Appendix A

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

Product Name: BLUETOOTH HEADPHONE

Trade Mark: N/A

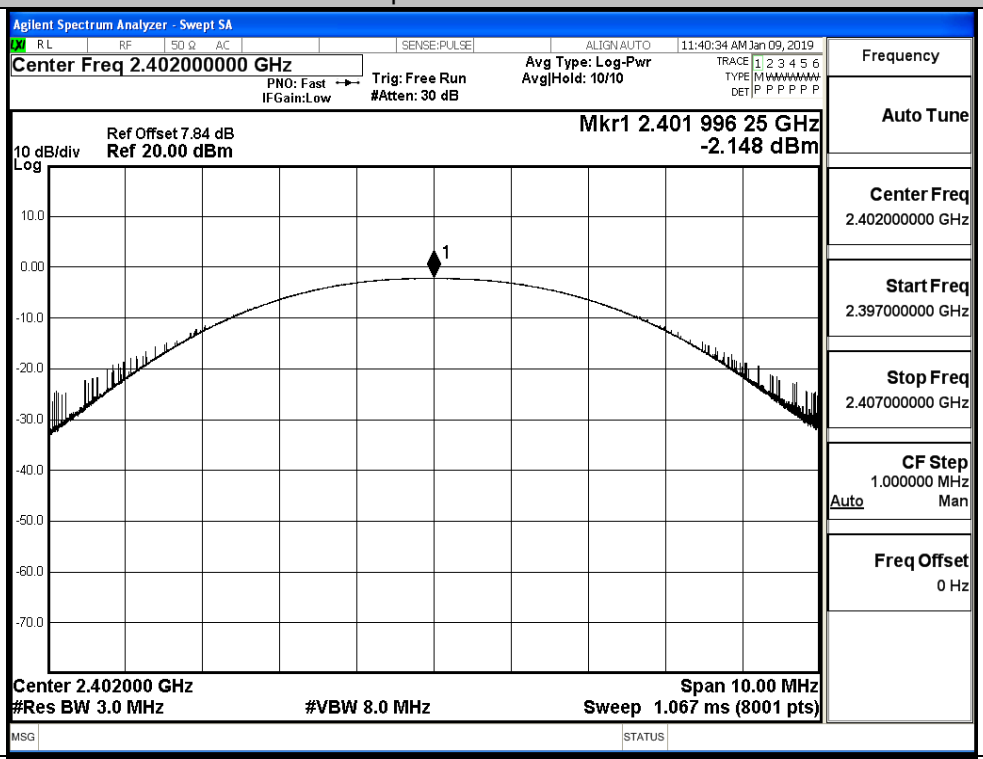
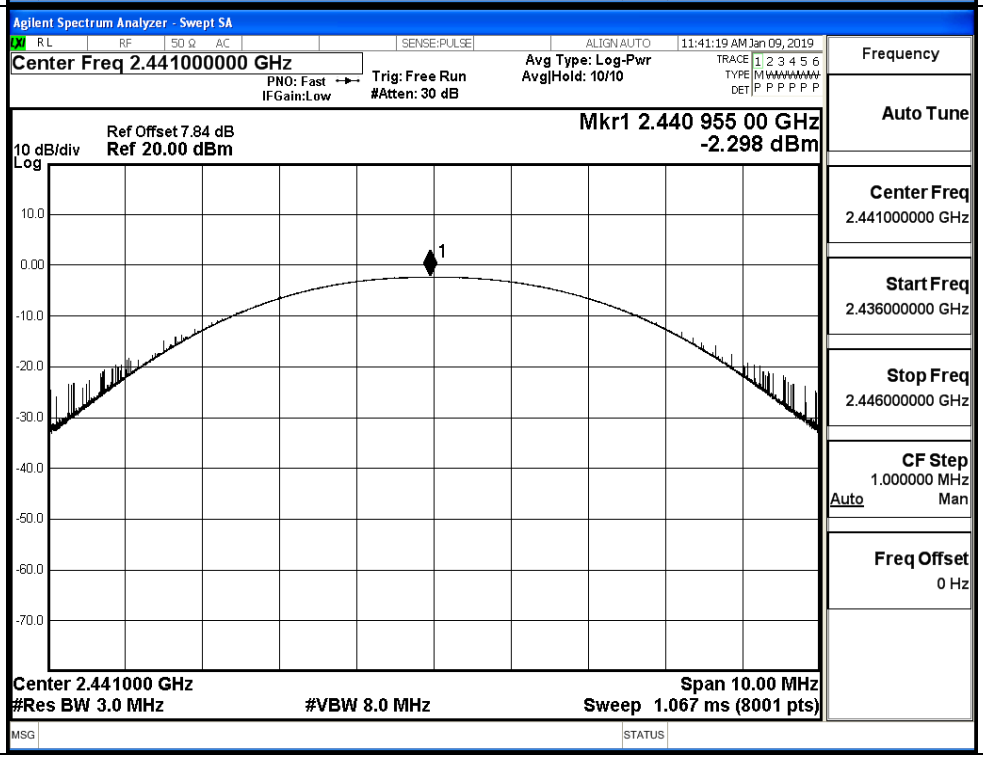
Test Model: NE-968

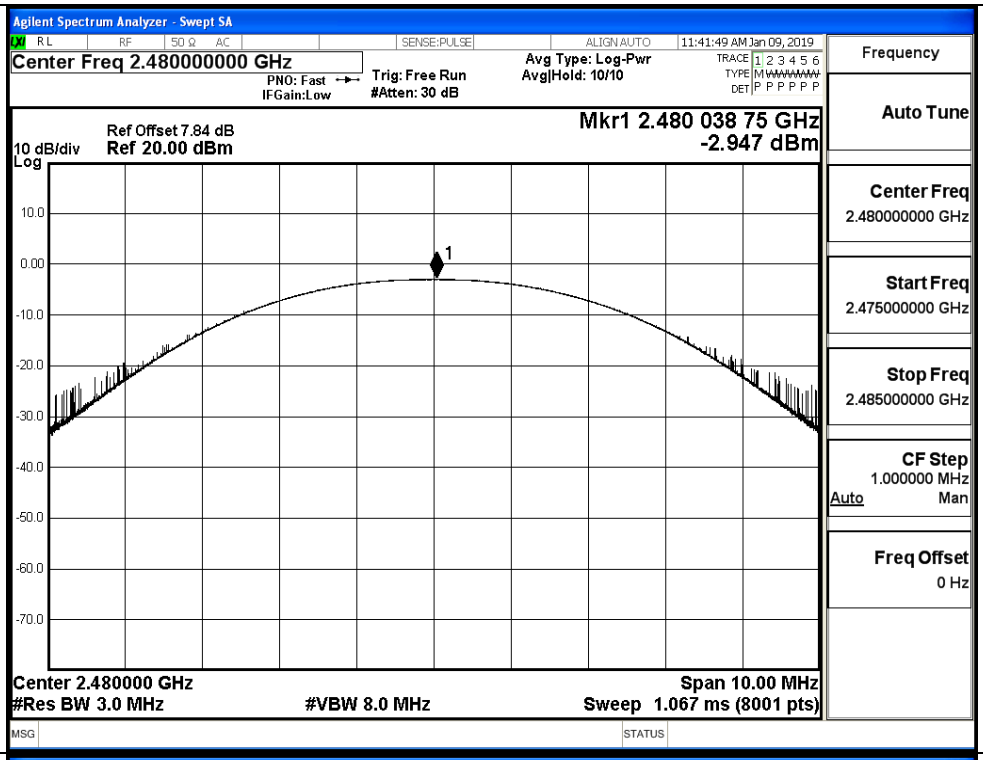
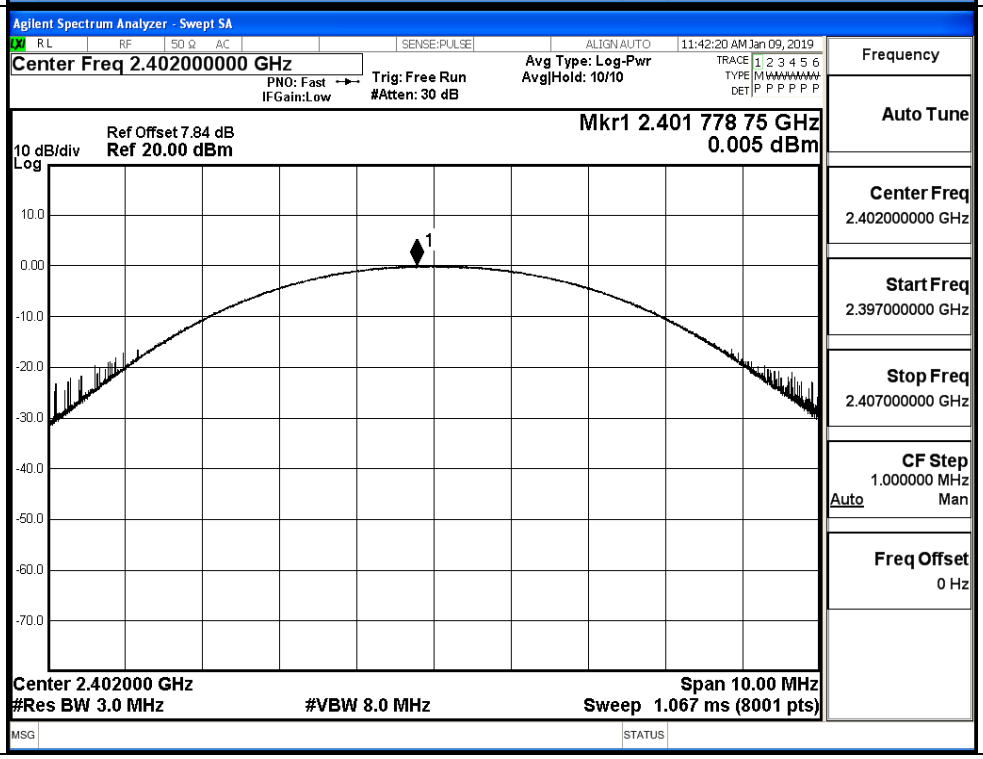
Environmental Conditions

Temperature:	23.3 ° C
Relative Humidity:	52.3%
ATM Pressure:	100.0 kPa
Test Engineer:	JERRY.Zeng
Supervised by:	Jayden.Zhuo

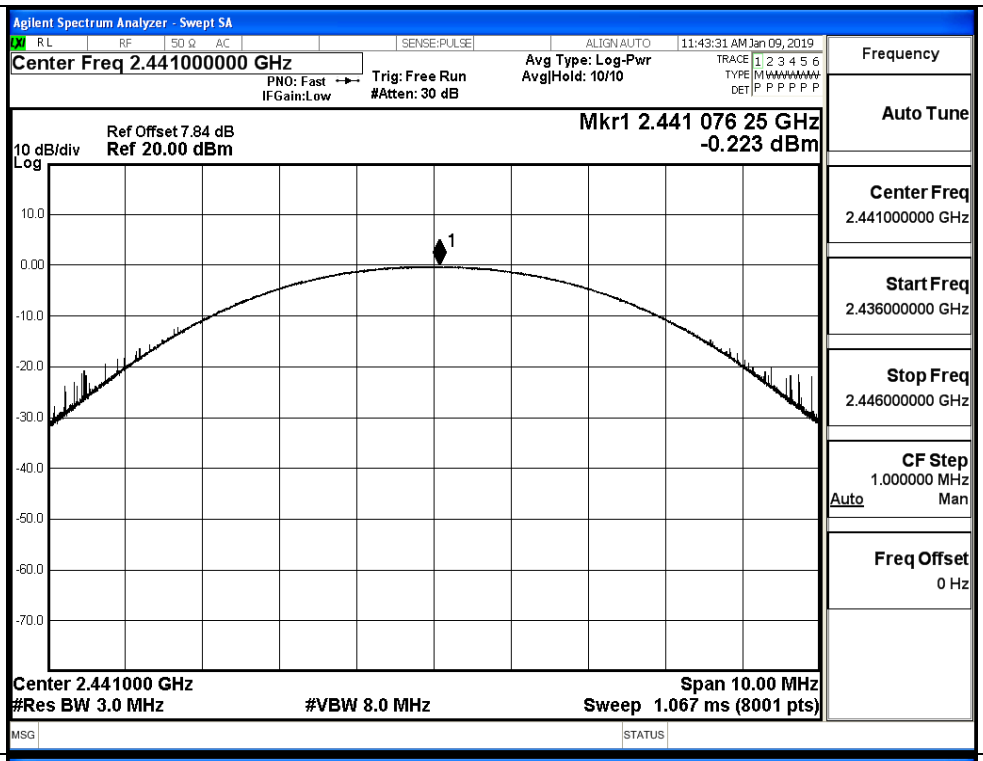
A.1 Maximum Conducted Peak Output Power

Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-2.148	21	PASS
	MCH	-2.298	21	PASS
	HCH	-2.947	21	PASS
π/4DQPSK	LCH	0.005	21	PASS
	MCH	-0.223	21	PASS
	HCH	-0.888	21	PASS
8DPSK	LCH	0.365	21	PASS
	MCH	0.233	21	PASS
	HCH	-0.491	21	PASS

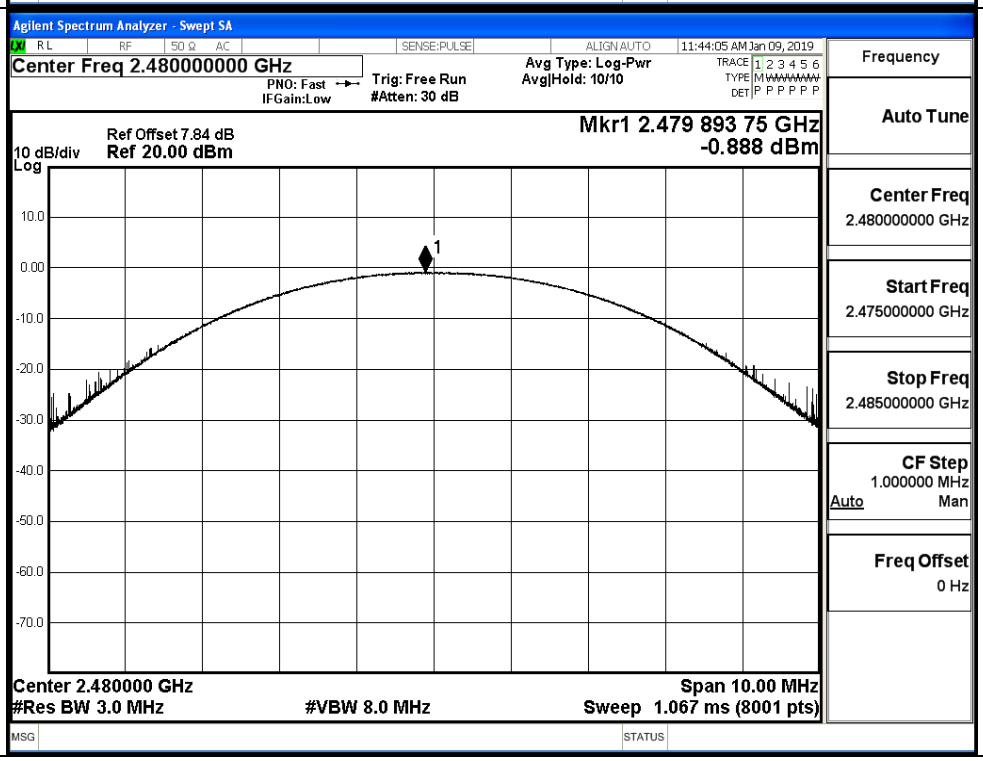
Test Graphs		
GFSK/LCH		
GFSK/MCH		

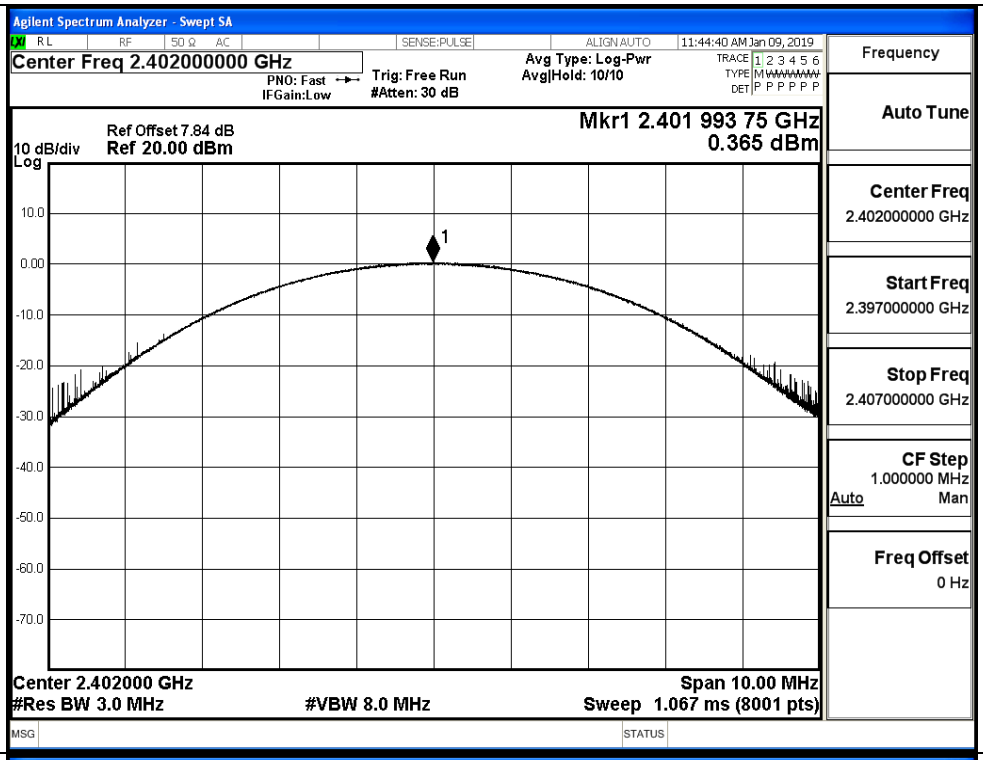
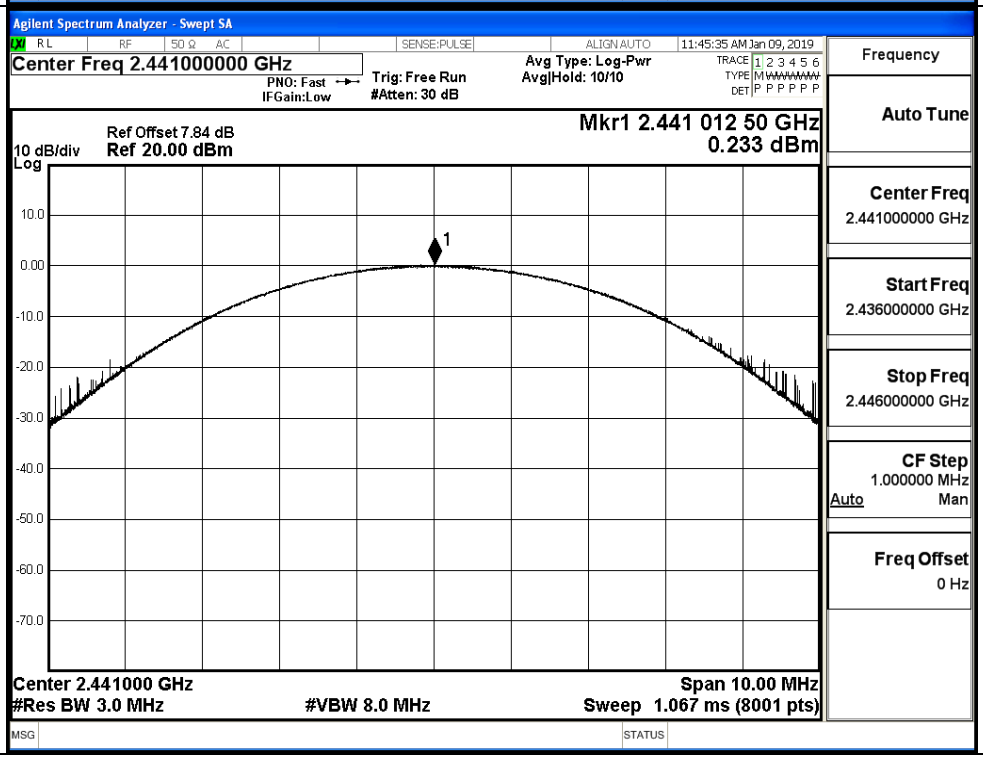
GFSK/HCH		
π/4DQPSK/LCH		

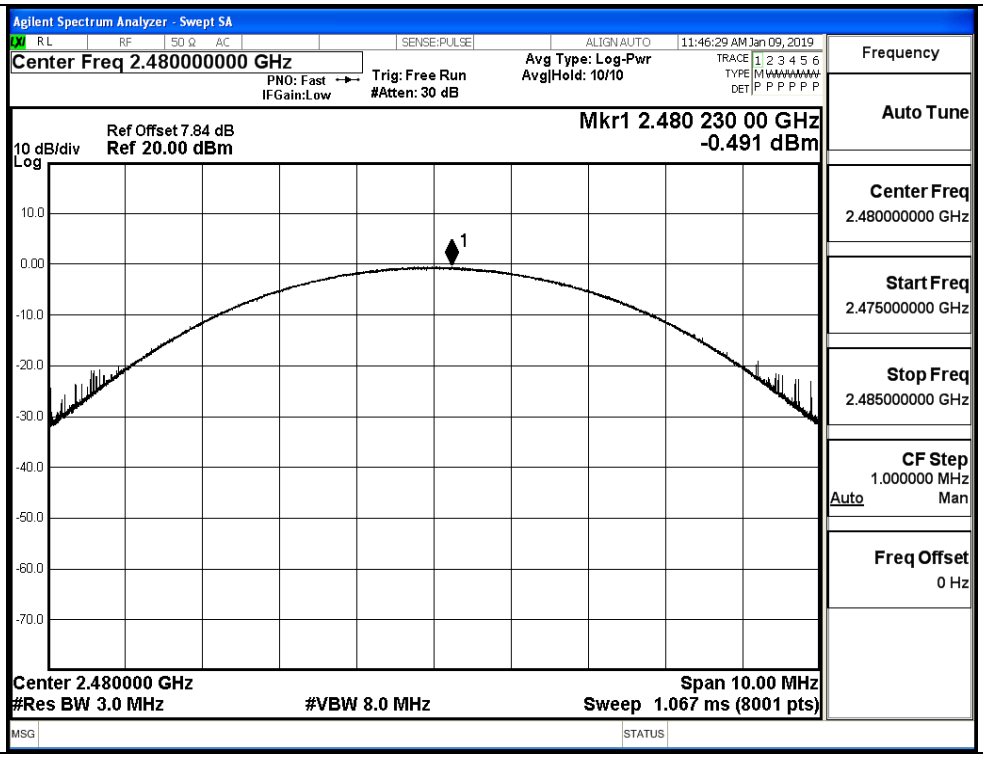
π/4DQPSK/MCH



π/4DQPSK/HCH



8DPSK/LCH		
8DPSK/MCH		

8DPSK/HCH		

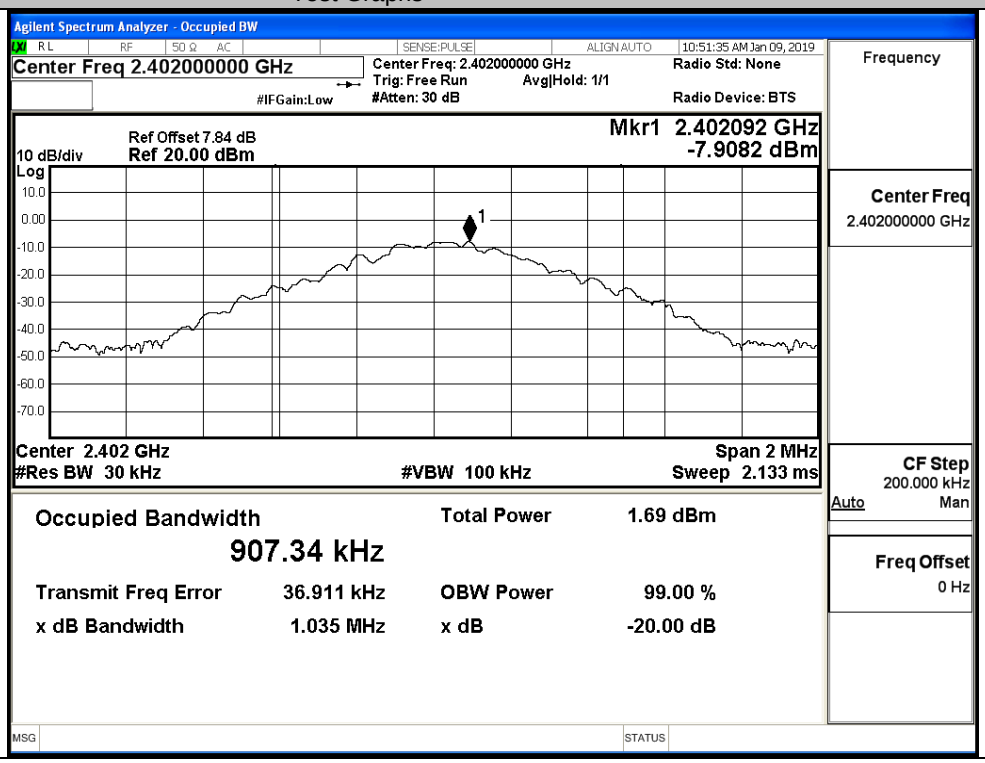
Agilent Spectrum Analyzer - Swept SA
Center Freq 2.480000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 10/10
11:46:29 AM Jan 09, 2019
Ref Offset 7.84 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr1 2.480 230 00 GHz
-0.491 dBm
Center 2.480000 GHz
#Res BW 3.0 MHz
#VBW 8.0 MHz
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 99% and 20dB Bandwidth

Mode	Channel.	99% Bandwidth [MHz]	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.90734	1.035	Not Specified	PASS
	MCH	0.90381	1.026	Not Specified	PASS
	HCH	0.90724	1.019	Not Specified	PASS
π/4DQPSK	LCH	1.1943	1.365	Not Specified	PASS
	MCH	1.1952	1.365	Not Specified	PASS
	HCH	1.1949	1.368	Not Specified	PASS
8DPSK	LCH	1.2031	1.349	Not Specified	PASS
	MCH	1.2046	1.349	Not Specified	PASS
	HCH	1.2040	1.352	Not Specified	PASS

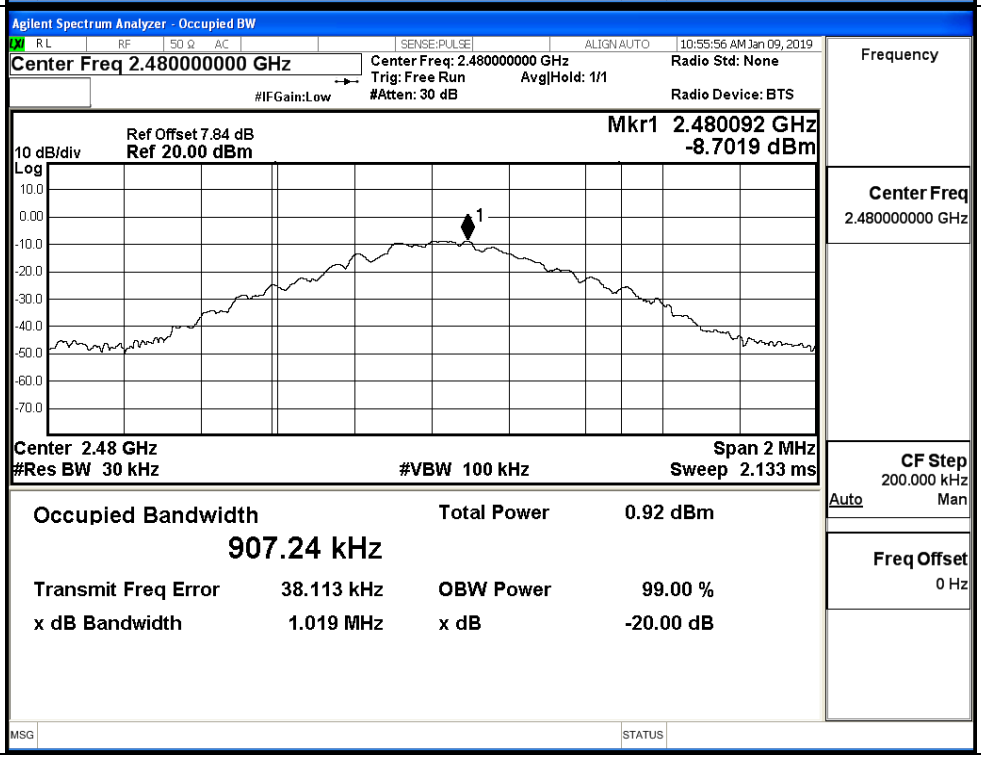
Test Graphs

GFSK/LCH

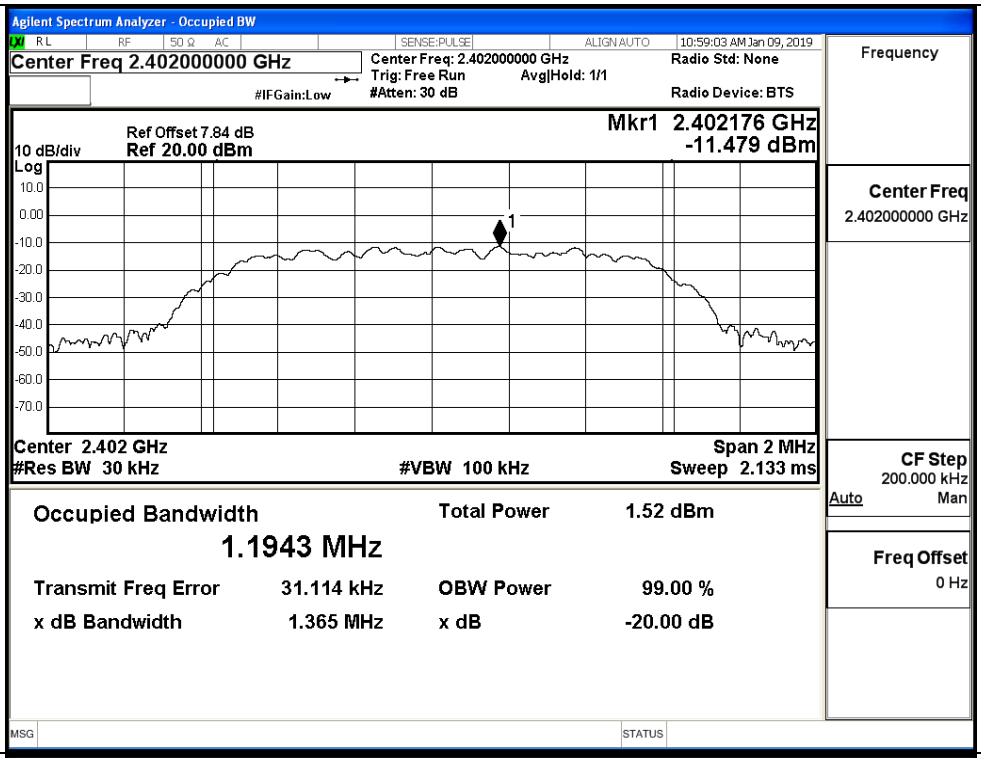


GFSK/MCH

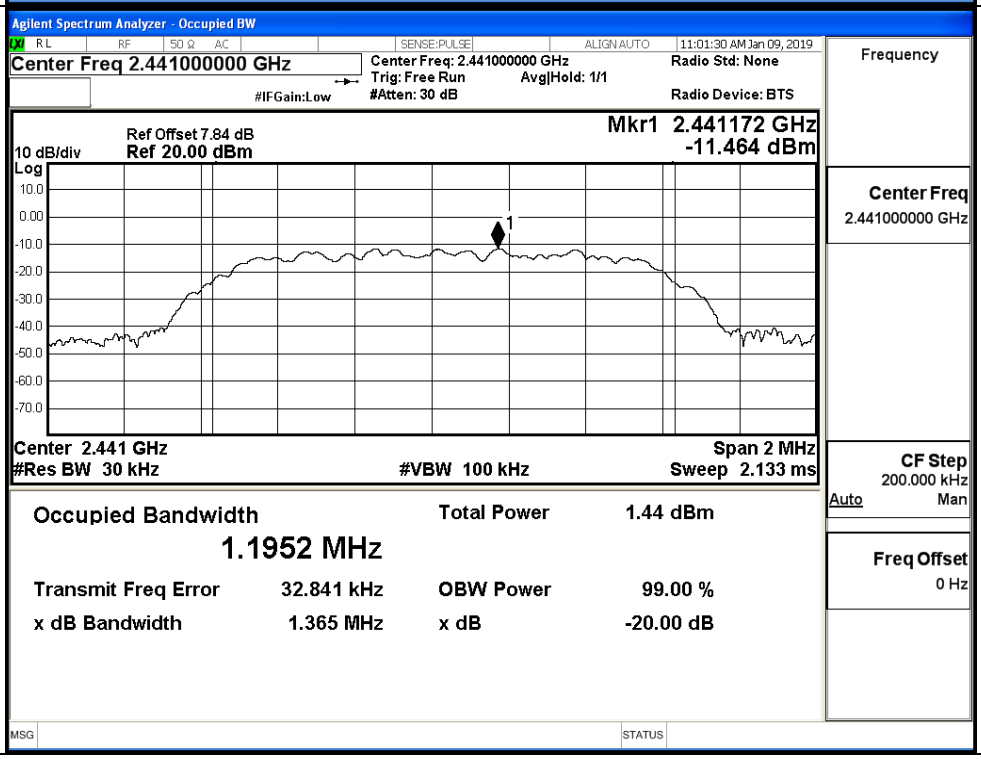
GFSK/HCH



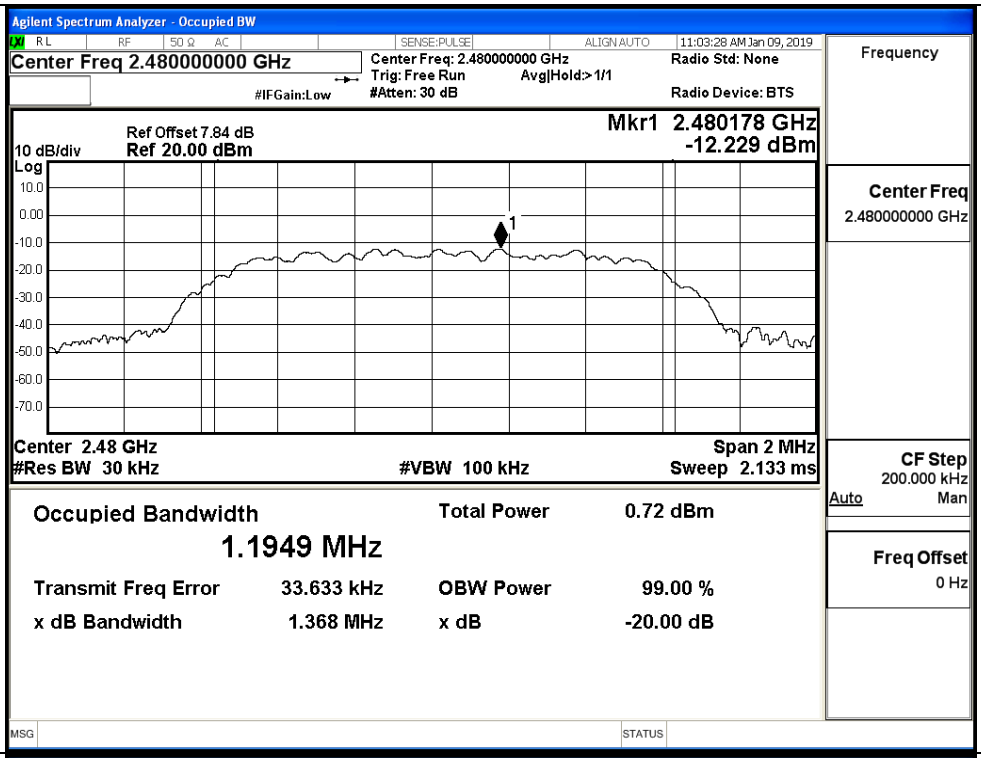
π/4DQPSK/LCH



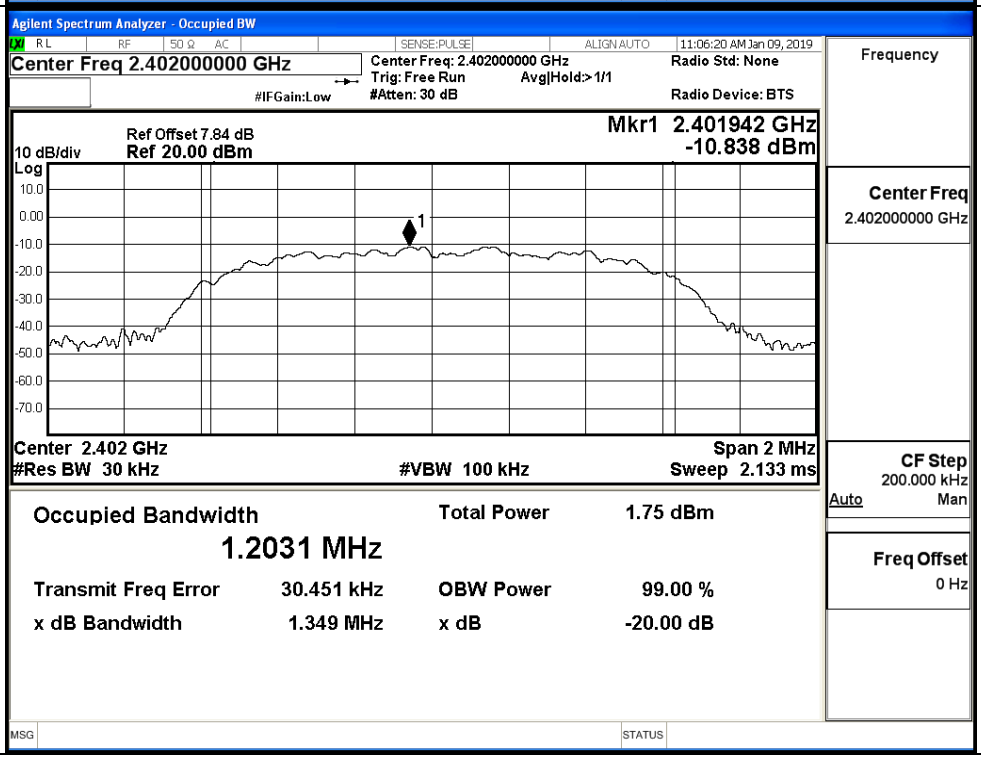
π/4DQPSK/MCH



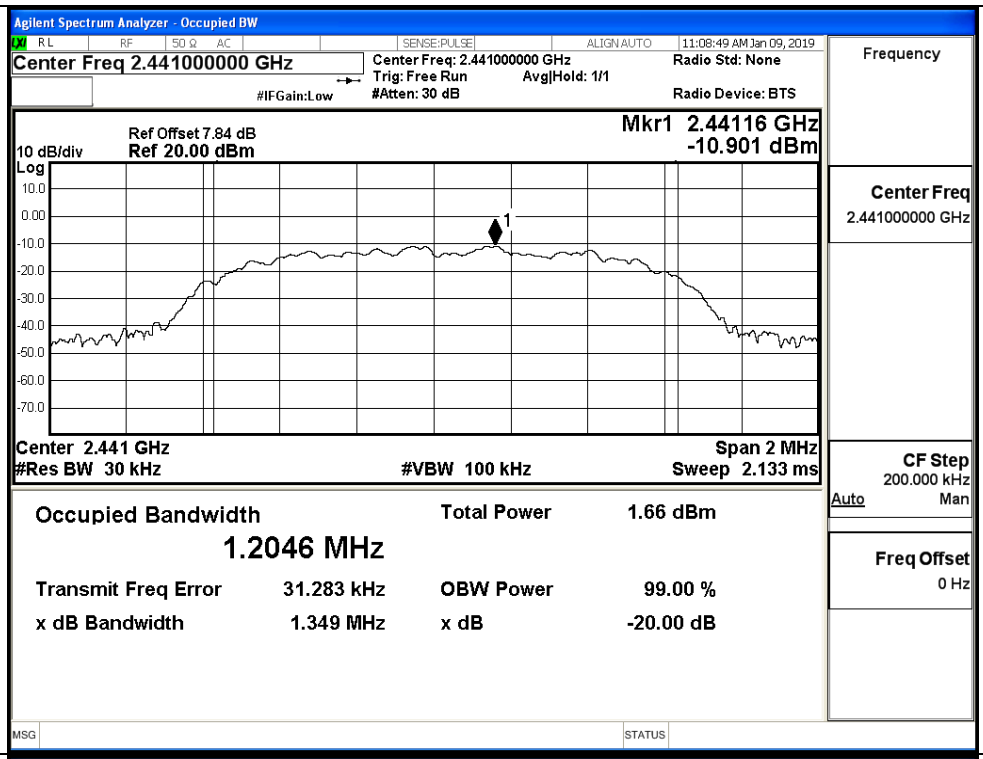
π/4DQPSK/HCH



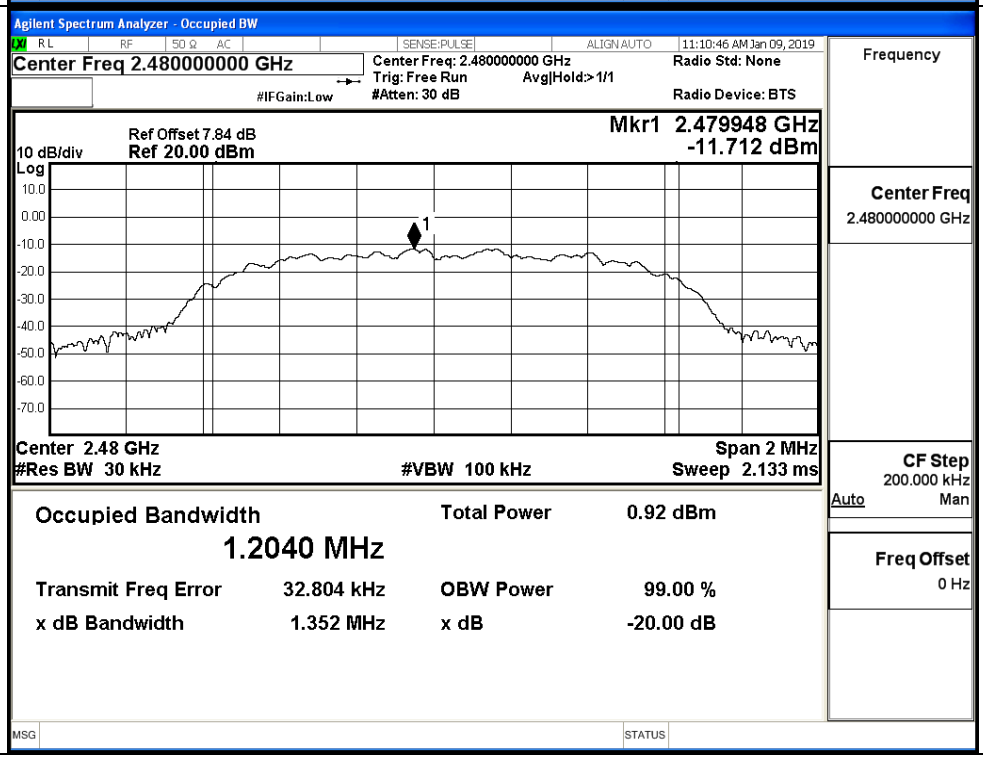
8DPSK/LCH



8DPSK/MCH

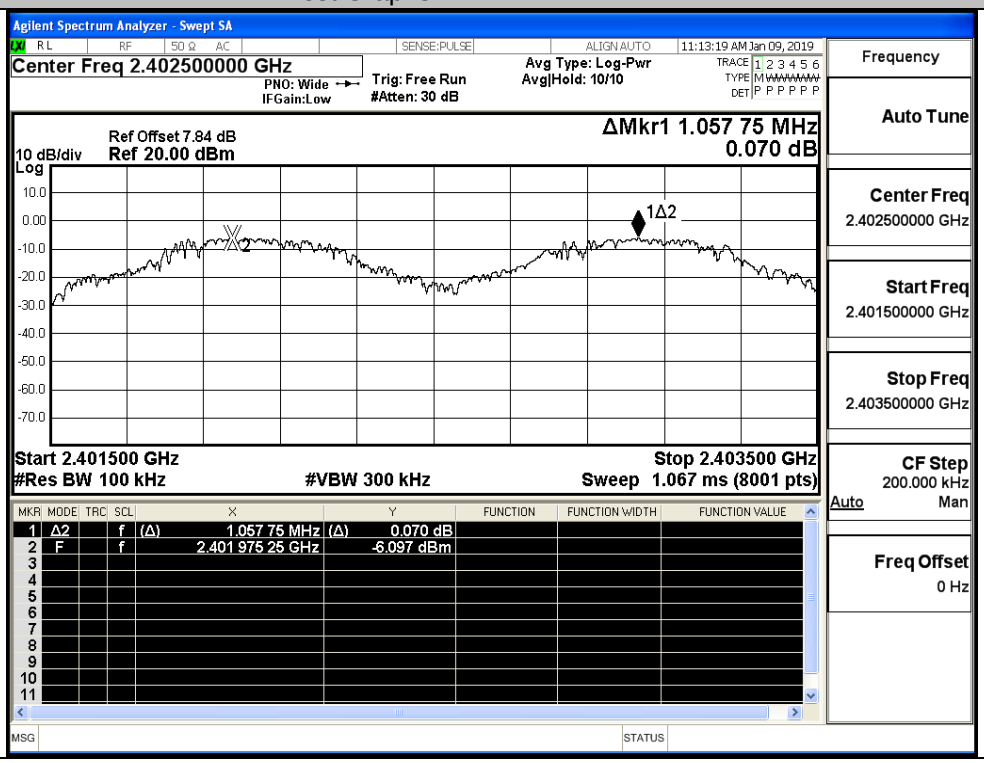


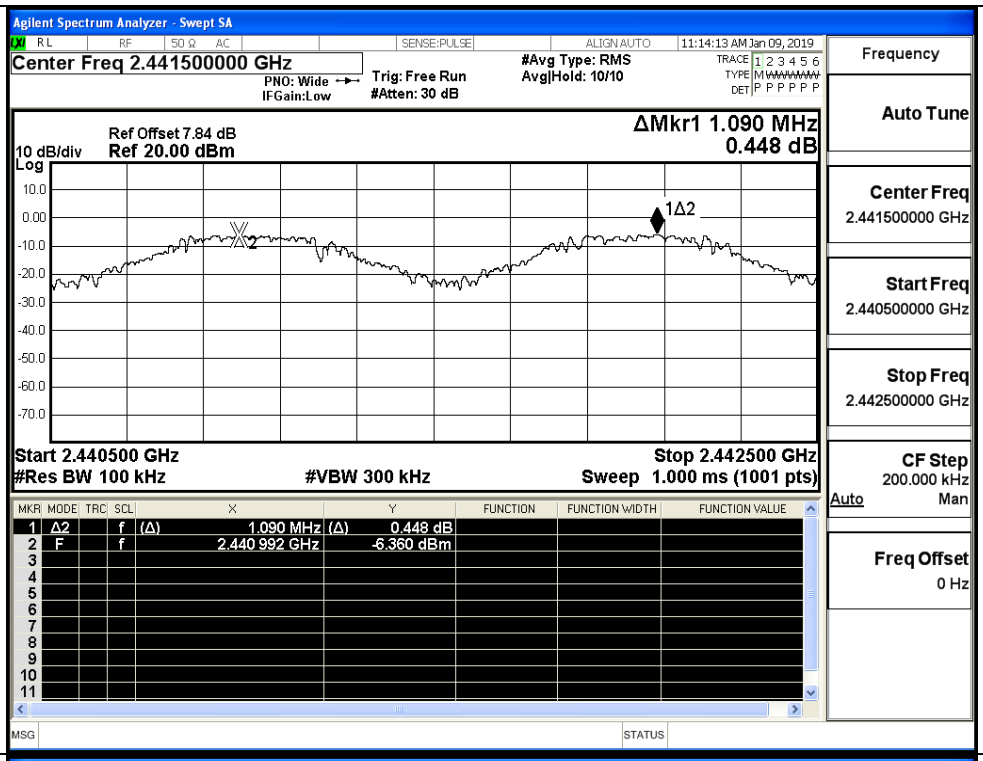
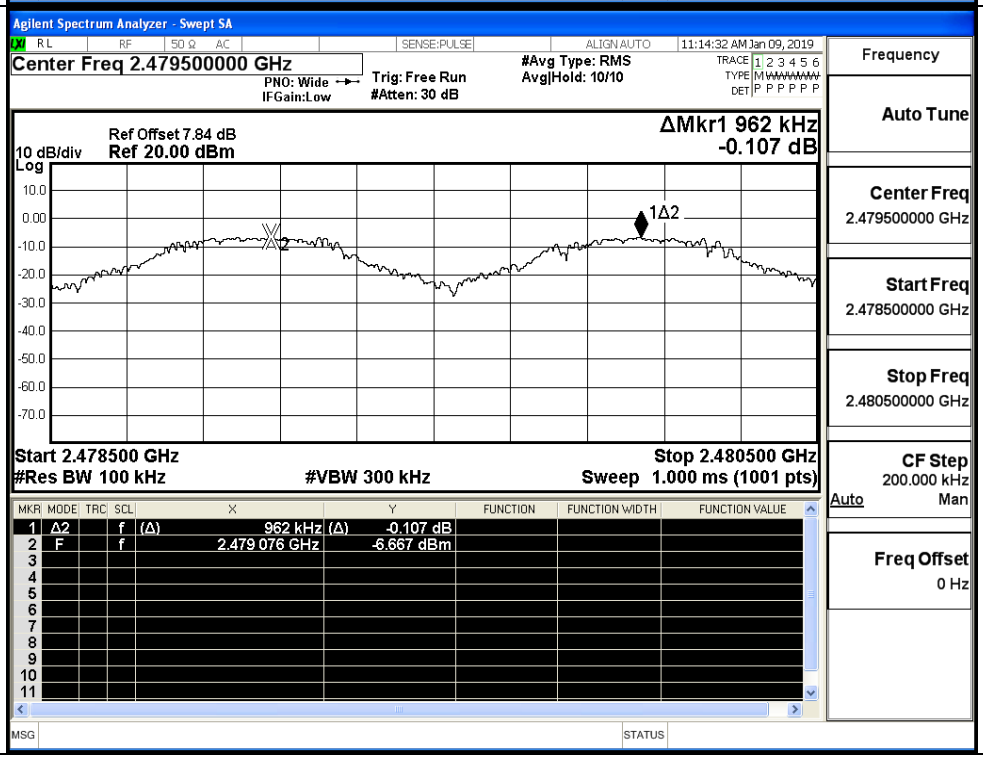
8DPSK/HCH



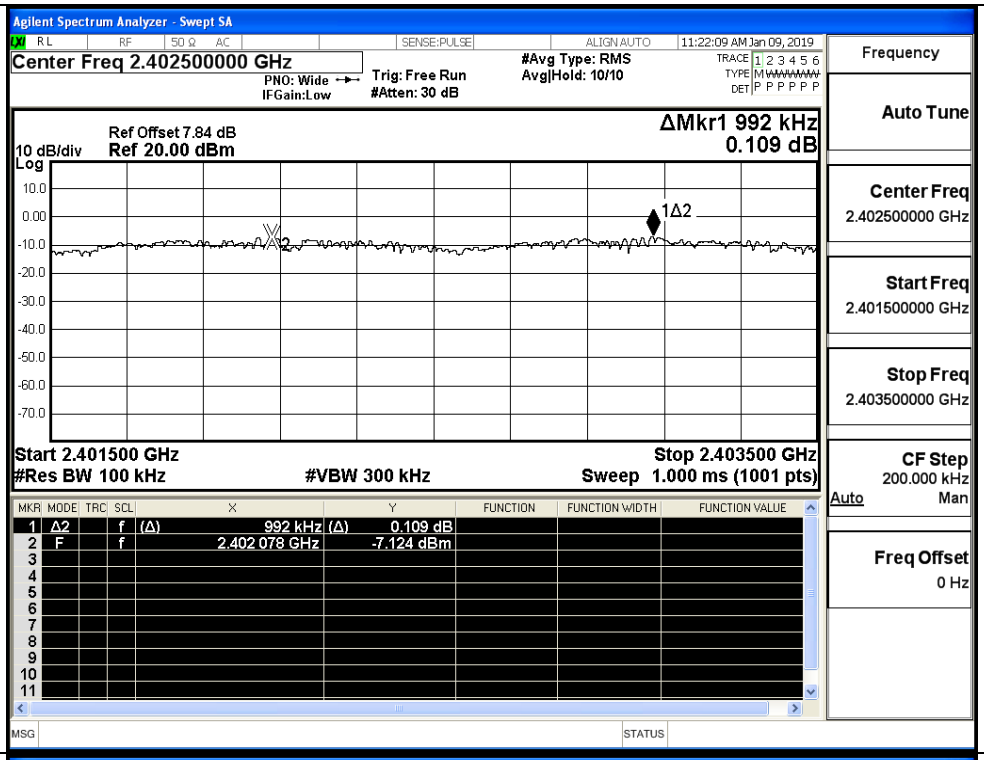
A.3 Carrier Frequency Separation

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.058	0.690	PASS
	MCH	1.090	0.690	PASS
	HCH	0.962	0.690	PASS
π/4DQPSK	LCH	0.992	0.912	PASS
	MCH	1.012	0.912	PASS
	HCH	1.020	0.912	PASS
8DPSK	LCH	1.016	0.901	PASS
	MCH	0.984	0.901	PASS
	HCH	1.066	0.901	PASS

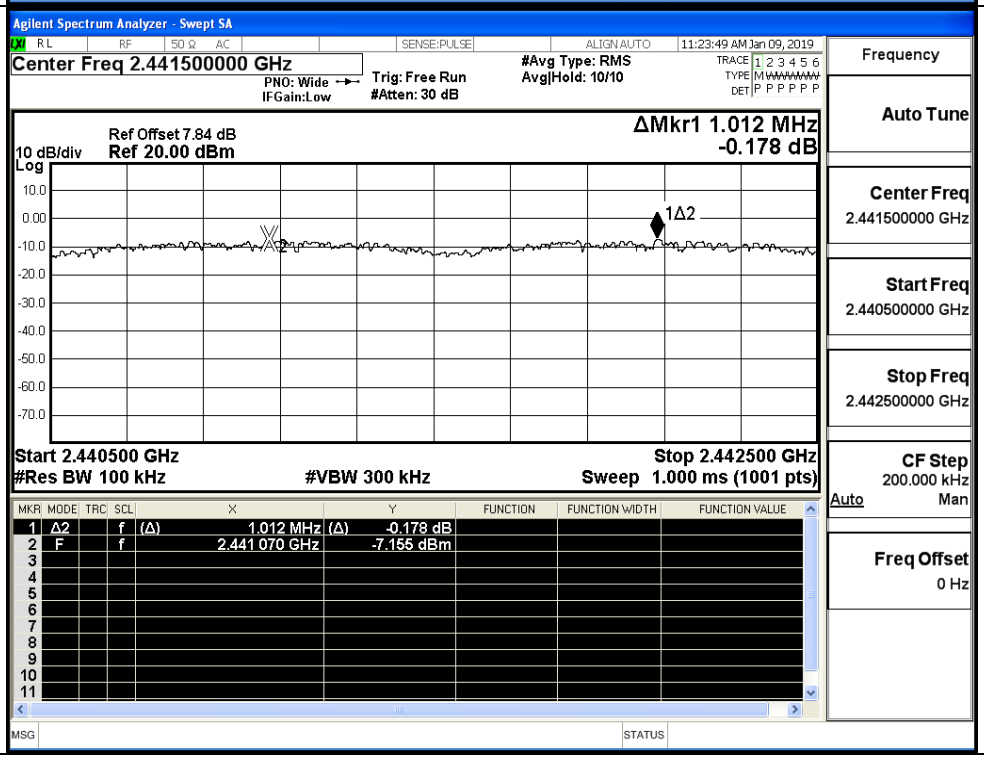
Test Graphs		
GFSK/LCH		

GFSK/MCH		
GFSK/HCH		

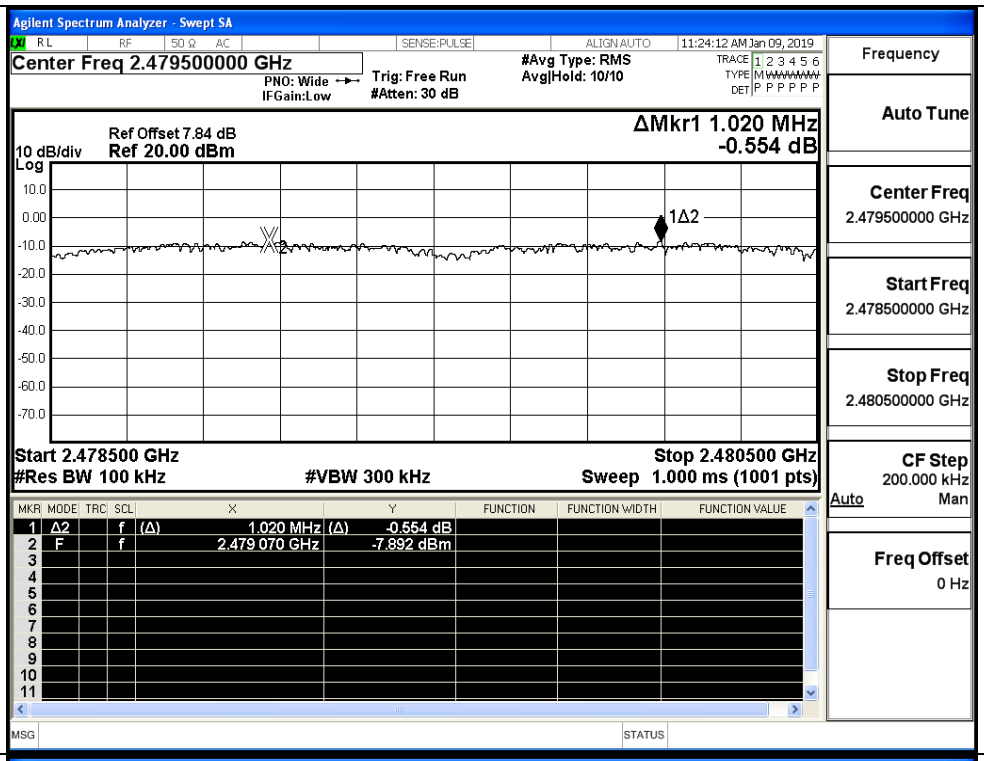
π/4DQPSK/LCH



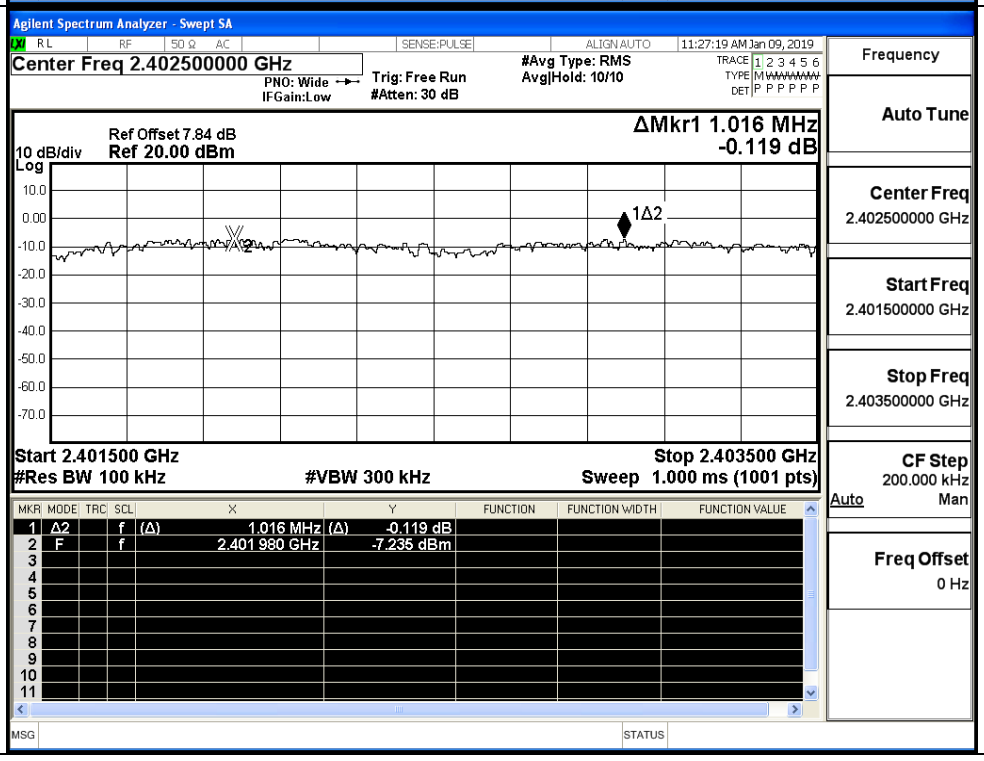
π/4DQPSK/MCH

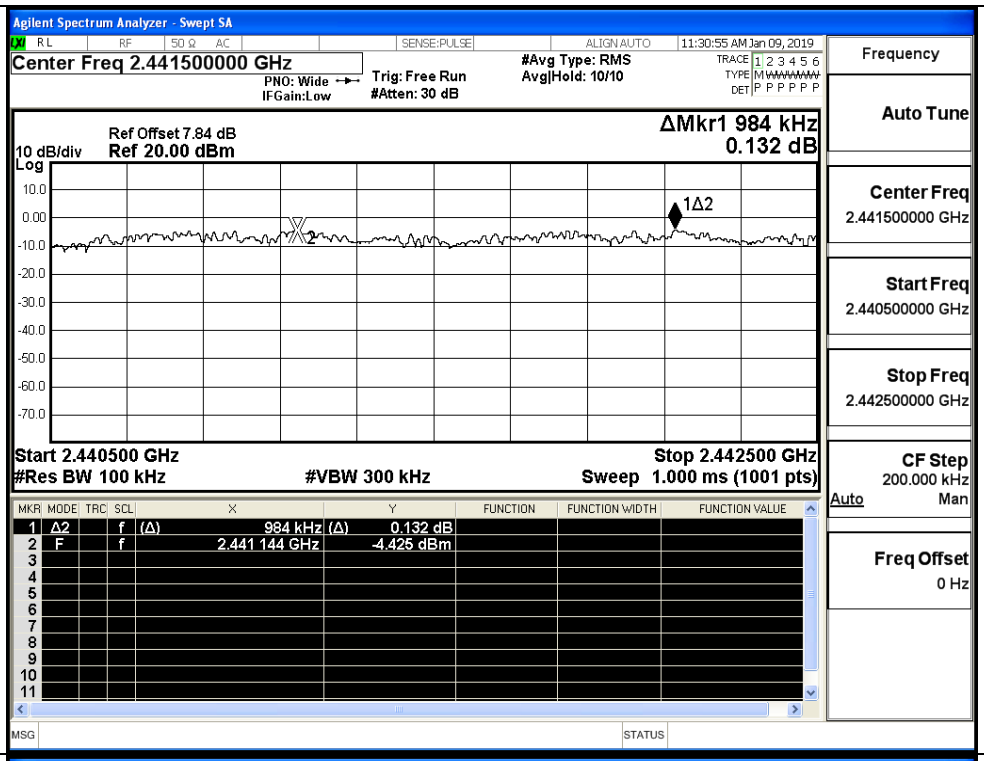
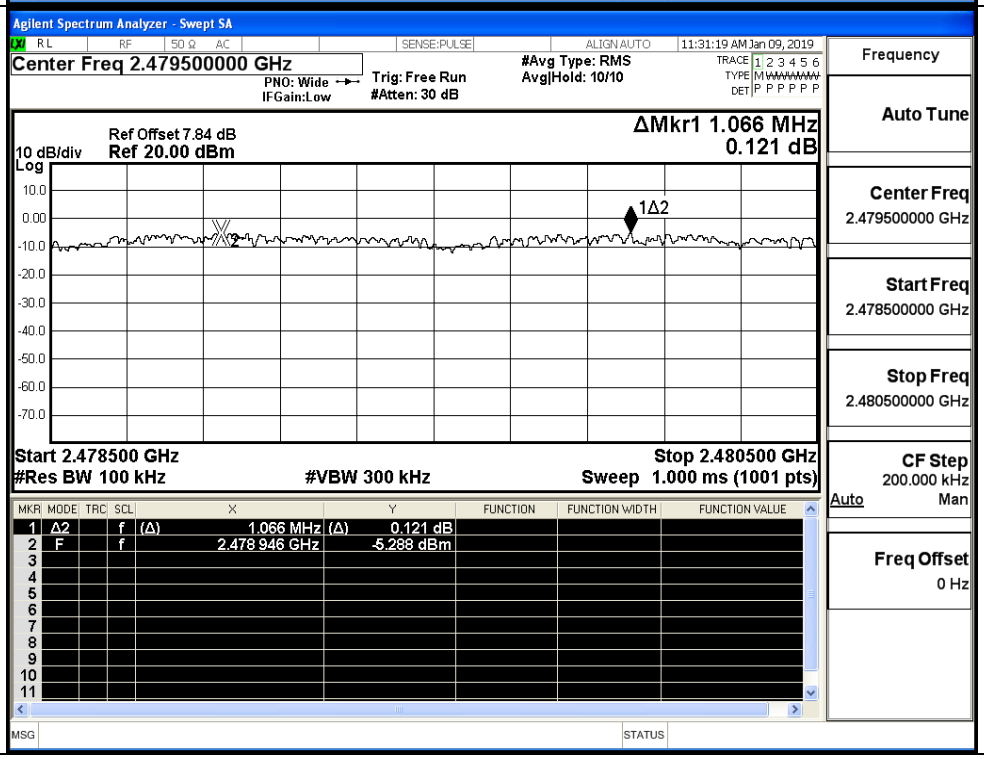


π/4DQPSK/HCH



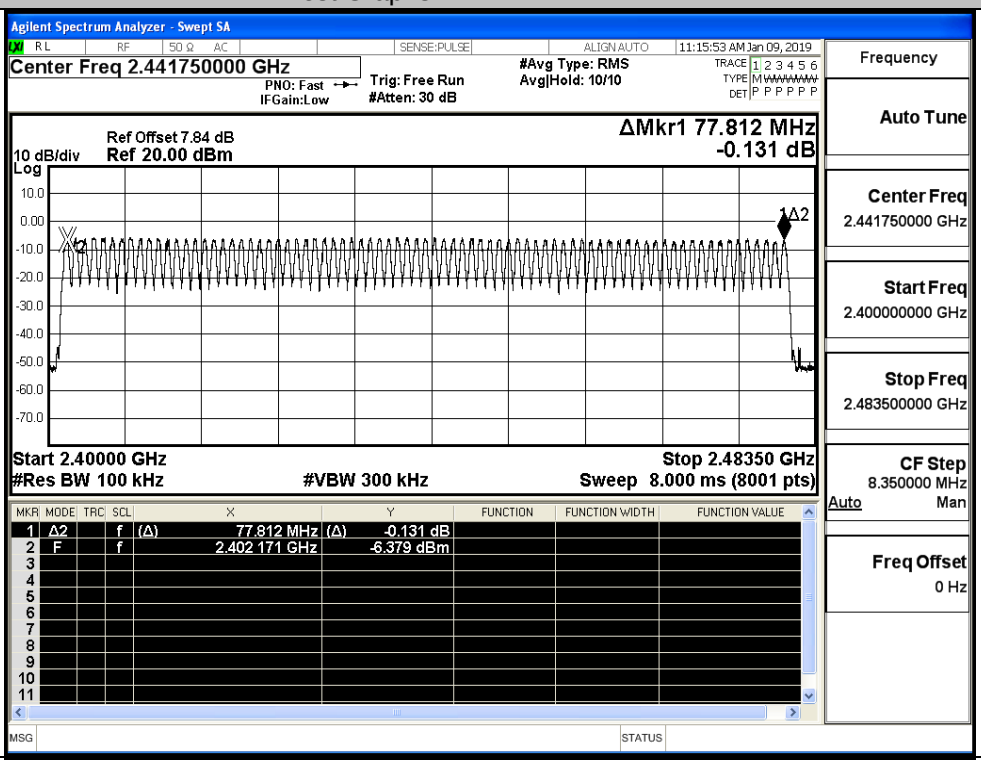
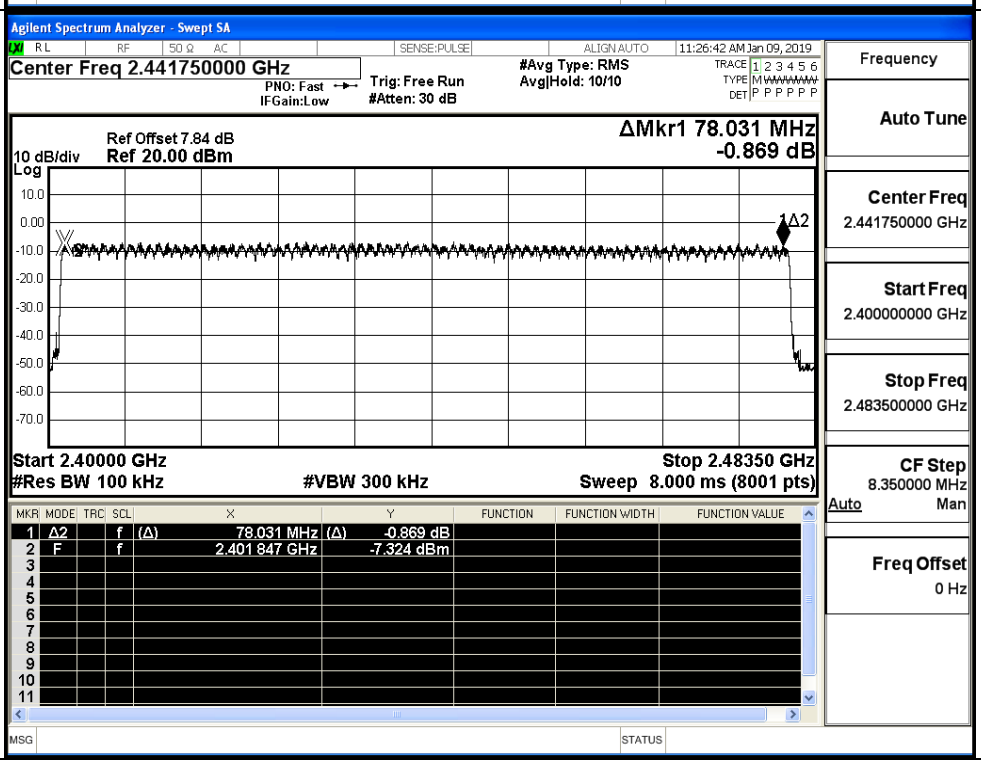
8DPSK/LCH

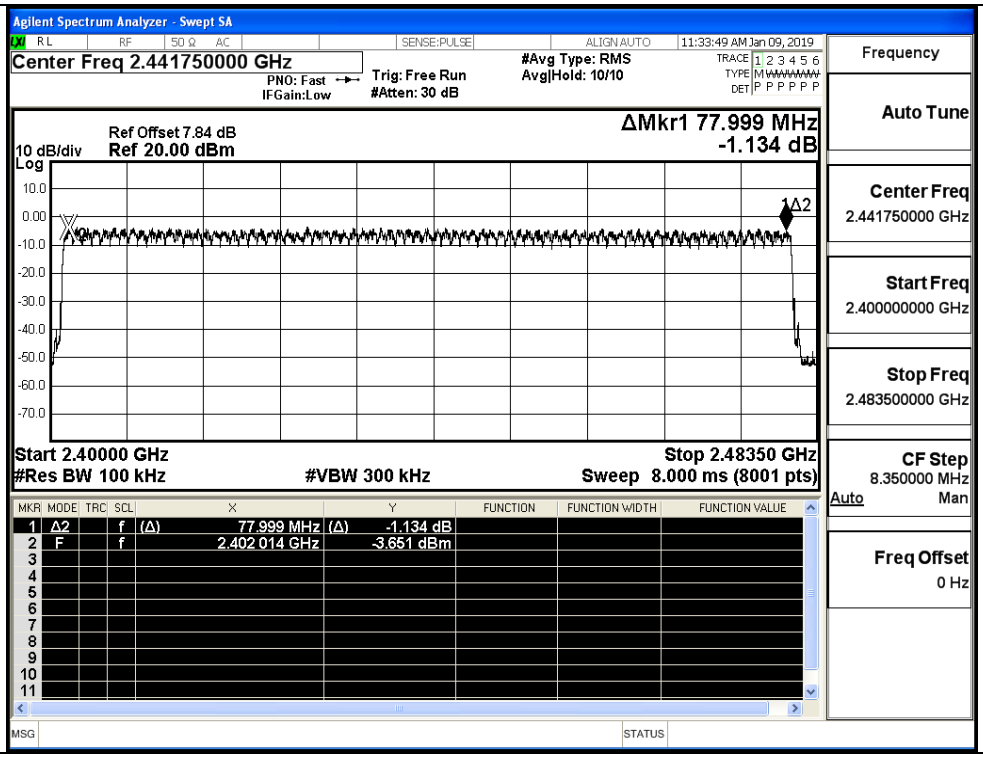


8DPSK/MCH		
8DPSK/HCH		

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	

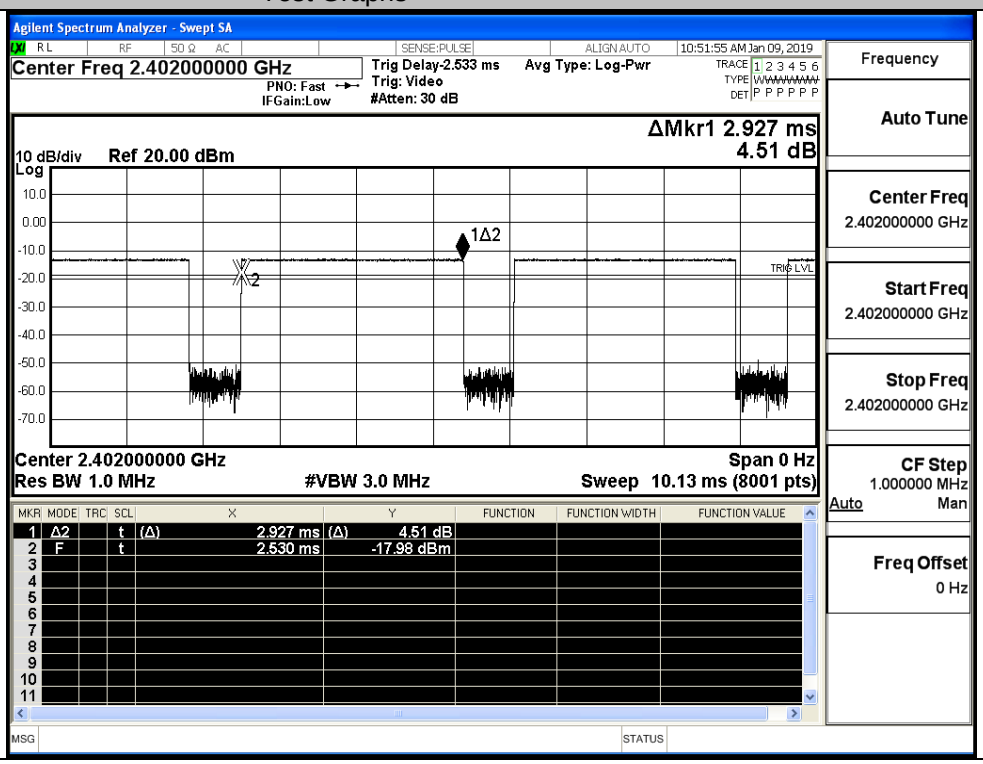
Agilent Spectrum Analyzer - Swept SA
Center Freq 2.441750000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 10/10
11:33:49 AM Jan 09, 2019
Ref Offset 7.84 dB
10 dB/div
Ref 20.00 dBm
ΔMkr1 77.999 MHz
-1.134 dB
Start 2.40000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.48350 GHz
Sweep 8.000 ms (8001 pts)
1 Δ2 f (Δ) 77.999 MHz (Δ) -1.134 dB
2 F f 2.402 014 GHz -3.651 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

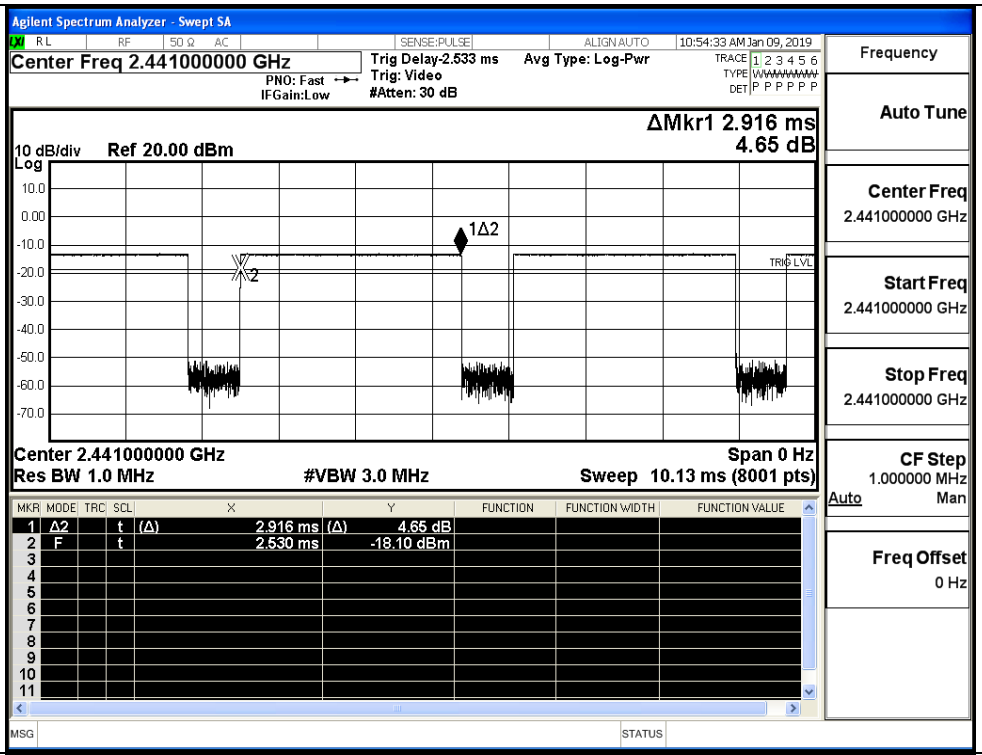
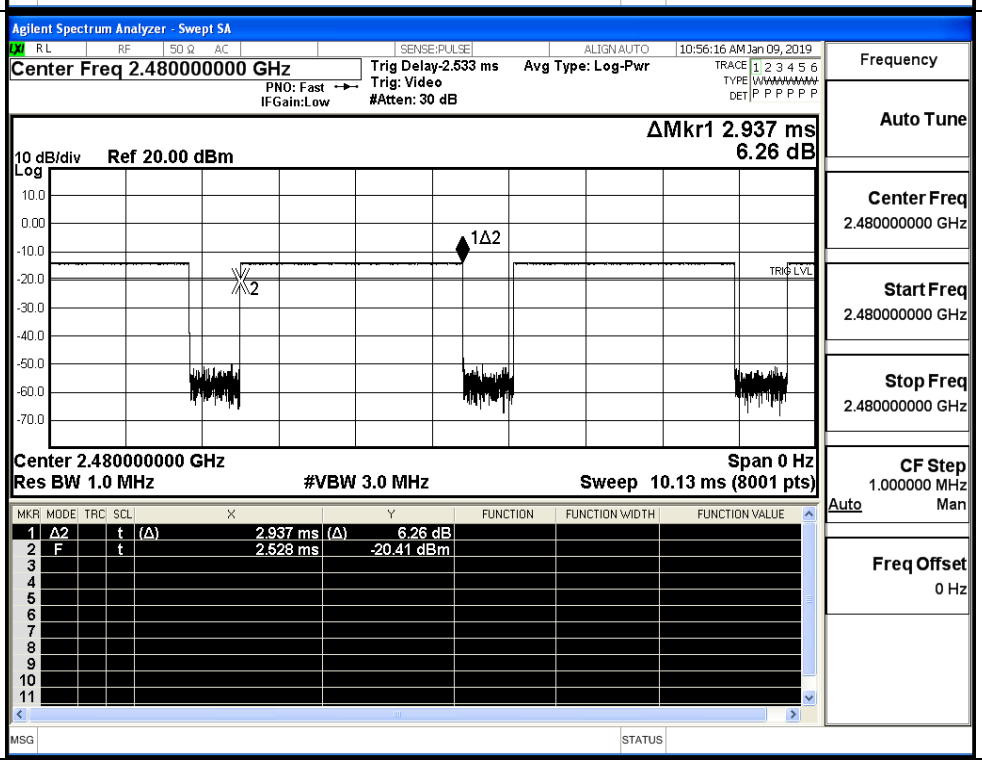
A.5 Dwell Time

Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.93	106.7	0.313	0.4	PASS
	DH5	MCH	2.92	106.7	0.312	0.4	PASS
	DH5	HCH	2.94	106.7	0.314	0.4	PASS
π/4DQPSK	2DH5	LCH	2.94	106.7	0.314	0.4	PASS
	2DH5	MCH	2.93	106.7	0.313	0.4	PASS
	2DH5	HCH	2.93	106.7	0.313	0.4	PASS
8DPSK	3DH5	LCH	2.93	106.7	0.313	0.4	PASS
	3DH5	MCH	2.92	106.7	0.312	0.4	PASS
	3DH5	HCH	2.93	106.7	0.313	0.4	PASS

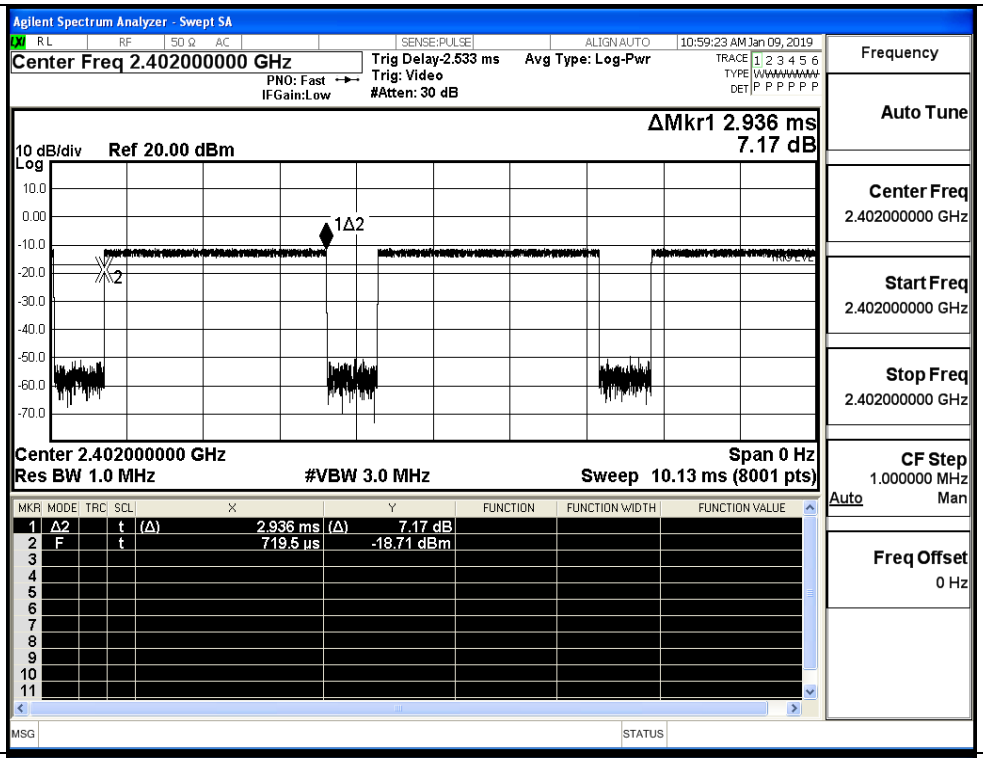
Test Graphs

GFSK_DH5/LCH

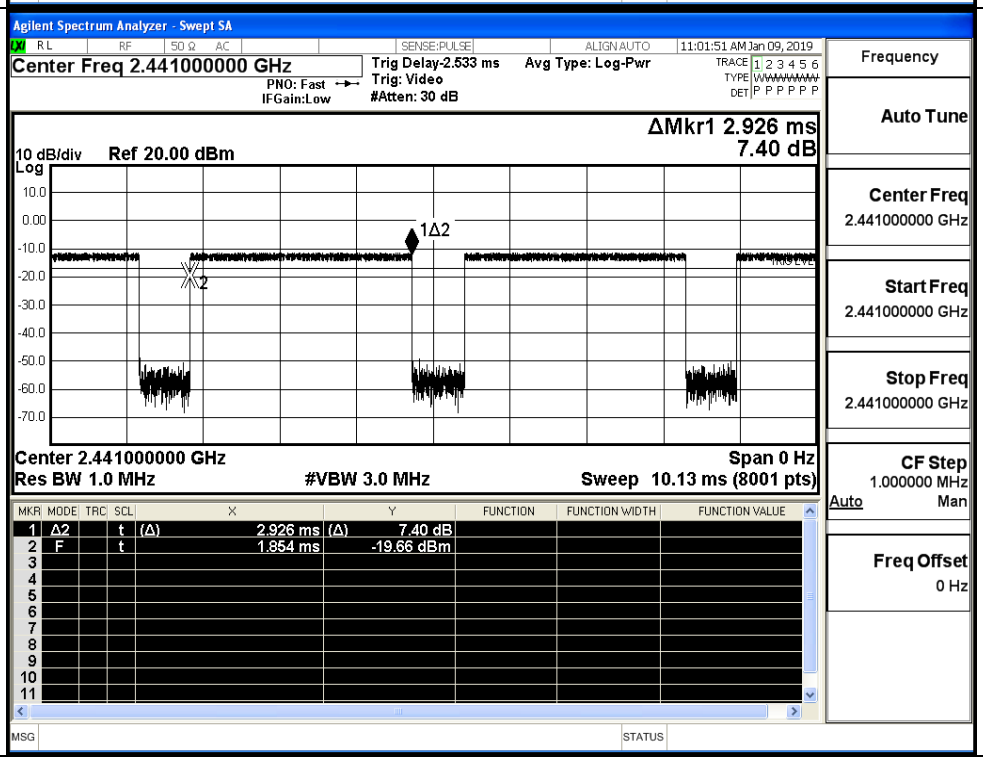


GFSK_DH5/MCH	
GFSK_DH5/HCH	

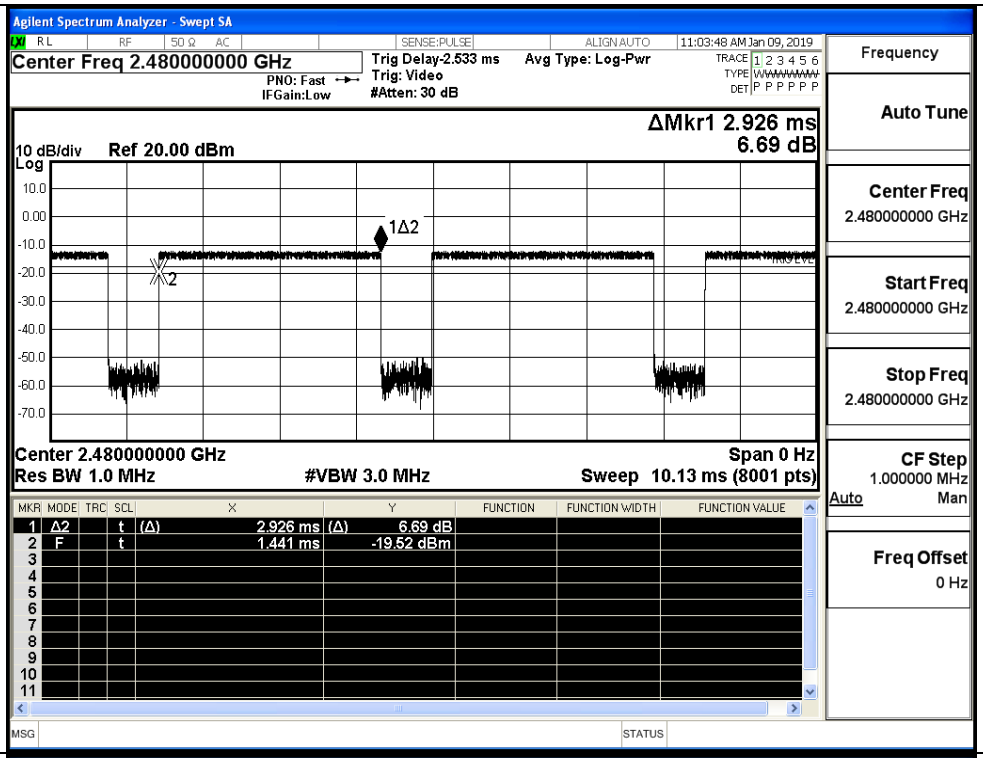
π/4DQPSK
_2DH5/LCH



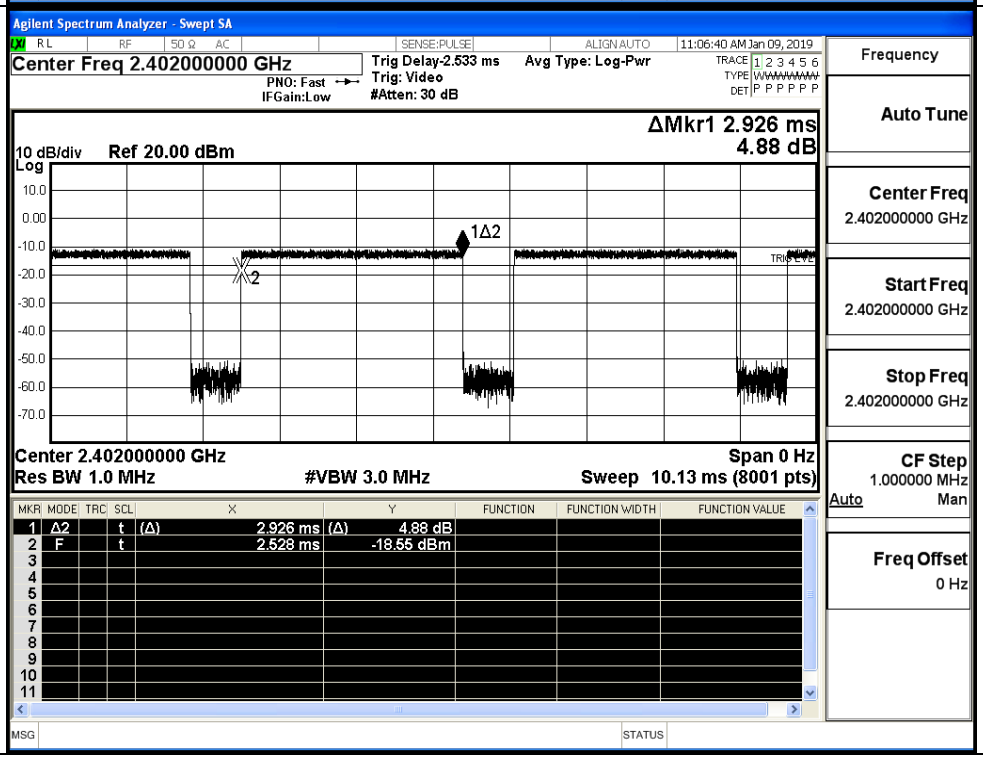
π/4DQPSK
_2DH5/MCH

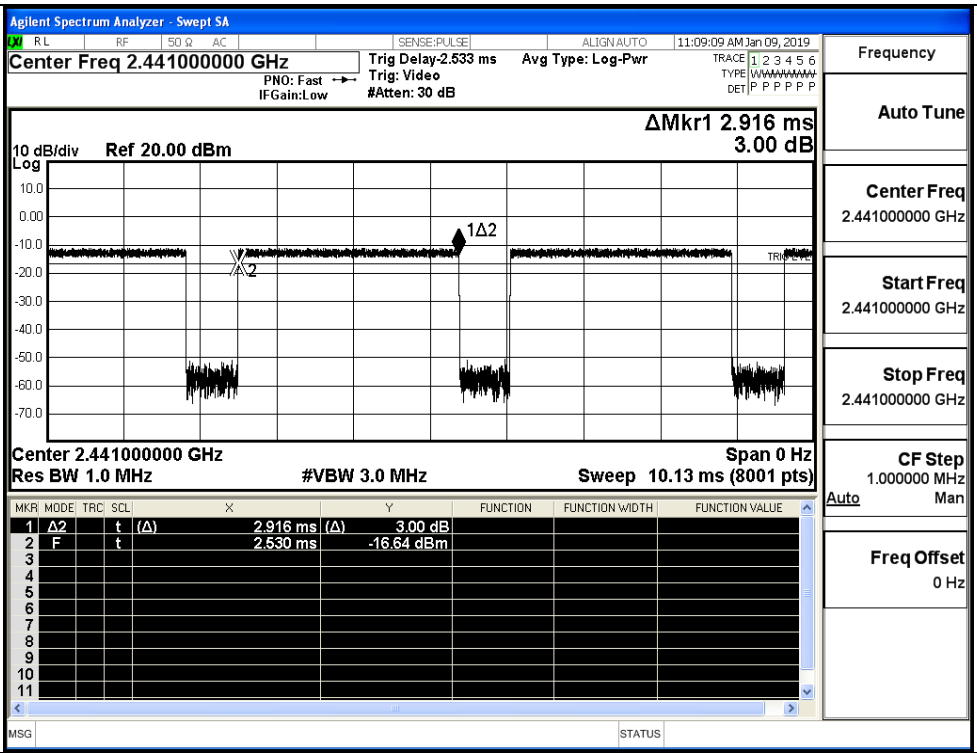
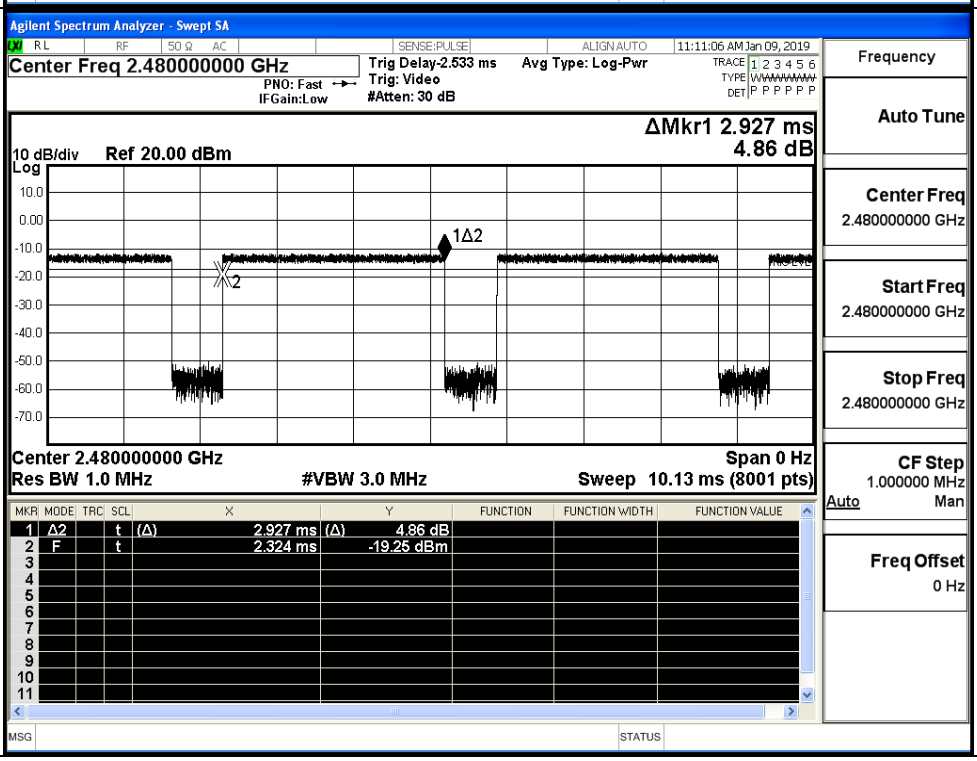


π/4DQPSK _2DH5/HCH



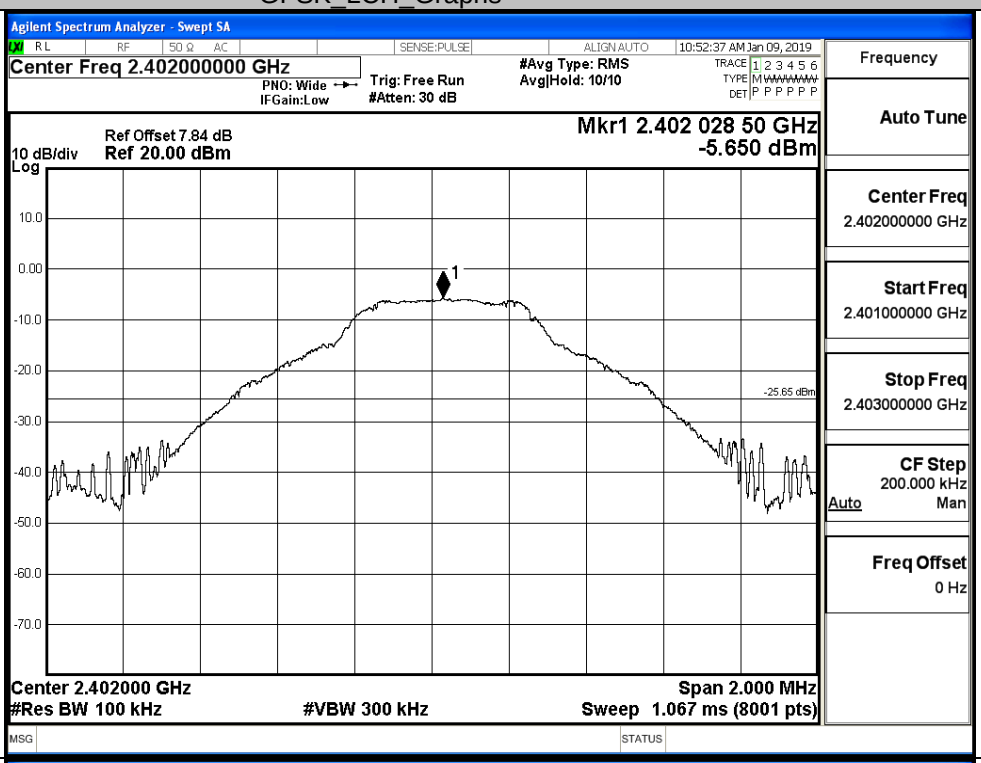
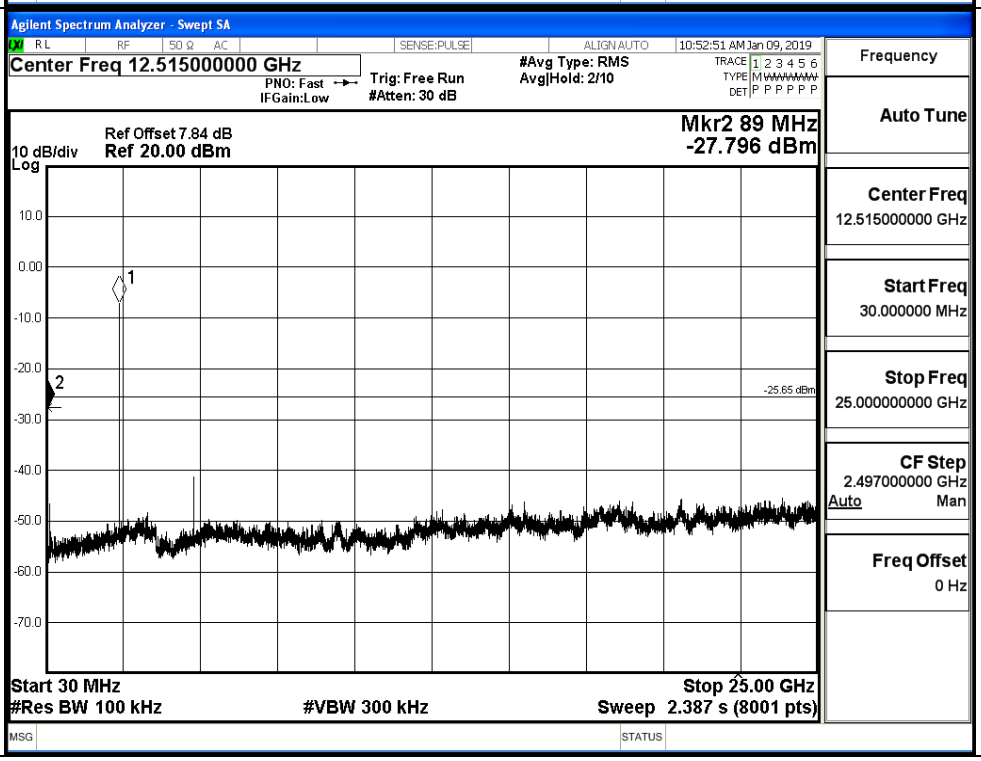
8DPSK _3DH5/LCH

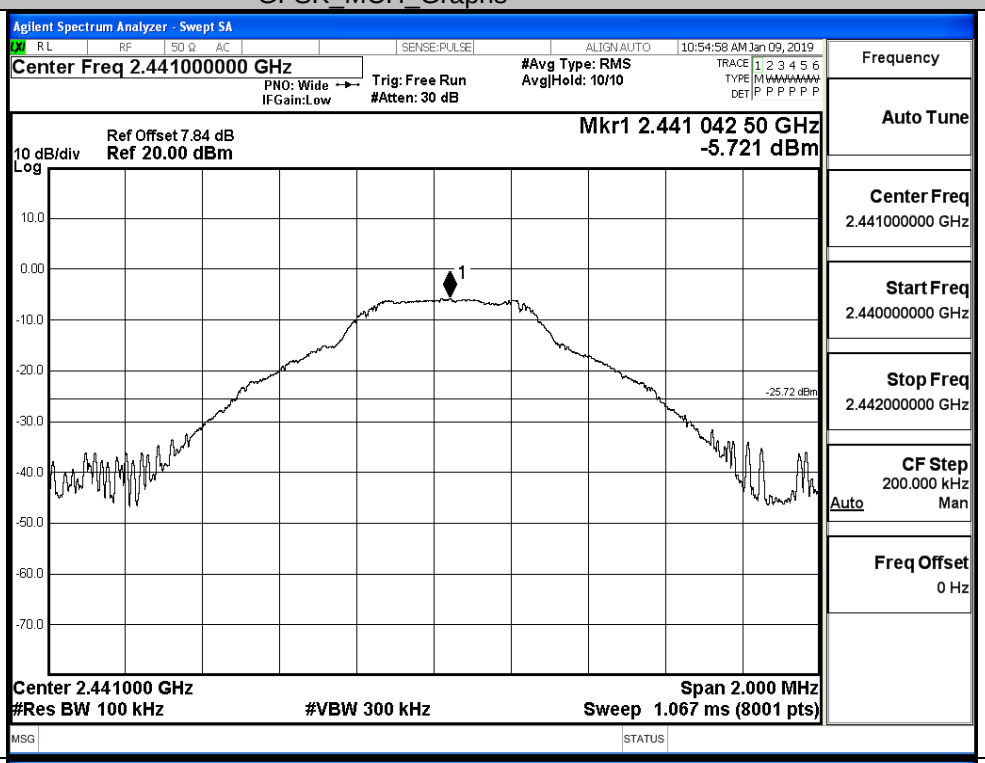
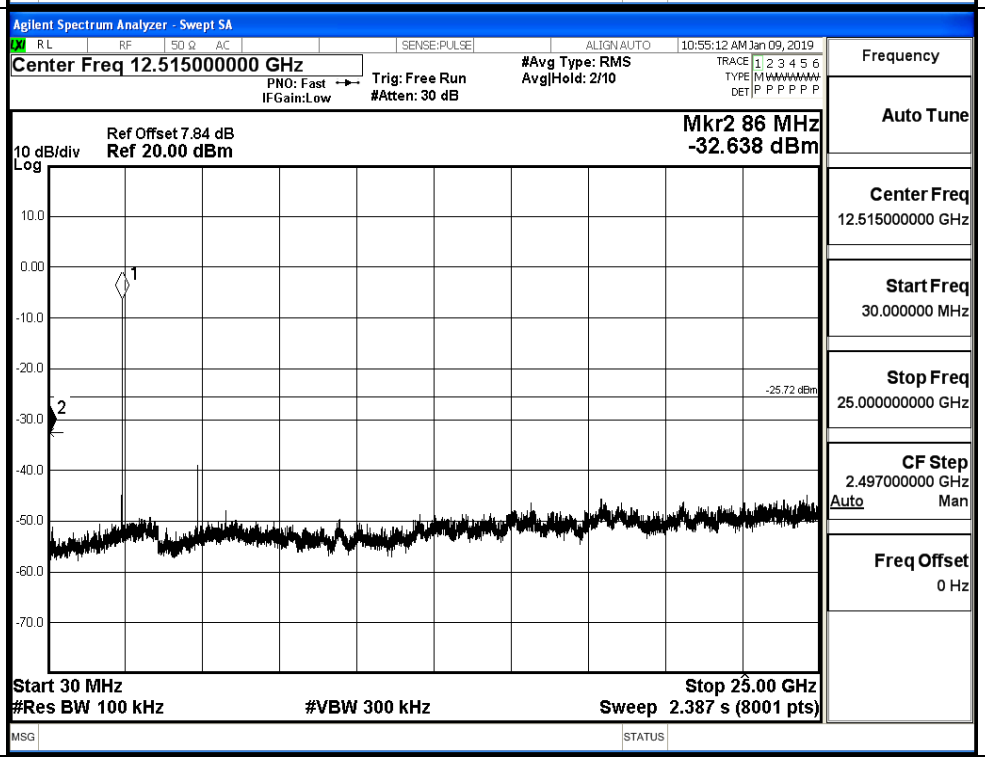


8DPSK _3DH5/MCH	
8DPSK _3DH5/HCH	

A.6 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-5.65	-27.796	-25.650	PASS
	MCH	-5.721	-32.638	-25.721	PASS
	HCH	-6.32	-30.564	-26.320	PASS
π/4DQPSK	LCH	-4.011	-27.419	-24.011	PASS
	MCH	-7.031	-31.997	-27.031	PASS
	HCH	-7.721	-29.480	-27.721	PASS
8DPSK	LCH	-4.102	-25.498	-24.102	PASS
	MCH	-4.318	-28.063	-24.318	PASS
	HCH	-4.975	-27.787	-24.975	PASS

GFSK_LCH_Graphs		
Pref		
Puw		

GFSK_MCH_Graphs		
Pref		
Puw		

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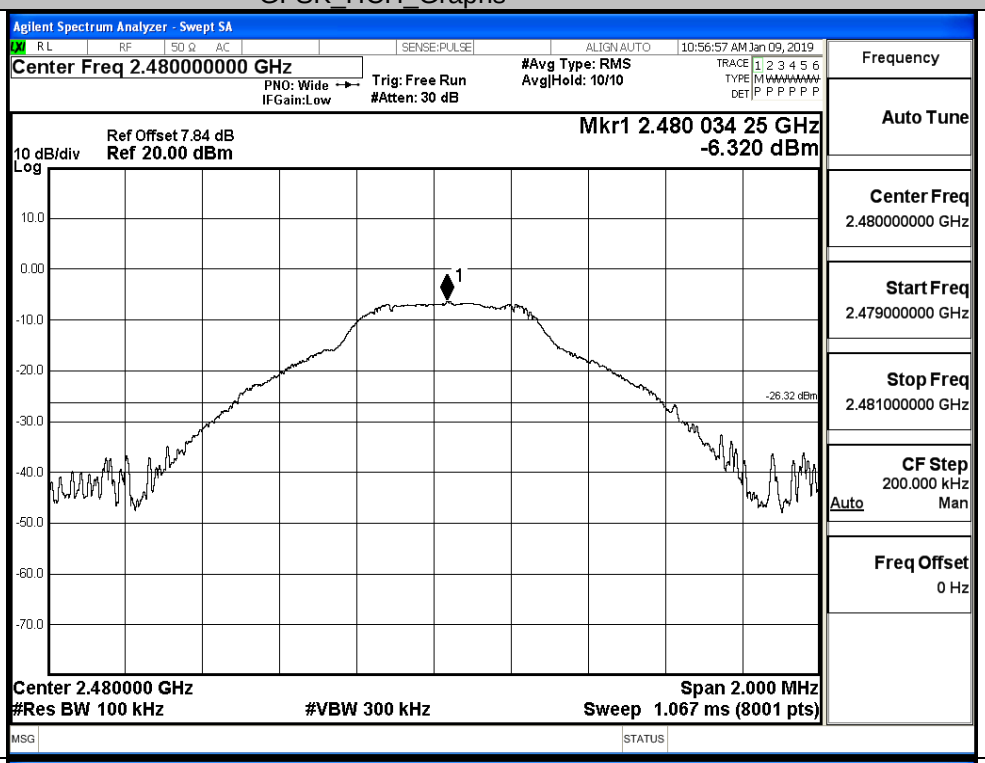
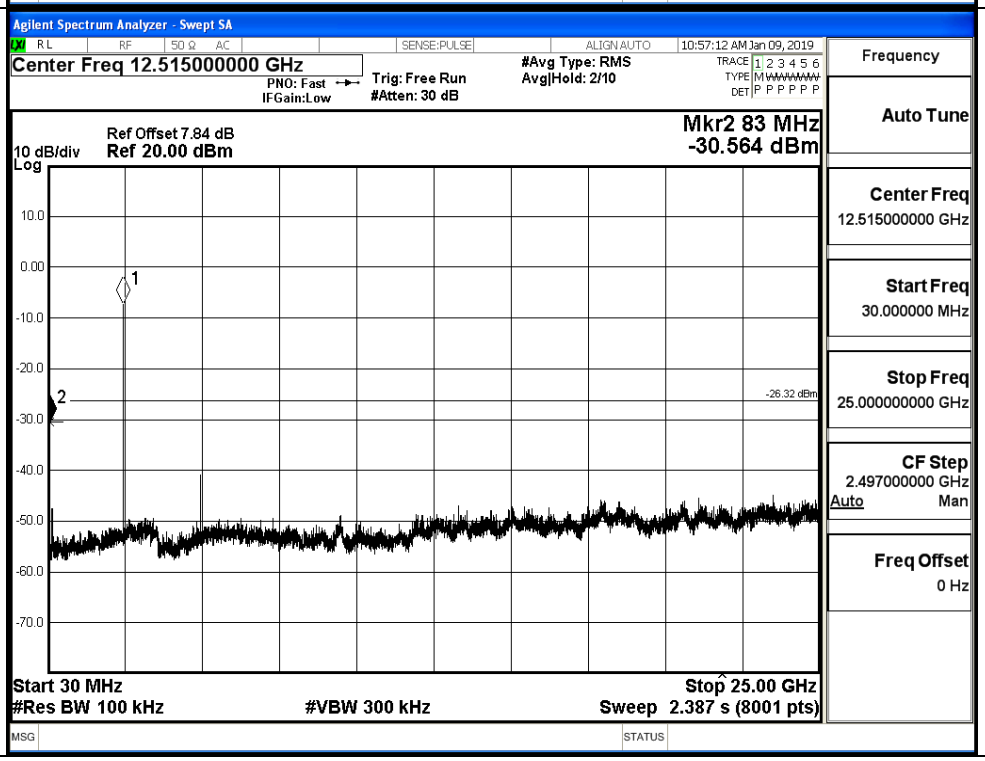
Pref		
Puw		

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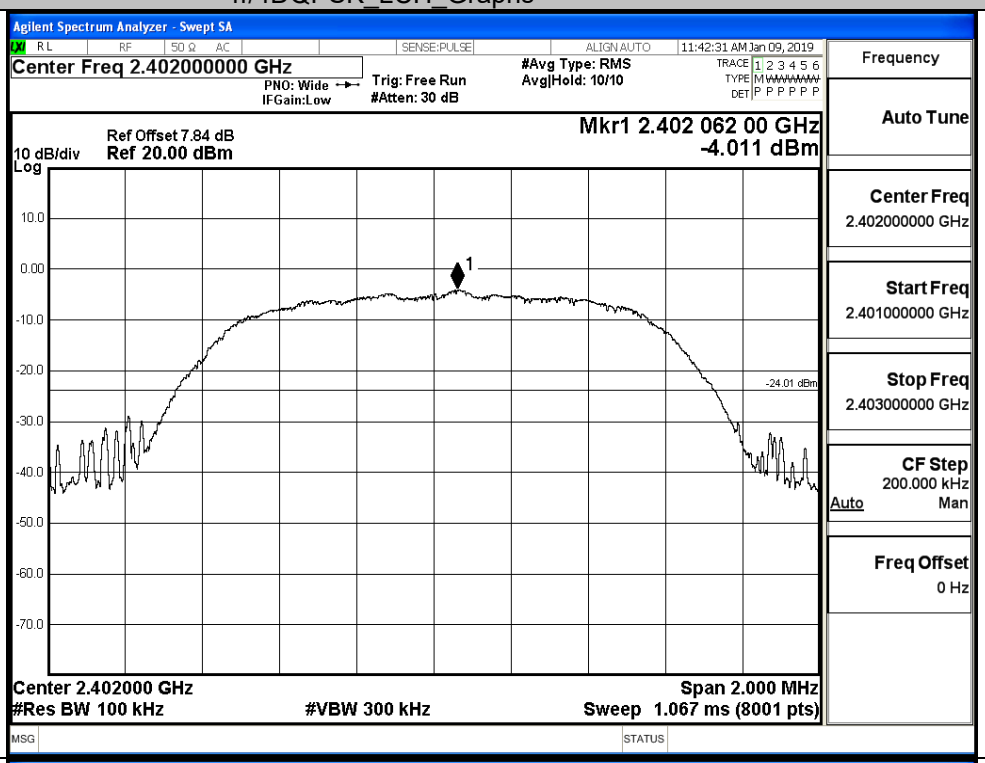
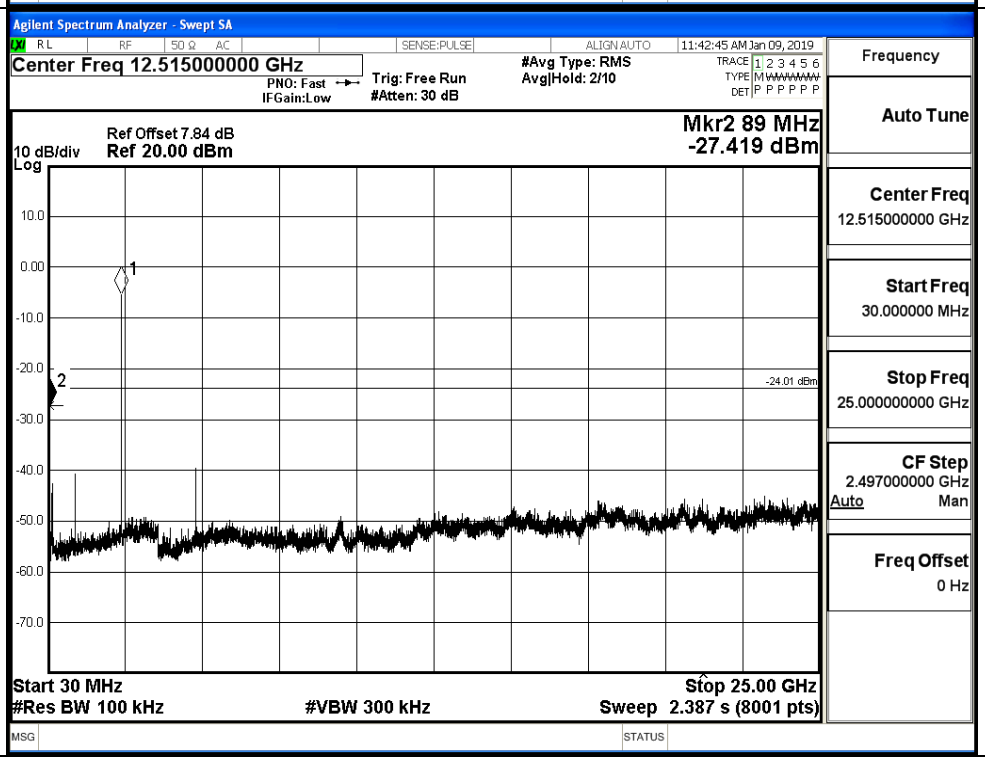
Pref		
Puw		

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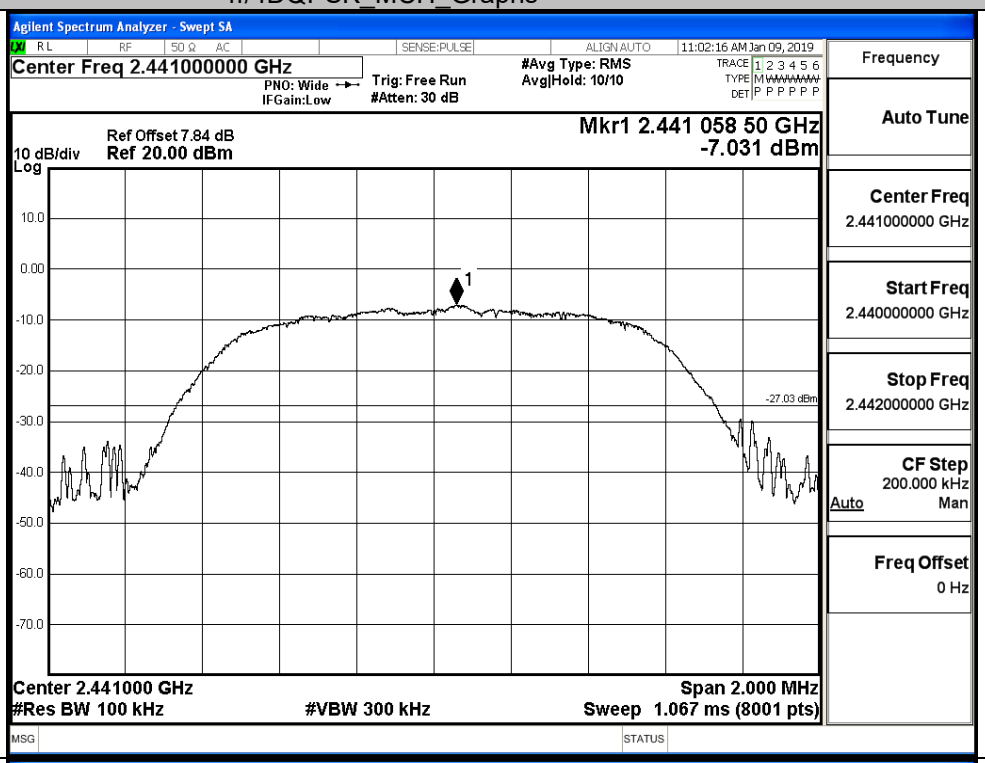
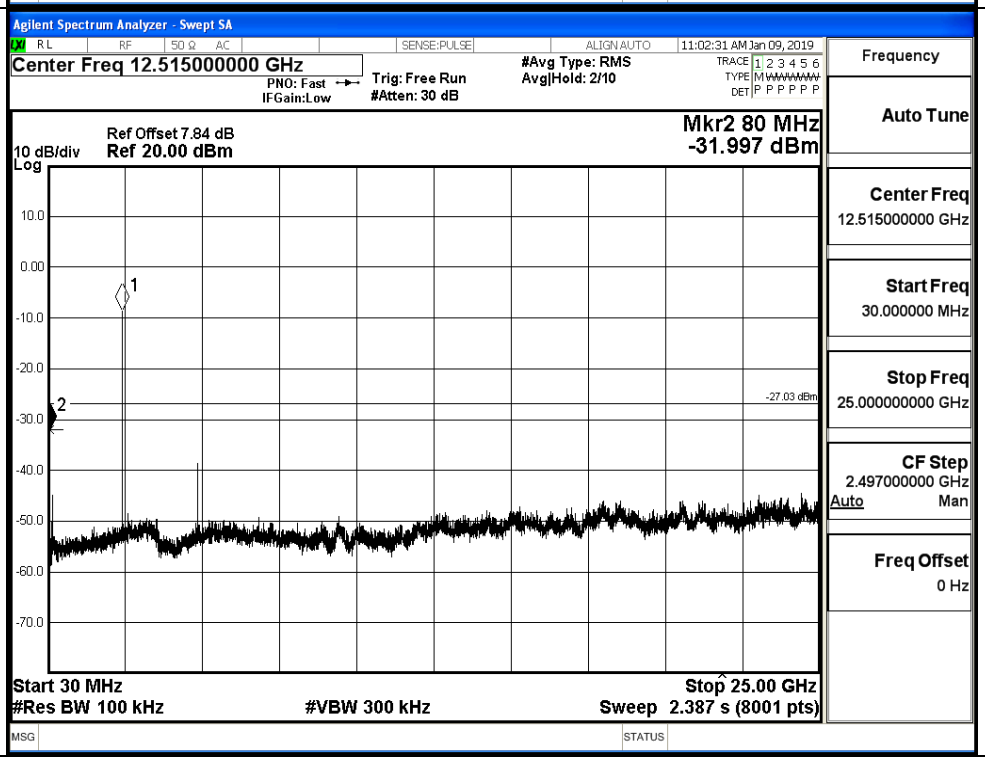
Pref		
Puw		

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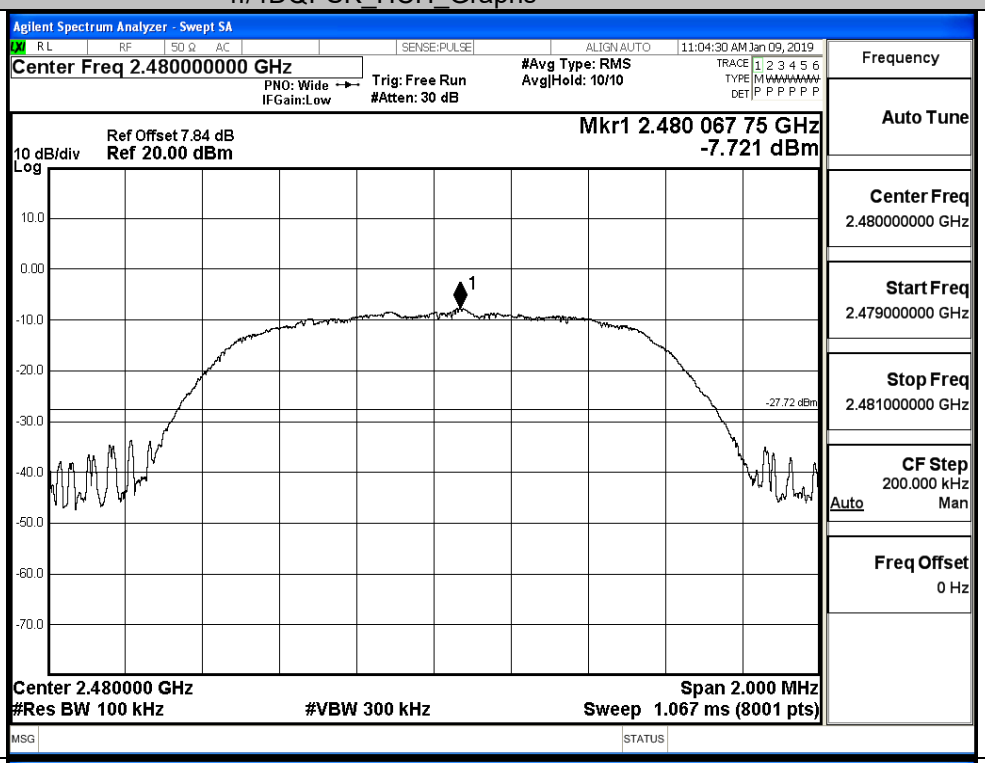
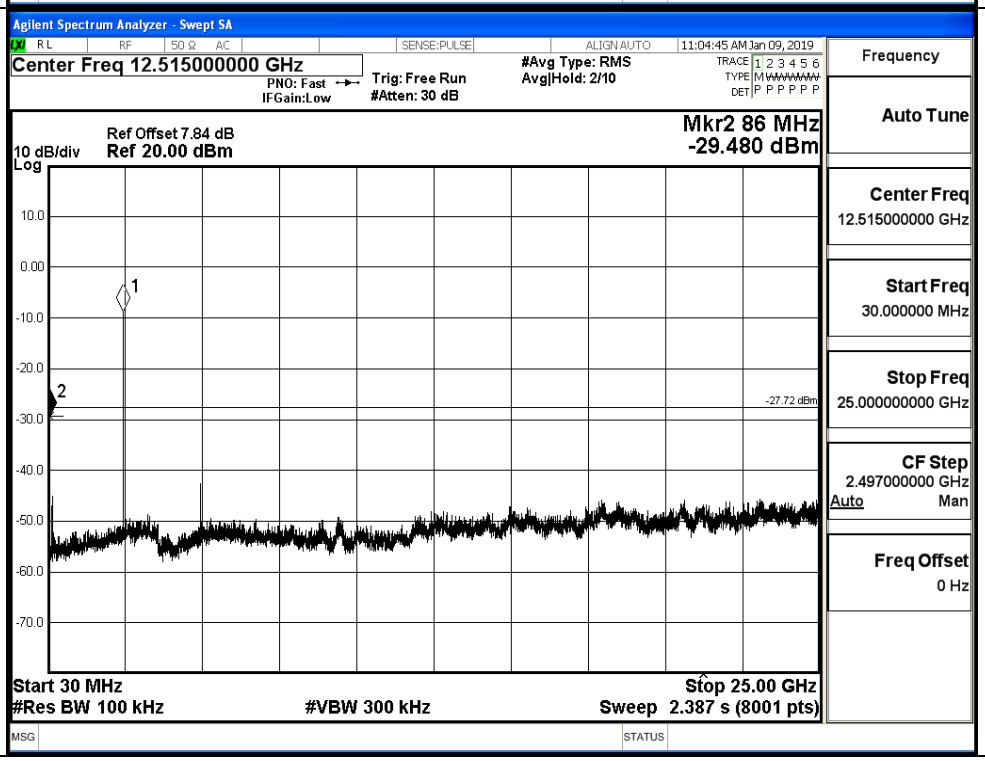
Pref		
Puw		

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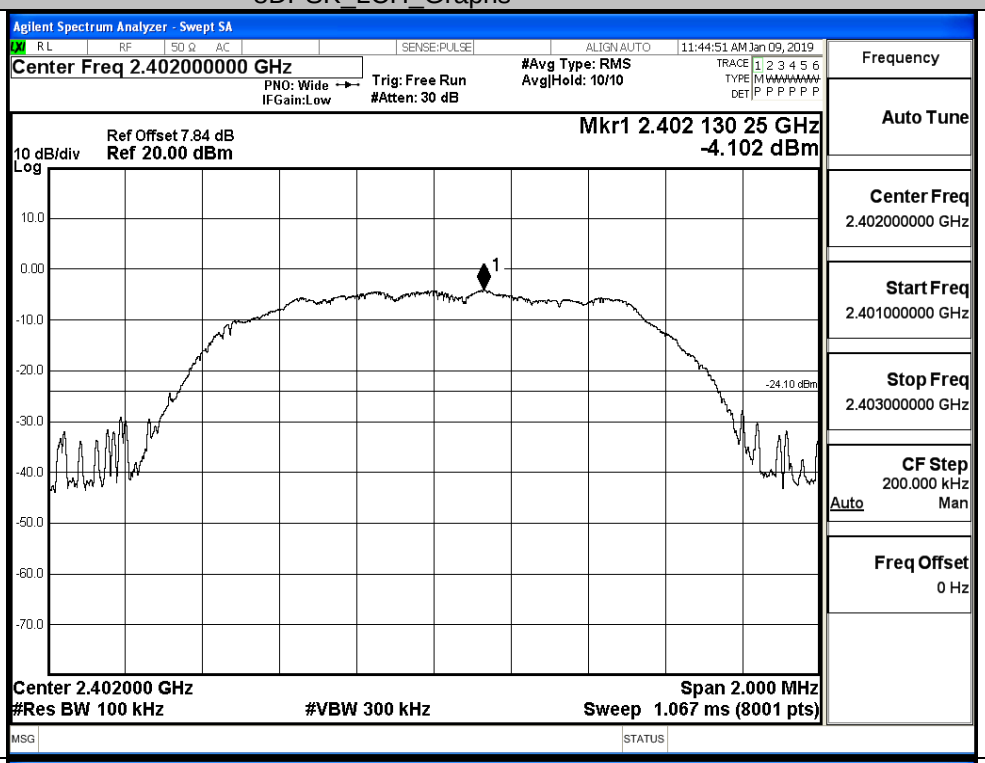
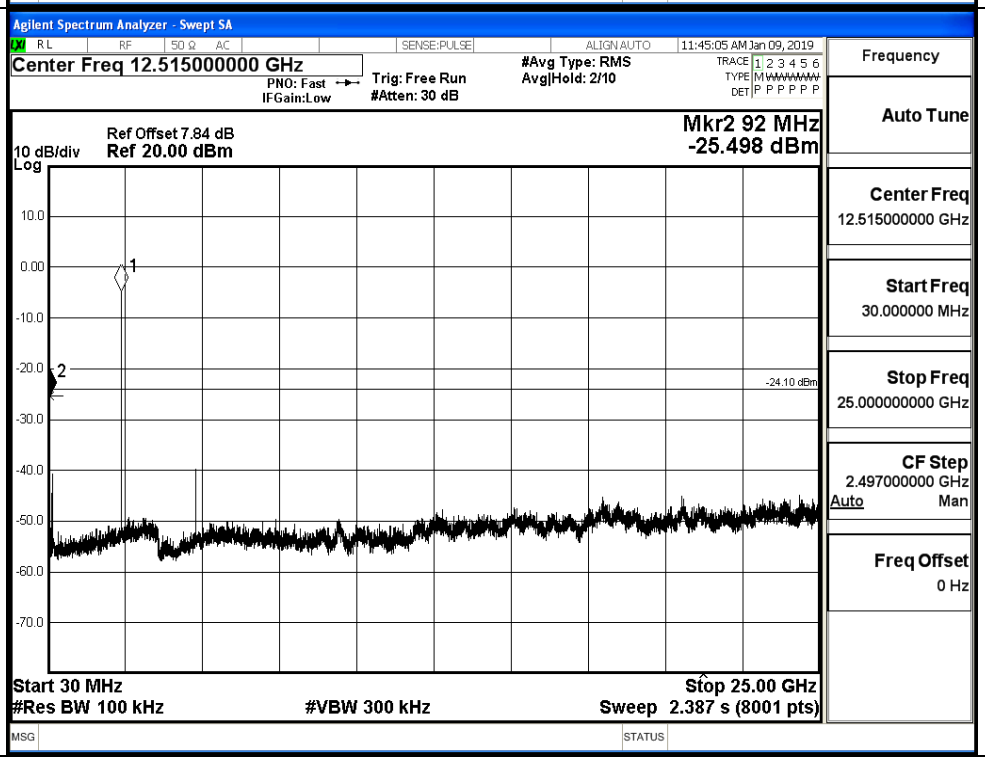
Pref		
Puw		

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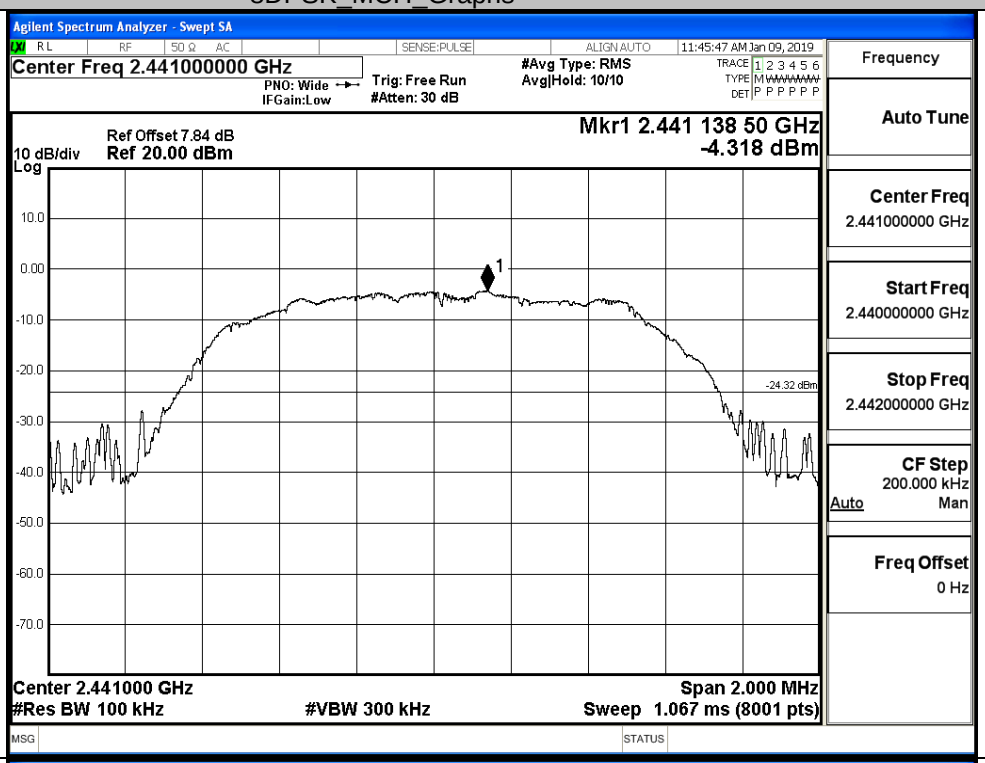
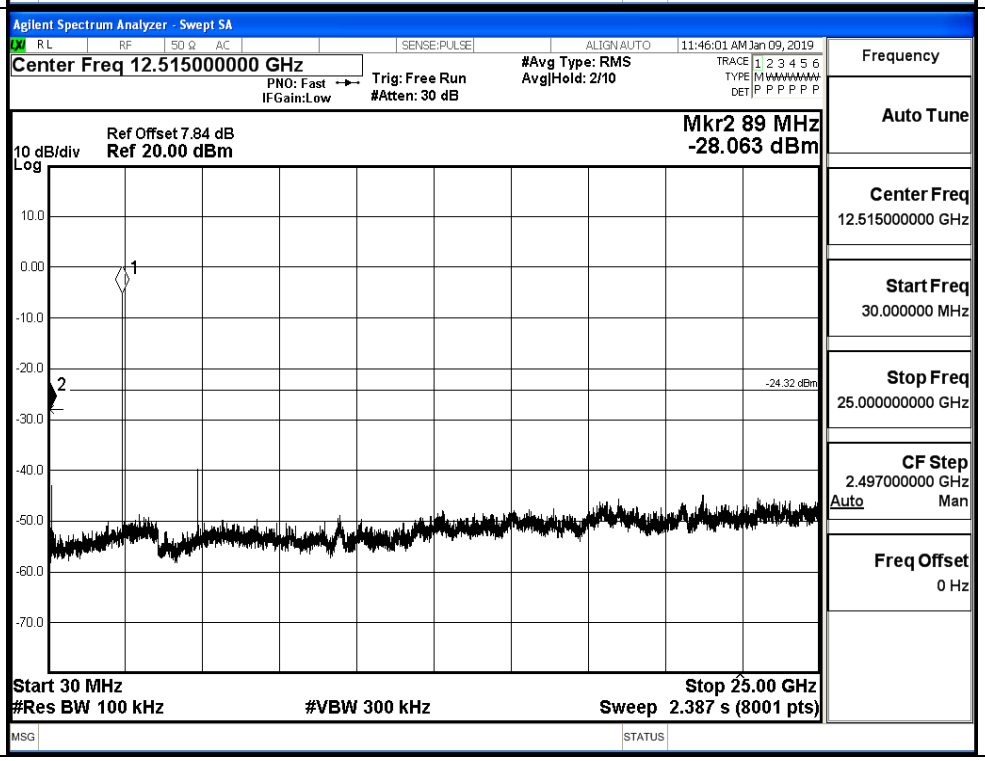
Pref			
Puw			

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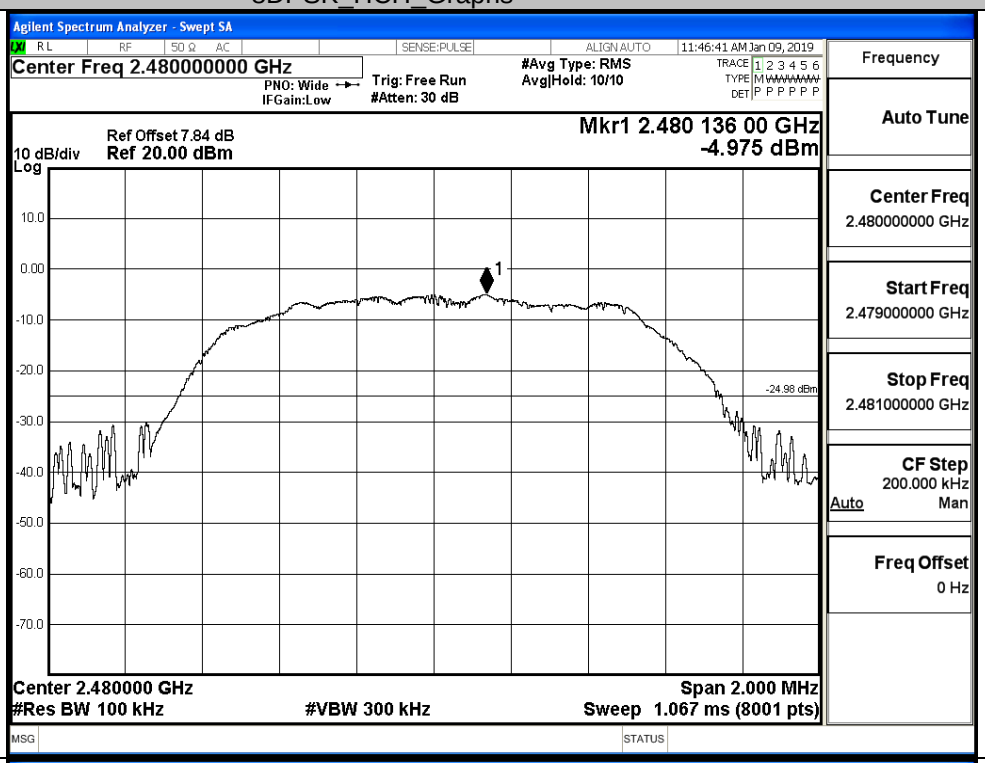
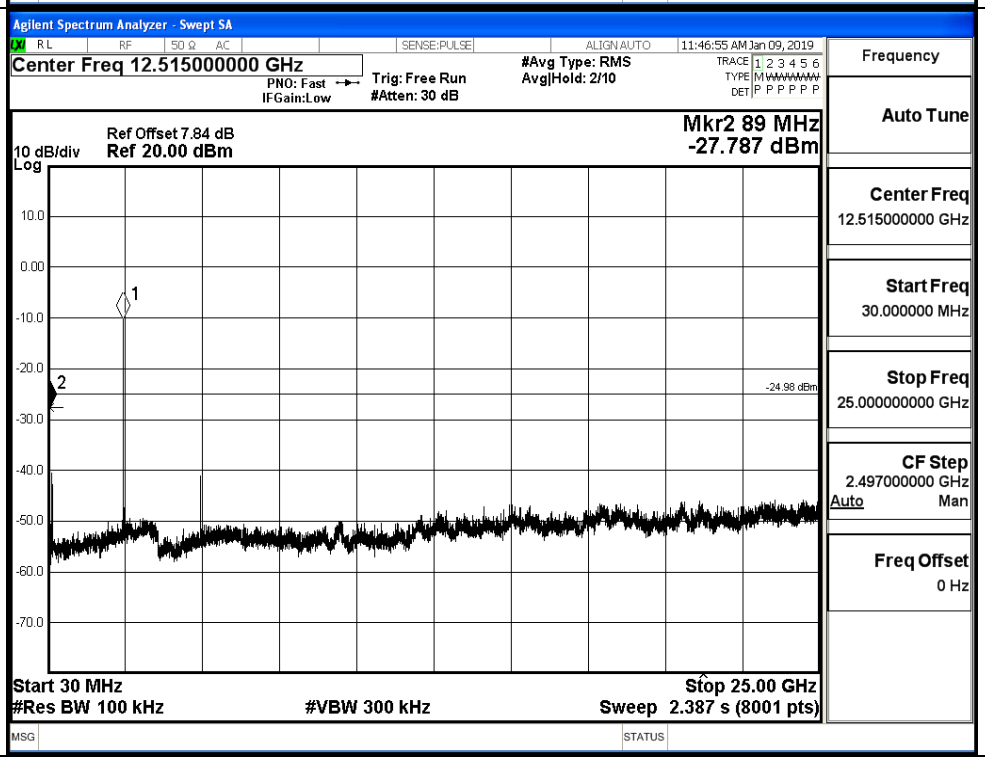
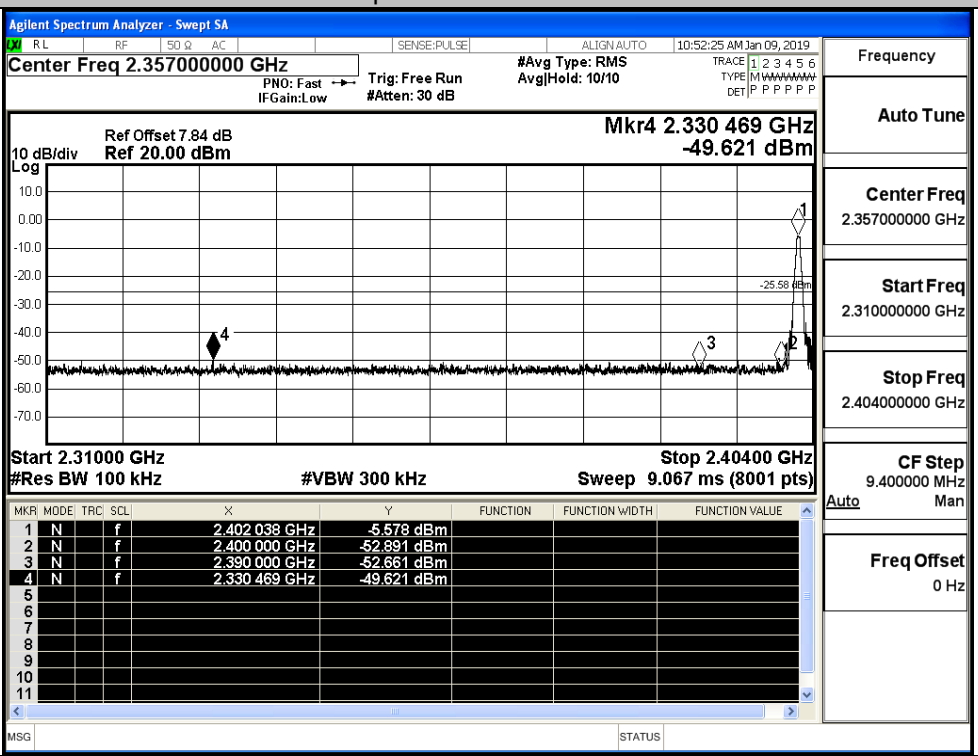
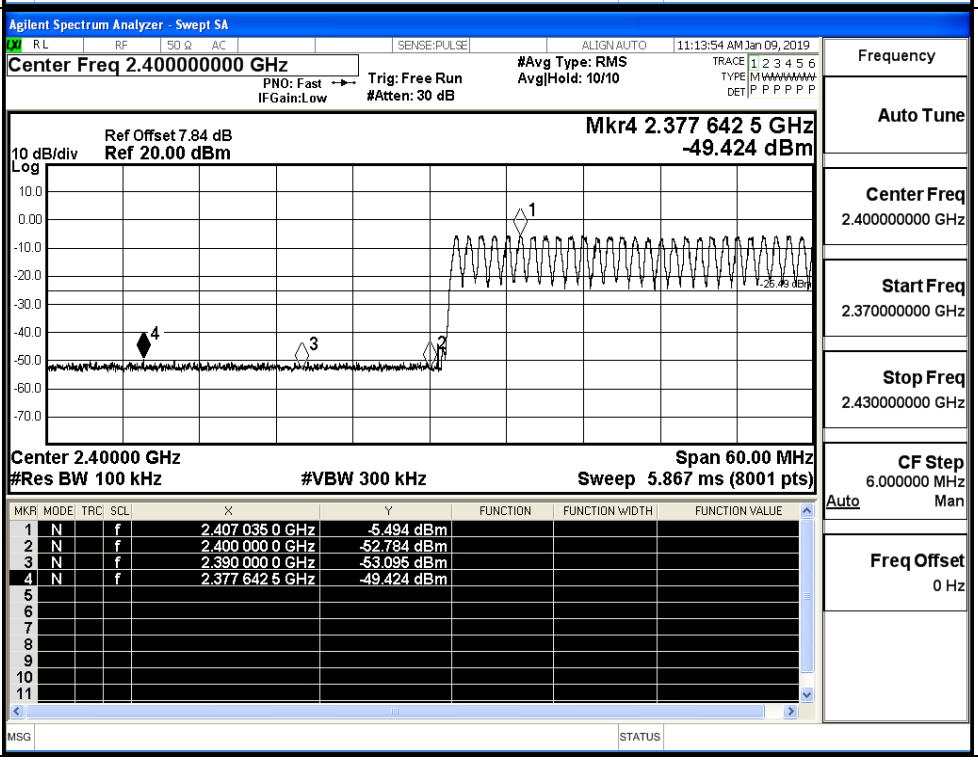
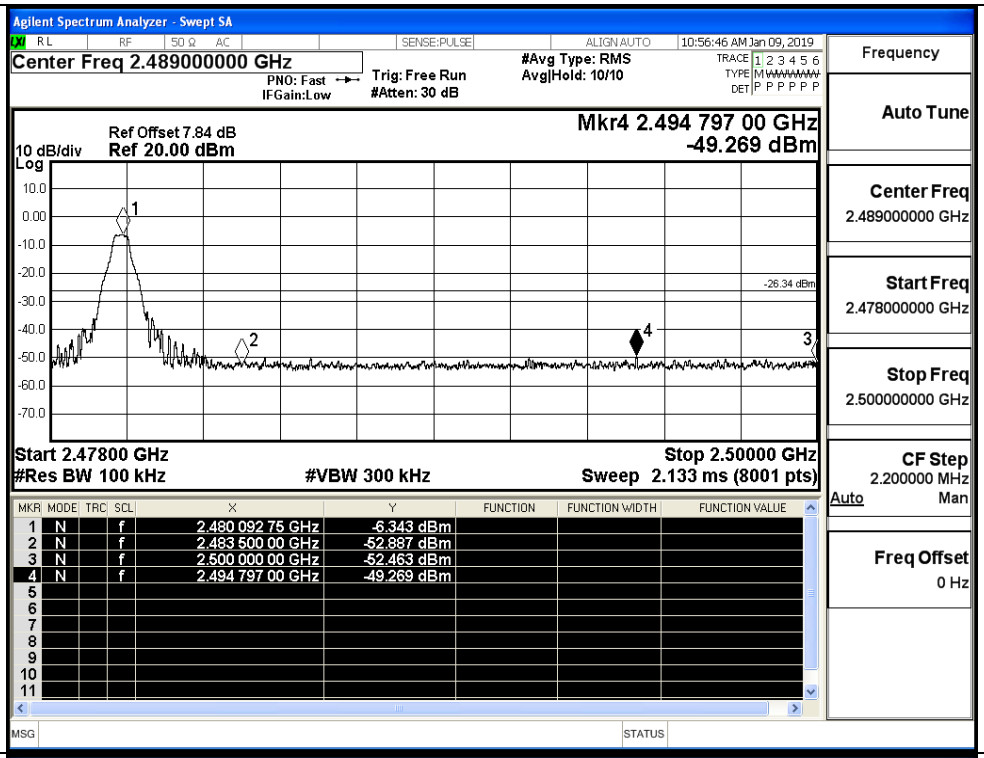
Pref			
Puw			

A.7 Band-edge for RF Conducted Emissions

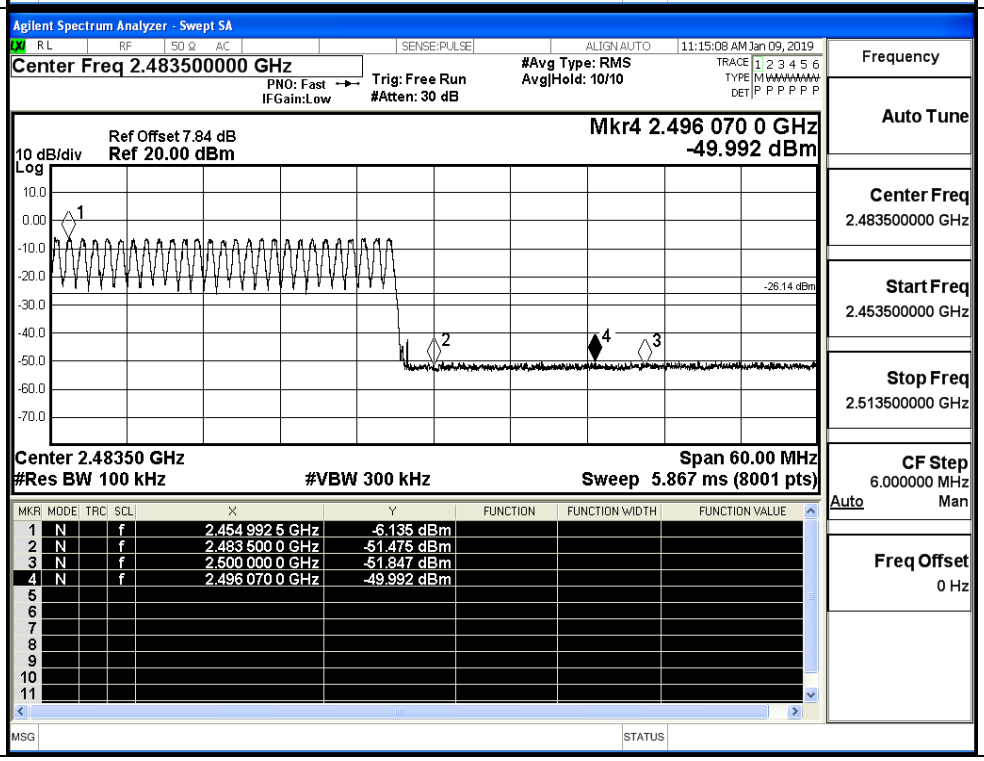
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	-5.578	Off	-49.621	-25.58	PASS
			-5.494	On	-49.424	-25.49	PASS
	HCH	2480	-6.343	Off	-49.269	-26.34	PASS
			-6.135	On	-49.992	-26.14	PASS
π/4DQPSK	LCH	2402	-6.798	Off	-49.501	-26.8	PASS
			-6.651	On	-50.031	-26.65	PASS
	HCH	2480	-7.429	Off	-49.678	-27.43	PASS
			-7.375	On	-49.614	-27.38	PASS
8DPSK	LCH	2402	-6.677	Off	-50.657	-26.68	PASS
			-3.694	On	-49.284	-23.69	PASS
	HCH	2480	-7.304	Off	-50.068	-27.3	PASS
			-4.178	On	-49.617	-24.18	PASS

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

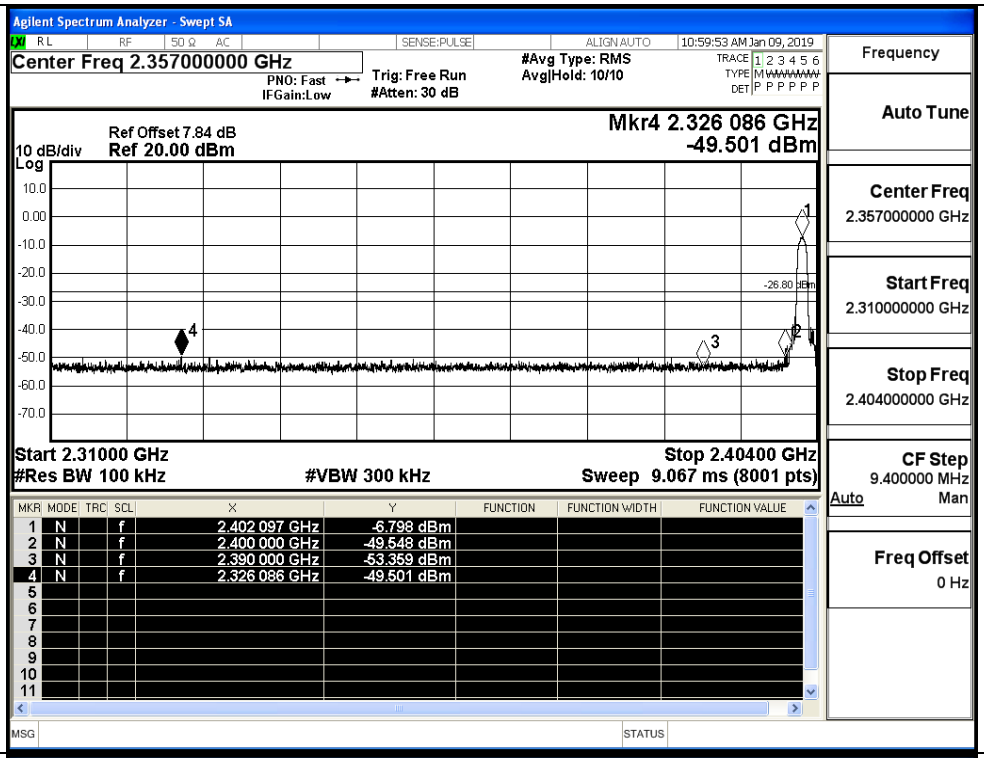
GFSK/HCH/No Hop



GFSK/HCH/Hop



π/4DQPSK/LCH/No Hop



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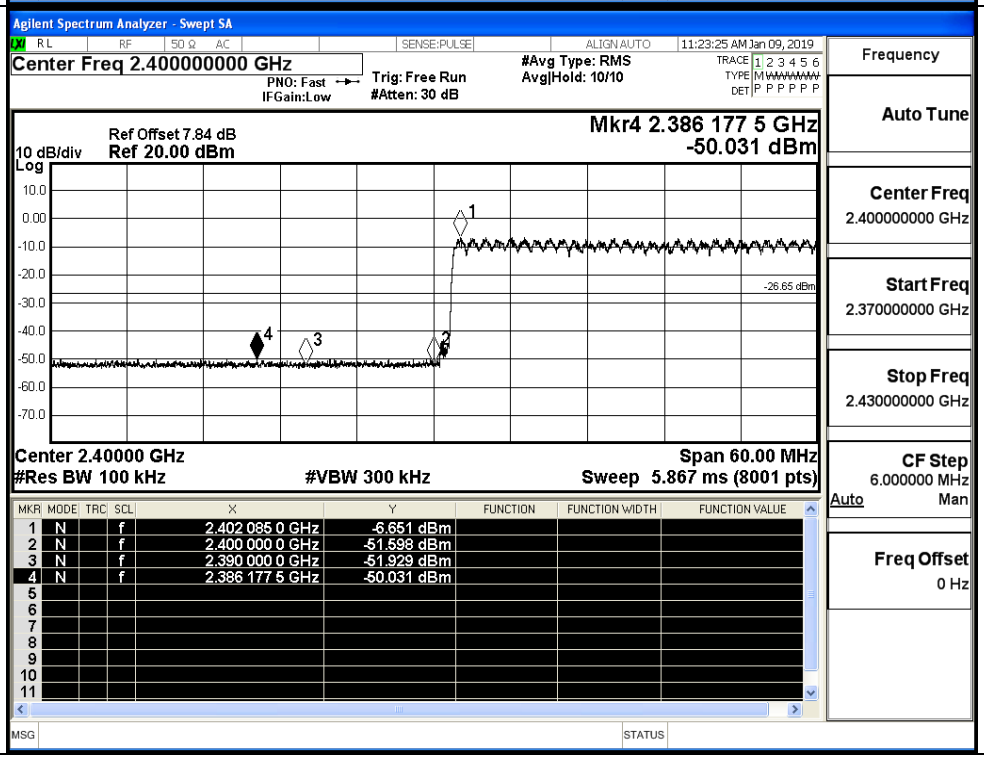

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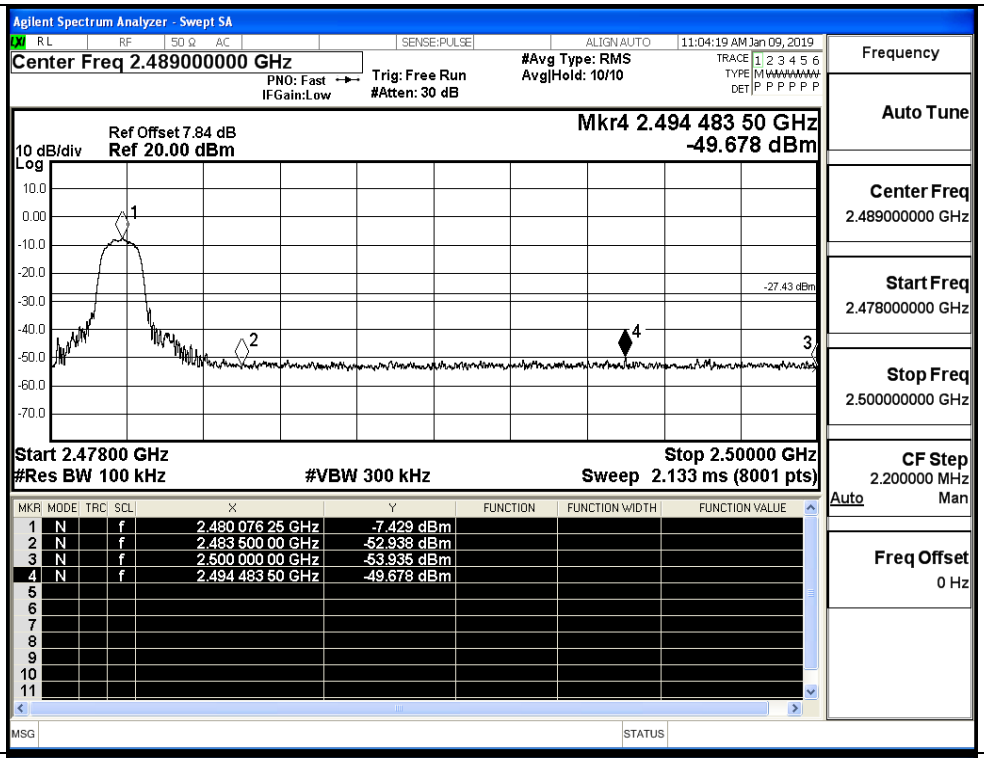

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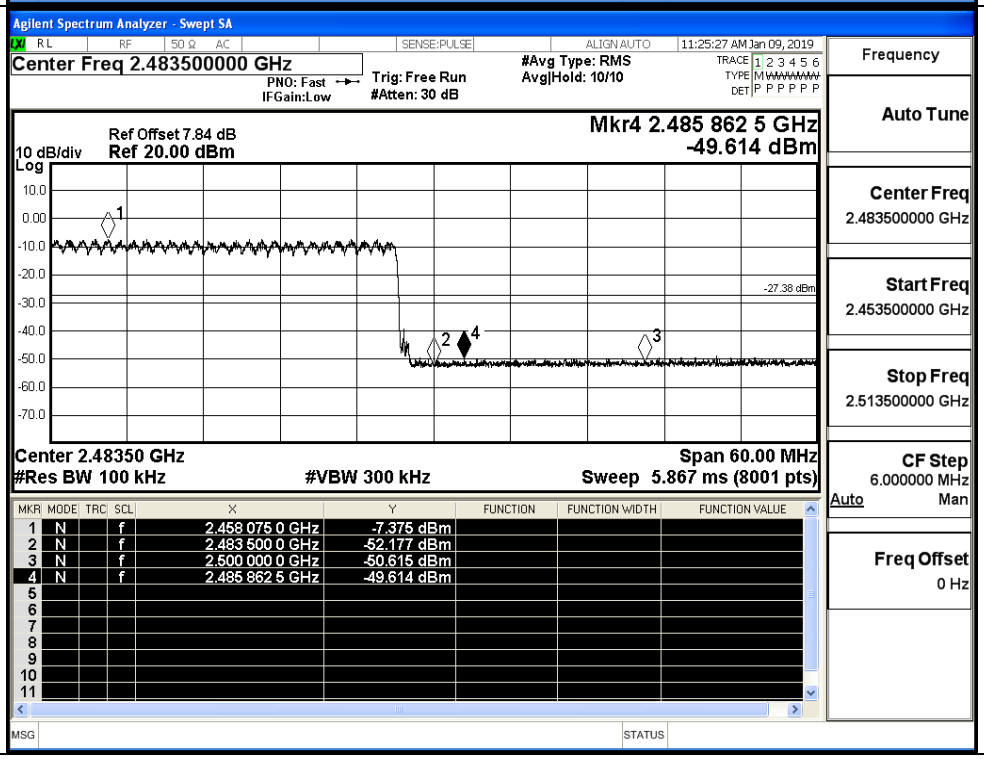
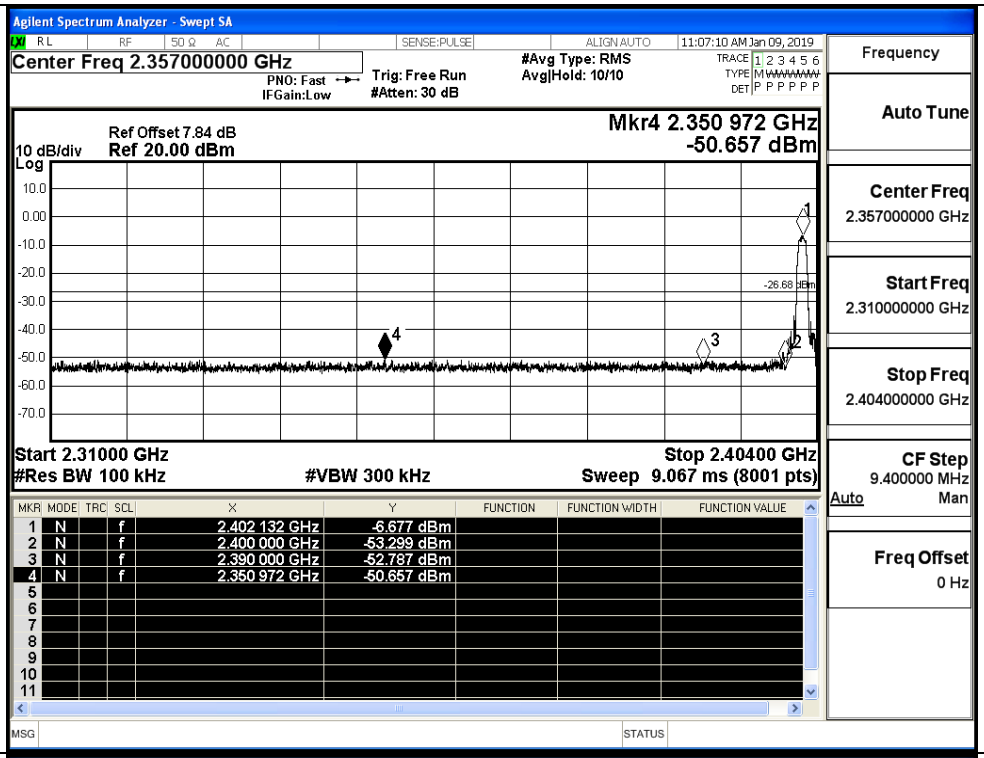
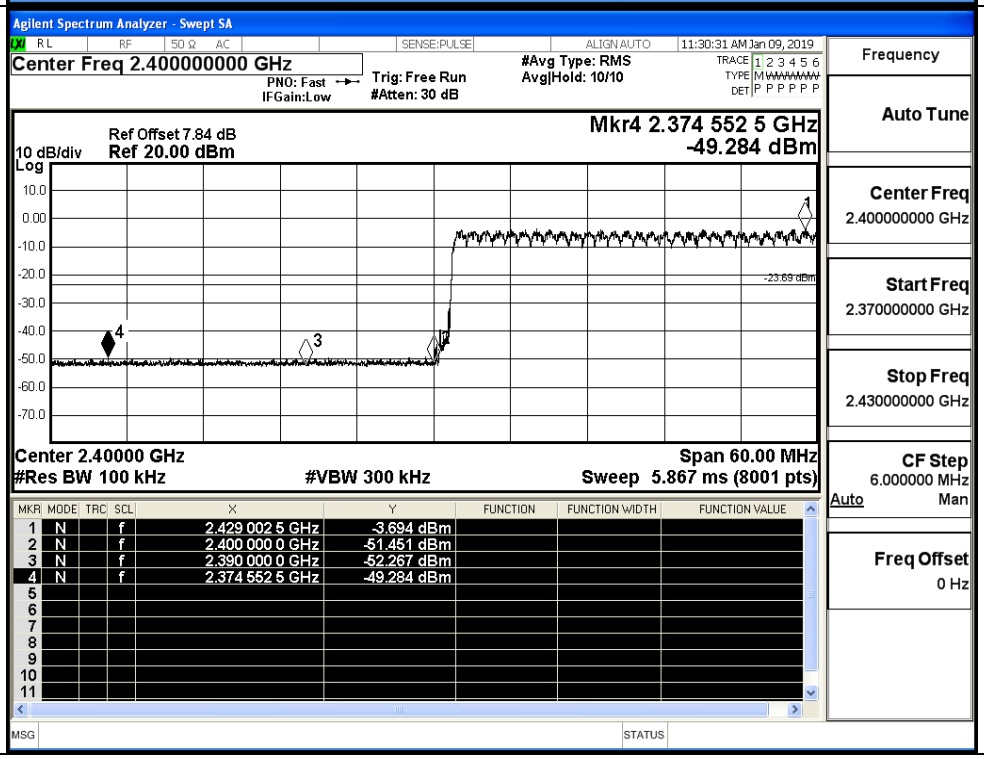
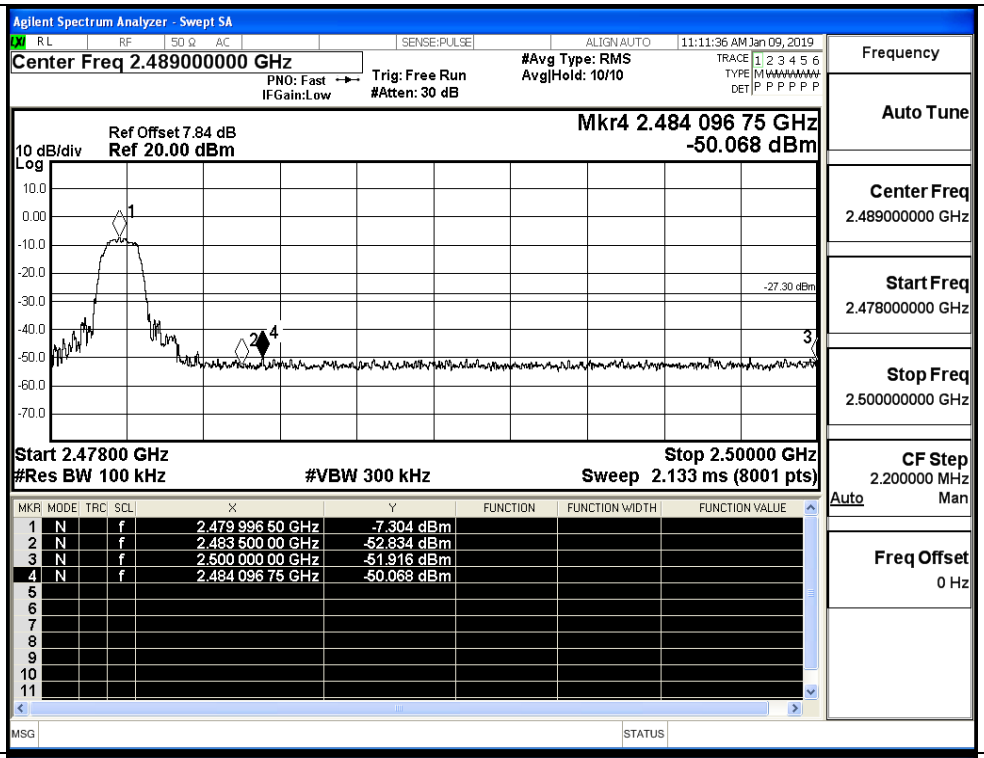
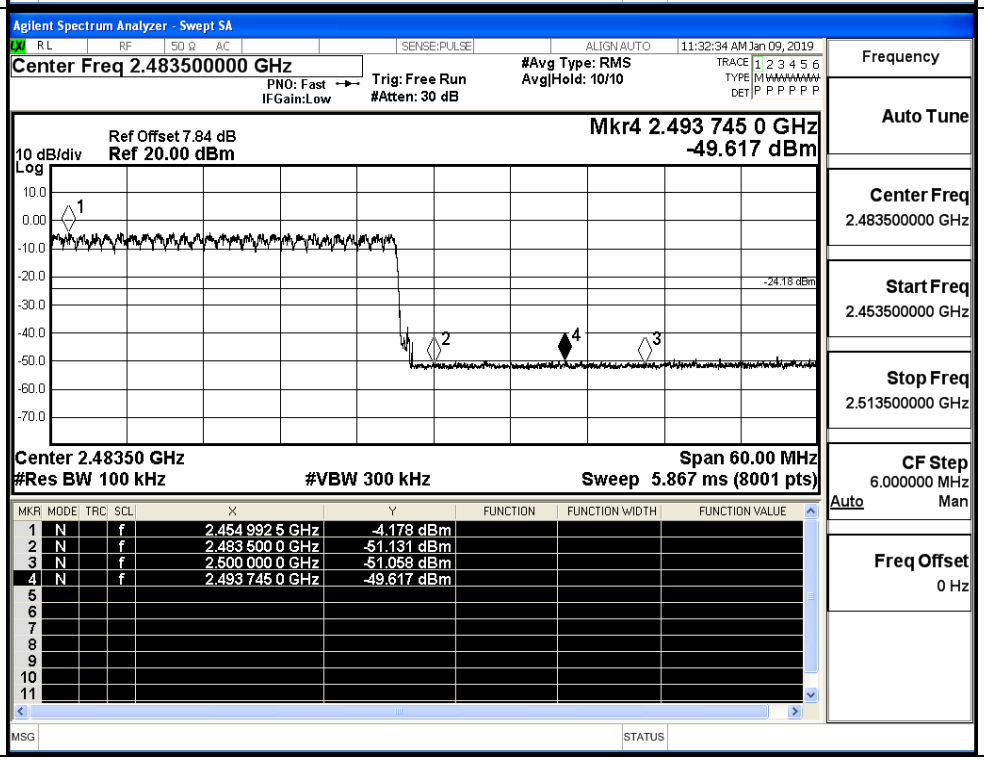


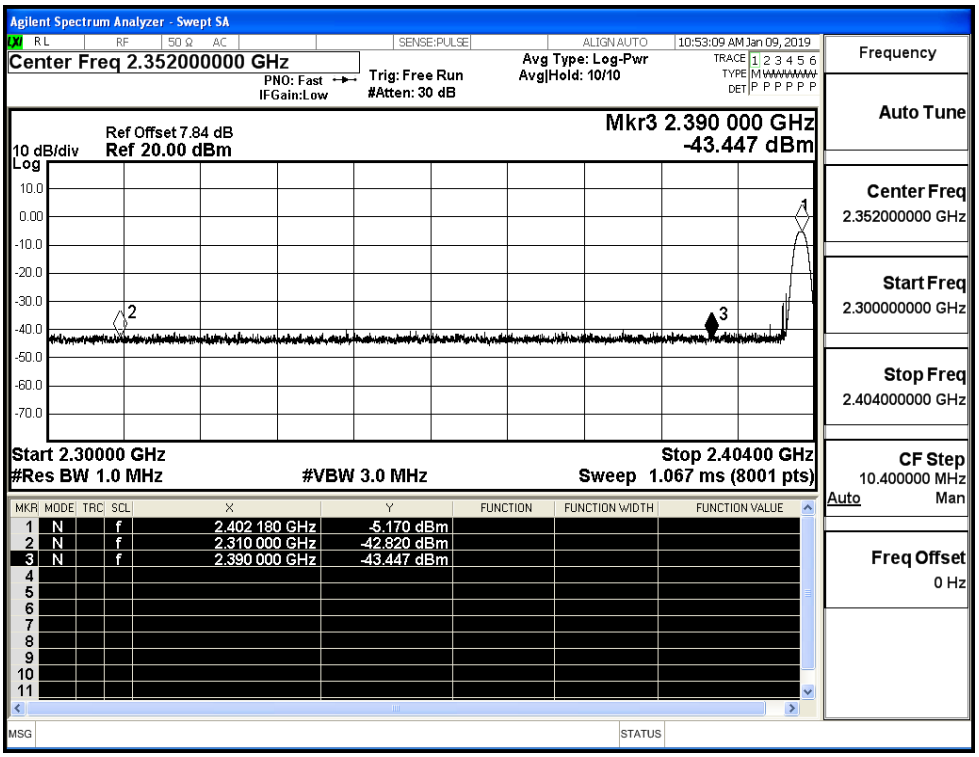
8DPSK/LCH/No Hop	
8DPSK/LCH/Hop	

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

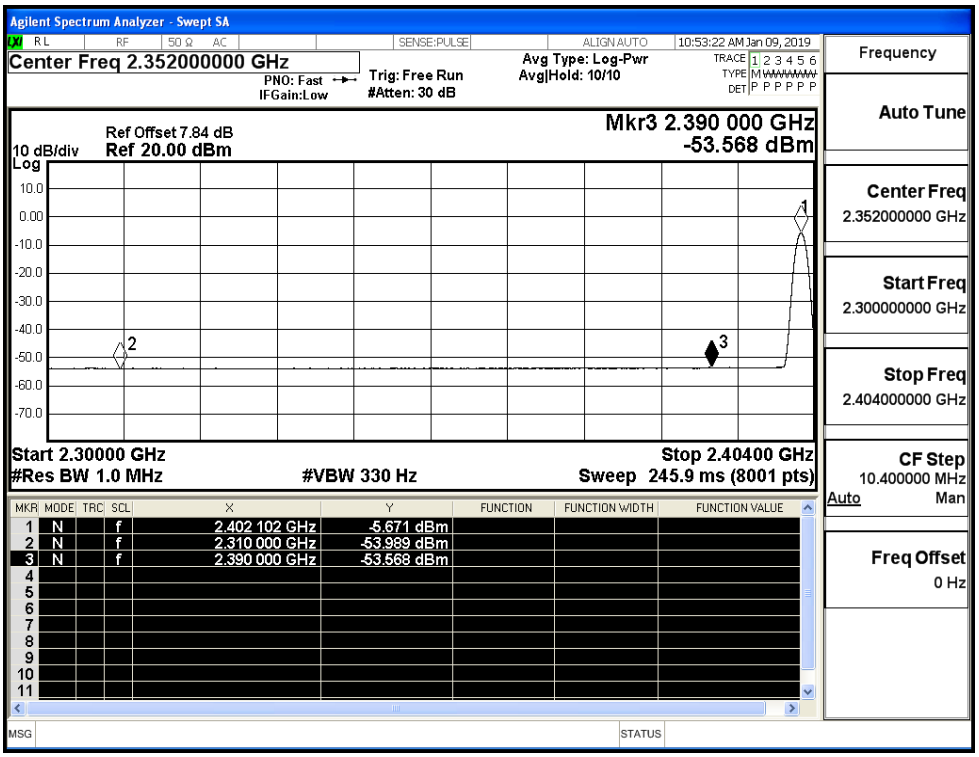
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-42.82	2.0	0	54.44	PEAK	74	PASS
	Off	2310.0	-53.99	2.0	0	43.27	AV	54	PASS
	Off	2390.0	-43.45	2.0	0	53.81	PEAK	74	PASS
	Off	2390.0	-53.57	2.0	0	43.69	AV	54	PASS
	Off	2483.5	-43.94	2.0	0	53.31	PEAK	74	PASS
	Off	2483.5	-53.25	2.0	0	44.01	AV	54	PASS
	Off	2500.0	-42.67	2.0	0	54.58	PEAK	74	PASS
	Off	2500.0	-53.30	2.0	0	43.96	AV	54	PASS
π/4DQPSK	Off	2310.0	-44.05	2.0	0	53.21	PEAK	74	PASS
	Off	2310.0	-53.93	2.0	0	43.33	AV	54	PASS
	Off	2390.0	-44.44	2.0	0	52.82	PEAK	74	PASS
	Off	2390.0	-53.75	2.0	0	43.51	AV	54	PASS
	Off	2483.5	-42.87	2.0	0	54.38	PEAK	74	PASS
	Off	2483.5	-53.40	2.0	0	43.85	AV	54	PASS
	Off	2500.0	-41.32	2.0	0	55.94	PEAK	74	PASS
	Off	2500.0	-53.23	2.0	0	44.03	AV	54	PASS
8DPSK	Off	2310.0	-42.80	2.0	0	54.46	PEAK	74	PASS
	Off	2310.0	-53.92	2.0	0	43.34	AV	54	PASS
	Off	2390.0	-43.96	2.0	0	53.30	PEAK	74	PASS
	Off	2390.0	-53.55	2.0	0	43.70	AV	54	PASS
	Off	2483.5	-43.04	2.0	0	54.21	PEAK	74	PASS
	Off	2483.5	-53.38	2.0	0	43.88	AV	54	PASS
	Off	2500.0	-43.83	2.0	0	53.42	PEAK	74	PASS
	Off	2500.0	-53.32	2.0	0	43.93	AV	54	PASS

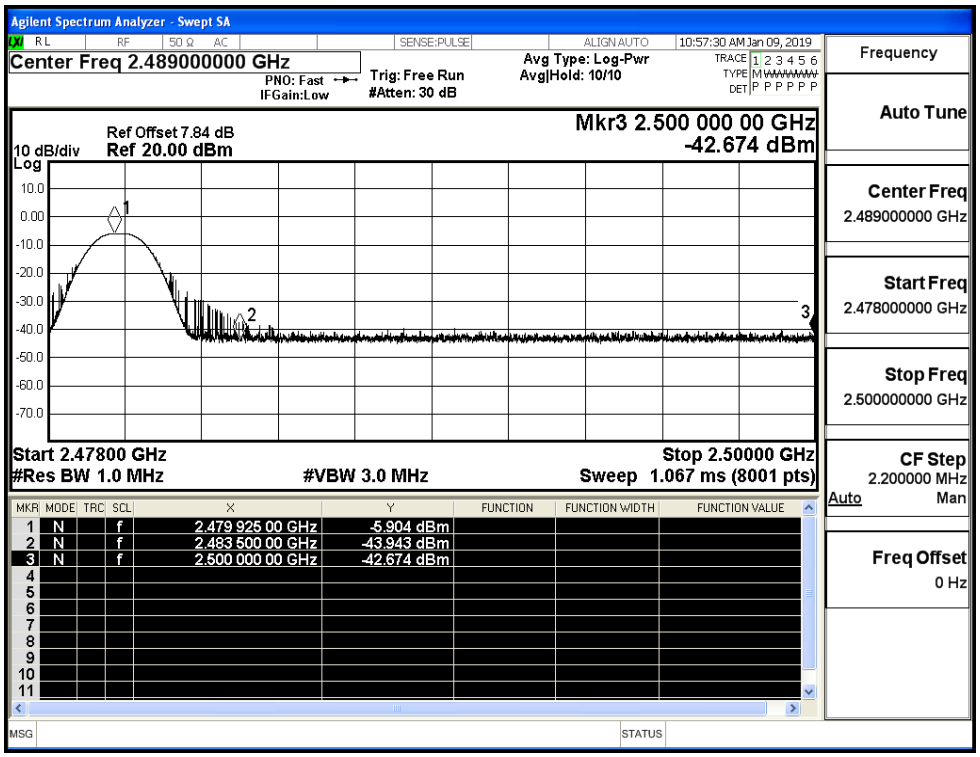
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (Low Channel)



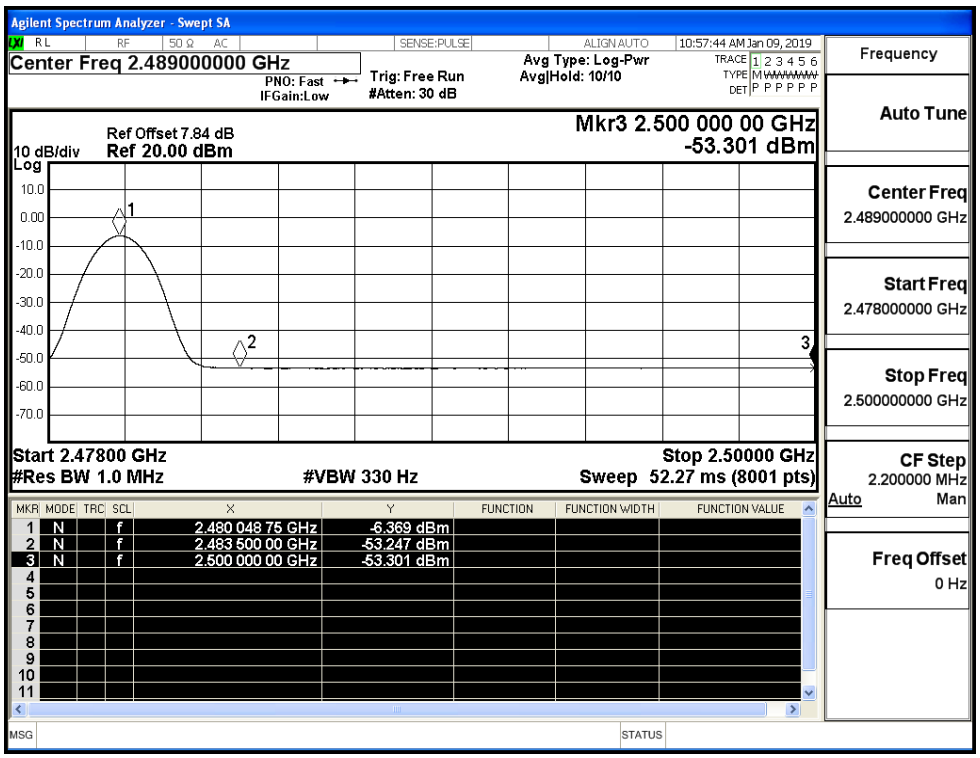
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (Low Channel)



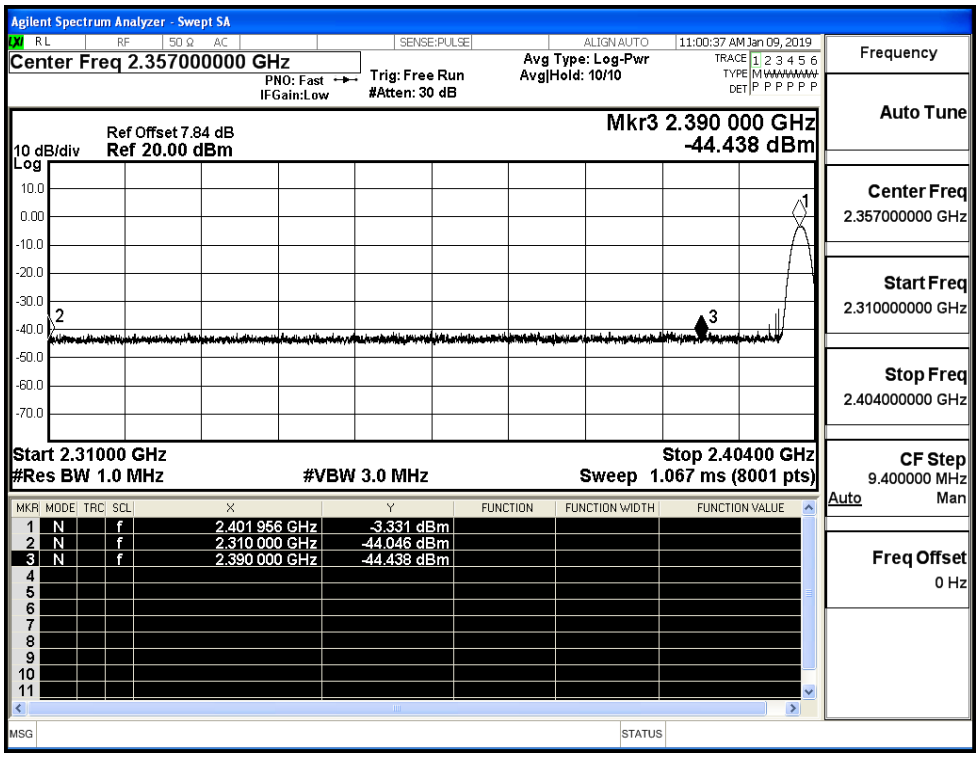
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (High Channel)



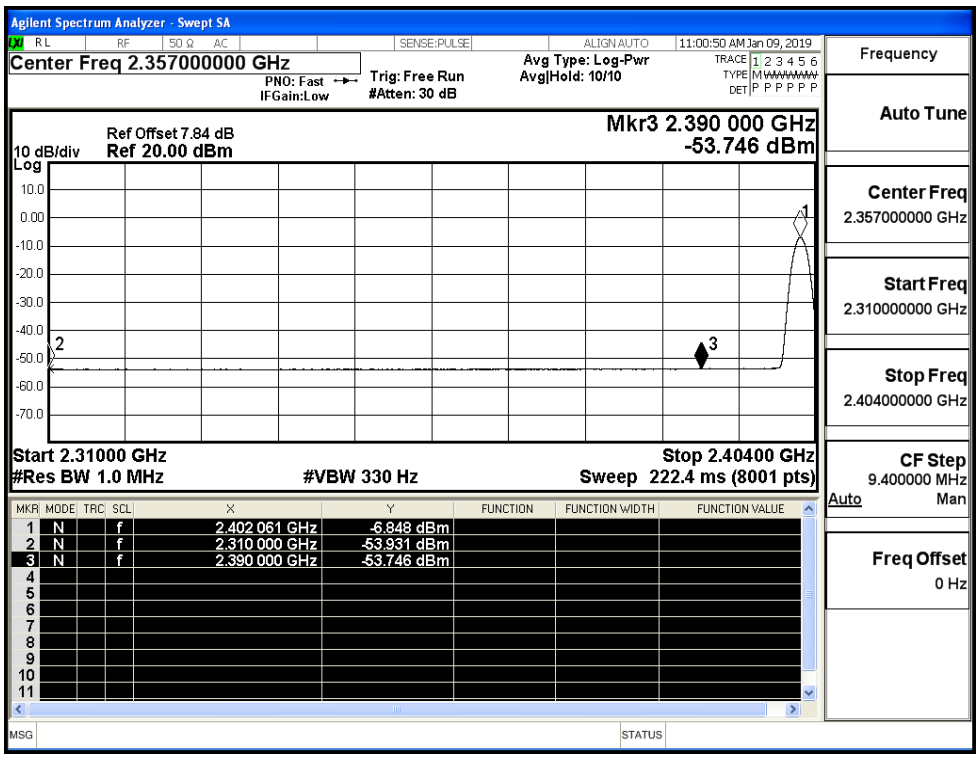
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (High Channel)



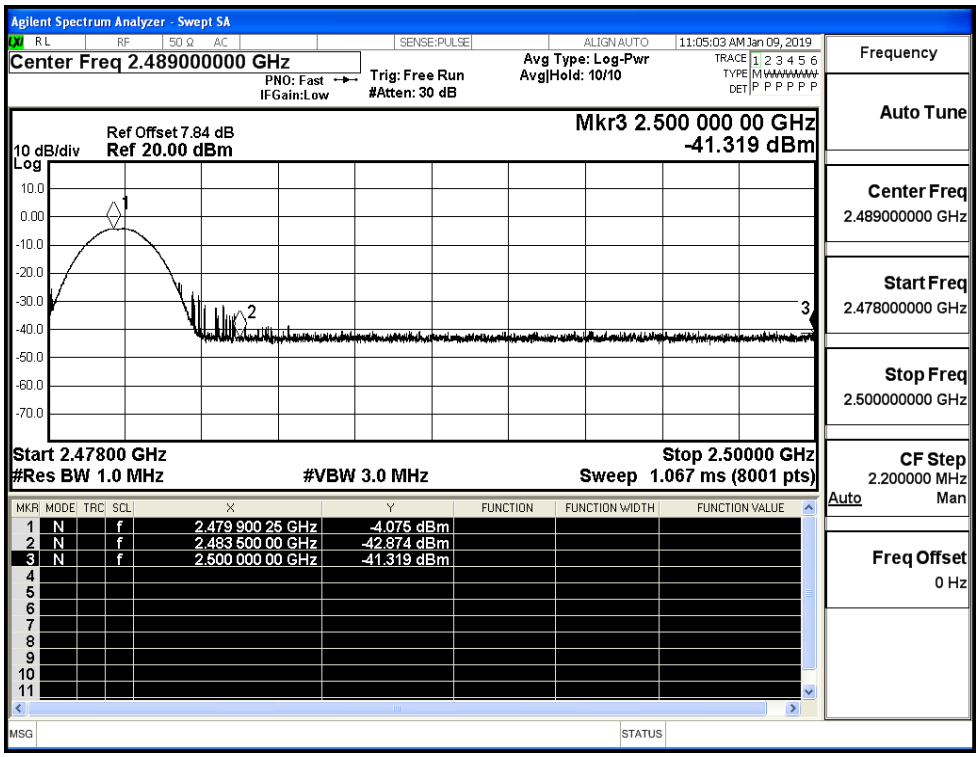
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (Low Channel)



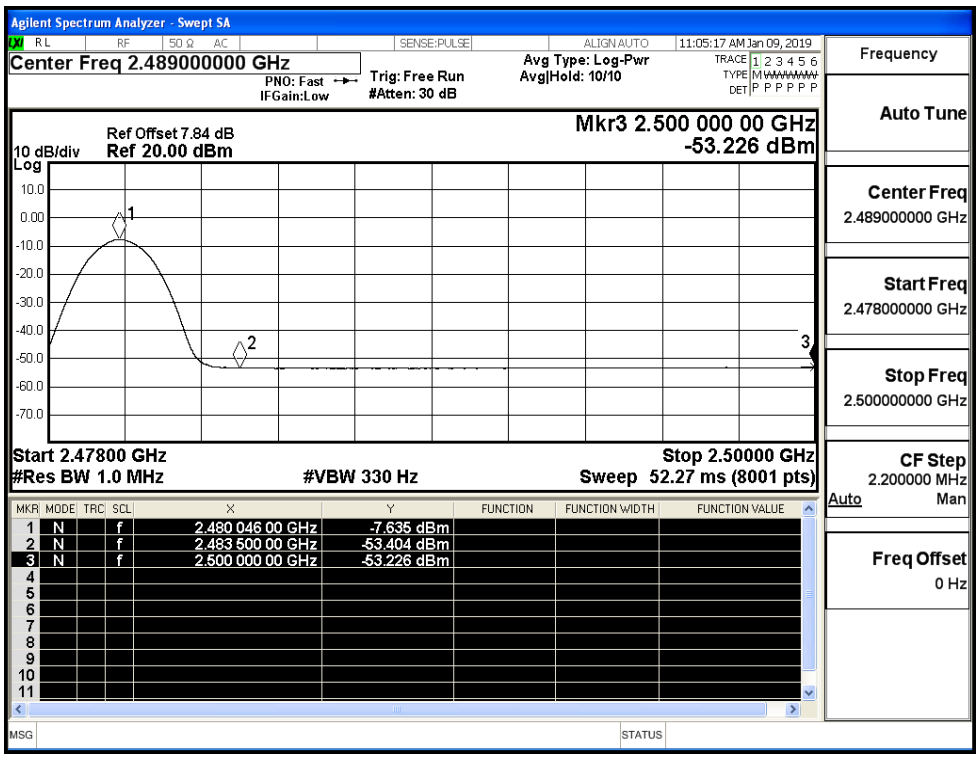
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (Low Channel)



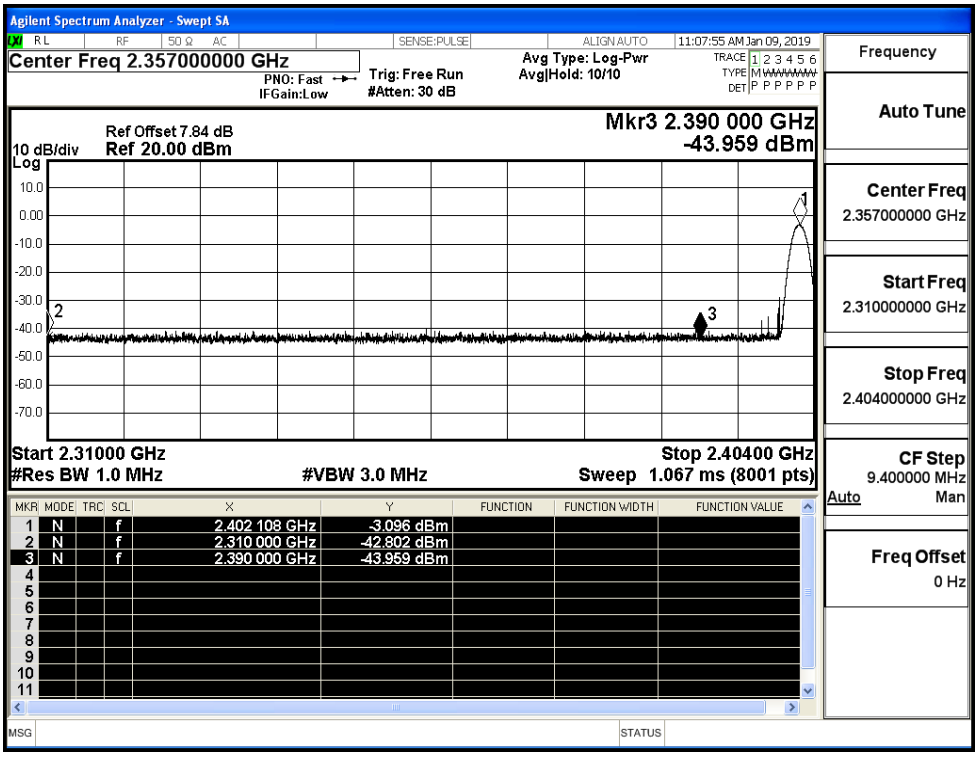
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (High Channel)



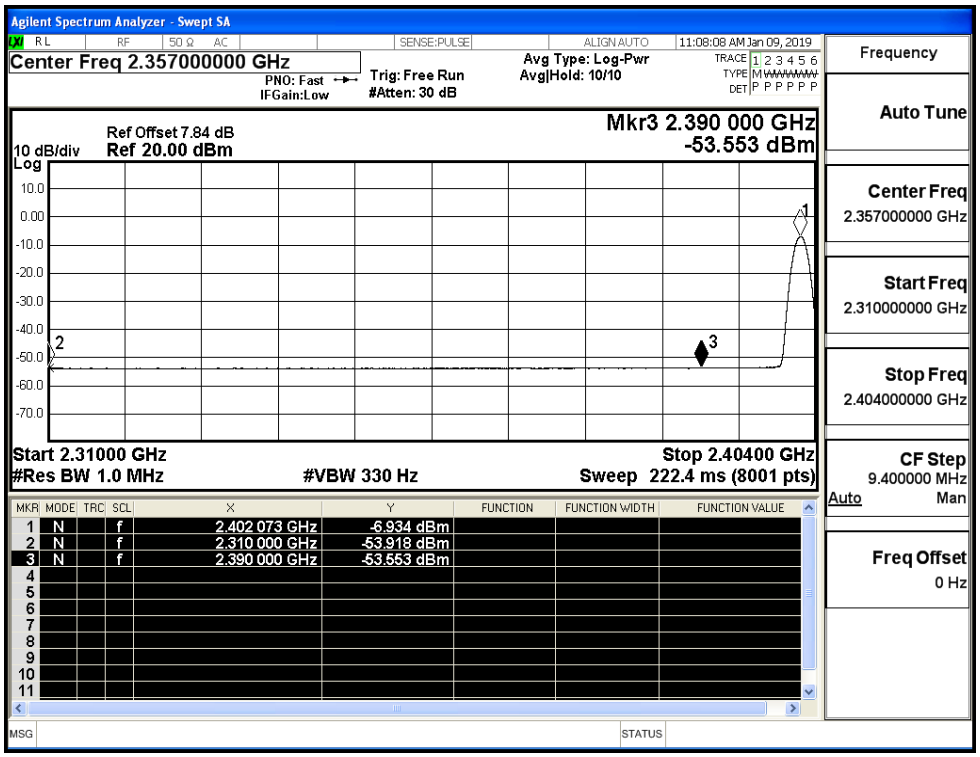
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (High Channel)



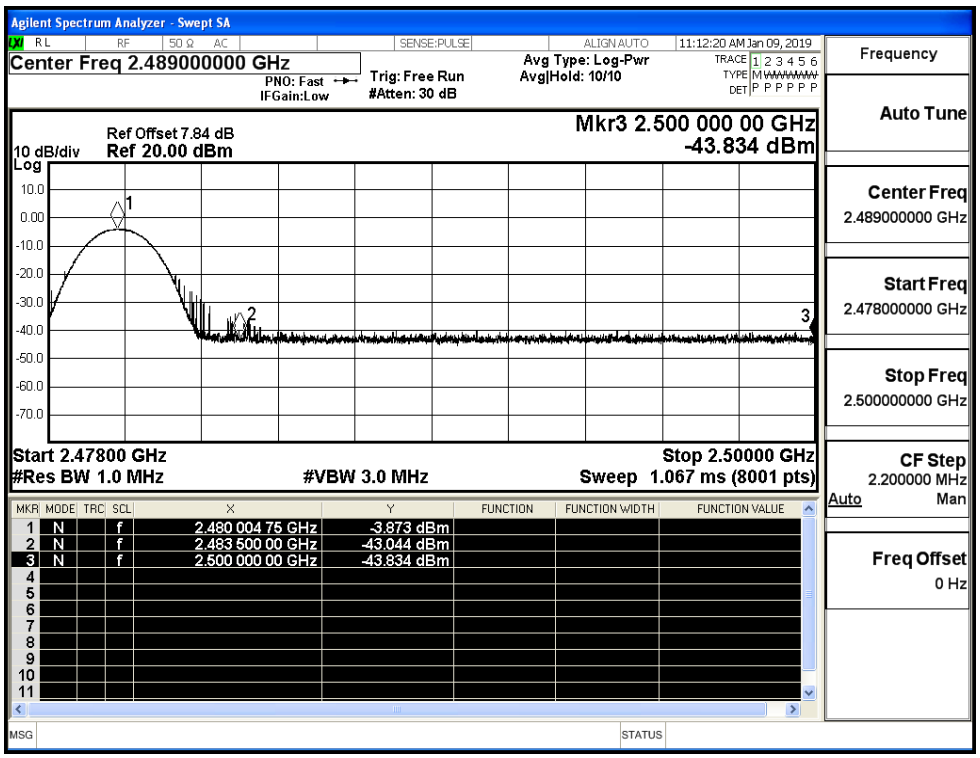
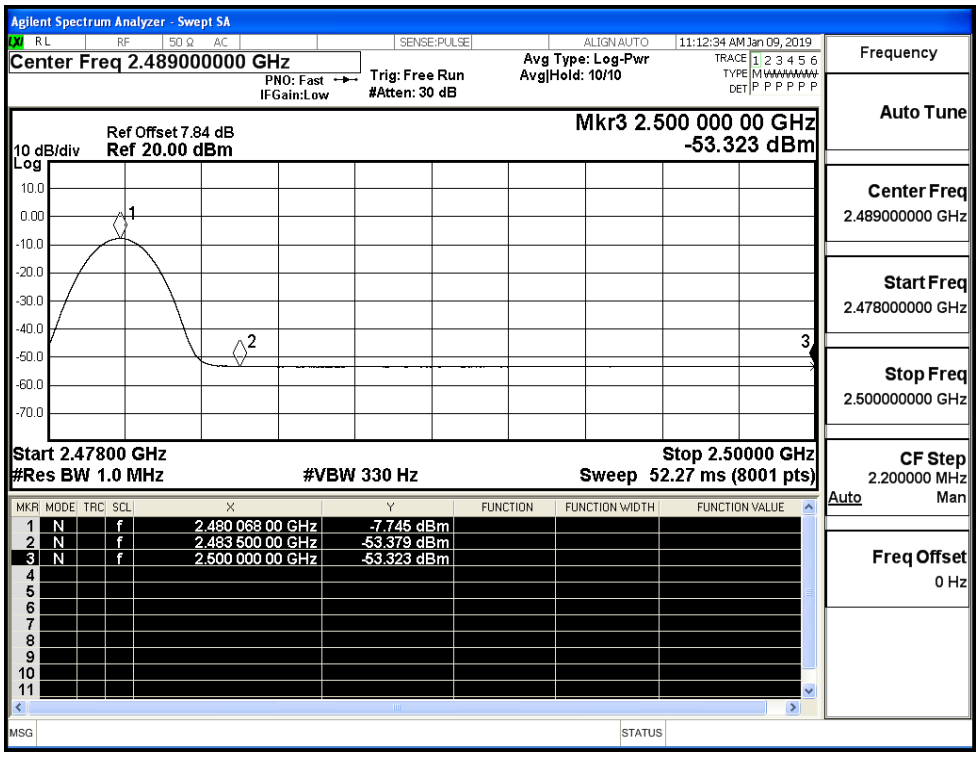
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)