Appendix A

RF Test Data for BT V3.0(BDR/EDR) (Conducted Measurement)

Product Name: Bluetooth receiver and car charger

Trade Mark: Monoprice, IIIP

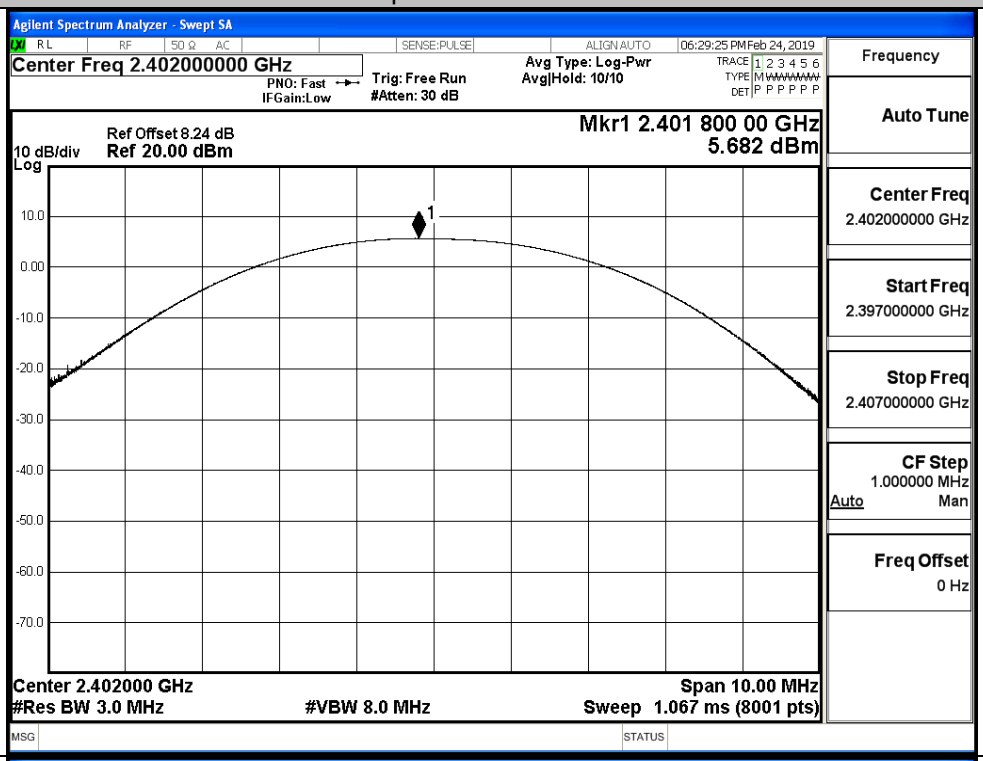
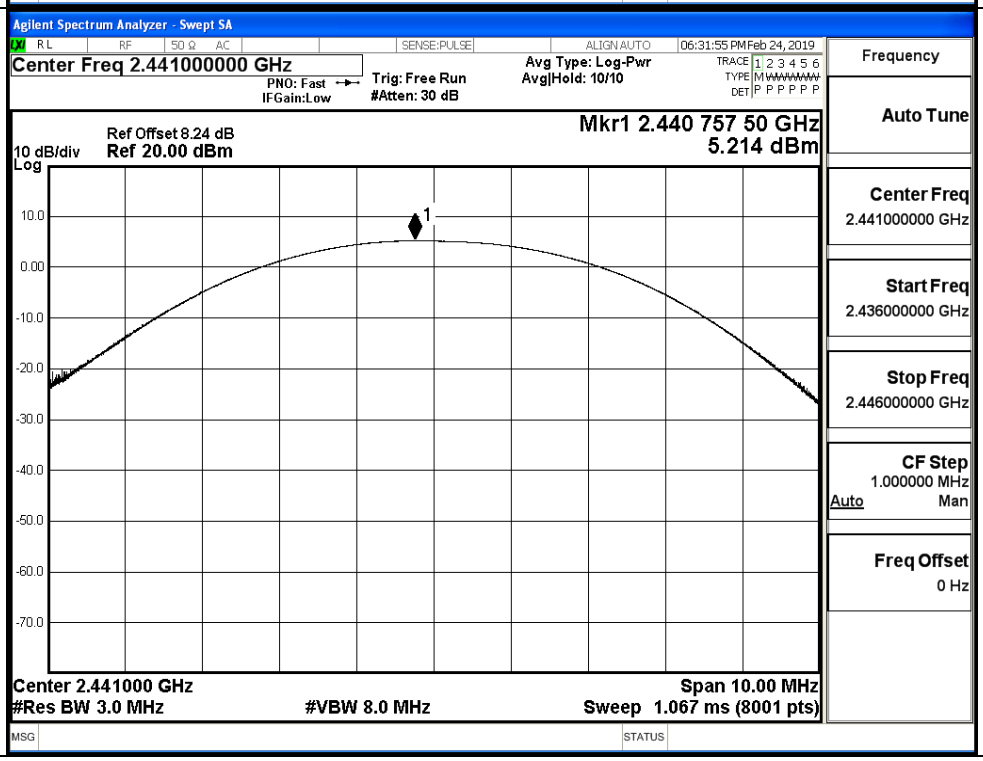
Test Model: 38038

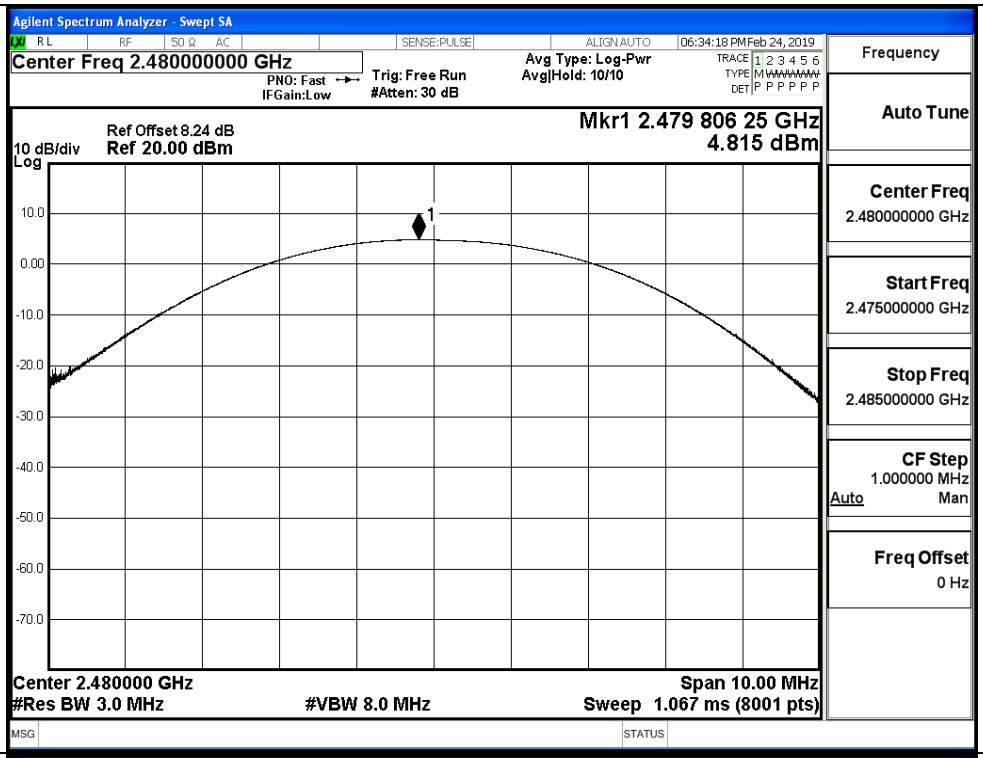
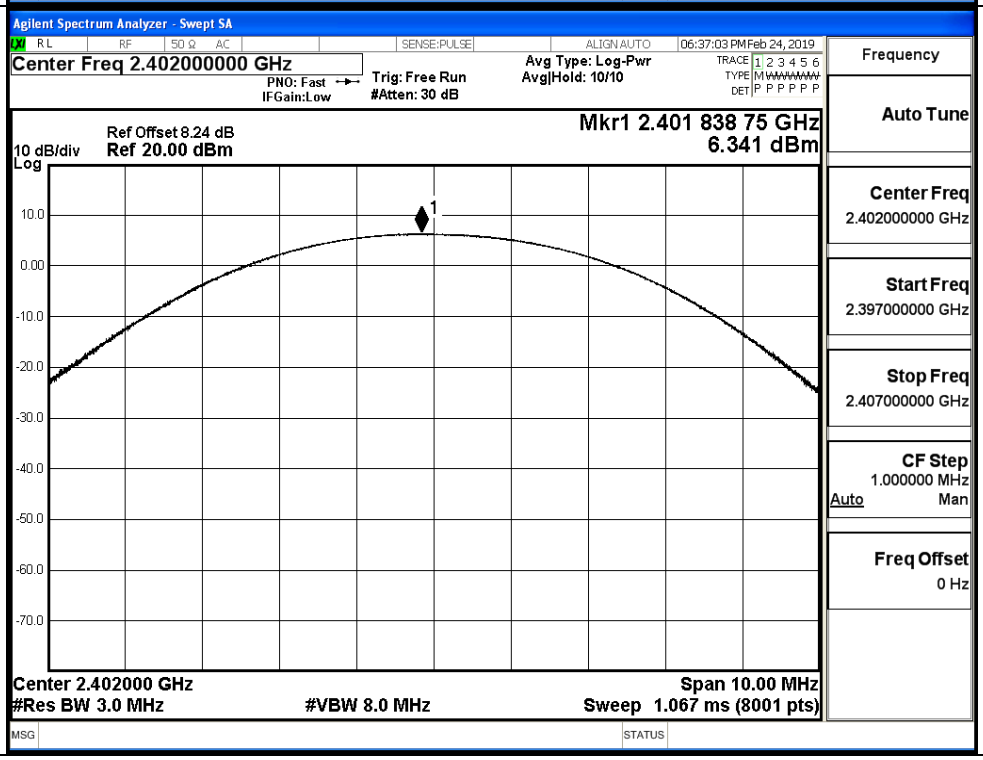
Environmental Conditions

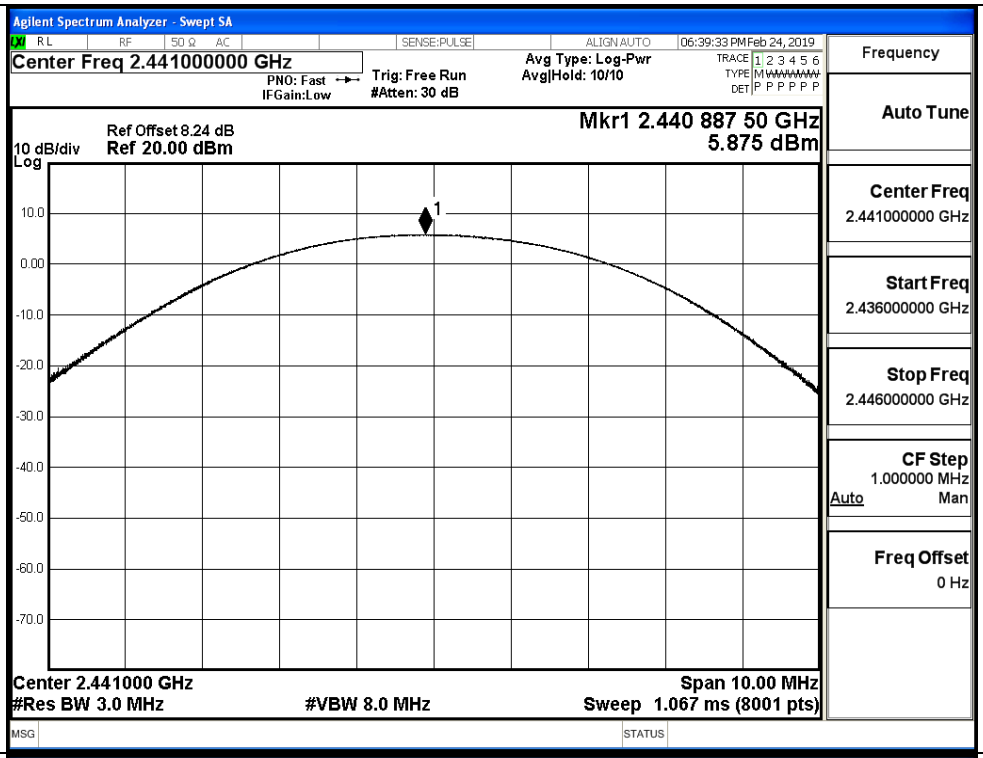
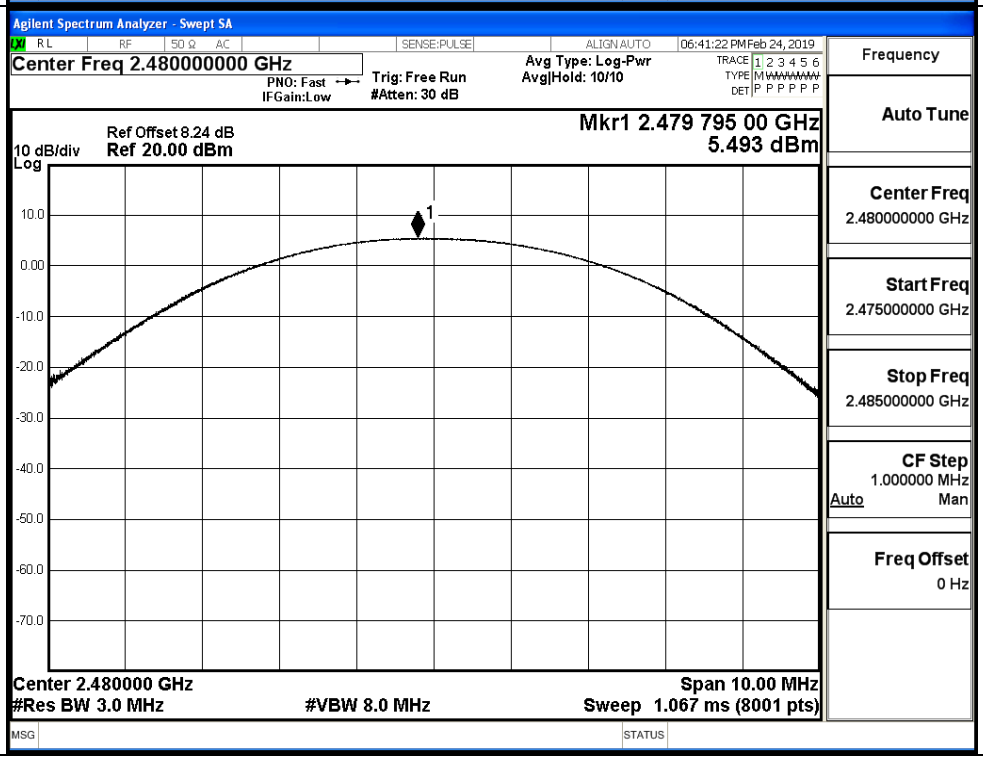
Temperature:	23.1 ° C
Relative Humidity:	53.4%
ATM Pressure:	100.0 kPa
Test Engineer:	David.Luo
Supervised by:	Jayden.Zhuo

A.1 Maxmum Conducted Peak Output Power

Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	5.682	21	PASS
	MCH	5.214	21	PASS
	HCH	4.815	21	PASS
π/4DQPSK	LCH	6.341	21	PASS
	MCH	5.875	21	PASS
	HCH	5.493	21	PASS

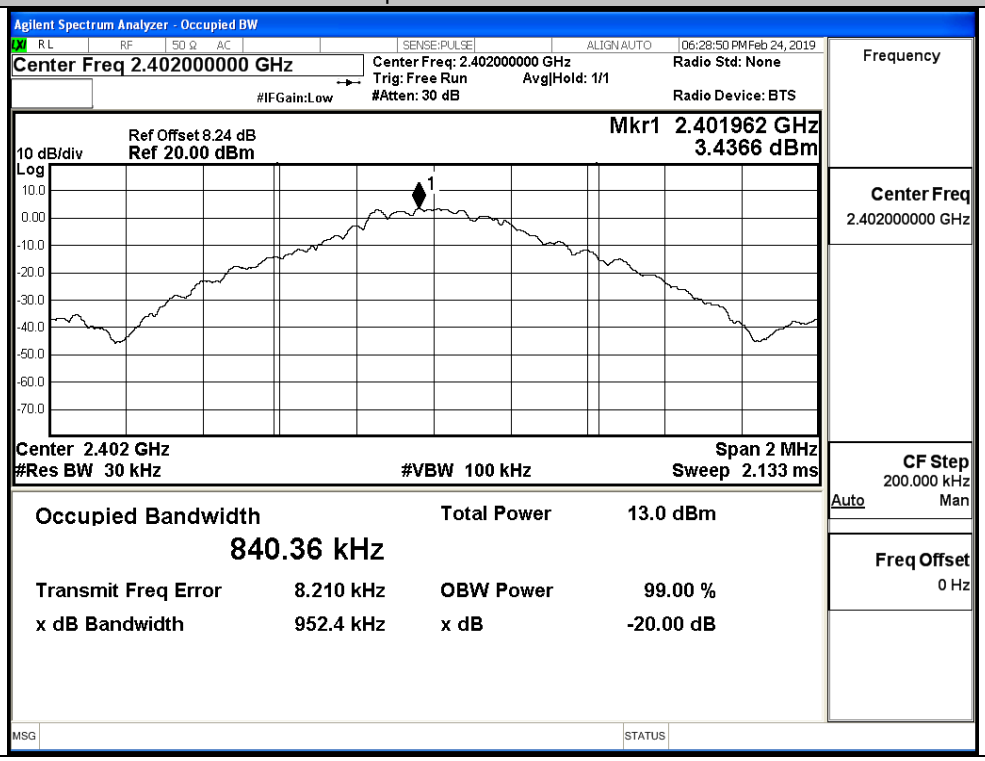
Test Graphs		
GFSK/LCH		
GFSK/MCH		

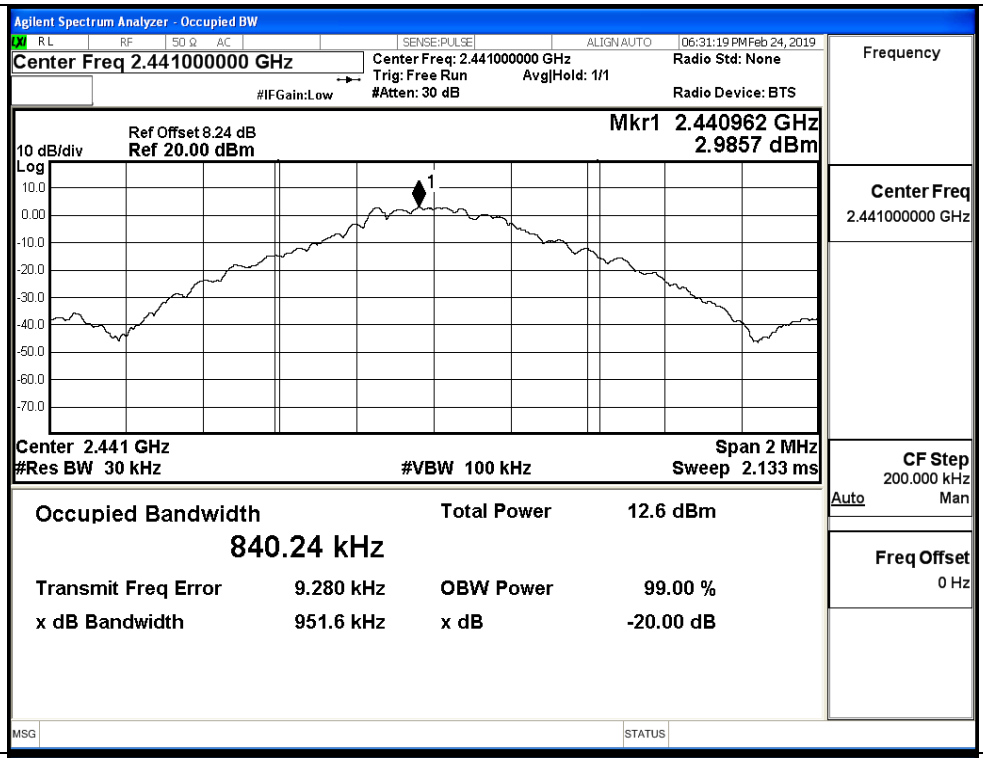
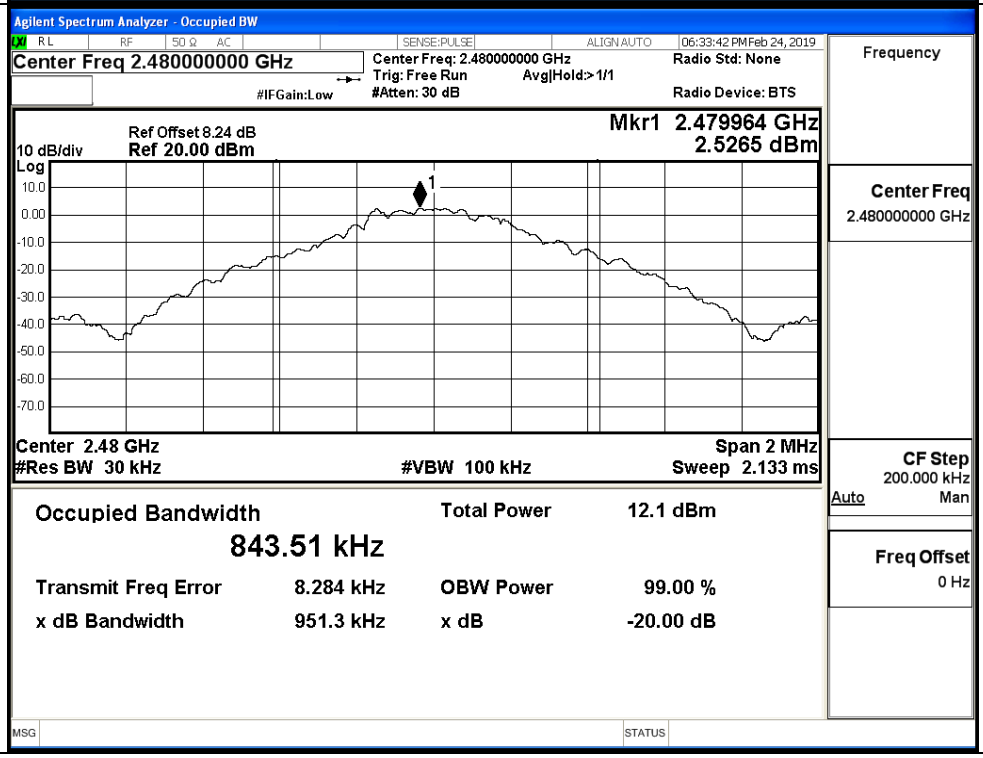
GFSK/HCH	
π/4DQPSK/LCH	

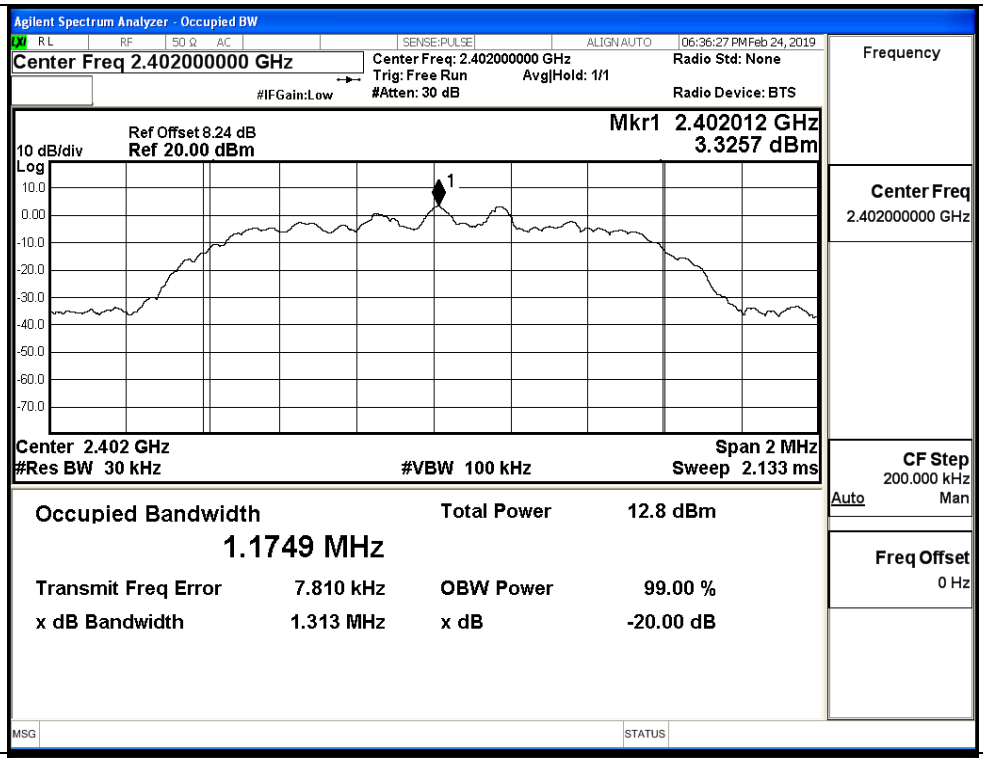
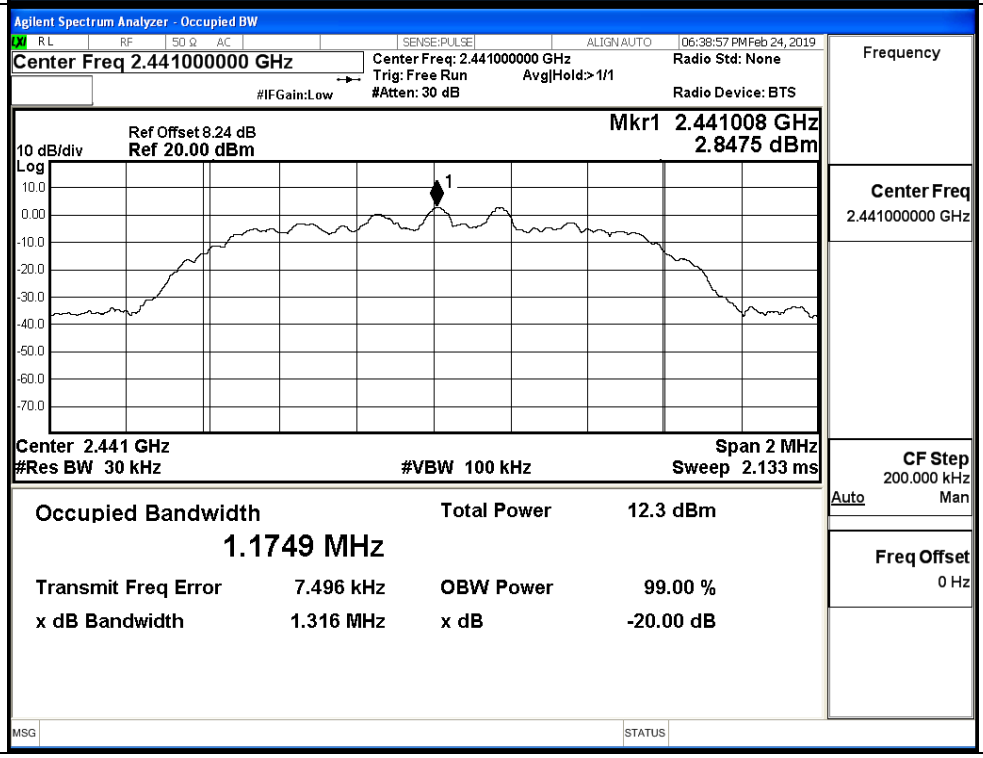
π/4DQPSK/MCH		
π/4DQPSK/HCH		

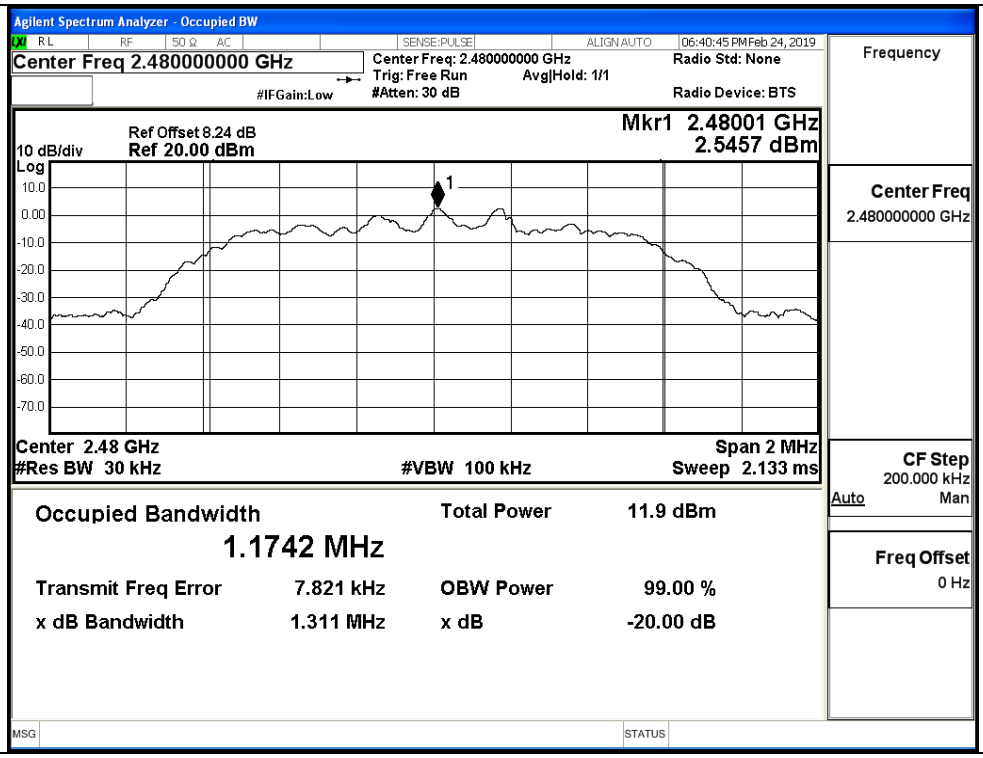
A.2 20dB Bandwidth

Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.9524	Not Specified	PASS
	MCH	0.9516	Not Specified	PASS
	HCH	0.9513	Not Specified	PASS
π/4DQPSK	LCH	1.313	Not Specified	PASS
	MCH	1.316	Not Specified	PASS
	HCH	1.311	Not Specified	PASS

Test Graphs	
GFSK/LCH	

GFSK/MCH	
GFSK/HCH	

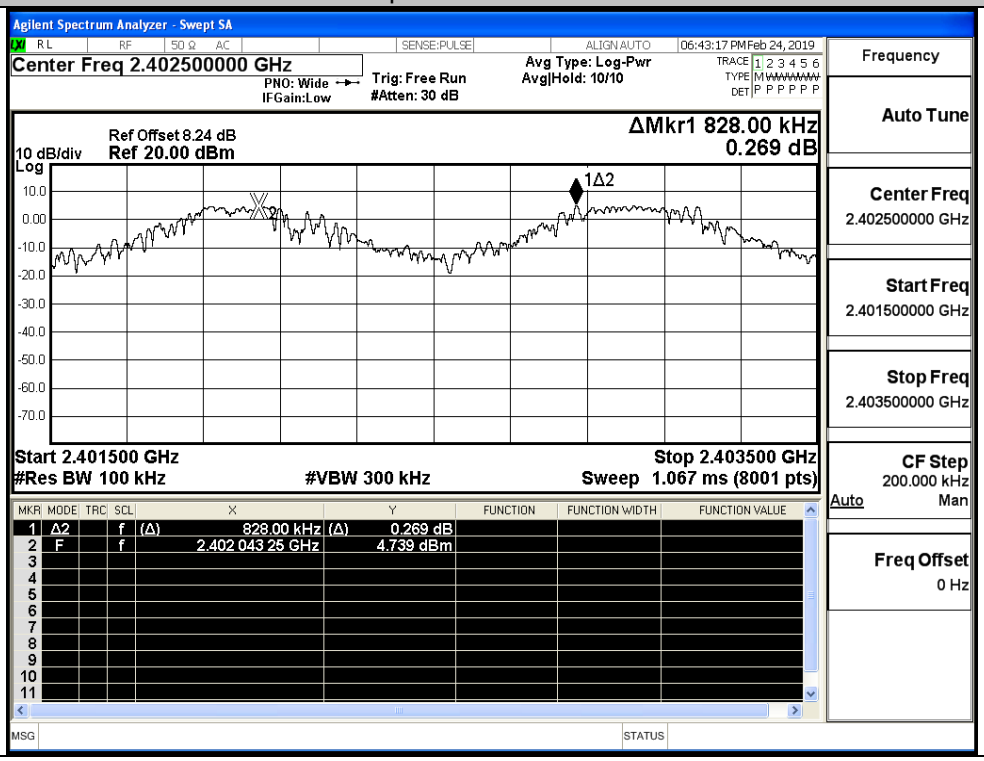
π/4DQPSK/LCH	
π/4DQPSK/MCH	

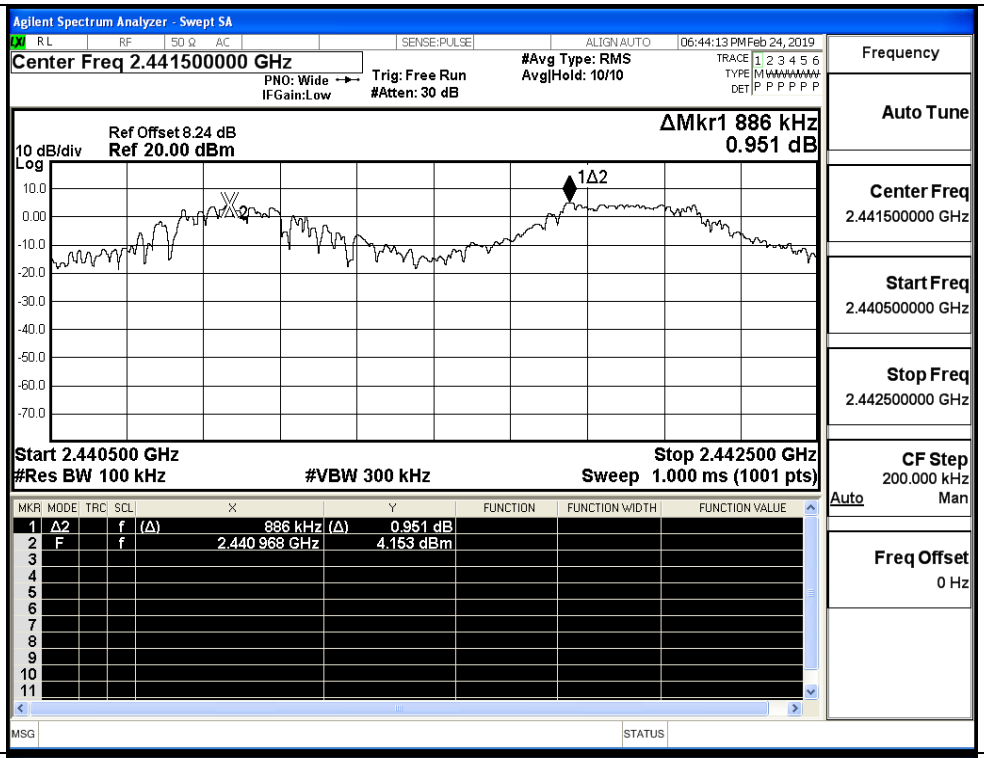
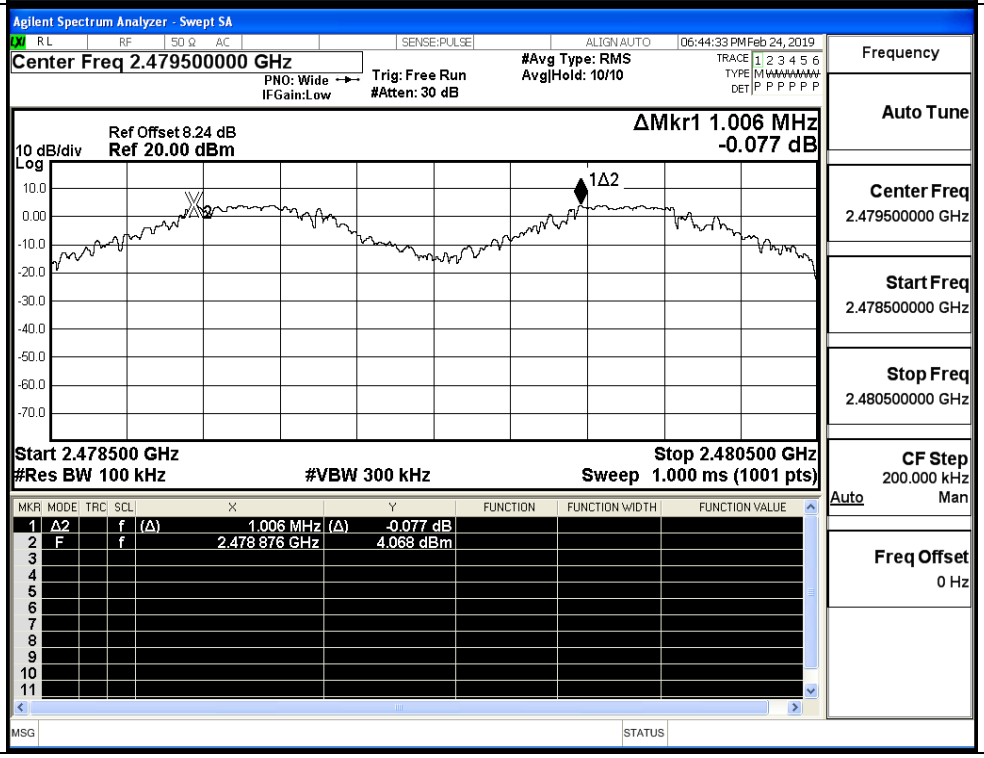
π/4DQPSK/HCH	

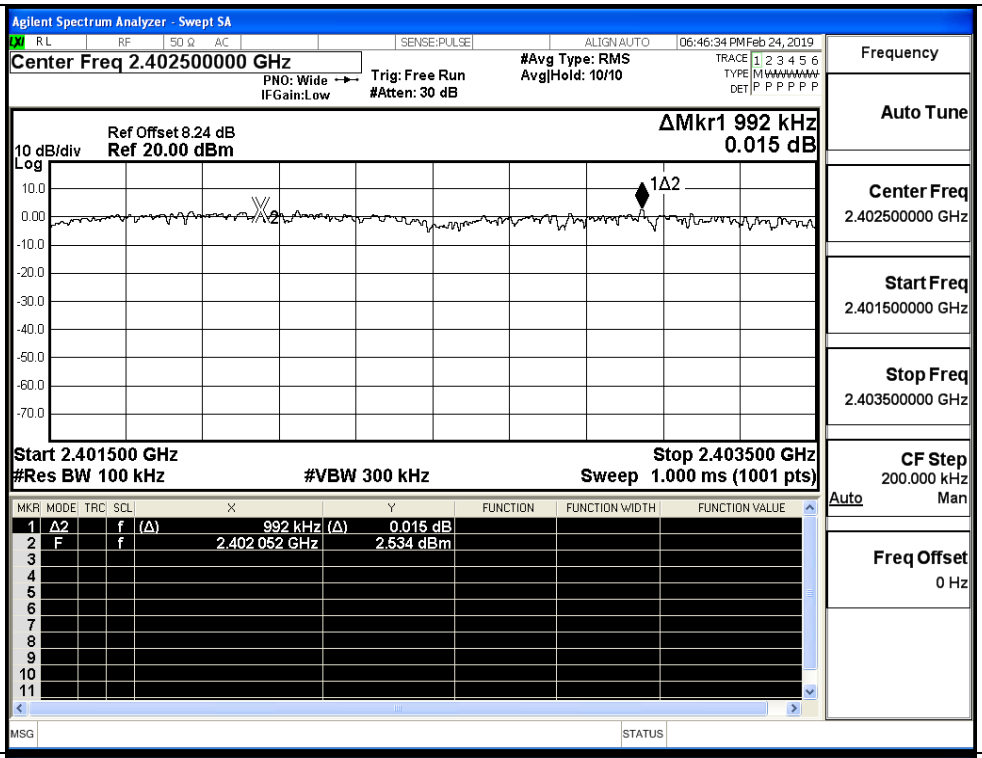
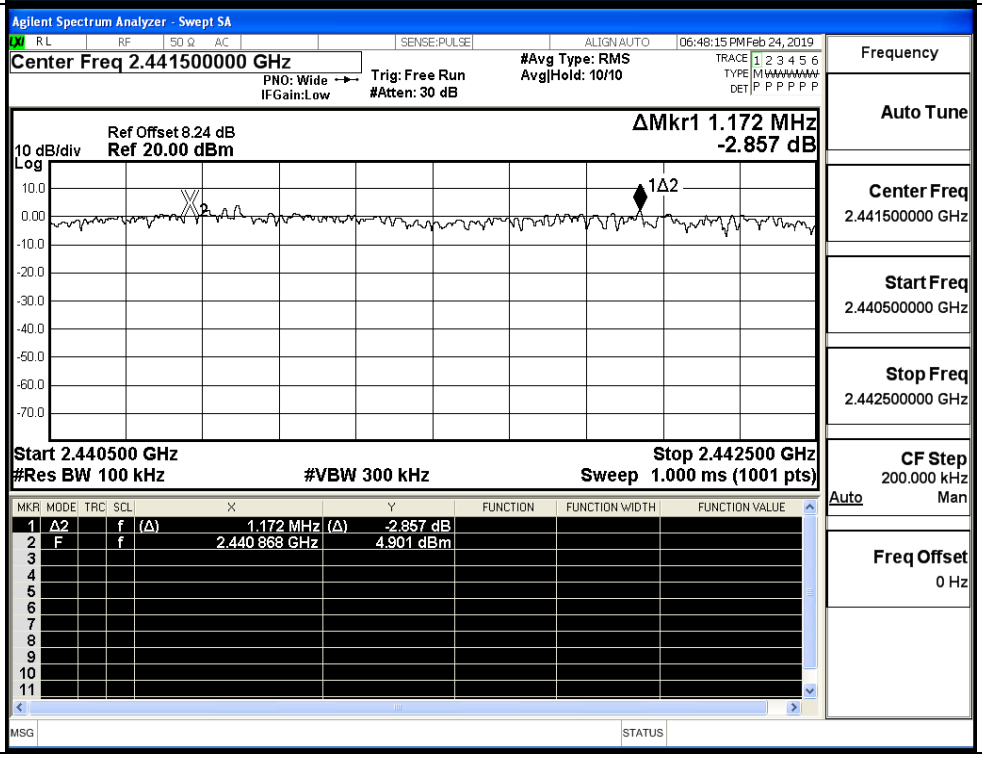
Agilent Spectrum Analyzer - Occupied BW
RL
RF
50 Ω AC
SENSE:PULSE
ALIGN AUTO
06:40:45 PM Feb 24, 2019
Center Freq 2.480000000 GHz
Center Freq: 2.480000000 GHz
Trig: Free Run
Avg|Hold: 1/1
#IFGain:Low
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
Frequency
Ref Offset 8.24 dB
10 dB/div
Ref 20.00 dBm
Mkr1 2.48001 GHz
2.5457 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
1.1742 MHz
Total Power
11.9 dBm
Freq Offset
0 Hz
Transmit Freq Error
7.821 kHz
OBW Power
99.00 %
x dB Bandwidth
1.311 MHz
x dB
-20.00 dB
MSG
STATUS

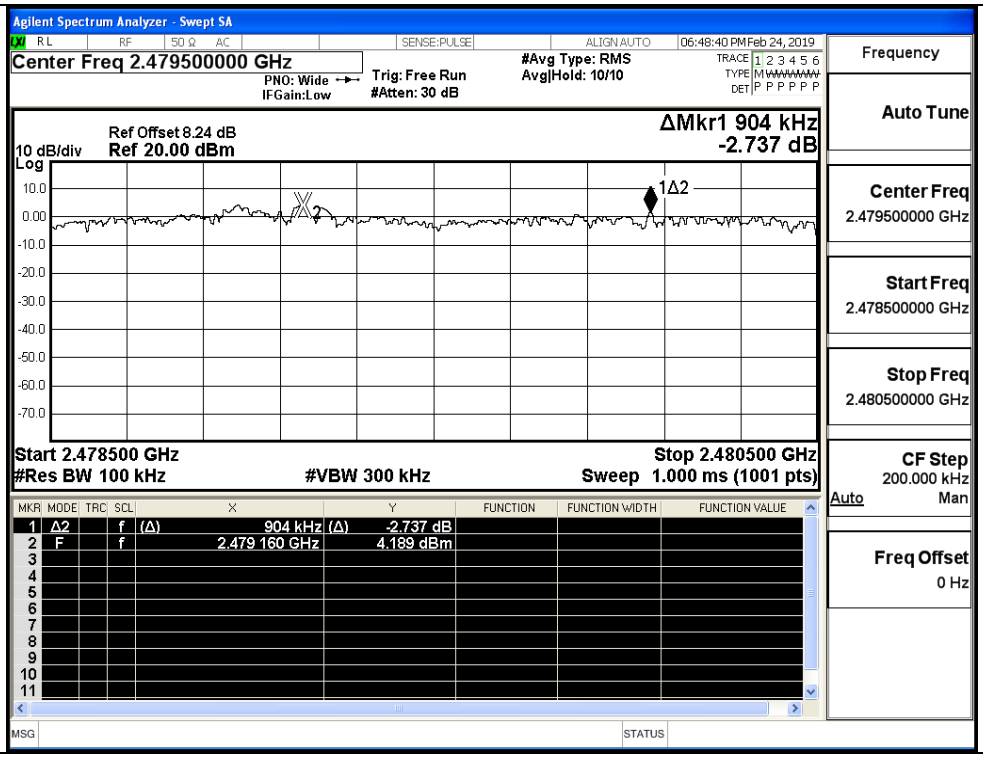
A.3 Carrier Frequency Separation

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.828	0.635	PASS
	MCH	0.886	0.635	PASS
	HCH	1.006	0.635	PASS
π/4DQPSK	LCH	0.992	0.877	PASS
	MCH	1.172	0.877	PASS
	HCH	0.904	0.877	PASS

Test Graphs	
GFSK/LCH	

GFSK/MCH	
GFSK/HCH	

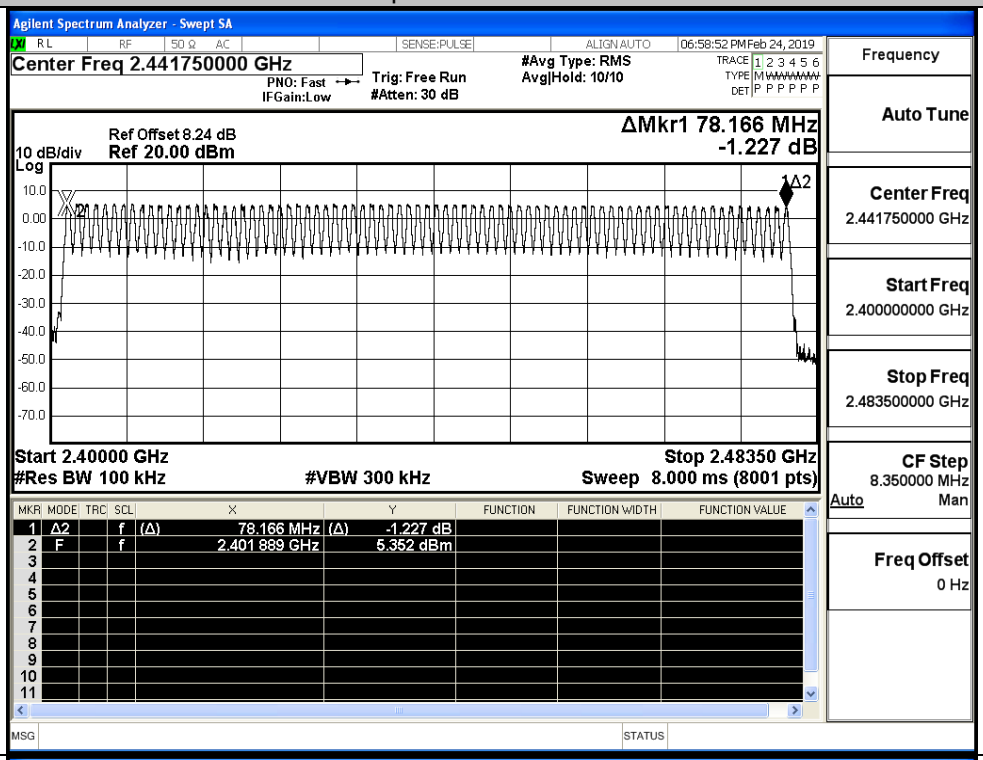
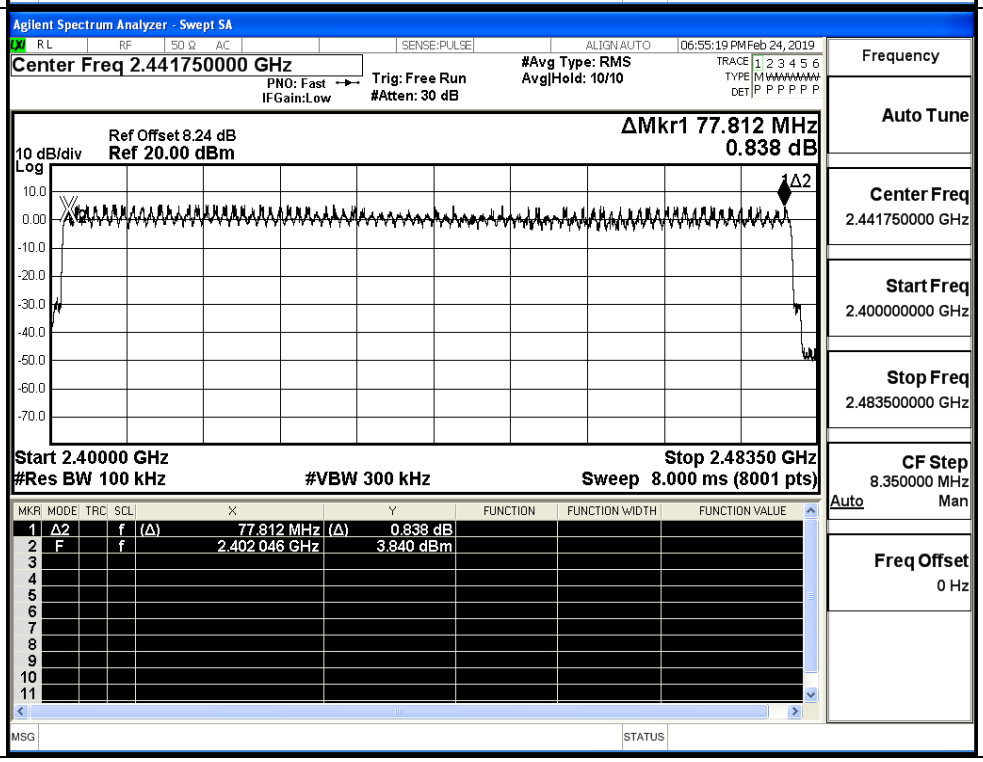
π/4DQPSK/LCH	
π/4DQPSK/MCH	

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
06:48:40 PM Feb 24, 2019
Ref Offset 8.24 dB
10 dB/div
Log
Ref 20.00 dBm
ΔMkr1 904 kHz
-2.737 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) 904 kHz (Δ) -2.737 dB
2 F f 2.479 160 GHz 4.189 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

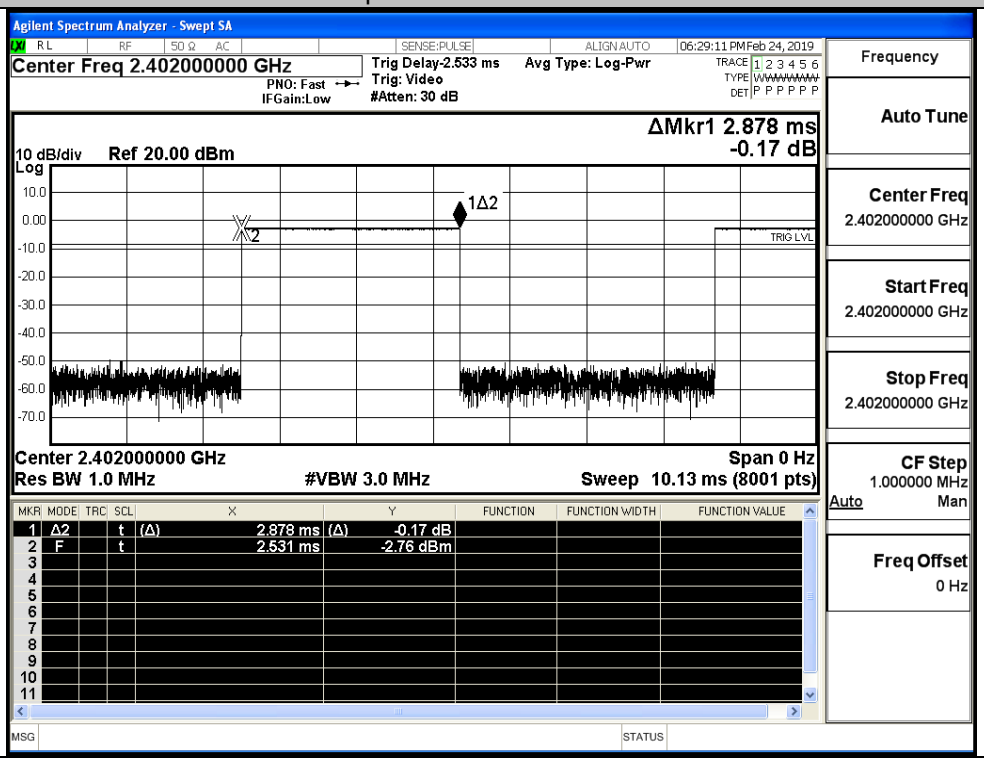
Test Graphs		
GFSK/Hop		
π/4DQPSK/Hop		

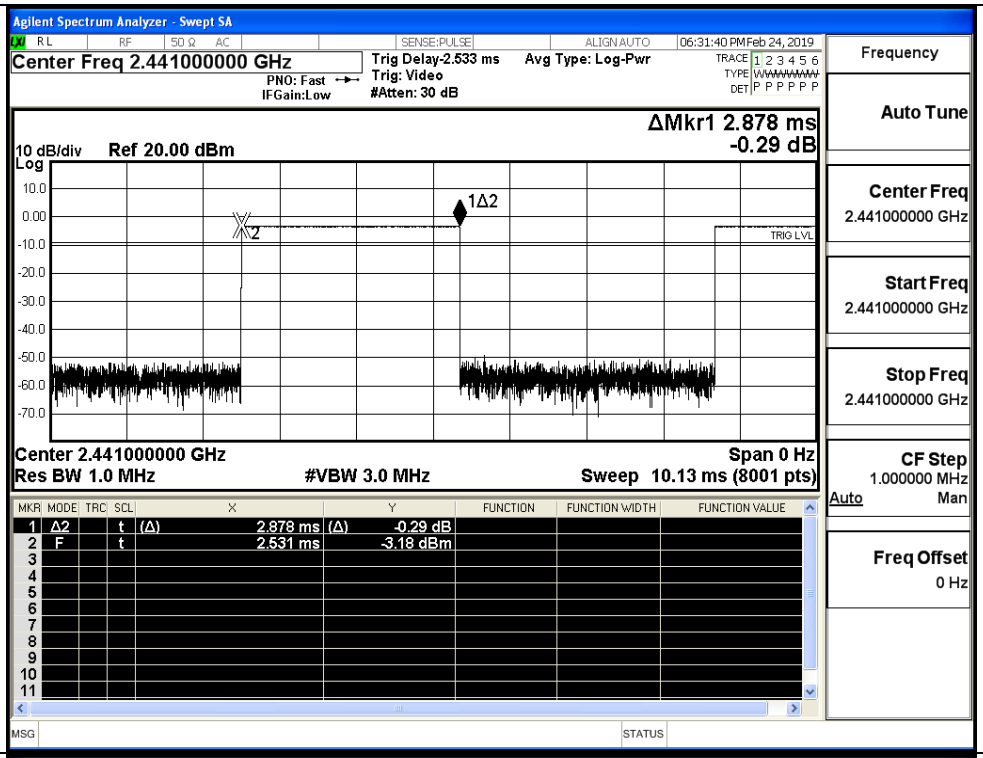
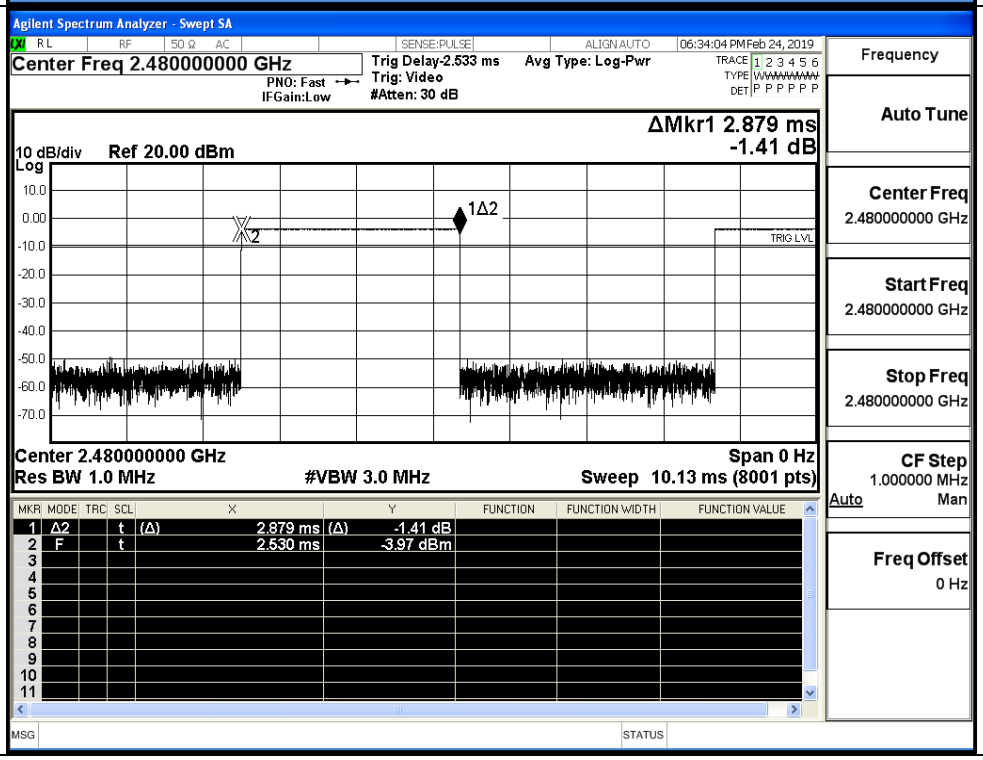
A.5 Dwell Time

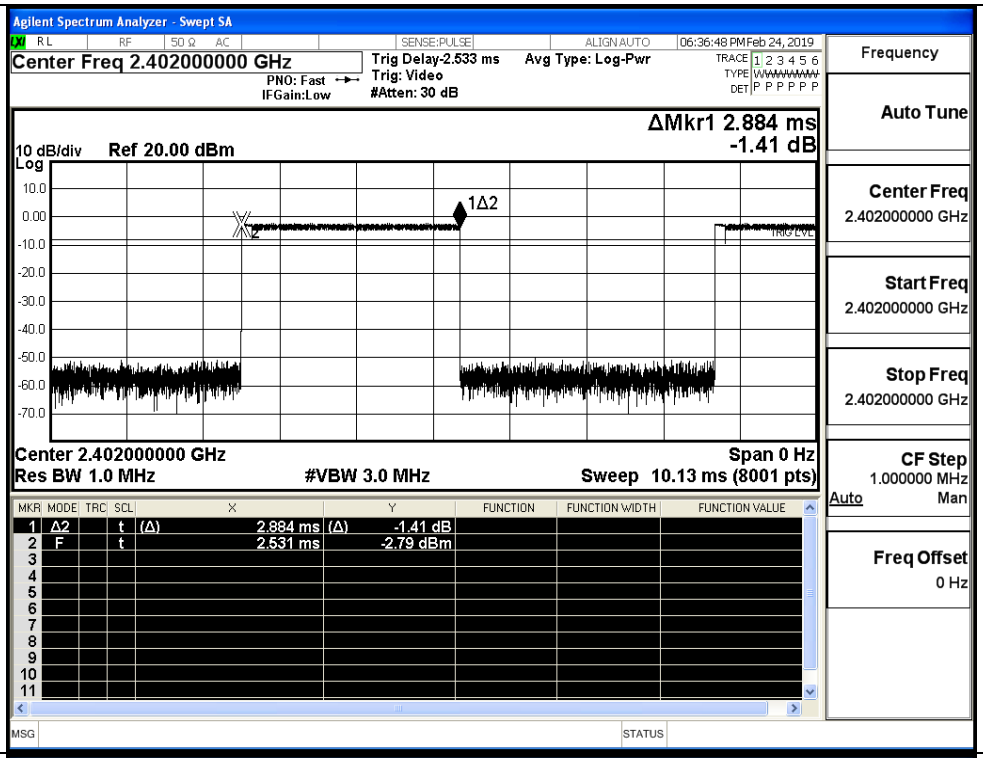
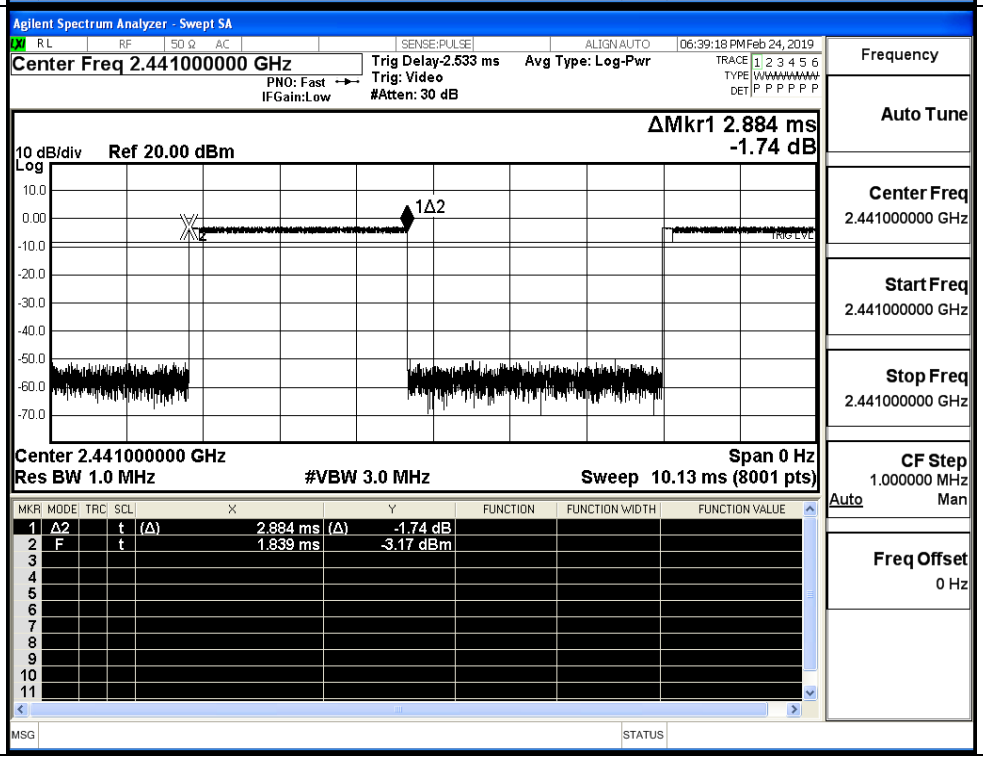
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.88	106.7	0.307	0.4	PASS
	DH5	MCH	2.88	106.7	0.307	0.4	PASS
	DH5	HCH	2.88	106.7	0.307	0.4	PASS
π/4DQPSK	2DH5	LCH	2.88	106.7	0.307	0.4	PASS
	2DH5	MCH	2.88	106.7	0.307	0.4	PASS
	2DH5	HCH	2.88	106.7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

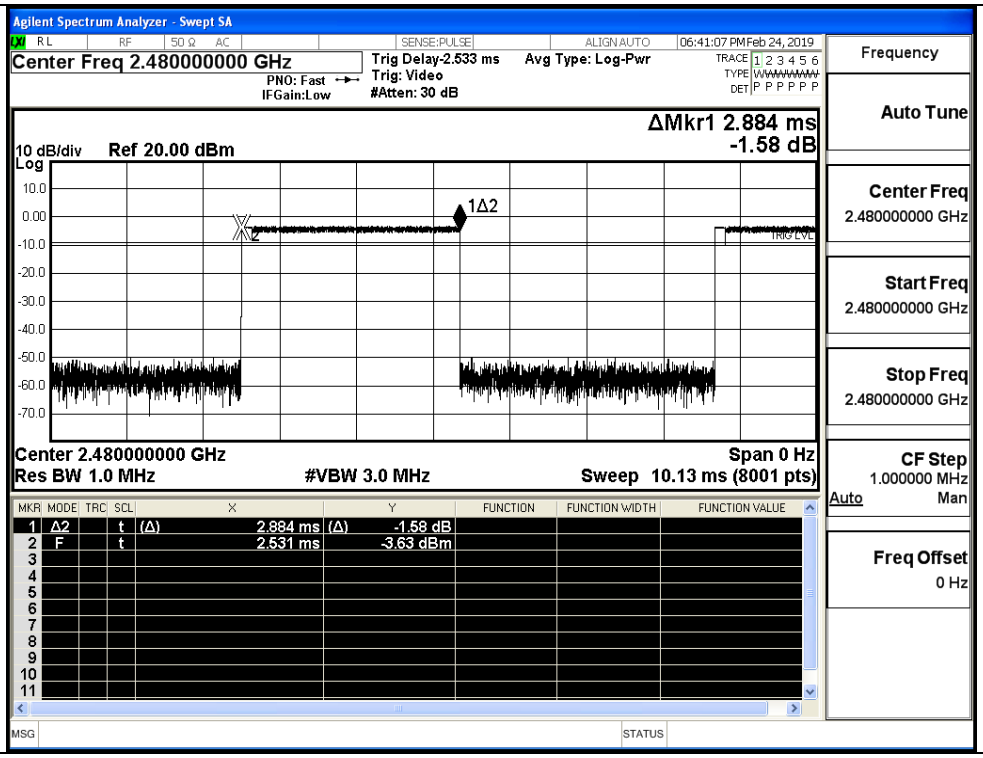
Test Graphs

GFSK_DH5/LCH



GFSK_DH5/MCH	
GFSK_DH5/HCH	

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

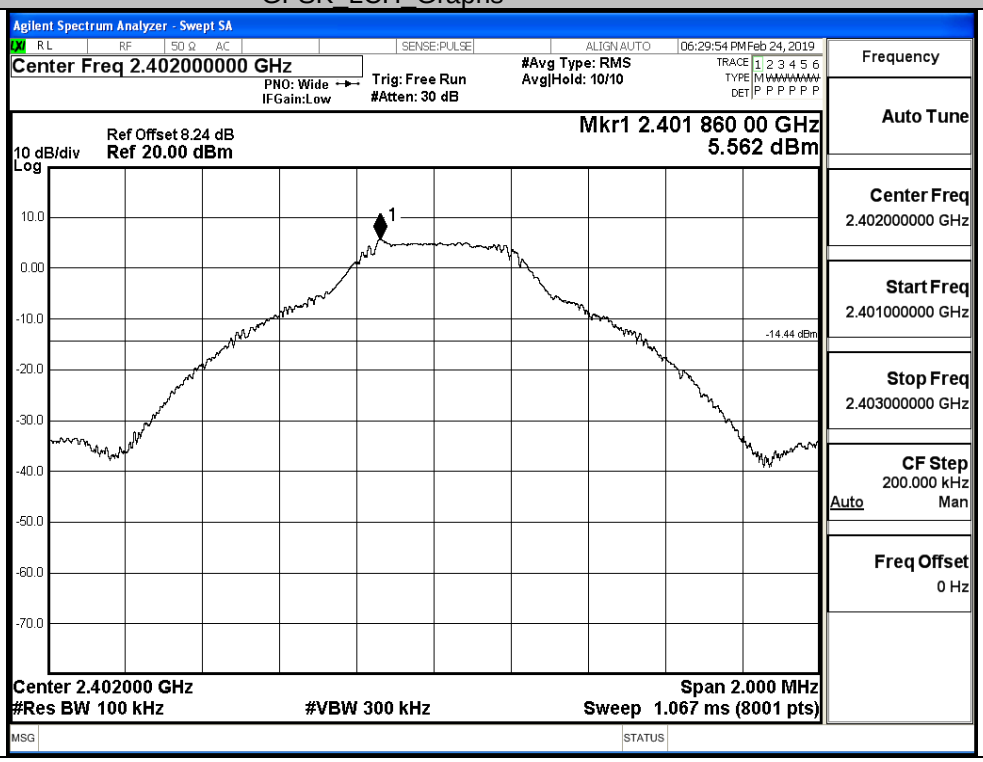
π/4DQPSK _2DH5/HCH	

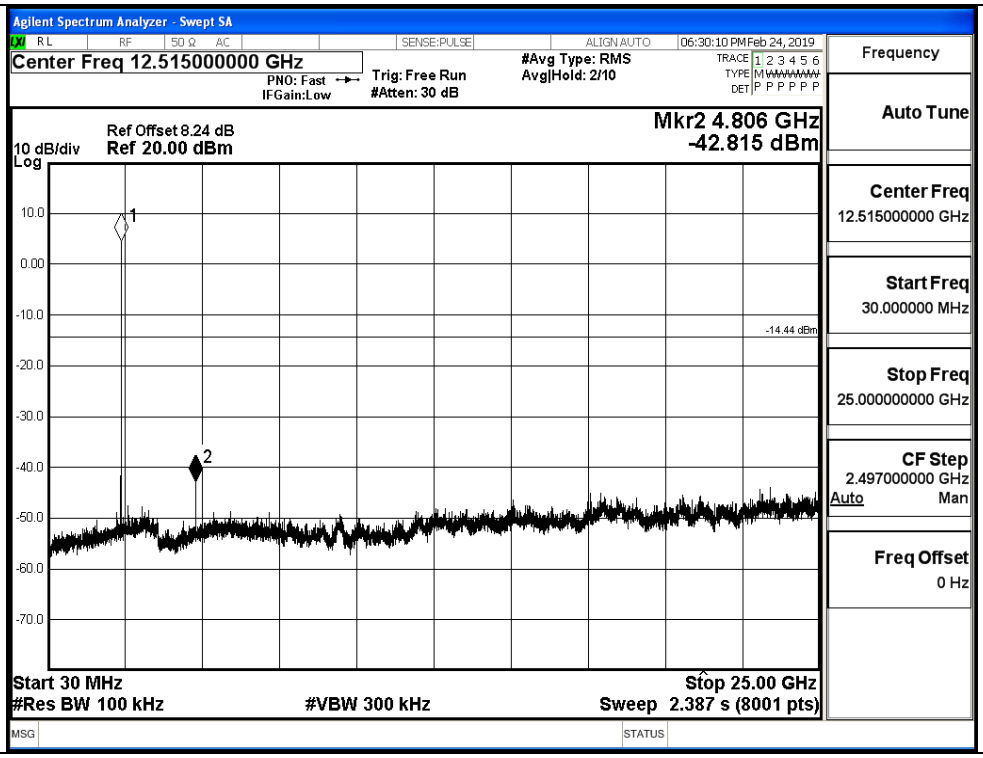
A.6 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	5.562	-42.815	-14.438	PASS
	MCH	5.104	-44.909	-14.896	PASS
	HCH	4.419	-43.444	-15.581	PASS
π/4DQPSK	LCH	4.797	-44.734	-15.203	PASS
	MCH	4.77	-40.538	-15.230	PASS
	HCH	1.709	-44.563	-18.291	PASS

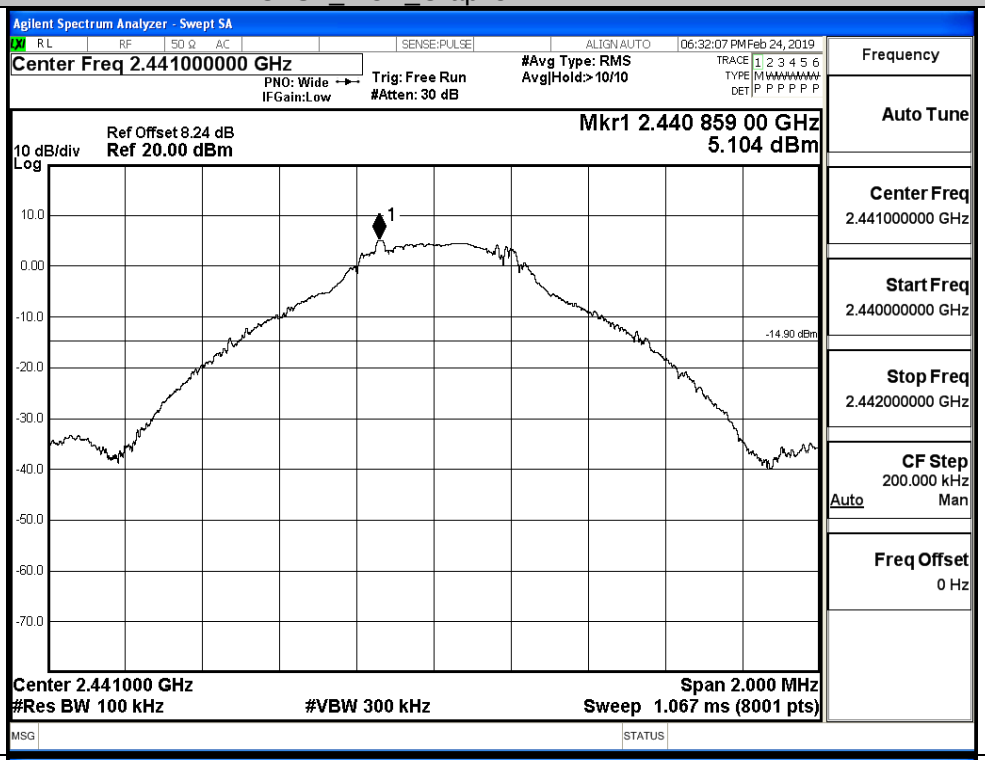
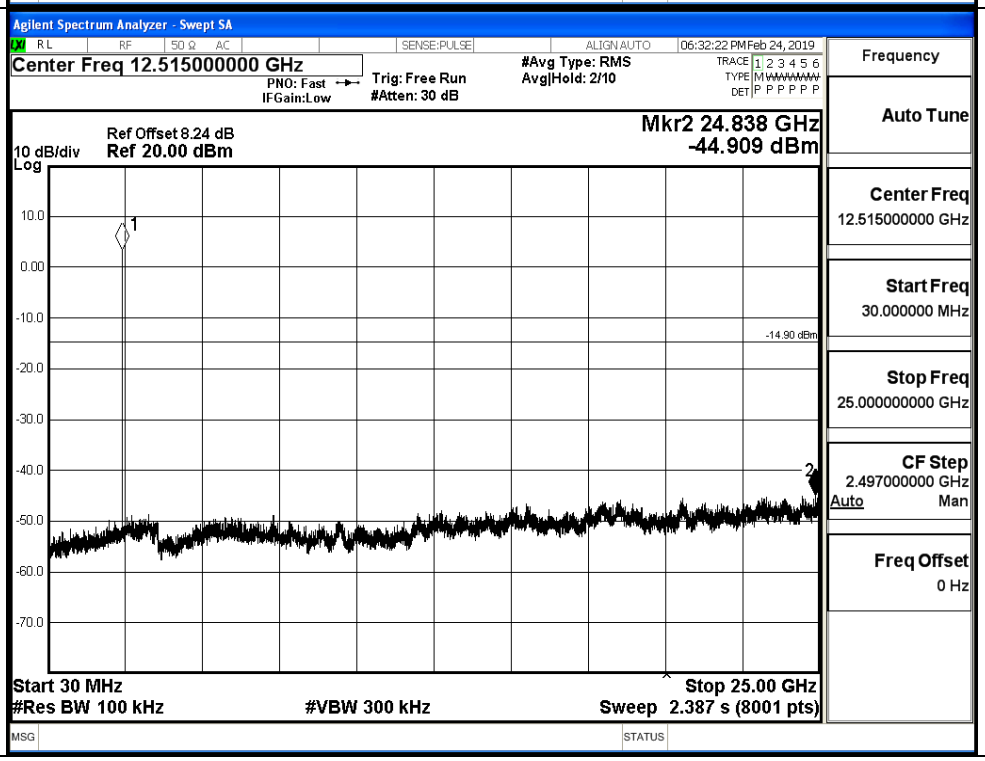
GFSK_LCH_Graphs

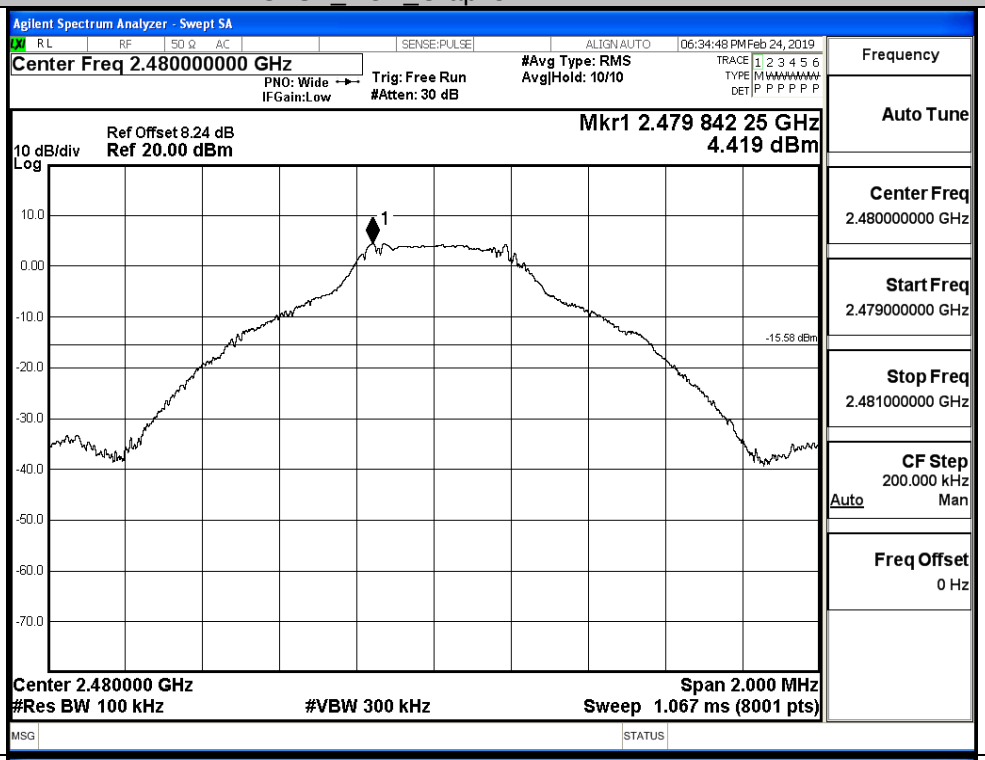
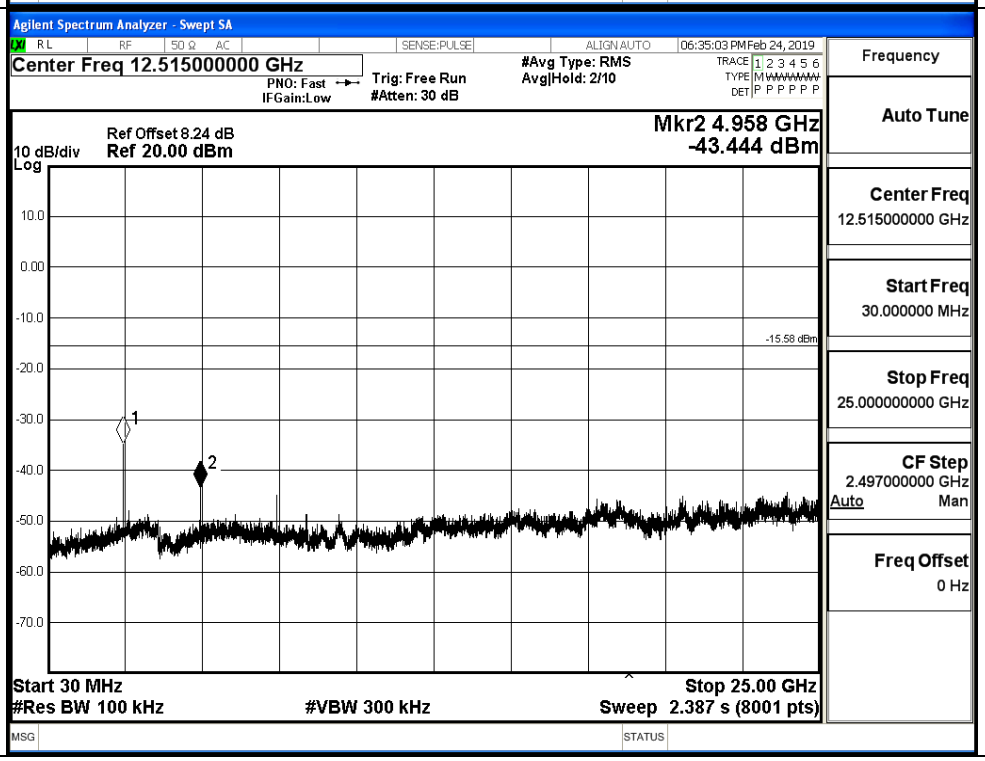
Pref

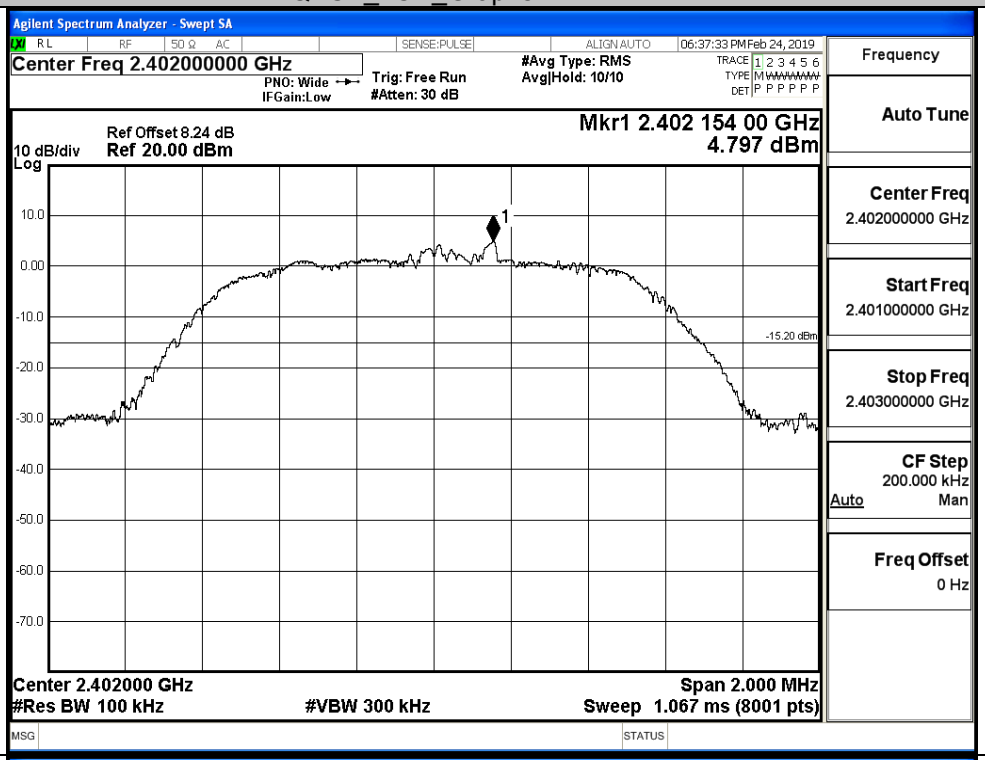
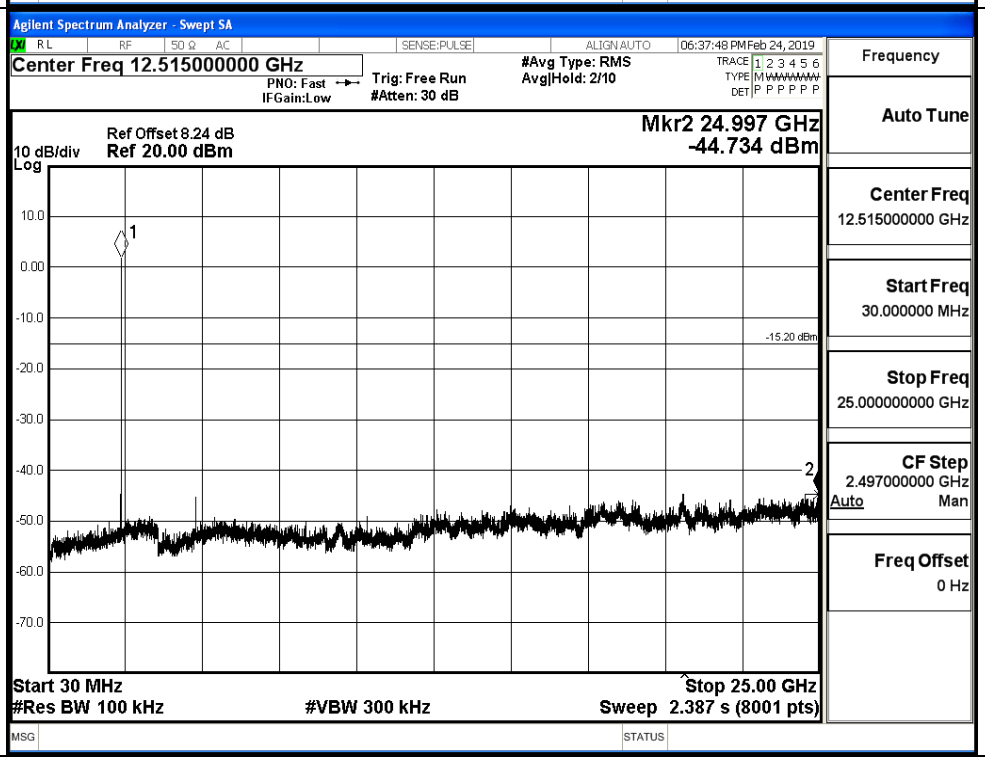


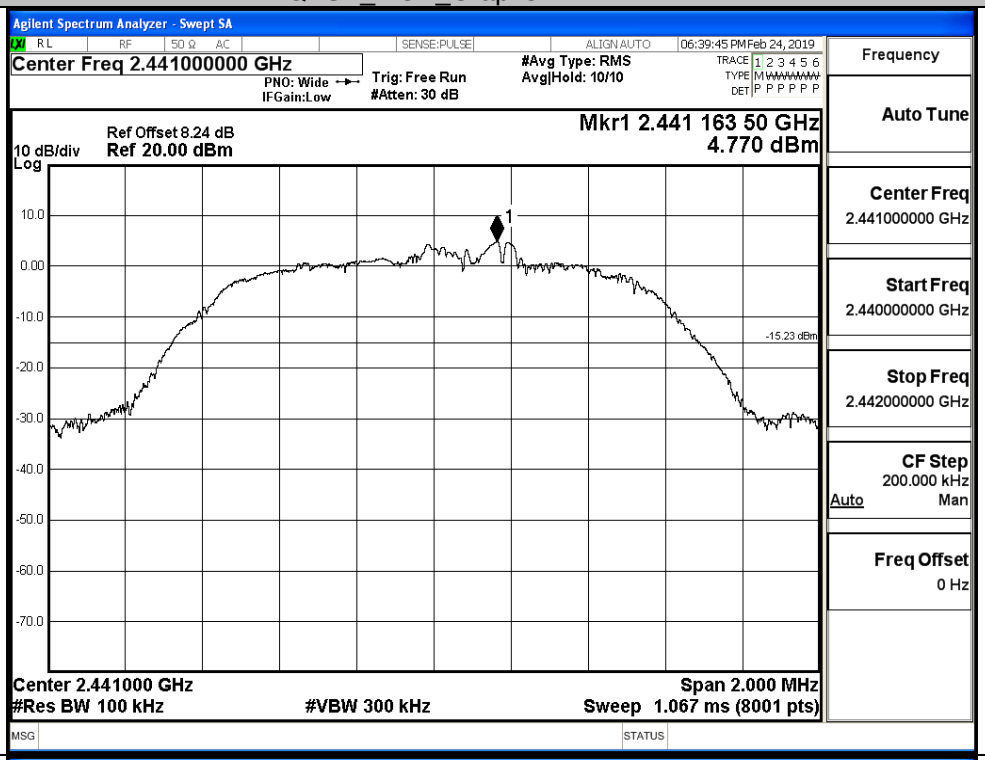
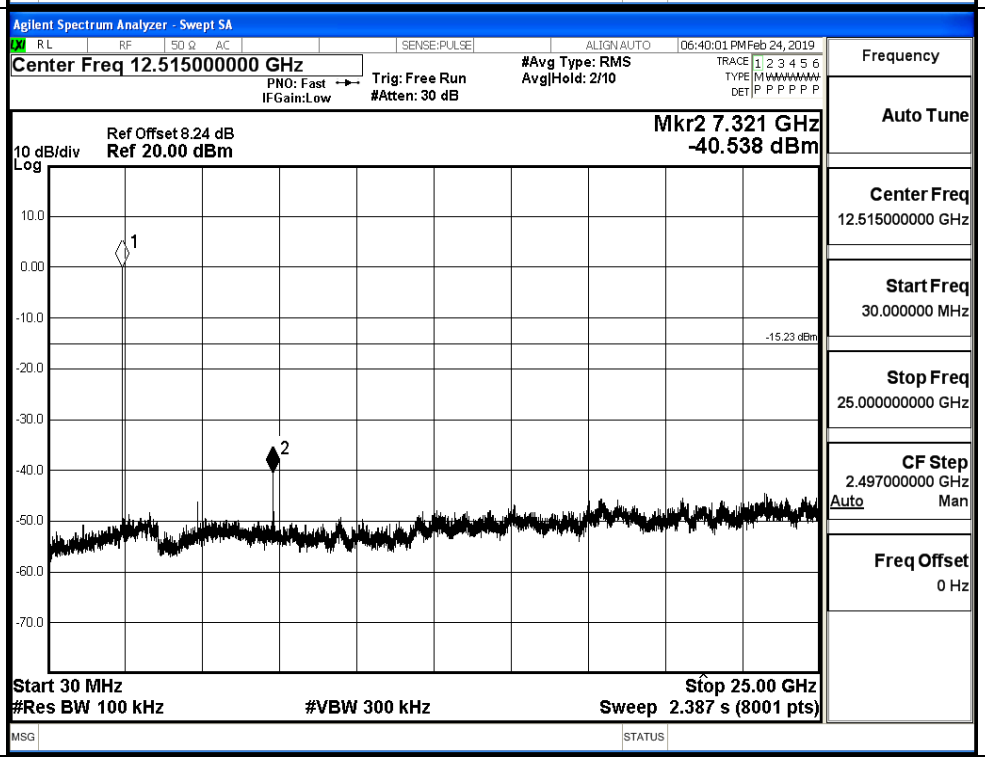
Puw		

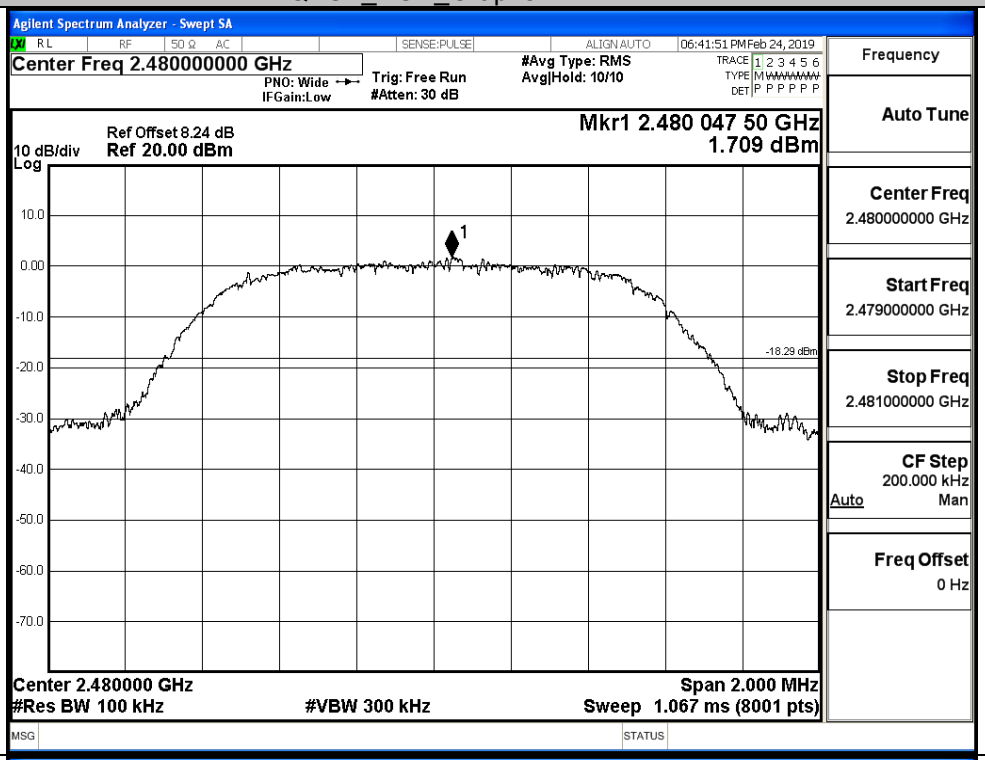
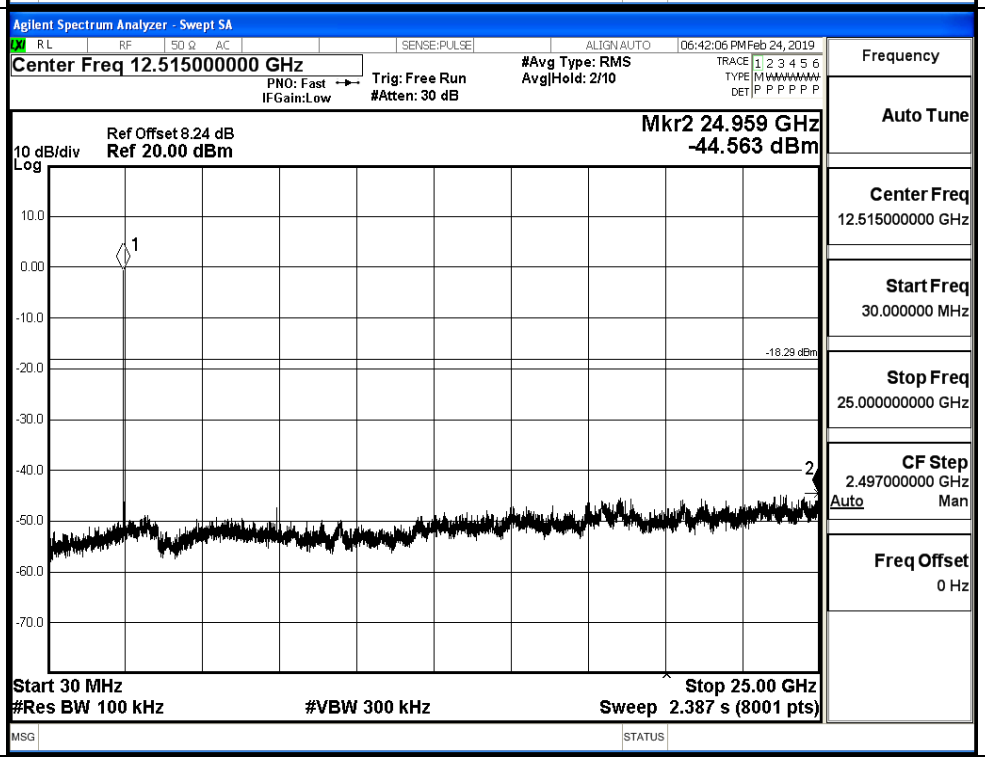
Agilent Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:PULSE
ALIGN AUTO
06:30:10 PM Feb 24, 2019
Center Freq 12.515000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 2/10
TRACE 1 2 3 4 5 6
TYPE M
DET P P P P P
Ref Offset 8.24 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr2 4.806 GHz
-42.815 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-14.44 dBm
1
2
Start 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.00 GHz
Sweep 2.387 s (8001 pts)
MSG
STATUS
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			

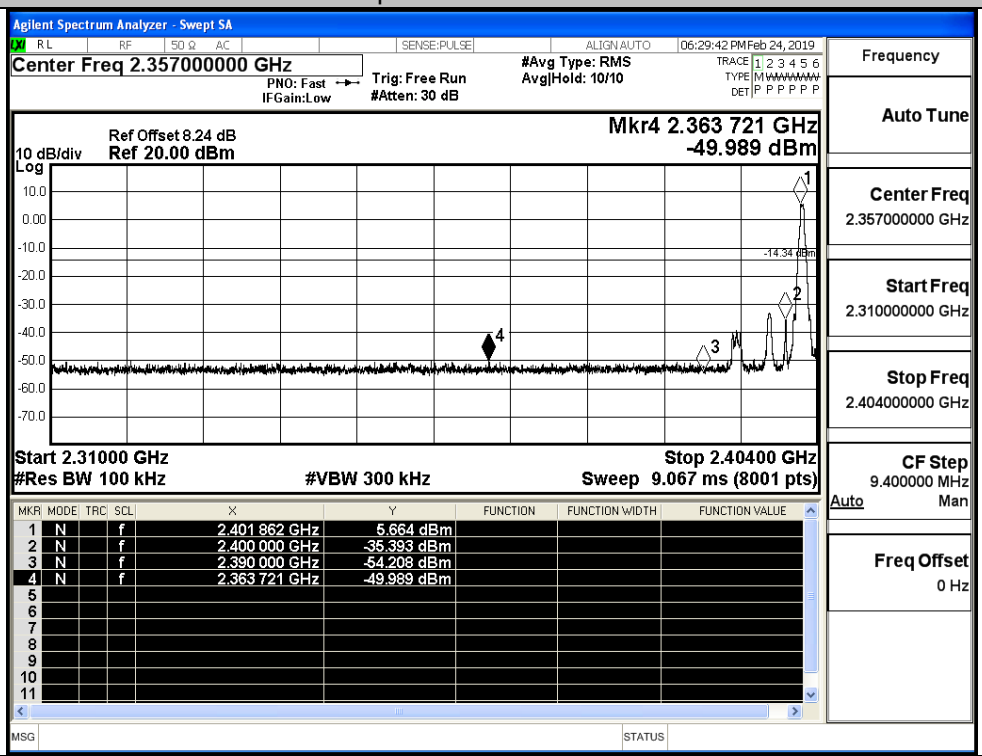
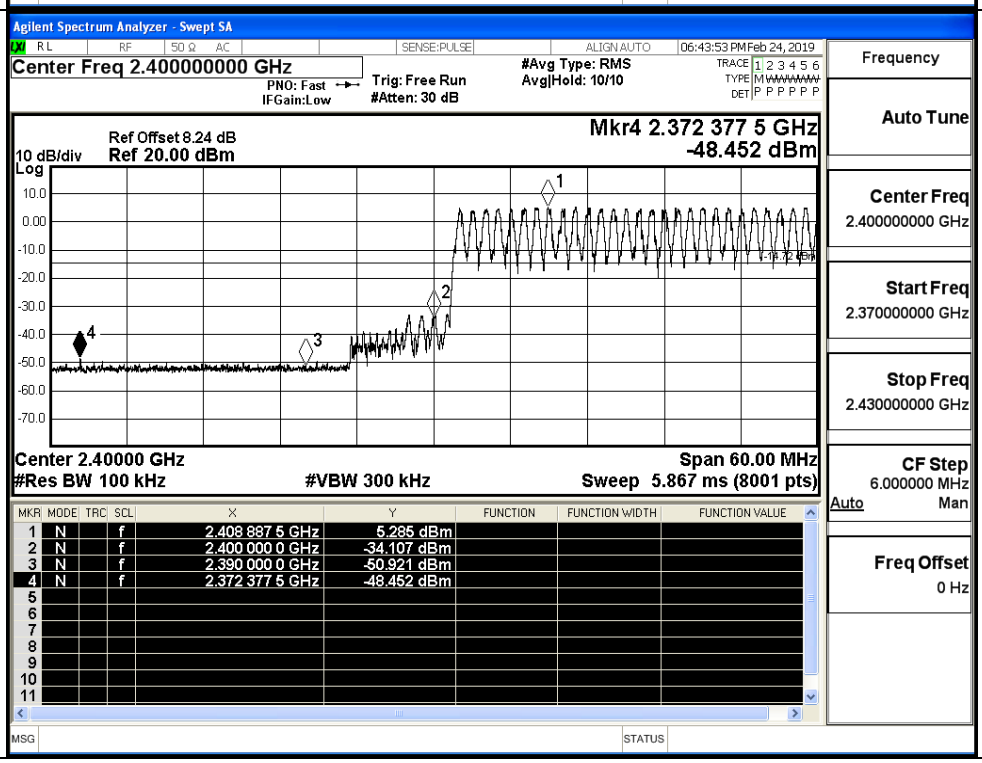
π/4DQPSK_LCH_Graphs		
Pref		
Puw		

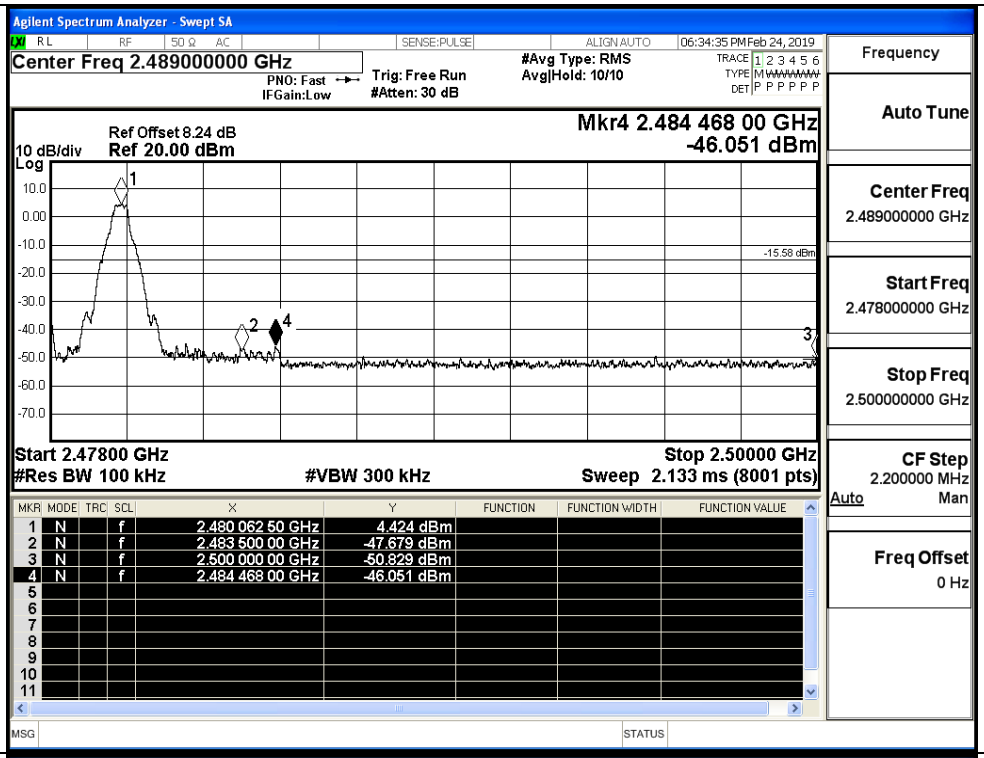
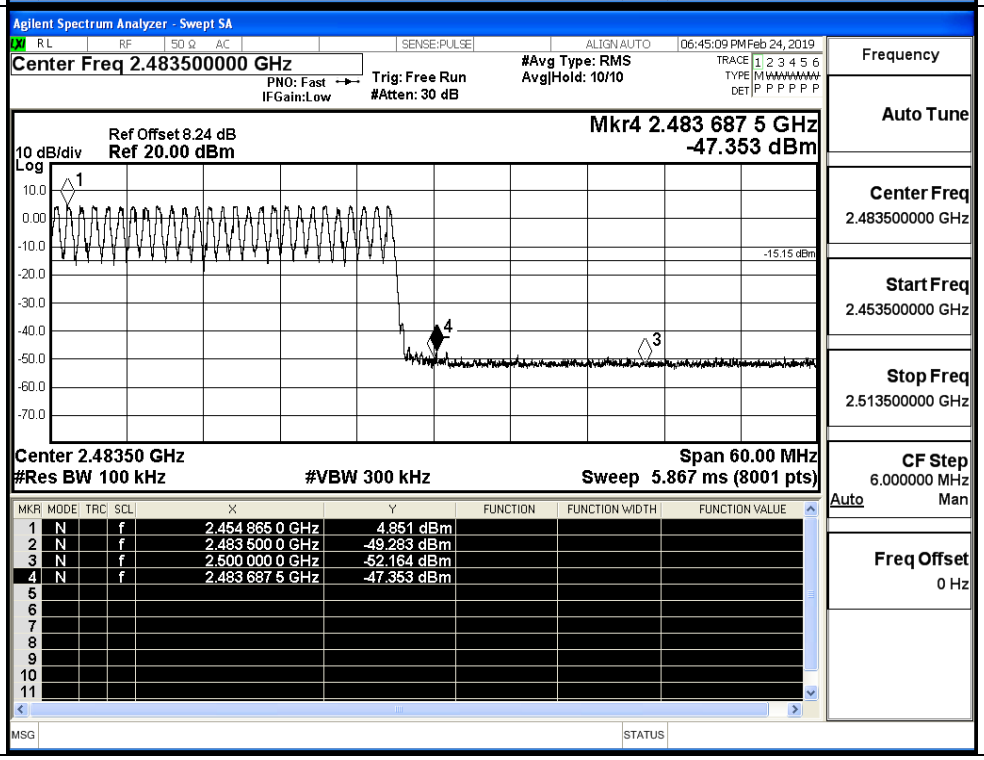
π/4DQPSK_MCH_Graphs			
Pref			
Puw			

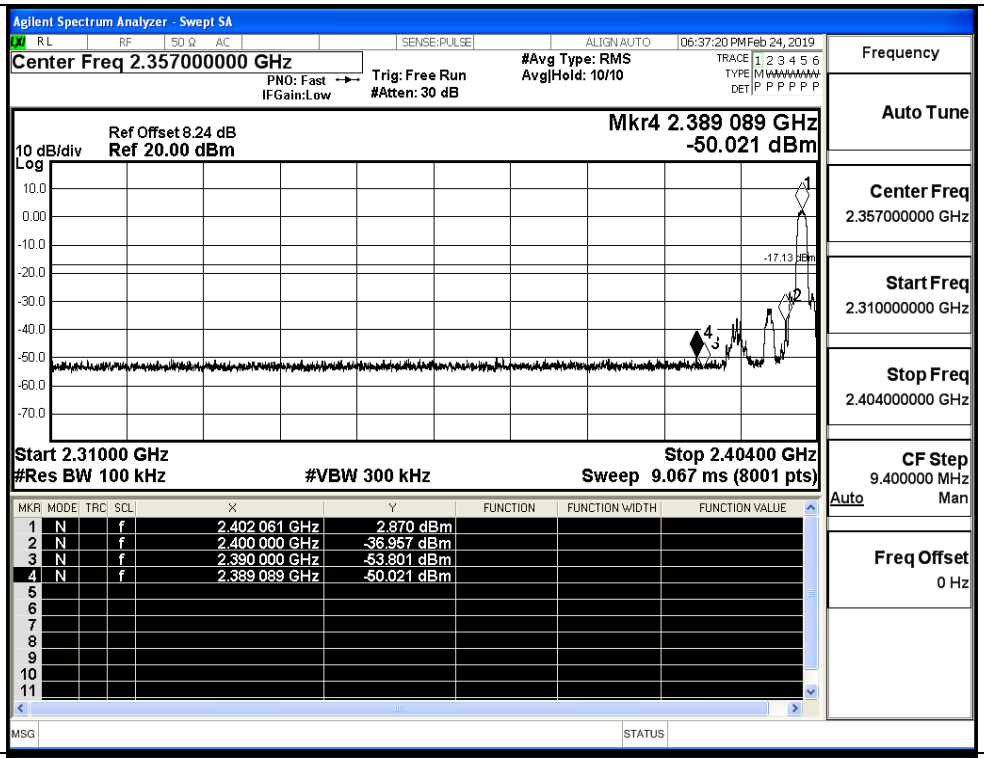
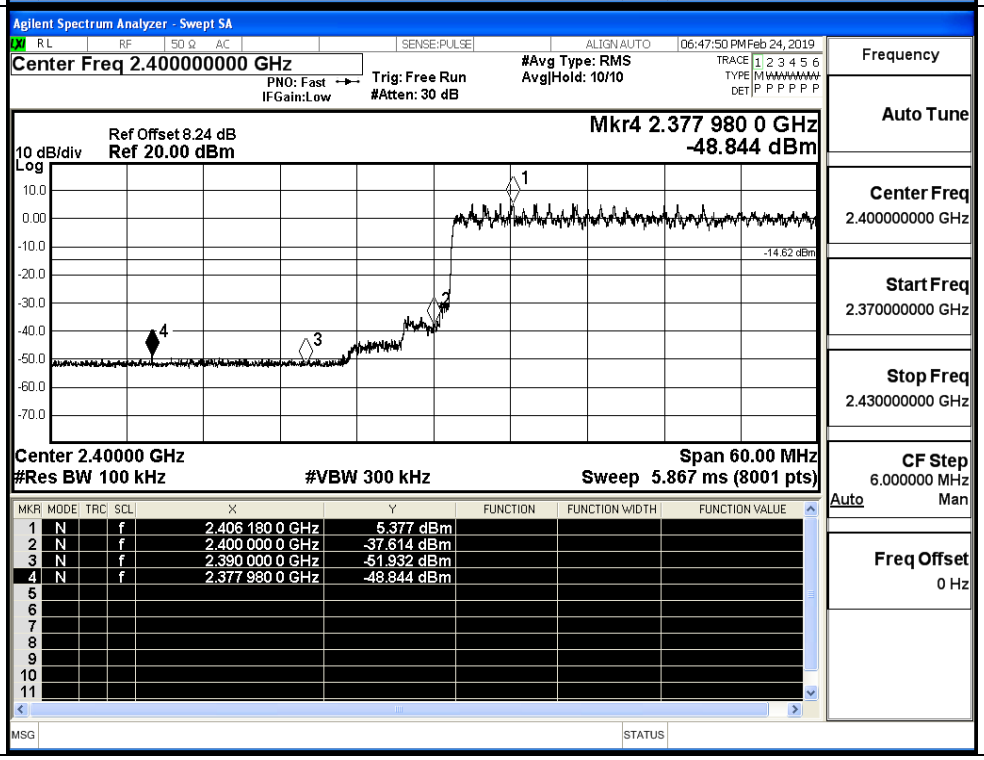
π/4DQPSK_HCH_Graphs		
Pref		
Puw		

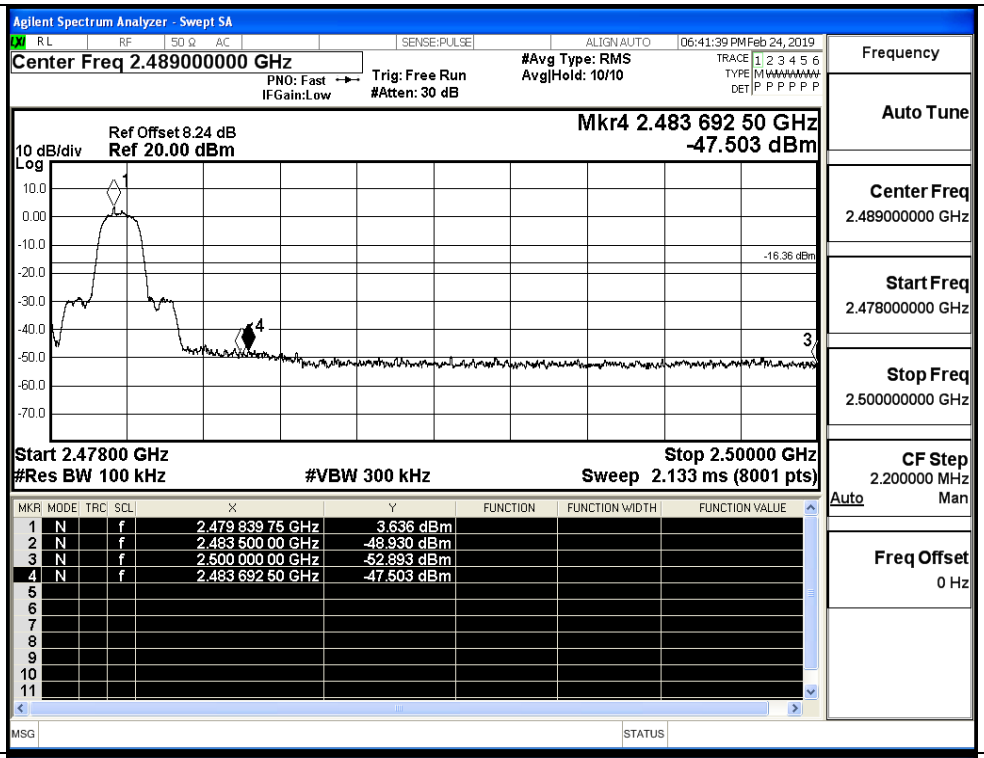
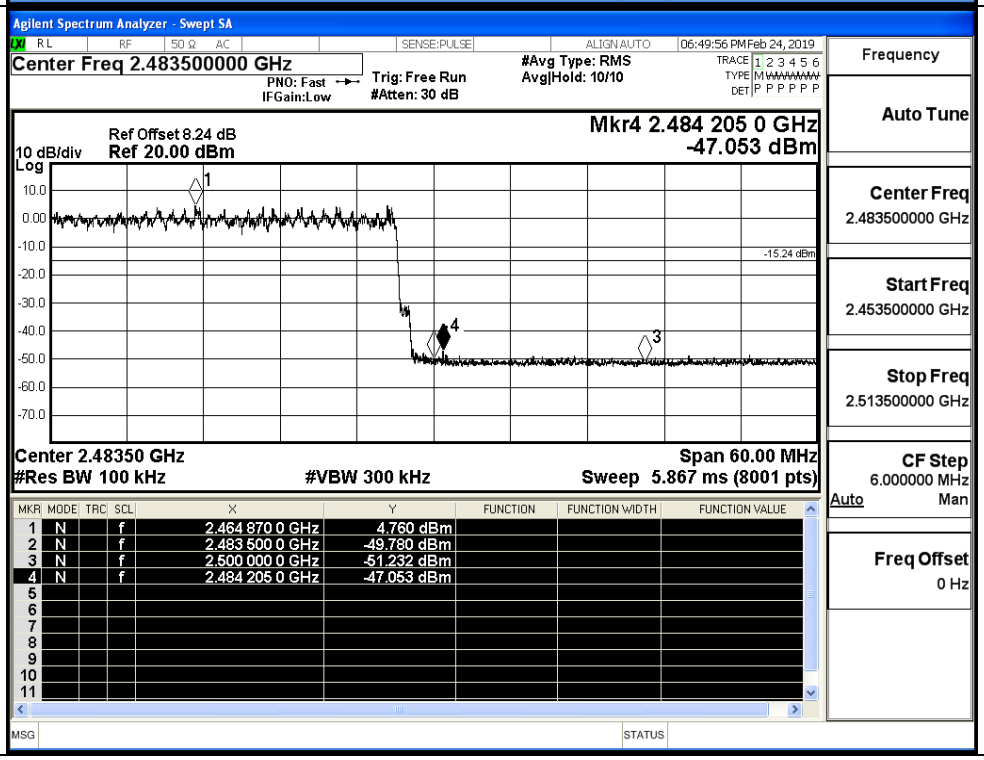
A.7 Band-edge for RF Conducted Emissions

Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	5.664	Off	-49.989	-14.34	PASS
			5.285	On	-48.452	-14.72	PASS
	HCH	2480	4.424	Off	-46.051	-15.58	PASS
			4.851	On	-47.353	-15.15	PASS
π/4DQPSK	LCH	2402	2.870	Off	-50.021	-17.13	PASS
			5.377	On	-48.844	-14.62	PASS
	HCH	2480	3.636	Off	-47.503	-16.36	PASS
			4.760	On	-47.053	-15.24	PASS

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

GFSK/HCH/No Hop	
GFSK/HCH/Hop	

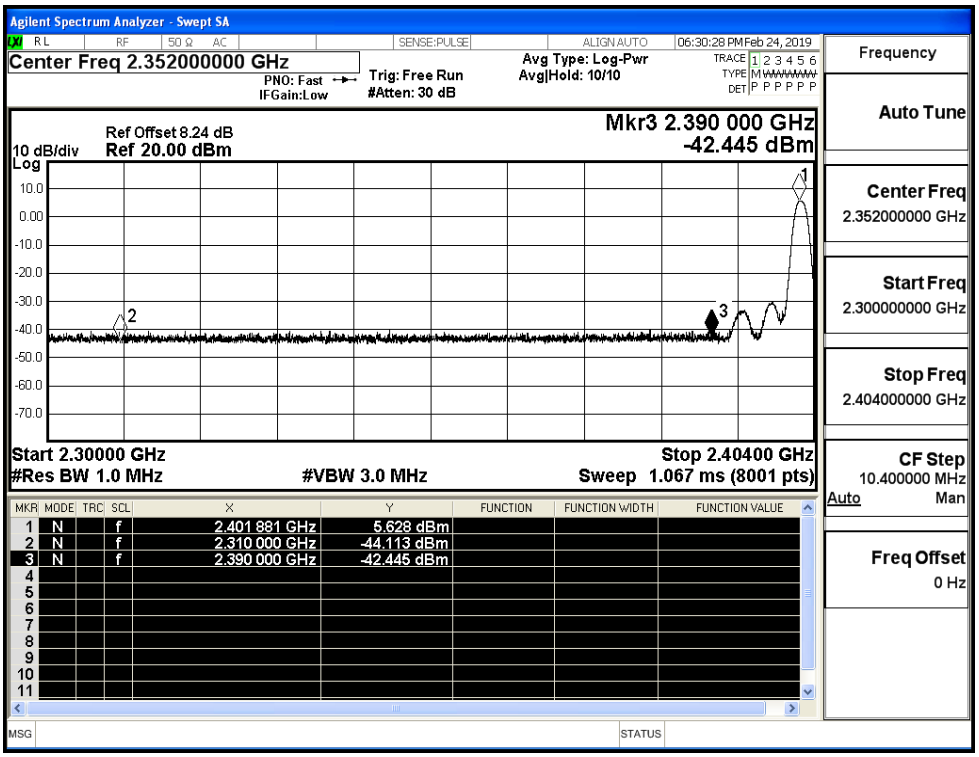
π/4DQPSK/LCH/No Hop	
π/4DQPSK/LCH/Hop	

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

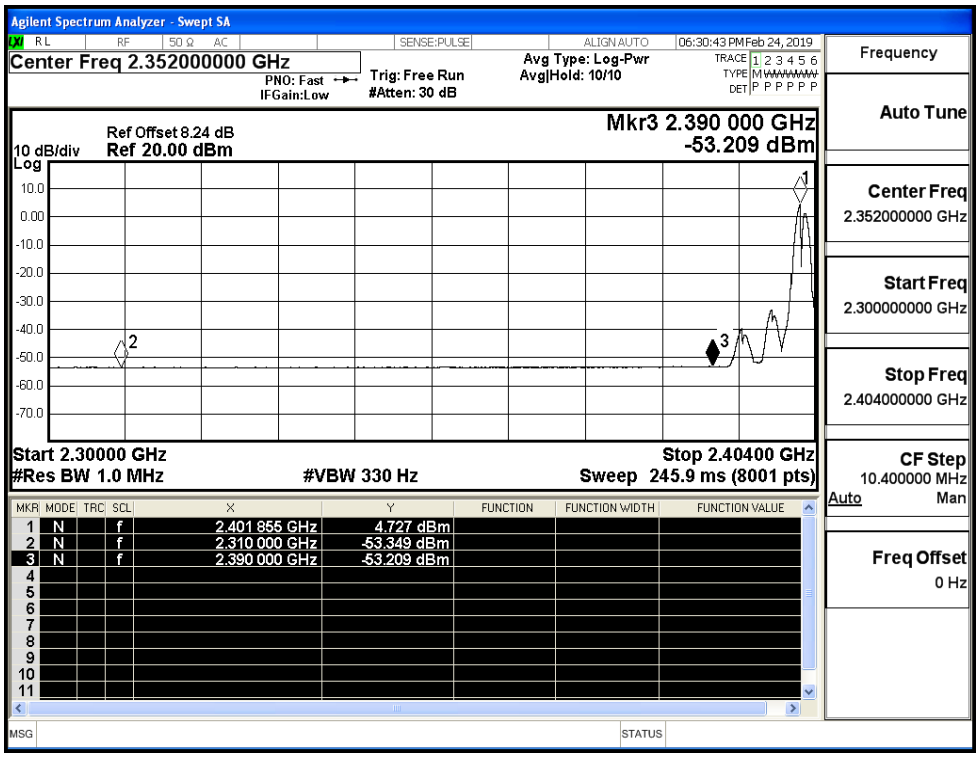
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-44.11	2.0	0	53.14	PEAK	74	PASS
	Off	2310.0	-53.35	2.0	0	43.91	AV	54	PASS
	Off	2390.0	-42.45	2.0	0	54.81	PEAK	74	PASS
	Off	2390.0	-53.21	2.0	0	44.05	AV	54	PASS
	Off	2483.5	-37.59	2.0	0	59.67	PEAK	74	PASS
	Off	2483.5	-47.63	2.0	0	49.63	AV	54	PASS
	Off	2500.0	-42.23	2.0	0	55.03	PEAK	74	PASS
	Off	2500.0	-52.97	2.0	0	44.29	AV	54	PASS
π/4DQPSK	Off	2310.0	-42.06	2.0	0	55.20	PEAK	74	PASS
	Off	2310.0	-53.64	2.0	0	43.61	AV	54	PASS
	Off	2390.0	-43.88	2.0	0	53.38	PEAK	74	PASS
	Off	2390.0	-53.28	2.0	0	43.98	AV	54	PASS
	Off	2483.5	-39.20	2.0	0	58.06	PEAK	74	PASS
	Off	2483.5	-49.07	2.0	0	48.19	AV	54	PASS
	Off	2500.0	-43.04	2.0	0	54.22	PEAK	74	PASS
	Off	2500.0	-52.82	2.0	0	44.43	AV	54	PASS

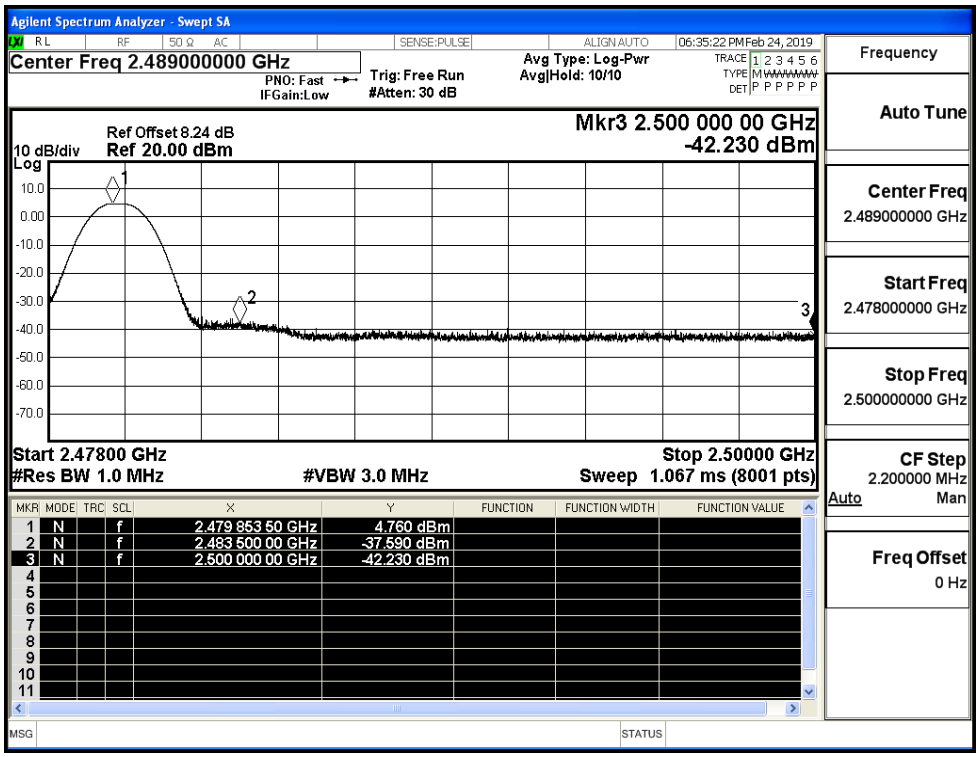
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (Low Channel)



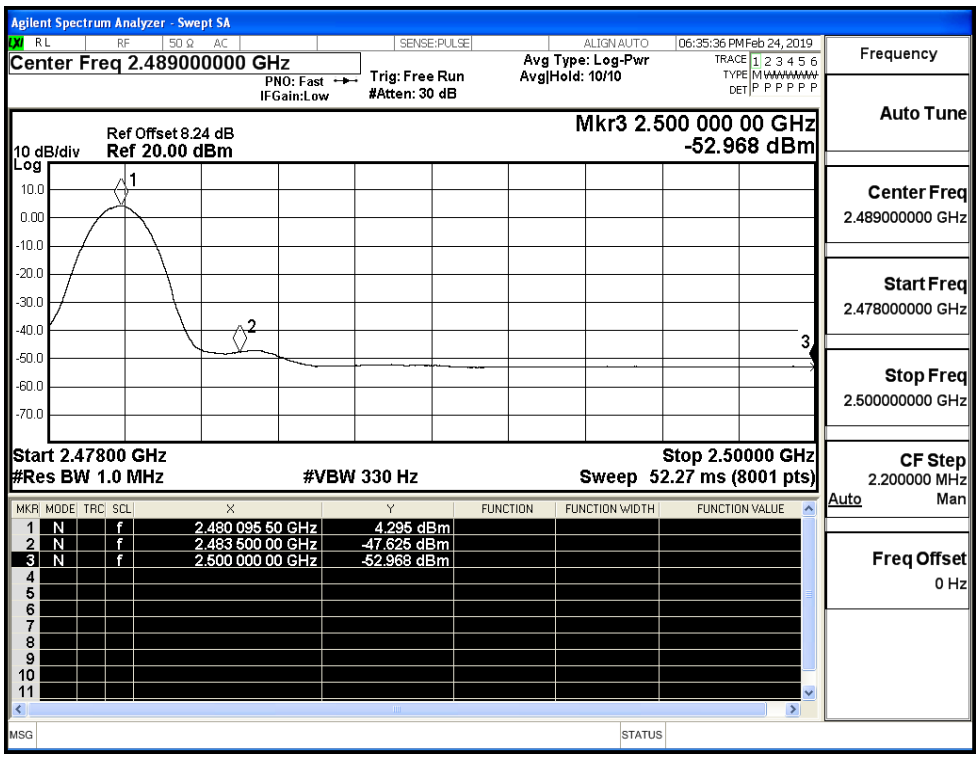
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (Low Channel)



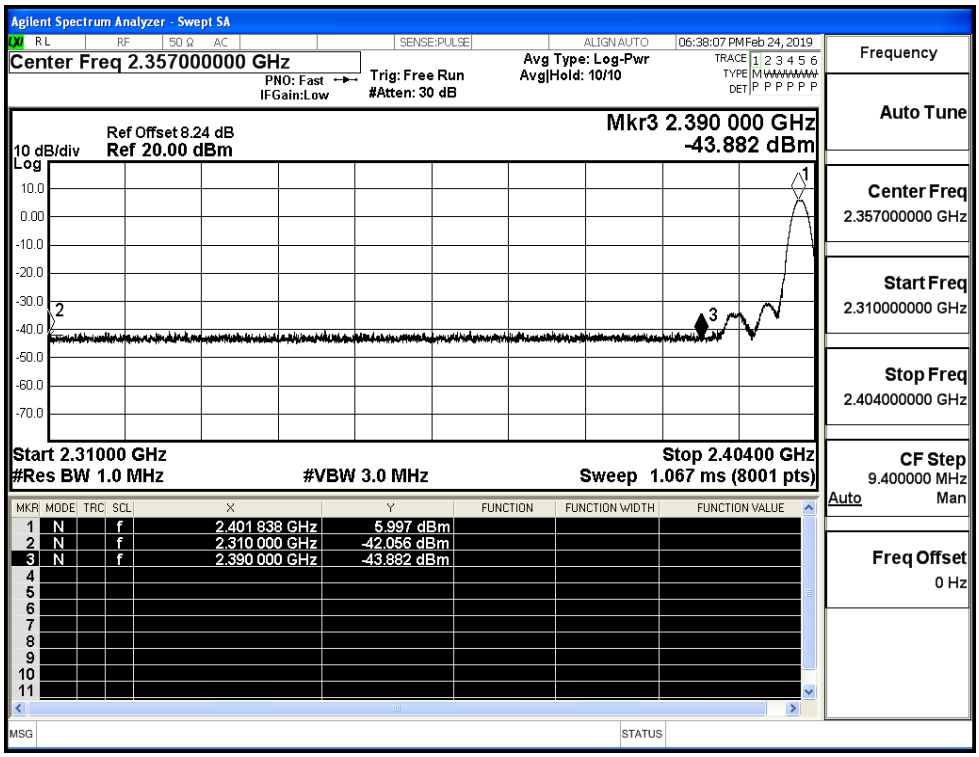
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (High Channel)



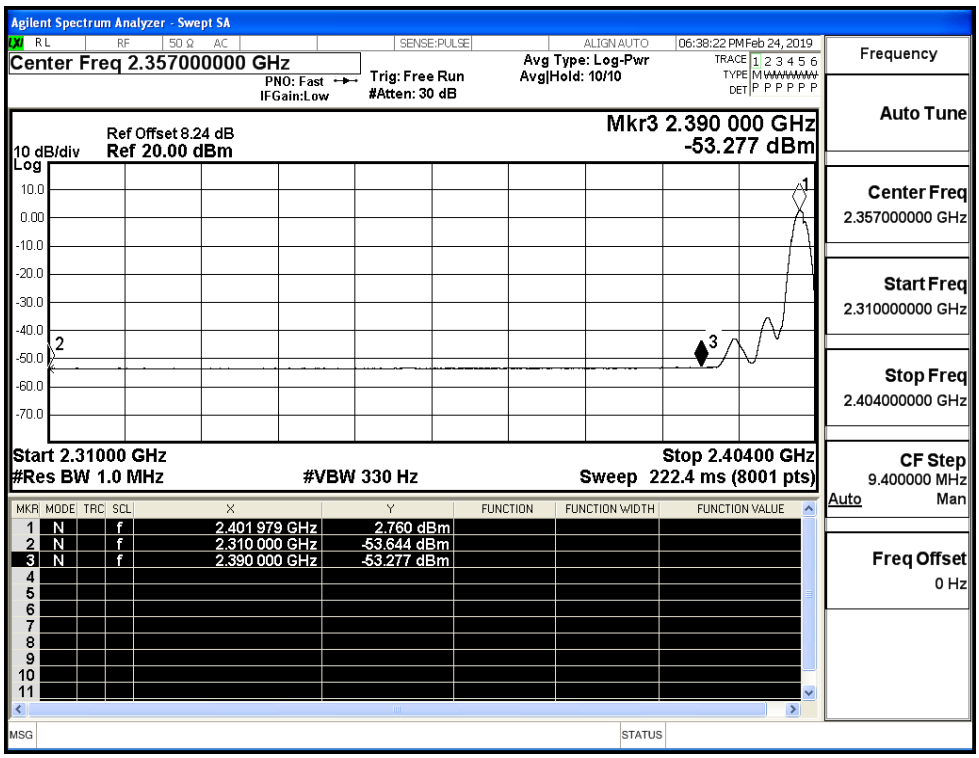
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (High Channel)



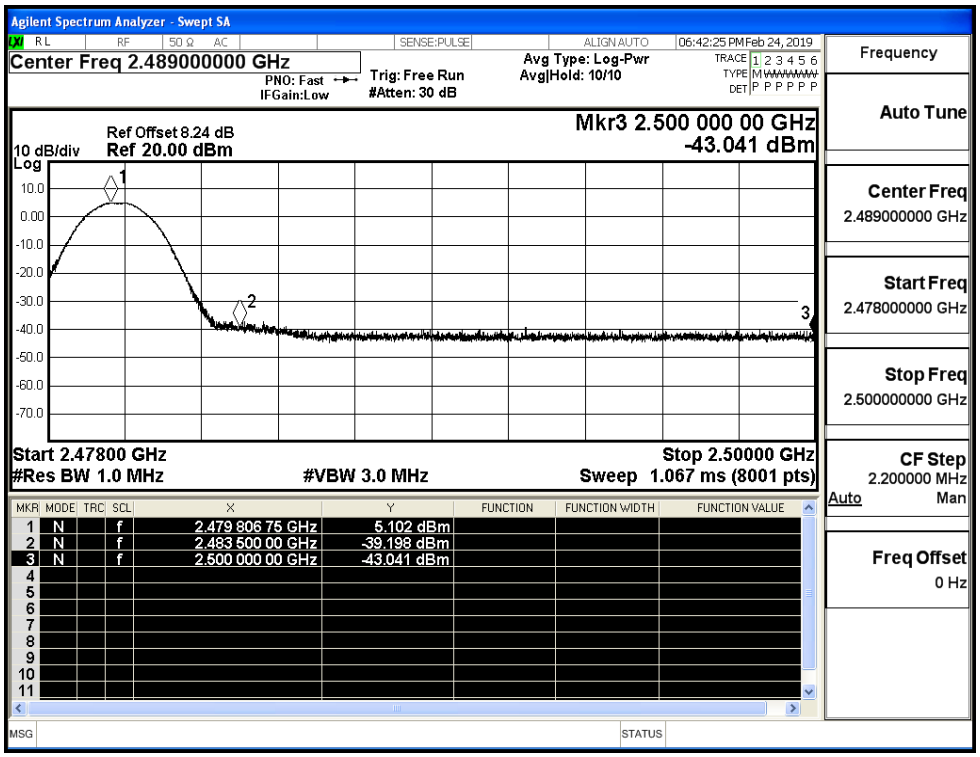
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (Low Channel)



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)