Appendix A

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

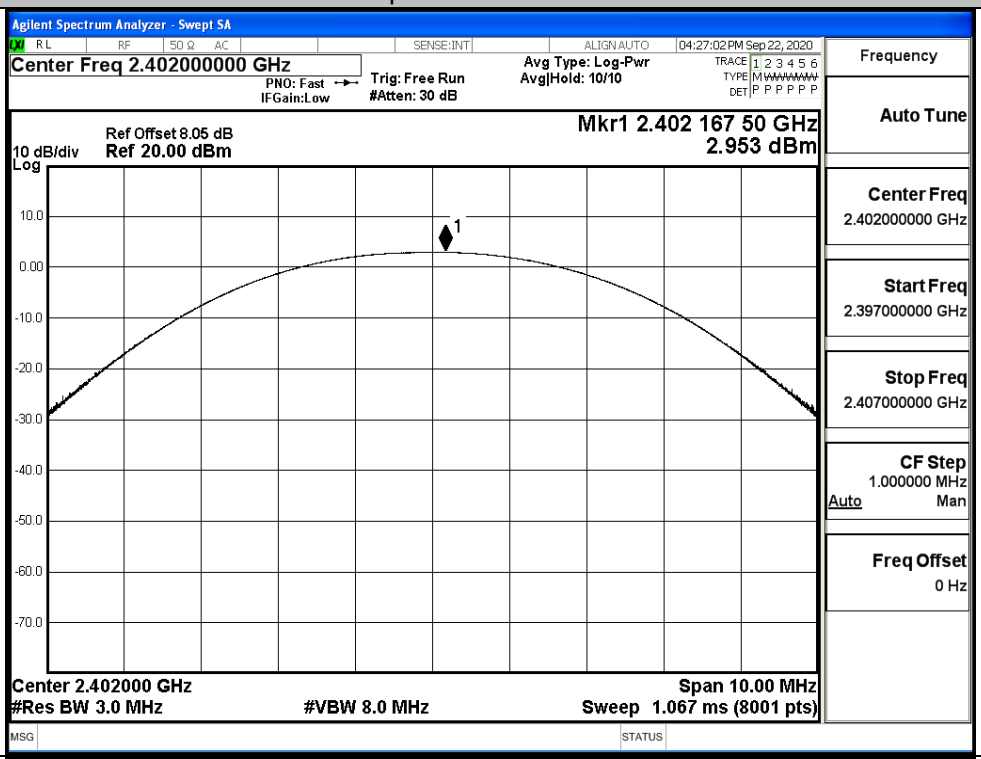
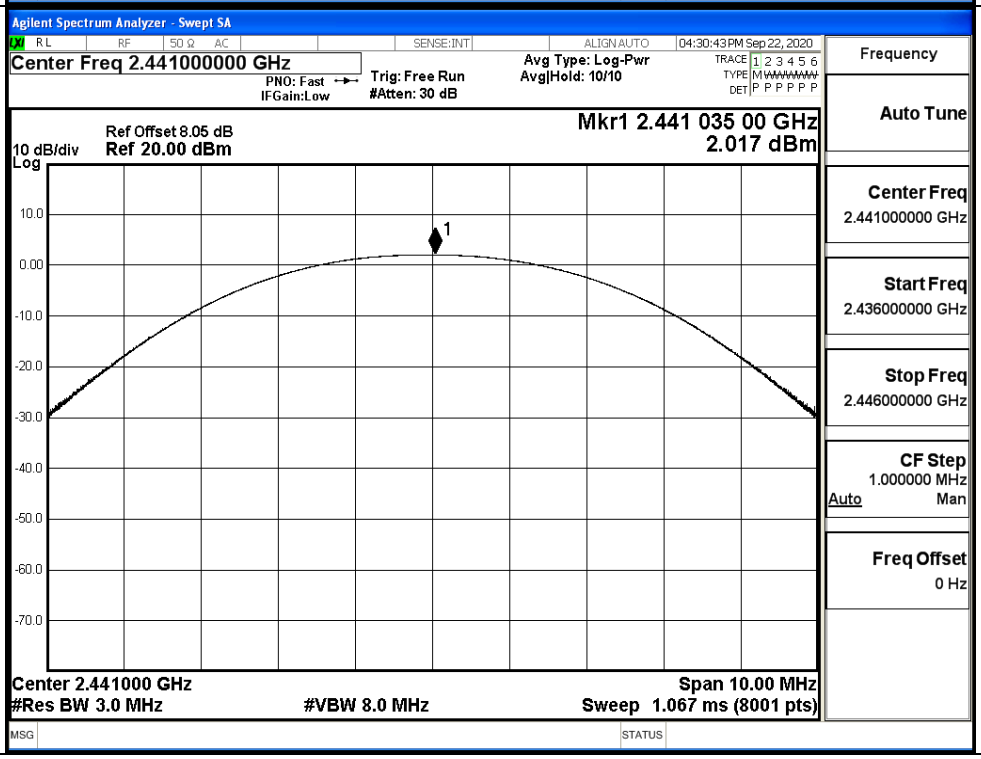
Product Name: VAPOR TRUE WIRELESS EARBUDS
Trade Mark: N/A
Test Model: PATW-1005-BK

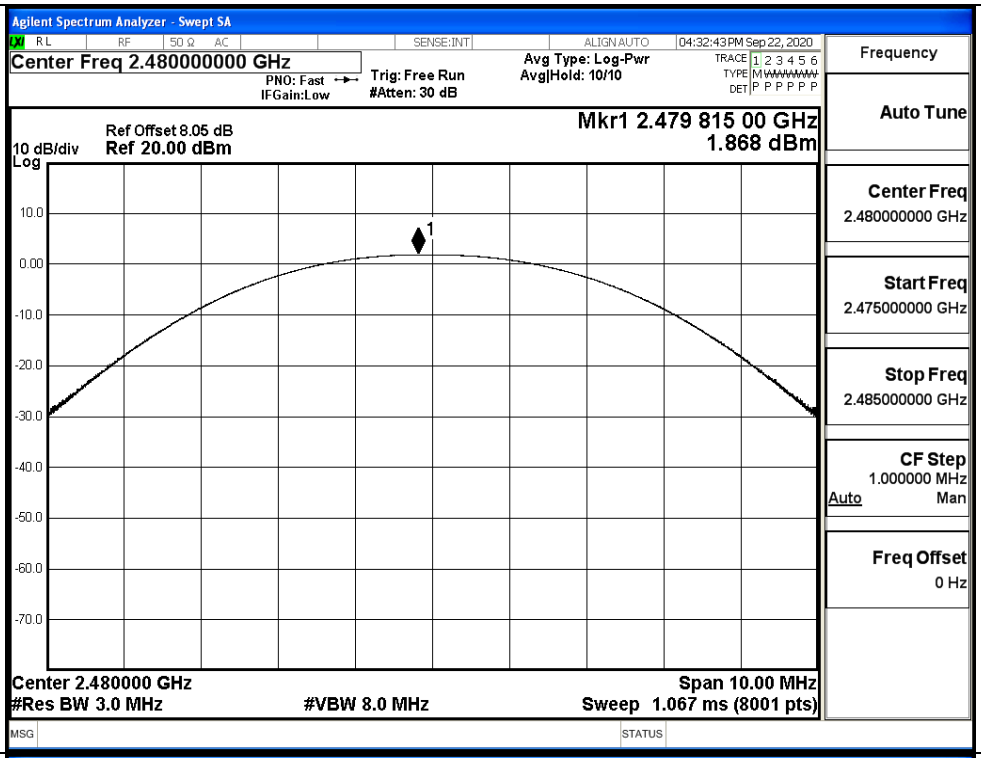
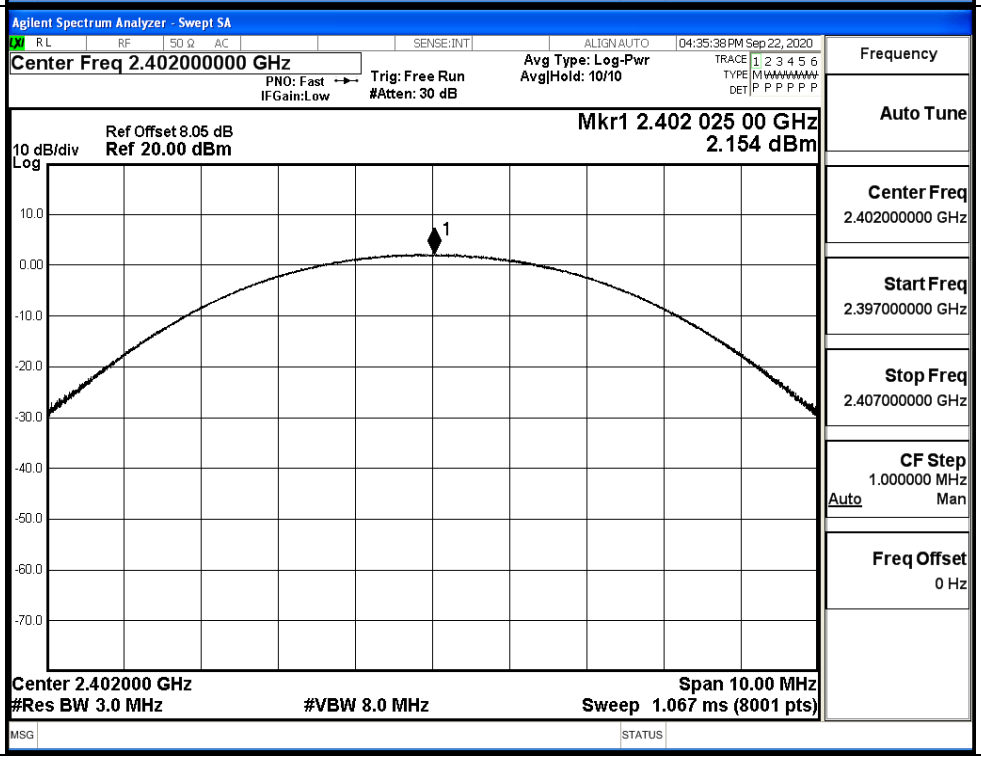
Environmental Conditions

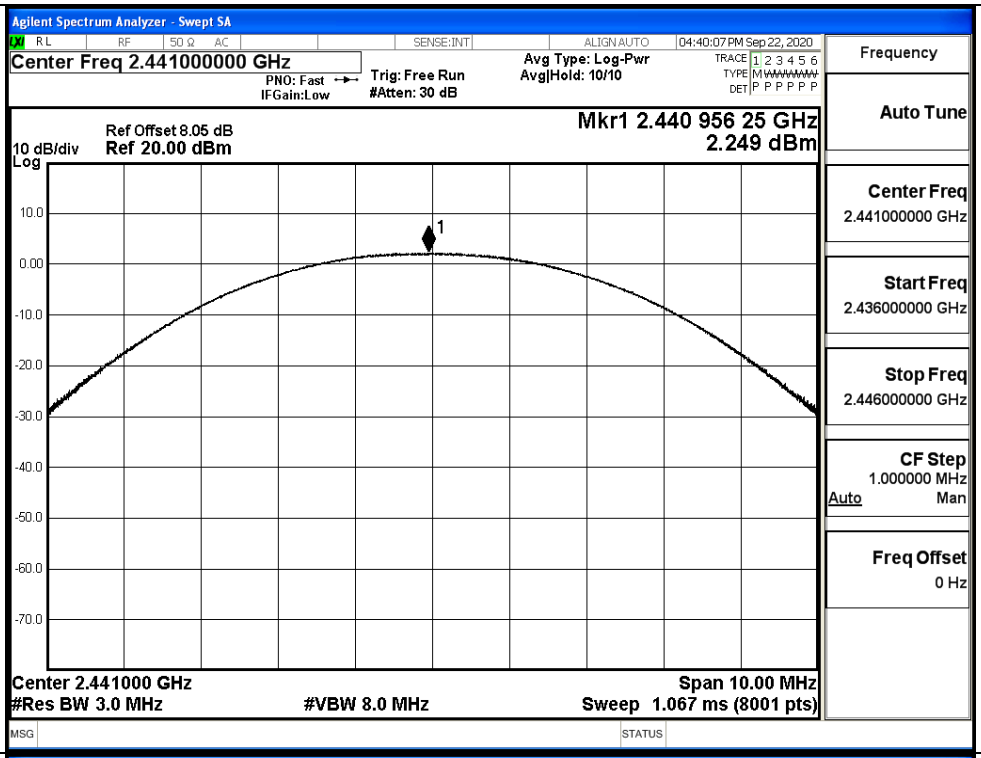
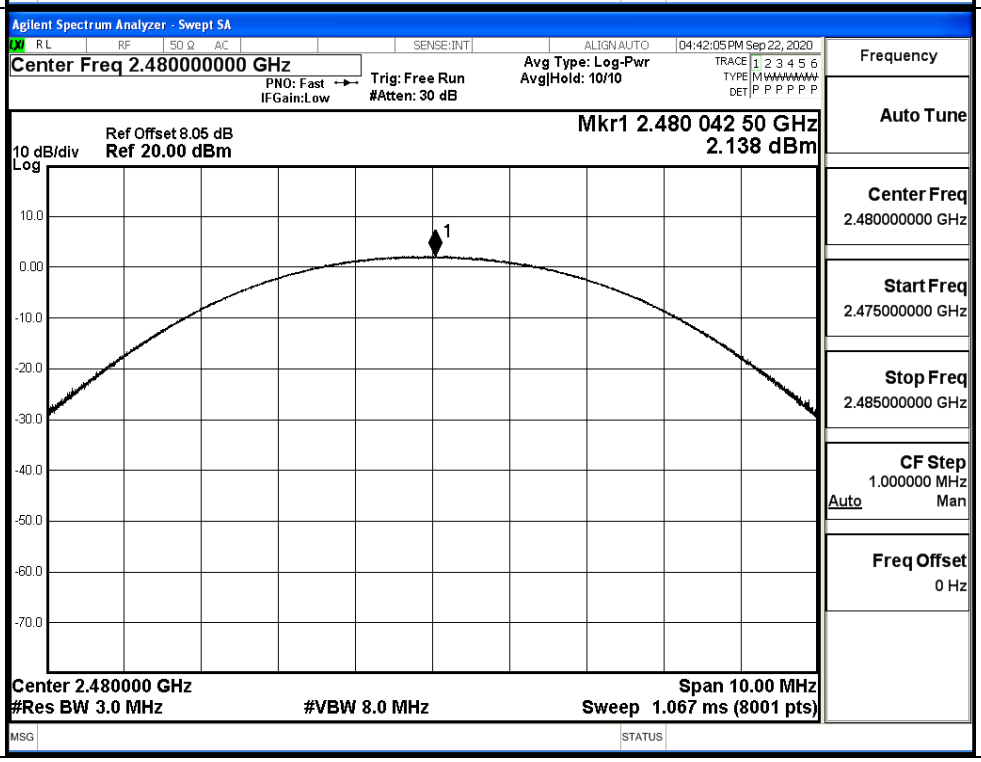
Temperature:	22.5°C
Relative Humidity:	51.8%
ATM Pressure:	100.0 kPa
Test Engineer:	Jam Zheng
Supervised by:	Li Huan

A.1 Maximum Conducted Peak Output Power

Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2.953	21	PASS
	MCH	2.017	21	PASS
	HCH	1.868	21	PASS
π/4DQPSK	LCH	2.154	21	PASS
	MCH	2.249	21	PASS
	HCH	2.138	21	PASS

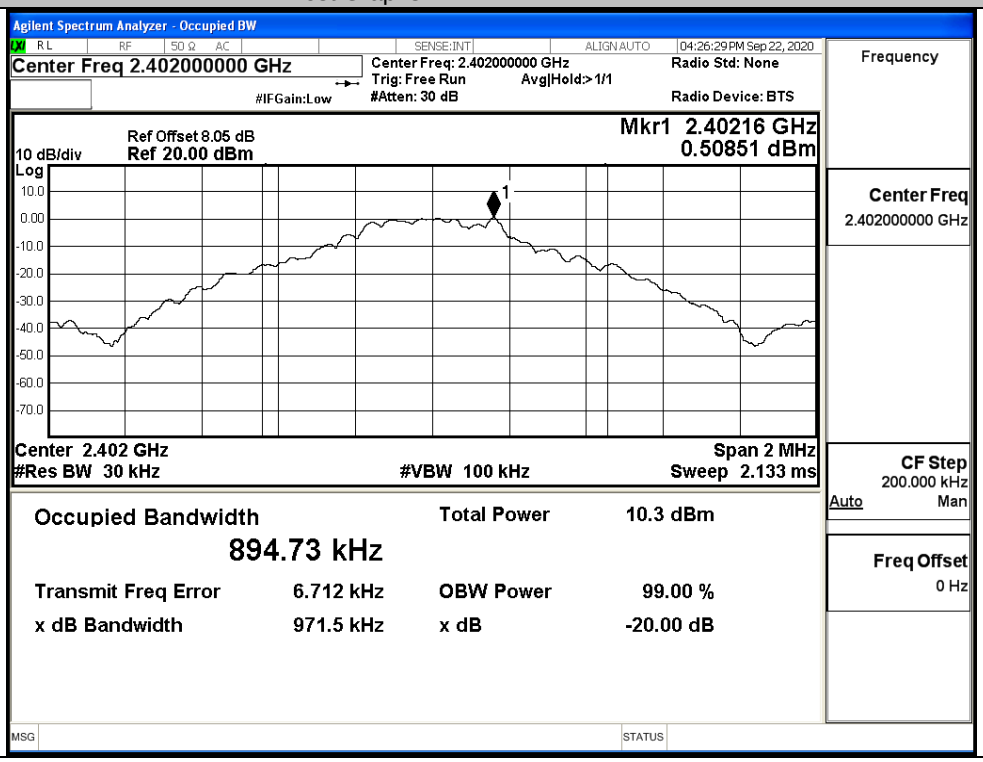
Test Graphs	
GFSK/LCH	
GFSK/MCH	

GFSK/HCH	
π/4DQPSK/LCH	

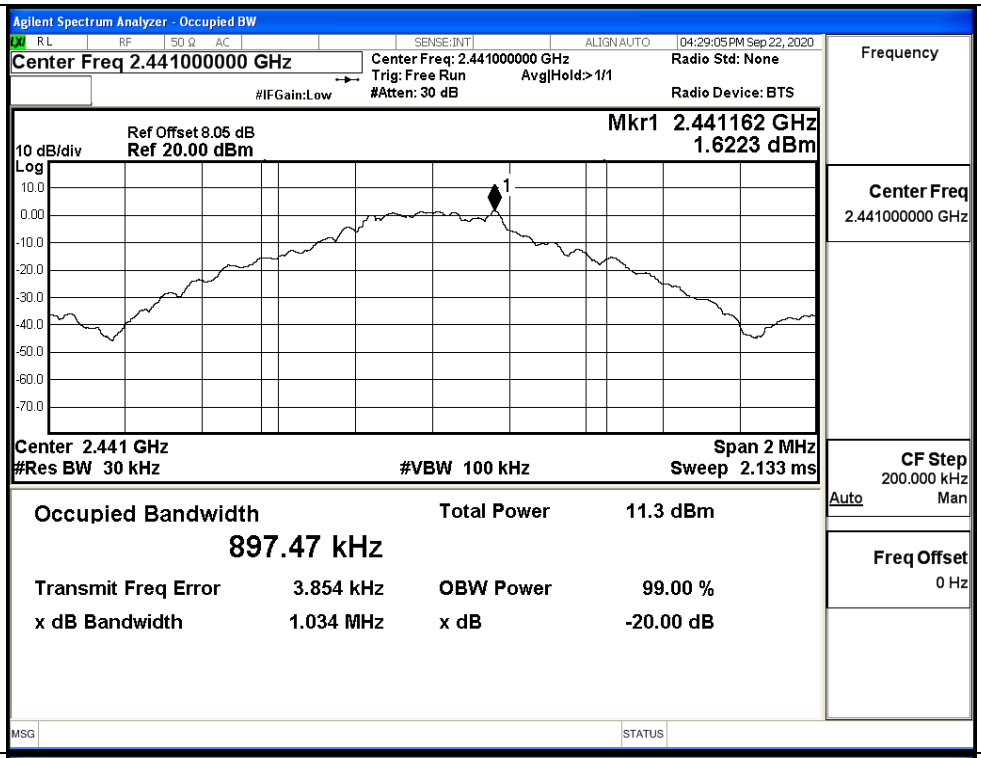
π/4DQPSK/MCH	
π/4DQPSK/HCH	

A.2 20dB Bandwidth

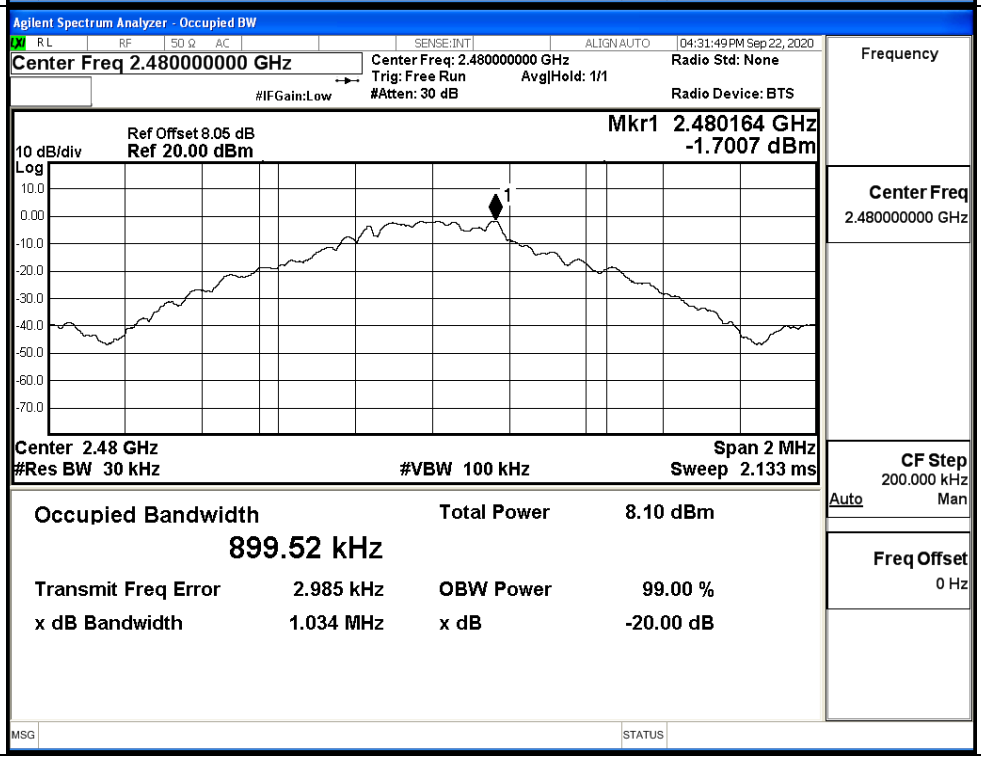
Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.9715	Not Specified	PASS
	MCH	1.034	Not Specified	PASS
	HCH	1.034	Not Specified	PASS
π/4DQPSK	LCH	1.286	Not Specified	PASS
	MCH	1.287	Not Specified	PASS
	HCH	1.288	Not Specified	PASS

Test Graphs		
GFSK/LCH		

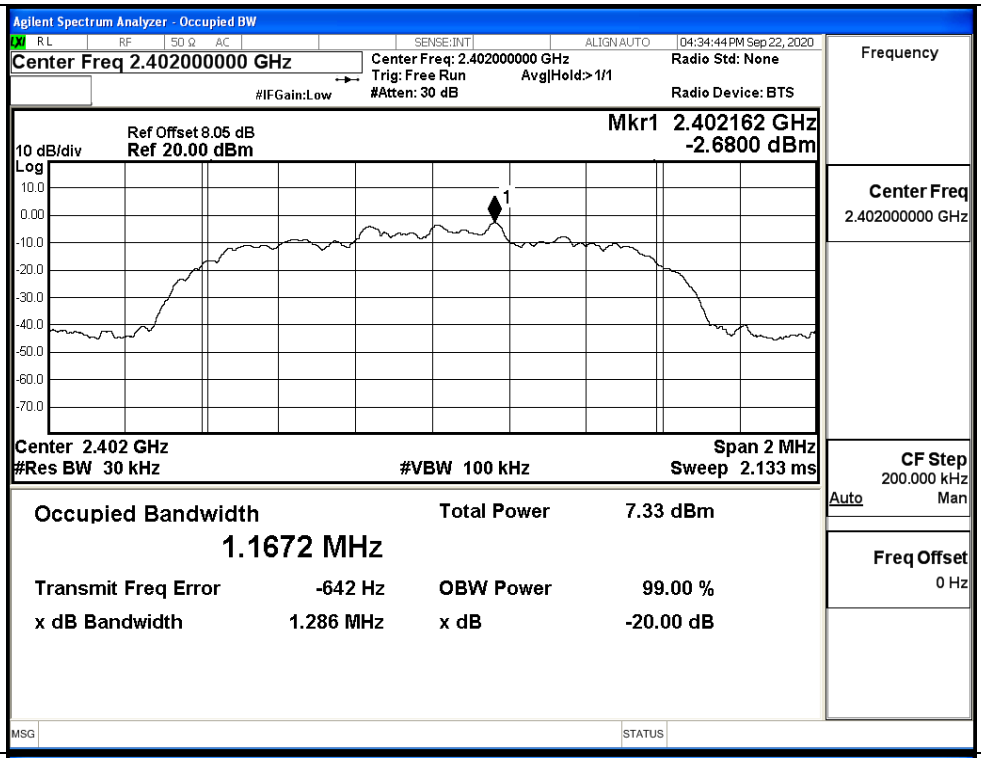
GFSK/MCH



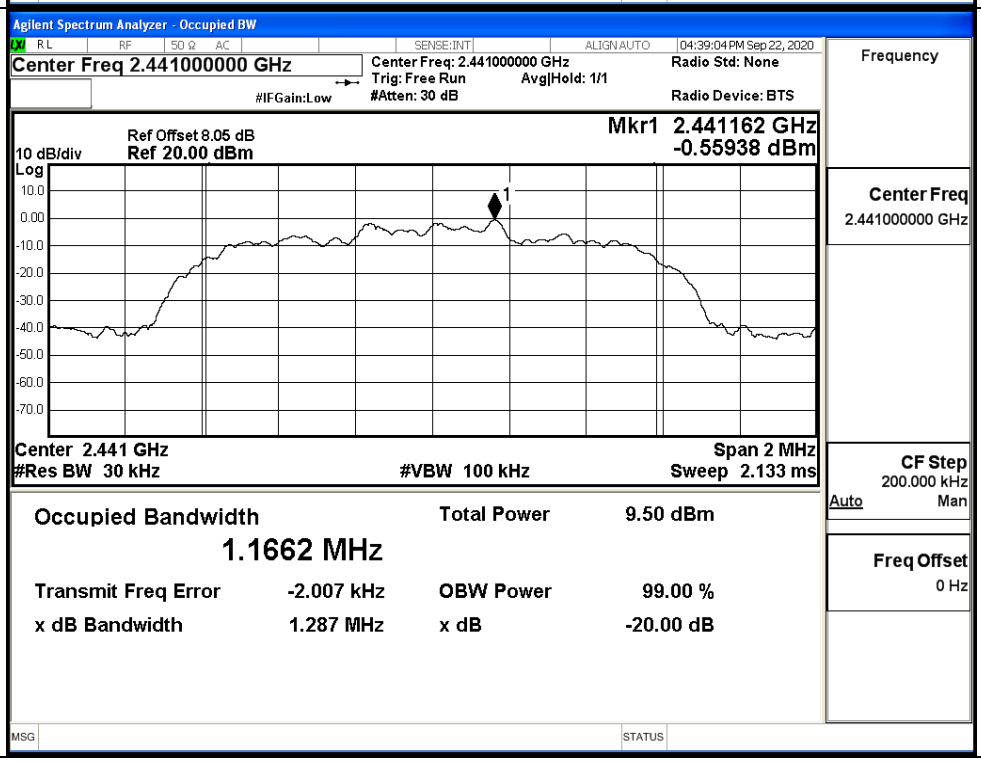
GFSK/HCH



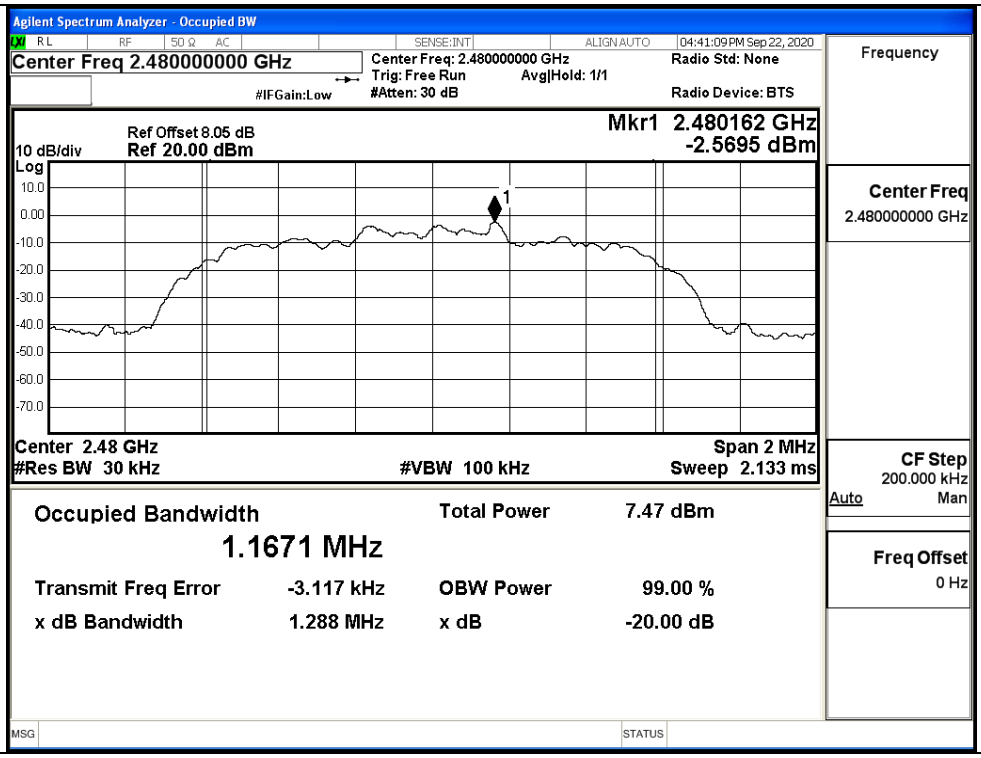
π/4DQPSK/LCH



π/4DQPSK/MCH

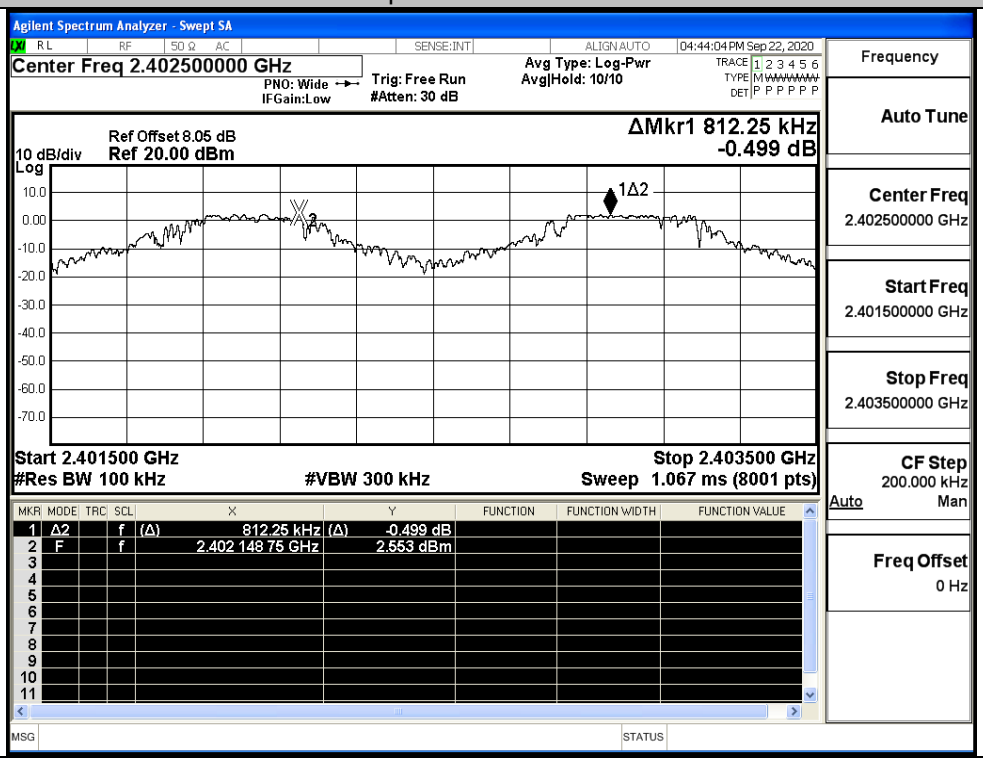


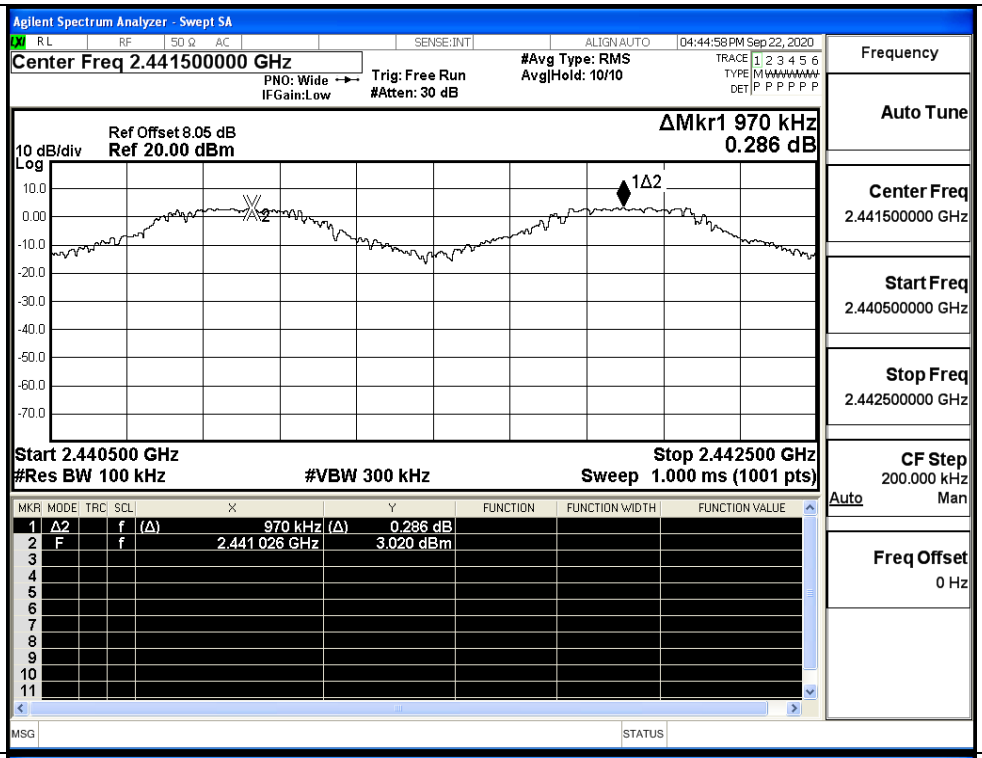
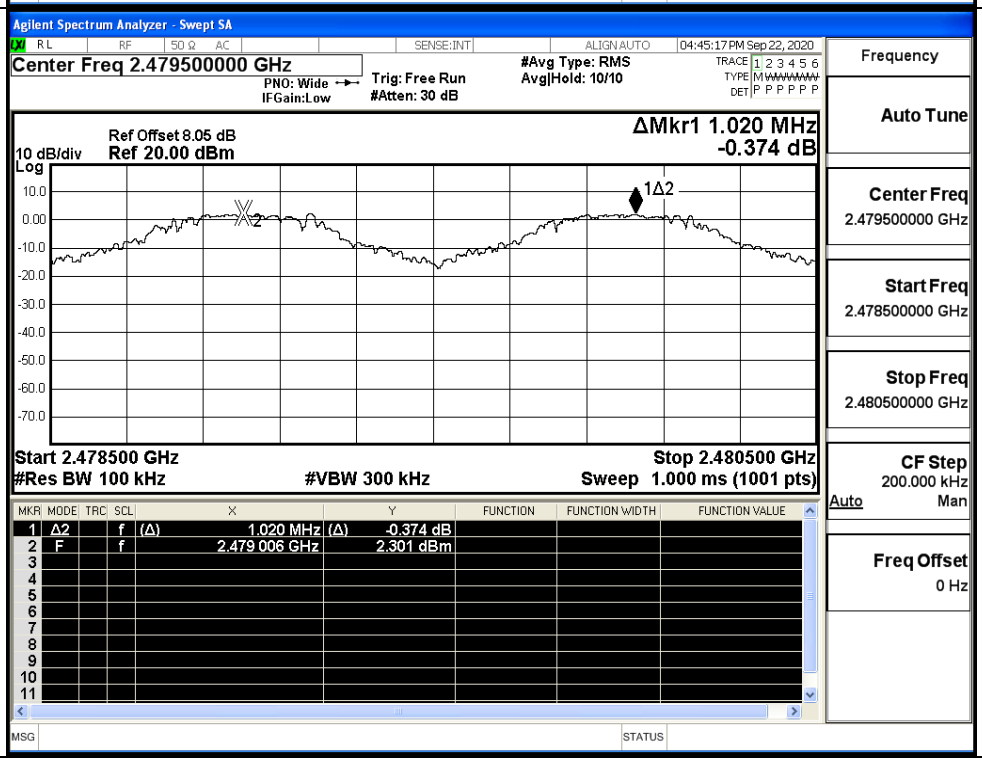
π/4DQPSK/HCH


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
#IFGain:Low
Radio Std: None
Radio Device: BTS
04:41:09 PM Sep 22, 2020
Frequency
Ref Offset 8.05 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr1 2.480162 GHz
-2.5695 dBm
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
1.1671 MHz
Total Power 7.47 dBm
Transmit Freq Error -3.117 kHz
OBW Power 99.00 %
x dB Bandwidth 1.288 MHz
x dB -20.00 dB
Freq Offset
0 Hz
MSG
STATUS

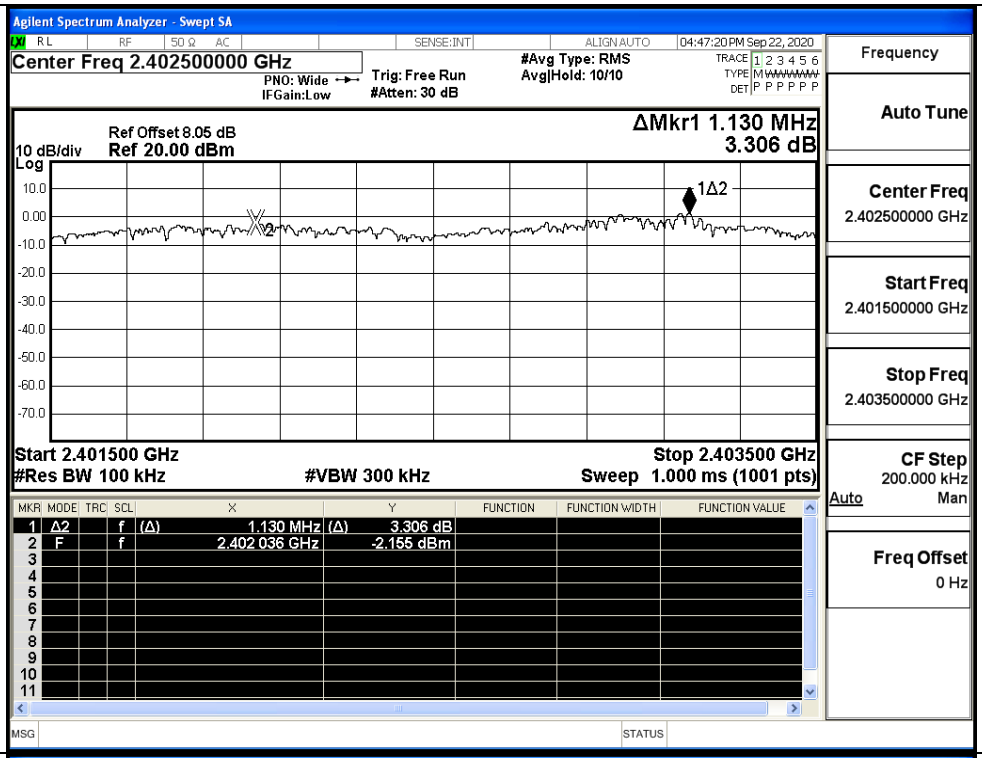
A.3 Carrier Frequency Separation

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.812	0.689	PASS
	MCH	0.970	0.689	PASS
	HCH	1.020	0.689	PASS
π/4DQPSK	LCH	1.130	0.859	PASS
	MCH	0.866	0.859	PASS
	HCH	1.196	0.859	PASS

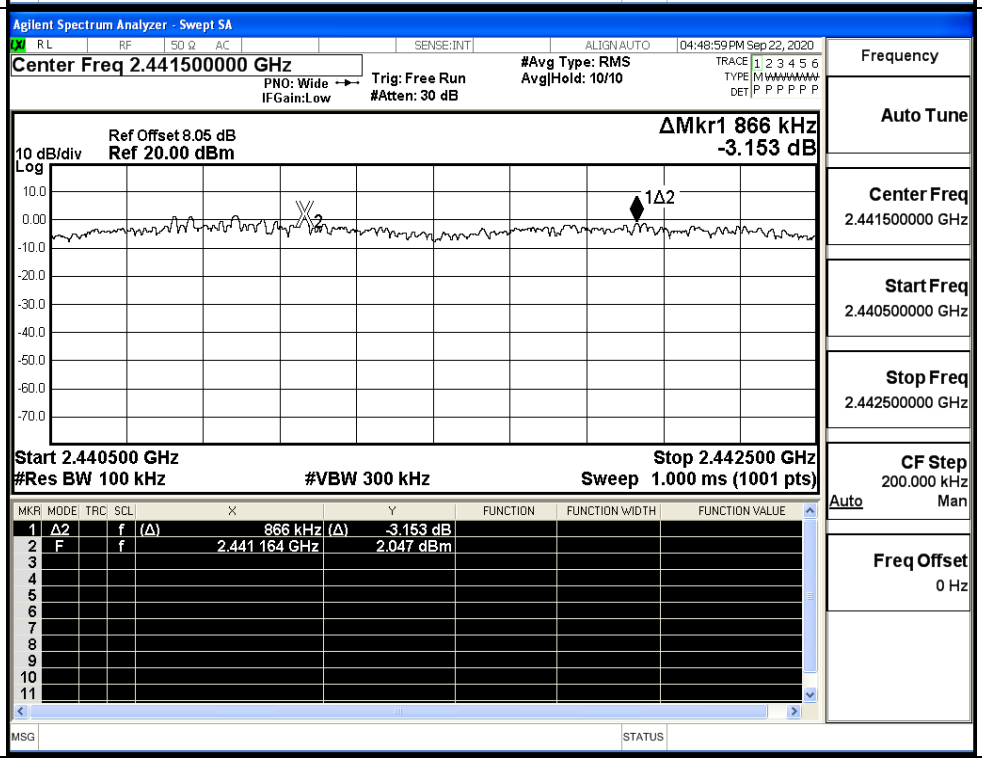
Test Graphs	
GFSK/LCH	

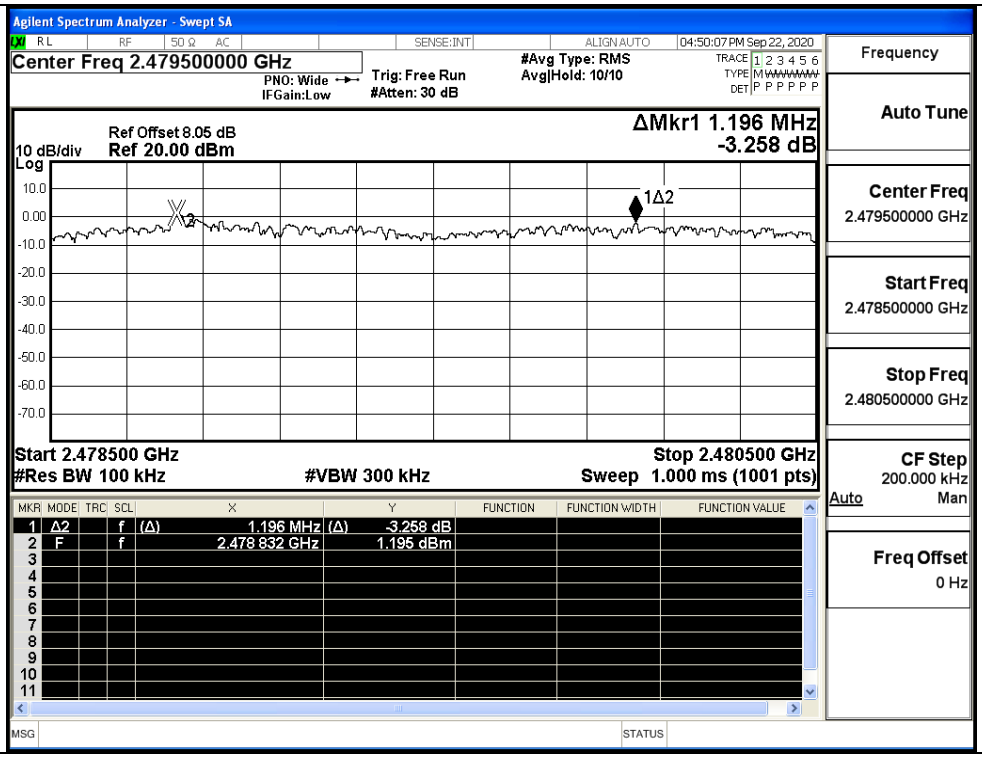
GFSK/MCH		
GFSK/HCH		

π/4DQPSK/LCH



π/4DQPSK/MCH

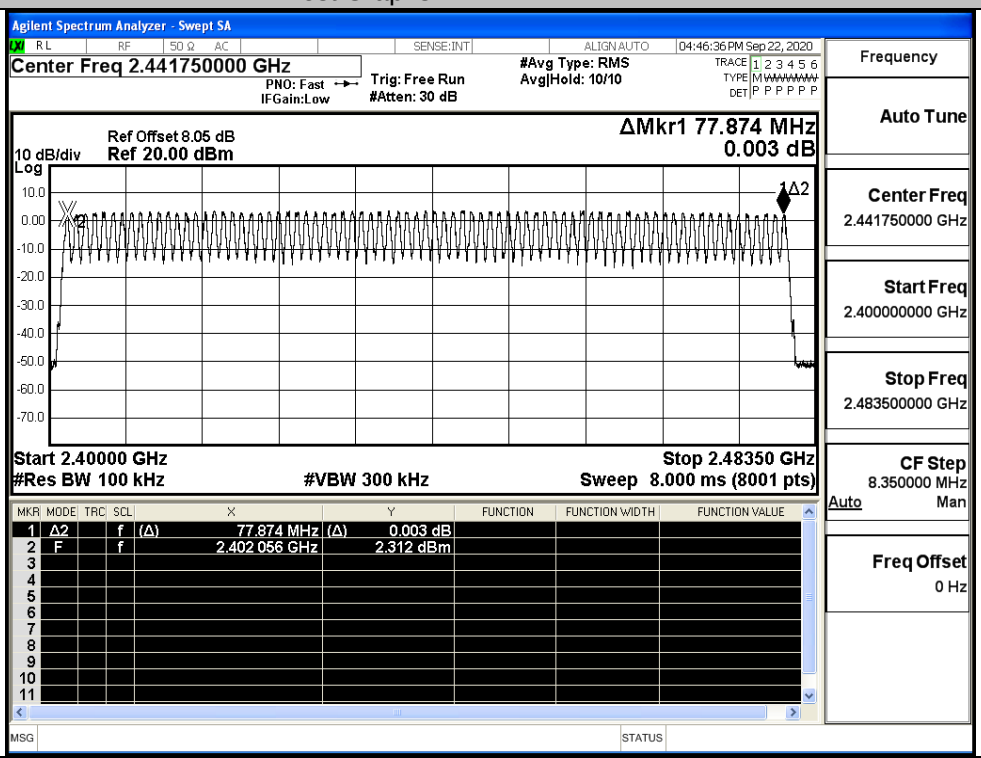
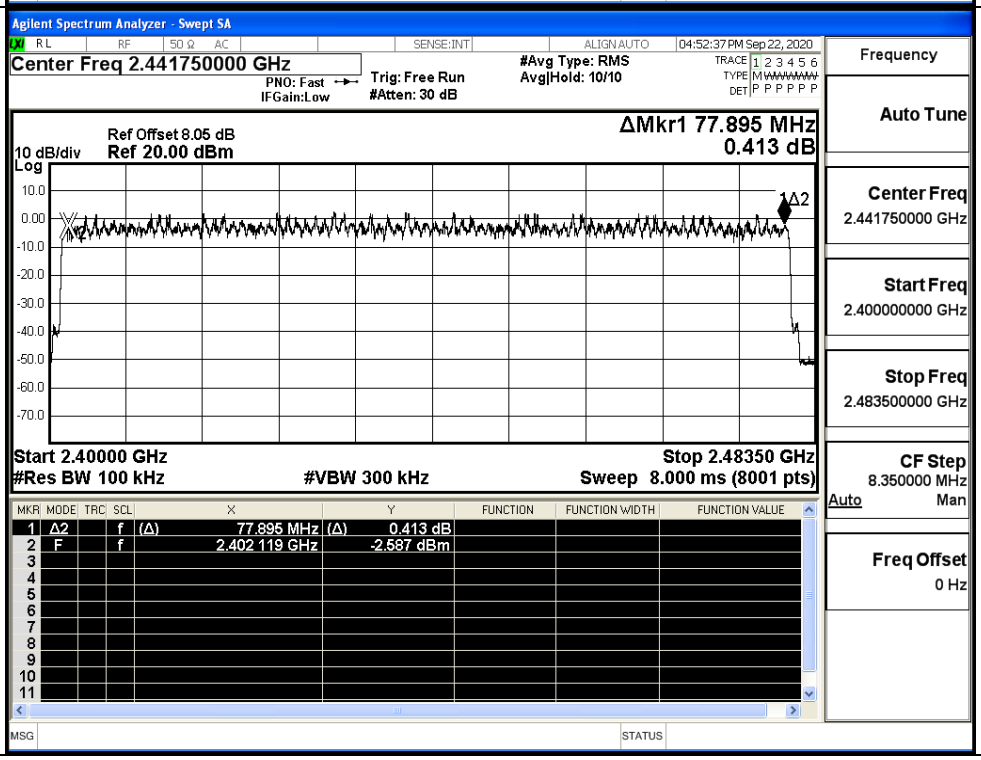


π/4DQPSK/HCH	

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
04:50:07 PM Sep 22, 2020
Ref Offset 8.05 dB
10 dB/div
Ref 20.00 dBm
ΔMkr1 1.196 MHz
-3.258 dB
1Δ2
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) 1.196 MHz (Δ) -3.258 dB
2 F f 2.478 832 GHz 1.195 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

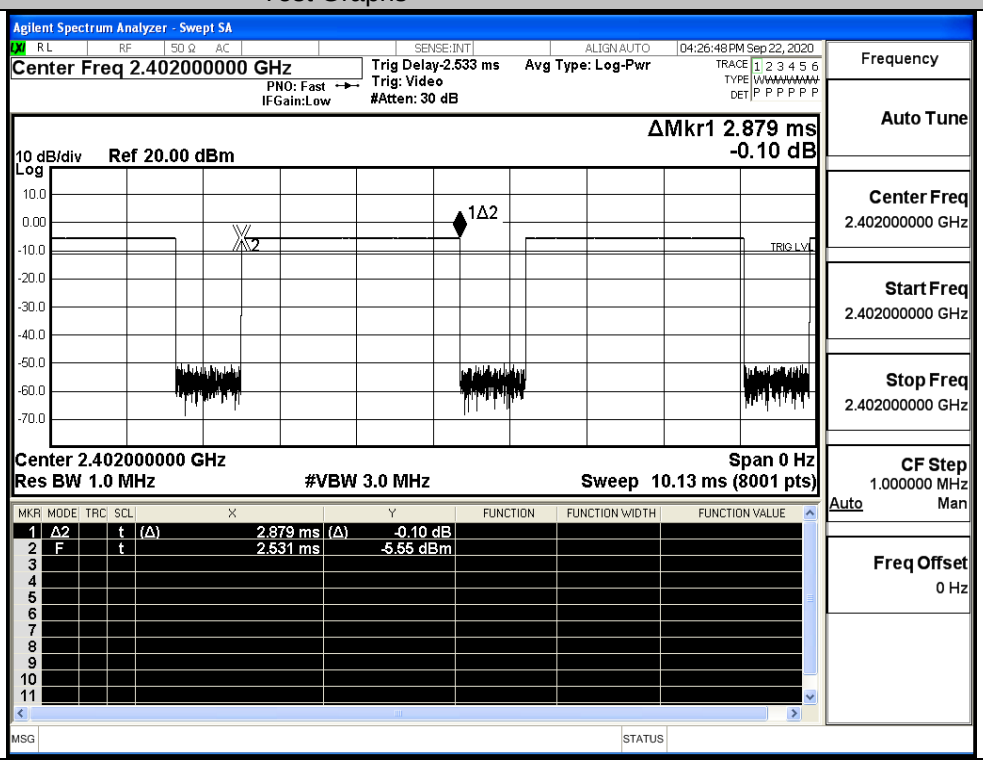
A.4 Hopping Channel Number

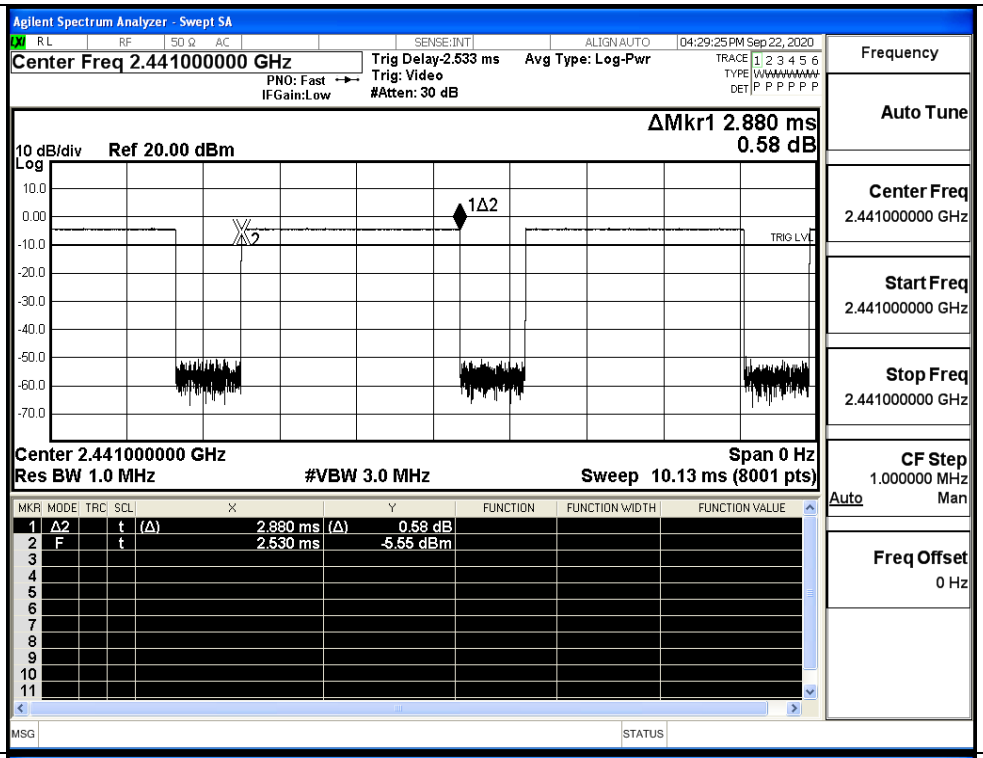
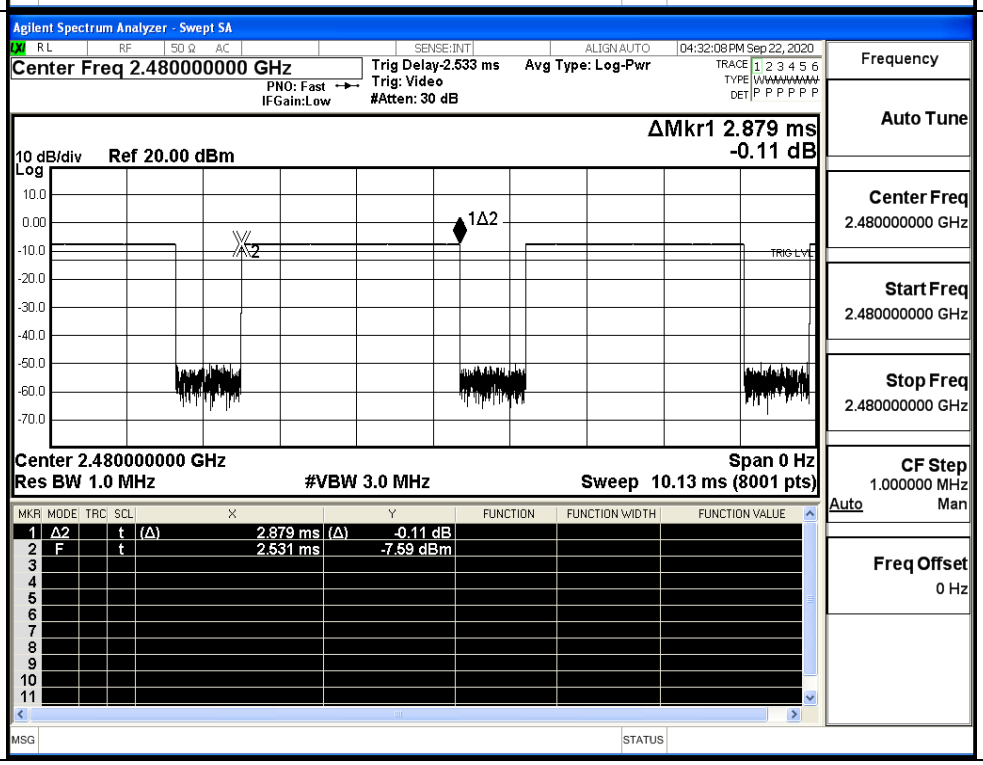
Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	>=15	PASS
π/4DQPSK	Hop	79	>=15	PASS

Test Graphs		
GFSK/Hop		
π/4DQPSK/Hop		

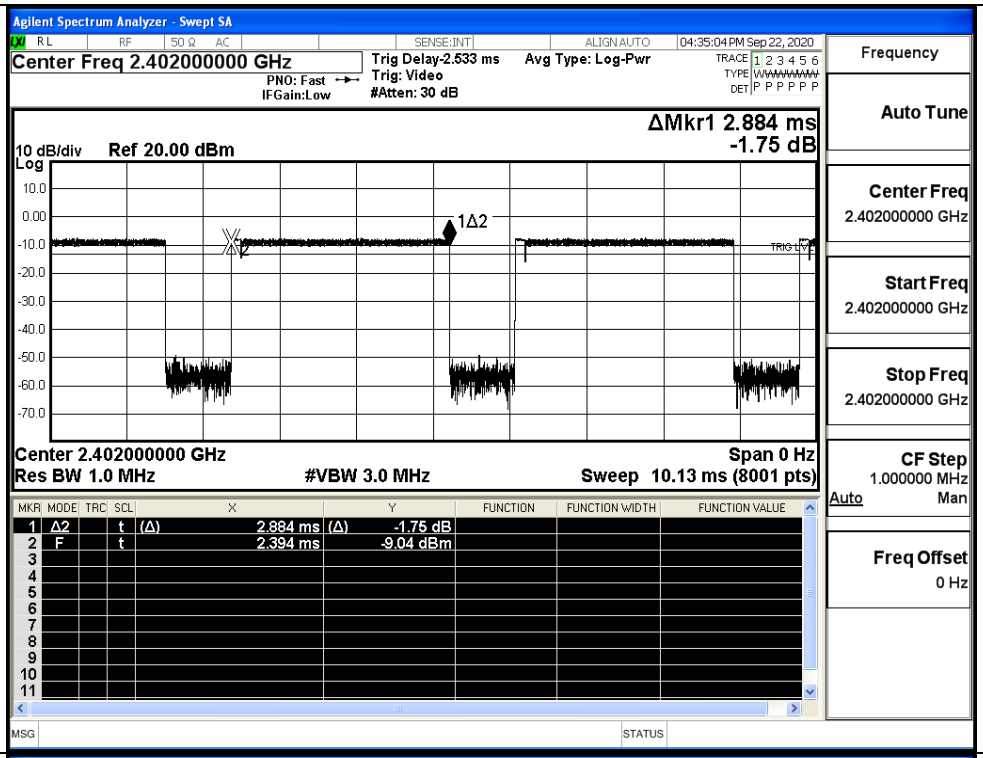
A.5 Dwell Time

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

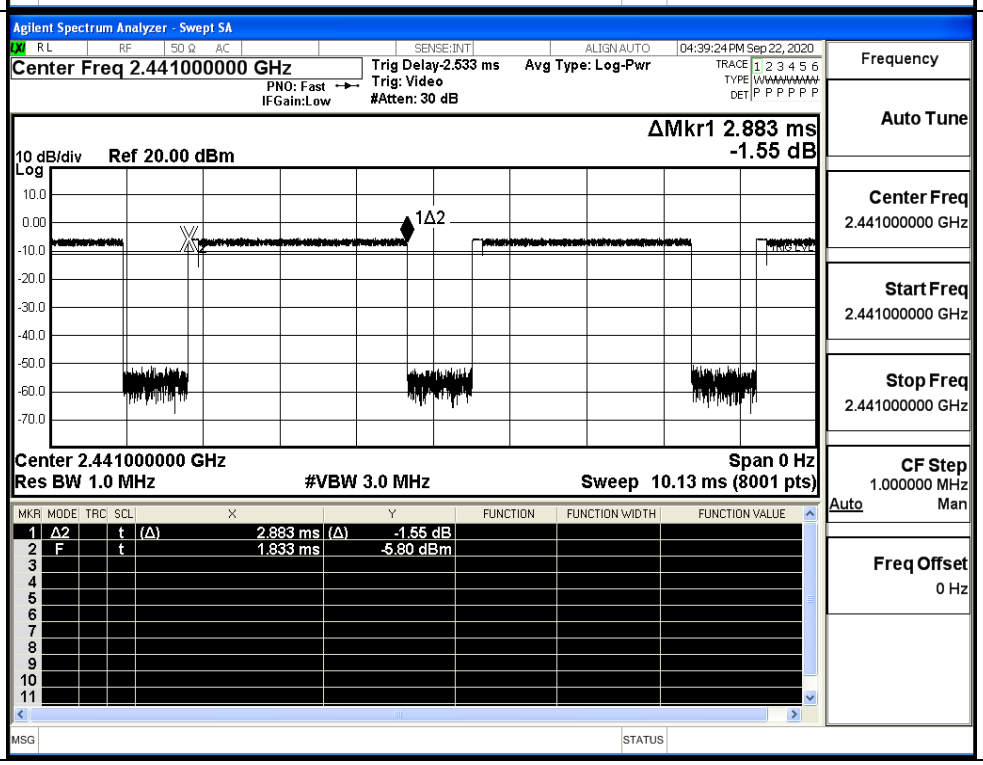
Test Graphs	
GFSK_DH5/LCH	

GFSK_DH5/MCH	
GFSK_DH5/HCH	

π/4DQPSK
_2DH5/LCH

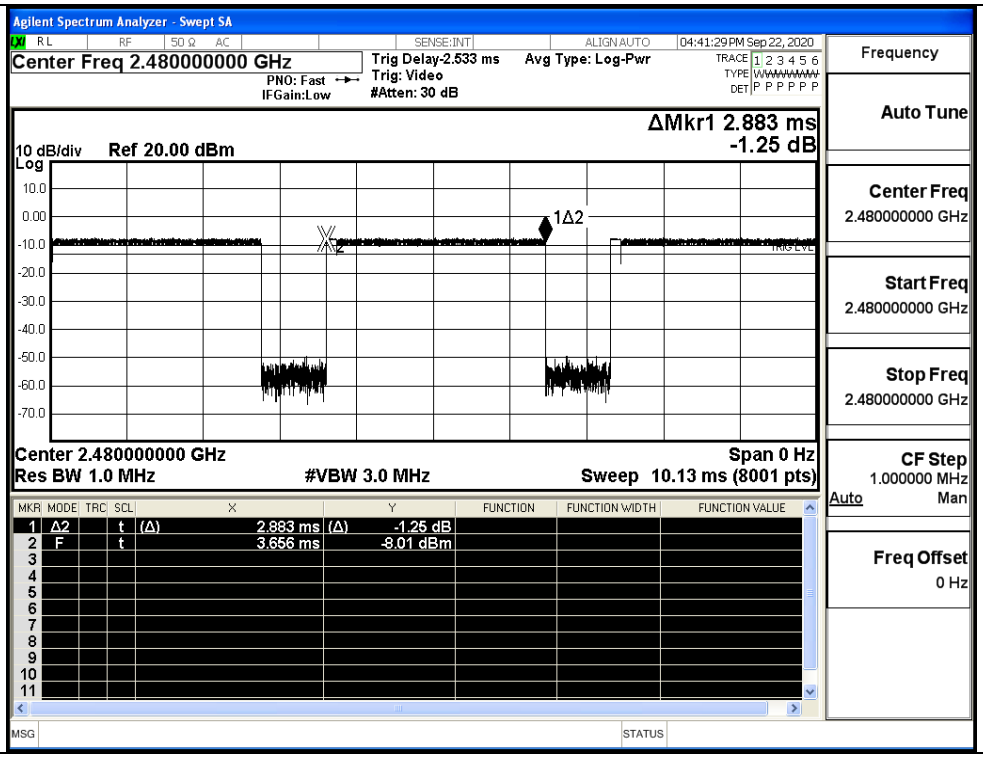


π/4DQPSK
_2DH5/MCH



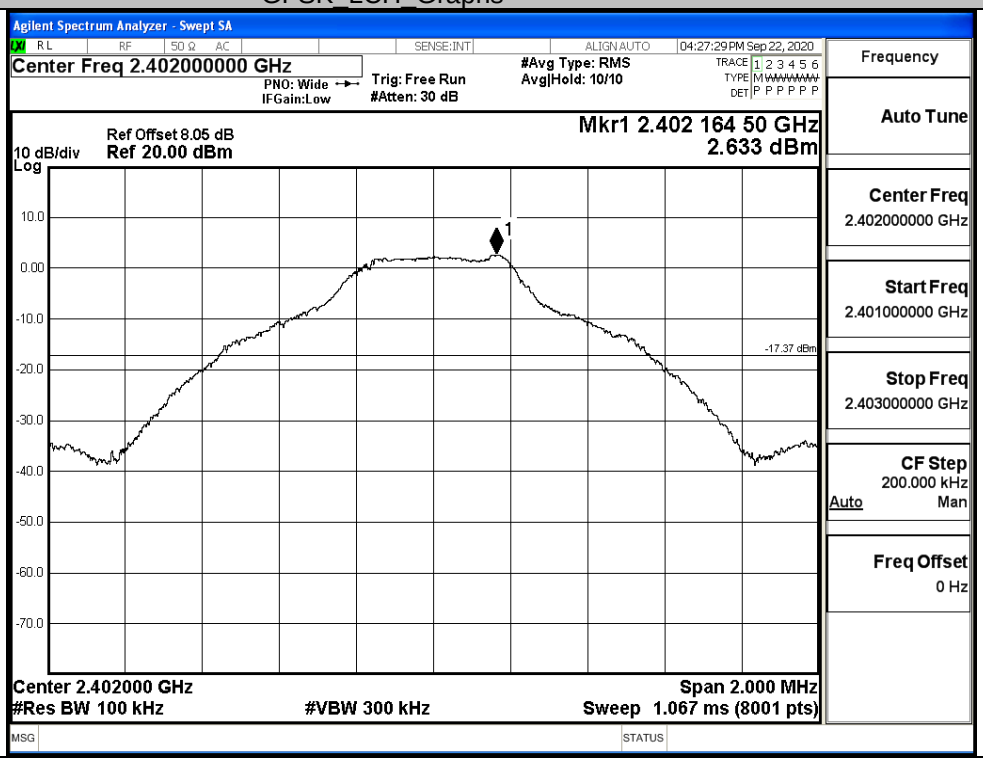
π/4DQPSK

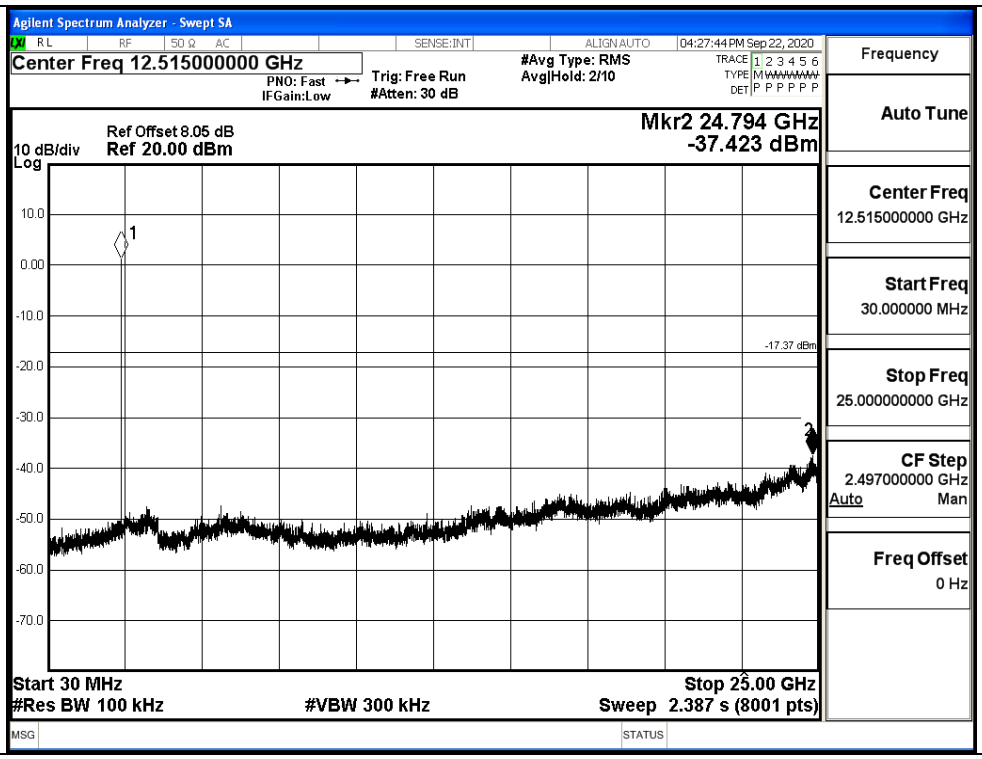
_2DH5/HCH



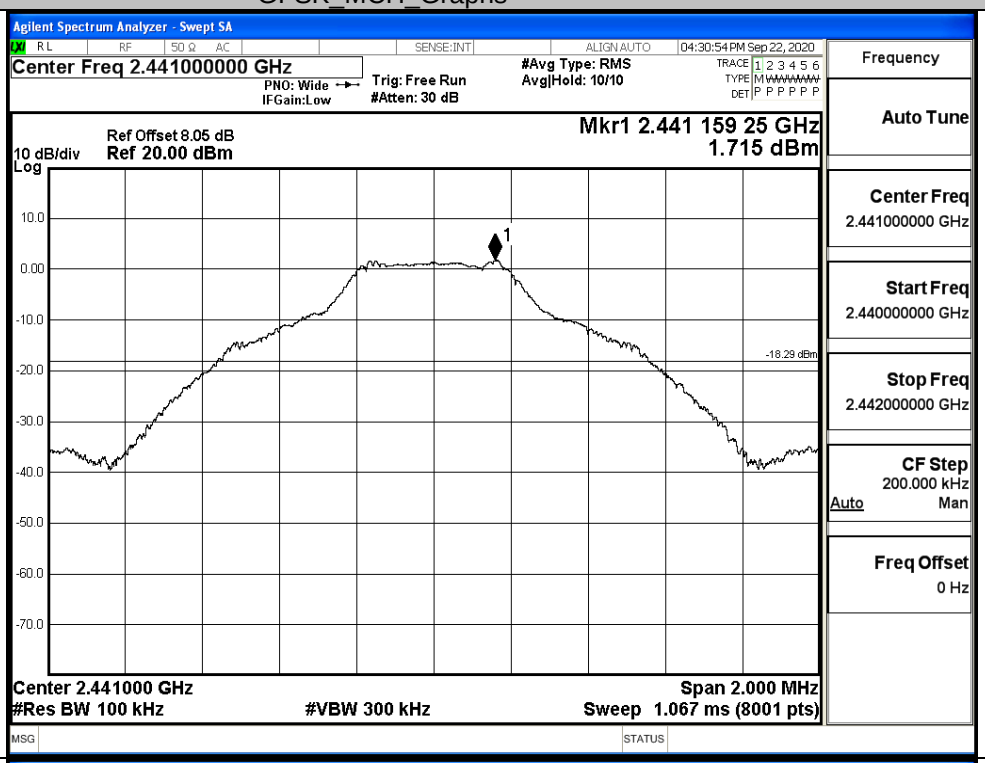
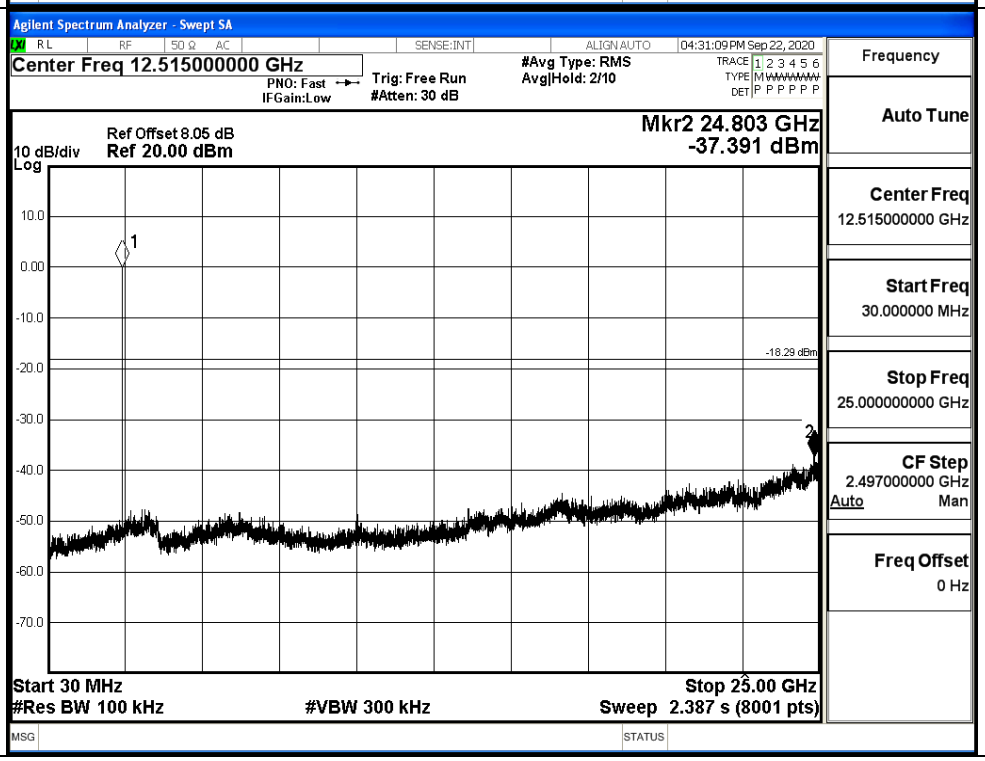
A.6 RF Conducted Spurious Emissions

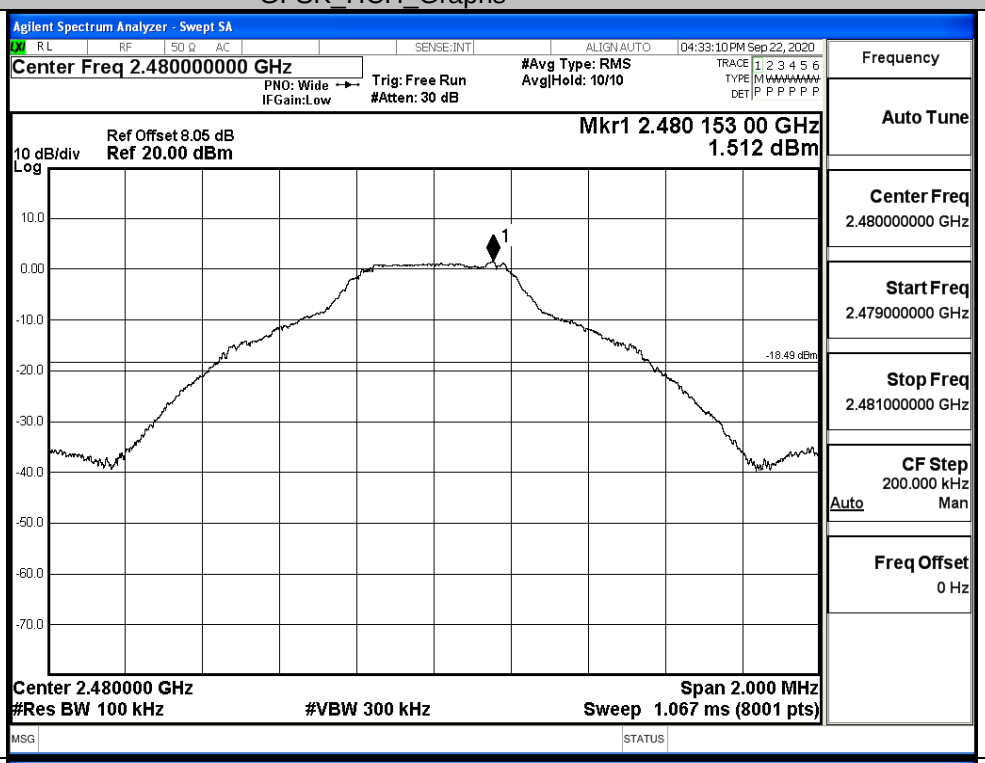
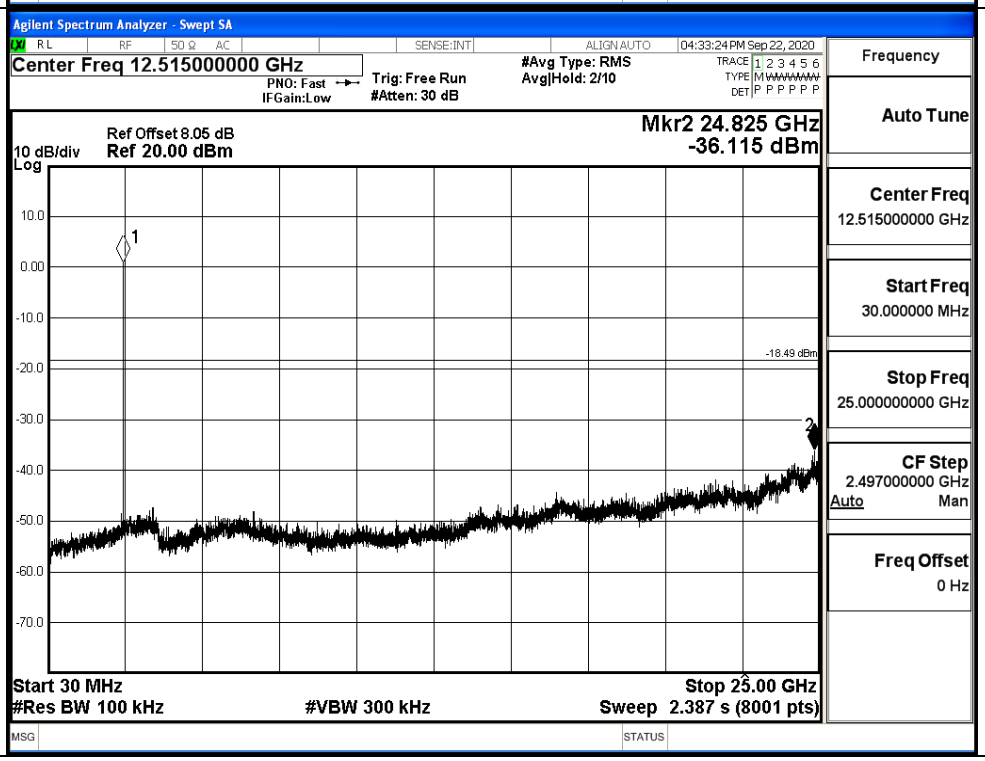
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2.633	-37.423	-17.367	PASS
	MCH	1.715	-37.391	-18.285	PASS
	HCH	1.512	-36.115	-18.488	PASS
π/4DQPSK	LCH	1.057	-37.844	-18.943	PASS
	MCH	1.13	-38.051	-18.870	PASS
	HCH	1.234	-37.908	-18.766	PASS

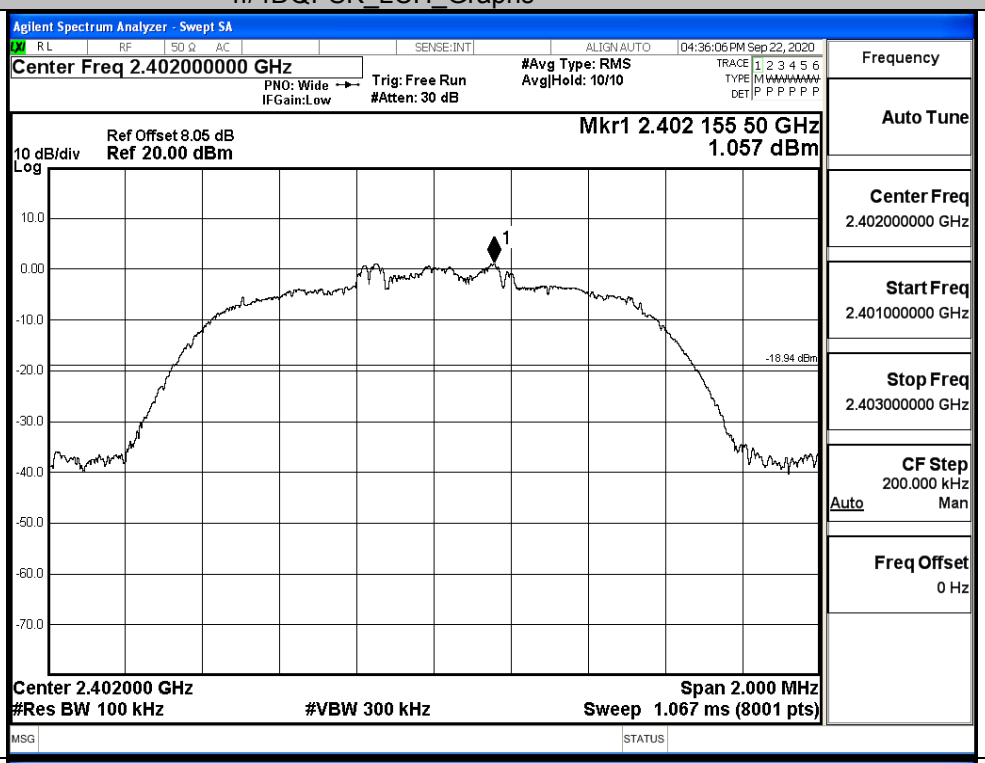
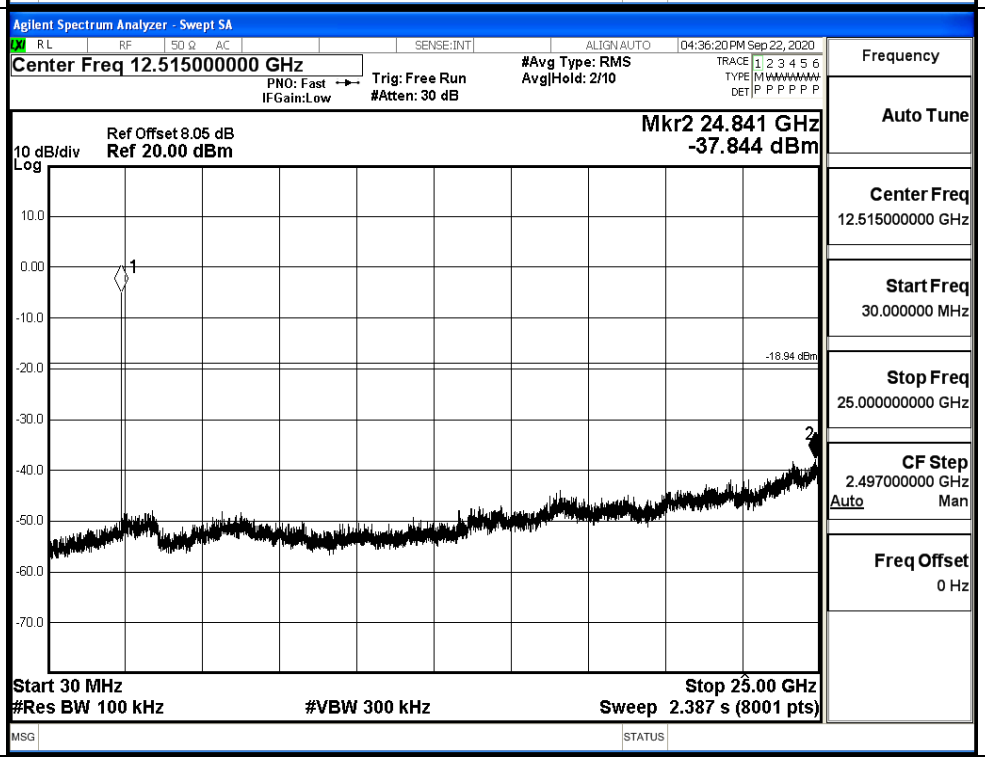
GFSK_LCH_Graphs		
Pref		

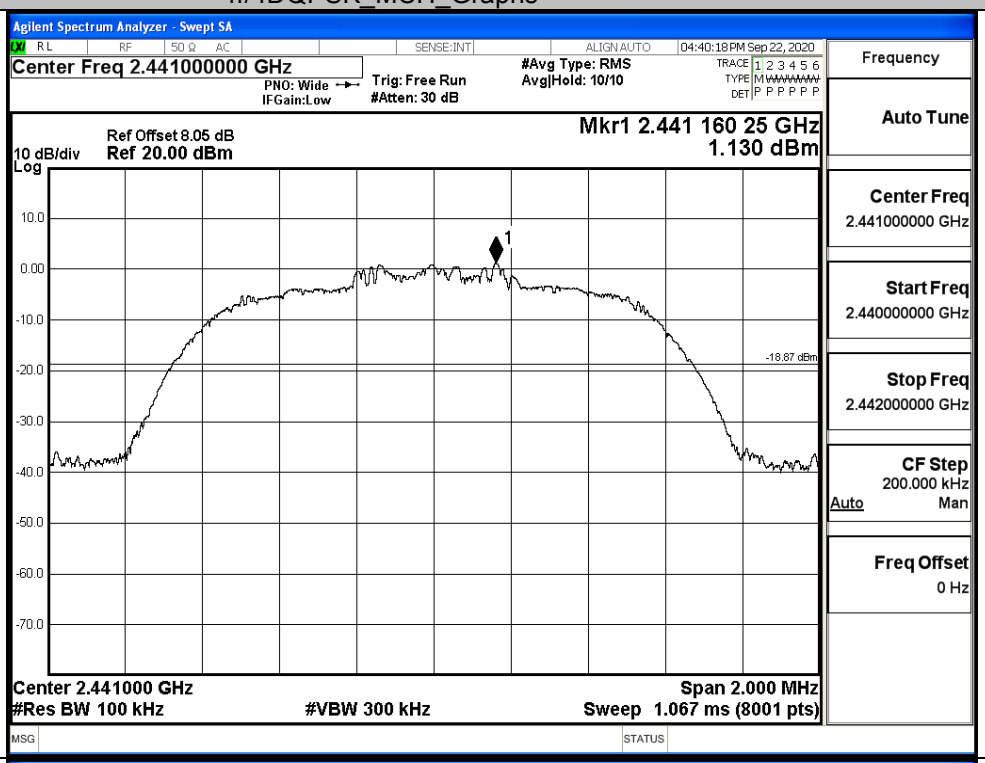
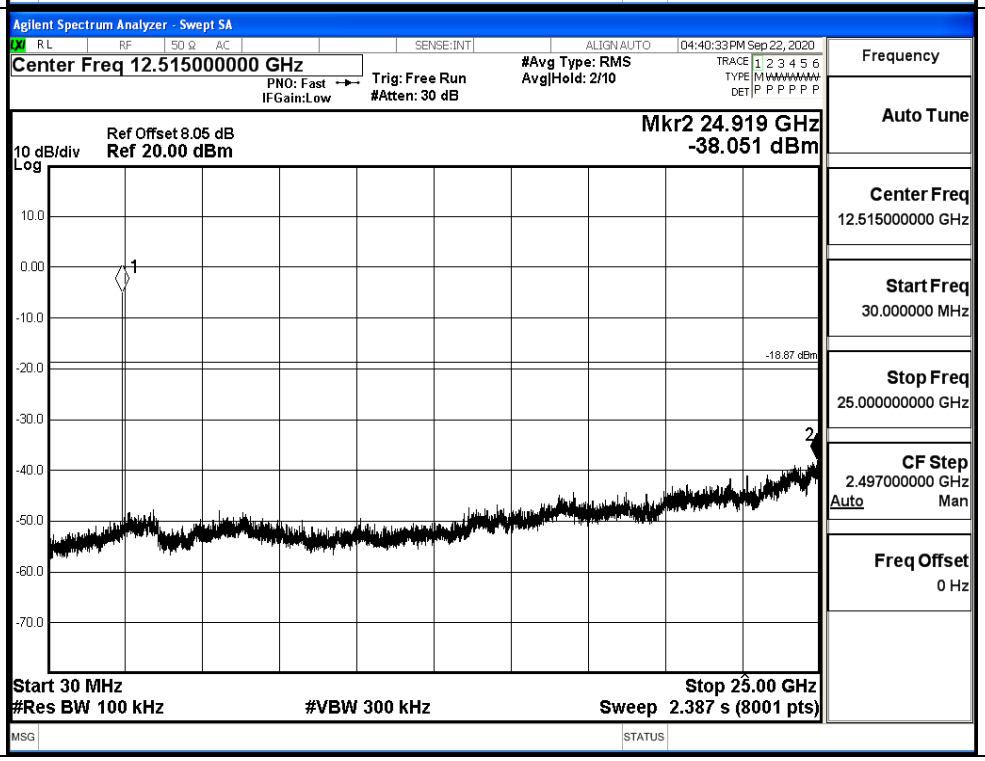
Puw		

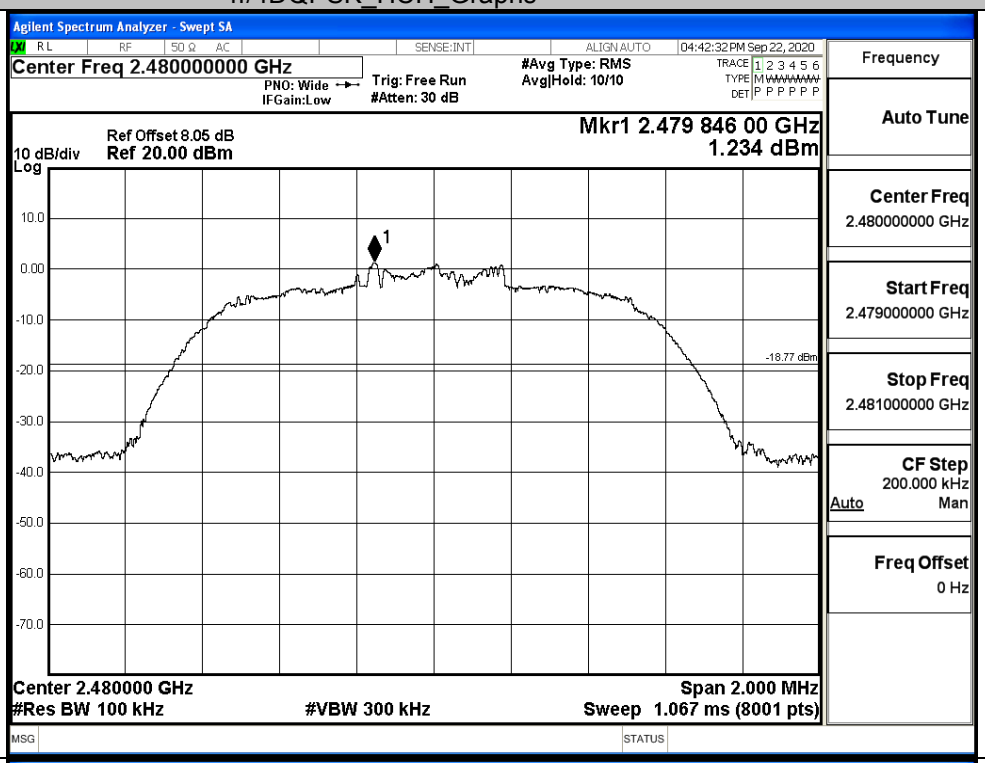
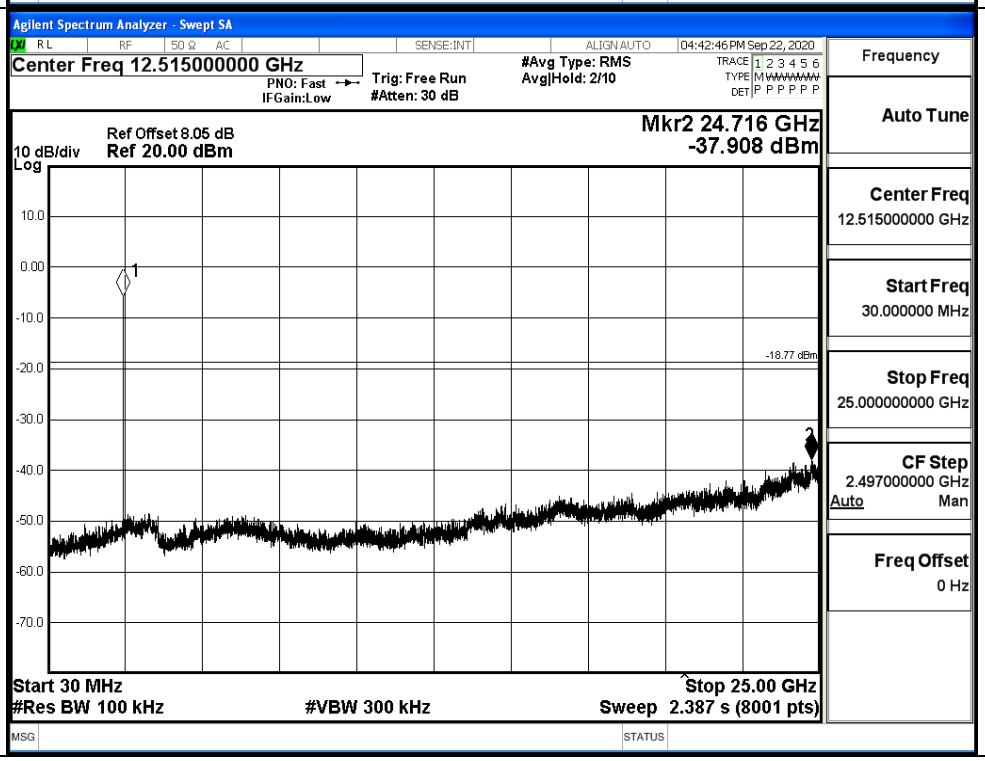
Agilent Spectrum Analyzer - Swept SA
Center Freq 12.515000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 2/10
04:27:44 PM Sep 22, 2020
Ref Offset 8.05 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr2 24.794 GHz
-37.423 dBm
-17.37 dBm
Start 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 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			

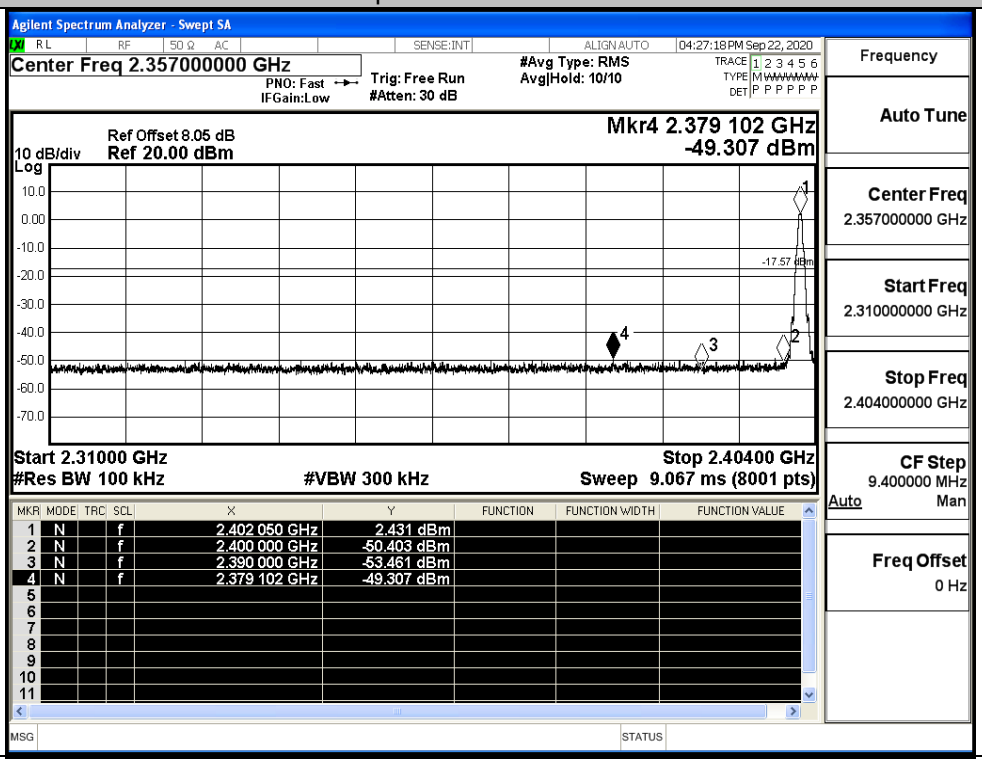
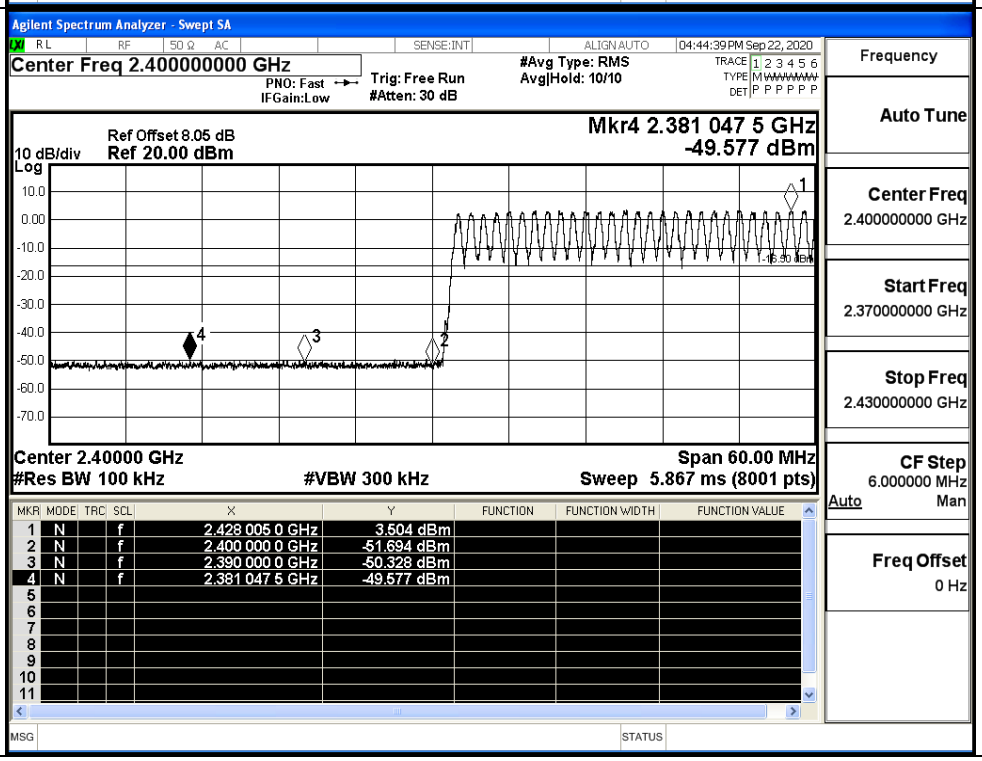
π/4DQPSK_LCH_Graphs		
Pref		
Puw		

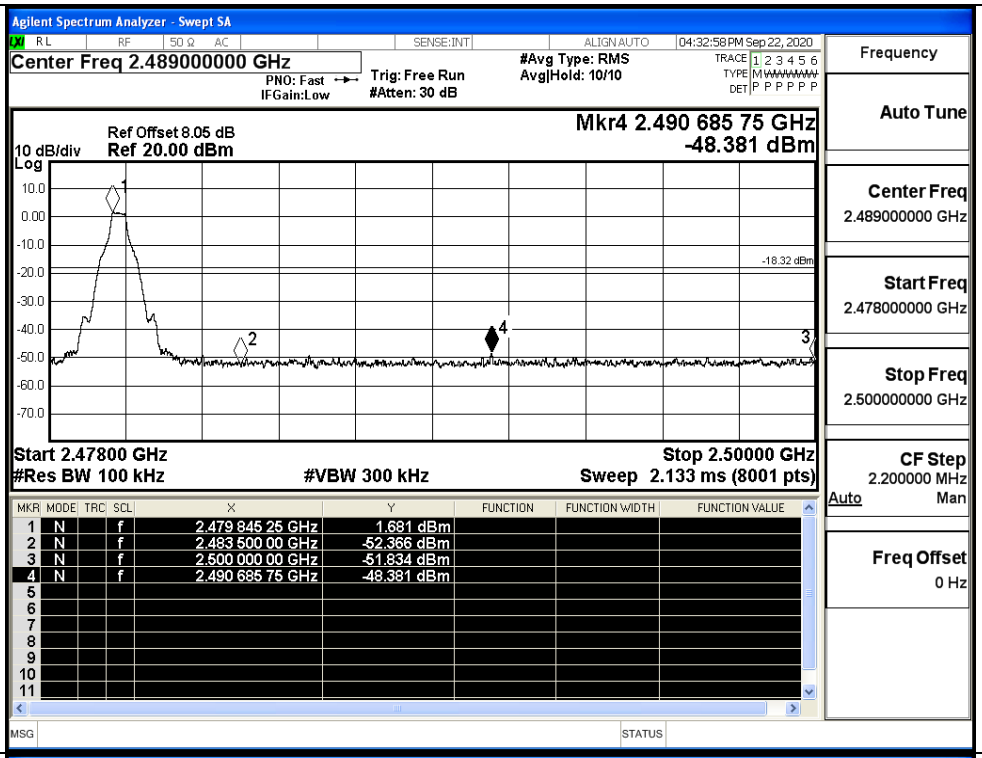
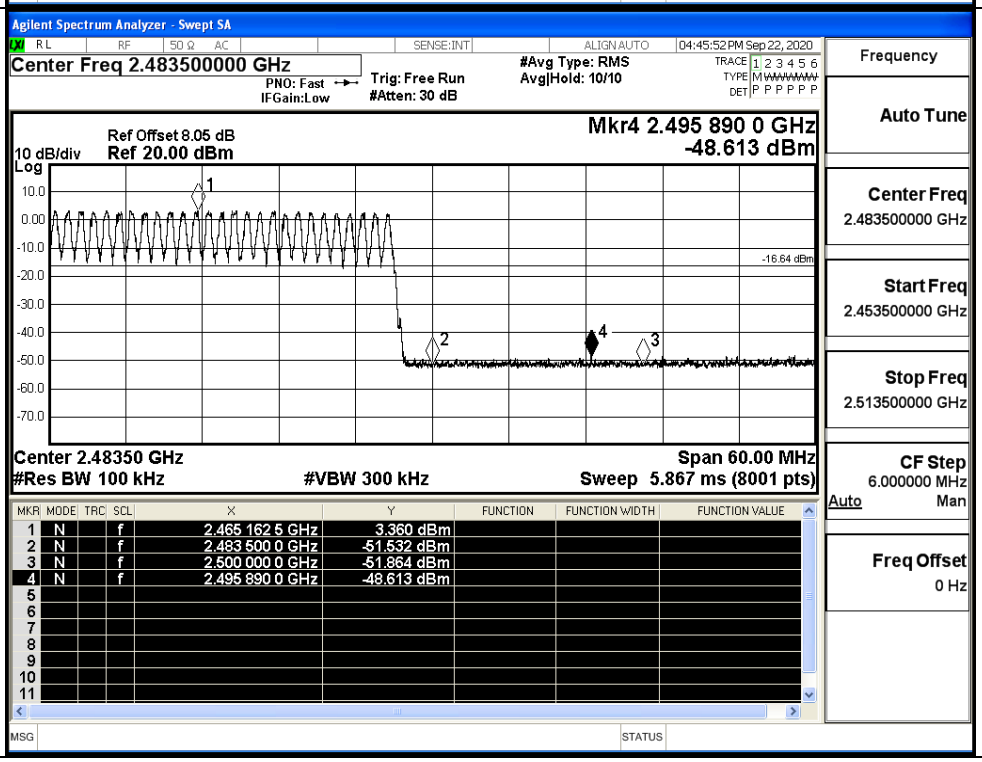
π/4DQPSK_MCH_Graphs			
Pref			
Puw			

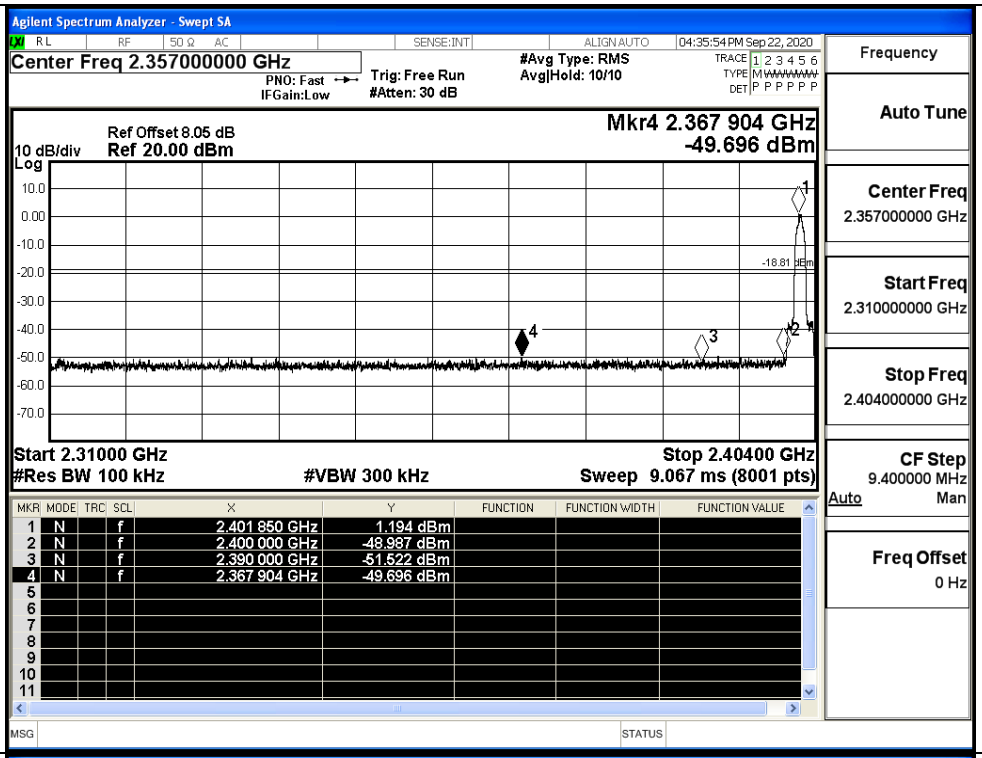
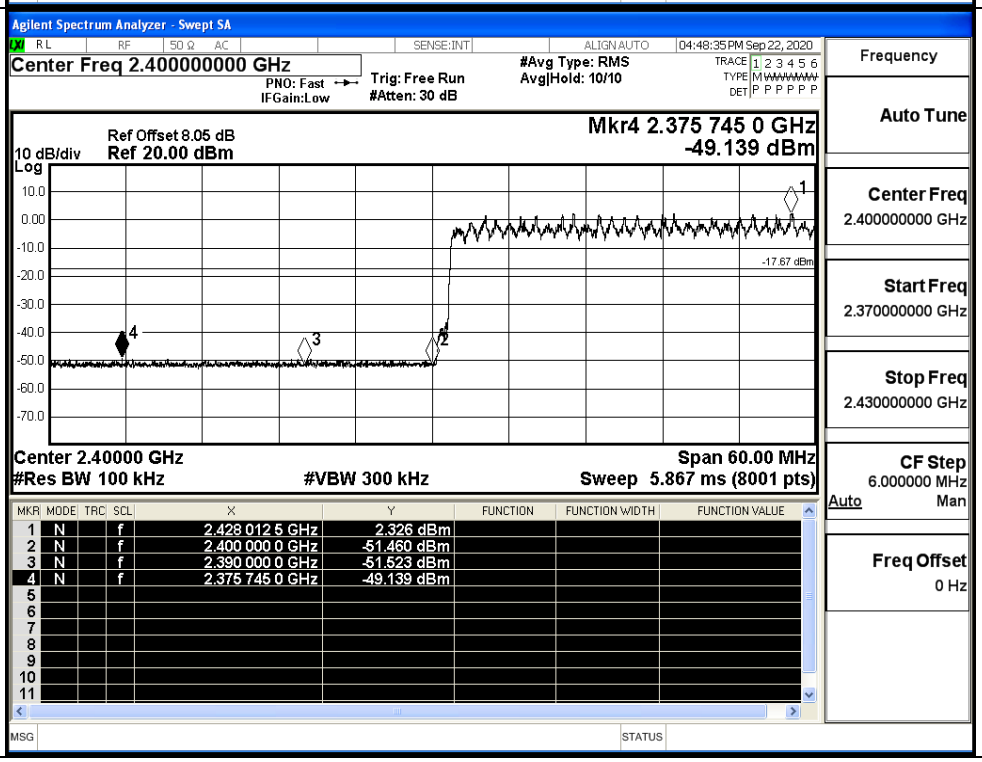
π/4DQPSK_HCH_Graphs			
Pref			
Puw			

A.7 Band-edge for RF Conducted Emissions

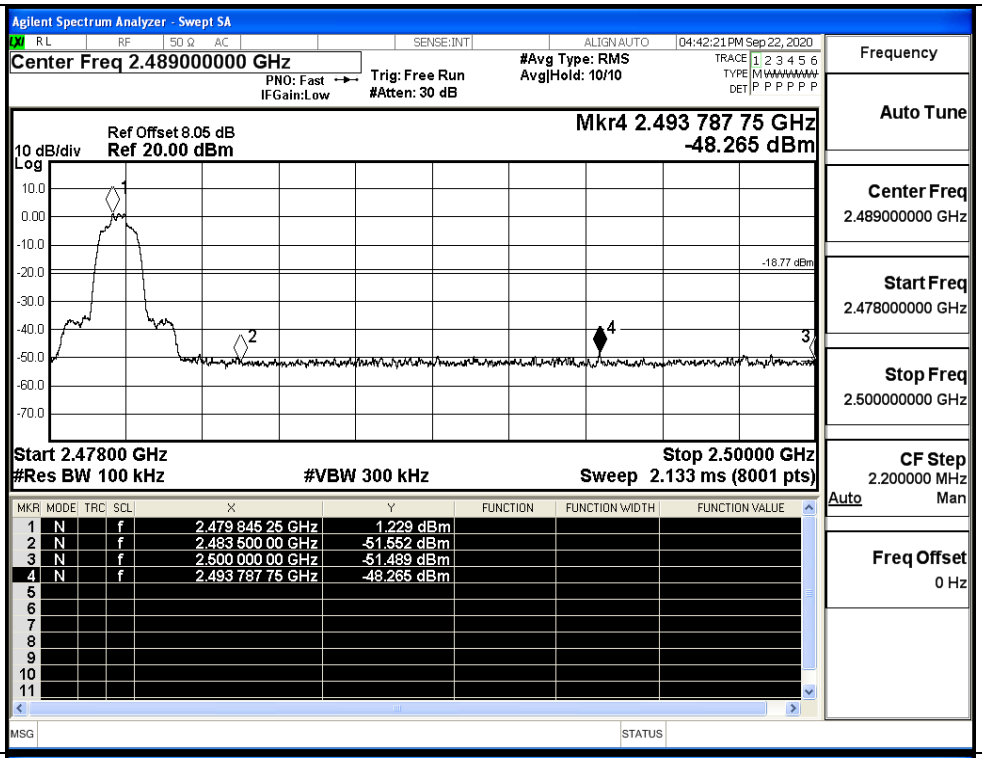
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	2.431	Off	-49.307	-17.57	PASS
			3.504	On	-49.577	-16.5	PASS
	HCH	2480	1.681	Off	-48.381	-18.32	PASS
			3.360	On	-48.613	-16.64	PASS
π/4DQPSK	LCH	2402	1.194	Off	-49.696	-18.81	PASS
			2.326	On	-49.139	-17.67	PASS
	HCH	2480	1.229	Off	-48.265	-18.77	PASS
			2.087	On	-47.526	-17.91	PASS

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

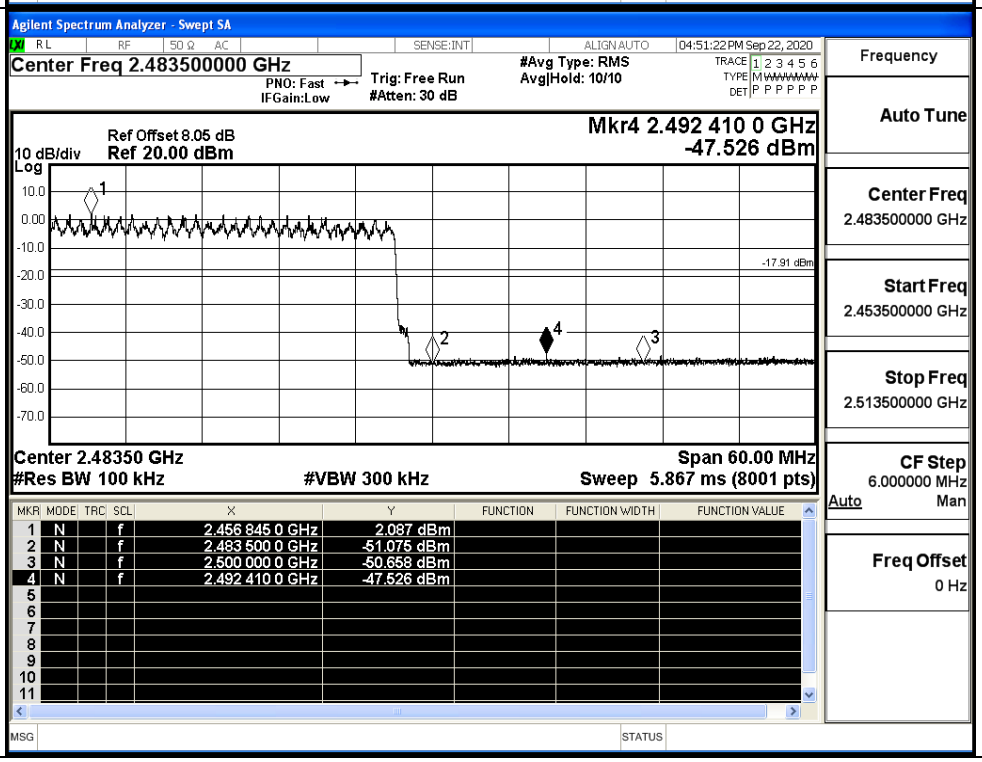
GFSK/HCH/No Hop	
GFSK/HCH/Hop	

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

π/4DQPSK/HCH/No Hop



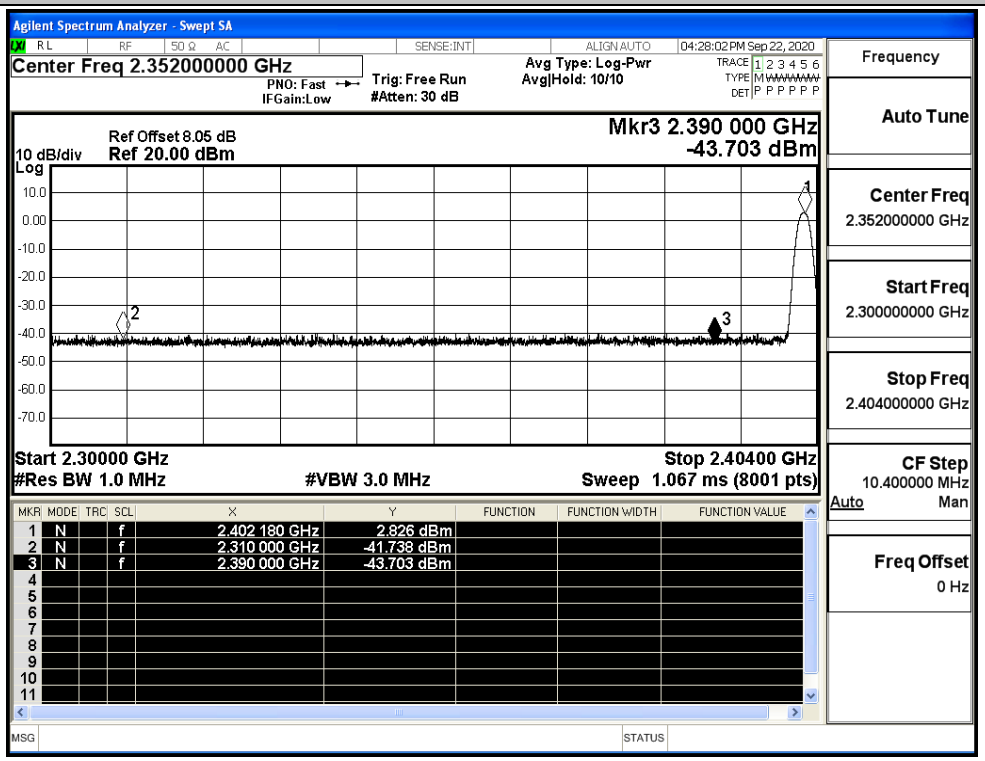
π/4DQPSK/HCH/Hop



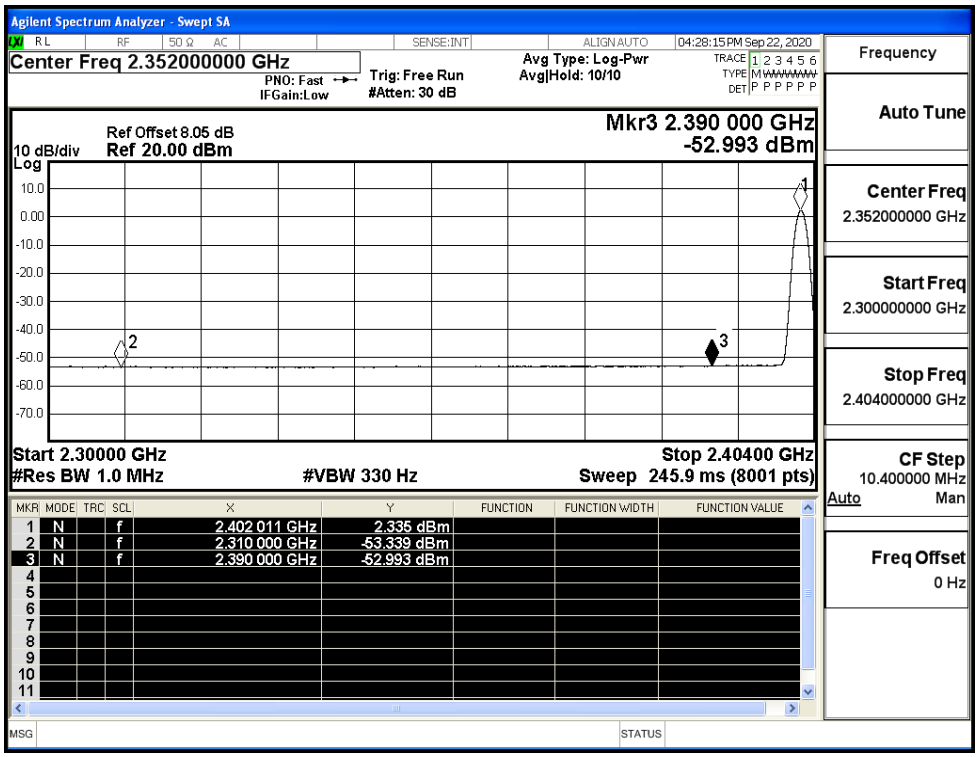
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-41.74	2.0	0	55.49	PEAK	74	PASS
	Off	2310.0	-53.34	2.0	0	43.89	AV	54	PASS
	Off	2390.0	-43.70	2.0	0	53.53	PEAK	74	PASS
	Off	2390.0	-52.99	2.0	0	44.24	AV	54	PASS
	Off	2483.5	-41.86	2.0	0	55.37	PEAK	74	PASS
	Off	2483.5	-52.53	2.0	0	44.70	AV	54	PASS
	Off	2500.0	-42.31	2.0	0	54.92	PEAK	74	PASS
	Off	2500.0	-52.36	2.0	0	44.87	AV	54	PASS
π/4DQPSK	Off	2310.0	-43.27	2.0	0	53.96	PEAK	74	PASS
	Off	2310.0	-53.33	2.0	0	43.90	AV	54	PASS
	Off	2390.0	-42.66	2.0	0	54.57	PEAK	74	PASS
	Off	2390.0	-52.90	2.0	0	44.33	AV	54	PASS
	Off	2483.5	-42.69	2.0	0	54.54	PEAK	74	PASS
	Off	2483.5	-52.35	2.0	0	44.88	AV	54	PASS
	Off	2500.0	-42.15	2.0	0	55.08	PEAK	74	PASS
	Off	2500.0	-52.28	2.0	0	44.95	AV	54	PASS

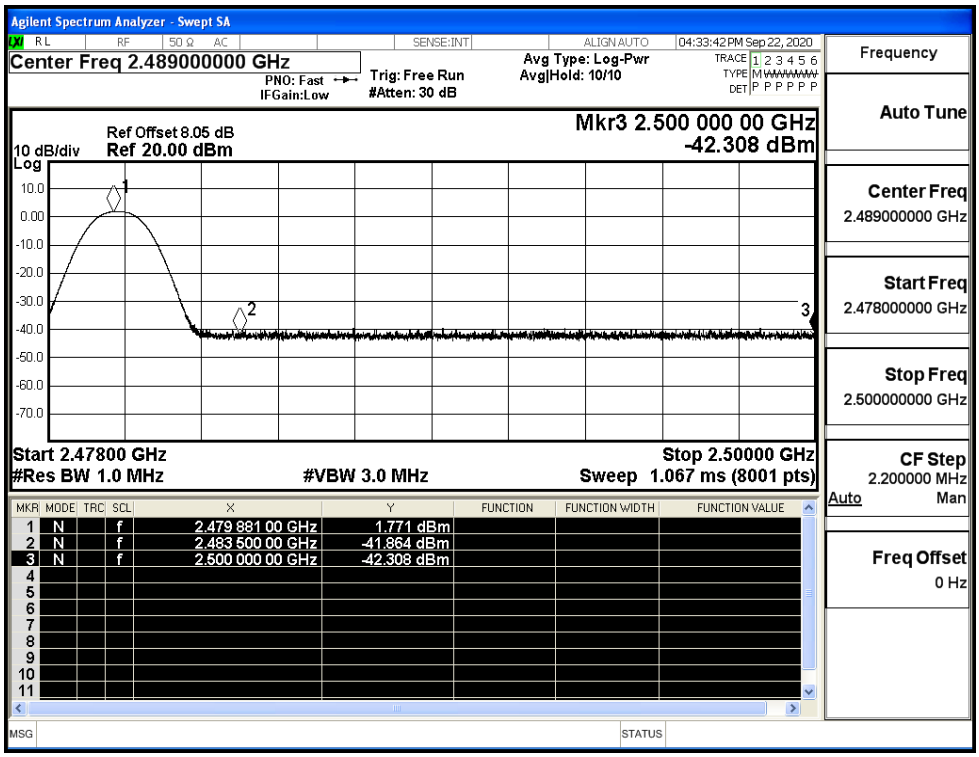
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (Low Channel)



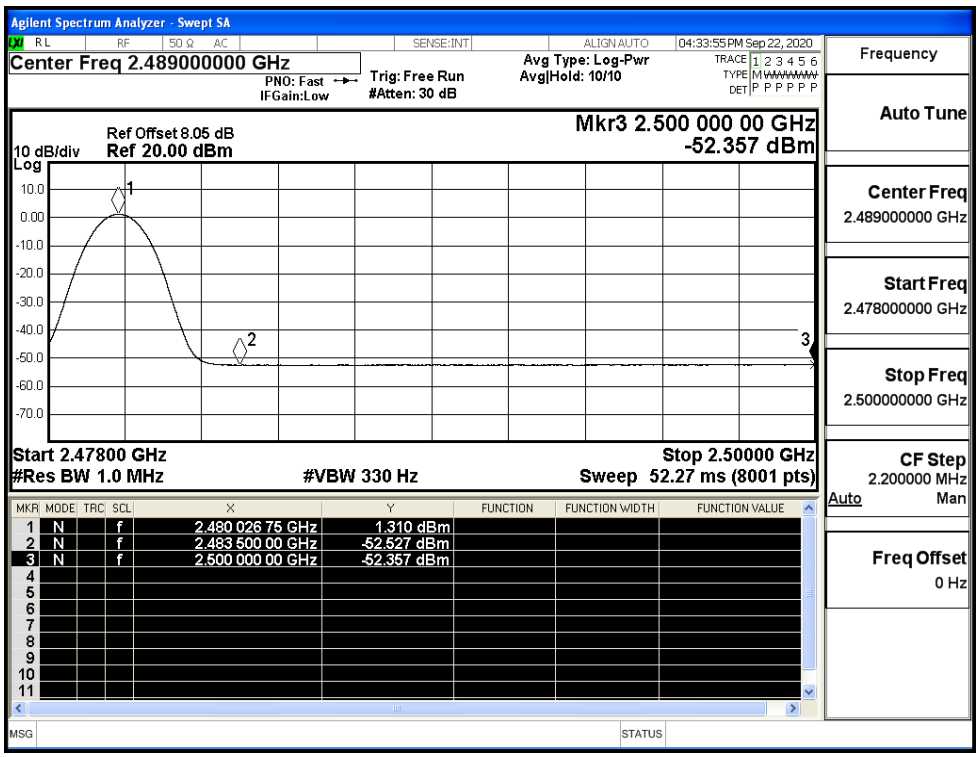
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (Low Channel)



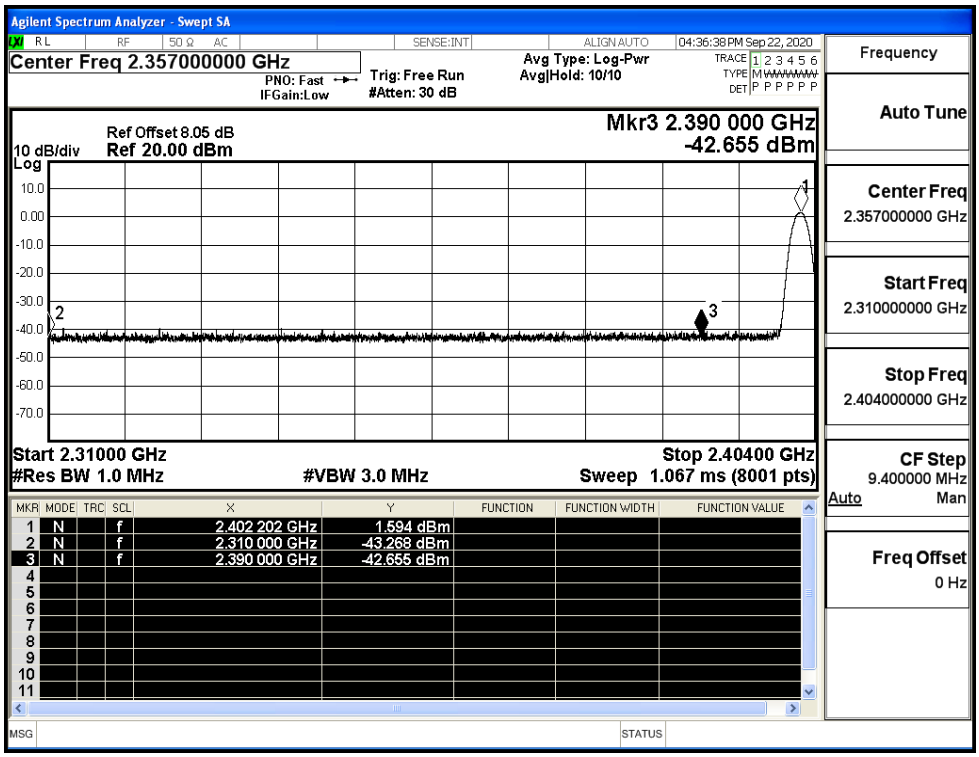
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (High Channel)



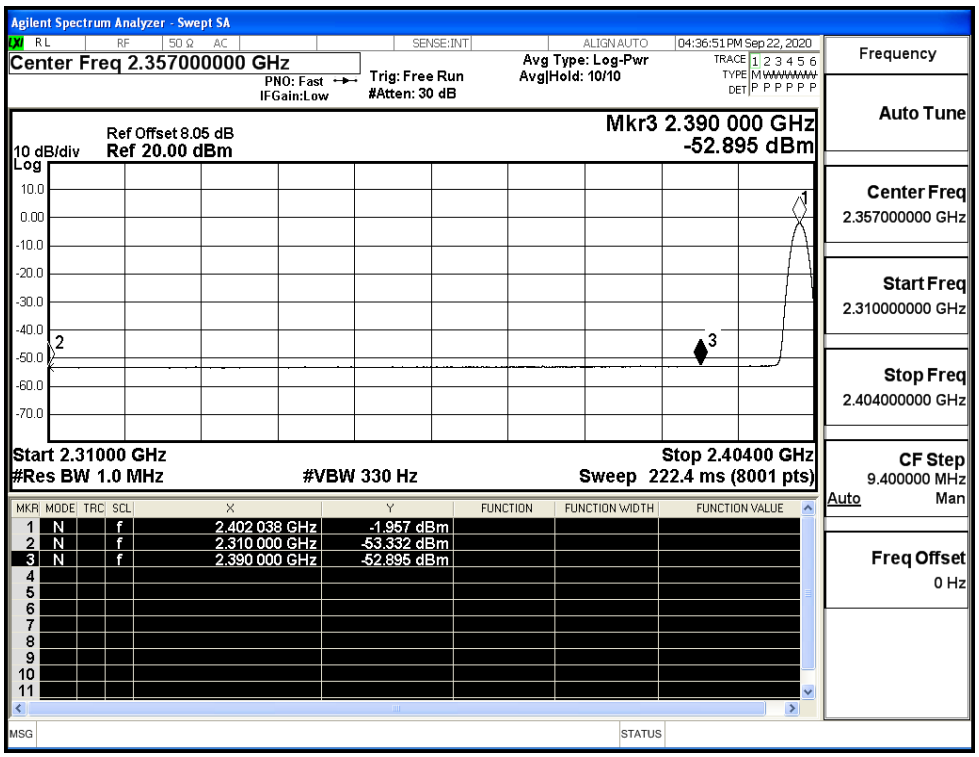
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (High Channel)



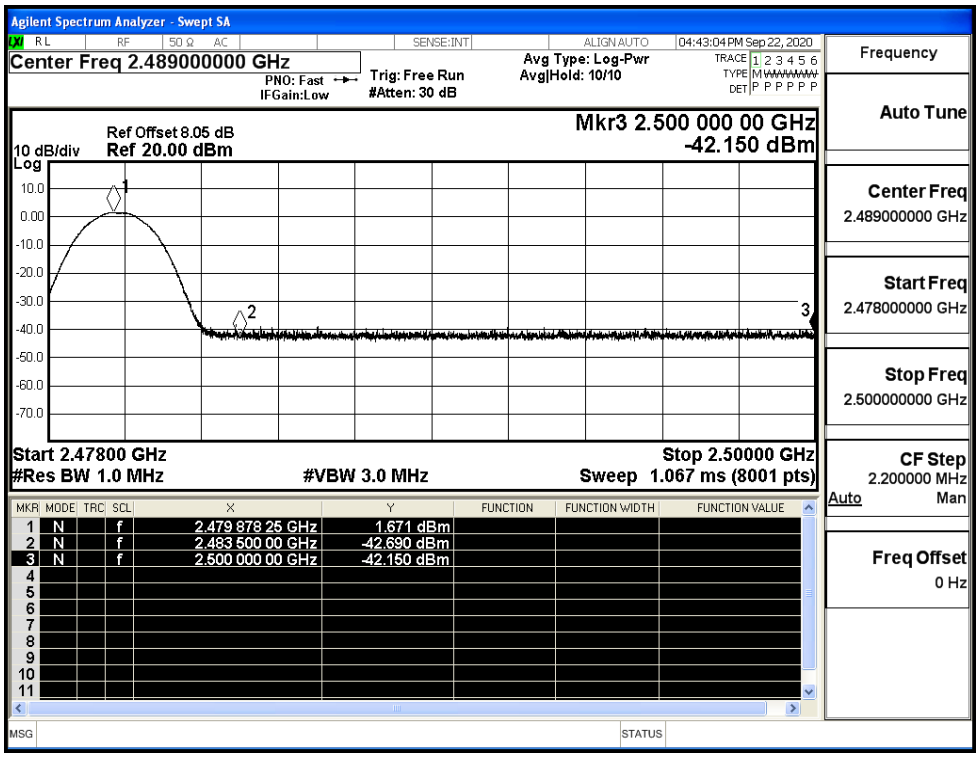
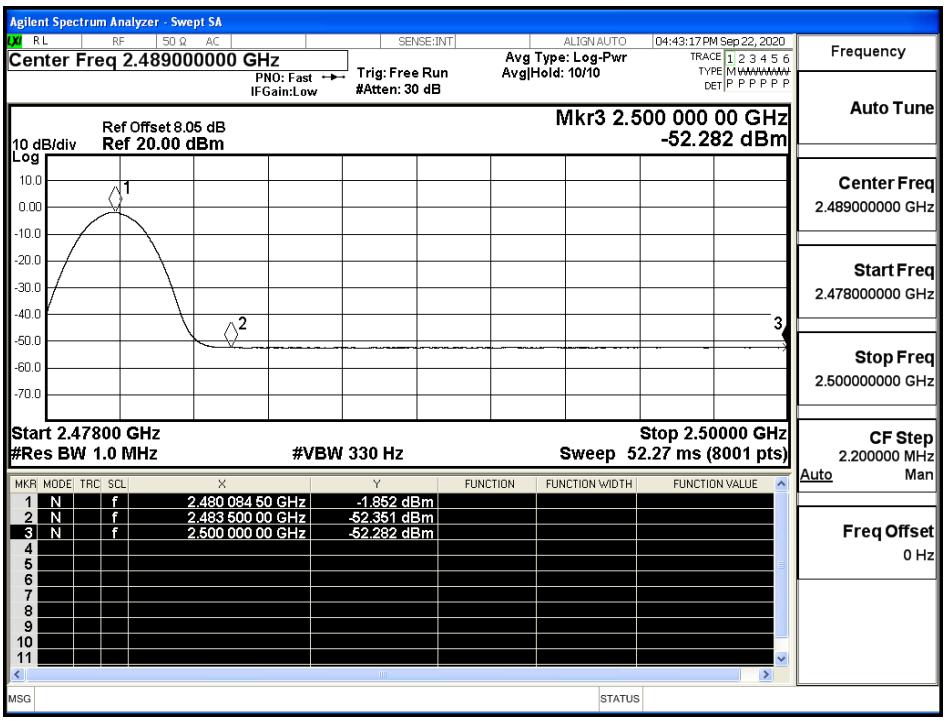
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (Low Channel)



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)