Appendix A

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

Product Name: Shower mirror /Fog free mirror LED clock with speaker / Shower clock with speaker

Trade Mark: N/A

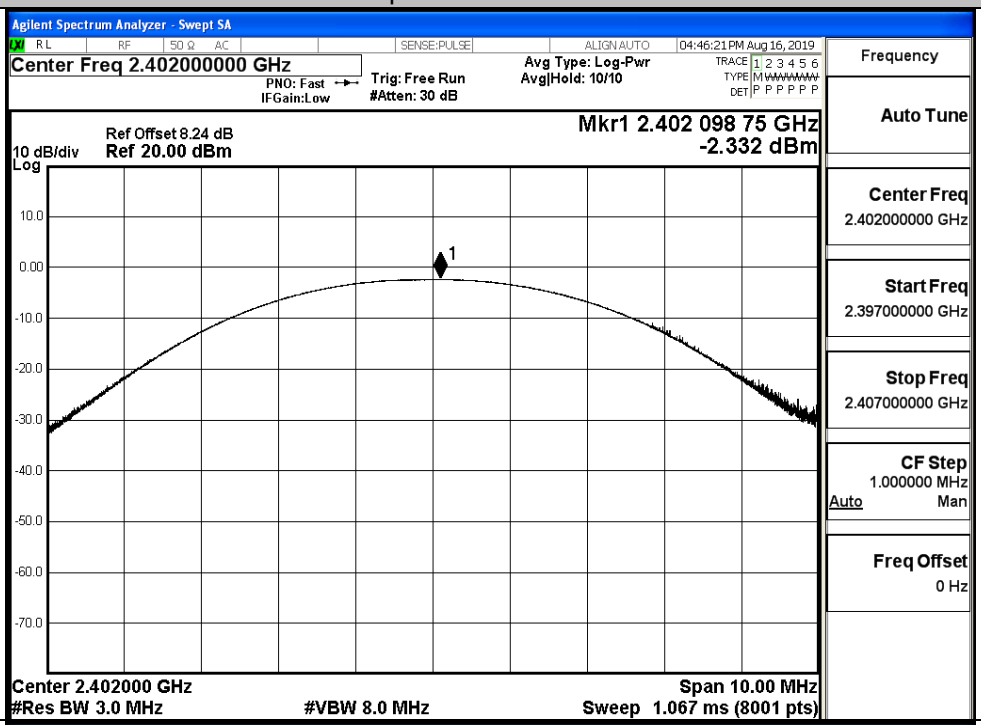
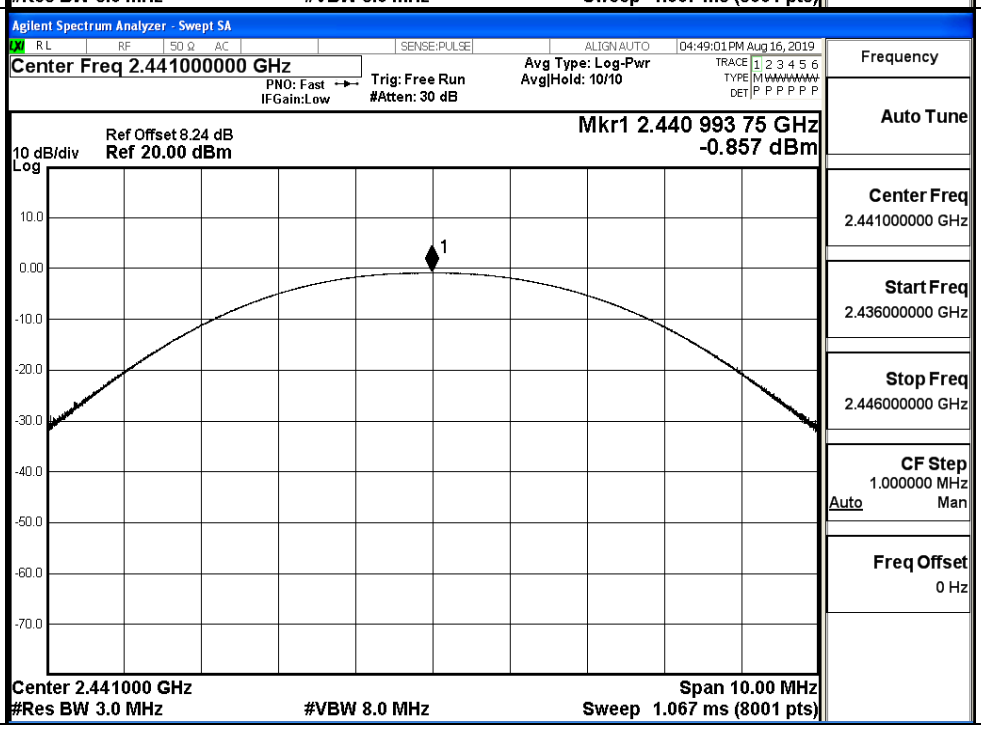
Test Model: 1703

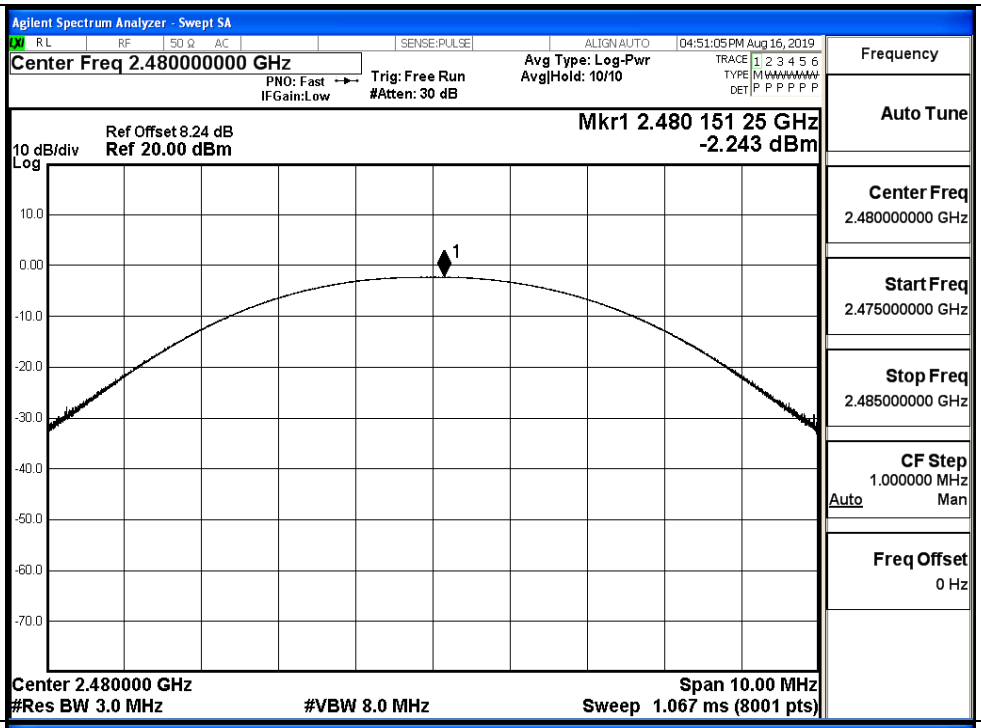
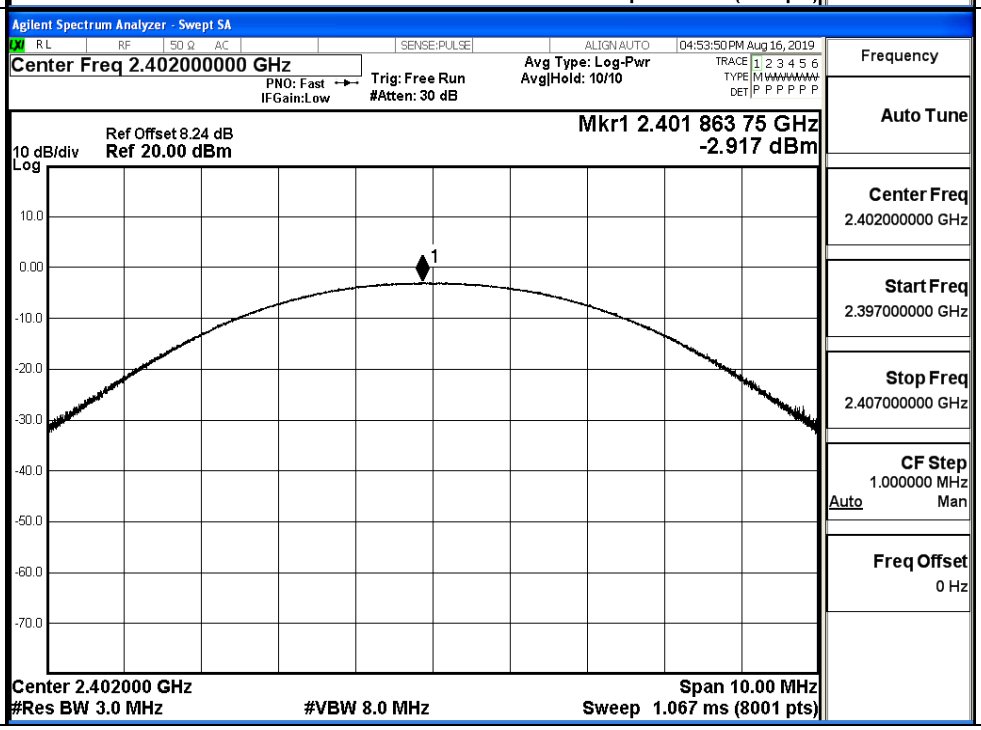
Environmental Conditions

Temperature:	24.2 ° C
Relative Humidity:	53.8%
ATM Pressure:	100.0 kPa
Test Engineer:	JK.ZHOU
Supervised by:	Wang.Chuang

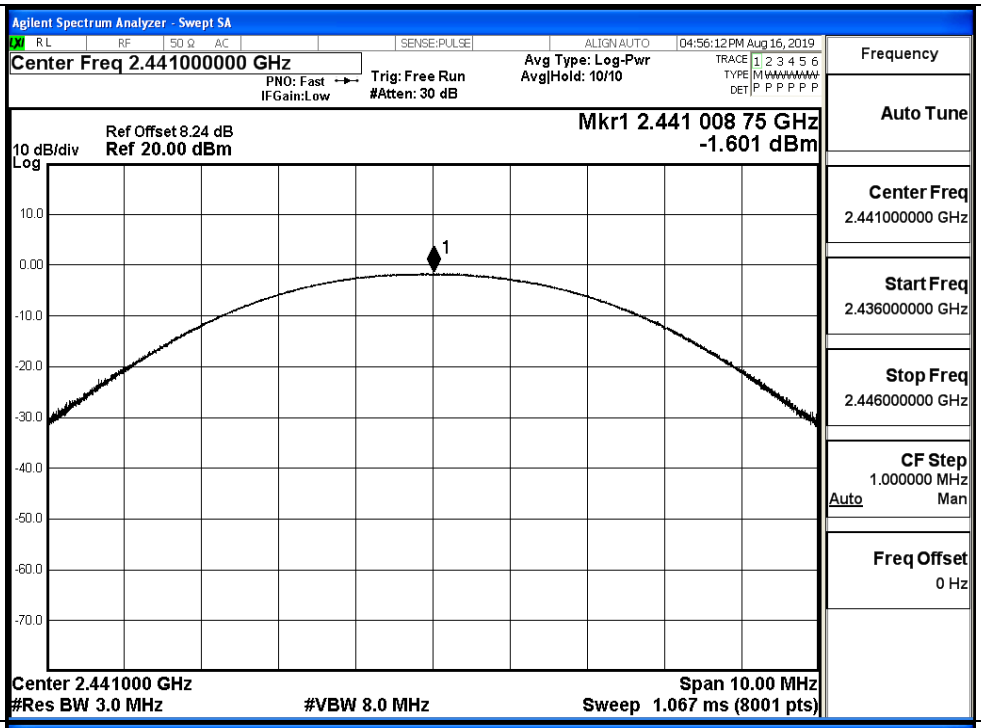
A.1 Maxmum Conducted Peak Output Power

Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-2.332	30	PASS
	MCH	-0.857	30	PASS
	HCH	-2.243	30	PASS
π/4DQPSK	LCH	-2.917	21	PASS
	MCH	-1.601	21	PASS
	HCH	-3.426	21	PASS
8DPSK	LCH	-3.124	21	PASS
	MCH	-1.949	21	PASS
	HCH	-2.991	21	PASS

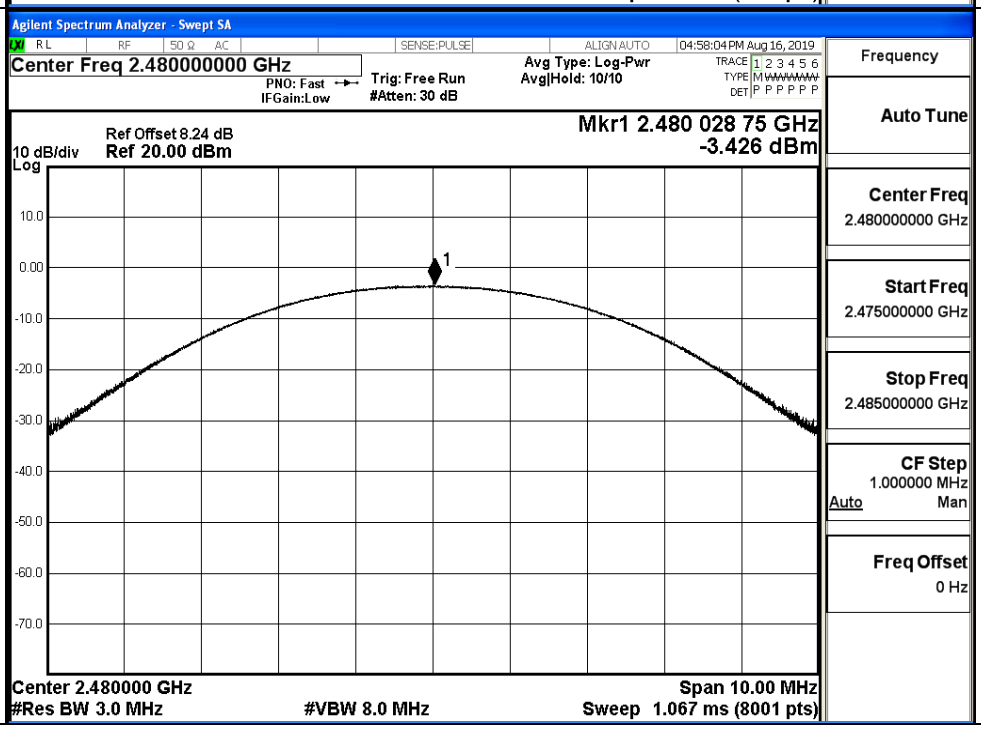
Test Graphs		
GFSK/LCH		
GFSK/MCH		

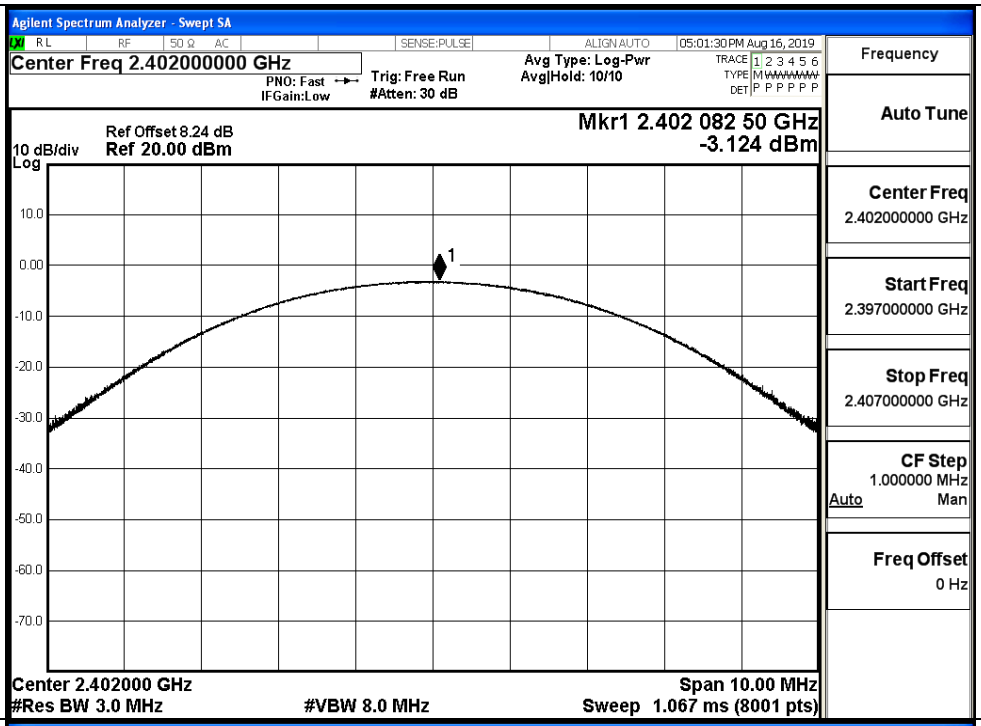
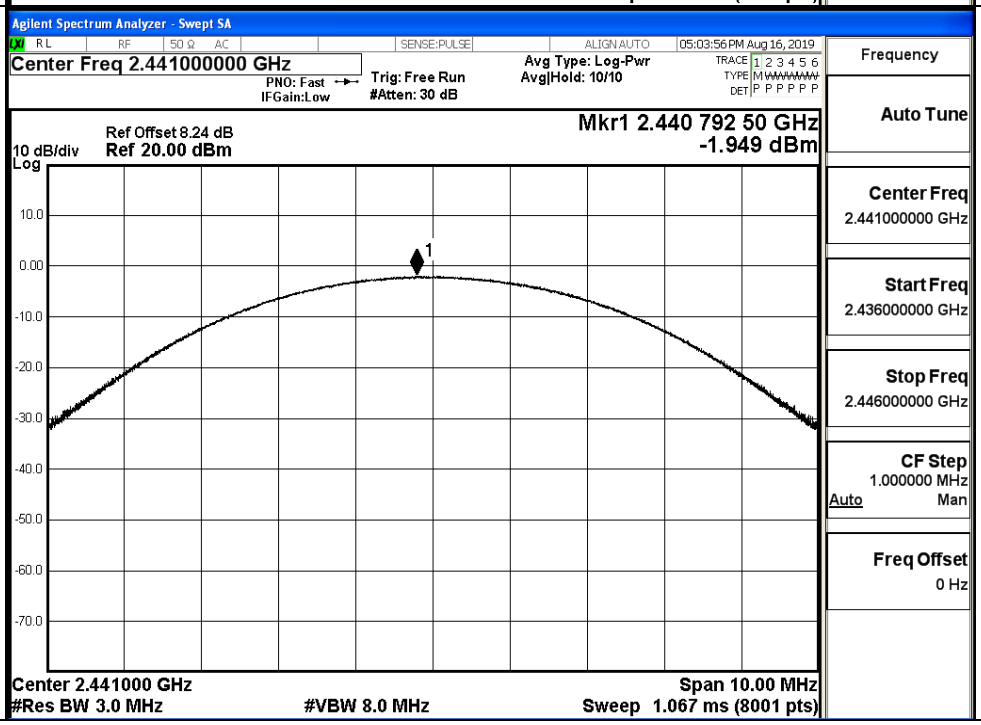
GFSK/HCH		
π/4DQPSK/LCH		

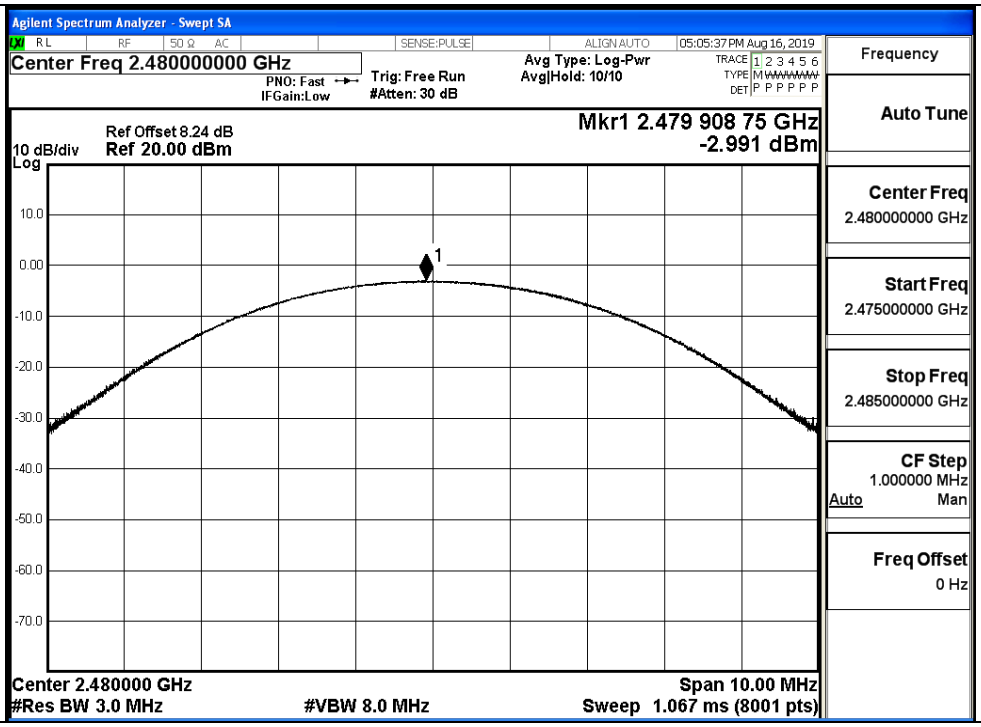
π/4DQPSK/MCH



π/4DQPSK/HCH



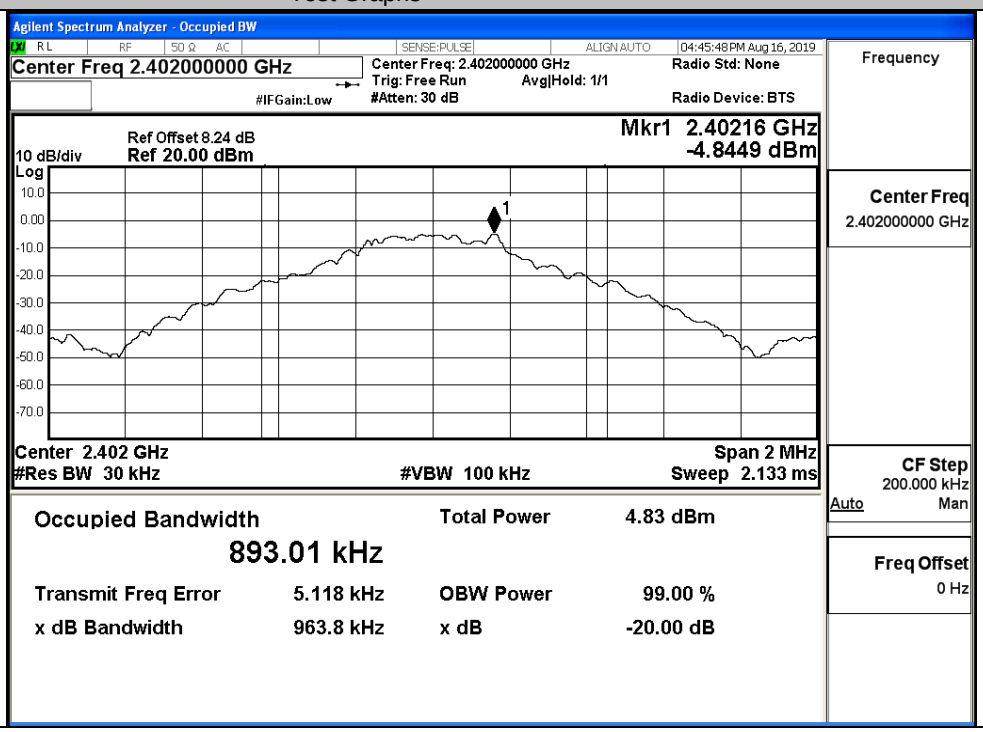
8DPSK/LCH		
8DPSK/MCH		

8DPSK/HCH		

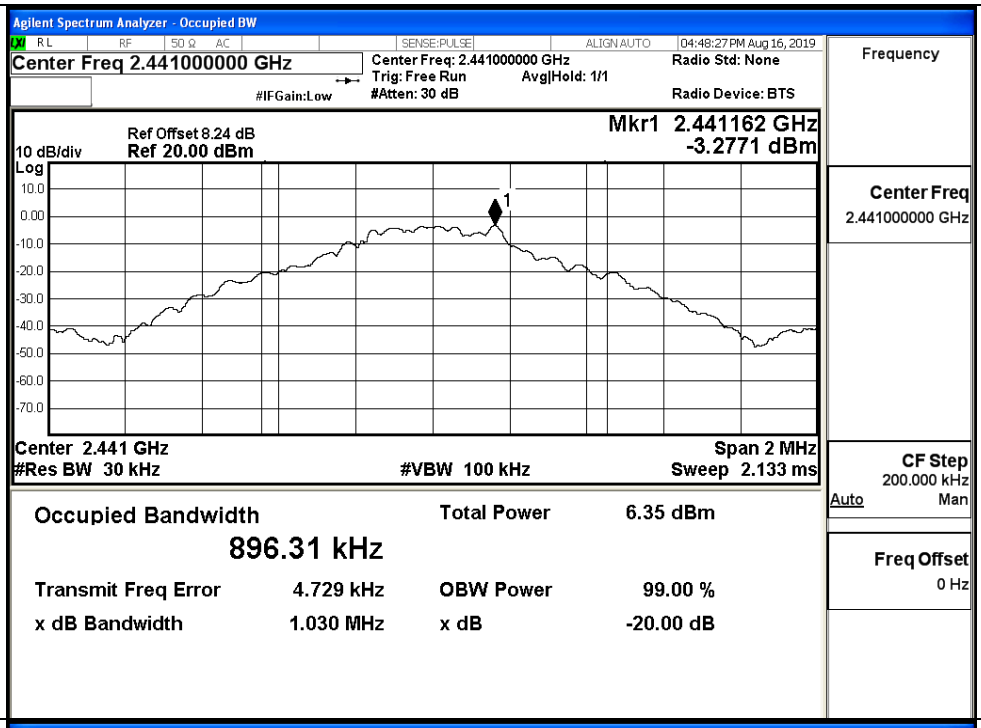
Agilent Spectrum Analyzer - Swept SA
Center Freq 2.480000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 10/10
05:05:37 PM Aug 16, 2019
Ref Offset 8.24 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr1 2.479 908 75 GHz
-2.991 dBm
Center 2.480000 GHz
#Res BW 3.0 MHz
#VBW 8.0 MHz
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

A.2 20dB Bandwidth

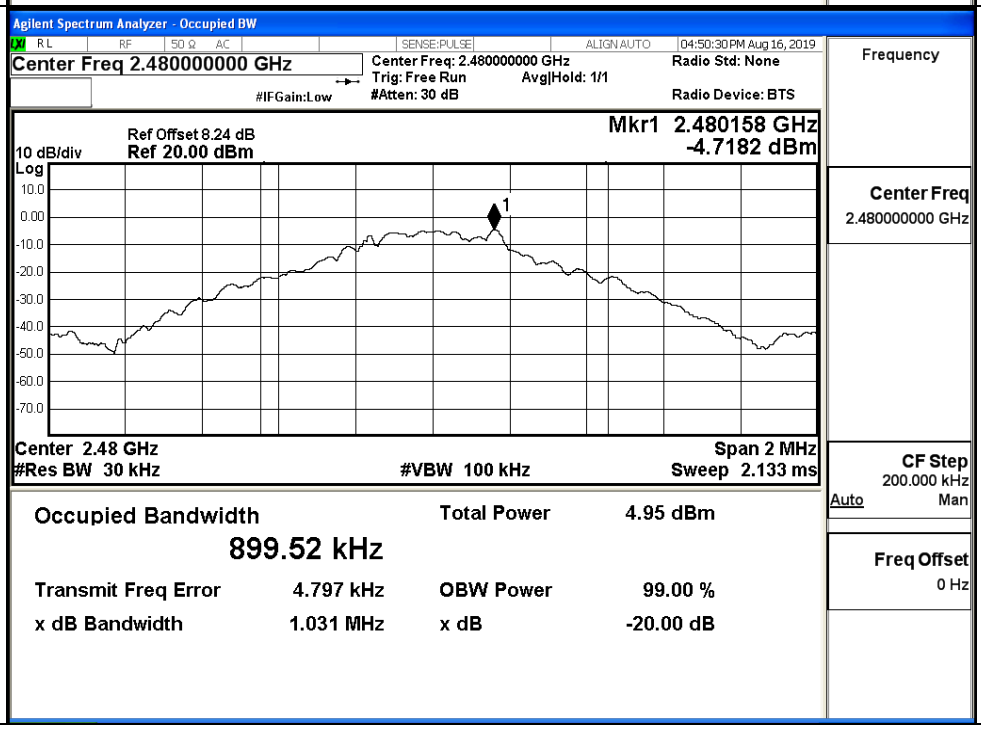
Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.9638	Not Specified	PASS
	MCH	1.030	Not Specified	PASS
	HCH	1.031	Not Specified	PASS
π/4DQPSK	LCH	1.293	Not Specified	PASS
	MCH	1.312	Not Specified	PASS
	HCH	1.313	Not Specified	PASS
8DPSK	LCH	1.299	Not Specified	PASS
	MCH	1.306	Not Specified	PASS
	HCH	1.296	Not Specified	PASS

Test Graphs	
GFSK/LCH	

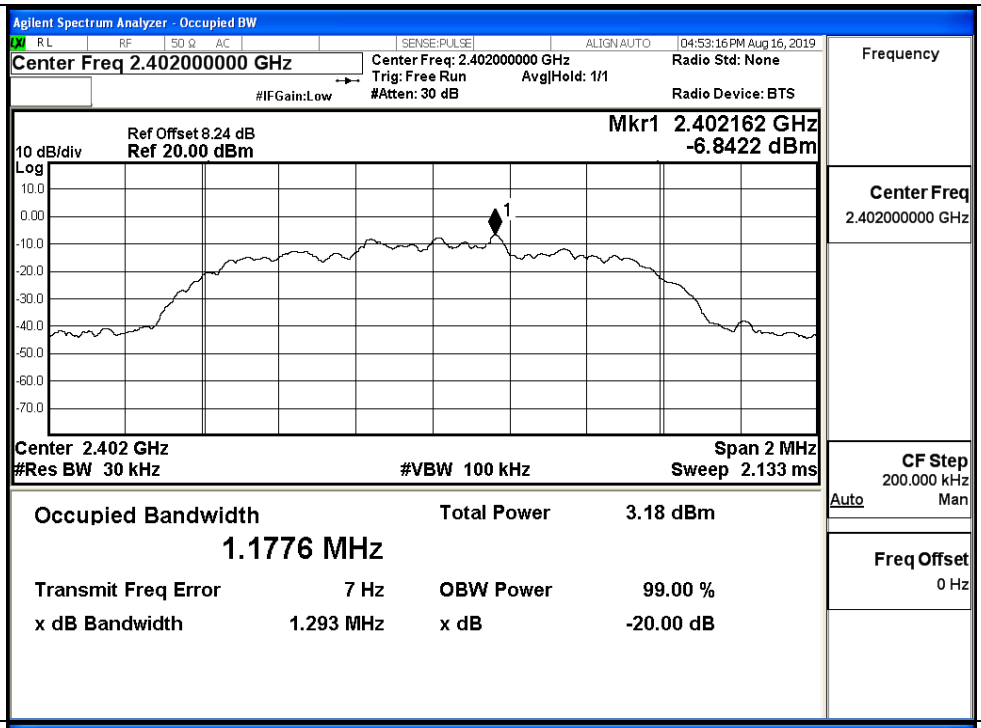
GFSK/MCH



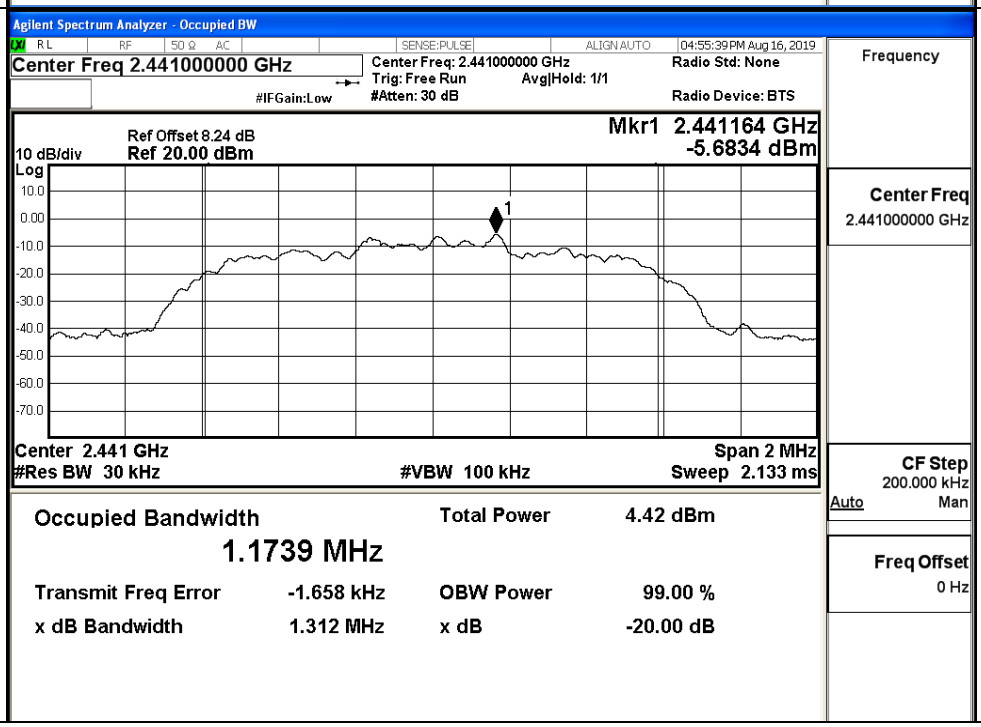
GFSK/HCH



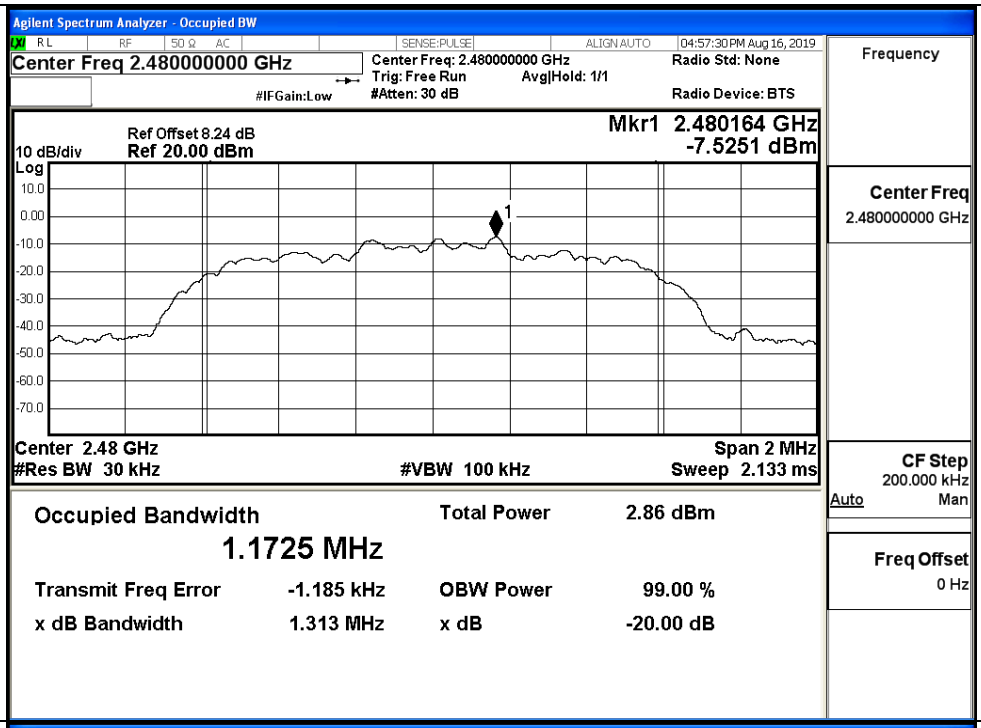
π/4DQPSK/LCH



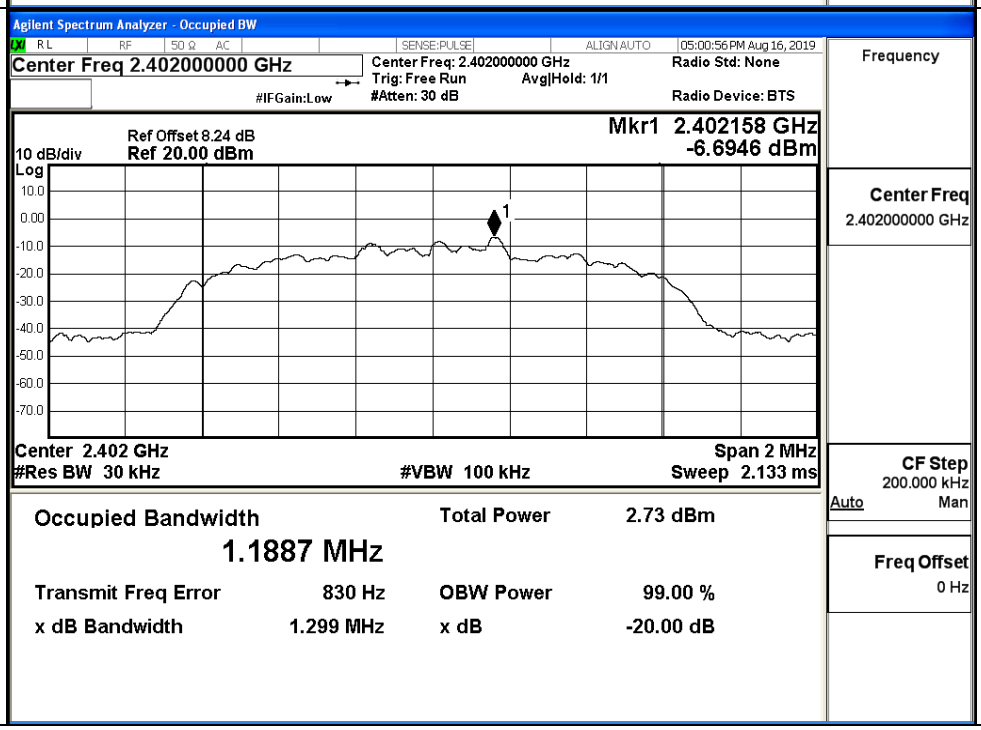
π/4DQPSK/MCH



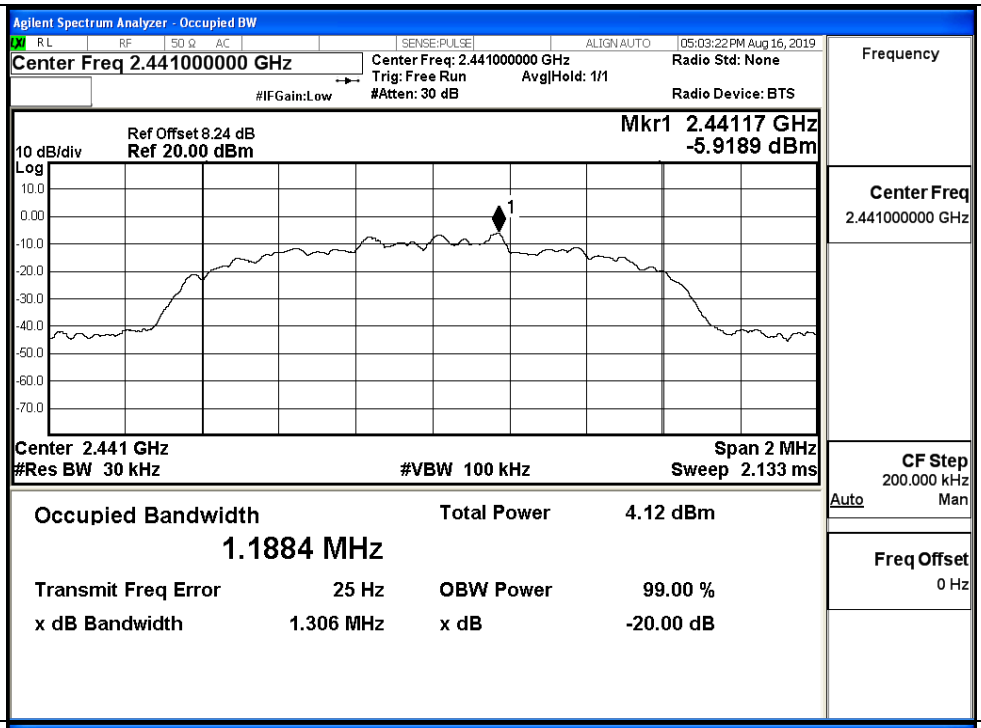
π/4DQPSK/HCH



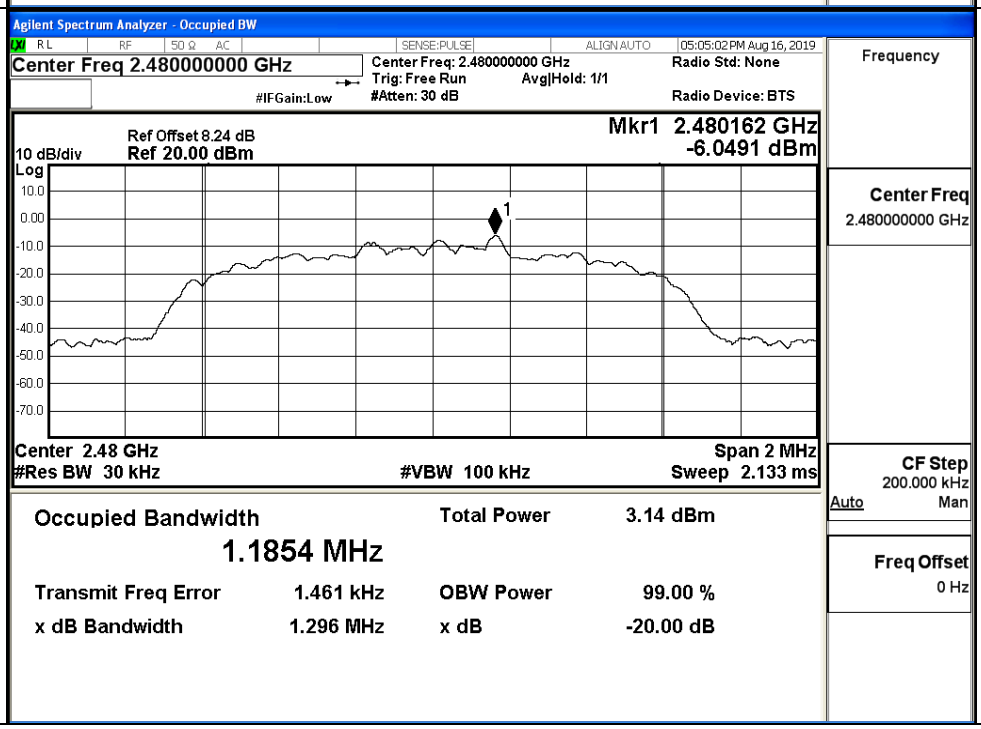
8DPSK/LCH



8DPSK/MCH

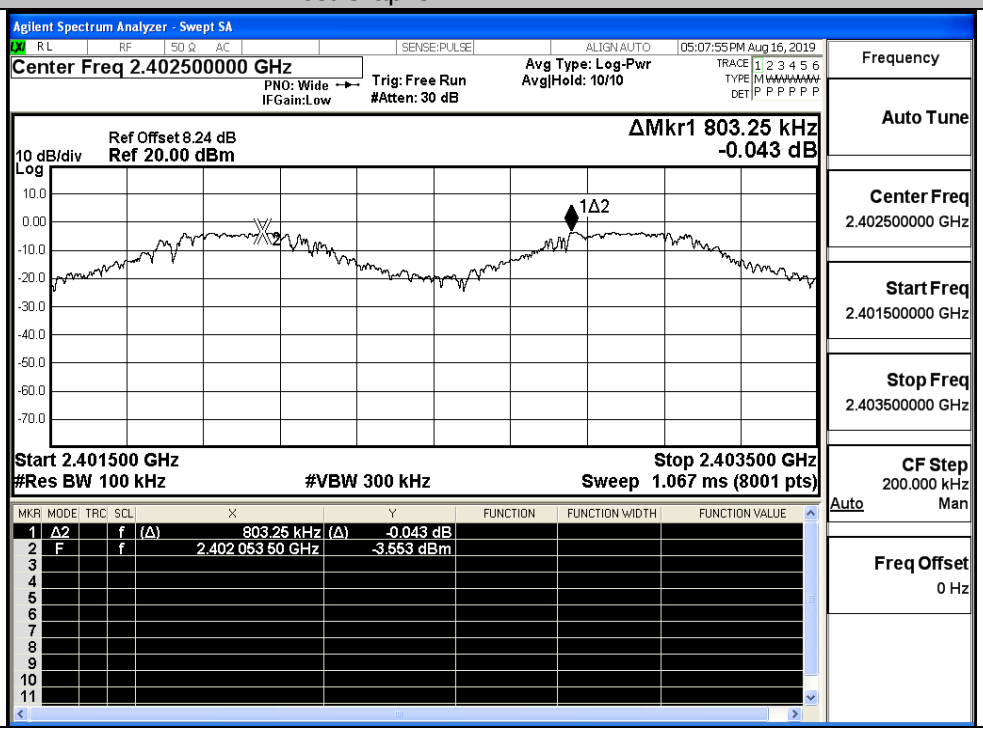


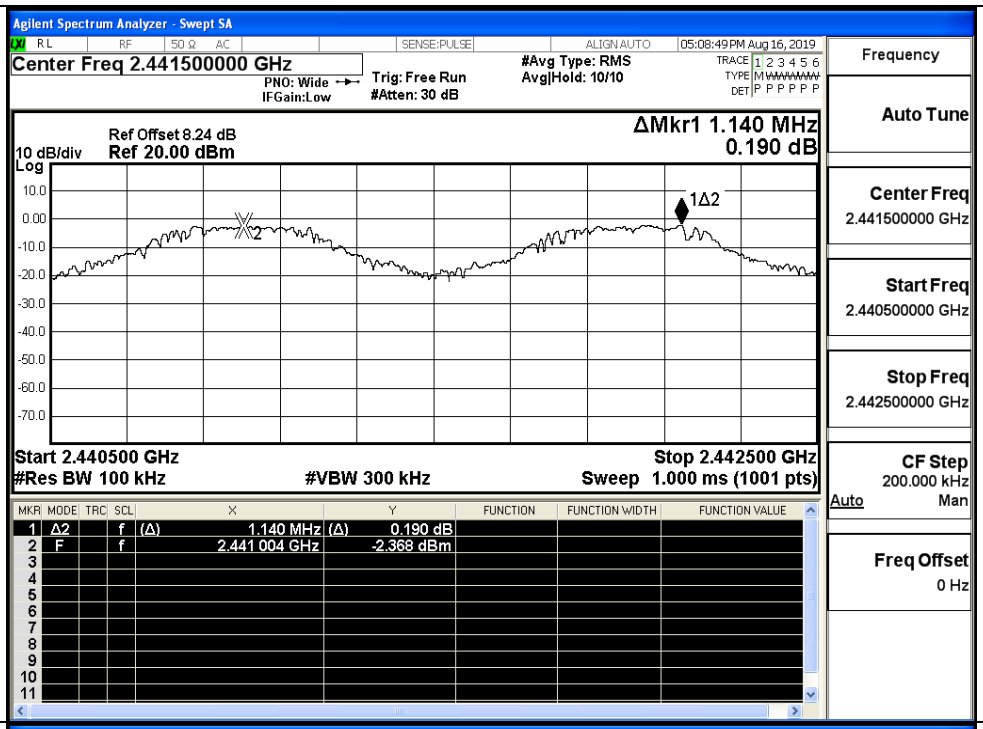
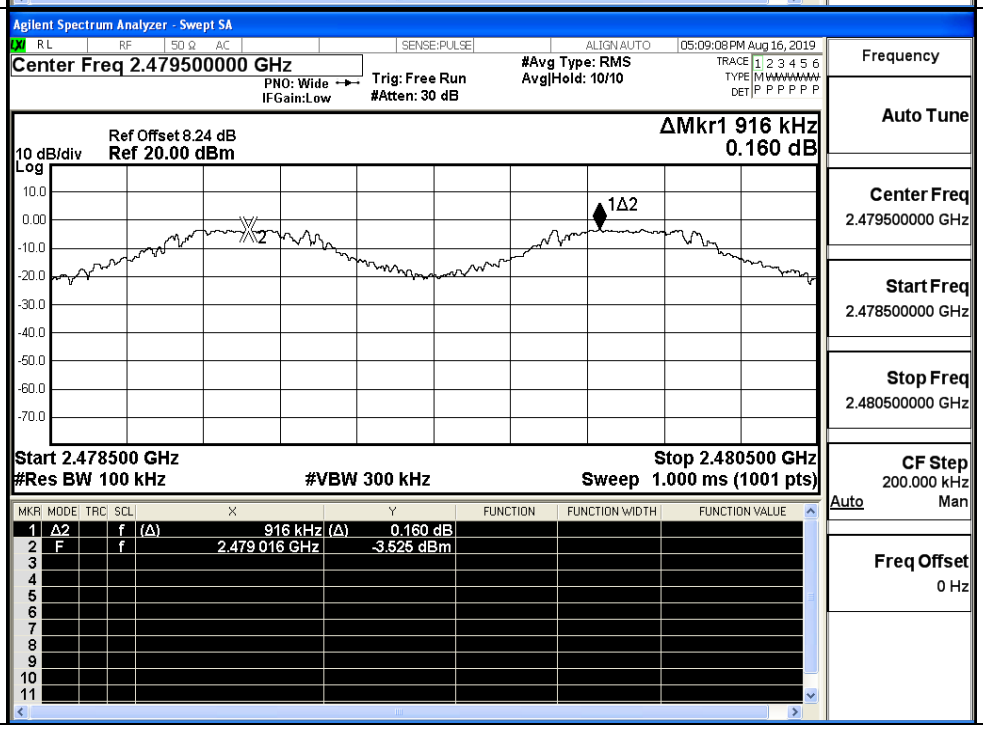
8DPSK/HCH



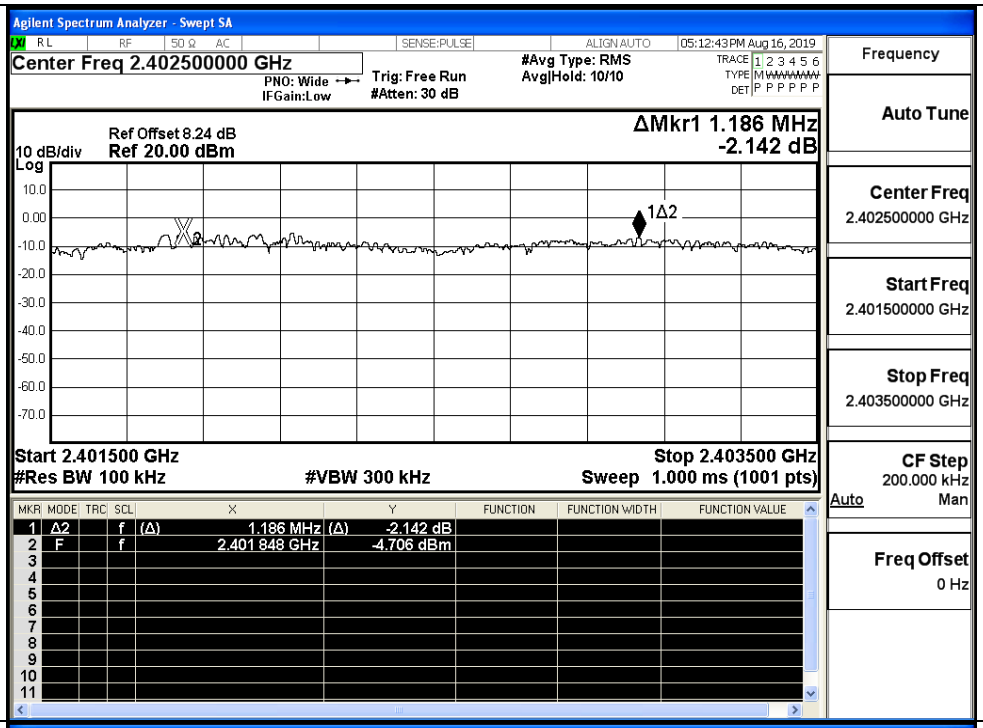
A.3 Carrier Frequency Separation

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.803	0.687	PASS
	MCH	1.140	0.687	PASS
	HCH	0.916	0.687	PASS
π/4DQPSK	LCH	1.186	0.875	PASS
	MCH	0.964	0.875	PASS
	HCH	0.884	0.875	PASS
8DPSK	LCH	1.000	0.871	PASS
	MCH	1.056	0.871	PASS
	HCH	1.000	0.871	PASS

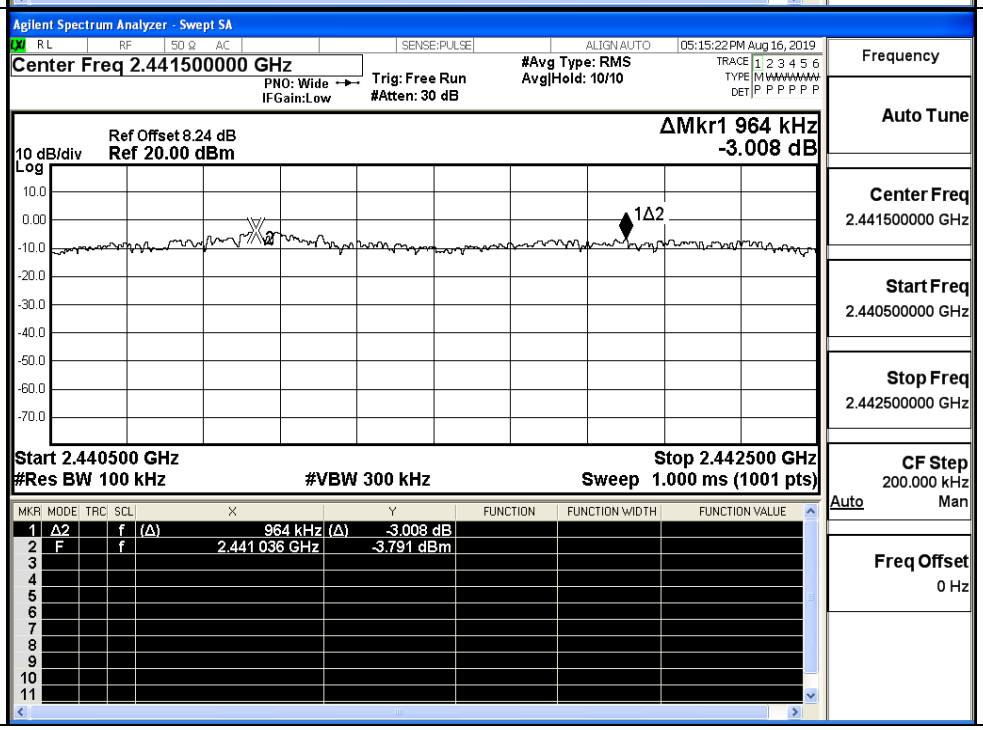
Test Graphs		
GFSK/LCH		

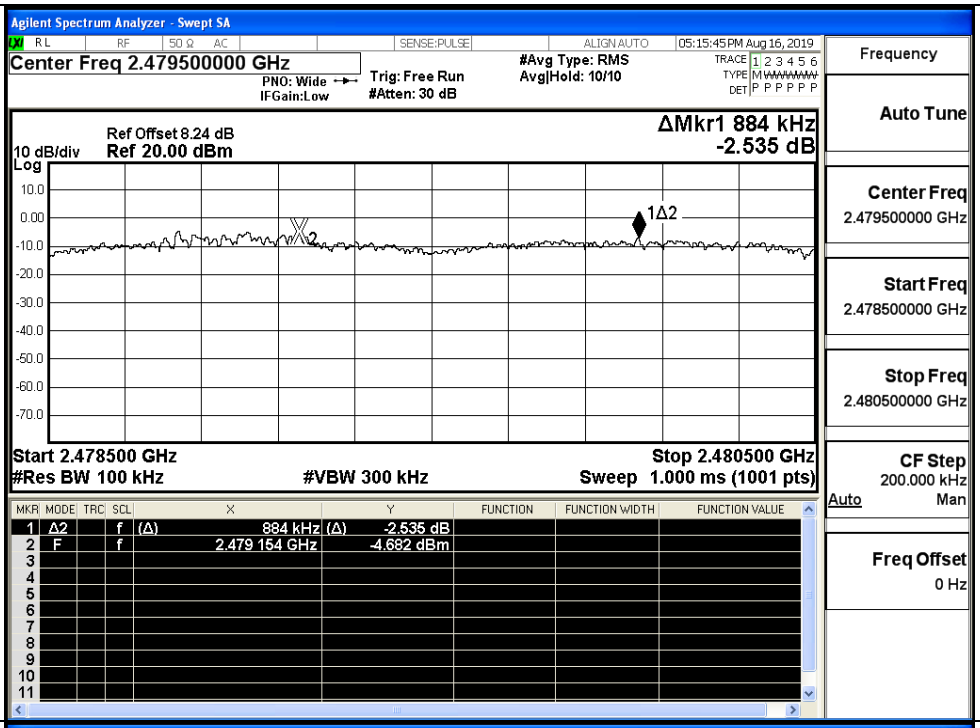
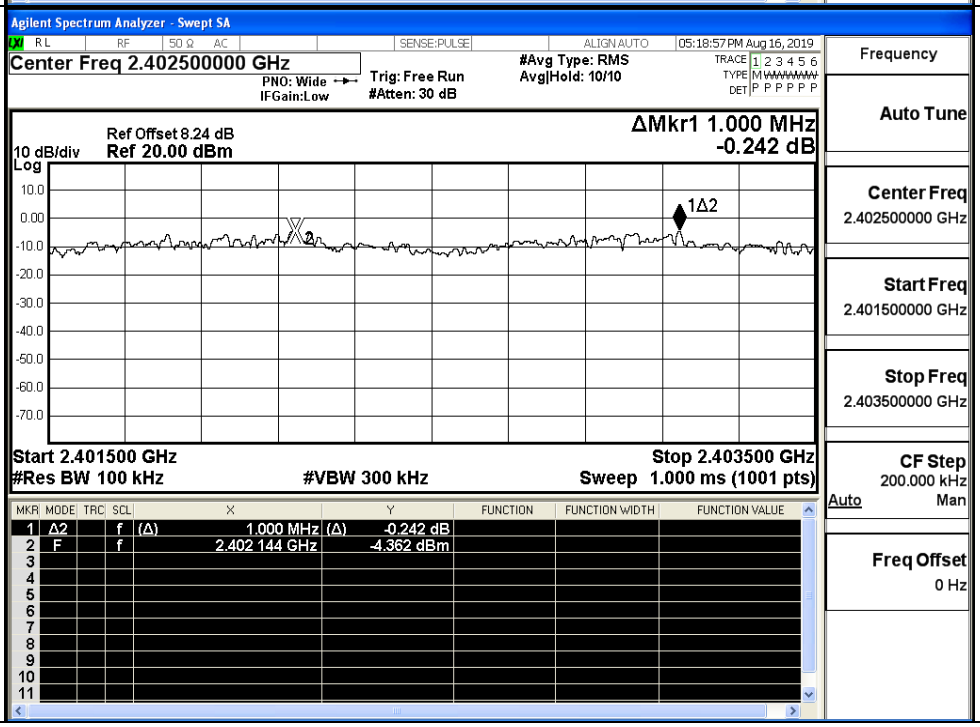
GFSK/MCH		
GFSK/HCH		

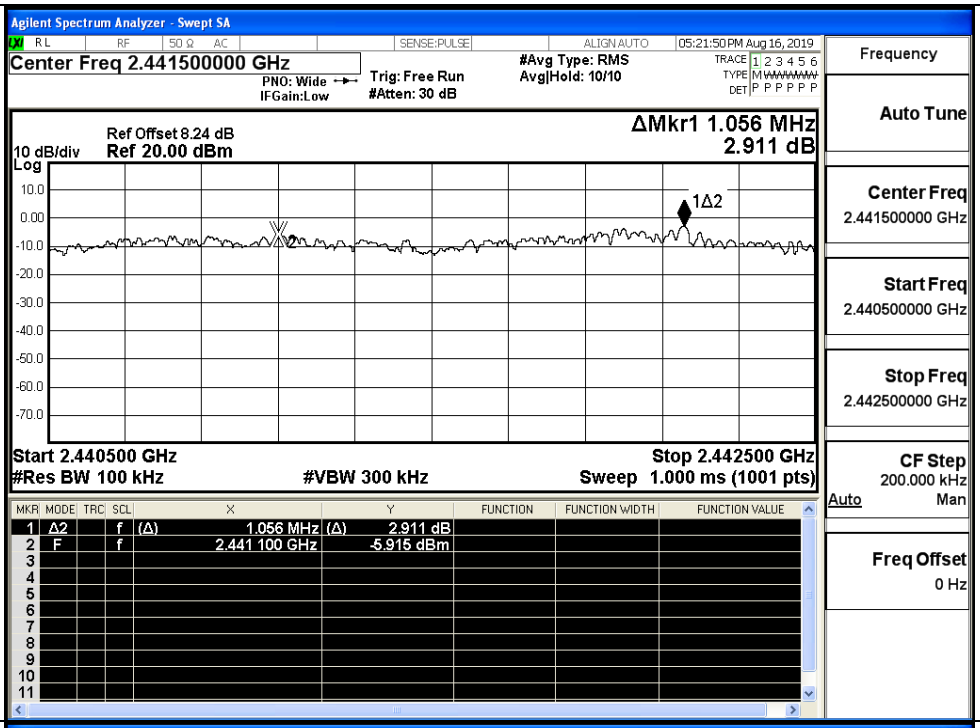
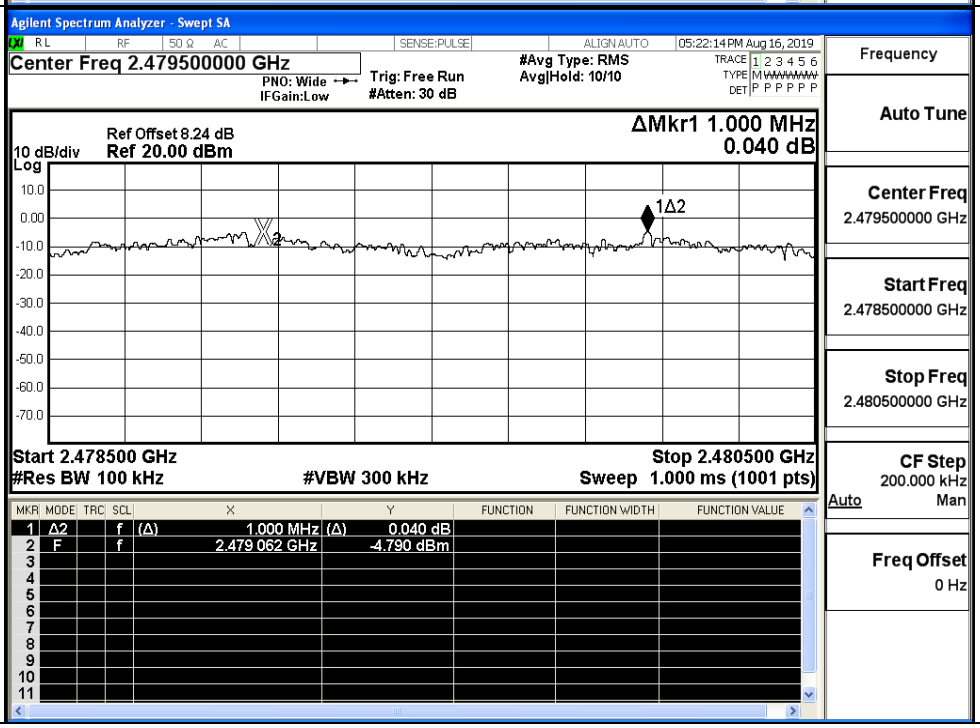
π/4DQPSK/LCH



π/4DQPSK/MCH



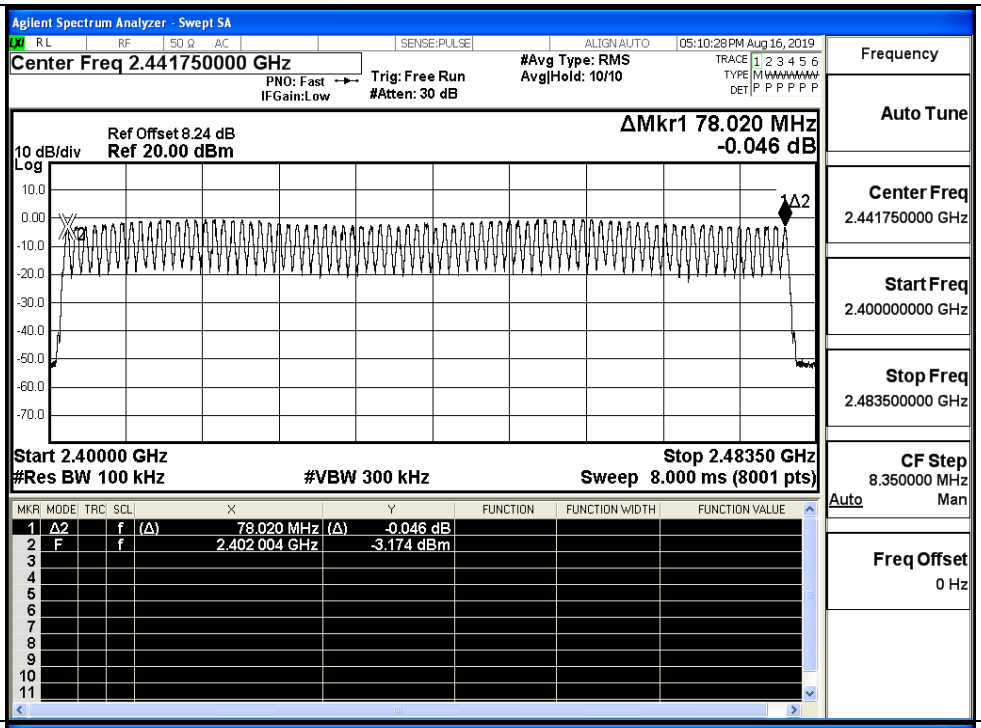
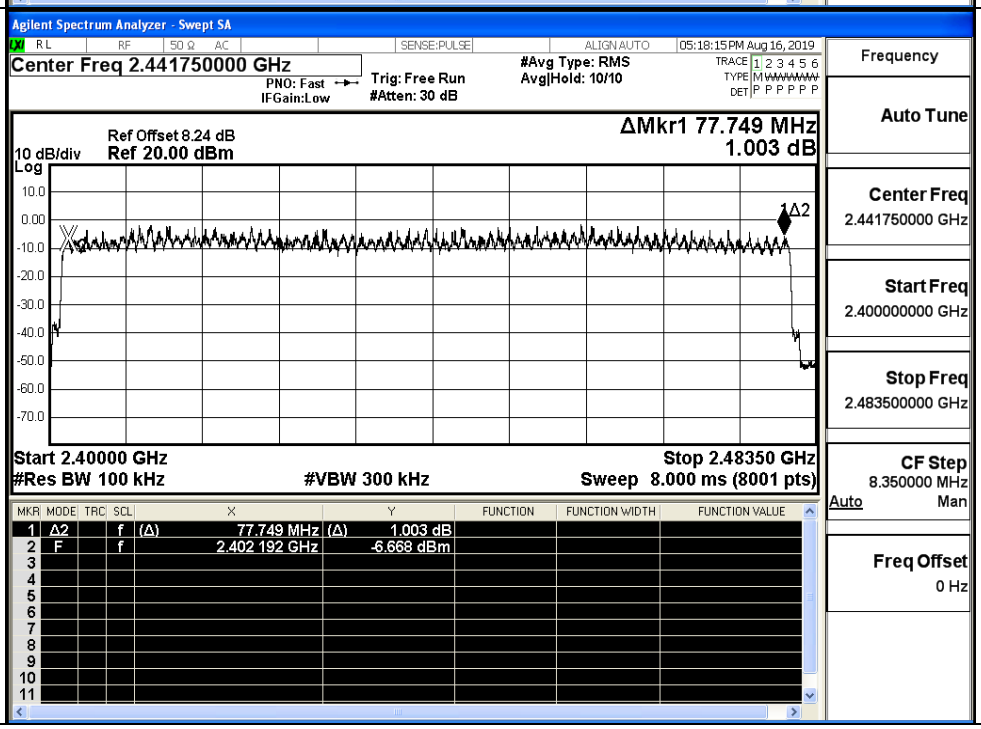
π/4DQPSK/HCH		
8DPSK/LCH		

8DPSK/MCH		
8DPSK/HCH		

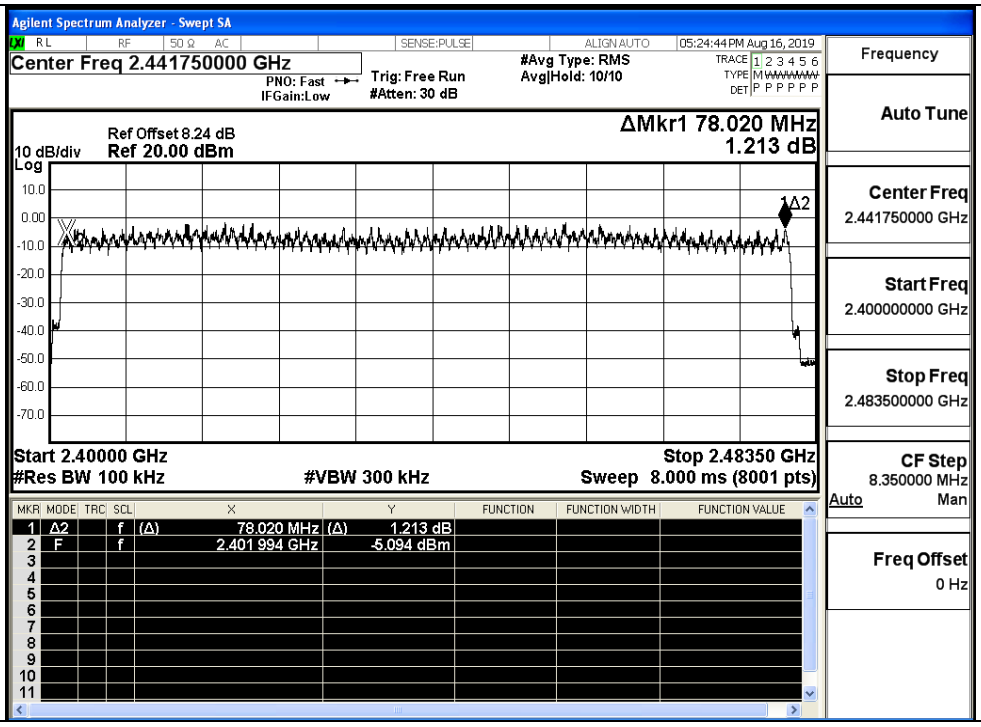
A.4 Hopping Channel Number

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

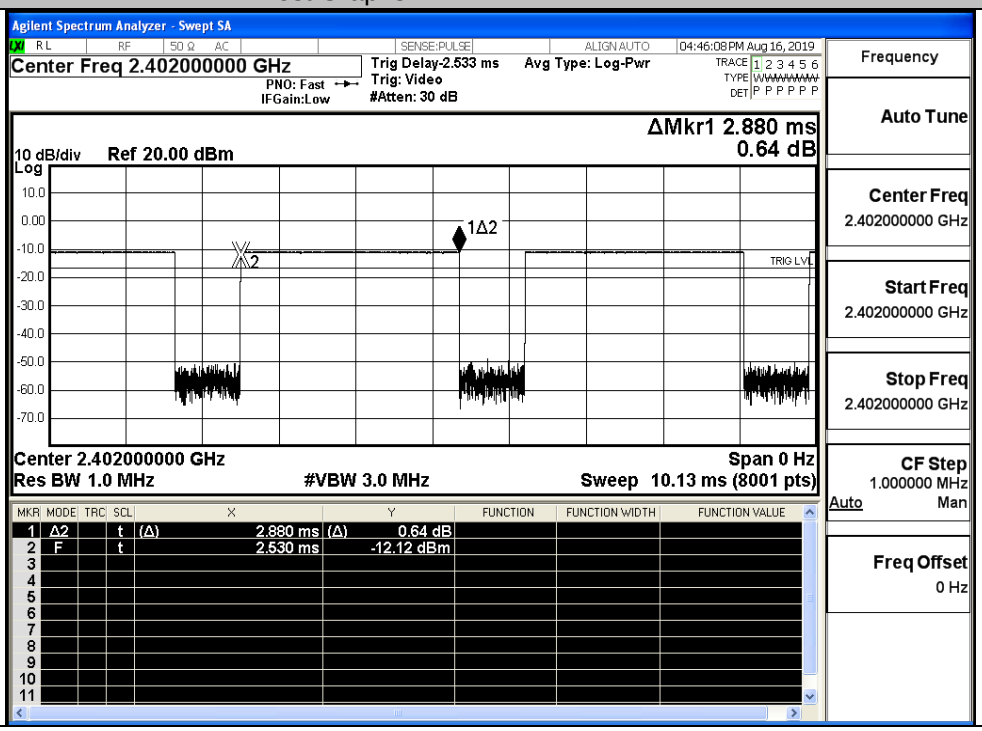
GFSK/Hop			
π/4DQPSK/Hop			

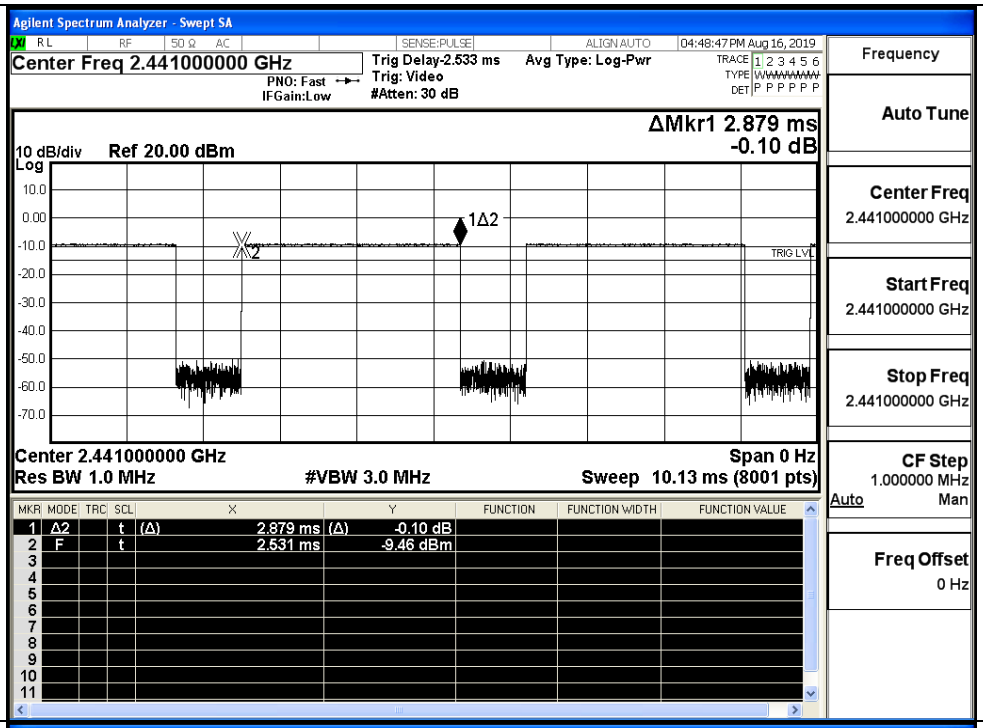
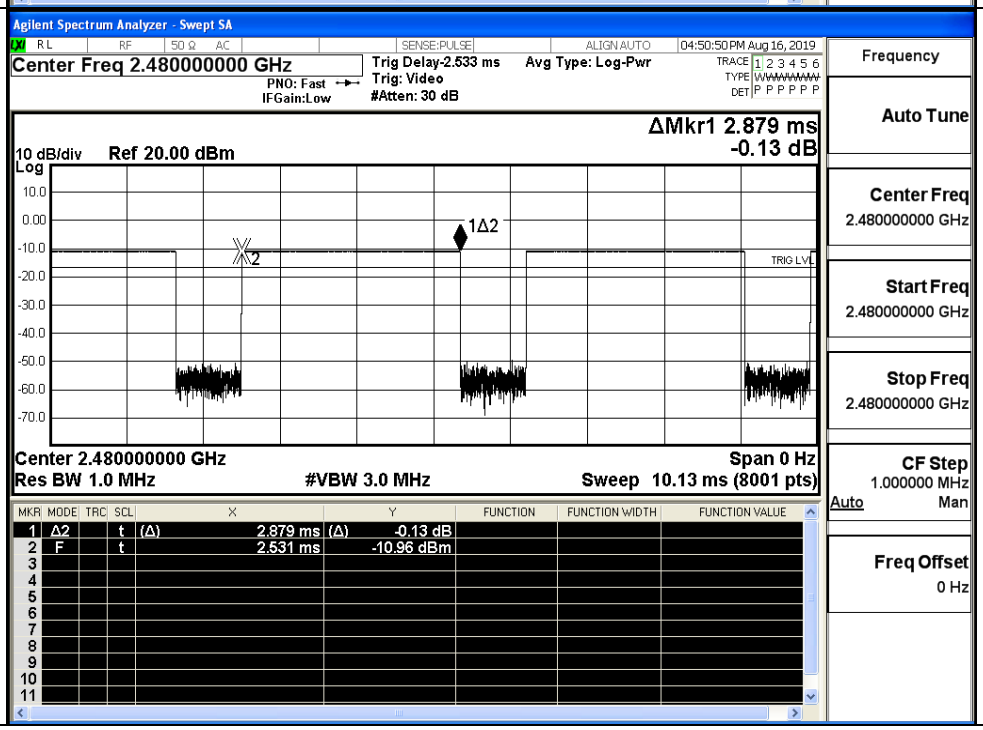
8DPSK/Hop


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
05:24:44 PM Aug 16, 2019
Ref Offset 8.24 dB
10 dB/div
Ref 20.00 dBm
ΔMkr1 78.020 MHz
1.213 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) 78.020 MHz (Δ) 1.213 dB
2 F f 2.401 994 GHz -5.094 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

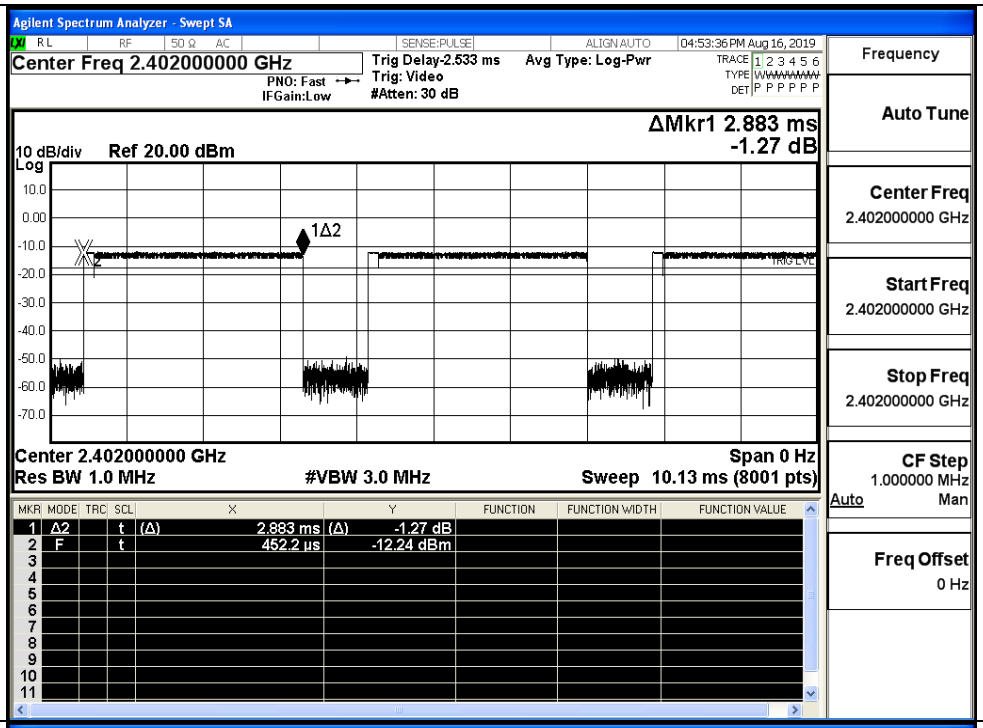
A.5 Dwell Time

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

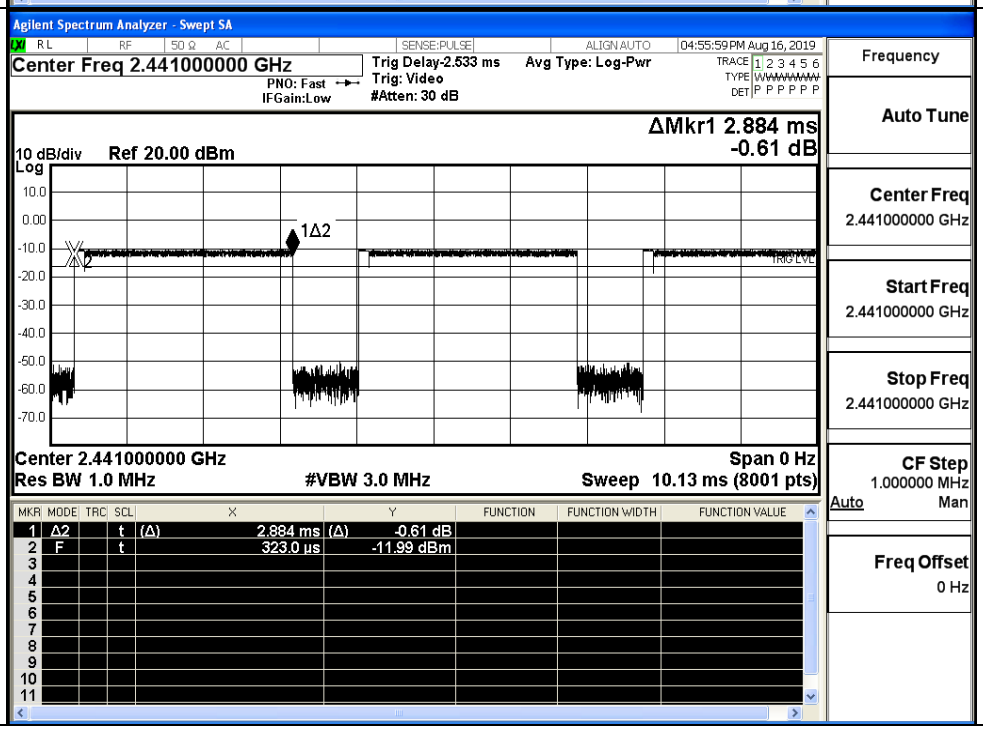
Test Graphs	
GFSK_DH5/LCH	

GFSK_DH5/MCH	
GFSK_DH5/HCH	

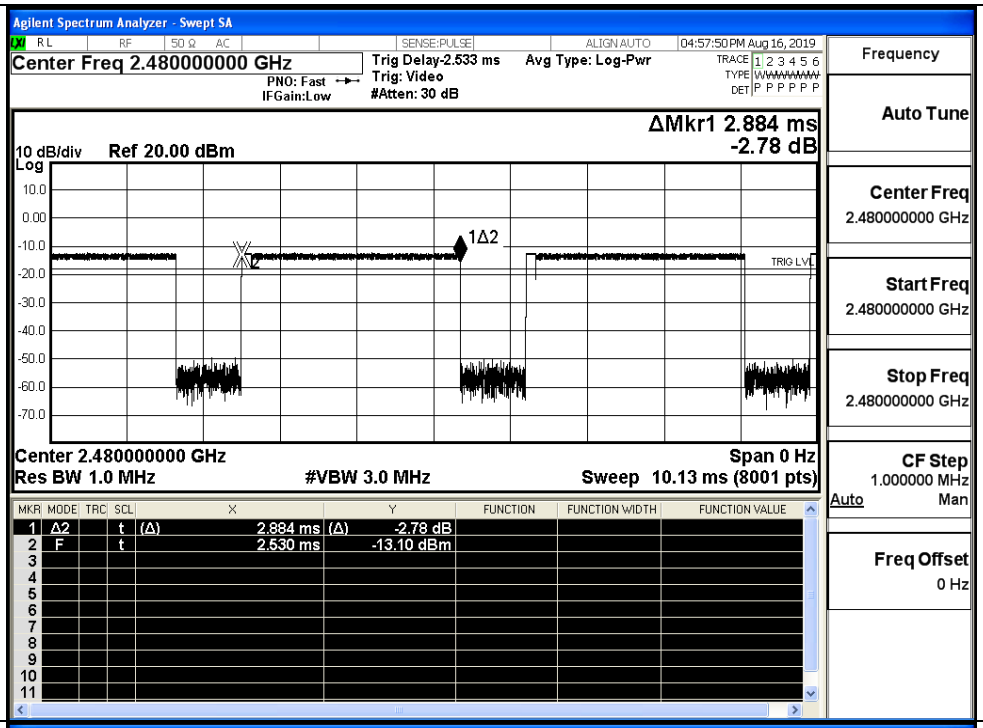
π/4DQPSK
_2DH5/LCH



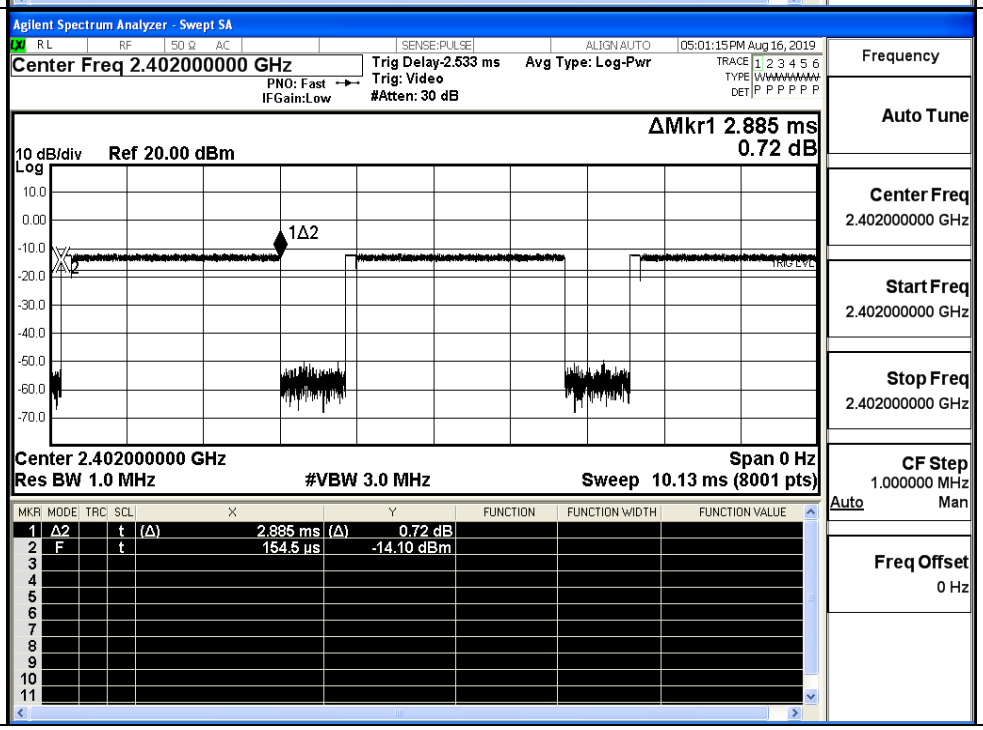
π/4DQPSK
_2DH5/MCH

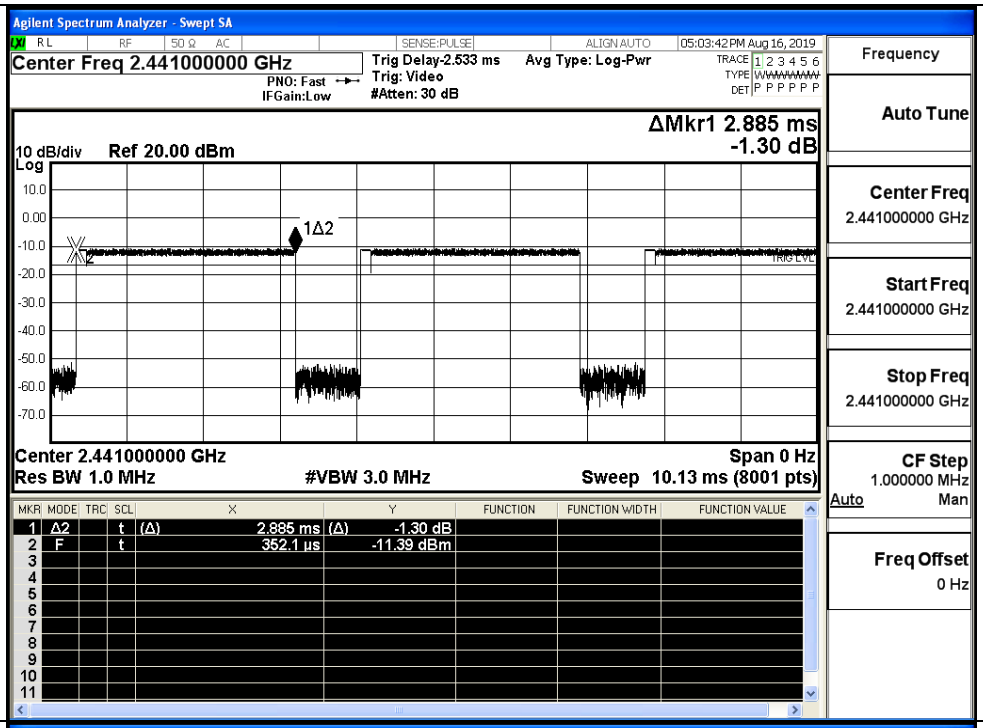
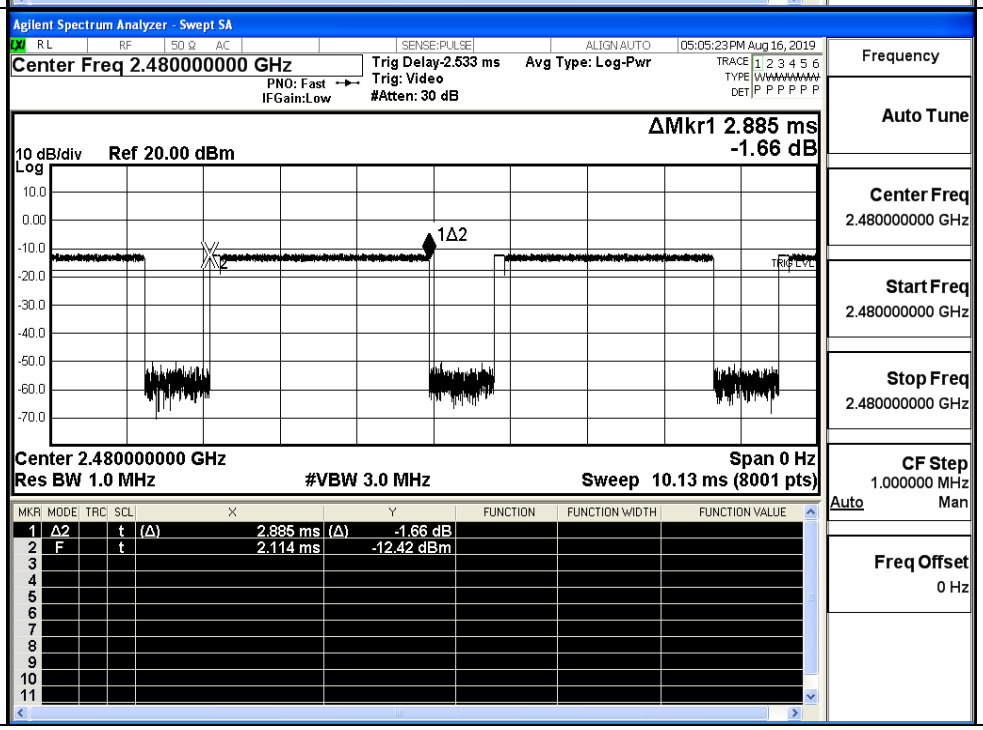


π/4DQPSK _2DH5/HCH



8DPSK _3DH5/LCH



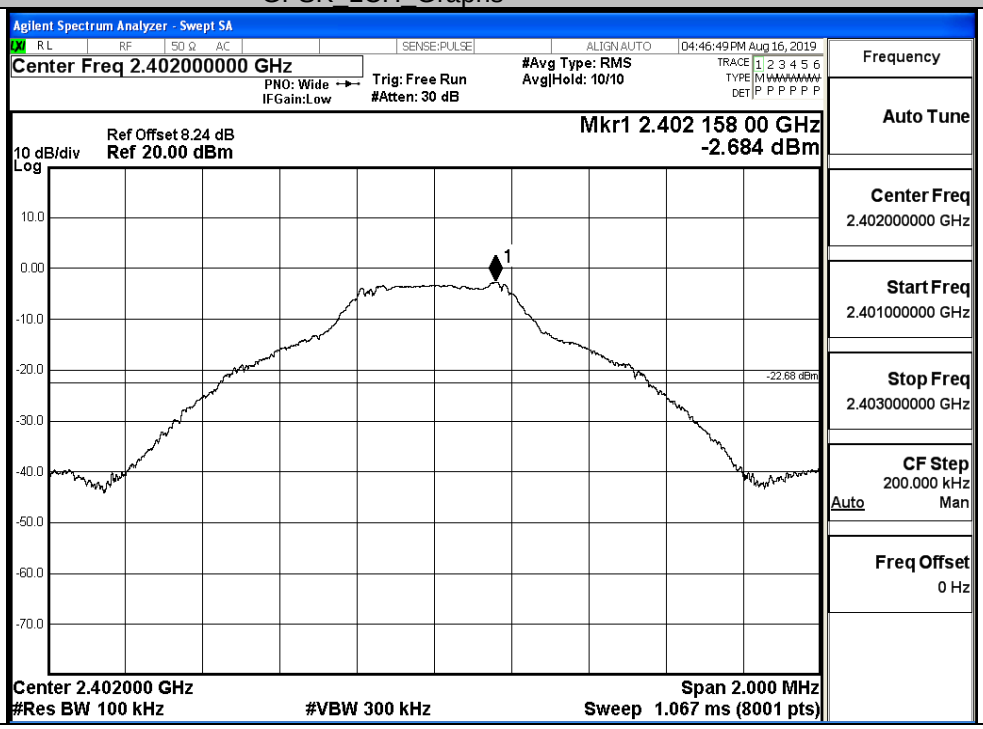
8DPSK _3DH5/MCH	
8DPSK _3DH5/HCH	

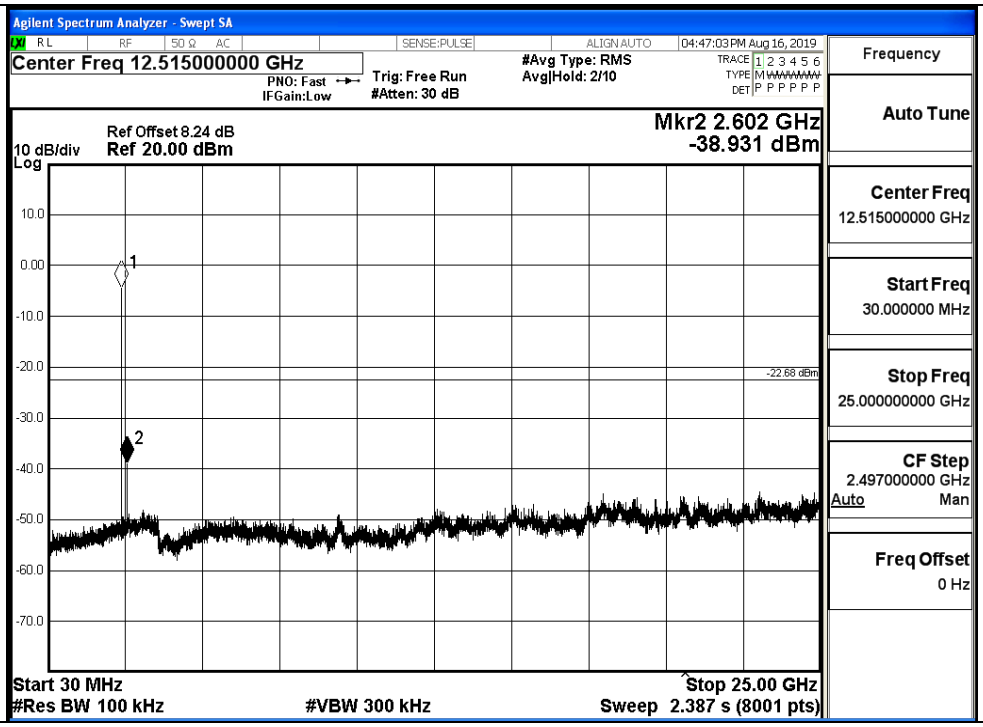
A.6 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-2.684	-38.931	-22.684	PASS
	MCH	-1.087	-40.813	-21.087	PASS
	HCH	-2.929	-44.447	-22.929	PASS
π/4DQPSK	LCH	-4.603	-44.698	-24.603	PASS
	MCH	-2.335	-44.584	-22.335	PASS
	HCH	-4.457	-34.764	-24.457	PASS
8DPSK	LCH	-4.447	-45.865	-24.447	PASS
	MCH	-2.99	-45.245	-22.990	PASS
	HCH	-3.979	-45.465	-23.979	PASS

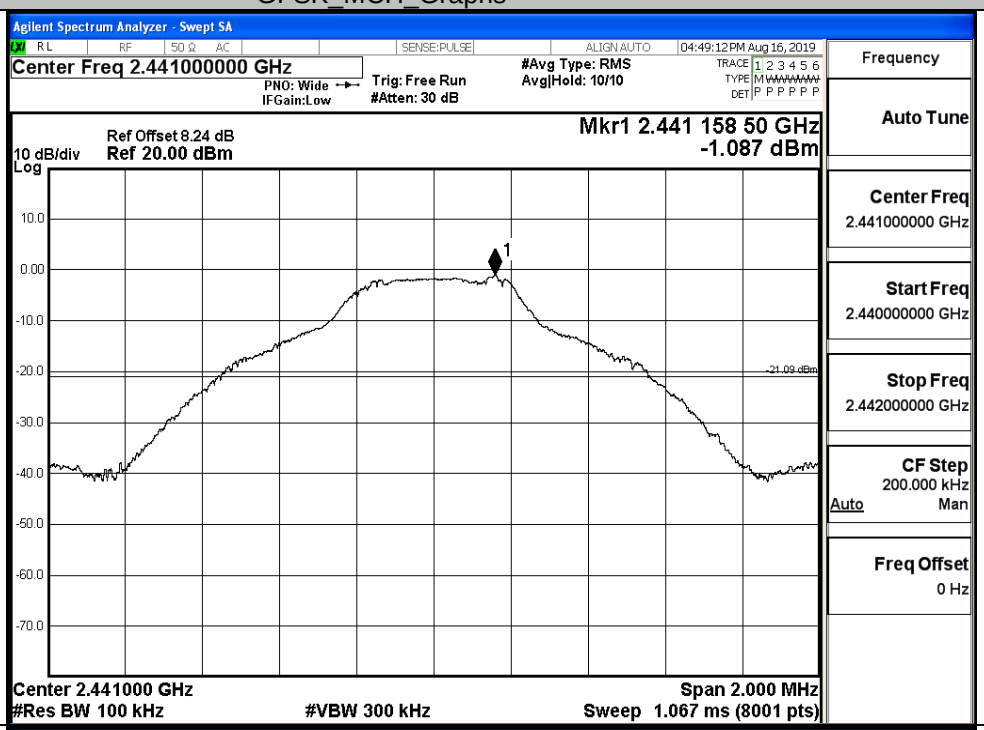
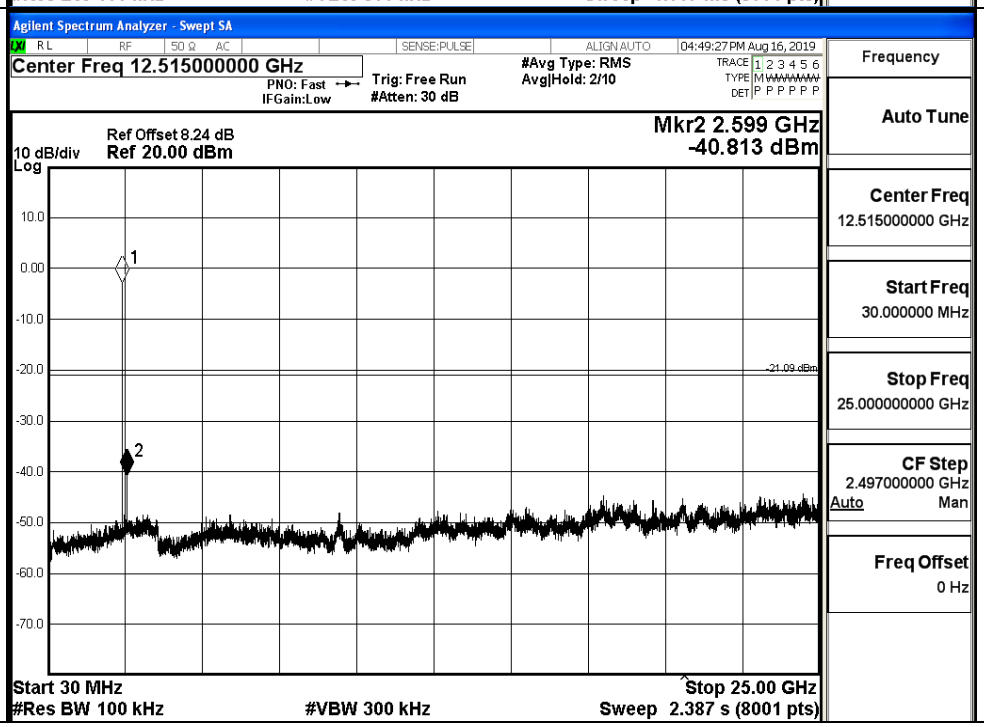
GFSK_LCH_Graphs

Pref



Puw		

Agilent Spectrum Analyzer - Swept SA
Center Freq 12.515000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 2/10
04:47:03 PM Aug 16, 2019
Ref Offset 8.24 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr2 2.602 GHz
-38.931 dBm
-22.68 dBm
Start 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.00 GHz
Sweep 2.387 s (8001 pts)
Frequency
Auto Tune
Center Freq
12.515000000 GHz
Start Freq
30.000000 MHz
Stop Freq
25.000000000 GHz
CF Step
2.497000000 GHz
Auto
Man
Freq Offset
0 Hz

GFSK_MCH_Graphs			
Pref			
Puw			

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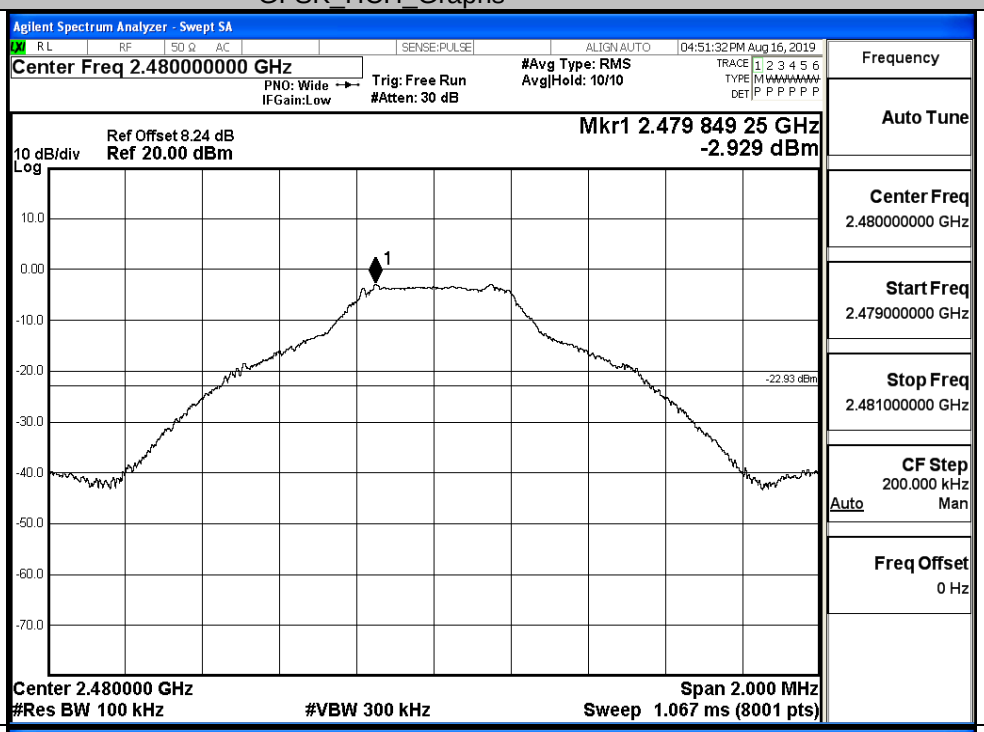
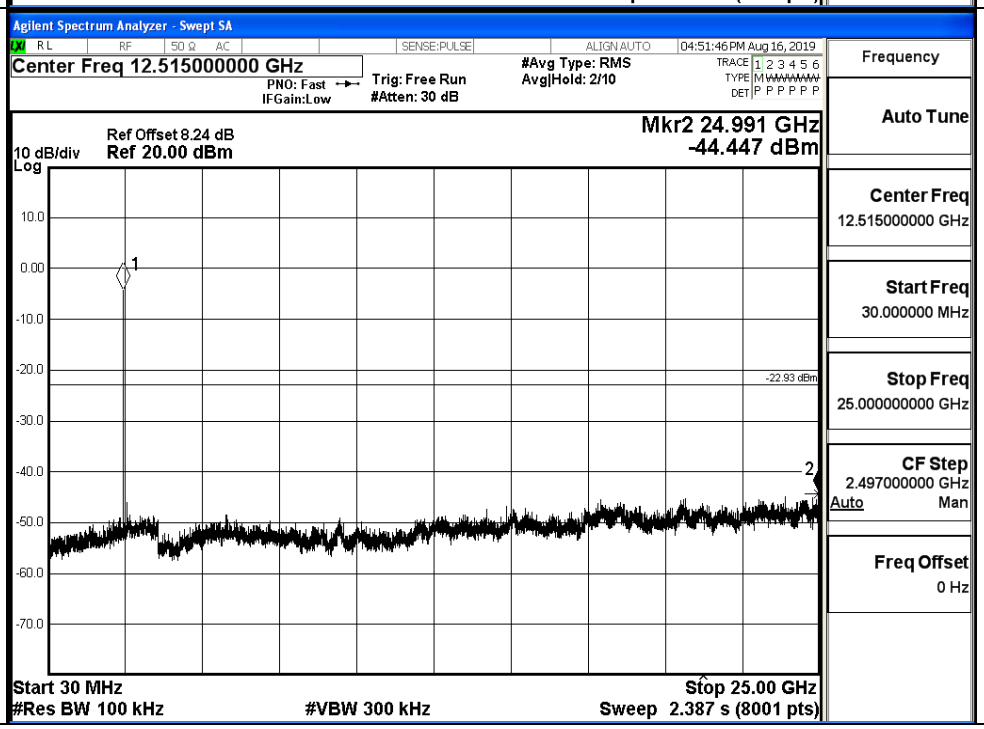
Pref			
Puw			

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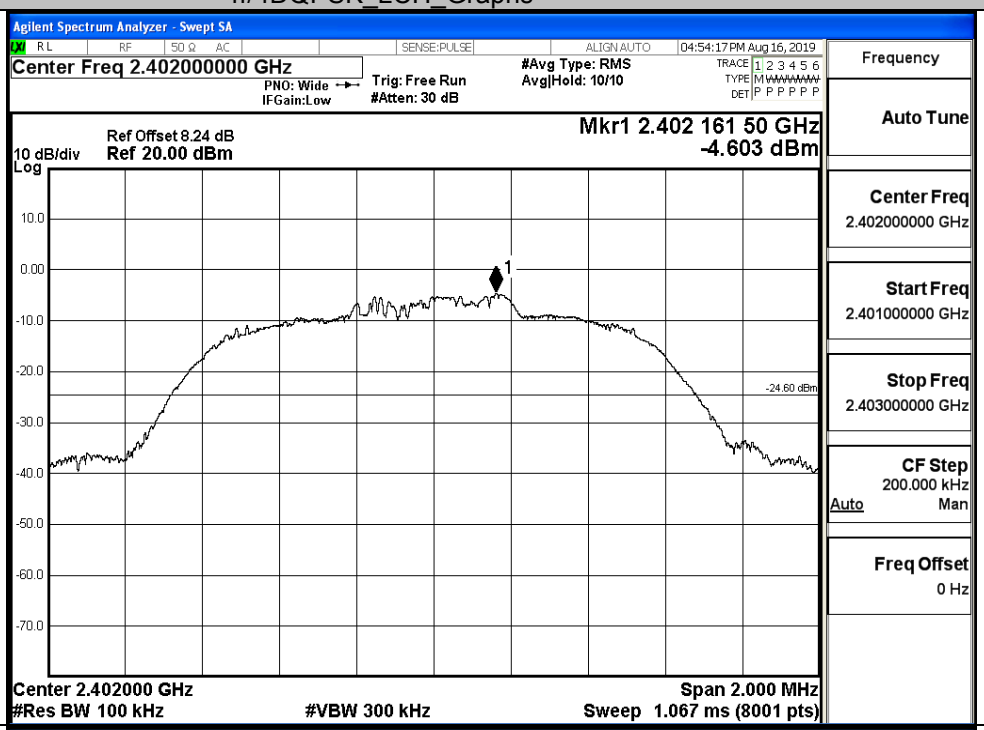
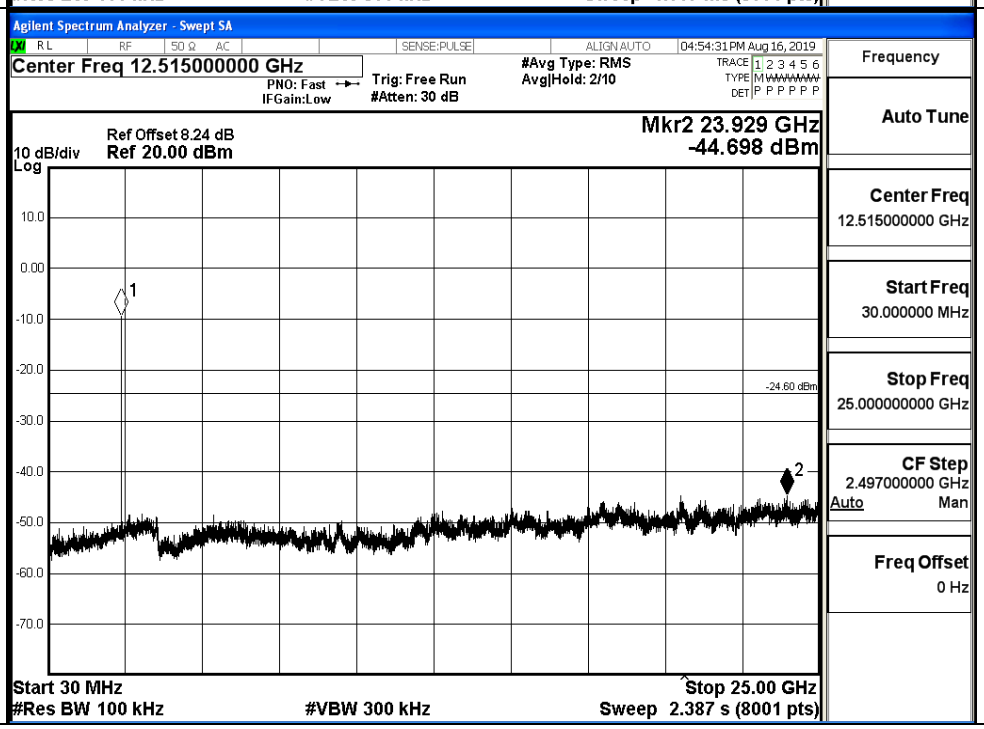
Pref			
Puw			

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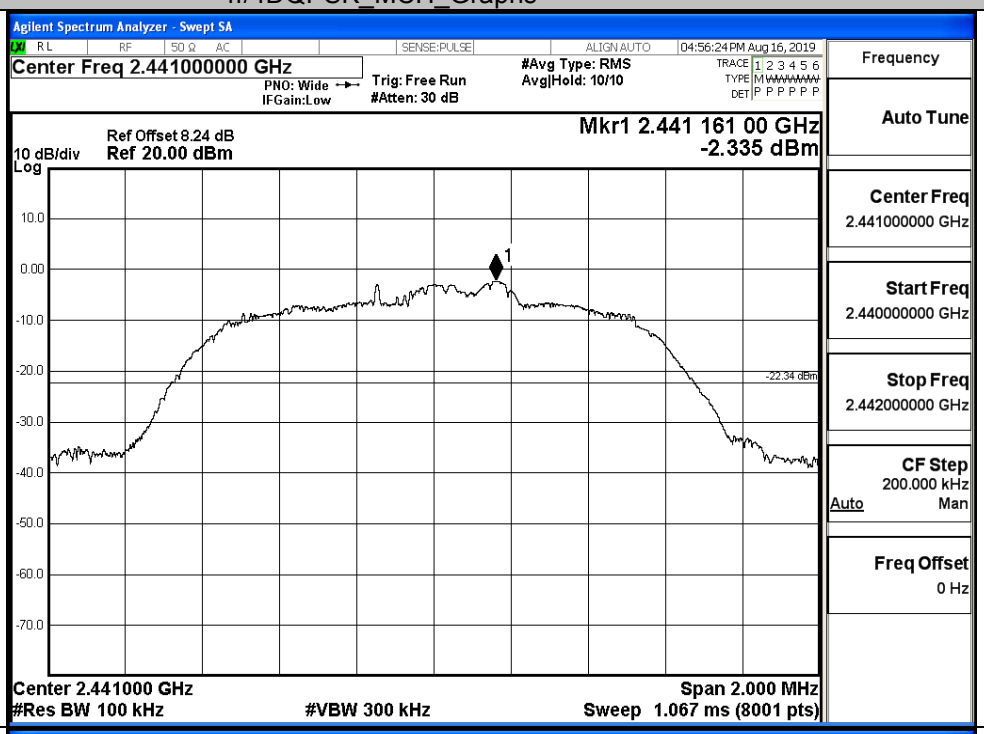
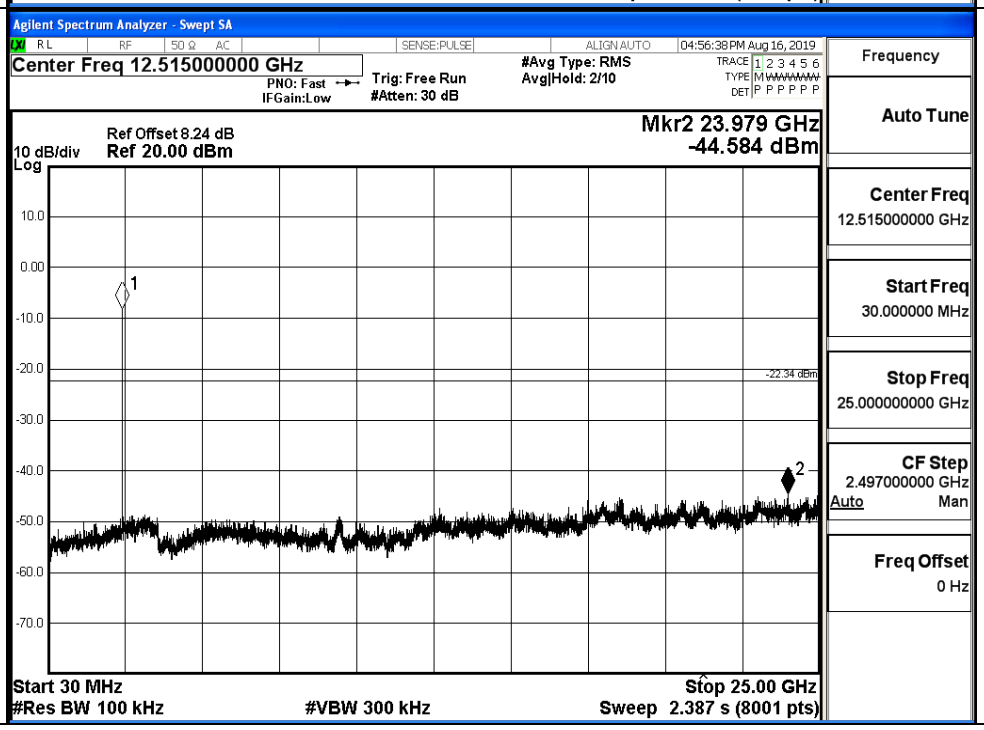
Pref			
Puw			

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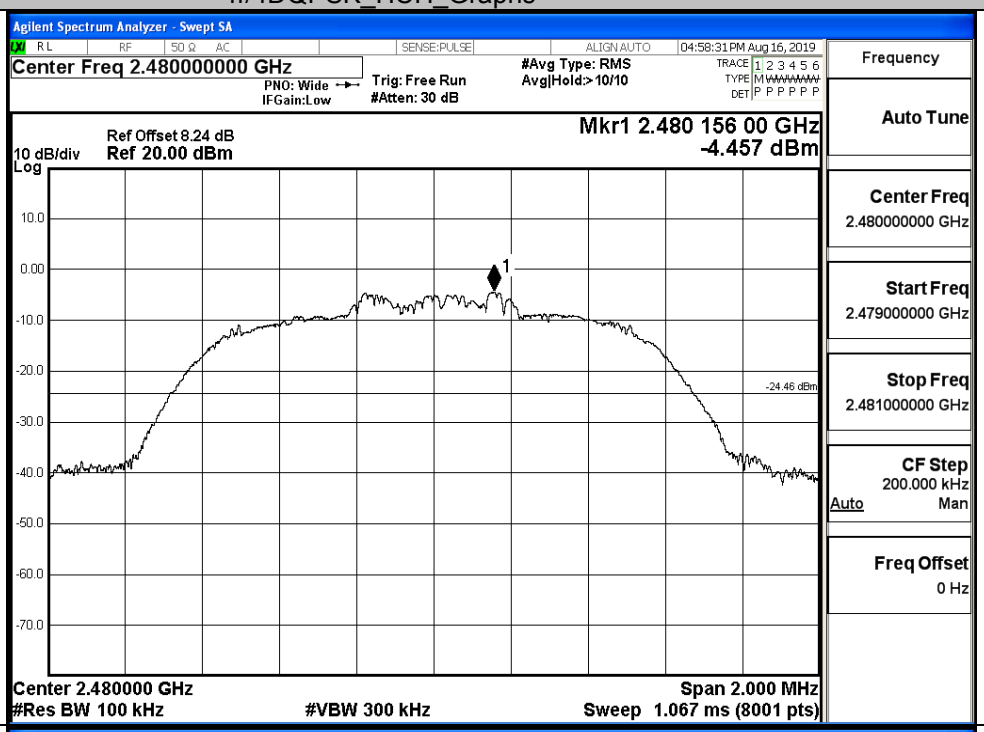
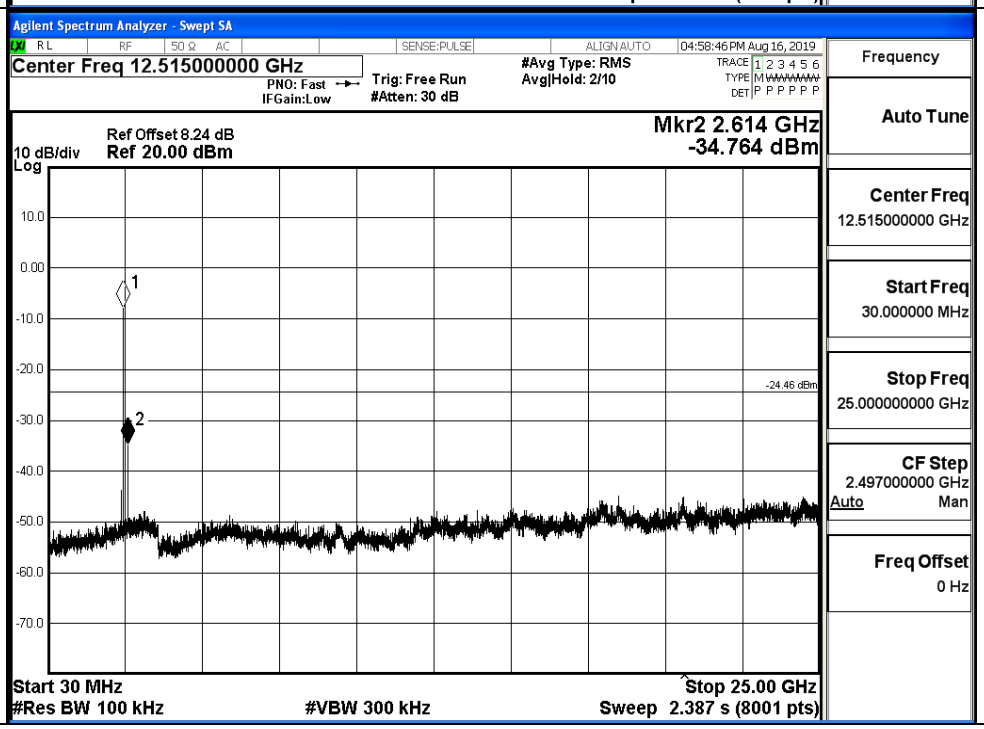
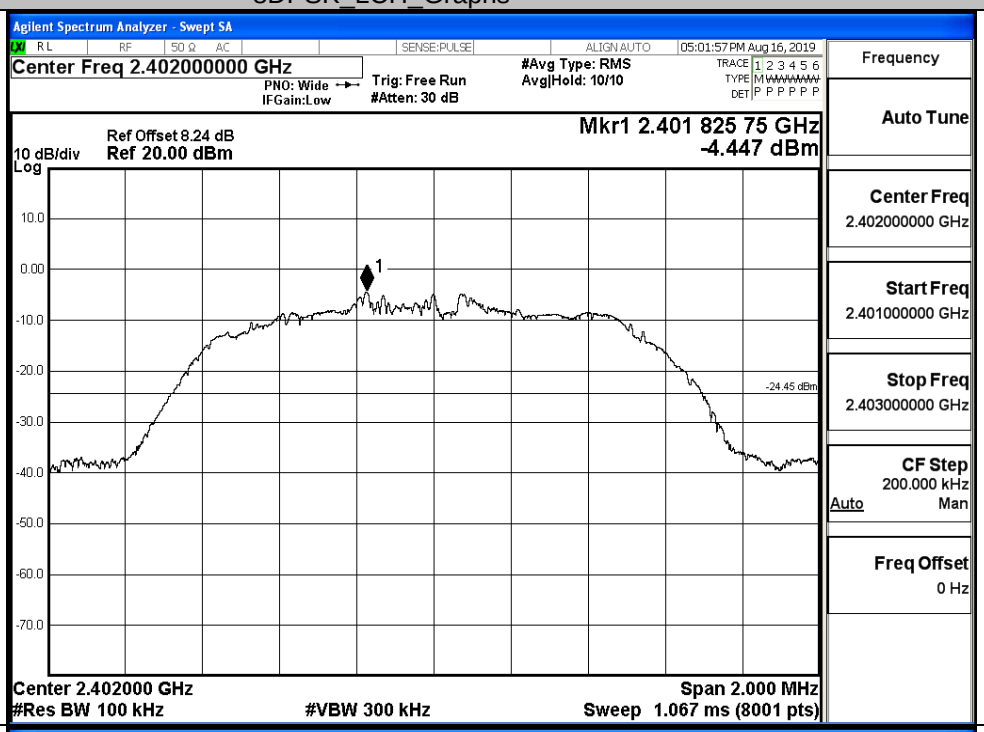
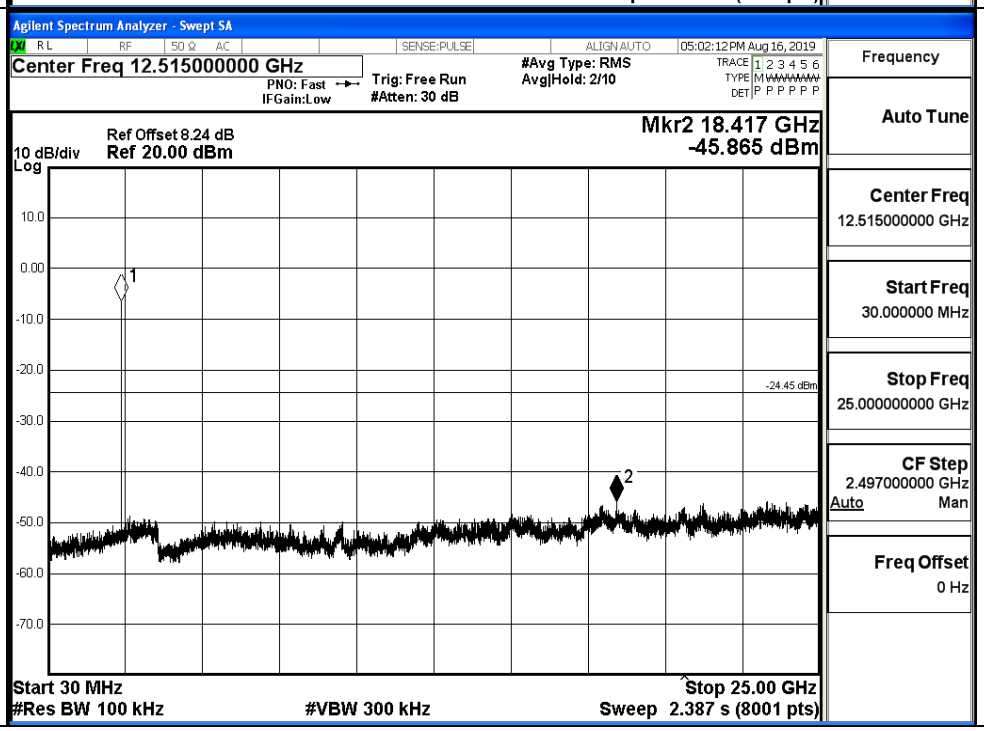
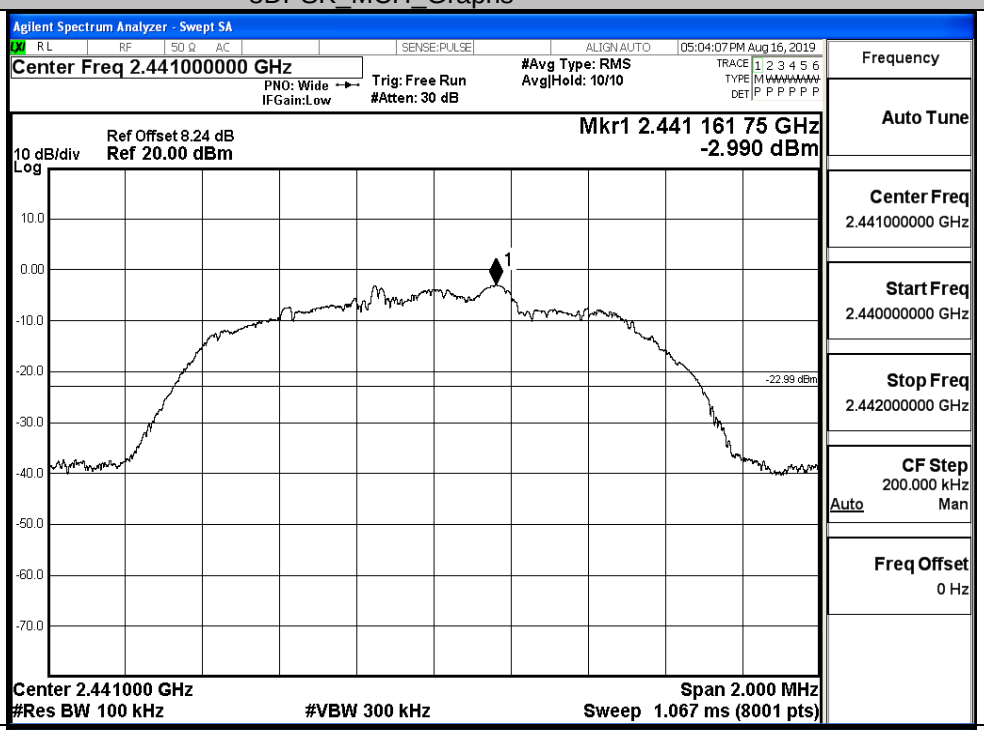
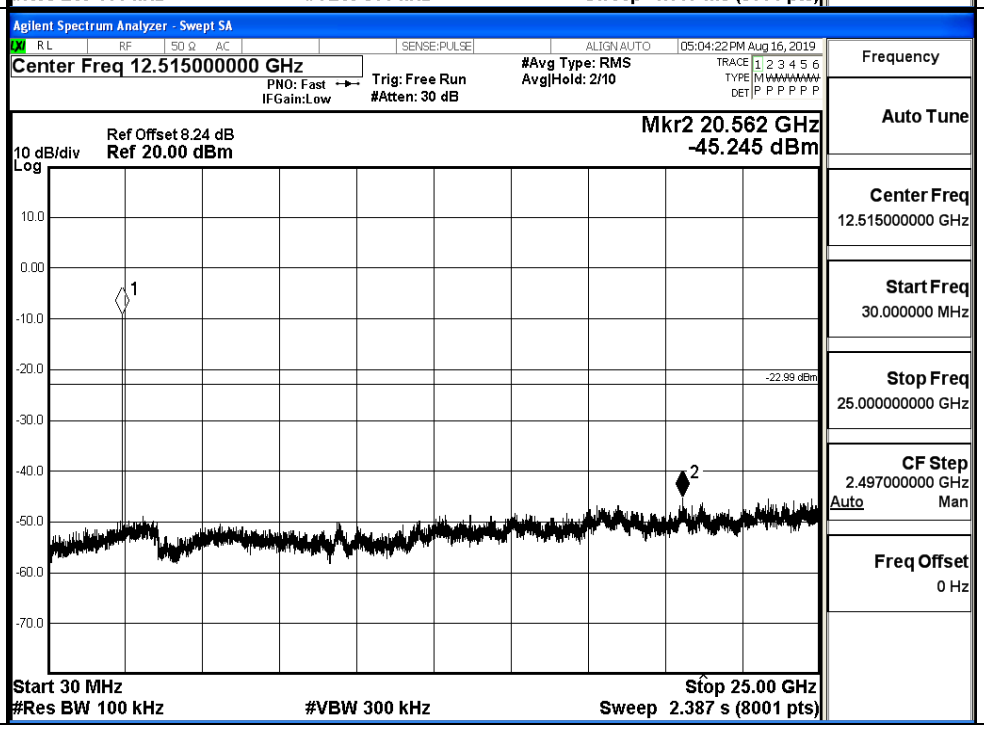
Pref			
Puw			

8DPSK_LCH_Graphs			
Pref			
Puw			

8DPSK_MCH_Graphs			
Pref			
Puw			

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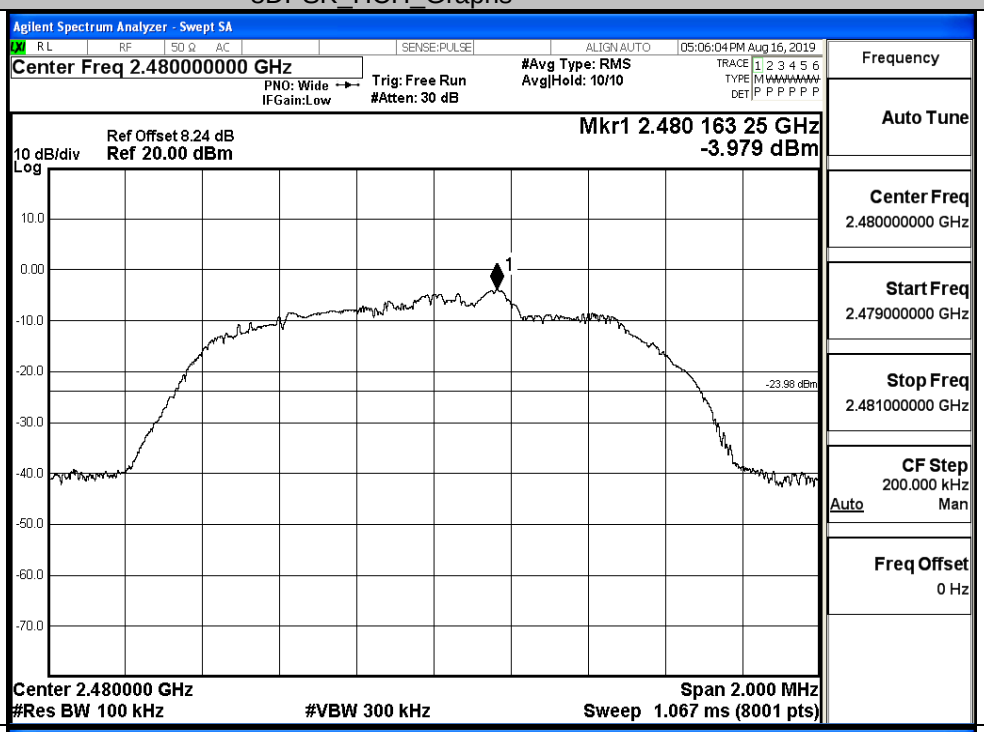
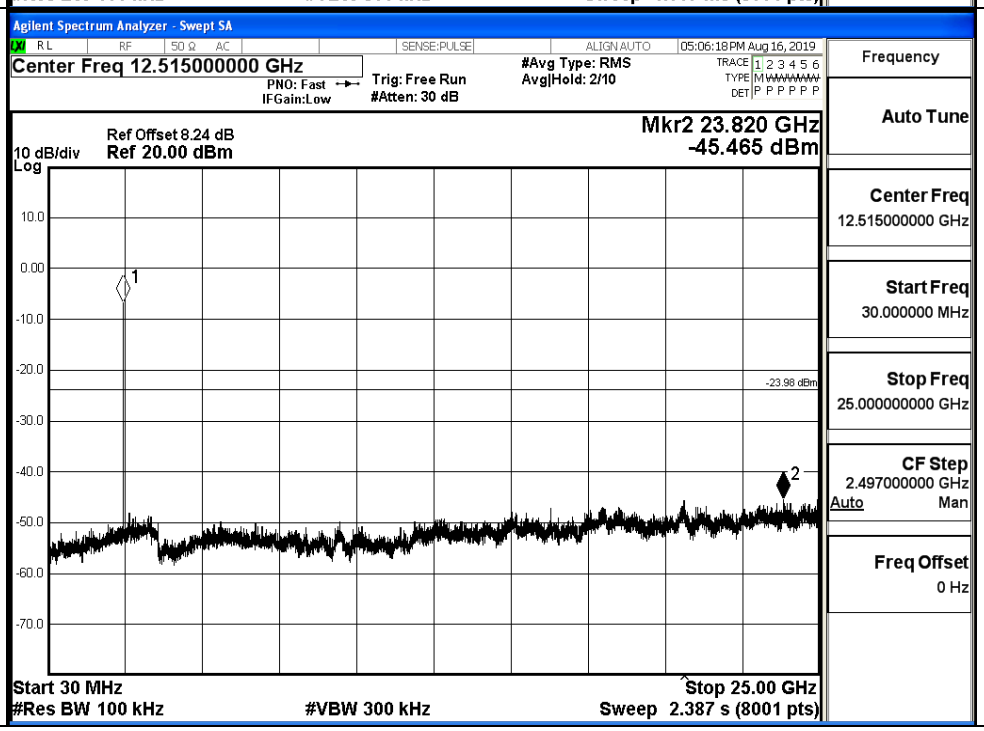
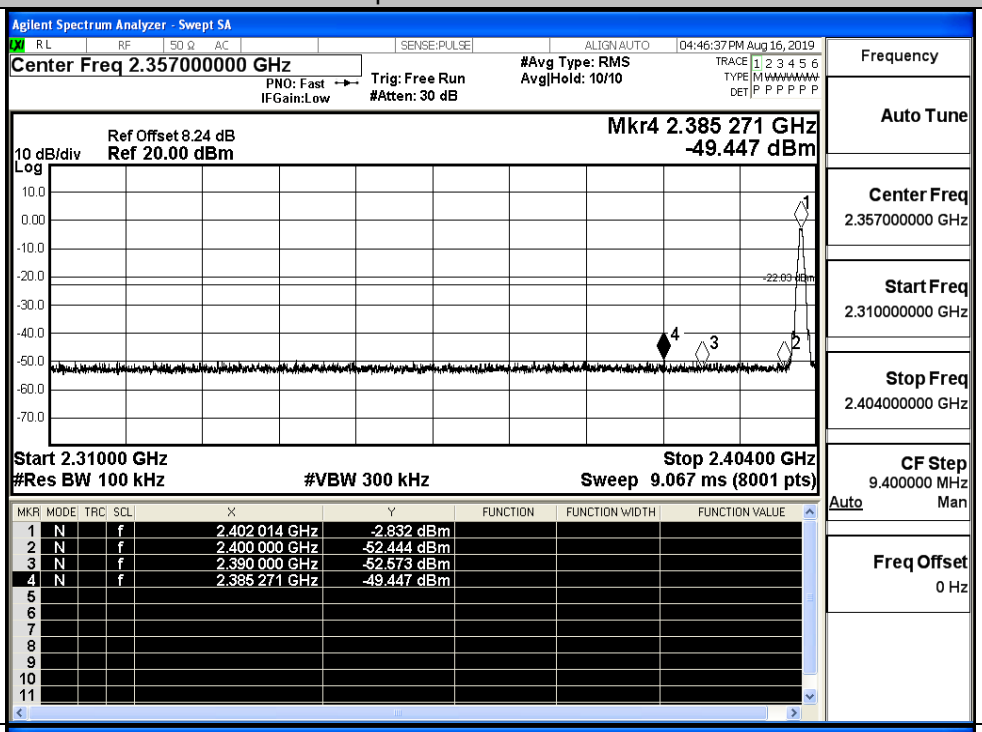
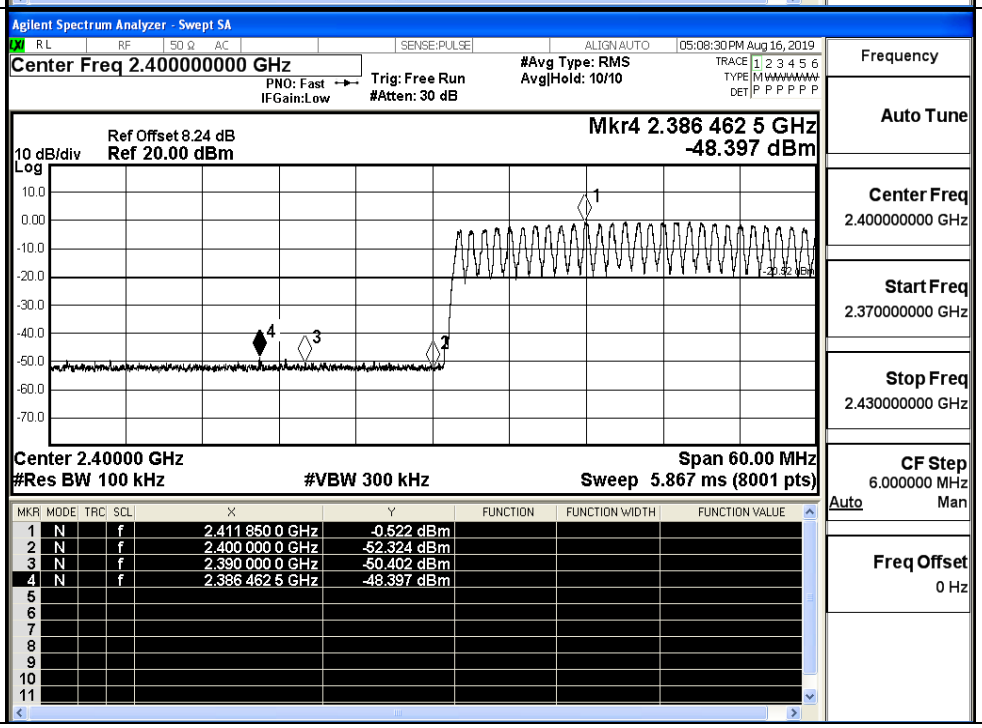
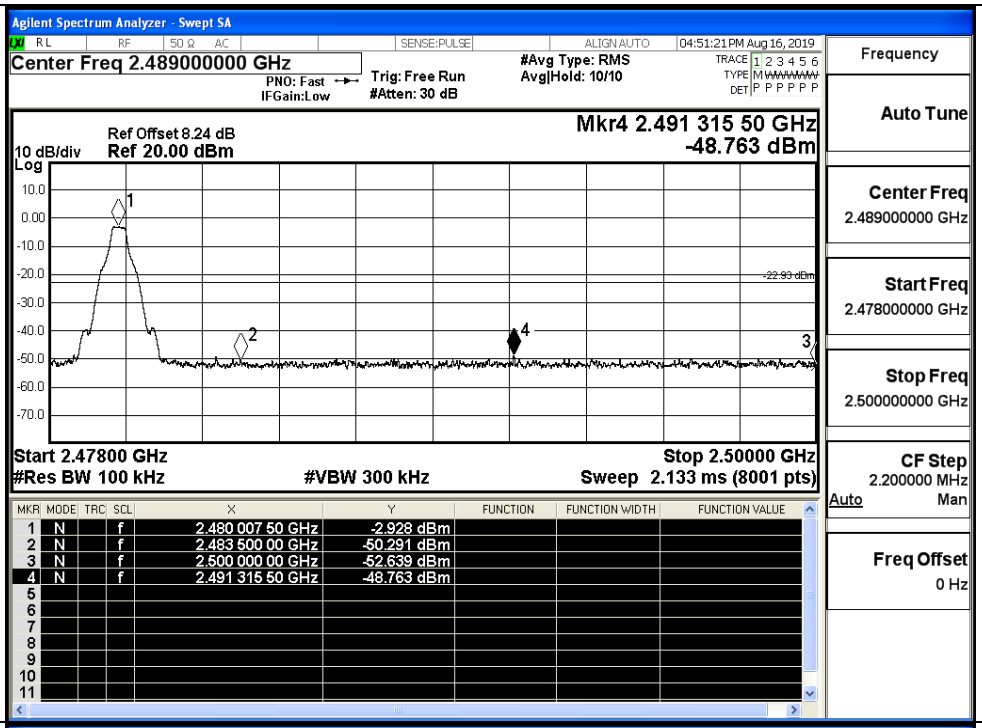
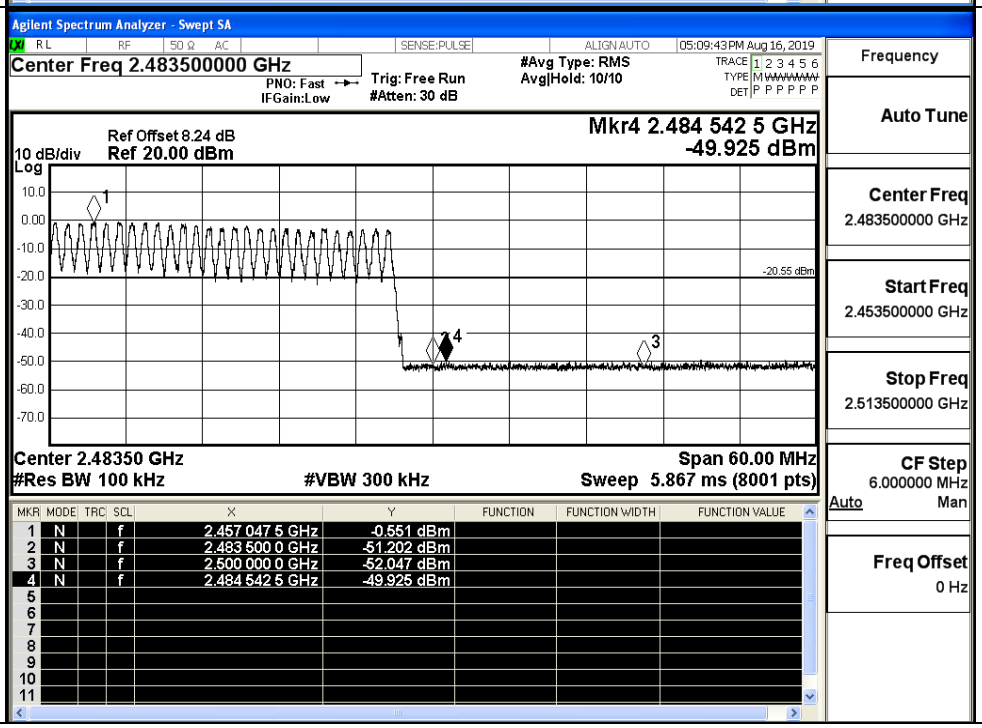
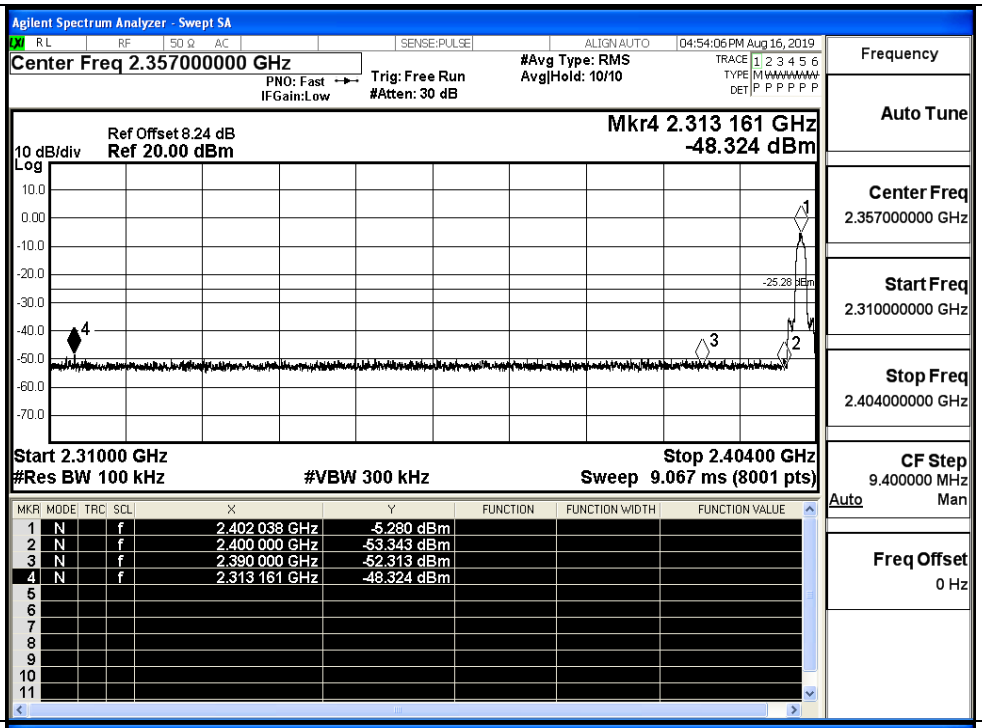
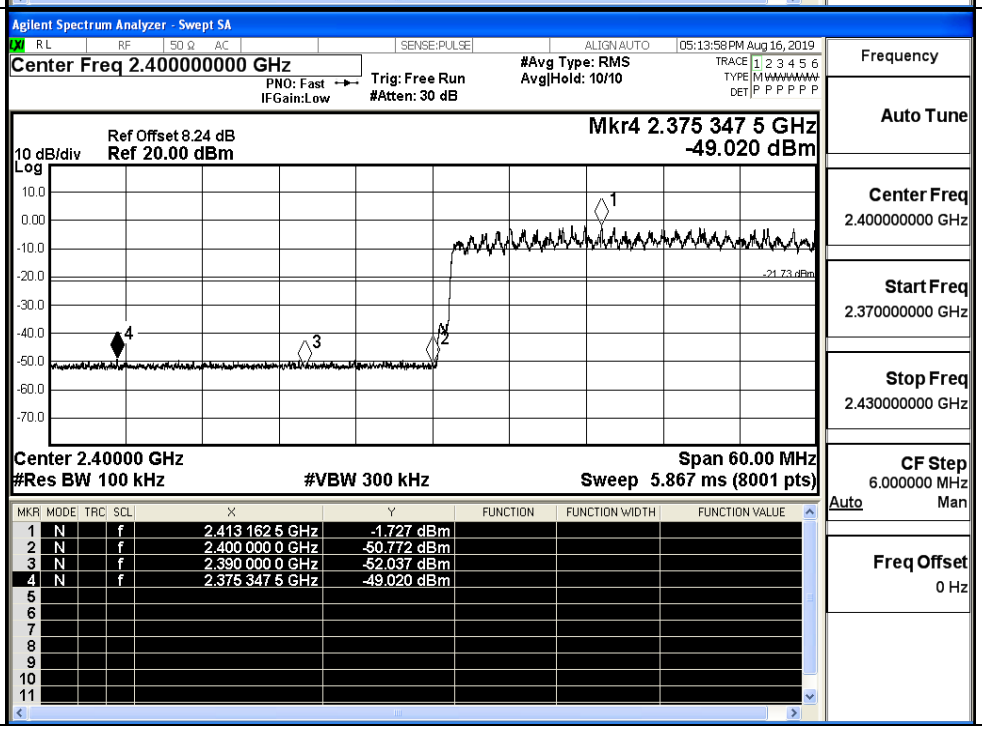
Pref			
Puw			

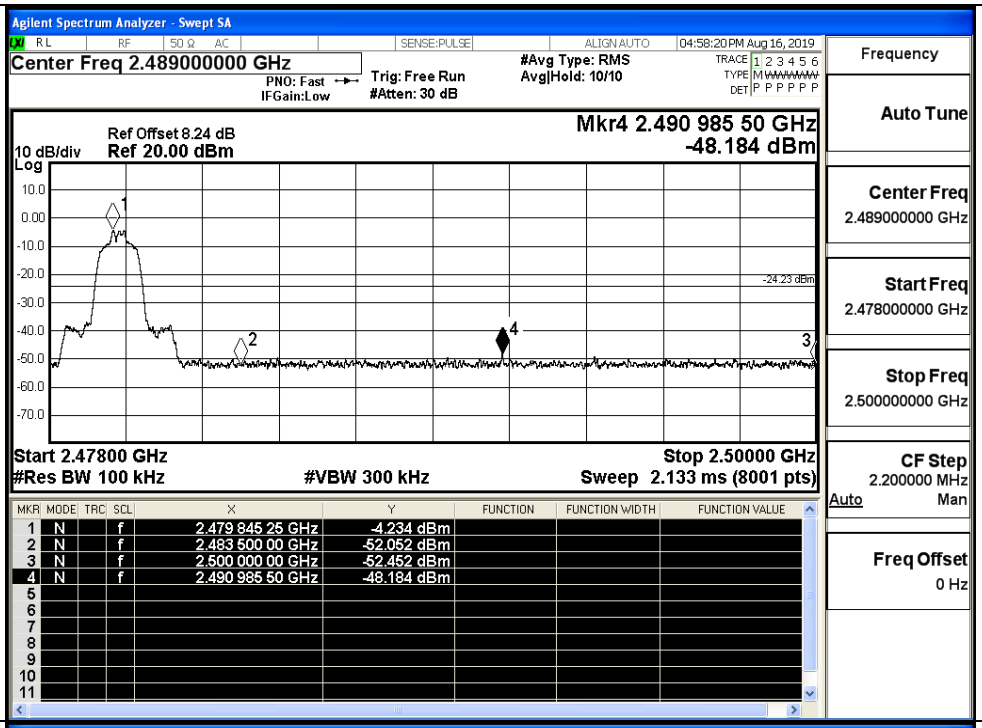
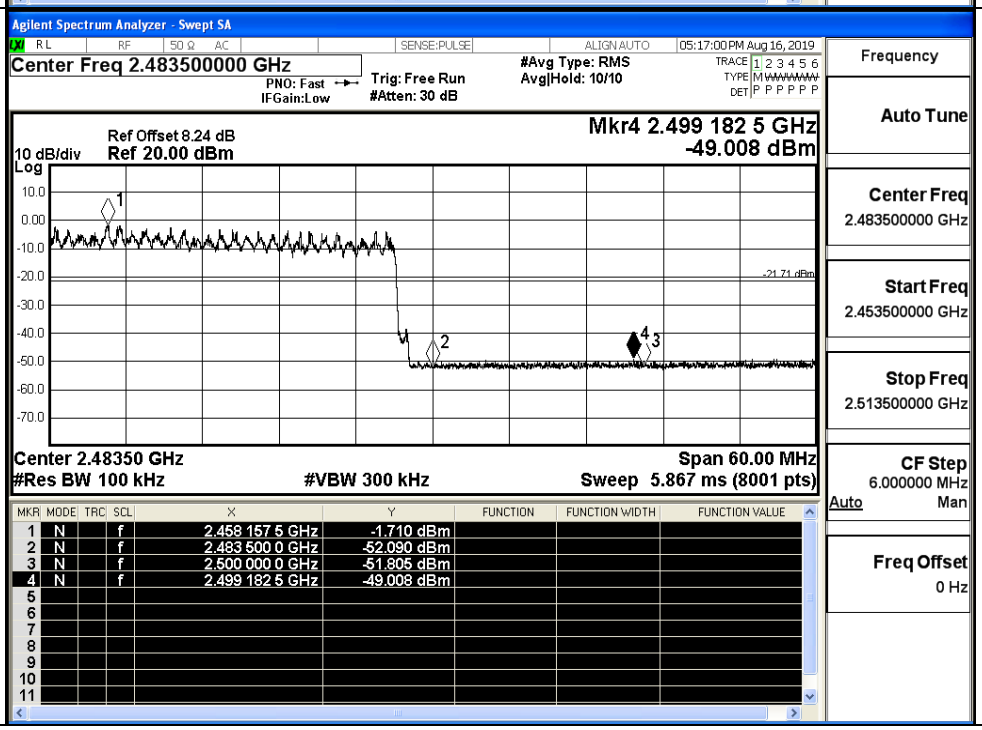
A.7 Band-edge for RF Conducted Emissions

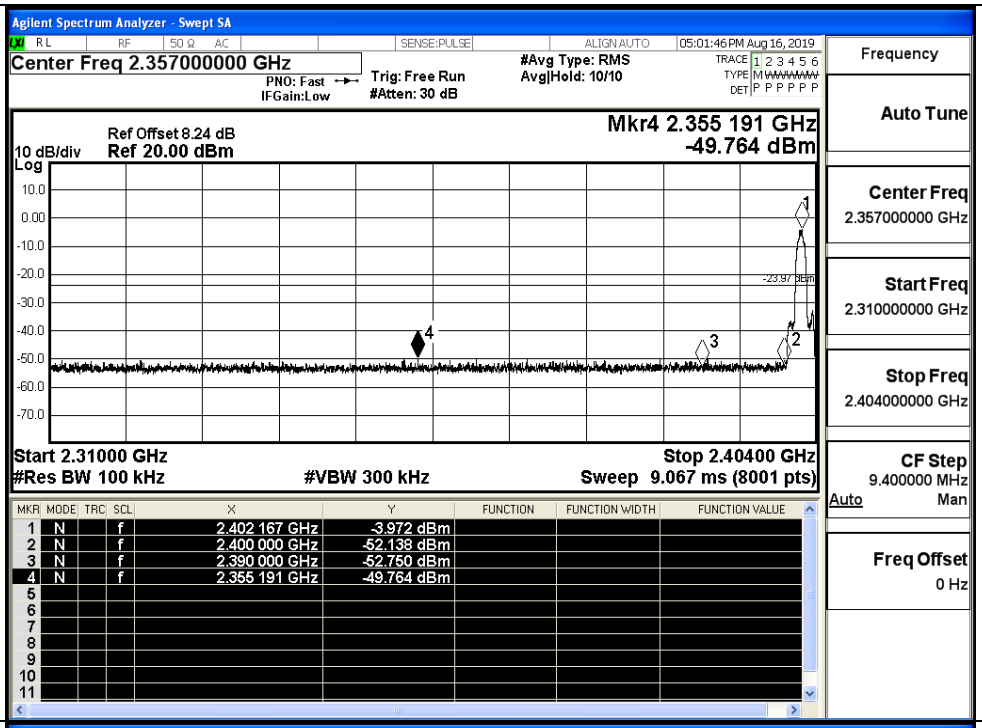
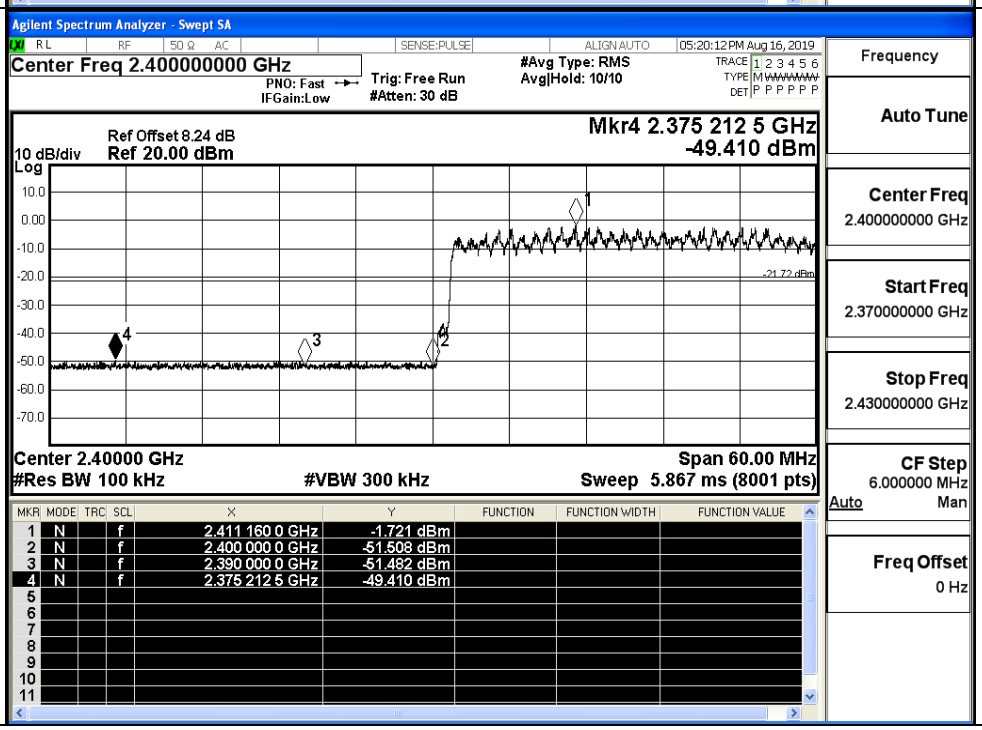
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	-2.832	Off	-49.447	-22.83	PASS
			-0.522	On	-48.397	-20.52	PASS
	HCH	2480	-2.928	Off	-48.763	-22.93	PASS
			-0.551	On	-49.925	-20.55	PASS
π/4DQPSK	LCH	2402	-5.280	Off	-48.324	-25.28	PASS
			-1.727	On	-49.020	-21.73	PASS
	HCH	2480	-4.234	Off	-48.184	-24.23	PASS
			-1.710	On	-49.008	-21.71	PASS
8DPSK	LCH	2402	-3.972	Off	-49.764	-23.97	PASS
			-1.721	On	-49.410	-21.72	PASS
	HCH	2480	-4.376	Off	-49.214	-24.38	PASS
			-1.554	On	-49.251	-21.55	PASS

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

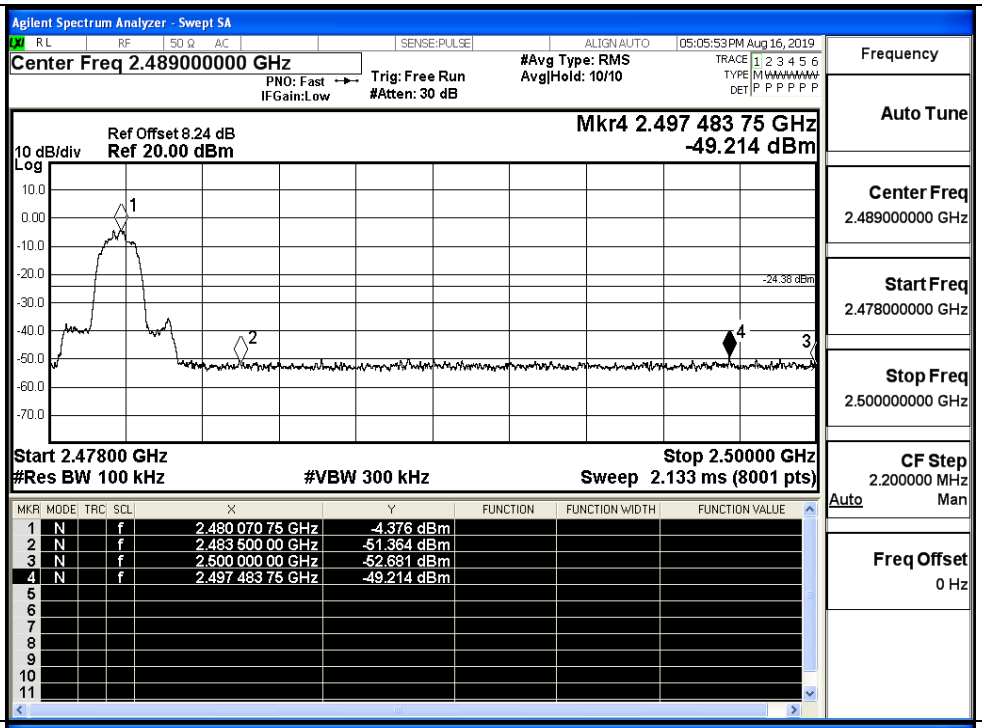
GFSK/HCH/No Hop		
GFSK/HCH/Hop		

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

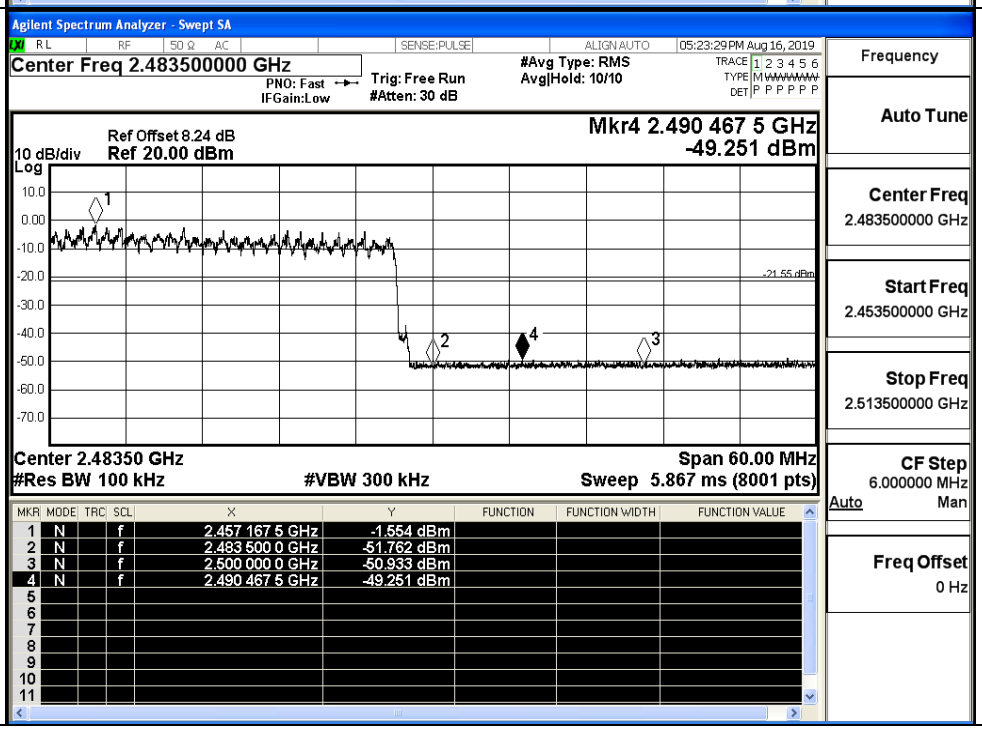
π/4DQPSK/HCH/No Hop		
π/4DQPSK/HCH/Hop		

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

8DPSK/HCH/No Hop



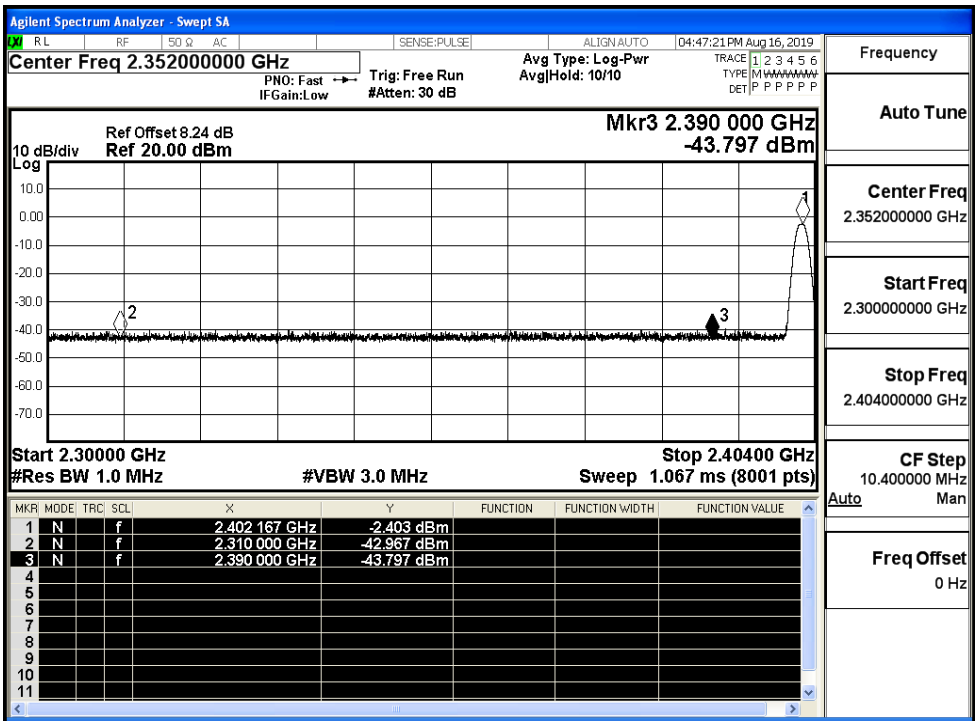
8DPSK/HCH/Hop



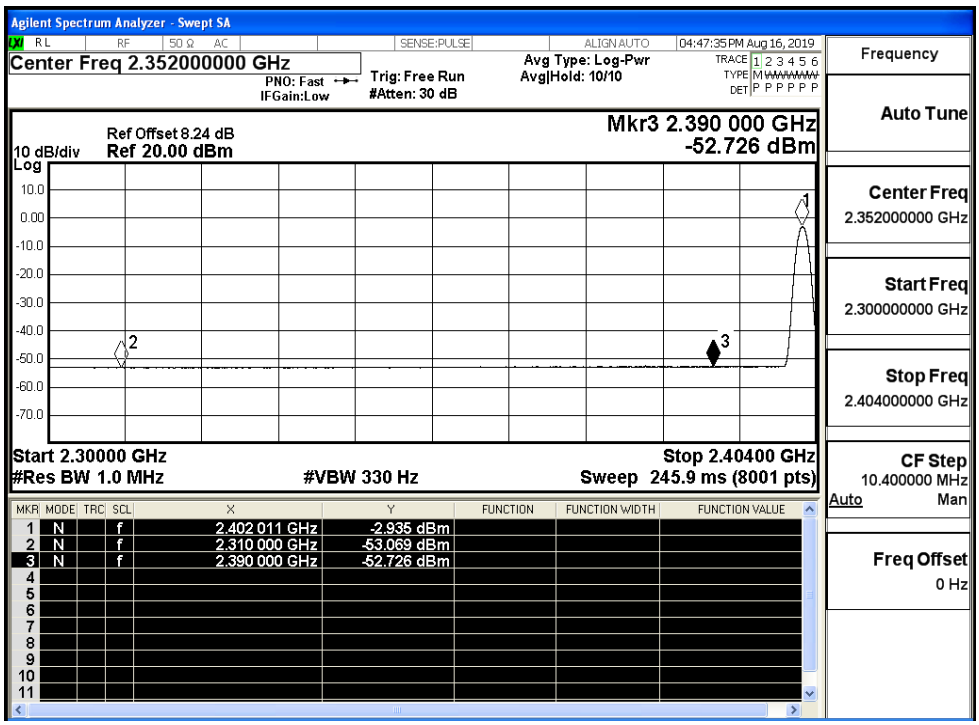
A.8 Restrict-band measurements on band-edge

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-42.97	2.0	0	52.29	PEAK	74	PASS
	Off	2310.0	-53.07	2.0	0	42.19	AV	54	PASS
	Off	2390.0	-43.80	2.0	0	51.46	PEAK	74	PASS
	Off	2390.0	-52.73	2.0	0	42.53	AV	54	PASS
	Off	2483.5	-43.21	2.0	0	52.05	PEAK	74	PASS
	Off	2483.5	-52.49	2.0	0	42.77	AV	54	PASS
	Off	2500.0	-42.79	2.0	0	52.47	PEAK	74	PASS
	Off	2500.0	-52.36	2.0	0	42.90	AV	54	PASS
π/4DQPSK	Off	2310.0	-41.85	2.0	0	53.41	PEAK	74	PASS
	Off	2310.0	-52.85	2.0	0	42.41	AV	54	PASS
	Off	2390.0	-43.06	2.0	0	52.19	PEAK	74	PASS
	Off	2390.0	-52.79	2.0	0	42.47	AV	54	PASS
	Off	2483.5	-41.53	2.0	0	53.73	PEAK	74	PASS
	Off	2483.5	-52.47	2.0	0	42.78	AV	54	PASS
	Off	2500.0	-42.94	2.0	0	52.32	PEAK	74	PASS
	Off	2500.0	-52.34	2.0	0	42.92	AV	54	PASS
8DPSK	Off	2310.0	-43.47	2.0	0	51.79	PEAK	74	PASS
	Off	2310.0	-53.60	2.0	0	41.66	AV	54	PASS
	Off	2390.0	-43.53	2.0	0	51.73	PEAK	74	PASS
	Off	2390.0	-53.40	2.0	0	41.86	AV	54	PASS
	Off	2483.5	-42.96	2.0	0	52.30	PEAK	74	PASS
	Off	2483.5	-53.13	2.0	0	42.13	AV	54	PASS
	Off	2500.0	-43.26	2.0	0	52.00	PEAK	74	PASS
	Off	2500.0	-53.02	2.0	0	42.24	AV	54	PASS

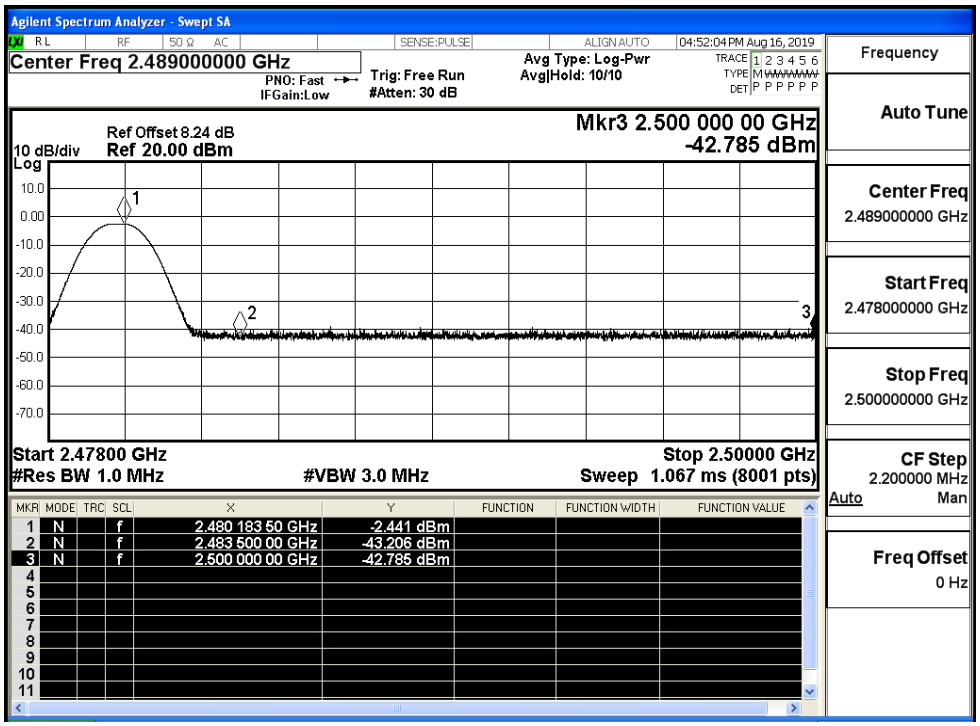
Restrict-band measurements on band-edge_Hopping Off_ GFSK_PEAK (Low Channel)



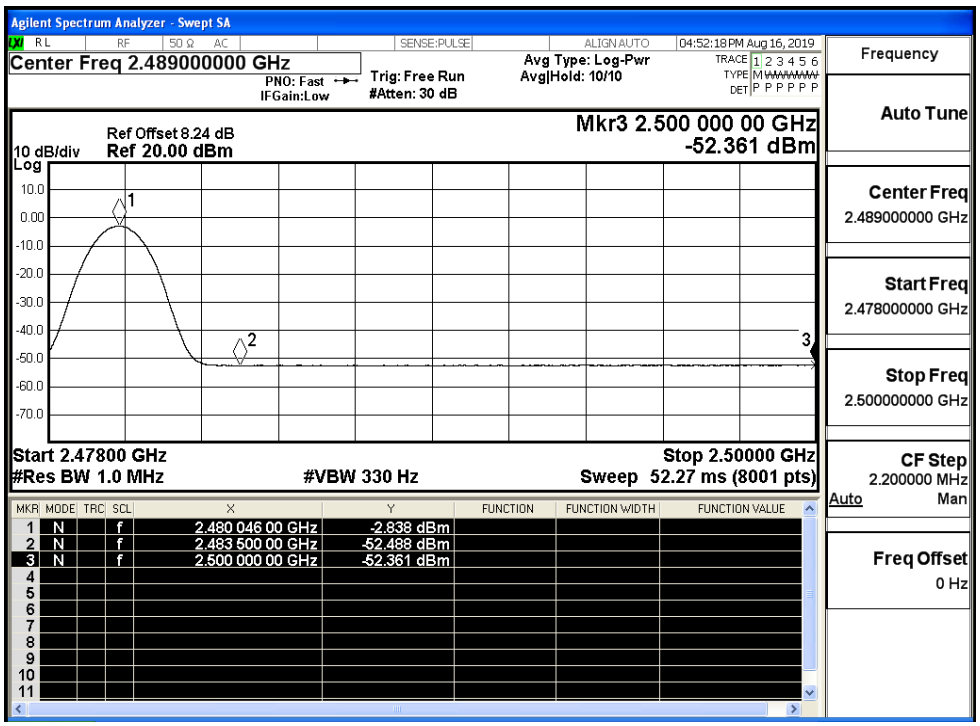
Restrict-band measurements on band-edge_Hopping Off_ GFSK_Average (Low Channel)



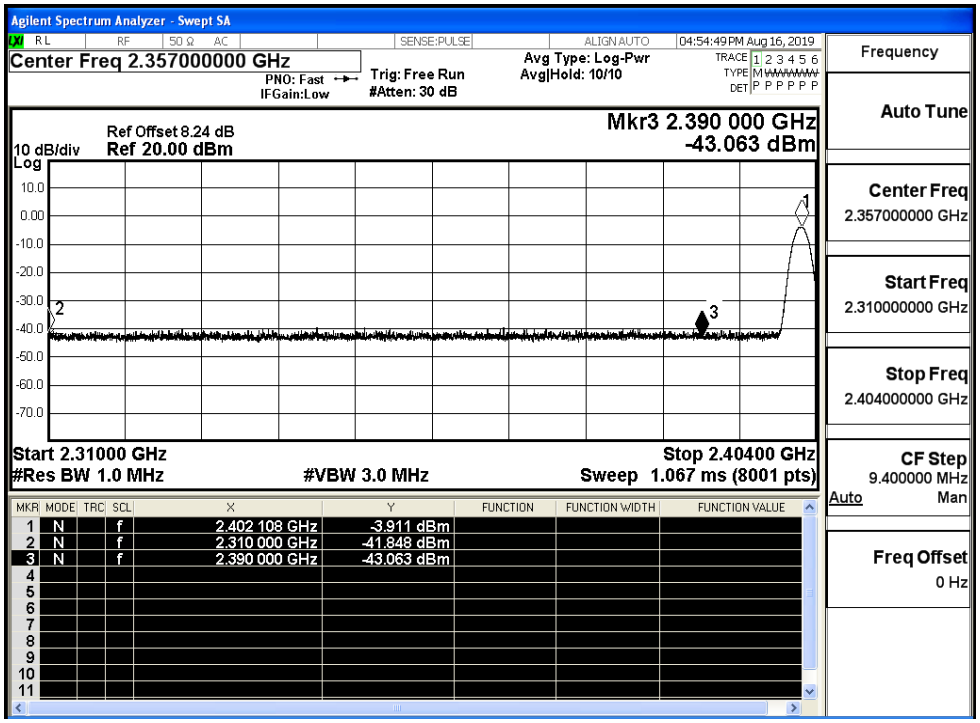
Restrict-band measurements on band-edge_Hopping Off_ GFSK_PEAK (High Channel)



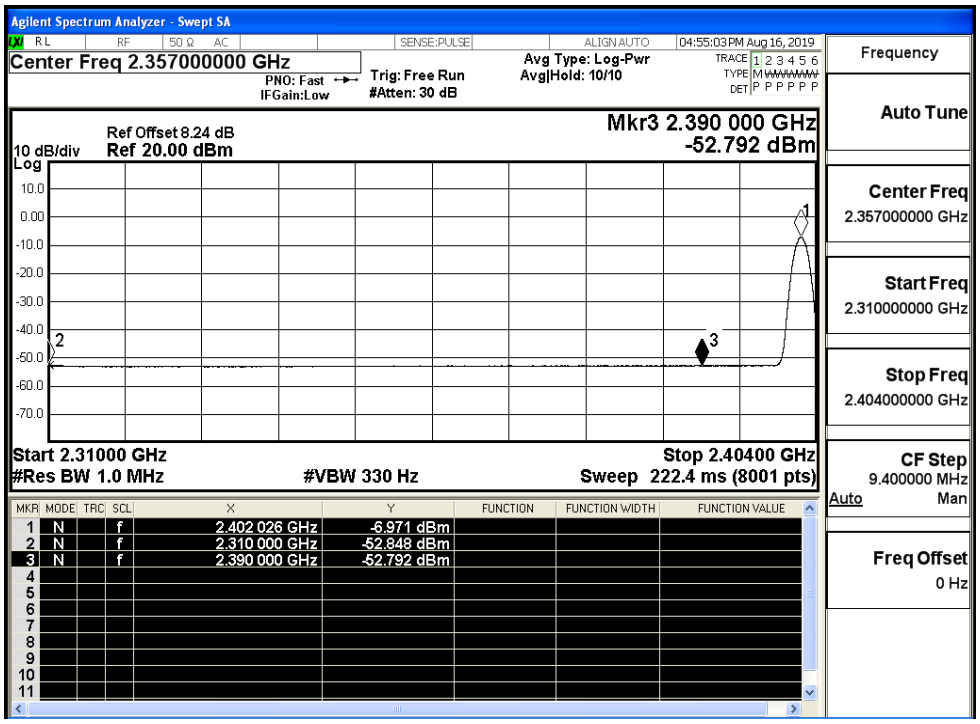
Restrict-band measurements on band-edge_Hopping Off_ GFSK_Average (High Channel)



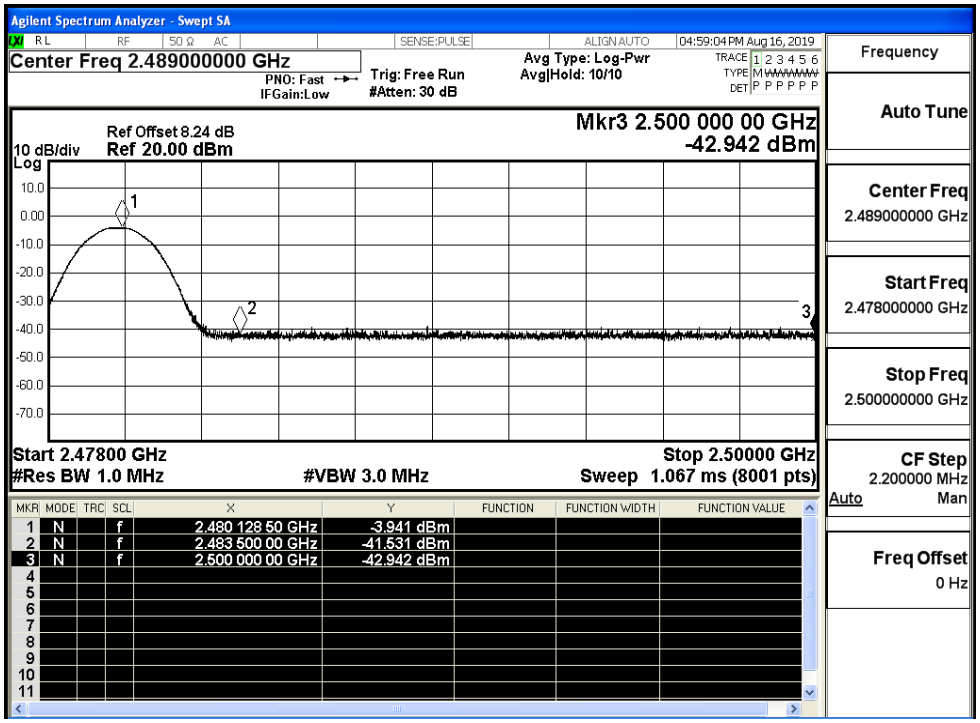
Restrict-band measurements on band-edge_Hopping Off_π/4-DQPSK_PEAK (Low Channel)



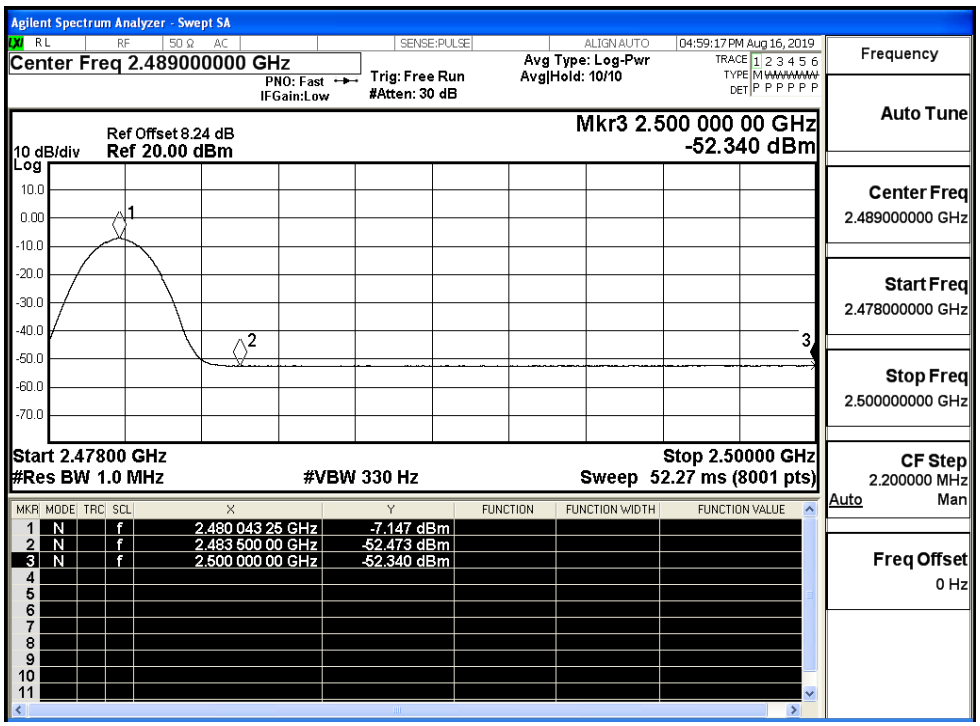
Restrict-band measurements on band-edge_Hopping Off_π/4-DQPSK_Average (Low Channel)



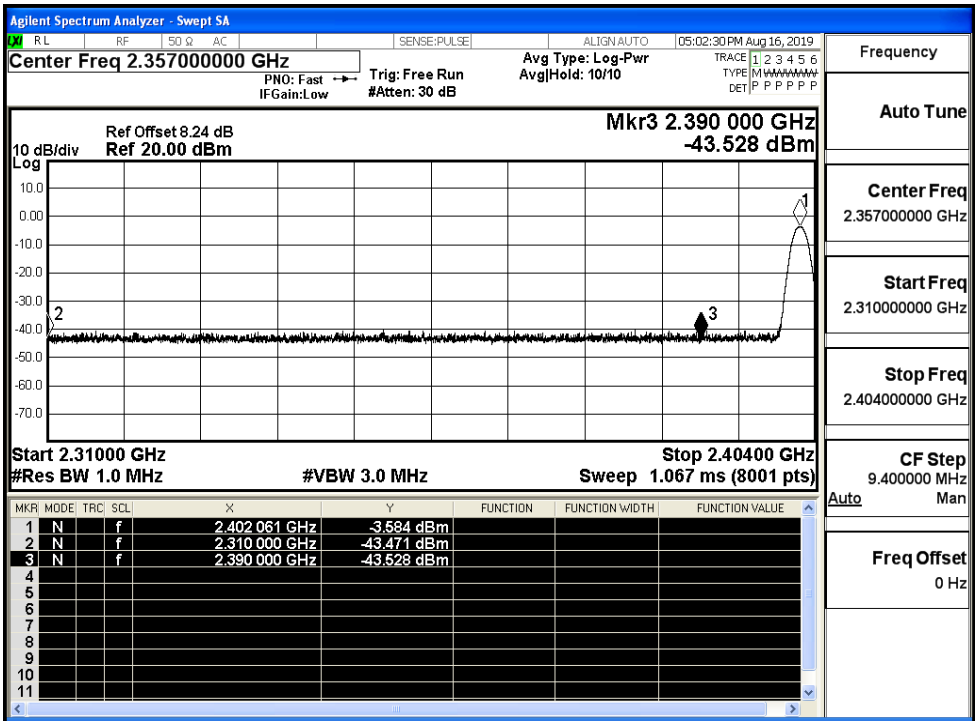
Restrict-band measurements on band-edge_Hopping Off_π/4-DQPSK_PEAK (High Channel)



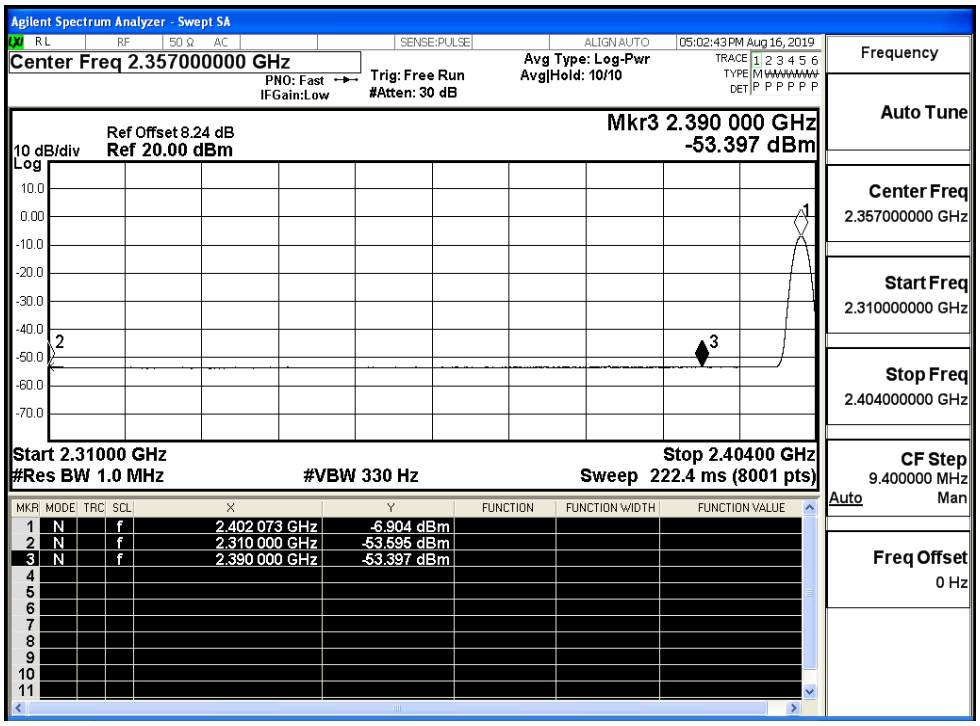
Restrict-band measurements on band-edge_Hopping Off_π/4-DQPSK_Average (High Channel)



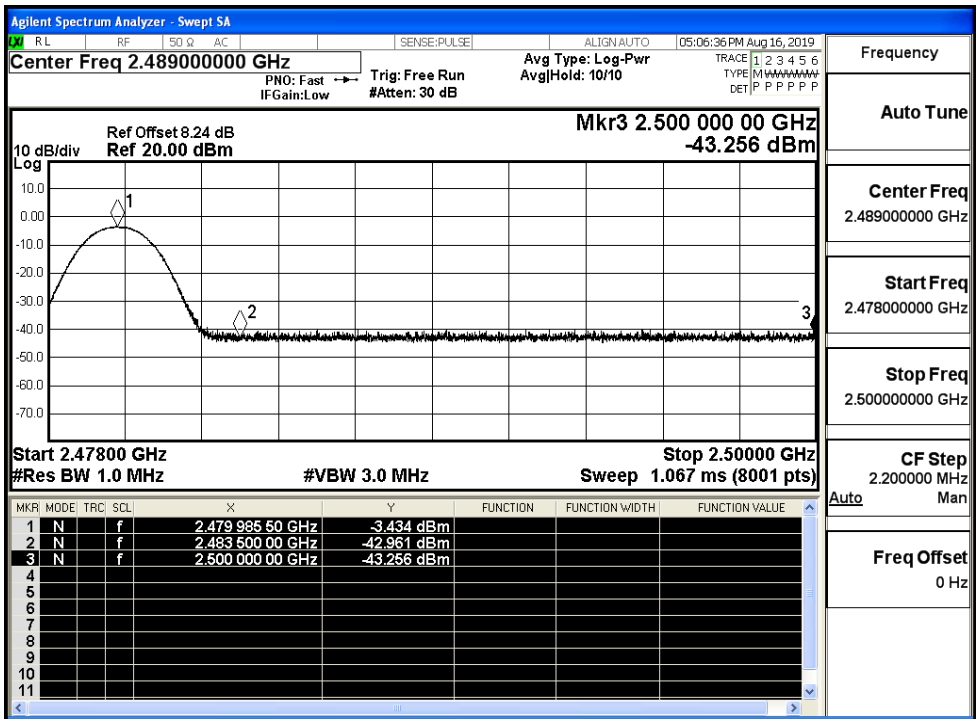
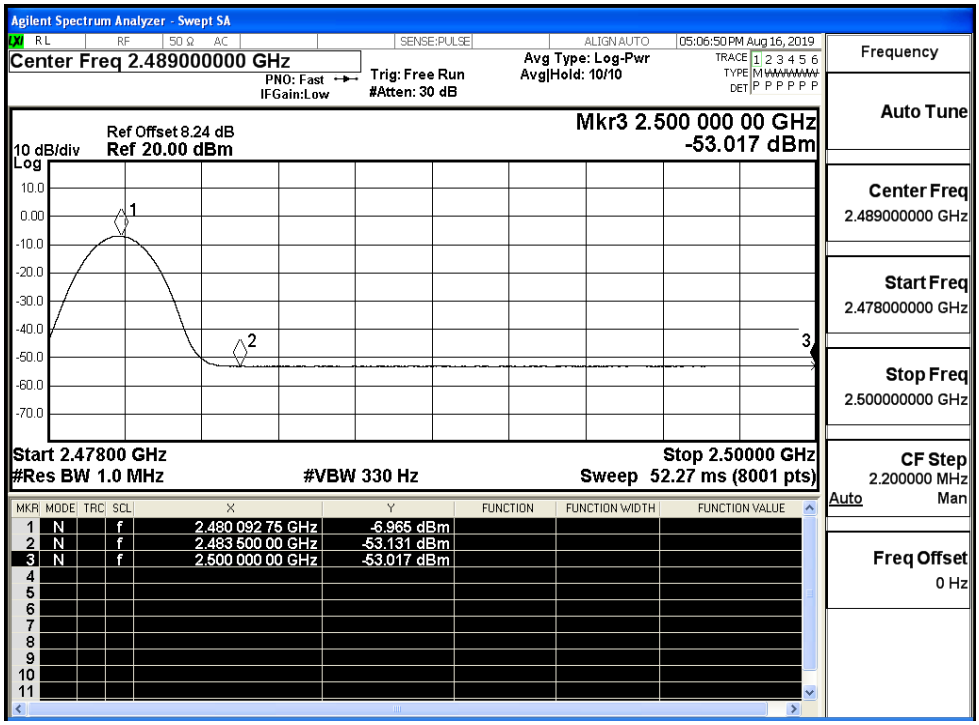
Restrict-band measurements on band-edge_Hopping Off_8DPSK_PEAK (Low Channel)



Restrict-band measurements on band-edge_Hopping Off_8DPSK_Average (Low Channel)



Restrict-band measurements on band-edge_Hopping Off_8DPSK_PEAK (High Channel)



Restrict-band measurements on band-edge_Hopping Off_8DPSK_Average (High Channel)