Appendix A

RF Test Data for BT V4.2(BR/EDR) (Conducted Measurement)

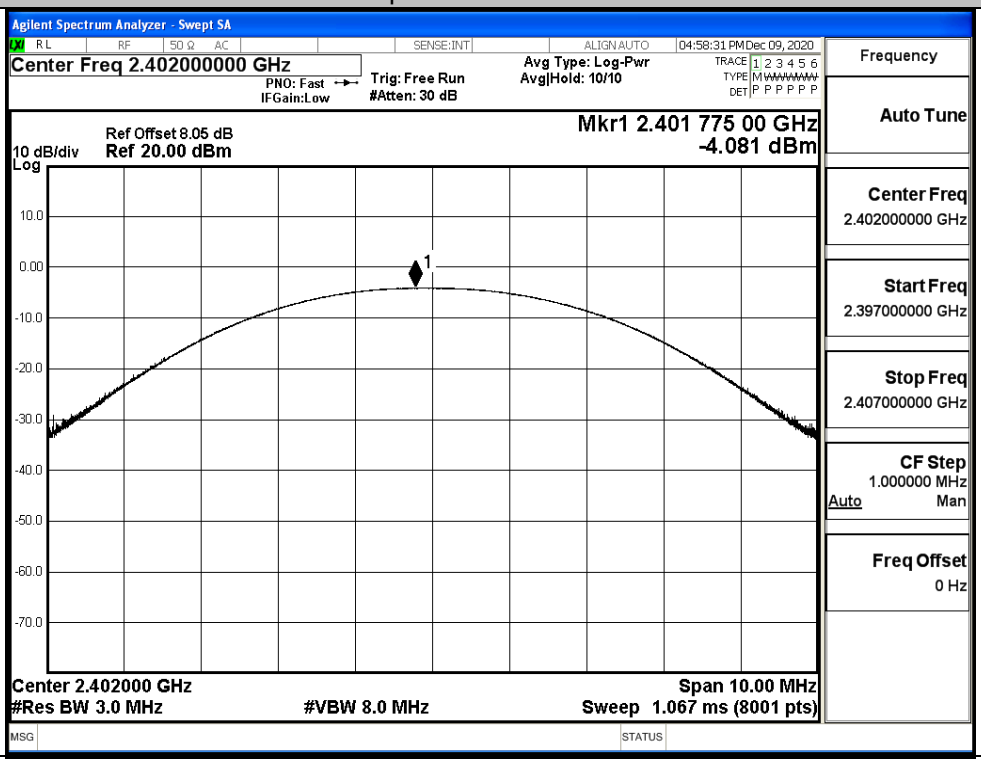
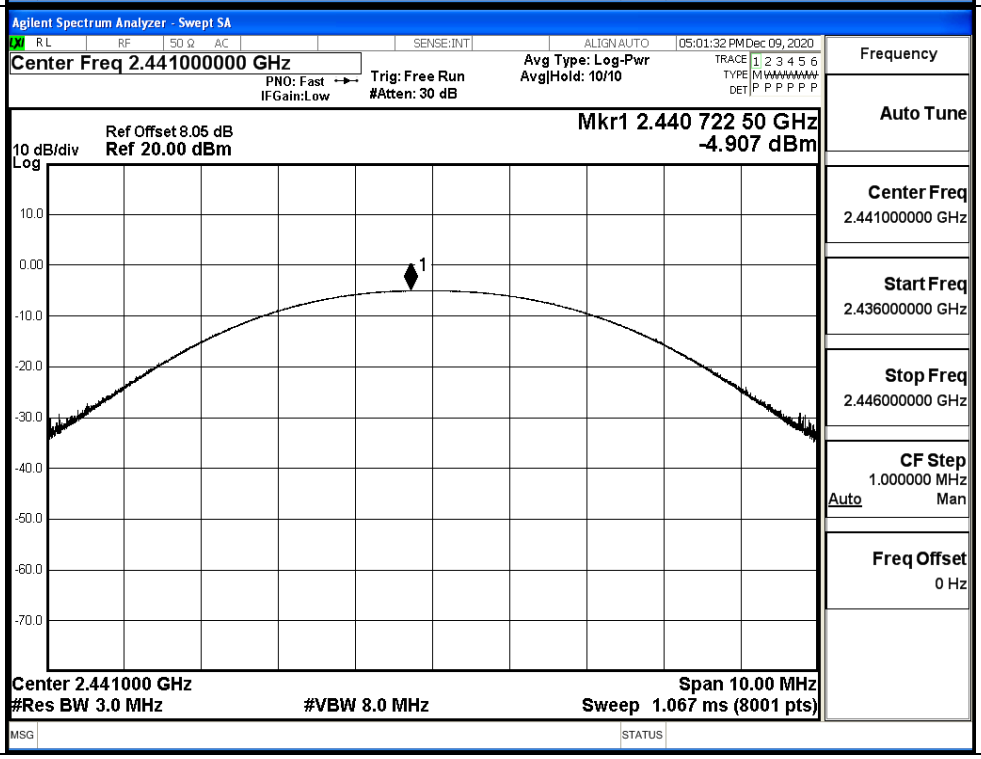
Product Name: ECHO MIRROR
Trade Mark: FENCHILIN
Test Model: MZMGJ0089

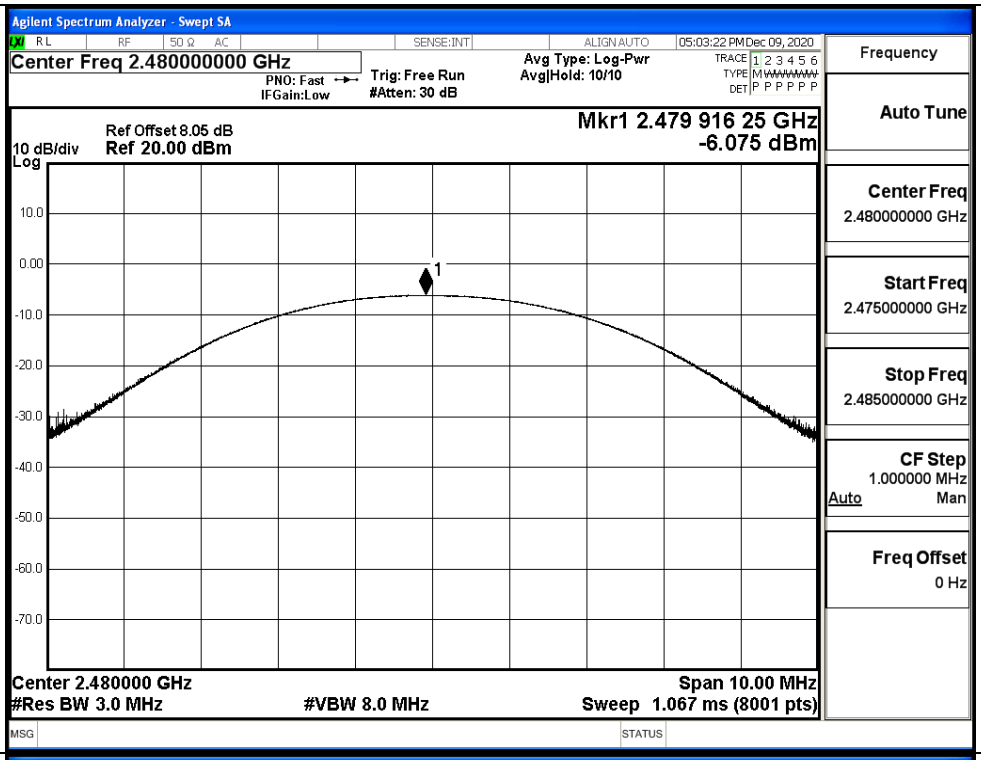
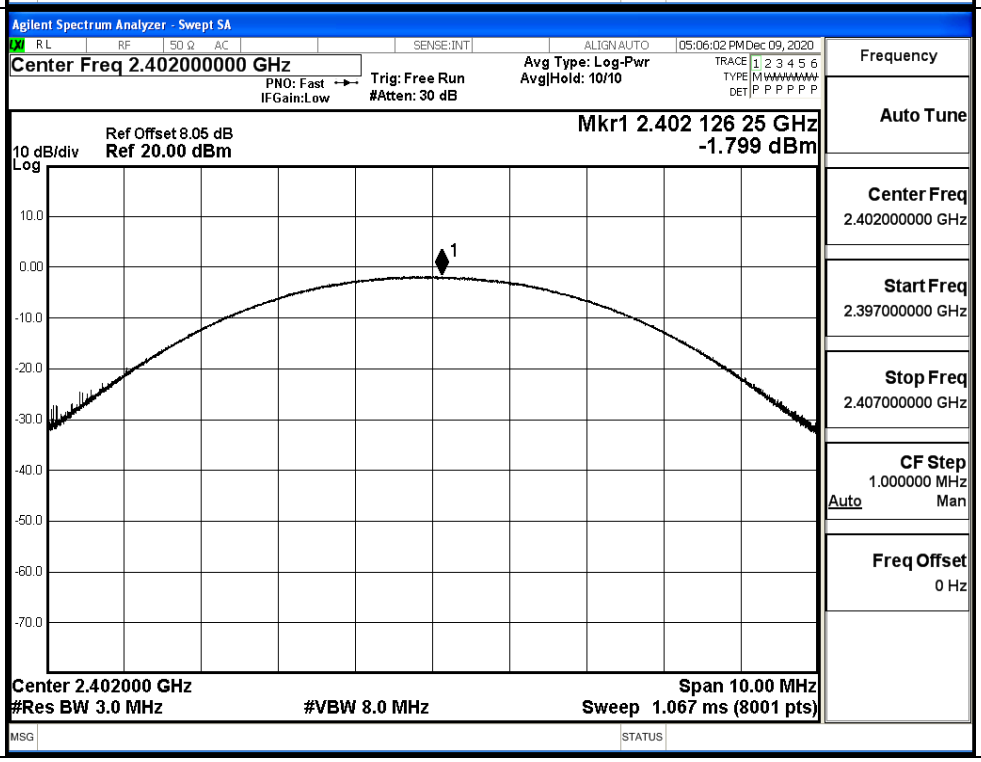
Environmental Conditions

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

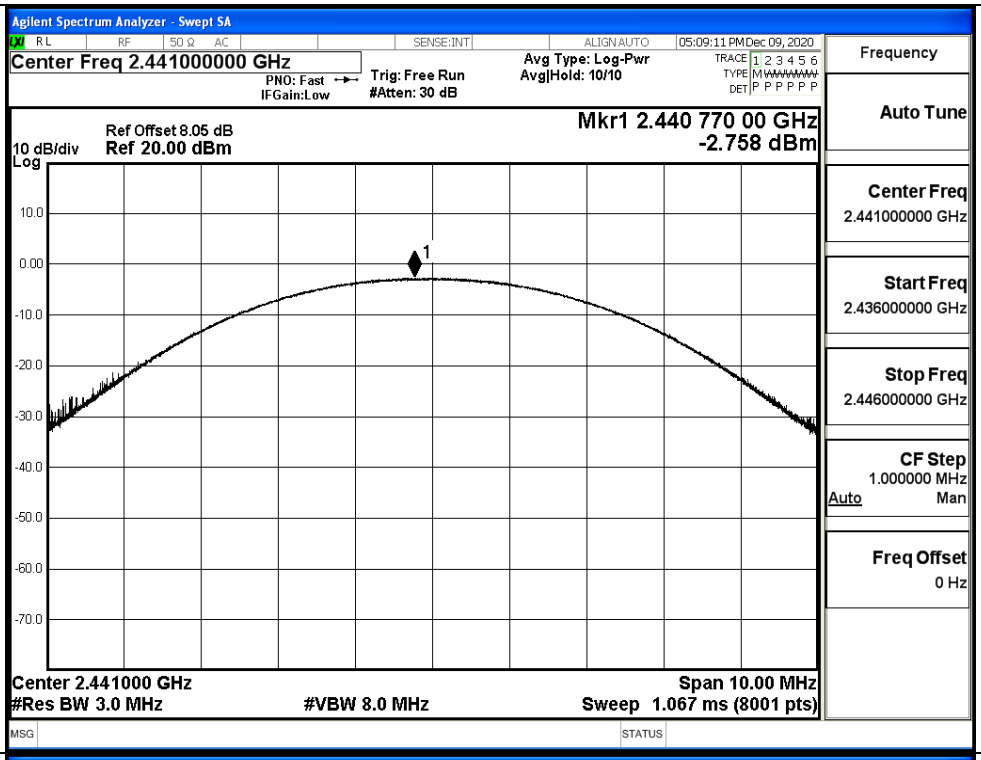
A.1 Maxmum Conducted Peak Output Power

Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-4.081	21	PASS
	MCH	-4.907	21	PASS
	HCH	-6.075	21	PASS
π/4DQPSK	LCH	-1.799	21	PASS
	MCH	-2.758	21	PASS
	HCH	-3.854	21	PASS
8DPSK	LCH	-1.235	21	PASS
	MCH	-2.082	21	PASS
	HCH	-3.182	21	PASS

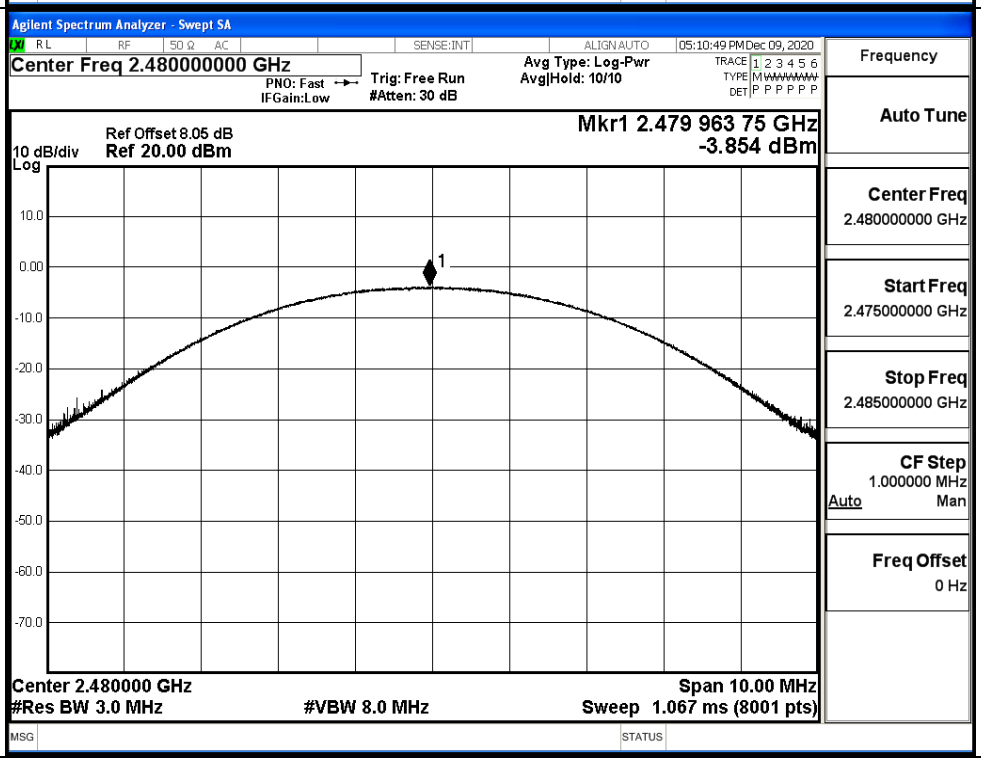
Test Graphs	
GFSK/LCH	
GFSK/MCH	

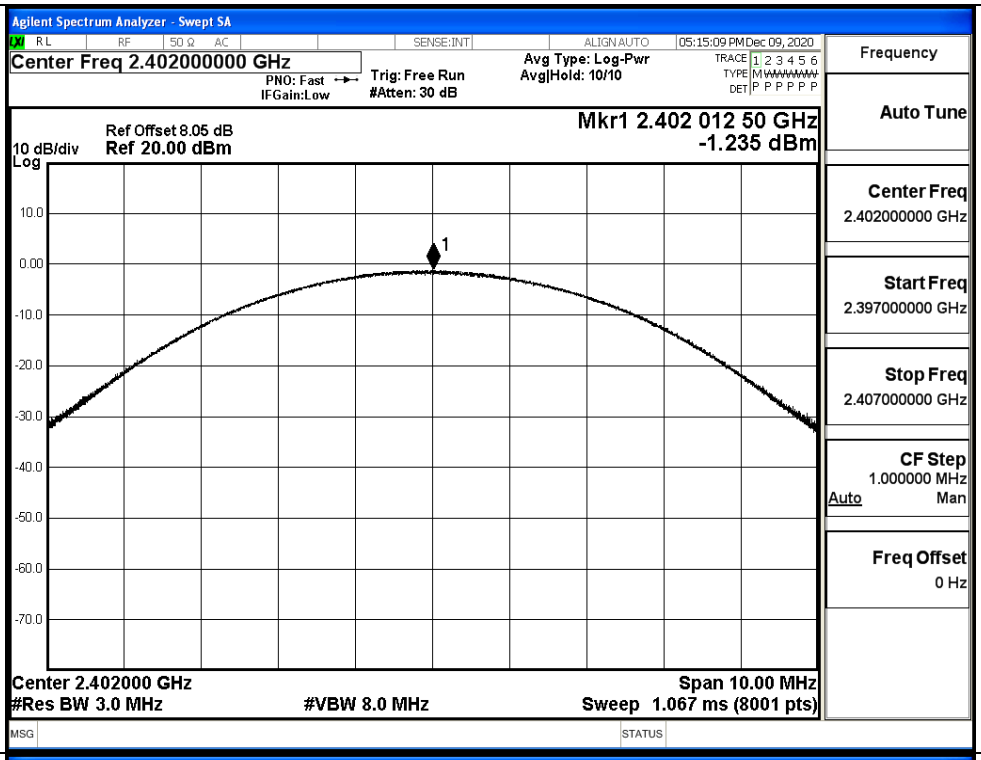
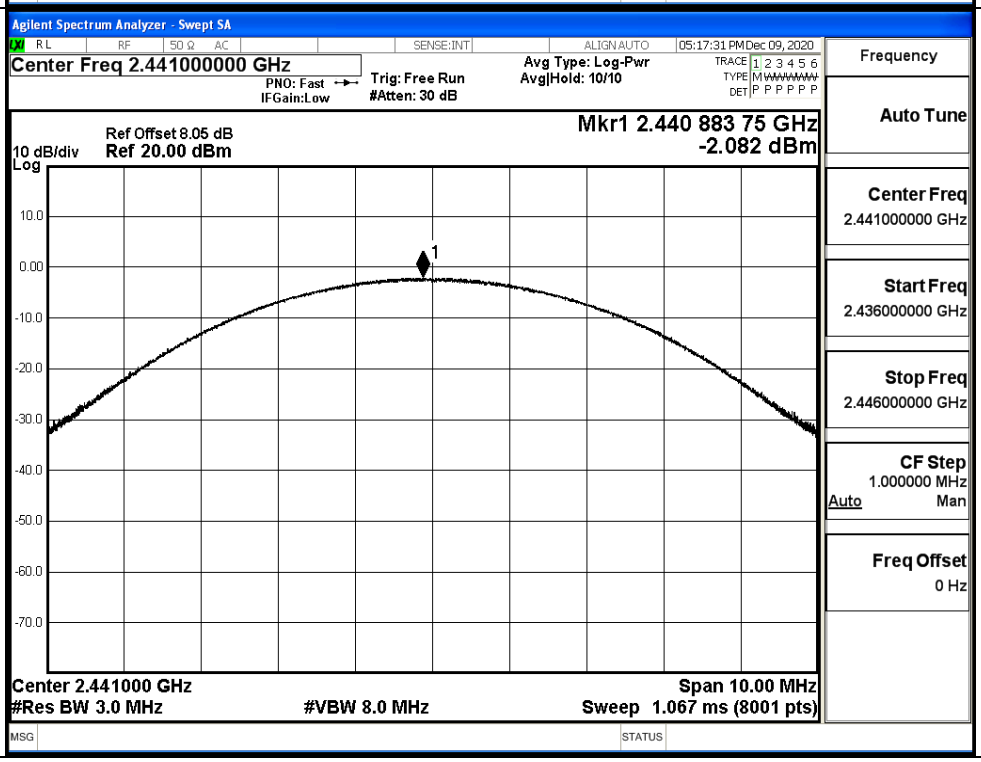
GFSK/HCH		
π/4DQPSK/LCH		

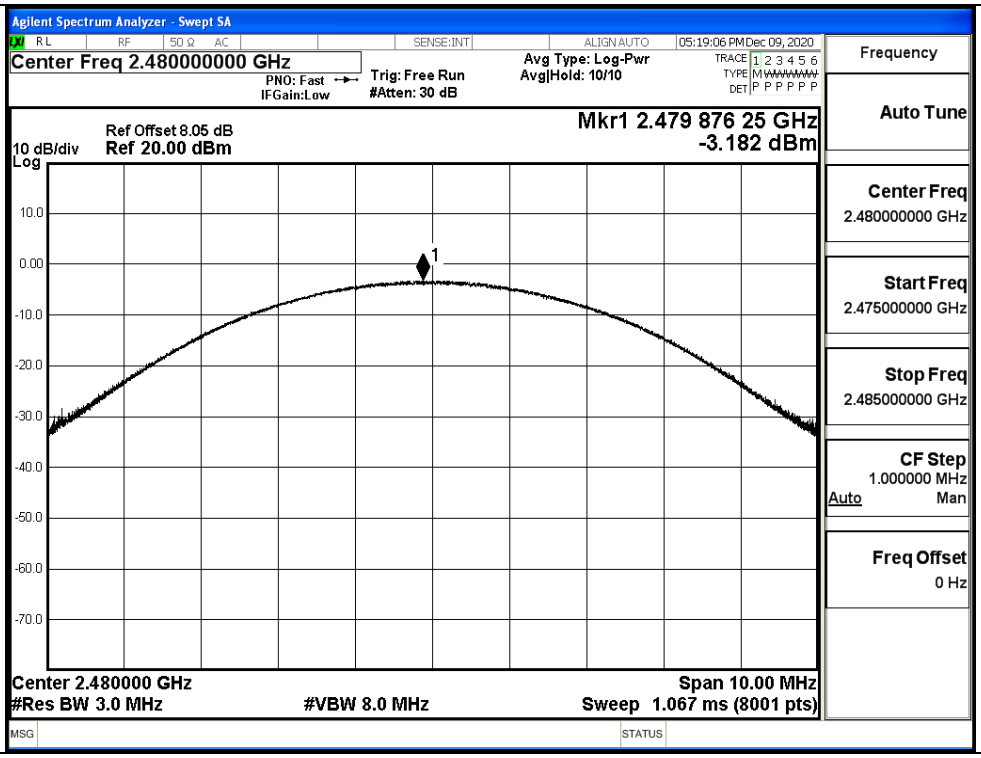
π/4DQPSK/MCH



π/4DQPSK/HCH



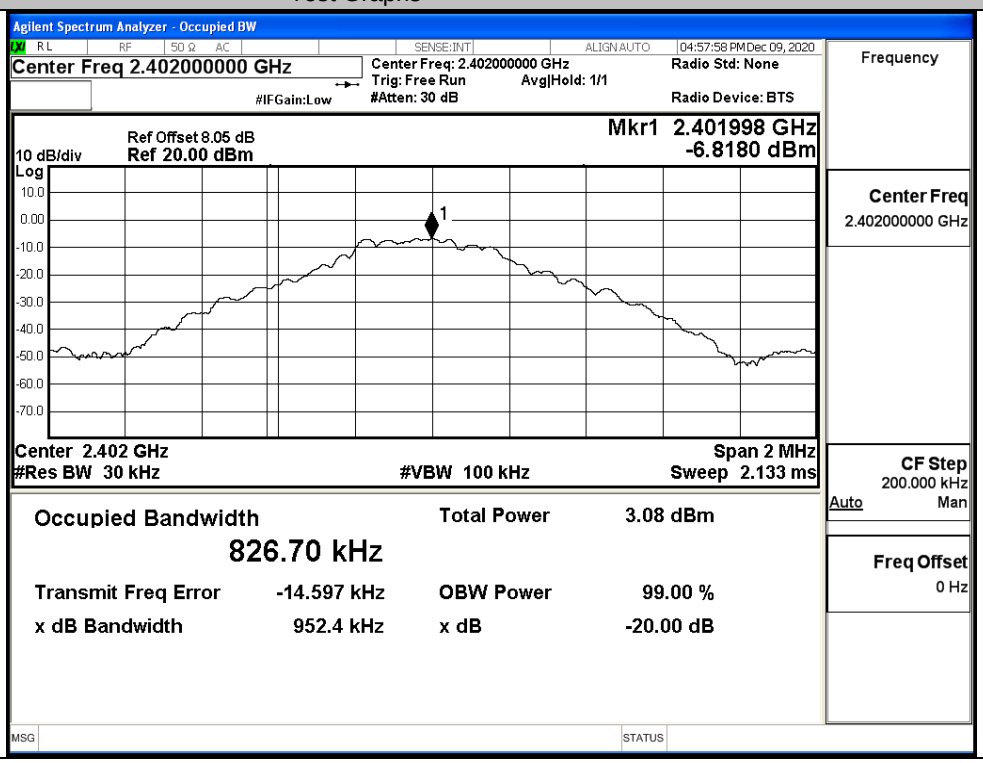
8DPSK/LCH		
8DPSK/MCH		

8DPSK/HCH		

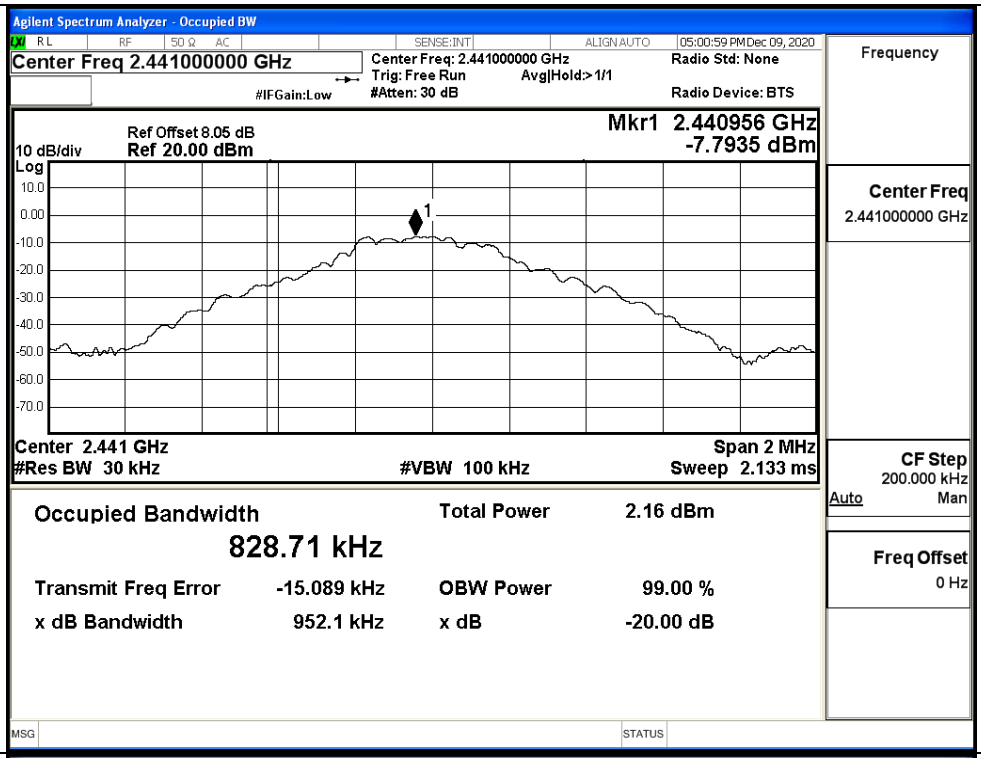
Agilent Spectrum Analyzer - Swept SA
Center Freq 2.480000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 10/10
05:19:06 PM Dec 09, 2020
Ref Offset 8.05 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr1 2.479 876 25 GHz
-3.182 dBm
Center 2.480000 GHz
#Res BW 3.0 MHz
#VBW 8.0 MHz
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

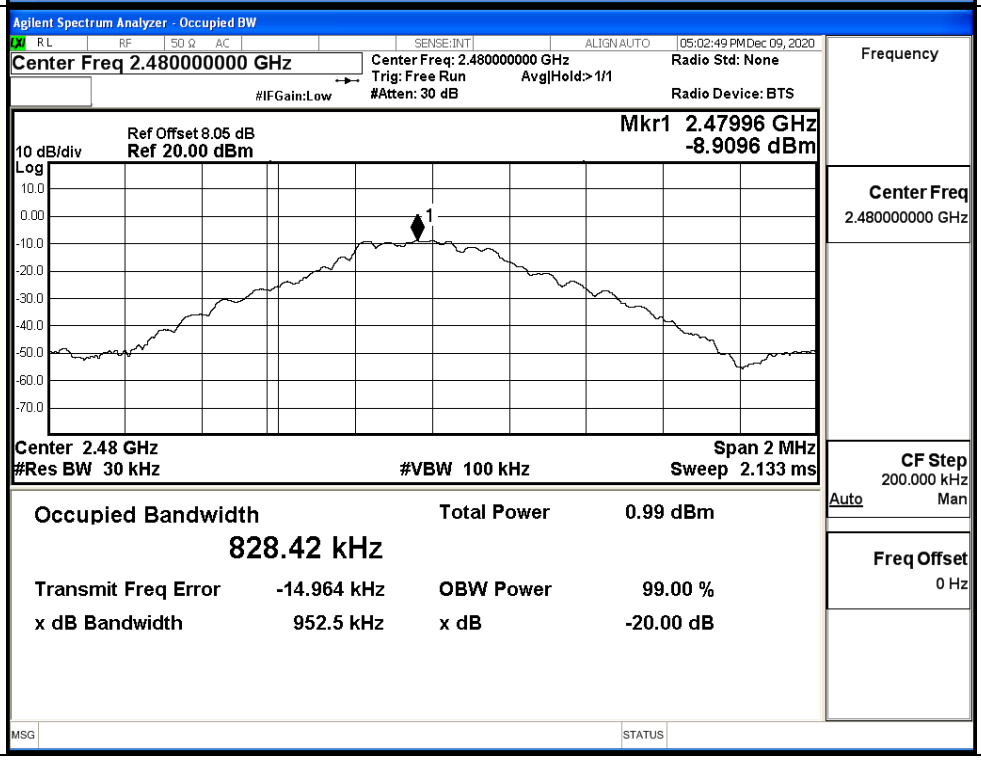
Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.9524	Not Specified	PASS
	MCH	0.9521	Not Specified	PASS
	HCH	0.9525	Not Specified	PASS
π/4DQPSK	LCH	1.323	Not Specified	PASS
	MCH	1.323	Not Specified	PASS
	HCH	1.324	Not Specified	PASS
8DPSK	LCH	1.303	Not Specified	PASS
	MCH	1.303	Not Specified	PASS
	HCH	1.305	Not Specified	PASS

Test Graphs		
GFSK/LCH		

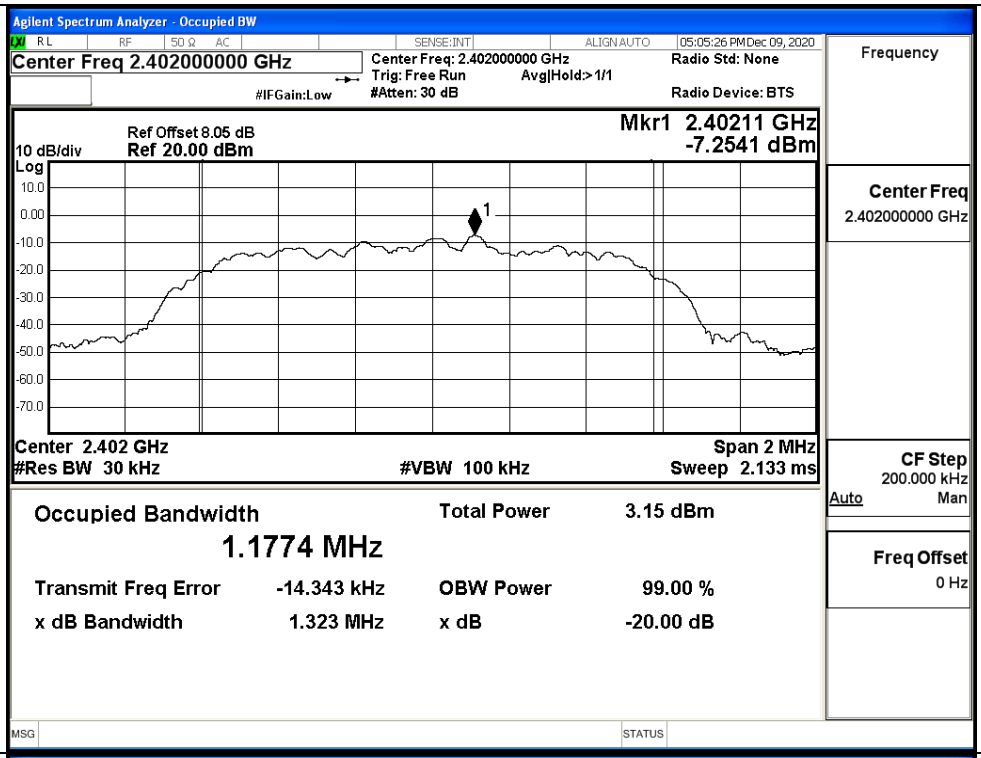
GFSK/MCH



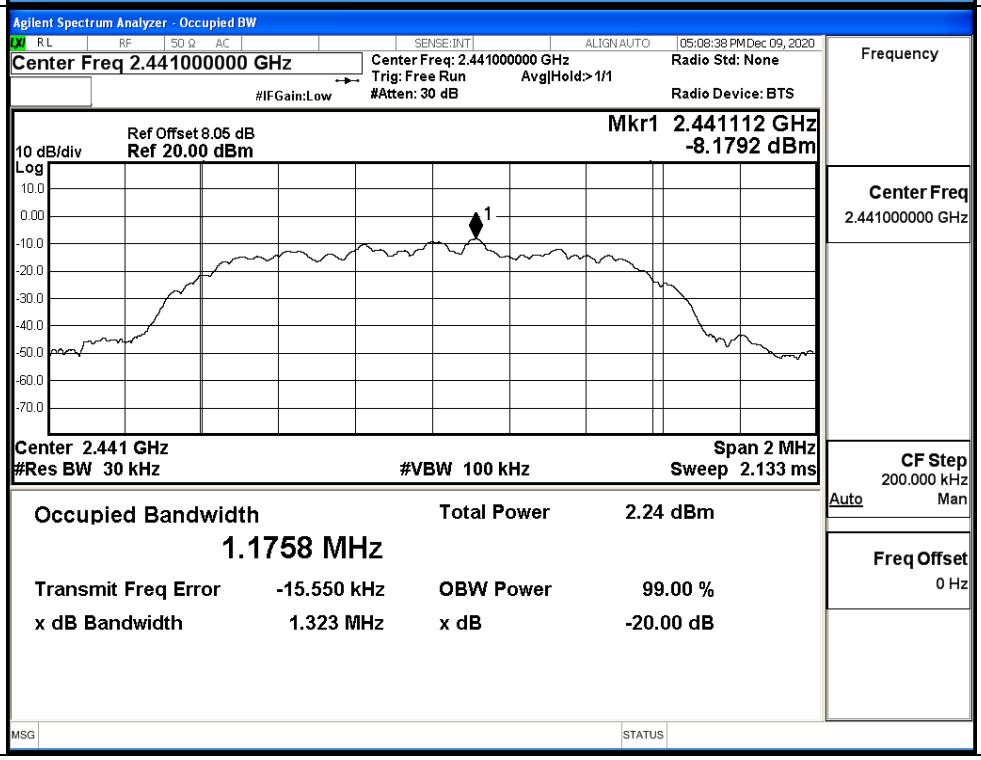
GFSK/HCH



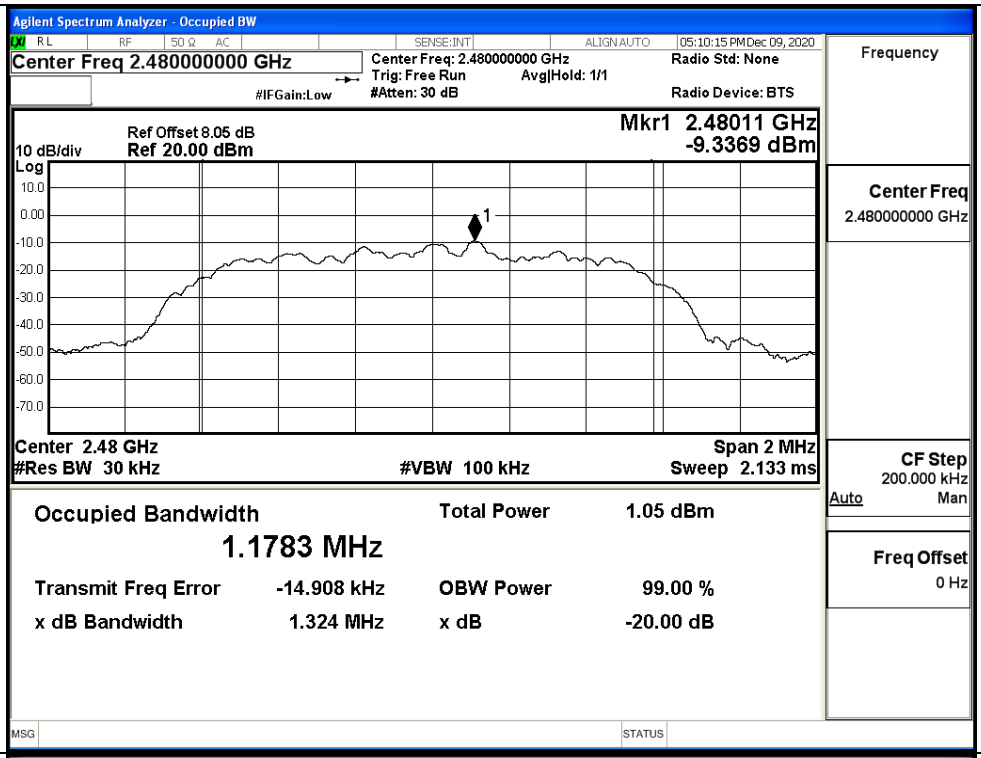
π/4DQPSK/LCH



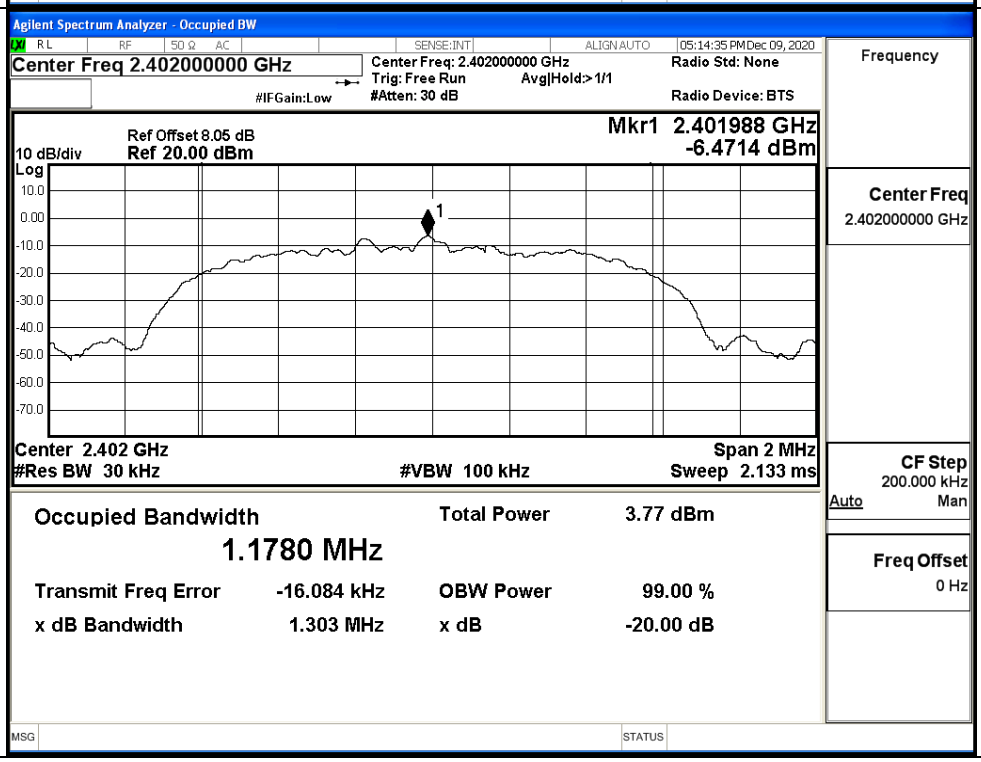
π/4DQPSK/MCH



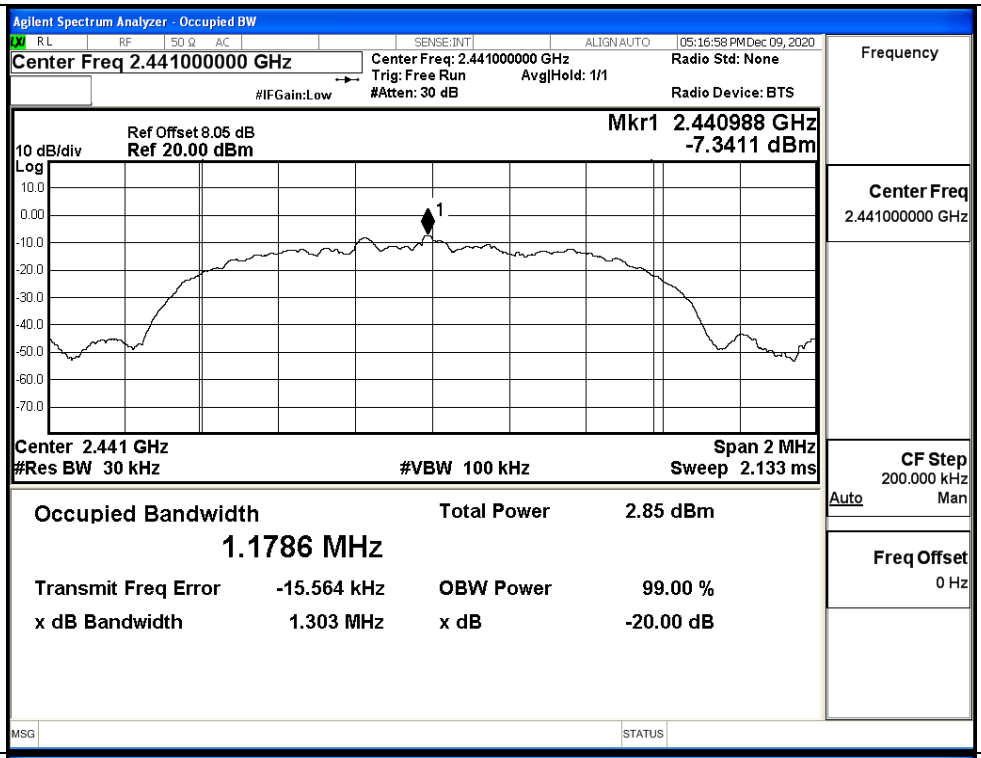
π/4DQPSK/HCH



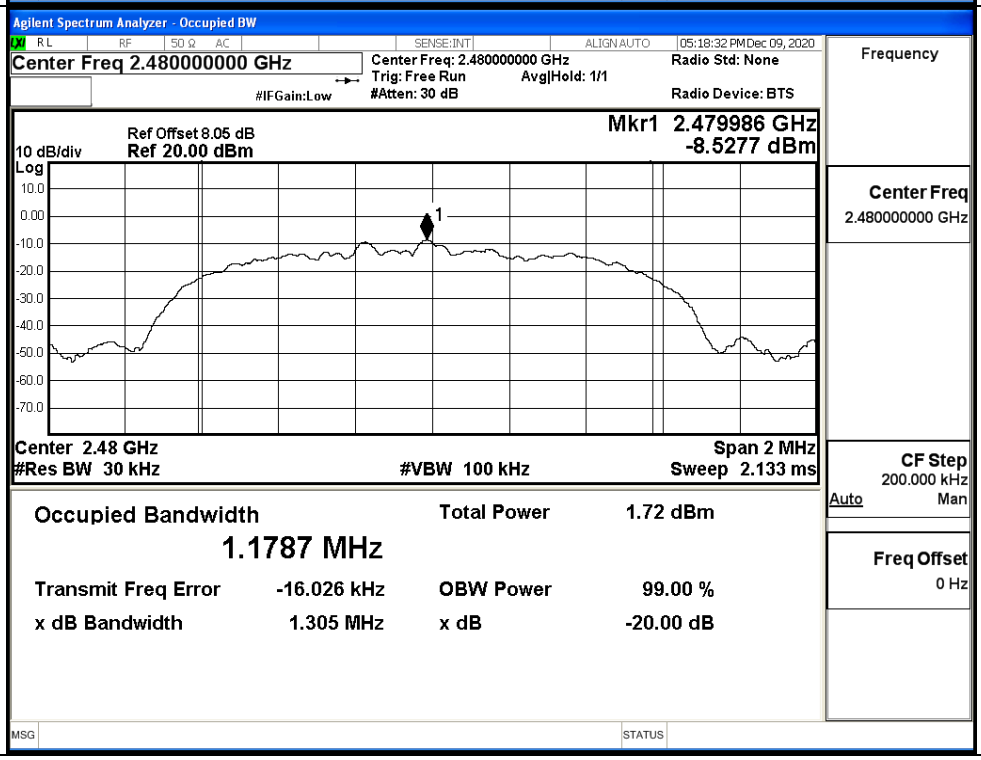
8DPSK/LCH



8DPSK/MCH

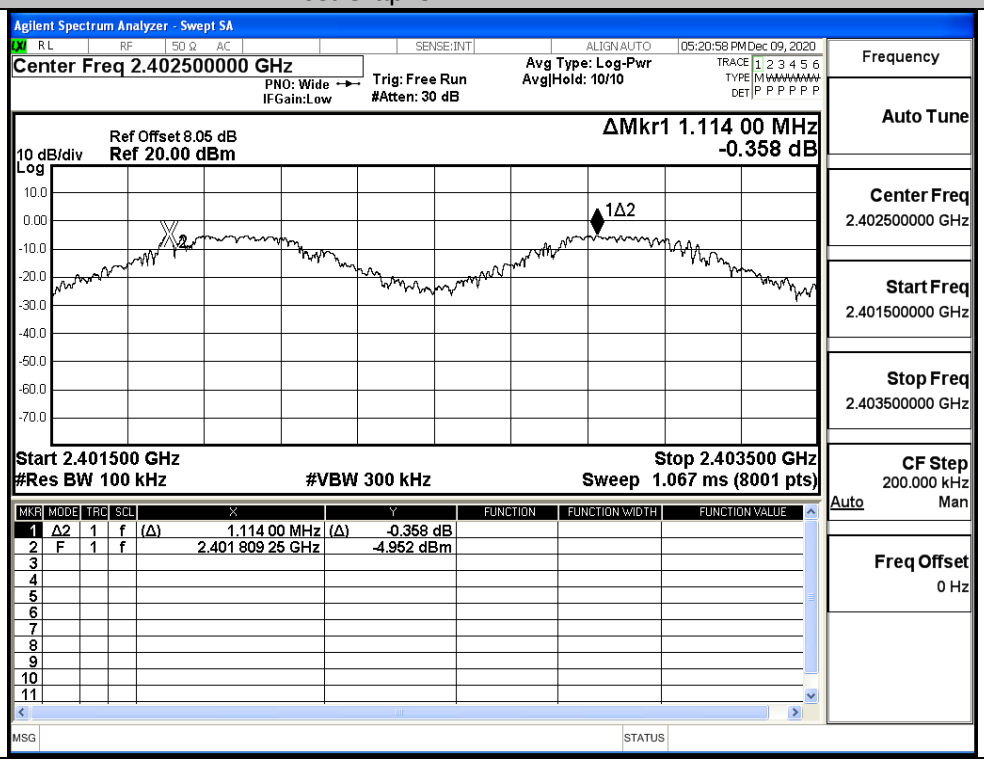


8DPSK/HCH

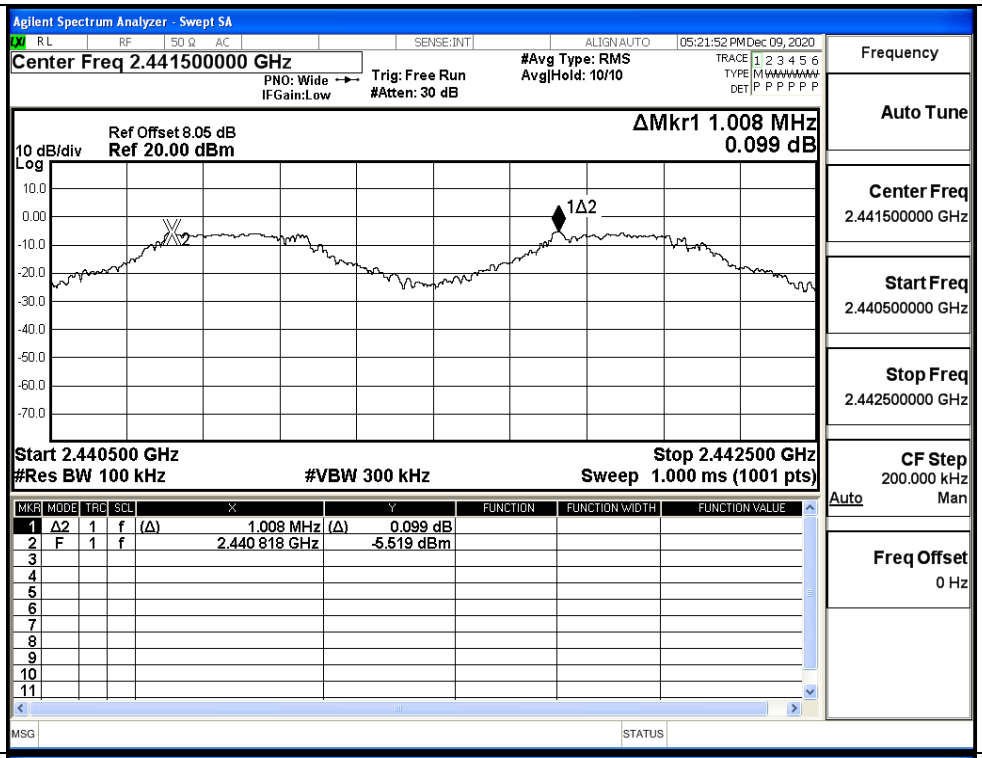


A.3 Carrier Frequency Separation

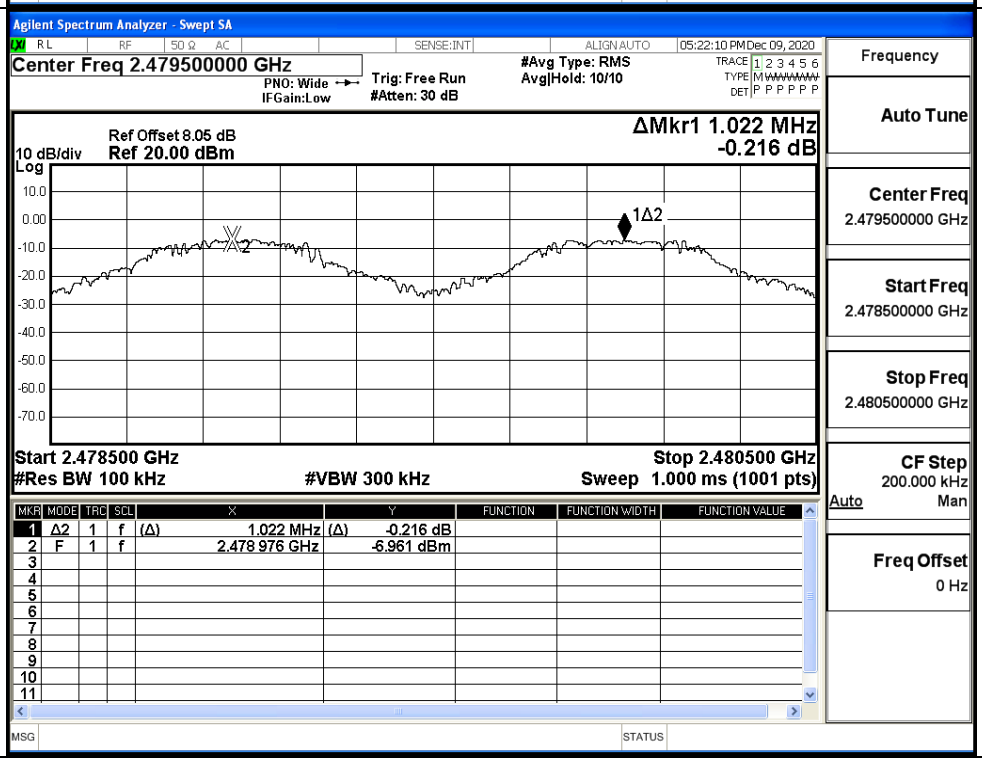
Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.114	0.635	PASS
	MCH	1.008	0.635	PASS
	HCH	1.022	0.635	PASS
π/4DQPSK	LCH	1.188	0.883	PASS
	MCH	1.304	0.883	PASS
	HCH	0.994	0.883	PASS
8DPSK	LCH	1.154	0.870	PASS
	MCH	1.002	0.870	PASS
	HCH	0.980	0.870	PASS

Test Graphs	
GFSK/LCH	

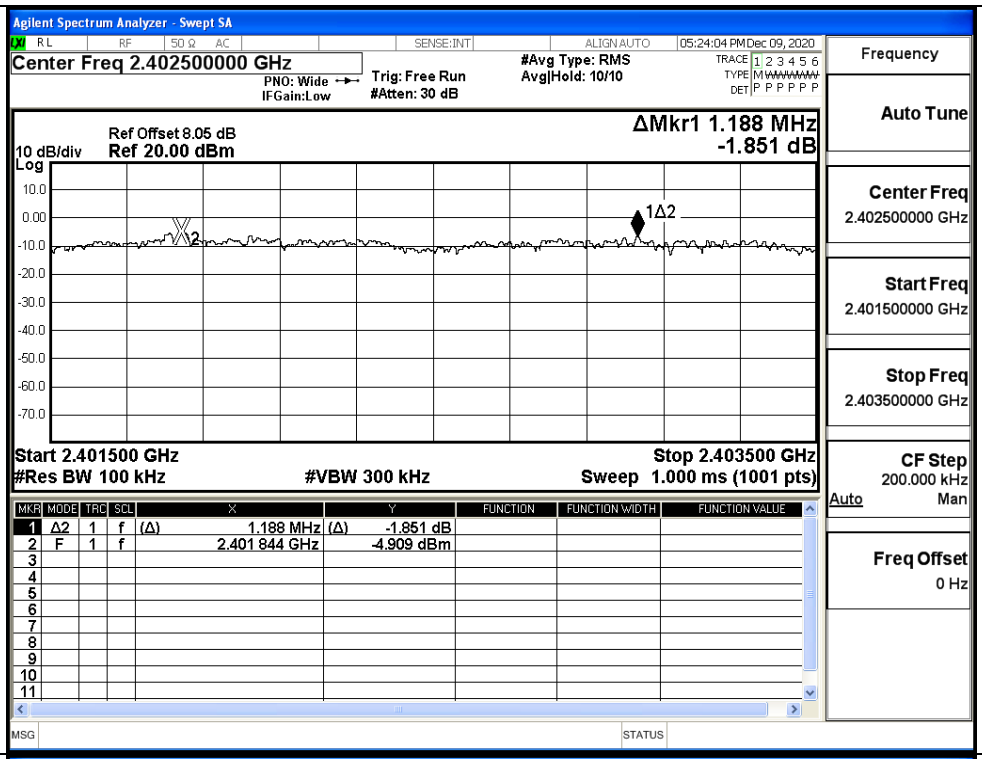
GFSK/MCH



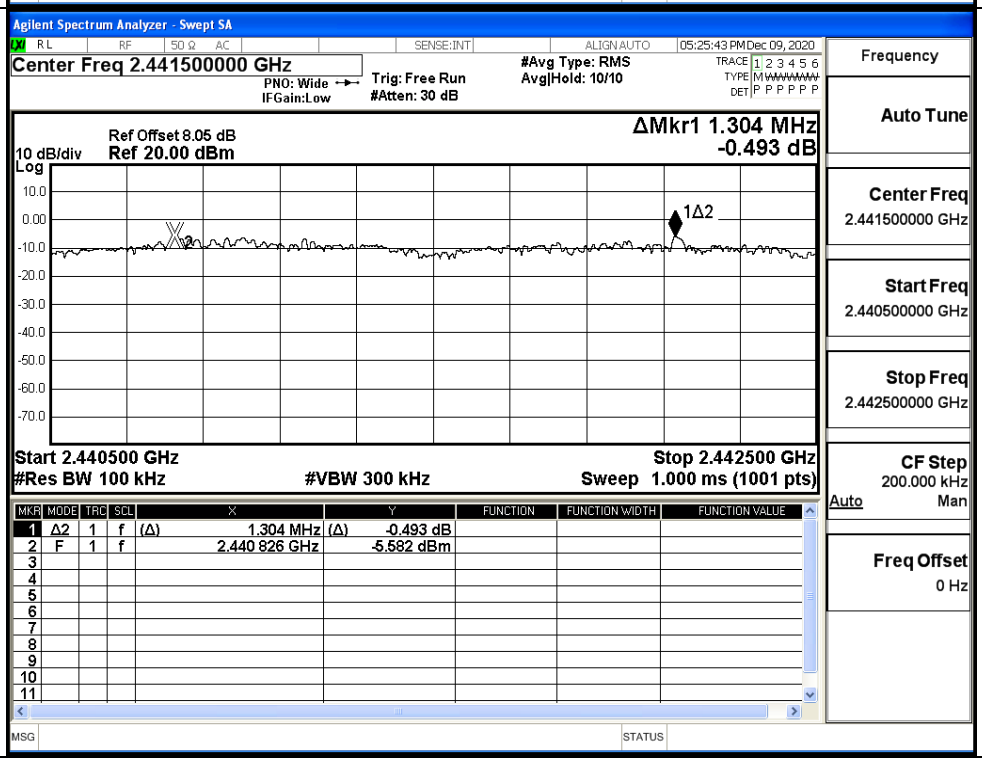
GFSK/HCH



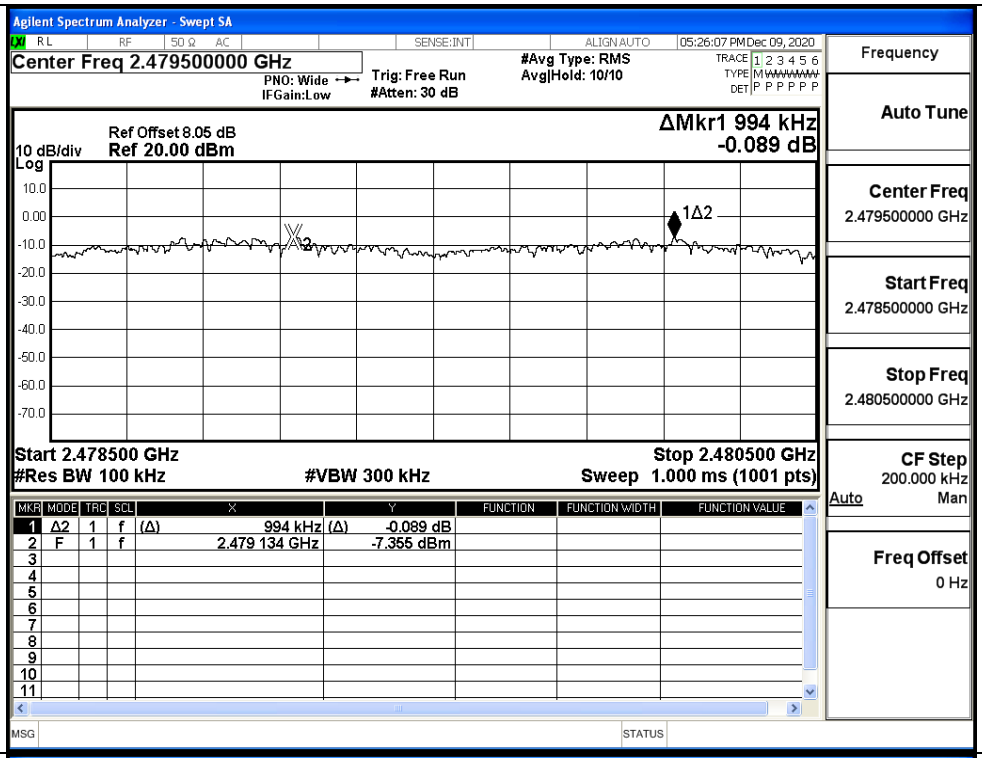
π/4DQPSK/LCH



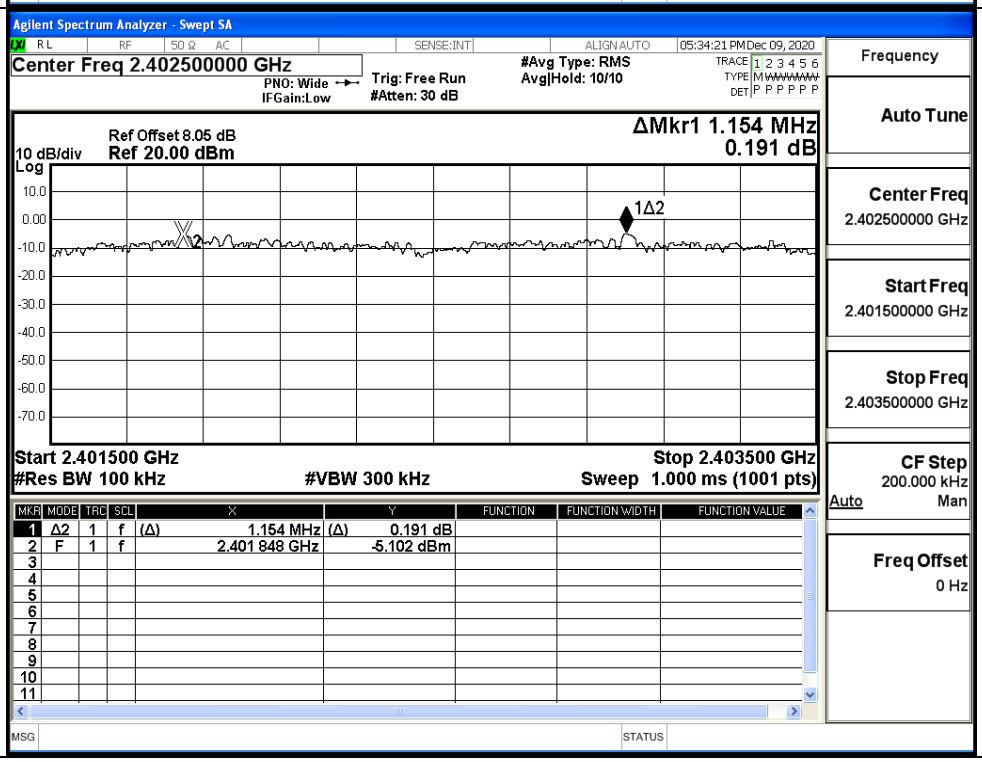
π/4DQPSK/MCH



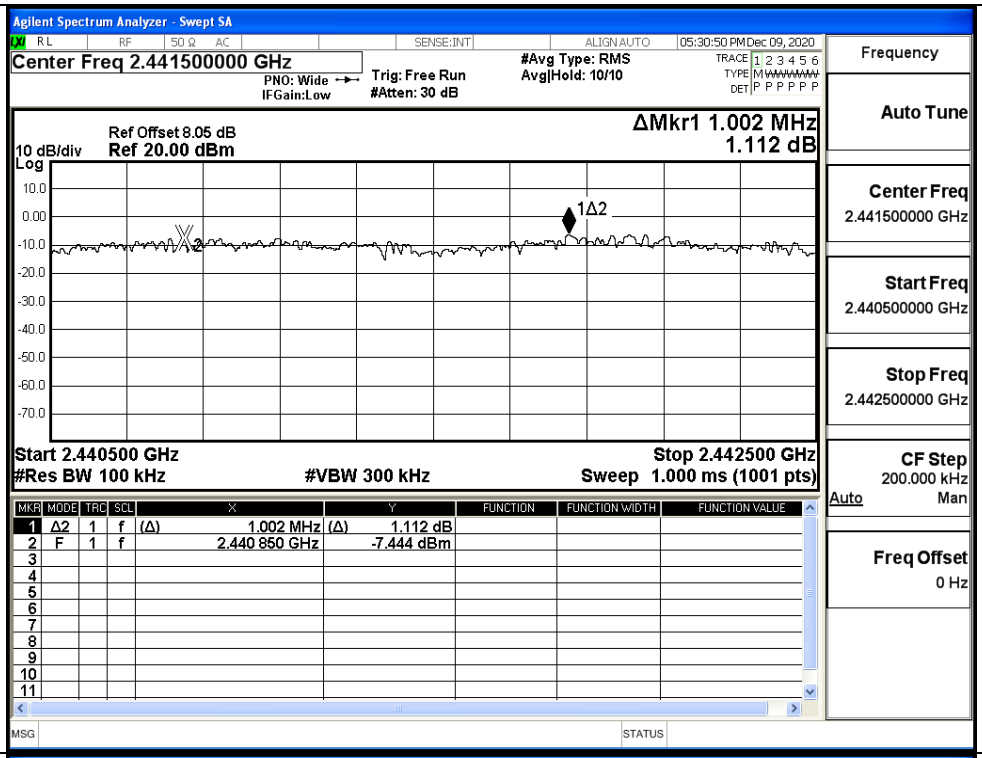
π/4DQPSK/HCH



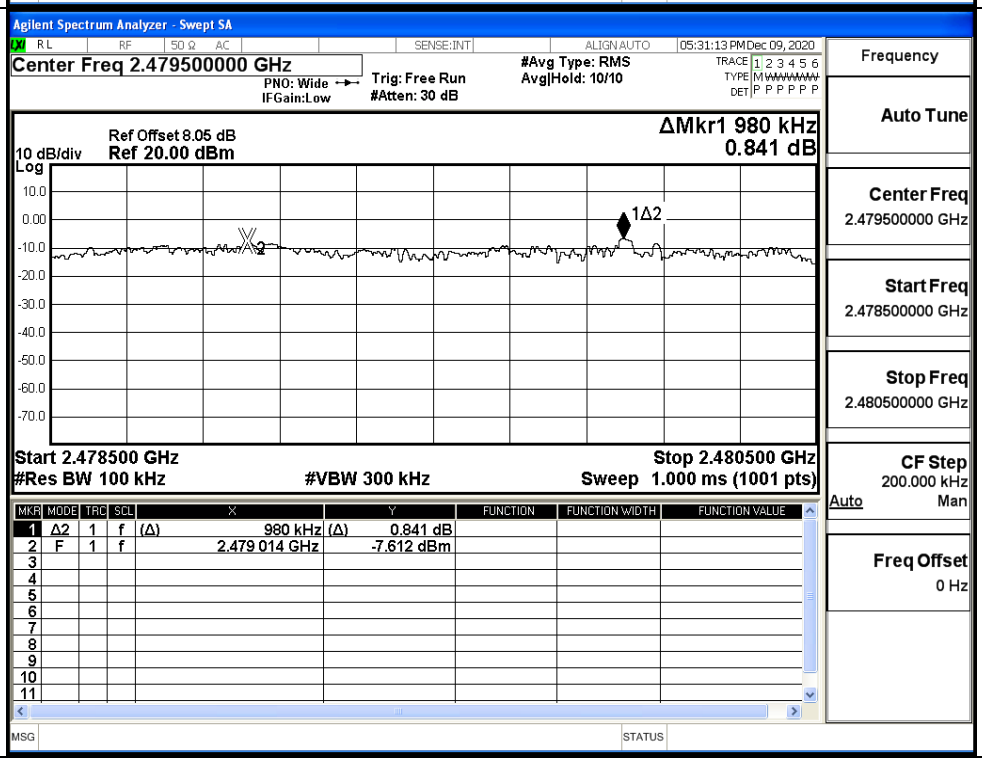
8DPSK/LCH



8DPSK/MCH

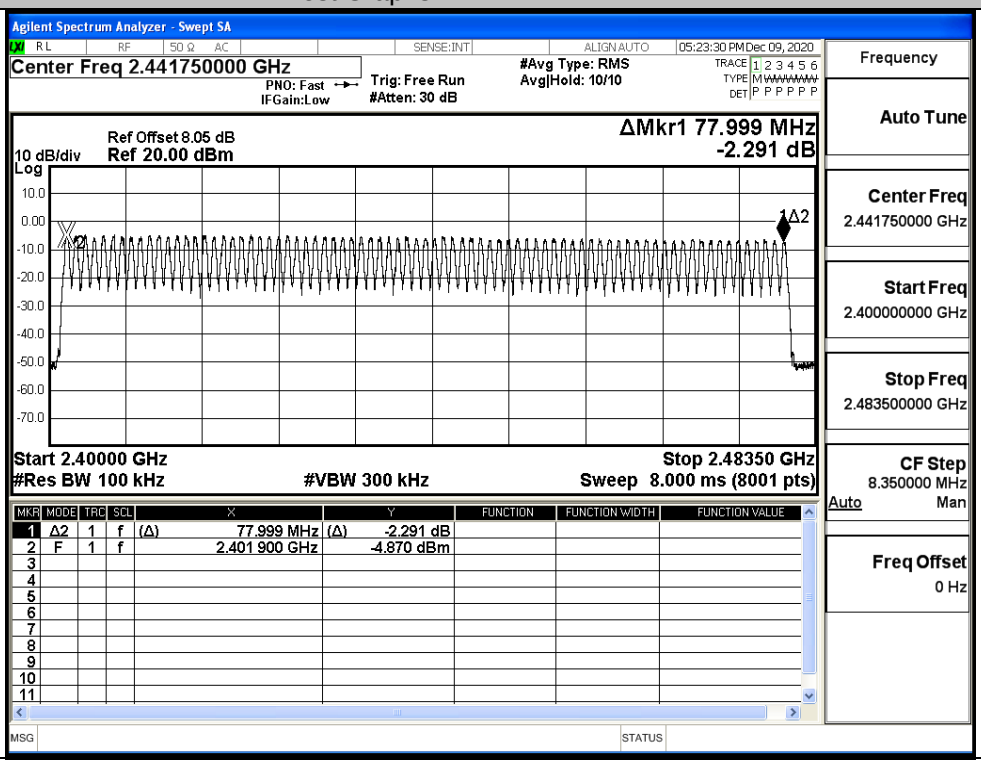
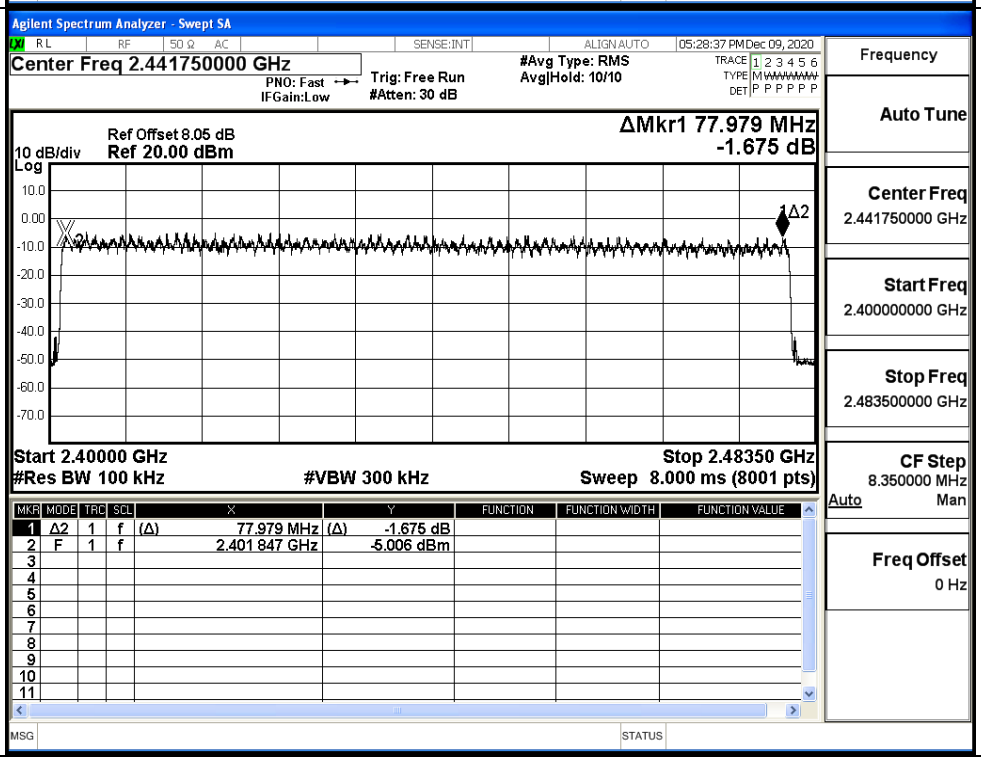


8DPSK/HCH

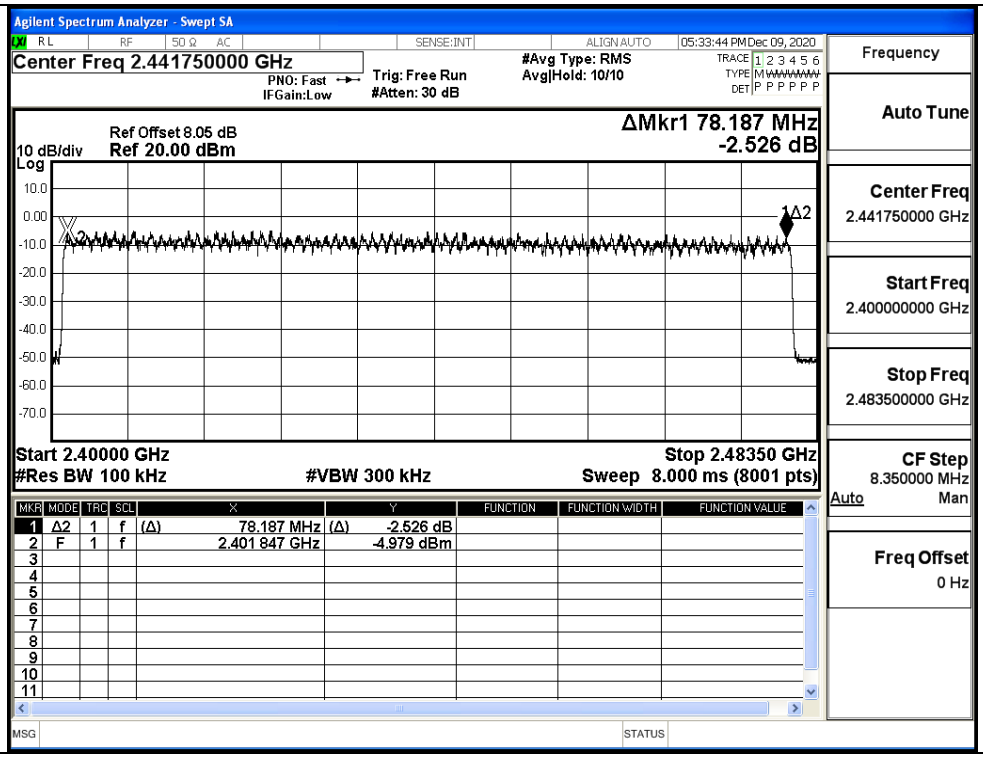


A.4 Hopping Channel Number

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

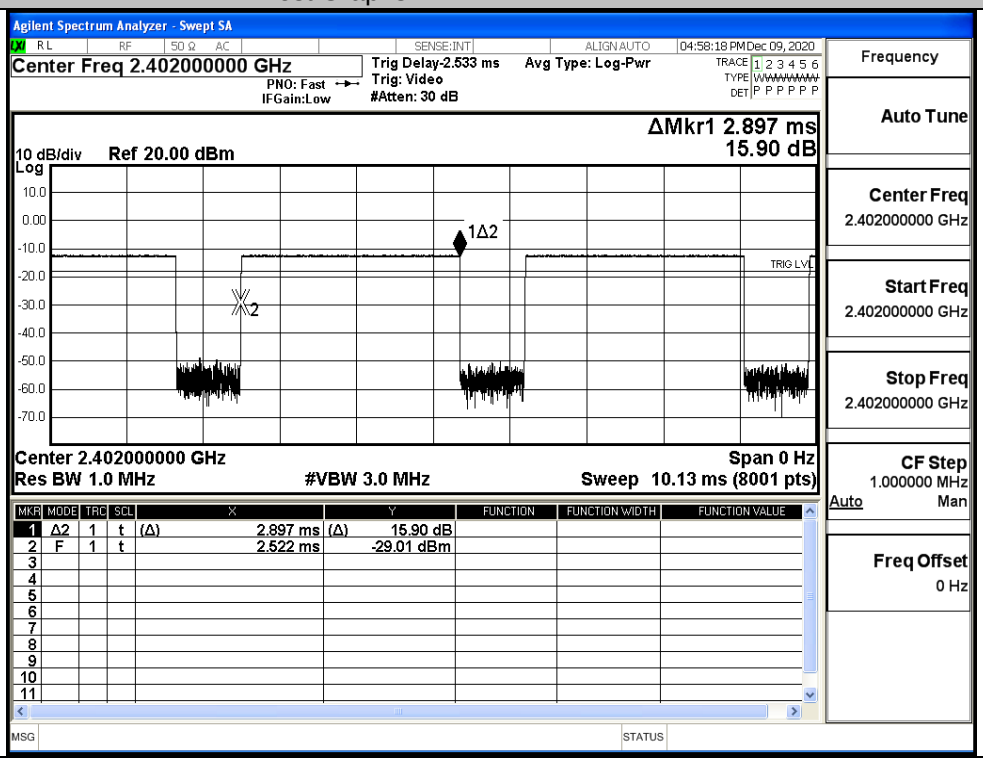
Test Graphs	
GFSK/Hop	
π/4DQPSK/Hop	

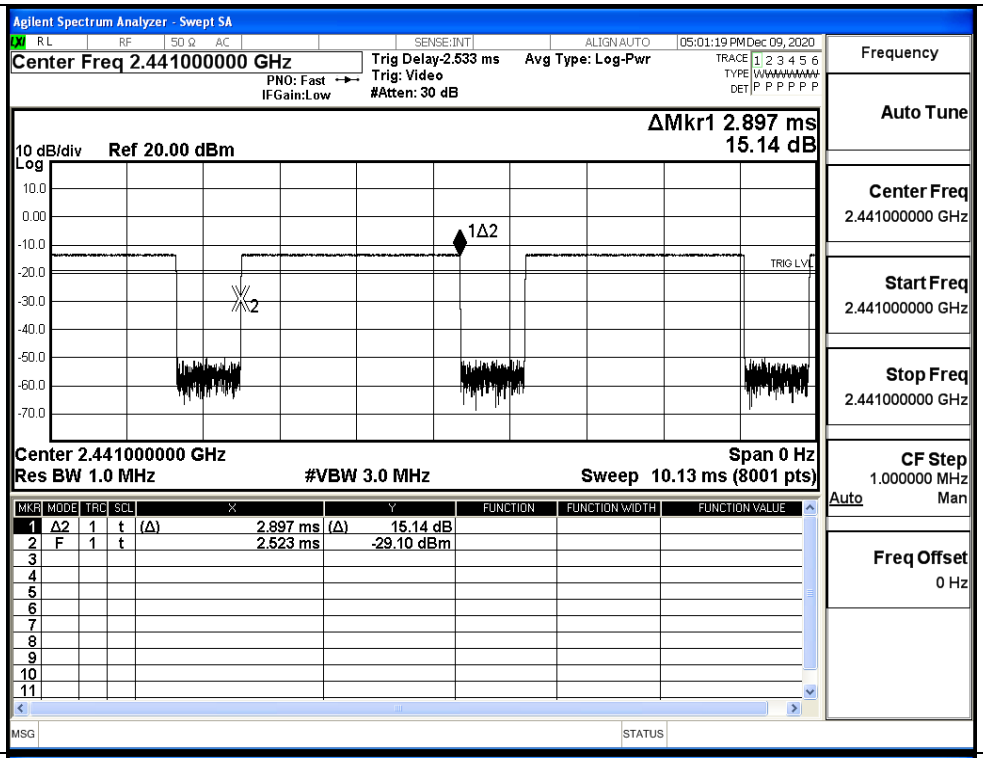
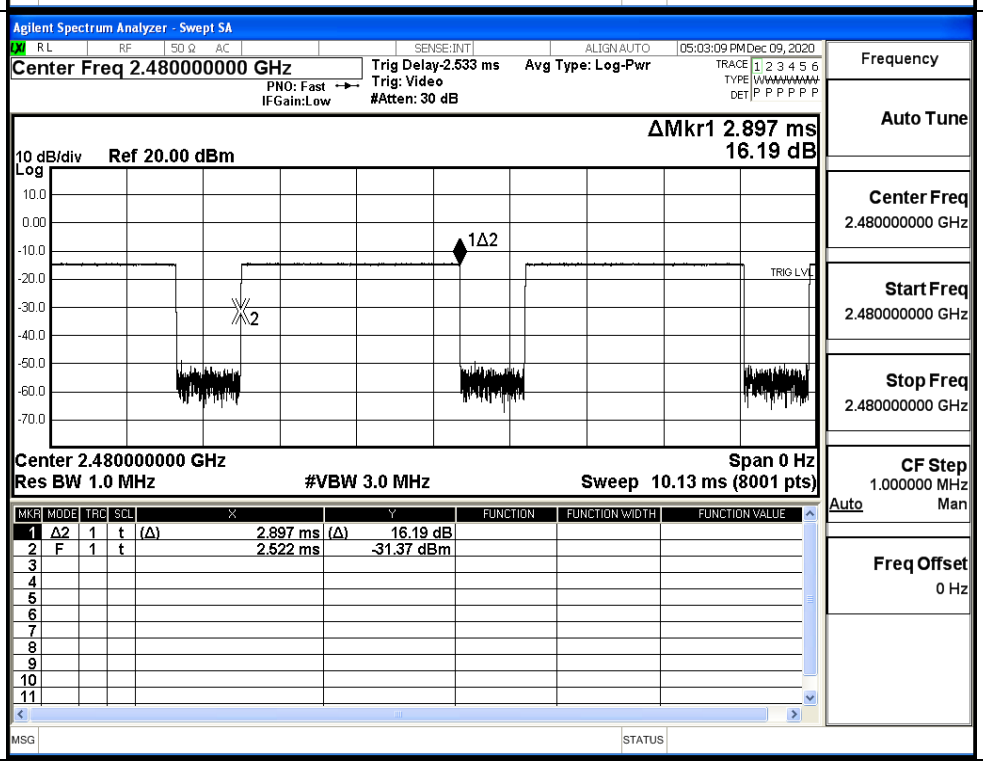
8DPSK/Hop

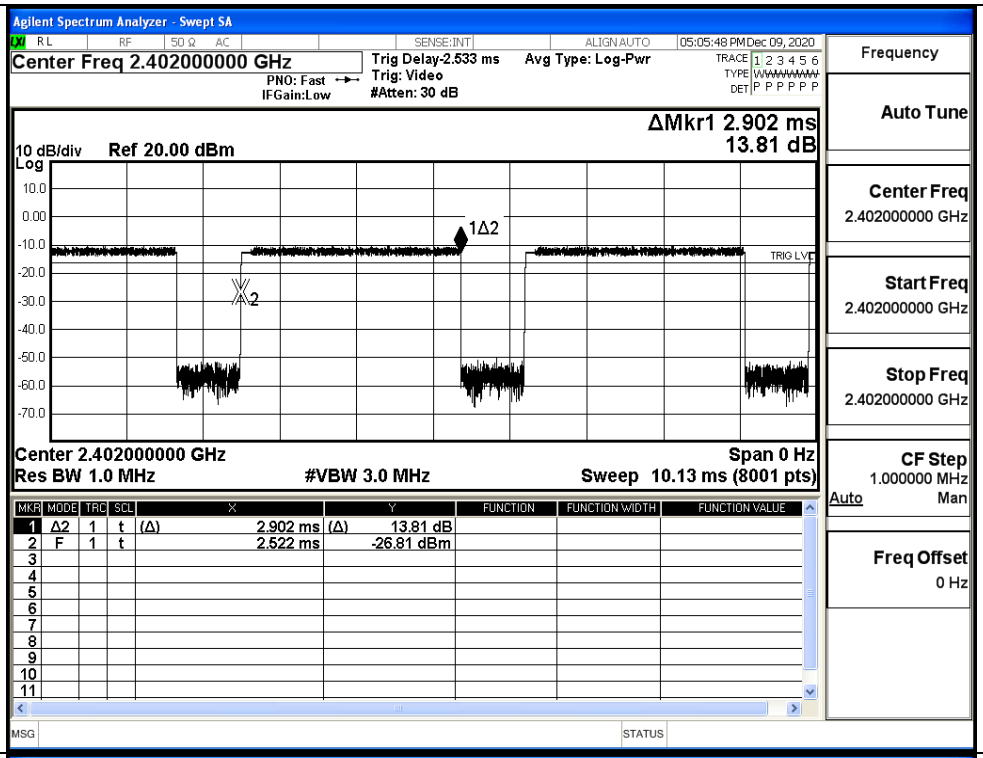
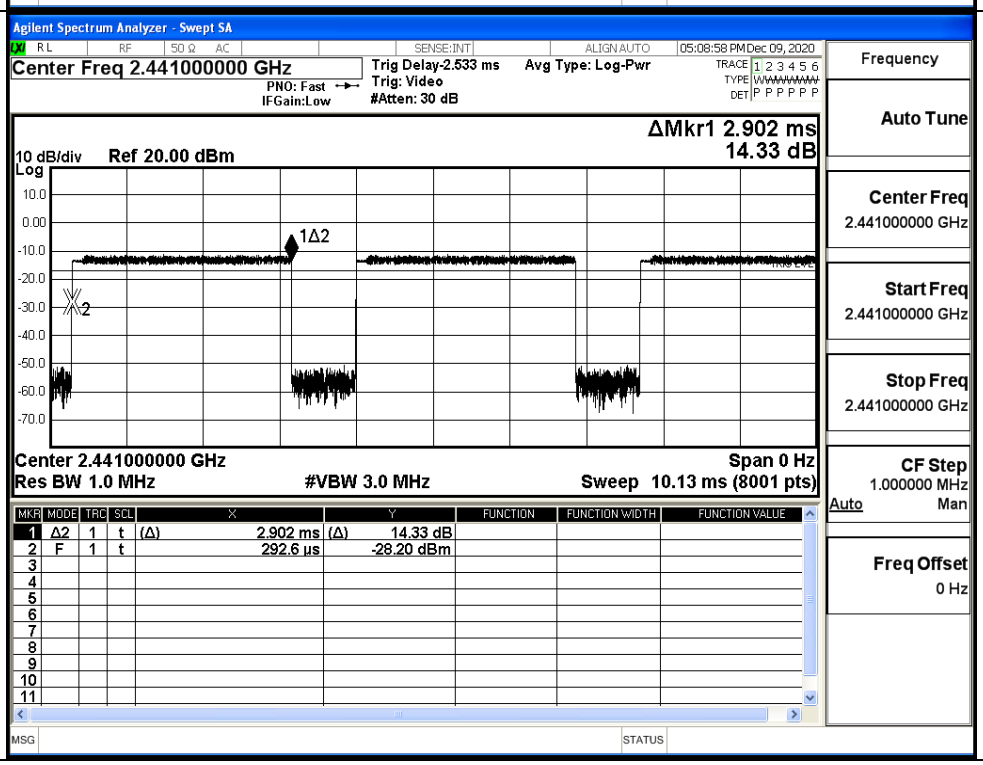

Agilent Spectrum Analyzer - Swept SA
Center Freq 2.441750000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 10/10
05:33:44 PM Dec 09, 2020
Ref Offset 8.05 dB
10 dB/div
Ref 20.00 dBm
ΔMkr1 78.187 MHz
-2.526 dB
Start 2.40000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.48350 GHz
Sweep 8.000 ms (8001 pts)
1 Δ2 1 f (Δ) 78.187 MHz (Δ) -2.526 dB
2 F 1 f 2.401 847 GHz -4.979 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

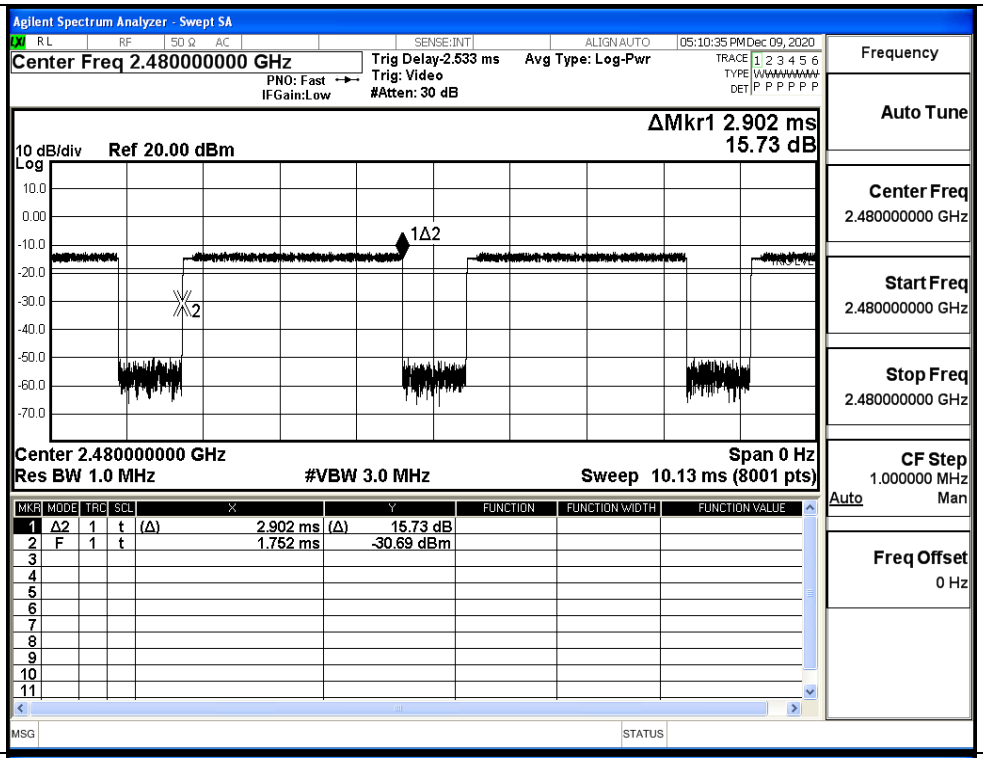
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.9	106.7	0.309	0.4	PASS
	DH5	MCH	2.9	106.7	0.309	0.4	PASS
	DH5	HCH	2.9	106.7	0.309	0.4	PASS
π/4DQPSK	2DH5	LCH	2.9	106.7	0.309	0.4	PASS
	2DH5	MCH	2.9	106.7	0.309	0.4	PASS
	2DH5	HCH	2.9	106.7	0.309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

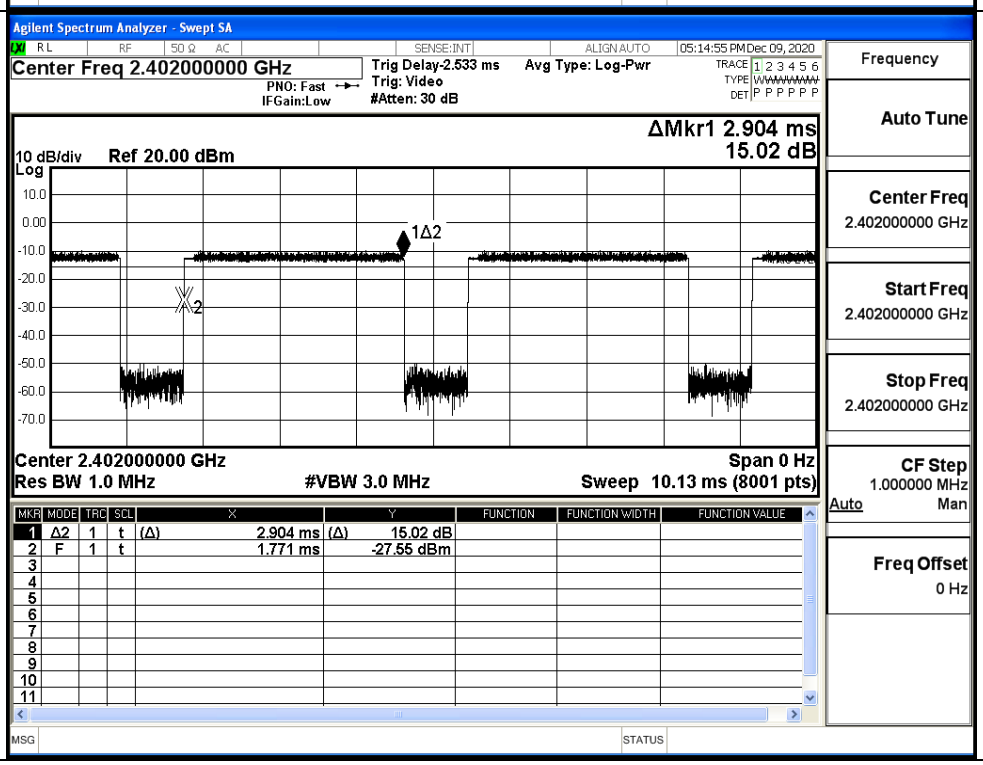
GFSK_DH5/MCH	
GFSK_DH5/HCH	

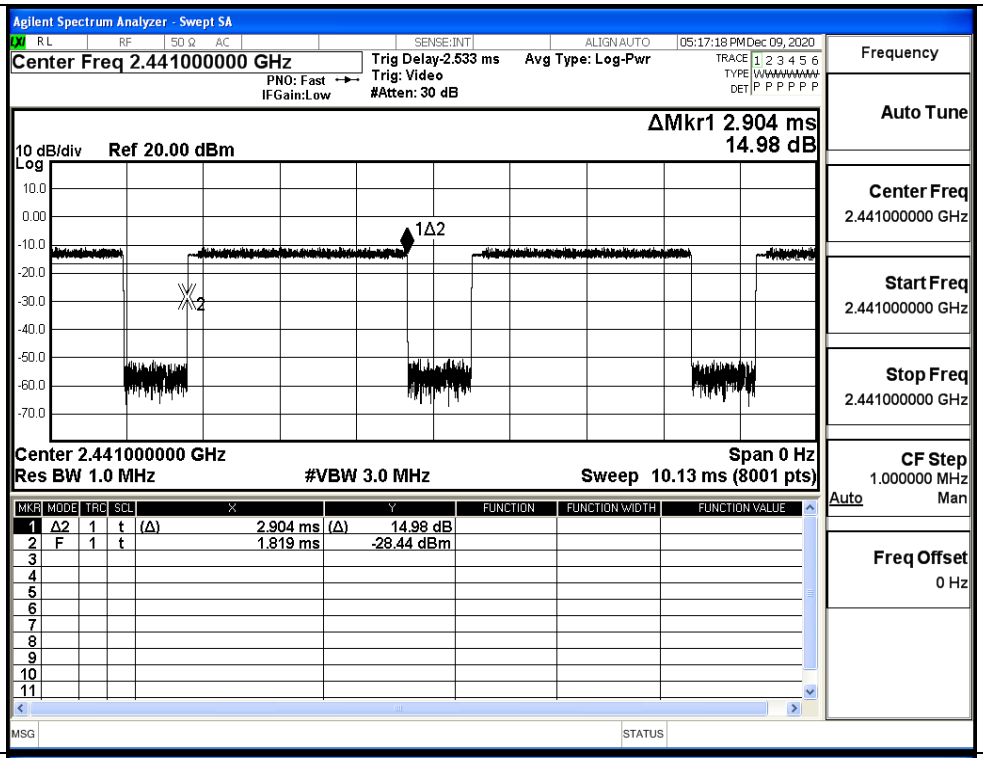
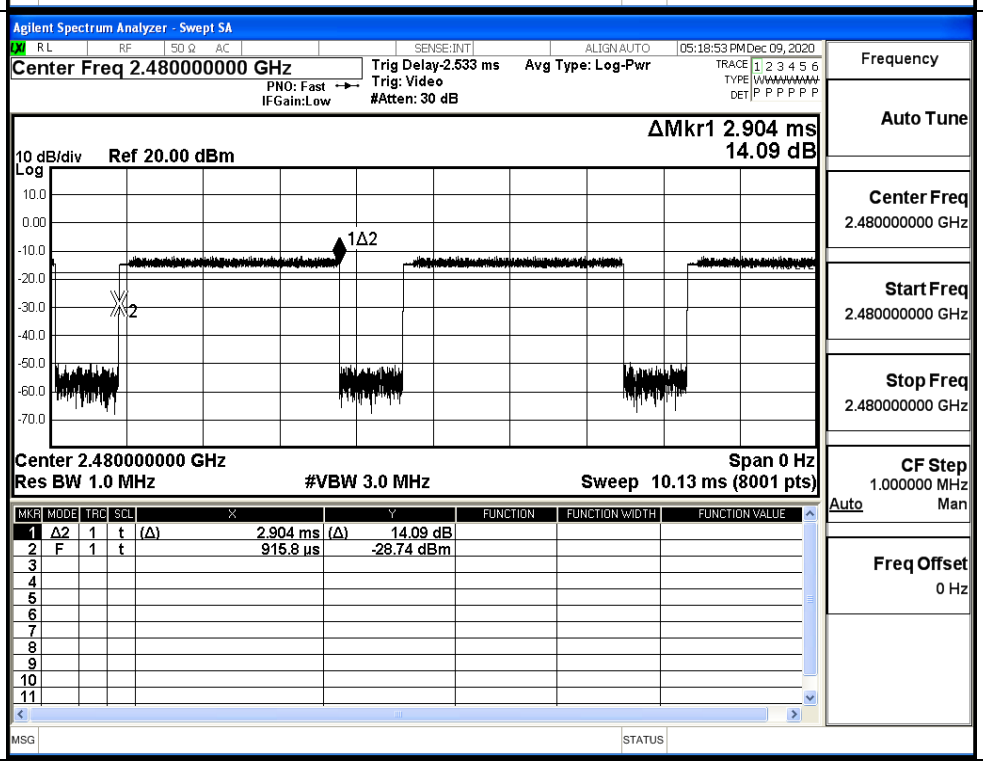
π/4DQPSK _2DH5/LCH	
π/4DQPSK _2DH5/MCH	

π/4DQPSK _2DH5/HCH



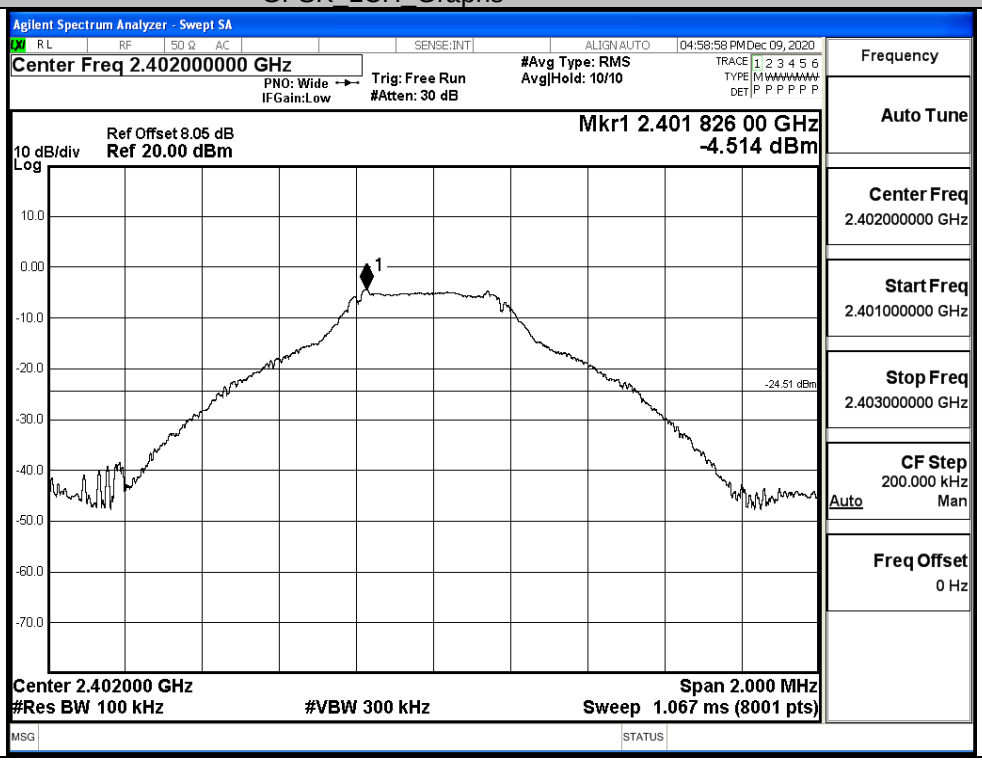
8DPSK _3DH5/LCH

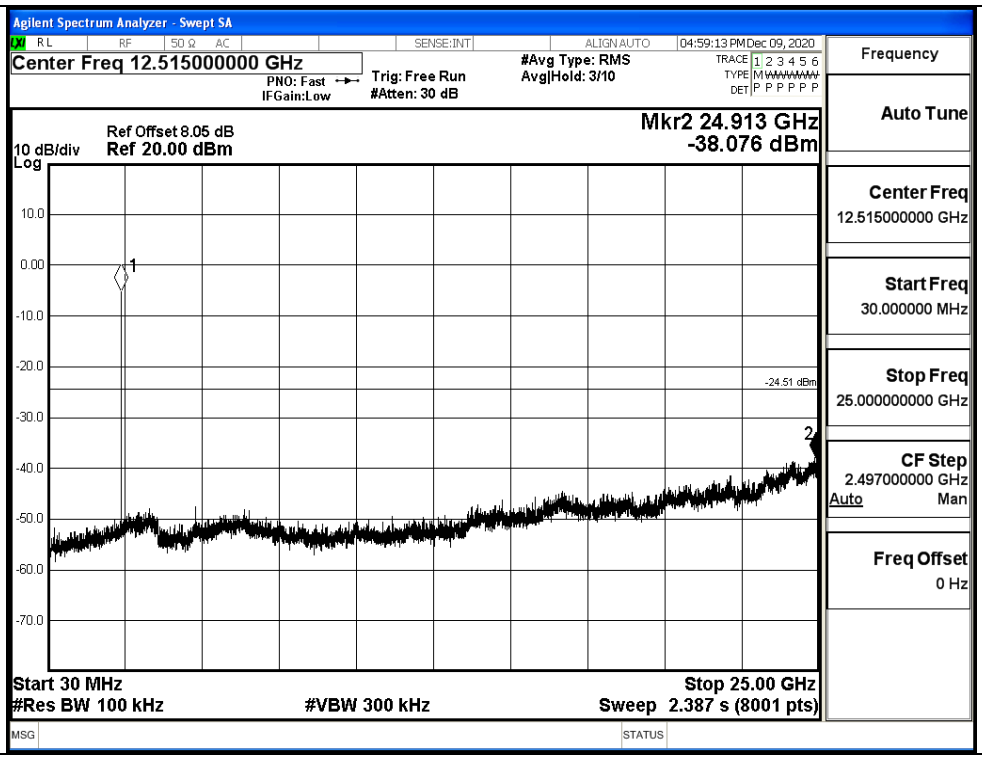


8DPSK _3DH5/MCH	
8DPSK _3DH5/HCH	

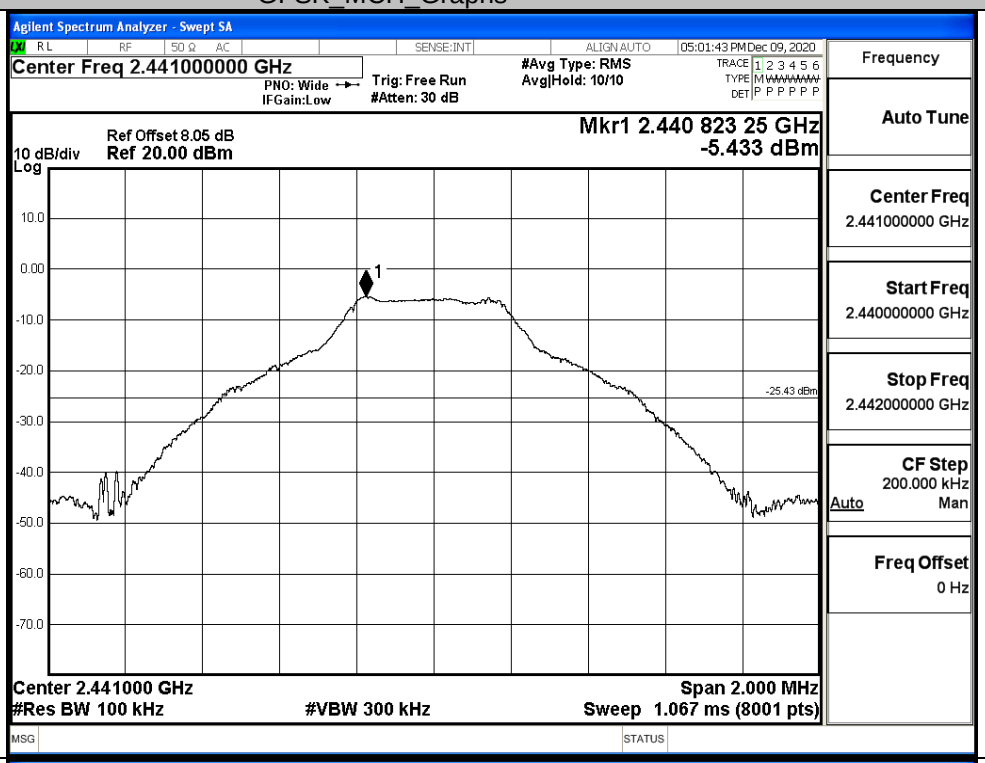
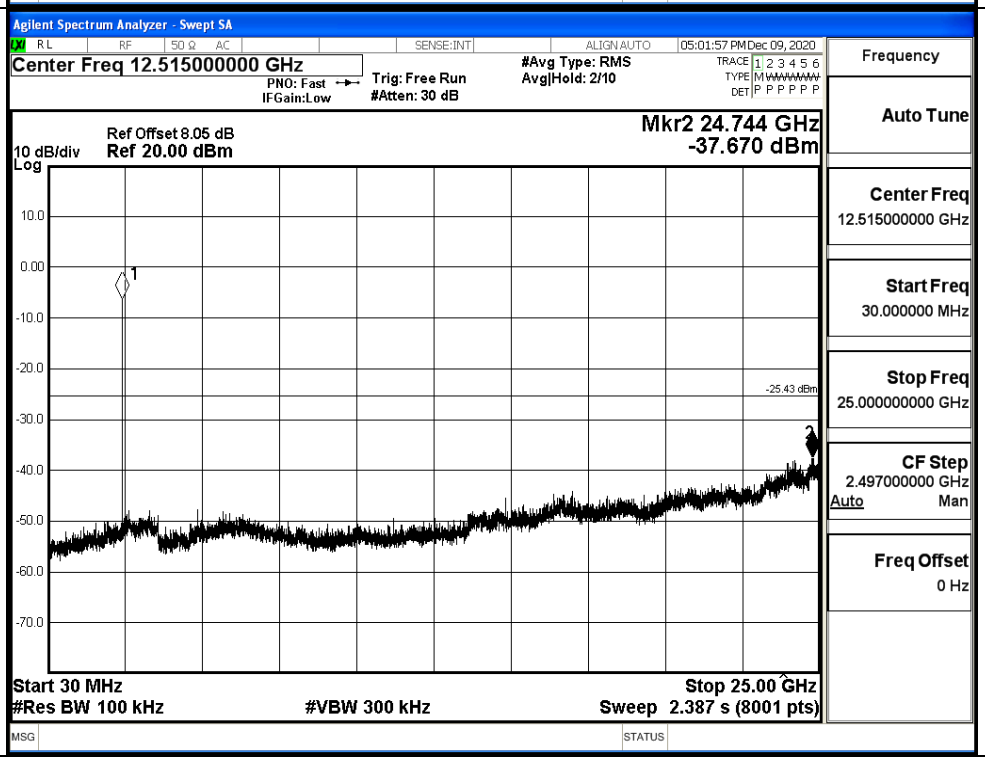
A.6 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-4.514	-38.076	-24.514	PASS
	MCH	-5.433	-37.670	-25.433	PASS
	HCH	-6.952	-37.840	-26.952	PASS
π/4DQPSK	LCH	-4.696	-37.112	-24.696	PASS
	MCH	-5.607	-36.870	-25.607	PASS
	HCH	-6.862	-37.394	-26.862	PASS
8DPSK	LCH	-4.56	-37.619	-24.560	PASS
	MCH	-5.679	-37.591	-25.679	PASS
	HCH	-6.611	-37.792	-26.611	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
04:59:13 PM Dec 09, 2020
Ref Offset 8.05 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr2 24.913 GHz
-38.076 dBm
-24.51 dBm
Start 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.00 GHz
Sweep 2.387 s (8001 pts)
Frequency
Auto Tune
Center Freq
12.515000000 GHz
Start Freq
30.000000 MHz
Stop Freq
25.000000000 GHz
CF Step
2.497000000 GHz
Auto
Man
Freq Offset
0 Hz

GFSK_MCH_Graphs			
Pref			
Puw			

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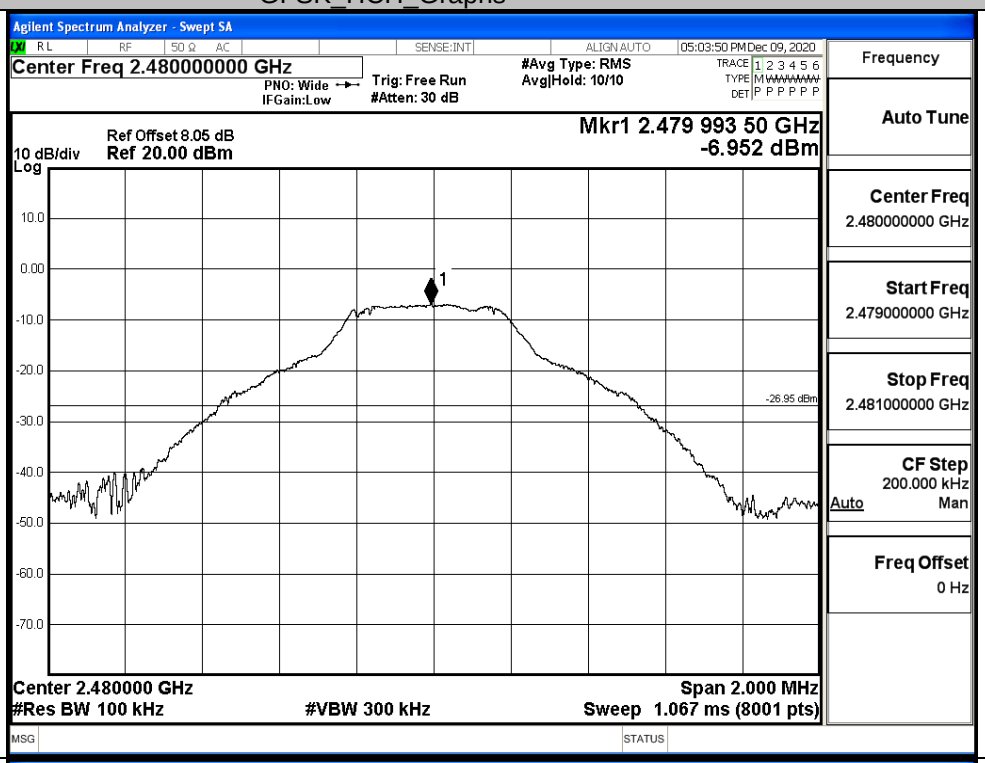
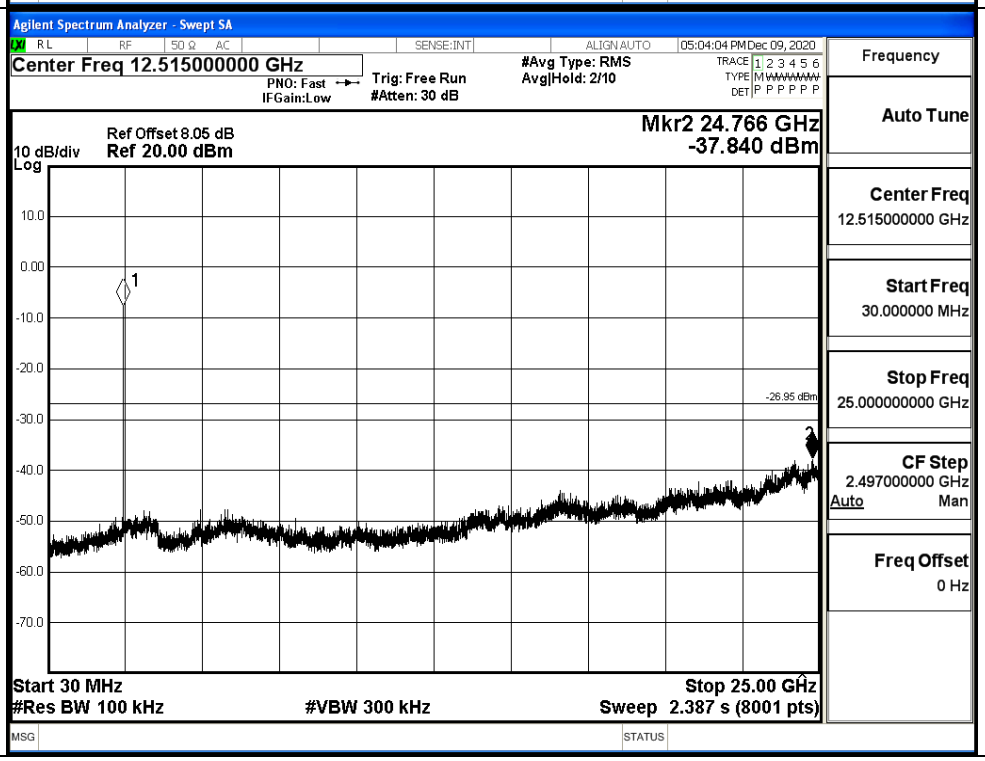
Pref			
Puw			

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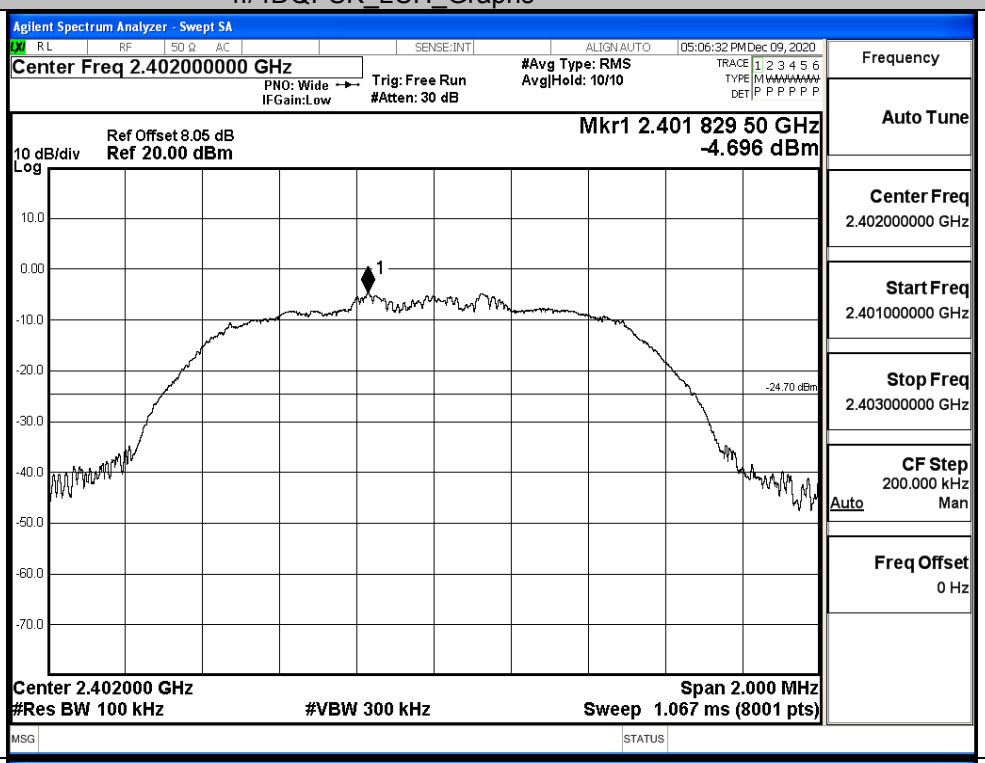
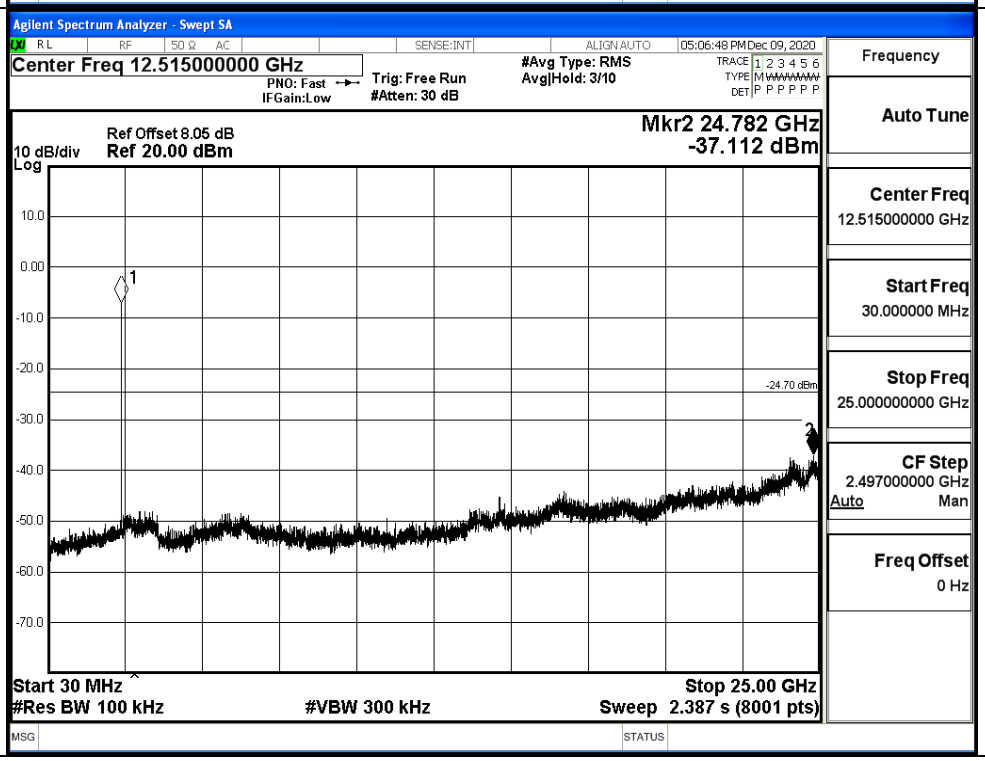
Pref		
Puw		

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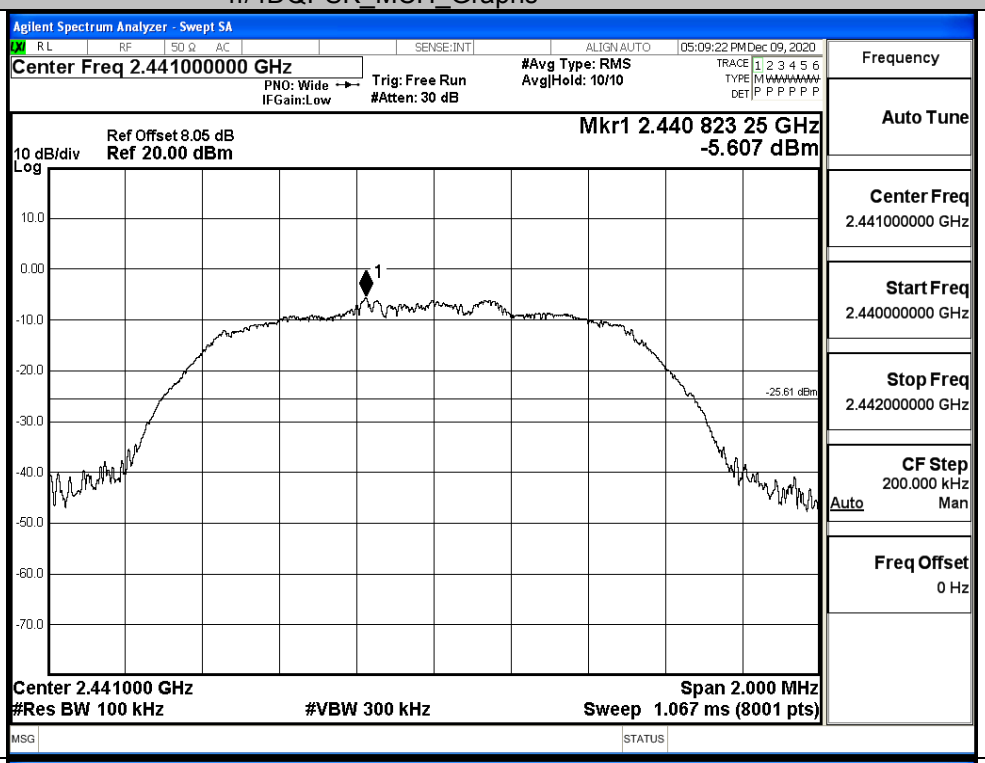
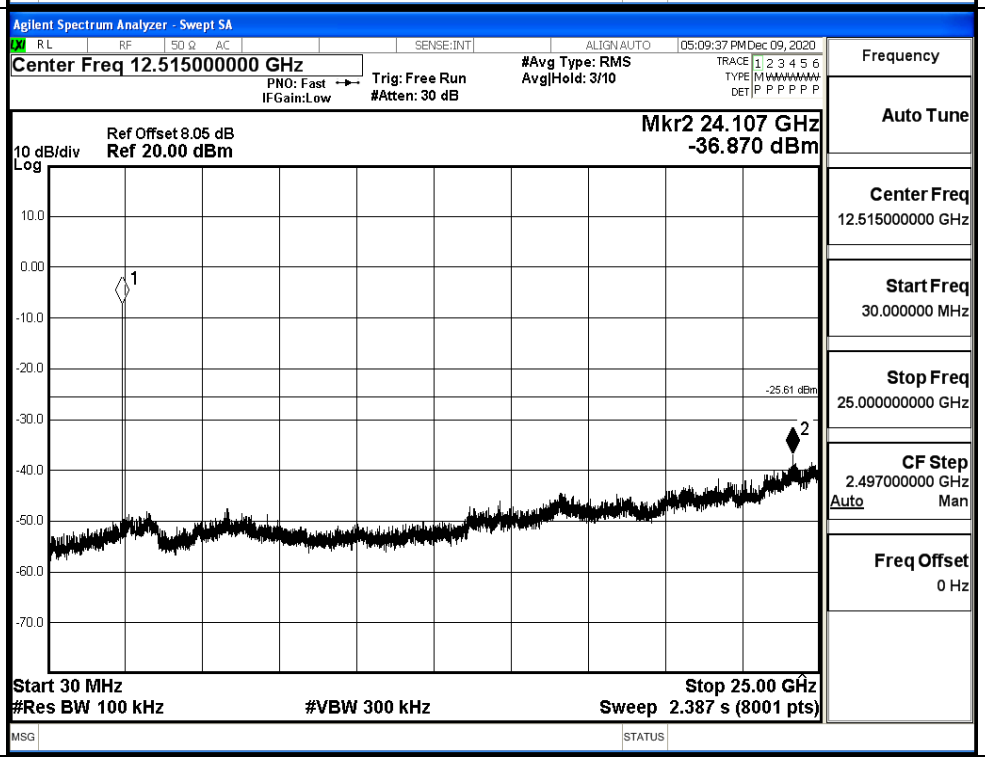
Pref		
Puw		

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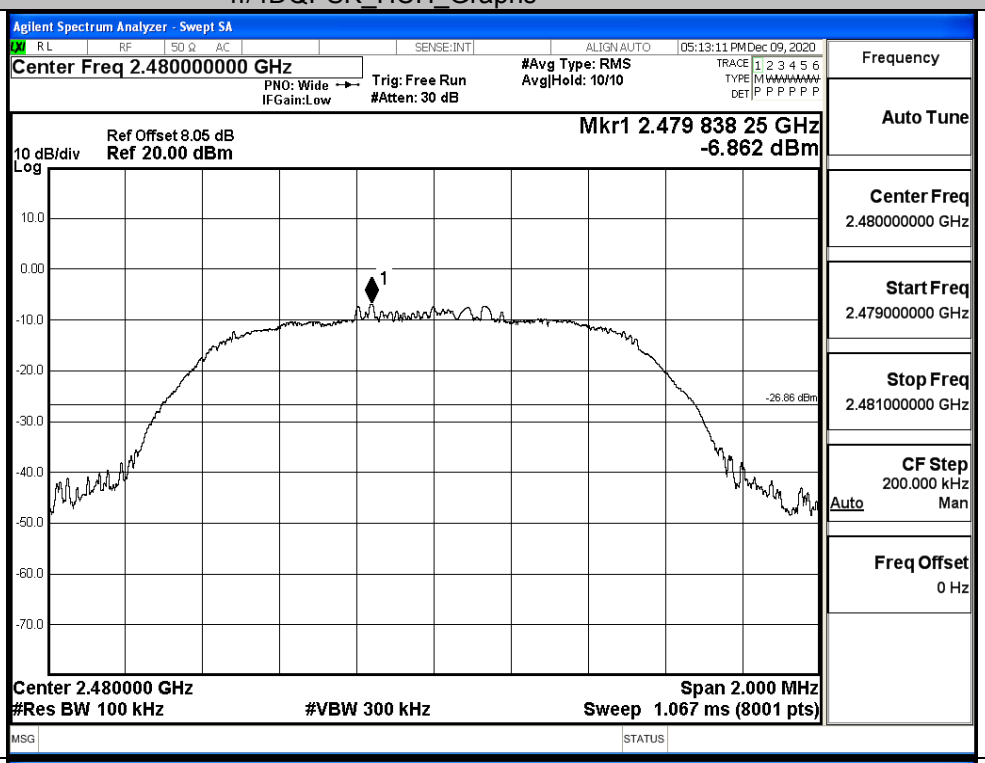
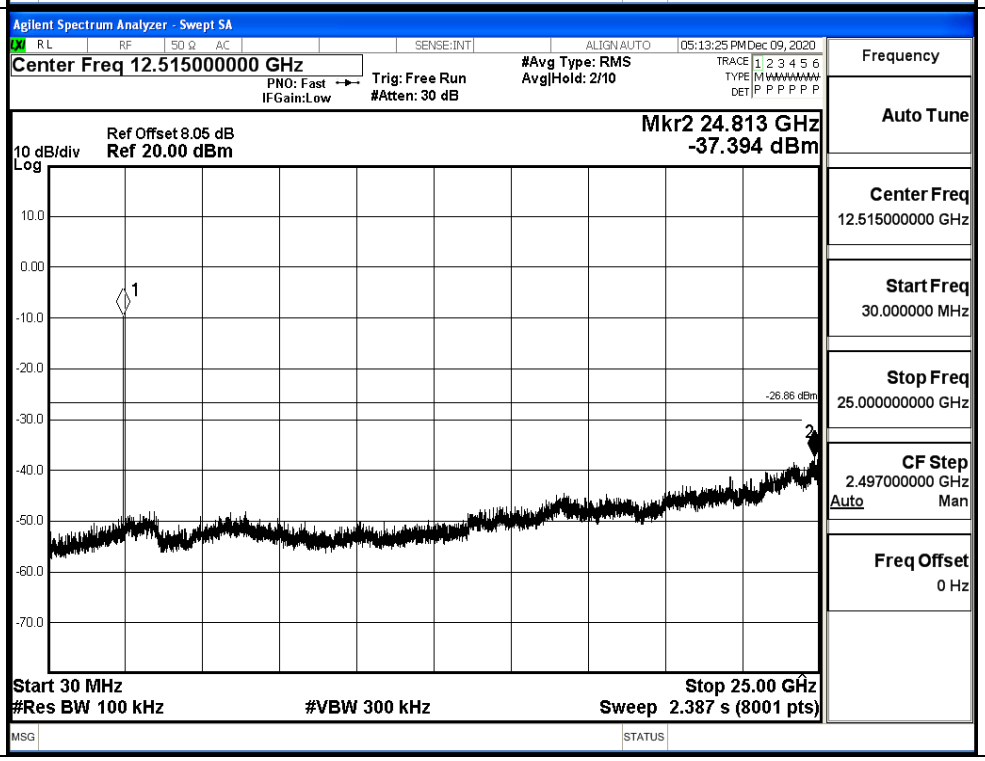
Pref			
Puw			

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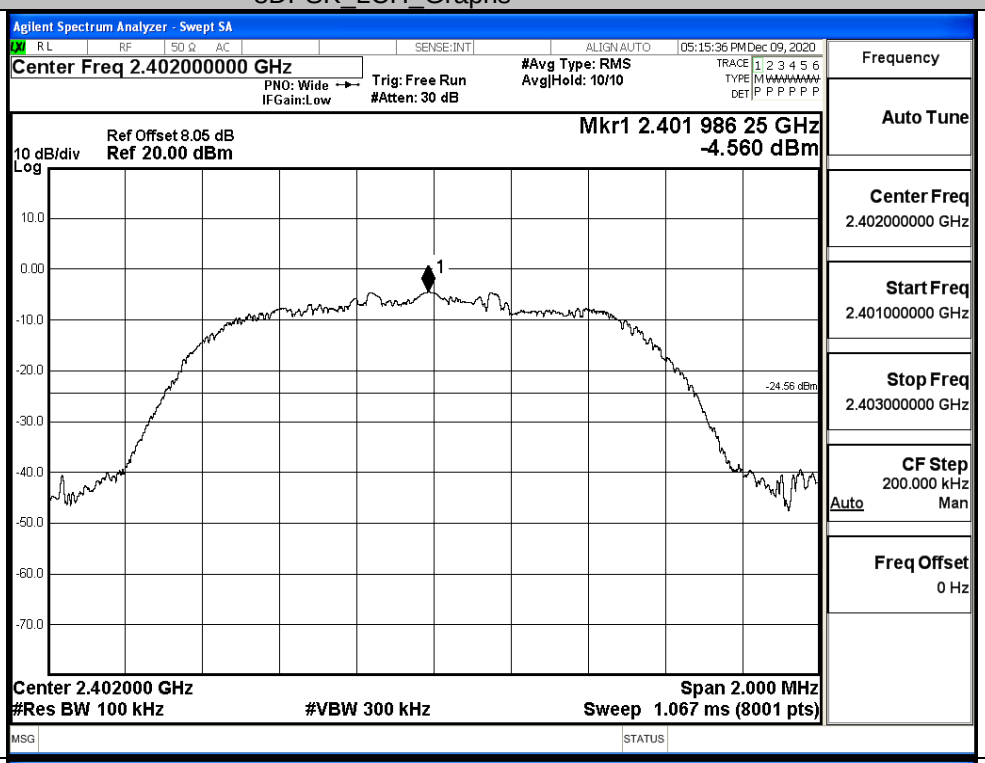
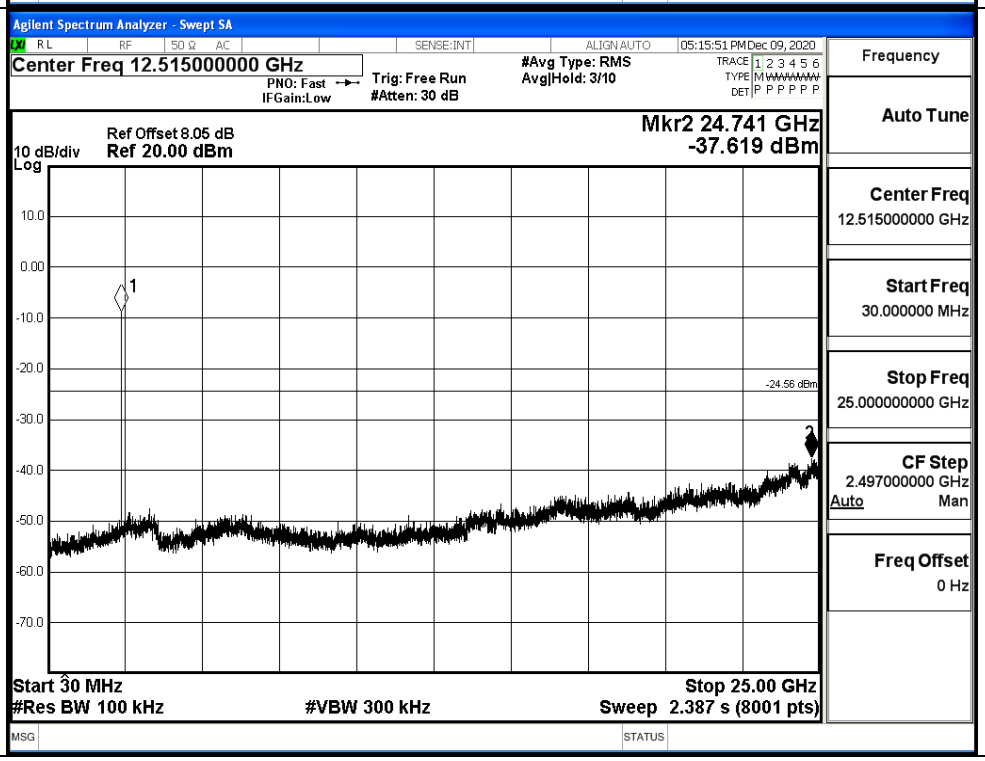
Pref		
Puw		

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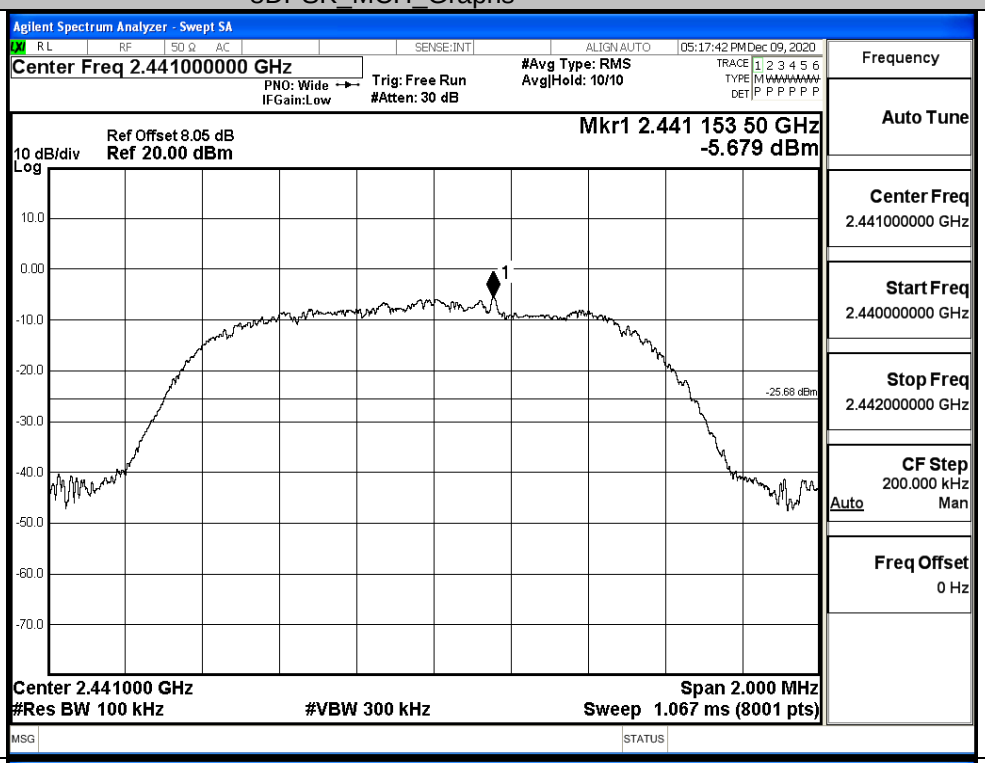
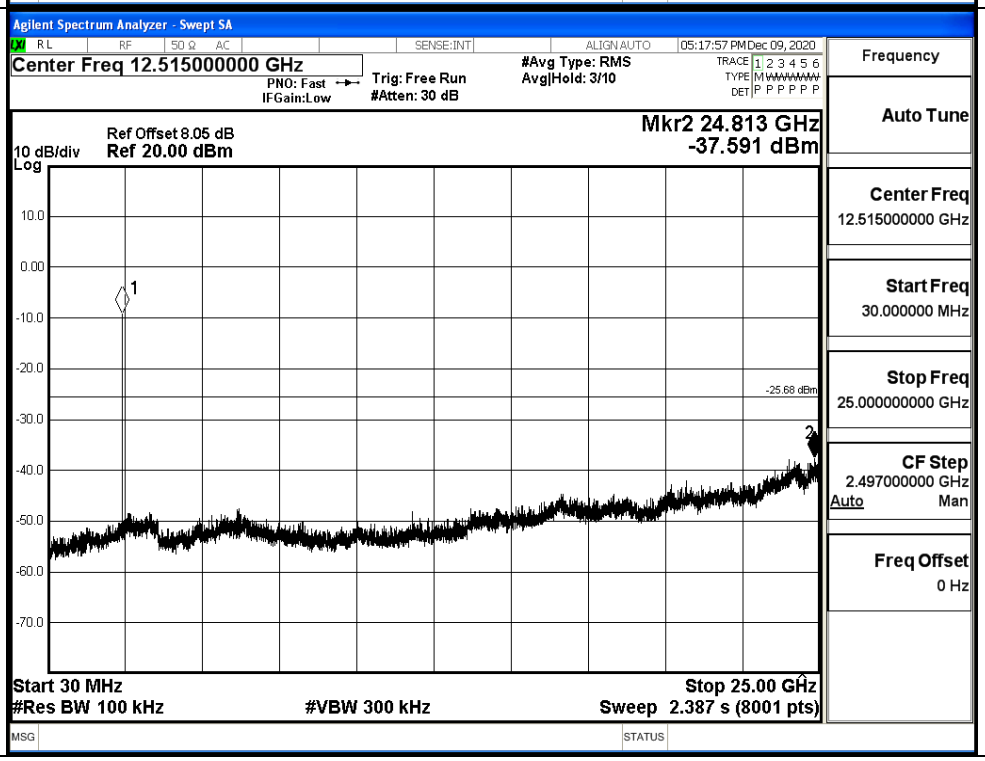
Pref		
Puw		

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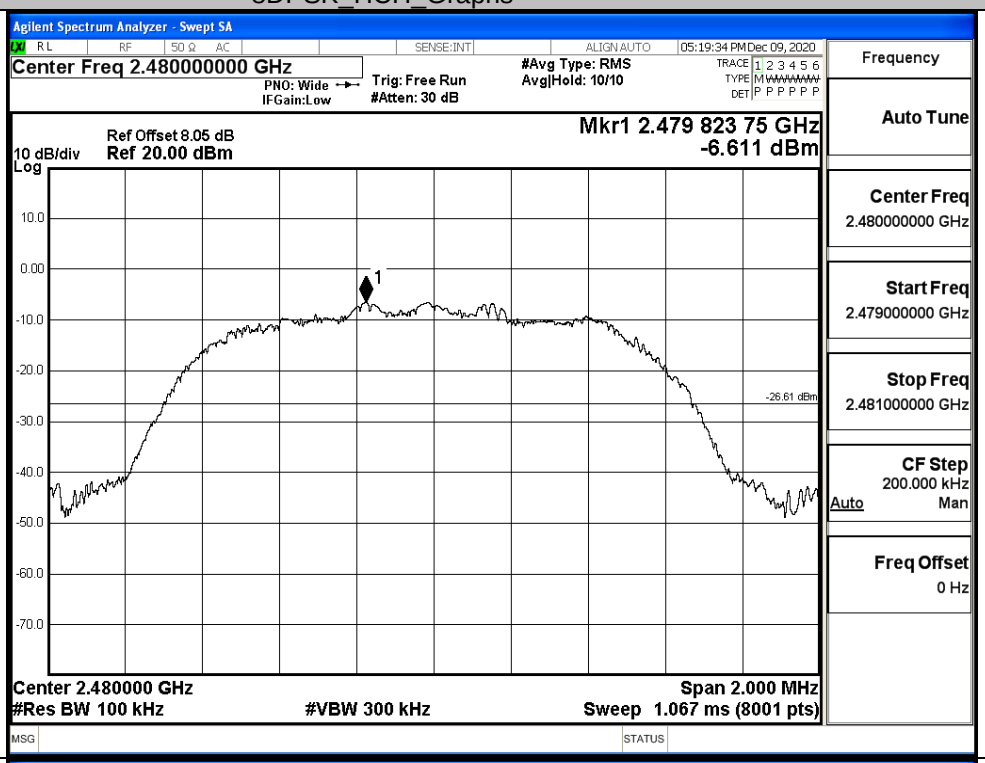
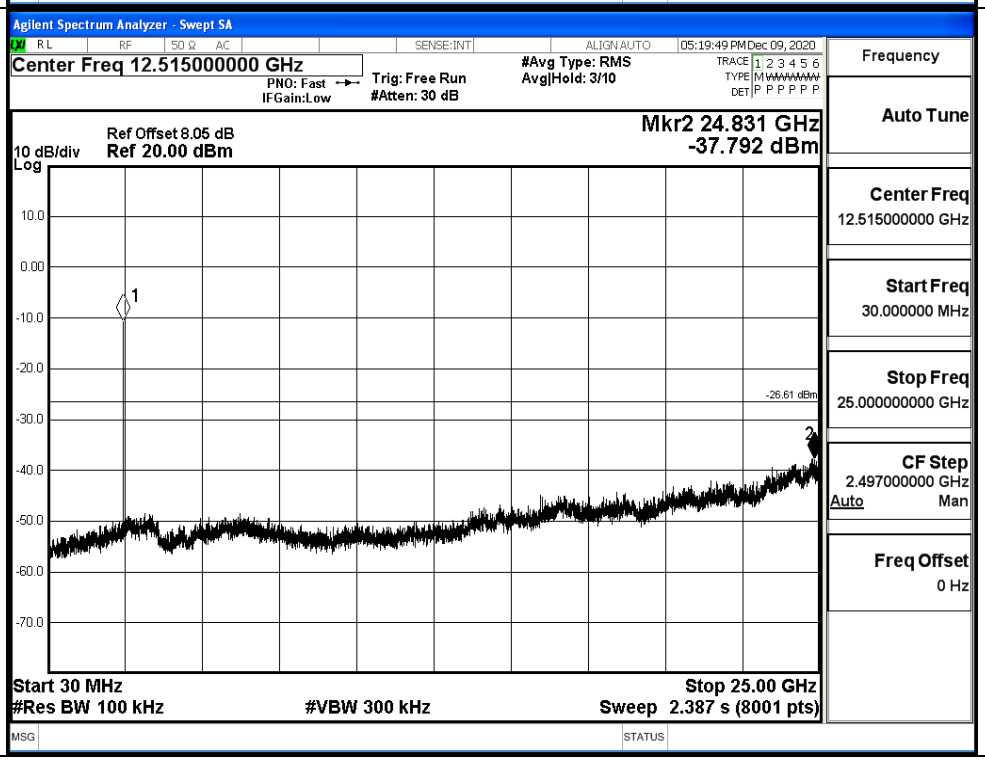
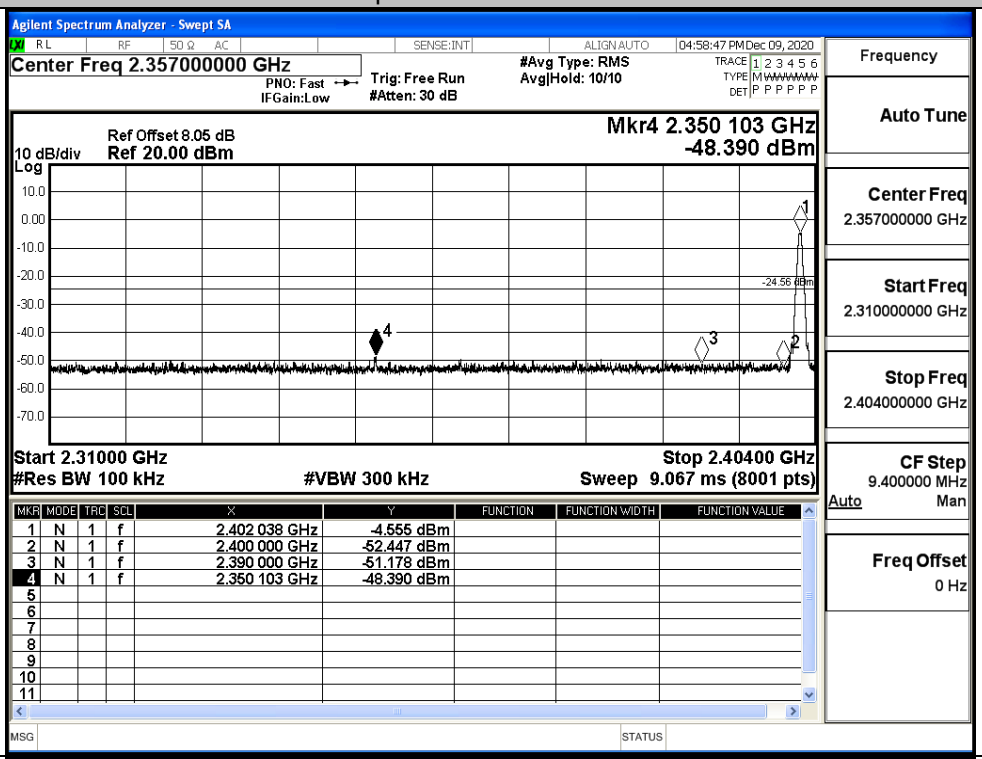
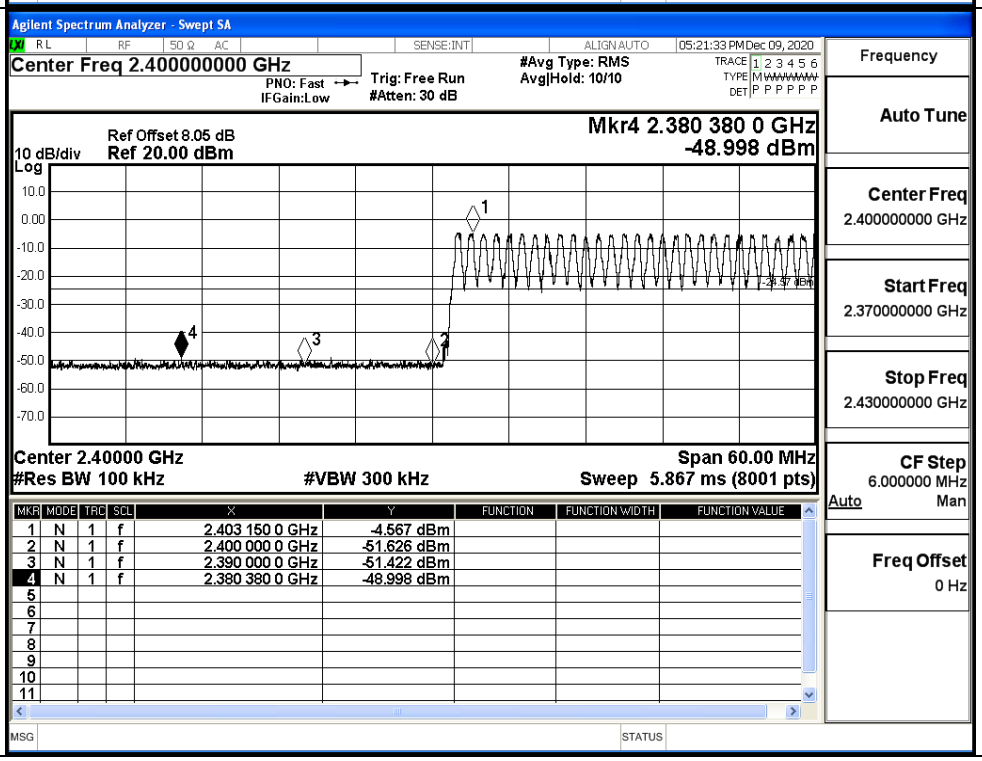
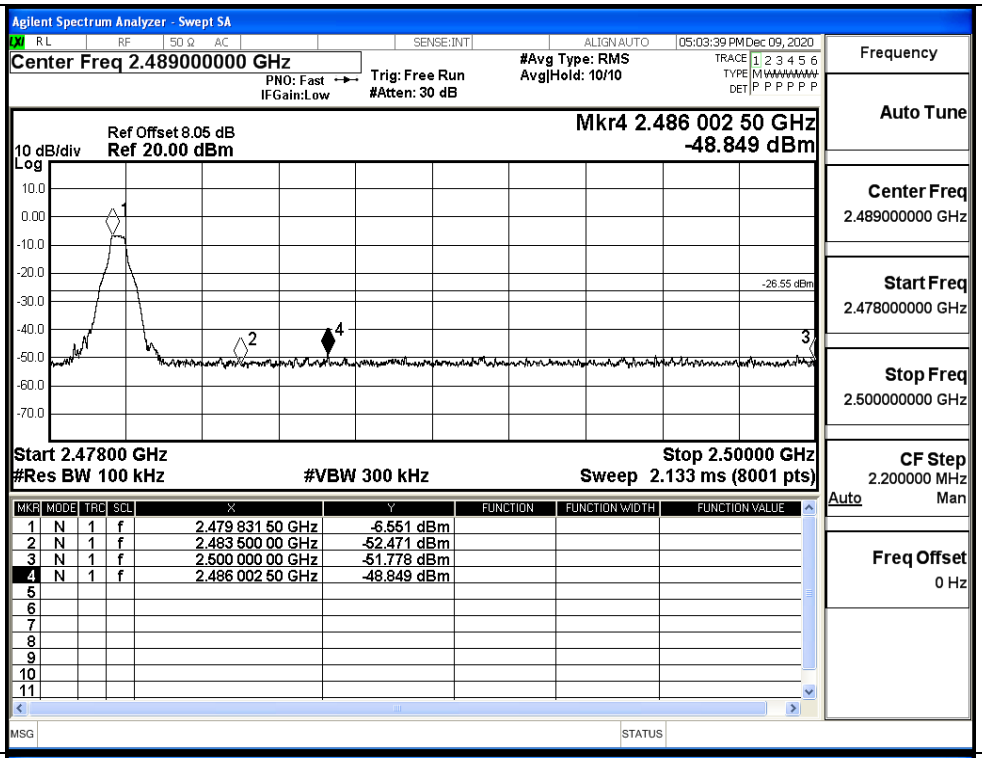
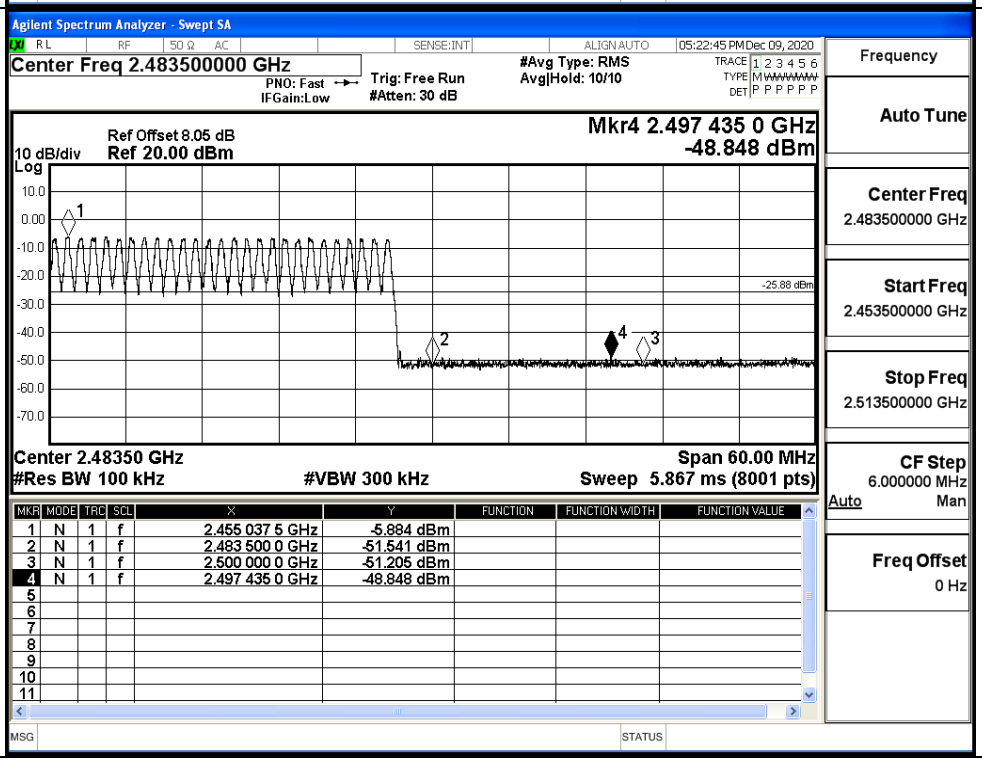
Pref			
Puw			

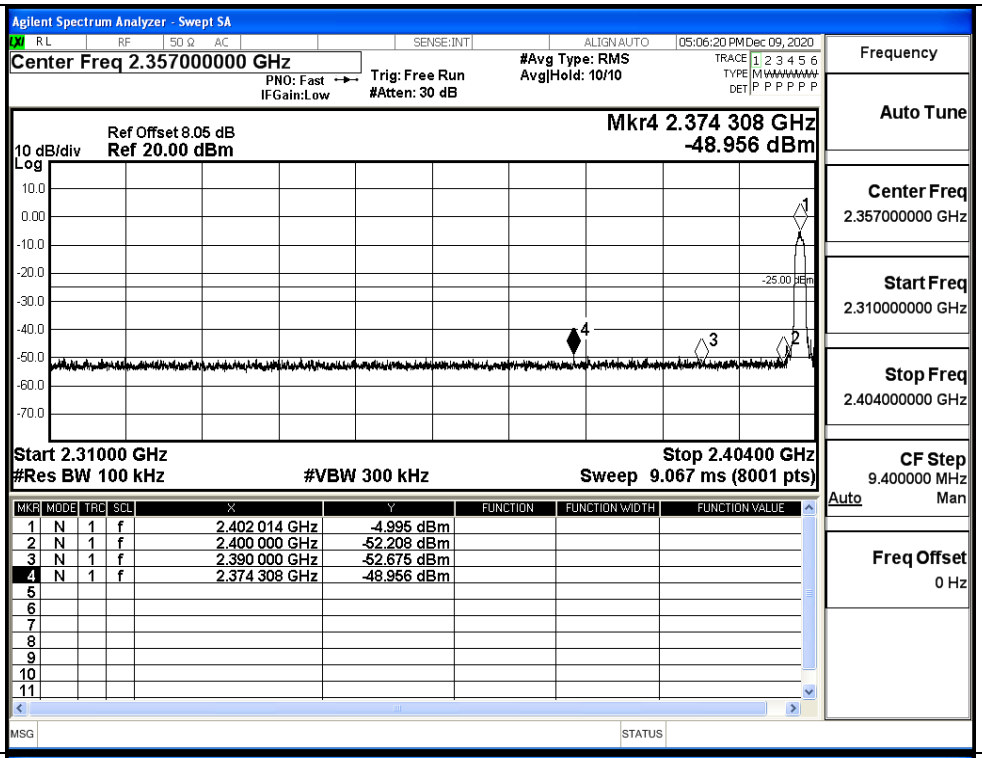
A.7 Band-edge for RF Conducted Emissions

Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	-4.555	Off	-48.390	-24.56	PASS
			-4.567	On	-48.998	-24.57	PASS
	HCH	2480	-6.551	Off	-48.849	-26.55	PASS
			-5.884	On	-48.848	-25.88	PASS
π/4DQPSK	LCH	2402	-4.995	Off	-48.956	-25	PASS
			-4.763	On	-49.190	-24.76	PASS
	HCH	2480	-6.724	Off	-48.848	-26.72	PASS
			-6.018	On	-48.800	-26.02	PASS
8DPSK	LCH	2402	-4.459	Off	-49.439	-24.46	PASS
			-4.694	On	-49.003	-24.69	PASS
	HCH	2480	-6.633	Off	-48.984	-26.63	PASS
			-5.844	On	-48.589	-25.84	PASS

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

GFSK/HCH/No Hop	
GFSK/HCH/Hop	

π/4DQPSK/LCH/No Hop



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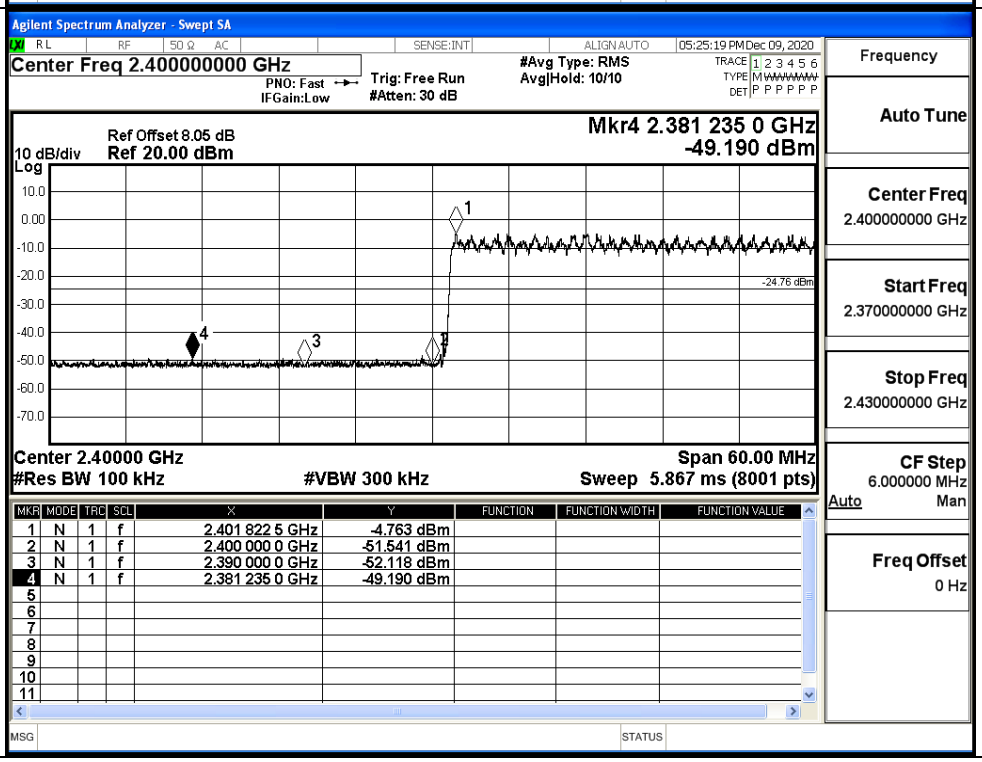
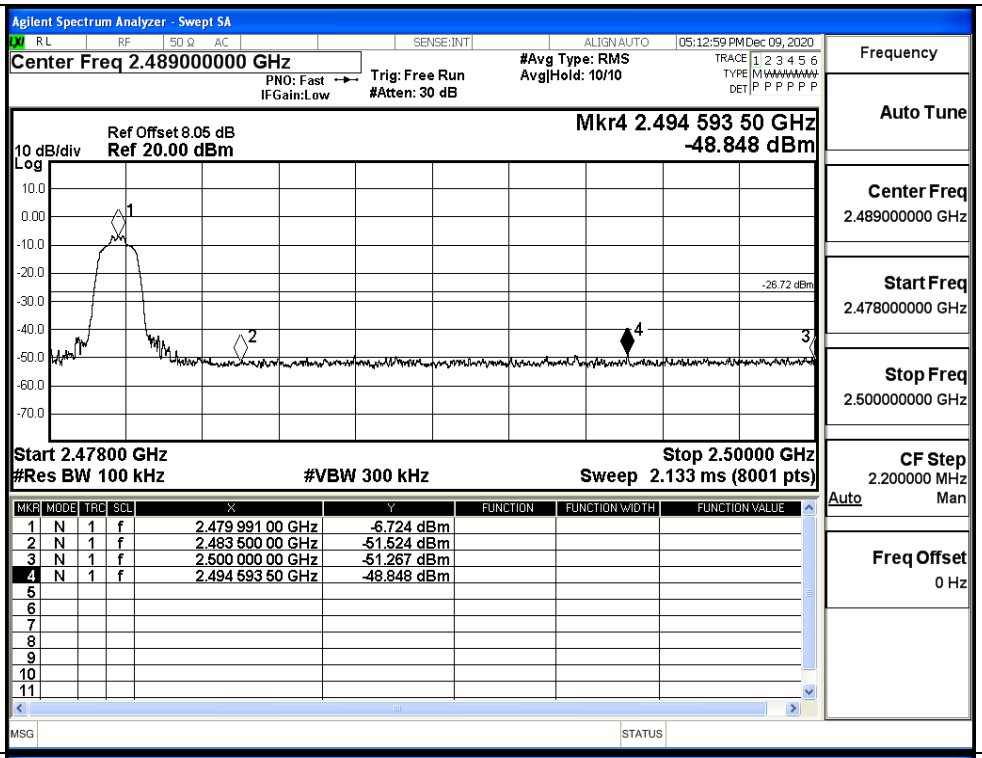


π/4DQPSK/HCH/No Hop



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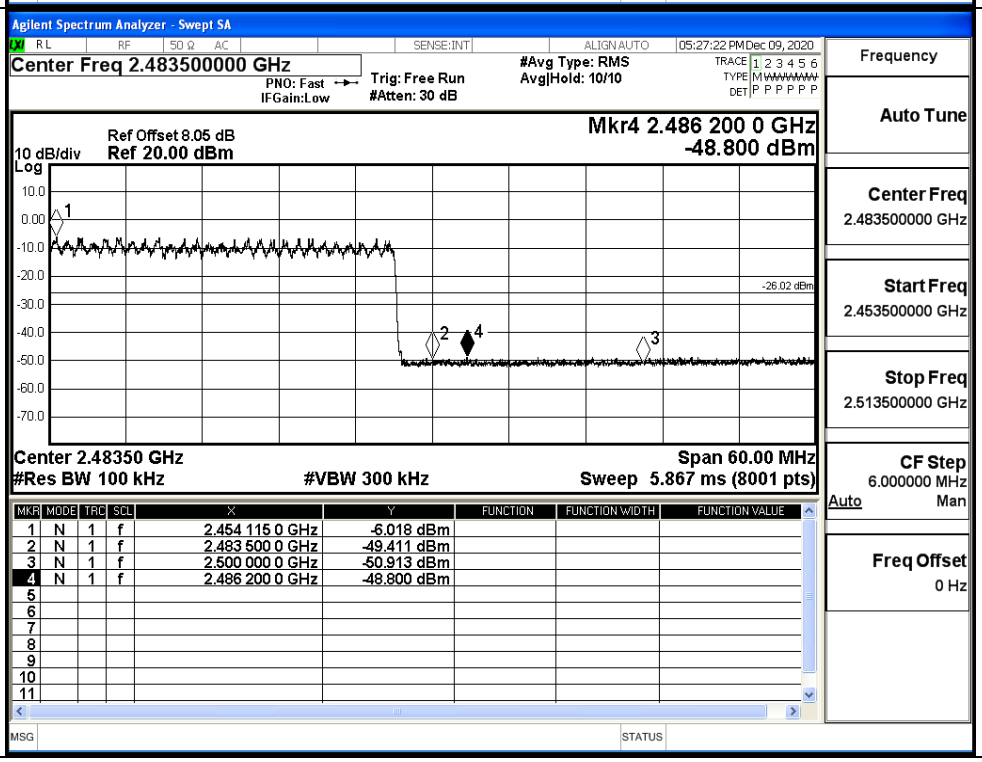
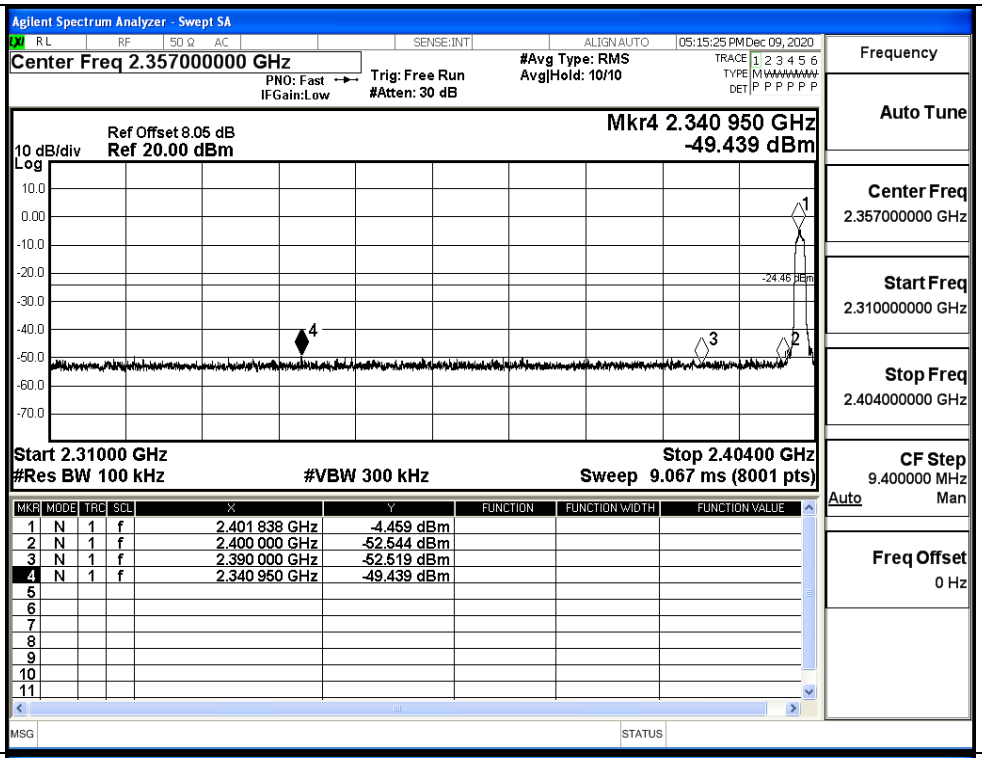
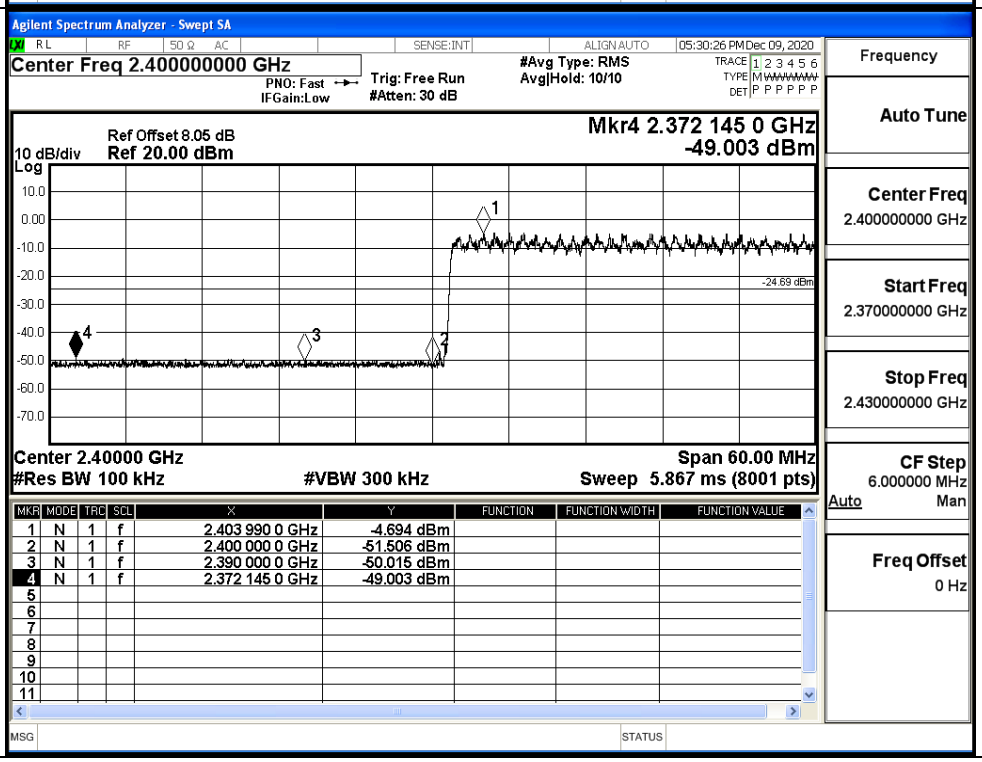
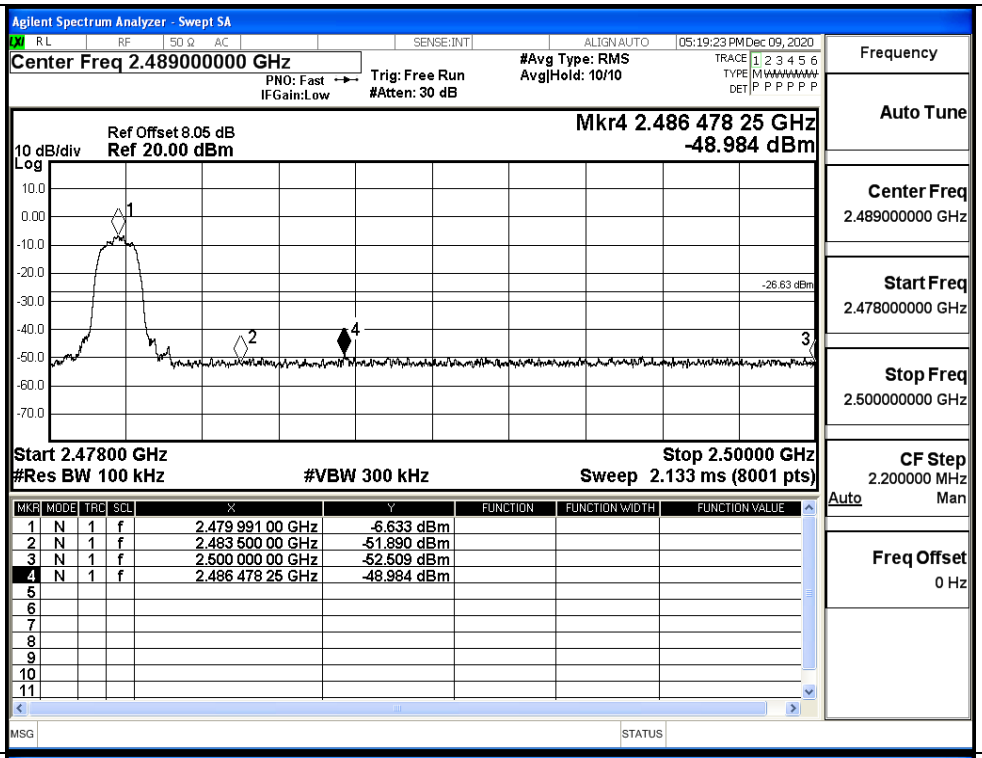


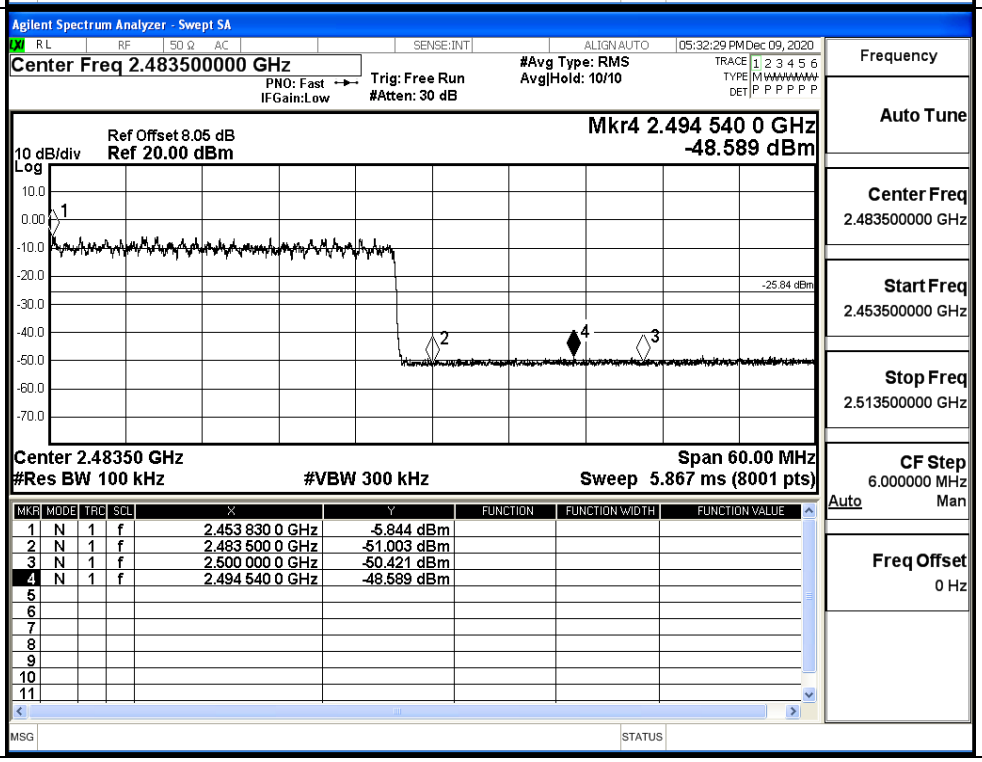
8DPSK/LCH/No Hop



8DPSK/LCH/Hop



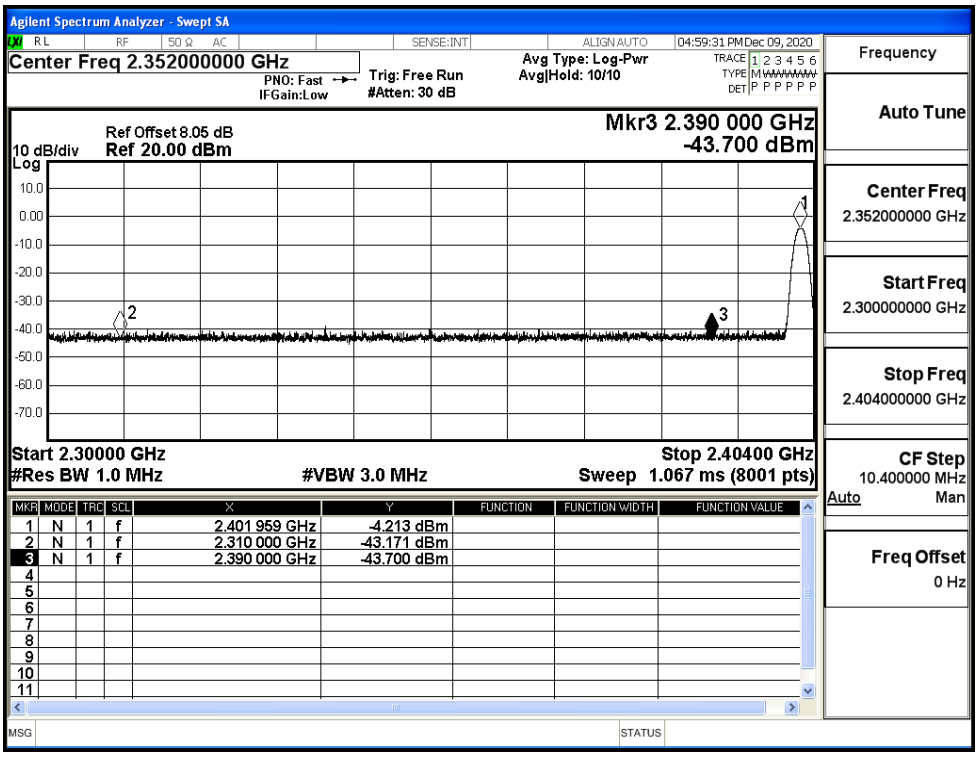
8DPSK/HCH/No Hop	

8DPSK/HCH/Hop	

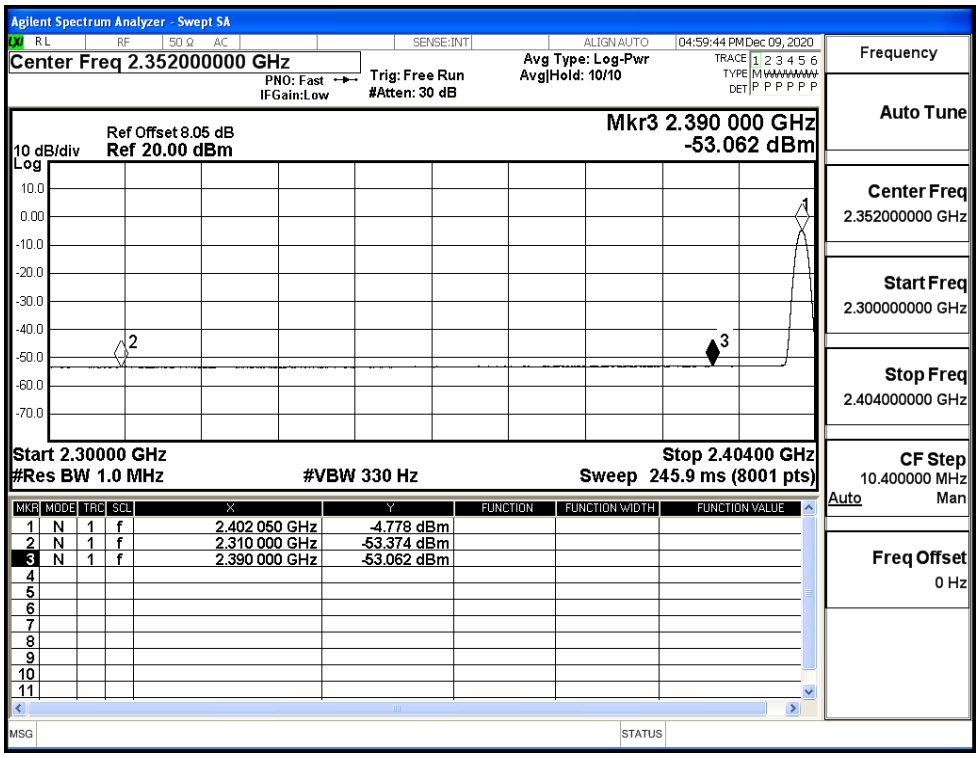
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-43.17	2.0	0	52.09	PEAK	74	PASS
	Off	2310.0	-53.37	2.0	0	41.88	AV	54	PASS
	Off	2390.0	-43.70	2.0	0	51.56	PEAK	74	PASS
	Off	2390.0	-53.06	2.0	0	42.20	AV	54	PASS
	Off	2483.5	-42.96	2.0	0	52.30	PEAK	74	PASS
	Off	2483.5	-52.52	2.0	0	42.74	AV	54	PASS
	Off	2500.0	-42.54	2.0	0	52.72	PEAK	74	PASS
	Off	2500.0	-52.40	2.0	0	42.86	AV	54	PASS
π/4DQPSK	Off	2310.0	-43.15	2.0	0	52.11	PEAK	74	PASS
	Off	2310.0	-53.33	2.0	0	41.93	AV	54	PASS
	Off	2390.0	-42.01	2.0	0	53.25	PEAK	74	PASS
	Off	2390.0	-53.05	2.0	0	42.21	AV	54	PASS
	Off	2483.5	-41.78	2.0	0	53.48	PEAK	74	PASS
	Off	2483.5	-52.43	2.0	0	42.83	AV	54	PASS
	Off	2500.0	-43.70	2.0	0	51.56	PEAK	74	PASS
	Off	2500.0	-52.34	2.0	0	42.92	AV	54	PASS
8DPSK	Off	2310.0	-42.64	2.0	0	52.62	PEAK	74	PASS
	Off	2310.0	-53.37	2.0	0	41.89	AV	54	PASS
	Off	2390.0	-43.31	2.0	0	51.95	PEAK	74	PASS
	Off	2390.0	-53.12	2.0	0	42.14	AV	54	PASS
	Off	2483.5	-41.95	2.0	0	53.31	PEAK	74	PASS
	Off	2483.5	-52.55	2.0	0	42.71	AV	54	PASS
	Off	2500.0	-41.59	2.0	0	53.67	PEAK	74	PASS
	Off	2500.0	-52.42	2.0	0	42.84	AV	54	PASS

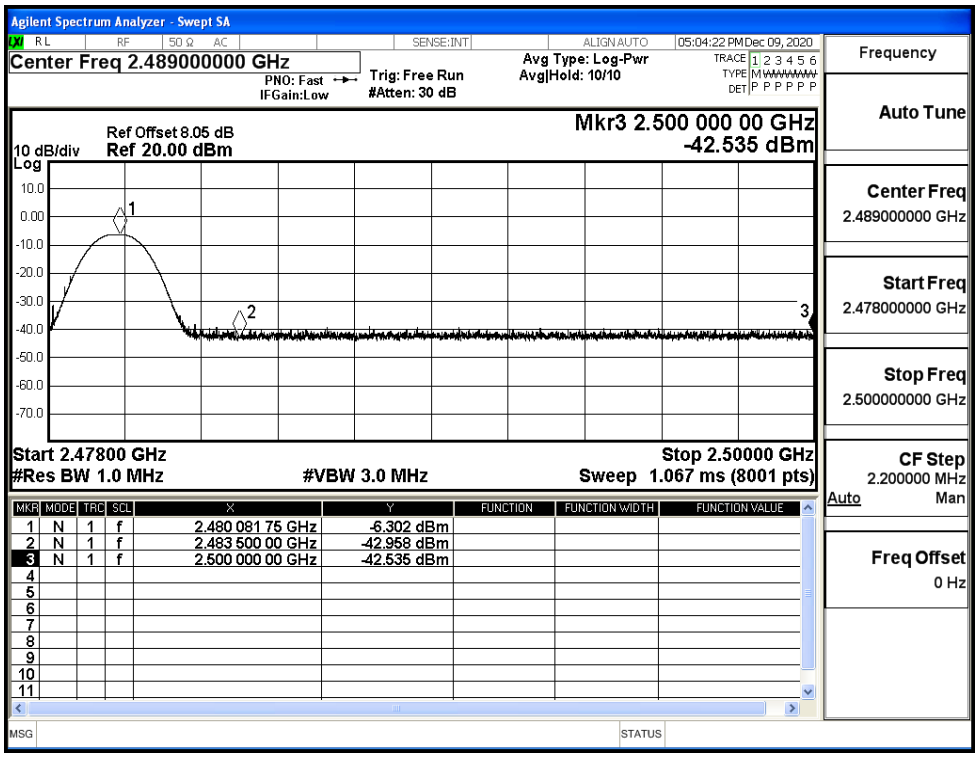
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (Low Channel)



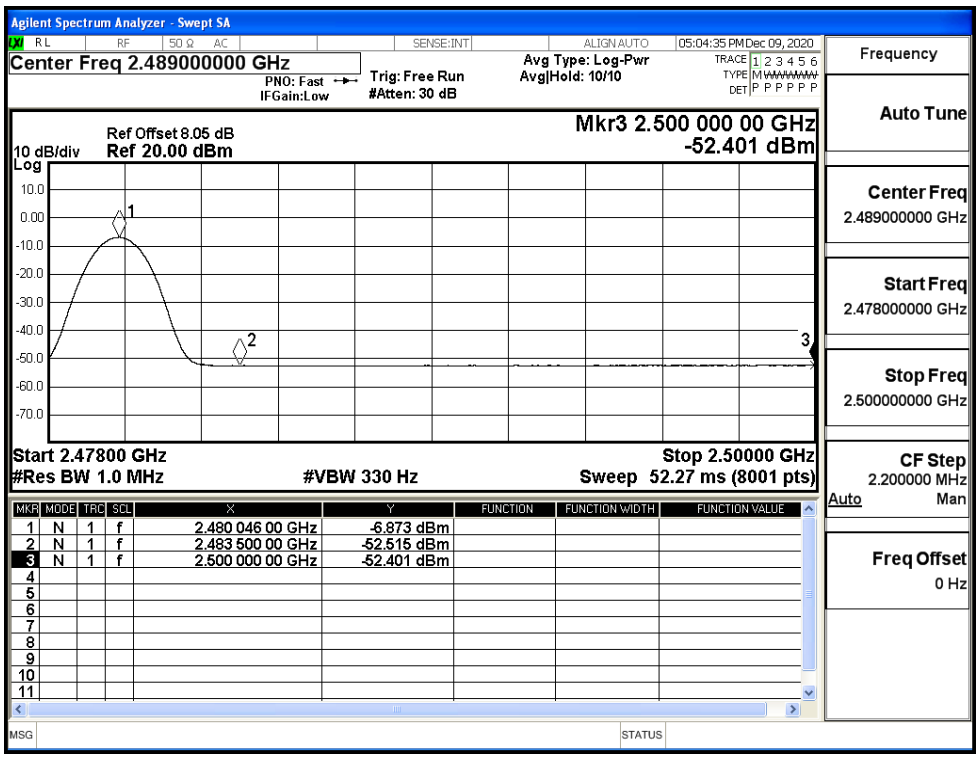
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (Low Channel)



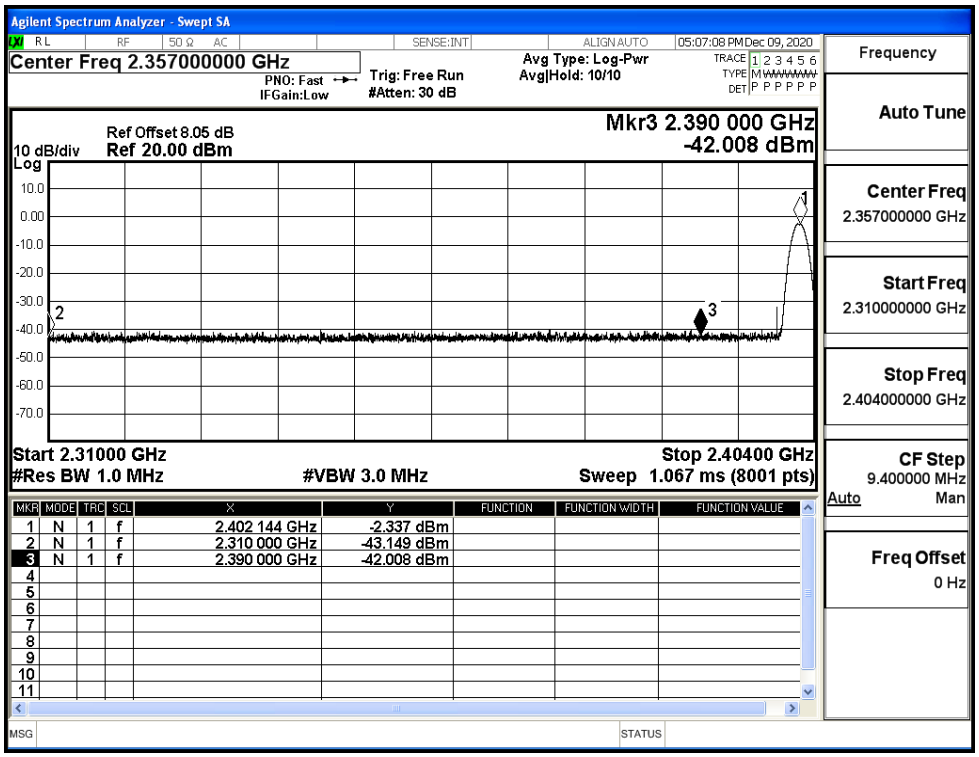
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (High Channel)



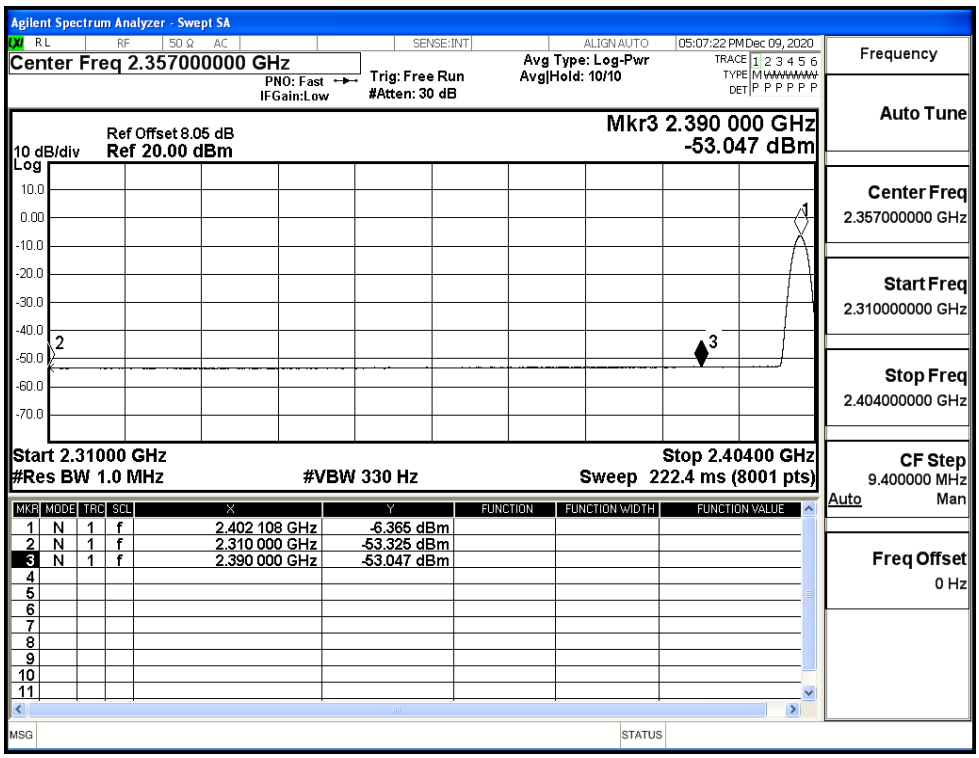
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (High Channel)



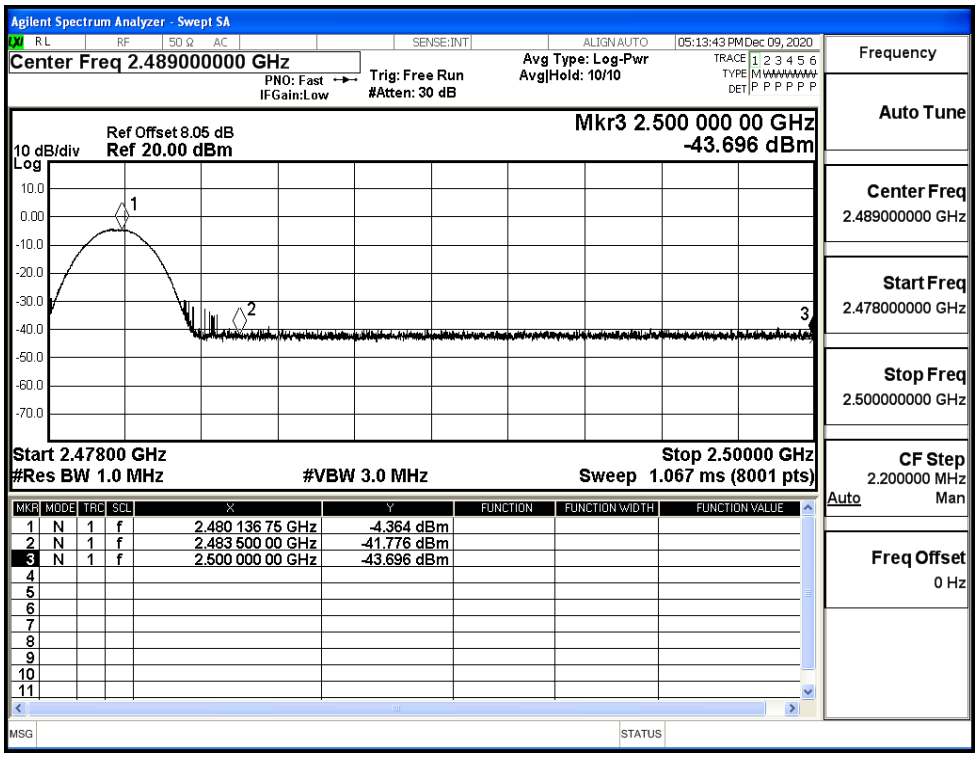
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (Low Channel)



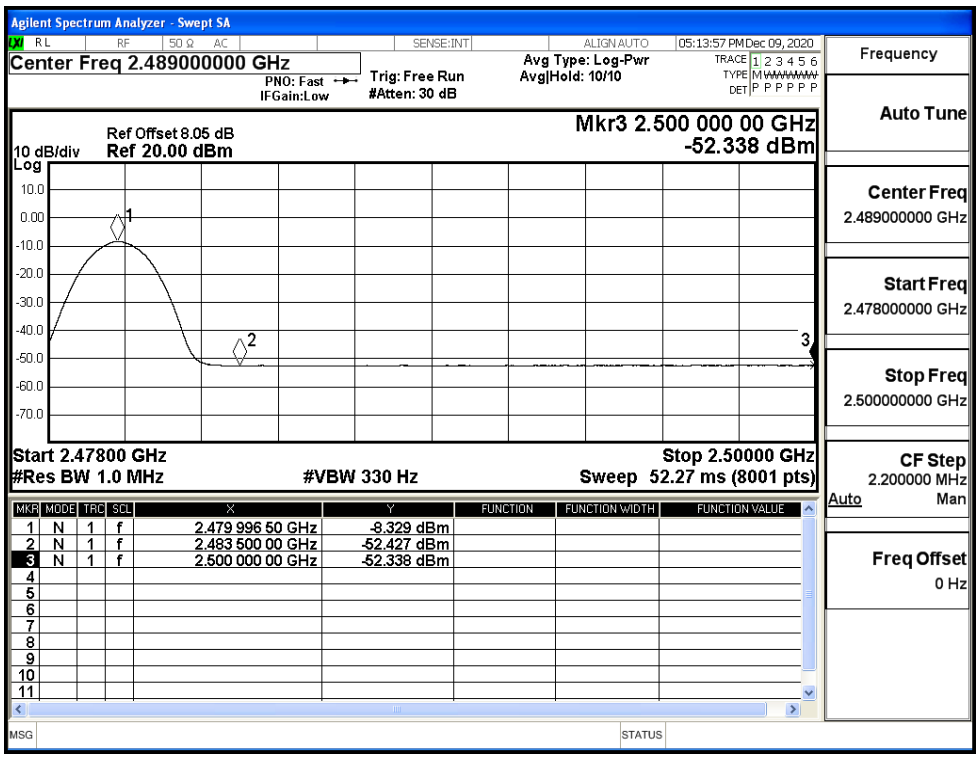
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (Low Channel)



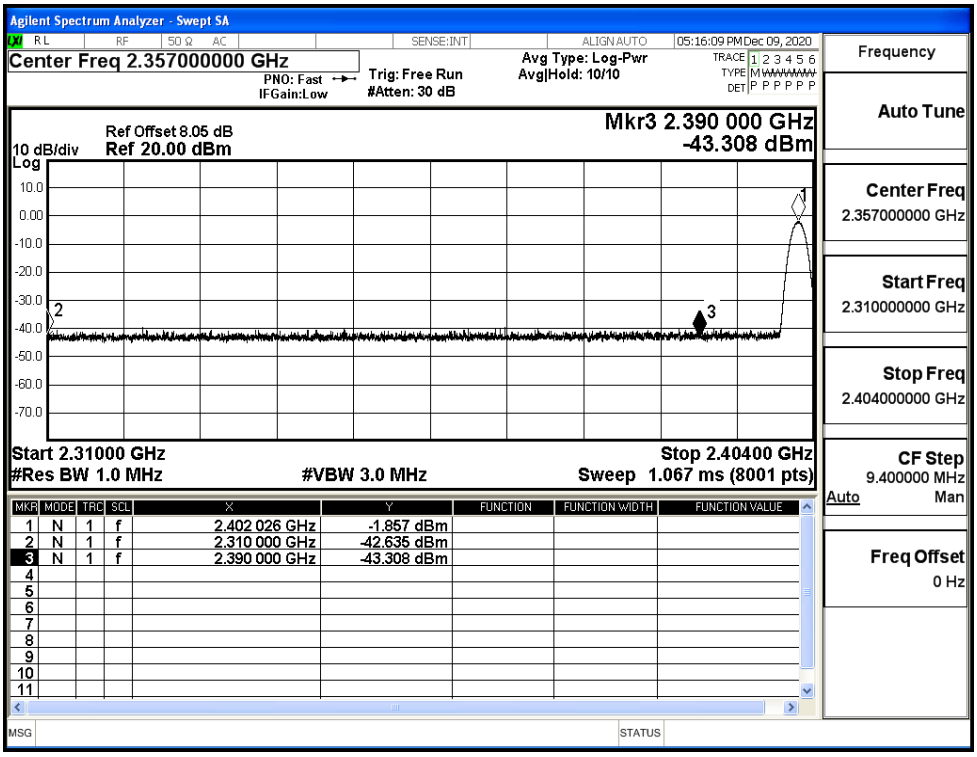
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (High Channel)



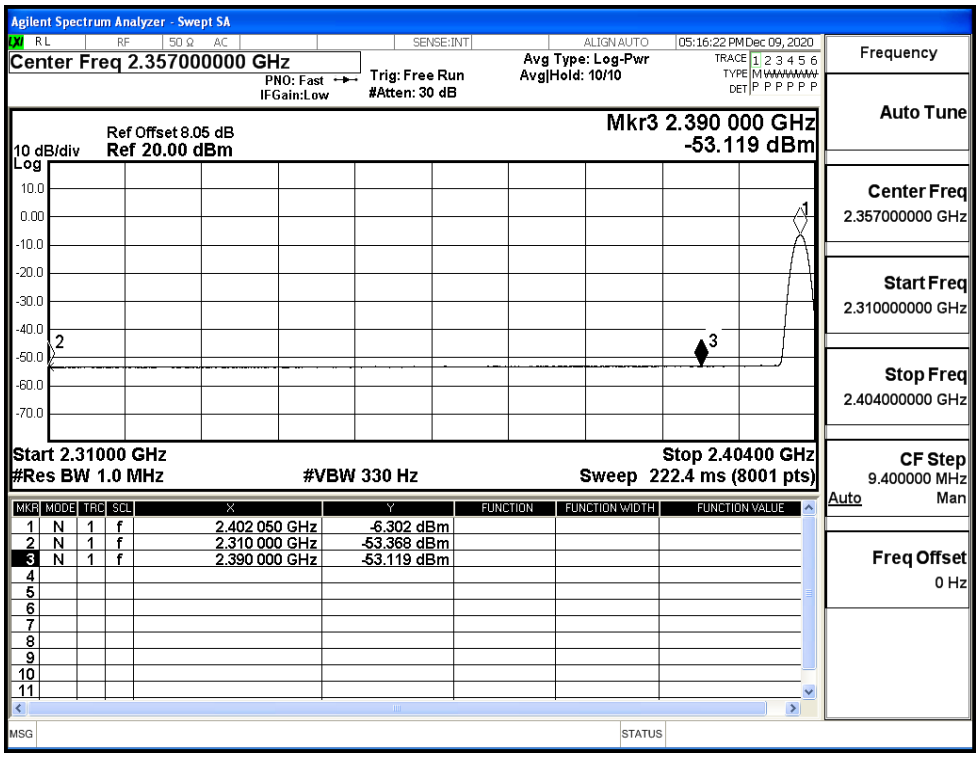
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (High Channel)



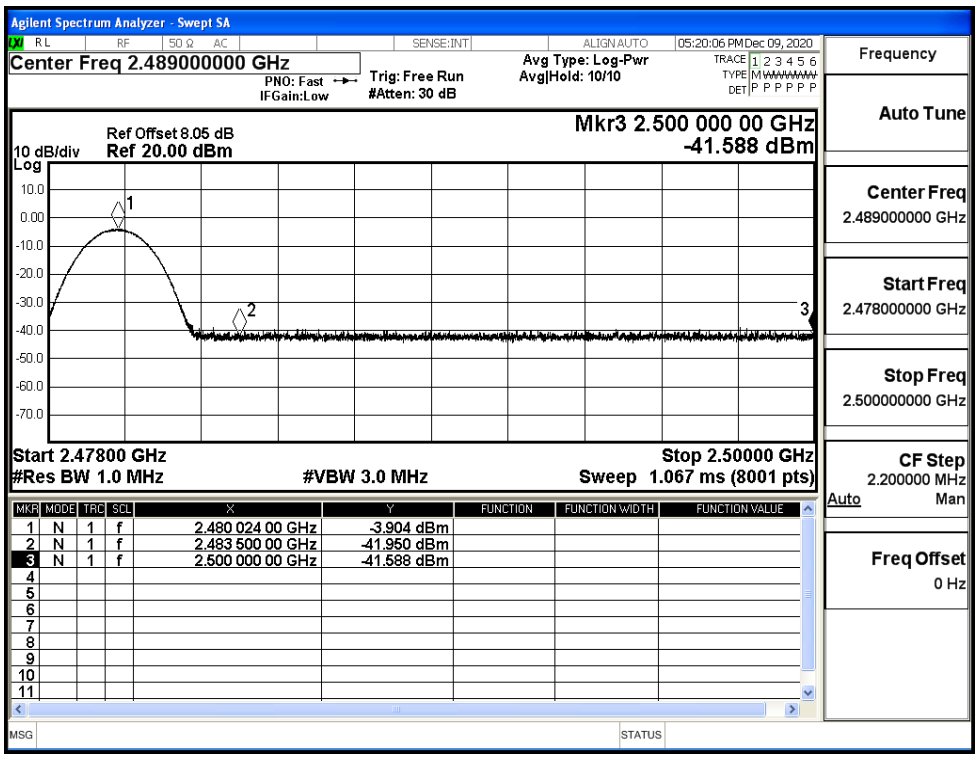
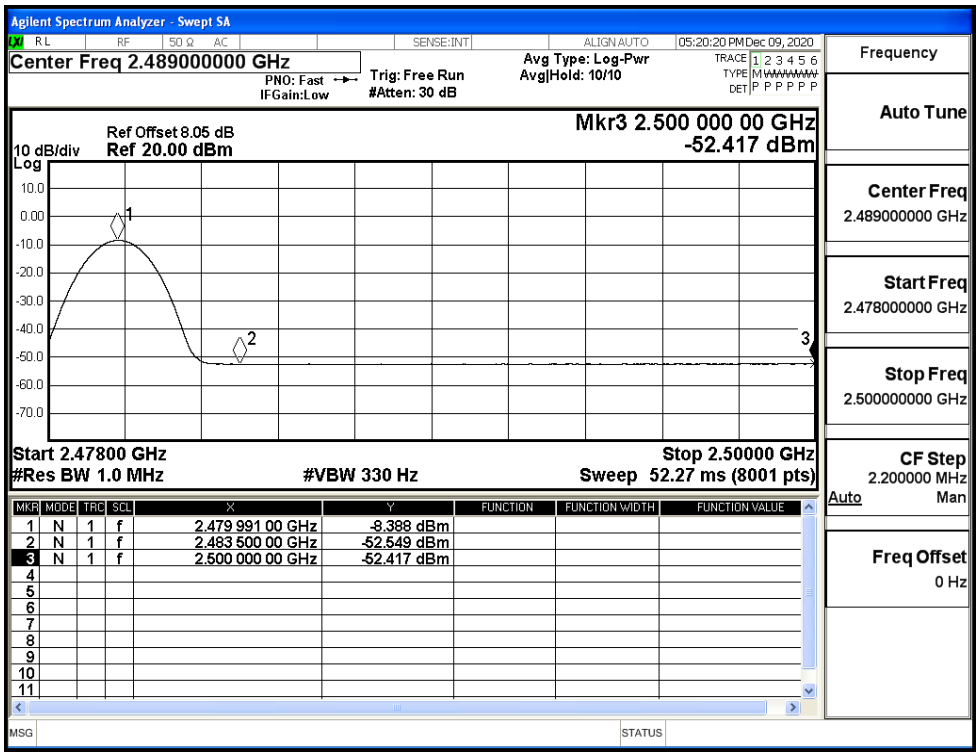
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)