Appendix A

RF Test Data for BT V3.0(BDR/EDR) (Conducted Measurement)

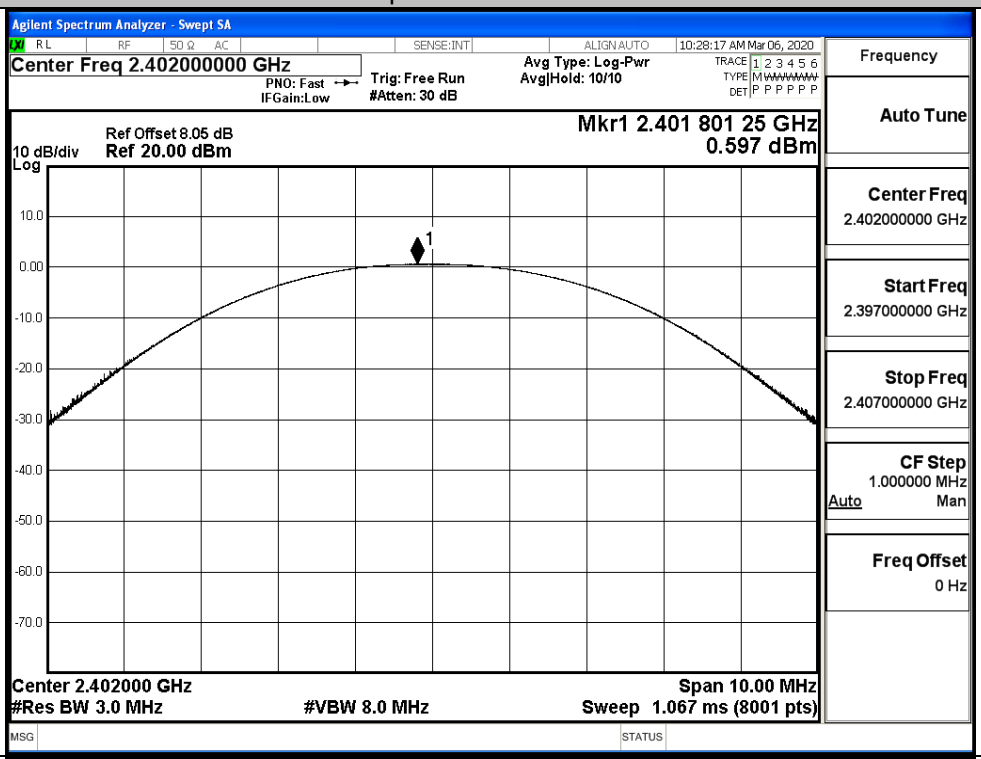
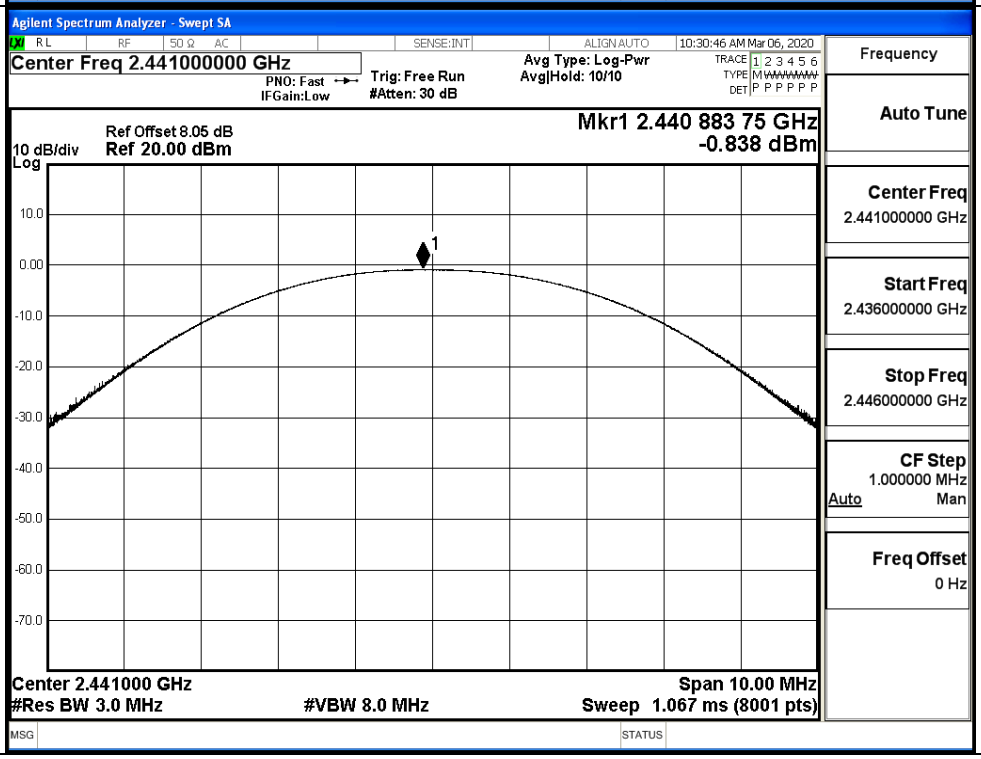
Product Name: Auto Diagnostic TOOL
Trade Mark: XTOOL
Test Model: Anyscan A30

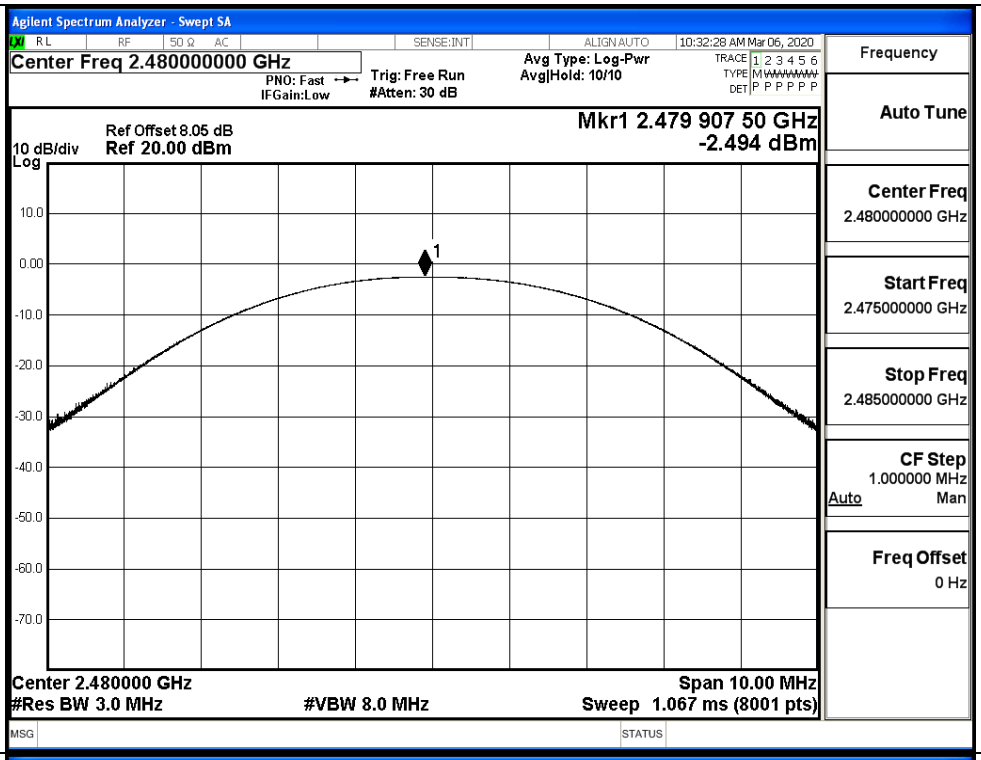
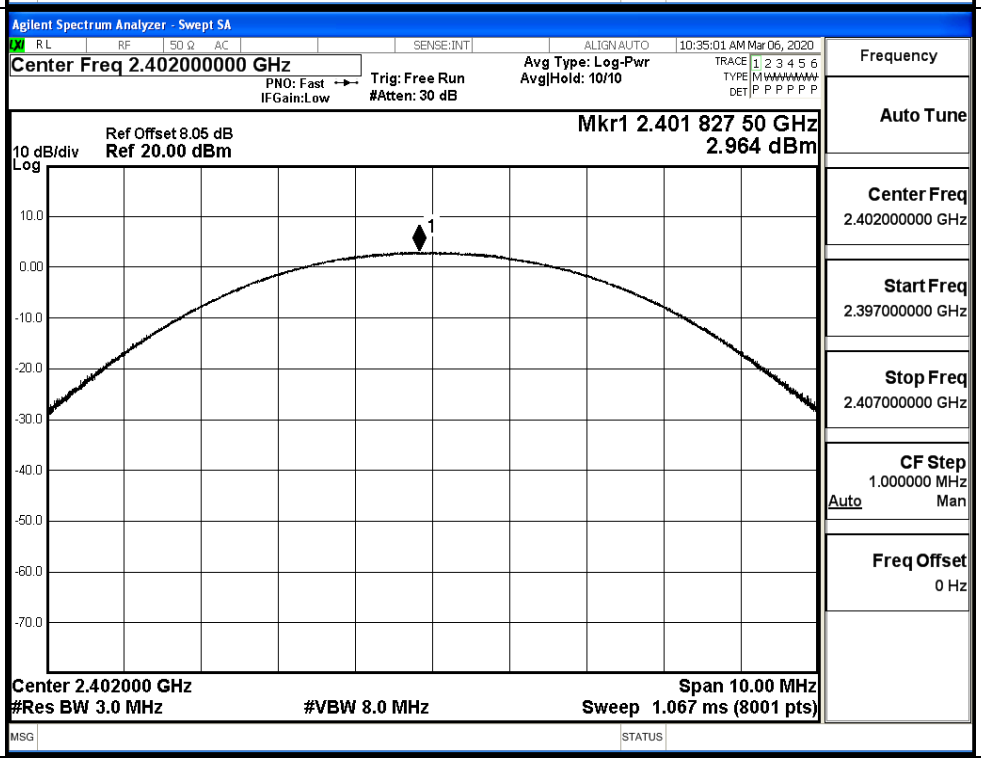
Environmental Conditions

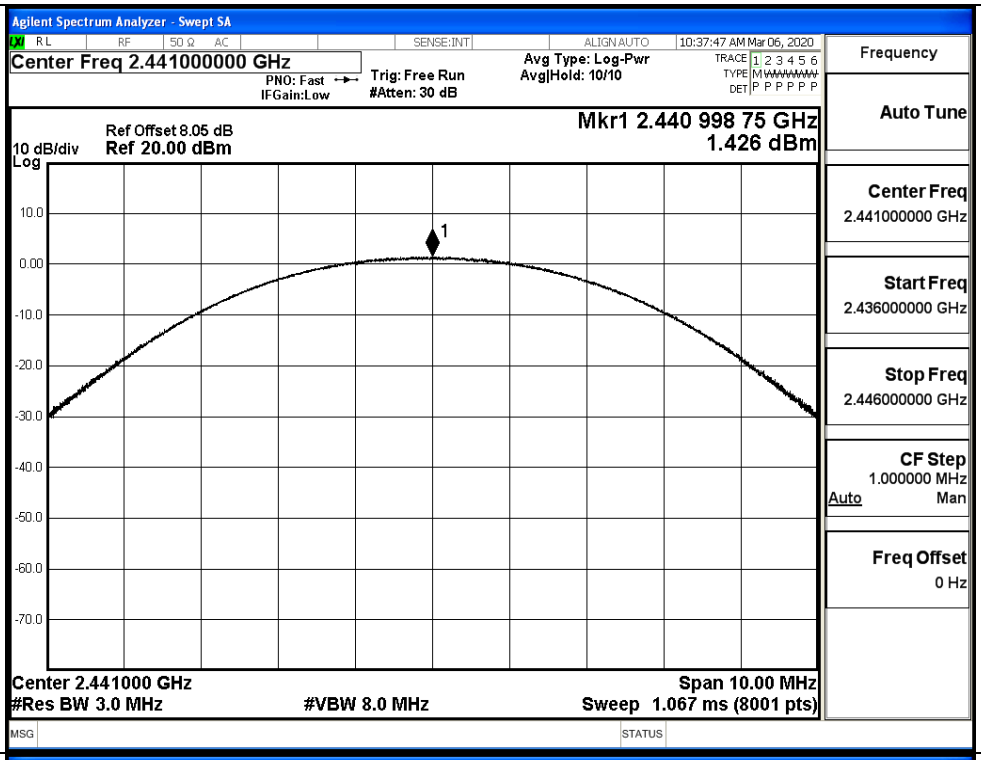
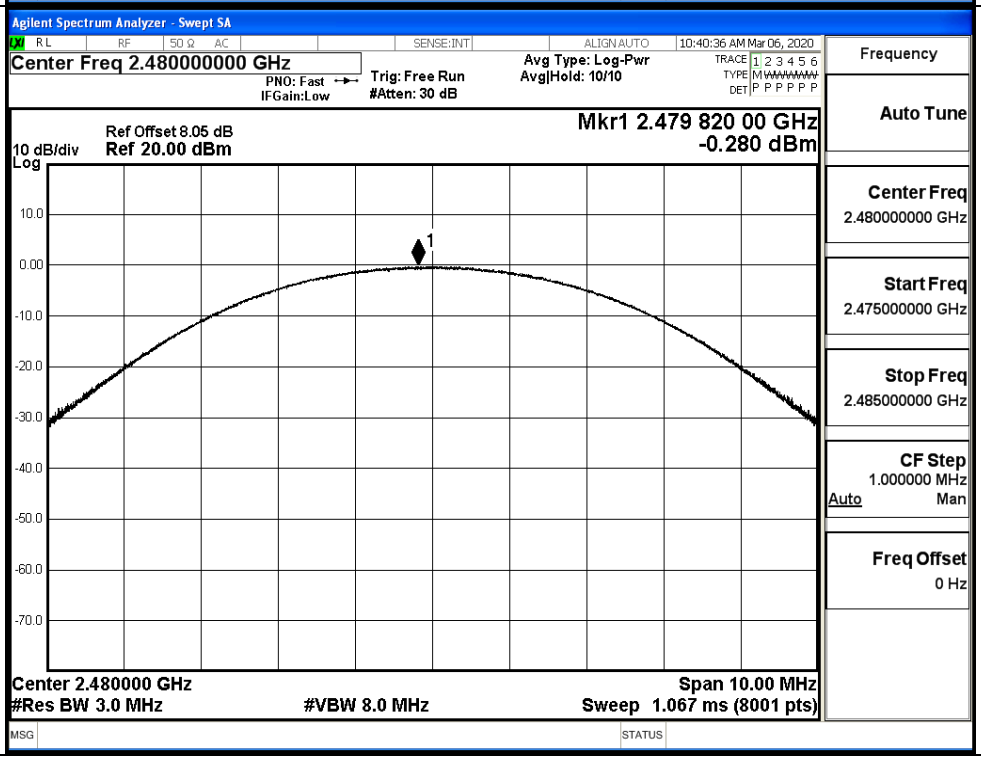
Temperature:	23.7°C
Relative Humidity:	52.4%
ATM Pressure:	100.0 kPa
Test Engineer:	Scout Wu
Supervised by:	Tom.Liu

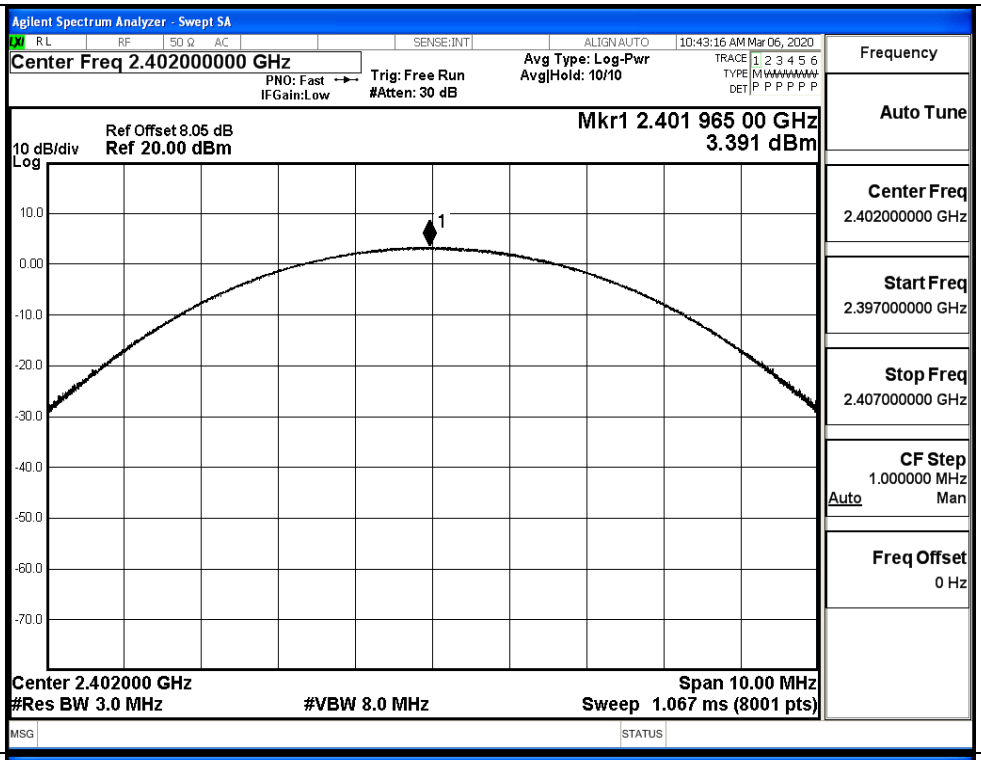
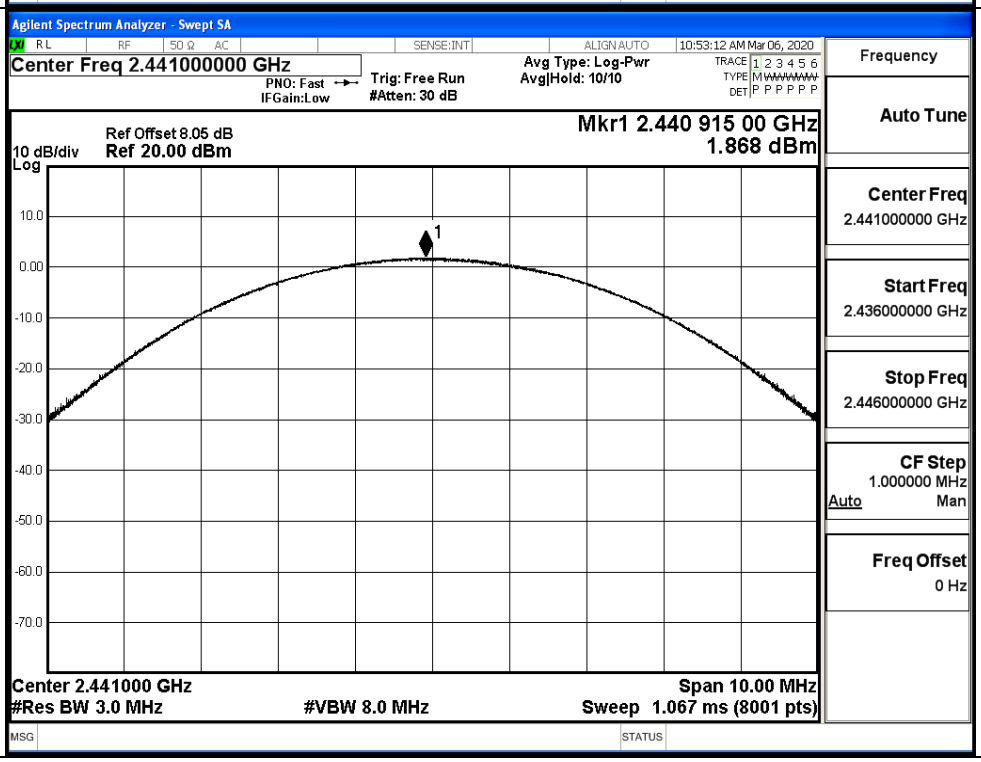
A.1 Maximum Conducted Peak Output Power

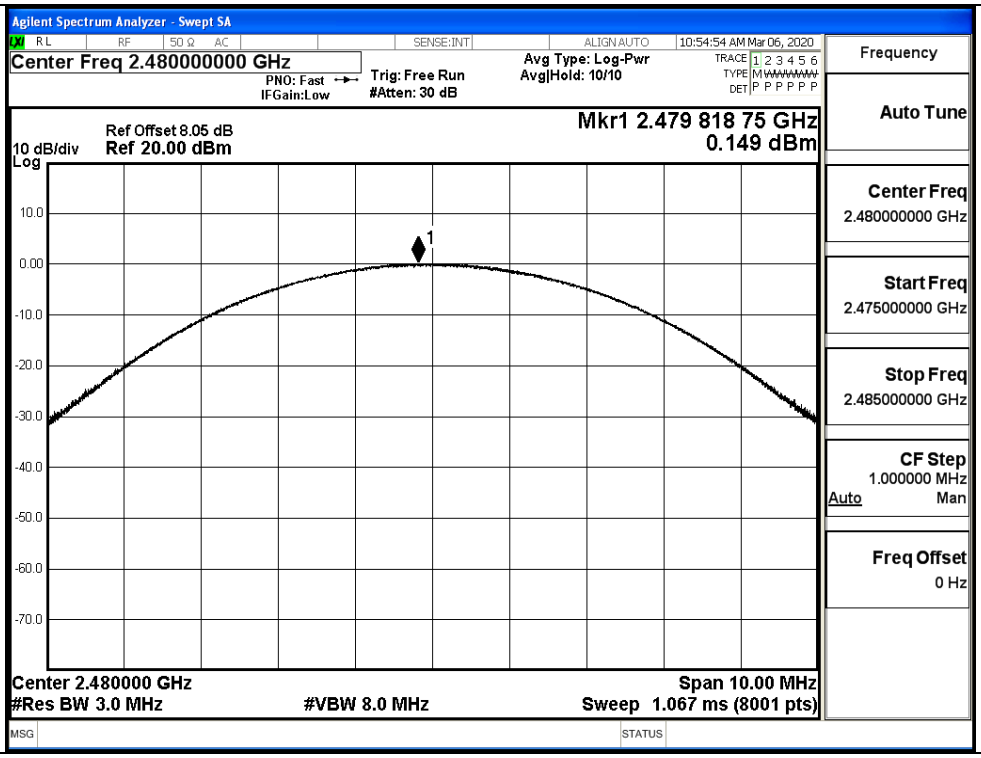
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	0.597	21	PASS
	MCH	-0.838	21	PASS
	HCH	-2.494	21	PASS
π/4DQPSK	LCH	2.964	21	PASS
	MCH	1.426	21	PASS
	HCH	-0.280	21	PASS
8DPSK	LCH	3.391	21	PASS
	MCH	1.868	21	PASS
	HCH	0.149	21	PASS

Test Graphs	
GFSK/LCH	
GFSK/MCH	

GFSK/HCH		
π/4DQPSK/LCH		

π/4DQPSK/MCH		
π/4DQPSK/HCH		

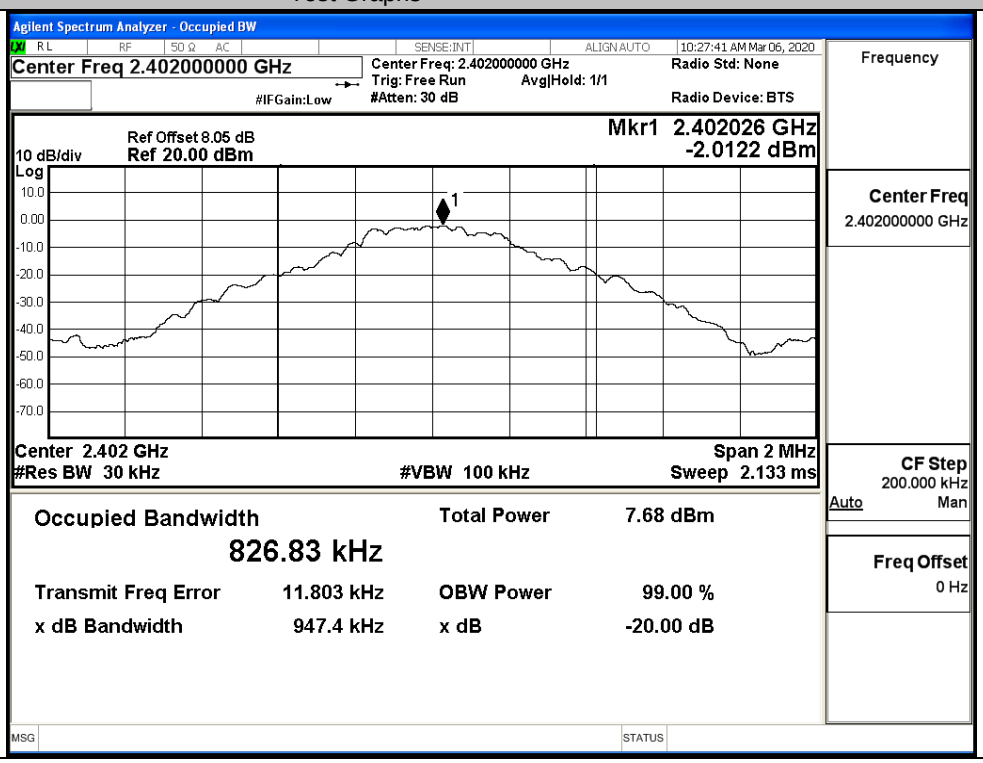
8DPSK/LCH		
8DPSK/MCH		

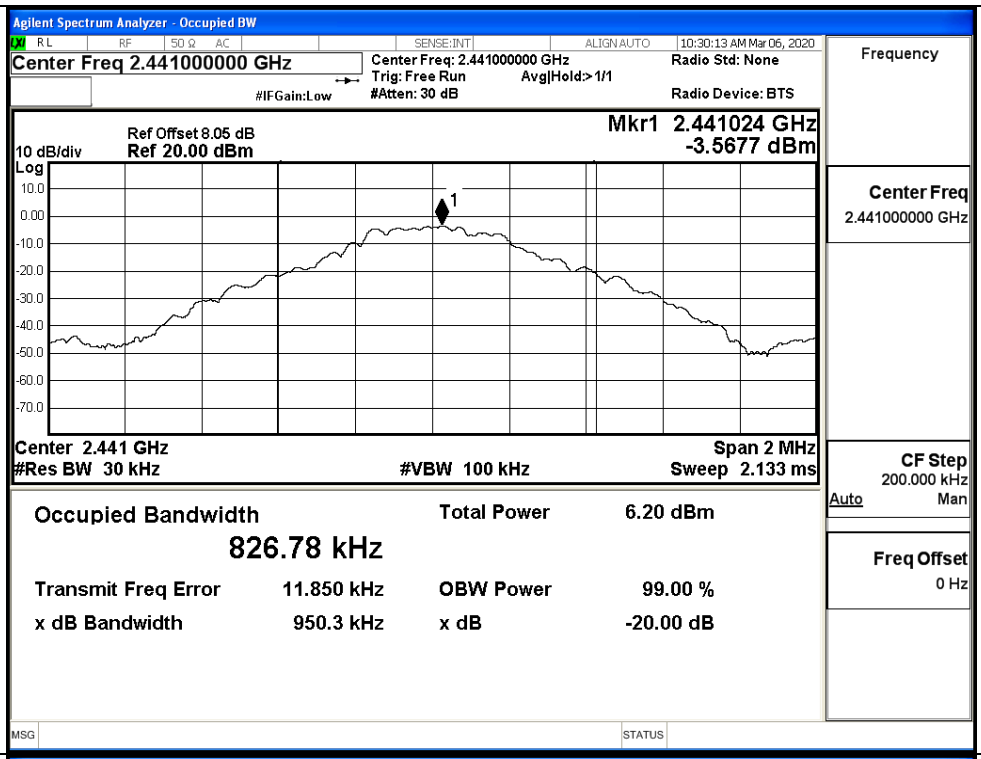
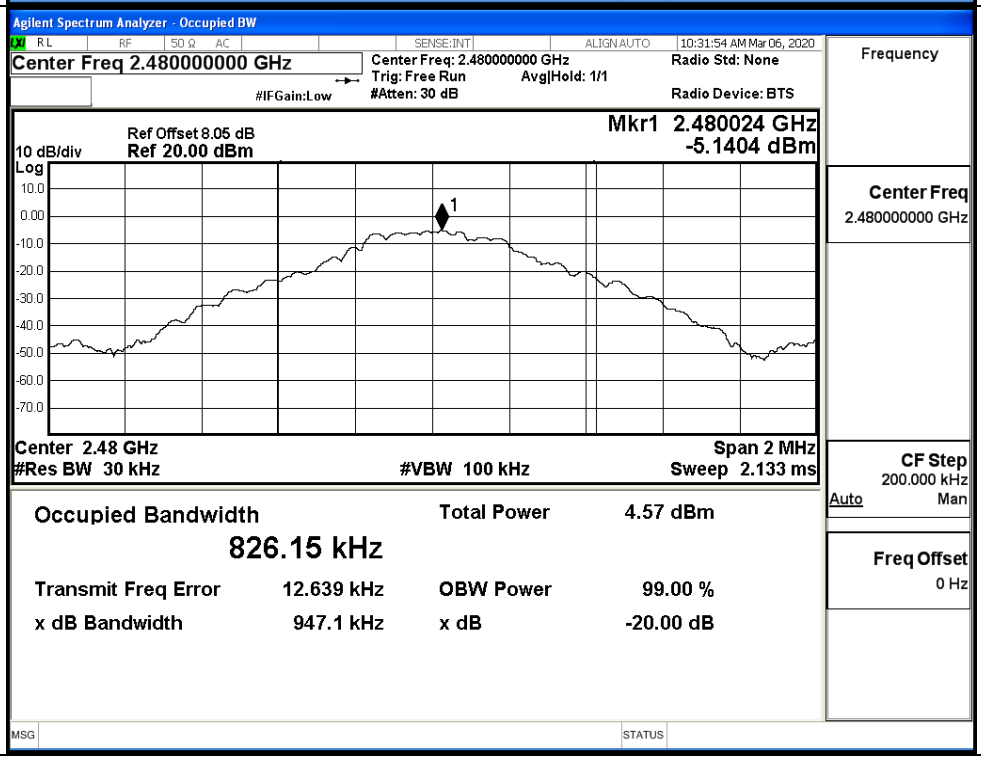
8DPSK/HCH		

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
10:54:54 AM Mar 06, 2020
Ref Offset 8.05 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr1 2.479 818 75 GHz
0.149 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

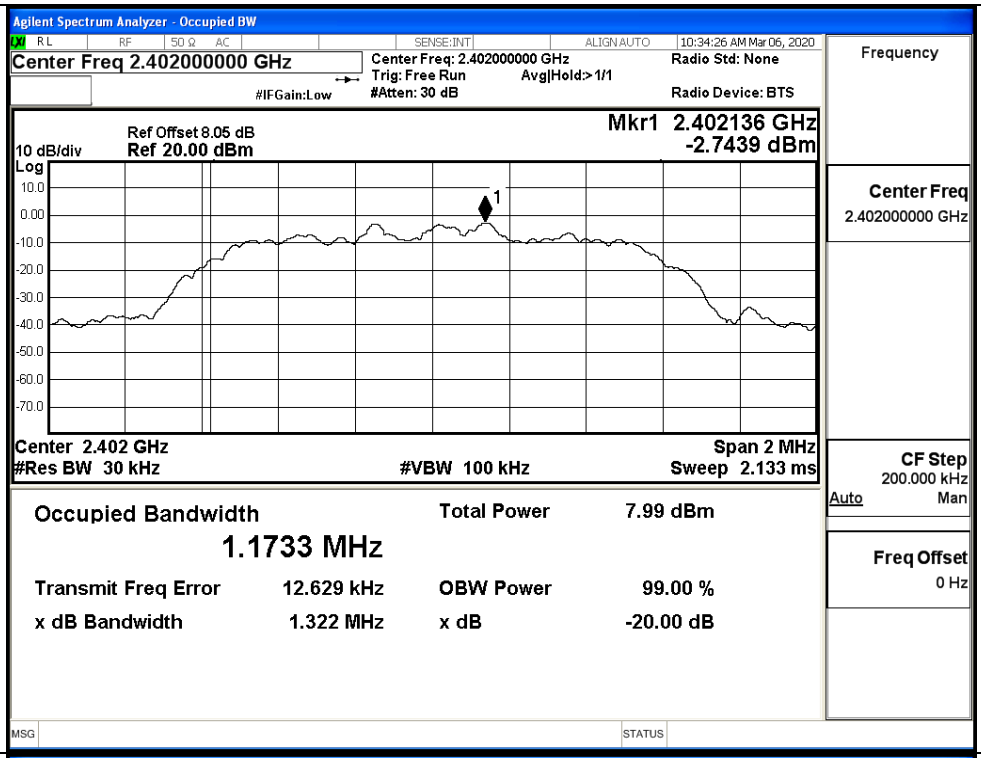
A.2 20dB Bandwidth

Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.9474	Not Specified	PASS
	MCH	0.9503	Not Specified	PASS
	HCH	0.9471	Not Specified	PASS
π/4DQPSK	LCH	1.322	Not Specified	PASS
	MCH	1.324	Not Specified	PASS
	HCH	1.323	Not Specified	PASS
8DPSK	LCH	1.297	Not Specified	PASS
	MCH	1.298	Not Specified	PASS
	HCH	1.298	Not Specified	PASS

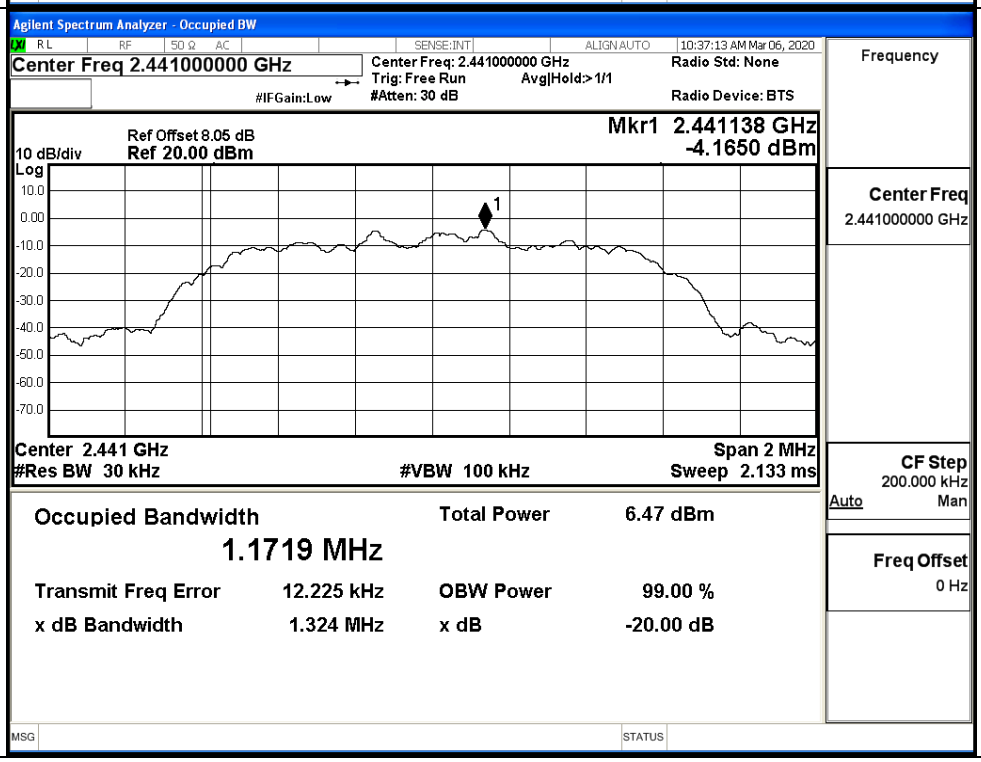
Test Graphs		
GFSK/LCH		

GFSK/MCH		
GFSK/HCH		

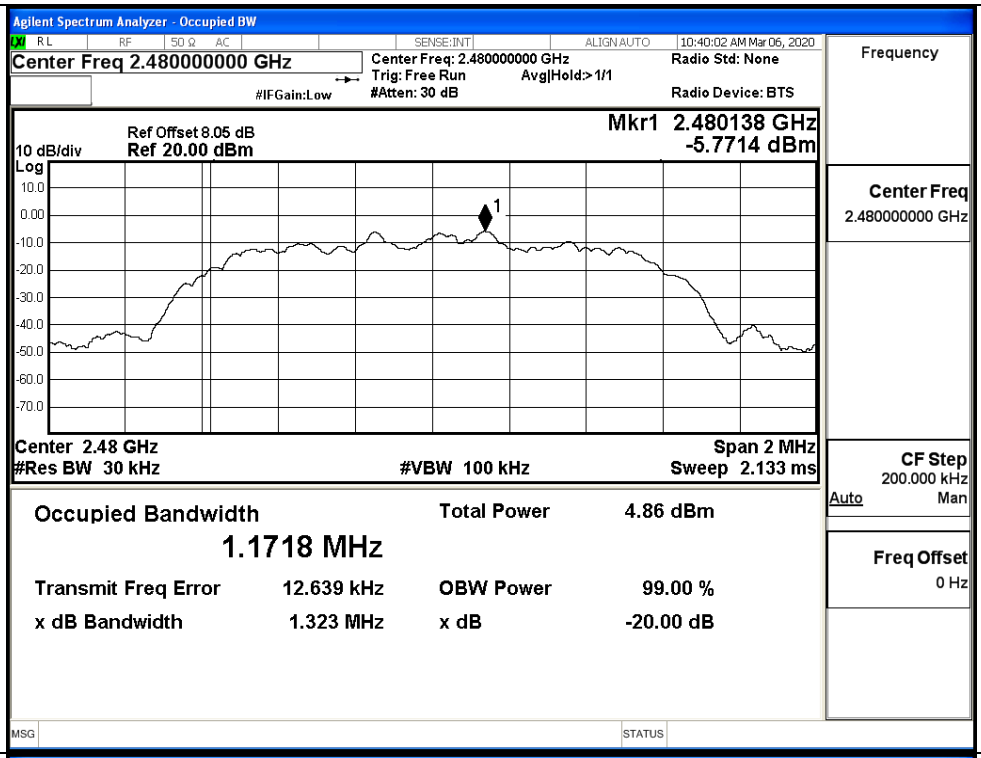
π/4DQPSK/LCH



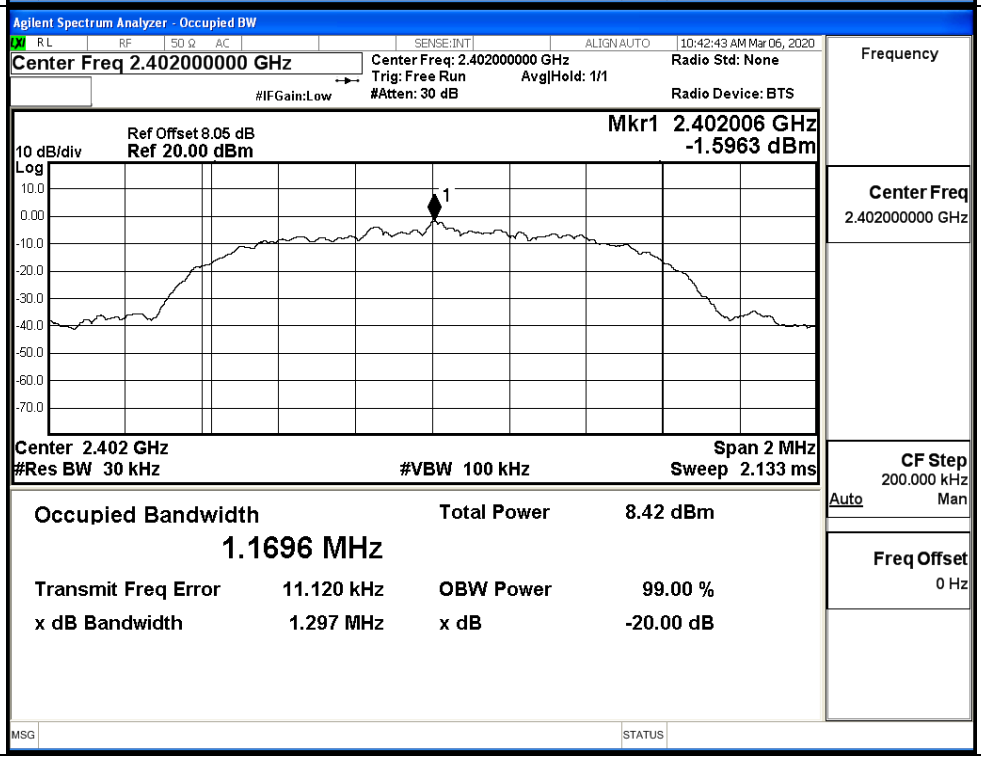
π/4DQPSK/MCH

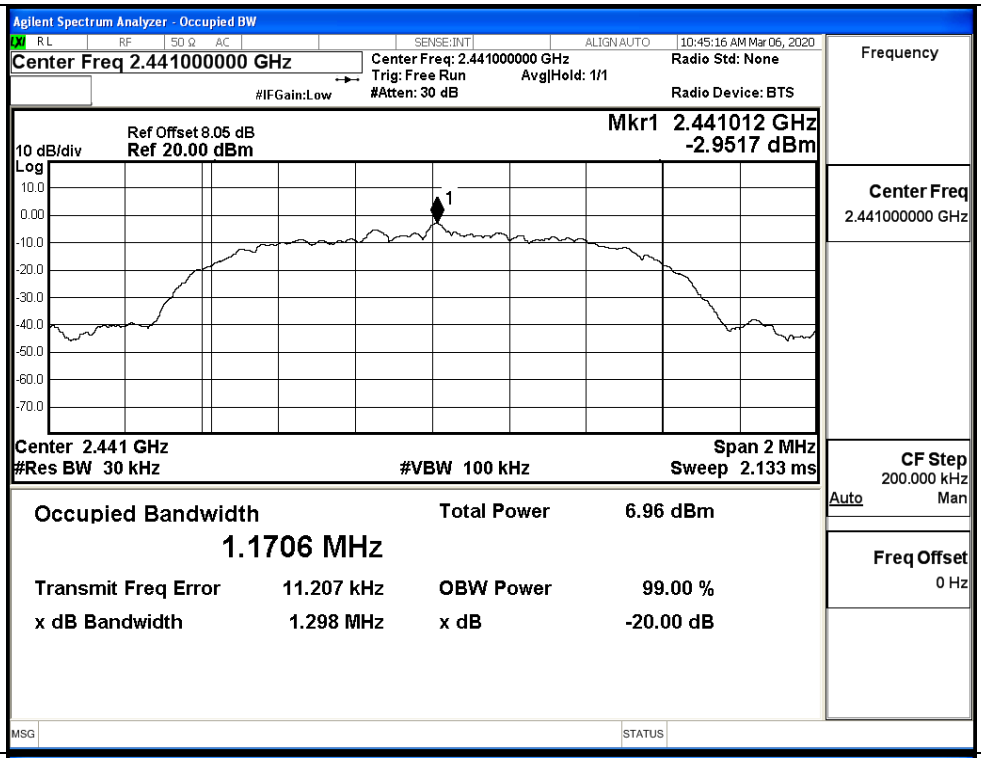
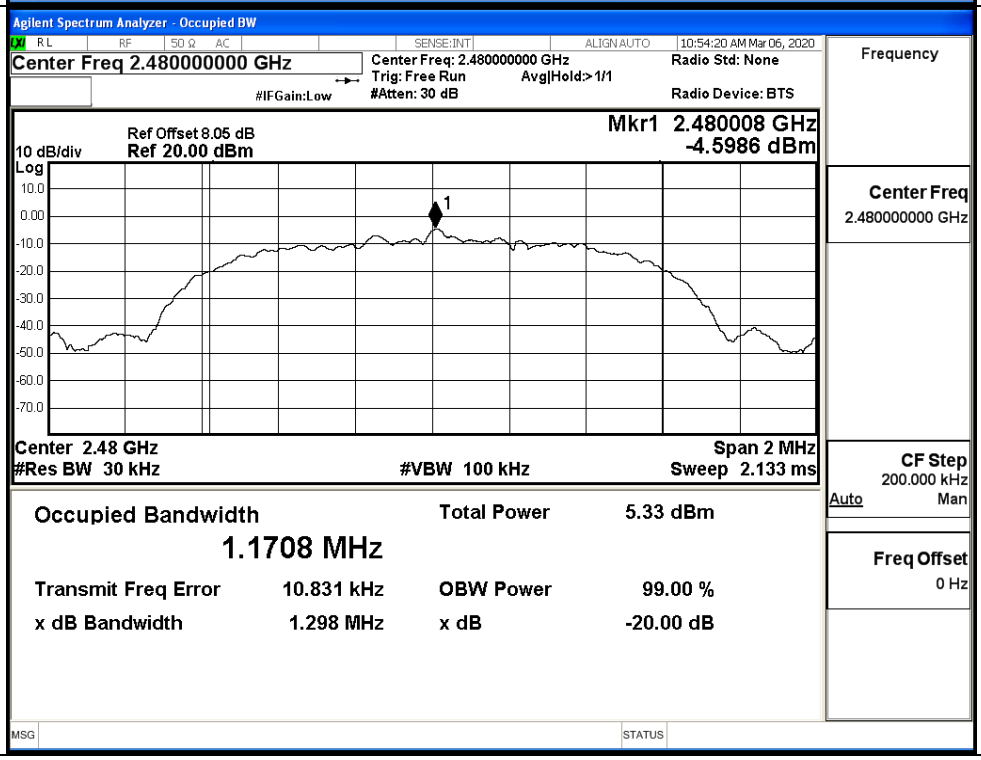


π/4DQPSK/HCH



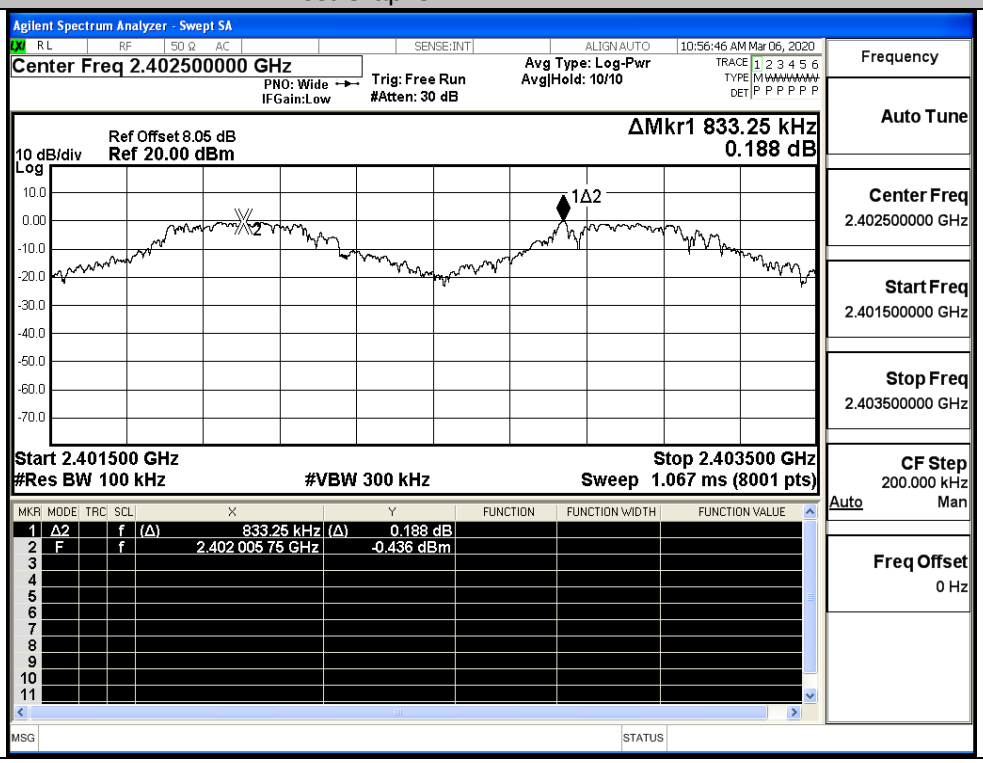
8DPSK/LCH

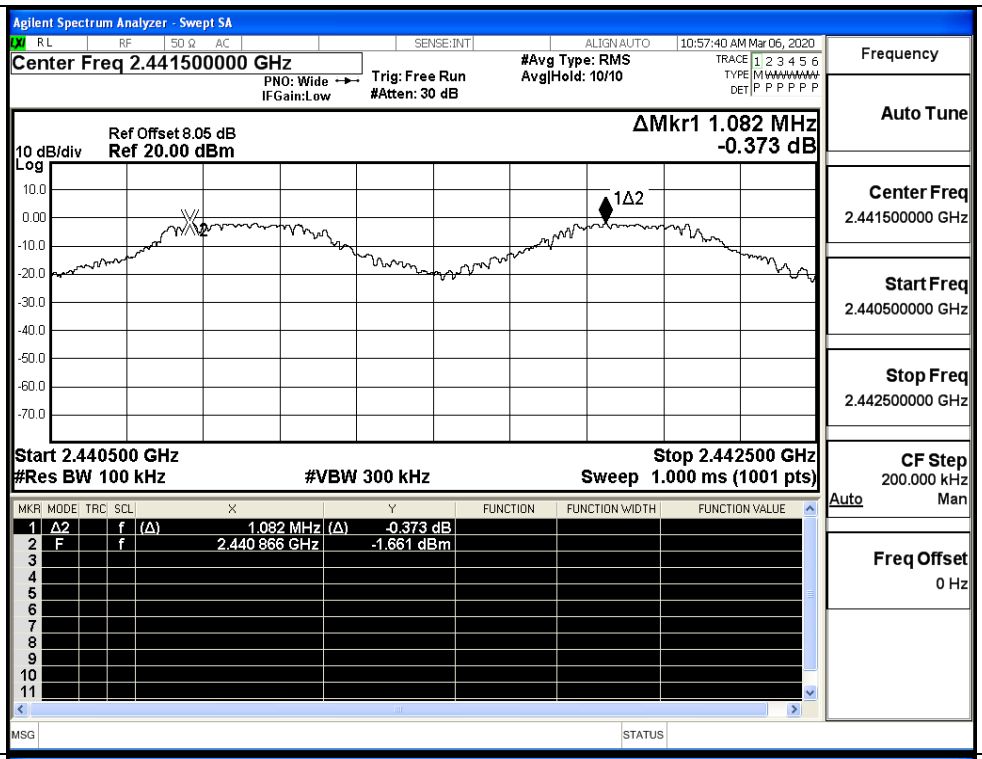
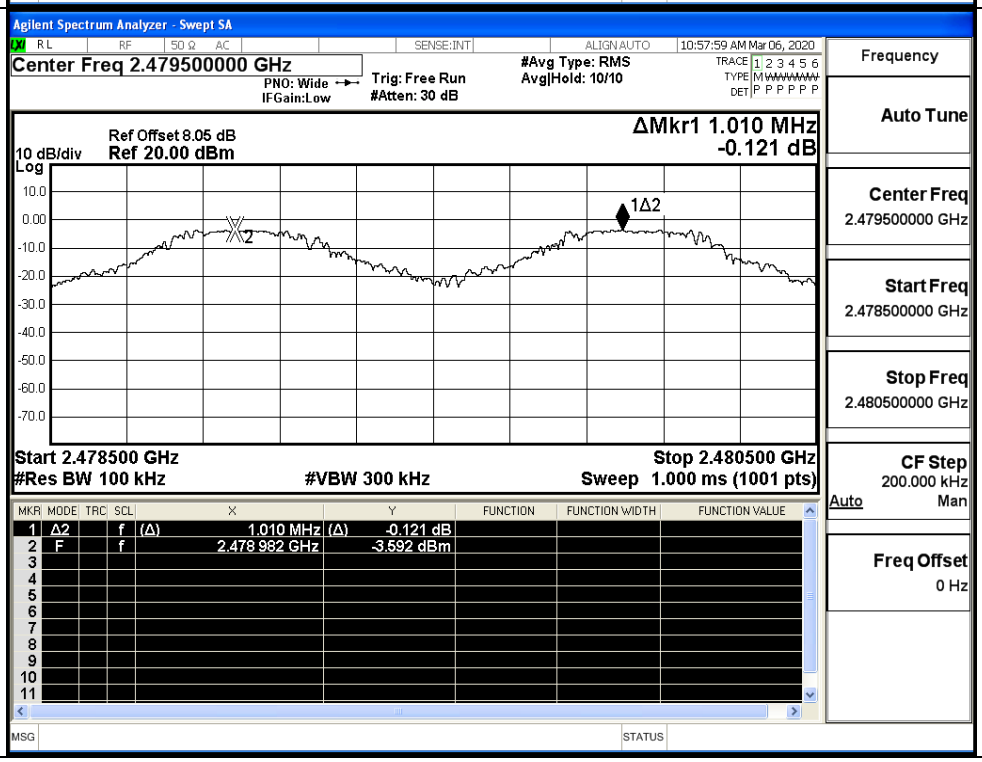


8DPSK/MCH		
8DPSK/HCH		

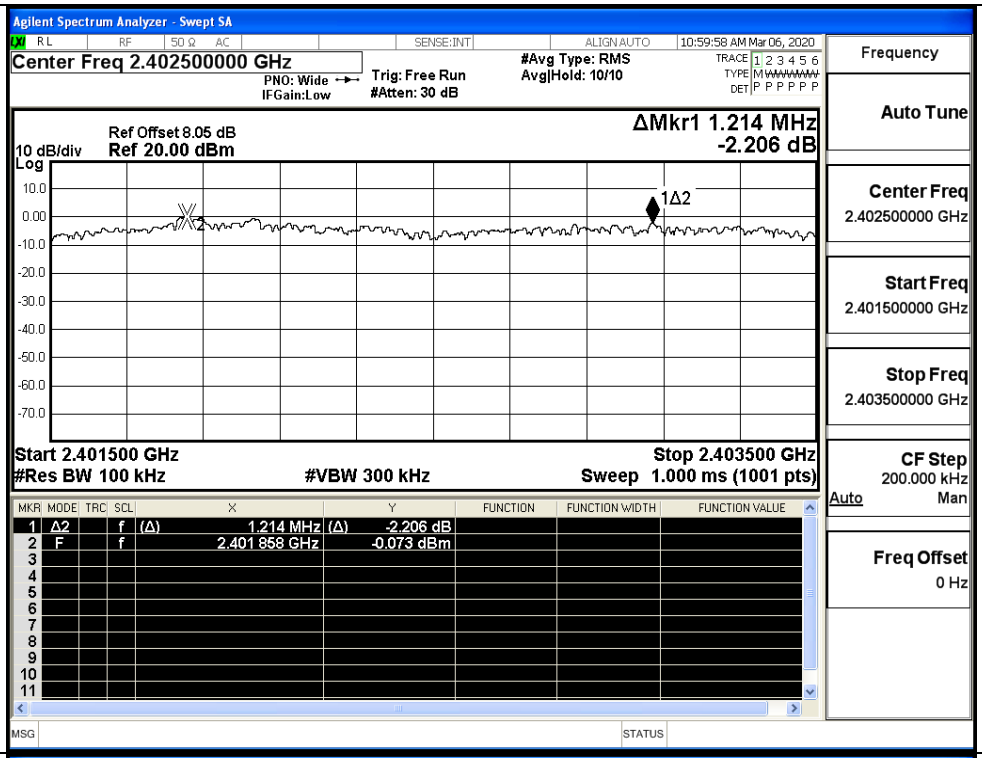
A.3 Carrier Frequency Separation

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.833	0.634	PASS
	MCH	1.082	0.634	PASS
	HCH	1.010	0.634	PASS
π/4DQPSK	LCH	1.214	0.883	PASS
	MCH	1.008	0.883	PASS
	HCH	1.102	0.883	PASS
8DPSK	LCH	0.988	0.865	PASS
	MCH	1.168	0.865	PASS
	HCH	1.024	0.865	PASS

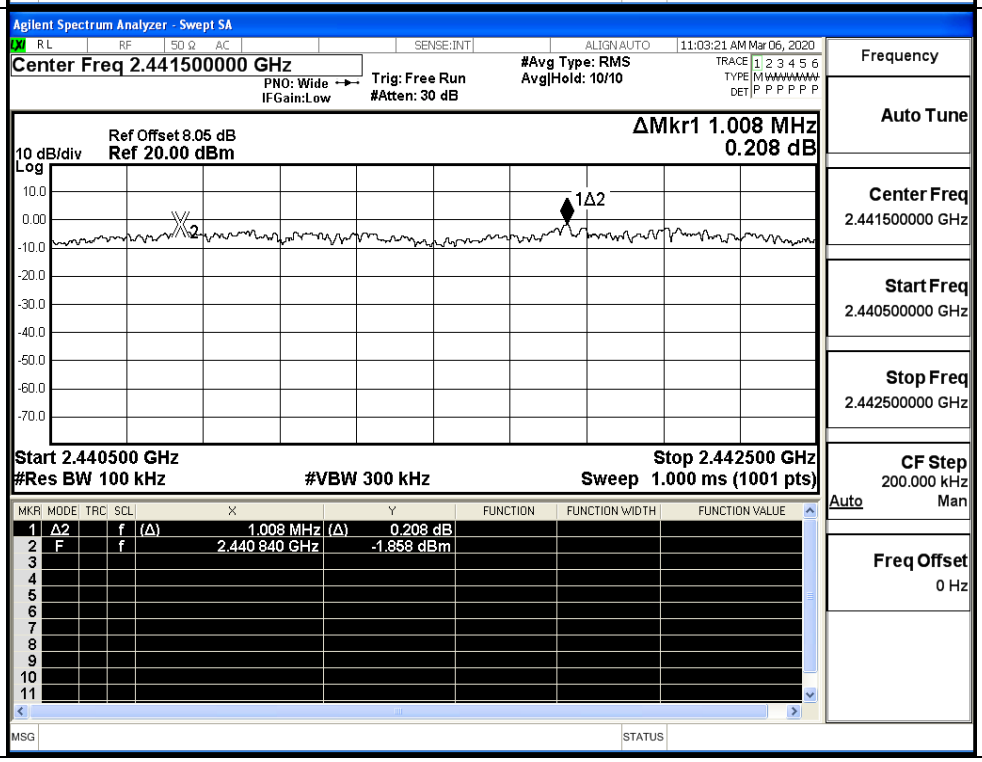
Test Graphs	
GFSK/LCH	

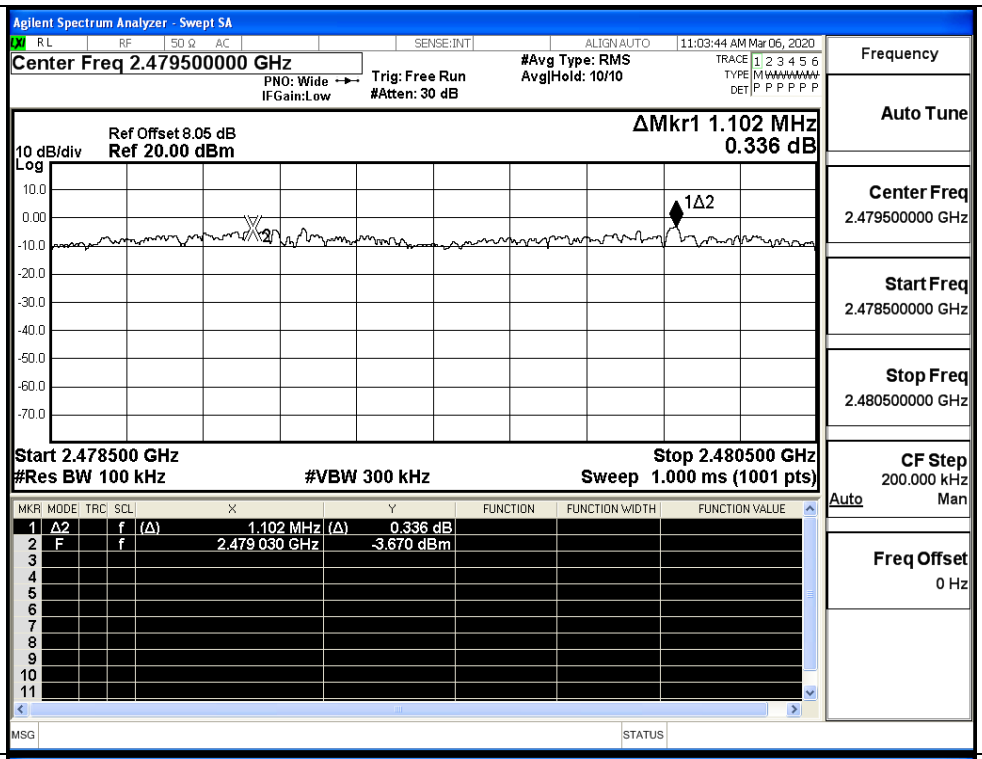
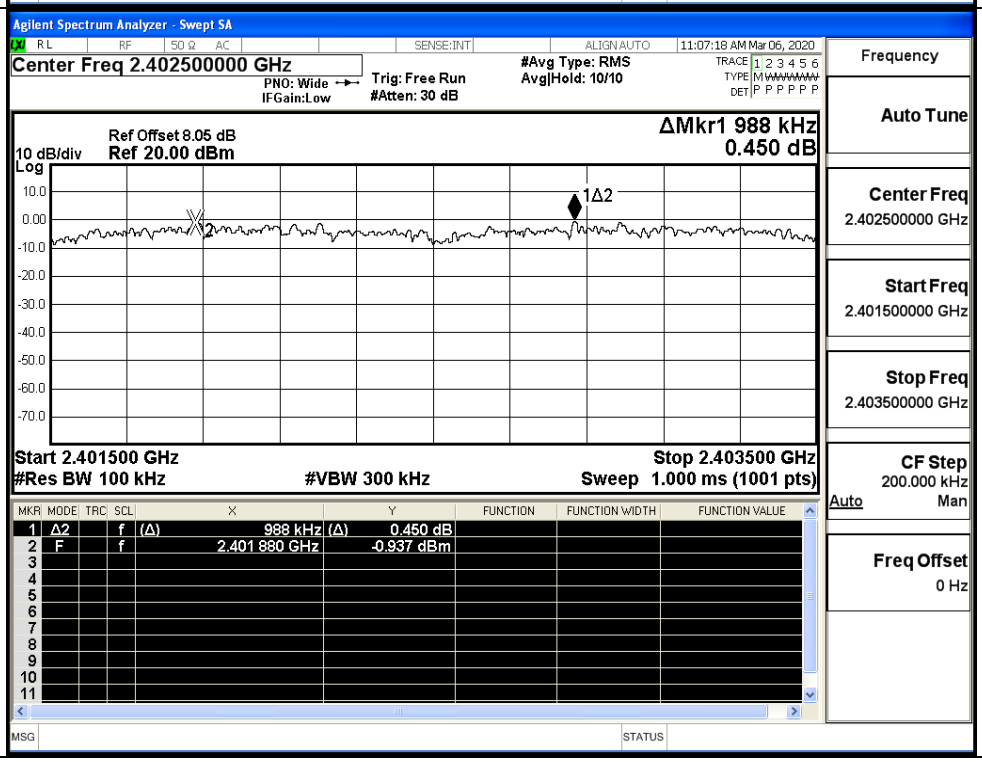
GFSK/MCH		
GFSK/HCH		

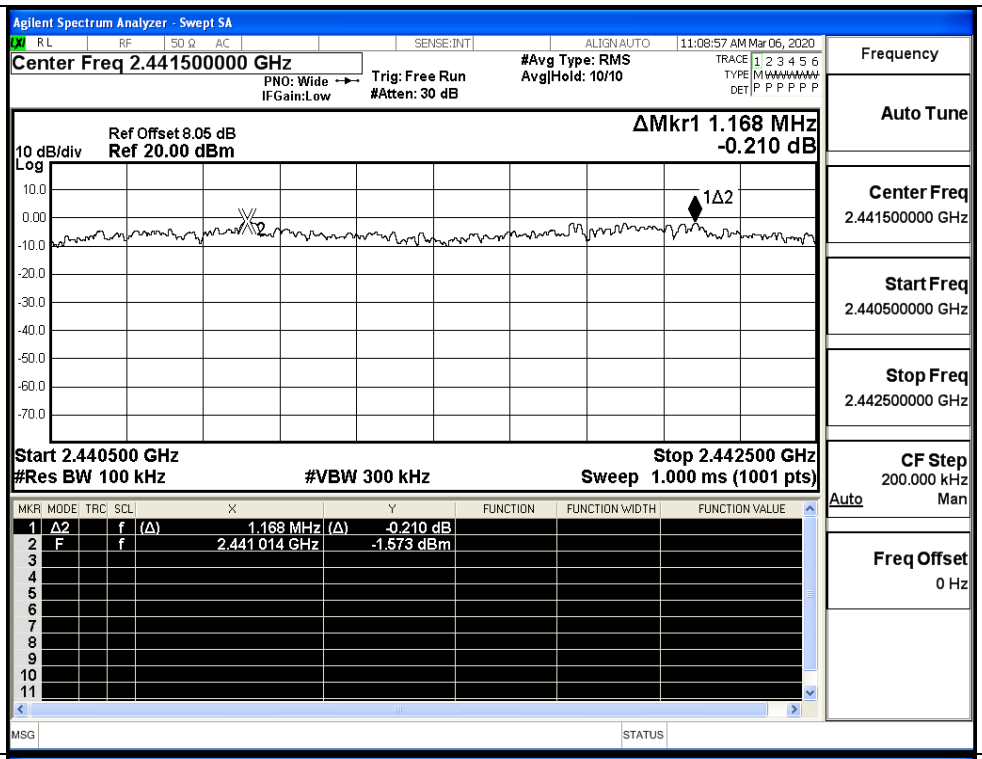
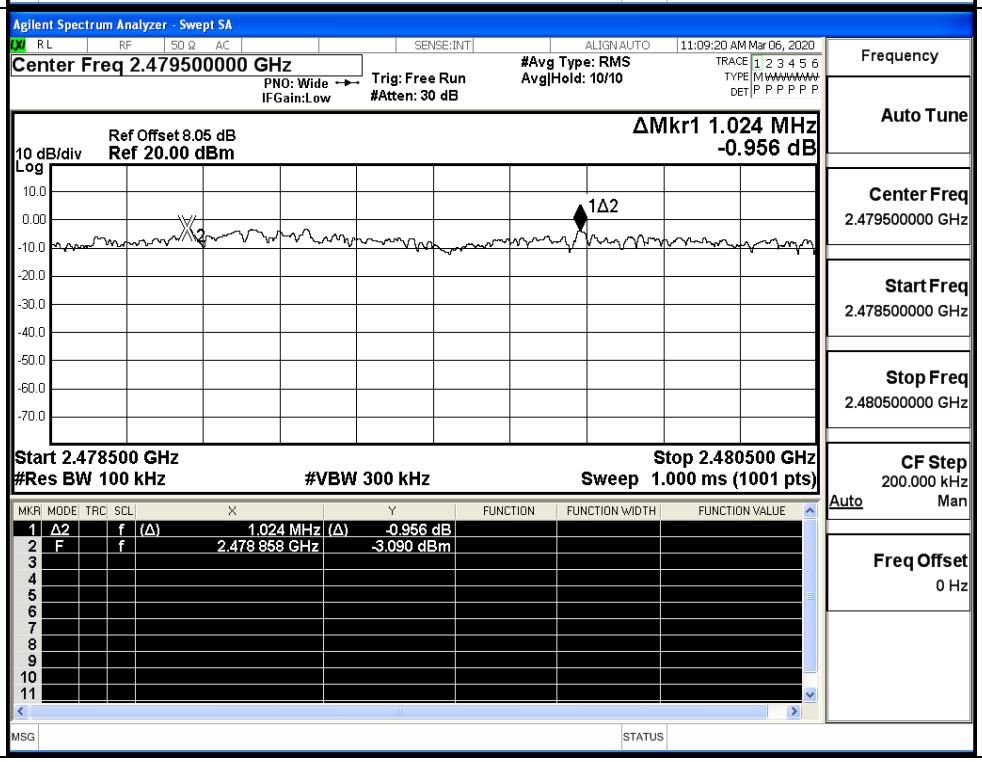
π/4DQPSK/LCH



π/4DQPSK/MCH

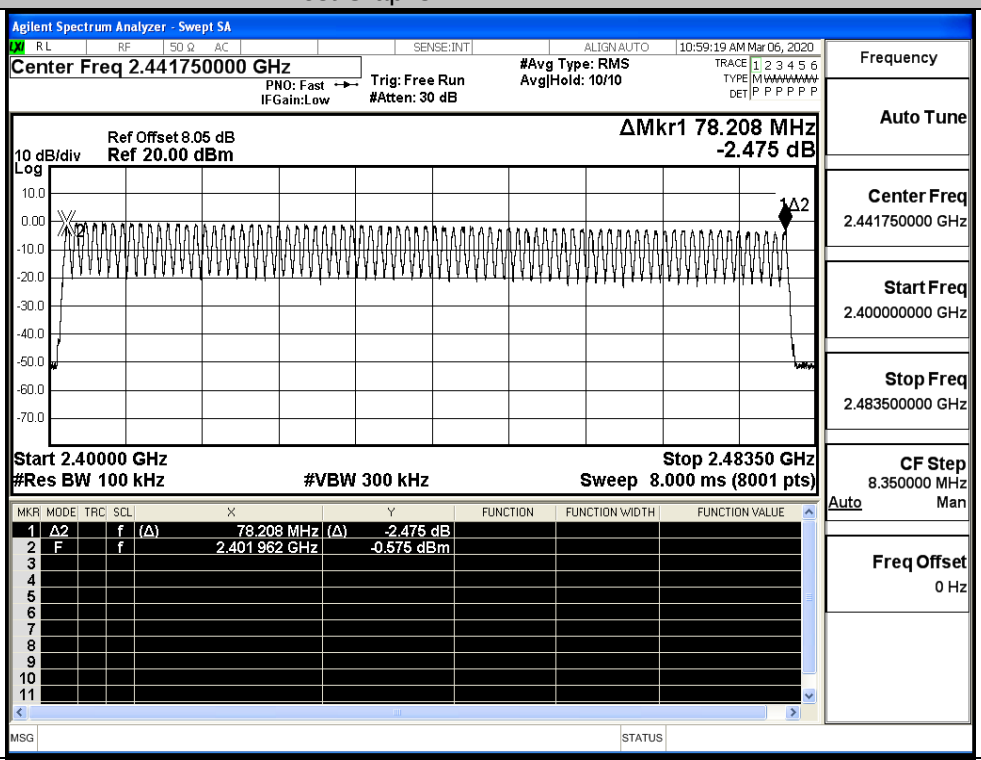
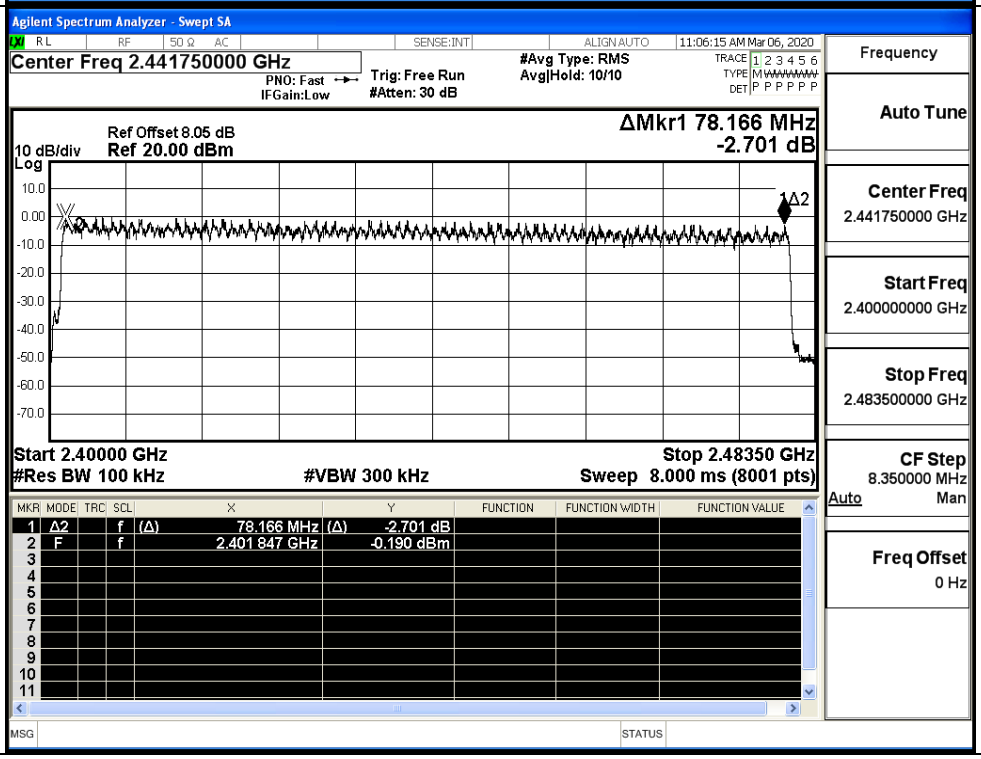


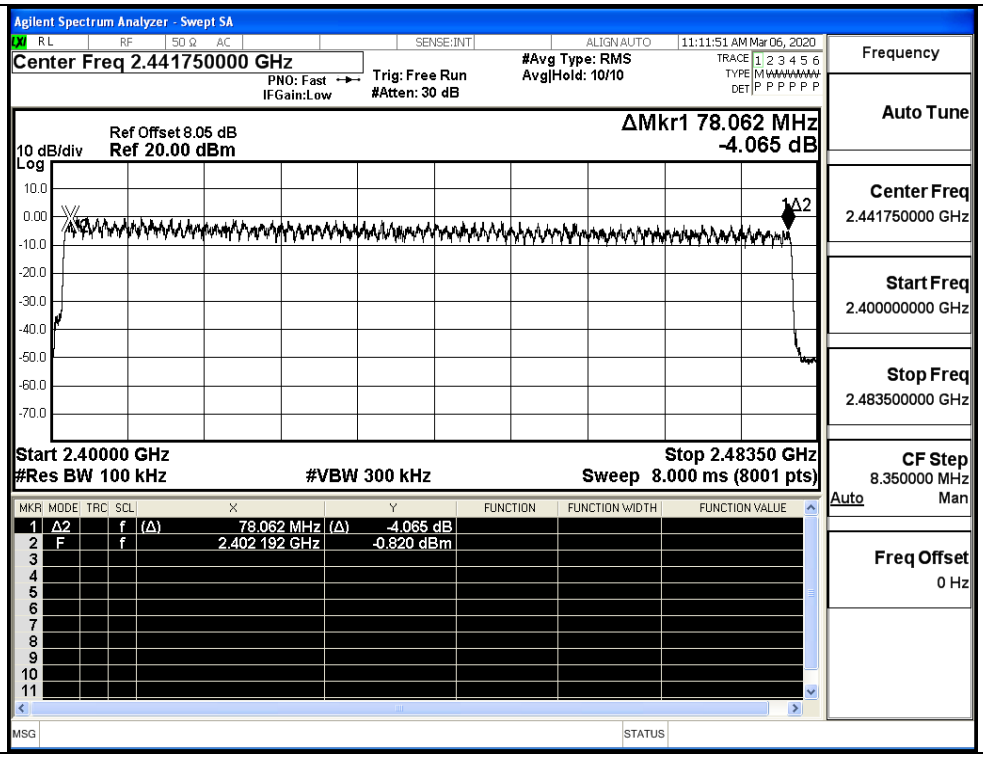
π/4DQPSK/HCH		
8DPSK/LCH		

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

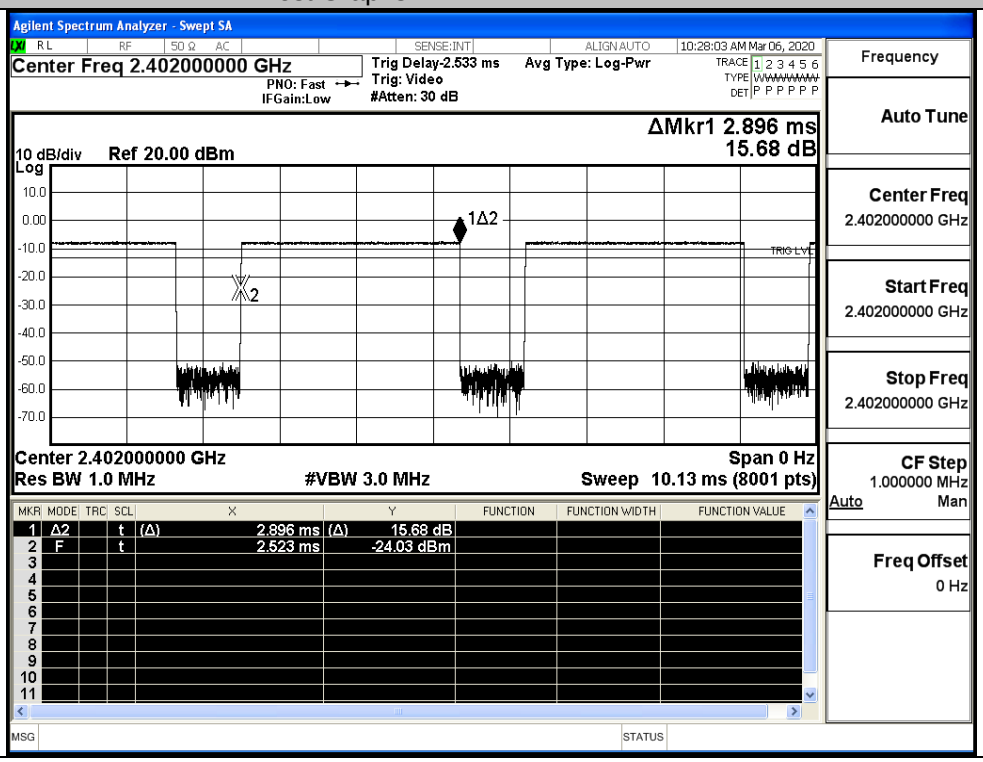
Test Graphs	
GFSK/Hop	
π/4DQPSK/Hop	

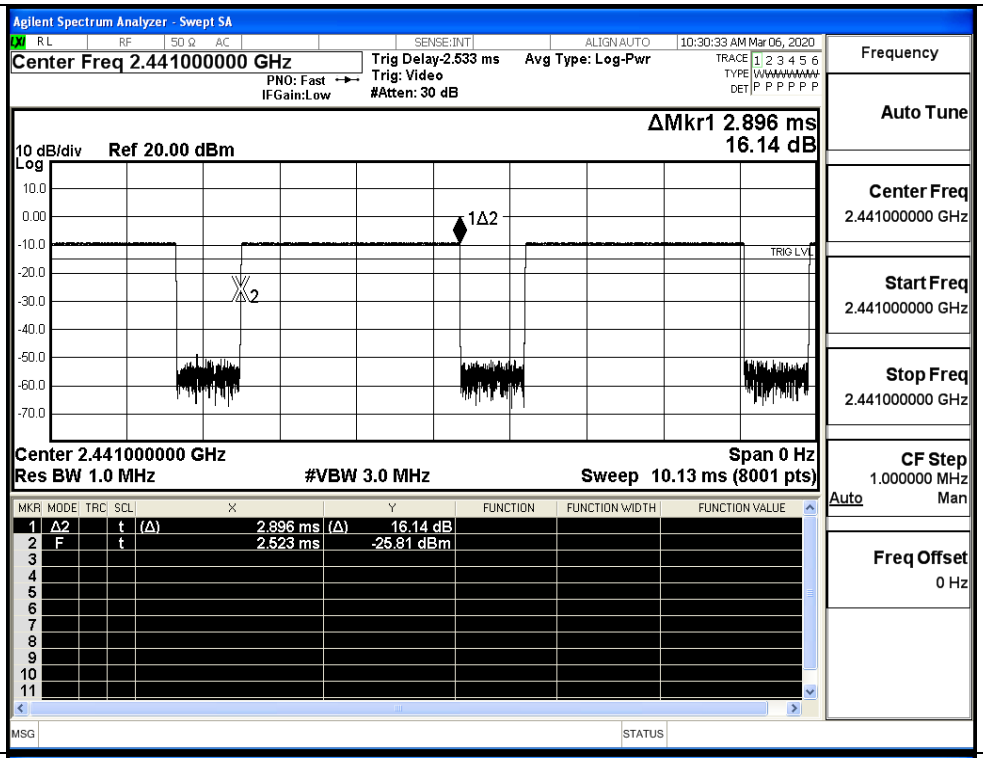
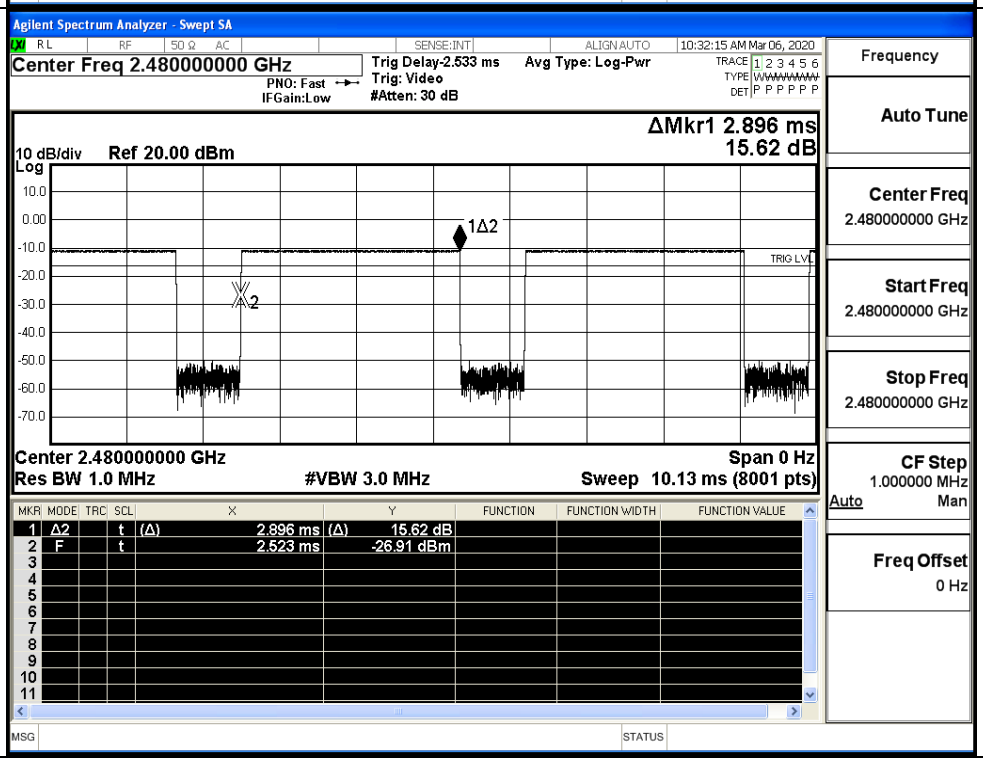
8DPSK/Hop	

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
11:11:51 AM Mar 06, 2020
Ref Offset 8.05 dB
10 dB/div
Ref 20.00 dBm
ΔMkr1 78.062 MHz
-4.065 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) 78.062 MHz (Δ) -4.065 dB
2 F f 2.402 192 GHz -0.820 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

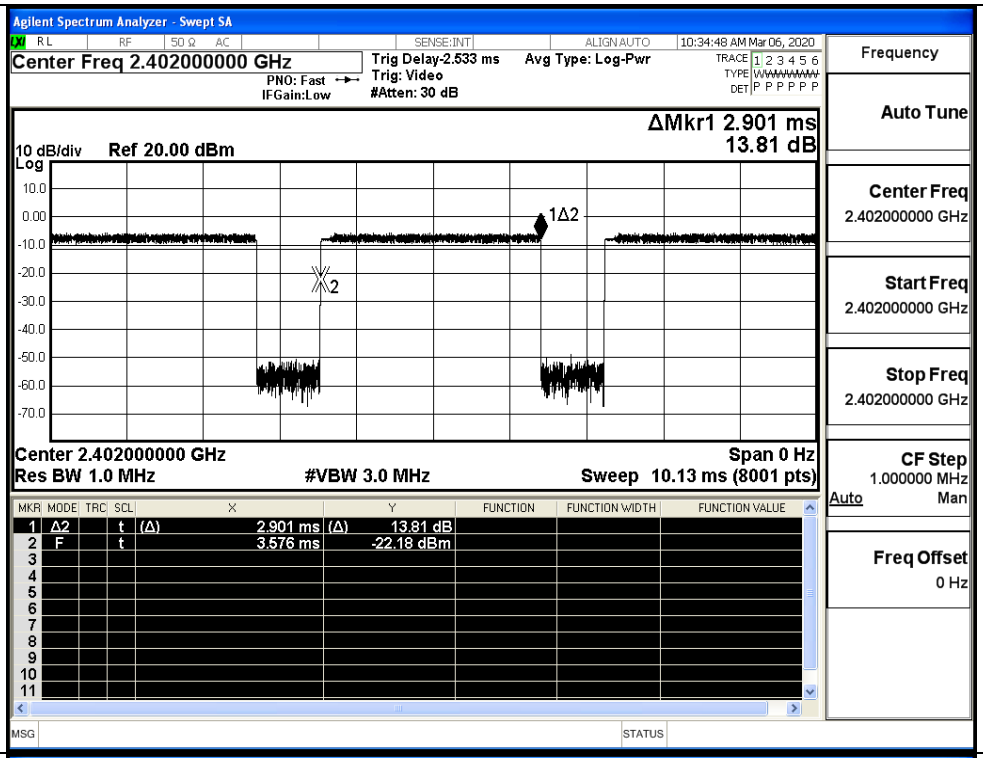
A.5 Dwell Time

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

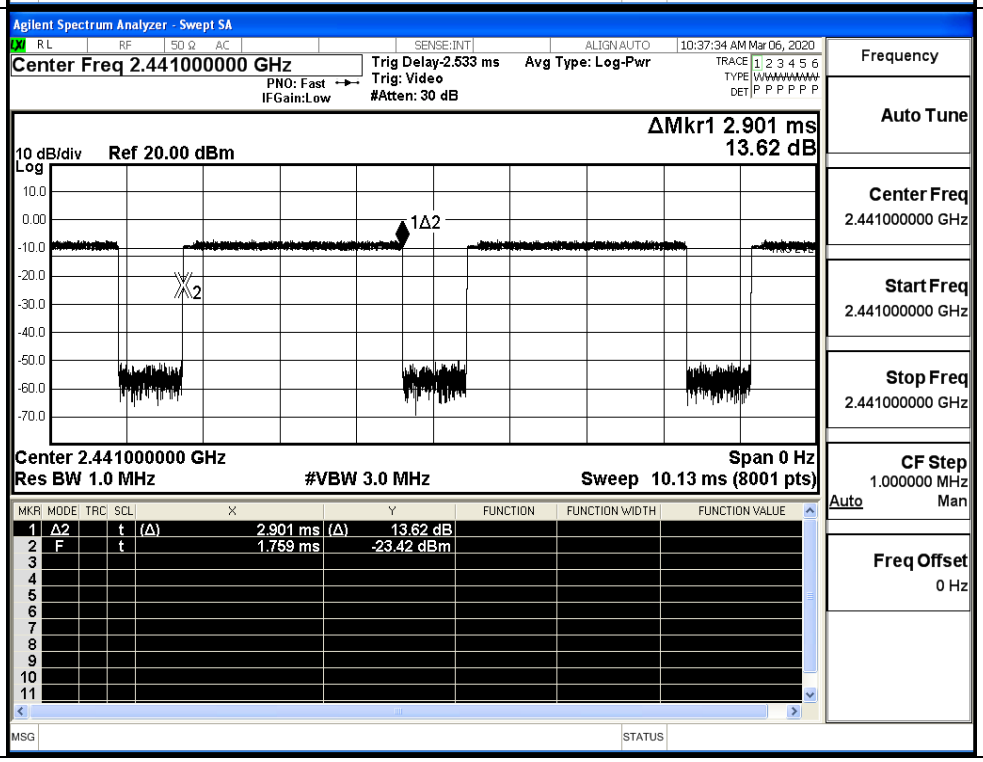
Test Graphs	
GFSK_DH5/LCH	

GFSK_DH5/MCH	
GFSK_DH5/HCH	

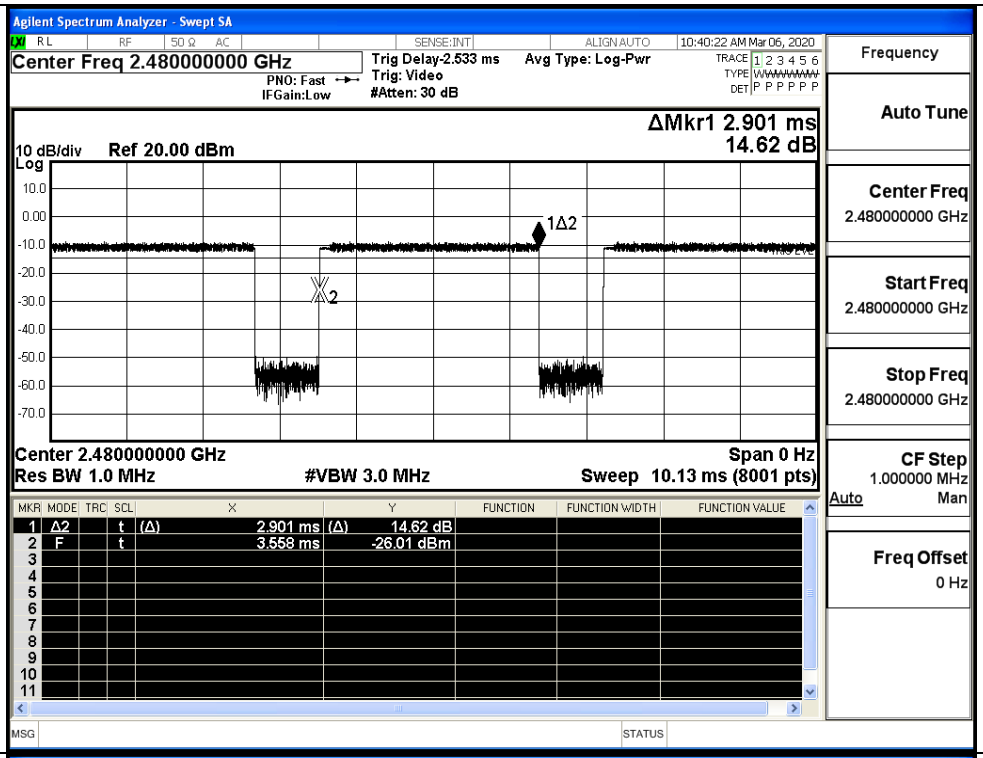
π/4DQPSK
_2DH5/LCH



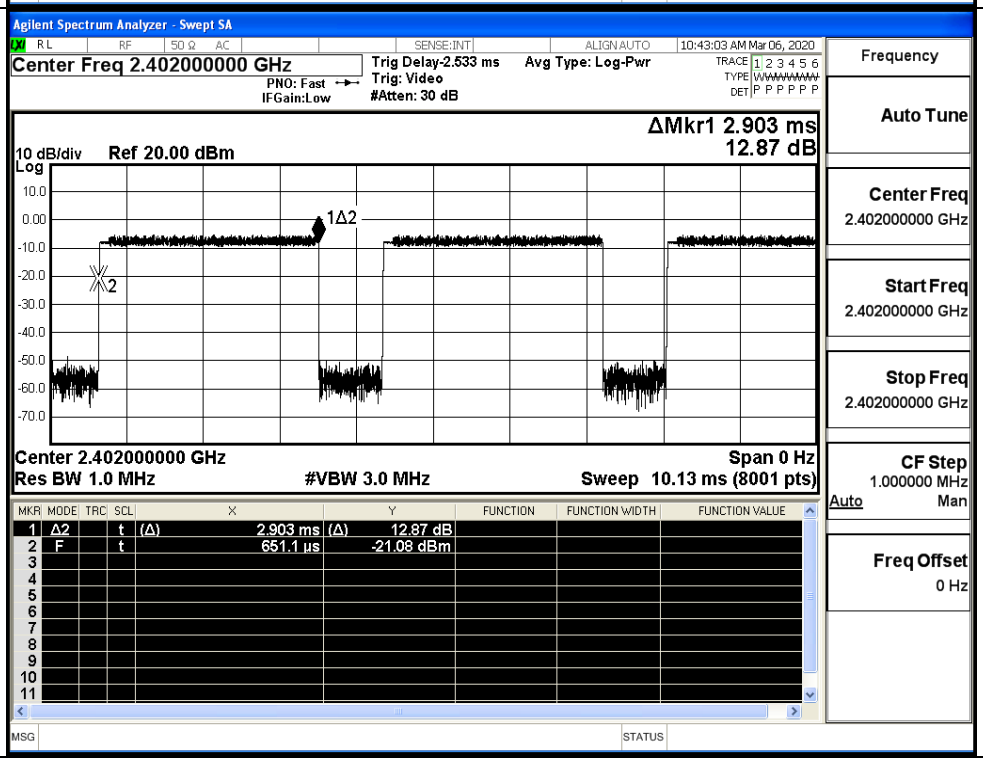
π/4DQPSK
_2DH5/MCH

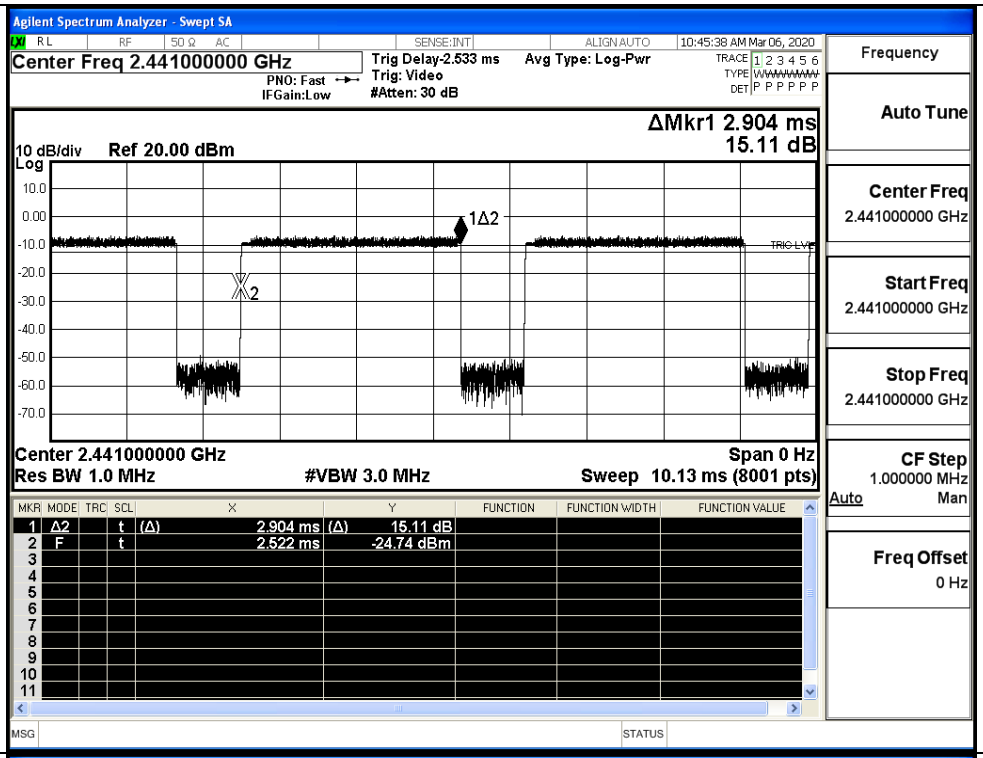
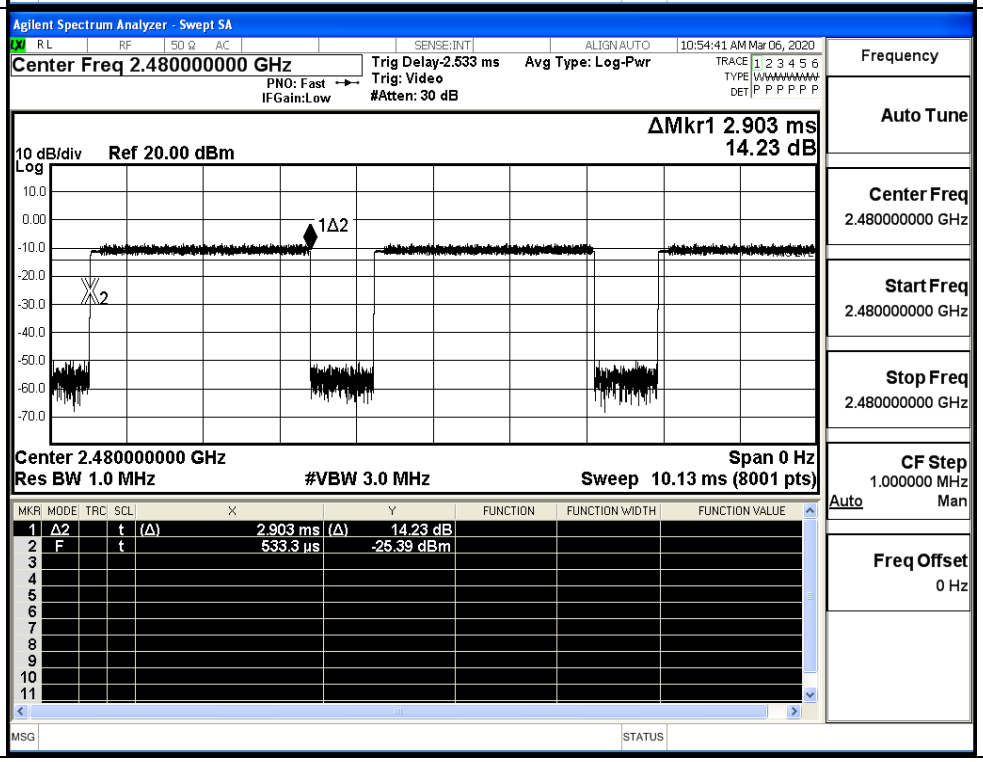


π/4DQPSK _2DH5/HCH



8DPSK _3DH5/LCH



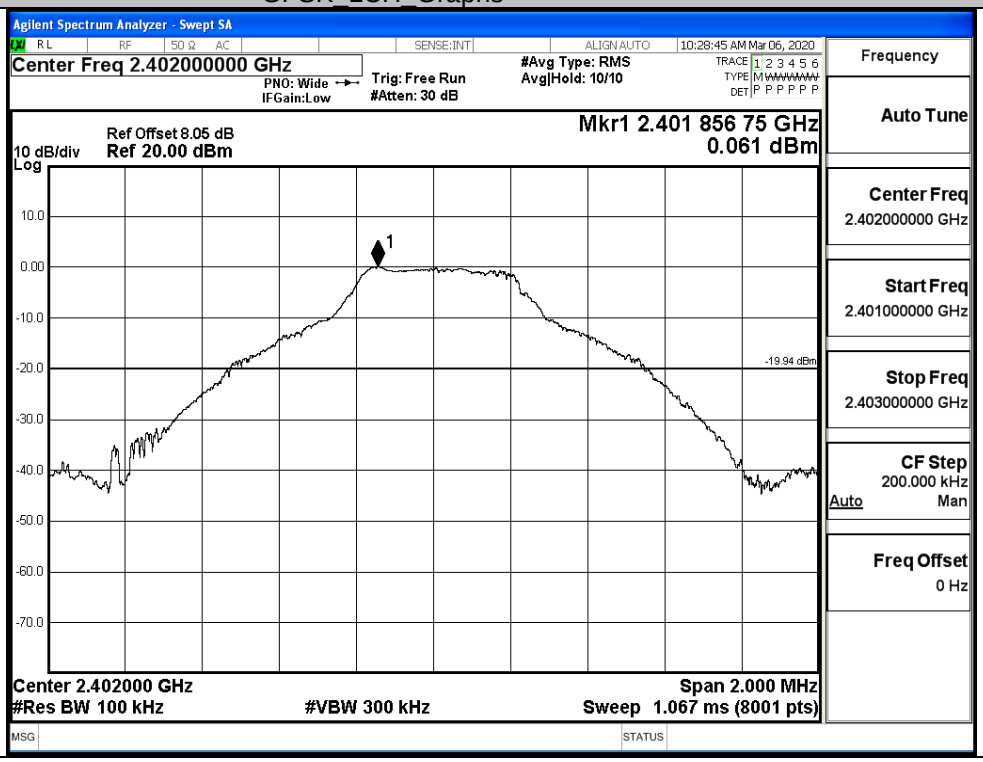
8DPSK _3DH5/MCH	
8DPSK _3DH5/HCH	

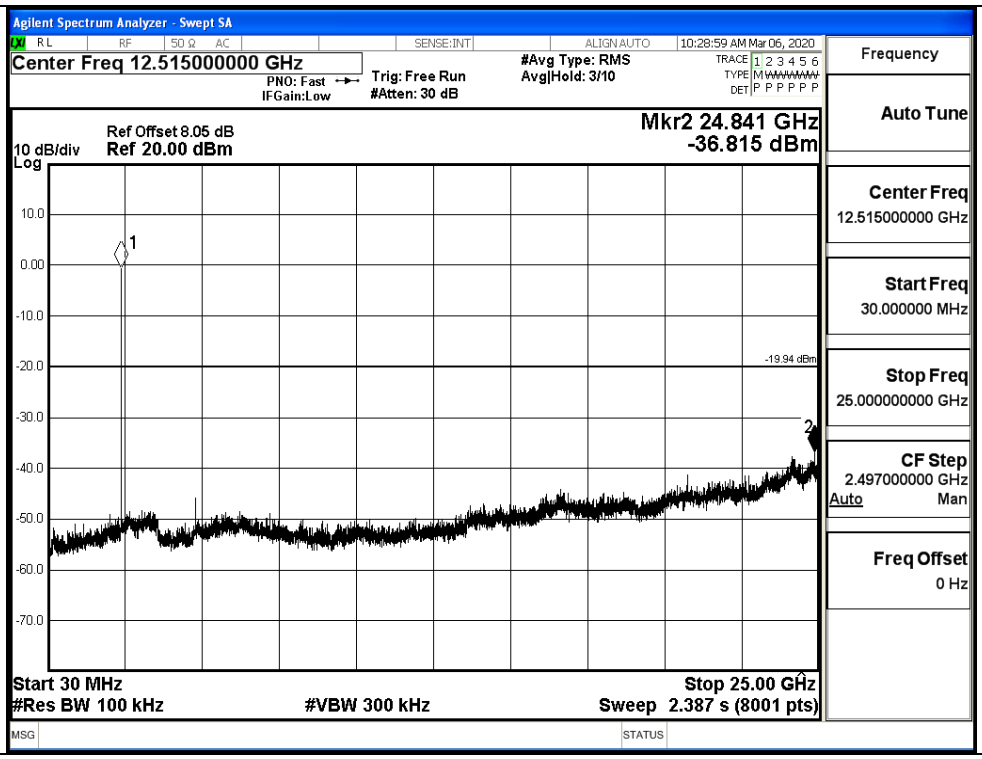
A.6 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	0.061	-36.815	-19.939	PASS
	MCH	-1.436	-37.253	-21.436	PASS
	HCH	-3.026	-37.556	-23.026	PASS
π/4DQPSK	LCH	-0.076	-37.895	-20.076	PASS
	MCH	-1.553	-38.320	-21.553	PASS
	HCH	-3.197	-36.984	-23.197	PASS
8DPSK	LCH	-0.012	-37.544	-20.012	PASS
	MCH	-1.441	-37.895	-21.441	PASS
	HCH	-3.084	-37.317	-23.084	PASS

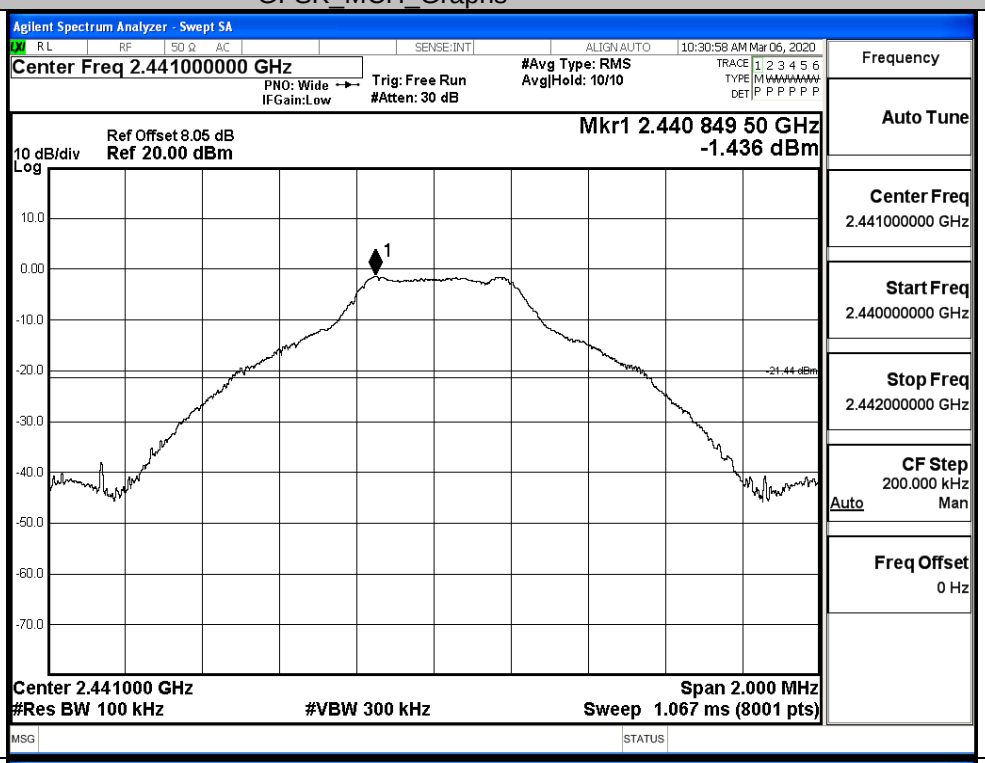
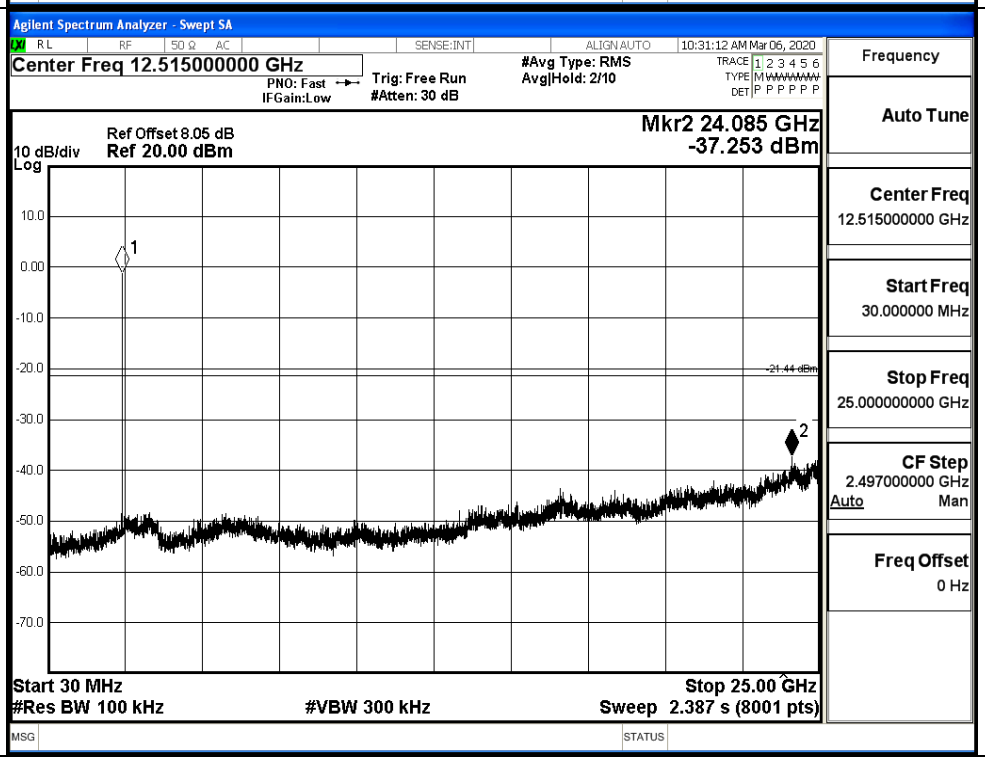
GFSK_LCH_Graphs

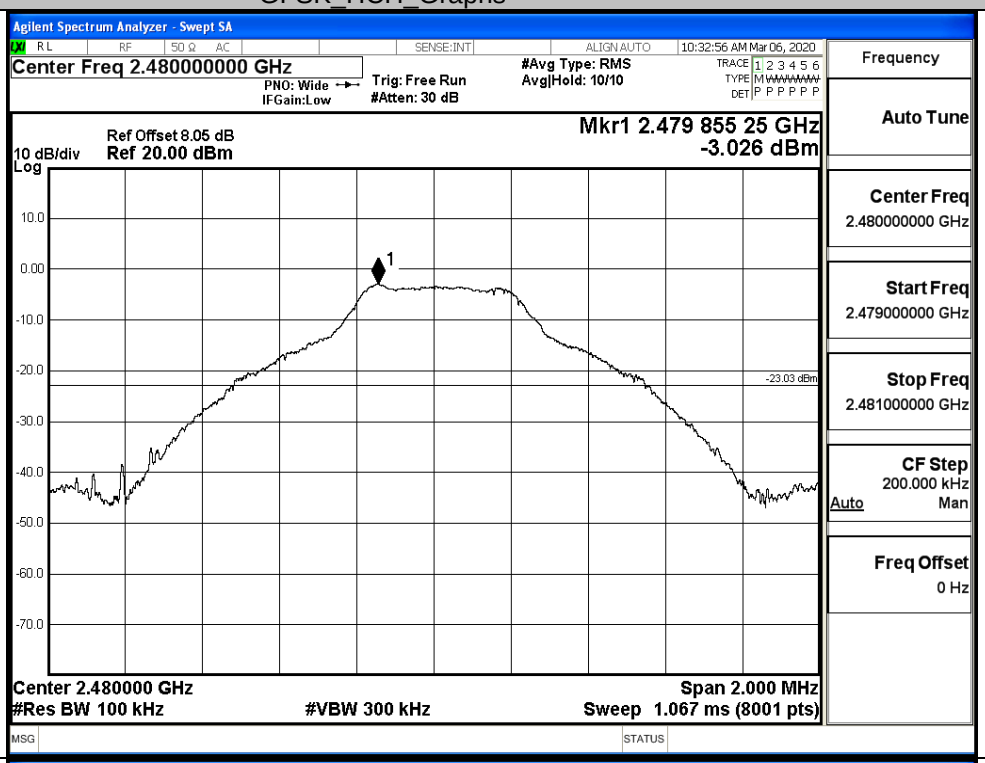
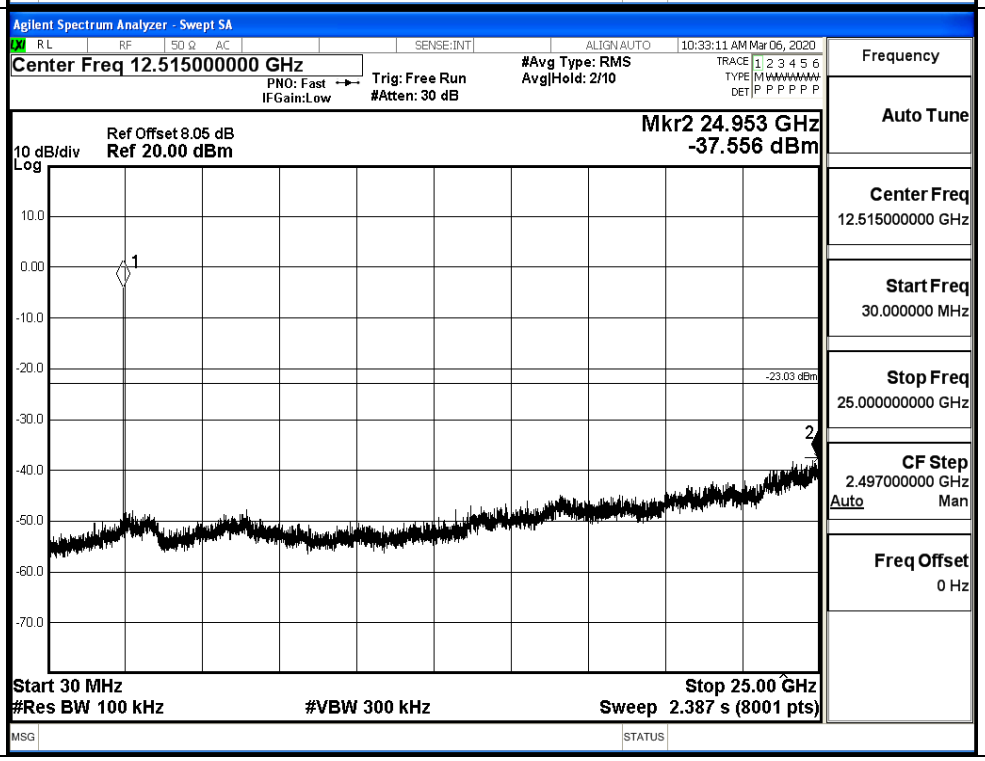
Pref



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
10:28:59 AM Mar 06, 2020
Ref Offset 8.05 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr2 24.841 GHz
-36.815 dBm
-19.94 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			

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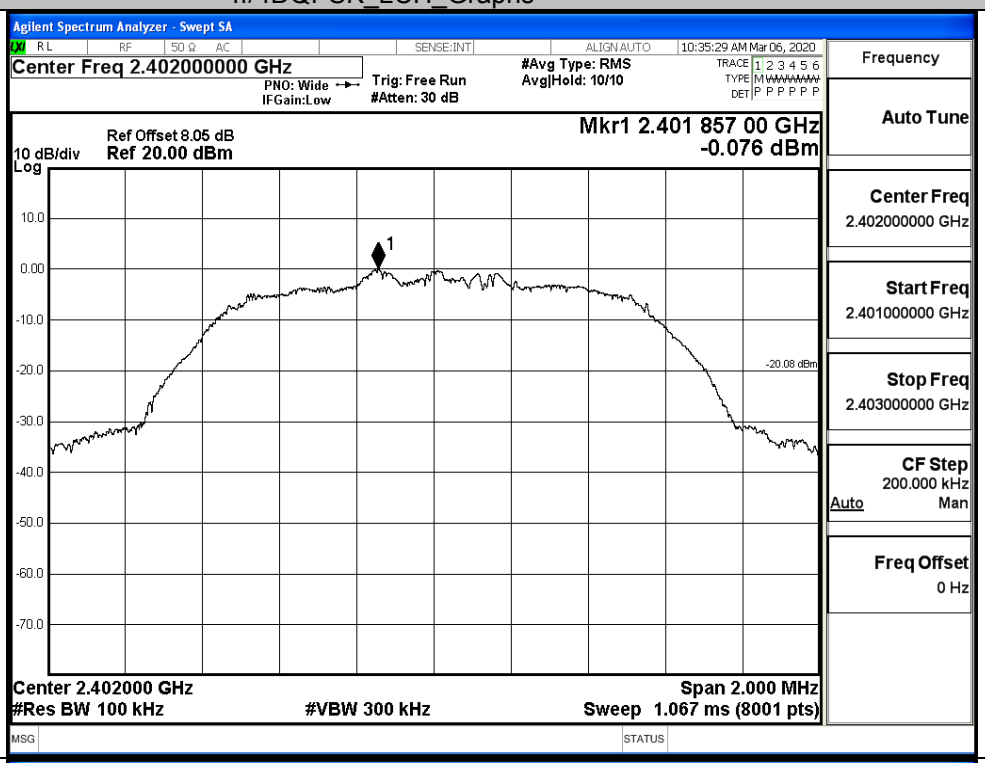
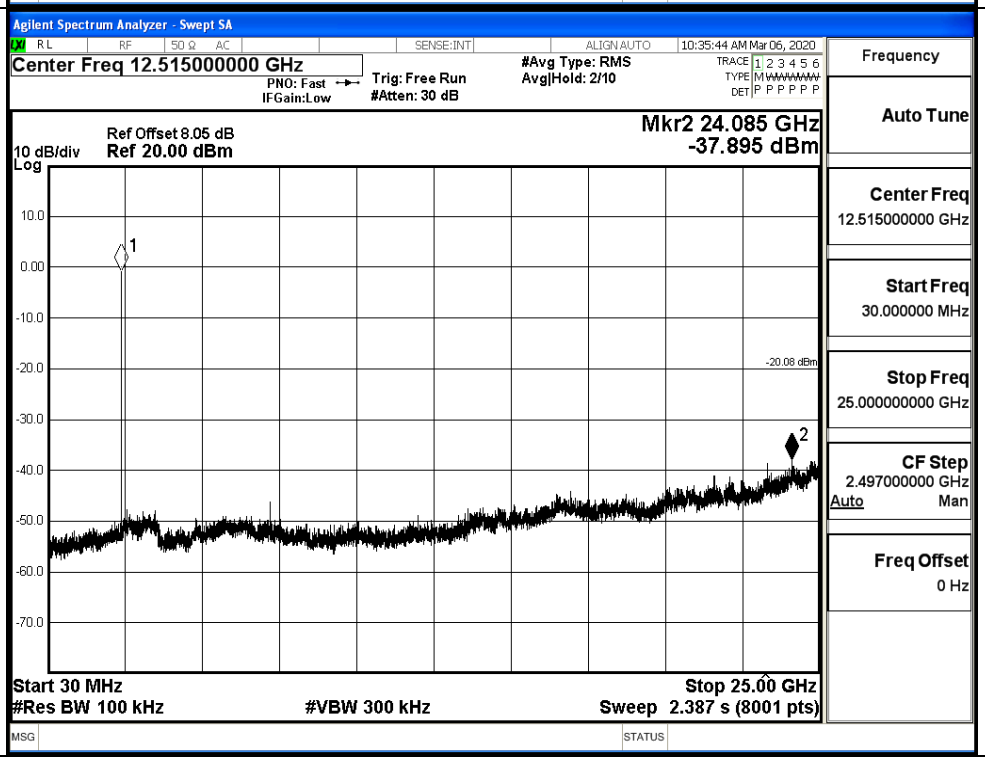
Pref		
Puw		

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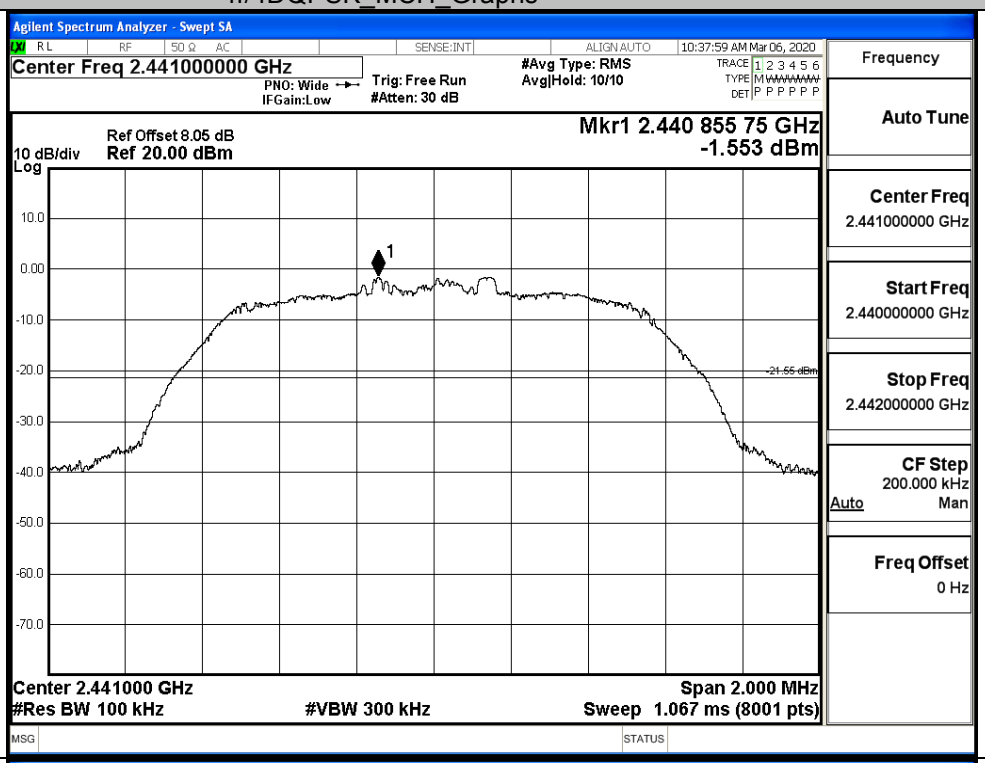
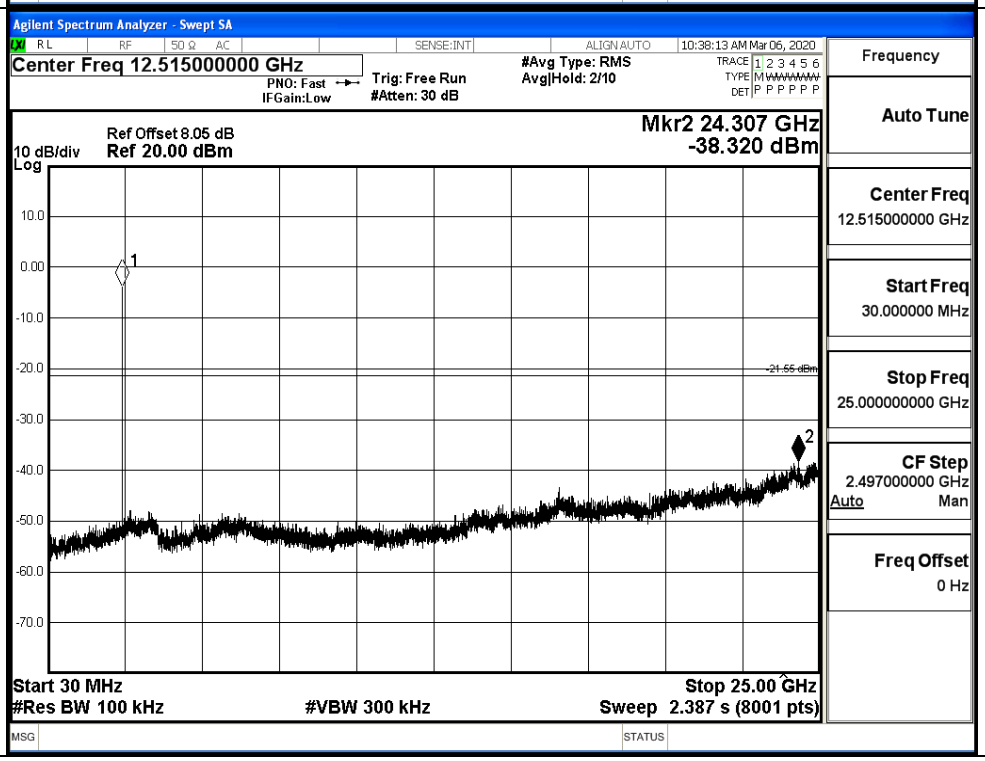
Pref		
Puw		

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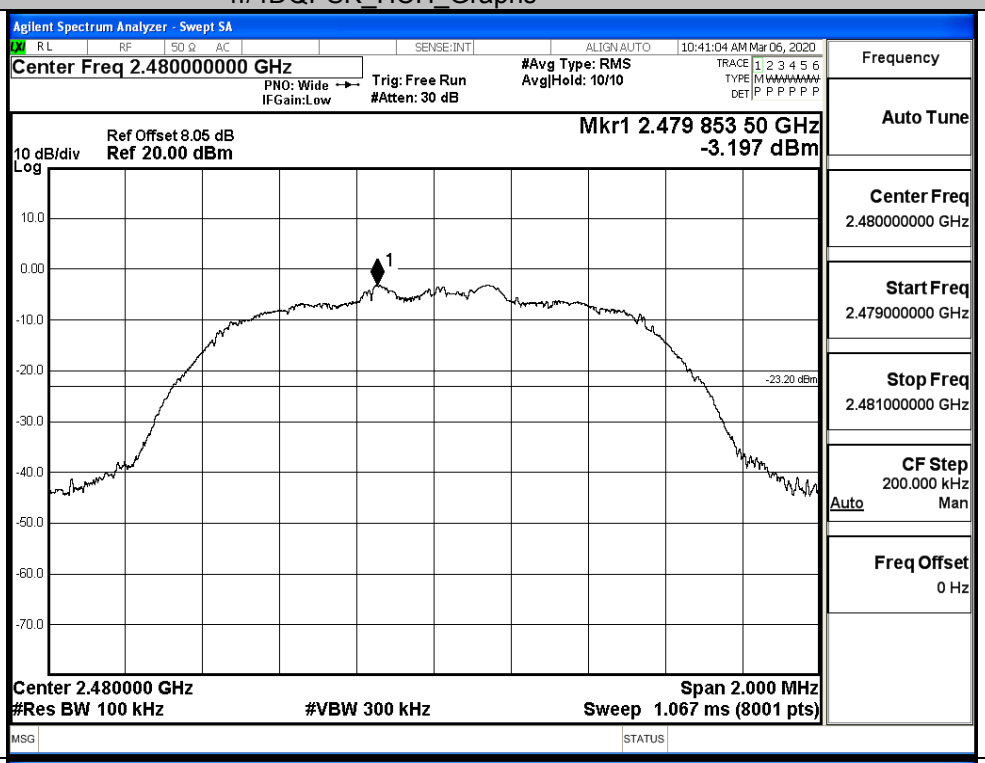
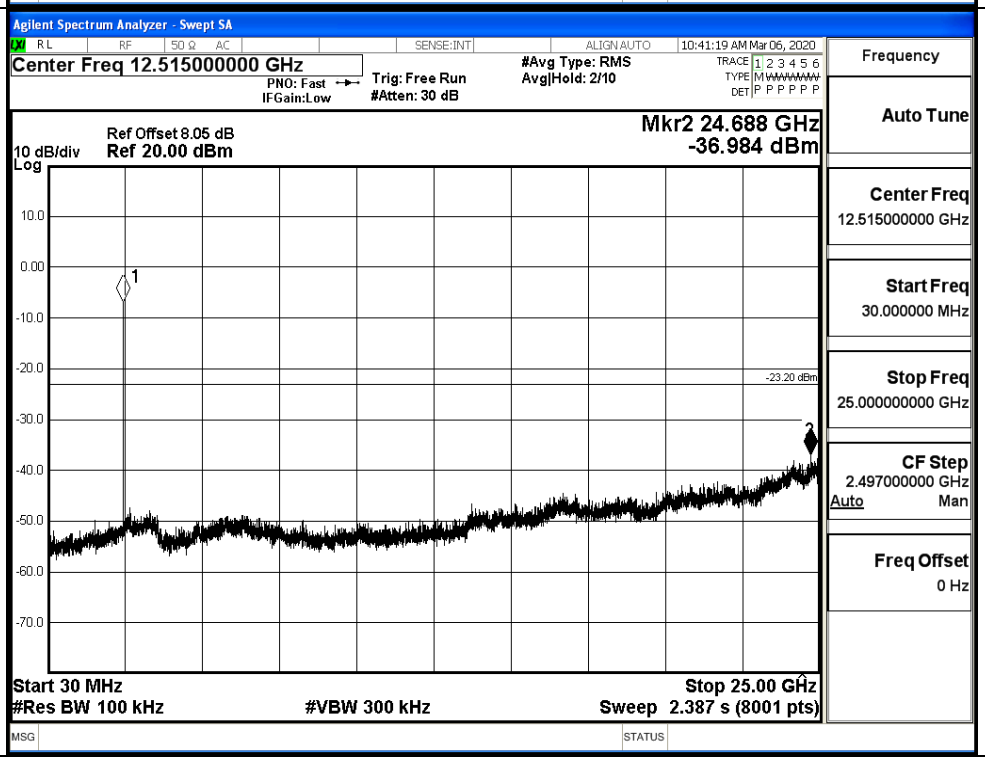
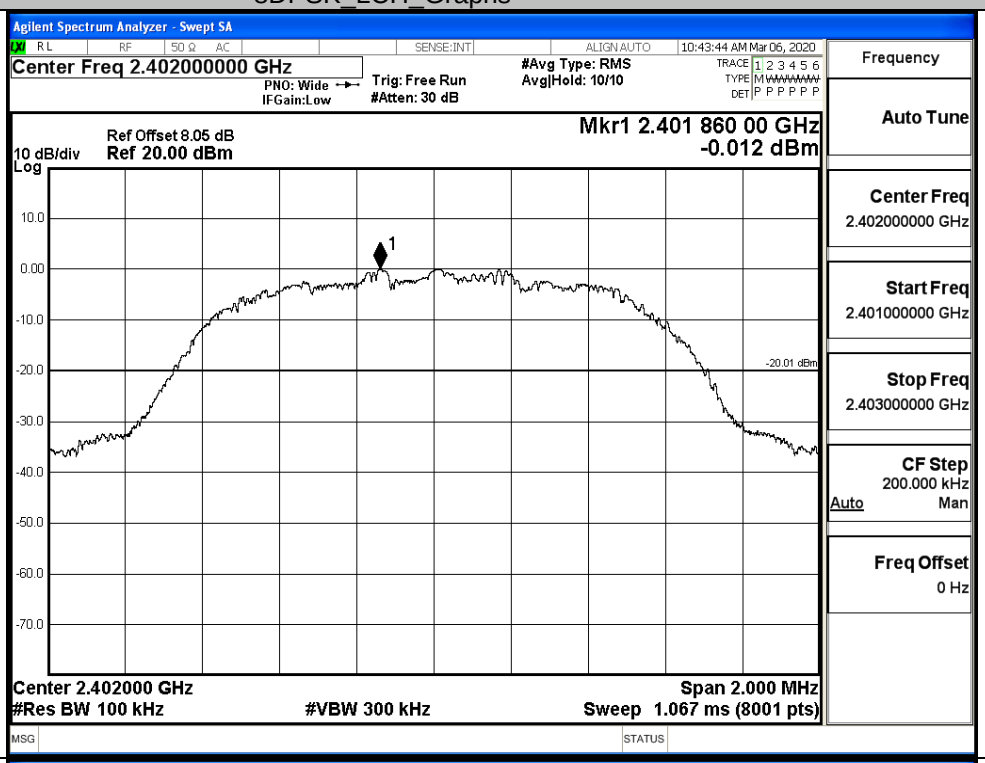
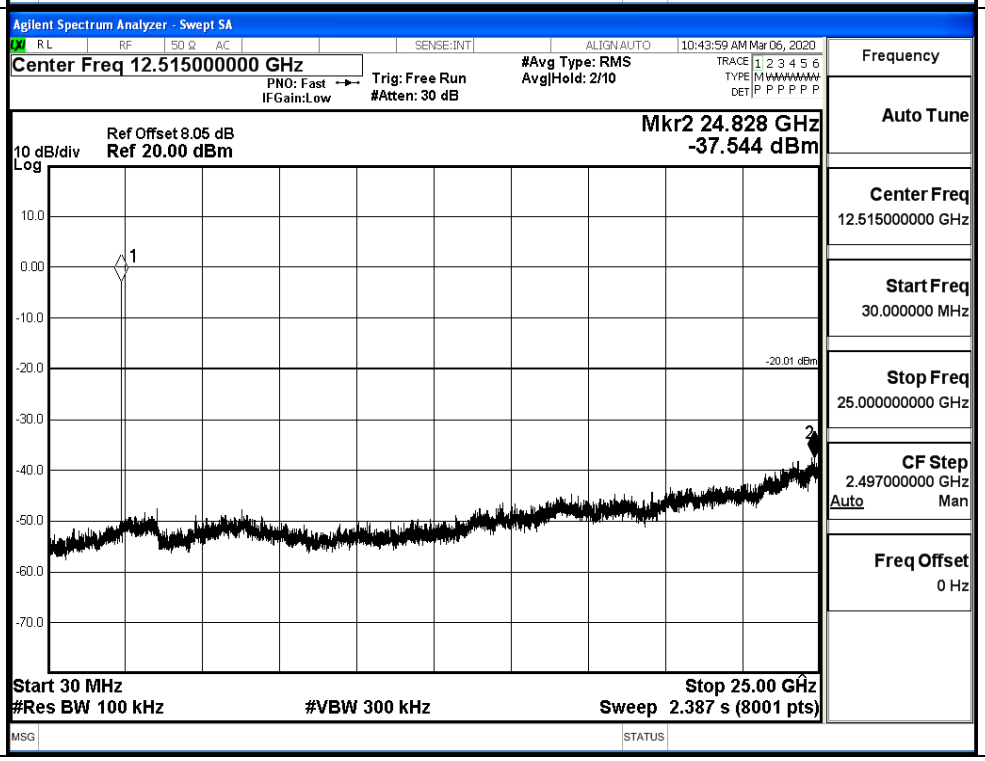
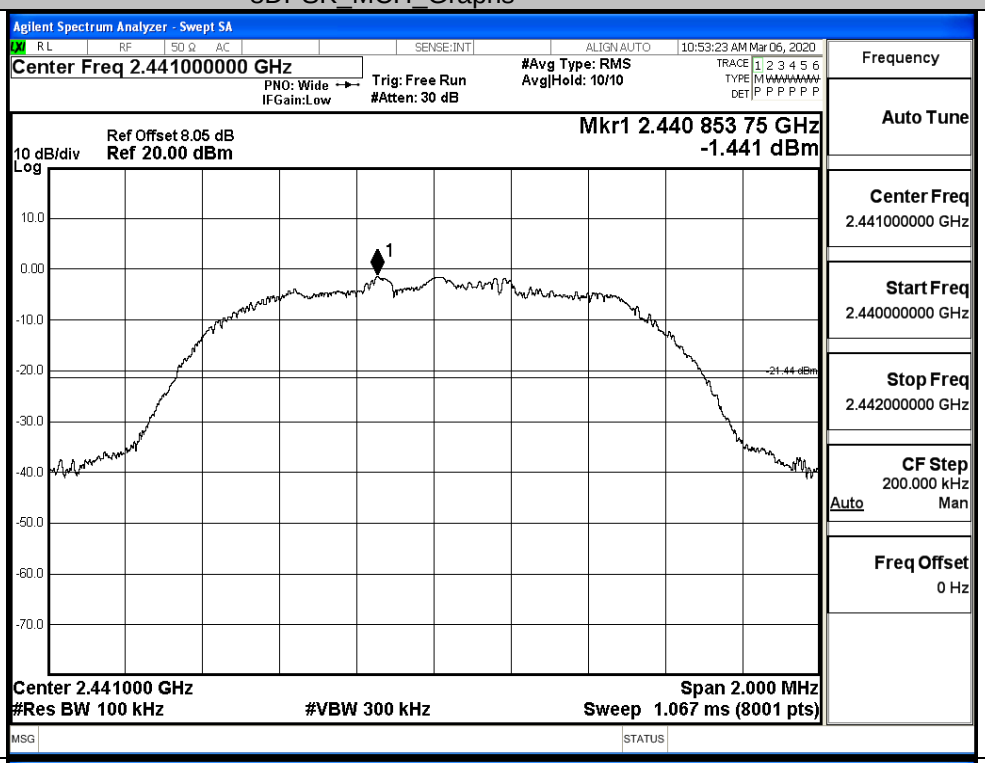
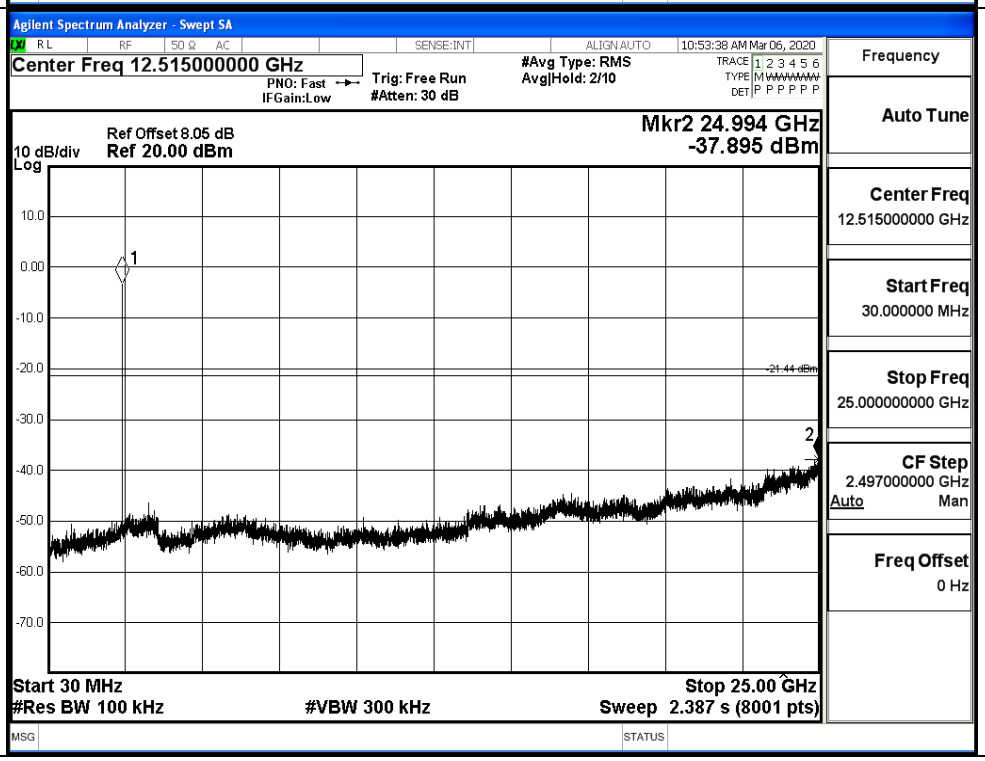
Pref		
Puw		

8DPSK_LCH_Graphs		
Pref		
Puw		

8DPSK_MCH_Graphs		
Pref		
Puw		

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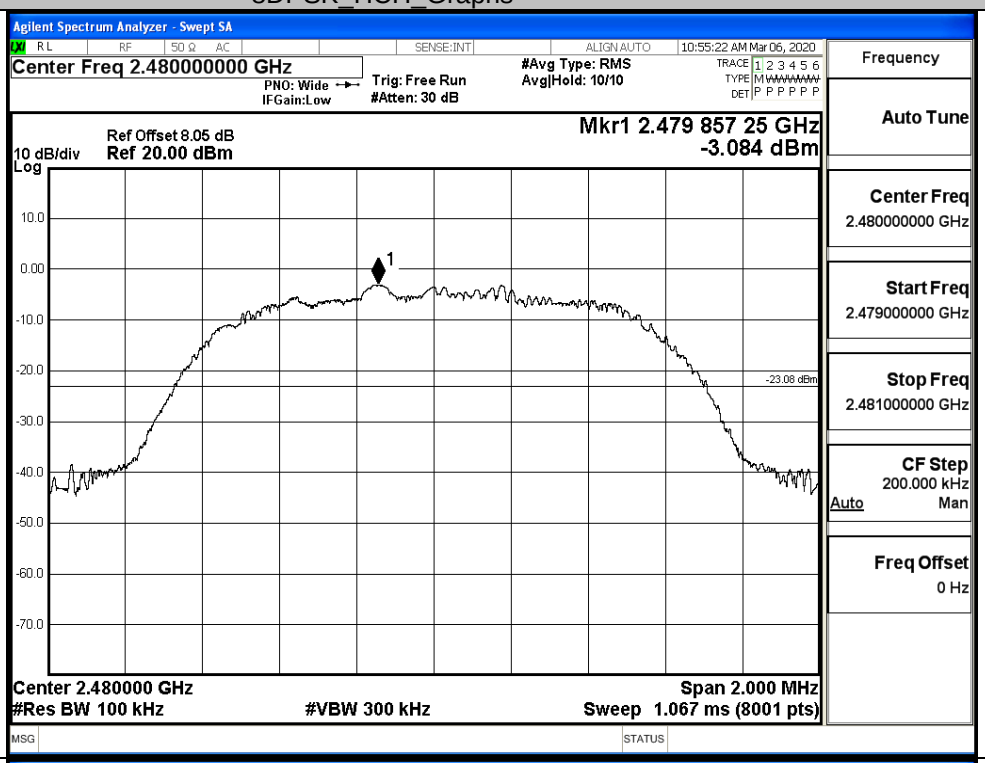
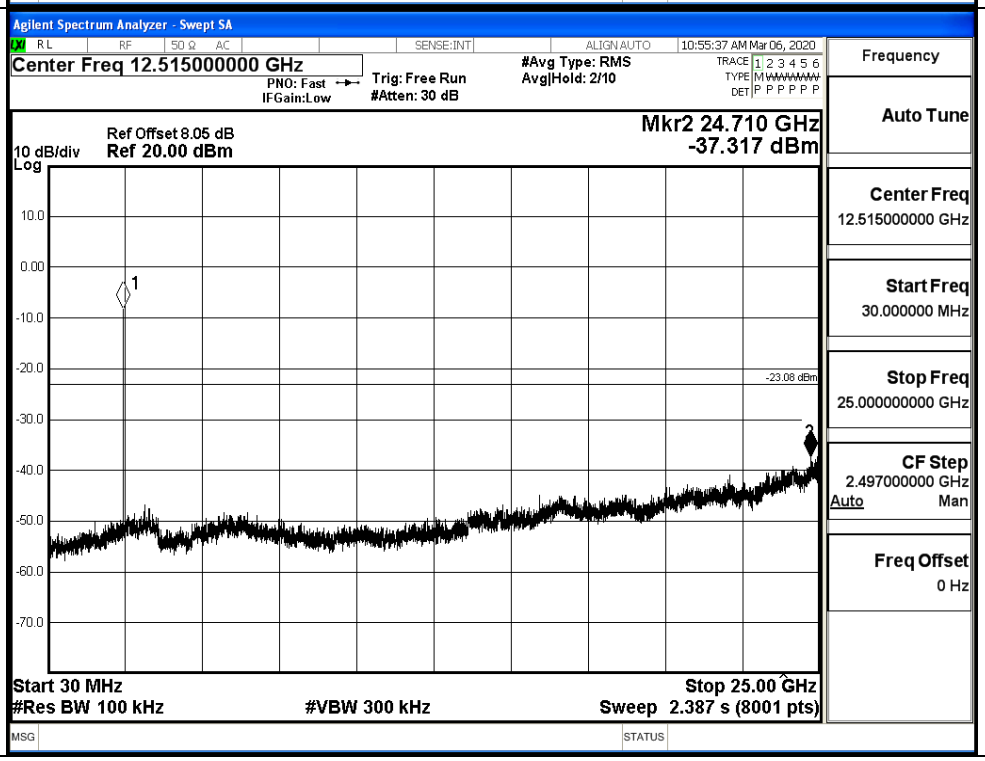
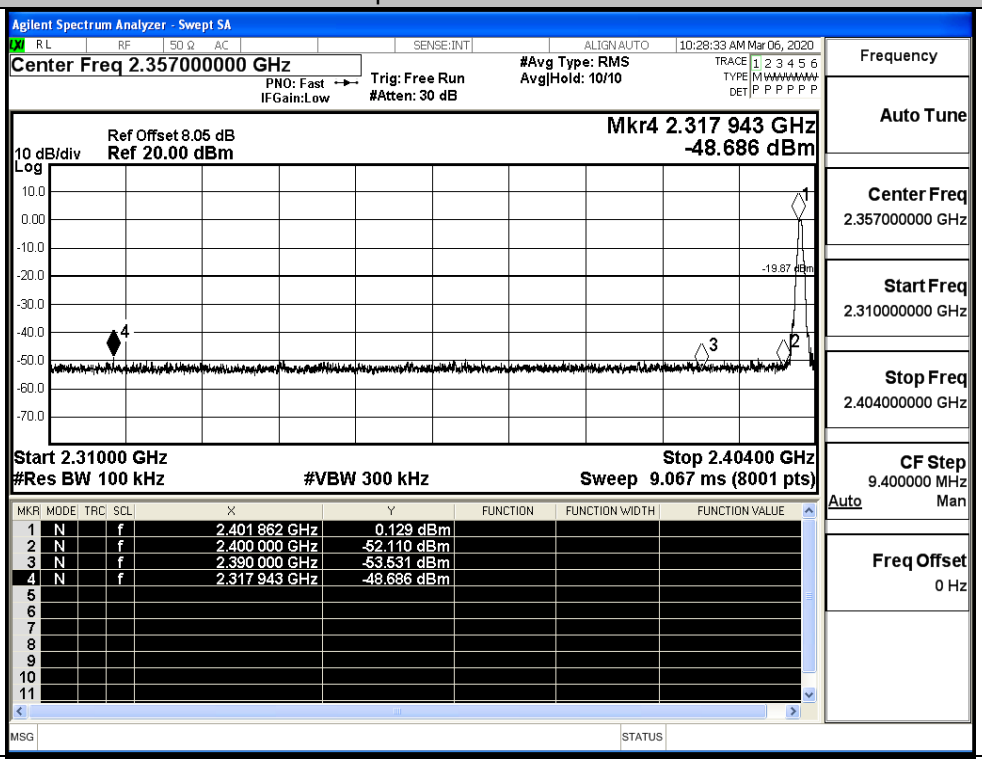
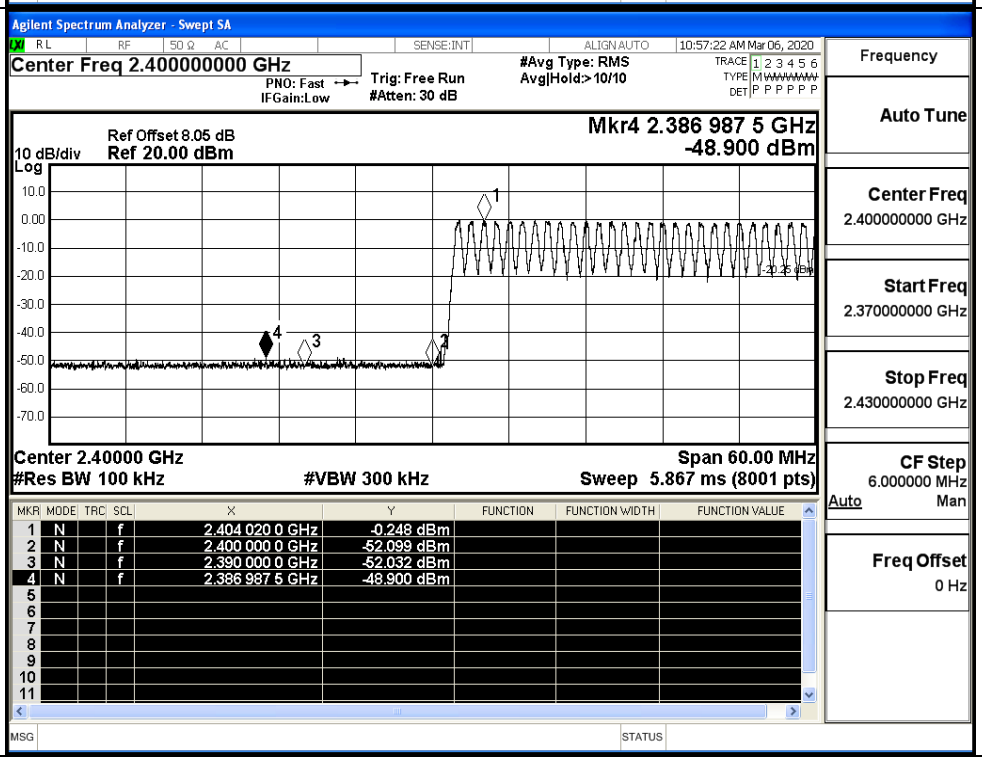
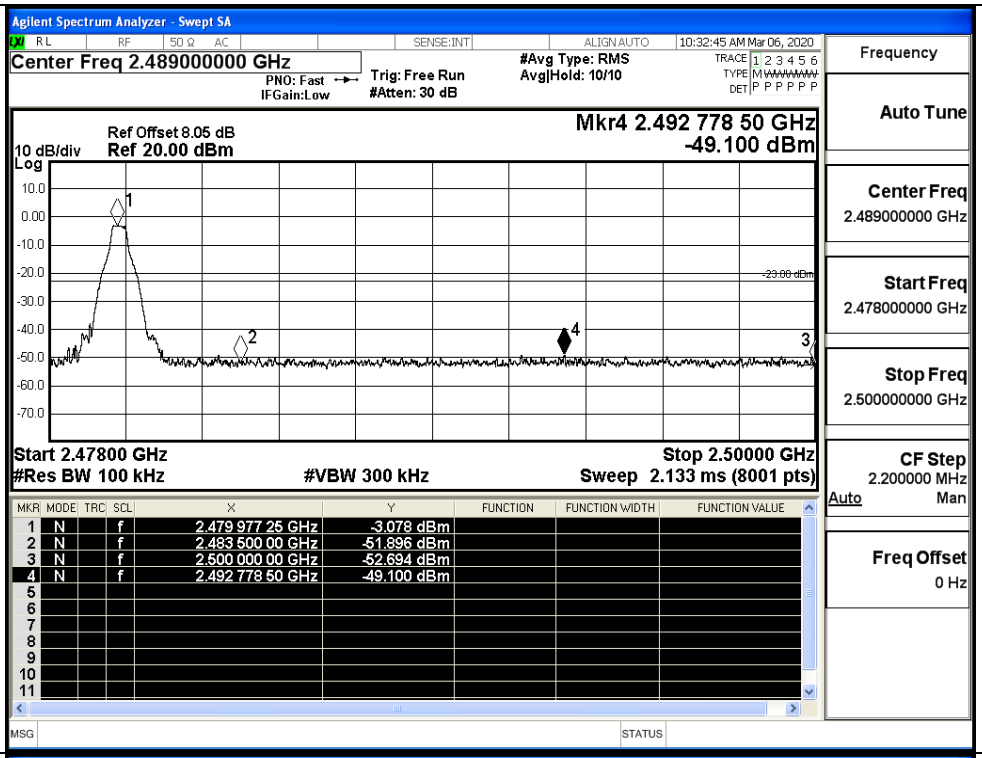
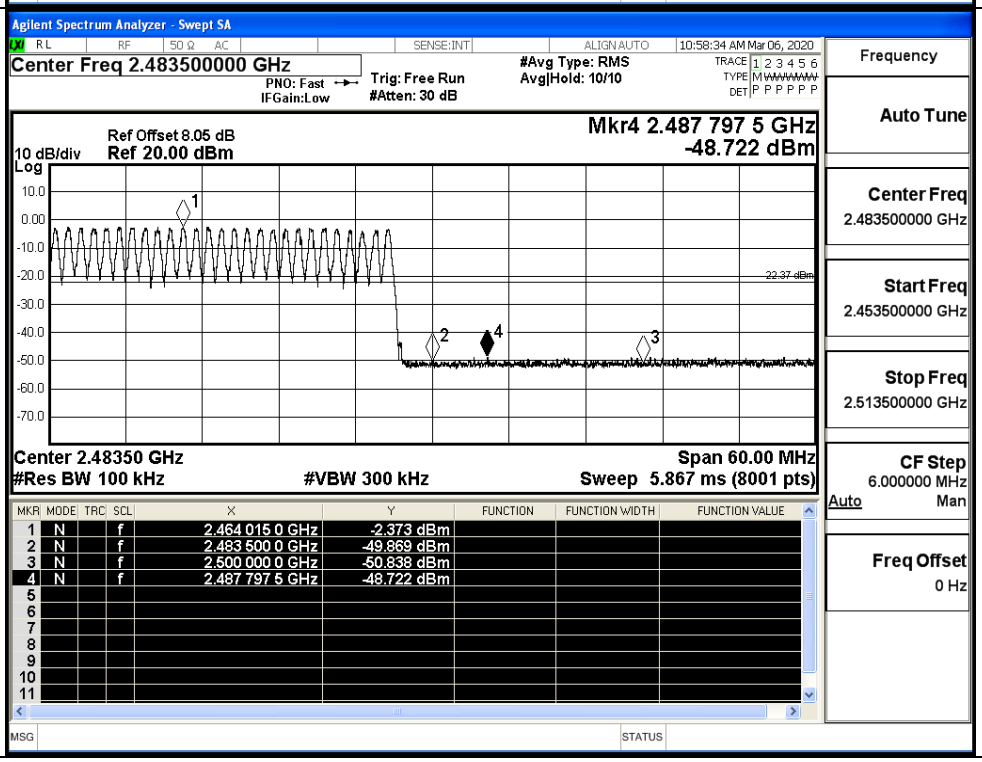
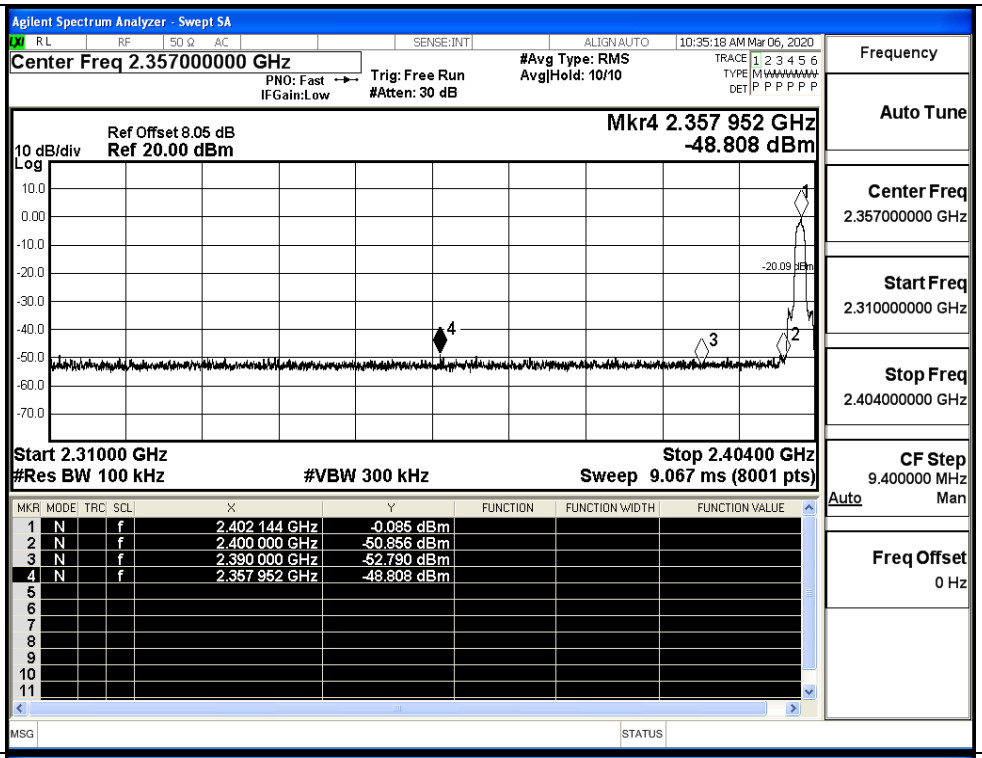
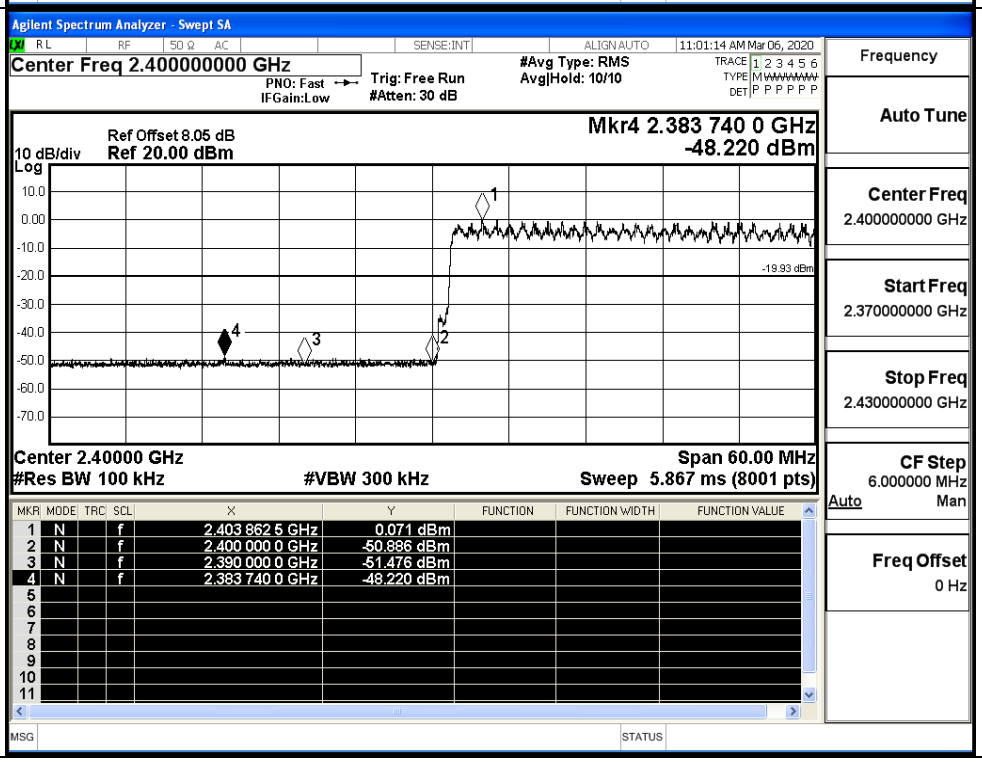
Pref			
Puw			

A.7 Band-edge for RF Conducted Emissions

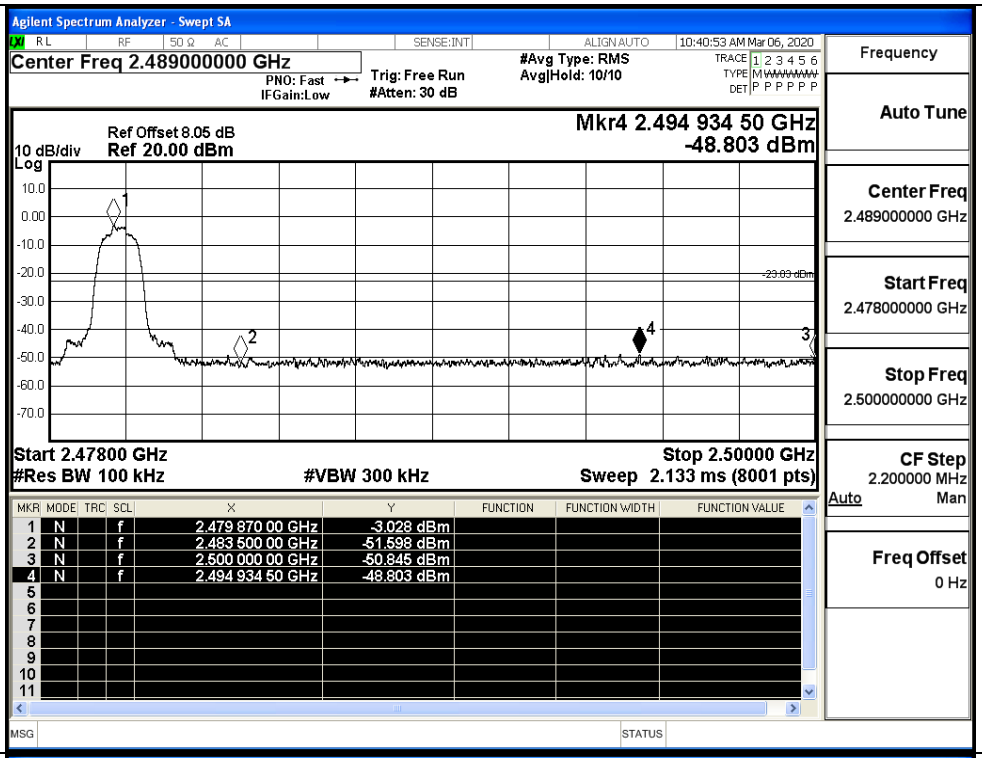
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	0.129	Off	-48.686	-19.87	PASS
			-0.248	On	-48.900	-20.25	PASS
	HCH	2480	-3.078	Off	-49.100	-23.08	PASS
			-2.373	On	-48.722	-22.37	PASS
π/4DQPSK	LCH	2402	-0.085	Off	-48.808	-20.09	PASS
			0.071	On	-48.220	-19.93	PASS
	HCH	2480	-3.028	Off	-48.803	-23.03	PASS
			-2.284	On	-48.224	-22.28	PASS
8DPSK	LCH	2402	0.104	Off	-49.375	-19.9	PASS
			0.106	On	-48.842	-19.89	PASS
	HCH	2480	-3.106	Off	-48.938	-23.11	PASS
			-2.291	On	-48.531	-22.29	PASS

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

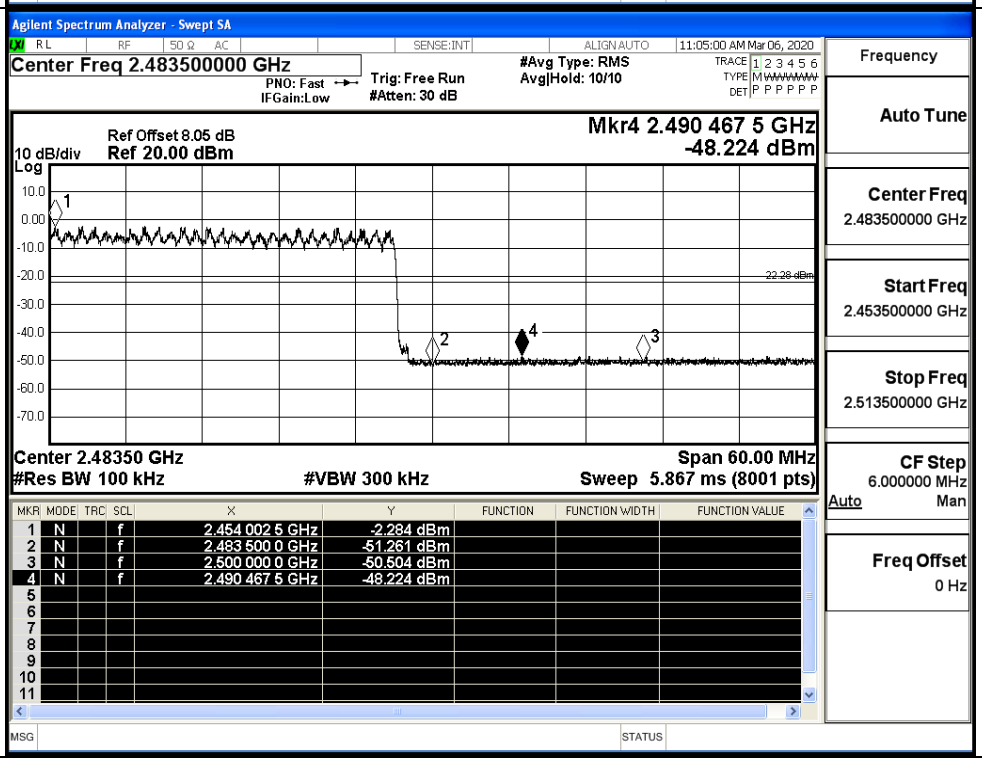
GFSK/HCH/No Hop	
GFSK/HCH/Hop	

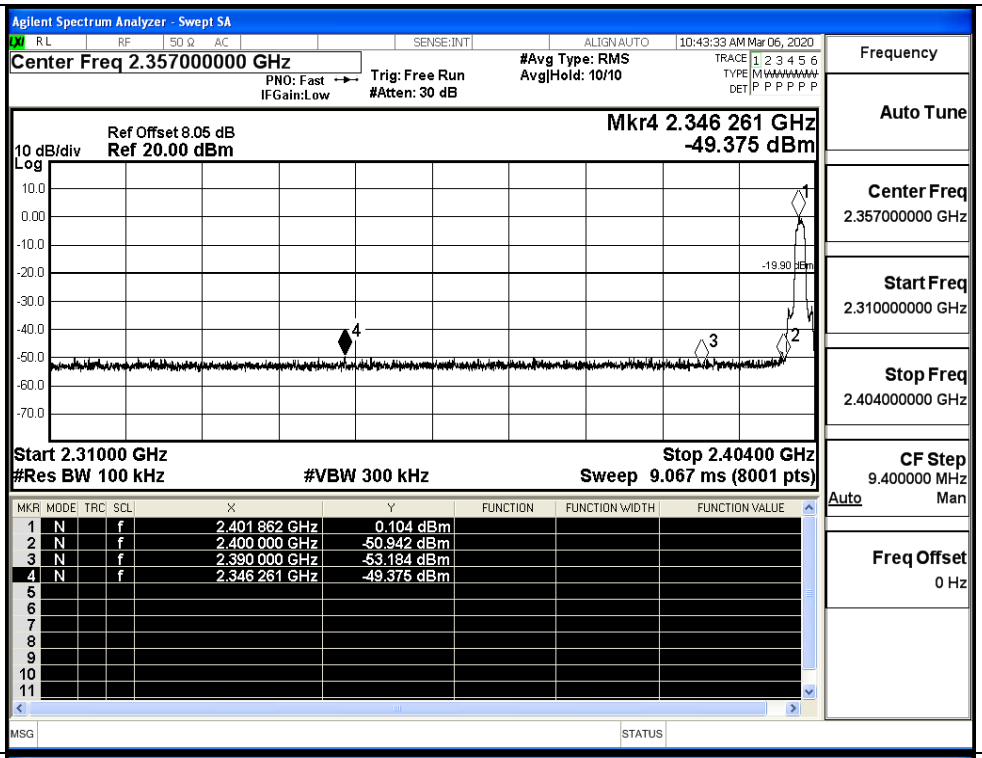
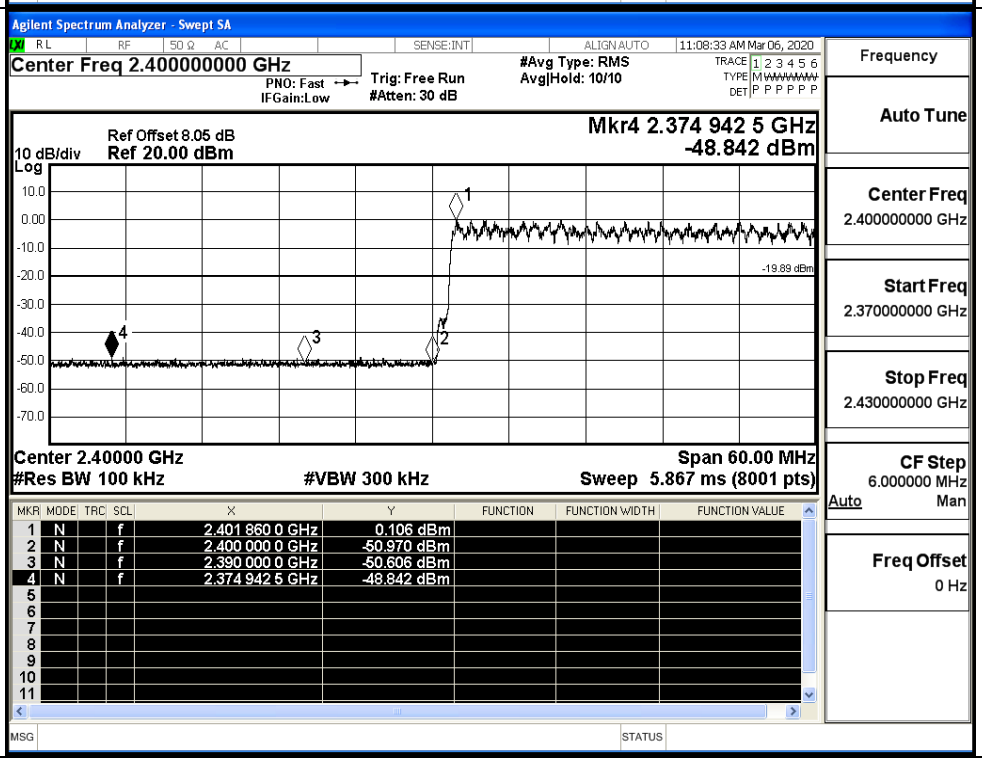
π/4DQPSK/LCH/No Hop	
π/4DQPSK/LCH/Hop	

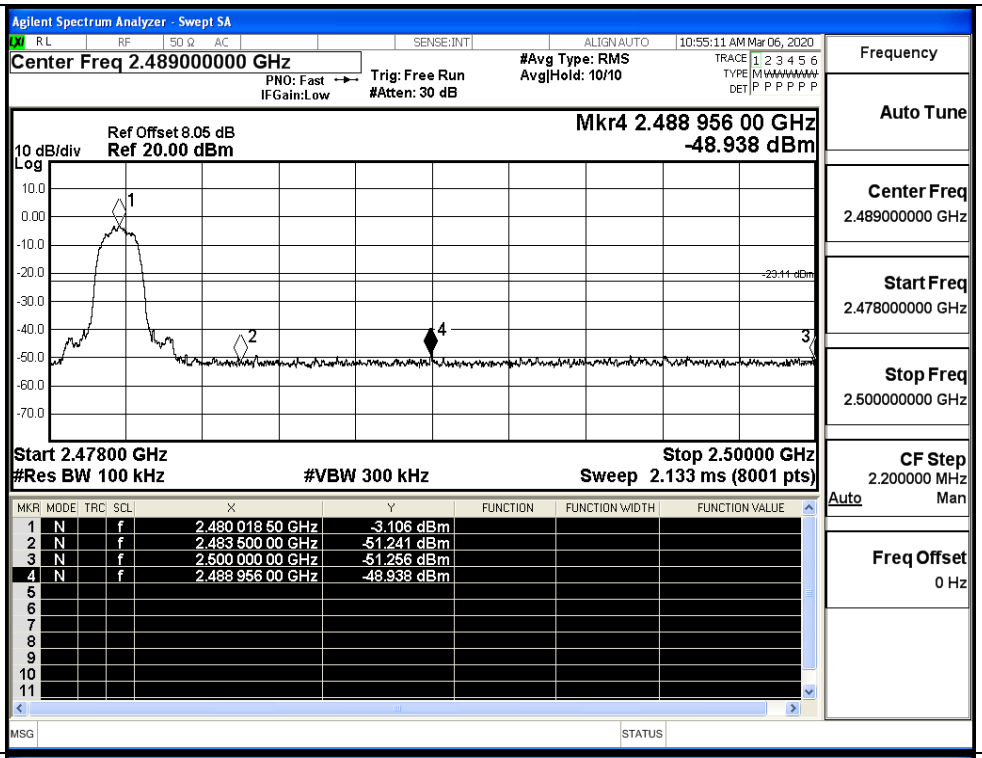
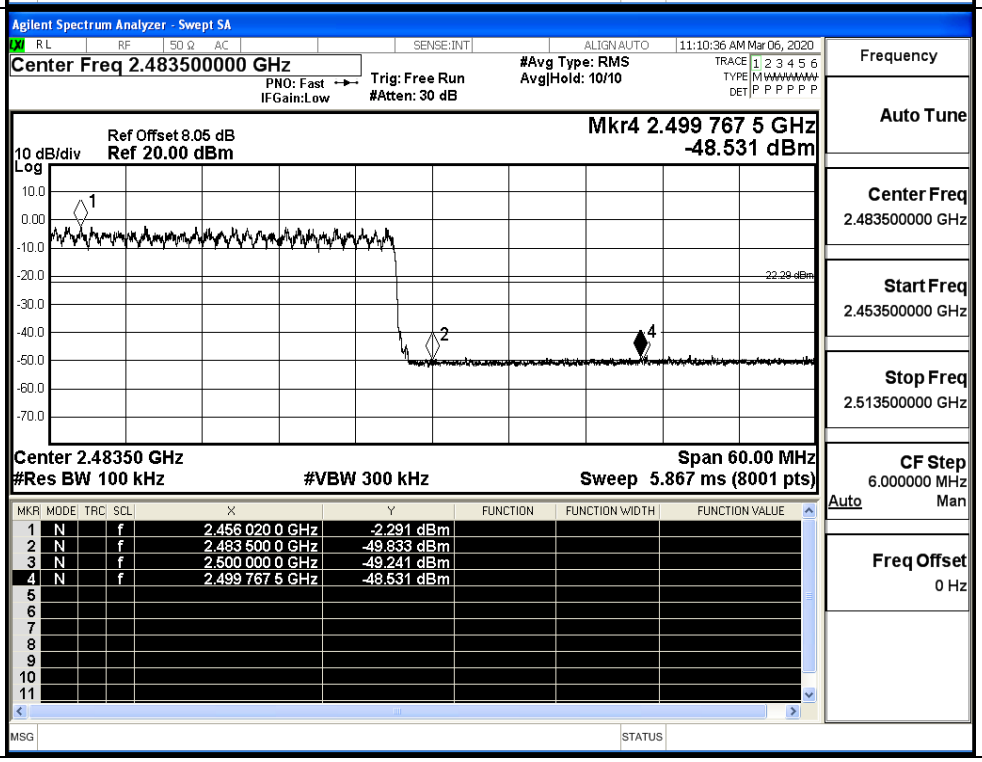
π/4DQPSK/HCH/No Hop



π/4DQPSK/HCH/Hop



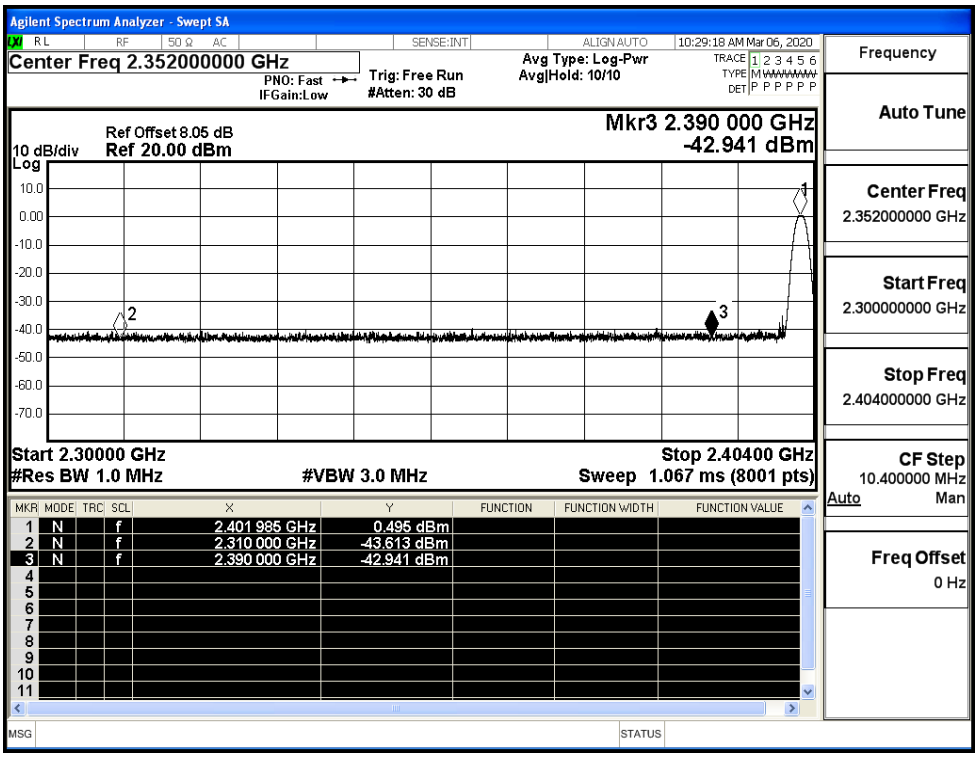
8DPSK/LCH/No Hop	
8DPSK/LCH/Hop	

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

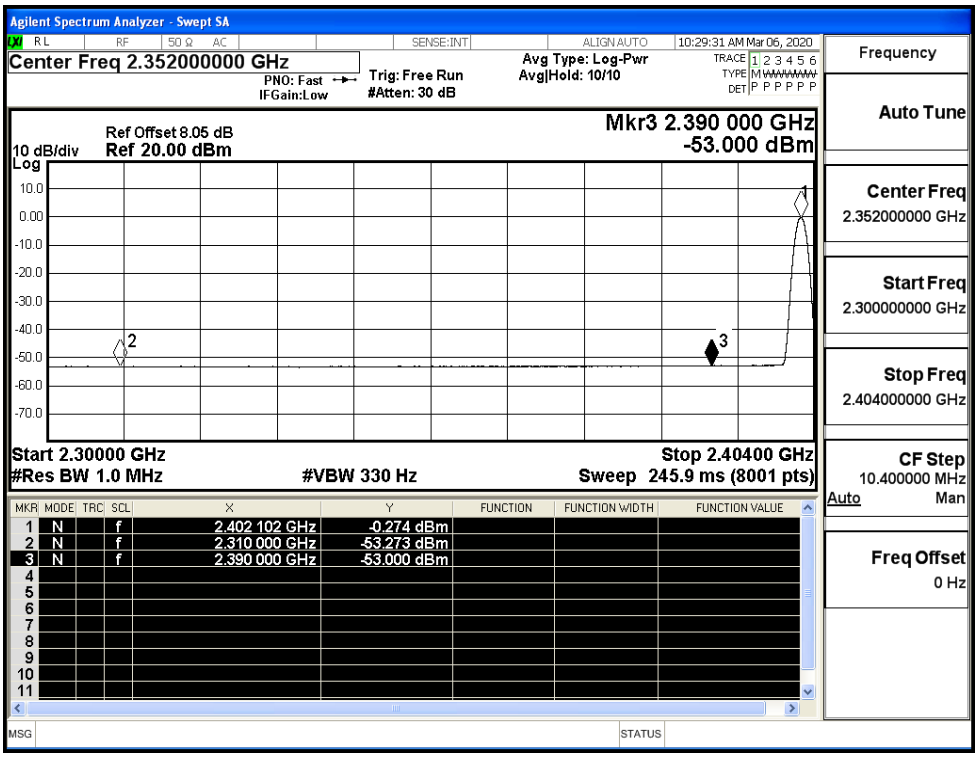
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-43.61	2.0	0	53.62	PEAK	74	PASS
	Off	2310.0	-53.27	2.0	0	43.96	AV	54	PASS
	Off	2390.0	-42.94	2.0	0	54.29	PEAK	74	PASS
	Off	2390.0	-53.00	2.0	0	44.23	AV	54	PASS
	Off	2483.5	-41.84	2.0	0	55.39	PEAK	74	PASS
	Off	2483.5	-52.50	2.0	0	44.73	AV	54	PASS
	Off	2500.0	-42.33	2.0	0	54.90	PEAK	74	PASS
	Off	2500.0	-52.30	2.0	0	44.93	AV	54	PASS
π/4DQPSK	Off	2310.0	-42.91	2.0	0	54.32	PEAK	74	PASS
	Off	2310.0	-53.22	2.0	0	44.01	AV	54	PASS
	Off	2390.0	-42.17	2.0	0	55.06	PEAK	74	PASS
	Off	2390.0	-52.96	2.0	0	44.27	AV	54	PASS
	Off	2483.5	-42.45	2.0	0	54.78	PEAK	74	PASS
	Off	2483.5	-52.38	2.0	0	44.85	AV	54	PASS
	Off	2500.0	-42.79	2.0	0	54.44	PEAK	74	PASS
	Off	2500.0	-52.31	2.0	0	44.92	AV	54	PASS
8DPSK	Off	2310.0	-42.54	2.0	0	54.69	PEAK	74	PASS
	Off	2310.0	-53.33	2.0	0	43.90	AV	54	PASS
	Off	2390.0	-43.73	2.0	0	53.50	PEAK	74	PASS
	Off	2390.0	-52.88	2.0	0	44.35	AV	54	PASS
	Off	2483.5	-41.90	2.0	0	55.33	PEAK	74	PASS
	Off	2483.5	-52.45	2.0	0	44.78	AV	54	PASS
	Off	2500.0	-42.22	2.0	0	55.01	PEAK	74	PASS
	Off	2500.0	-52.21	2.0	0	45.02	AV	54	PASS

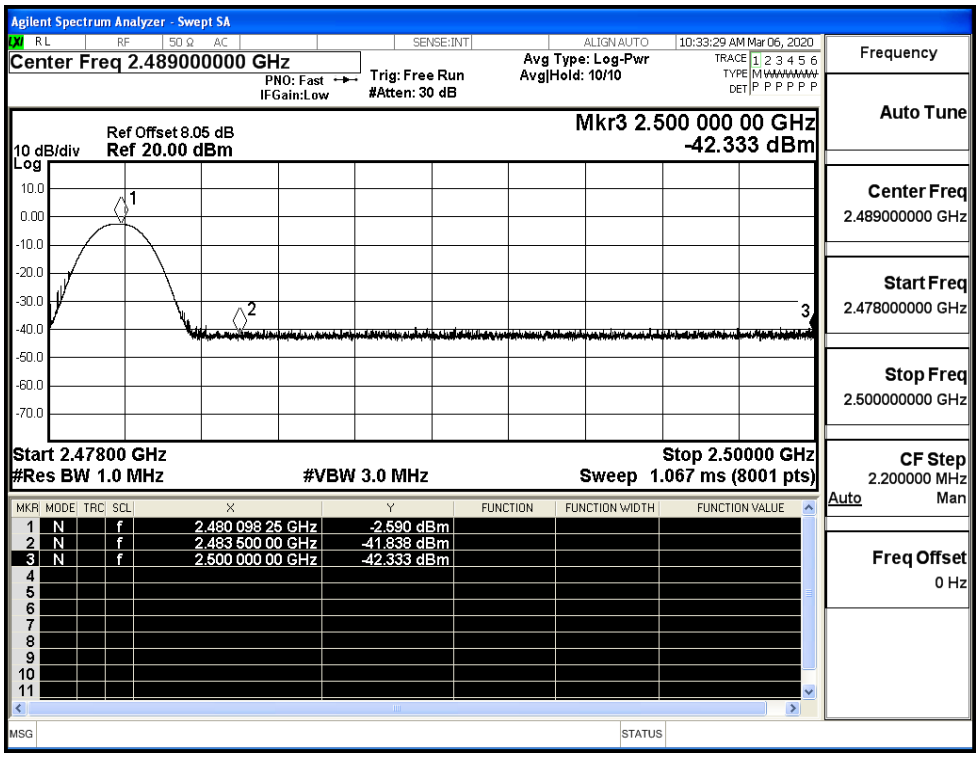
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (Low Channel)



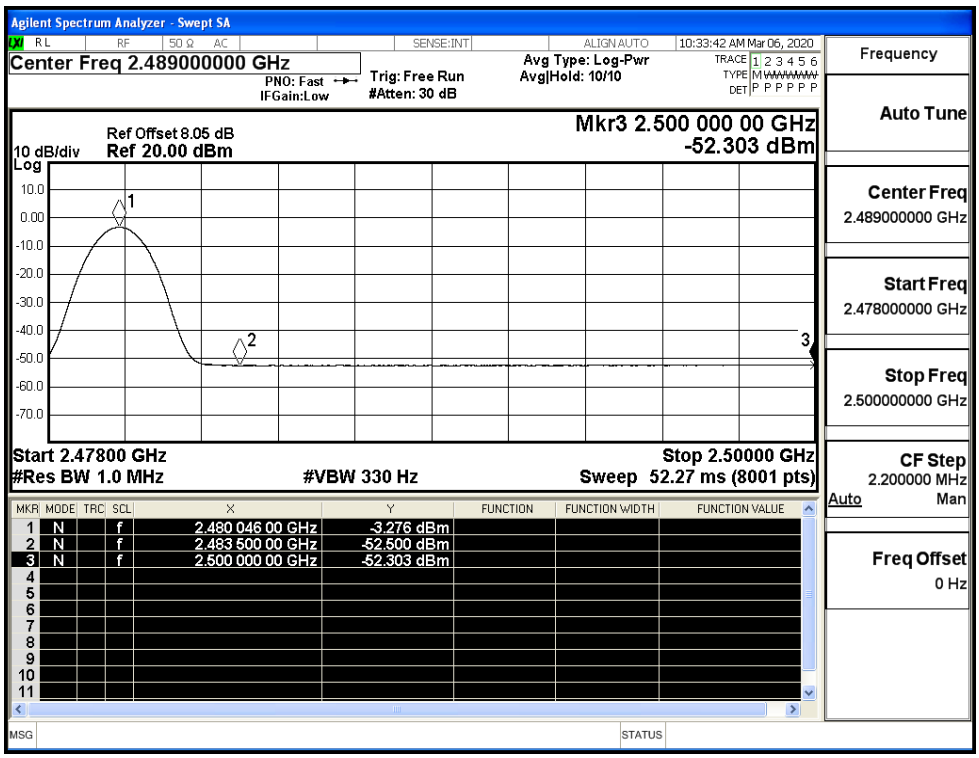
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (Low Channel)



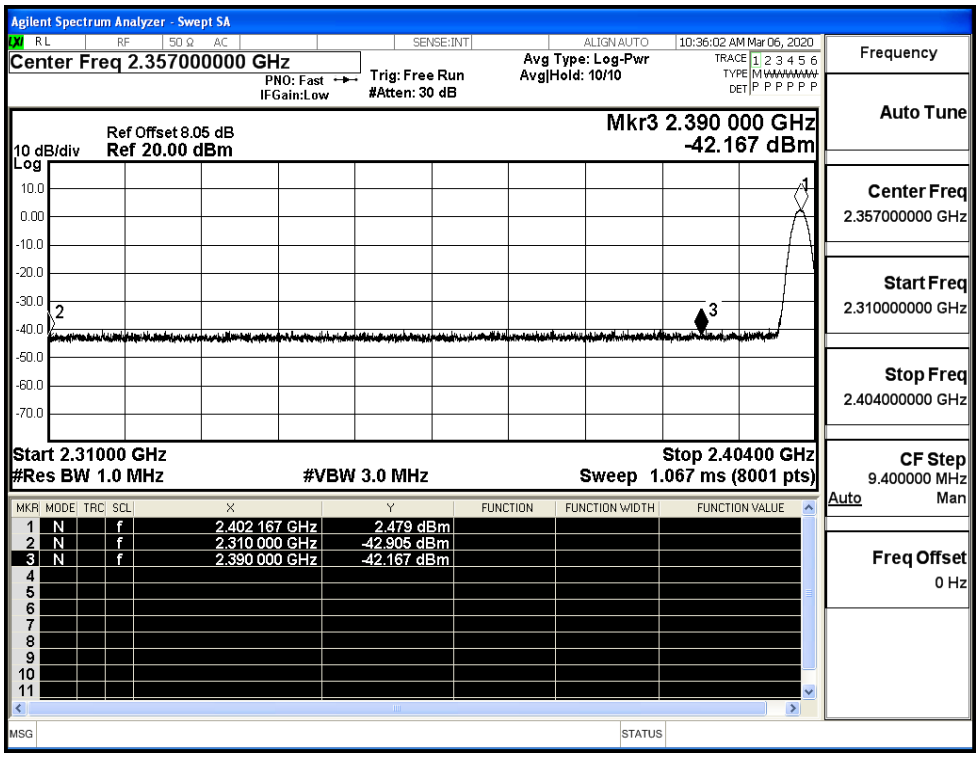
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (High Channel)



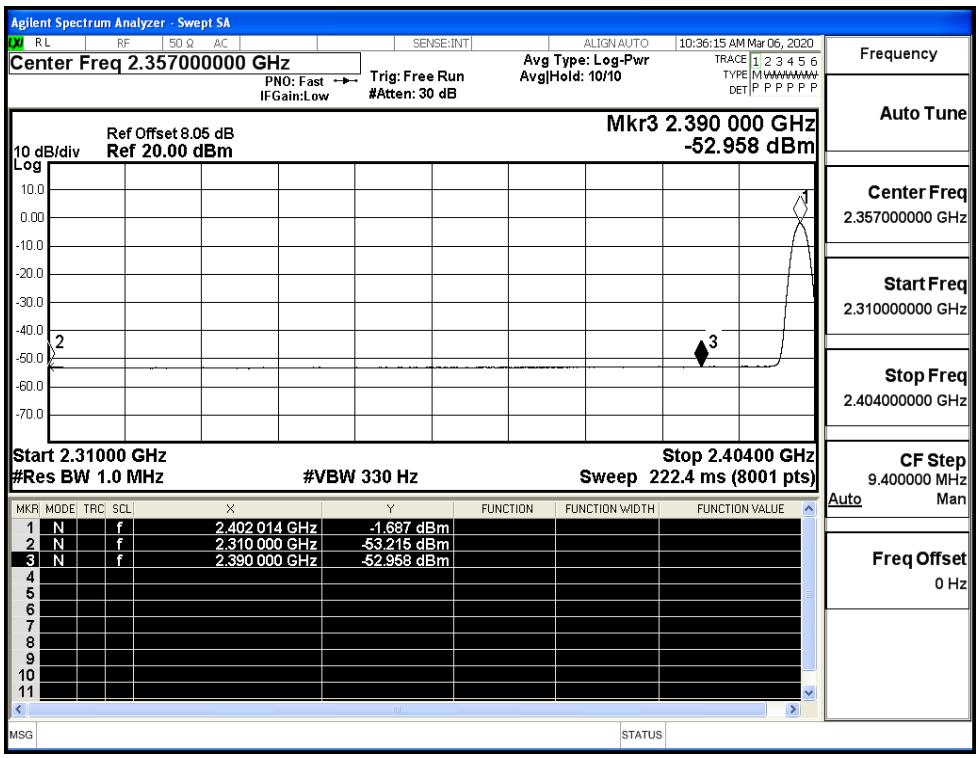
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (High Channel)



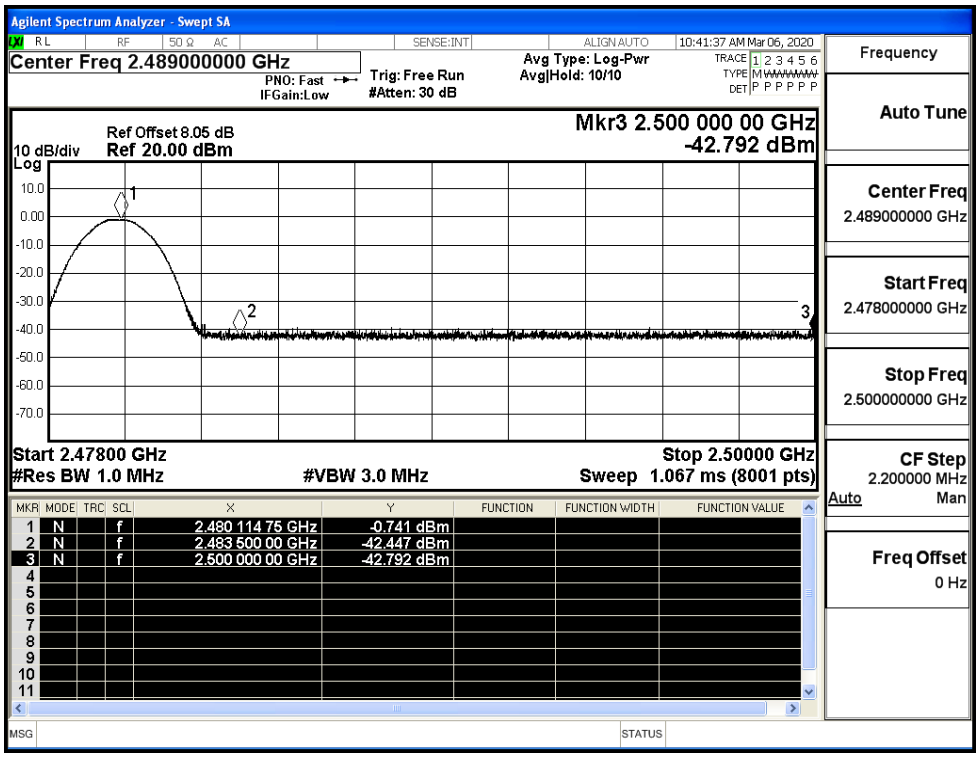
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (Low Channel)



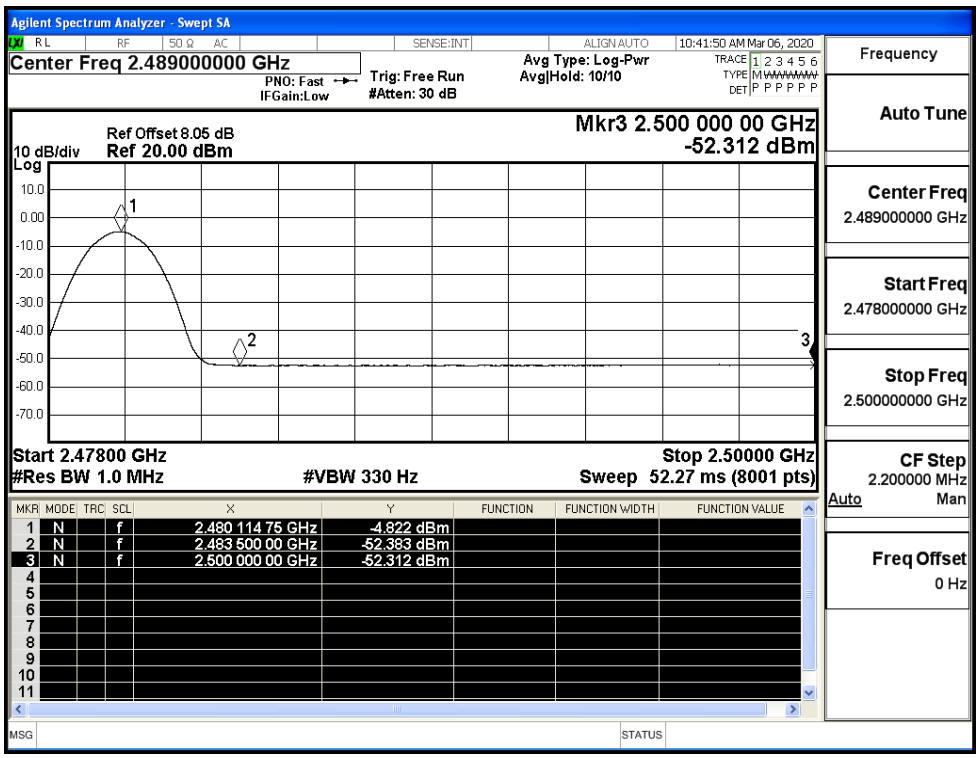
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (Low Channel)



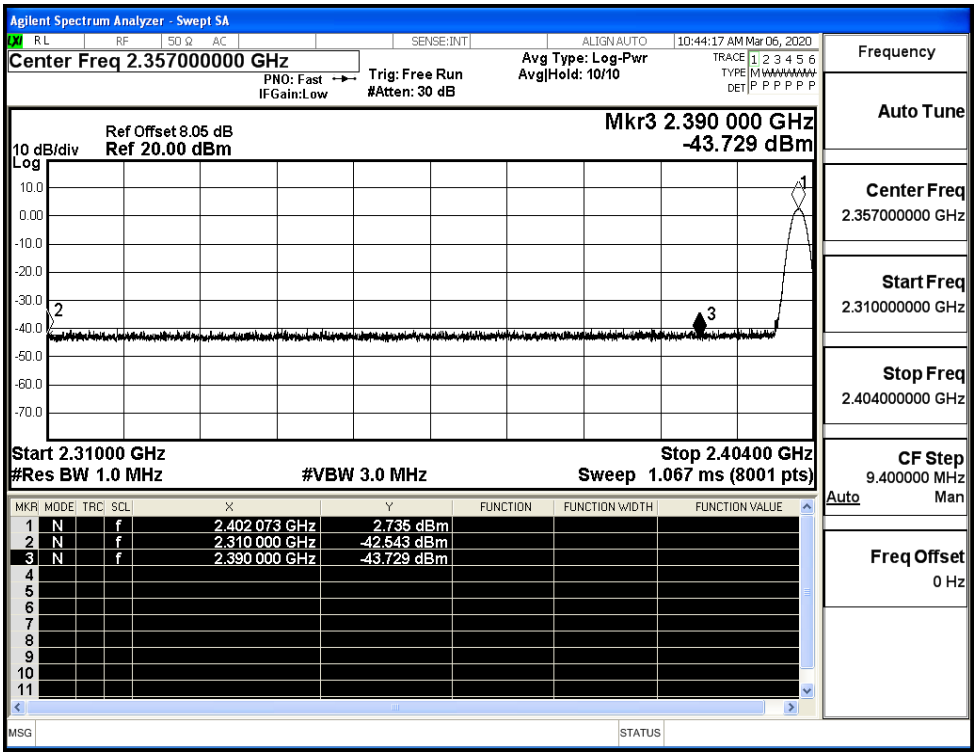
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (High Channel)



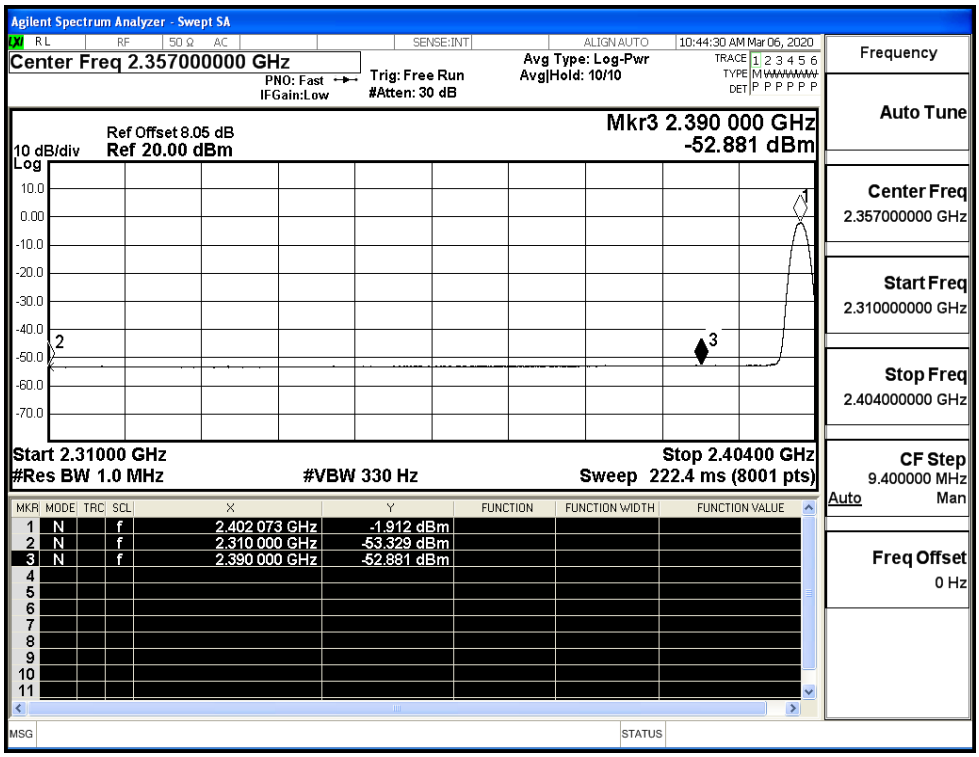
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (High Channel)



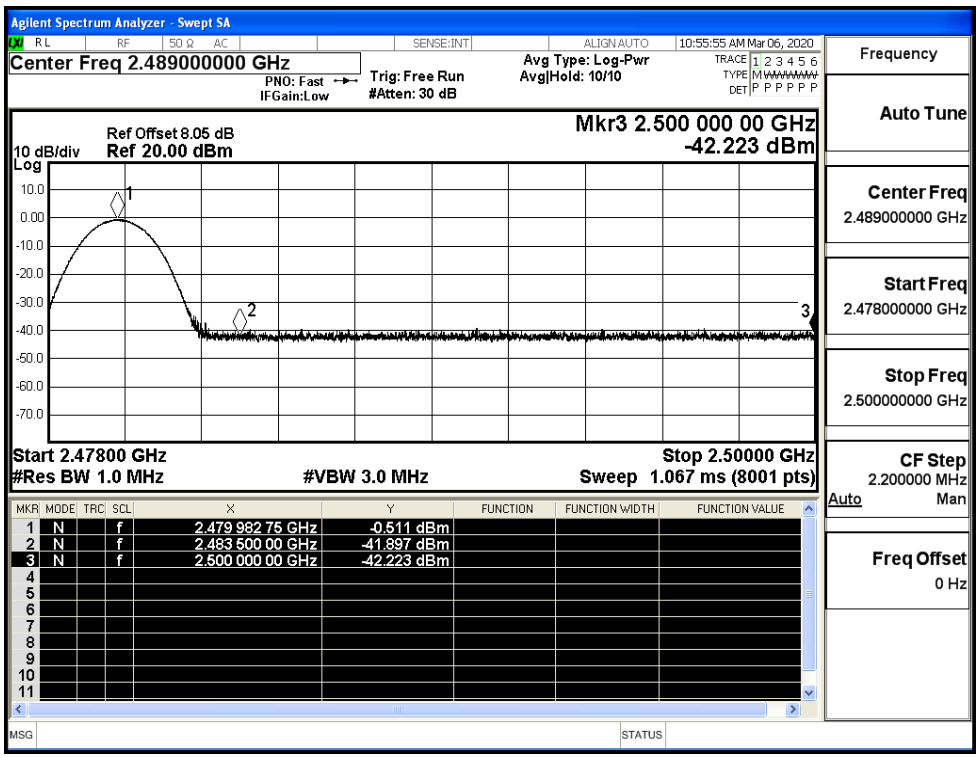
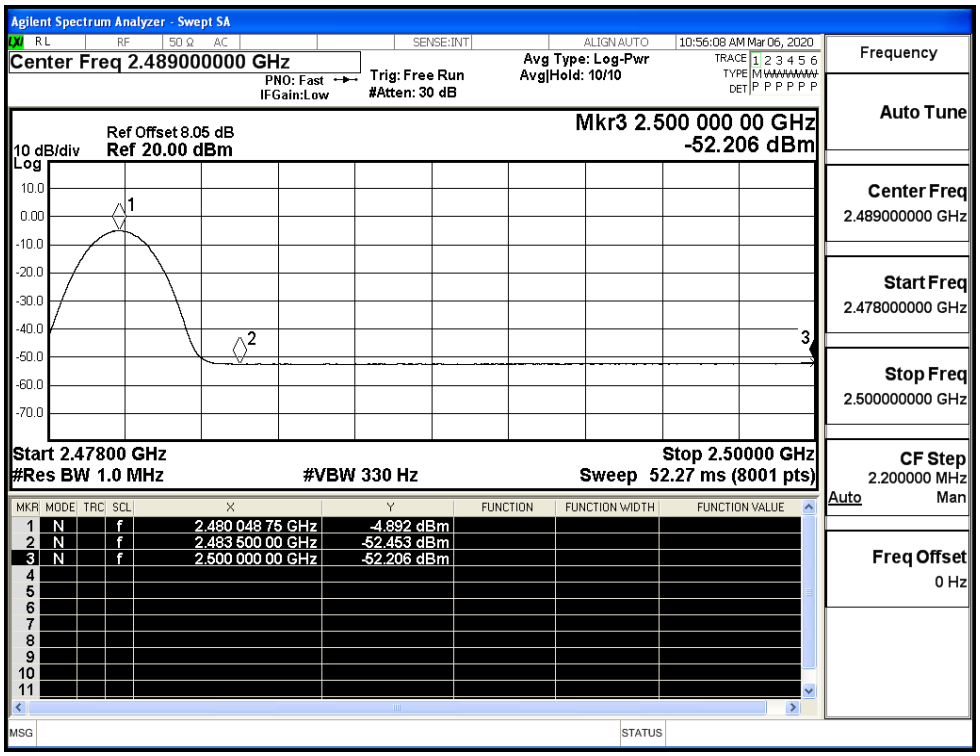
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)