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

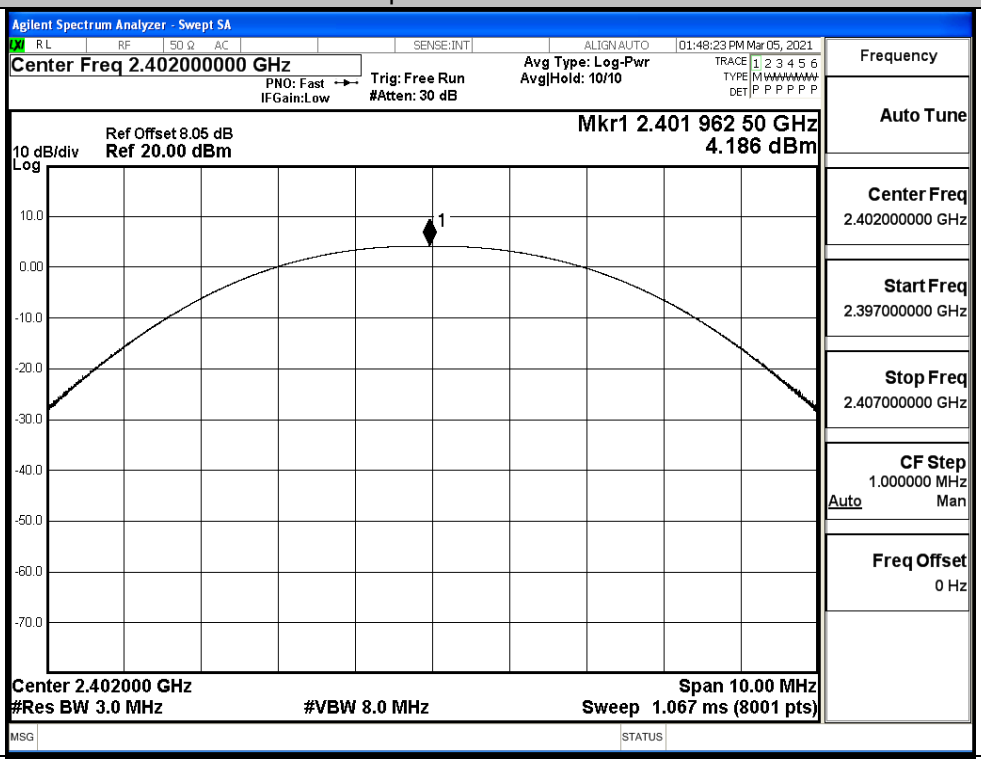
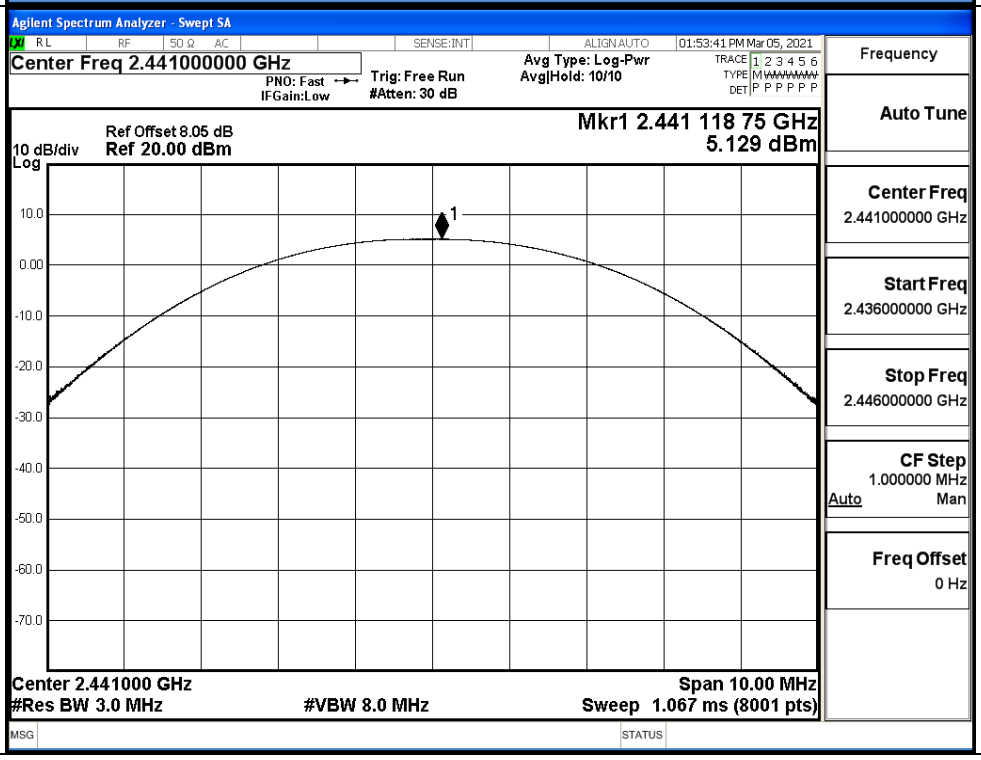
Test Model: SML625BTBK

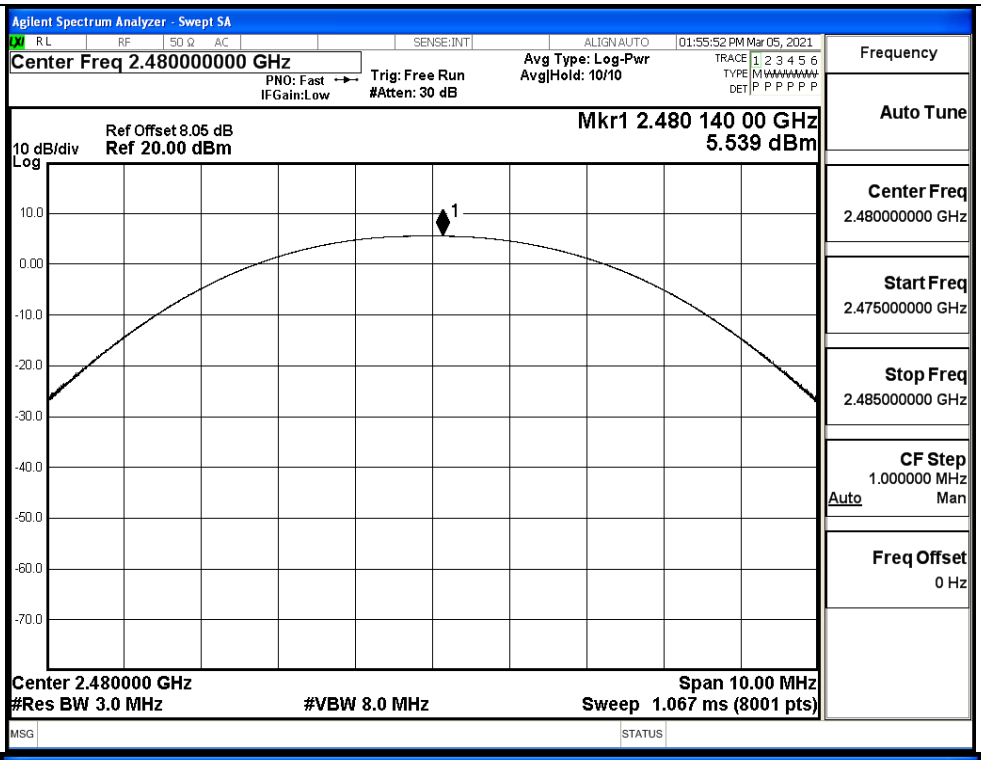
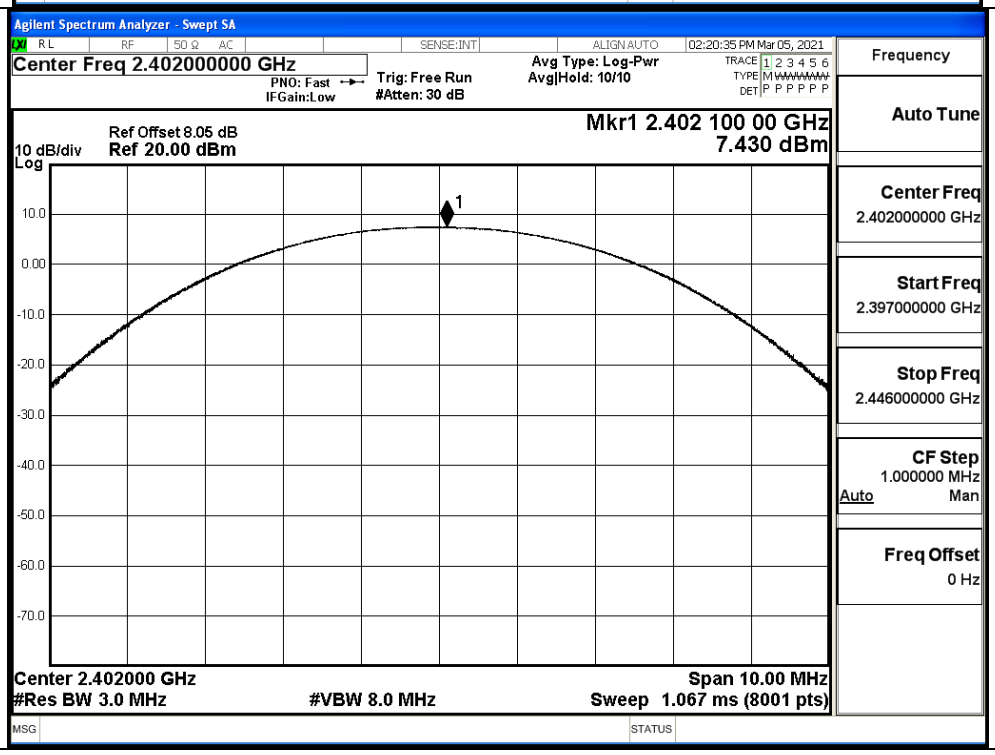
Environmental Conditions

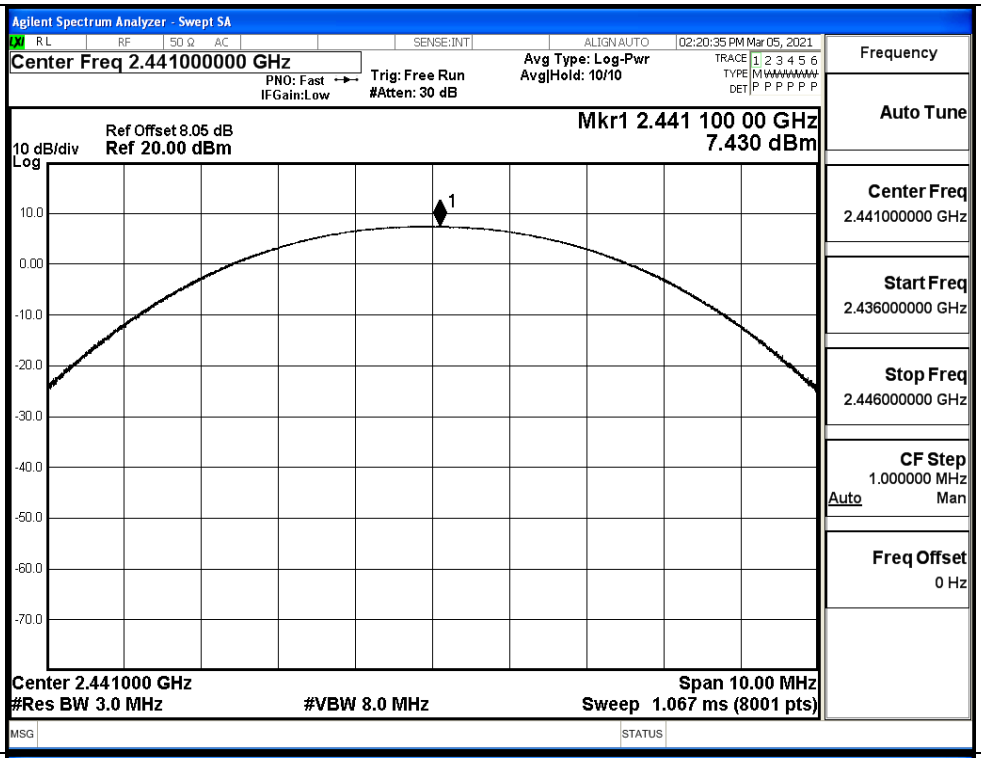
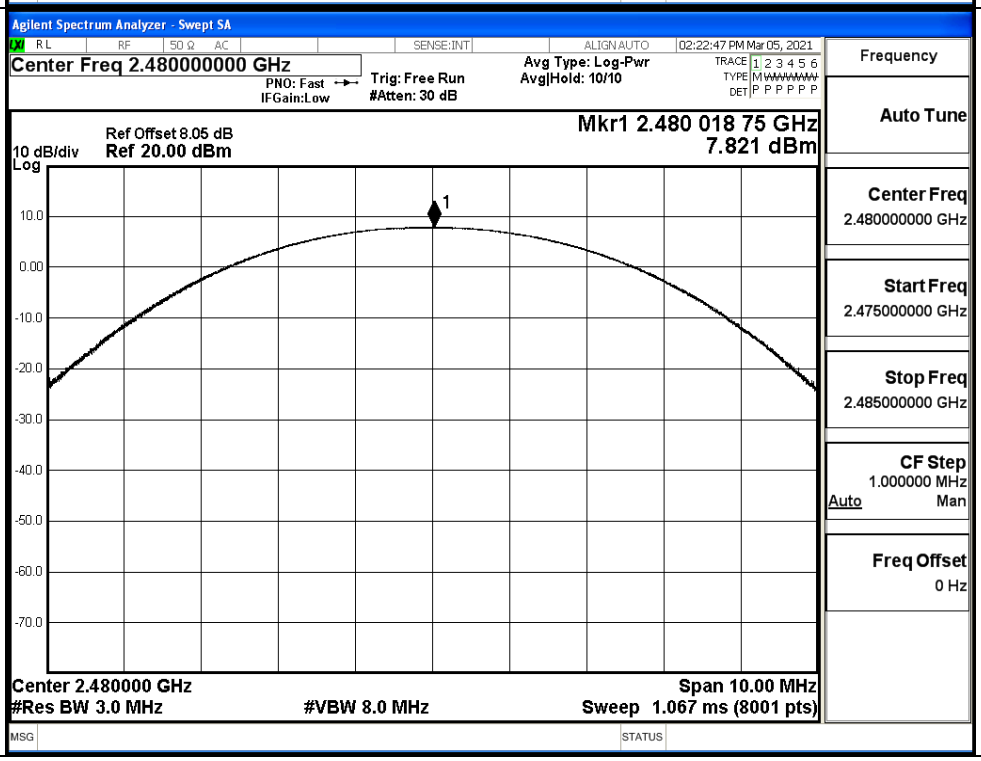
Temperature:	24.2° C
Relative Humidity:	54.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Li Huan
Supervised by:	Li Huan

A.1 Maxmum Conducted Peak Output Power

Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	4.186	21	PASS
	MCH	5.129	21	PASS
	HCH	5.539	21	PASS
π/4DQPSK	LCH	7.430	21	PASS
	MCH	7.430	21	PASS
	HCH	7.821	21	PASS

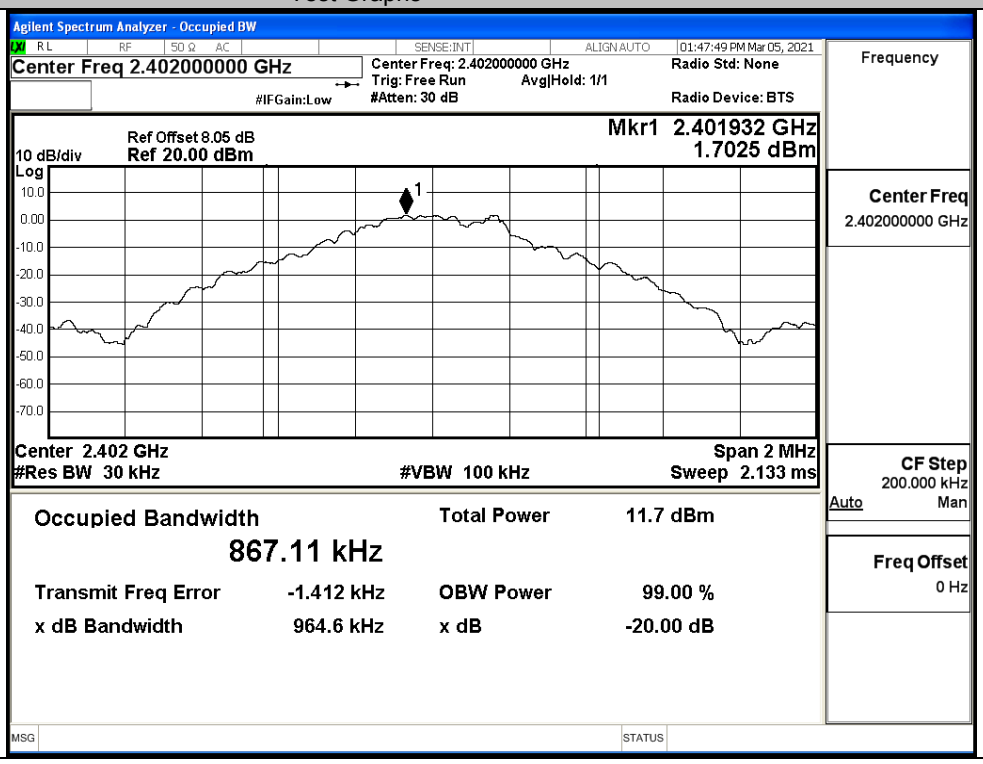
Test Graphs	
GFSK/LCH	
GFSK/MCH	

GFSK/HCH	
π/4DQPSK/LCH	

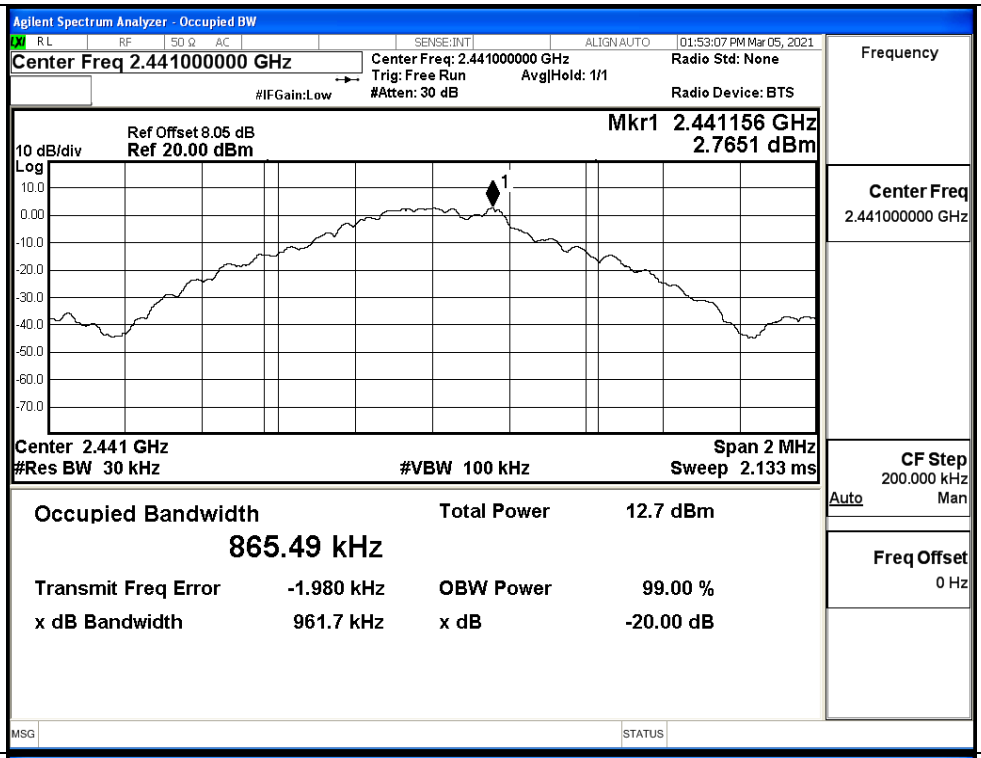
π/4DQPSK/MCH		
π/4DQPSK/HCH		

A.2 20dB Bandwidth

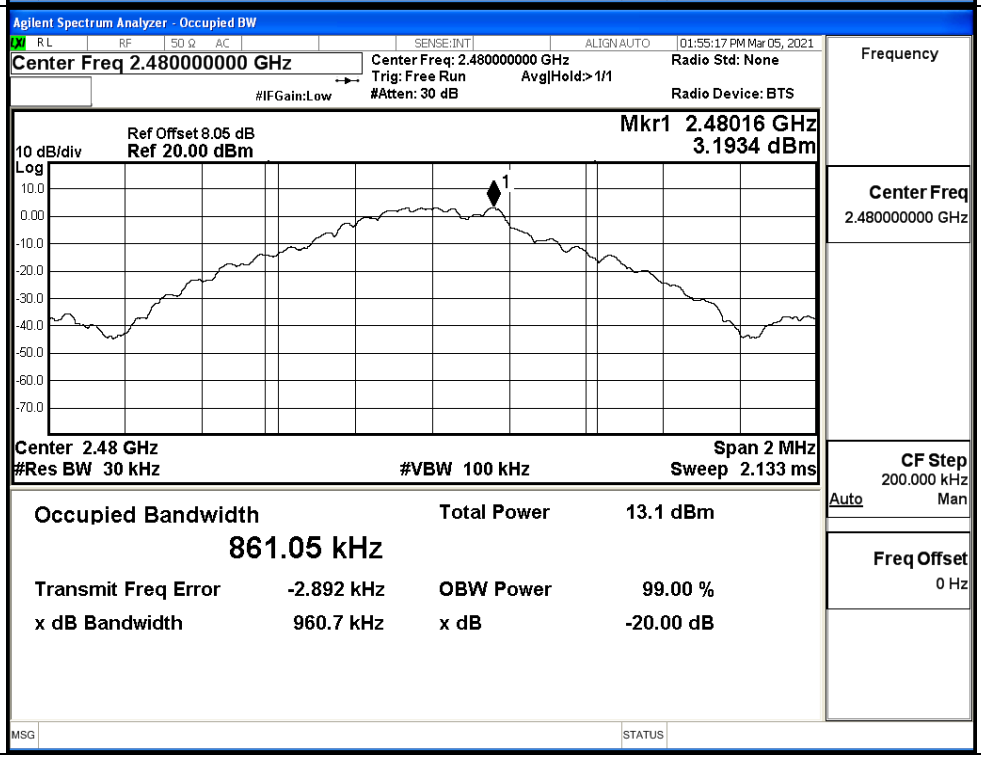
Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.9646	Not Specified	PASS
	MCH	0.9617	Not Specified	PASS
	HCH	0.9607	Not Specified	PASS
π/4DQPSK	LCH	1.335	Not Specified	PASS
	MCH	1.336	Not Specified	PASS
	HCH	1.335	Not Specified	PASS

Test Graphs	
GFSK/LCH	

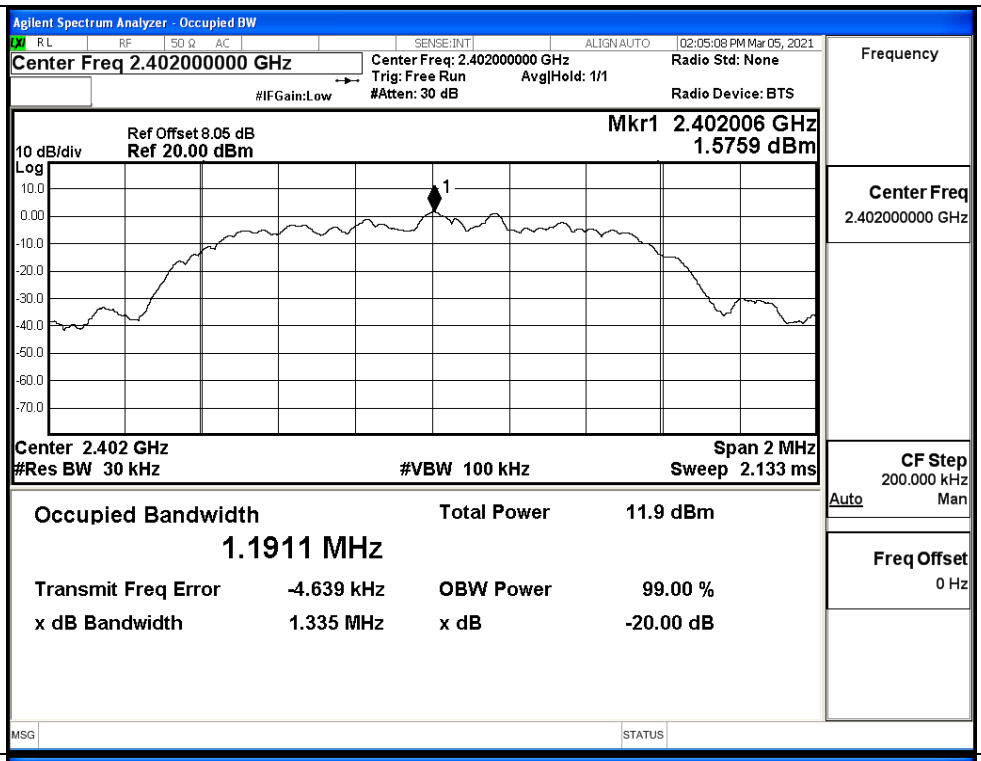
GFSK/MCH



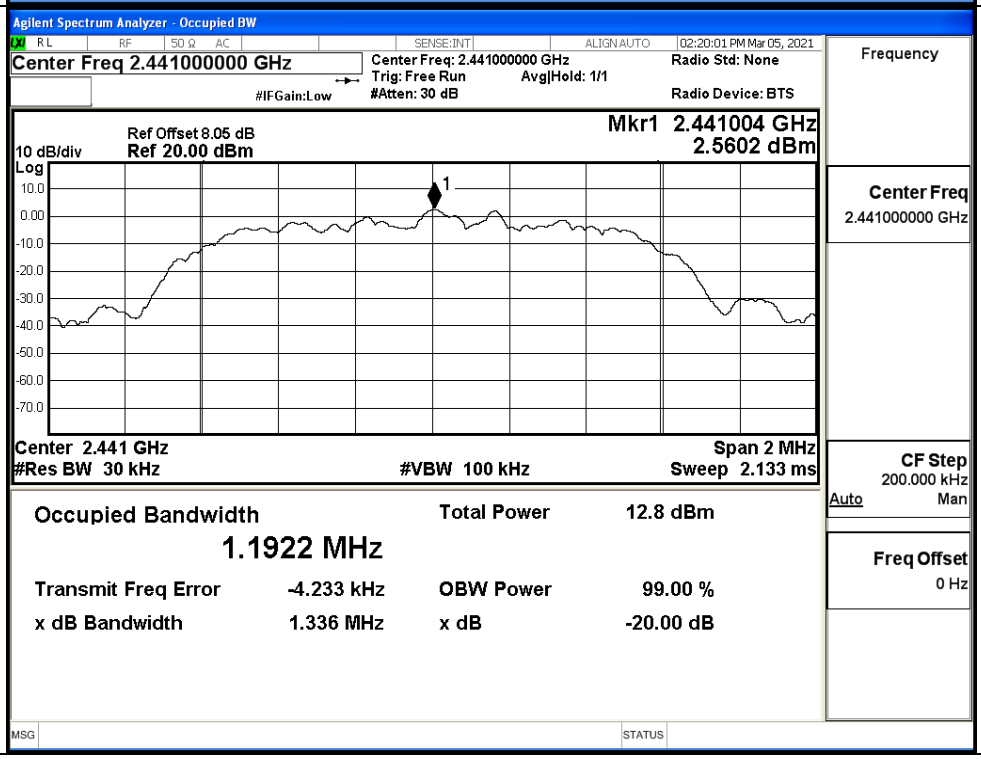
GFSK/HCH



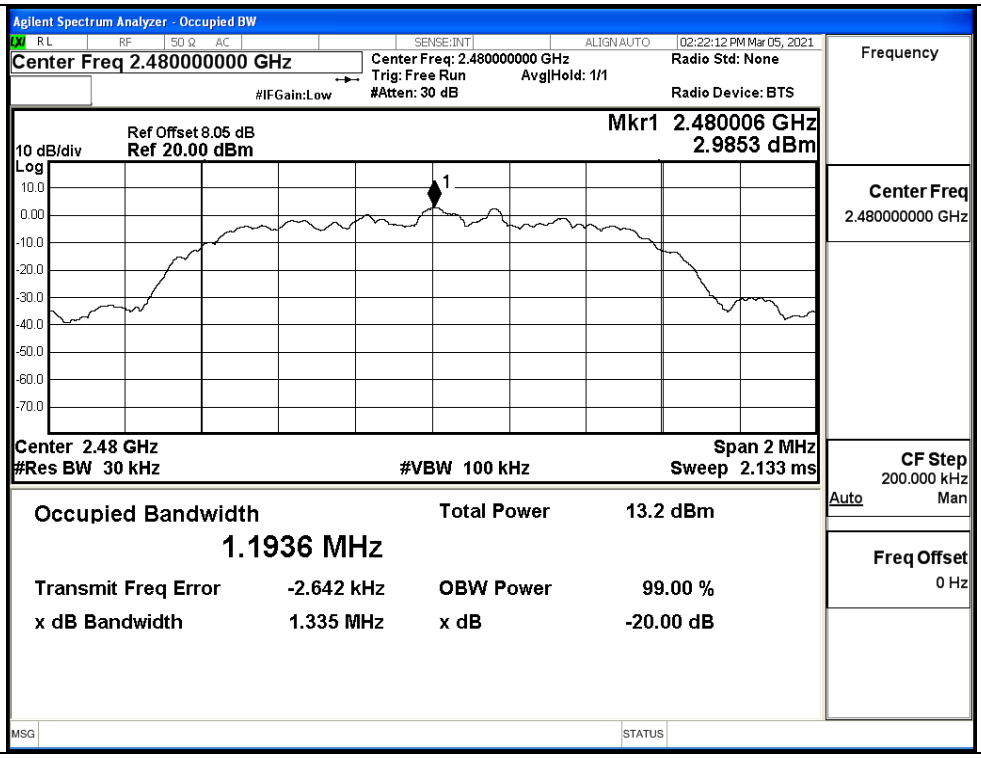
π/4DQPSK/LCH



π/4DQPSK/MCH

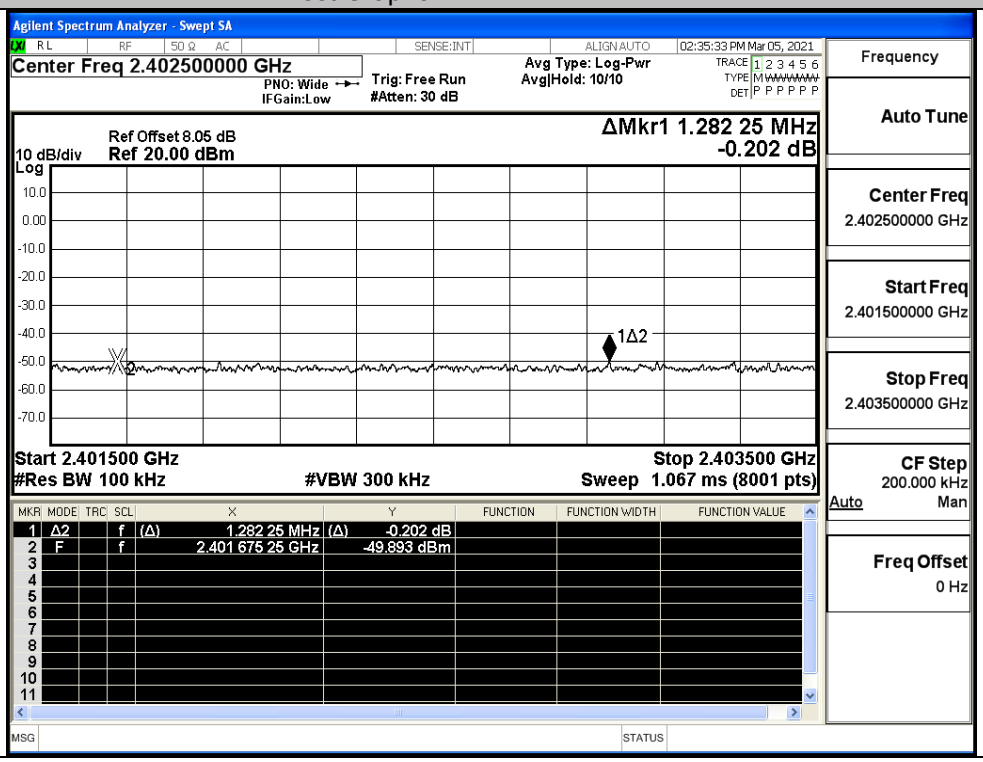


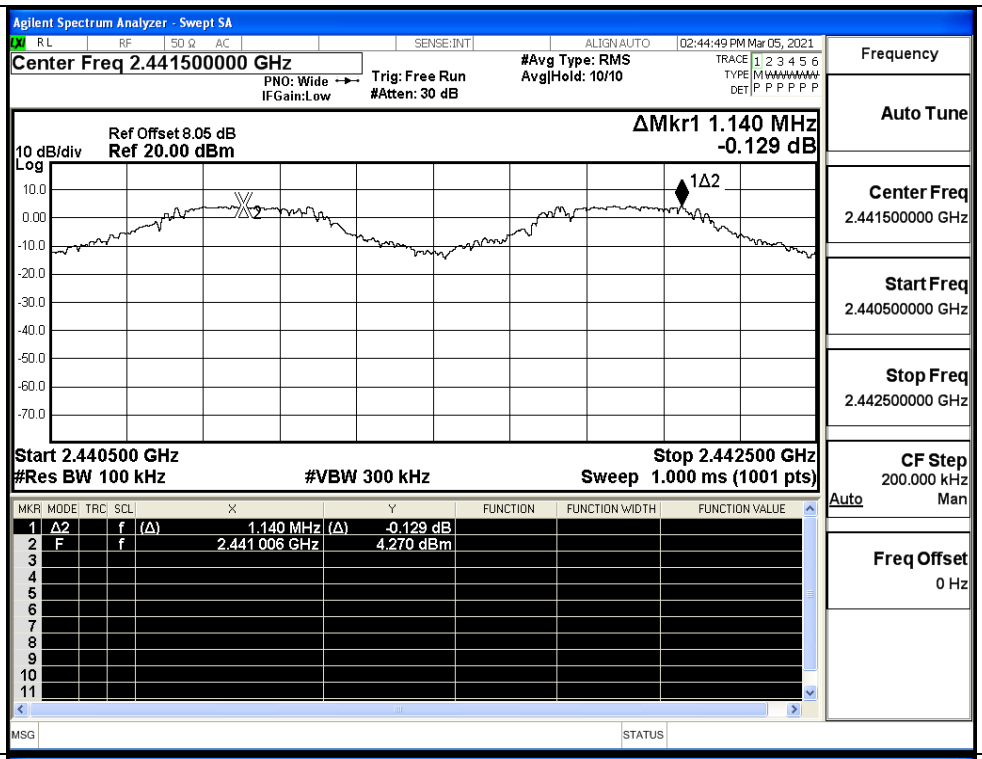
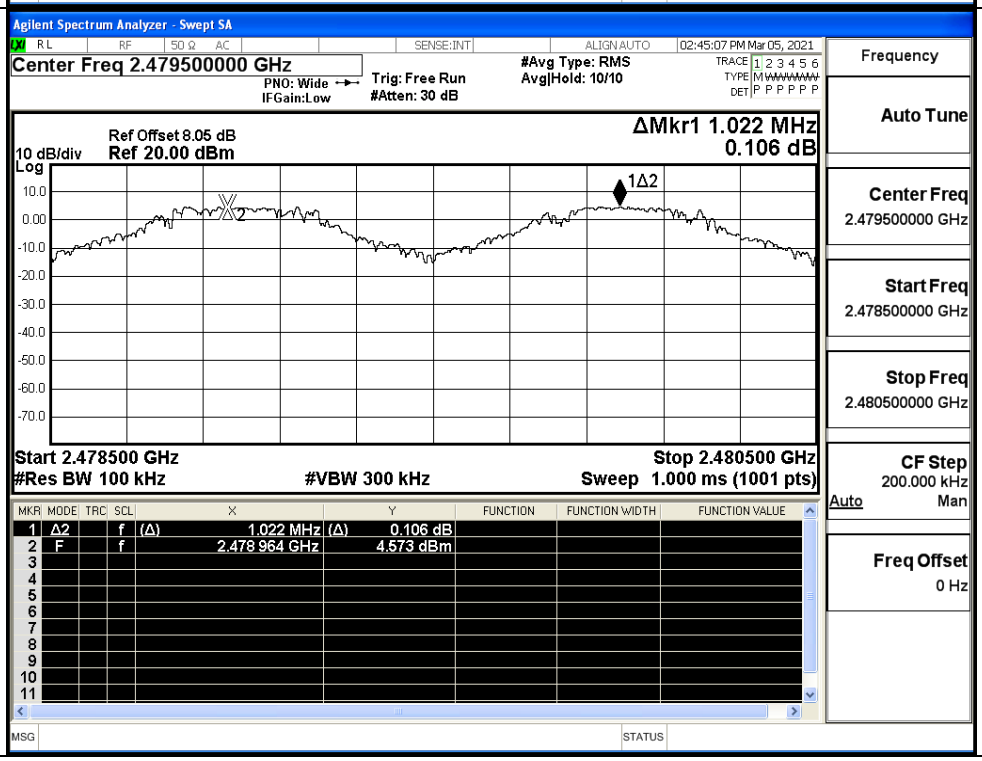
π/4DQPSK/HCH


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
02:22:12 PM Mar 05, 2021
Frequency
Ref Offset 8.05 dB
10 dB/div
Ref 20.00 dBm
Mkr1 2.480006 GHz
2.9853 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
1.1936 MHz
Total Power 13.2 dBm
Transmit Freq Error -2.642 kHz
OBW Power 99.00 %
x dB Bandwidth 1.335 MHz
x dB -20.00 dB
Freq Offset
0 Hz
MSG
STATUS

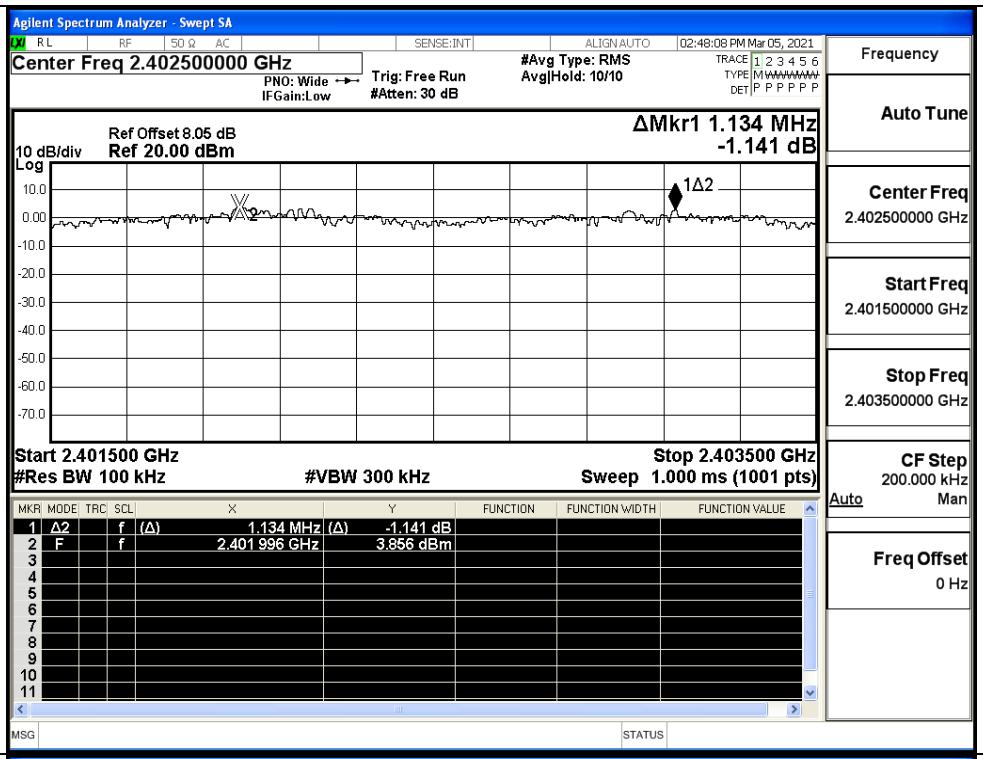
A.3 Carrier Frequency Separation

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.282	0.643	PASS
	MCH	1.140	0.643	PASS
	HCH	1.022	0.643	PASS
π/4DQPSK	LCH	1.134	0.891	PASS
	MCH	1.012	0.891	PASS
	HCH	0.974	0.891	PASS

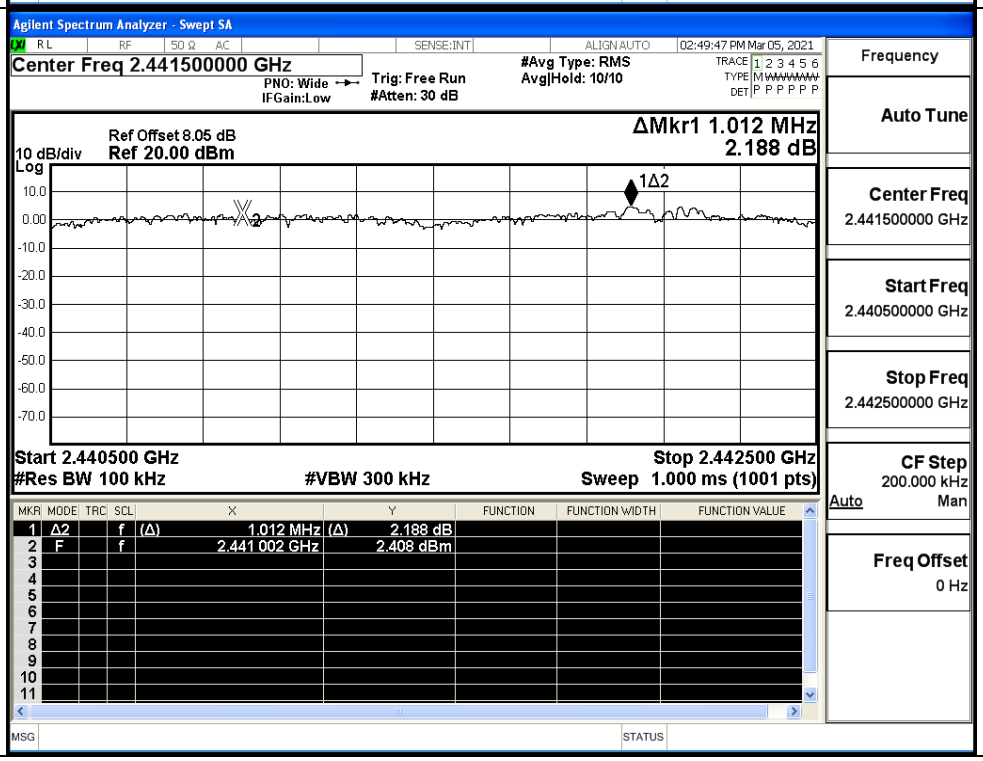
Test Graphs		
GFSK/LCH		

GFSK/MCH		
GFSK/HCH		

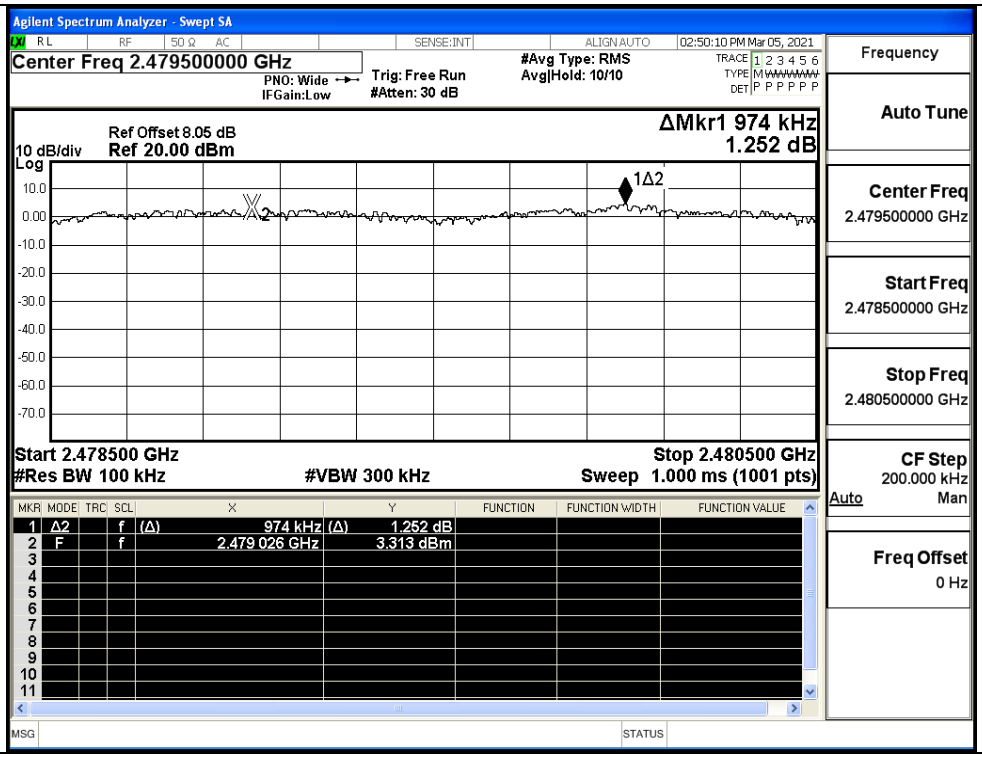
π/4DQPSK/LCH



π/4DQPSK/MCH

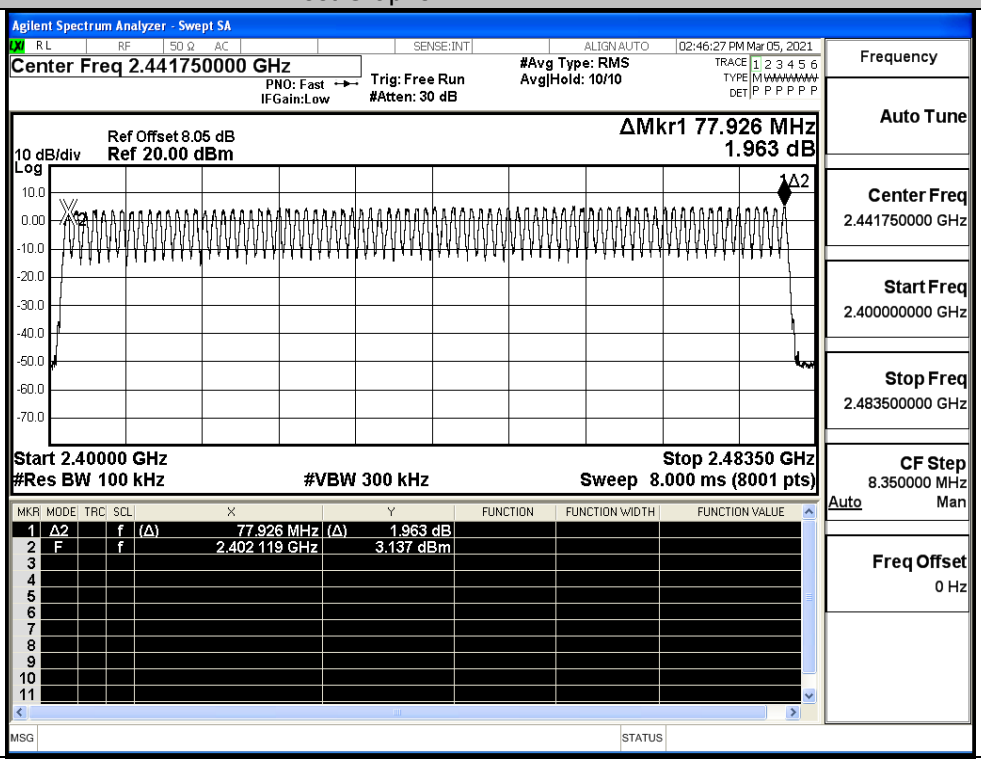
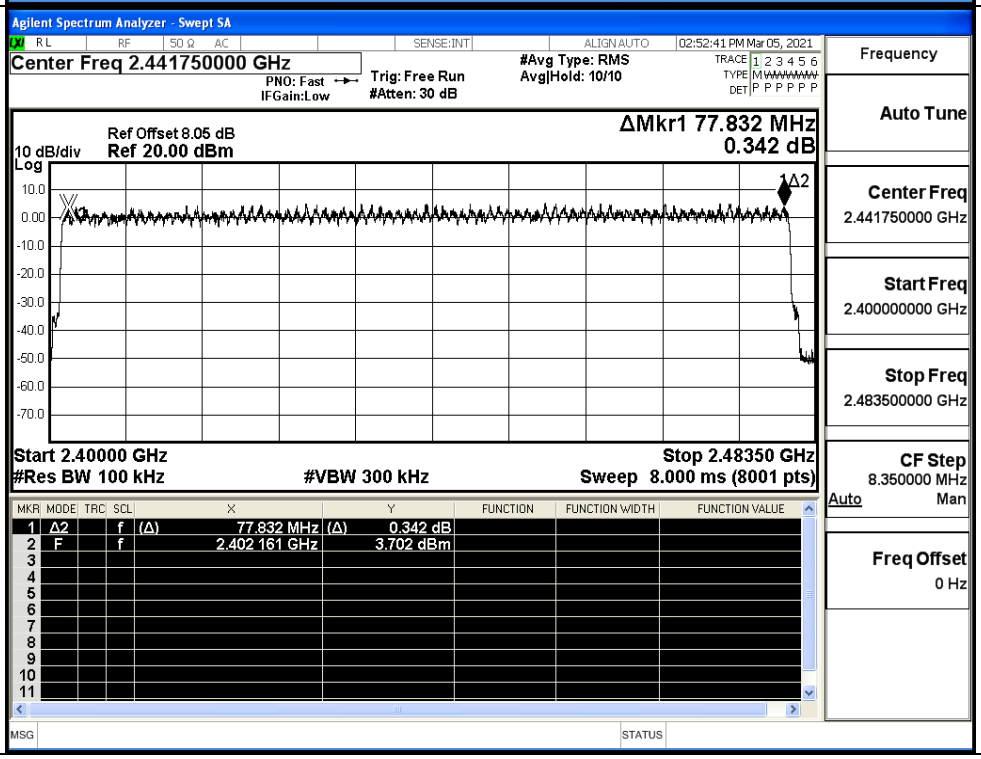


π/4DQPSK/HCH


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
02:50:10 PM Mar 05, 2021
Ref Offset 8.05 dB
10 dB/div
Ref 20.00 dBm
ΔMkr1 974 kHz
1.252 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) 974 kHz (Δ) 1.252 dB
2 F f 2.479 026 GHz 3.313 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

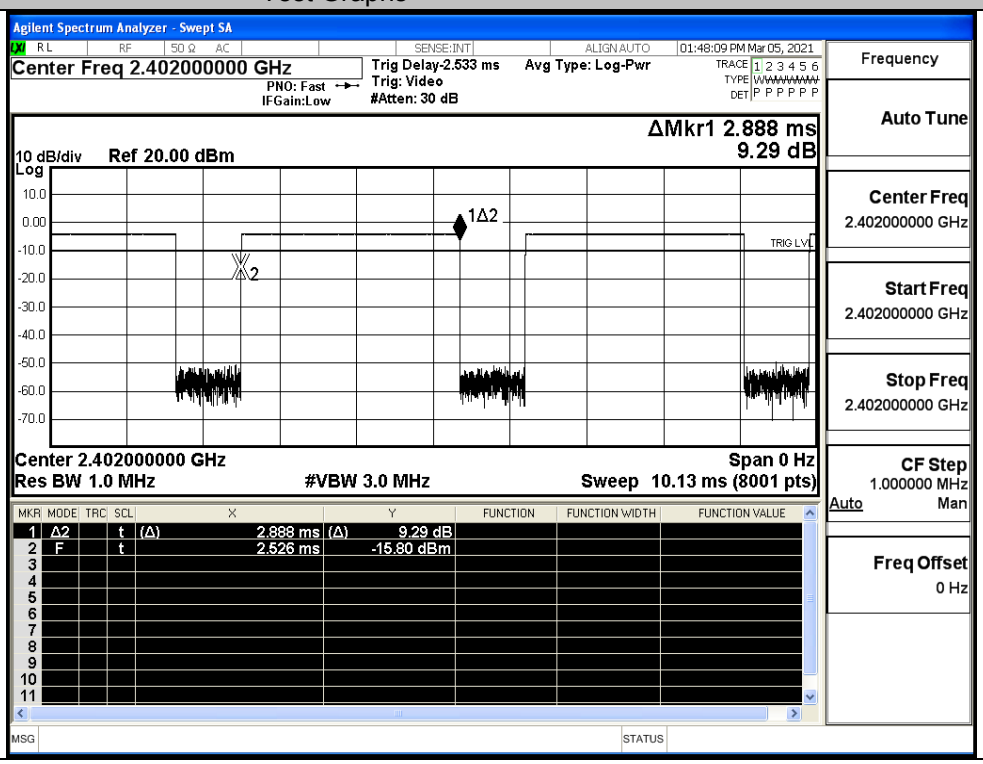
A.4 Hopping Channel Number

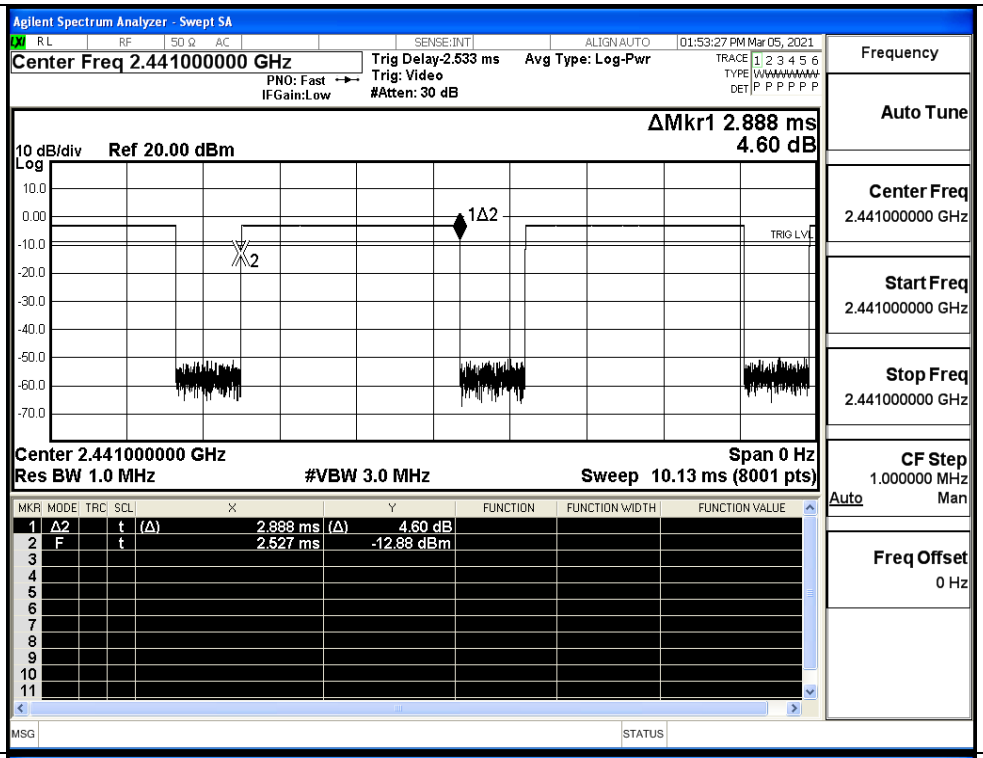
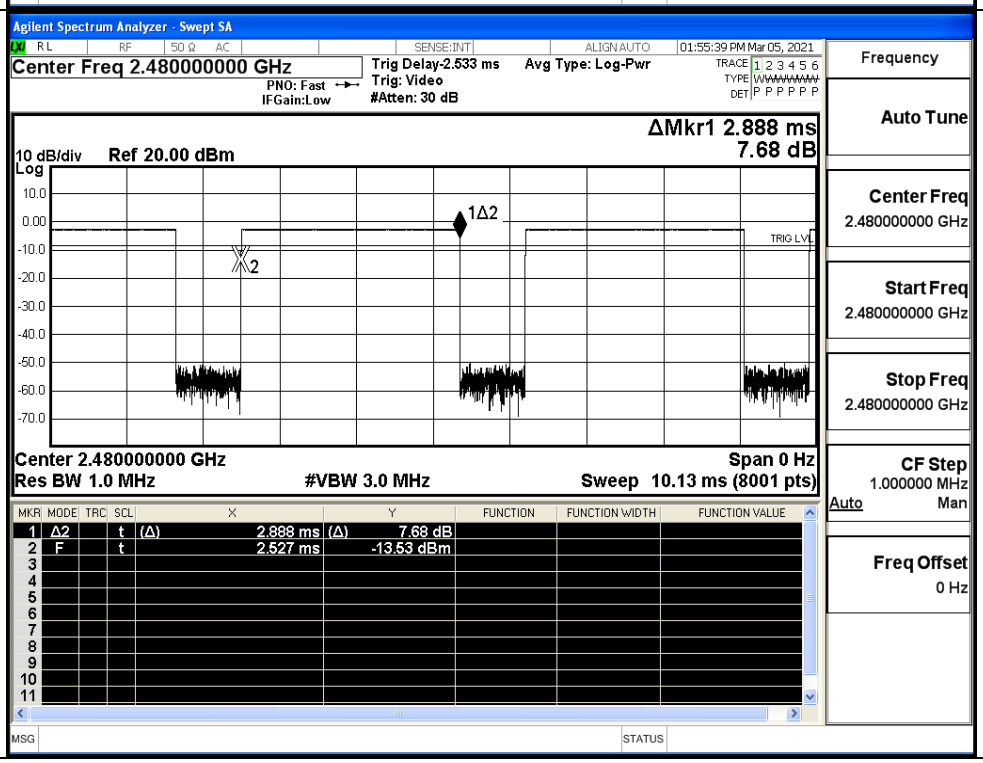
Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	>=15	PASS
π/4DQPSK	Hop	79	>=15	PASS

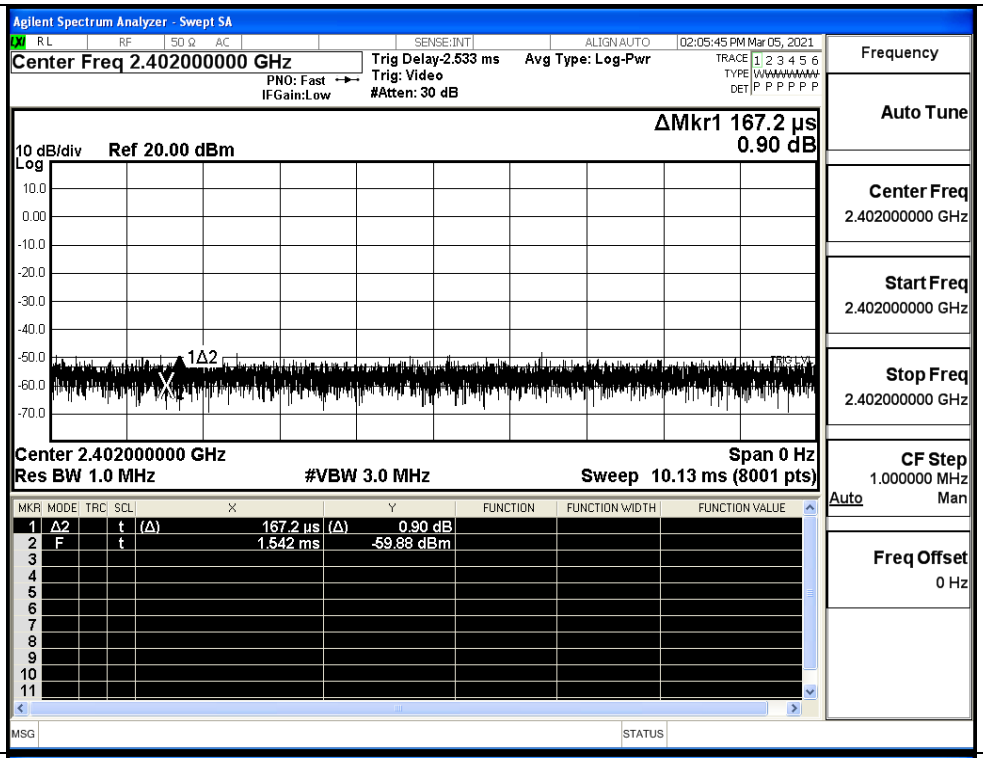
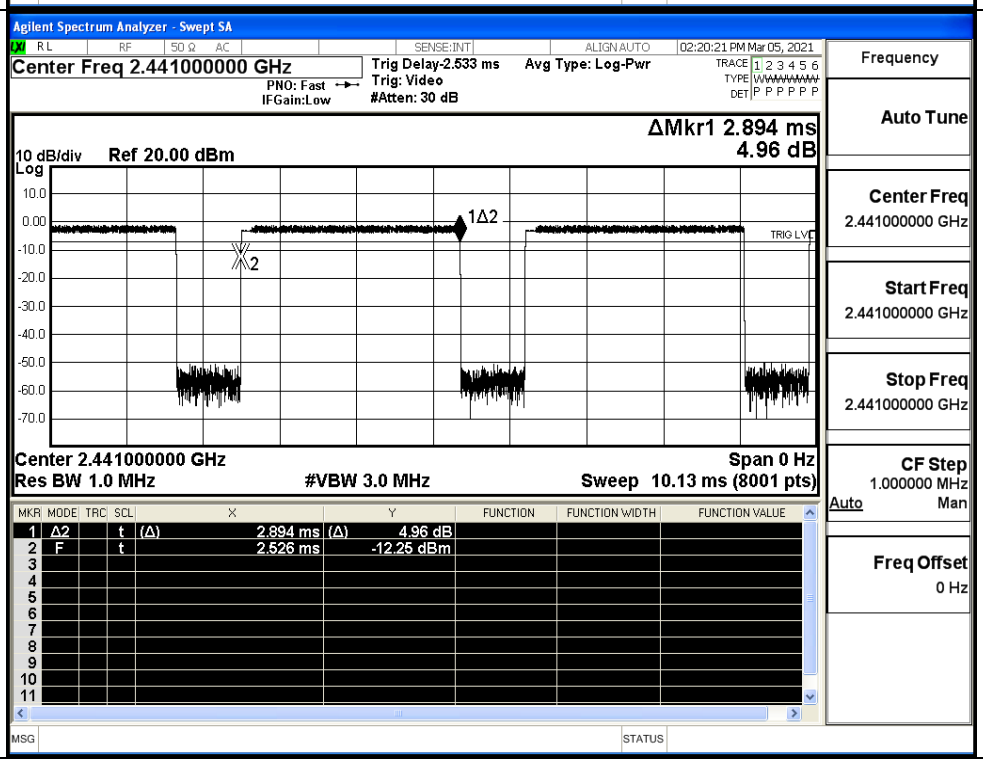
Test Graphs		
GFSK/Hop		
π/4DQPSK/Hop		

A.5 Dwell Time

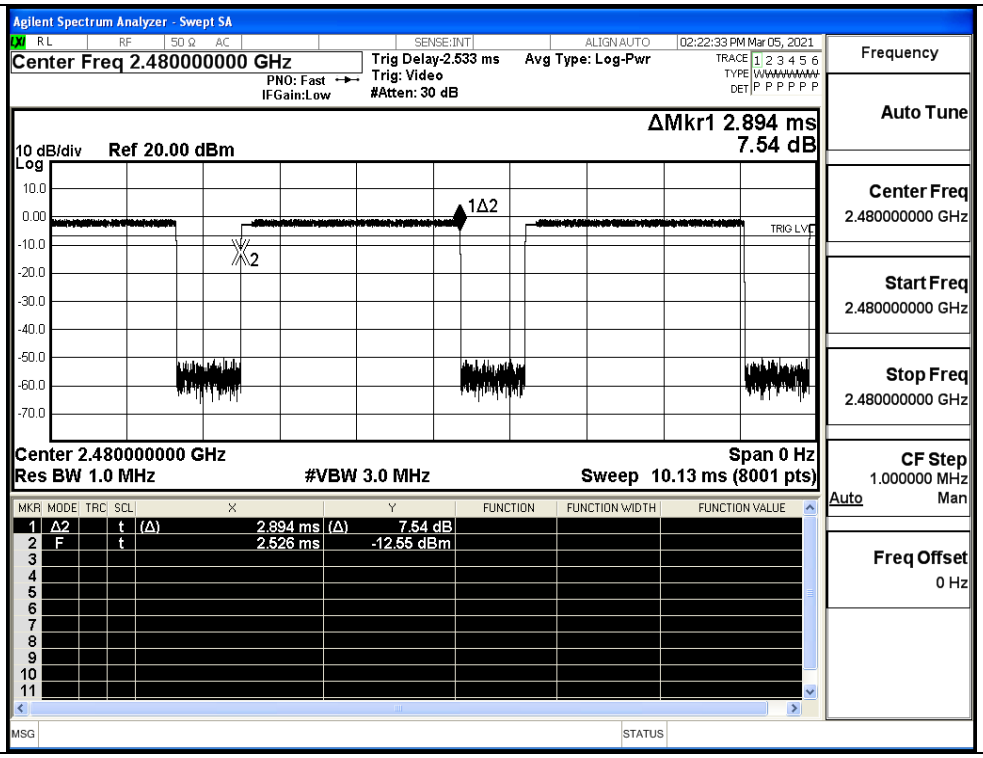
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.89	106.7	0.308	0.4	PASS
	DH5	MCH	2.89	106.7	0.308	0.4	PASS
	DH5	HCH	2.89	106.7	0.308	0.4	PASS
π/4DQPSK	2DH5	LCH	2.89	106.7	0.018	0.4	PASS
	2DH5	MCH	2.89	106.7	0.308	0.4	PASS
	2DH5	HCH	2.89	106.7	0.308	0.4	PASS

Test Graphs	
GFSK_DH5/LCH	

GFSK_DH5/MCH	
GFSK_DH5/HCH	

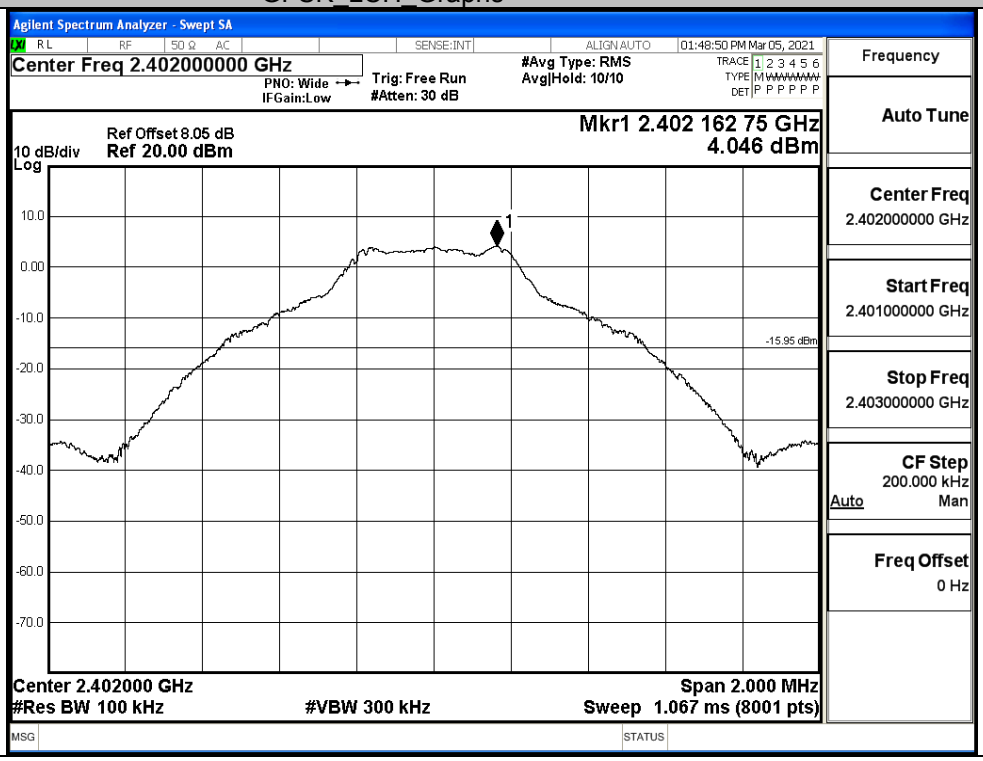
π/4DQPSK _2DH5/LCH	
π/4DQPSK _2DH5/MCH	

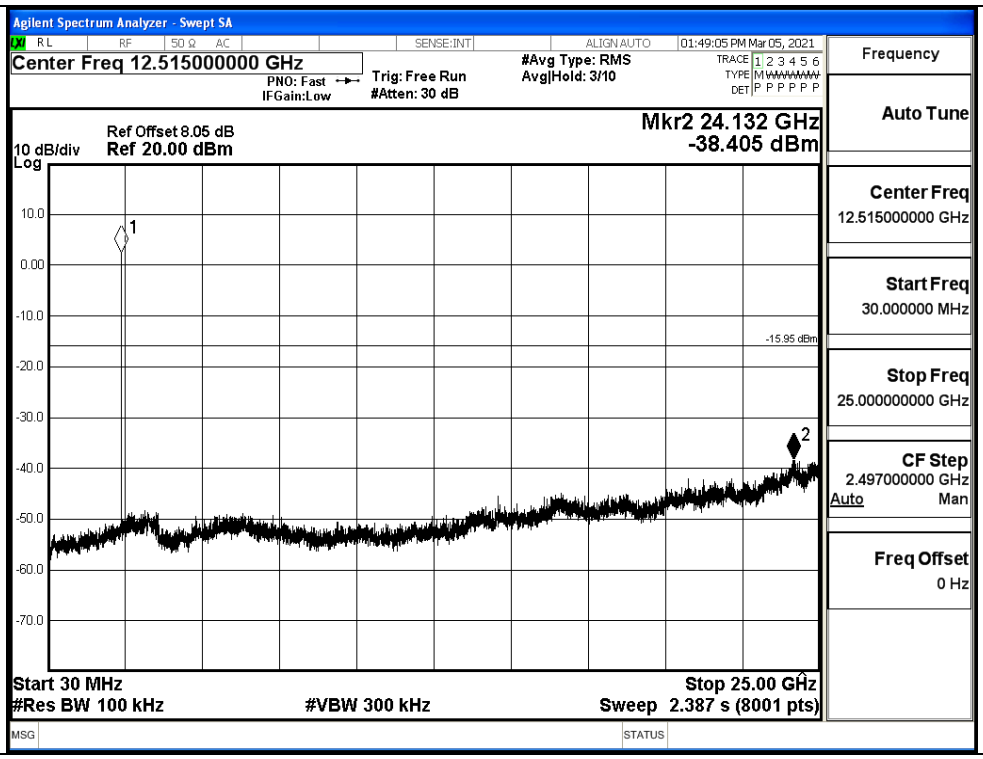
π/4DQPSK
_2DH5/HCH



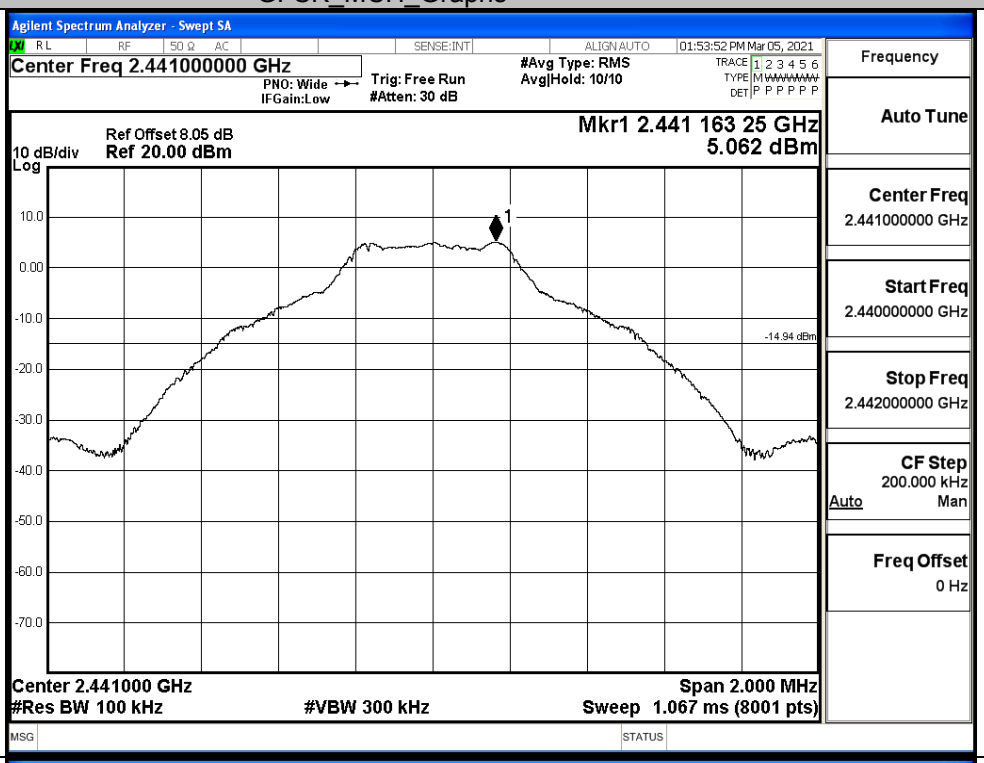
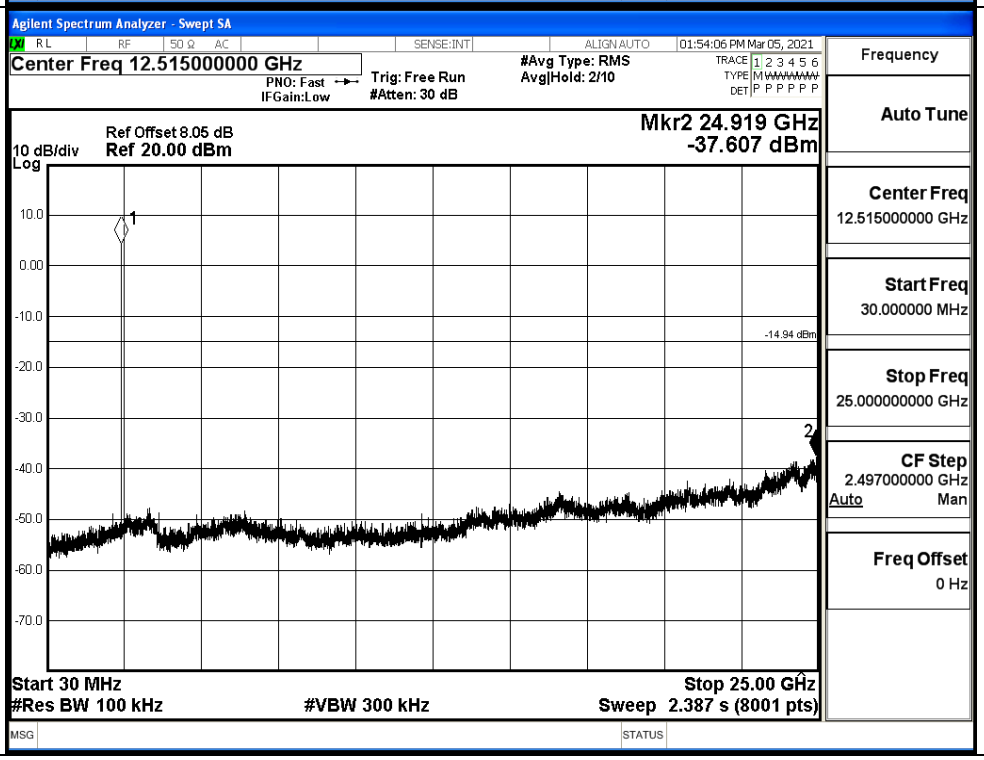
A.6 RF Conducted Spurious Emissions

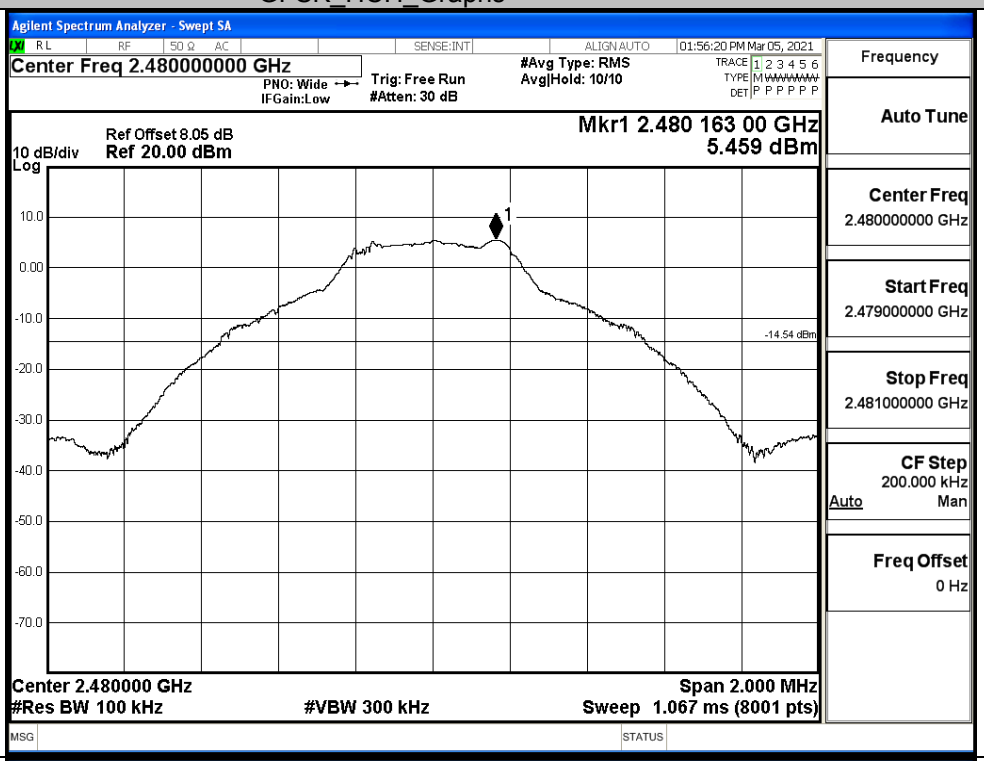
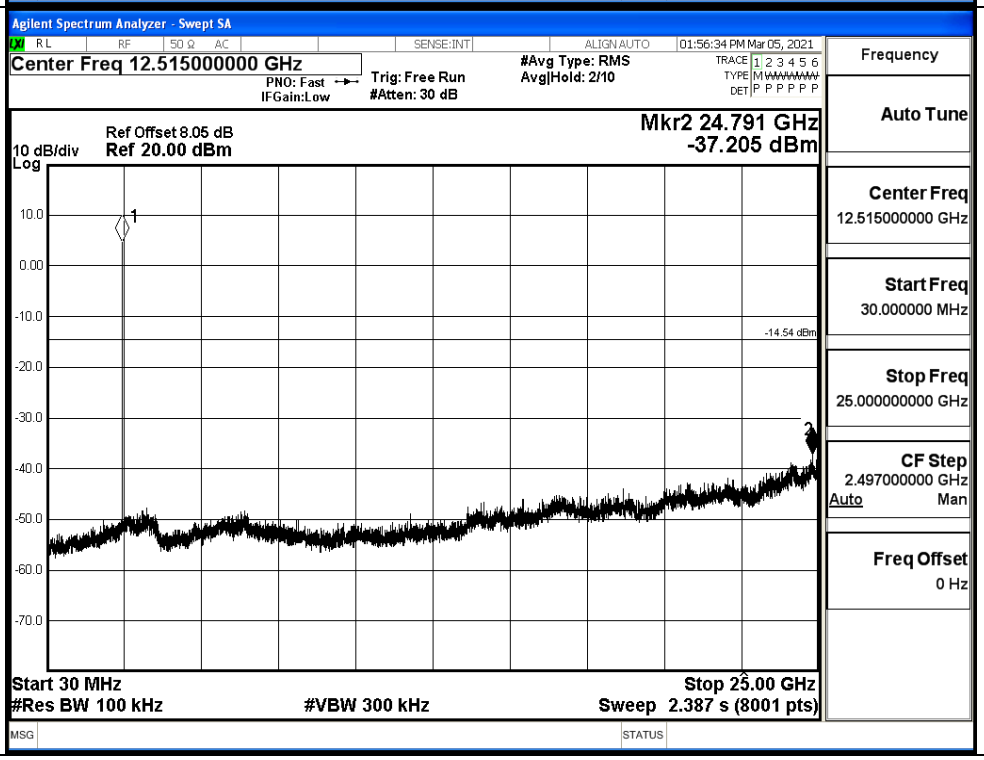
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	4.046	-38.405	-15.954	PASS
	MCH	5.062	-37.607	-14.938	PASS
	HCH	5.459	-37.205	-14.541	PASS
π/4DQPSK	LCH	4.012	-37.779	-15.988	PASS
	MCH	4.827	-37.574	-15.173	PASS
	HCH	5.175	-37.944	-14.825	PASS

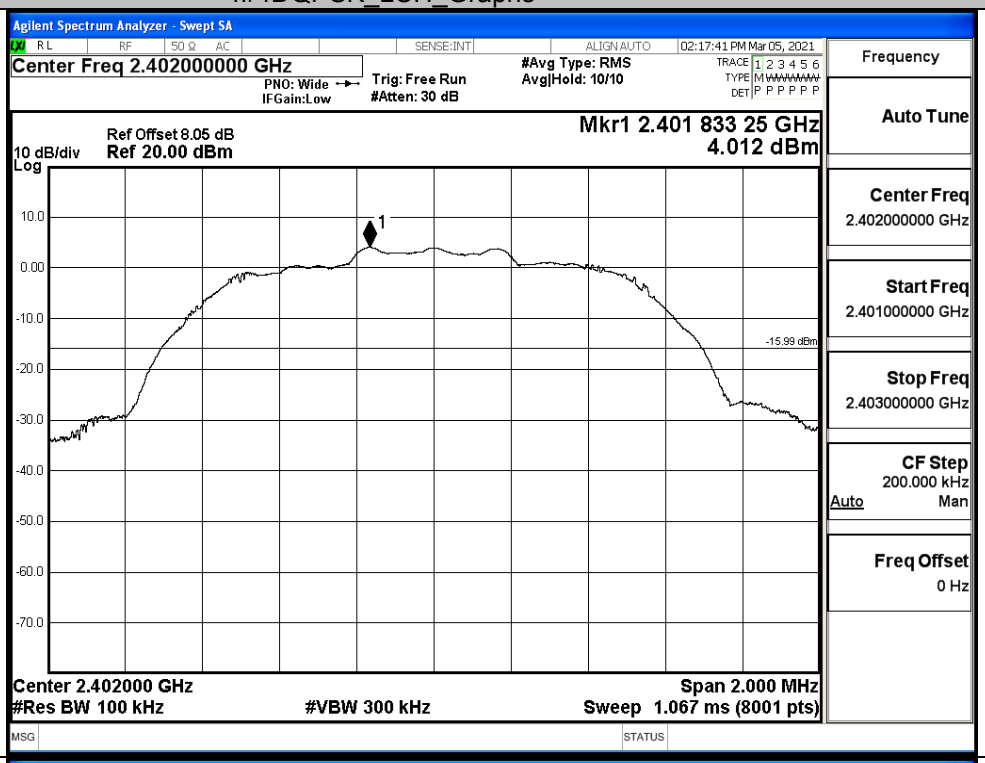
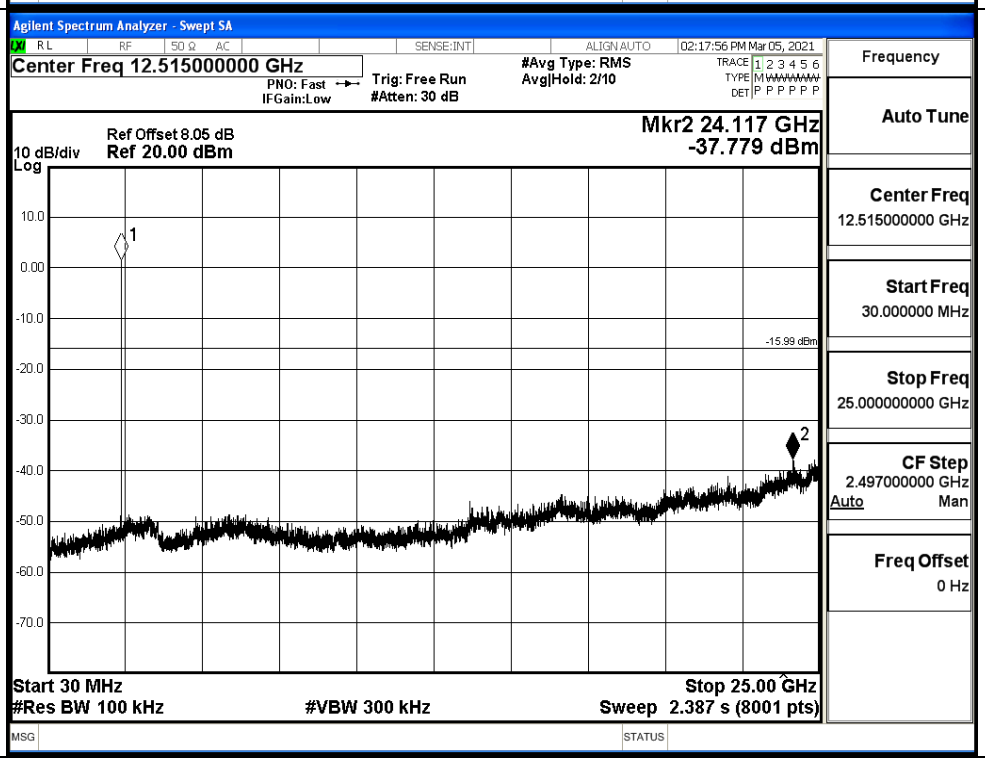
GFSK_LCH_Graphs	
Pref	

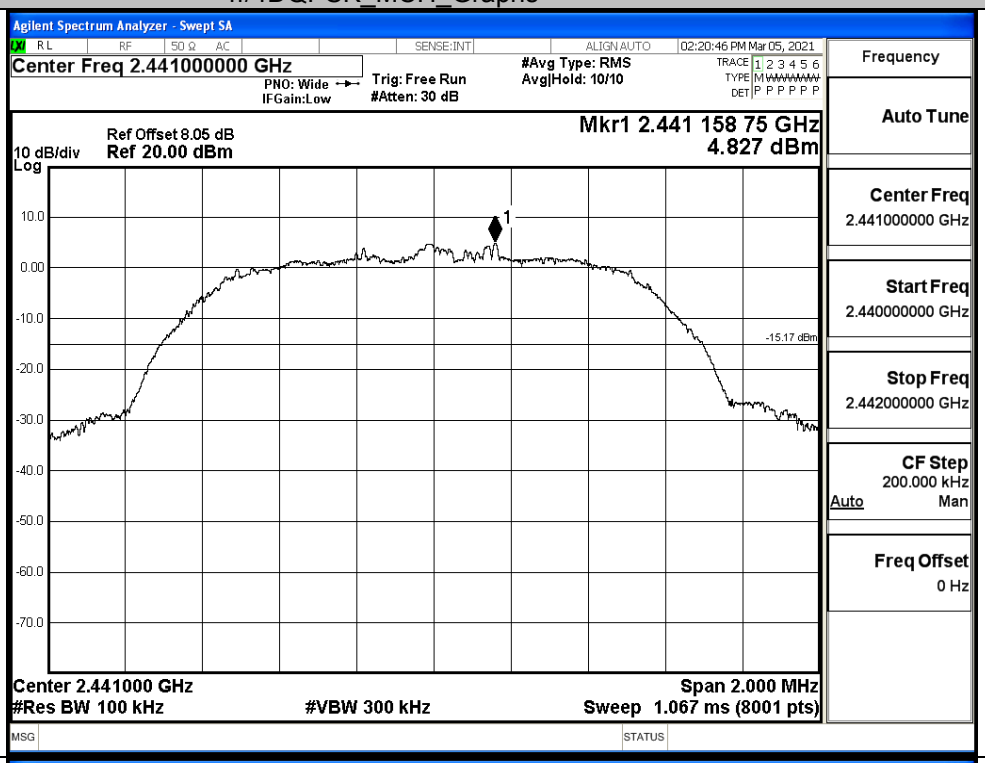
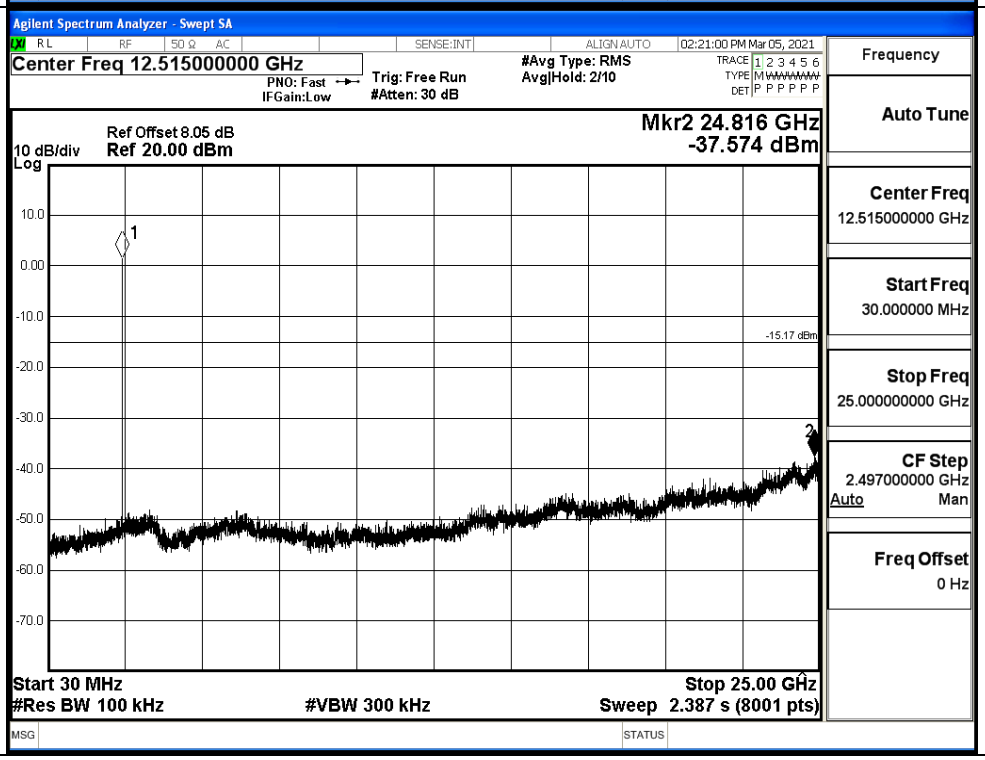
Puw		

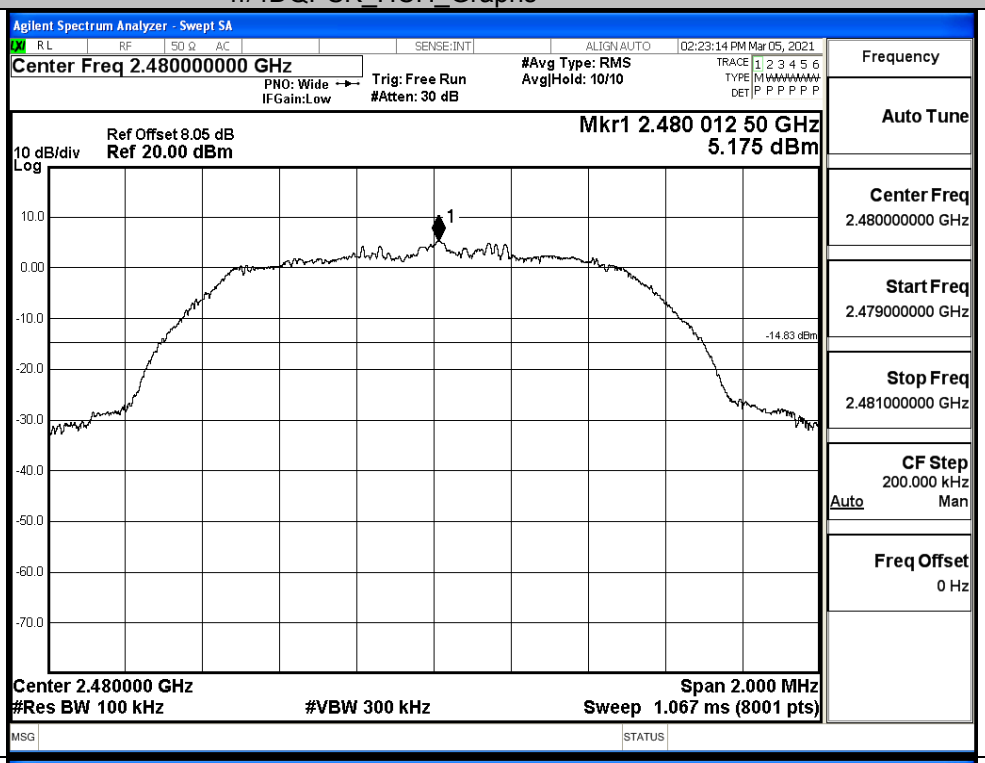
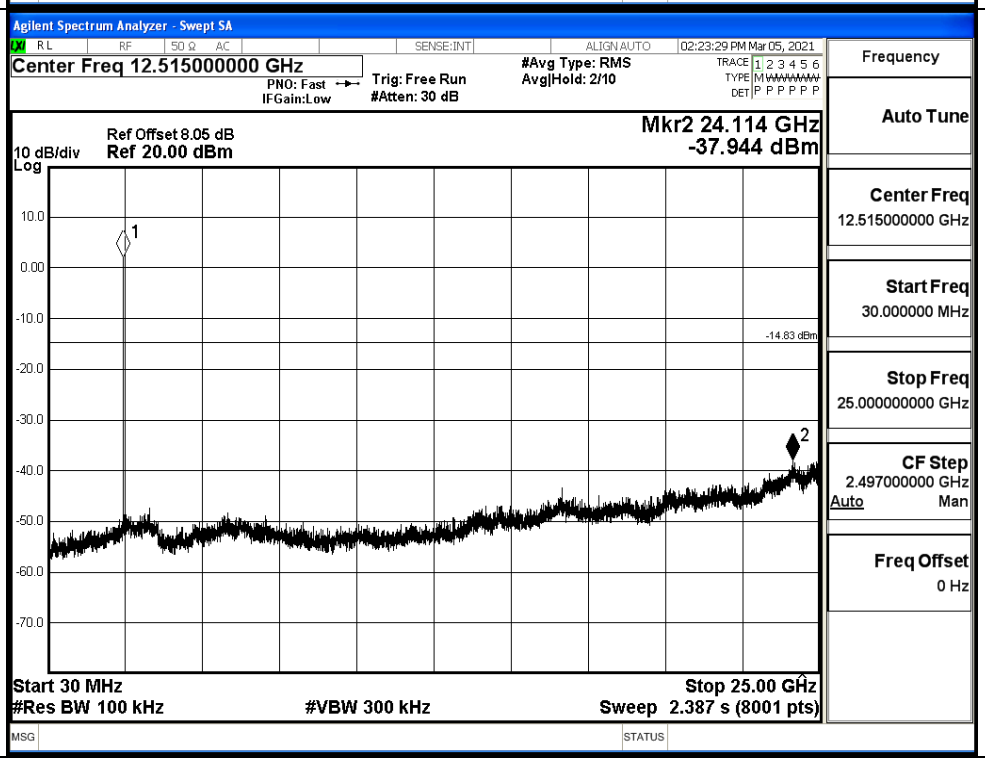
Agilent Spectrum Analyzer - Swept SA
Center Freq 12.515000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 3/10
01:49:05 PM Mar 05, 2021
Ref Offset 8.05 dB
10 dB/div
Ref 20.00 dBm
Mkr2 24.132 GHz
-38.405 dBm
-15.95 dBm
Start 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.00 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			

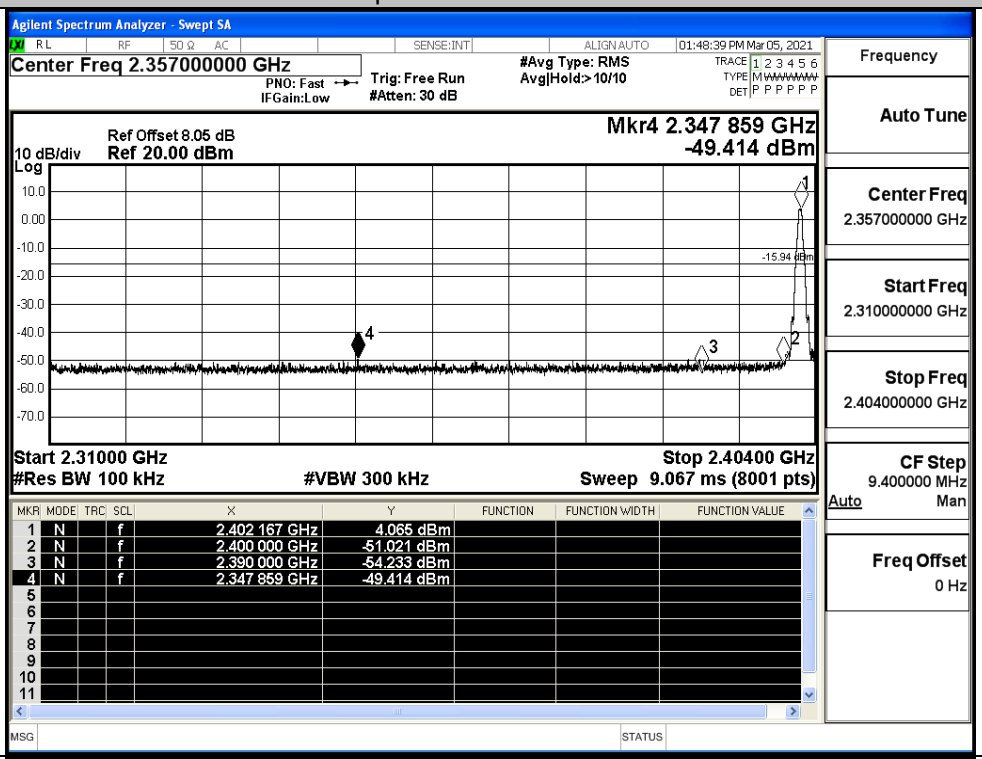
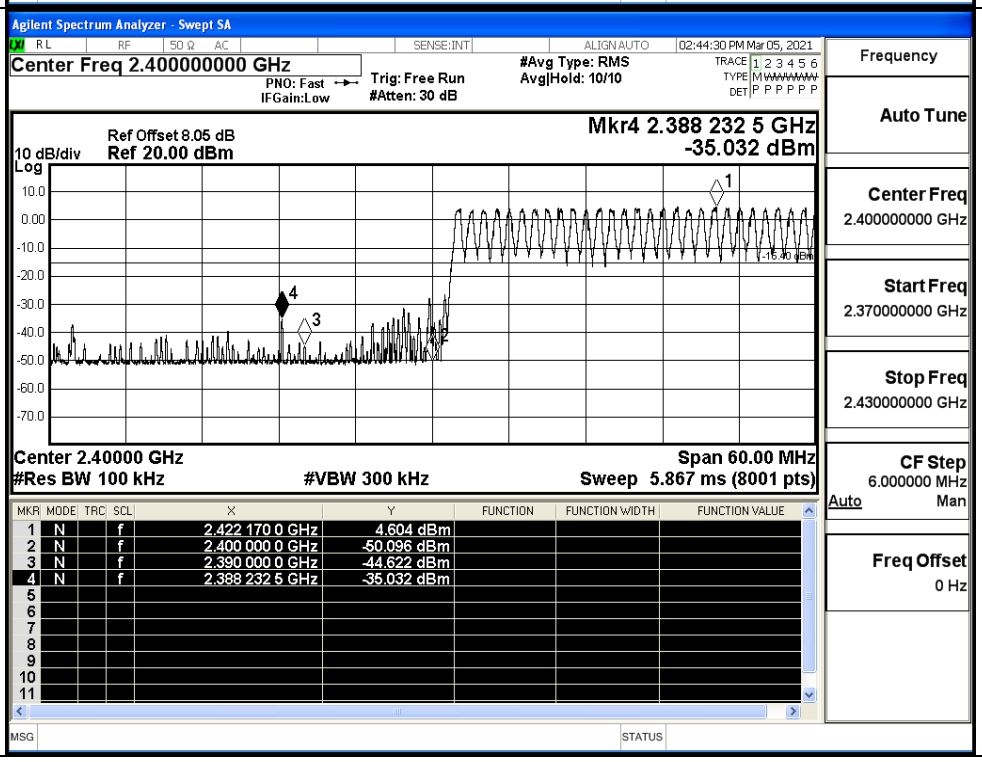
π/4DQPSK_LCH_Graphs			
Pref			
Puw			

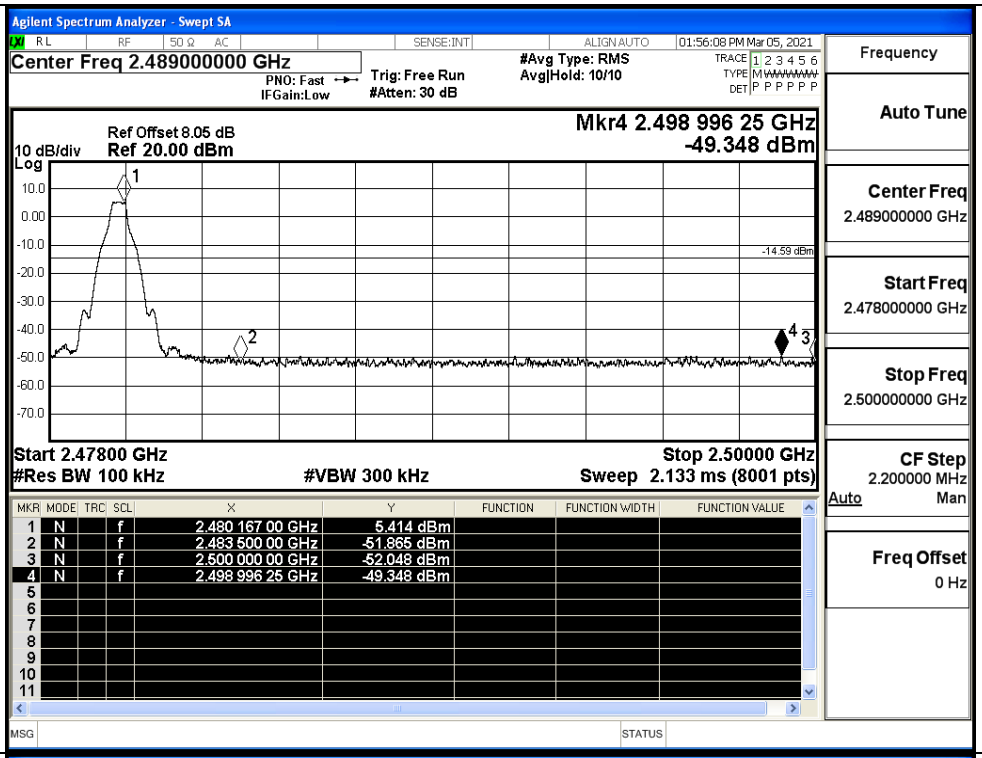
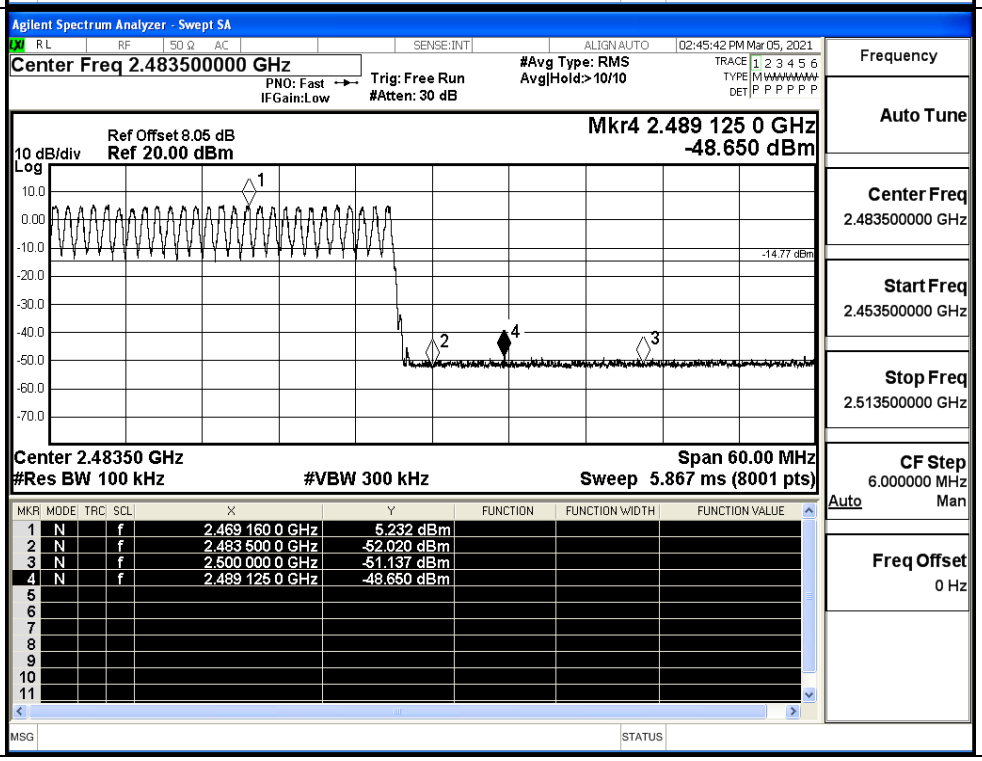
π/4DQPSK_MCH_Graphs			
Pref			
Puw			

π/4DQPSK_HCH_Graphs			
Pref			
Puw			

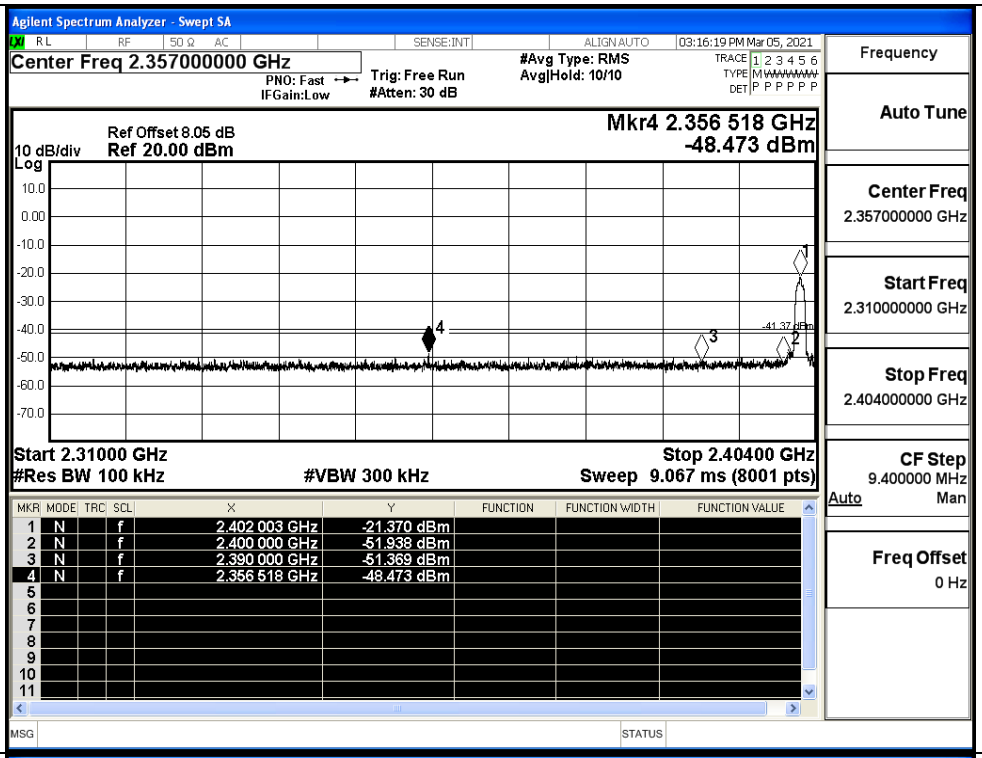
A.7 Band-edge for RF Conducted Emissions

Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	4.065	Off	-49.414	-15.94	PASS
			4.604	On	-35.032	-15.4	PASS
	HCH	2480	5.414	Off	-49.348	-14.59	PASS
			5.232	On	-48.650	-14.77	PASS
π/4DQPSK	LCH	2402	-21.370	Off	-48.473	-41.37	PASS
			4.730	On	-49.096	-15.27	PASS
	HCH	2480	5.279	Off	-47.503	-14.72	PASS
			5.226	On	-48.420	-14.77	PASS

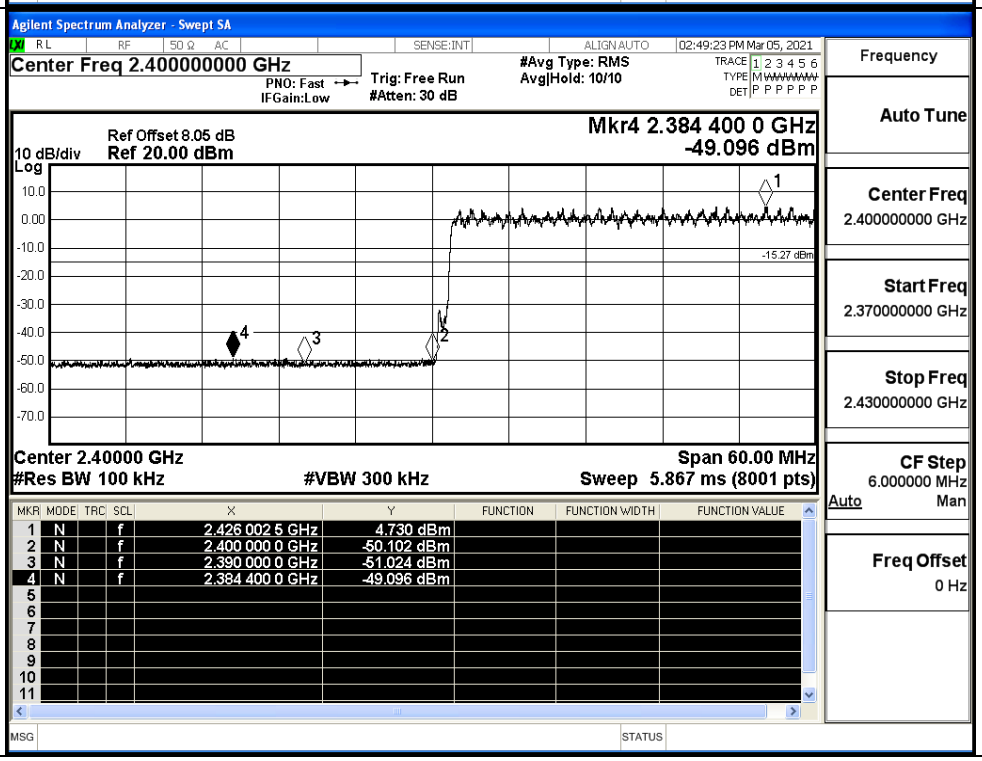
Test Graphs	
GFSK/LCH/No Hop	
GFSK/LCH/Hop	

GFSK/HCH/No Hop	
GFSK/HCH/Hop	

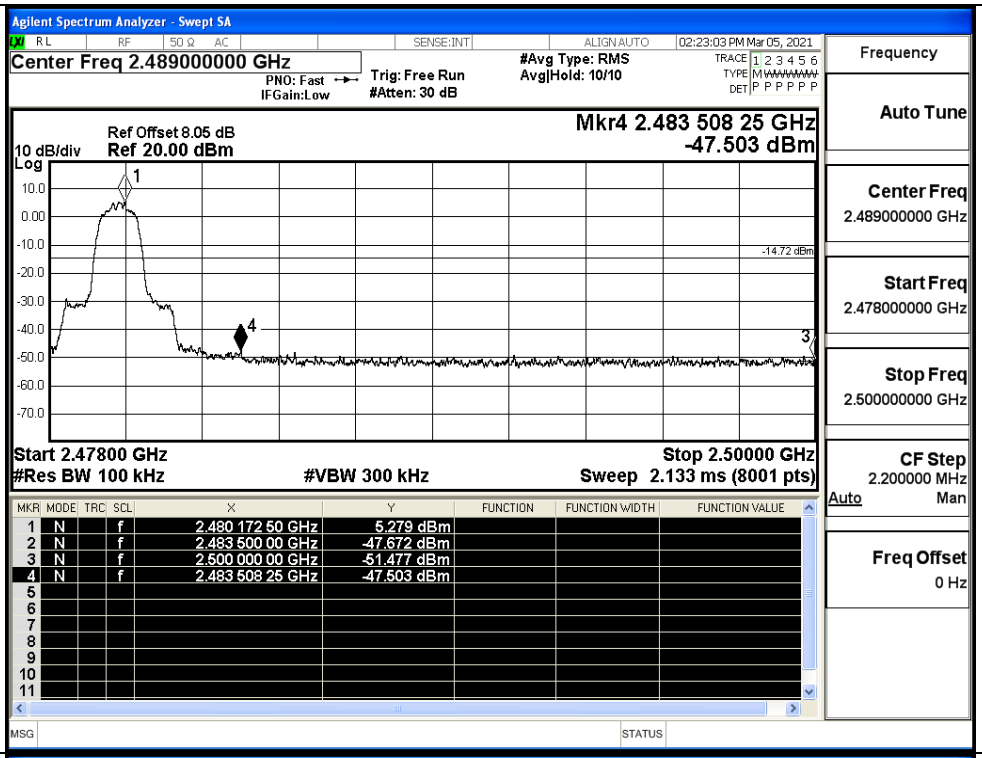
π/4DQPSK/LCH/No Hop



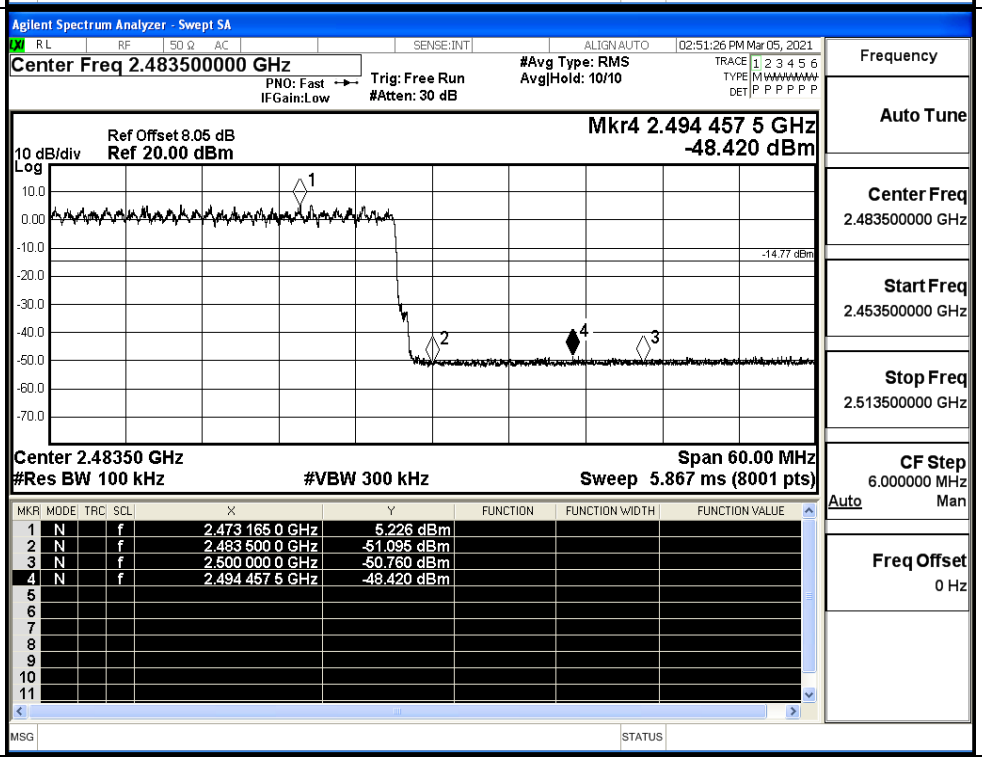
π/4DQPSK/LCH/Hop



π/4DQPSK/HCH/No Hop



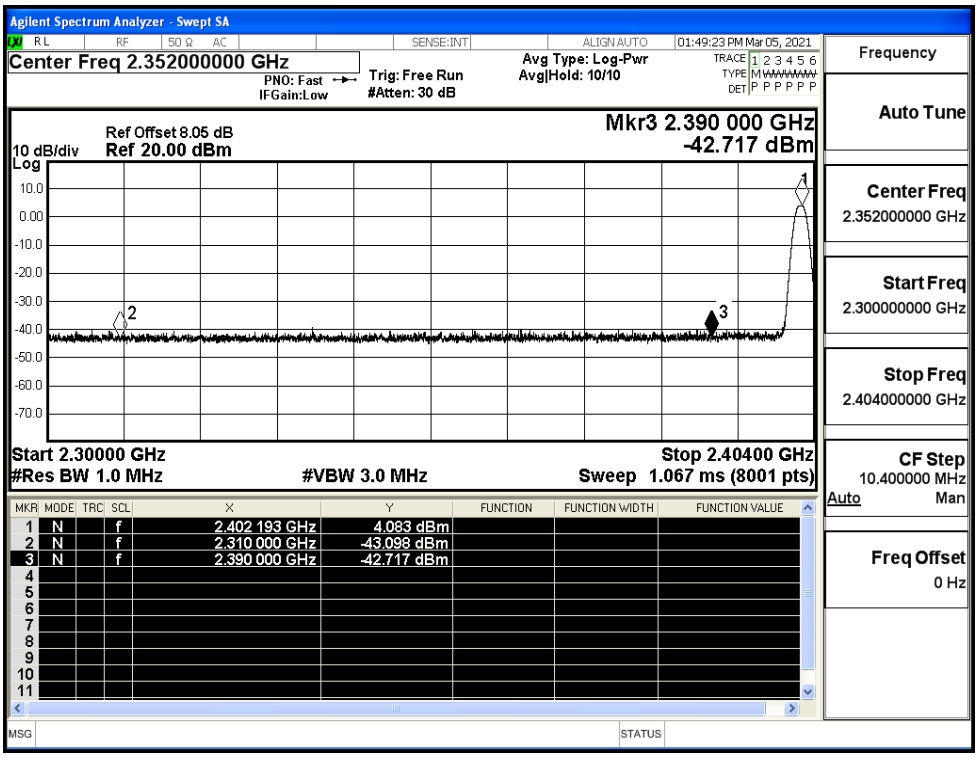
π/4DQPSK/HCH/Hop



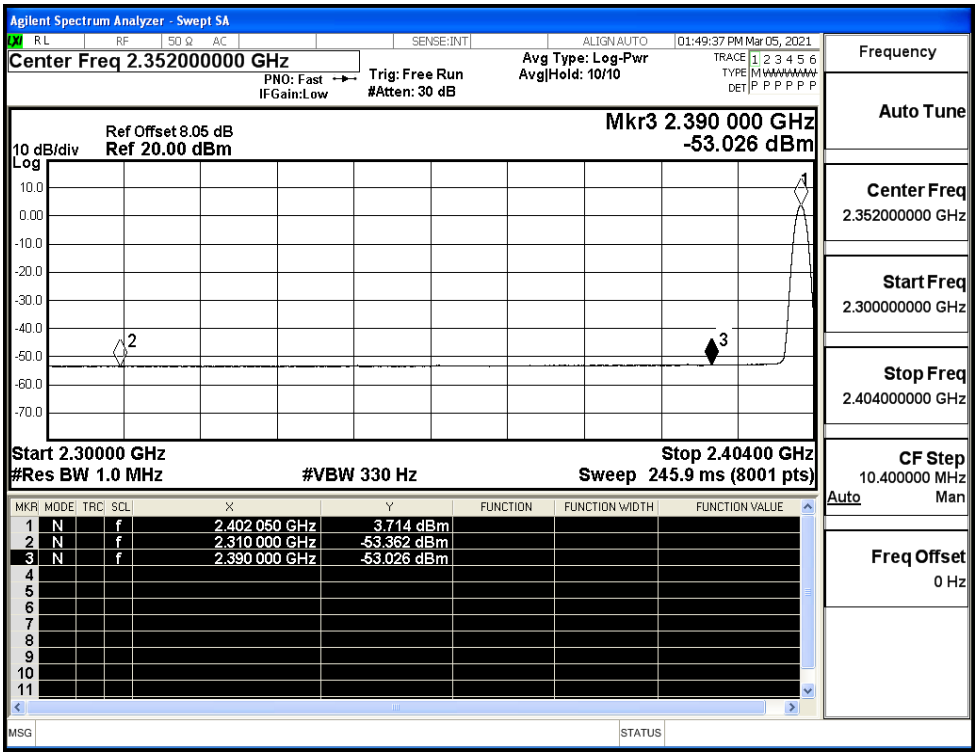
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-43.10	2.0	0	52.16	PEAK	74	PASS
	Off	2310.0	-53.36	2.0	0	41.90	AV	54	PASS
	Off	2390.0	-42.72	2.0	0	52.54	PEAK	74	PASS
	Off	2390.0	-53.03	2.0	0	42.23	AV	54	PASS
	Off	2483.5	-41.68	2.0	0	53.58	PEAK	74	PASS
	Off	2483.5	-51.95	2.0	0	43.31	AV	54	PASS
	Off	2500.0	-41.95	2.0	0	53.31	PEAK	74	PASS
	Off	2500.0	-52.34	2.0	0	42.92	AV	54	PASS
π/4DQPSK	Off	2310.0	-43.39	2.0	0	51.87	PEAK	74	PASS
	Off	2310.0	-53.50	2.0	0	41.76	AV	54	PASS
	Off	2390.0	-42.62	2.0	0	52.64	PEAK	74	PASS
	Off	2390.0	-53.04	2.0	0	42.22	AV	54	PASS
	Off	2483.5	-39.99	2.0	0	55.26	PEAK	74	PASS
	Off	2483.5	-50.55	2.0	0	44.70	AV	54	PASS
	Off	2500.0	-43.08	2.0	0	52.18	PEAK	74	PASS
	Off	2500.0	-52.25	2.0	0	43.01	AV	54	PASS

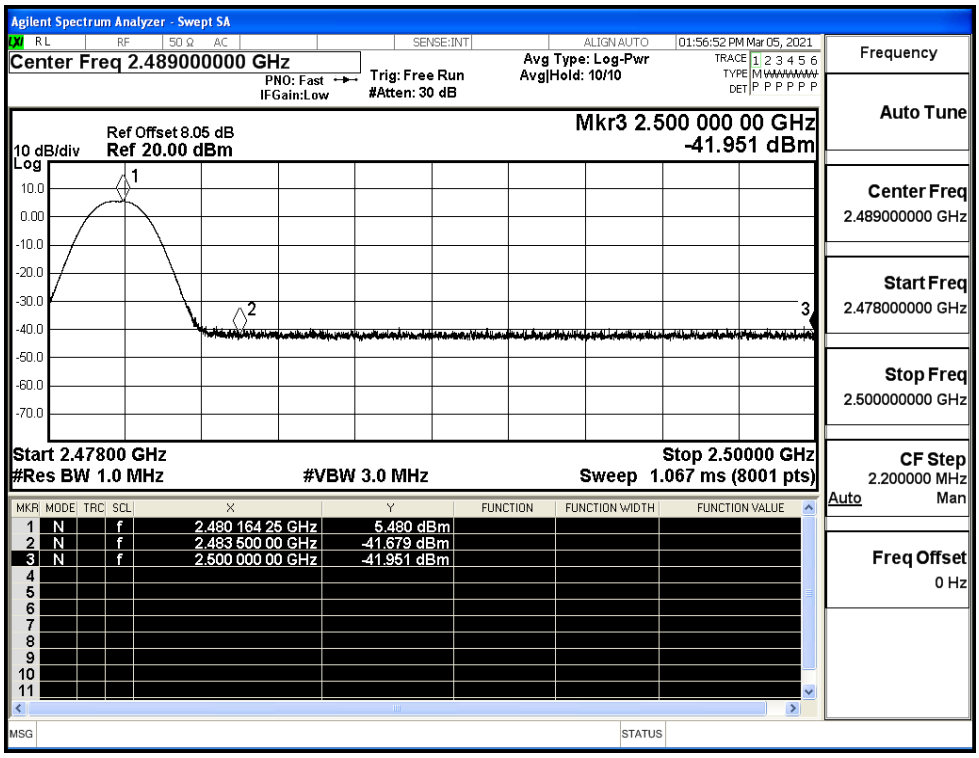
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (Low Channel)



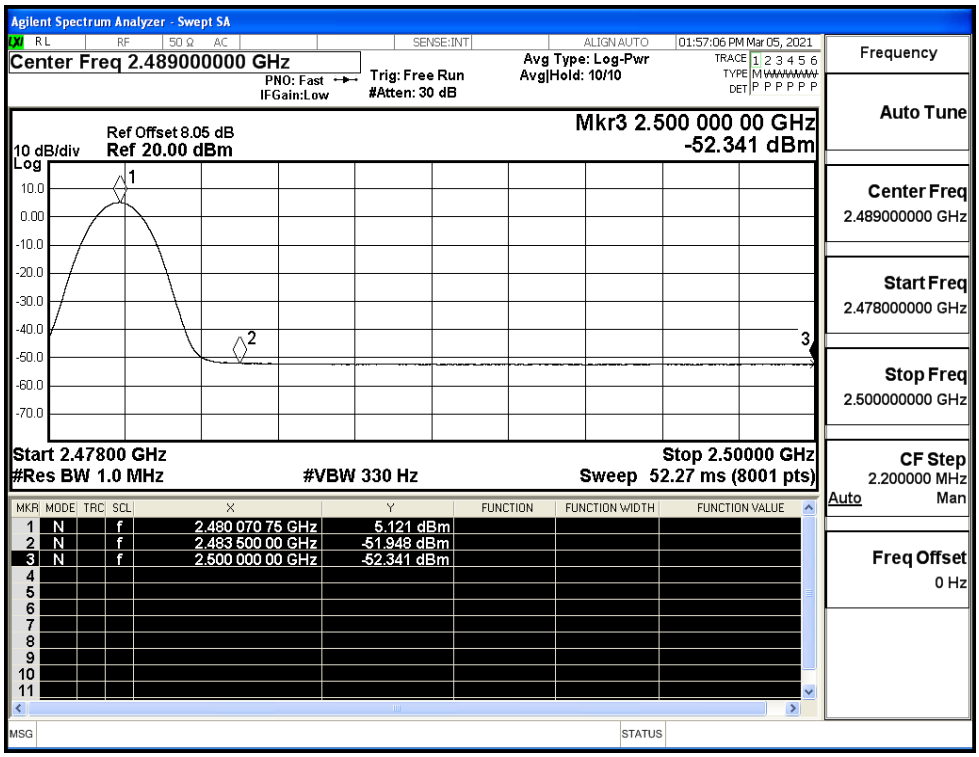
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (Low Channel)



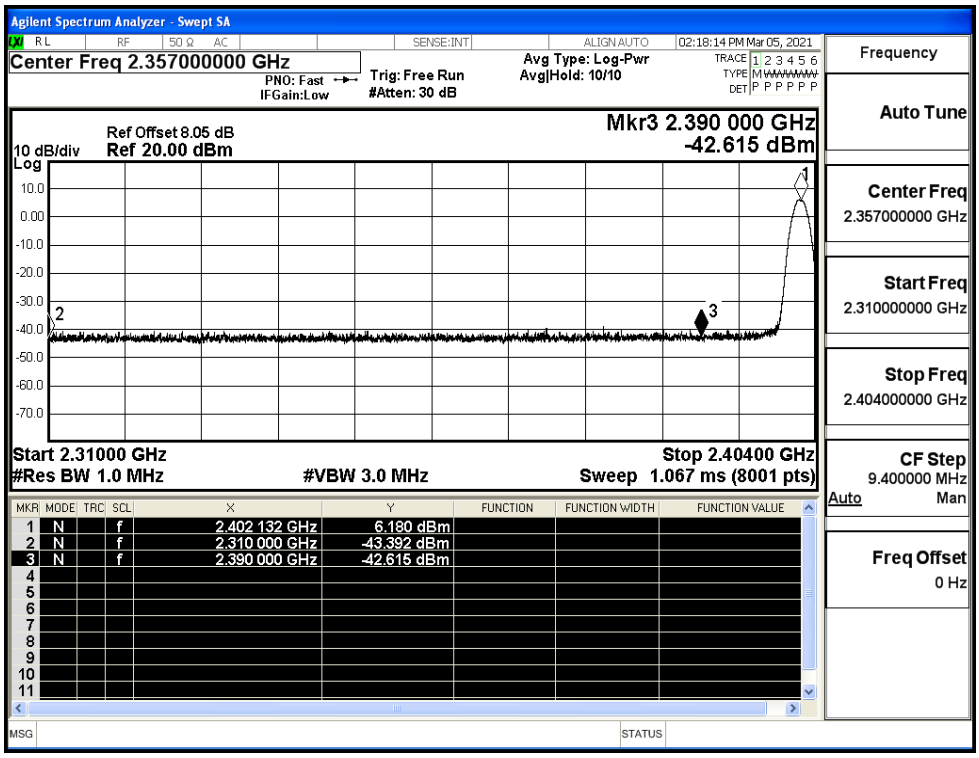
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (High Channel)



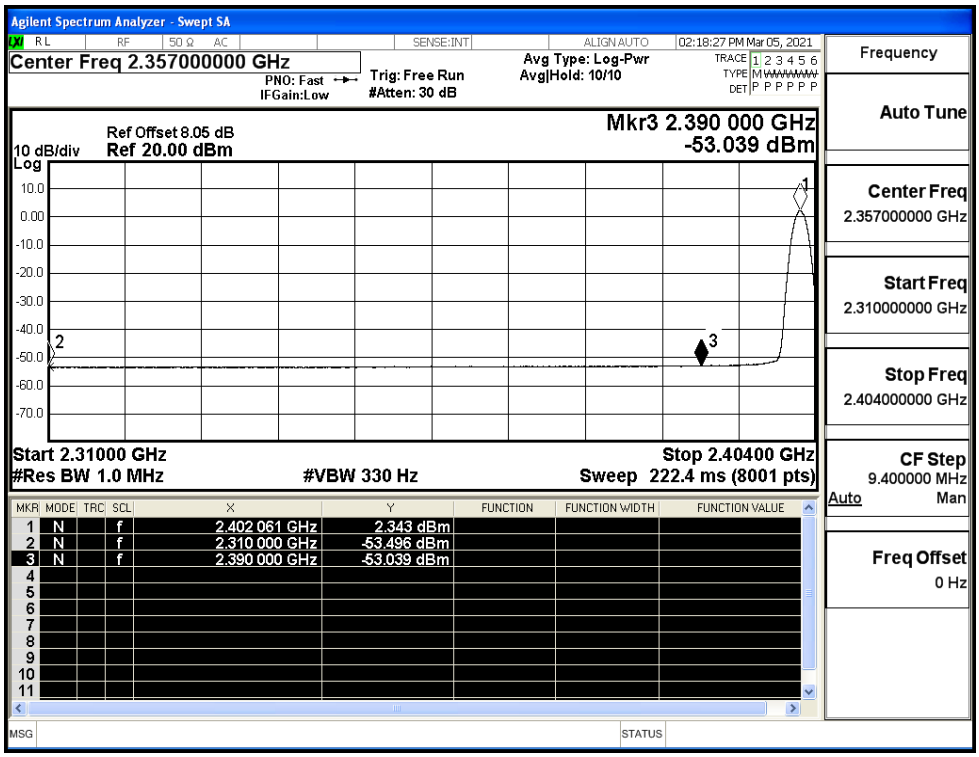
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (High Channel)



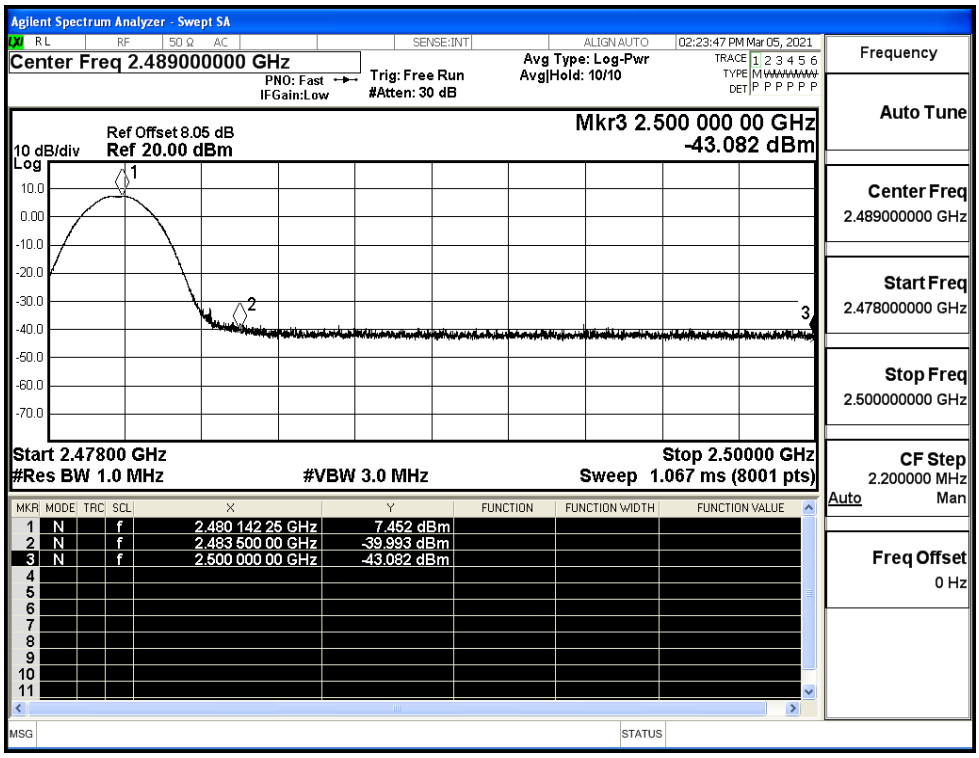
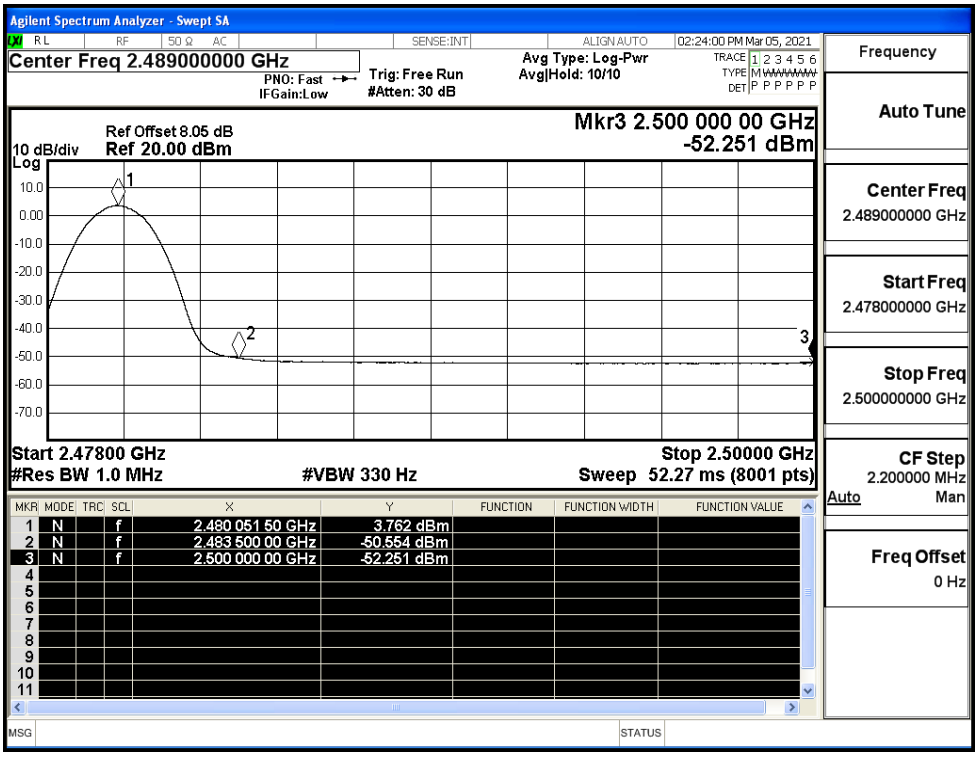
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (Low Channel)



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)