Appendix A

RF Test Data for BT V4.2 (BDR/EDR) (Conducted Measurement)

Product Name: Network audio system (built-in amplifier)

Trade Mark: MAXIN

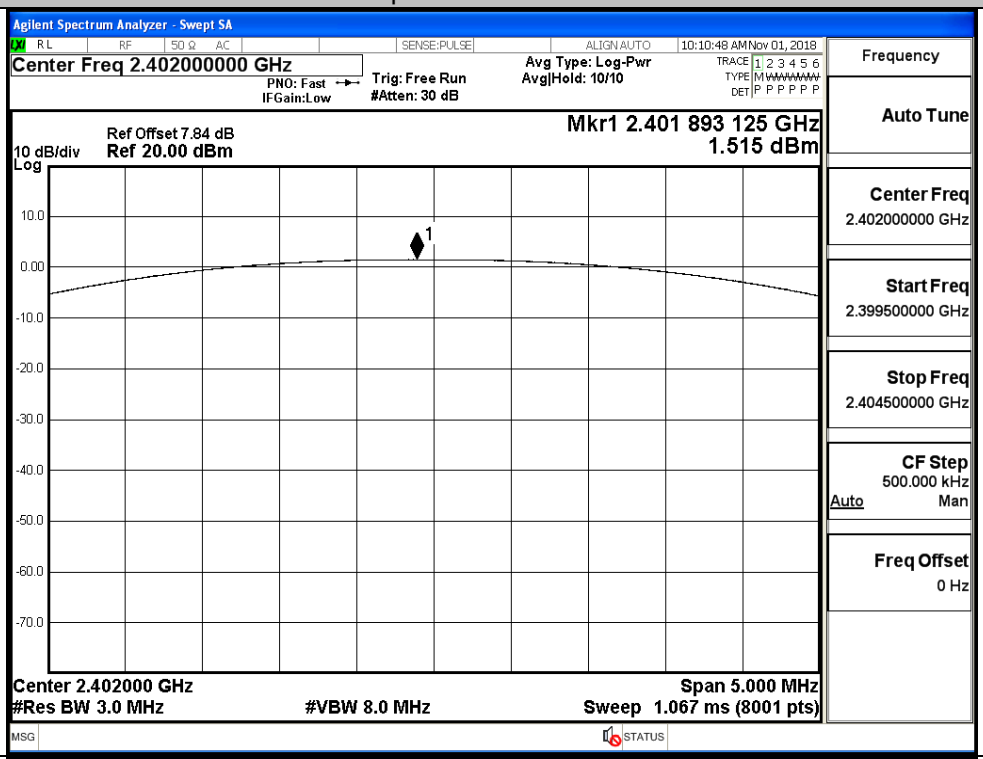
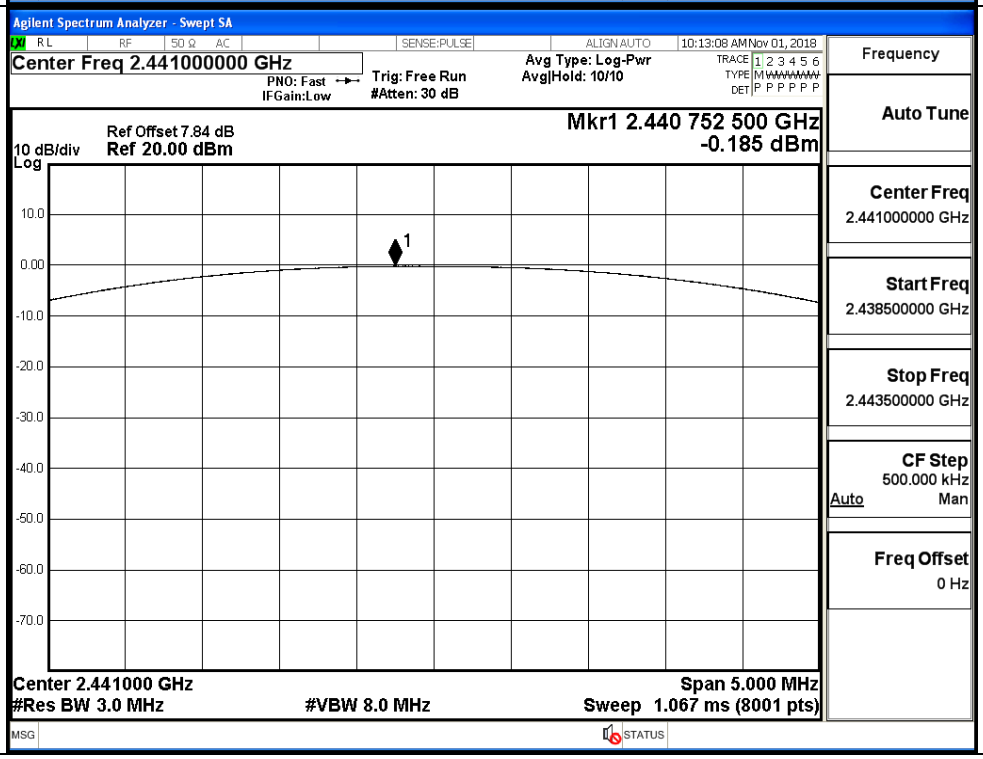
Test Model: RAPNAS MF-1

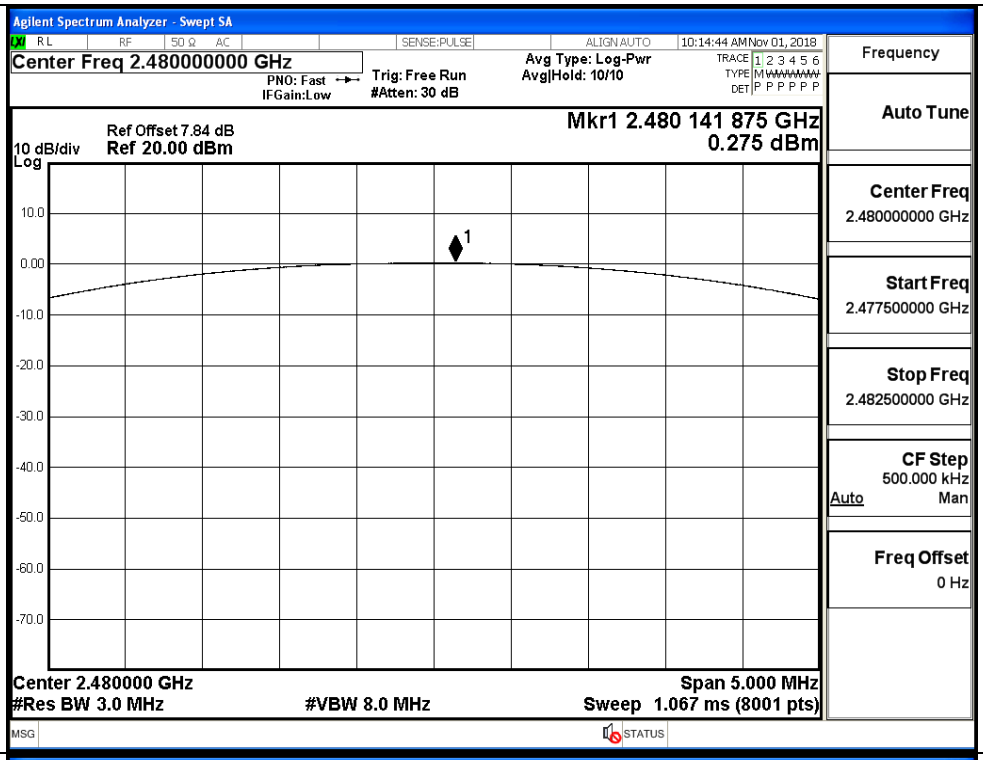
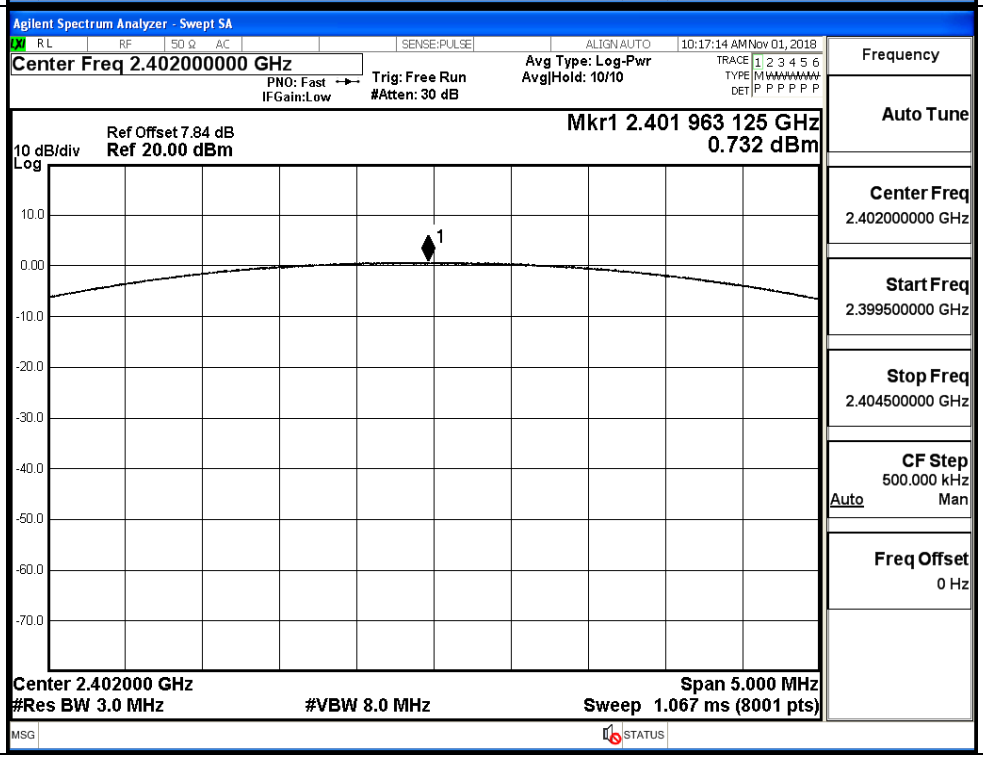
Environmental Conditions

Temperature:	23.5 ° C
Relative Humidity:	54.2%
ATM Pressure:	100.0 kPa
Test Engineer:	Tom Liu
Supervised by:	Jayden Zhuo

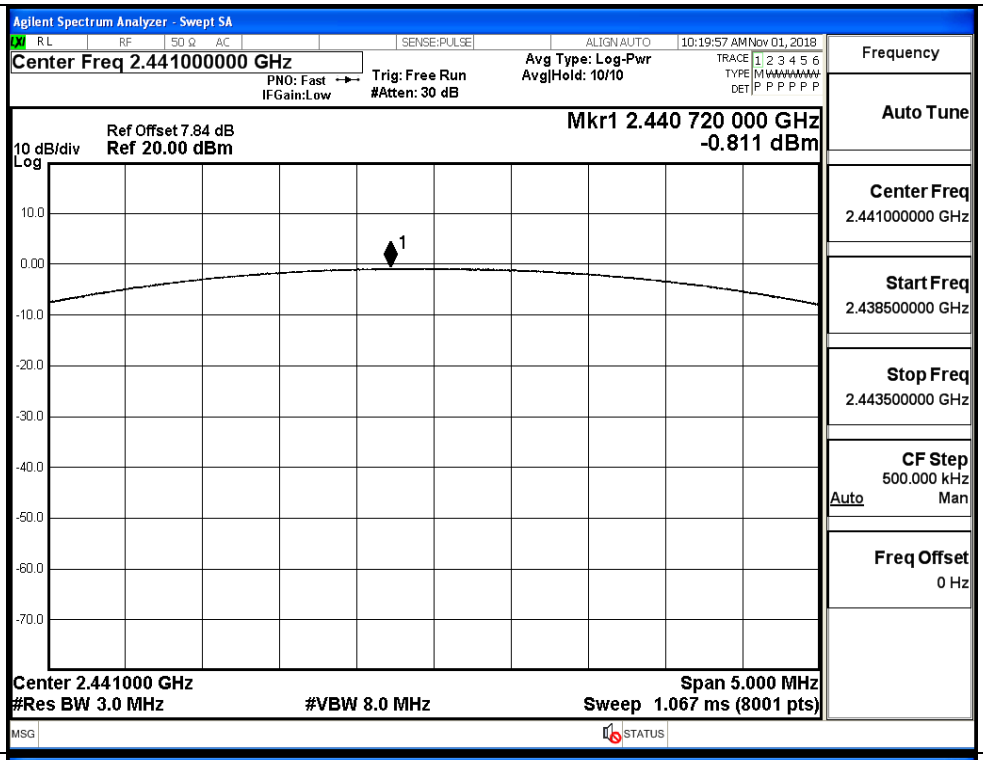
A.1 Maxmum Conducted Peak Output Power

Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	1.515	21	PASS
	MCH	-0.185	21	PASS
	HCH	0.275	21	PASS
π/4DQPSK	LCH	0.732	21	PASS
	MCH	-0.811	21	PASS
	HCH	-0.588	21	PASS
8DPSK	LCH	0.881	21	PASS
	MCH	-0.642	21	PASS
	HCH	-0.387	21	PASS

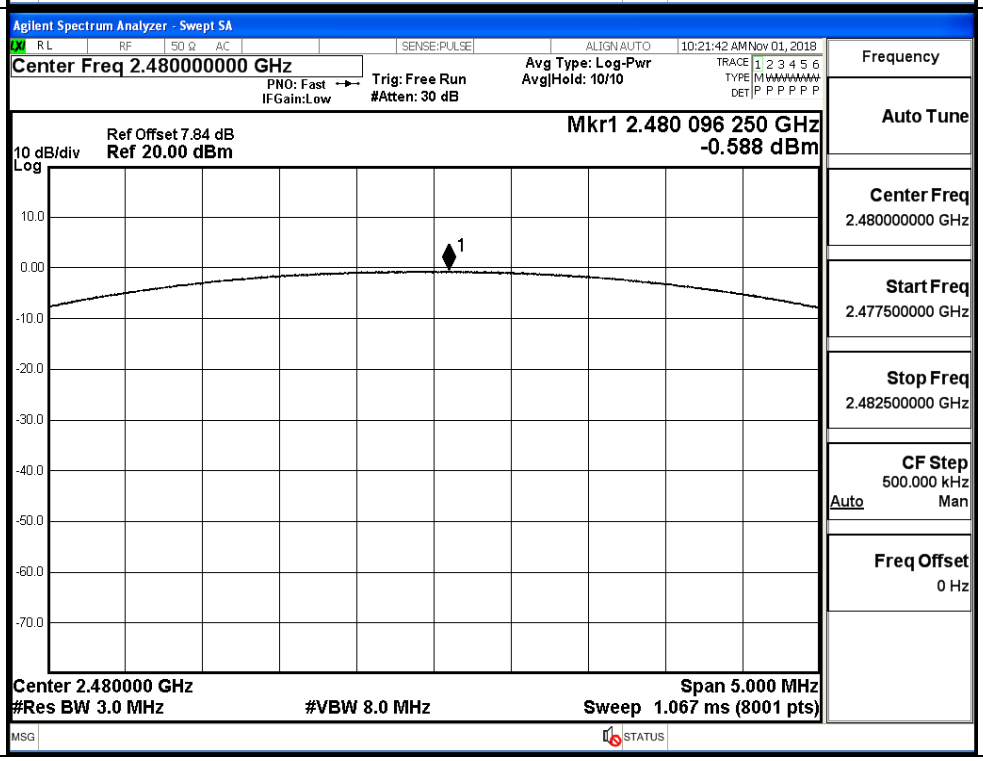
Test Graphs		
GFSK/LCH		
GFSK/MCH		

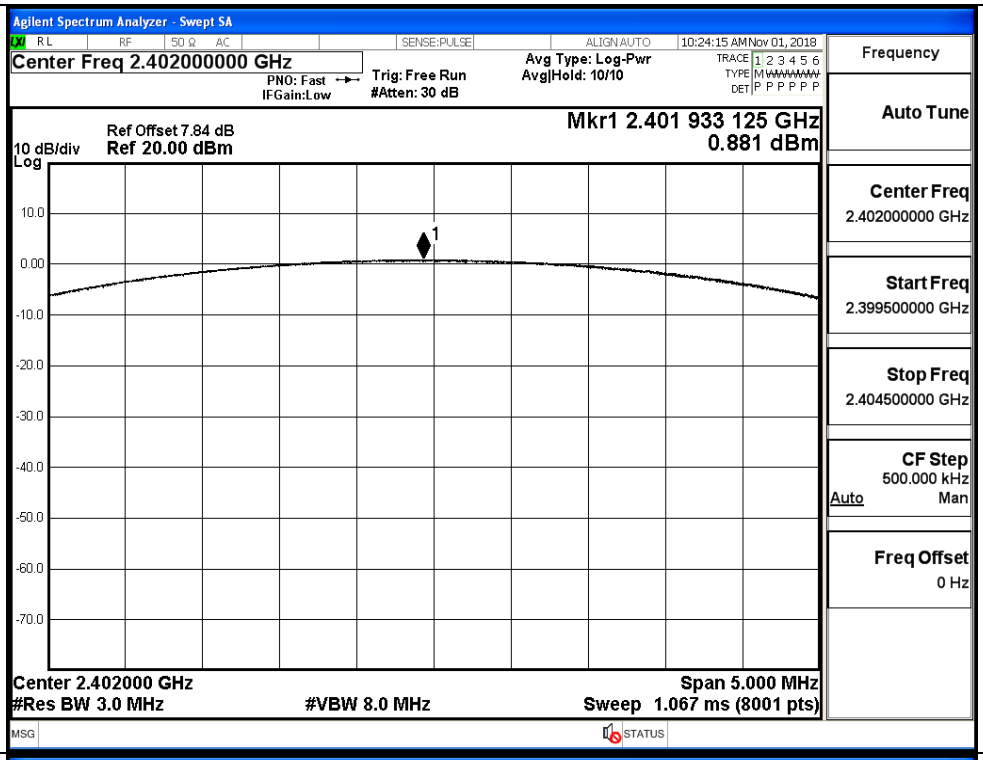
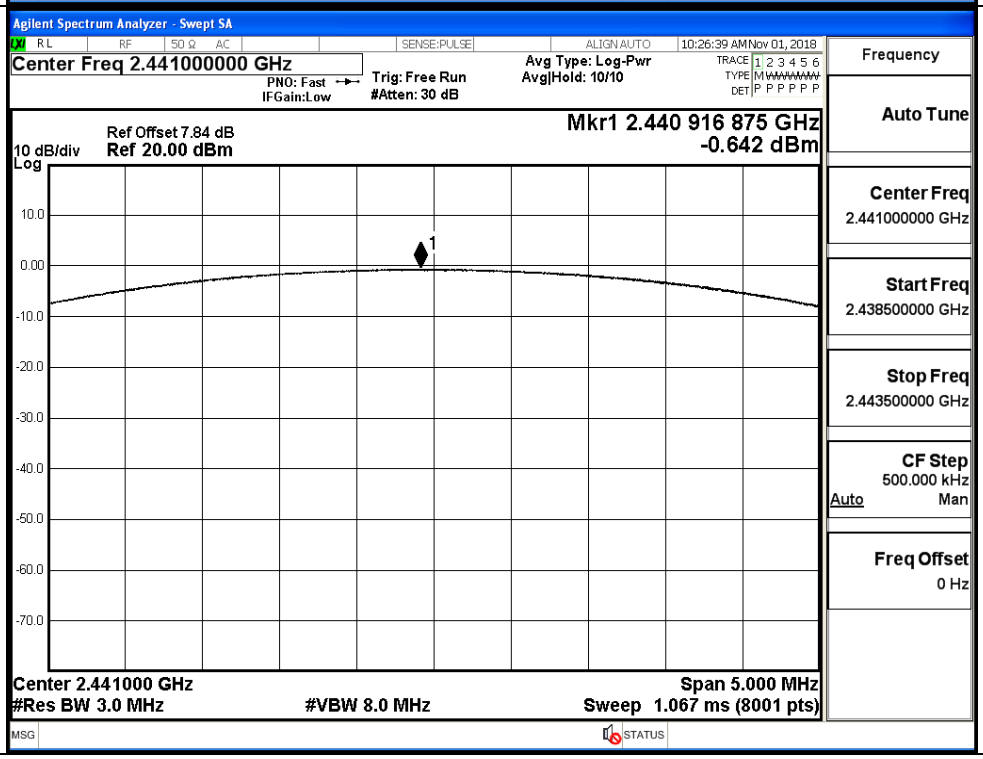
GFSK/HCH	
π/4DQPSK/LCH	

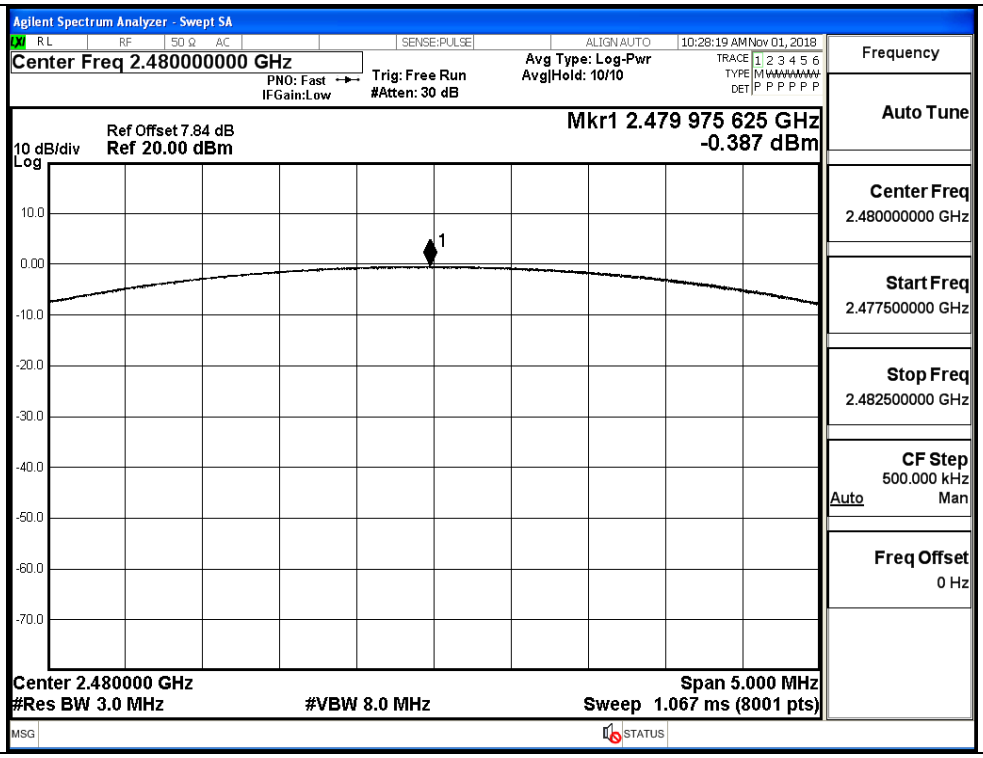
π/4DQPSK/MCH



π/4DQPSK/HCH



8DPSK/LCH	
8DPSK/MCH	

8DPSK/HCH		

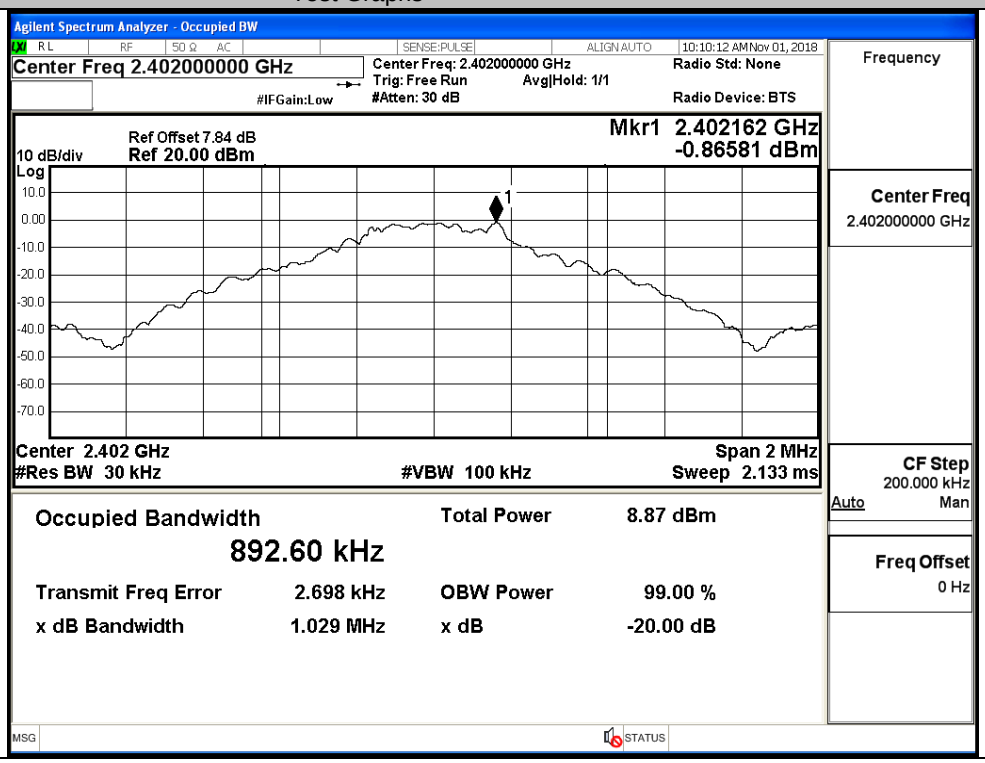
Agilent Spectrum Analyzer - Swept SA
Center Freq 2.480000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 10/10
10:28:19 AM Nov 01, 2018
Ref Offset 7.84 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr1 2.479 975 625 GHz
-0.387 dBm
Center 2.480000 GHz
#Res BW 3.0 MHz
#VBW 8.0 MHz
Span 5.000 MHz
Sweep 1.067 ms (8001 pts)
Frequency
Auto Tune
Center Freq
2.480000000 GHz
Start Freq
2.477500000 GHz
Stop Freq
2.482500000 GHz
CF Step
500.000 kHz
Auto
Man
Freq Offset
0 Hz

A.2 99% and 20dB Bandwidth

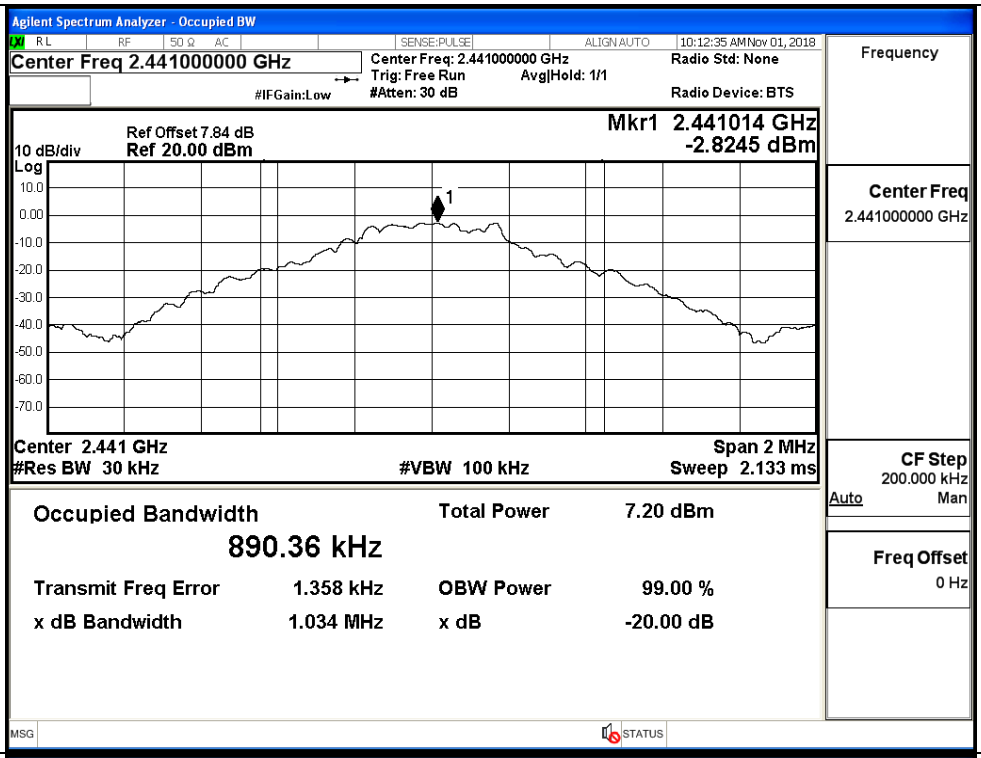
Mode	Channel.	99% Bandwidth [MHz]	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.89260	1.029	Not Specified	PASS
	MCH	0.89036	1.034	Not Specified	PASS
	HCH	0.89384	0.9718	Not Specified	PASS
π/4DQPSK	LCH	1.1687	1.288	Not Specified	PASS
	MCH	1.1790	1.314	Not Specified	PASS
	HCH	1.1691	1.288	Not Specified	PASS
8DPSK	LCH	1.1825	1.308	Not Specified	PASS
	MCH	1.1958	1.299	Not Specified	PASS
	HCH	1.1787	1.295	Not Specified	PASS

Test Graphs

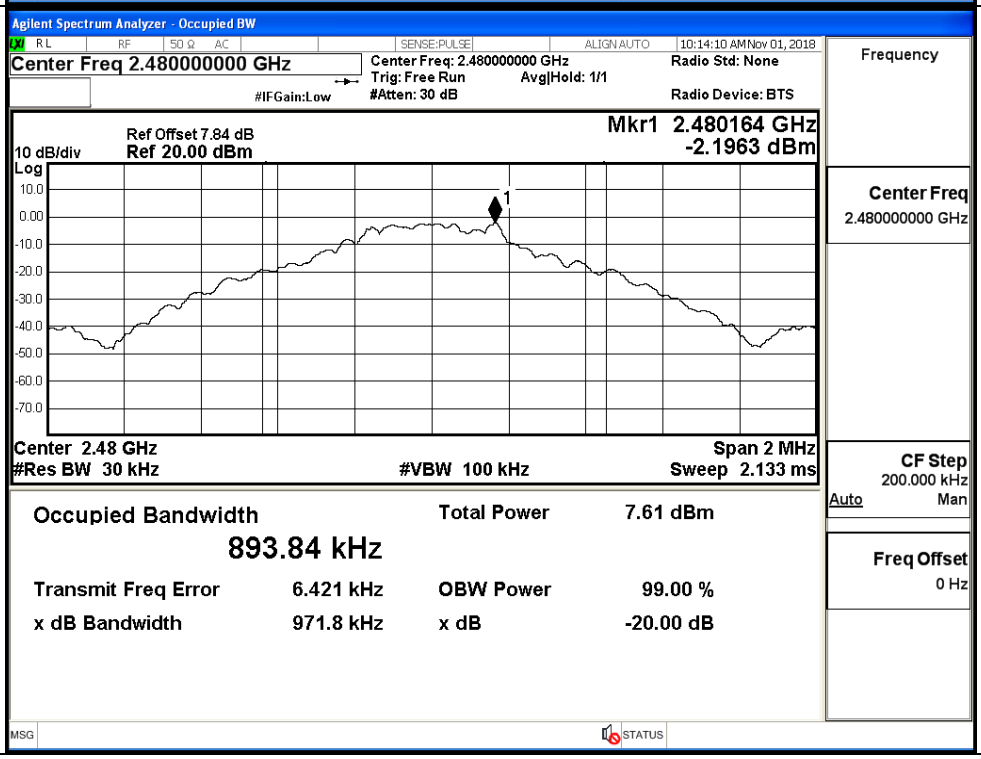
GFSK/LCH



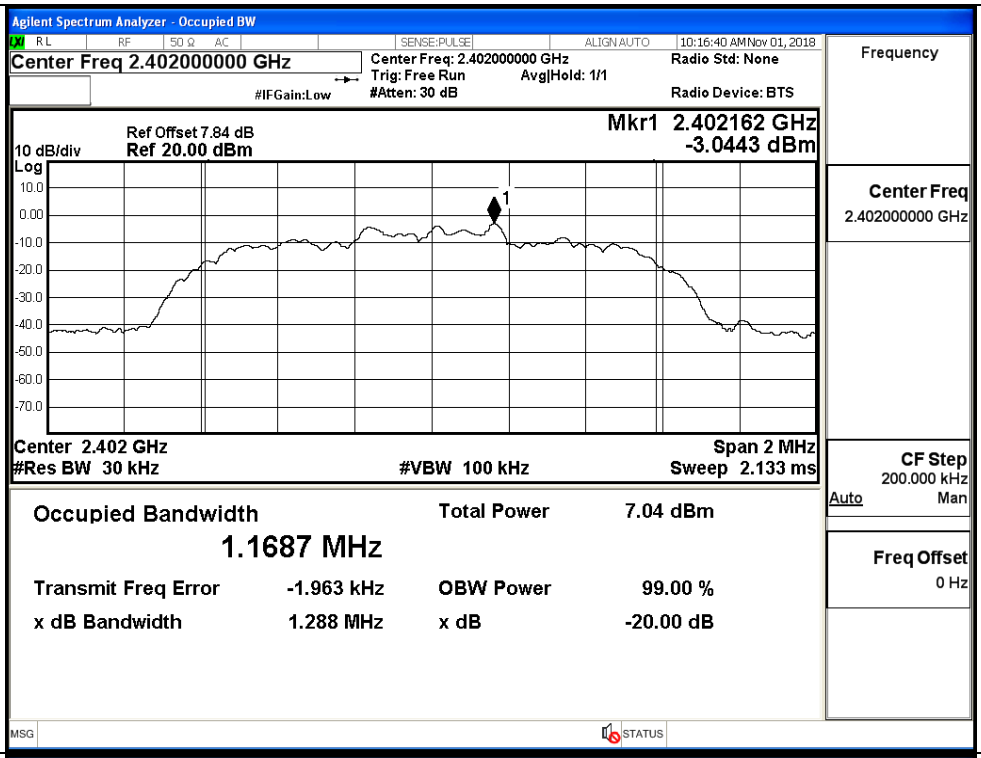
GFSK/MCH



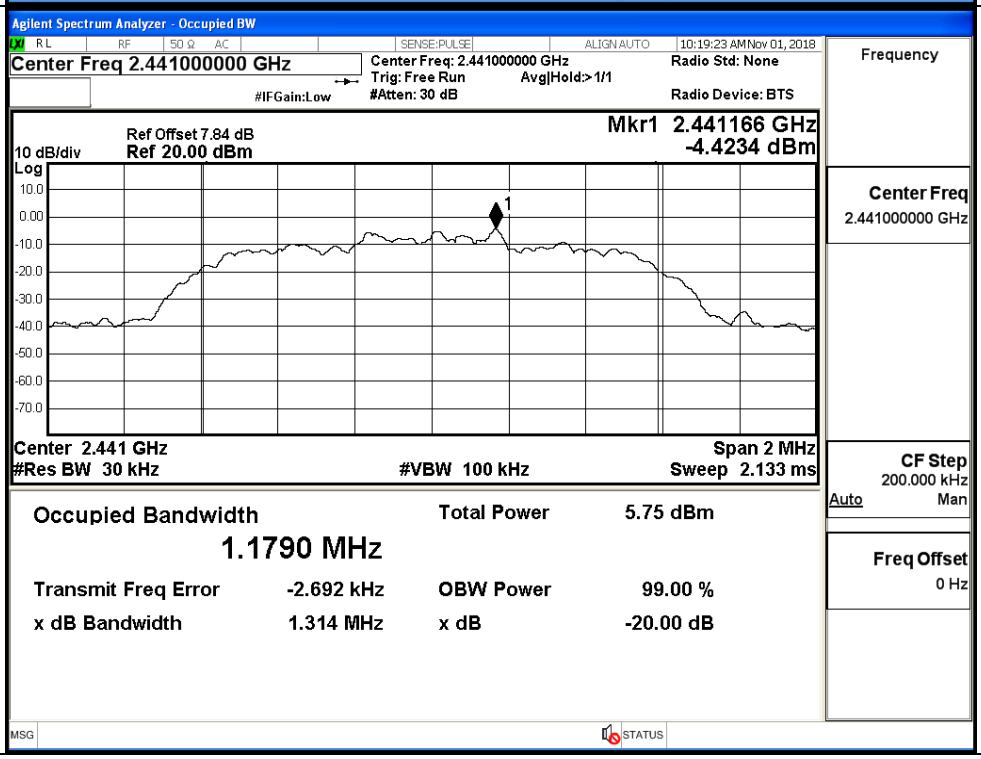
GFSK/HCH



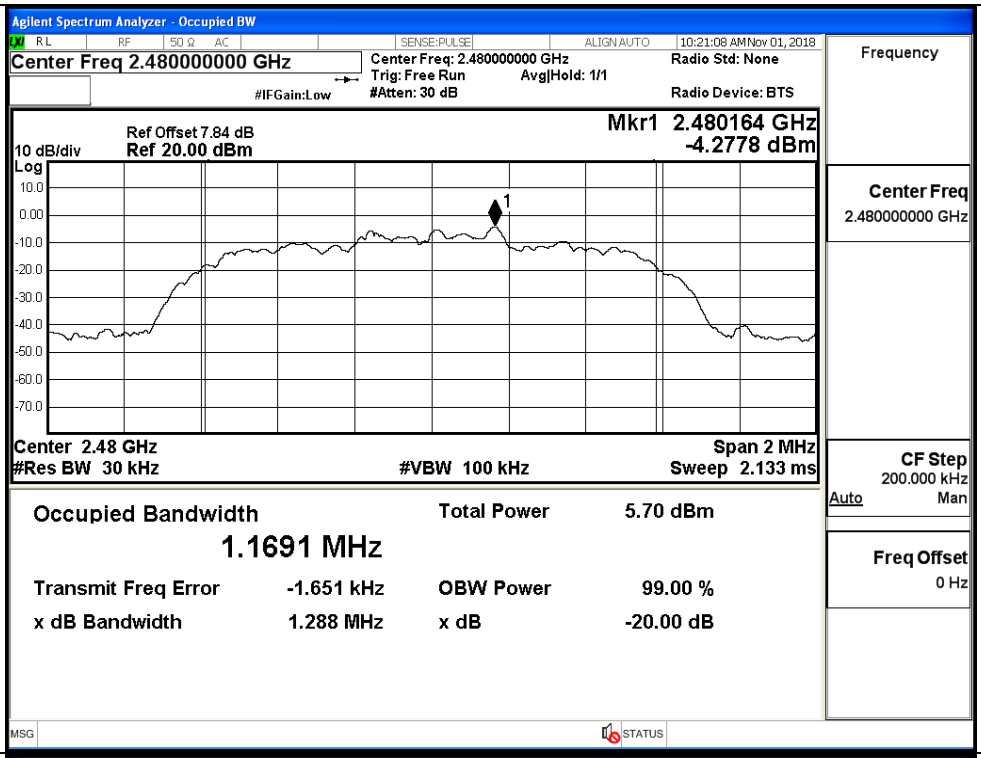
π/4DQPSK/LCH



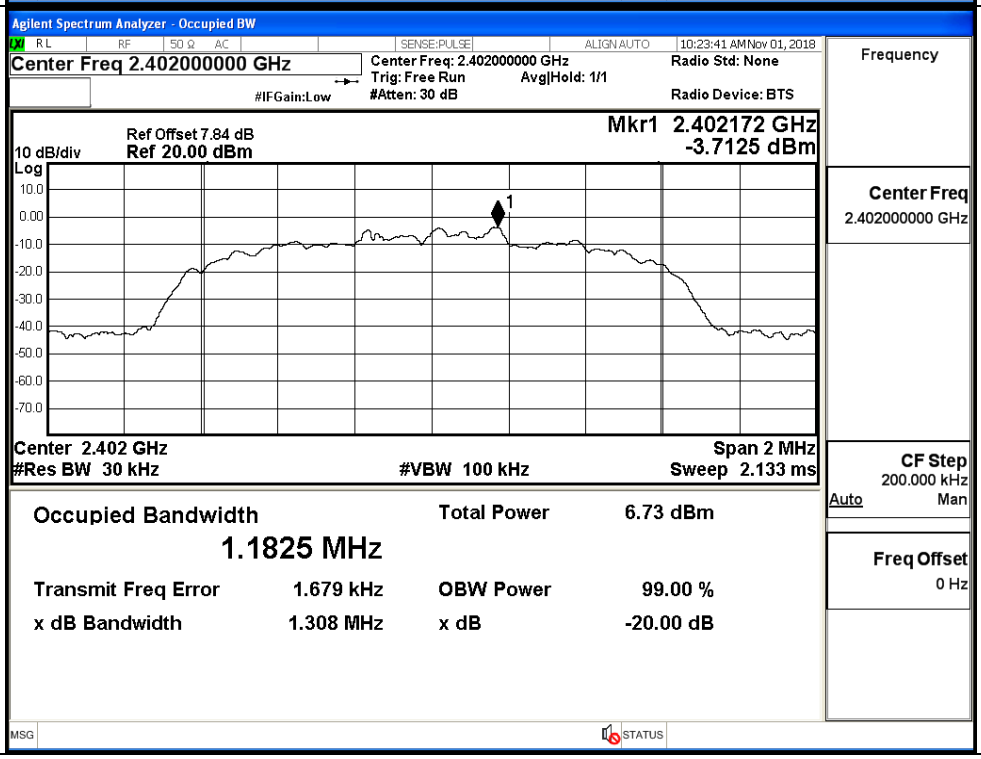
π/4DQPSK/MCH



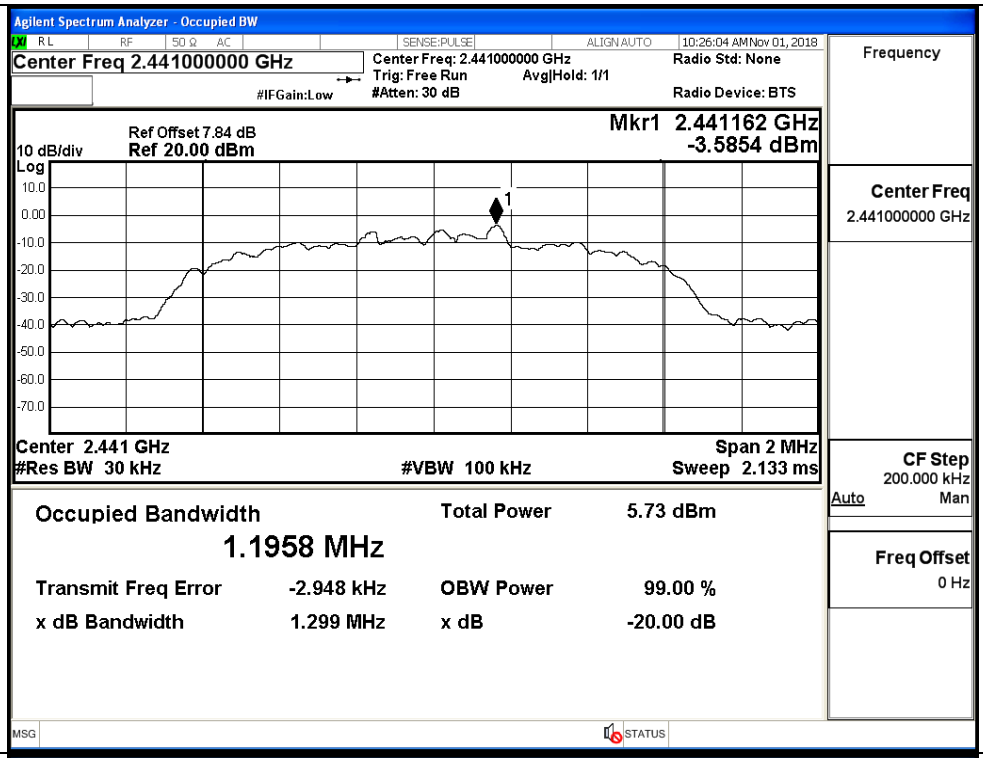
π/4DQPSK/HCH



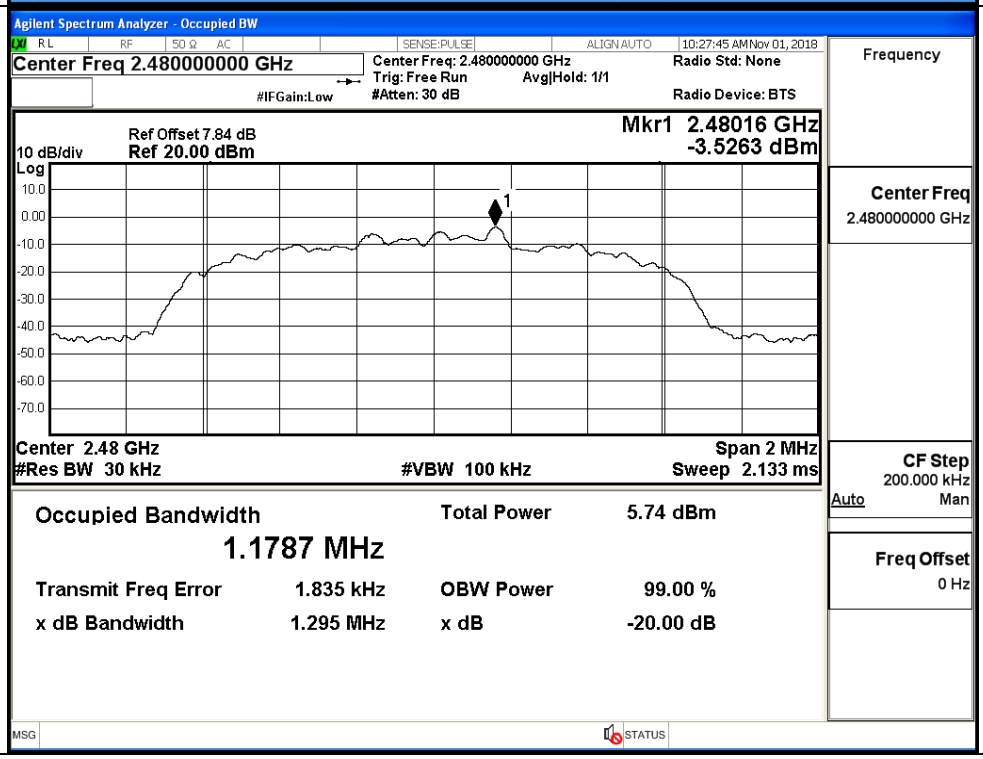
8DPSK/LCH



8DPSK/MCH

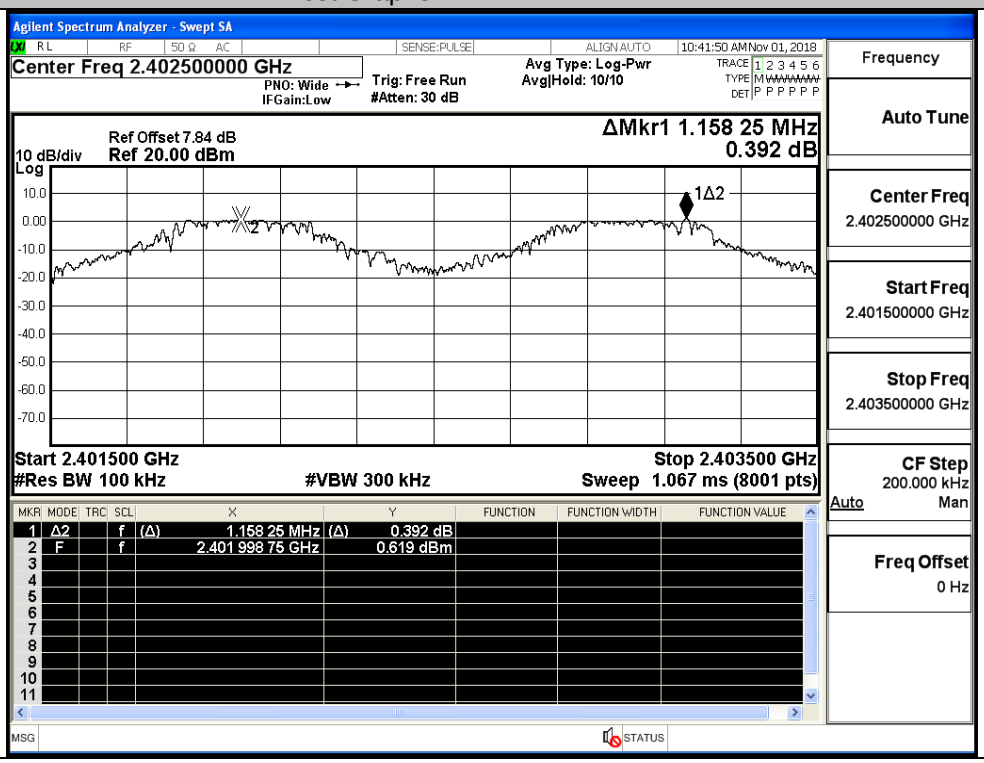


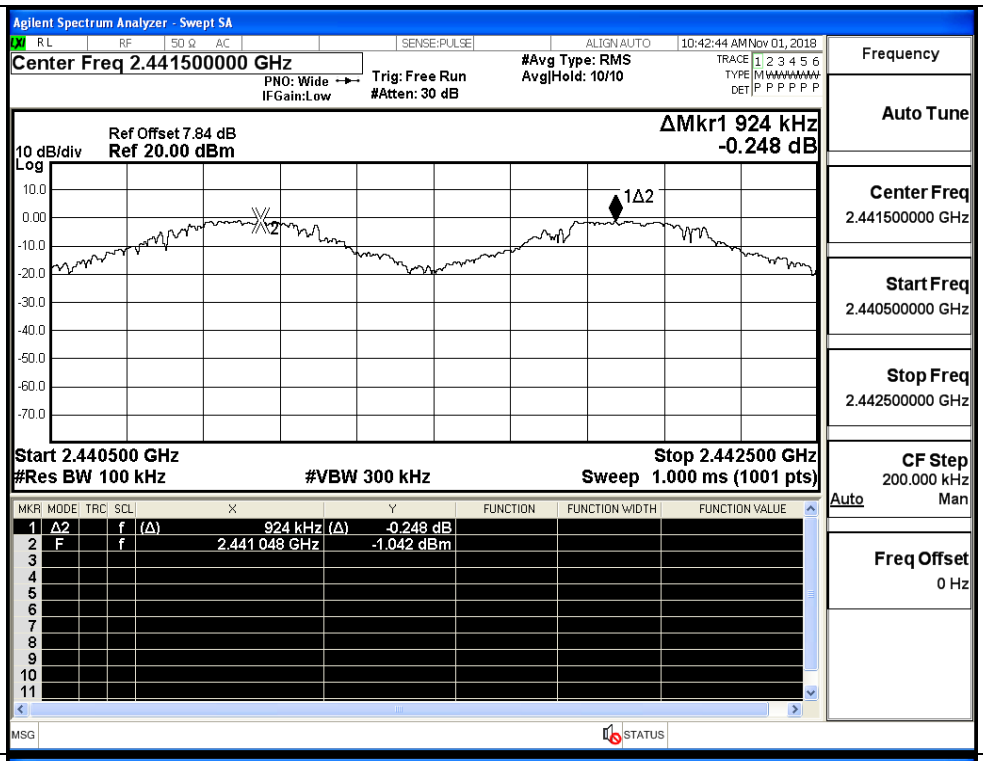
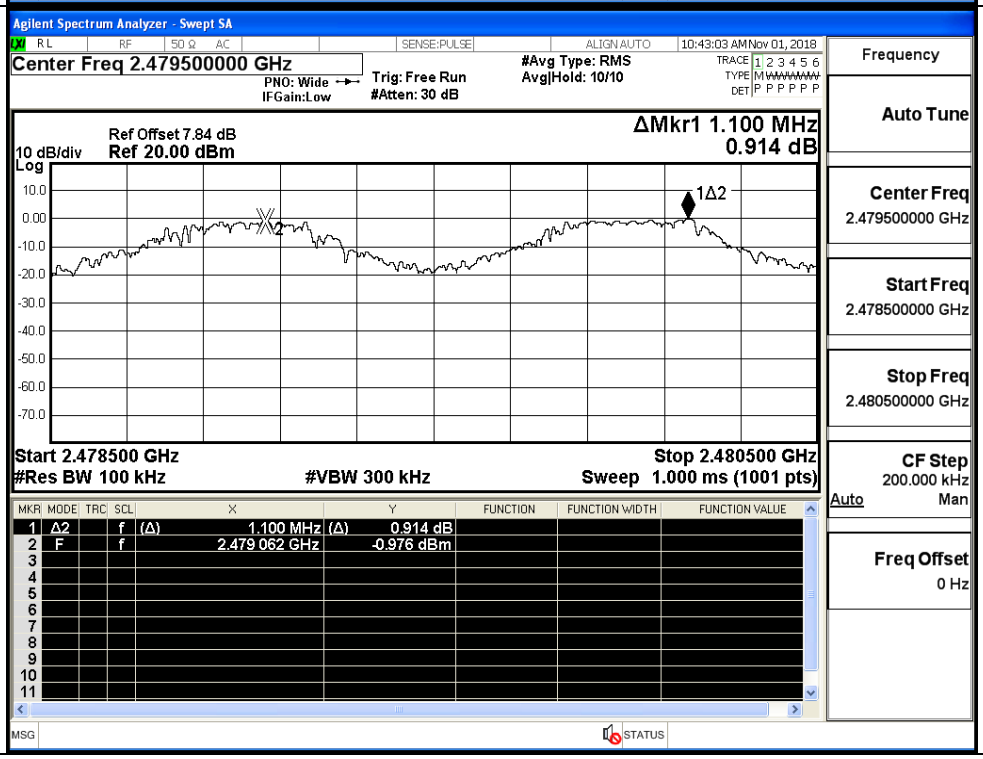
8DPSK/HCH

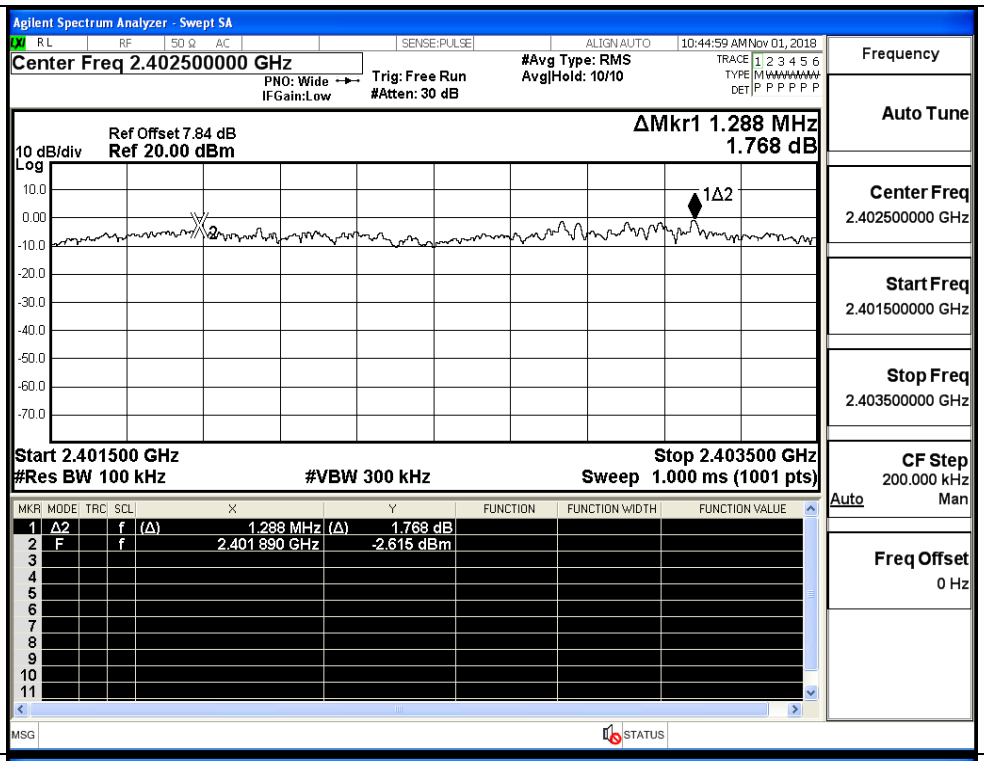
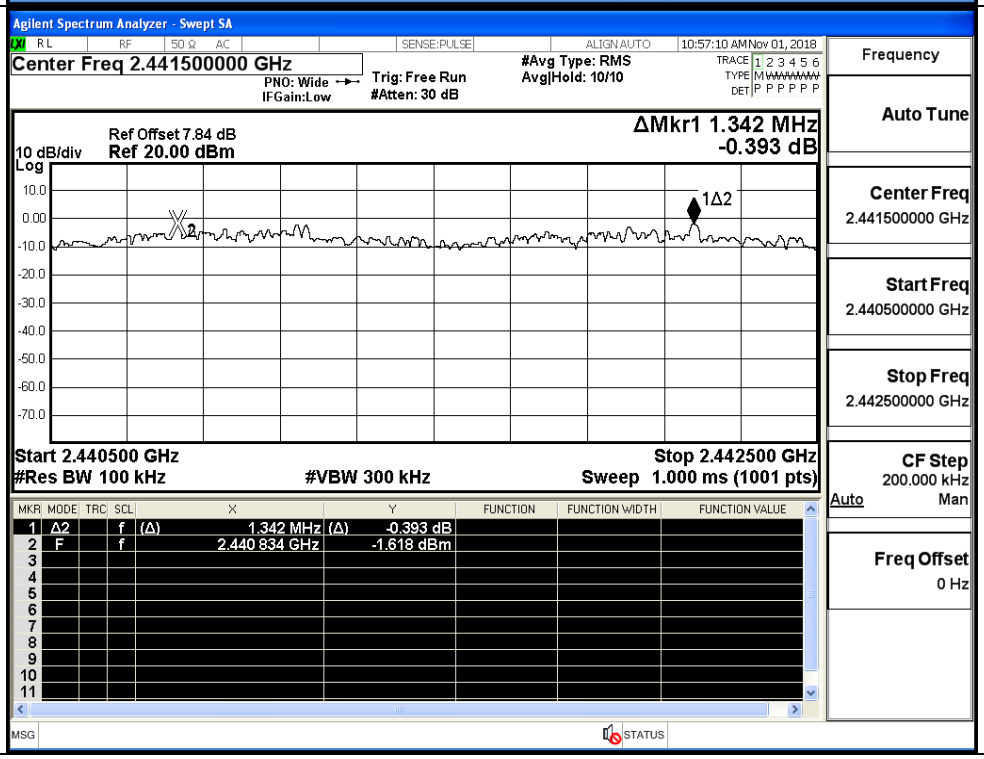


A.3 Carrier Frequency Separation

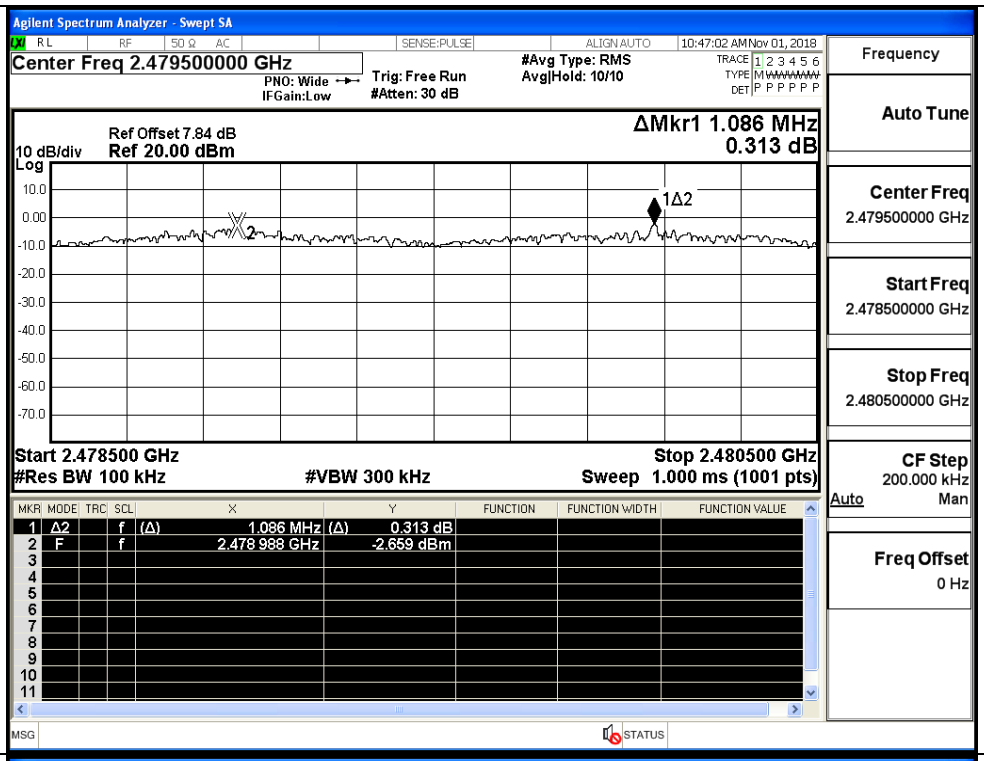
Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.158	0.689	PASS
	MCH	0.924	0.689	PASS
	HCH	1.100	0.689	PASS
π/4DQPSK	LCH	1.288	0.876	PASS
	MCH	1.342	0.876	PASS
	HCH	1.086	0.876	PASS
8DPSK	LCH	1.278	0.872	PASS
	MCH	1.166	0.872	PASS
	HCH	1.060	0.872	PASS

Test Graphs		
GFSK/LCH		

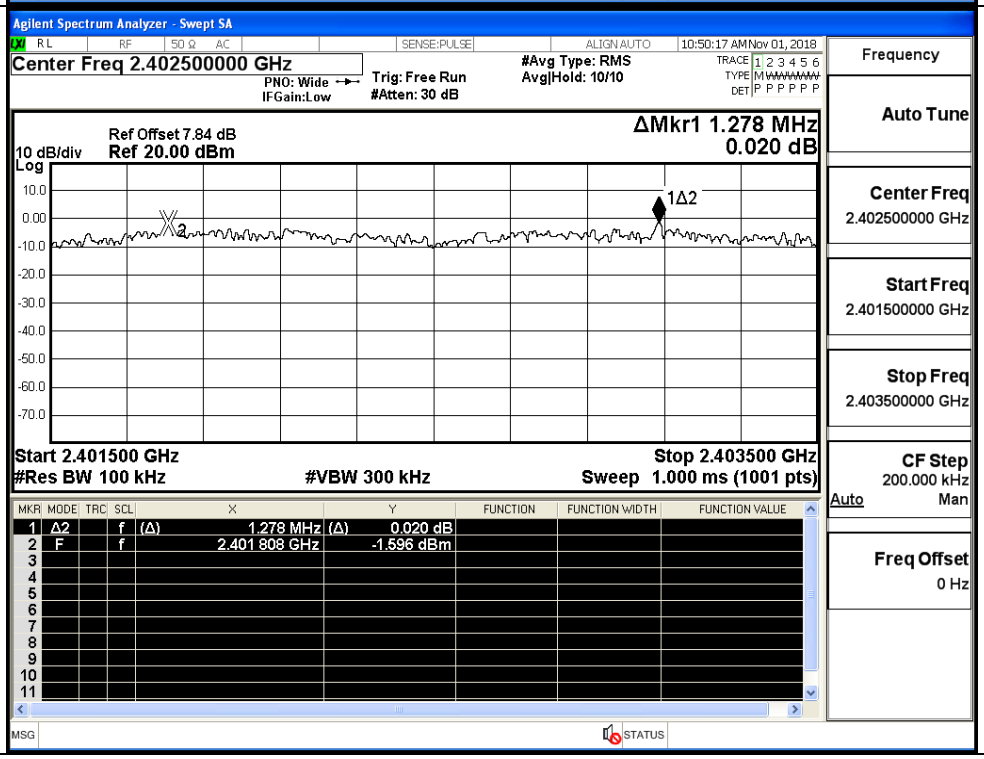
GFSK/MCH		
GFSK/HCH		

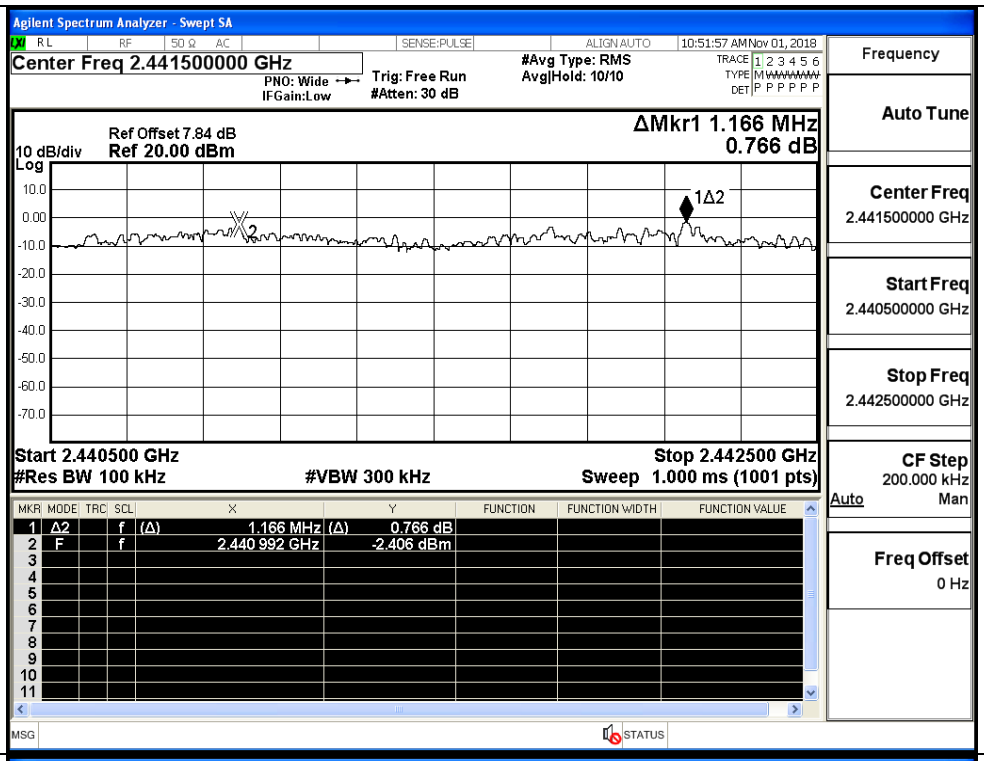
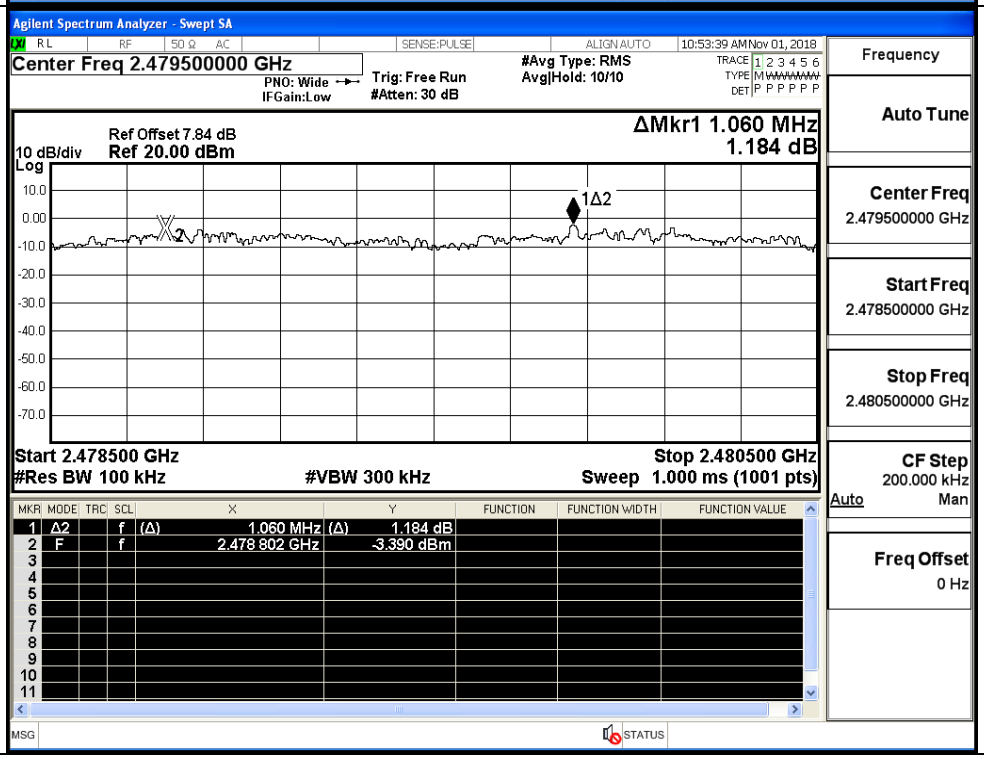
π/4DQPSK/LCH		
π/4DQPSK/MCH		

π/4DQPSK/HCH



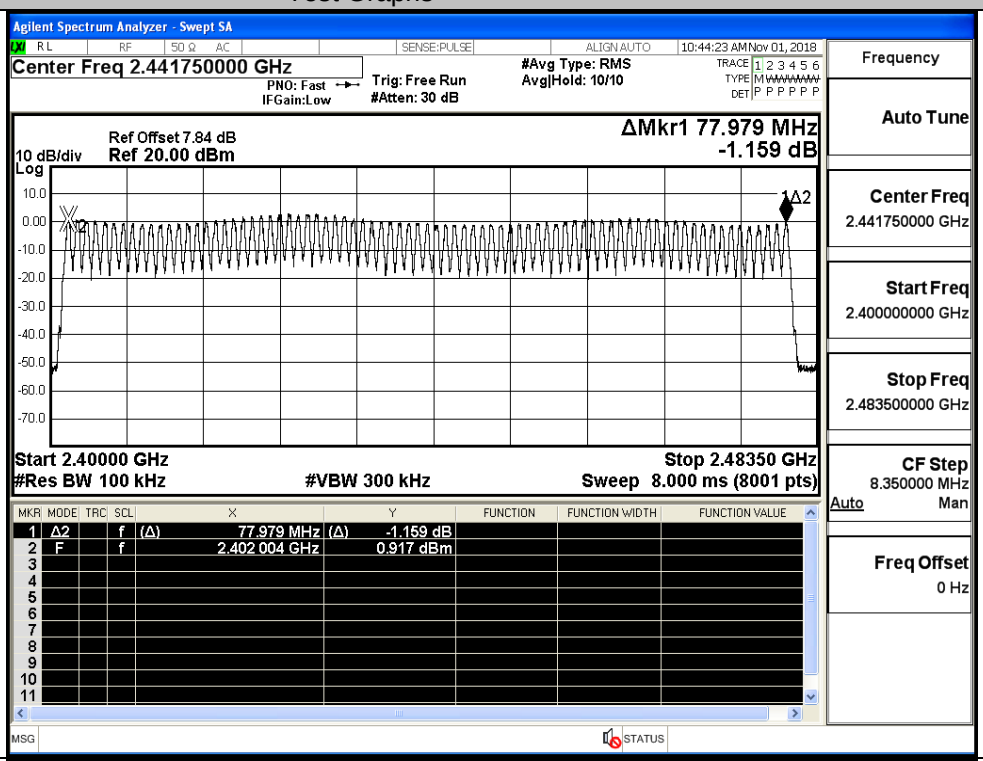
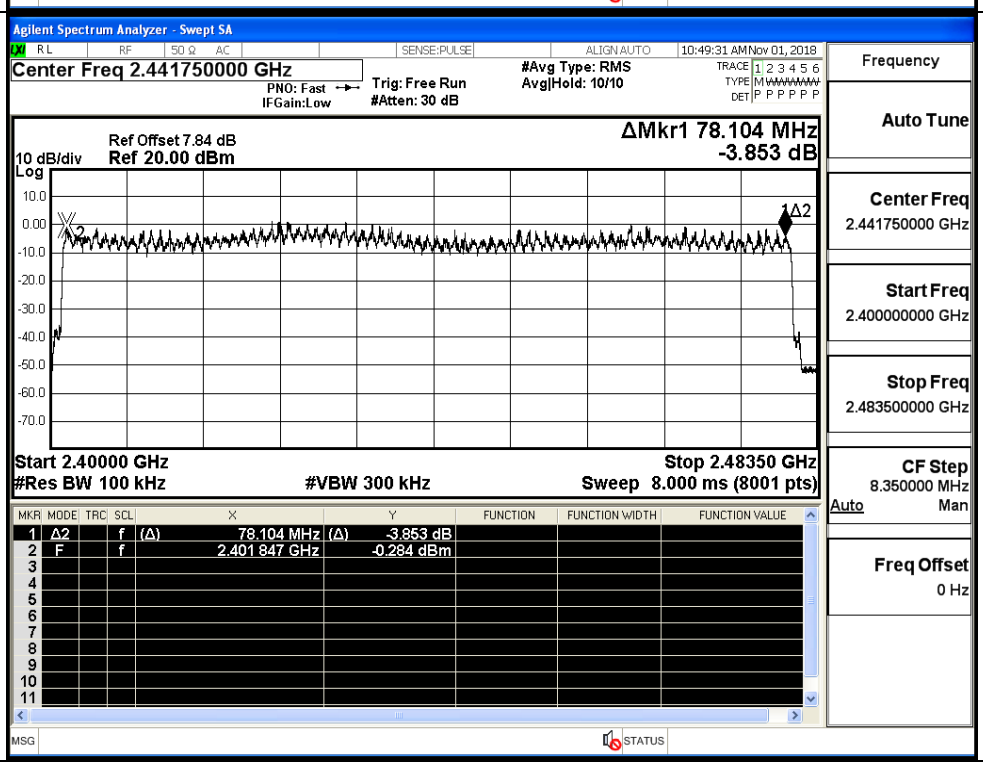
8DPSK/LCH

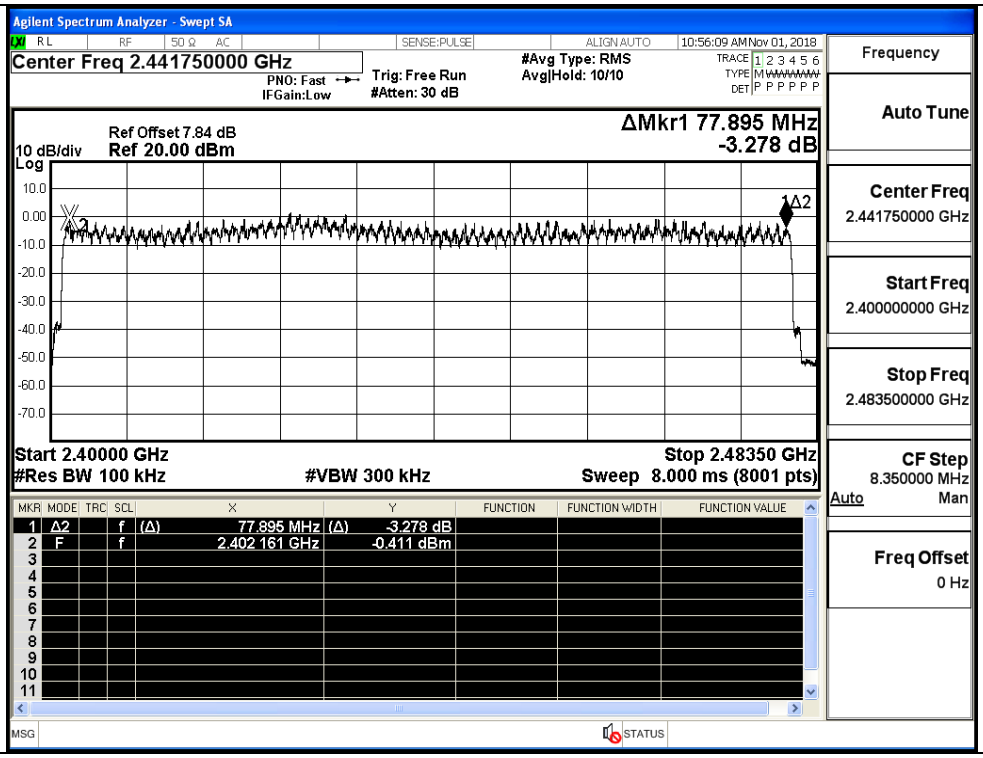


8DPSK/MCH		
8DPSK/HCH		

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

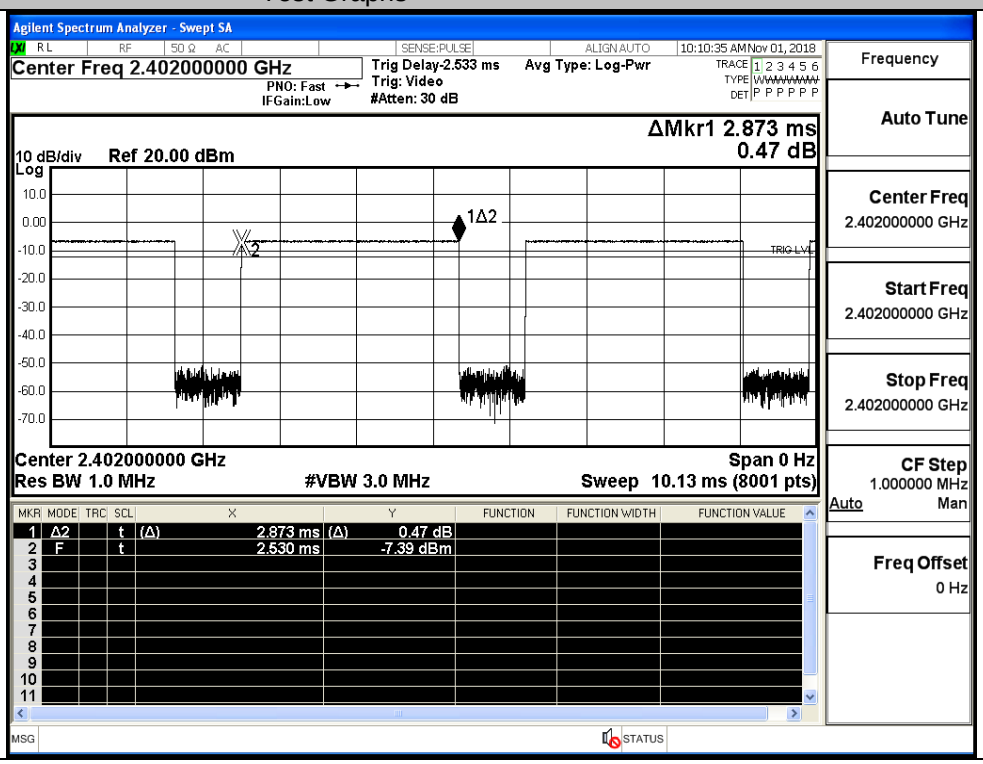
Test Graphs	
GFSK/Hop	
π/4DQPSK/Hop	

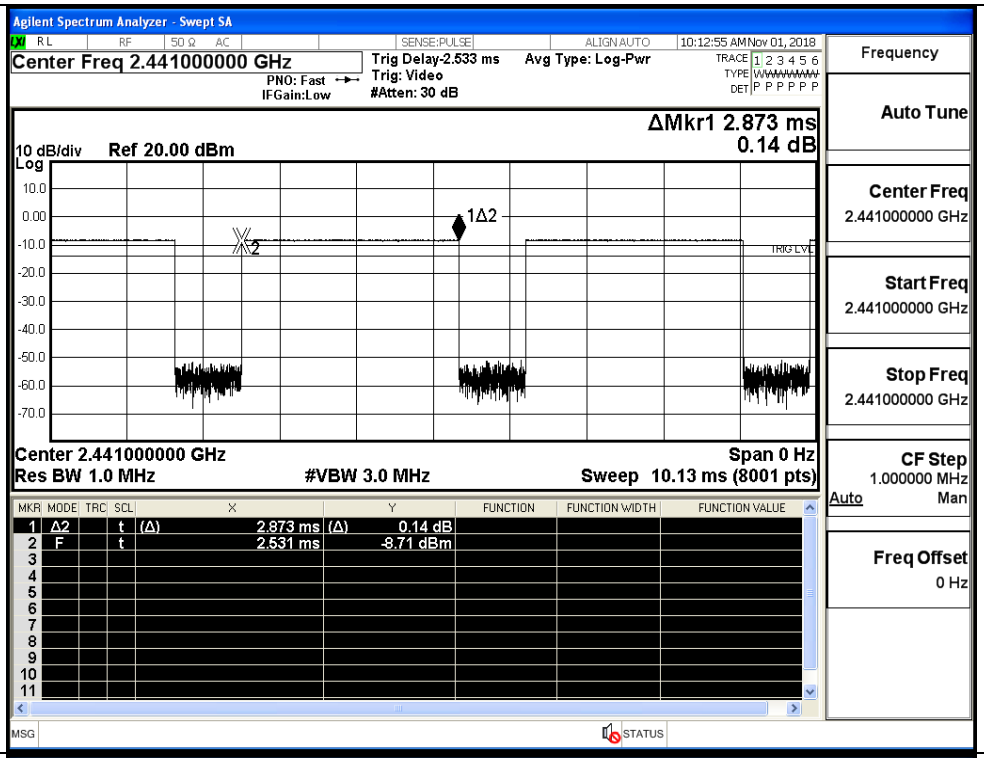
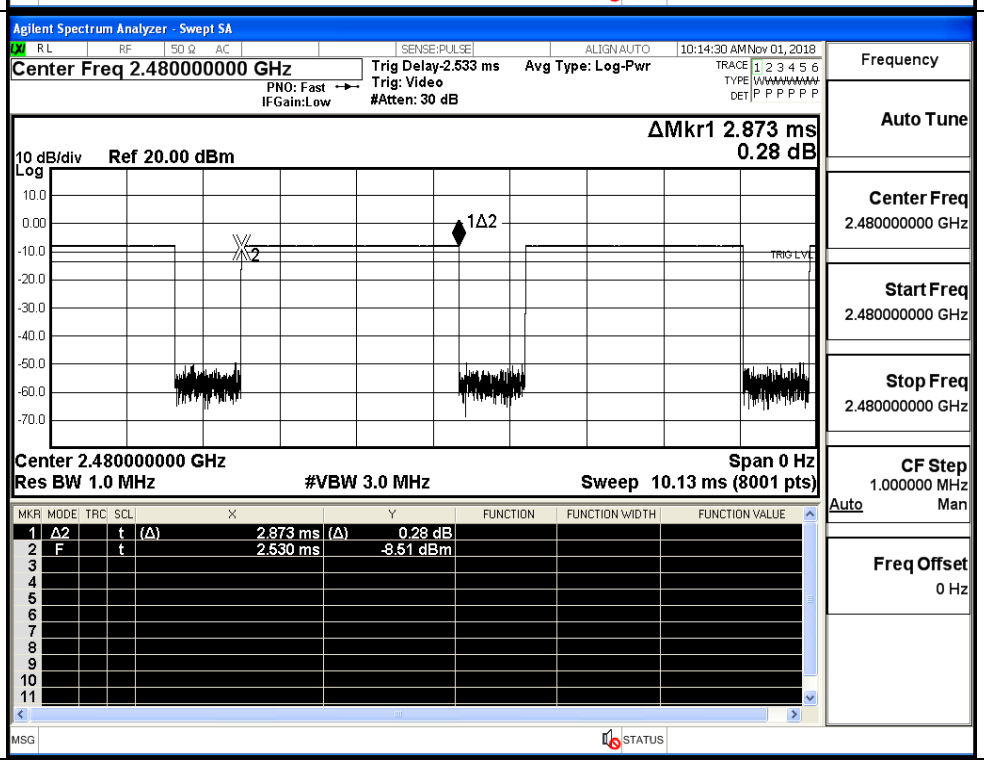
8DPSK/Hop		

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
10:56:09 AM Nov 01, 2018
Ref Offset 7.84 dB
10 dB/div
Ref 20.00 dBm
Log
ΔMkr1 77.895 MHz
-3.278 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) 77.895 MHz (Δ) -3.278 dB
2 F f 2.402 161 GHz -0.411 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

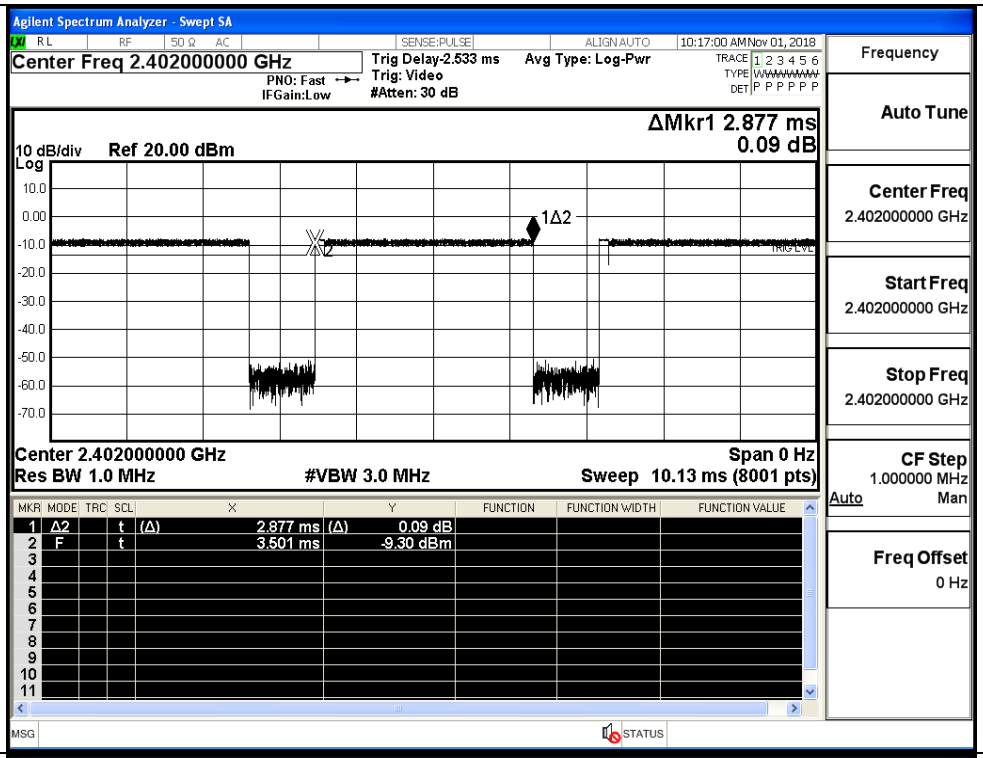
A.5 Dwell Time

Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.87	106.7	0.306	0.4	PASS
	DH5	MCH	2.87	106.7	0.306	0.4	PASS
	DH5	HCH	2.87	106.7	0.306	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	0.307	0.4	PASS
	3DH5	MCH	2.88	106.7	0.307	0.4	PASS
	3DH5	HCH	2.88	106.7	0.307	0.4	PASS

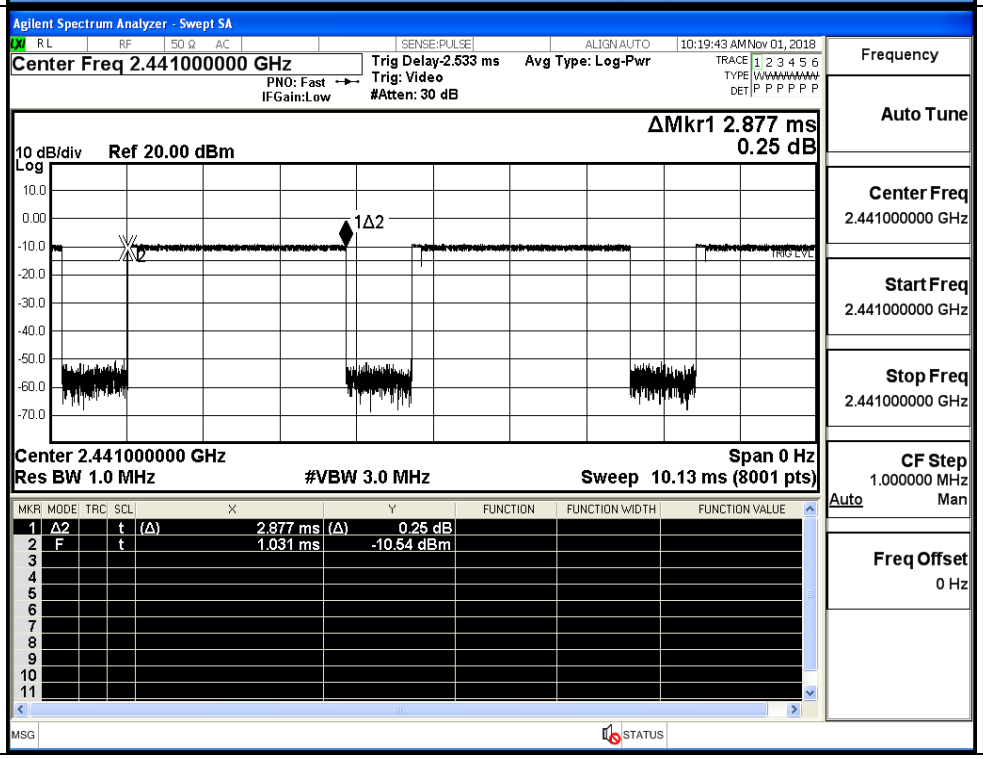
Test Graphs	
GFSK_DH5/LCH	

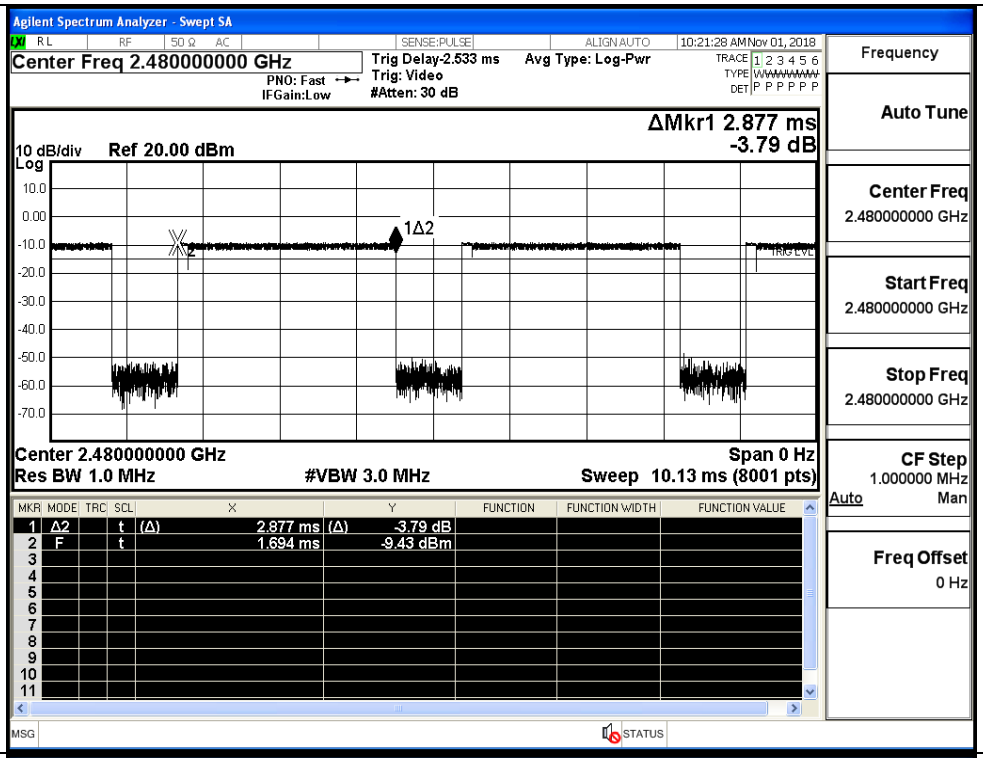
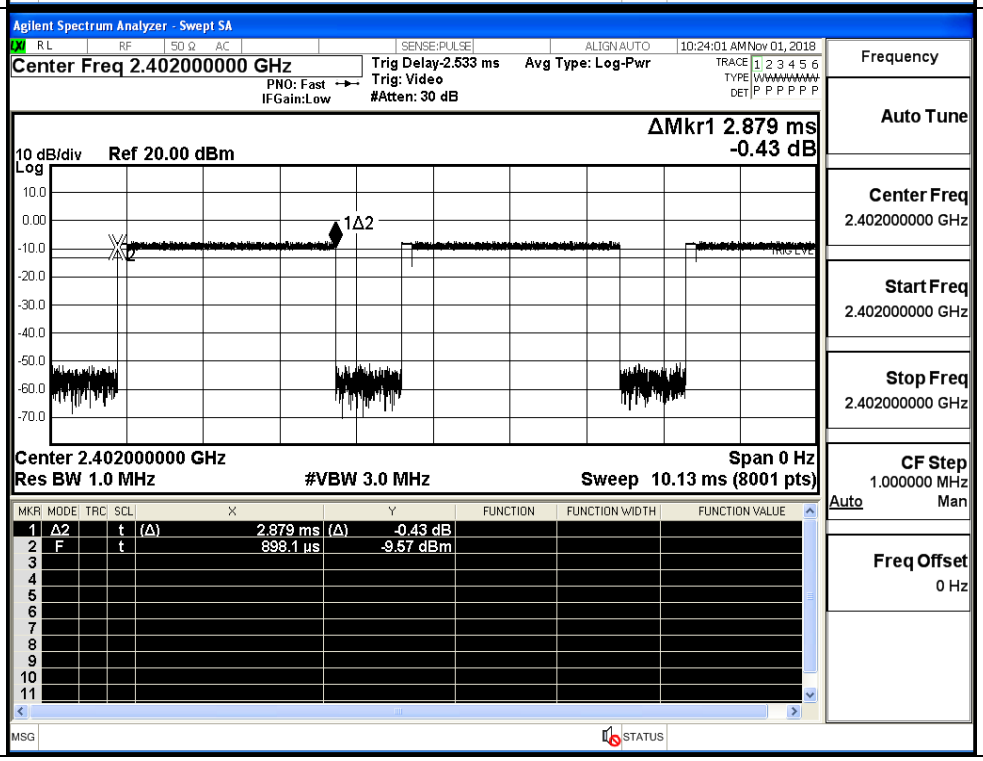
GFSK_DH5/MCH	
GFSK_DH5/HCH	

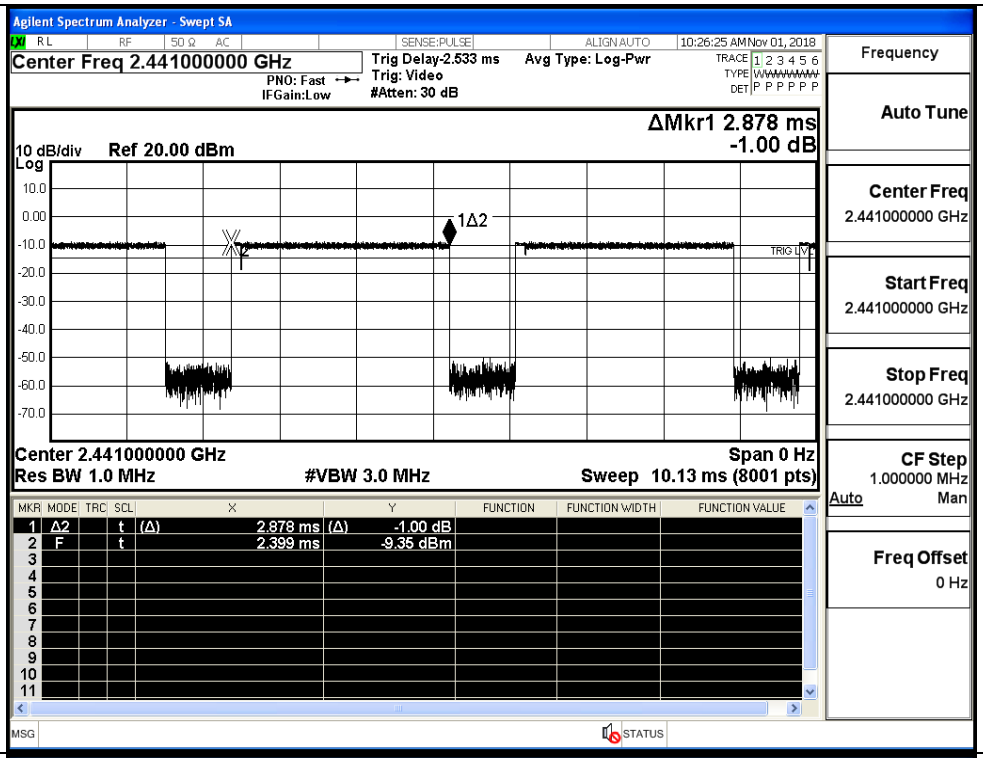
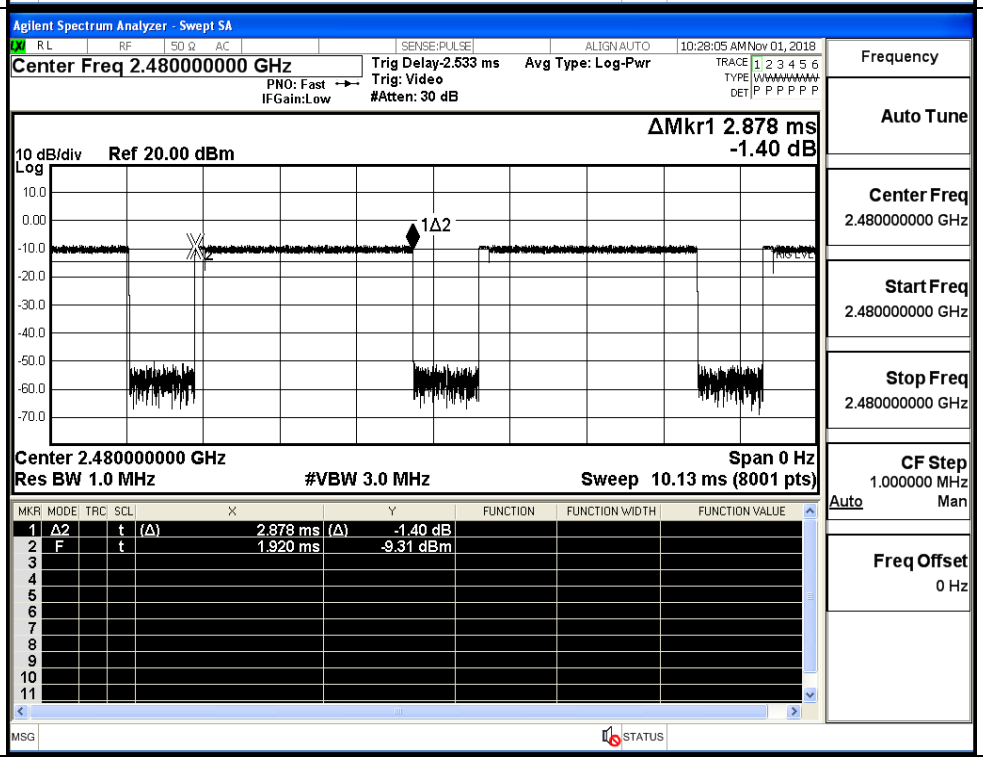
π/4DQPSK
_2DH5/LCH



π/4DQPSK
_2DH5/MCH

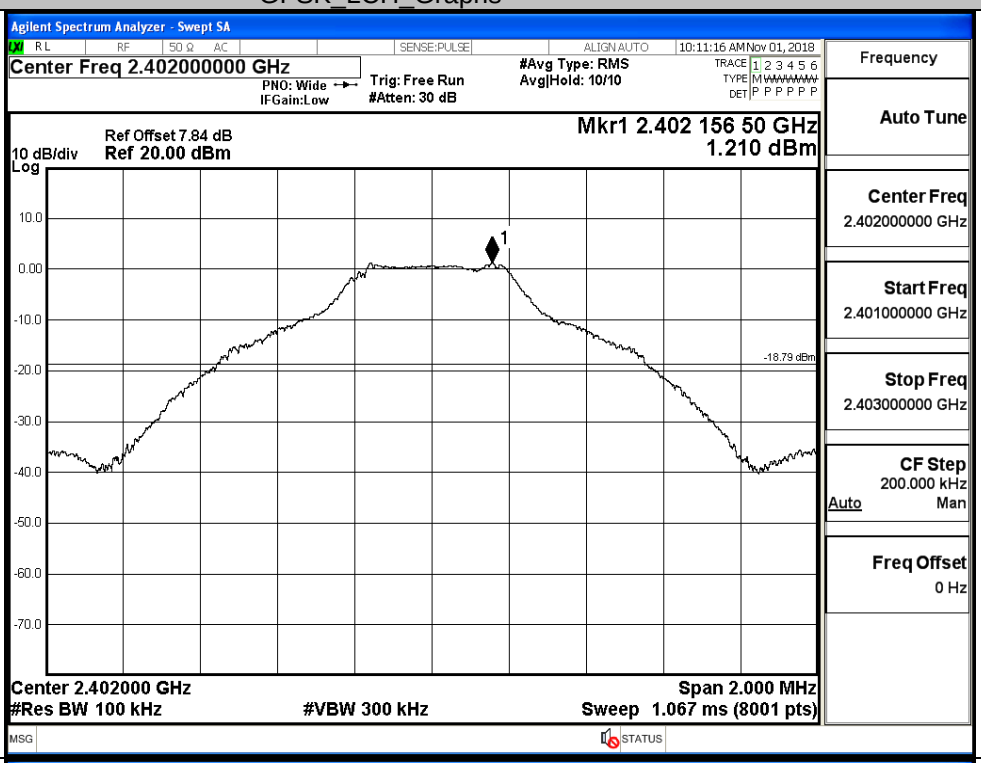
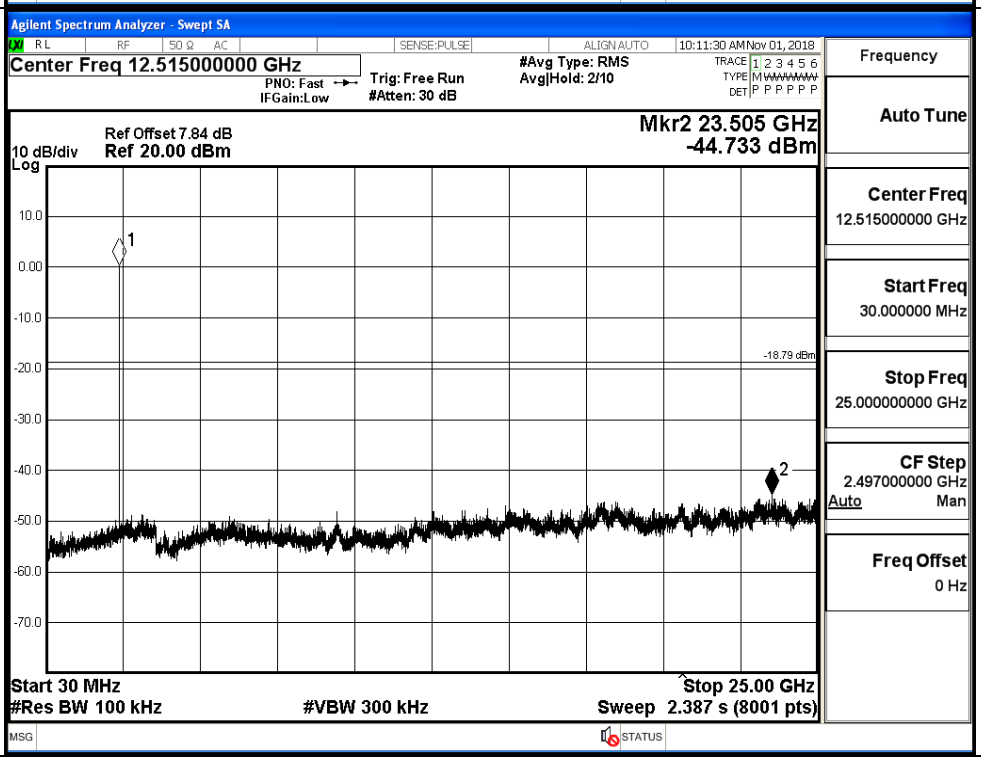


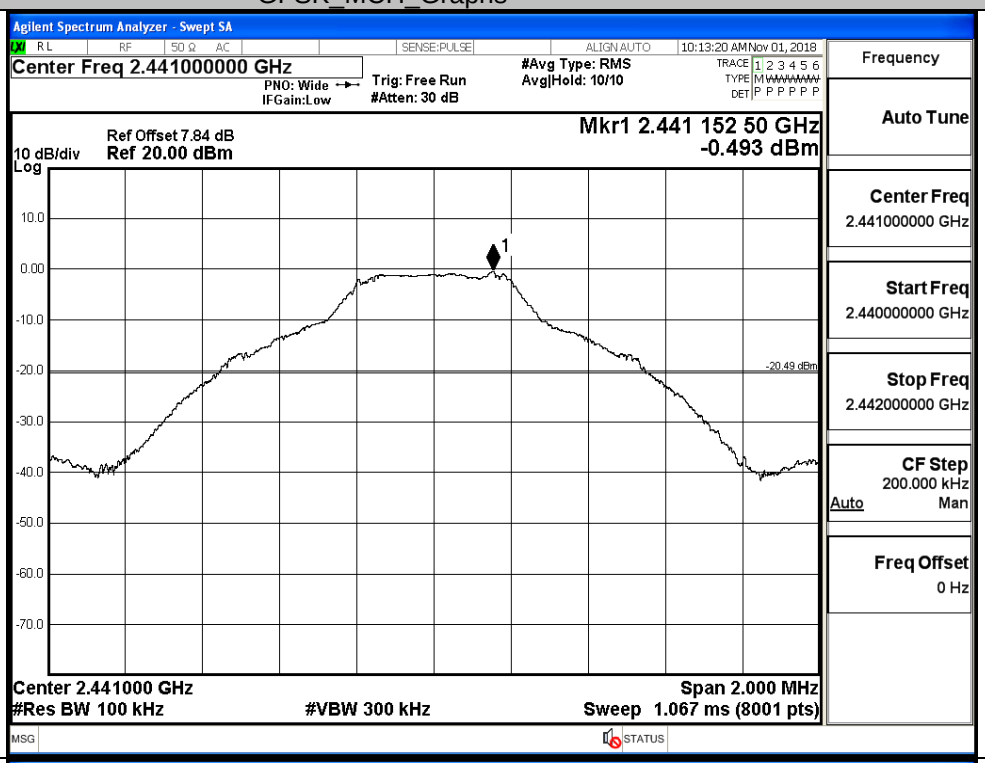
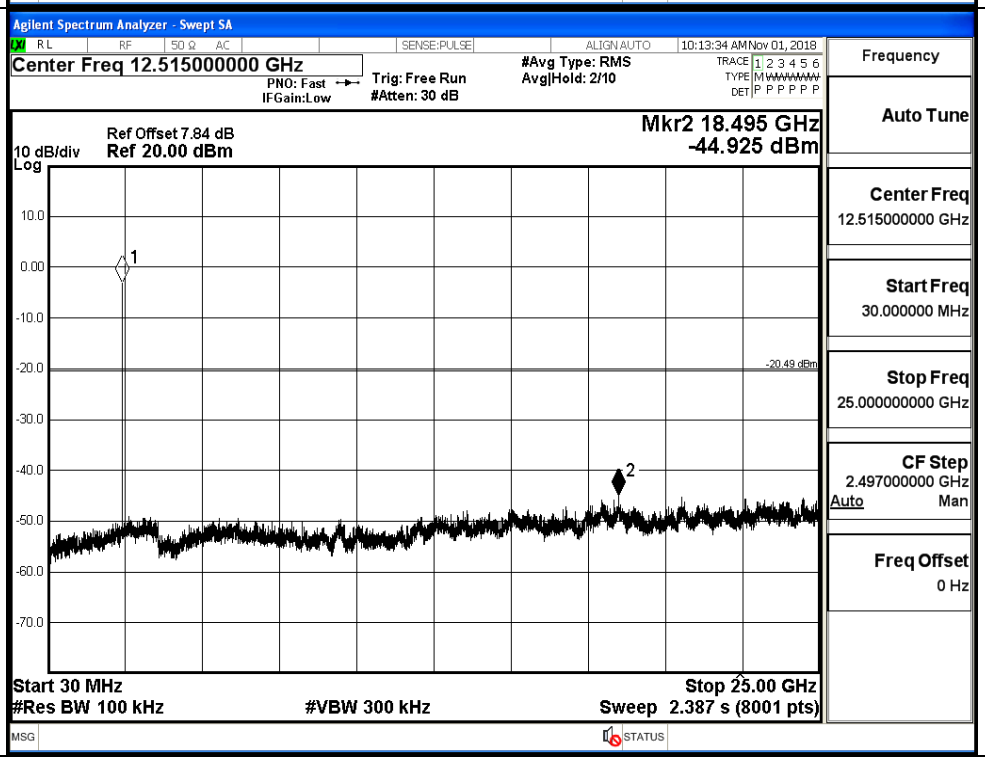
π/4DQPSK _2DH5/HCH	
8DPSK _3DH5/LCH	

8DPSK _3DH5/MCH	
8DPSK _3DH5/HCH	

A.6 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	1.21	-44.733	-18.790	PASS
	MCH	-0.493	-44.925	-20.493	PASS
	HCH	-0.576	-44.489	-20.576	PASS
π/4DQPSK	LCH	-0.891	-43.831	-20.891	PASS
	MCH	-1.592	-44.440	-21.592	PASS
	HCH	-1.918	-44.796	-21.918	PASS
8DPSK	LCH	-0.393	-44.928	-20.393	PASS
	MCH	-1.507	-44.777	-21.507	PASS
	HCH	-1.447	-45.232	-21.447	PASS

GFSK_LCH_Graphs		
Pref		
Puw		

GFSK_MCH_Graphs		
Pref		
Puw		

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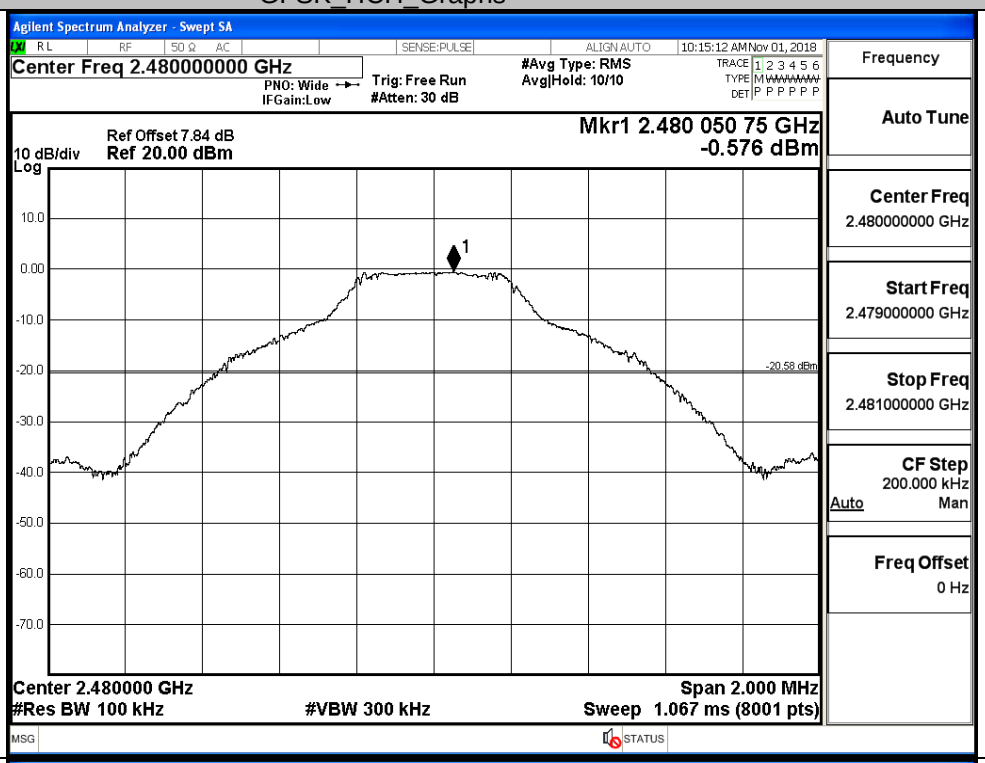
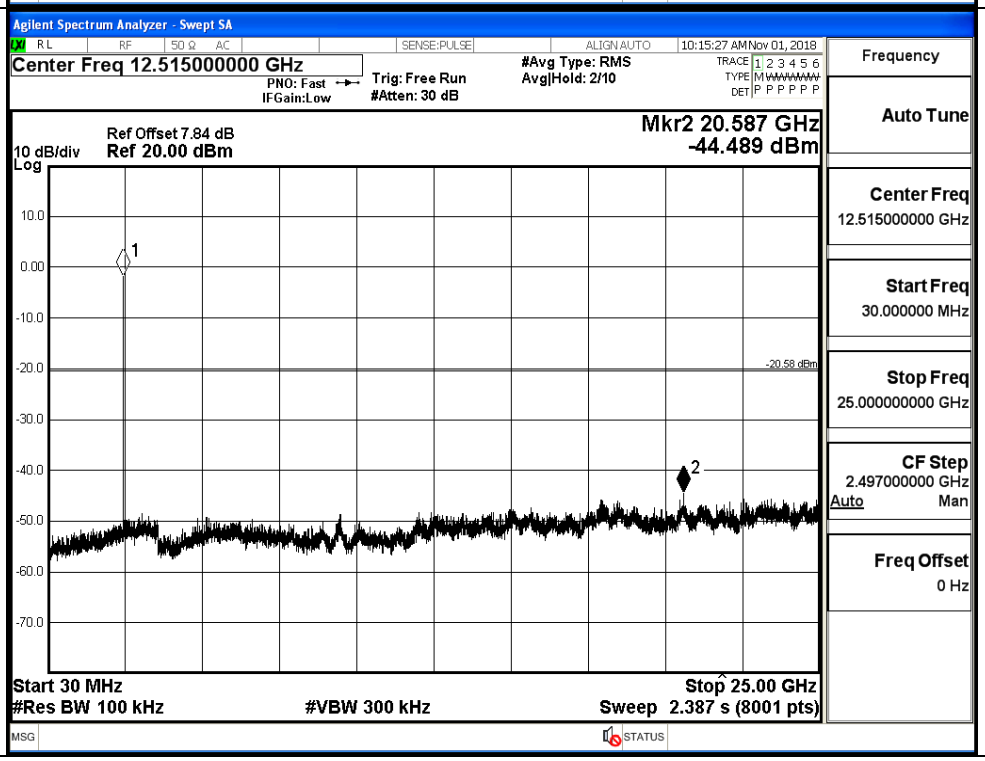
Pref		
Puw		

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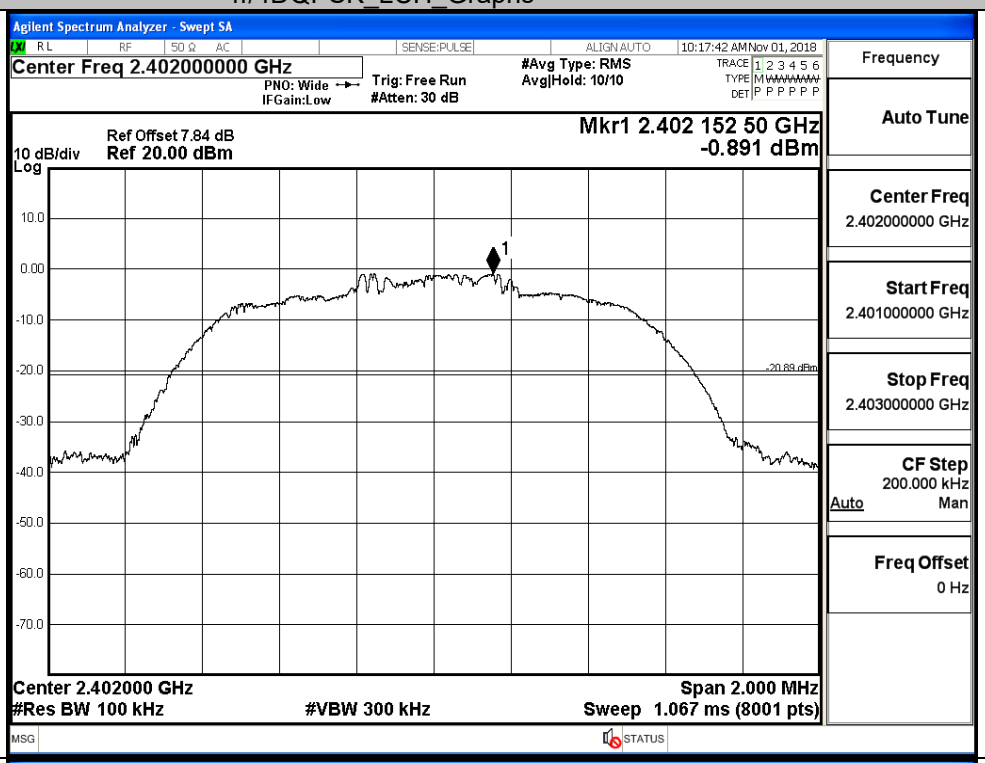
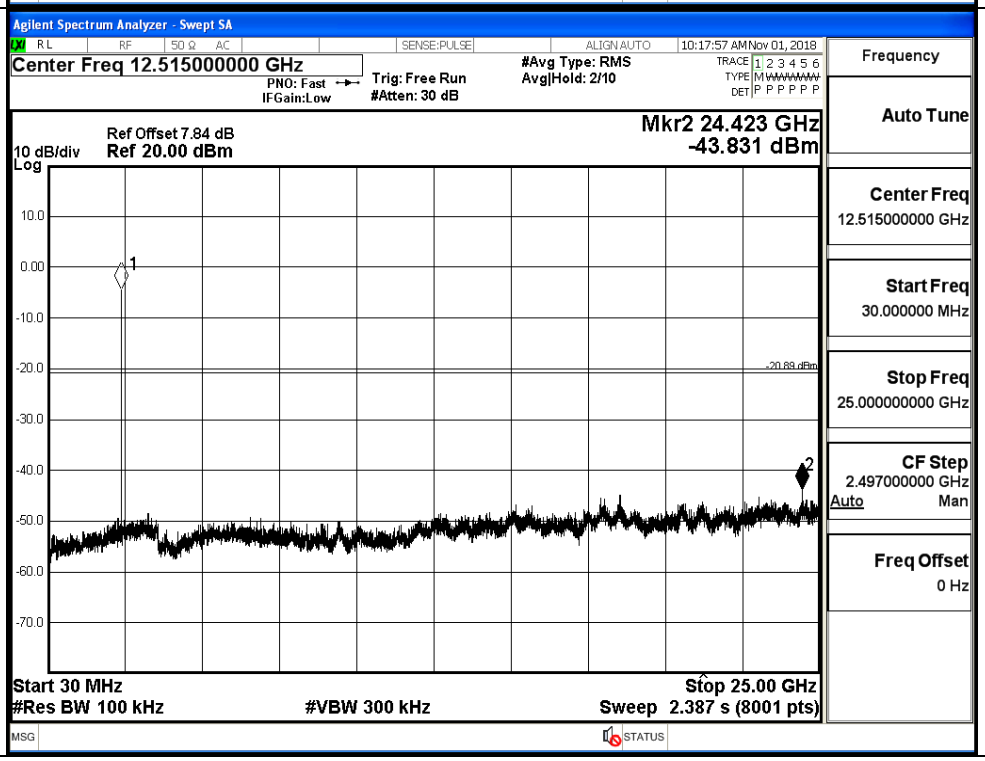
Pref		
Puw		

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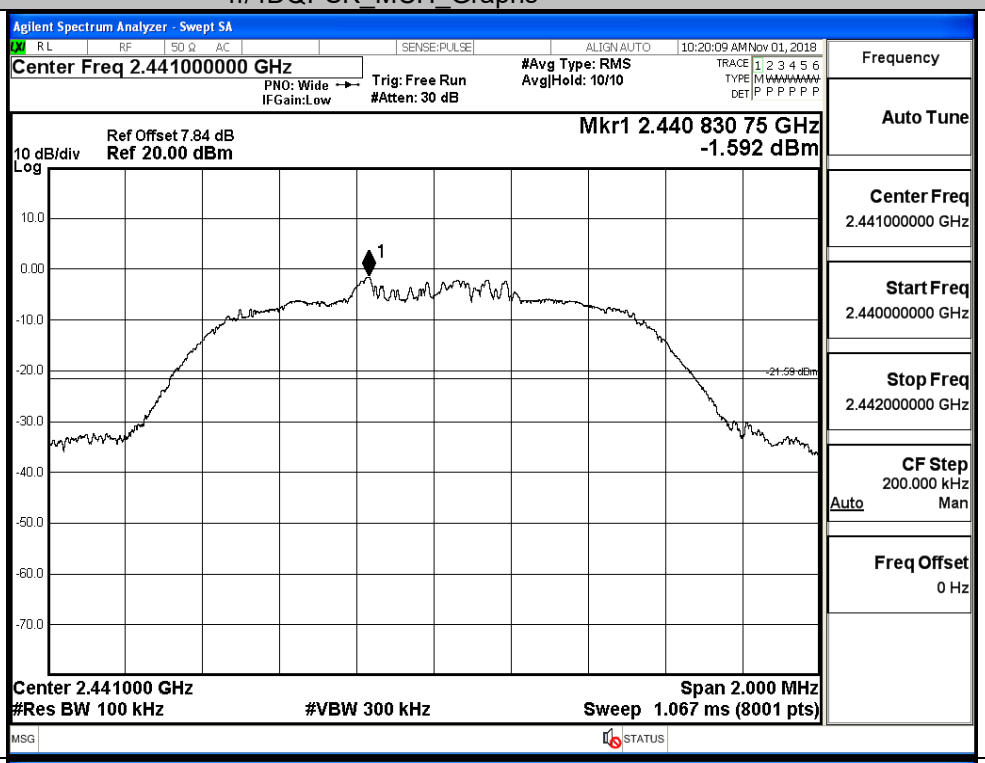
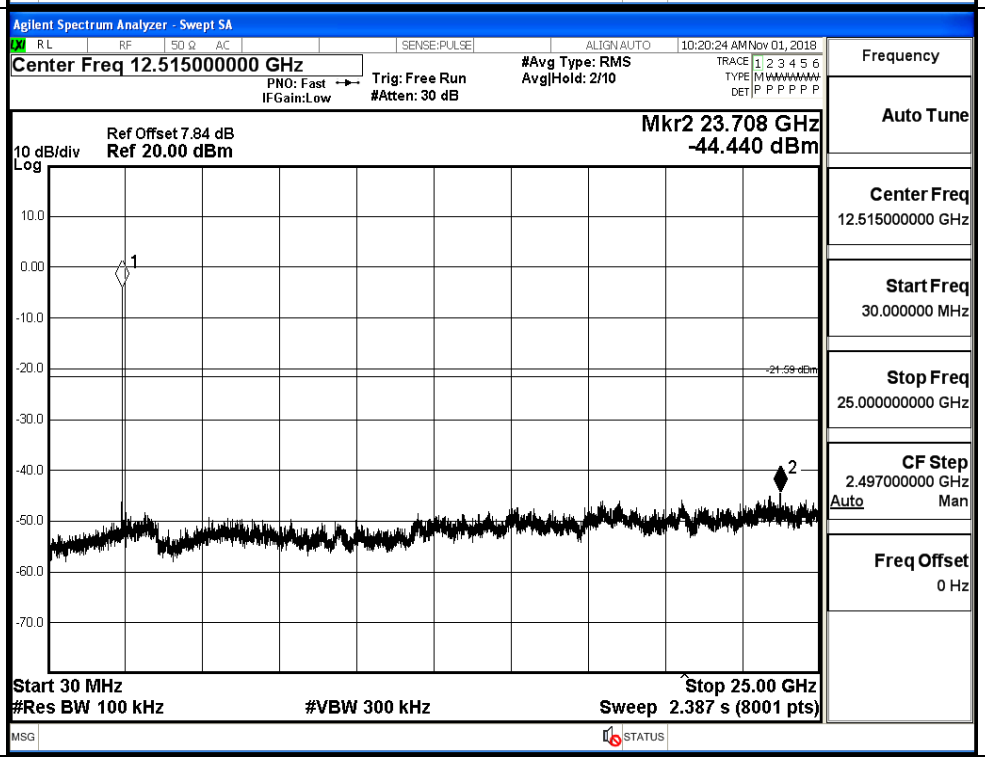
Pref		
Puw		

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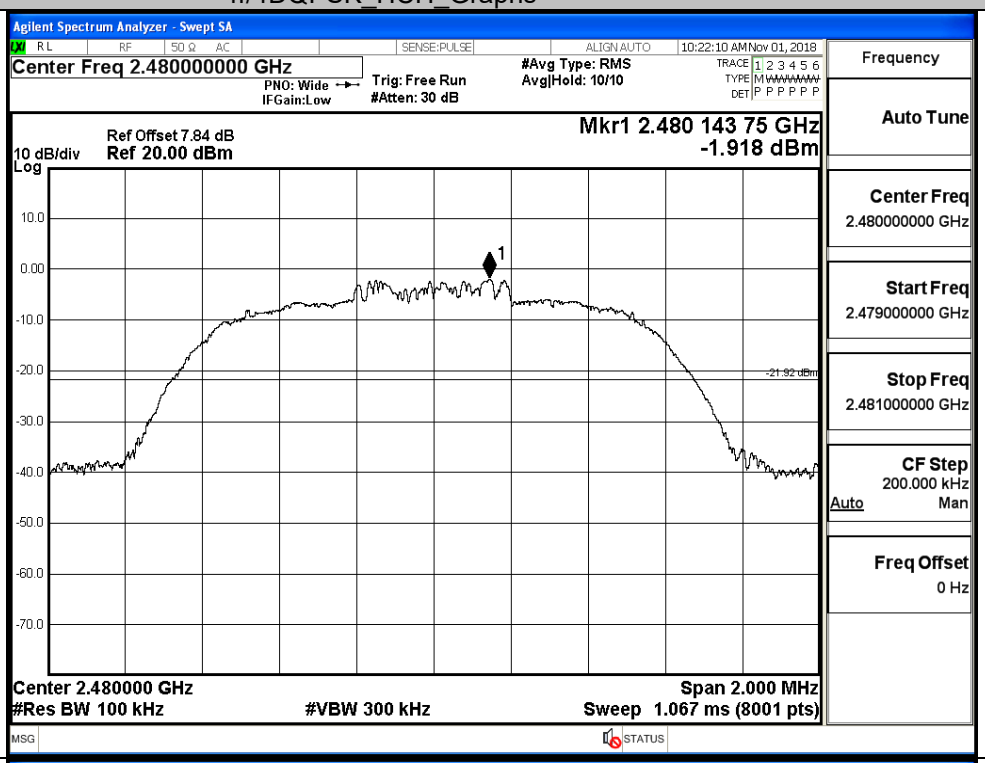
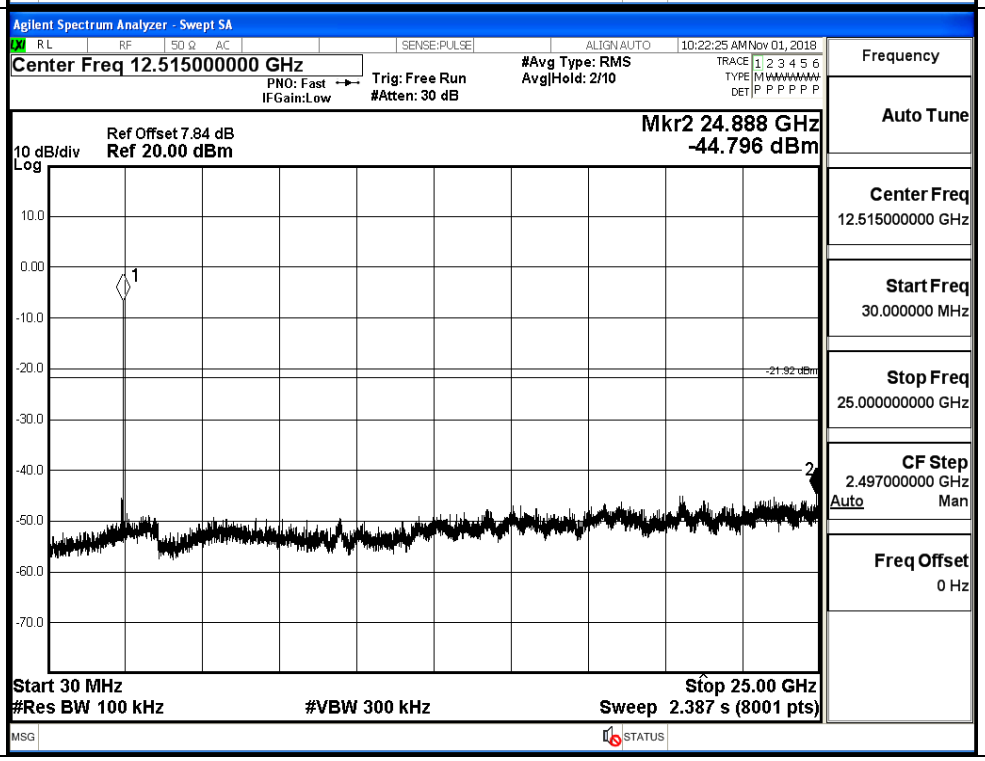
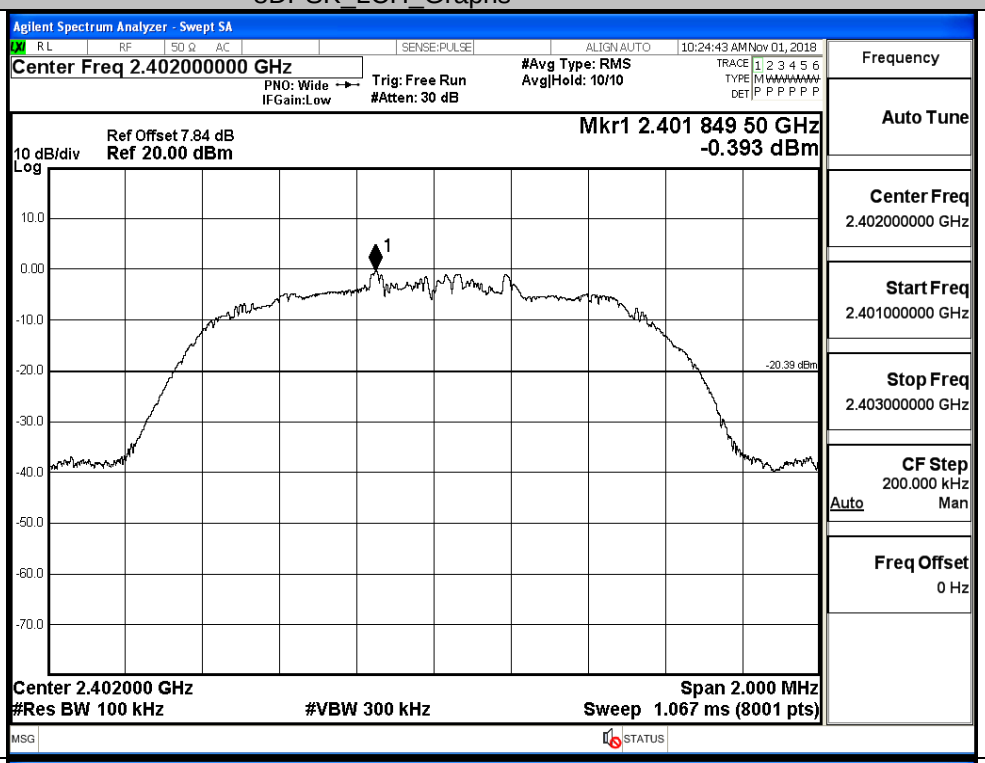
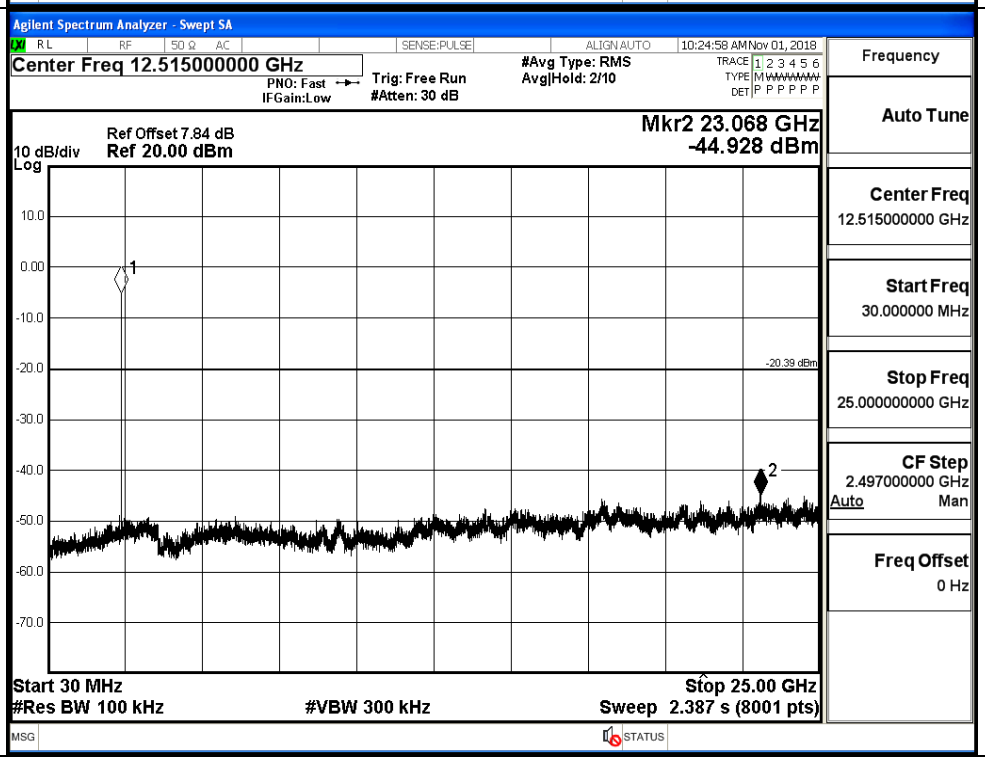
Pref		
Puw		

8DPSK_LCH_Graphs		
Pref		
Puw		

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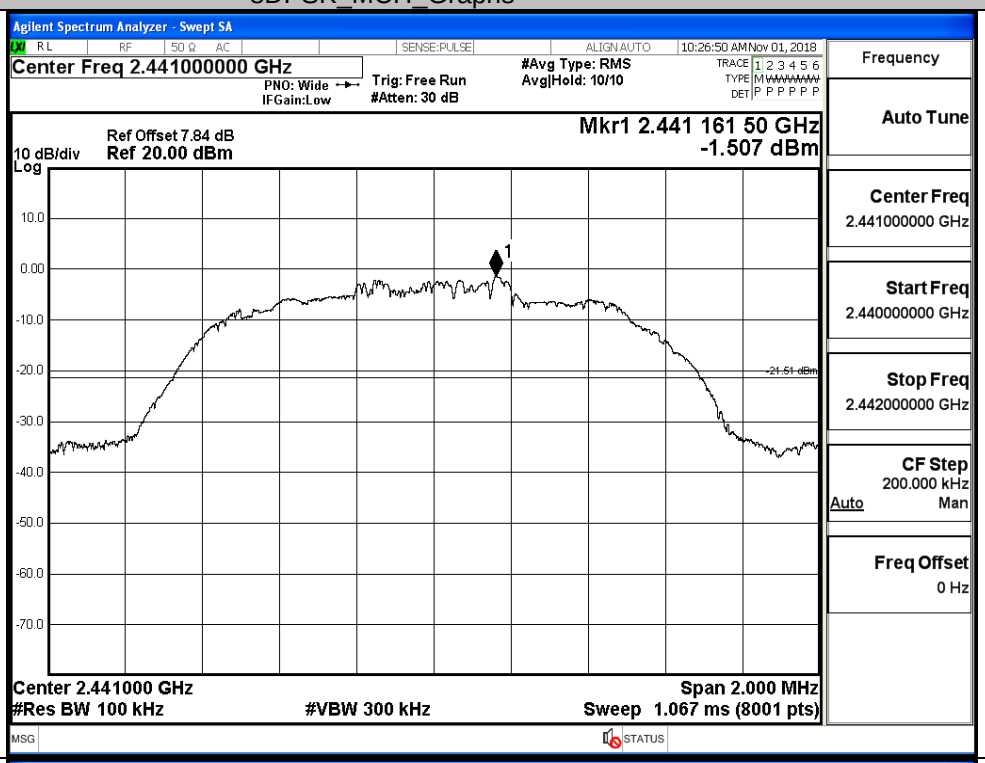
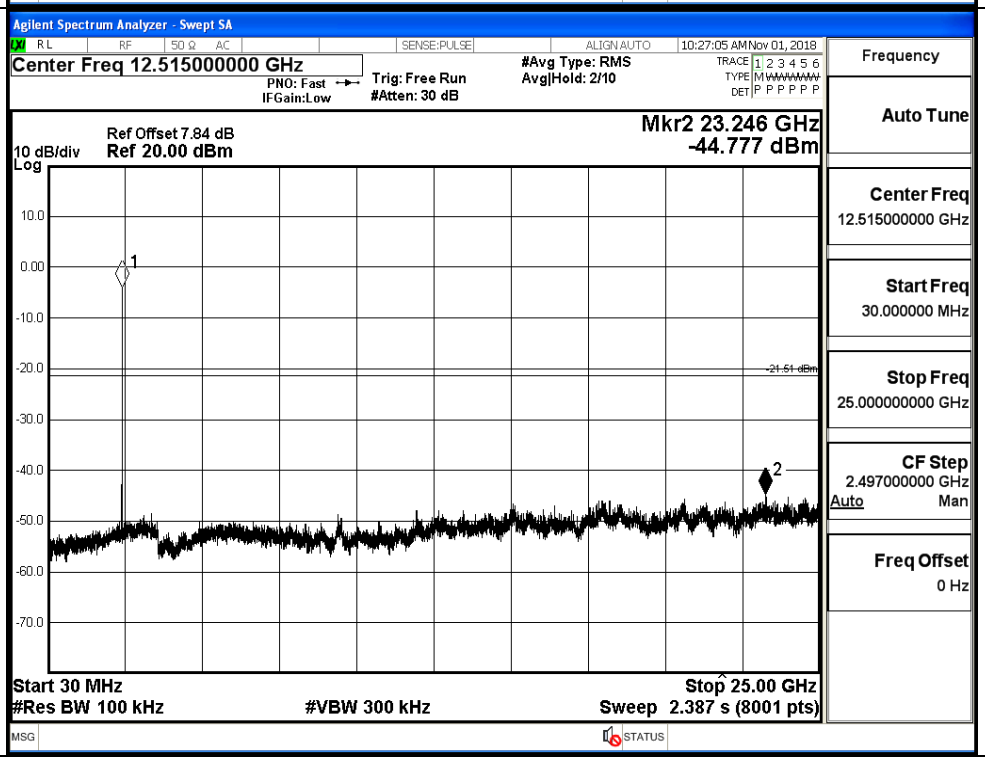
Pref		
Puw		

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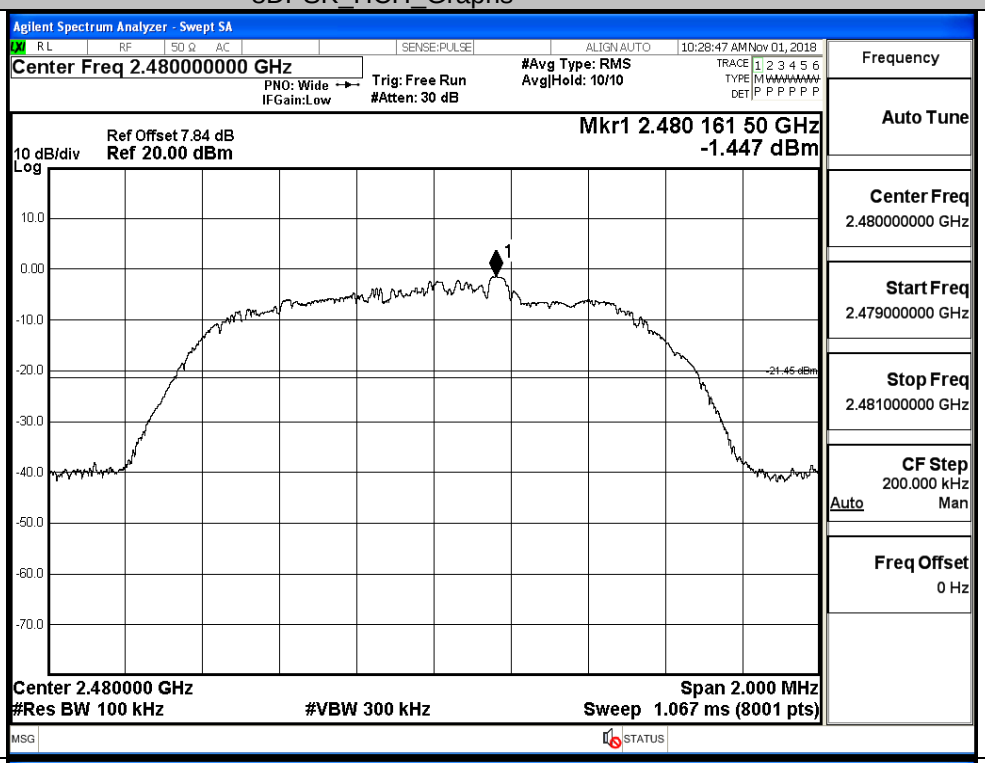
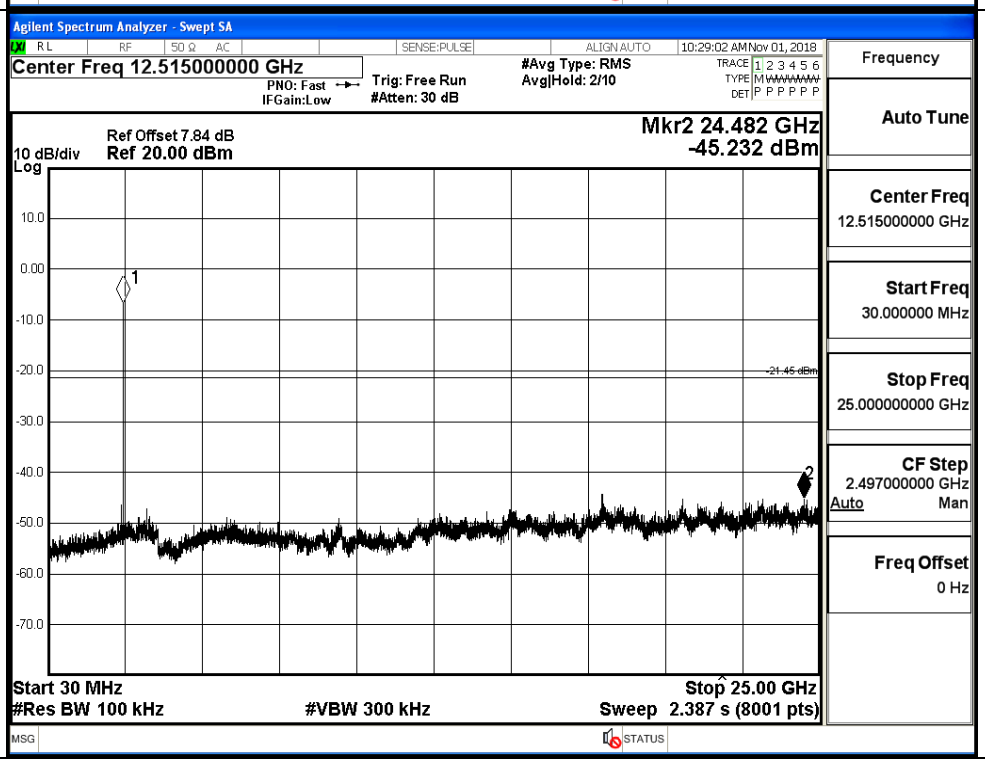
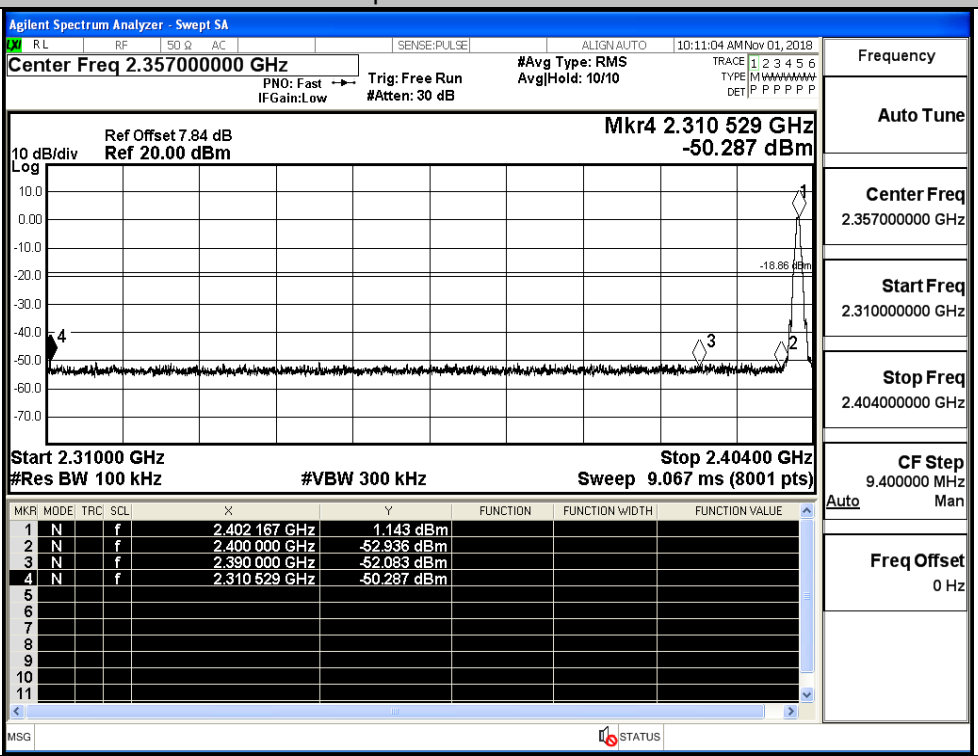
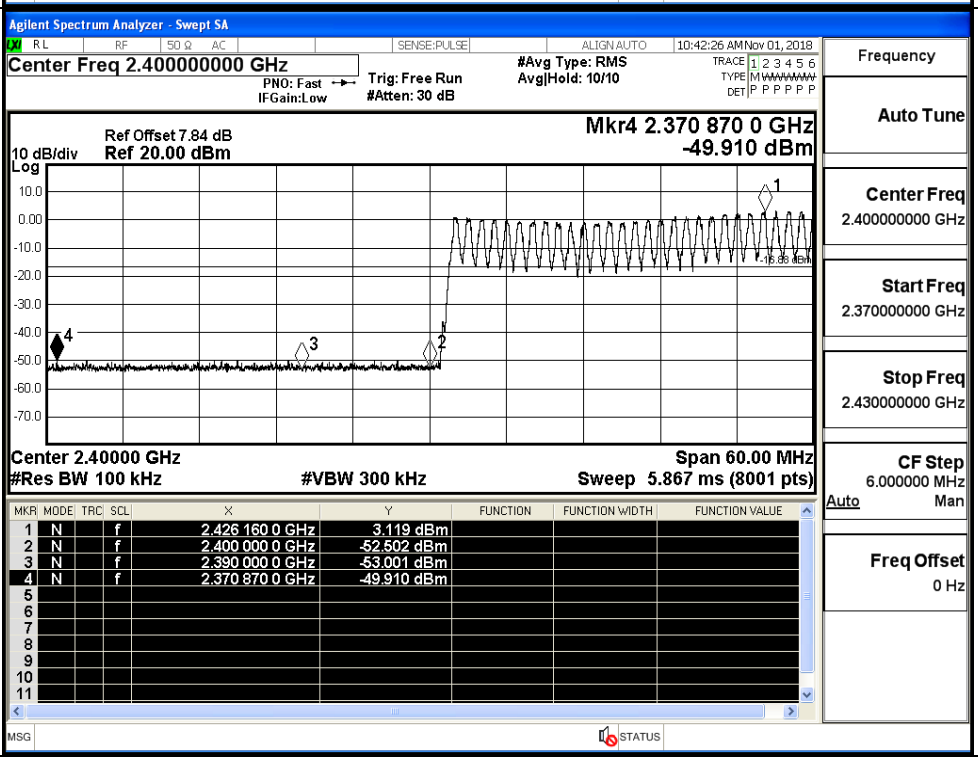
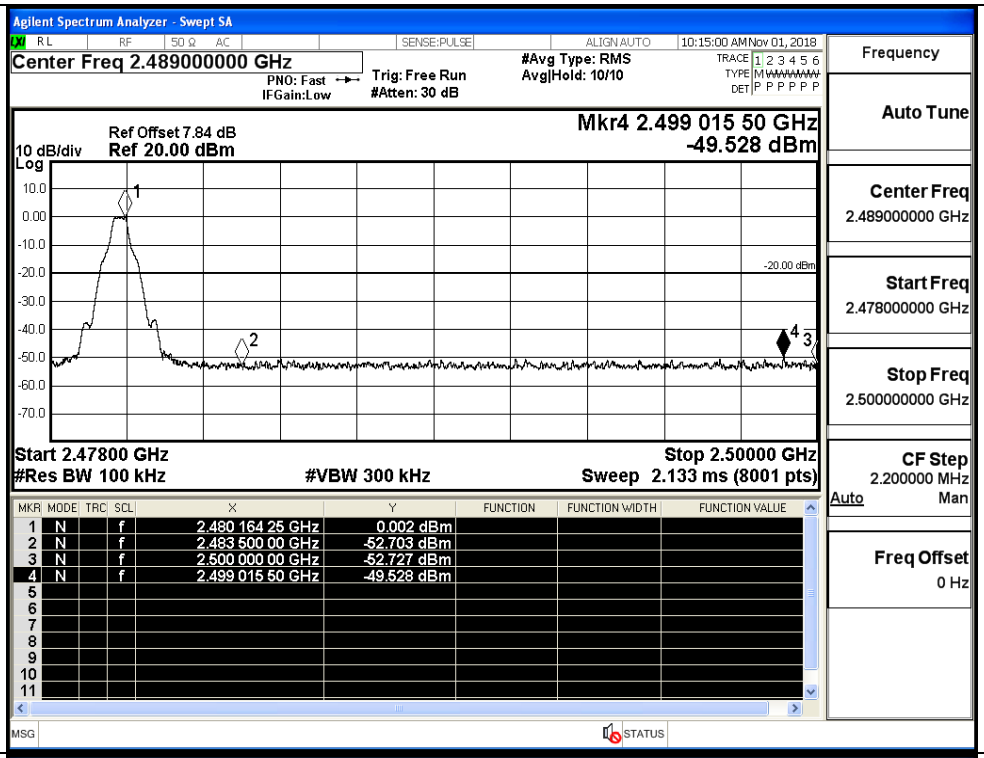
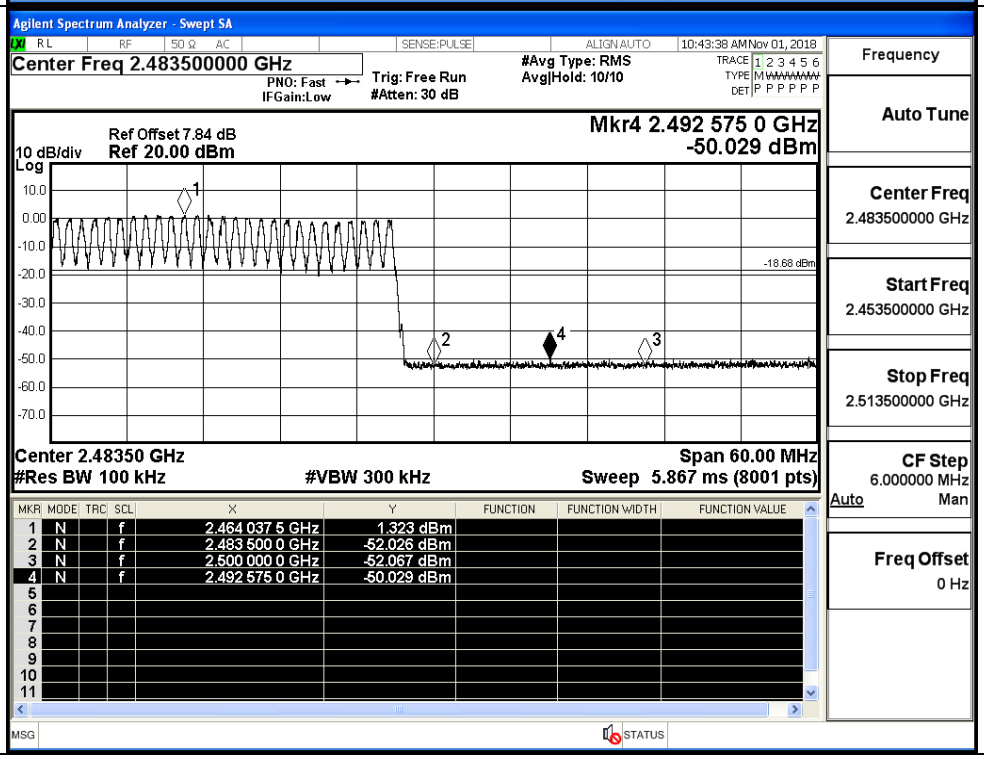
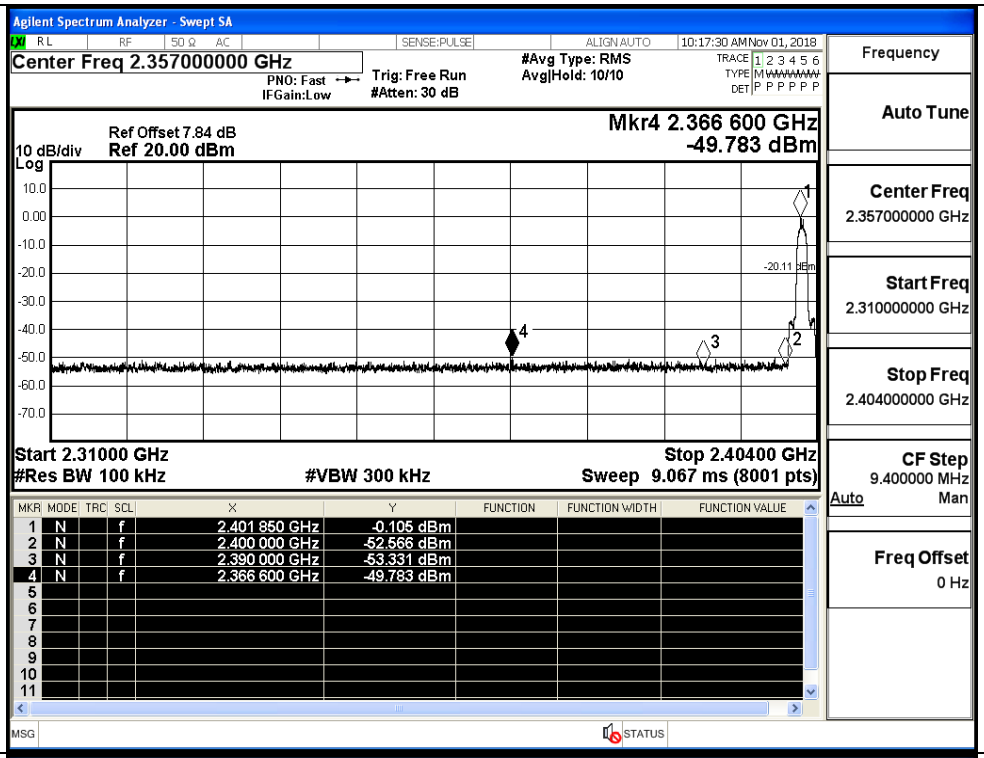
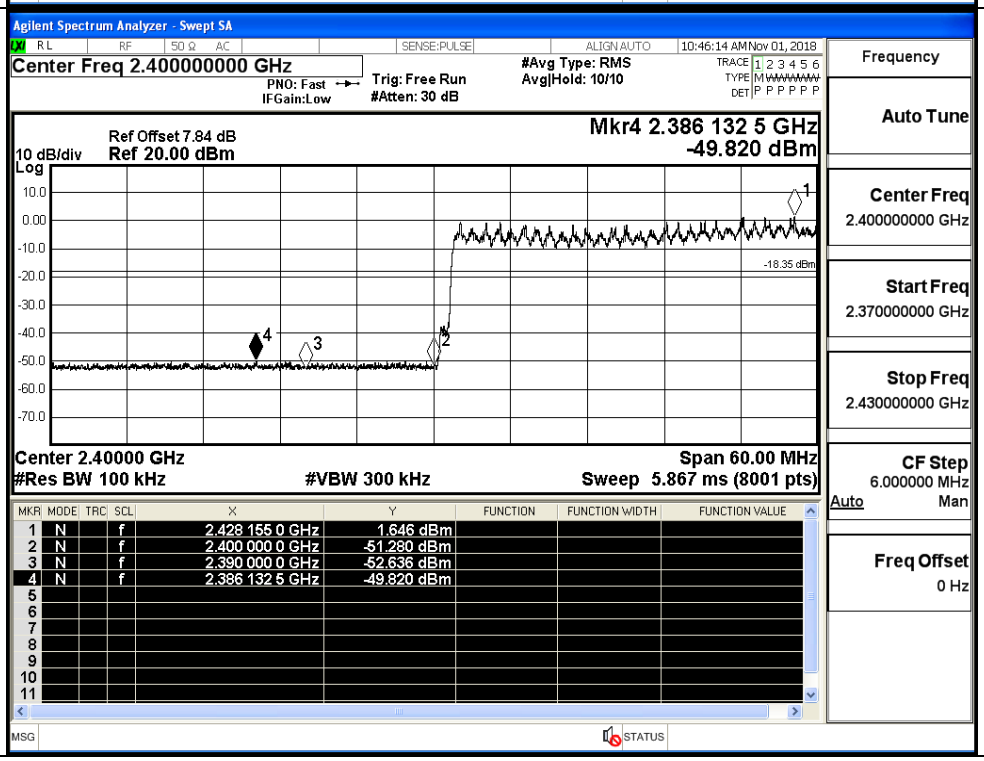
Pref		
Puw		

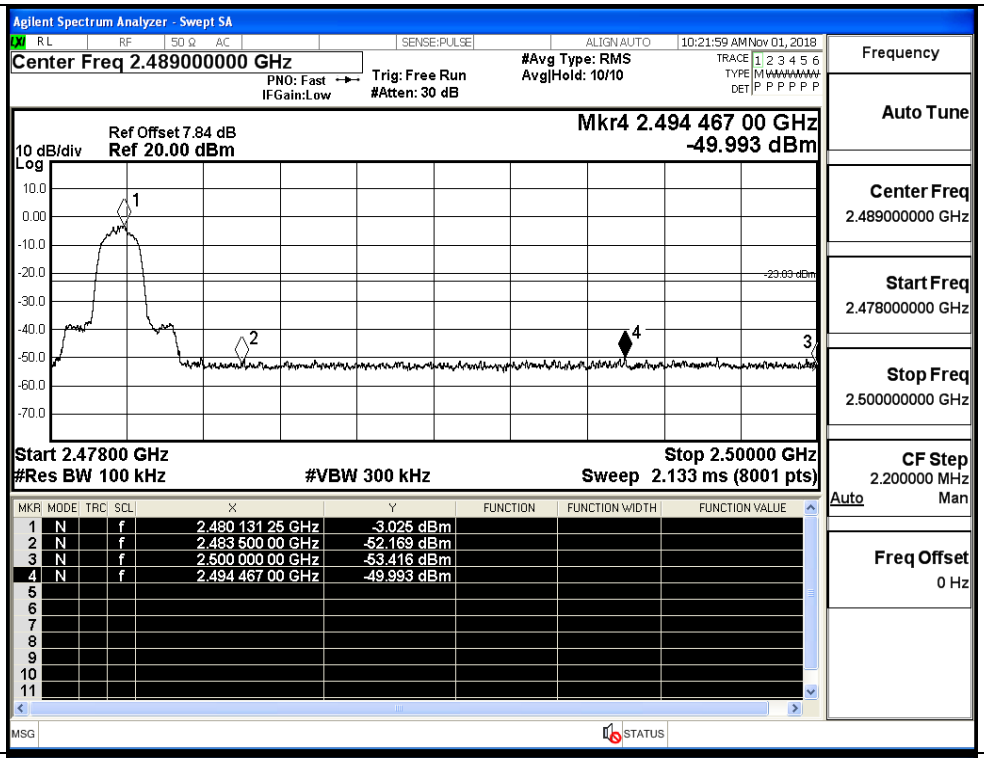
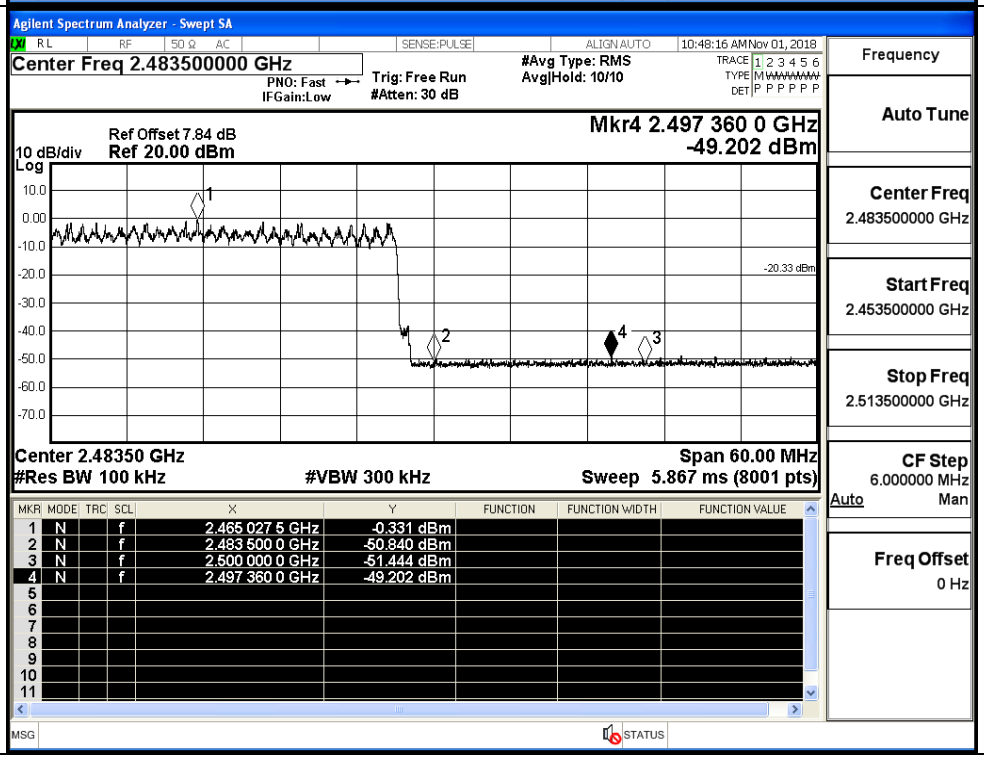
A.7 Band-edge for RF Conducted Emissions

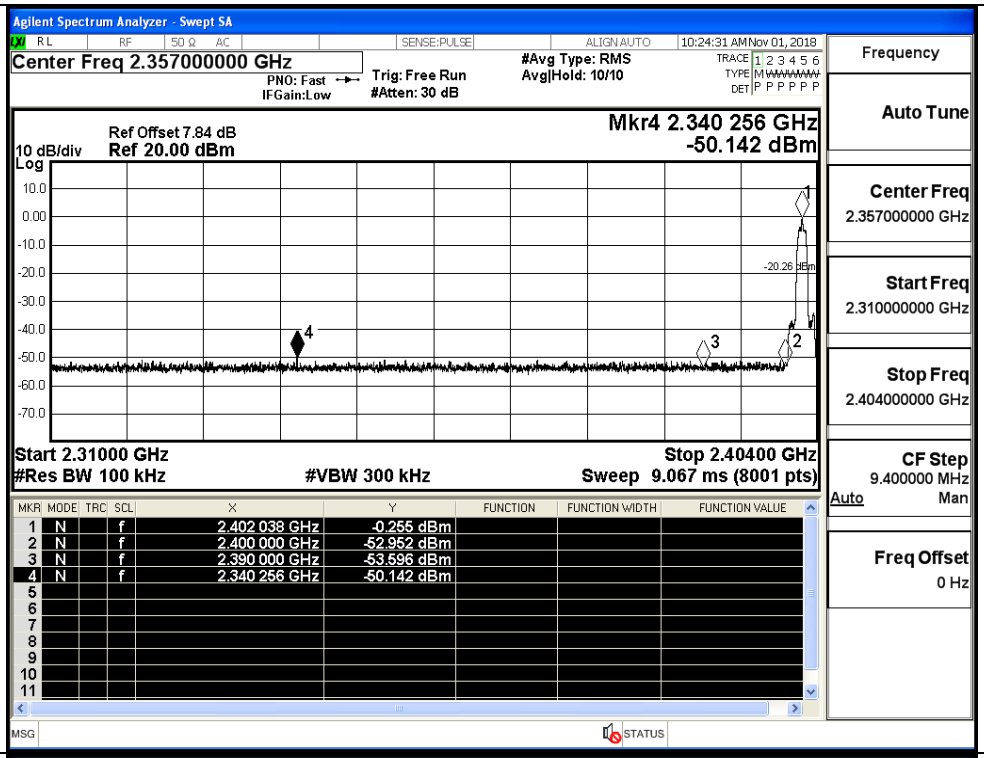
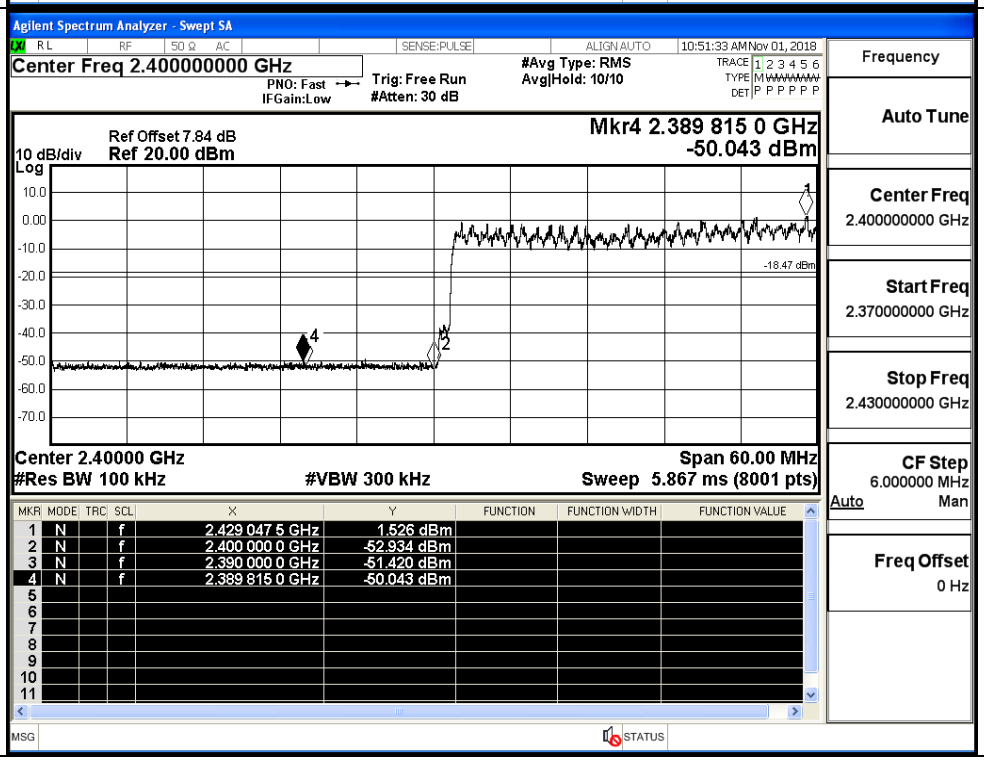
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	1.143	Off	-50.287	-18.86	PASS
			3.119	On	-49.910	-16.88	PASS
	HCH	2480	0.002	Off	-49.528	-20	PASS
			1.323	On	-50.029	-18.68	PASS
π/4DQPSK	LCH	2402	-0.105	Off	-49.783	-20.11	PASS
			1.646	On	-49.820	-18.35	PASS
	HCH	2480	-3.025	Off	-49.993	-23.03	PASS
			-0.331	On	-49.202	-20.33	PASS
8DPSK	LCH	2402	-0.255	Off	-50.142	-20.26	PASS
			1.526	On	-50.043	-18.47	PASS
	HCH	2480	-1.421	Off	-49.793	-21.42	PASS
			-0.323	On	-50.029	-20.32	PASS

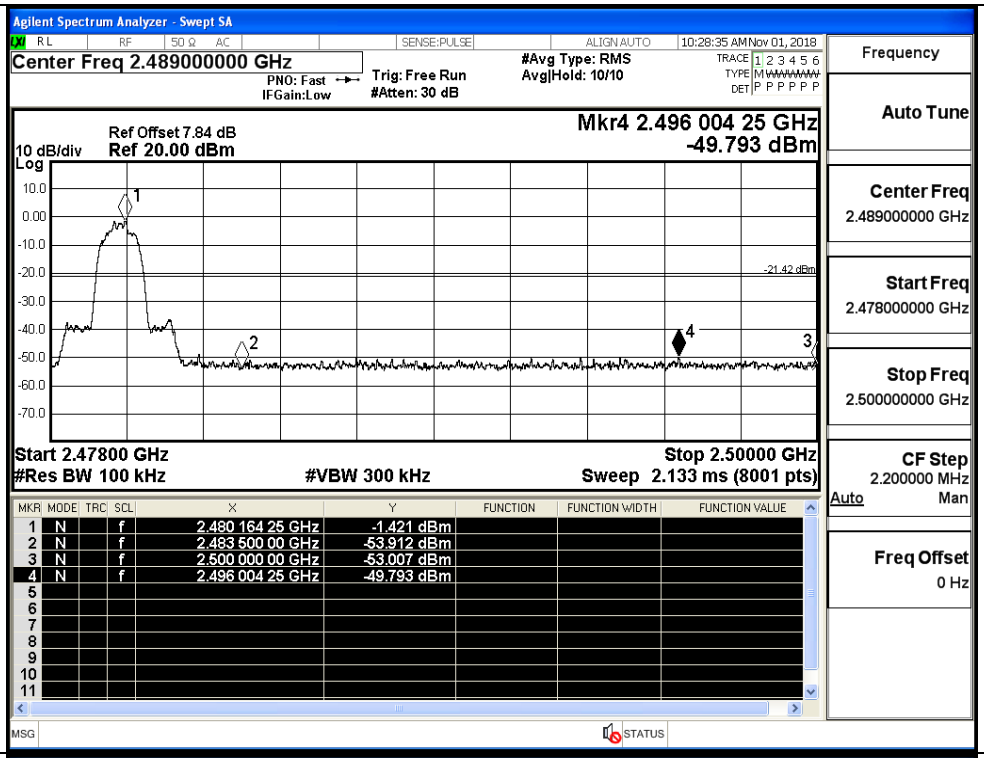
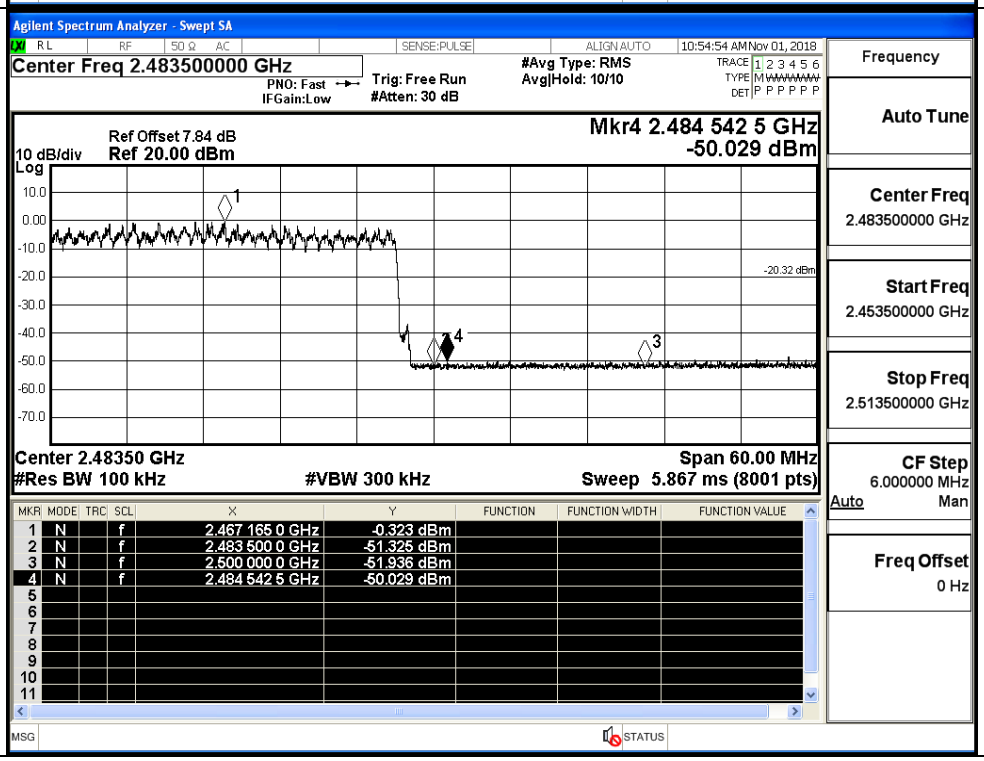
Test Graphs	
GFSK/LCH/No Hop	
GFSK/LCH/Hop	

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	

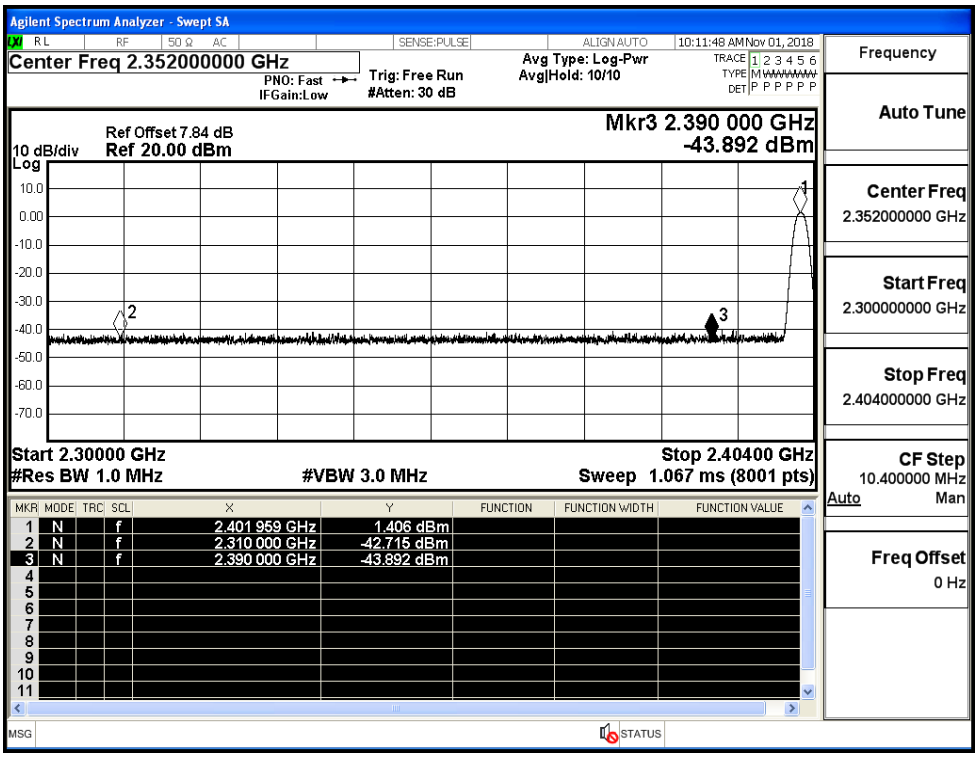
8DPSK/LCH/No Hop	
8DPSK/LCH/Hop	

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

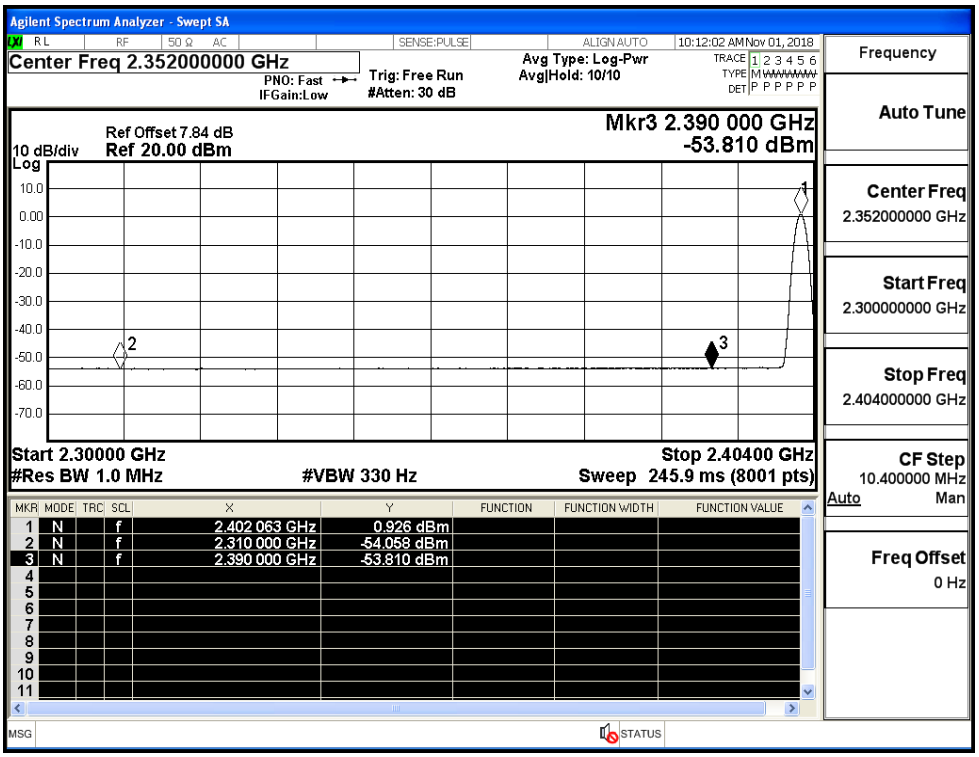
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-42.72	3.5	0	56.04	PEAK	74	PASS
	Off	2310.0	-54.06	3.5	0	44.70	AV	54	PASS
	Off	2390.0	-43.89	3.5	0	54.87	PEAK	74	PASS
	Off	2390.0	-53.81	3.5	0	44.95	AV	54	PASS
	Off	2483.5	-43.67	3.5	0	55.09	PEAK	74	PASS
	Off	2483.5	-53.43	3.5	0	45.33	AV	54	PASS
	Off	2500.0	-43.70	3.5	0	55.06	PEAK	74	PASS
	Off	2500.0	-53.26	3.5	0	45.50	AV	54	PASS
π/4DQPSK	Off	2310.0	-43.07	3.5	0	55.69	PEAK	74	PASS
	Off	2310.0	-54.04	3.5	0	44.72	AV	54	PASS
	Off	2390.0	-44.43	3.5	0	54.33	PEAK	74	PASS
	Off	2390.0	-53.75	3.5	0	45.01	AV	54	PASS
	Off	2483.5	-43.07	3.5	0	55.69	PEAK	74	PASS
	Off	2483.5	-53.32	3.5	0	45.44	AV	54	PASS
	Off	2500.0	-43.34	3.5	0	55.42	PEAK	74	PASS
	Off	2500.0	-53.39	3.5	0	45.37	AV	54	PASS
8DPSK	Off	2310.0	-44.62	3.5	0	54.14	PEAK	74	PASS
	Off	2310.0	-53.99	3.5	0	44.77	AV	54	PASS
	Off	2390.0	-42.58	3.5	0	56.18	PEAK	74	PASS
	Off	2390.0	-53.54	3.5	0	45.22	AV	54	PASS
	Off	2483.5	-42.28	3.5	0	56.48	PEAK	74	PASS
	Off	2483.5	-53.40	3.5	0	45.36	AV	54	PASS
	Off	2500.0	-43.42	3.5	0	55.34	PEAK	74	PASS
	Off	2500.0	-53.36	3.5	0	45.40	AV	54	PASS

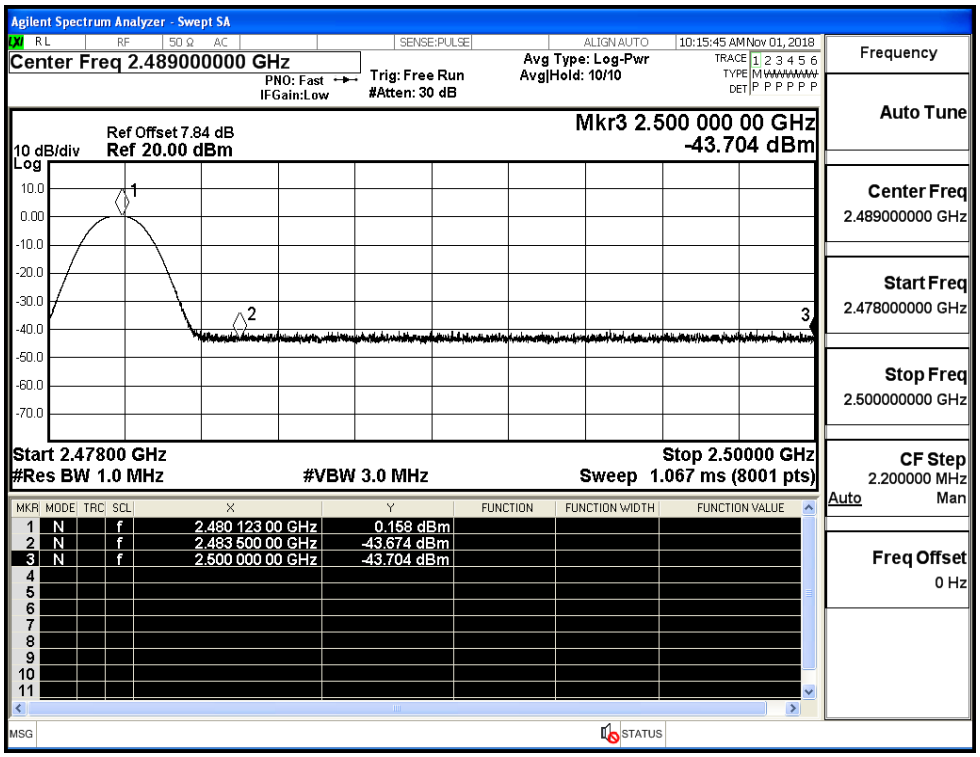
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (Low Channel)



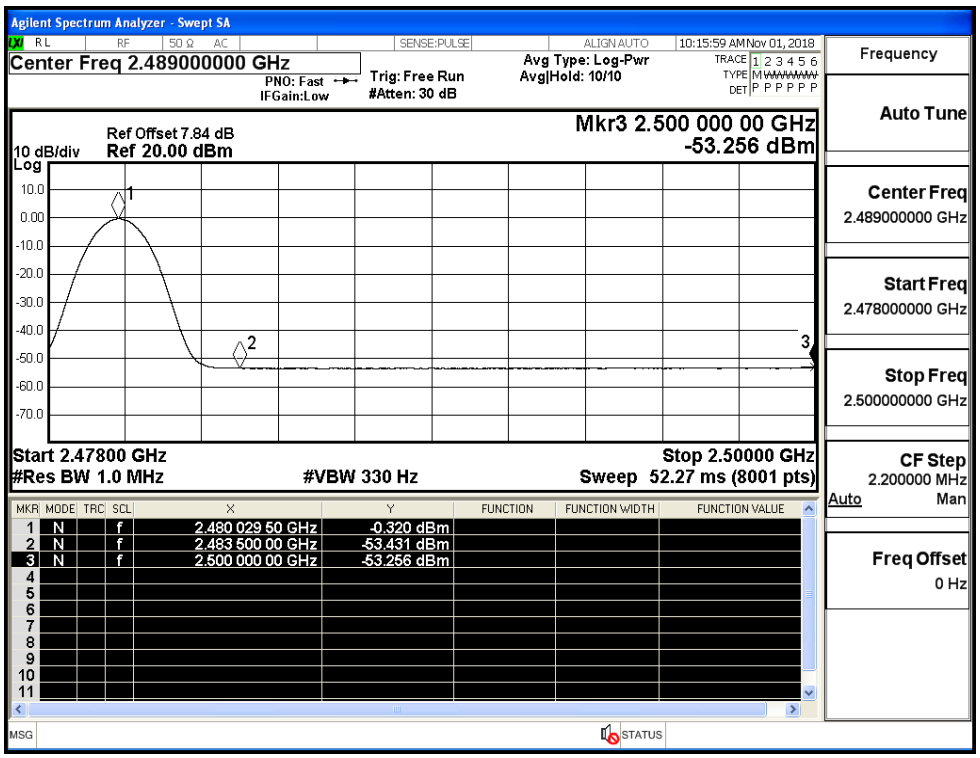
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (Low Channel)



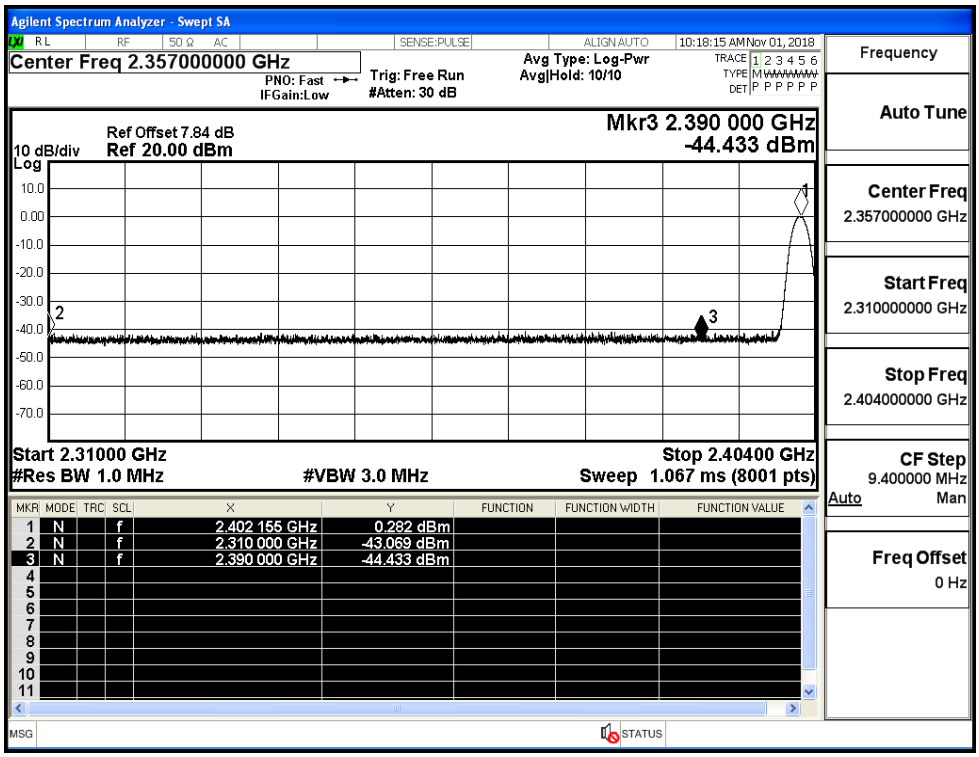
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (High Channel)



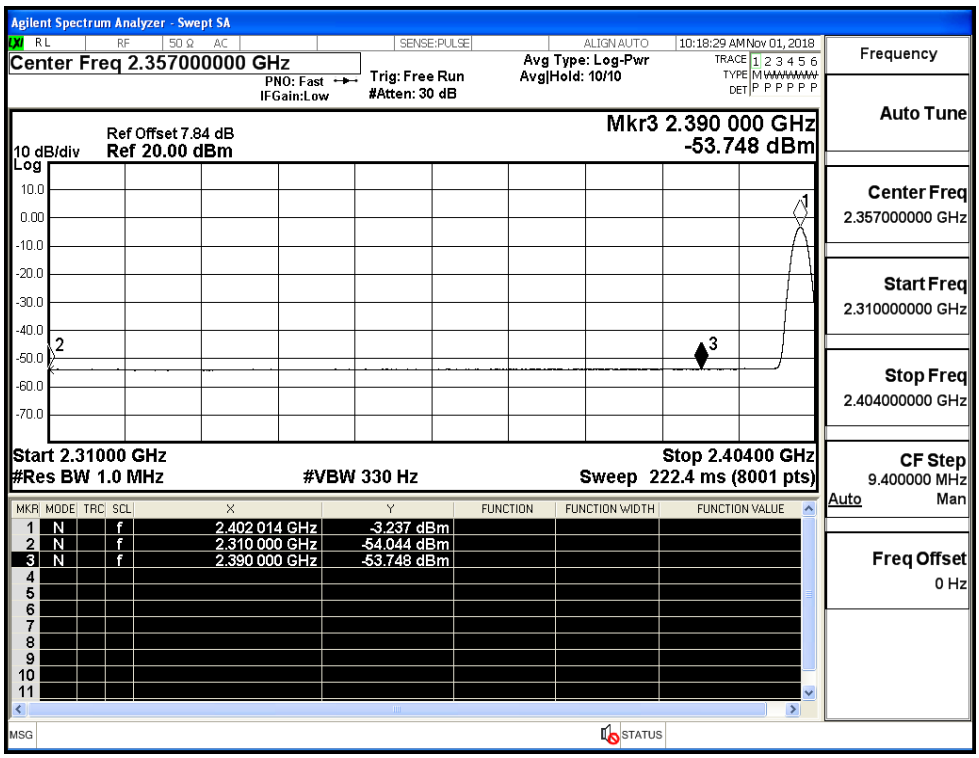
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (High Channel)



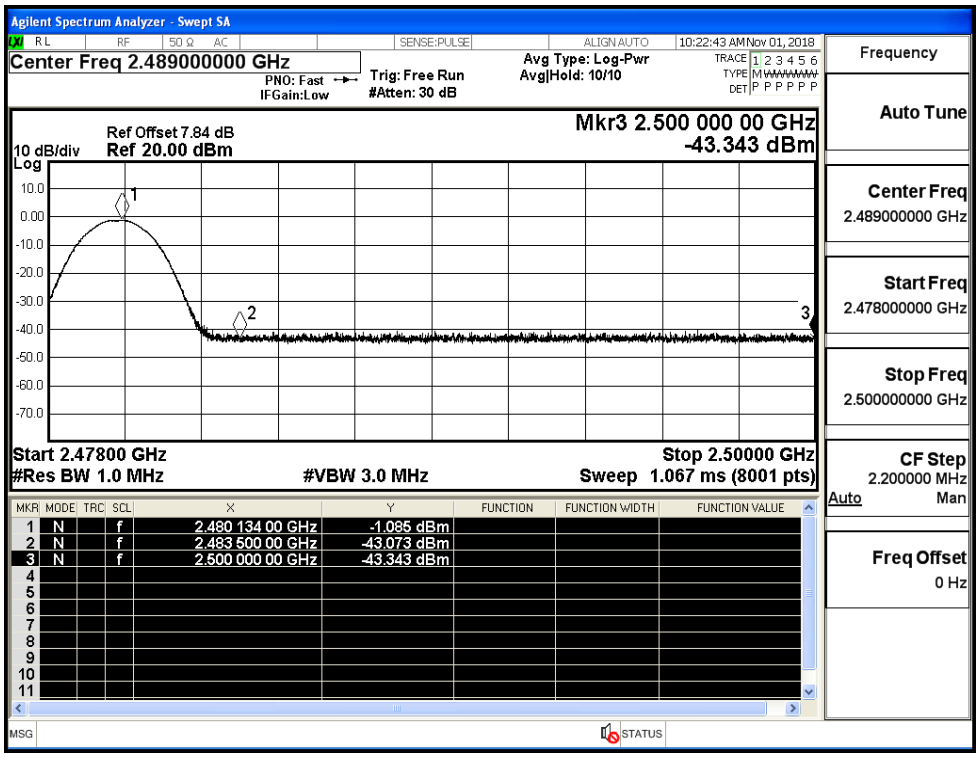
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (Low Channel)



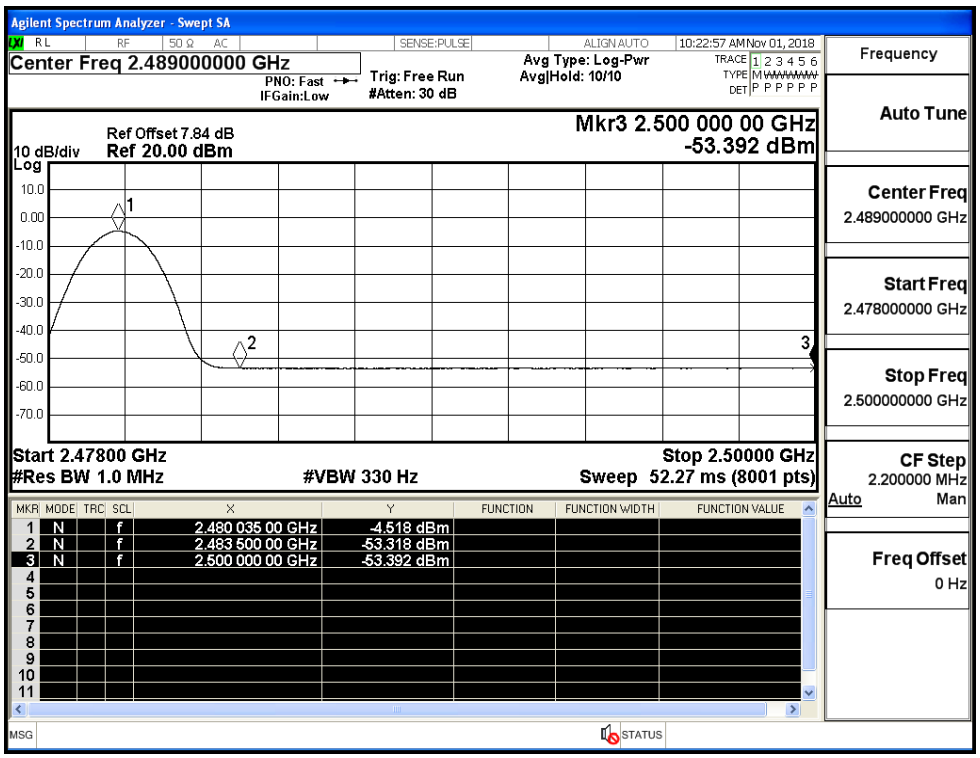
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (Low Channel)



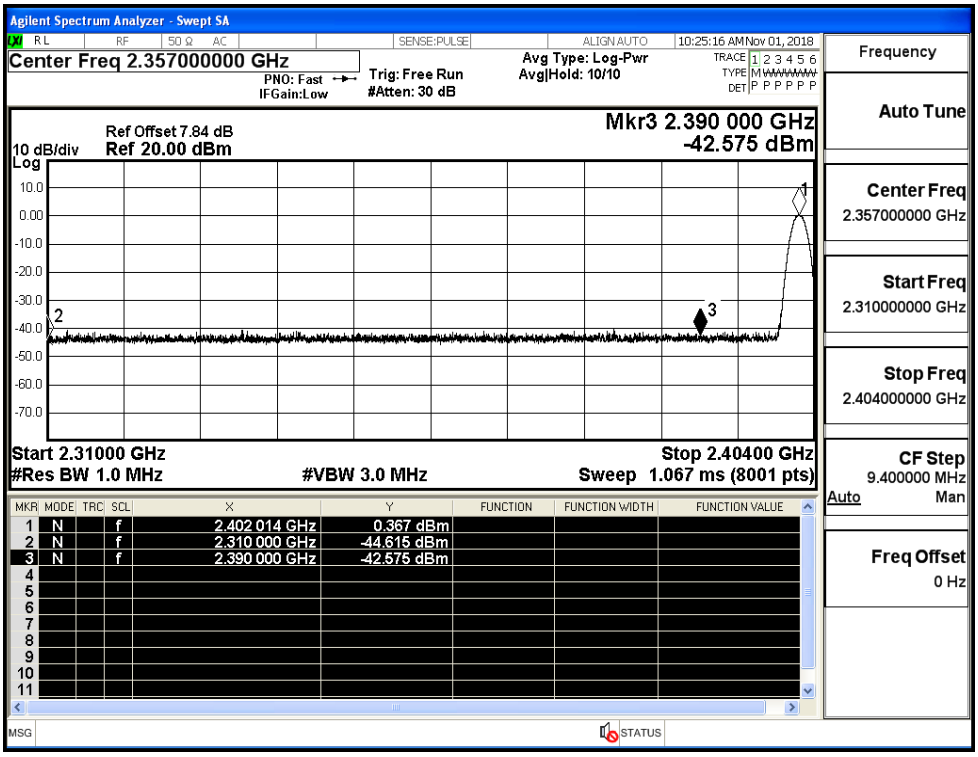
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (High Channel)



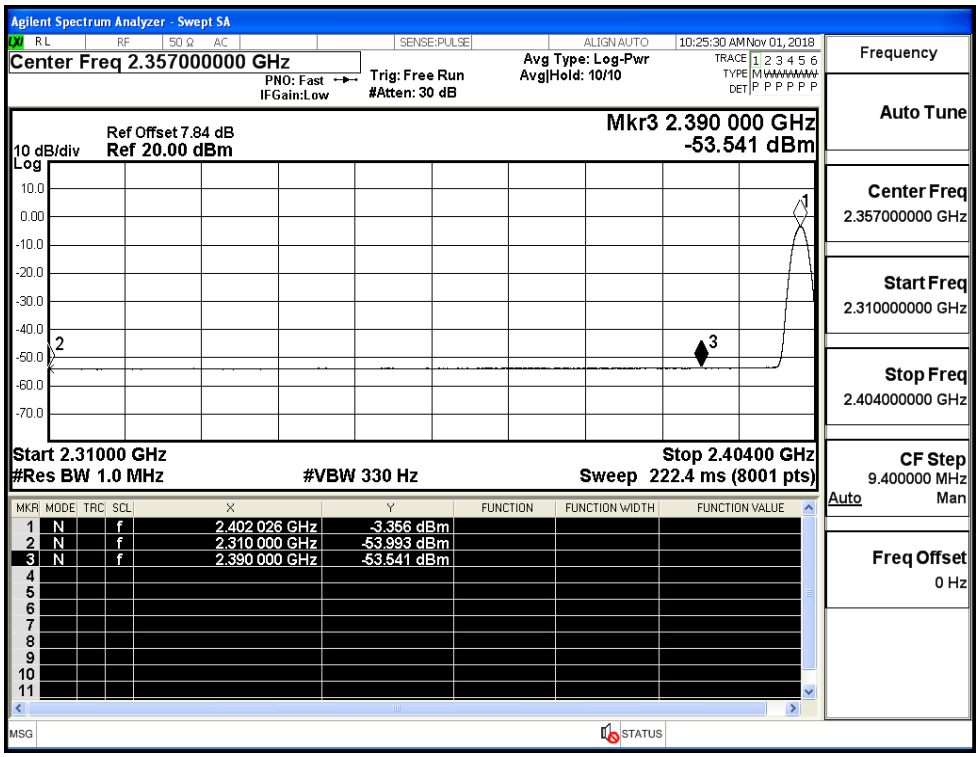
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (High Channel)



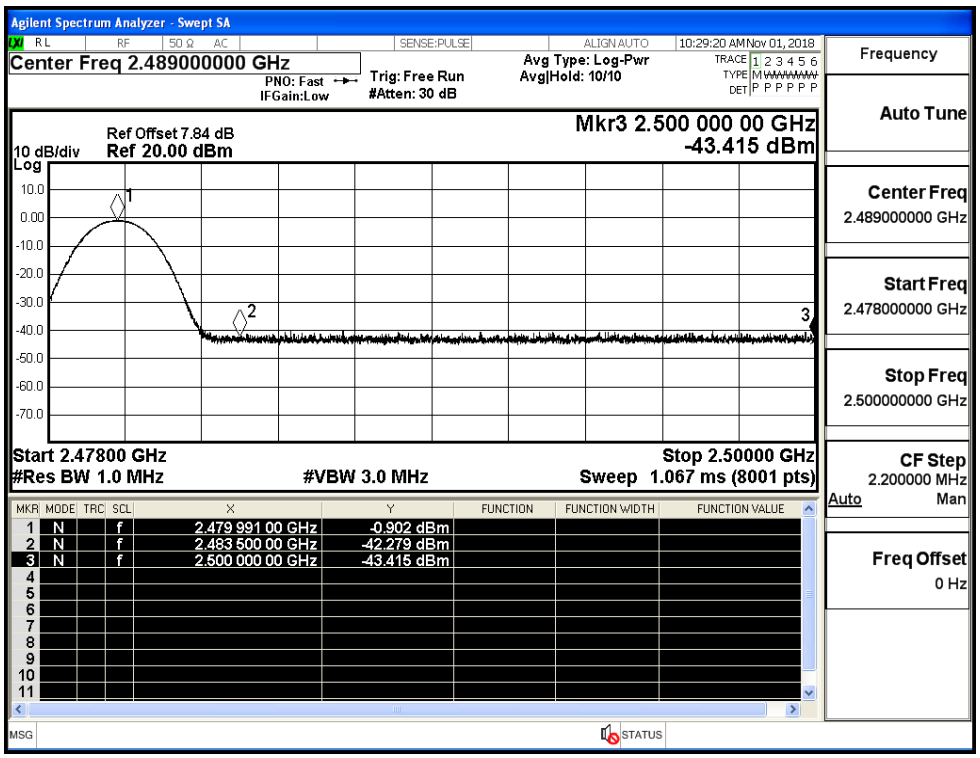
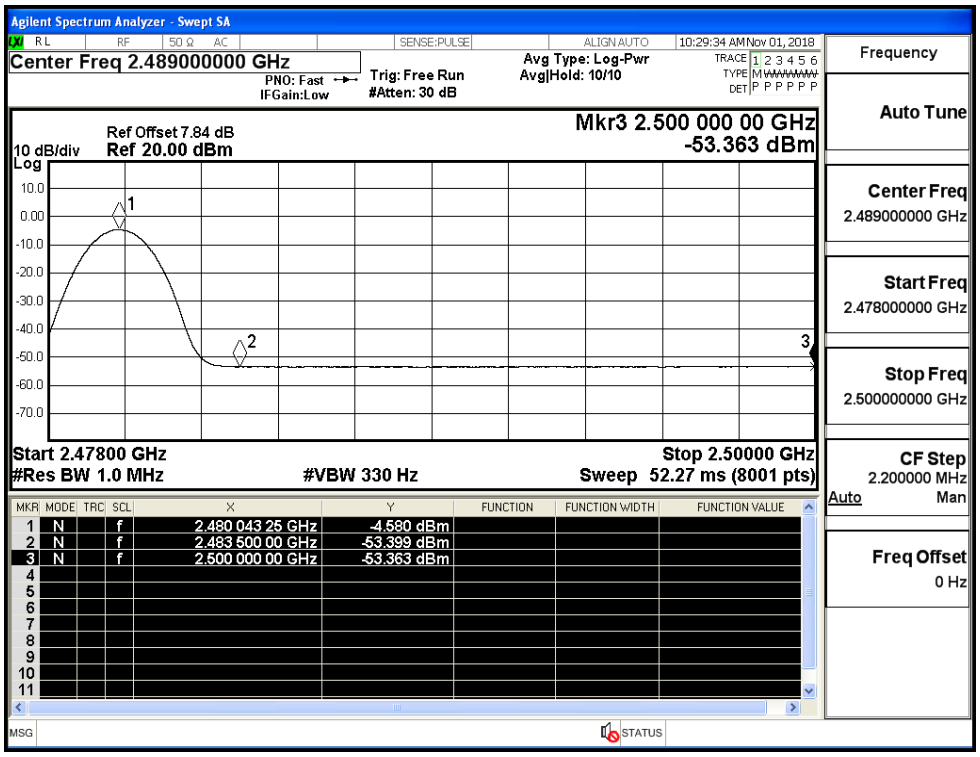
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)