Appendix A

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

Product Name: TURNTABLE PLAYER

Trade Mark: GPO

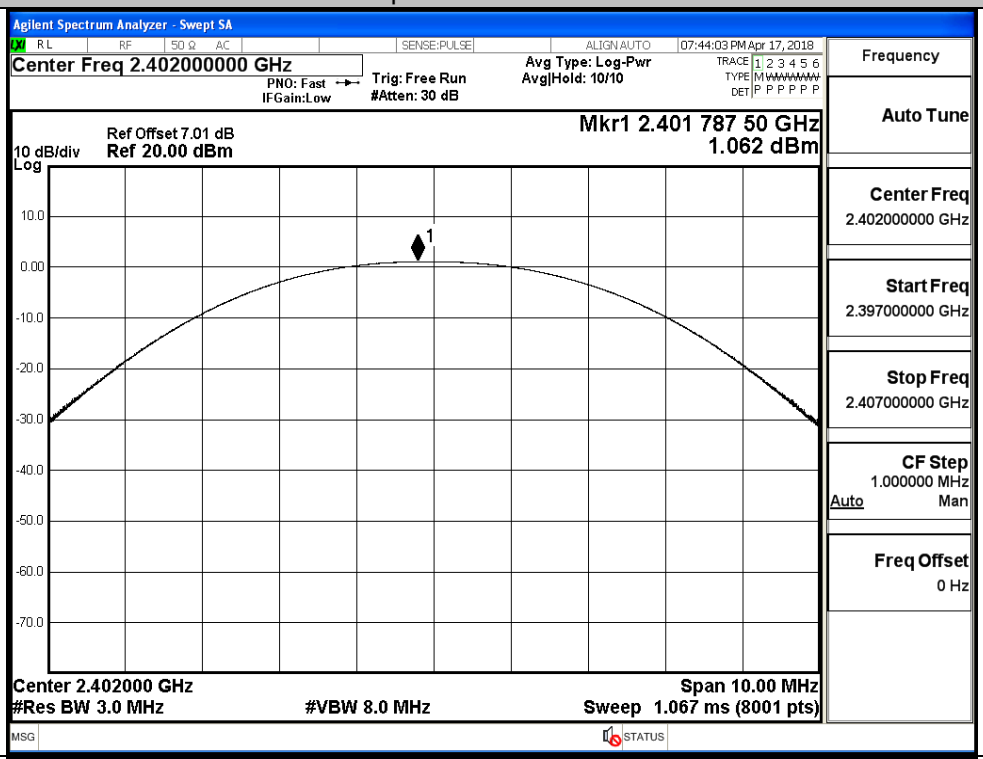
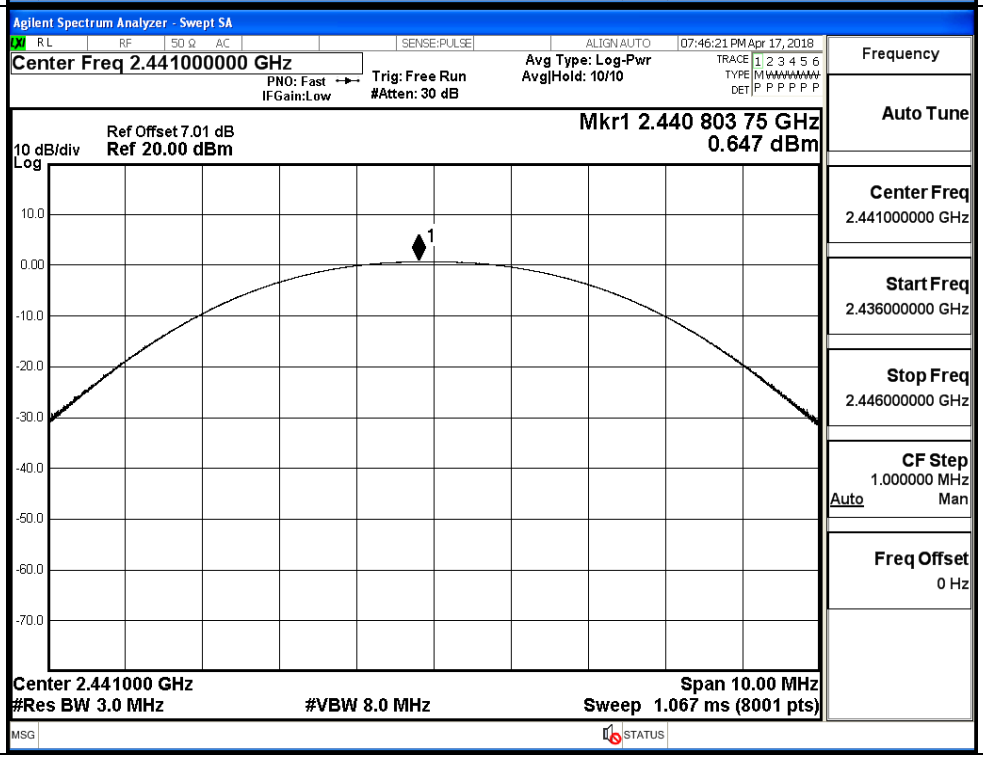
Test Model: PR100

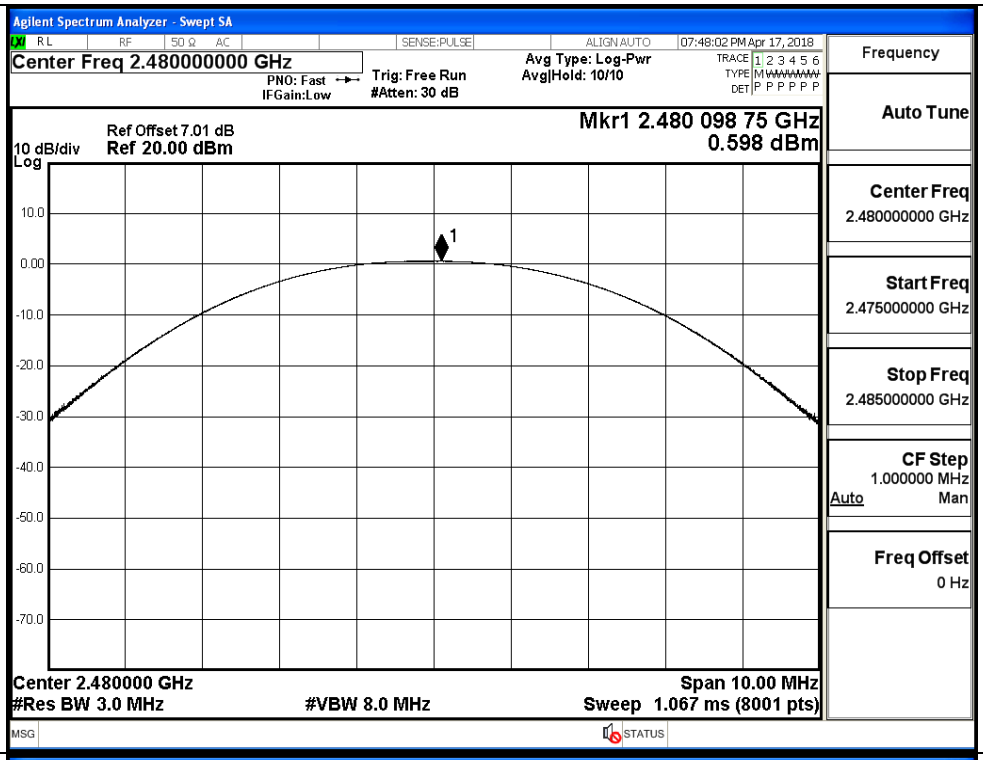
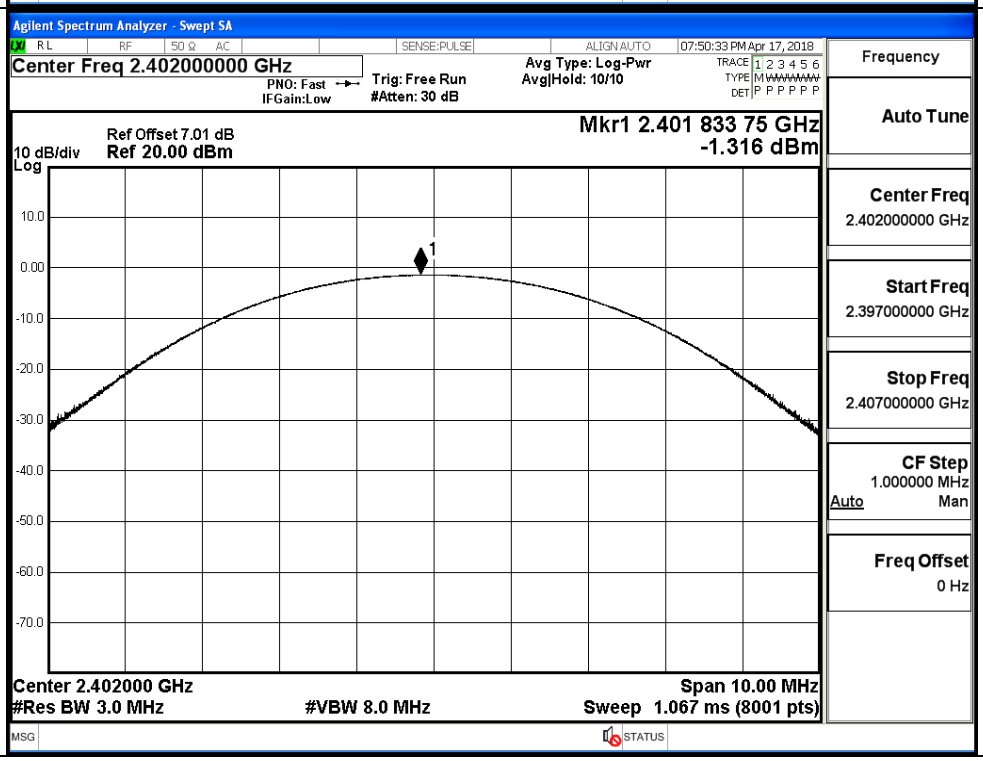
Environmental Conditions

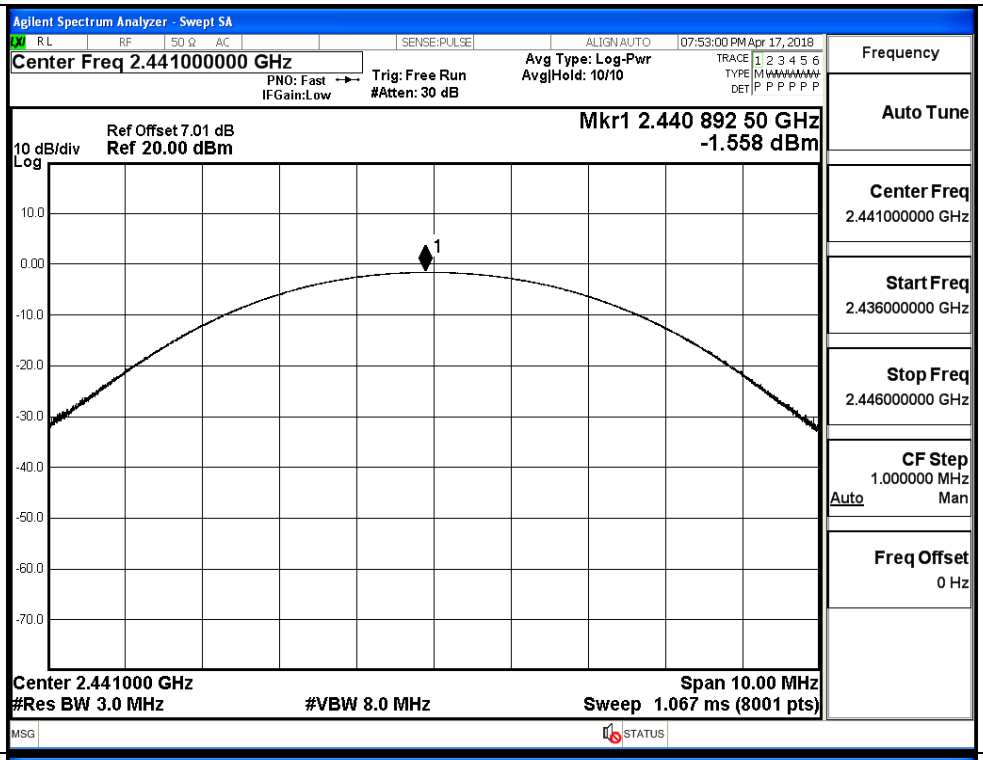
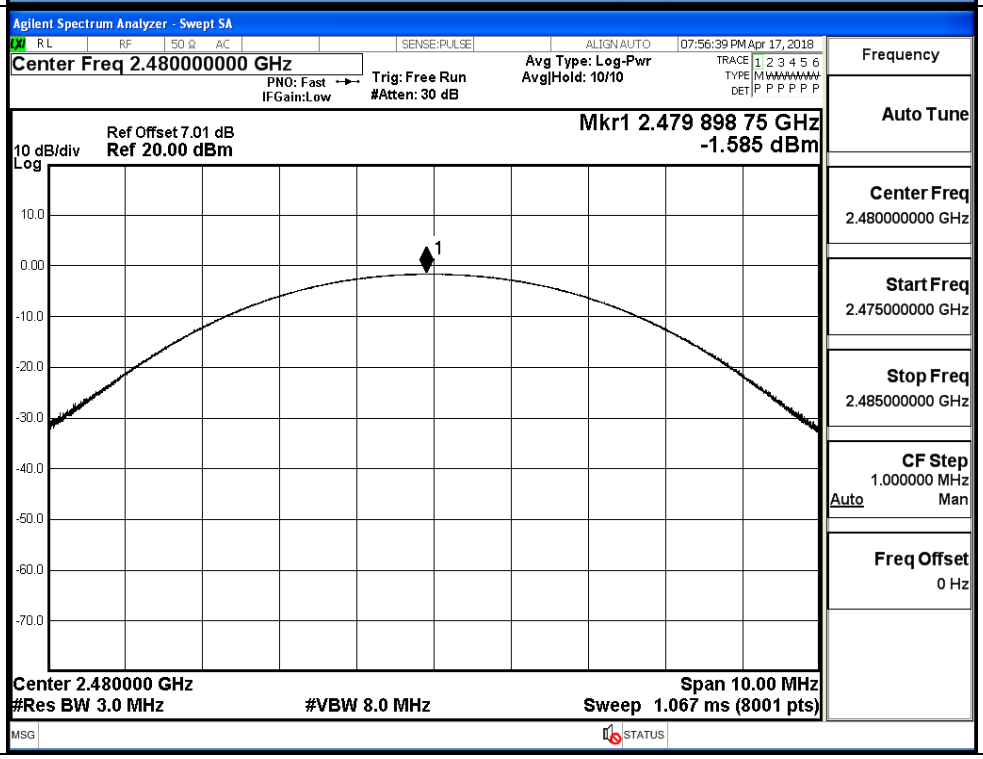
Temperature:	24.2 ° C
Relative Humidity:	53.2%
ATM Pressure:	100.0 kPa
Test Engineer:	Willson.hong
Supervised by:	Jayden.Zhuo

A.1 Maximum Conducted Peak Output Power

Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	1.062	21	PASS
	MCH	0.647	21	PASS
	HCH	0.598	21	PASS
π/4DQPSK	LCH	-1.316	21	PASS
	MCH	-1.558	21	PASS
	HCH	-1.585	21	PASS

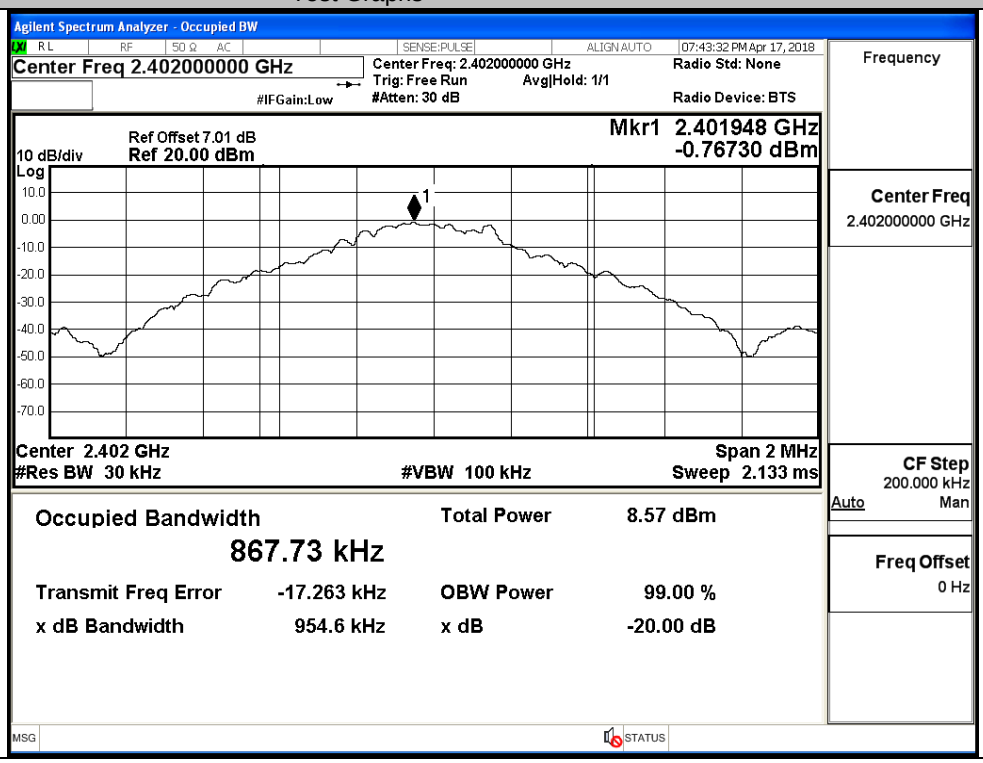
Test Graphs		
GFSK/LCH		
GFSK/MCH		

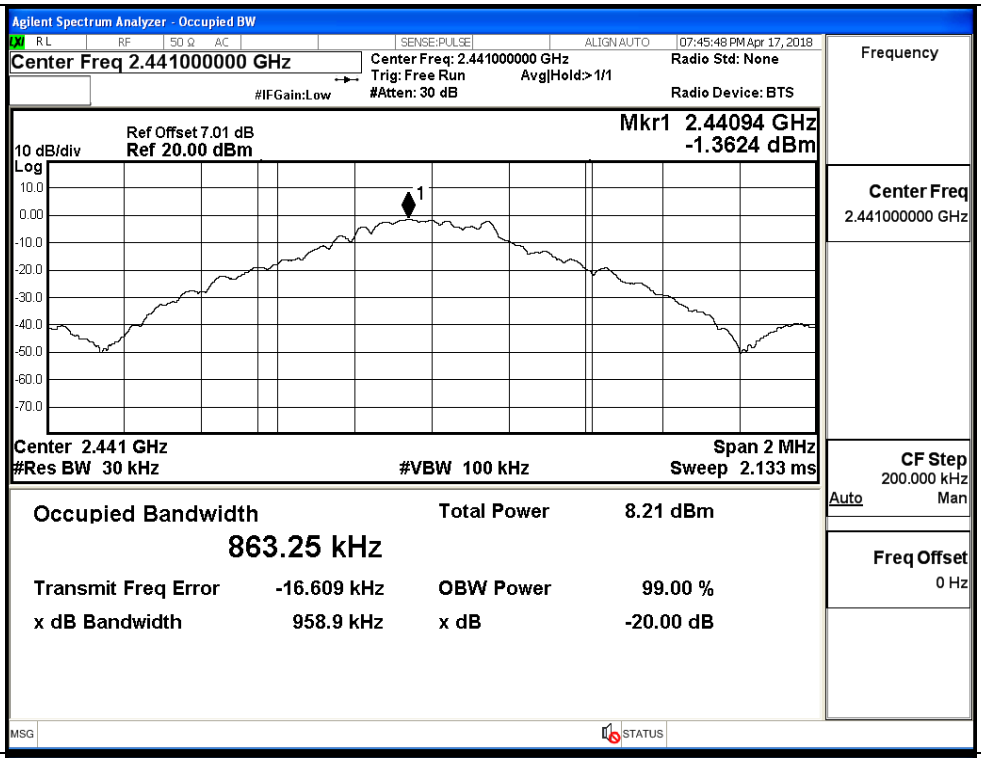
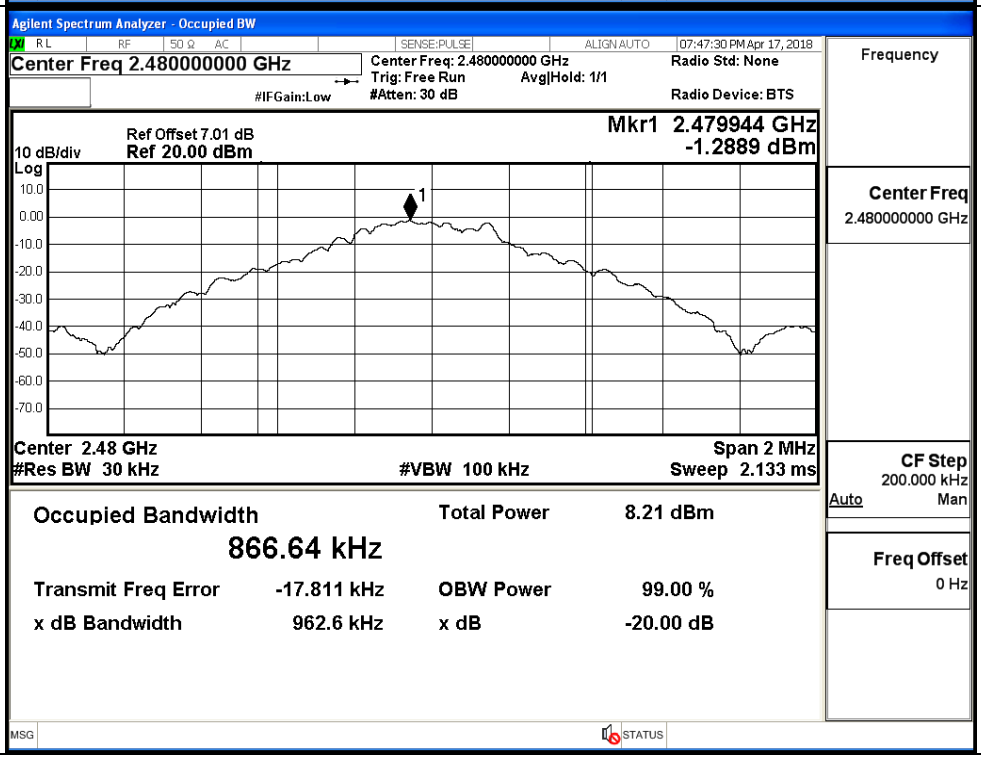
GFSK/HCH		
π/4DQPSK/LCH		

π/4DQPSK/MCH	
π/4DQPSK/HCH	

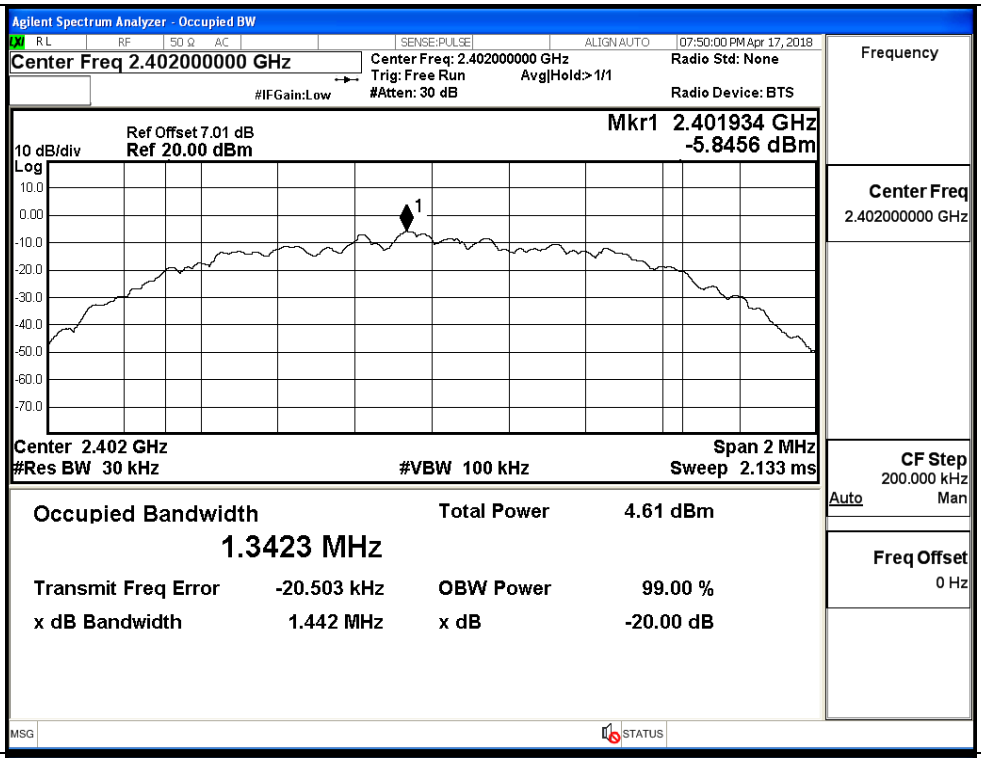
A.2 99% and 20dB Bandwidth

Mode	Channel.	99% Bandwidth [MHz]	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.86773	0.9546	Not Specified	PASS
	MCH	0.86325	0.9589	Not Specified	PASS
	HCH	0.86664	0.9626	Not Specified	PASS
π/4DQPSK	LCH	1.3423	1.442	Not Specified	PASS
	MCH	1.3411	1.441	Not Specified	PASS
	HCH	1.3424	1.479	Not Specified	PASS

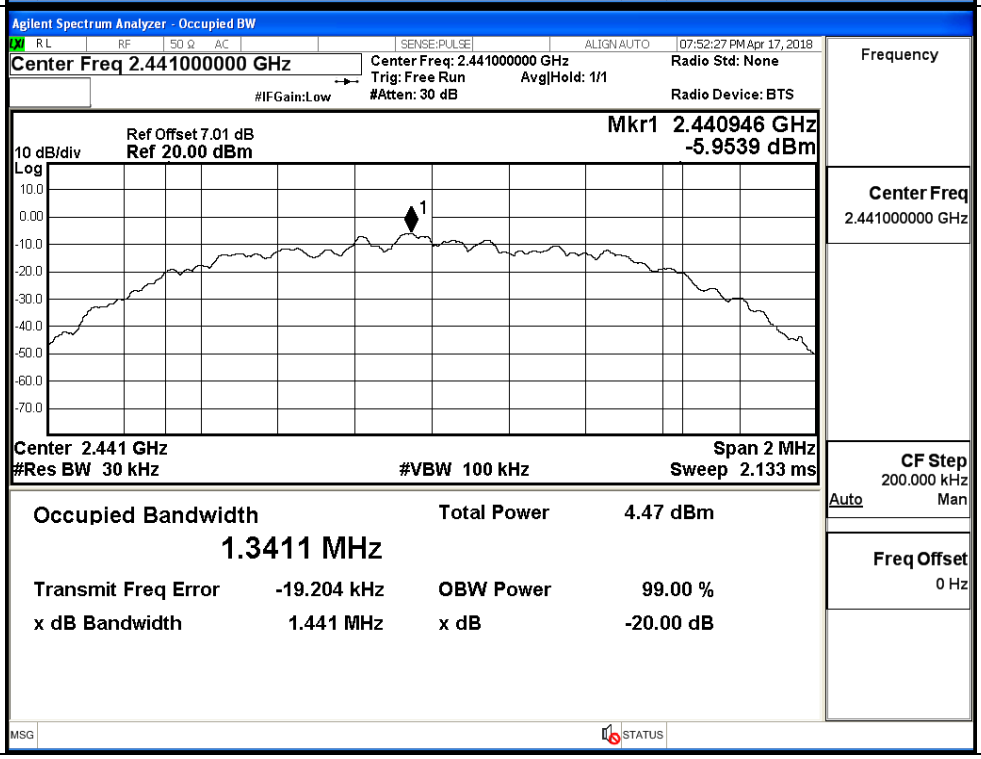
Test Graphs	
GFSK/LCH	

GFSK/MCH		
GFSK/HCH		

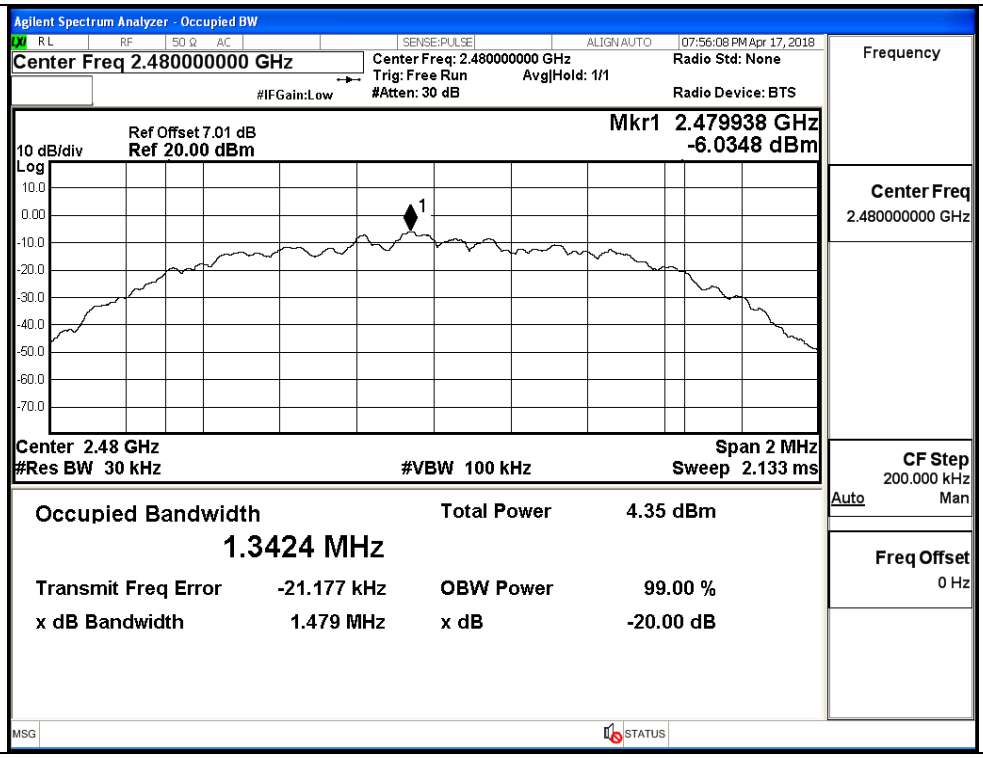
π/4DQPSK/LCH



π/4DQPSK/MCH

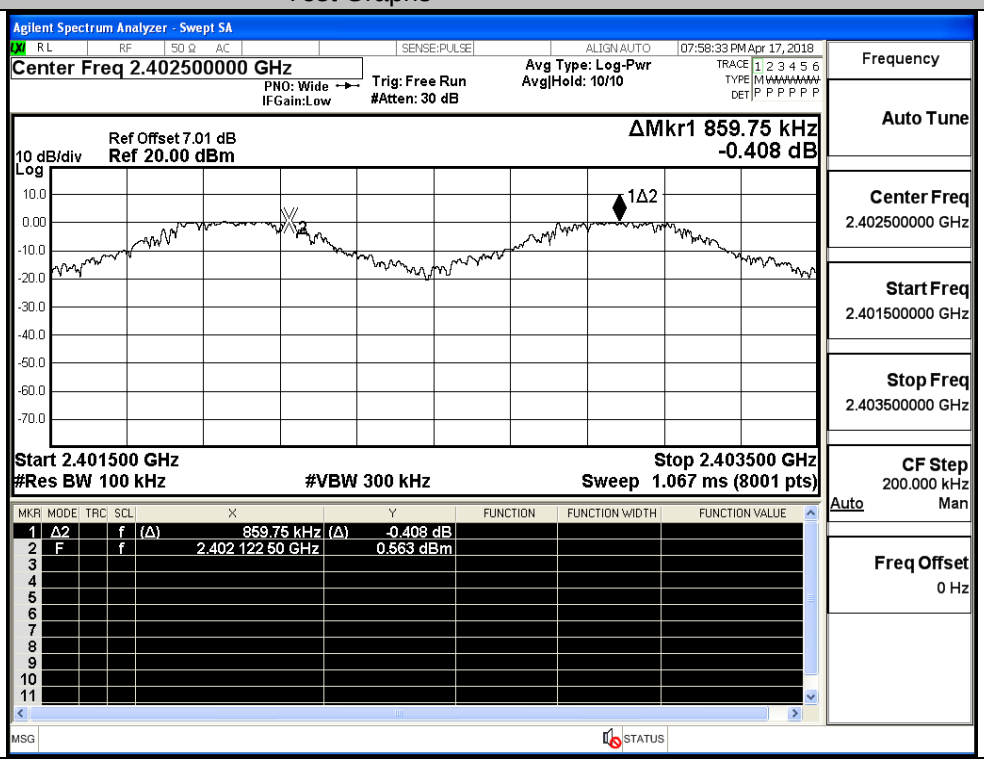


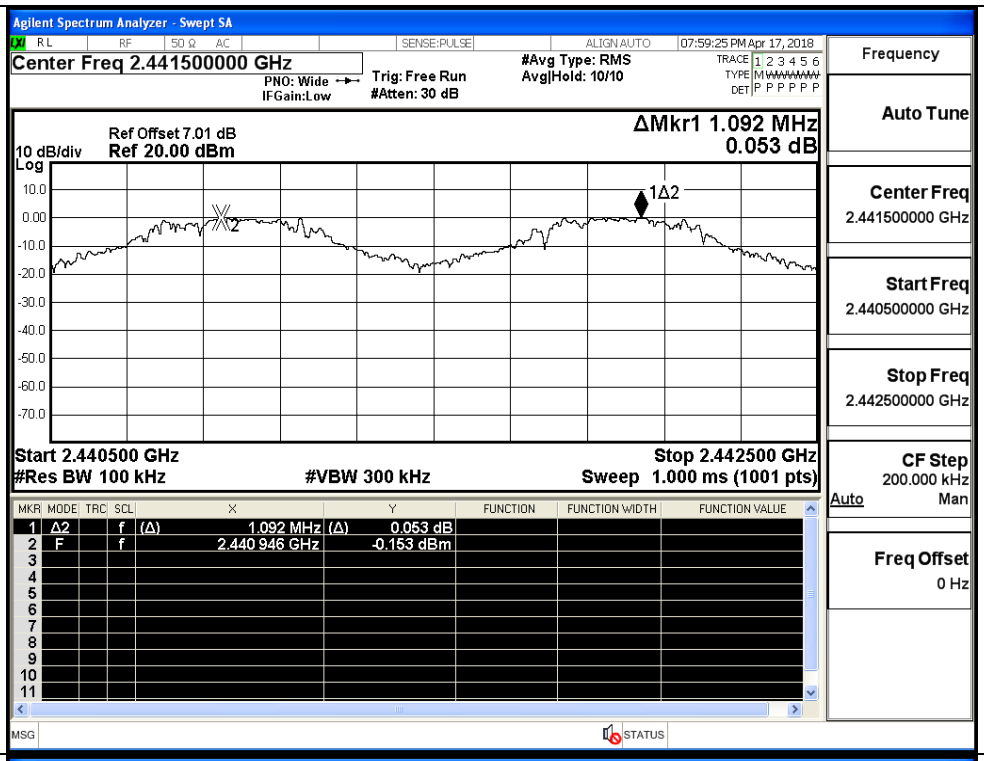
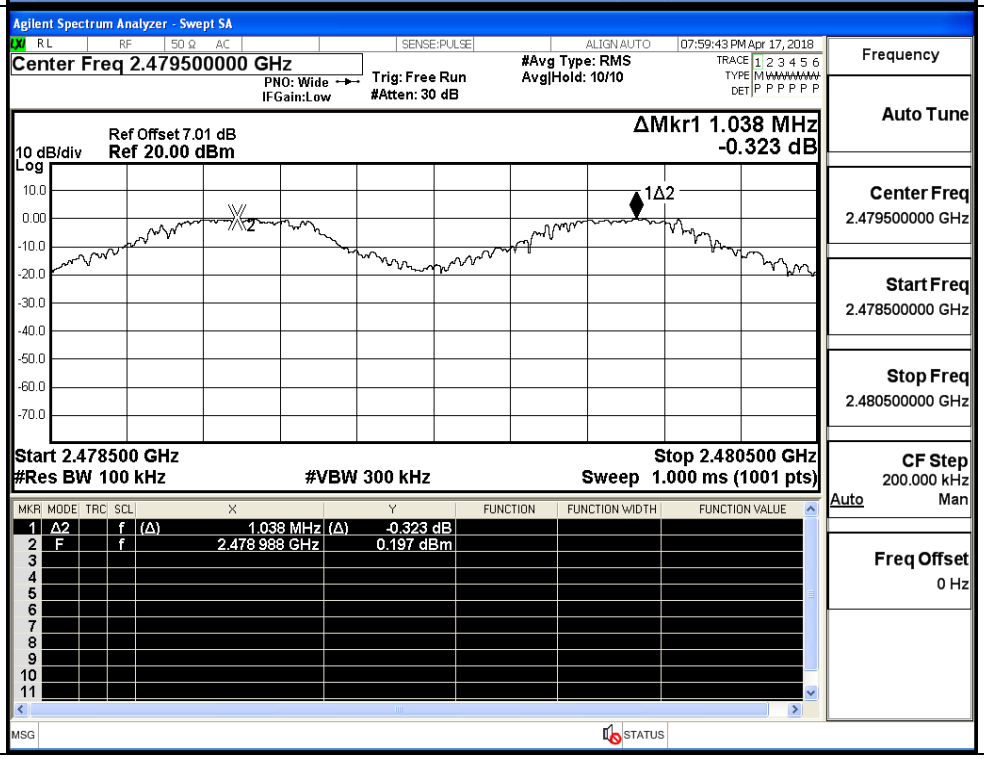
π/4DQPSK/HCH


Agilent Spectrum Analyzer - Occupied BW
Center Freq 2.480000000 GHz
Center Freq: 2.480000000 GHz
Trig: Free Run
Avg|Hold: 1/1
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
07:56:08 PM Apr 17, 2018
#IFGain:Low
Ref Offset 7.01 dB
10 dB/div
Ref 20.00 dBm
Mkr1 2.479938 GHz
-6.0348 dBm
Center 2.48 GHz
#Res BW 30 kHz
#VBW 100 kHz
Span 2 MHz
Sweep 2.133 ms
Occupied Bandwidth
1.3424 MHz
Total Power 4.35 dBm
Transmit Freq Error -21.177 kHz
OBW Power 99.00 %
x dB Bandwidth 1.479 MHz
x dB -20.00 dB
Frequency
Center Freq
2.480000000 GHz
CF Step
200.000 kHz
Auto Man
Freq Offset
0 Hz

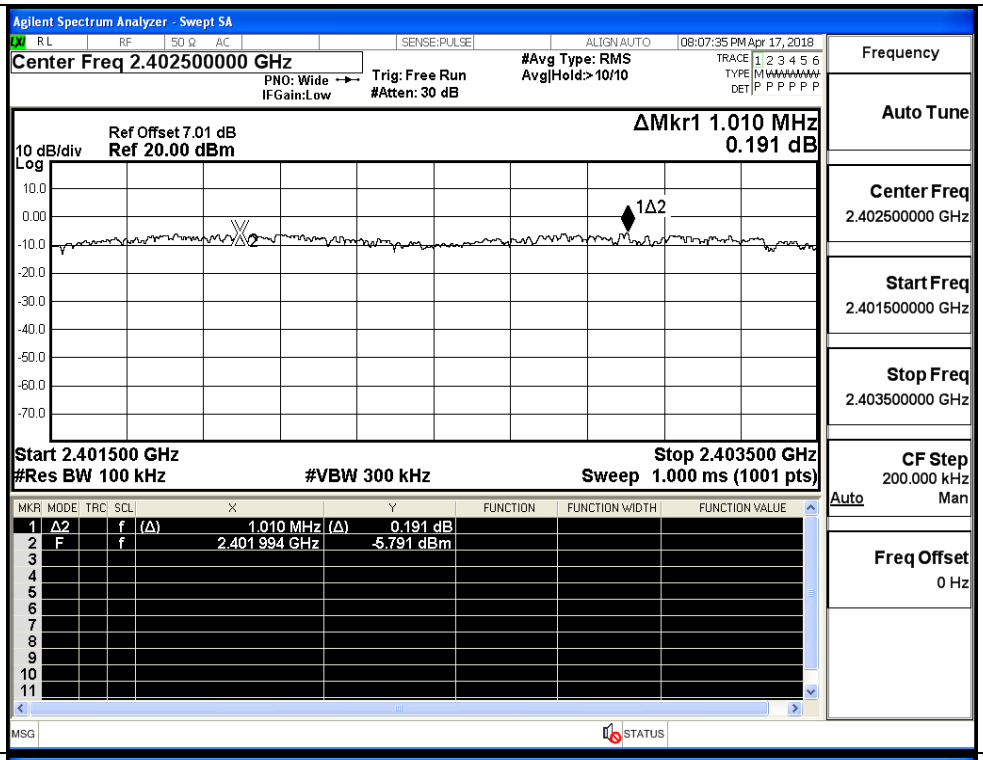
A.3 Carrier Frequency Separation

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.860	0.636	PASS
	MCH	1.092	0.639	PASS
	HCH	1.038	0.642	PASS
π/4DQPSK	LCH	1.010	0.961	PASS
	MCH	1.146	0.961	PASS
	HCH	1.170	0.986	PASS

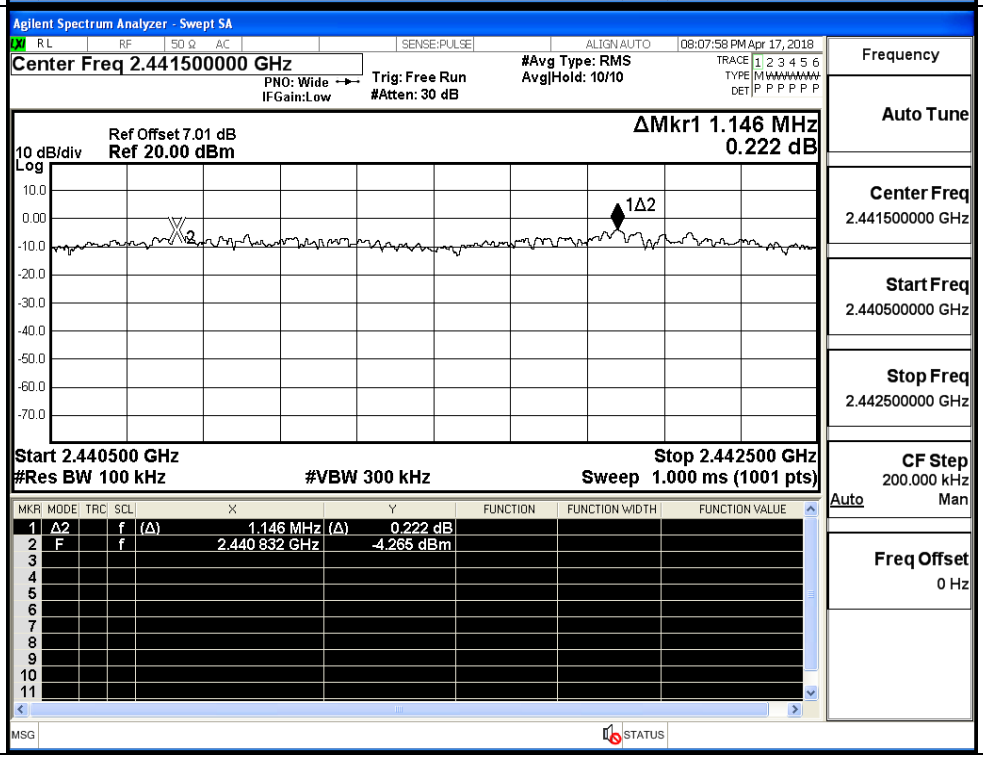
Test Graphs		
GFSK/LCH		

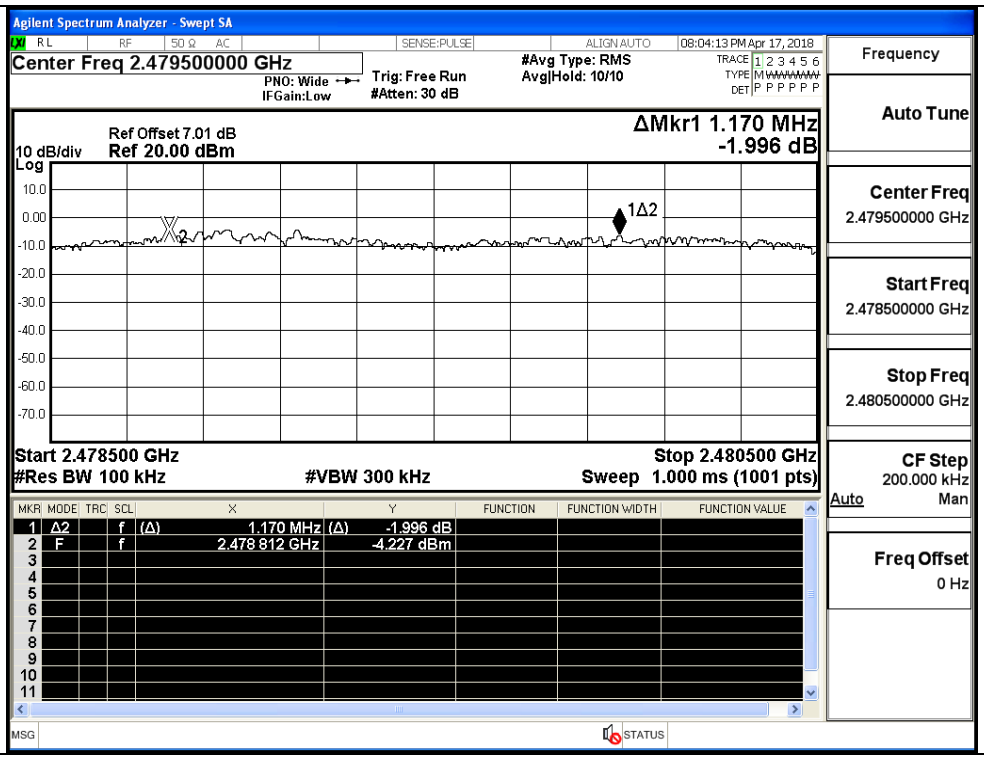
GFSK/MCH		
GFSK/HCH		

π/4DQPSK/LCH



π/4DQPSK/MCH

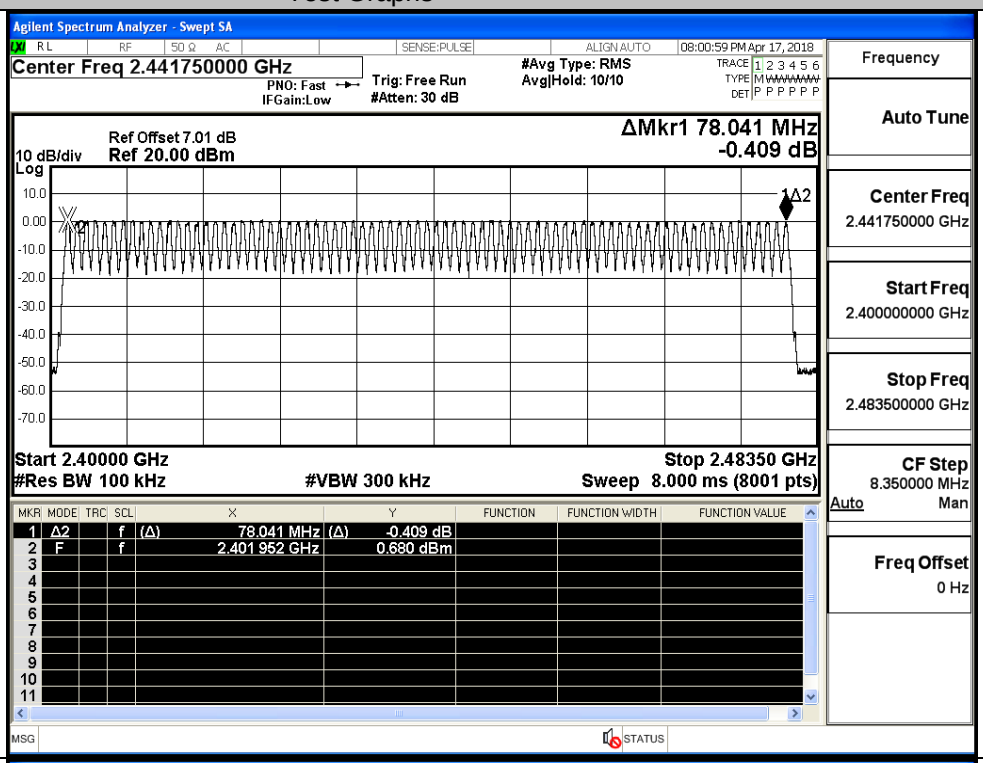
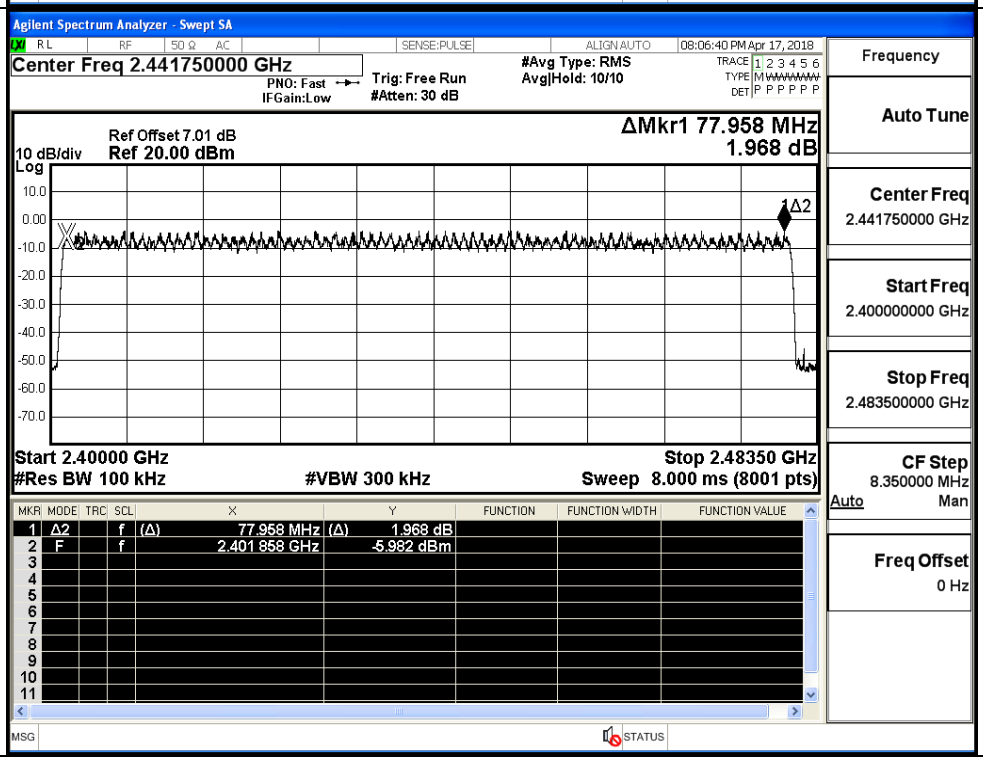


π/4DQPSK/HCH		

Agilent Spectrum Analyzer - Swept SA
Center Freq 2.479500000 GHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 10/10
08:04:13 PM Apr 17, 2018
Ref Offset 7.01 dB
10 dB/div
Ref 20.00 dBm
ΔMkr1 1.170 MHz
-1.996 dB
Start 2.478500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.480500 GHz
Sweep 1.000 ms (1001 pts)
1 Δ2 f (Δ) 1.170 MHz (Δ) -1.996 dB
2 F f 2.478 812 GHz -4.227 dBm
Frequency
Auto Tune
Center Freq 2.479500000 GHz
Start Freq 2.478500000 GHz
Stop Freq 2.480500000 GHz
CF Step 200.000 kHz
Auto Man
Freq Offset 0 Hz

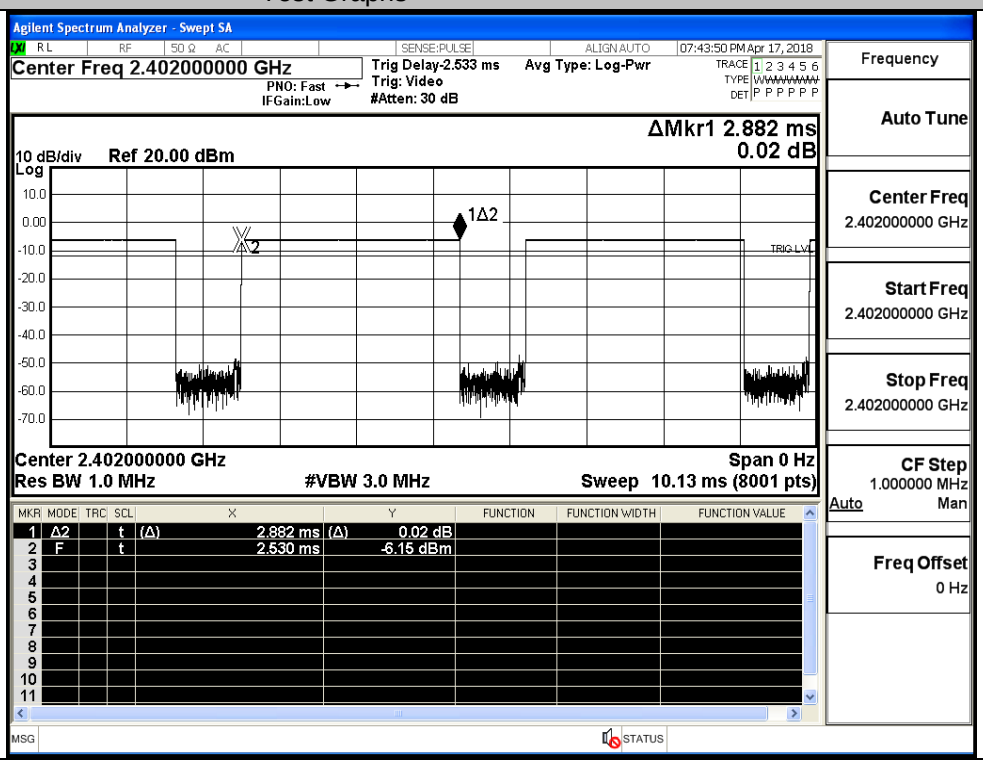
A.4 Hopping Channel Number

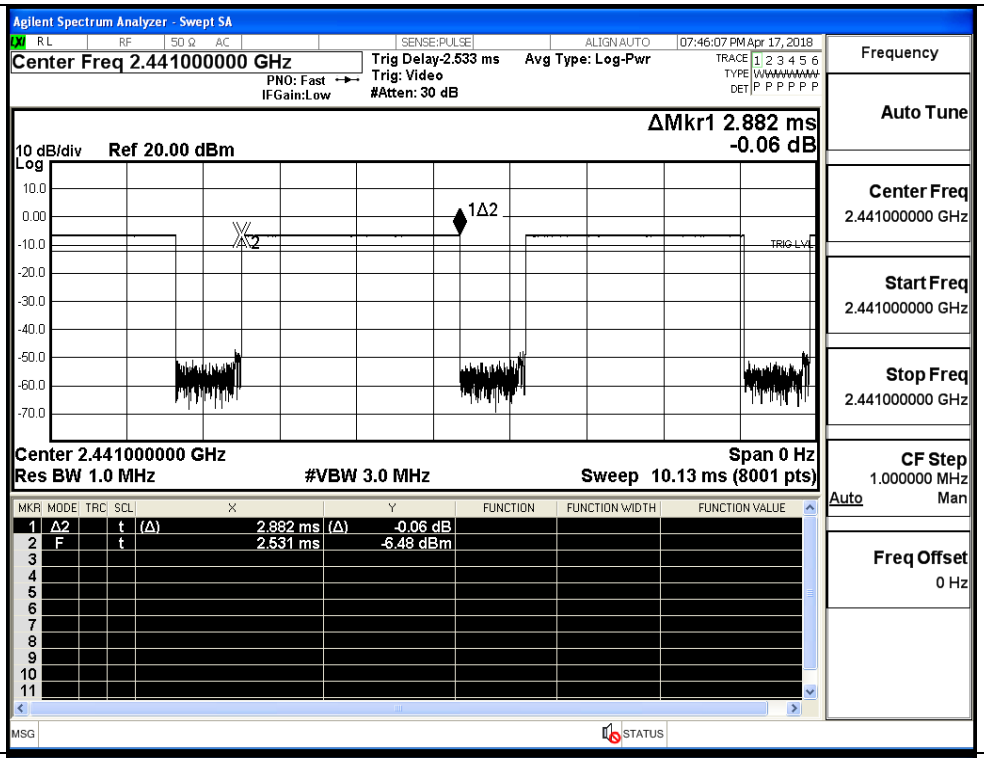
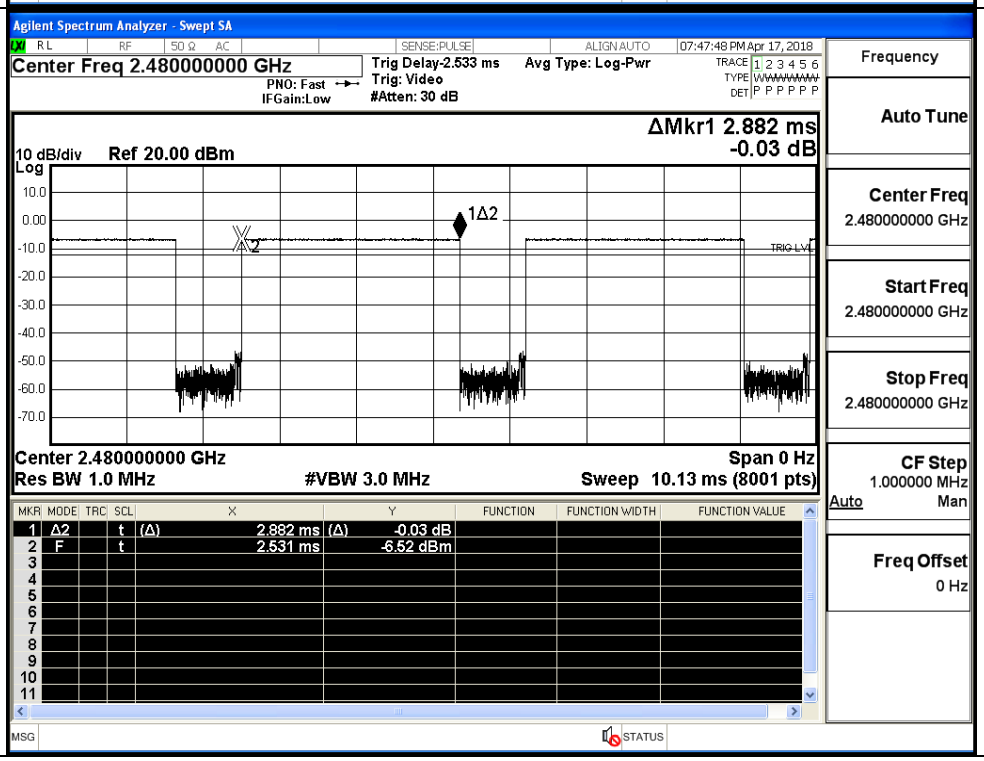
Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	>=15	PASS
π/4DQPSK	Hop	79	>=15	PASS

Test Graphs	
GFSK/Hop	
π/4DQPSK/Hop	

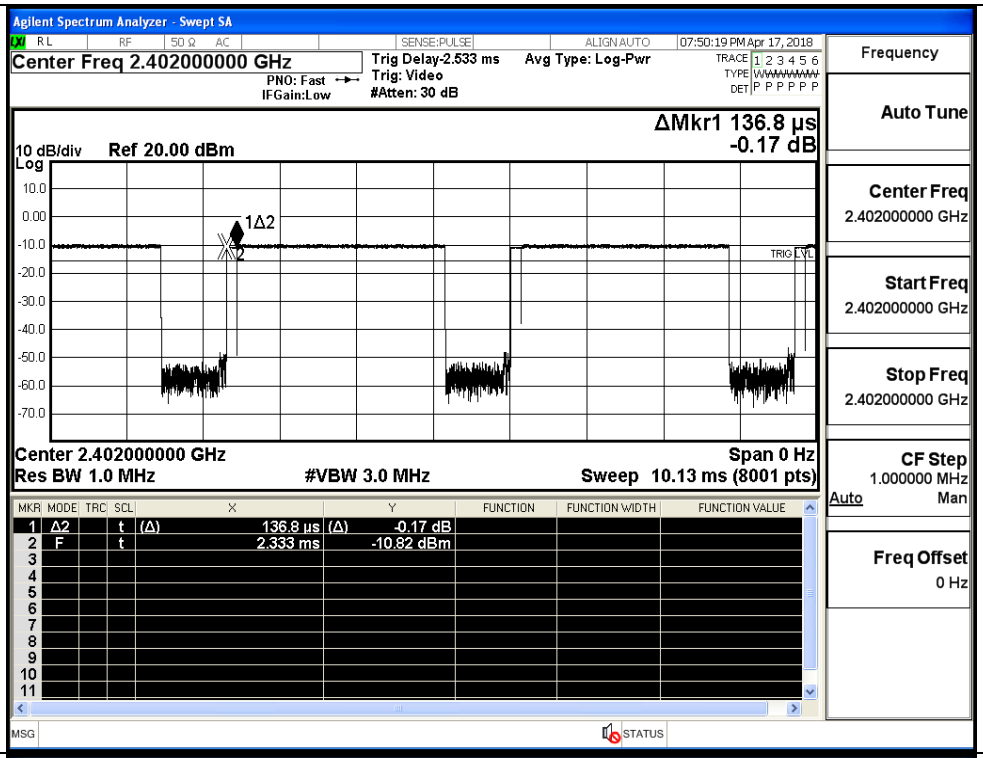
A.5 Dwell Time

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

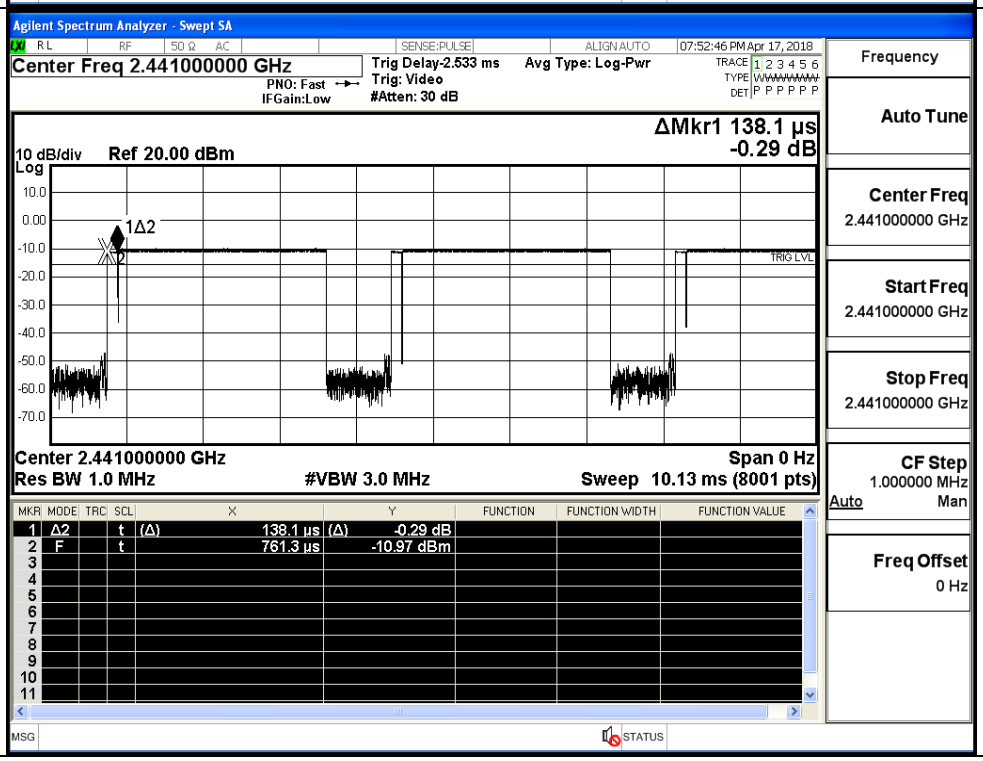
Test Graphs	
GFSK_DH5/LCH	

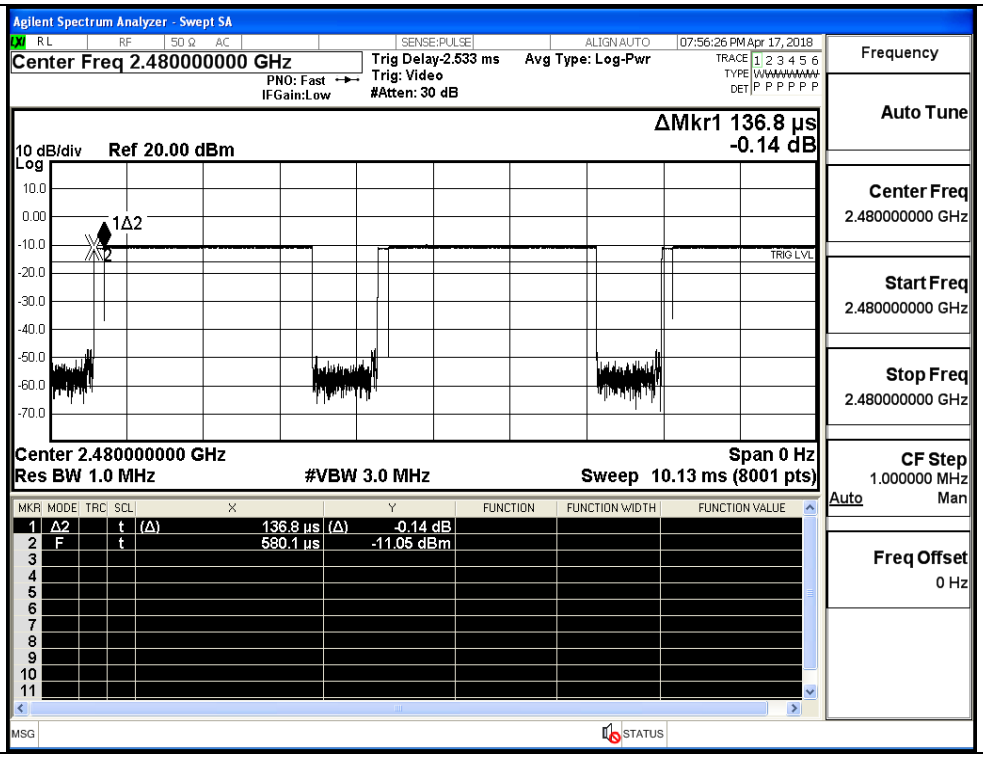
GFSK_DH5/MCH	
GFSK_DH5/HCH	

π/4DQPSK
_2DH5/LCH



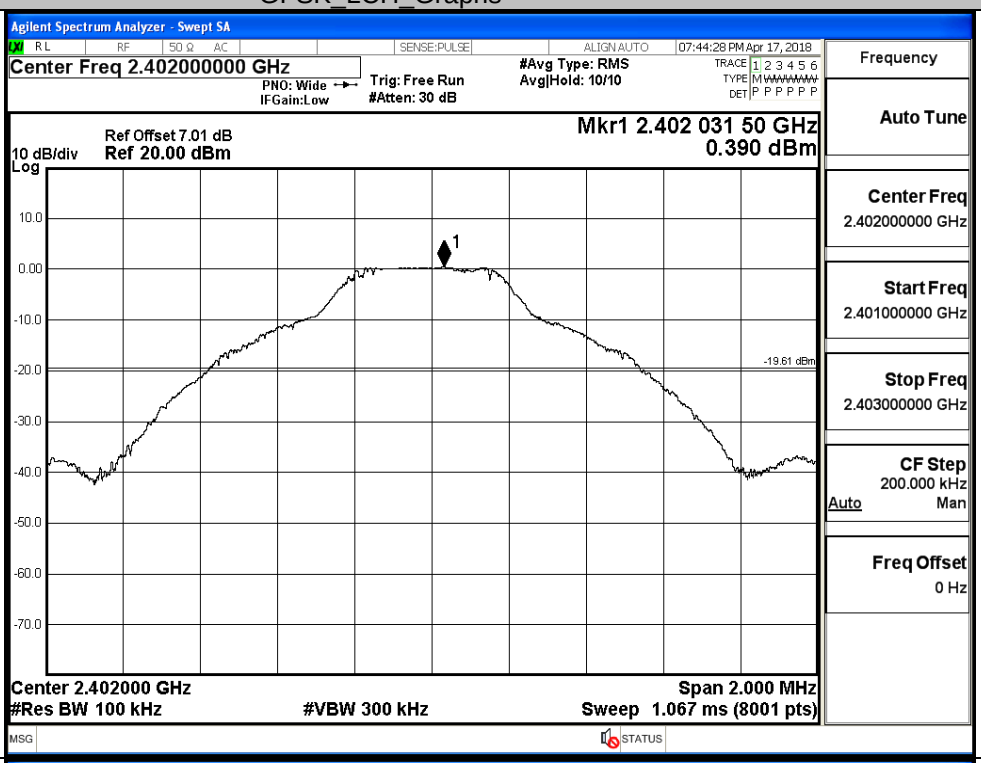
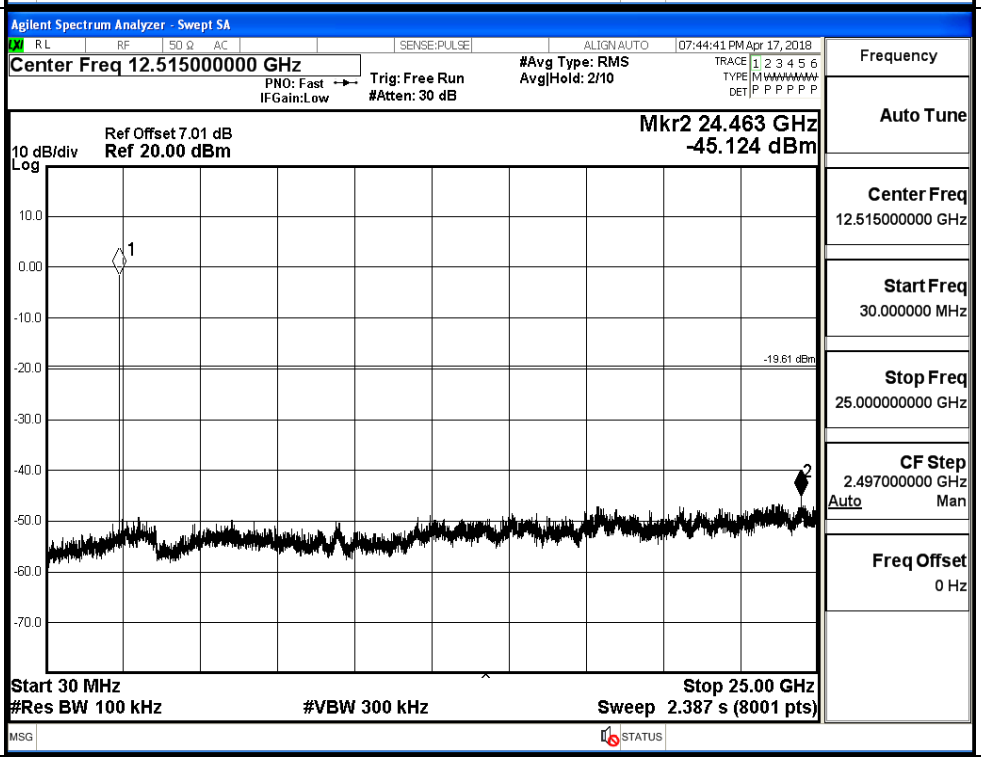
π/4DQPSK
_2DH5/MCH

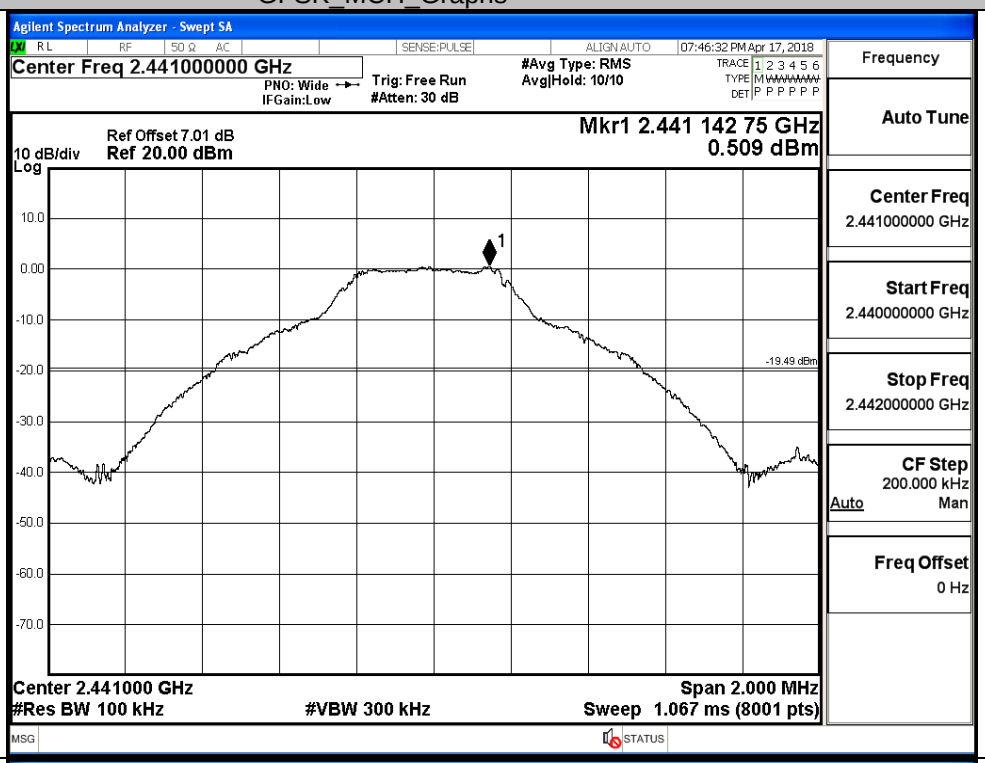
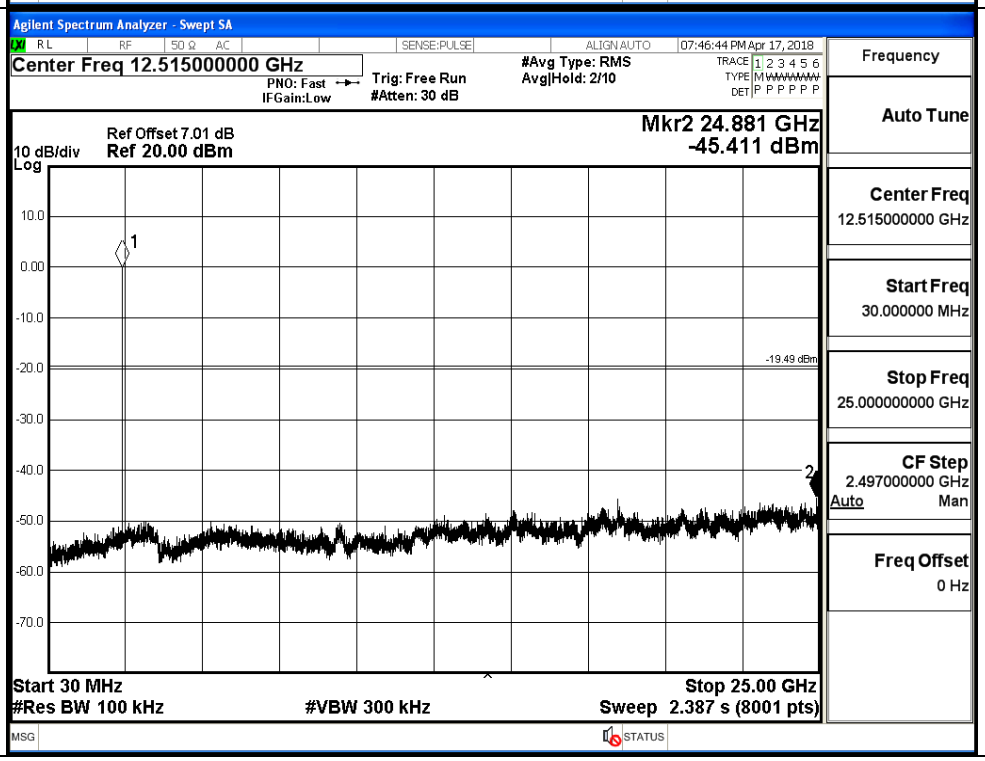


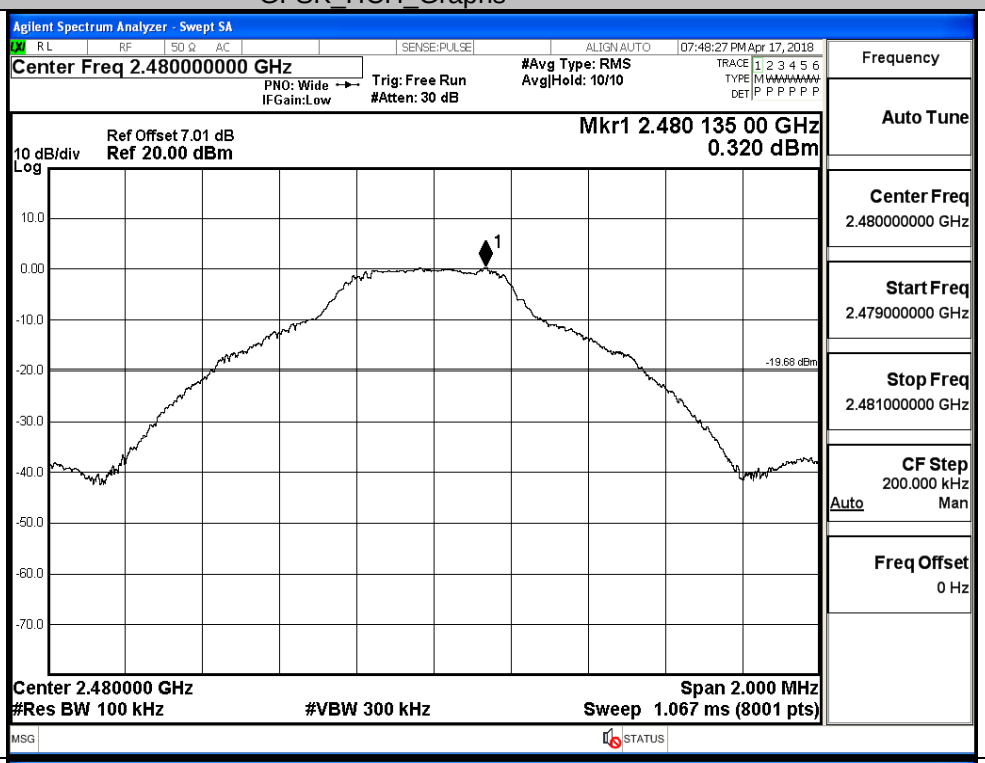
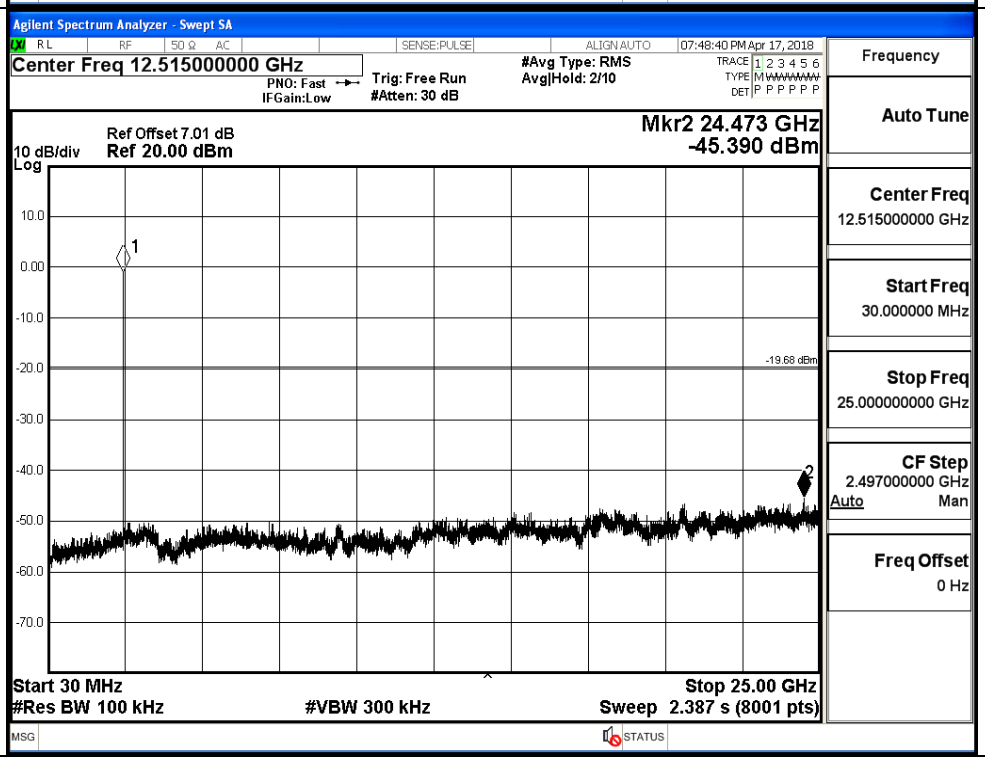
π/4DQPSK _2DH5/HCH	

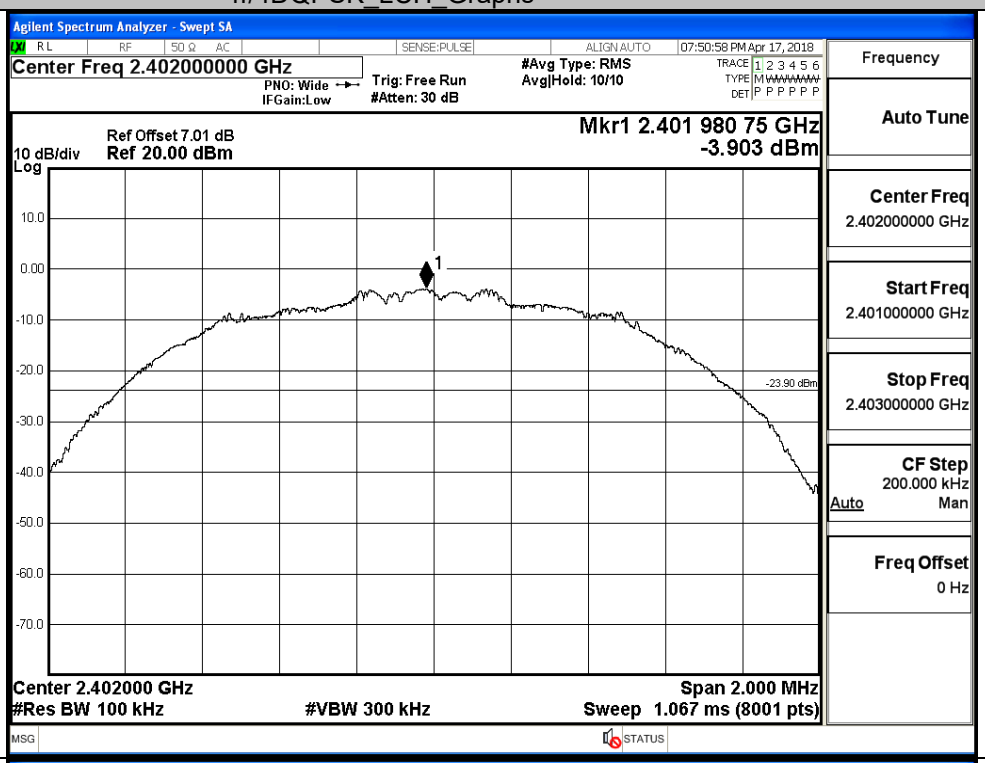
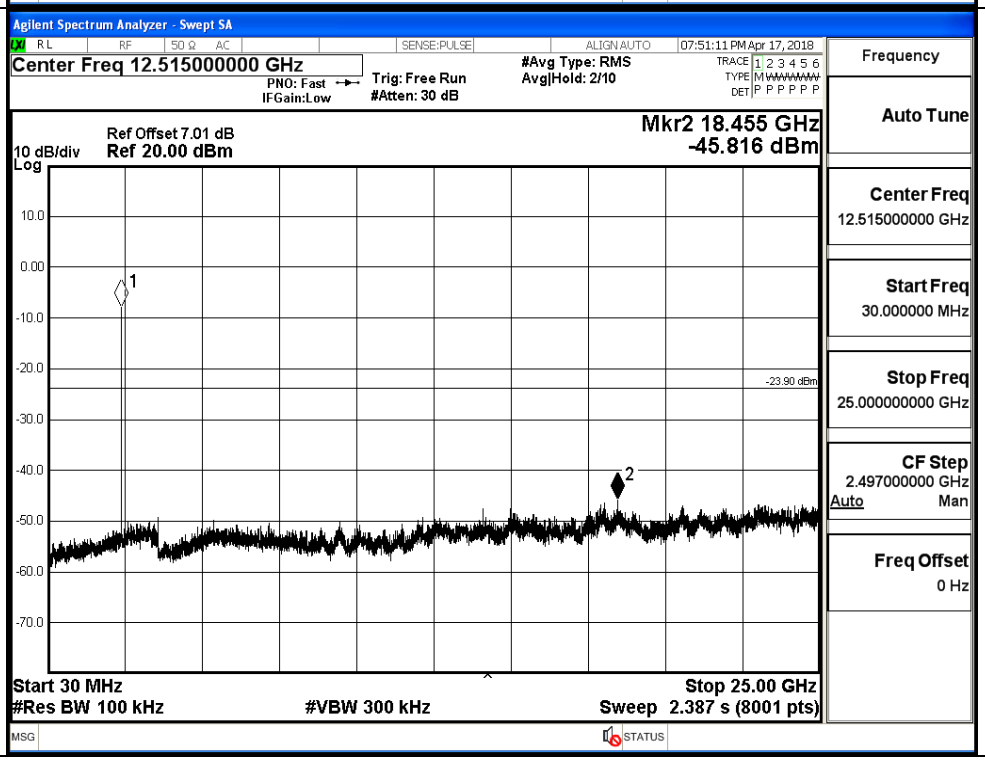
A.6 RF Conducted Spurious Emissions

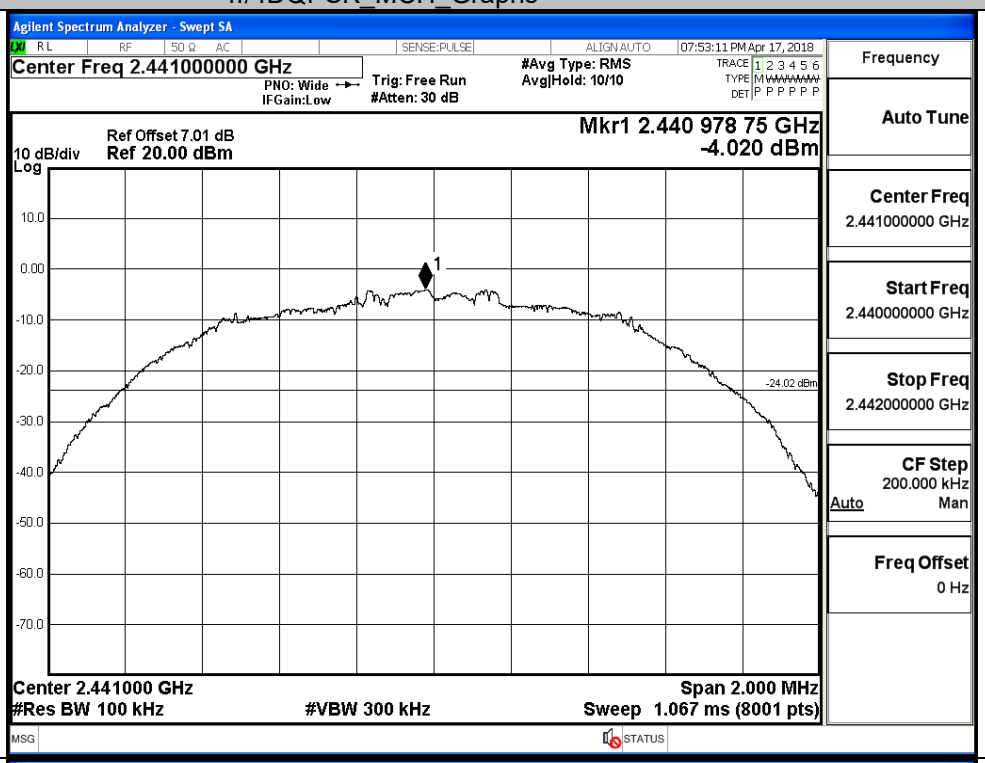
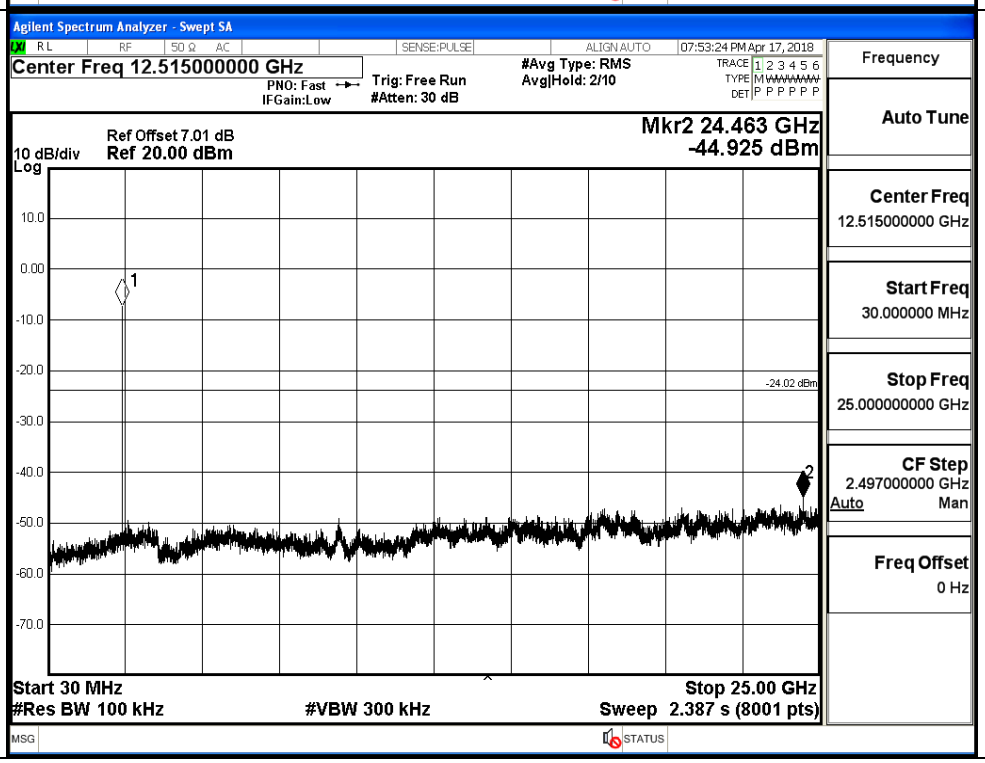
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	0.39	-45.124	-19.610	PASS
	MCH	0.509	-45.411	-19.491	PASS
	HCH	0.32	-45.390	-19.680	PASS
π/4DQPSK	LCH	-3.903	-45.816	-23.903	PASS
	MCH	-4.02	-44.925	-24.020	PASS
	HCH	-4.153	-45.502	-24.153	PASS

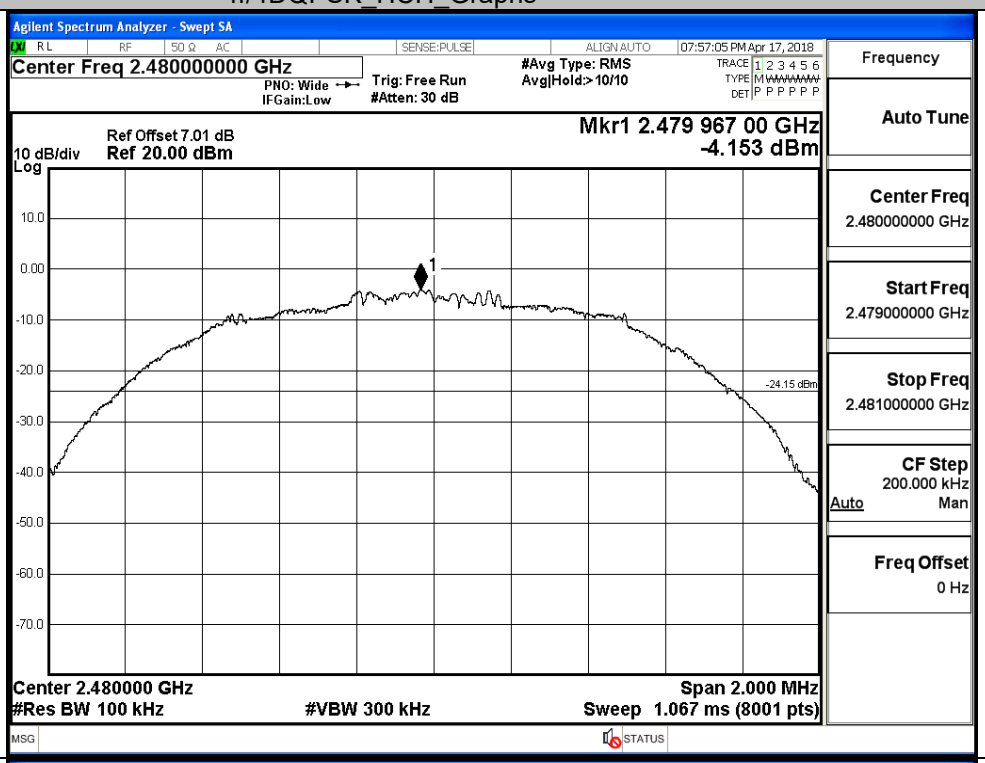
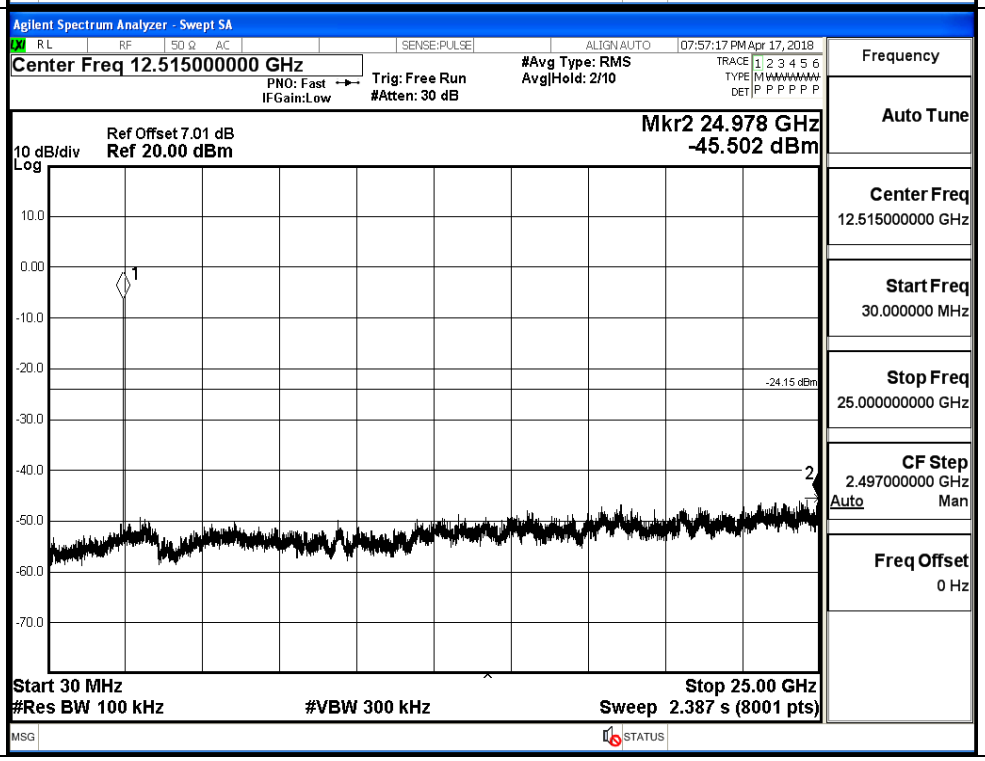
GFSK_LCH_Graphs		
Pref		
Puw		

GFSK_MCH_Graphs		
Pref		
Puw		

GFSK_HCH_Graphs		
Pref		
Puw		

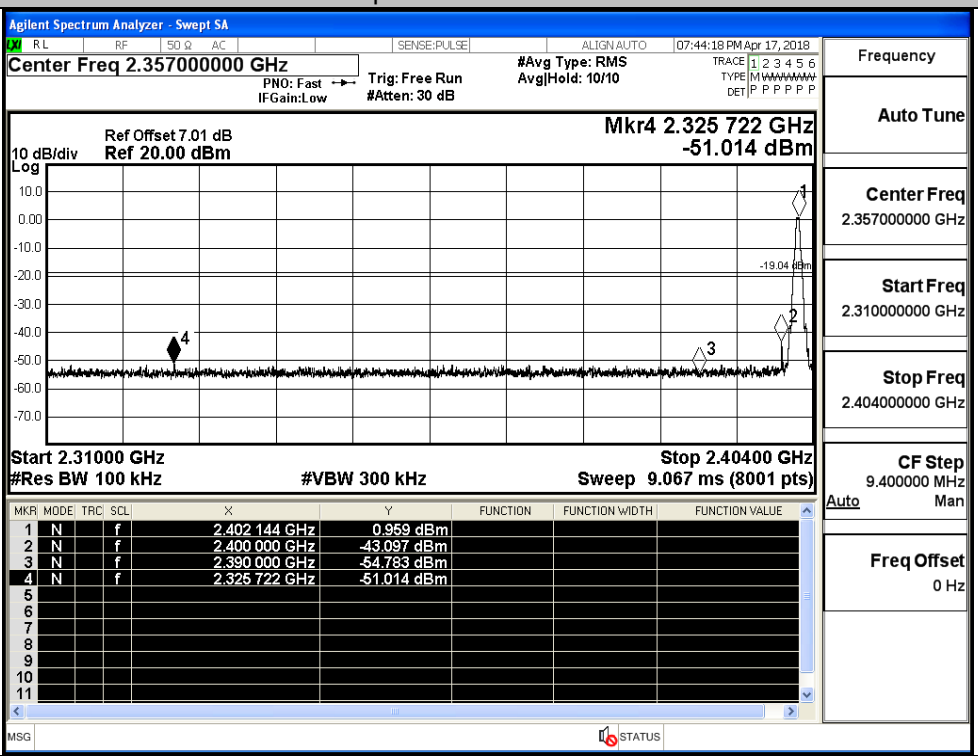
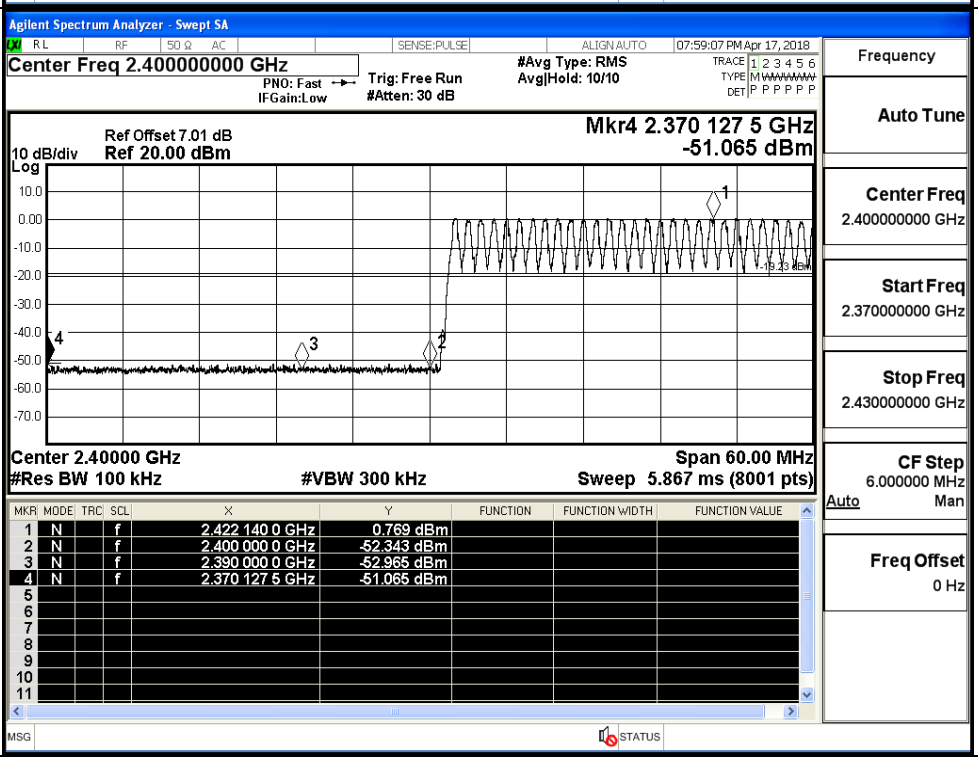
π/4DQPSK_LCH_Graphs		
Pref		
Puw		

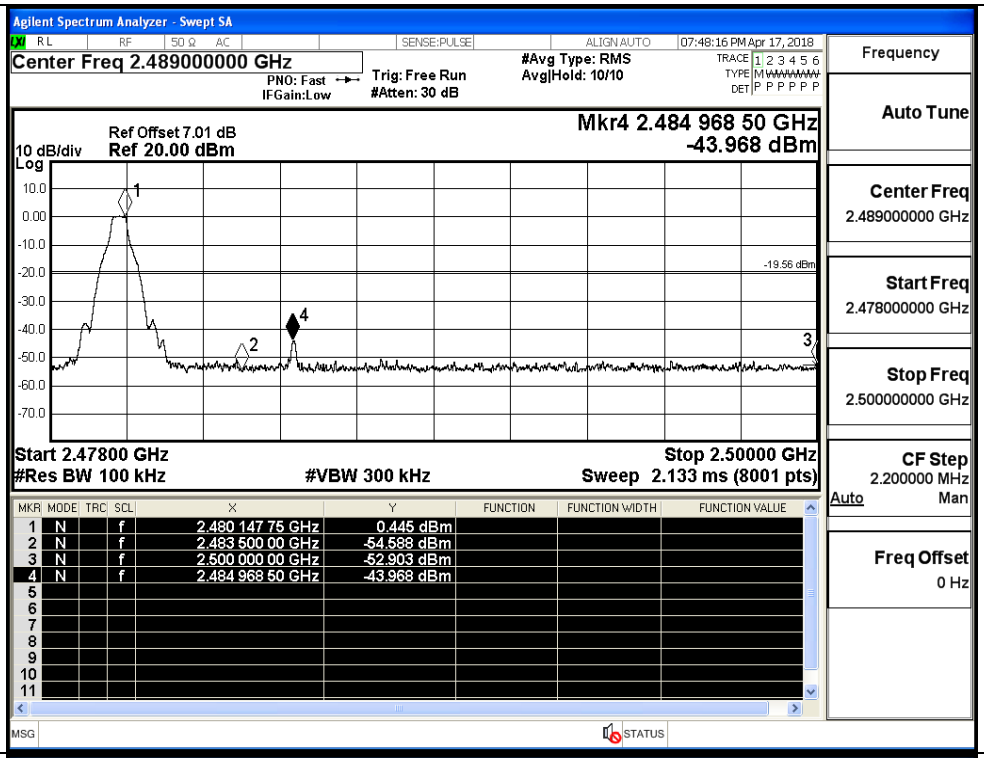
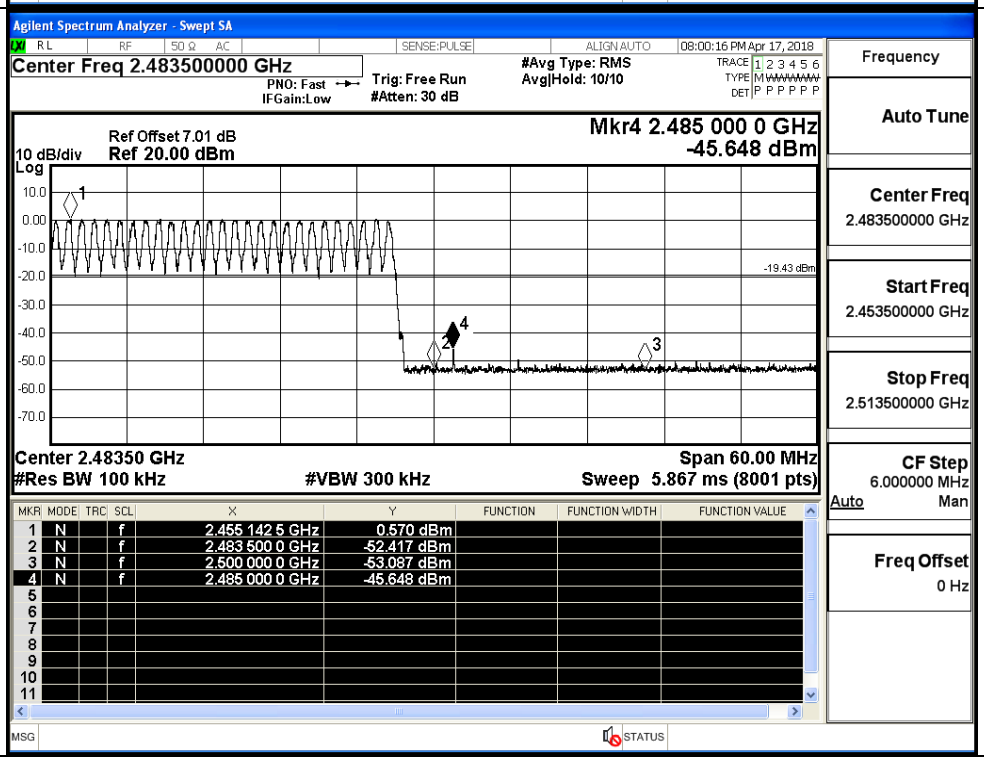
π/4DQPSK_MCH_Graphs		
Pref		
Puw		

π/4DQPSK_HCH_Graphs		
Pref		
Puw		

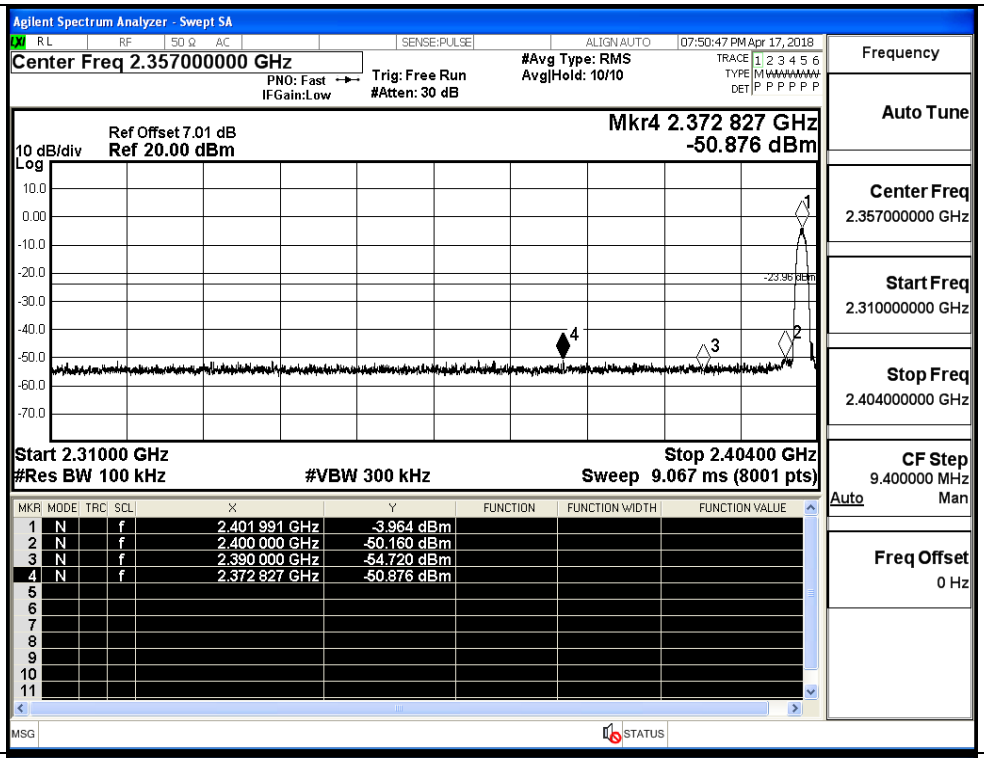
A.7 Band-edge for RF Conducted Emissions

Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	0.959	Off	-51.014	-19.04	PASS
			0.769	On	-51.065	-19.23	PASS
	HCH	2480	0.445	Off	-43.968	-19.56	PASS
			0.570	On	-45.648	-19.43	PASS
π/4DQPSK	LCH	2402	-3.964	Off	-50.876	-23.96	PASS
			-3.817	On	-50.861	-23.82	PASS
	HCH	2480	-4.206	Off	-43.422	-24.21	PASS
			-4.047	On	-44.997	-24.05	PASS

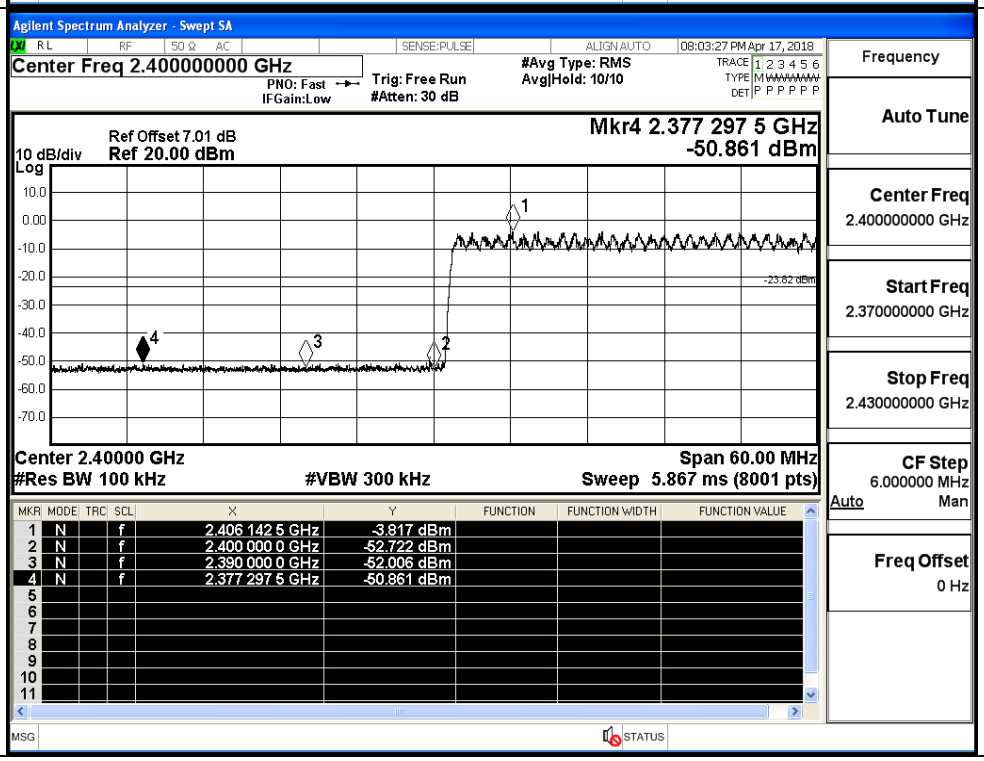
Test Graphs	
GFSK/LCH/No Hop	
GFSK/LCH/Hop	

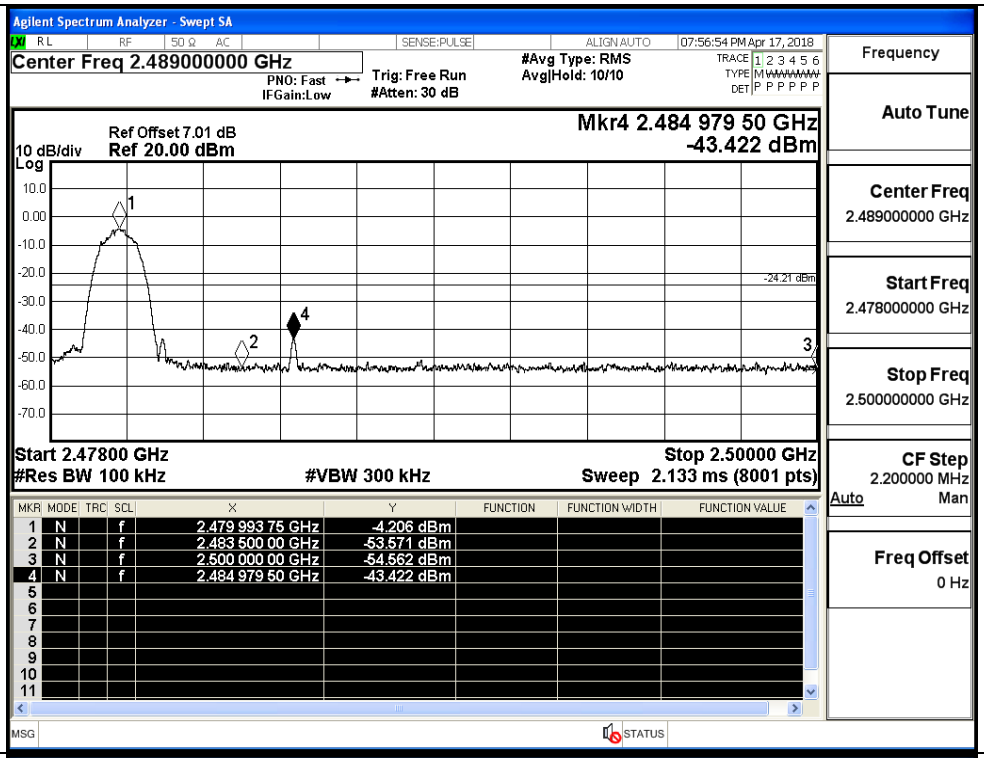
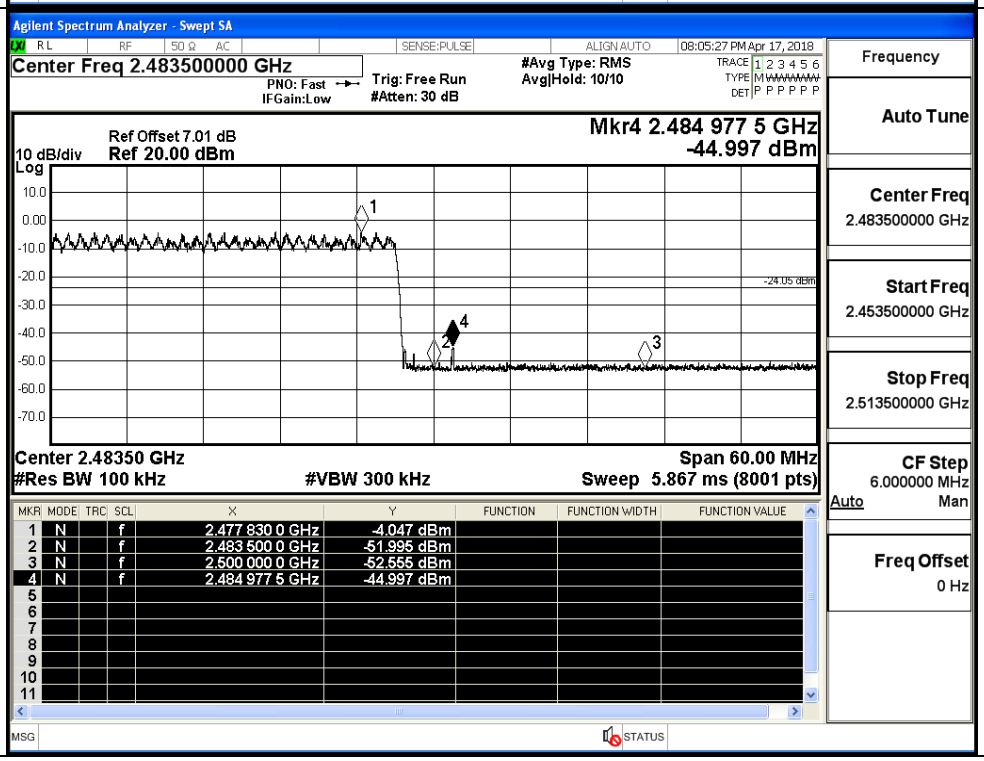
GFSK/HCH/No Hop	
GFSK/HCH/Hop	

π/4DQPSK/LCH/No Hop



π/4DQPSK/LCH/Hop

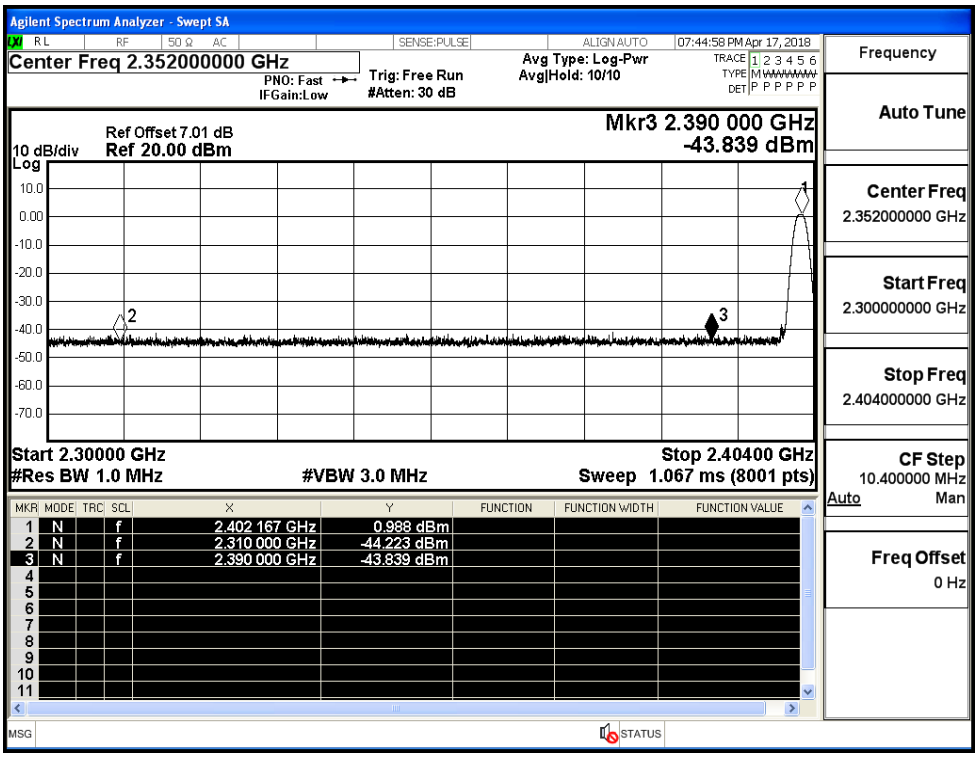


π/4DQPSK/HCH/No Hop	
π/4DQPSK/HCH/Hop	

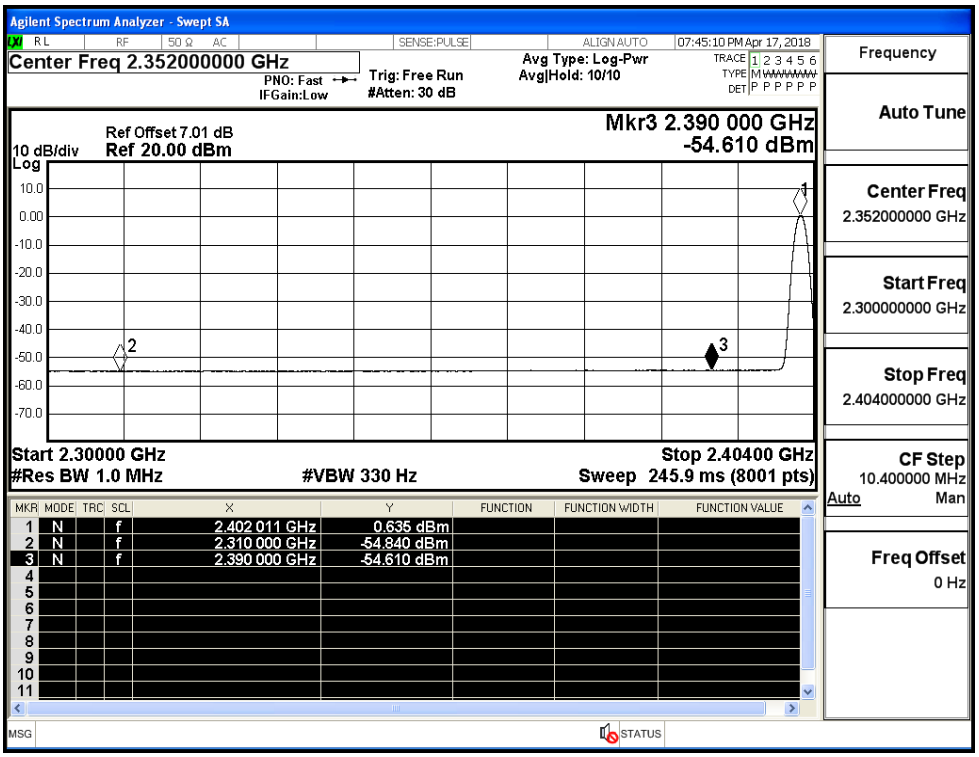
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-44.22	2.0	0	52.98	PEAK	74	PASS
	Off	2310.0	-54.84	2.0	0	42.36	AV	54	PASS
	Off	2390.0	-43.84	2.0	0	53.36	PEAK	74	PASS
	Off	2390.0	-54.61	2.0	0	42.59	AV	54	PASS
	Off	2483.5	-44.06	2.0	0	53.14	PEAK	74	PASS
	Off	2483.5	-54.20	2.0	0	43.00	AV	54	PASS
	Off	2500.0	-44.19	2.0	0	53.01	PEAK	74	PASS
	Off	2500.0	-54.11	2.0	0	43.09	AV	54	PASS
π/4DQPSK	Off	2310.0	-45.06	2.0	0	52.14	PEAK	74	PASS
	Off	2310.0	-54.82	2.0	0	42.38	AV	54	PASS
	Off	2390.0	-45.17	2.0	0	52.03	PEAK	74	PASS
	Off	2390.0	-54.47	2.0	0	42.73	AV	54	PASS
	Off	2483.5	-43.38	2.0	0	53.82	PEAK	74	PASS
	Off	2483.5	-54.02	2.0	0	43.18	AV	54	PASS
	Off	2500.0	-43.62	2.0	0	53.58	PEAK	74	PASS
	Off	2500.0	-54.14	2.0	0	43.06	AV	54	PASS

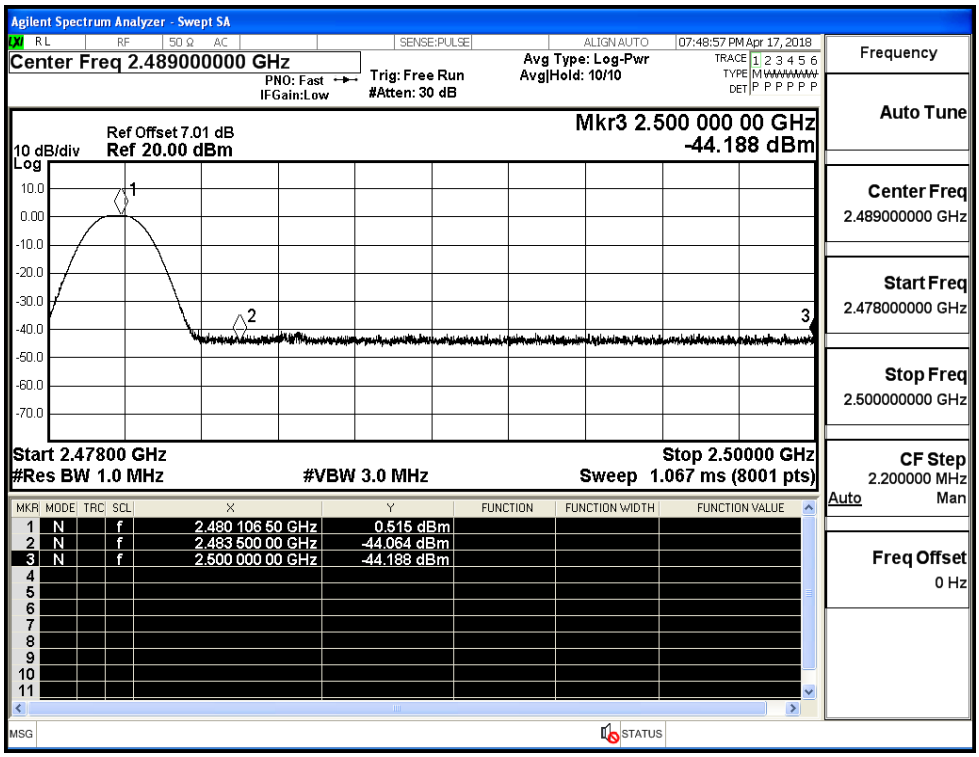
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (Low Channel)



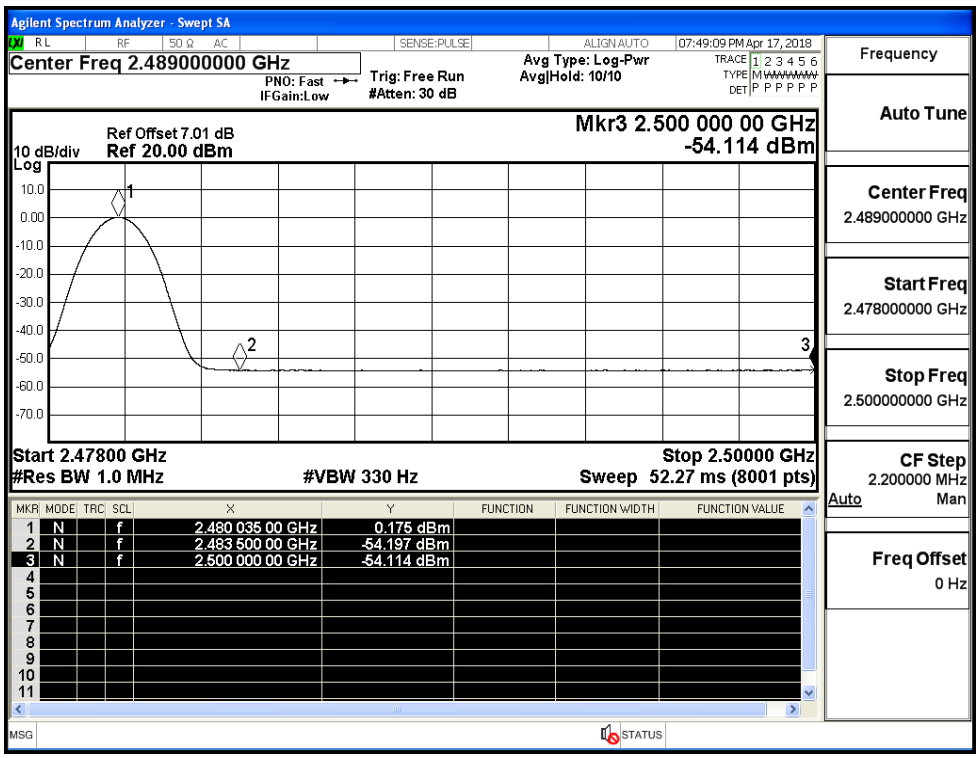
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (Low Channel)



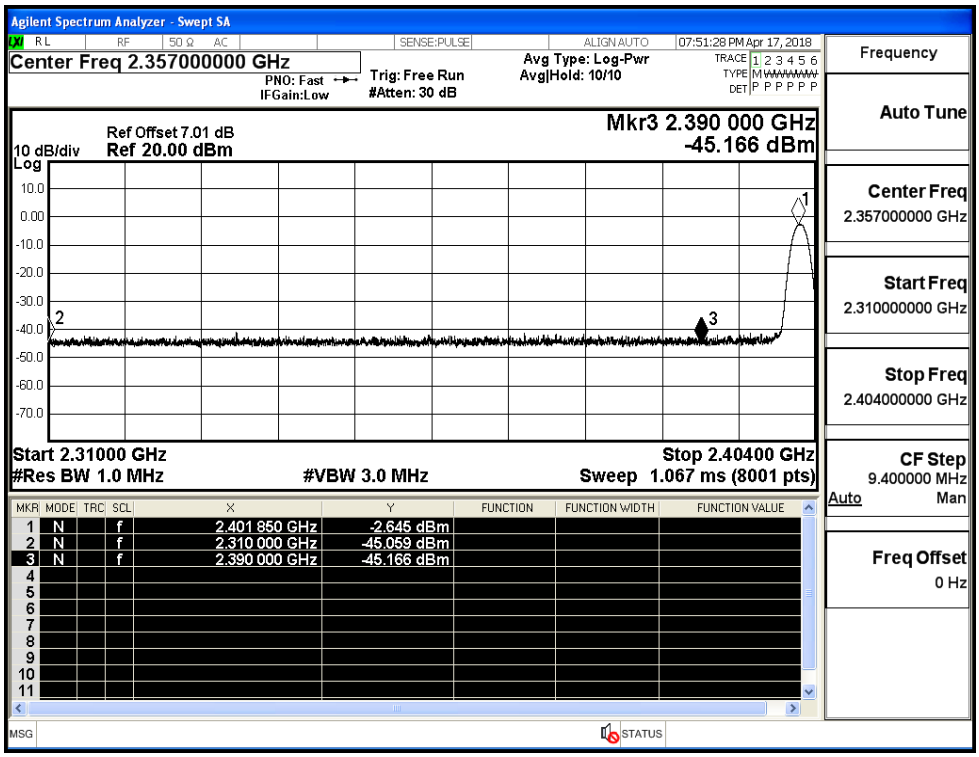
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (High Channel)



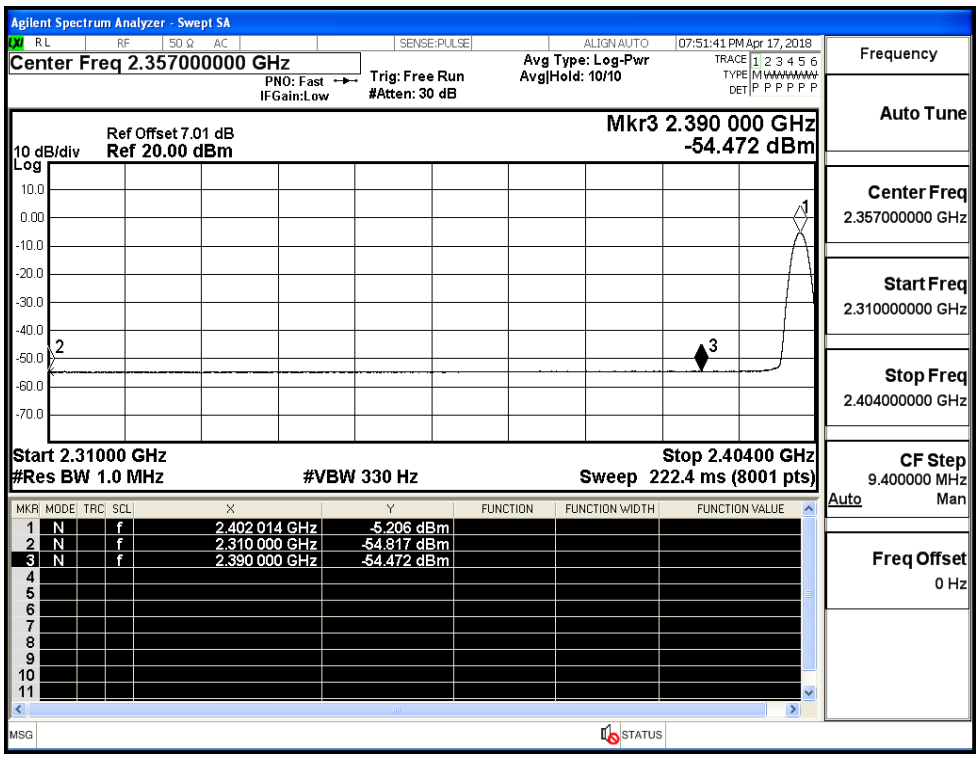
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (High Channel)



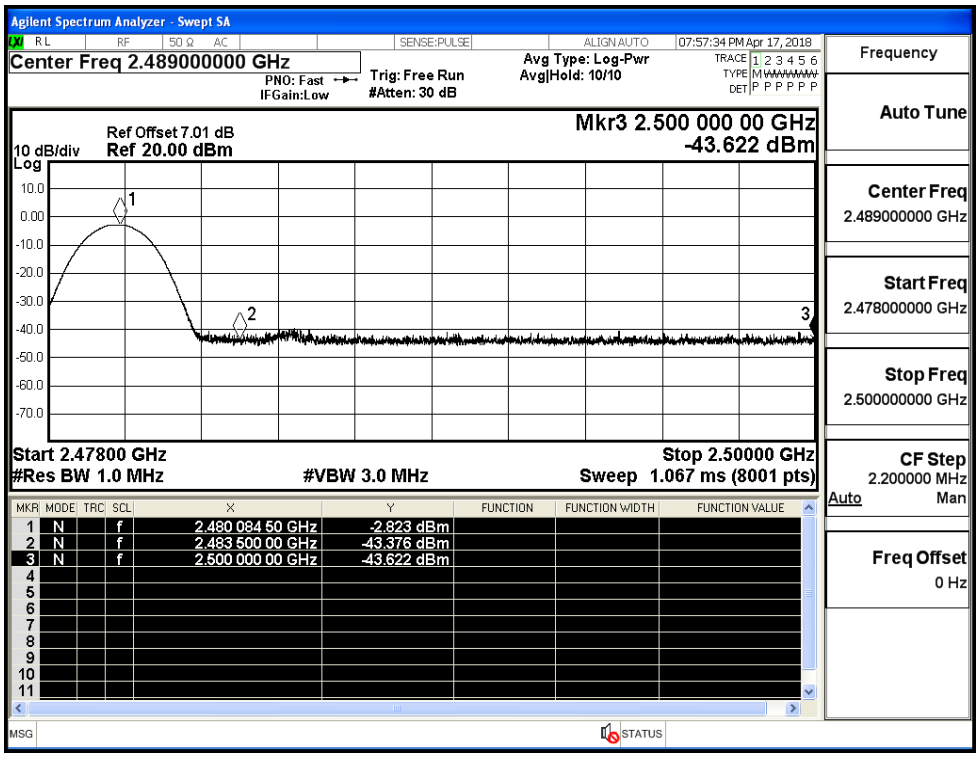
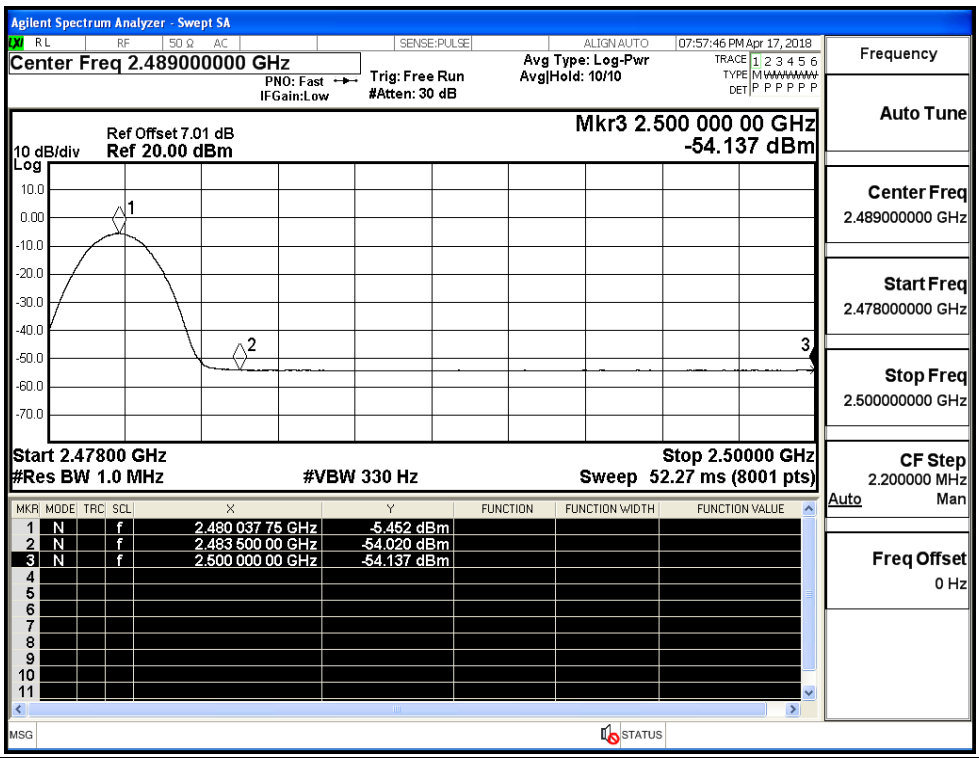
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (Low Channel)



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)