

## Appendix A

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

Product Name: Wireless speaker

Trade Mark: N/A

Test Model: R1

#### Environmental Conditions

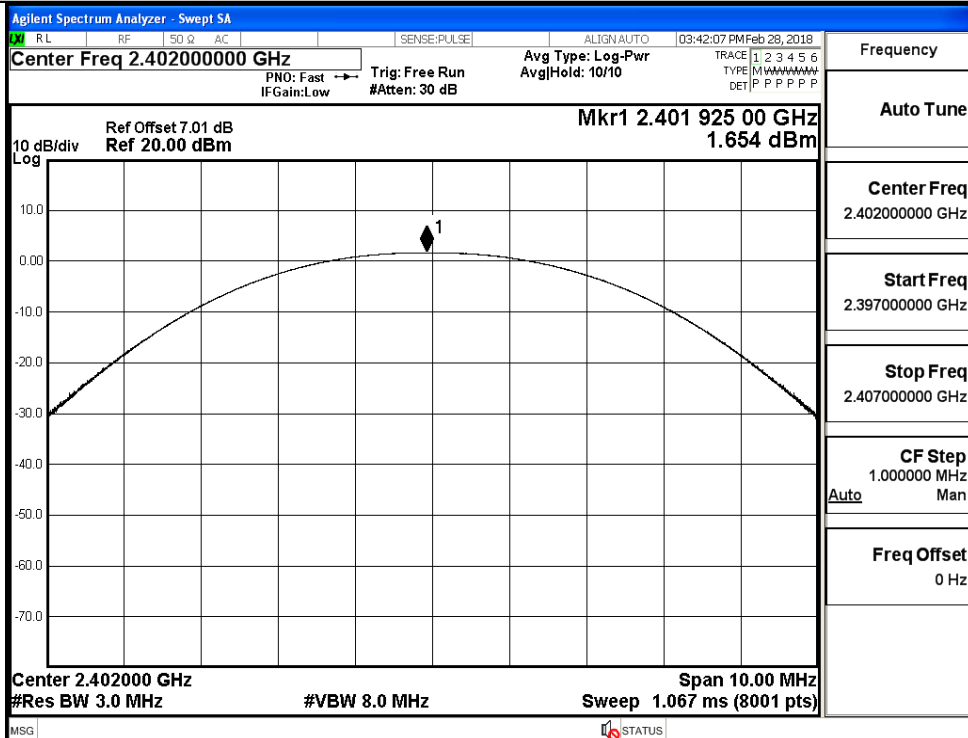
Temperature:	21.5 ° C
Relative Humidity:	52.3%
ATM Pressure:	100.0 kPa
Test Engineer:	Mina.xu
Supervised by:	Tom.Liu

#### A.1 Maximum Conducted Peak Output Power

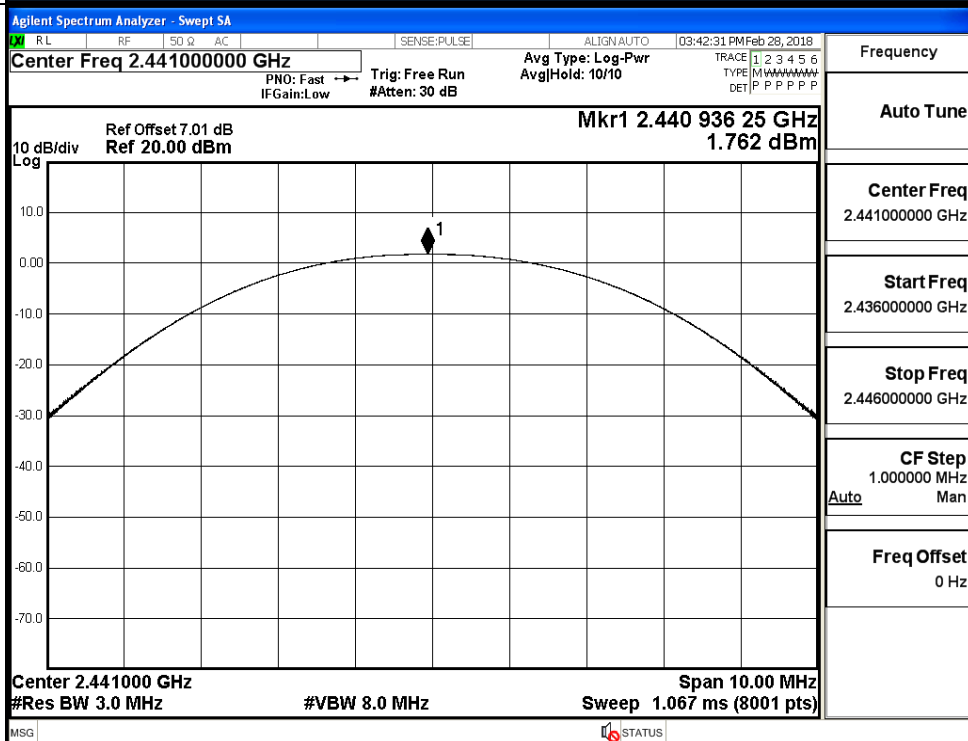
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	1.654	21	PASS
	MCH	1.762	21	PASS
	HCH	1.751	21	PASS
$\pi/4$ DQPSK	LCH	1.533	21	PASS
	MCH	1.602	21	PASS
	HCH	1.569	21	PASS
8DPSK	LCH	1.745	21	PASS
	MCH	1.840	21	PASS
	HCH	1.826	21	PASS

## Test Graphs

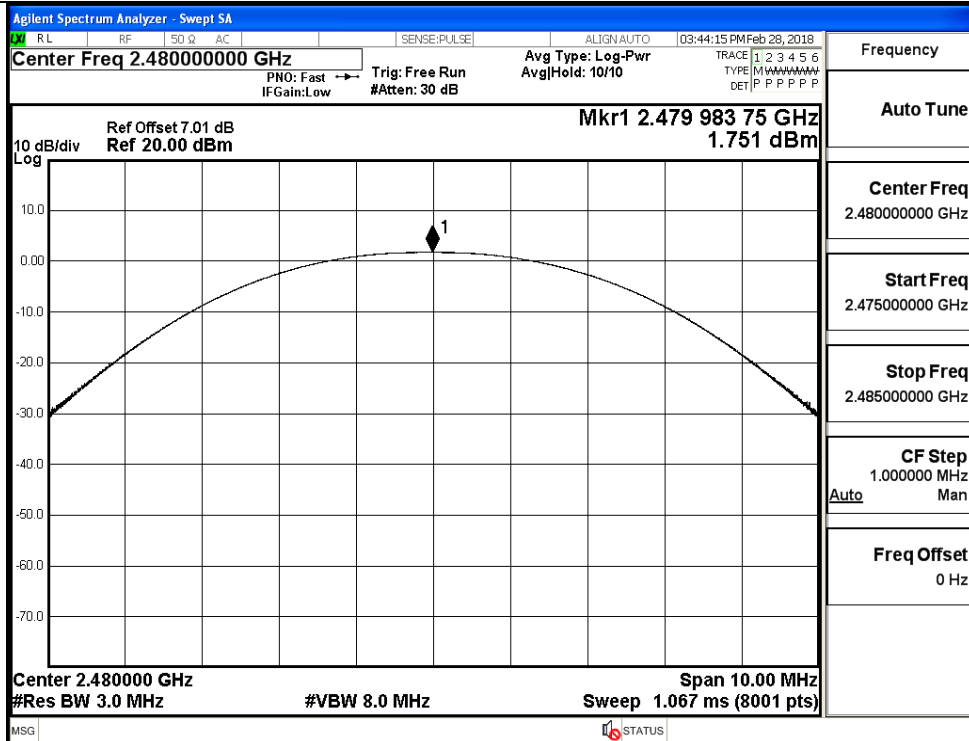
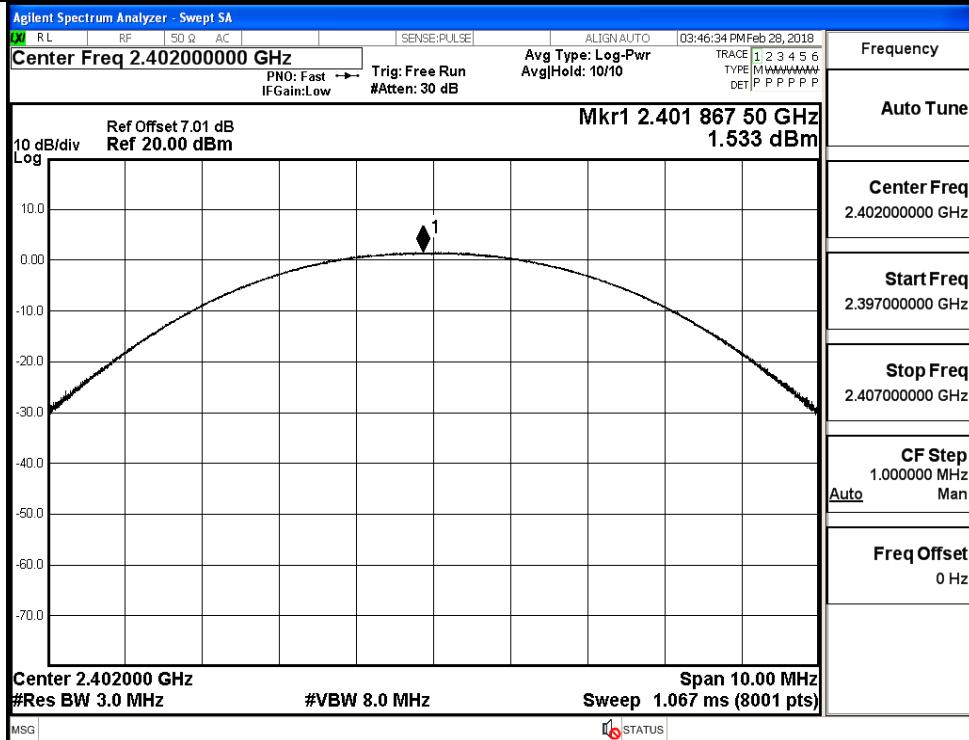
GFSK/LCH

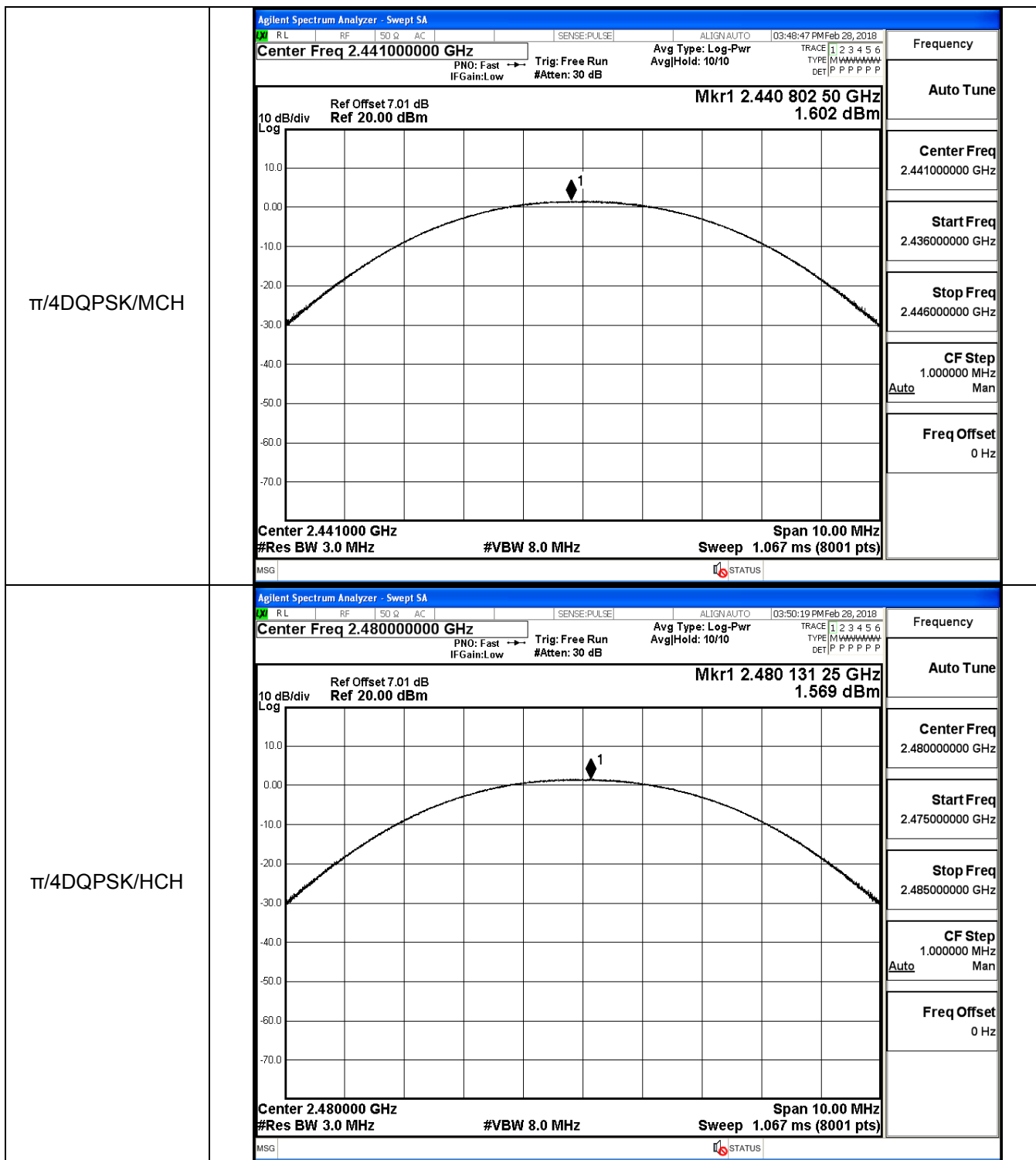


GFSK/MCH

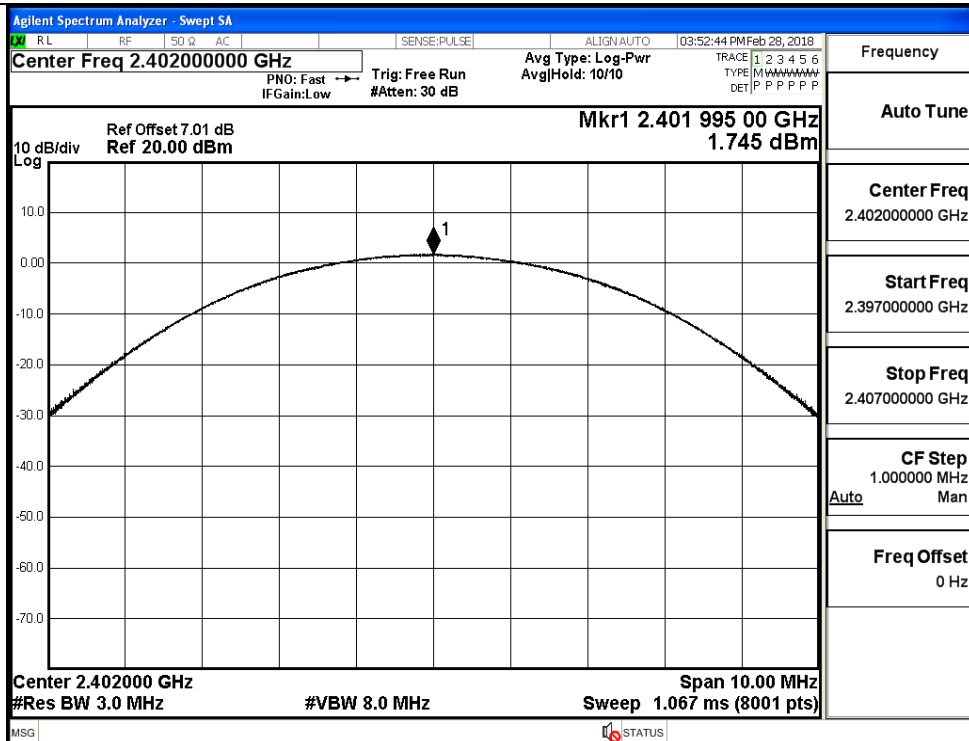


GFSK/HCH

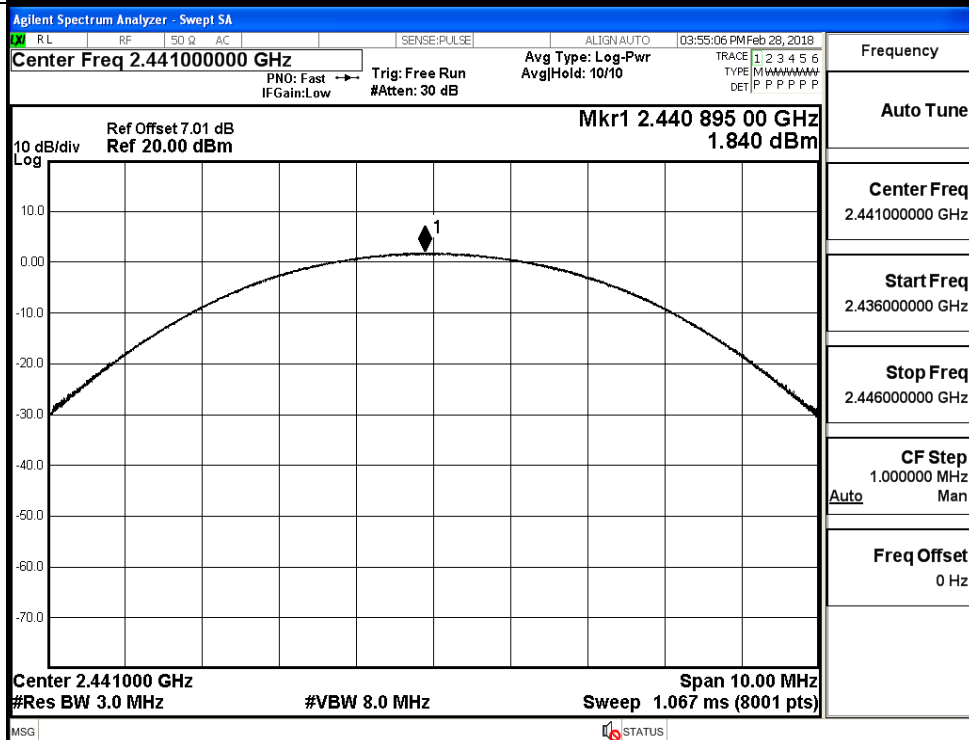
 $\pi$ /4DQPSK/LCH



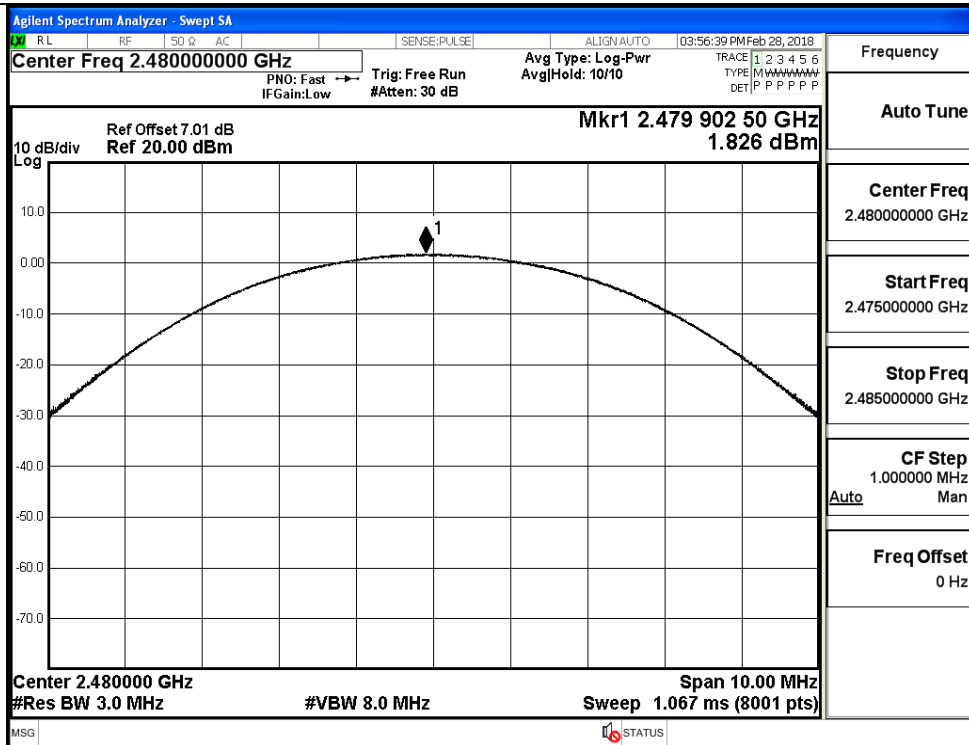
8DPSK/LCH



8DPSK/MCH



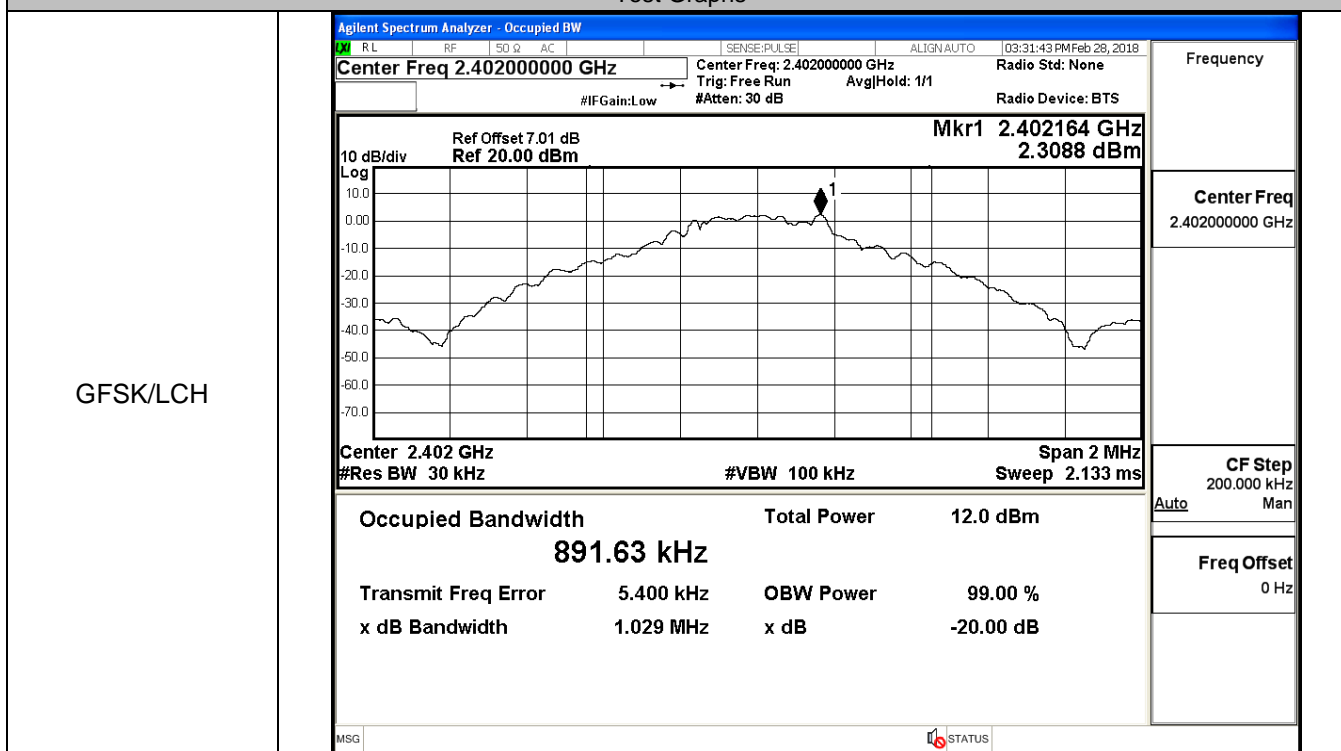
8DPSK/HCH



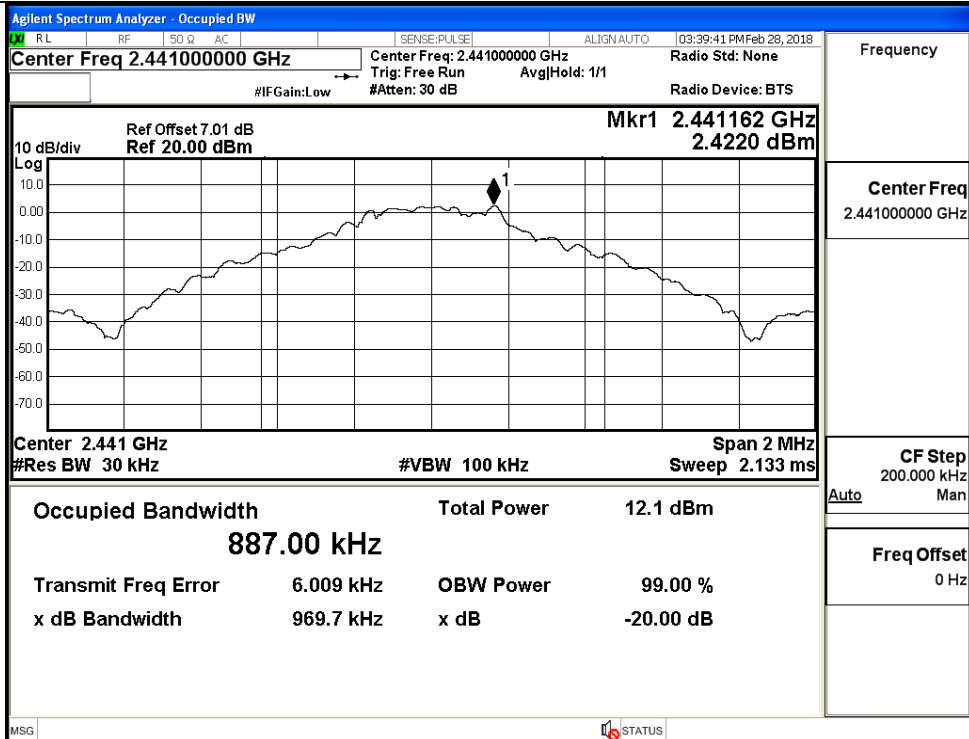
## A.2 20dB Bandwidth

Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.029	Not Specified	PASS
	MCH	0.9697	Not Specified	PASS
	HCH	1.035	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.291	Not Specified	PASS
	MCH	1.288	Not Specified	PASS
	HCH	1.286	Not Specified	PASS
8DPSK	LCH	1.292	Not Specified	PASS
	MCH	1.290	Not Specified	PASS
	HCH	1.291	Not Specified	PASS

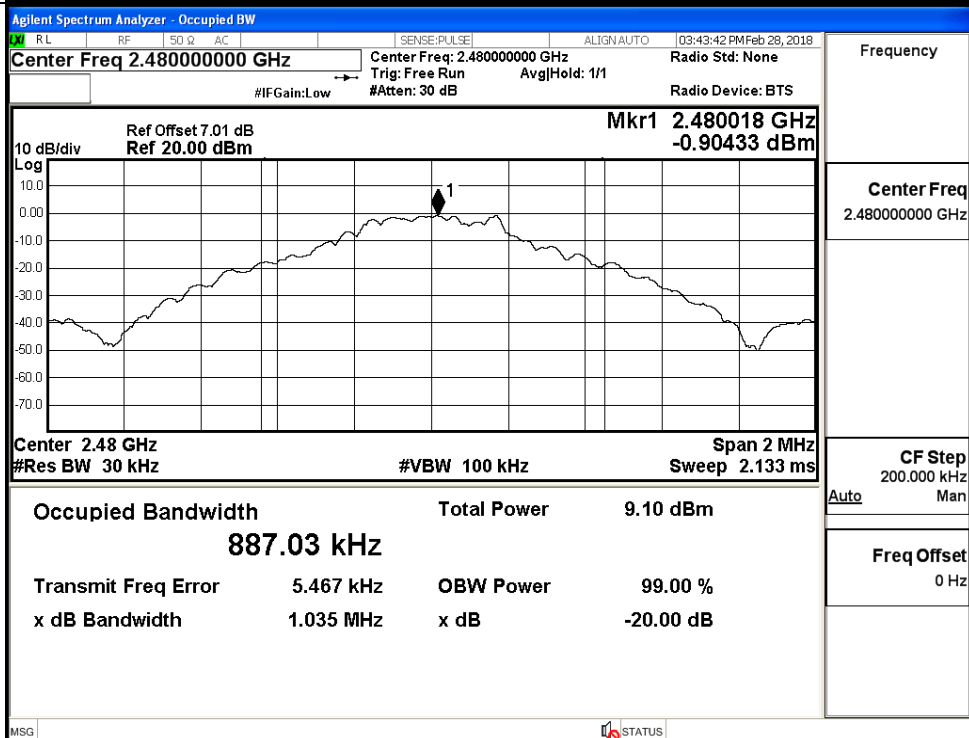
Test Graphs



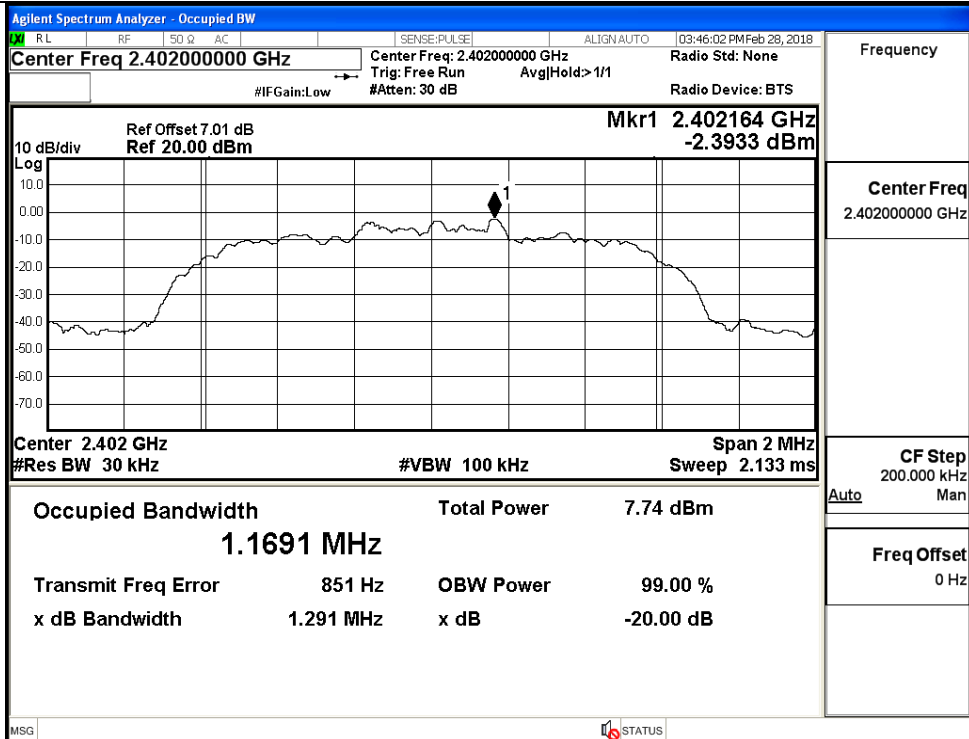
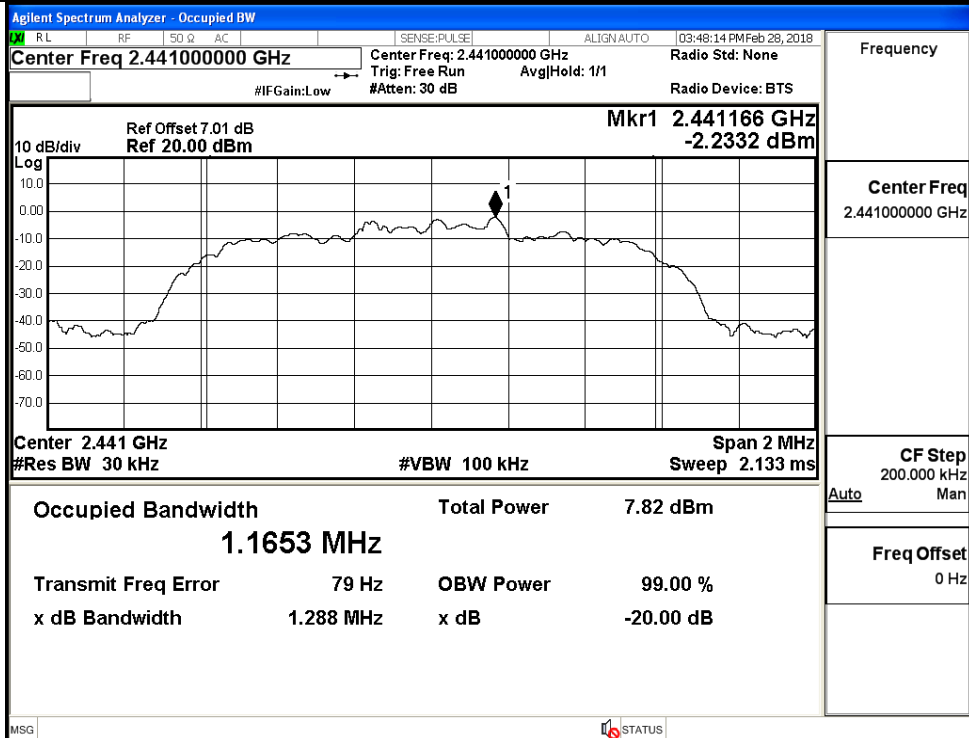
GFSK/MCH

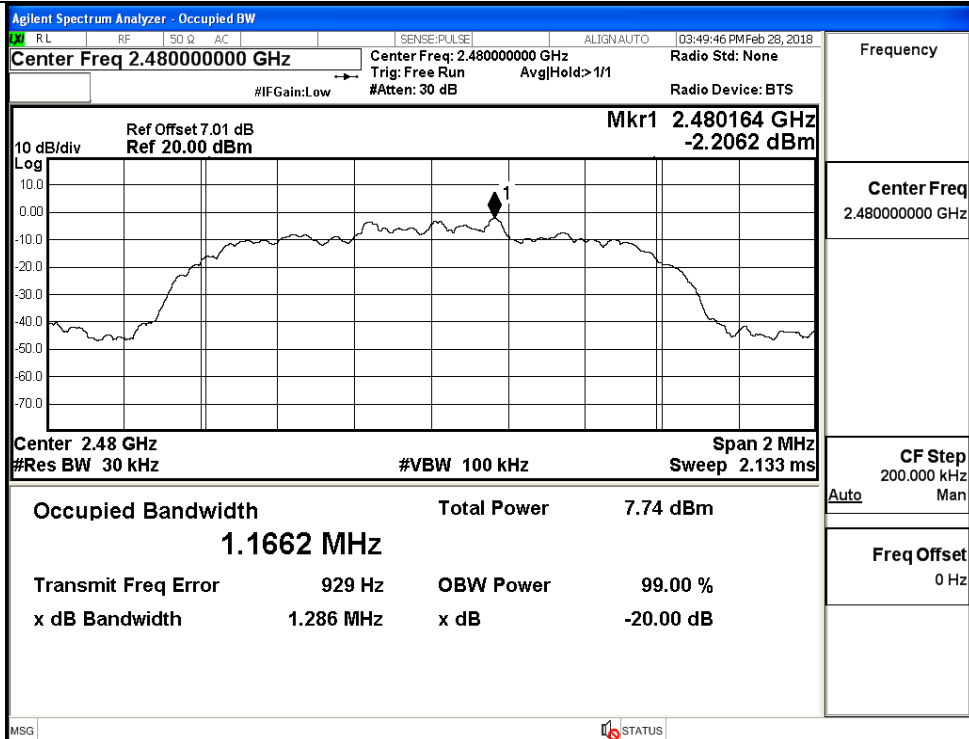


GFSK/HCH

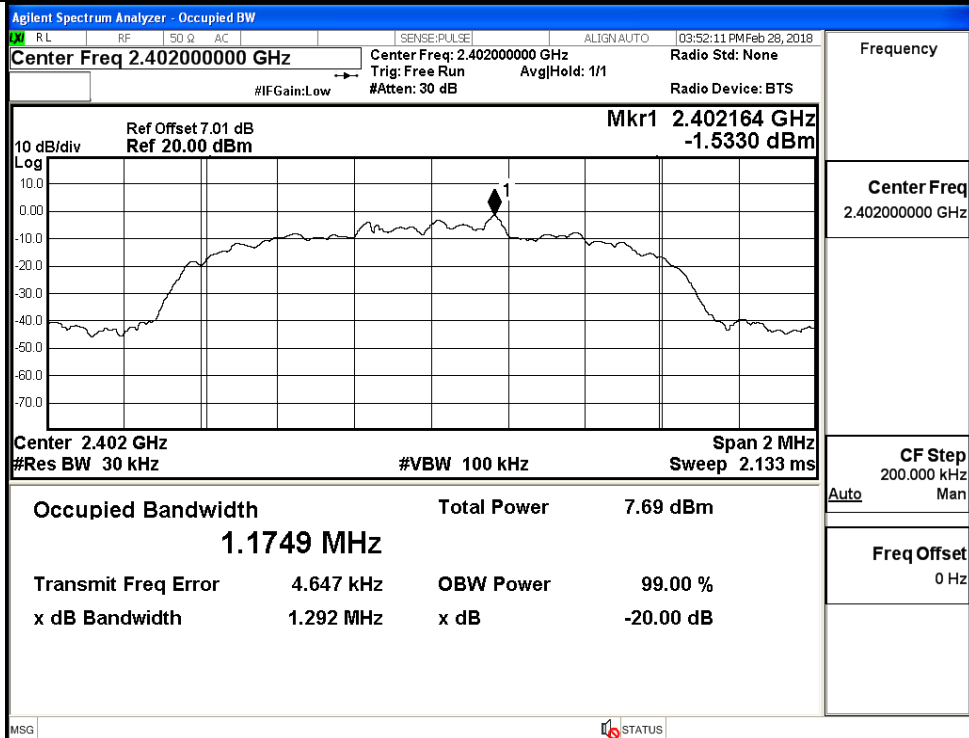




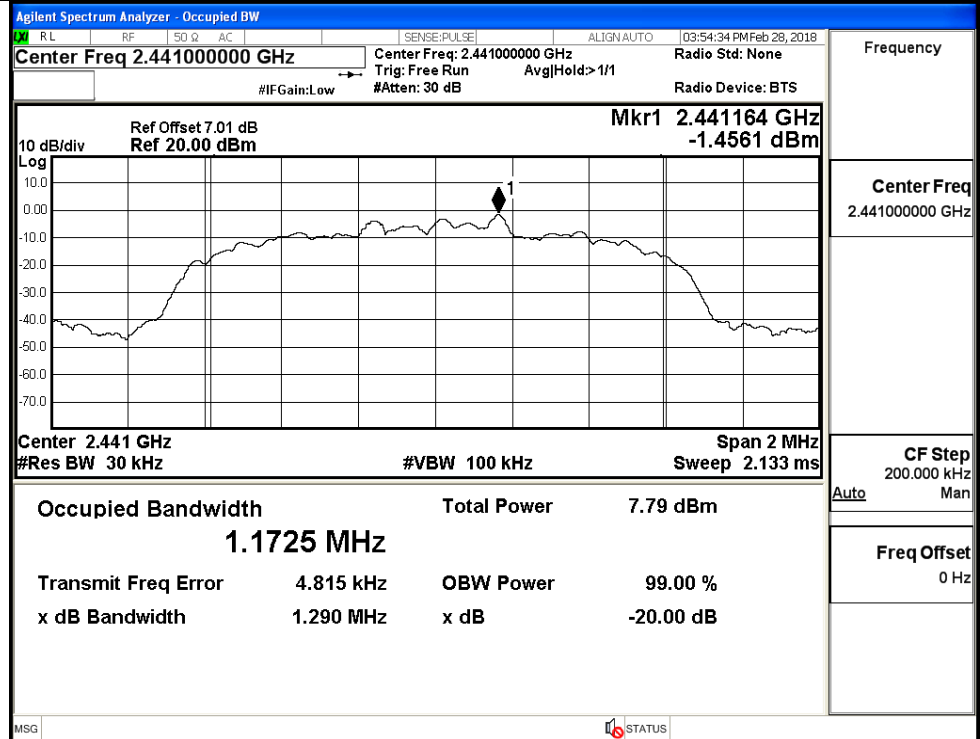
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

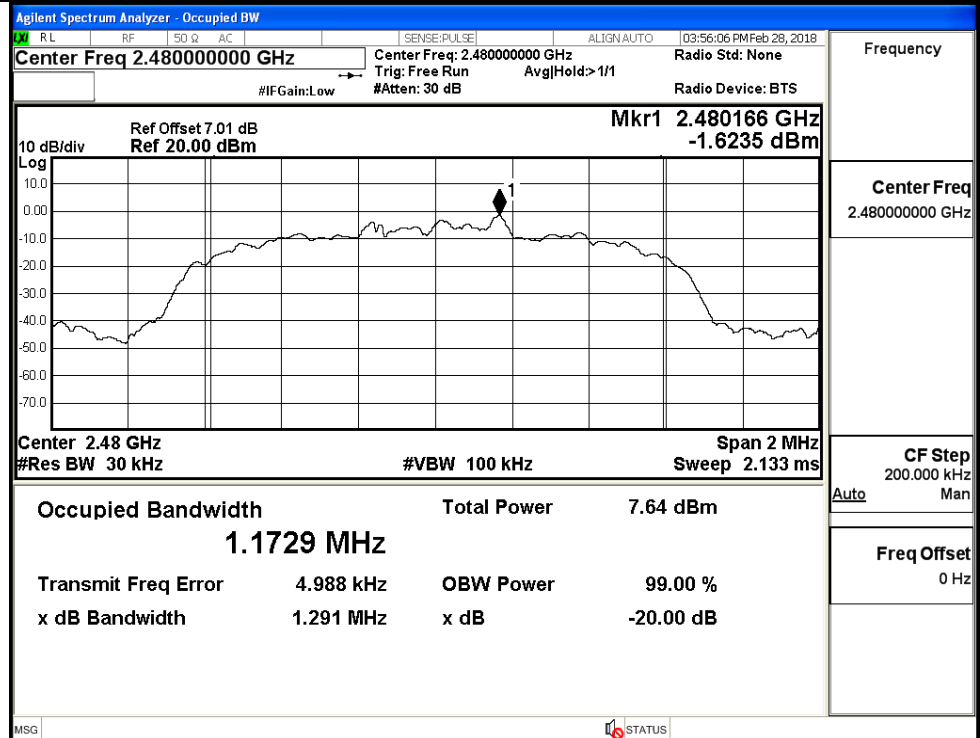
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

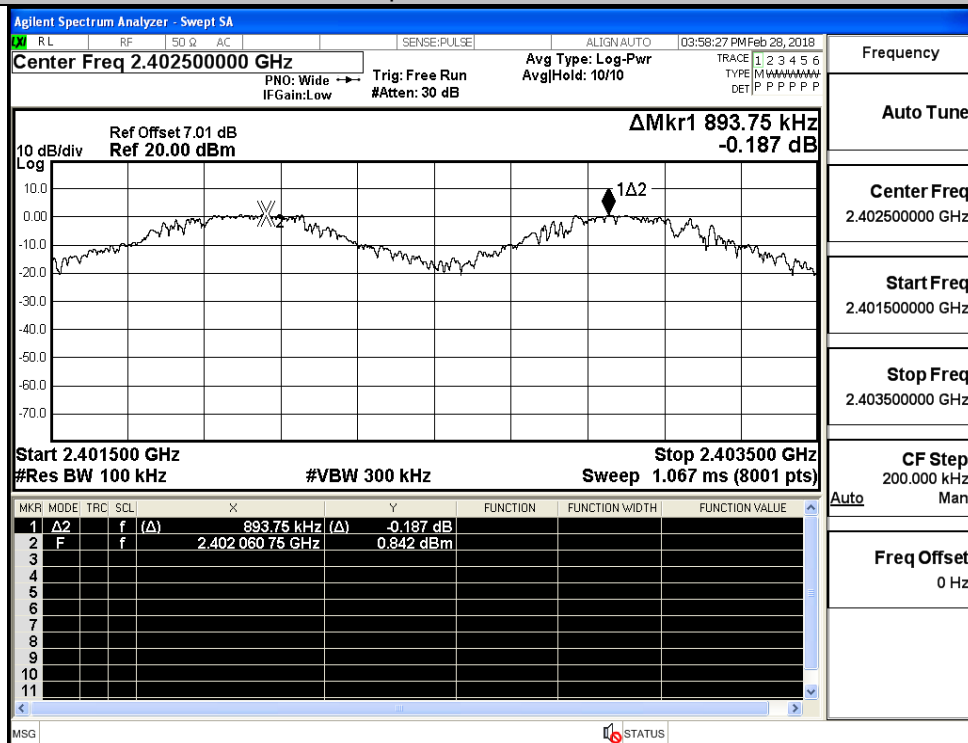


## A.3 Carrier Frequency Separation

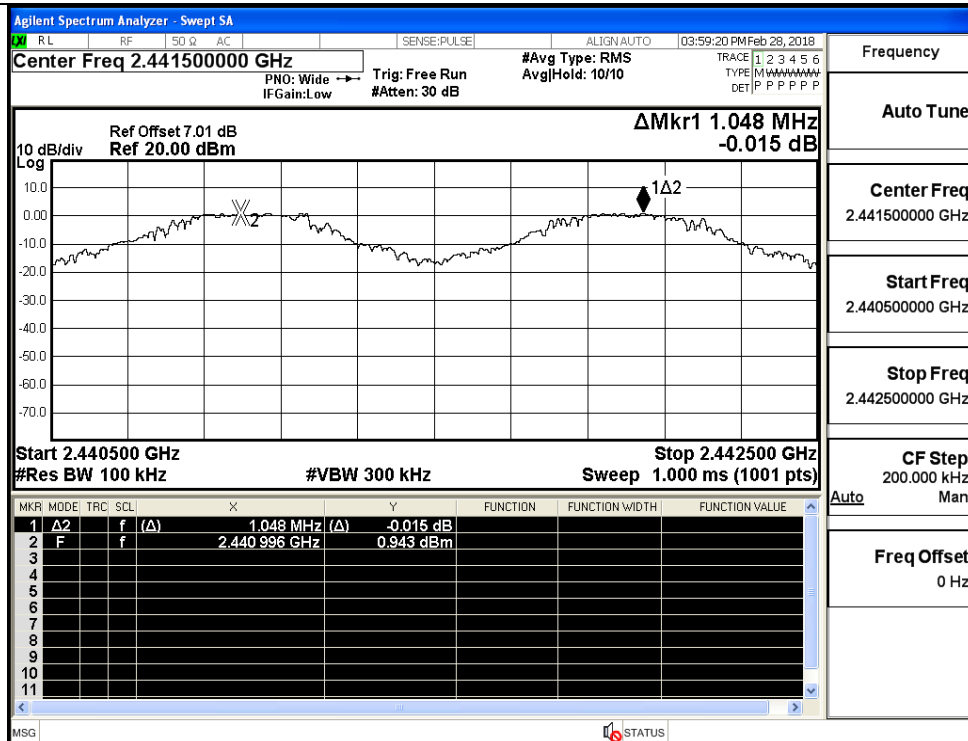
Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.894	0.686	PASS
	MCH	1.048	0.646	PASS
	HCH	1.172	0.690	PASS
$\pi/4$ DQPSK	LCH	1.136	0.861	PASS
	MCH	0.902	0.859	PASS
	HCH	0.988	0.857	PASS
8DPSK	LCH	0.992	0.861	PASS
	MCH	0.880	0.860	PASS
	HCH	0.928	0.861	PASS

## Test Graphs

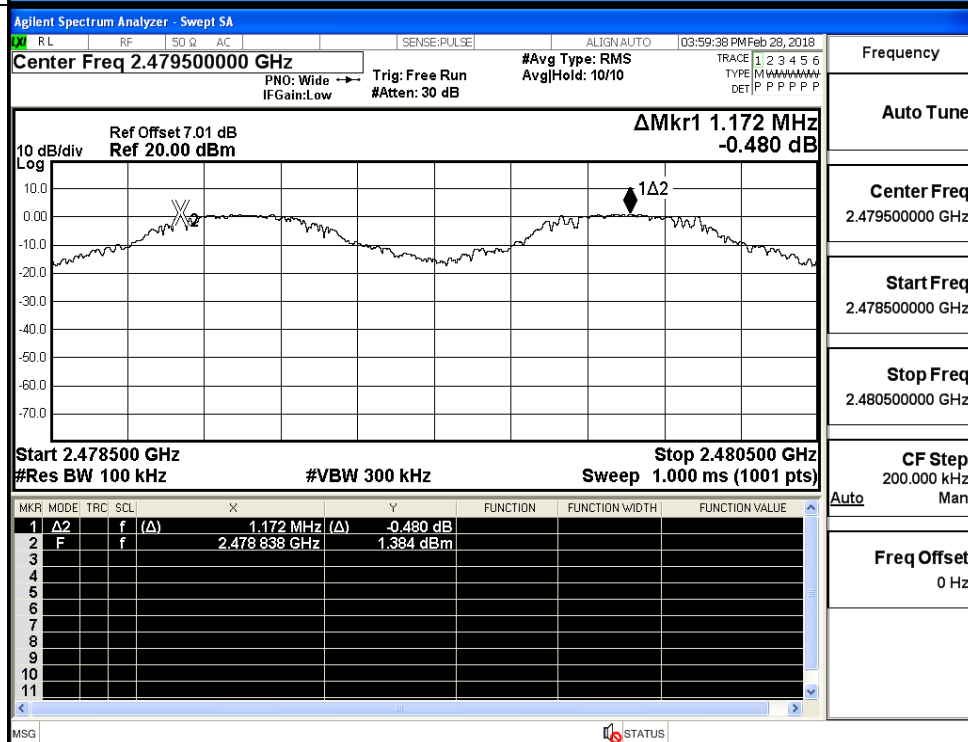
GFSK/LCH

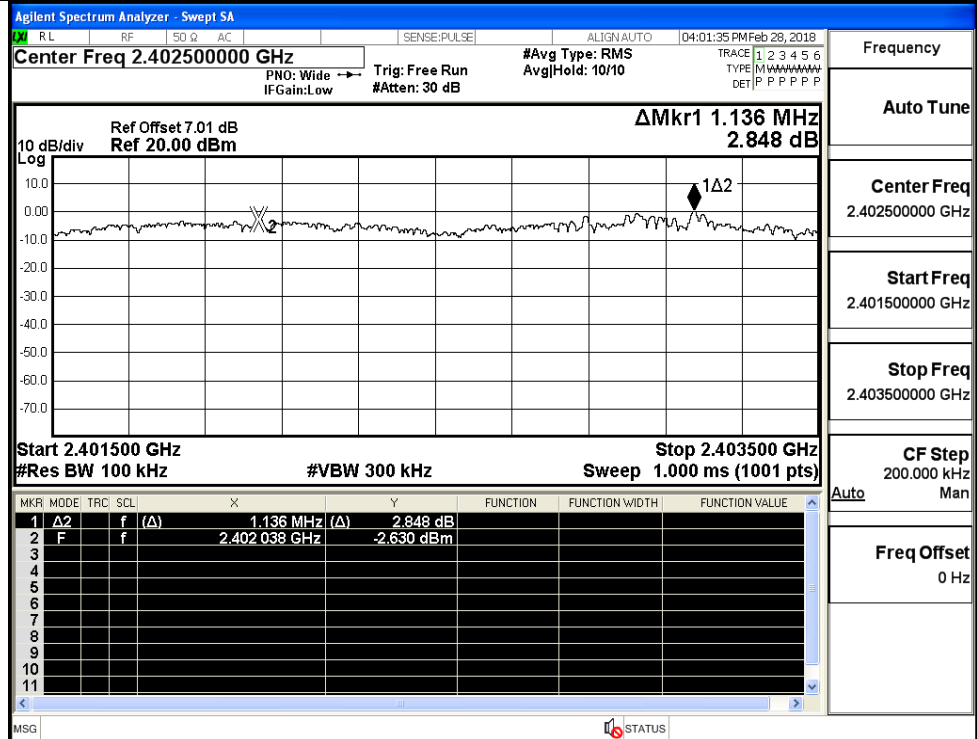
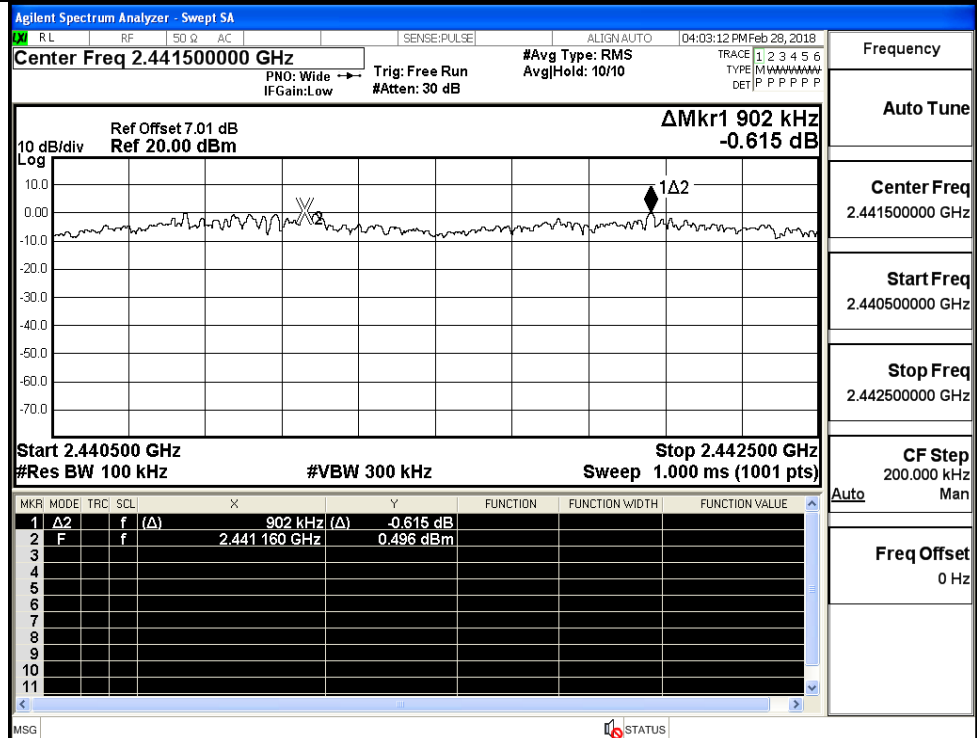


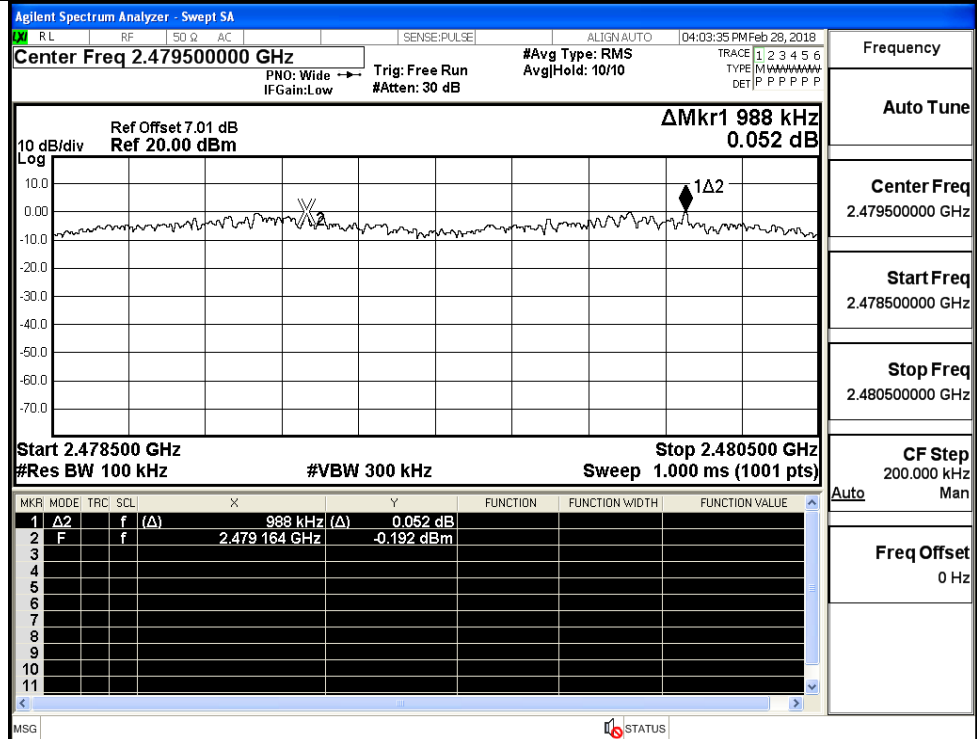
GFSK/MCH



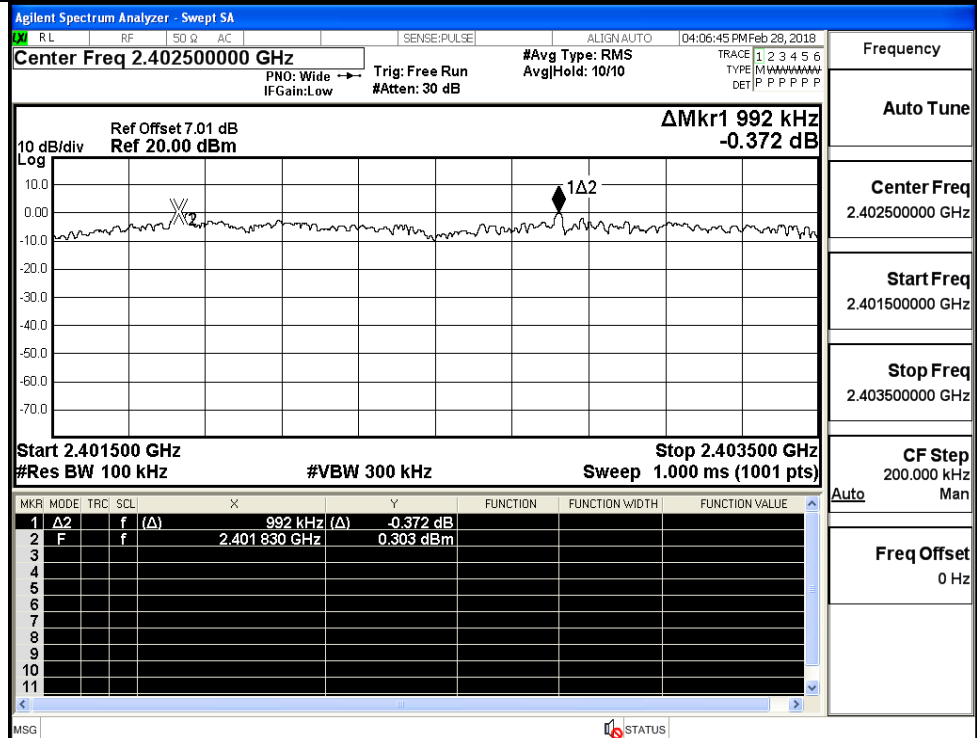
GFSK/HCH

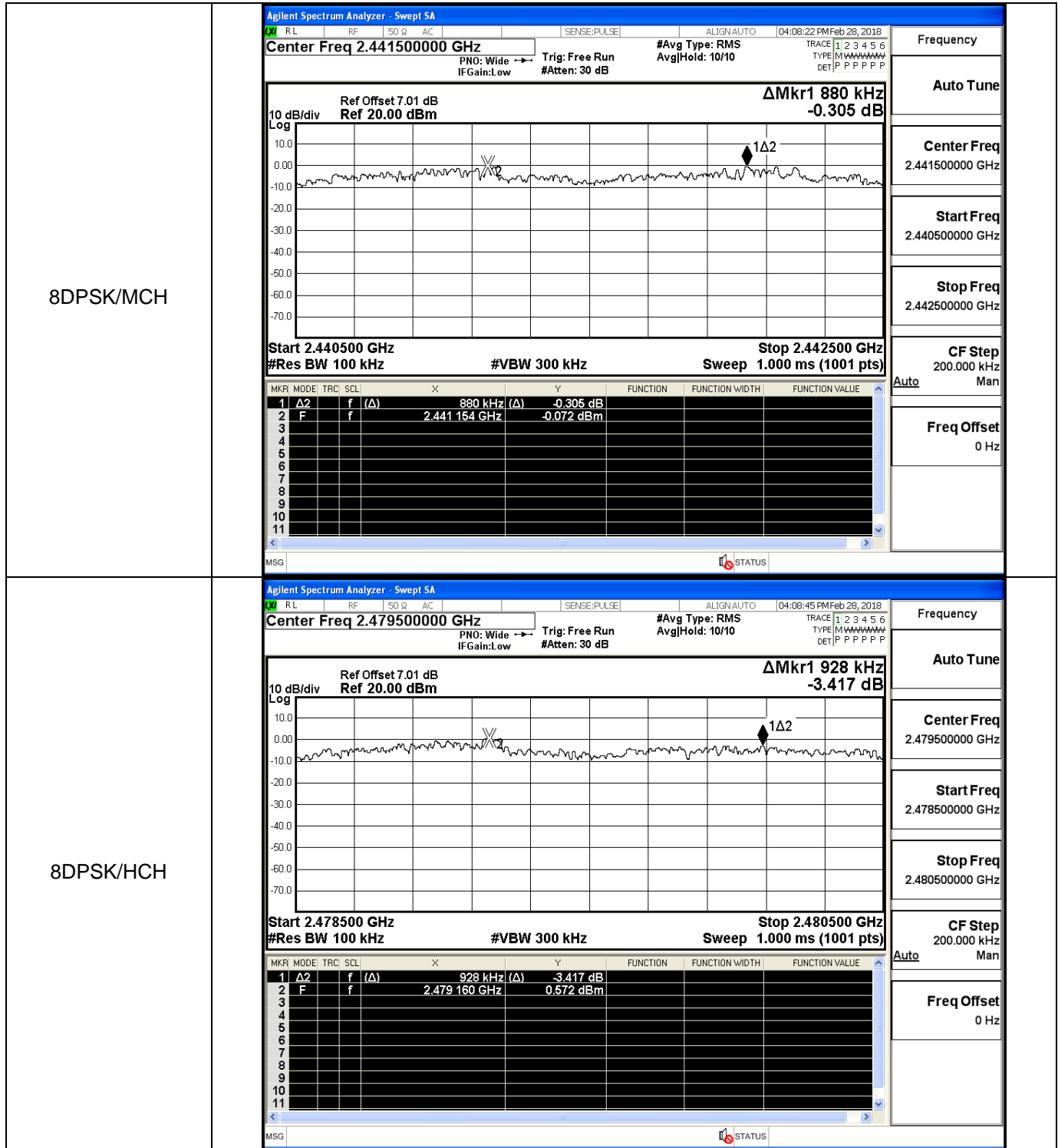


$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

8DPSK/LCH





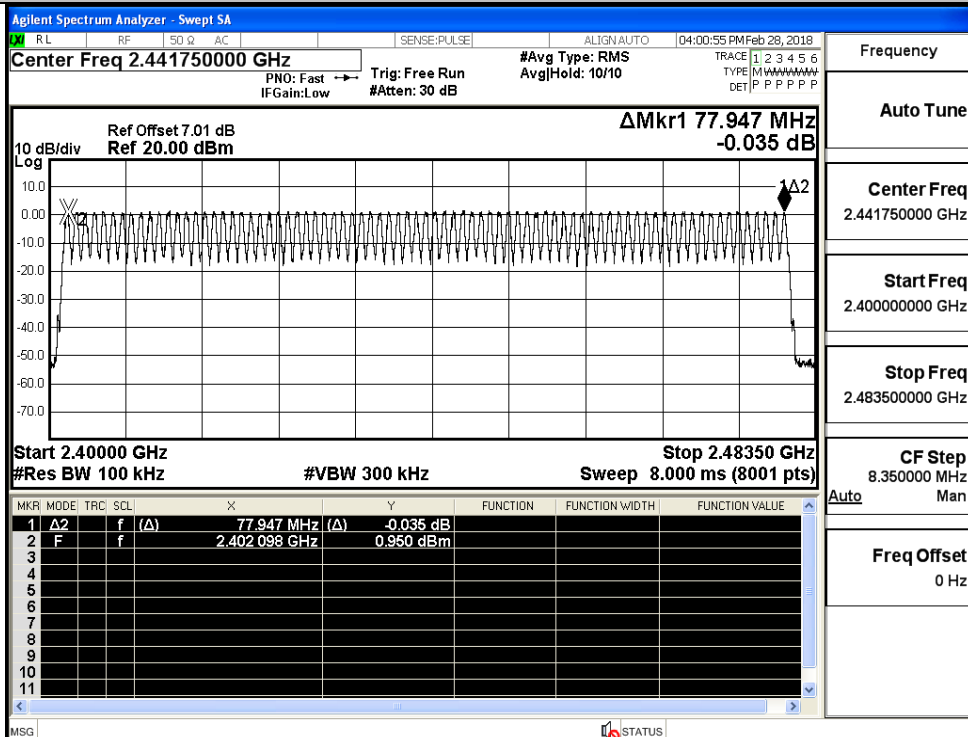
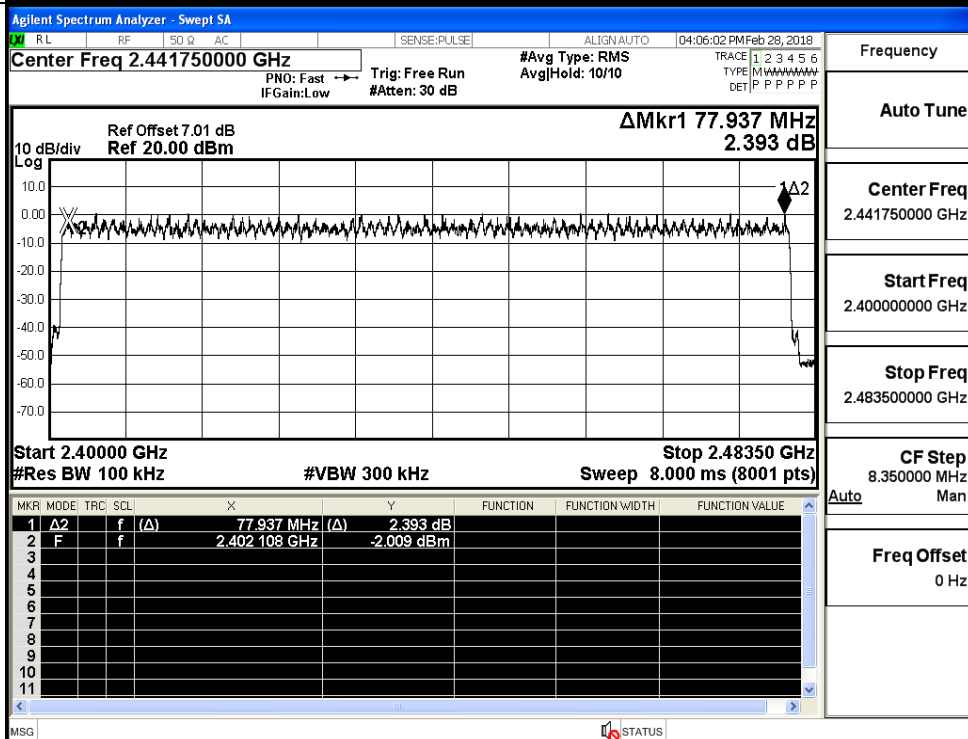
#### A.4 Hopping Channel Number

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

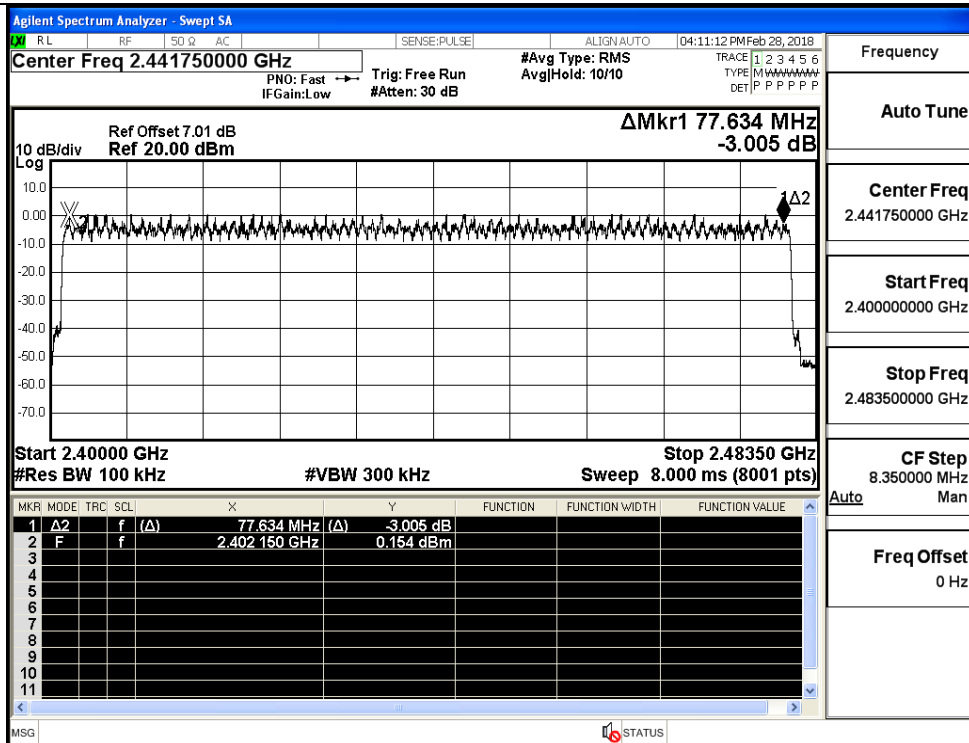


## Test Graphs

GFSK/Hop

 $\pi/4$ DQPSK/Hop

8DPSK/Hop

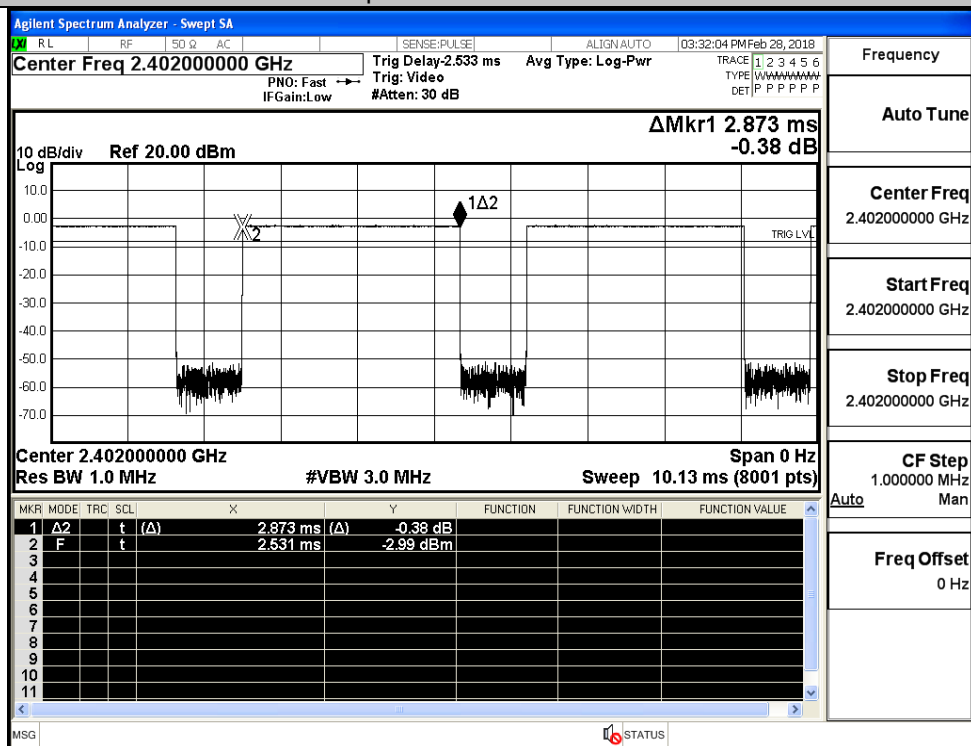


## A.5 Dwell Time

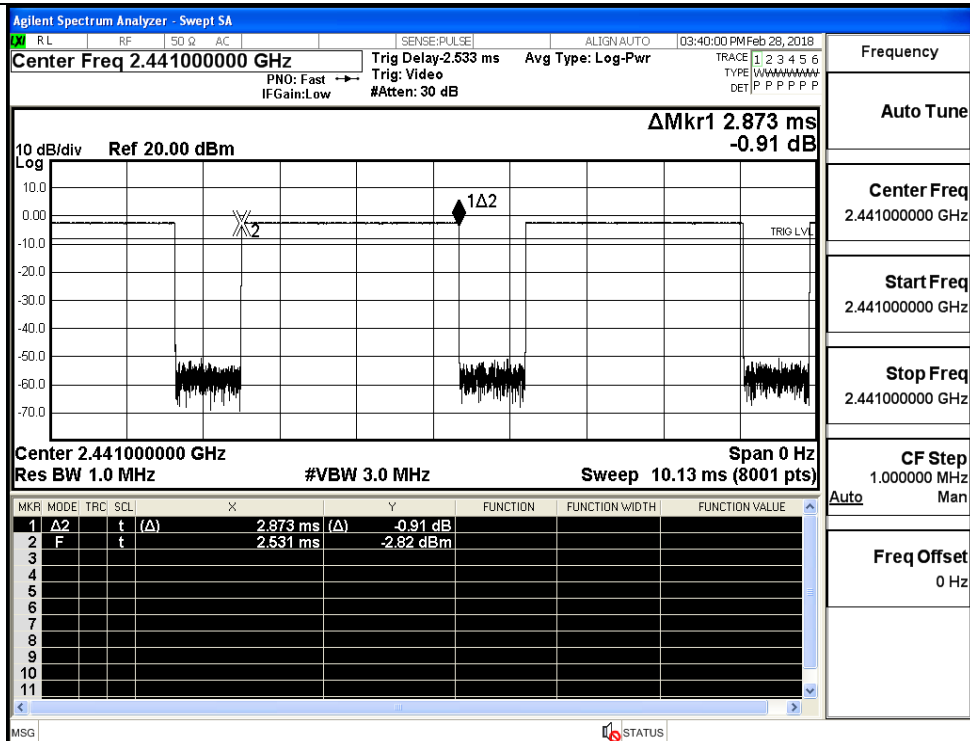
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.87	106.7	0.306	0.4	PASS
	DH5	MCH	2.87	106.7	0.306	0.4	PASS
	DH5	HCH	2.87	106.7	0.306	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.87	106.7	0.307	0.4	PASS
	2DH5	MCH	2.87	106.7	0.307	0.4	PASS
	2DH5	HCH	2.87	106.7	0.307	0.4	PASS
8DPSK	3DH5	LCH	2.87	106.7	0.307	0.4	PASS
	3DH5	MCH	2.87	106.7	0.307	0.4	PASS
	3DH5	HCH	2.87	106.7	0.307	0.4	PASS

Test Graphs

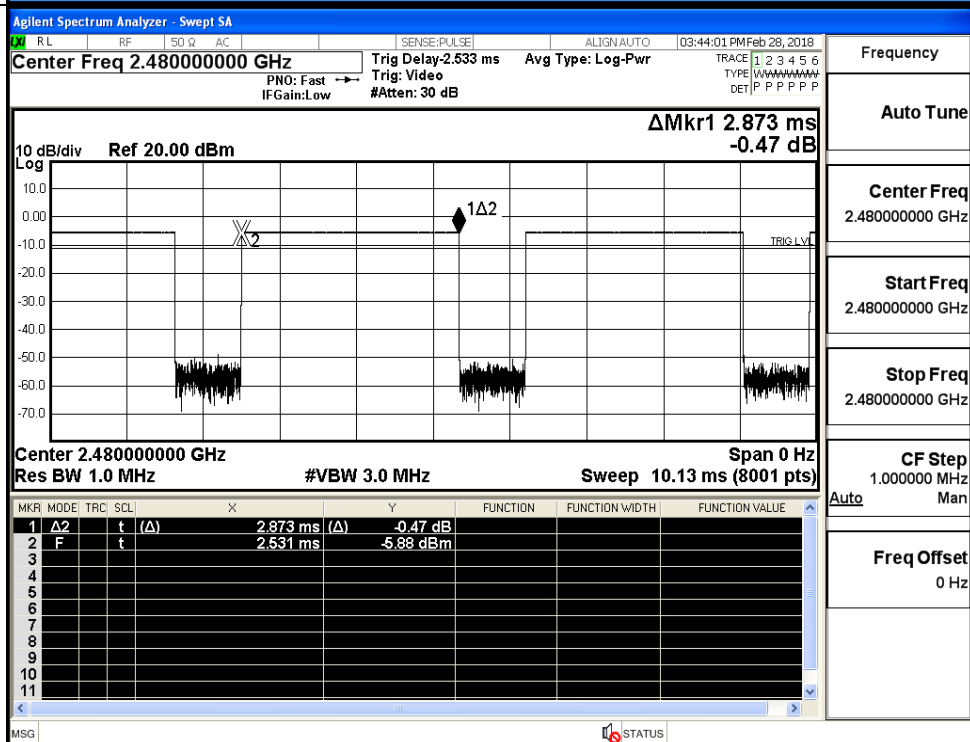
GFSK\_DH5/LCH



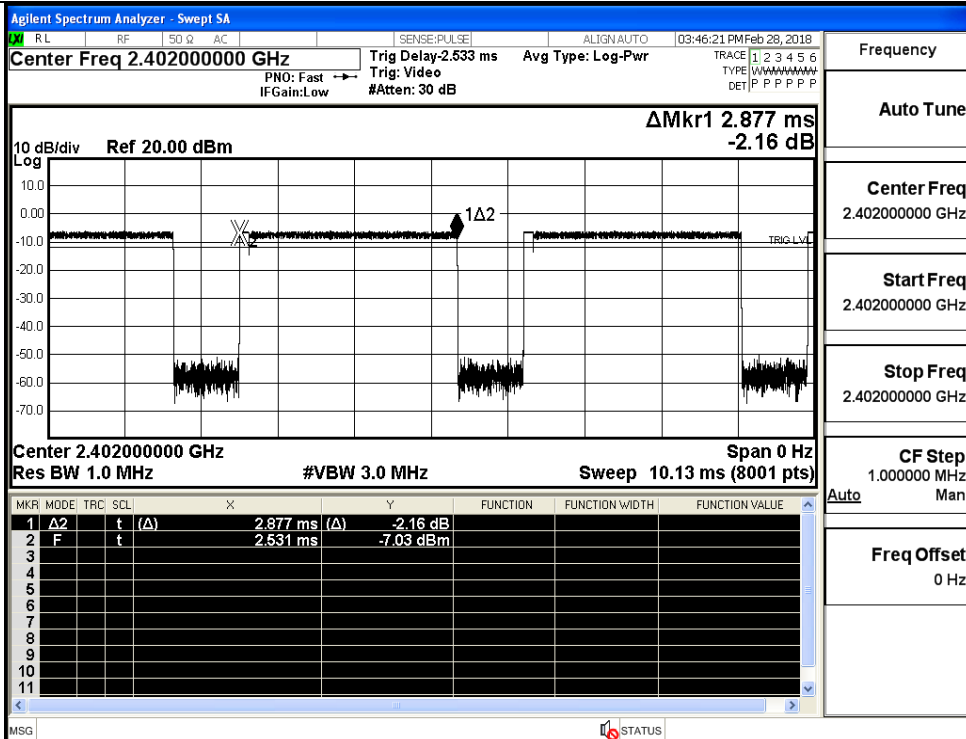
GFSK\_DH5/MCH



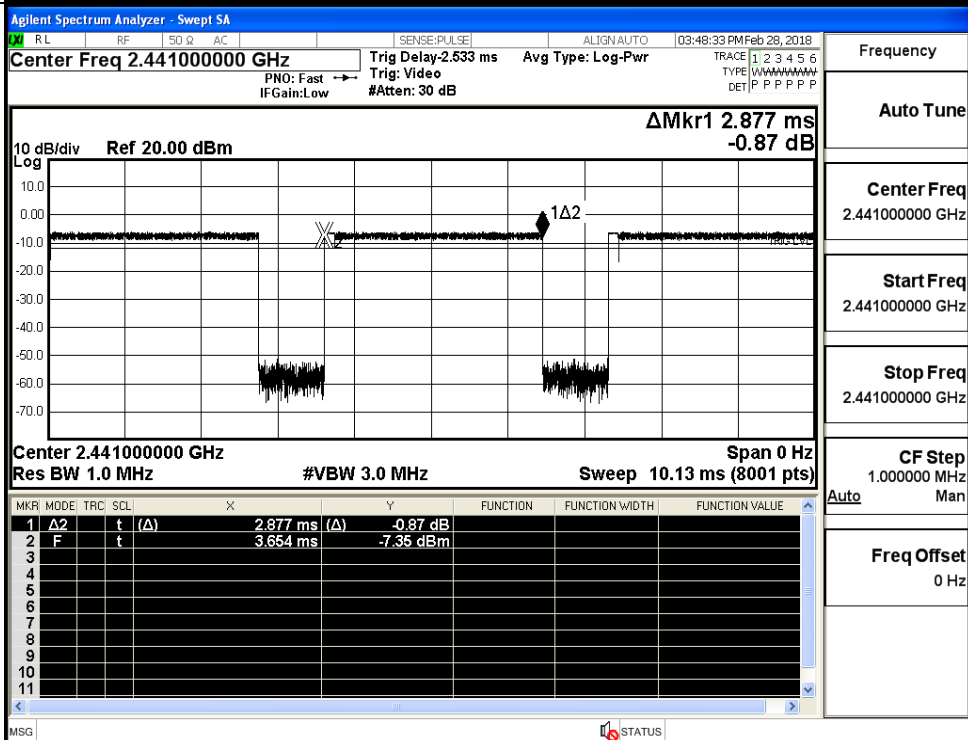
GFSK\_DH5/HCH



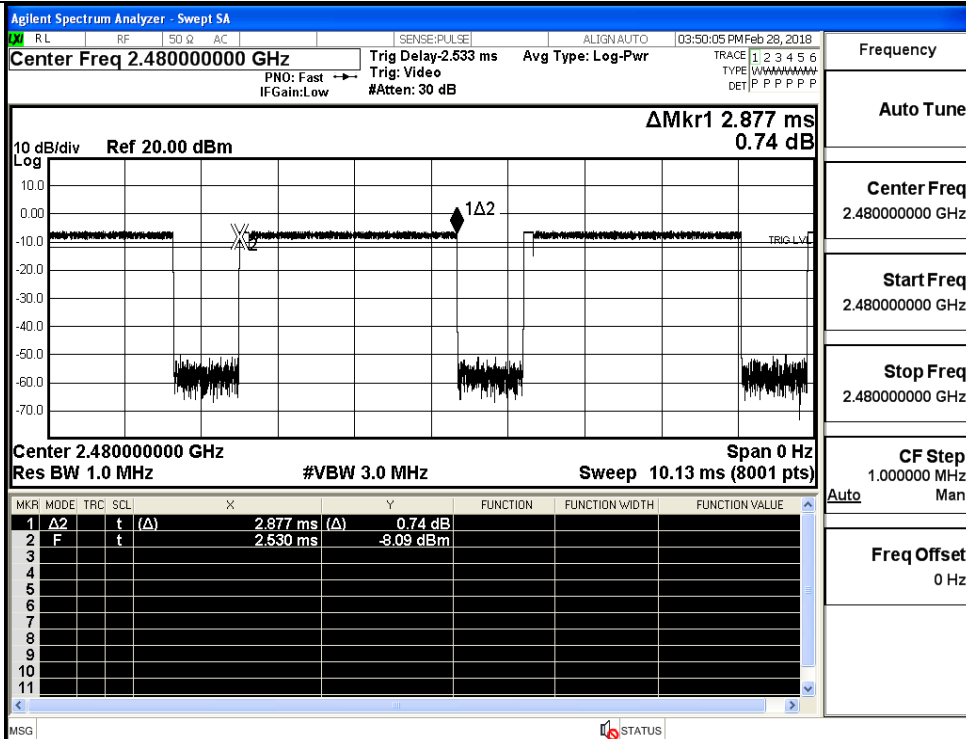
$\pi/4$ DQPSK  
\_2DH5/LCH



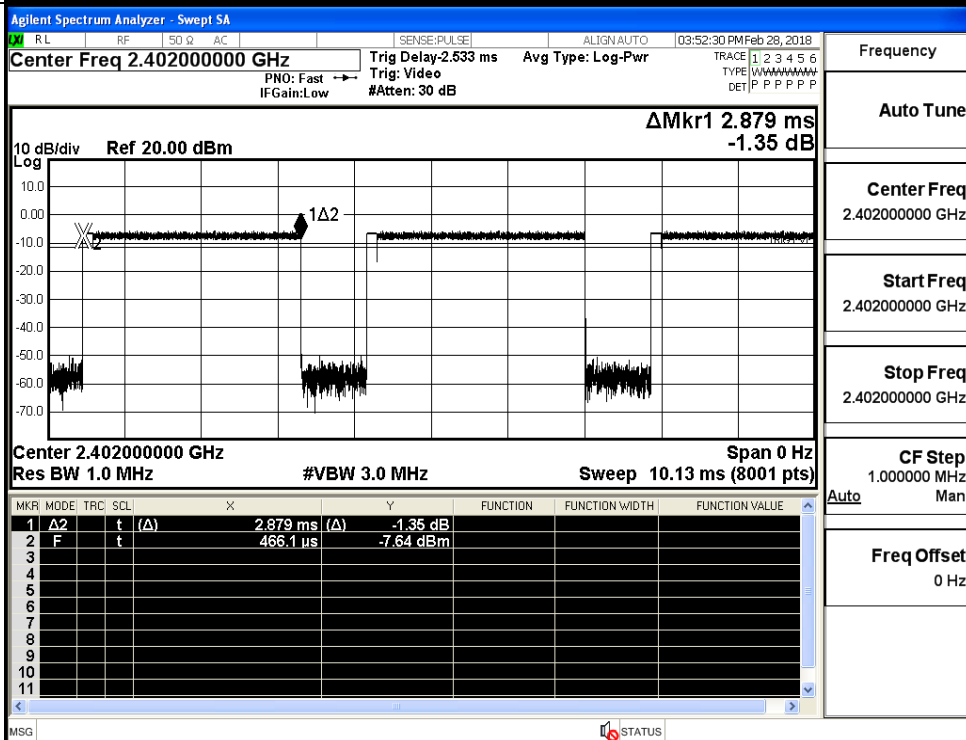
$\pi/4$ DQPSK  
\_2DH5/MCH



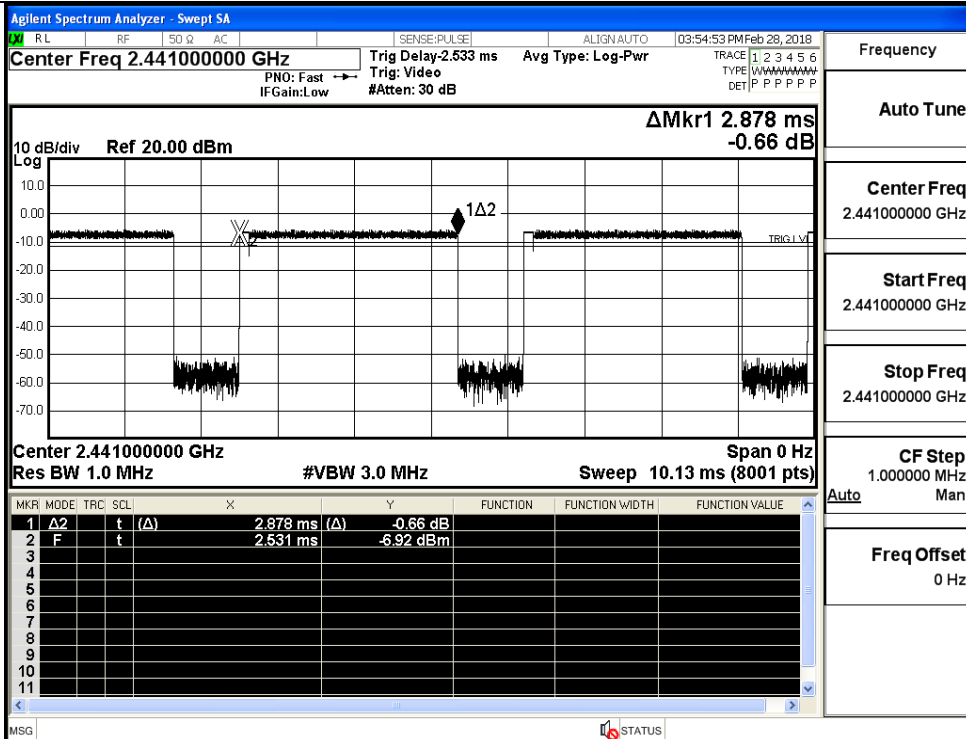
$\pi/4$ DQPSK  
\_2DH5/HCH



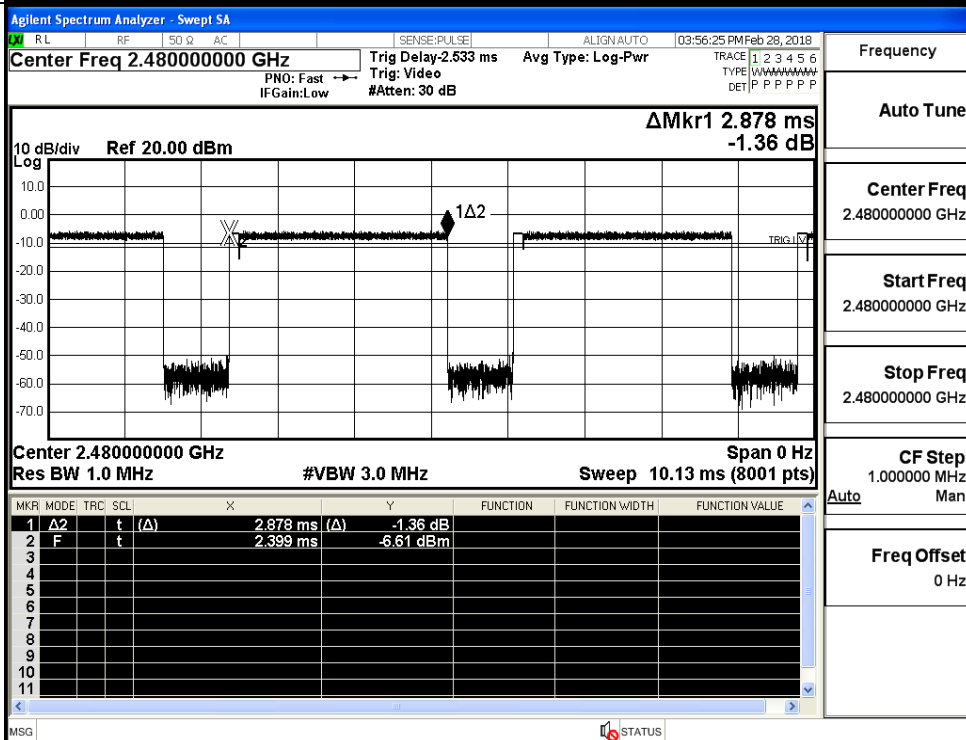
8DPSK \_3DH5/LCH



8DPSK\_3DH5/MCH



8DPSK\_3DH5/HCH



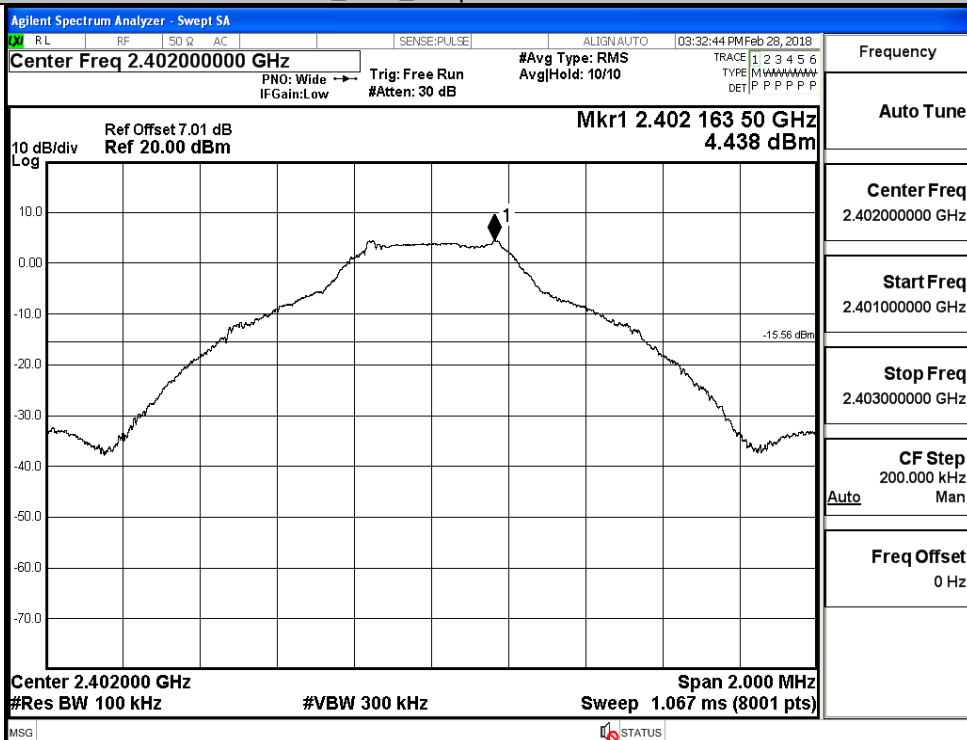
**A.6 RF Conducted Spurious Emissions**

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBc]	Verdict
GFSK	LCH	4.438	-45.925	-20	PASS
	MCH	1.347	-45.526	-20	PASS
	HCH	1.436	-45.598	-20	PASS
$\pi/4$ DQPSK	LCH	0.443	-44.258	-20	PASS
	MCH	0.591	-45.581	-20	PASS
	HCH	0.468	-45.912	-20	PASS
8DPSK	LCH	0.522	-45.462	-20	PASS
	MCH	0.532	-45.892	-20	PASS
	HCH	0.576	-44.167	-20	PASS

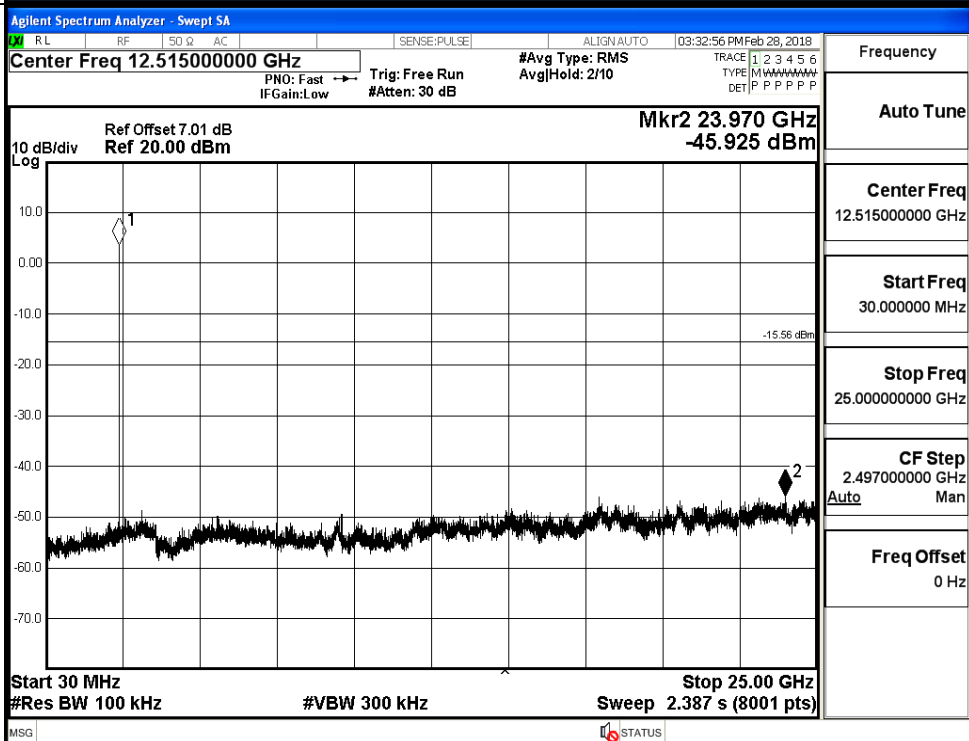


## GFSK\_LCH\_Graphs

Pref

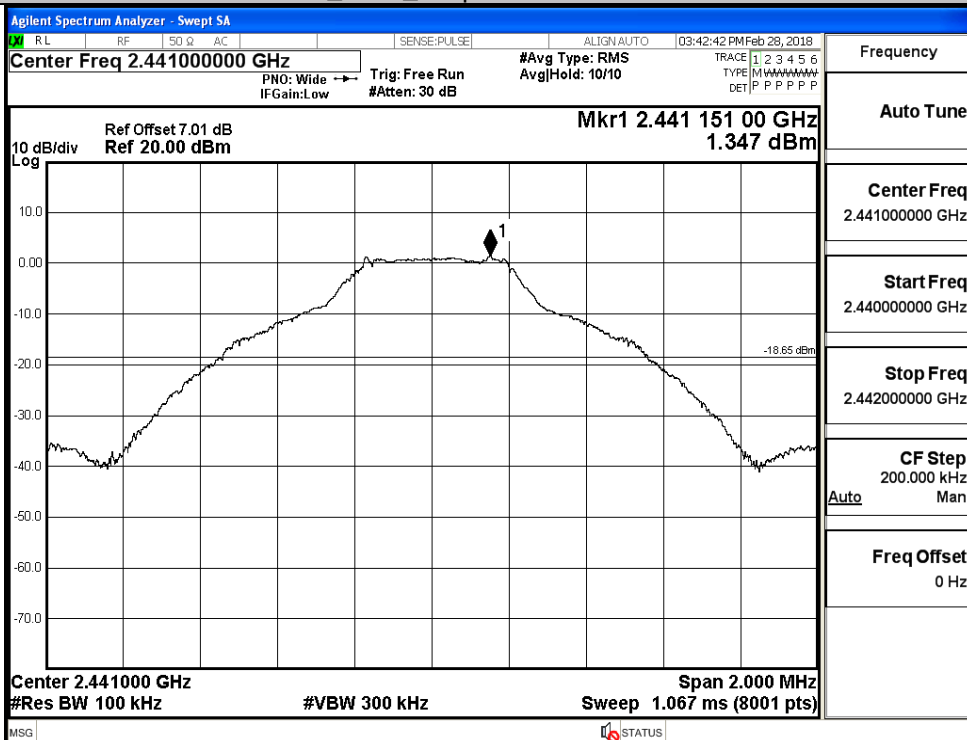


Puw

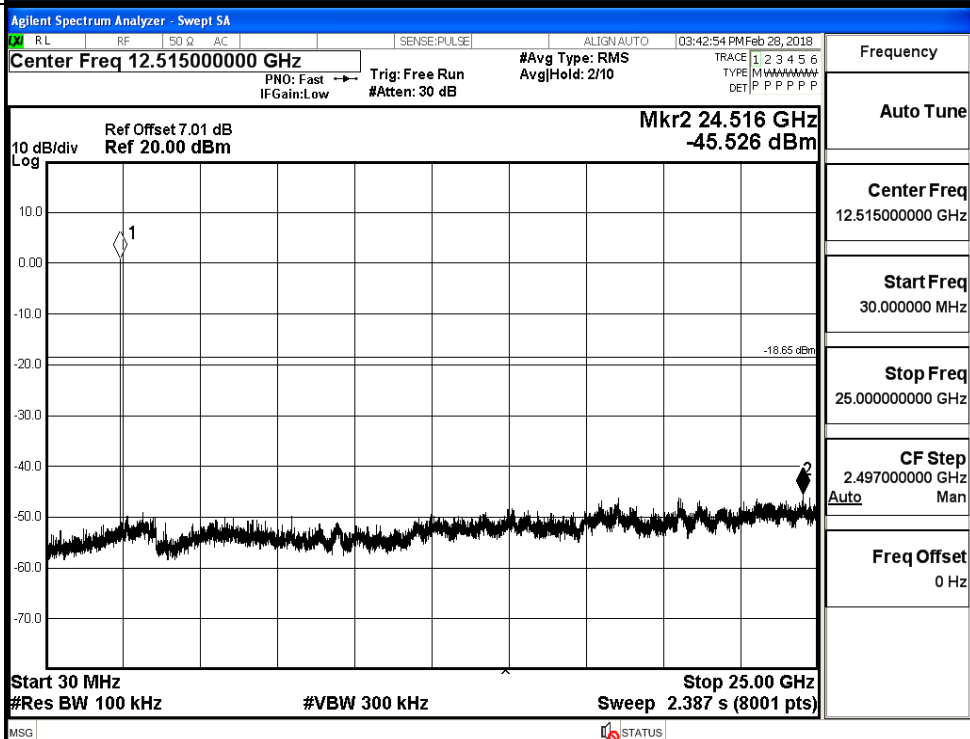


## GFSK\_MCH\_Graphs

Pref

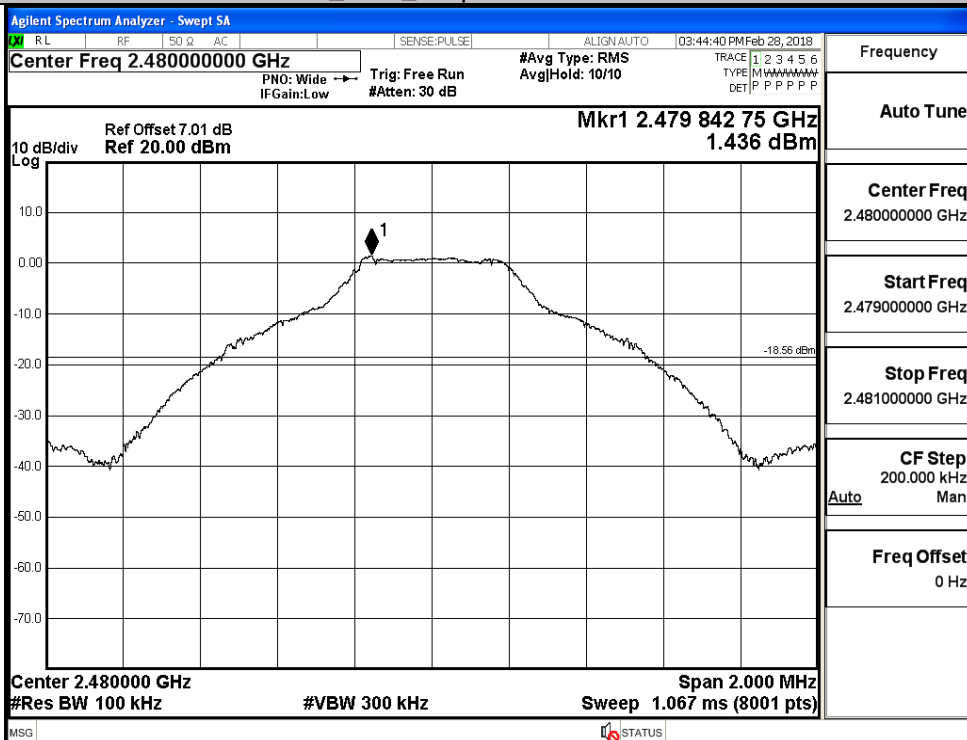


Puw

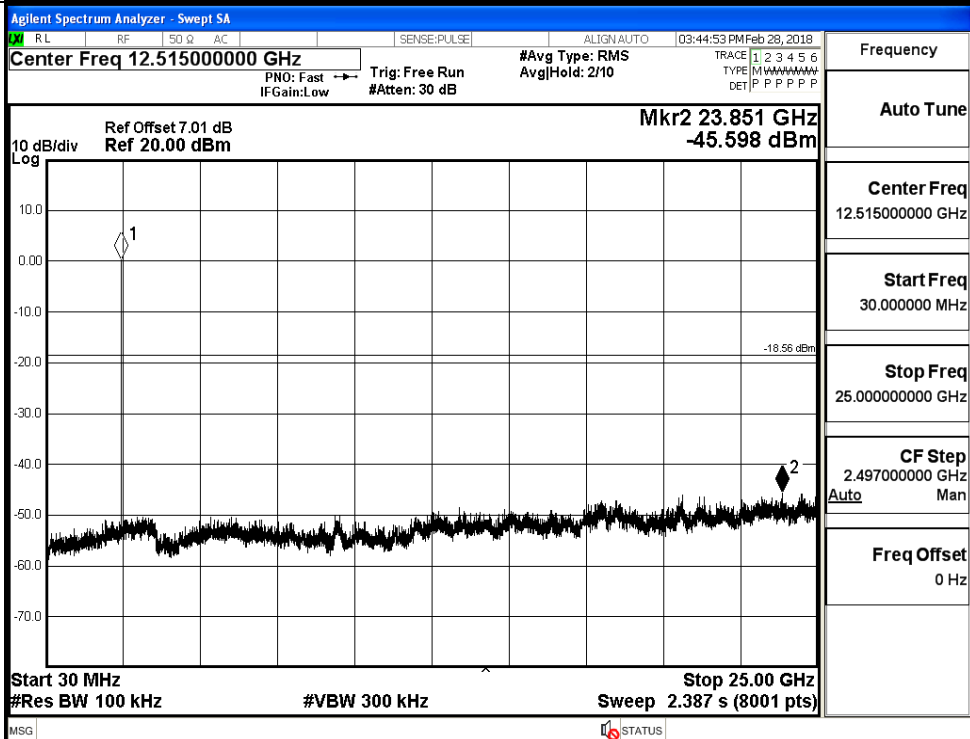


## GFSK\_HCH\_Graphs

Pref

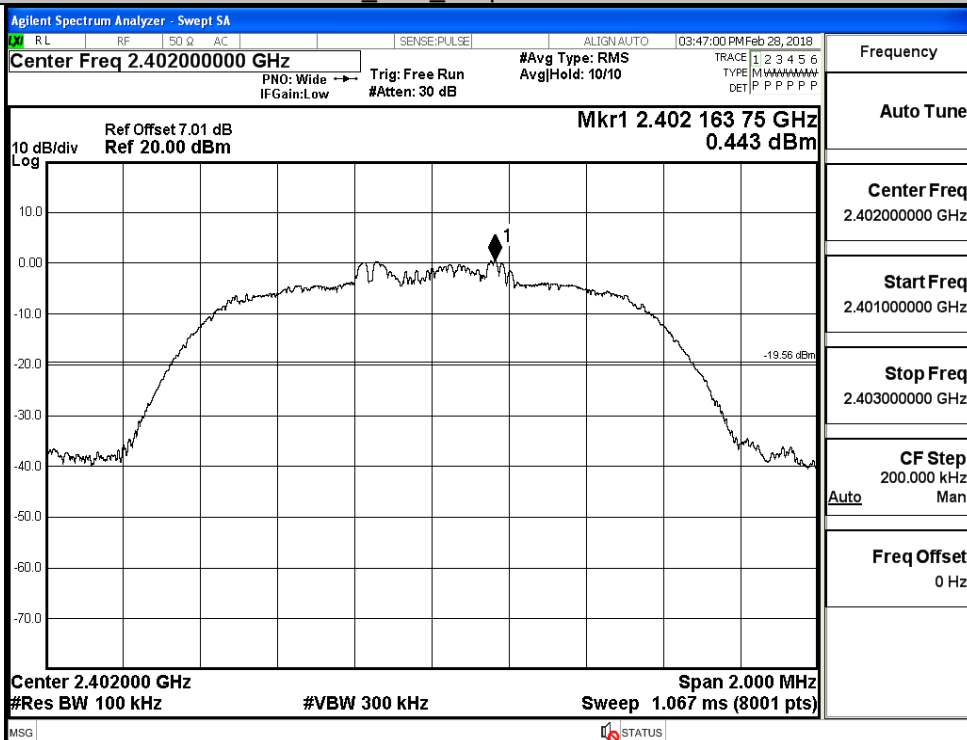


Puw

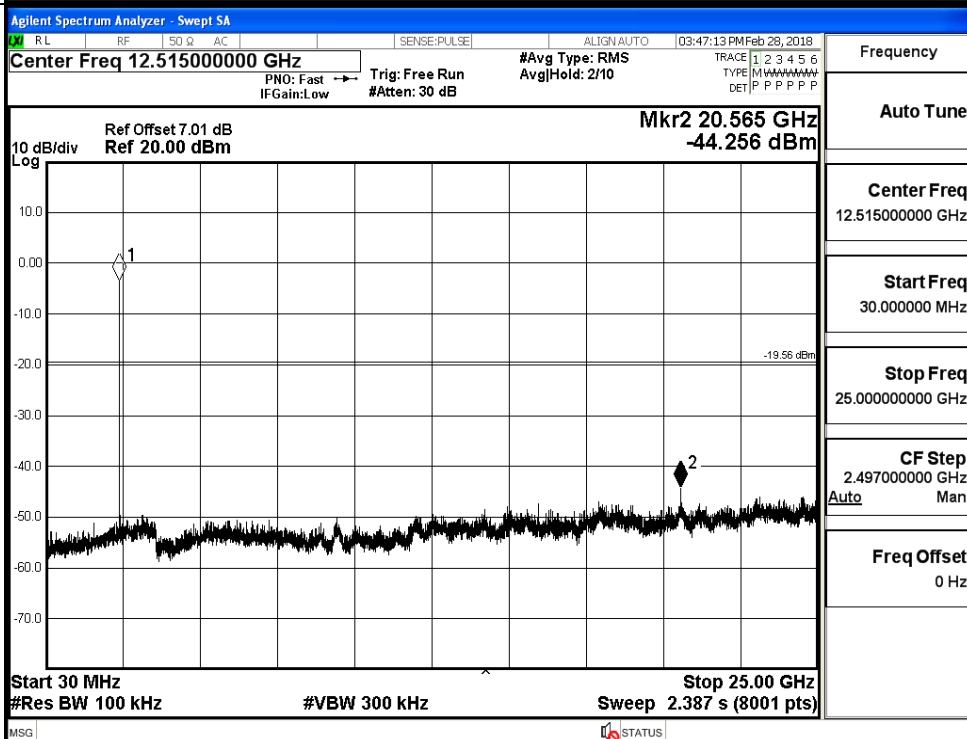


$\pi/4$ DQPSK\_LCH\_Graphs

Pref

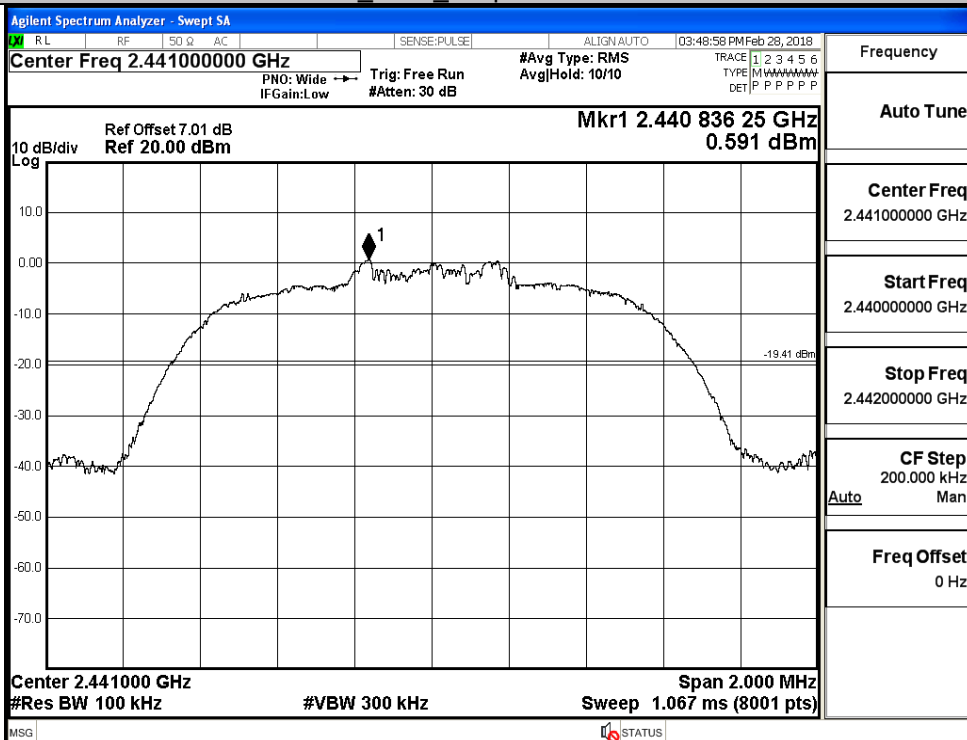


Puw

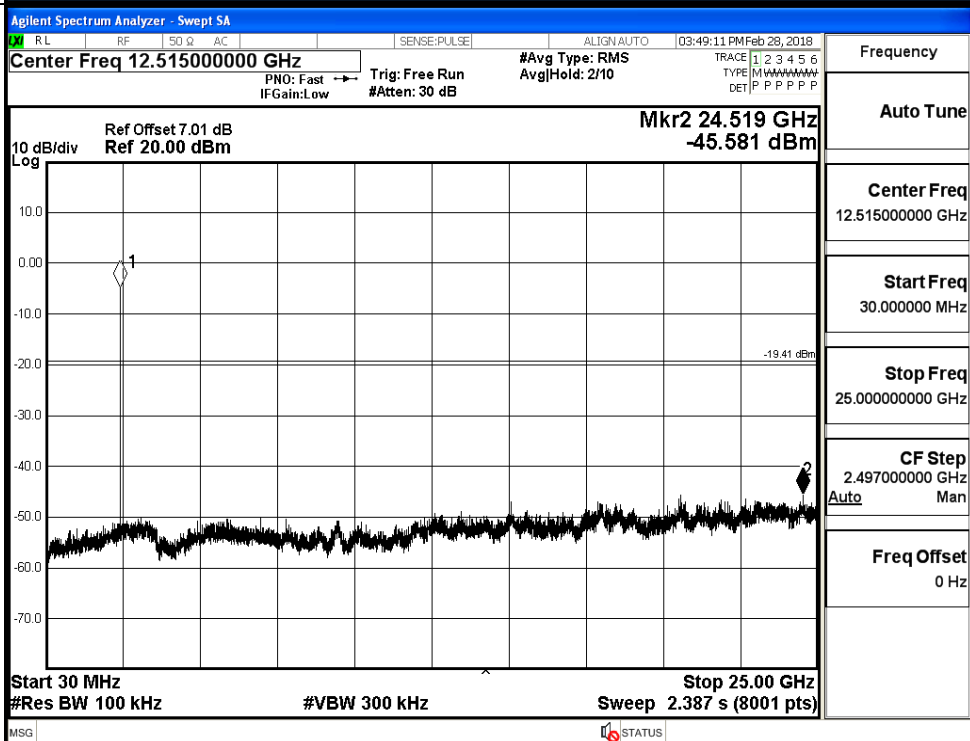


$\pi/4$ DQPSK\_MCH\_Graphs

Pref

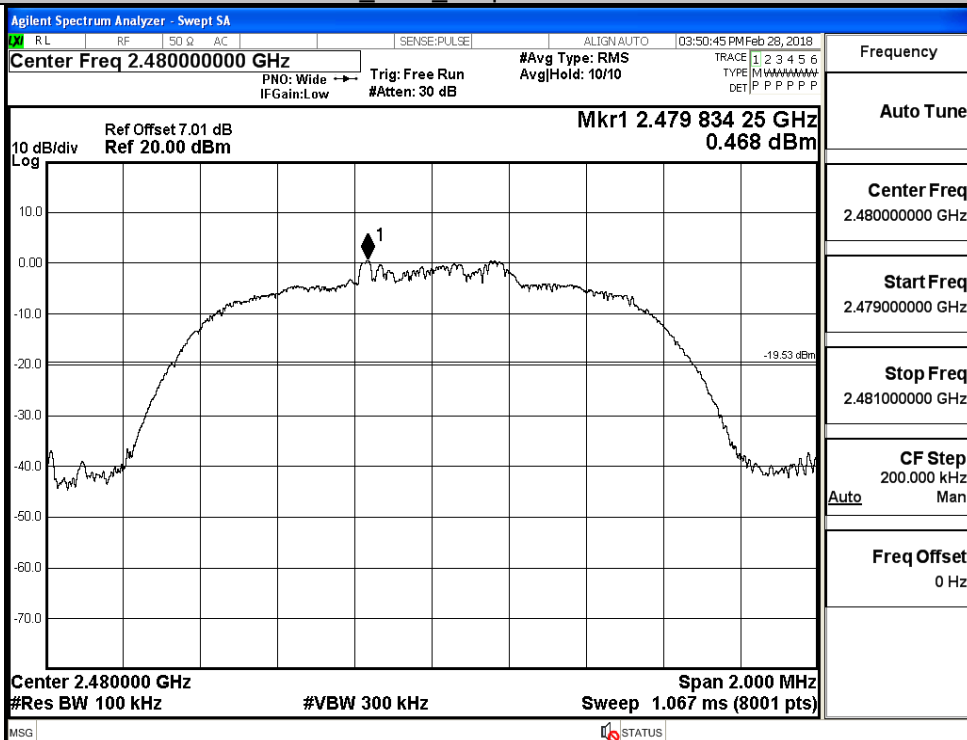


Puw

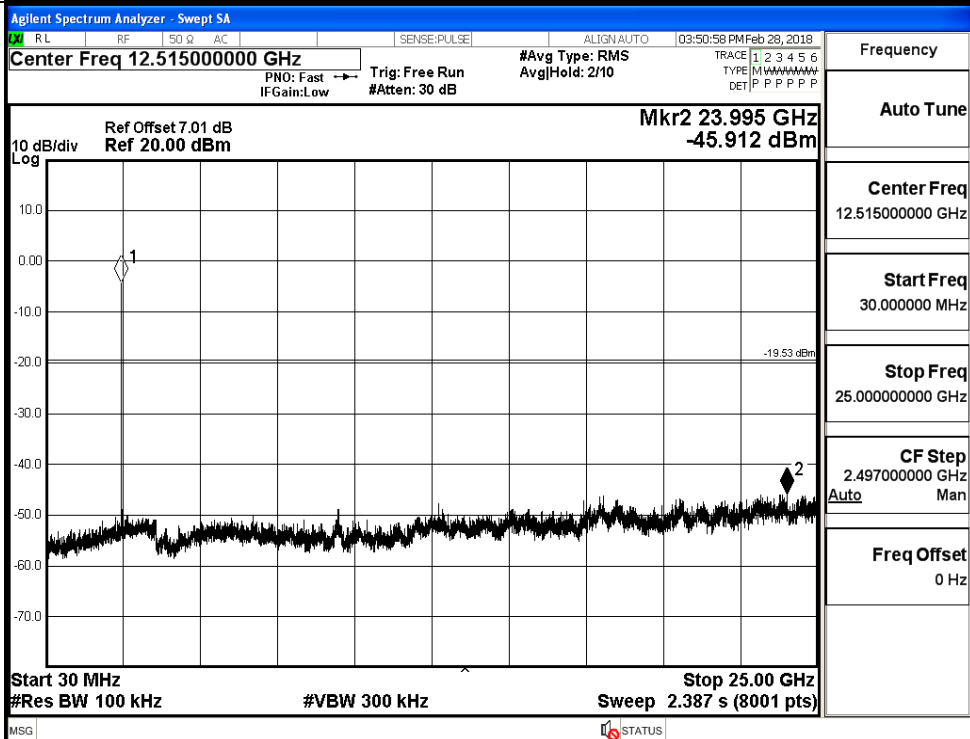


$\pi/4$ DQPSK\_HCH\_Graphs

Pref

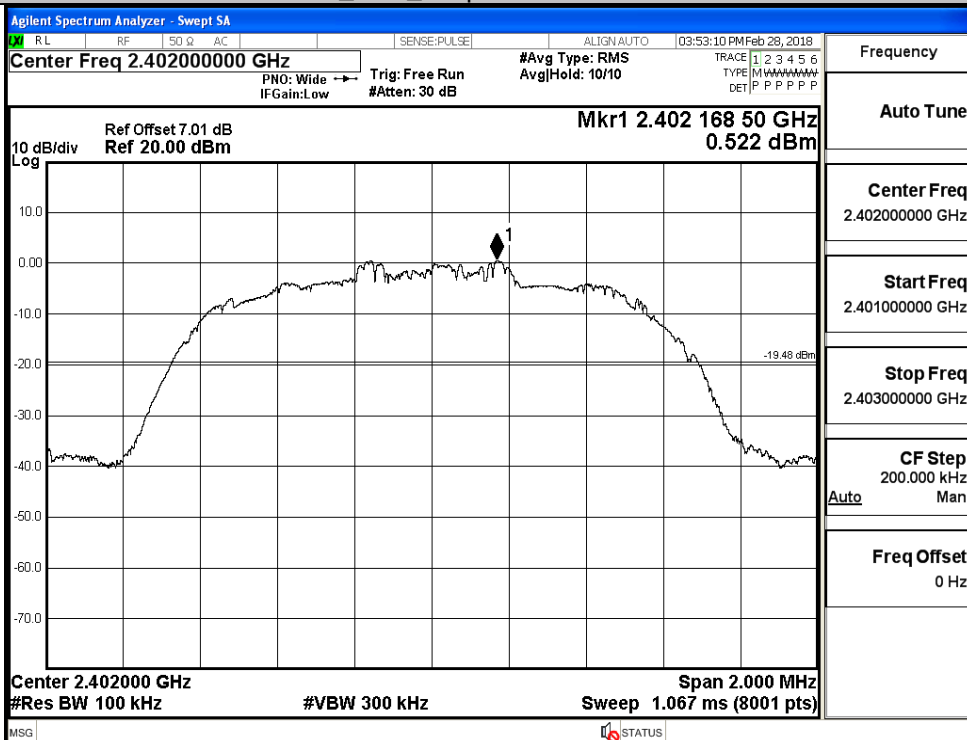


Puw

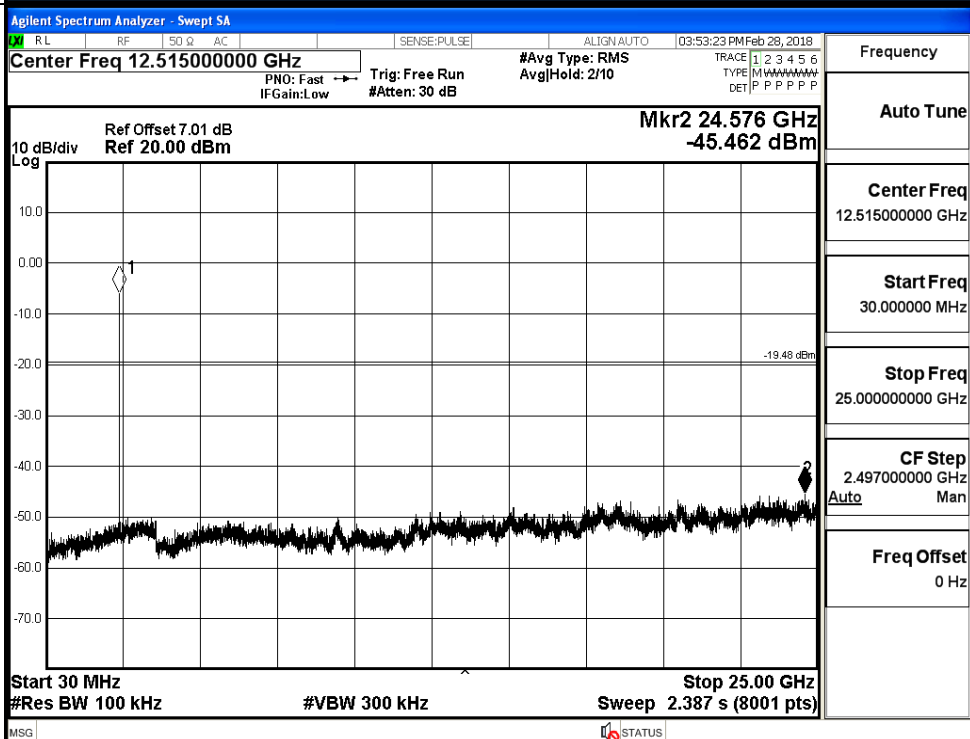


## 8DPSK\_LCH\_Graphs

Pref

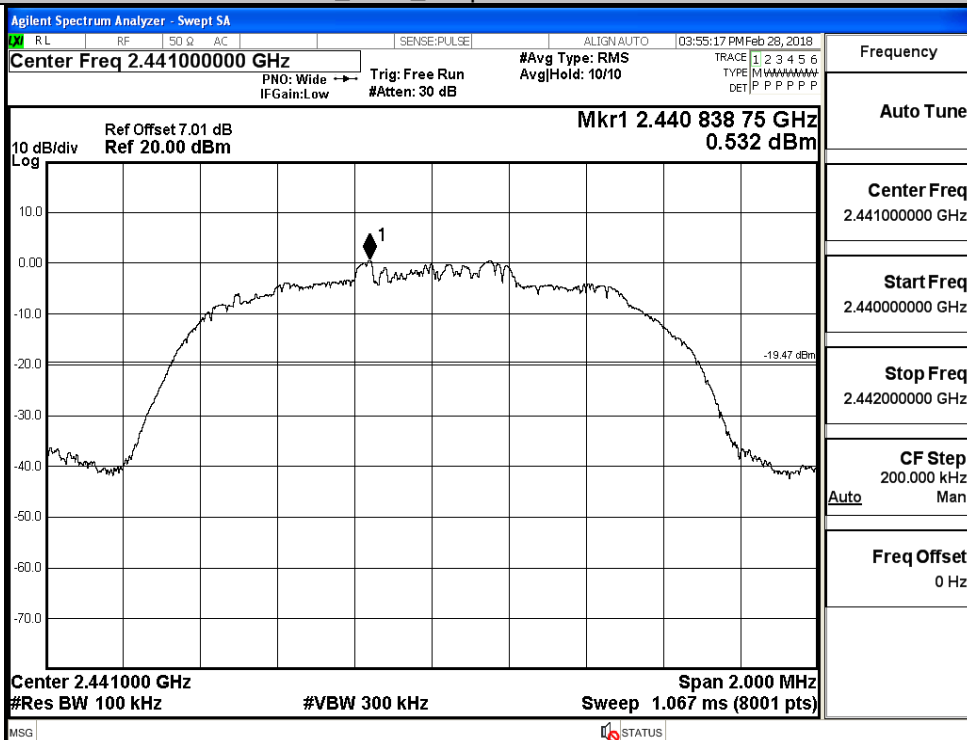


Puw

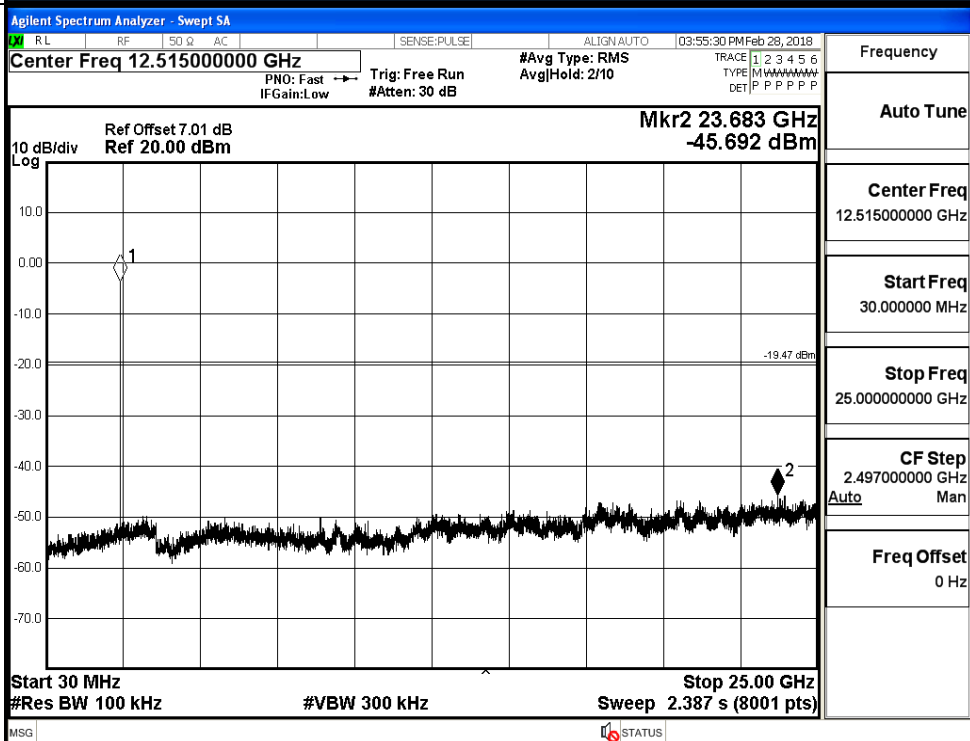


## 8DPSK\_MCH\_Graphs

Pref



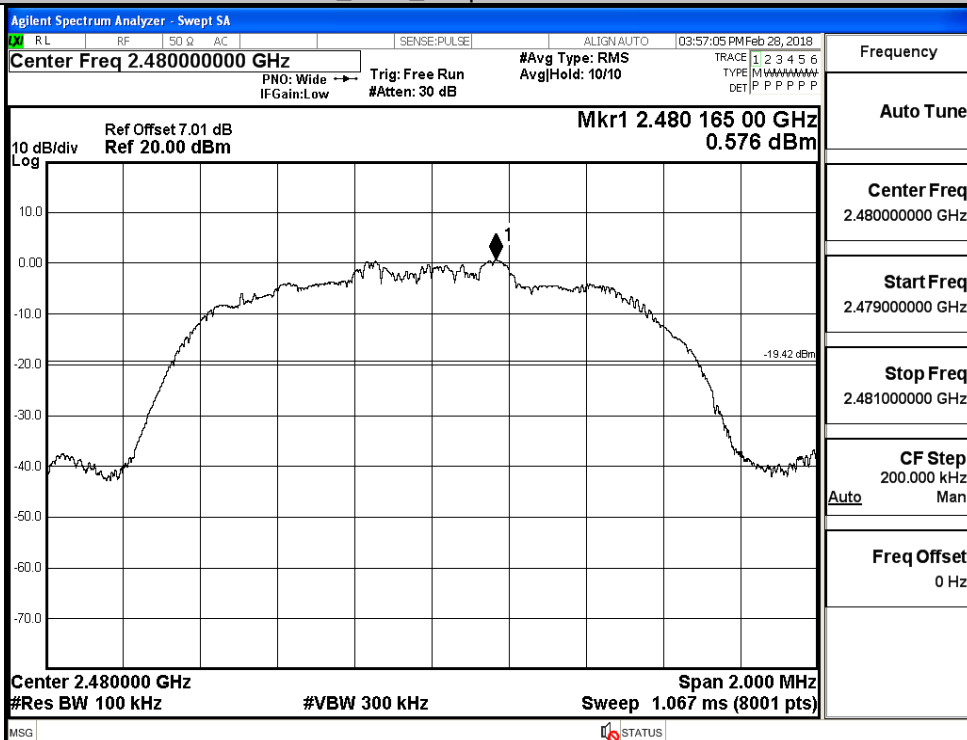
Puw



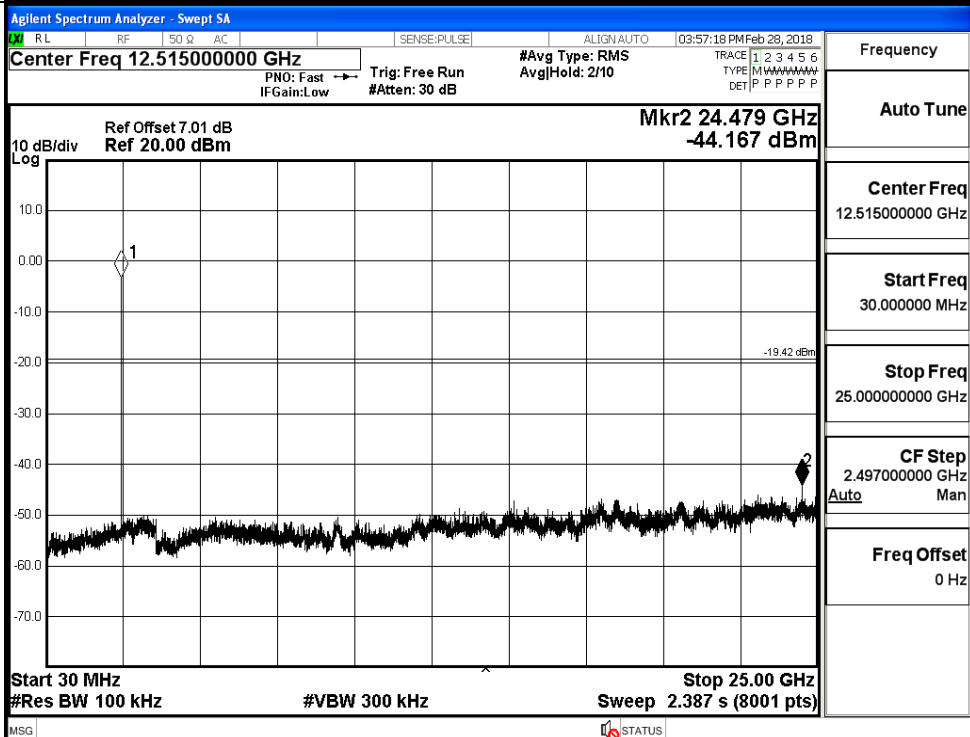


## 8DPSK\_HCH\_Graphs

Pref



Puw

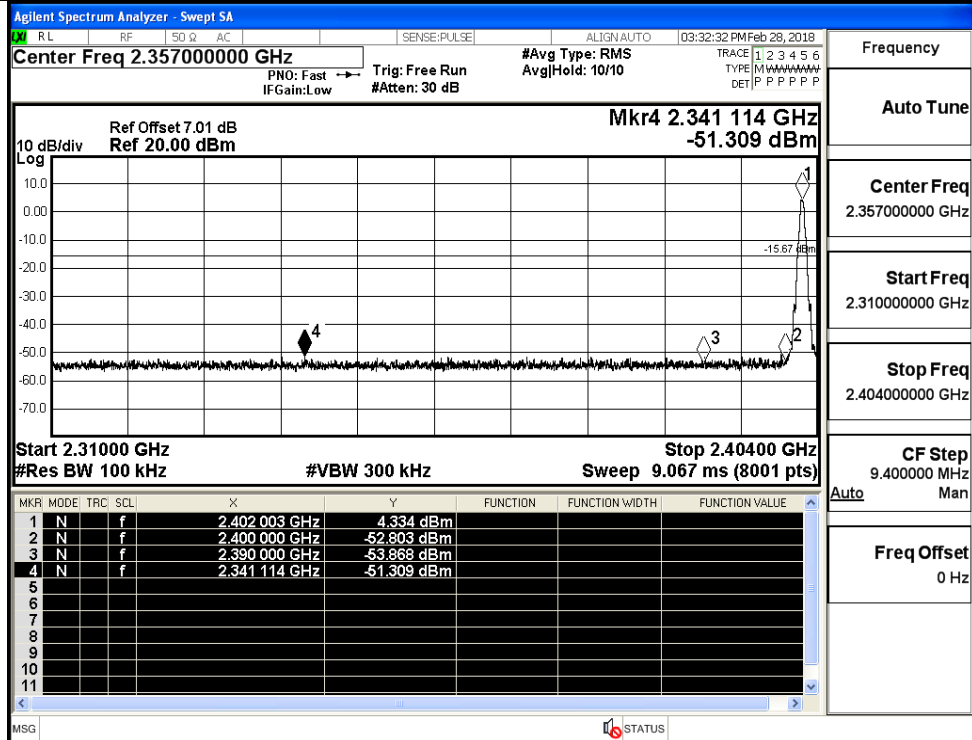


## A.7 Band-edge for RF Conducted Emissions

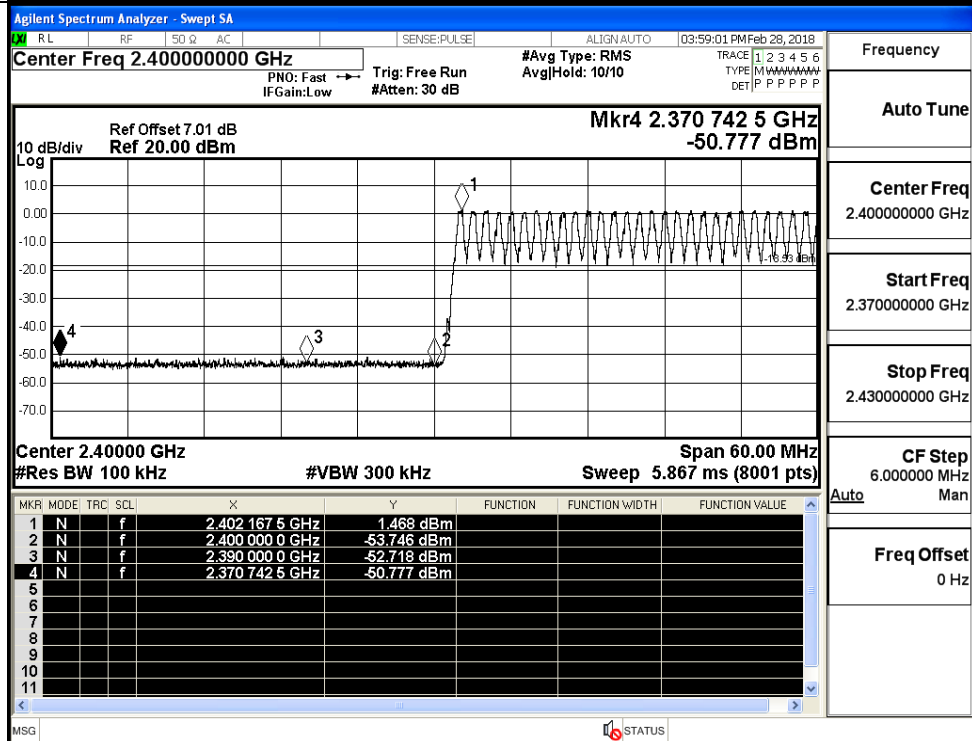
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	4.334	Off	-51.309	-15.67	PASS
			1.468	On	-50.777	-18.53	PASS
	HCH	2480	1.525	Off	-50.638	-18.48	PASS
			1.531	On	-50.494	-18.47	PASS
$\pi/4$ DQPSK	LCH	2402	-1.042	Off	-51.058	-21.04	PASS
			0.579	On	-49.823	-19.42	PASS
	HCH	2480	0.537	Off	-51.071	-19.46	PASS
			0.552	On	-49.245	-19.45	PASS
8DPSK	LCH	2402	0.465	Off	-51.367	-19.54	PASS
			0.565	On	-50.990	-19.44	PASS
	HCH	2480	0.583	Off	-50.622	-19.42	PASS
			0.339	On	-50.396	-19.66	PASS

## Test Graphs

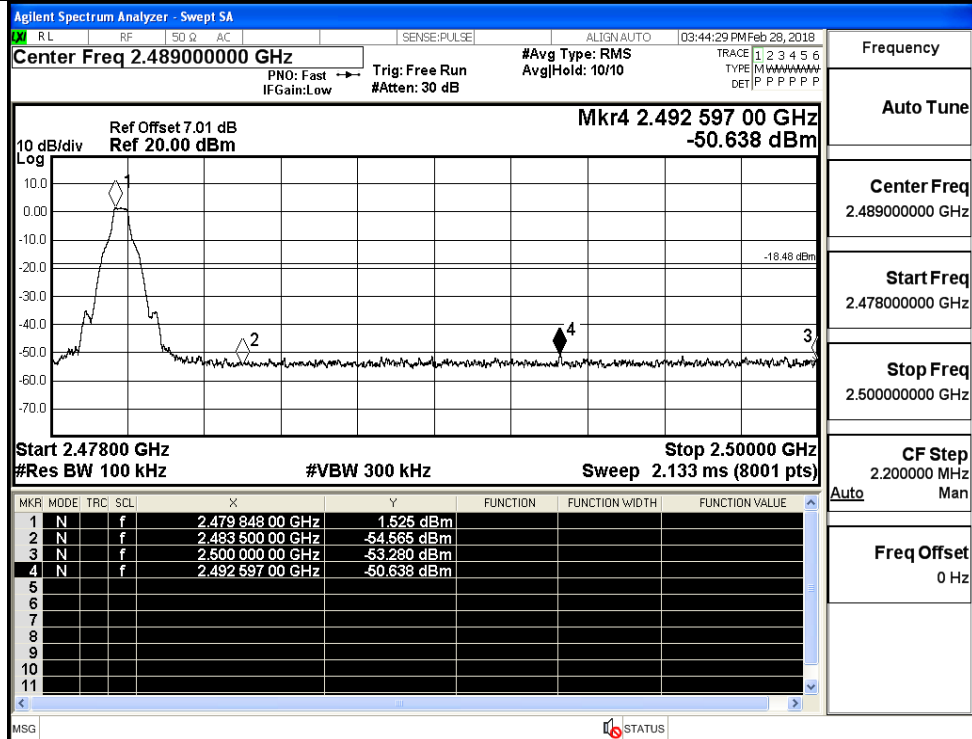
GFSK/LCH/No Hop



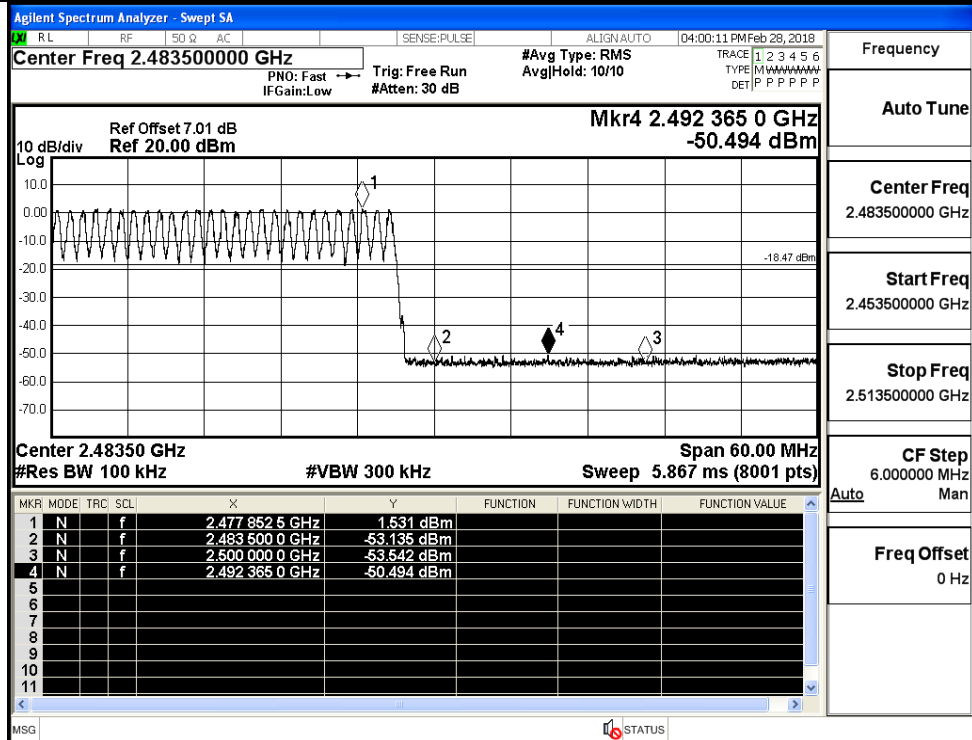
GFSK/LCH/Hop



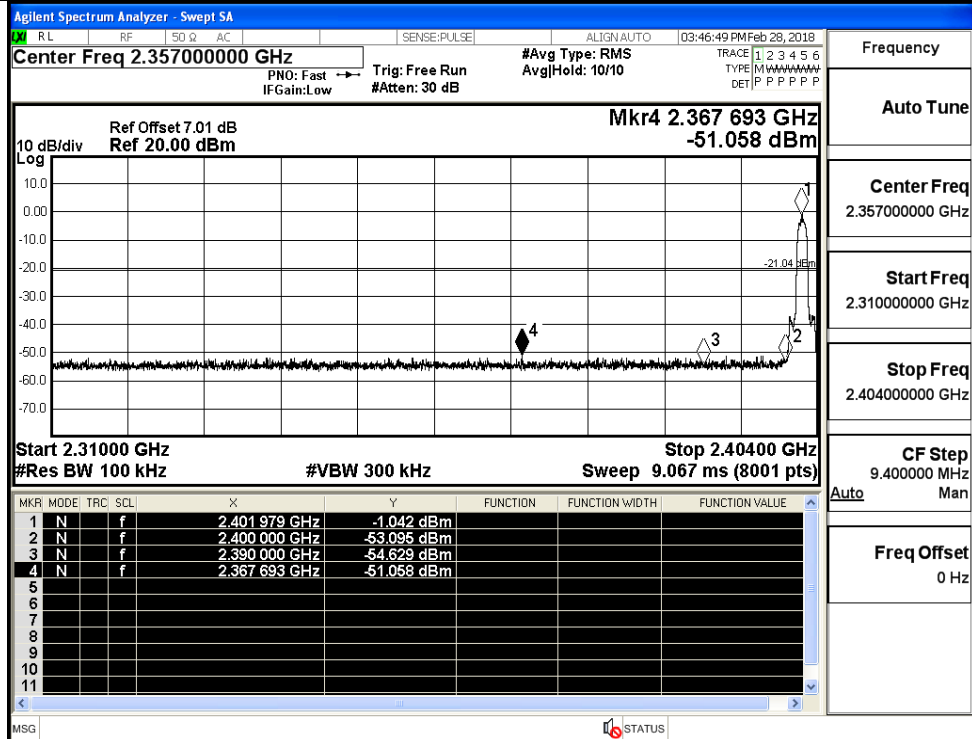
GFSK/HCH/No Hop



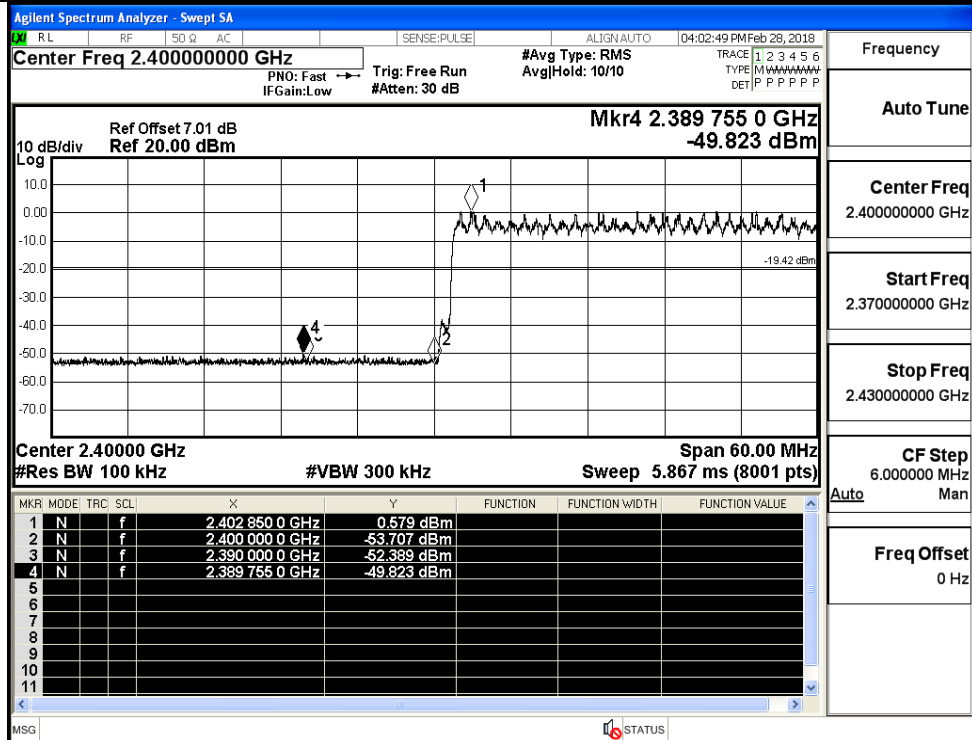
GFSK/HCH/Hop



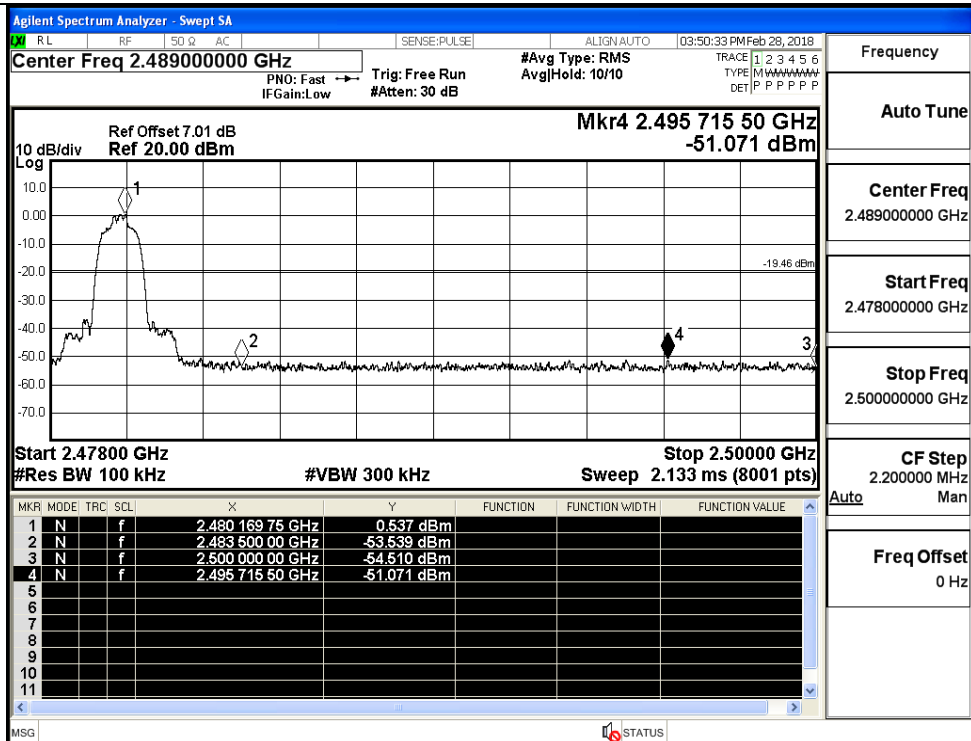
$\pi/4$ DQPSK/LCH/No  
Hop



$\pi/4$ DQPSK/LCH/Hop



$\pi/4$ DQPSK/HCH/No  
Hop

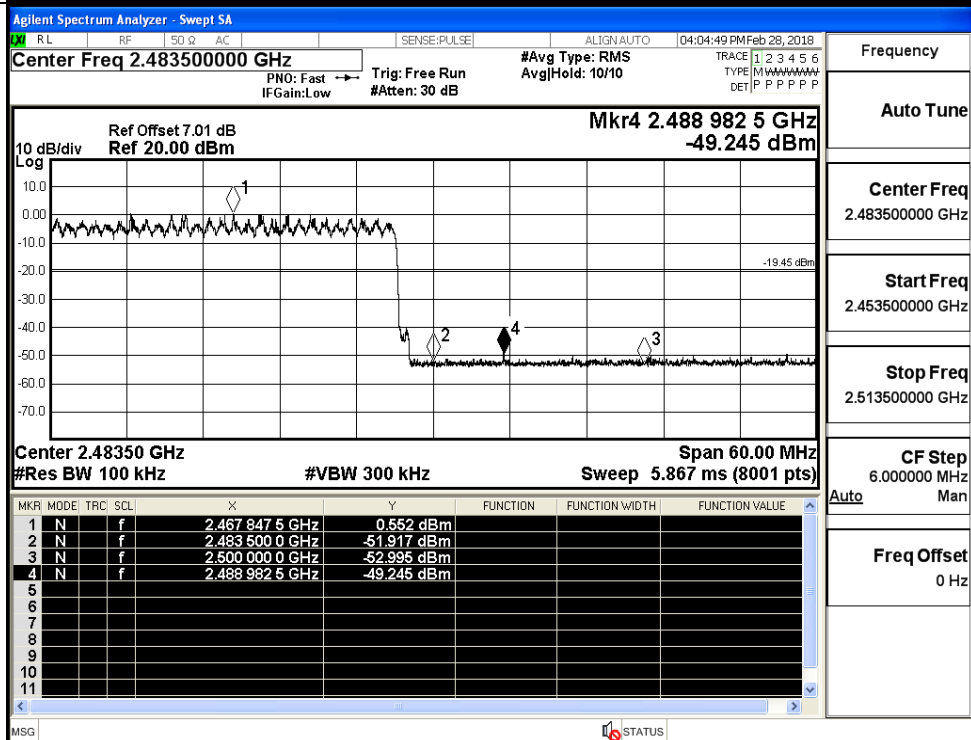


Frequency

Auto Tune

Center Freq  
2.489000000 GHzStart Freq  
2.478000000 GHzStop Freq  
2.500000000 GHzCF Step  
2.200000 MHz  
Auto ManFreq Offset  
0 Hz

$\pi/4$ DQPSK/HCH/Hop

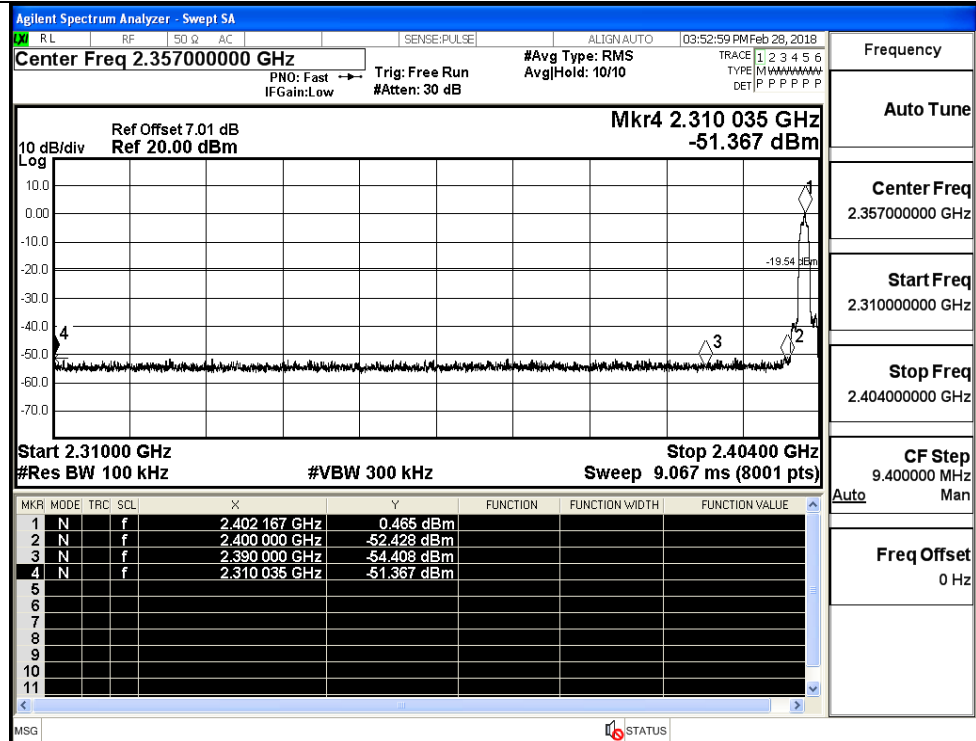


Frequency

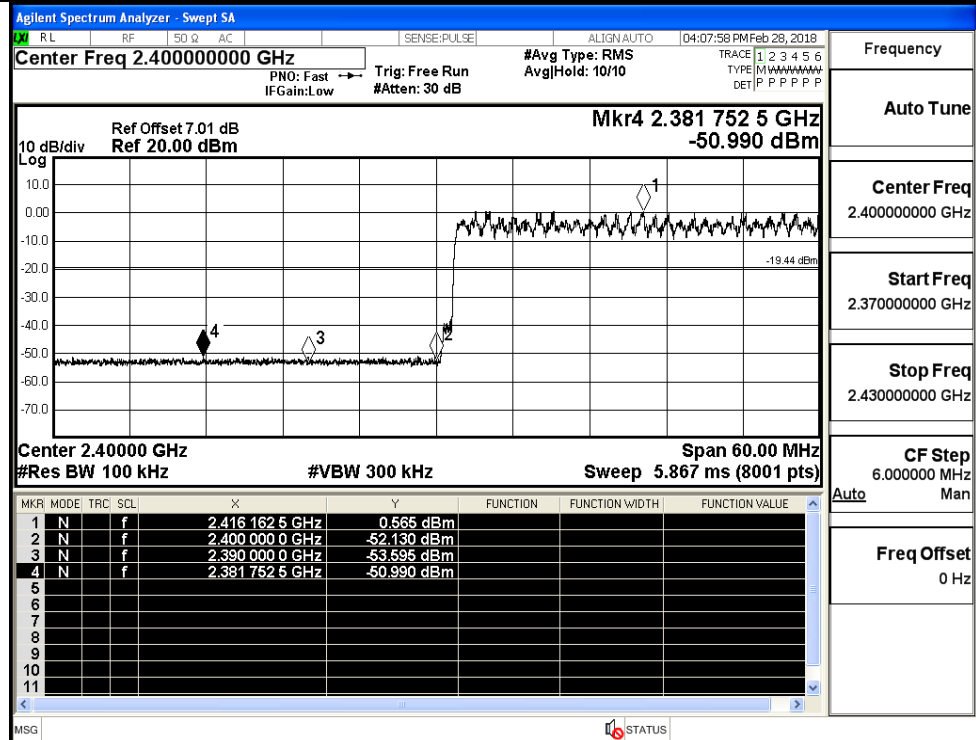
Auto Tune

Center Freq  
2.483500000 GHzStart Freq  
2.453500000 GHzStop Freq  
2.513500000 GHzCF Step  
6.000000 MHz  
Auto ManFreq Offset  
0 Hz

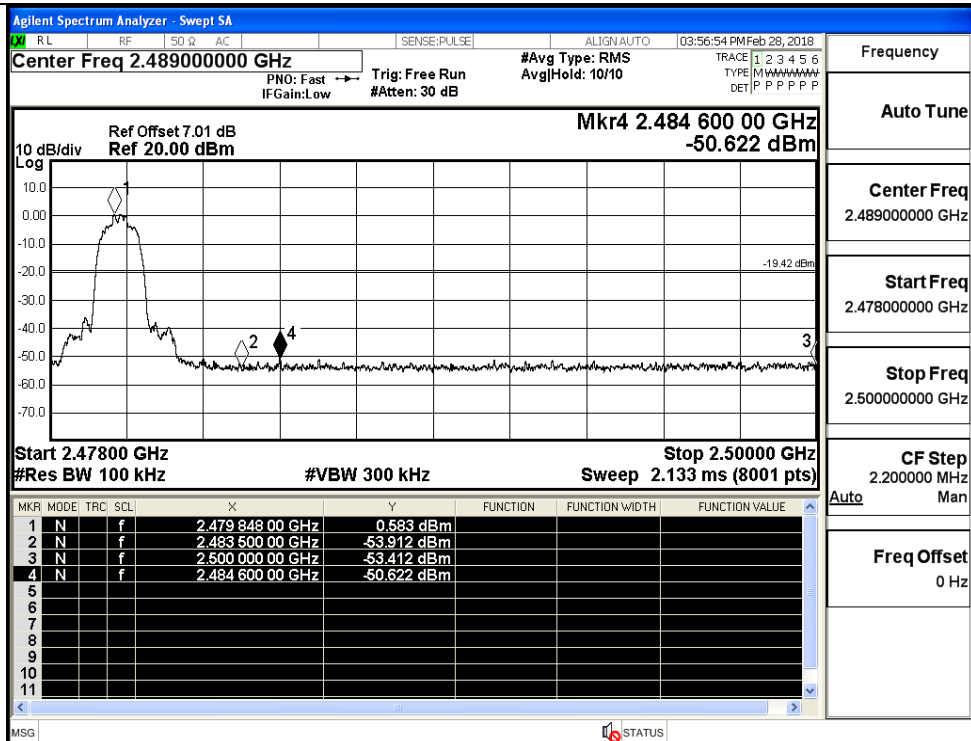
8DPSK/LCH/No Hop



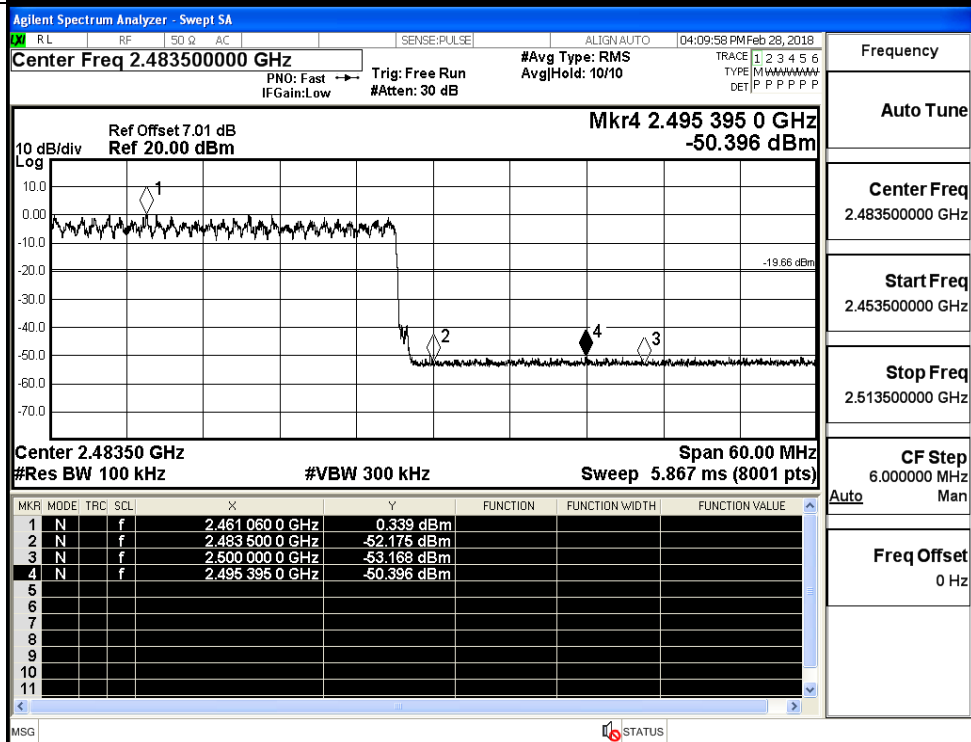
8DPSK/LCH/Hop



8DPSK/HCH/No Hop



8DPSK/HCH/Hop

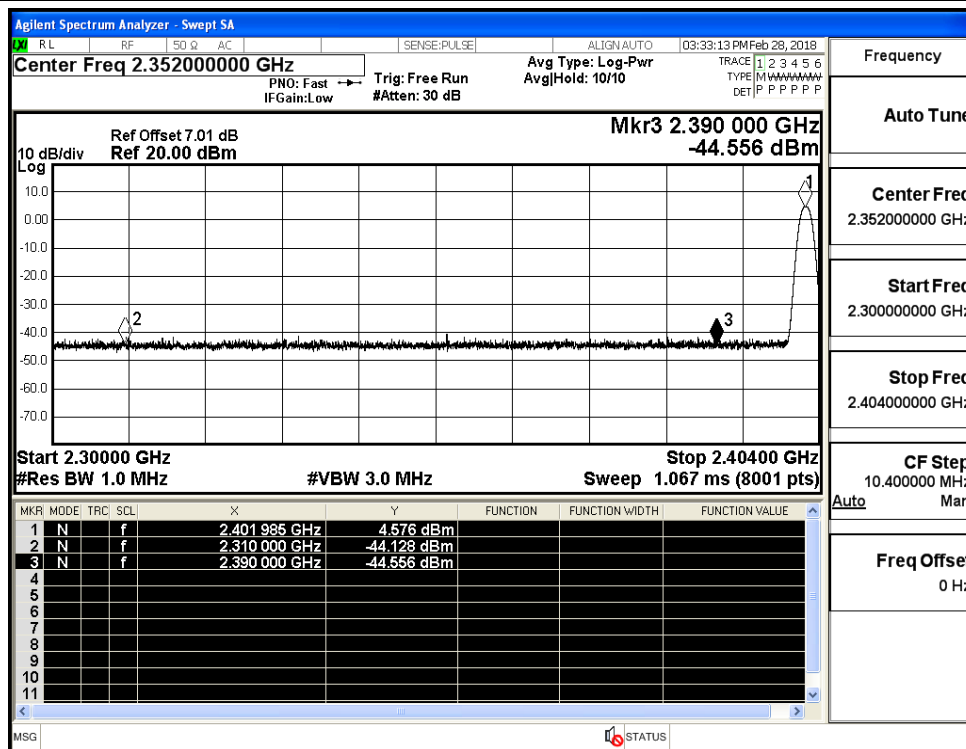




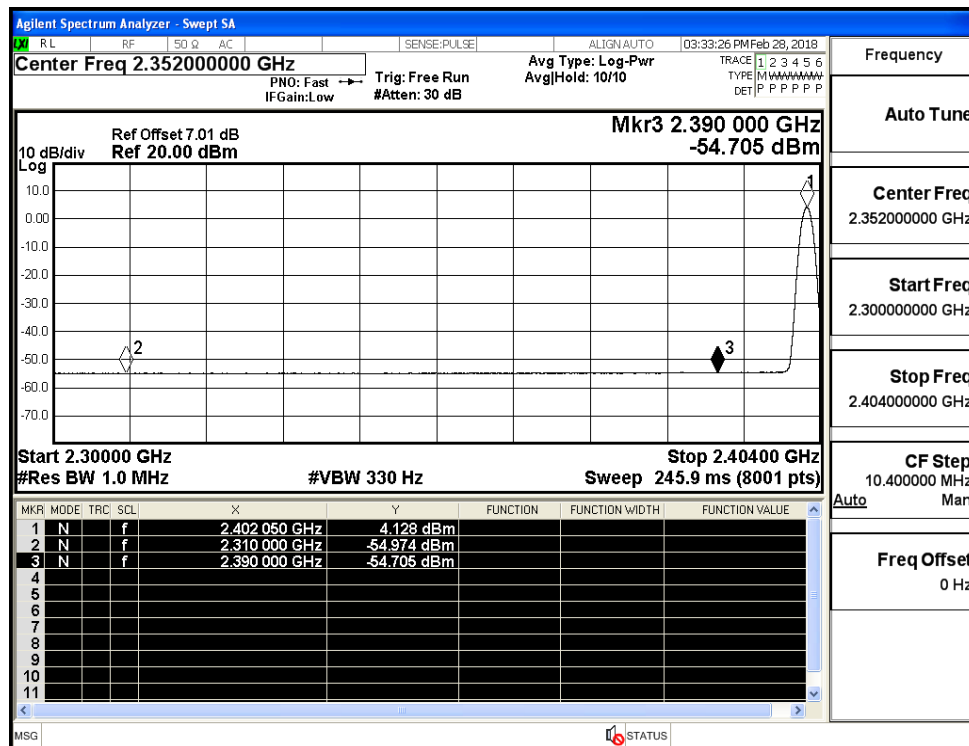
## A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-44.13	2.0	0	51.13	PEAK	74	PASS
	Off	2310.0	-54.97	2.0	0	40.28	AV	54	PASS
	Off	2390.0	-44.56	2.0	0	50.70	PEAK	74	PASS
	Off	2390.0	-54.71	2.0	0	40.55	AV	54	PASS
	Off	2483.5	-43.61	2.0	0	51.65	PEAK	74	PASS
	Off	2483.5	-54.32	2.0	0	40.94	AV	54	PASS
	Off	2500.0	-43.70	2.0	0	51.56	PEAK	74	PASS
	Off	2500.0	-54.22	2.0	0	41.04	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-45.55	2.0	0	49.71	PEAK	74	PASS
	Off	2310.0	-54.94	2.0	0	40.31	AV	54	PASS
	Off	2390.0	-44.23	2.0	0	51.02	PEAK	74	PASS
	Off	2390.0	-54.73	2.0	0	40.53	AV	54	PASS
	Off	2483.5	-43.99	2.0	0	51.27	PEAK	74	PASS
	Off	2483.5	-54.40	2.0	0	40.86	AV	54	PASS
	Off	2500.0	-44.24	2.0	0	51.02	PEAK	74	PASS
	Off	2500.0	-54.30	2.0	0	40.95	AV	54	PASS
8DPSK	Off	2310.0	-44.95	2.0	0	50.31	PEAK	74	PASS
	Off	2310.0	-54.74	2.0	0	40.52	AV	54	PASS
	Off	2390.0	-43.59	2.0	0	51.67	PEAK	74	PASS
	Off	2390.0	-54.63	2.0	0	40.63	AV	54	PASS
	Off	2483.5	-44.25	2.0	0	51.01	PEAK	74	PASS
	Off	2483.5	-54.23	2.0	0	41.03	AV	54	PASS
	Off	2500.0	-43.62	2.0	0	51.63	PEAK	74	PASS
	Off	2500.0	-54.32	2.0	0	40.94	AV	54	PASS

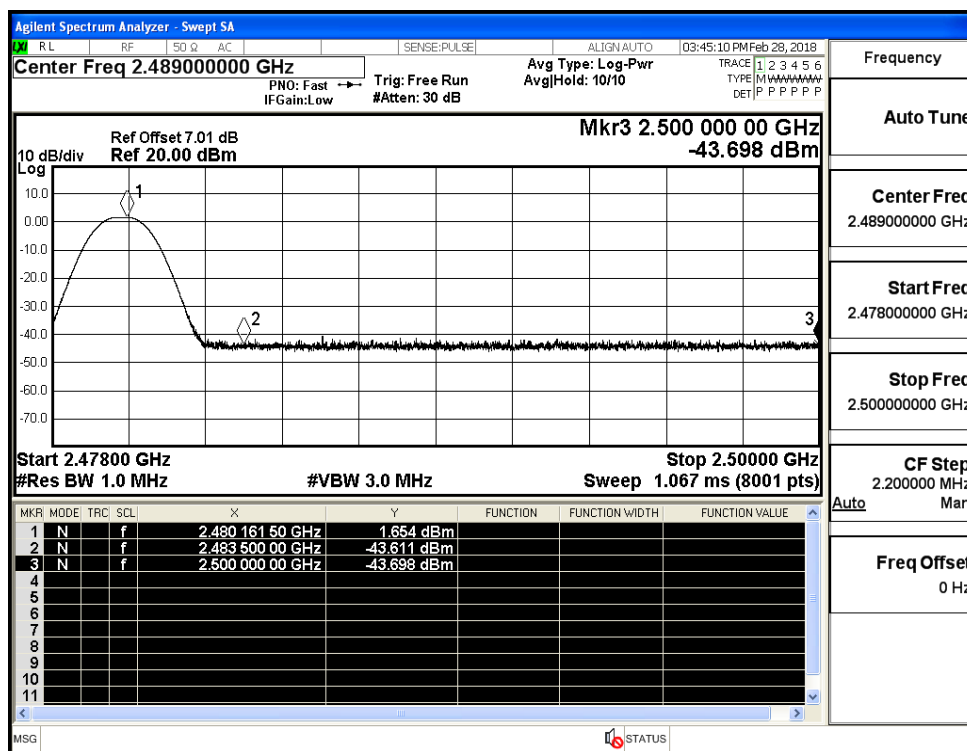
## Restrict-band band-edge measurements\_Hopping Off\_GFSK\_PEAK (Low Channel)



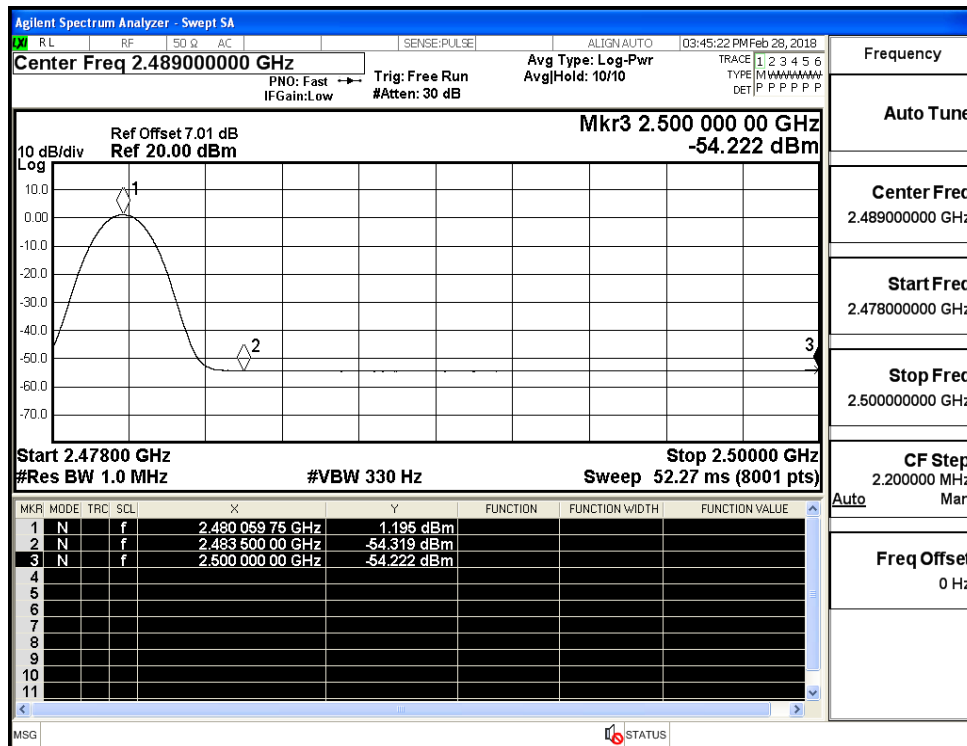
## Restrict-band band-edge measurements\_Hopping Off\_GFSK\_Average (Low Channel)

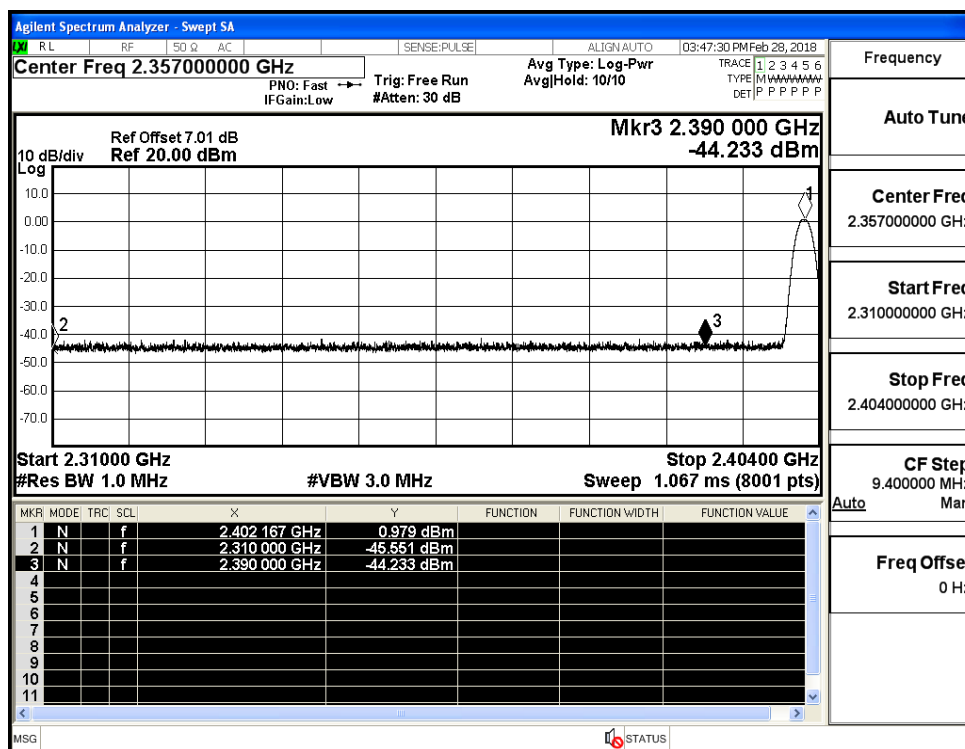
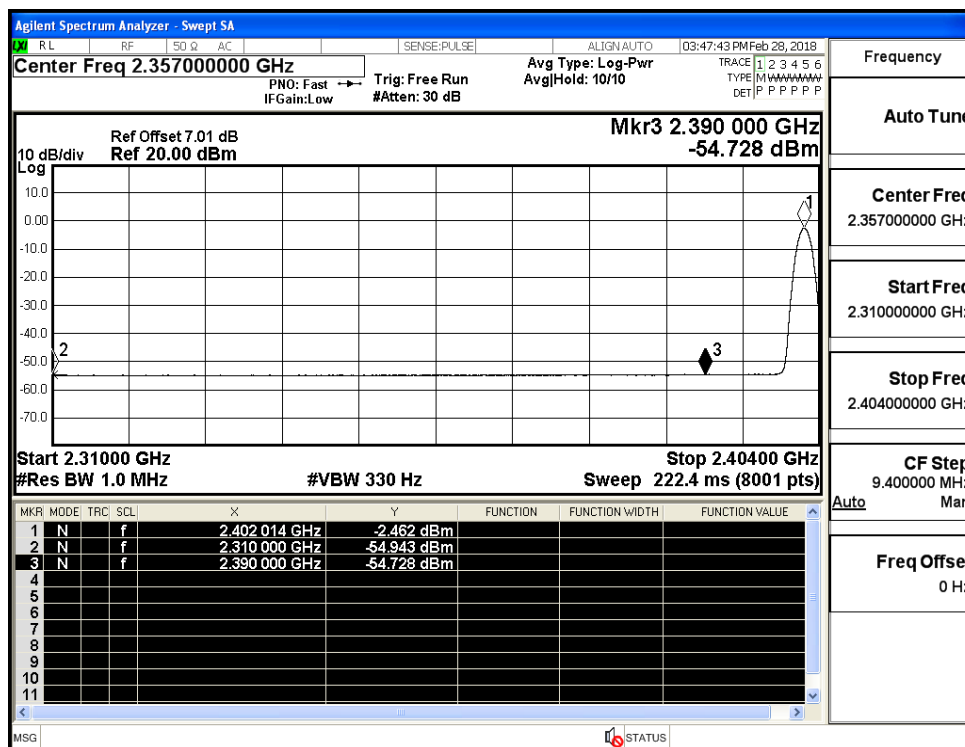


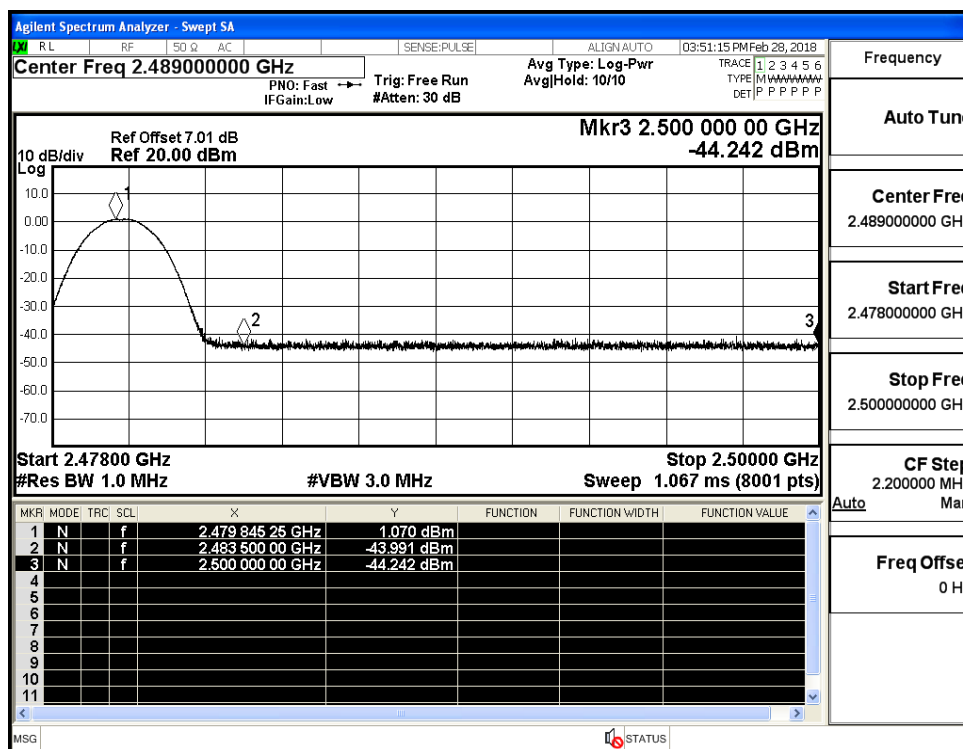
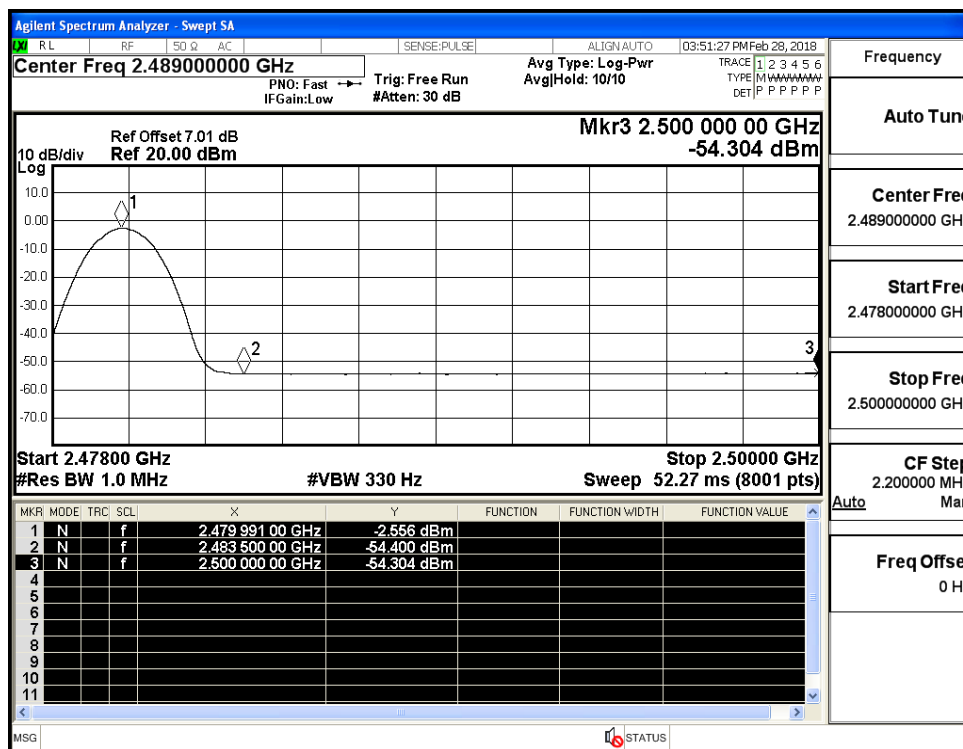
## Restrict-band band-edge measurements\_Hopping Off\_ GFSK\_PEAK (High Channel)



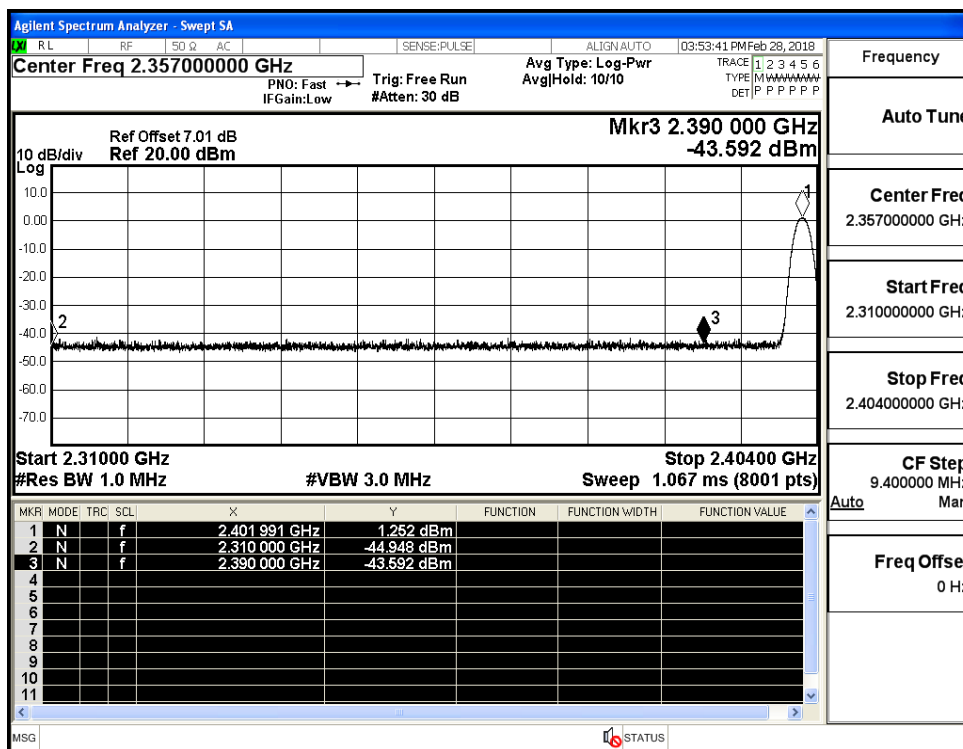
## Restrict-band band-edge measurements\_Hopping Off\_ GFSK\_Average (High Channel)



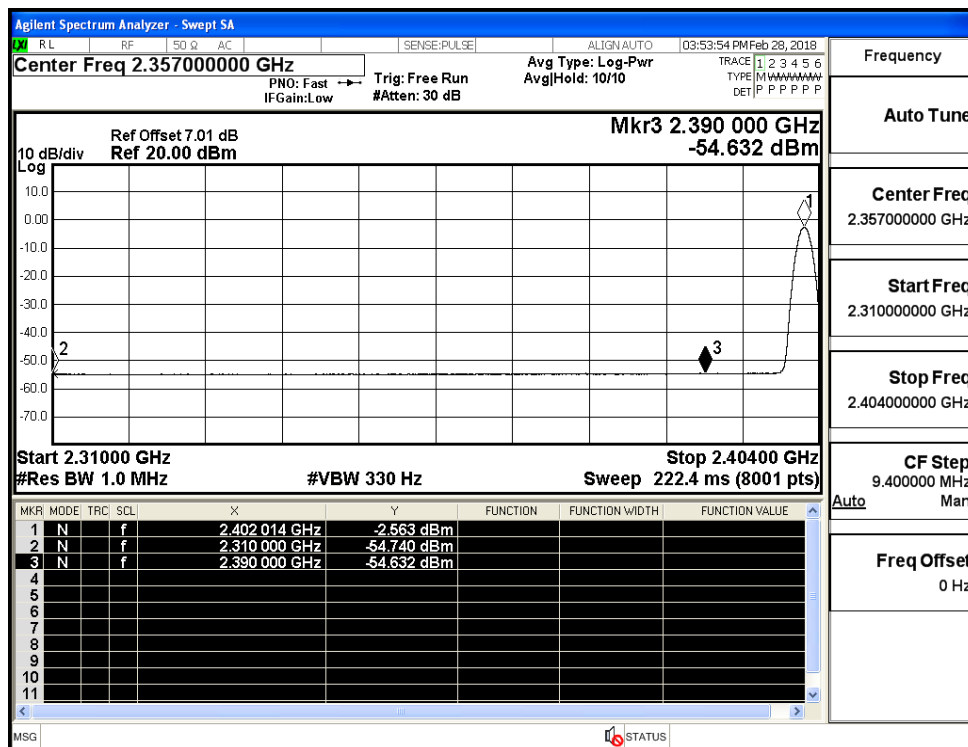
Restrict-band band-edge measurements\_Hopping Off  $\pi/4$ -DQPSK\_PEAK (Low Channel)Restrict-band band-edge measurements\_Hopping Off  $\pi/4$ -DQPSK\_Average (Low Channel)

Restrict-band band-edge measurements\_Hopping Off  $\pi/4$ -DQPSK\_PEAK (High Channel)Restrict-band band-edge measurements\_Hopping Off  $\pi/4$ -DQPSK\_Average (High Channel)

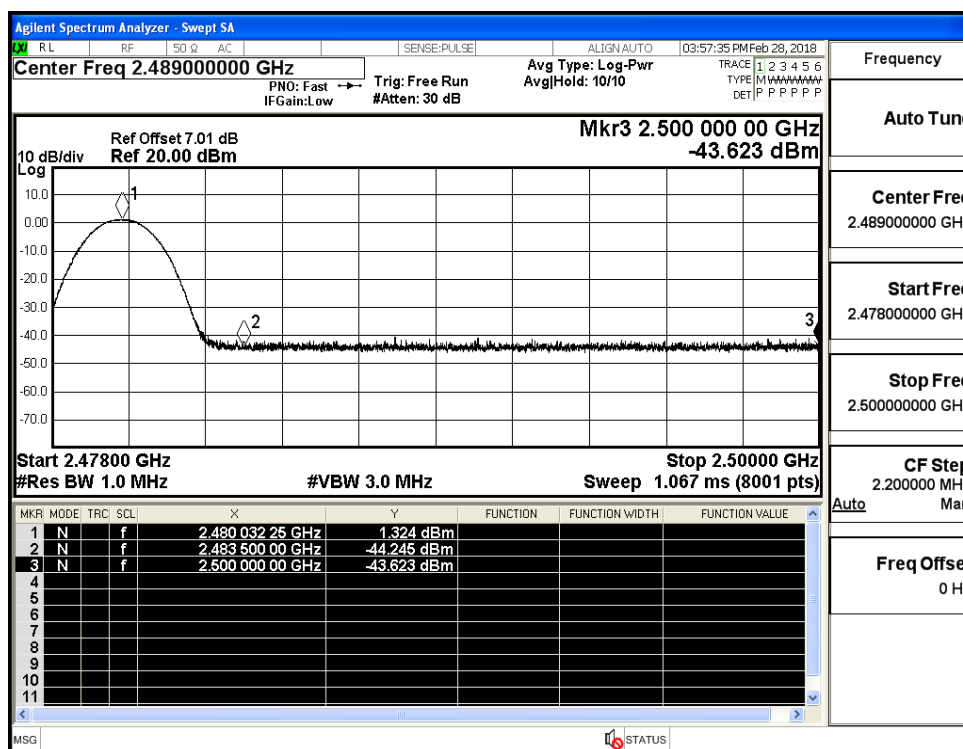
## Restrict-band band-edge measurements\_Hopping Off\_8DPSK\_PEAK (Low Channel)



## 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)

