Environmental Conditions

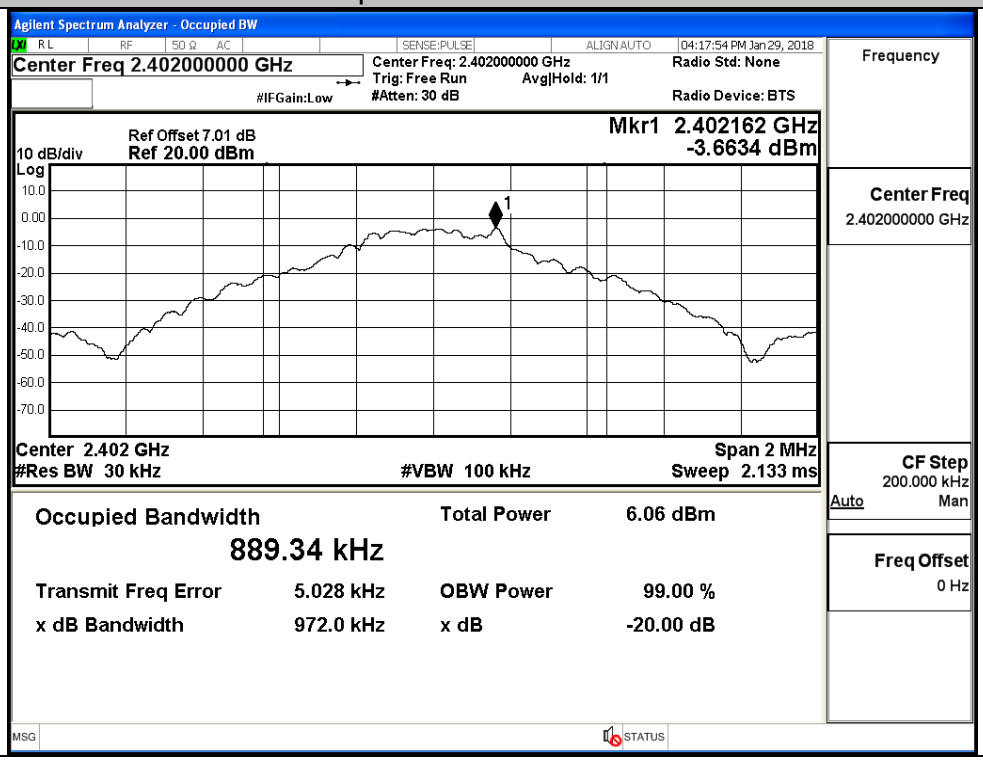
Temperature:	22.9 ° C
Relative Humidity:	52.3%
ATM Pressure:	100.0 kPa
Test Engineer:	Mina.xu
Supervised by:	Tom.Liu

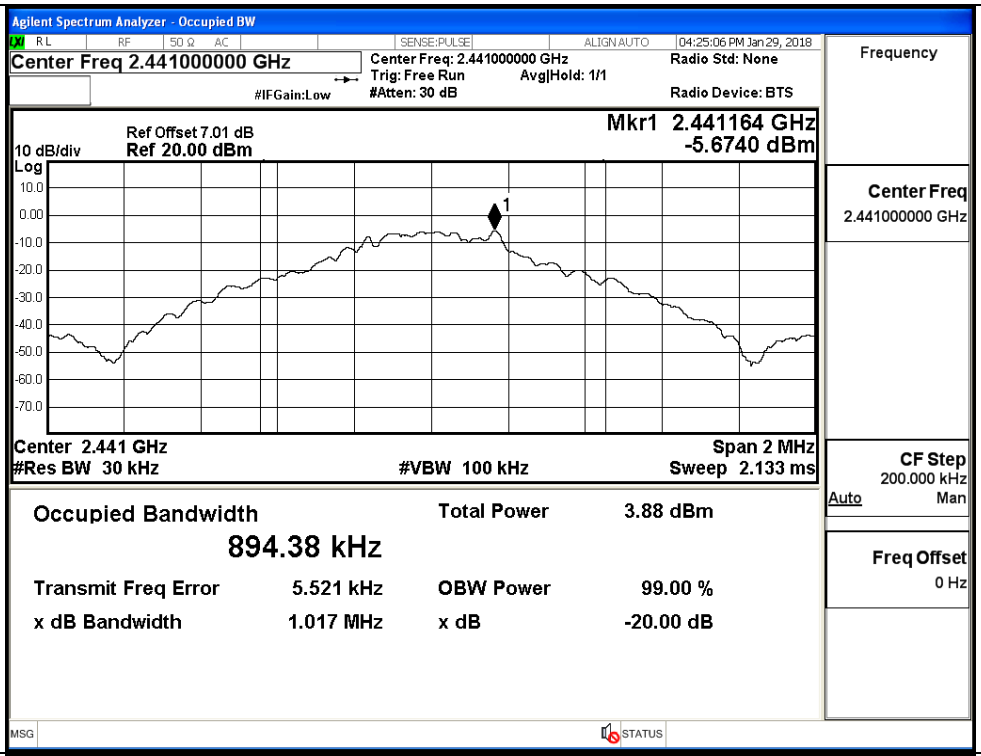
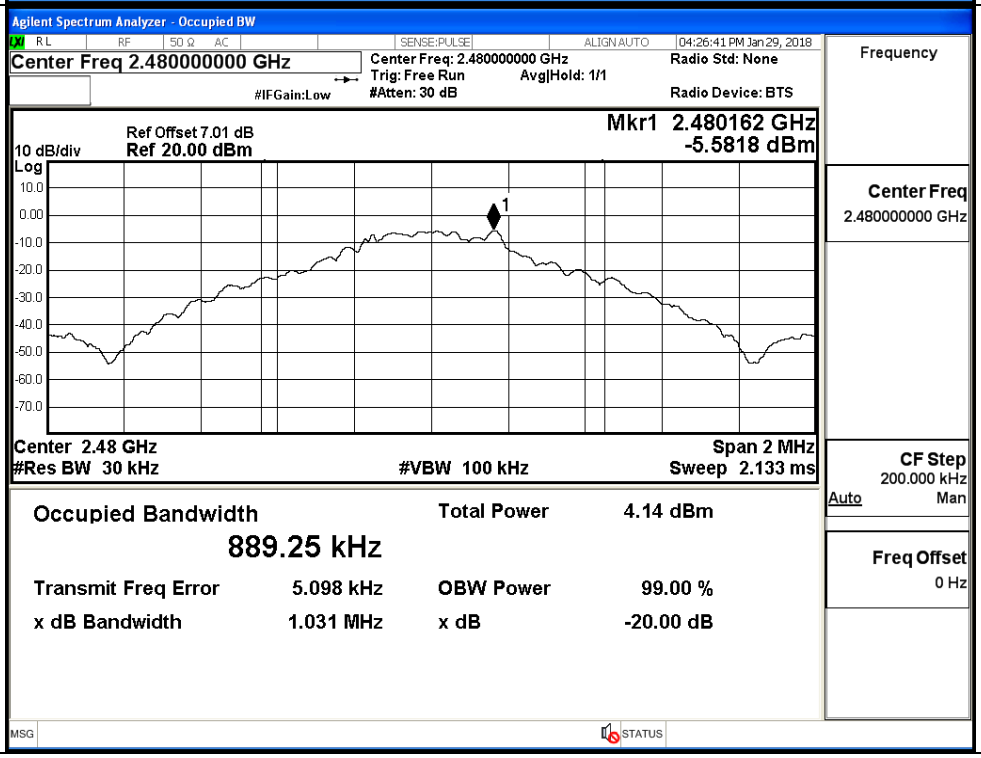
Appendix A): 20dB Bandwidth

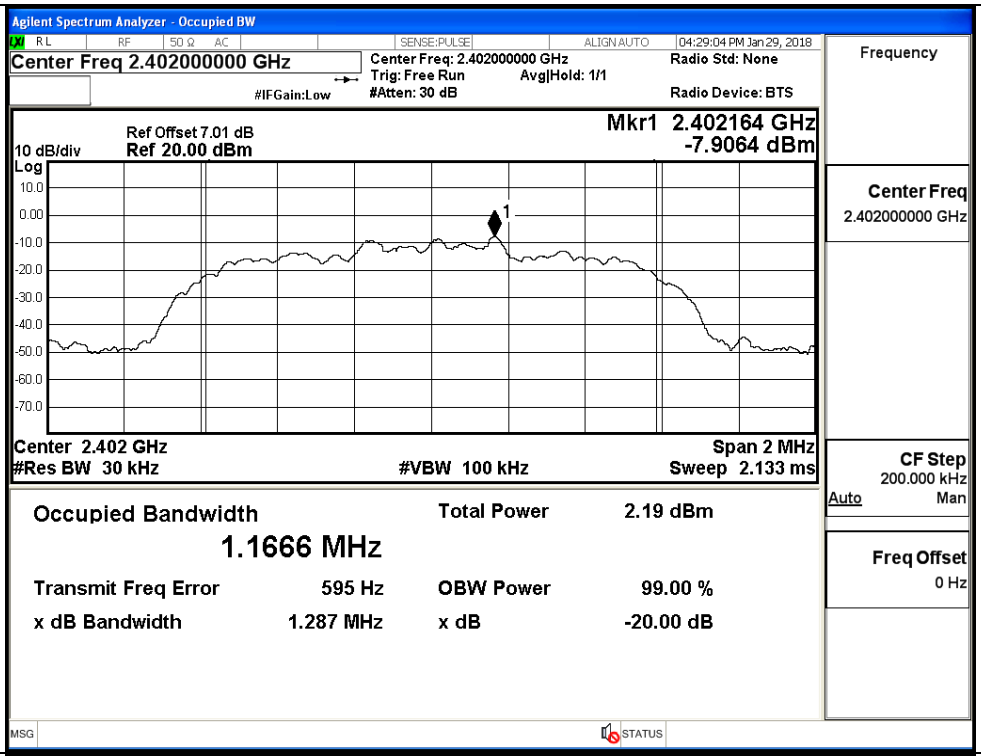
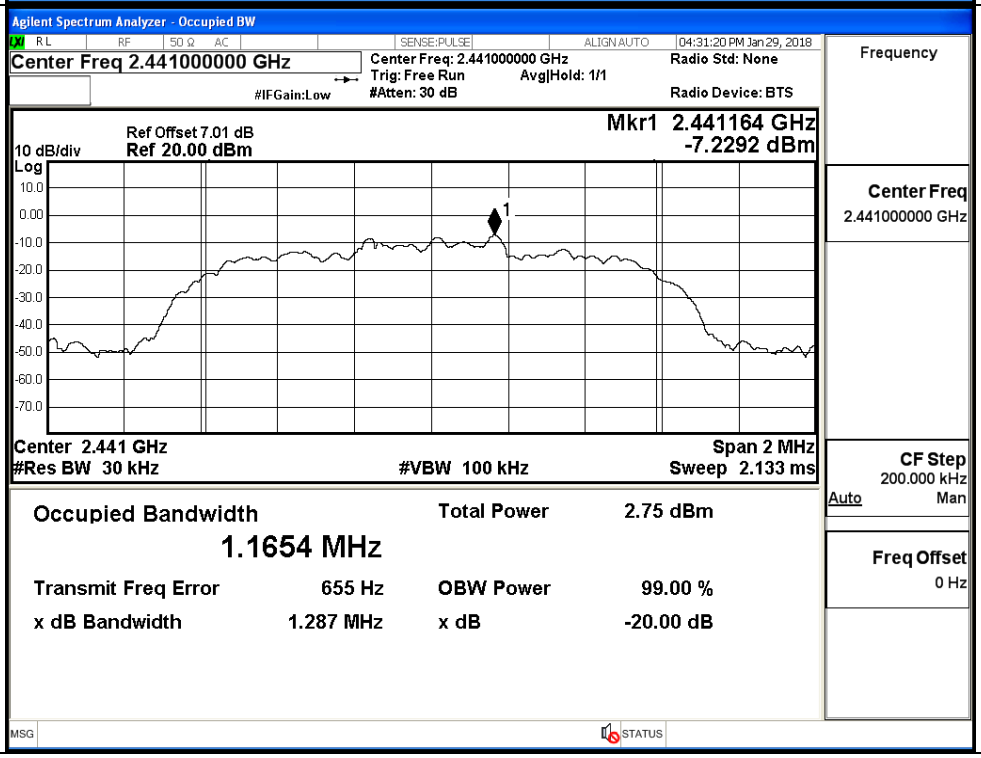
Test Result

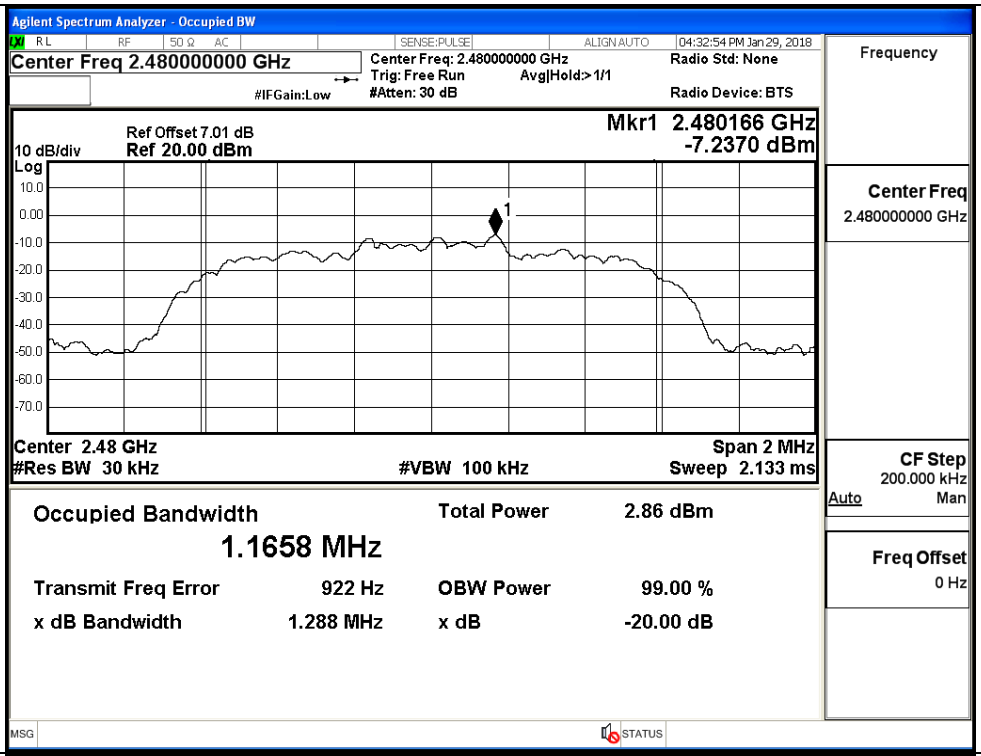
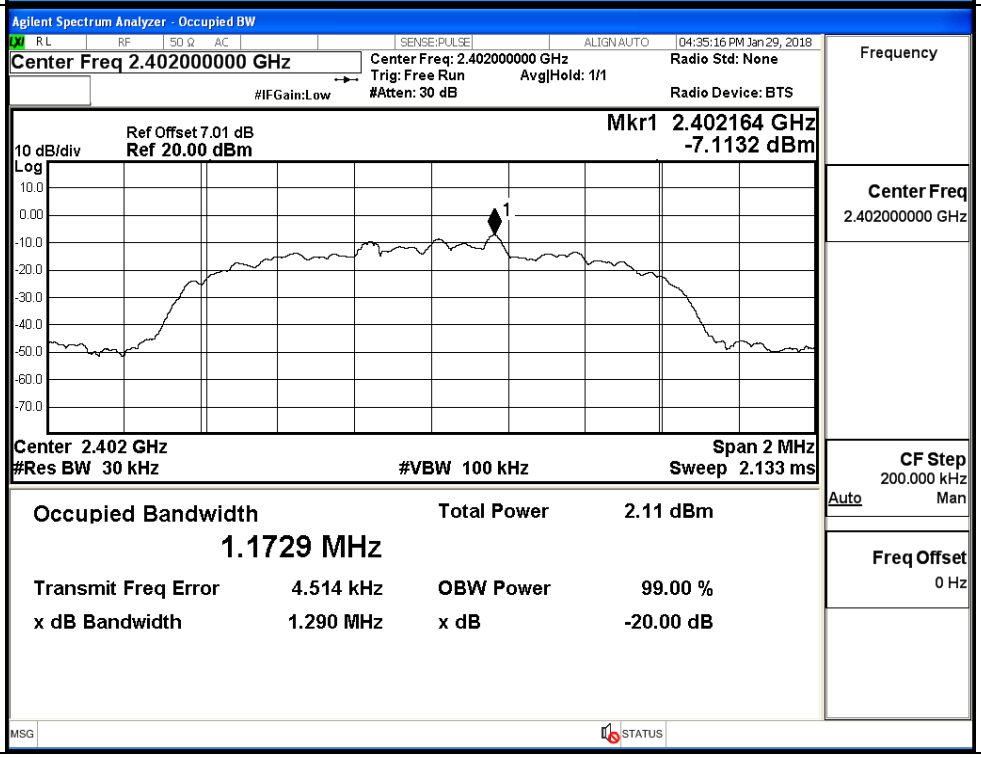
Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.9720	Not Specified	PASS
	MCH	1.017	Not Specified	PASS
	HCH	1.031	Not Specified	PASS
π/4DQPSK	LCH	1.287	Not Specified	PASS
	MCH	1.287	Not Specified	PASS
	HCH	1.288	Not Specified	PASS
8DPSK	LCH	1.290	Not Specified	PASS
	MCH	1.290	Not Specified	PASS
	HCH	1.289	Not Specified	PASS

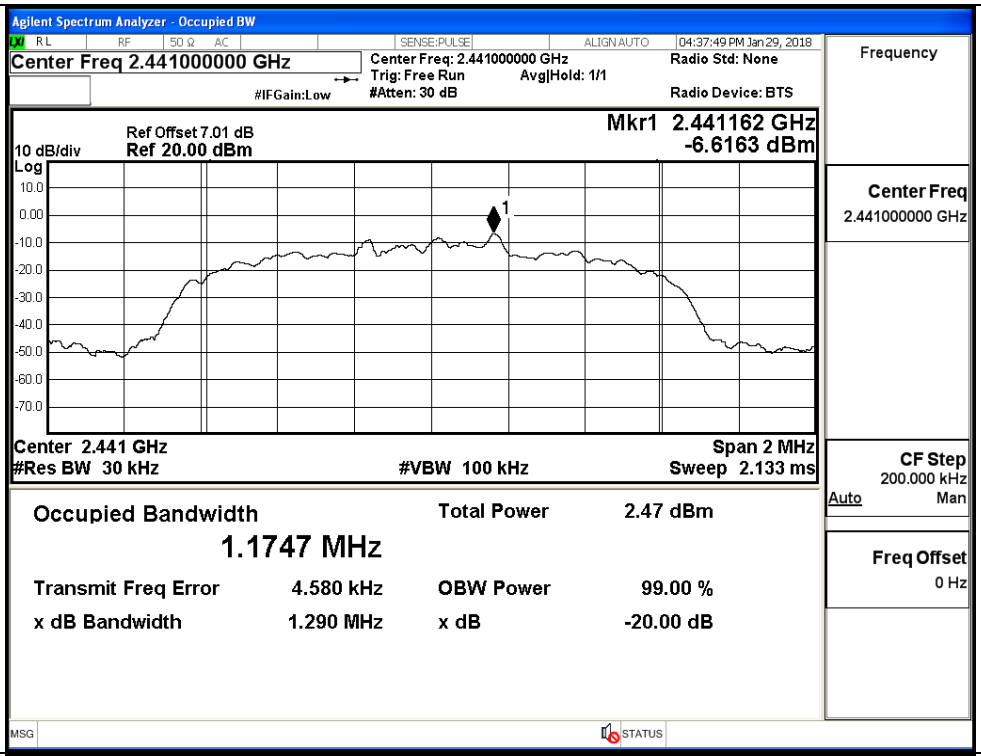
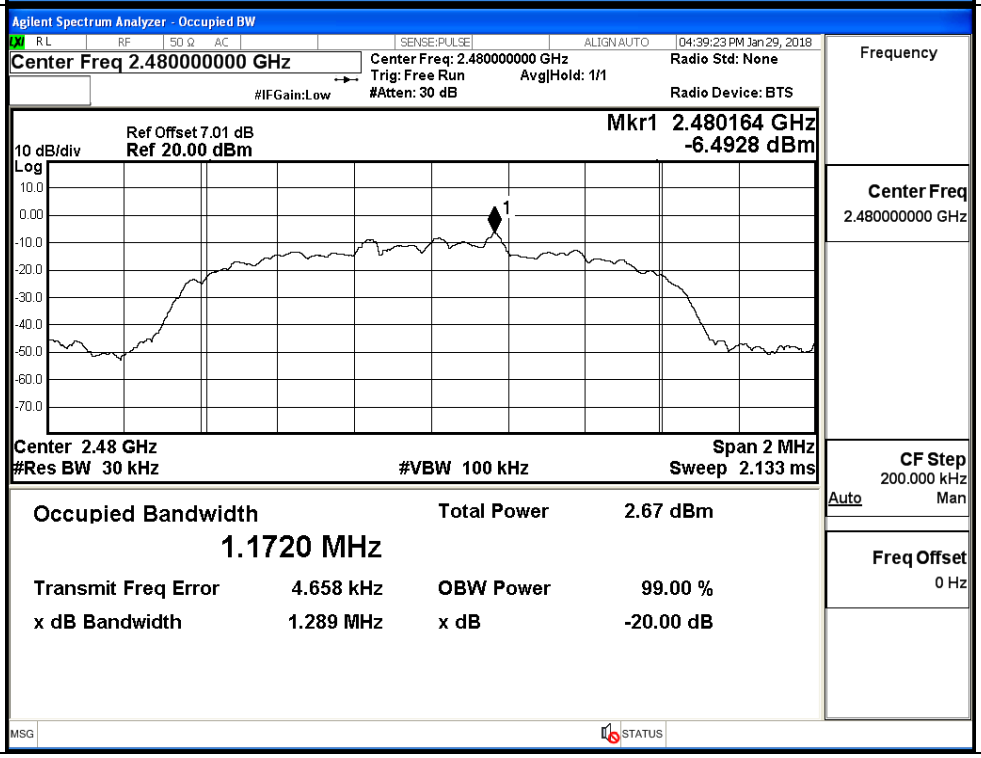
Test Graph

Graphs	
GFSK/LCH	

GFSK/MCH		
GFSK/HCH		

π/4DQPSK/LCH		
π/4DQPSK/MCH		

π/4DQPSK/HCH		
8DPSK/LCH		

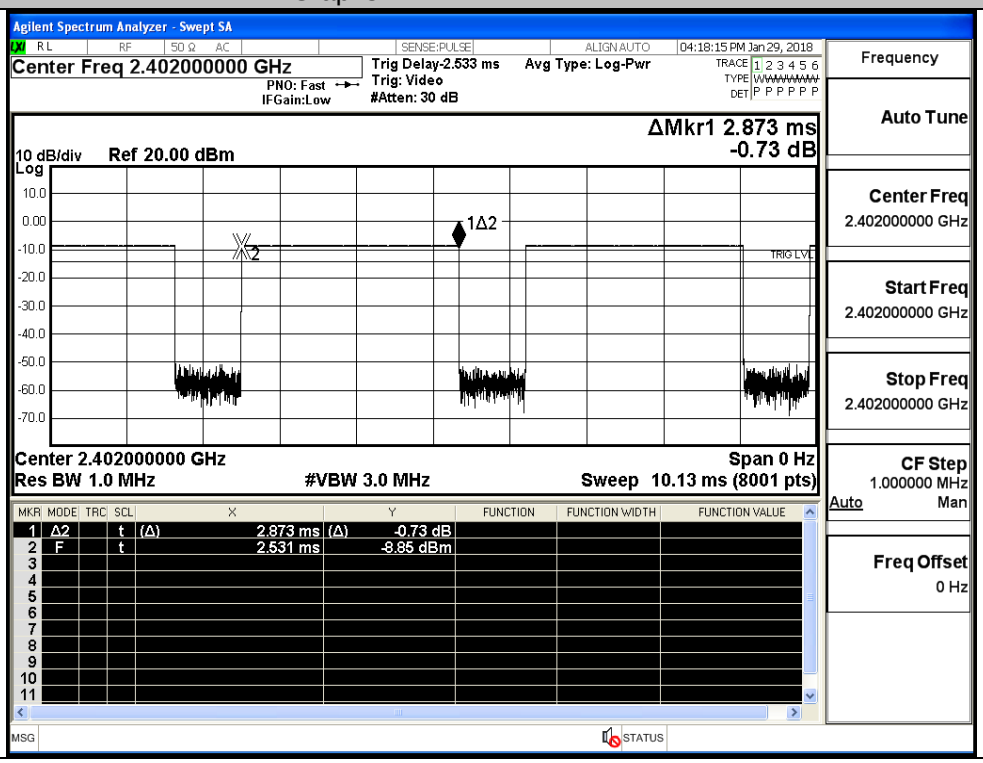
8DPSK/MCH		
8DPSK/HCH		

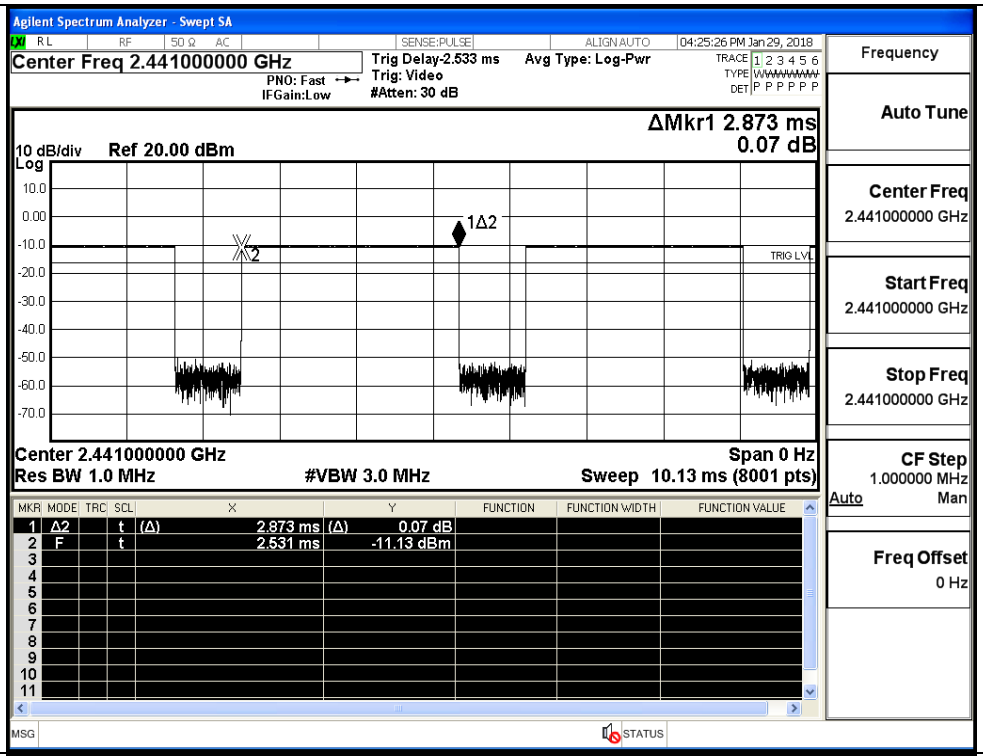
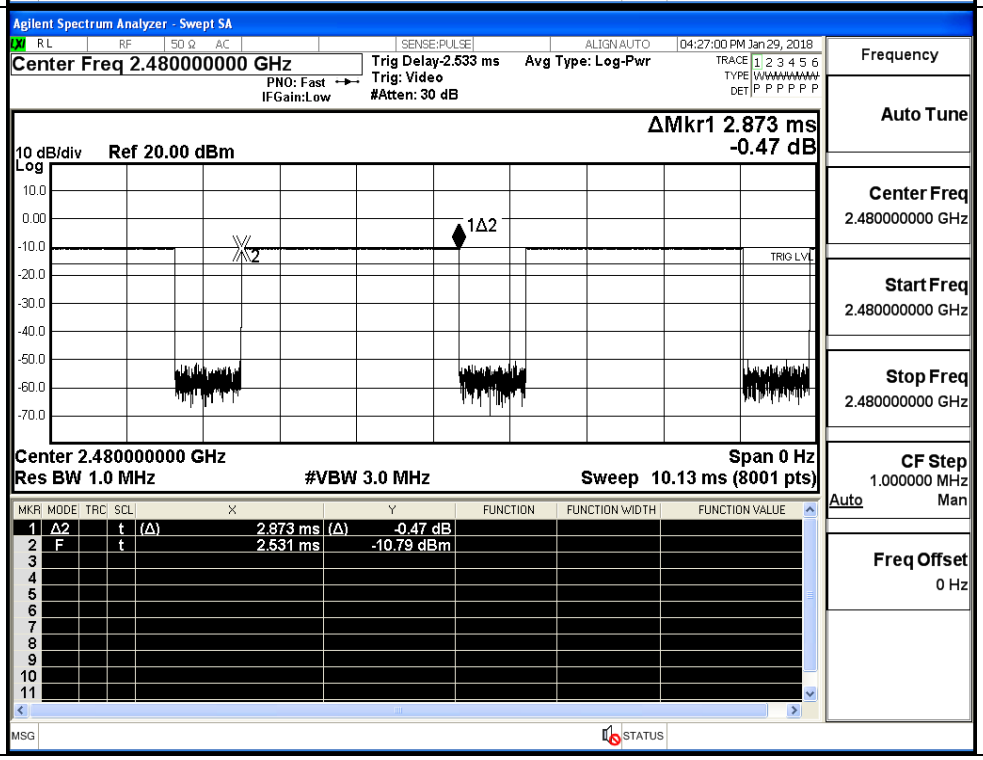
Appendix B): Dwell Time

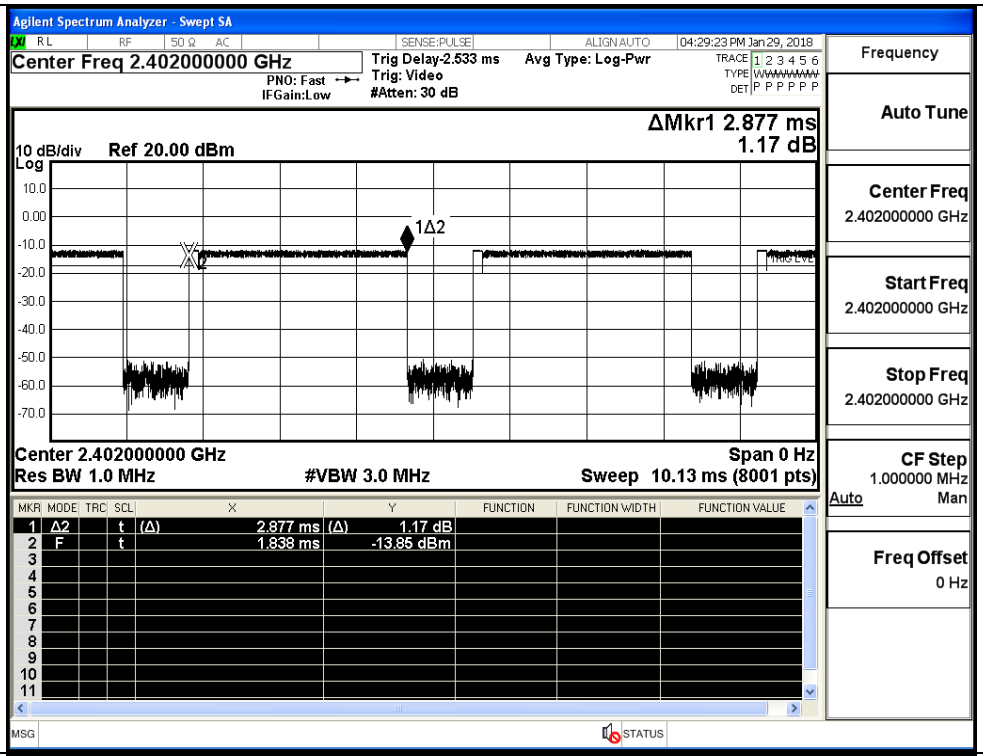
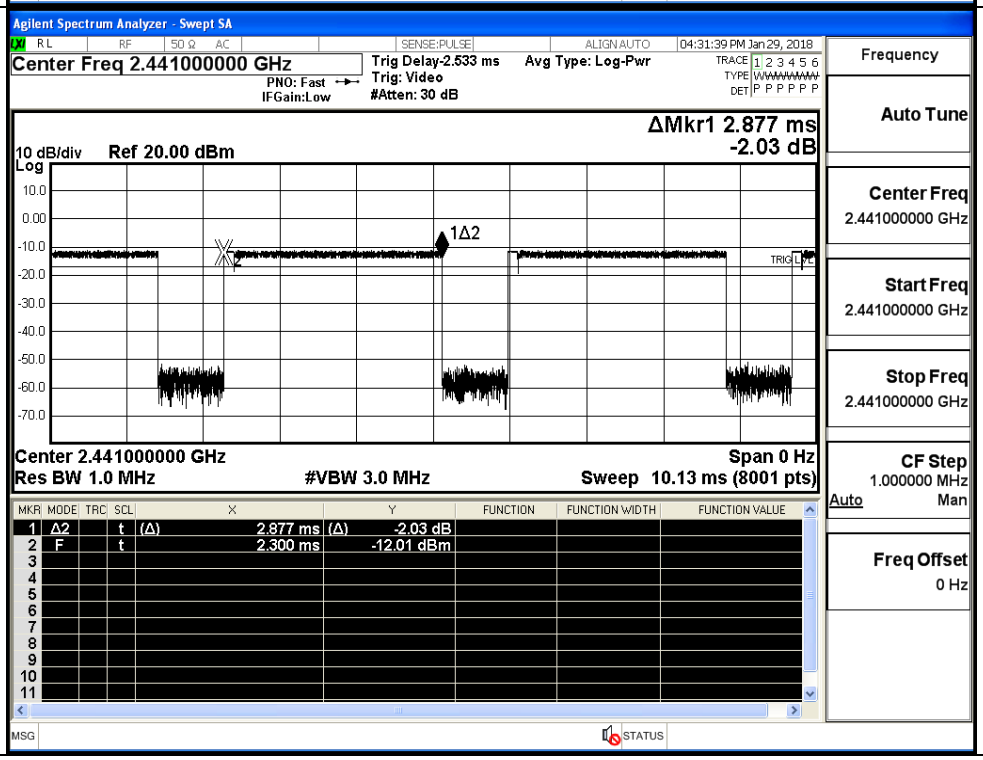
Result Table

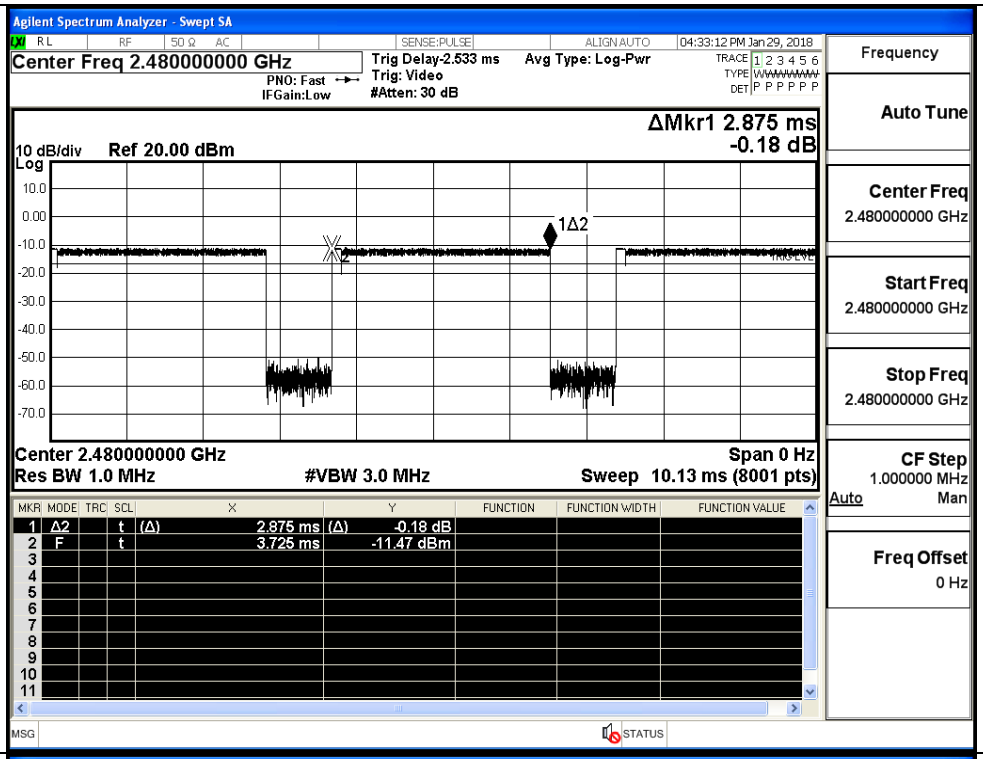
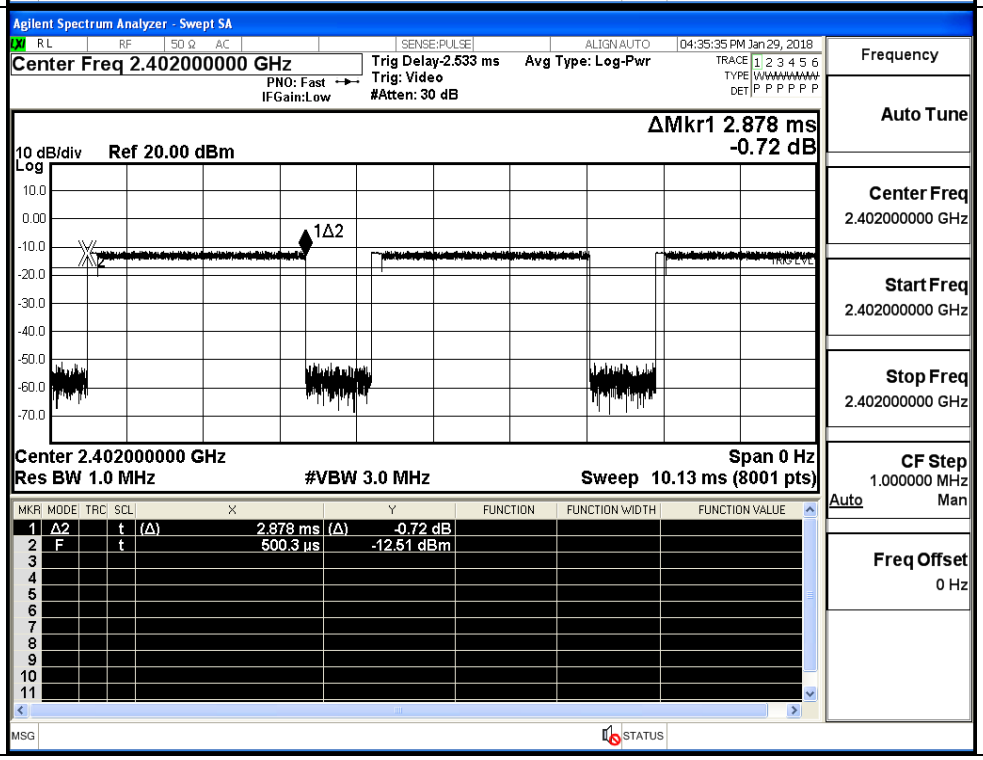
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.87	106.7	0.306	0.4	PASS
GFSK	DH5	MCH	2.87	106.7	0.306	0.4	PASS
GFSK	DH5	HCH	2.87	106.7	0.306	0.4	PASS
π/4DQPSK	2DH5	LCH	2.87	106.7	0.307	0.4	PASS
π/4DQPSK	2DH5	MCH	2.87	106.7	0.307	0.4	PASS
π/4DQPSK	2DH5	HCH	2.87	106.7	0.307	0.4	PASS
8DPSK	3DH5	LCH	2.87	106.7	0.307	0.4	PASS
8DPSK	3DH5	MCH	2.87	106.7	0.307	0.4	PASS
8DPSK	3DH5	HCH	2.87	106.7	0.307	0.4	PASS

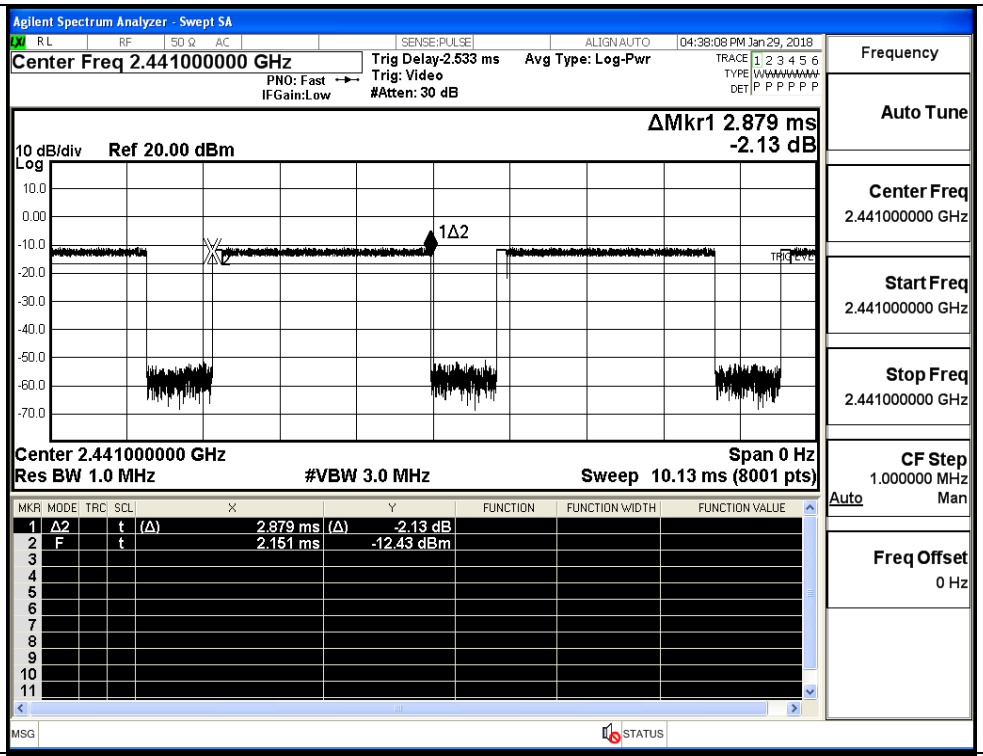
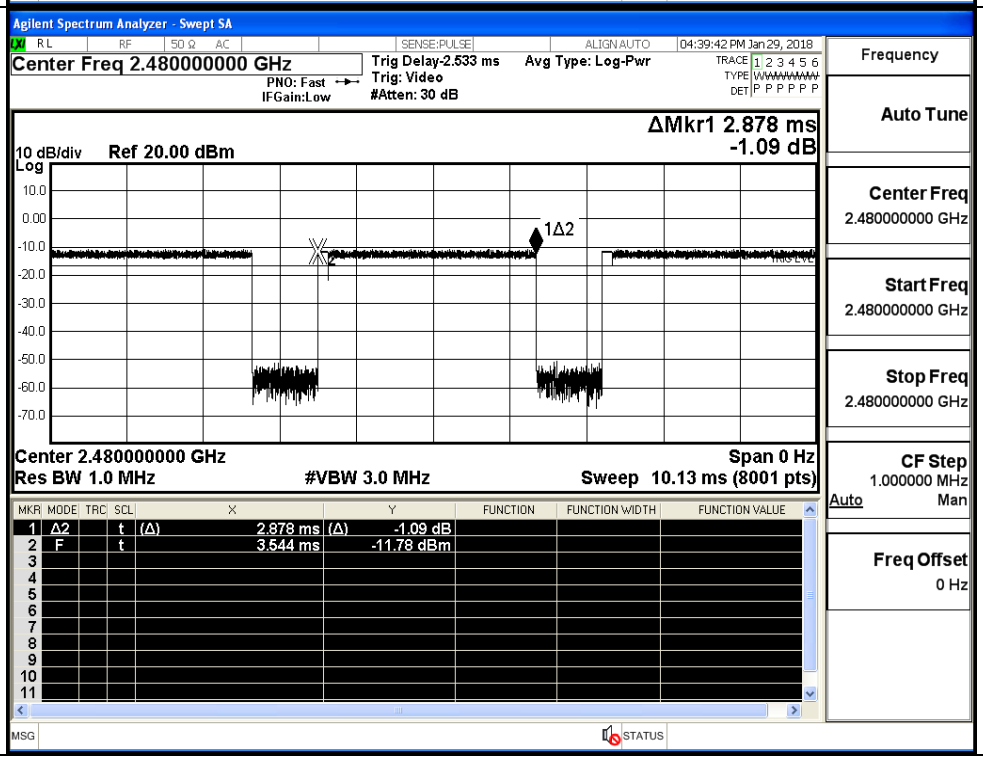
Test Graph

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	

Appendix C): Carrier Frequency Separation

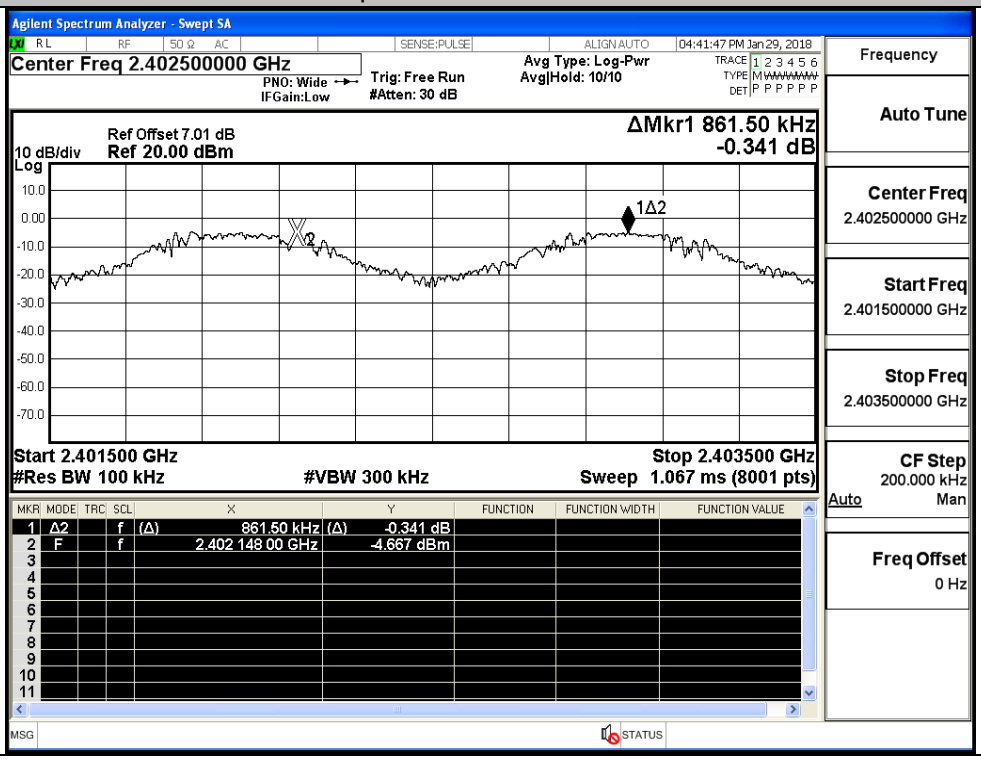
Result Table

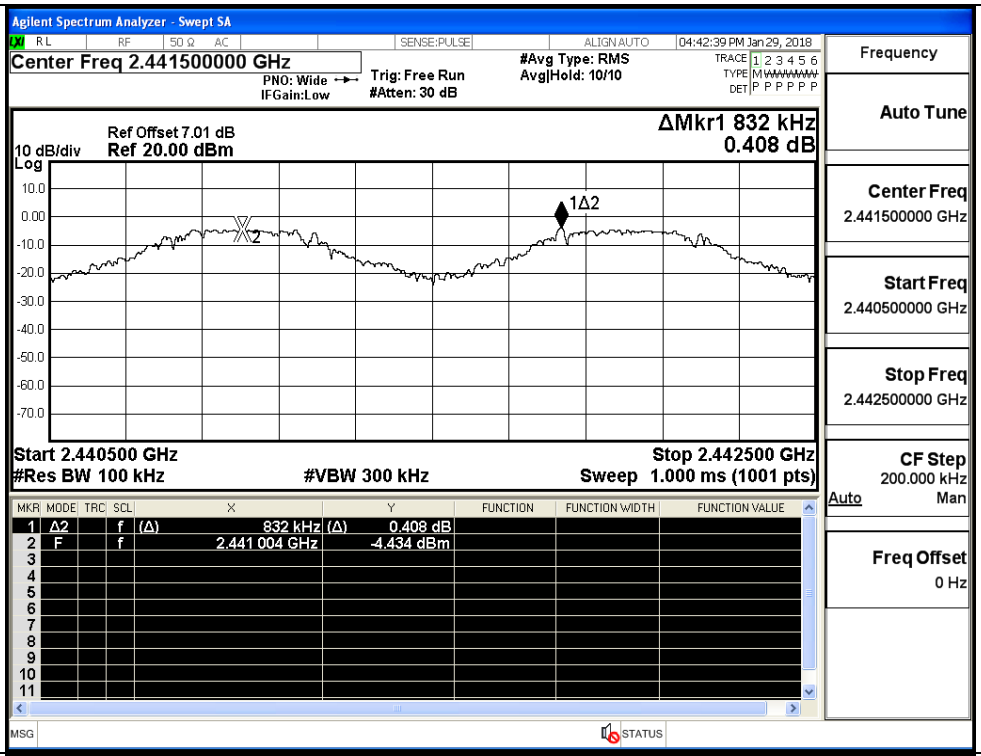
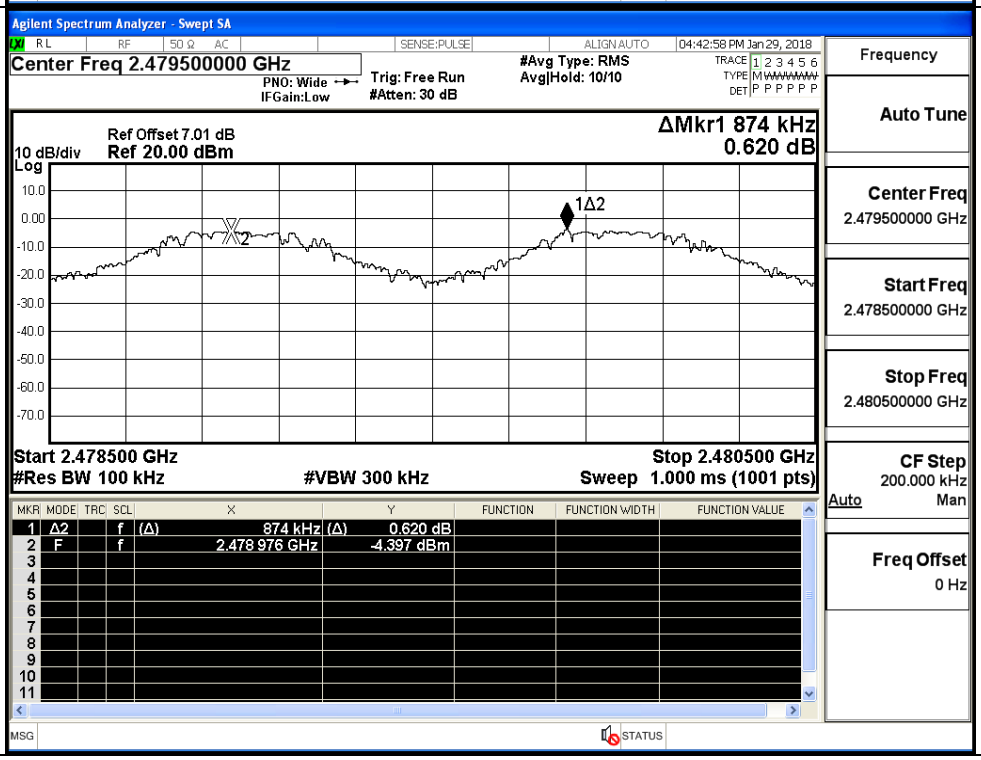
Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz] 2/3*20dB Bandwidth	Verdict
GFSK	LCH	0.861	0.648	PASS
	MCH	0.832	0.678	PASS
	HCH	0.874	0.687	PASS
π/4DQPSK	LCH	1.010	0.858	PASS
	MCH	0.872	0.858	PASS
	HCH	1.242	0.859	PASS
8DPSK	LCH	1.106	0.860	PASS
	MCH	1.146	0.860	PASS
	HCH	1.312	0.859	PASS

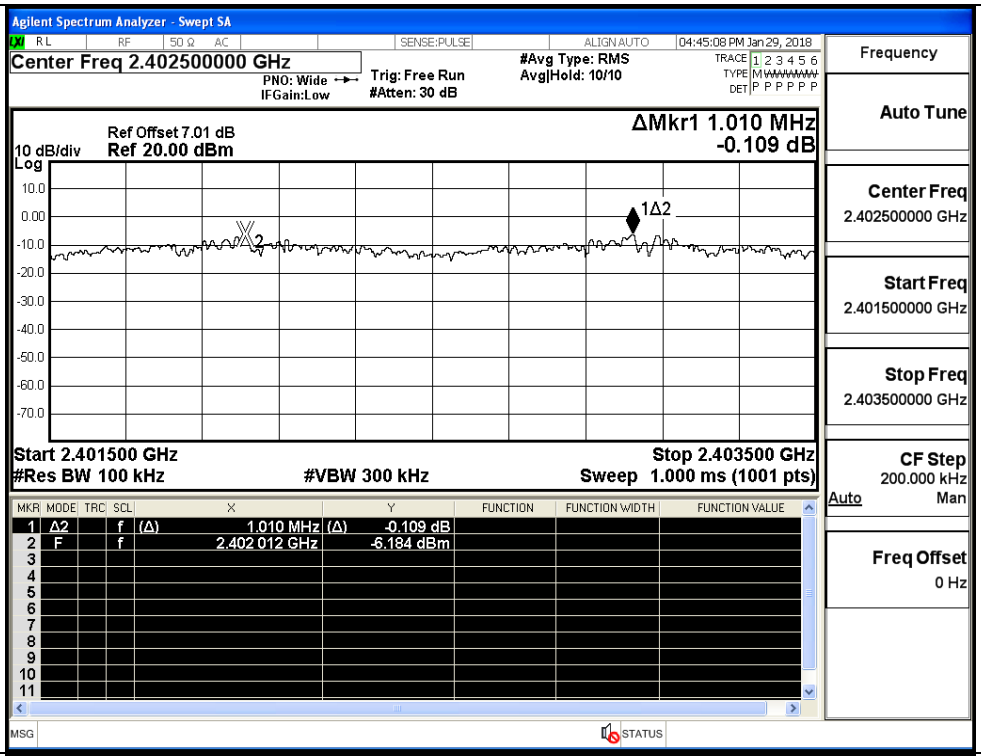
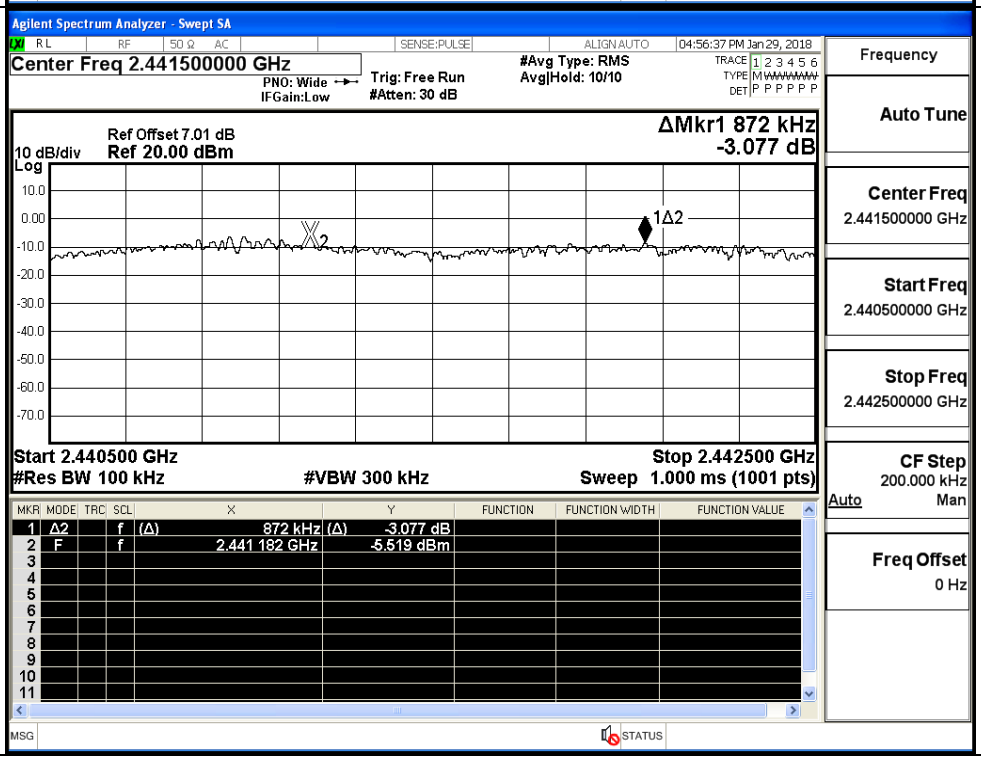
Test Graph

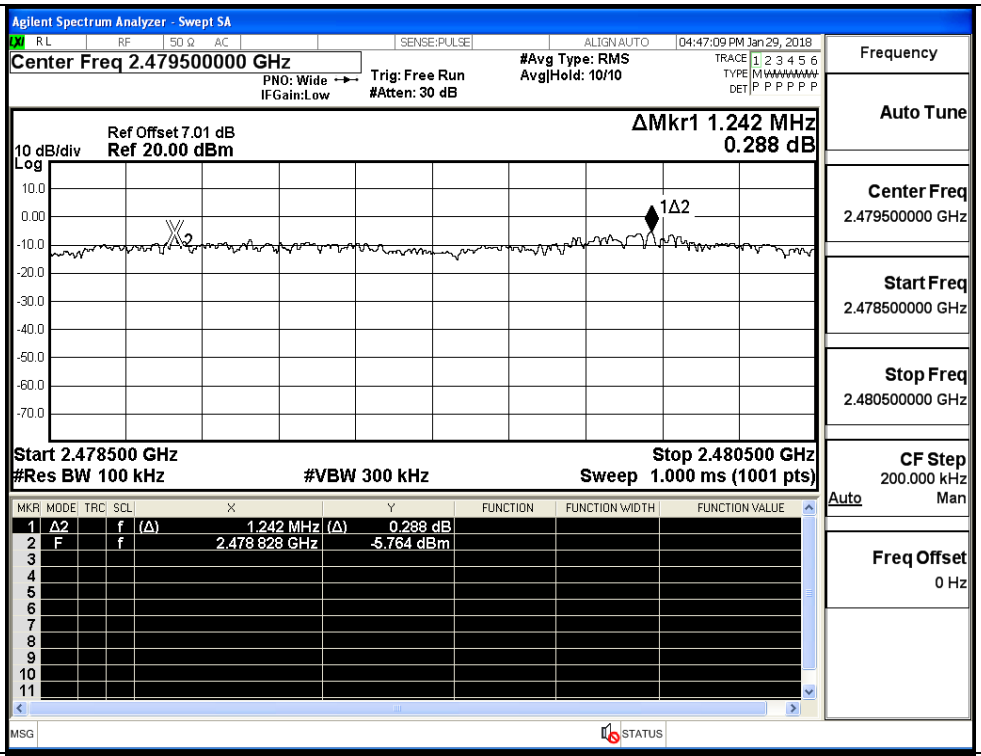
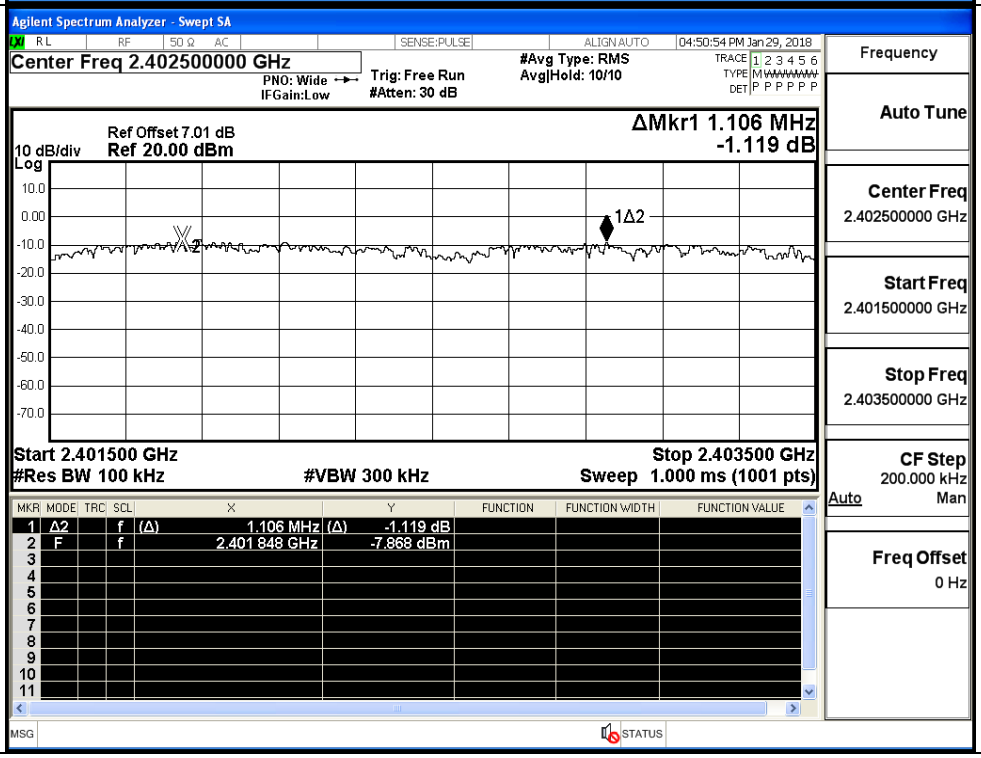
Graphs

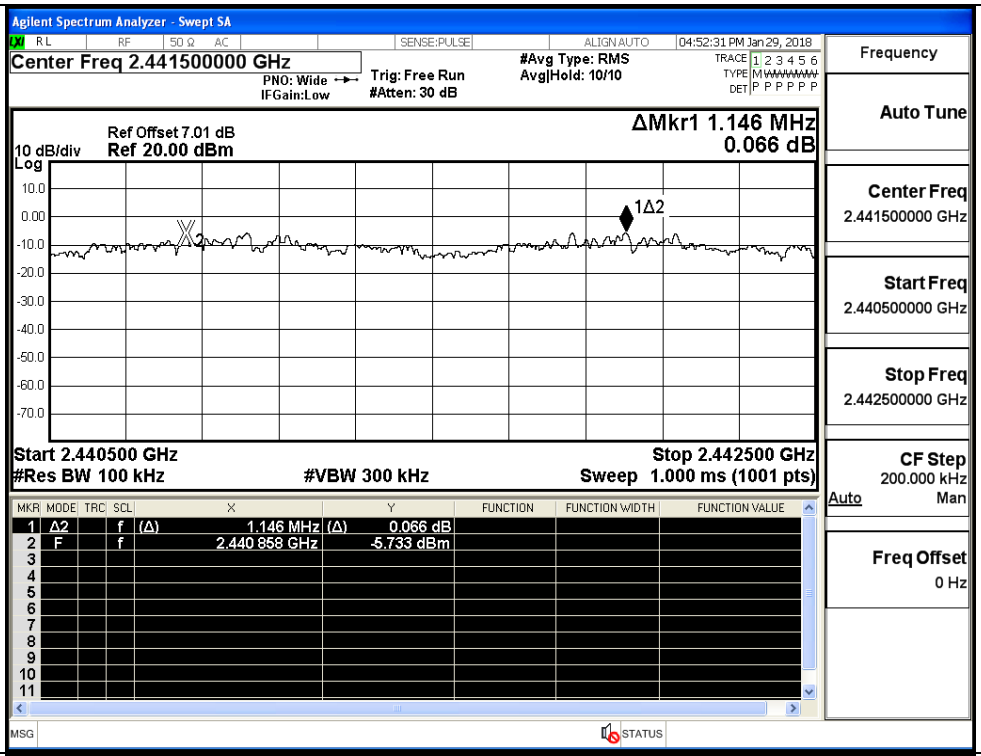
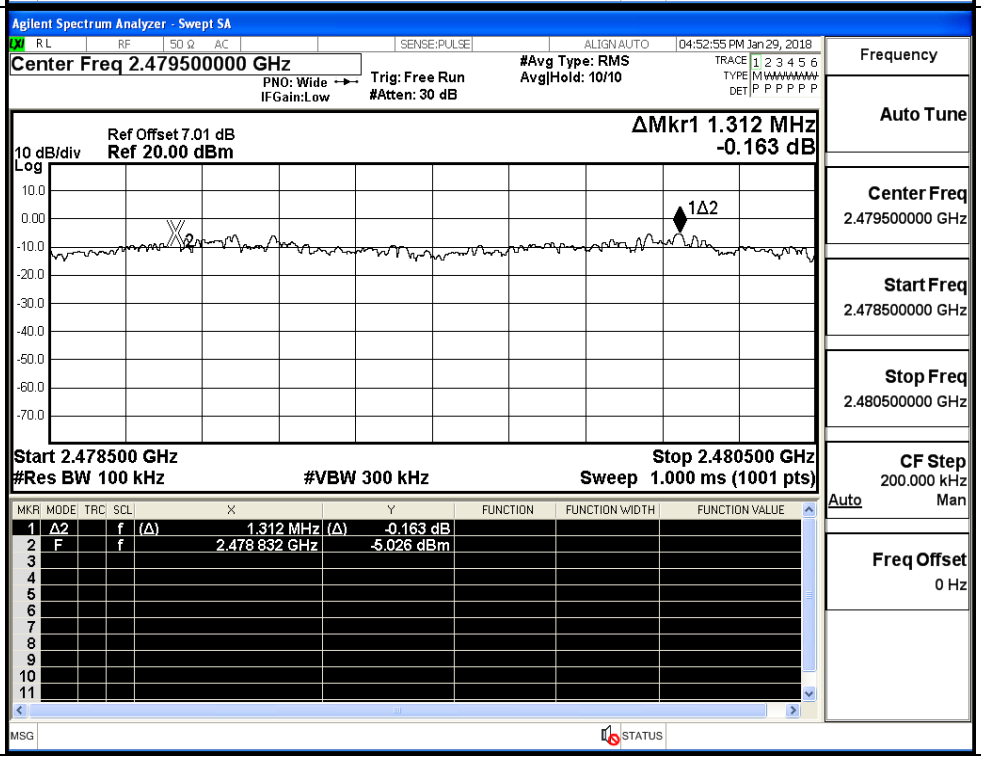
GFSK/LCH



GFSK/MCH	
GFSK/HCH	

π/4DQPSK/LCH	
π/4DQPSK/MCH	

π/4DQPSK/HCH	
8DPSK/LCH	

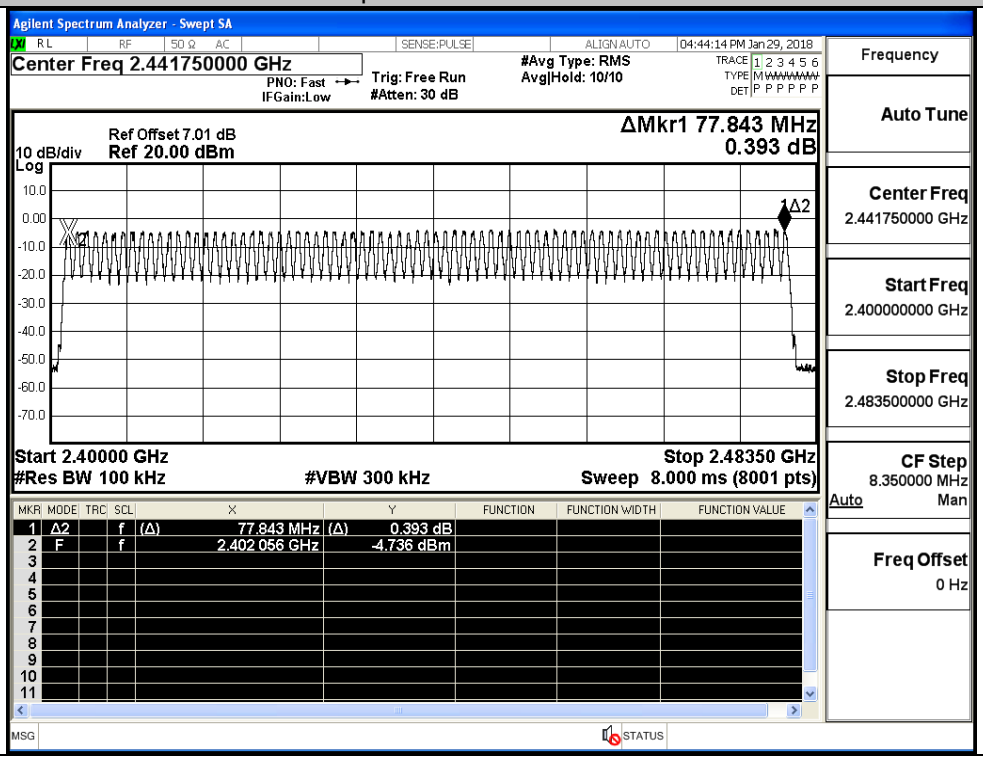
8DPSK/MCH	
8DPSK/HCH	

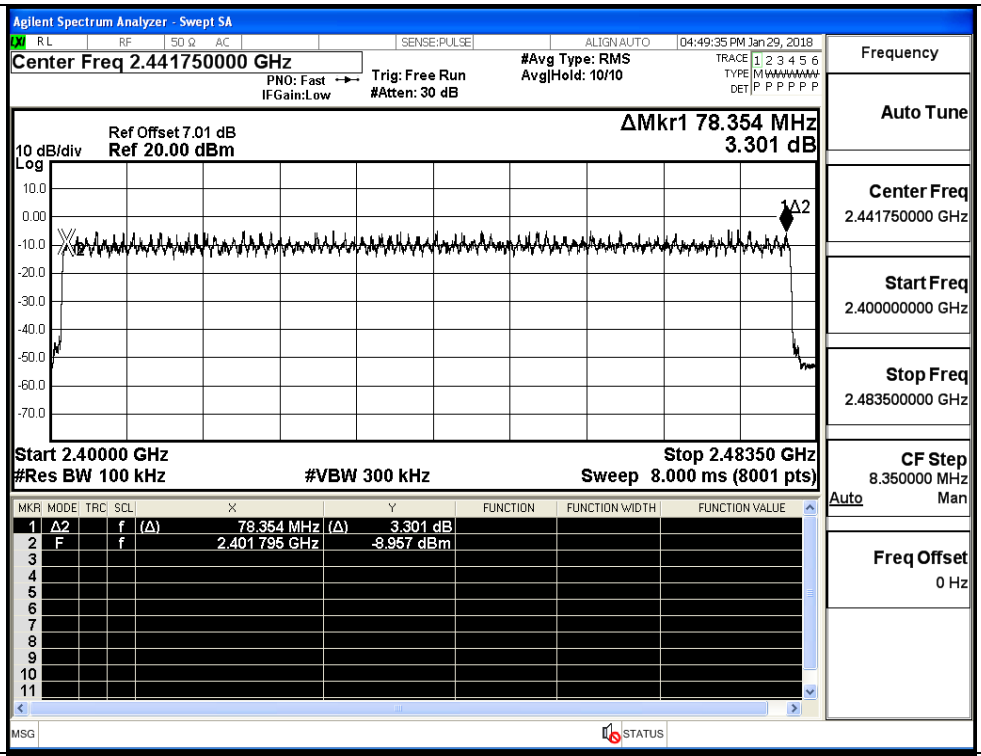
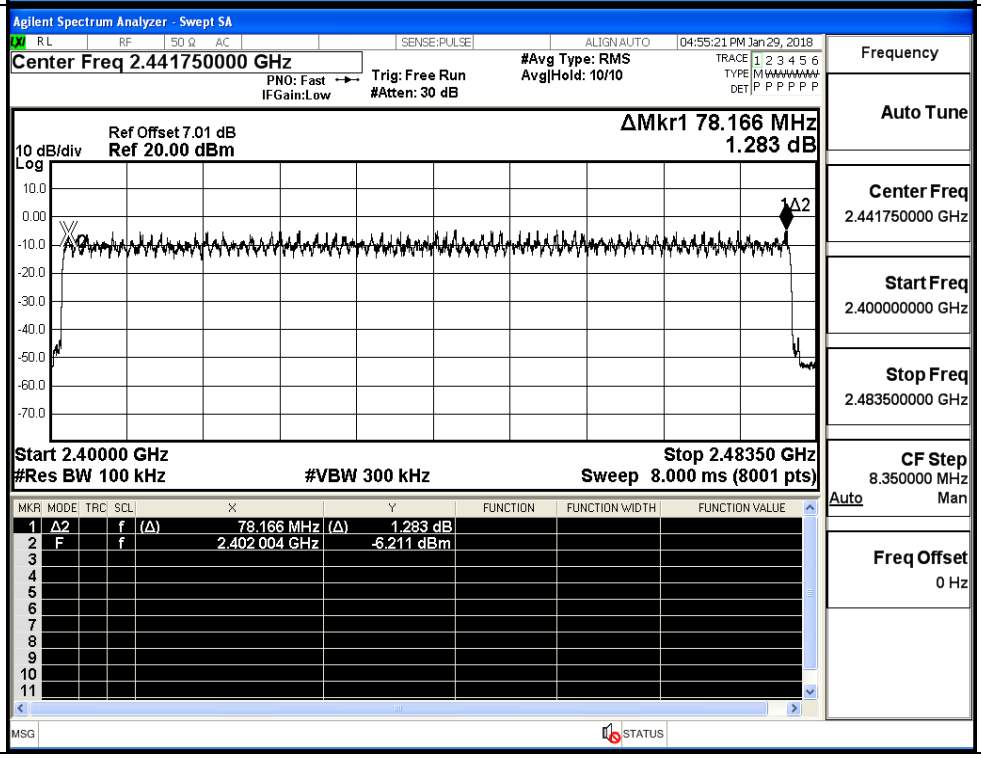
Appendix C): Hopping Channel Number

Result Table

Mode	Channel.	Number of Hopping Channel	Verdict
GFSK	Hop	79	PASS
π/4DQPSK	Hop	79	PASS
8DPSK	Hop	79	PASS

Test Graph

Graphs	
GFSK/Hop	

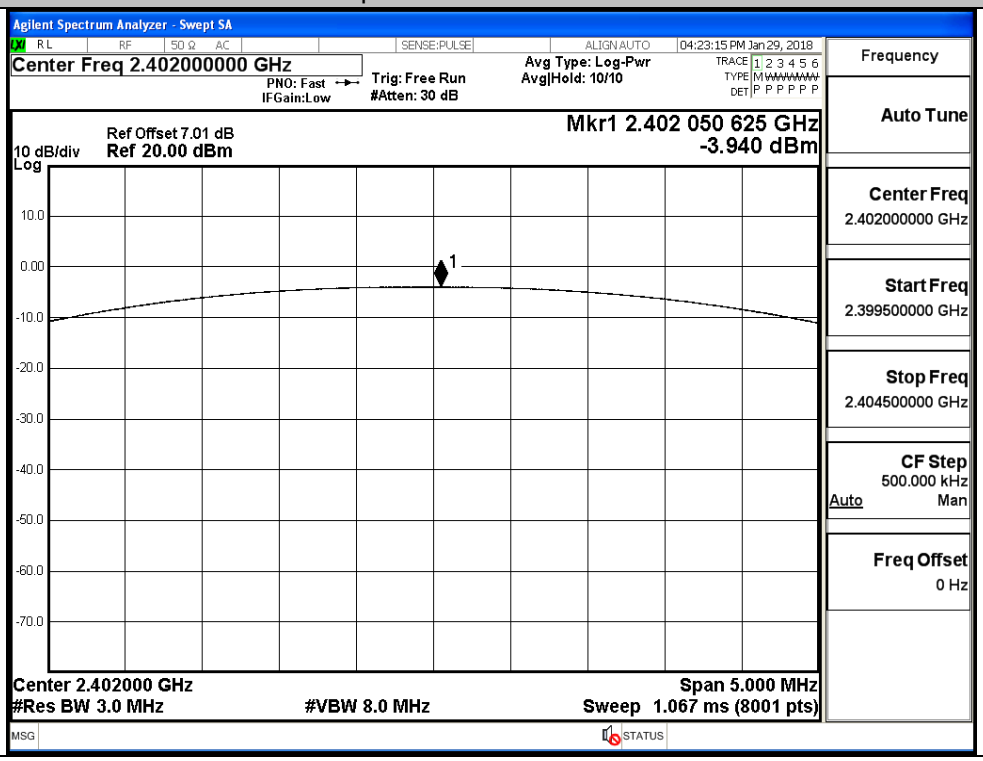
π/4DQPSK/Hop		
8DPSK/Hop		

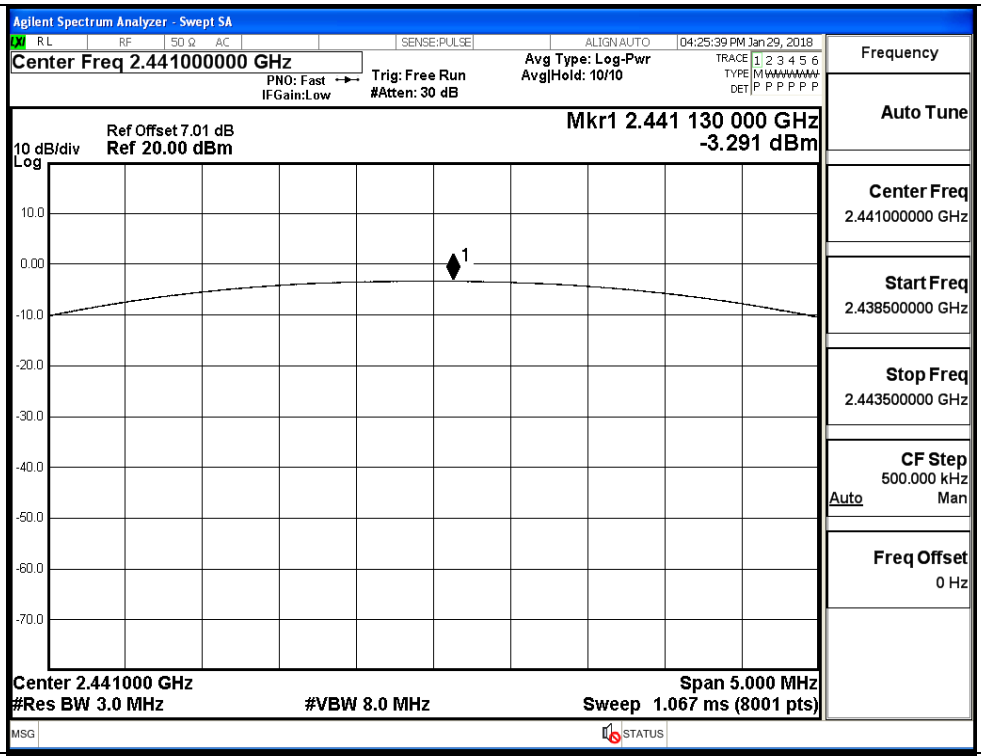
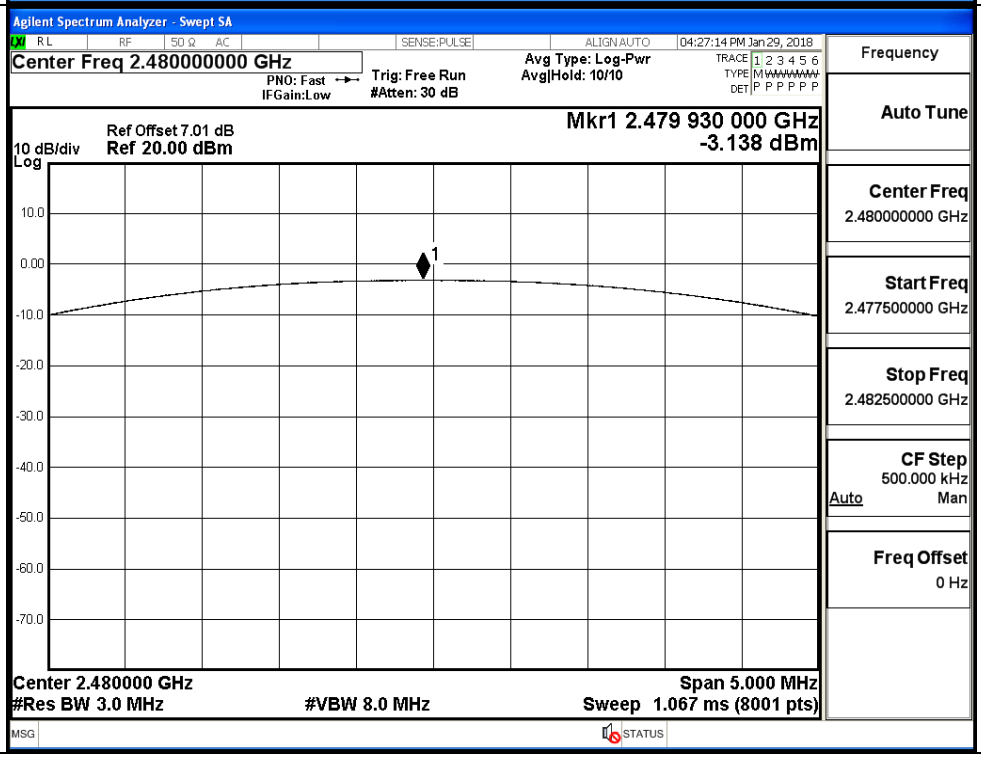
Appendix D): Conducted Peak Output Power

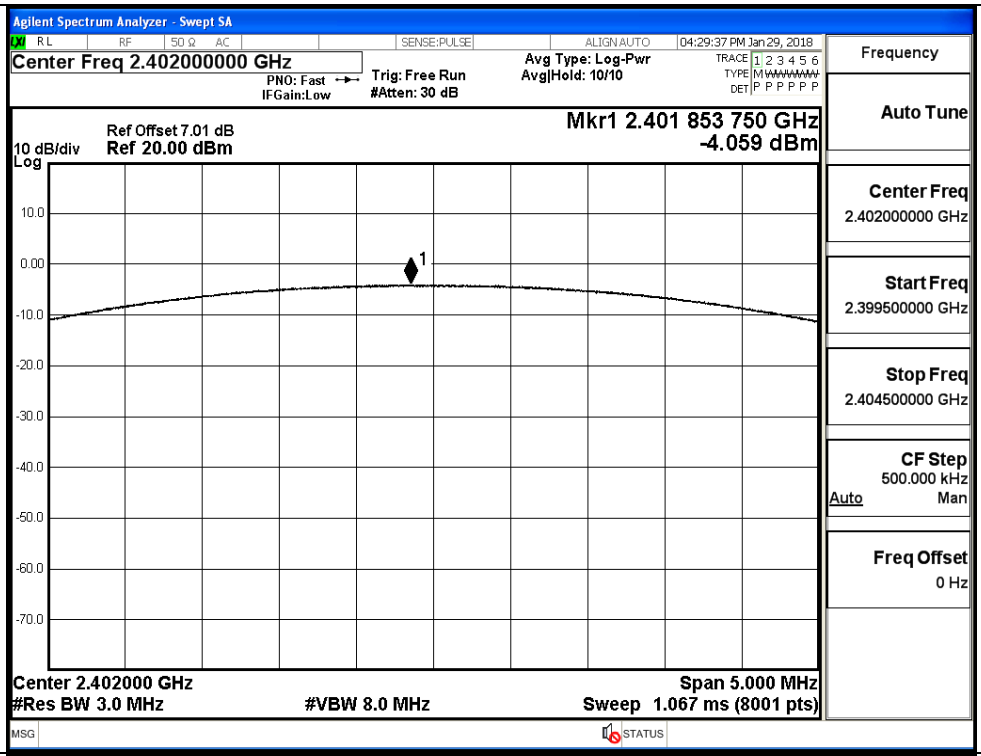
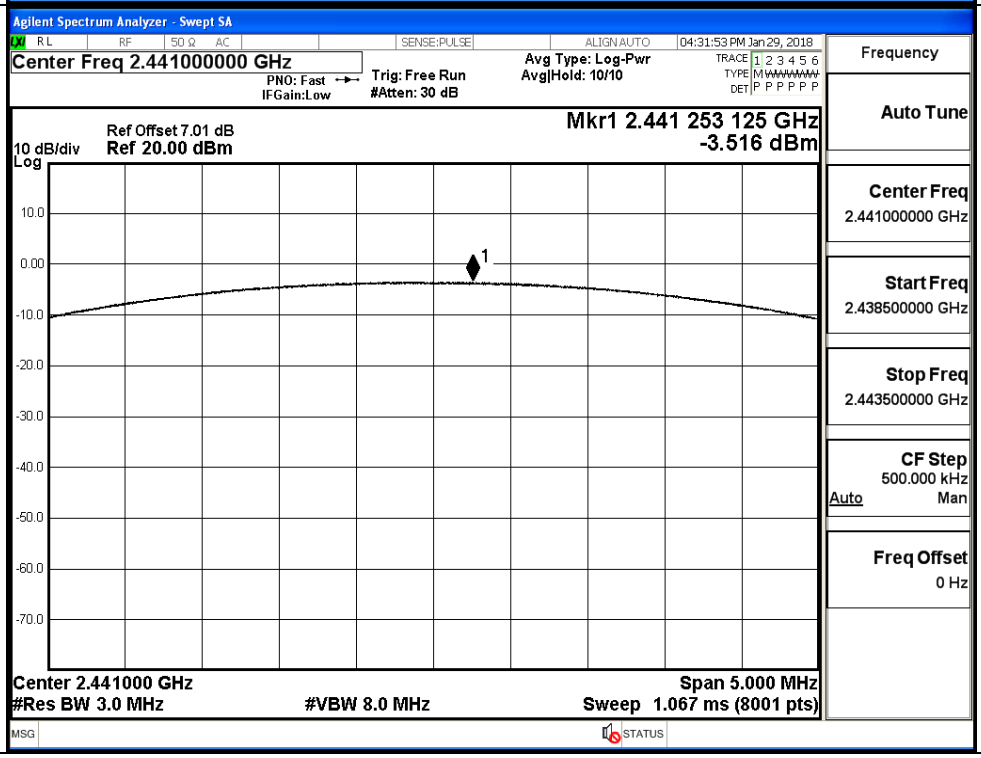
Result Table

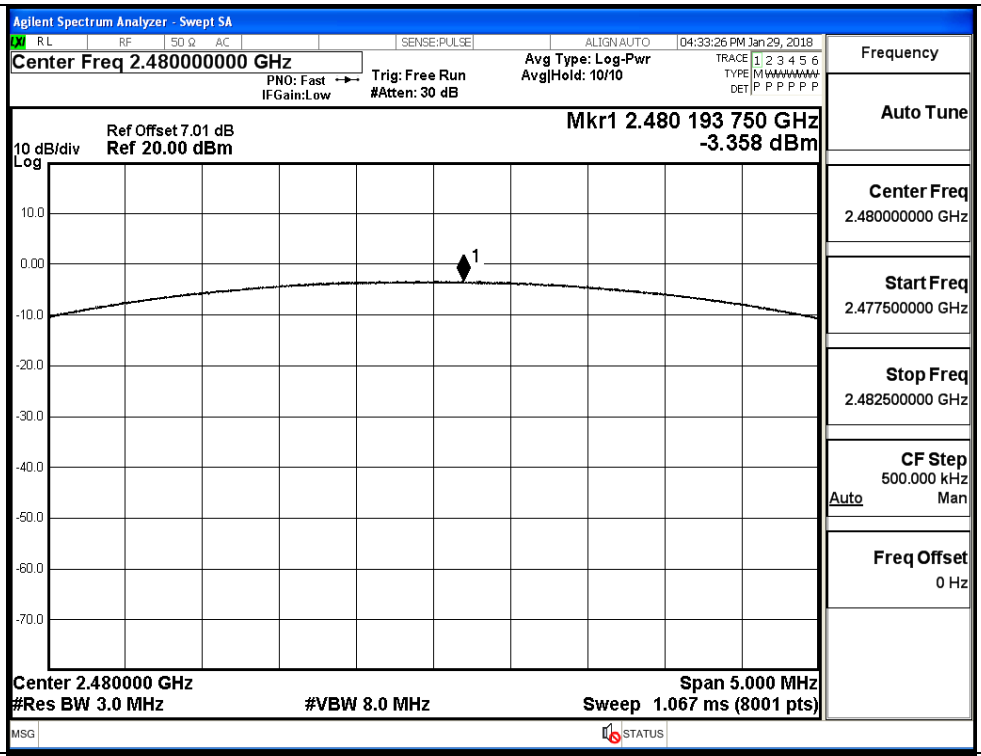
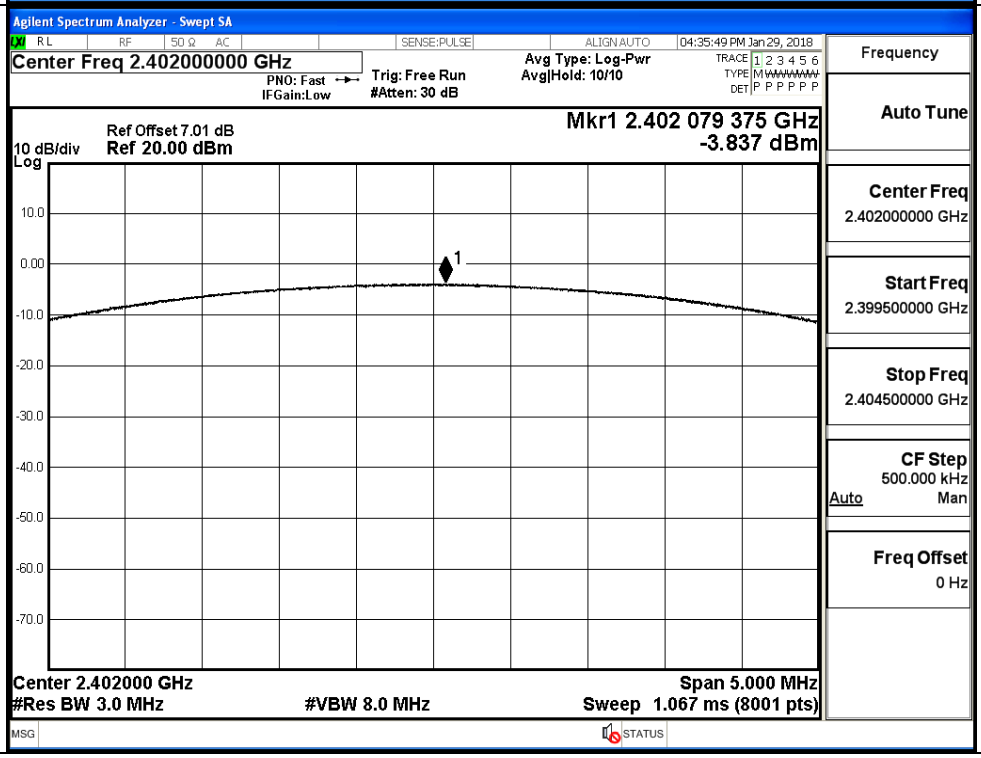
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-3.940	21	PASS
	MCH	-3.291	21	PASS
	HCH	-3.138	21	PASS
π/4DQPSK	LCH	-4.059	21	PASS
	MCH	-3.516	21	PASS
	HCH	-3.358	21	PASS
8DPSK	LCH	-3.837	21	PASS
	MCH	-3.291	21	PASS
	HCH	-3.327	21	PASS

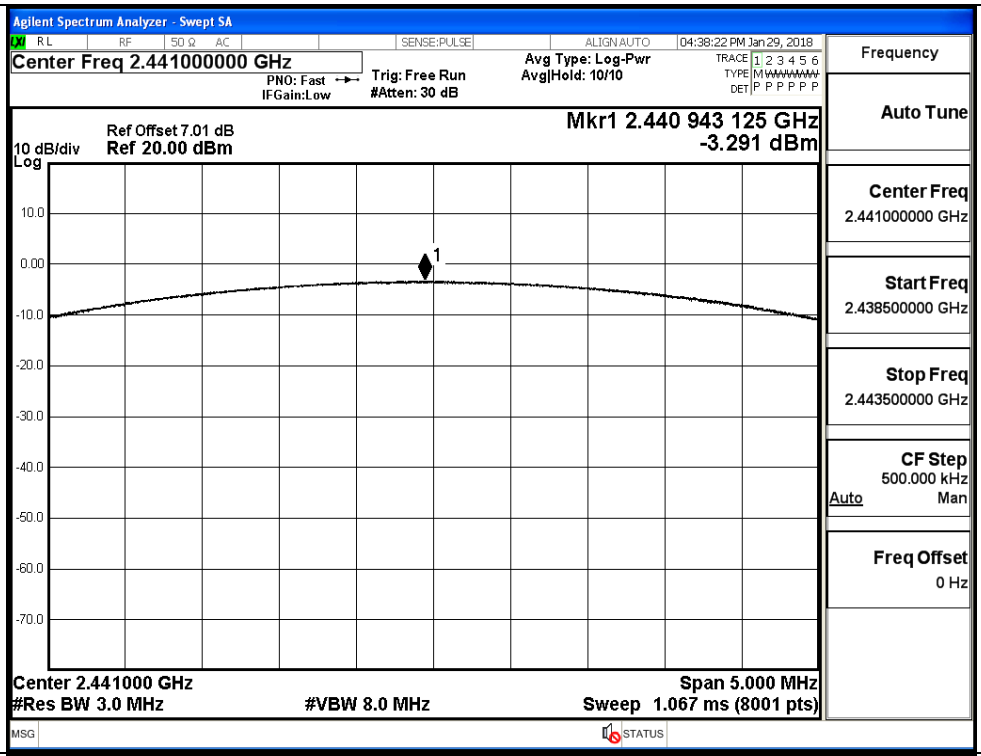
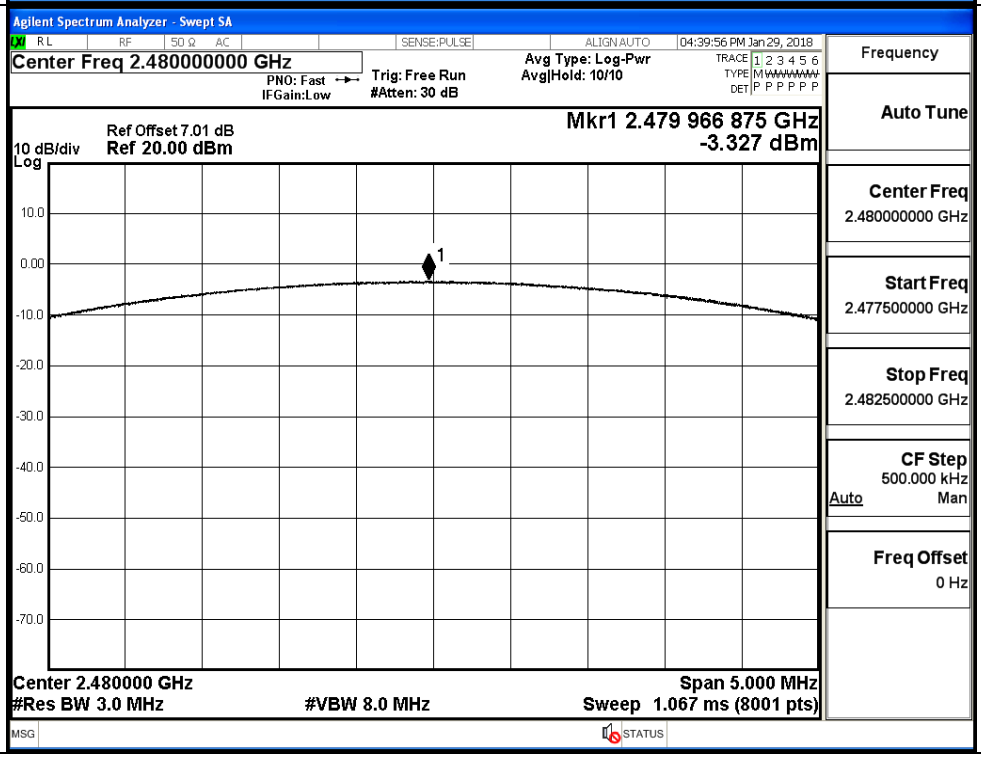
Test Graph

Graphs	
GFSK/LCH	

GFSK/MCH		
GFSK/HCH		

π/4DQPSK/LCH		
π/4DQPSK/MCH		

π/4DQPSK/HCH		
8DPSK/LCH		

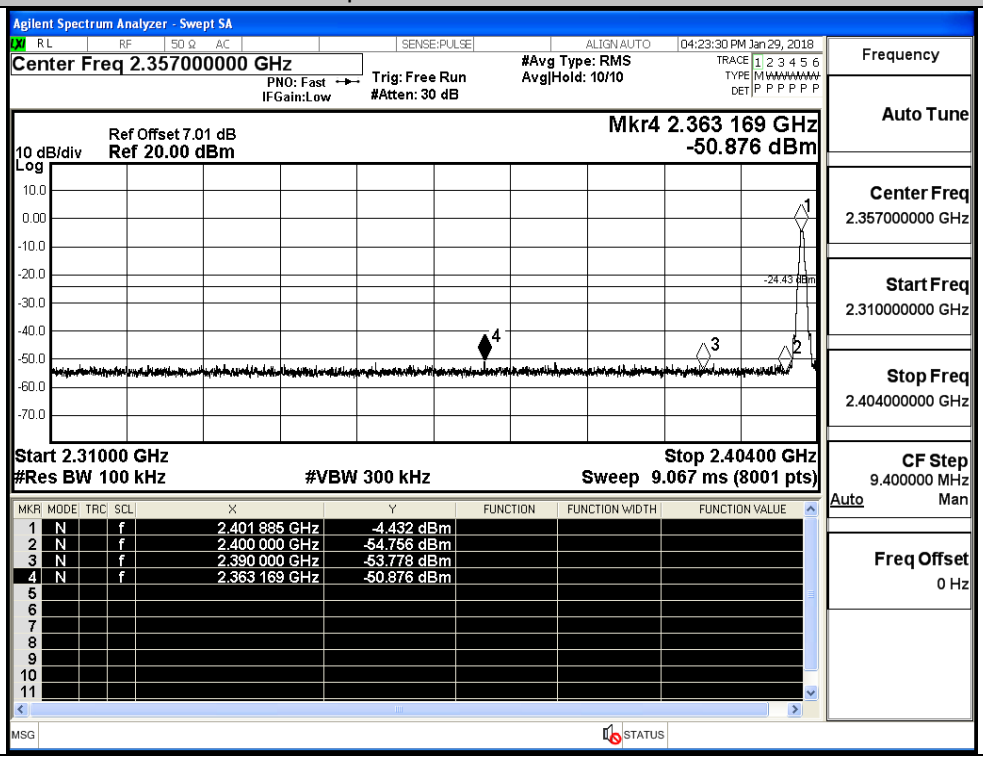
8DPSK/MCH		
8DPSK/HCH		

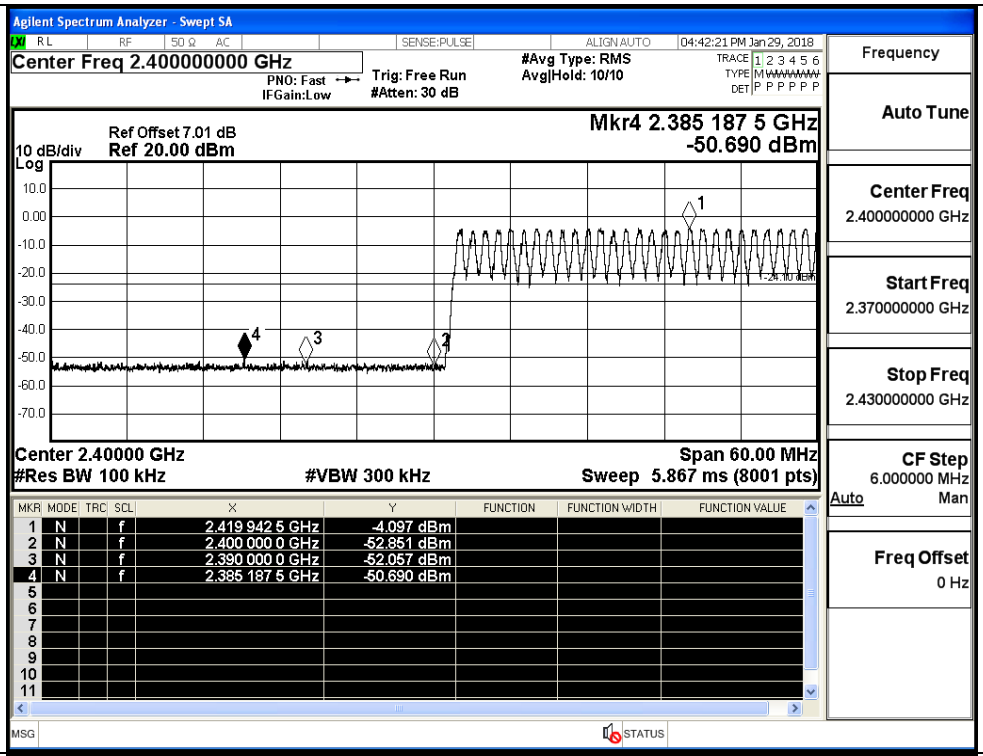
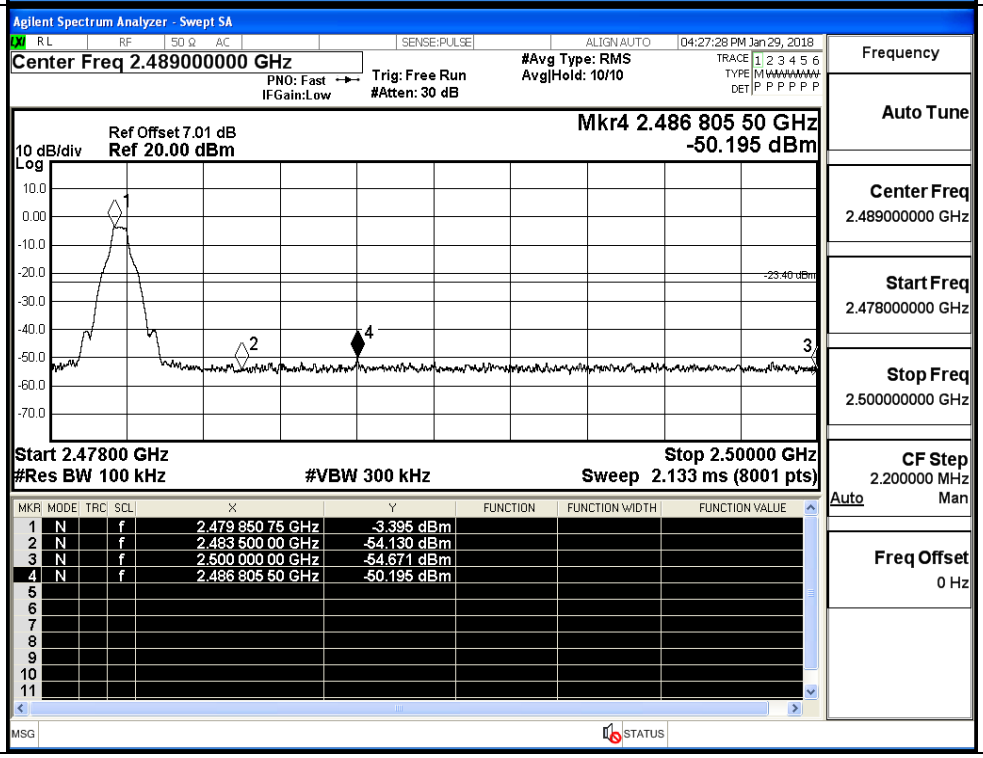
Appendix E): Band-edge for RF Conducted Emissions

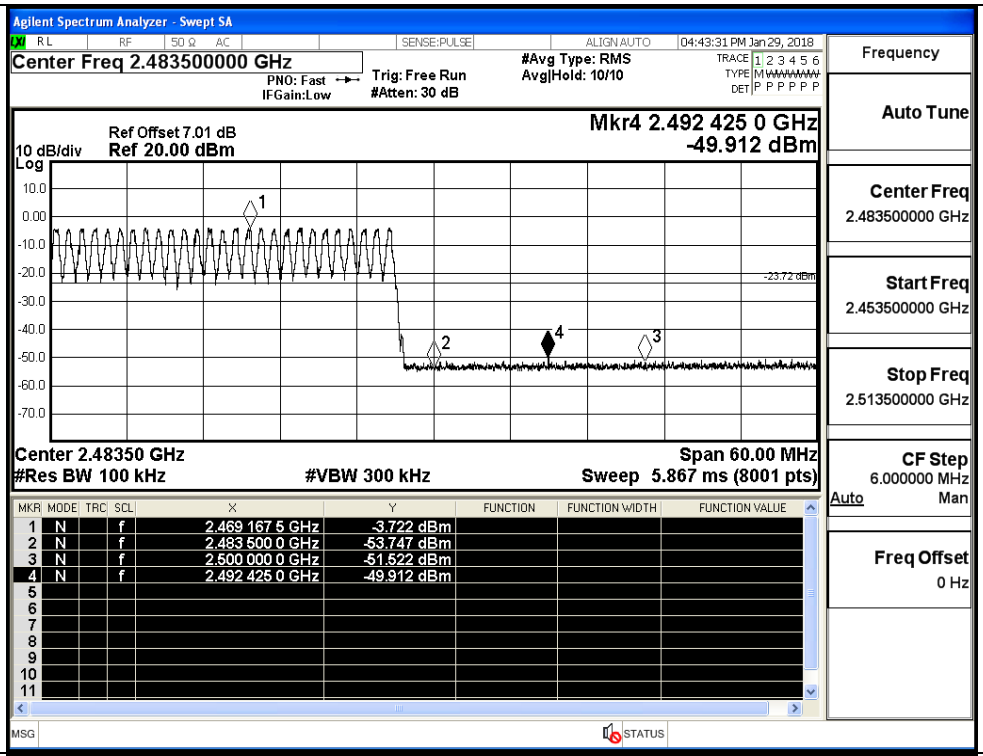
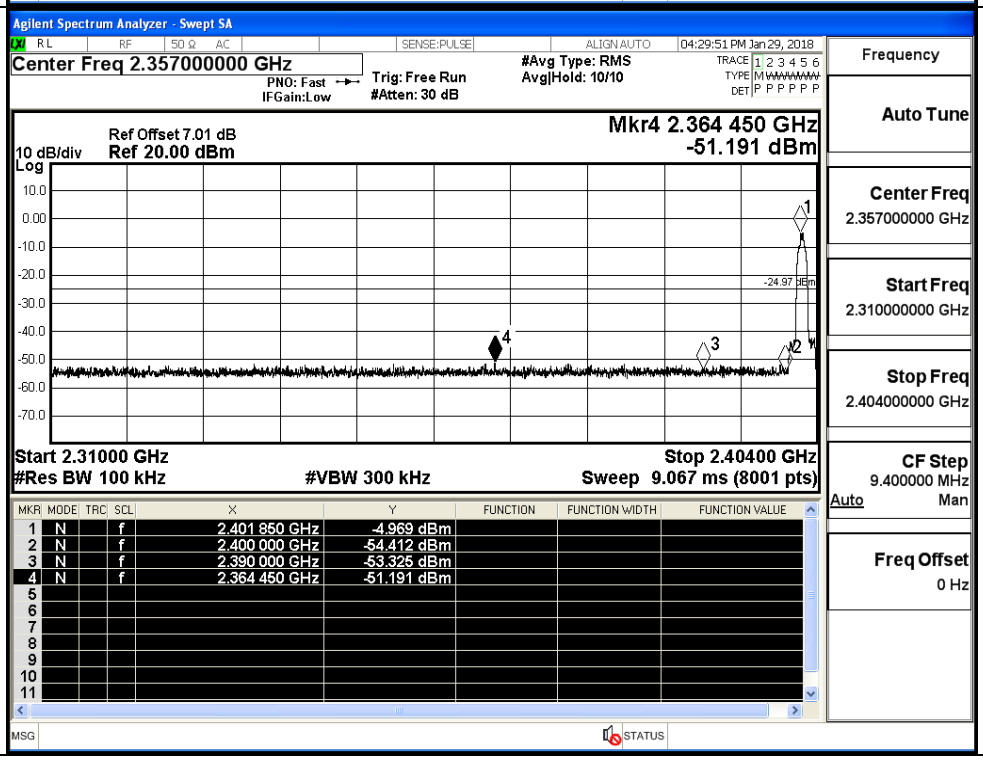
Result Table

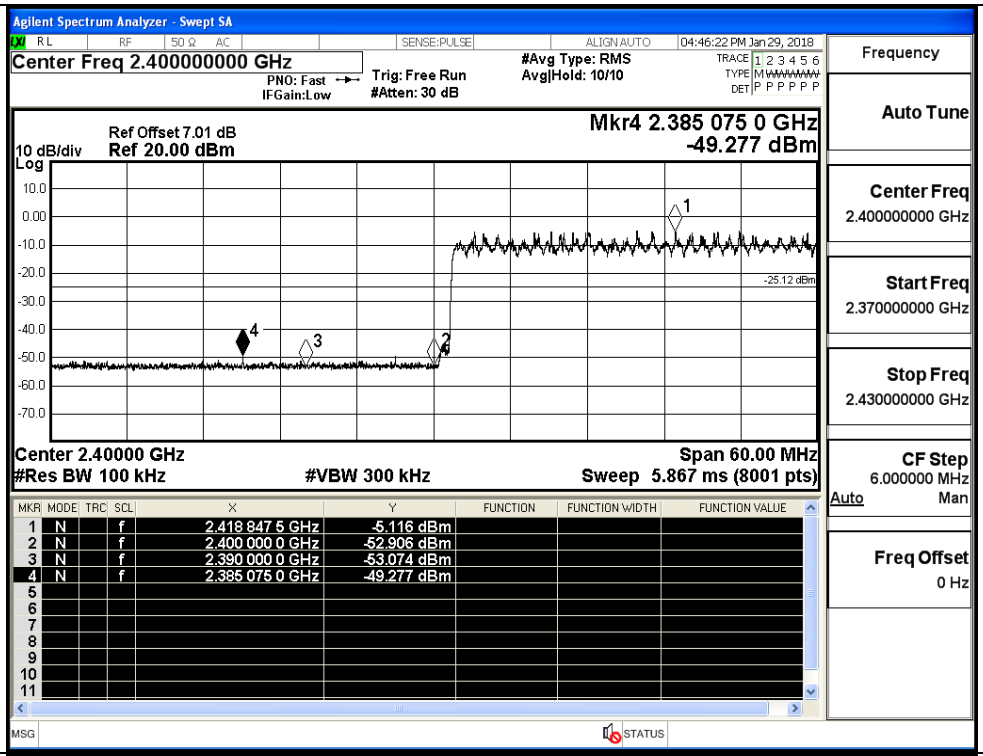
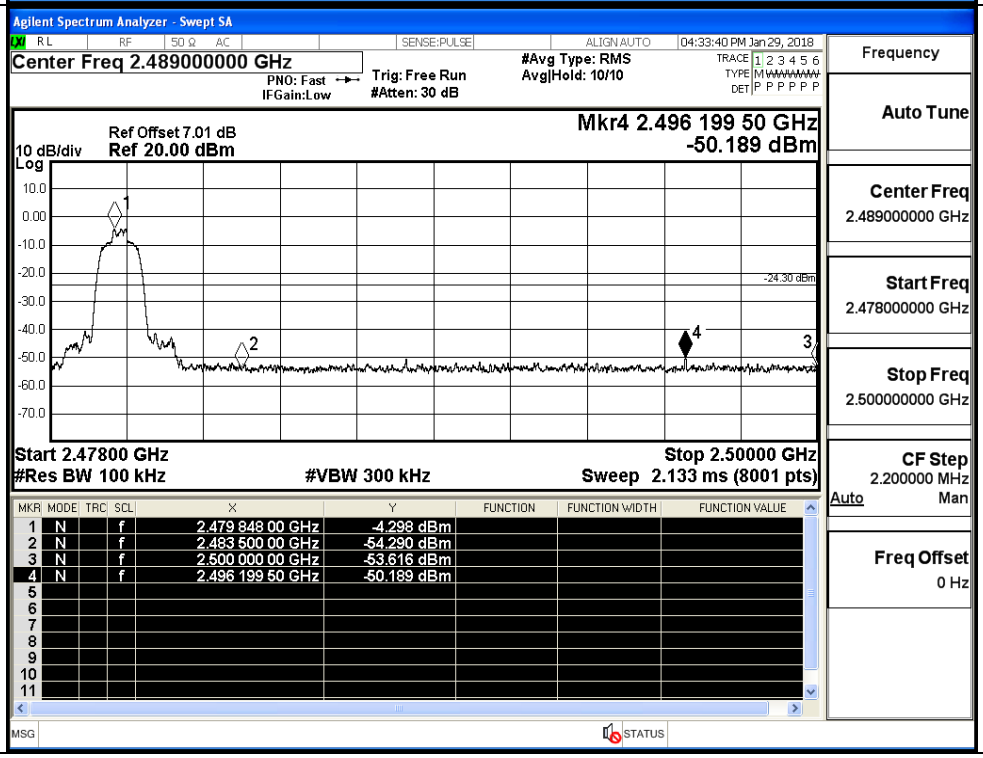
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	-4.432	Off	-50.876	-24.43	PASS
			-4.097	On	-50.690	-24.1	PASS
GFSK	HCH	2480	-3.395	Off	-50.195	-23.4	PASS
			-3.722	On	-49.912	-23.72	PASS
π/4DQPSK	LCH	2402	-4.969	Off	-51.191	-24.97	PASS
			-5.116	On	-49.277	-25.12	PASS
π/4DQPSK	HCH	2480	-4.298	Off	-50.189	-24.3	PASS
			-4.778	On	-50.547	-24.78	PASS
8DPSK	LCH	2402	-5.016	Off	-50.519	-25.02	PASS
			-5.232	On	-50.929	-25.23	PASS
8DPSK	HCH	2480	-4.526	Off	-51.492	-24.53	PASS
			-4.880	On	-50.396	-24.88	PASS

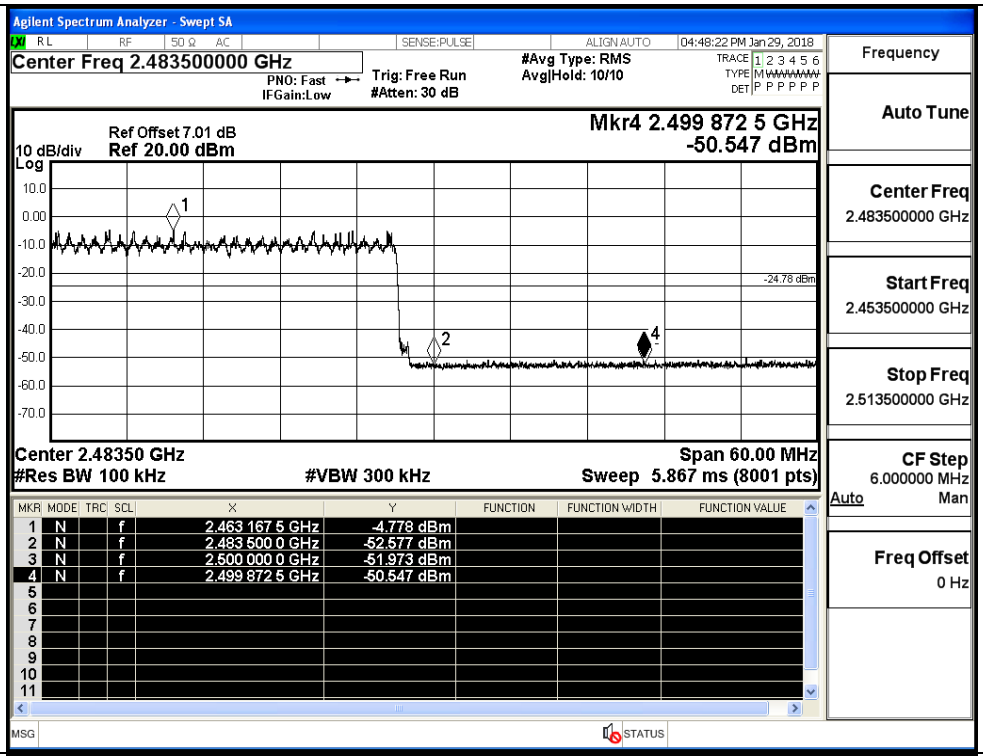
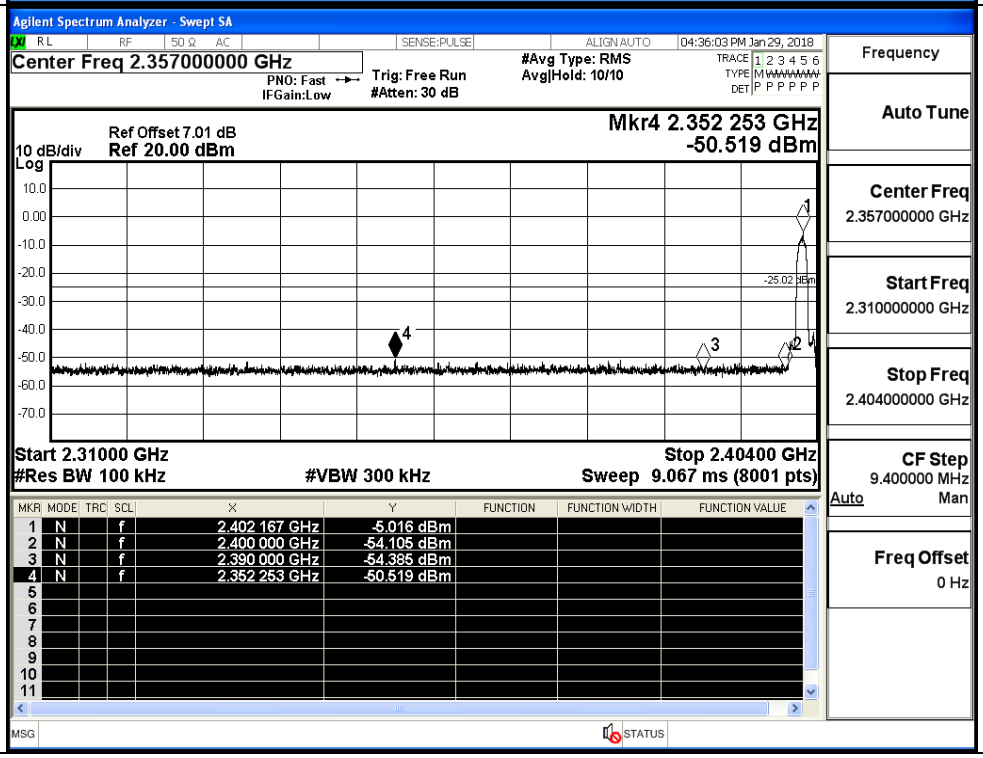
Test Graph

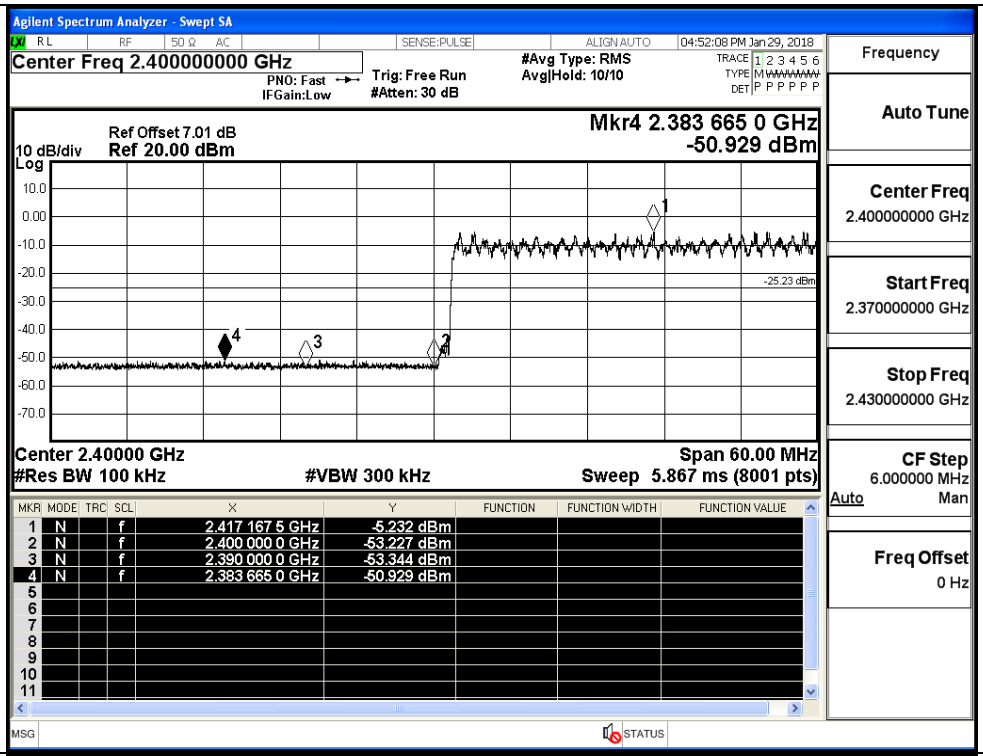
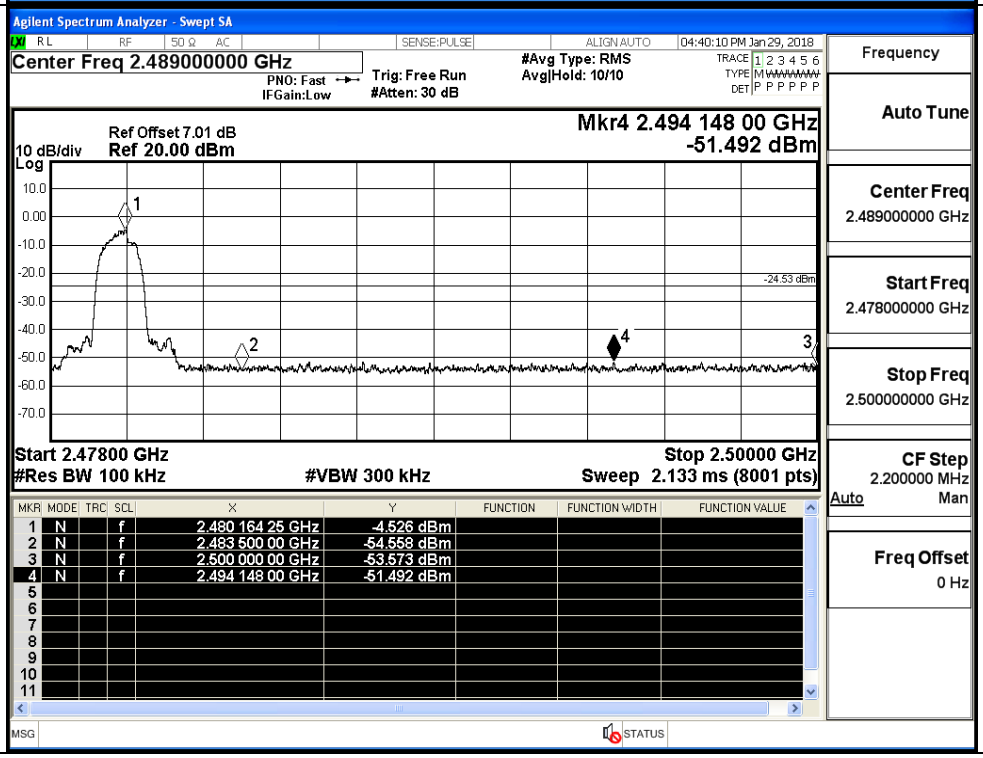
Graphs	
GFSK/LCH/No Hop	

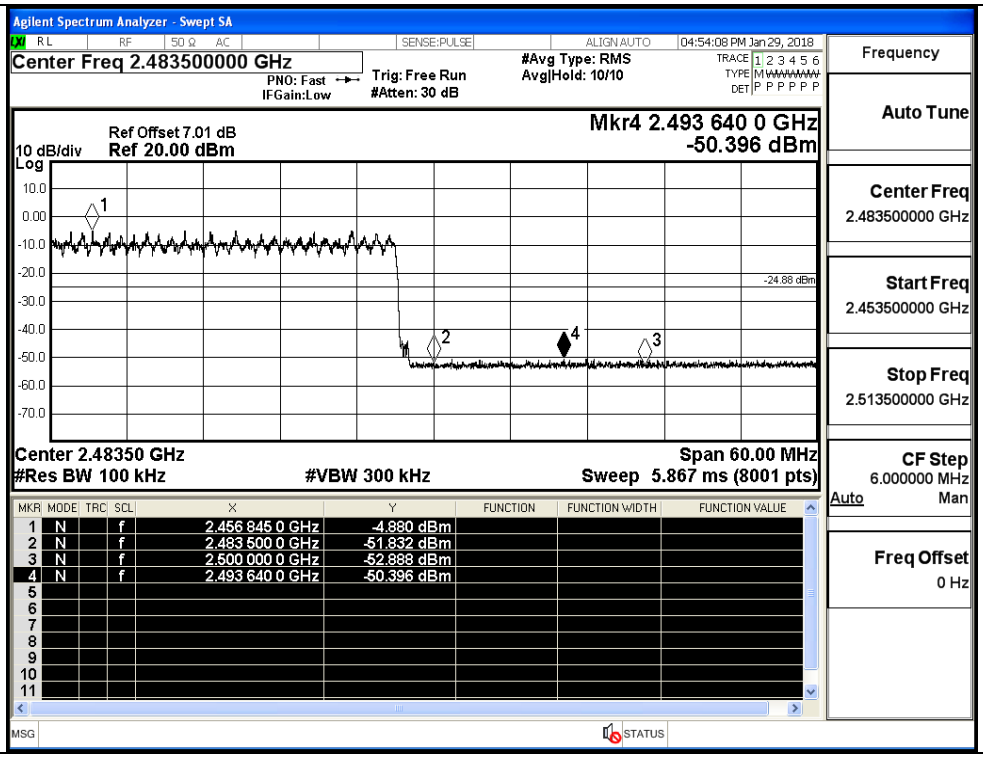
GFSK/LCH/Hop	
GFSK/HCH/No Hop	

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	

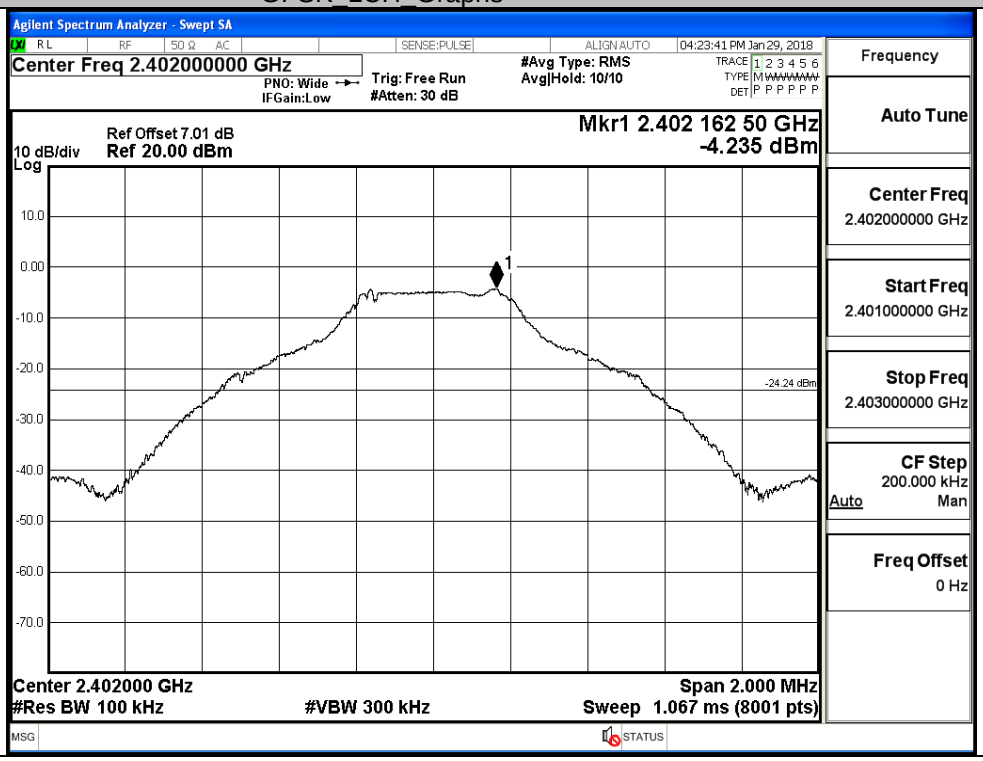
8DPSK/HCH/Hop	

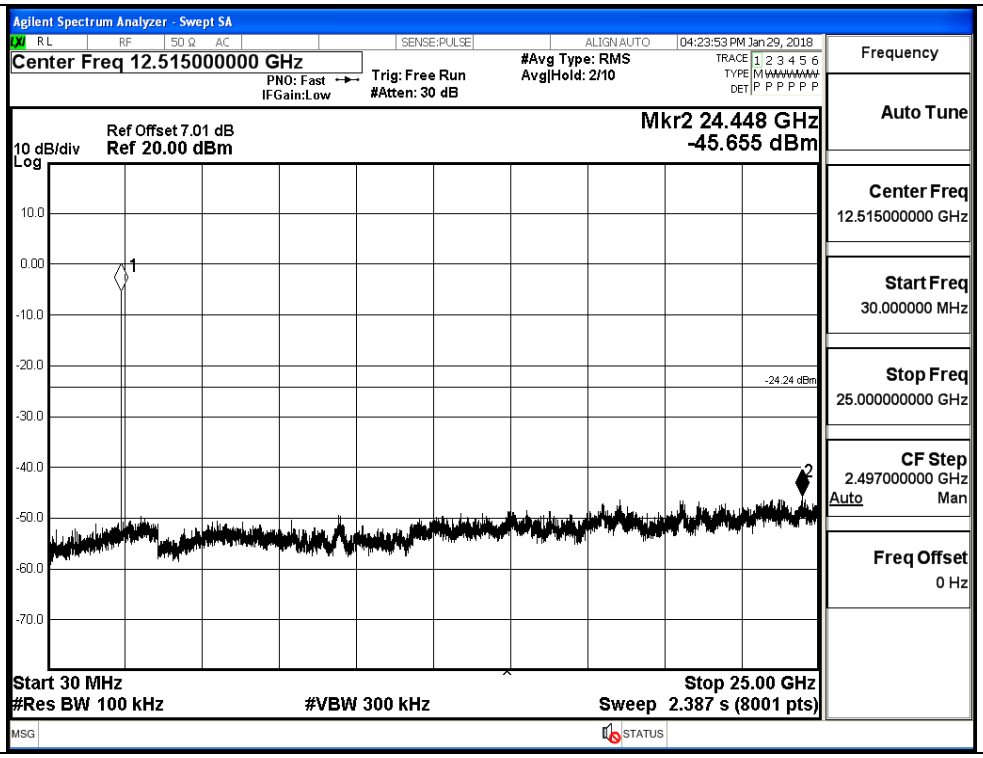
Appendix F): RF Conducted Spurious Emissions

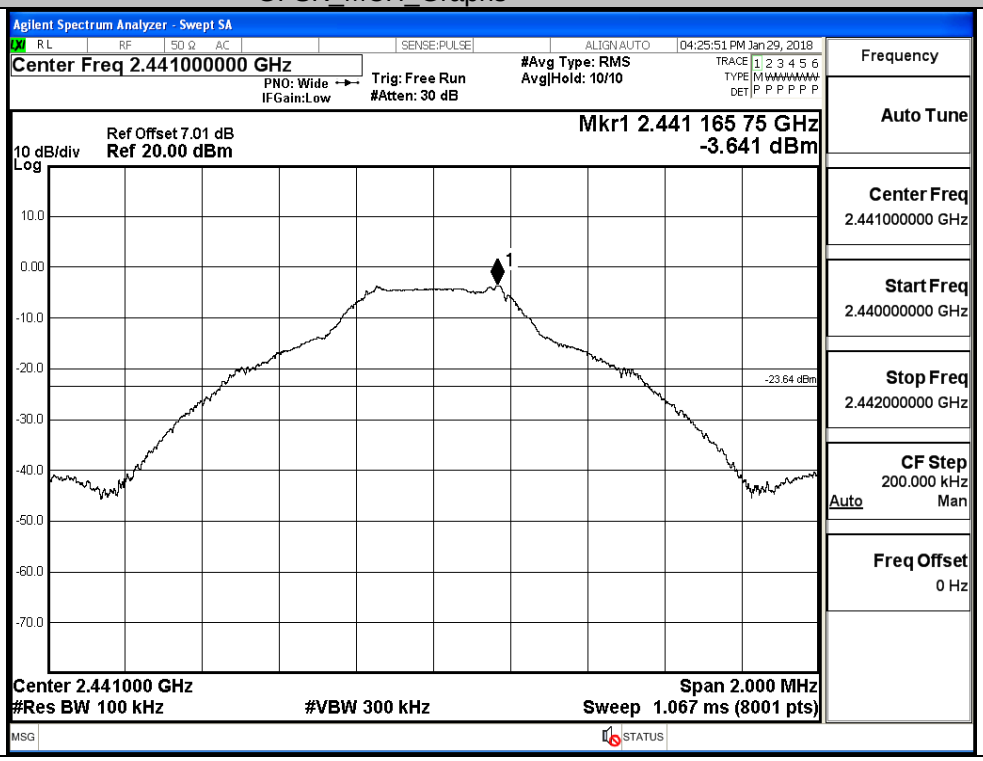
Result Table

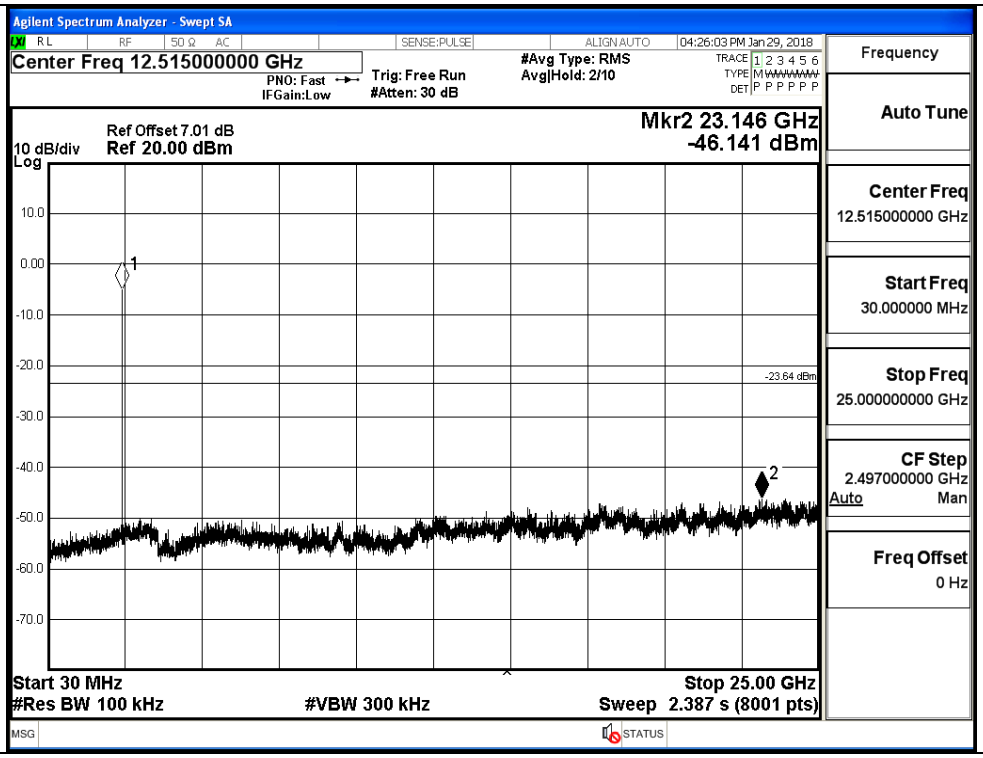
Mode	Channel	Pref [dBm]	Puw[dBm]	Verdict
GFSK	LCH	-4.235	<Limit	PASS
GFSK	MCH	-3.641	<Limit	PASS
GFSK	HCH	-3.471	<Limit	PASS
π/4DQPSK	LCH	-4.961	<Limit	PASS
π/4DQPSK	MCH	-4.649	<Limit	PASS
π/4DQPSK	HCH	-4.376	<Limit	PASS
8DPSK	LCH	-5.276	<Limit	PASS
8DPSK	MCH	-4.562	<Limit	PASS
8DPSK	HCH	-4.564	<Limit	PASS

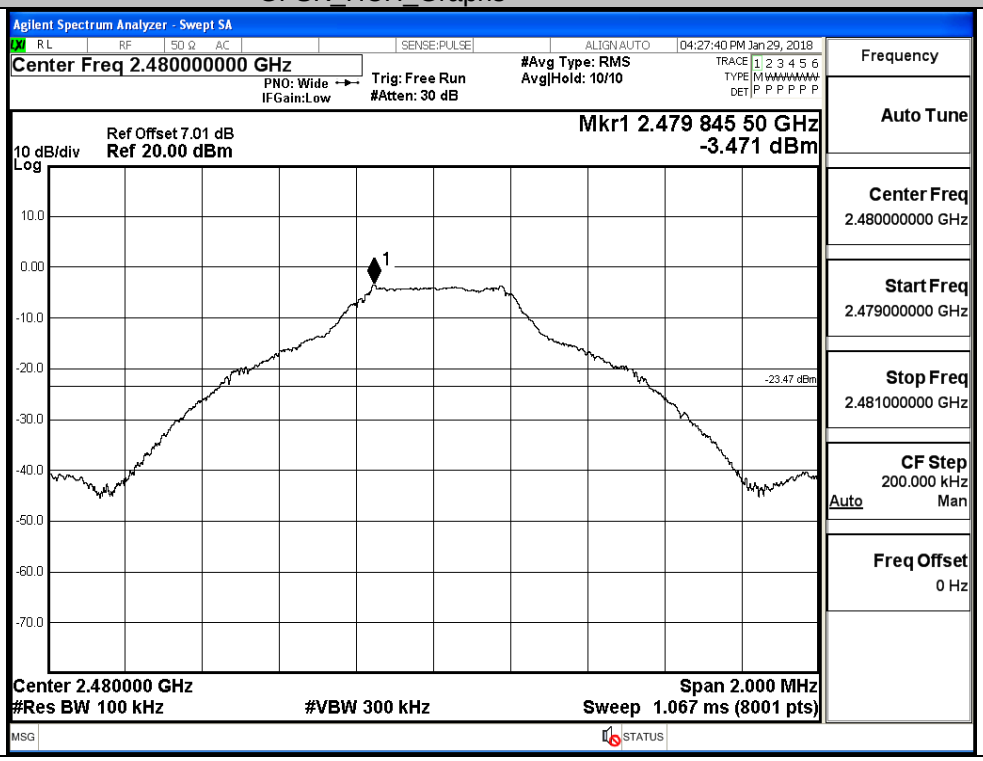
Test Graph

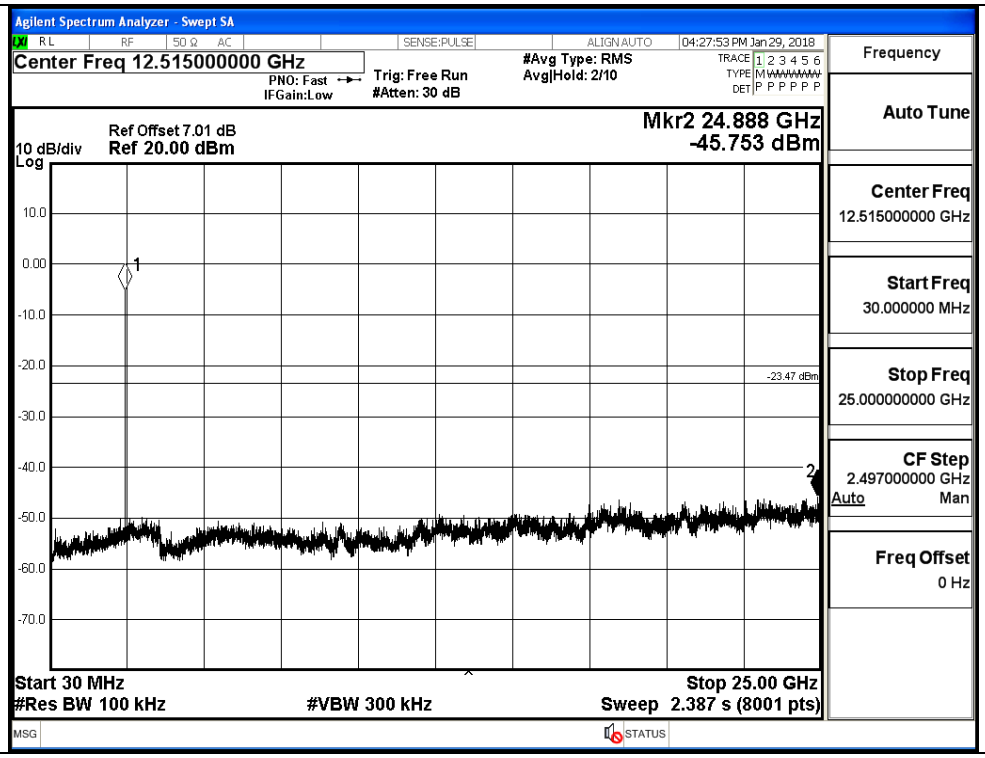
GFSK_LCH_Graphs		
Pref		

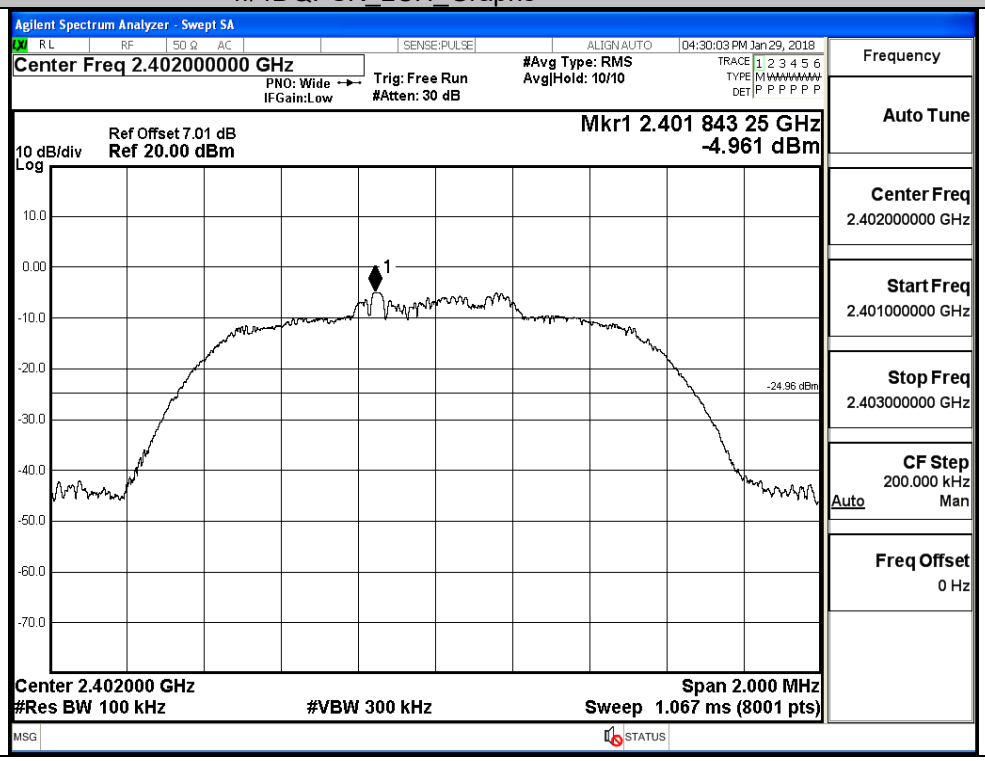
Puw	

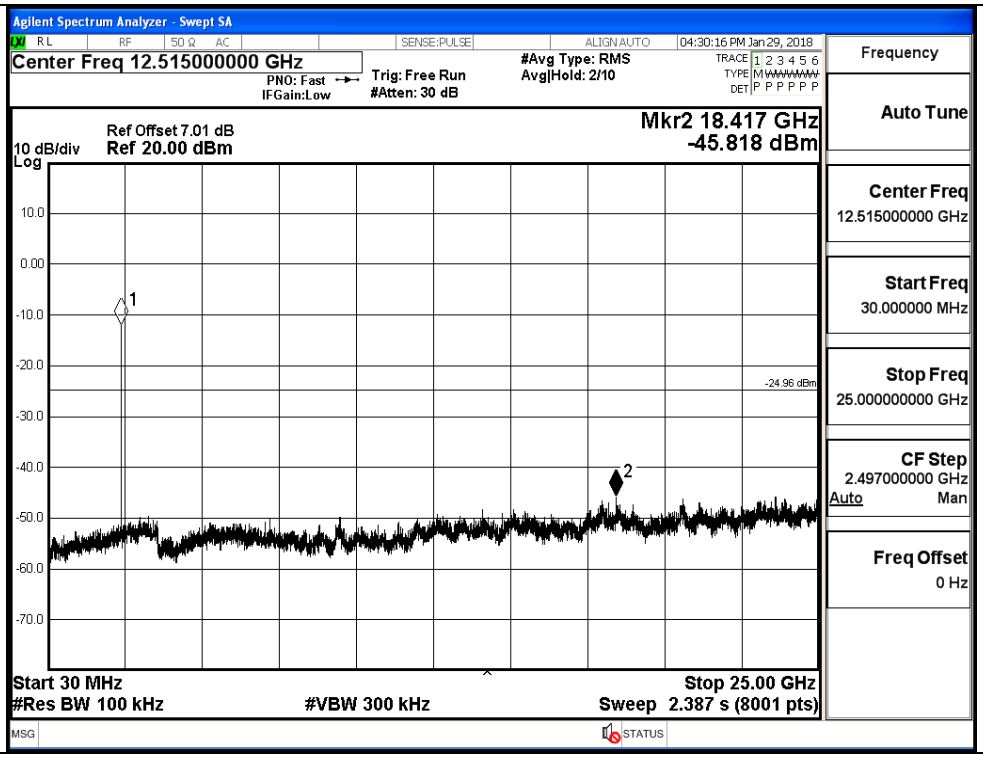
GFSK_MCH_Graphs	
Pref	

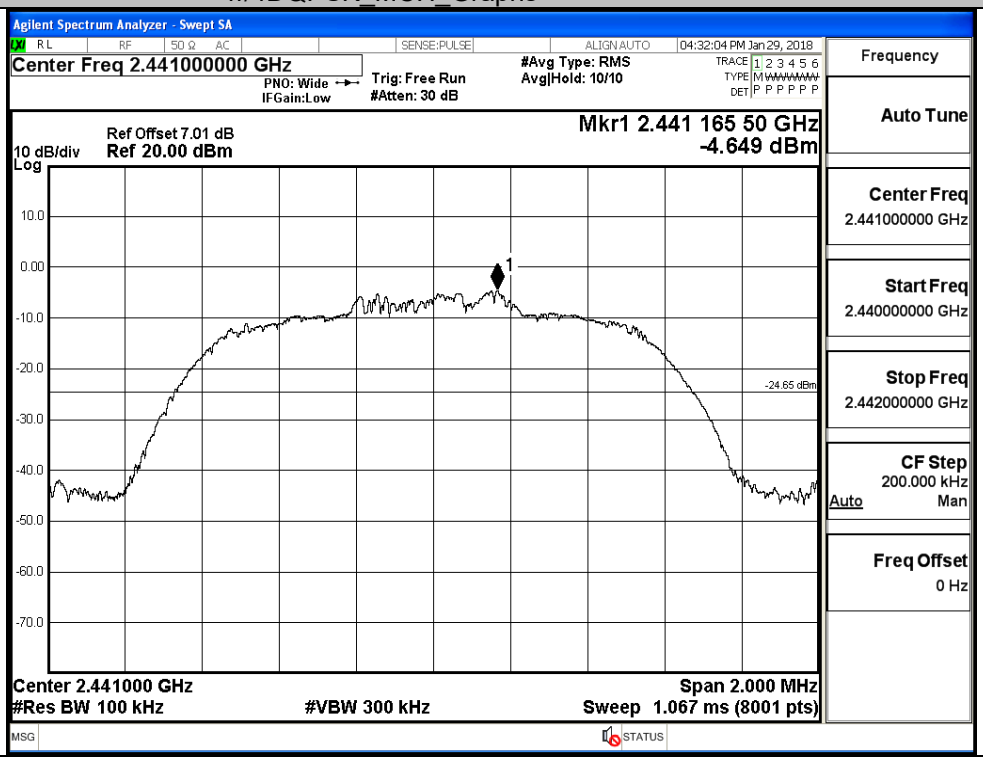
Puw	

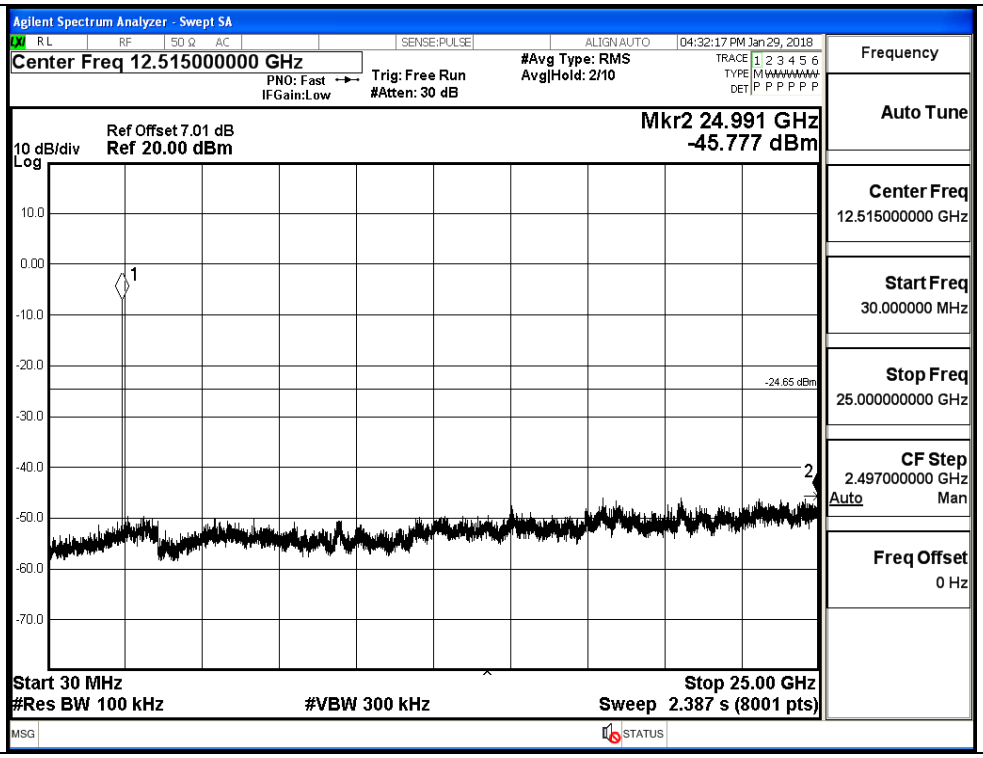
GFSK_HCH_Graphs	
Pref	

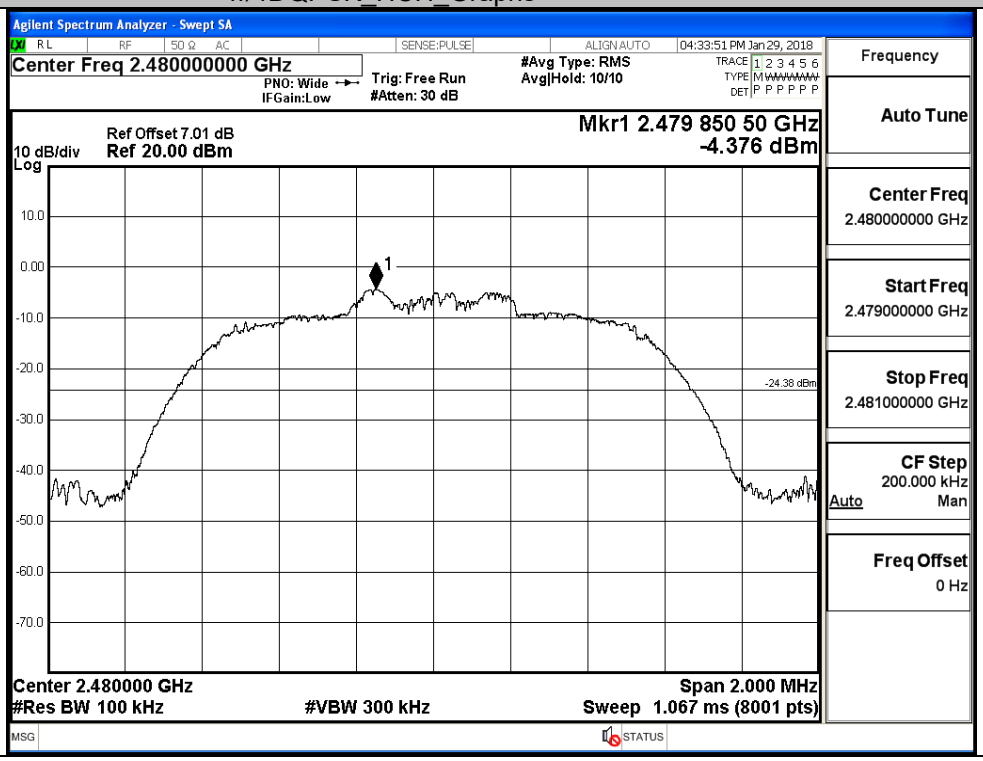
Puw	

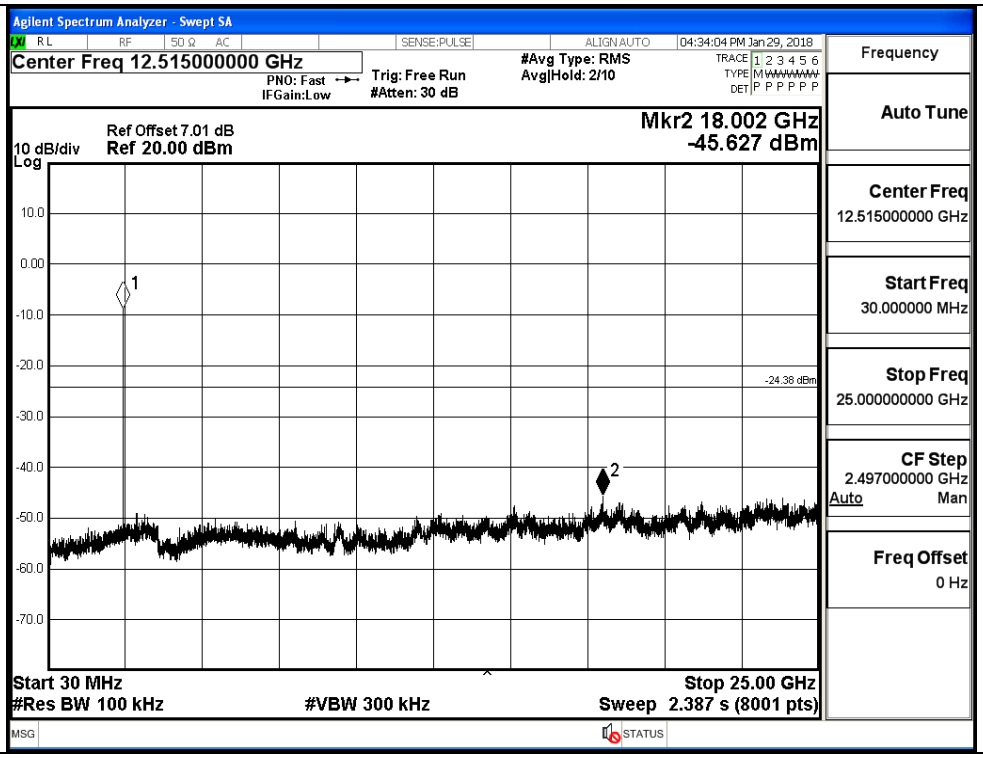
π/4DQPSK_LCH_Graphs	
Pref	

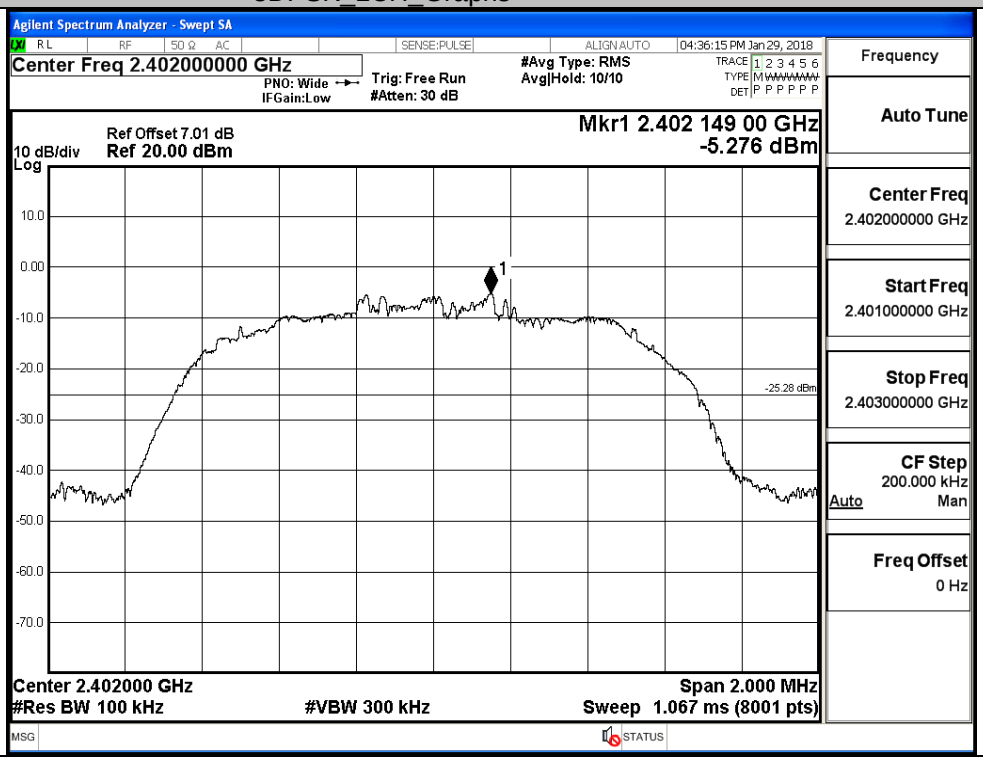
Puw	

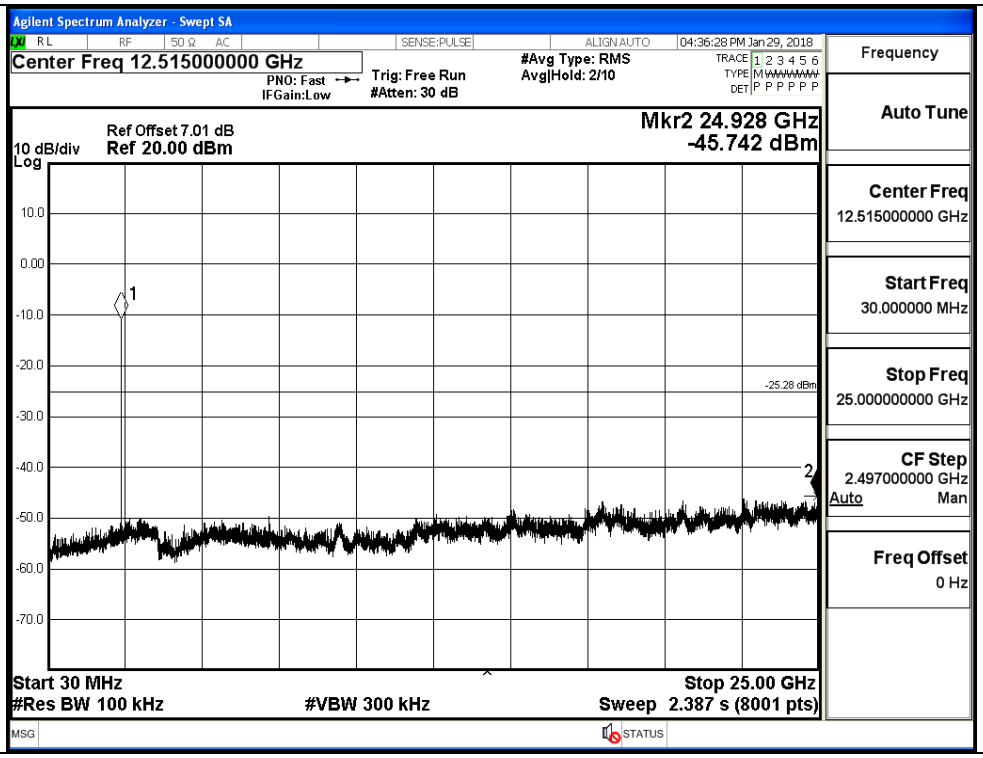
π/4DQPSK_MCH_Graphs	
Pref	

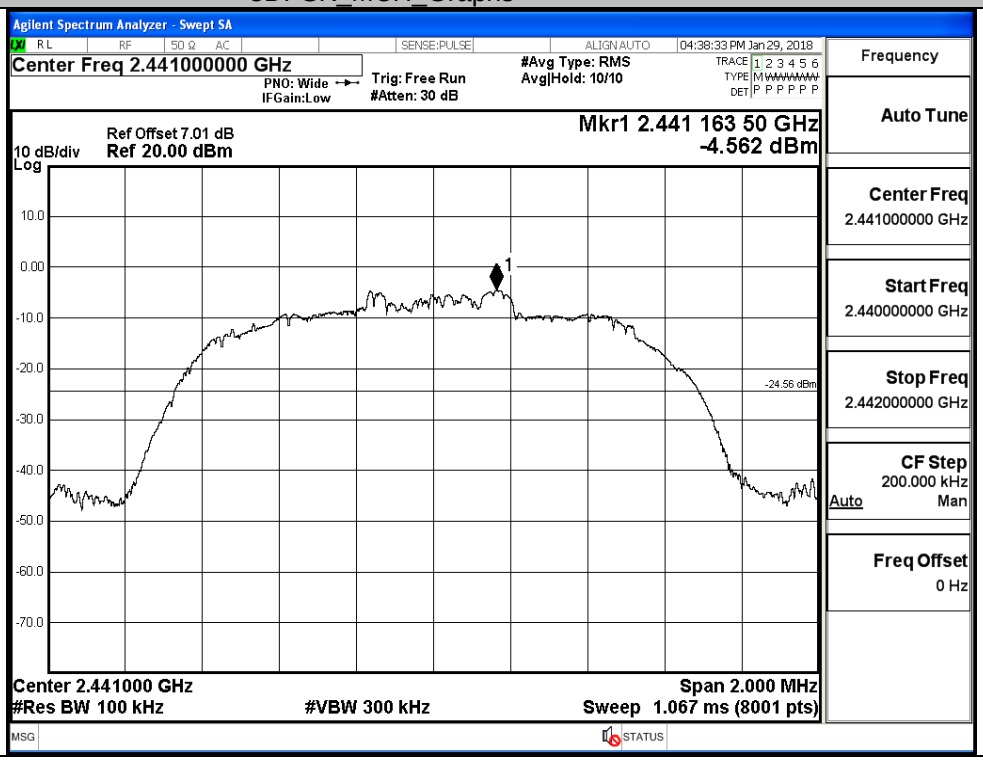
Puw	

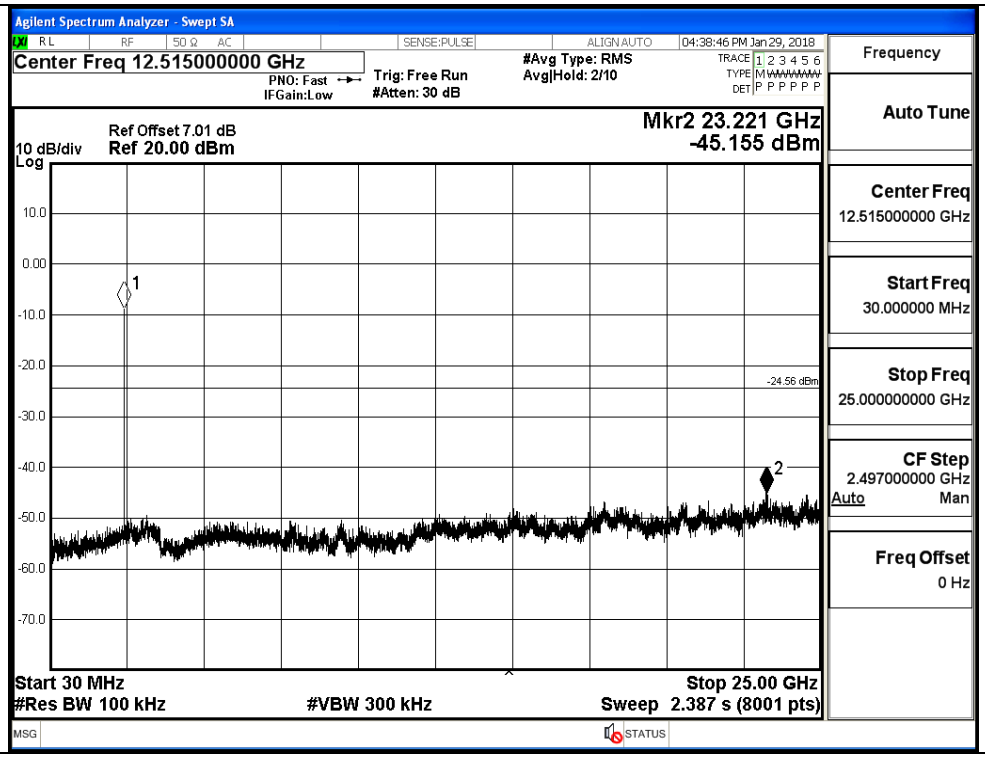
π/4DQPSK_HCH_Graphs	
Pref	

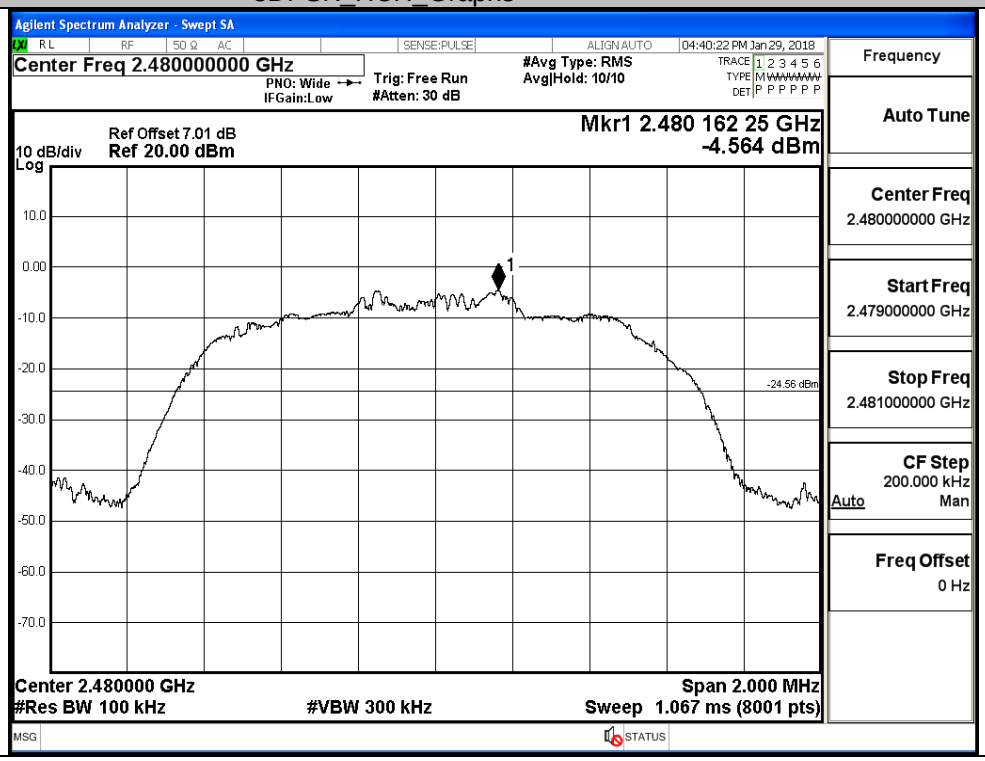
Puw	

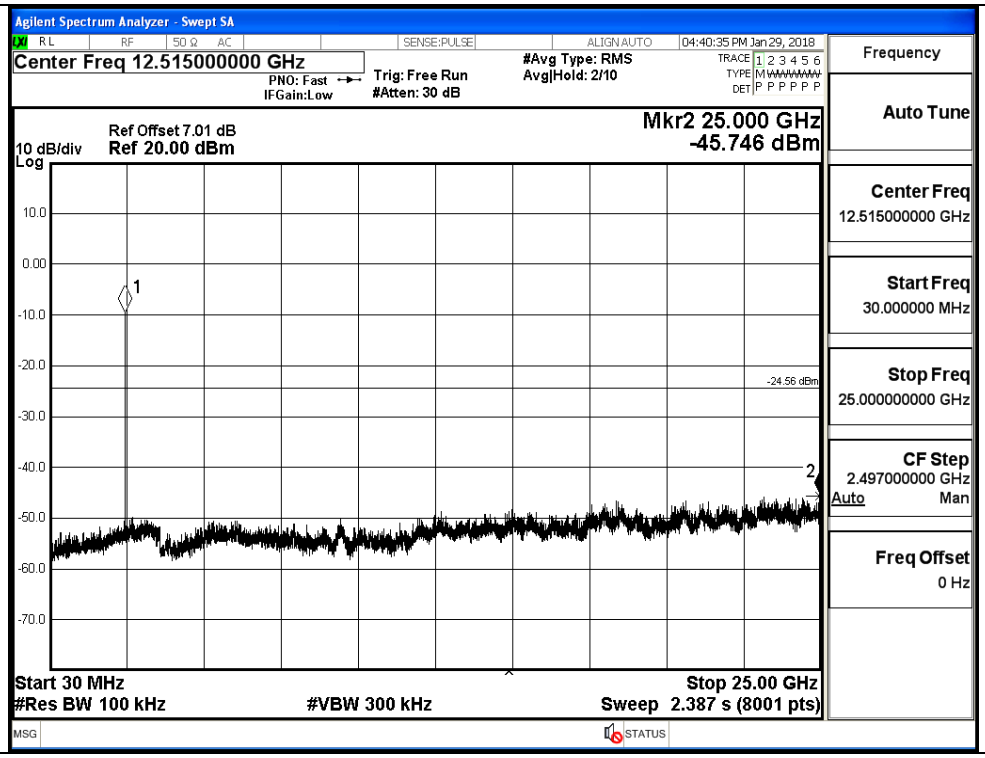
8DPSK_LCH_Graphs	
Pref	

Puw	

8DPSK_MCH_Graphs	
Pref	

Puw	

8DPSK_HCH_Graphs	
Pref	

Puw		

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
04:40:35 PM Jan 29, 2018
Ref Offset 7.01 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr2 25.000 GHz
-45.746 dBm
-24.56 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

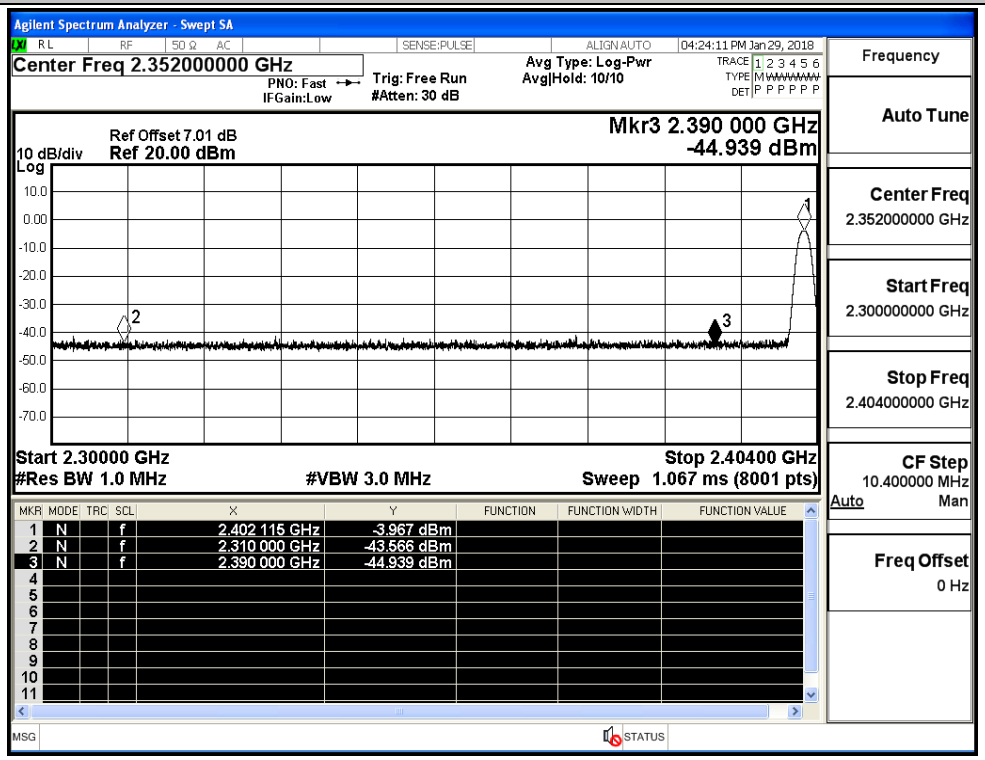
. Appendix G):Restrict-band band-edge measurements

Result Table

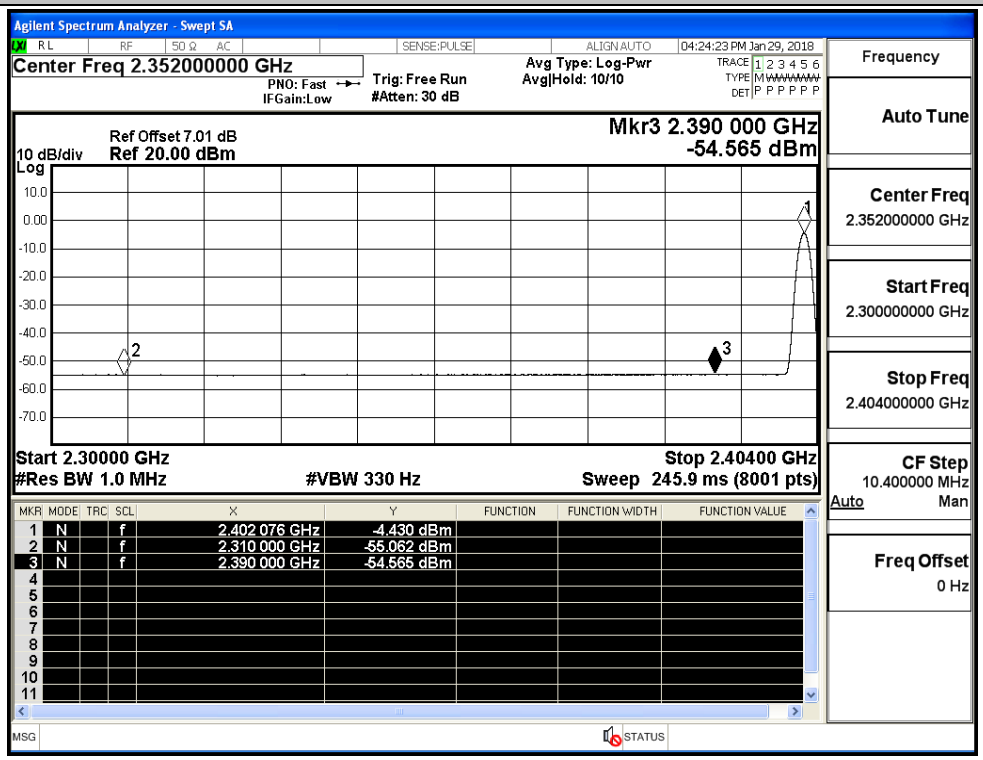
Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdi
GFSK_DH5	On	2310.0	-43.57	2	0	51.69	PEAK	74	PASS
GFSK_DH5	On	2310.0	-55.06	2	0	40.20	AV	54	PASS
GFSK_DH5	On	2390.0	-44.94	2	0	50.32	PEAK	74	PASS
GFSK_DH5	On	2390.0	-54.57	2	0	40.69	AV	54	PASS
GFSK_DH5	On	2483.5	-44.73	2	0	50.53	PEAK	74	PASS
GFSK_DH5	On	2483.5	-54.39	2	0	40.87	AV	54	PASS
GFSK_DH5	On	2500.0	-45.32	2	0	49.94	PEAK	74	PASS
GFSK_DH5	On	2500.0	-54.30	2	0	40.96	AV	54	PASS
π/4DQPSK _2DH5	On	2310.0	-44.73	2	0	50.53	PEAK	74	PASS
π/4DQPSK_ 2DH5	On	2310.0	-55.05	2	0	40.21	AV	54	PASS
π/4DQPSK_ 2DH5	On	2390.0	-45.30	2	0	49.96	PEAK	74	PASS
π/4DQPSK _2DH5	On	2390.0	-54.69	2	0	40.57	AV	54	PASS
π/4DQPSK _2DH5	On	2483.5	-44.92	2	0	50.33	PEAK	74	PASS
π/4DQPSK _2DH5	On	2483.5	-54.46	2	0	40.80	AV	54	PASS
π/4DQPSK _2DH5	On	2500.0	-43.87	2	0	51.38	PEAK	74	PASS
π/4DQPSK_ 2DH5	On	2500.0	-54.38	2	0	40.87	AV	54	PASS
8DPSK _3DH5	On	2310.0	-44.22	2	0	51.04	PEAK	74	PASS
8DPSK _3DH5	On	2310.0	-54.95	2	0	40.31	AV	54	PASS
8DPSK _3DH5	On	2390.0	-44.99	2	0	50.27	PEAK	74	PASS
8DPSK _3DH5	On	2390.0	-54.75	2	0	40.51	AV	54	PASS
8DPSK _3DH5	On	2483.5	-43.90	2	0	51.36	PEAK	74	PASS
8DPSK _3DH5	On	2483.5	-54.45	2	0	40.81	AV	54	PASS
8DPSK _3DH5	On	2500.0	-43.62	2	0	51.64	PEAK	74	PASS
8DPSK _3DH5	On	2500.0	-54.43	2	0	40.83	AV	54	PASS

Test Graph

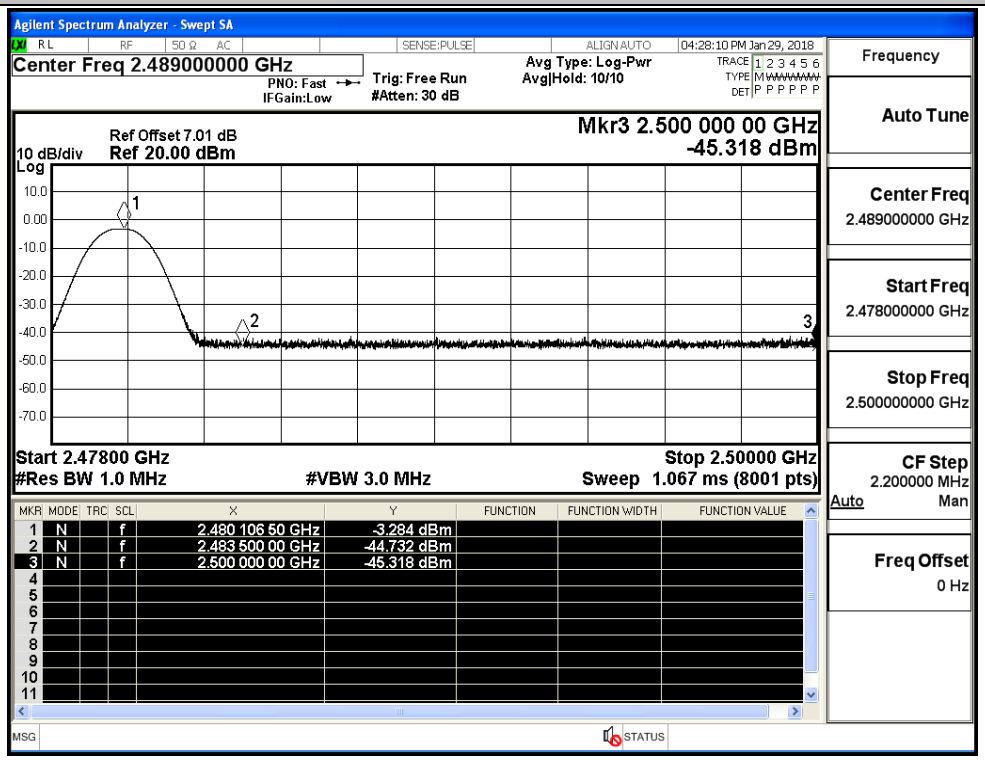
Restrict-band band-edge measurements_2402_PEAK_DH5



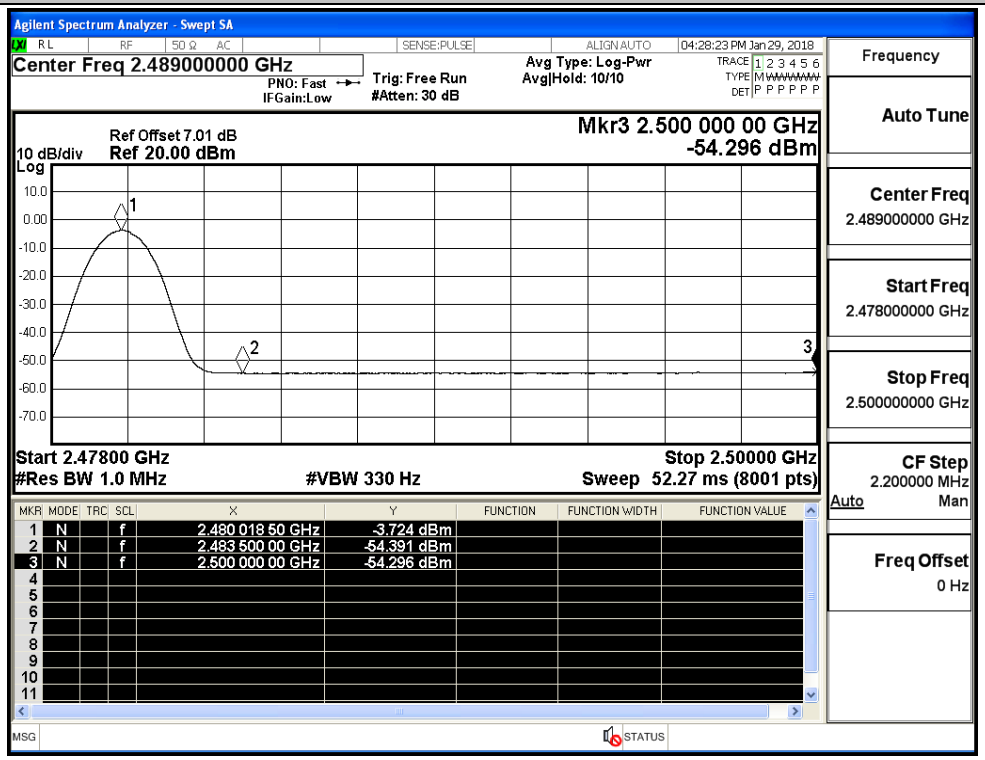
Restrict-band band-edge measurements_2402_AV_DH5



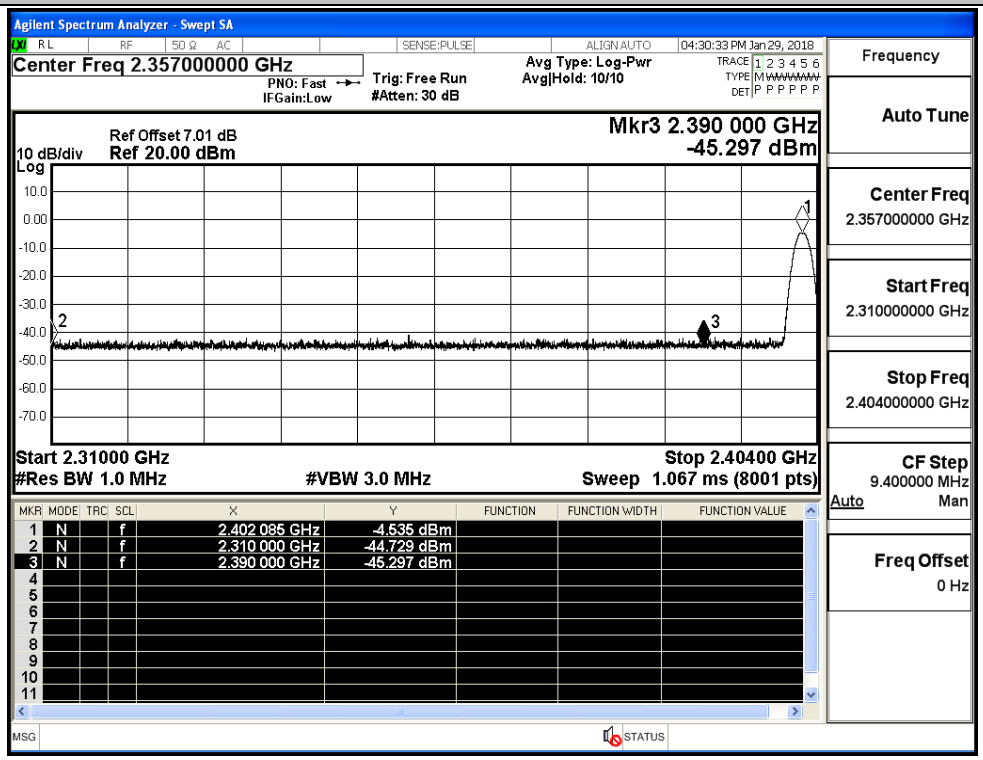
Restrict-band band-edge measurements_2480_PEAK_DH5



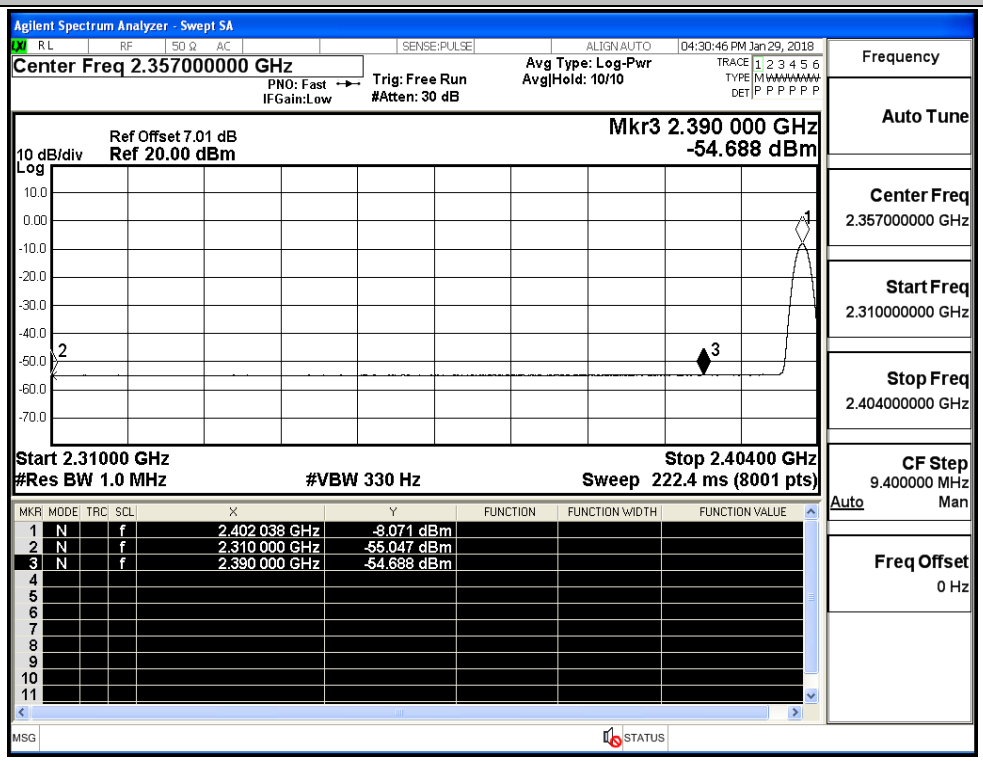
Restrict-band band-edge measurements_2480_AV_DH5



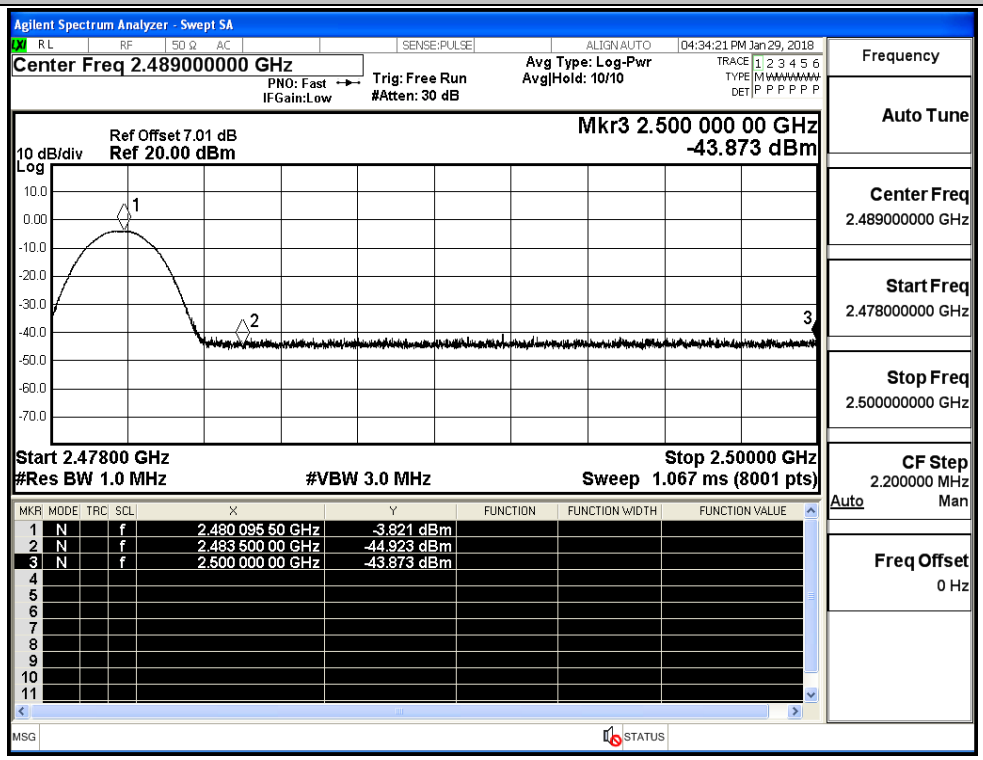
Restrict-band band-edge measurements_2402_PEAK_2DH5



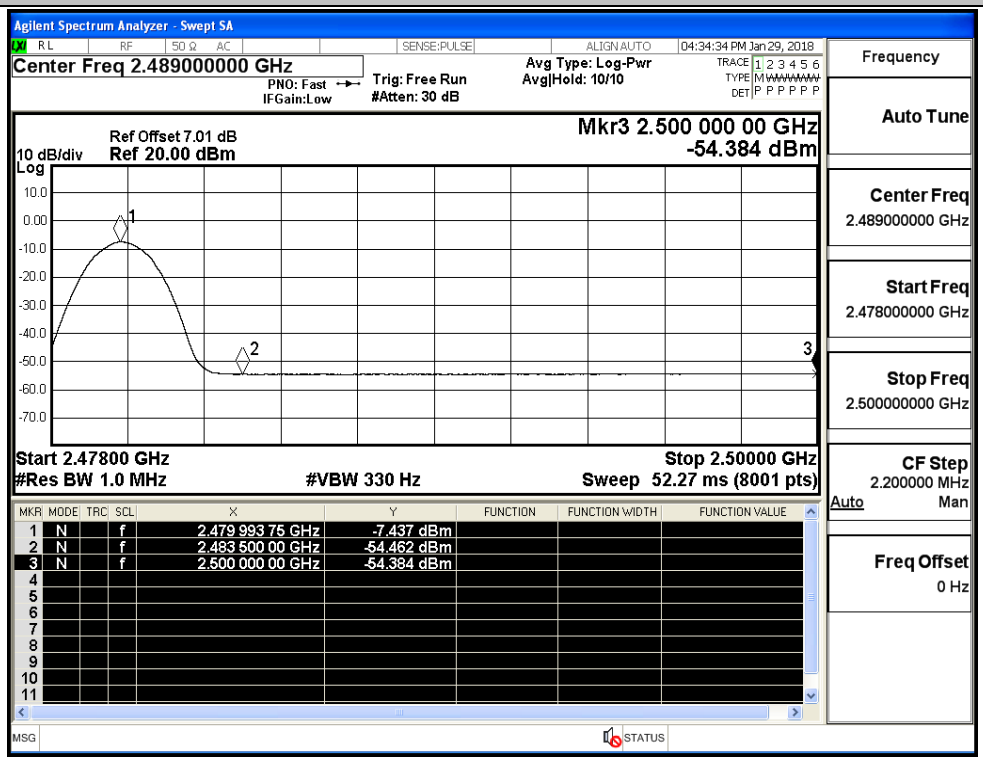
Restrict-band band-edge measurements_2402_AV_2DH5



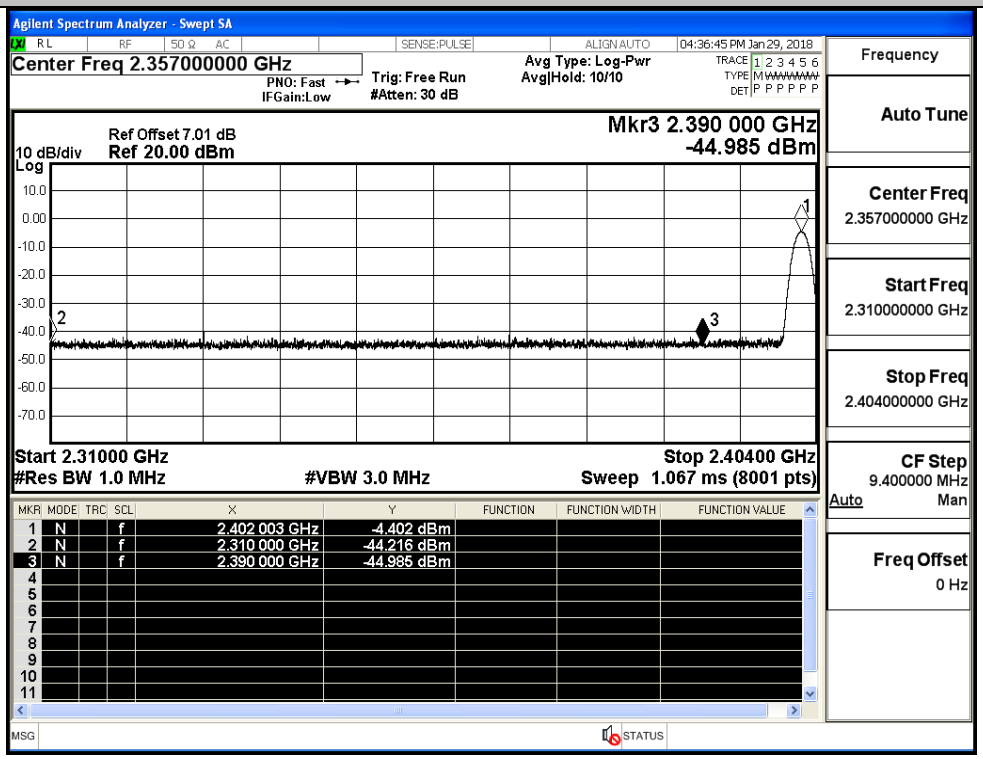
Restrict-band band-edge measurements_2480_PEAK_2DH5



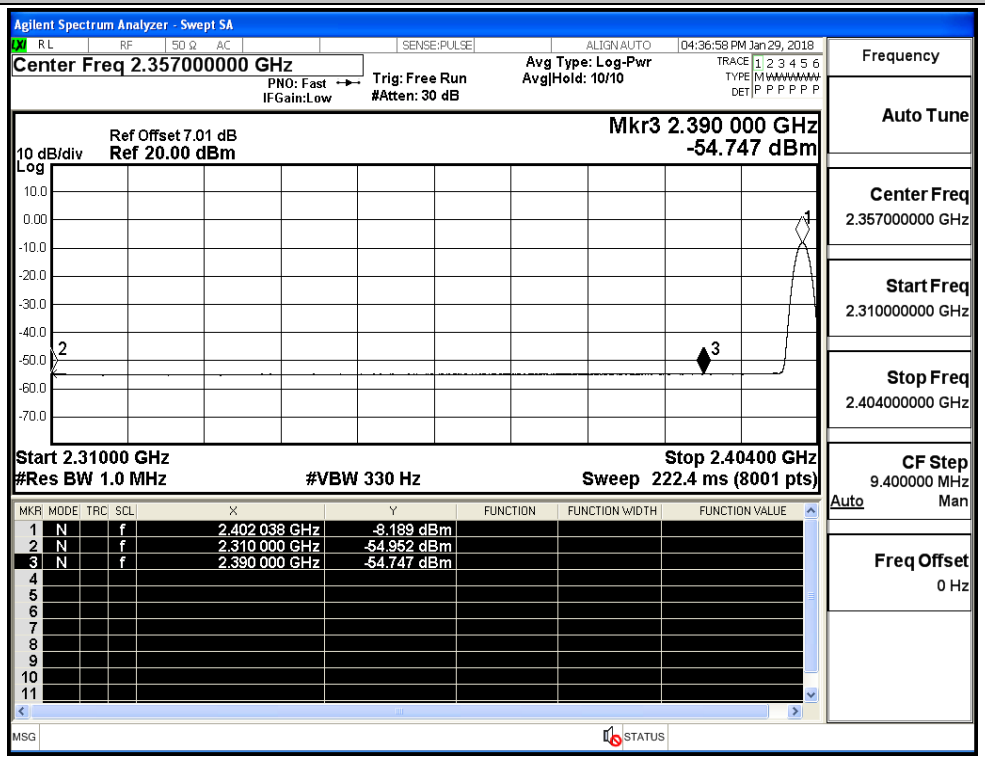
Restrict-band band-edge measurements_2480_AV_2DH5



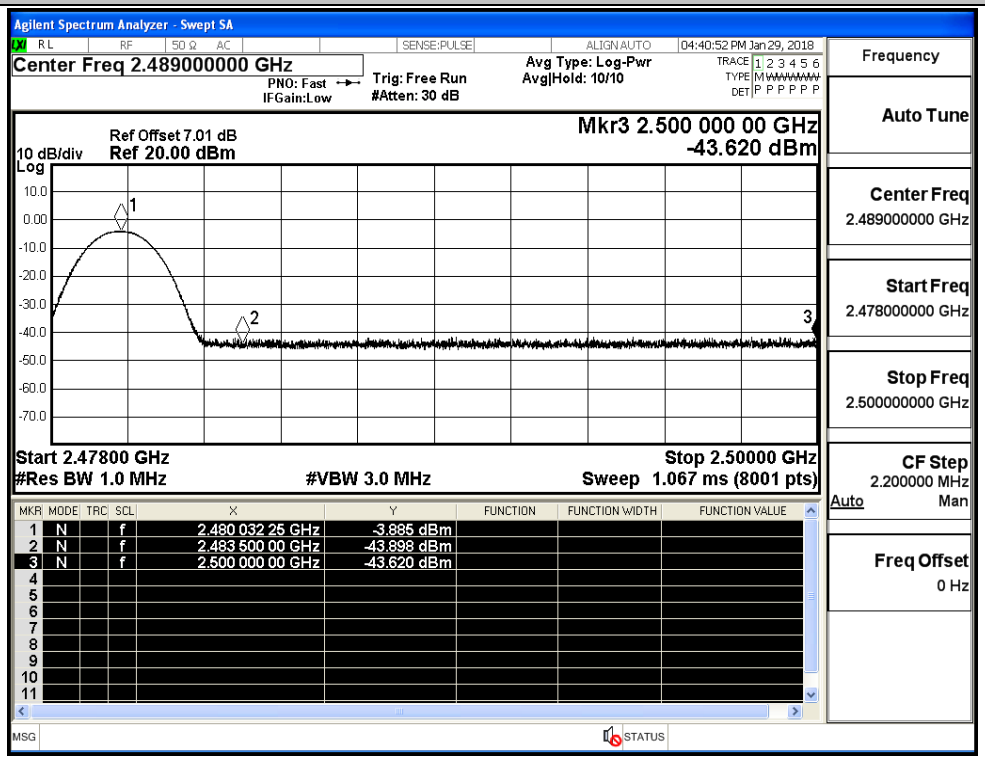
Restrict-band band-edge measurements_2402_PEAK_3DH5



Restrict-band band-edge measurements_2402_AV_3DH5



Restrict-band band-edge measurements_2480_PEAK_3DH5



Restrict-band band-edge measurements_2480_AV_3DH5