

## Appendix A

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

Product Name: Pebble Bluetooth® Outdoor Speaker

Trade Mark: Gemline

Test Model: 100247-001B

#### Environmental Conditions

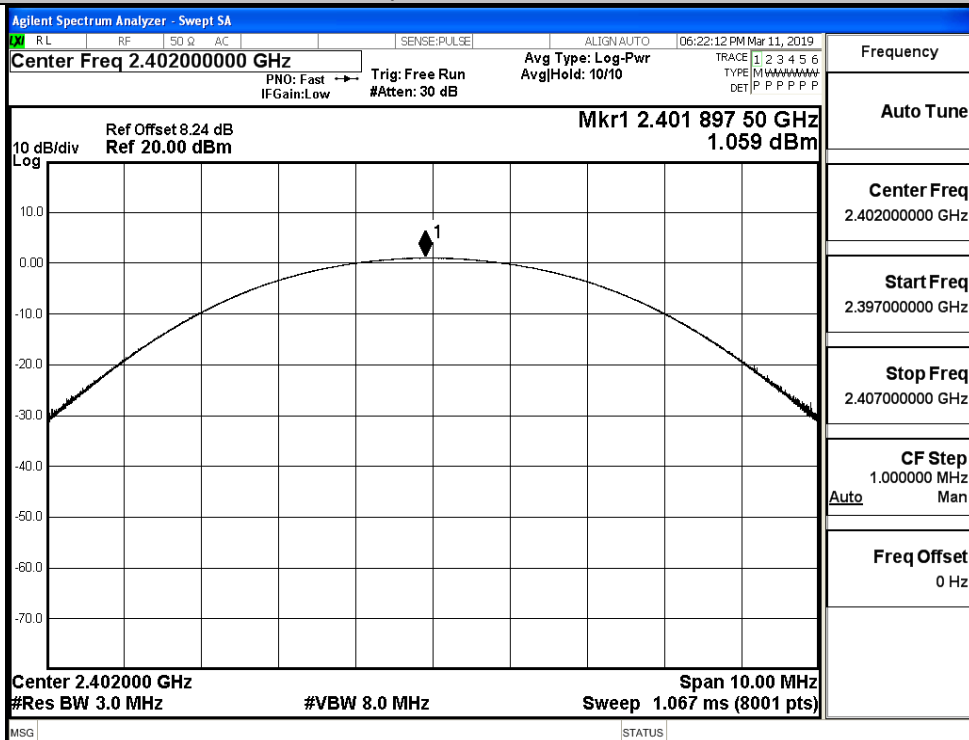
Temperature:	23.2 ° C
Relative Humidity:	53.4%
ATM Pressure:	100.0 kPa
Test Engineer:	Diamond.lu
Supervised by:	Jayden.Zhuo

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

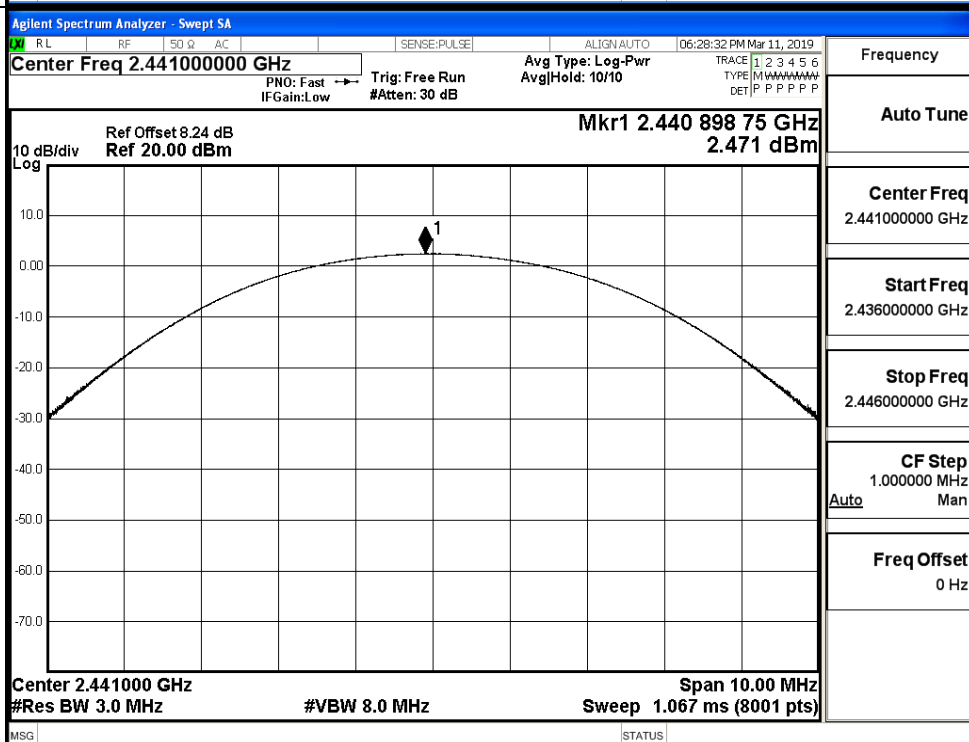
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	1.059	21	PASS
	MCH	2.471	21	PASS
	HCH	2.320	21	PASS
$\pi/4$ DQPSK	LCH	0.230	21	PASS
	MCH	1.821	21	PASS
	HCH	1.560	21	PASS

## Test Graphs

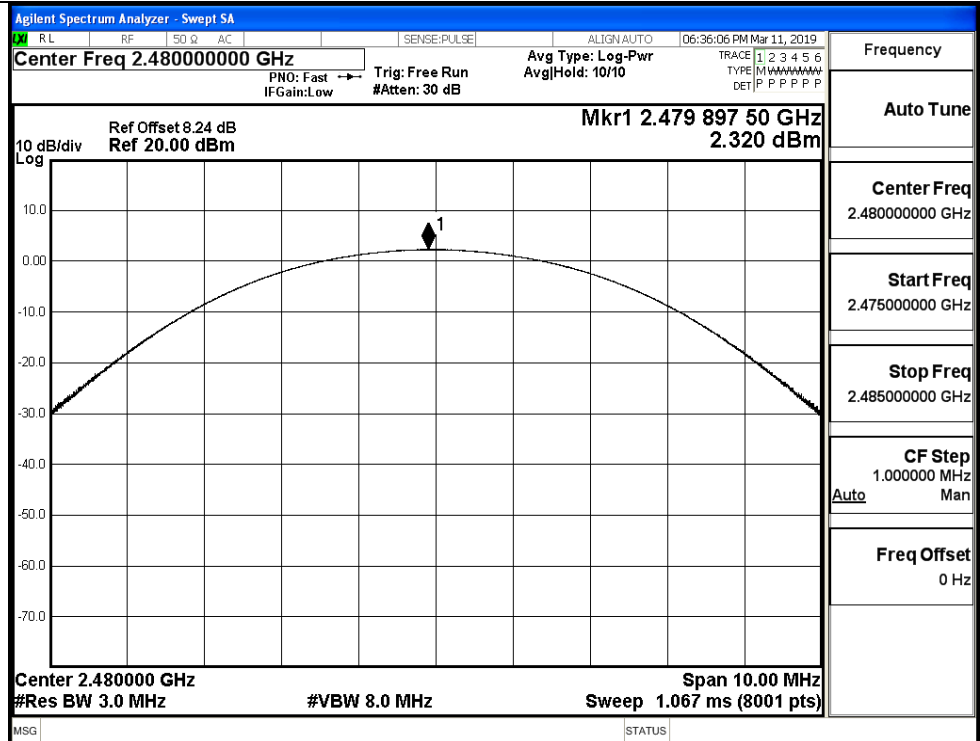
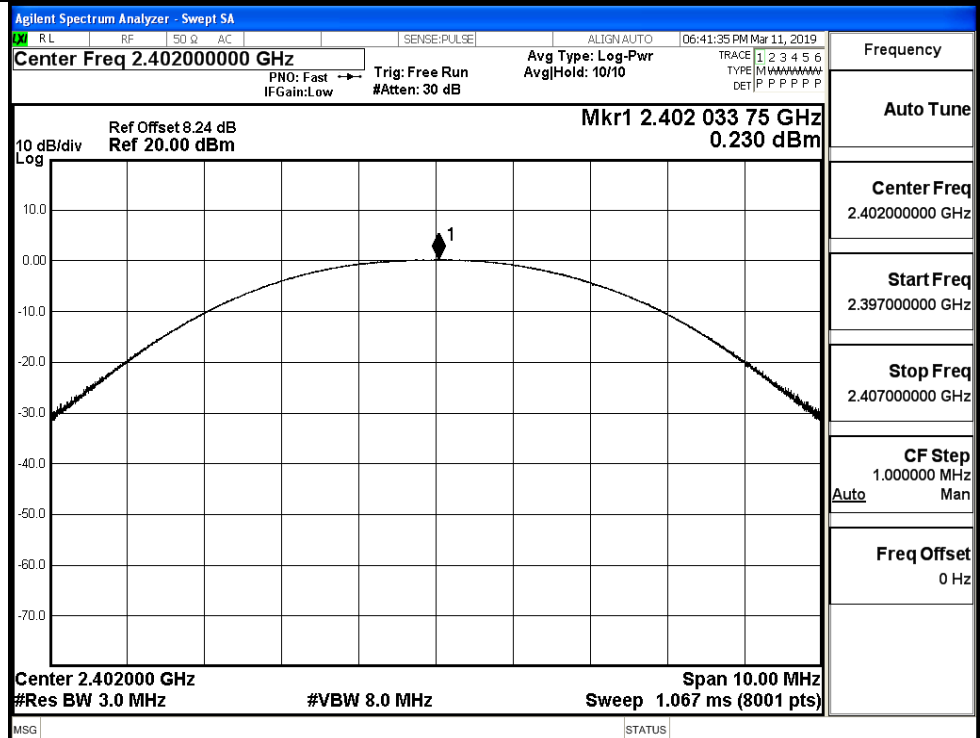
GFSK/LCH

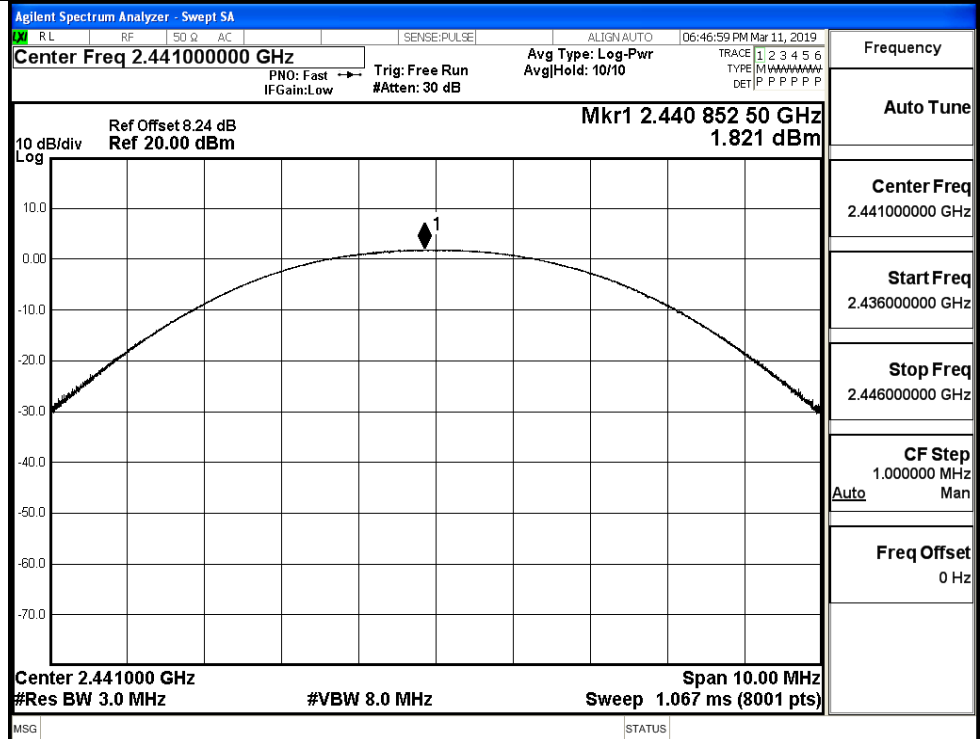
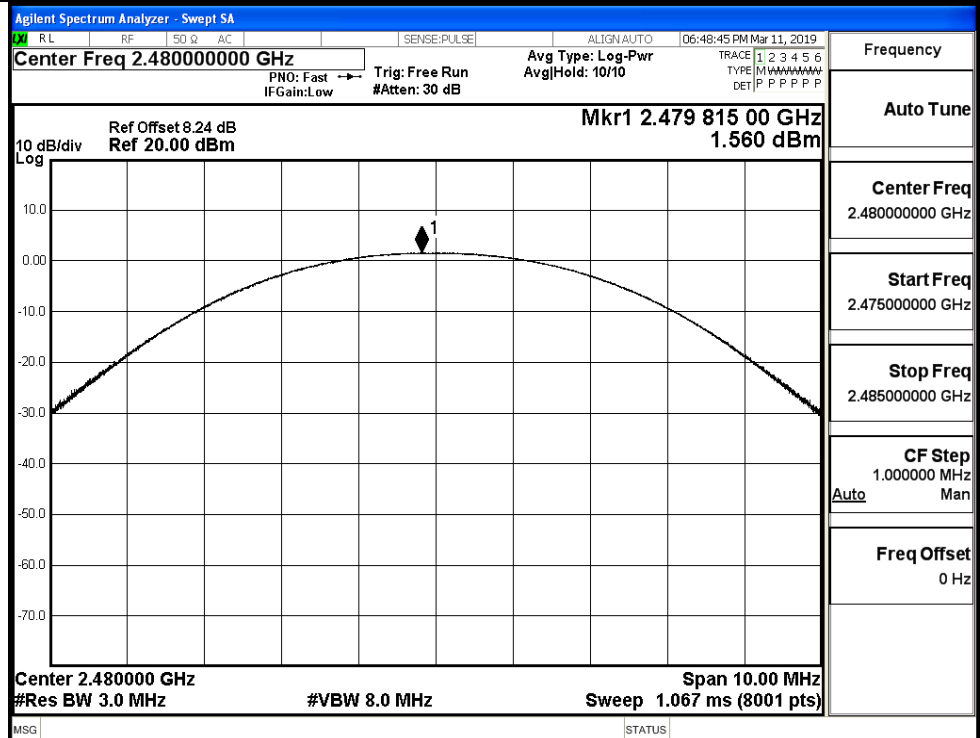


GFSK/MCH



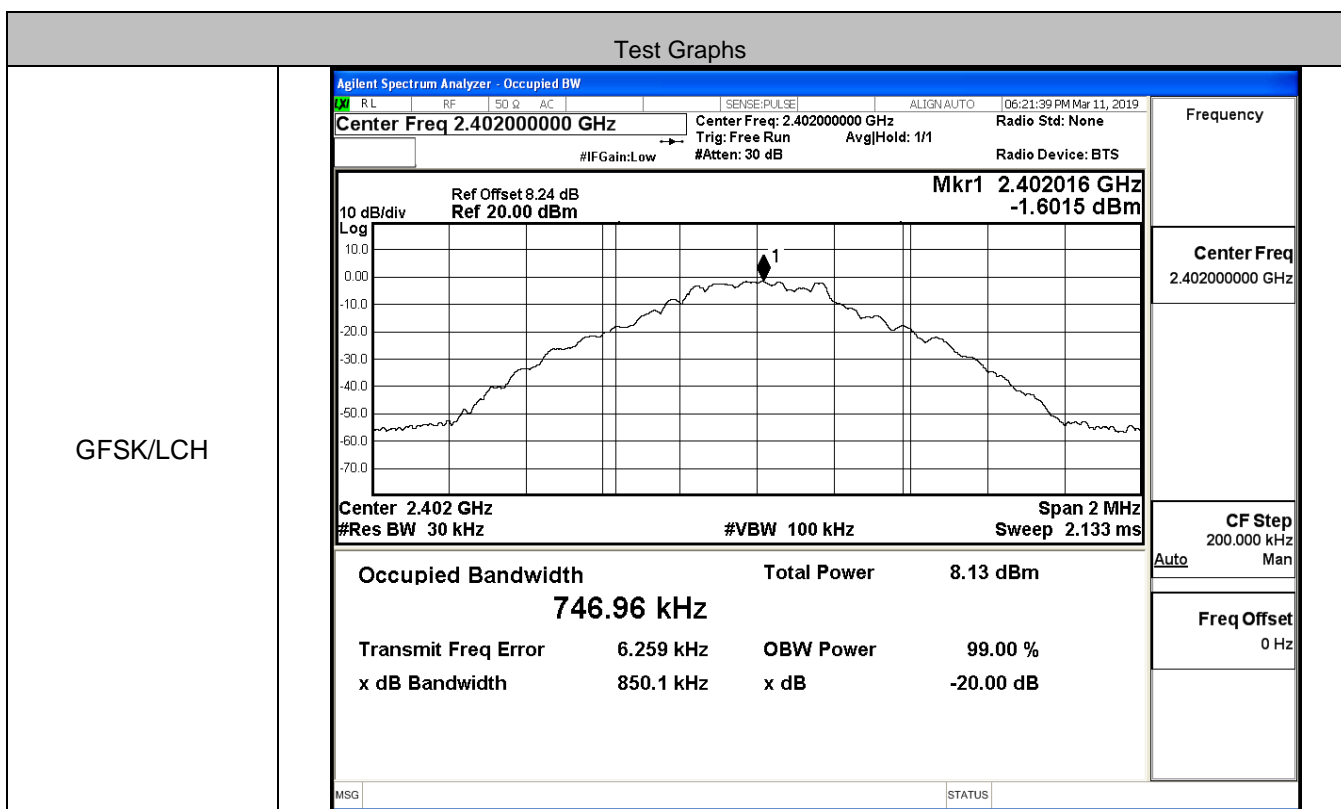
GFSK/HCH

 $\pi$ /4DQPSK/LCH

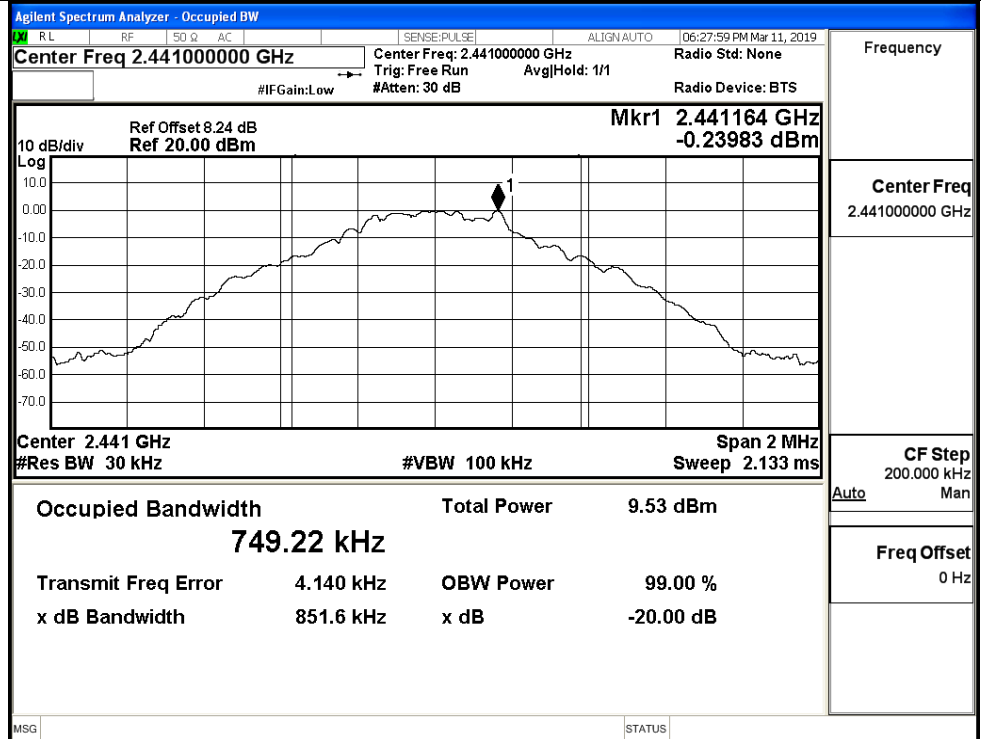
$\pi/4$ DQPSK/MCH $\pi/4$ DQPSK/HCH

## A.2 99% and 20dB Bandwidth

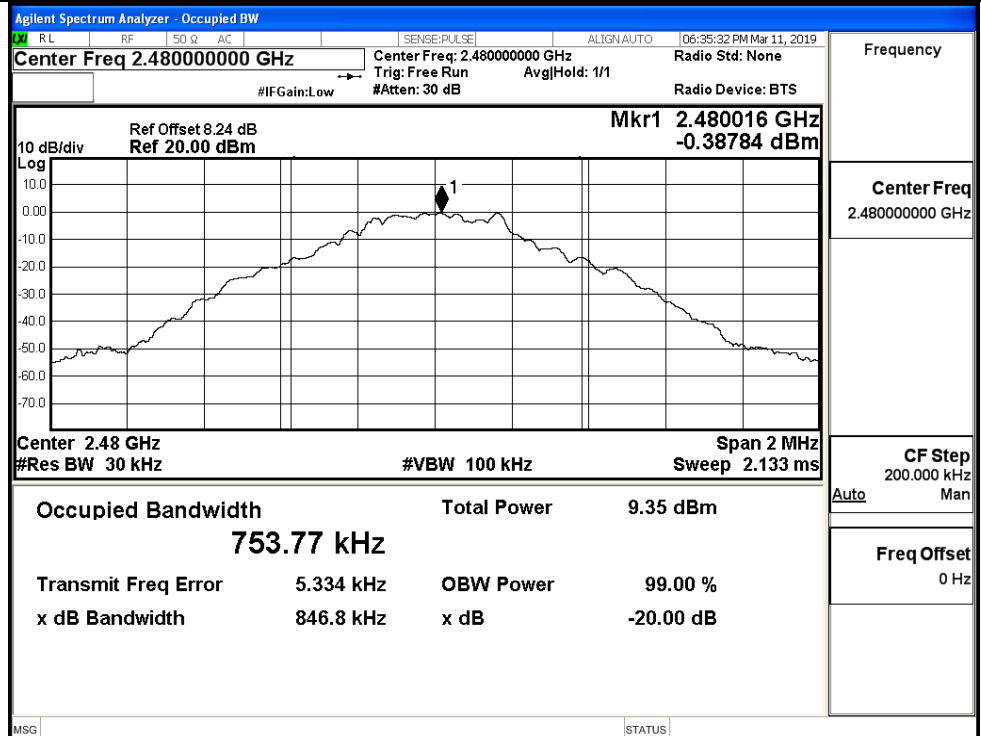
Mode	Channel.	99% Bandwidth [MHz]	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.74696	0.8501	Not Specified	PASS
	MCH	0.74922	0.8516	Not Specified	PASS
	HCH	0.75377	0.8468	Not Specified	PASS
$\pi$ /4DQPSK	LCH	1.1461	1.270	Not Specified	PASS
	MCH	1.1470	1.267	Not Specified	PASS
	HCH	1.1491	1.272	Not Specified	PASS

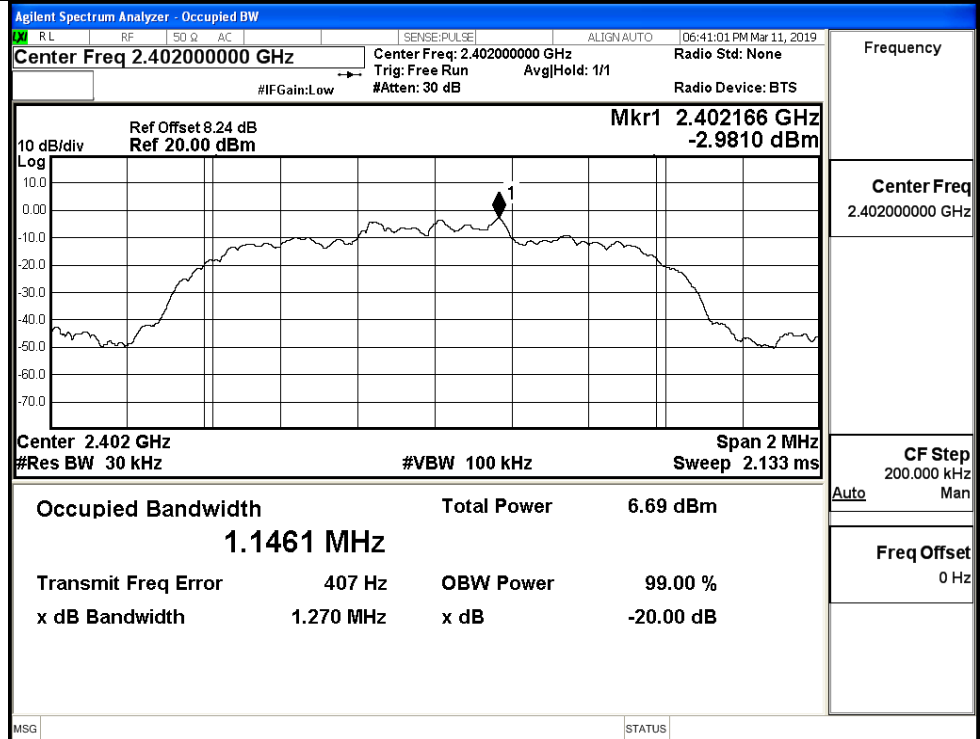
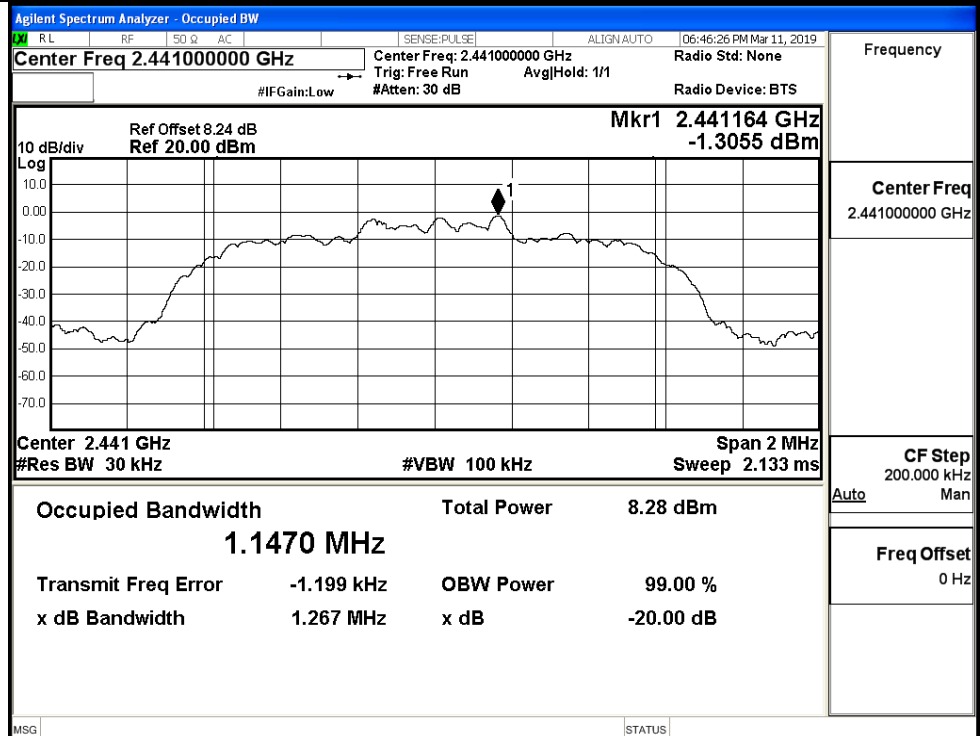


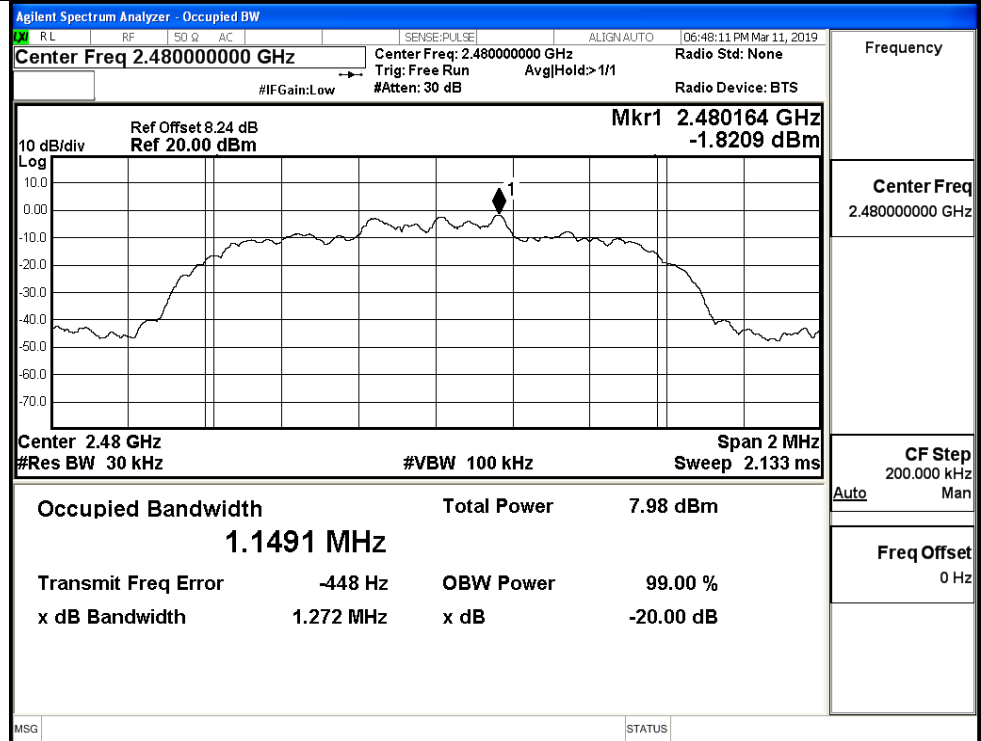
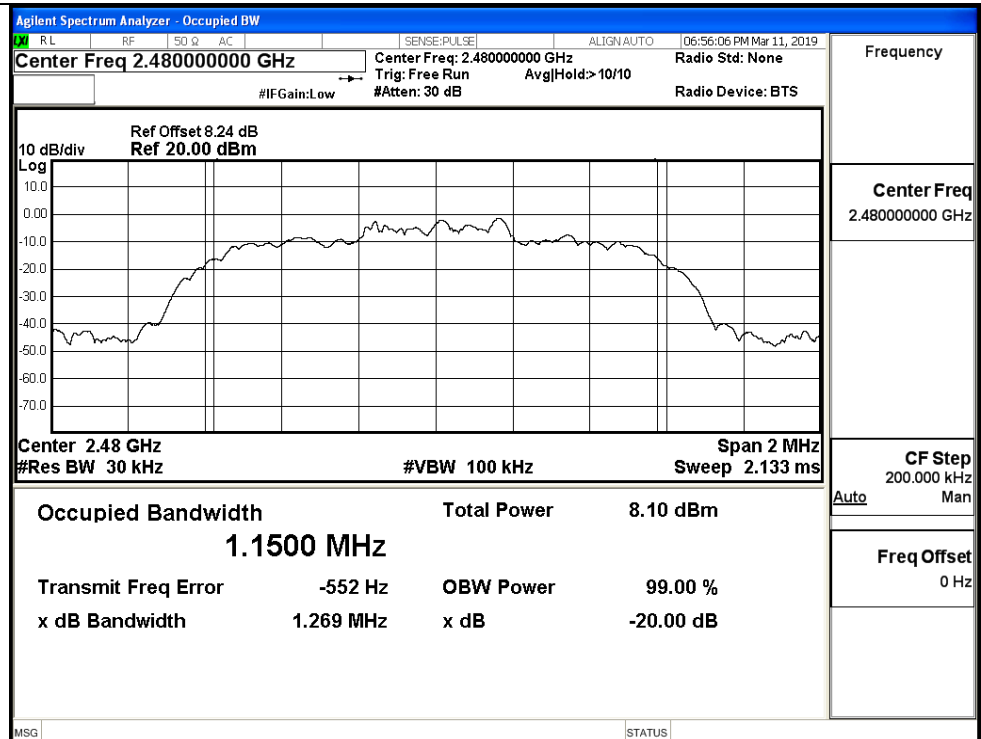
GFSK/MCH



GFSK/HCH



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

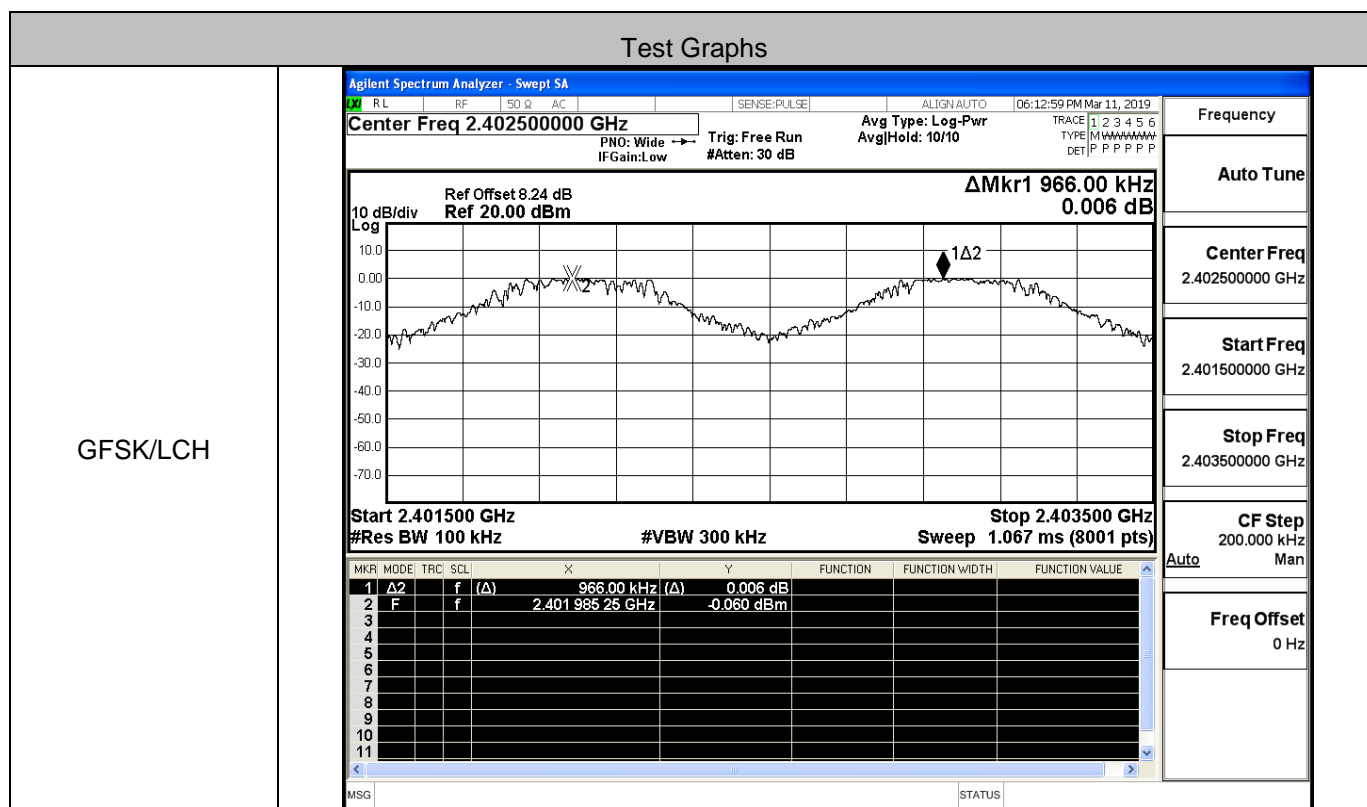
$\pi/4$ DQPSK/HCH $\pi/4$ DQPSK/HCH



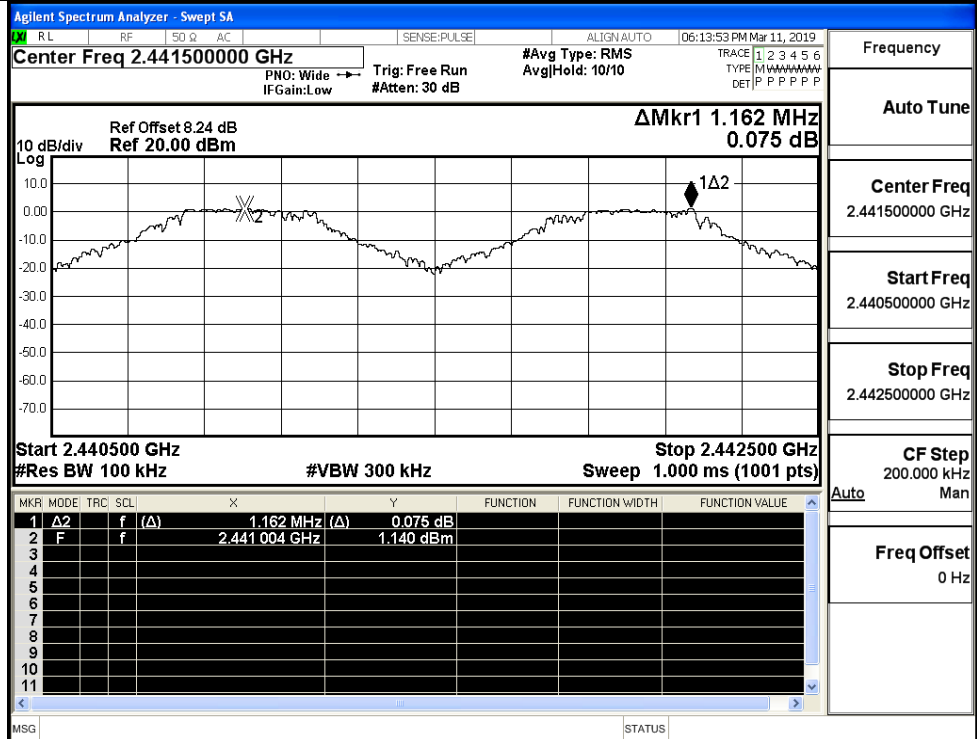
### A.3 Carrier Frequency Separation

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.966	0.574	PASS
	MCH	1.162	0.574	PASS
	HCH	0.918	0.574	PASS
$\pi/4$ DQPSK	LCH	1.200	0.850	PASS
	MCH	0.962	0.850	PASS
	HCH	0.856	0.850	PASS

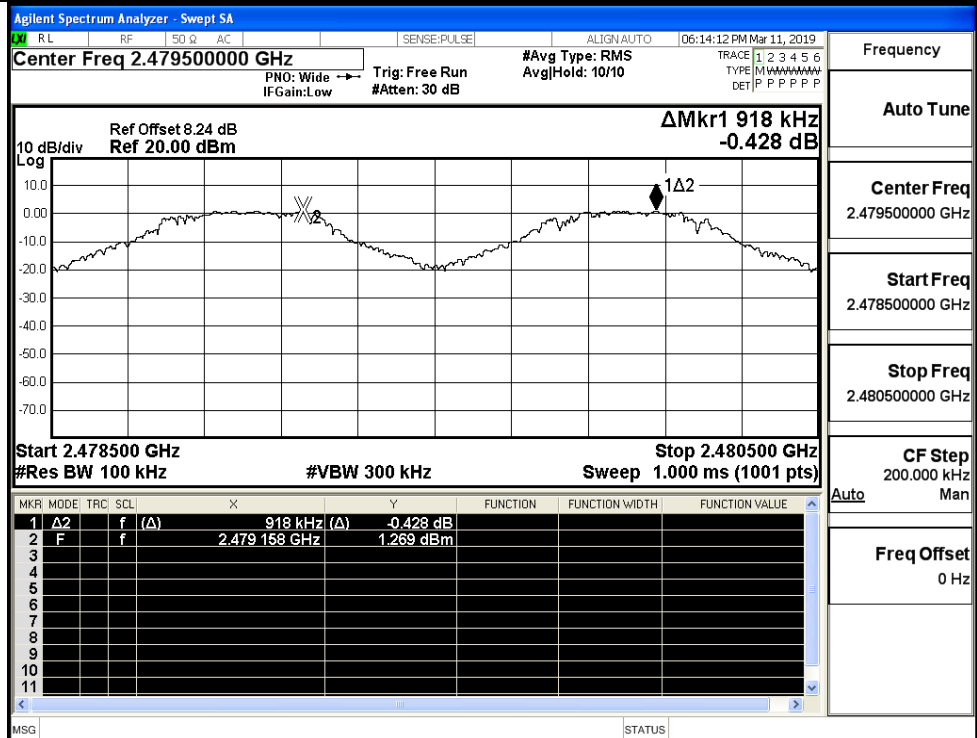
#### Test Graphs

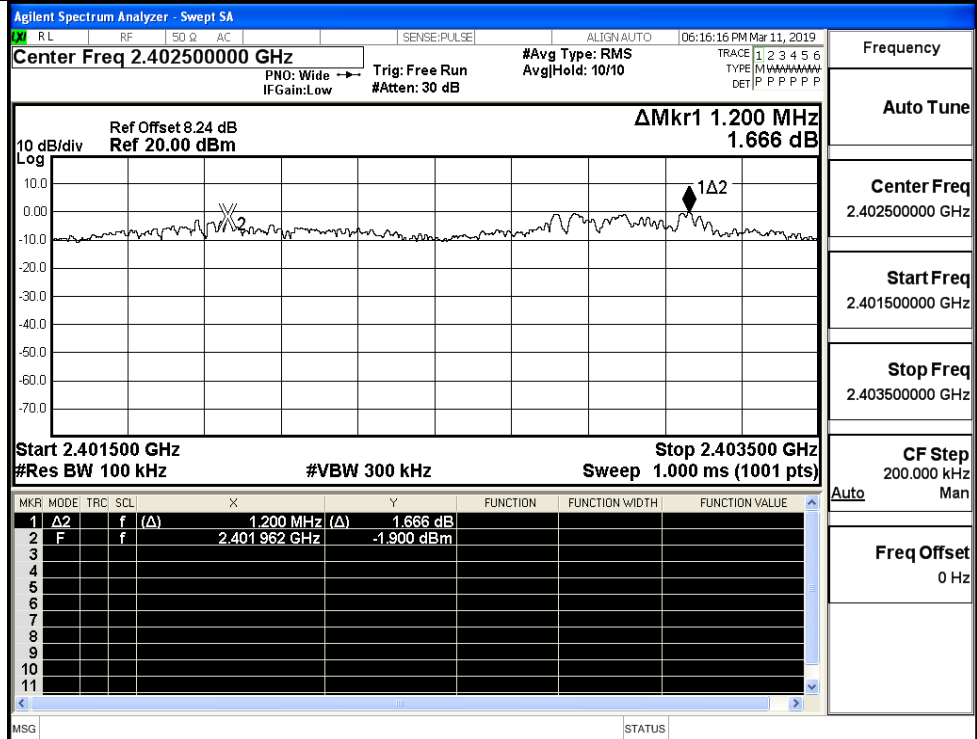
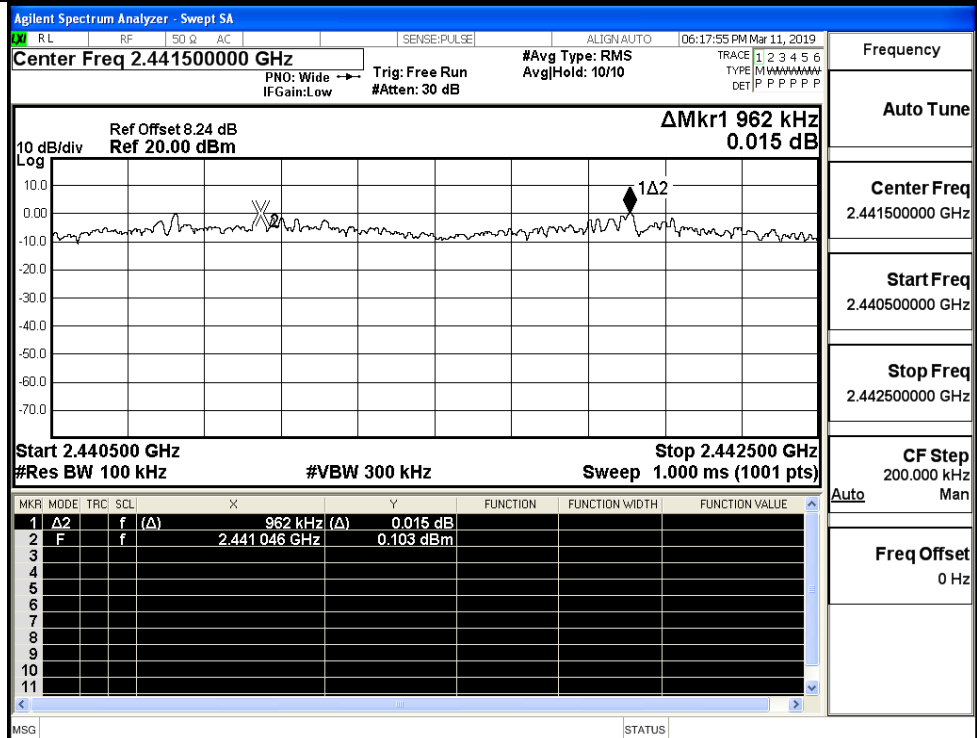


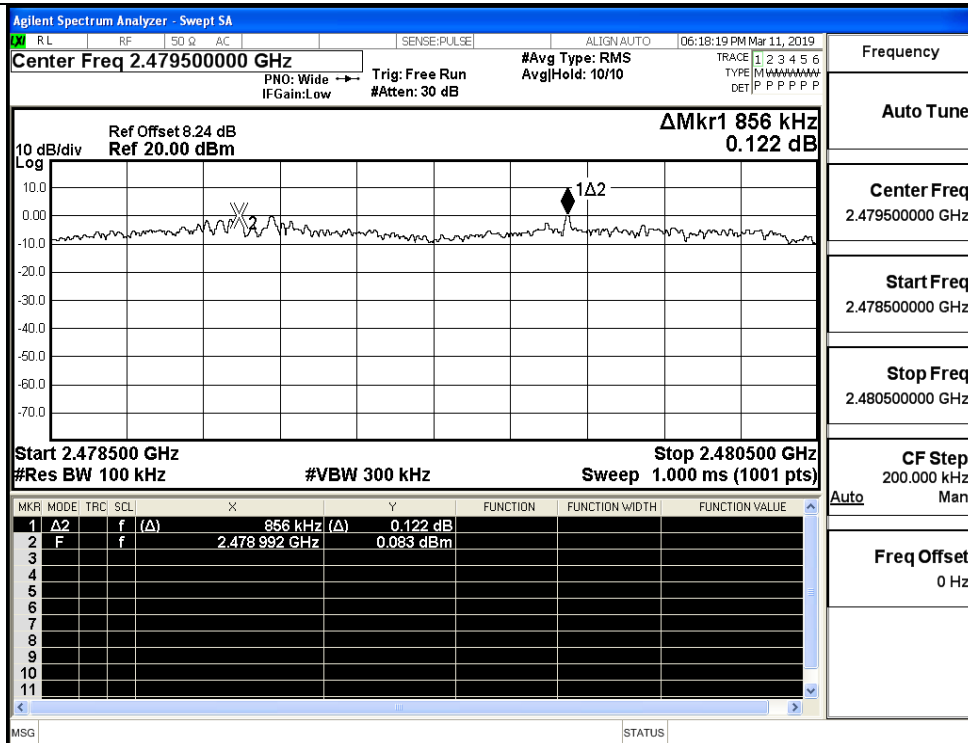
GFSK/MCH



GFSK/HCH



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

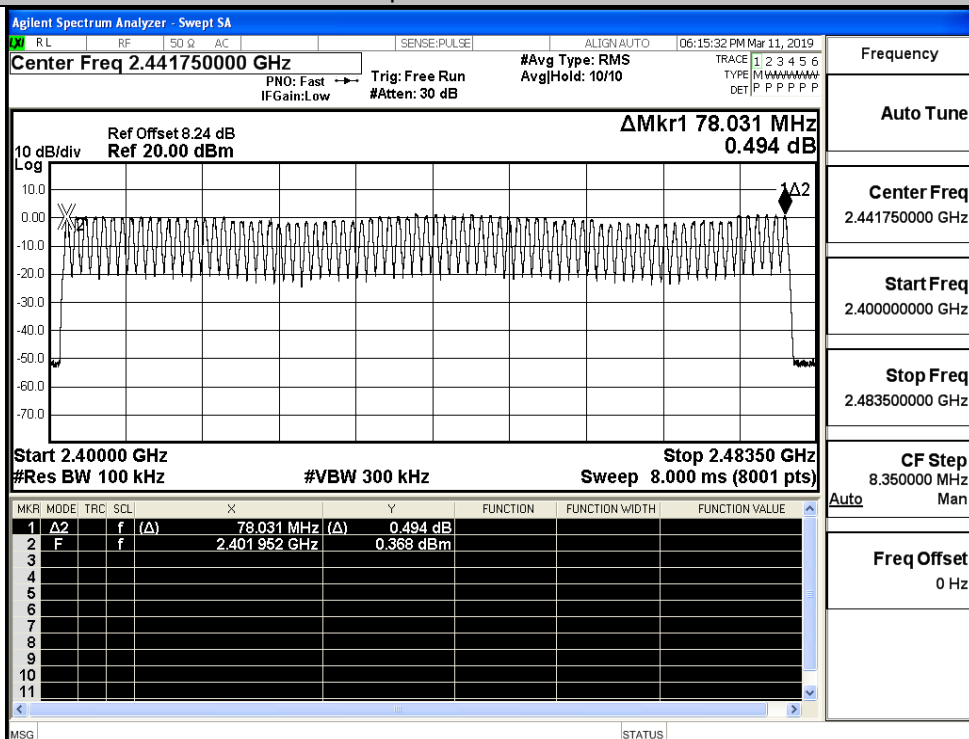
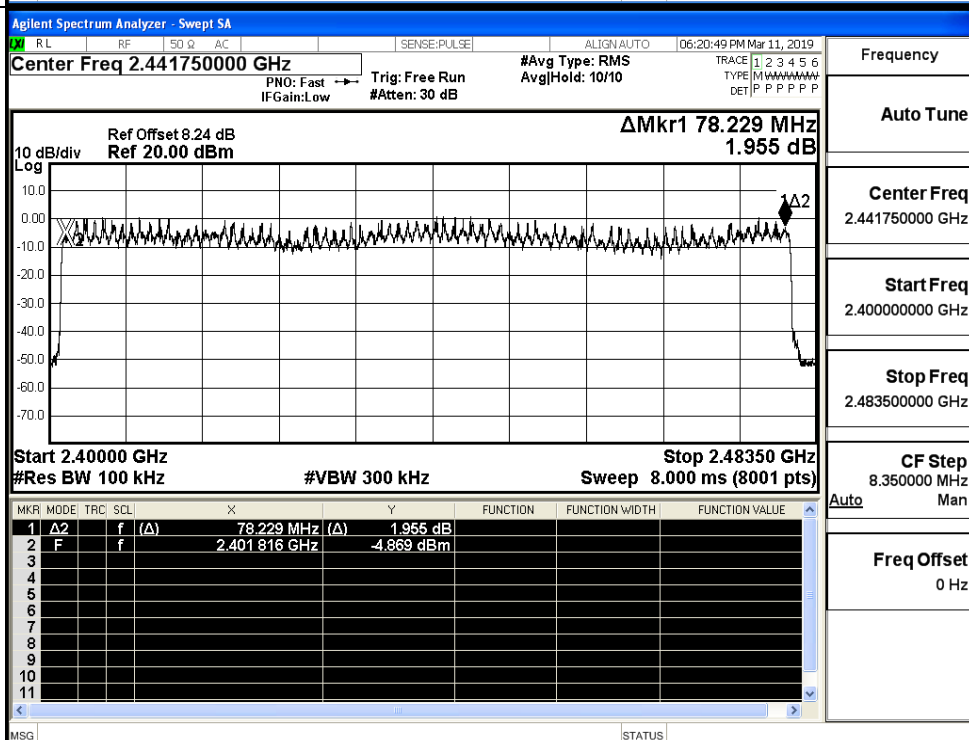
$\pi/4$ DQPSK/HCH

## A.4 Hopping Channel Number

Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	$\geq 15$	PASS
$\pi/4$ DQPSK	Hop	79	$\geq 15$	PASS

## Test Graphs

GFSK/Hop

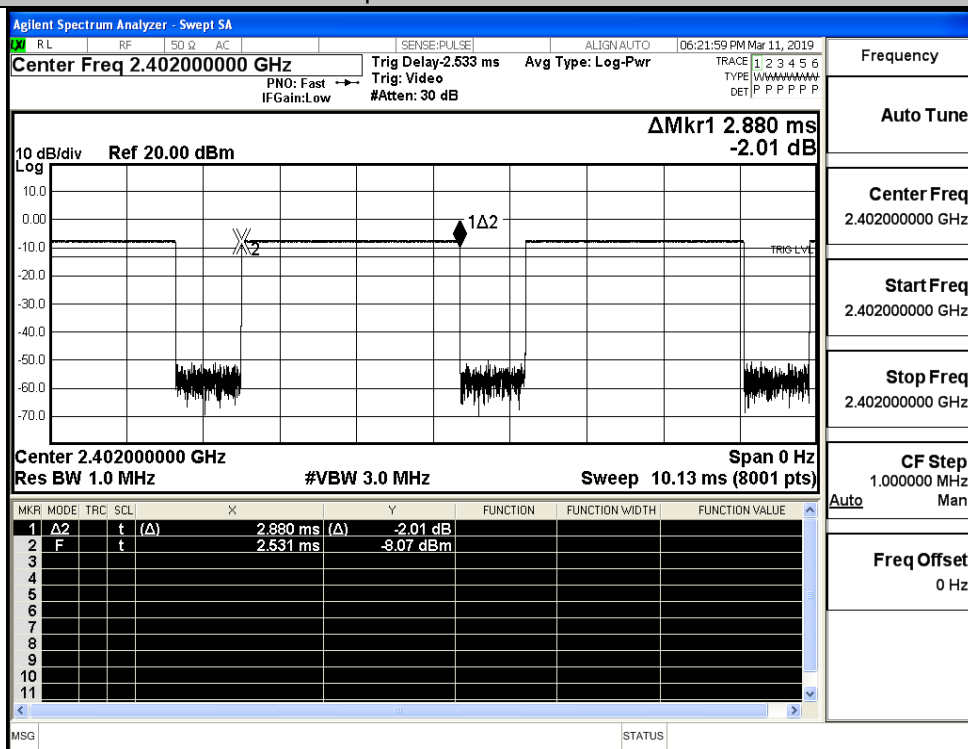
 $\pi/4$ DQPSK/Hop

## A.5 Dwell Time

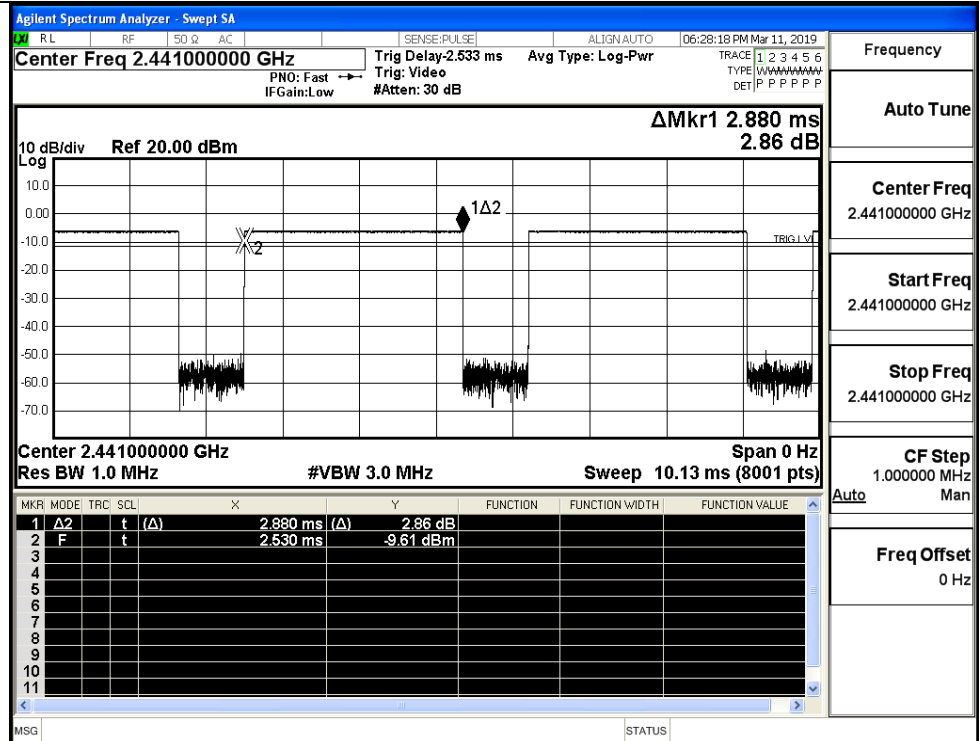
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.88	106.7	0.307	0.4	PASS
	DH5	MCH	2.88	106.7	0.307	0.4	PASS
	DH5	HCH	2.88	106.7	0.307	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.88	106.7	0.307	0.4	PASS
	2DH5	MCH	2.88	106.7	0.307	0.4	PASS
	2DH5	HCH	2.88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

### Test Graphs

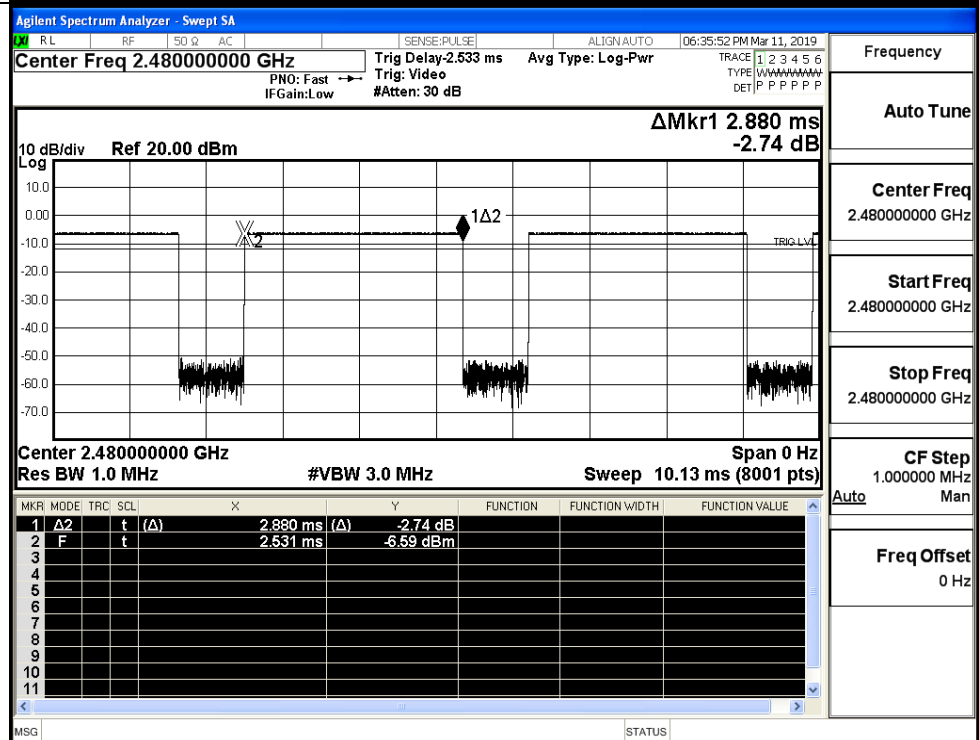
GFSK\_DH5/LCH



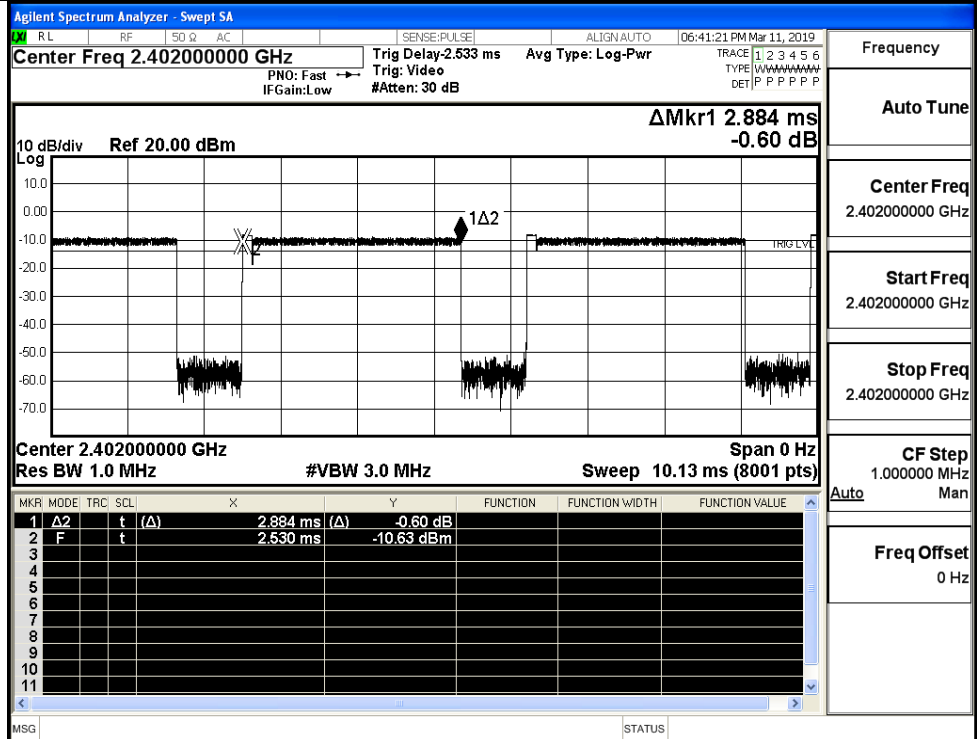
GFSK\_DH5/MCH



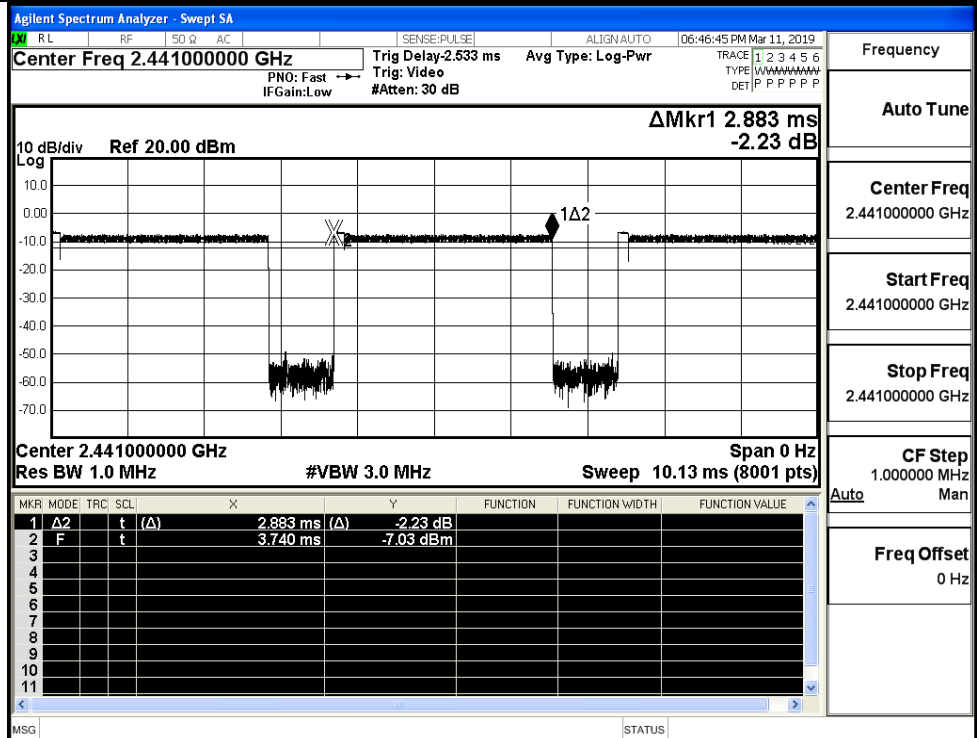
GFSK\_DH5/HCH



$\pi/4$ DQPSK  
\_2DH5/LCH



$\pi/4$ DQPSK  
\_2DH5/MCH



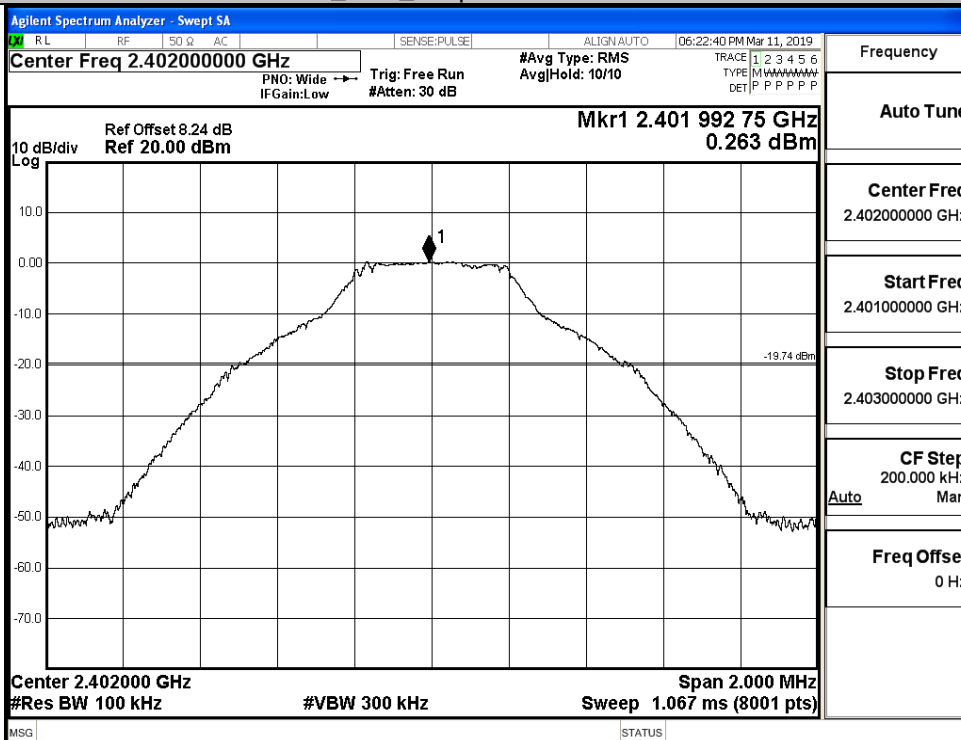




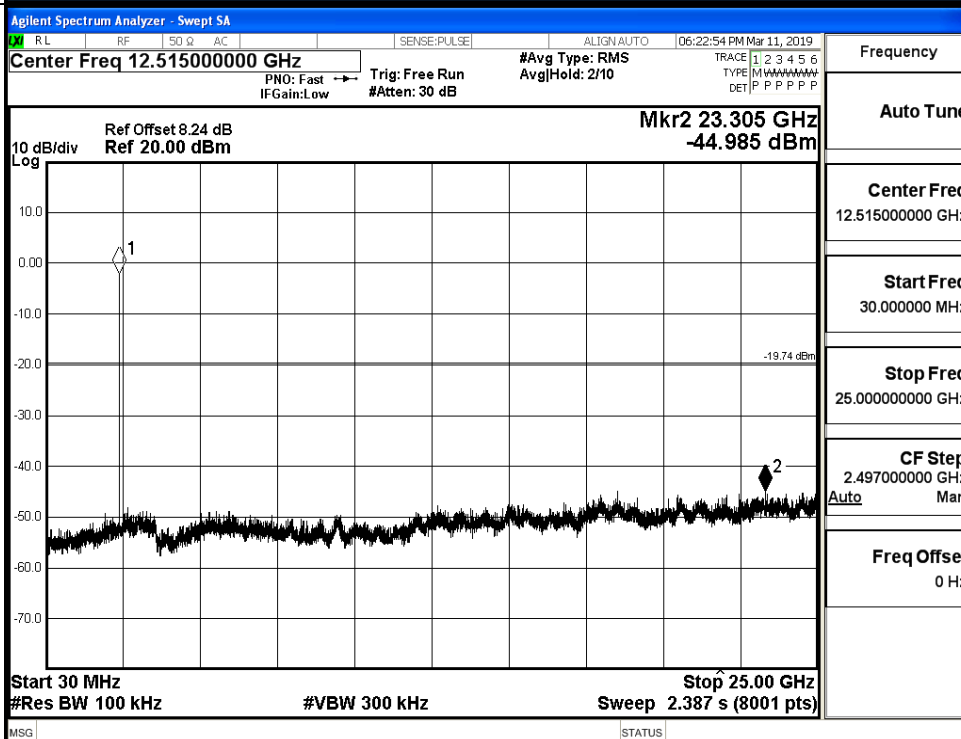
**A.6 RF Conducted Spurious Emissions**

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	0.263	-44.985	-19.737	PASS
	MCH	1.695	-44.250	-18.305	PASS
	HCH	1.444	-44.942	-18.556	PASS
$\pi/4$ DQPSK	LCH	-0.283	-44.801	-20.283	PASS
	MCH	1.368	-44.809	-18.632	PASS
	HCH	0.763	-43.550	-19.237	PASS

Pref

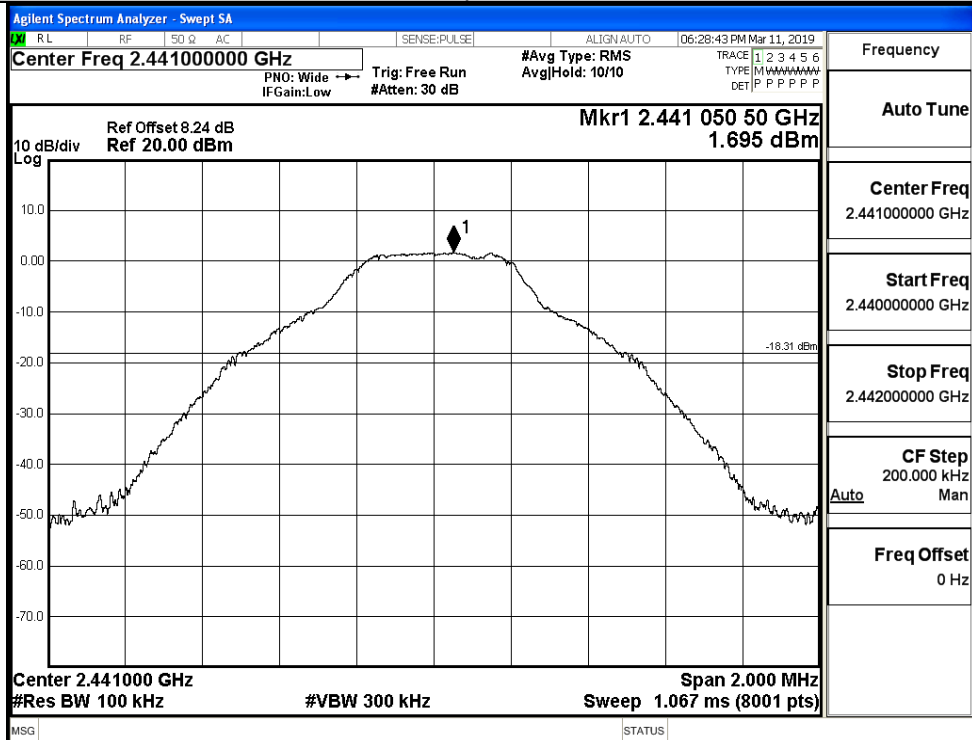


Puw

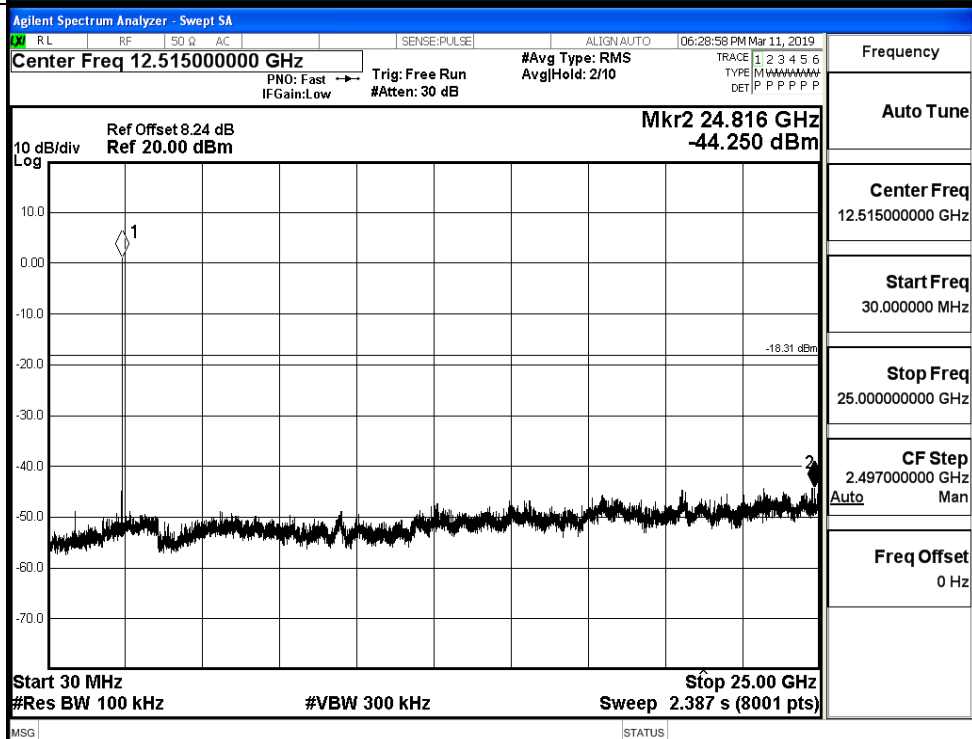


## GFSK\_MCH\_Graphs

Pref

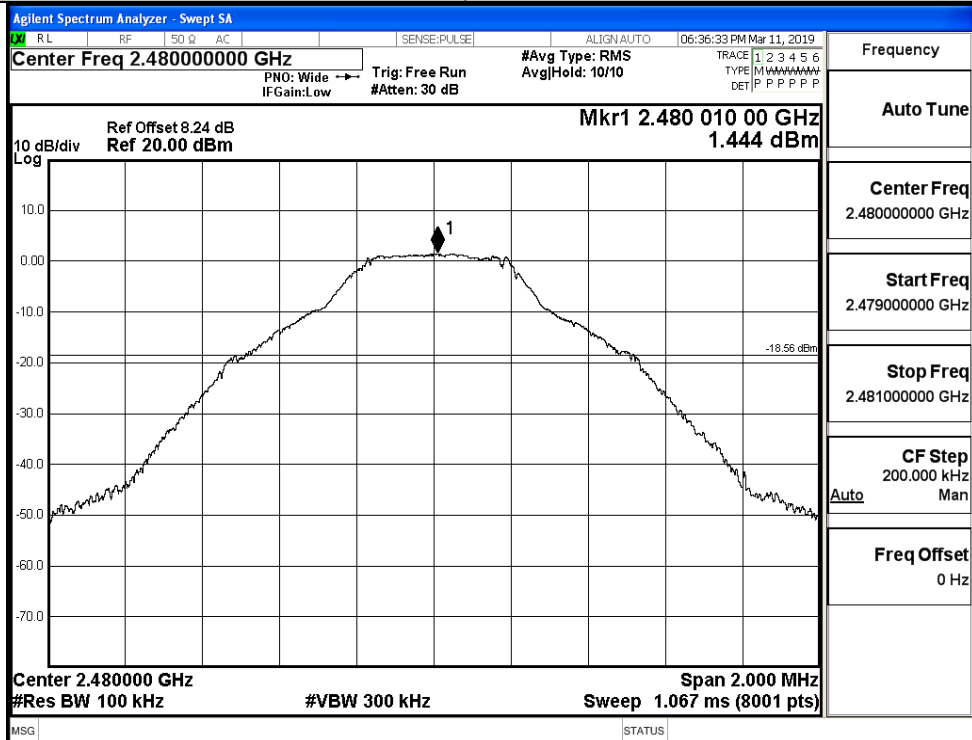


Puw

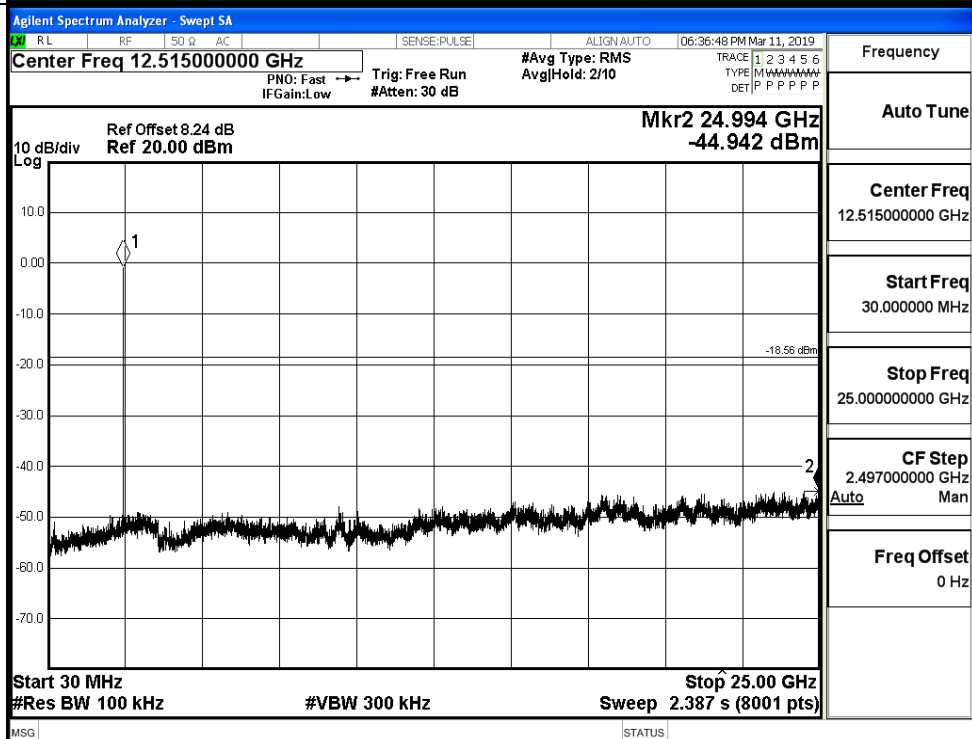


## GFSK\_HCH\_Graphs

Pref

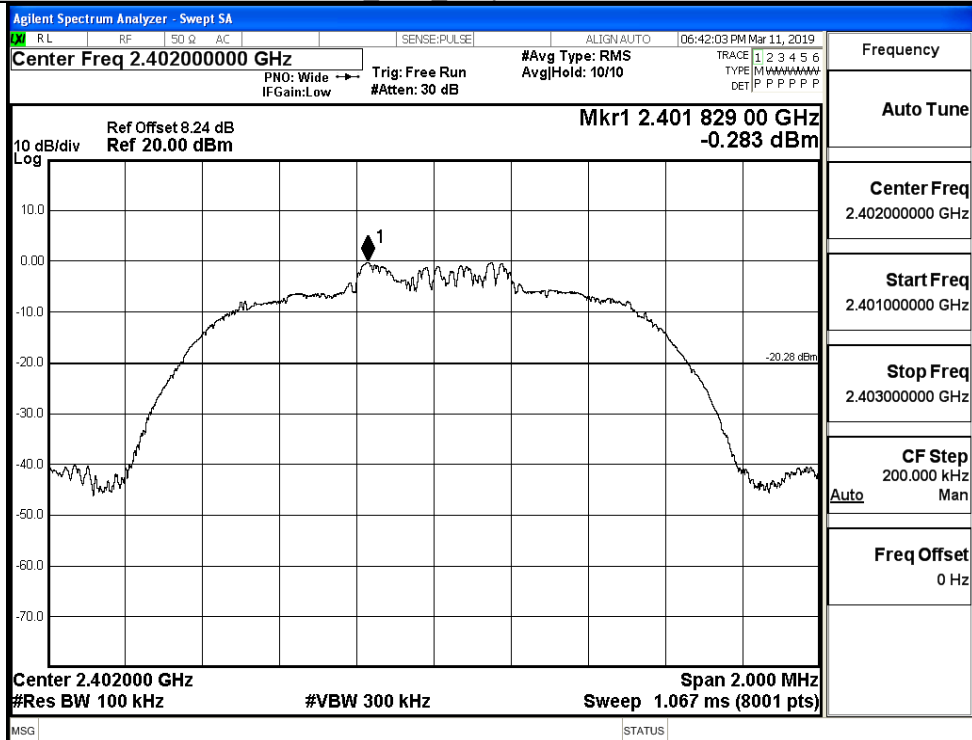


Puw

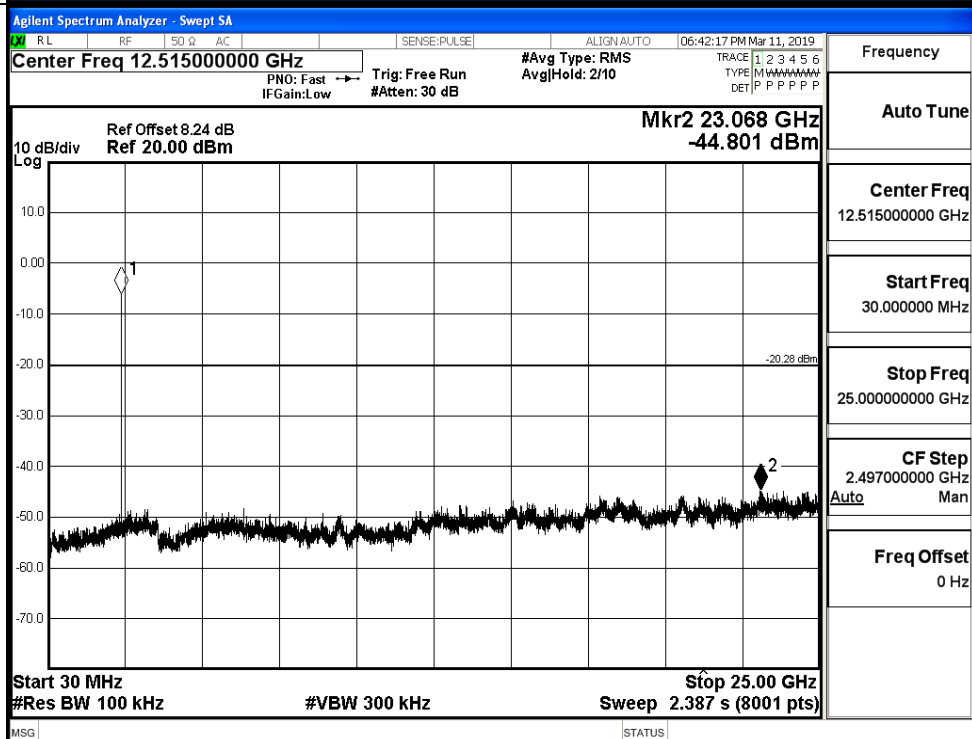


$\pi/4$ DQPSK LCH\_Graphs

Pref

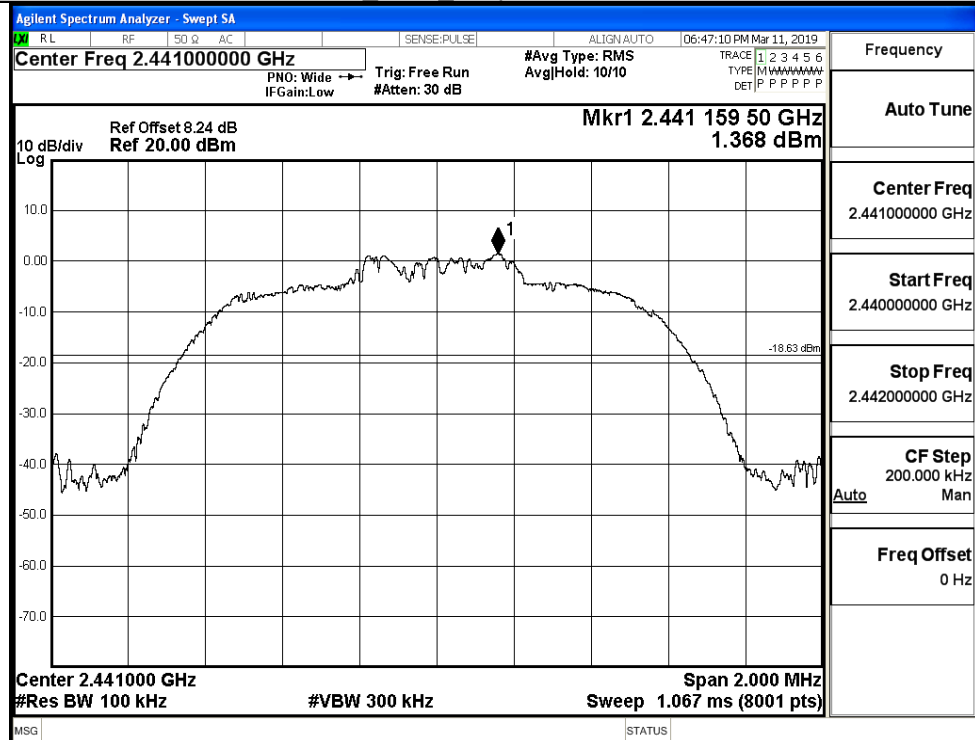


Puw

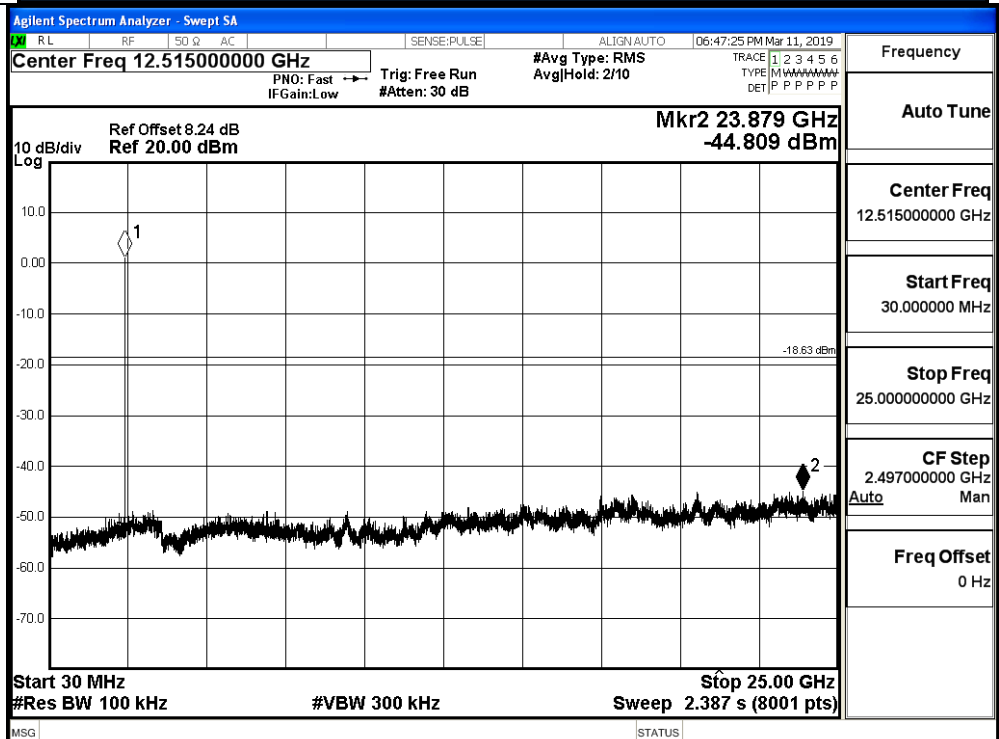


$\pi$ /4DQPSK\_MCH\_Graphs

Pref

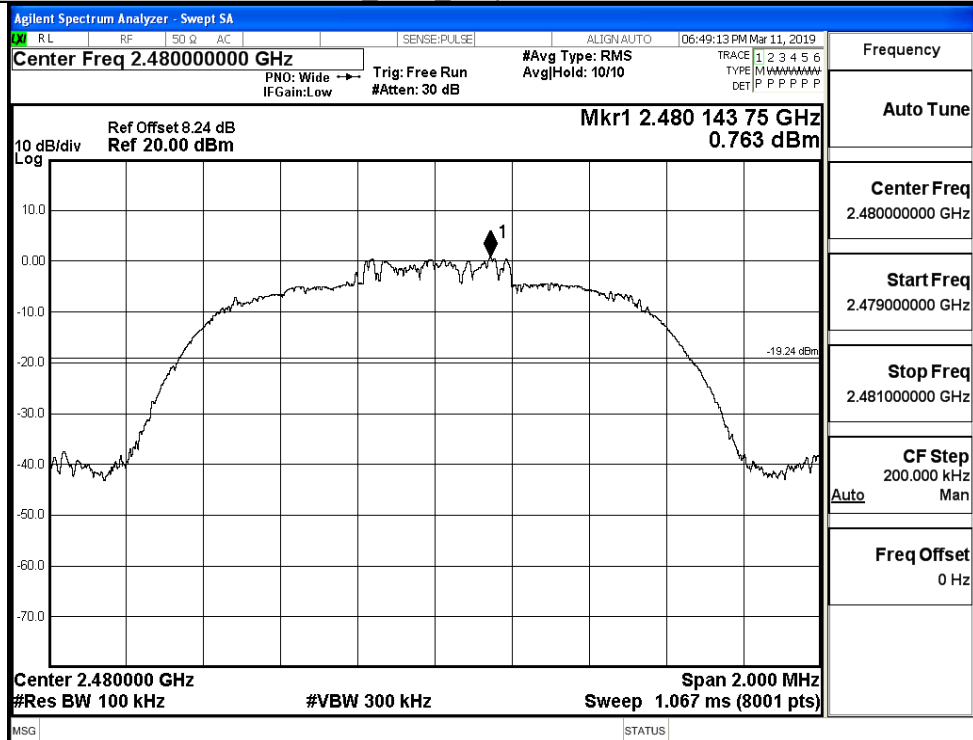


Puw

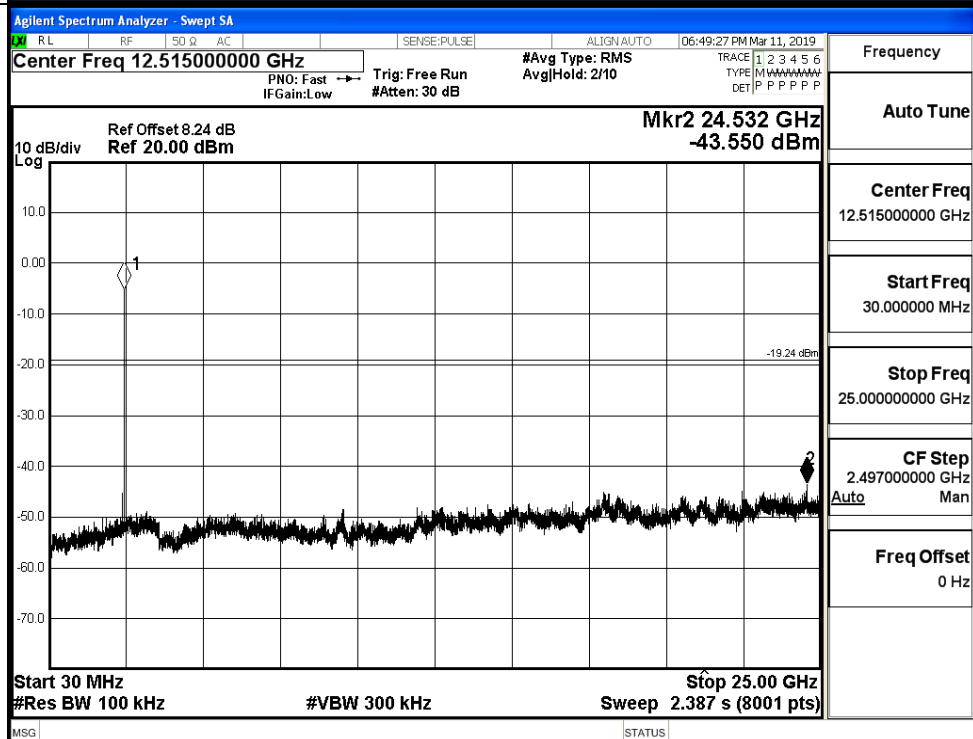


$\pi/4$ DQPSK\_HCH\_Graphs

Pref



Puw



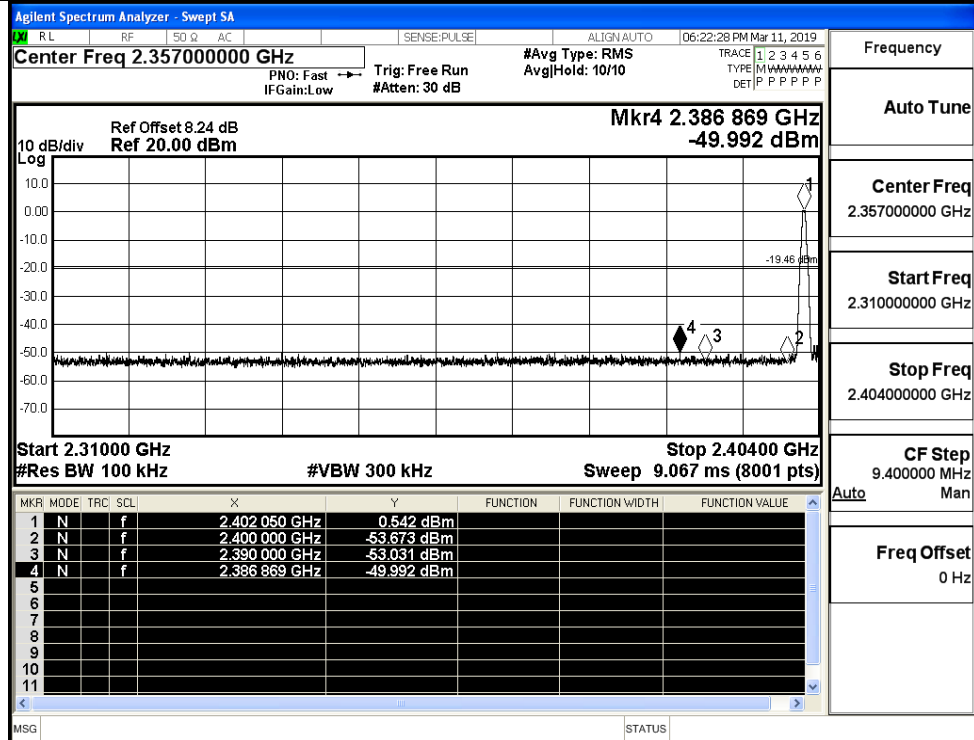


## A.7 Band-edge for RF Conducted Emissions

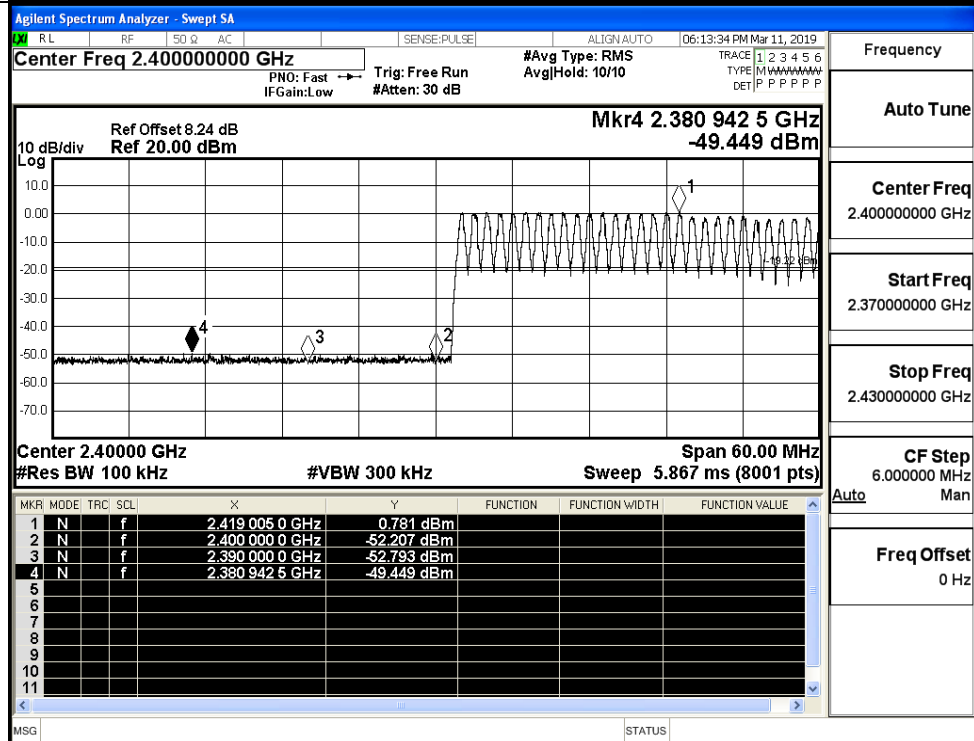
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	0.542	Off	-49.992	-19.46	PASS
			0.781	On	-49.449	-19.22	PASS
	HCH	2480	1.782	Off	-49.901	-18.22	PASS
			1.441	On	-49.132	-18.56	PASS
$\pi/4$ DQPSK	LCH	2402	-0.106	Off	-49.987	-20.11	PASS
			0.252	On	-49.349	-19.75	PASS
	HCH	2480	1.254	Off	-49.104	-18.75	PASS
			0.542	On	-49.146	-19.46	PASS

## Test Graphs

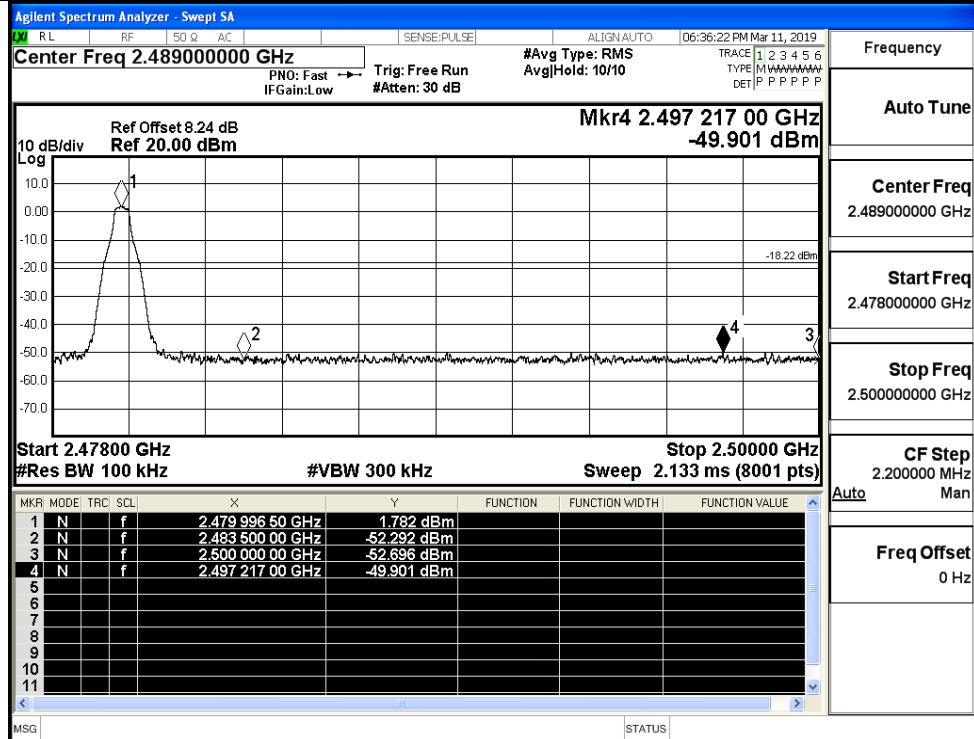
GFSK/LCH/No Hop



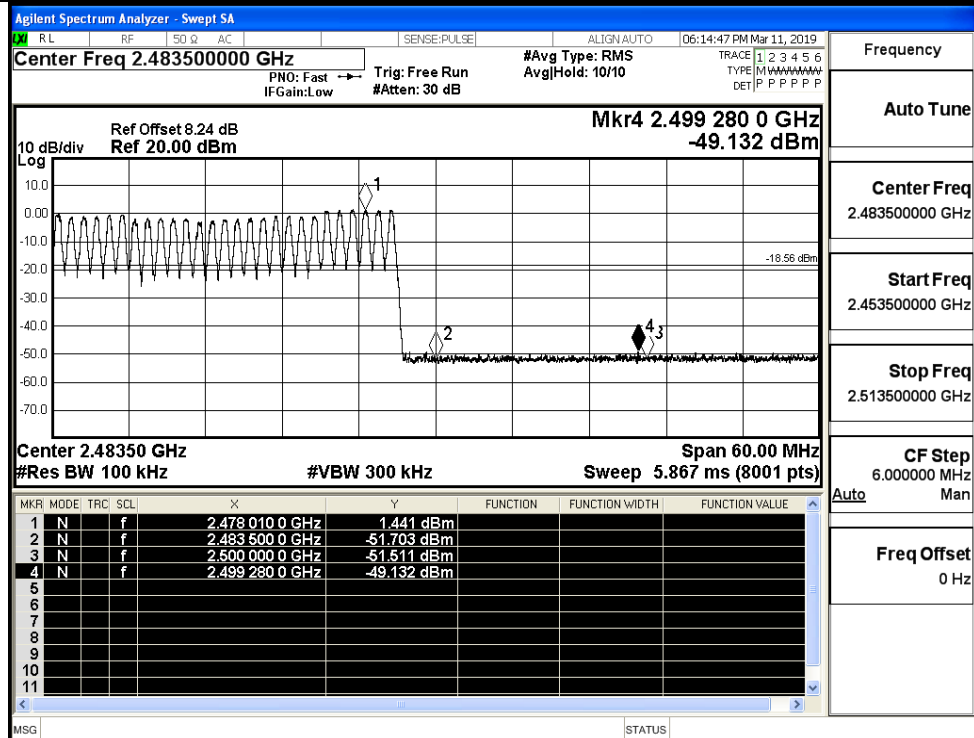
GFSK/LCH/Hop



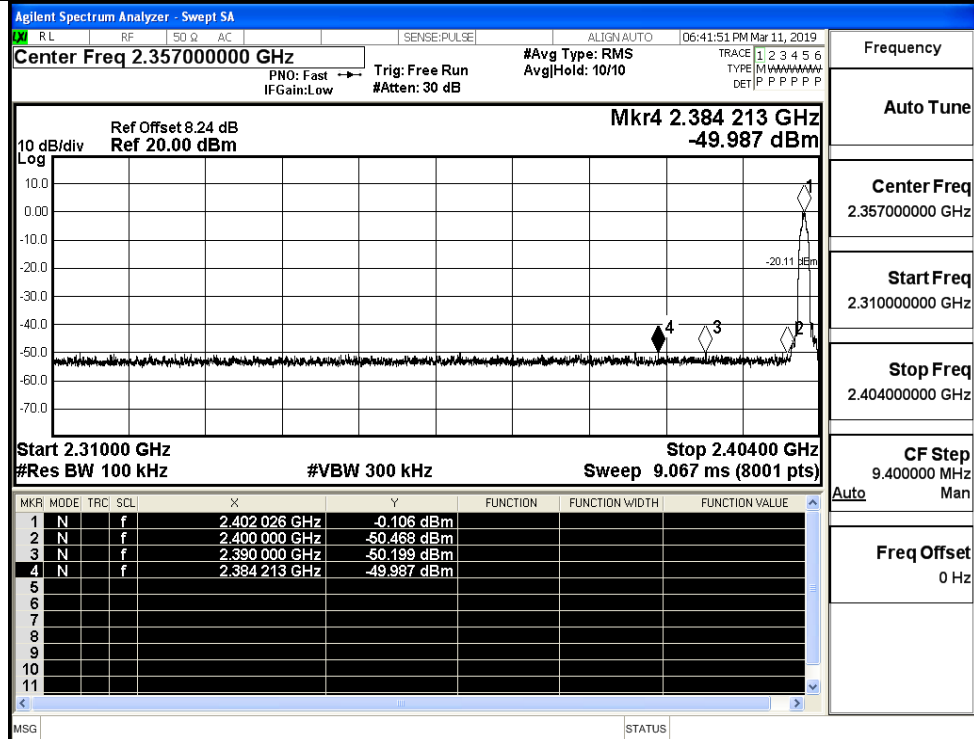
GFSK/HCH/No Hop



GFSK/HCH/Hop



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

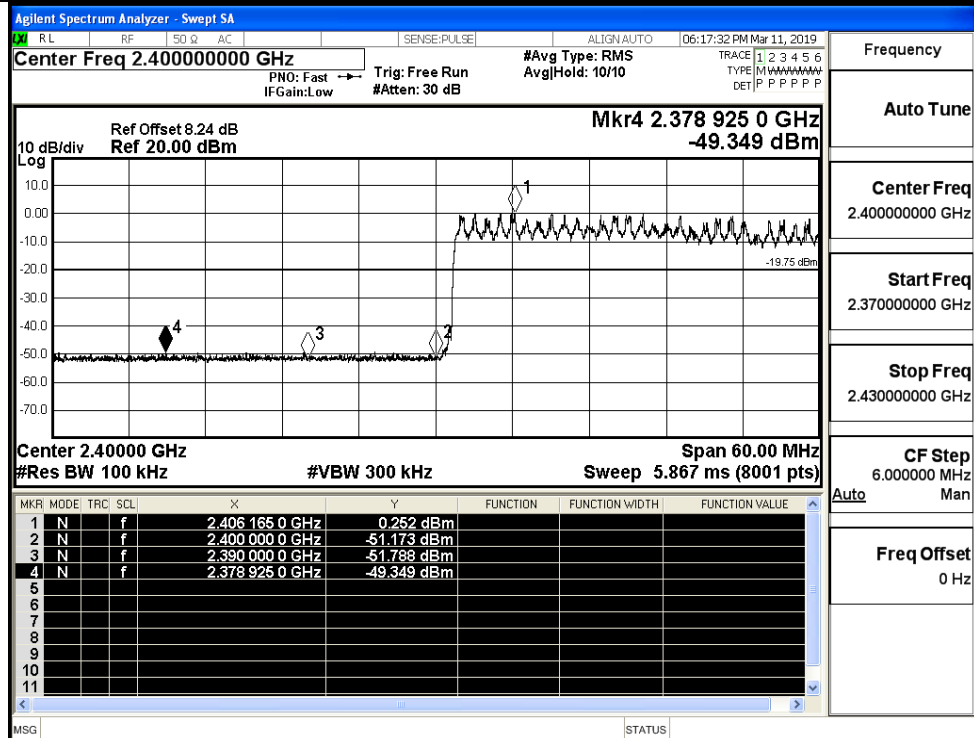


Frequency

Auto Tune

Center Freq  
2.357000000 GHzStart Freq  
2.310000000 GHzStop Freq  
2.404000000 GHzCF Step  
9.400000 MHz  
Auto ManFreq Offset  
0 Hz

$\pi/4$ DQPSK/LCH/Hop

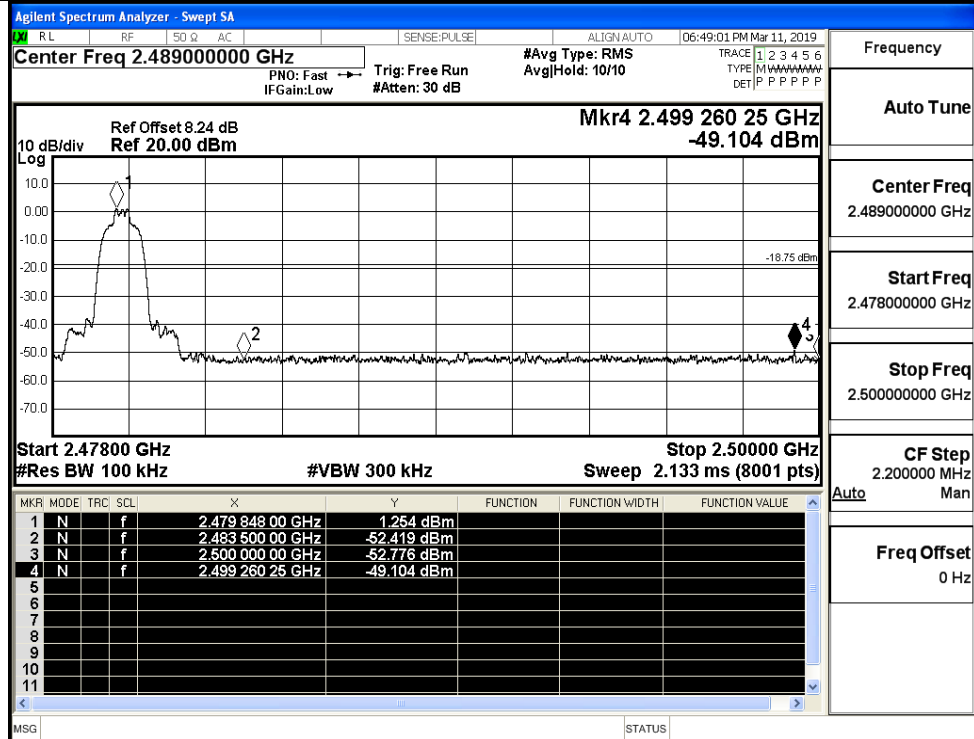


Frequency

Auto Tune

Center Freq  
2.400000000 GHzStart Freq  
2.370000000 GHzStop Freq  
2.430000000 GHzCF Step  
6.000000 MHz  
Auto ManFreq Offset  
0 Hz

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

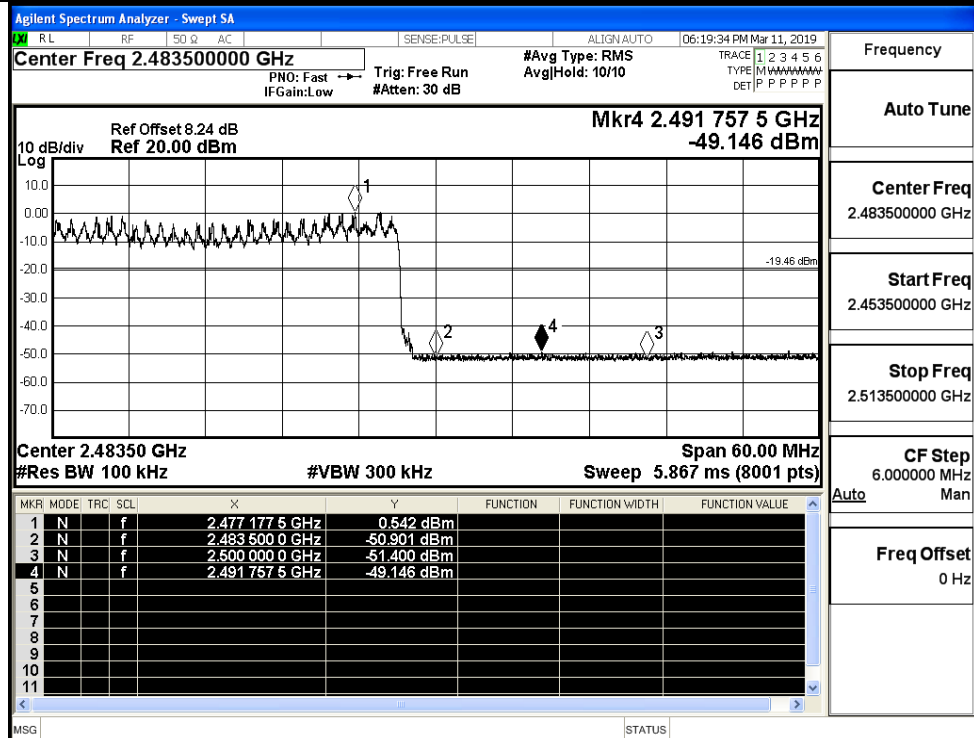


Frequency

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

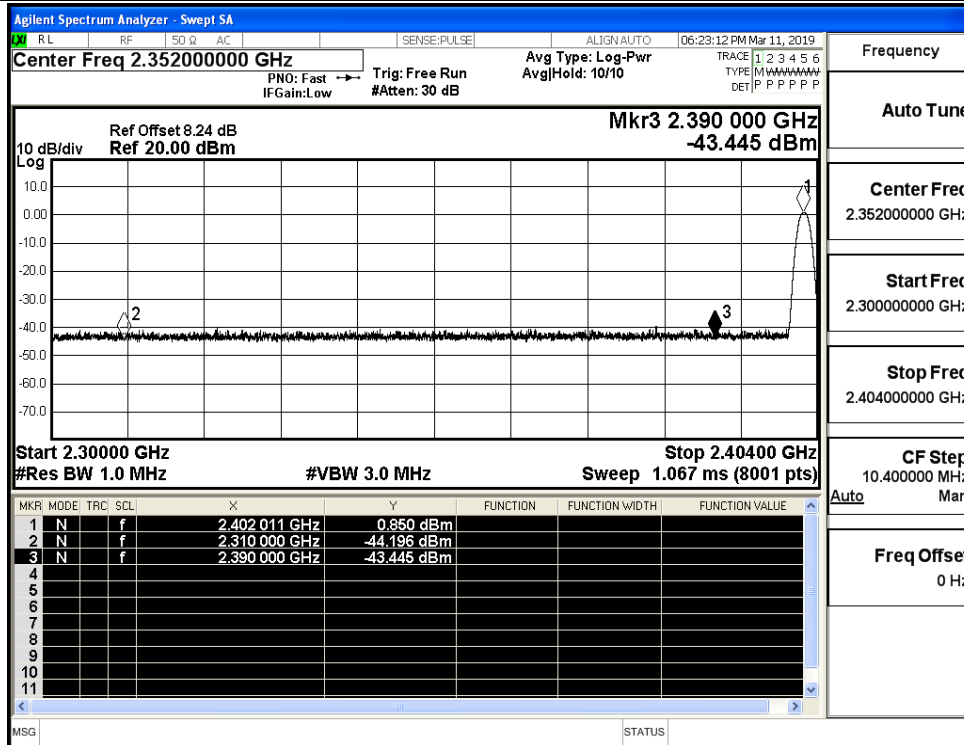
Auto Tune

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

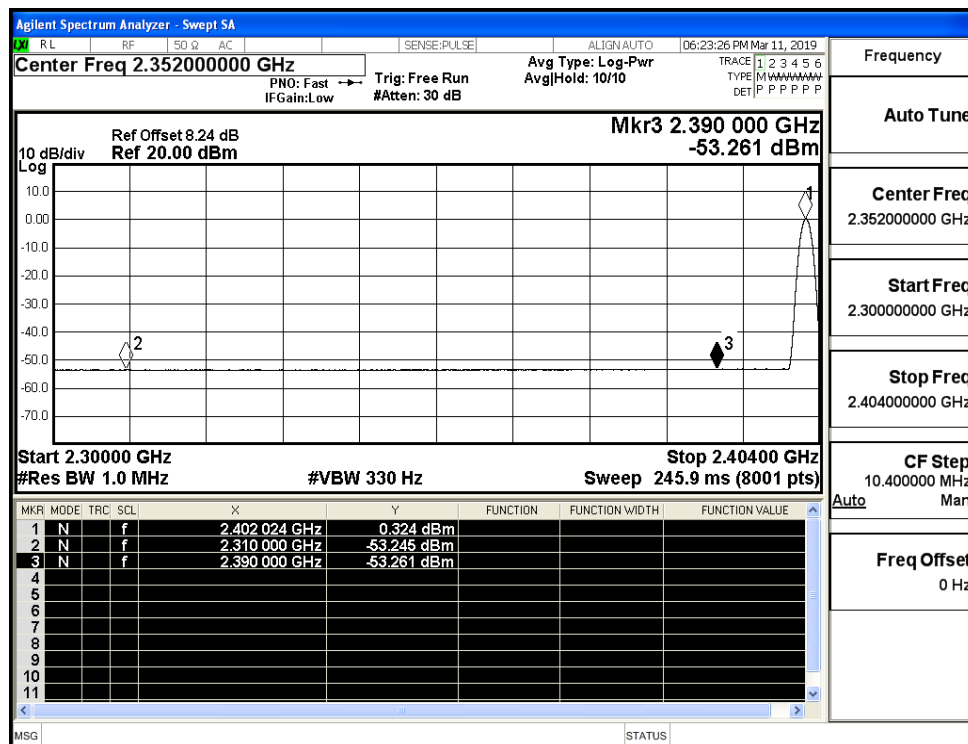
**A.8 Restrict-band band-edge measurements**

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-44.20	2.0	0	51.06	PEAK	74	PASS
	Off	2310.0	-53.25	2.0	0	42.01	AV	54	PASS
	Off	2390.0	-43.45	2.0	0	51.81	PEAK	74	PASS
	Off	2390.0	-53.26	2.0	0	42.00	AV	54	PASS
	Off	2483.5	-42.49	2.0	0	52.77	PEAK	74	PASS
	Off	2483.5	-52.96	2.0	0	42.30	AV	54	PASS
	Off	2500.0	-43.27	2.0	0	51.98	PEAK	74	PASS
	Off	2500.0	-52.98	2.0	0	42.27	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-43.11	2.0	0	52.15	PEAK	74	PASS
	Off	2310.0	-53.58	2.0	0	41.68	AV	54	PASS
	Off	2390.0	-43.81	2.0	0	51.45	PEAK	74	PASS
	Off	2390.0	-53.35	2.0	0	41.90	AV	54	PASS
	Off	2483.5	-42.77	2.0	0	52.49	PEAK	74	PASS
	Off	2483.5	-53.03	2.0	0	42.22	AV	54	PASS
	Off	2500.0	-44.12	2.0	0	51.14	PEAK	74	PASS
	Off	2500.0	-52.79	2.0	0	42.47	AV	54	PASS

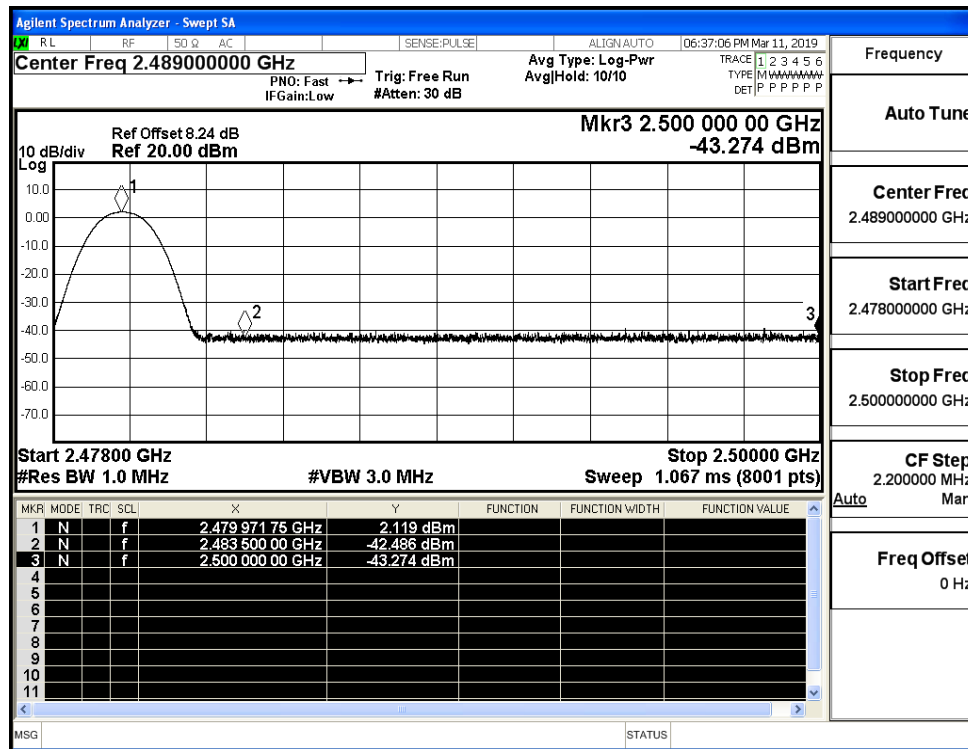
## Restrict-band band-edge measurements\_Hopping Off\_GFSK\_PEAK (Low Channel)



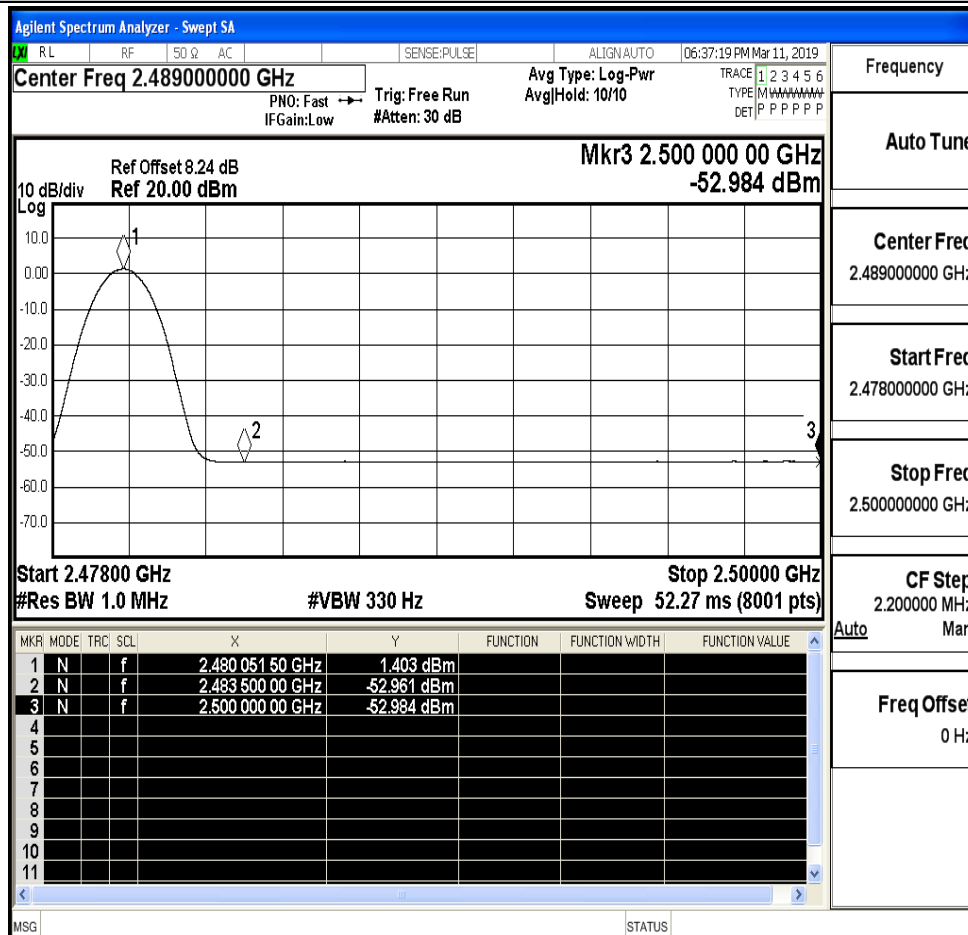
## Restrict-band band-edge measurements\_Hopping Off\_GFSK\_Average (Low Channel)



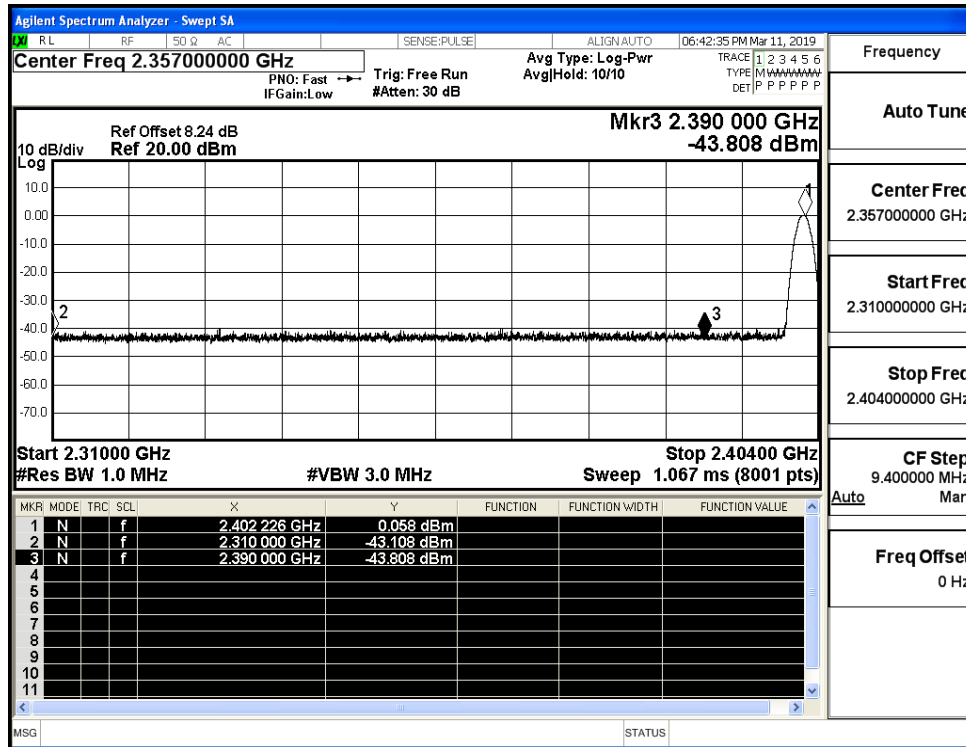
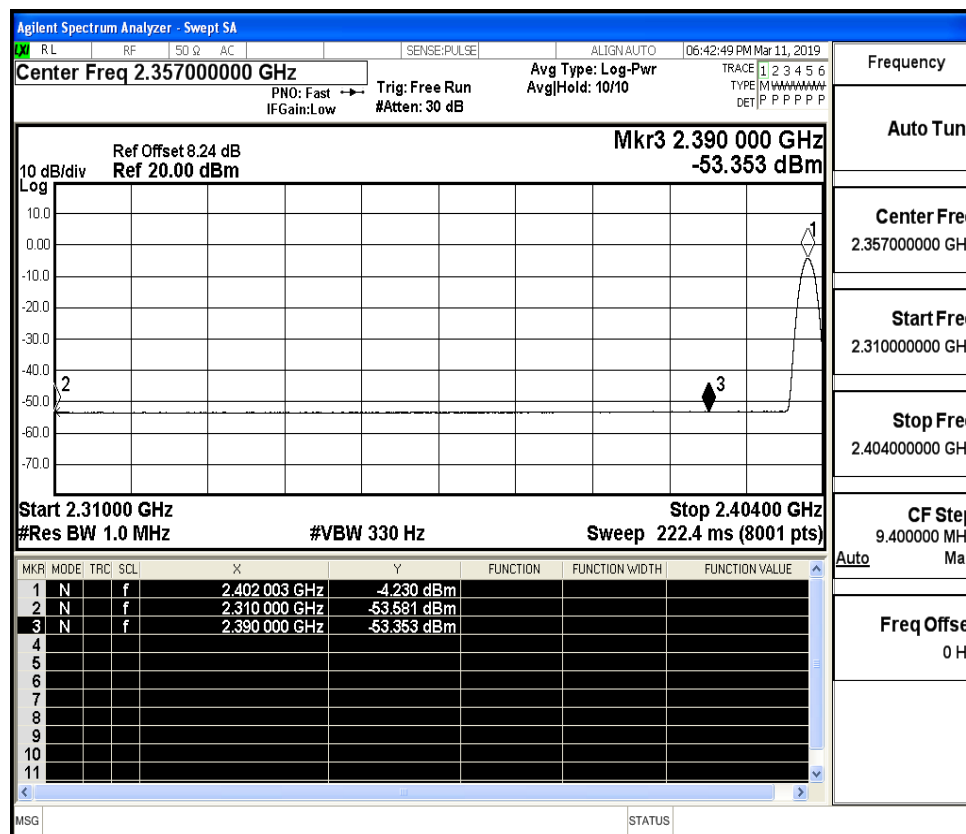
## Restrict-band band-edge measurements\_Hopping Off\_ GFSK\_PEAK (High Channel)



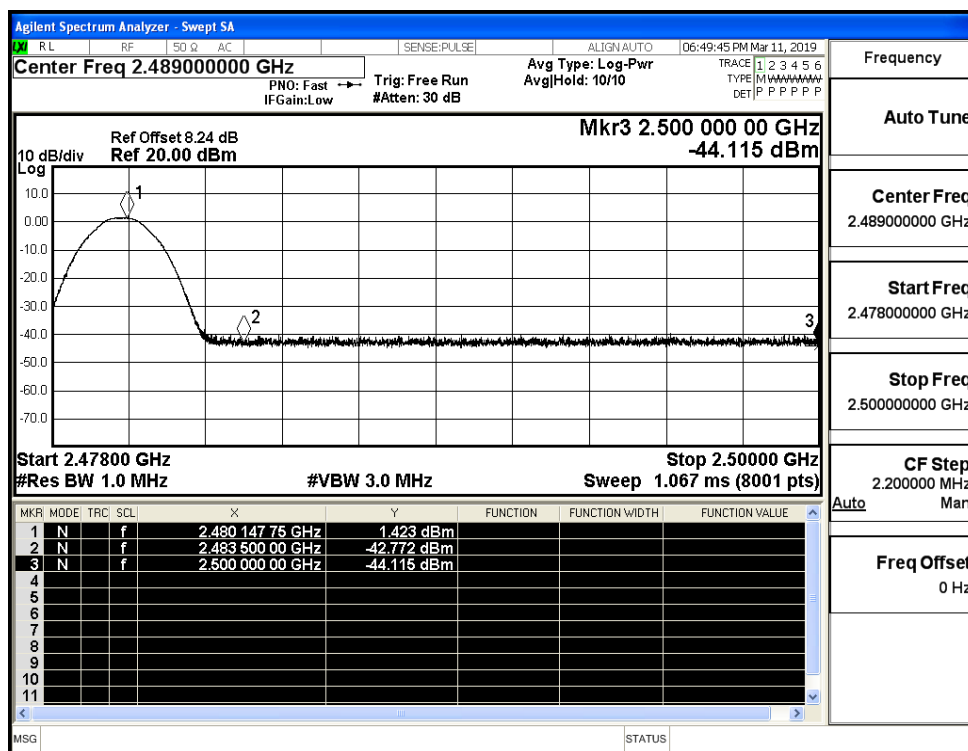
## Restrict-band band-edge measurements\_Hopping Off\_ GFSK\_Average (High Channel)





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\_π/4-DQPSK\_PEAK (High Channel)



## Restrict-band band-edge measurements\_Hopping Off\_π/4-DQPSK\_Average (High Channel)

