4DQPSK	Hop	79	>=15	PASS
8DPSK	Hop	79	>=15	PASS

Test Graphs		
GFSK/Hop		

π/4DQPSK/Hop

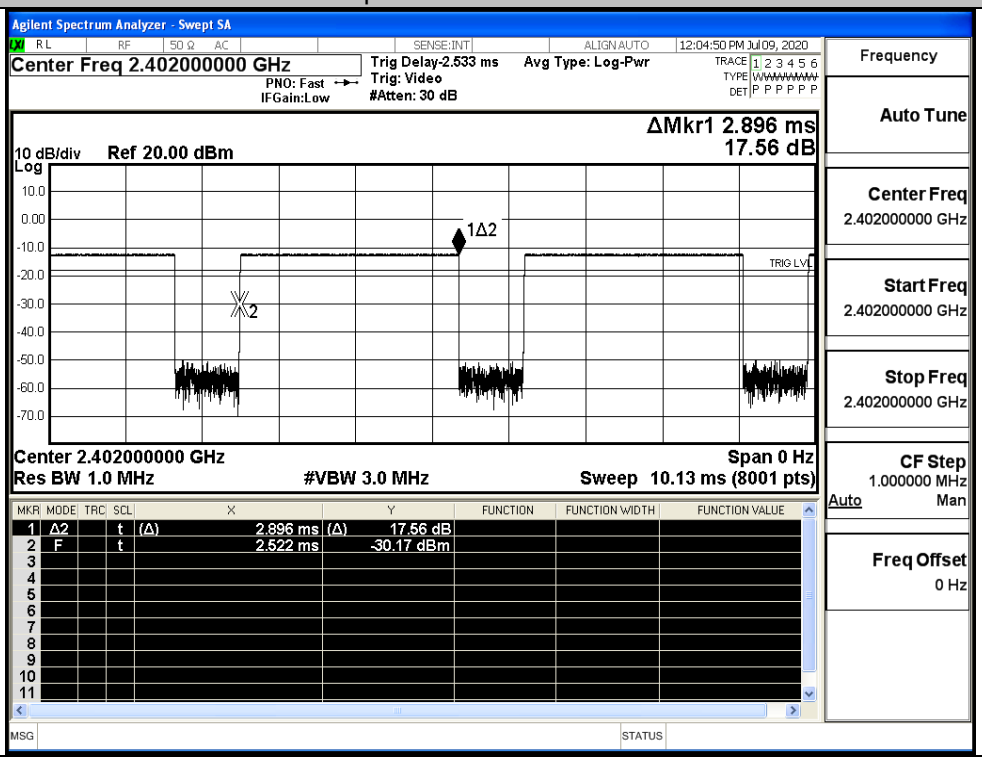


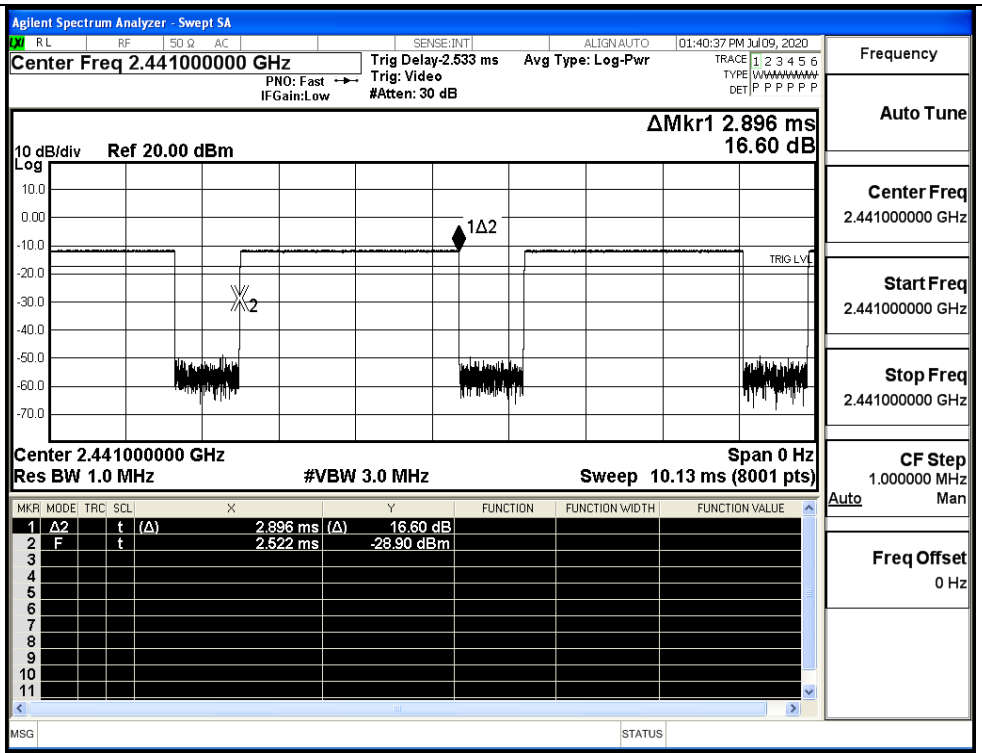
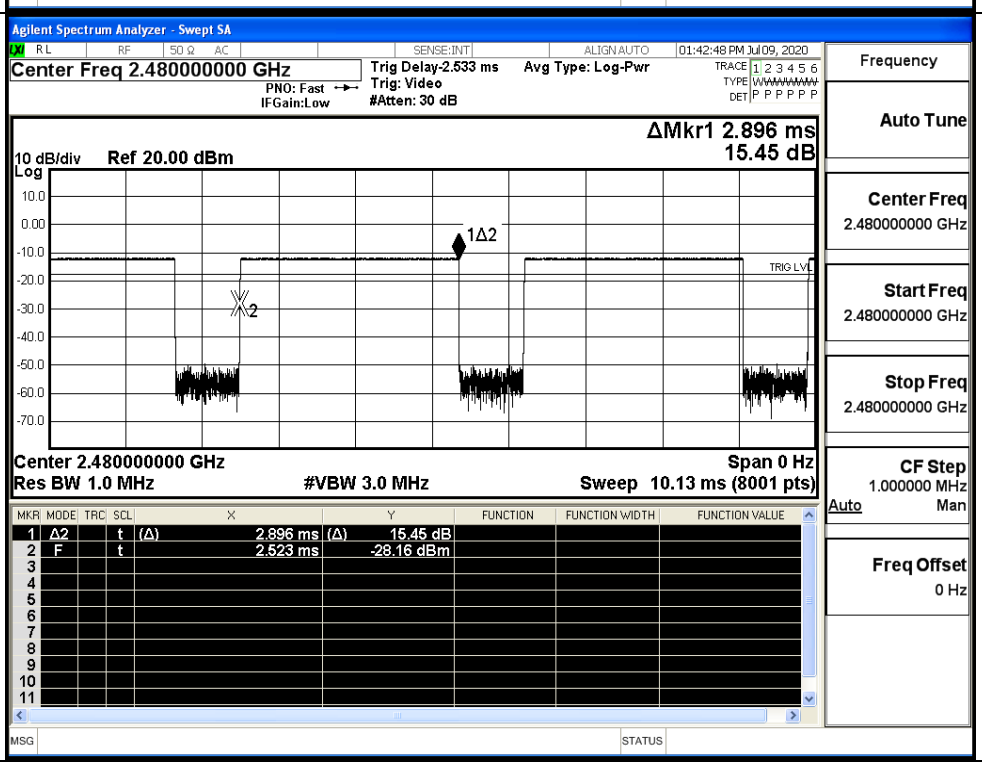
8DPSK/Hop

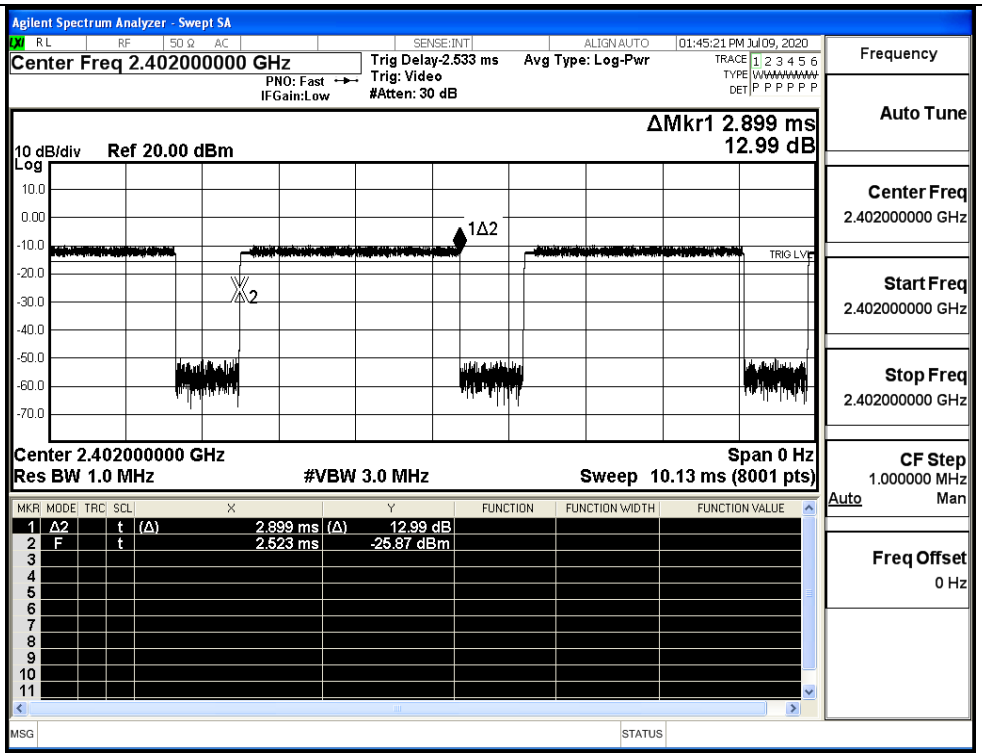
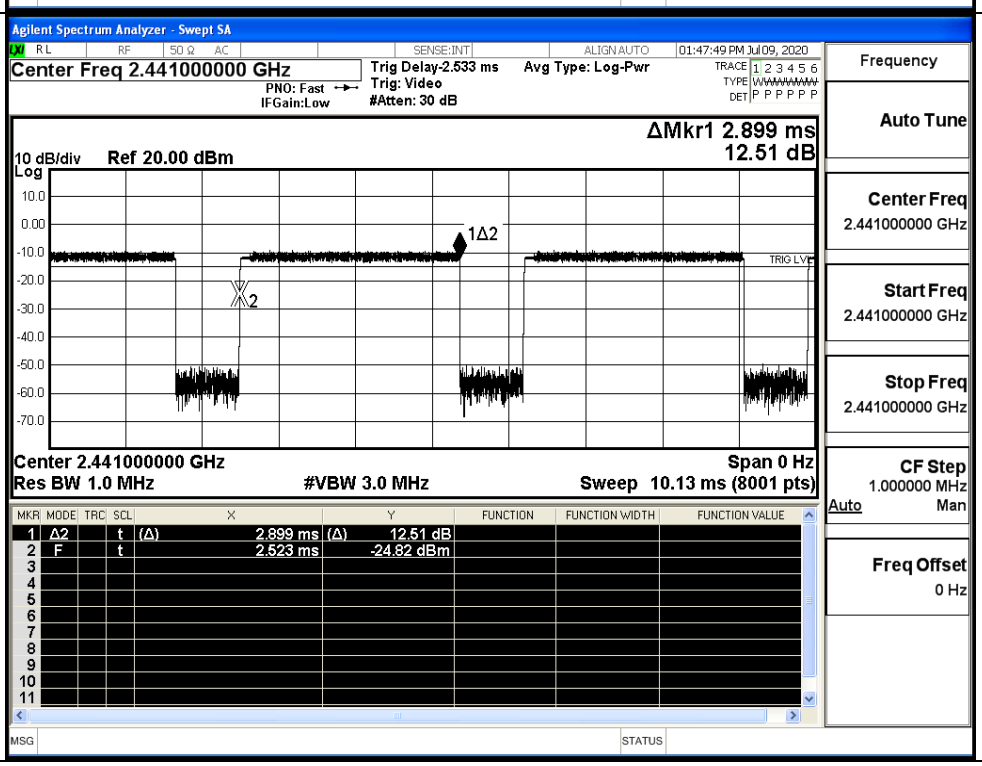


A.6 Dwell Time

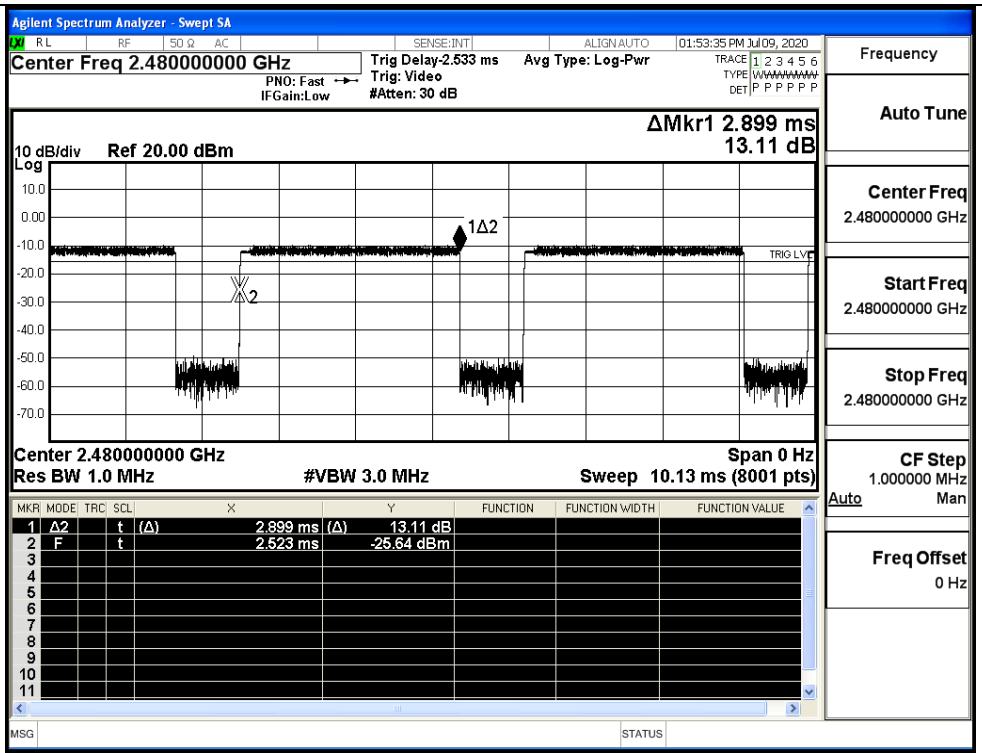
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.9	106.7	0.309	0.4	PASS
	DH5	MCH	2.9	106.7	0.309	0.4	PASS
	DH5	HCH	2.9	106.7	0.309	0.4	PASS
π/4DQPSK	2DH5	LCH	2.9	106.7	0.309	0.4	PASS
	2DH5	MCH	2.9	106.7	0.309	0.4	PASS
	2DH5	HCH	2.9	106.7	0.309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

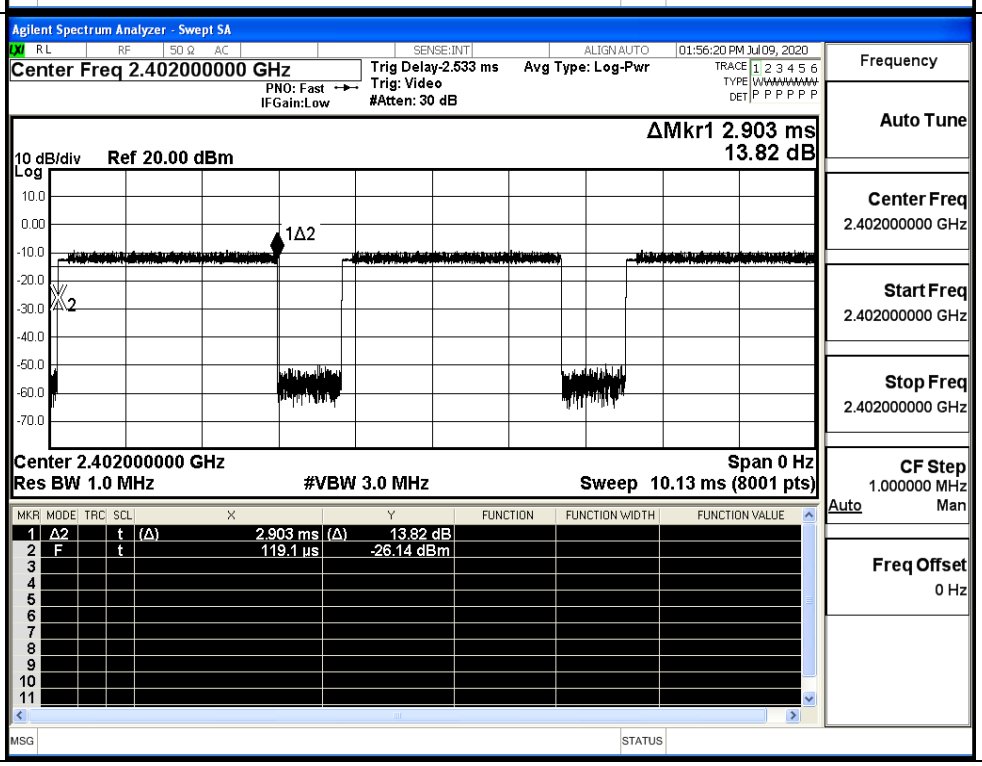
GFSK_DH5/MCH	
GFSK_DH5/HCH	

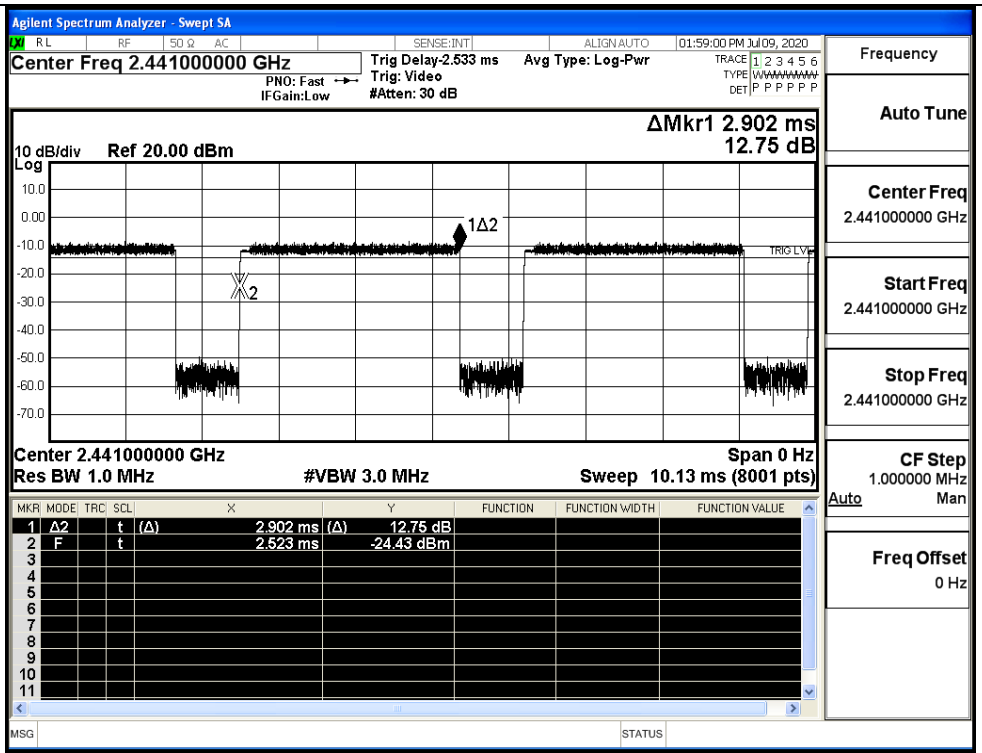
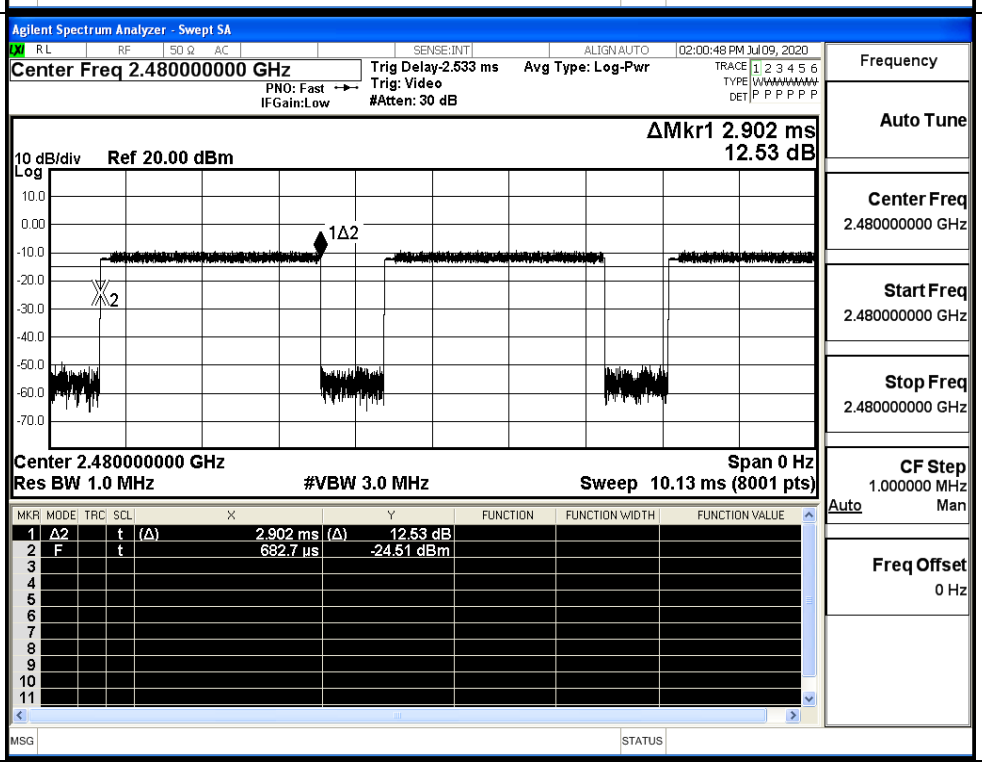
π/4DQPSK _2DH5/LCH	
π/4DQPSK _2DH5/MCH	

π/4DQPSK _2DH5/HCH



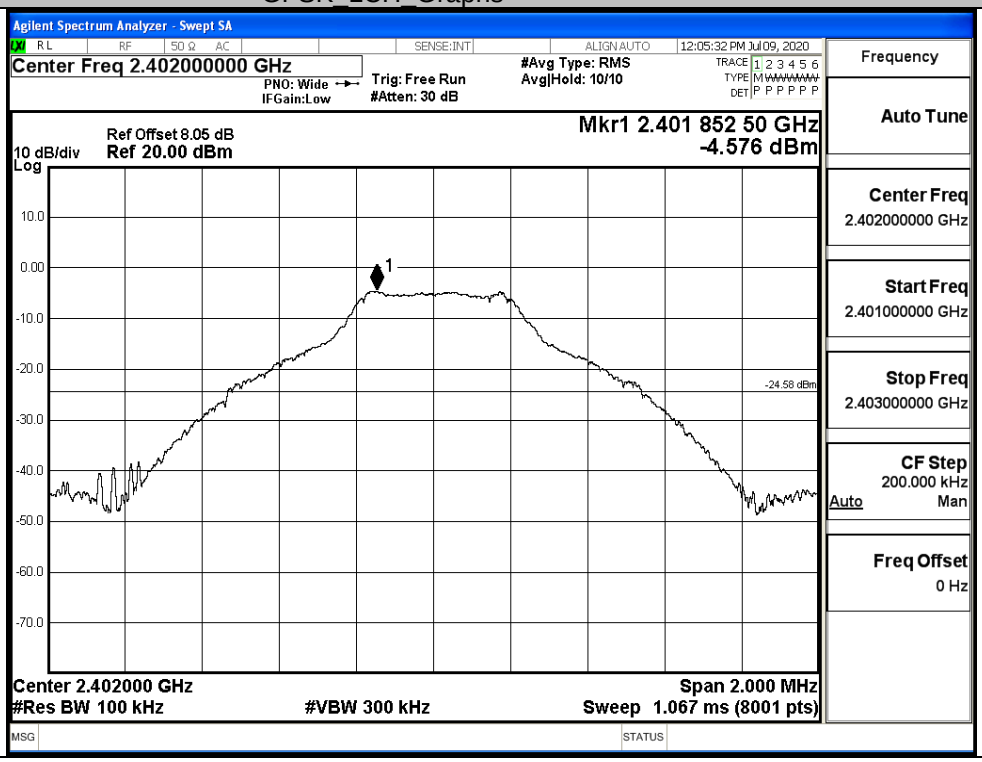
8DPSK _3DH5/LCH

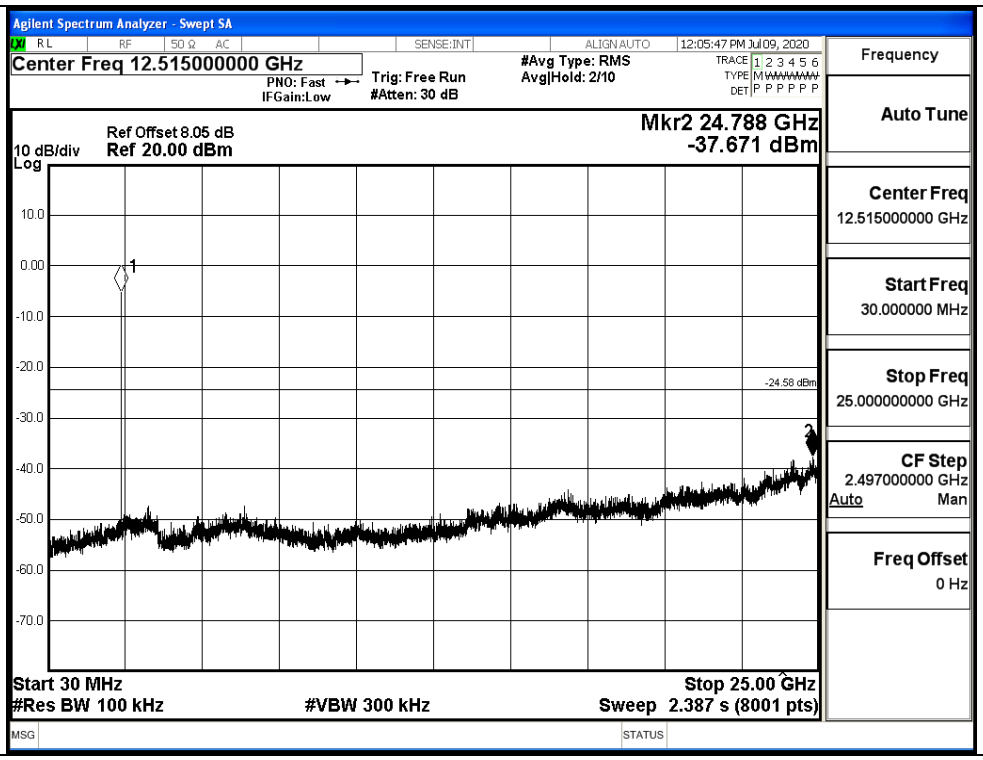


8DPSK _3DH5/MCH	
8DPSK _3DH5/HCH	

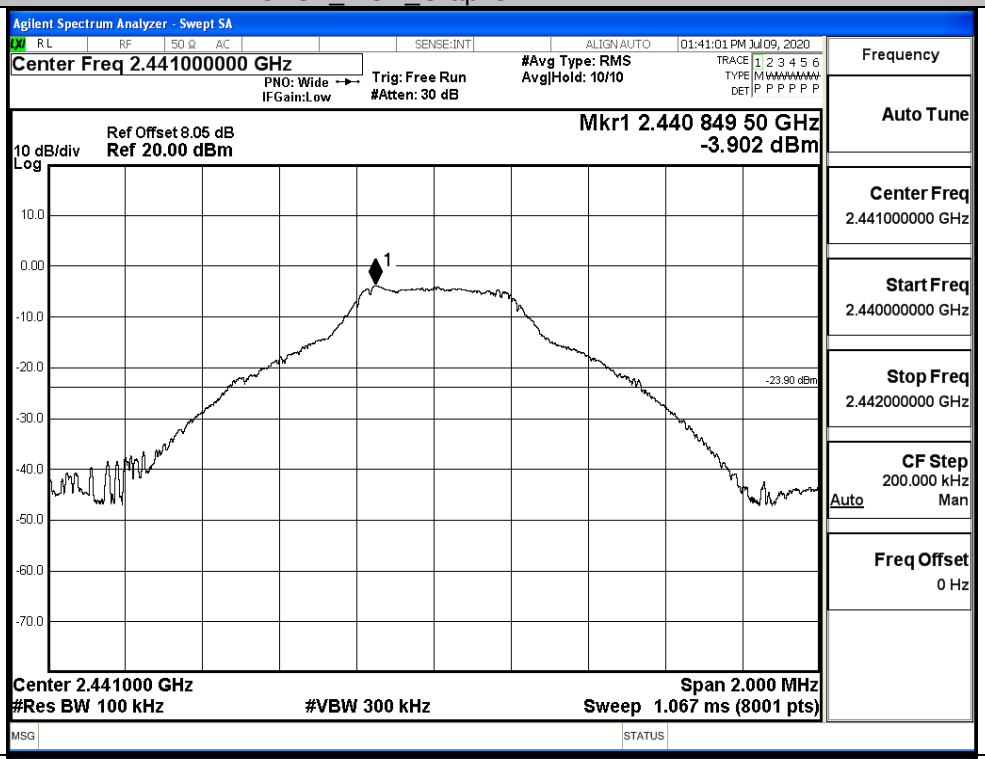
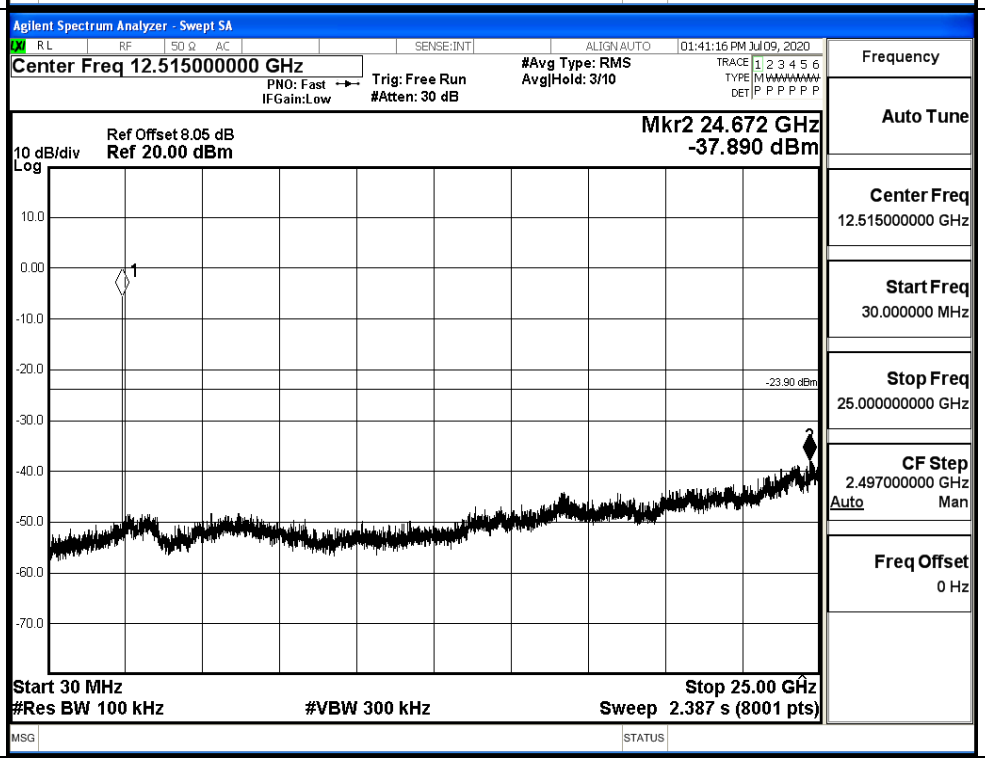
A.7 RF Conducted Spurious Emissions

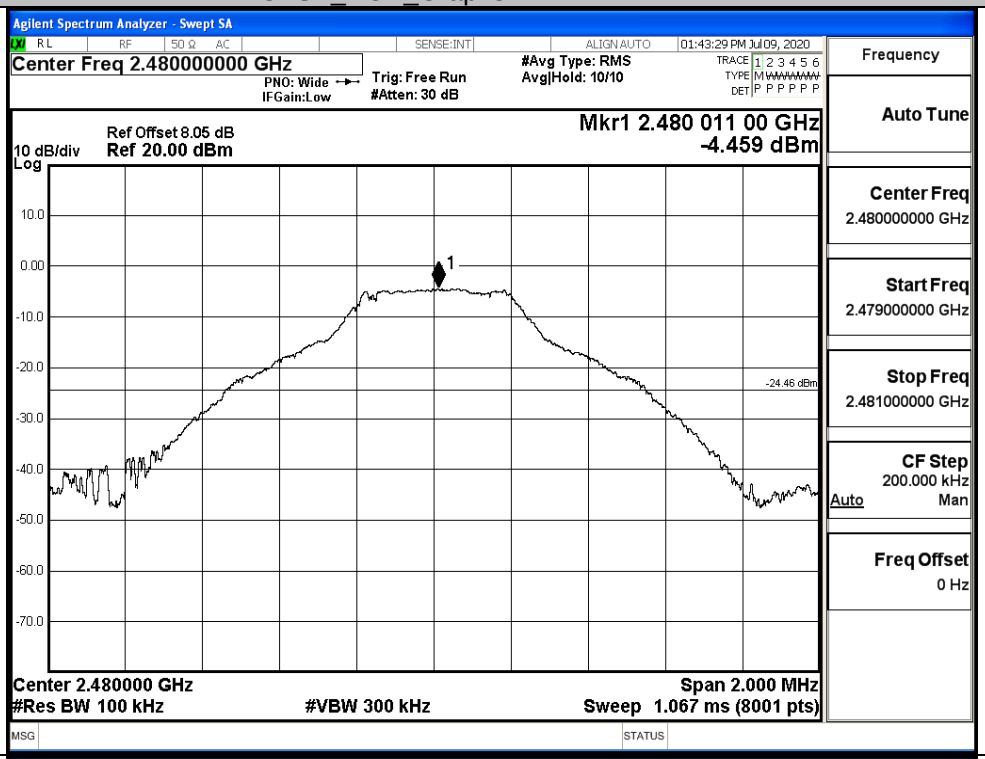
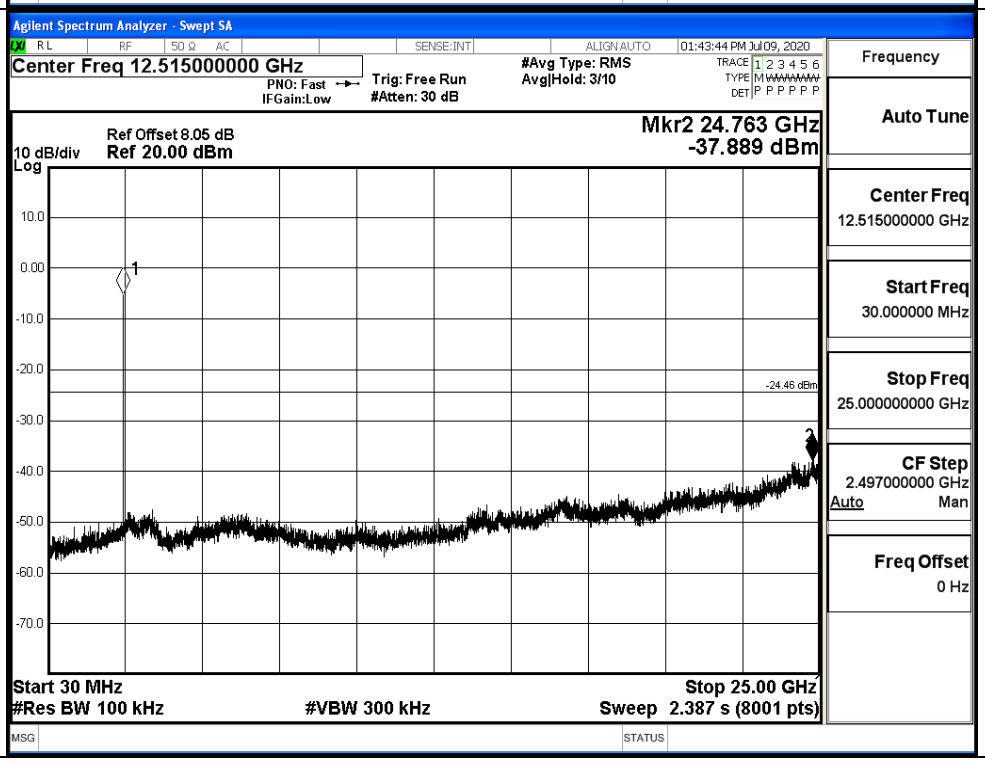
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-4.576	-37.671	-24.576	PASS
	MCH	-3.902	-37.890	-23.902	PASS
	HCH	-4.459	-37.889	-24.459	PASS
π/4DQPSK	LCH	-4.646	-37.906	-24.646	PASS
	MCH	-4.054	-37.865	-24.054	PASS
	HCH	-4.401	-36.639	-24.401	PASS
8DPSK	LCH	-4.264	-38.509	-24.264	PASS
	MCH	-3.783	-37.238	-23.783	PASS
	HCH	-4.226	-38.168	-24.226	PASS

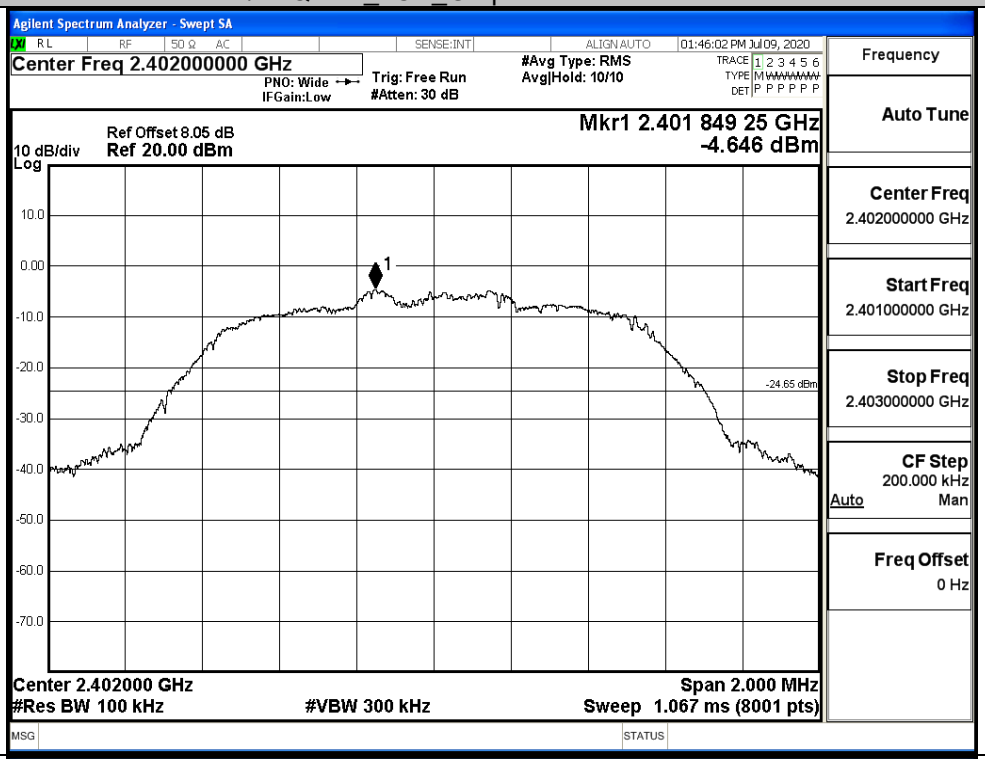
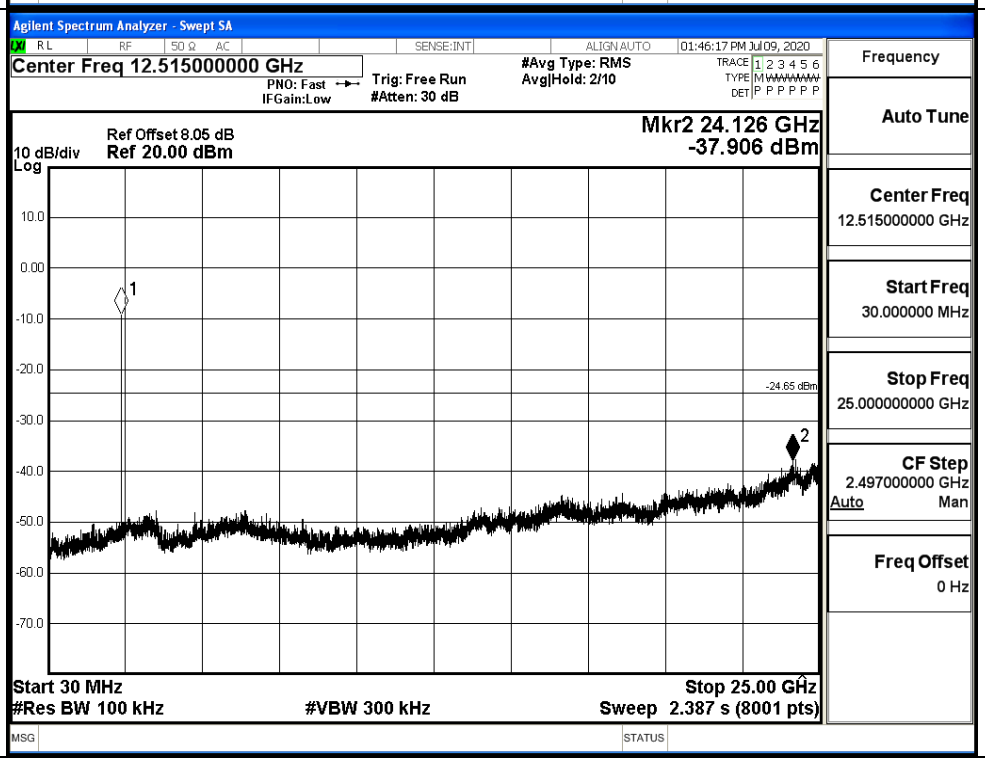
GFSK_LCH_Graphs	
Pref	

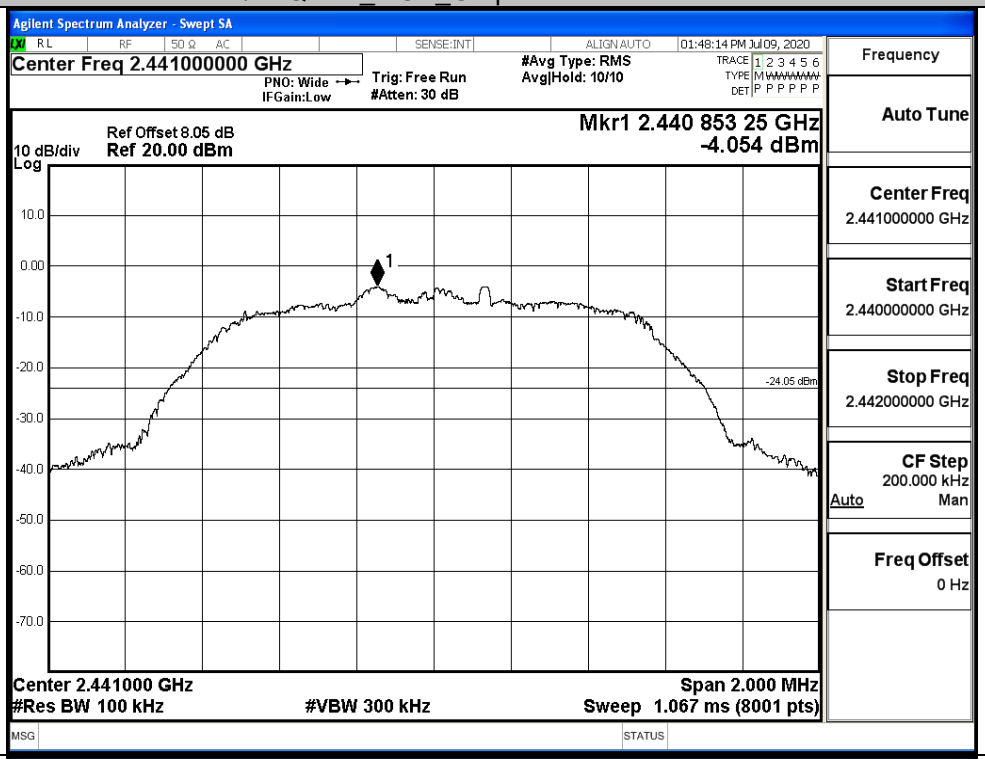
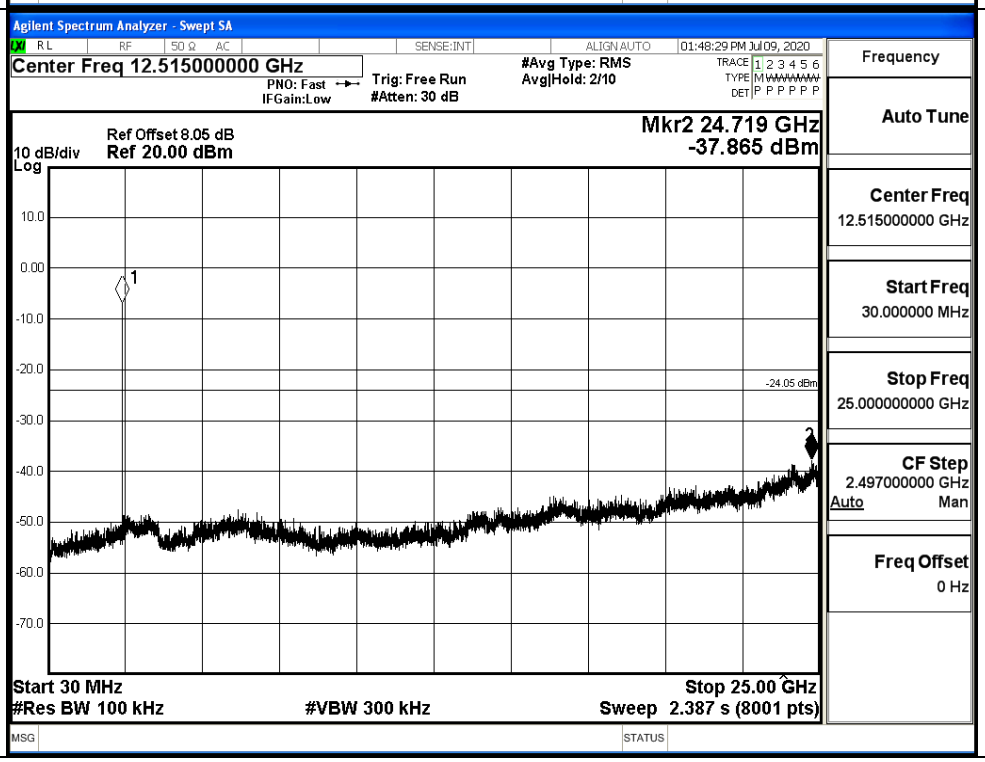
Puw		

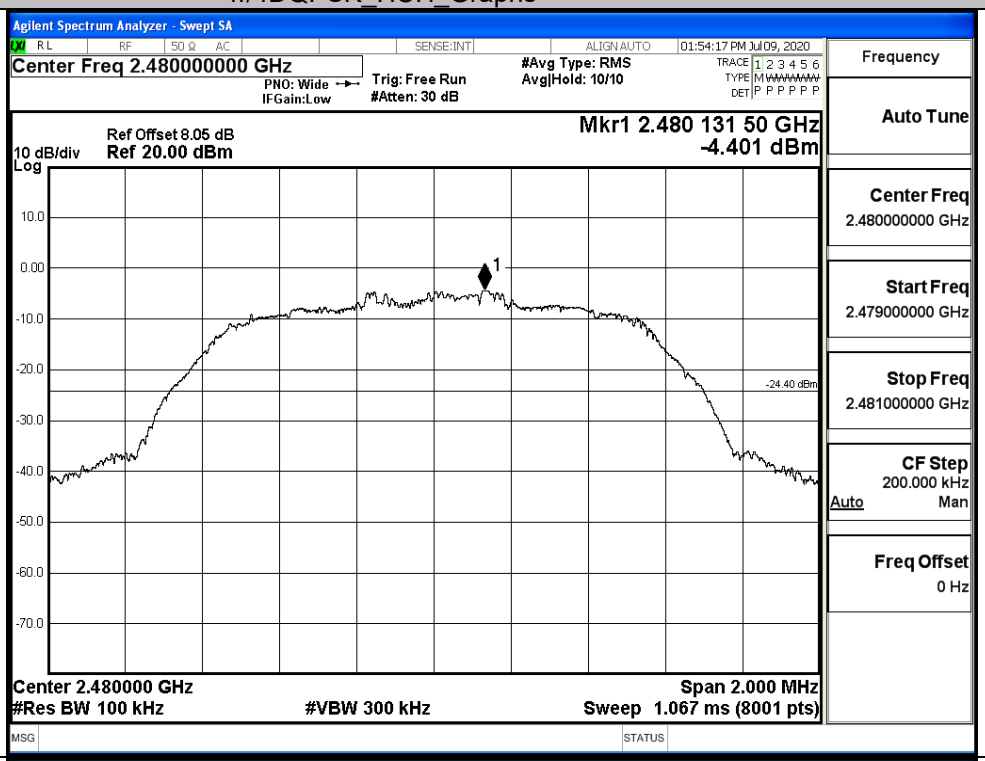
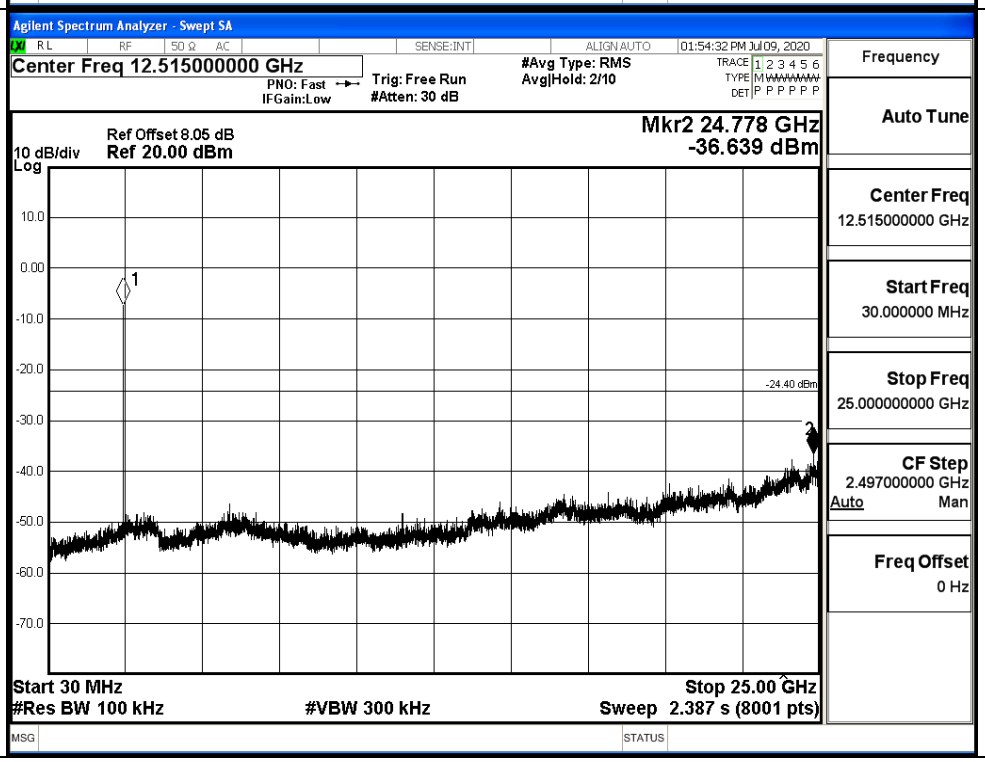
Agilent Spectrum Analyzer - Swept SA
Center Freq 12.515000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 2/10
12:05:47 PM Jul 09, 2020
Ref Offset 8.05 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr2 24.788 GHz
-37.671 dBm
-24.58 dBm
Start 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 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

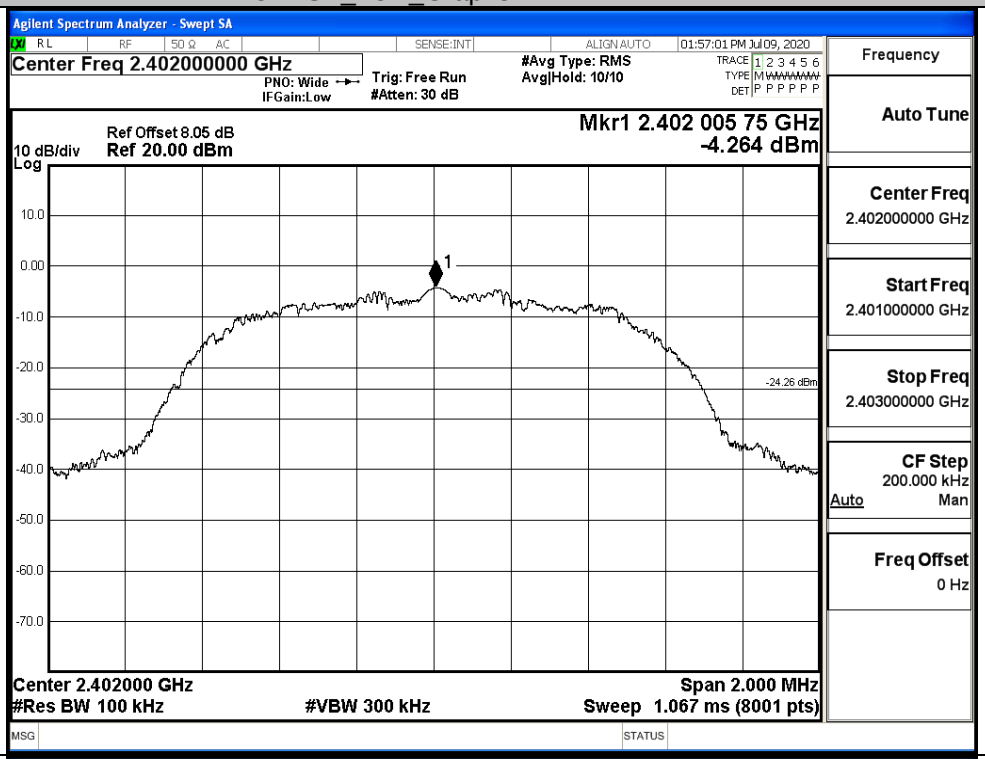
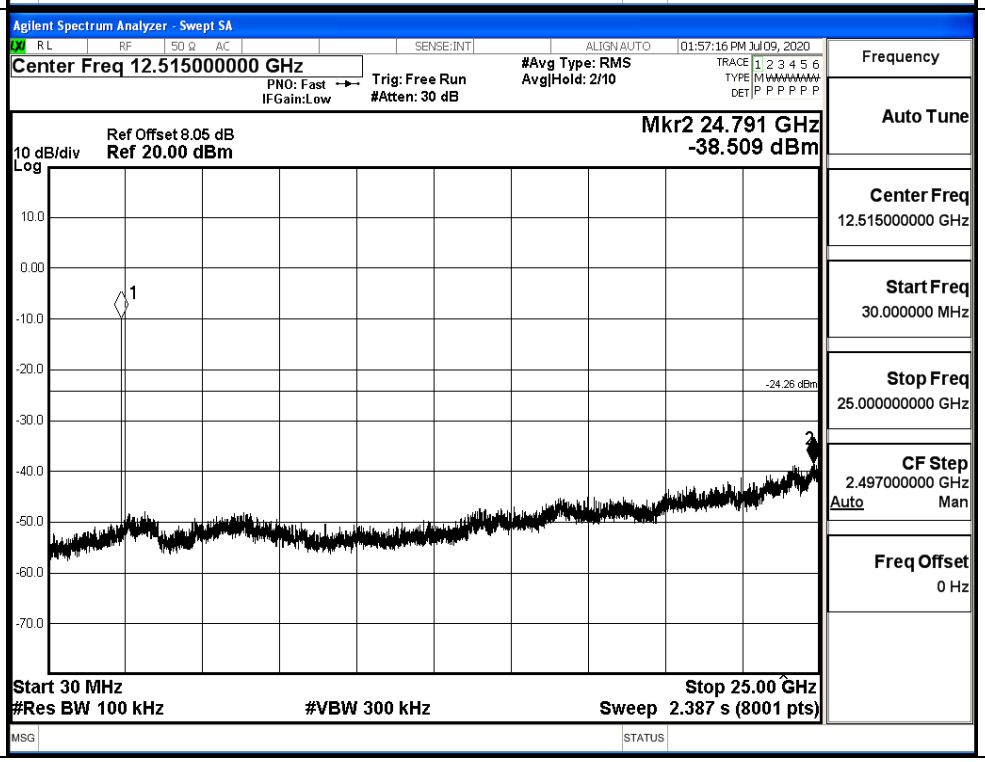
GFSK_MCH_Graphs			
Pref			
Puw			

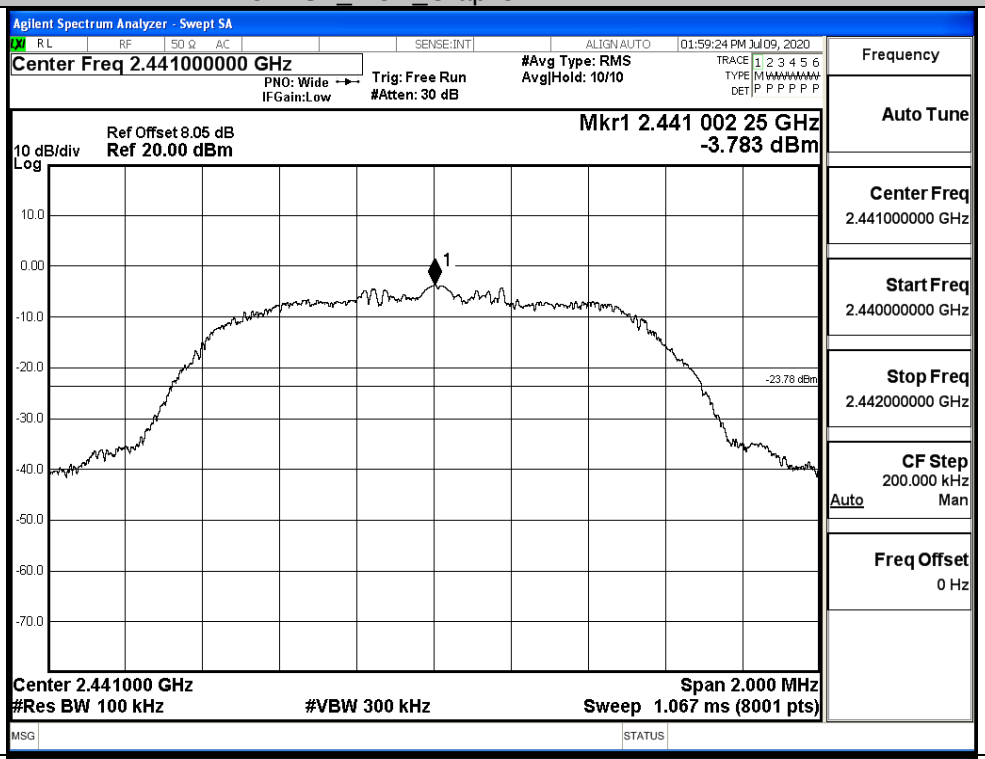
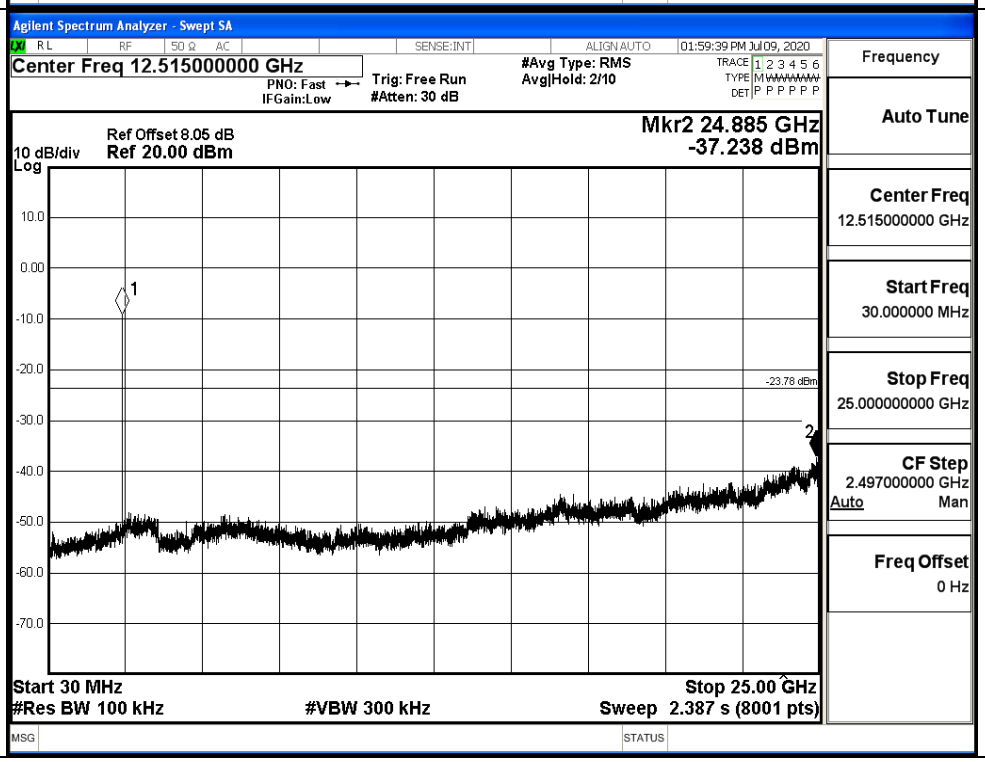
GFSK_HCH_Graphs			
Pref			
Puw			

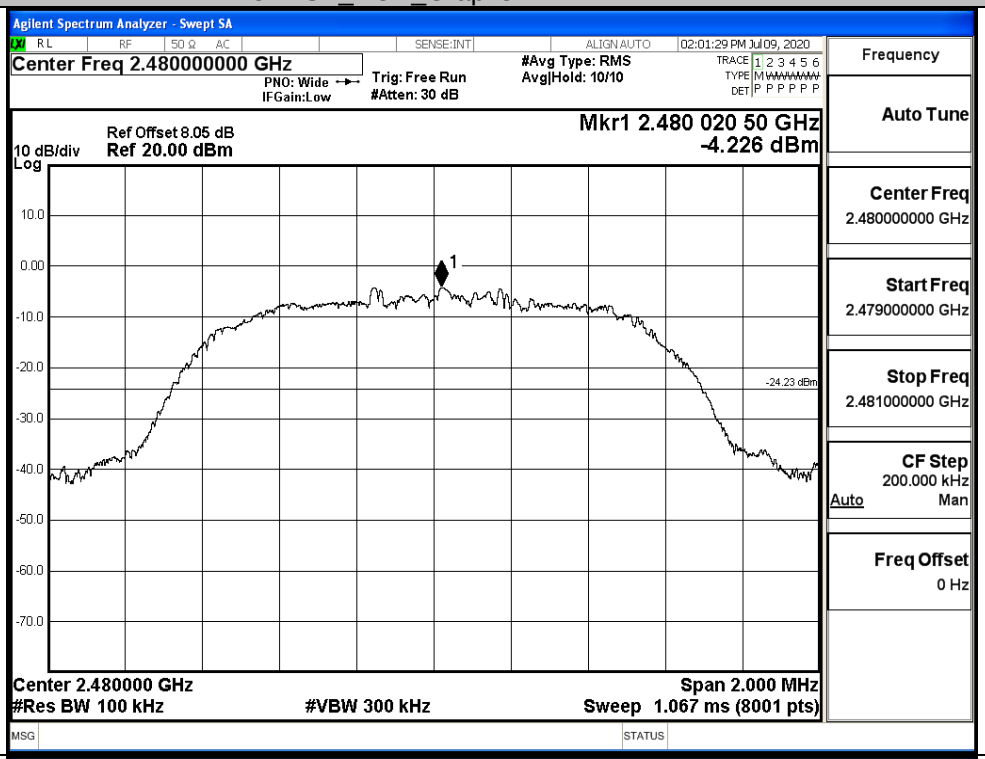
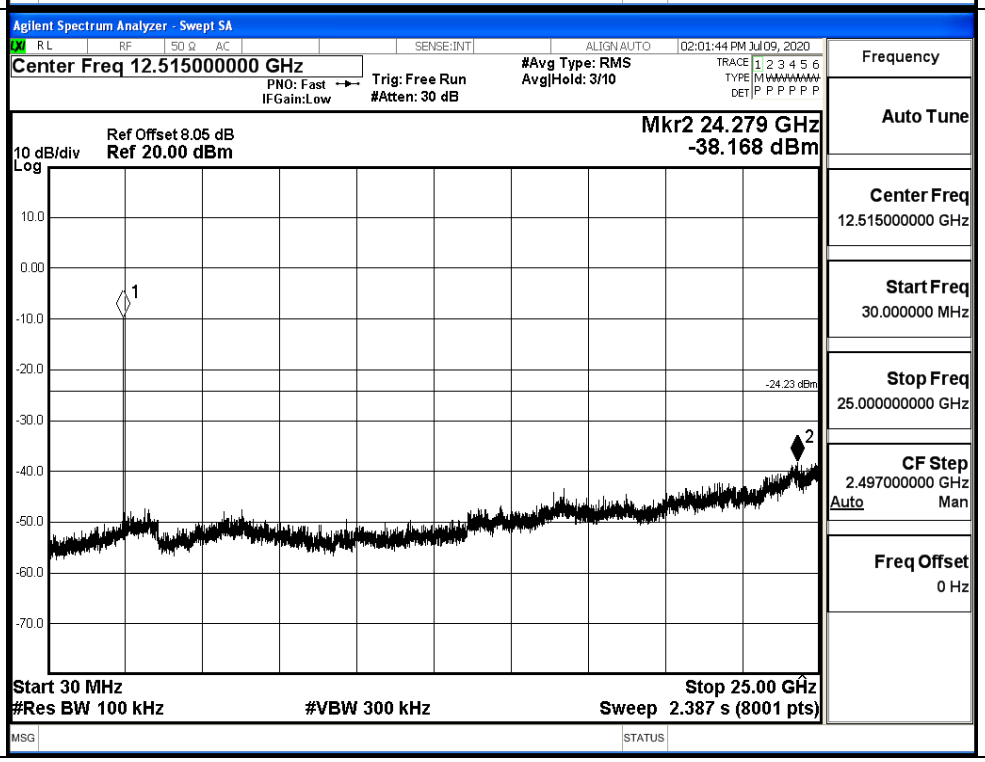
π/4DQPSK_LCH_Graphs		
Pref		
Puw		

π/4DQPSK_MCH_Graphs		
Pref		
Puw		

π/4DQPSK_HCH_Graphs		
Pref		
Puw		

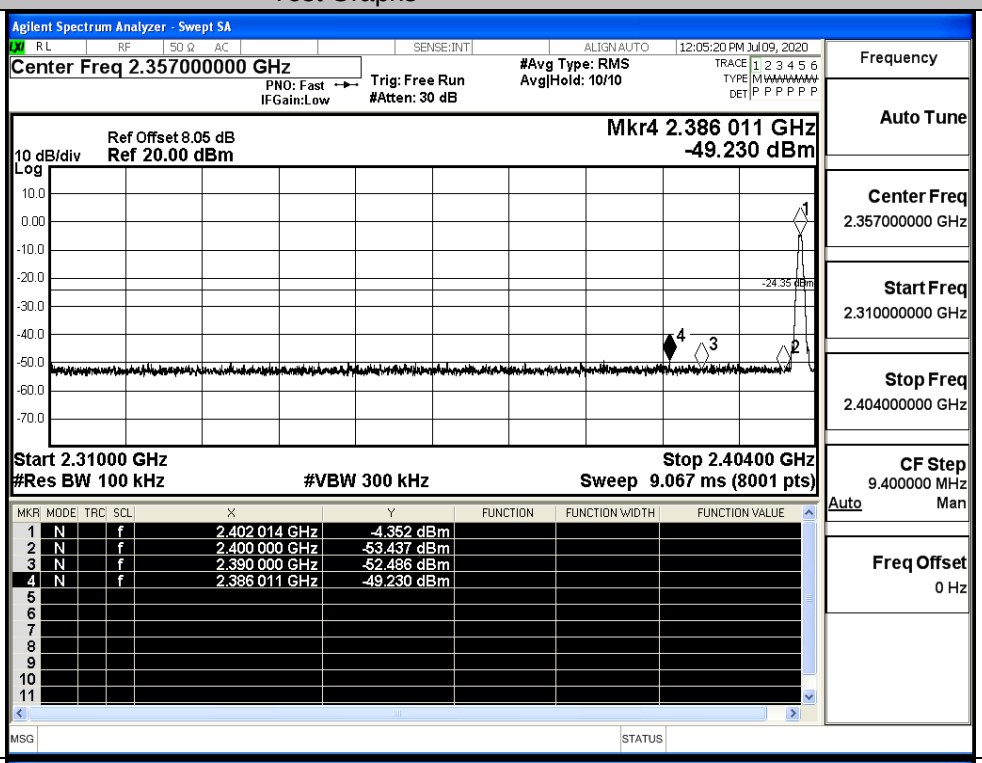
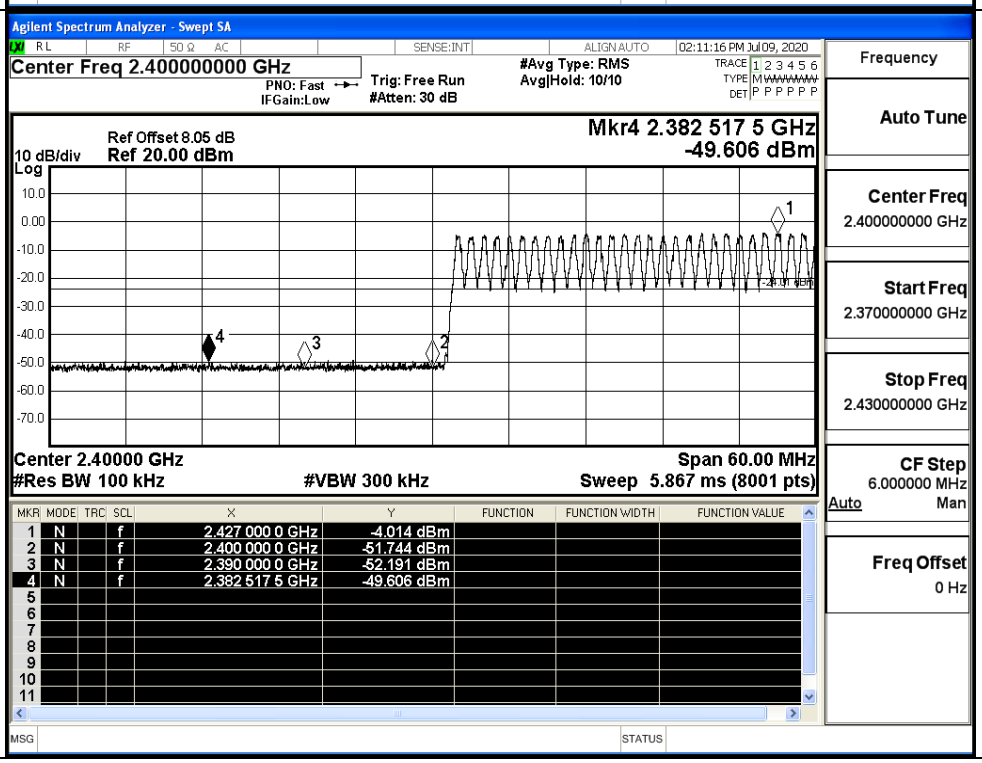
8DPSK_LCH_Graphs		
Pref		
Puw		

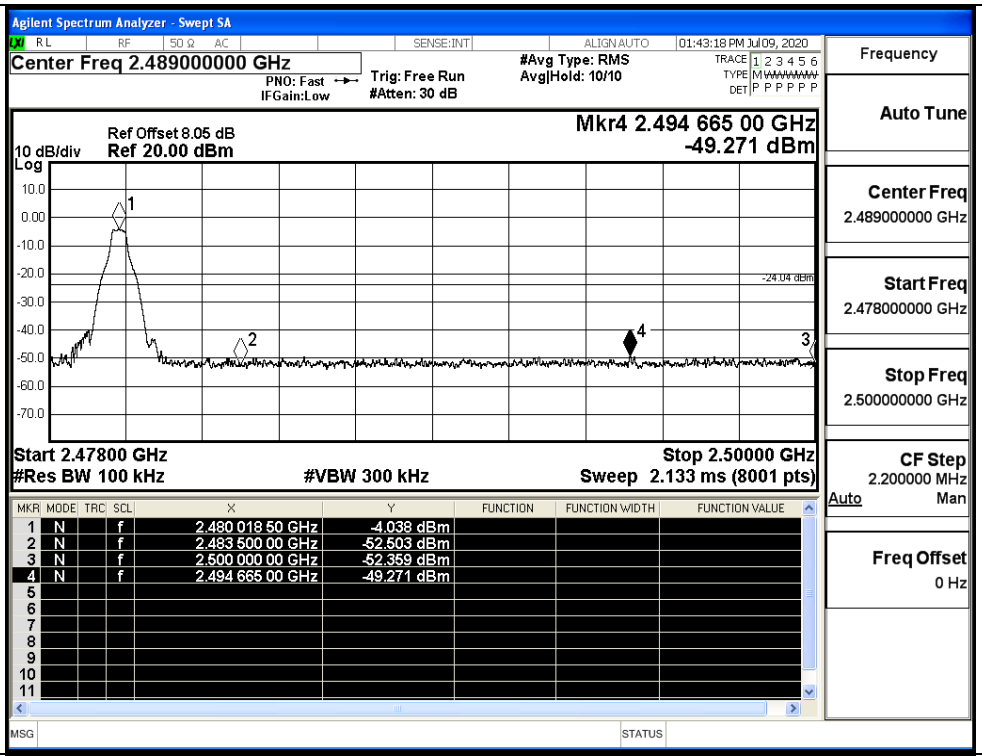
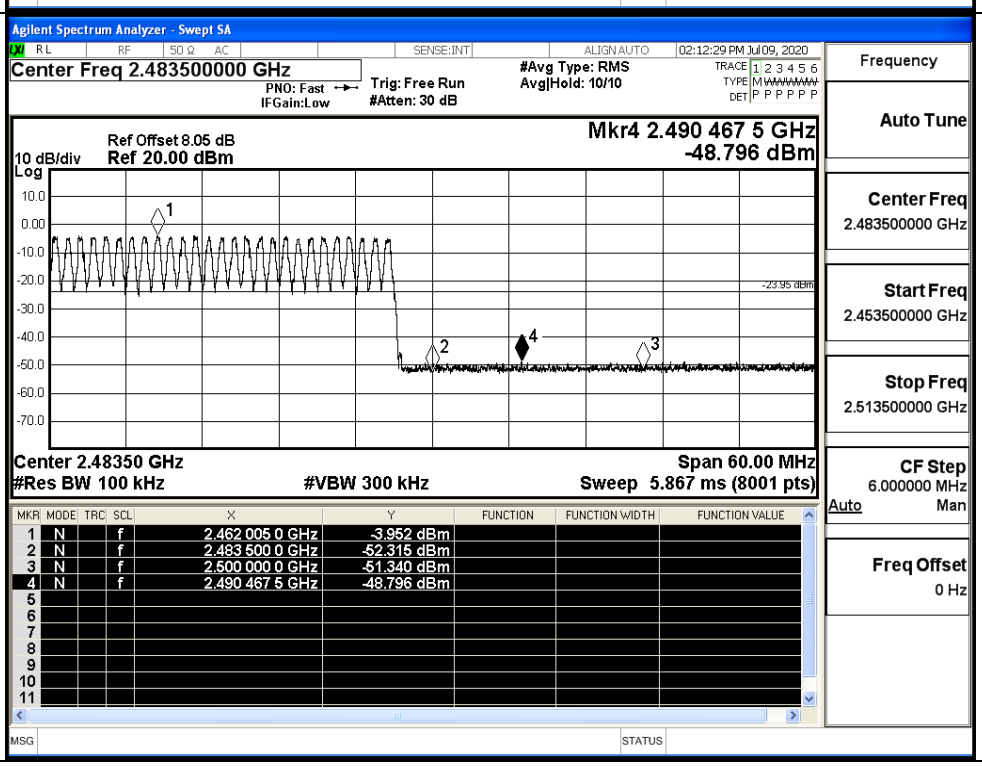
8DPSK_MCH_Graphs		
Pref		
Puw		

8DPSK_HCH_Graphs		
Pref		
Puw		

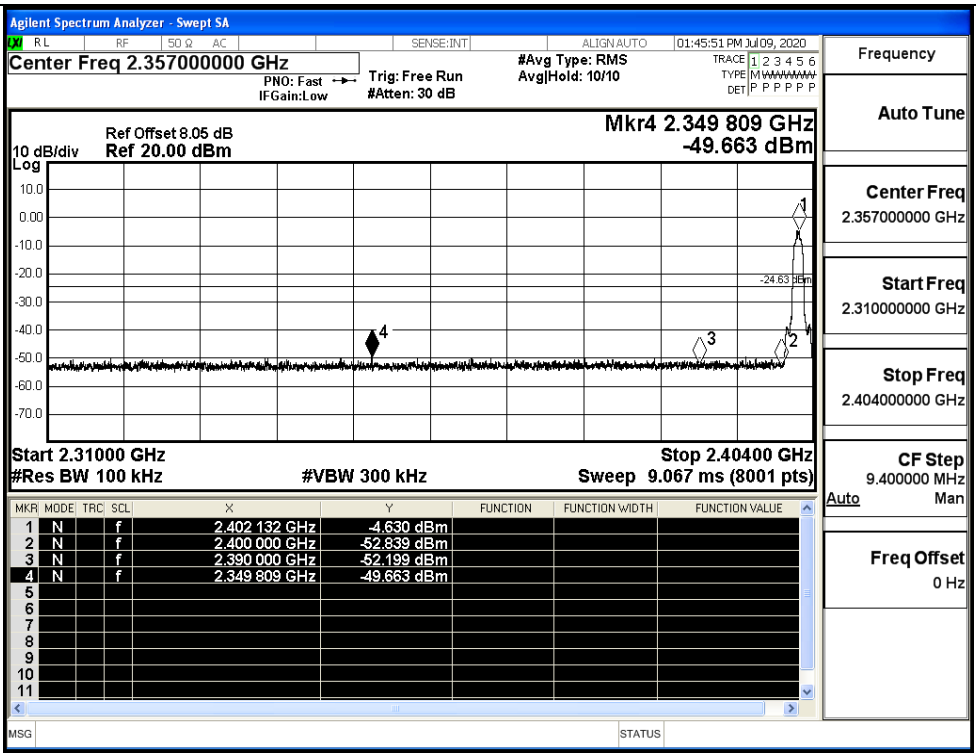
A.8 Band-edge for RF Conducted Emissions

Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	-4.352	Off	-49.230	-24.35	PASS
			-4.014	On	-49.606	-24.01	PASS
	HCH	2480	-4.038	Off	-49.271	-24.04	PASS
			-3.952	On	-48.796	-23.95	PASS
π/4DQPSK	LCH	2402	-4.630	Off	-49.663	-24.63	PASS
			-4.107	On	-48.316	-24.11	PASS
	HCH	2480	-4.393	Off	-48.501	-24.39	PASS
			-4.051	On	-48.706	-24.05	PASS
8DPSK	LCH	2402	-6.061	Off	-49.399	-26.06	PASS
			-3.955	On	-48.655	-23.96	PASS
	HCH	2480	-4.043	Off	-48.520	-24.04	PASS
			-3.910	On	-48.642	-23.91	PASS

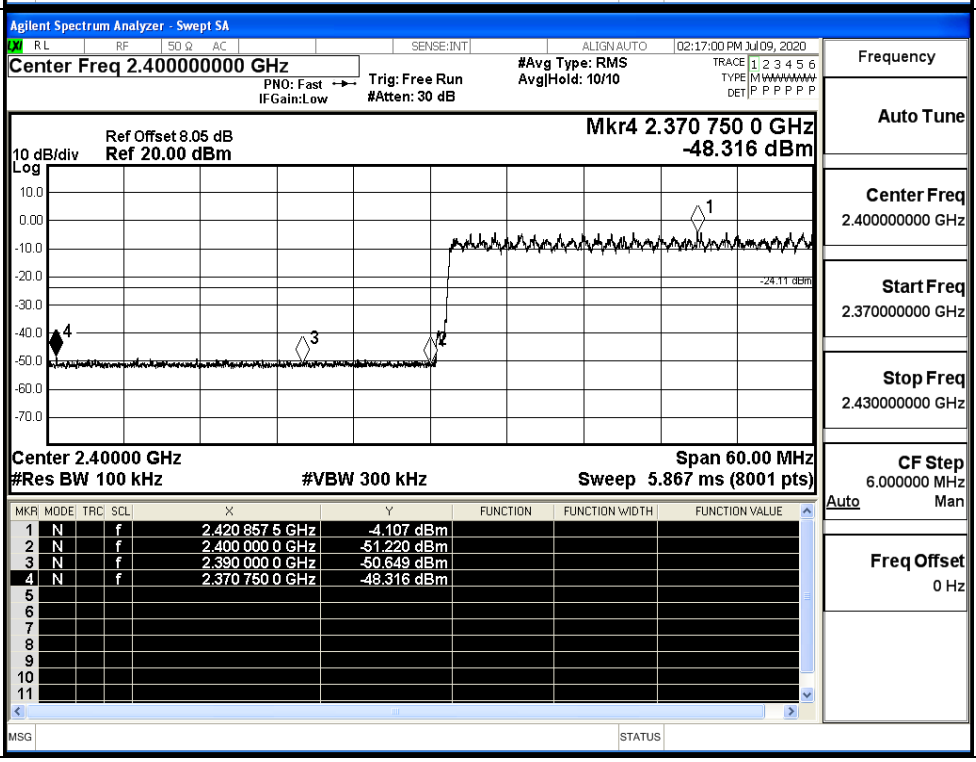
Test Graphs	
GFSK/LCH/No Hop	
GFSK/LCH/Hop	

GFSK/HCH/No Hop	
GFSK/HCH/Hop	

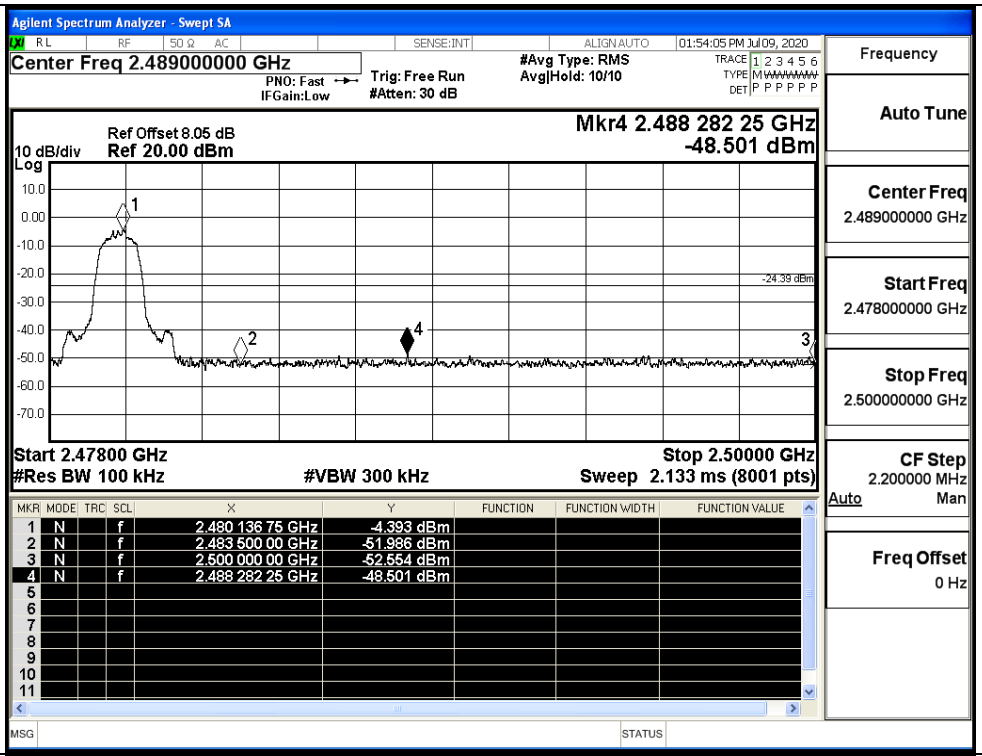
π/4DQPSK/LCH/No Hop



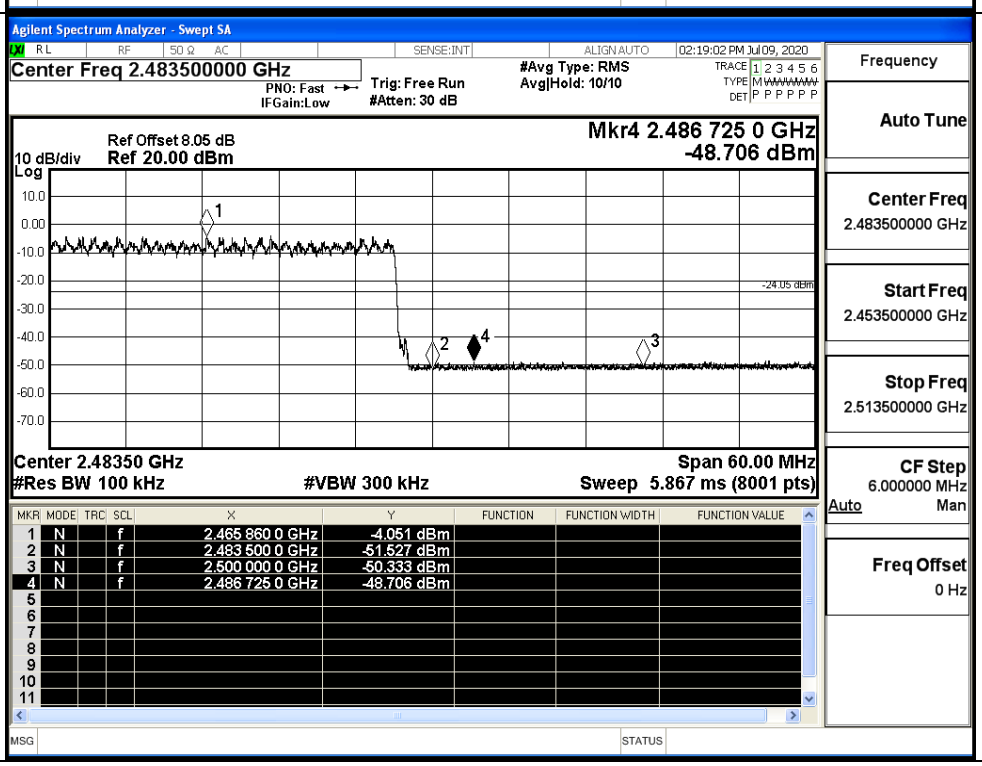
π/4DQPSK/LCH/Hop



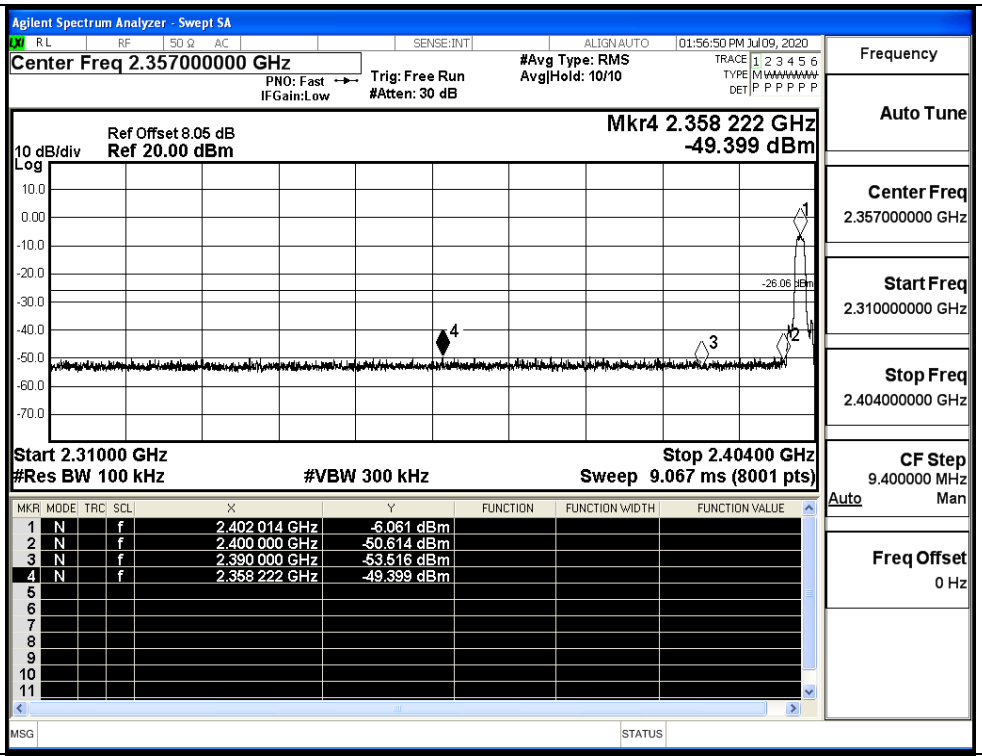
π/4DQPSK/HCH/No Hop



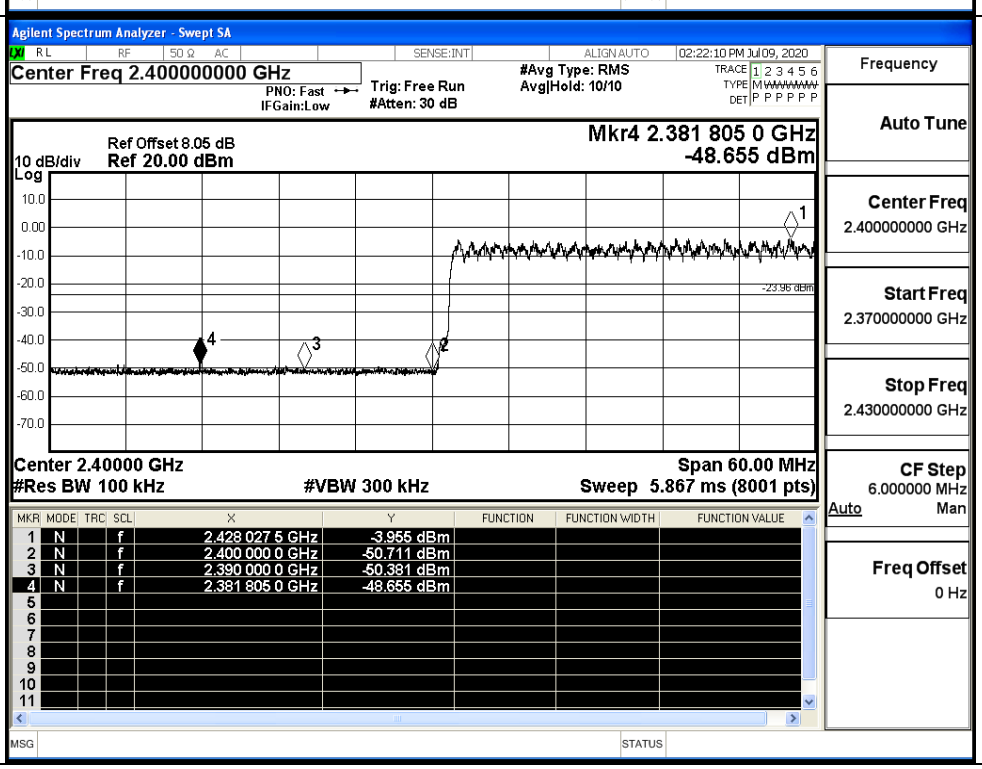
π/4DQPSK/HCH/Hop

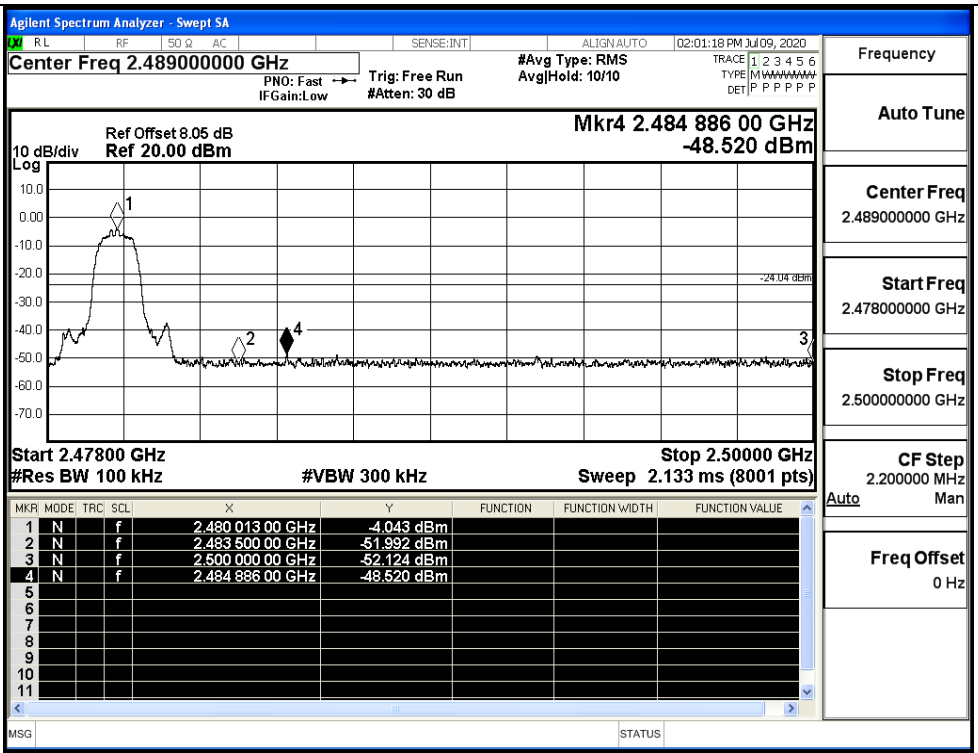
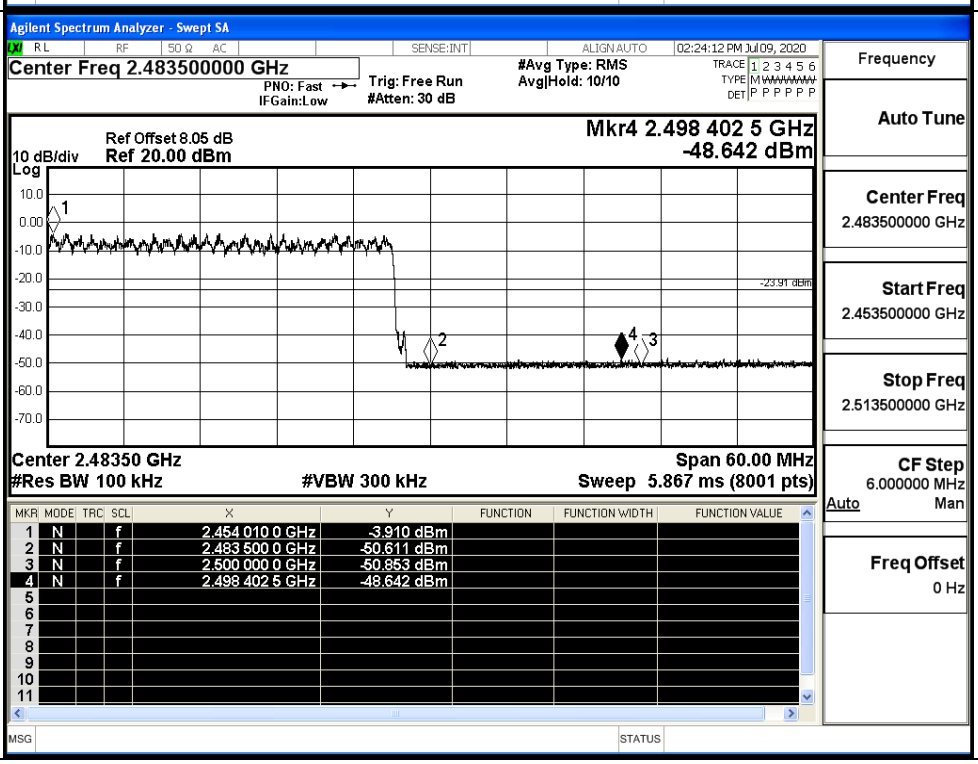


8DPSK/LCH/No Hop



8DPSK/LCH/Hop

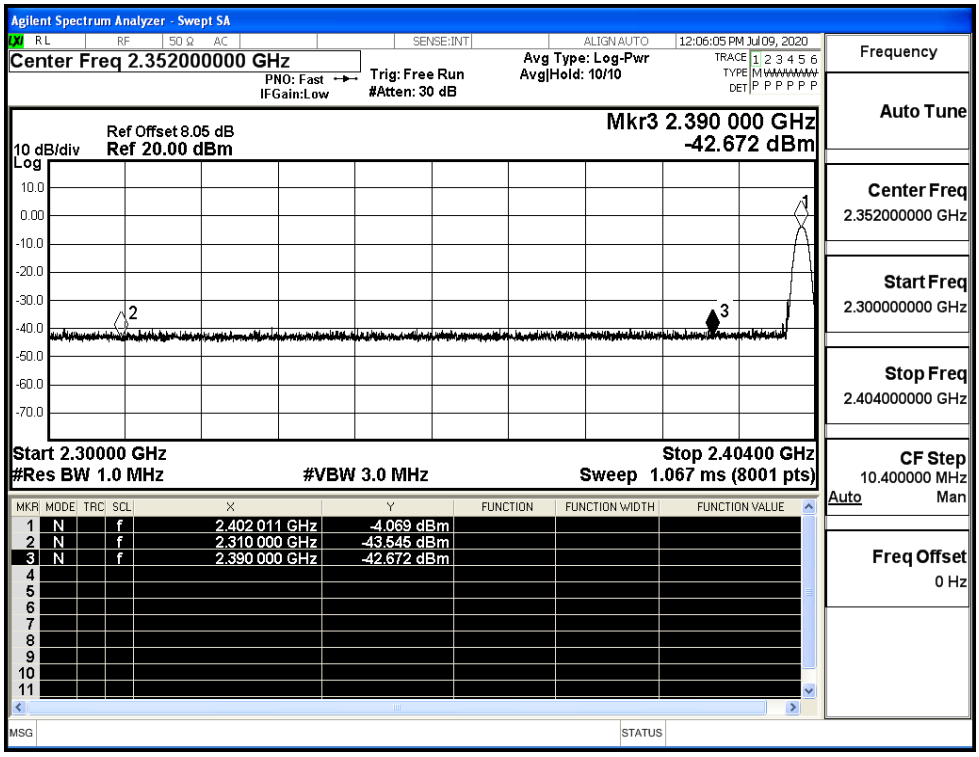


8DPSK/HCH/No Hop	
8DPSK/HCH/Hop	

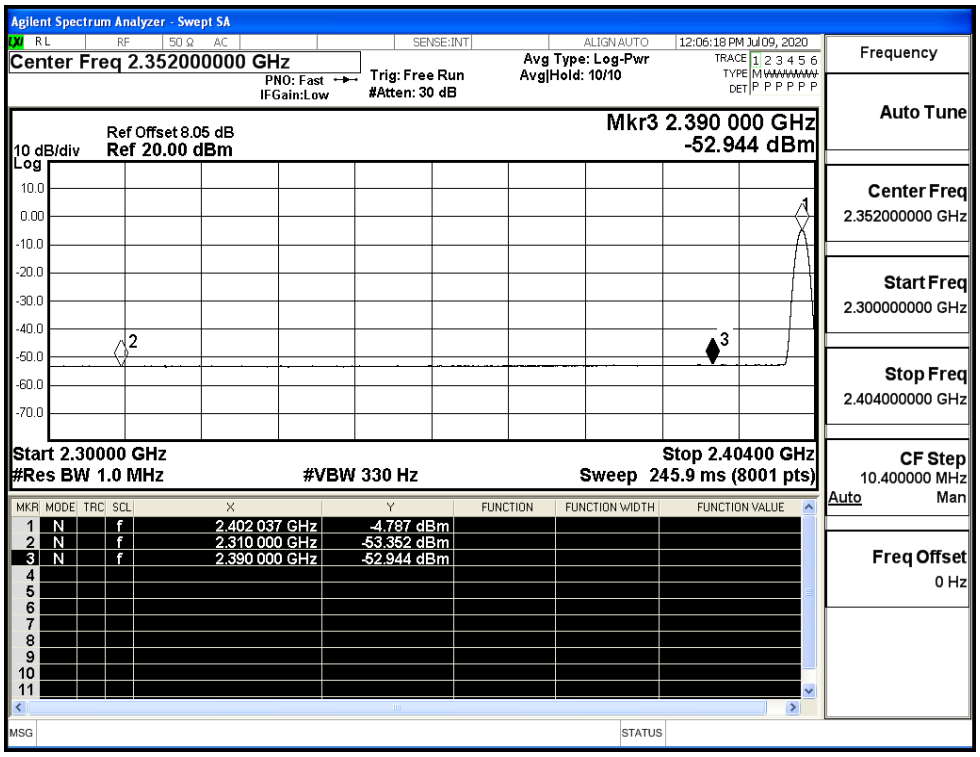
A.9 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-43.55	3.2	0	54.88	PEAK	74	PASS
	Off	2310.0	-53.35	3.2	0	45.08	AV	54	PASS
	Off	2390.0	-42.67	3.2	0	55.76	PEAK	74	PASS
	Off	2390.0	-52.94	3.2	0	45.49	AV	54	PASS
	Off	2483.5	-43.52	3.2	0	54.91	PEAK	74	PASS
	Off	2483.5	-52.38	3.2	0	46.05	AV	54	PASS
	Off	2500.0	-41.54	3.2	0	56.89	PEAK	74	PASS
	Off	2500.0	-52.27	3.2	0	46.16	AV	54	PASS
π/4DQPSK	Off	2310.0	-42.98	3.2	0	55.45	PEAK	74	PASS
	Off	2310.0	-53.30	3.2	0	45.13	AV	54	PASS
	Off	2390.0	-43.39	3.2	0	55.04	PEAK	74	PASS
	Off	2390.0	-52.97	3.2	0	45.46	AV	54	PASS
	Off	2483.5	-42.86	3.2	0	55.57	PEAK	74	PASS
	Off	2483.5	-52.45	3.2	0	45.98	AV	54	PASS
	Off	2500.0	-42.49	3.2	0	55.94	PEAK	74	PASS
	Off	2500.0	-52.27	3.2	0	46.16	AV	54	PASS
8DPSK	Off	2310.0	-43.62	3.2	0	54.81	PEAK	74	PASS
	Off	2310.0	-53.43	3.2	0	45.00	AV	54	PASS
	Off	2390.0	-43.68	3.2	0	54.75	PEAK	74	PASS
	Off	2390.0	-52.92	3.2	0	45.51	AV	54	PASS
	Off	2483.5	-42.76	3.2	0	55.67	PEAK	74	PASS
	Off	2483.5	-52.36	3.2	0	46.07	AV	54	PASS
	Off	2500.0	-41.00	3.2	0	57.43	PEAK	74	PASS
	Off	2500.0	-52.20	3.2	0	46.23	AV	54	PASS

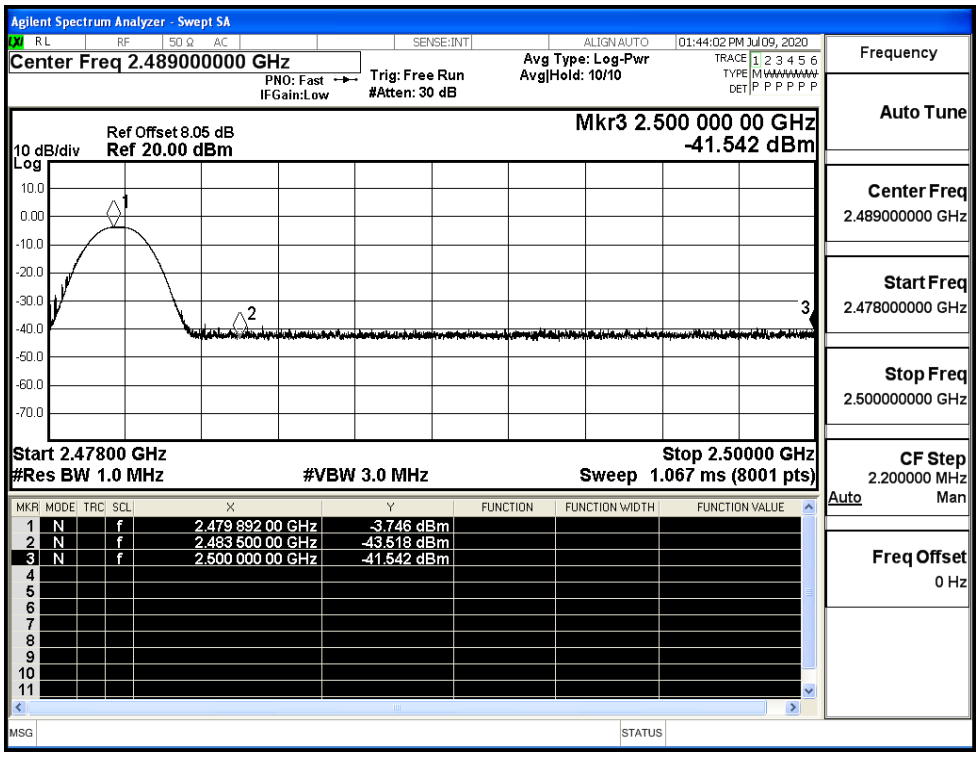
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (Low Channel)



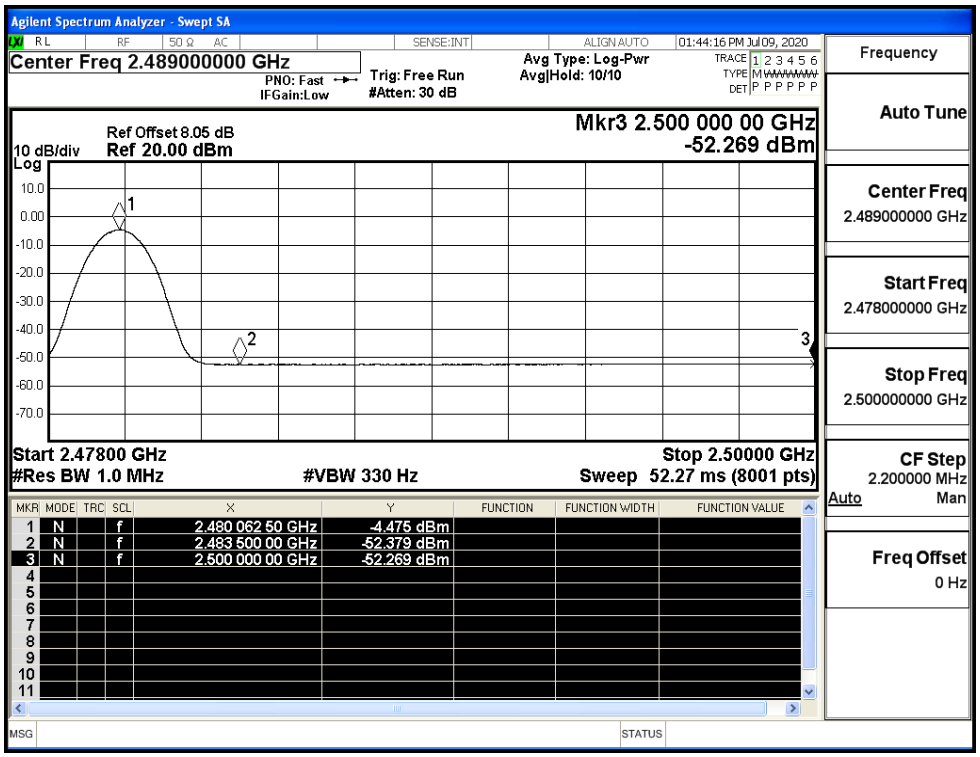
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (Low Channel)



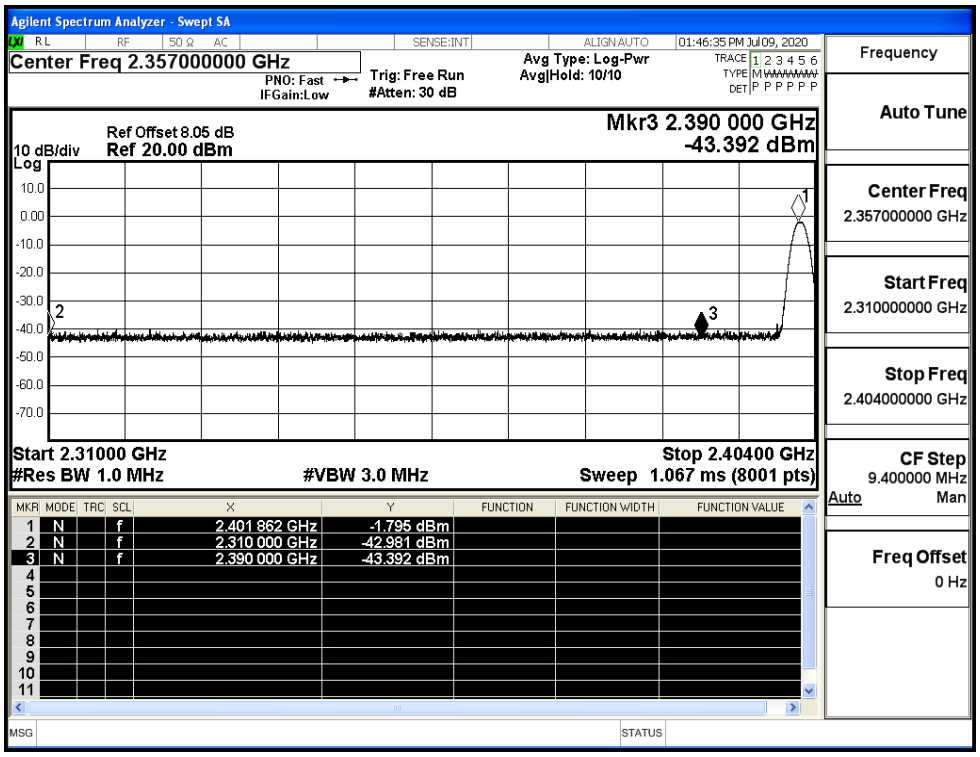
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (High Channel)



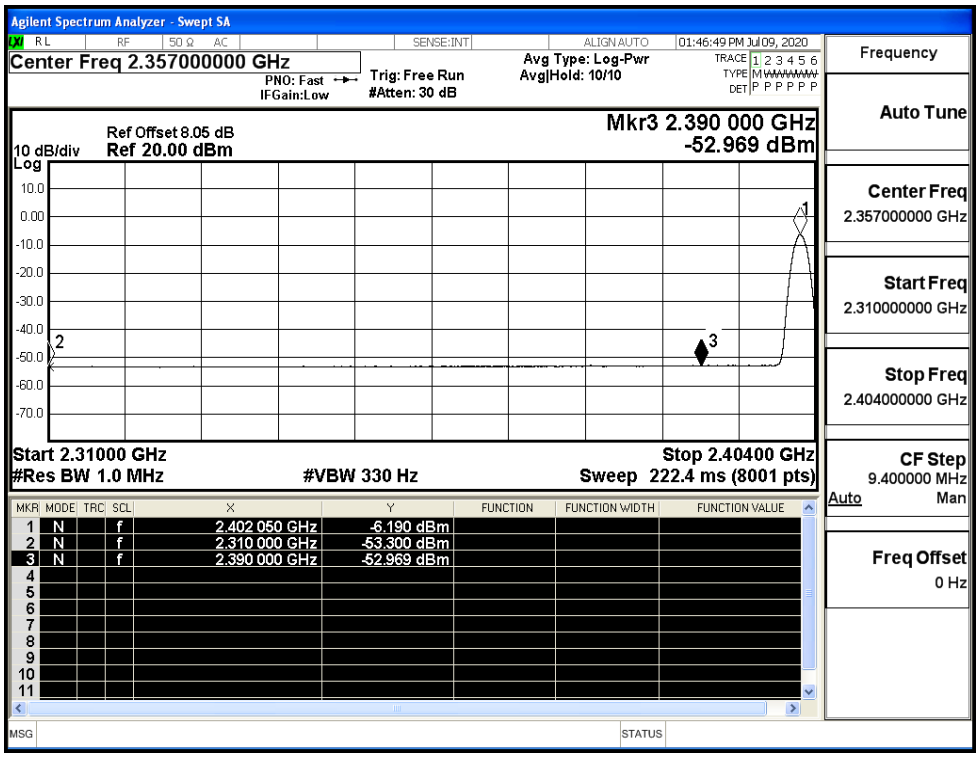
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (High Channel)



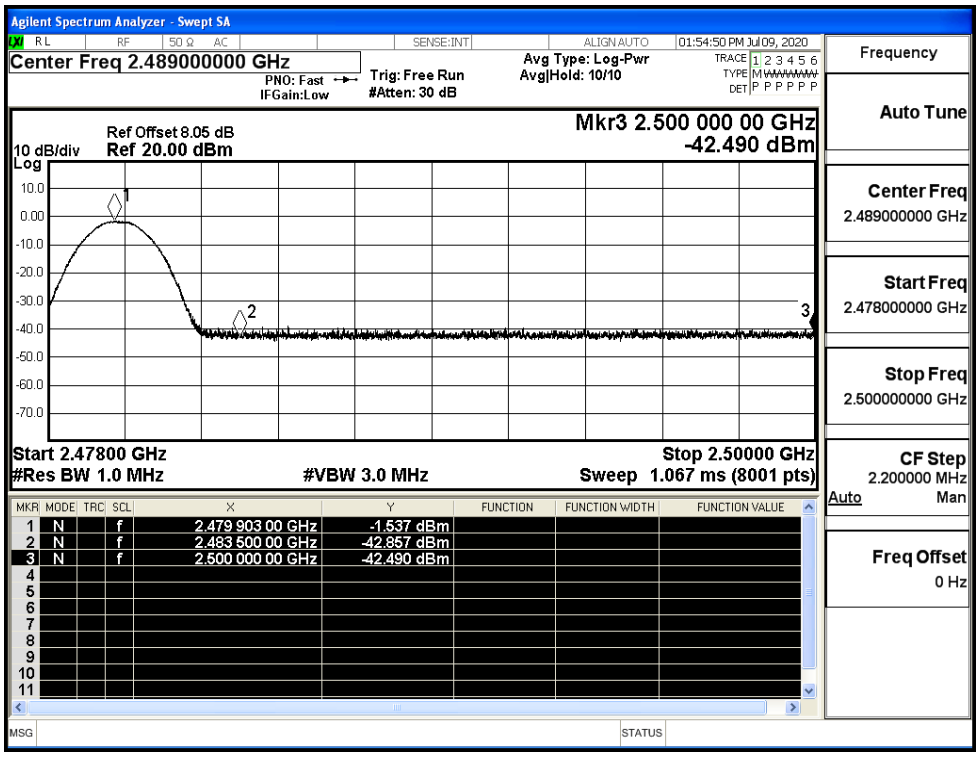
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (Low Channel)



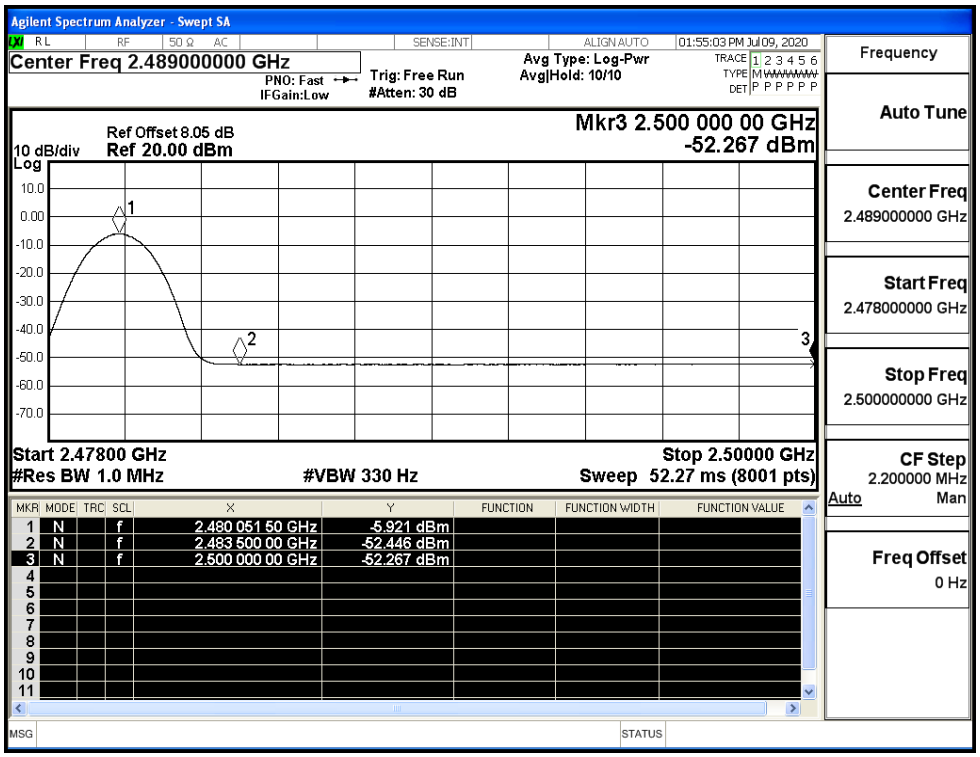
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (Low Channel)



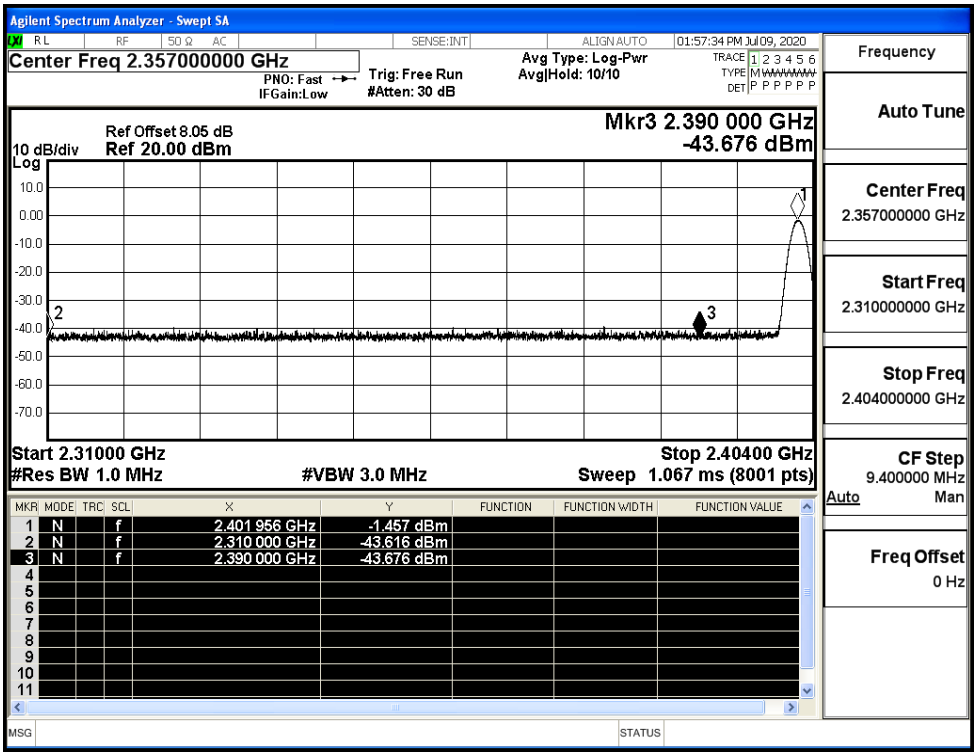
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (High Channel)



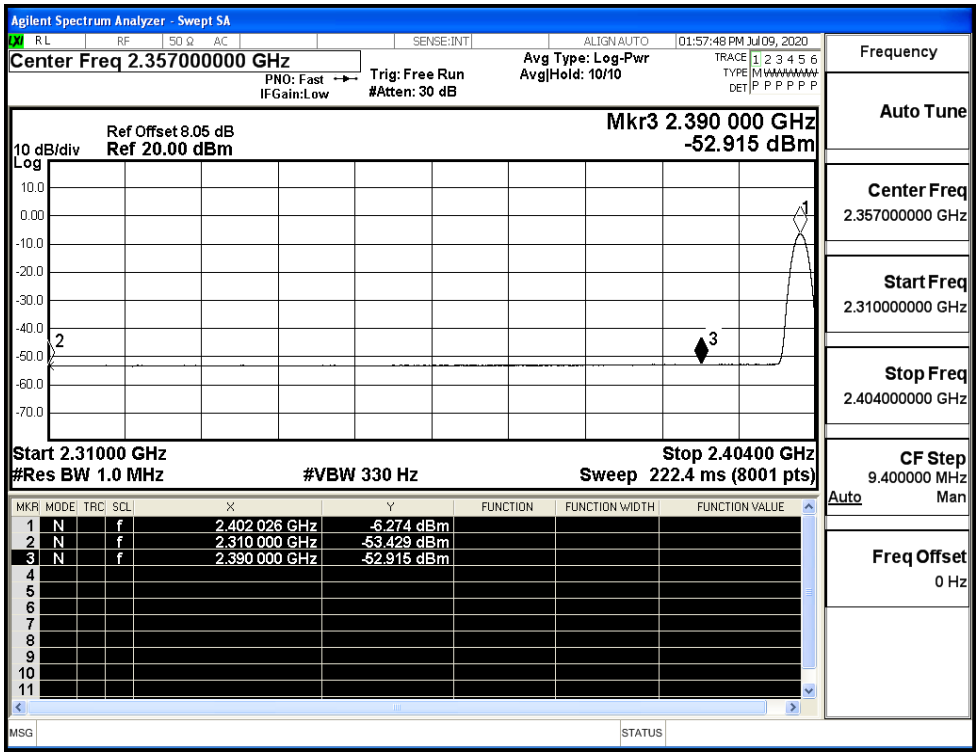
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (High Channel)



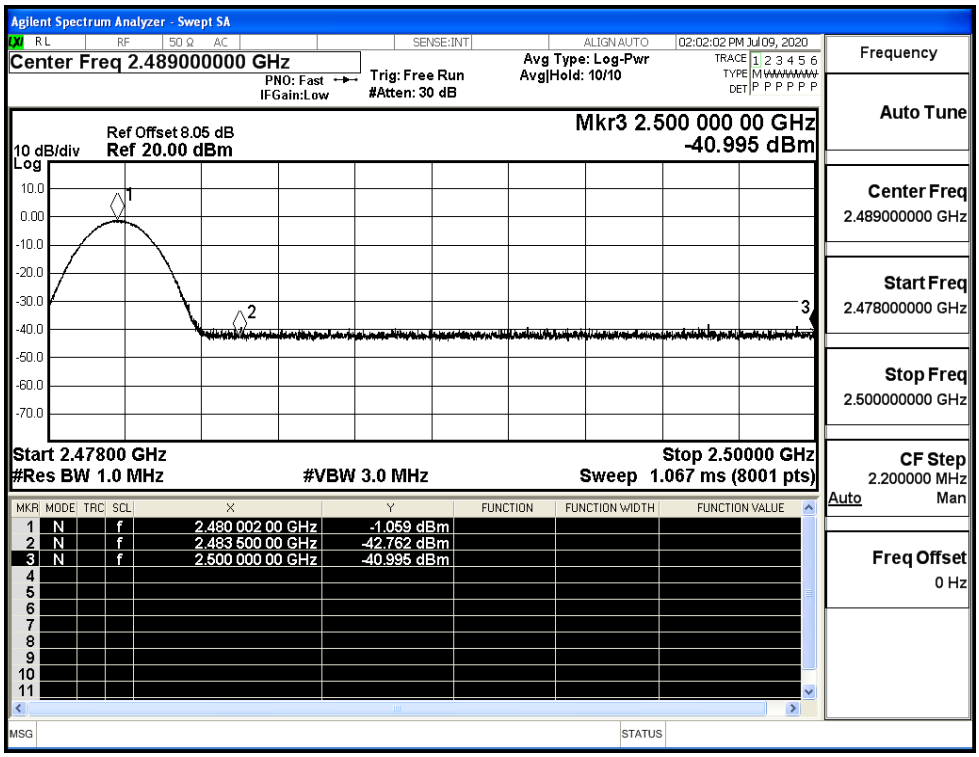
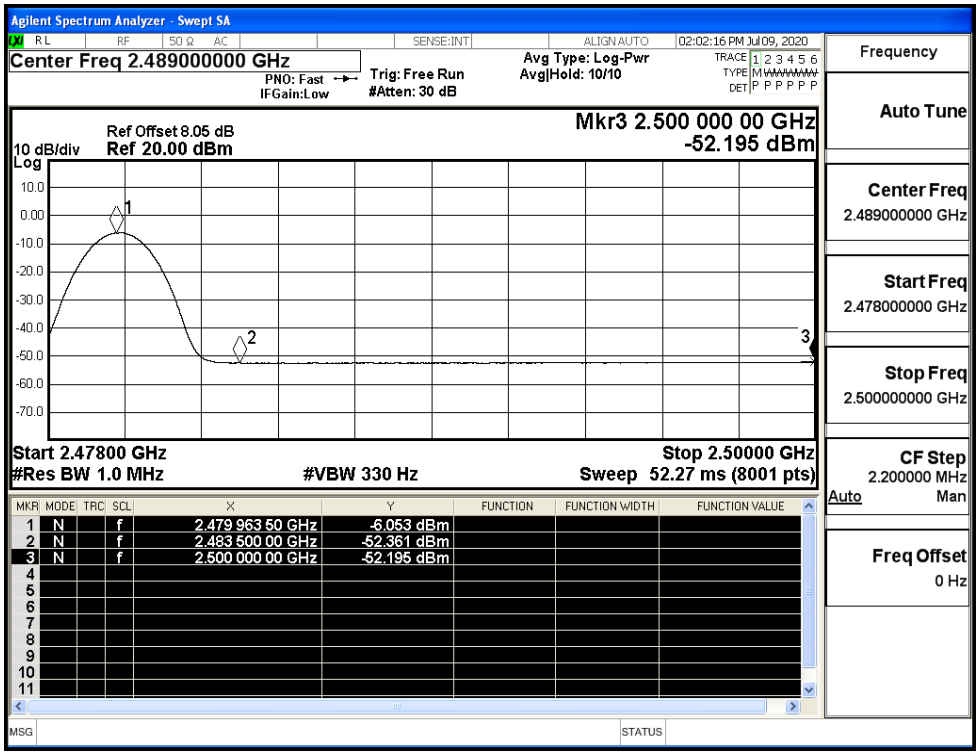
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)