Appendix A

RF Test Data for BT V4.1(BDR/EDR) (Conducted Measurement)

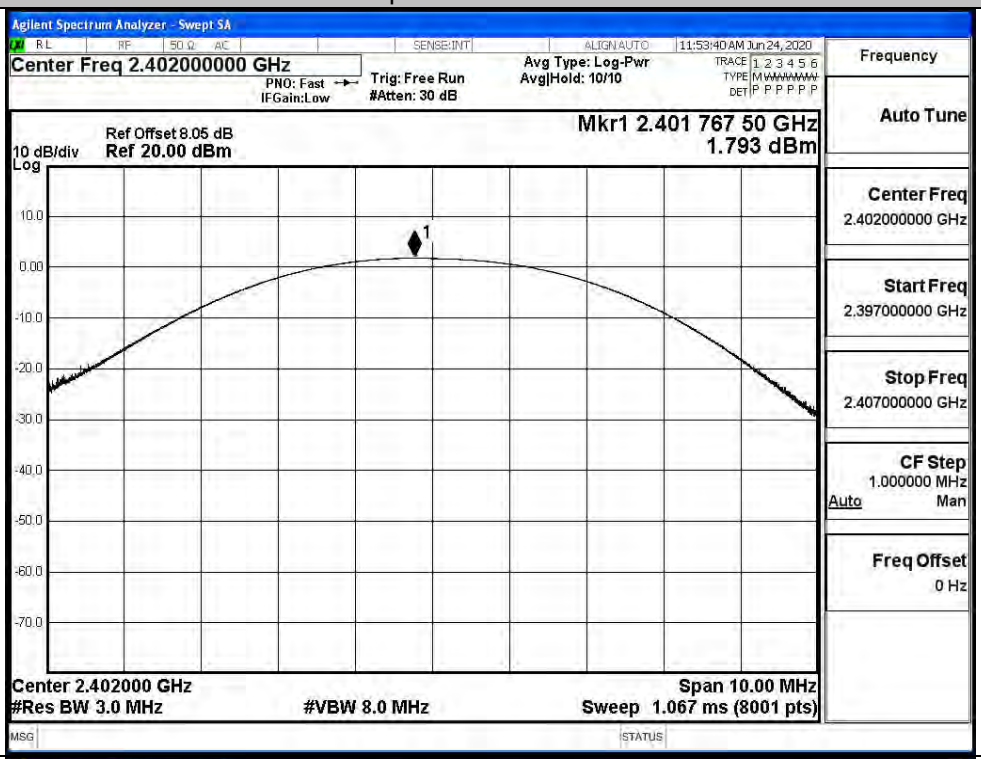
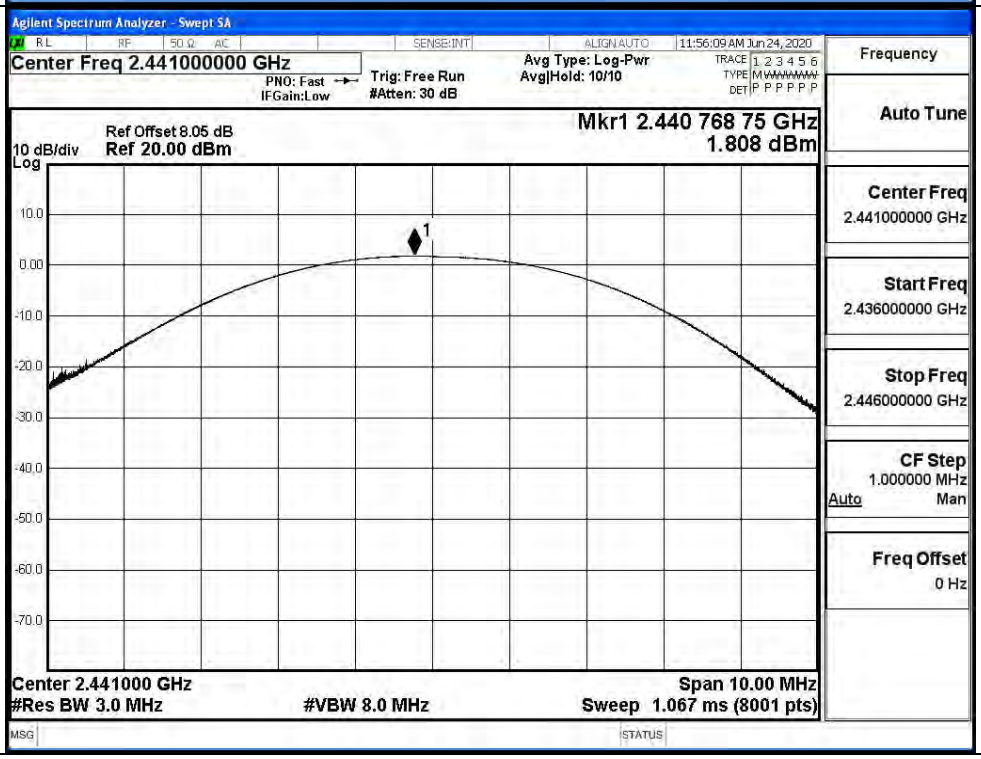
Product Name: Bluetooth speaker
Trade Mark: iDance
Test Model: Cyclone-400

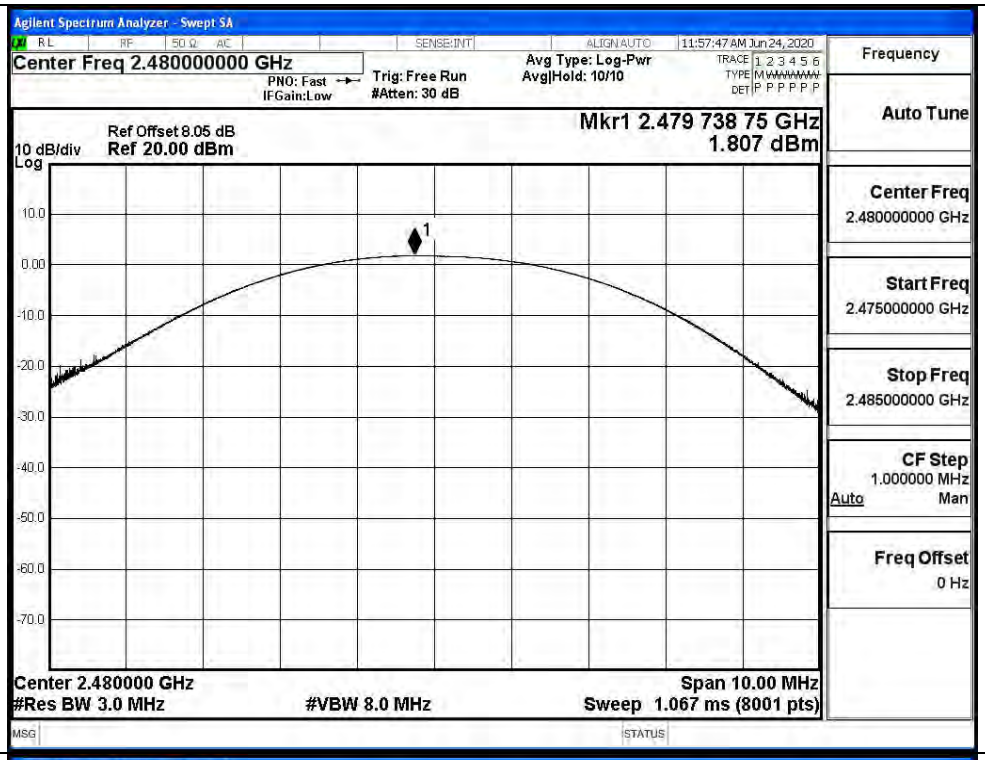
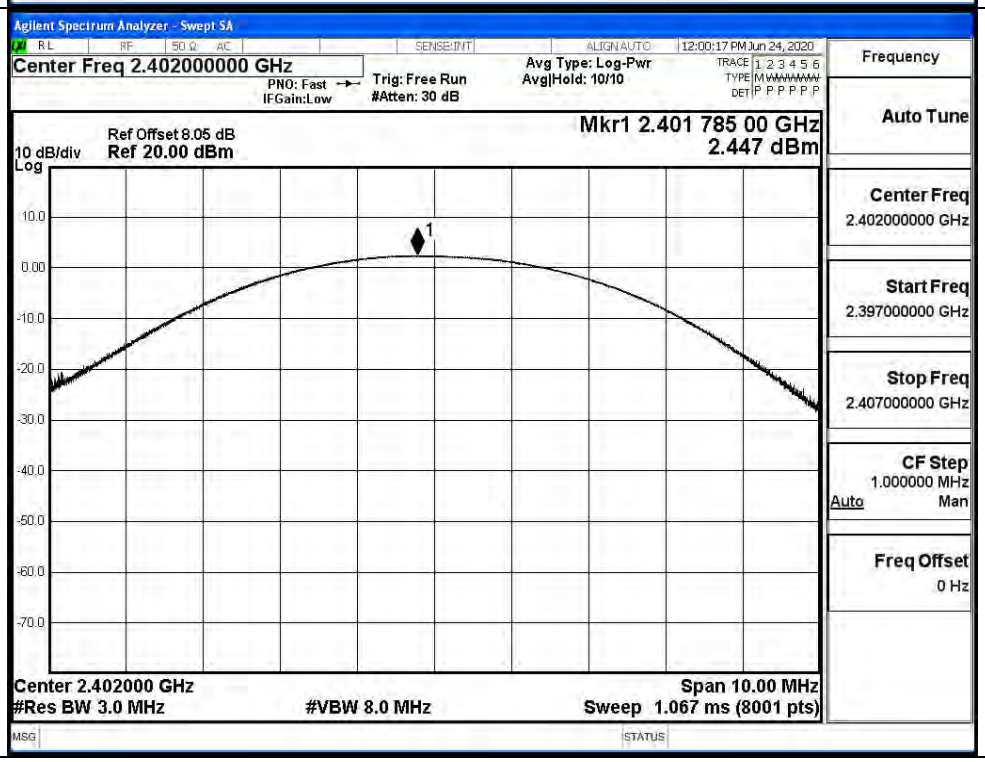
Environmental Conditions

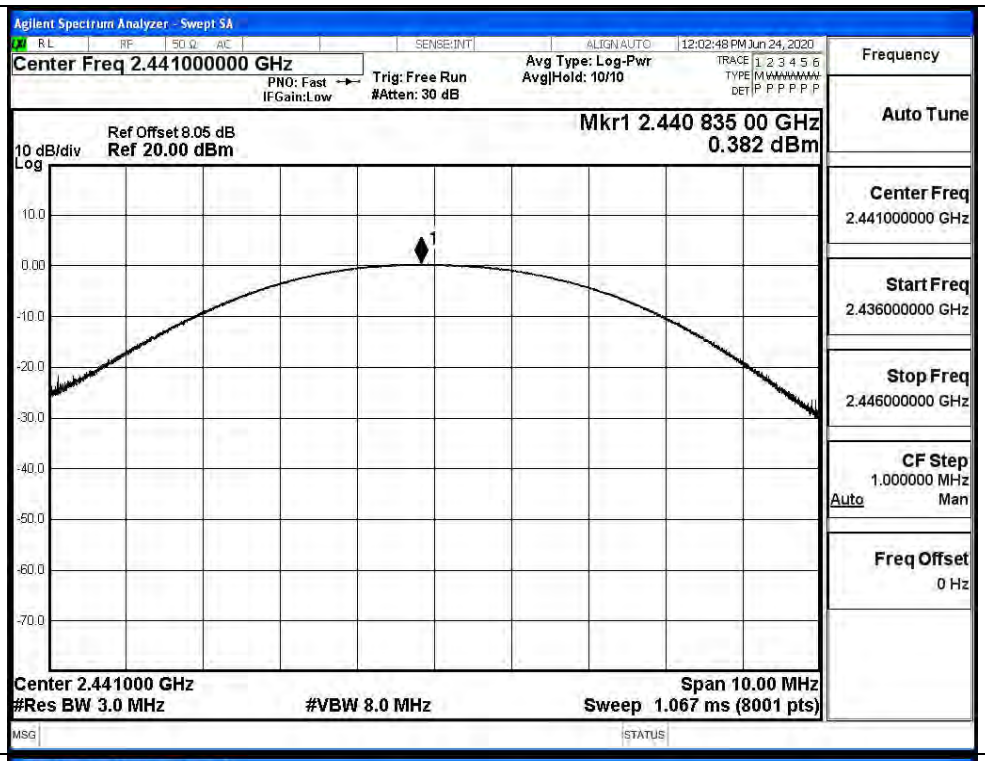
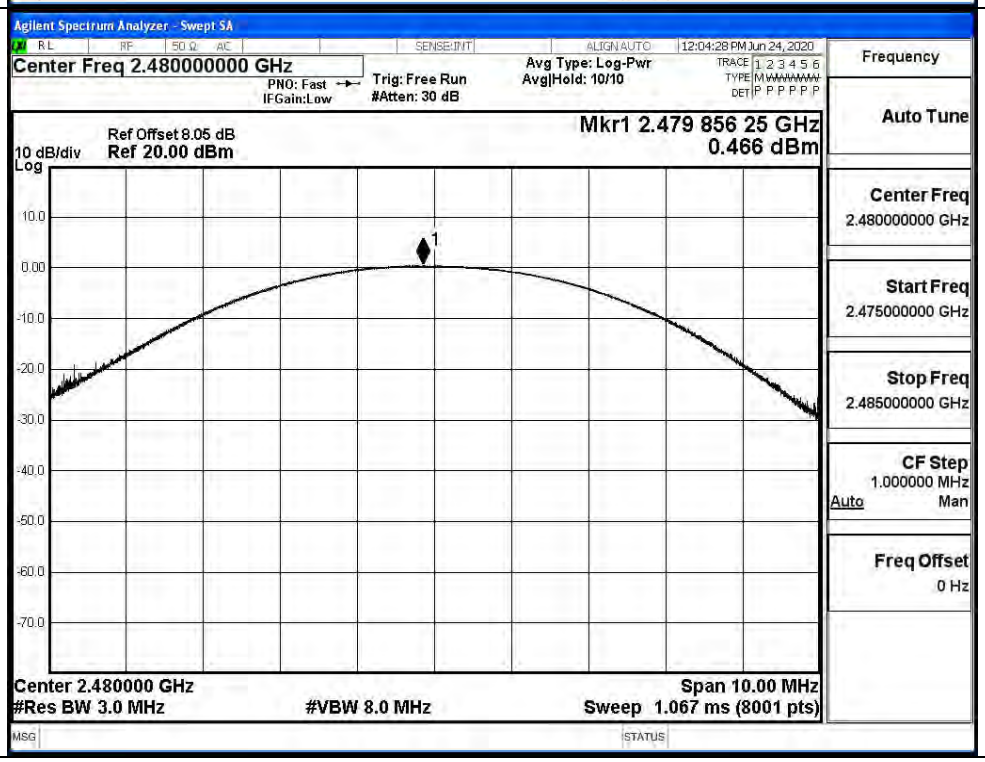
Temperature:	24.5° C
Relative Humidity:	52.3%
ATM Pressure:	100.0 kPa
Test Engineer:	Jay Li
Supervised by:	Li Huan

A.1 Maxmum Conducted Peak Output Power

Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	1.793	21	PASS
	MCH	1.808	21	PASS
	HCH	1.807	21	PASS
π/4DQPSK	LCH	2.447	21	PASS
	MCH	0.382	21	PASS
	HCH	0.466	21	PASS

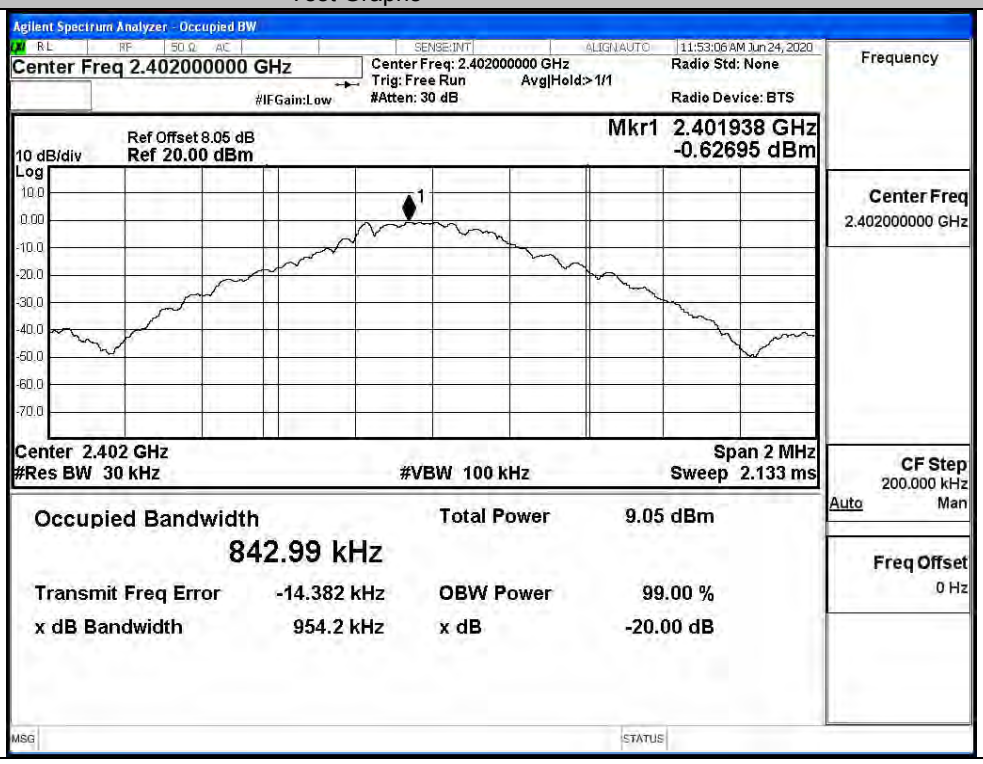
Test Graphs		
GFSK/LCH		
GFSK/MCH		

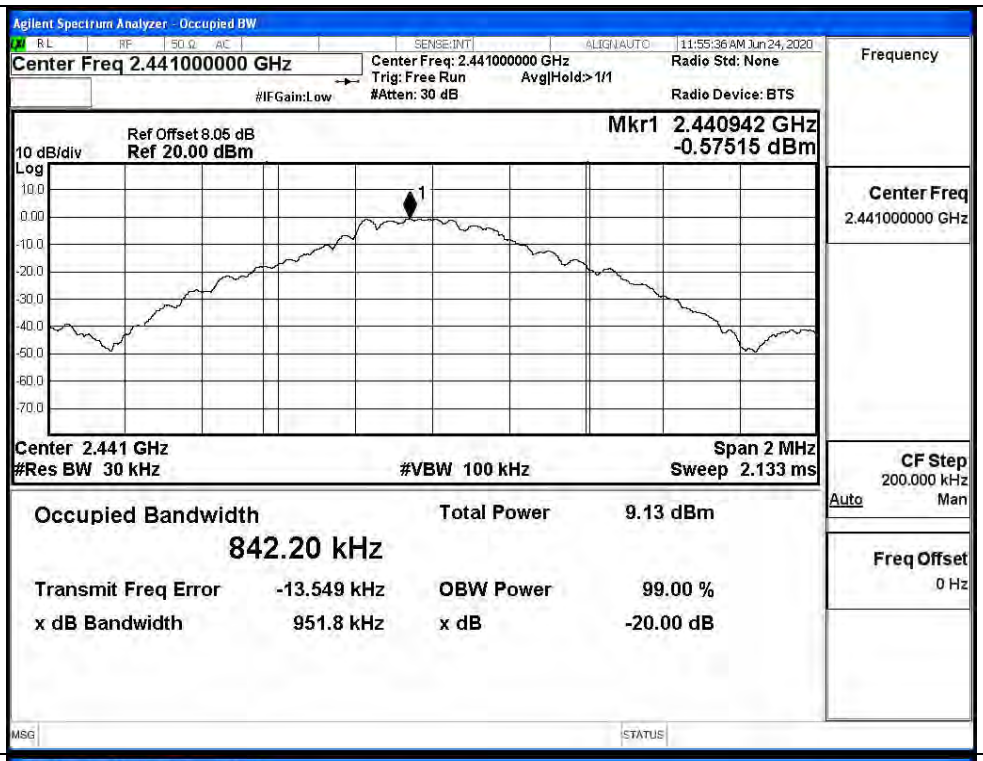
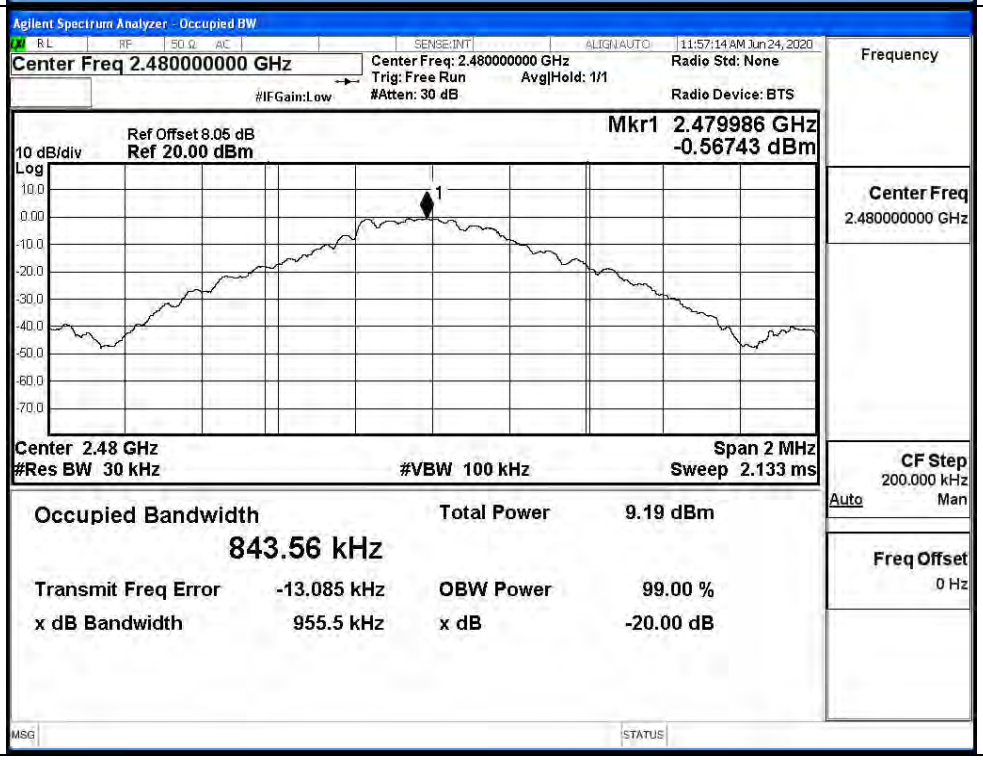
GFSK/HCH		
π/4DQPSK/LCH		

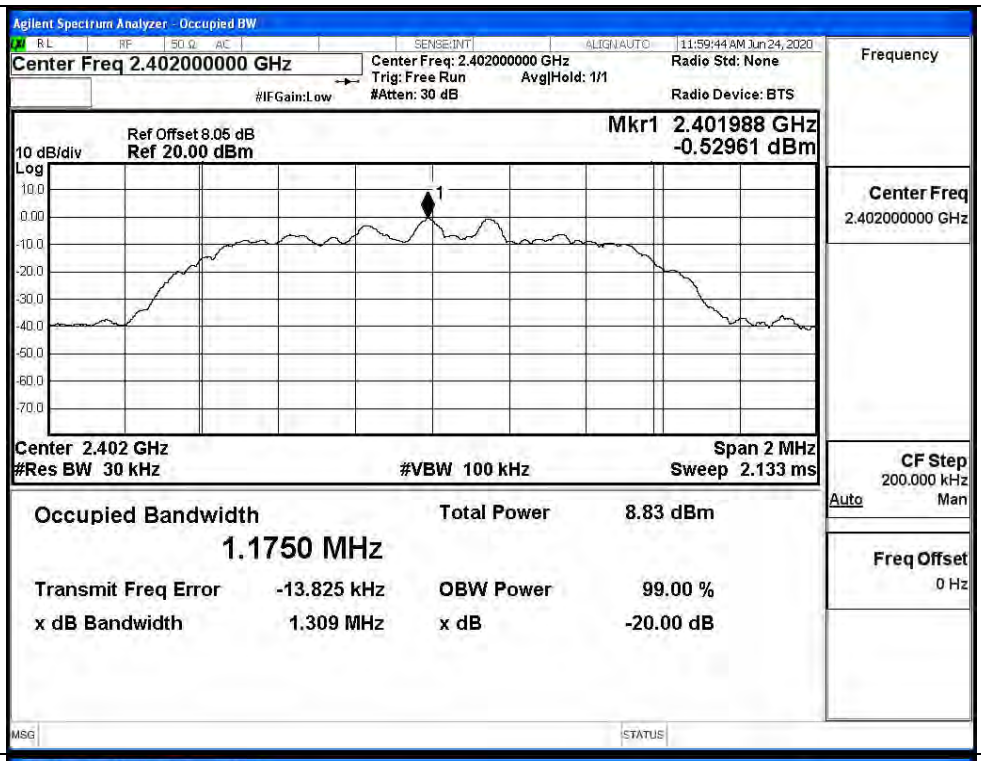
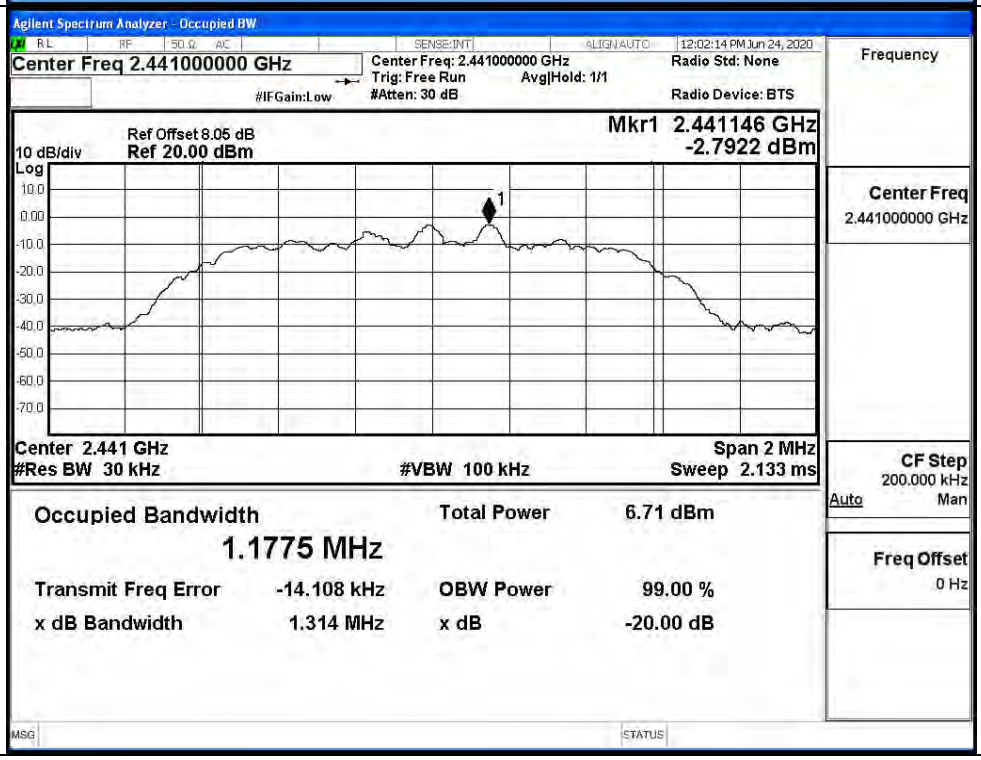
π/4DQPSK/MCH	
π/4DQPSK/HCH	

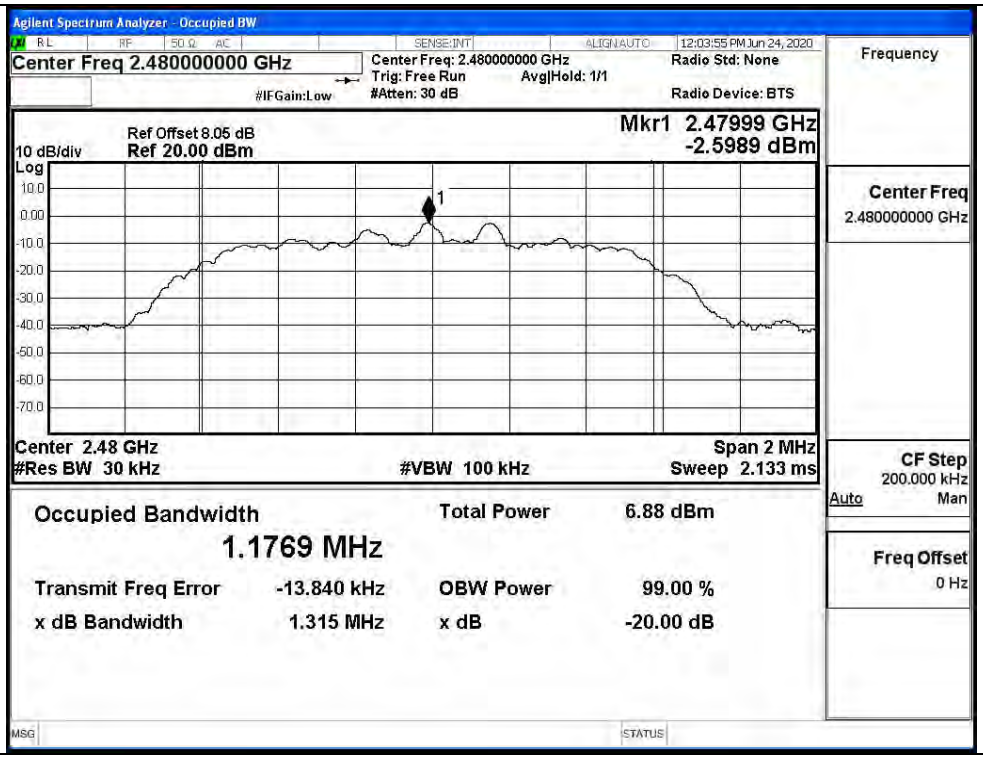
A.2 20dB Bandwidth

Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.9542	Not Specified	PASS
	MCH	0.9518	Not Specified	PASS
	HCH	0.9555	Not Specified	PASS
π/4DQPSK	LCH	1.309	Not Specified	PASS
	MCH	1.314	Not Specified	PASS
	HCH	1.315	Not Specified	PASS

Test Graphs	
GFSK/LCH	

GFSK/MCH	
GFSK/HCH	

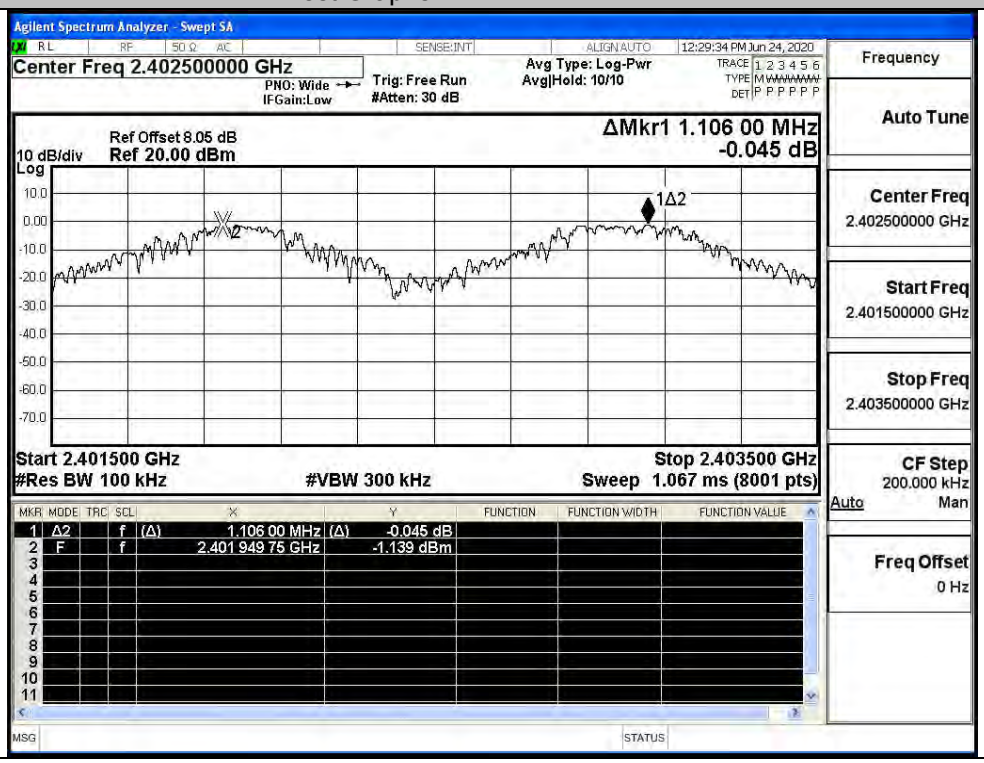
π/4DQPSK/LCH		
π/4DQPSK/MCH		

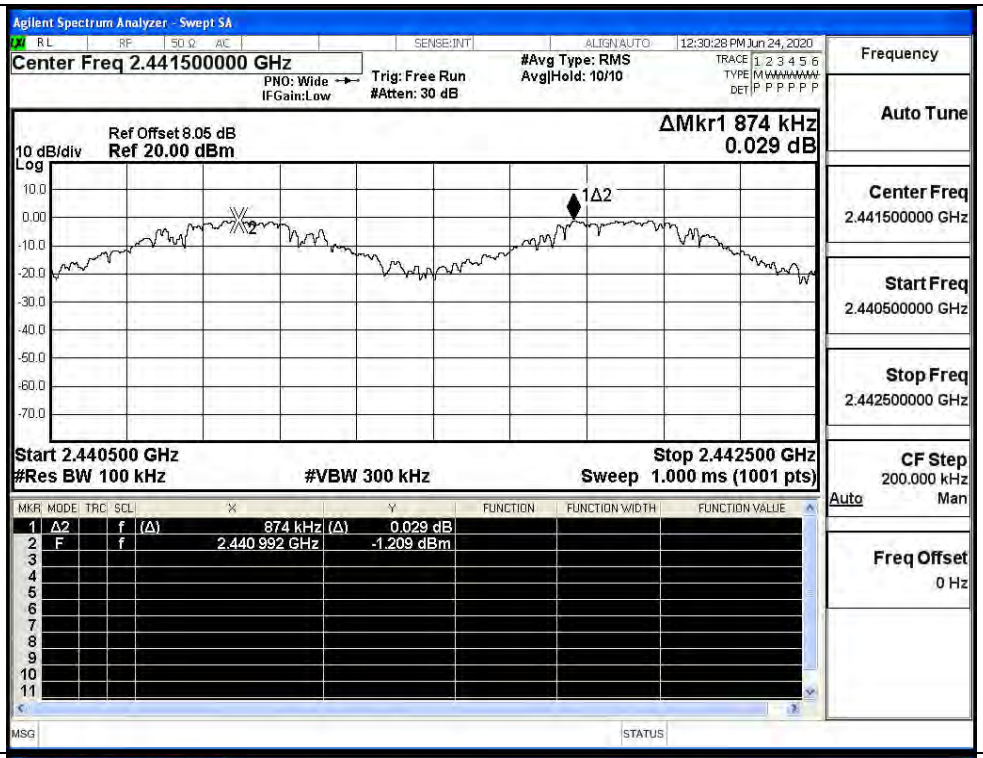
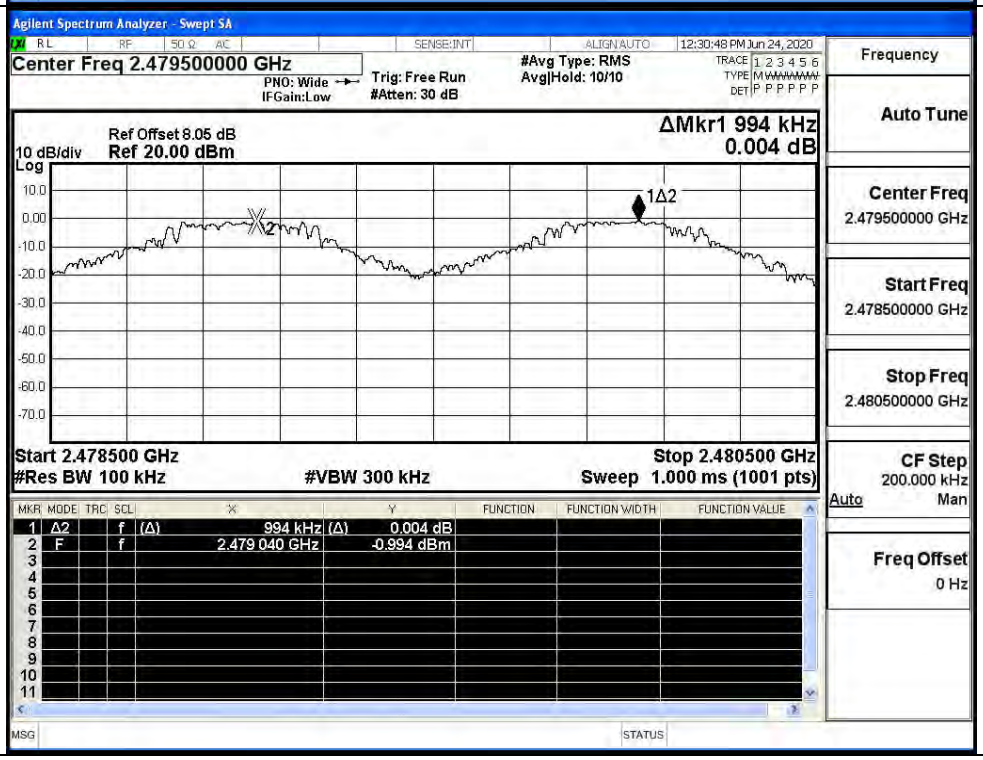
π/4DQPSK/HCH		

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
12:03:55 PM Jun 24, 2020
Frequency
Ref Offset 8.05 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr1 2.47999 GHz
-2.5989 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
1.1769 MHz
Total Power 6.88 dBm
Transmit Freq Error -13.840 kHz
OBW Power 99.00 %
x dB Bandwidth 1.315 MHz
x dB -20.00 dB
Freq Offset
0 Hz
MSG
STATUS

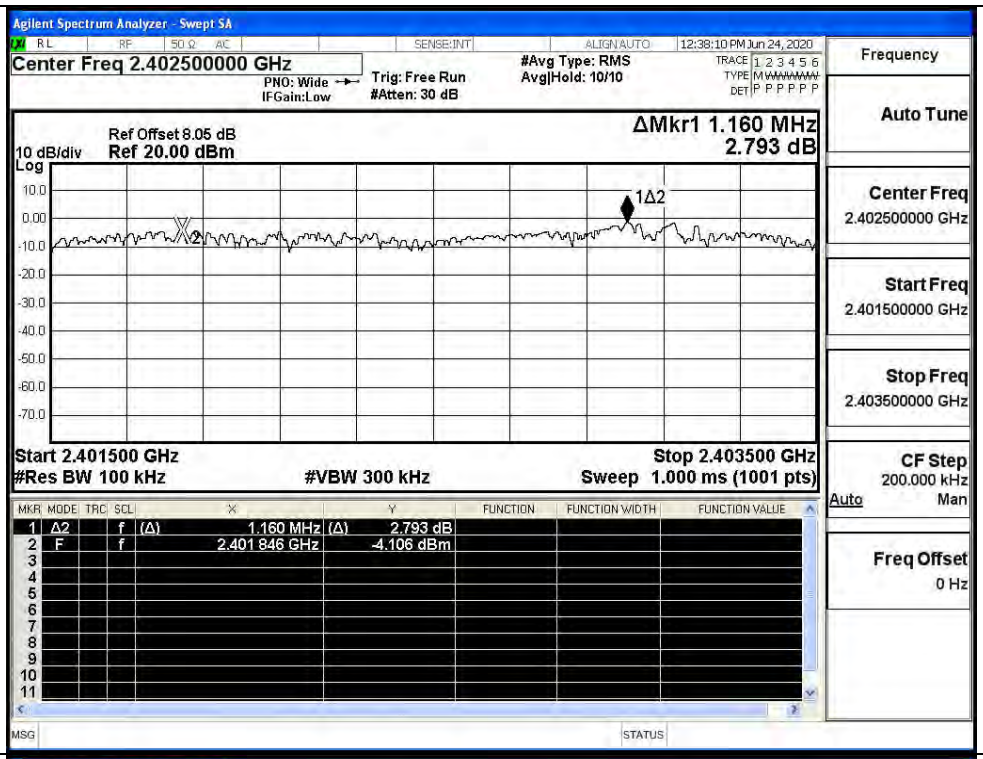
A.3 Carrier Frequency Separation

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.106	0.637	PASS
	MCH	0.874	0.637	PASS
	HCH	0.994	0.637	PASS
π/4DQPSK	LCH	1.160	0.877	PASS
	MCH	1.012	0.877	PASS
	HCH	1.146	0.877	PASS

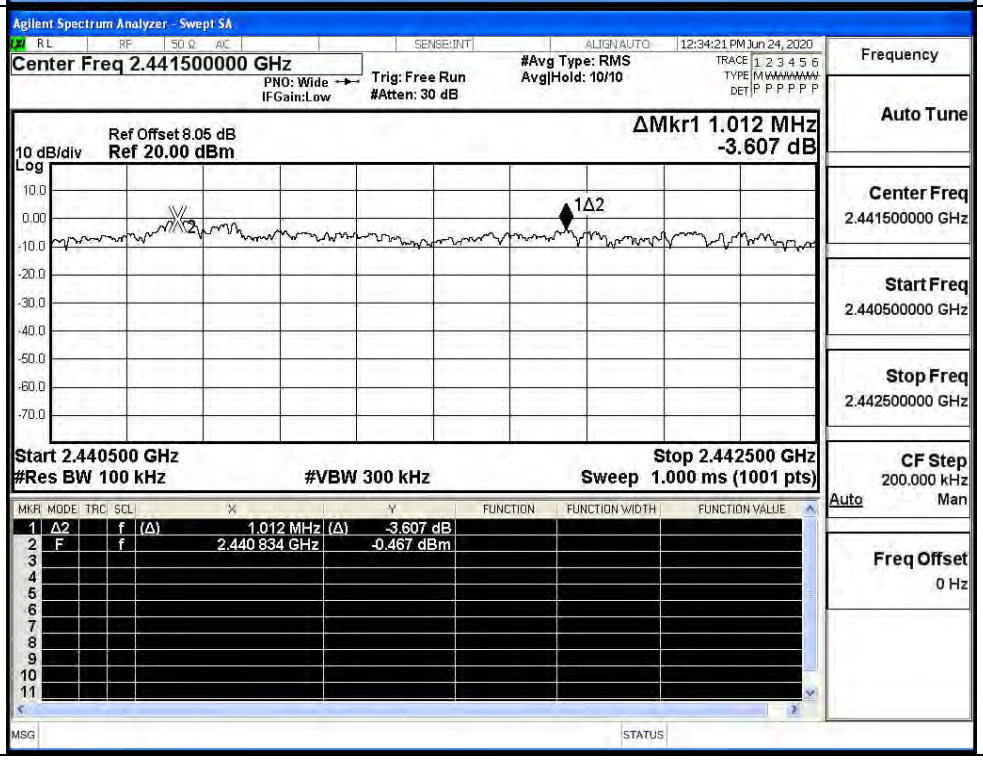
Test Graphs	
GFSK/LCH	

GFSK/MCH		
GFSK/HCH		

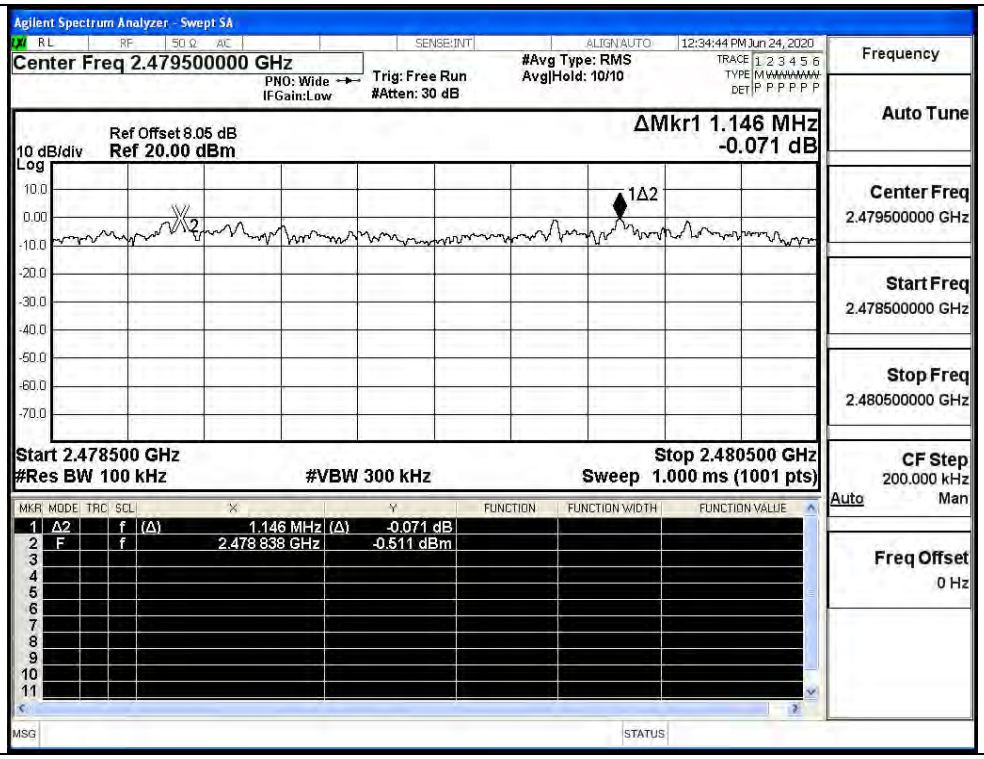
π/4DQPSK/LCH



π/4DQPSK/MCH

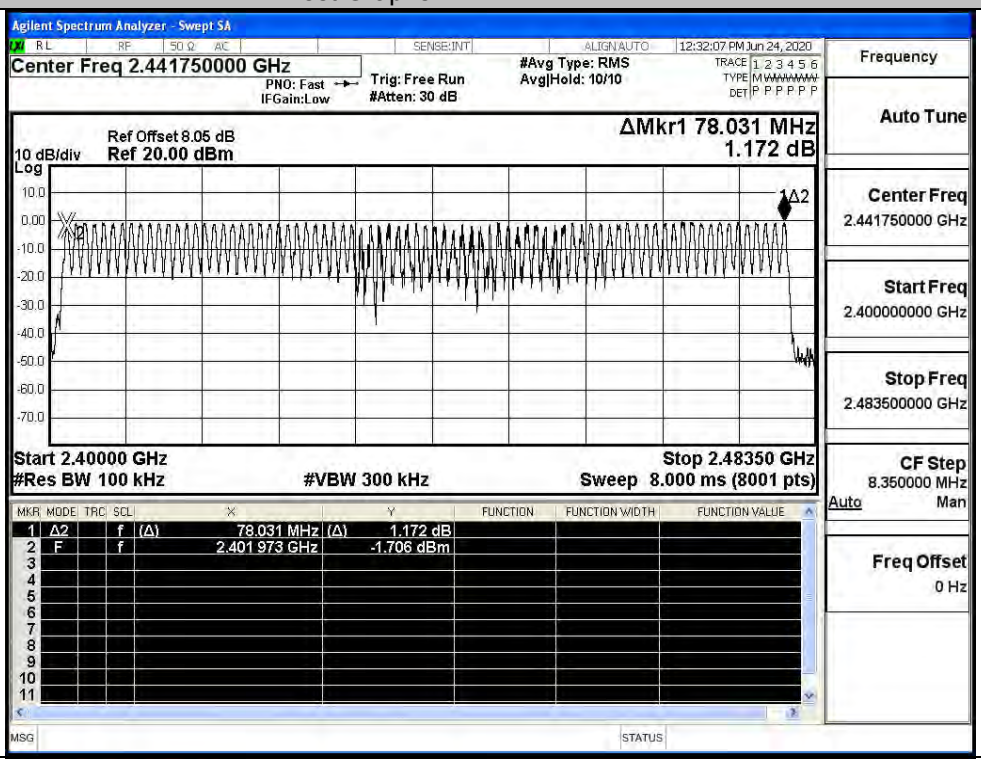
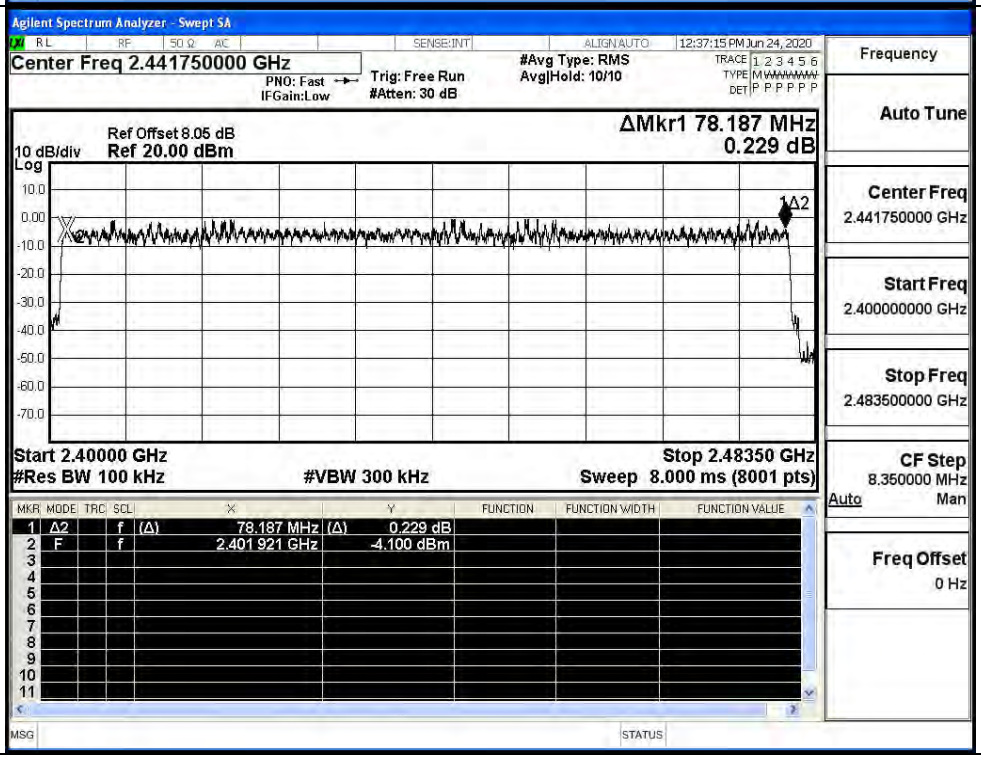


π/4DQPSK/HCH


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
12:34:44 PM Jun 24, 2020
Ref Offset 8.05 dB
10 dB/div Ref 20.00 dBm
ΔMkr1 1.146 MHz
-0.071 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) 1.146 MHz (Δ) -0.071 dB
2 F f 2.478 838 GHz -0.511 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

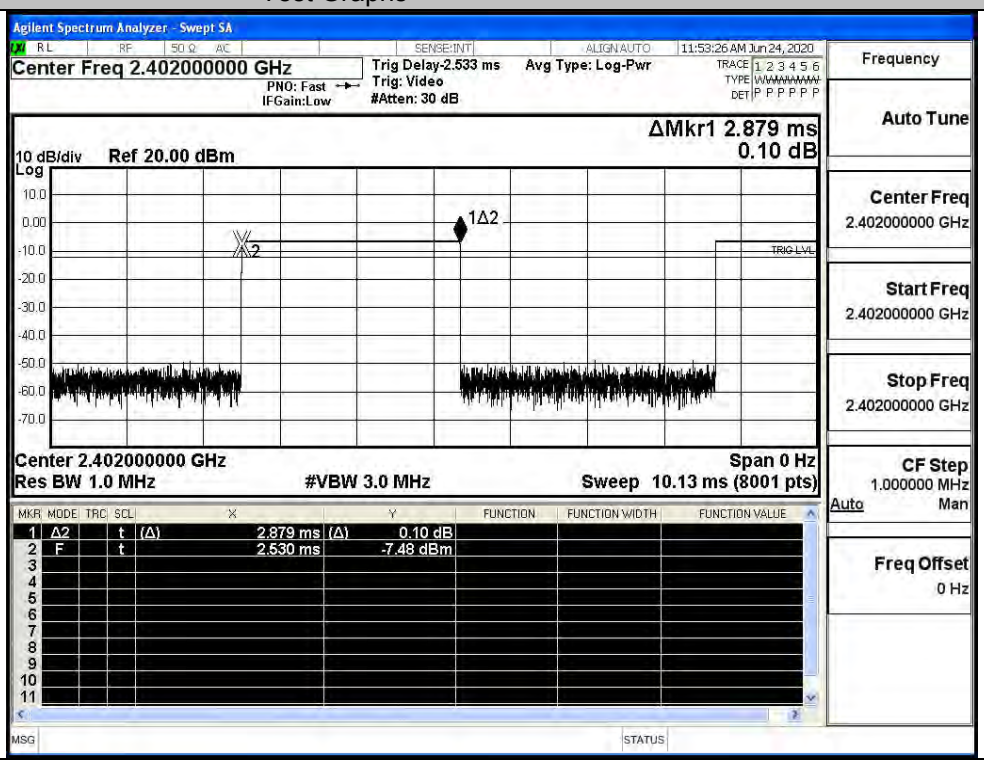
A.4 Hopping Channel Number

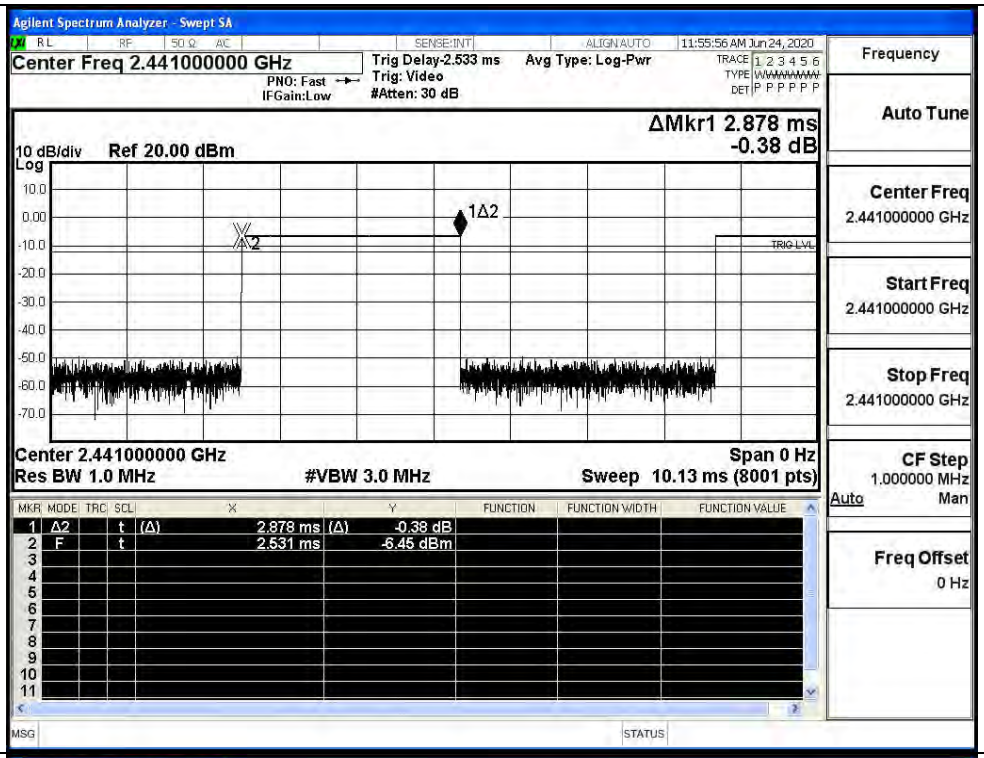
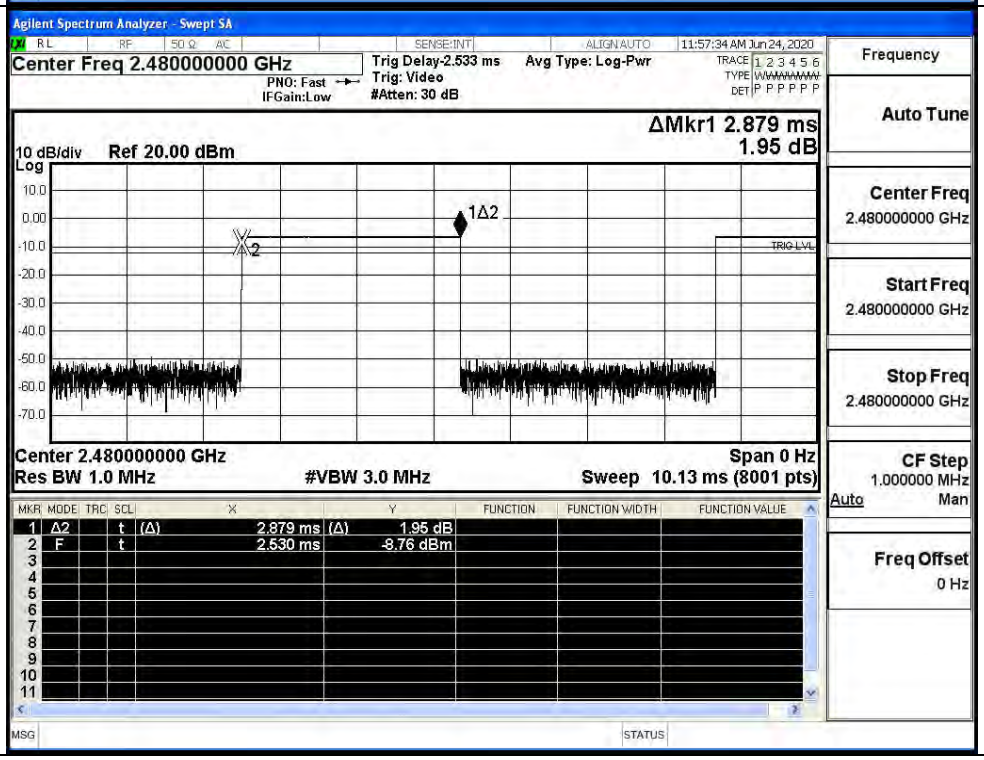
Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	>=15	PASS
π/4DQPSK	Hop	79	>=15	PASS

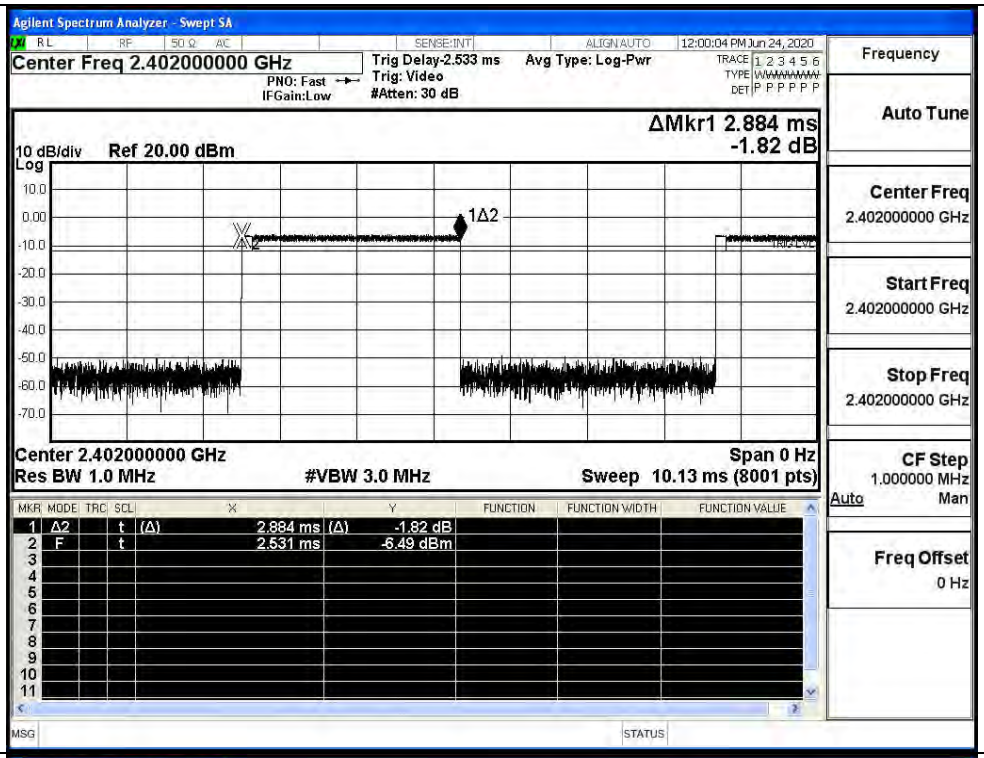
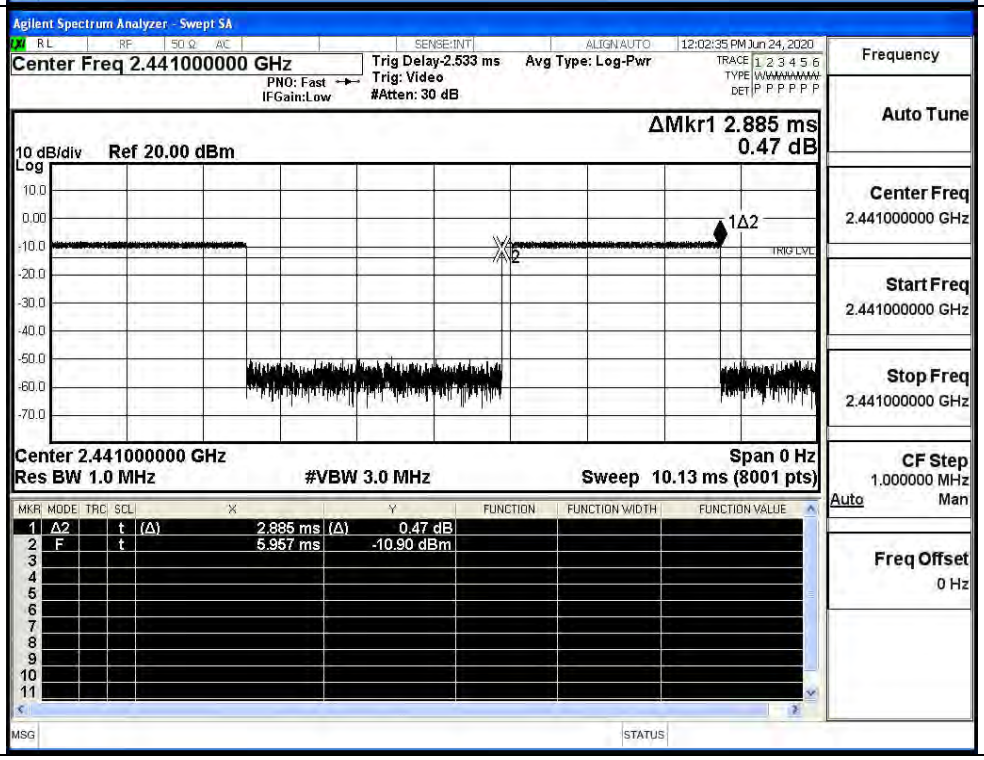
Test Graphs		
GFSK/Hop		
π/4DQPSK/Hop		

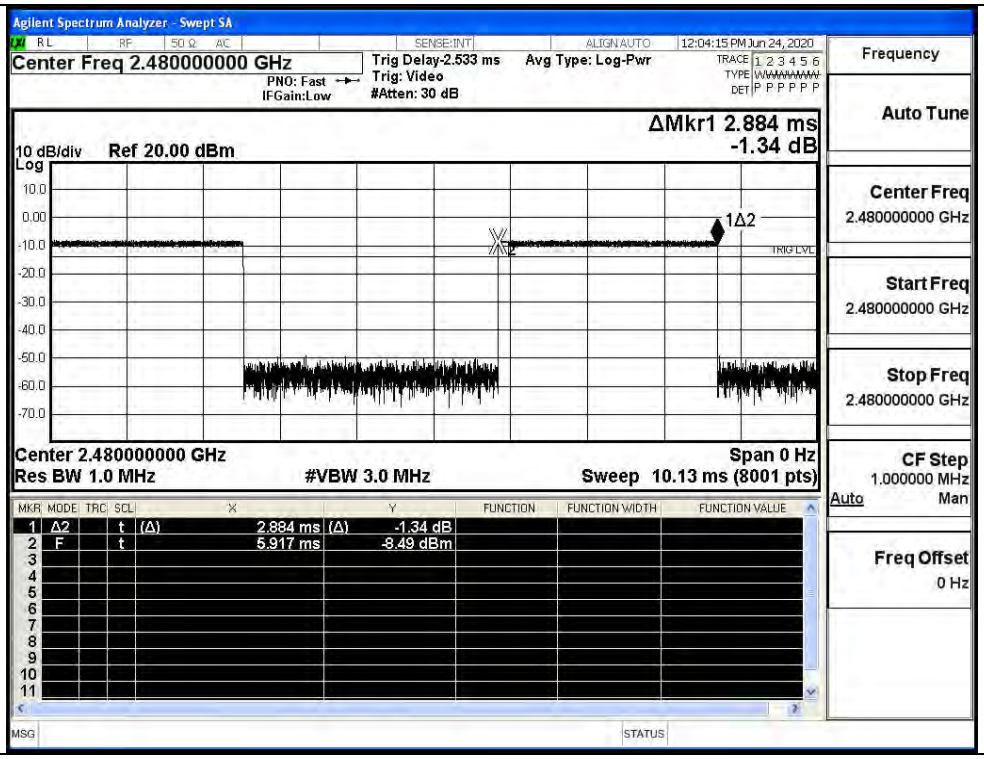
A.5 Dwell Time

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	0.308	0.4	PASS
	2DH5	HCH	2.88	106.7	0.307	0.4	PASS

Test Graphs	
GFSK_DH5/LCH	

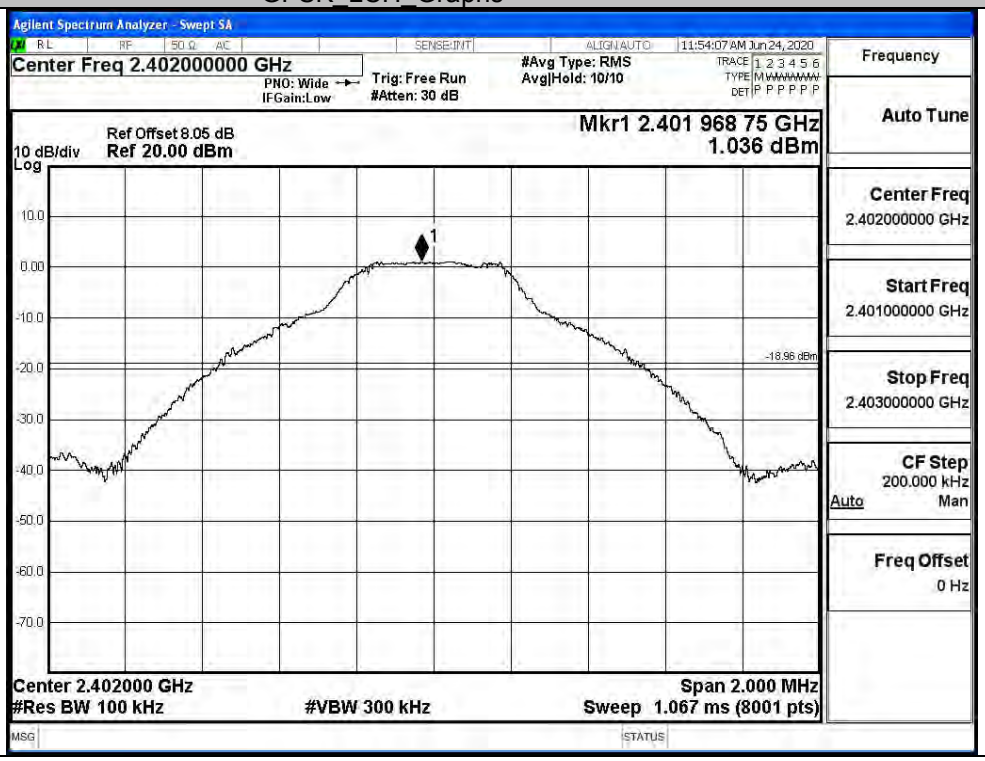
GFSK_DH5/MCH	
GFSK_DH5/HCH	

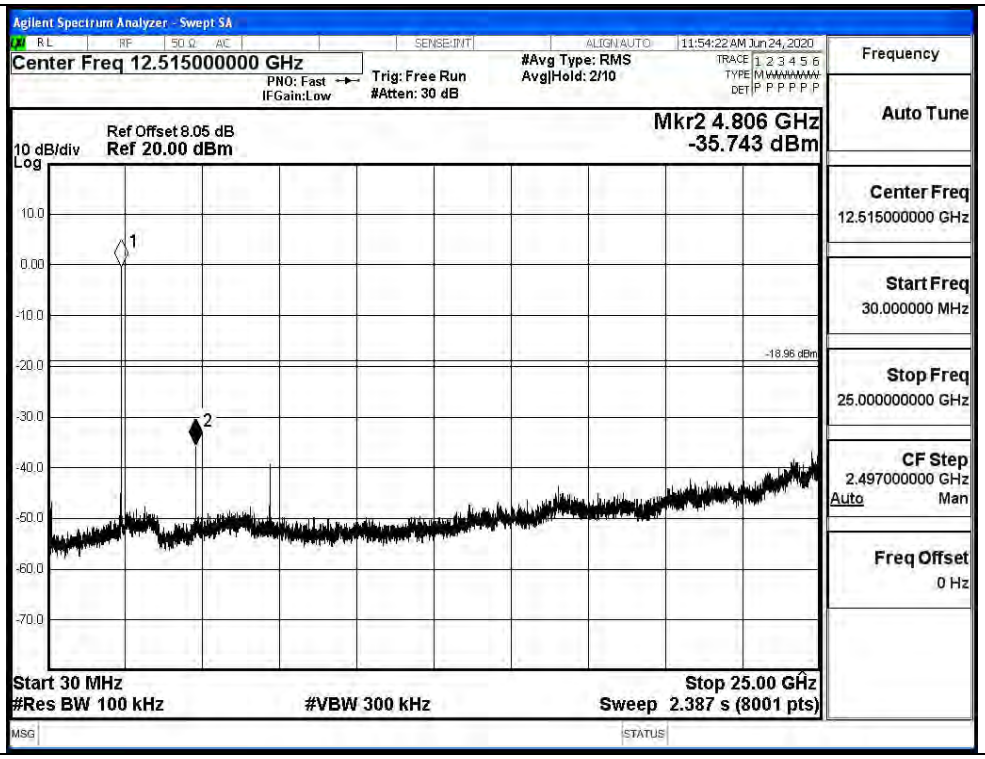
π/4DQPSK _2DH5/LCH	
π/4DQPSK _2DH5/MCH	

π/4DQPSK _2DH5/HCH	

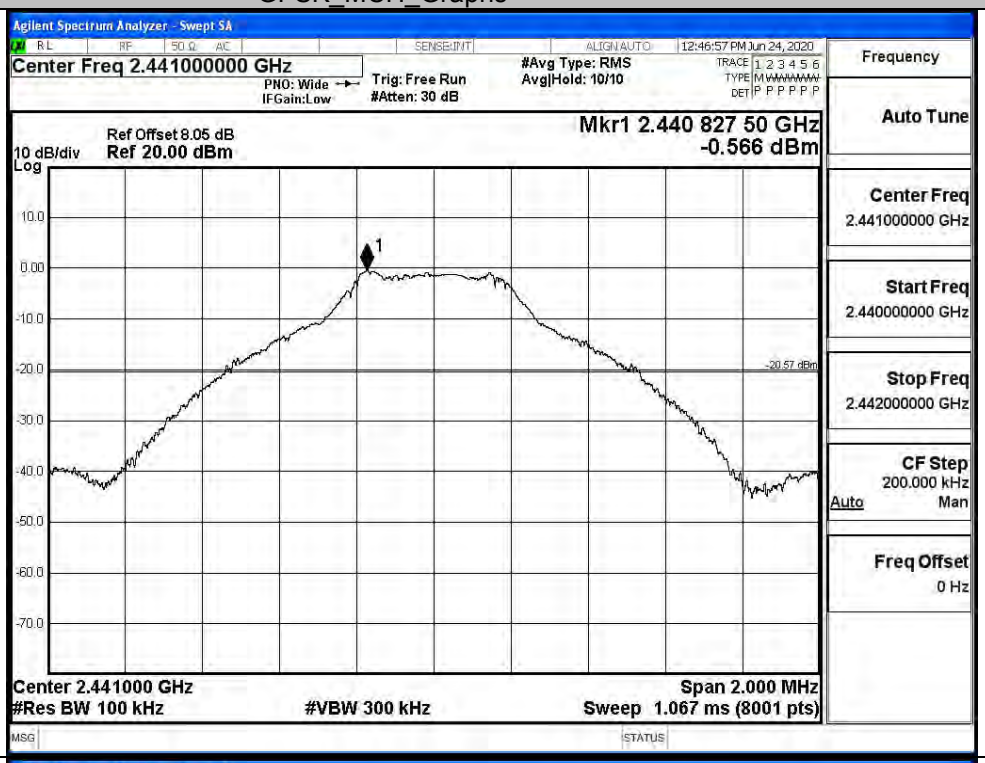
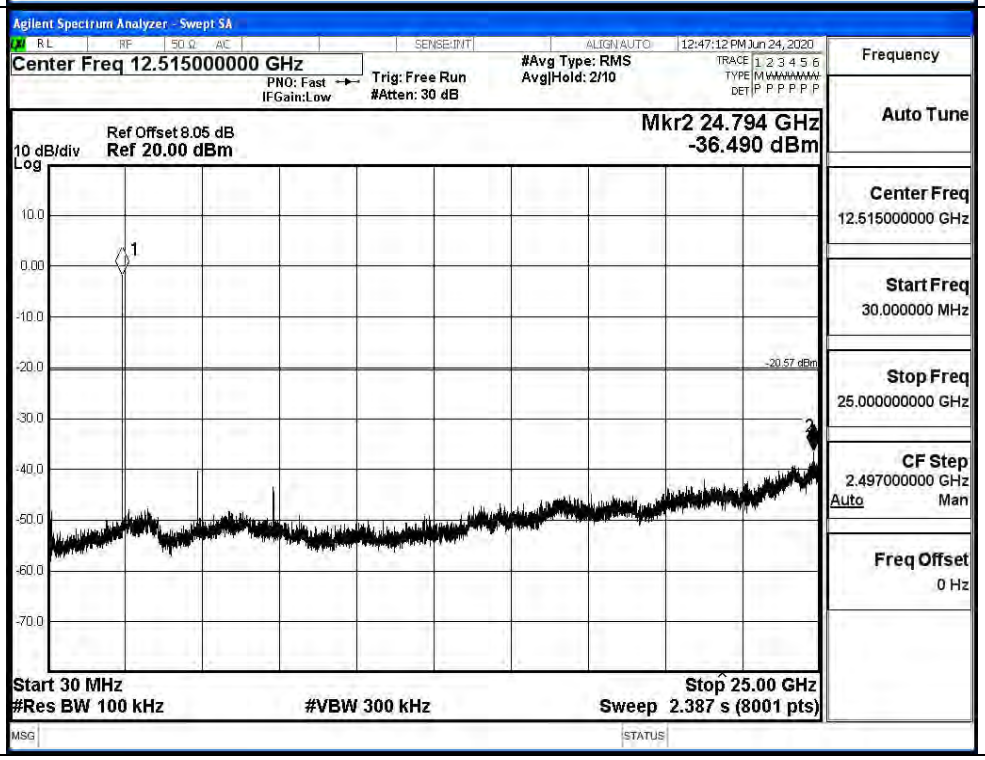
A.6 RF Conducted Spurious Emissions

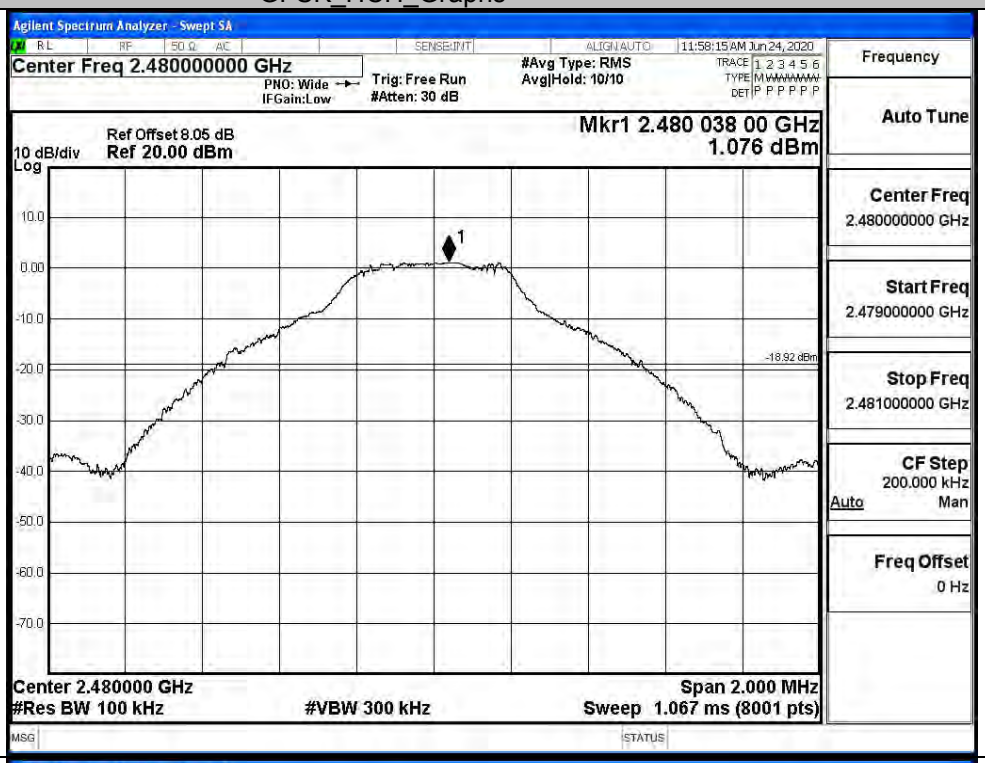
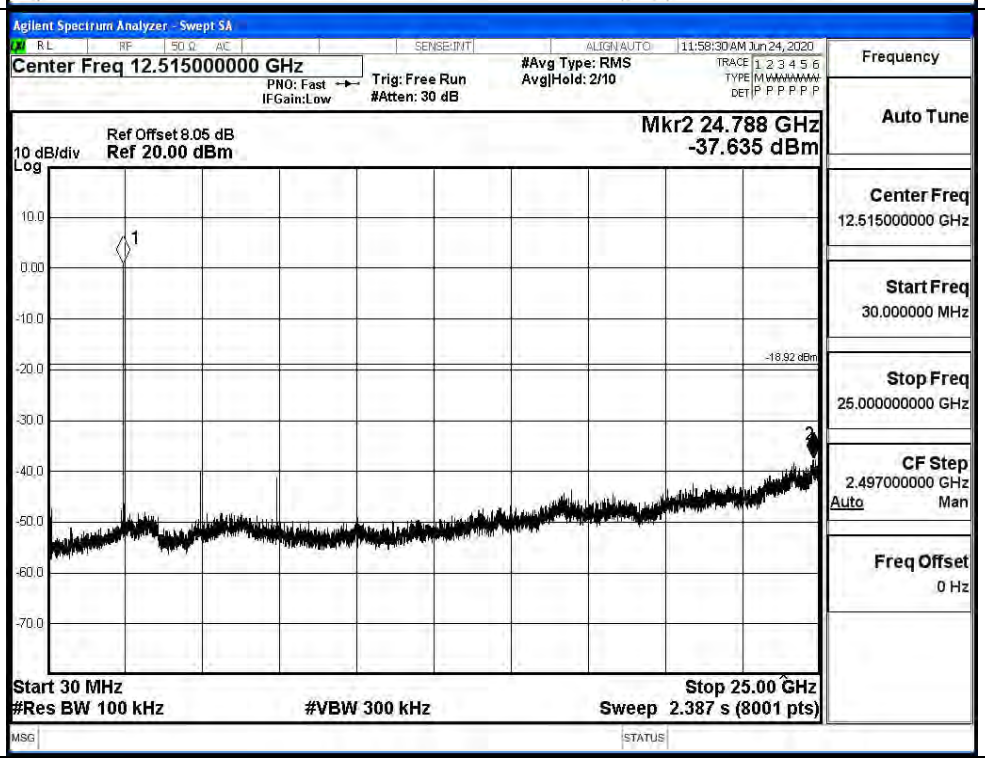
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	1.036	-35.743	-18.964	PASS
	MCH	-0.566	-36.490	-20.566	PASS
	HCH	1.076	-37.635	-18.924	PASS
π/4DQPSK	LCH	-0.836	-38.128	-20.836	PASS
	MCH	-0.724	-37.822	-20.724	PASS
	HCH	-0.433	-38.184	-20.433	PASS

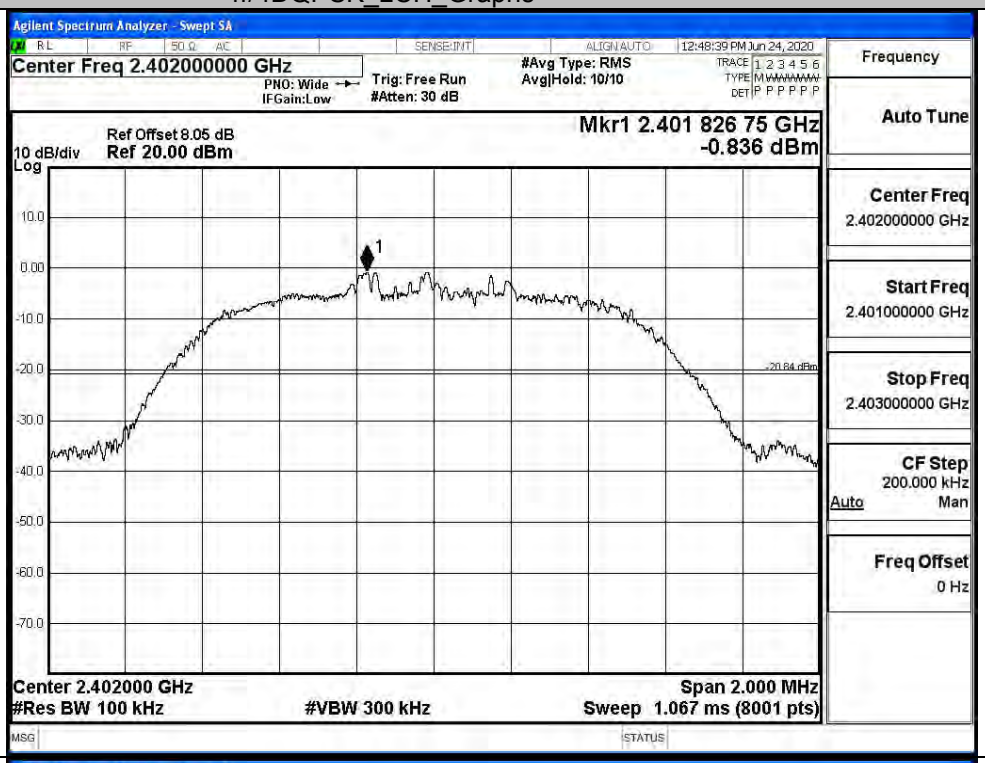
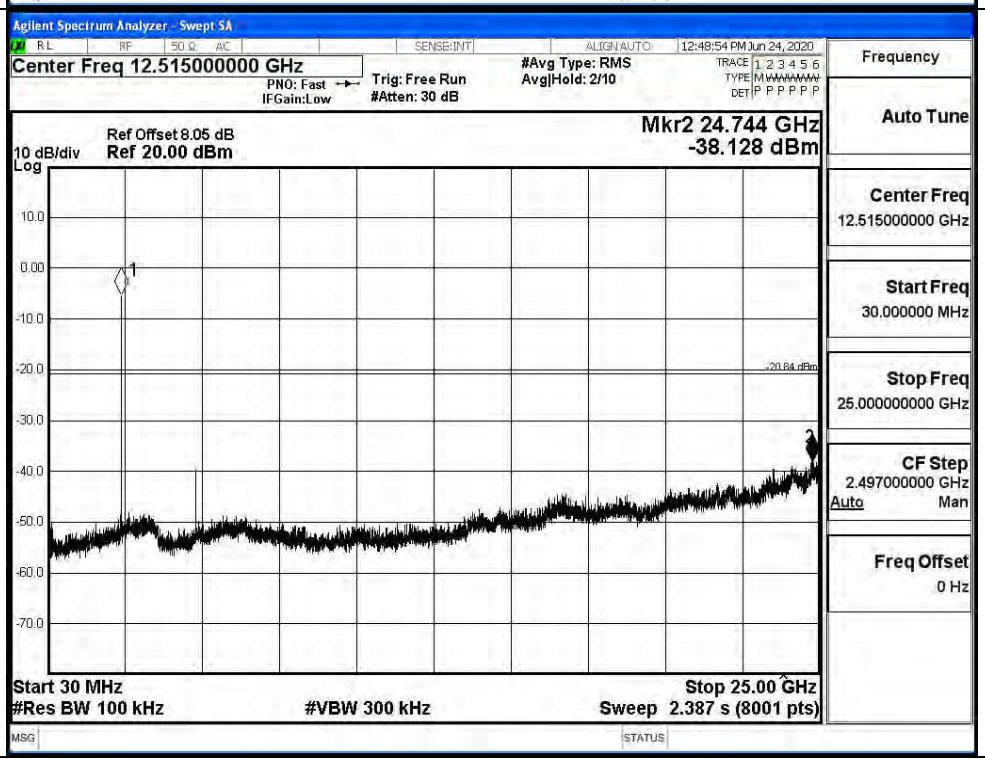
GFSK_LCH_Graphs	
Pref	

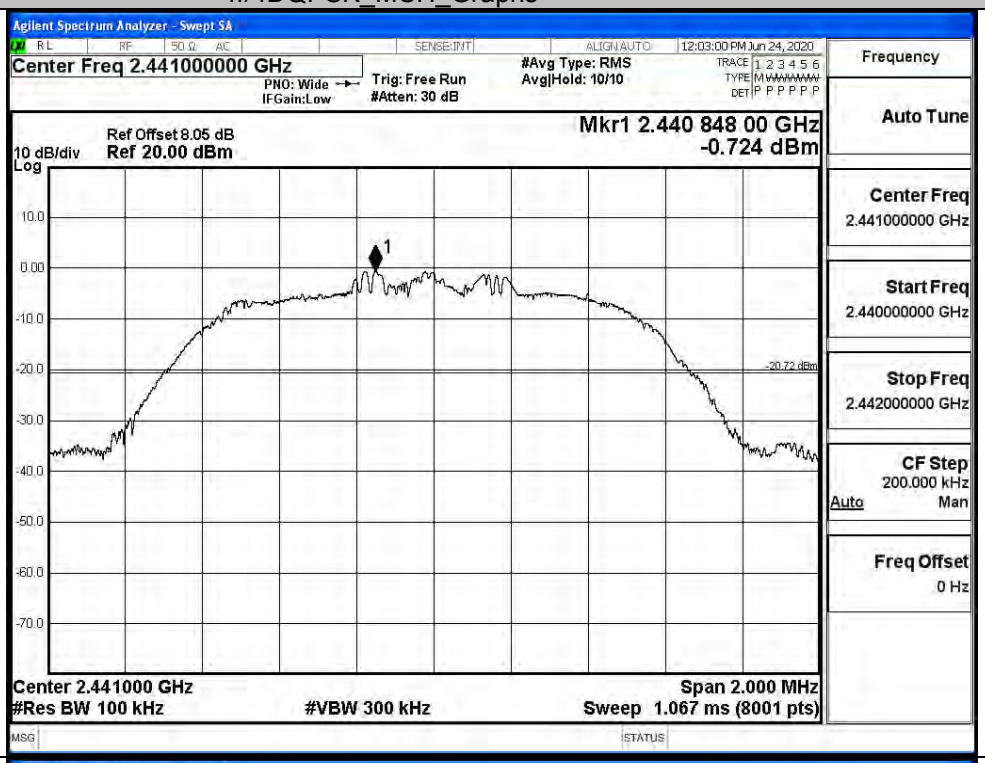
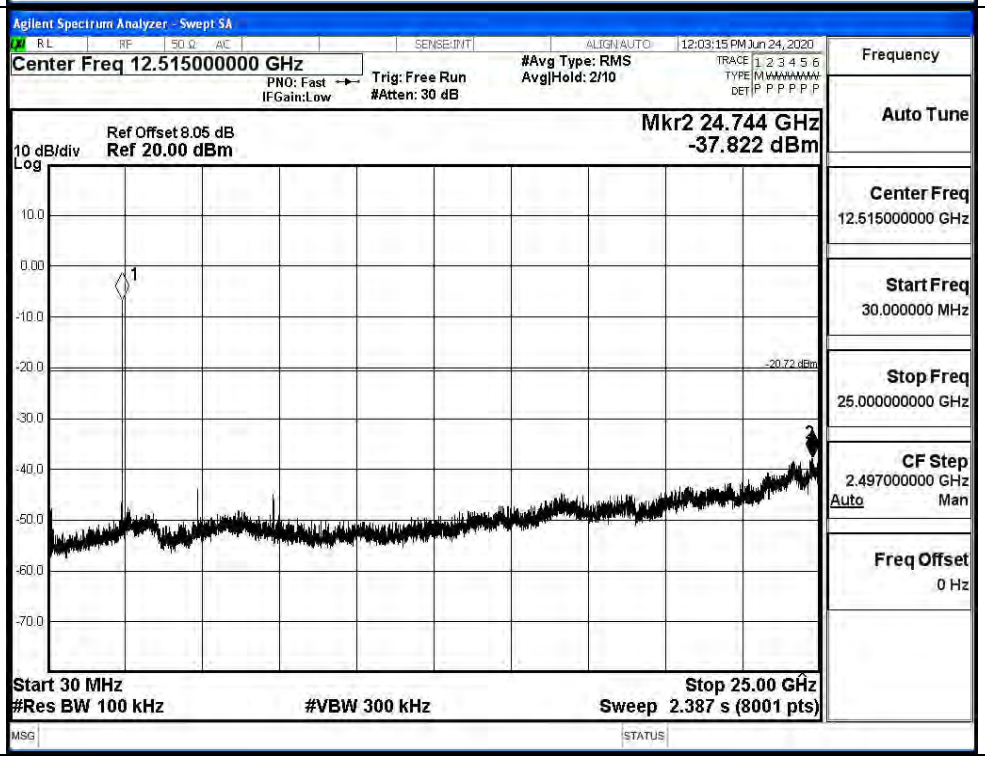
Puw		

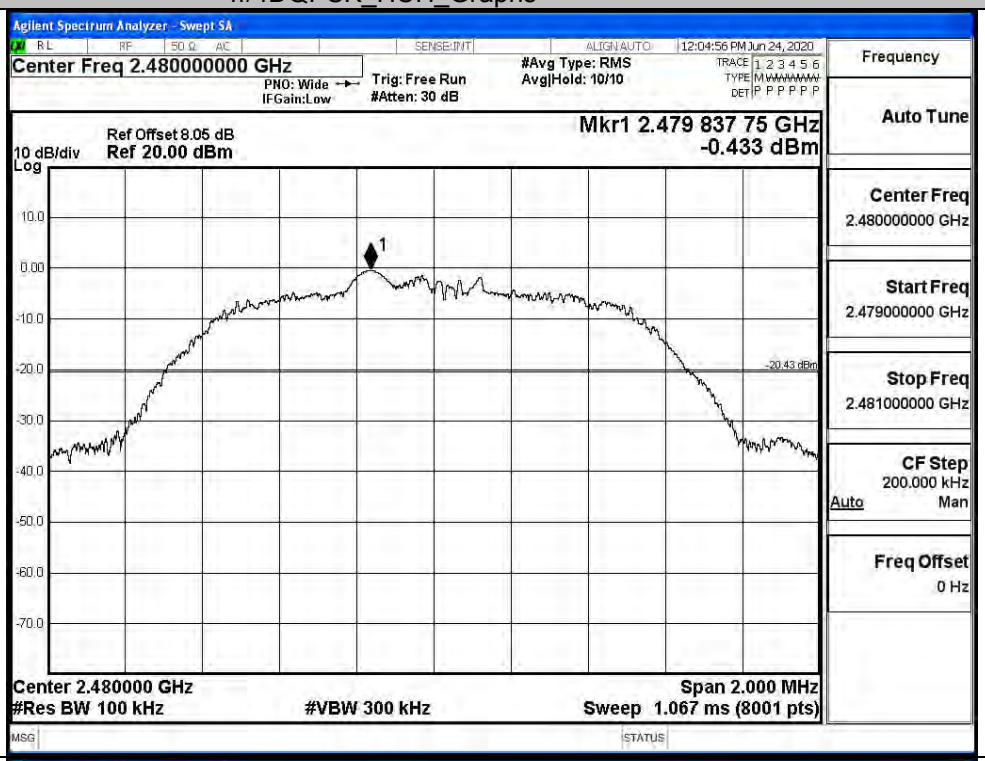
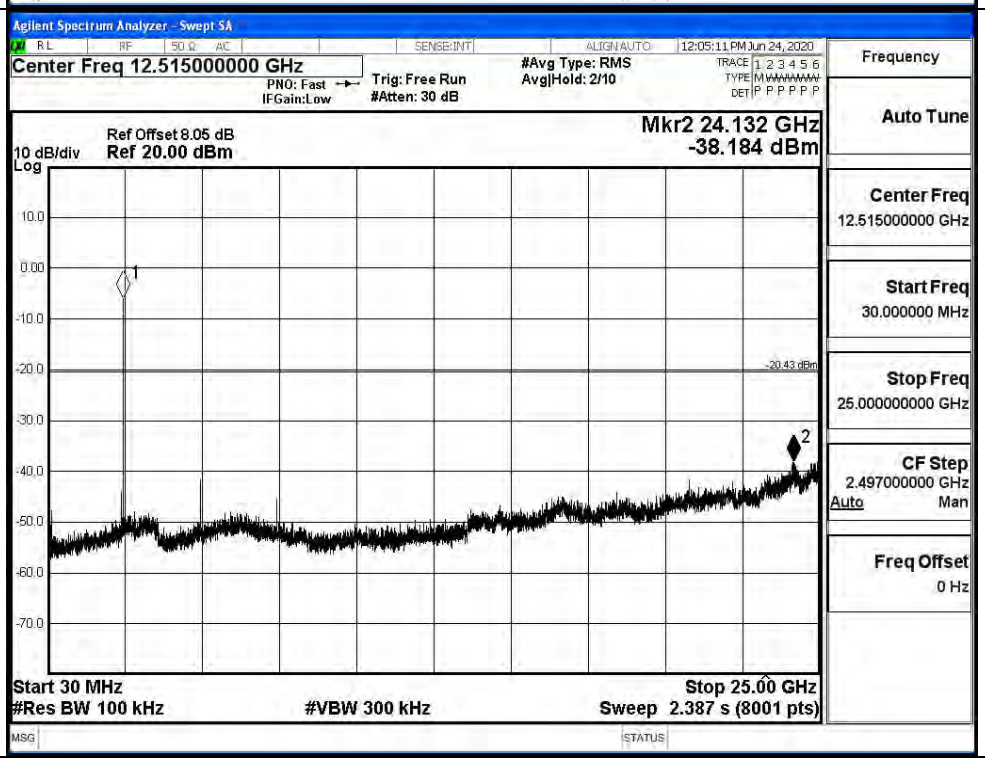
Agilent Spectrum Analyzer - Swept SA
Center Freq 12.515000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 2/10
11:54:22 AM Jun 24, 2020
Ref Offset 8.05 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr2 4.806 GHz
-35.743 dBm
-18.96 dBm
Start 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 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			

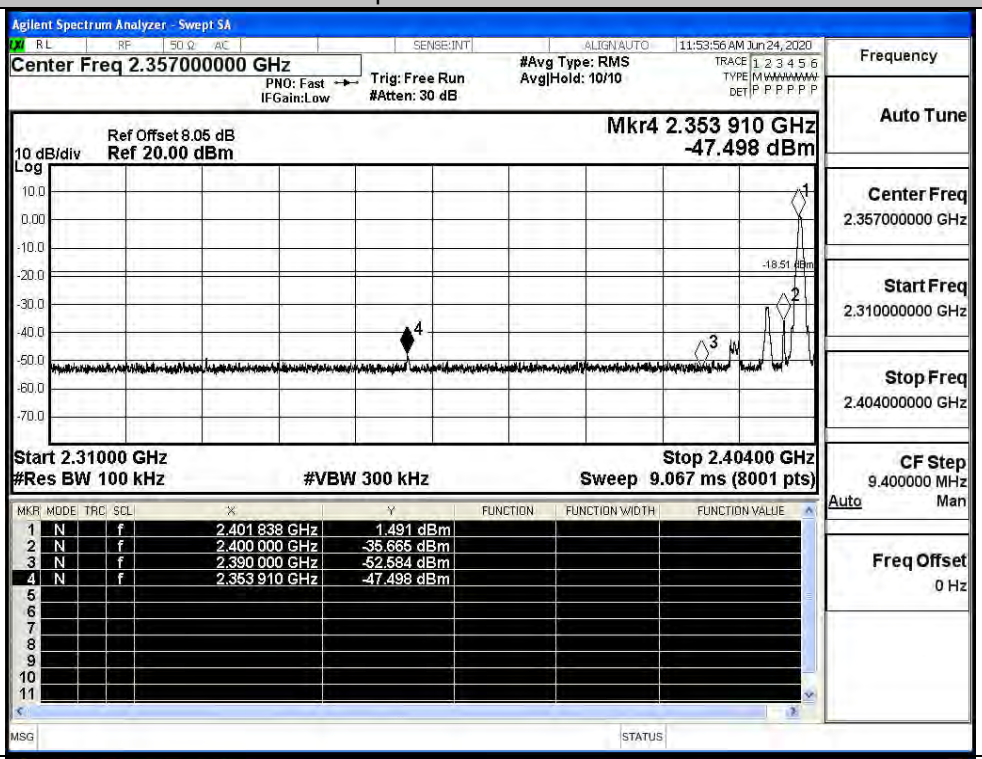
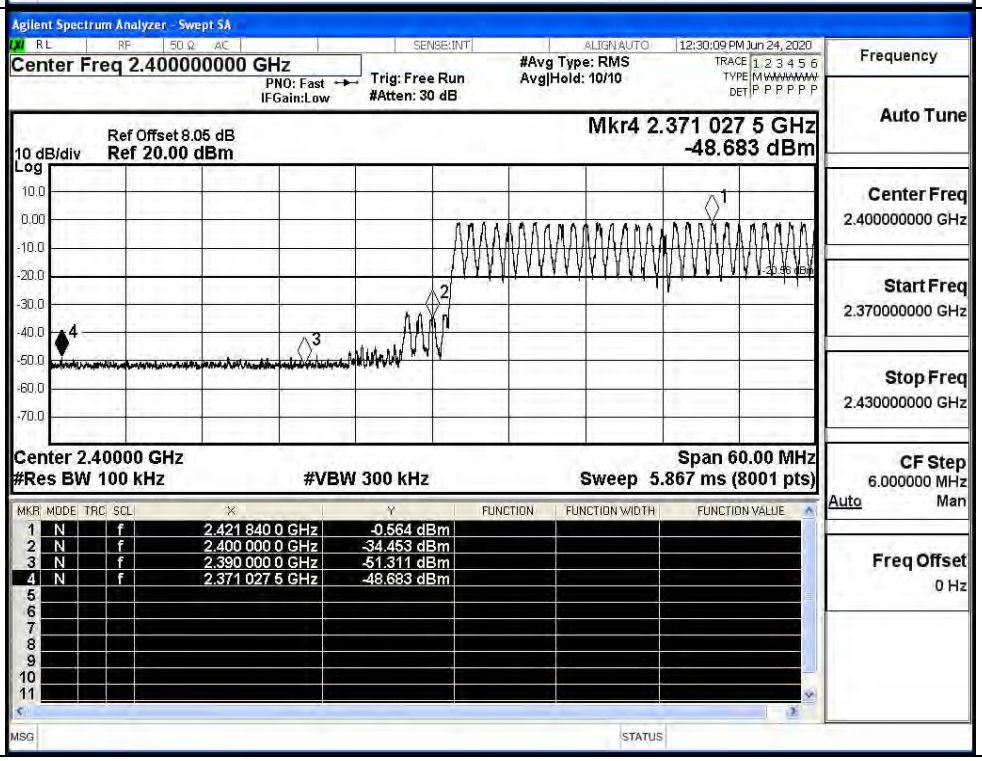
π/4DQPSK_LCH_Graphs			
Pref			
Puw			

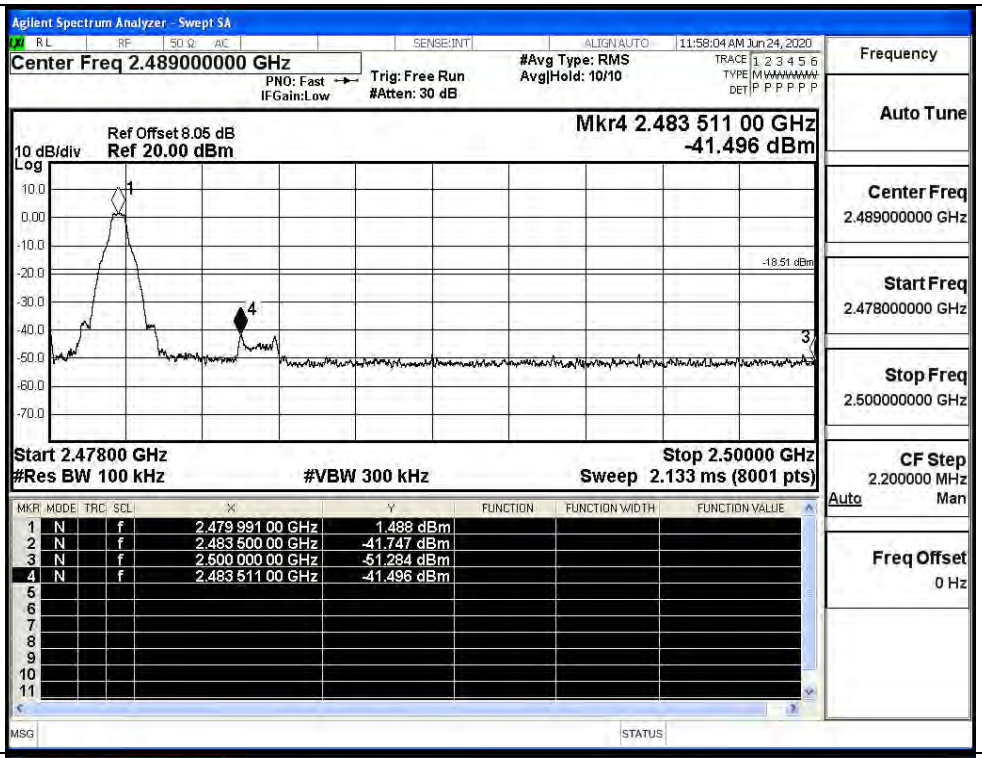
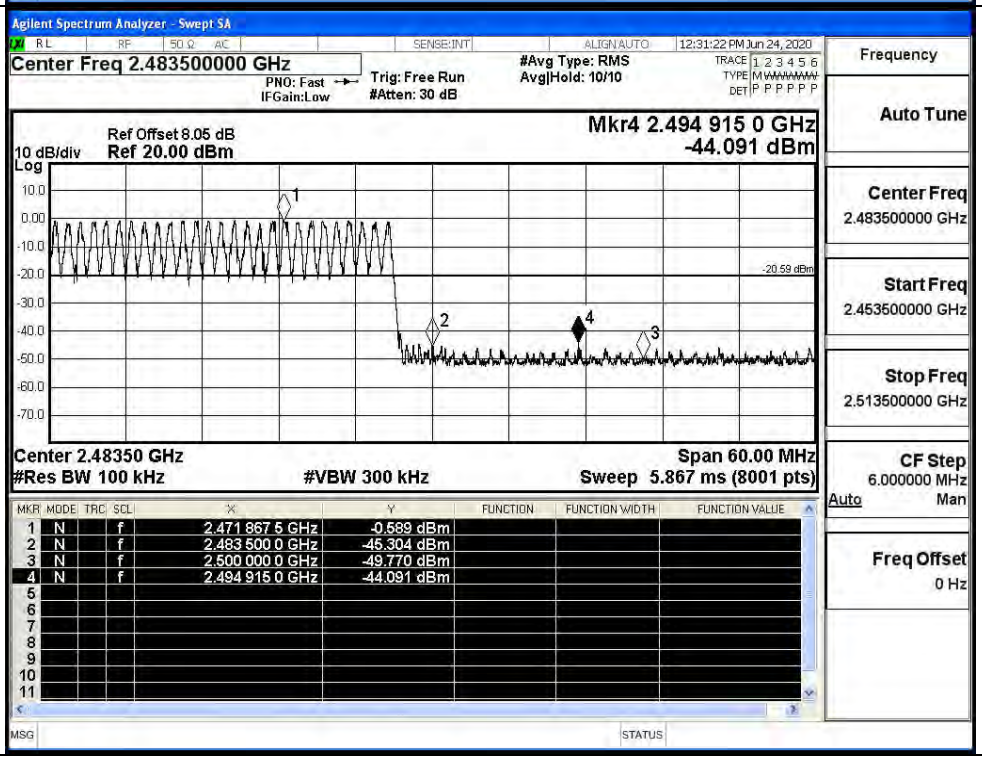
π/4DQPSK_MCH_Graphs			
Pref			
Puw			

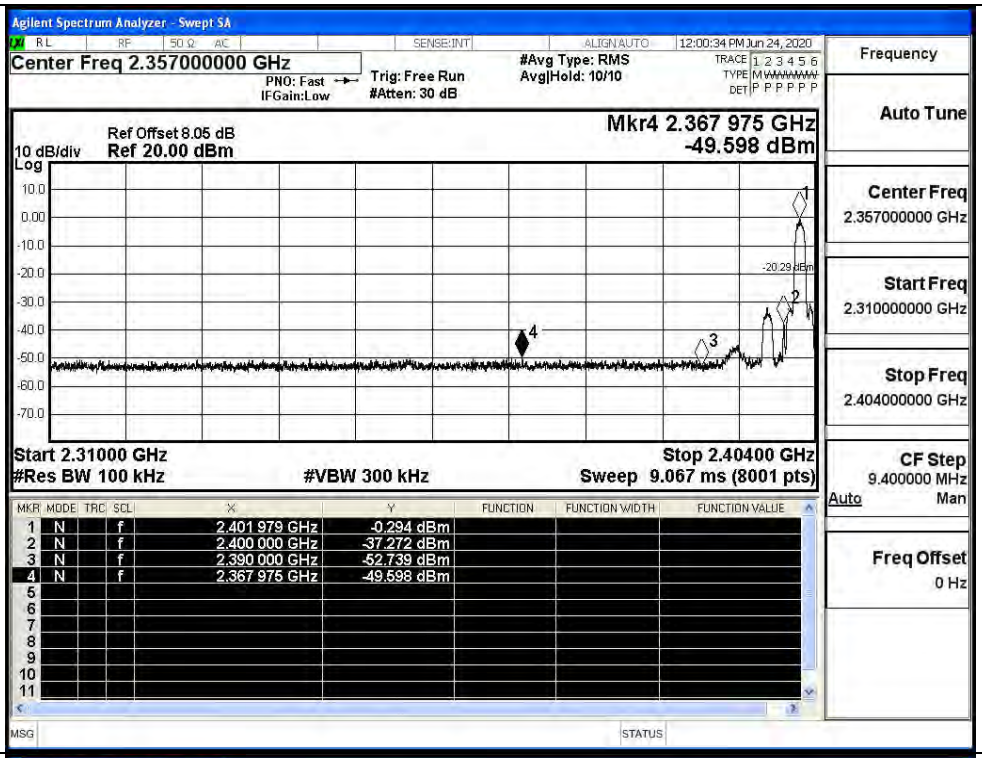
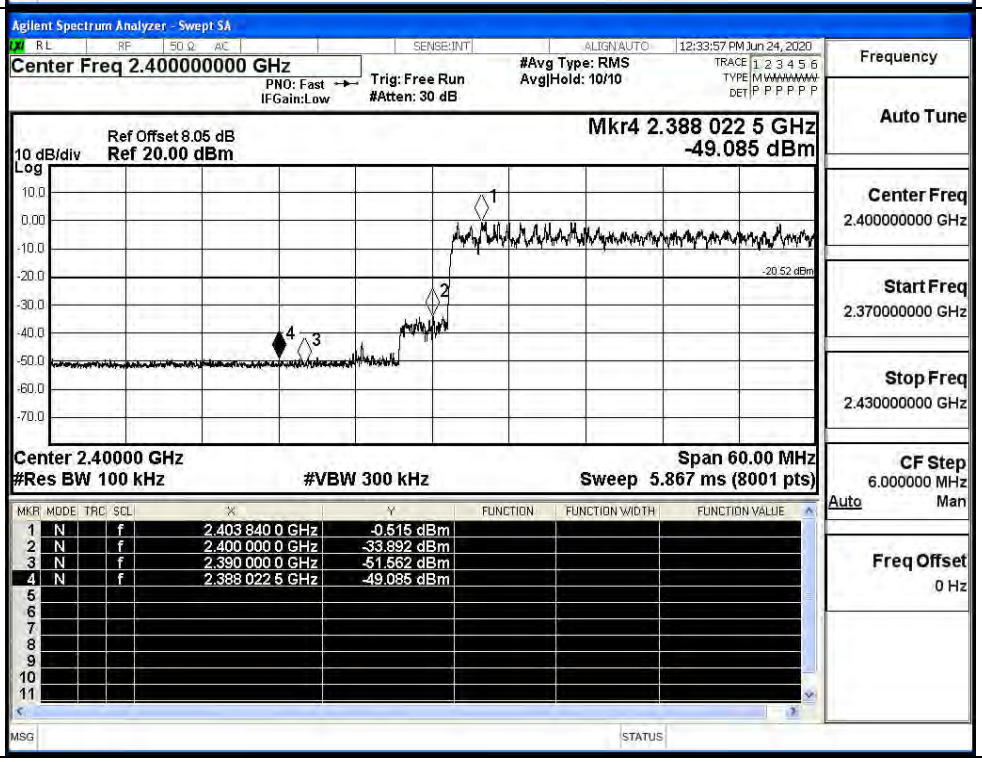
π/4DQPSK_HCH_Graphs			
Pref			
Puw			

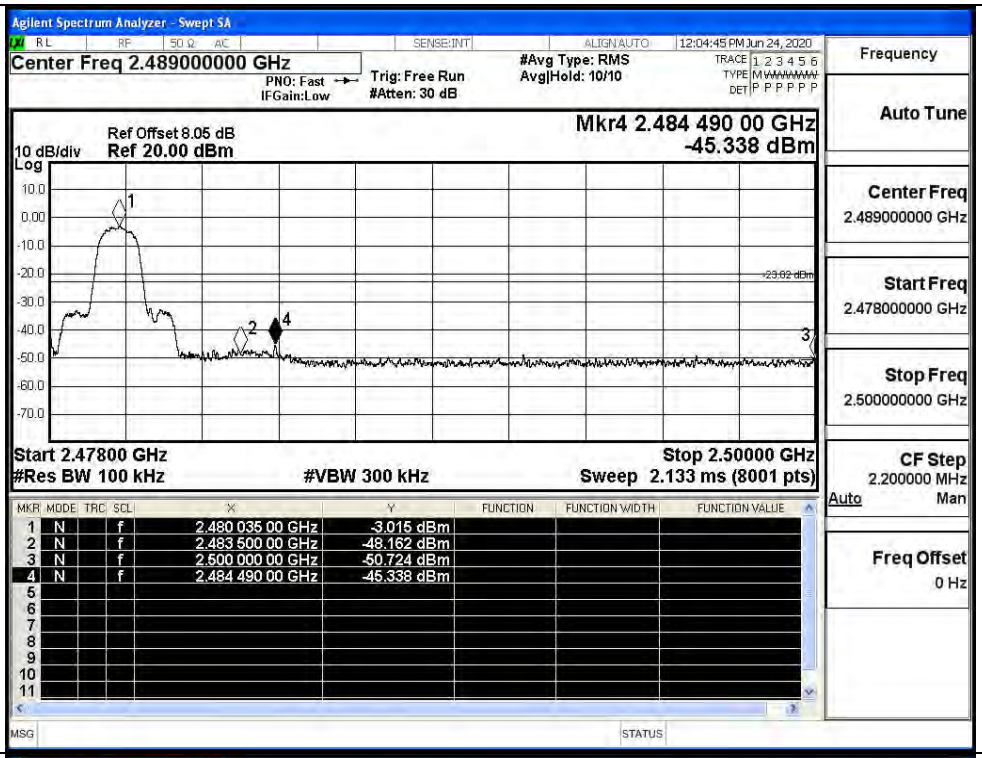
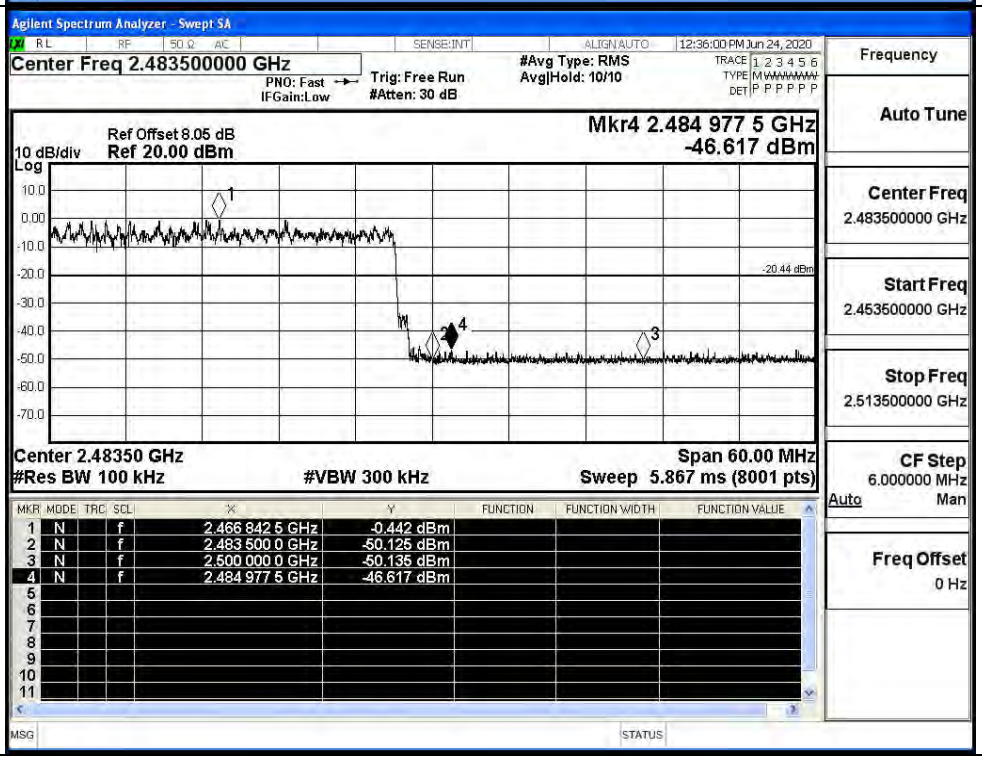
A.7 Band-edge for RF Conducted Emissions

Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	1.491	Off	-47.498	-18.51	PASS
			-0.564	On	-48.683	-20.56	PASS
	HCH	2480	1.488	Off	-41.496	-18.51	PASS
			-0.589	On	-44.091	-20.59	PASS
π/4DQPSK	LCH	2402	-0.294	Off	-49.598	-20.29	PASS
			-0.515	On	-49.085	-20.52	PASS
	HCH	2480	-3.015	Off	-45.338	-23.02	PASS
			-0.442	On	-46.617	-20.44	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	-44.37	2.0	0	50.89	PEAK	74	PASS
	Off	2310.0	-53.26	2.0	0	41.99	AV	54	PASS
	Off	2390.0	-43.35	2.0	0	51.91	PEAK	74	PASS
	Off	2390.0	-52.96	2.0	0	42.30	AV	54	PASS
	Off	2483.5	-37.56	2.0	0	57.69	PEAK	74	PASS
	Off	2483.5	-45.49	2.0	0	49.77	AV	54	PASS
	Off	2500.0	-42.41	2.0	0	52.85	PEAK	74	PASS
	Off	2500.0	-52.28	2.0	0	42.98	AV	54	PASS
π/4DQPSK	Off	2310.0	-44.01	2.0	0	51.25	PEAK	74	PASS
	Off	2310.0	-53.32	2.0	0	41.93	AV	54	PASS
	Off	2390.0	-43.46	2.0	0	51.79	PEAK	74	PASS
	Off	2390.0	-52.78	2.0	0	42.48	AV	54	PASS
	Off	2483.5	-39.14	2.0	0	56.12	PEAK	74	PASS
	Off	2483.5	-48.90	2.0	0	46.36	AV	54	PASS
	Off	2500.0	-41.14	2.0	0	54.12	PEAK	74	PASS
	Off	2500.0	-52.23	2.0	0	43.03	AV	54	PASS