Appendix A

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

Product Name: LTE GSM/WCDMA Smartphone

Trade Mark: DOOGEE

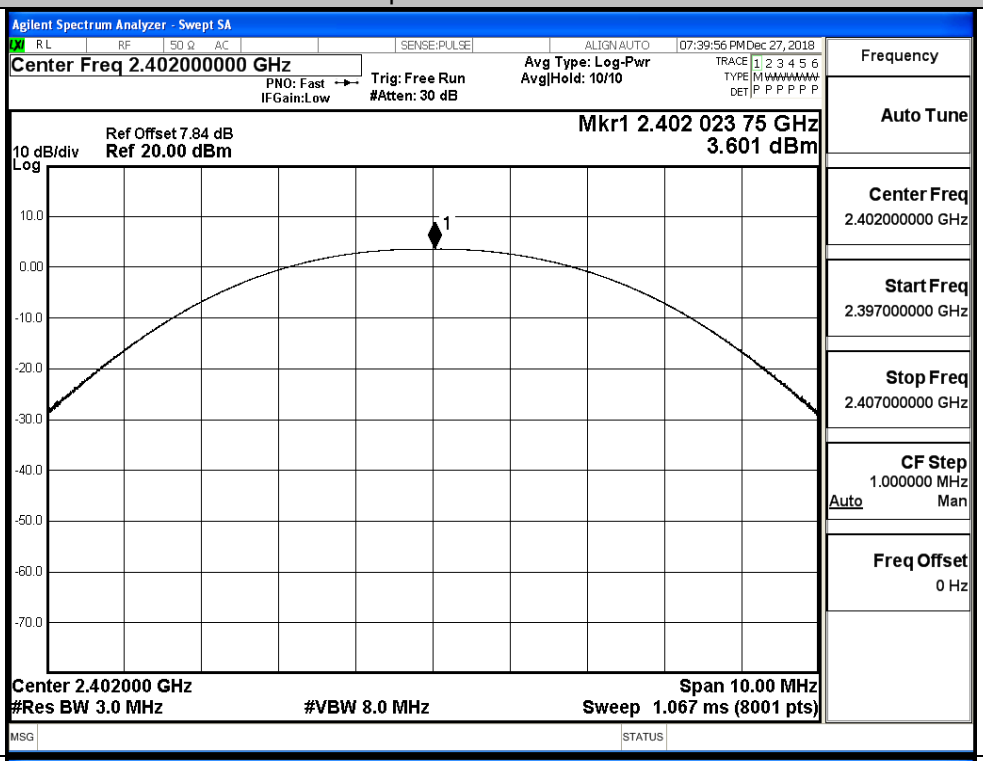
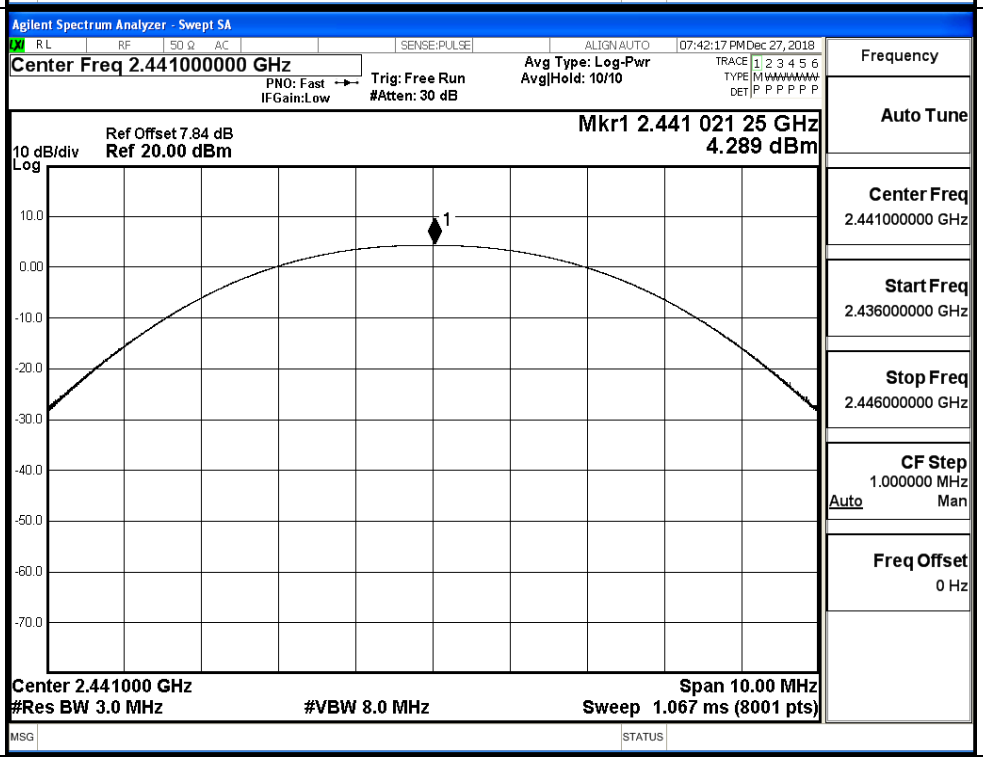
Test Model: S60 Lite

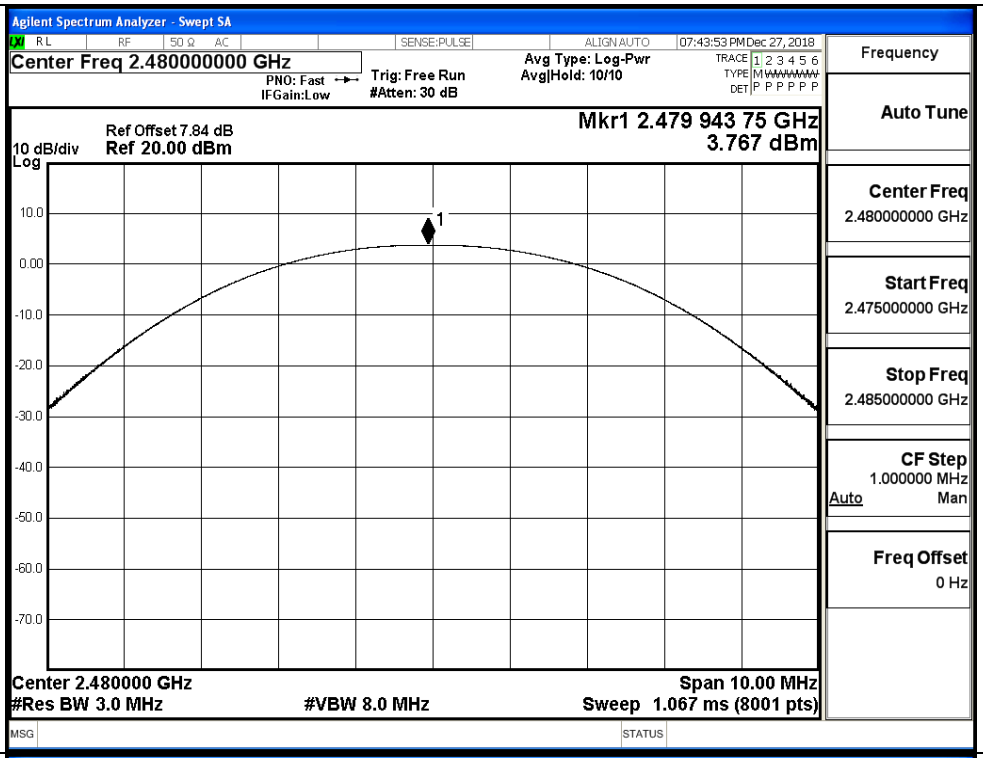
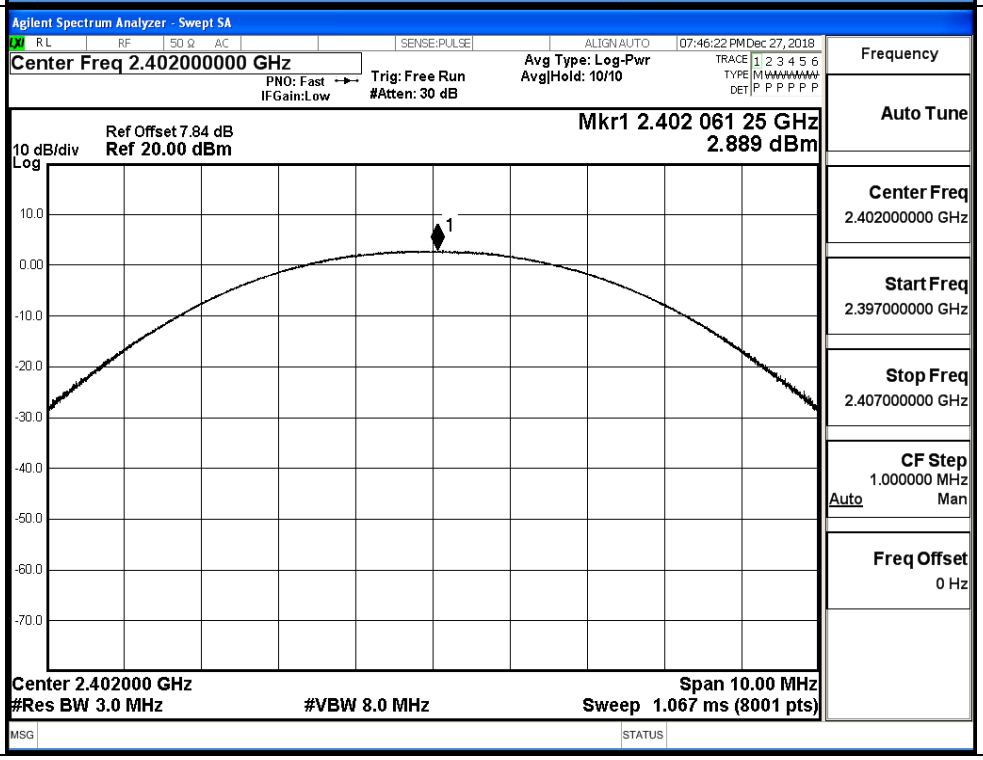
Environmental Conditions

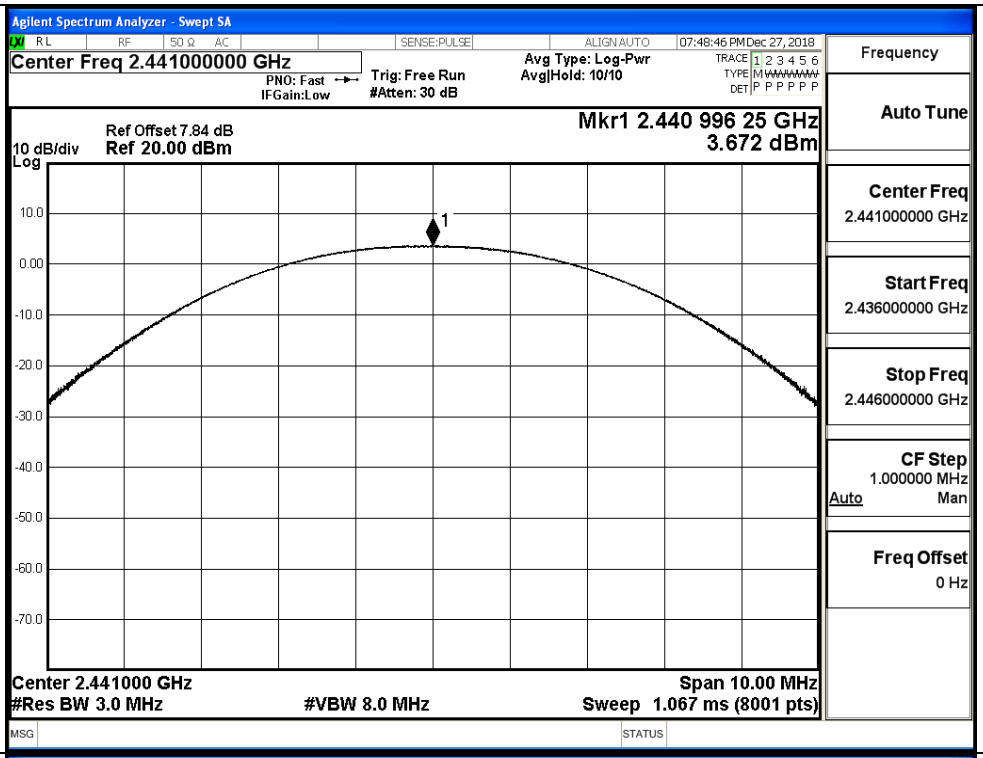
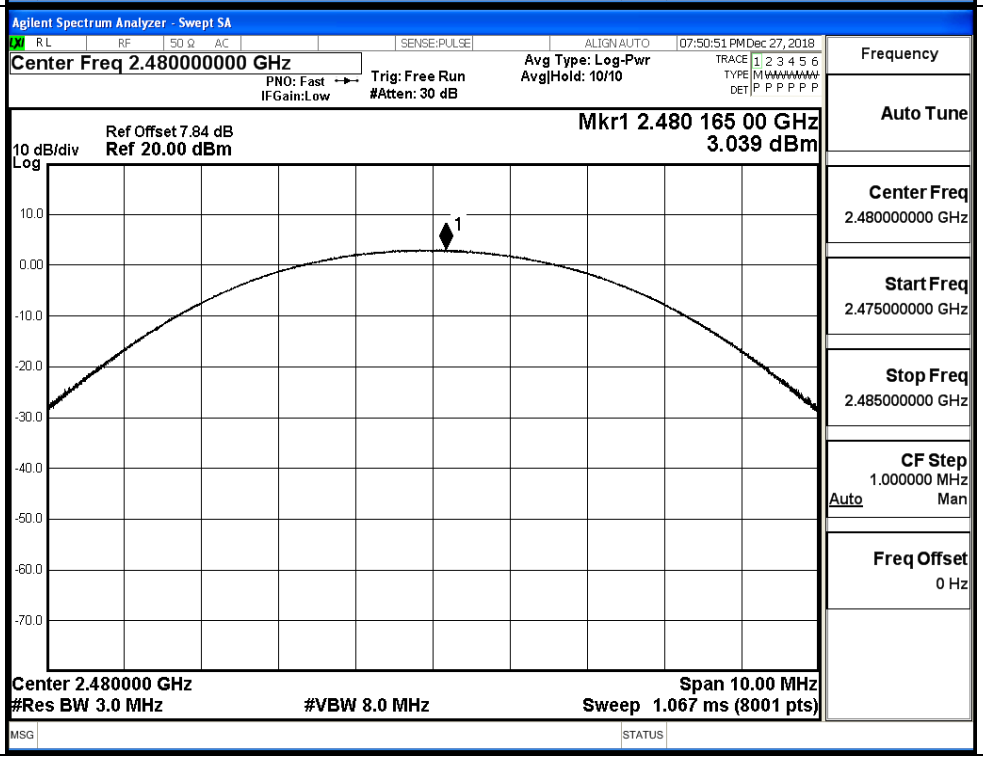
Temperature:	24.1 ° C
Relative Humidity:	53.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Tom.Liu
Supervised by:	Jayden.Zhuo

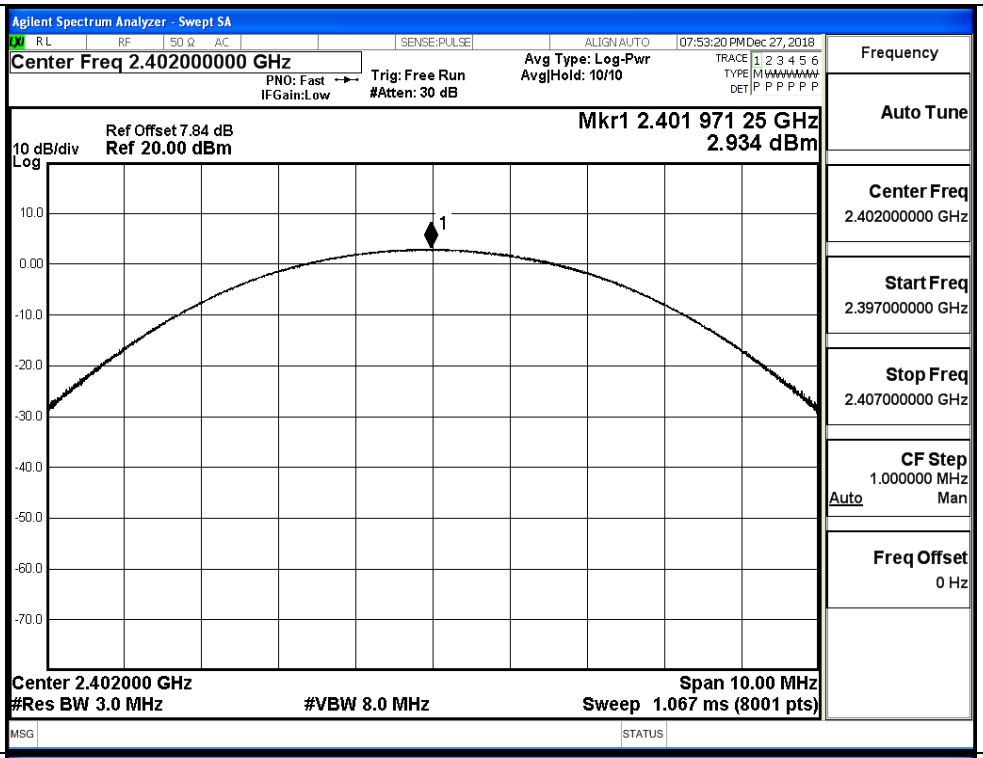
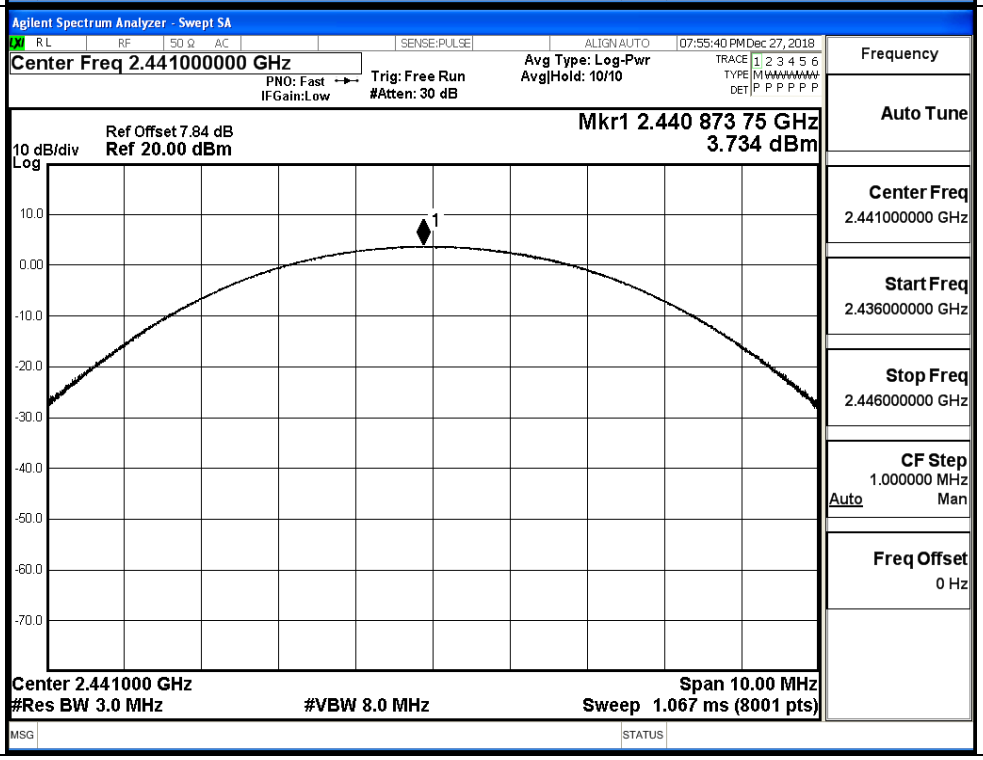
A.1 Maximum Conducted Peak Output Power

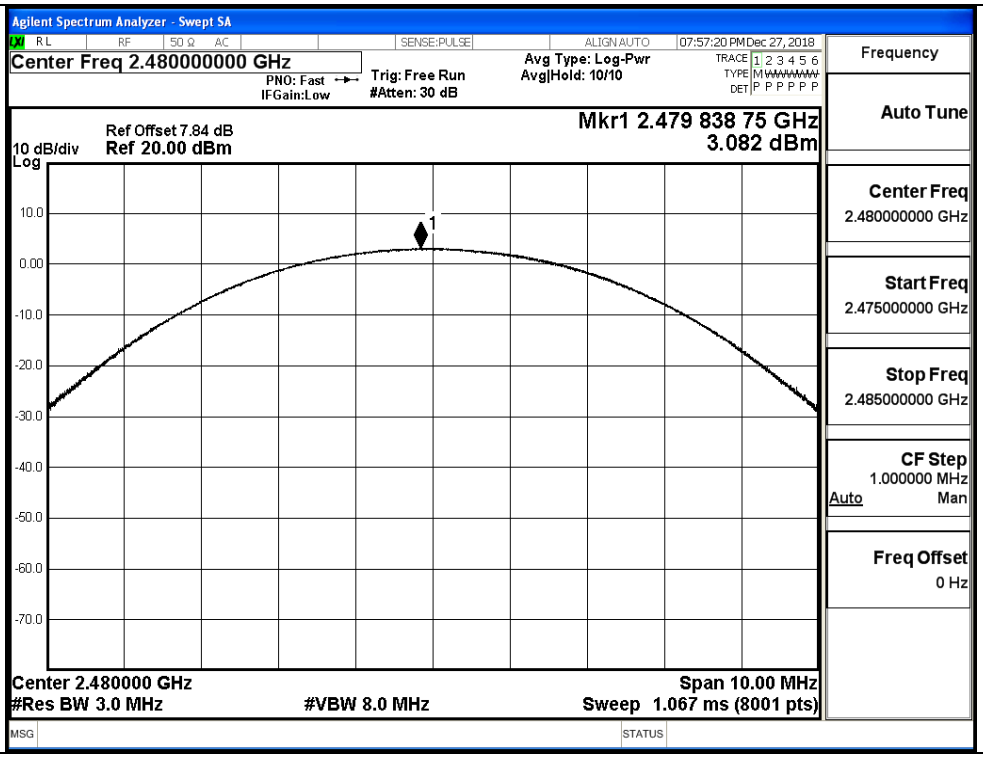
Mode	Channel.	Maximum Peak Output Power [dBm]	Maximum Average Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	3.601	1.845	30	PASS
	MCH	4.289	2.323	30	PASS
	HCH	3.767	1.365	30	PASS
π/4DQPSK	LCH	2.889	1.025	21	PASS
	MCH	3.672	1.846	21	PASS
	HCH	3.039	1.251	21	PASS
8DPSK	LCH	2.934	1.036	21	PASS
	MCH	3.734	1.254	21	PASS
	HCH	3.082	1.649	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	

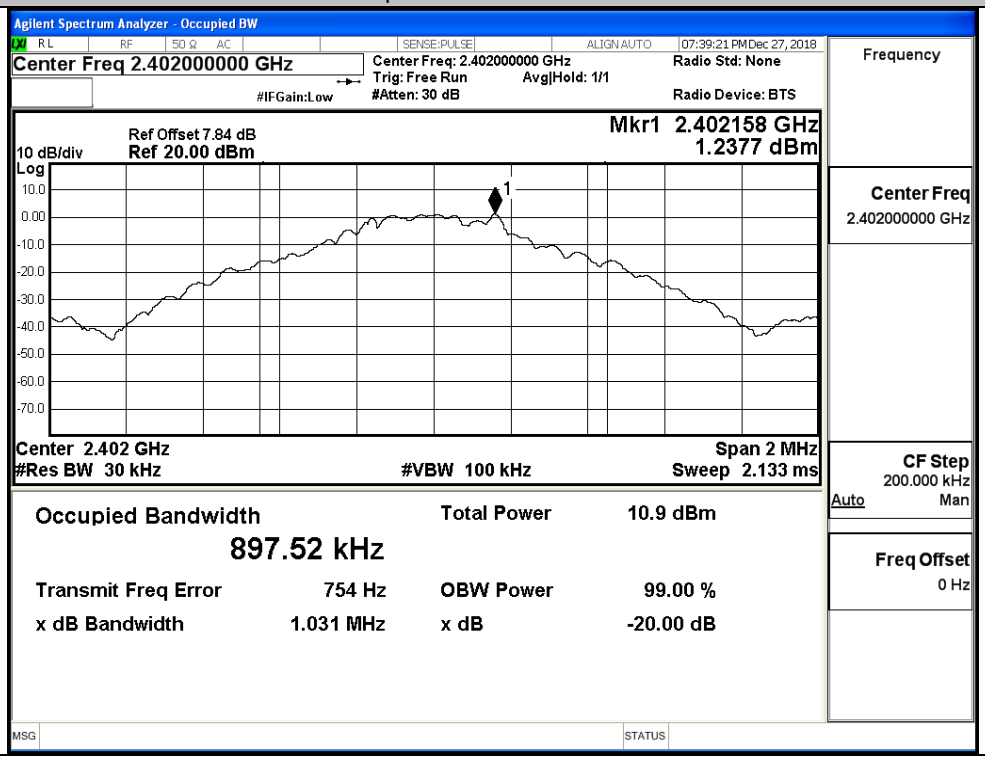
Agilent Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:PULSE
ALIGN AUTO
07:57:20 PM Dec 27, 2018
Center Freq 2.480000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 10/10
TRACE 1 2 3 4 5 6
TYPE M
DET P P P P P
Ref Offset 7.84 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 2.479 838 75 GHz
3.082 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Center 2.480000 GHz
#Res BW 3.0 MHz
#VBW 8.0 MHz
Span 10.00 MHz
Sweep 1.067 ms (8001 pts)
MSG
STATUS
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

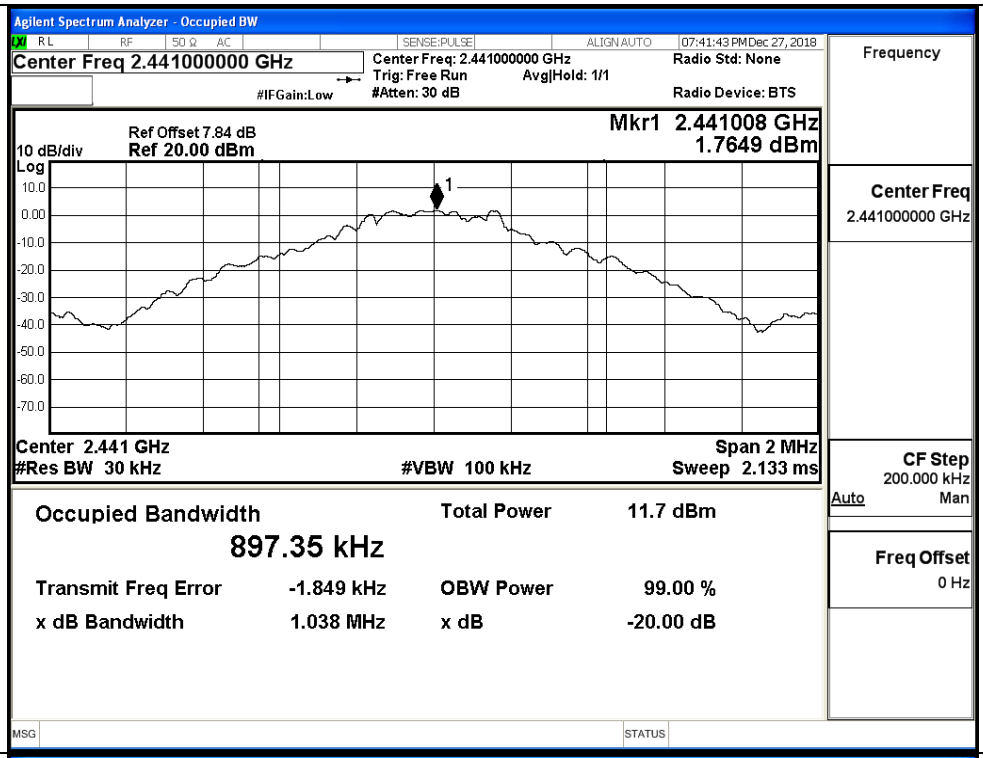
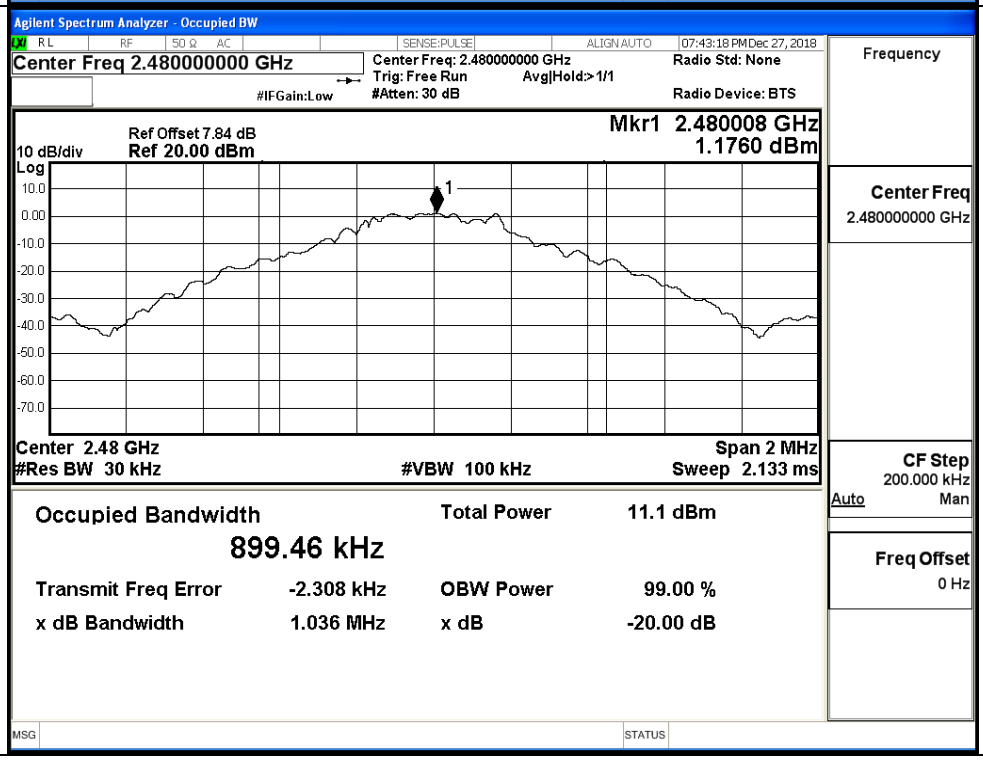
A.2 20dB Bandwidth

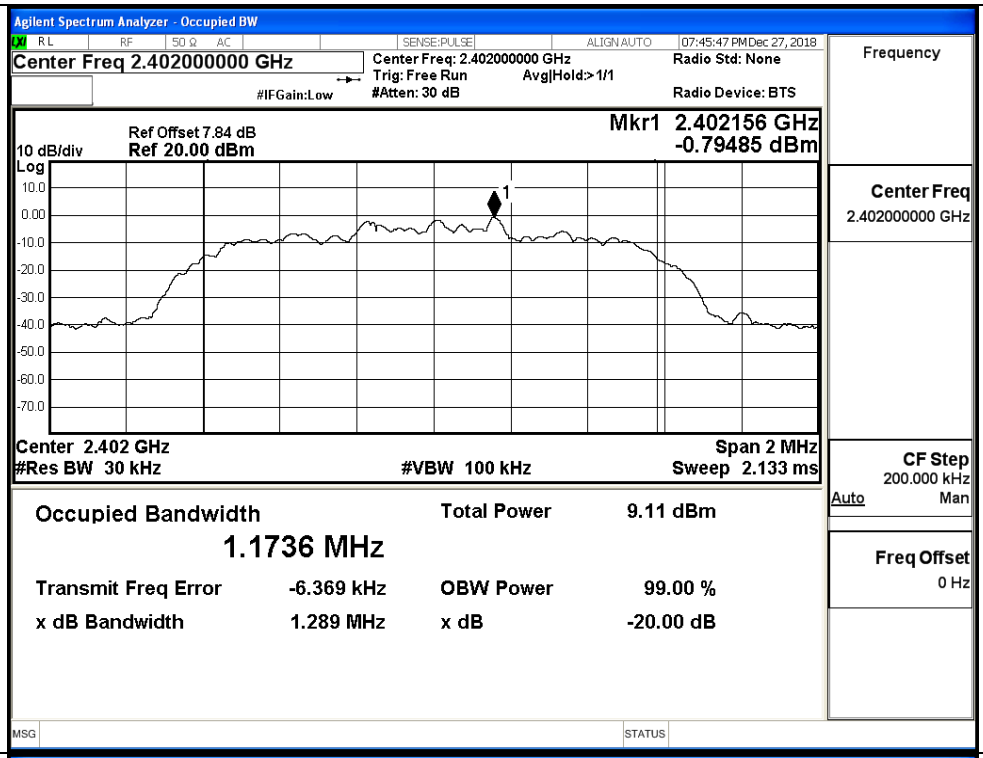
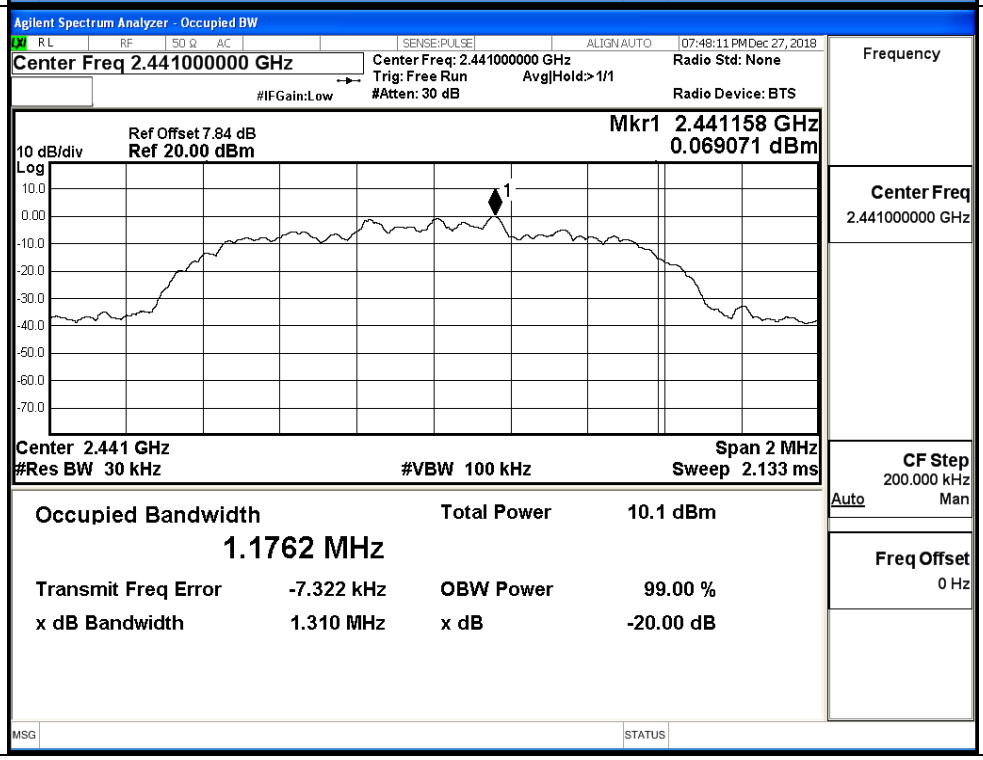
Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.031	Not Specified	PASS
	MCH	1.038	Not Specified	PASS
	HCH	1.036	Not Specified	PASS
π/4DQPSK	LCH	1.289	Not Specified	PASS
	MCH	1.310	Not Specified	PASS
	HCH	1.289	Not Specified	PASS
8DPSK	LCH	1.304	Not Specified	PASS
	MCH	1.294	Not Specified	PASS
	HCH	1.293	Not Specified	PASS

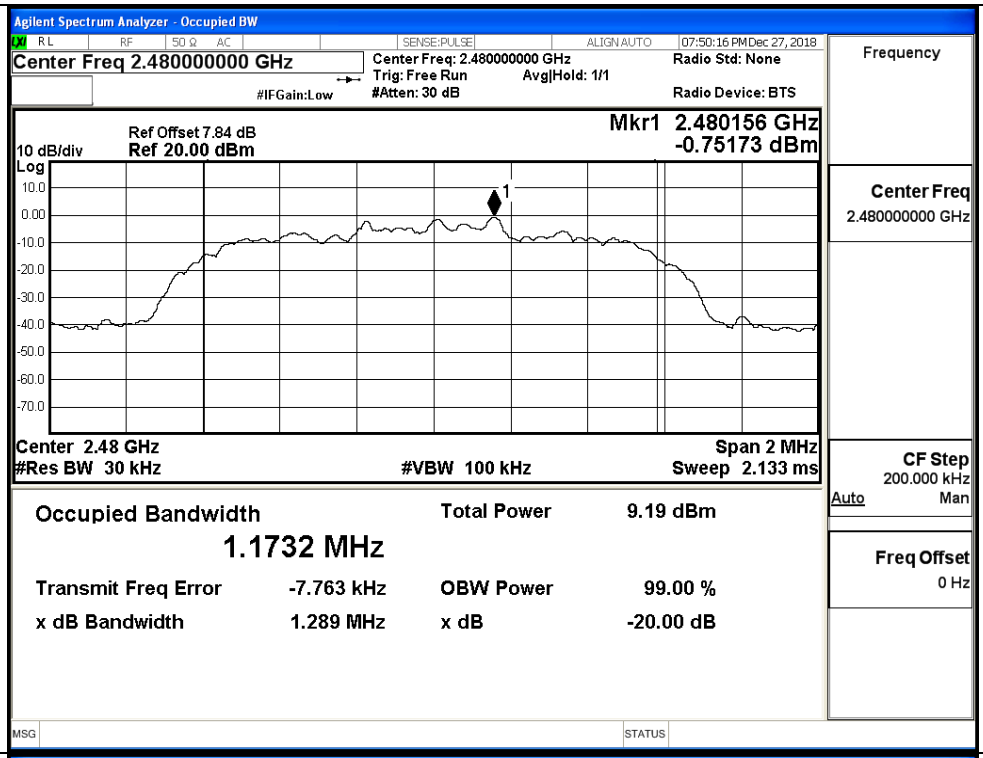
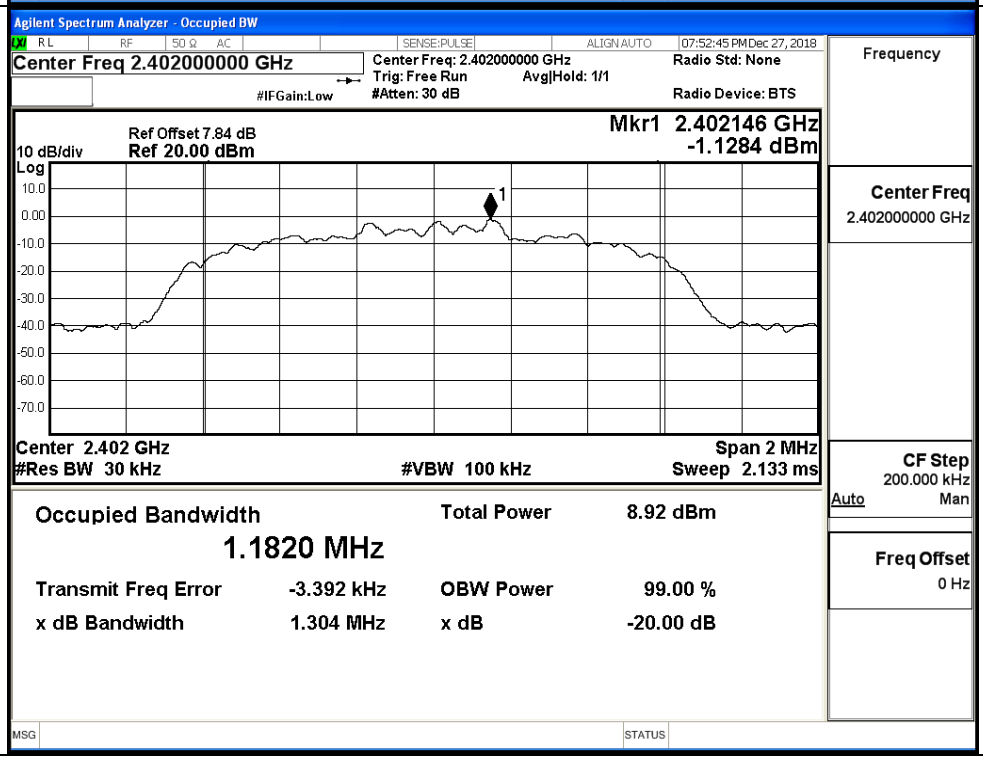
Test Graphs

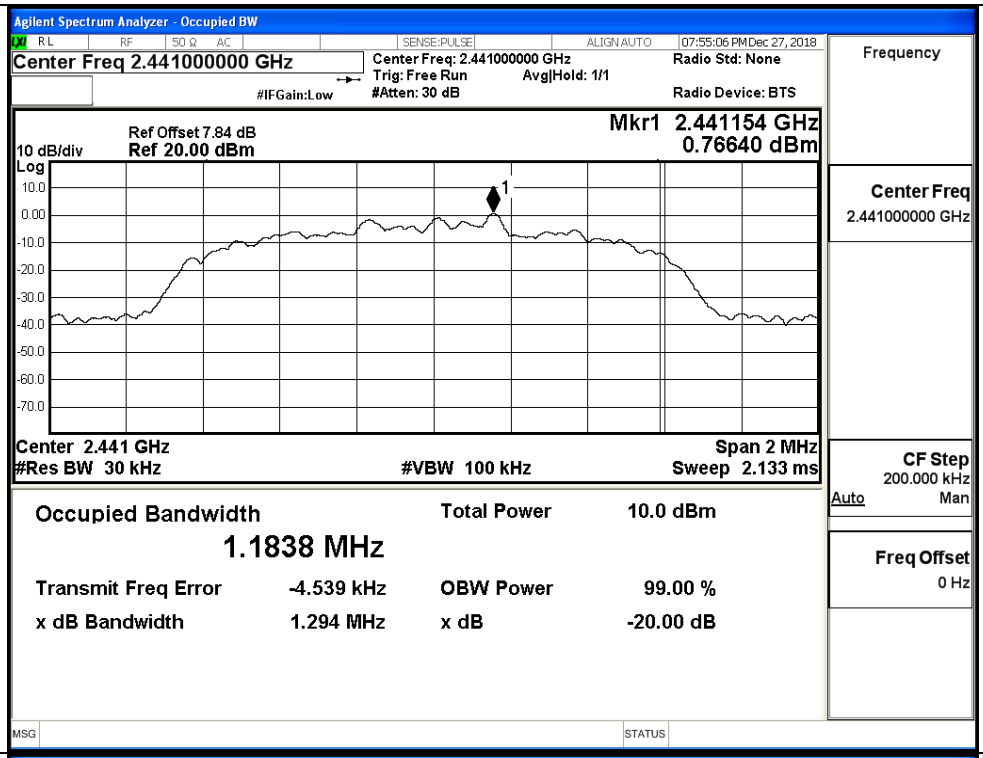
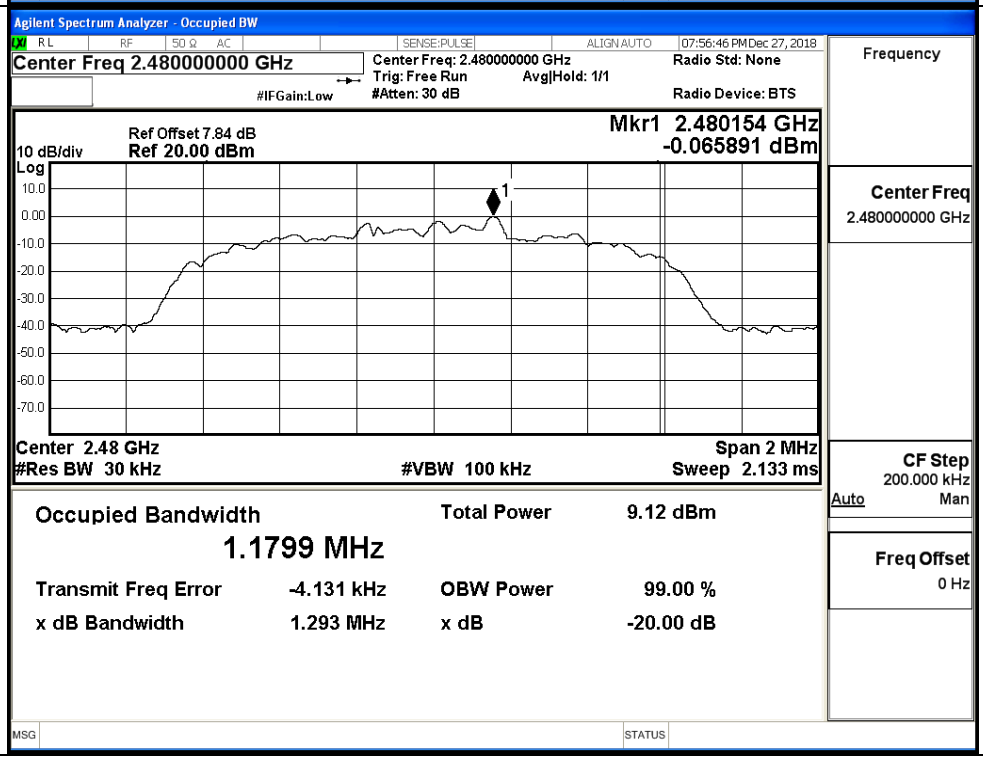
GFSK/LCH



GFSK/MCH	
GFSK/HCH	

π/4DQPSK/LCH	
π/4DQPSK/MCH	

π/4DQPSK/HCH	
8DPSK/LCH	

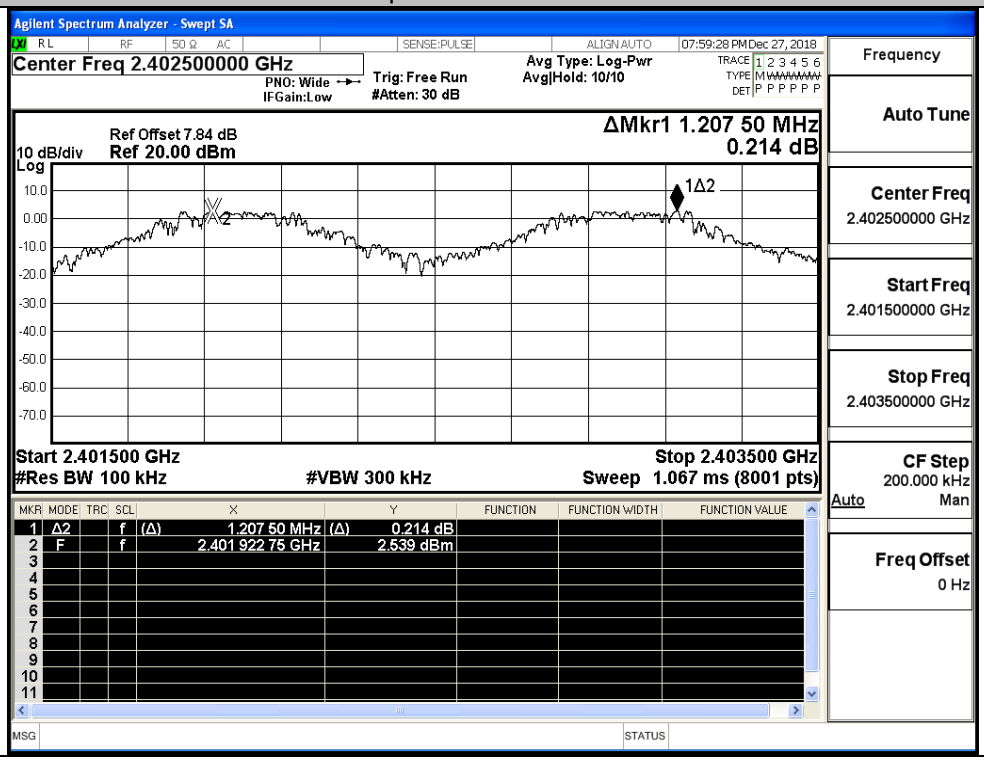
8DPSK/MCH	
8DPSK/HCH	

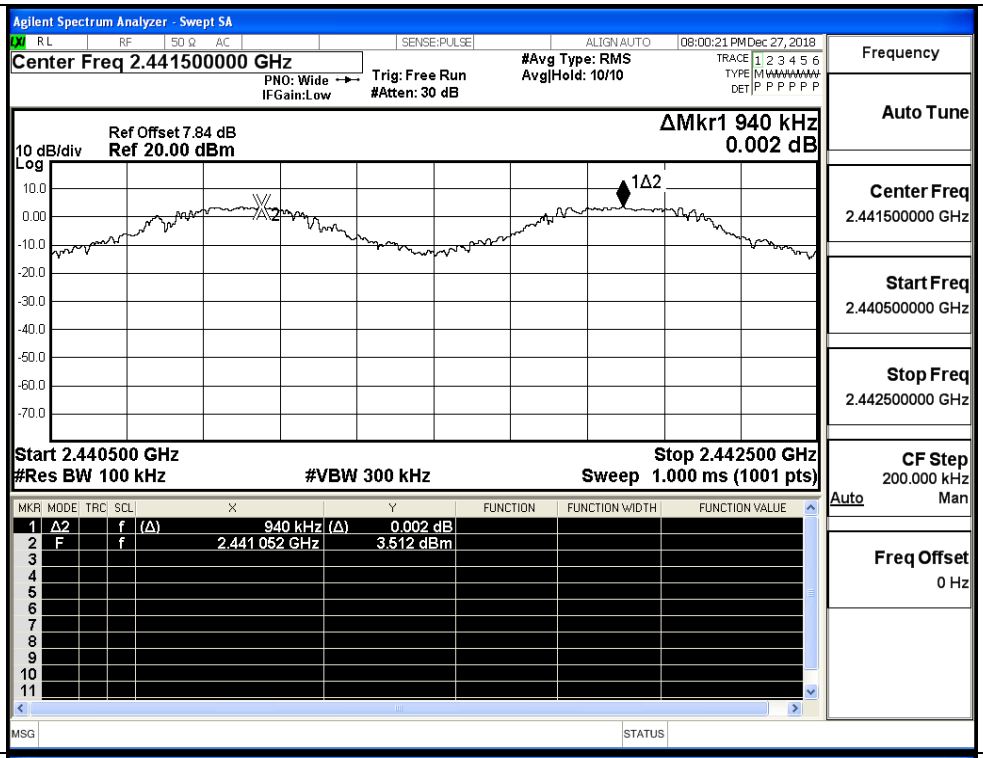
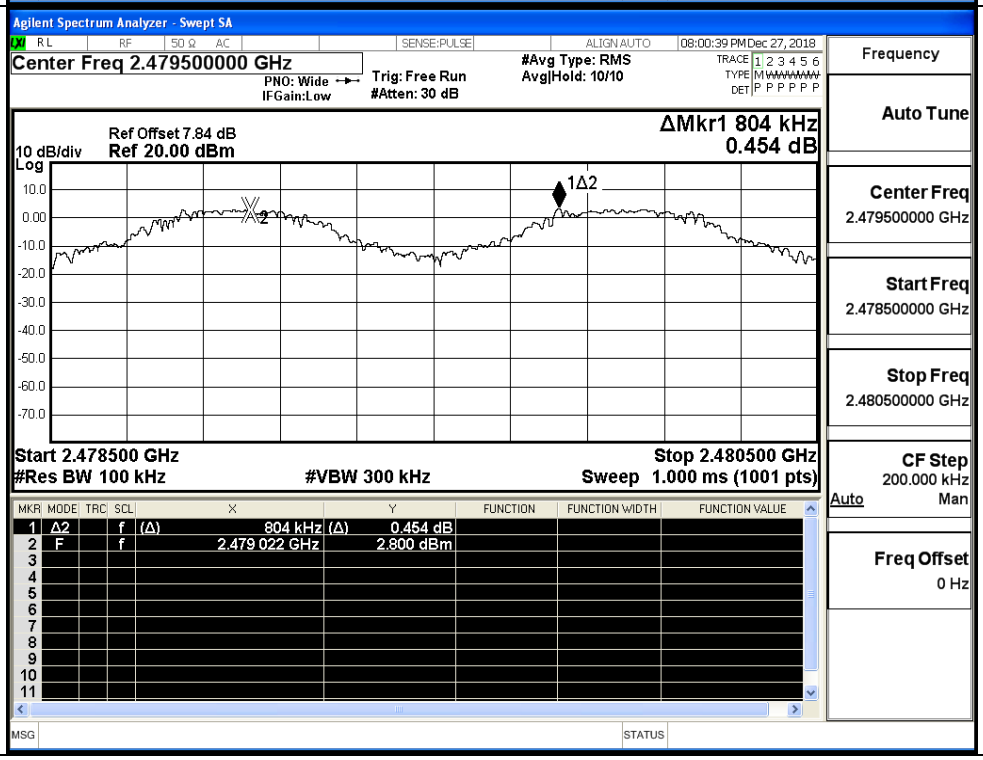
A.3 Carrier Frequency Separation

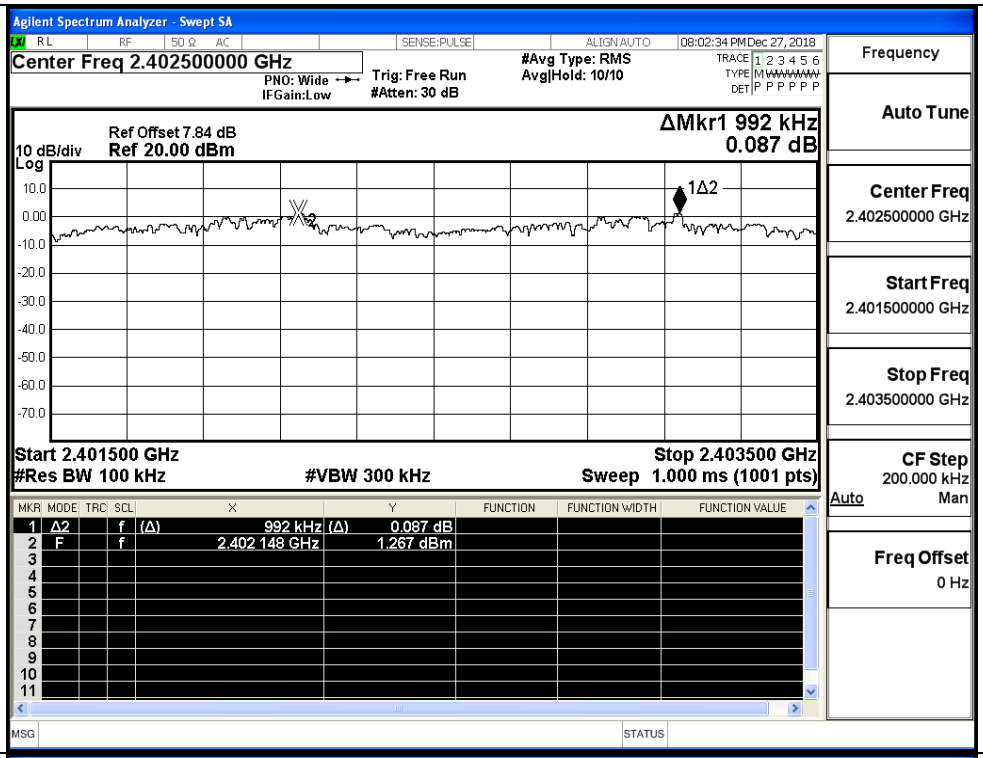
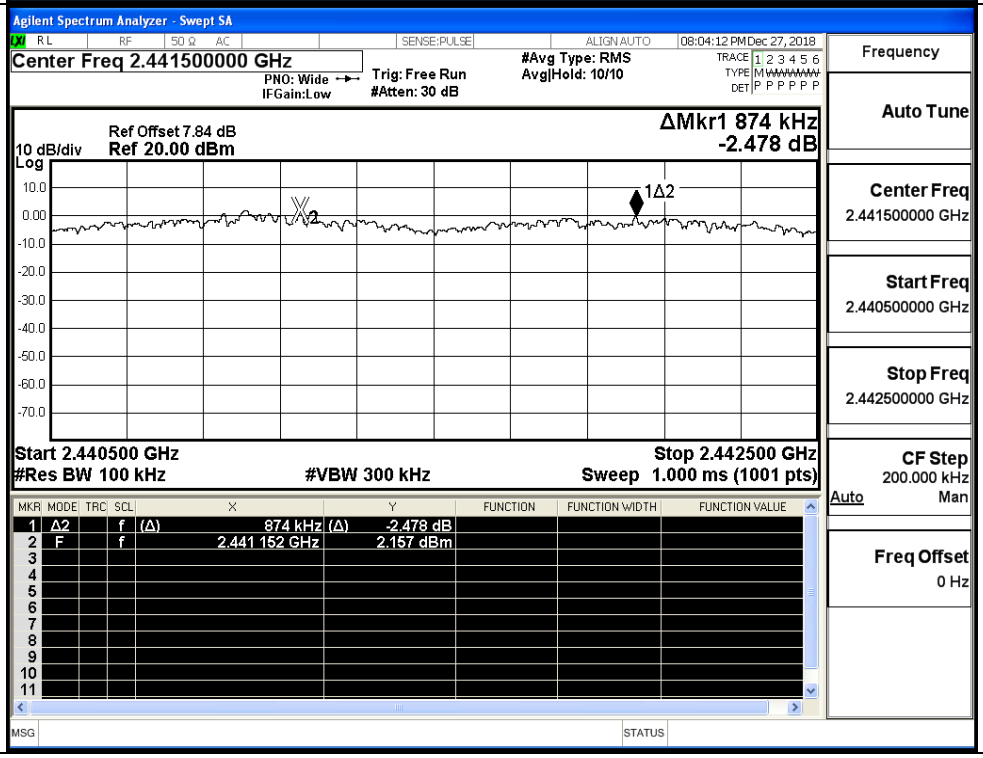
Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.207	0.692	PASS
	MCH	0.940	0.692	PASS
	HCH	0.804	0.692	PASS
π/4DQPSK	LCH	0.992	0.873	PASS
	MCH	0.874	0.873	PASS
	HCH	1.122	0.873	PASS
8DPSK	LCH	0.928	0.869	PASS
	MCH	1.114	0.869	PASS
	HCH	1.018	0.869	PASS

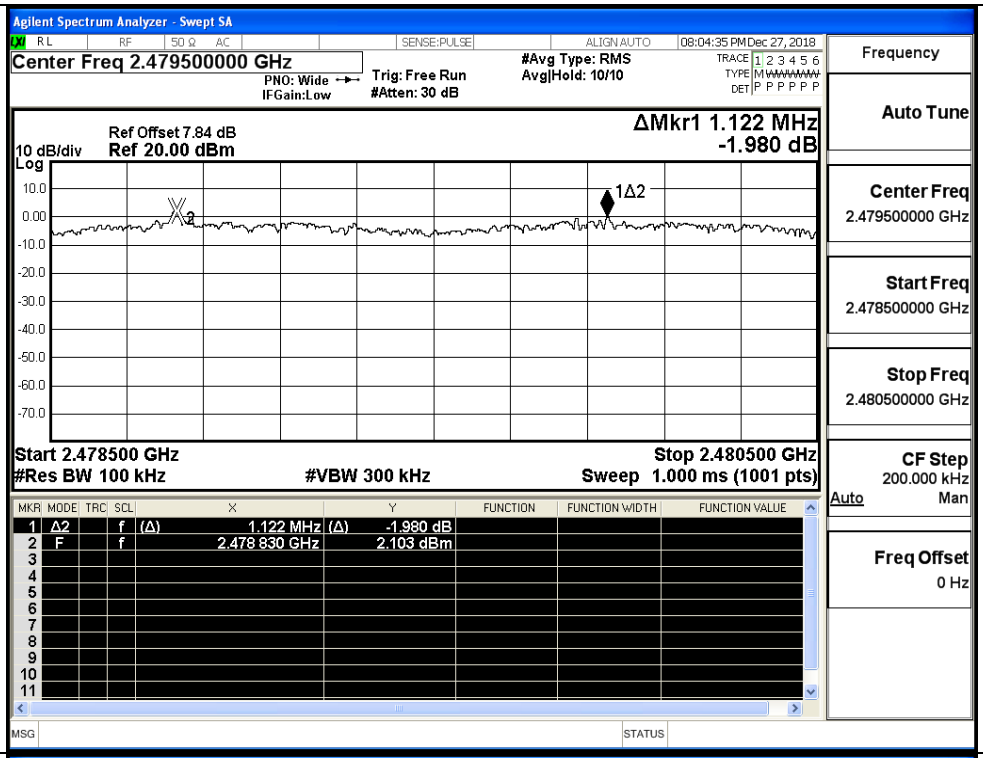
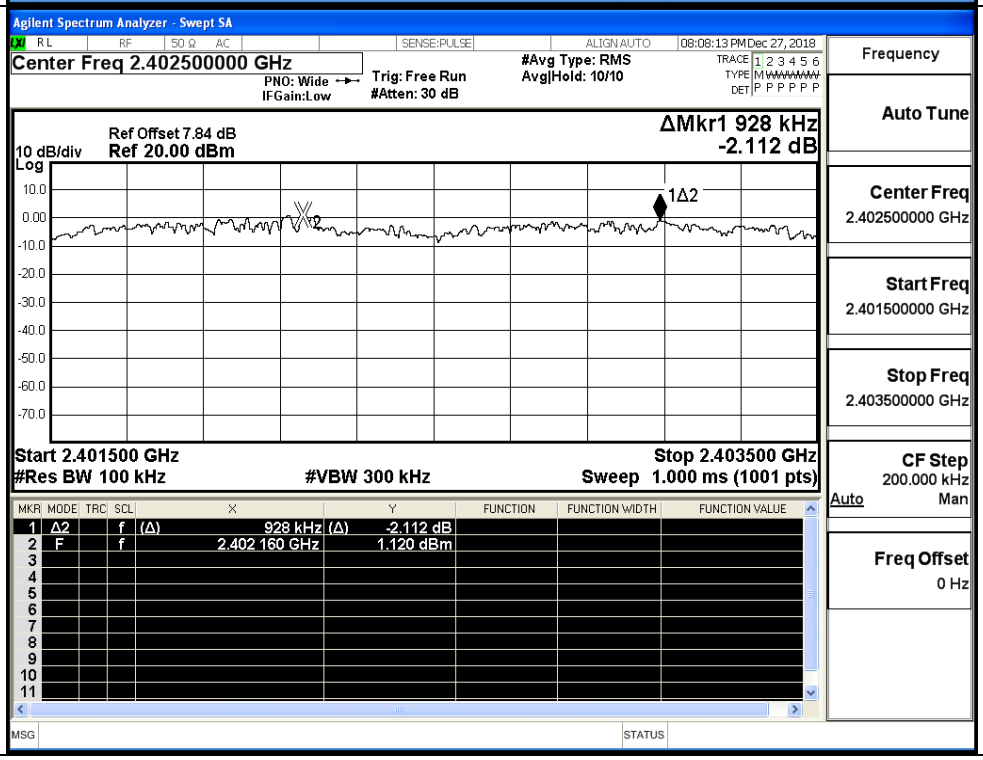
Test Graphs

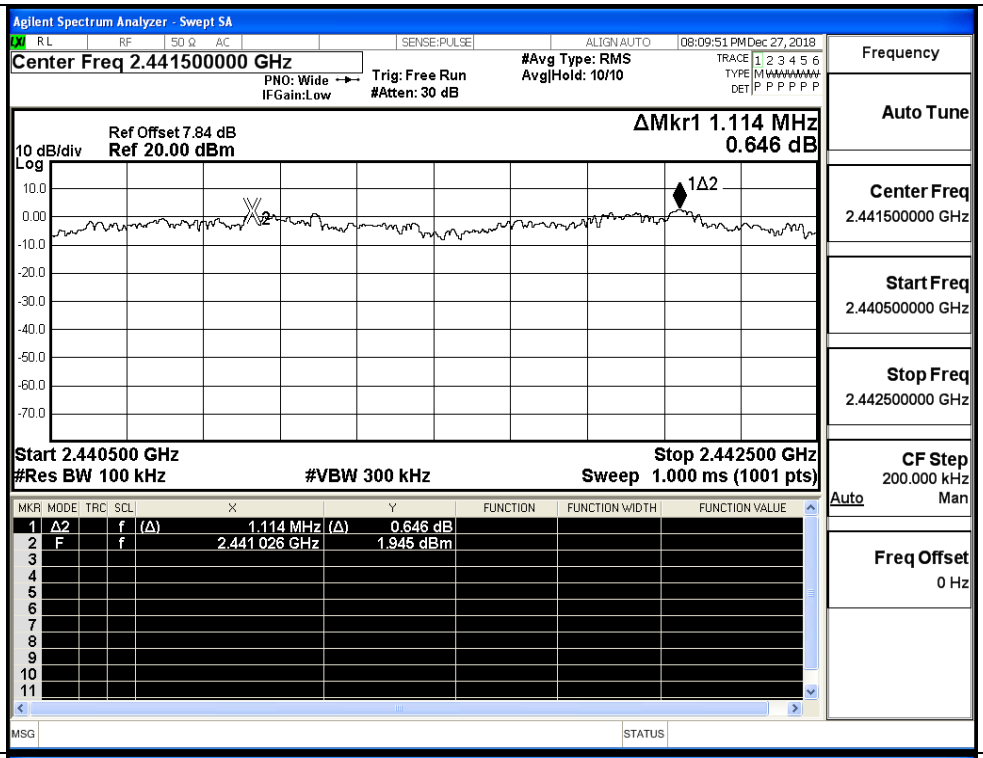
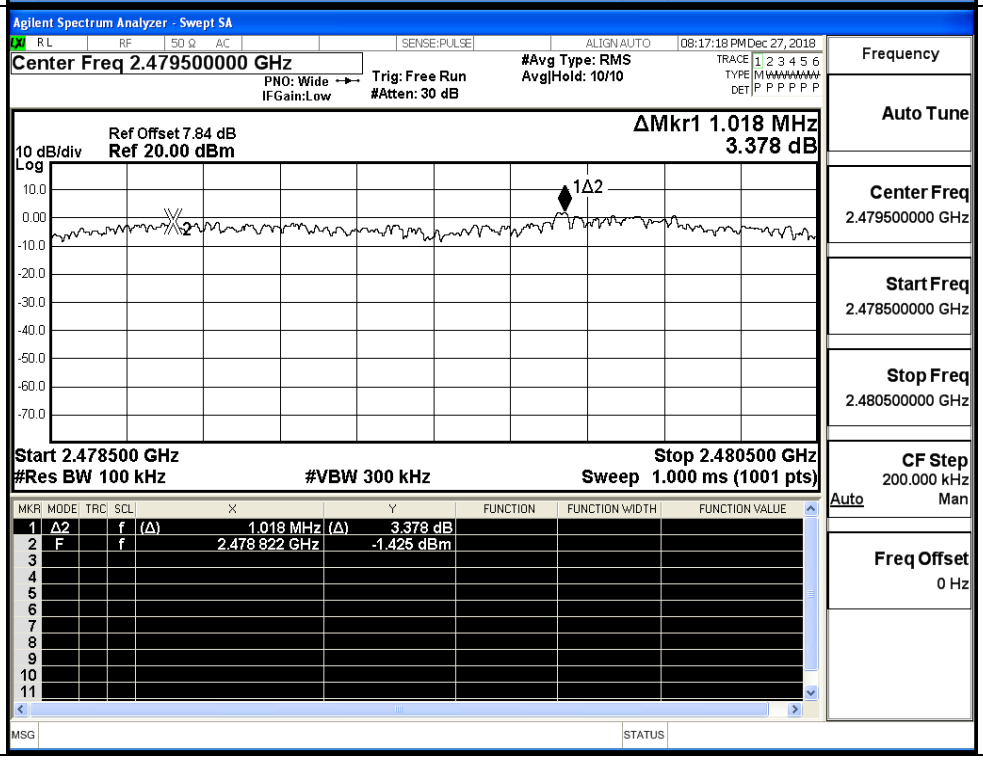
GFSK/LCH



GFSK/MCH	
GFSK/HCH	

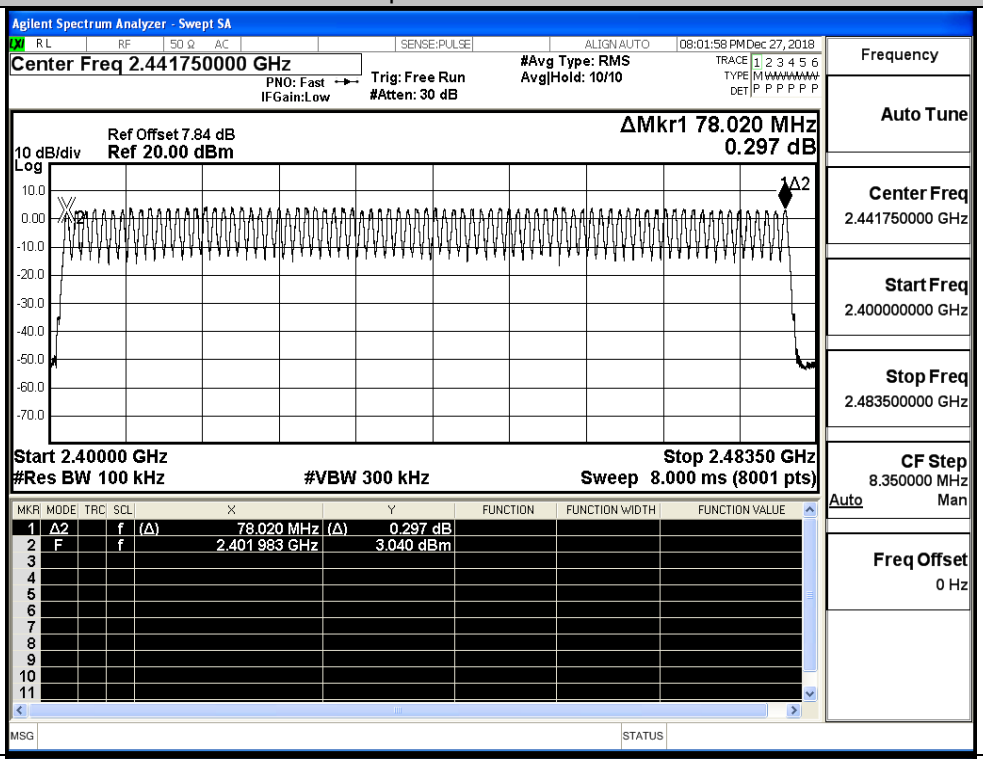
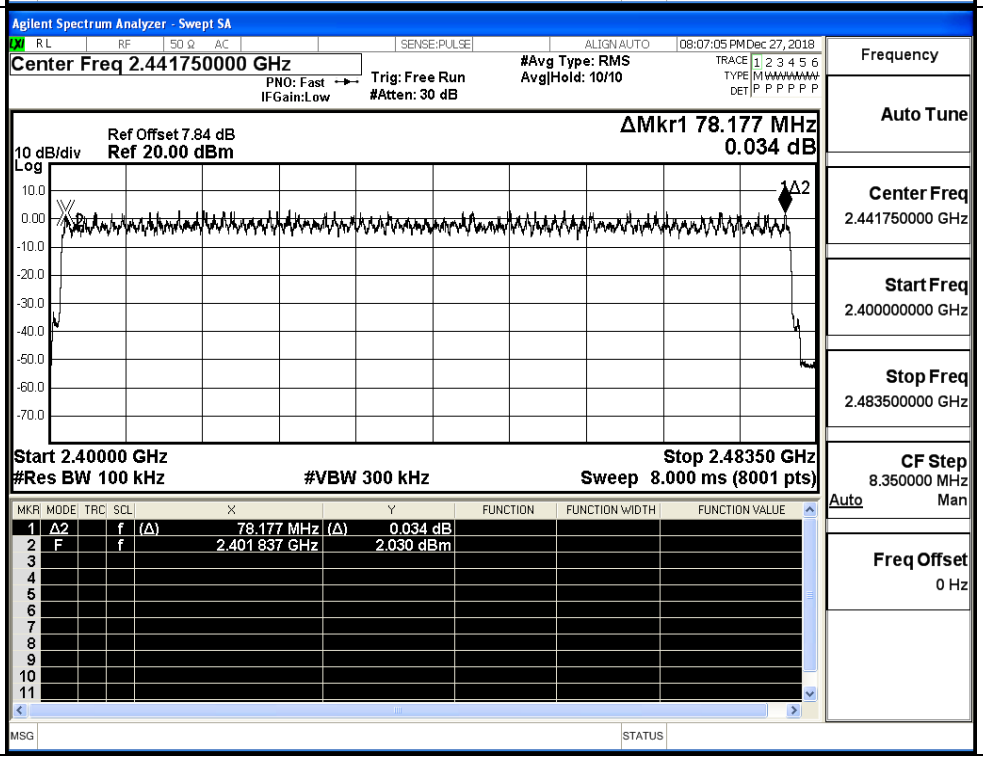
π/4DQPSK/LCH	
π/4DQPSK/MCH	

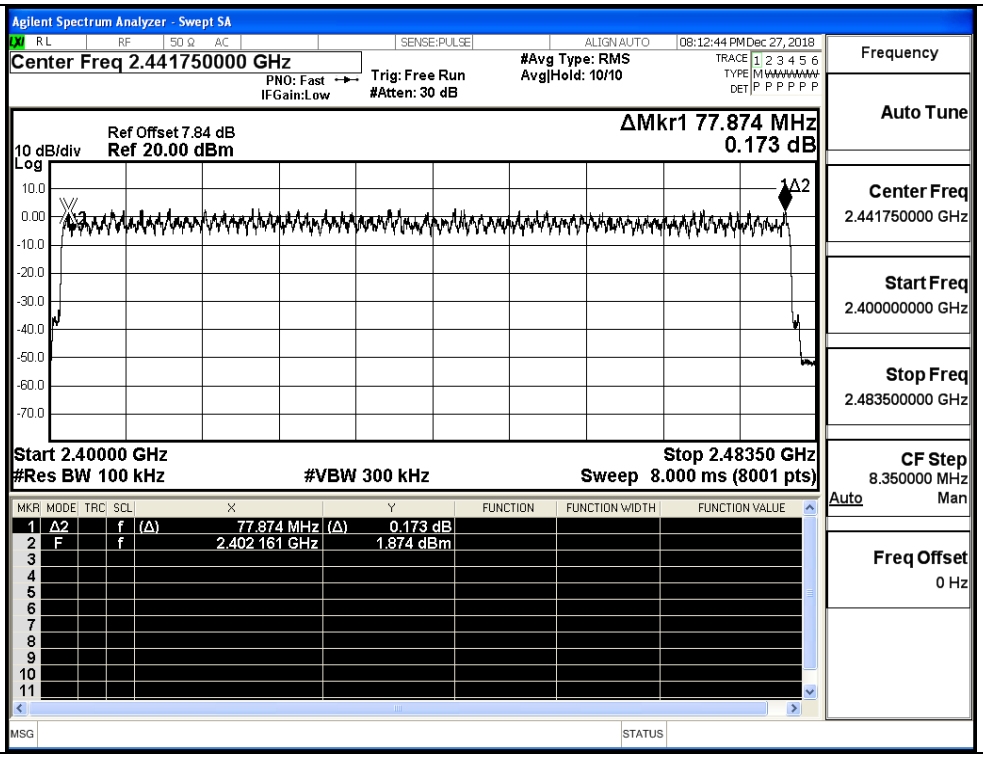
π/4DQPSK/HCH	
8DPSK/LCH	

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	

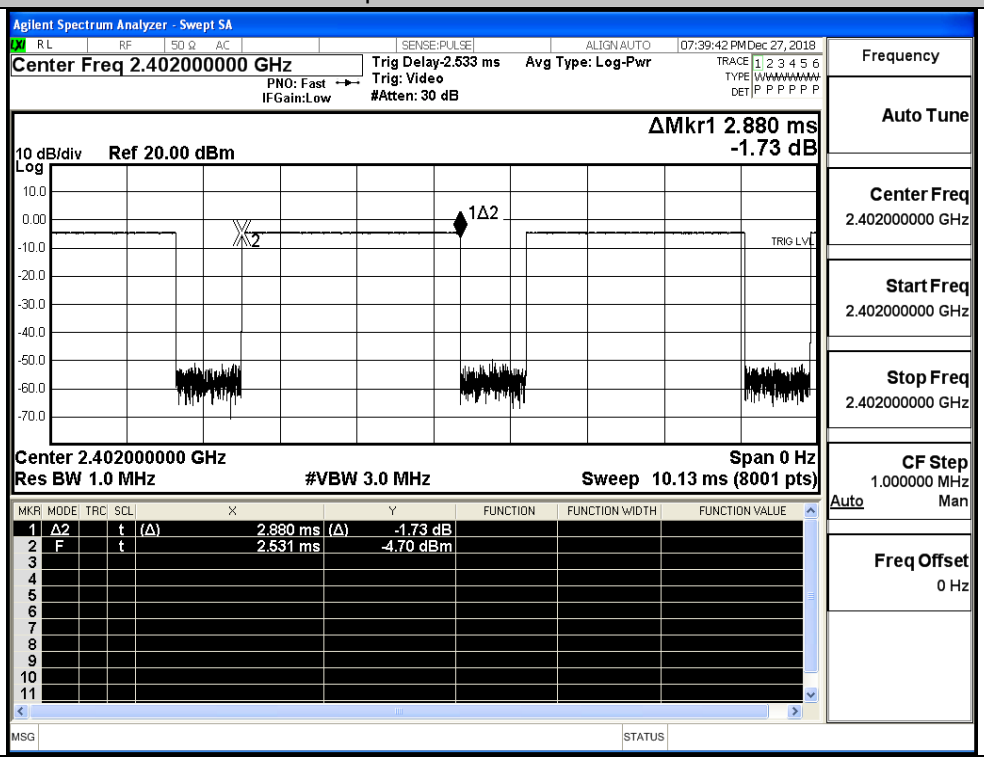
Agilent Spectrum Analyzer - Swept SA
Center Freq 2.441750000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 10/10
08:12:44 PM Dec 27, 2018
Ref Offset 7.84 dB
10 dB/div
Ref 20.00 dBm
Log
ΔMkr1 77.874 MHz
0.173 dB
Start 2.40000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.48350 GHz
Sweep 8.000 ms (8001 pts)
1 Δ2 f (Δ) 77.874 MHz (Δ) 0.173 dB
2 F f 2.402 161 GHz 1.874 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

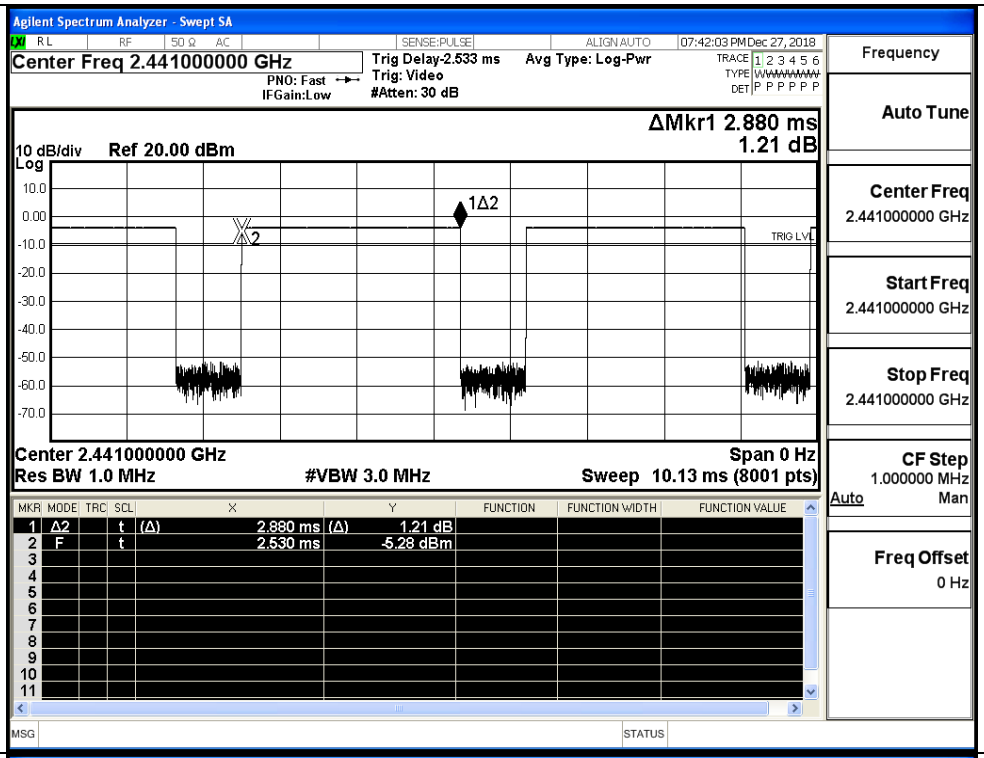
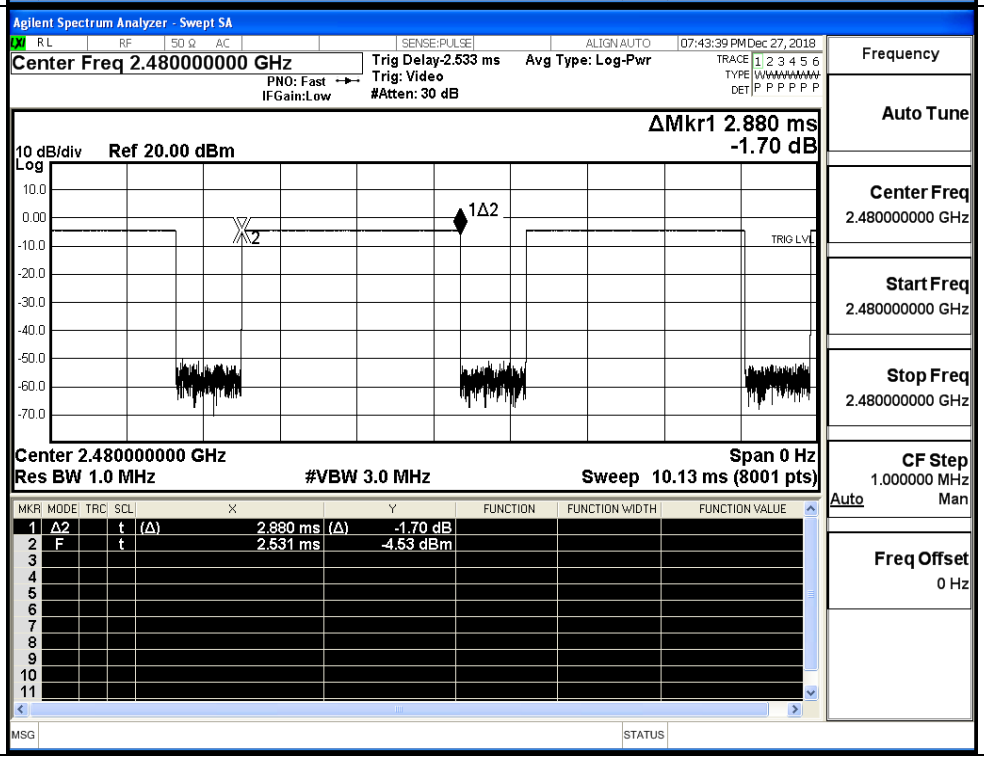
A.5 Dwell Time

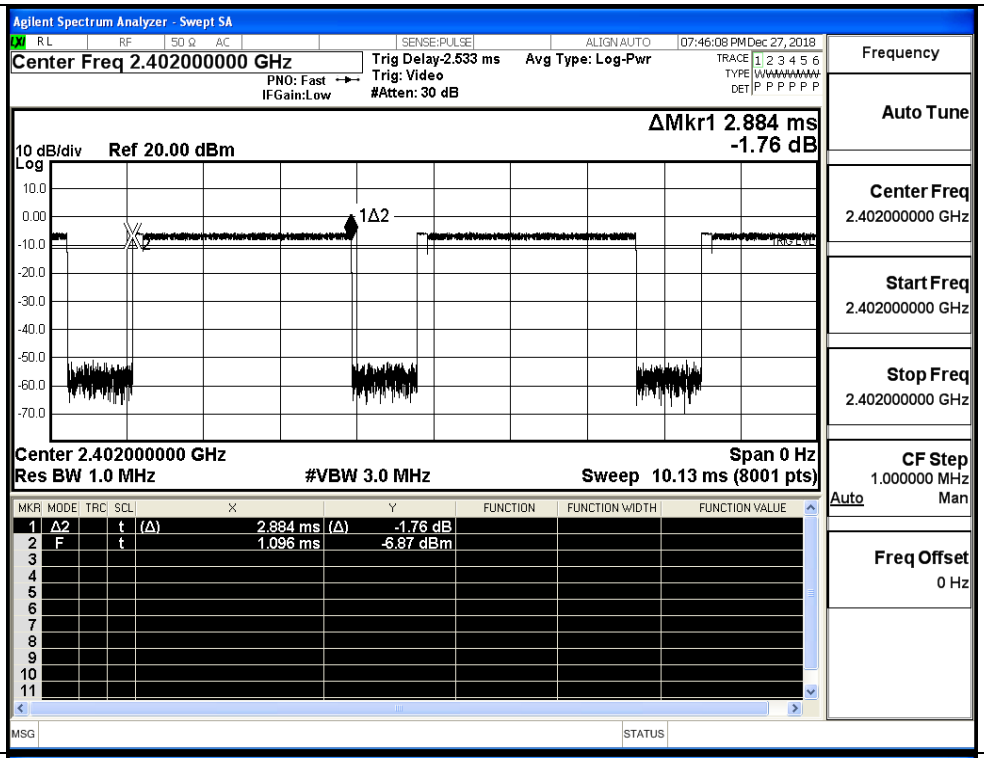
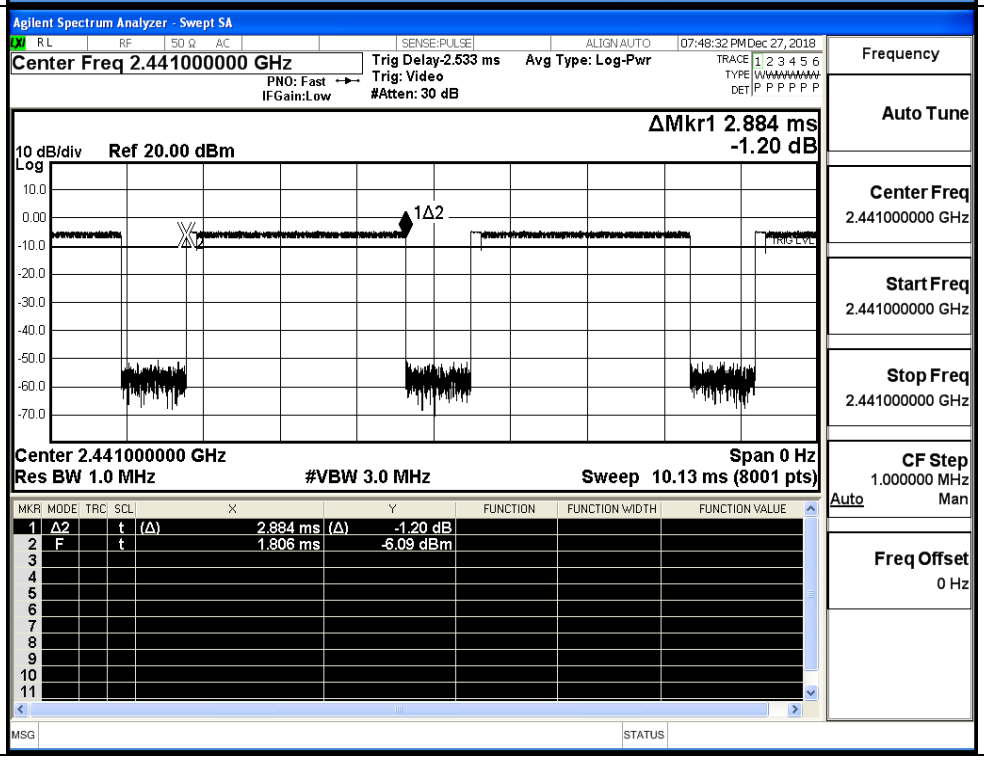
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.88	106.7	0.307	0.4	PASS
	DH5	MCH	2.88	106.7	0.307	0.4	PASS
	DH5	HCH	2.88	106.7	0.307	0.4	PASS
π/4DQPSK	2DH5	LCH	2.88	106.7	0.307	0.4	PASS
	2DH5	MCH	2.88	106.7	0.307	0.4	PASS
	2DH5	HCH	2.88	106.7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

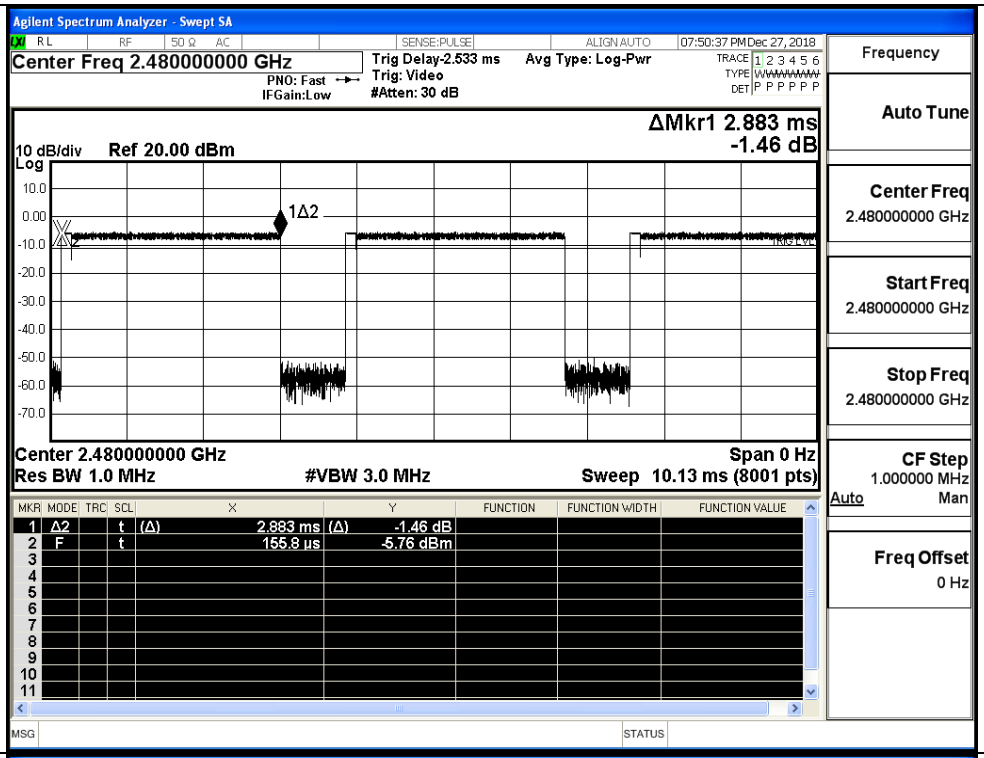
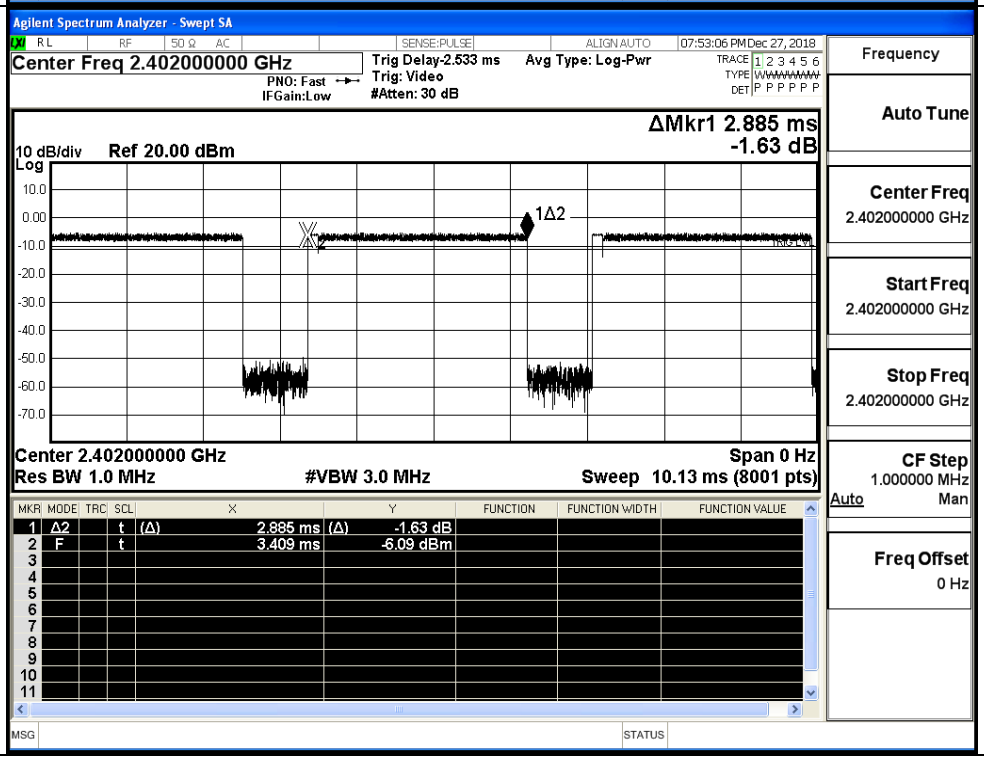
Test Graphs

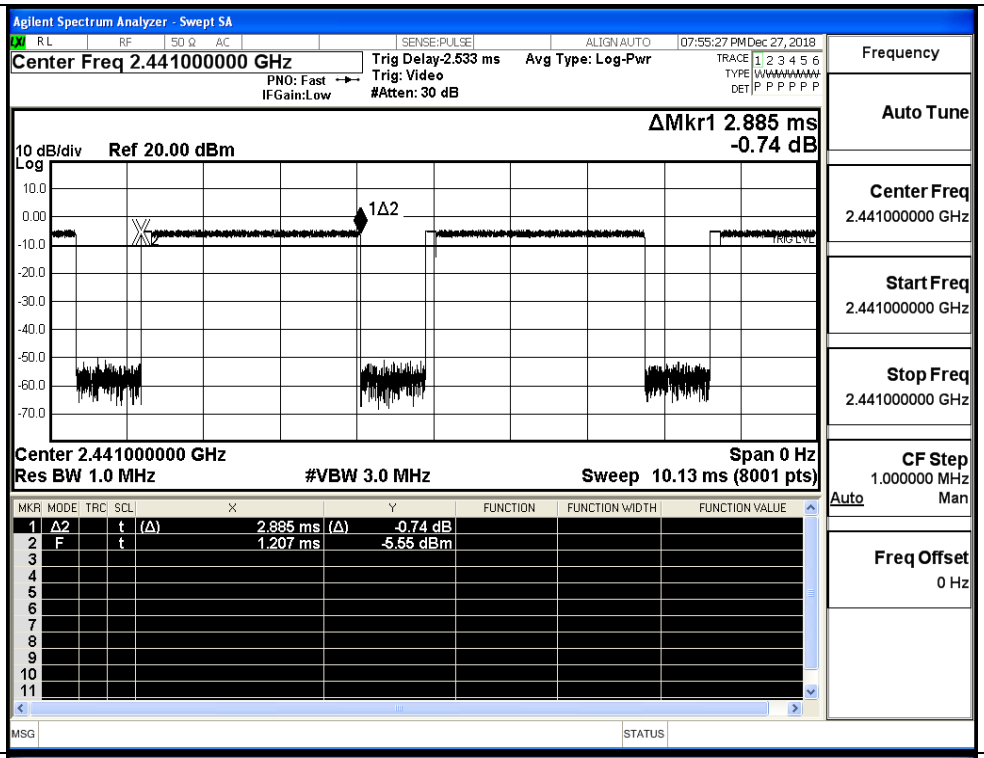
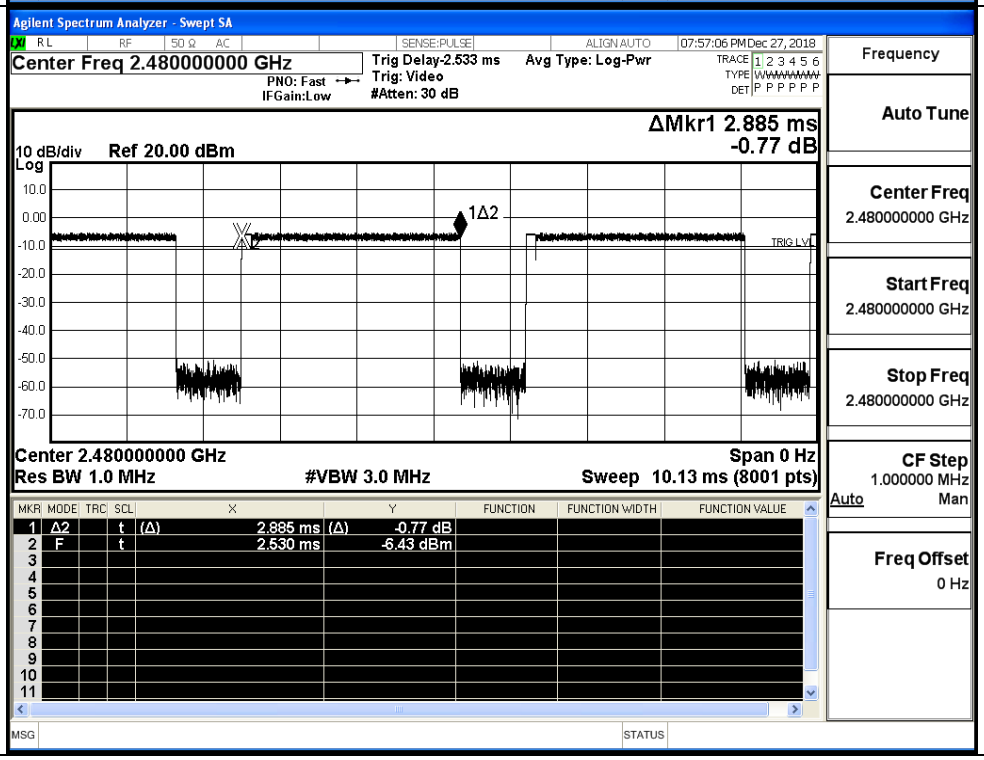
GFSK_DH5/LCH



GFSK_DH5/MCH	
GFSK_DH5/HCH	

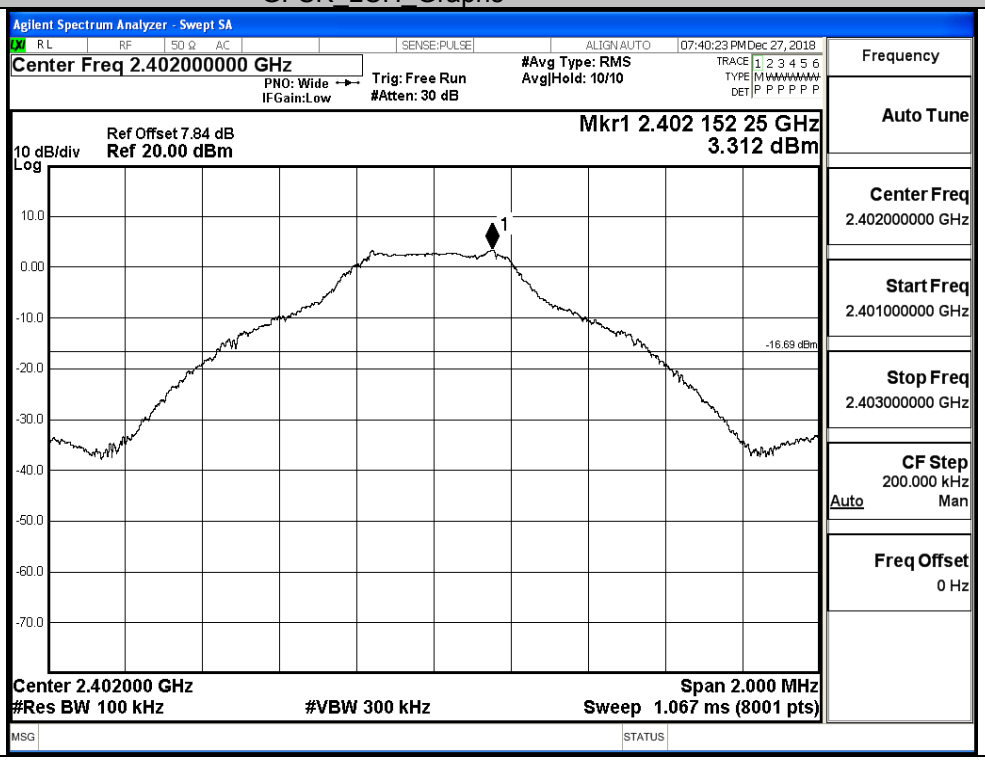
π/4DQPSK _2DH5/LCH	
π/4DQPSK _2DH5/MCH	

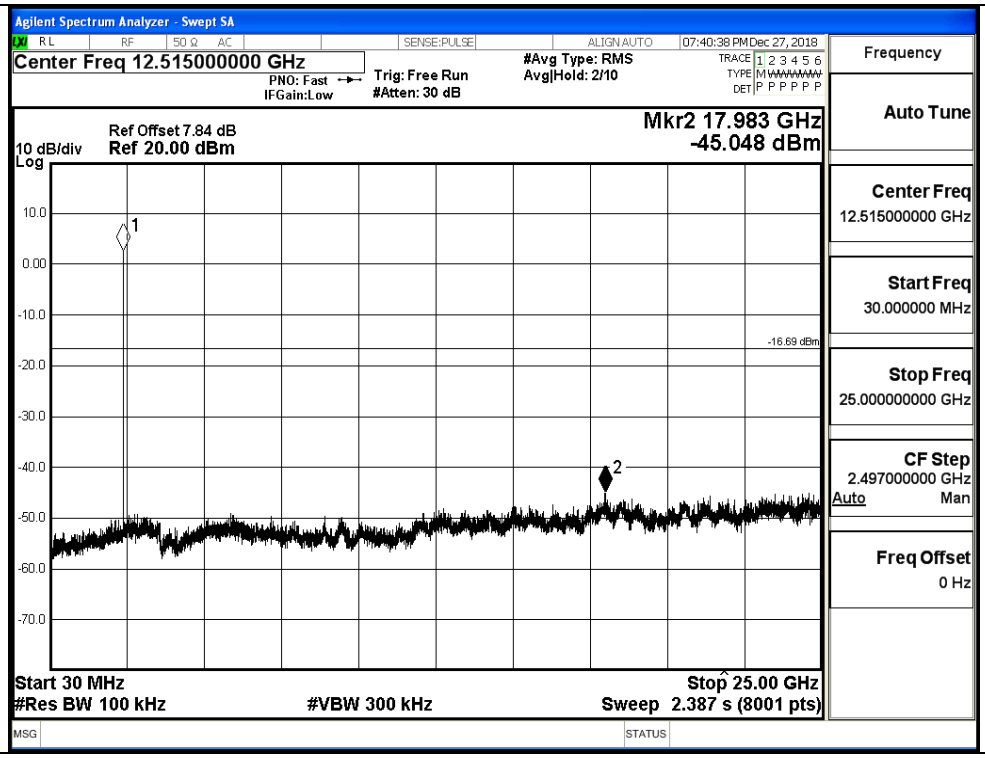
π/4DQPSK _2DH5/HCH	
8DPSK _3DH5/LCH	

8DPSK _3DH5/MCH	
8DPSK _3DH5/HCH	

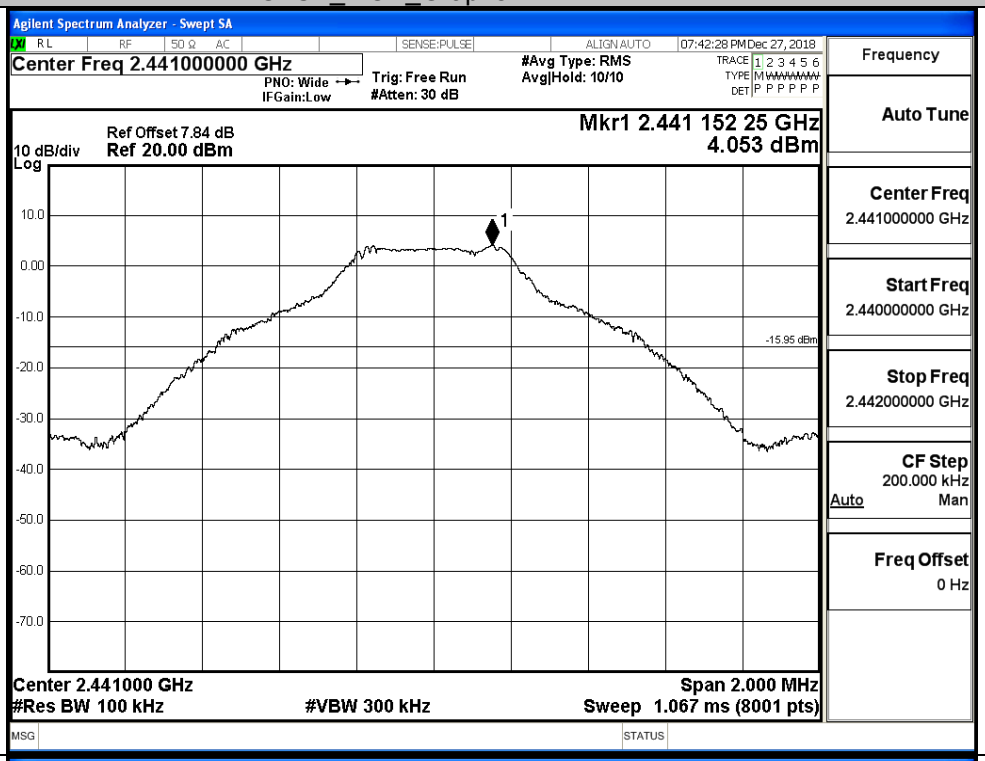
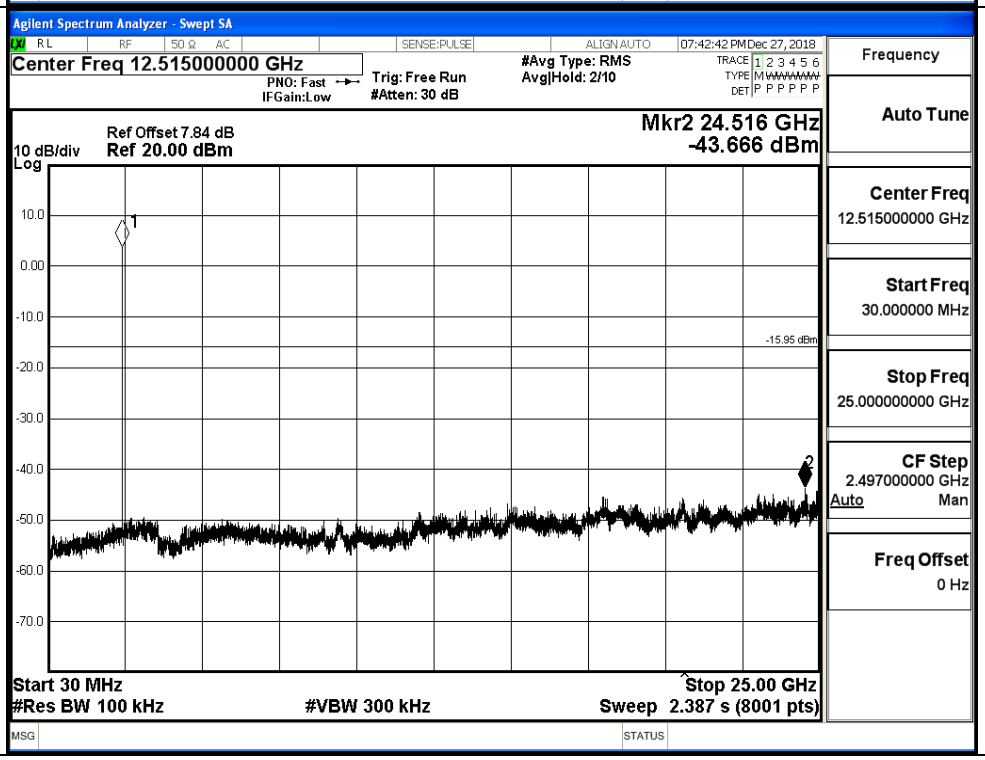
A.6 RF Conducted Spurious Emissions

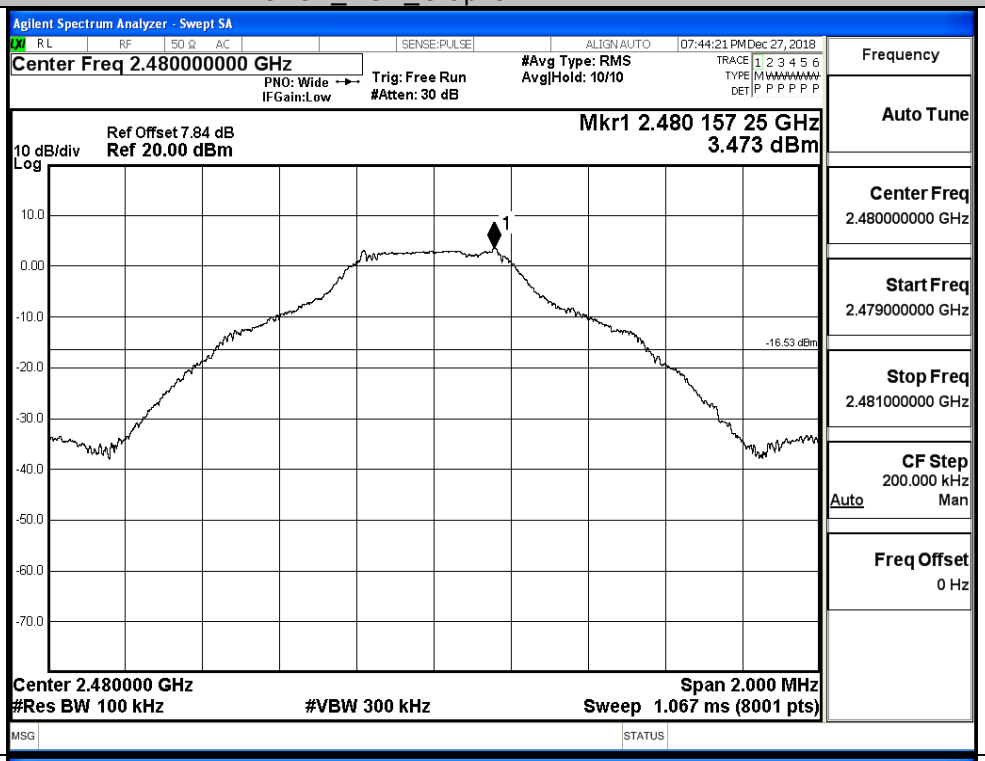
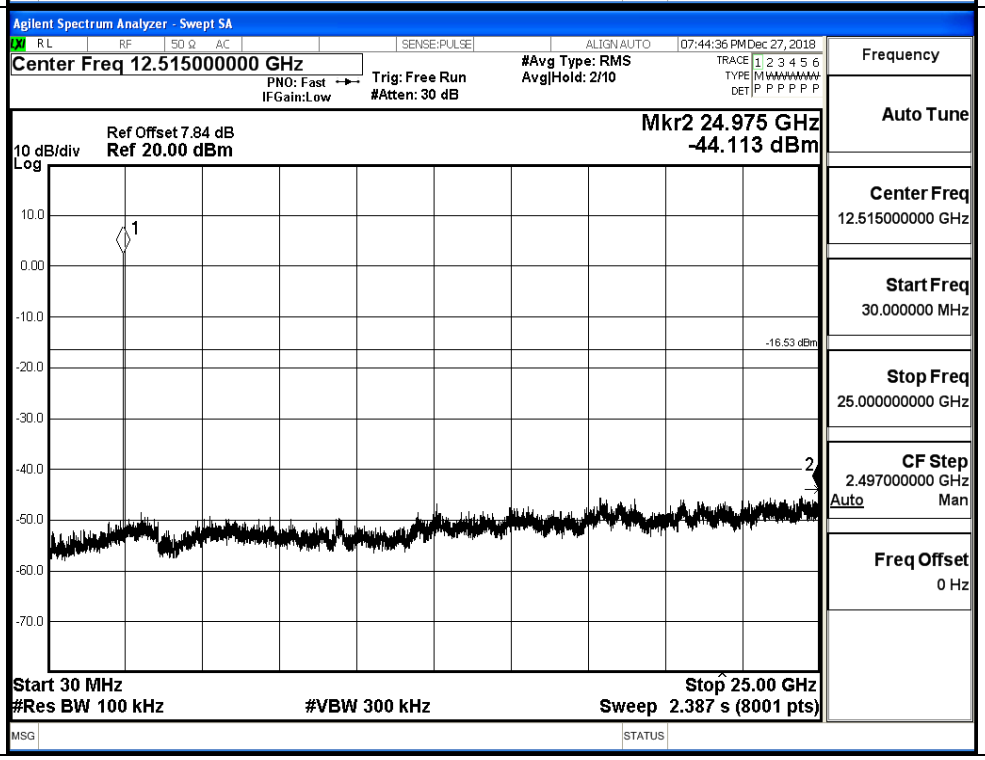
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	3.312	-45.048	-16.688	PASS
	MCH	4.053	-43.666	-15.947	PASS
	HCH	3.473	-44.113	-16.527	PASS
π/4DQPSK	LCH	1.87	-45.045	-18.130	PASS
	MCH	2.9	-44.520	-17.100	PASS
	HCH	1.417	-44.489	-18.583	PASS
8DPSK	LCH	1.926	-44.801	-18.074	PASS
	MCH	2.64	-44.852	-17.360	PASS
	HCH	1.886	-44.879	-18.114	PASS

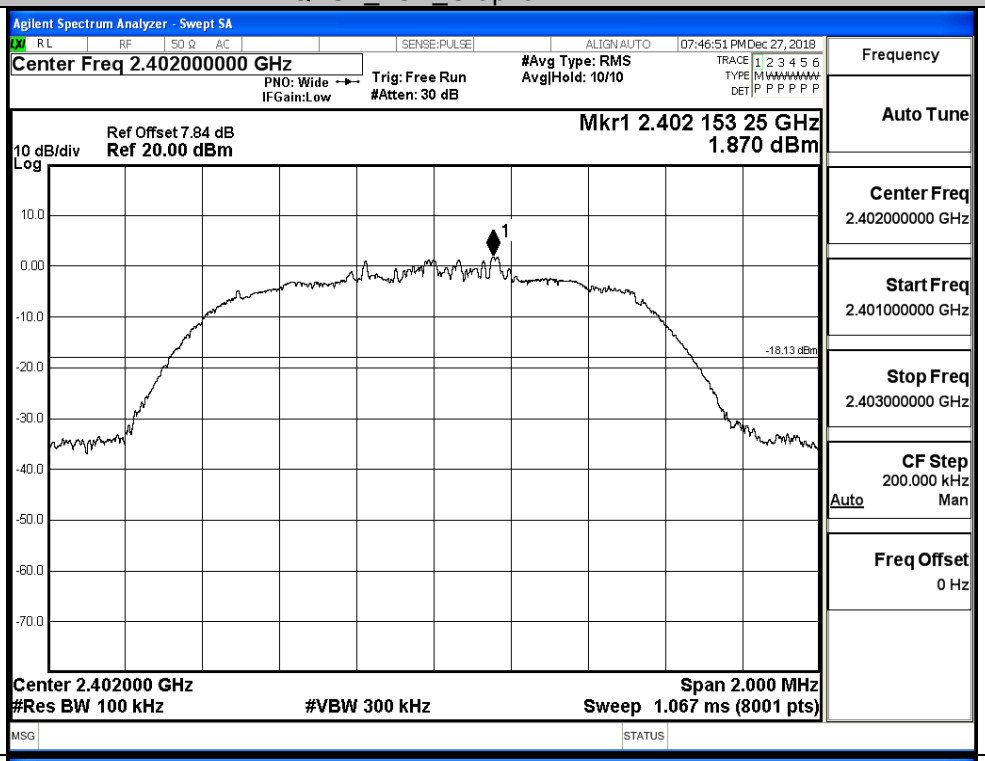
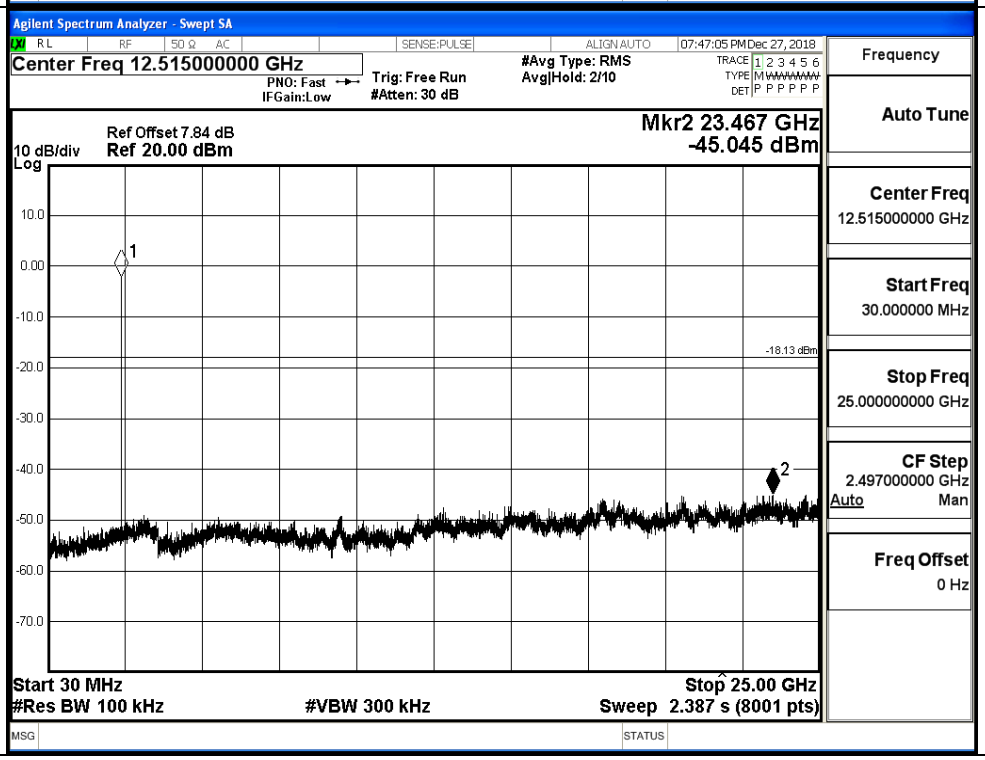
GFSK_LCH_Graphs	
Pref	

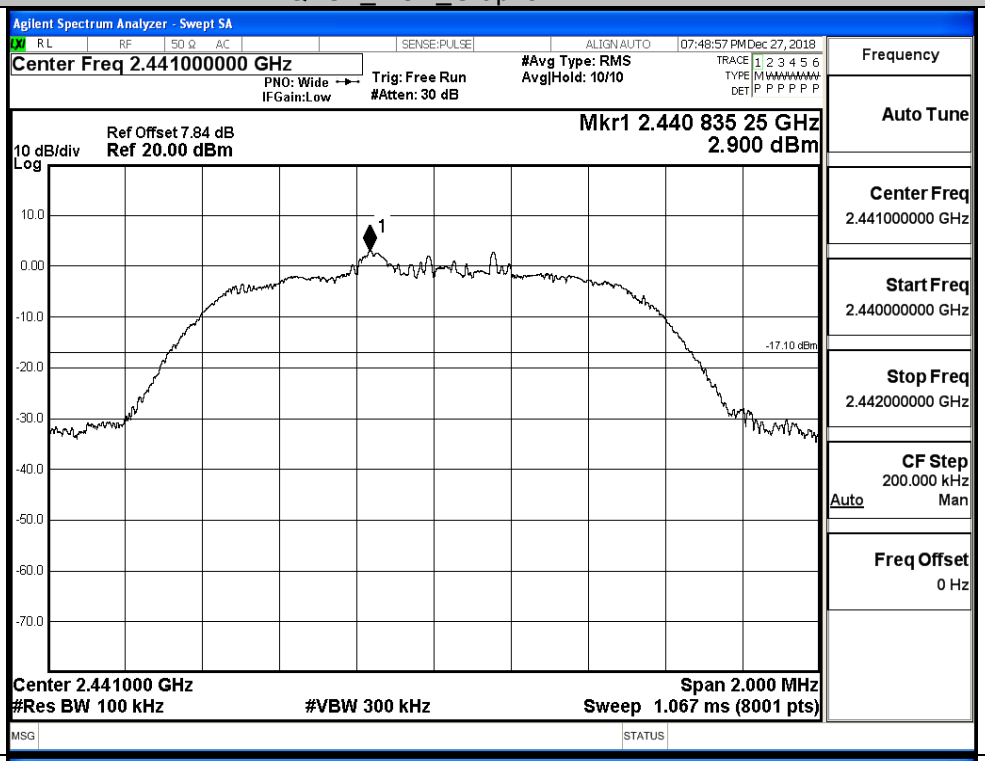
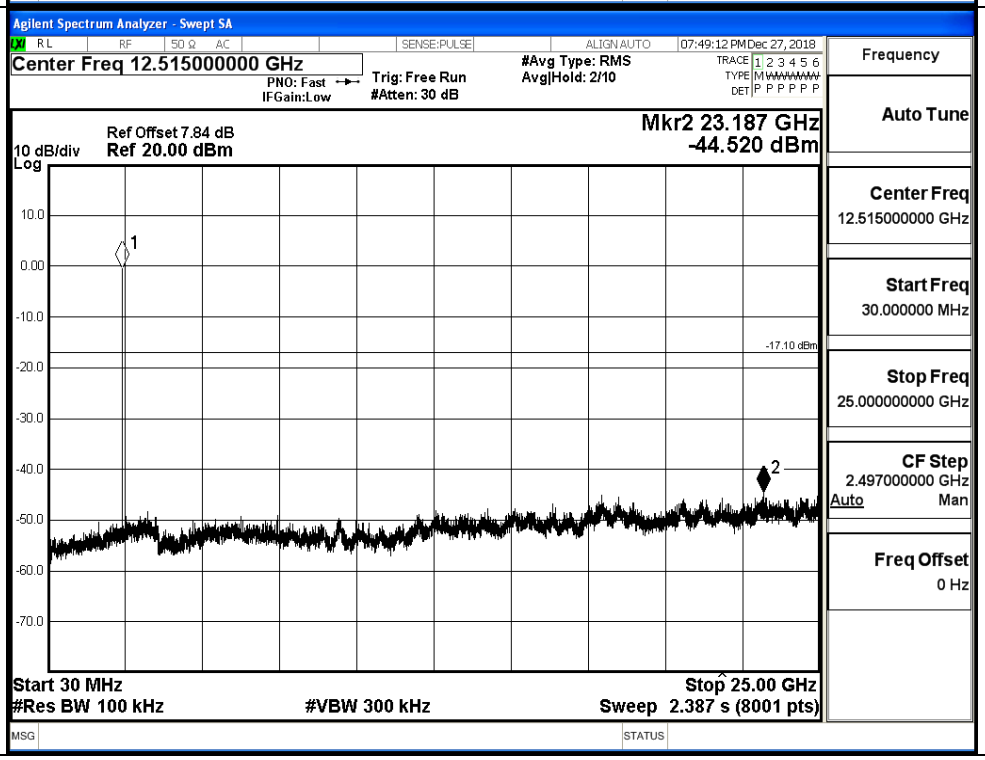
Puw		

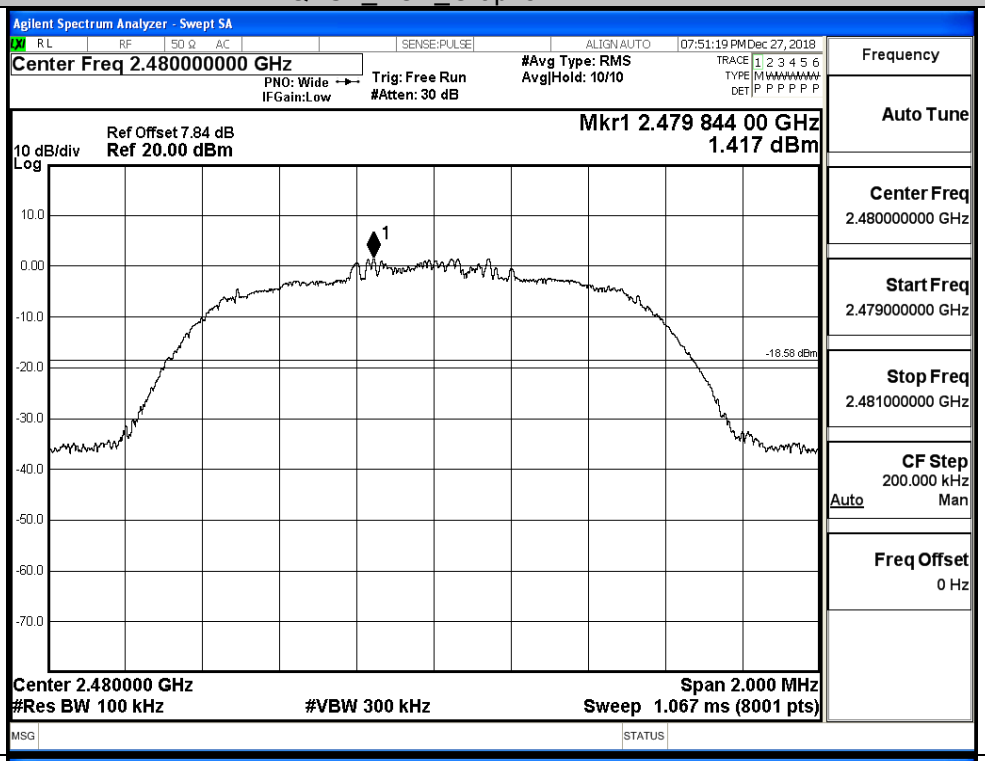
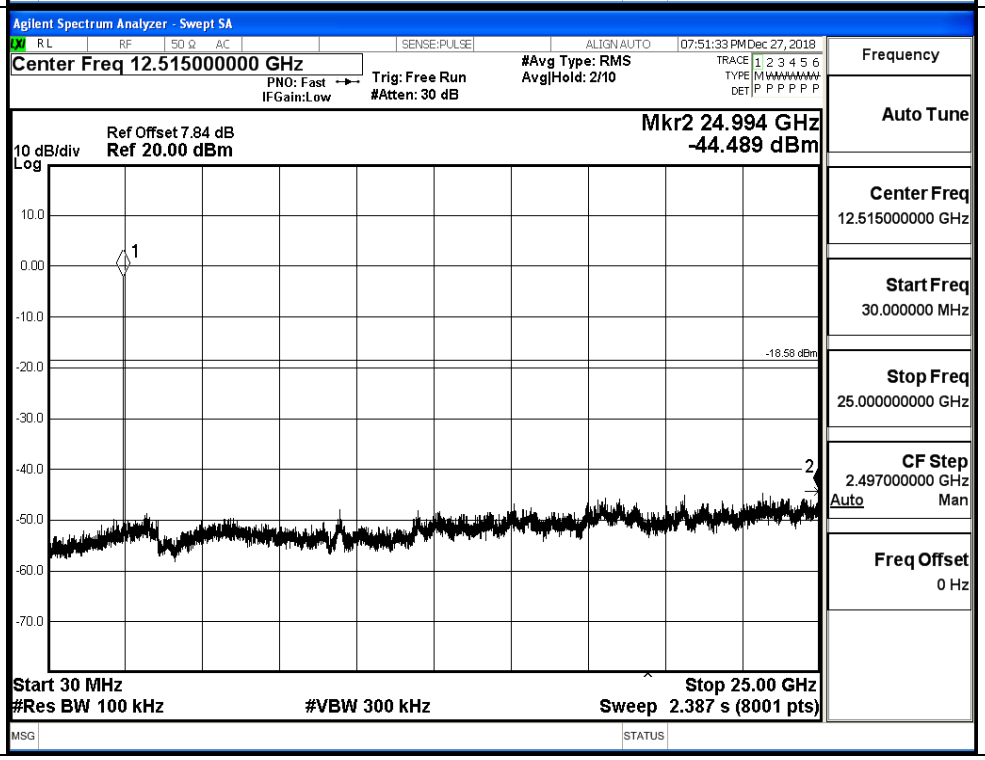
Agilent Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:PULSE
ALIGN AUTO
07:40:38 PM Dec 27, 2018
Center Freq 12.515000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 2/10
TRACE 1 2 3 4 5 6
TYPE M
DET P P P P P
Ref Offset 7.84 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr2 17.983 GHz
-45.048 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-16.69 dBm
1
2
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

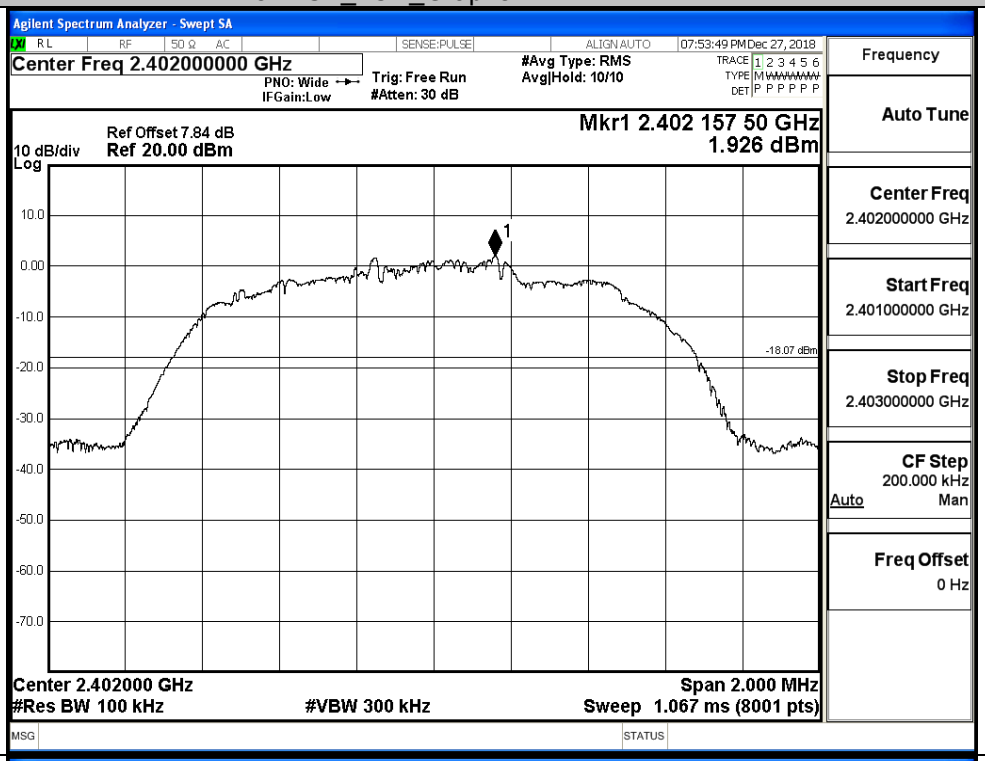
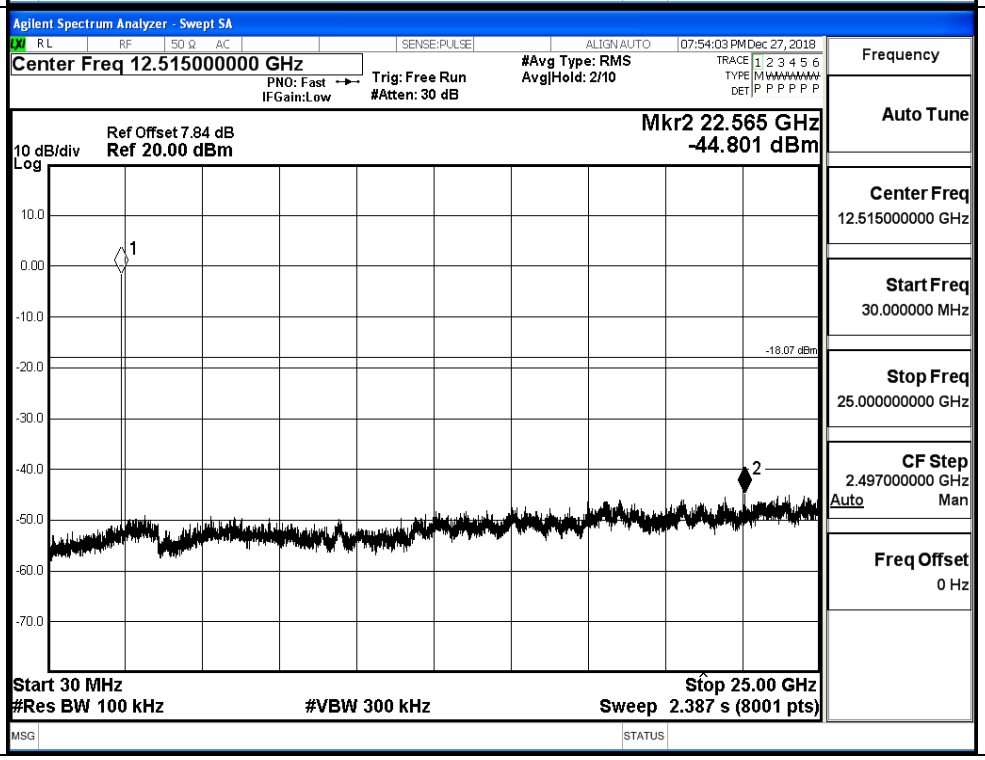
GFSK_MCH_Graphs			
Pref			
Puw			

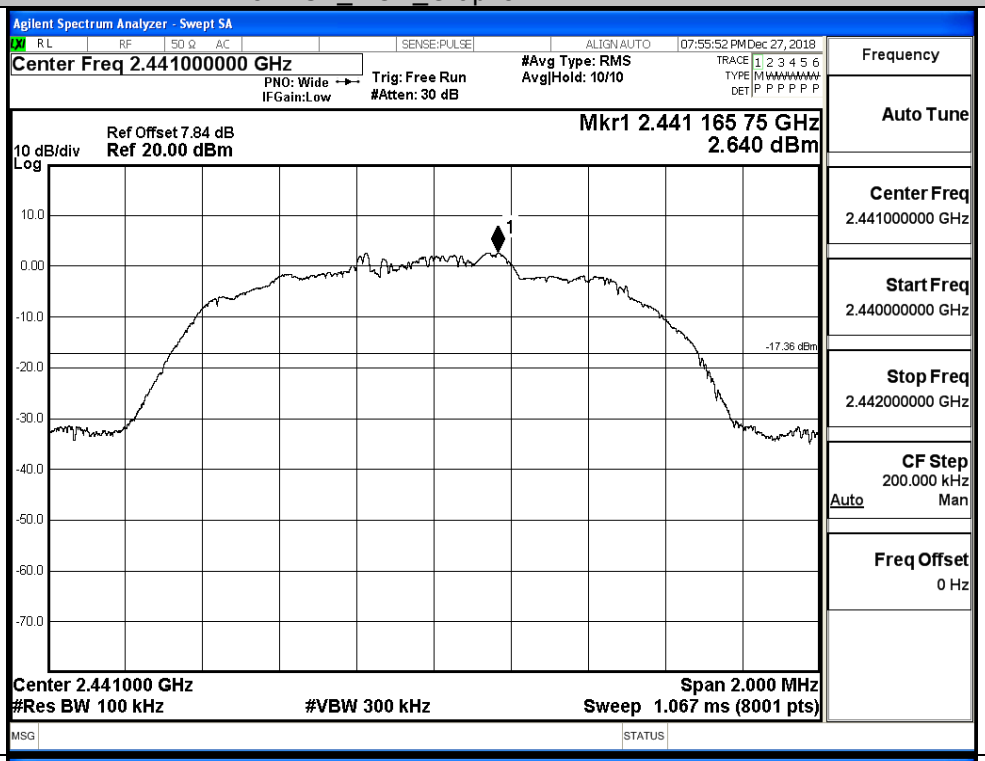
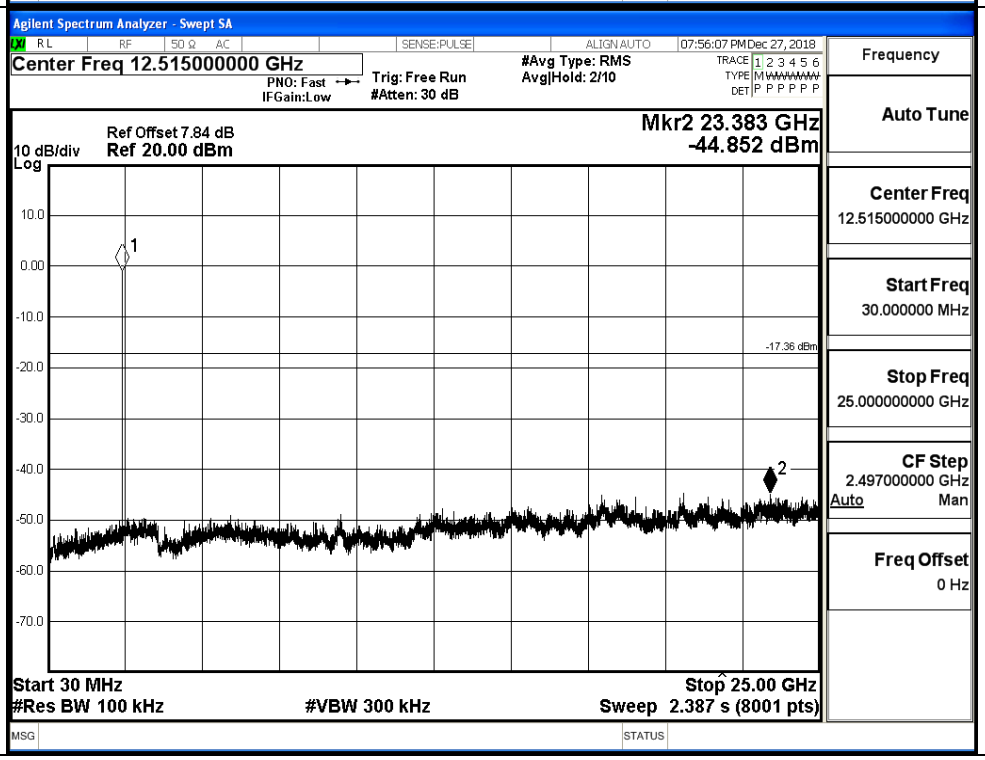
GFSK_HCH_Graphs			
Pref			
Puw			

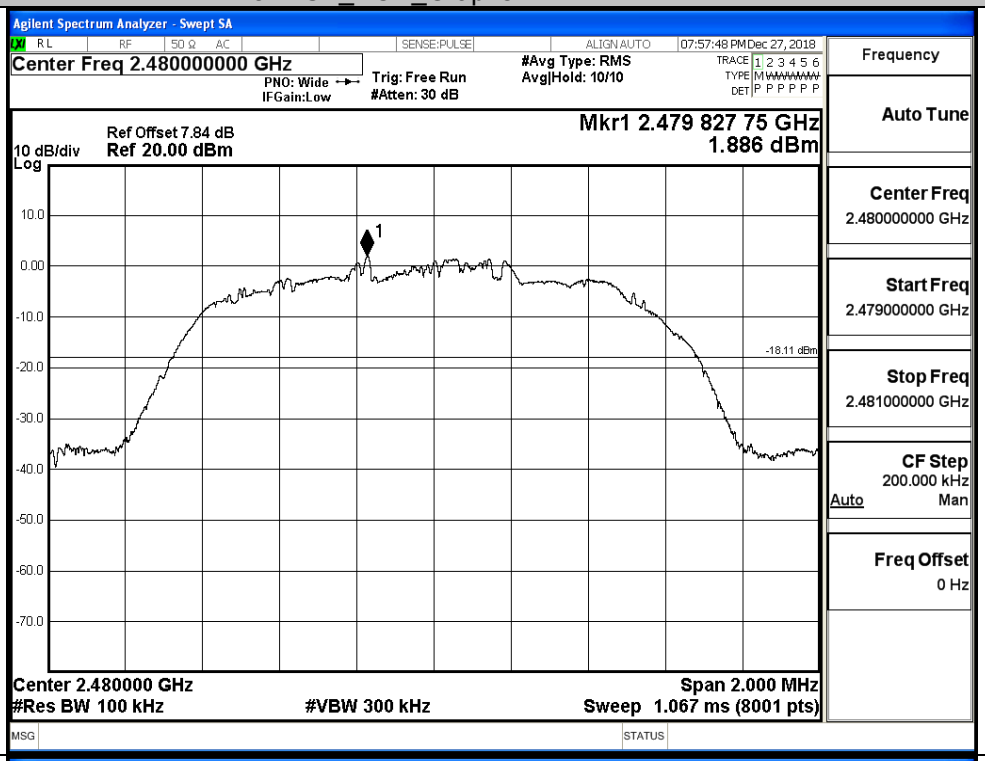
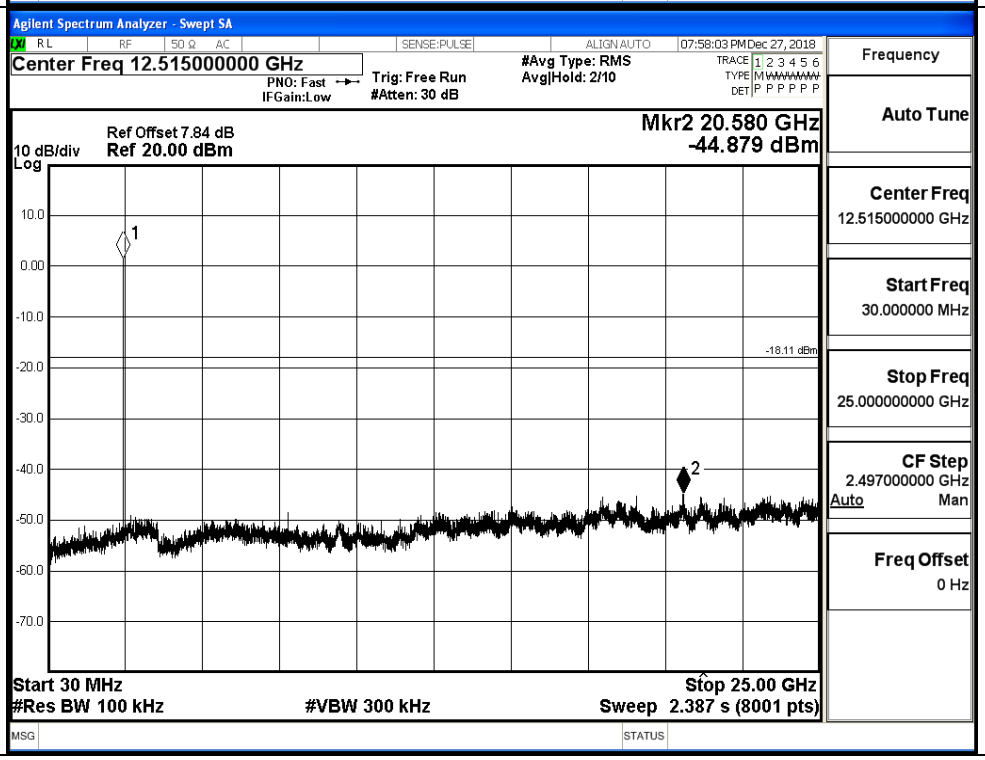
π/4DQPSK_LCH_Graphs			
Pref			
Puw			

π/4DQPSK_MCH_Graphs			
Pref			
Puw			

π/4DQPSK_HCH_Graphs			
Pref			
Puw			

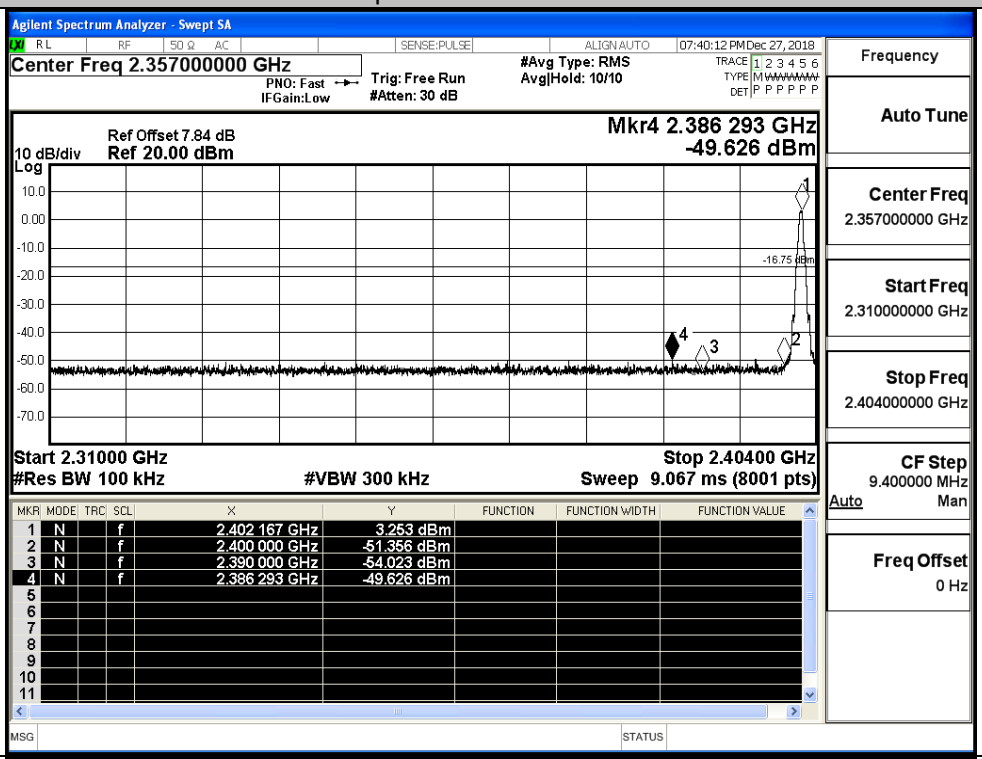
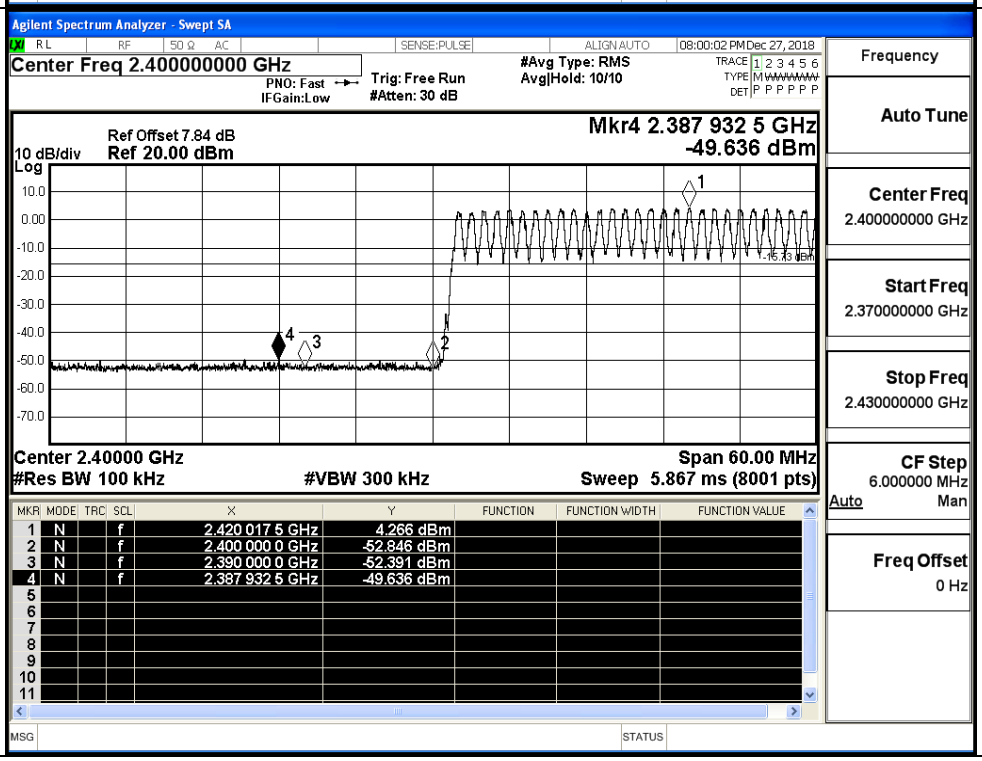
8DPSK_LCH_Graphs		
Pref		
Puw		

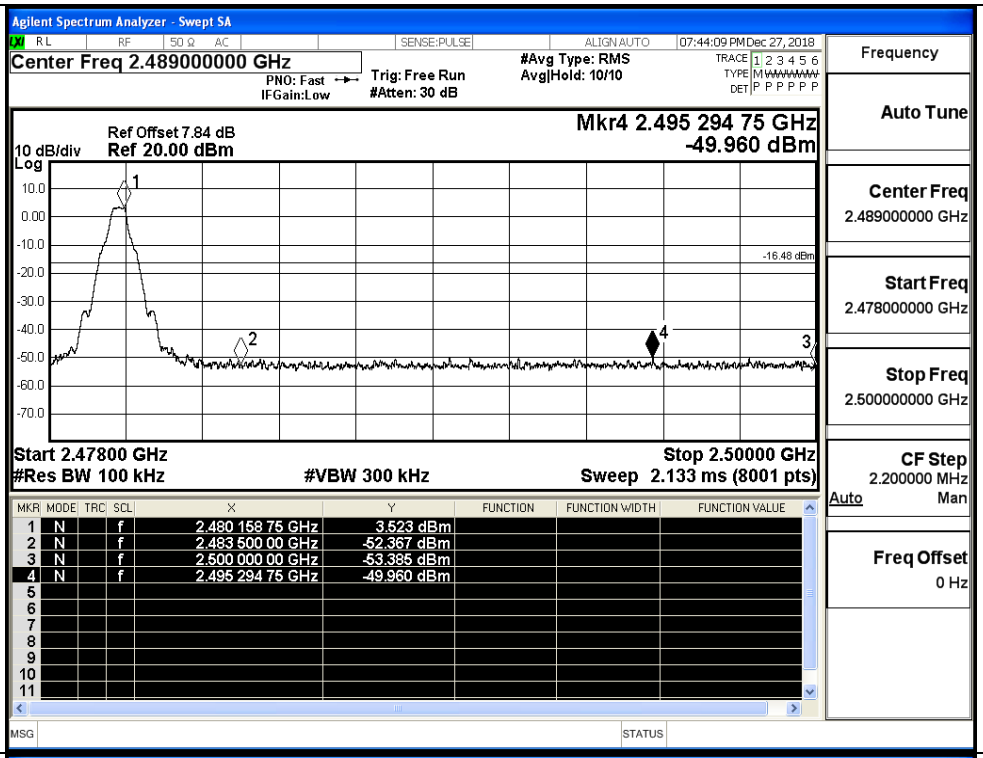
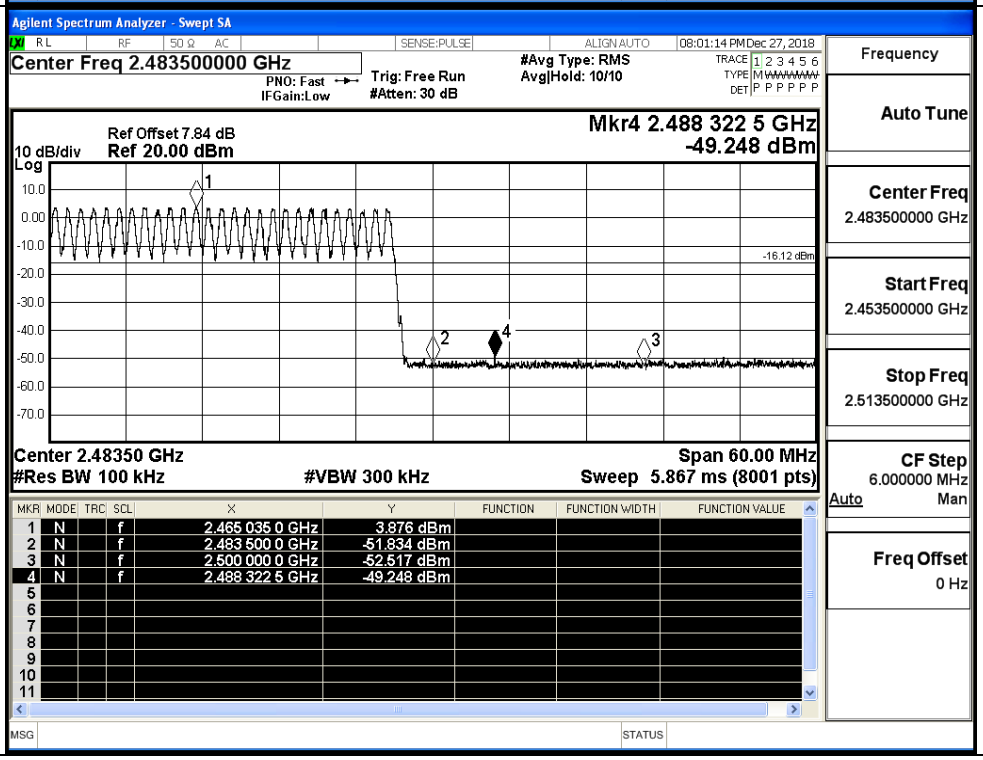
8DPSK_MCH_Graphs			
Pref			
Puw			

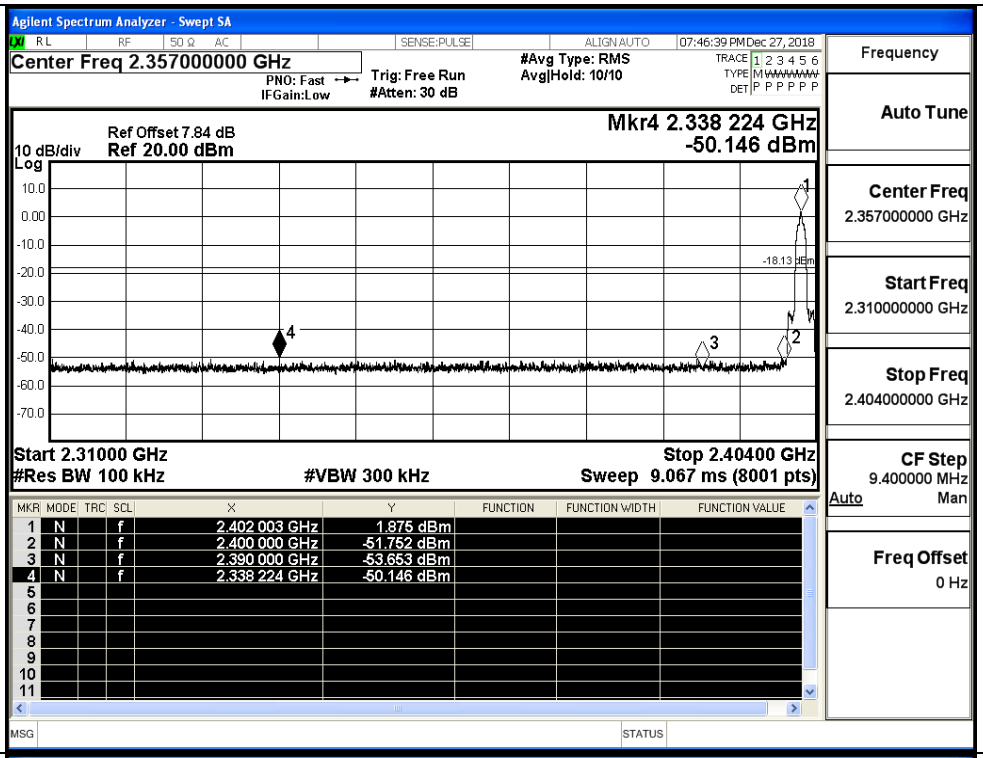
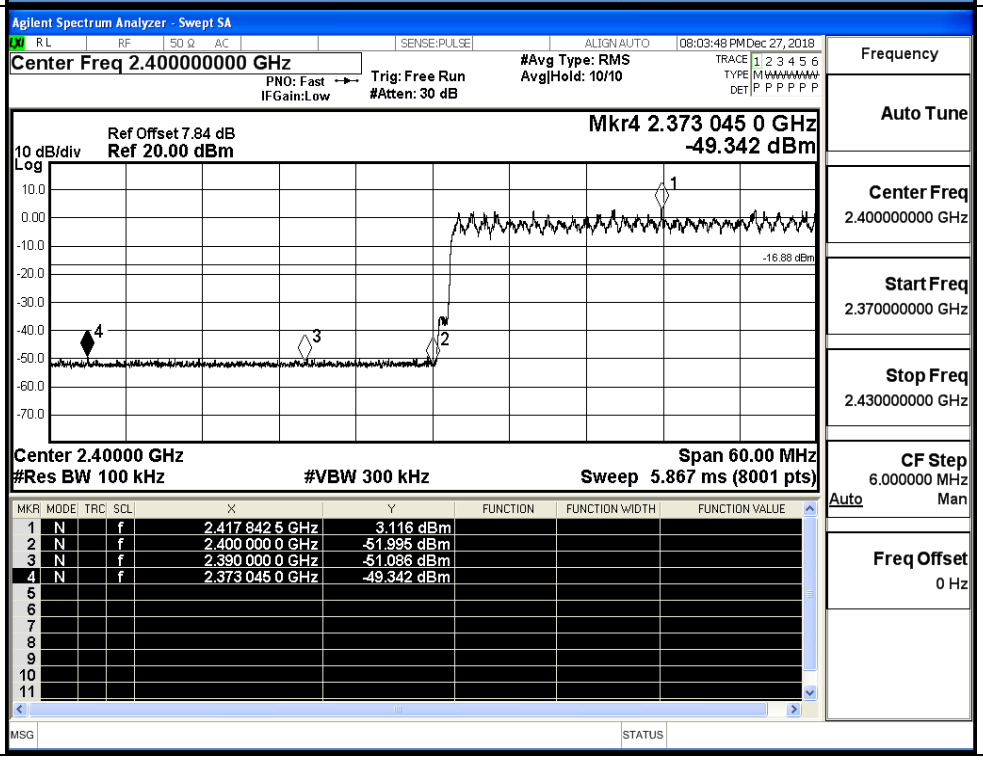
8DPSK_HCH_Graphs			
Pref			
Puw			

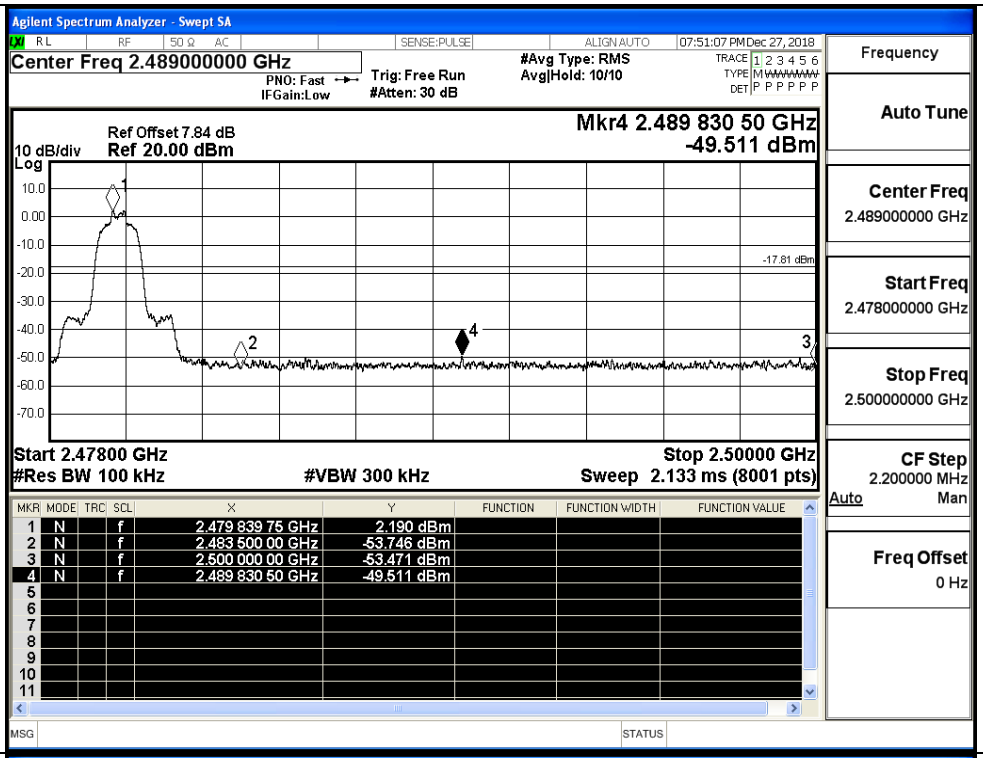
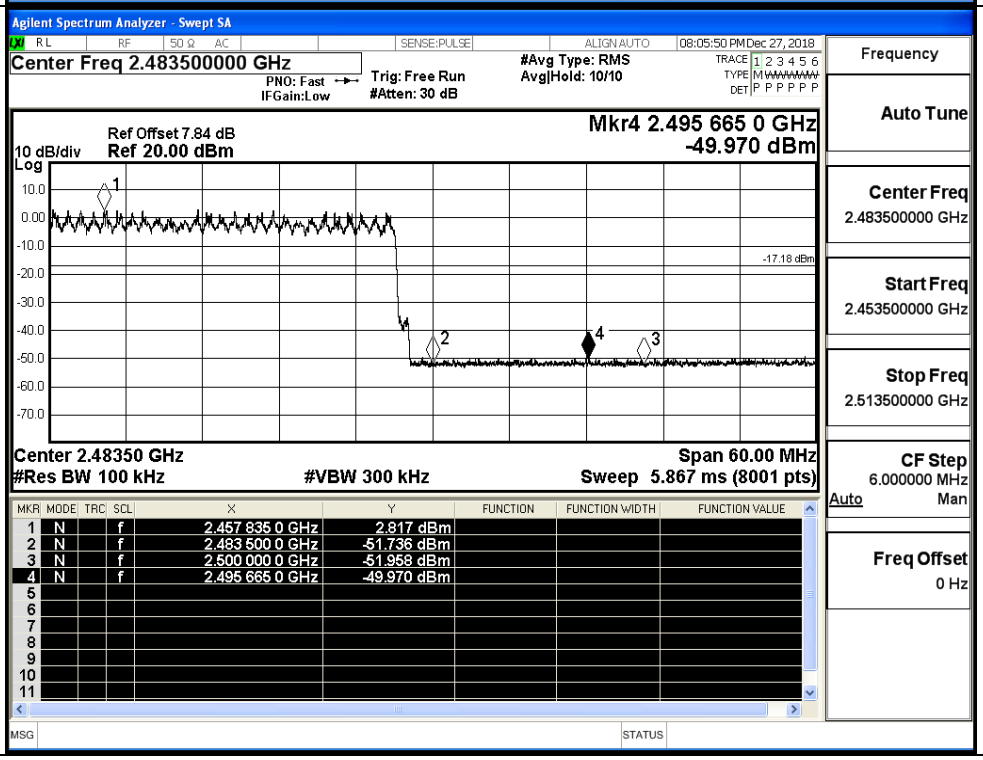
A.7 Band-edge for RF Conducted Emissions

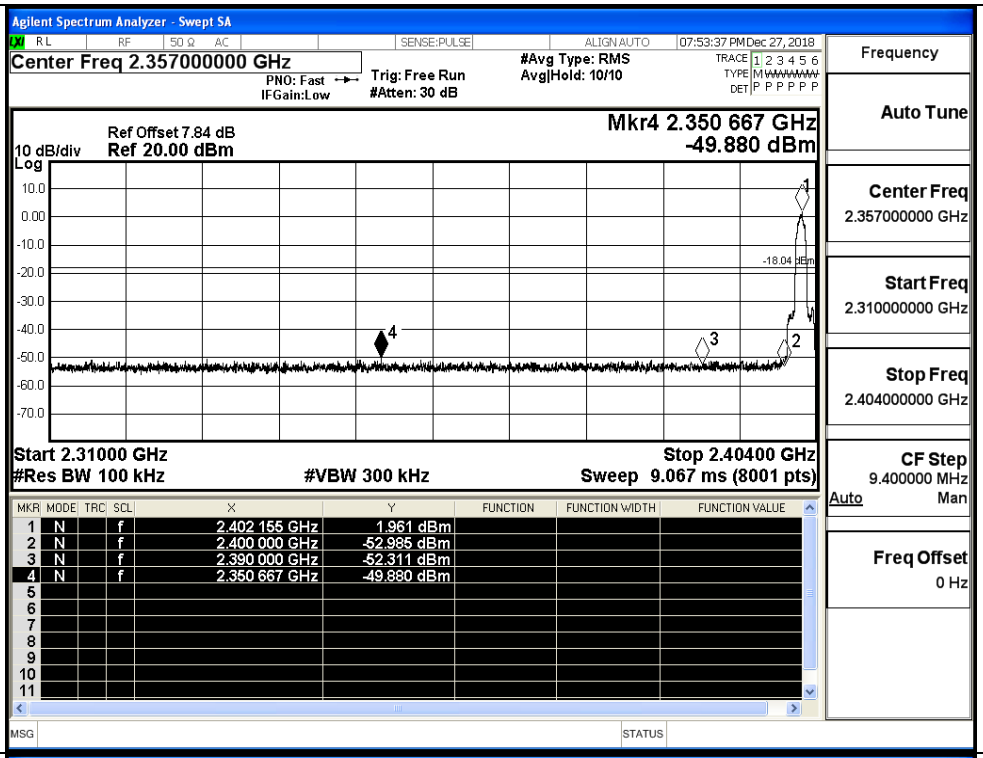
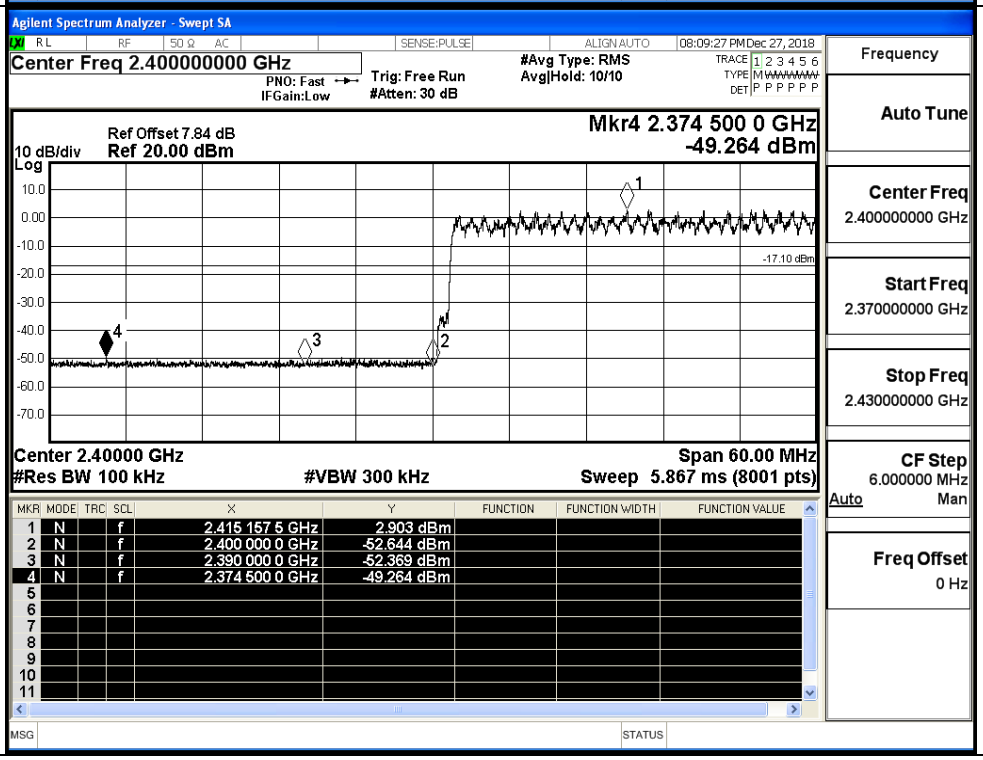
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	3.253	Off	-49.626	-16.75	PASS
			4.266	On	-49.636	-15.73	PASS
	HCH	2480	3.523	Off	-49.960	-16.48	PASS
			3.876	On	-49.248	-16.12	PASS
π/4DQPSK	LCH	2402	1.875	Off	-50.146	-18.13	PASS
			3.116	On	-49.342	-16.88	PASS
	HCH	2480	2.190	Off	-49.511	-17.81	PASS
			2.817	On	-49.970	-17.18	PASS
8DPSK	LCH	2402	1.961	Off	-49.880	-18.04	PASS
			2.903	On	-49.264	-17.1	PASS
	HCH	2480	2.002	Off	-50.306	-18	PASS
			2.804	On	-49.706	-17.2	PASS

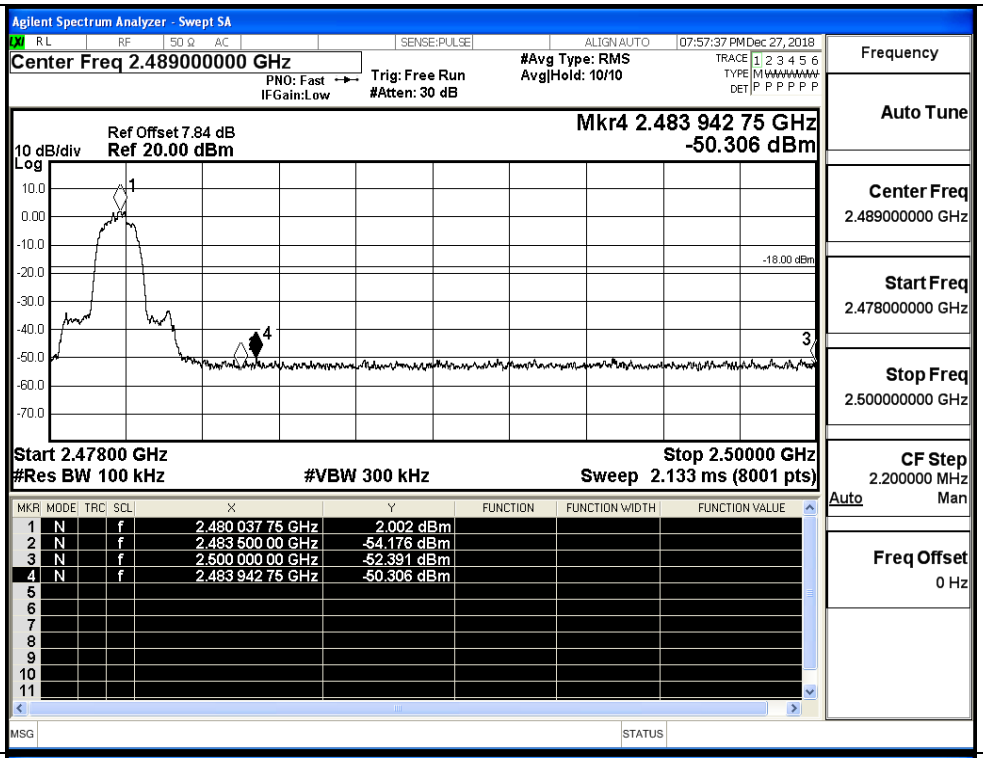
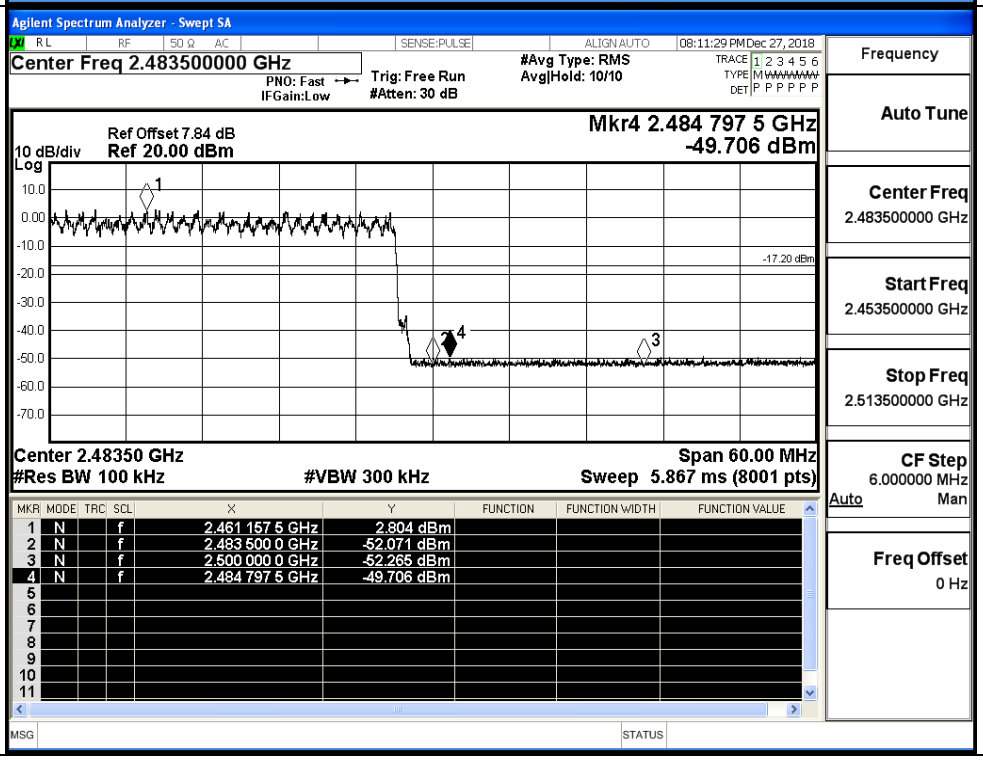
Test Graphs	
GFSK/LCH/No Hop	
GFSK/LCH/Hop	

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	

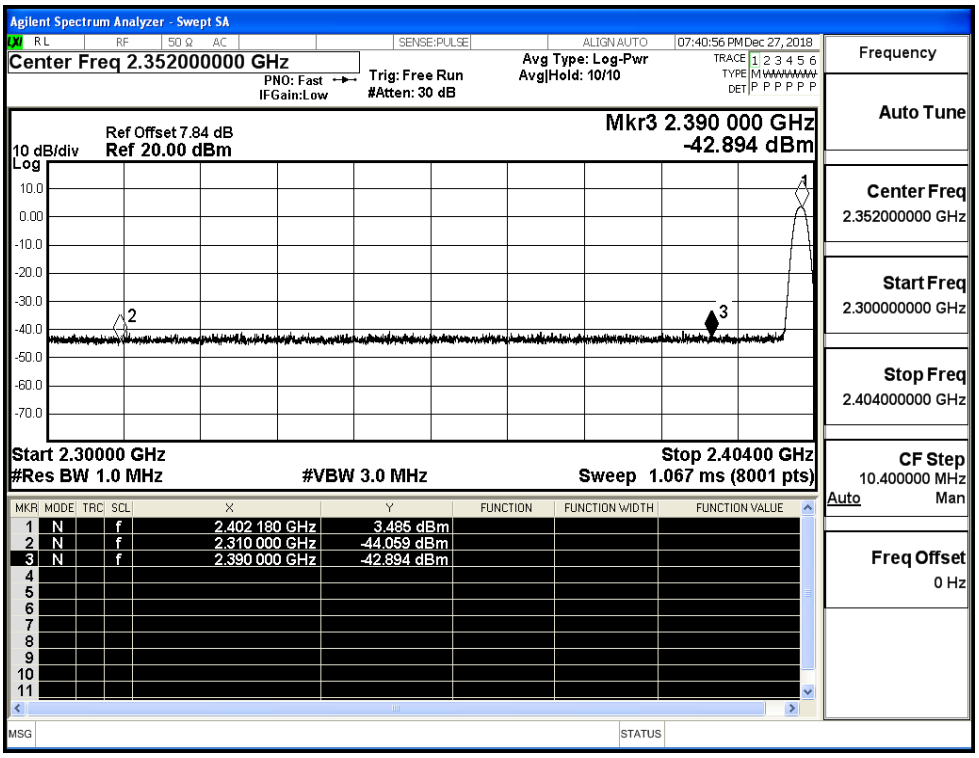
8DPSK/LCH/No Hop	
8DPSK/LCH/Hop	

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

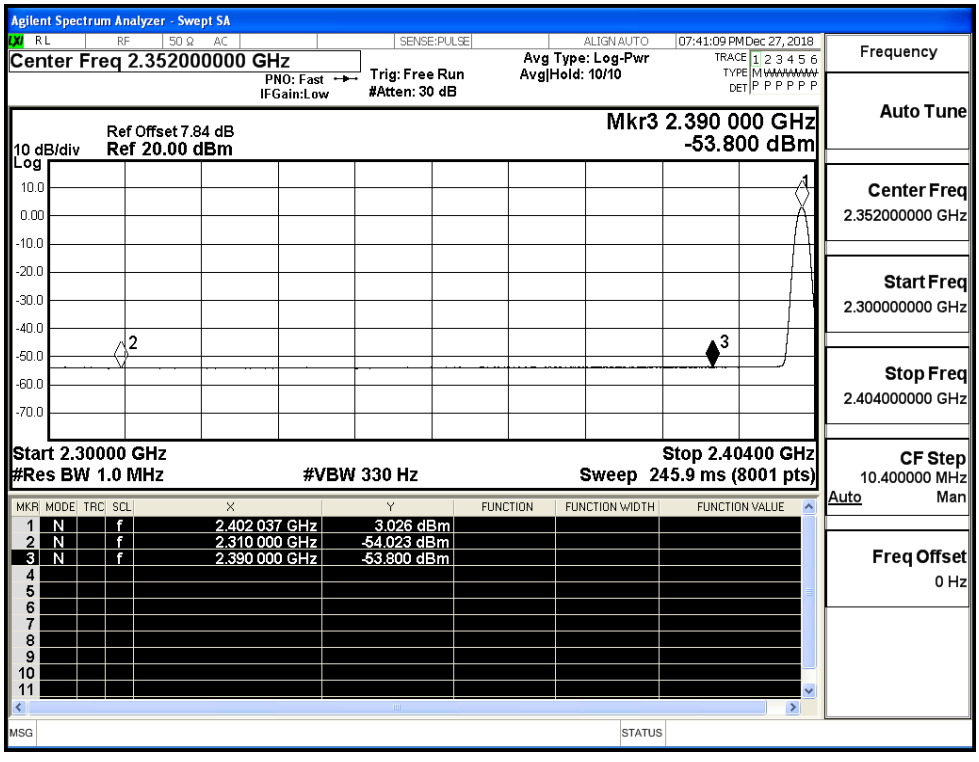
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-44.06	2.0	0	53.20	PEAK	74	PASS
	Off	2310.0	-54.02	2.0	0	43.23	AV	54	PASS
	Off	2390.0	-42.89	2.0	0	54.36	PEAK	74	PASS
	Off	2390.0	-53.80	2.0	0	43.46	AV	54	PASS
	Off	2483.5	-43.84	2.0	0	53.42	PEAK	74	PASS
	Off	2483.5	-53.27	2.0	0	43.98	AV	54	PASS
	Off	2500.0	-43.79	2.0	0	53.47	PEAK	74	PASS
	Off	2500.0	-53.33	2.0	0	43.93	AV	54	PASS
π/4DQPSK	Off	2310.0	-44.04	2.0	0	53.22	PEAK	74	PASS
	Off	2310.0	-54.05	2.0	0	43.21	AV	54	PASS
	Off	2390.0	-44.75	2.0	0	52.50	PEAK	74	PASS
	Off	2390.0	-53.72	2.0	0	43.54	AV	54	PASS
	Off	2483.5	-43.80	2.0	0	53.46	PEAK	74	PASS
	Off	2483.5	-53.08	2.0	0	44.18	AV	54	PASS
	Off	2500.0	-42.69	2.0	0	54.57	PEAK	74	PASS
	Off	2500.0	-53.32	2.0	0	43.94	AV	54	PASS
8DPSK	Off	2310.0	-43.91	2.0	0	53.35	PEAK	74	PASS
	Off	2310.0	-54.03	2.0	0	43.23	AV	54	PASS
	Off	2390.0	-42.29	2.0	0	54.97	PEAK	74	PASS
	Off	2390.0	-53.81	2.0	0	43.45	AV	54	PASS
	Off	2483.5	-43.22	2.0	0	54.04	PEAK	74	PASS
	Off	2483.5	-53.26	2.0	0	44.00	AV	54	PASS
	Off	2500.0	-43.15	2.0	0	54.11	PEAK	74	PASS
	Off	2500.0	-53.39	2.0	0	43.87	AV	54	PASS

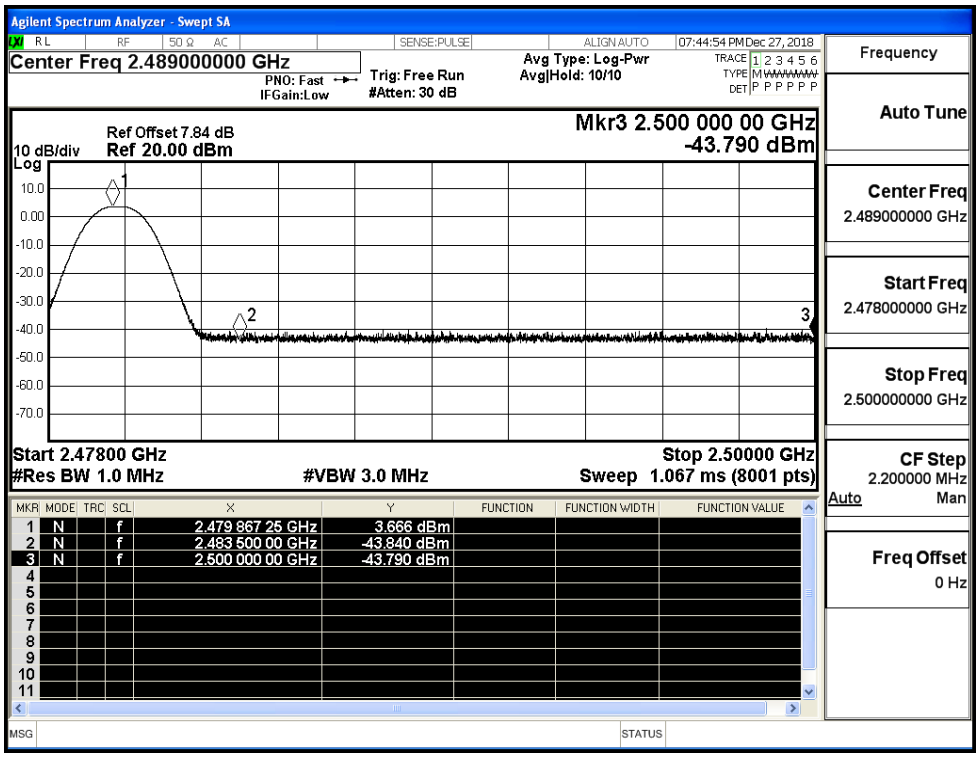
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (Low Channel)



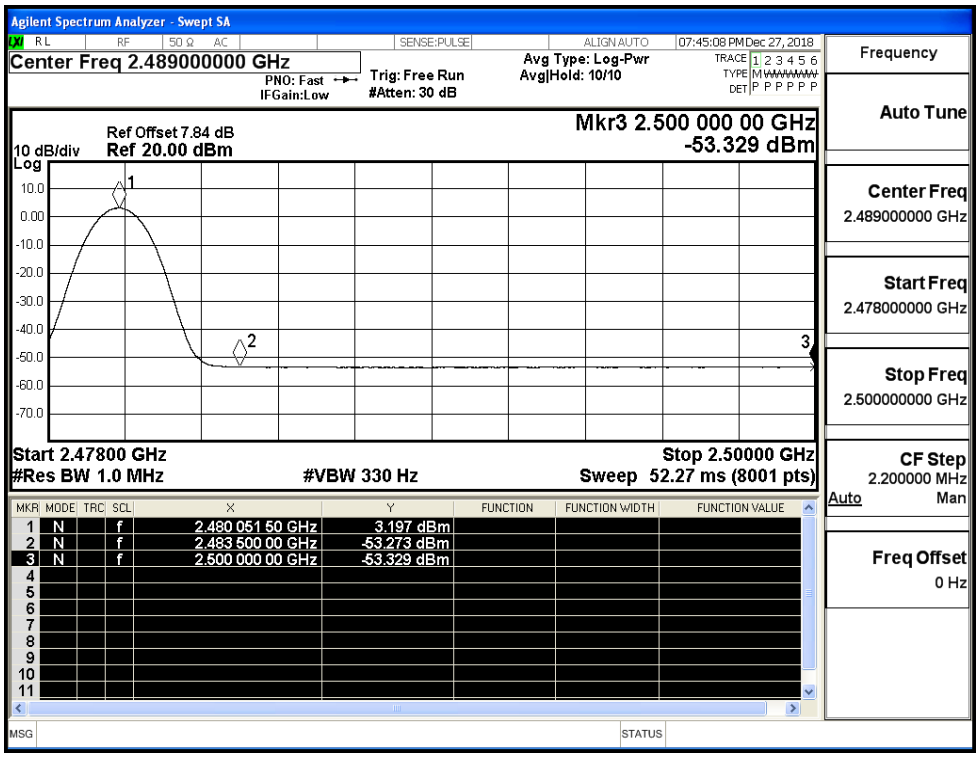
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (Low Channel)



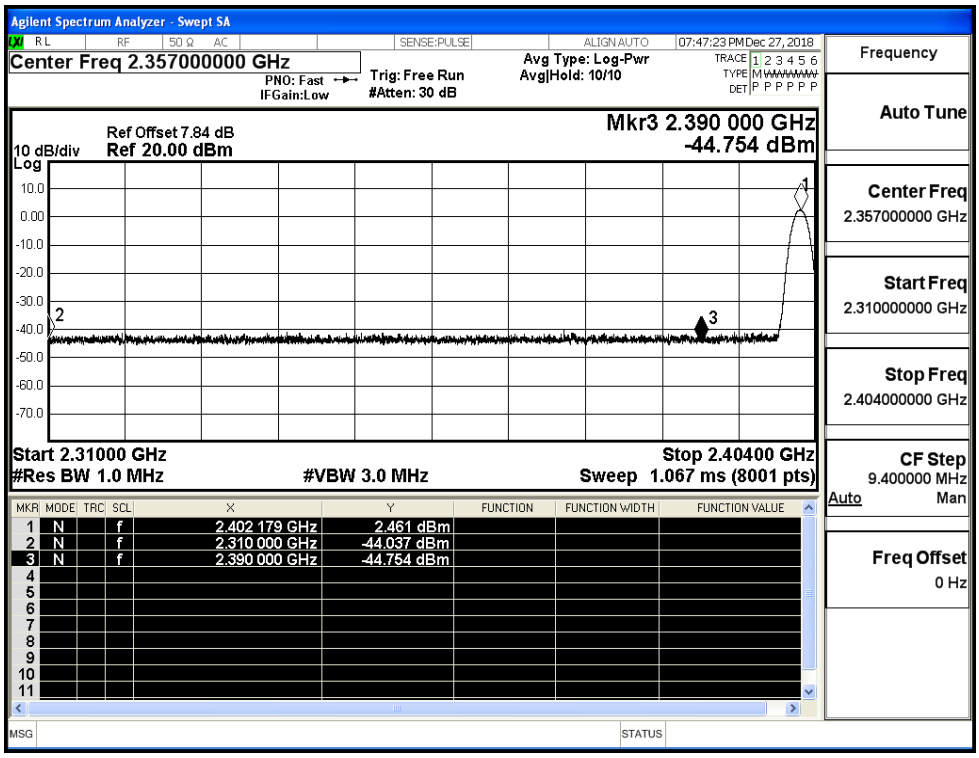
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (High Channel)



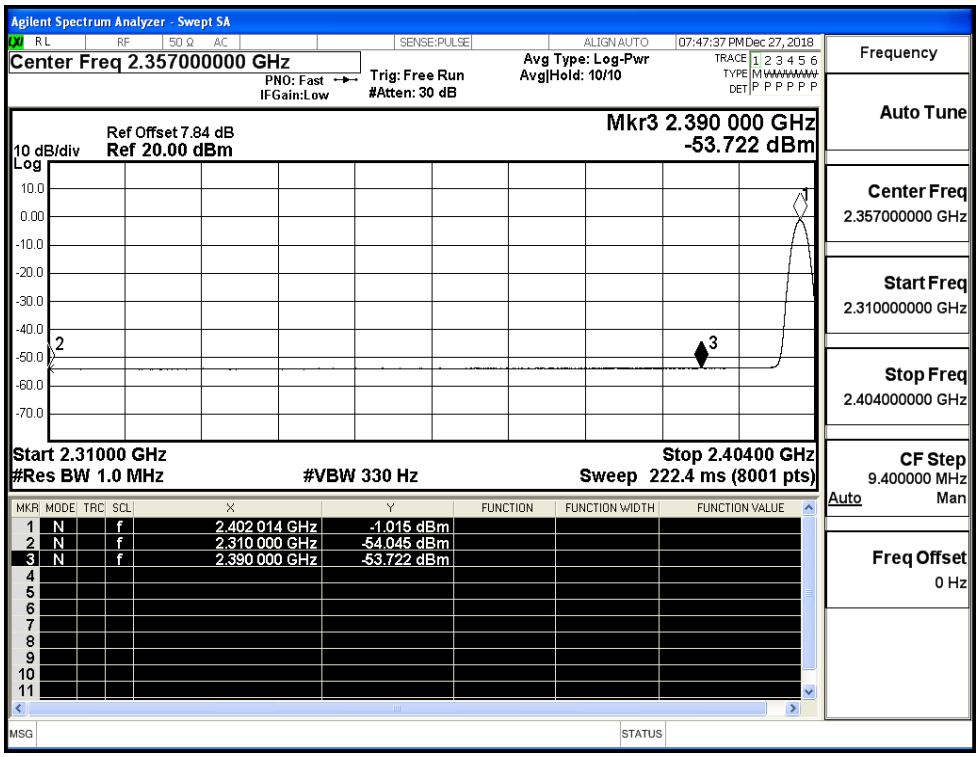
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (High Channel)



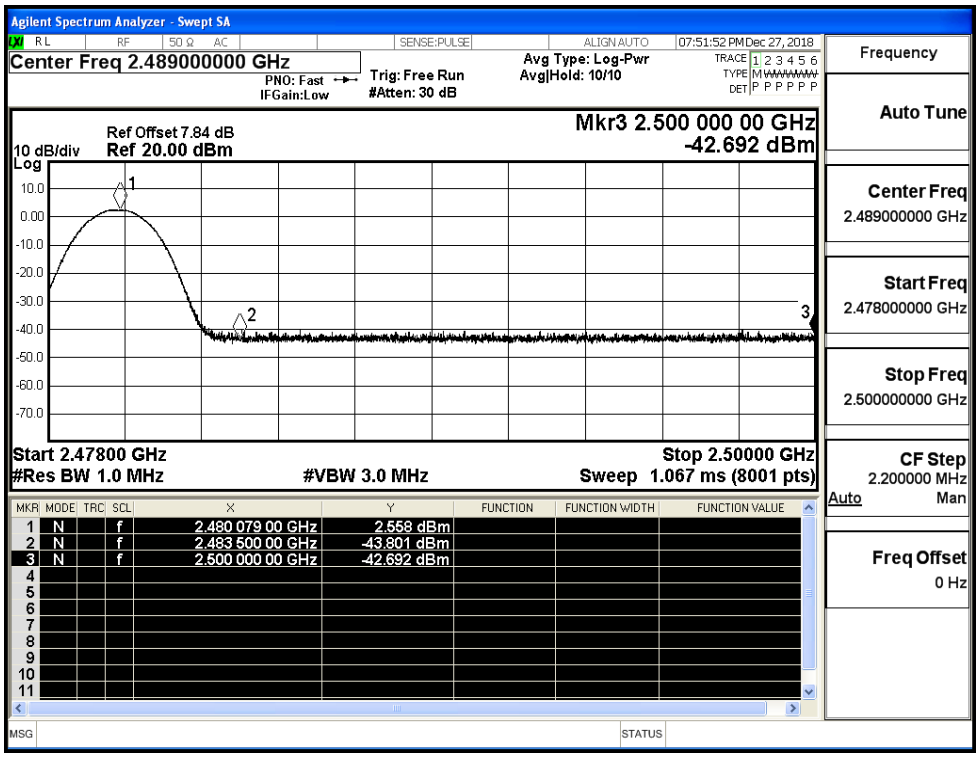
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (Low Channel)



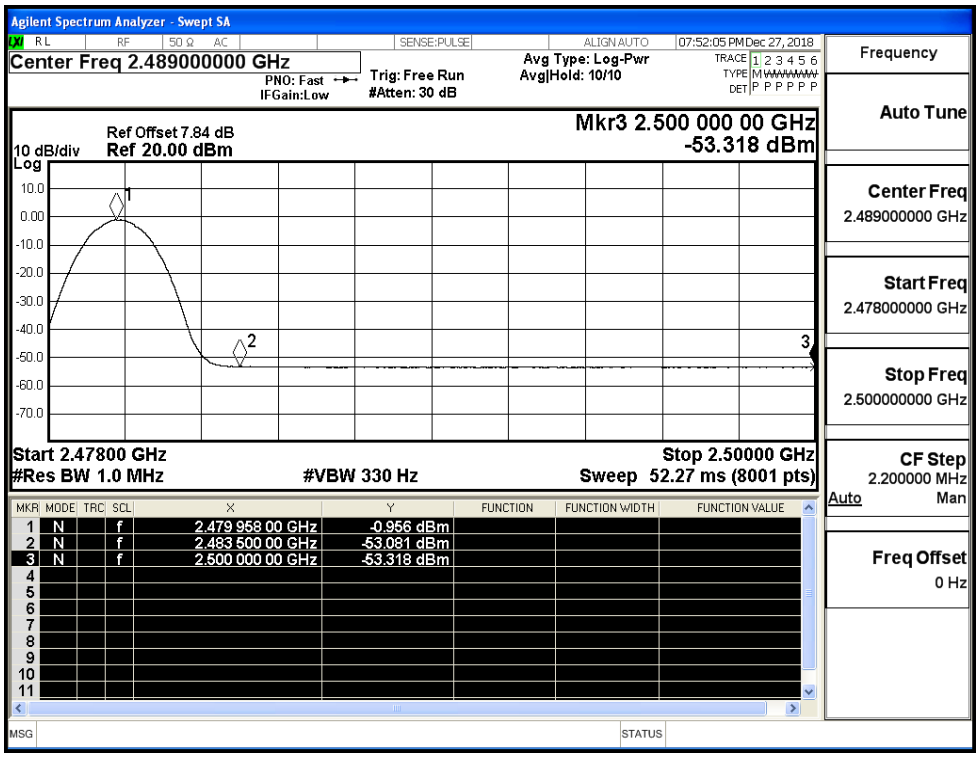
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (Low Channel)



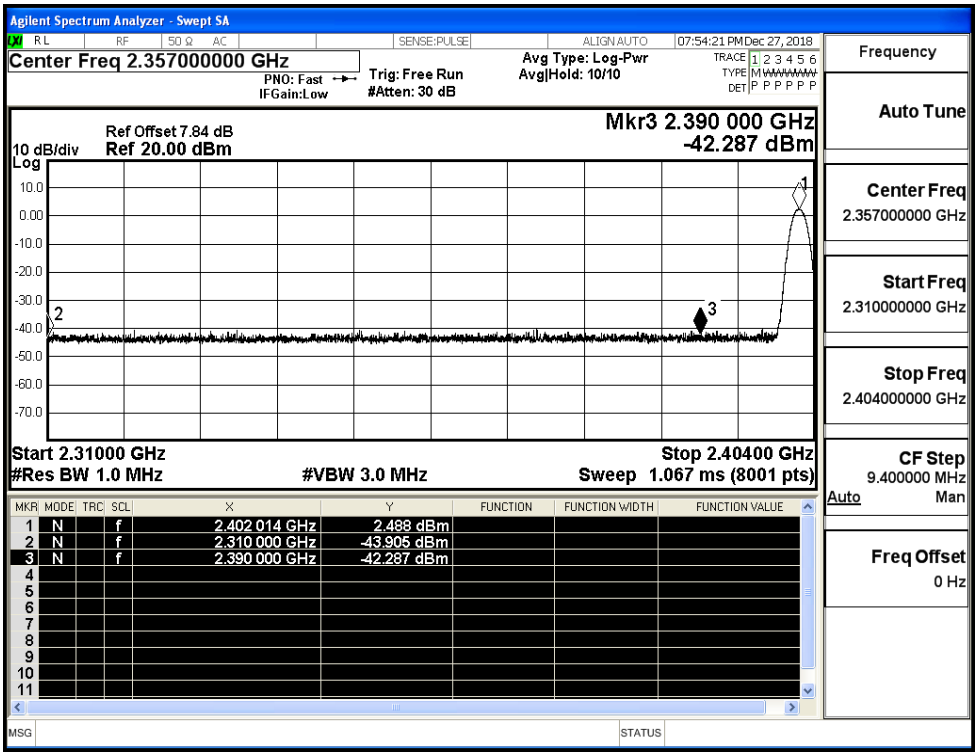
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (High Channel)



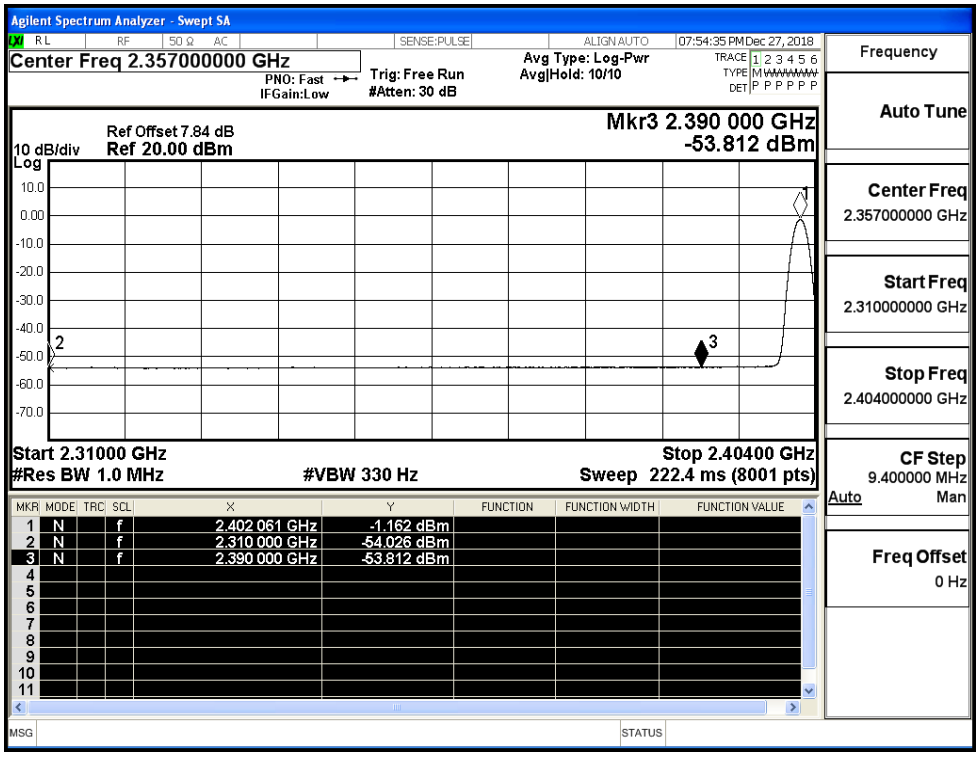
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (High Channel)



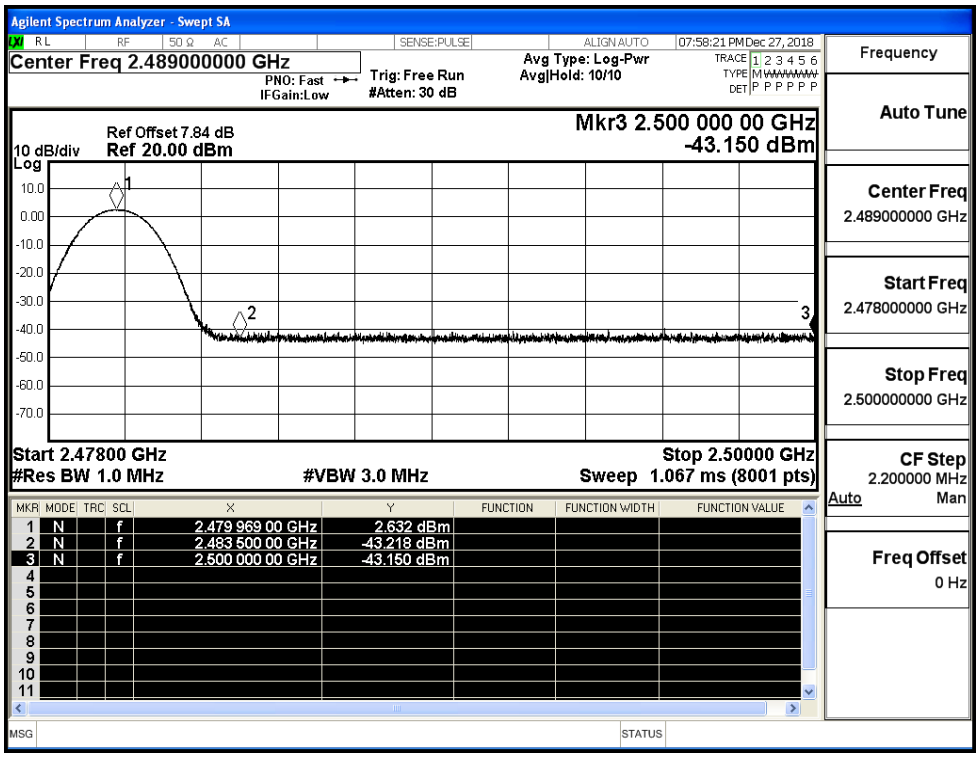
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)