Appendix A

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

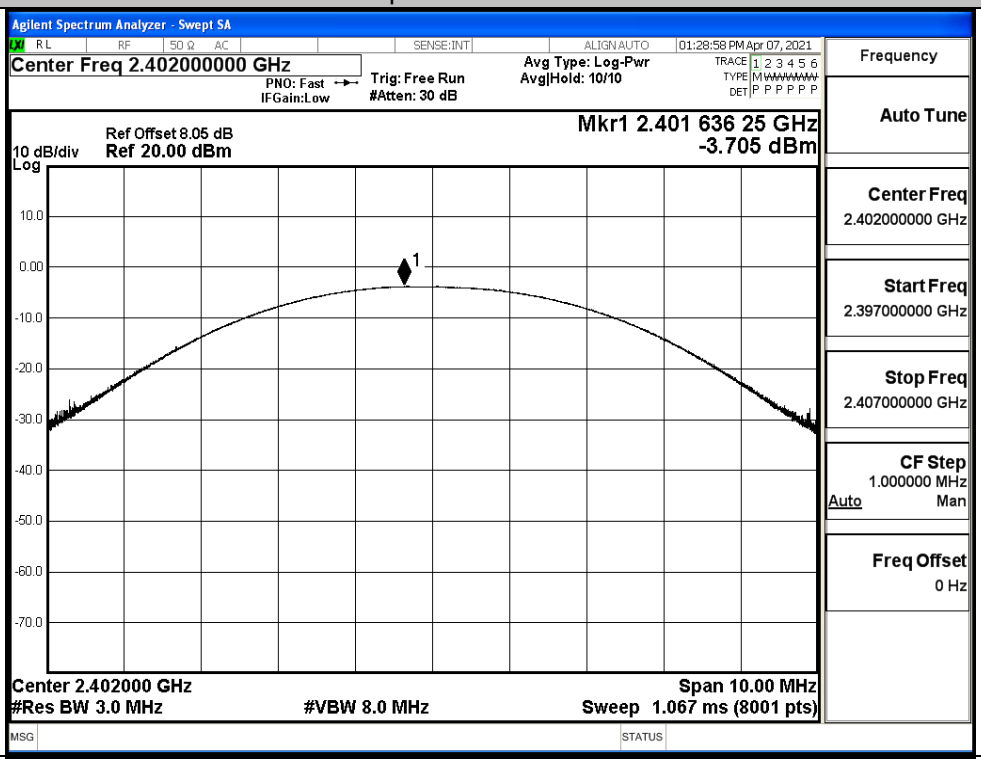
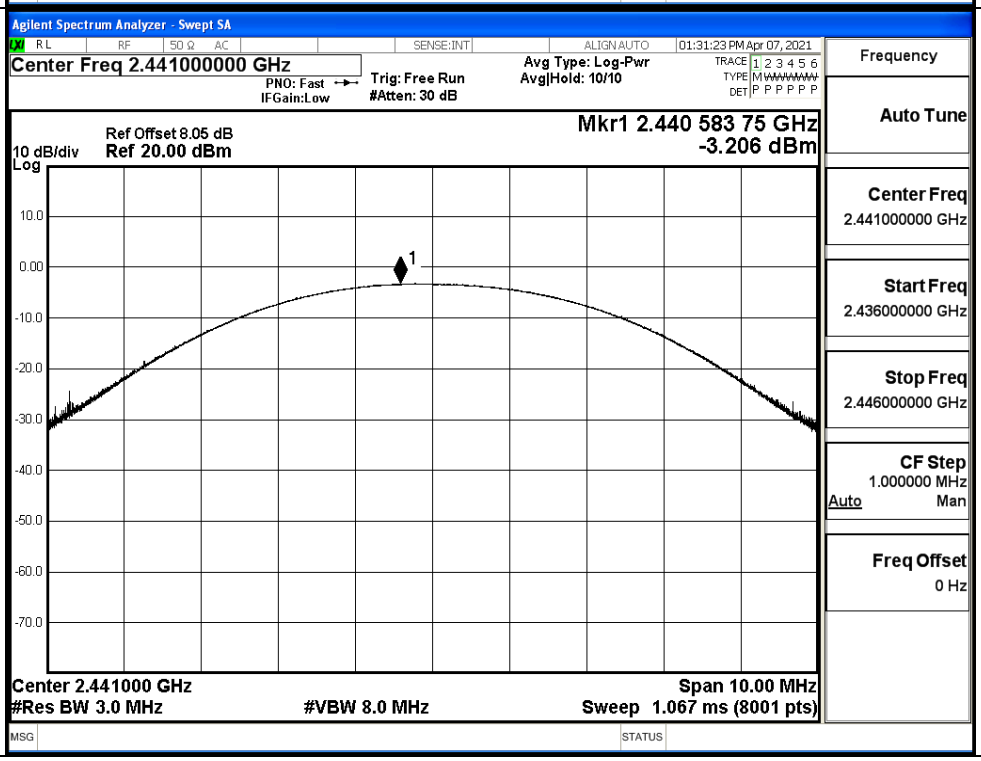
Product Name: CDG/BLUETOOTH KARAOKE PLAYER
Trade Mark: singing machine
Test Model: STVG785BTW

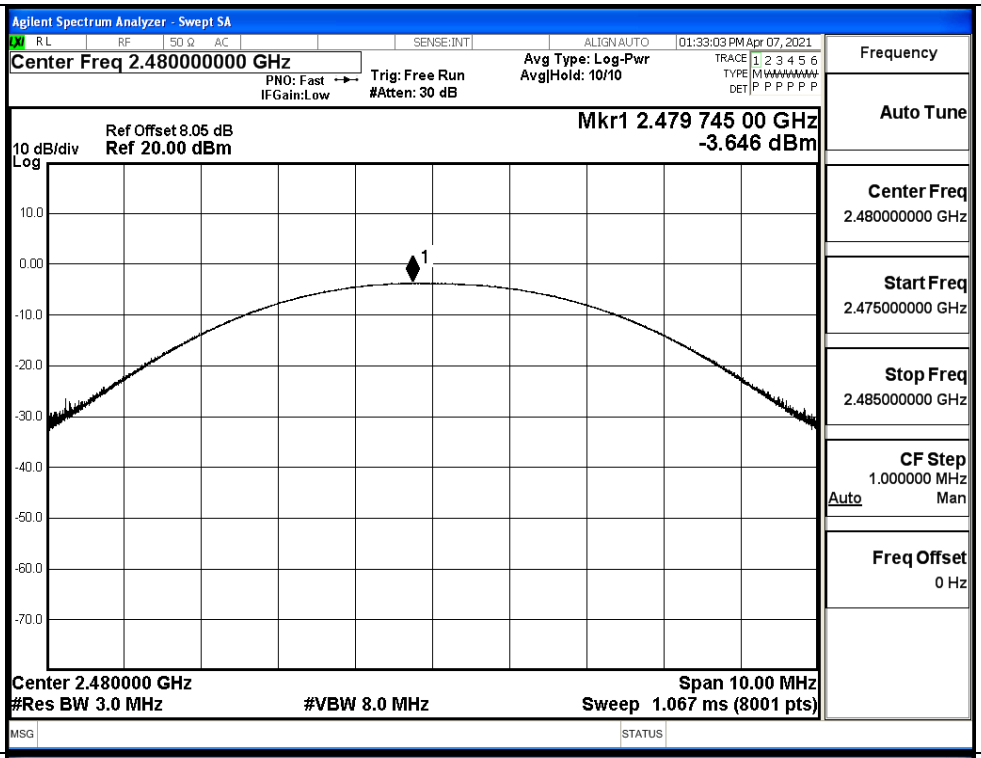
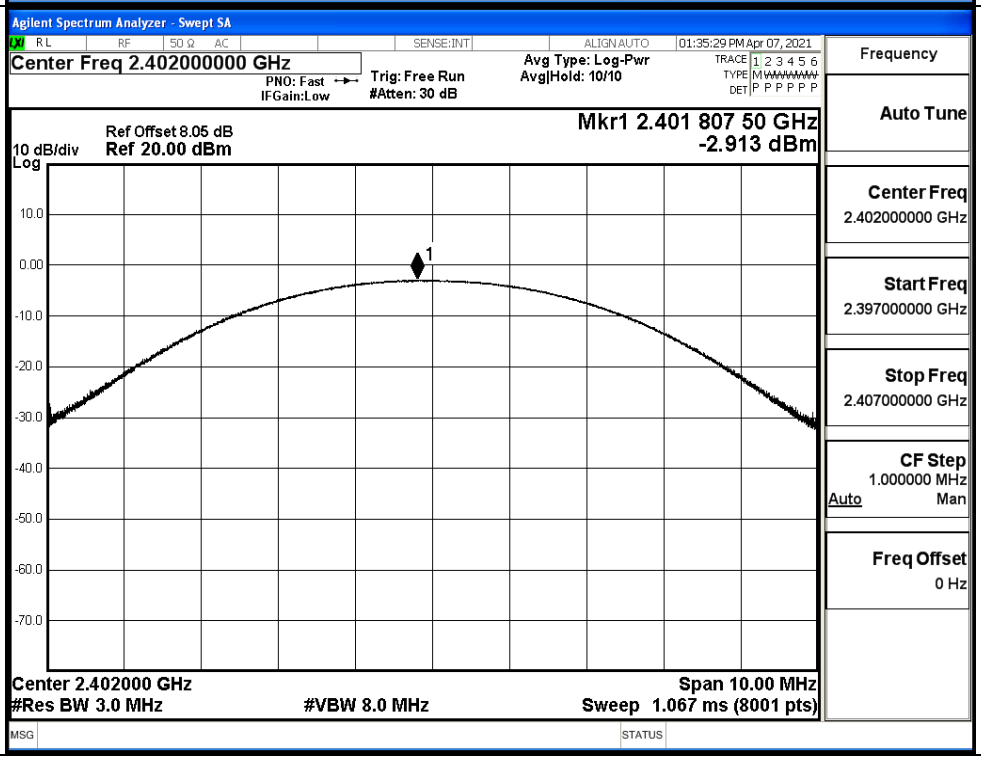
Environmental Conditions

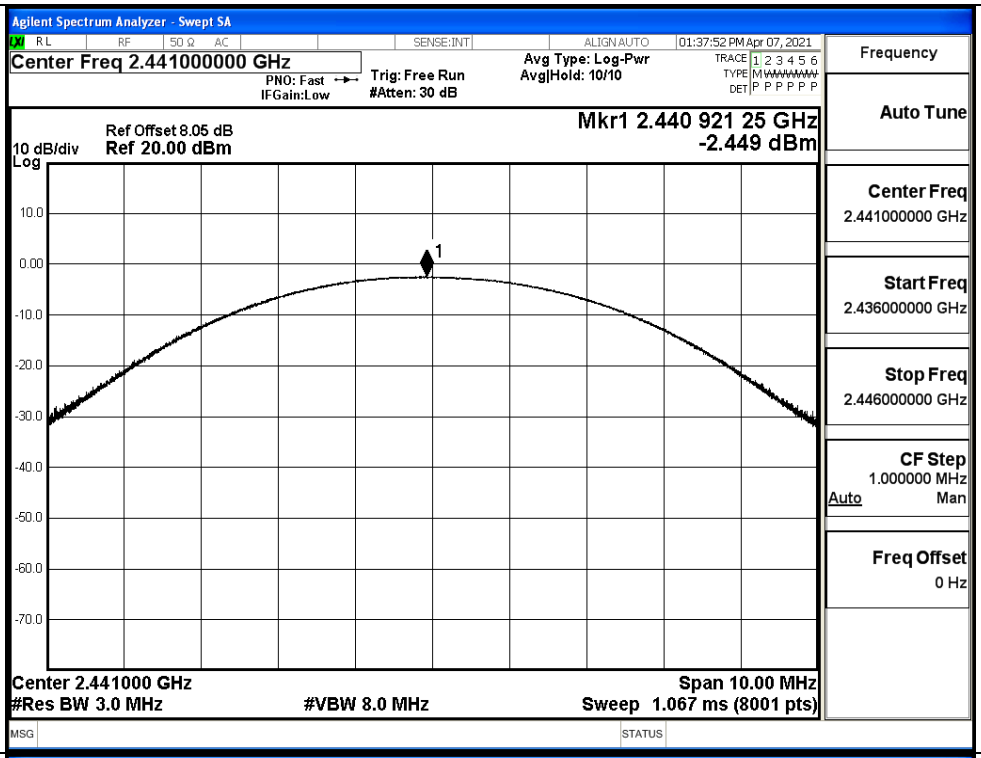
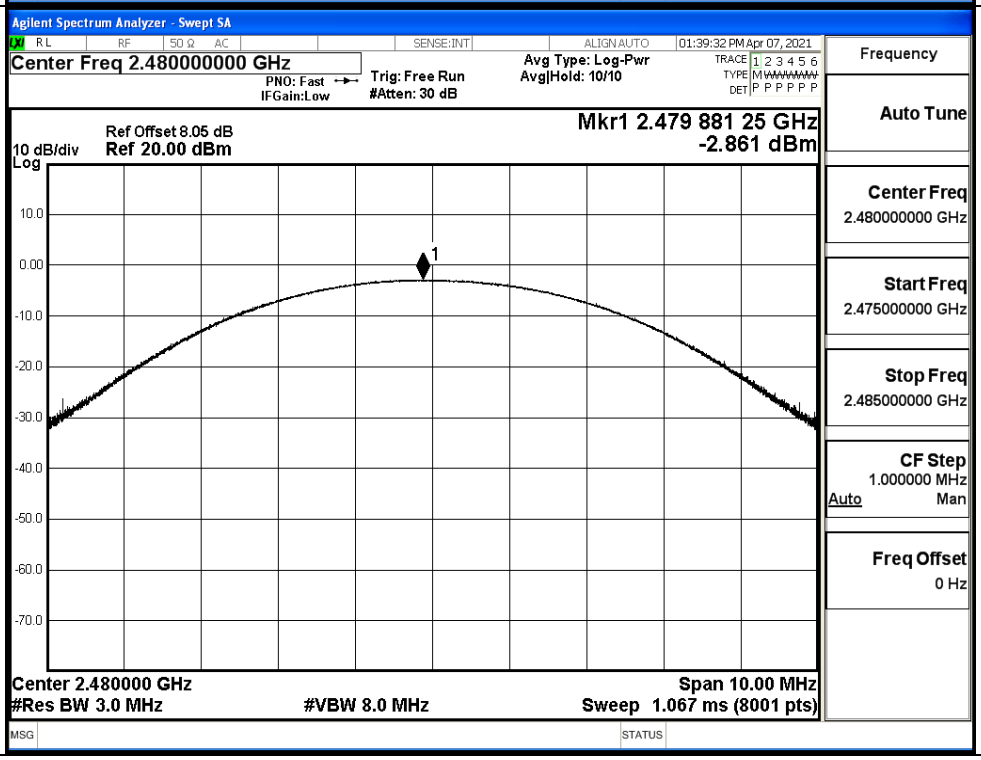
Temperature:	24.8°C
Relative Humidity:	56.5%
ATM Pressure:	100.0 kPa
Test Engineer:	Ben Jin
Supervised by:	Li Huan

A.1 Maximum Conducted Peak Output Power

Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-3.705	30	PASS
	MCH	-3.206	30	PASS
	HCH	-3.646	30	PASS
π/4DQPSK	LCH	-2.913	21	PASS
	MCH	-2.449	21	PASS
	HCH	-2.861	21	PASS

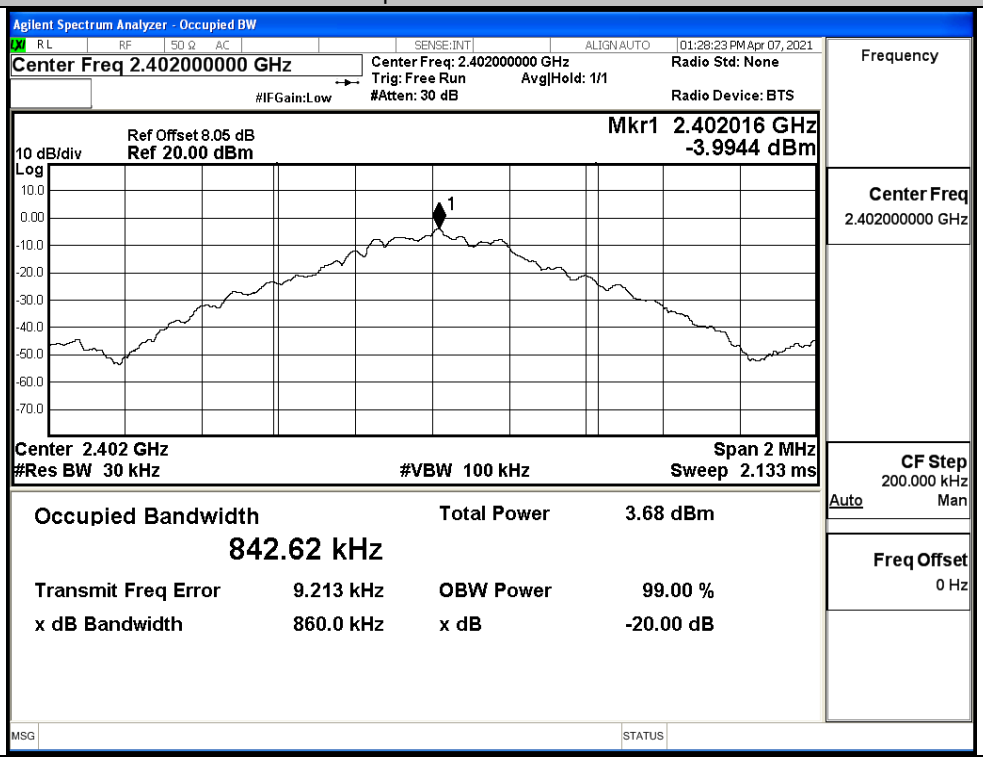
Test Graphs		
GFSK/LCH		
GFSK/MCH		

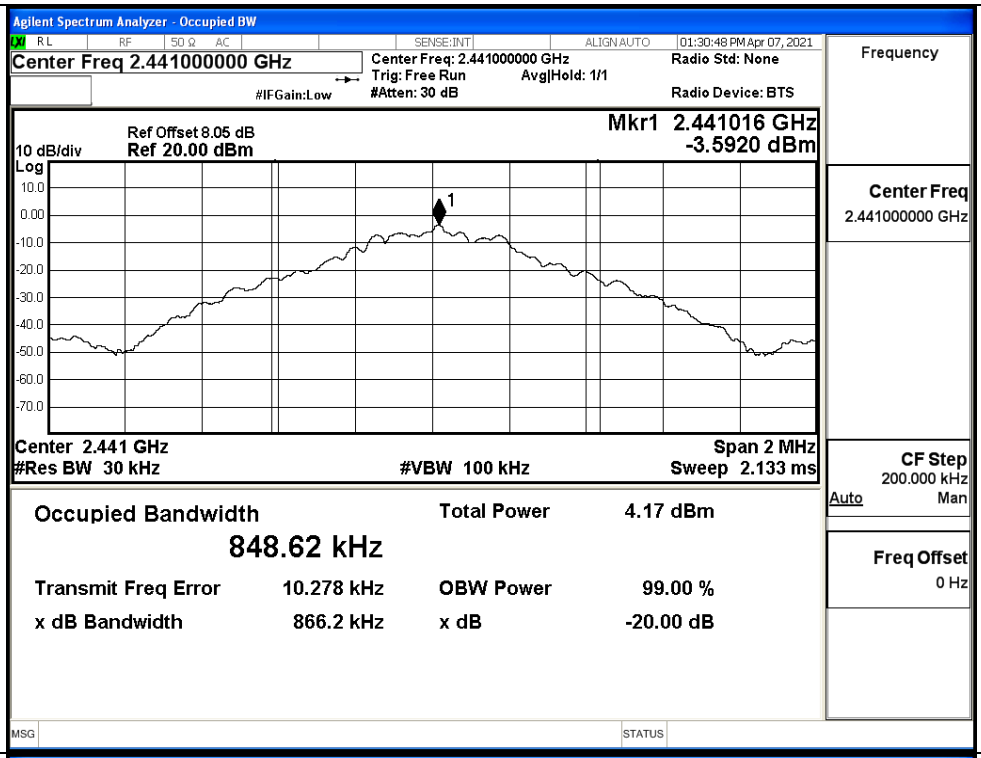
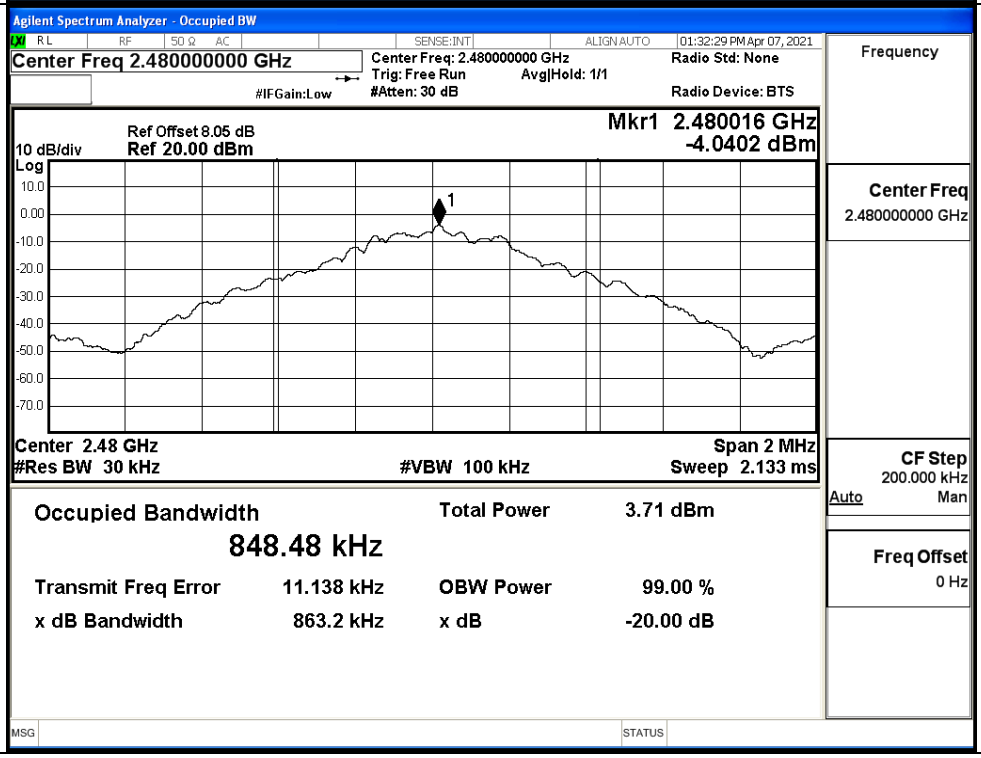
GFSK/HCH		
π/4DQPSK/LCH		

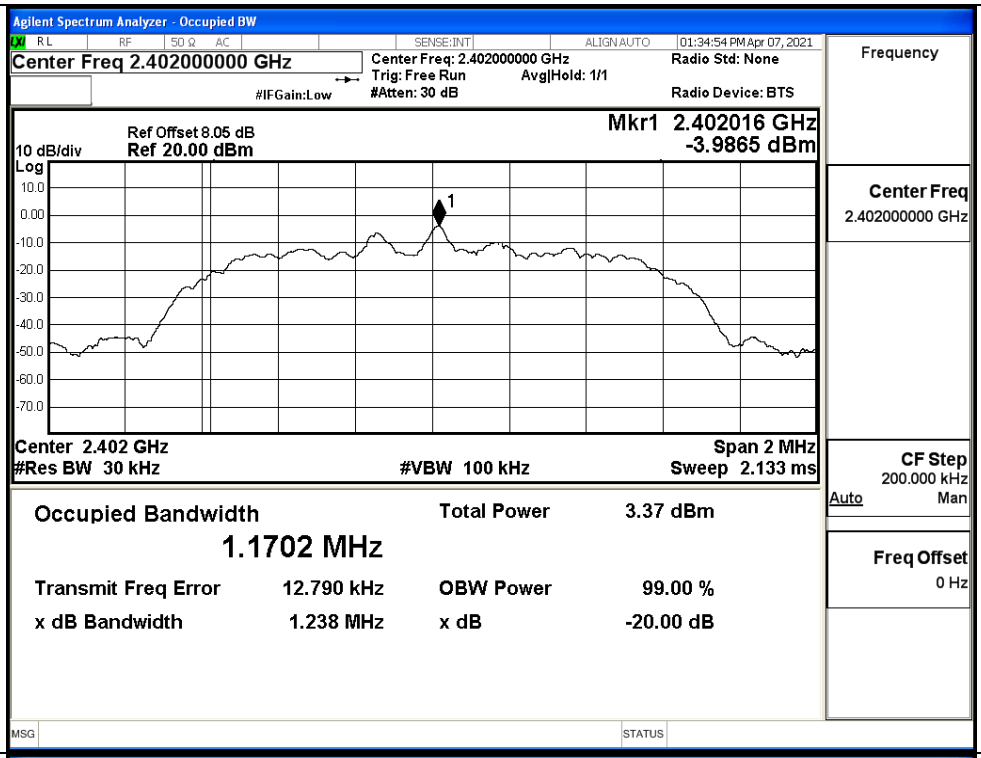
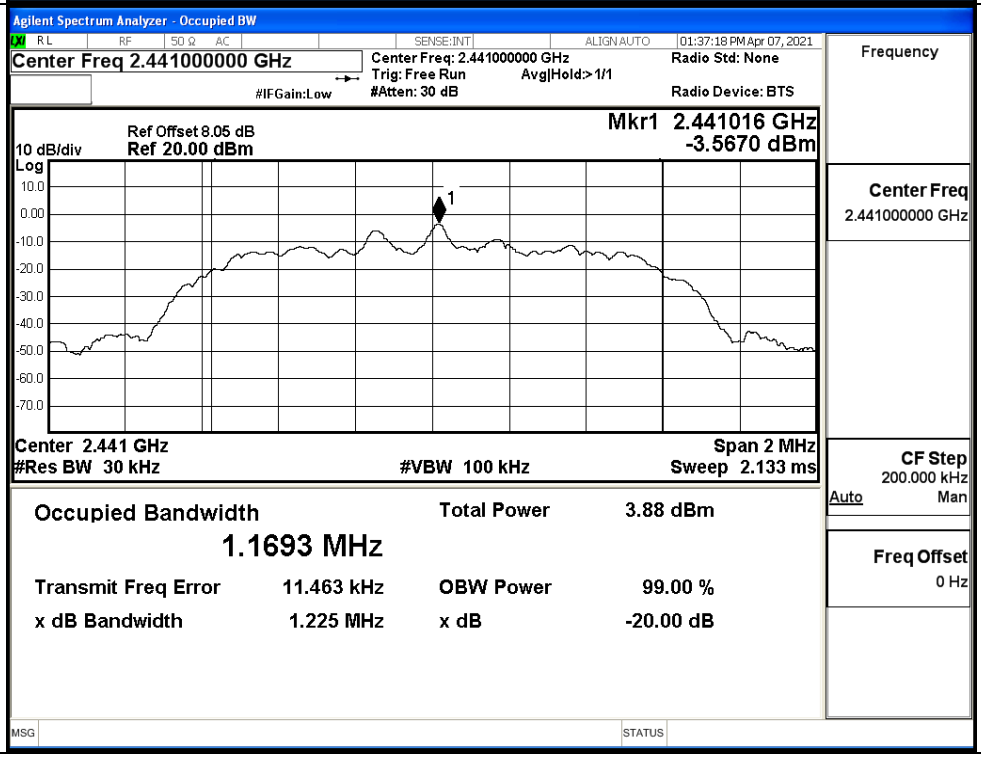
π/4DQPSK/MCH		
π/4DQPSK/HCH		

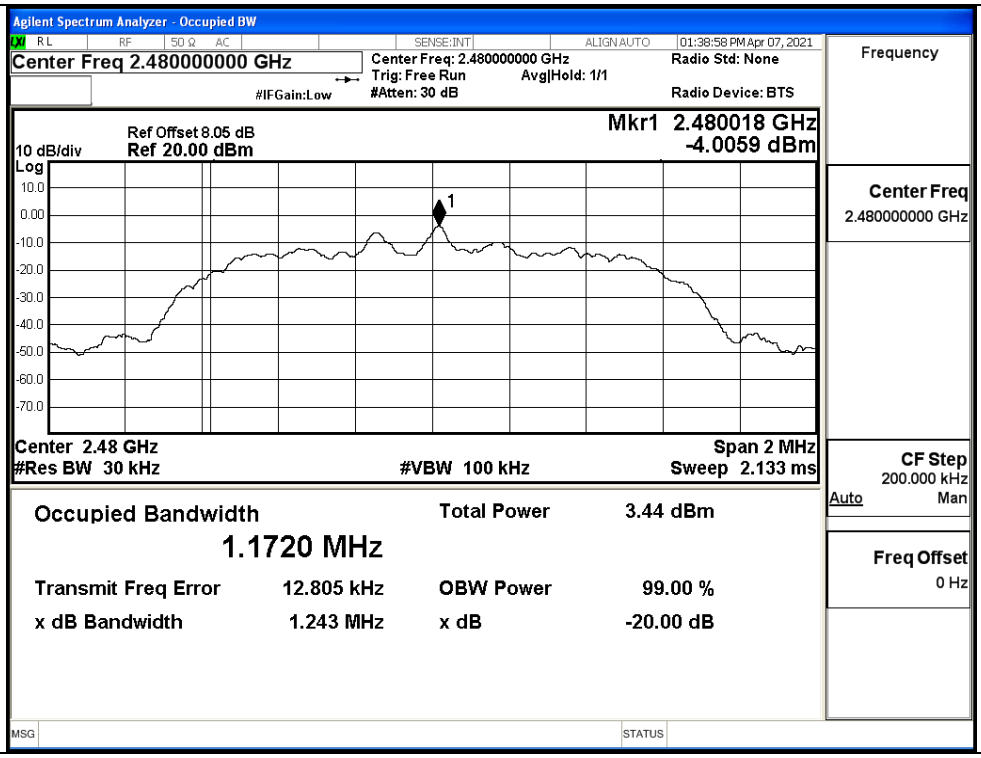
A.2 20dB Bandwidth

Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.8600	Not Specified	PASS
	MCH	0.8662	Not Specified	PASS
	HCH	0.8632	Not Specified	PASS
π/4DQPSK	LCH	1.238	Not Specified	PASS
	MCH	1.225	Not Specified	PASS
	HCH	1.243	Not Specified	PASS

Test Graphs	
GFSK/LCH	

GFSK/MCH	
GFSK/HCH	

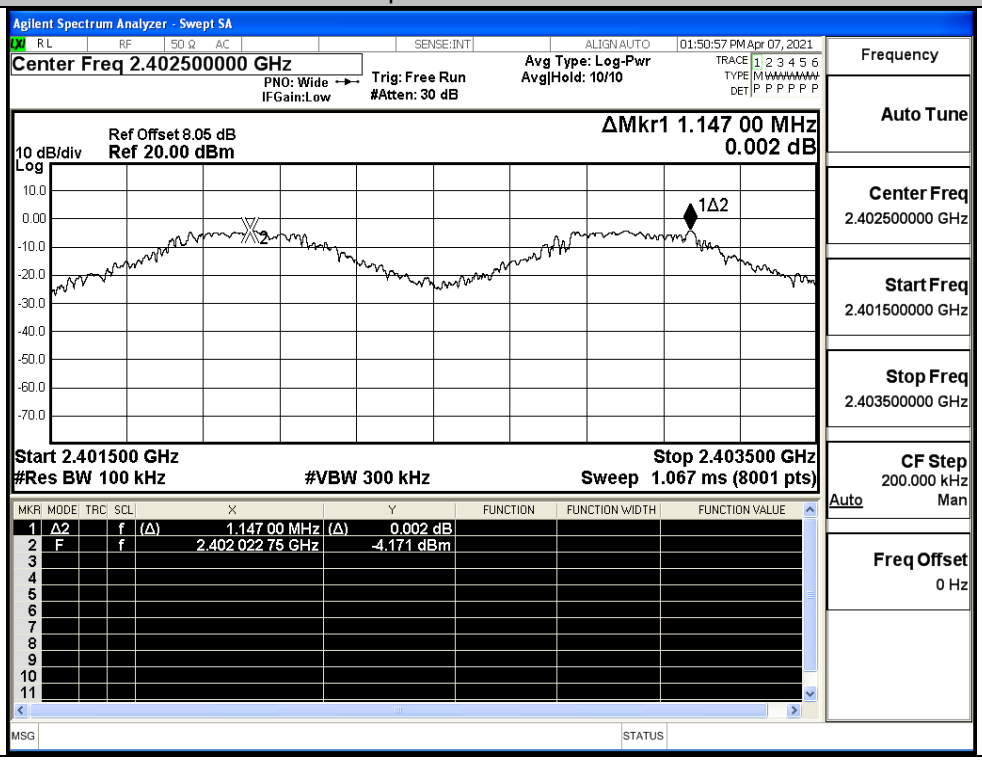
π/4DQPSK/LCH	
π/4DQPSK/MCH	

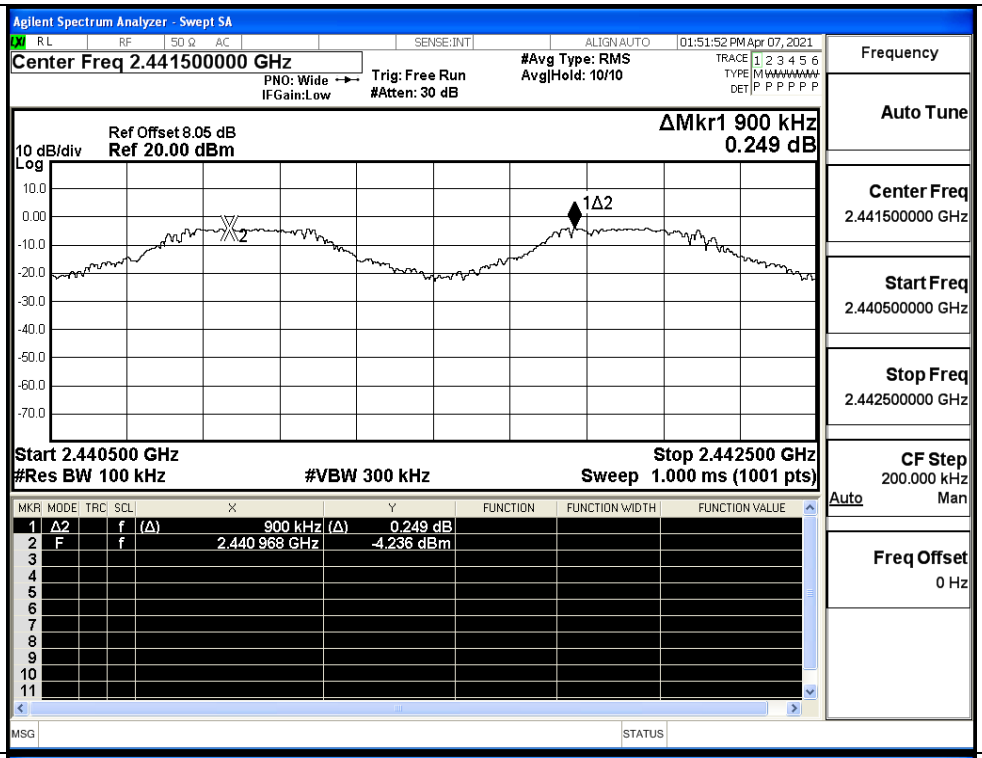
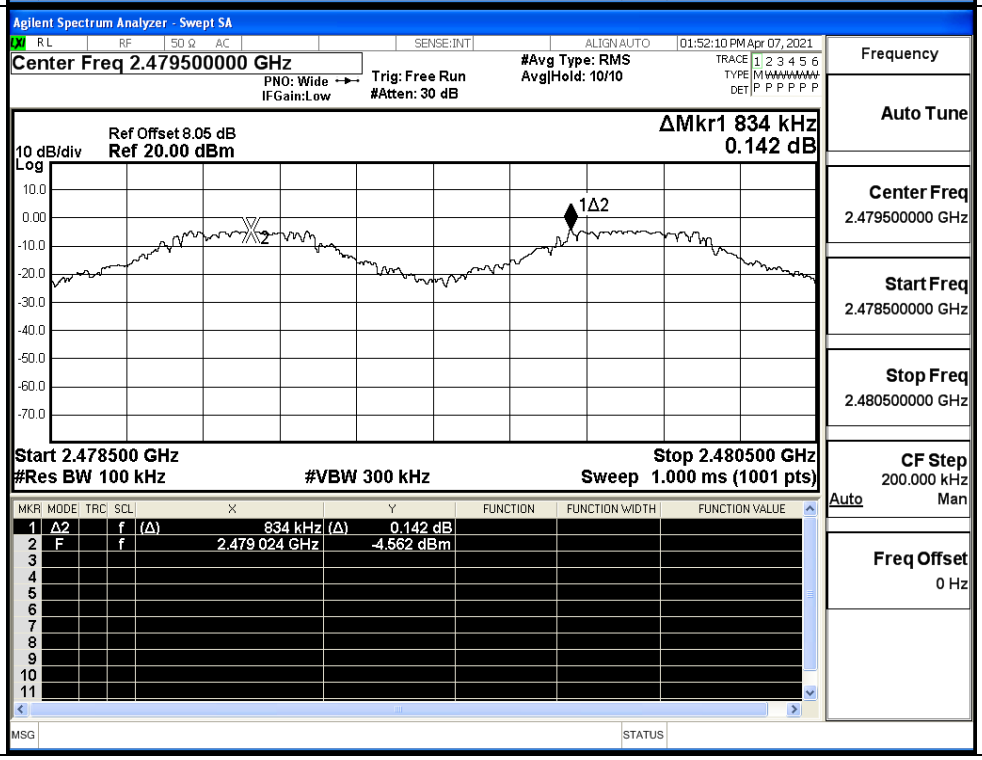
π/4DQPSK/HCH	

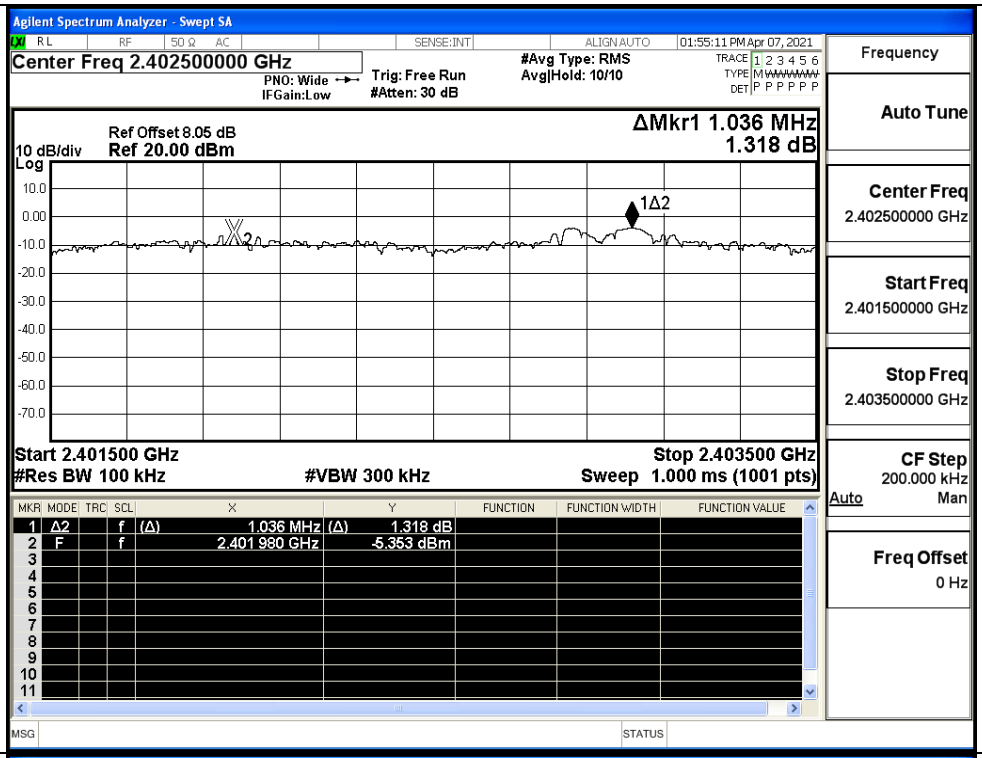
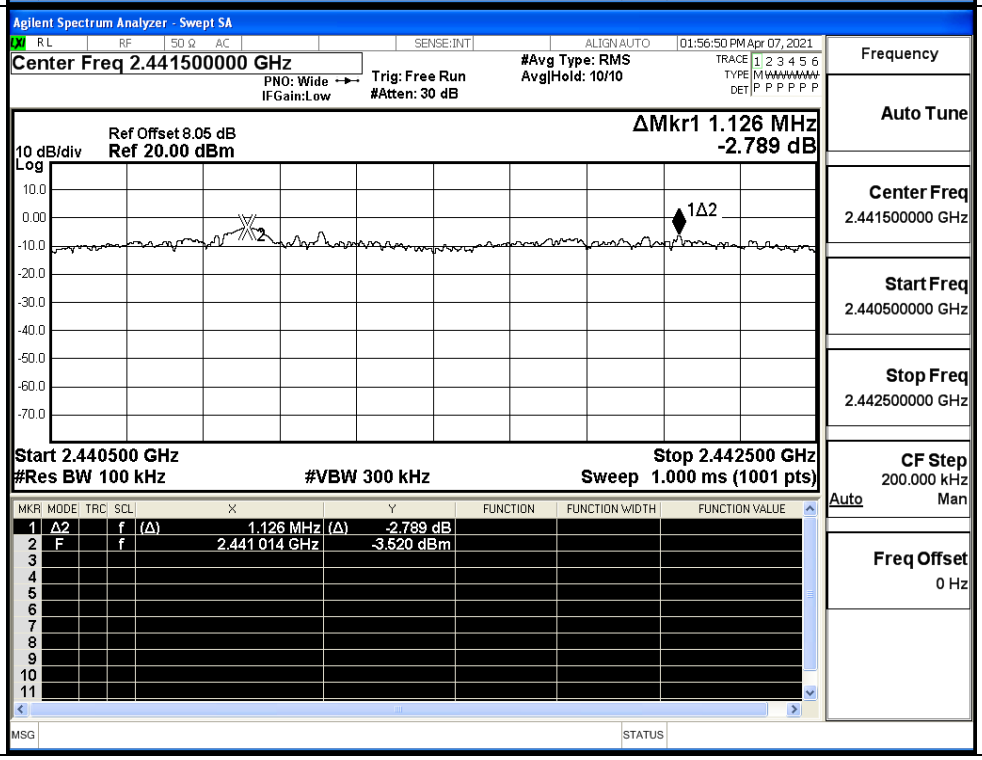
Agilent Spectrum Analyzer - Occupied BW
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
01:38:58 PM Apr 07, 2021
Center Freq 2.480000000 GHz
Center Freq: 2.480000000 GHz
Trig: Free Run
Avg|Hold: 1/1
#IFGain:Low
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
Frequency
Ref Offset 8.05 dB
10 dB/div
Ref 20.00 dBm
Mkr1 2.480018 GHz
-4.0059 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
1.1720 MHz
Total Power
3.44 dBm
Freq Offset
0 Hz
Transmit Freq Error
12.805 kHz
OBW Power
99.00 %
x dB Bandwidth
1.243 MHz
x dB
-20.00 dB
MSG
STATUS

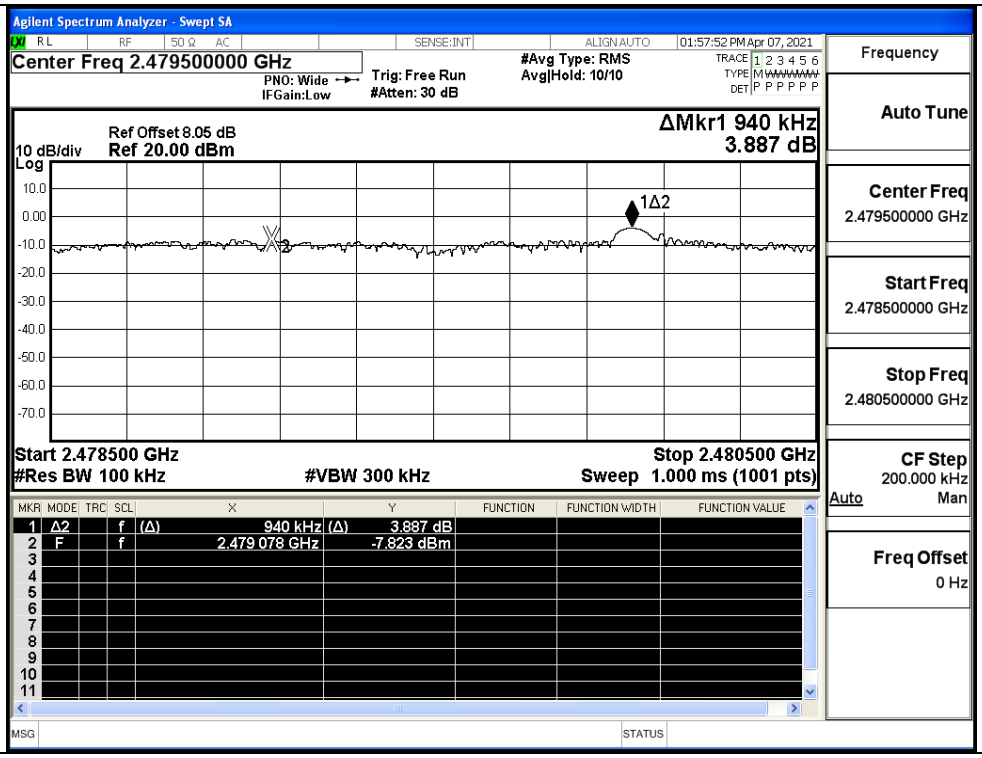
A.3 Carrier Frequency Separation

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.147	0.577	PASS
	MCH	0.900	0.577	PASS
	HCH	0.834	0.577	PASS
π/4DQPSK	LCH	1.036	0.829	PASS
	MCH	1.126	0.829	PASS
	HCH	0.940	0.829	PASS

Test Graphs	
GFSK/LCH	

GFSK/MCH	
GFSK/HCH	

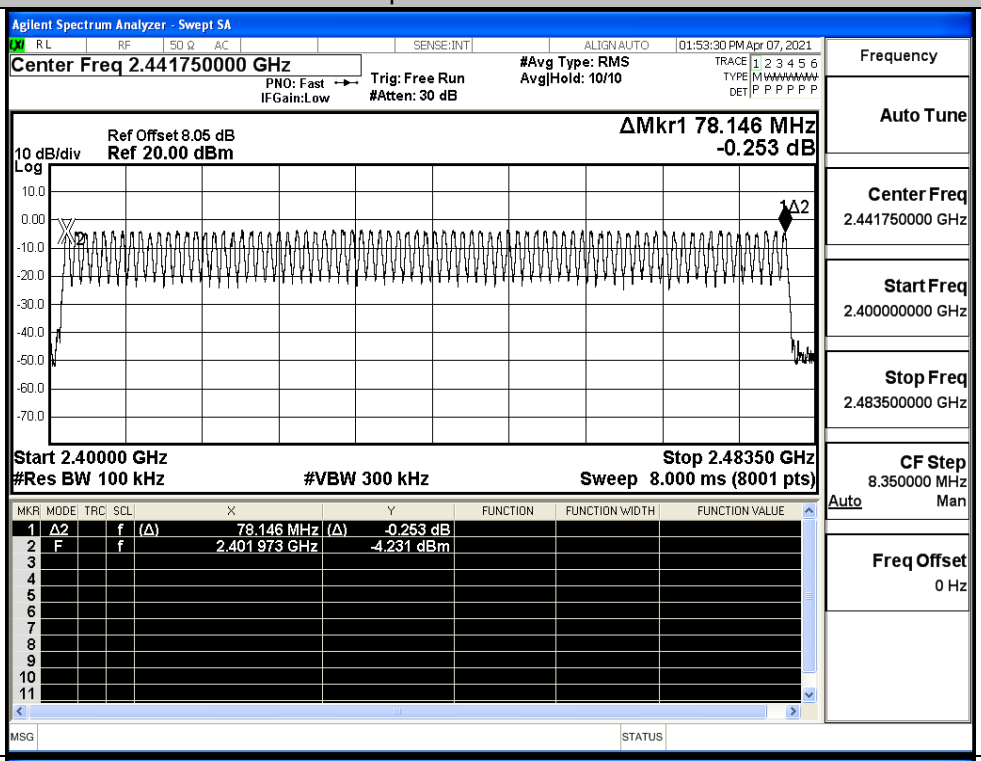
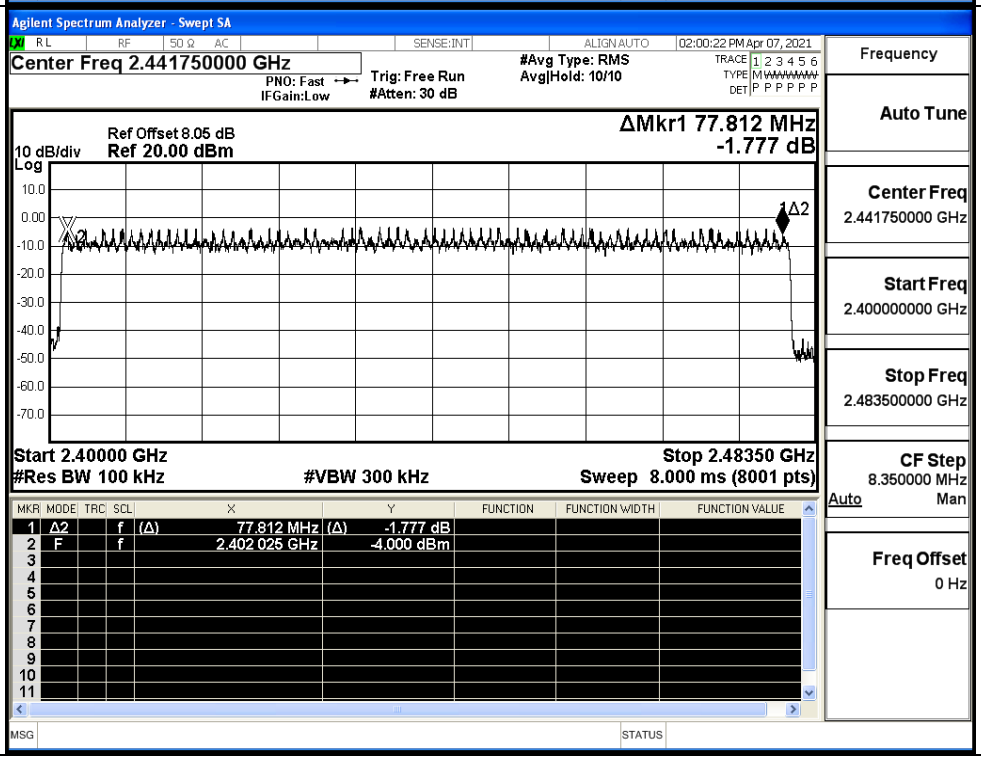
π/4DQPSK/LCH	
π/4DQPSK/MCH	

π/4DQPSK/HCH	

Agilent Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
01:57:52 PM Apr 07, 2021
Center Freq 2.479500000 GHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 10/10
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P P P P P P
Ref Offset 8.05 dB
10 dB/div
Log
Ref 20.00 dBm
ΔMkr1 940 kHz
3.887 dB
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
1Δ2
Start 2.478500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.480500 GHz
Sweep 1.000 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 Δ2 f (Δ) 940 kHz (Δ) 3.887 dB
2 F f 2.479 078 GHz -7.823 dBm
3
4
5
6
7
8
9
10
11
MSG
STATUS
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

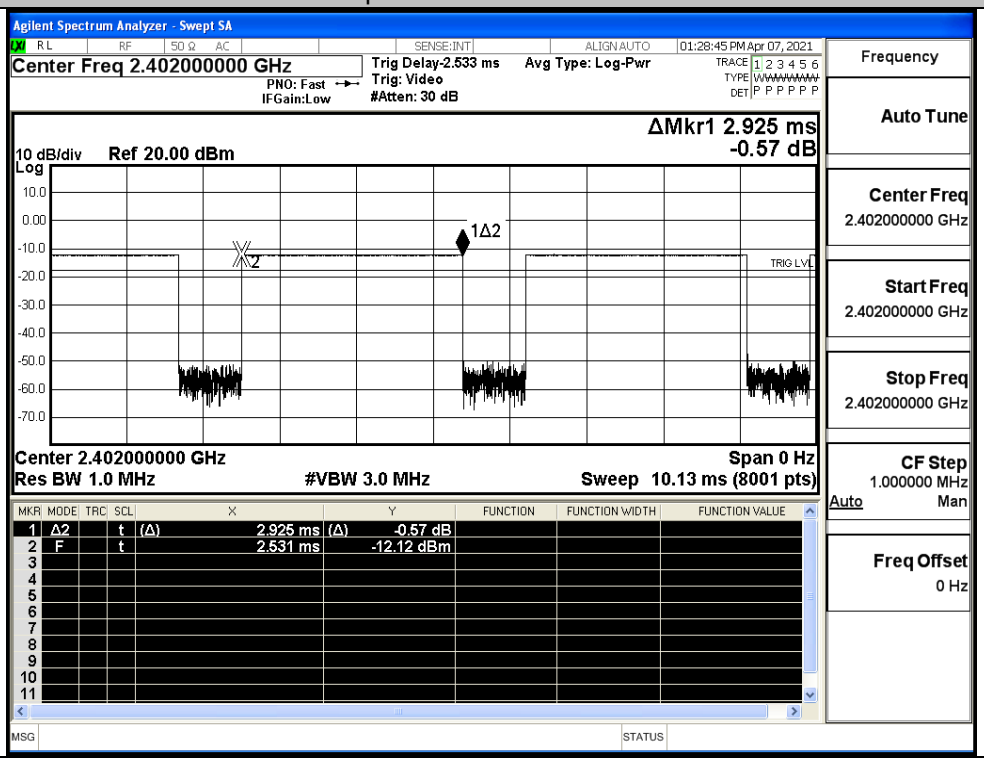
A.4 Hopping Channel Number

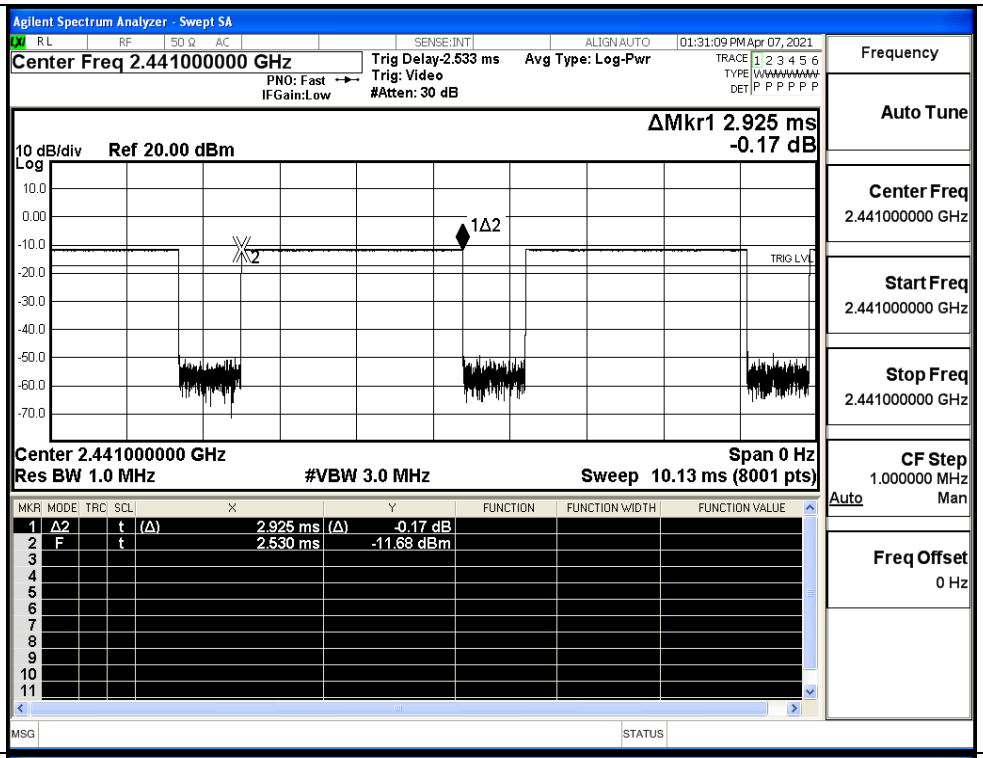
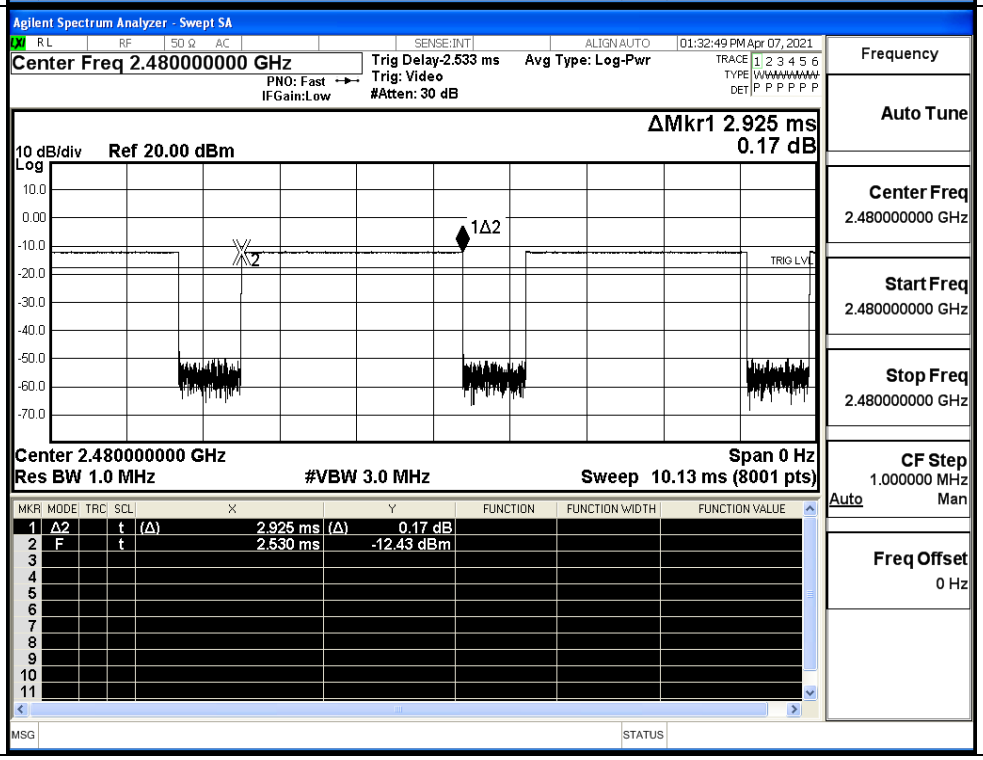
Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	>=15	PASS
π/4DQPSK	Hop	79	>=15	PASS

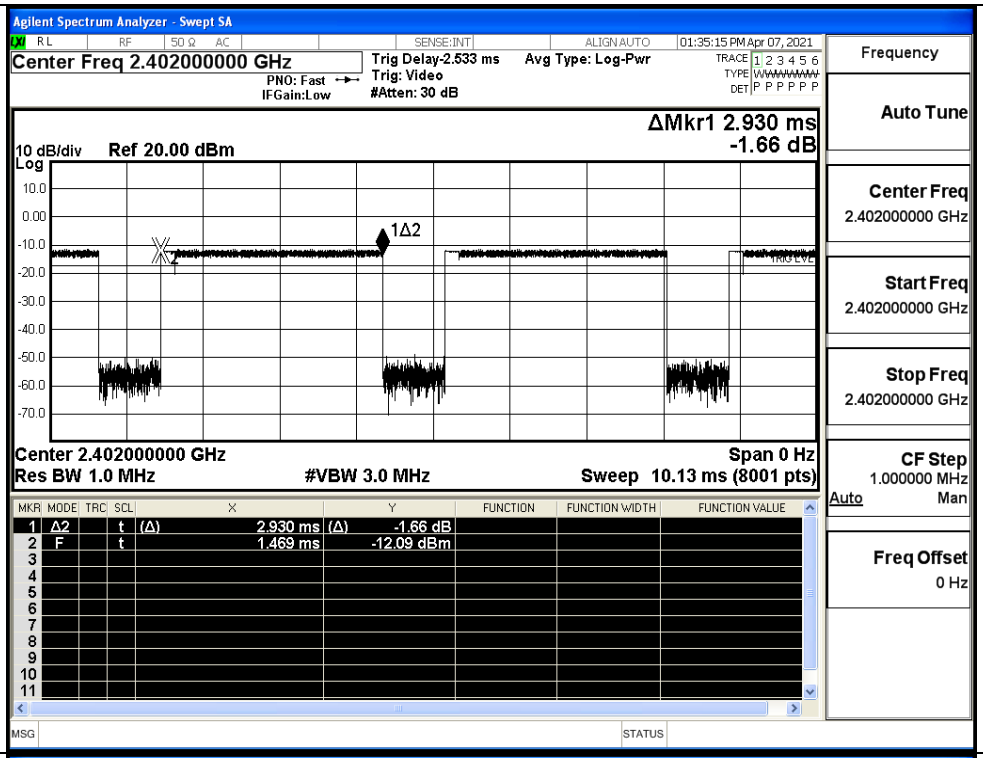
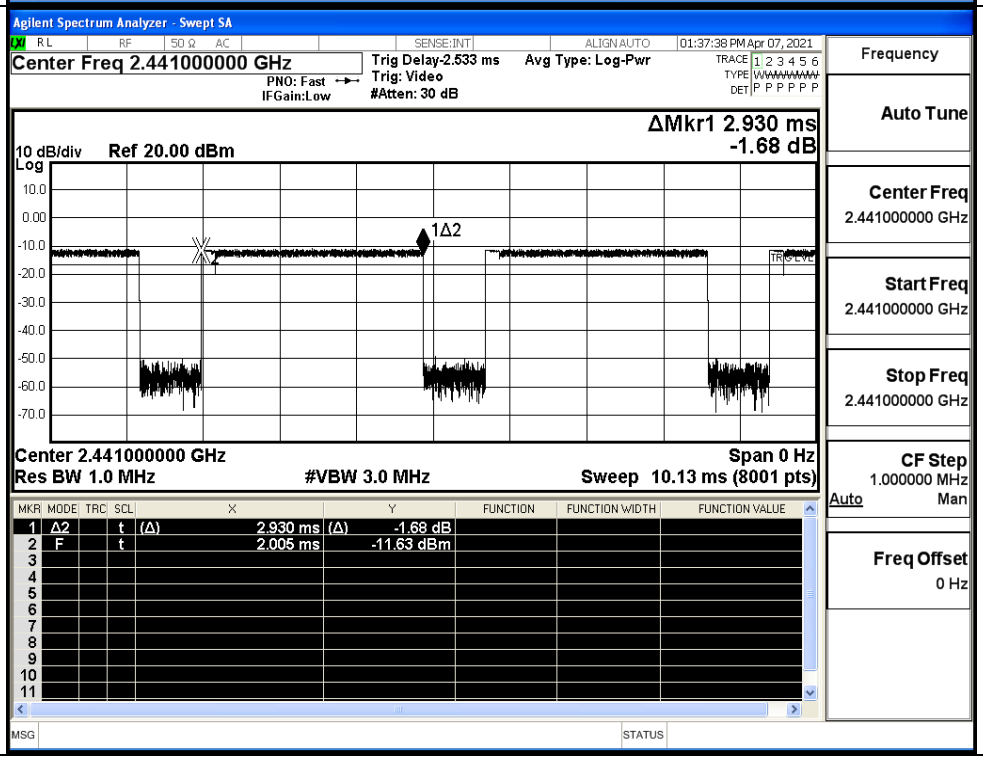
Test Graphs		
GFSK/Hop		
π/4DQPSK/Hop		

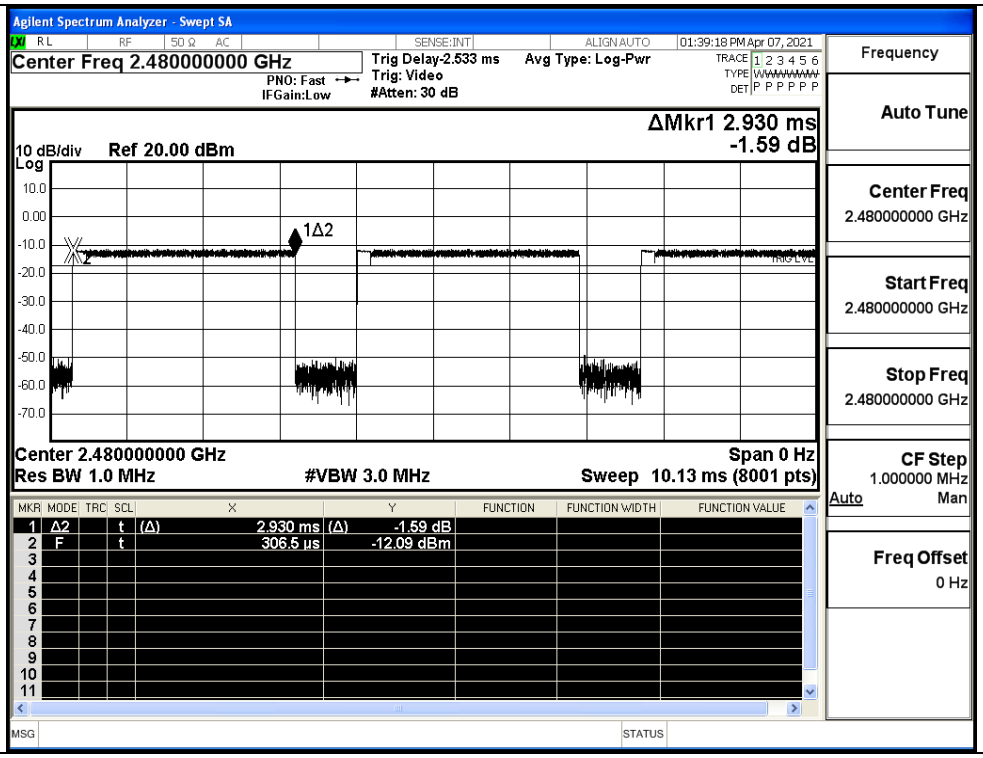
A.5 Dwell Time

Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.92	106.7	0.312	0.4	PASS
	DH5	MCH	2.92	106.7	0.312	0.4	PASS
	DH5	HCH	2.92	106.7	0.312	0.4	PASS
π/4DQPSK	2DH5	LCH	2.92	106.7	0.313	0.4	PASS
	2DH5	MCH	2.92	106.7	0.313	0.4	PASS
	2DH5	HCH	2.92	106.7	0.313	0.4	PASS

Test Graphs	
GFSK_DH5/LCH	

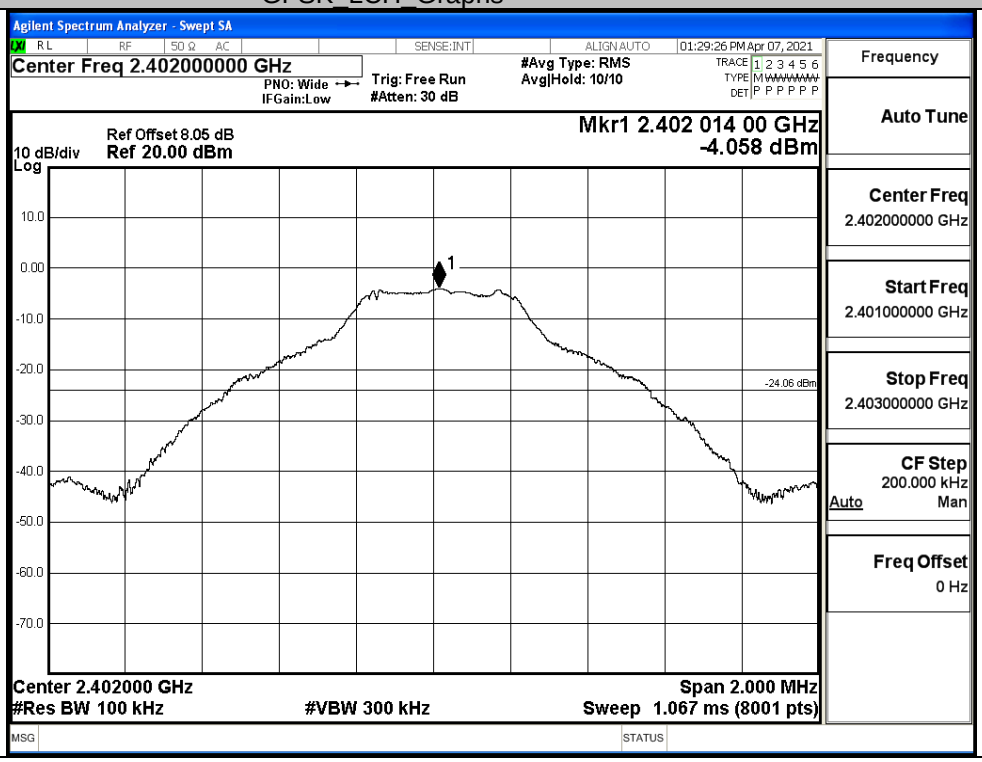
GFSK_DH5/MCH	
GFSK_DH5/HCH	

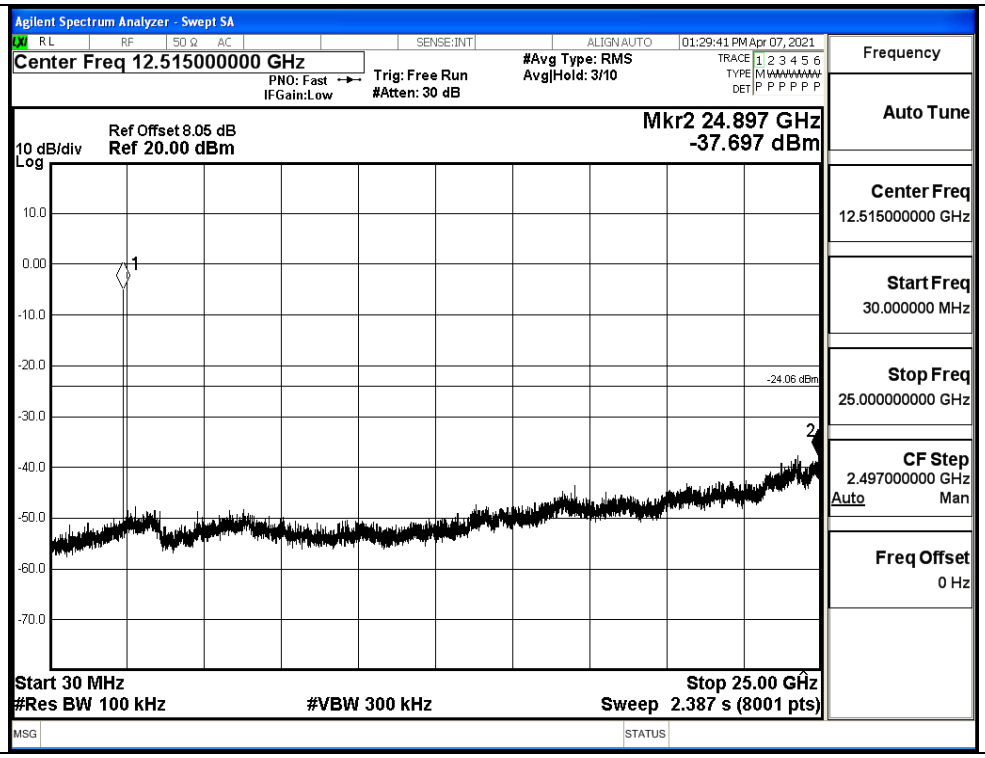
π/4DQPSK _2DH5/LCH	
π/4DQPSK _2DH5/MCH	

π/4DQPSK _2DH5/HCH	

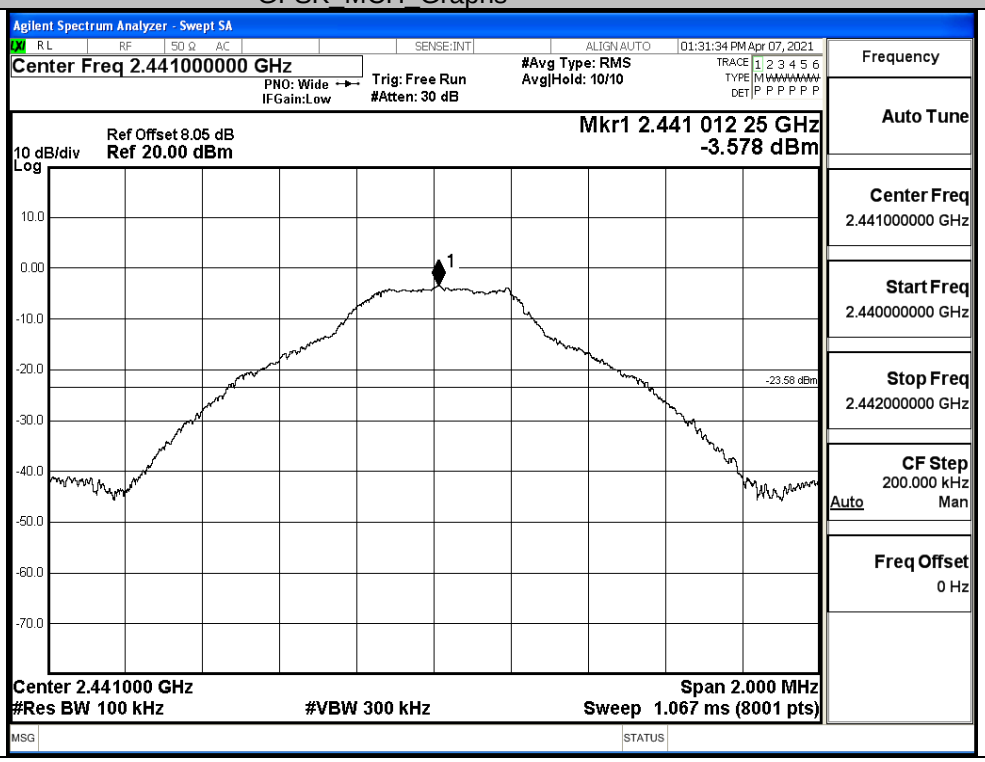
A.6 RF Conducted Spurious Emissions

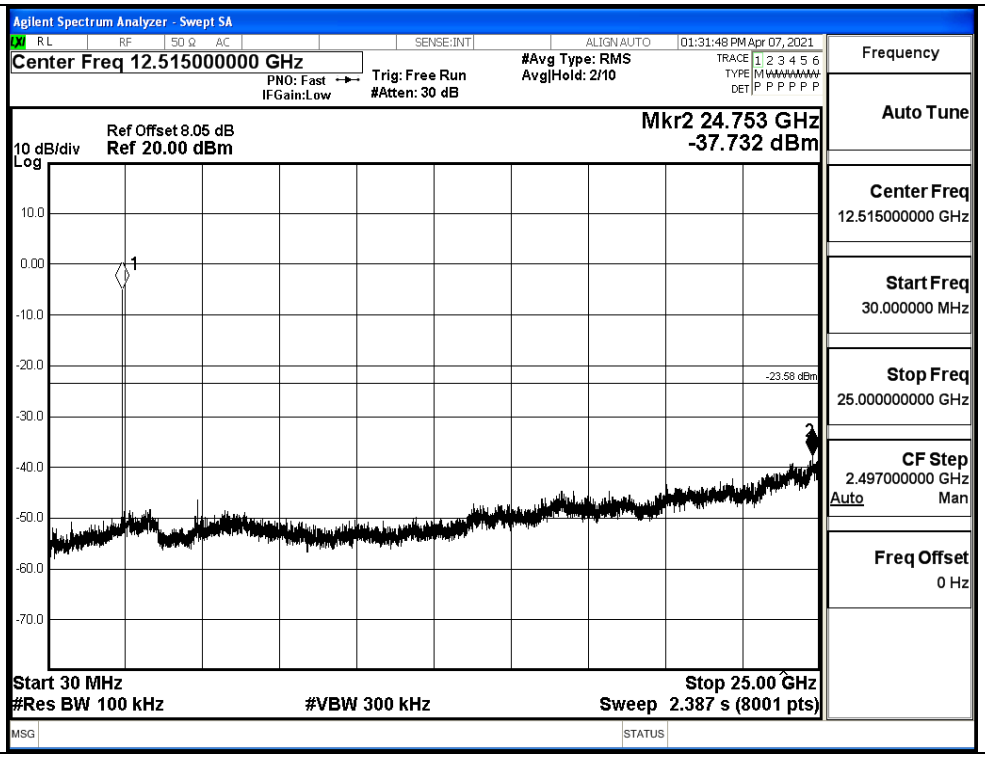
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-4.058	-37.697	-24.058	PASS
	MCH	-3.578	-37.732	-23.578	PASS
	HCH	-3.995	-38.571	-23.995	PASS
π/4DQPSK	LCH	-3.997	-38.138	-23.997	PASS
	MCH	-3.537	-37.679	-23.537	PASS
	HCH	-3.974	-37.811	-23.974	PASS

GFSK_LCH_Graphs	
Pref	

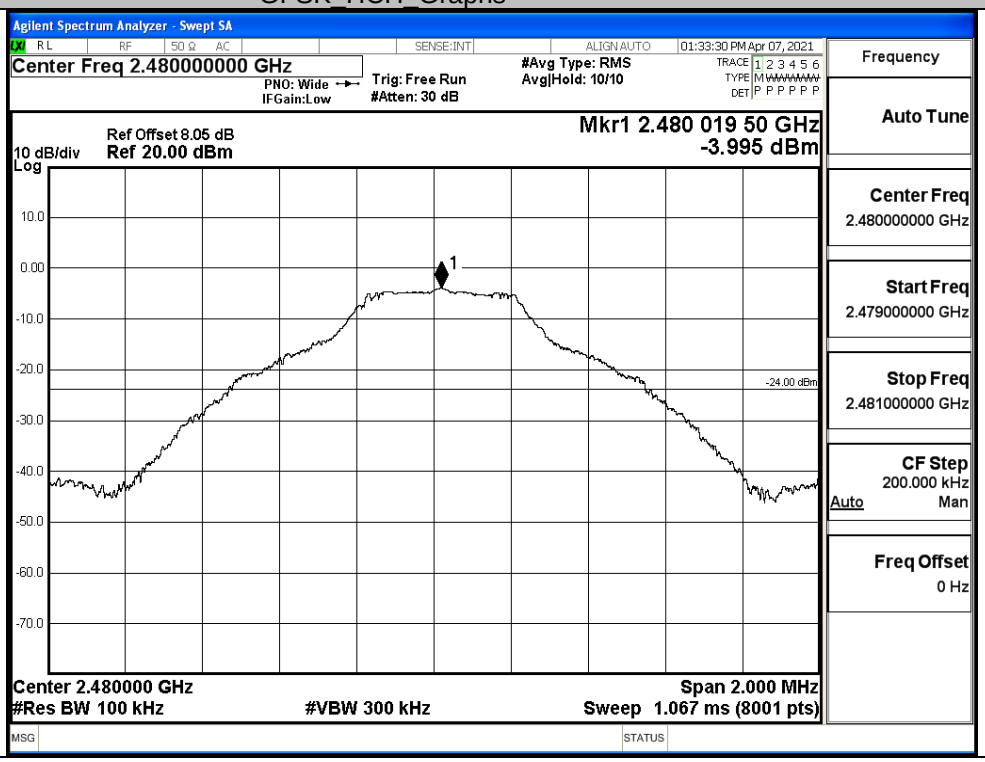
Puw	

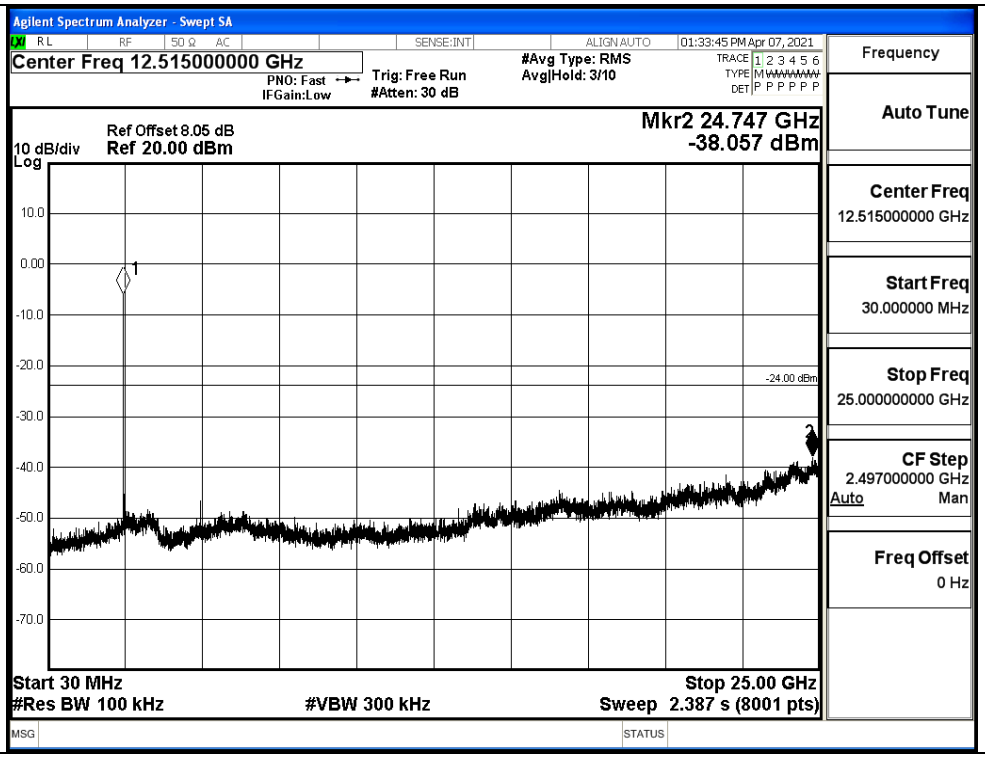
GFSK_MCH_Graphs

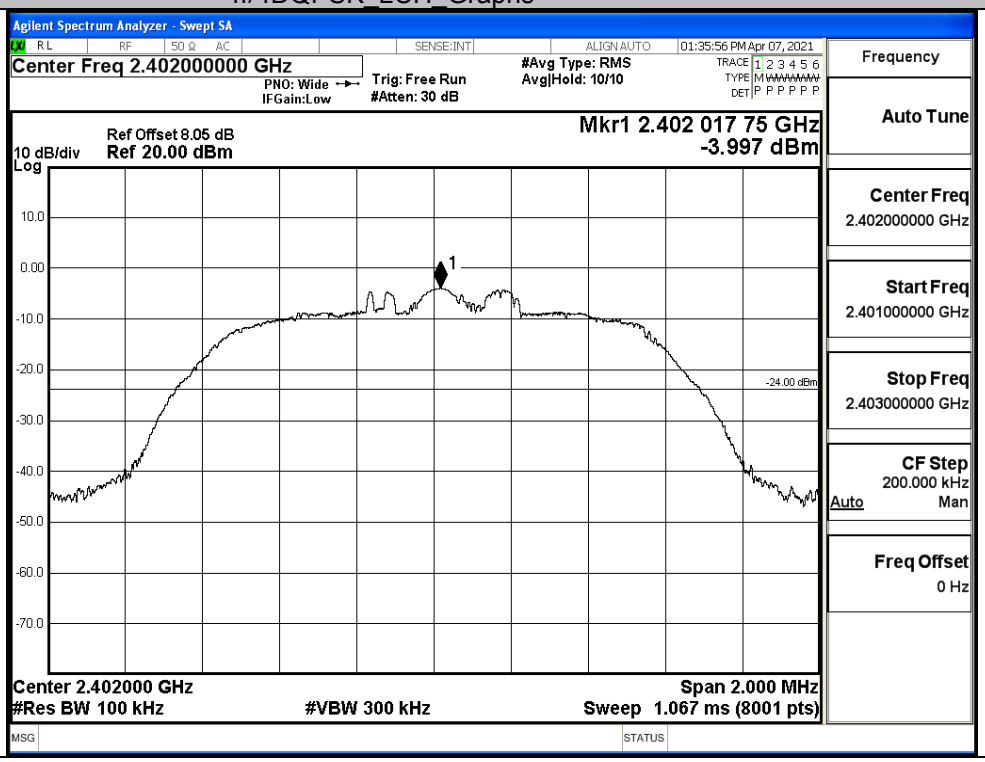
Pref	

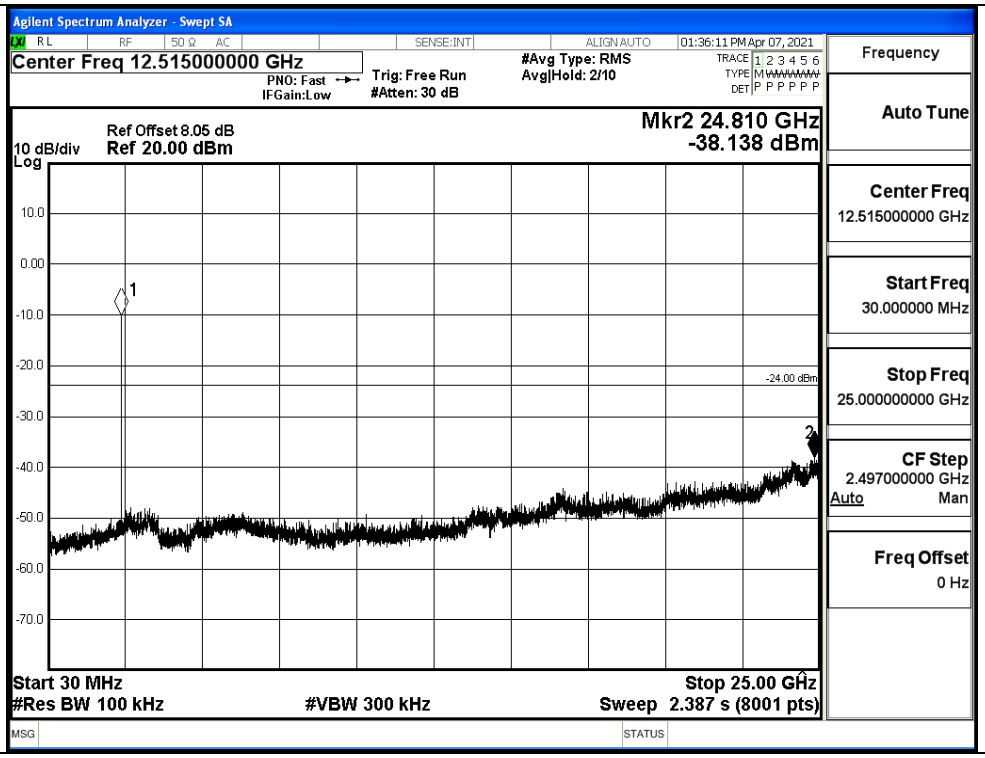
Puw	

GFSK_HCH_Graphs

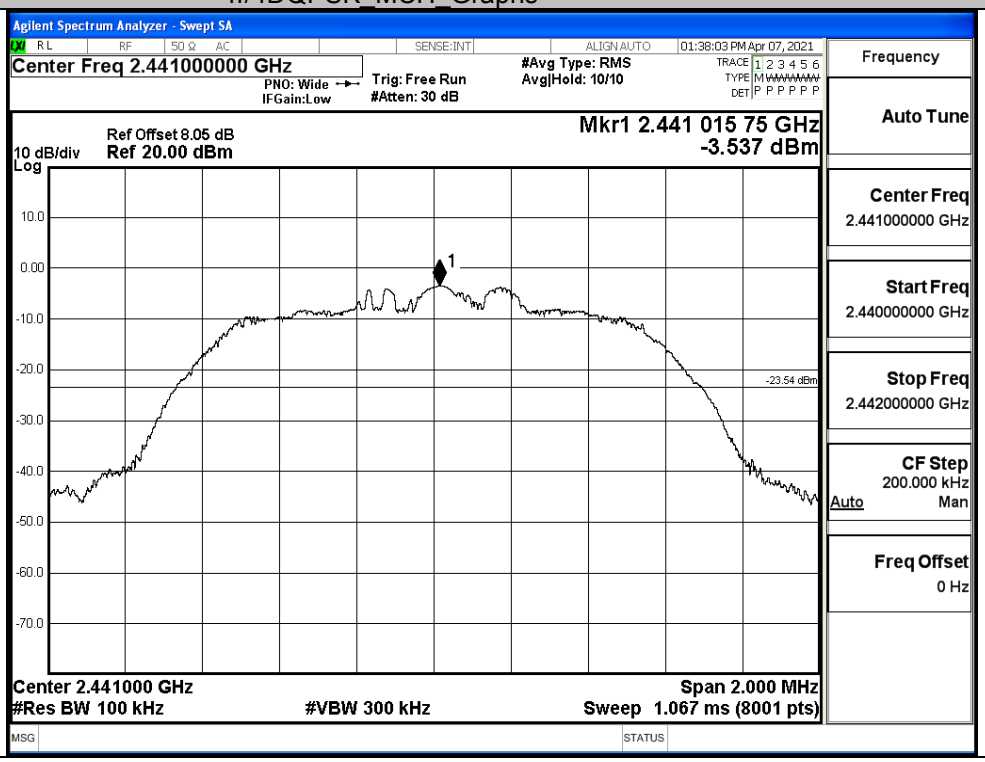
Pref	

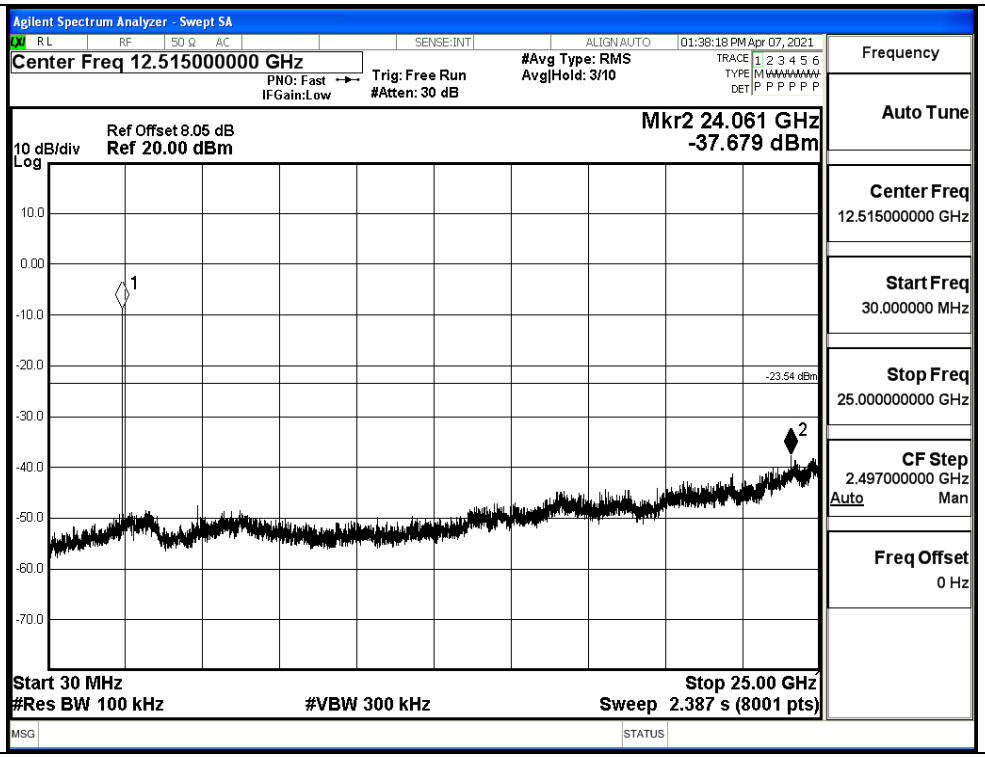
Puw	

π/4DQPSK_LCH_Graphs	
Pref	

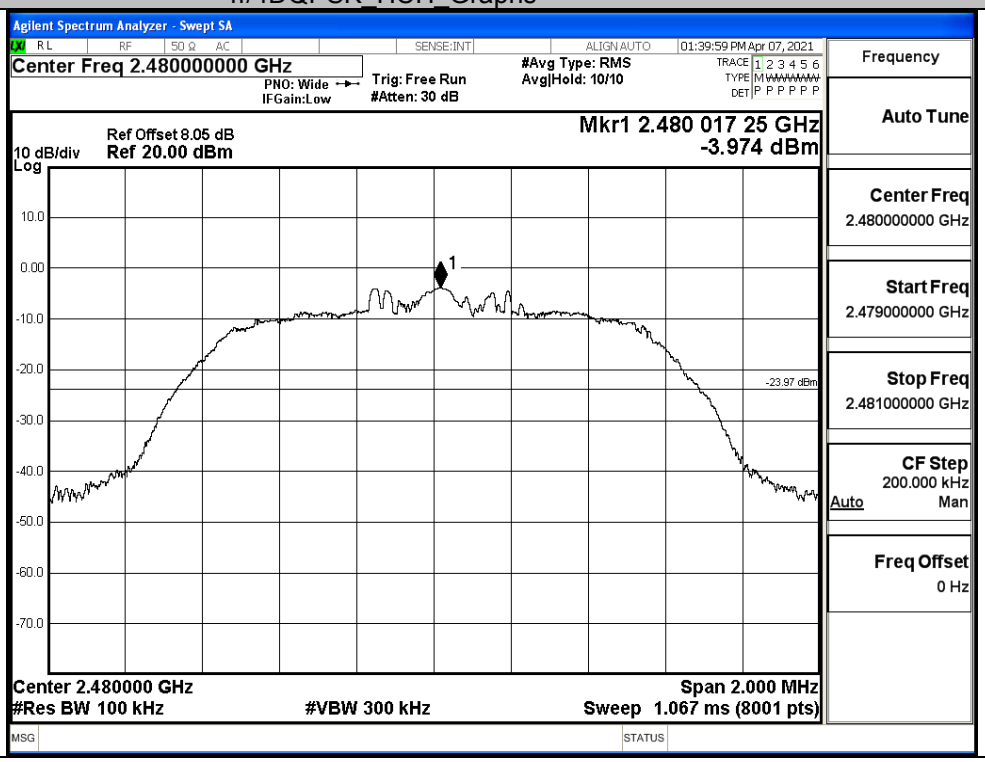
Puw	

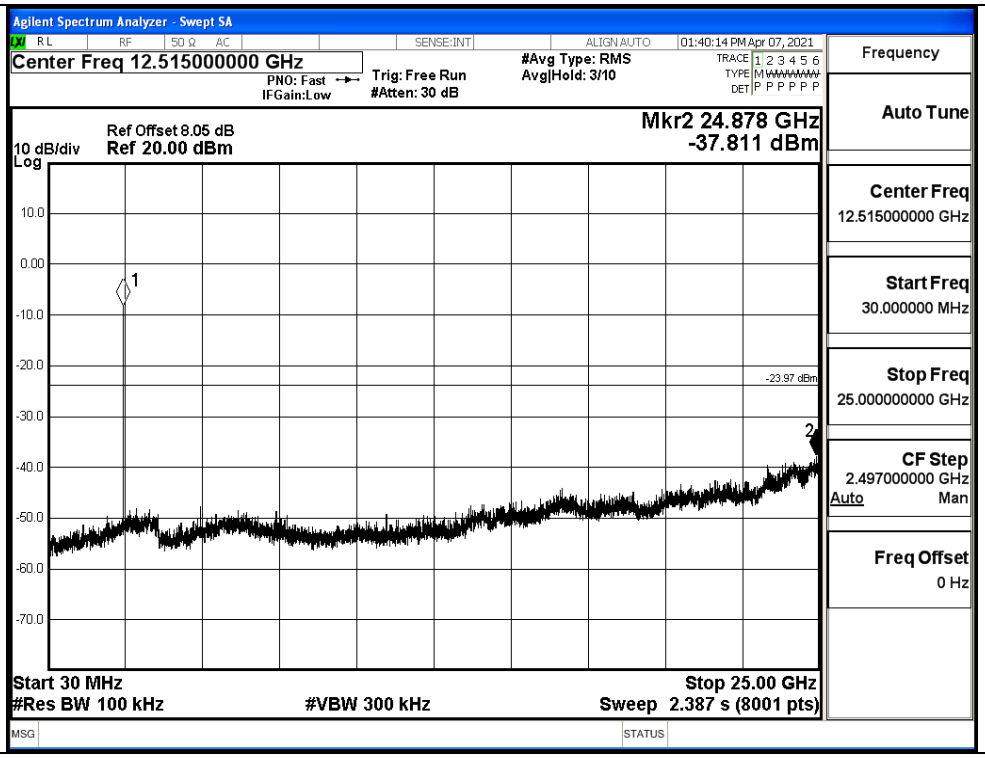
π/4DQPSK_MCH_Graphs

Pref	

Puw	

π/4DQPSK_HCH_Graphs

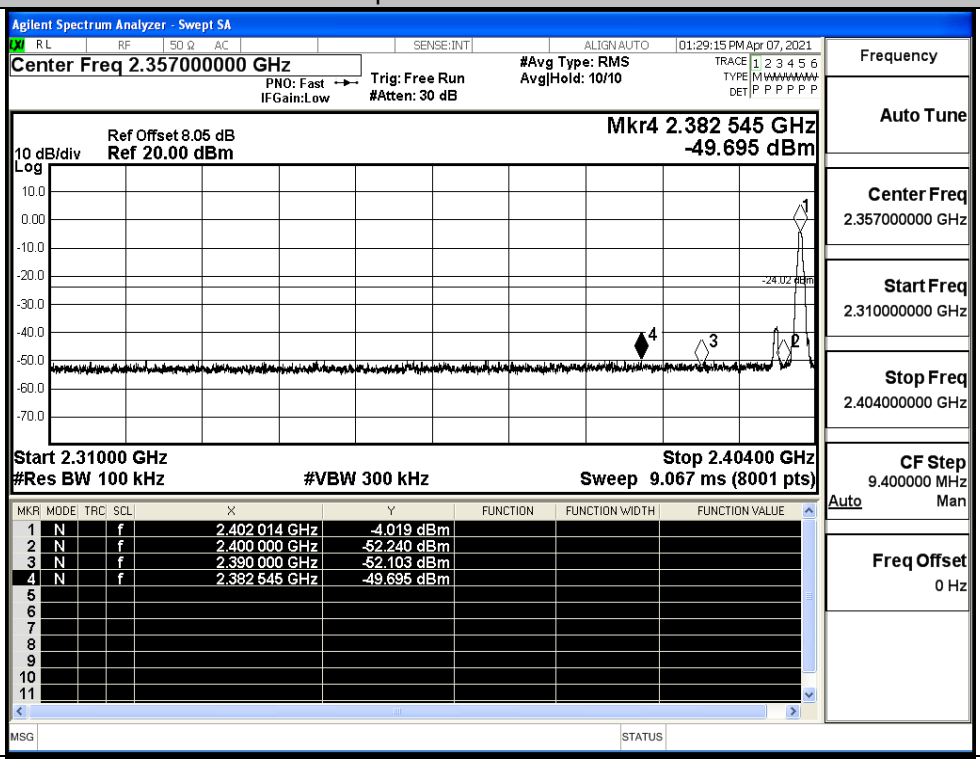
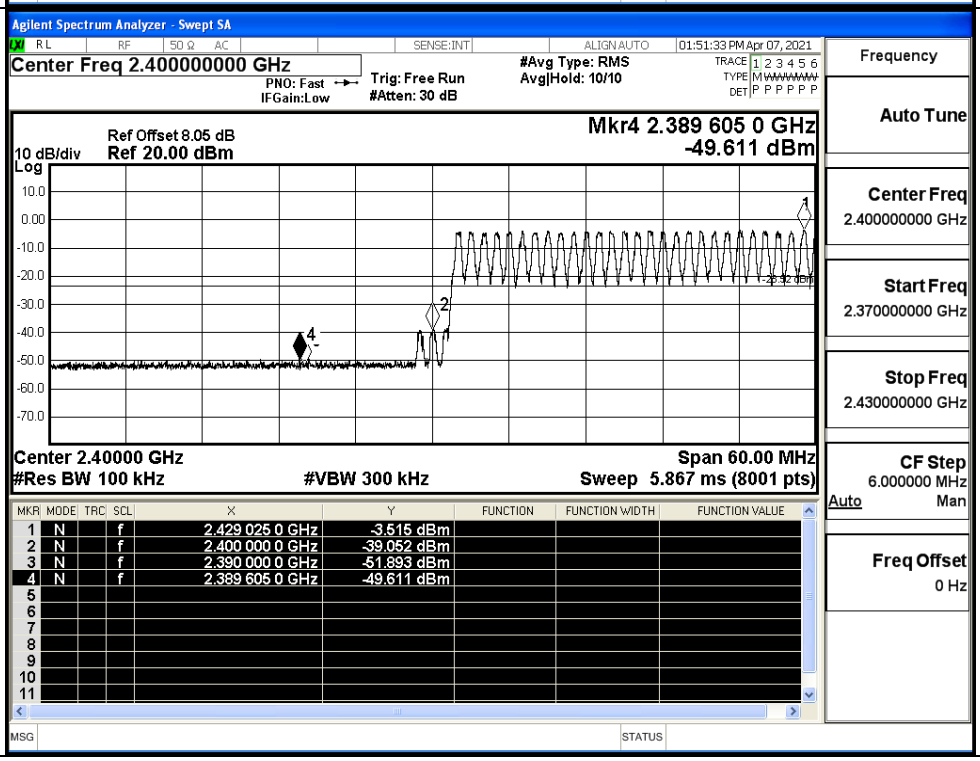
Pref	

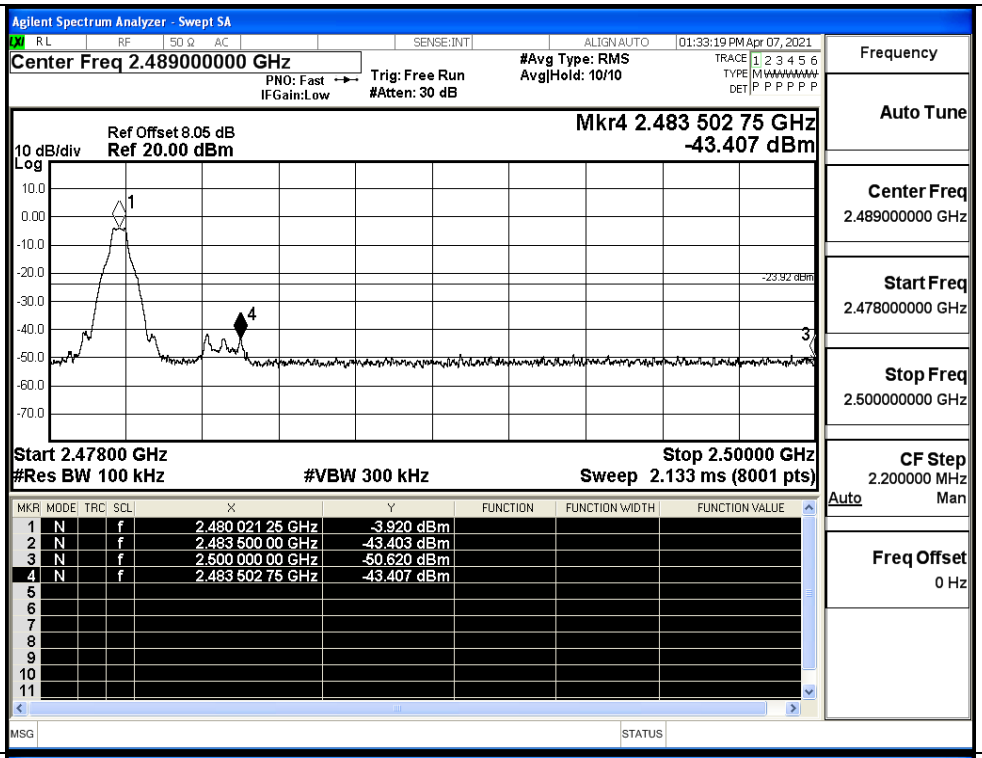
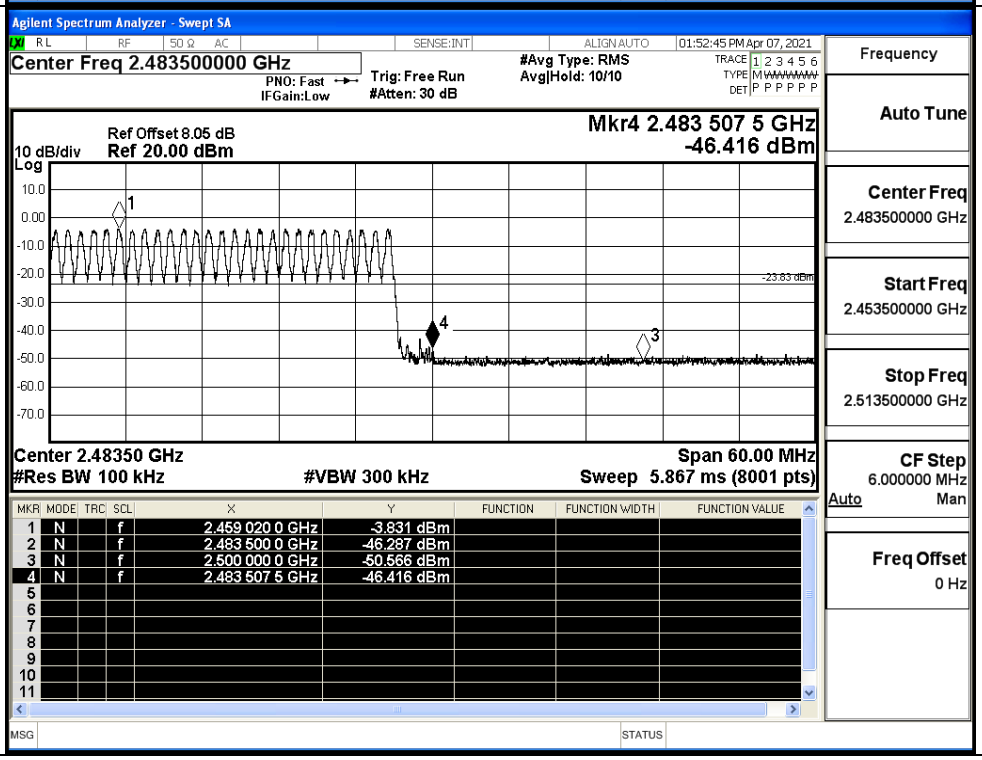
Puw		

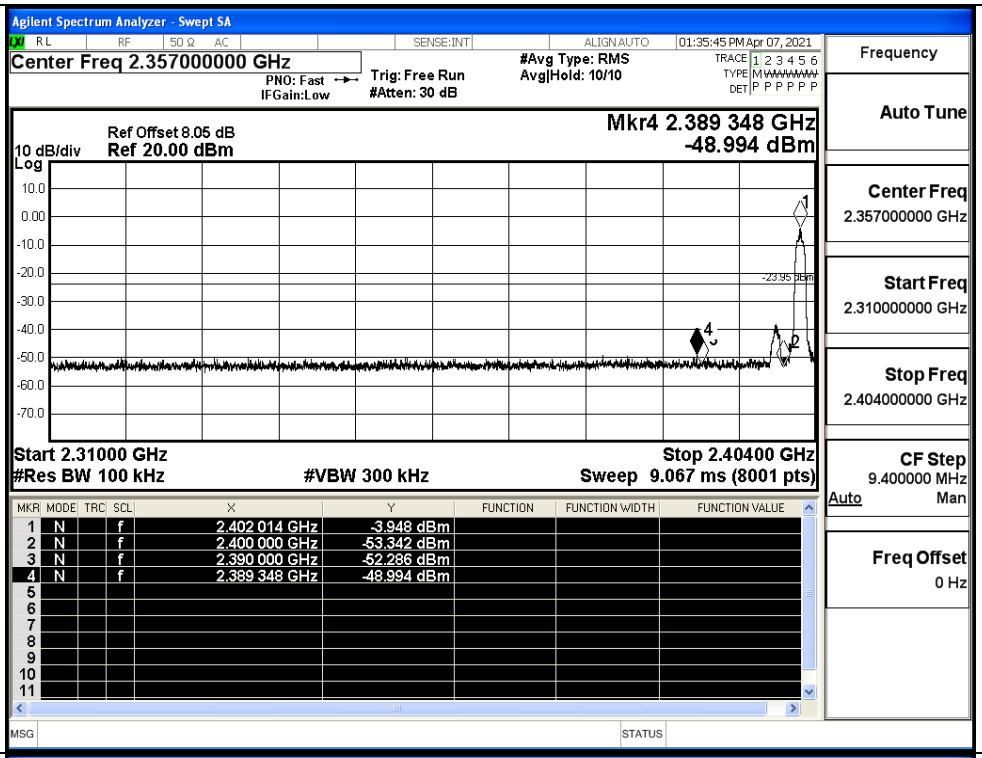
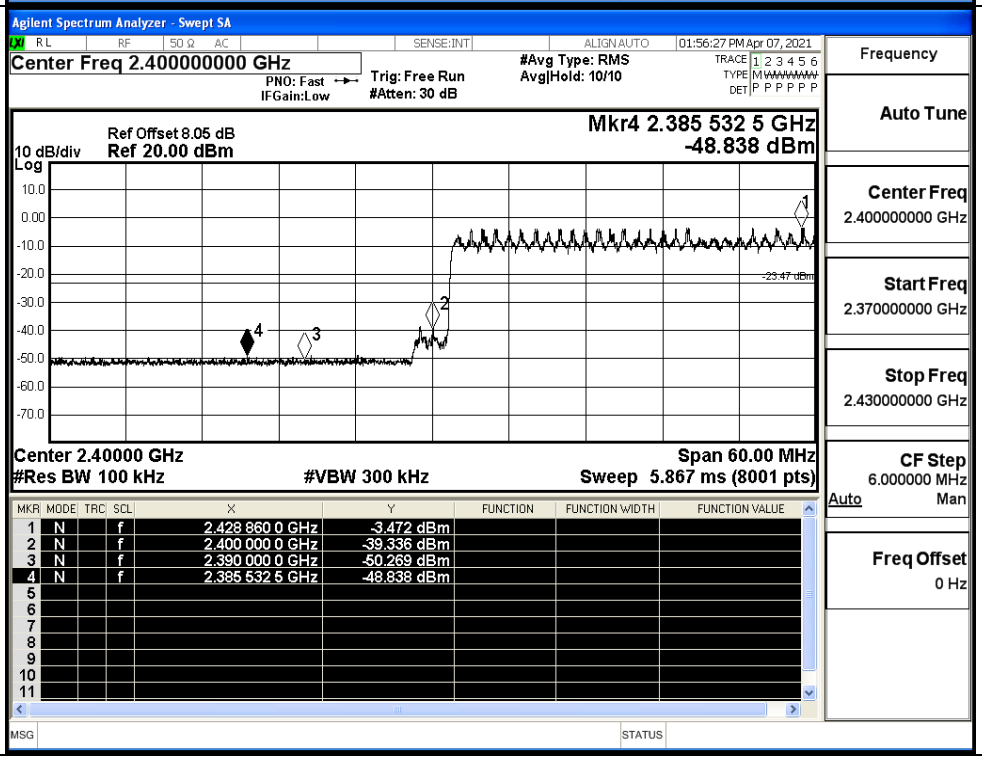
Agilent Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
01:40:14 PM Apr 07, 2021
Center Freq 12.515000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 3/10
TRACE 1 2 3 4 5 6
TYPE M
DET P P P P P
Ref Offset 8.05 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr2 24.878 GHz
-37.811 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-23.97 dBm
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

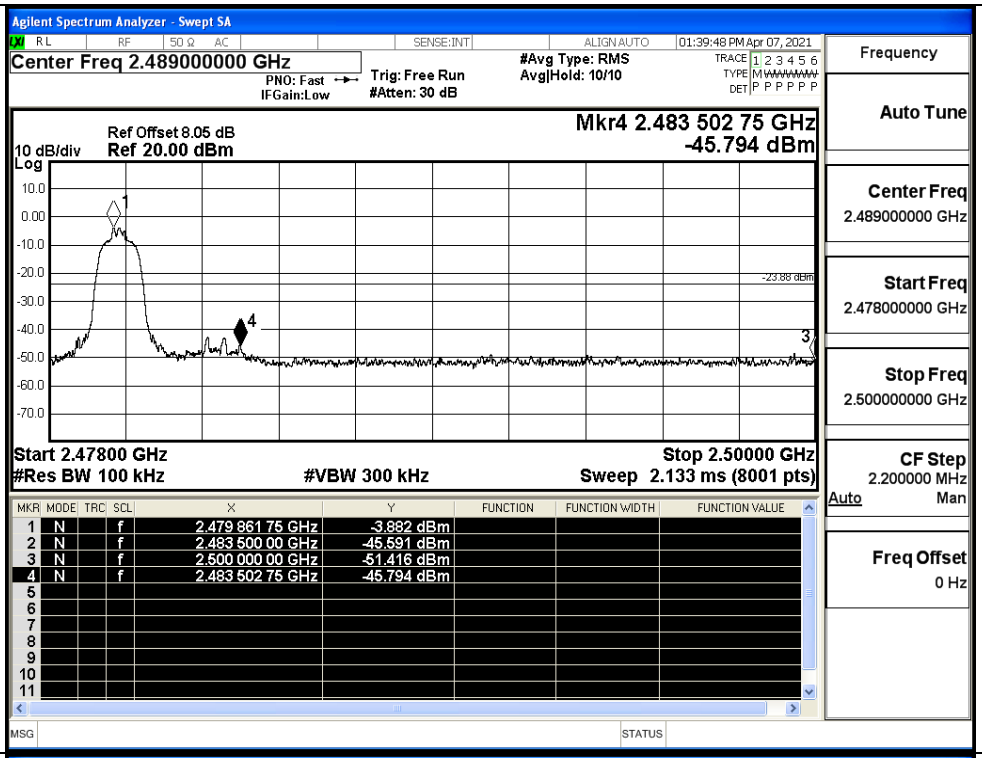
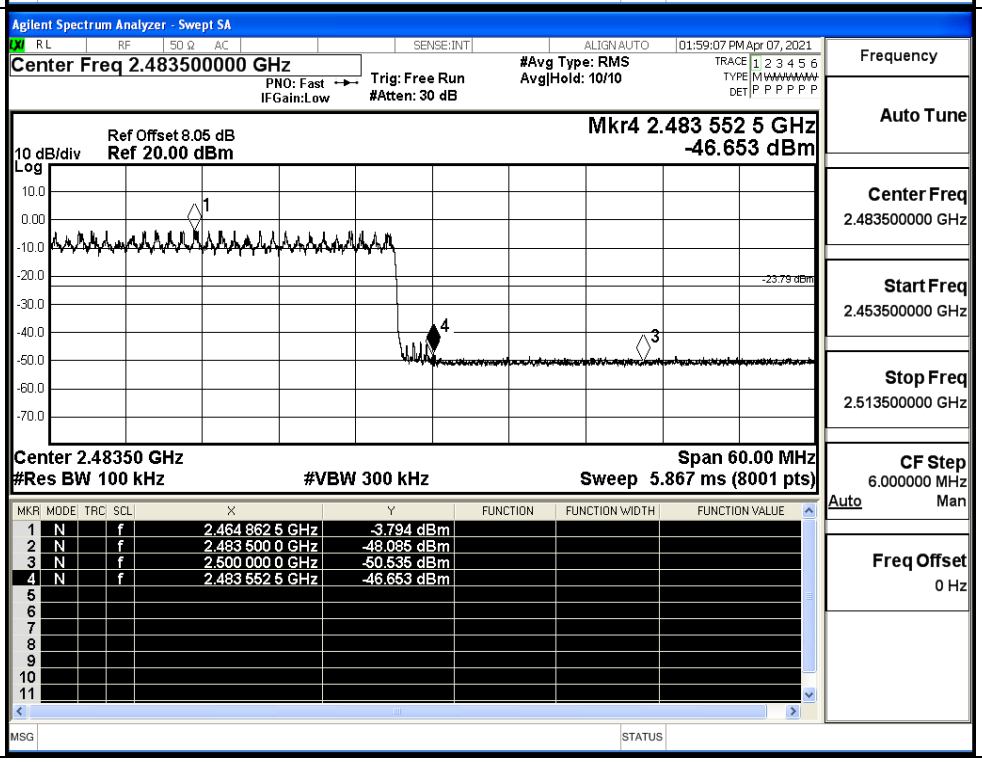
A.7 Band-edge for RF Conducted Emissions

Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	-4.019	Off	-49.695	-24.02	PASS
			-3.515	On	-49.611	-23.52	PASS
	HCH	2480	-3.920	Off	-43.407	-23.92	PASS
			-3.831	On	-46.416	-23.83	PASS
π/4DQPSK	LCH	2402	-3.948	Off	-48.994	-23.95	PASS
			-3.472	On	-48.838	-23.47	PASS
	HCH	2480	-3.882	Off	-45.794	-23.88	PASS
			-3.794	On	-46.653	-23.79	PASS

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

GFSK/HCH/No Hop	
GFSK/HCH/Hop	

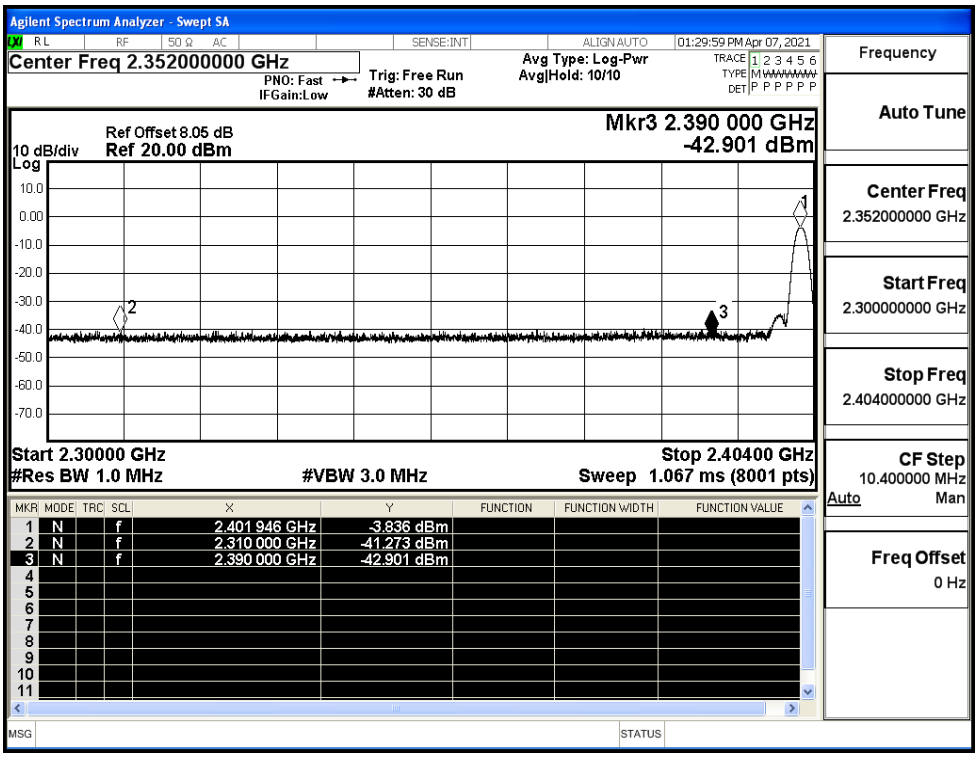
π/4DQPSK/LCH/No Hop	
π/4DQPSK/LCH/Hop	

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

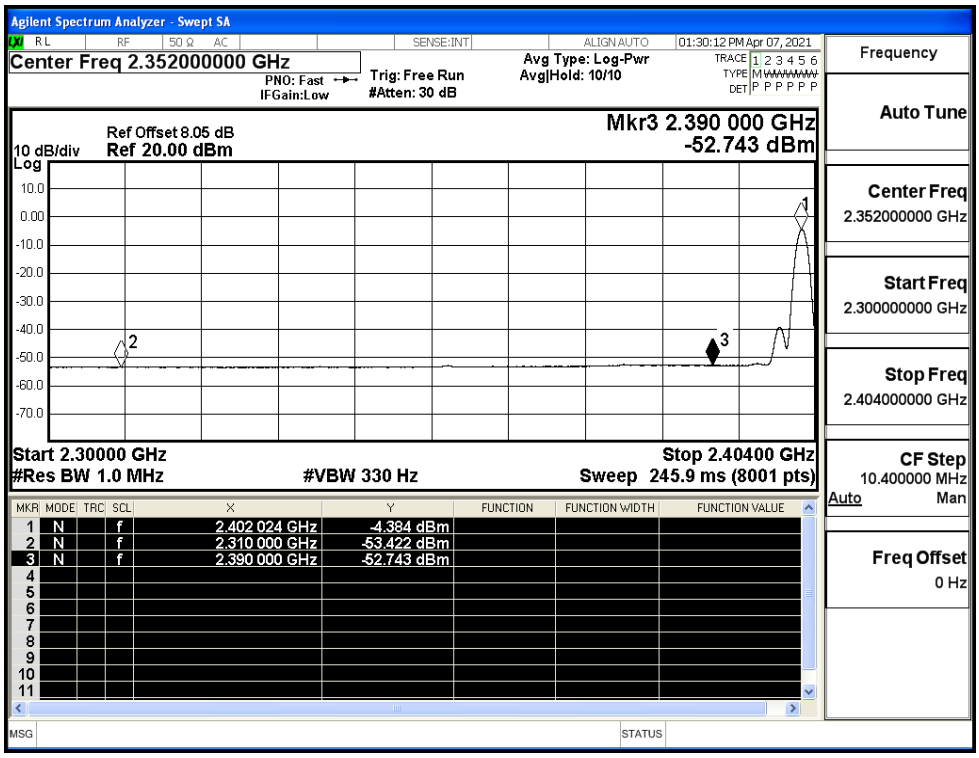
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-41.27	2.0	0	55.98	PEAK	74	PASS
	Off	2310.0	-53.42	2.0	0	43.84	AV	54	PASS
	Off	2390.0	-42.90	2.0	0	54.36	PEAK	74	PASS
	Off	2390.0	-52.74	2.0	0	44.51	AV	54	PASS
	Off	2483.5	-38.61	2.0	0	58.65	PEAK	74	PASS
	Off	2483.5	-47.23	2.0	0	50.03	AV	54	PASS
	Off	2500.0	-42.81	2.0	0	54.45	PEAK	74	PASS
	Off	2500.0	-51.95	2.0	0	45.31	AV	54	PASS
π/4DQPSK	Off	2310.0	-43.76	2.0	0	53.5	PEAK	74	PASS
	Off	2310.0	-53.37	2.0	0	43.89	AV	54	PASS
	Off	2390.0	-41.69	2.0	0	55.57	PEAK	74	PASS
	Off	2390.0	-52.80	2.0	0	44.46	AV	54	PASS
	Off	2483.5	-39.97	2.0	0	57.29	PEAK	74	PASS
	Off	2483.5	-49.40	2.0	0	47.86	AV	54	PASS
	Off	2500.0	-40.50	2.0	0	56.76	PEAK	74	PASS
	Off	2500.0	-51.97	2.0	0	45.29	AV	54	PASS

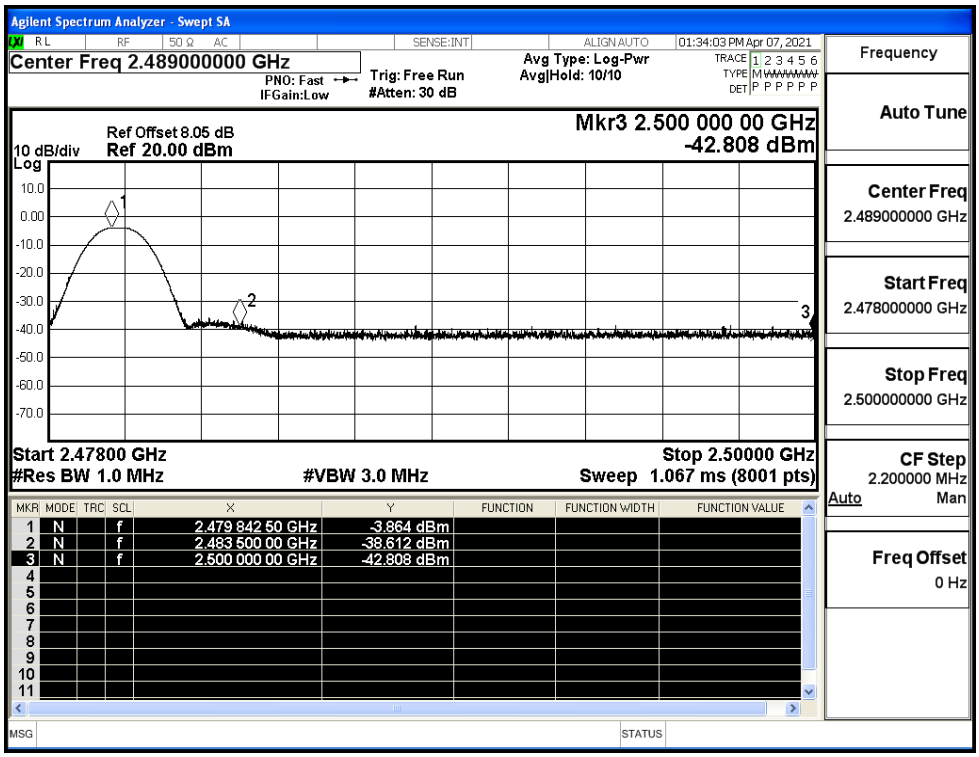
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (Low Channel)



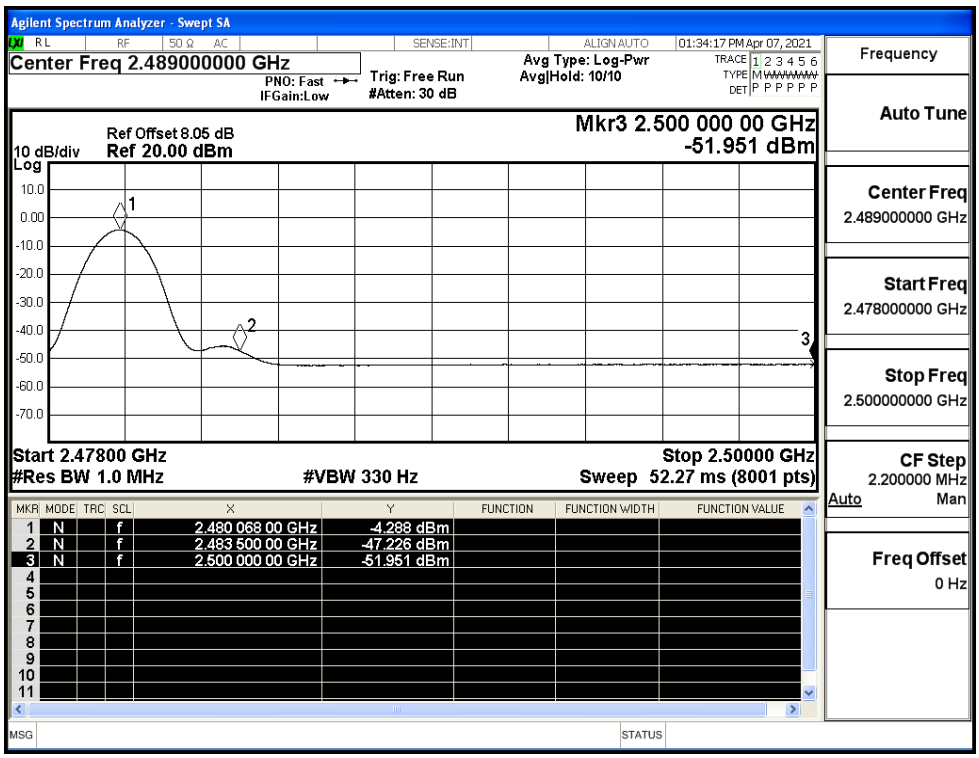
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (Low Channel)



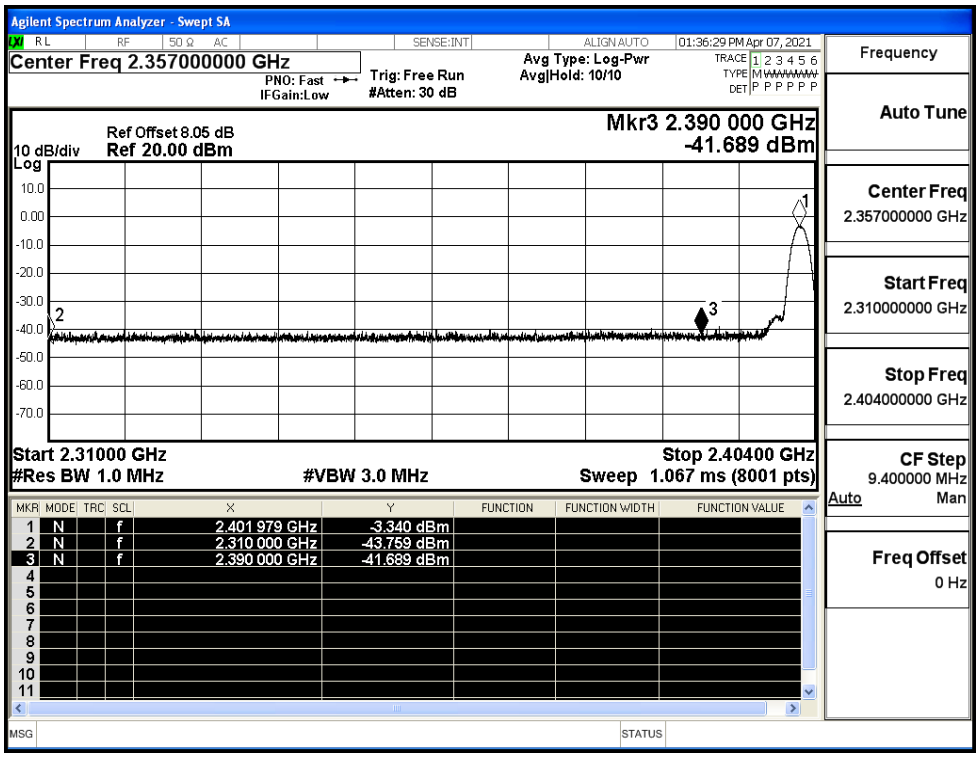
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (High Channel)



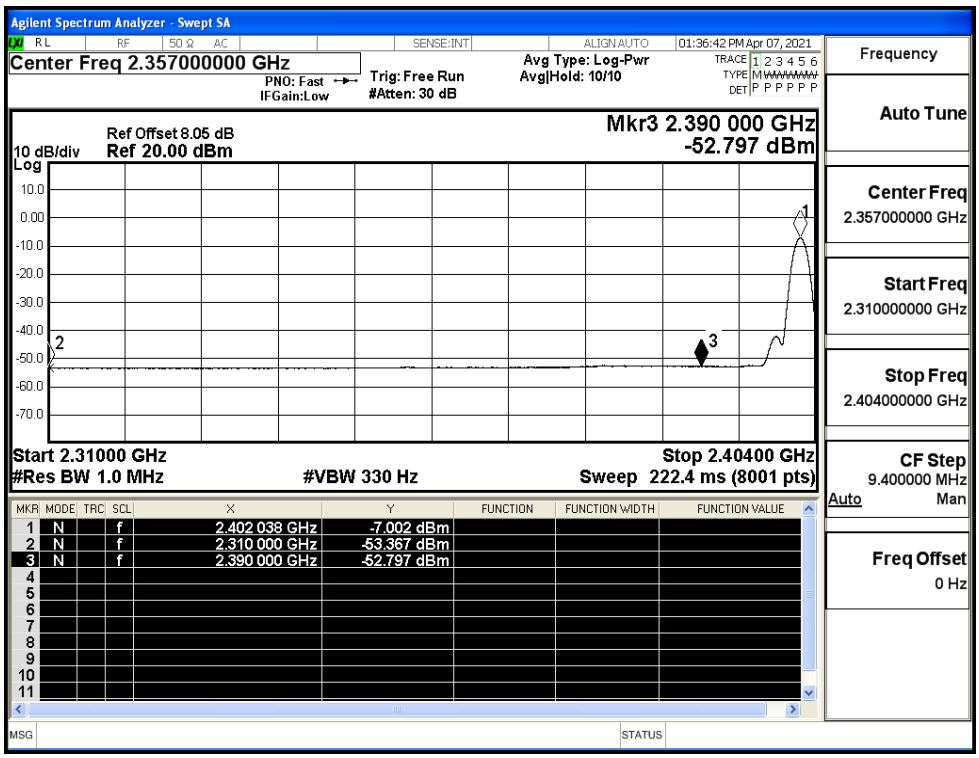
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (High Channel)



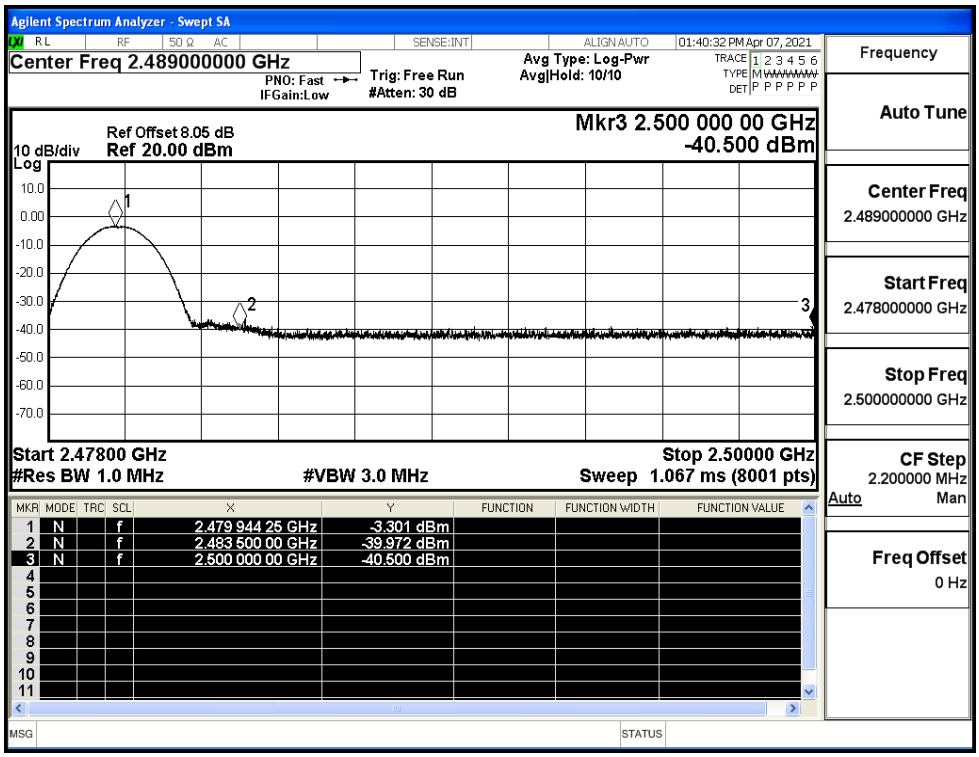
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (Low Channel)



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)