Appendix A

RF Test Data for BT V5.0 (BDR/EDR) (Conducted Measurement)

Product Name: Bluetooth CDG Karaoke with Special Light Effects

Trade Mark: singing machine

FCC Test Model: SML625BTBK

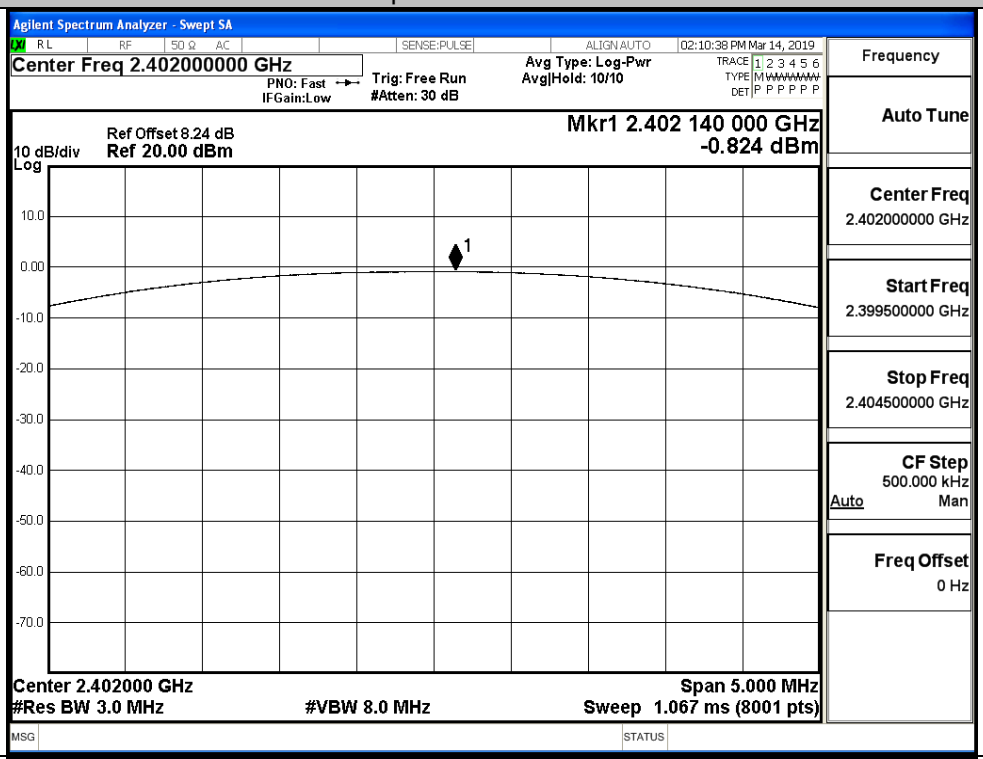
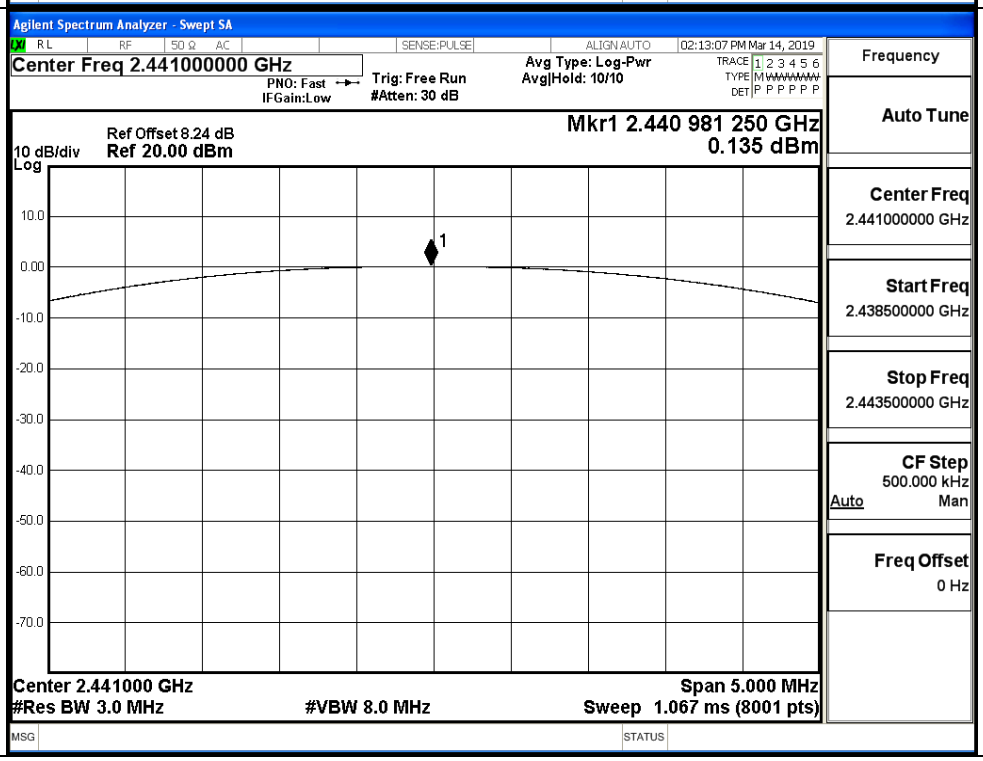
ISED Test Model: SML625BTXX

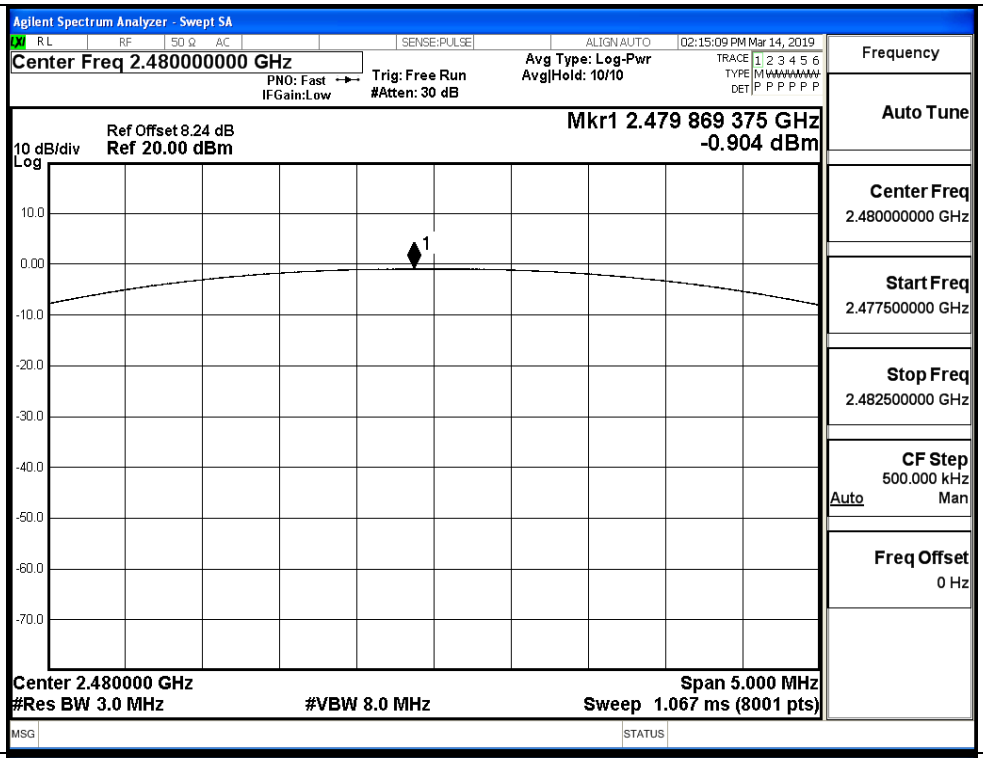
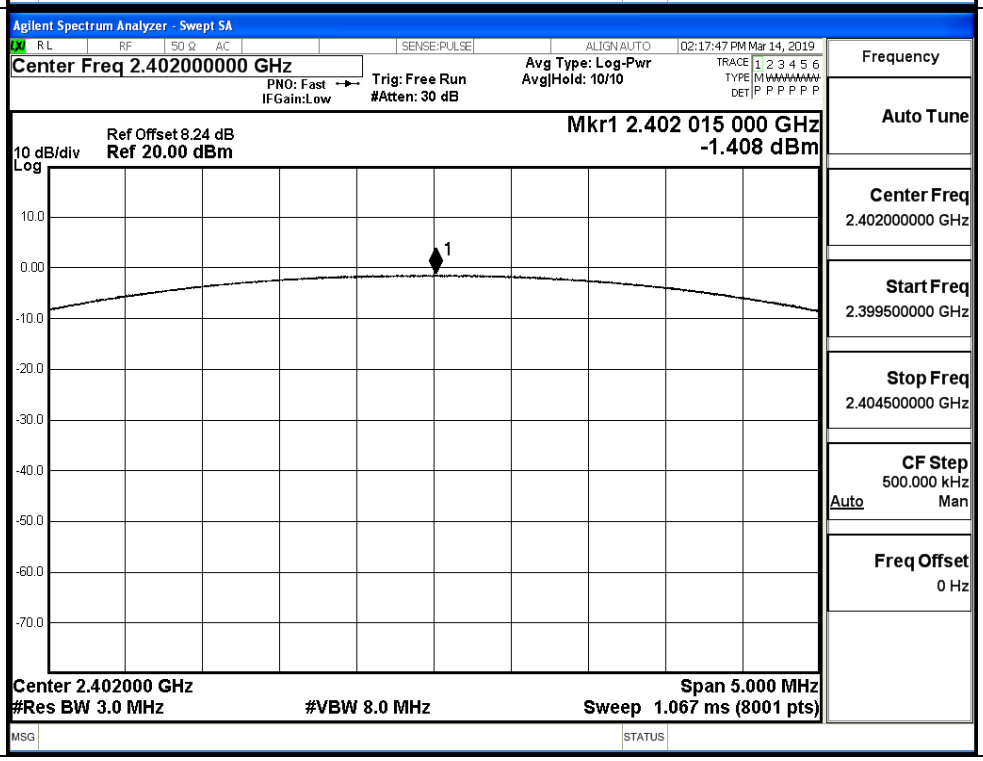
Environmental Conditions

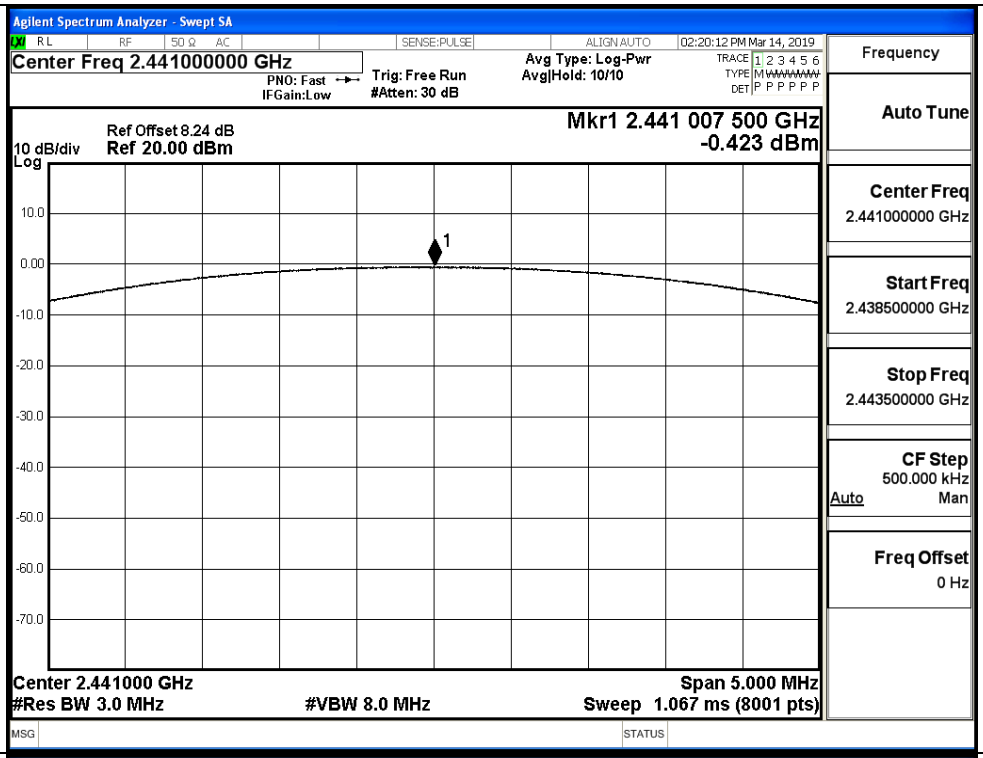
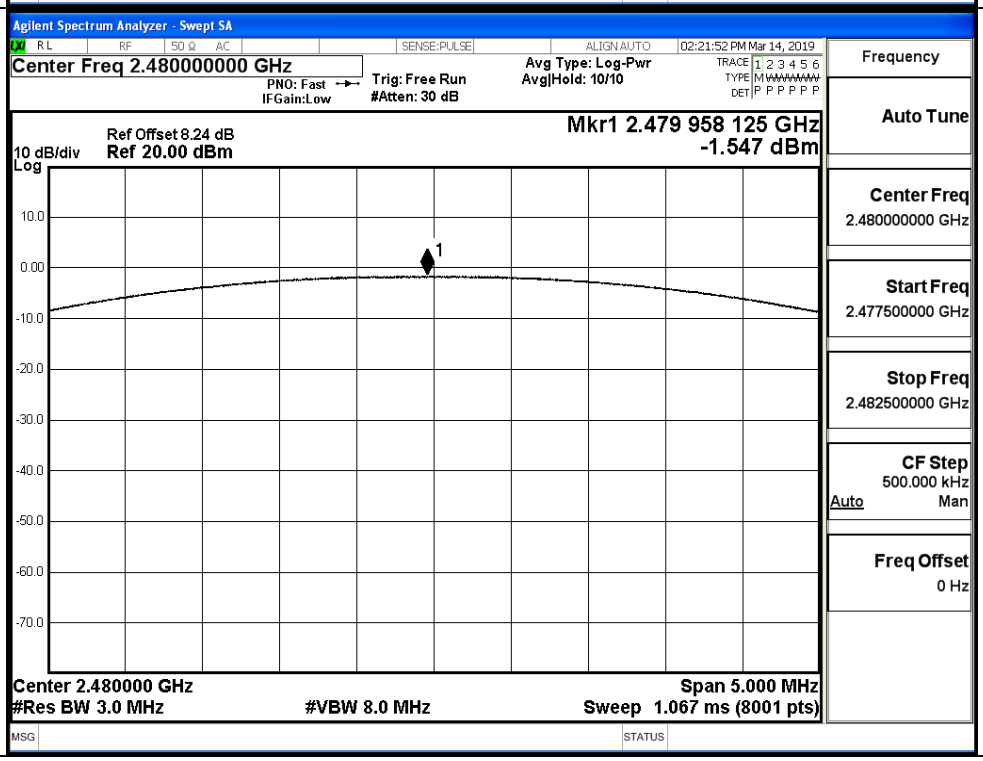
Temperature:	24.5 ° C
Relative Humidity:	53.8%
ATM Pressure:	100.0 kPa
Test Engineer:	JERRY.ZENG
Supervised by:	Tom.Liu

A.1 Maximum Conducted Peak Output Power

Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-0.824	21	PASS
	MCH	0.135	21	PASS
	HCH	-0.904	21	PASS
π/4DQPSK	LCH	-1.408	21	PASS
	MCH	-0.423	21	PASS
	HCH	-1.547	21	PASS

Test Graphs		
GFSK/LCH		
GFSK/MCH		

GFSK/HCH	
π/4DQPSK/LCH	

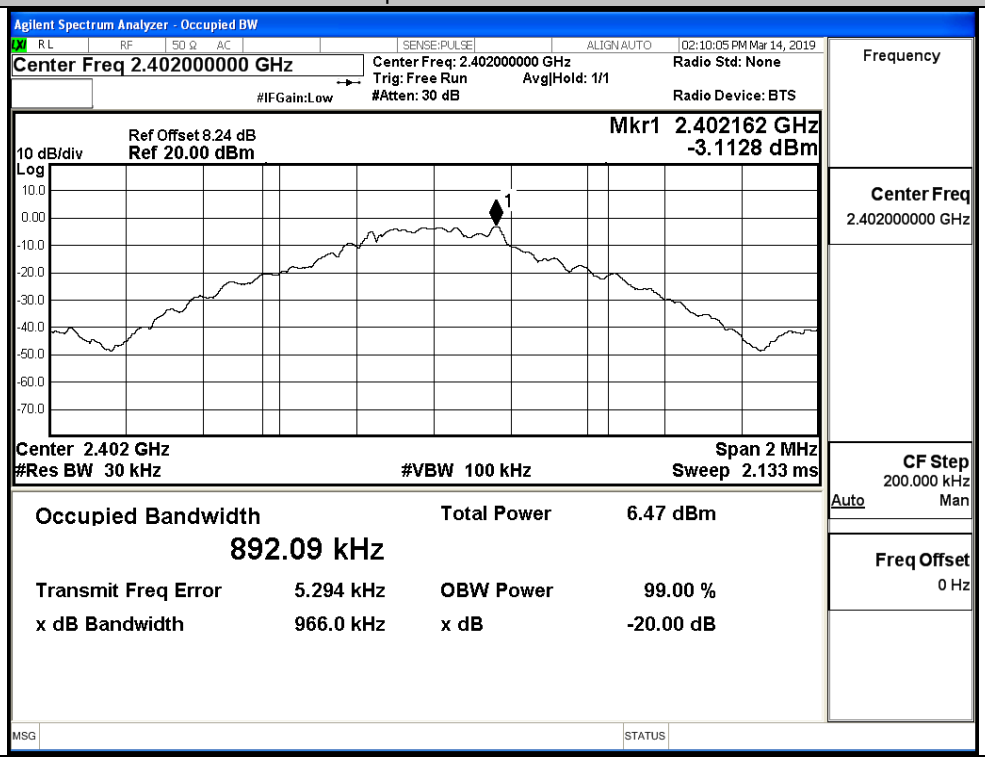
π/4DQPSK/MCH		
π/4DQPSK/HCH		

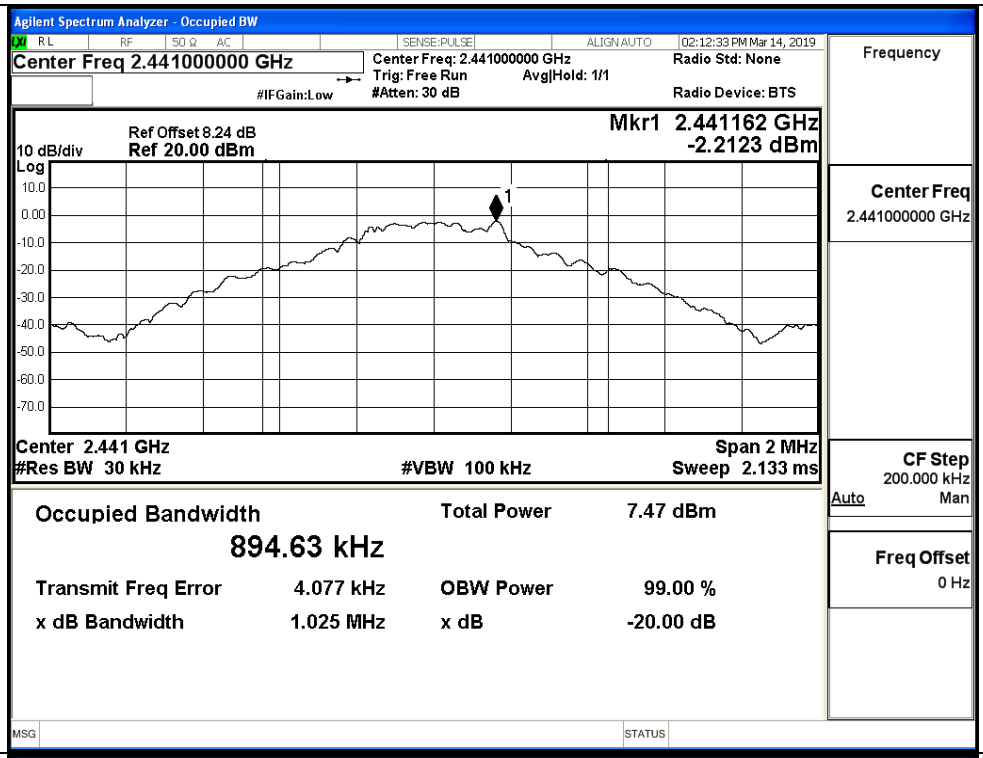
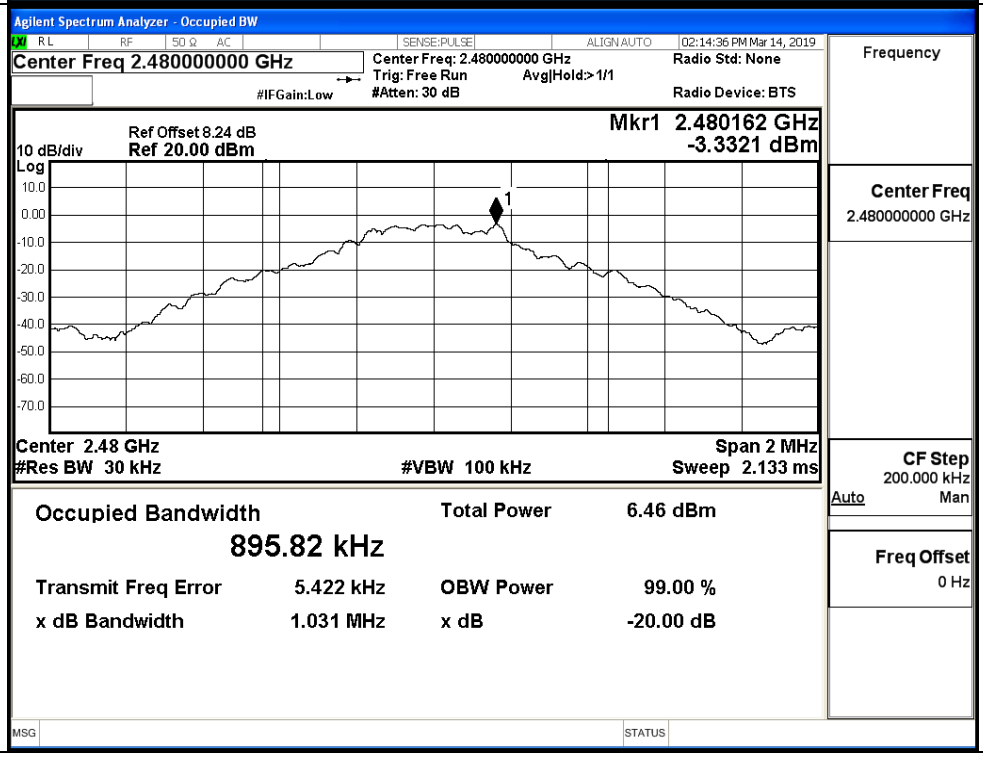
A.2 99% and 20dB Bandwidth

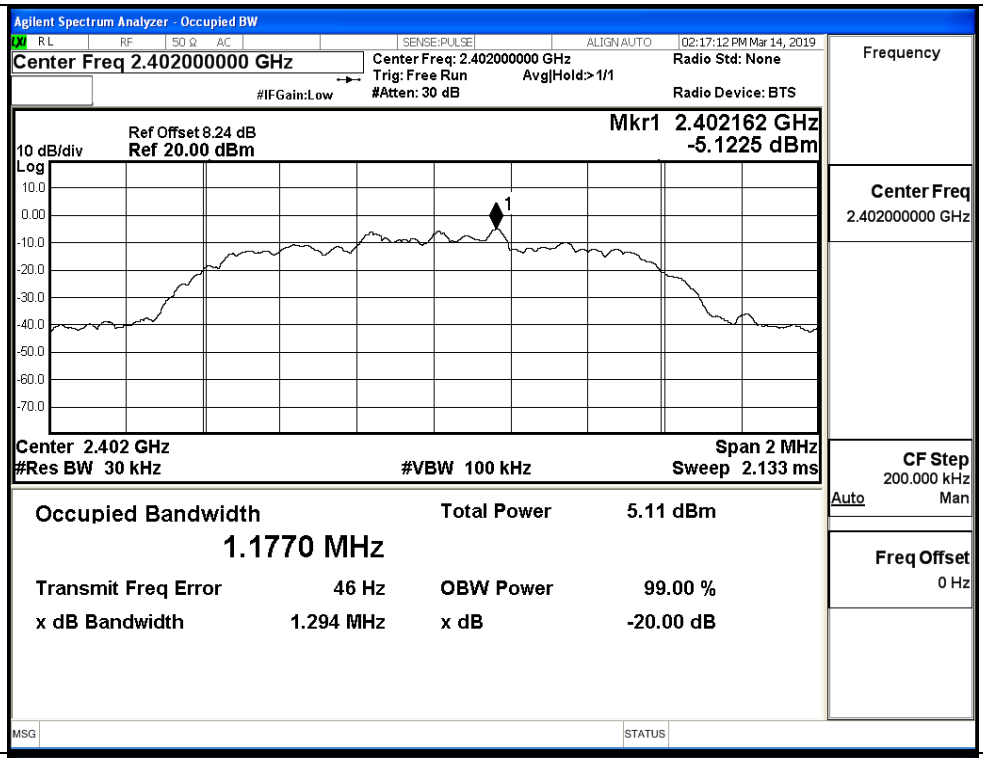
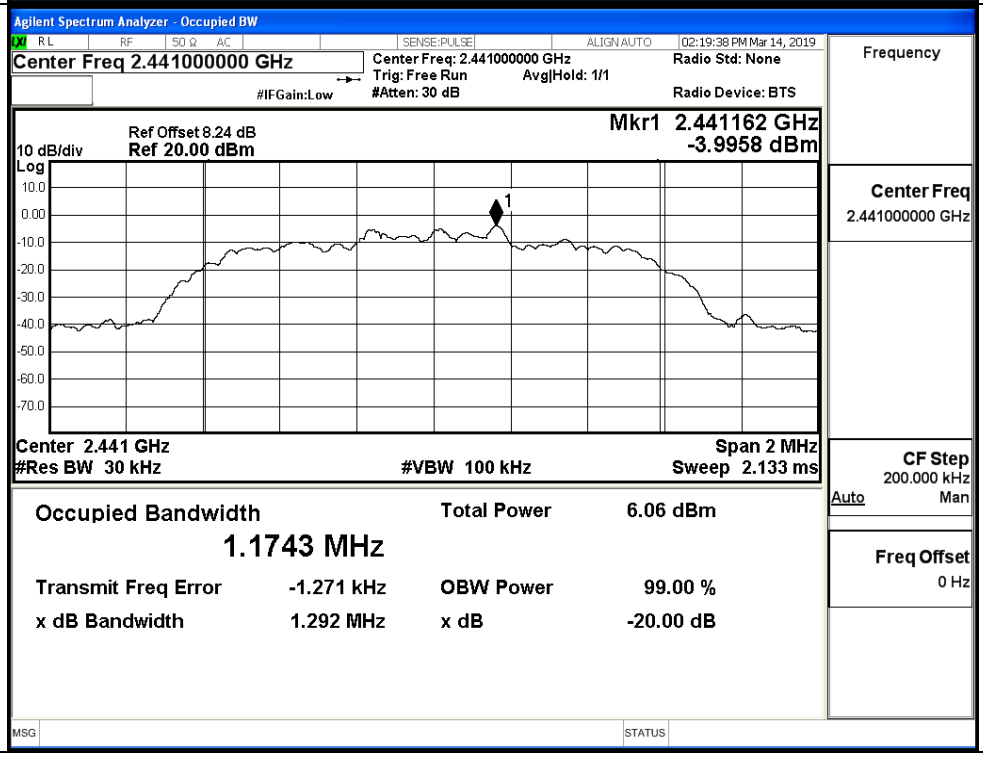
Mode	Channel.	99% Bandwidth [MHz]	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.89209	0.9660	Not Specified	PASS
	MCH	0.89463	1.025	Not Specified	PASS
	HCH	0.89582	1.031	Not Specified	PASS
π/4DQPSK	LCH	1.1770	1.294	Not Specified	PASS
	MCH	1.1743	1.292	Not Specified	PASS
	HCH	1.1733	1.292	Not Specified	PASS

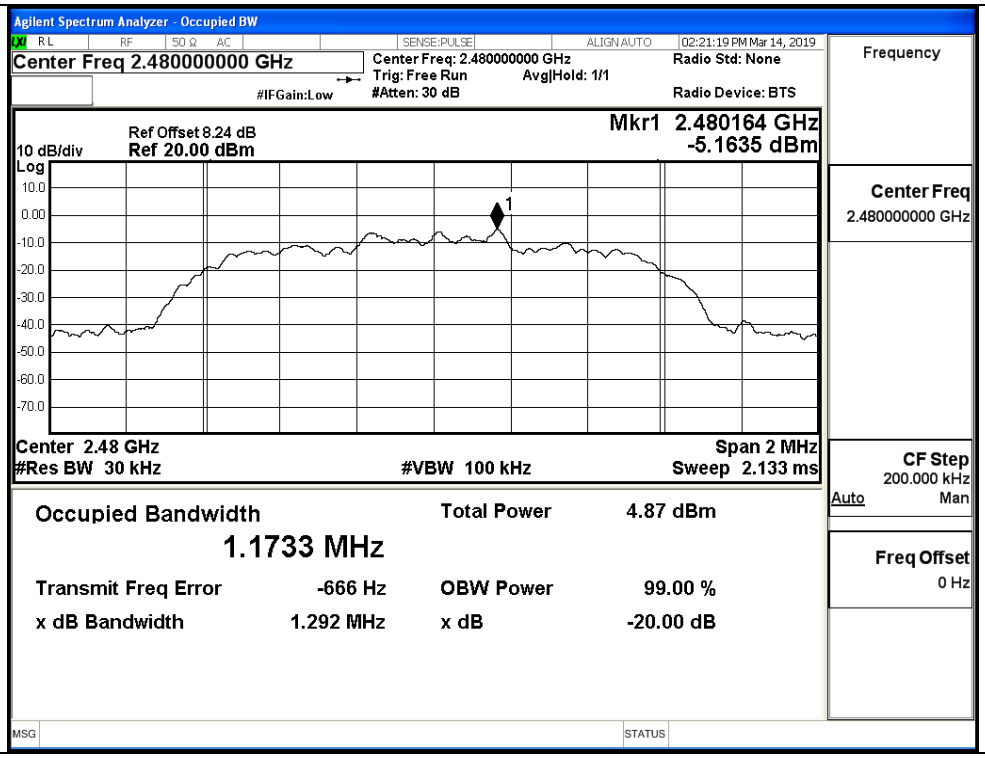
Test Graphs

GFSK/LCH



GFSK/MCH	
GFSK/HCH	

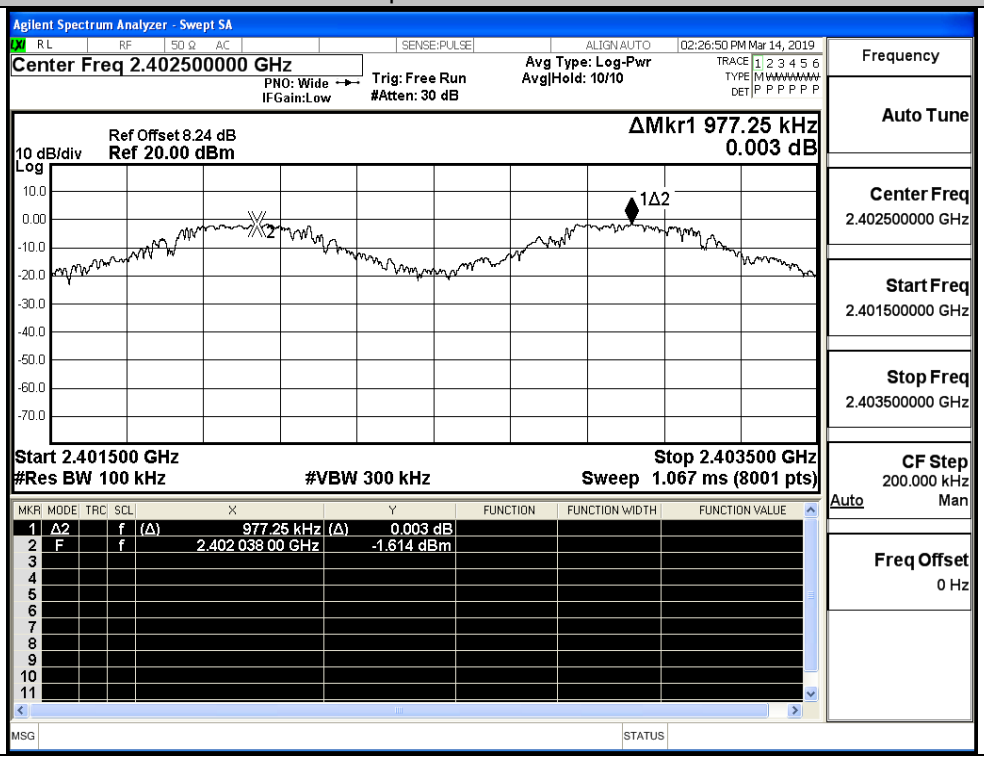
π/4DQPSK/LCH	
π/4DQPSK/MCH	

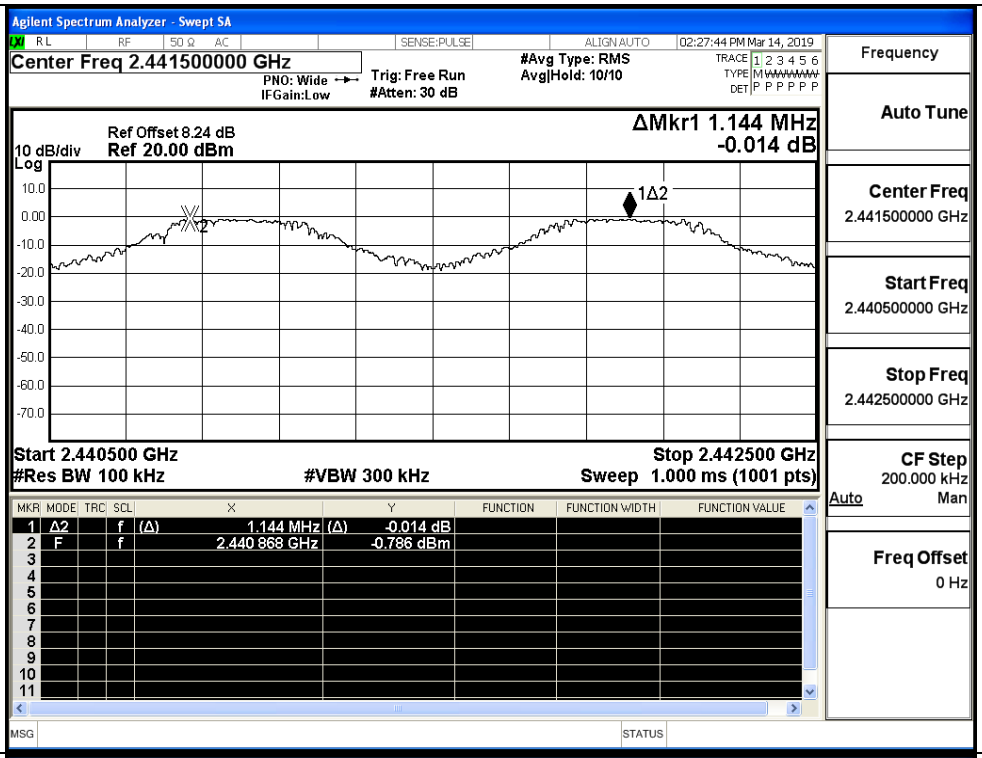
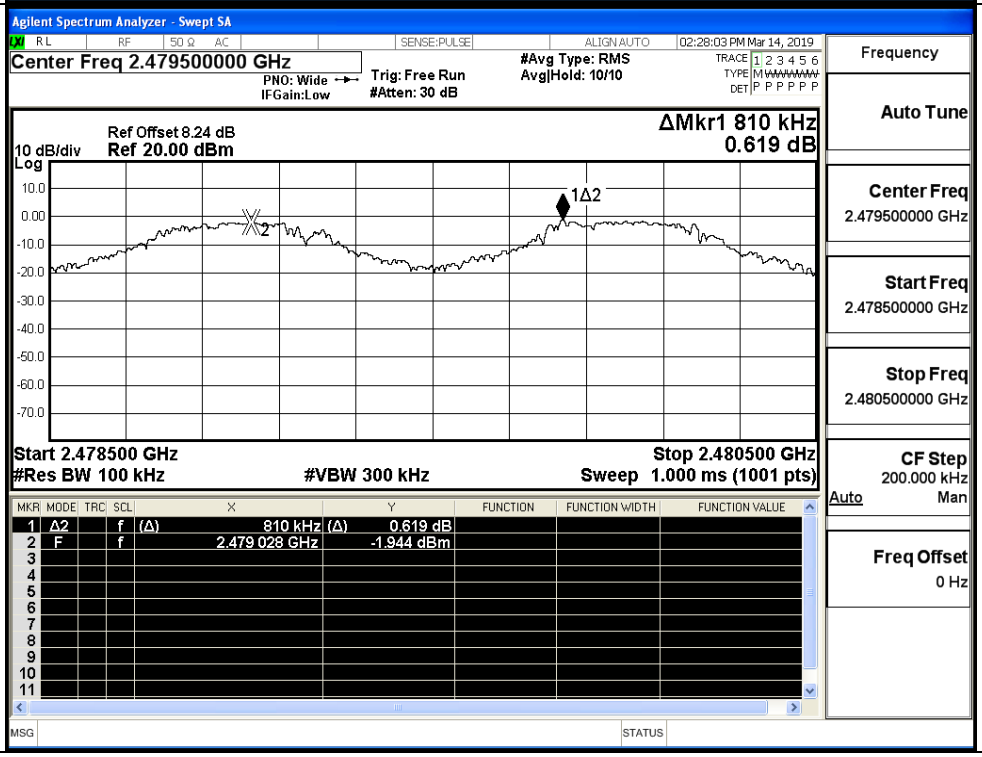
π/4DQPSK/HCH	

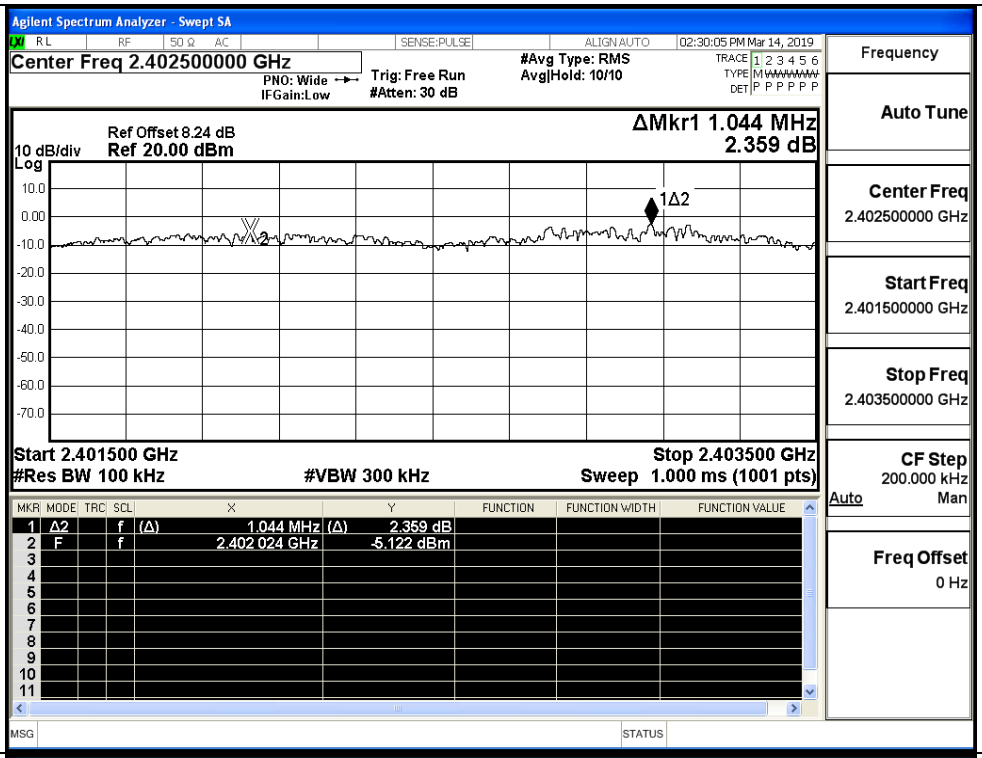
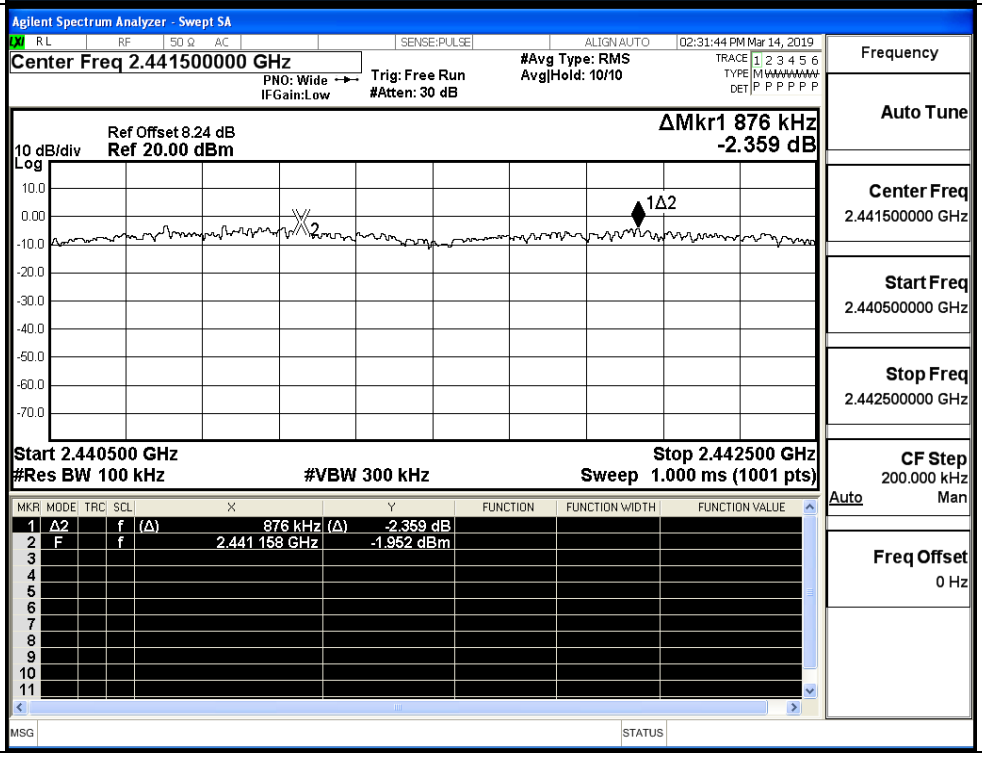
Agilent Spectrum Analyzer - Occupied BW
RL
RF
50 Ω AC
SENSE:PULSE
ALIGN AUTO
02:21:19 PM Mar 14, 2019
Center Freq 2.480000000 GHz
#IFGain:Low
Center Freq: 2.480000000 GHz
Trig: Free Run
Avg|Hold: 1/1
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
Frequency
Ref Offset 8.24 dB
10 dB/div
Ref 20.00 dBm
Mkr1 2.480164 GHz
-5.1635 dBm
Log
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
1
Center Freq
2.480000000 GHz
Center 2.48 GHz
#Res BW 30 kHz
#VBW 100 kHz
Span 2 MHz
Sweep 2.133 ms
CF Step
200.000 kHz
Auto
Man
Occupied Bandwidth
1.1733 MHz
Total Power
4.87 dBm
Freq Offset
0 Hz
Transmit Freq Error
-666 Hz
OBW Power
99.00 %
x dB Bandwidth
1.292 MHz
x dB
-20.00 dB
MSG
STATUS

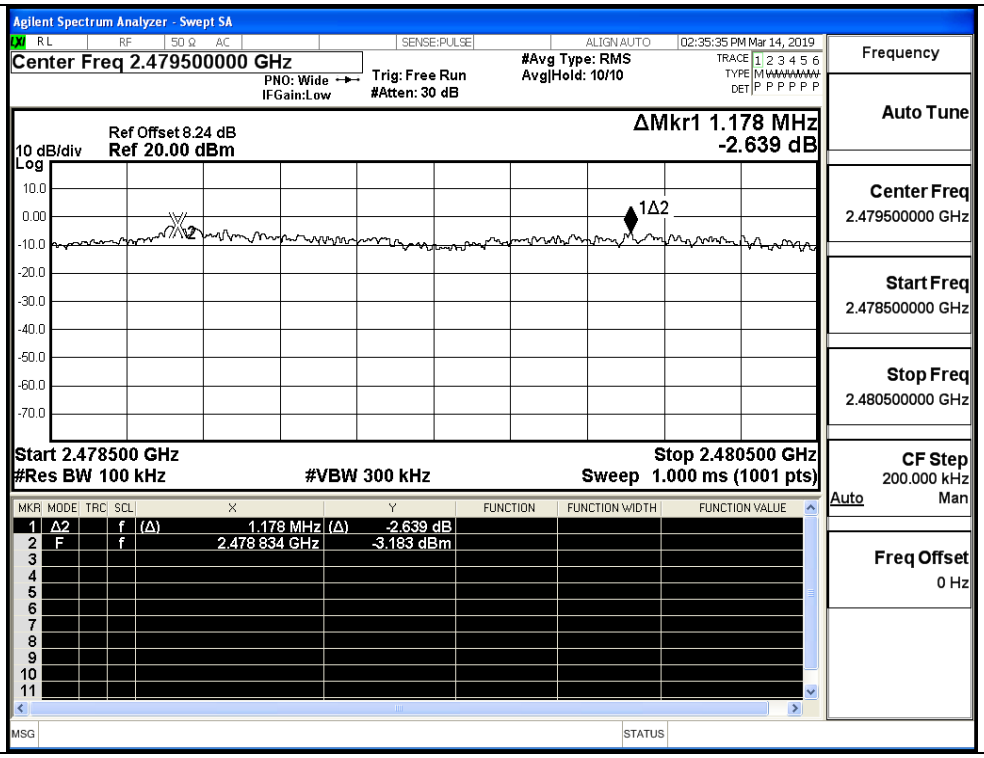
A.3 Carrier Frequency Separation

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.977	0.687	PASS
	MCH	1.144	0.687	PASS
	HCH	0.810	0.687	PASS
π/4DQPSK	LCH	1.044	0.863	PASS
	MCH	0.876	0.863	PASS
	HCH	1.178	0.863	PASS

Test Graphs	
GFSK/LCH	

GFSK/MCH	
GFSK/HCH	

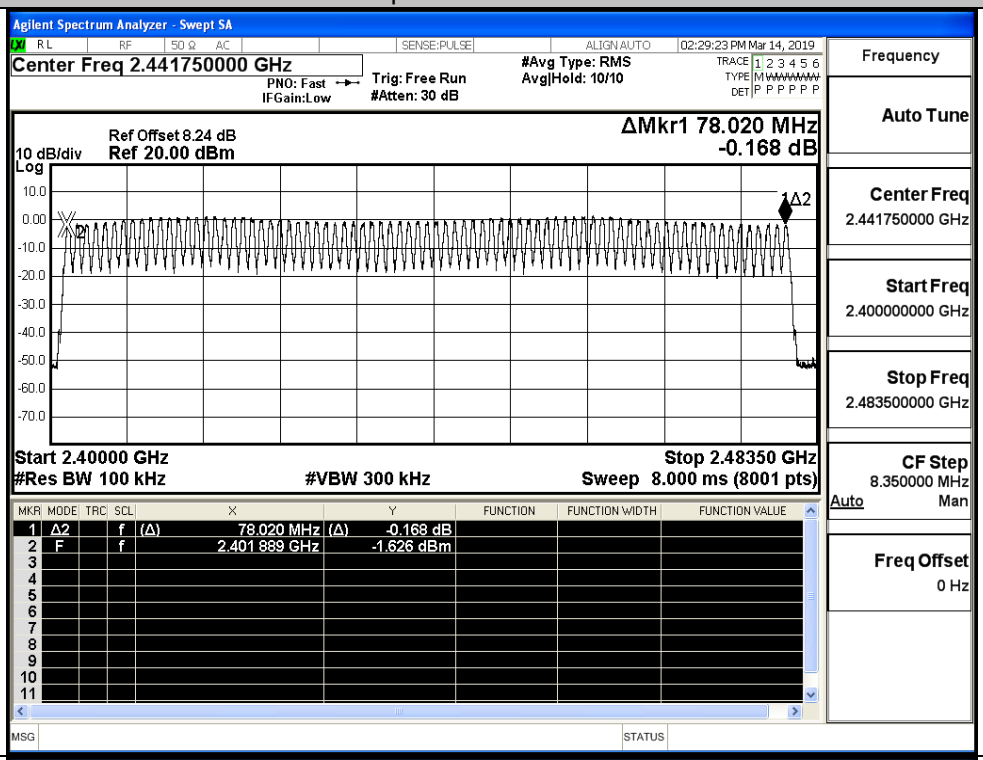
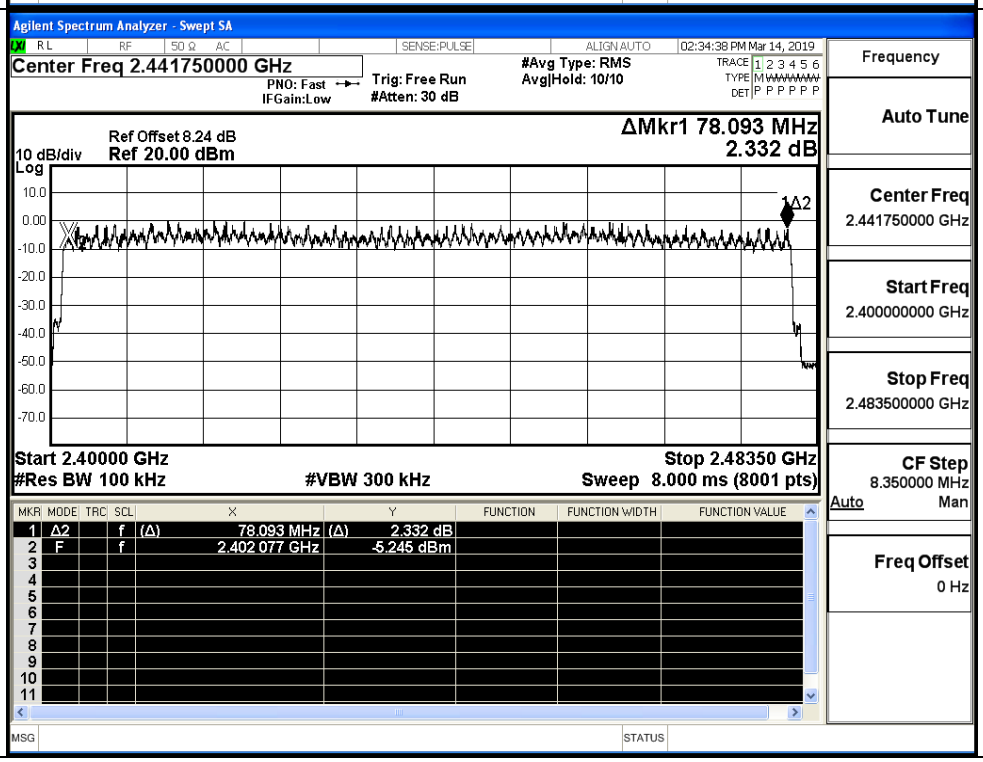
π/4DQPSK/LCH	
π/4DQPSK/MCH	

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
02:35:35 PM Mar 14, 2019
Ref Offset 8.24 dB
10 dB/div
Log
Ref 20.00 dBm
ΔMkr1 1.178 MHz
-2.639 dB
Start 2.478500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.480500 GHz
Sweep 1.000 ms (1001 pts)
1 Δ2 1.178 MHz -2.639 dB
2 F 2.478 834 GHz -3.183 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

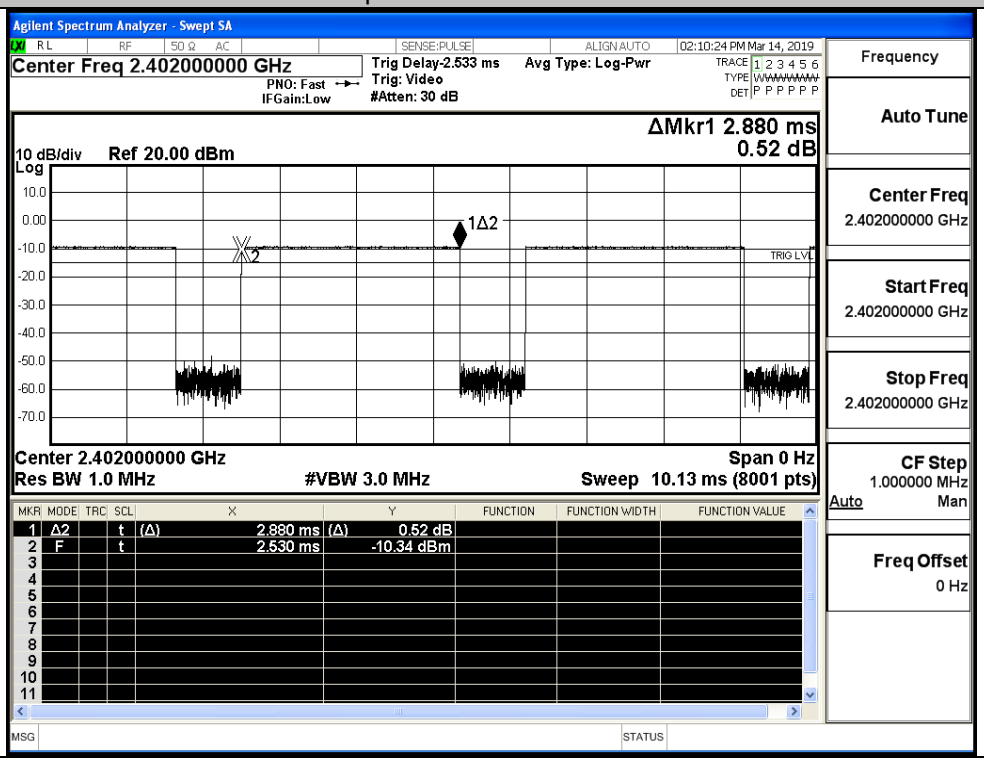
A.4 Hopping Channel Number

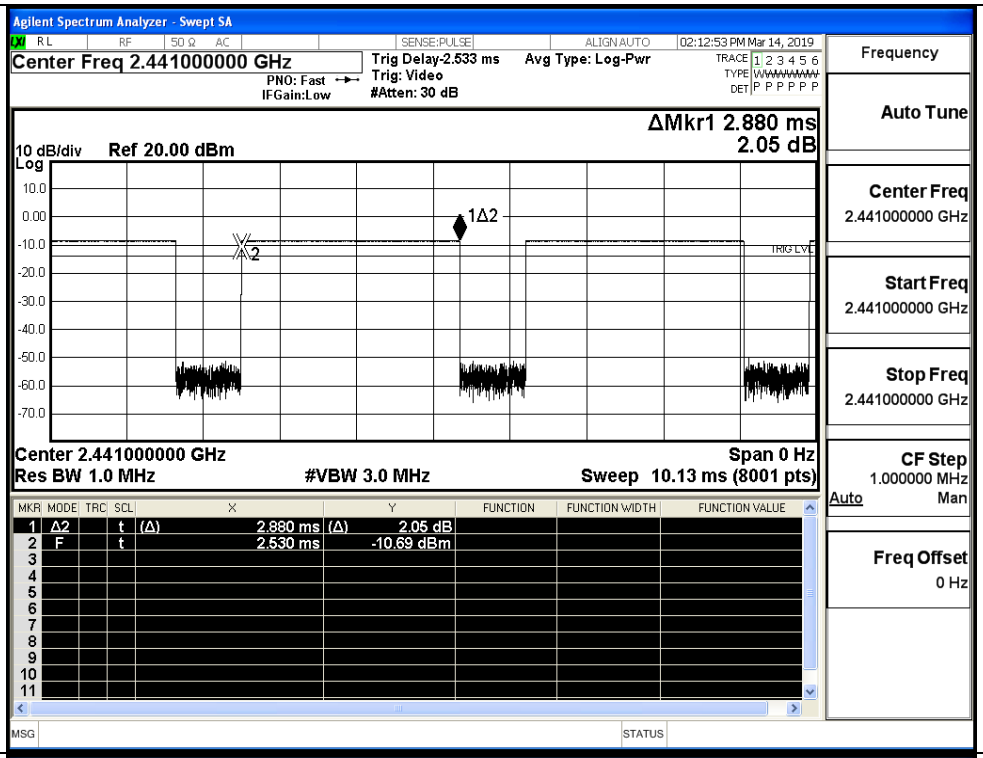
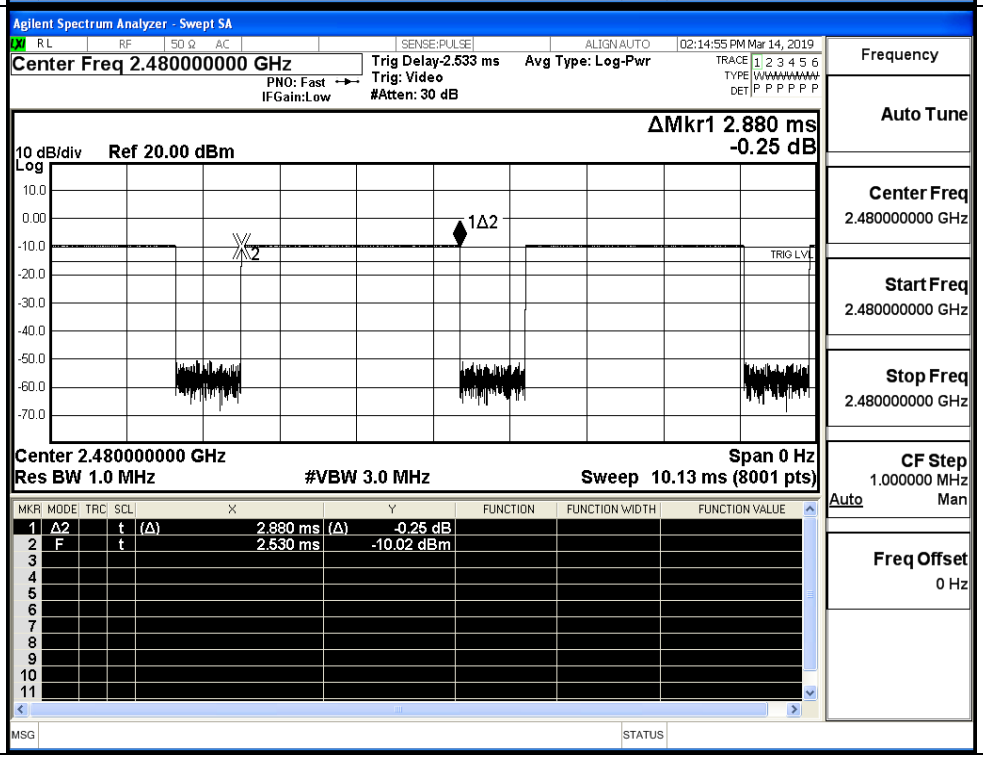
Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	>=15	PASS
π/4DQPSK	Hop	79	>=15	PASS

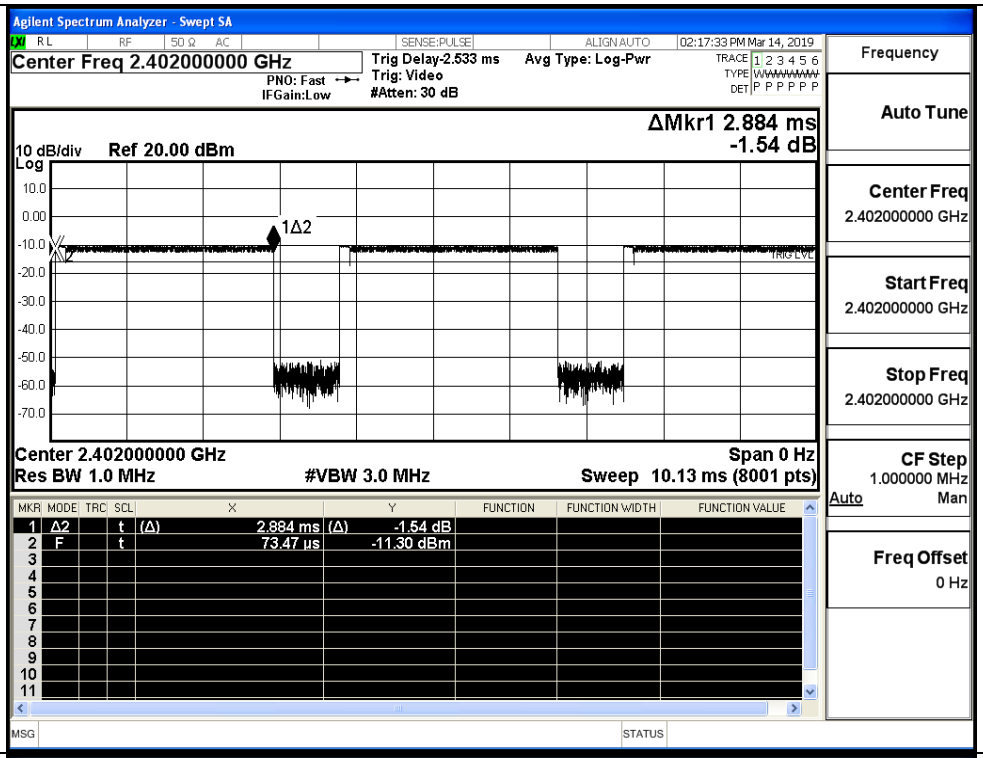
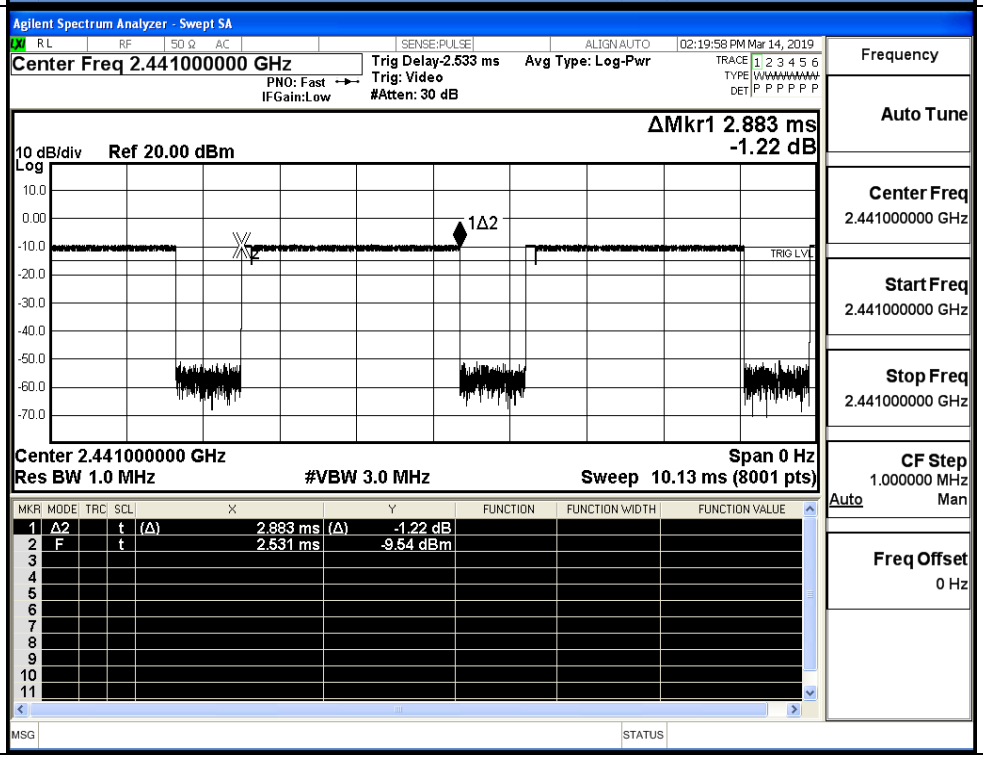
Test Graphs		
GFSK/Hop		
π/4DQPSK/Hop		

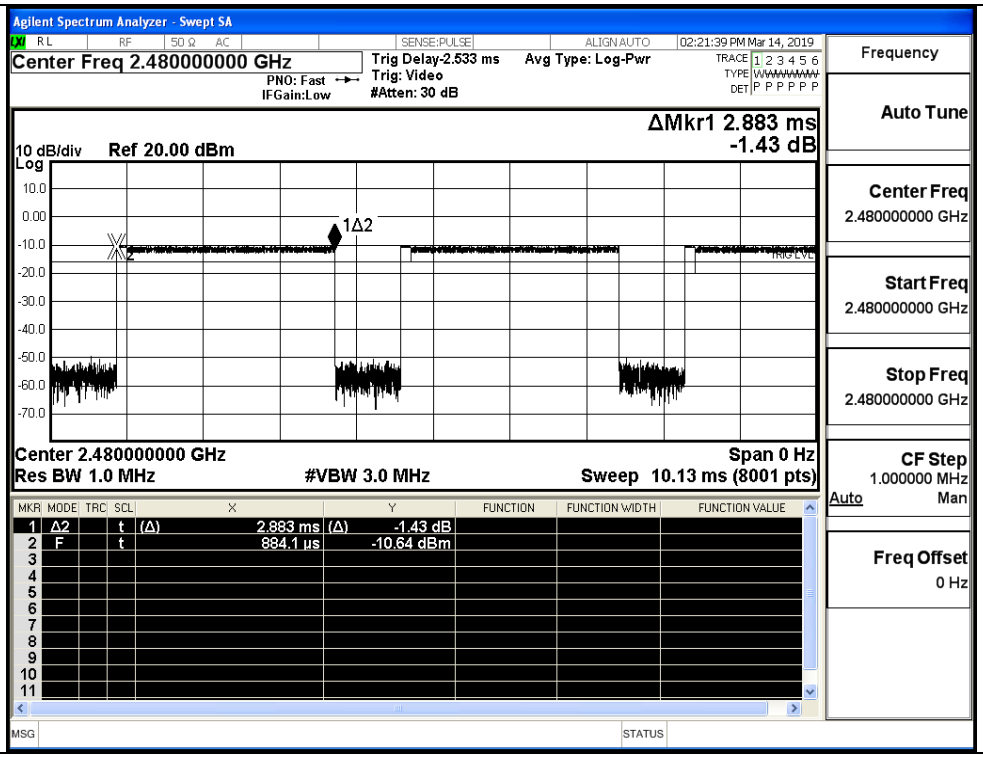
A.5 Dwell Time

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	

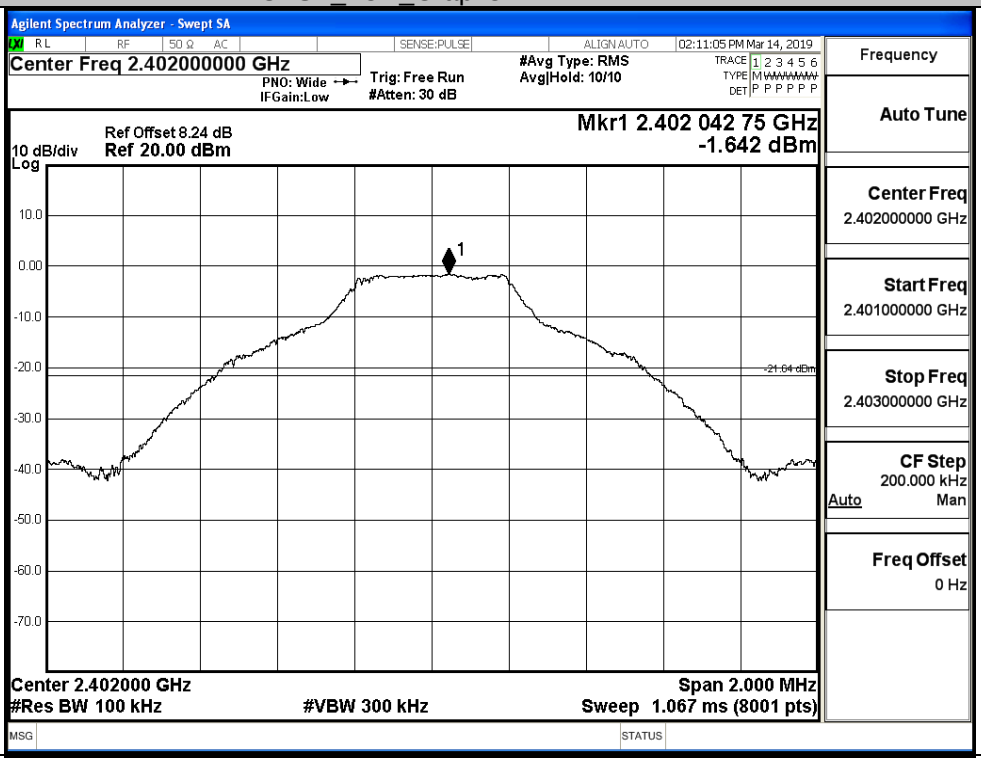
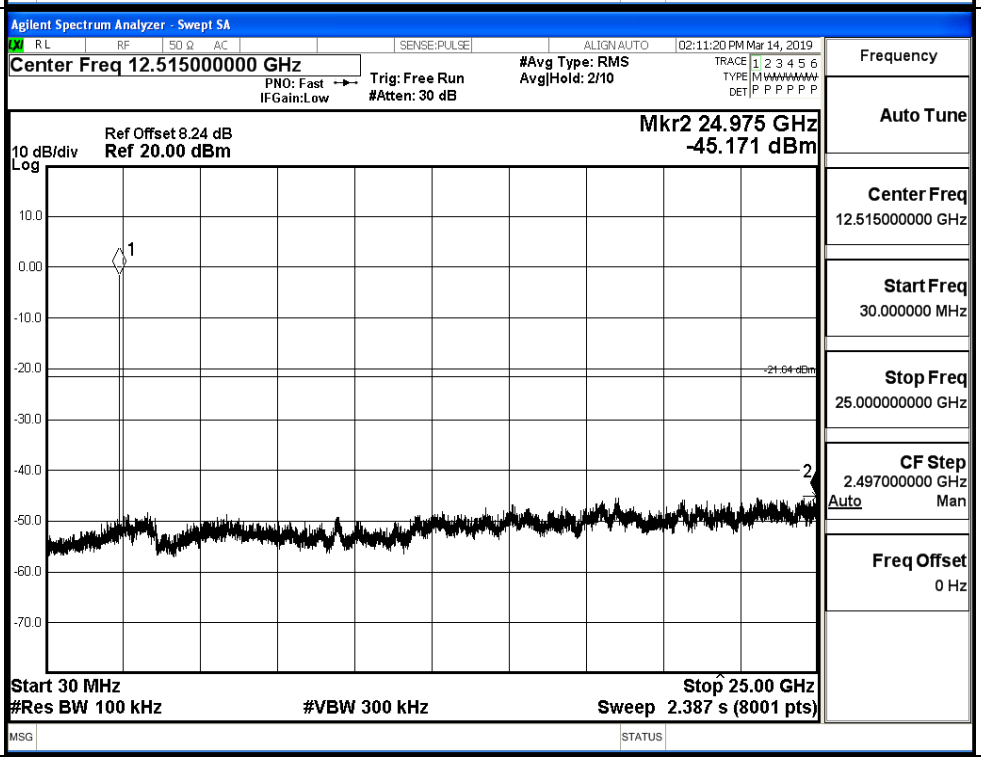
GFSK_DH5/MCH	
GFSK_DH5/HCH	

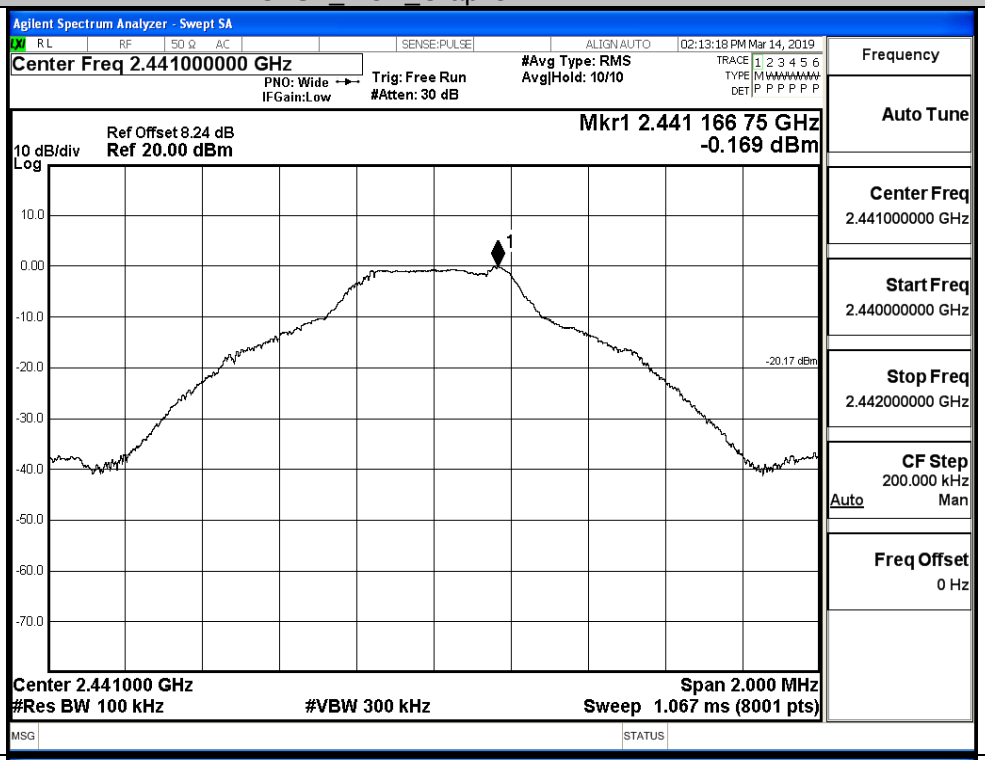
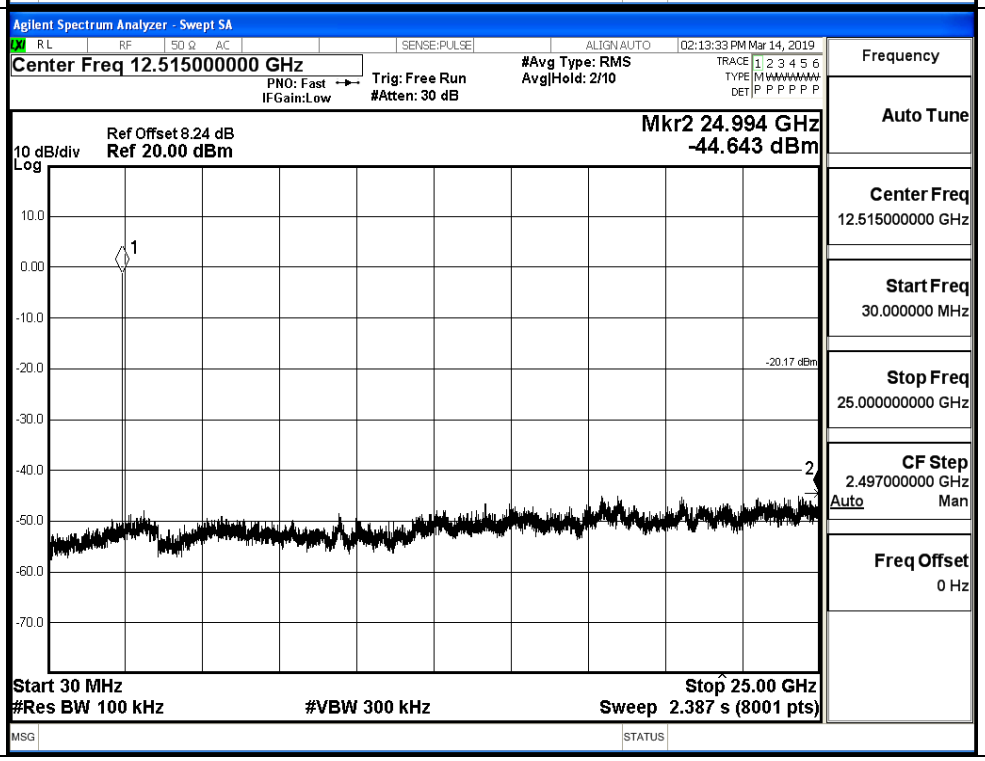
π/4DQPSK _2DH5/LCH	
π/4DQPSK _2DH5/MCH	

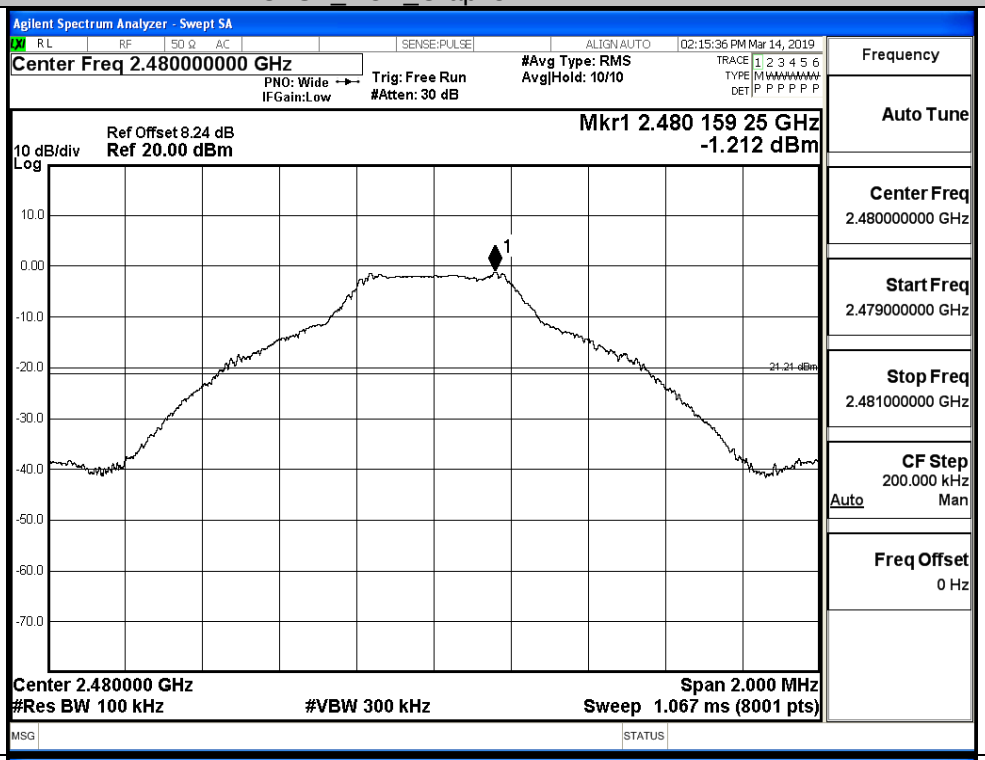
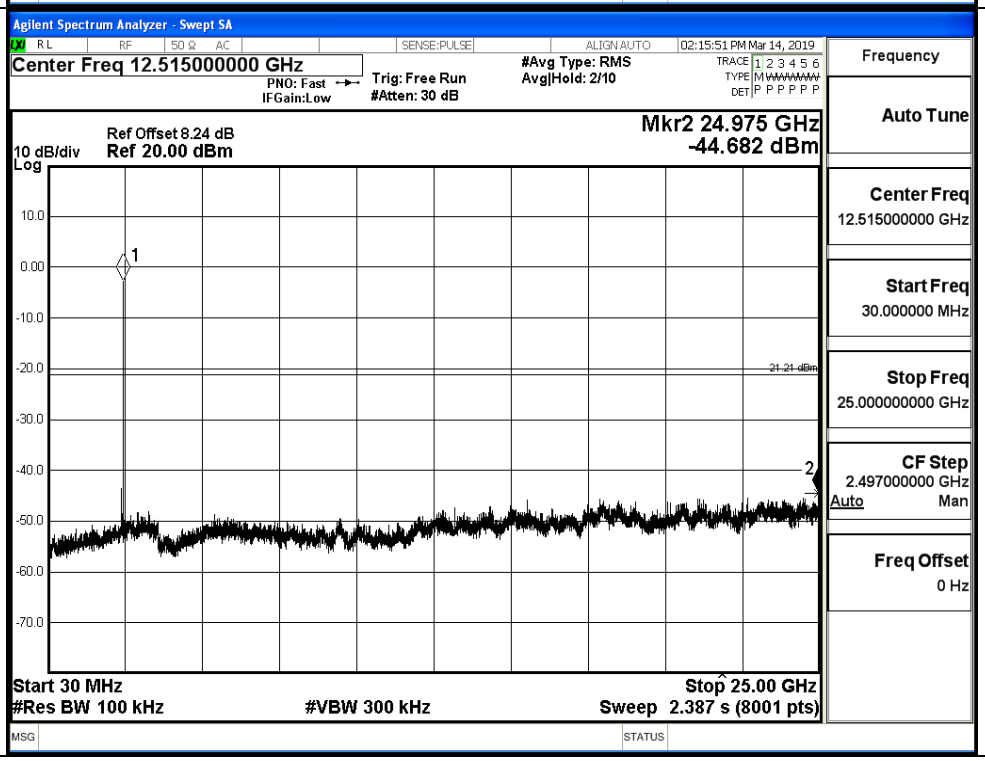
π/4DQPSK _2DH5/HCH	

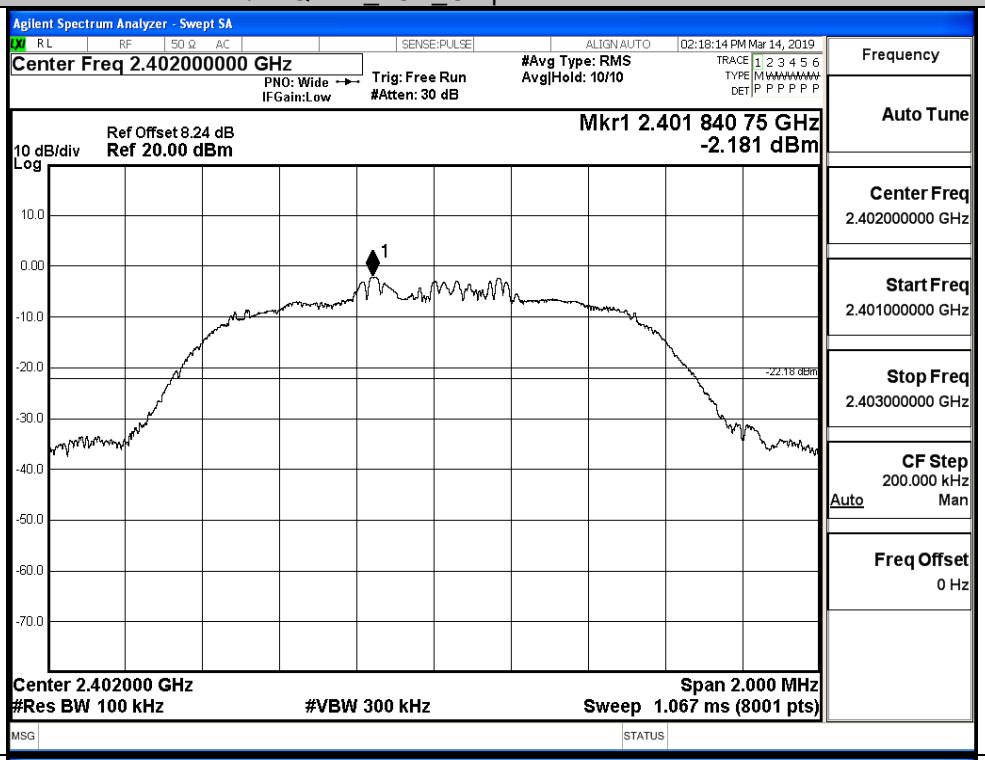
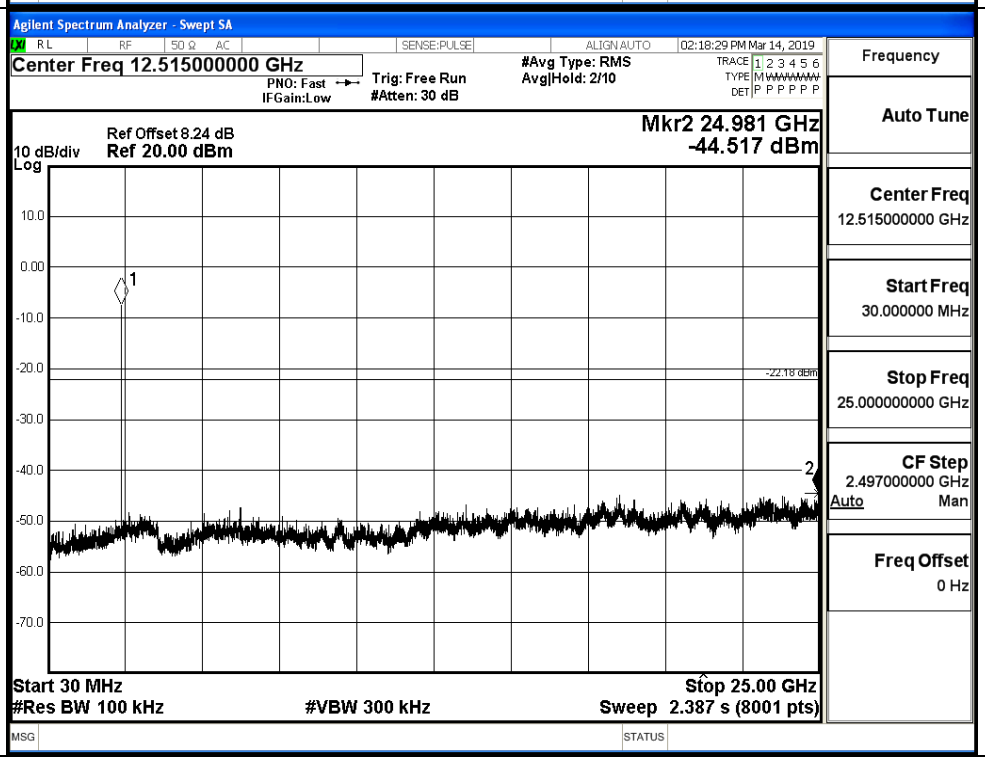
A.6 RF Conducted Spurious Emissions

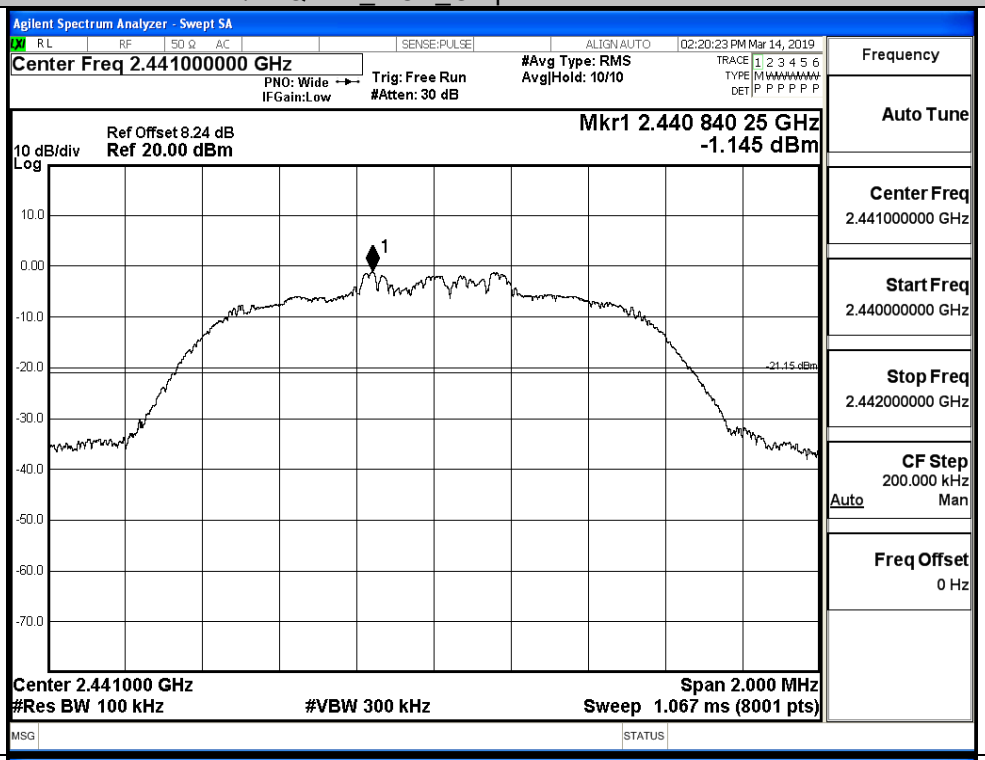
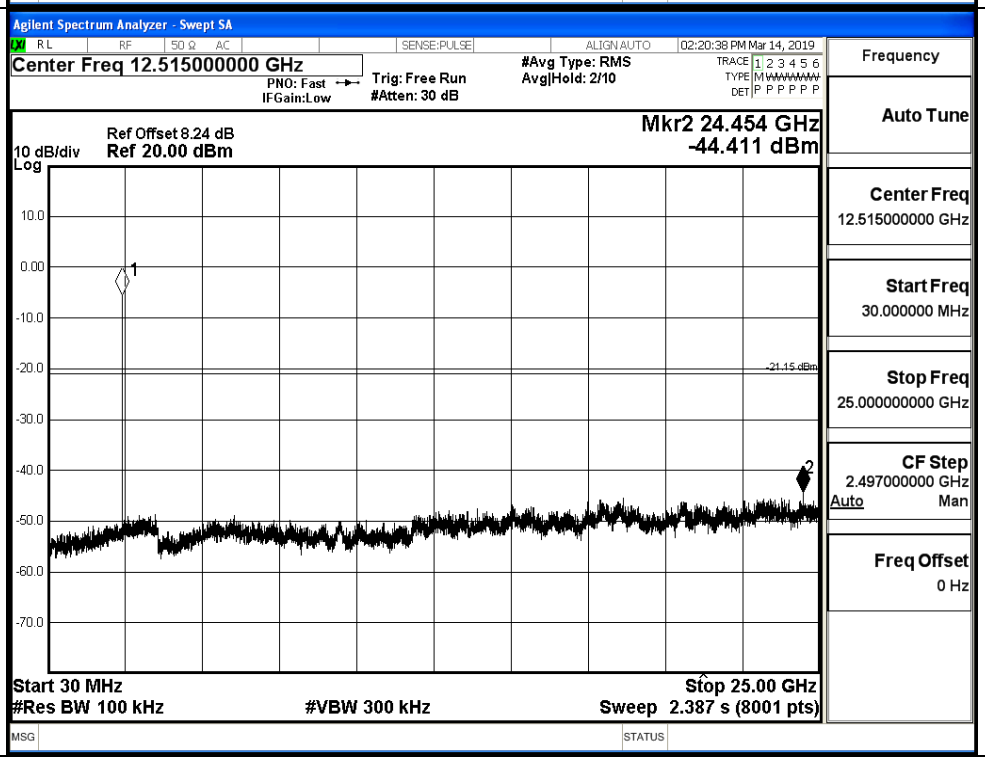
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-1.642	-45.171	-21.642	PASS
	MCH	-0.169	-44.643	-20.169	PASS
	HCH	-1.212	-44.682	-21.212	PASS
π/4DQPSK	LCH	-2.181	-44.517	-22.181	PASS
	MCH	-1.145	-44.411	-21.145	PASS
	HCH	-2.535	-44.879	-22.535	PASS

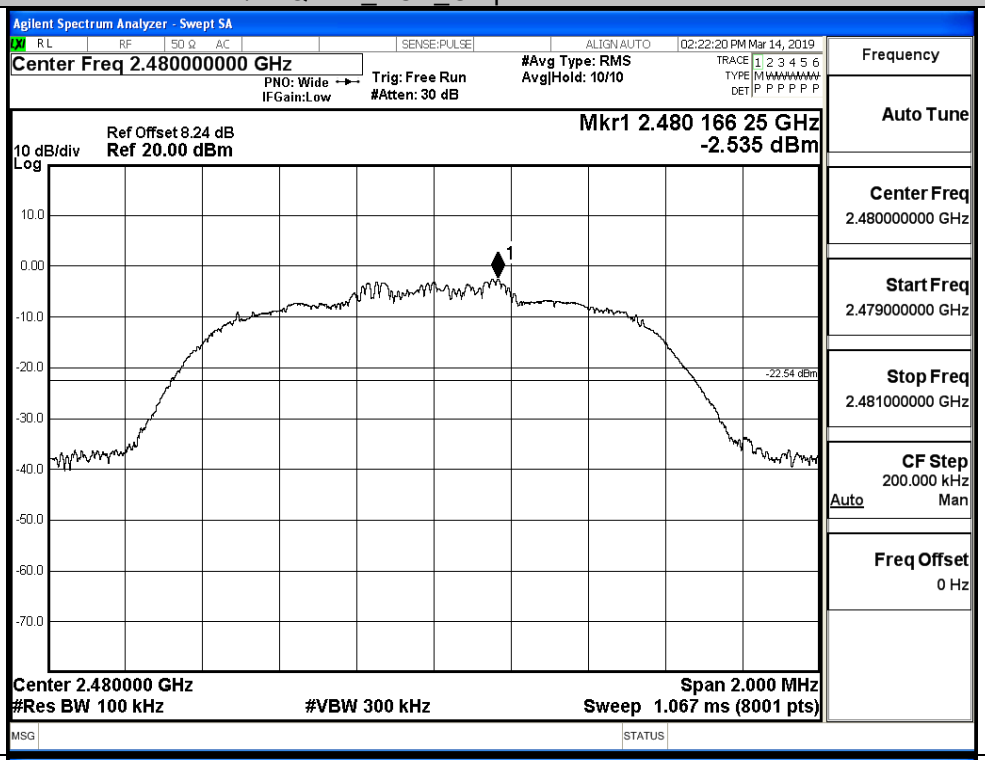
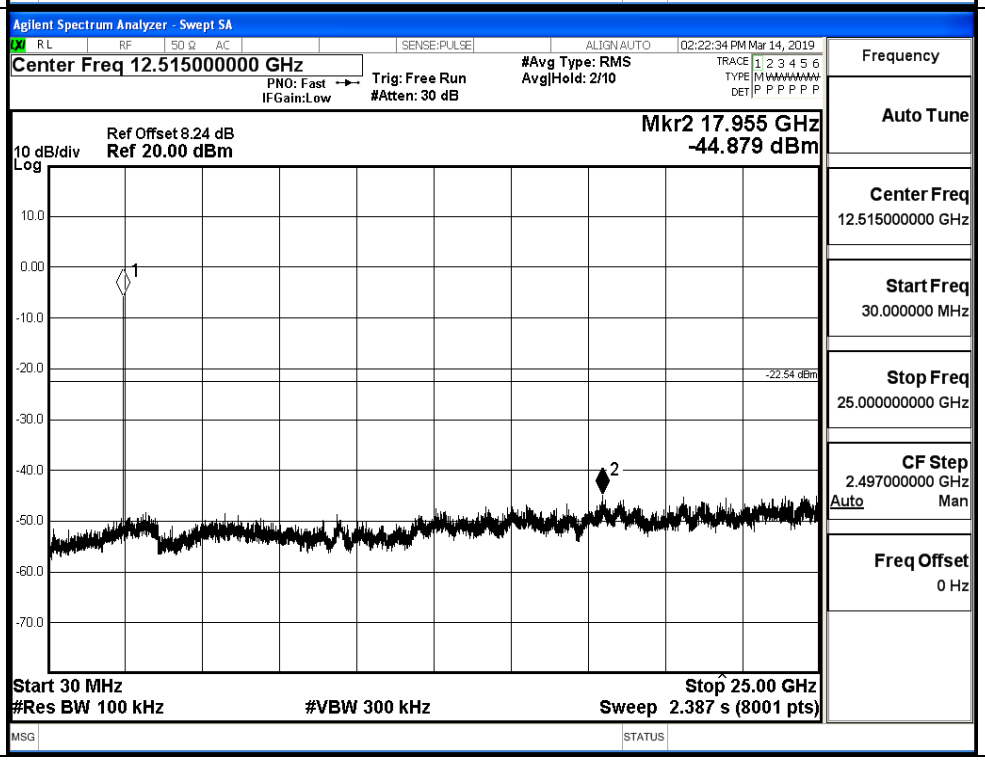
GFSK_LCH_Graphs			
Pref			
Puw			

GFSK_MCH_Graphs			
Pref			
Puw			

GFSK_HCH_Graphs			
Pref			
Puw			

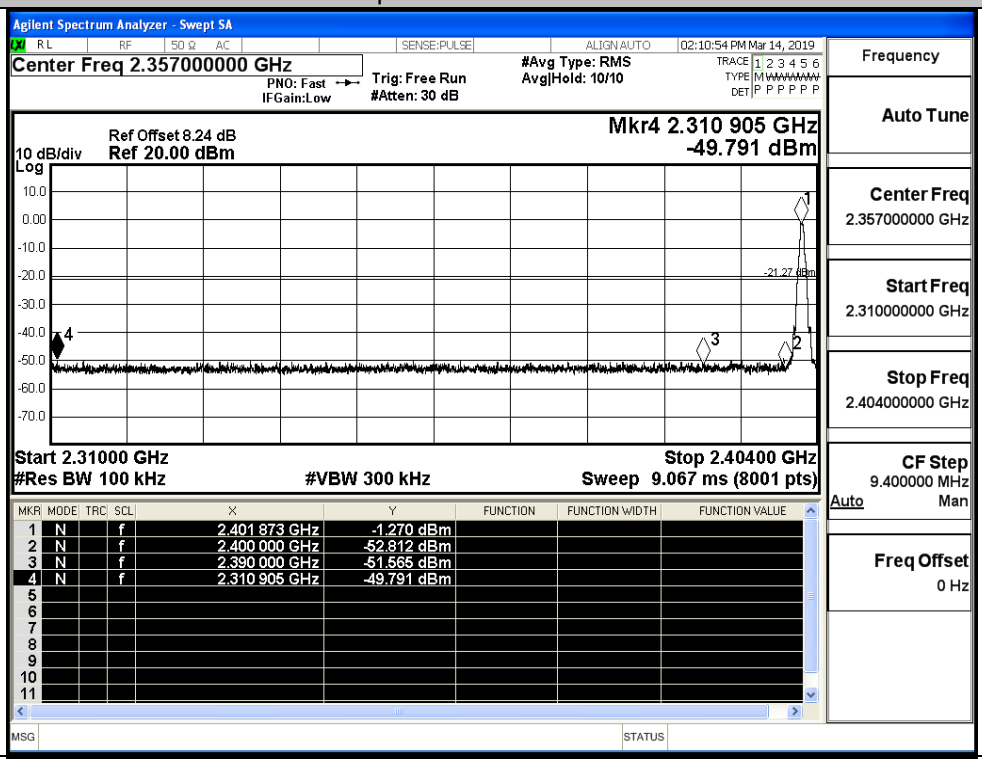
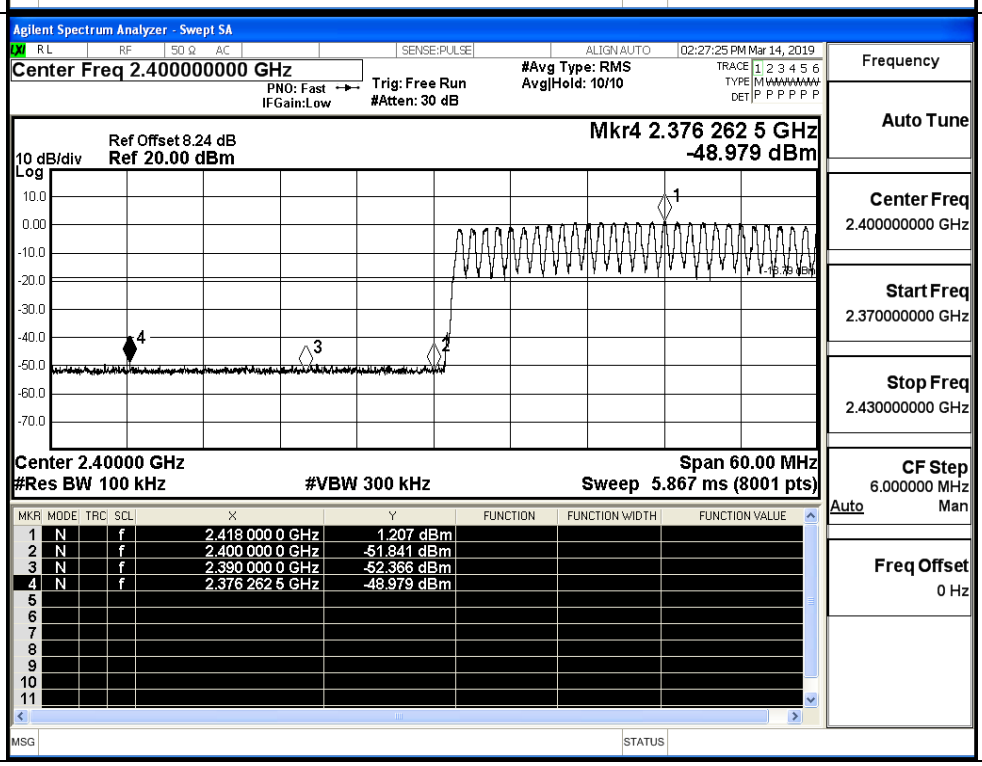
π/4DQPSK_LCH_Graphs			
Pref			
Puw			

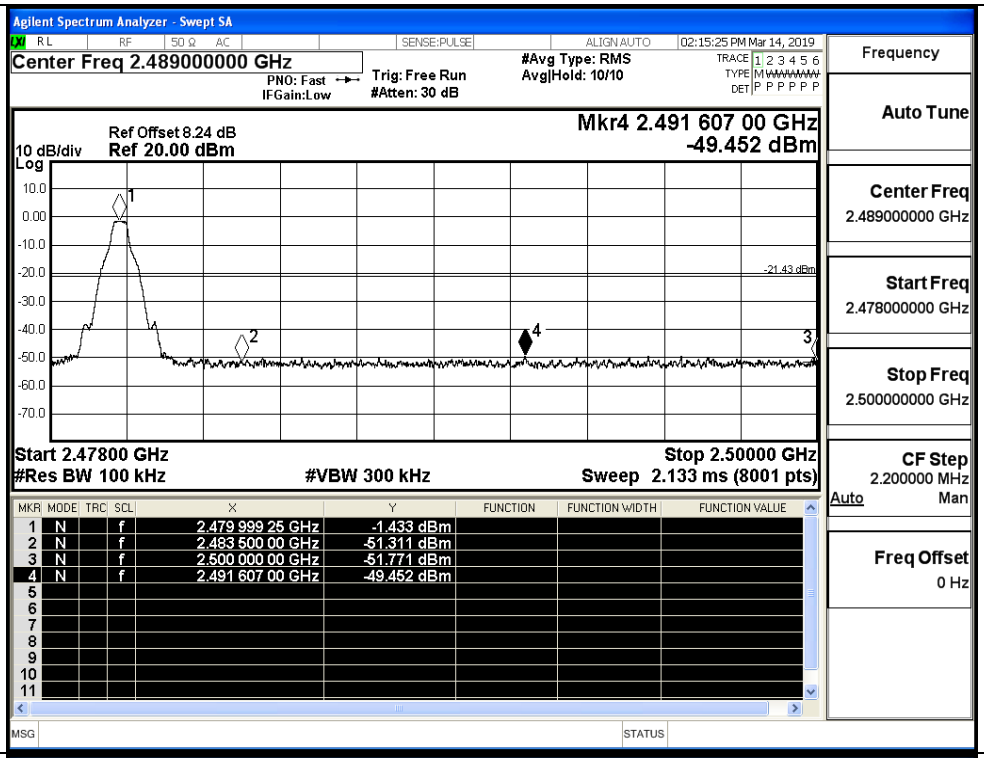
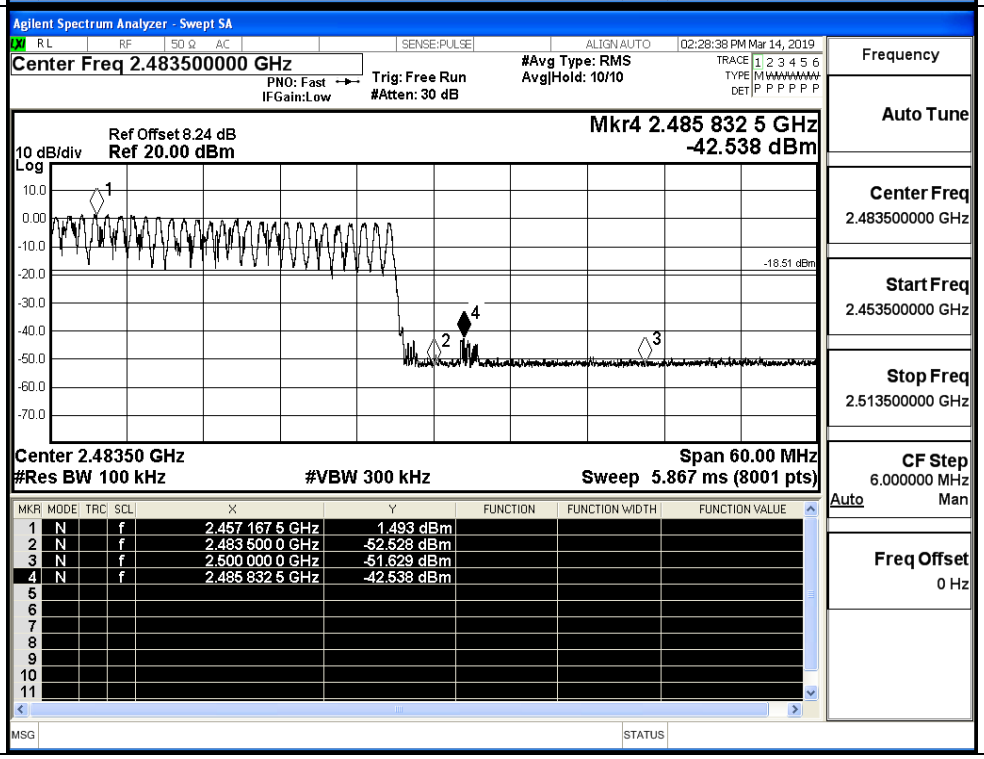
π/4DQPSK_MCH_Graphs			
Pref			
Puw			

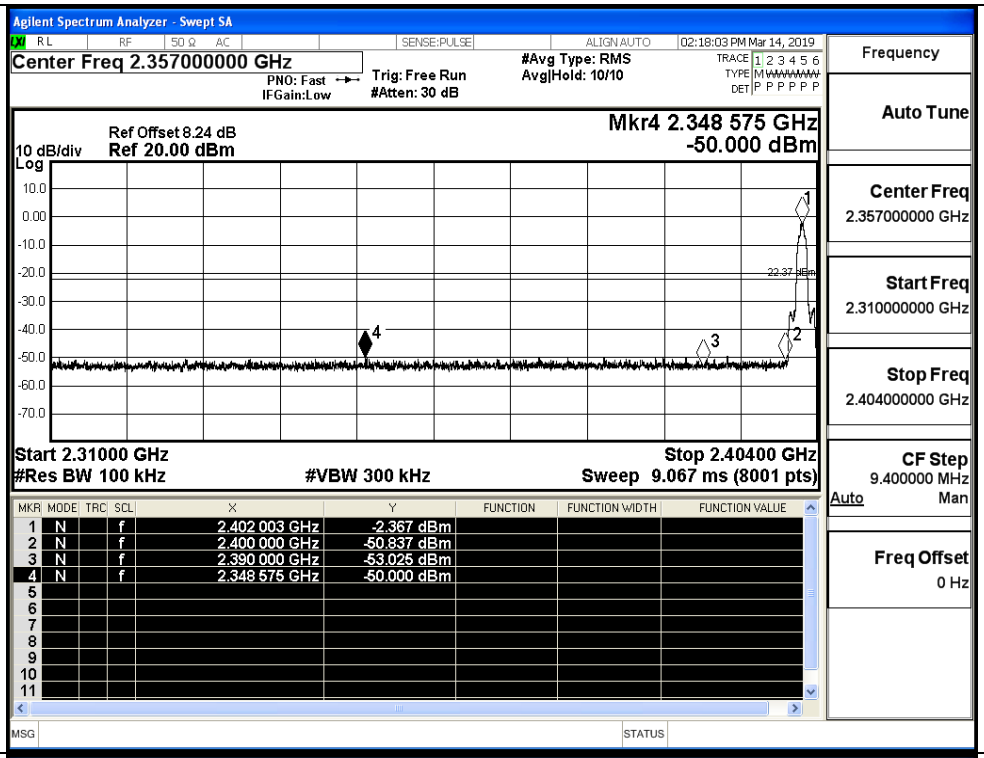
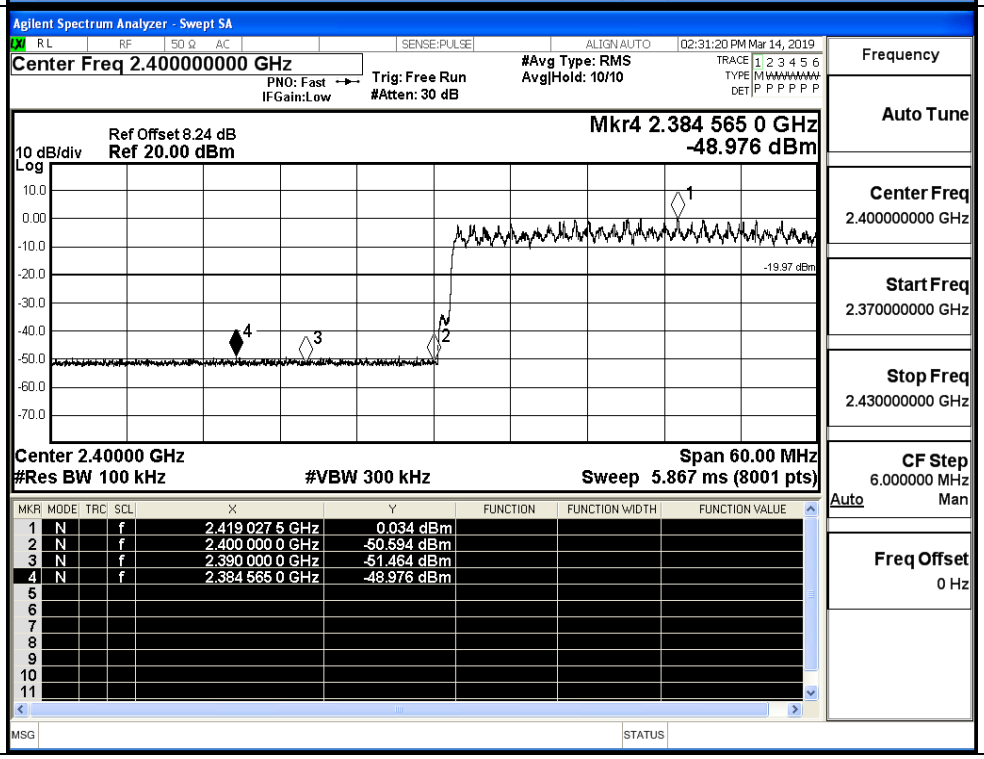
π/4DQPSK_HCH_Graphs			
Pref			
Puw			

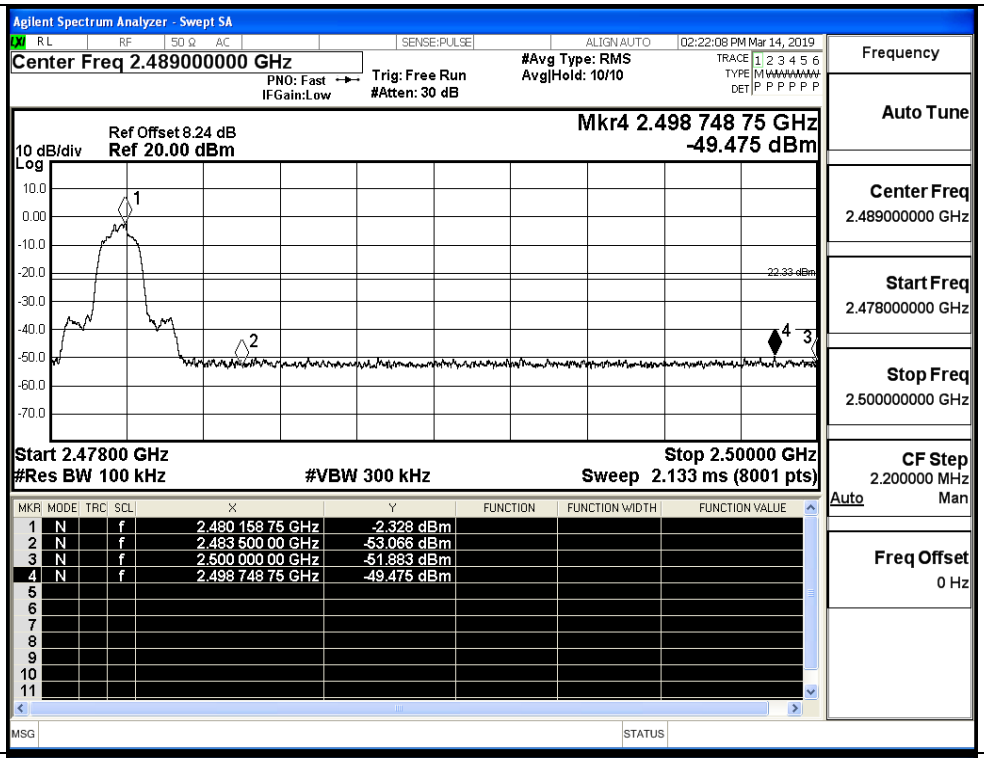
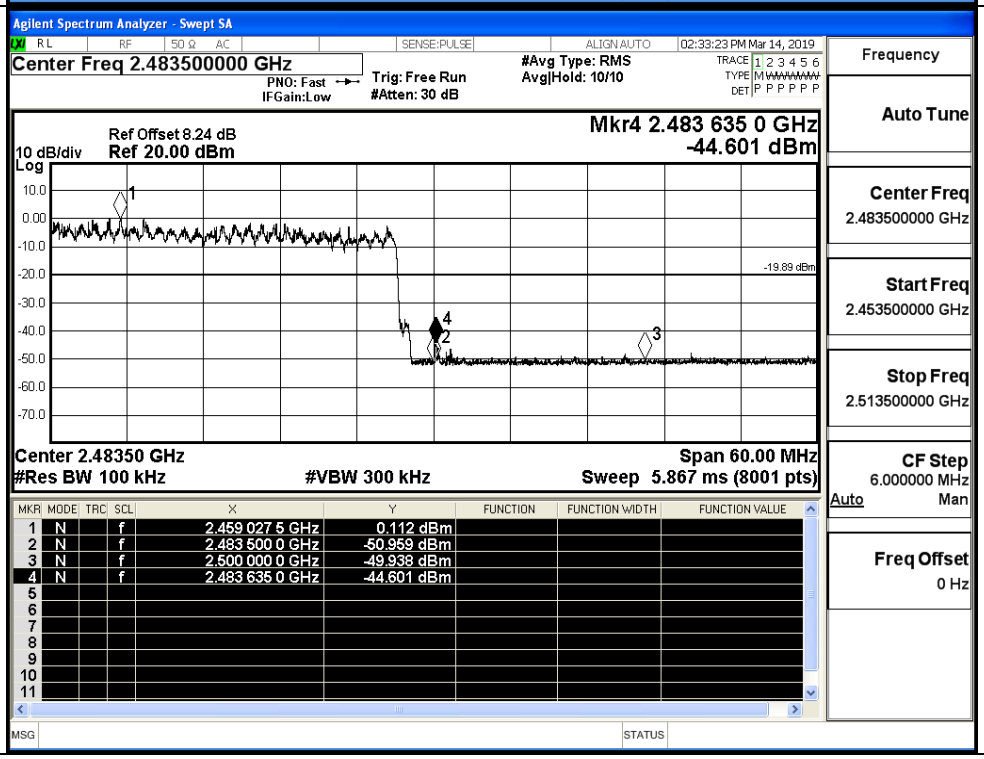
A.7 Band-edge for RF Conducted Emissions

Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	-1.270	Off	-49.791	-21.27	PASS
			1.207	On	-48.979	-18.79	PASS
	HCH	2480	-1.433	Off	-49.452	-21.43	PASS
			1.493	On	-42.538	-18.51	PASS
π/4DQPSK	LCH	2402	-2.367	Off	-50.000	-22.37	PASS
			0.034	On	-48.976	-19.97	PASS
	HCH	2480	-2.328	Off	-49.475	-22.33	PASS
			0.112	On	-44.601	-19.89	PASS

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

GFSK/HCH/No Hop	
GFSK/HCH/Hop	

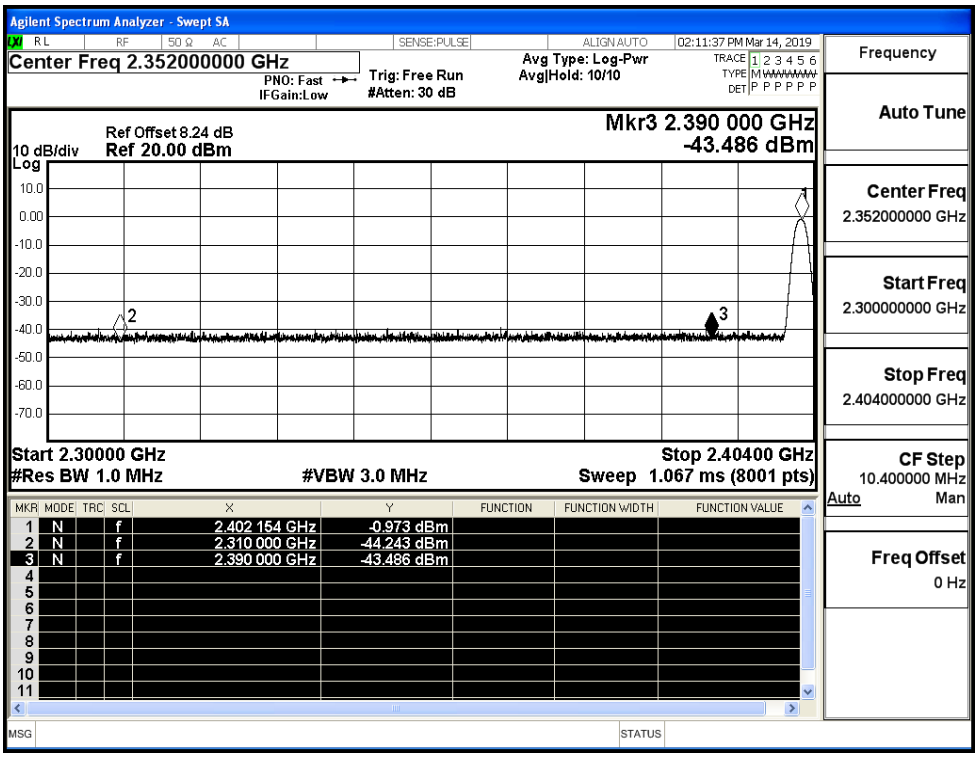
π/4DQPSK/LCH/No Hop	
π/4DQPSK/LCH/Hop	

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

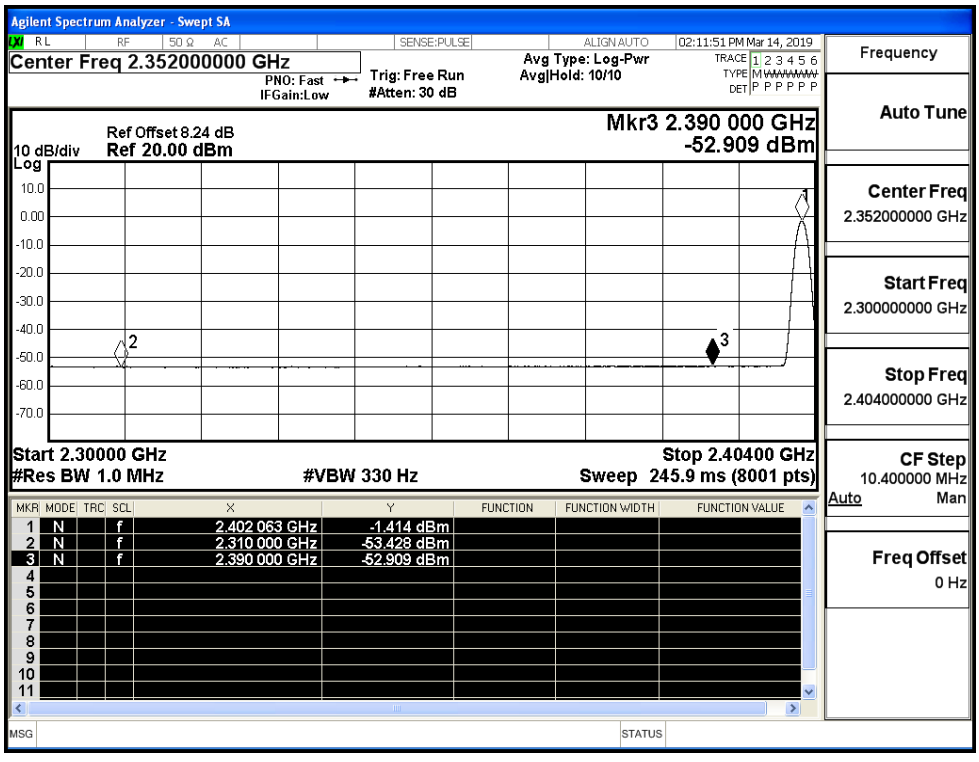
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-44.24	2.0	0	53.01	PEAK	74	PASS
	Off	2310.0	-53.43	2.0	0	43.83	AV	54	PASS
	Off	2390.0	-43.49	2.0	0	53.77	PEAK	74	PASS
	Off	2390.0	-52.91	2.0	0	44.35	AV	54	PASS
	Off	2483.5	-43.33	2.0	0	53.93	PEAK	74	PASS
	Off	2483.5	-52.77	2.0	0	44.48	AV	54	PASS
	Off	2500.0	-42.59	2.0	0	54.67	PEAK	74	PASS
	Off	2500.0	-52.56	2.0	0	44.70	AV	54	PASS
π/4DQPSK	Off	2310.0	-43.32	2.0	0	53.94	PEAK	74	PASS
	Off	2310.0	-53.29	2.0	0	43.96	AV	54	PASS
	Off	2390.0	-41.94	2.0	0	55.31	PEAK	74	PASS
	Off	2390.0	-53.07	2.0	0	44.18	AV	54	PASS
	Off	2483.5	-42.86	2.0	0	54.40	PEAK	74	PASS
	Off	2483.5	-52.76	2.0	0	44.50	AV	54	PASS
	Off	2500.0	-41.68	2.0	0	55.58	PEAK	74	PASS
	Off	2500.0	-52.71	2.0	0	44.54	AV	54	PASS

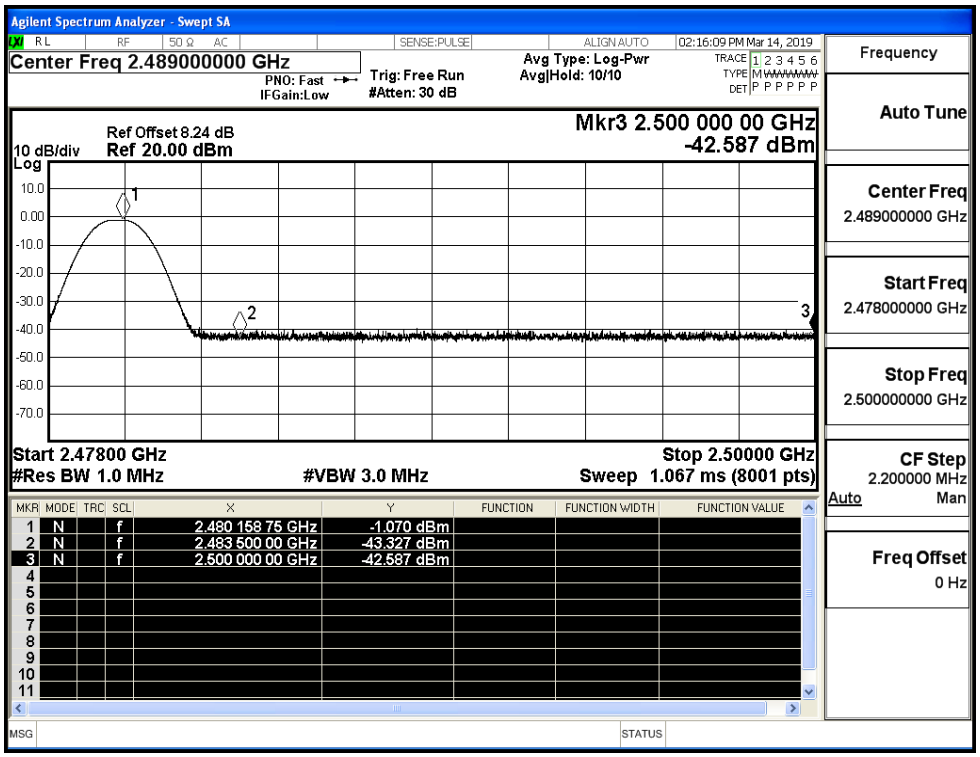
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (Low Channel)



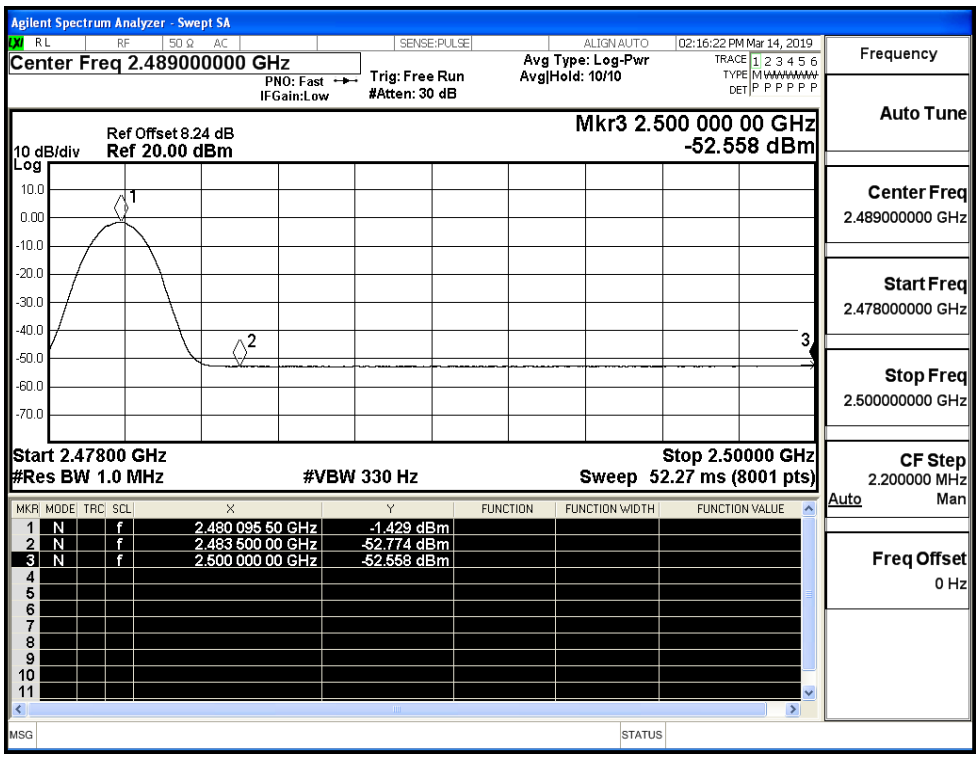
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (Low Channel)



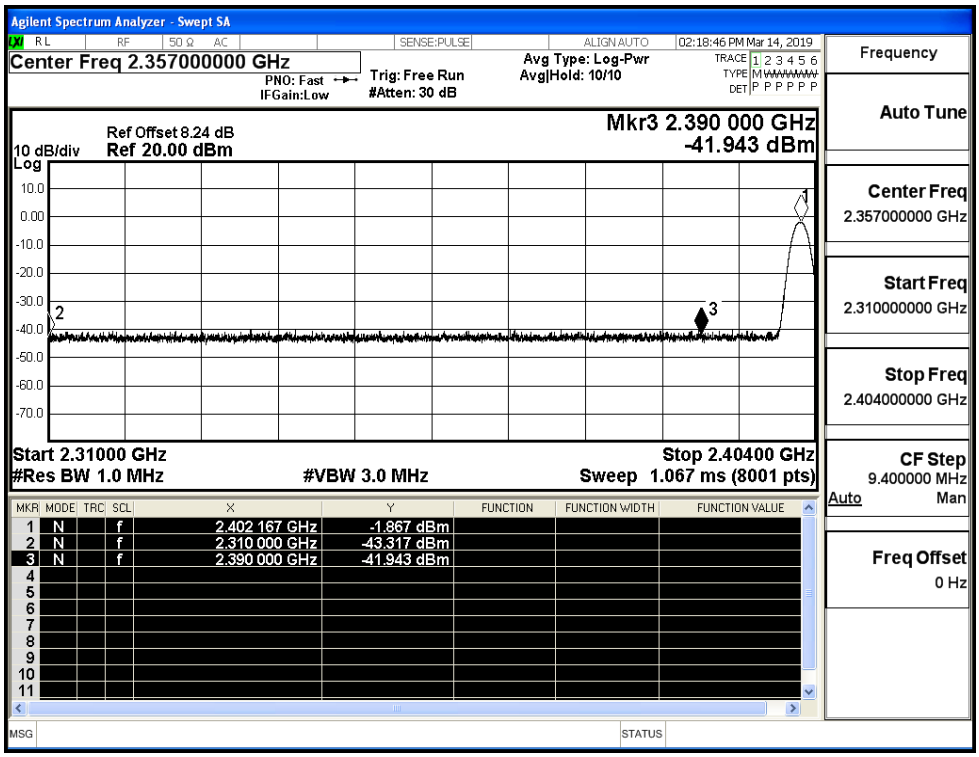
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (High Channel)



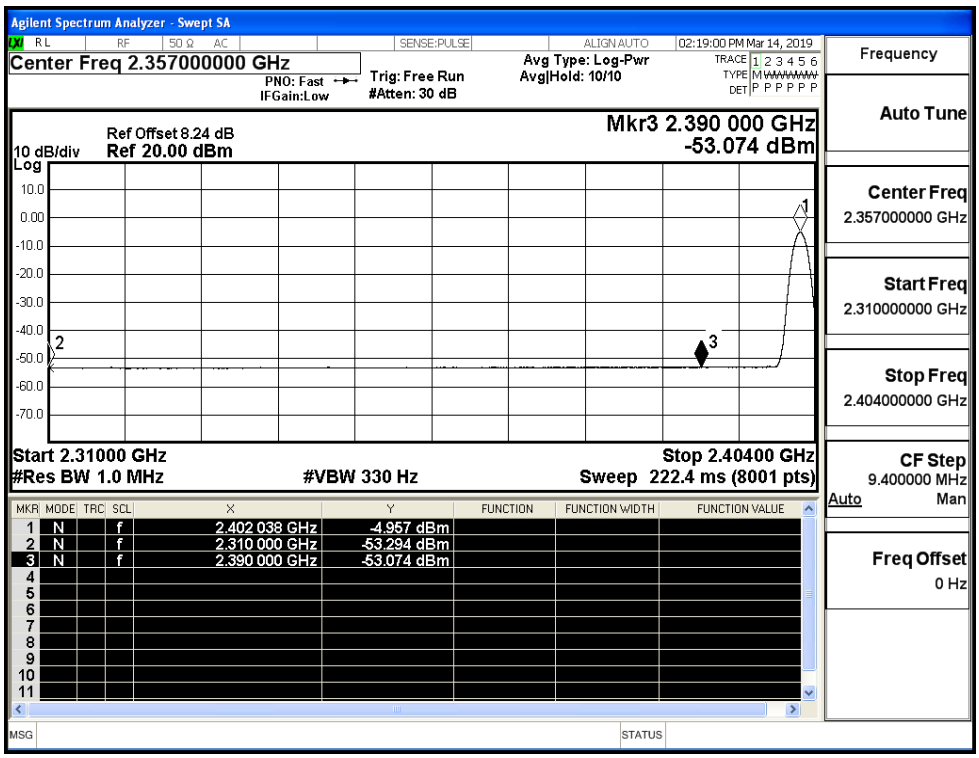
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (High Channel)



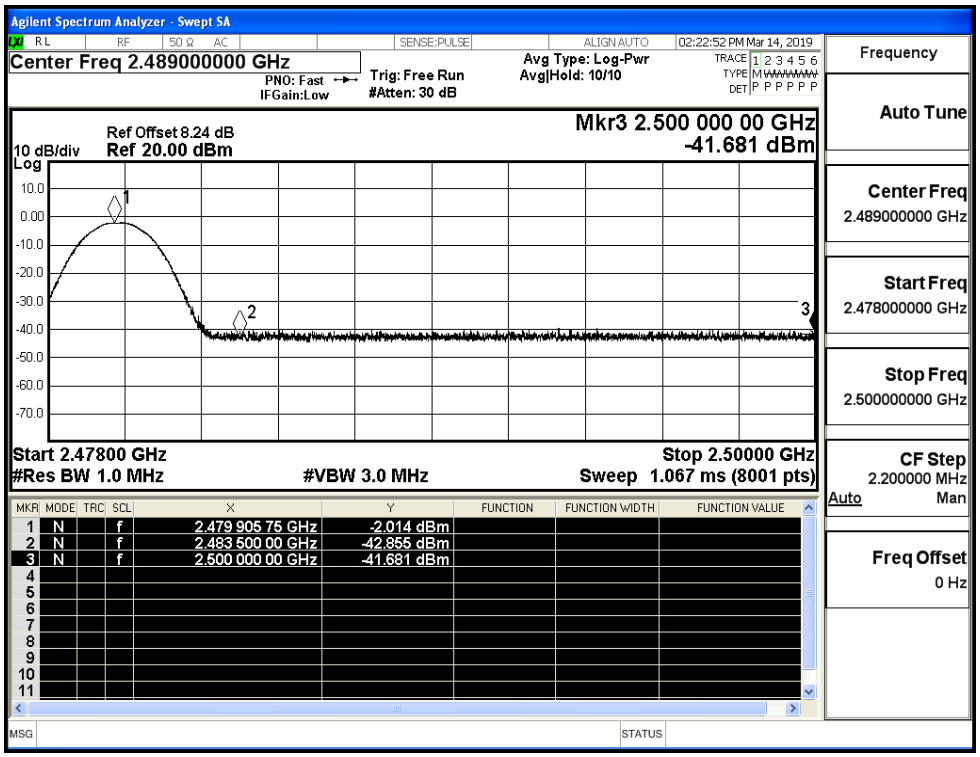
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (Low Channel)



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)