Appendix A

RF Test Data for BT V4.1(BDR/EDR) (Conducted Measurement)

Product Name: Vivi Wireless Presentation

Trade Mark: Vivi

Test Model: VWP-200-16

Environmental Conditions

Temperature:	24.5°C
Relative Humidity:	52.8%
ATM Pressure:	100.0 kPa
Test Engineer:	Diamond.Lu
Supervised by:	Wang Chuang

A.1 Maxmum Conducted Peak Output Power

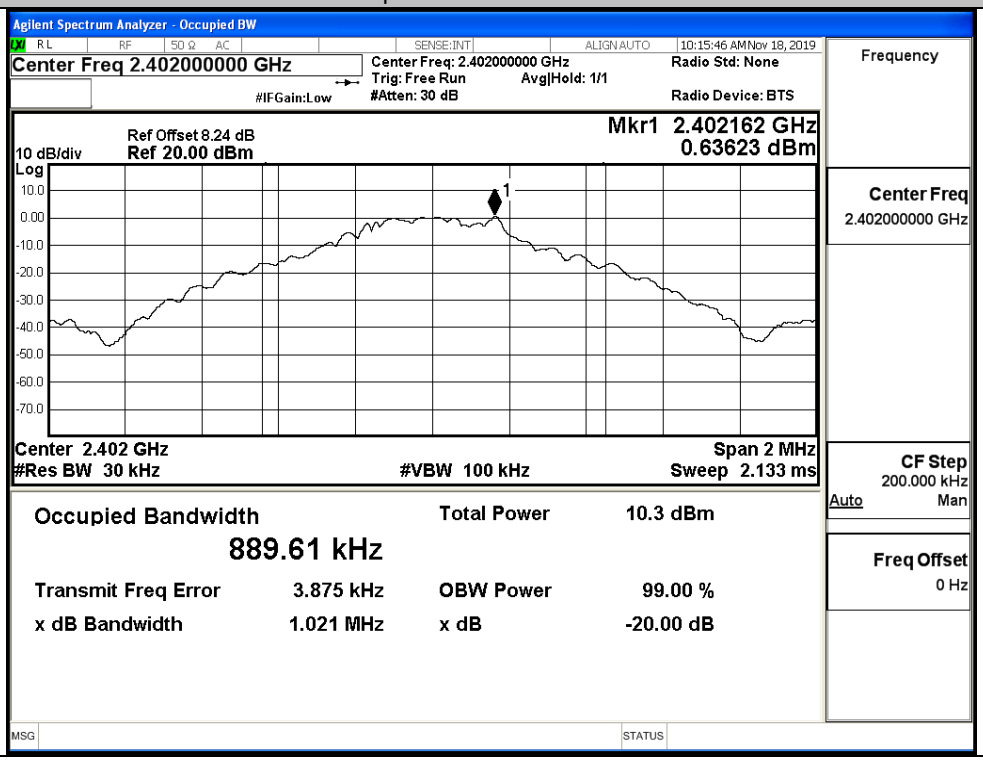
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2.980	21	PASS
	MCH	1.074	21	PASS
	HCH	2.251	21	PASS
π/4DQPSK	LCH	2.194	21	PASS
	MCH	0.456	21	PASS
	HCH	1.497	21	PASS
8DPSK	LCH	2.415	21	PASS
	MCH	0.633	21	PASS
	HCH	1.797	21	PASS

A.2 20dB Bandwidth And 99% Bandwidth

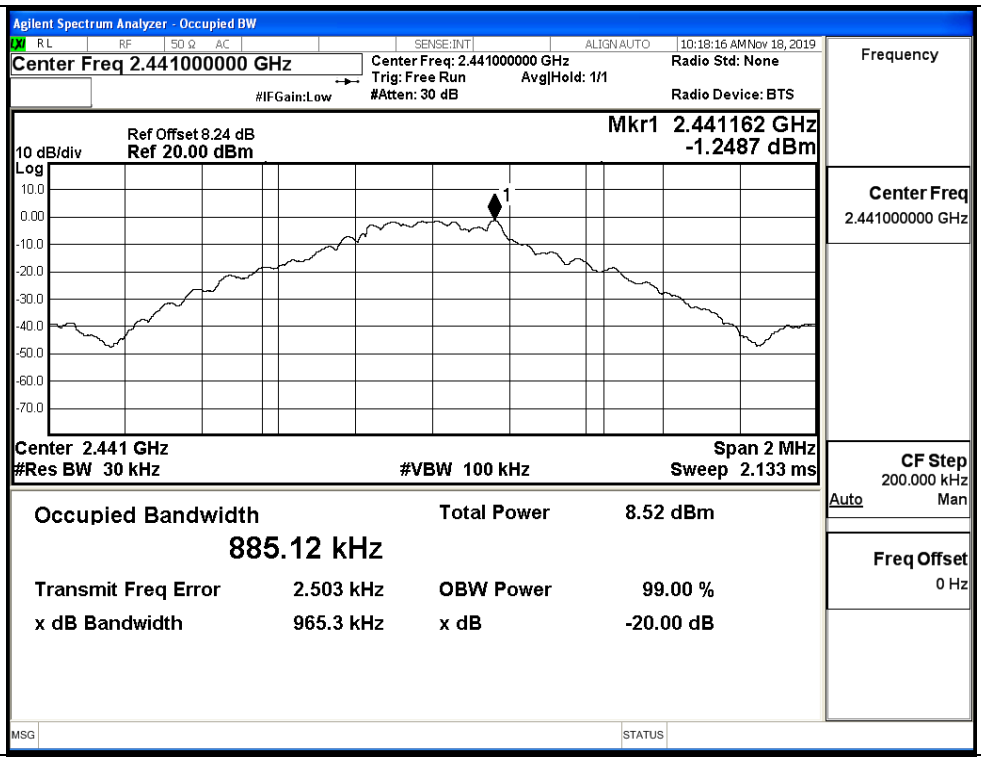
Mode	Channel.	20dB Bandwidth [MHz]	99% Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.021	0.890	Not Specified	PASS
	MCH	0.9653	0.885	Not Specified	PASS
	HCH	1.030	0.889	Not Specified	PASS
π/4DQPSK	LCH	1.290	1.171	Not Specified	PASS
	MCH	1.294	1.178	Not Specified	PASS
	HCH	1.290	1.171	Not Specified	PASS
8DPSK	LCH	1.296	1.178	Not Specified	PASS
	MCH	1.299	1.188	Not Specified	PASS
	HCH	1.310	1.184	Not Specified	PASS

Test Graphs

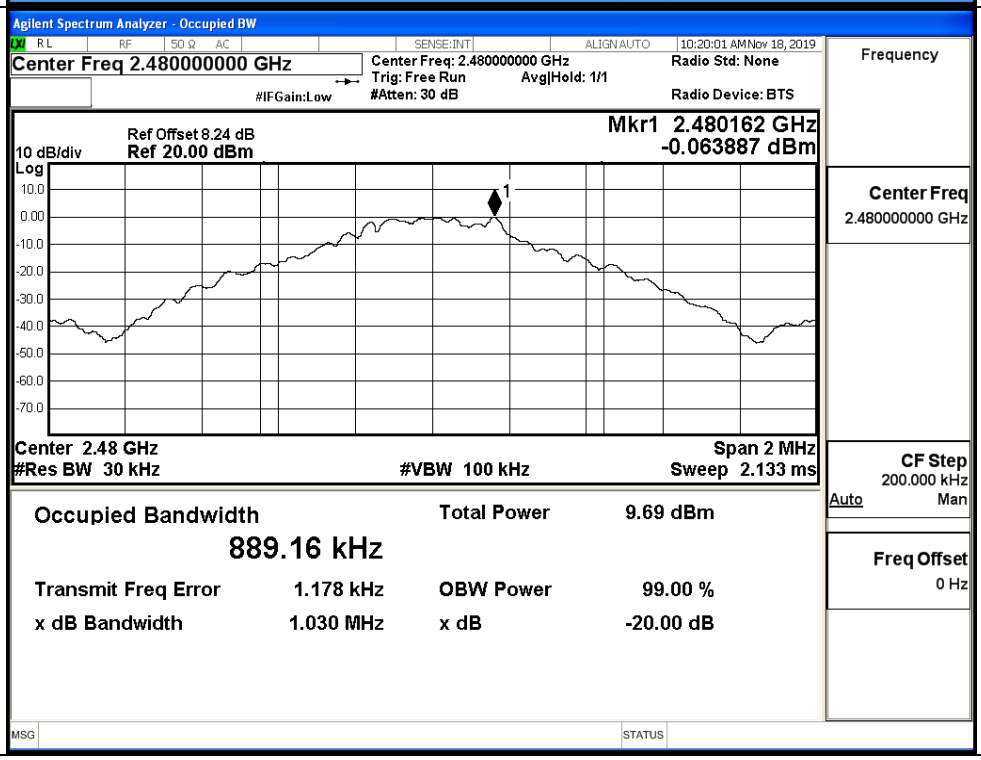
GFSK/LCH



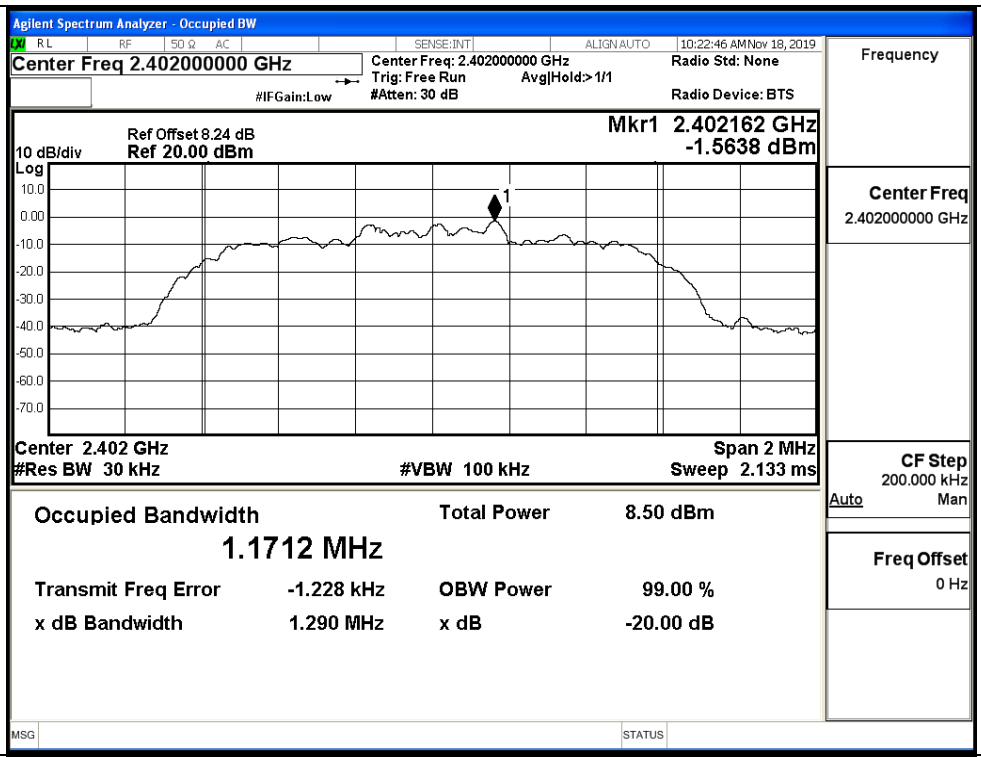
GFSK/MCH



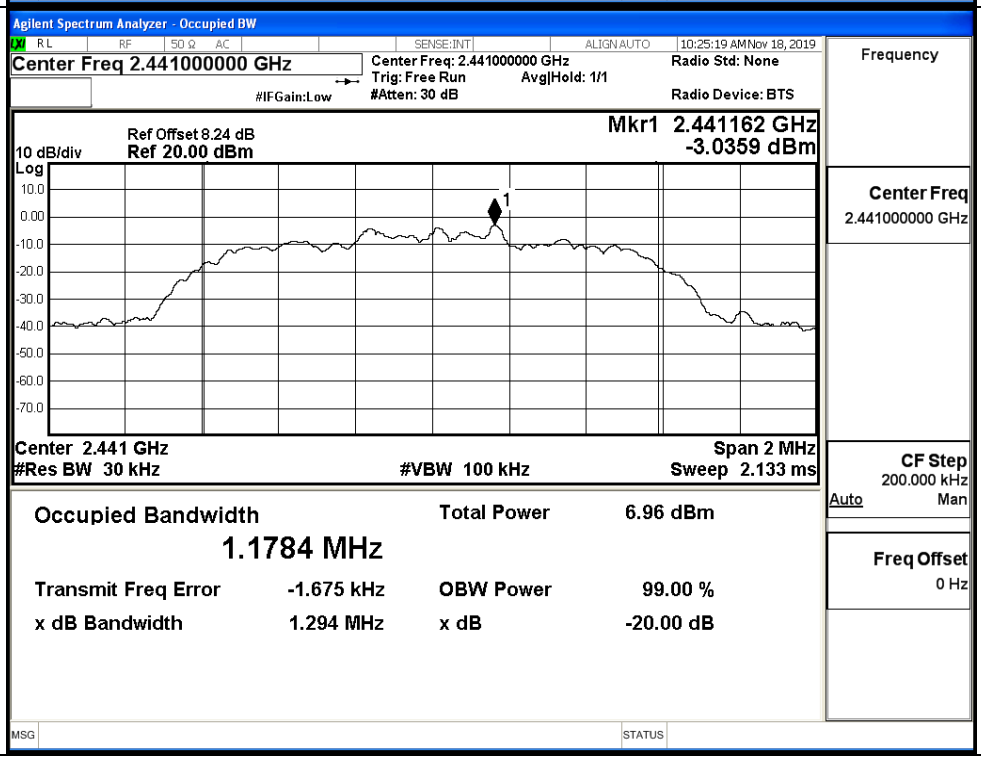
GFSK/HCH



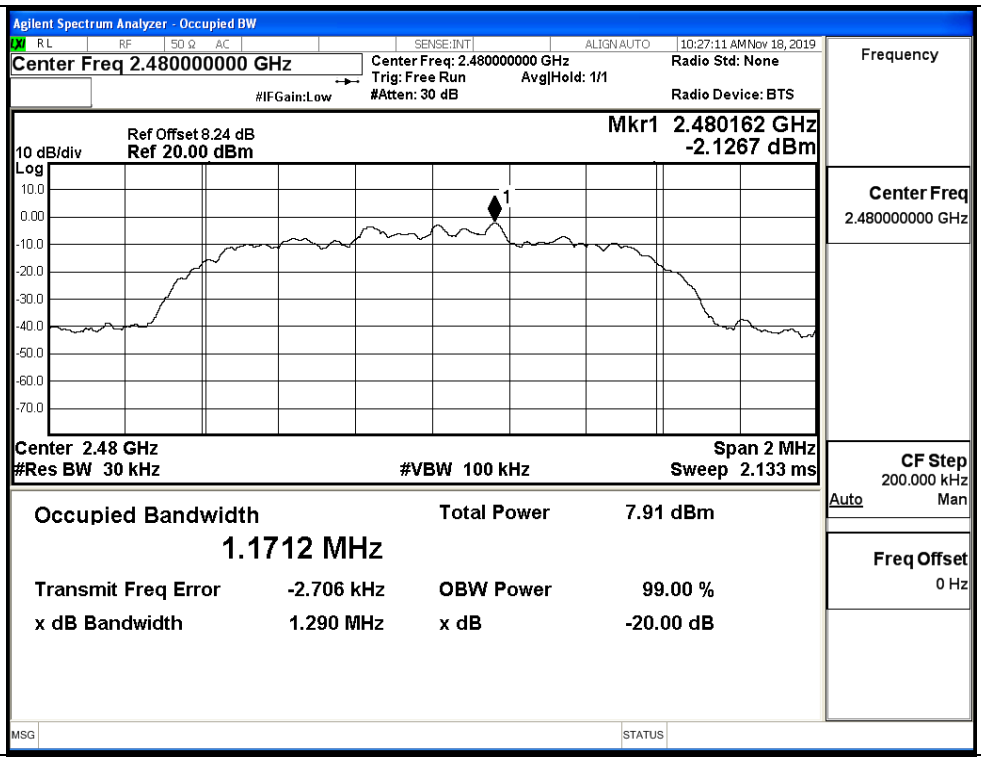
π/4DQPSK/LCH



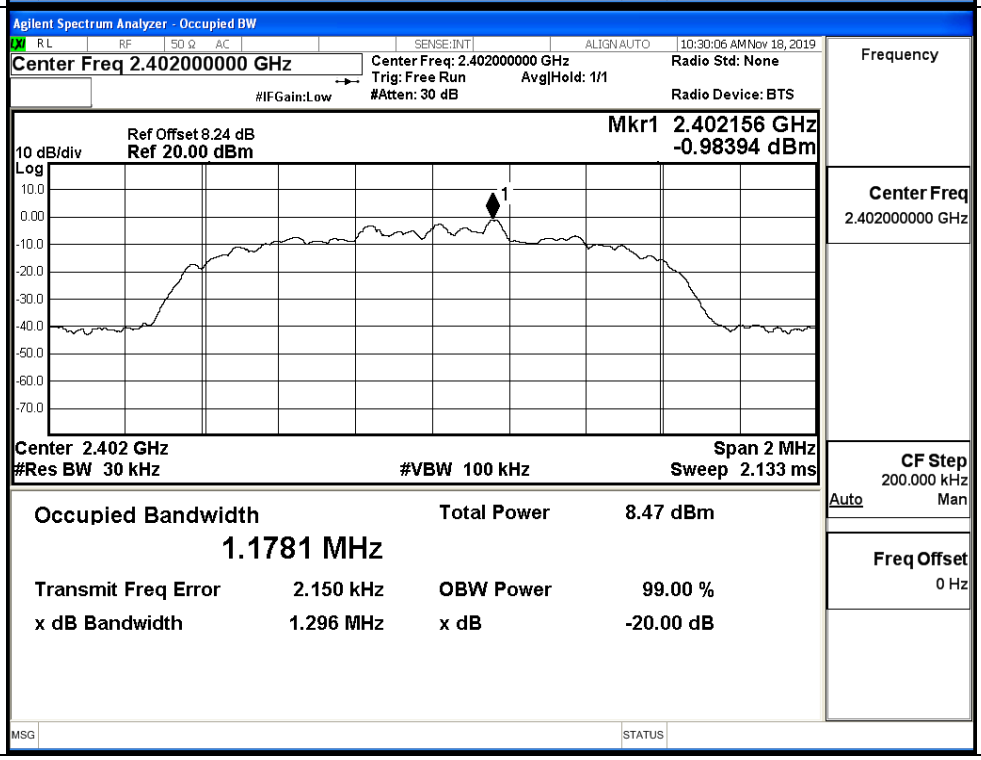
π/4DQPSK/MCH



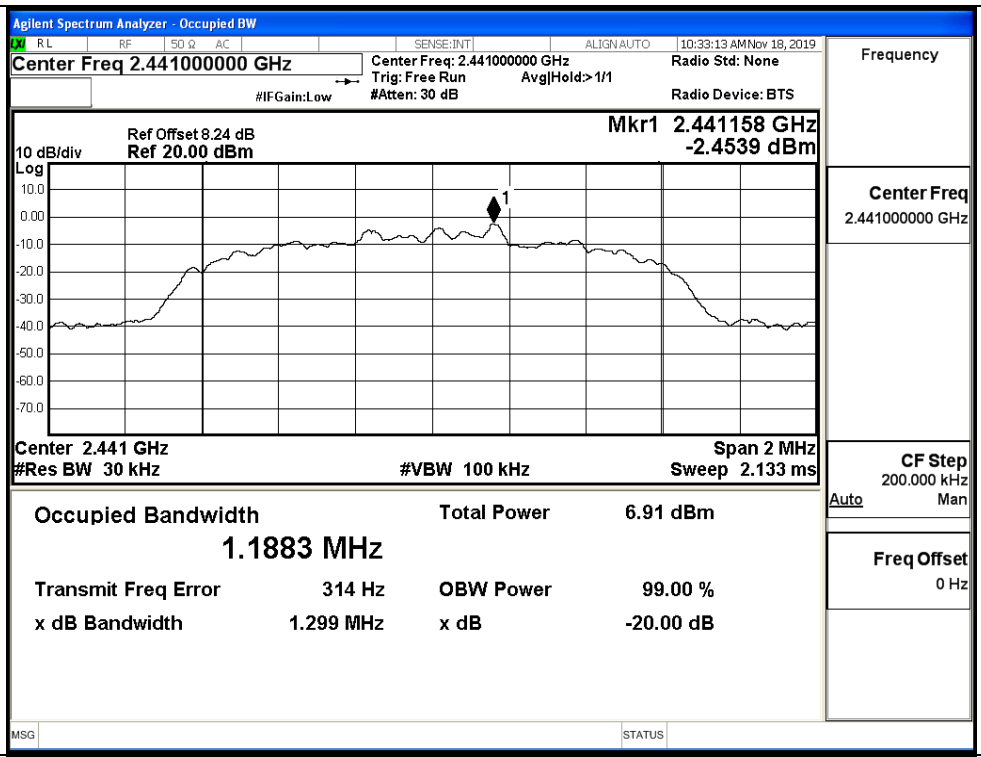
π/4DQPSK/HCH



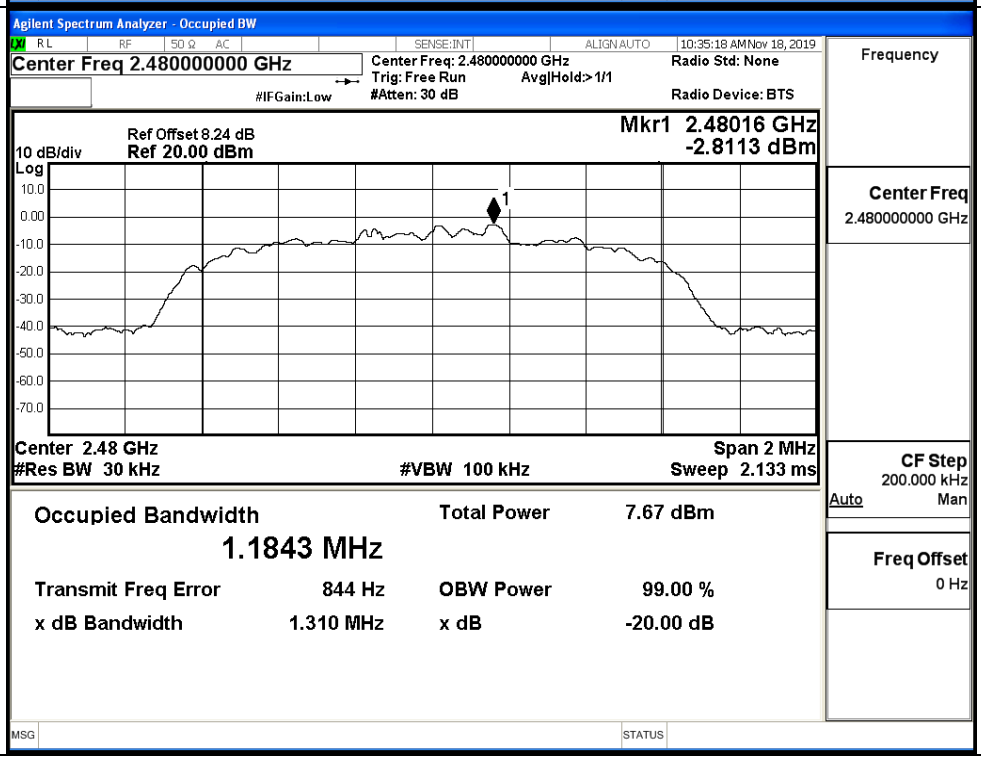
8DPSK/LCH



8DPSK/MCH

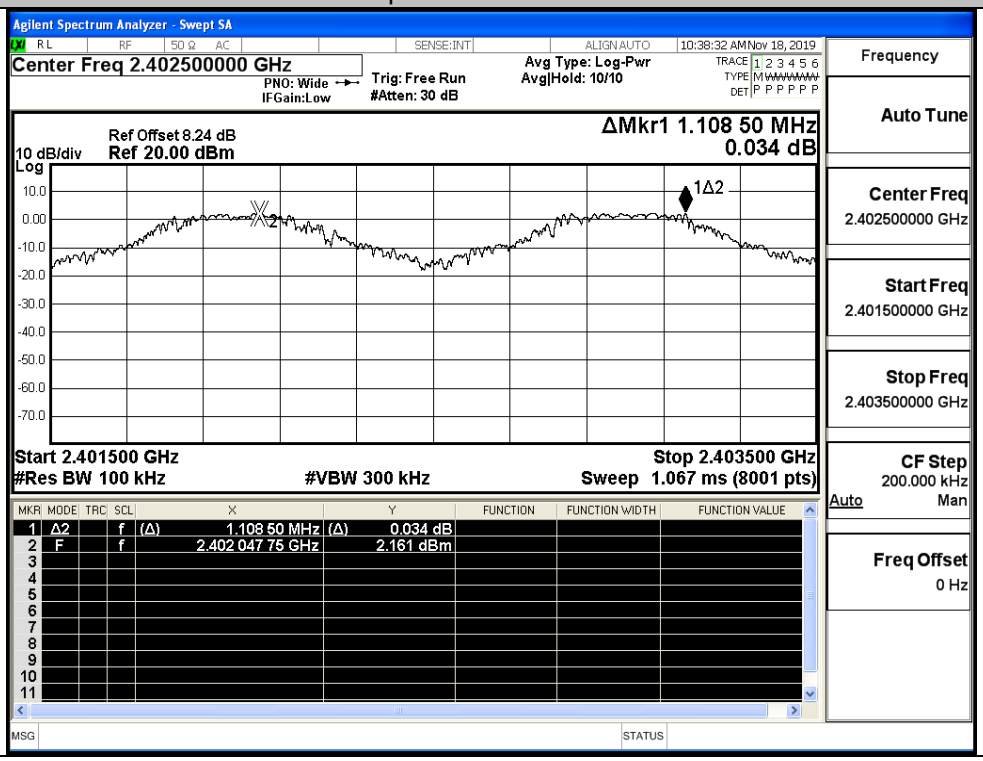


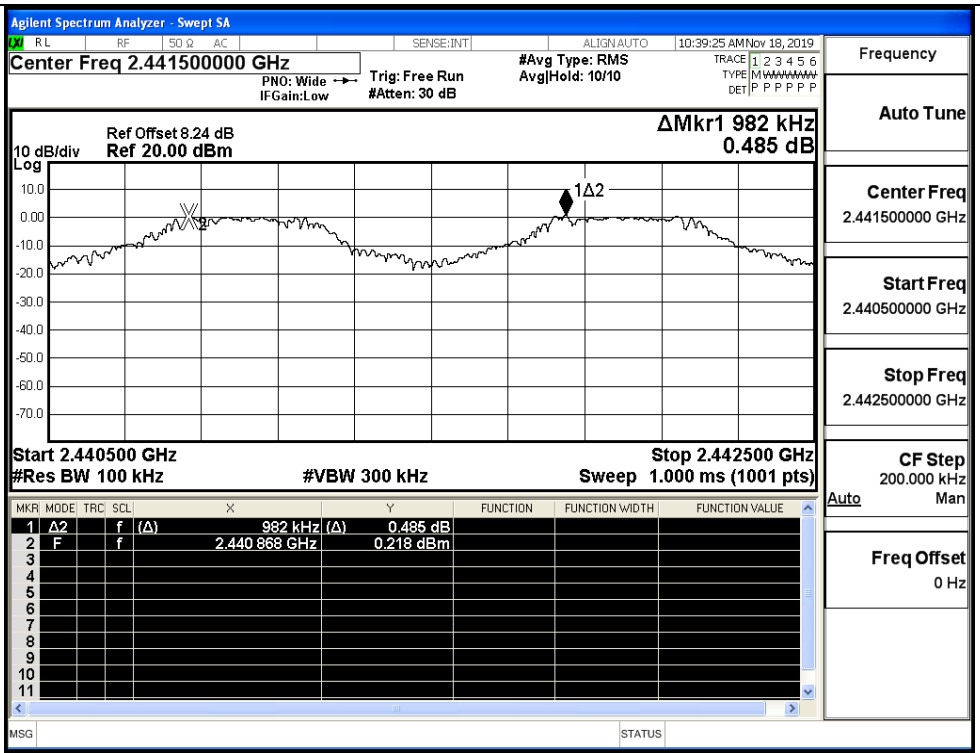
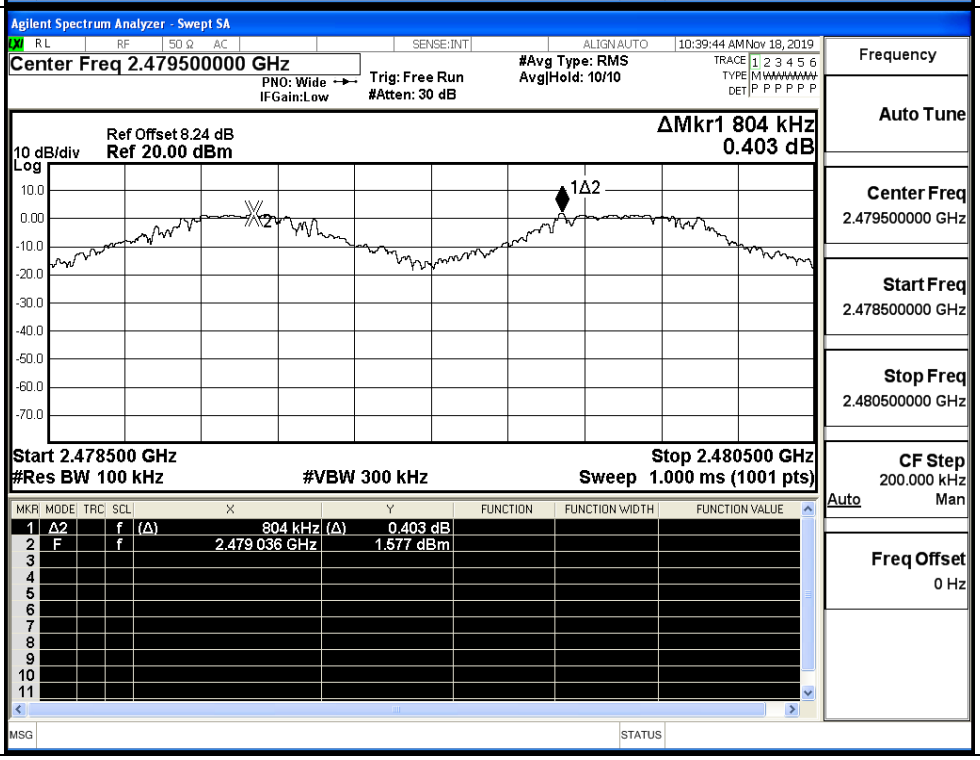
8DPSK/HCH



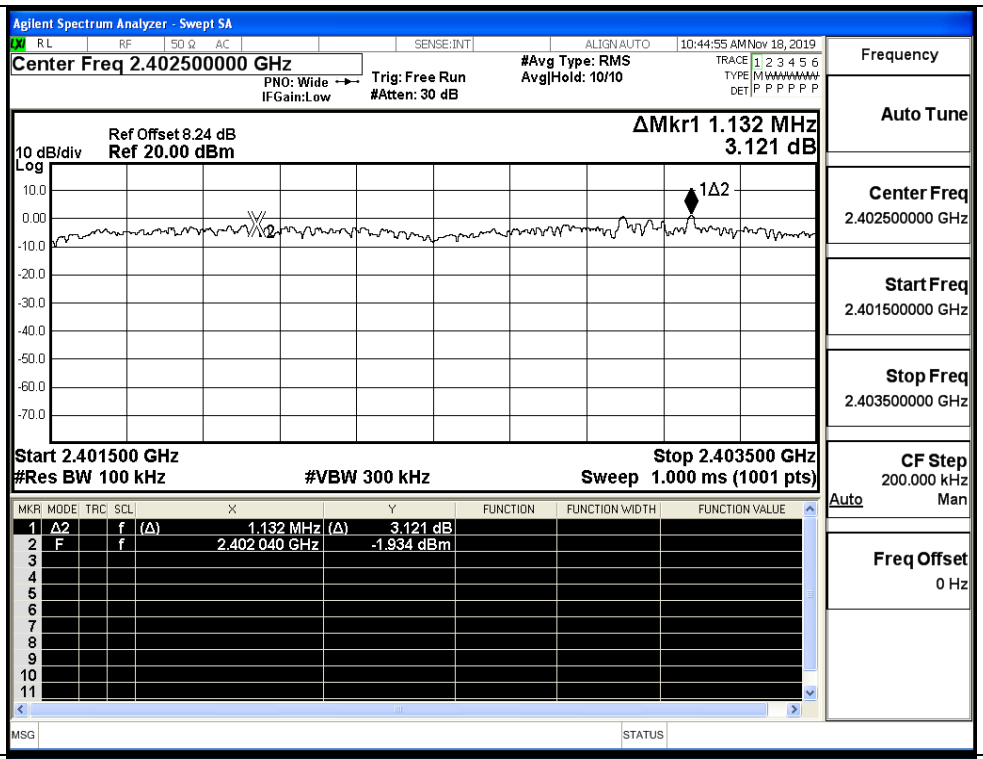
A.3 Carrier Frequency Separation

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.108	0.687	PASS
	MCH	0.982	0.687	PASS
	HCH	0.804	0.687	PASS
π/4DQPSK	LCH	1.132	0.863	PASS
	MCH	1.238	0.863	PASS
	HCH	0.914	0.863	PASS
8DPSK	LCH	0.978	0.873	PASS
	MCH	0.952	0.873	PASS
	HCH	1.144	0.873	PASS

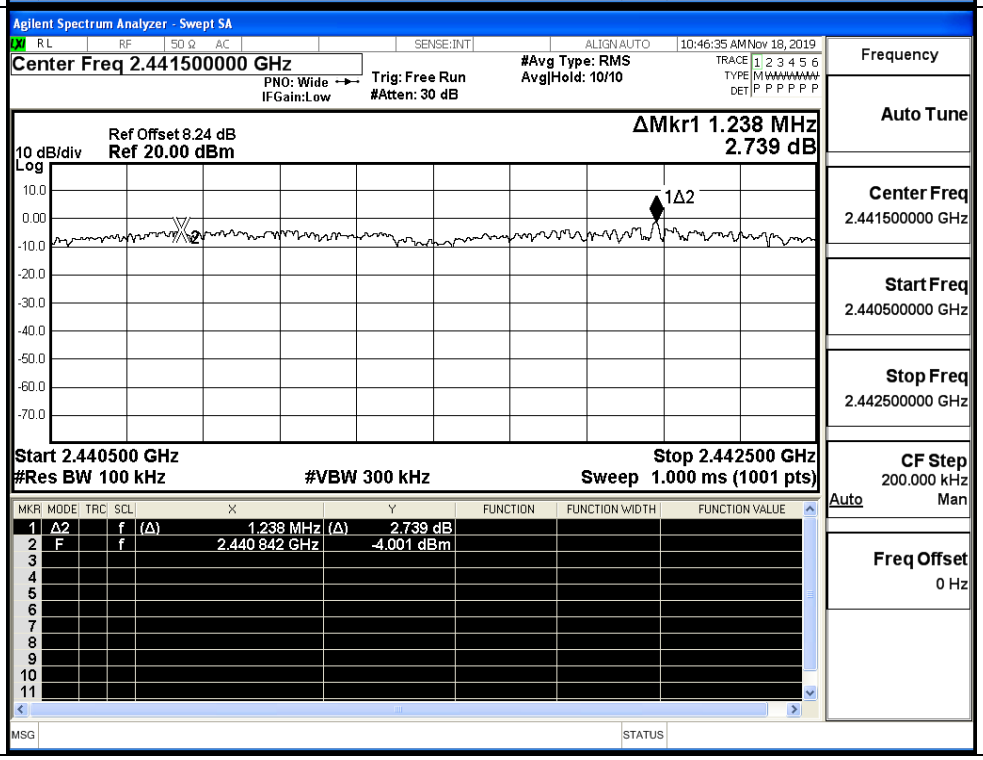
Test Graphs	
GFSK/LCH	

GFSK/MCH		
GFSK/HCH		

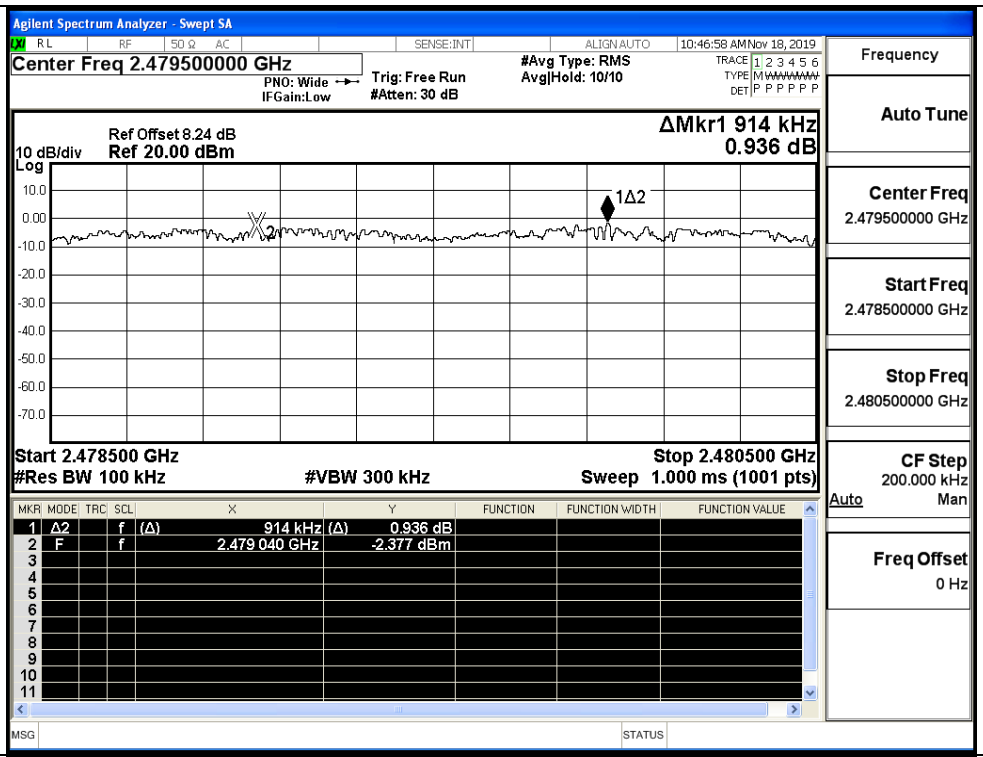
π/4DQPSK/LCH



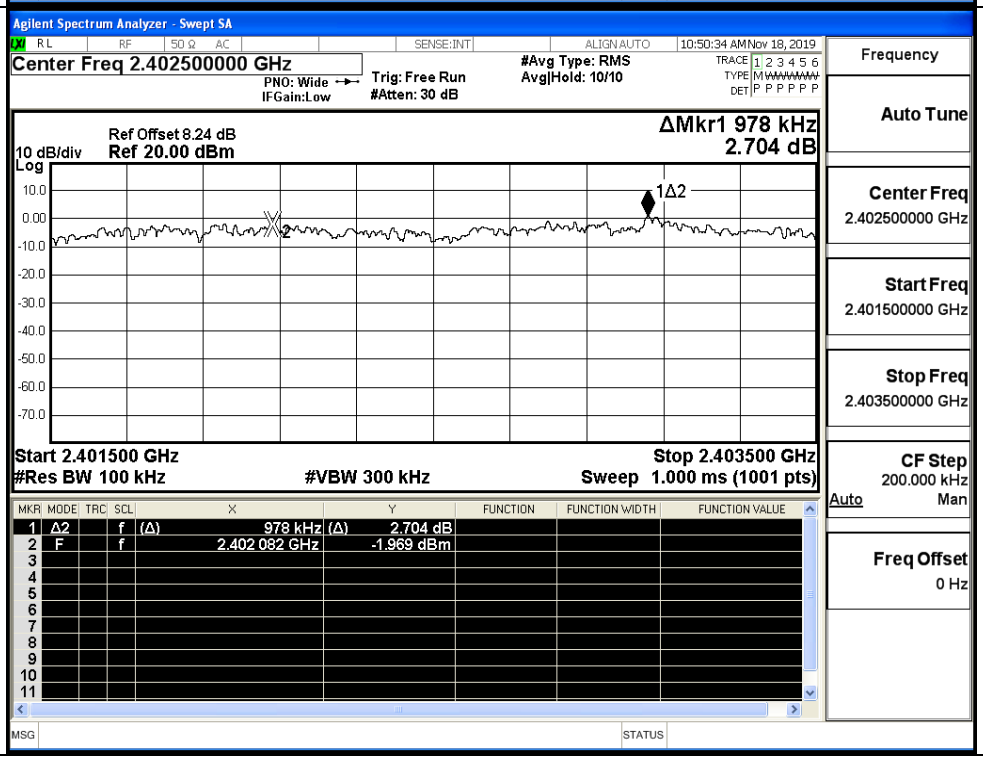
π/4DQPSK/MCH

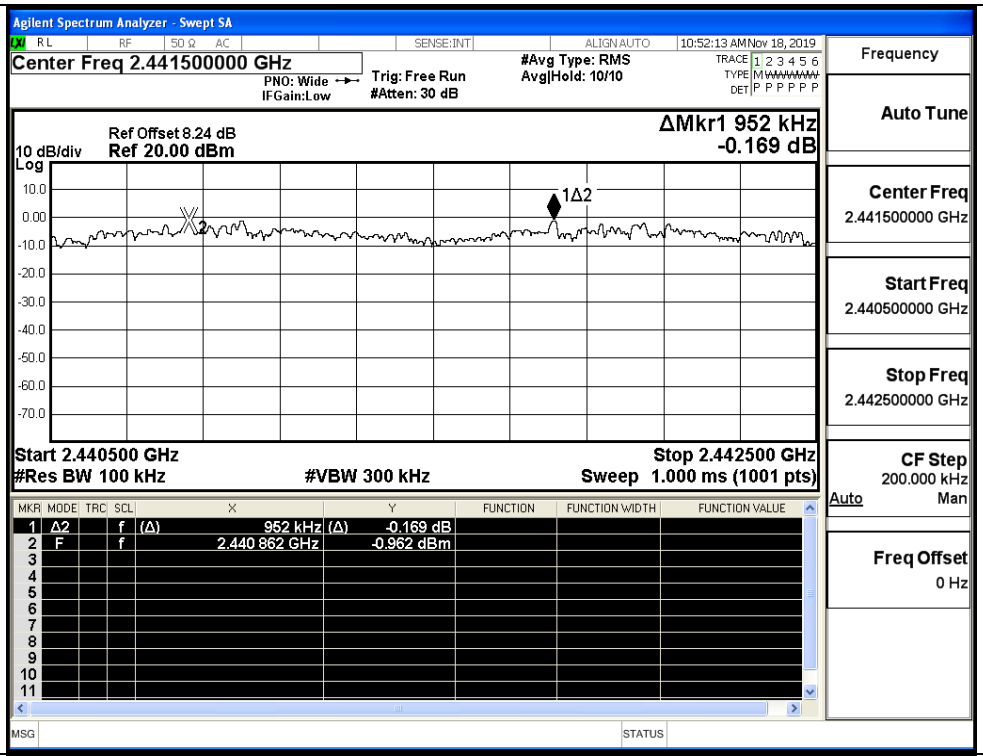
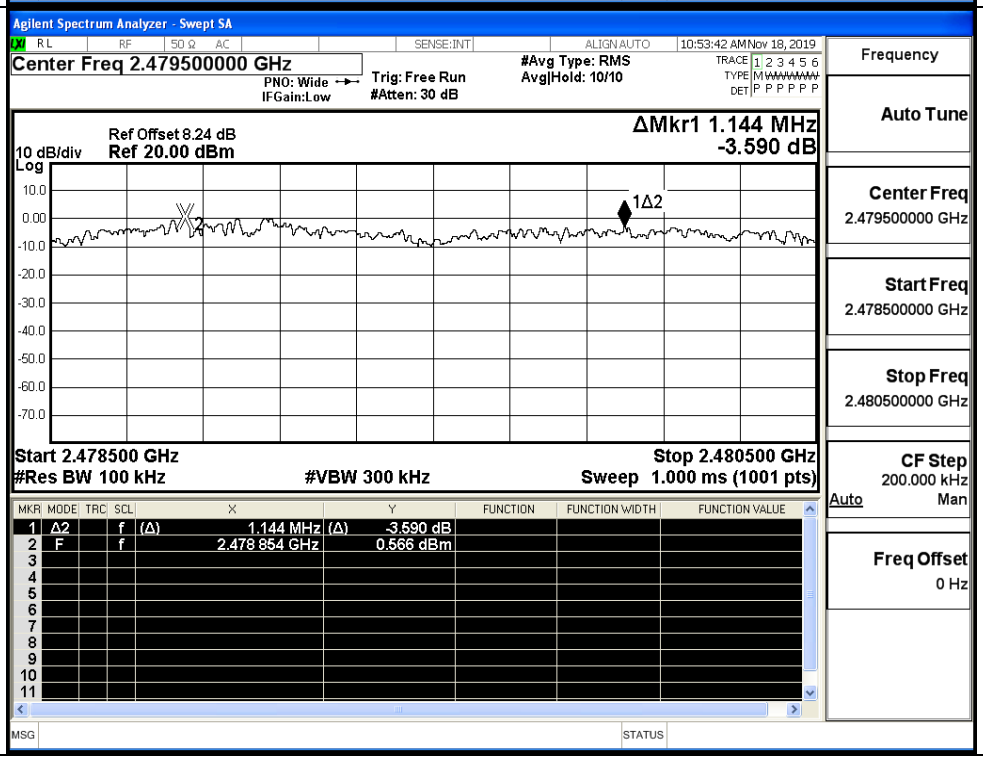


π/4DQPSK/HCH



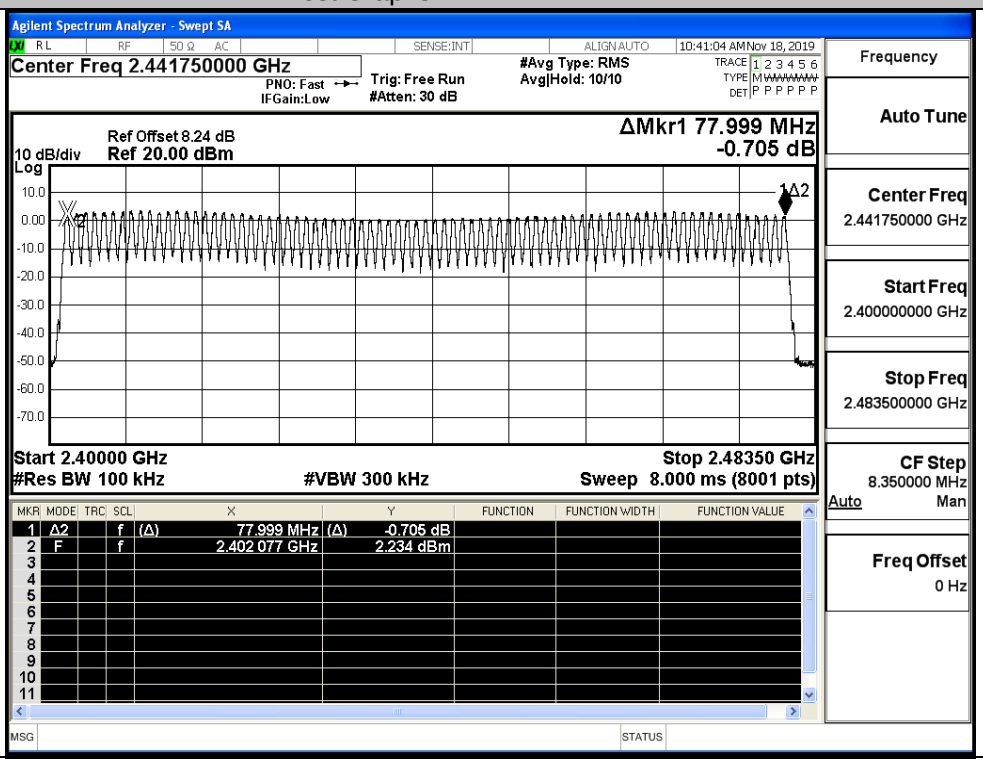
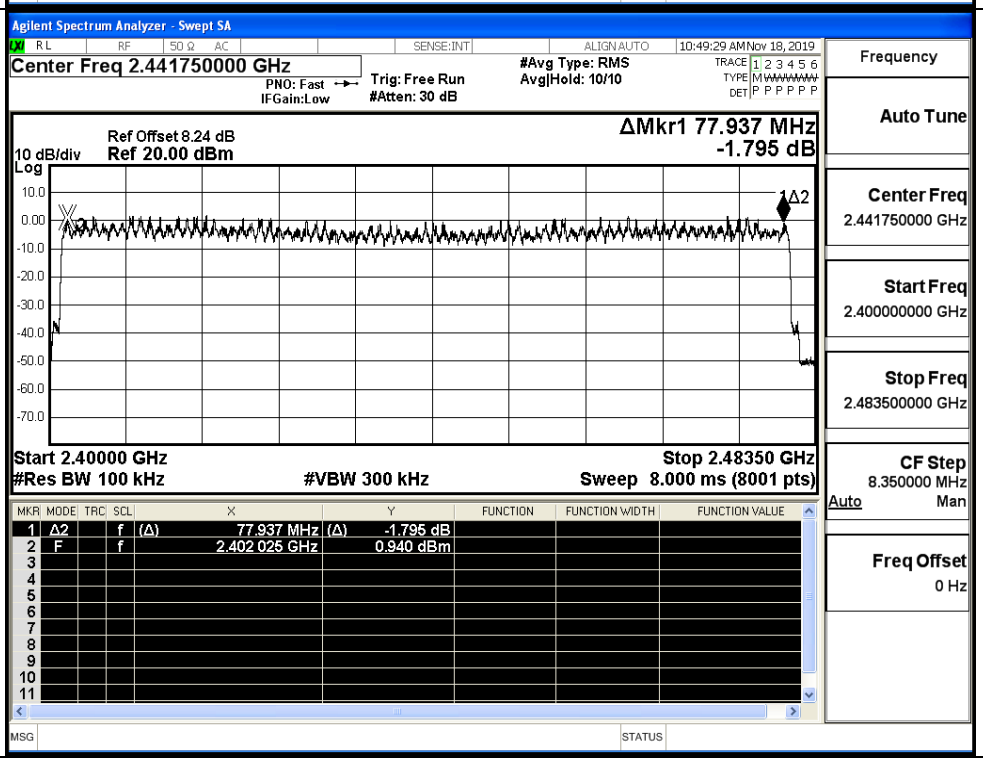
8DPSK/LCH

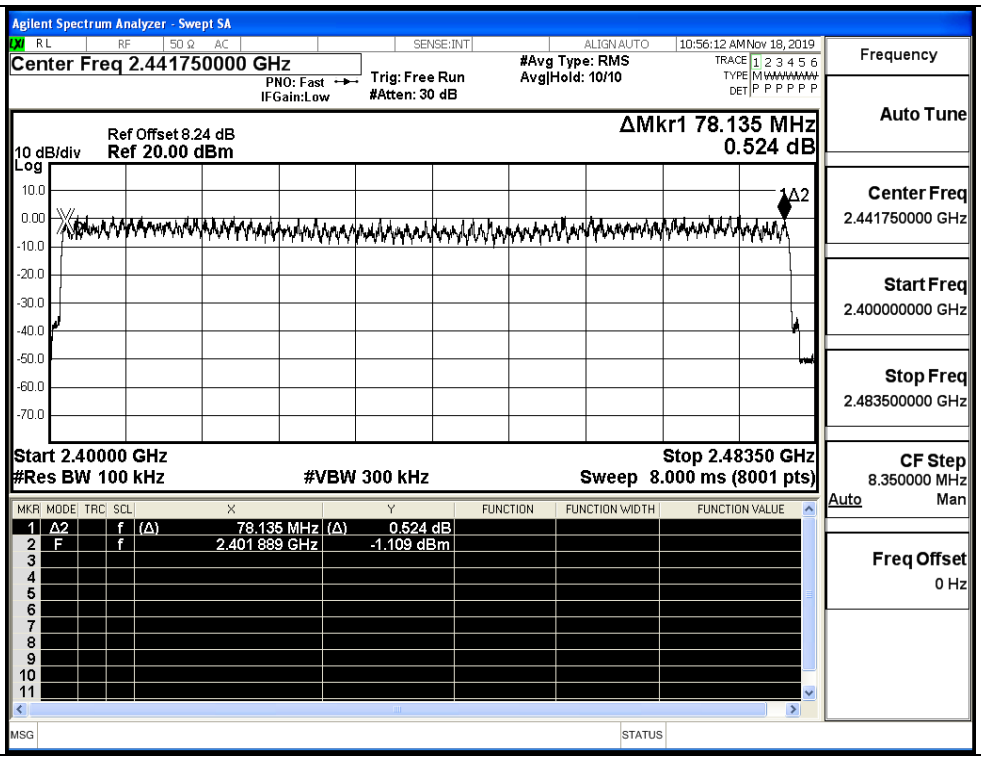


8DPSK/MCH	
8DPSK/HCH	

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

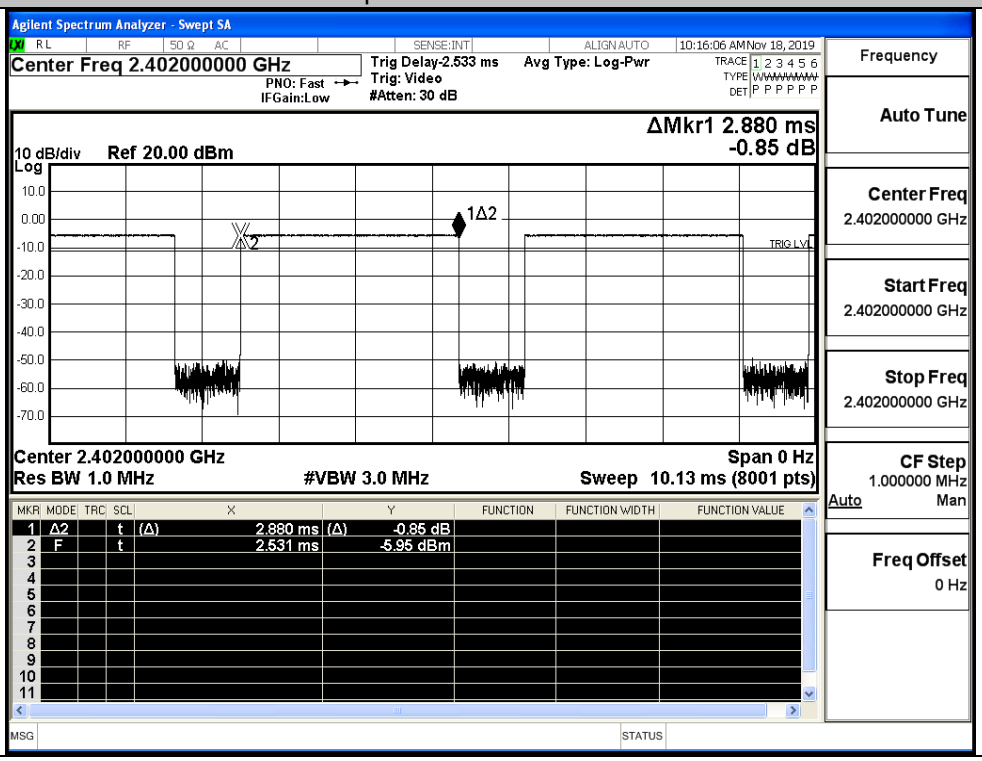
Test Graphs		
GFSK/Hop		
π/4DQPSK/Hop		

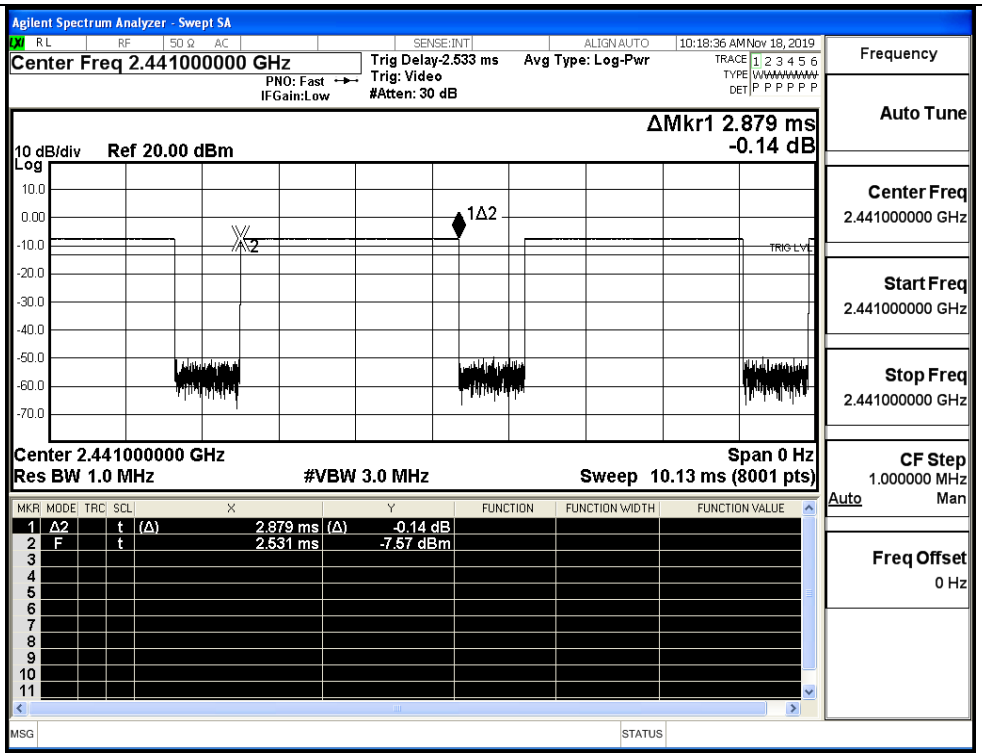
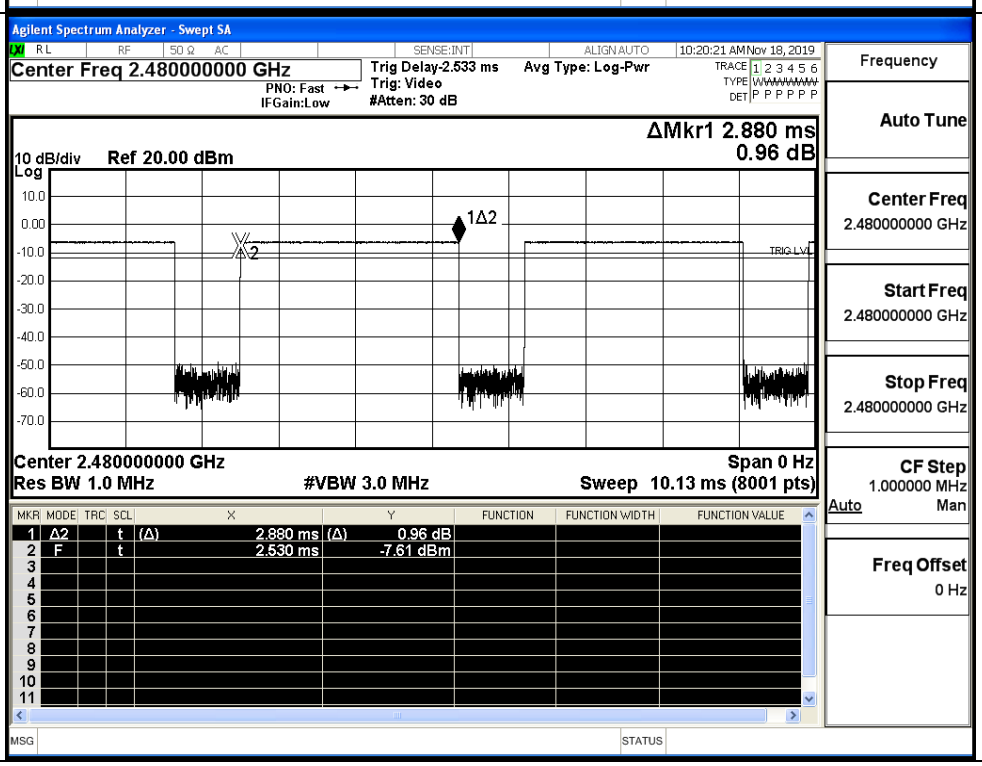
8DPSK/Hop	

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
10:56:12 AM Nov 18, 2019
Ref Offset 8.24 dB
10 dB/div
Ref 20.00 dBm
Log
ΔMkr1 78.135 MHz
0.524 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) 78.135 MHz (Δ) 0.524 dB
2 F f 2.401 889 GHz -1.109 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

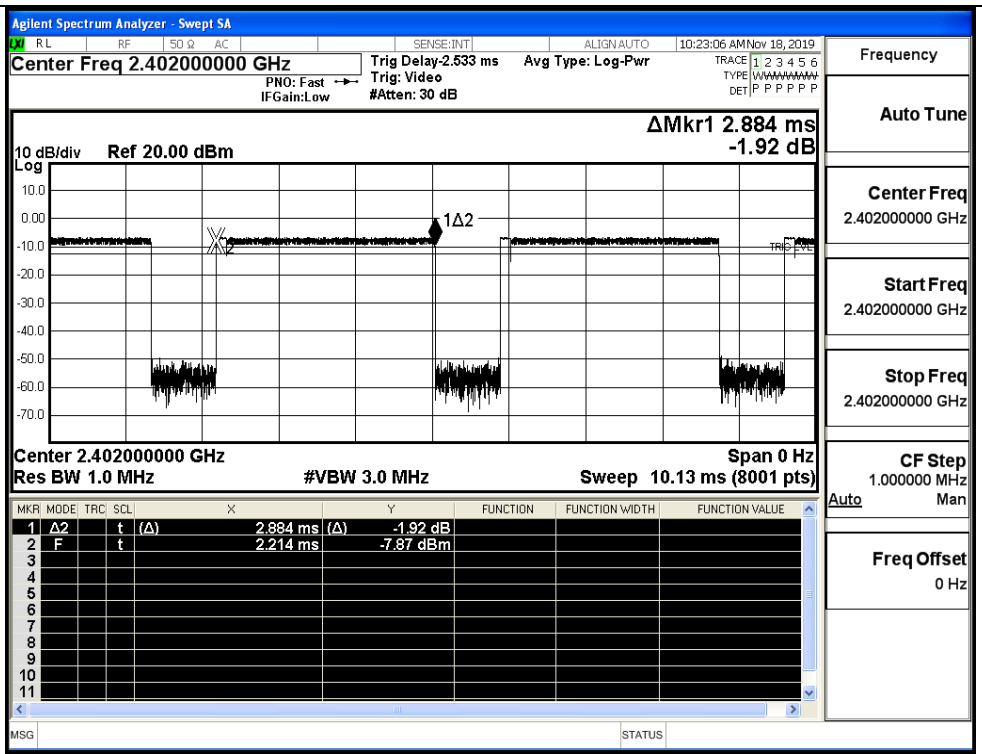
A.5 Dwell Time

Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.88	106.7	0.307	0.4	PASS
	DH5	MCH	2.88	106.7	0.307	0.4	PASS
	DH5	HCH	2.88	106.7	0.307	0.4	PASS
π/4DQPSK	2DH5	LCH	2.88	106.7	0.307	0.4	PASS
	2DH5	MCH	2.88	106.7	0.307	0.4	PASS
	2DH5	HCH	2.88	106.7	0.307	0.4	PASS
8DPSK	3DH5	LCH	2.88	106.7	0.308	0.4	PASS
	3DH5	MCH	2.88	106.7	0.308	0.4	PASS
	3DH5	HCH	2.88	106.7	0.308	0.4	PASS

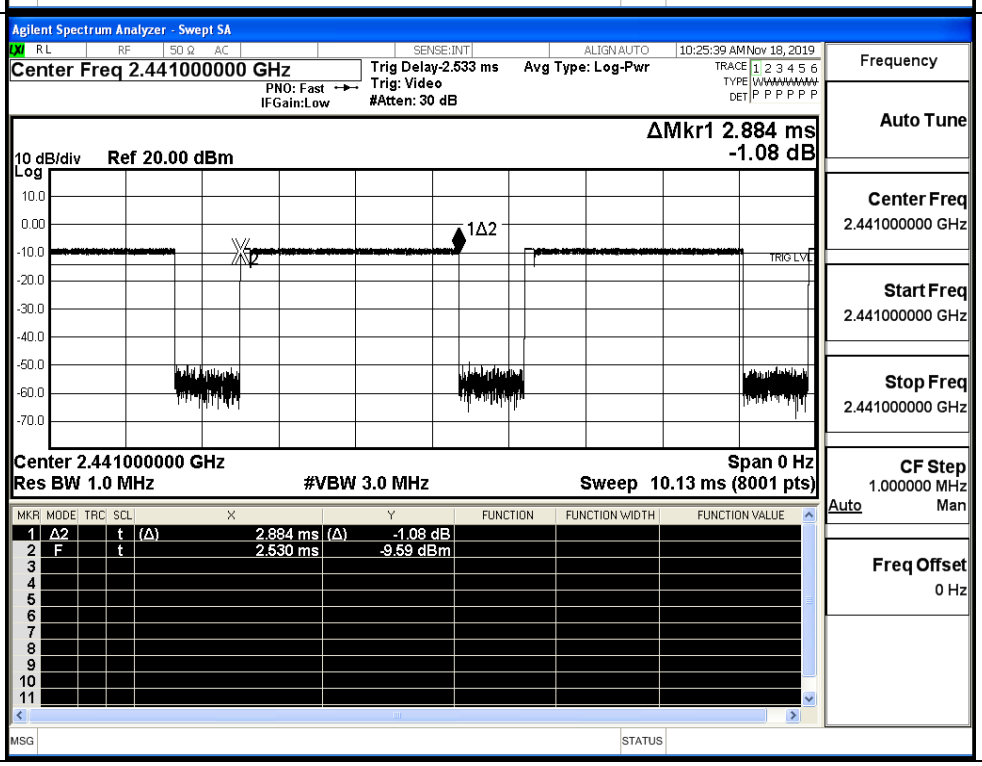
Test Graphs	
GFSK_DH5/LCH	

GFSK_DH5/MCH	
GFSK_DH5/HCH	

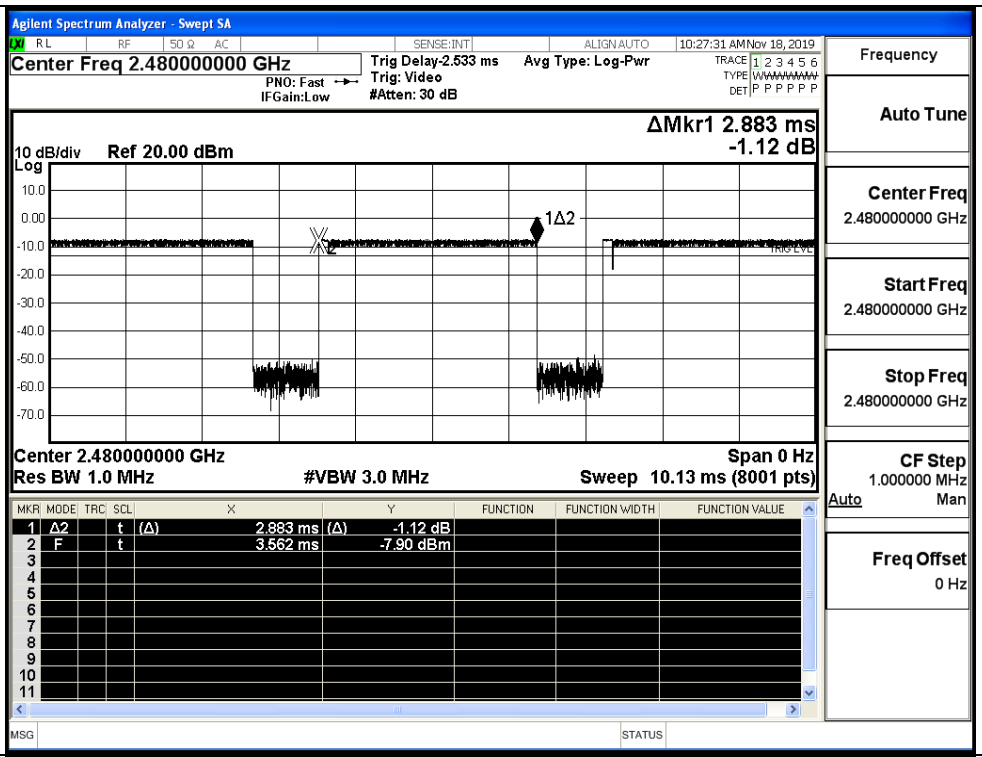
π/4DQPSK
_2DH5/LCH



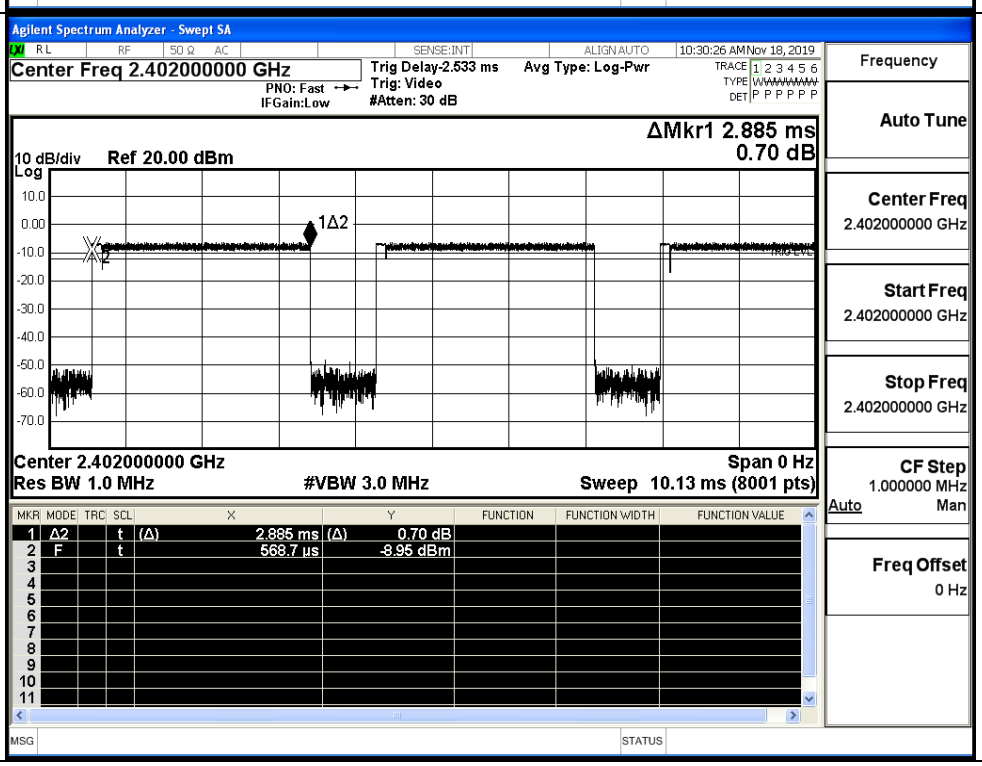
π/4DQPSK
_2DH5/MCH

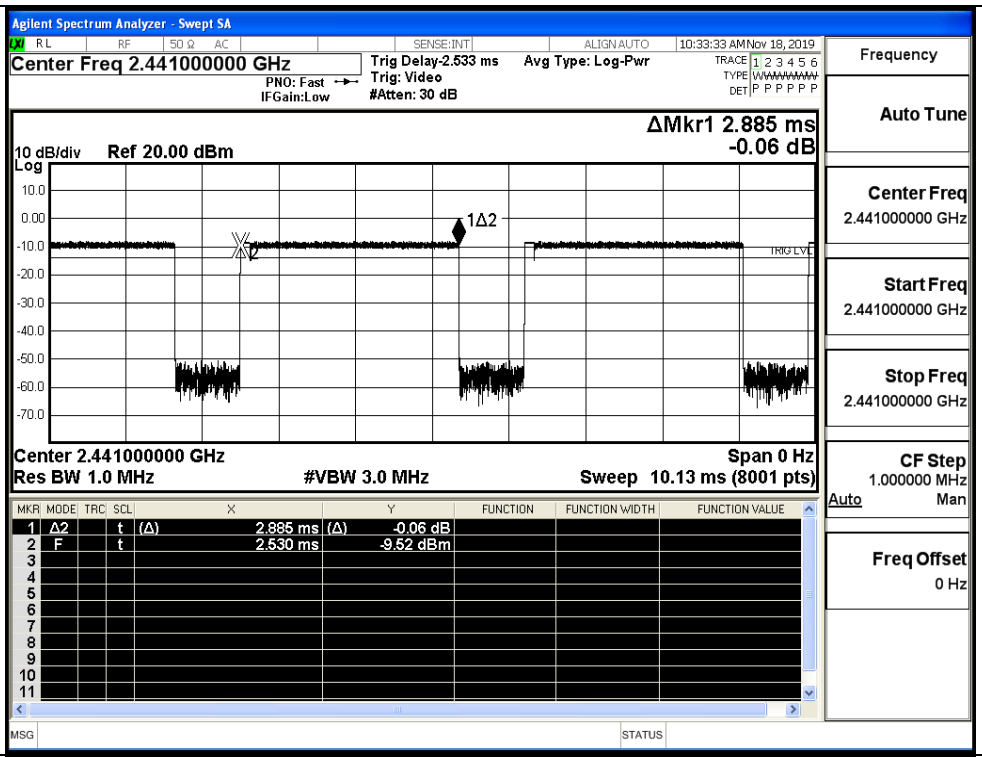
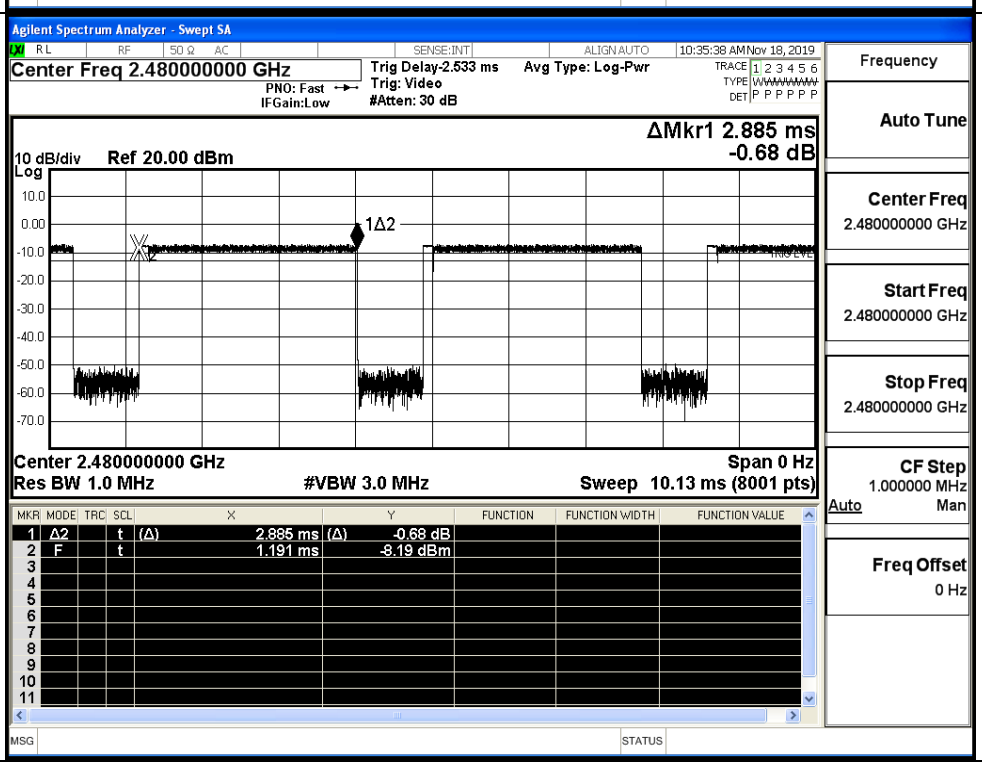


π/4DQPSK _2DH5/HCH



8DPSK _3DH5/LCH



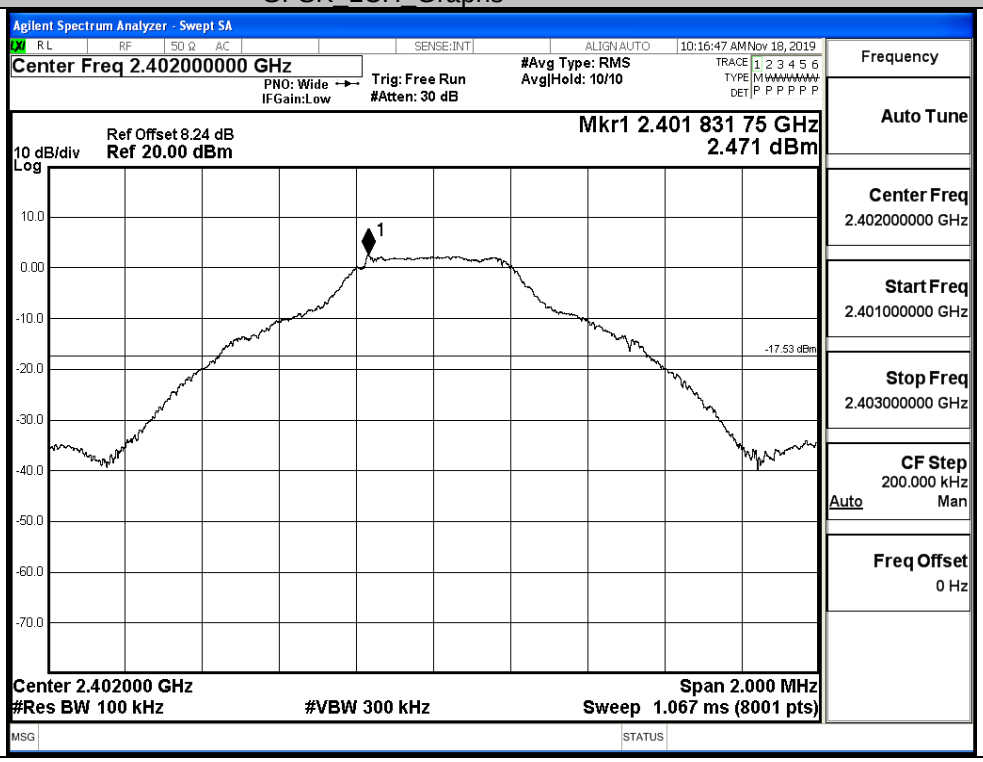
8DPSK _3DH5/MCH	
8DPSK _3DH5/HCH	

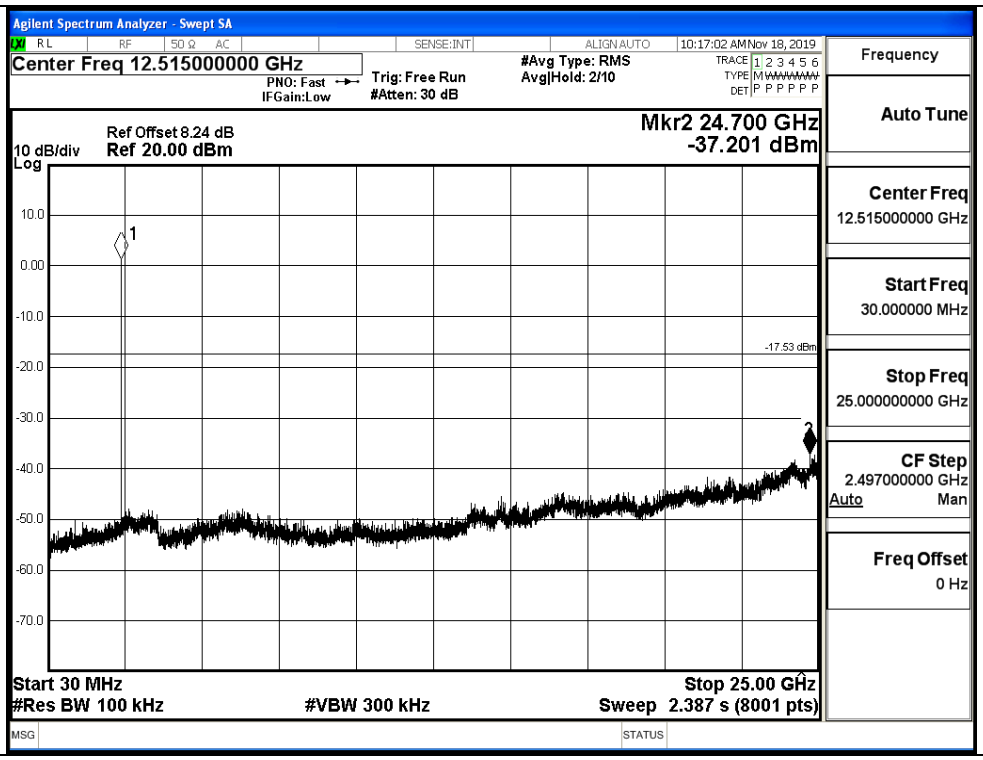
A.6 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2.471	-37.201	-17.529	PASS
	MCH	0.392	-37.587	-19.608	PASS
	HCH	1.945	-36.828	-18.055	PASS
π/4DQPSK	LCH	0.661	-37.442	-19.339	PASS
	MCH	-0.252	-37.556	-20.252	PASS
	HCH	0.666	-37.538	-19.334	PASS
8DPSK	LCH	1.373	-37.846	-18.627	PASS
	MCH	-0.237	-37.752	-20.237	PASS
	HCH	0.595	-37.718	-19.405	PASS

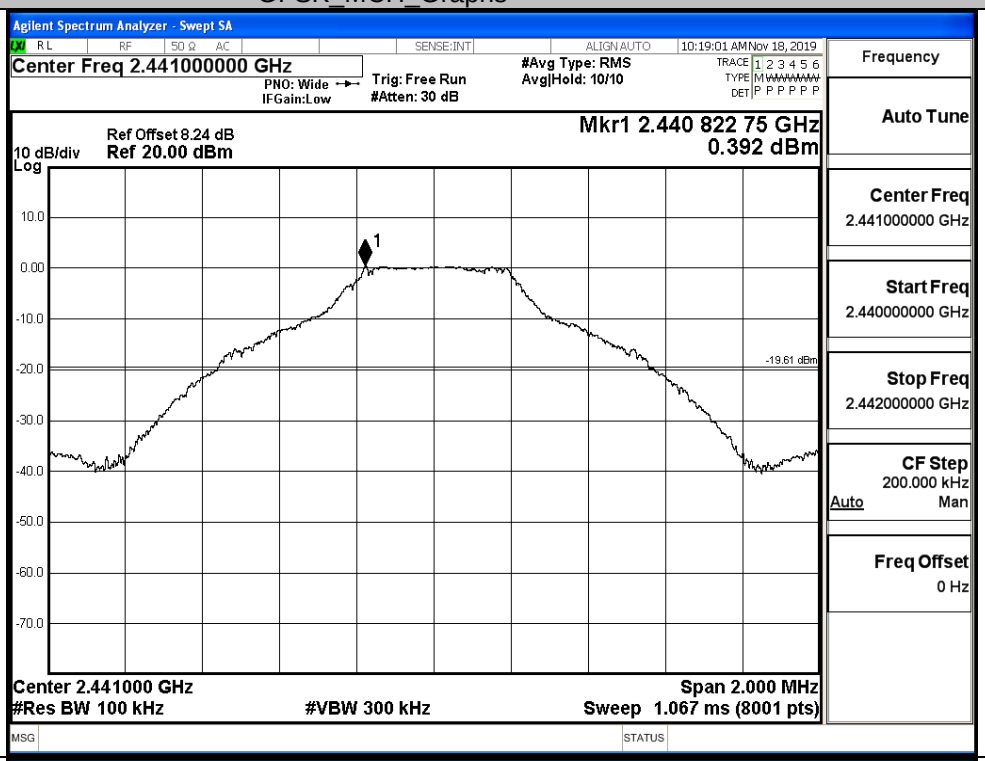
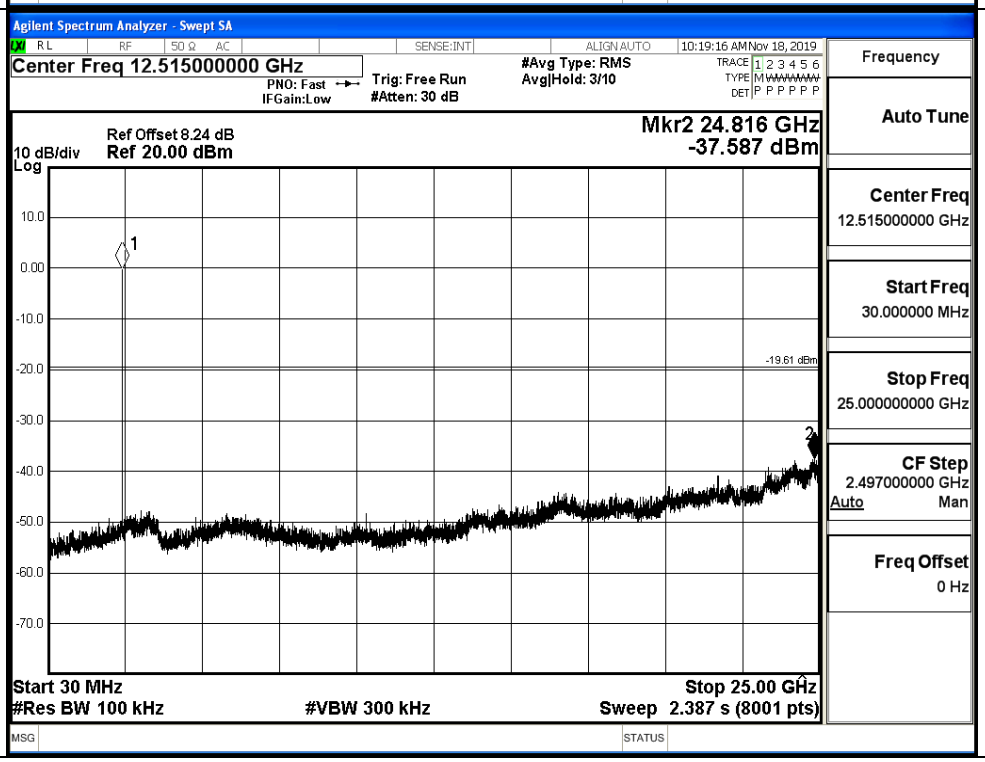
GFSK_LCH_Graphs

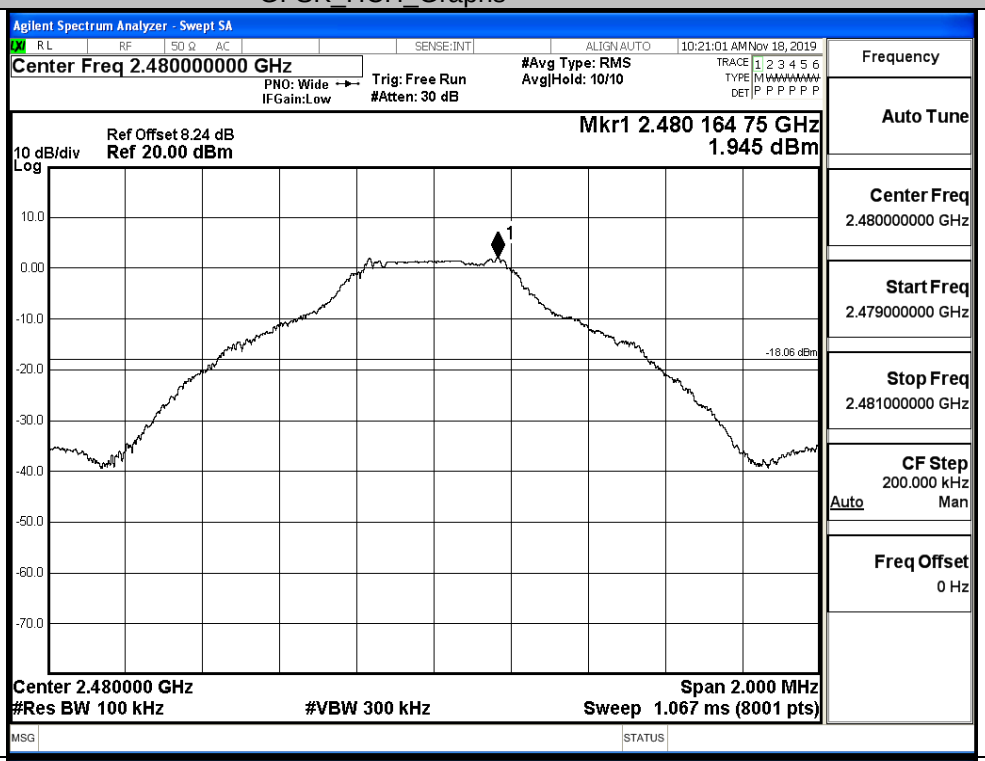
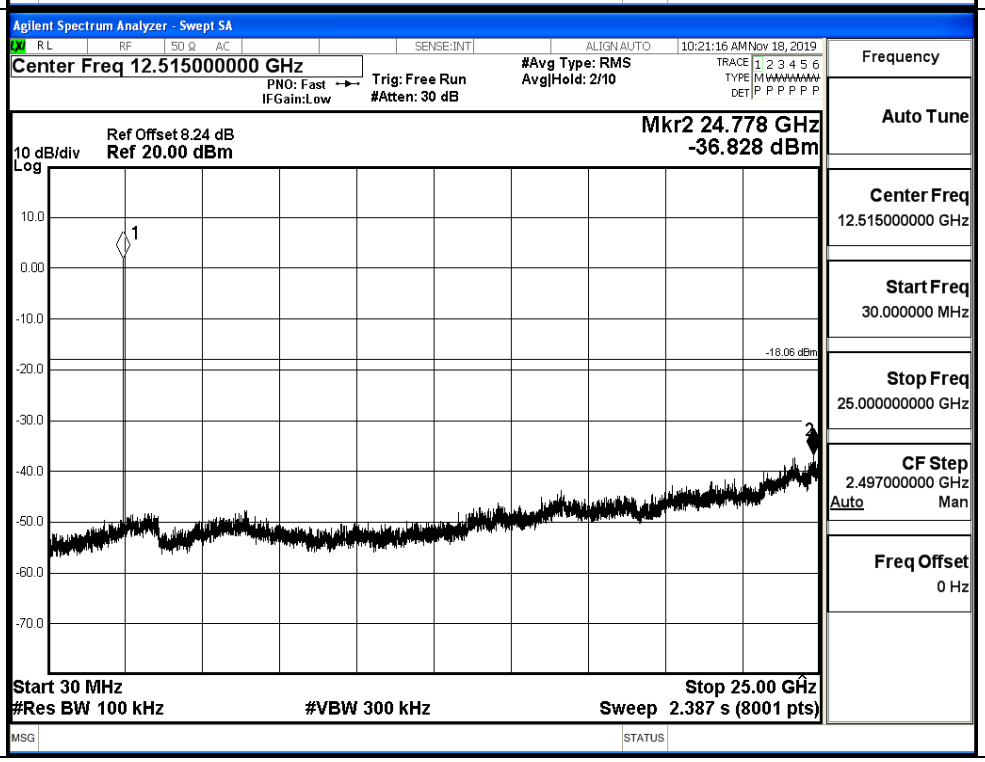
Pref

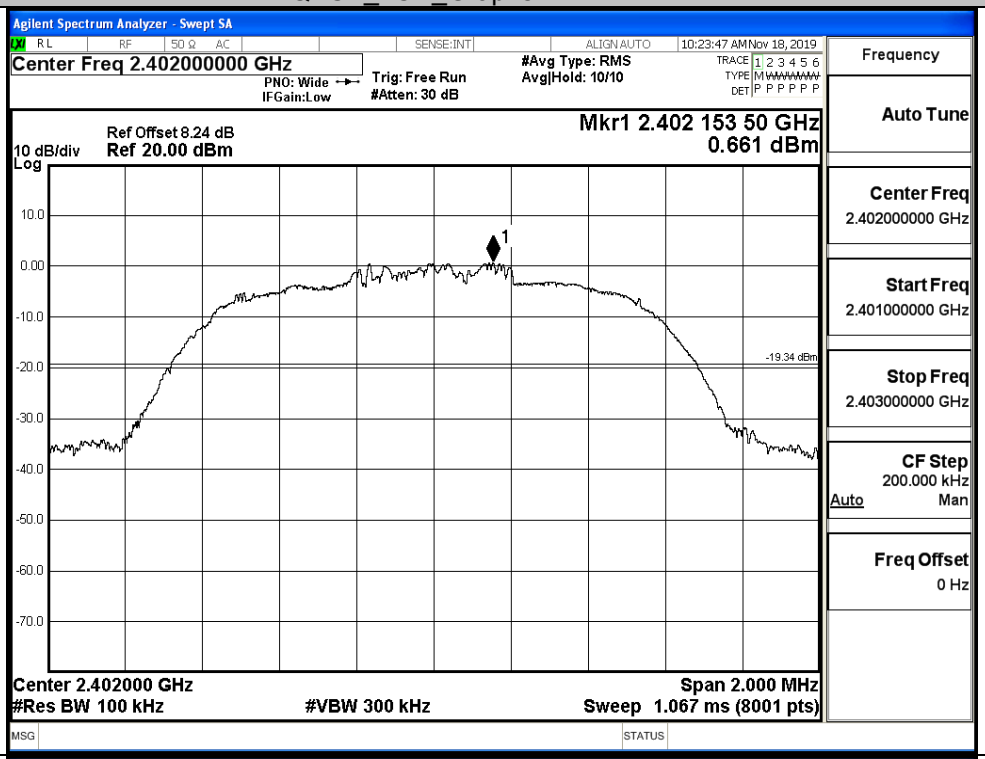
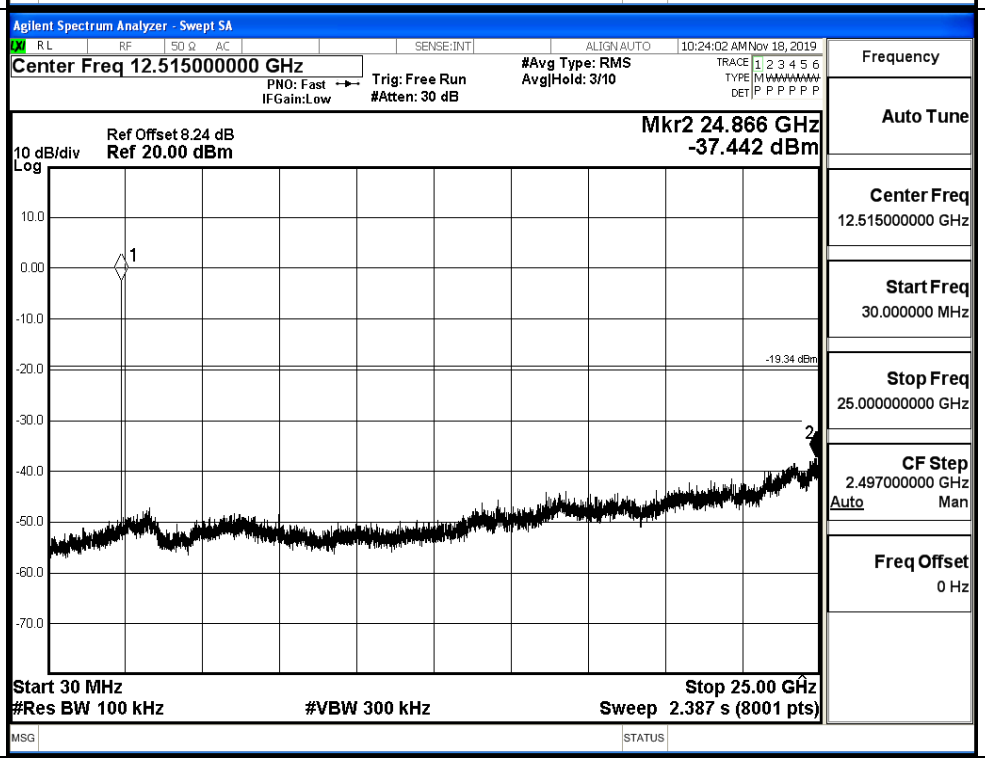


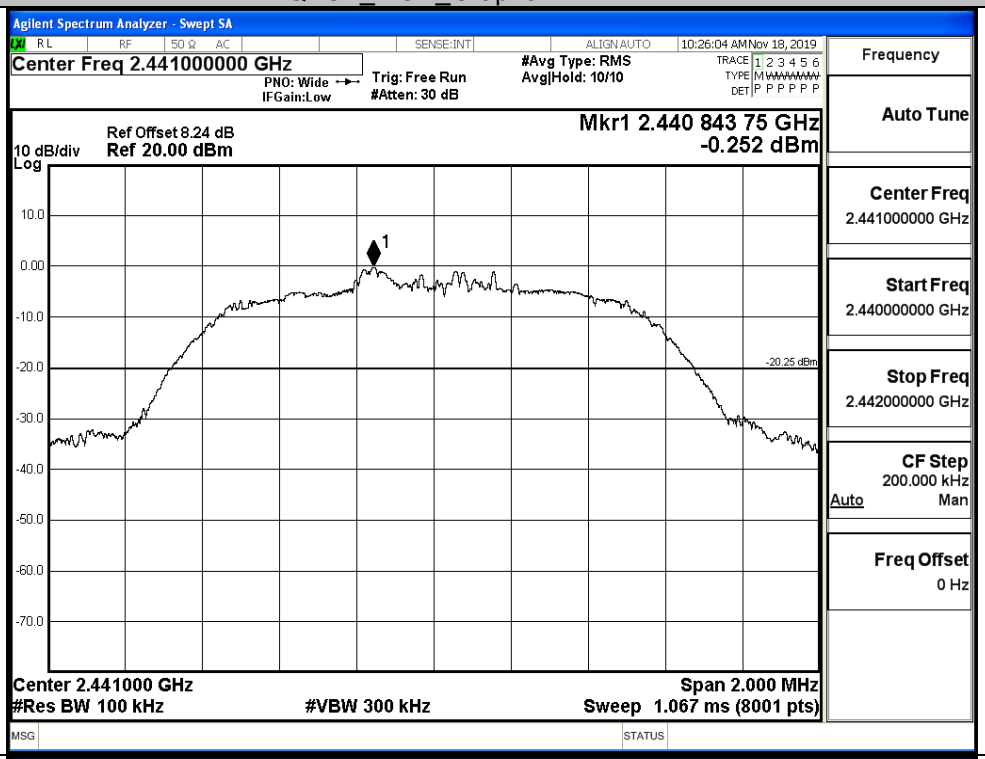
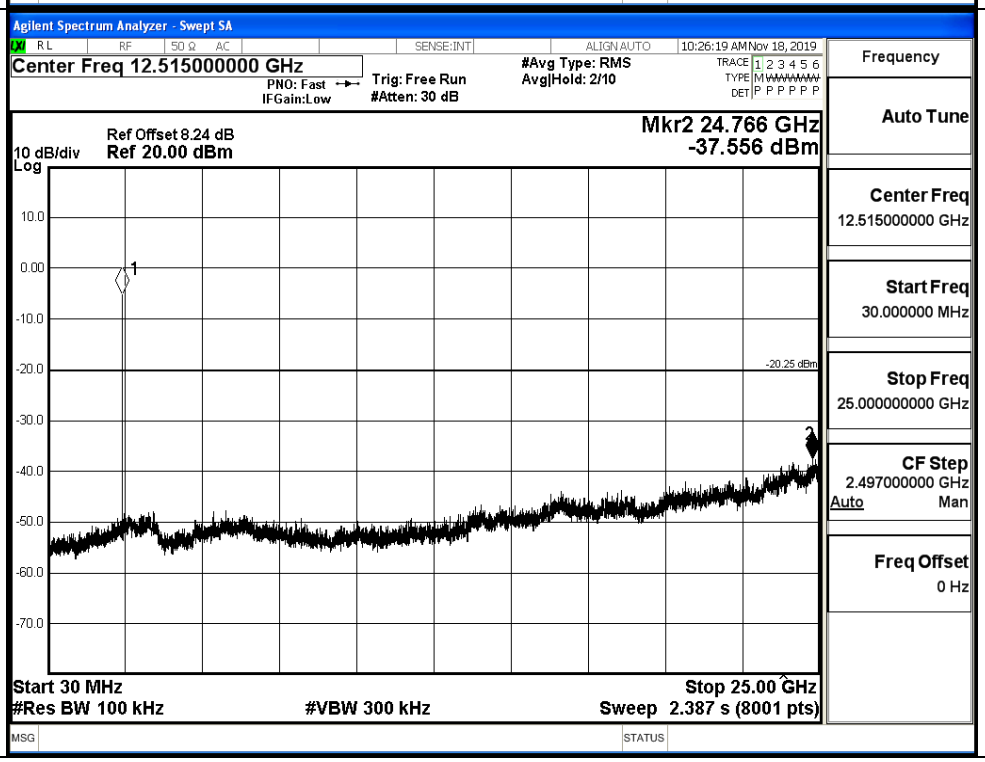
Puw		

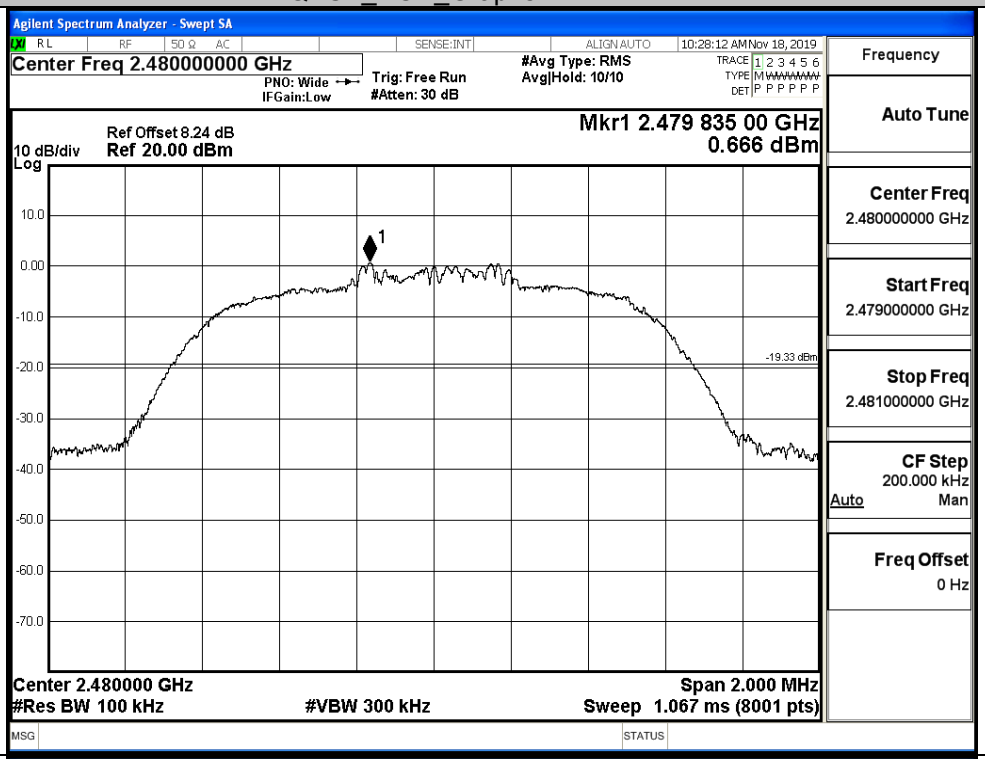
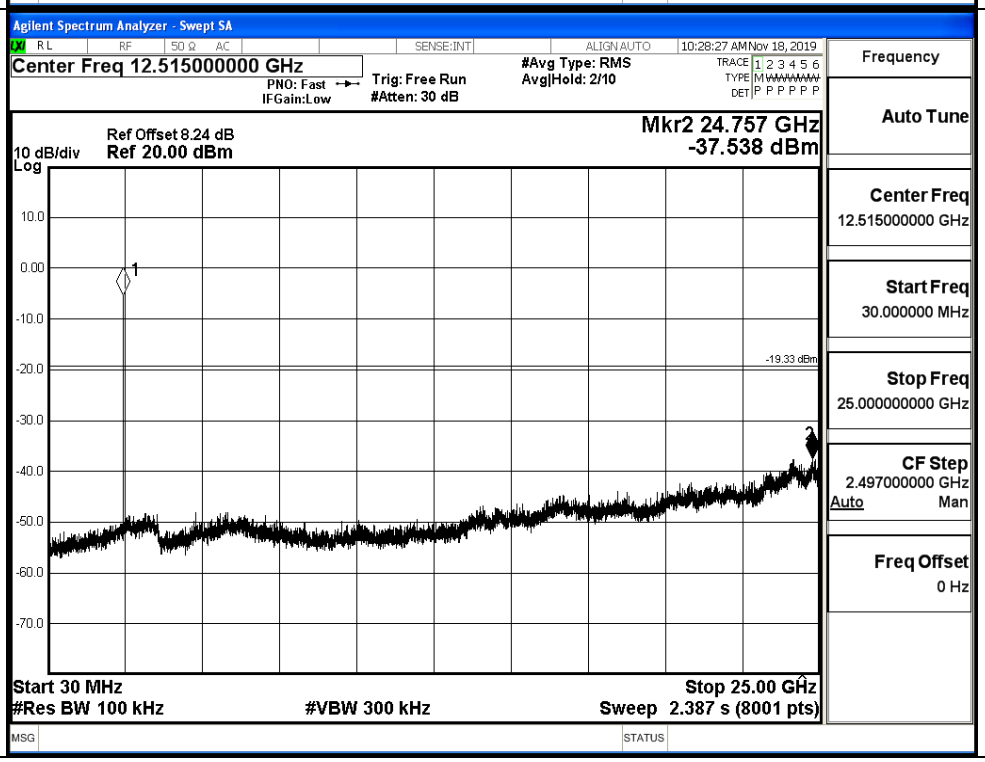
Agilent Spectrum Analyzer - Swept SA
Center Freq 12.515000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 2/10
10:17:02 AM Nov 18, 2019
Ref Offset 8.24 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr2 24.700 GHz
-37.201 dBm
-17.53 dBm
Start 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 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

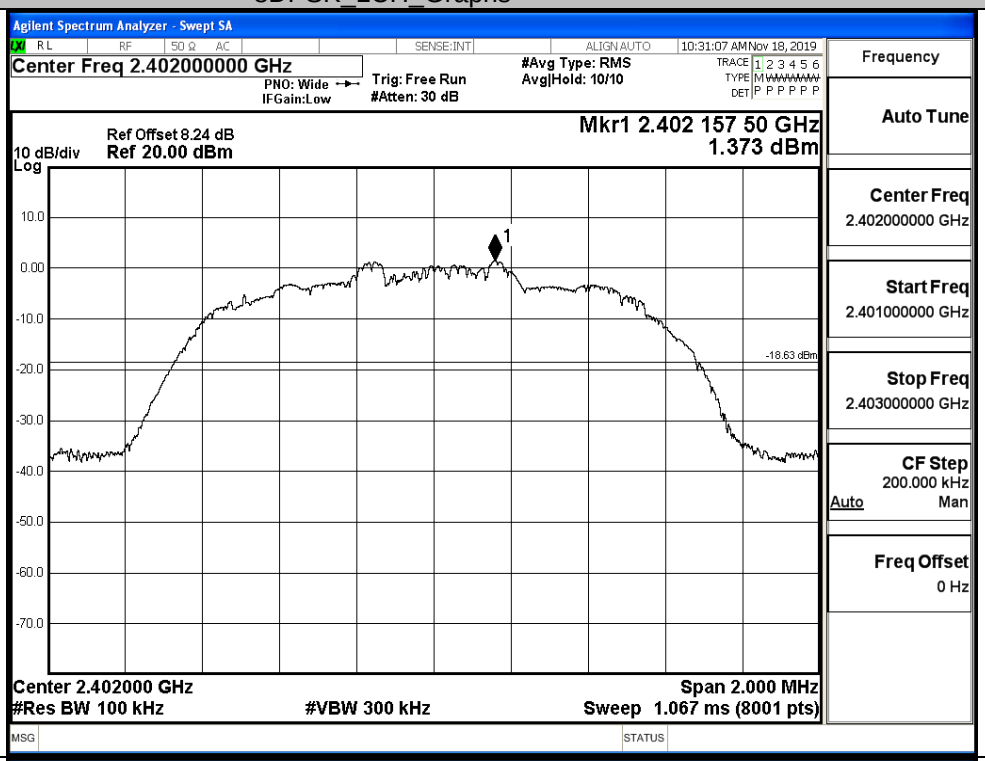
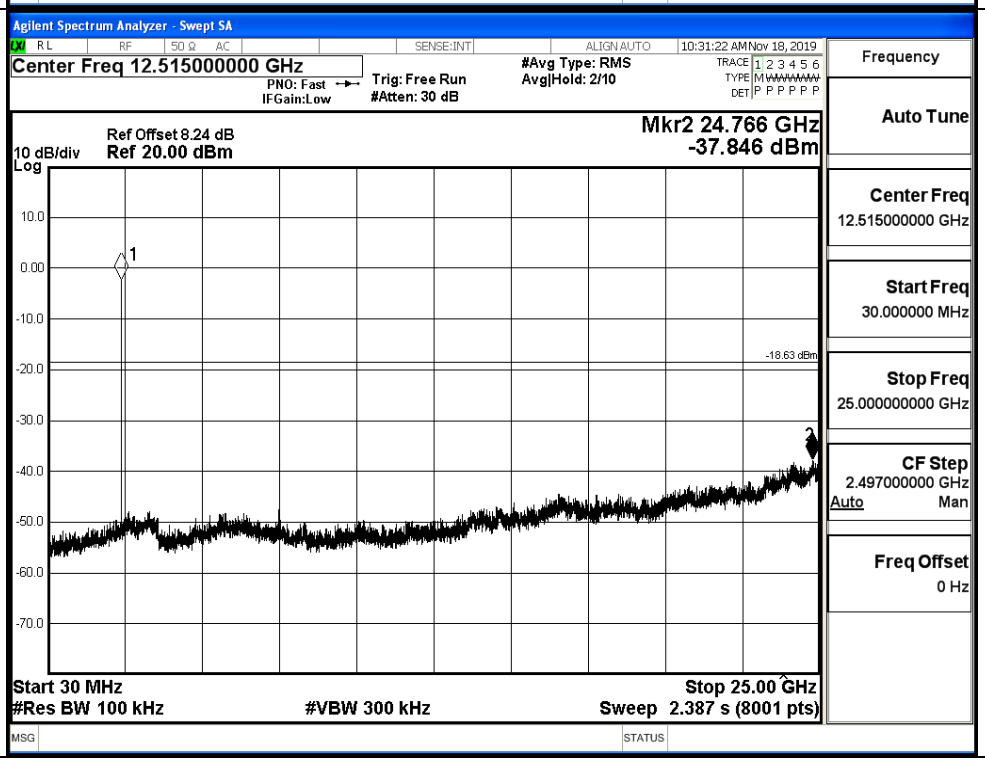
GFSK_MCH_Graphs			
Pref			
Puw			

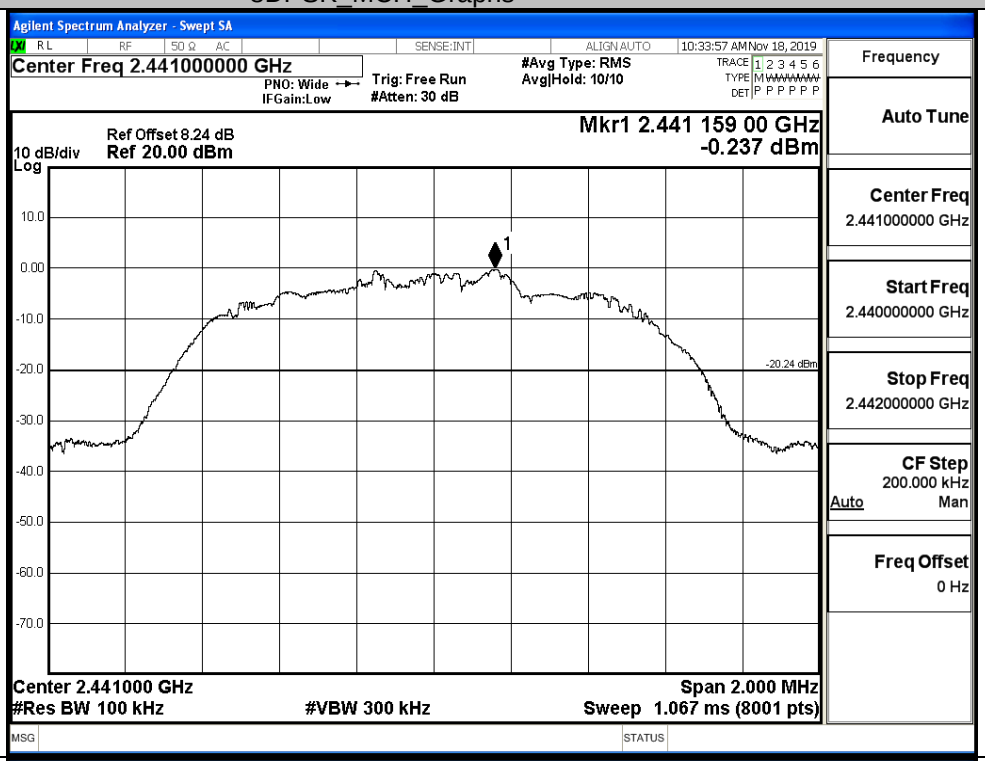
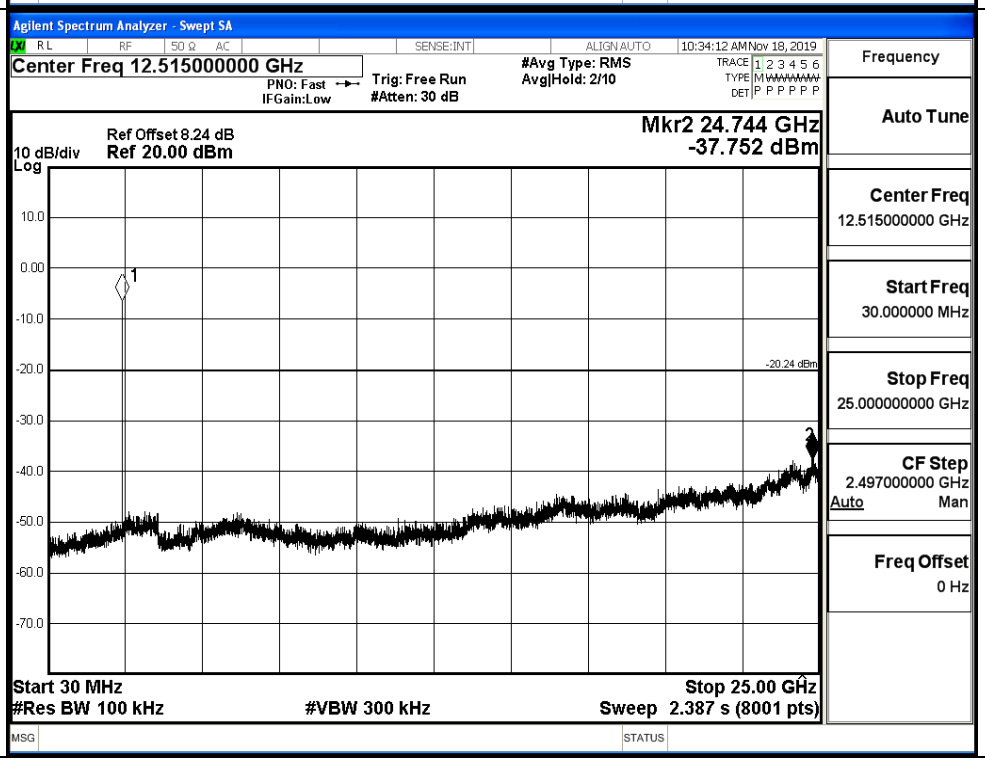
GFSK_HCH_Graphs			
Pref			
Puw			

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		

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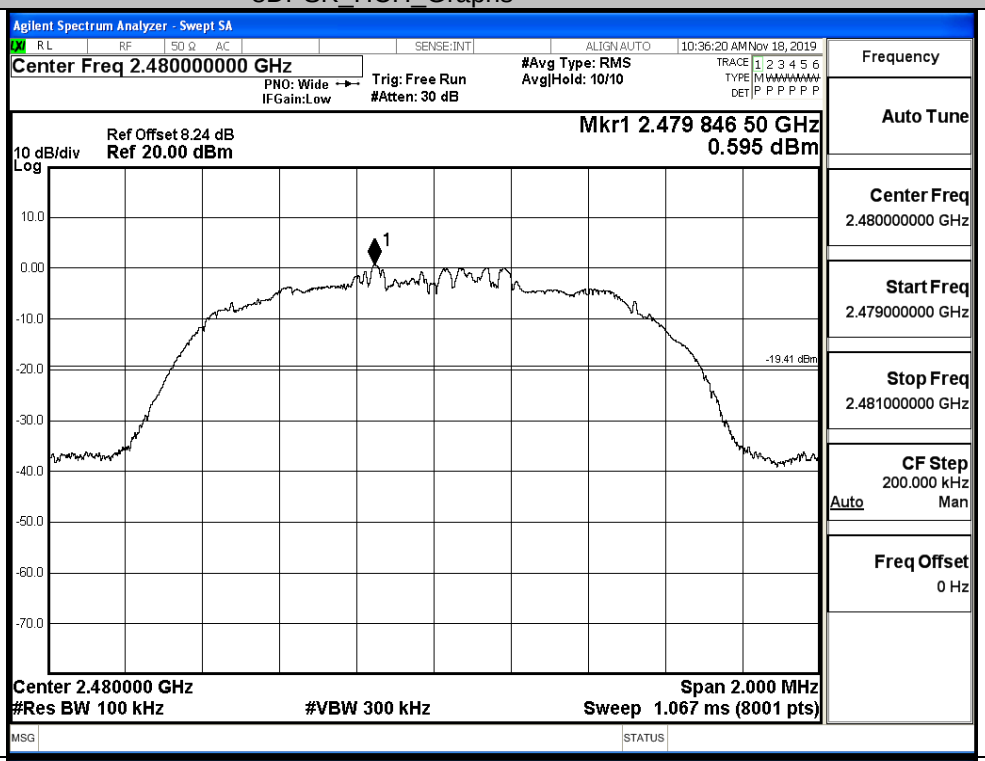
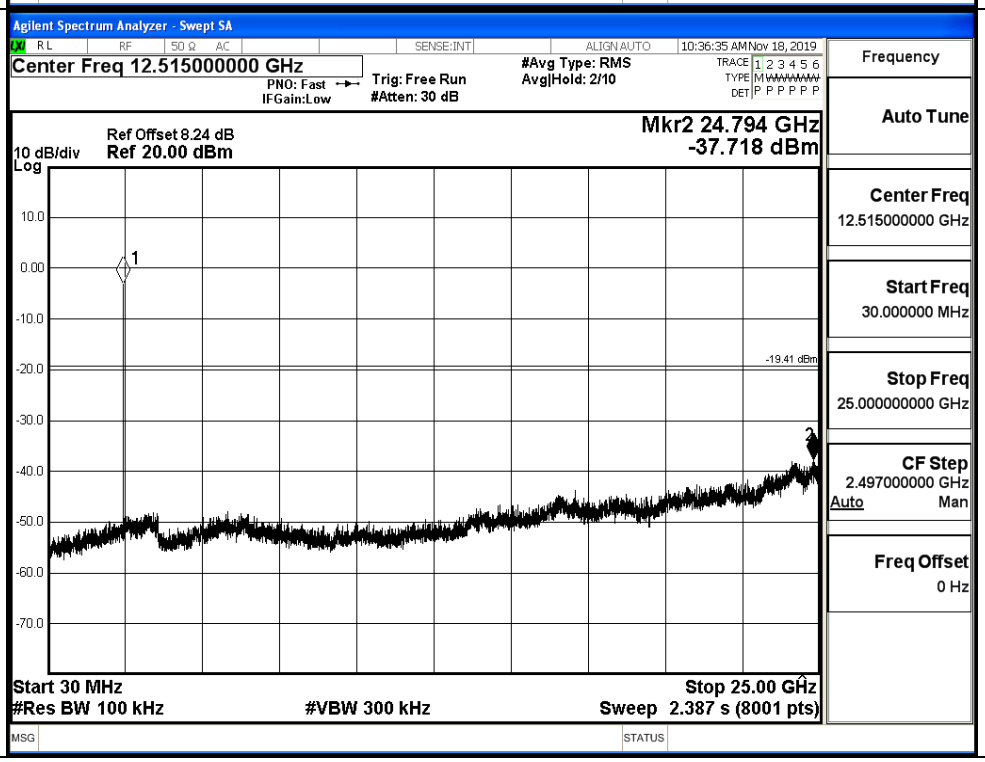
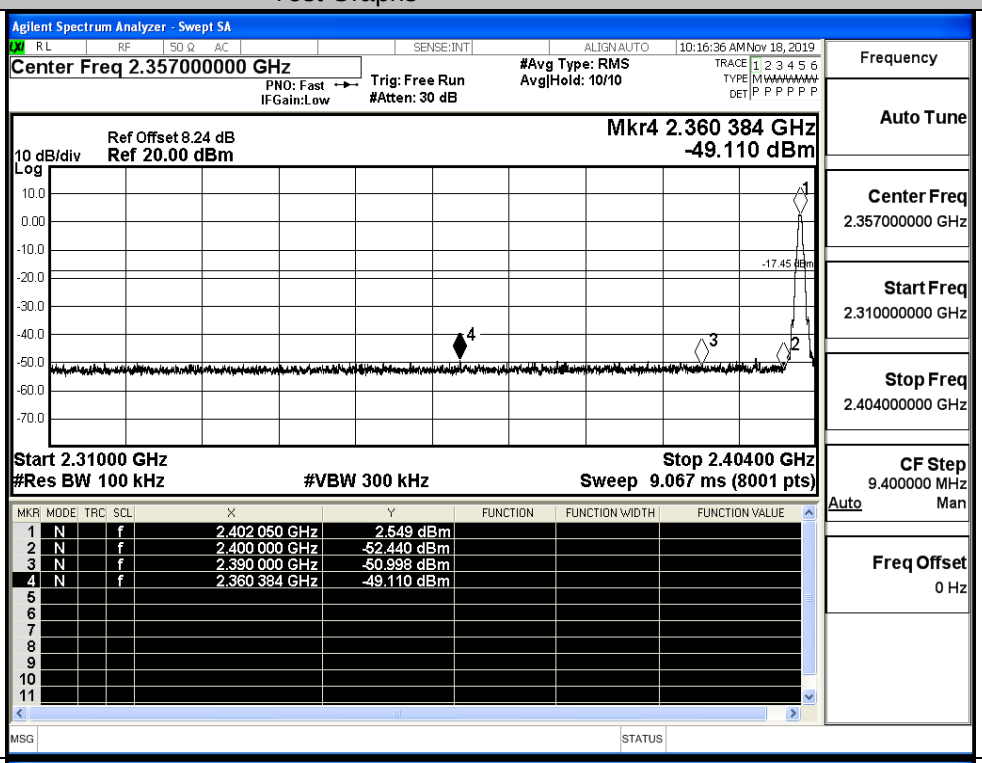
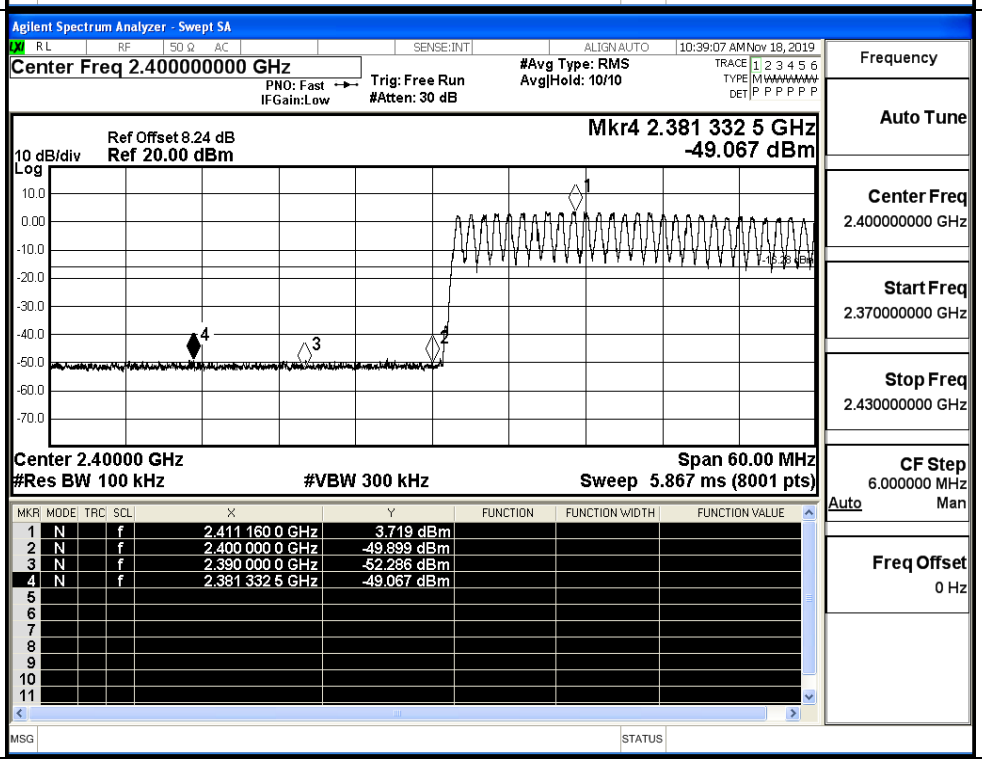
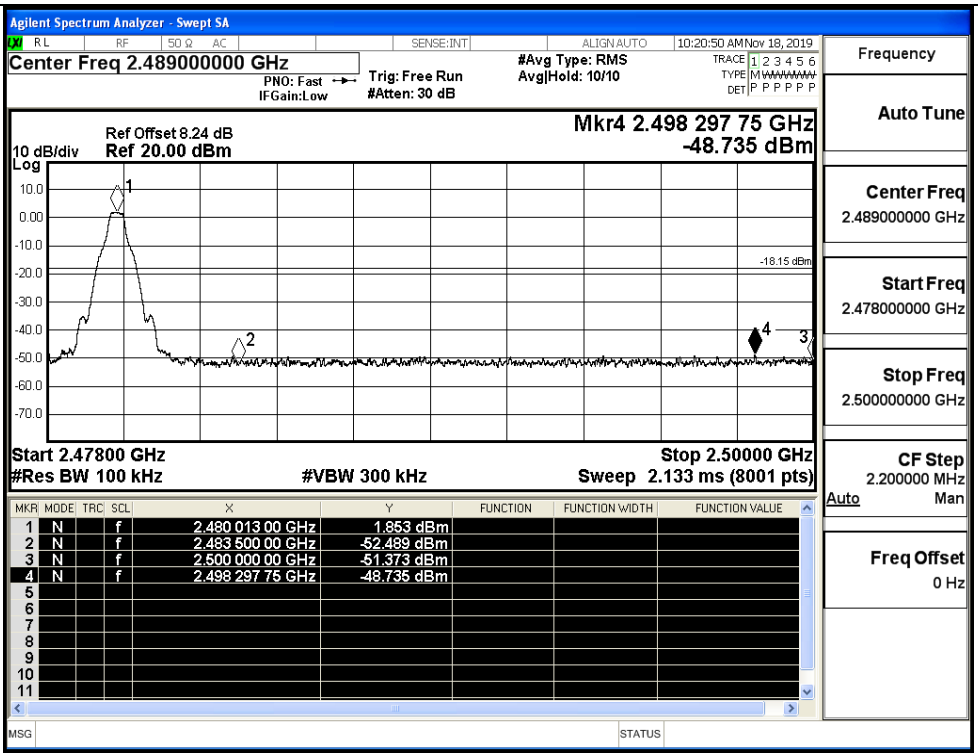
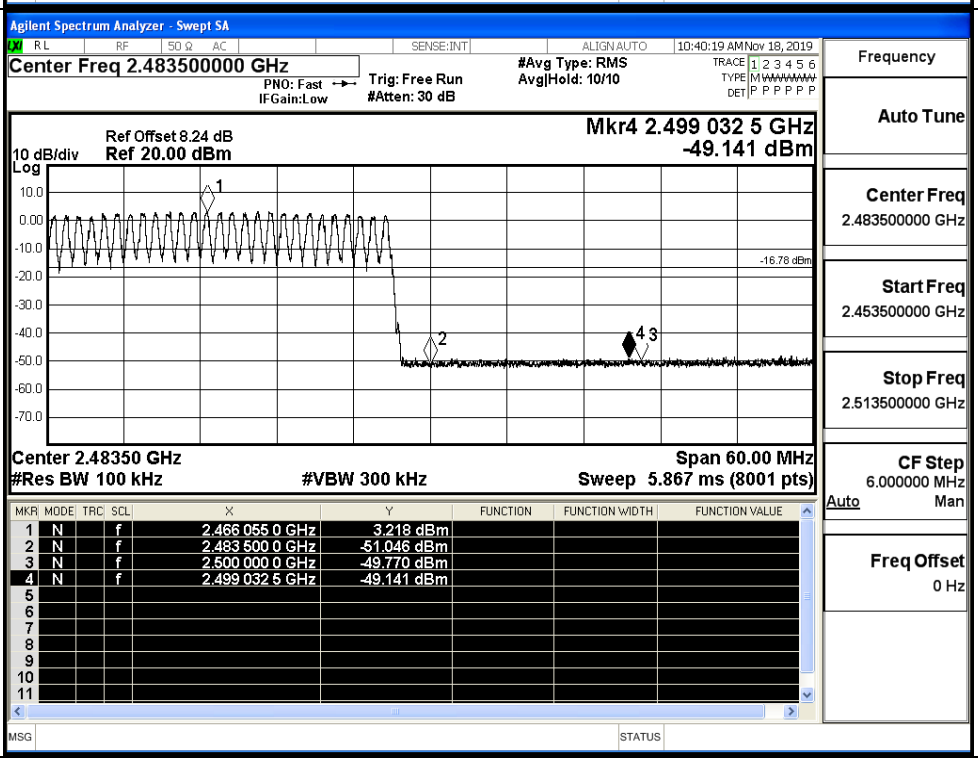
Pref			
Puw			

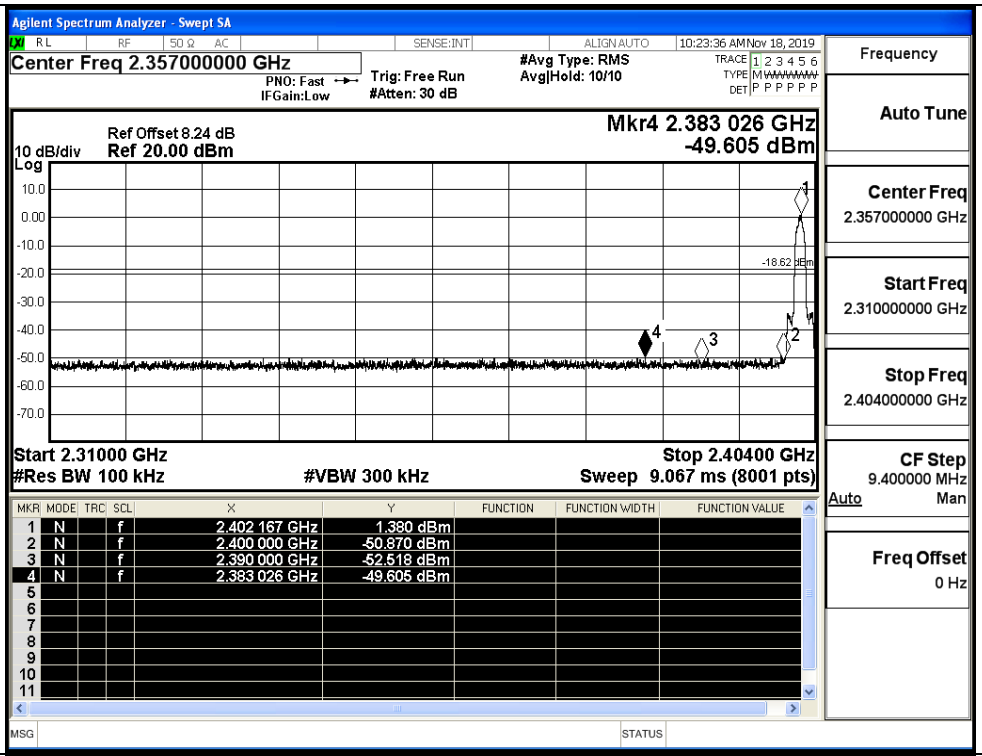
A.7 Band-edge for RF Conducted Emissions

Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	2.549	Off	-49.110	-17.45	PASS
			3.719	On	-49.067	-16.28	PASS
	HCH	2480	1.853	Off	-48.735	-18.15	PASS
			3.218	On	-49.141	-16.78	PASS
π/4DQPSK	LCH	2402	1.380	Off	-49.605	-18.62	PASS
			1.928	On	-48.836	-18.07	PASS
	HCH	2480	0.604	Off	-47.851	-19.4	PASS
			1.769	On	-48.176	-18.23	PASS
8DPSK	LCH	2402	1.277	Off	-49.035	-18.72	PASS
			2.139	On	-48.508	-17.86	PASS
	HCH	2480	0.735	Off	-47.901	-19.27	PASS
			1.825	On	-48.652	-18.18	PASS

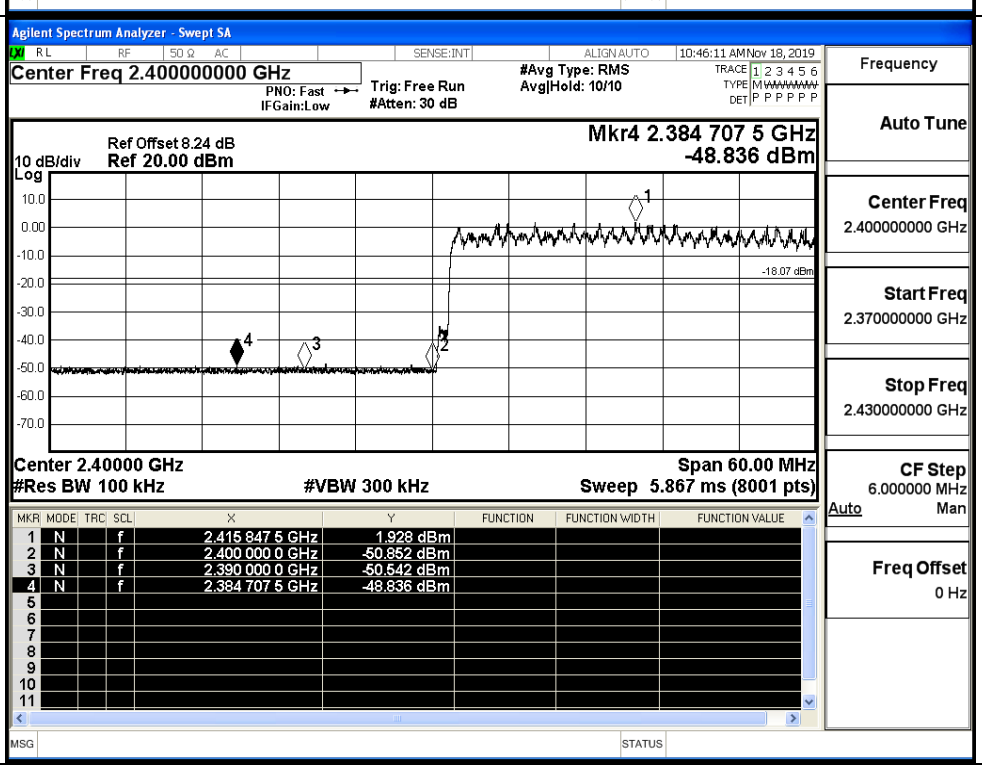
Test Graphs	
GFSK/LCH/No Hop	
GFSK/LCH/Hop	

GFSK/HCH/No Hop	
GFSK/HCH/Hop	

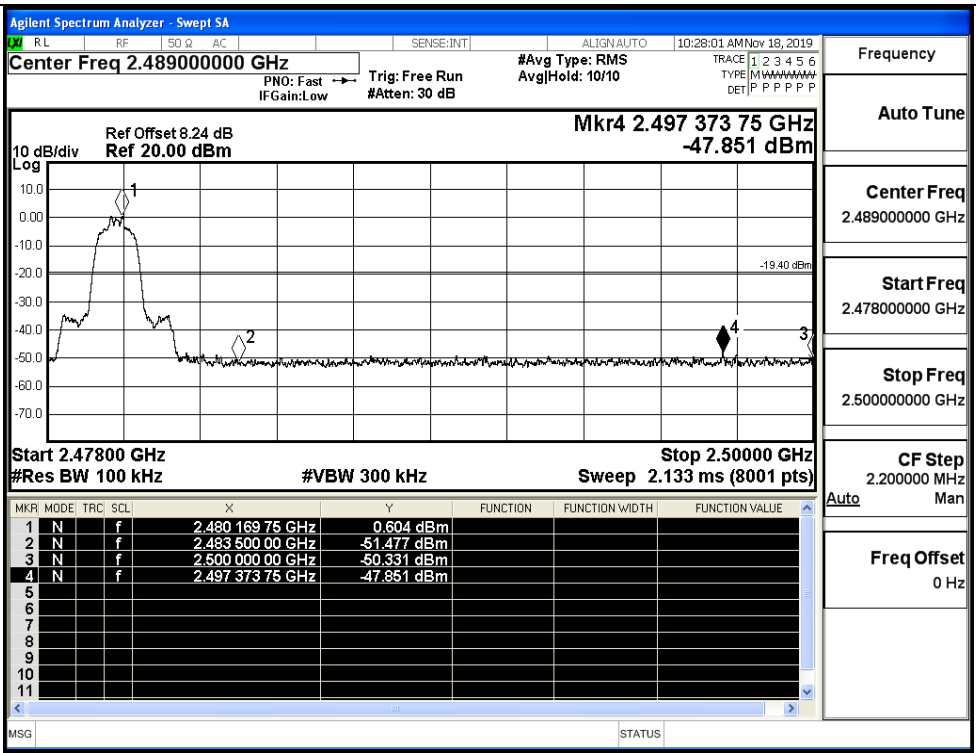
π/4DQPSK/LCH/No Hop



π/4DQPSK/LCH/Hop



π/4DQPSK/HCH/No Hop



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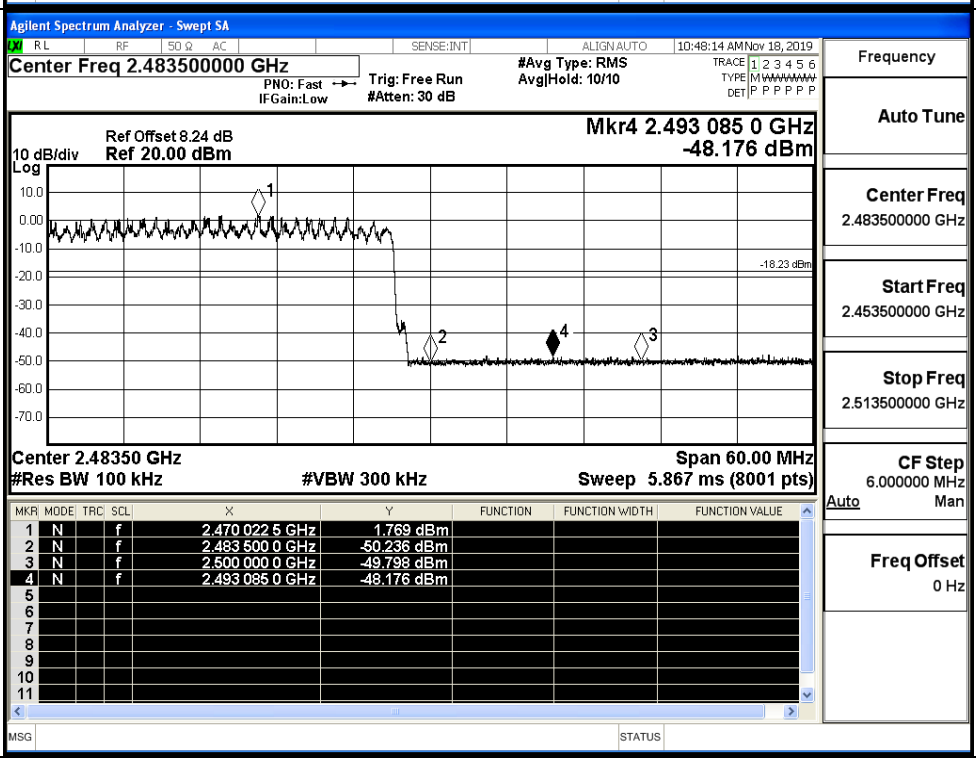
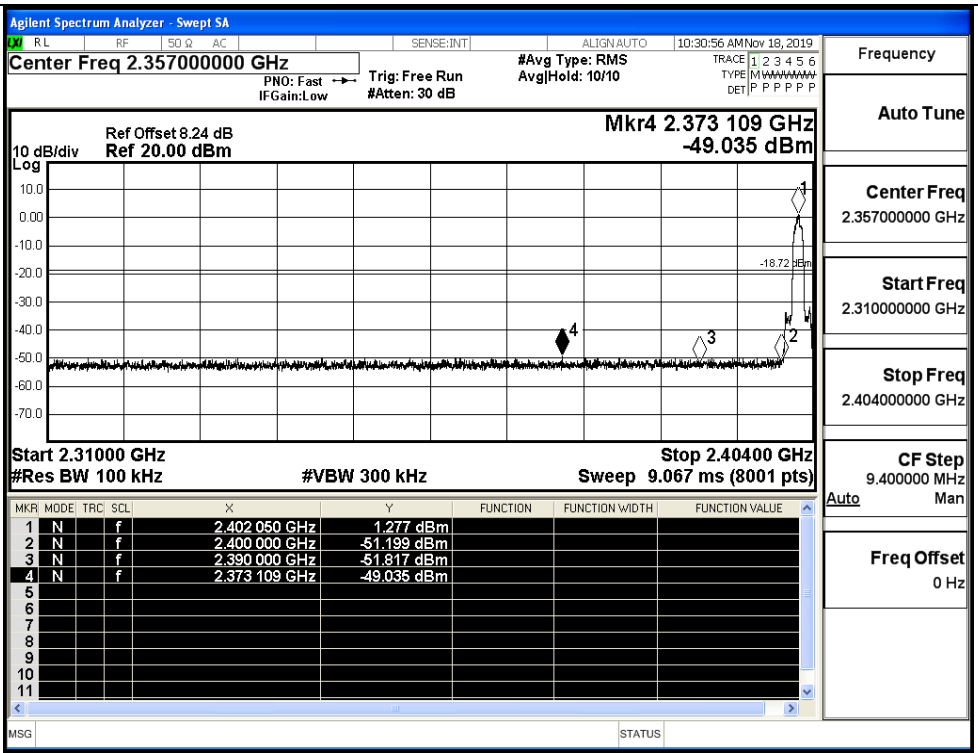
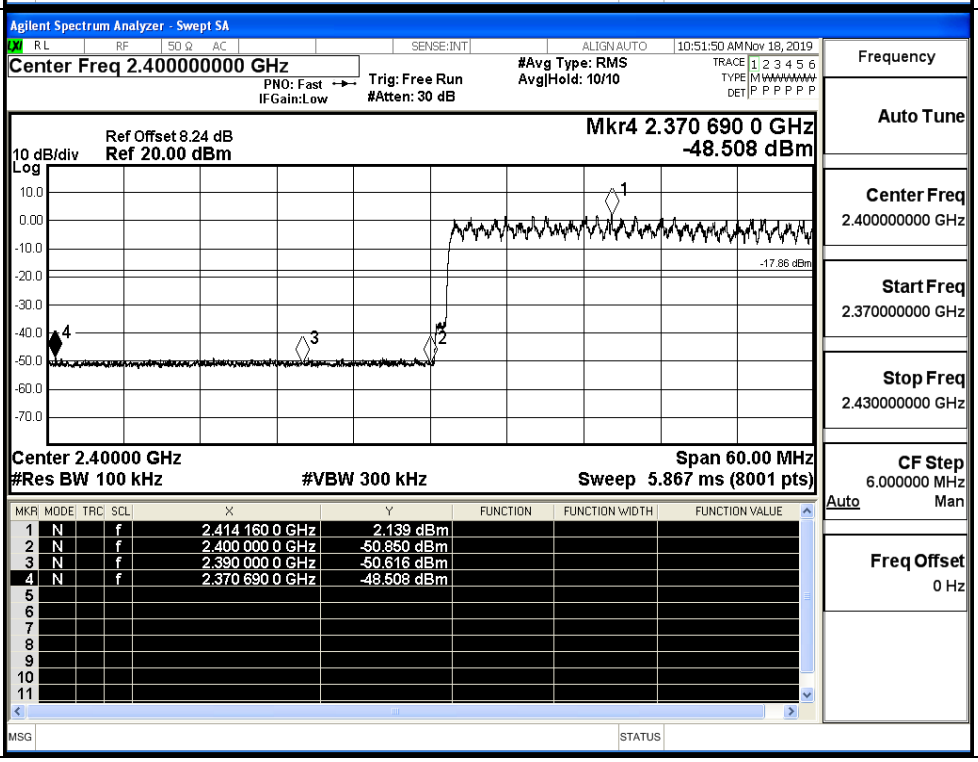
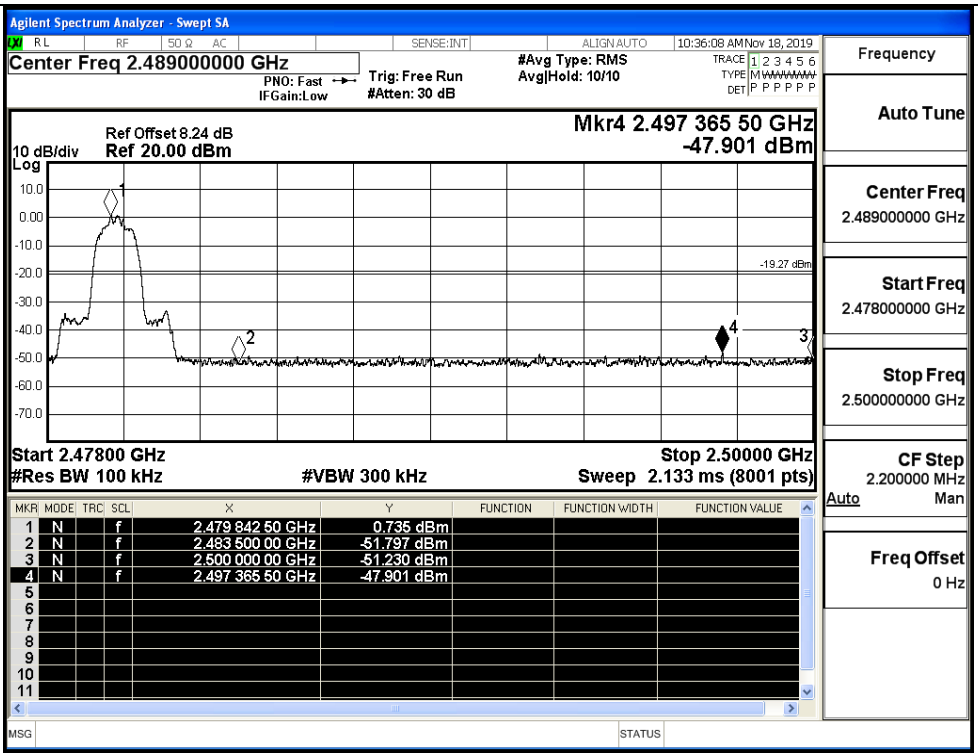
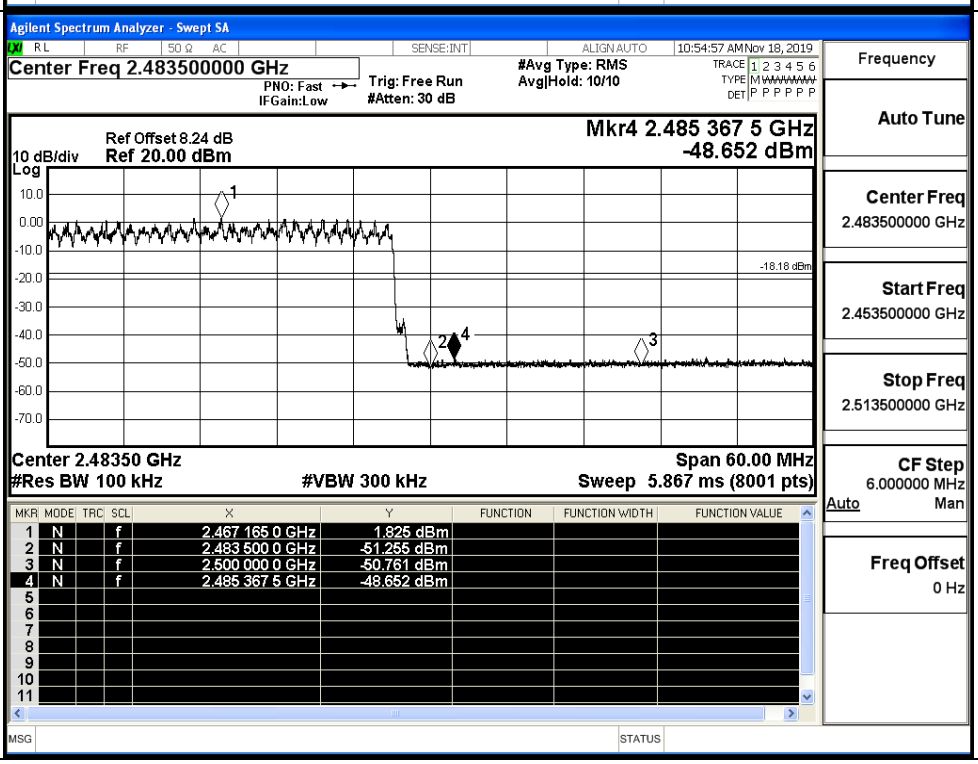


8DPSK/LCH/No Hop



8DPSK/LCH/Hop

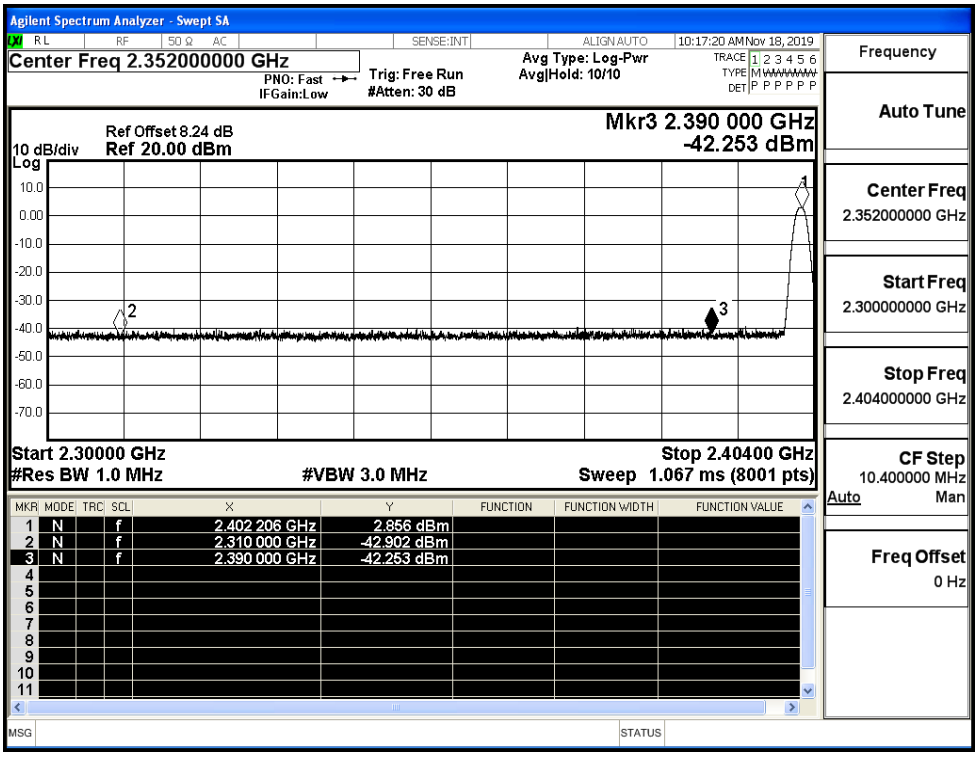


8DPSK/HCH/No Hop	
8DPSK/HCH/Hop	

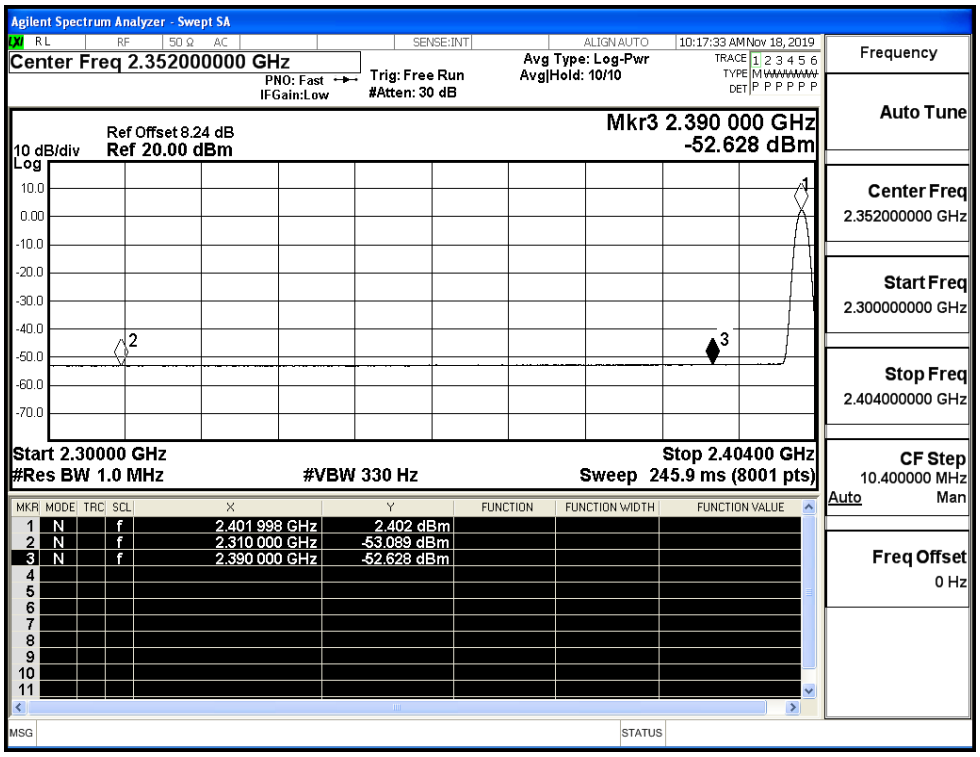
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-42.90	3.0	0	55.36	PEAK	74	PASS
	Off	2310.0	-53.09	3.0	0	45.17	AV	54	PASS
	Off	2390.0	-42.25	3.0	0	56.01	PEAK	74	PASS
	Off	2390.0	-52.63	3.0	0	45.63	AV	54	PASS
	Off	2483.5	-42.60	3.0	0	55.66	PEAK	74	PASS
	Off	2483.5	-52.18	3.0	0	46.08	AV	54	PASS
	Off	2500.0	-38.74	3.0	0	59.52	PEAK	74	PASS
	Off	2500.0	-52.09	3.0	0	46.17	AV	54	PASS
π/4DQPSK	Off	2310.0	-43.38	3.0	0	54.88	PEAK	74	PASS
	Off	2310.0	-53.09	3.0	0	45.17	AV	54	PASS
	Off	2390.0	-43.04	3.0	0	55.22	PEAK	74	PASS
	Off	2390.0	-52.67	3.0	0	45.59	AV	54	PASS
	Off	2483.5	-41.04	3.0	0	57.22	PEAK	74	PASS
	Off	2483.5	-52.13	3.0	0	46.13	AV	54	PASS
	Off	2500.0	-39.64	3.0	0	58.62	PEAK	74	PASS
	Off	2500.0	-52.03	3.0	0	46.23	AV	54	PASS
8DPSK	Off	2310.0	-42.90	3.0	0	55.36	PEAK	74	PASS
	Off	2310.0	-53.00	3.0	0	45.26	AV	54	PASS
	Off	2390.0	-41.99	3.0	0	56.27	PEAK	74	PASS
	Off	2390.0	-52.72	3.0	0	45.54	AV	54	PASS
	Off	2483.5	-41.49	3.0	0	56.77	PEAK	74	PASS
	Off	2483.5	-52.01	3.0	0	46.25	AV	54	PASS
	Off	2500.0	-41.99	3.0	0	56.27	PEAK	74	PASS
	Off	2500.0	-52.07	3.0	0	46.19	AV	54	PASS

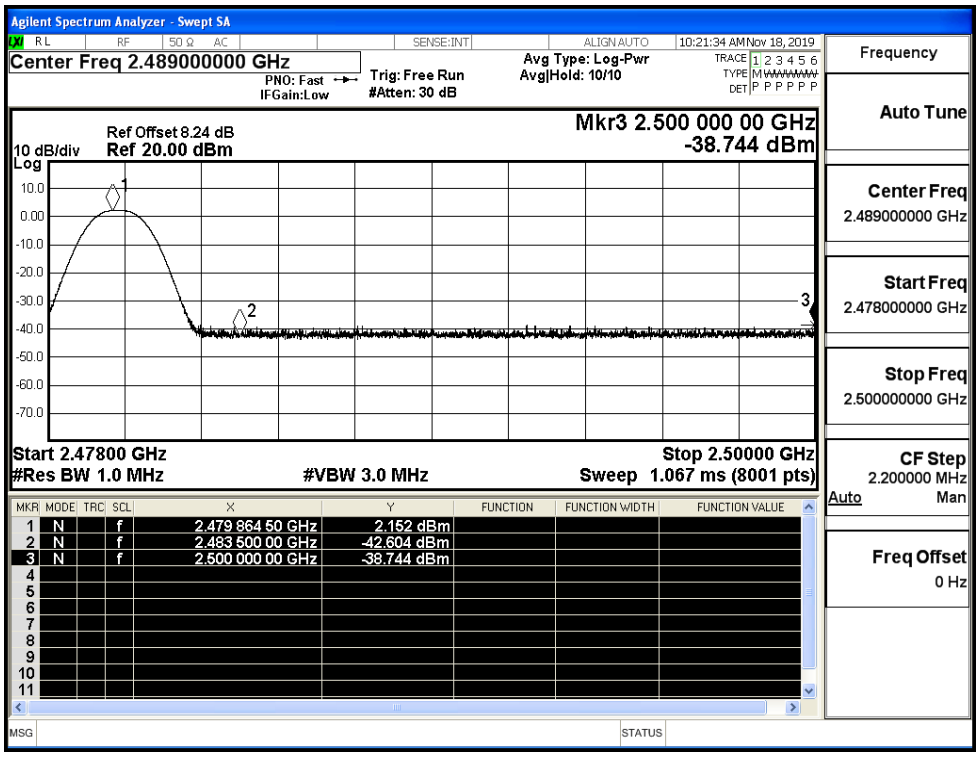
Restrict-band band-edge measurements_ Hopping Off_ GFSK_PEAK (Low Channel)



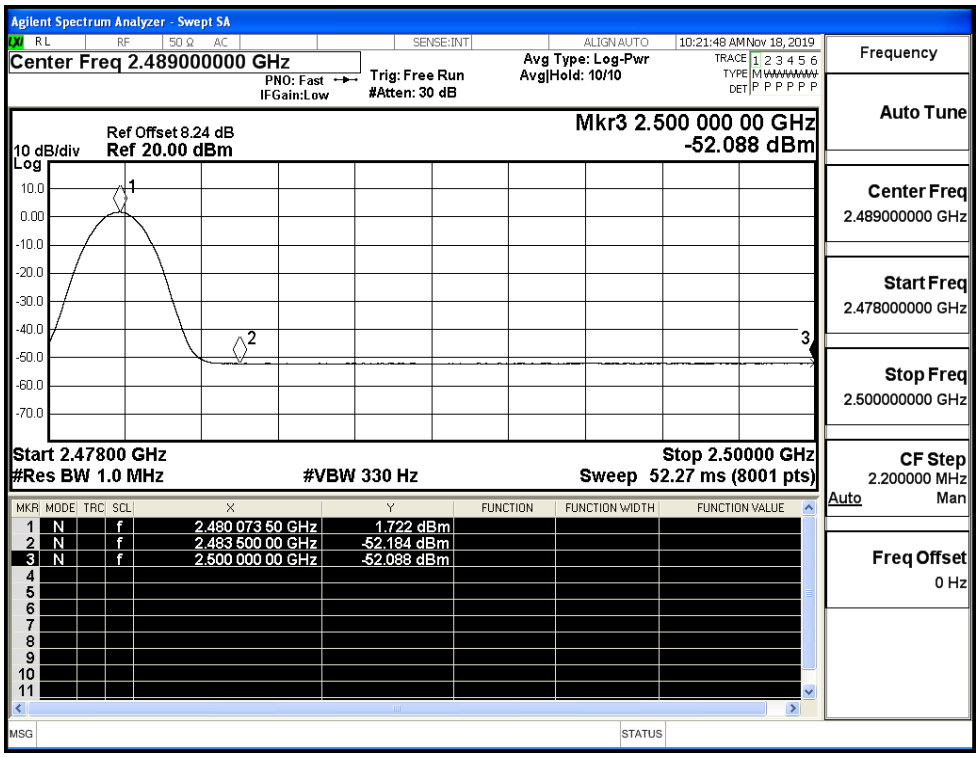
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (Low Channel)



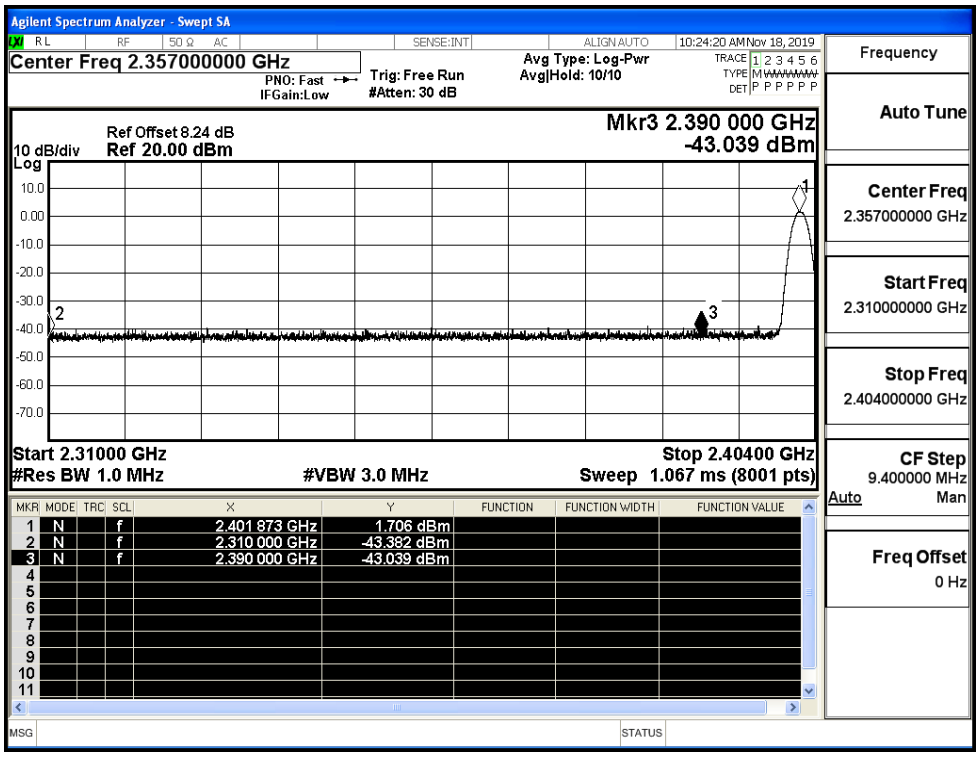
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (High Channel)



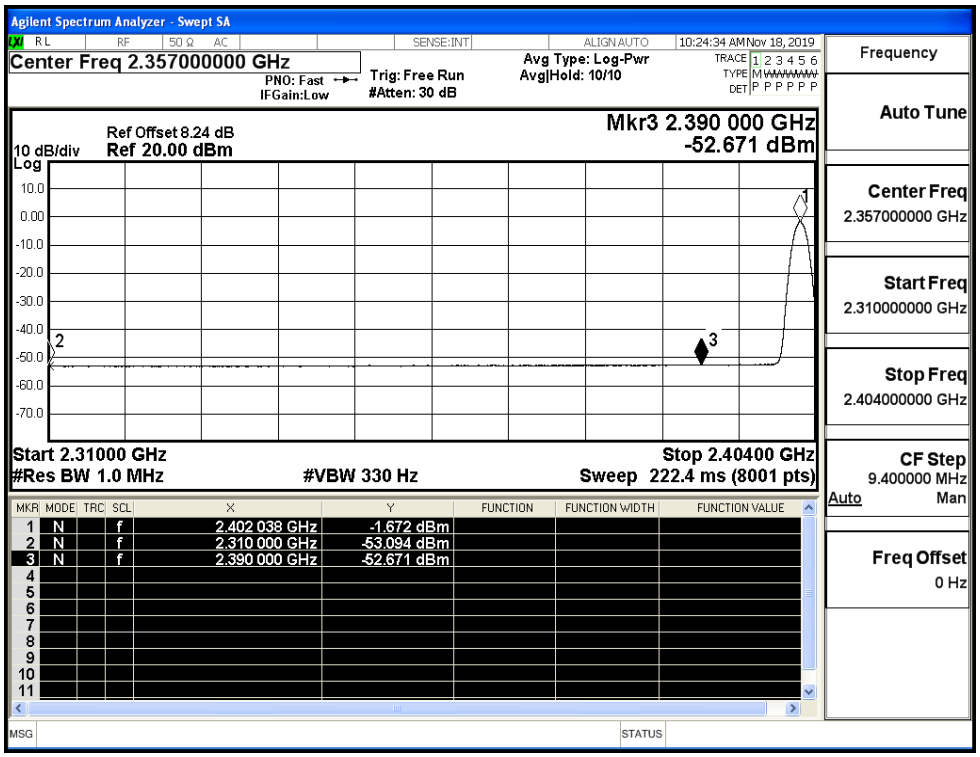
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (High Channel)



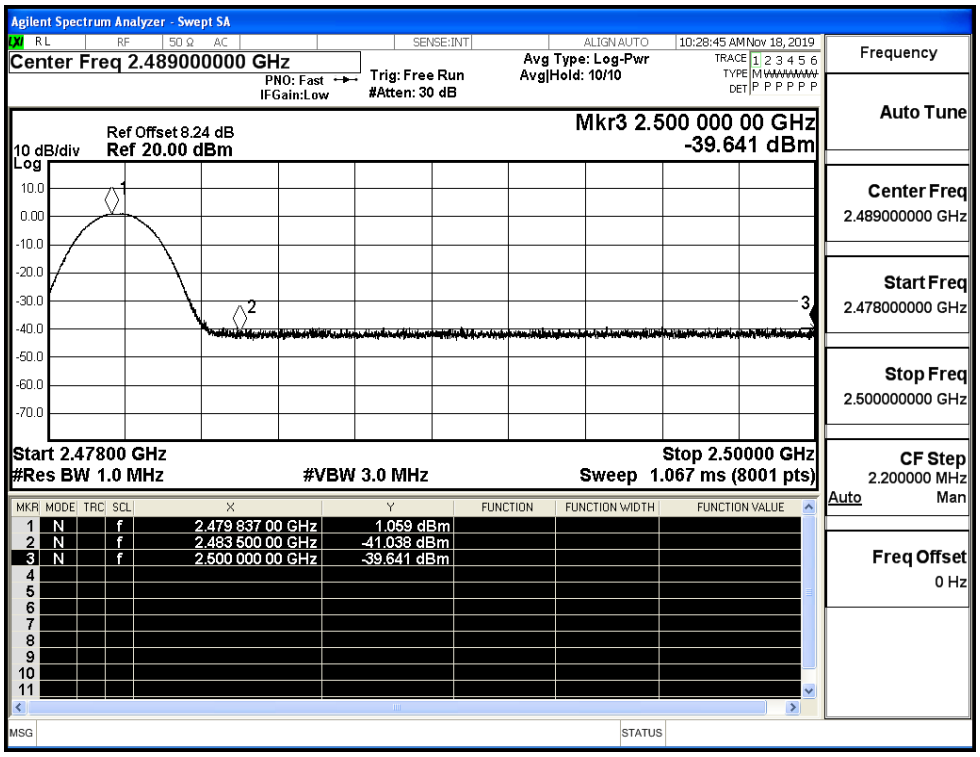
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (Low Channel)



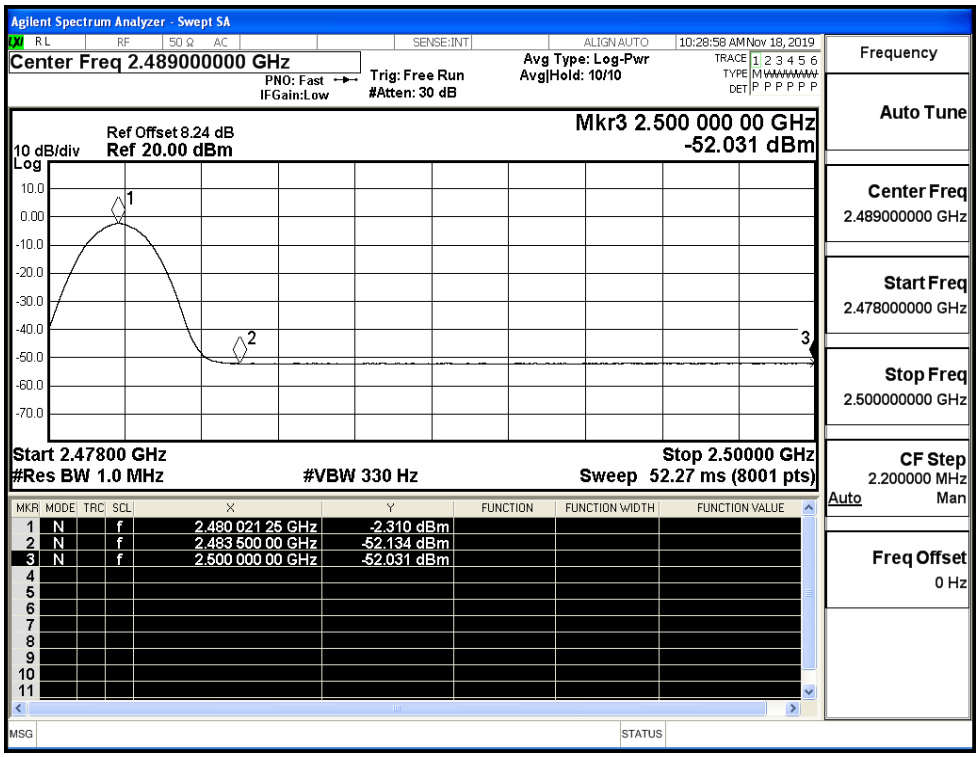
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (Low Channel)



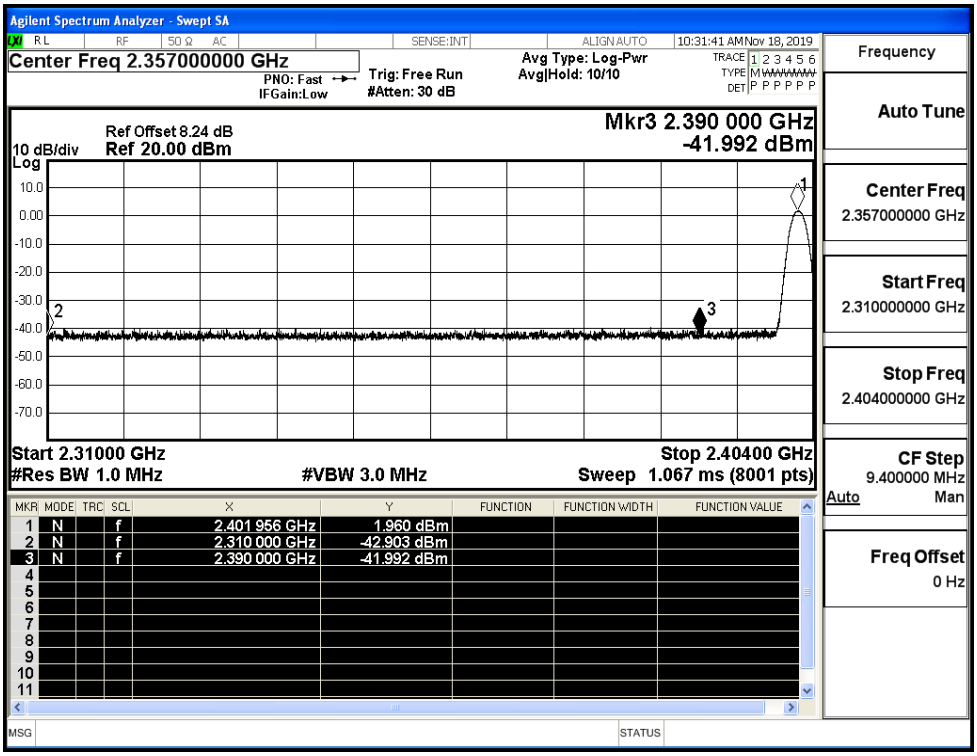
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (High Channel)



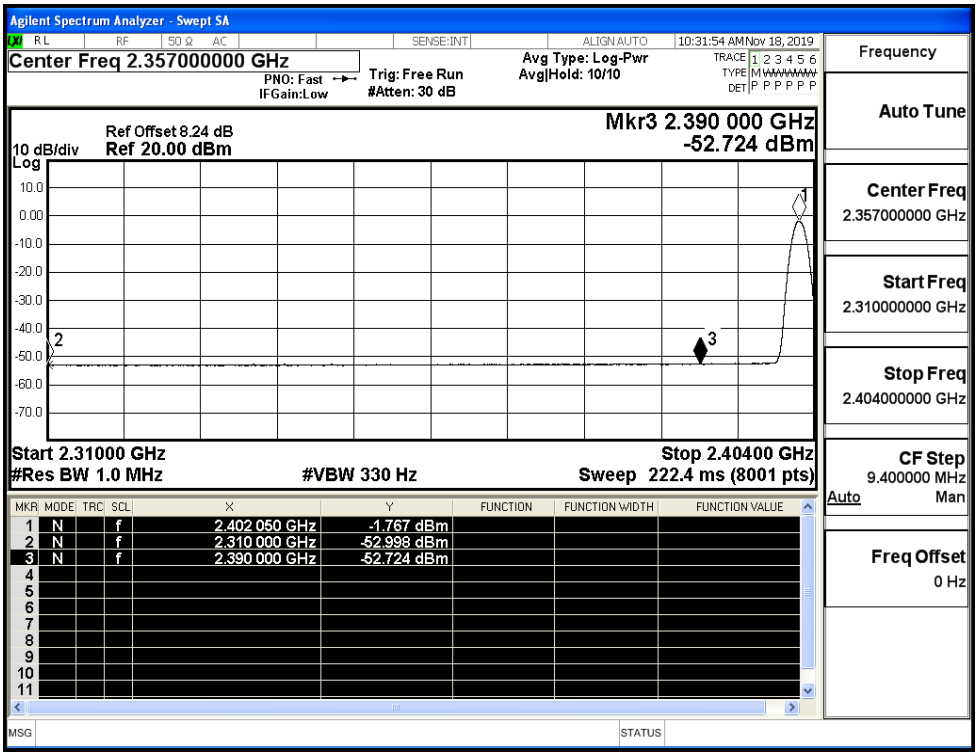
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (High Channel)



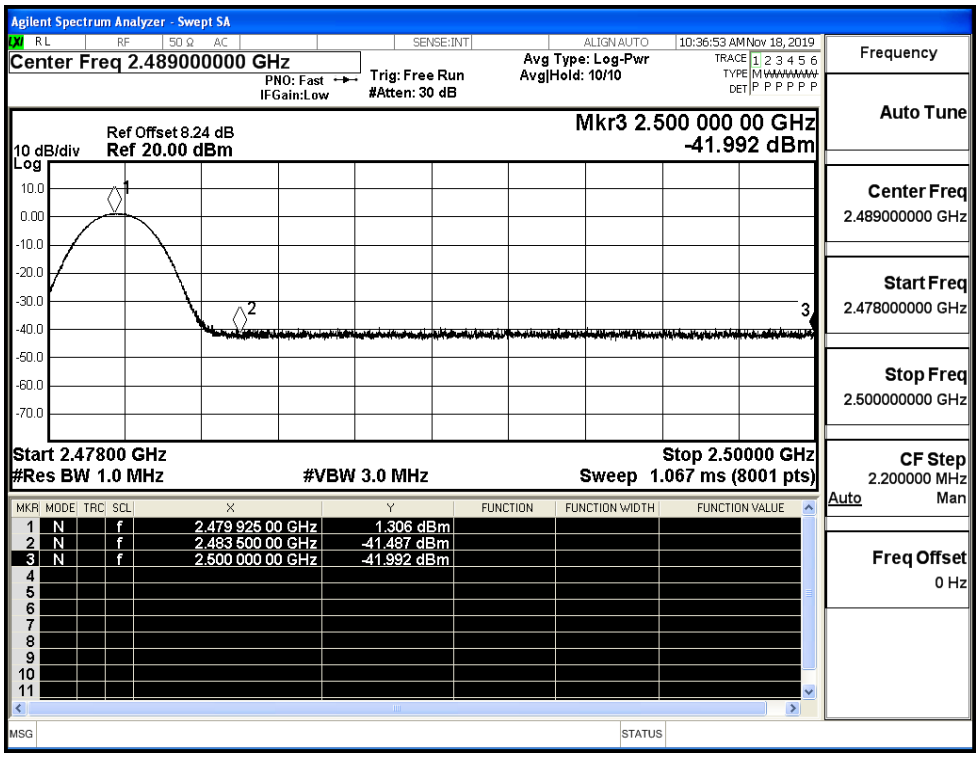
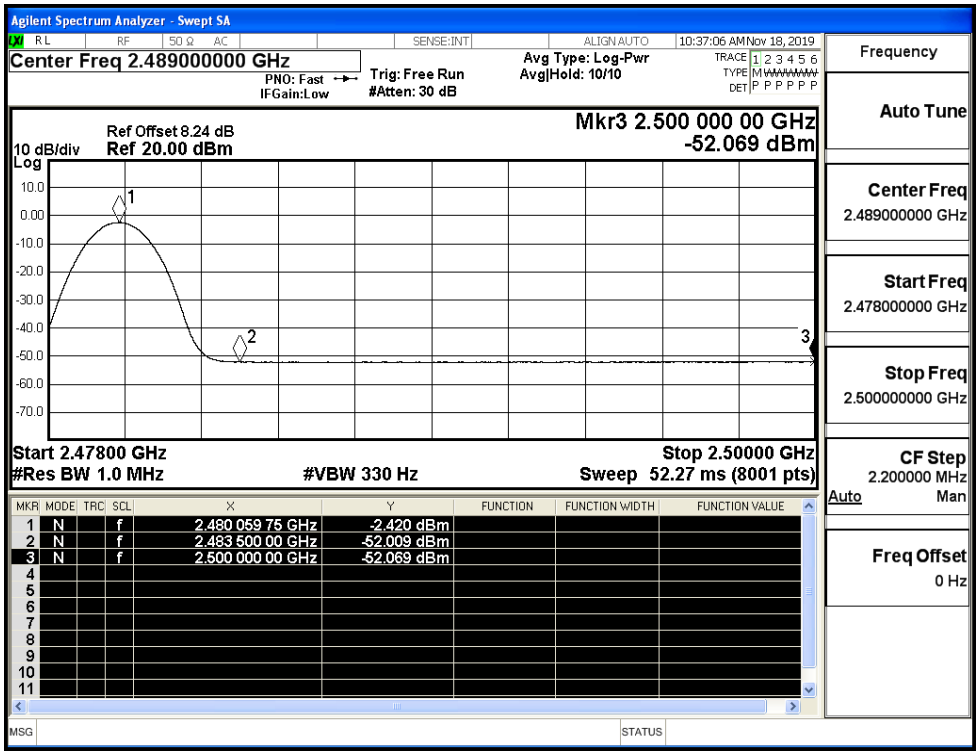
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)