Appendix A

RF Test Data for BT V4.0(BDR/EDR) (Conducted Measurement)

Product Name: 3-D VR Smartphone

Trade Mark: Q PHONE

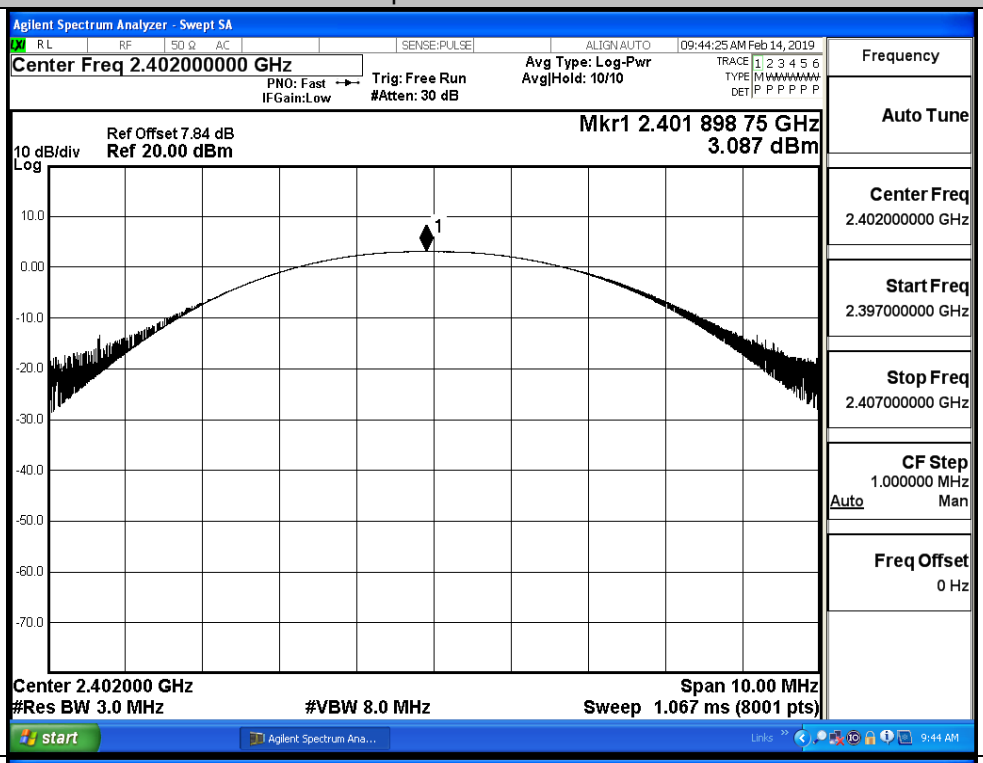
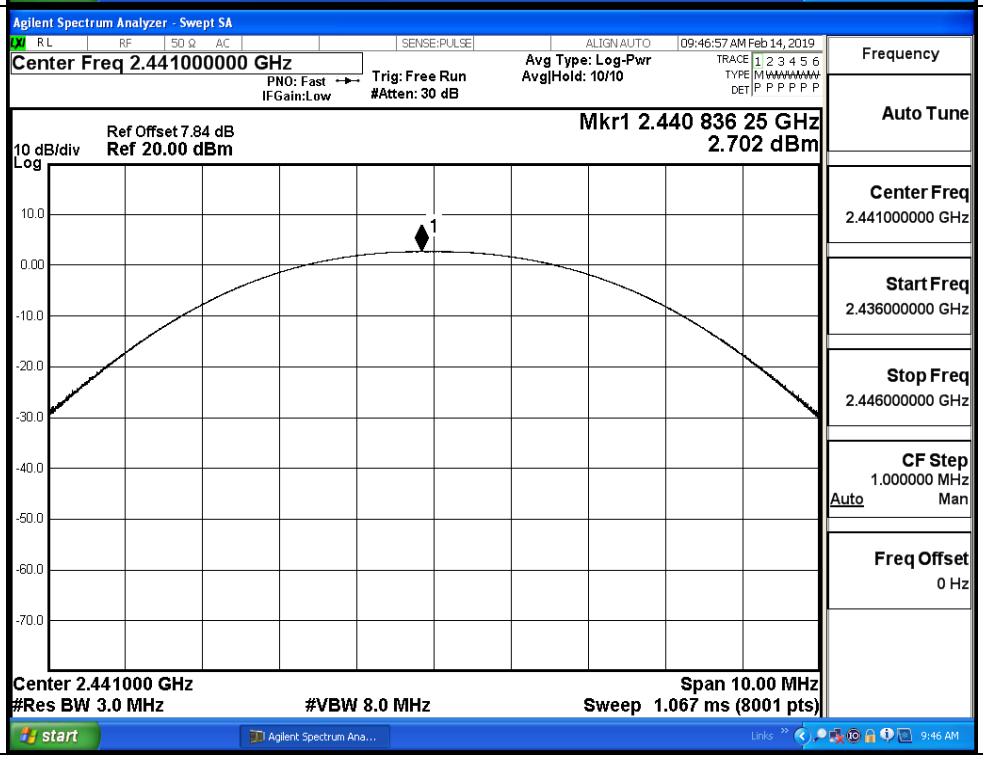
Test Model: Qphone2019_A

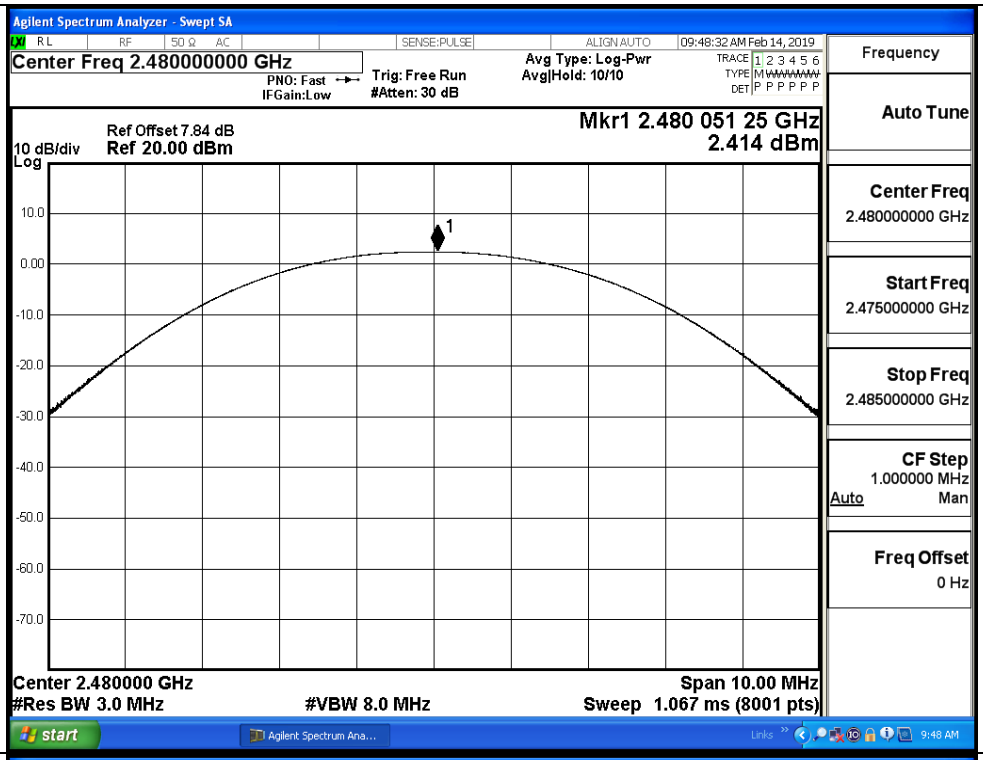
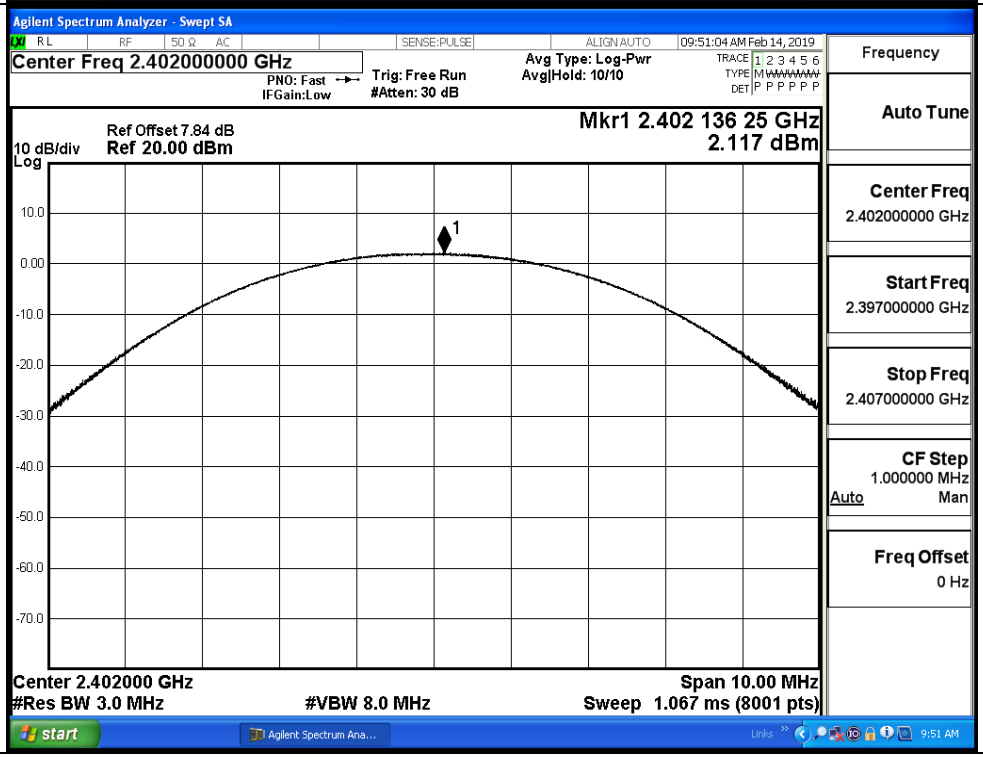
Environmental Conditions

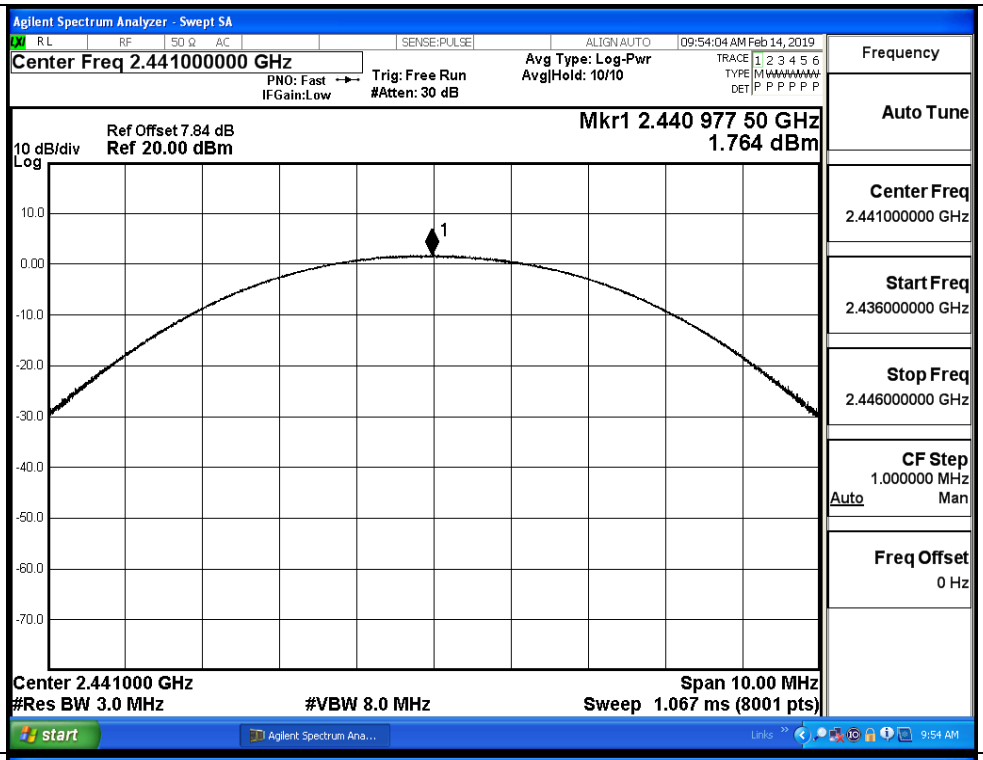
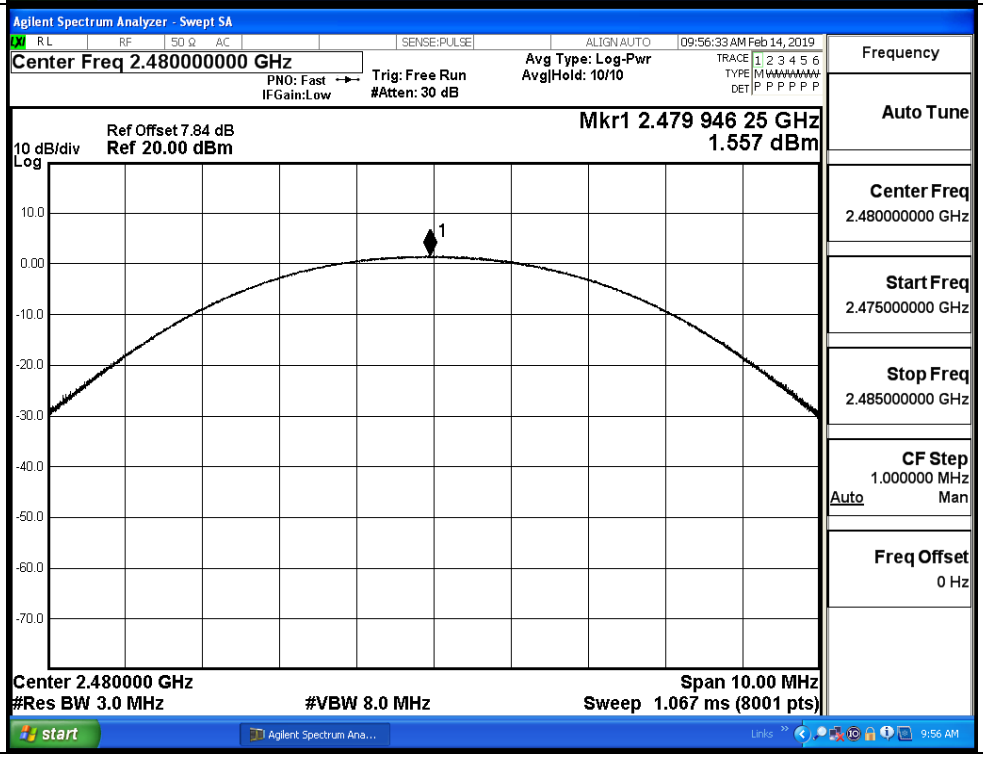
Temperature:	22.8 ° C
Relative Humidity:	53.8%
ATM Pressure:	100.0 kPa
Test Engineer:	Tom.Liu
Supervised by:	Jayden.Zhuo

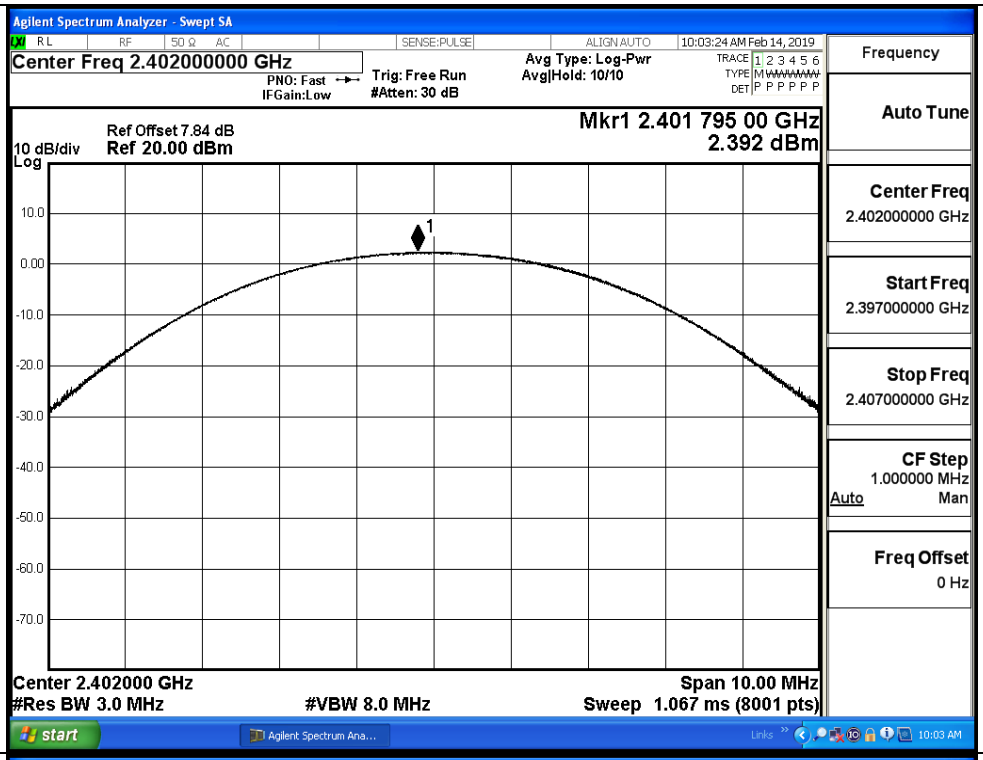
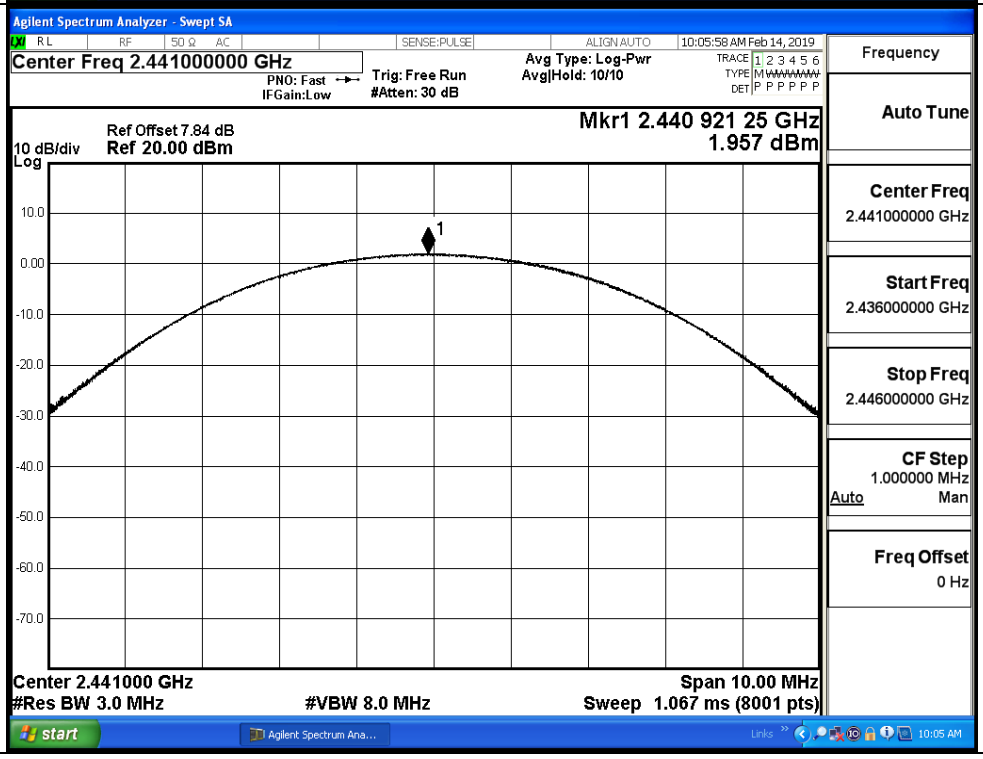
A.1 Maxmum Conducted Peak Output Power

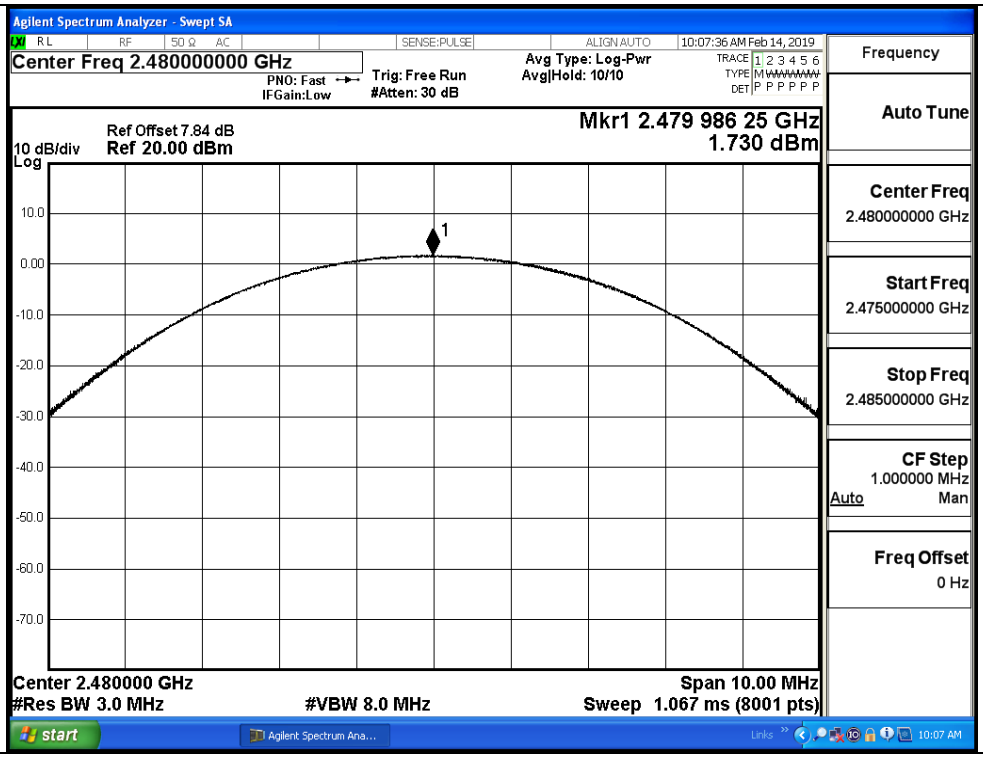
Mode	Channel.	Maximum Peak Output Power [dBm]	Maximum Average Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	3.087	2.943	21	PASS
	MCH	2.702	2.569	21	PASS
	HCH	2.414	2.243	21	PASS
π/4DQPSK	LCH	2.117	1.946	21	PASS
	MCH	1.764	1.629	21	PASS
	HCH	1.557	1.424	21	PASS
8DPSK	LCH	2.392	2.254	21	PASS
	MCH	1.957	1.821	21	PASS
	HCH	1.730	1.558	21	PASS

Test Graphs		
GFSK/LCH		
GFSK/MCH		

GFSK/HCH	
π/4DQPSK/LCH	

π/4DQPSK/MCH		
π/4DQPSK/HCH		

8DPSK/LCH	
8DPSK/MCH	

8DPSK/HCH	

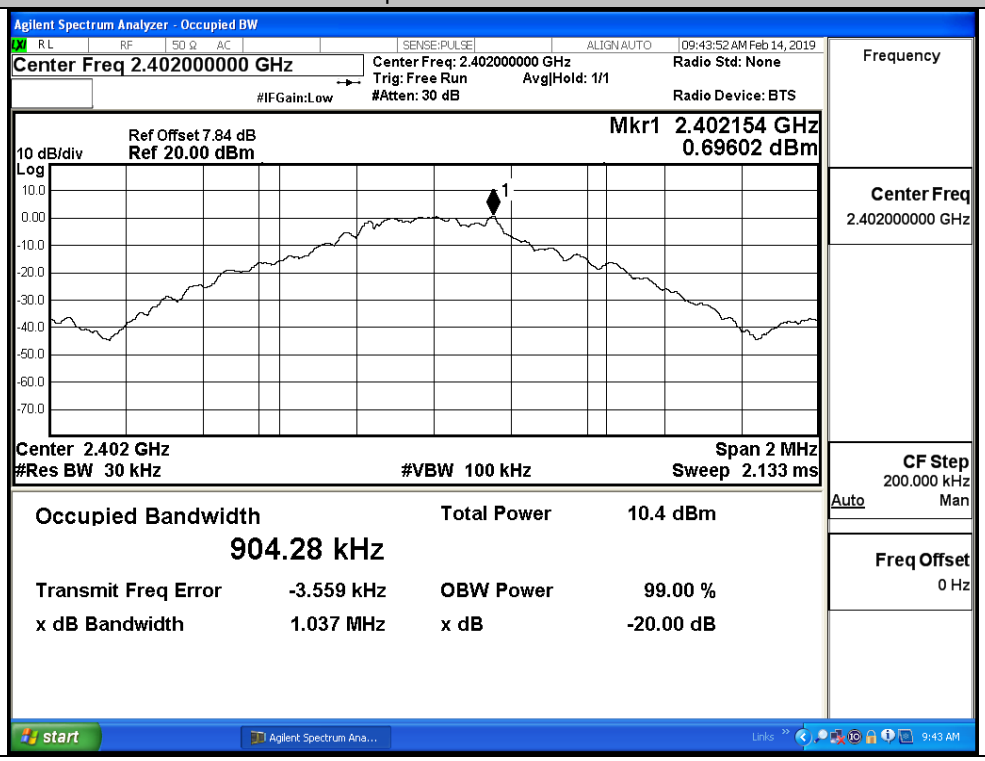
Agilent Spectrum Analyzer - Swept SA
Center Freq 2.480000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 10/10
10:07:36 AM Feb 14, 2019
Ref Offset 7.84 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 2.479 986 25 GHz
1.730 dBm
Center 2.480000 GHz
#Res BW 3.0 MHz
#VBW 8.0 MHz
Span 10.00 MHz
Sweep 1.067 ms (8001 pts)
Frequency
Auto Tune
Center Freq
2.480000000 GHz
Start Freq
2.475000000 GHz
Stop Freq
2.485000000 GHz
CF Step
1.000000 MHz
Auto
Man
Freq Offset
0 Hz
start
10:07 AM

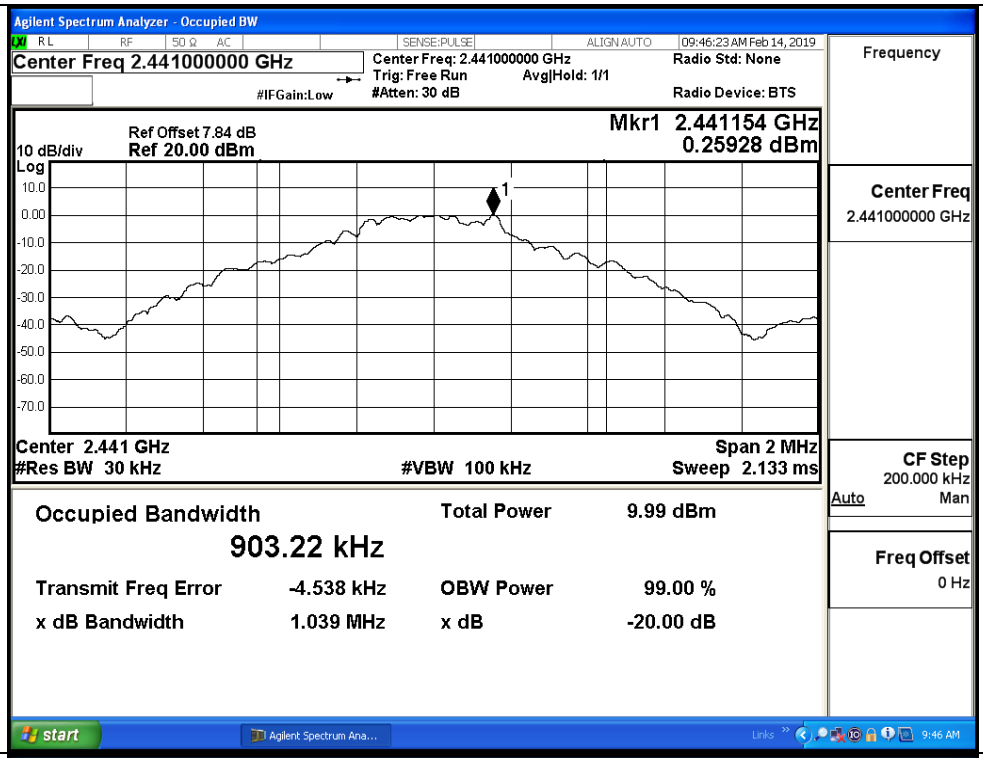
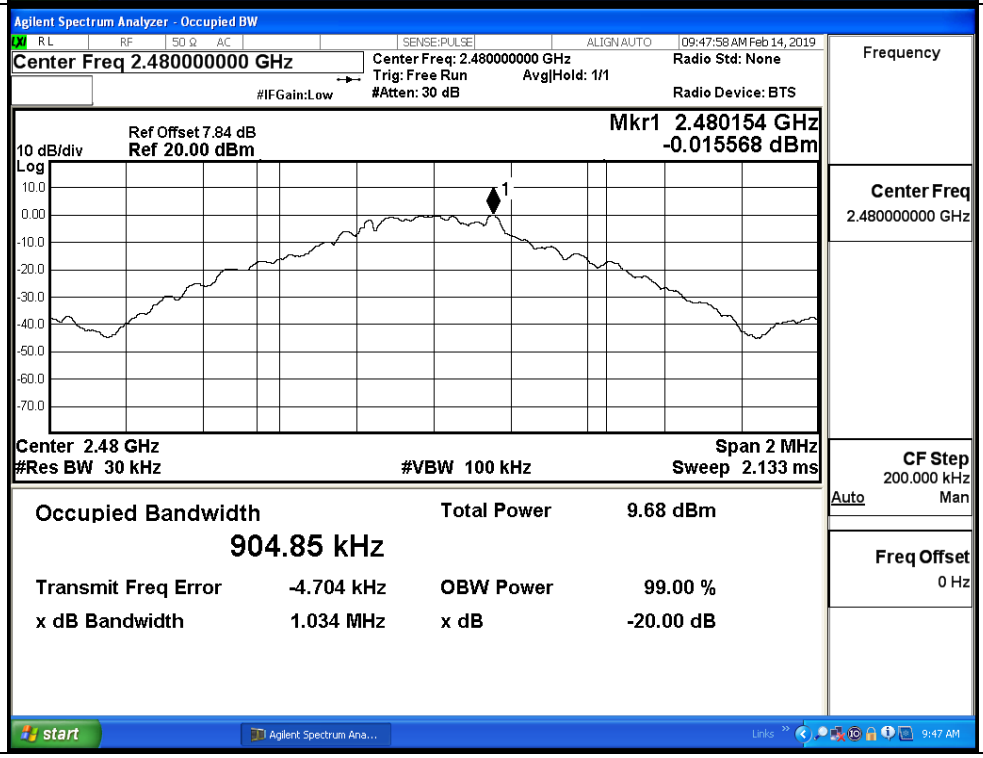
A.2 20dB Bandwidth

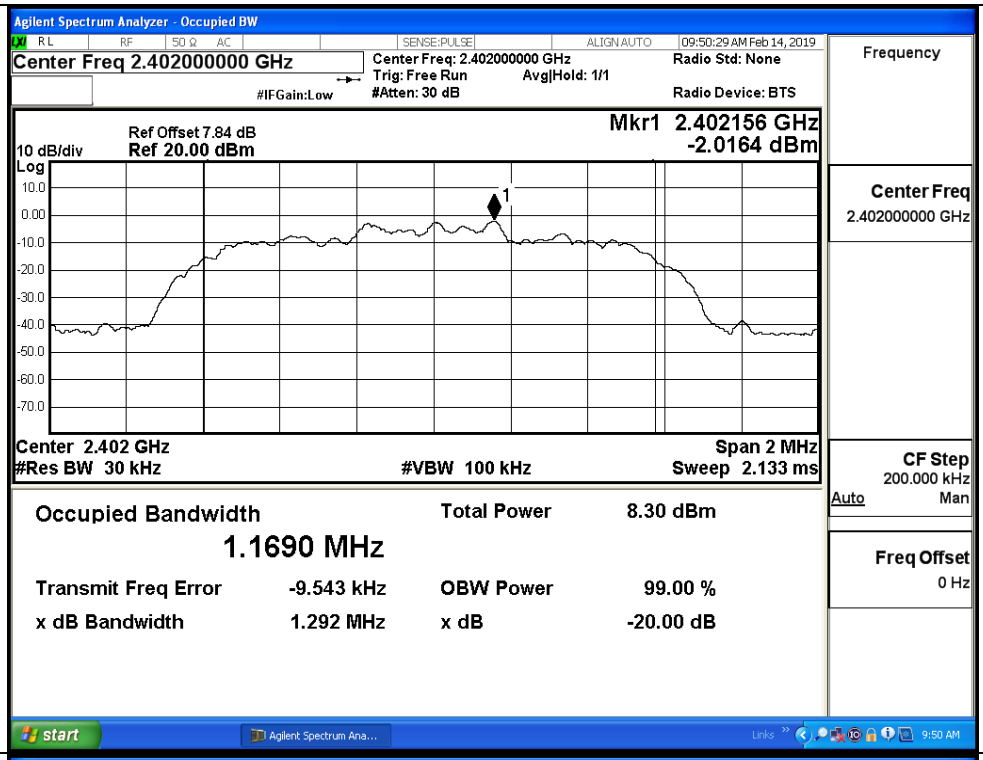
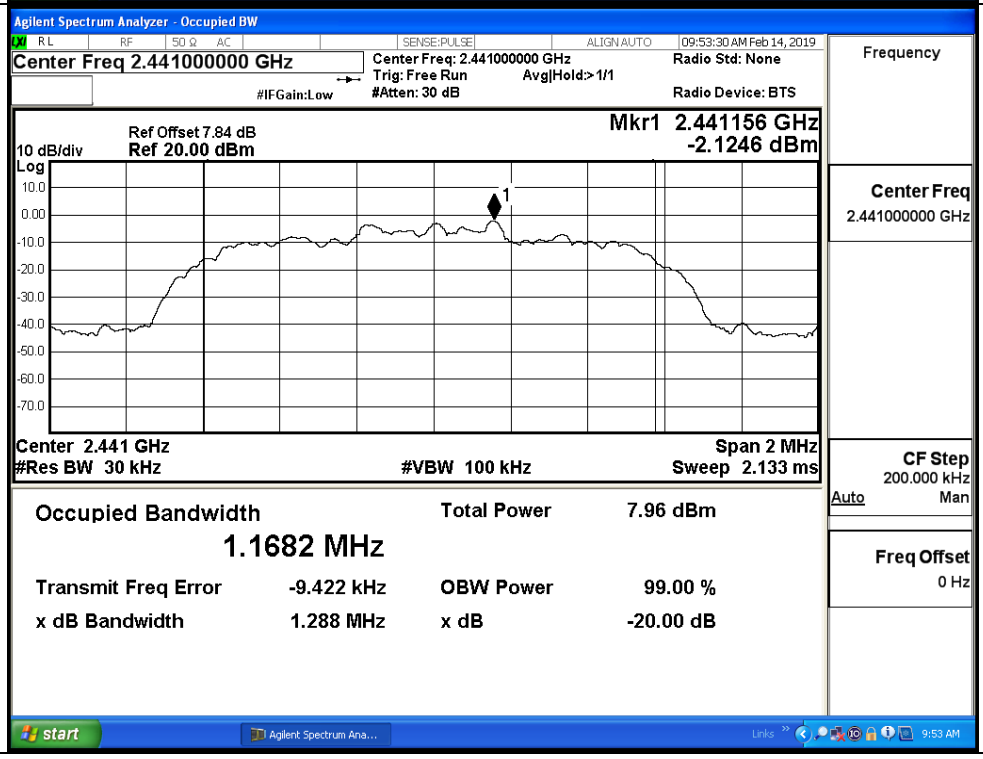
Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.037	Not Specified	PASS
	MCH	1.039	Not Specified	PASS
	HCH	1.034	Not Specified	PASS
π/4DQPSK	LCH	1.292	Not Specified	PASS
	MCH	1.288	Not Specified	PASS
	HCH	1.290	Not Specified	PASS
8DPSK	LCH	1.299	Not Specified	PASS
	MCH	1.295	Not Specified	PASS
	HCH	1.296	Not Specified	PASS

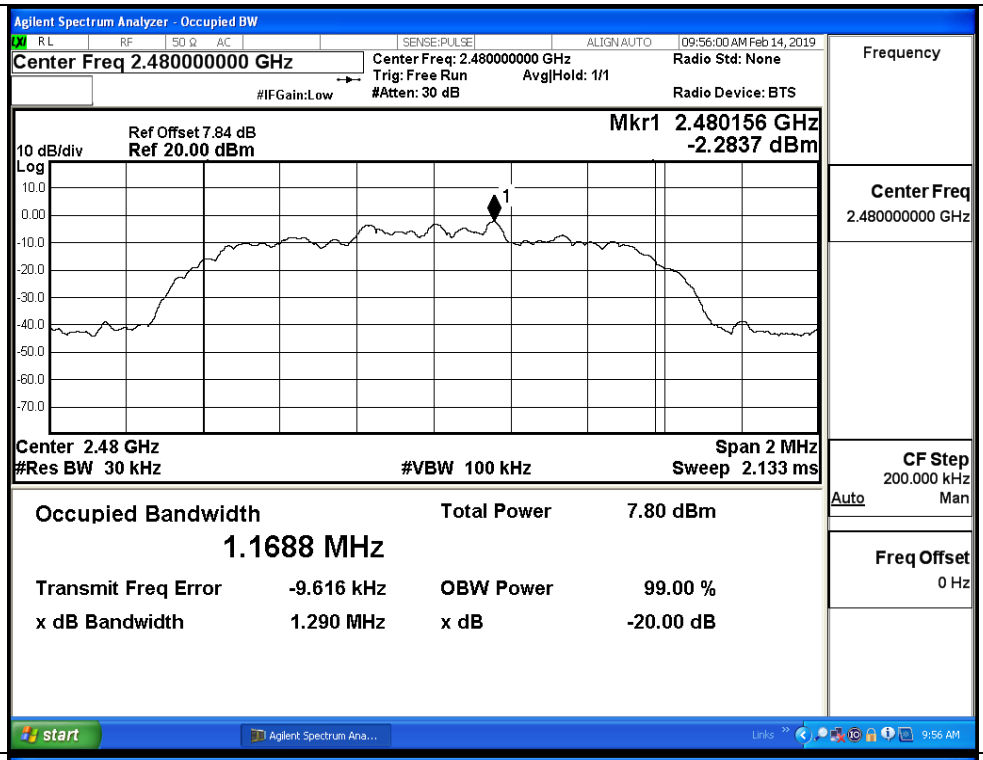
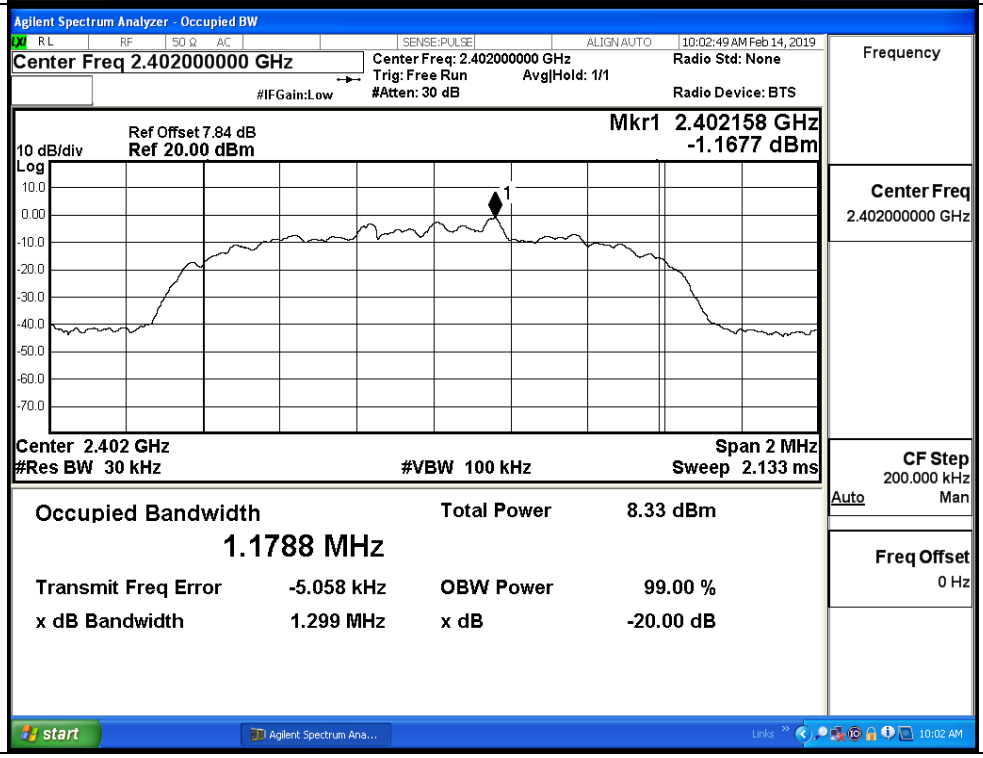
Test Graphs

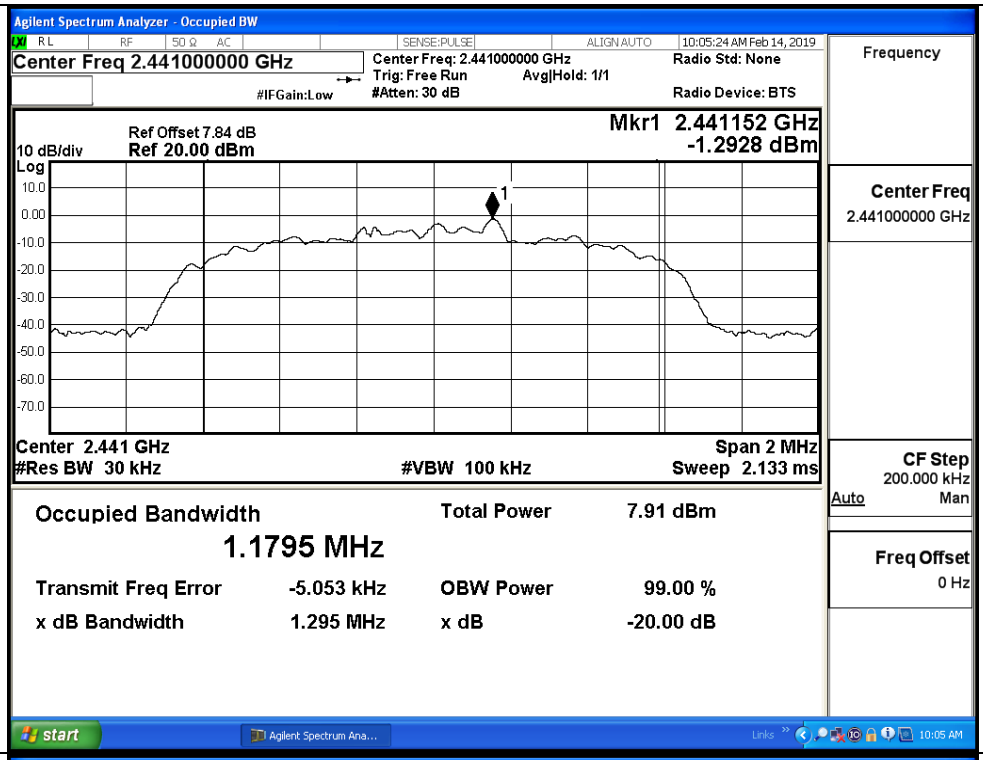
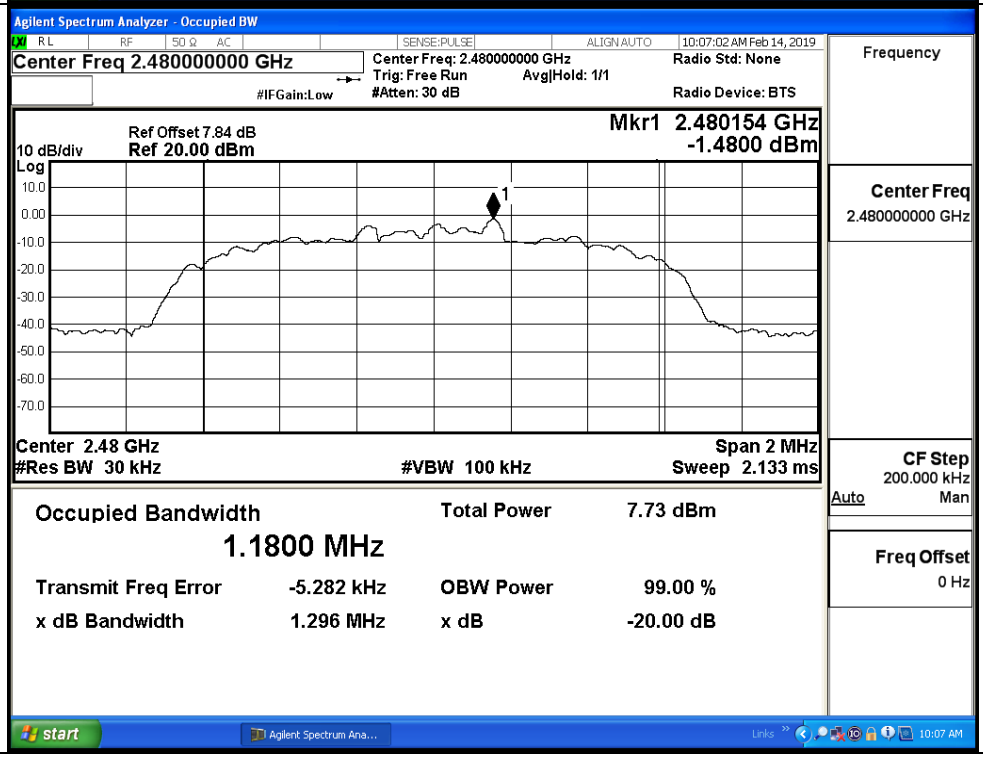
GFSK/LCH



GFSK/MCH	
GFSK/HCH	

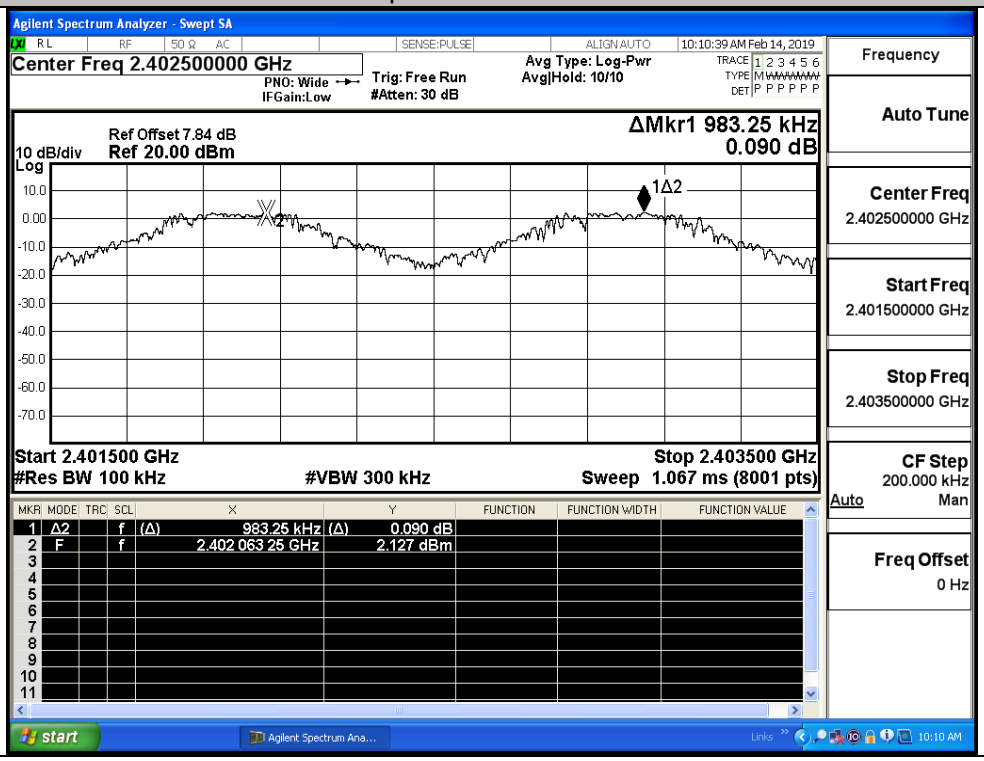
π/4DQPSK/LCH	
π/4DQPSK/MCH	

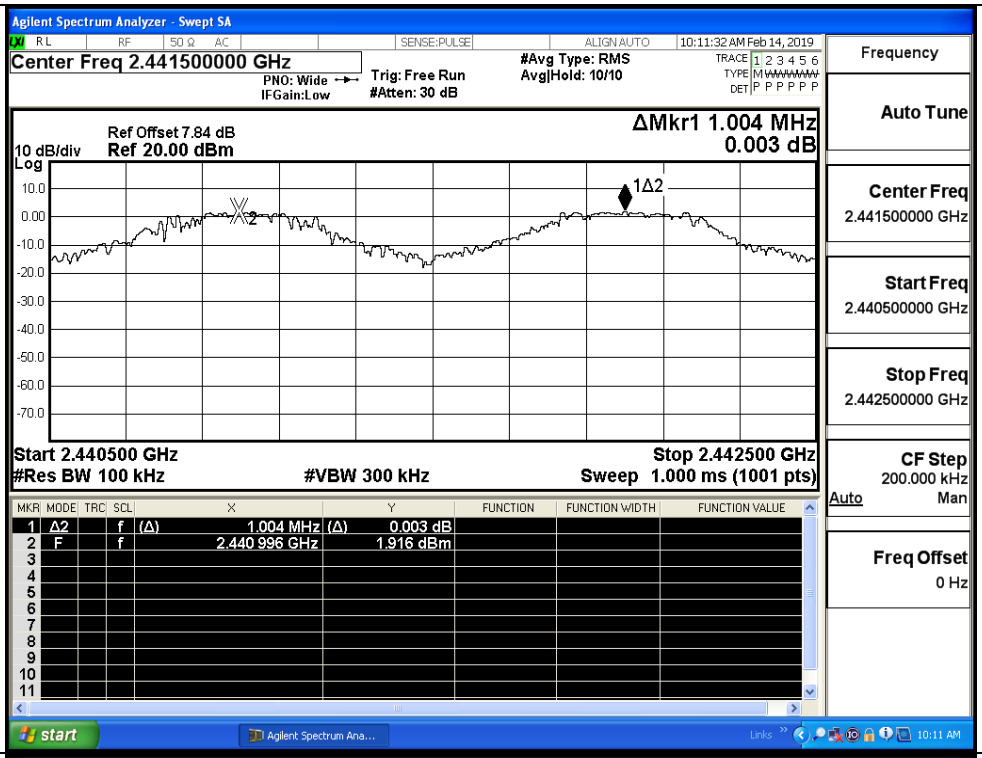
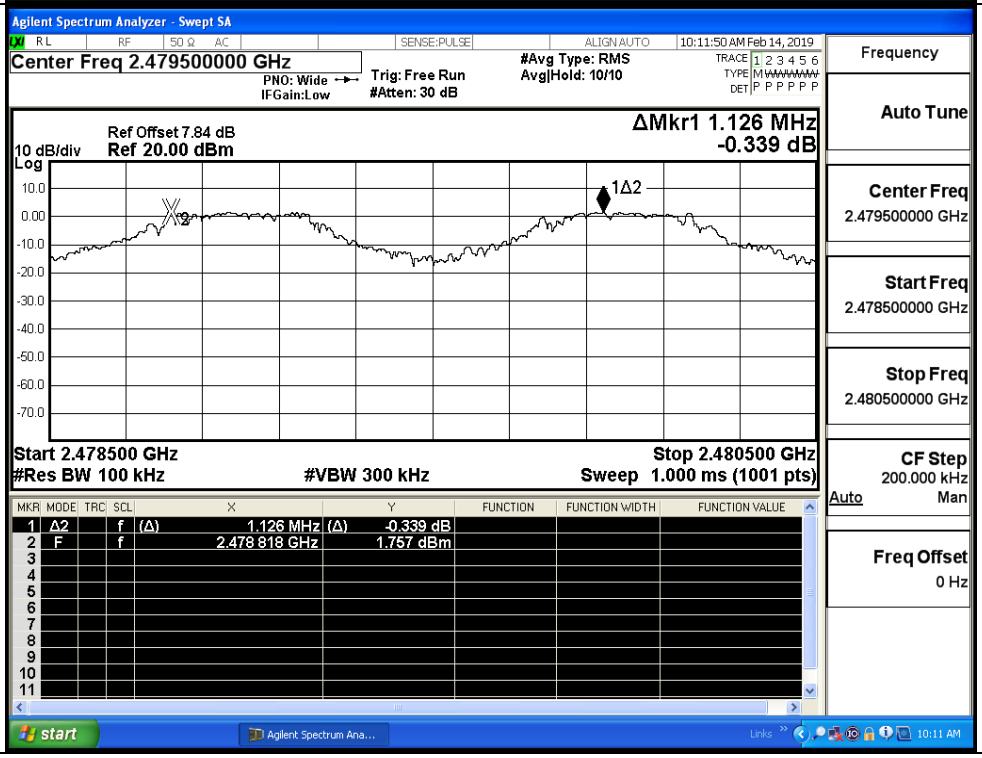
π/4DQPSK/HCH	
8DPSK/LCH	

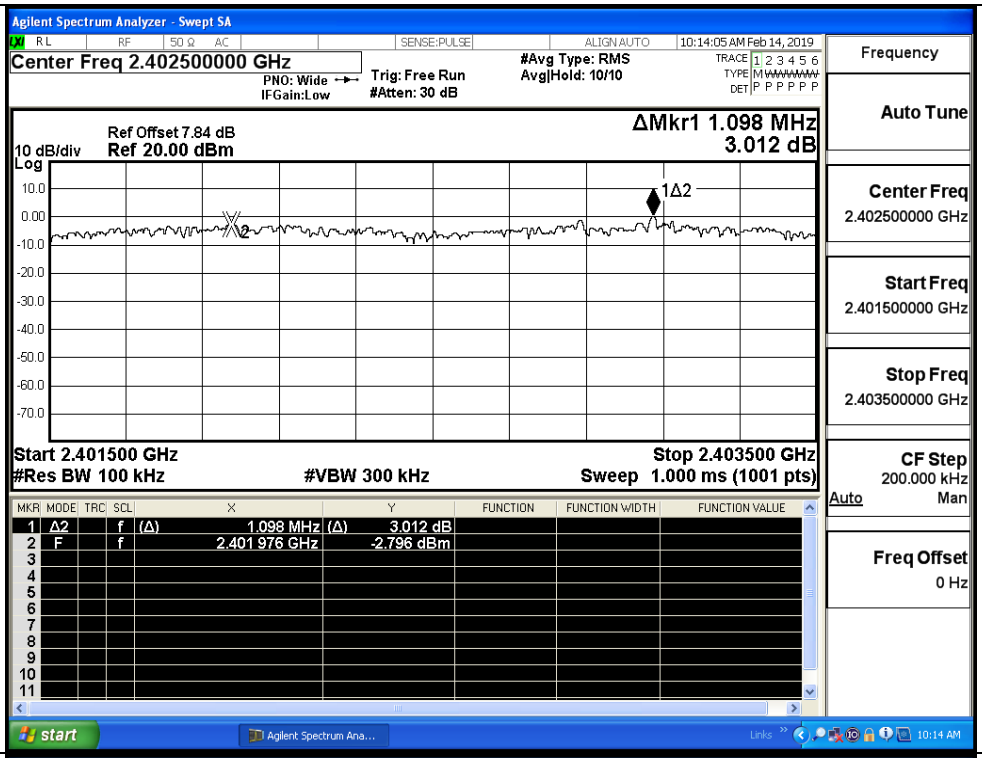
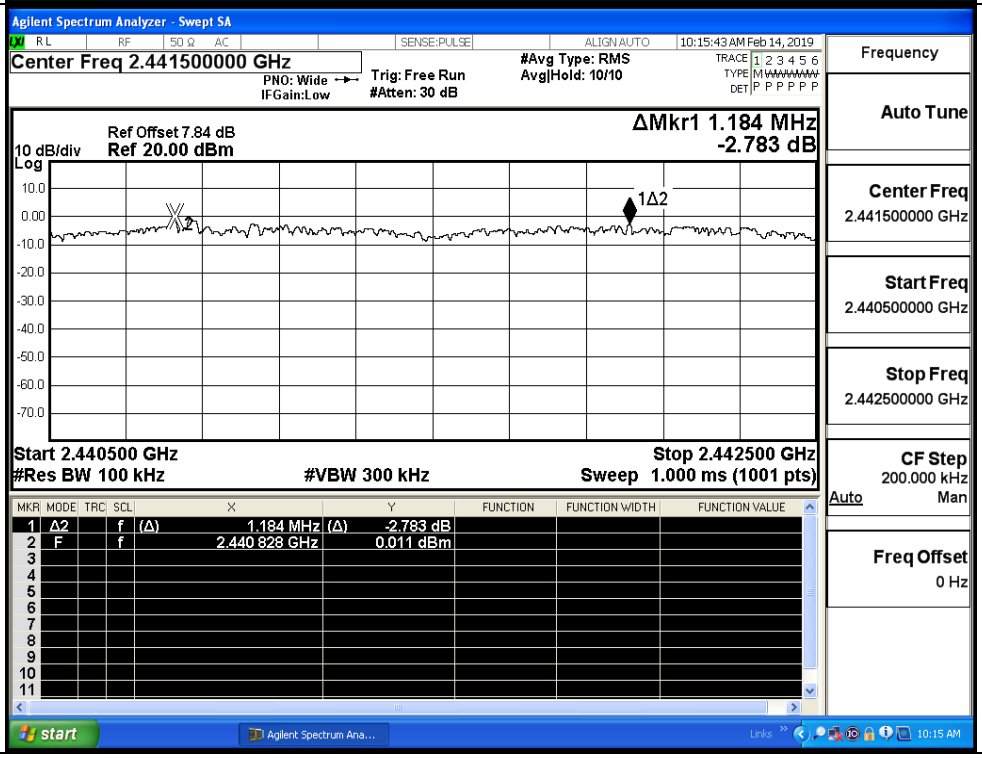
8DPSK/MCH	
8DPSK/HCH	

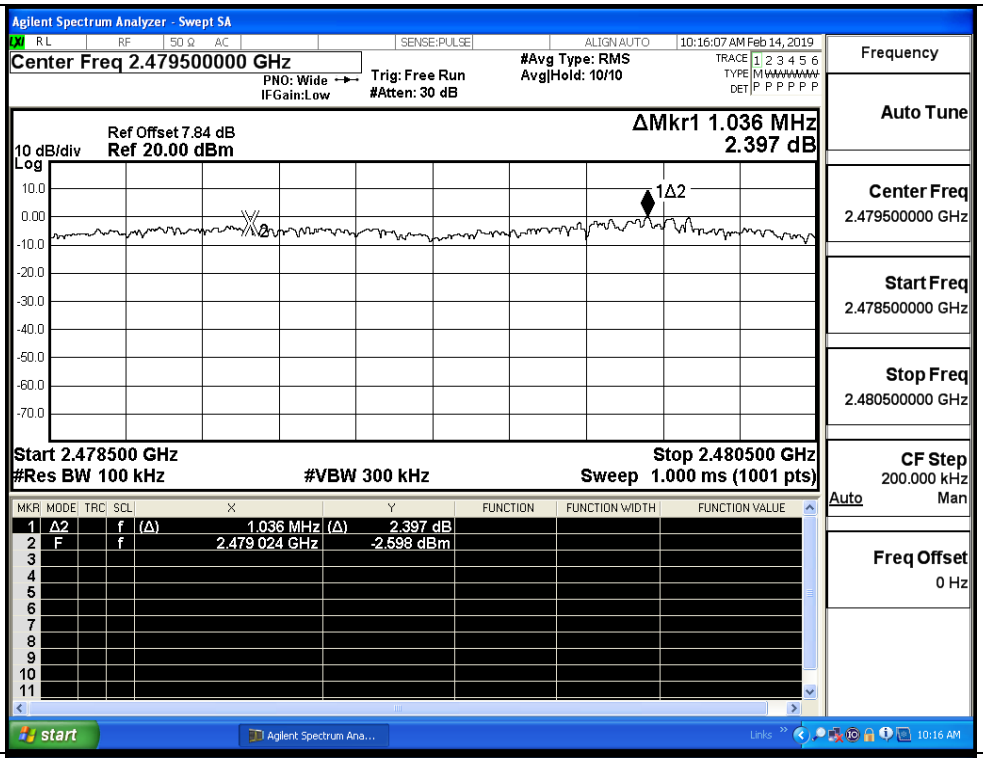
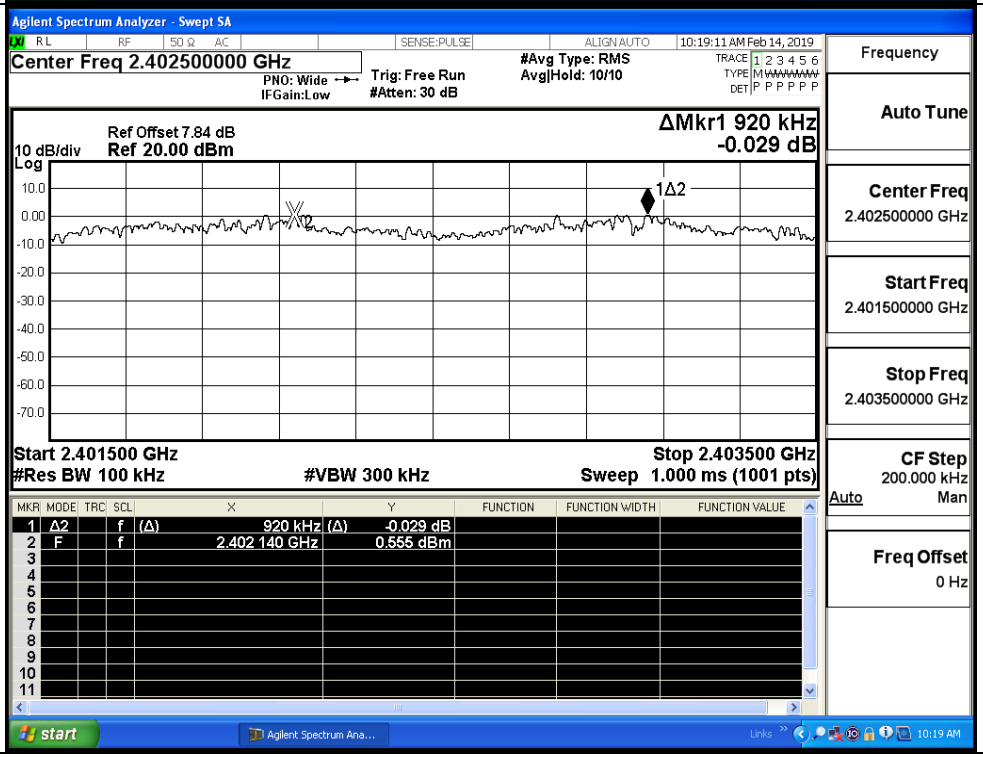
A.3 Carrier Frequency Separation

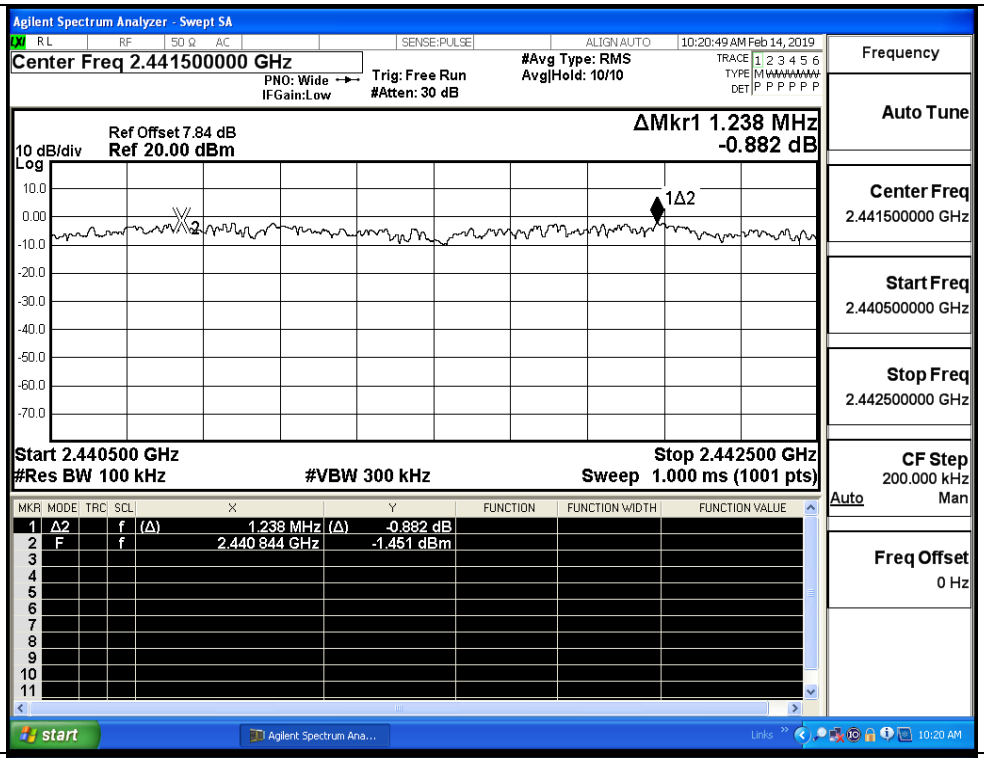
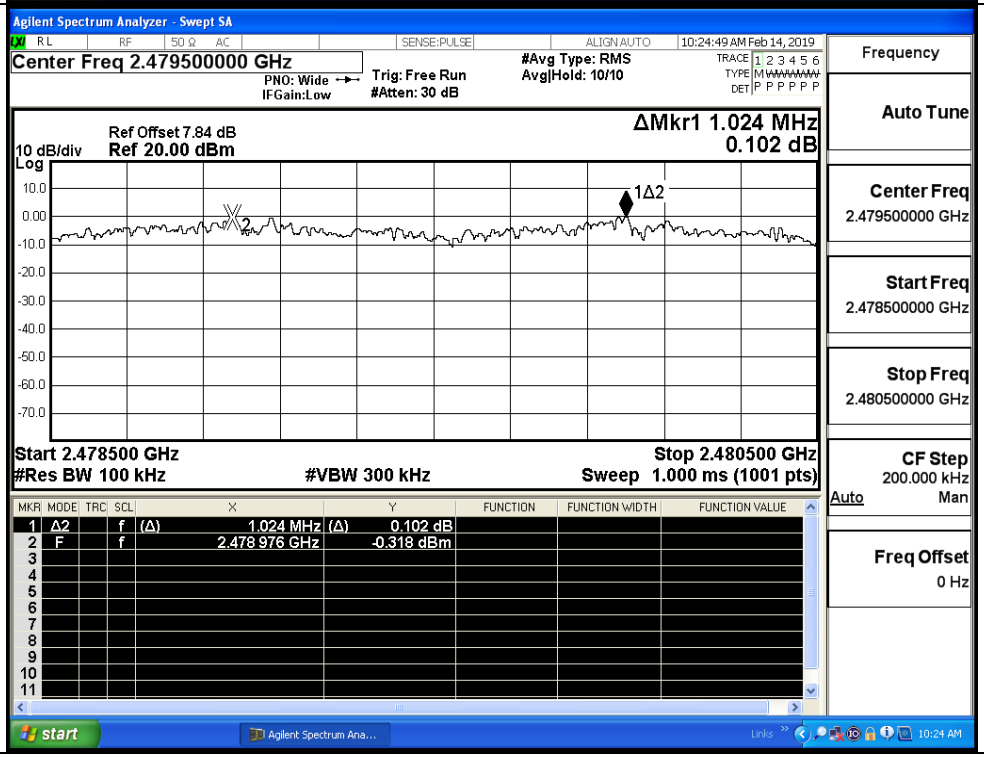
Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.983	0.693	PASS
	MCH	1.004	0.693	PASS
	HCH	1.126	0.693	PASS
π/4DQPSK	LCH	1.098	0.861	PASS
	MCH	1.184	0.861	PASS
	HCH	1.036	0.861	PASS
8DPSK	LCH	0.920	0.866	PASS
	MCH	1.238	0.866	PASS
	HCH	1.024	0.866	PASS

Test Graphs	
GFSK/LCH	

GFSK/MCH	
GFSK/HCH	

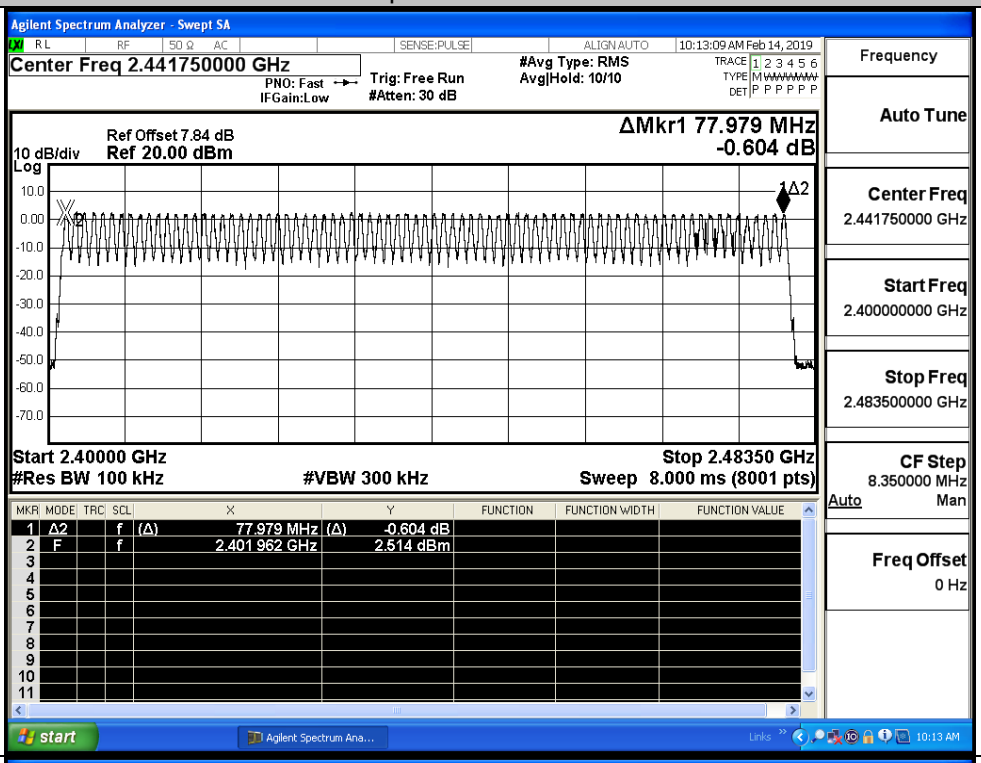
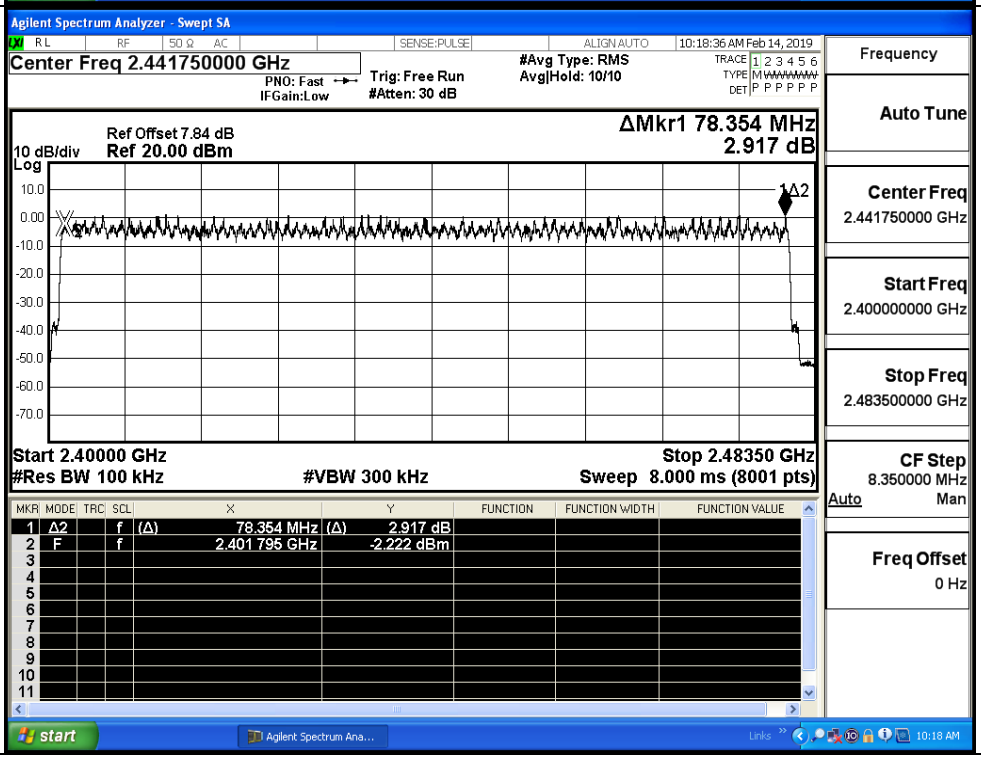
π/4DQPSK/LCH	
π/4DQPSK/MCH	

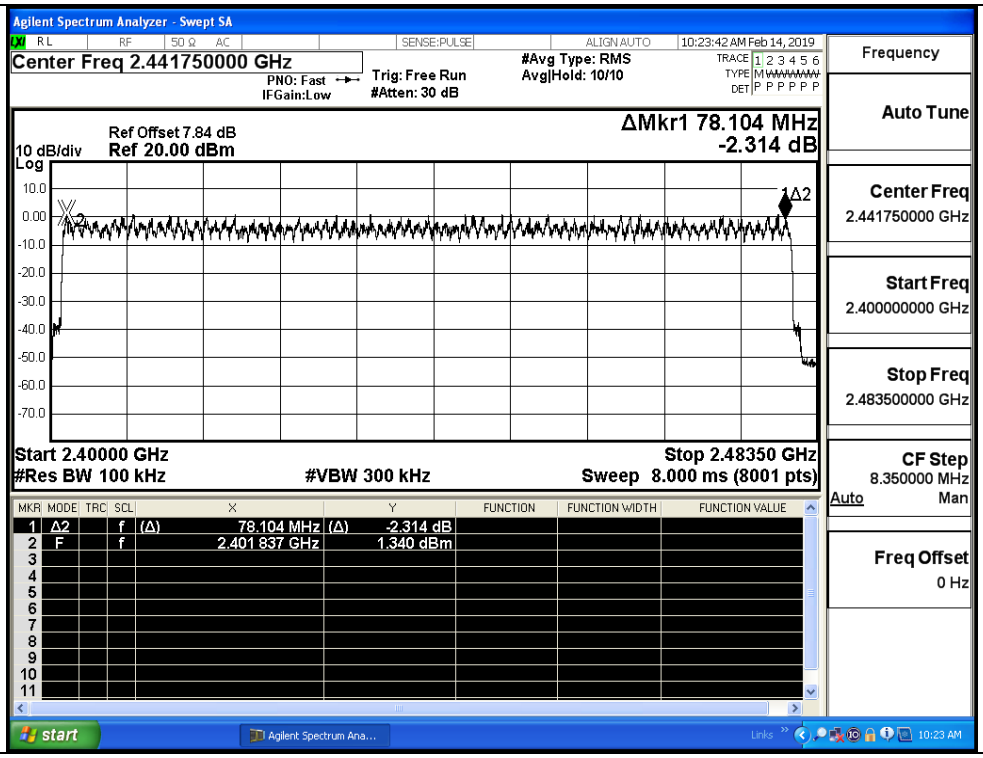
π/4DQPSK/HCH	
8DPSK/LCH	

8DPSK/MCH	
8DPSK/HCH	

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
8DPSK	Hop	79	>=15	PASS

Test Graphs	
GFSK/Hop	
π/4DQPSK/Hop	

8DPSK/Hop	

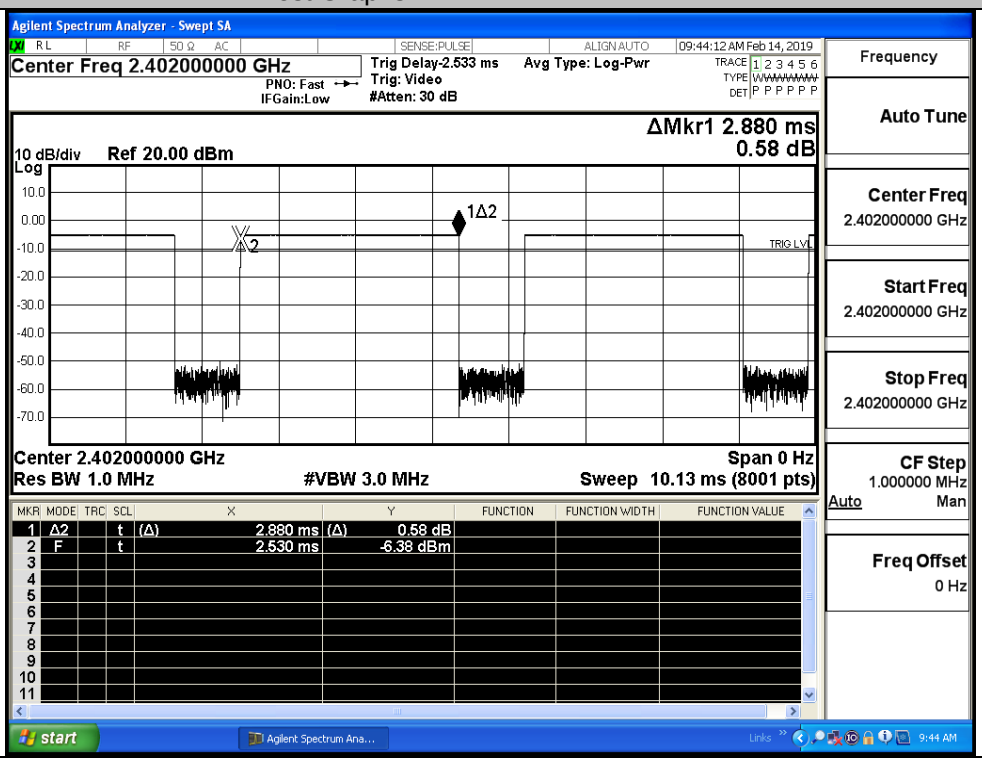
Agilent Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:PULSE
ALIGN AUTO
10:23:42 AM Feb 14, 2019
Center Freq 2.441750000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 10/10
TRACE 1 2 3 4 5 6
TYPE M
DET P P P P P
Ref Offset 7.84 dB
10 dB/div
Log
Ref 20.00 dBm
ΔMkr1 78.104 MHz
-2.314 dB
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
1Δ2
Start 2.40000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.48350 GHz
Sweep 8.000 ms (8001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 Δ2 f (Δ) 78.104 MHz (Δ) -2.314 dB
2 F f 2.401 837 GHz 1.340 dBm
Frequency
Auto Tune
Center Freq
2.441750000 GHz
Start Freq
2.400000000 GHz
Stop Freq
2.483500000 GHz
CF Step
8.350000 MHz
Auto
Man
Freq Offset
0 Hz
start
Agilent Spectrum Ana...
Links
10:23 AM

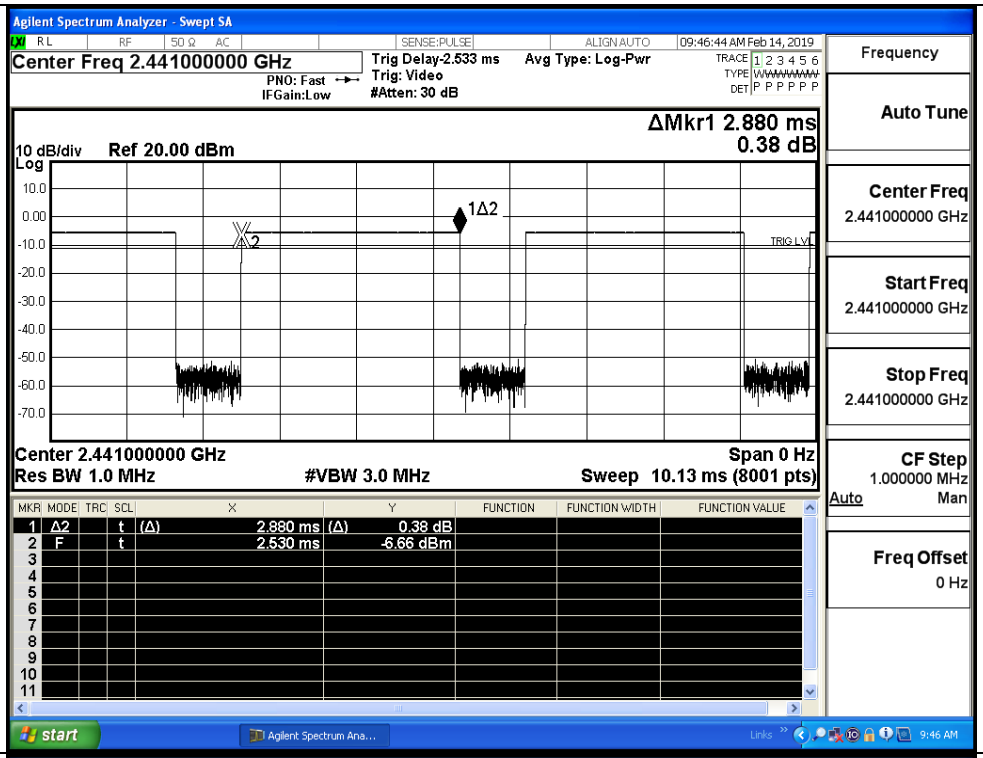
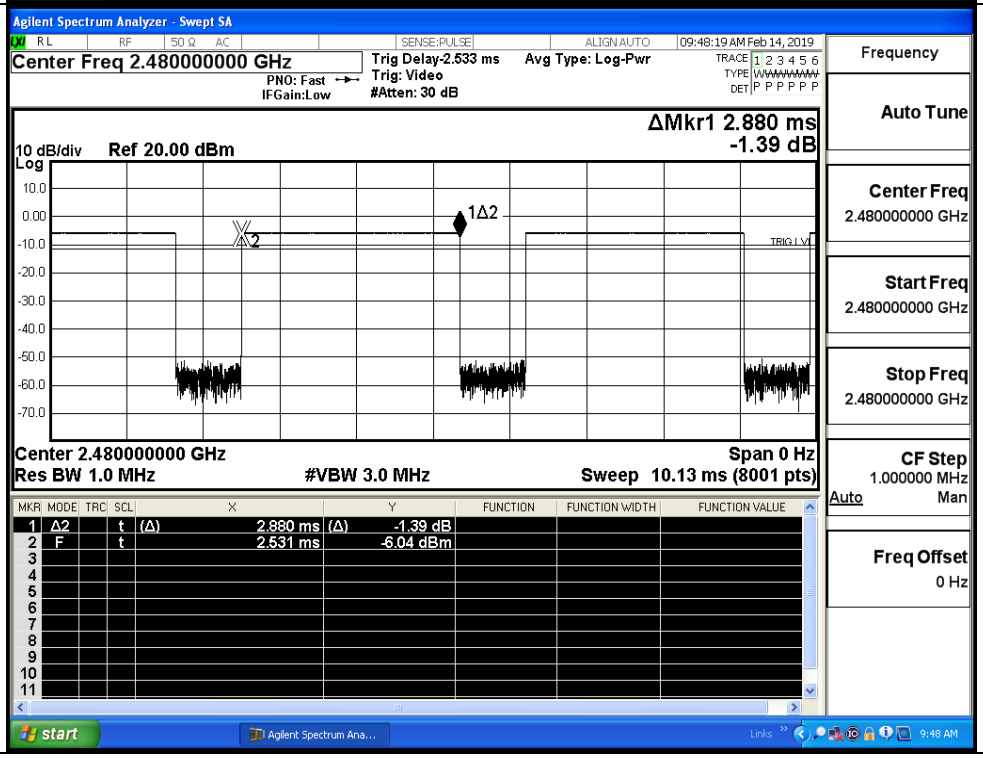
A.5 Dwell Time

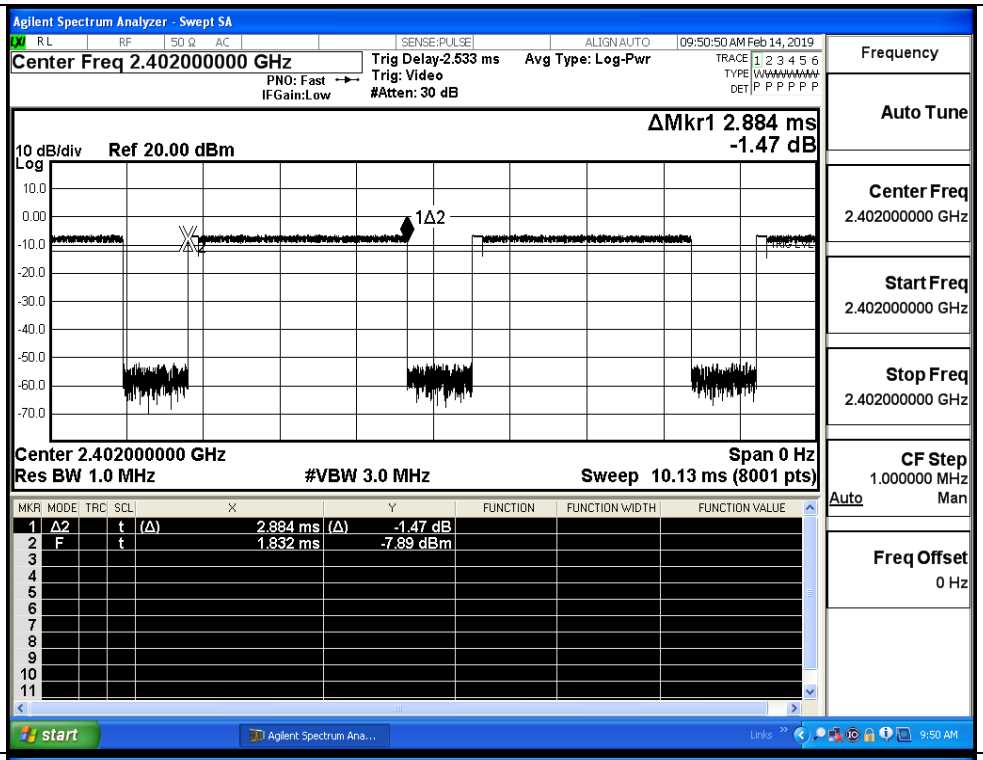
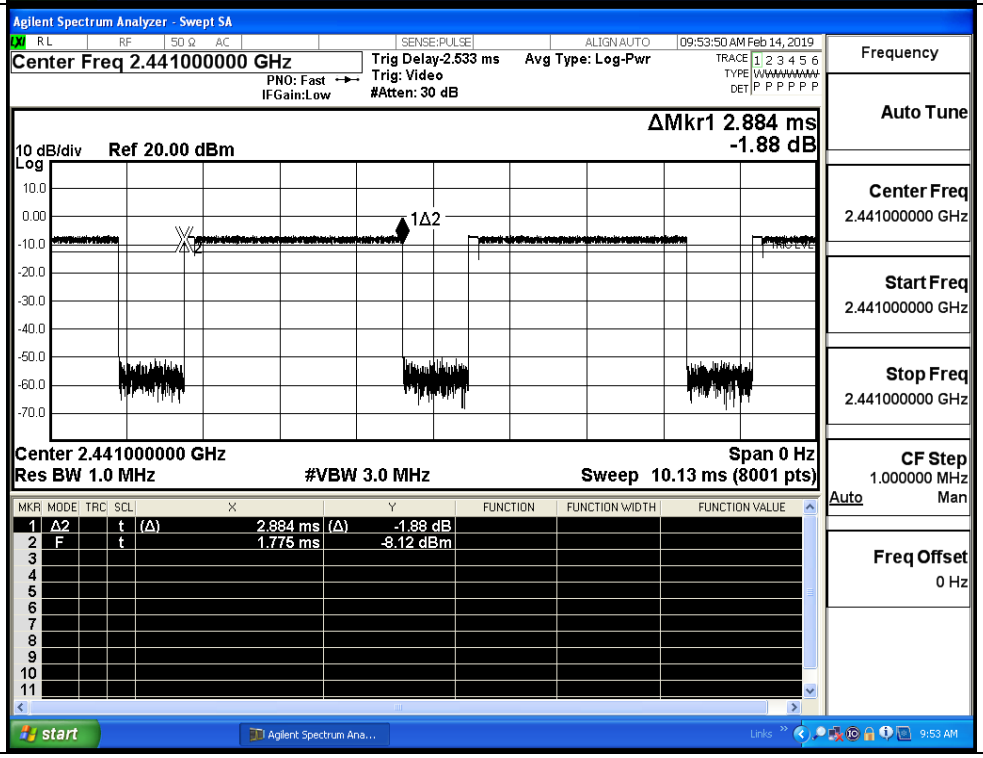
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.88	106.7	0.307	0.4	PASS
	DH5	MCH	2.88	106.7	0.307	0.4	PASS
	DH5	HCH	2.88	106.7	0.307	0.4	PASS
π/4DQPSK	2DH5	LCH	2.88	106.7	0.307	0.4	PASS
	2DH5	MCH	2.88	106.7	0.307	0.4	PASS
	2DH5	HCH	2.88	106.7	0.307	0.4	PASS
8DPSK	3DH5	LCH	2.89	106.7	0.308	0.4	PASS
	3DH5	MCH	2.89	106.7	0.308	0.4	PASS
	3DH5	HCH	2.89	106.7	0.308	0.4	PASS

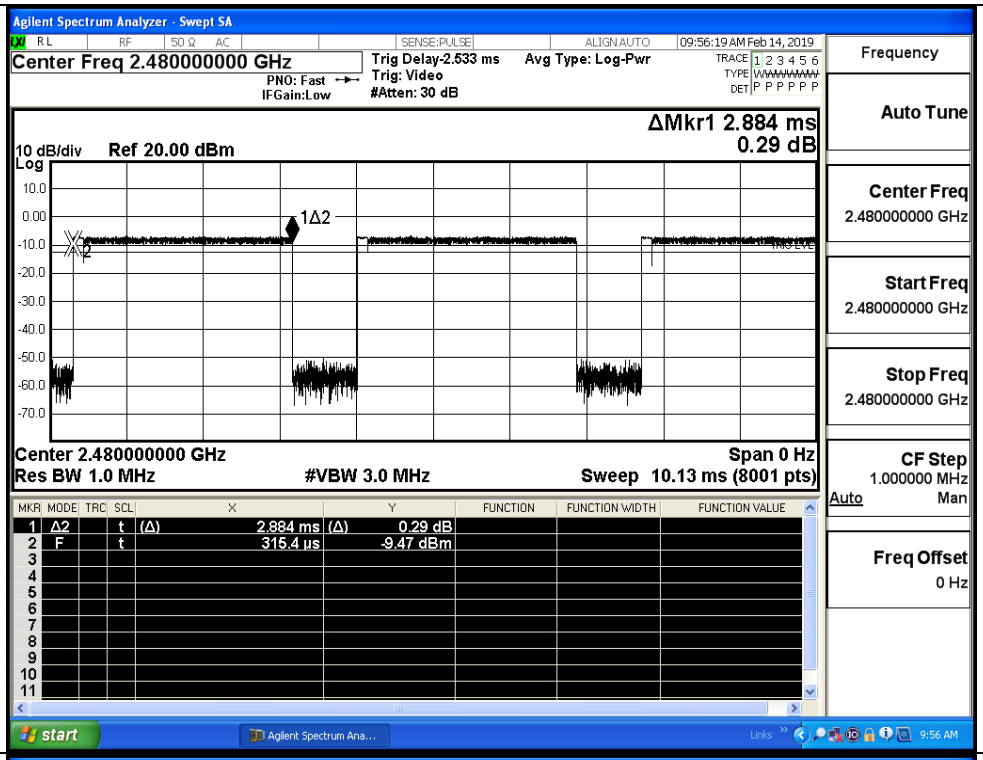
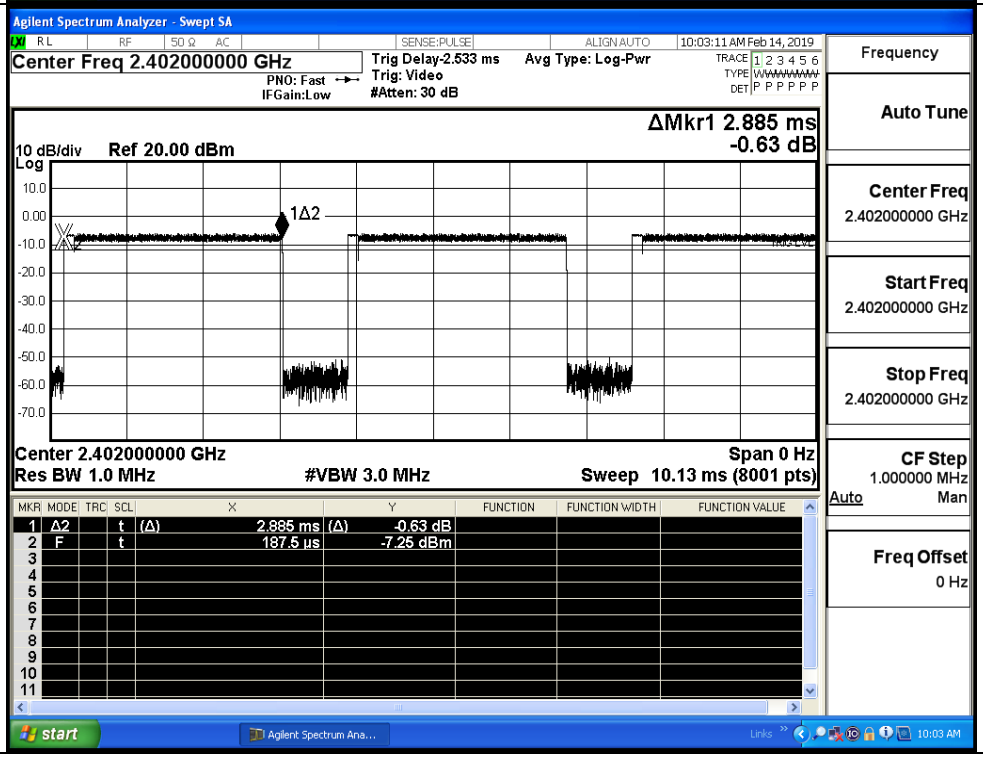
Test Graphs

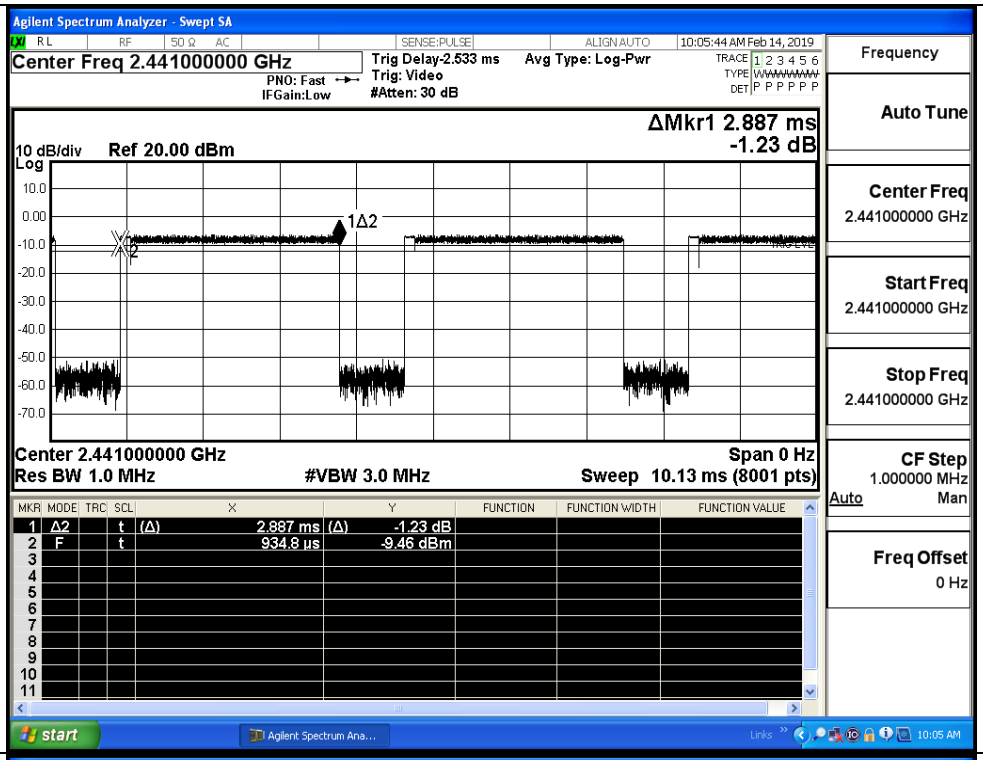
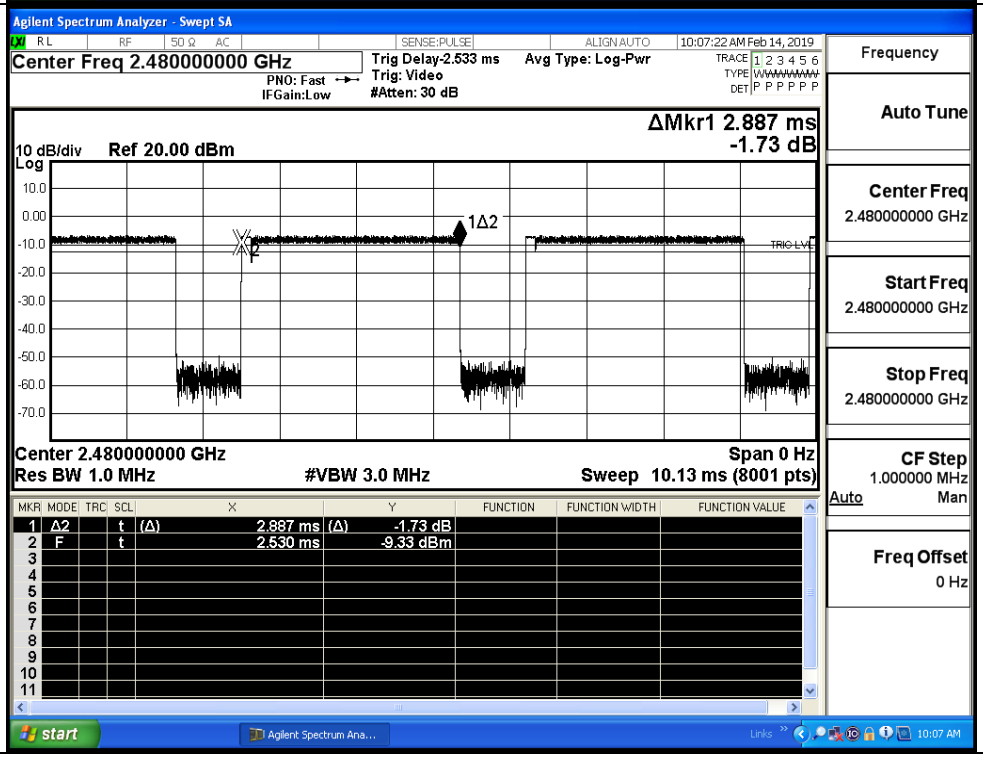
GFSK_DH5/LCH



GFSK_DH5/MCH	
GFSK_DH5/HCH	

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

π/4DQPSK _2DH5/HCH	
8DPSK _3DH5/LCH	

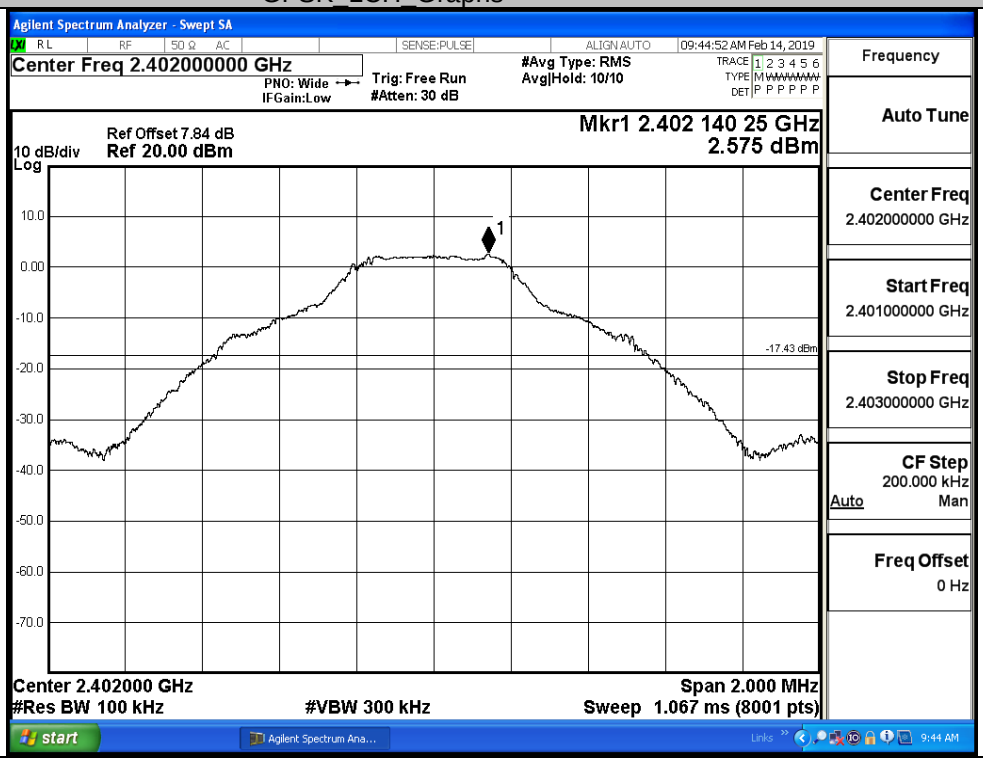
8DPSK _3DH5/MCH	
8DPSK _3DH5/HCH	

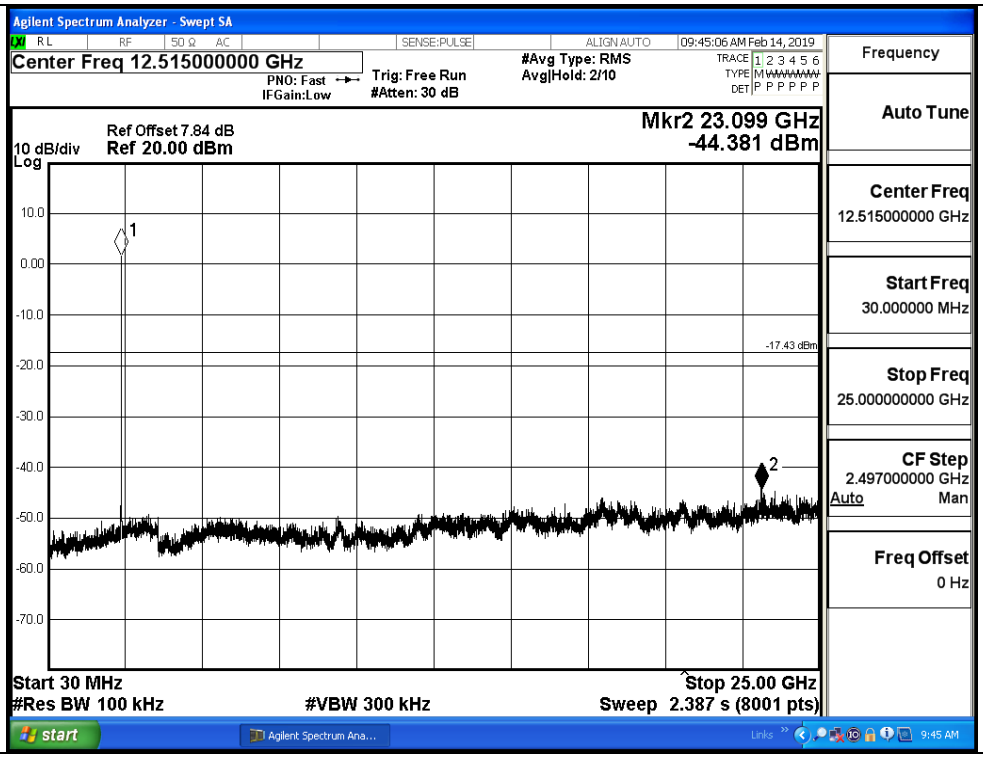
A.6 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2.575	-44.381	-17.425	PASS
	MCH	2.326	-45.324	-17.674	PASS
	HCH	2.035	-44.847	-17.965	PASS
π/4DQPSK	LCH	1.168	-44.722	-18.832	PASS
	MCH	0.536	-45.402	-19.464	PASS
	HCH	0.561	-44.493	-19.439	PASS
8DPSK	LCH	1.273	-45.052	-18.727	PASS
	MCH	0.811	-44.916	-19.189	PASS
	HCH	0.544	-44.277	-19.456	PASS

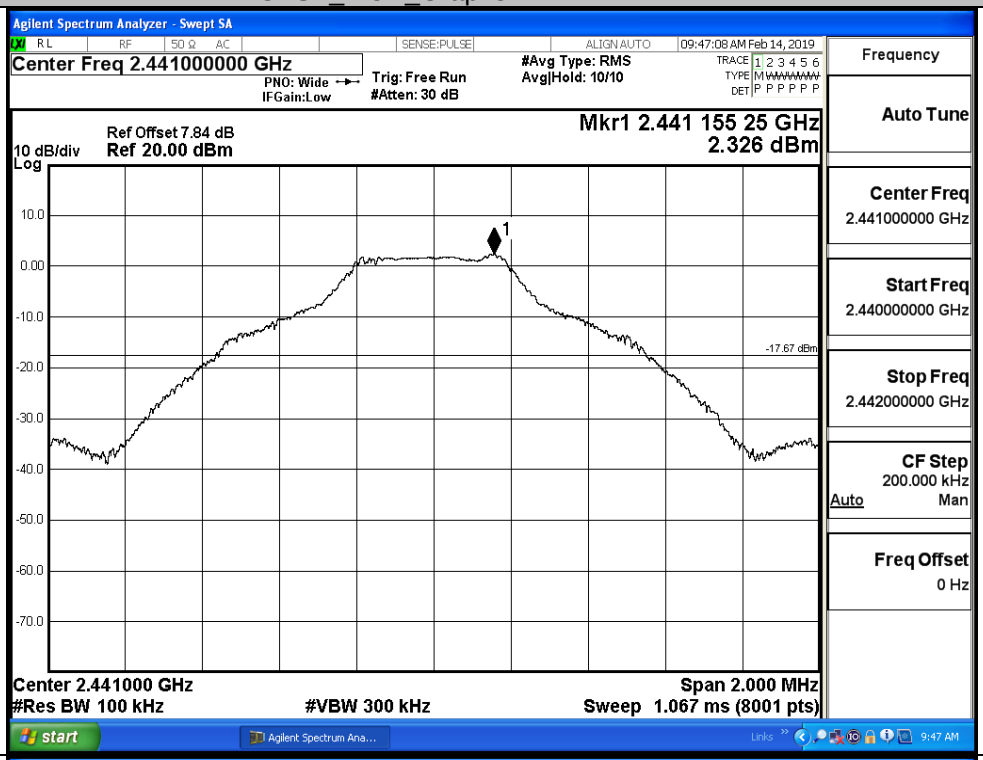
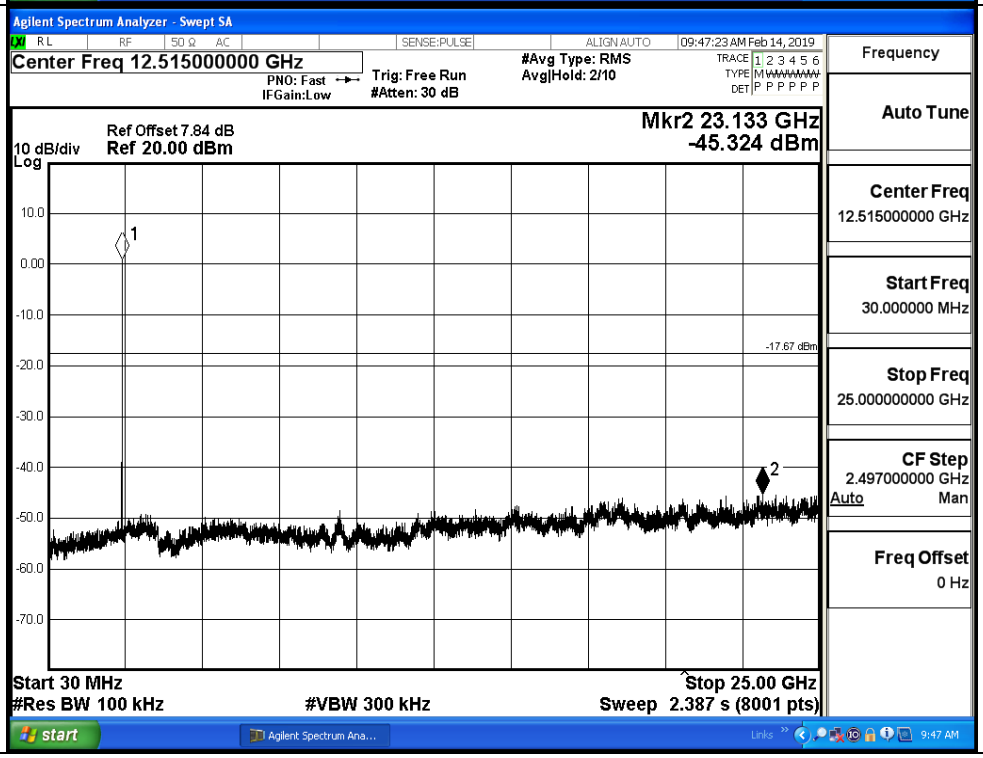
GFSK_LCH_Graphs

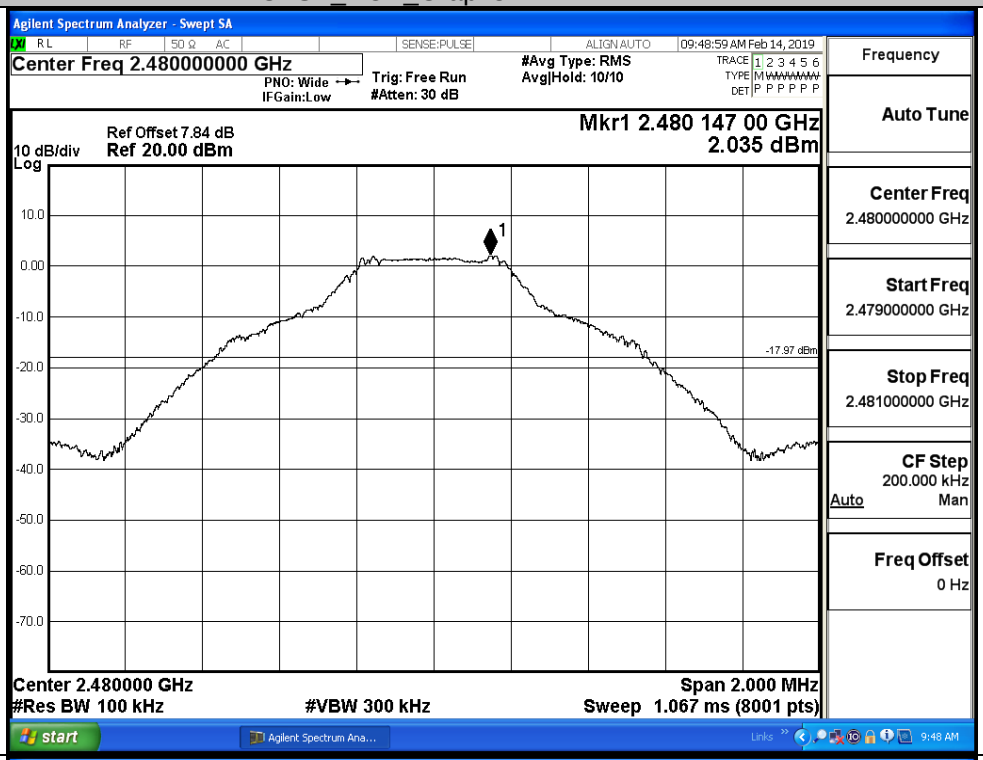
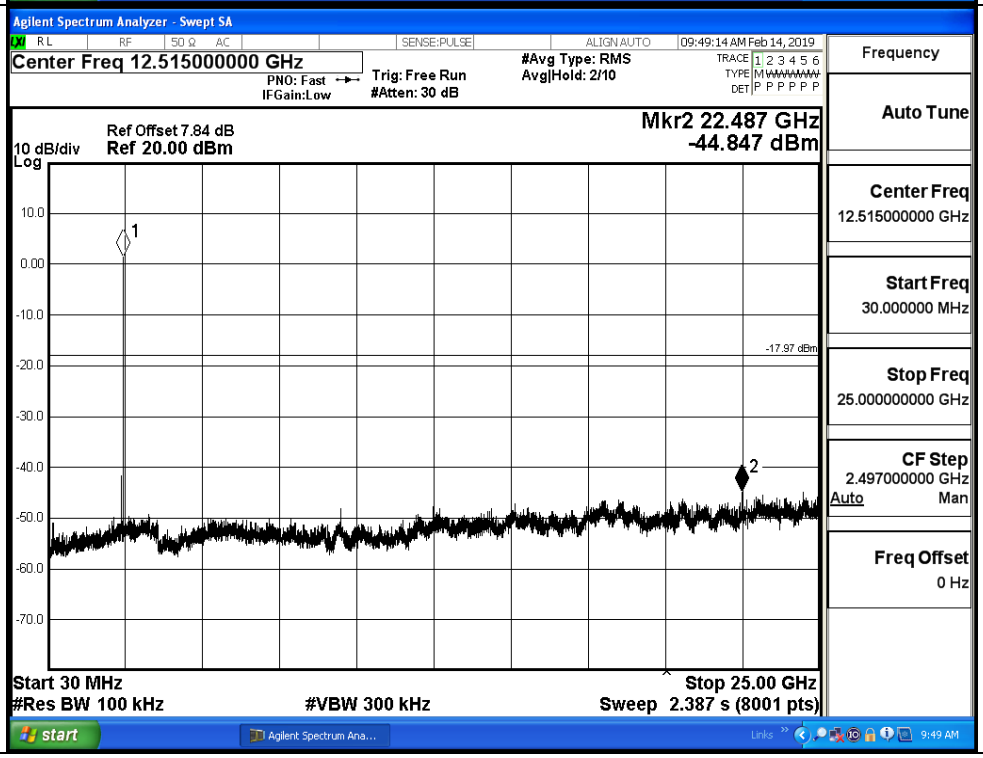
Pref

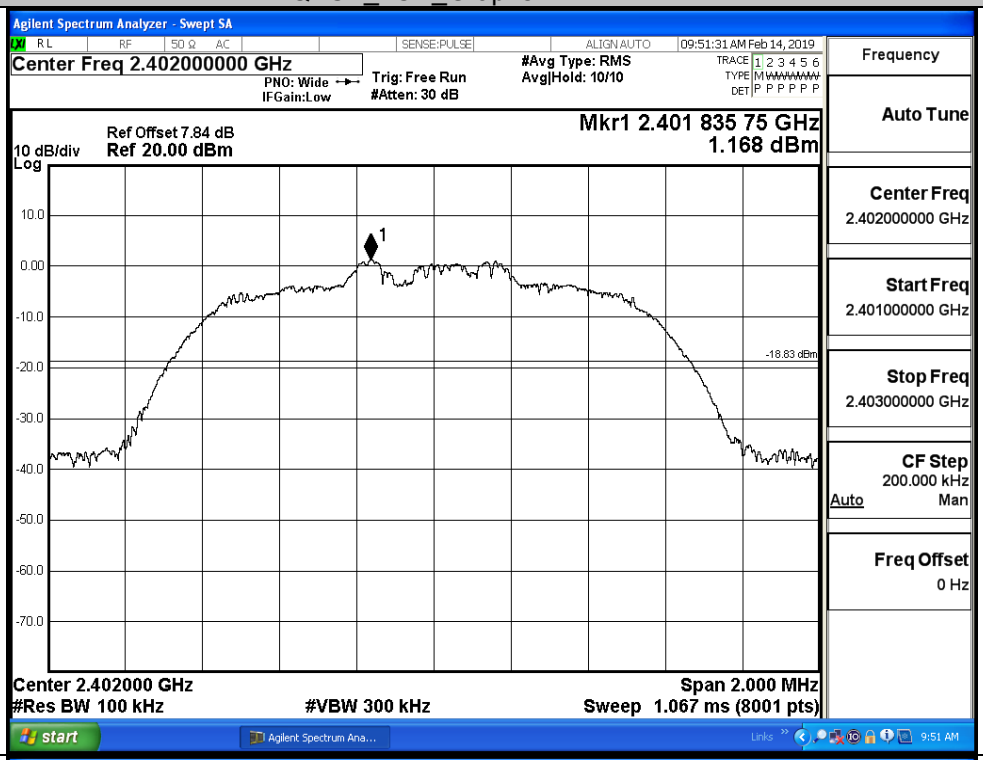
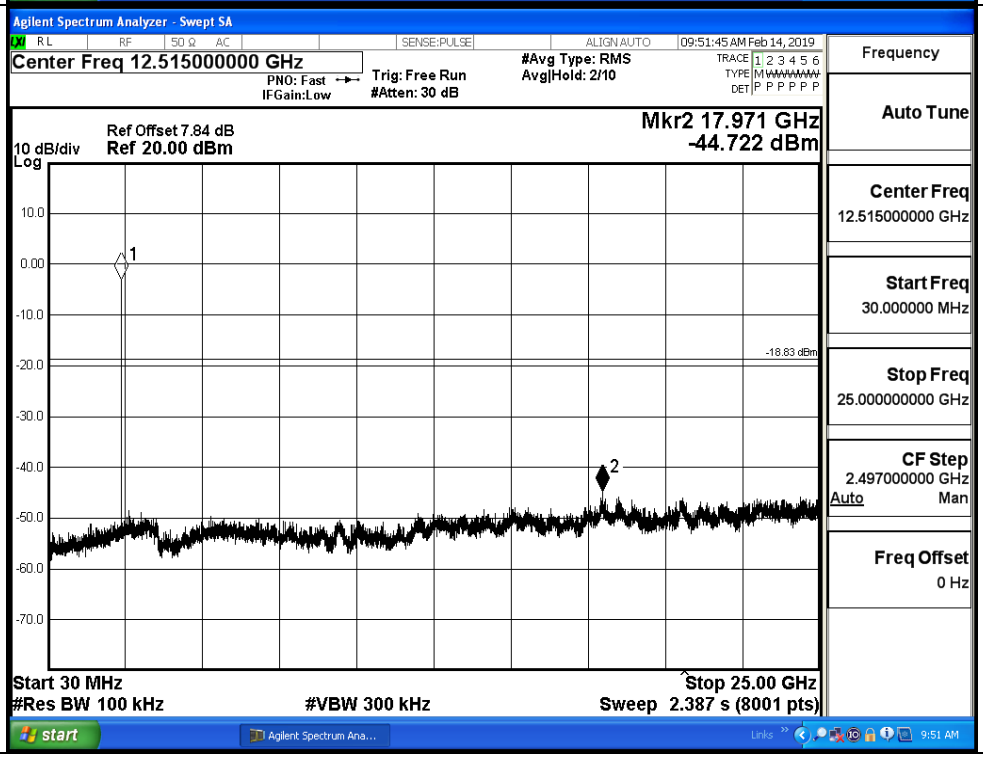


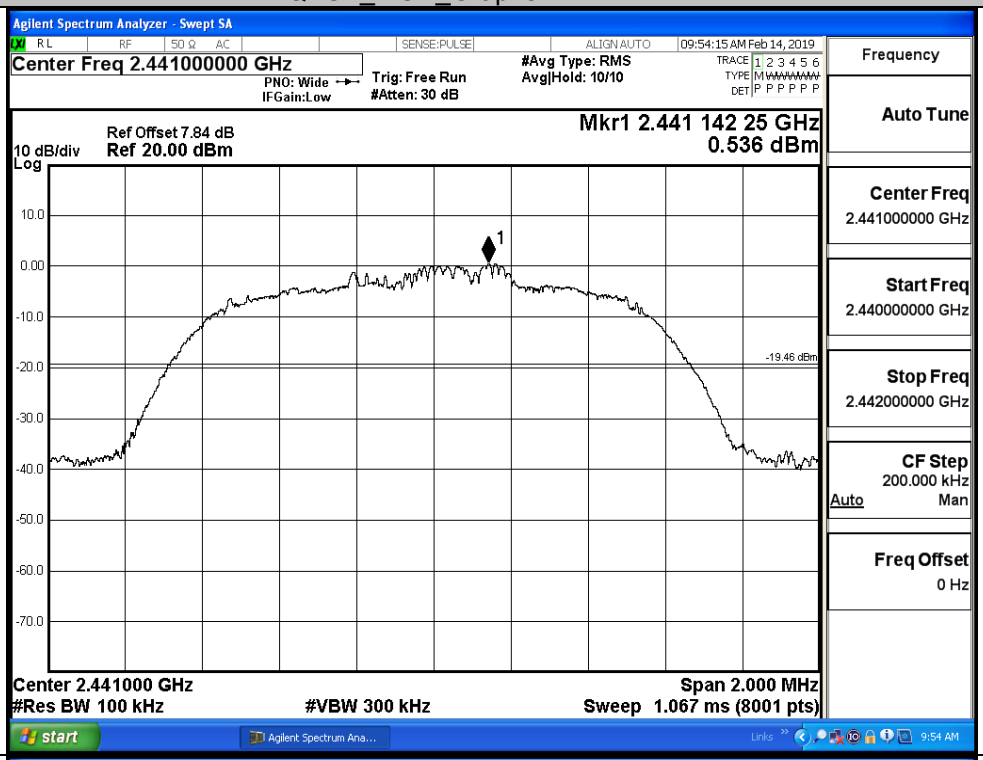
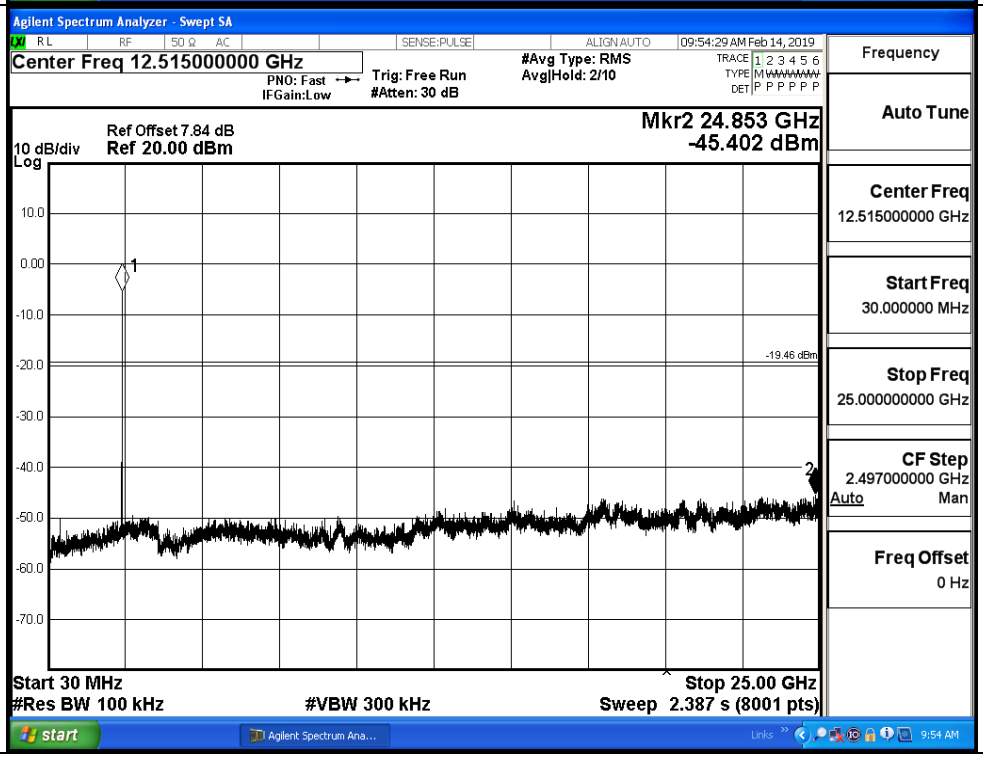
Puw		

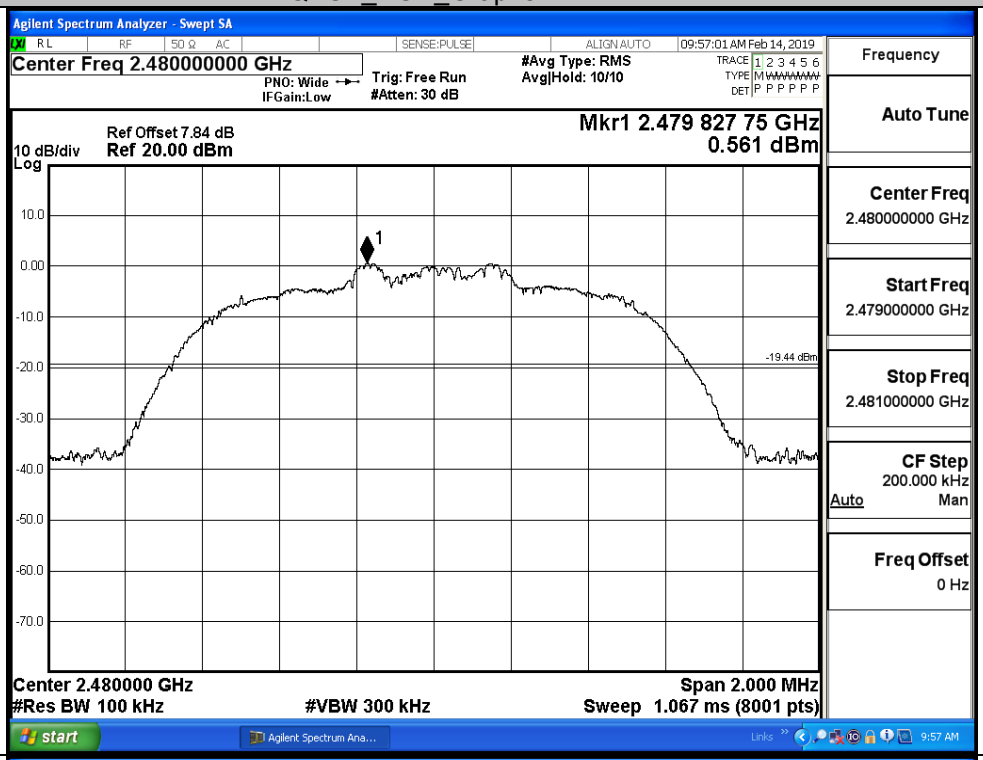
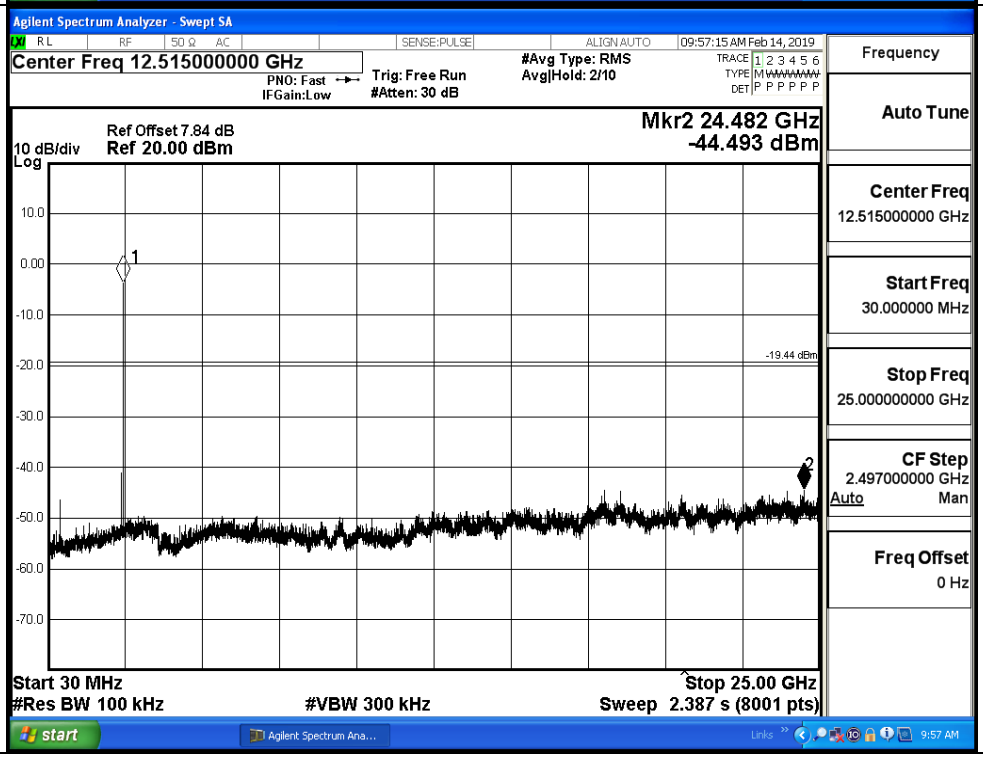
Agilent Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:PULSE
ALIGN AUTO
09:45:06 AM Feb 14, 2019
Center Freq 12.515000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 2/10
TRACE 1 2 3 4 5 6
TYPE M
DET P P P P P
Ref Offset 7.84 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr2 23.099 GHz
-44.381 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-17.43 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
start
Agilent Spectrum Ana...
9:45 AM

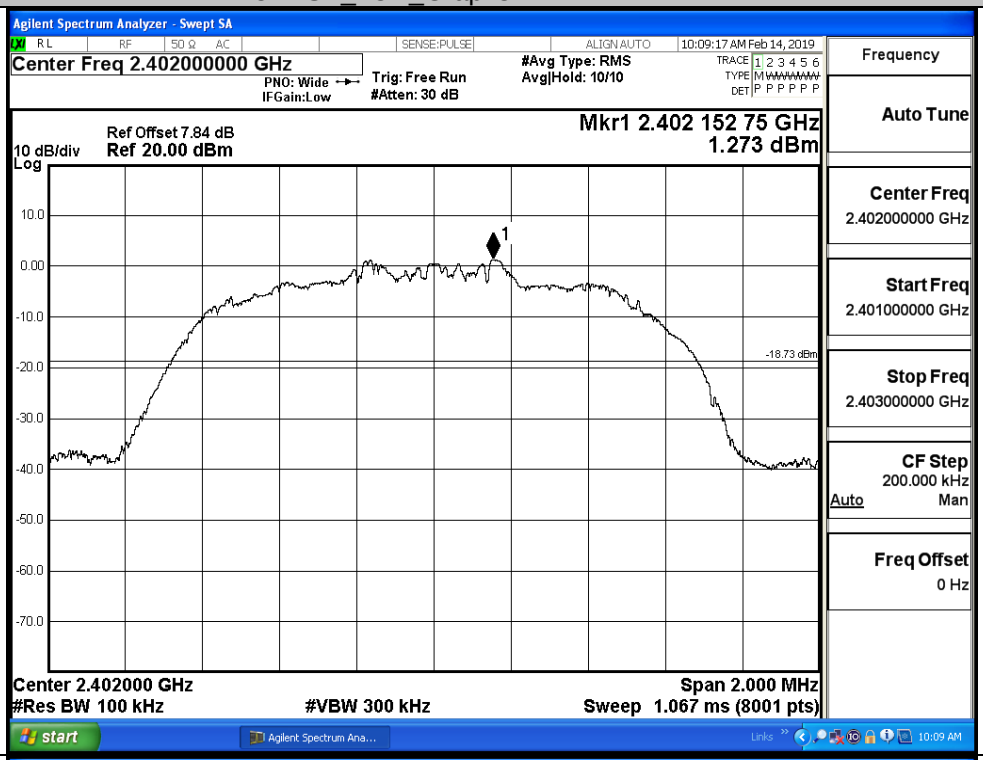
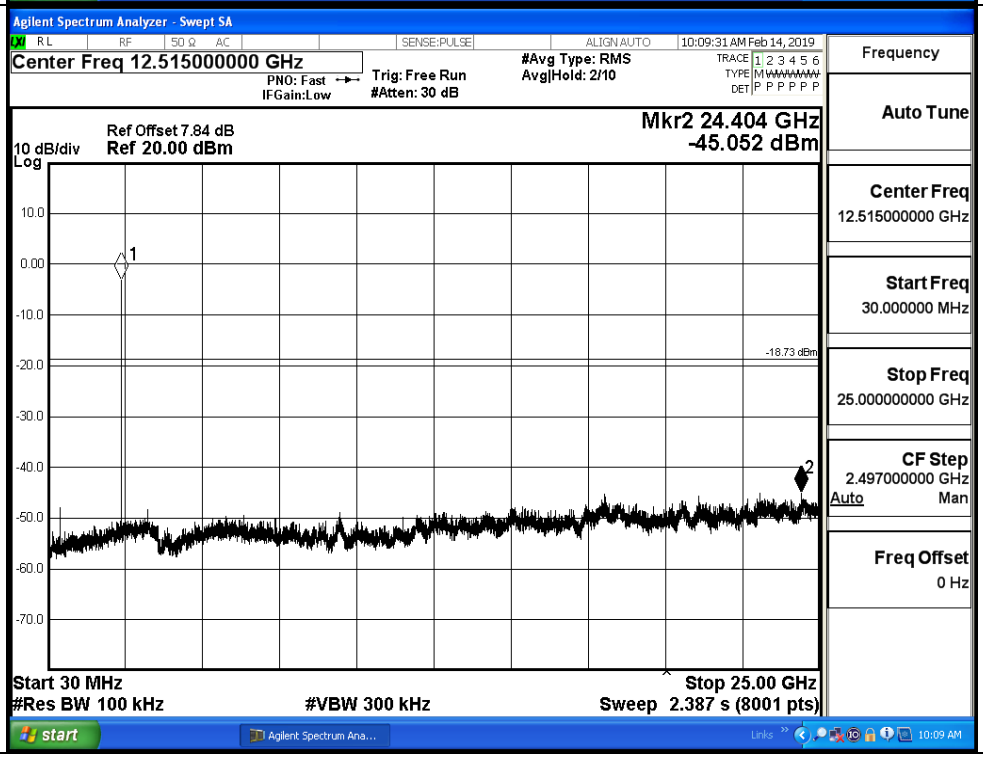
GFSK_MCH_Graphs		
Pref		
Puw		

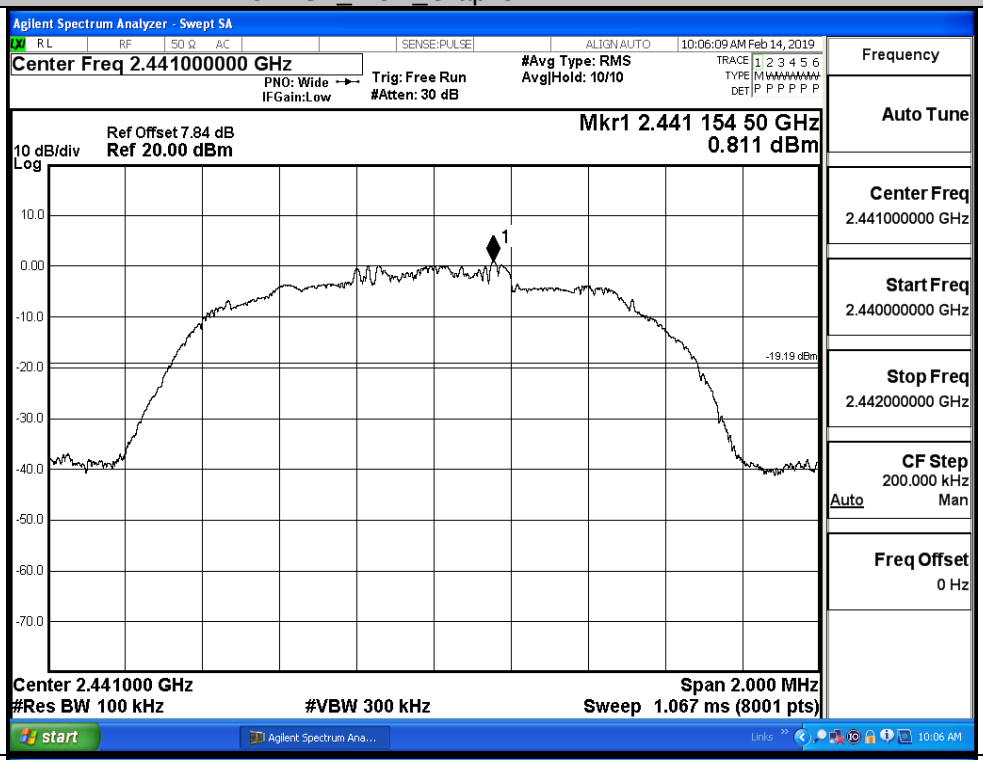
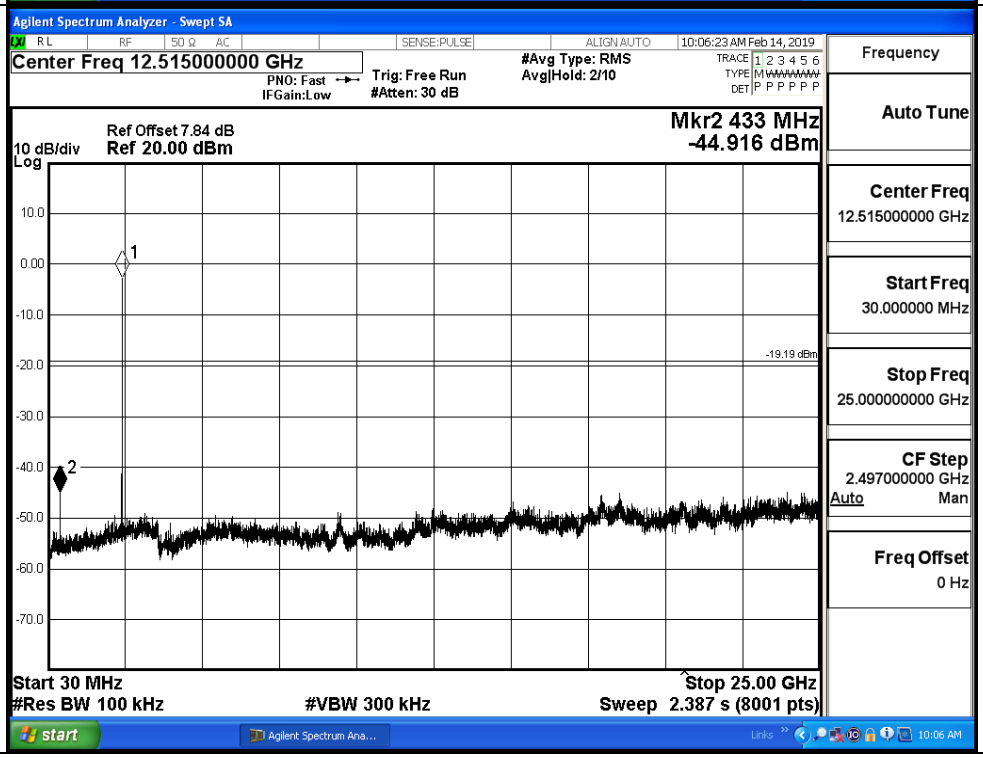
GFSK_HCH_Graphs		
Pref		
Puw		

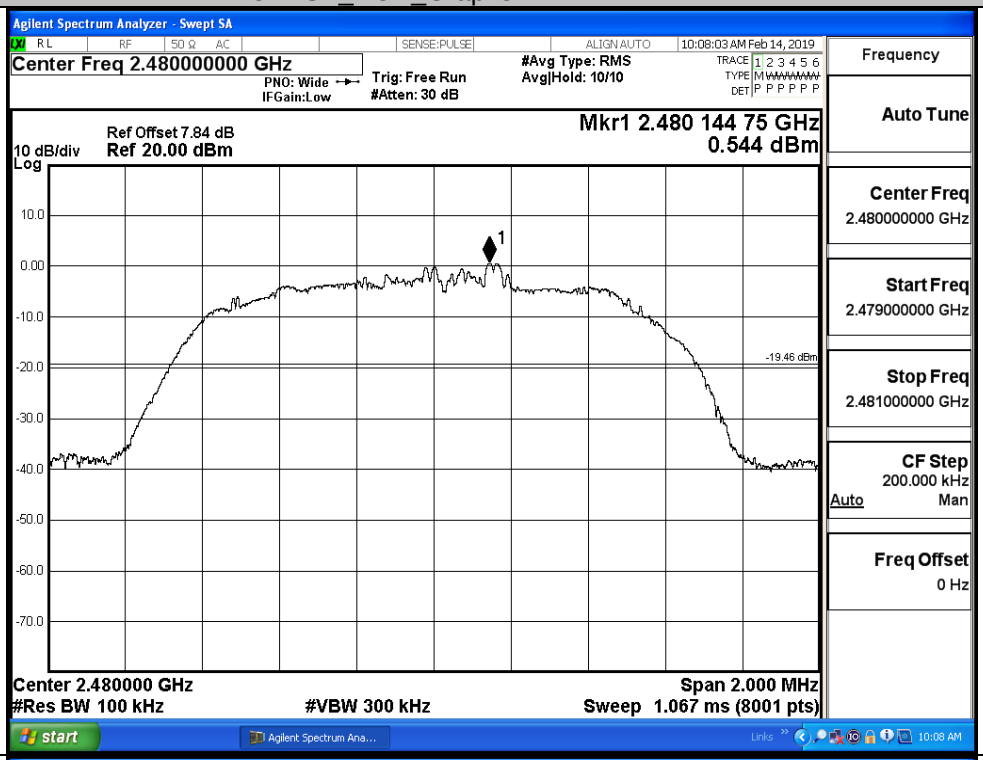
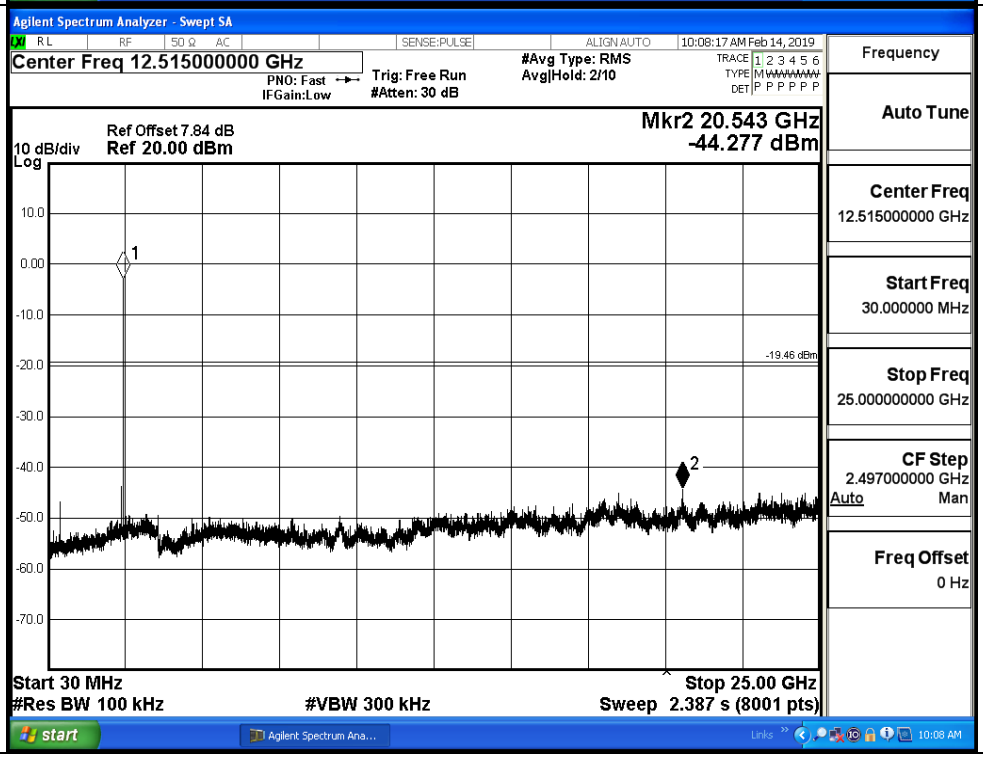
π/4DQPSK_LCH_Graphs		
Pref		
Puw		

π/4DQPSK_MCH_Graphs		
Pref		
Puw		

π/4DQPSK_HCH_Graphs		
Pref		
Puw		

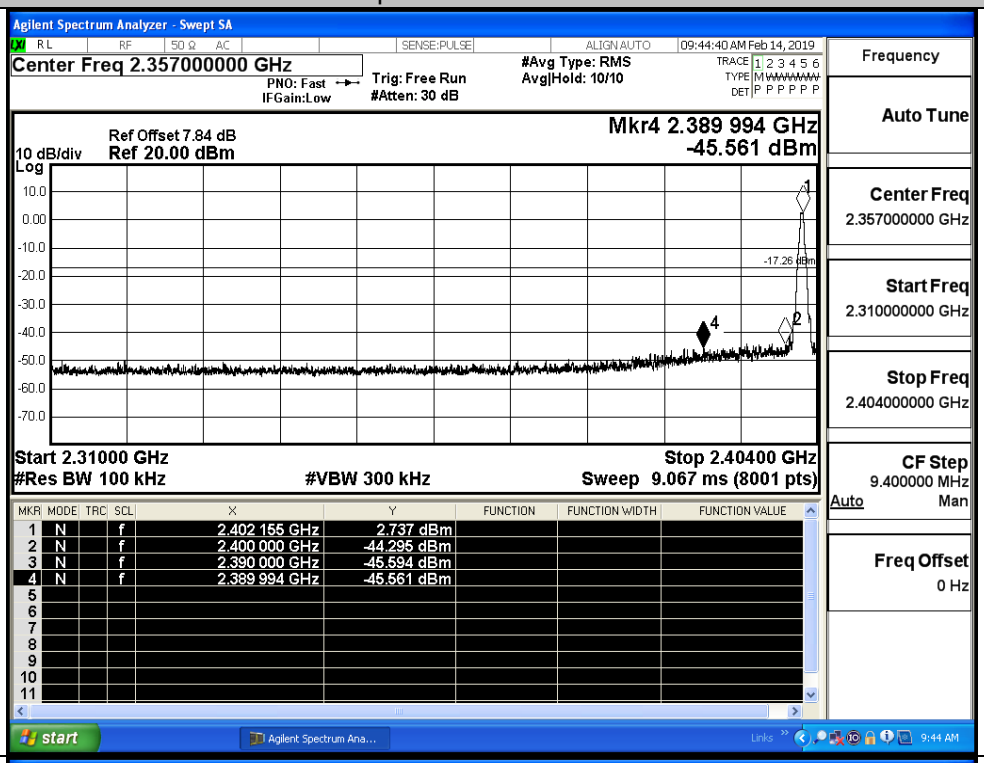
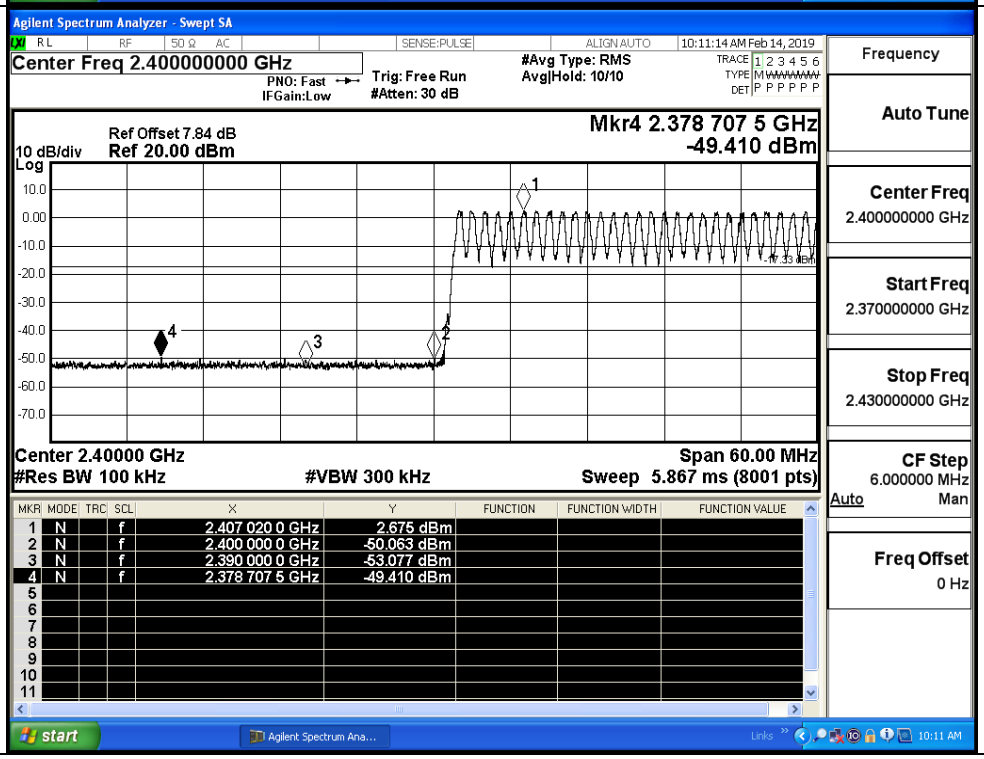
8DPSK_LCH_Graphs		
Pref		
Puw		

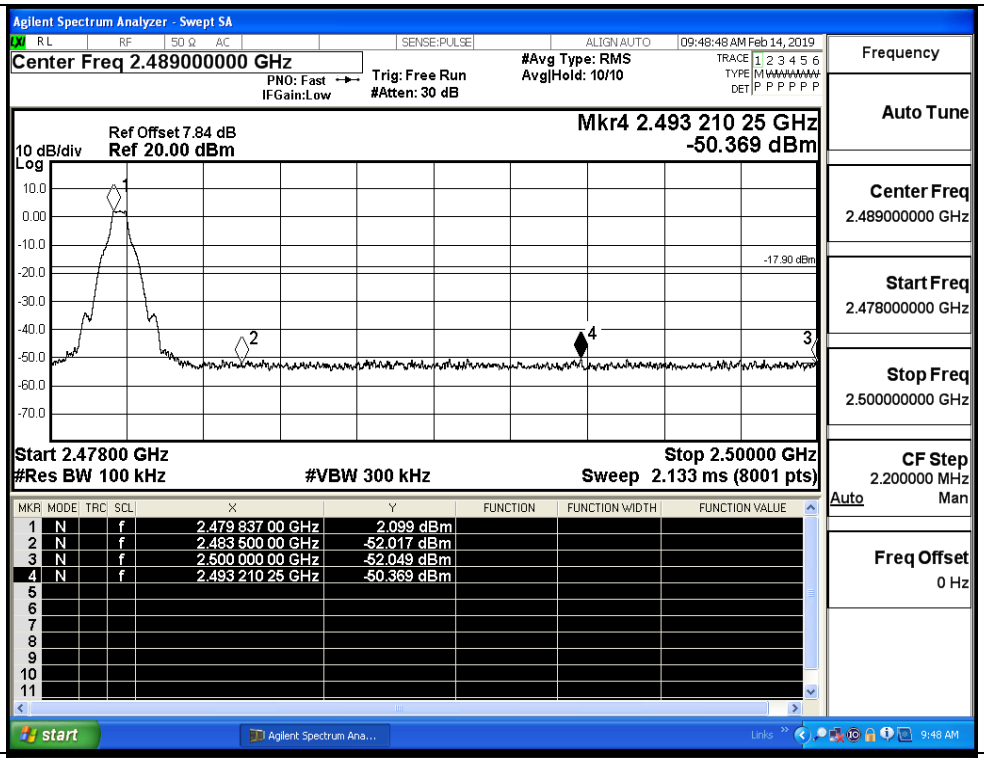
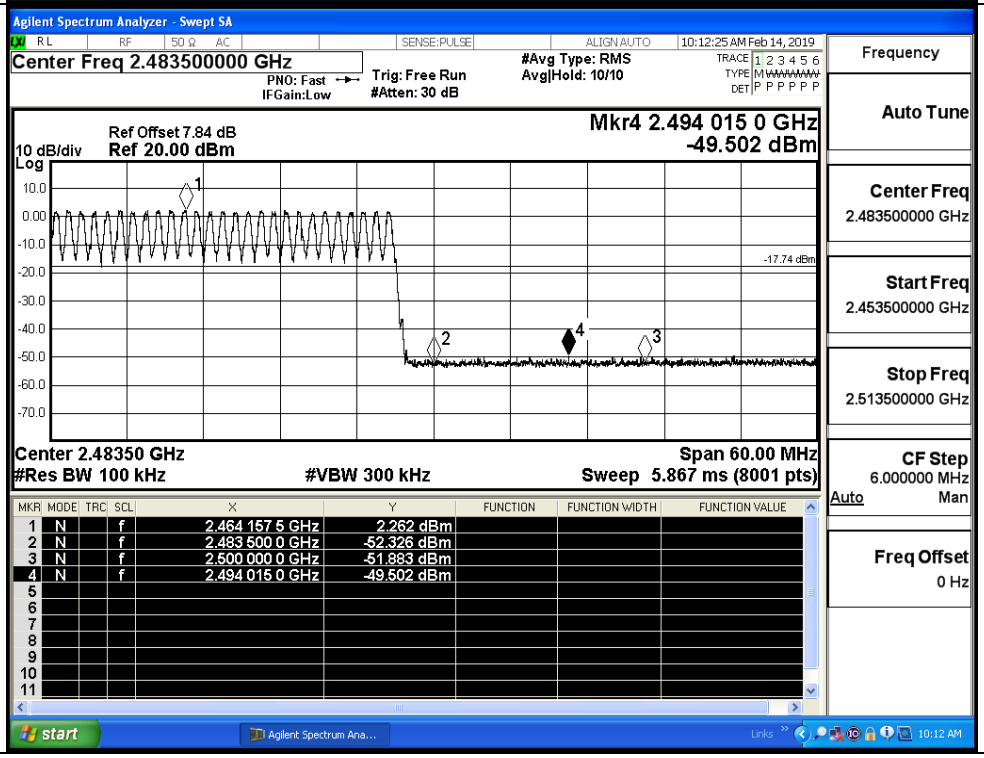
8DPSK_MCH_Graphs		
Pref		
Puw		

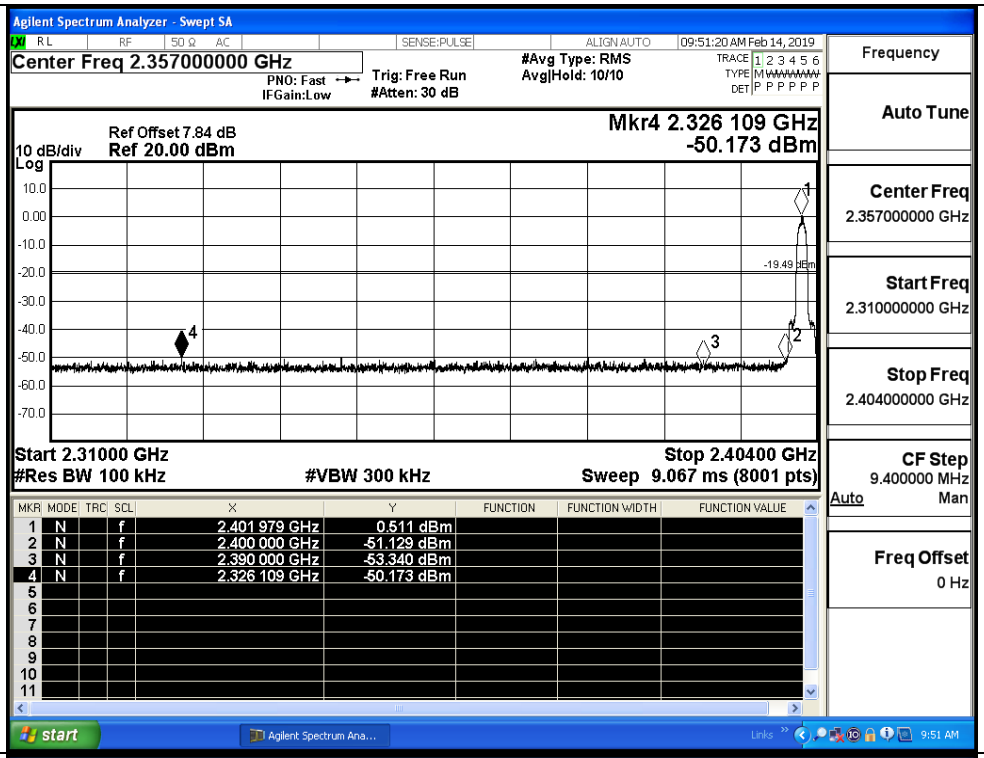
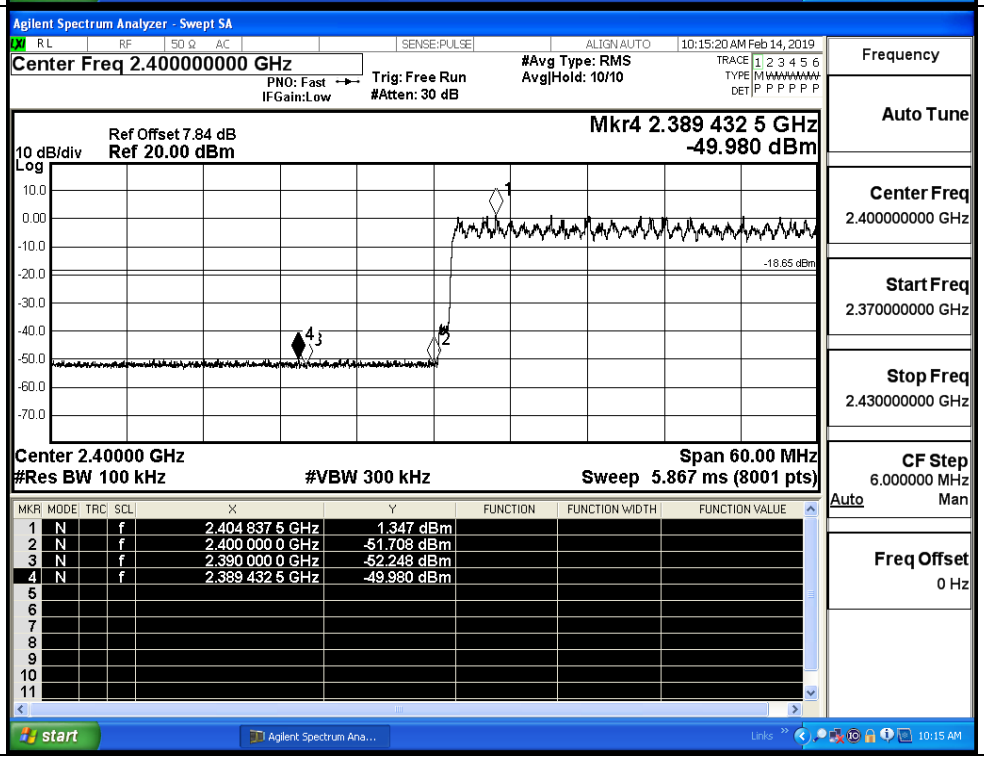
8DPSK_HCH_Graphs		
Pref		
Puw		

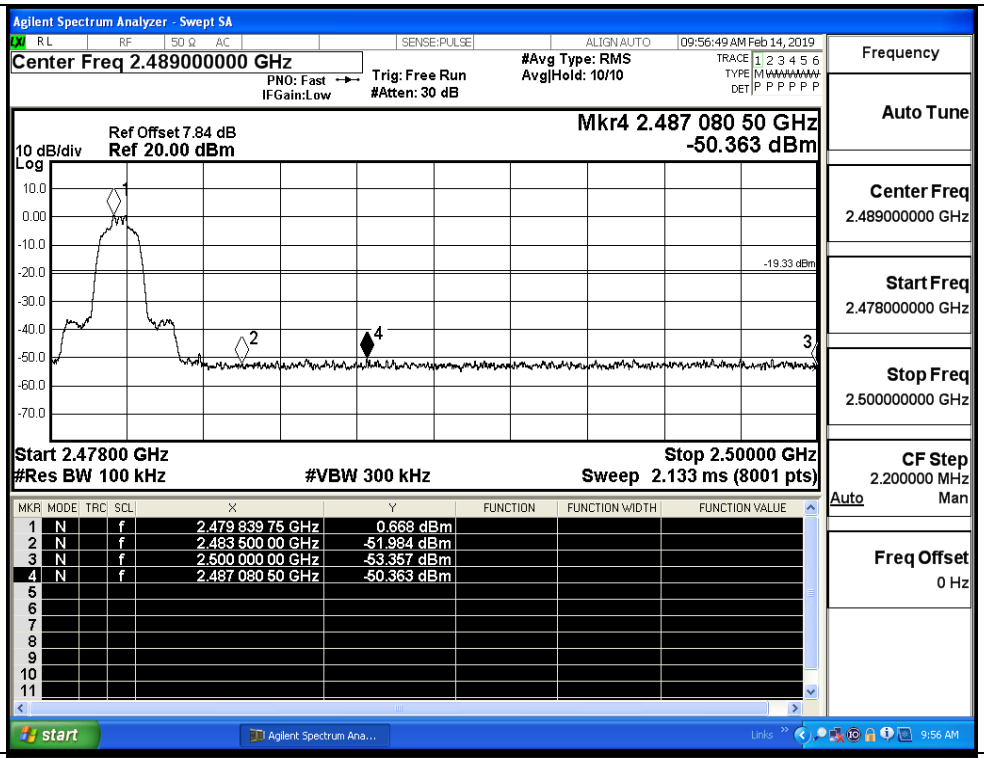
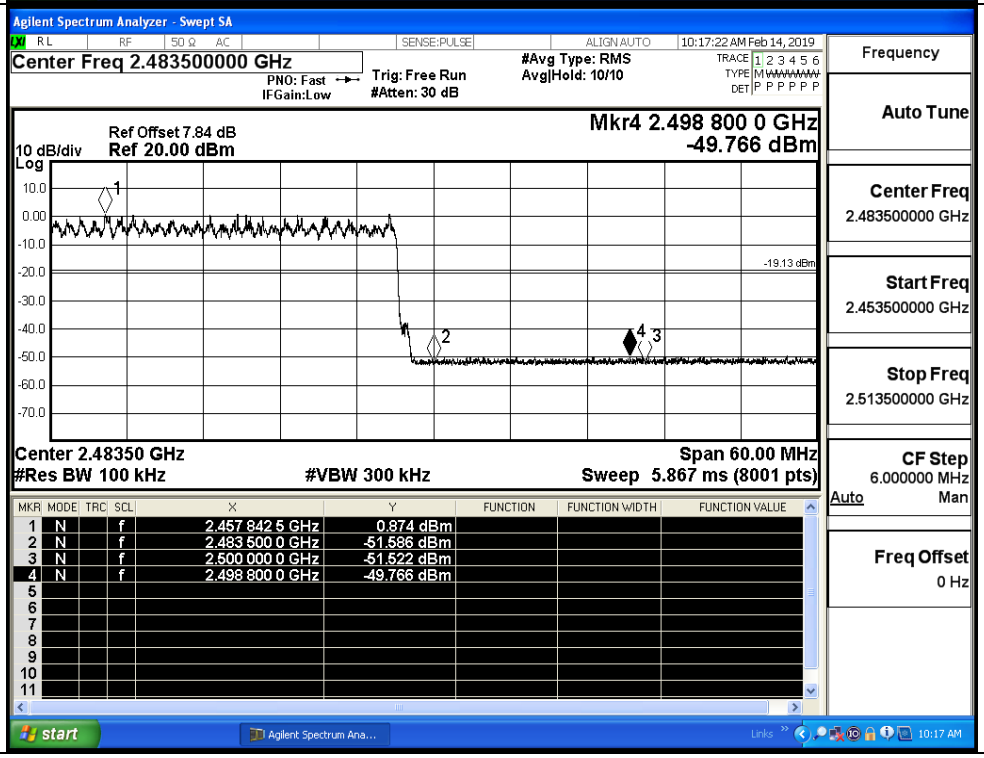
A.7 Band-edge for RF Conducted Emissions

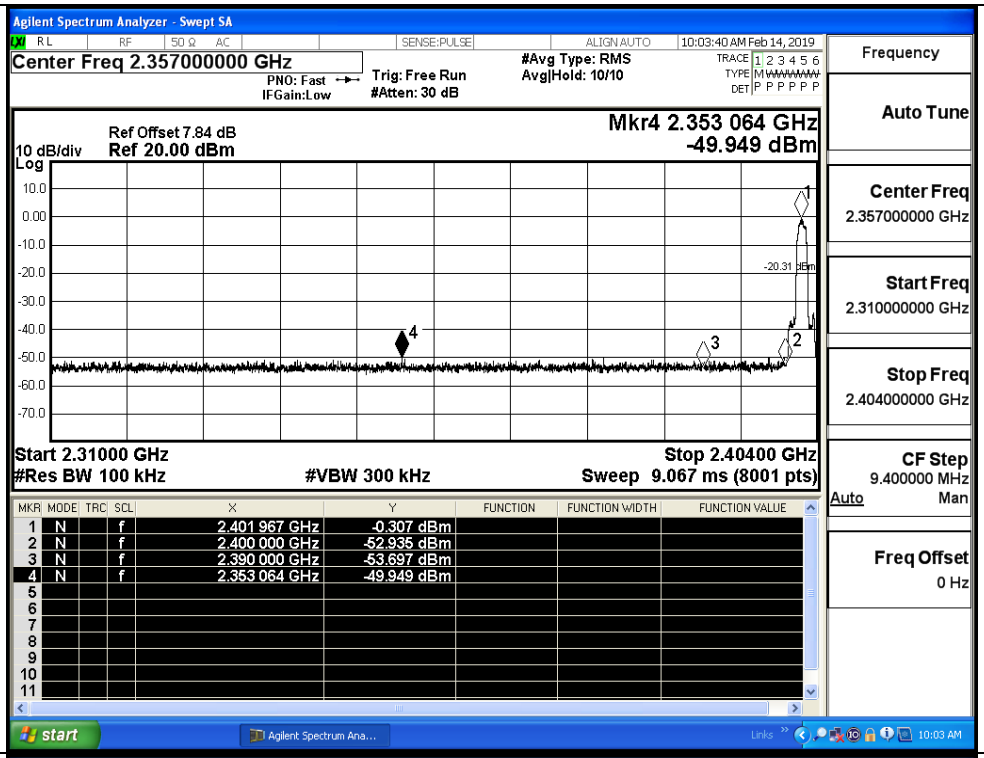
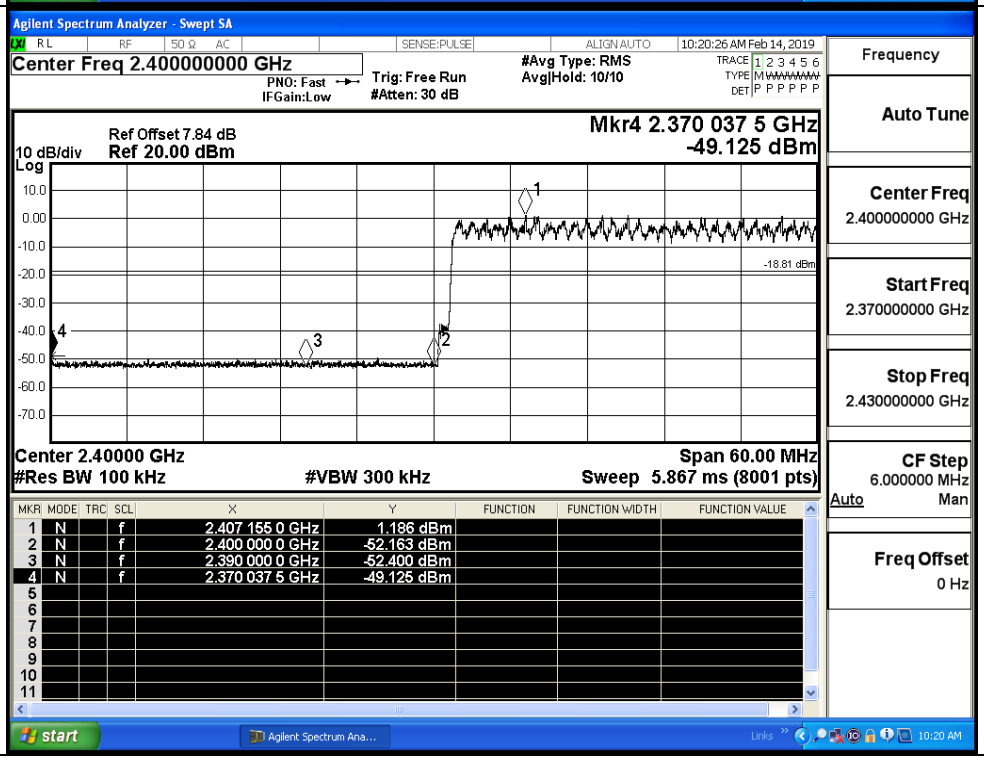
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	2.737	Off	-45.561	-17.26	PASS
			2.675	On	-49.410	-17.33	PASS
	HCH	2480	2.099	Off	-50.369	-17.9	PASS
			2.262	On	-49.502	-17.74	PASS
π/4DQPSK	LCH	2402	0.511	Off	-50.173	-19.49	PASS
			1.347	On	-49.980	-18.65	PASS
	HCH	2480	0.668	Off	-50.363	-19.33	PASS
			0.874	On	-49.766	-19.13	PASS
8DPSK	LCH	2402	-0.307	Off	-49.949	-20.31	PASS
			1.186	On	-49.125	-18.81	PASS
	HCH	2480	0.625	Off	-49.633	-19.38	PASS
			0.823	On	-49.808	-19.18	PASS

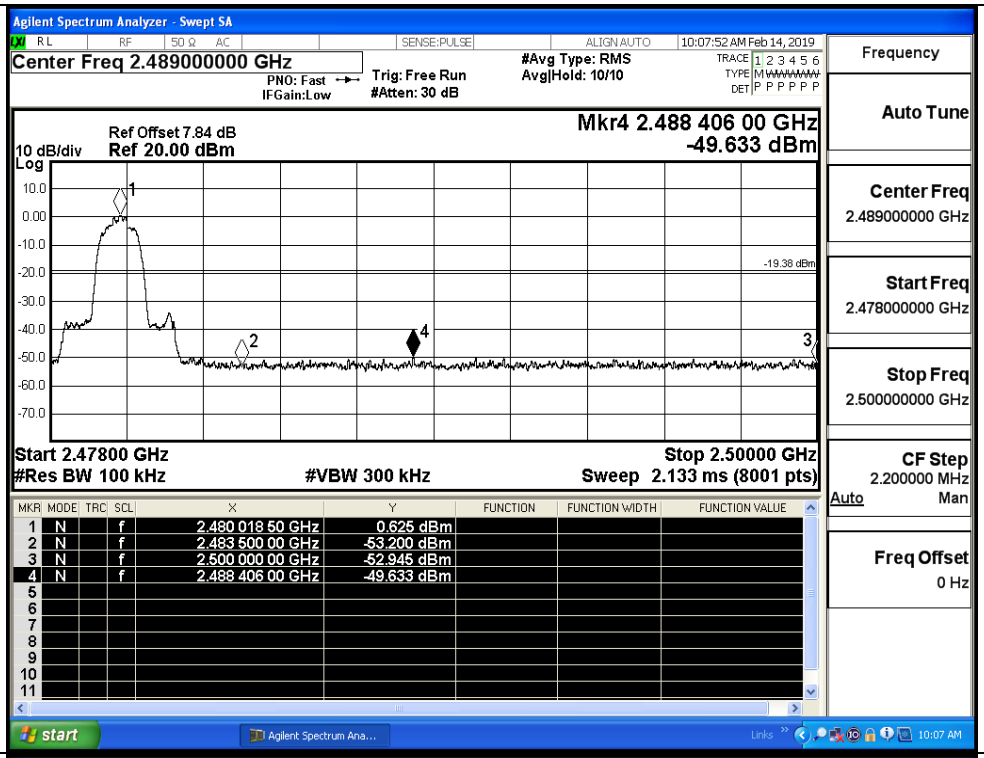
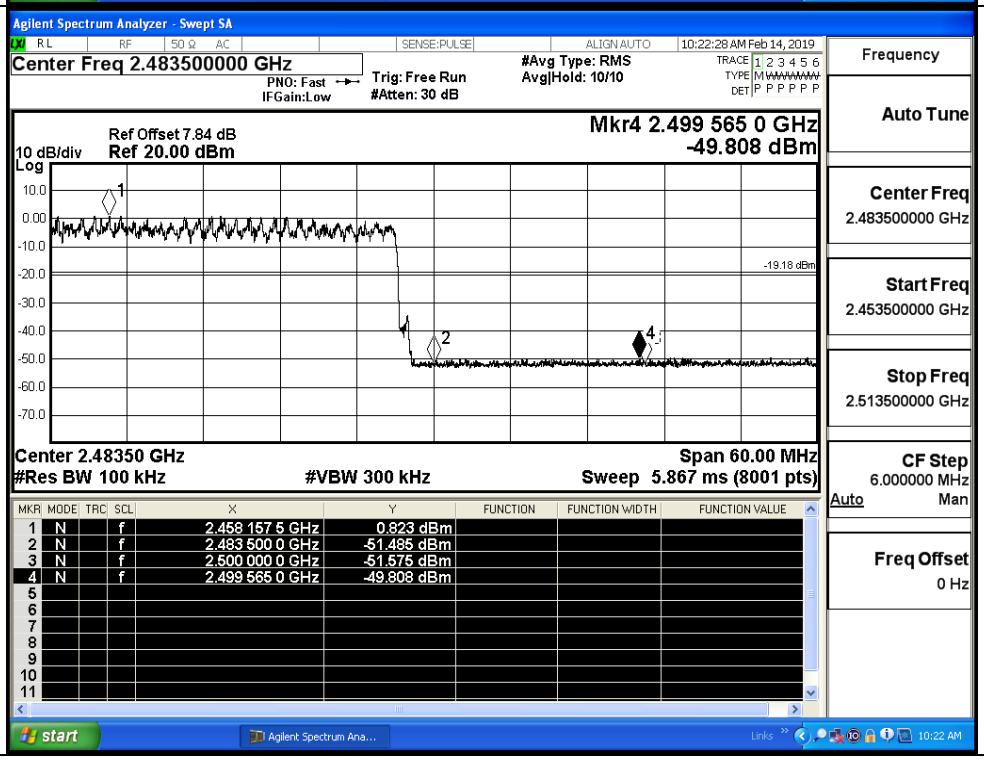
Test Graphs	
GFSK/LCH/No Hop	
GFSK/LCH/Hop	

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	

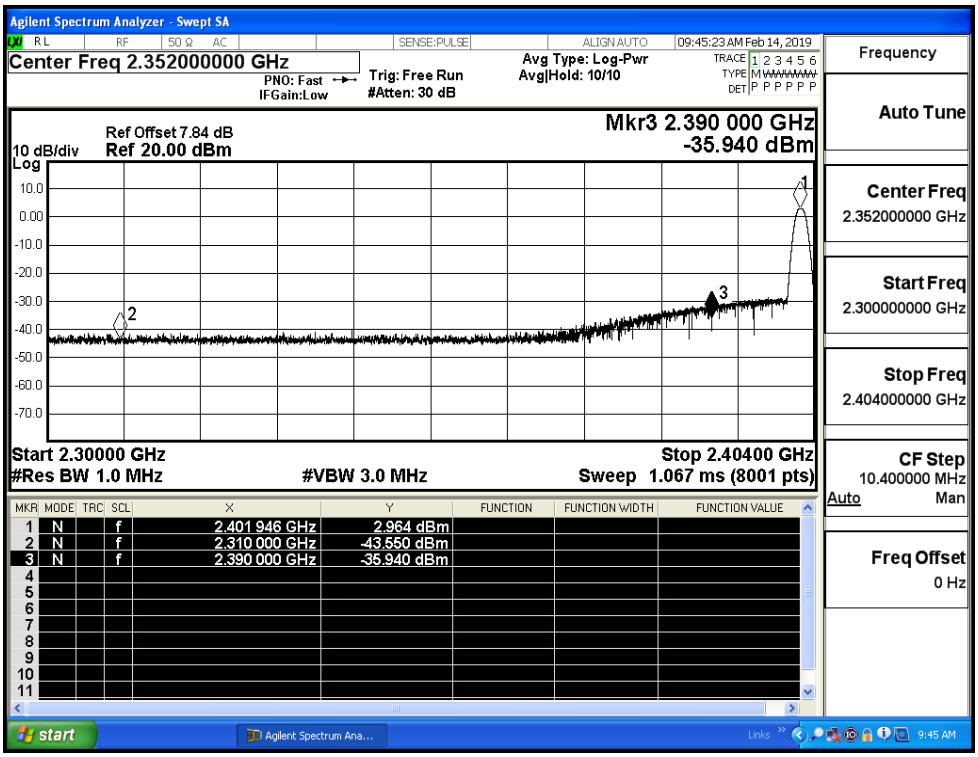
8DPSK/LCH/No Hop	
8DPSK/LCH/Hop	

8DPSK/HCH/No Hop	
8DPSK/HCH/Hop	

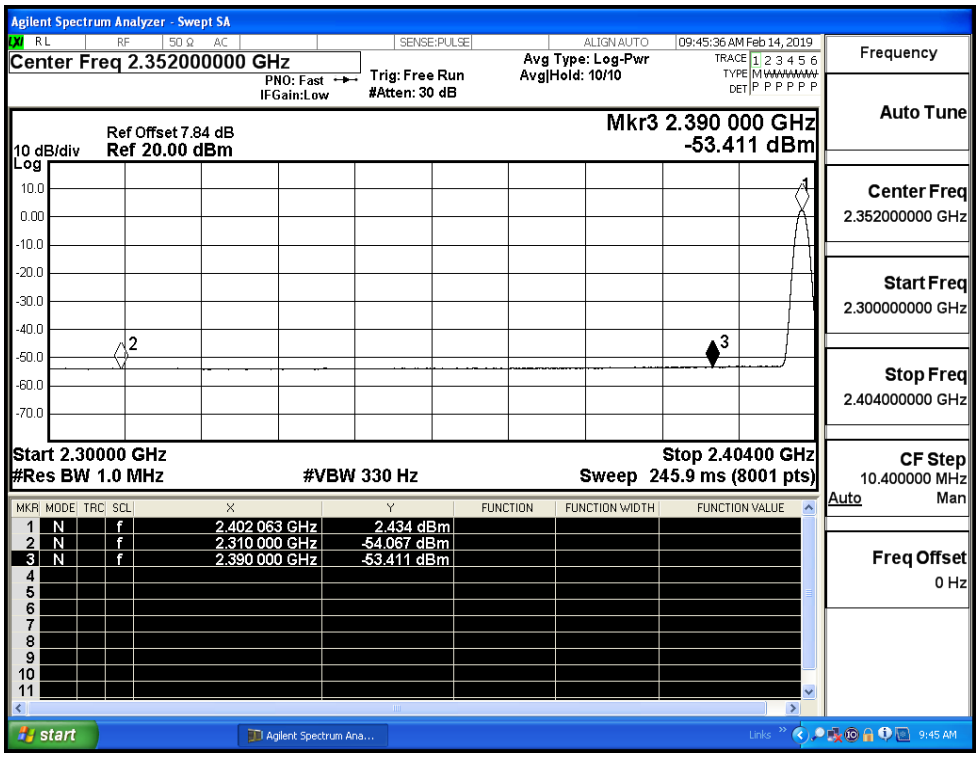
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-43.55	2.0	0	53.71	PEAK	74	PASS
	Off	2310.0	-54.07	2.0	0	43.19	AV	54	PASS
	Off	2390.0	-35.94	2.0	0	61.32	PEAK	74	PASS
	Off	2390.0	-53.41	2.0	0	43.85	AV	54	PASS
	Off	2483.5	-43.34	2.0	0	53.91	PEAK	74	PASS
	Off	2483.5	-53.30	2.0	0	43.95	AV	54	PASS
	Off	2500.0	-44.04	2.0	0	53.22	PEAK	74	PASS
	Off	2500.0	-53.27	2.0	0	43.99	AV	54	PASS
π/4DQPSK	Off	2310.0	-43.07	2.0	0	54.18	PEAK	74	PASS
	Off	2310.0	-53.94	2.0	0	43.32	AV	54	PASS
	Off	2390.0	-44.82	2.0	0	52.44	PEAK	74	PASS
	Off	2390.0	-53.63	2.0	0	43.62	AV	54	PASS
	Off	2483.5	-42.02	2.0	0	55.24	PEAK	74	PASS
	Off	2483.5	-53.34	2.0	0	43.91	AV	54	PASS
	Off	2500.0	-43.26	2.0	0	54.00	PEAK	74	PASS
	Off	2500.0	-53.32	2.0	0	43.94	AV	54	PASS
8DPSK	Off	2310.0	-44.50	2.0	0	52.75	PEAK	74	PASS
	Off	2310.0	-54.07	2.0	0	43.19	AV	54	PASS
	Off	2390.0	-43.84	2.0	0	53.42	PEAK	74	PASS
	Off	2390.0	-53.70	2.0	0	43.56	AV	54	PASS
	Off	2483.5	-43.99	2.0	0	53.27	PEAK	74	PASS
	Off	2483.5	-53.36	2.0	0	43.90	AV	54	PASS
	Off	2500.0	-42.77	2.0	0	54.49	PEAK	74	PASS
	Off	2500.0	-53.38	2.0	0	43.88	AV	54	PASS

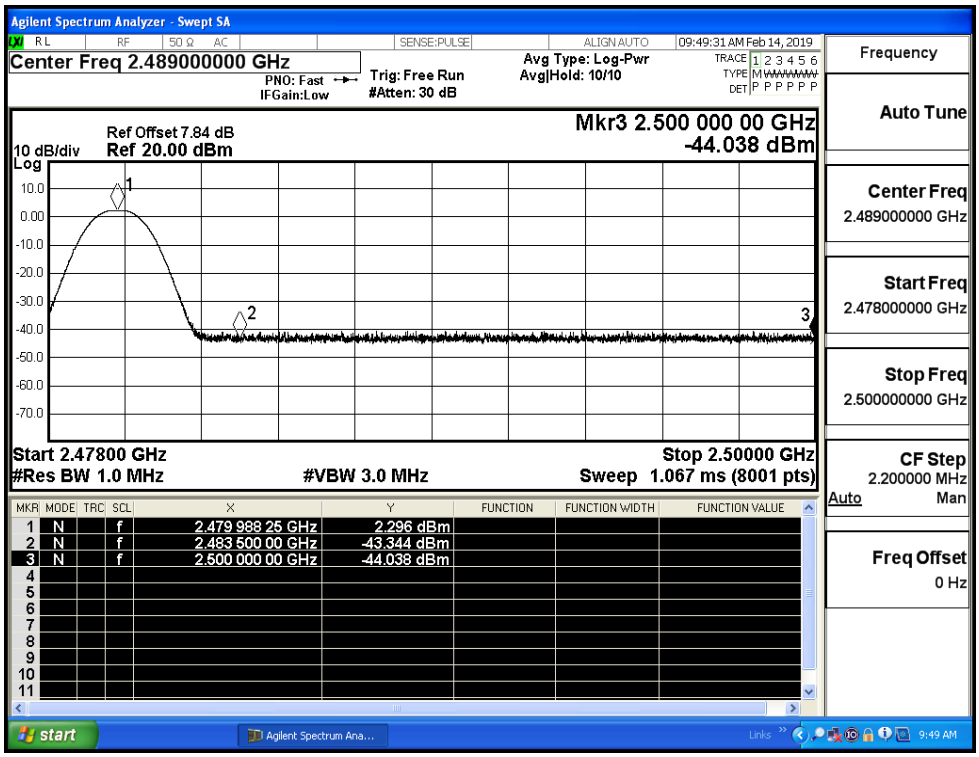
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (Low Channel)



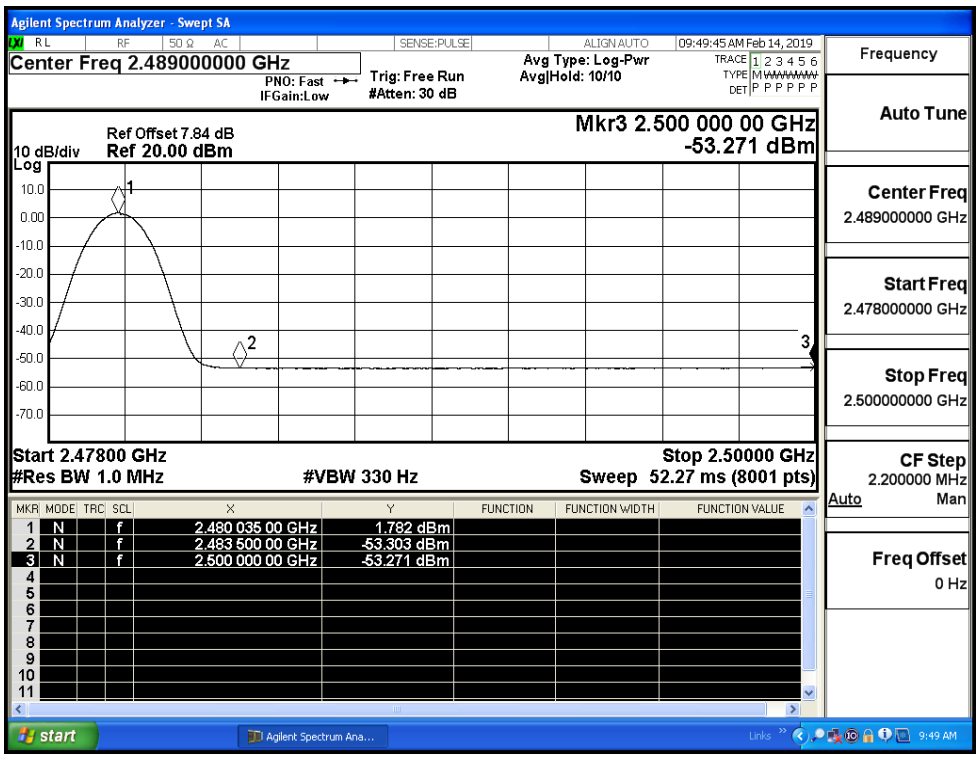
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (Low Channel)



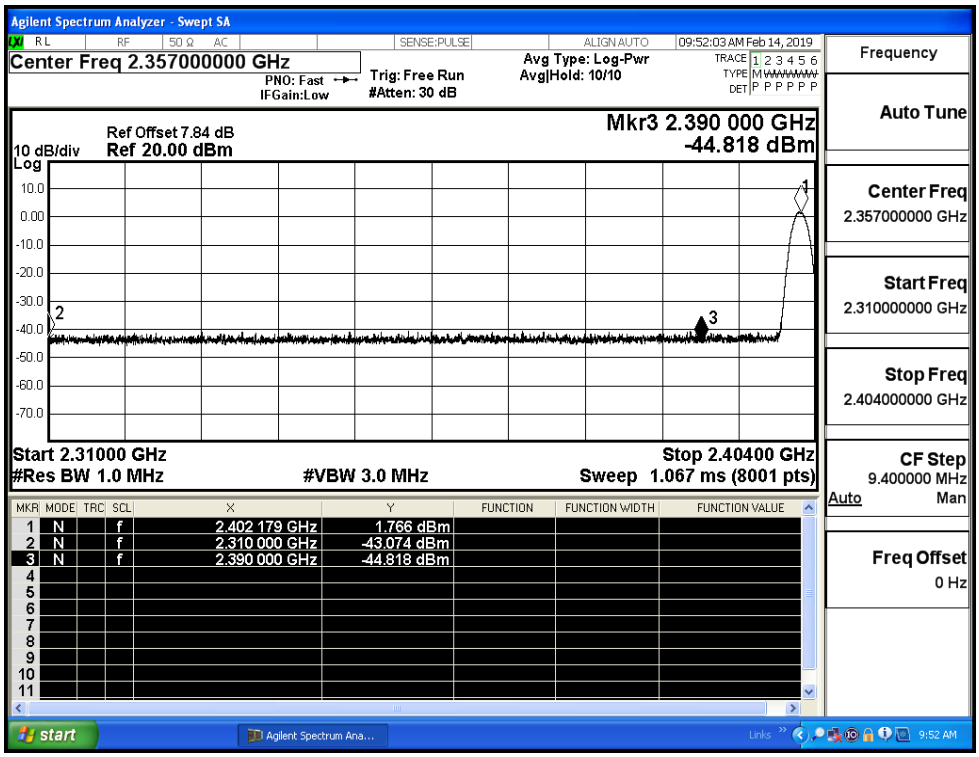
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (High Channel)



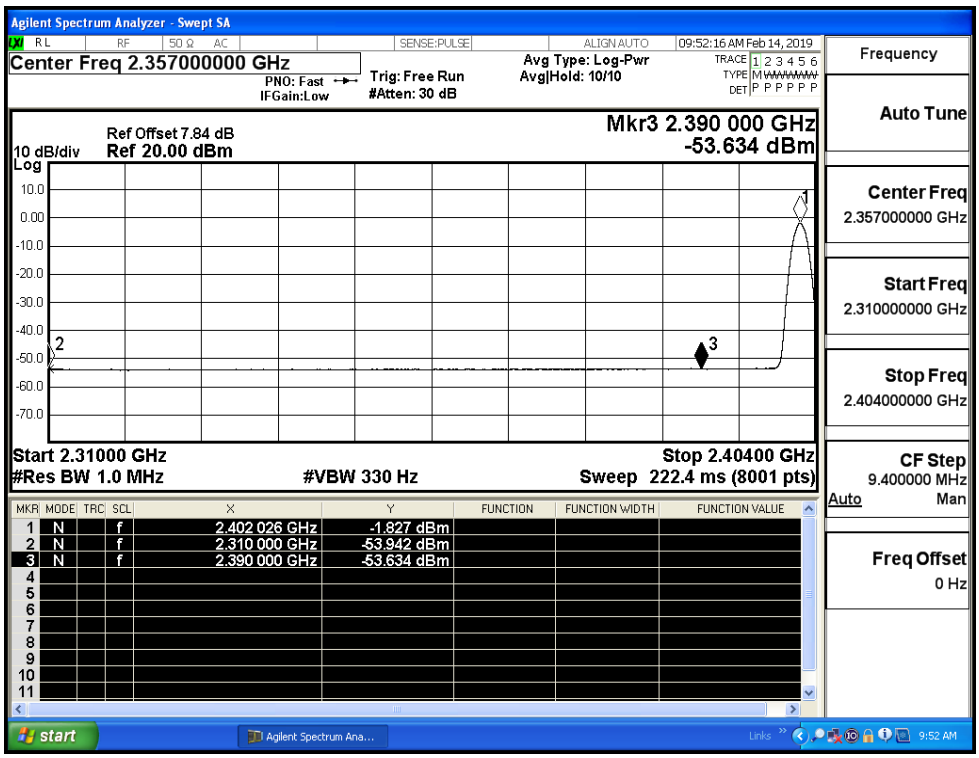
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (High Channel)



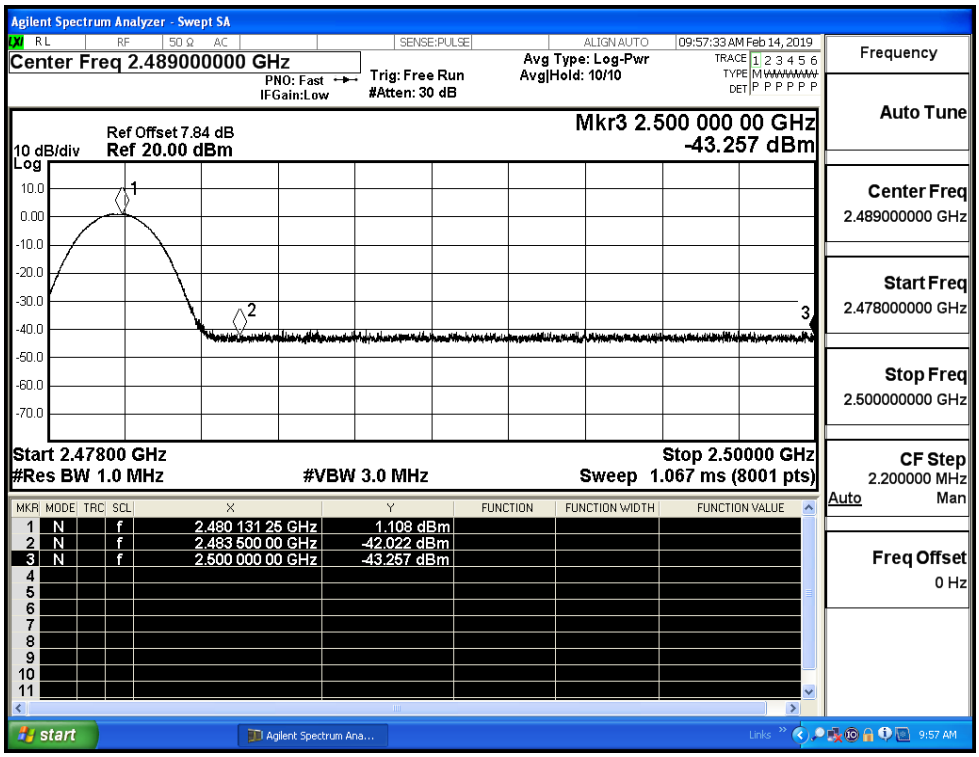
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (Low Channel)



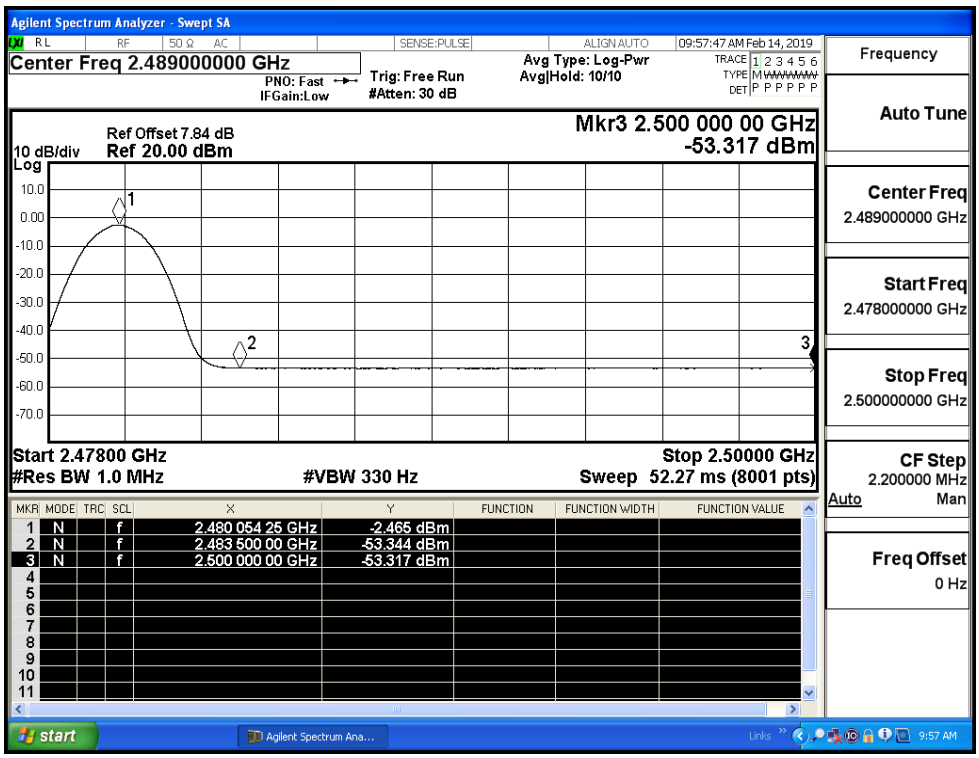
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (Low Channel)



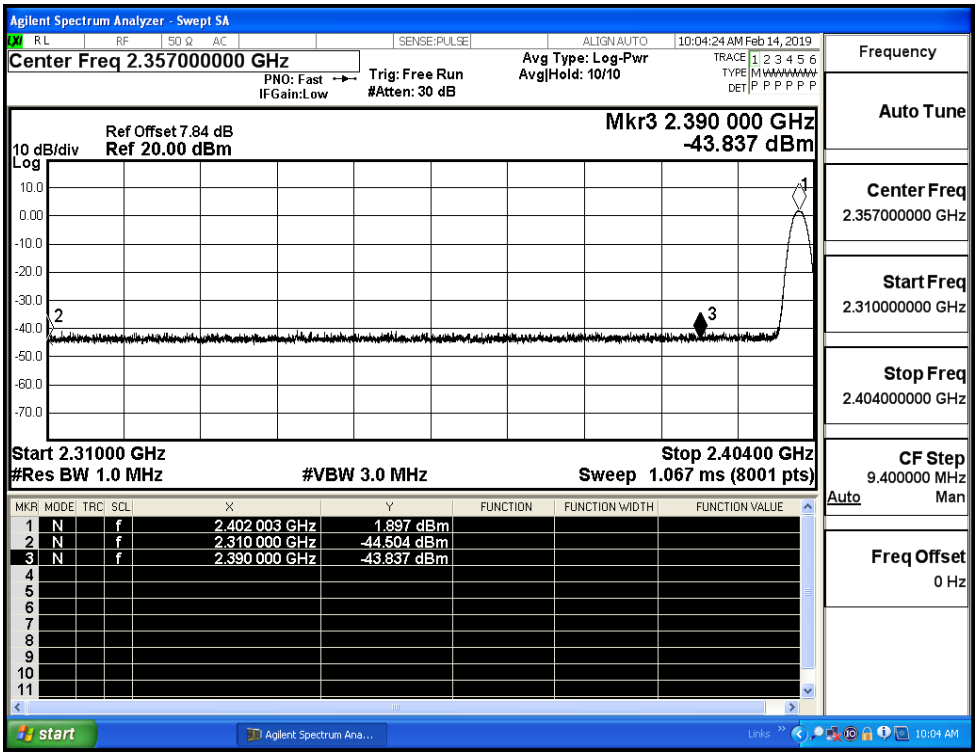
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (High Channel)



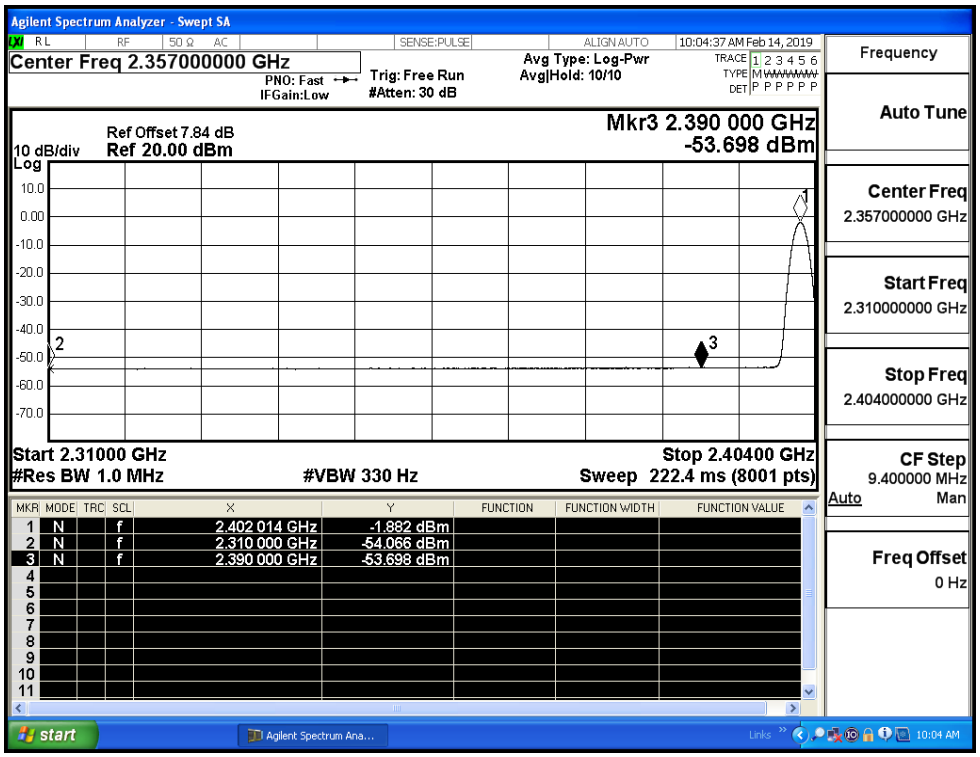
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (High Channel)



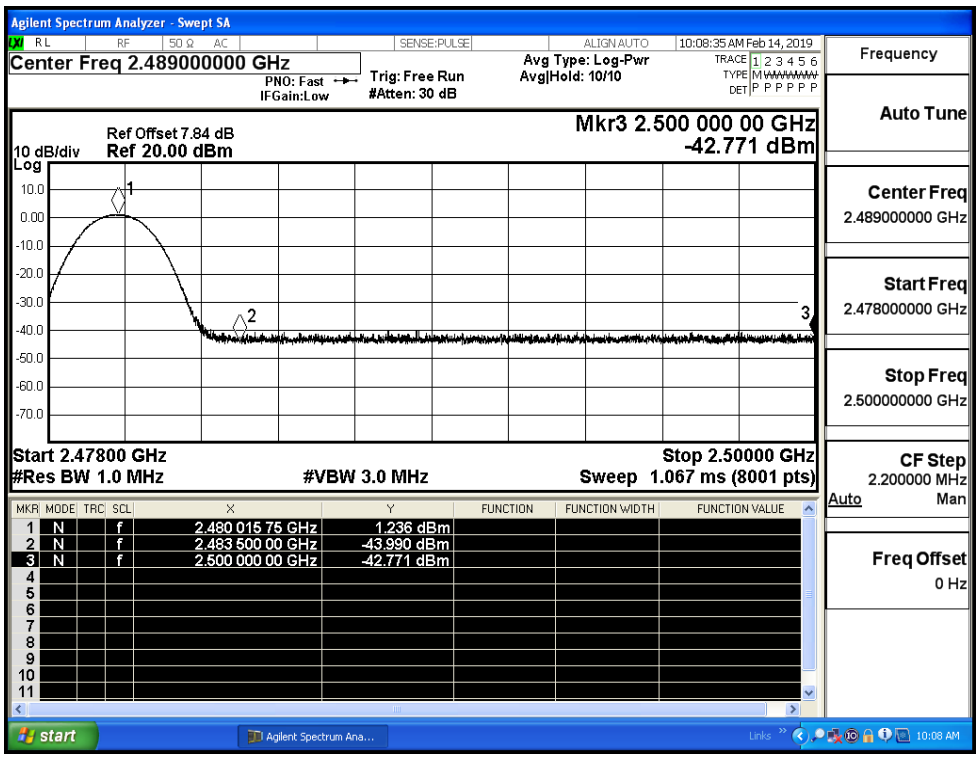
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



Restrict-band band-edge measurements_Hopping Off_8DPSK_Average (Low Channel)



Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (High Channel)



Restrict-band band-edge measurements_Hopping Off_8DPSK_Average (High Channel)