Appendix A

RF Test Data for BT V2.1+EDR (Conducted Measurement)

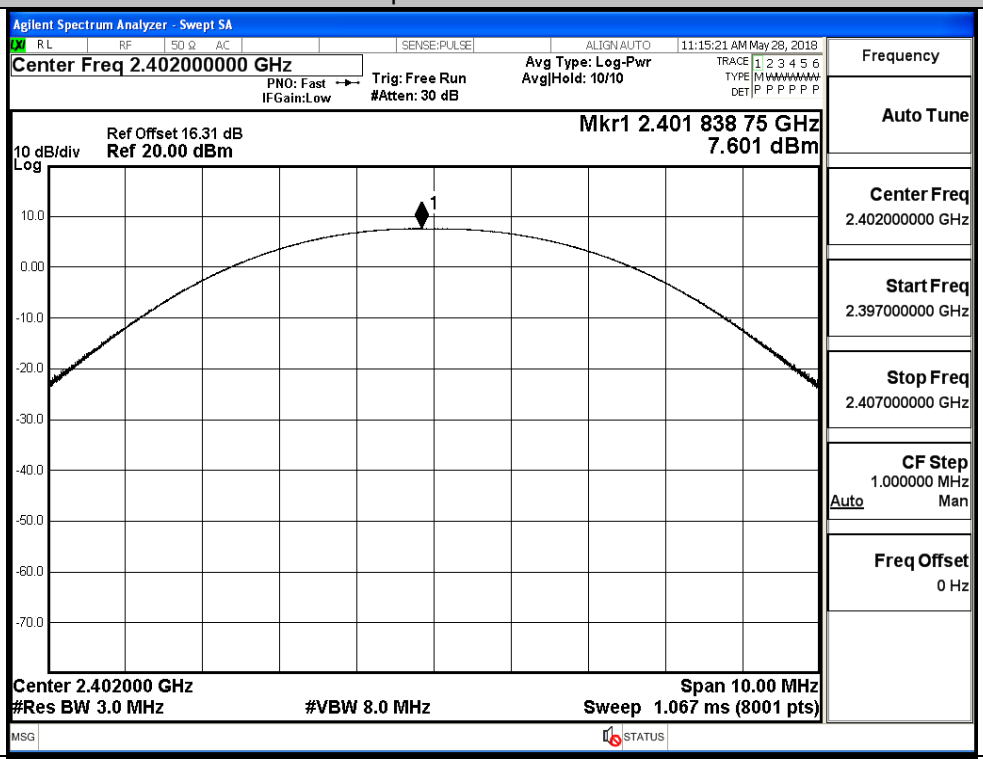
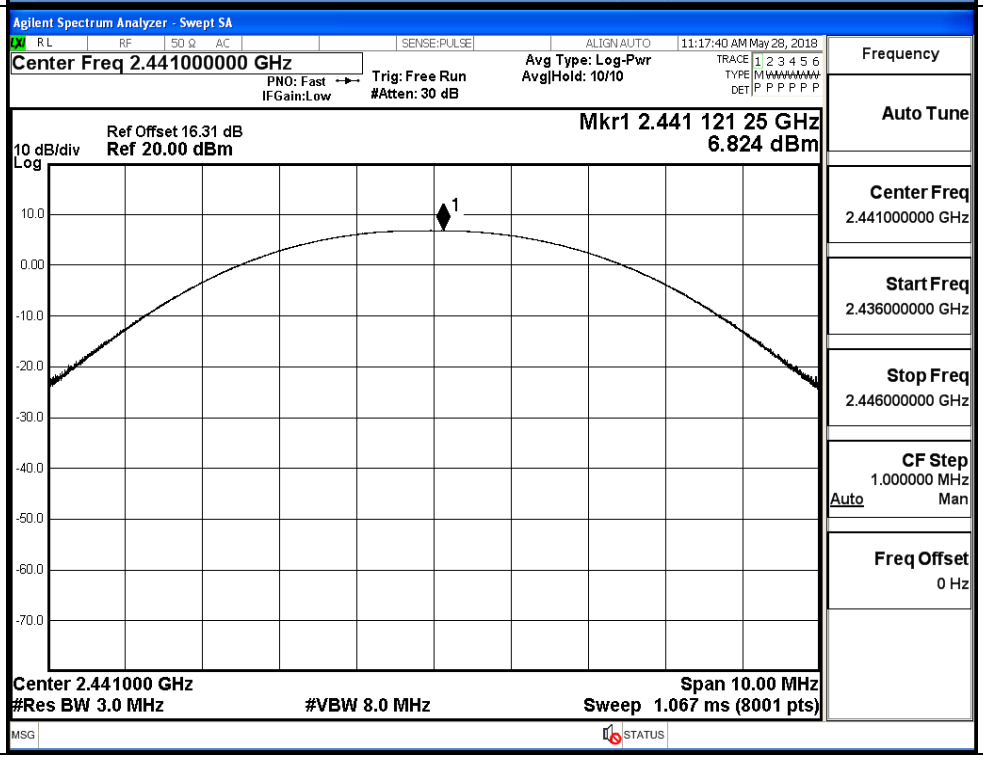
Product Name: Tablet PC
Trade Mark: NetThings
Test Model: F716XR

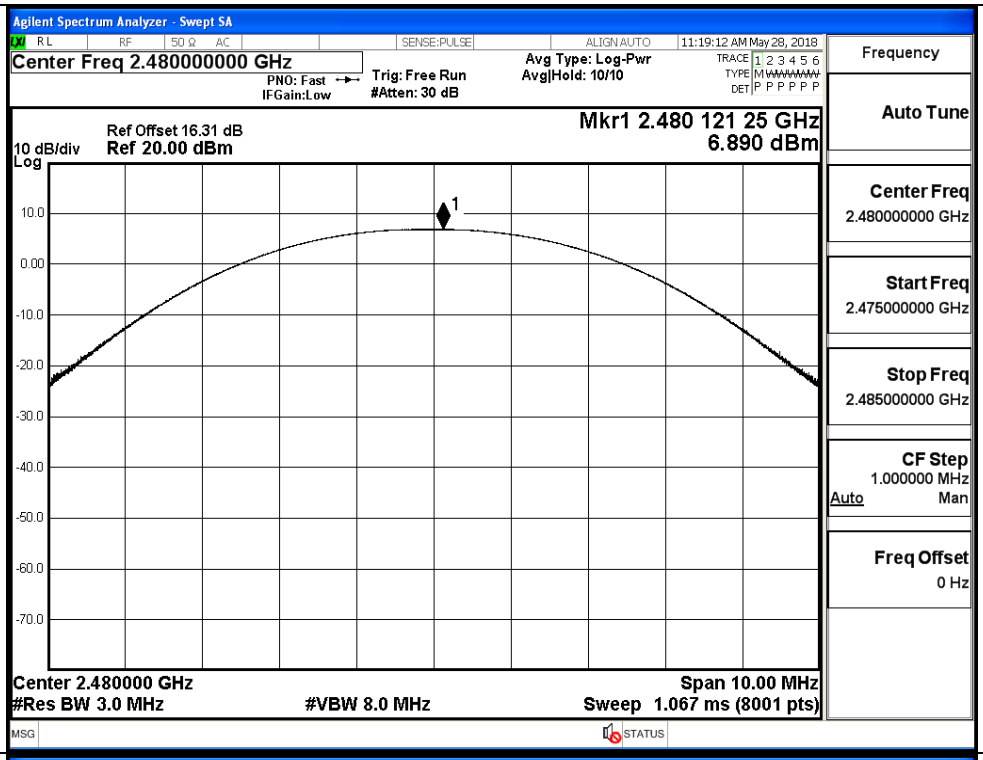
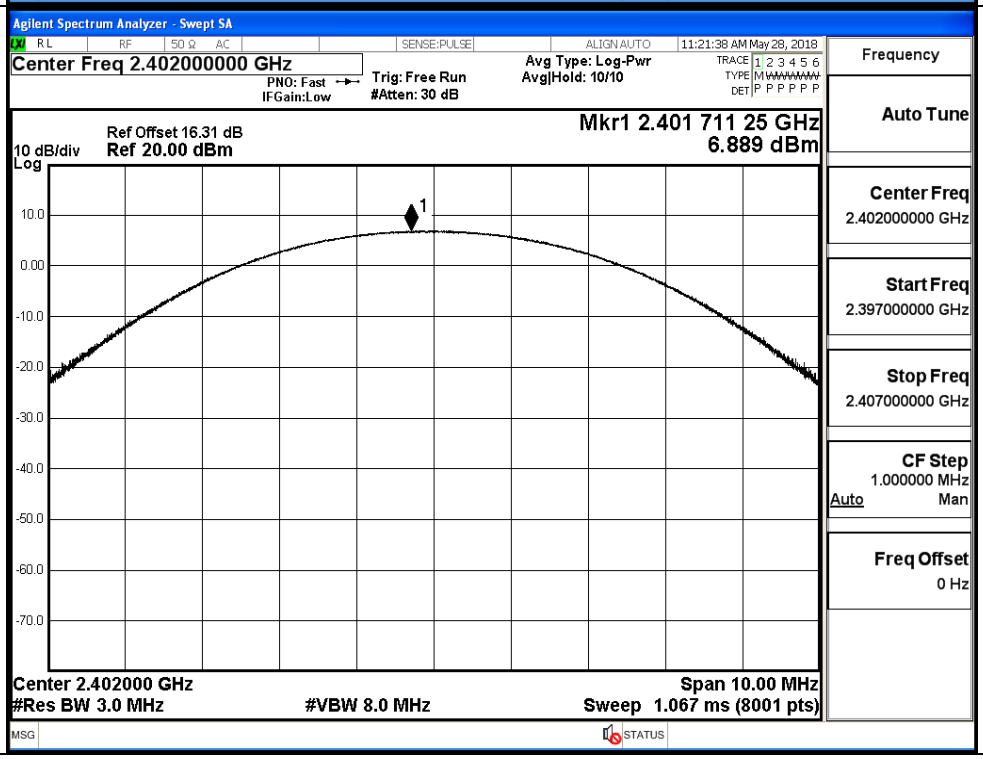
Environmental Conditions

Temperature:	23.7 ° C
Relative Humidity:	56.3%
ATM Pressure:	100.0 kPa
Test Engineer:	Tom Liu
Supervised by:	Jayden.Zhuo

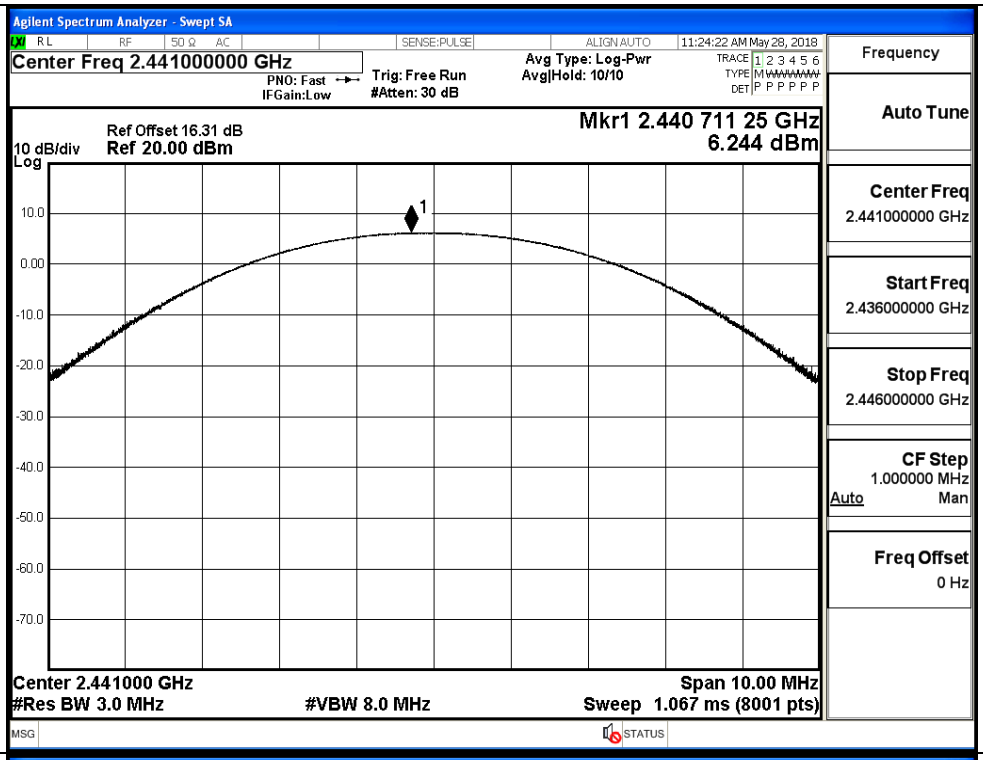
A.1 Maximum Conducted Peak Output Power

Mode	Channel	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	7.601	30	PASS
	MCH	6.824	30	PASS
	HCH	6.890	30	PASS
π/4DQPSK	LCH	6.889	21	PASS
	MCH	6.244	21	PASS
	HCH	6.229	21	PASS
8DPSK	LCH	7.079	21	PASS
	MCH	6.414	21	PASS
	HCH	6.451	21	PASS

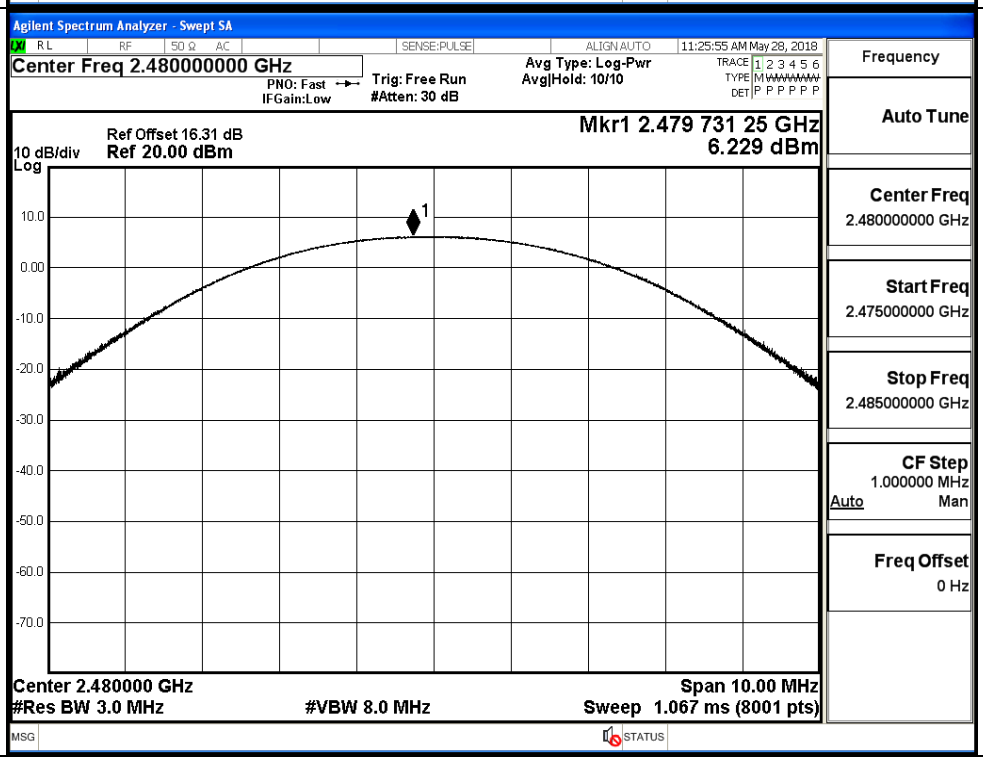
Test Graphs		
GFSK/LCH		
GFSK/MCH		

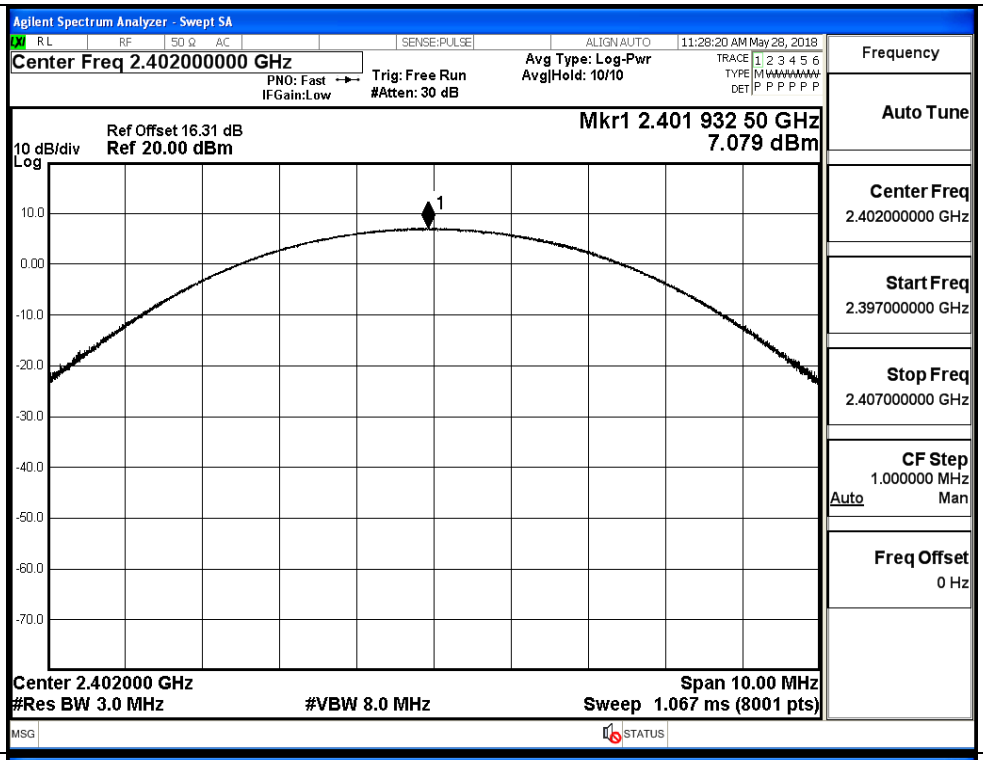
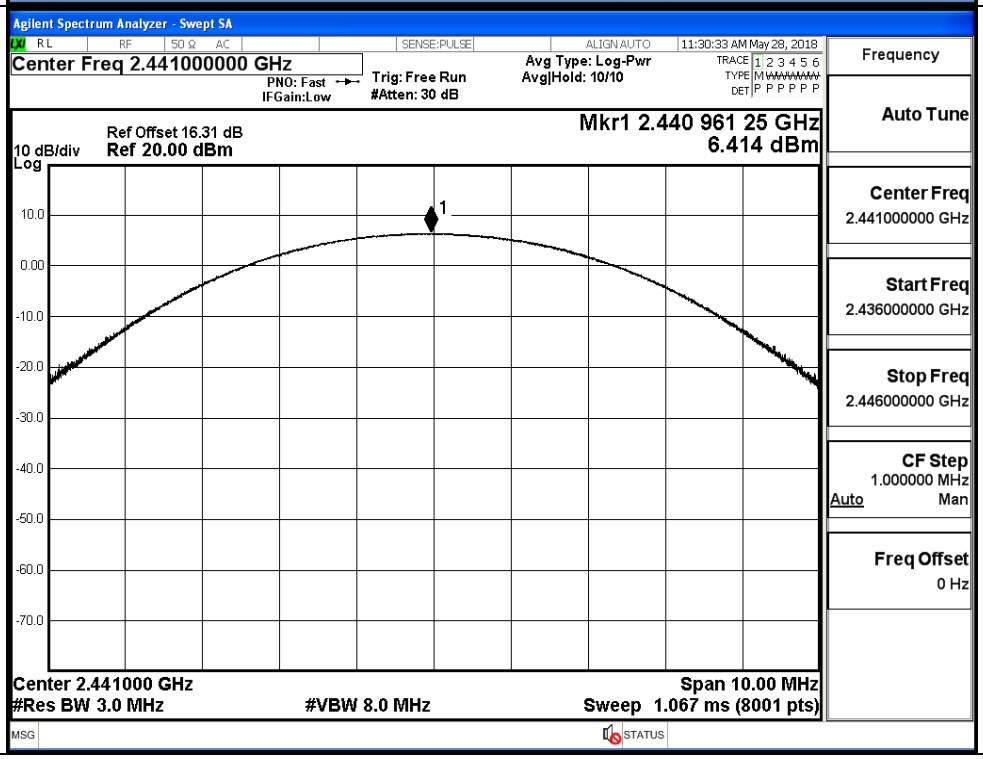
GFSK/HCH	
π/4DQPSK/LCH	

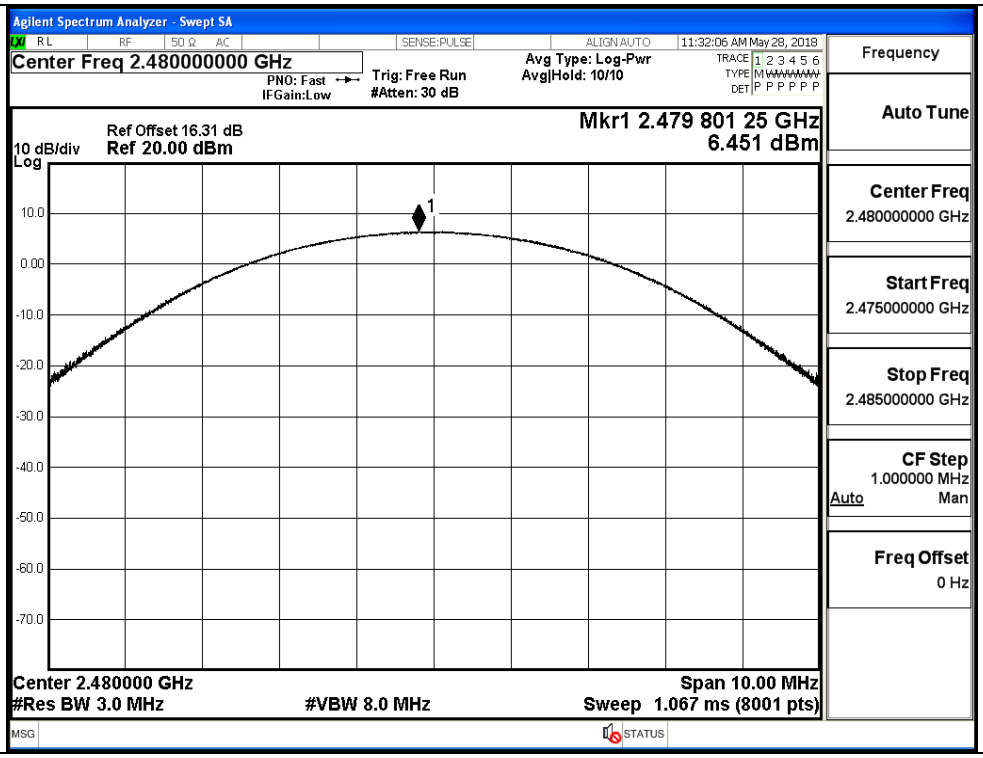
π/4DQPSK/MCH



π/4DQPSK/HCH



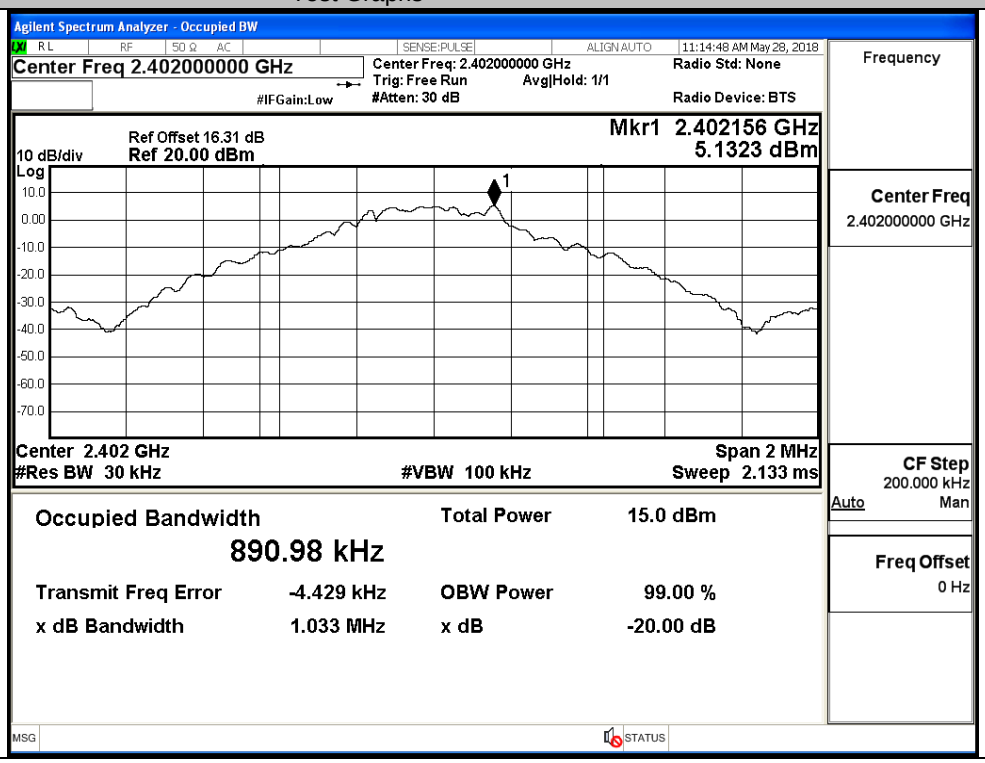
8DPSK/LCH	
8DPSK/MCH	

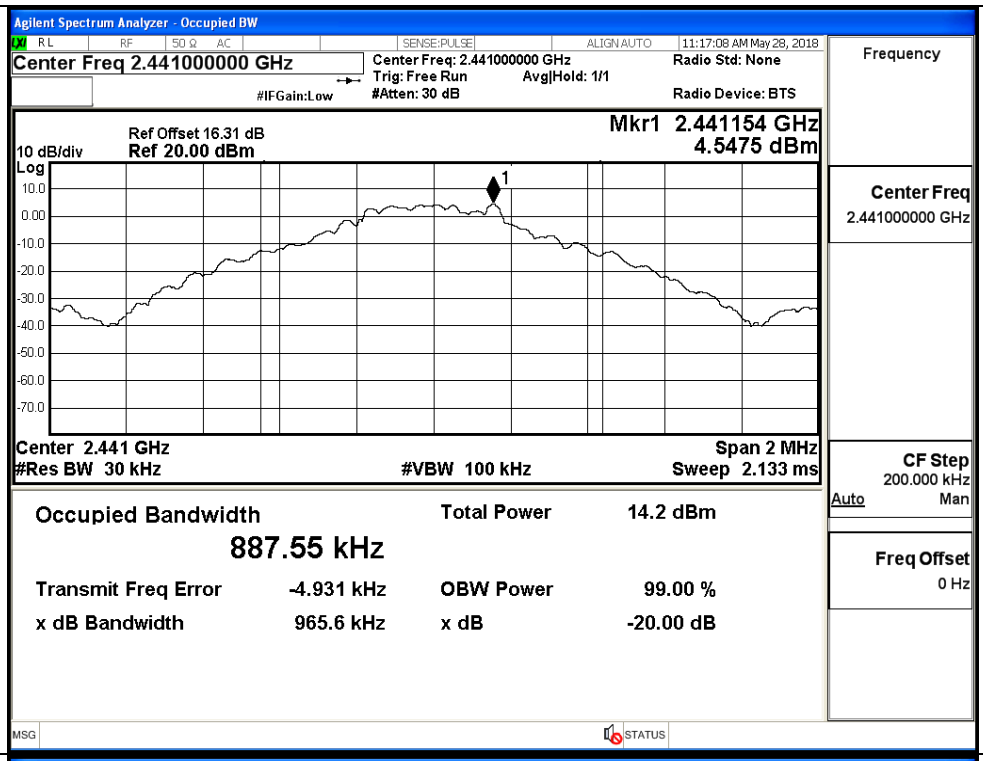
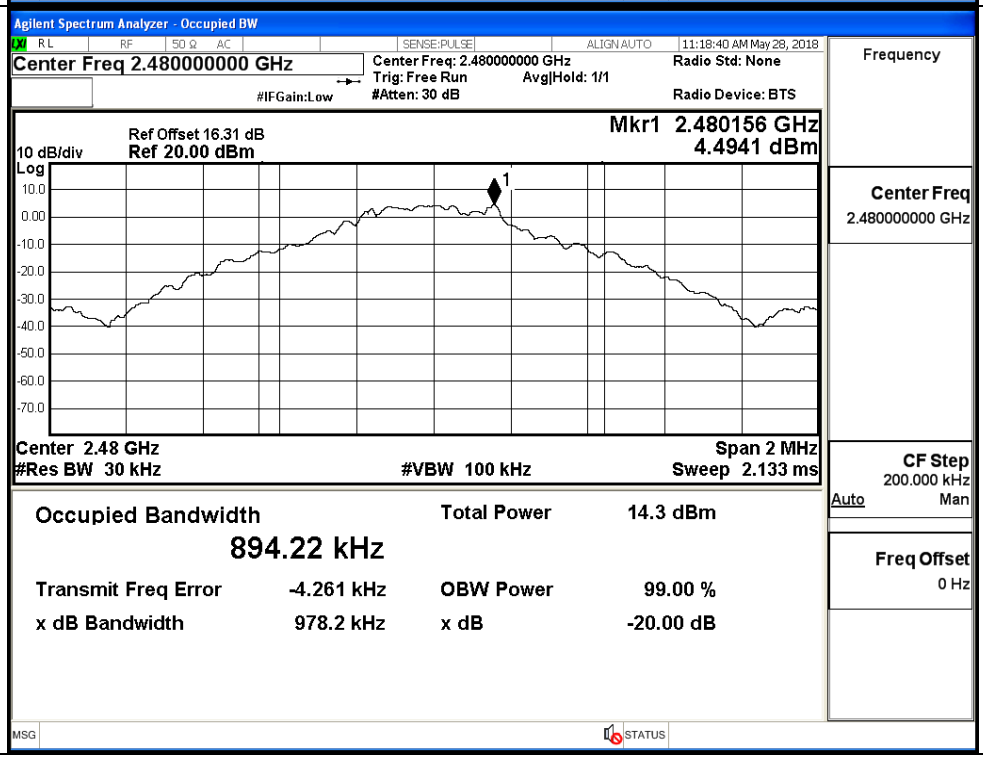
8DPSK/HCH		

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
11:32:06 AM May 28, 2018
Ref Offset 16.31 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr1 2.479 801 25 GHz
6.451 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

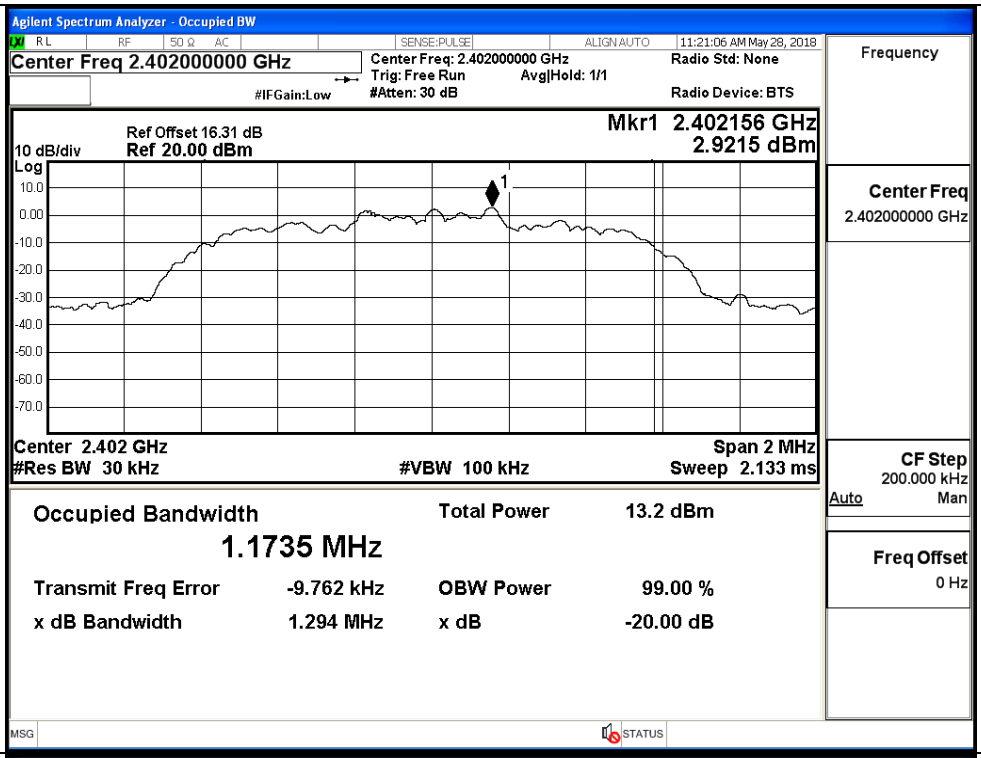
A.2 99% and 20dB Bandwidth

Mode	Channel	99% Bandwidth [MHz]	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.89098	1.033	Not Specified	PASS
	MCH	0.88755	0.9656	Not Specified	PASS
	HCH	0.89422	0.9782	Not Specified	PASS
π/4DQPSK	LCH	1.1735	1.294	Not Specified	PASS
	MCH	1.1779	1.309	Not Specified	PASS
	HCH	1.1752	1.315	Not Specified	PASS
8DPSK	LCH	1.1863	1.295	Not Specified	PASS
	MCH	1.1925	1.300	Not Specified	PASS
	HCH	1.1876	1.299	Not Specified	PASS

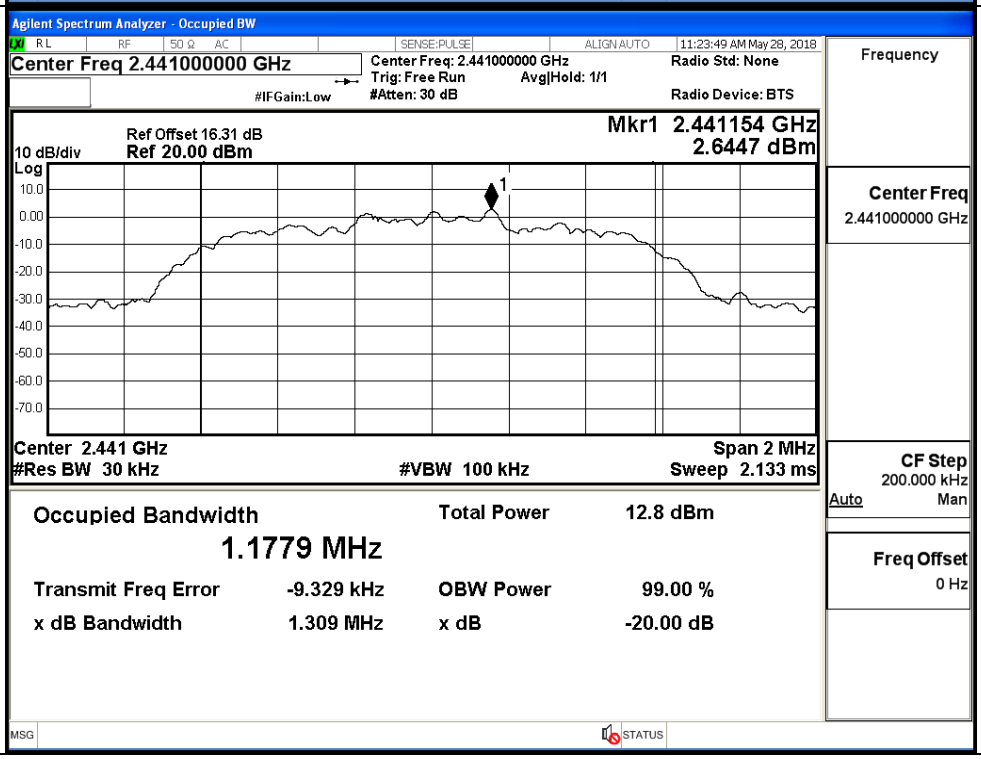
Test Graphs	
GFSK/LCH	

GFSK/MCH	
GFSK/HCH	

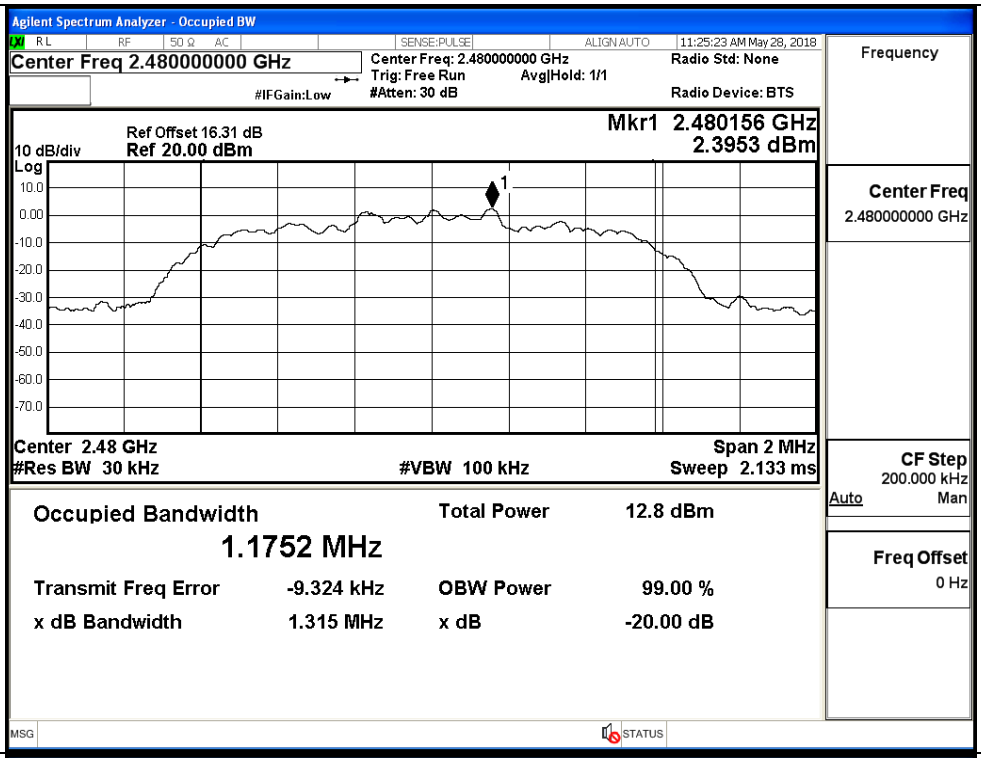
π/4DQPSK/LCH



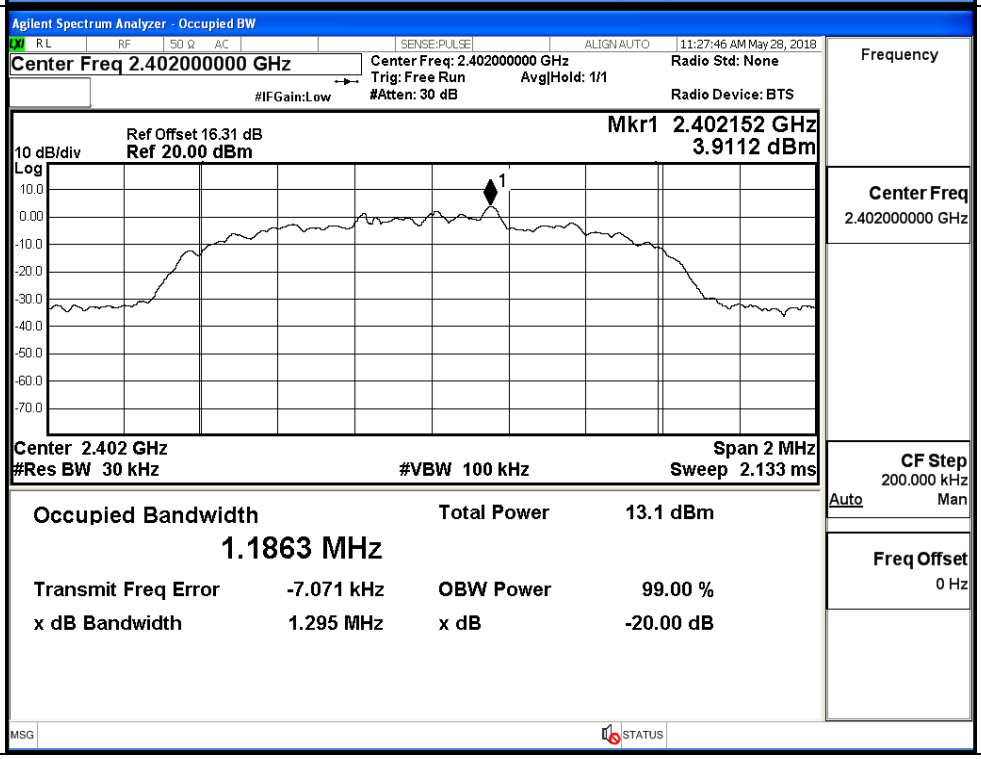
π/4DQPSK/MCH

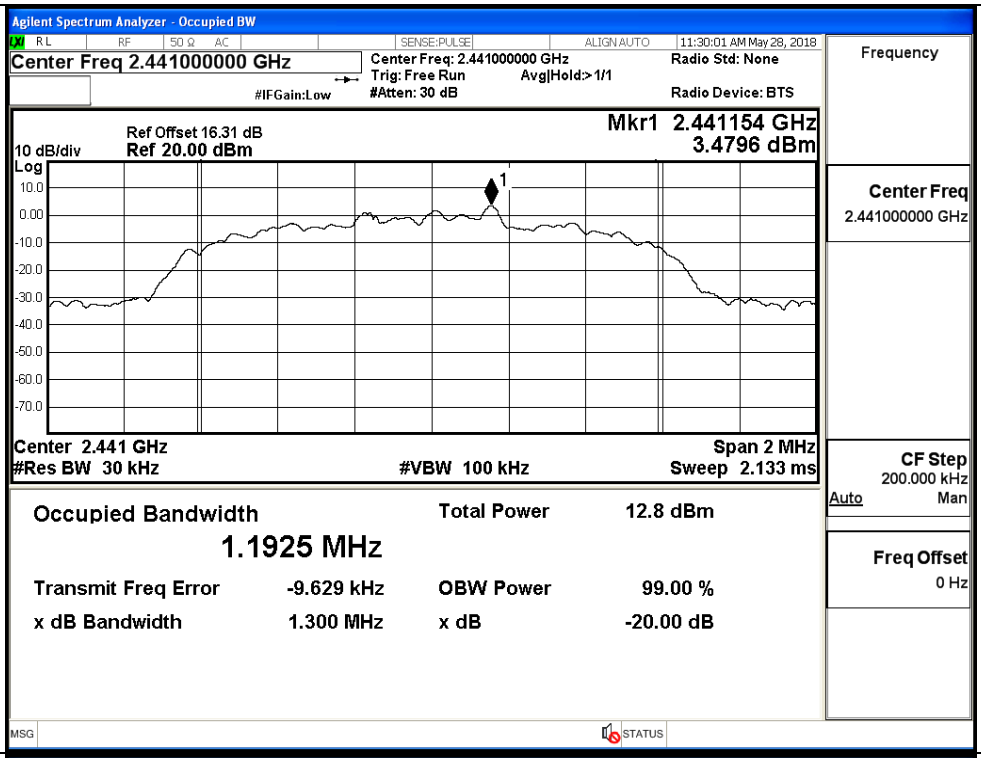
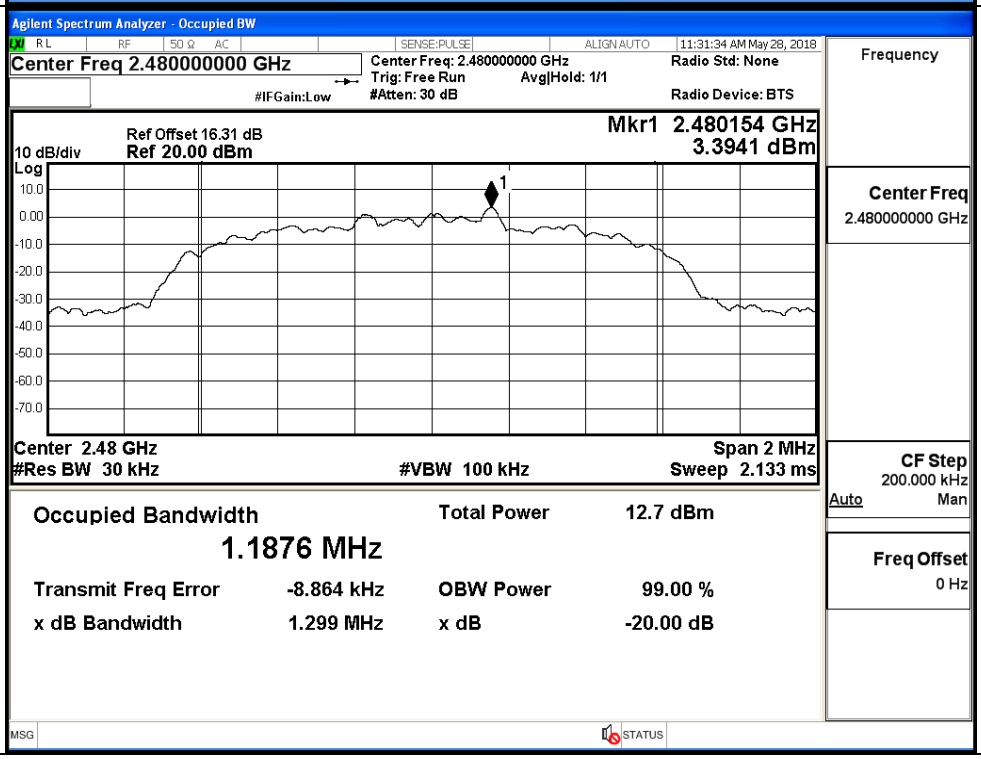


π/4DQPSK/HCH



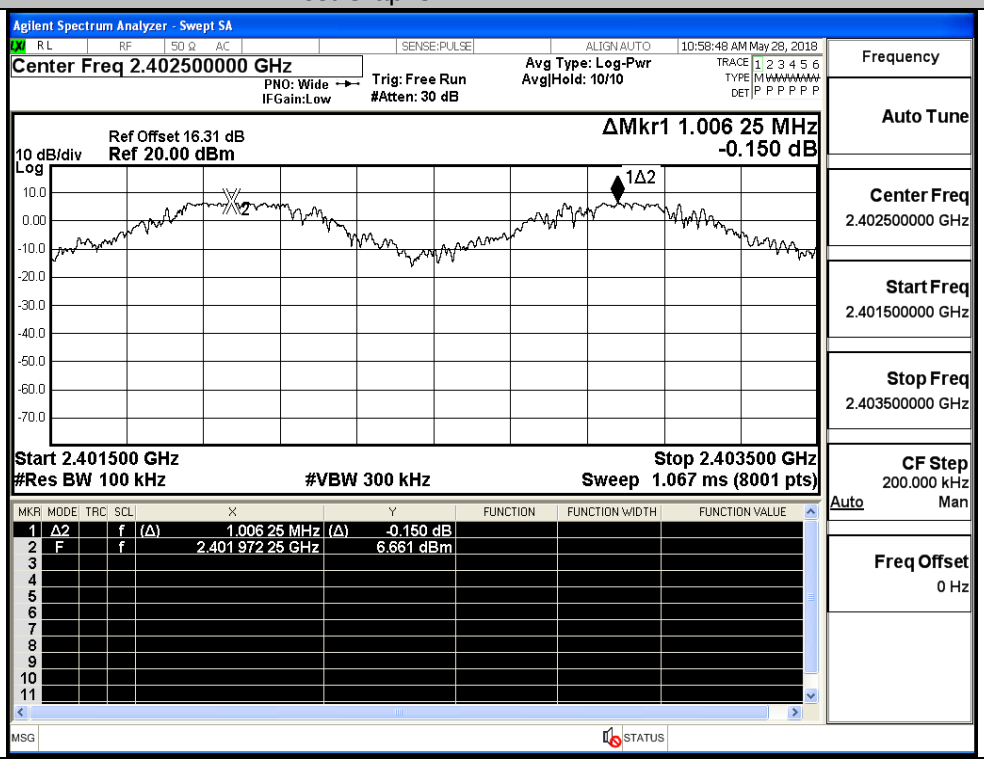
8DPSK/LCH

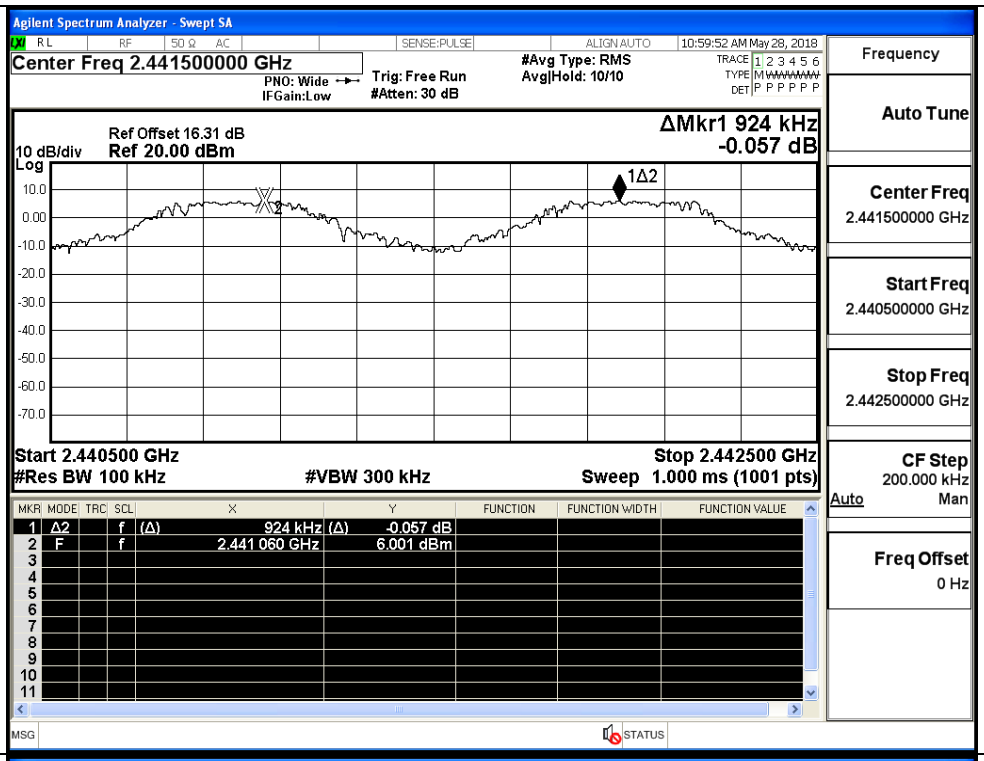
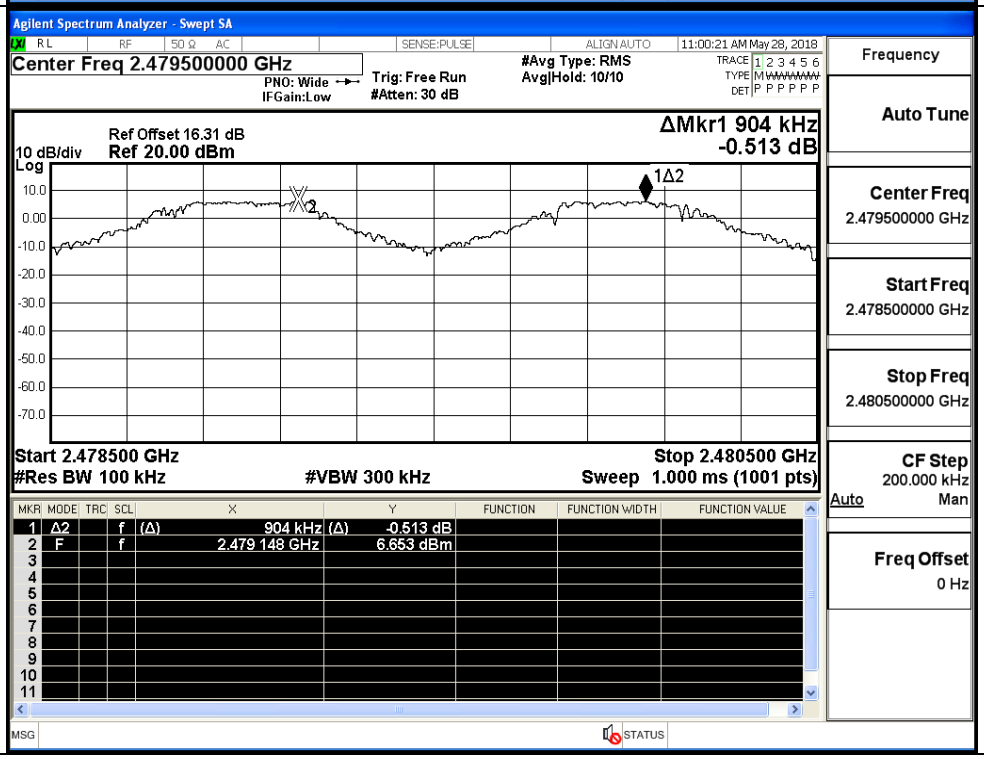


8DPSK/MCH	
8DPSK/HCH	

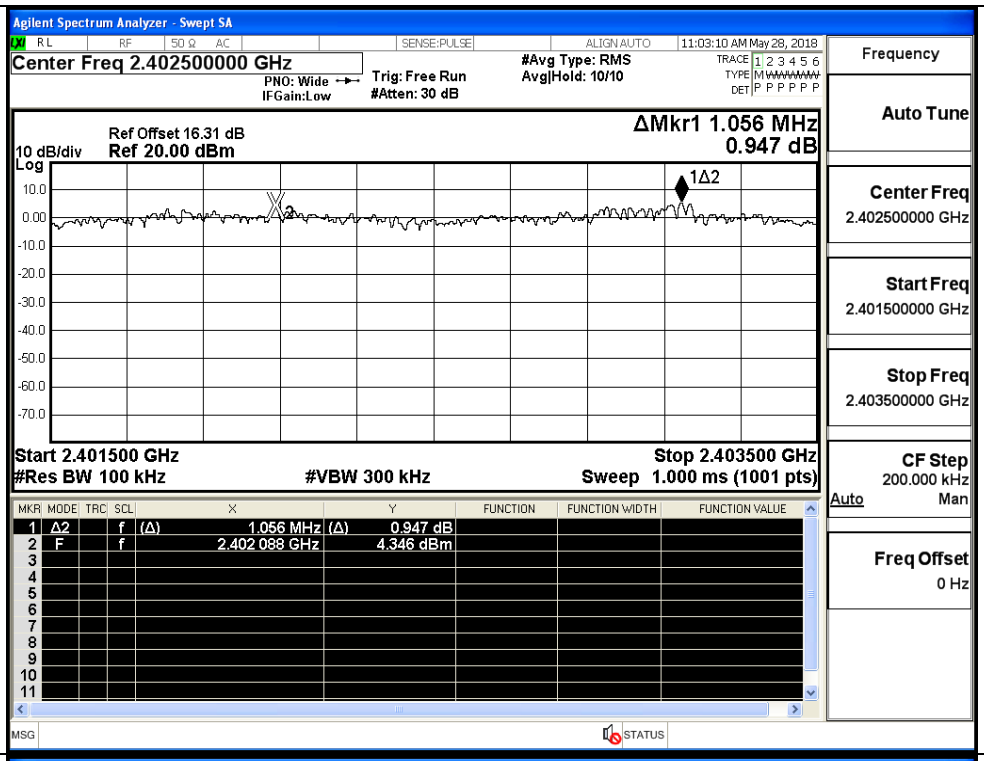
A.3 Carrier Frequency Separation

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.006	0.025	PASS
	MCH	0.924	0.025	PASS
	HCH	0.904	0.025	PASS
π/4DQPSK	LCH	1.056	0.025	PASS
	MCH	0.990	0.025	PASS
	HCH	0.970	0.025	PASS
8DPSK	LCH	0.916	0.025	PASS
	MCH	0.724	0.025	PASS
	HCH	1.326	0.025	PASS

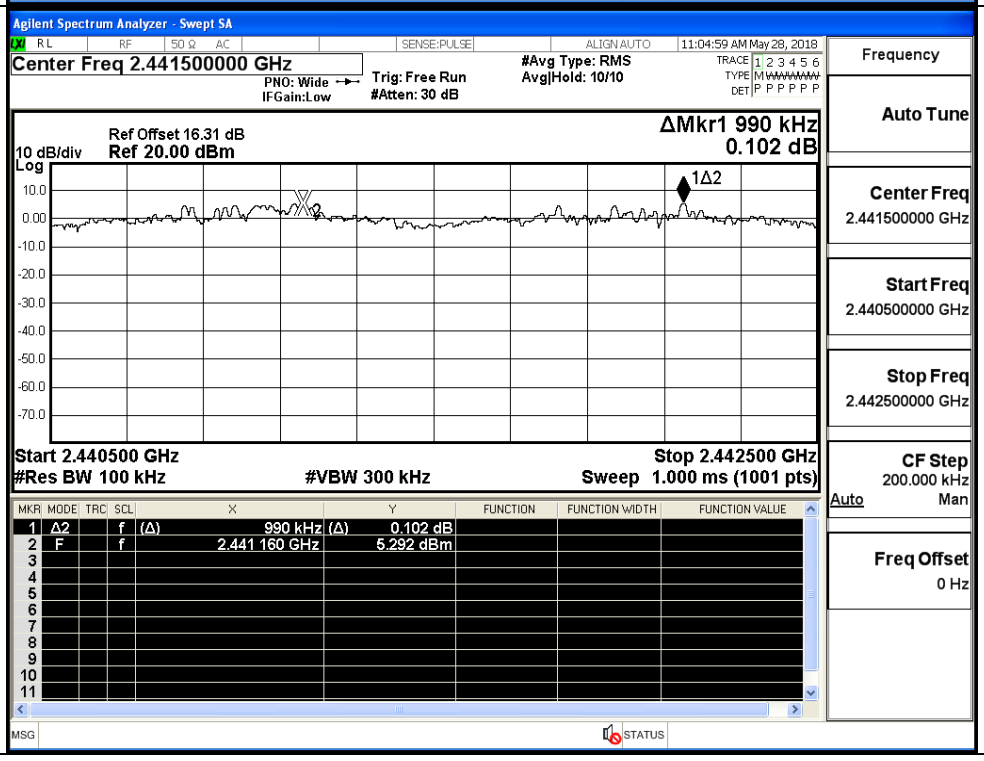
Test Graphs	
GFSK/LCH	

GFSK/MCH		
GFSK/HCH		

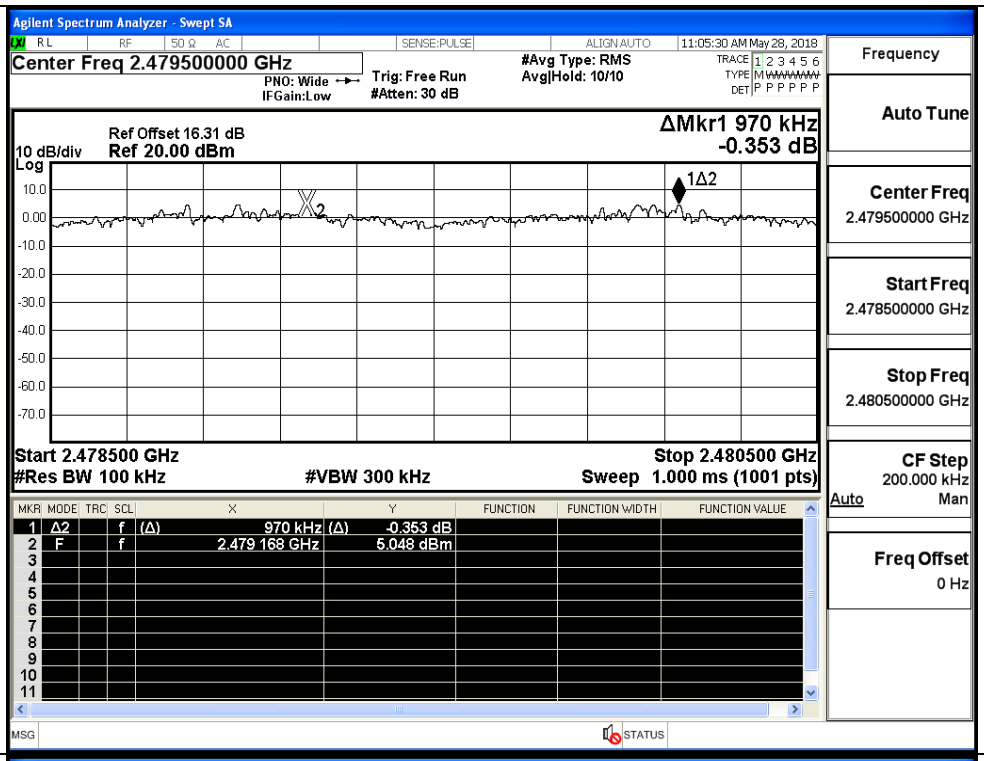
π/4DQPSK/LCH



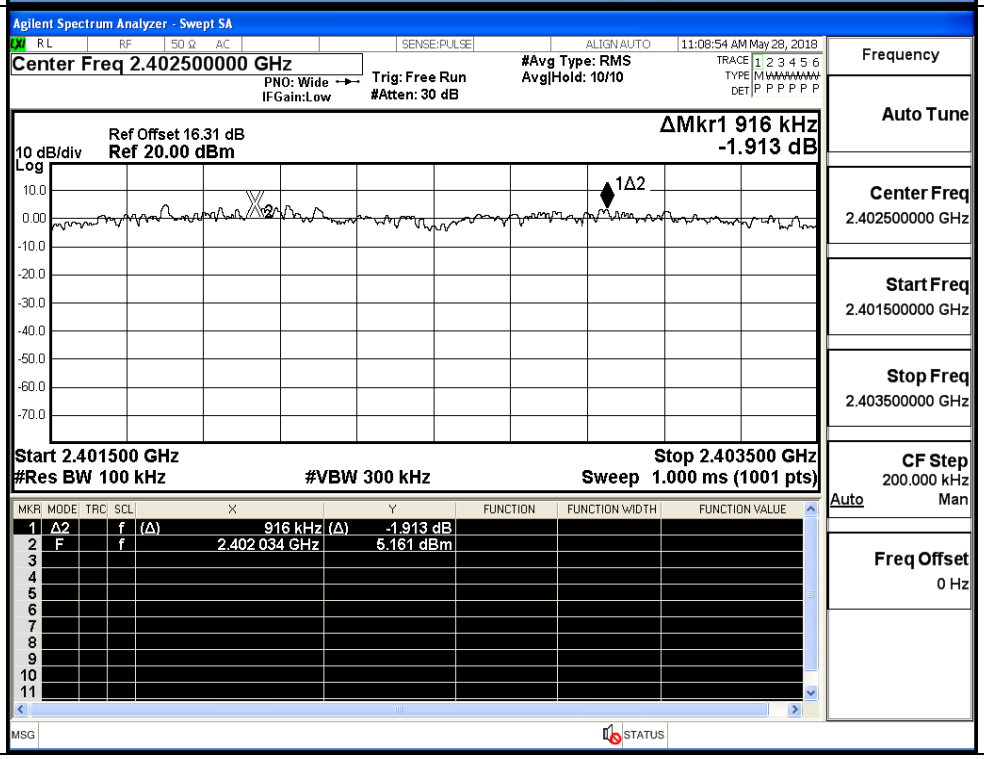
π/4DQPSK/MCH

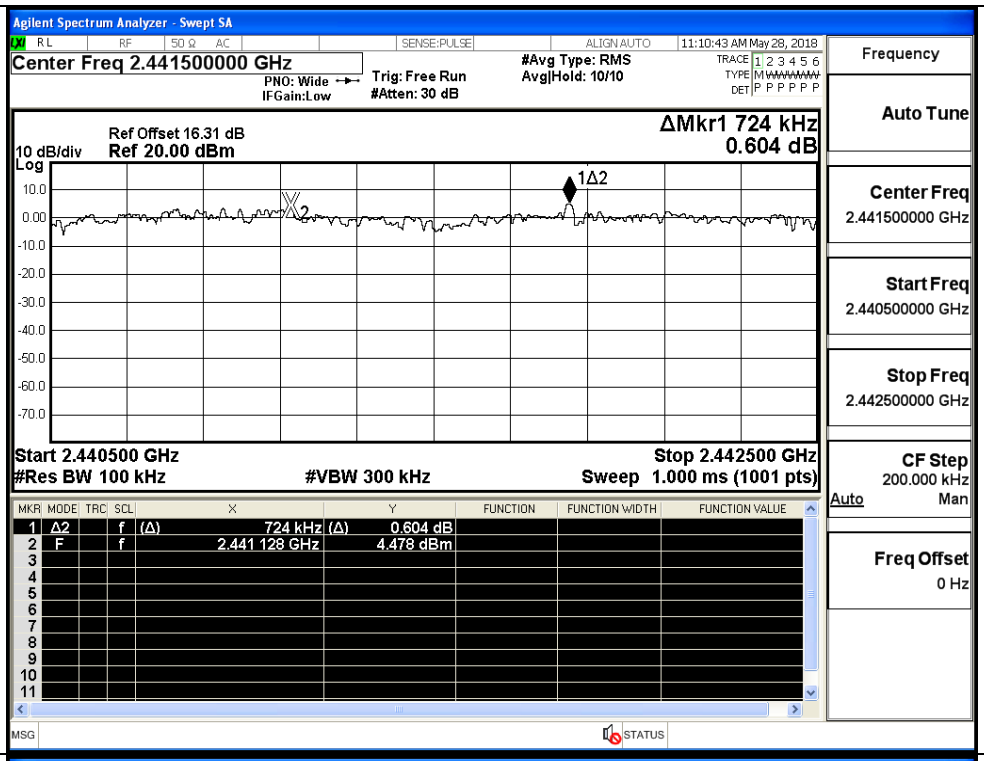
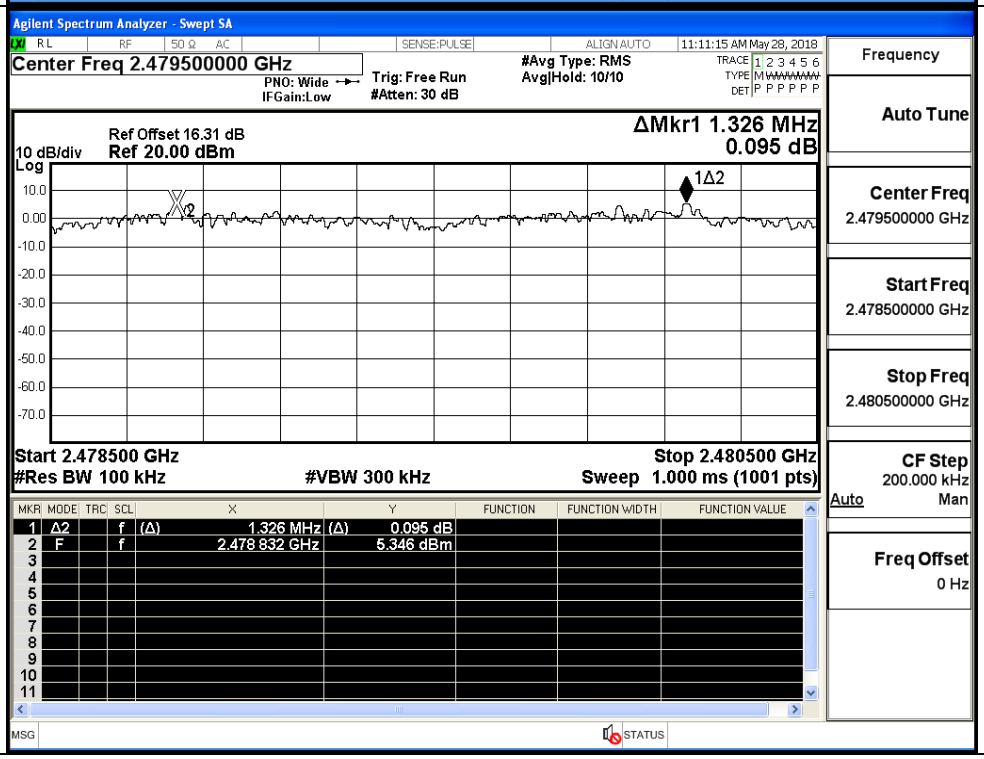


π/4DQPSK/HCH



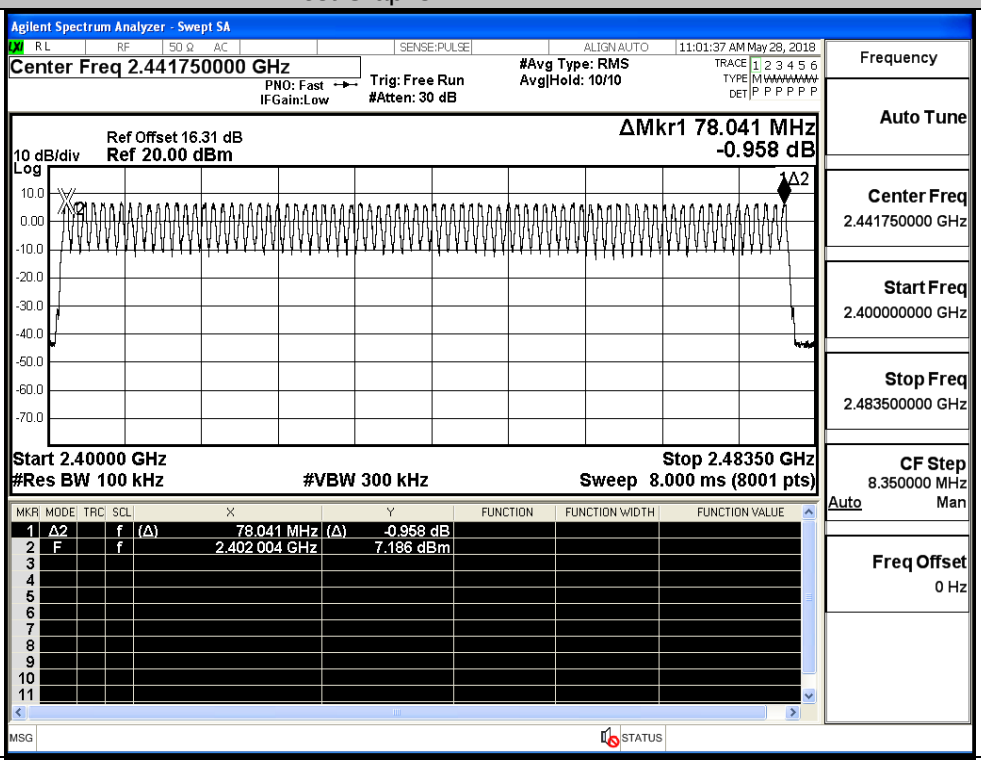
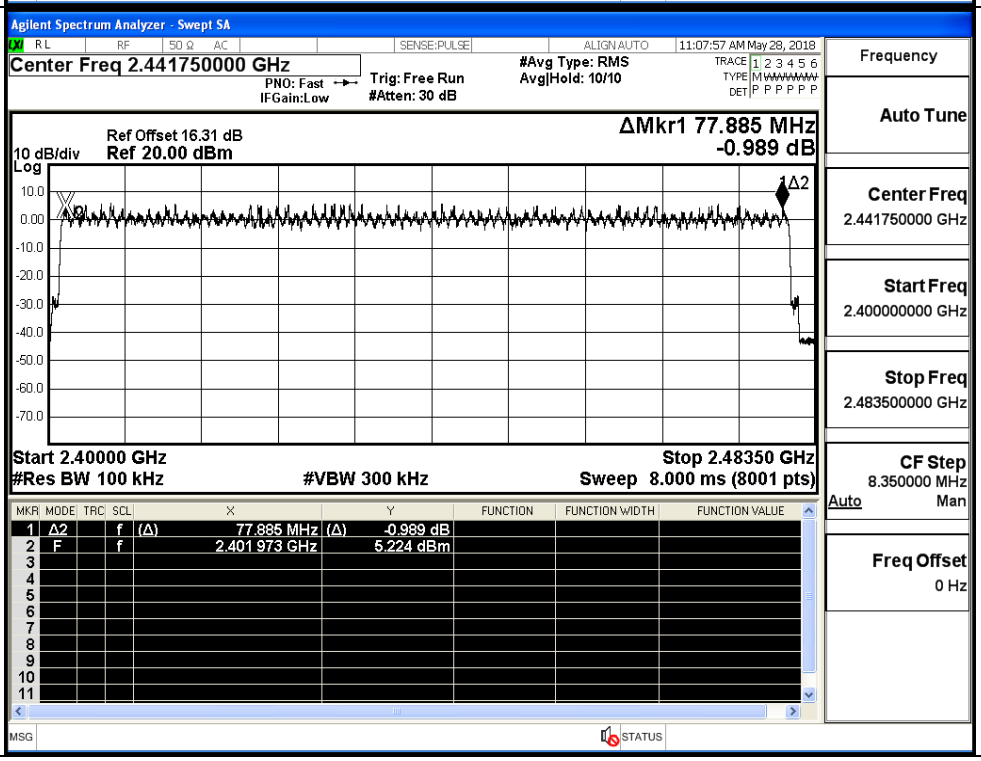
8DPSK/LCH



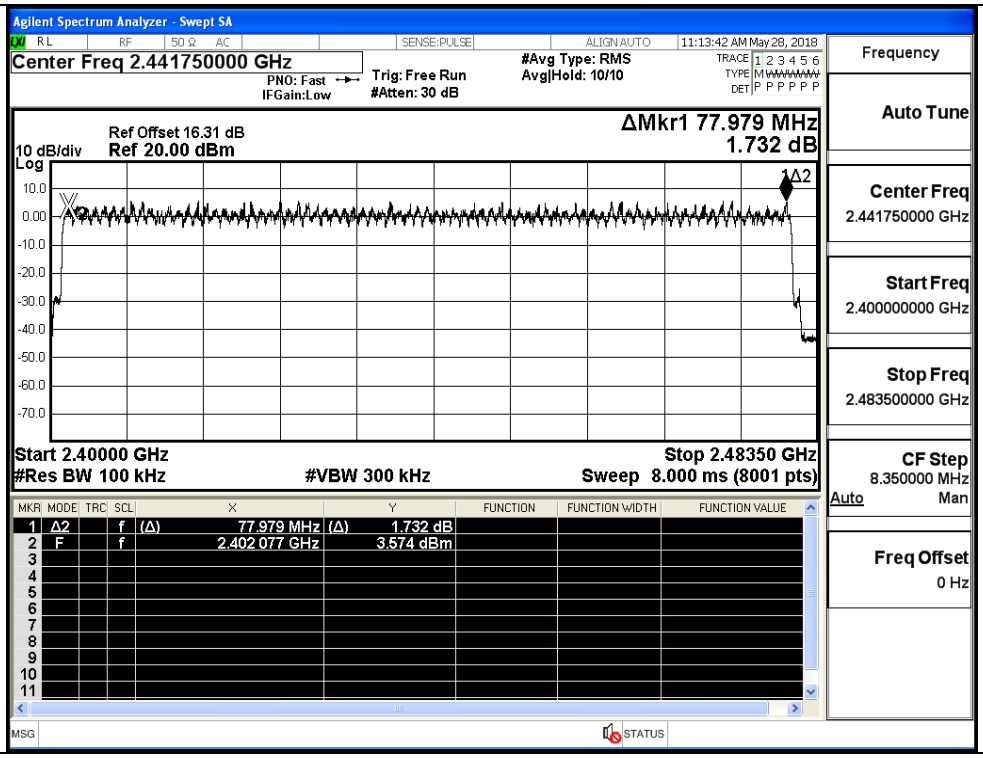
8DPSK/MCH		
8DPSK/HCH		

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

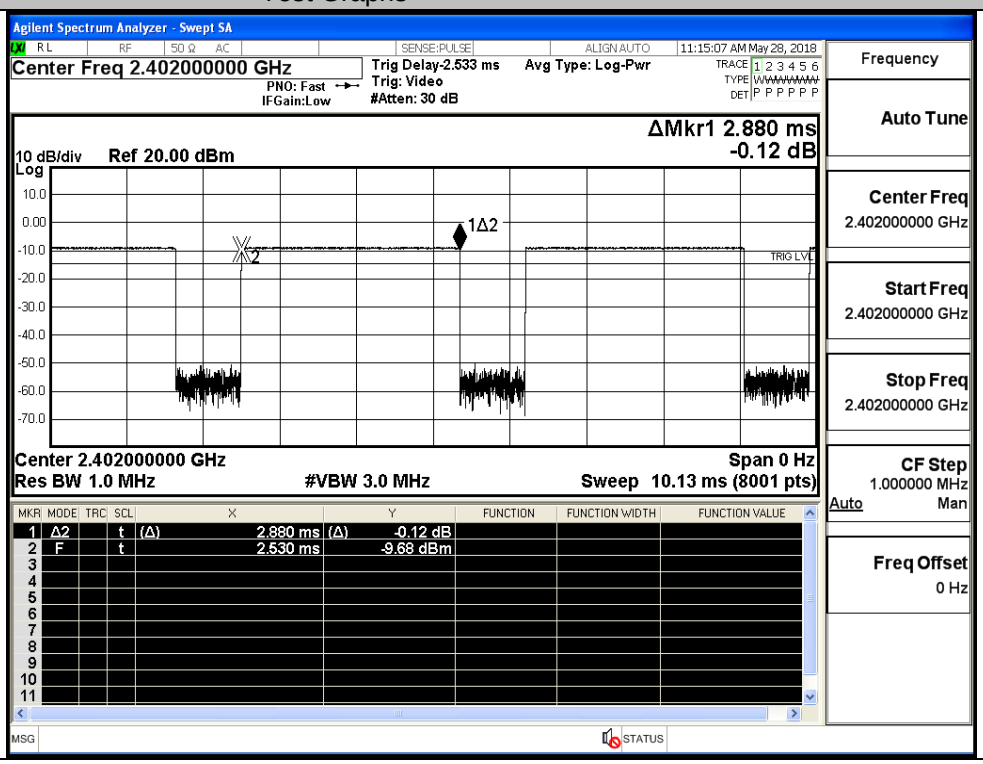
Test Graphs	
GFSK/Hop	
π/4DQPSK/Hop	

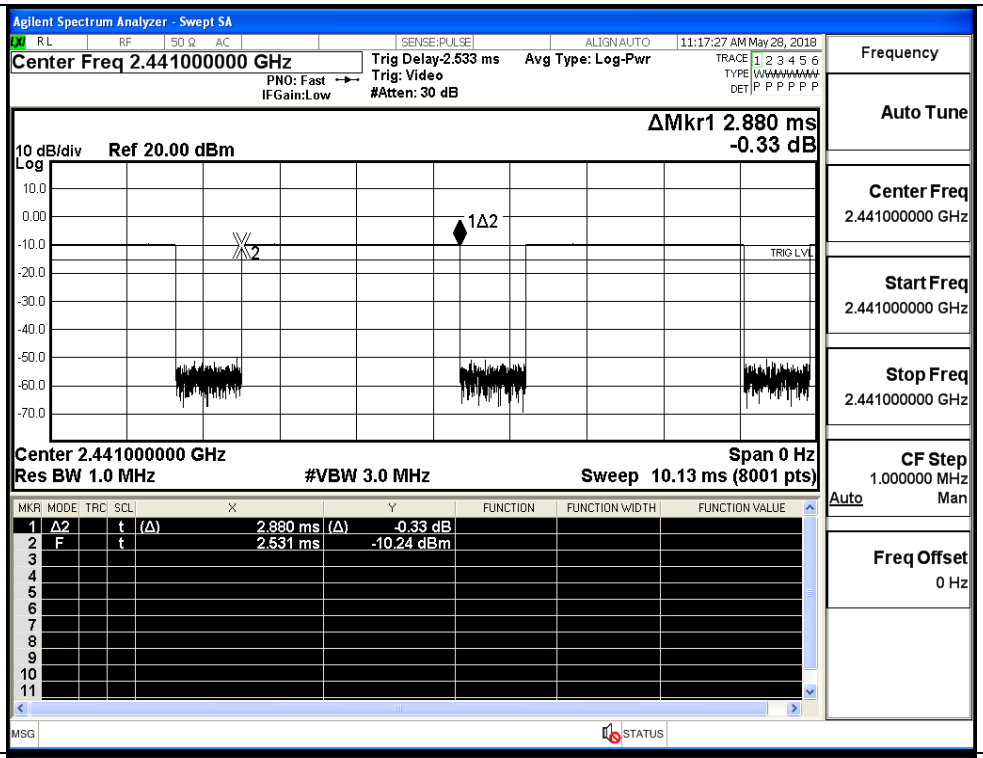
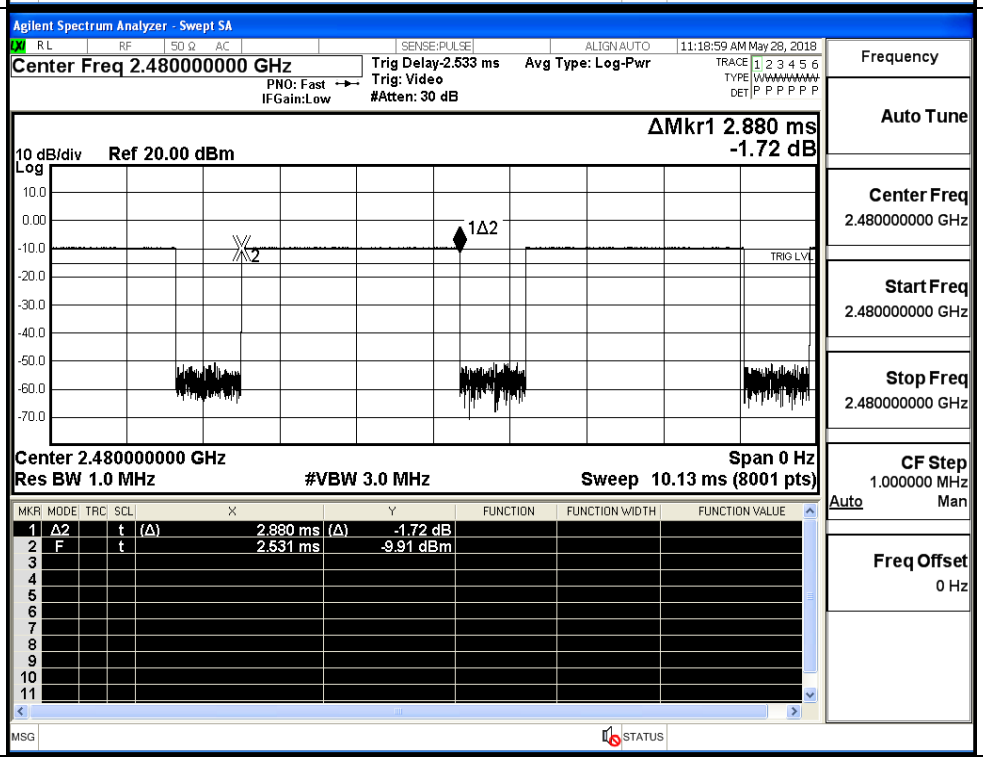
8DPSK/Hop


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
11:13:42 AM May 28, 2018
Ref Offset 16.31 dB
10 dB/div
Ref 20.00 dBm
ΔMkr1 77.979 MHz
1.732 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) 77.979 MHz (Δ) 1.732 dB
2 F f 2.402 077 GHz 3.574 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

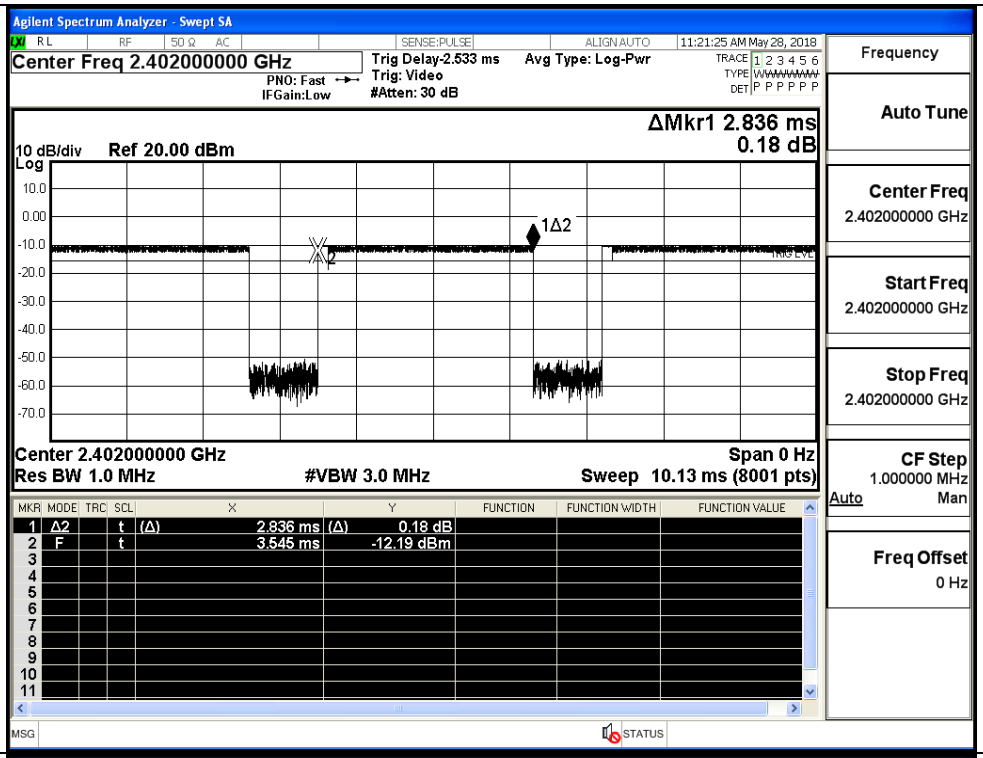
A.5 Dwell Time

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	0.303	0.4	PASS
	2DH5	MCH	2.88	106.7	0.303	0.4	PASS
	2DH5	HCH	2.88	106.7	0.303	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

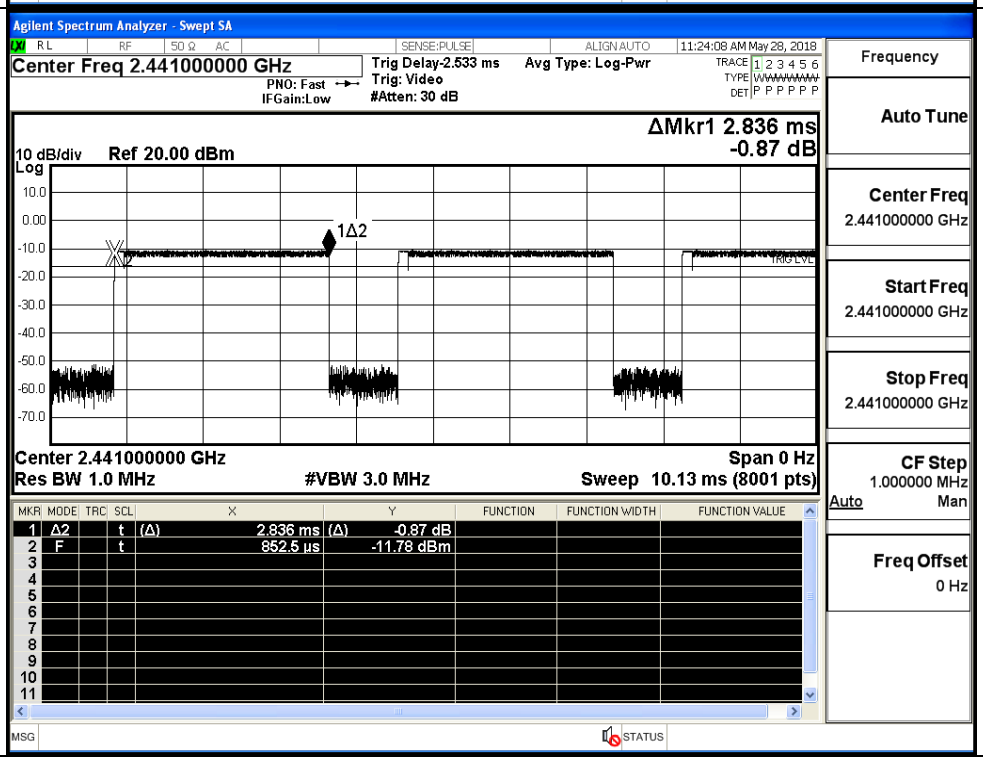
Test Graphs	
GFSK_DH5/LCH	

GFSK_DH5/MCH	
GFSK_DH5/HCH	

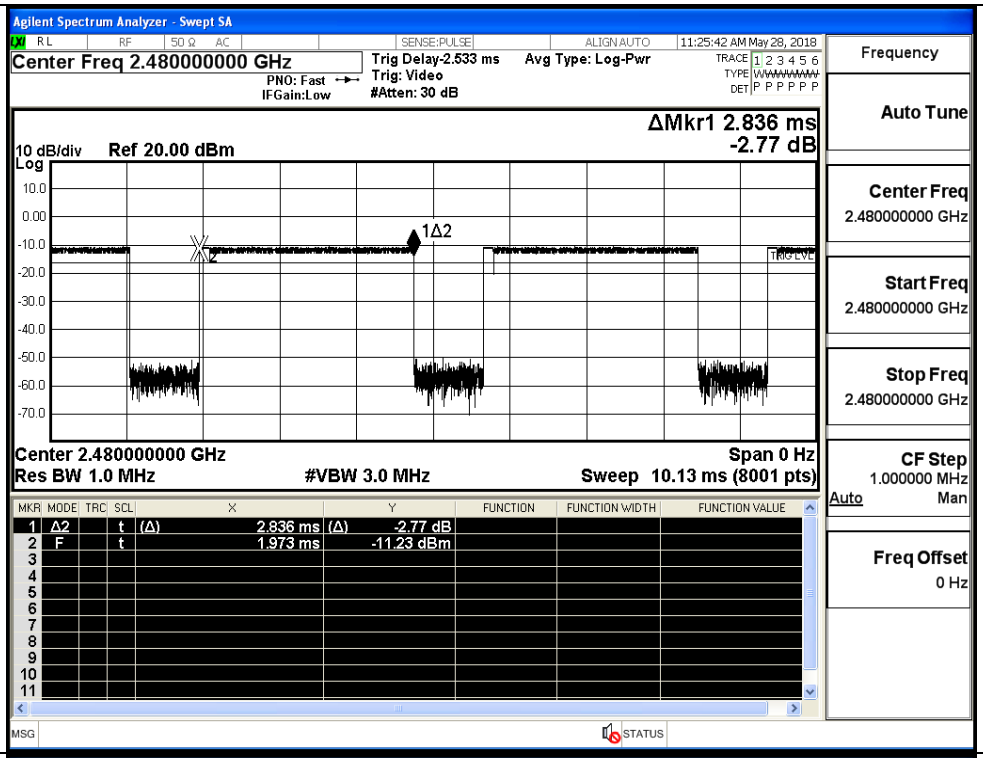
π/4DQPSK
_2DH5/LCH



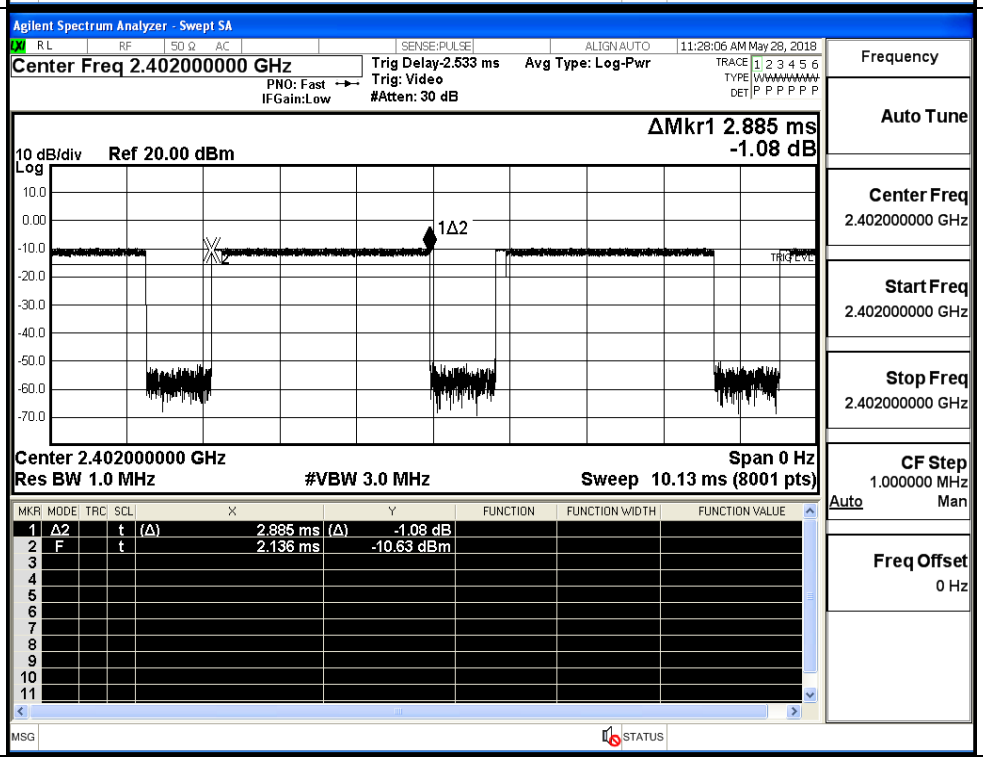
π/4DQPSK
_2DH5/MCH

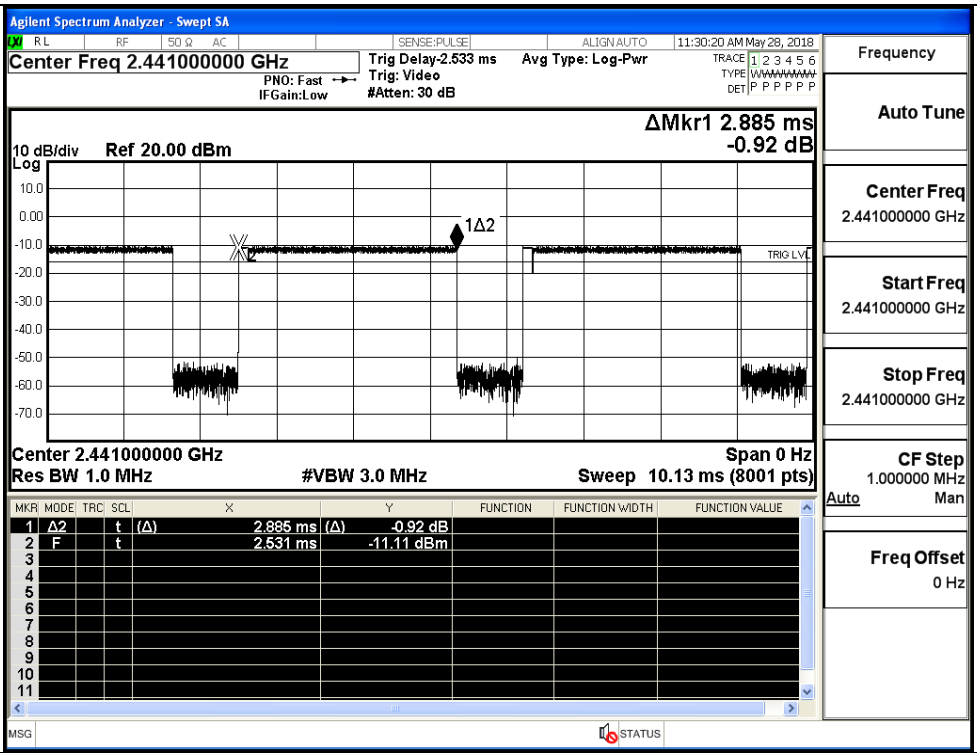
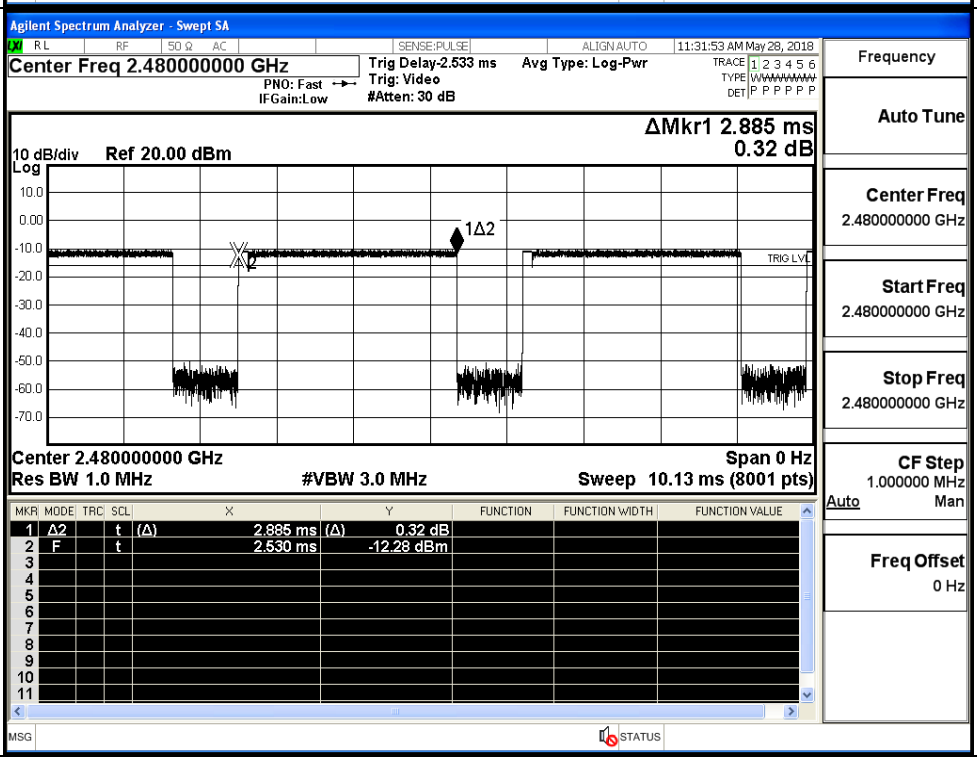


π/4DQPSK _2DH5/HCH



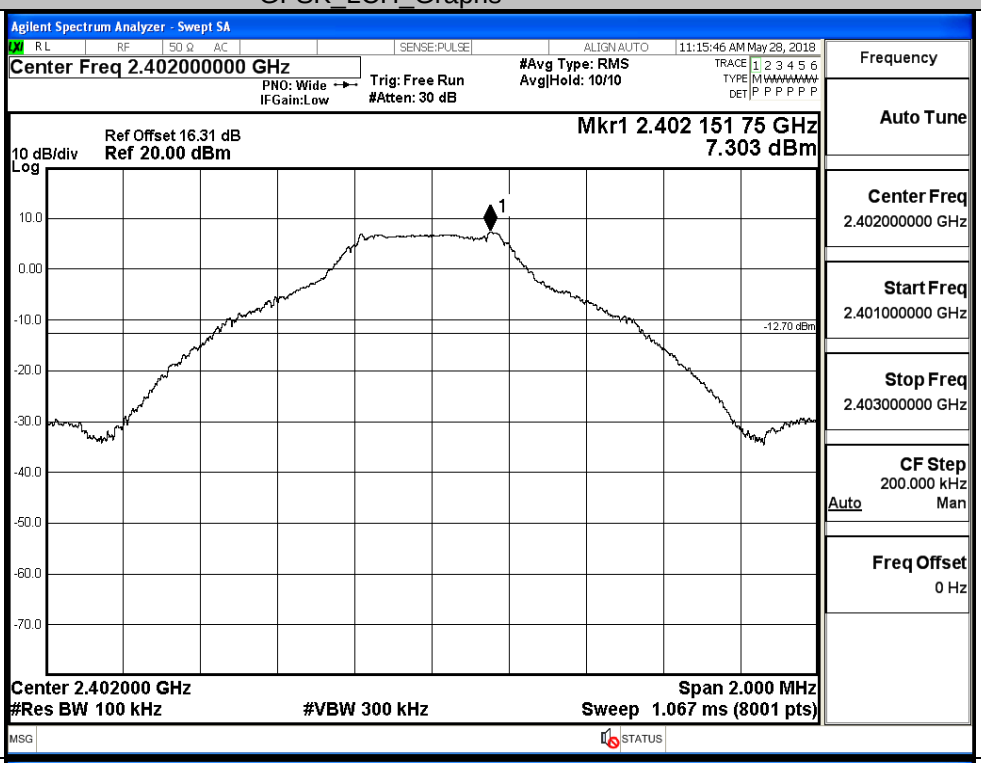
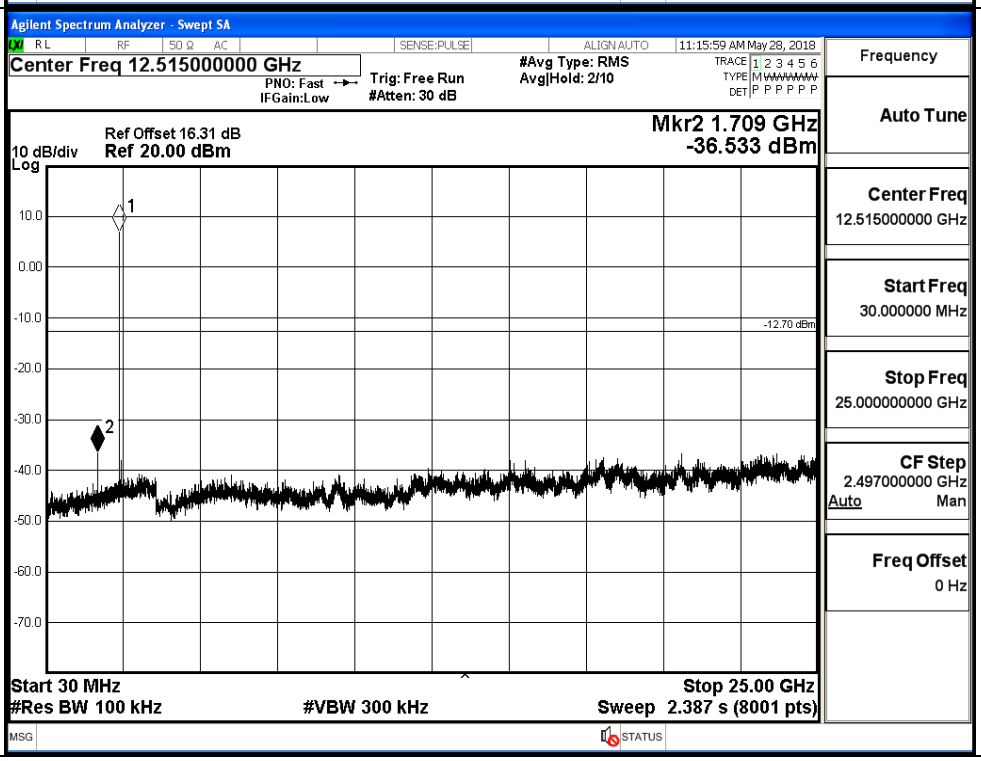
8DPSK _3DH5/LCH

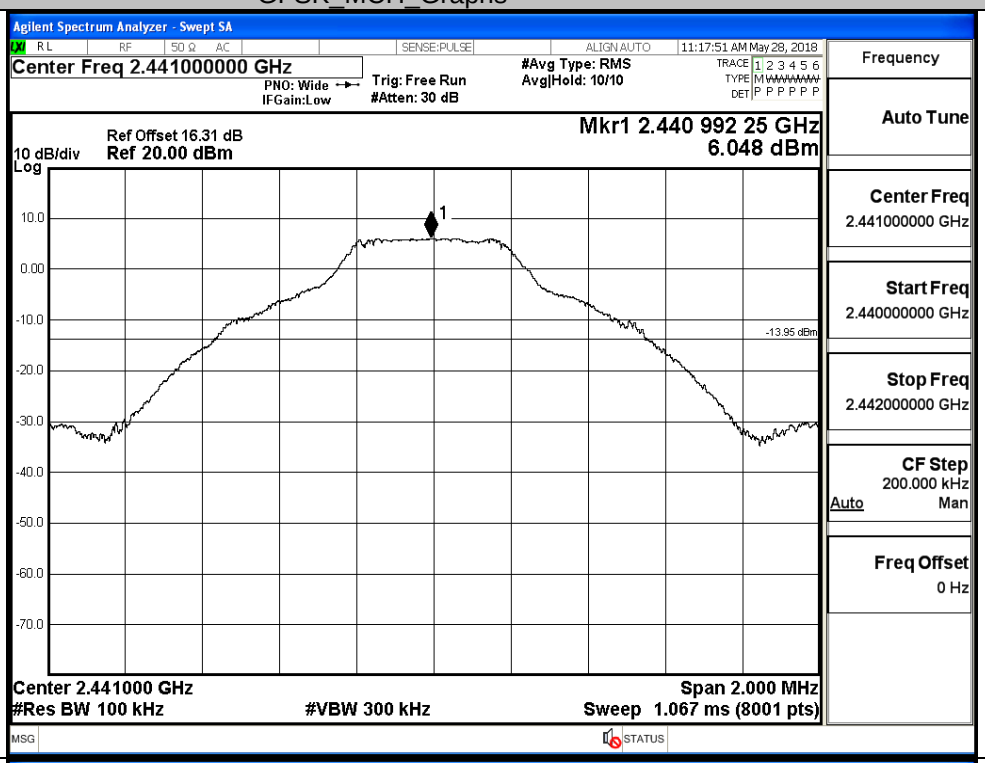
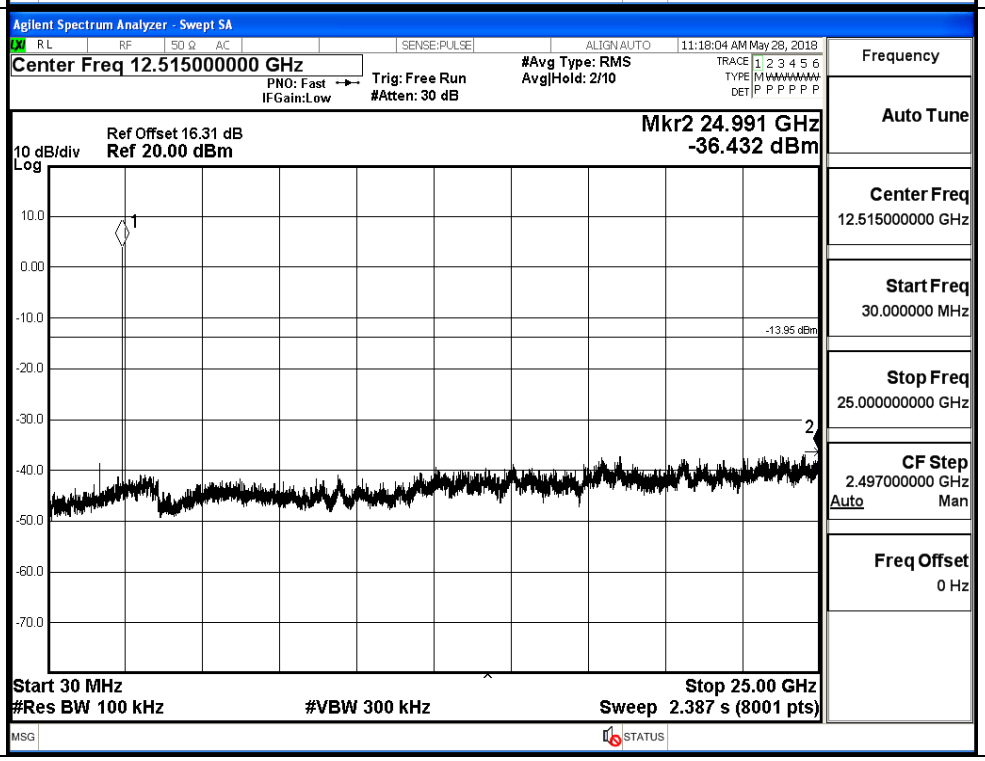


8DPSK _3DH5/MCH	
8DPSK _3DH5/HCH	

A.6 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	7.303	-36.533	-12.697	PASS
	MCH	6.048	-36.432	-13.952	PASS
	HCH	6.583	-34.666	-13.417	PASS
π/4DQPSK	LCH	5.779	-35.920	-14.221	PASS
	MCH	5.389	-36.556	-14.611	PASS
	HCH	5.457	-35.154	-14.543	PASS
8DPSK	LCH	6.006	-34.688	-13.994	PASS
	MCH	5.534	-33.767	-14.466	PASS
	HCH	5.317	-35.711	-14.683	PASS

GFSK_LCH_Graphs		
Pref		
Puw		

GFSK_MCH_Graphs		
Pref		
Puw		

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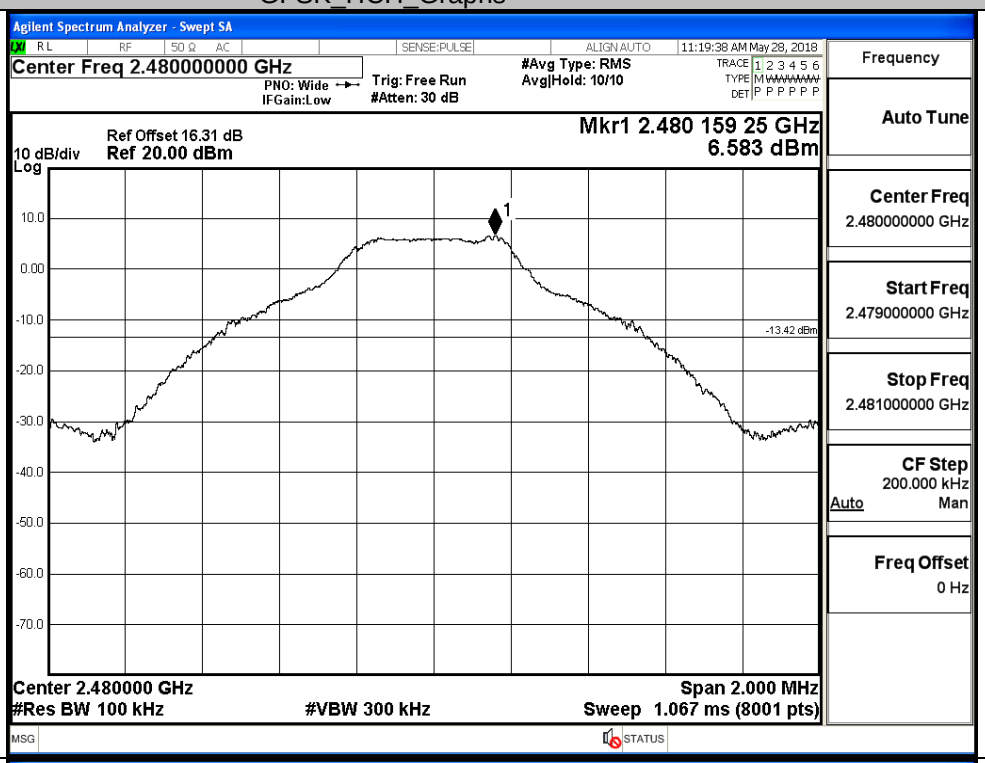
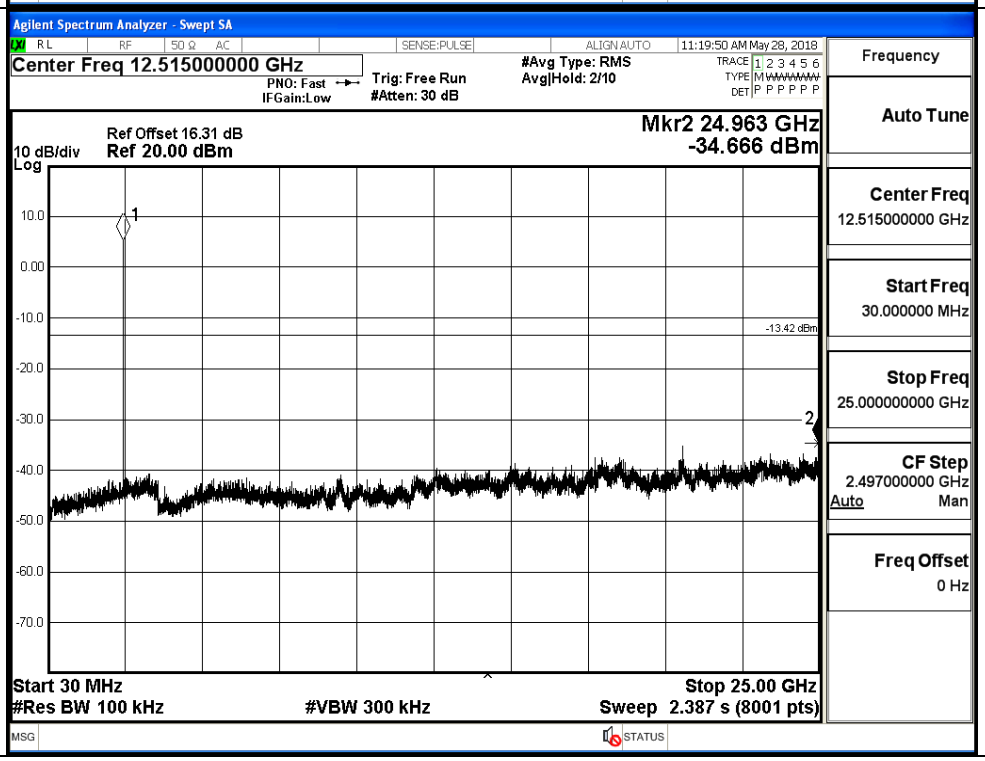
Pref		
Puw		

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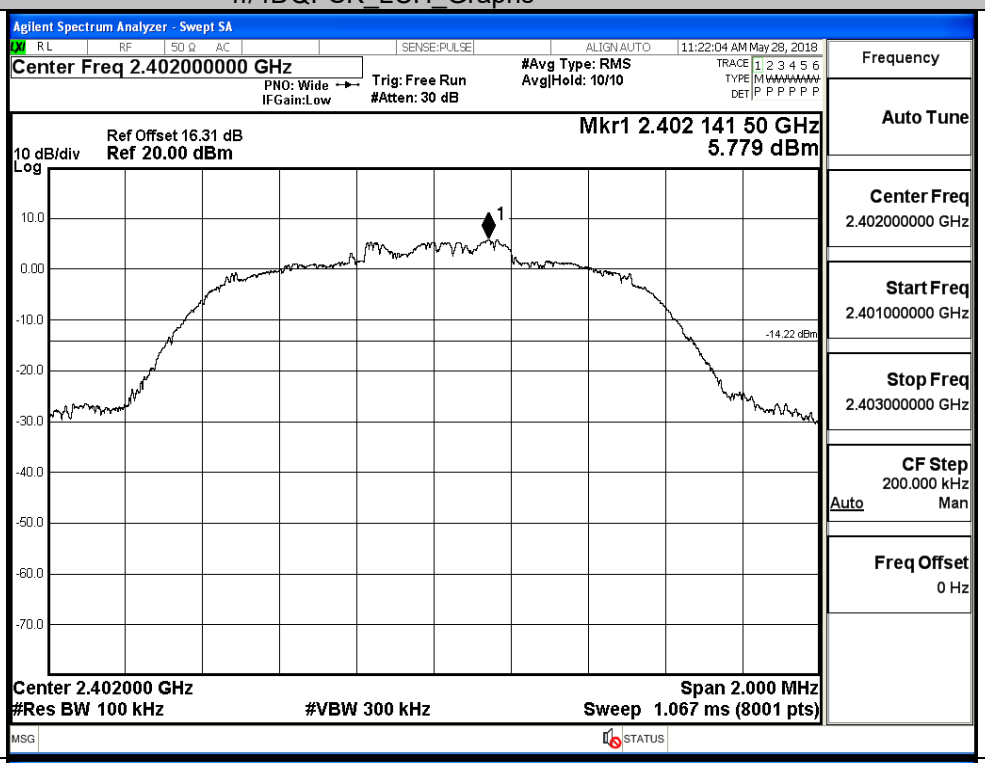
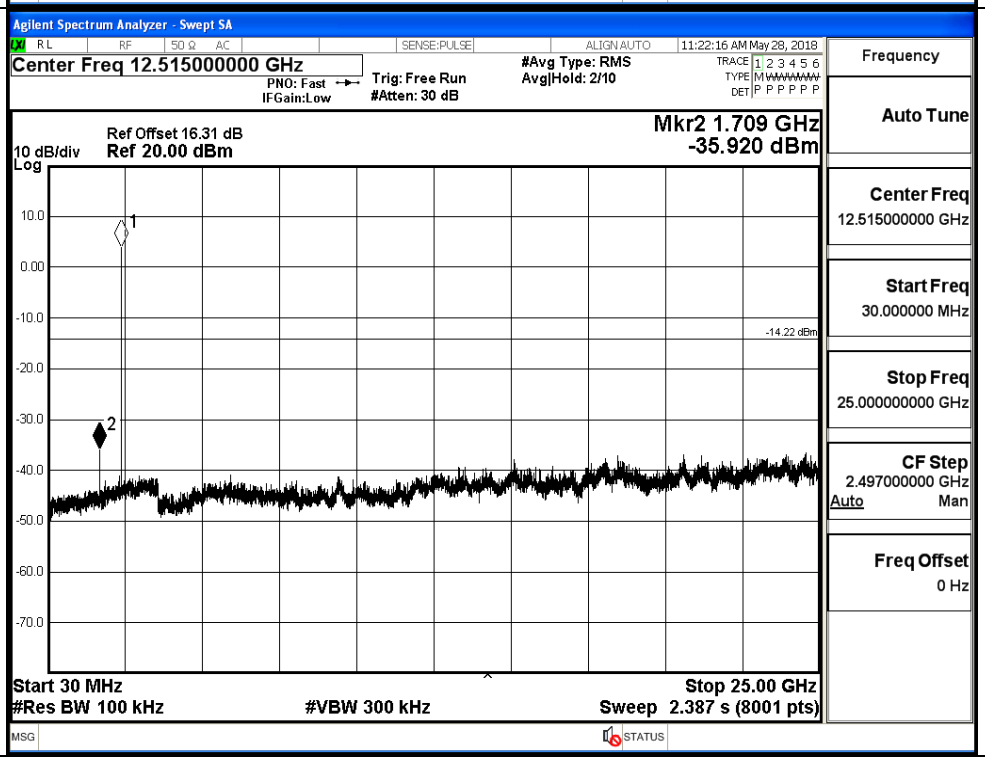
Pref		
Puw		

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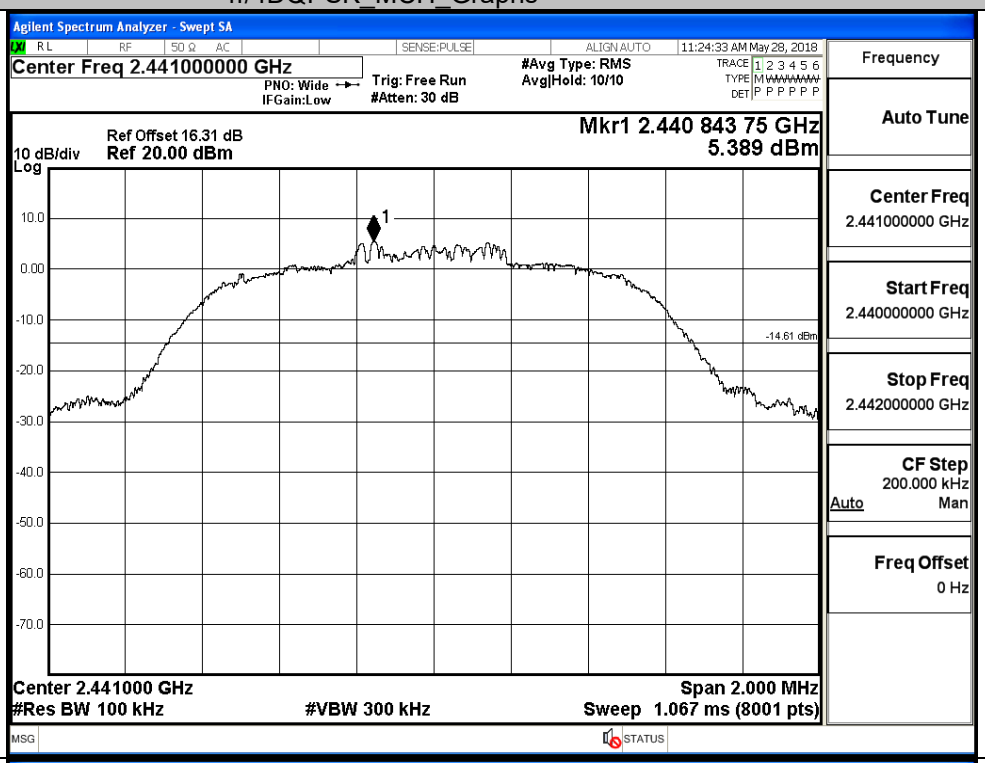
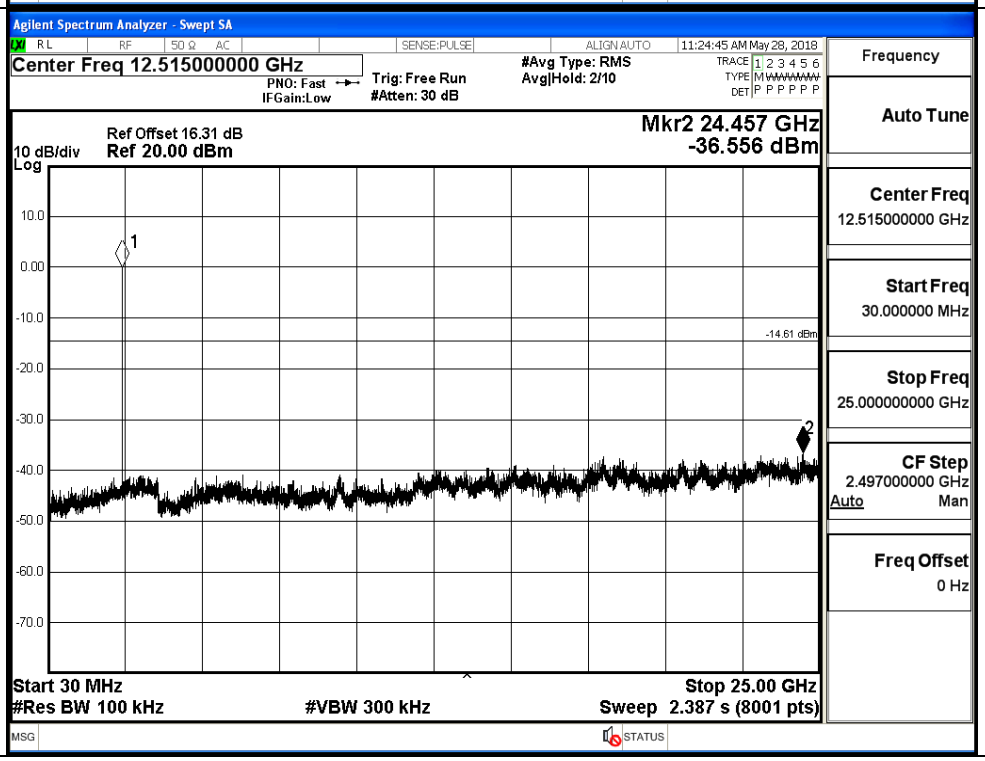
Pref		
Puw		

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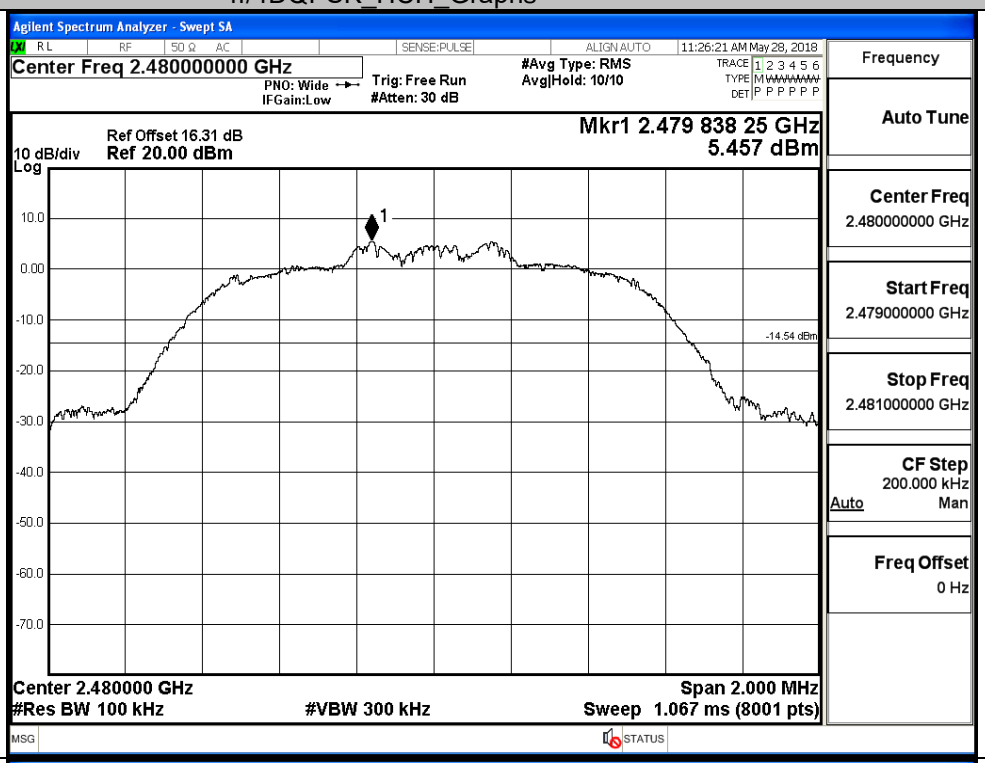
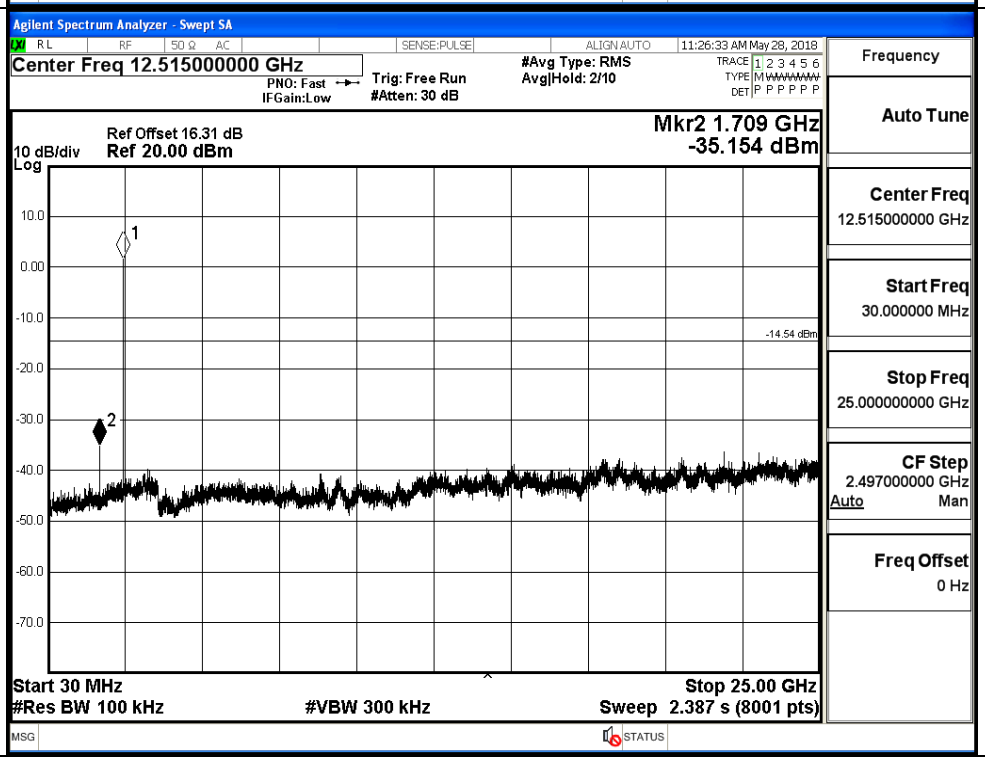
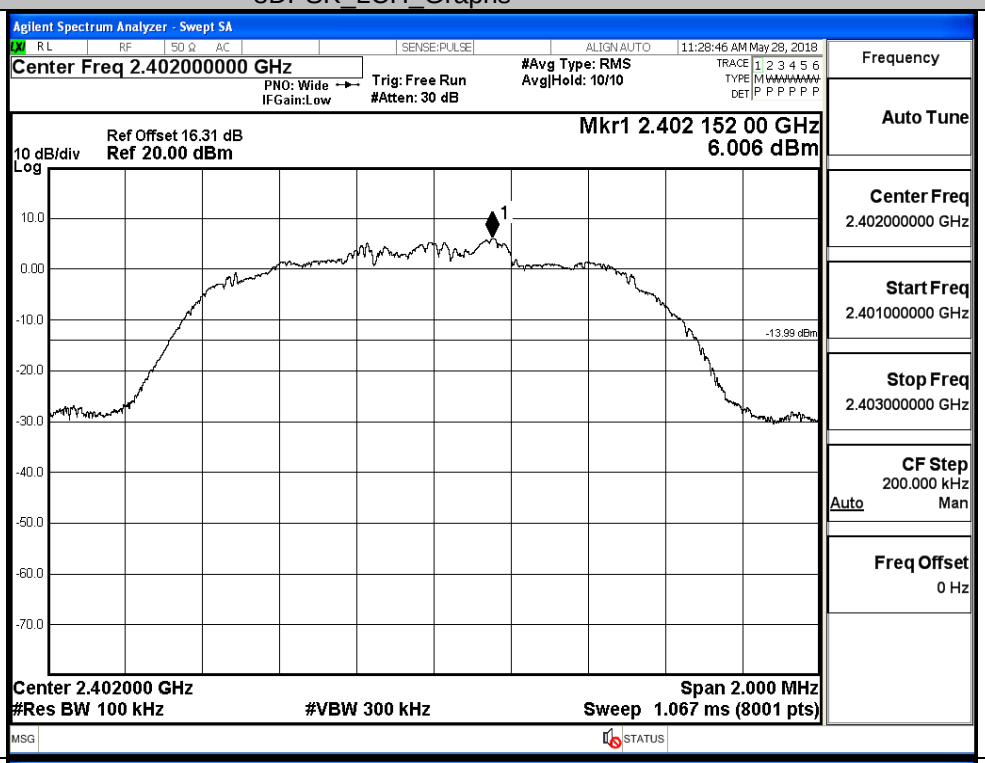
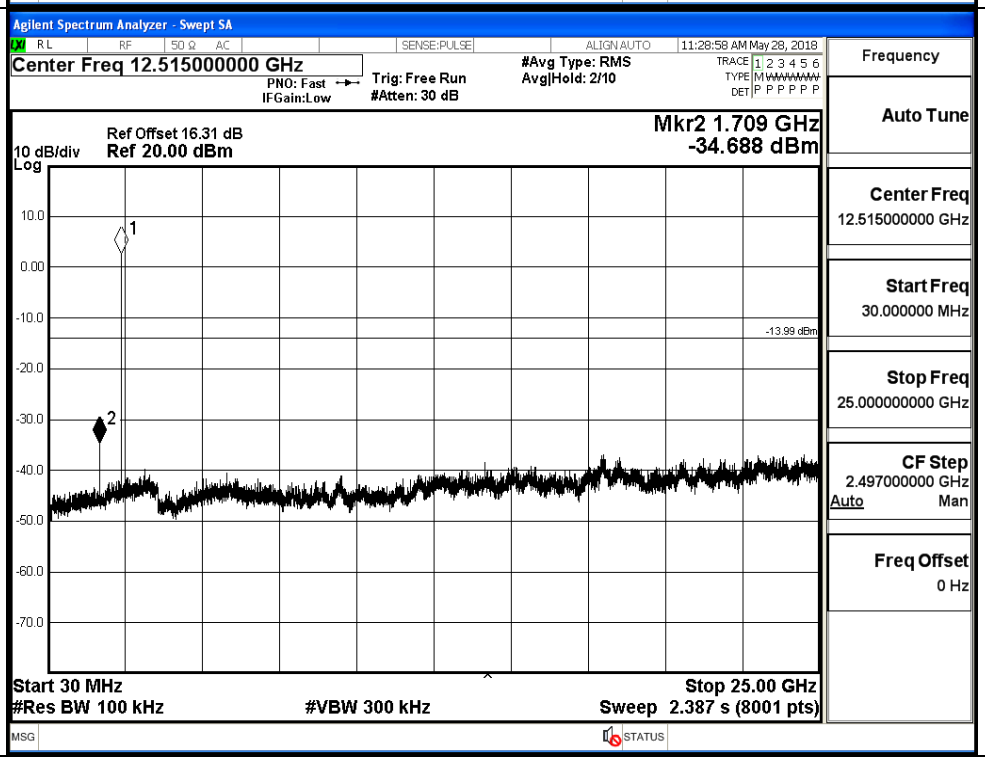
Pref		
Puw		

8DPSK_LCH_Graphs		
Pref		
Puw		

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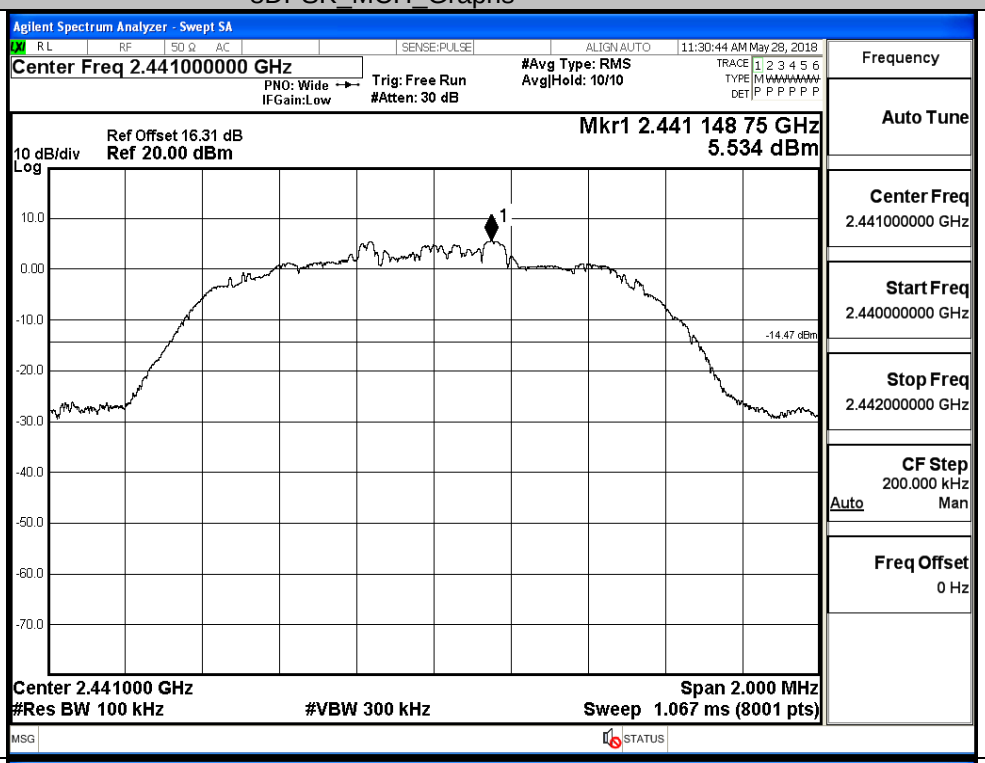
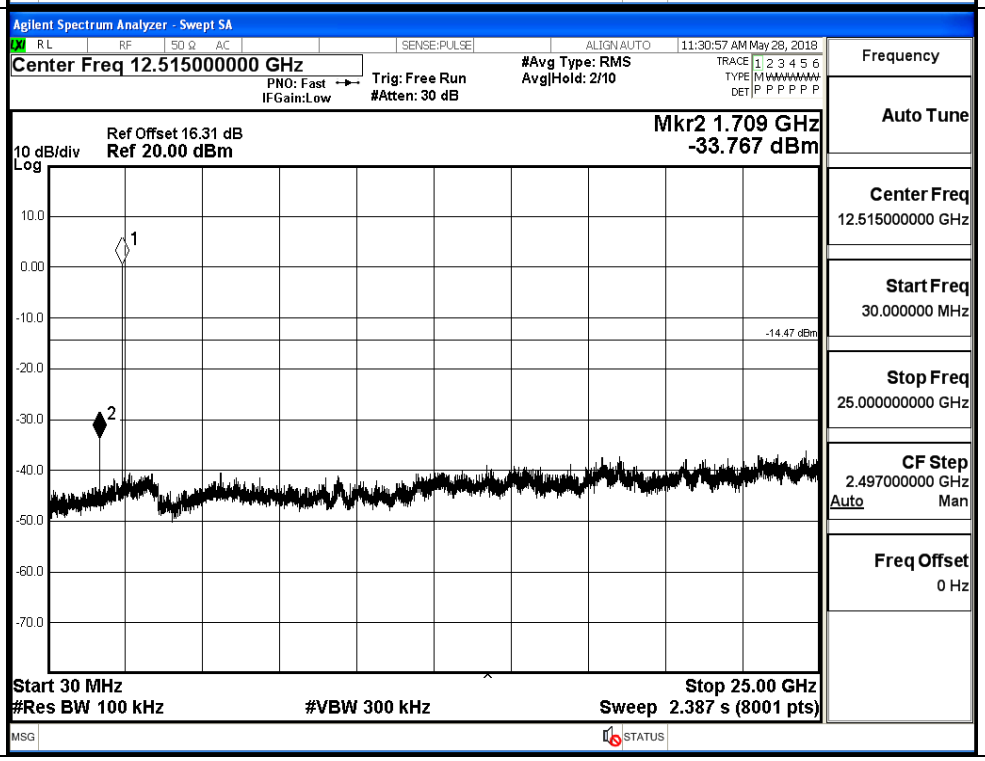
Pref		
Puw		

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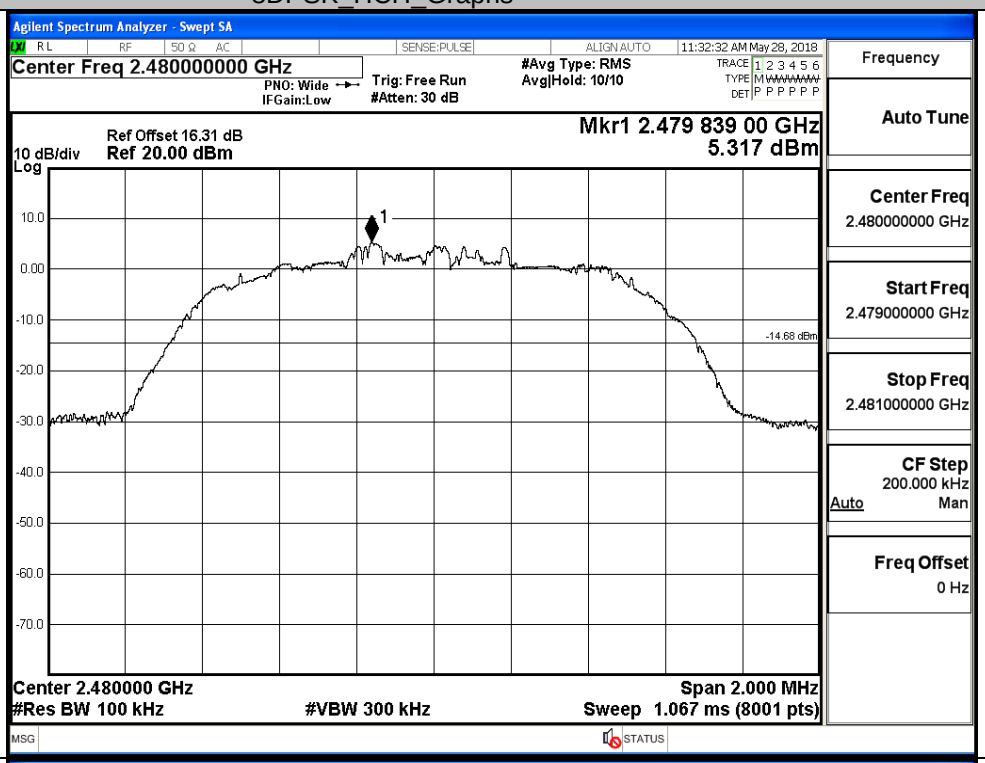
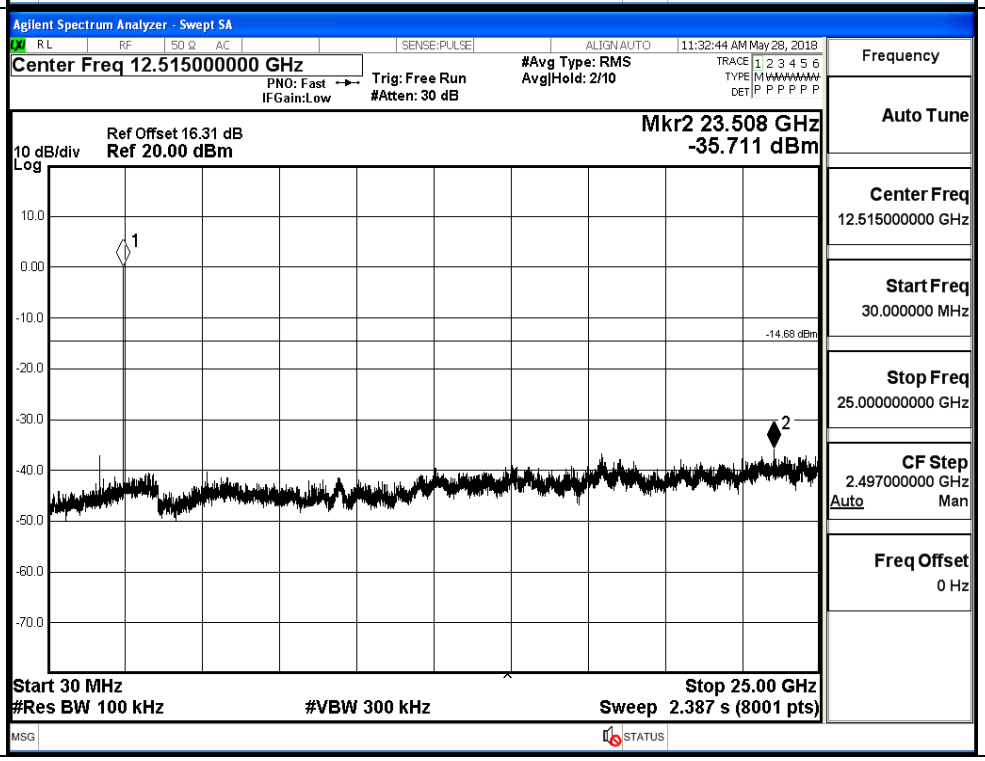
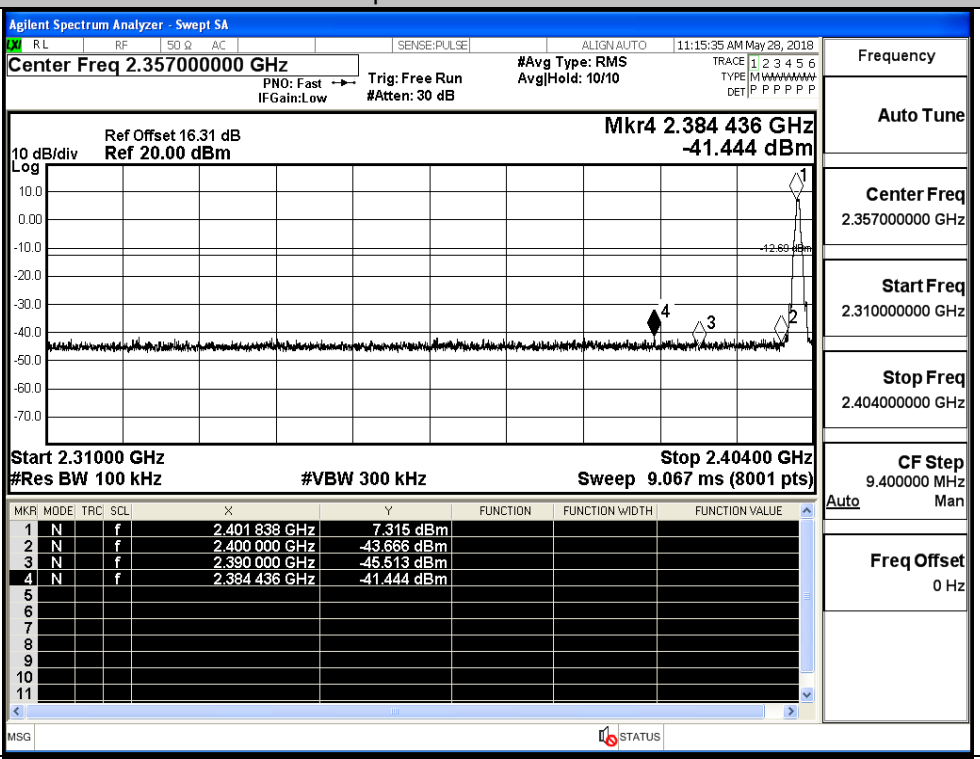
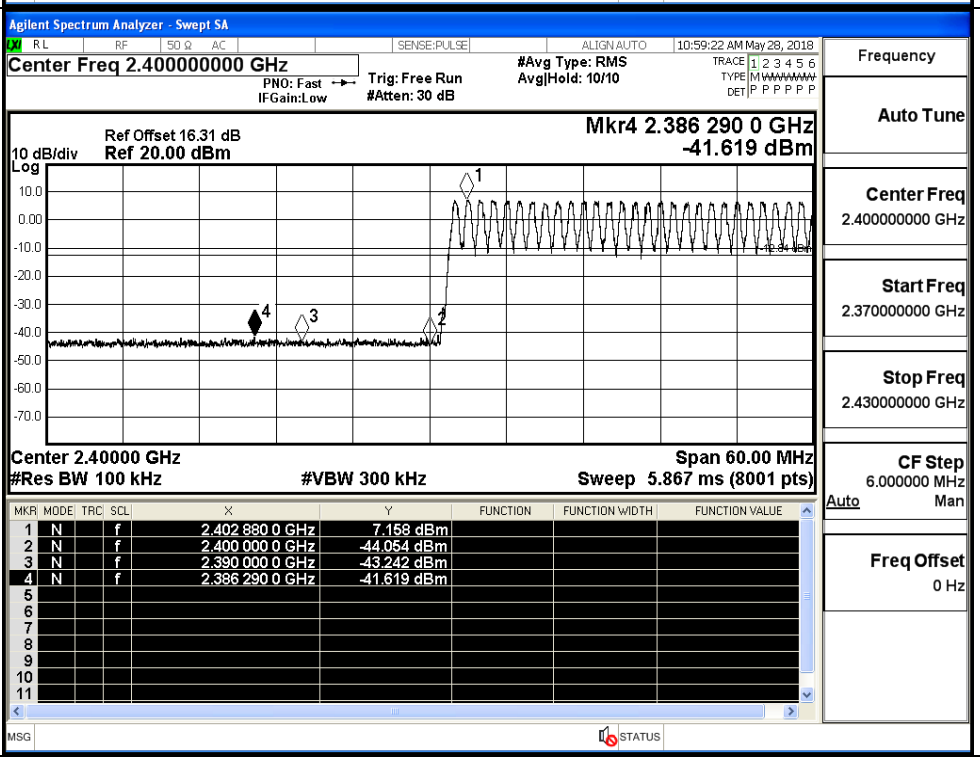
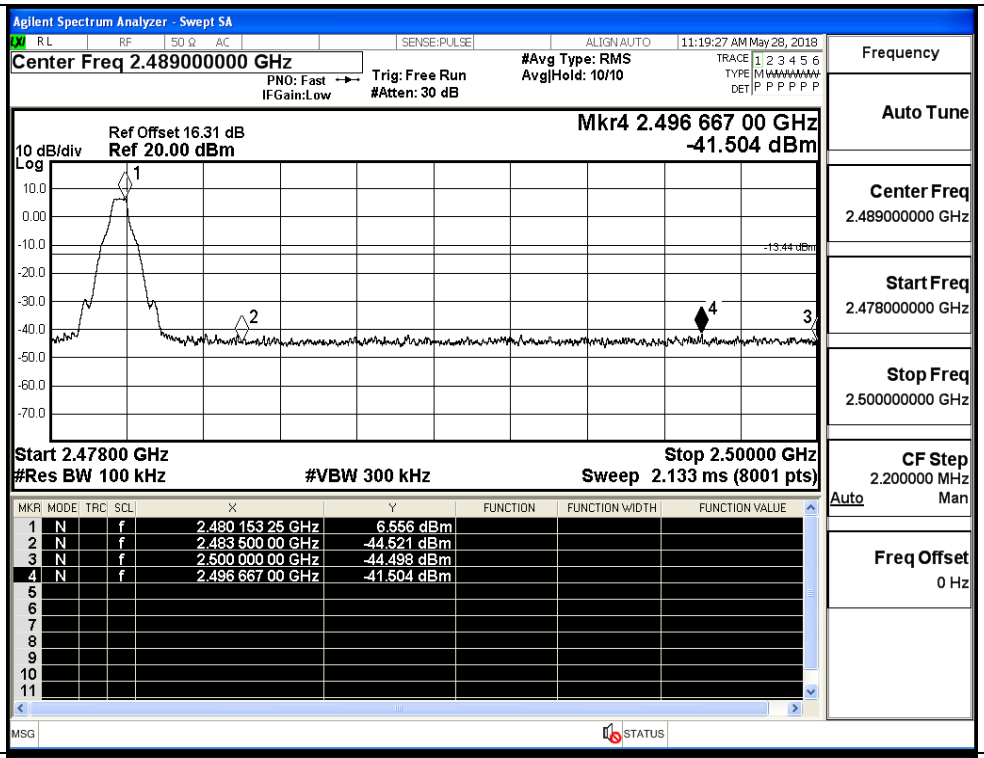
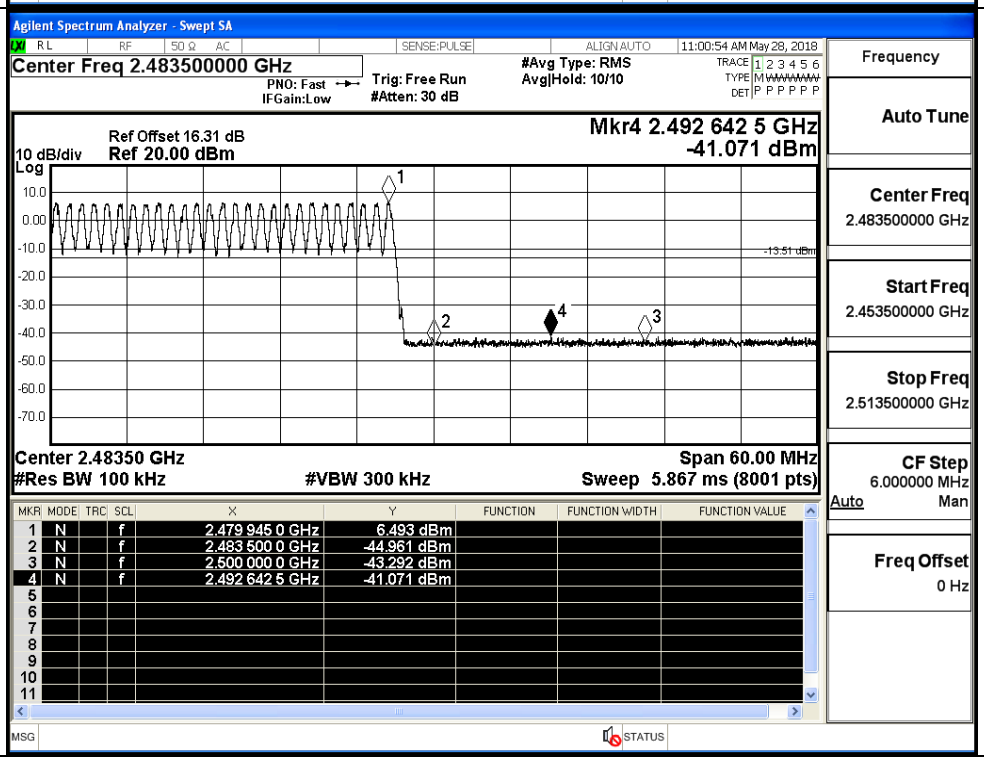
Pref		
Puw		

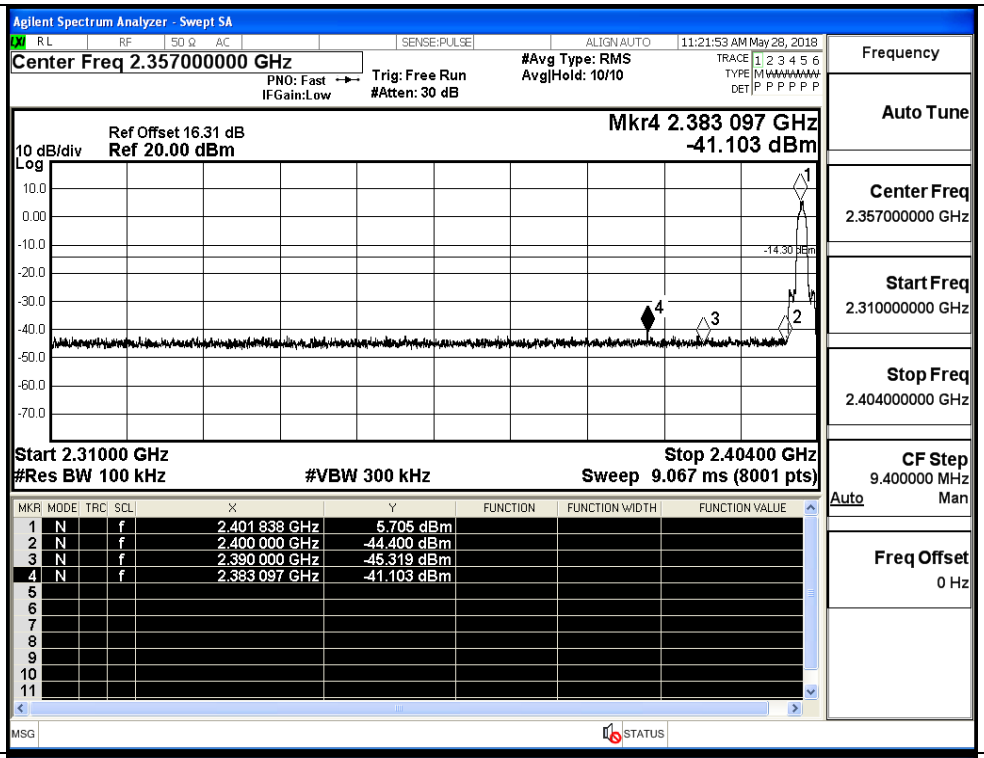
A.7 Band-edge for RF Conducted Emissions

Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	7.315	Off	-41.444	-12.69	PASS
			7.158	On	-41.619	-12.84	PASS
	HCH	2480	6.556	Off	-41.504	-13.44	PASS
			6.493	On	-41.071	-13.51	PASS
π/4DQPSK	LCH	2402	5.705	Off	-41.103	-14.3	PASS
			5.916	On	-41.074	-14.08	PASS
	HCH	2480	5.388	Off	-40.220	-14.61	PASS
			5.408	On	-40.489	-14.59	PASS
8DPSK	LCH	2402	5.611	Off	-41.672	-14.39	PASS
			5.869	On	-41.117	-14.13	PASS
	HCH	2480	5.260	Off	-41.244	-14.74	PASS
			5.521	On	-41.241	-14.48	PASS

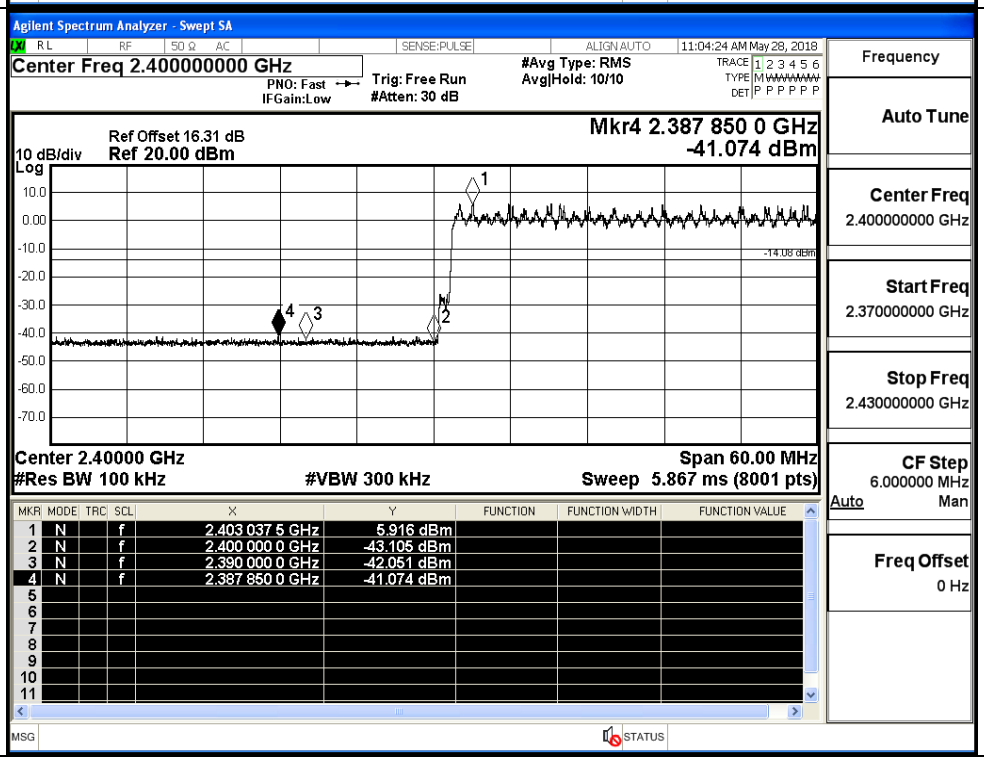
Test Graphs	
GFSK/LCH/No Hop	
GFSK/LCH/Hop	

GFSK/HCH/No Hop	
GFSK/HCH/Hop	

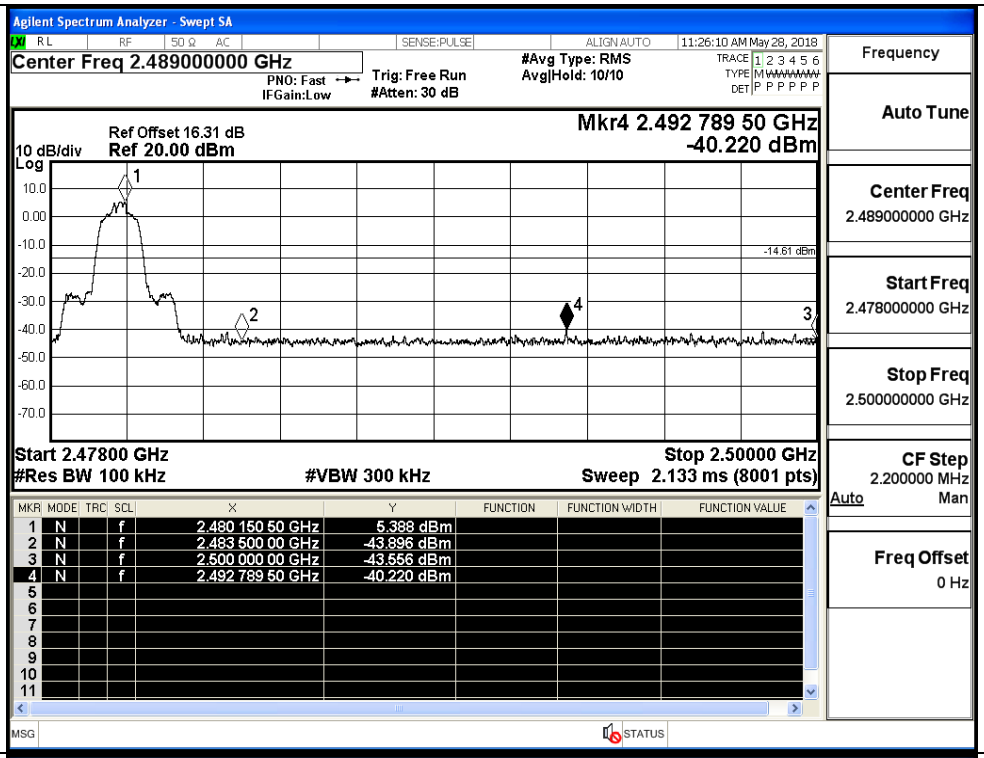
π/4DQPSK/LCH/No Hop



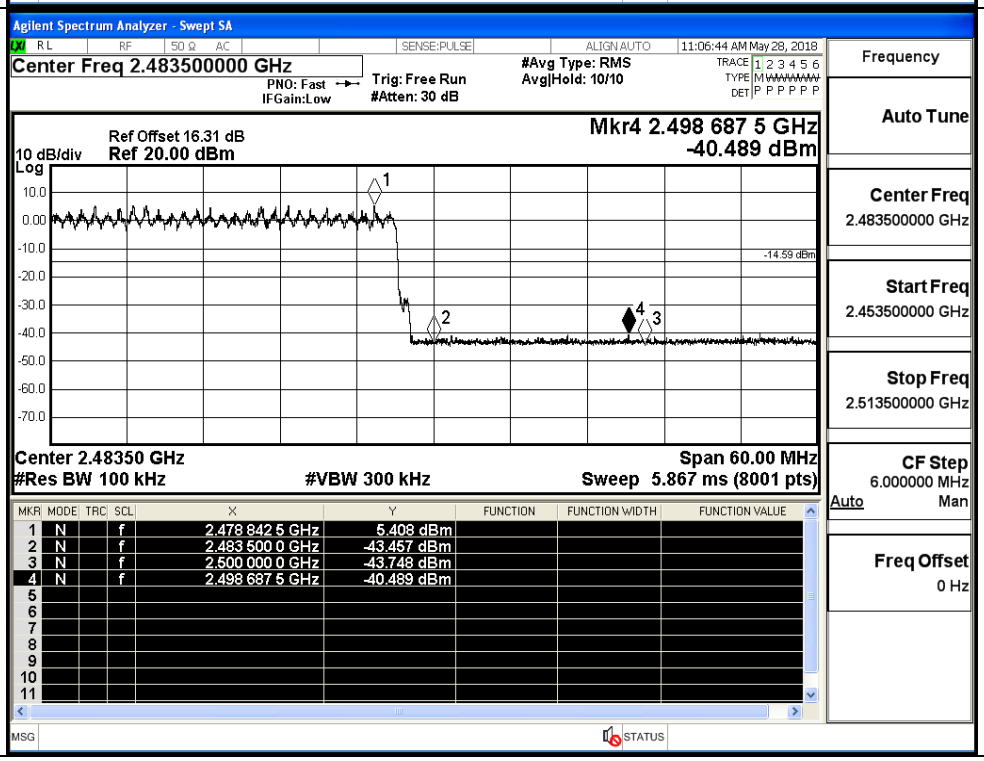
π/4DQPSK/LCH/Hop

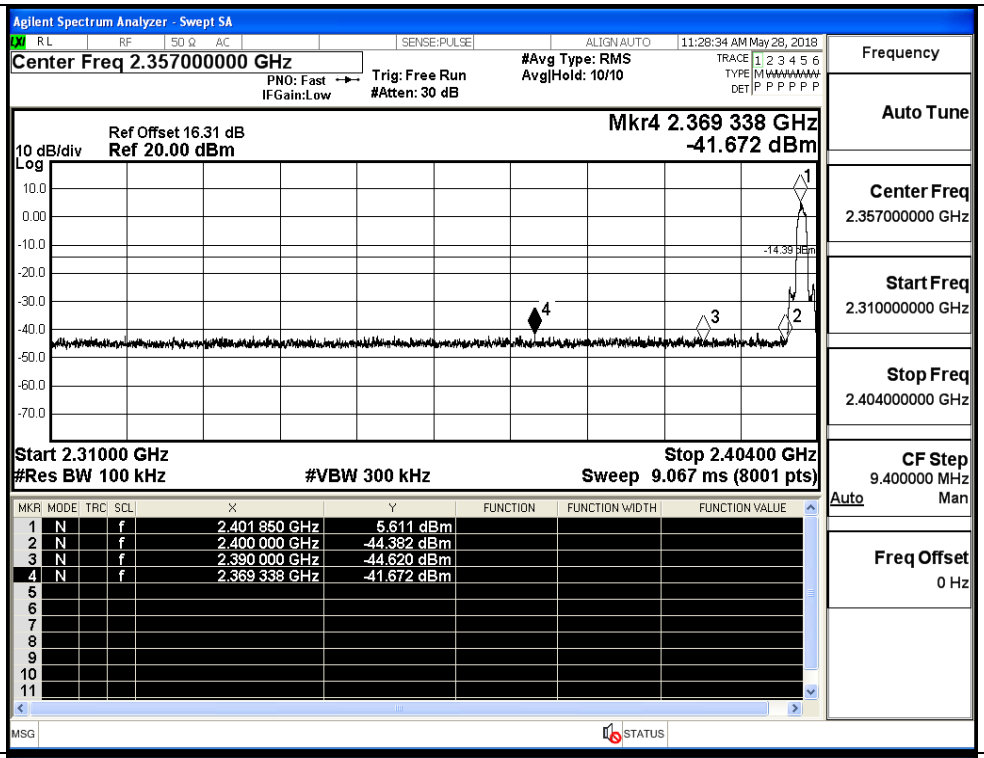
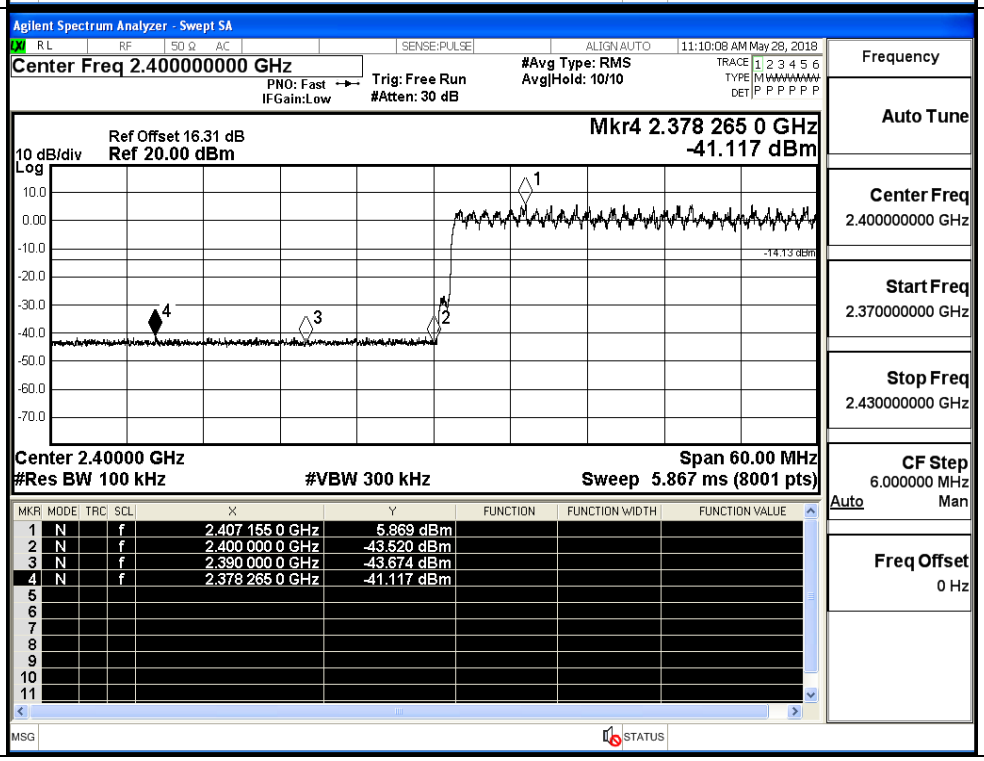


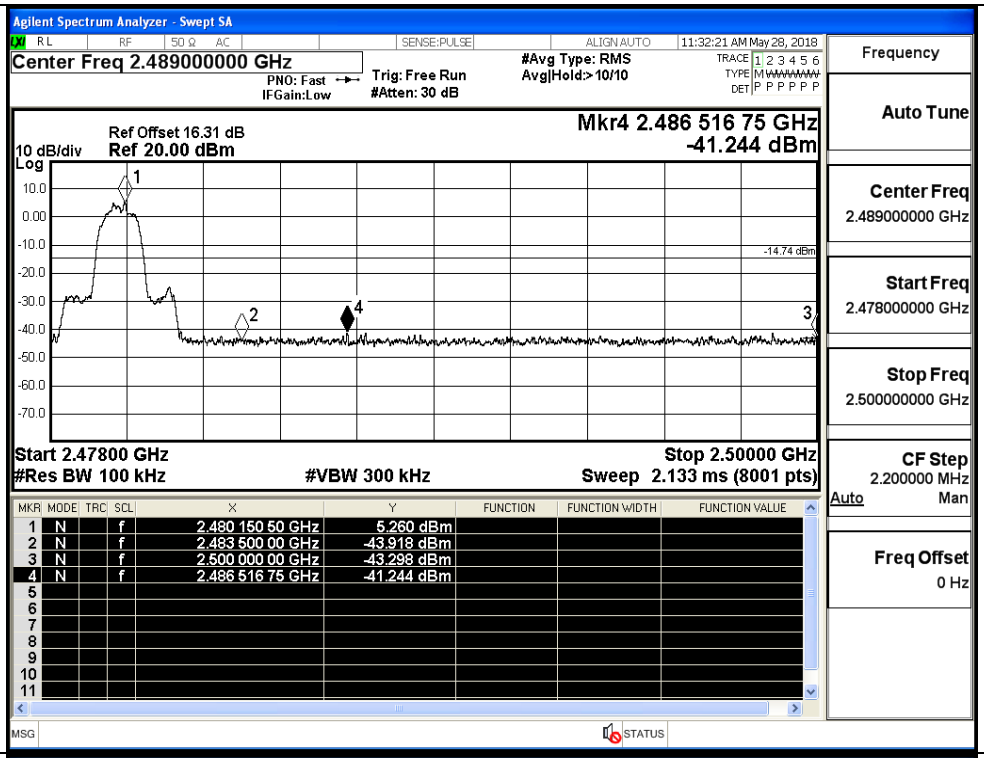
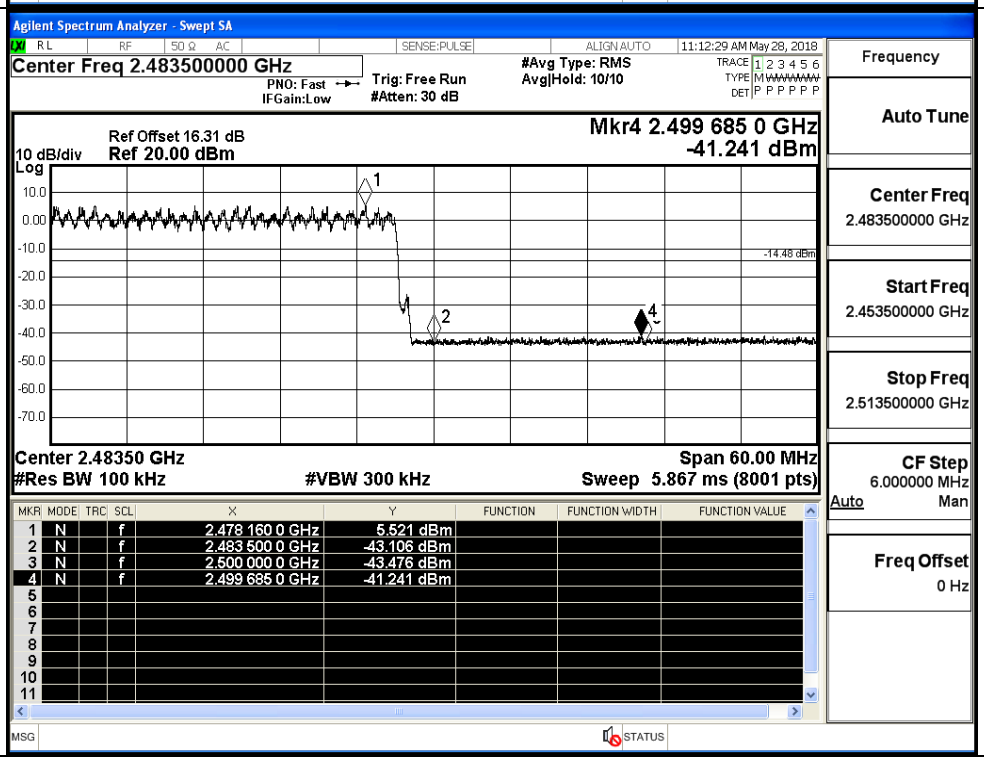
π/4DQPSK/HCH/No Hop



π/4DQPSK/HCH/Hop



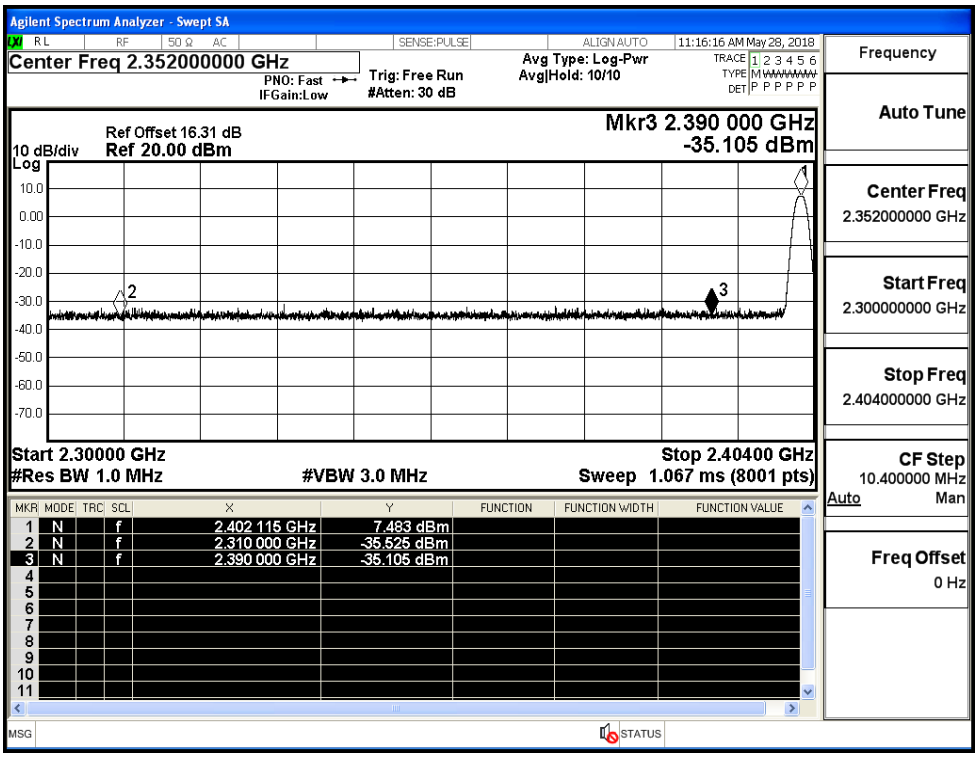
8DPSK/LCH/No Hop	
8DPSK/LCH/Hop	

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

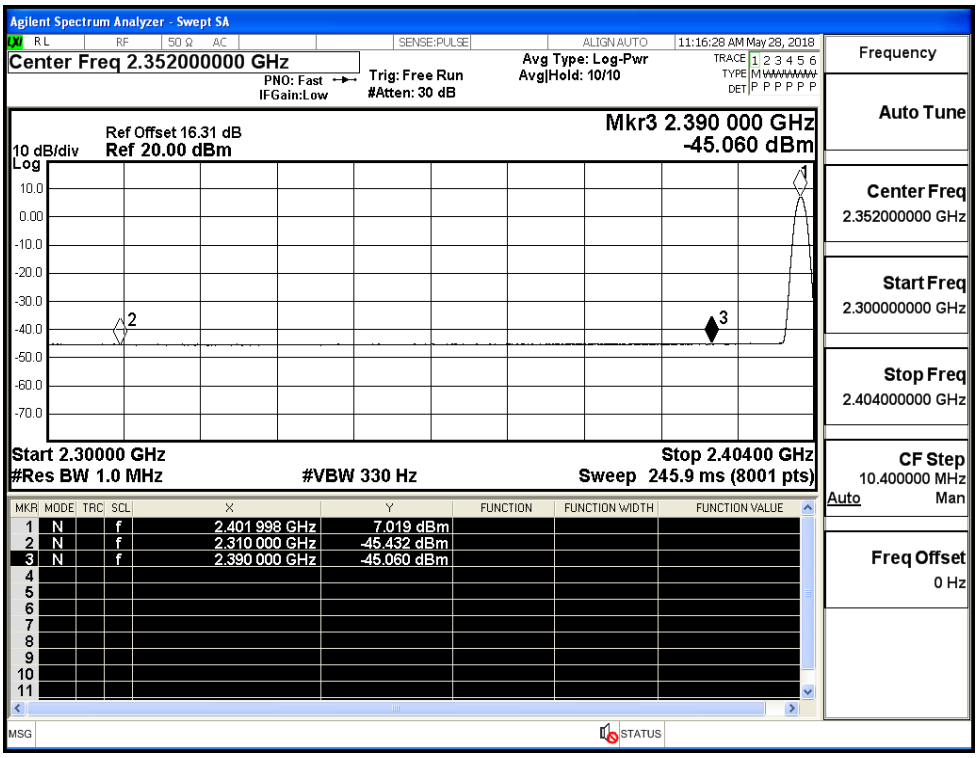
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-35.53	2.0	0	59.73	PEAK	74	PASS
	Off	2310.0	-45.43	2.0	0	49.83	AV	54	PASS
	Off	2390.0	-35.11	2.0	0	60.15	PEAK	74	PASS
	Off	2390.0	-45.06	2.0	0	50.20	AV	54	PASS
	Off	2483.5	-35.03	2.0	0	60.23	PEAK	74	PASS
	Off	2483.5	-44.86	2.0	0	50.40	AV	54	PASS
	Off	2500.0	-35.59	2.0	0	59.66	PEAK	74	PASS
	Off	2500.0	-44.82	2.0	0	50.43	AV	54	PASS
π/4DQPSK	Off	2310.0	-35.35	2.0	0	59.91	PEAK	74	PASS
	Off	2310.0	-45.39	2.0	0	49.87	AV	54	PASS
	Off	2390.0	-33.43	2.0	0	61.82	PEAK	74	PASS
	Off	2390.0	-45.18	2.0	0	50.08	AV	54	PASS
	Off	2483.5	-34.95	2.0	0	60.31	PEAK	74	PASS
	Off	2483.5	-44.82	2.0	0	50.44	AV	54	PASS
	Off	2500.0	-34.08	2.0	0	61.18	PEAK	74	PASS
	Off	2500.0	-44.72	2.0	0	50.54	AV	54	PASS
8DPSK	Off	2310.0	-35.04	2.0	0	60.22	PEAK	74	PASS
	Off	2310.0	-45.33	2.0	0	49.92	AV	54	PASS
	Off	2390.0	-34.57	2.0	0	60.69	PEAK	74	PASS
	Off	2390.0	-45.19	2.0	0	50.07	AV	54	PASS
	Off	2483.5	-33.69	2.0	0	61.57	PEAK	74	PASS
	Off	2483.5	-44.64	2.0	0	50.62	AV	54	PASS
	Off	2500.0	-35.83	2.0	0	59.43	PEAK	74	PASS
	Off	2500.0	-44.77	2.0	0	50.48	AV	54	PASS

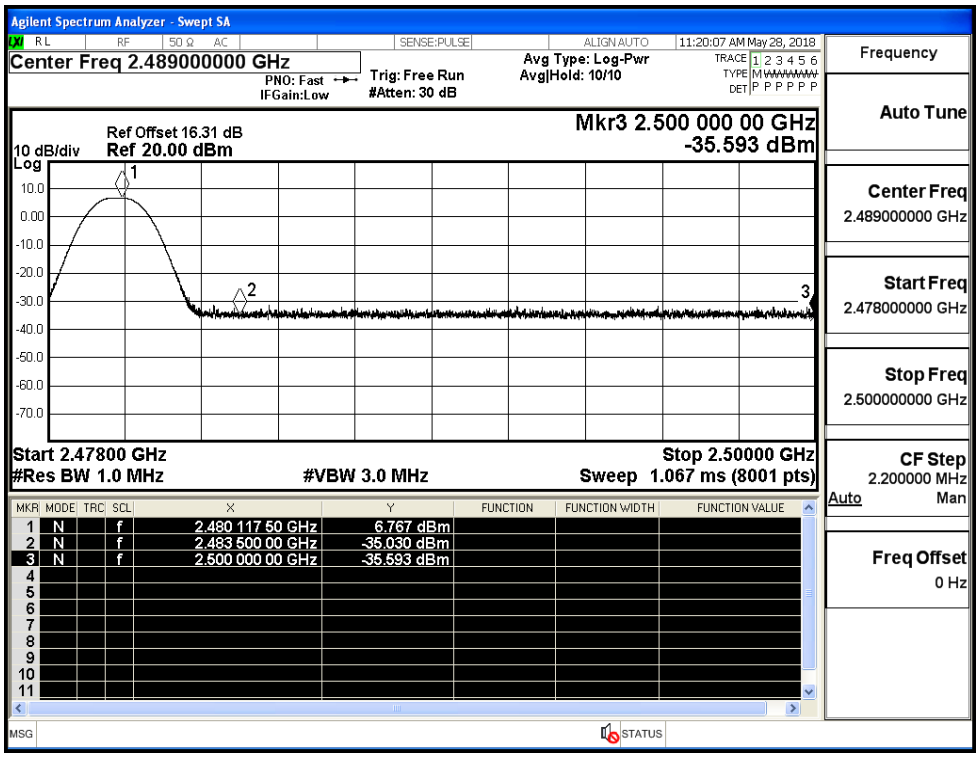
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (Low Channel)



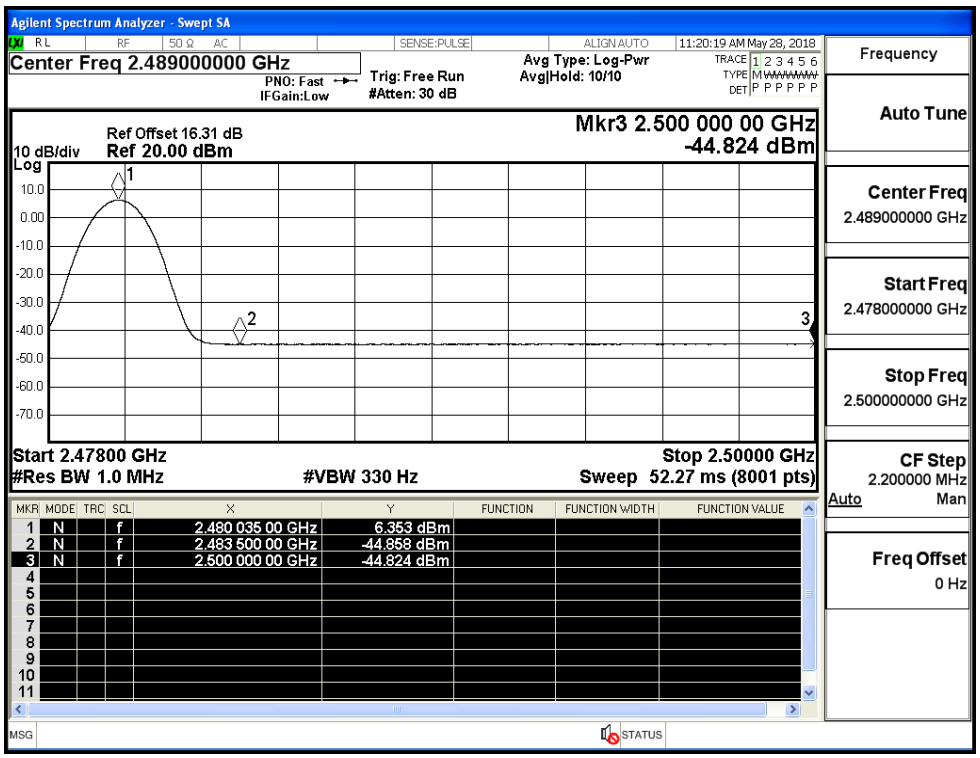
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (Low Channel)



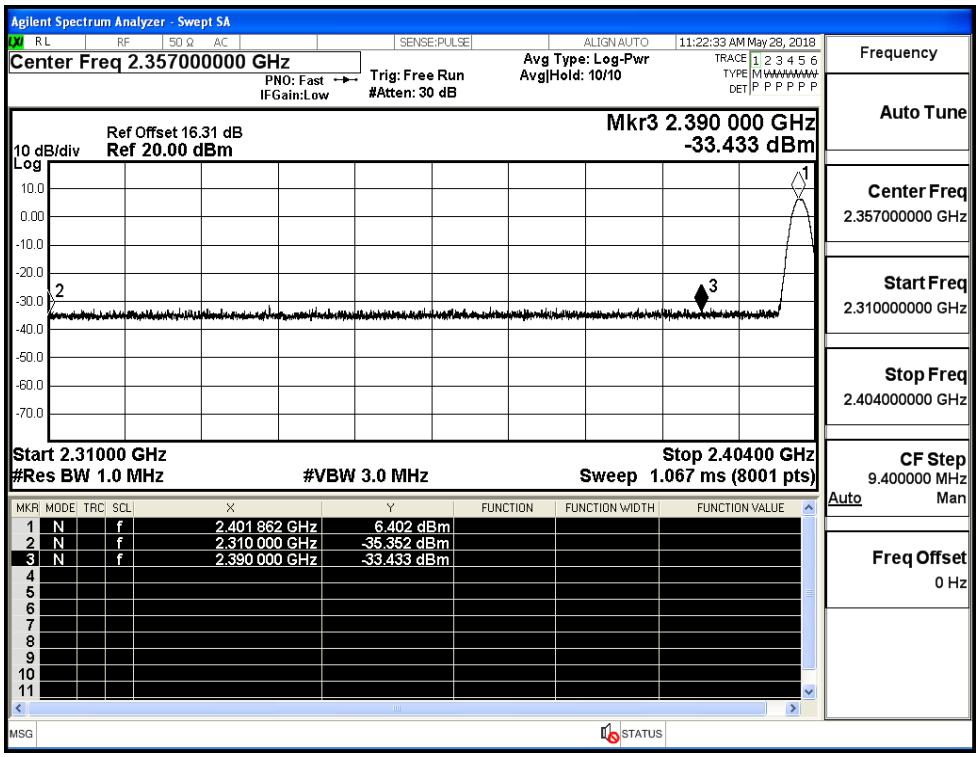
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (High Channel)



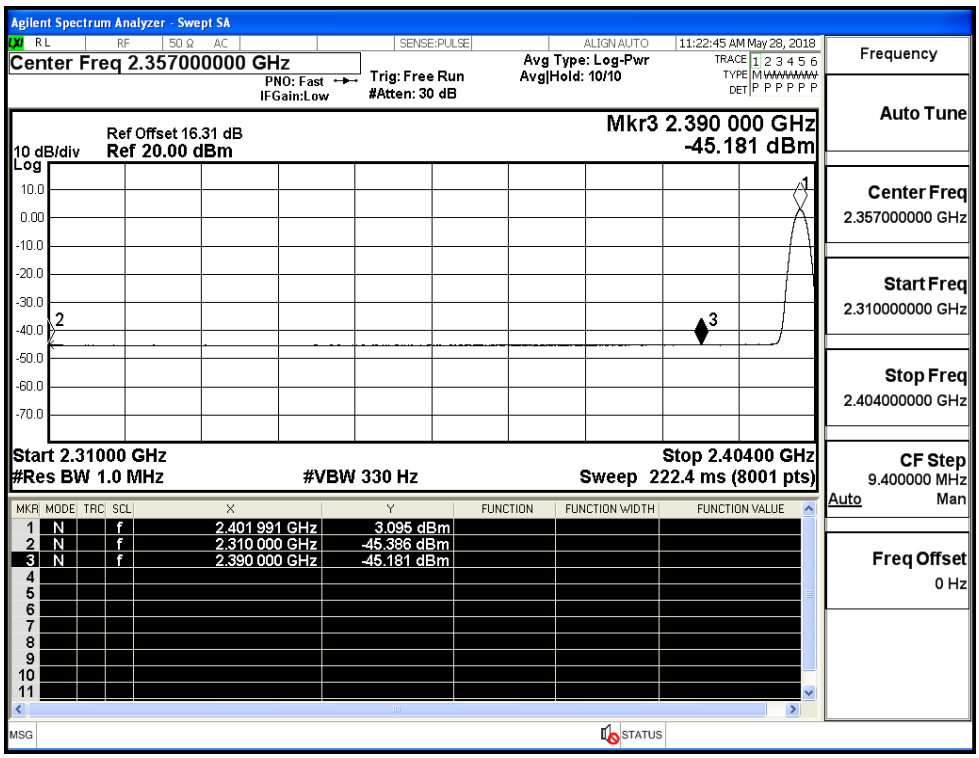
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (High Channel)



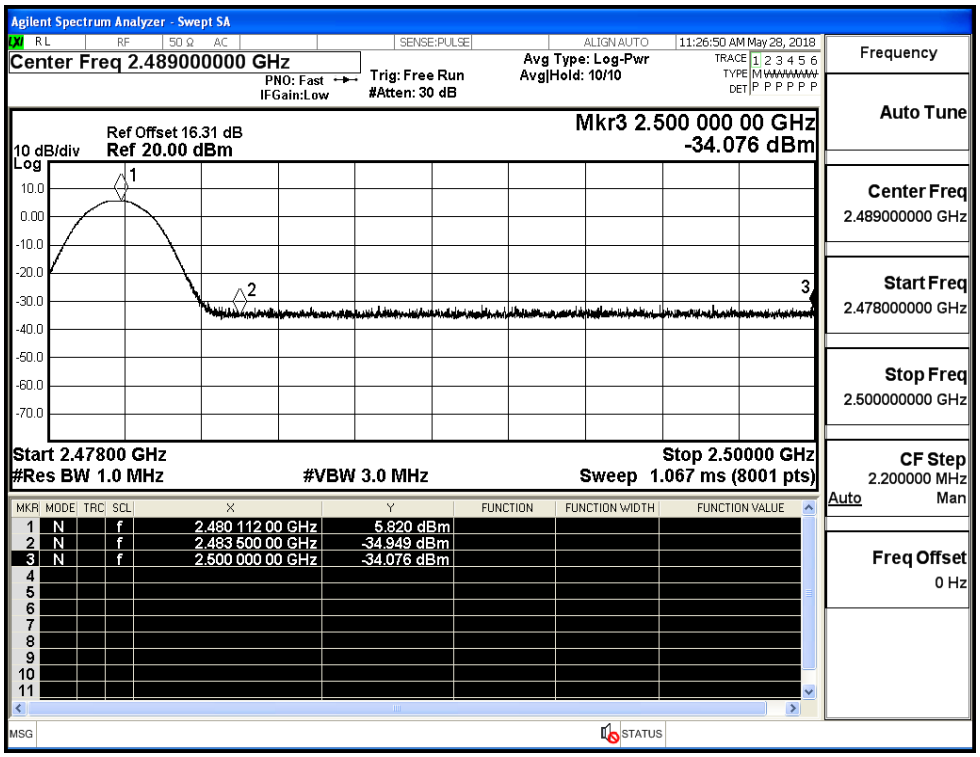
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (Low Channel)



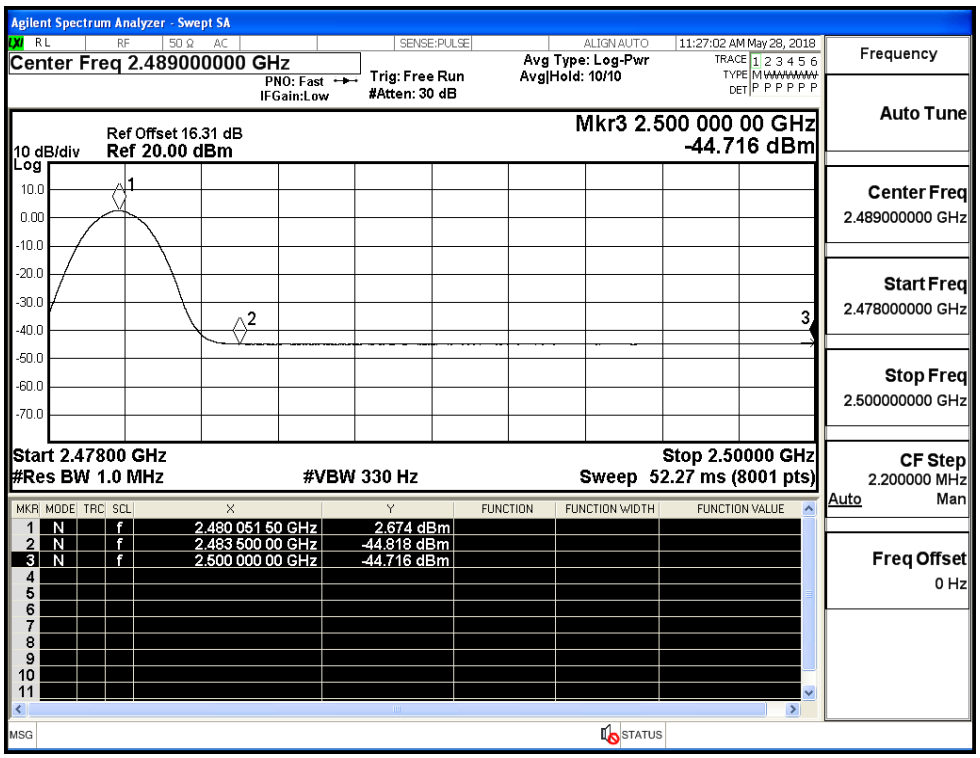
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (Low Channel)



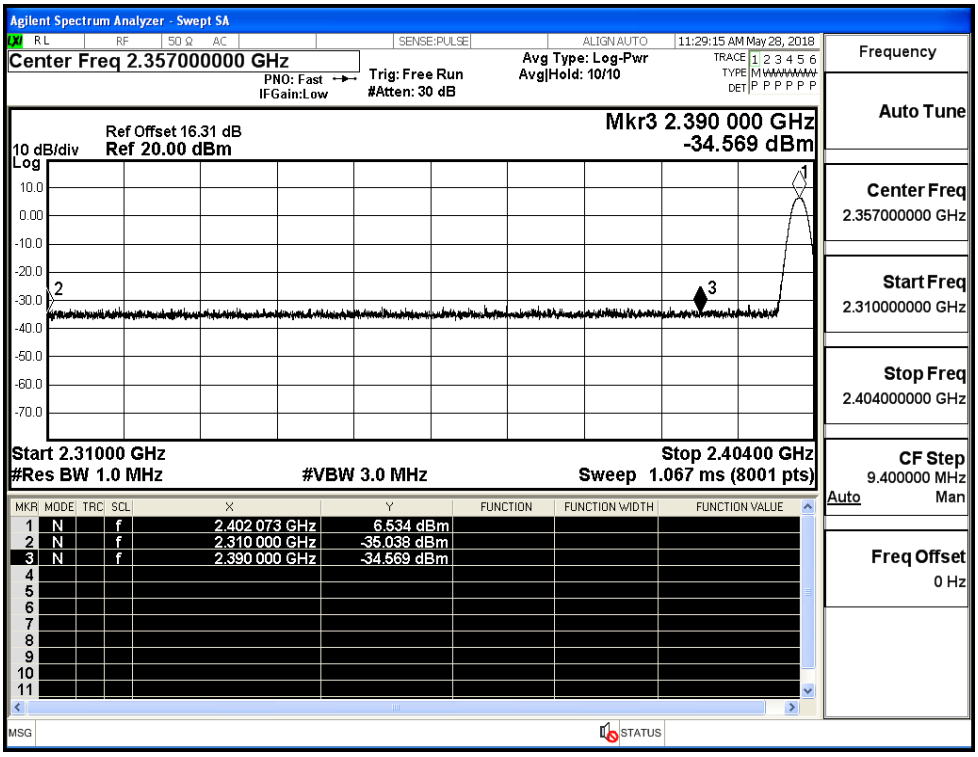
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (High Channel)



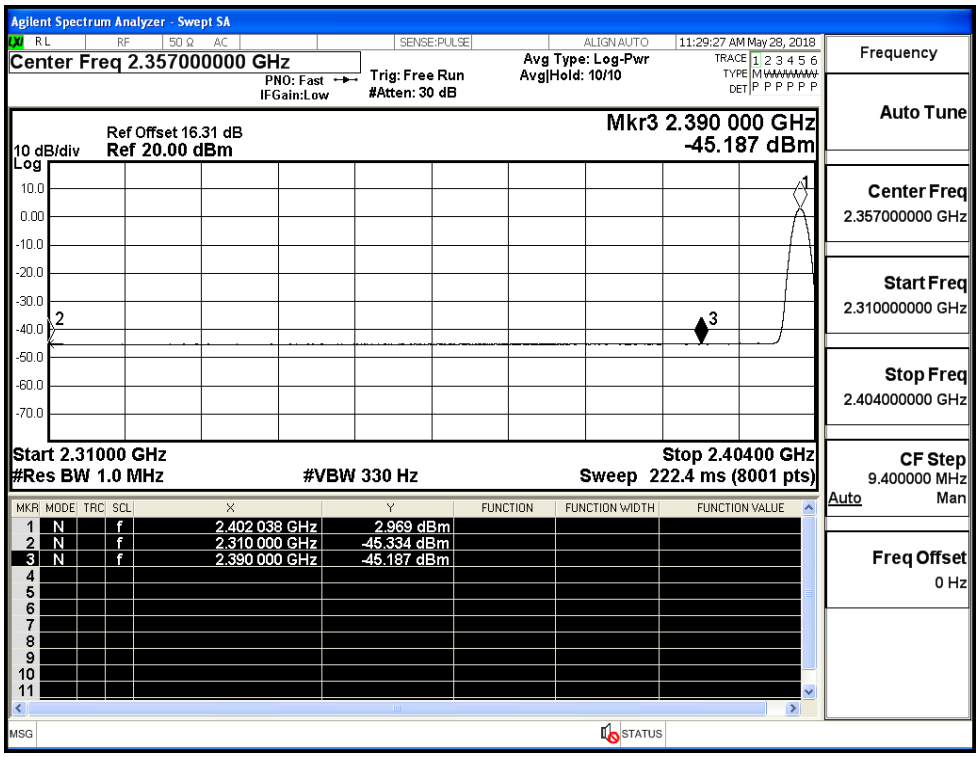
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (High Channel)



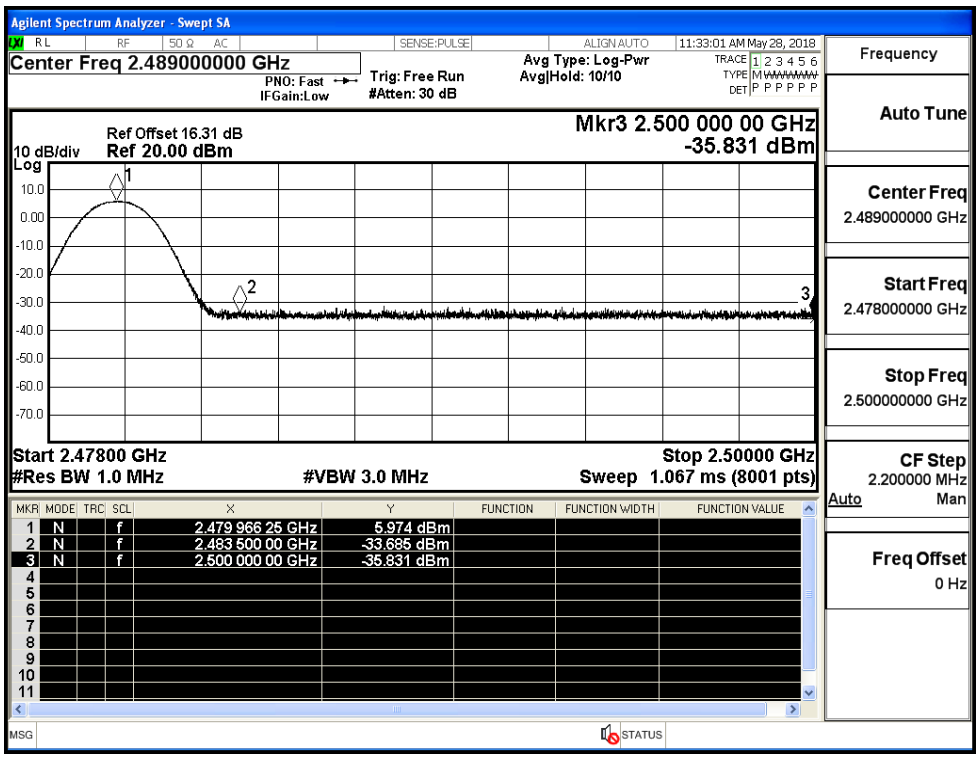
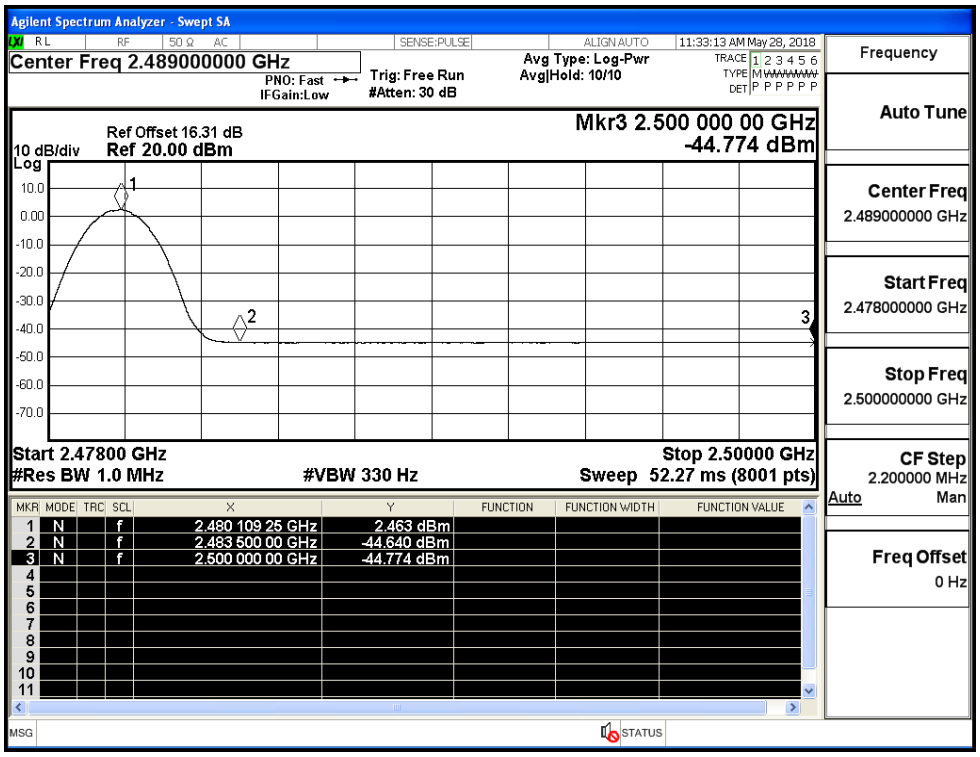
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)