

Appendix A

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

Product Name: WIRELESS HEADPHONES

Trade Mark: N/A

Test Model: S609-BT

Environmental Conditions

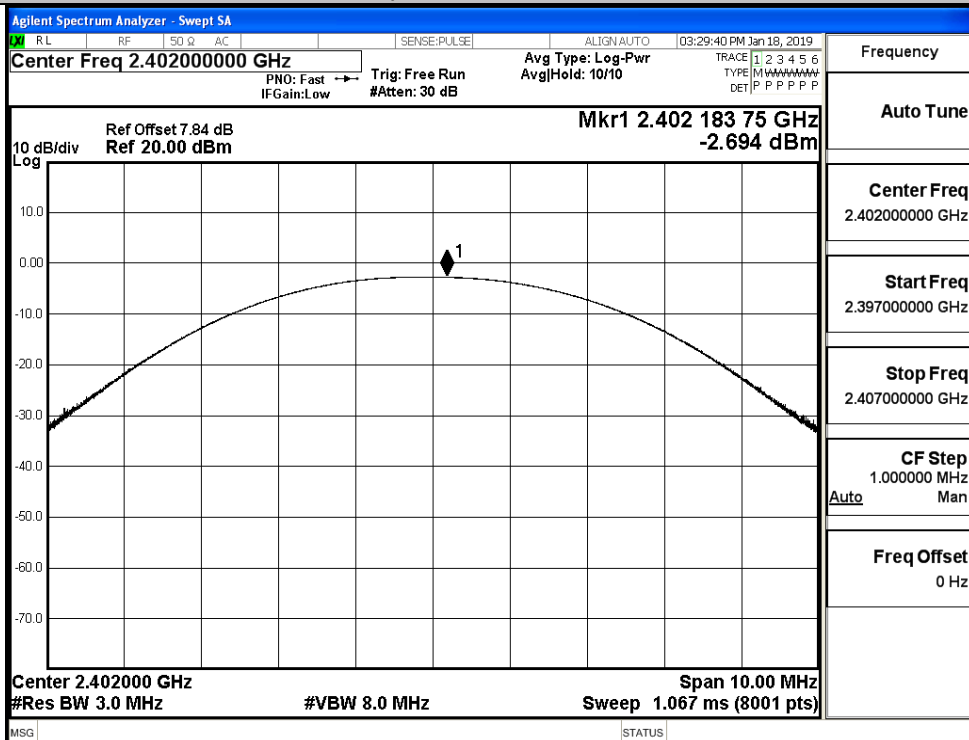
Temperature:	24.5 ° C
Relative Humidity:	53.8%
ATM Pressure:	100.0 kPa
Test Engineer:	David.Luo
Supervised by:	Jayden.Zhuo

A.1 Maximum Conducted Peak Output Power

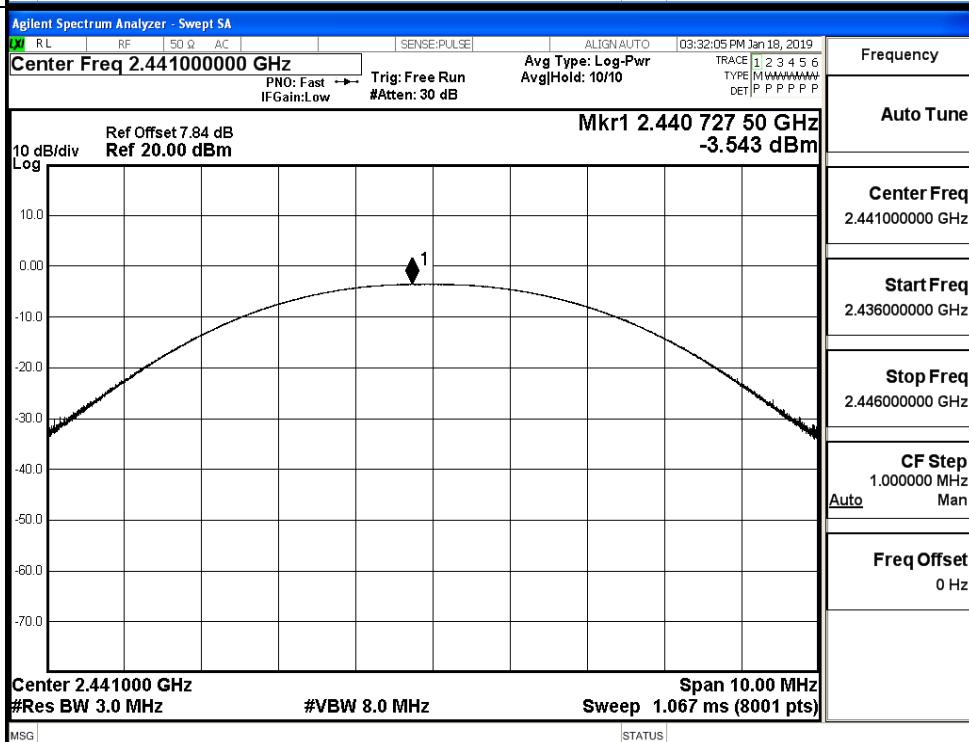
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-2.694	21	PASS
	MCH	-3.543	21	PASS
	HCH	-4.780	21	PASS
$\pi/4$ DQPSK	LCH	-0.400	21	PASS
	MCH	-1.365	21	PASS
	HCH	-2.728	21	PASS
8DPSK	LCH	0.041	21	PASS
	MCH	-0.842	21	PASS
	HCH	-2.184	21	PASS

Test Graphs

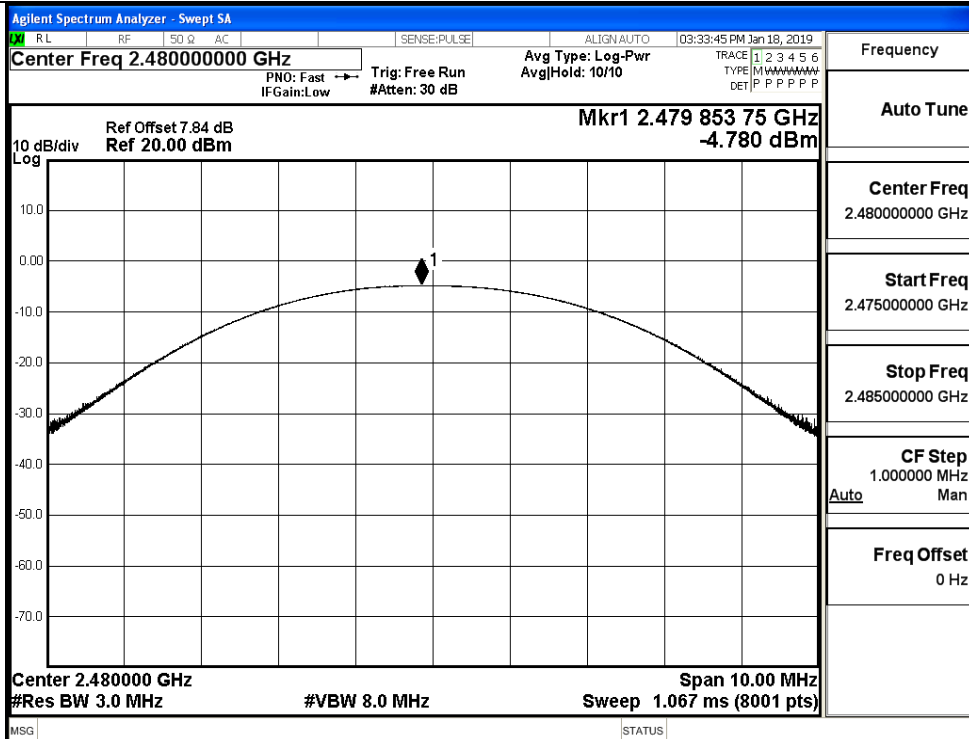
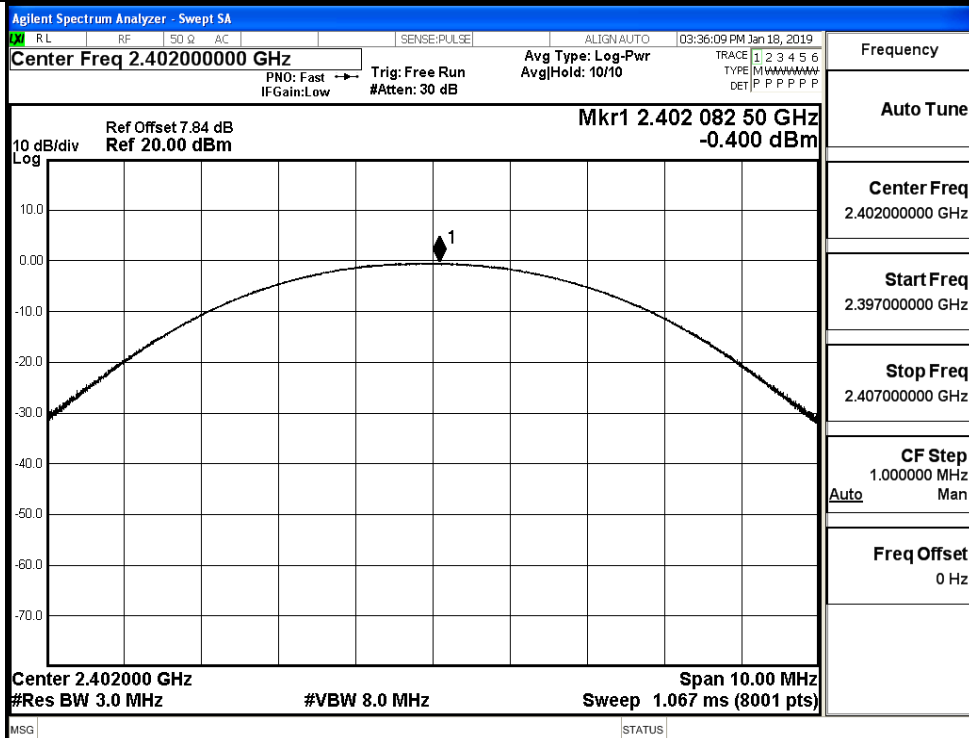
GFSK/LCH

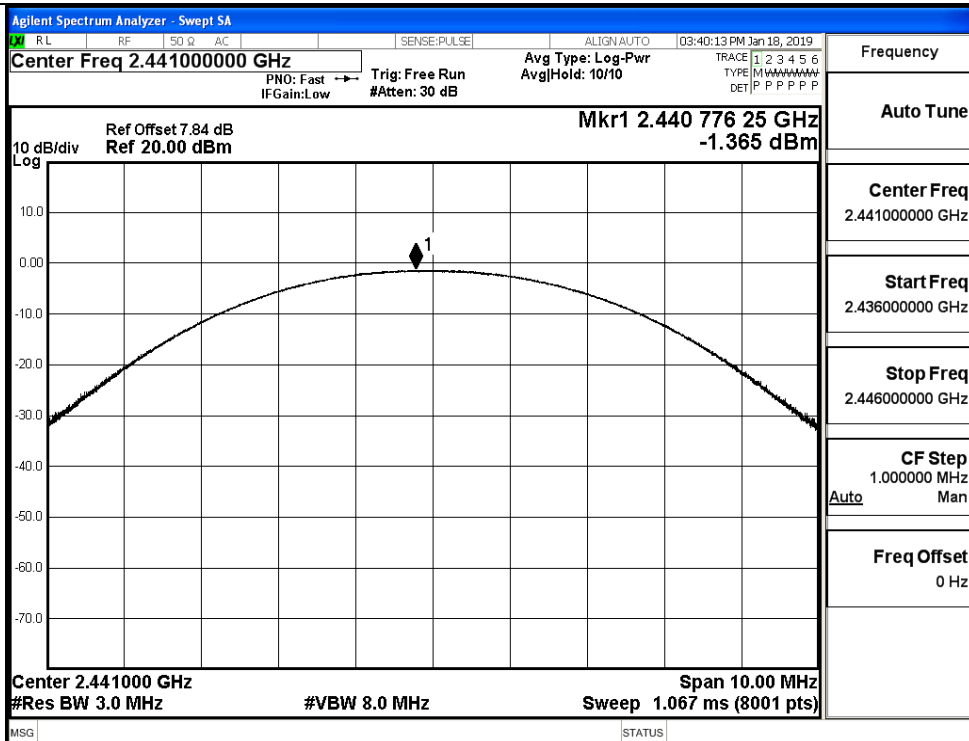
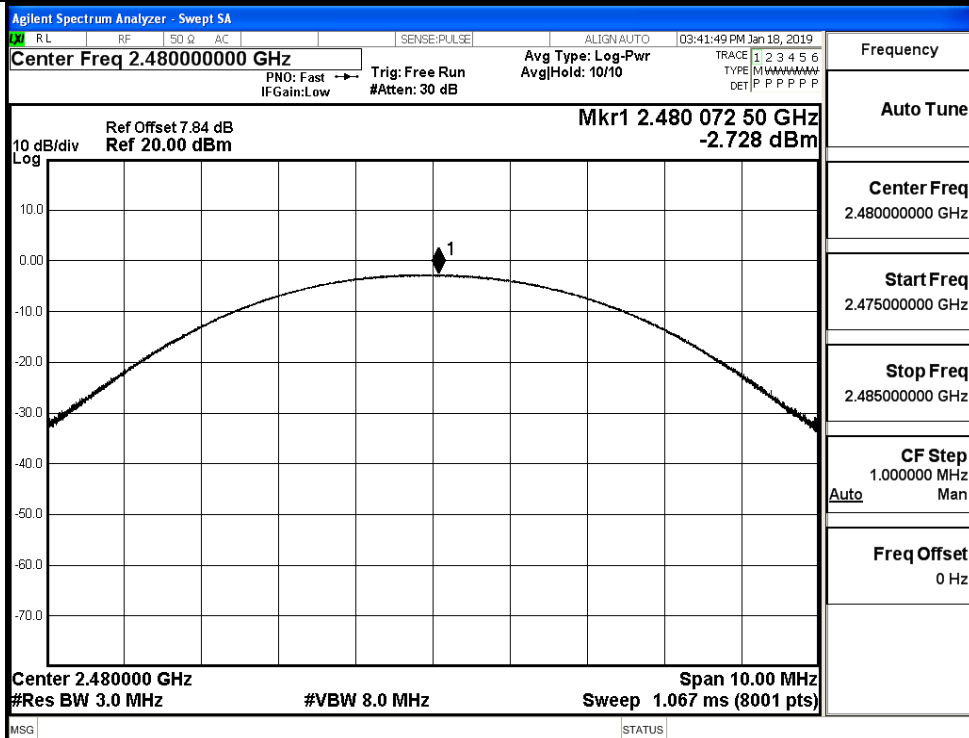


GFSK/MCH

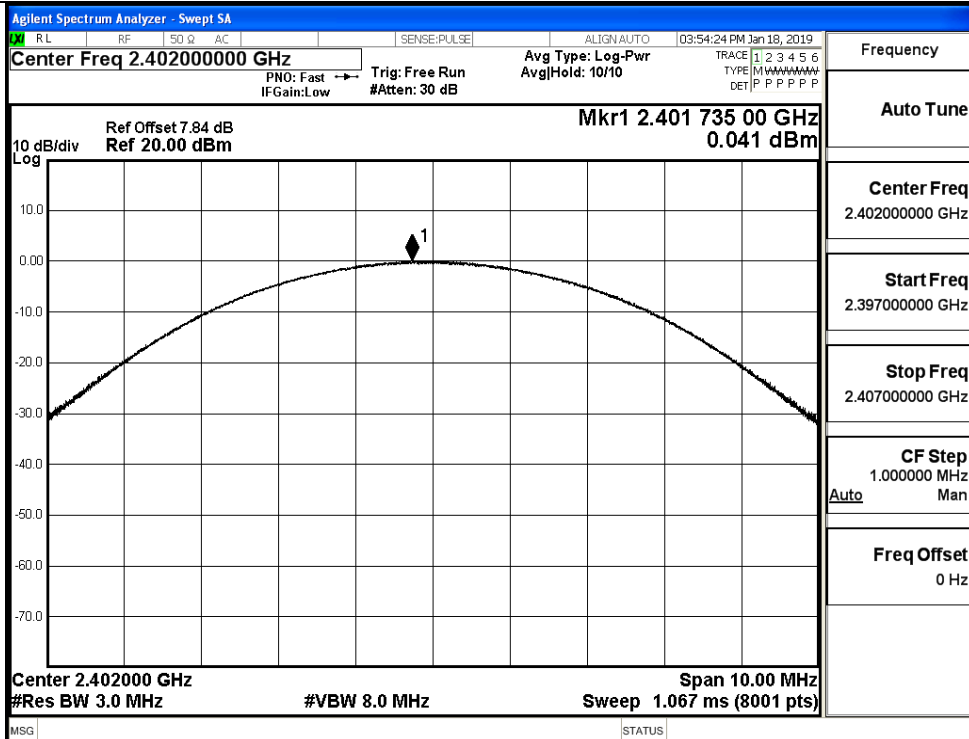


GFSK/HCH

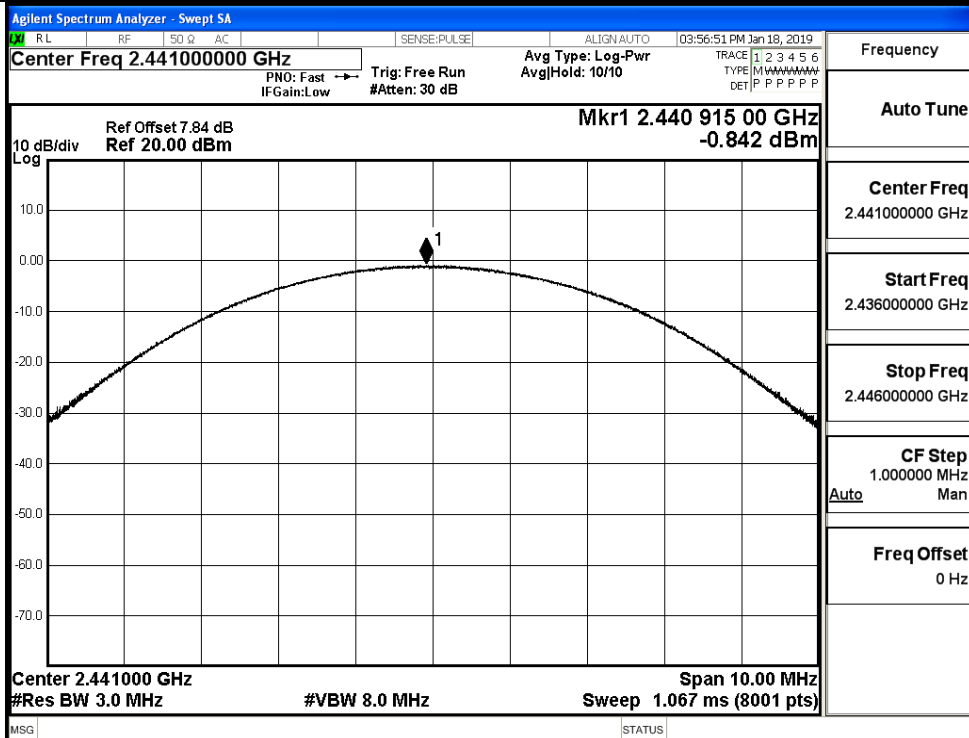
 π /4DQPSK/LCH

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

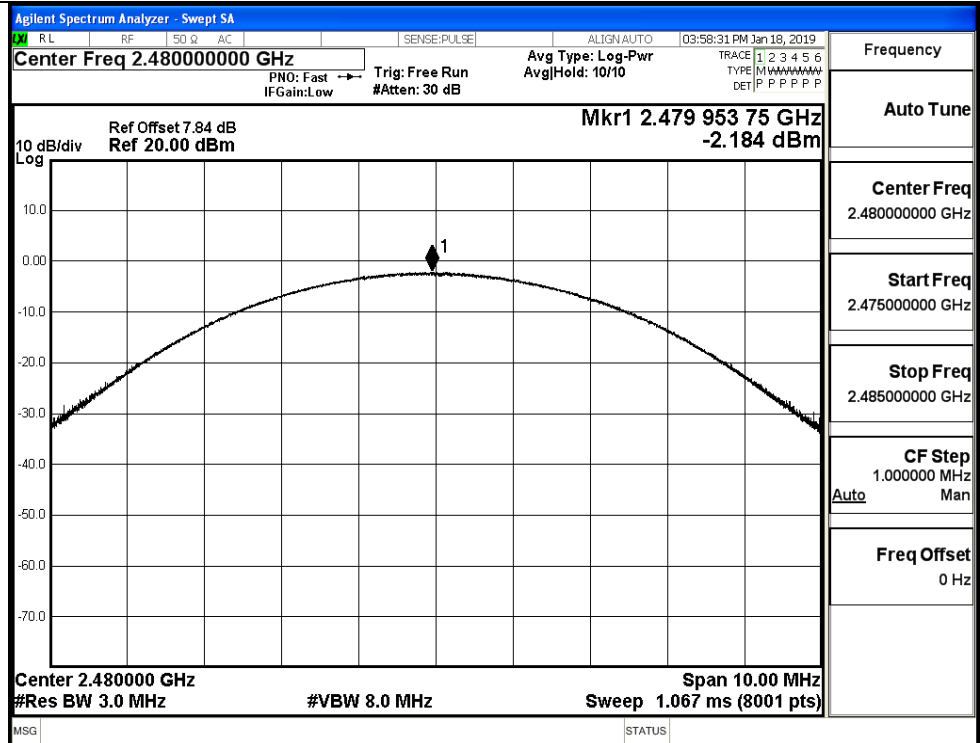
8DPSK/LCH



8DPSK/MCH



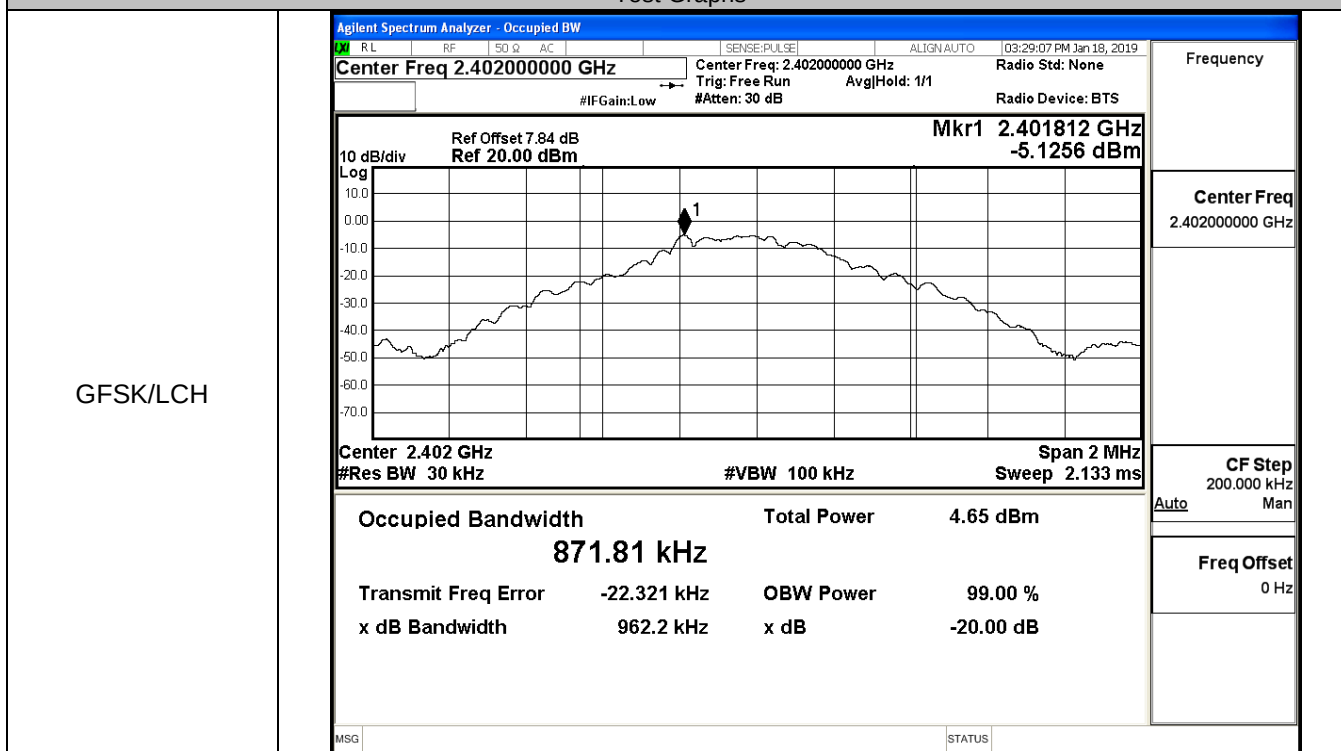
8DPSK/HCH



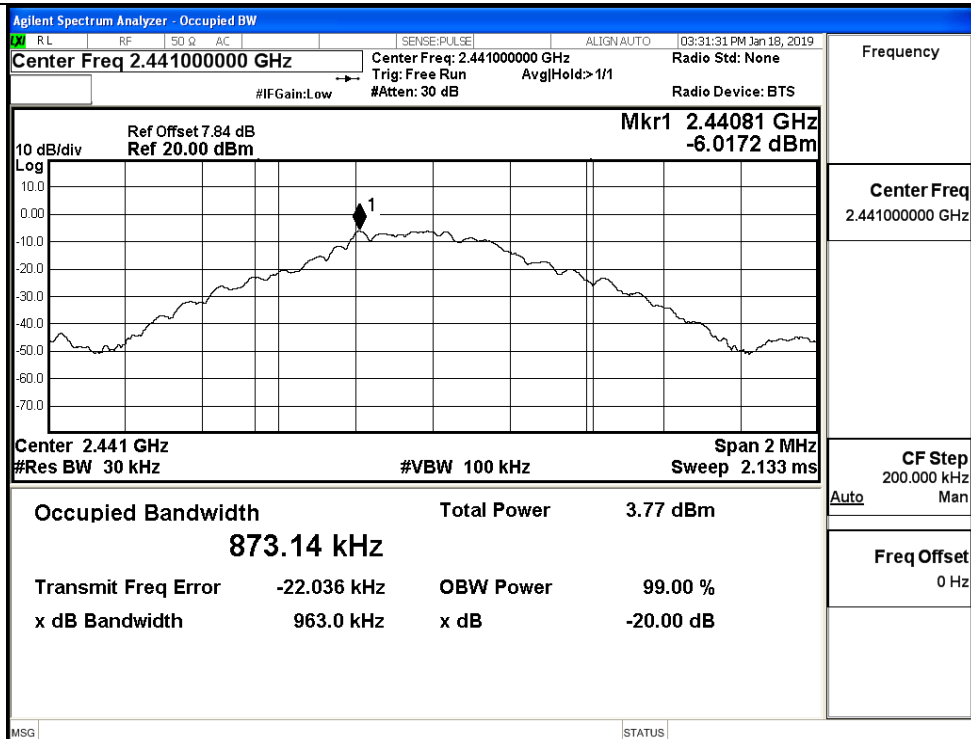
A.2 99% and 20dB Bandwidth

Mode	Channel.	99% Bandwidth [MHz]	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.87181	0.9622	Not Specified	PASS
	MCH	0.87314	0.9630	Not Specified	PASS
	HCH	0.87418	0.9622	Not Specified	PASS
π /4DQPSK	LCH	1.1613	1.281	Not Specified	PASS
	MCH	1.1609	1.282	Not Specified	PASS
	HCH	1.1608	1.282	Not Specified	PASS
8DPSK	LCH	1.1687	1.301	Not Specified	PASS
	MCH	1.1689	1.300	Not Specified	PASS
	HCH	1.1691	1.302	Not Specified	PASS

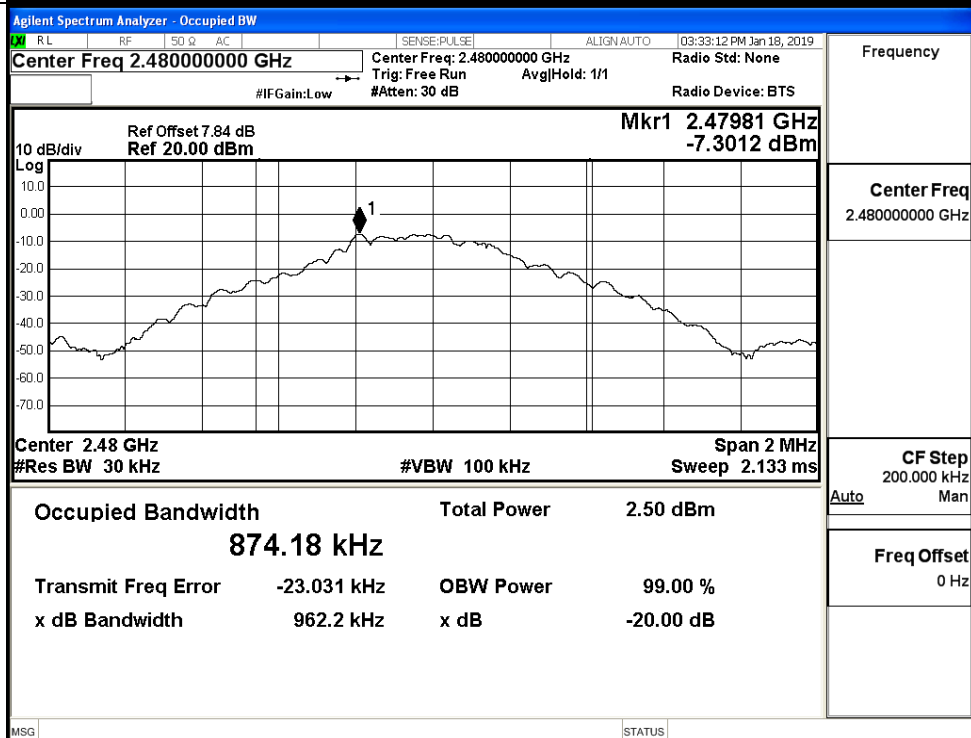
Test Graphs

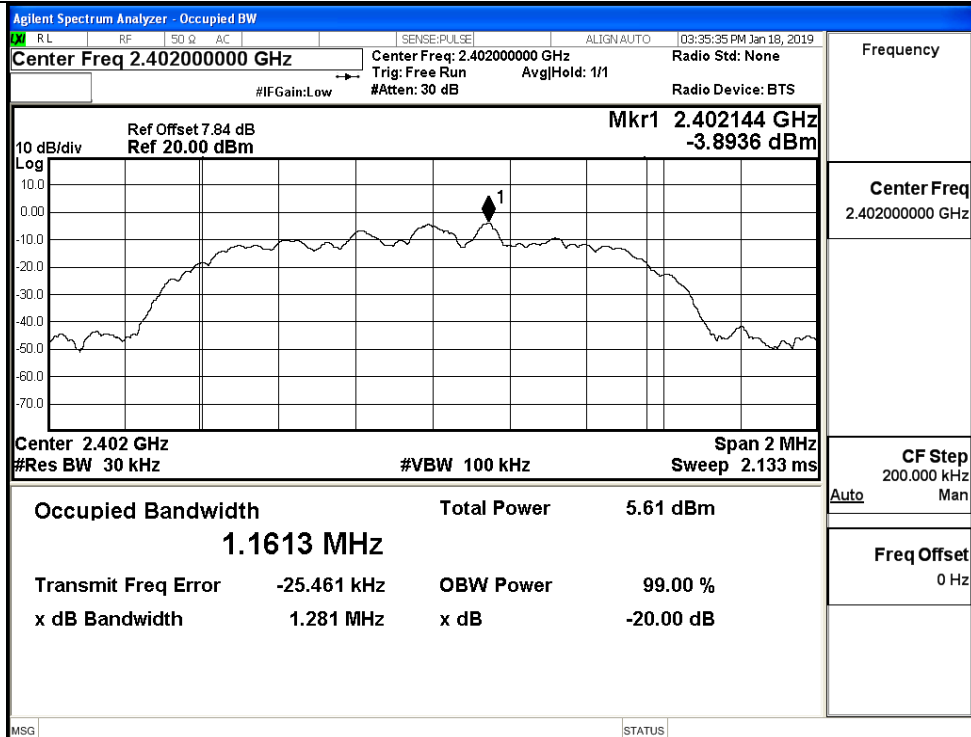
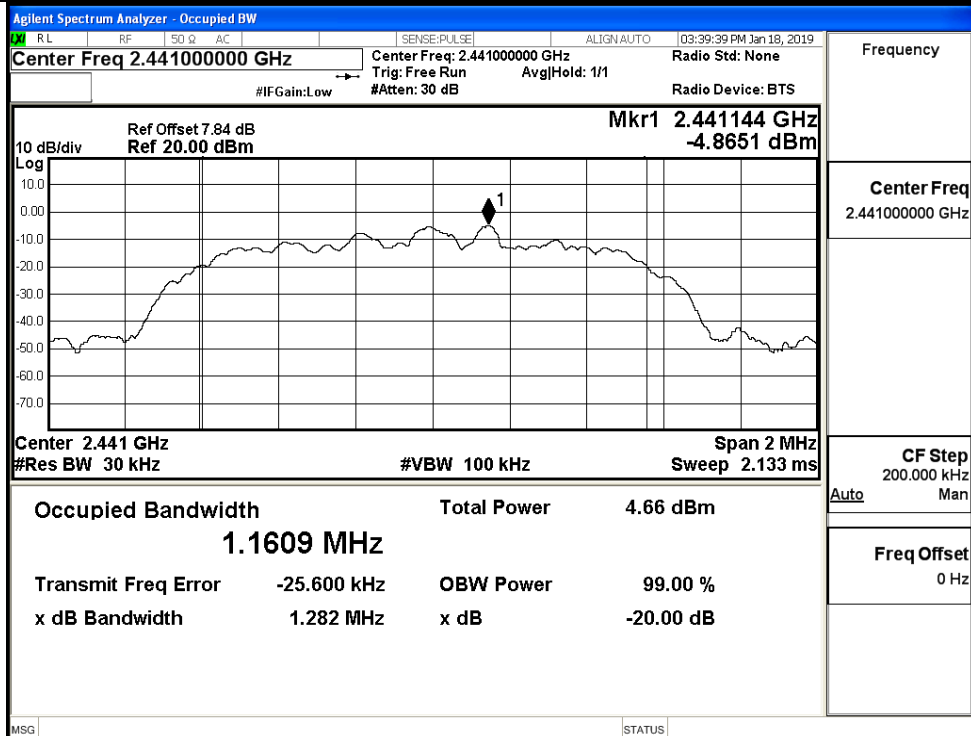


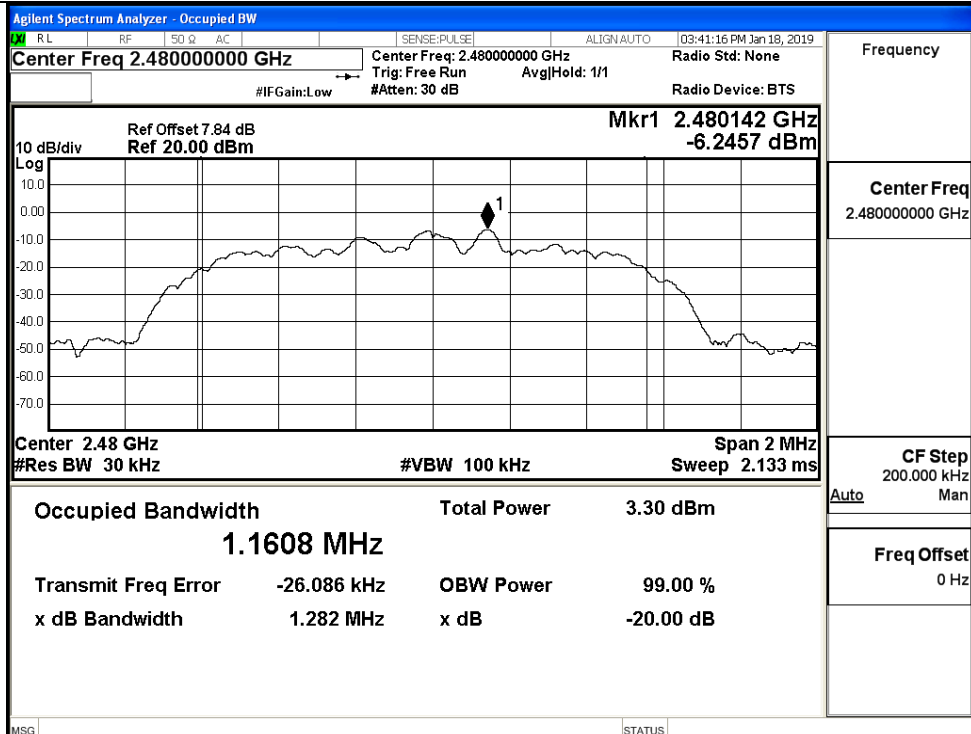
GFSK/MCH



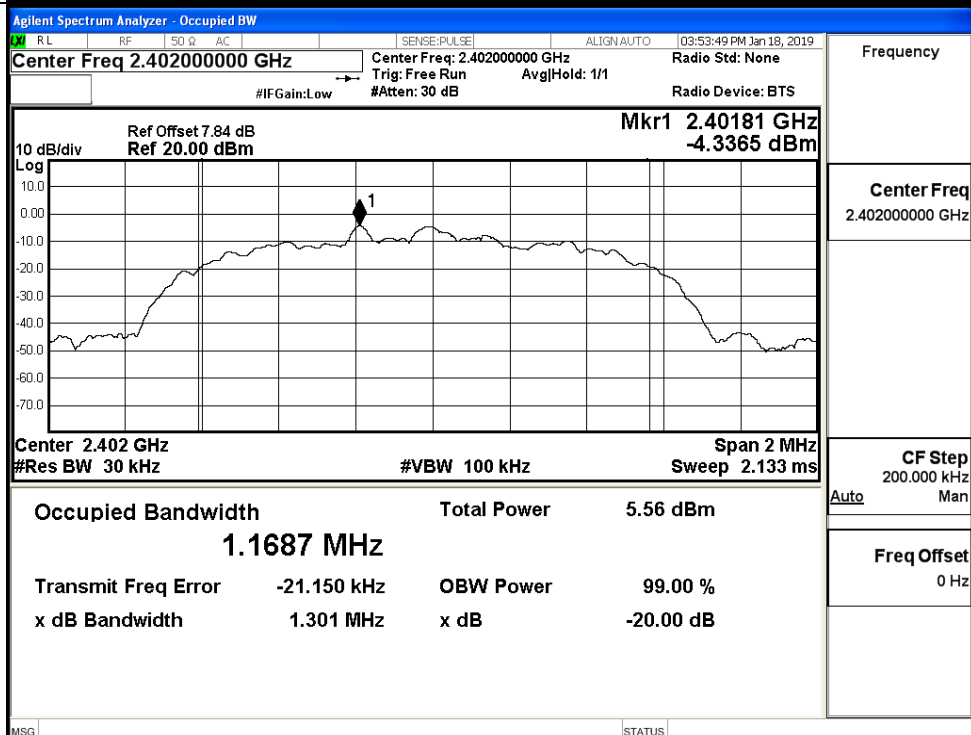
GFSK/HCH



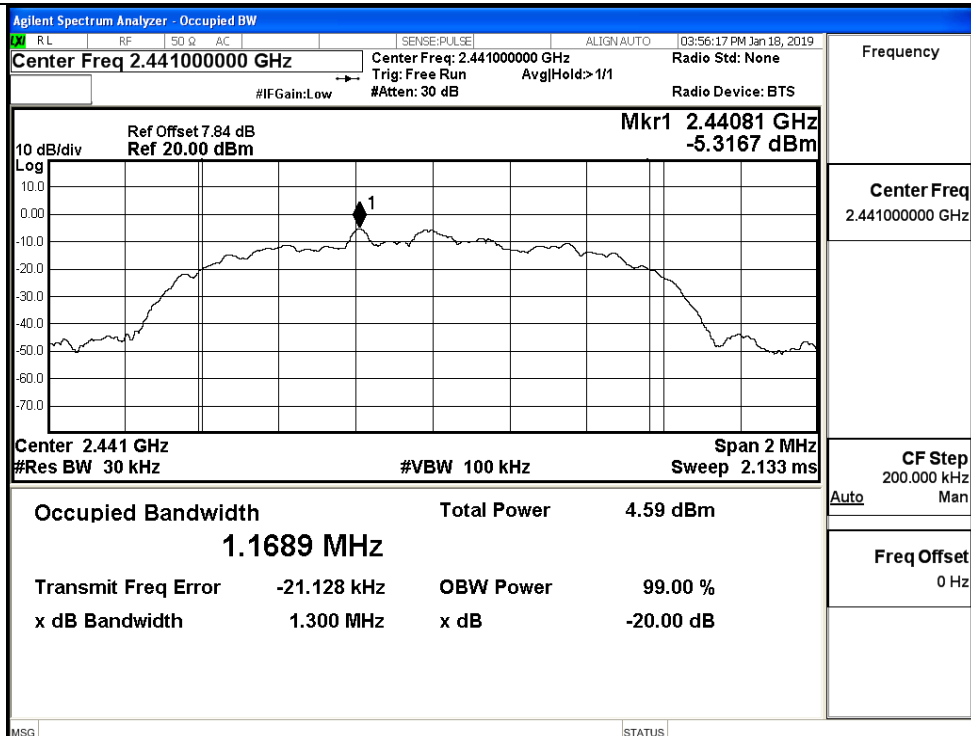
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

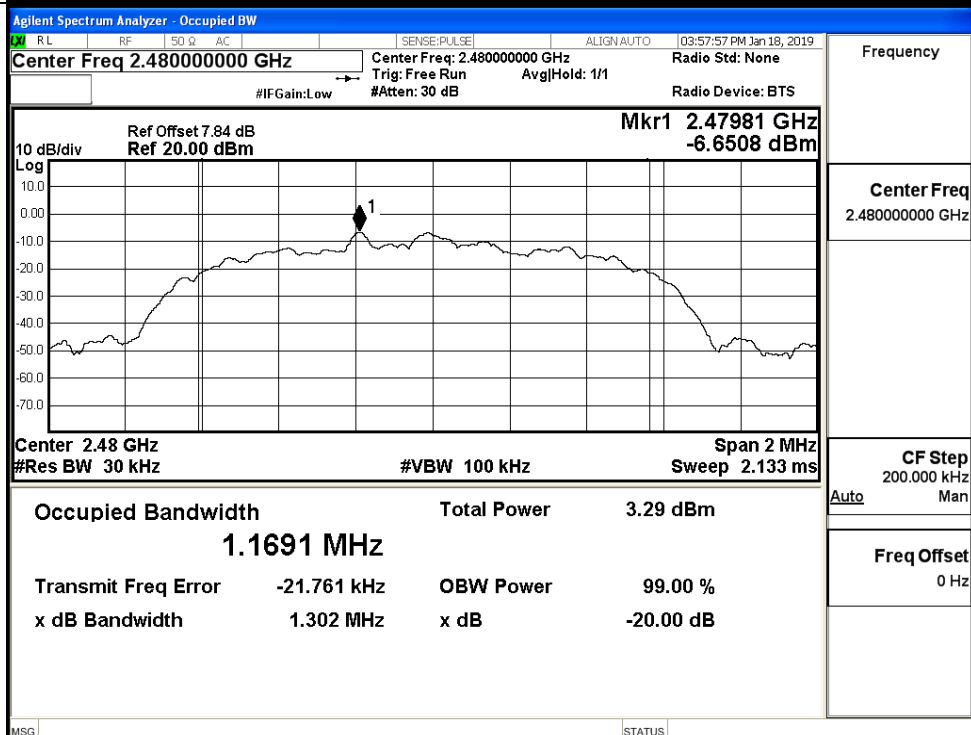
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

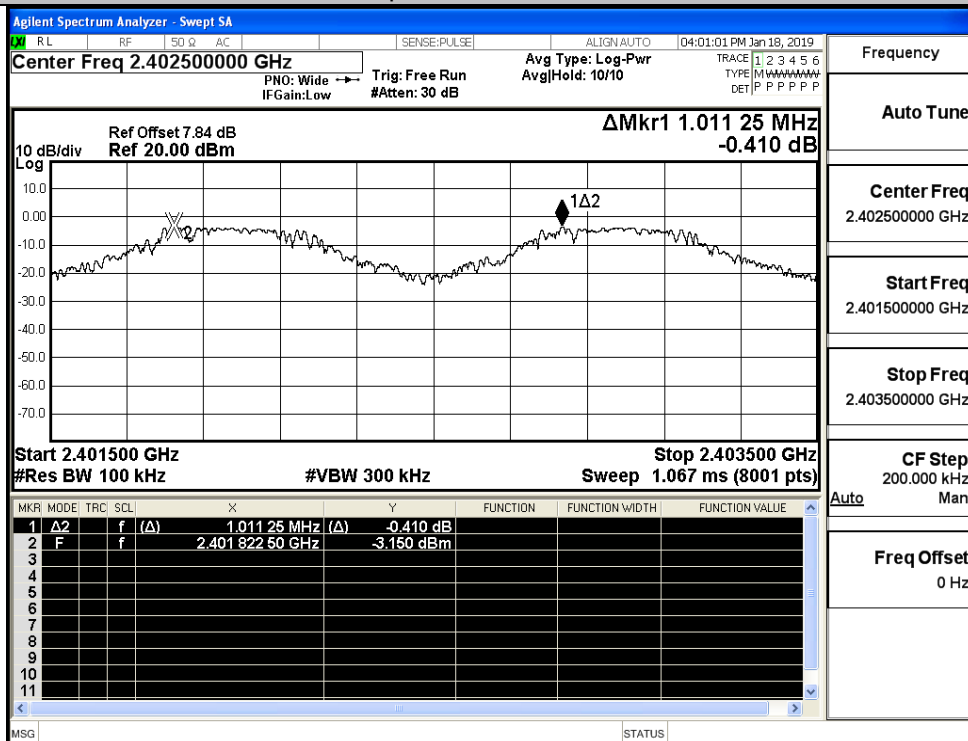


A.3 Carrier Frequency Separation

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.011	0.642	PASS
	MCH	1.186	0.642	PASS
	HCH	1.058	0.642	PASS
π /4DQPSK	LCH	1.156	0.855	PASS
	MCH	1.048	0.855	PASS
	HCH	0.990	0.855	PASS
8DPSK	LCH	1.280	0.868	PASS
	MCH	1.038	0.868	PASS
	HCH	1.132	0.868	PASS

Test Graphs

GFSK/LCH



Frequency

Auto Tune

Center Freq

2.402500000 GHz

Start Freq

2.401500000 GHz

Stop Freq

2.403500000 GHz

CF Step

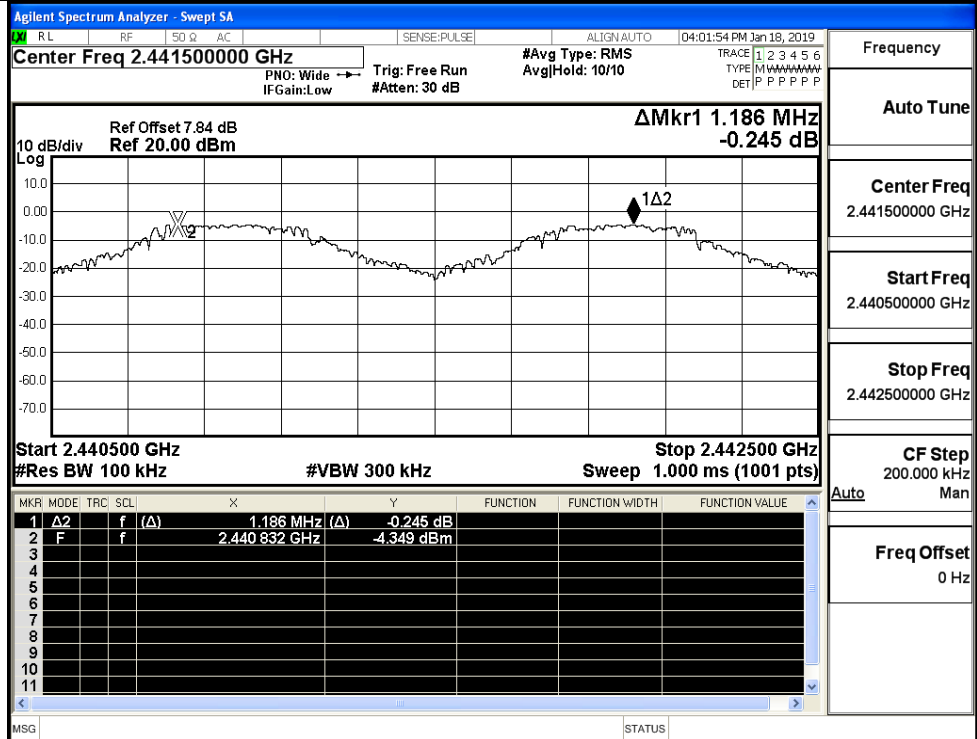
200.000 kHz

Man

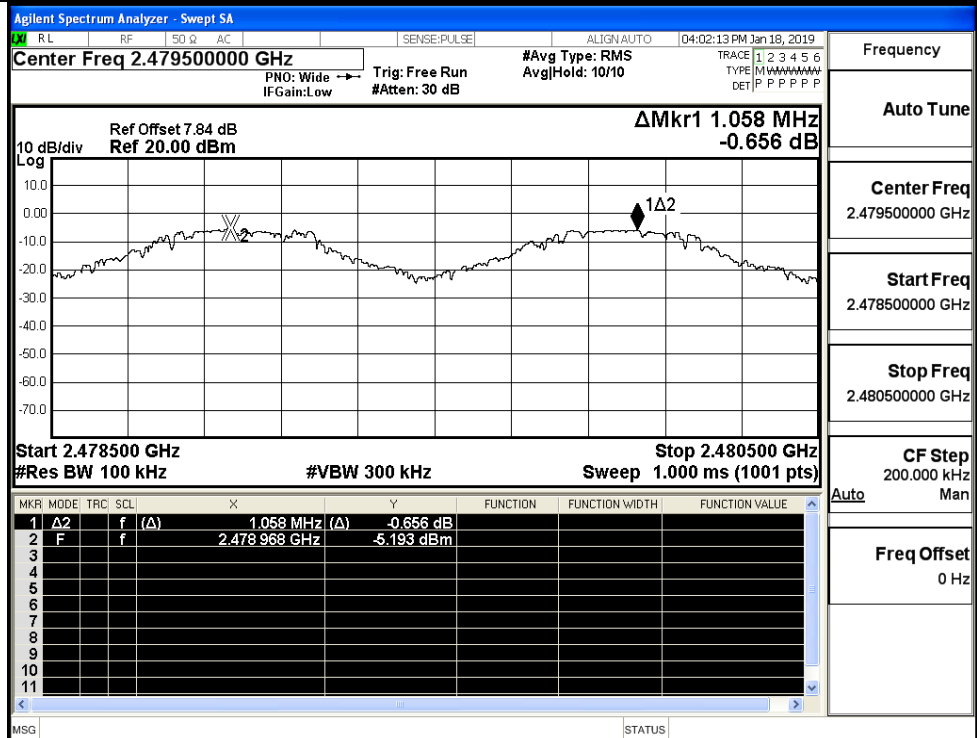
Freq Offset

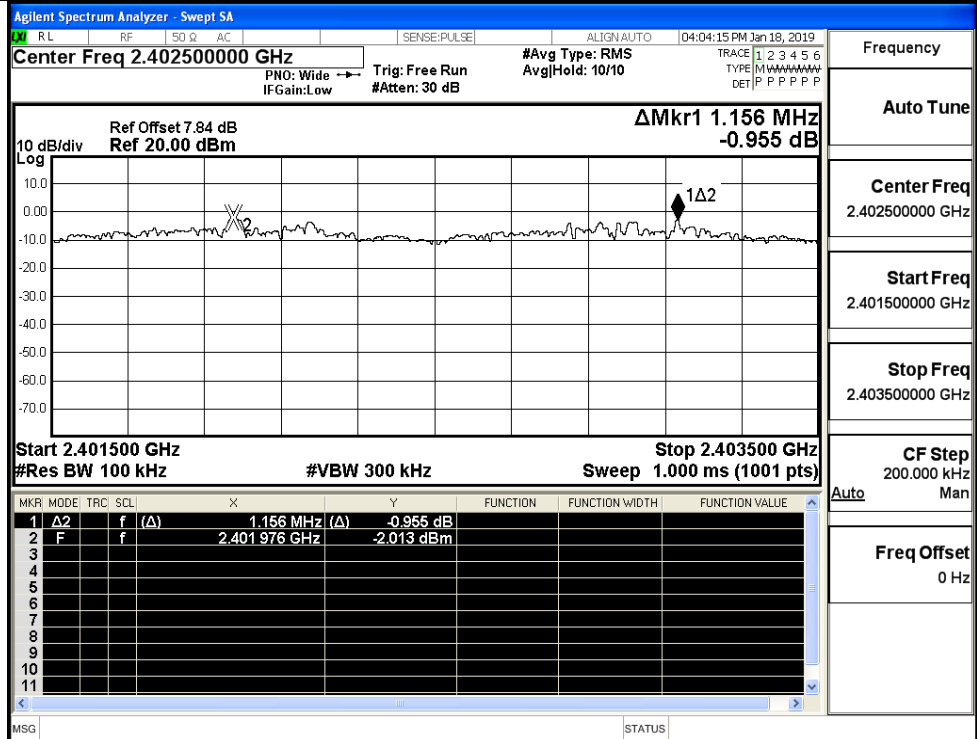
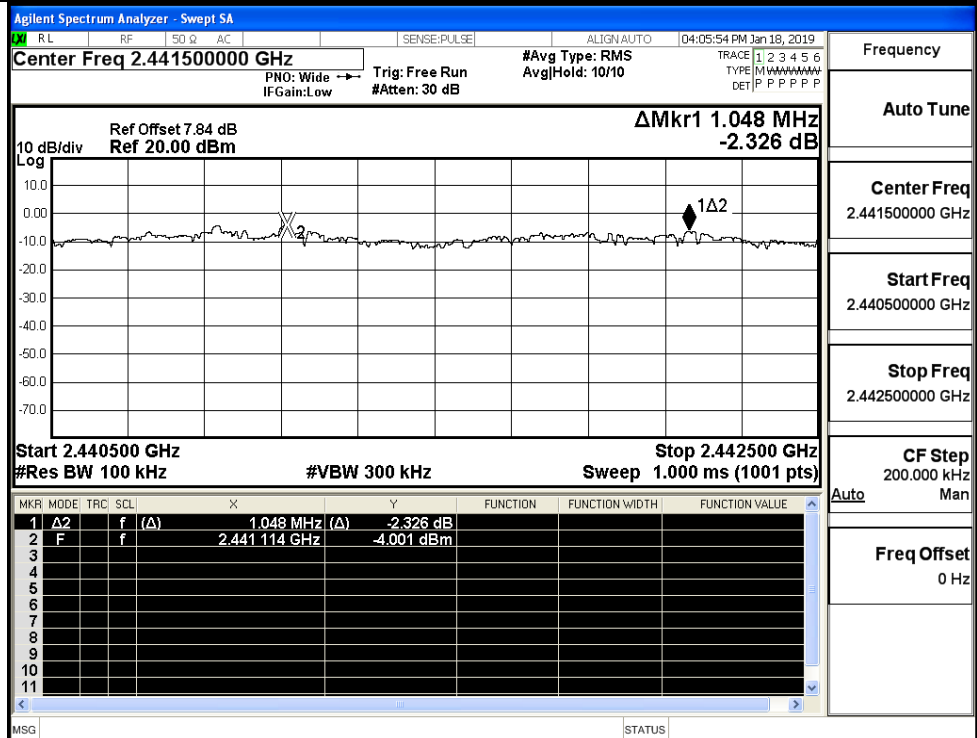
0 Hz

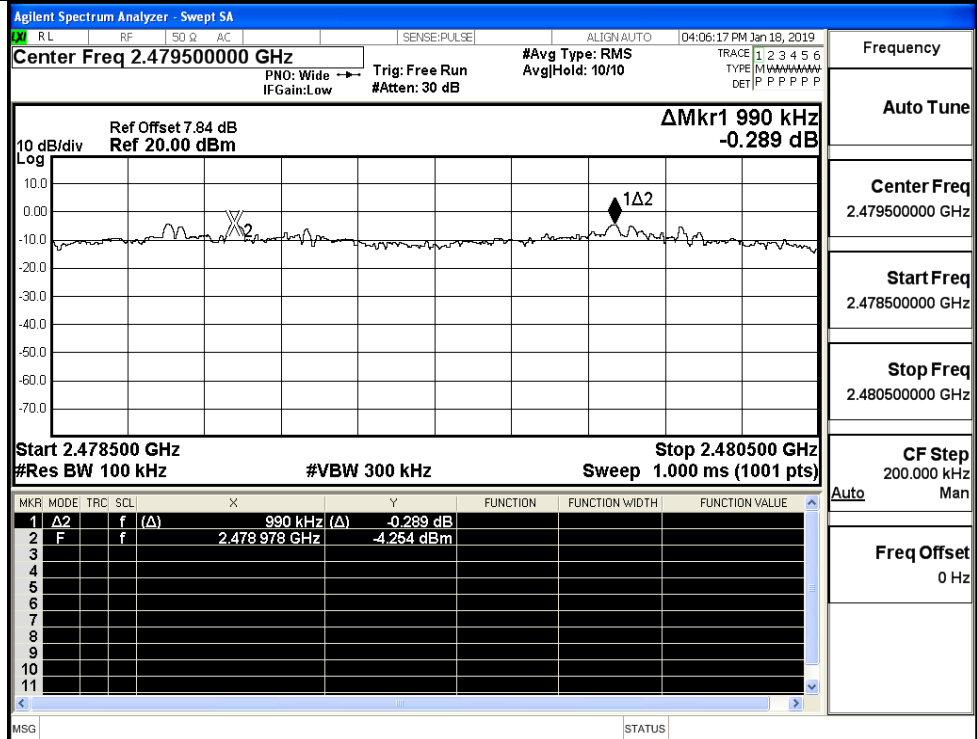
GFSK/MCH



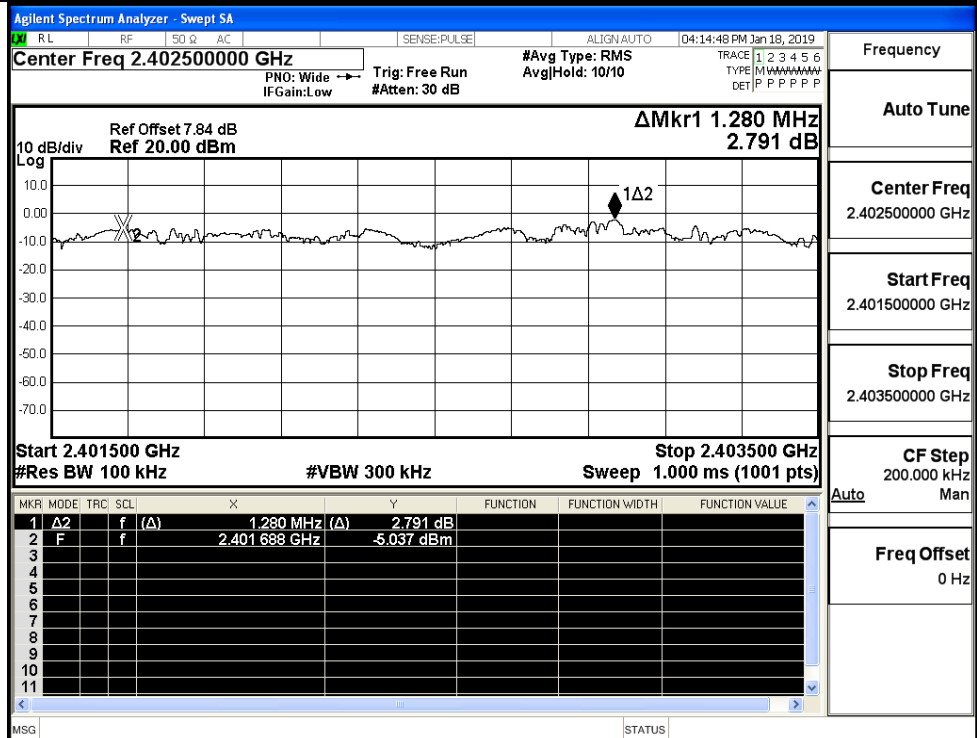
GFSK/HCH



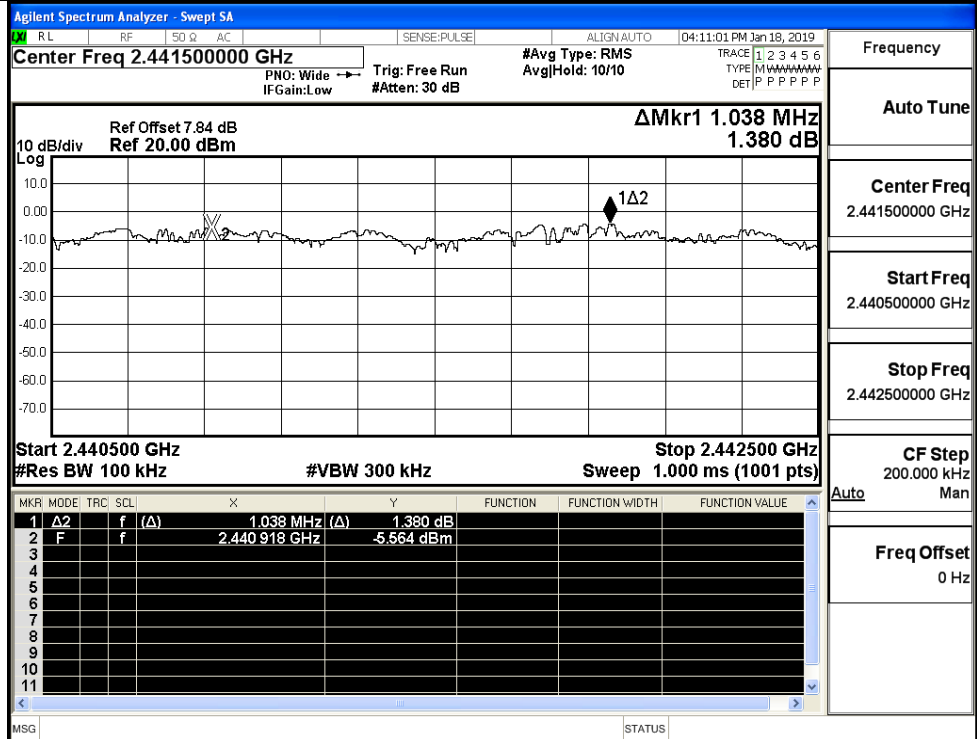
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

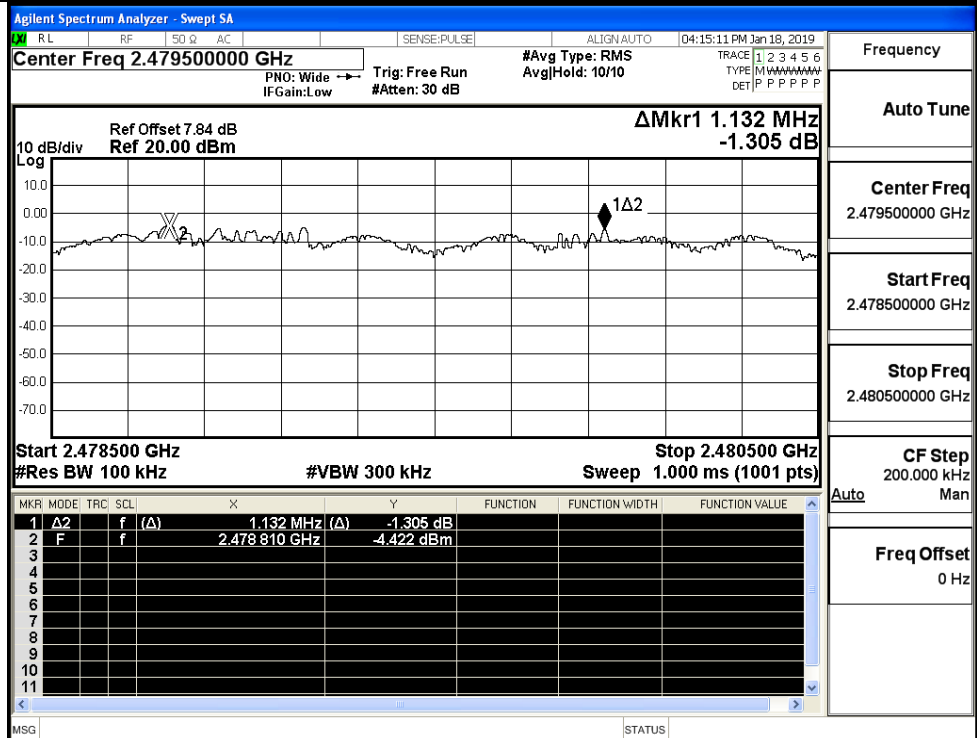
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

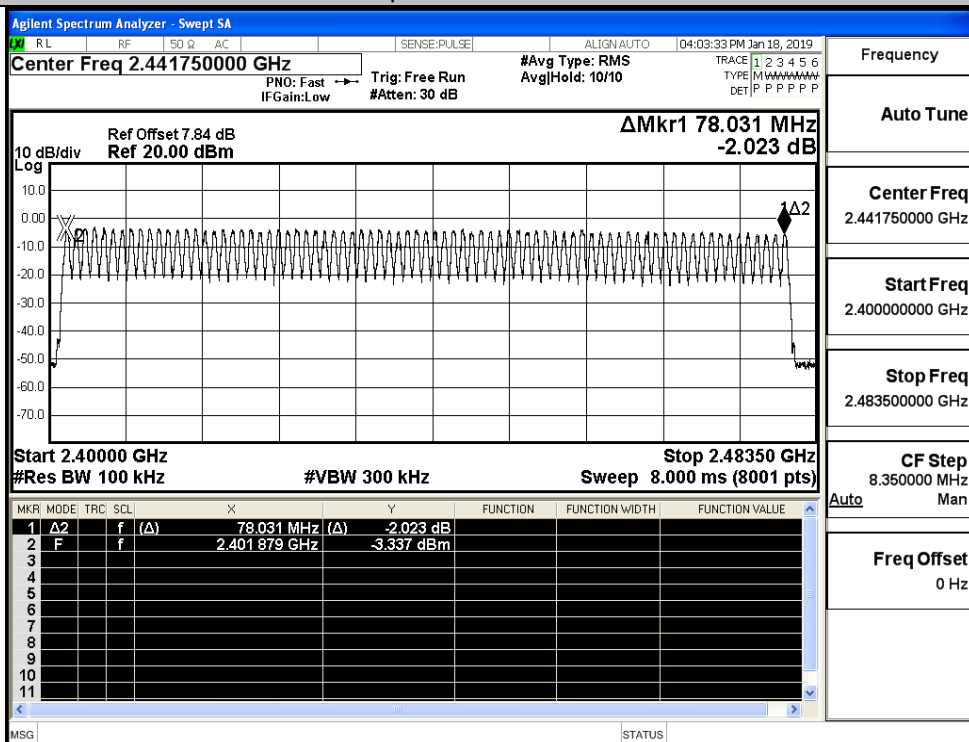
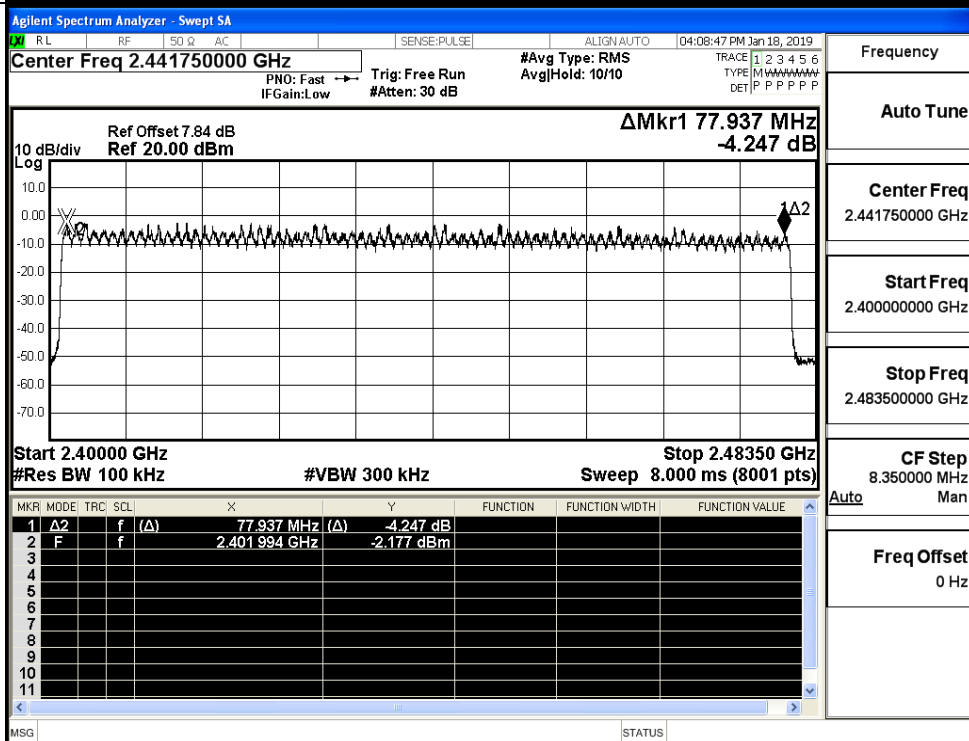


A.4 Hopping Channel Number

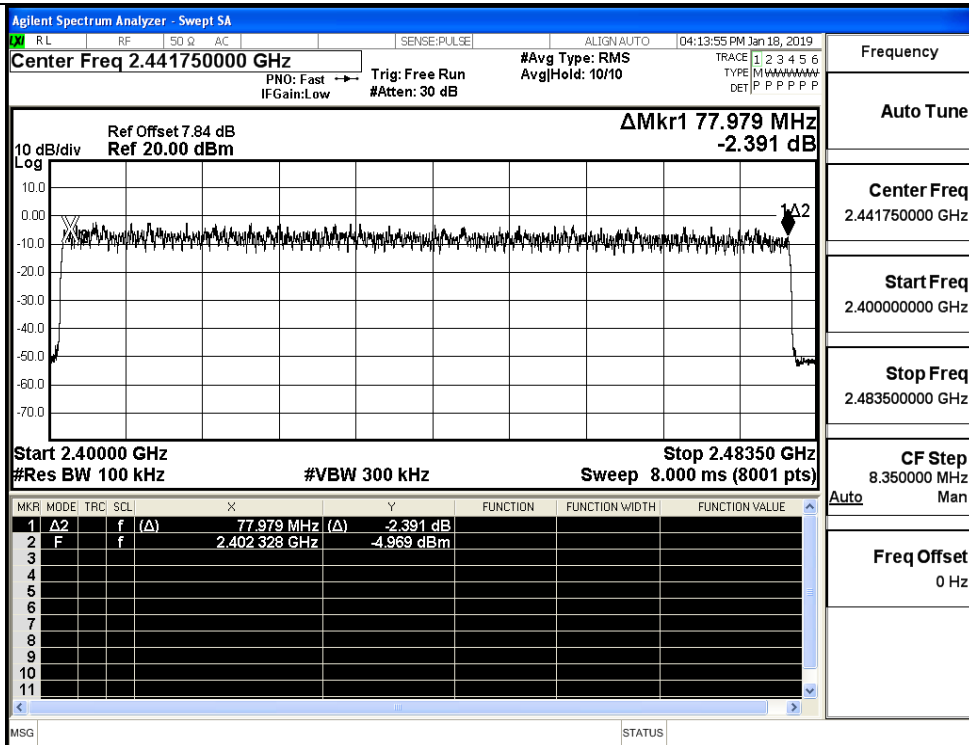
Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	≥ 15	PASS
$\pi/4$ DQPSK	Hop	79	≥ 15	PASS
8DPSK	Hop	79	≥ 15	PASS

Test Graphs

GFSK/Hop

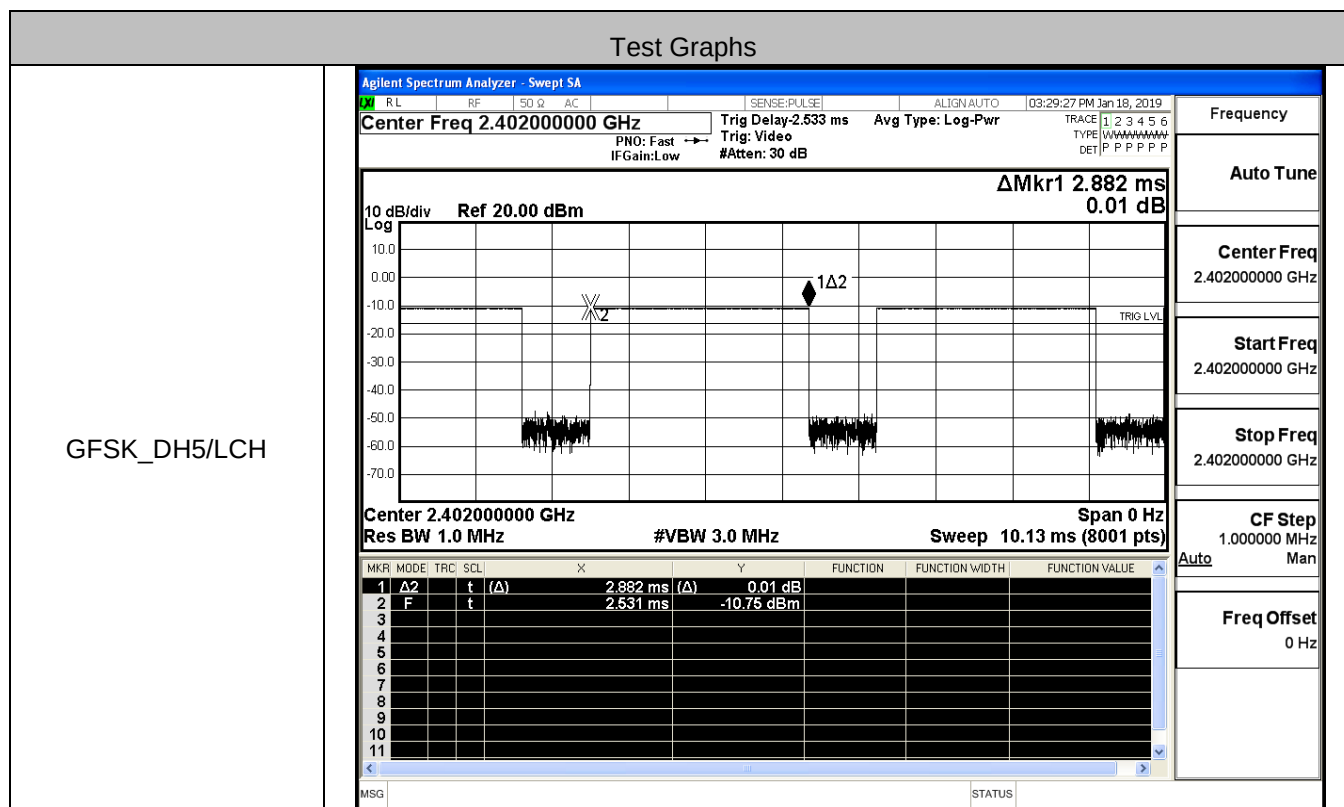
 $\pi/4$ DQPSK/Hop

8DPSK/Hop

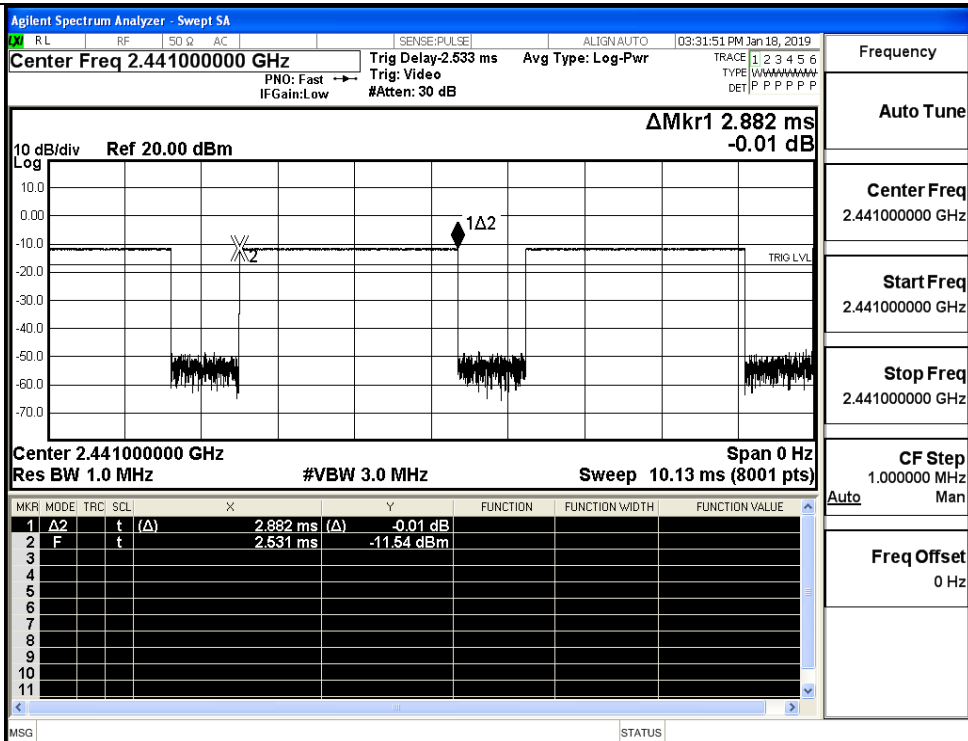


A.5 Dwell Time

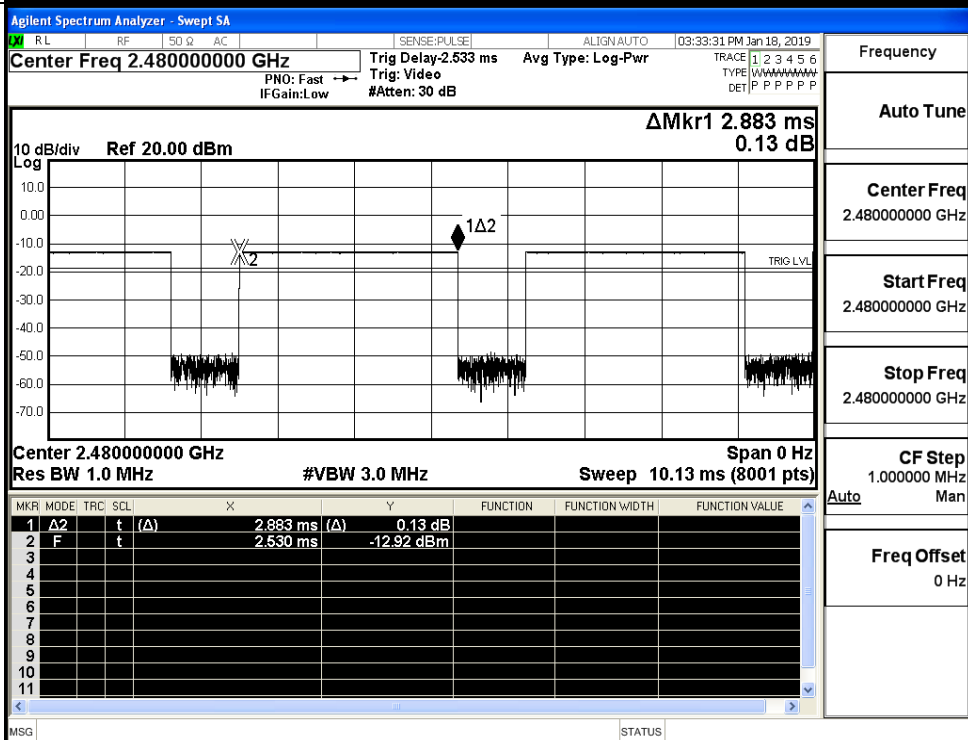
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.88	106.7	0.307	0.4	PASS
	DH5	MCH	2.88	106.7	0.307	0.4	PASS
	DH5	HCH	2.88	106.7	0.307	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.89	106.7	0.308	0.4	PASS
	2DH5	MCH	2.89	106.7	0.308	0.4	PASS
	2DH5	HCH	2.89	106.7	0.308	0.4	PASS
8DPSK	3DH5	LCH	2.89	106.7	0.308	0.4	PASS
	3DH5	MCH	2.89	106.7	0.308	0.4	PASS
	3DH5	HCH	2.89	106.7	0.308	0.4	PASS



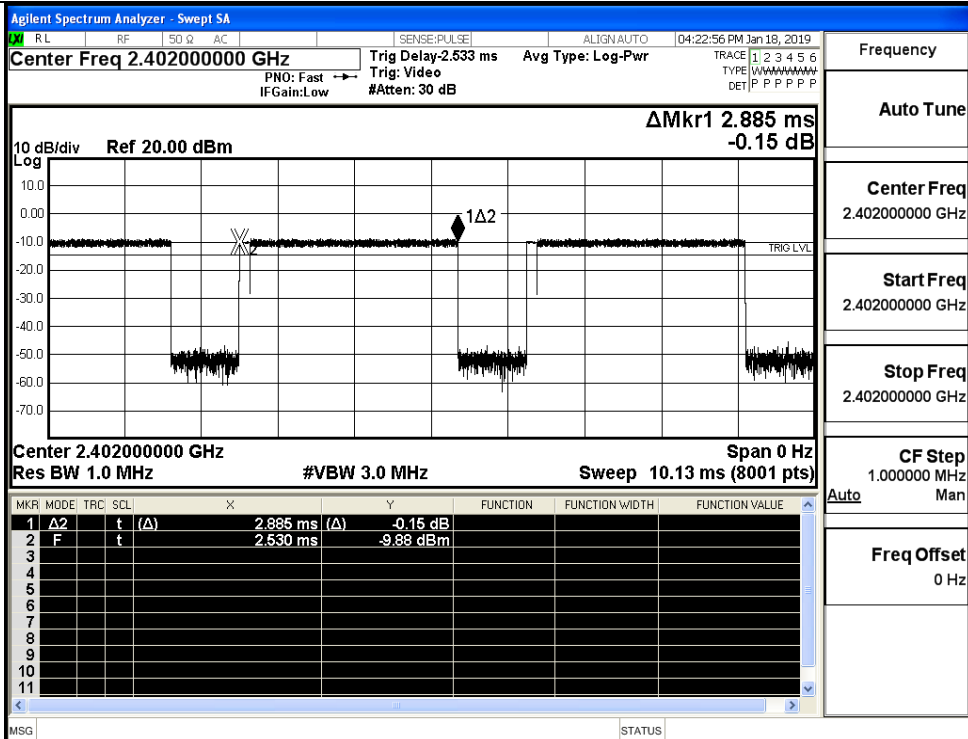
GFSK_DH5/MCH



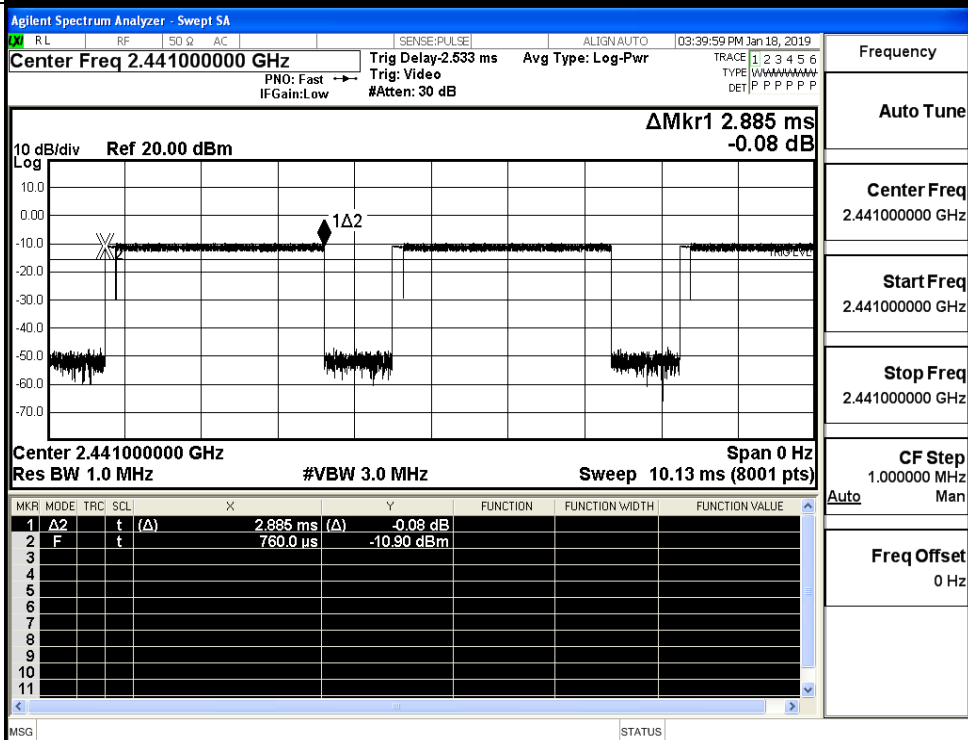
GFSK_DH5/HCH



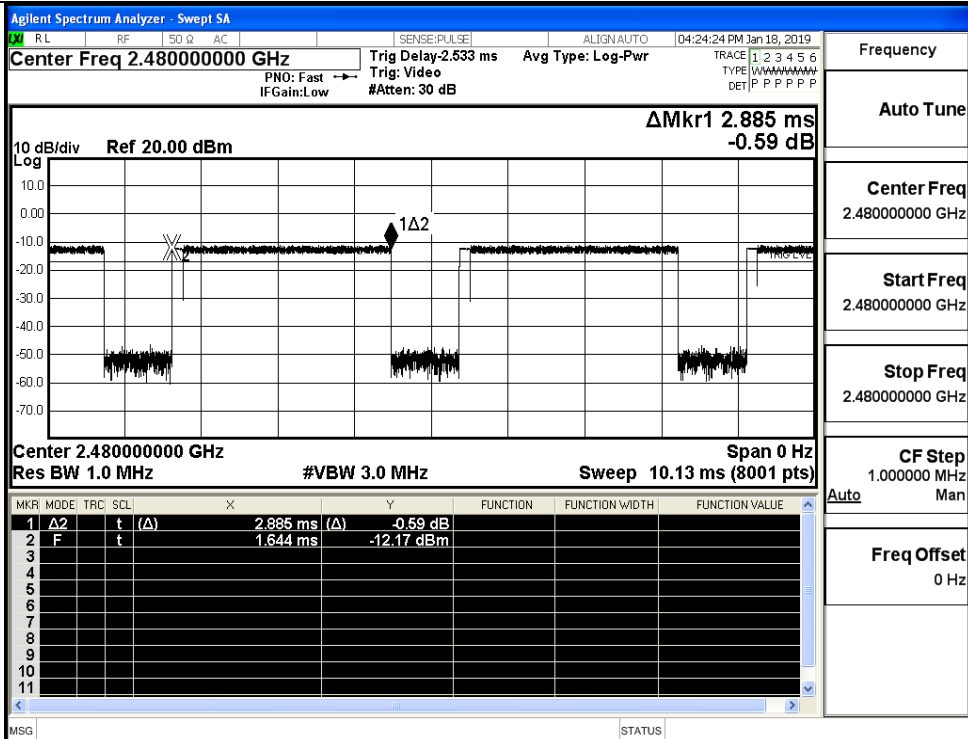
$\pi/4$ DQPSK
_2DH5/LCH



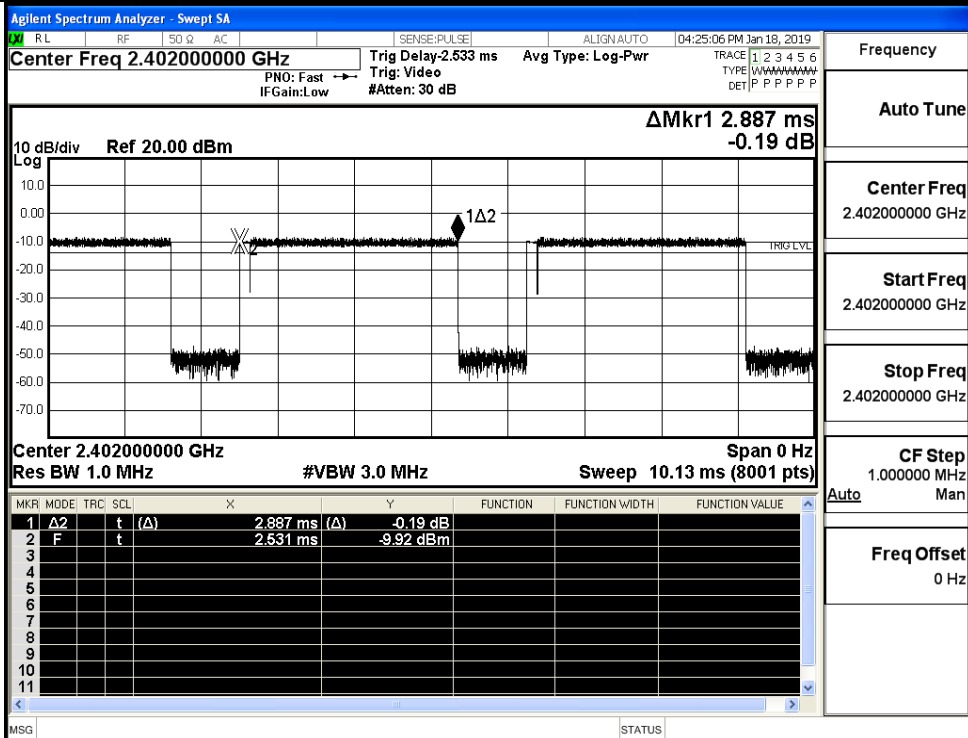
$\pi/4$ DQPSK
_2DH5/MCH



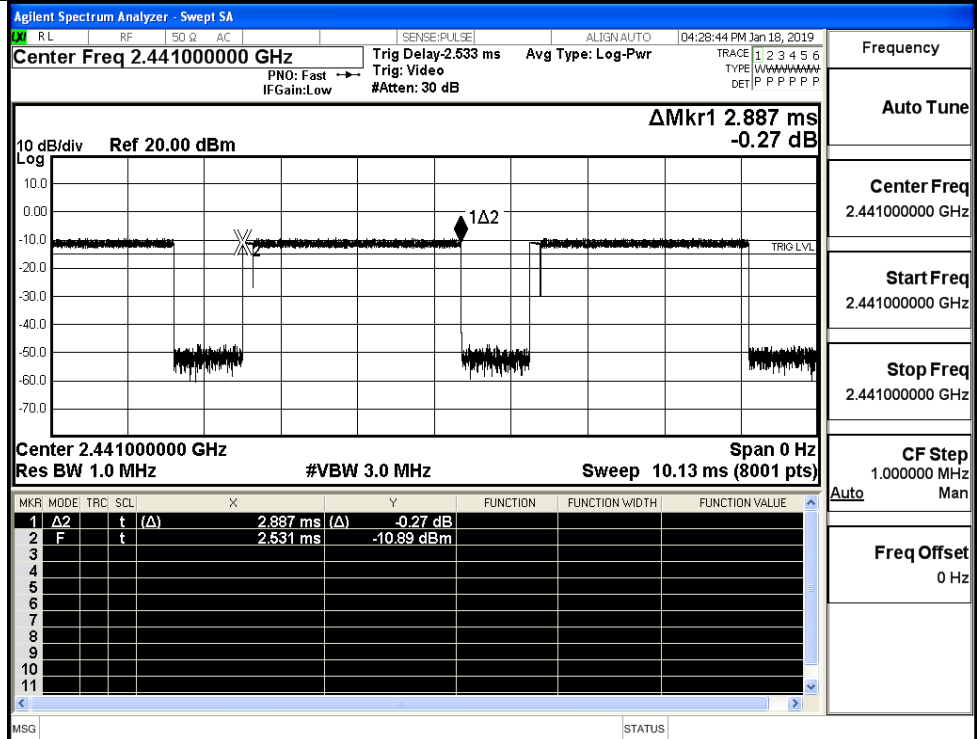
$\pi/4$ DQPSK
_2DH5/HCH



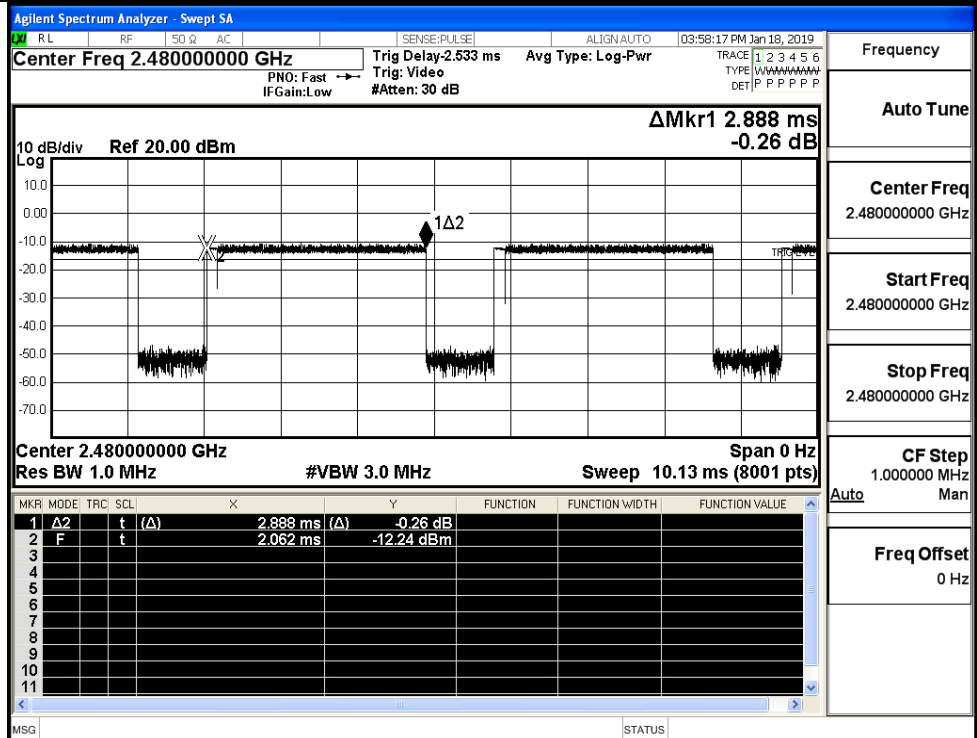
8DPSK _3DH5/LCH



8DPSK_3DH5/MCH



8DPSK_3DH5/HCH

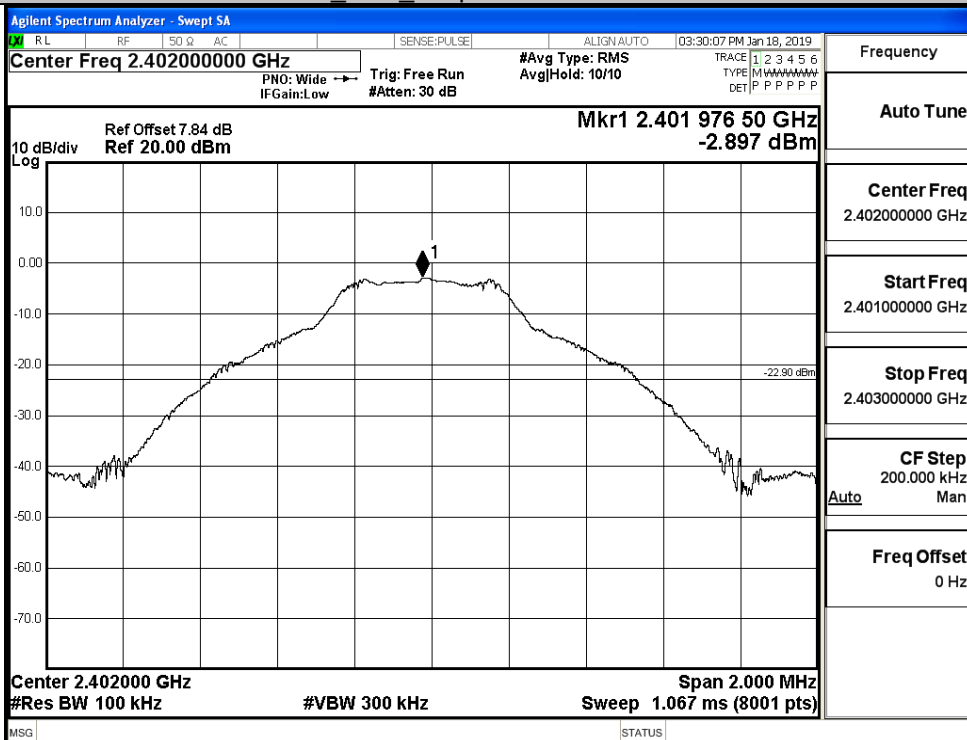


A.6 RF Conducted Spurious Emissions

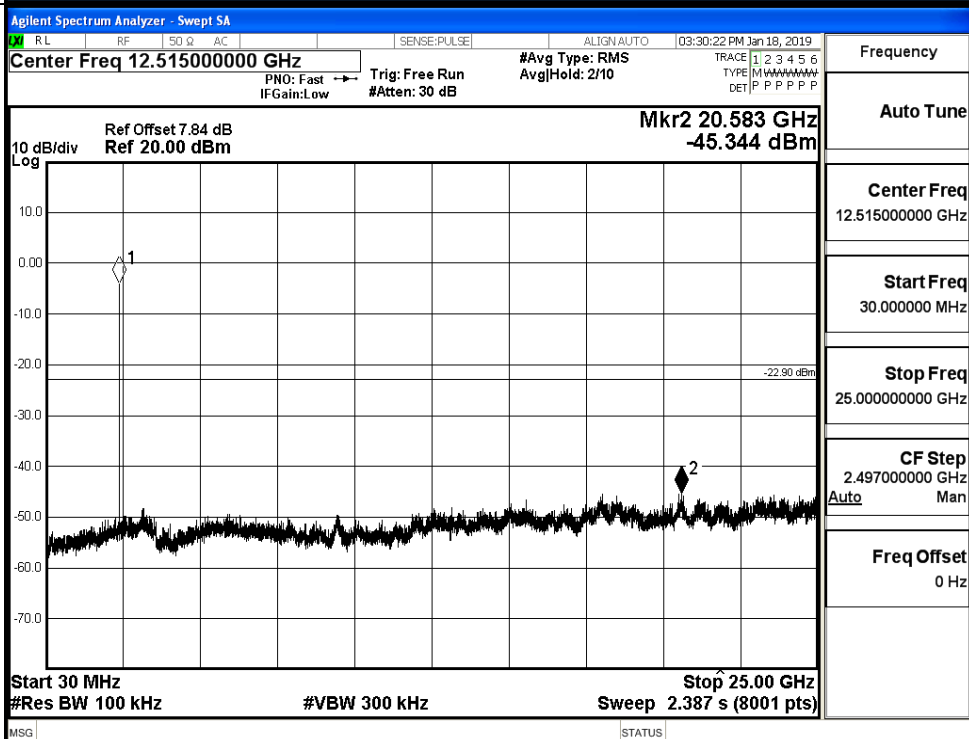
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-2.897	-45.344	-22.897	PASS
	MCH	-3.79	-45.596	-23.790	PASS
	HCH	-5.053	-43.923	-25.053	PASS
$\pi/4$ DQPSK	LCH	-2.096	-44.807	-22.096	PASS
	MCH	-3.038	-45.144	-23.038	PASS
	HCH	-4.423	-45.209	-24.423	PASS
8DPSK	LCH	-2.124	-44.307	-22.124	PASS
	MCH	-3.138	-45.698	-23.138	PASS
	HCH	-4.865	-44.954	-24.865	PASS

GFSK LCH Graphs

Pref

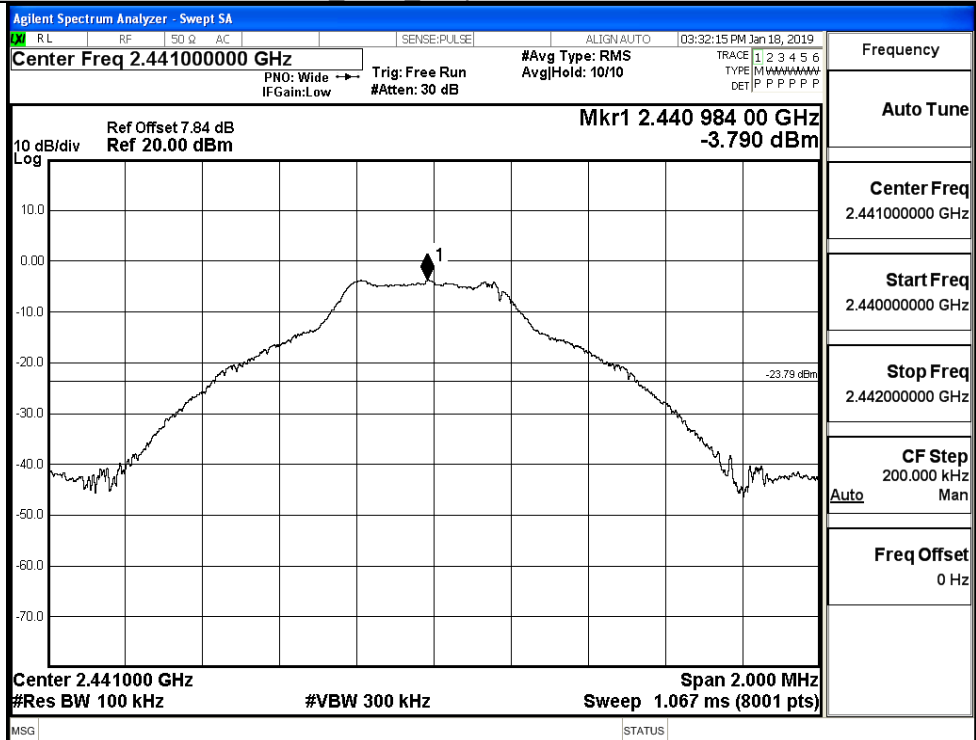


Puw

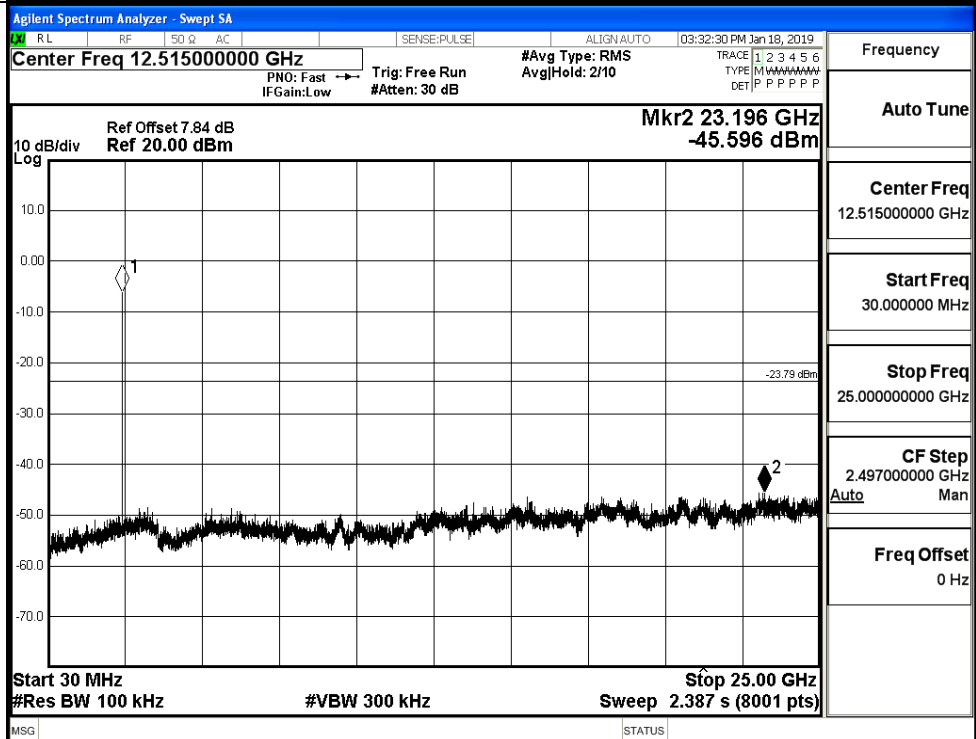


GFSK_MCH_Graphs

Pref

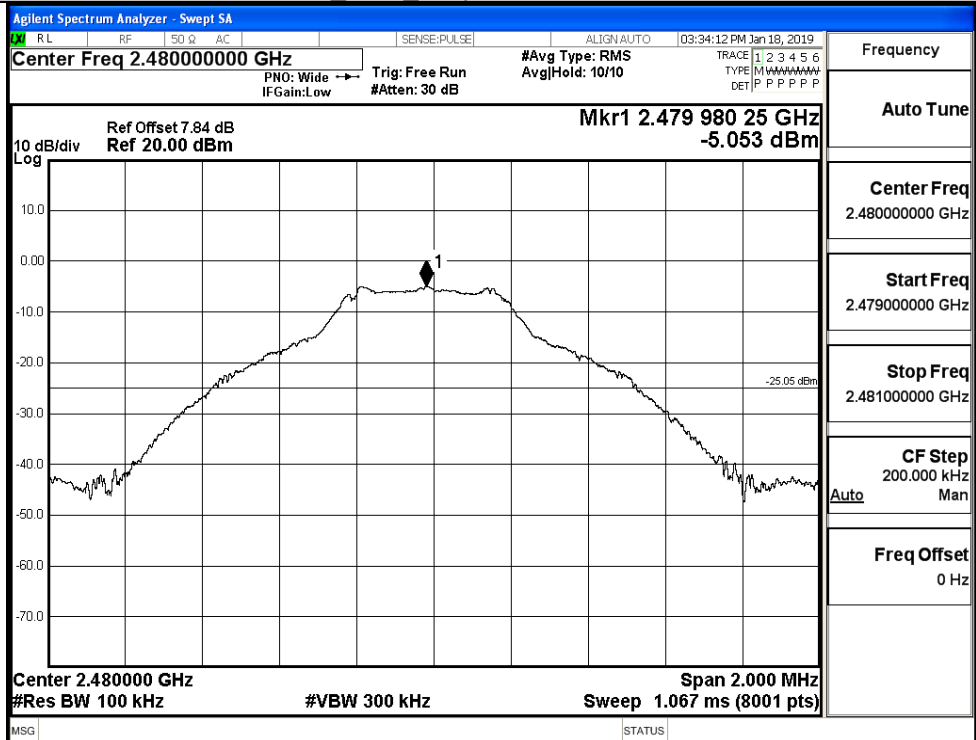


Puw

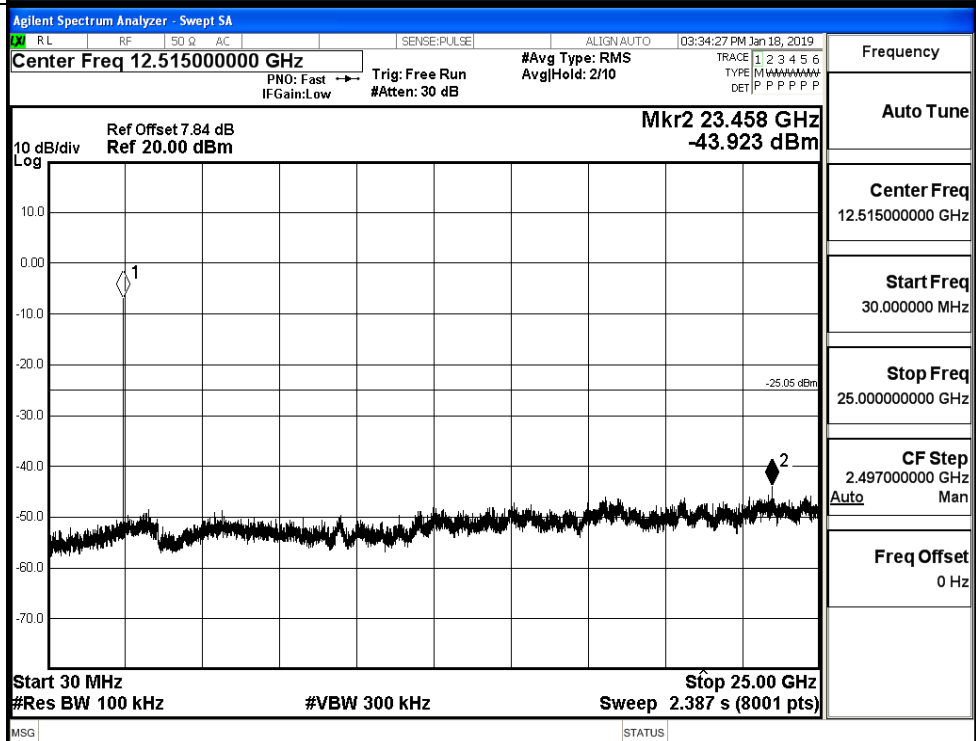


GFSK_HCH_Graphs

Pref

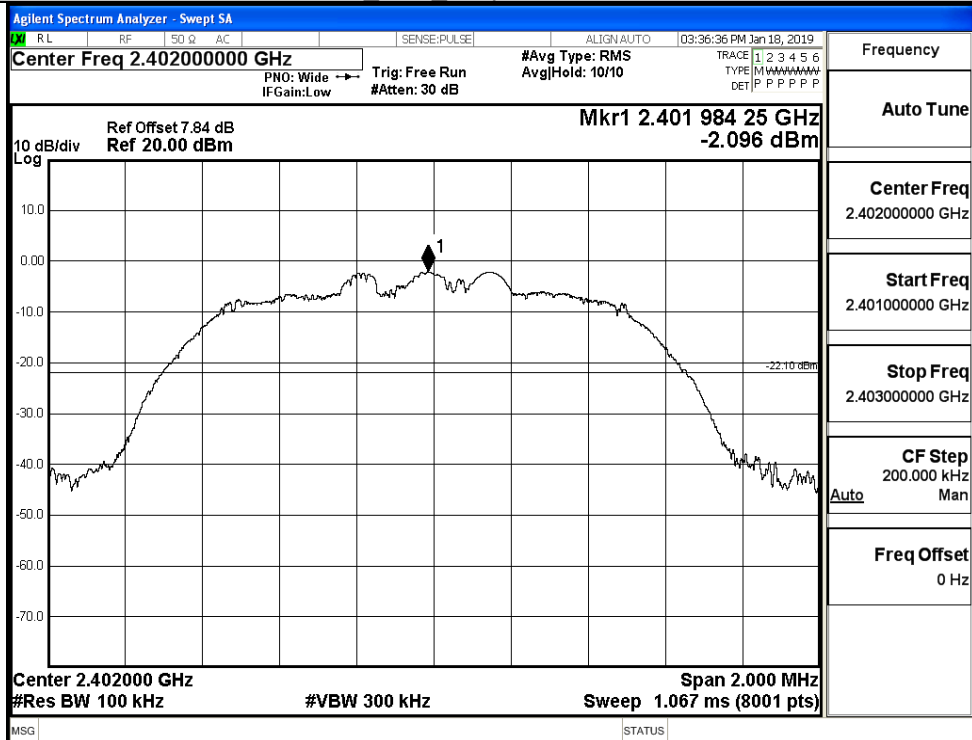


Puw

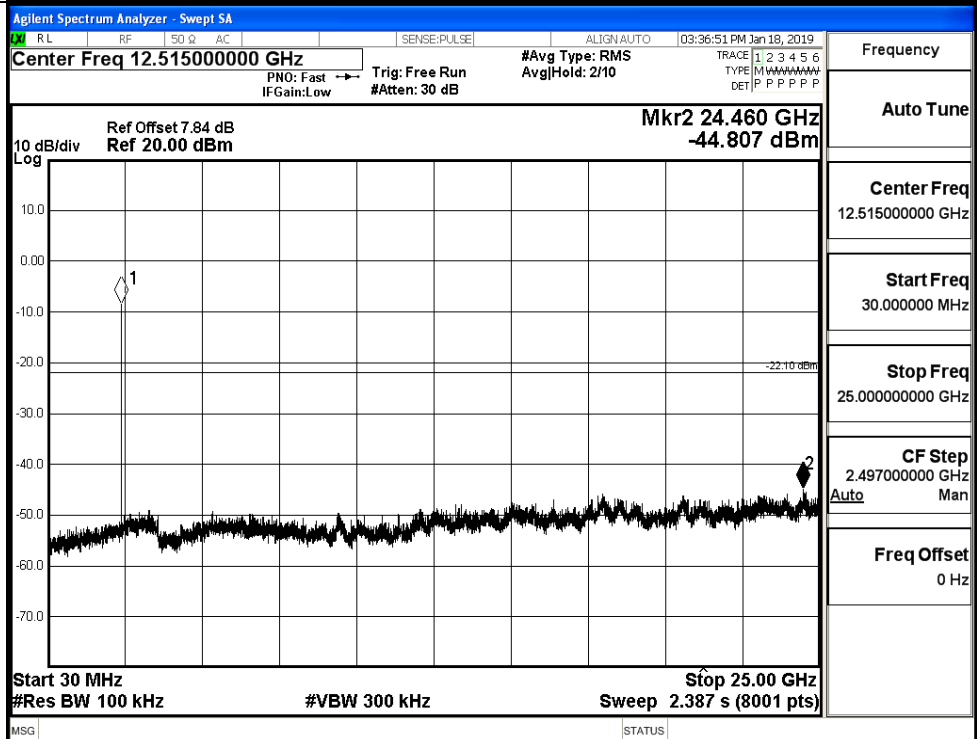


$\pi/4$ DQPSK LCH_Graphs

Pref

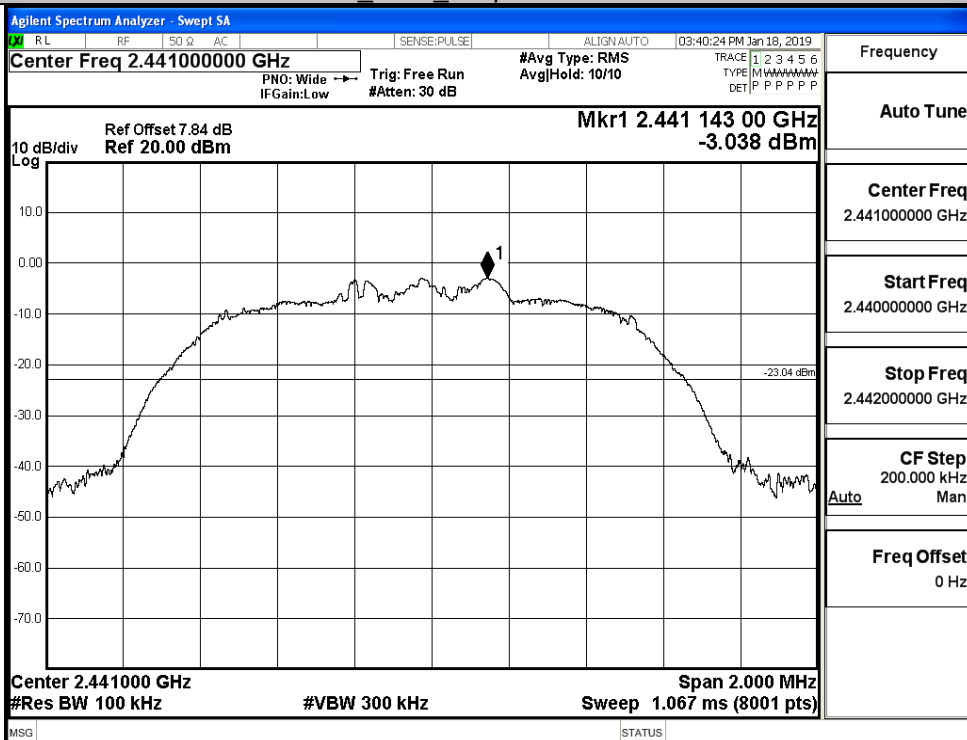


Puw

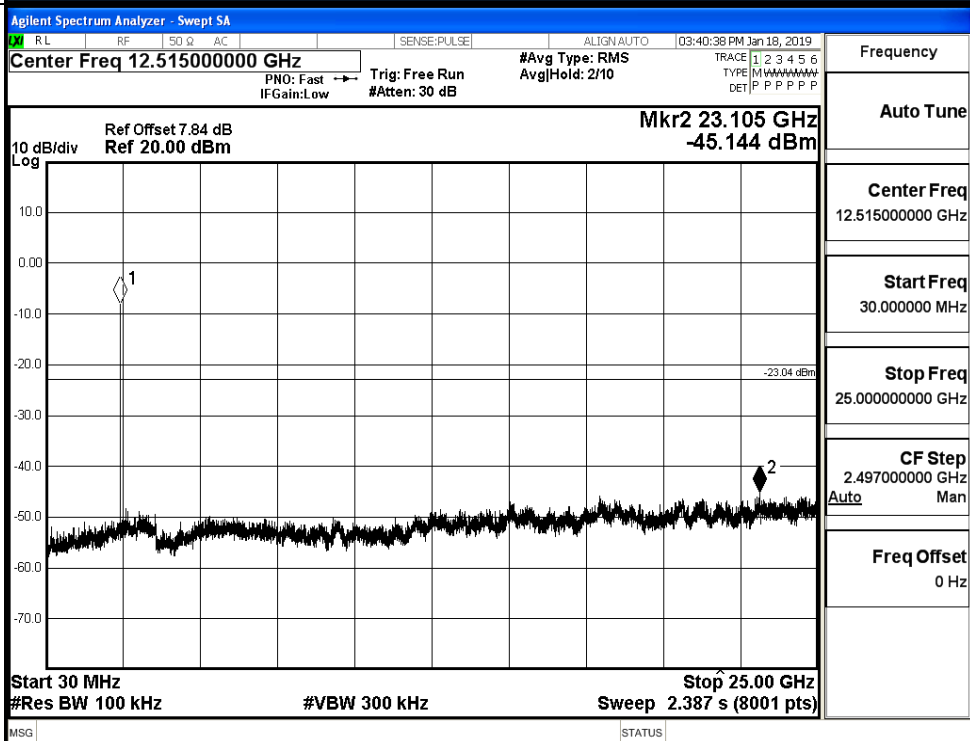


π /4DQPSK_MCH_Graphs

Pref



Puw



Pref

Puw

Agilent Spectrum Analyzer - Swept SA

Center Freq 2.48000000 GHz

Ref Offset 7.84 dB

Ref 20.00 dBm

Mkr1 2.479 972 5 GHz

-4.423 dBm

10 dB/div

Log

Span 2.000 MHz

#Res BW 100 kHz

#VBW 300 kHz

Sweep 1.067 ms (8001 pts)

MSG STATUS

Frequency

Auto Tune

Center Freq 2.480000000 GHz

Start Freq 2.479000000 GHz

Stop Freq 2.481000000 GHz

CF Step 200.000 kHz

Auto Man

Freq Offset 0 Hz

Agilent Spectrum Analyzer - Swept SA

Center Freq 12.51500000 GHz

Ref Offset 7.84 dB

Ref 20.00 dBm

Mkr2 24.991 GHz

-45.209 dBm

10 dB/div

Log

Start 30 MHz

Stop 25.00 GHz

#Res BW 100 kHz

#VBW 300 kHz

Sweep 2.387 s (8001 pts)

MSG STATUS

Frequency

Auto Tune

Center Freq 12.515000000 GHz

Start Freq 30.000000 MHz

Stop Freq 25.000000000 GHz

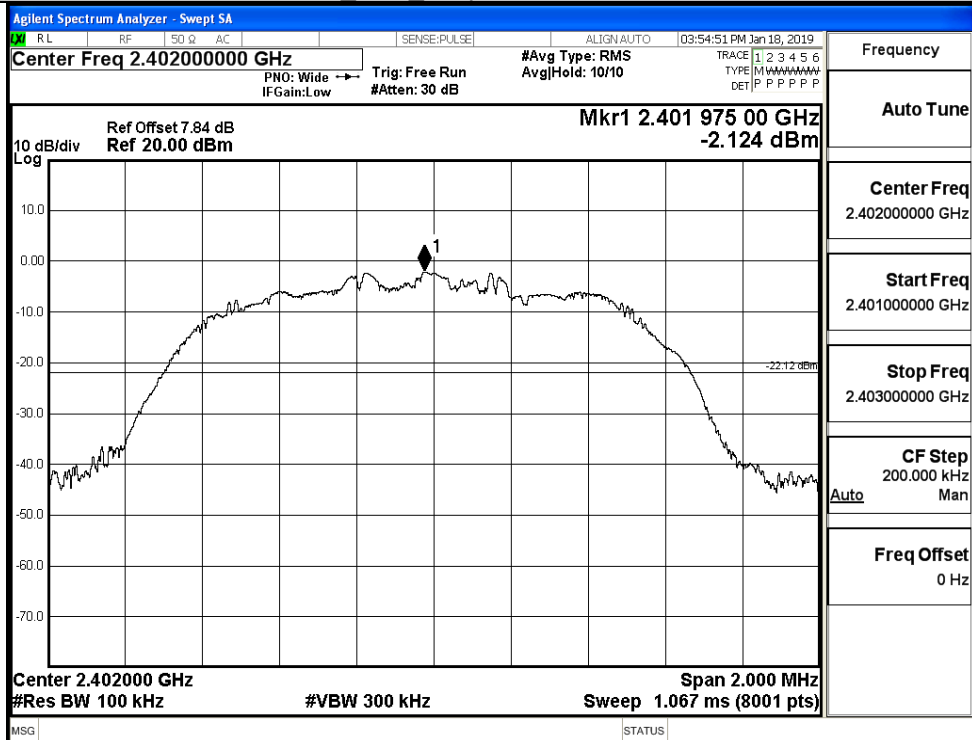
CF Step 2.497000000 GHz

Auto Man

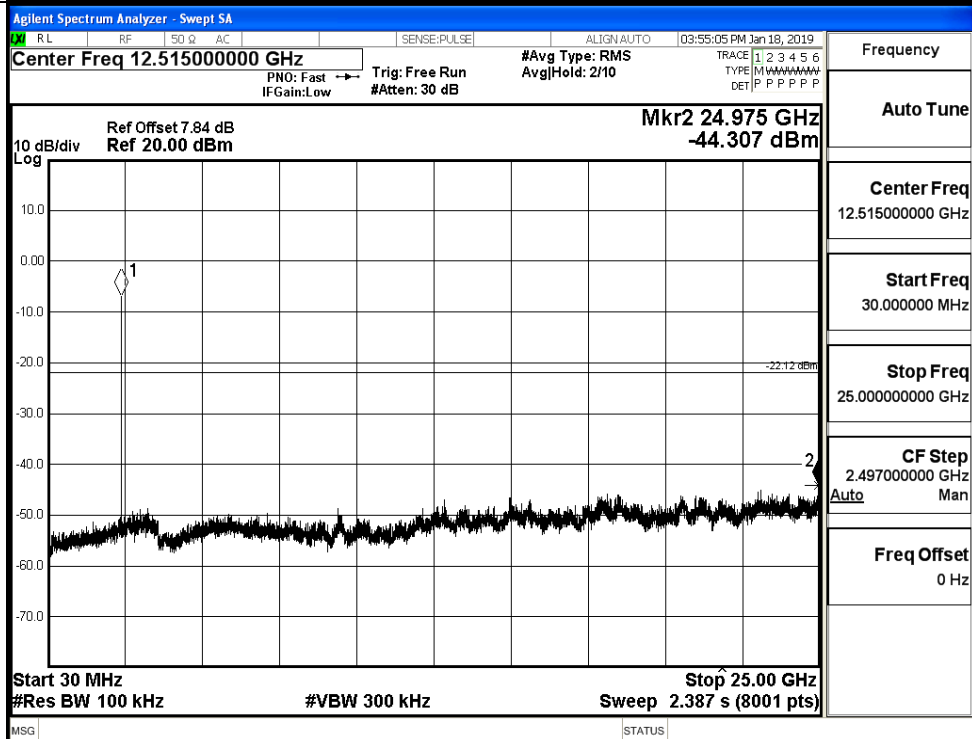
Freq Offset 0 Hz

8DPSK_LCH_Graphs

Pref

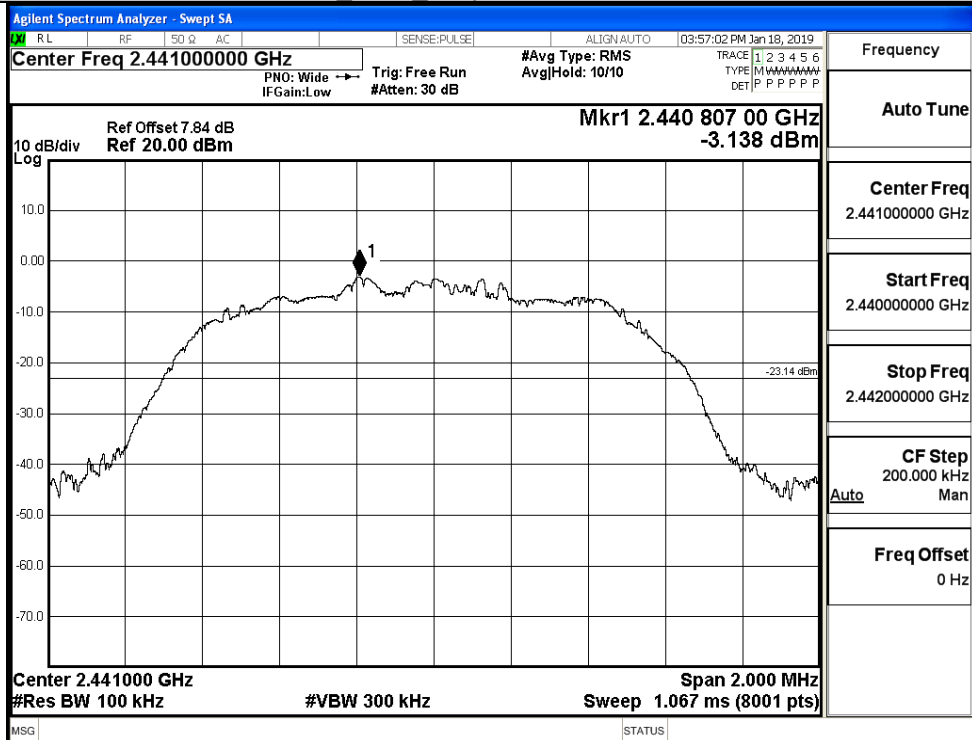


Puw

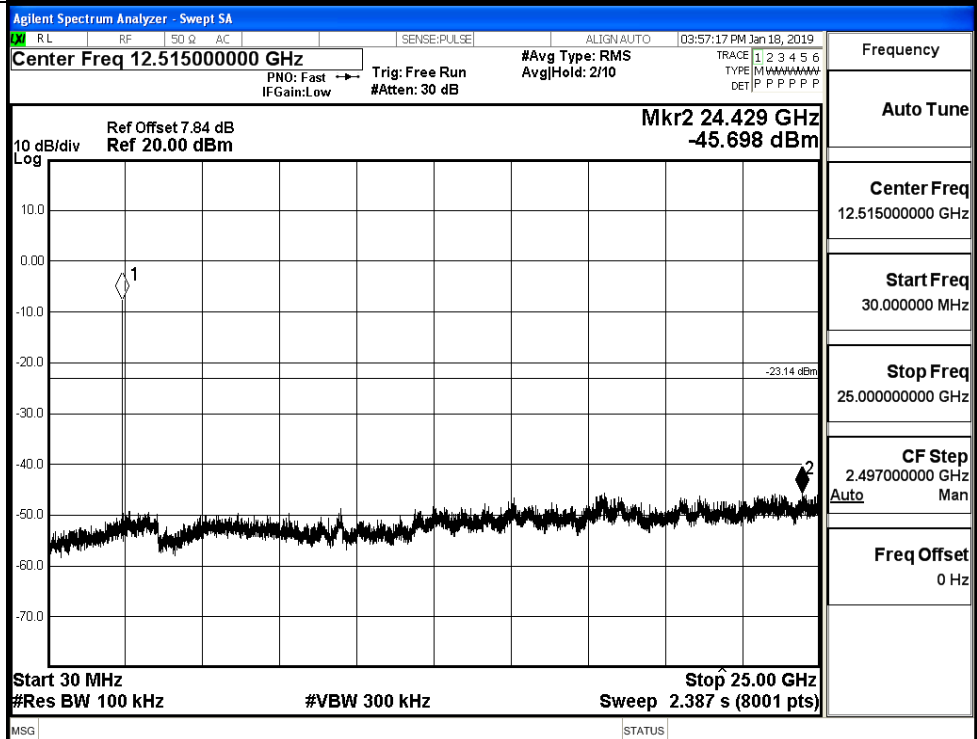


8DPSK_MCH_Graphs

Pref

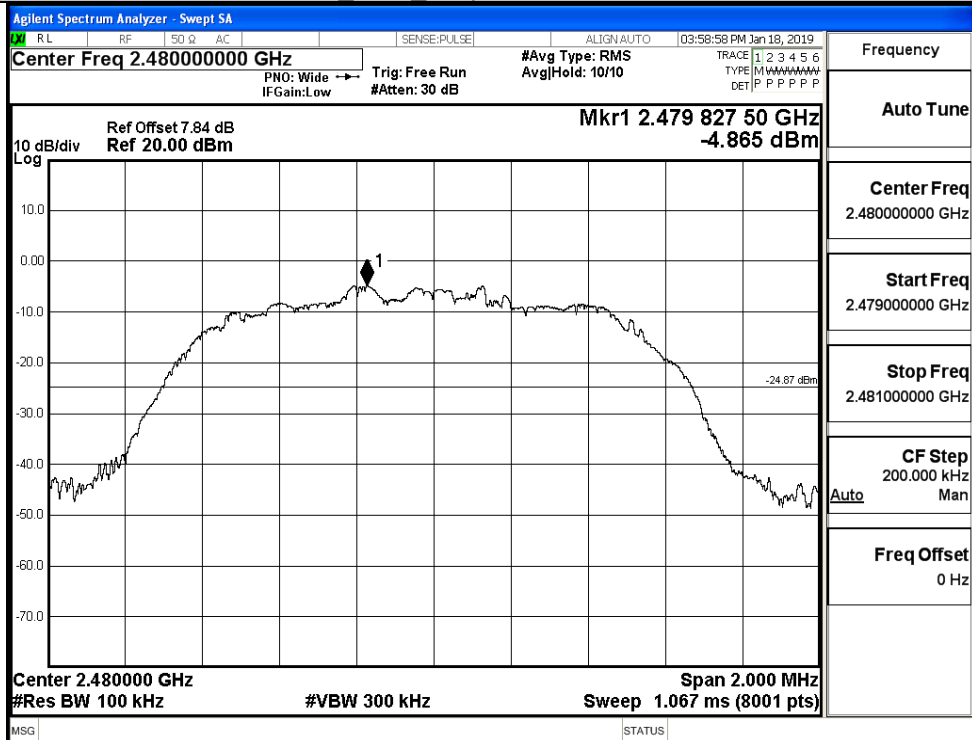


Puw

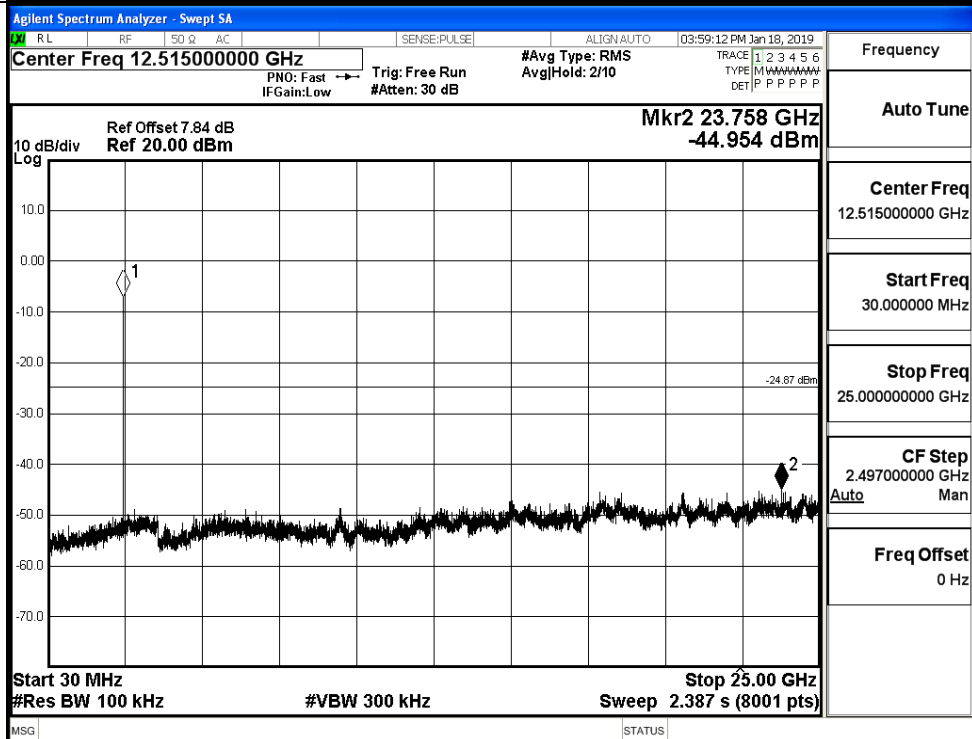


8DPSK_HCH_Graphs

Pref



Puw

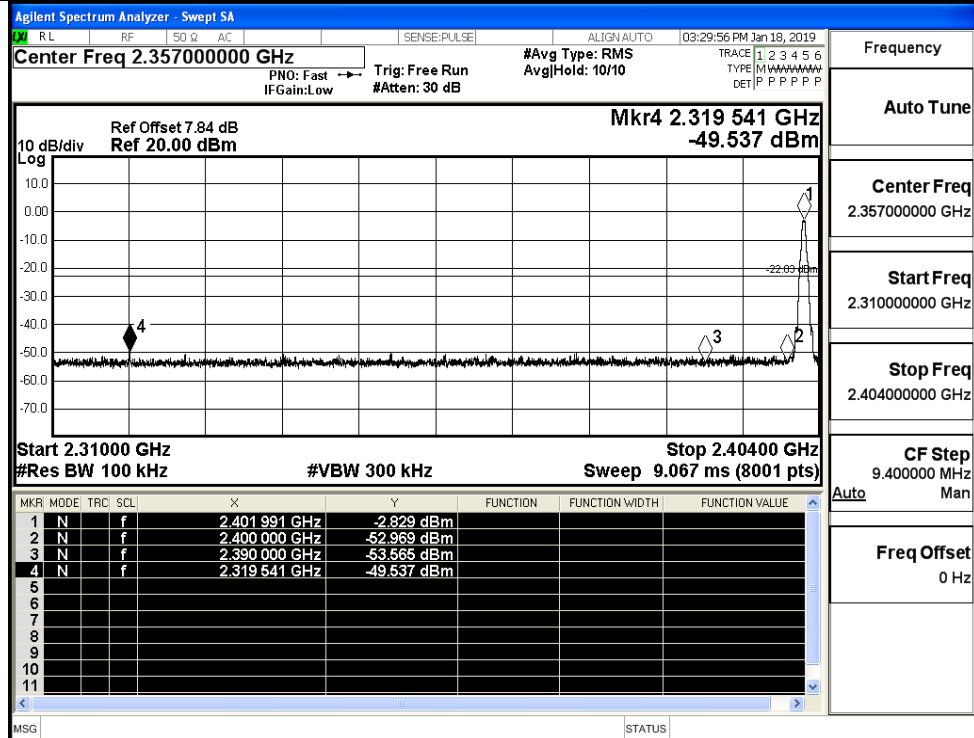


A.7 Band-edge for RF Conducted Emissions

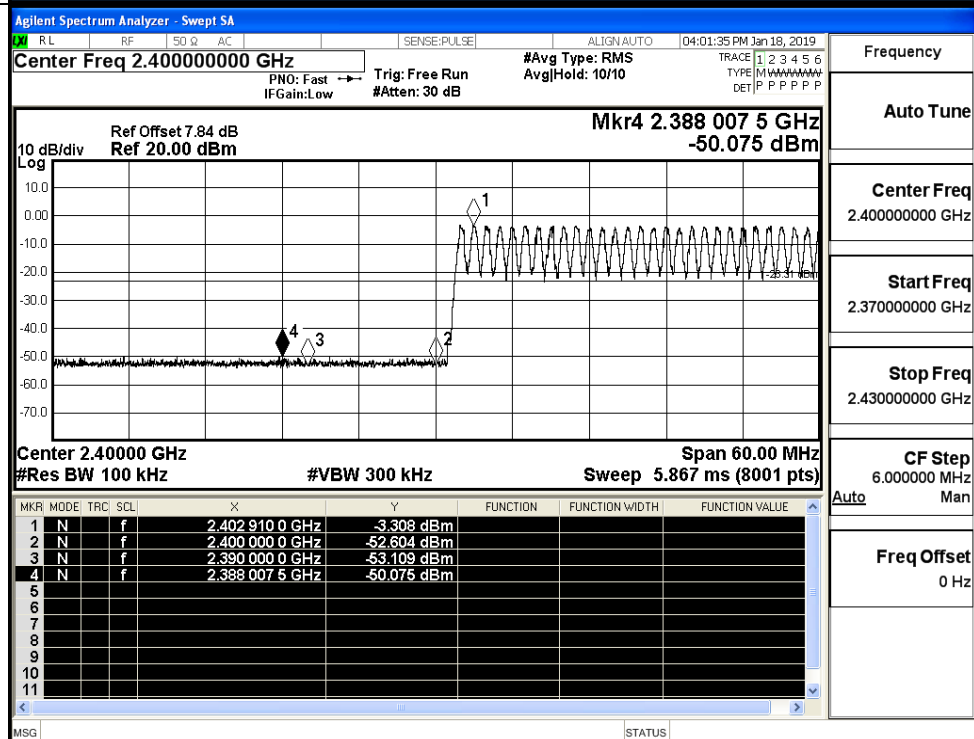
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	-2.829	Off	-49.537	-22.83	PASS
			-3.308	On	-50.075	-23.31	PASS
	HCH	2480	-4.912	Off	-50.151	-24.91	PASS
			-3.958	On	-49.186	-23.96	PASS
$\pi/4$ DQPSK	LCH	2402	-2.232	Off	-50.096	-22.23	PASS
			-2.306	On	-48.871	-22.31	PASS
	HCH	2480	-4.290	Off	-49.895	-24.29	PASS
			-3.542	On	-49.546	-23.54	PASS
8DPSK	LCH	2402	-2.121	Off	-50.424	-22.12	PASS
			-2.683	On	-49.557	-22.68	PASS
	HCH	2480	-4.250	Off	-49.708	-24.25	PASS
			-3.552	On	-49.517	-23.55	PASS

Test Graphs

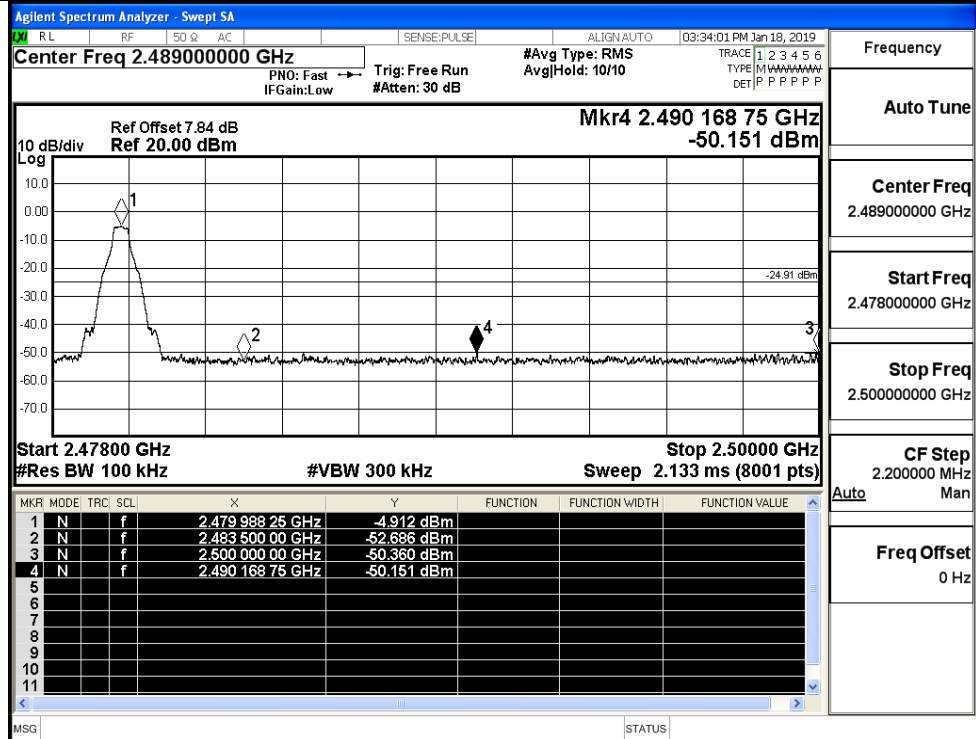
GFSK/LCH/No Hop



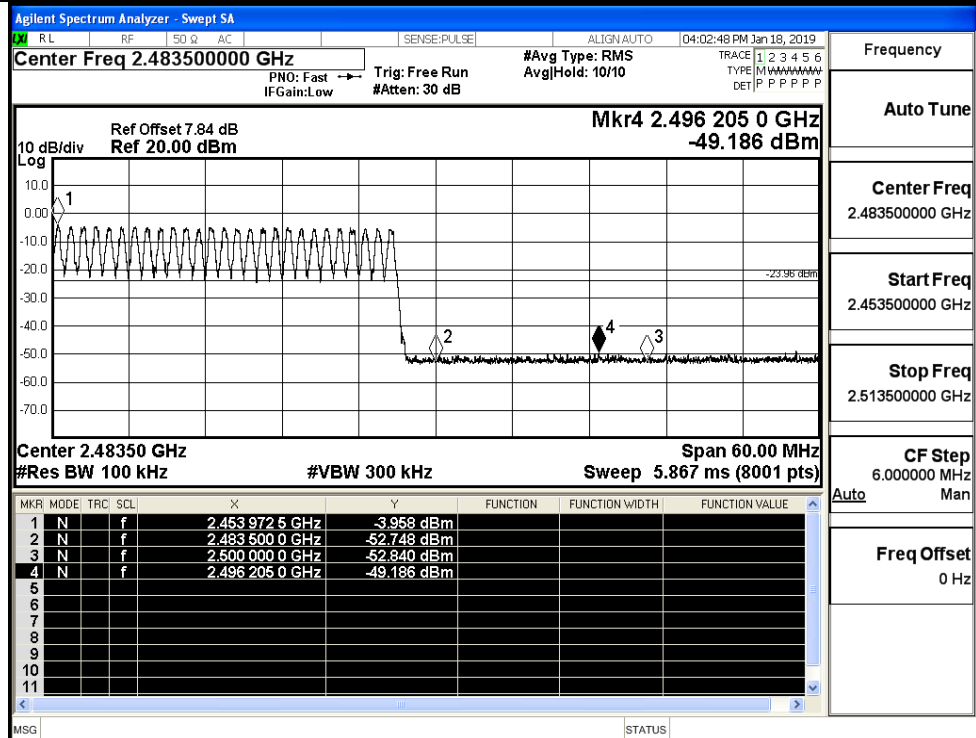
GFSK/LCH/Hop



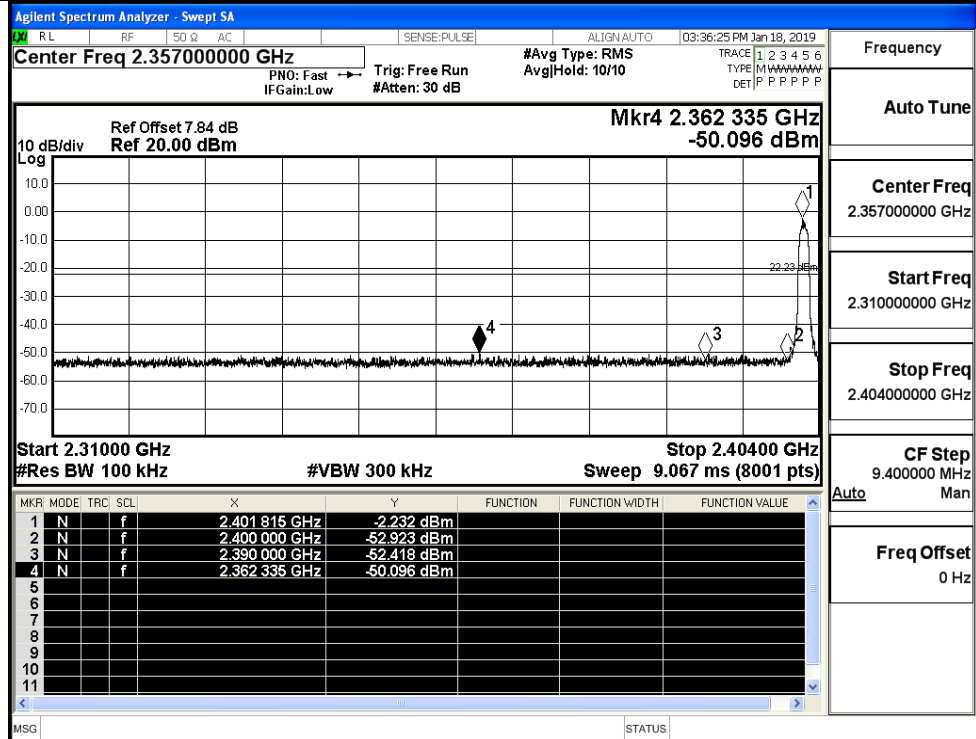
GFSK/HCH/No Hop



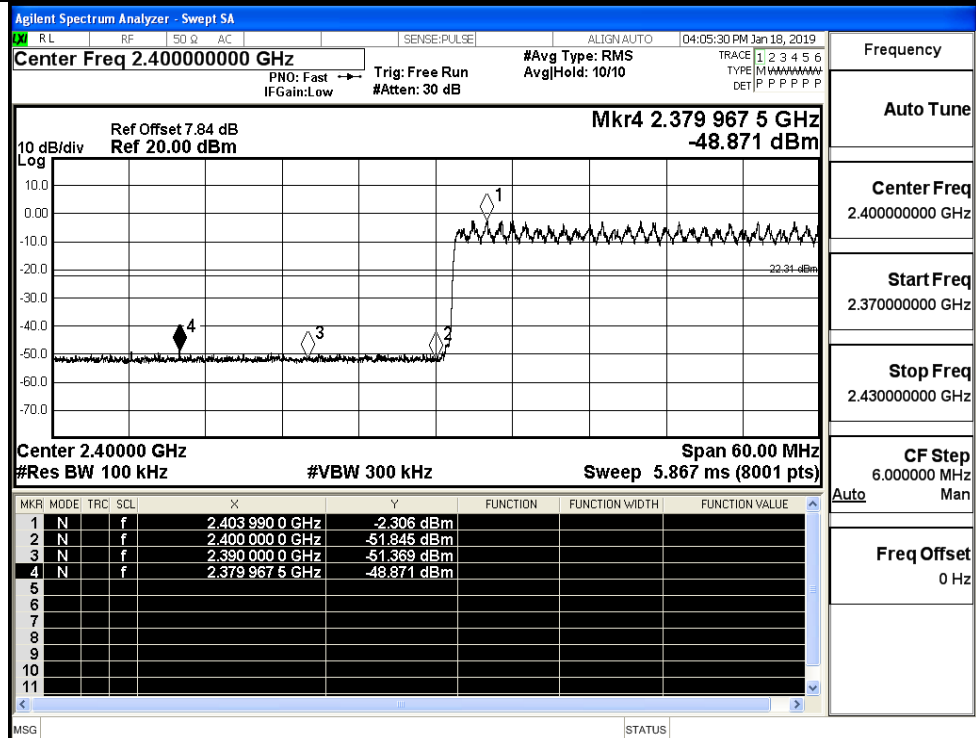
GFSK/HCH/Hop



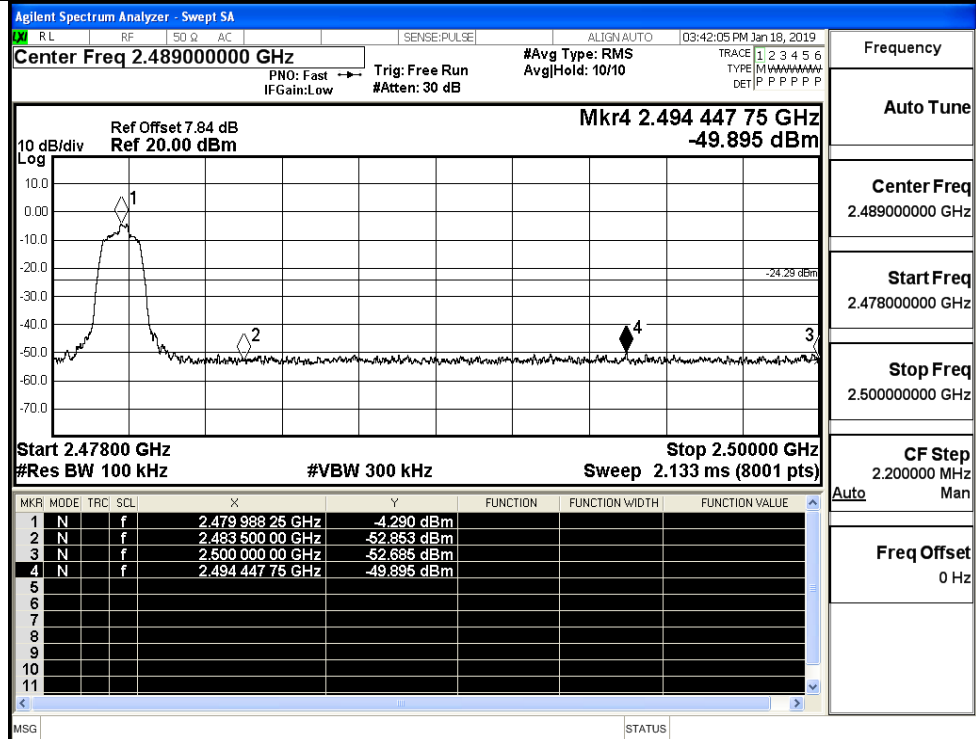
$\pi/4$ DQPSK/LCH/No
Hop



$\pi/4$ DQPSK/LCH/Hop



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

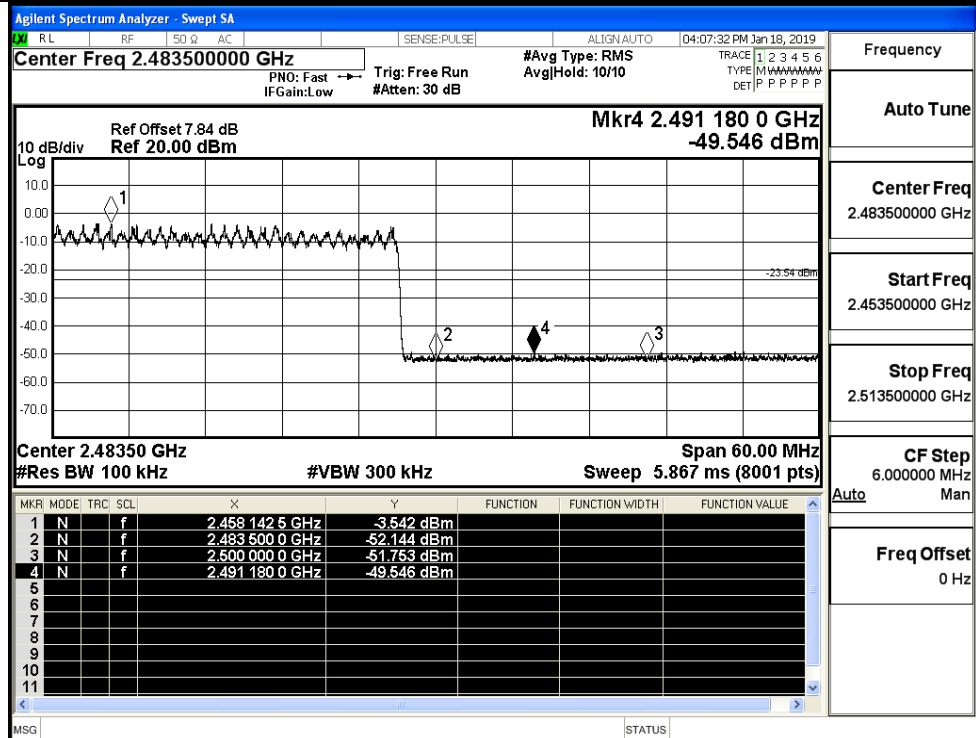


Frequency

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

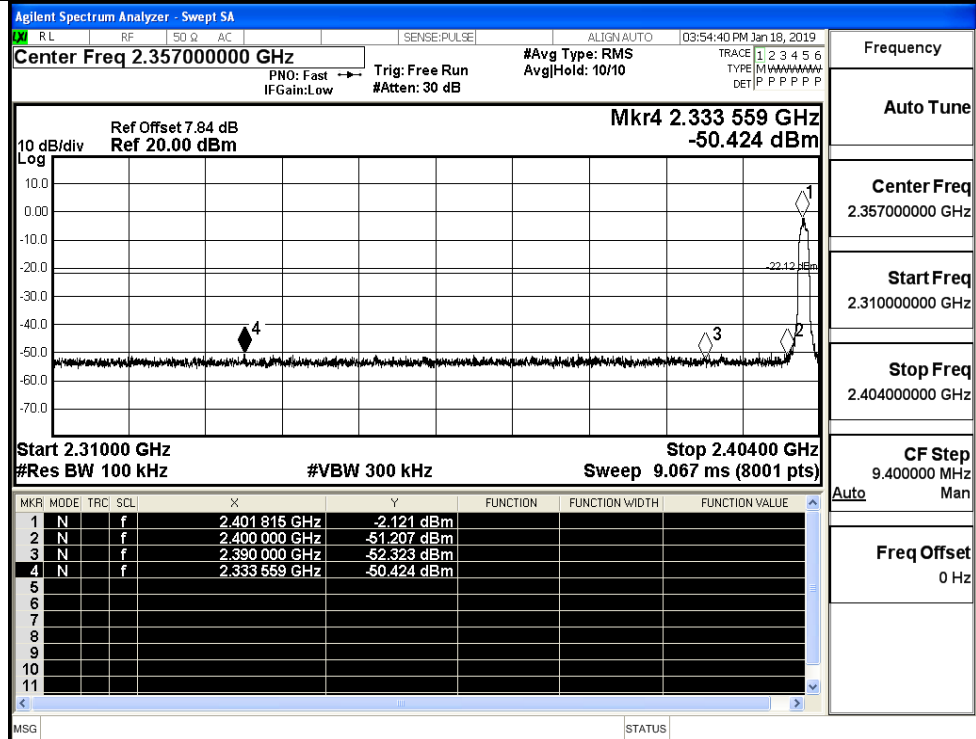


Frequency

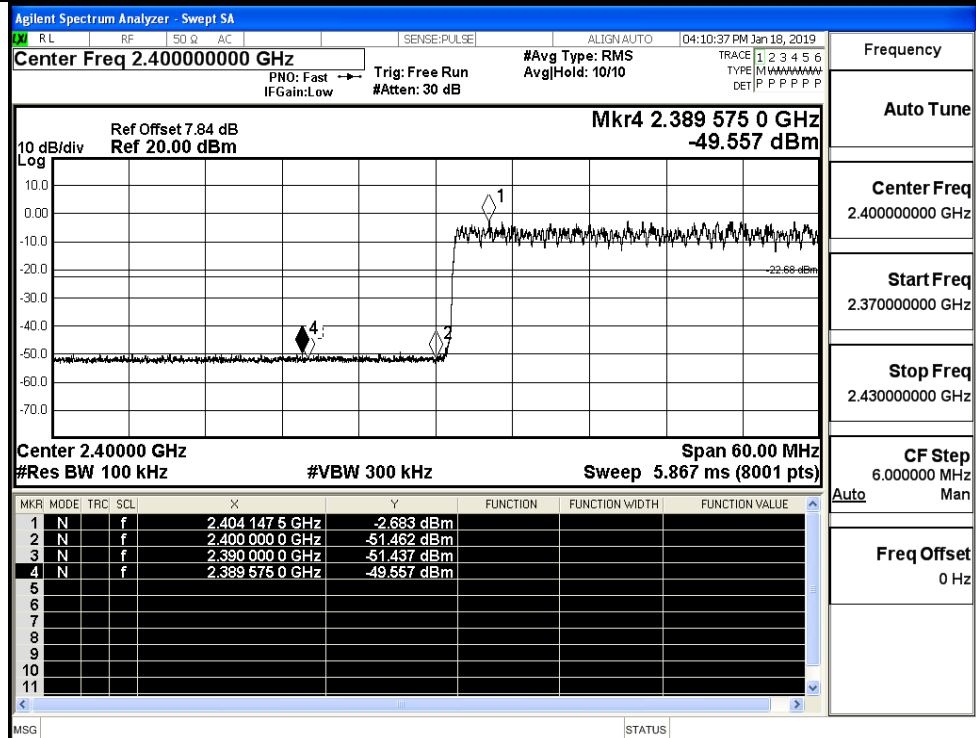
Auto Tune

Center Freq
2.483500000 GHzStart Freq
2.453000000 GHzStop Freq
2.513500000 GHzCF Step
6.000000 MHz
Auto ManFreq Offset
0 Hz

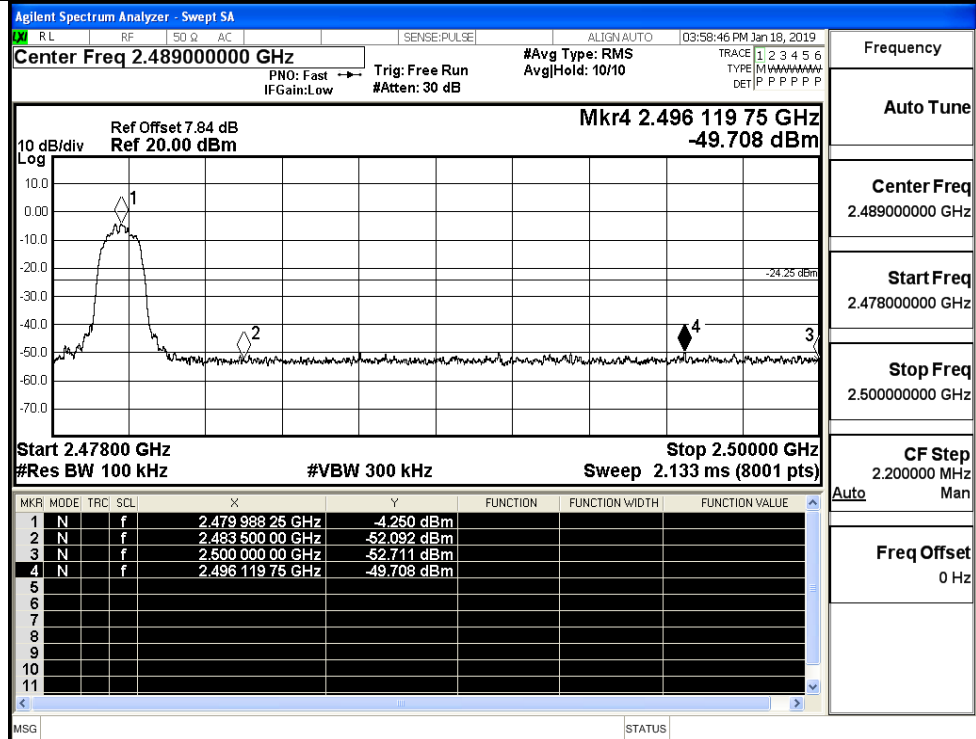
8DPSK/LCH/No Hop



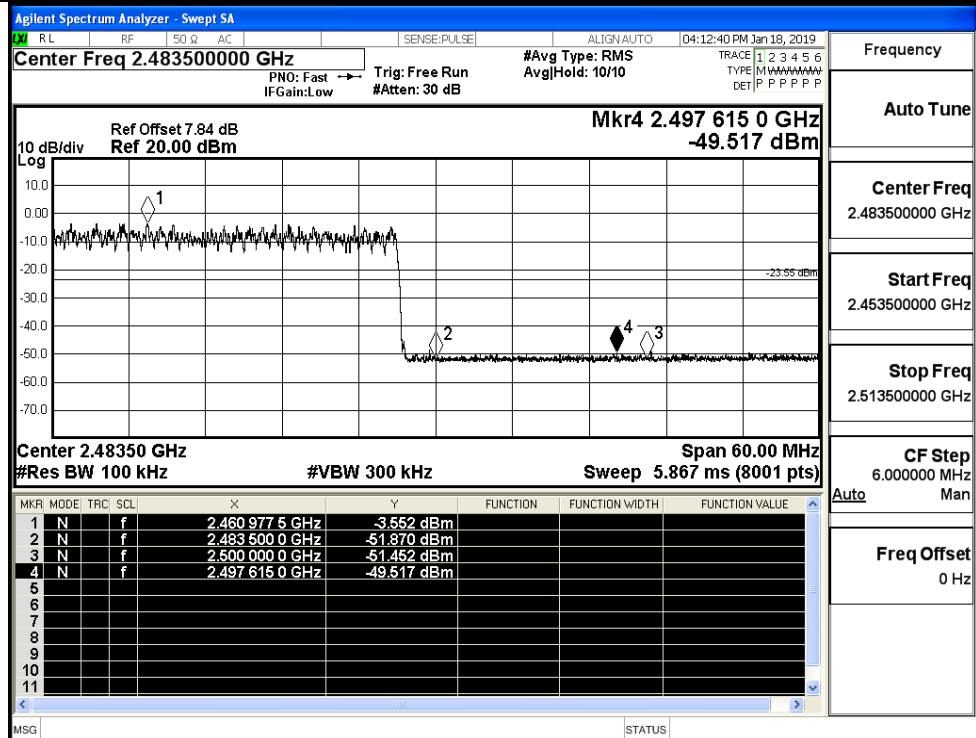
8DPSK/LCH/Hop



8DPSK/HCH/No Hop



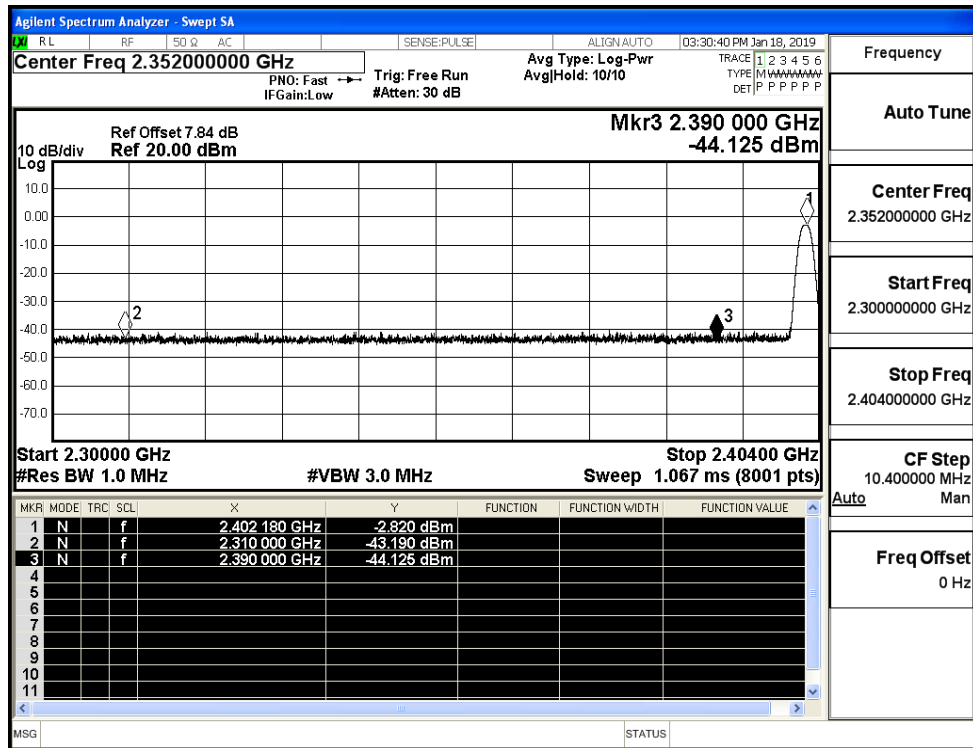
8DPSK/HCH/Hop



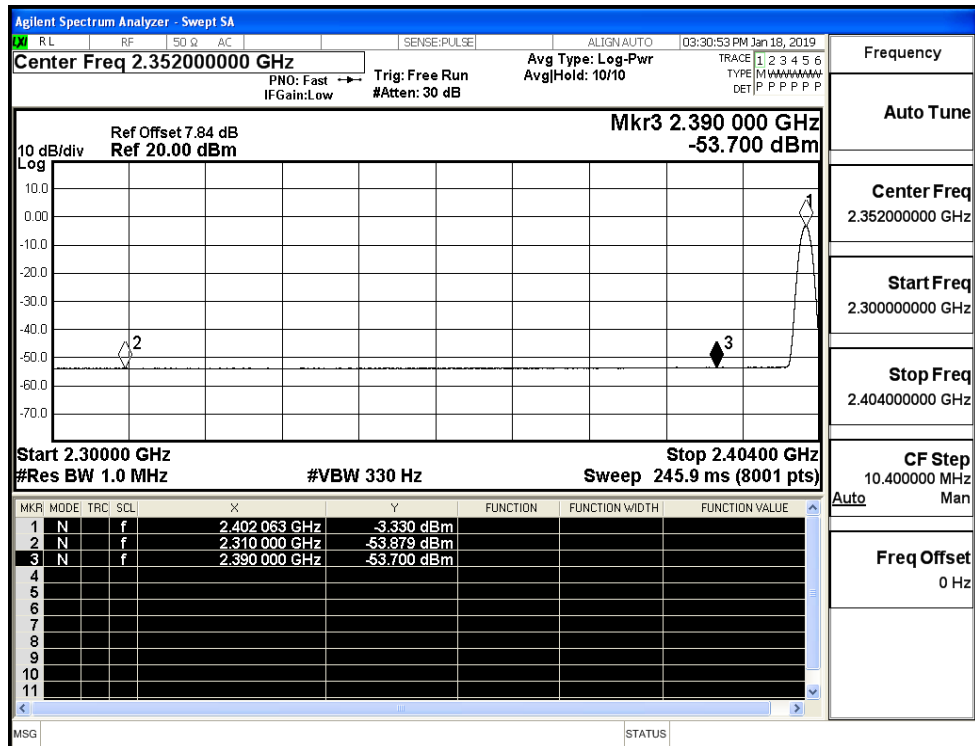
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-43.19	2.0	0	54.07	PEAK	74	PASS
	Off	2310.0	-53.88	2.0	0	43.38	AV	54	PASS
	Off	2390.0	-44.13	2.0	0	53.13	PEAK	74	PASS
	Off	2390.0	-53.70	2.0	0	43.56	AV	54	PASS
	Off	2483.5	-42.62	2.0	0	54.64	PEAK	74	PASS
	Off	2483.5	-53.26	2.0	0	43.99	AV	54	PASS
	Off	2500.0	-43.71	2.0	0	53.54	PEAK	74	PASS
	Off	2500.0	-53.20	2.0	0	44.05	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-44.07	2.0	0	53.19	PEAK	74	PASS
	Off	2310.0	-53.88	2.0	0	43.38	AV	54	PASS
	Off	2390.0	-44.32	2.0	0	52.94	PEAK	74	PASS
	Off	2390.0	-53.62	2.0	0	43.64	AV	54	PASS
	Off	2483.5	-43.58	2.0	0	53.67	PEAK	74	PASS
	Off	2483.5	-53.28	2.0	0	43.98	AV	54	PASS
	Off	2500.0	-42.55	2.0	0	54.71	PEAK	74	PASS
	Off	2500.0	-53.15	2.0	0	44.11	AV	54	PASS
8DPSK	Off	2310.0	-43.36	2.0	0	53.90	PEAK	74	PASS
	Off	2310.0	-53.97	2.0	0	43.28	AV	54	PASS
	Off	2390.0	-42.80	2.0	0	54.46	PEAK	74	PASS
	Off	2390.0	-53.62	2.0	0	43.64	AV	54	PASS
	Off	2483.5	-43.24	2.0	0	54.01	PEAK	74	PASS
	Off	2483.5	-53.37	2.0	0	43.89	AV	54	PASS
	Off	2500.0	-43.36	2.0	0	53.89	PEAK	74	PASS
	Off	2500.0	-53.23	2.0	0	44.03	AV	54	PASS

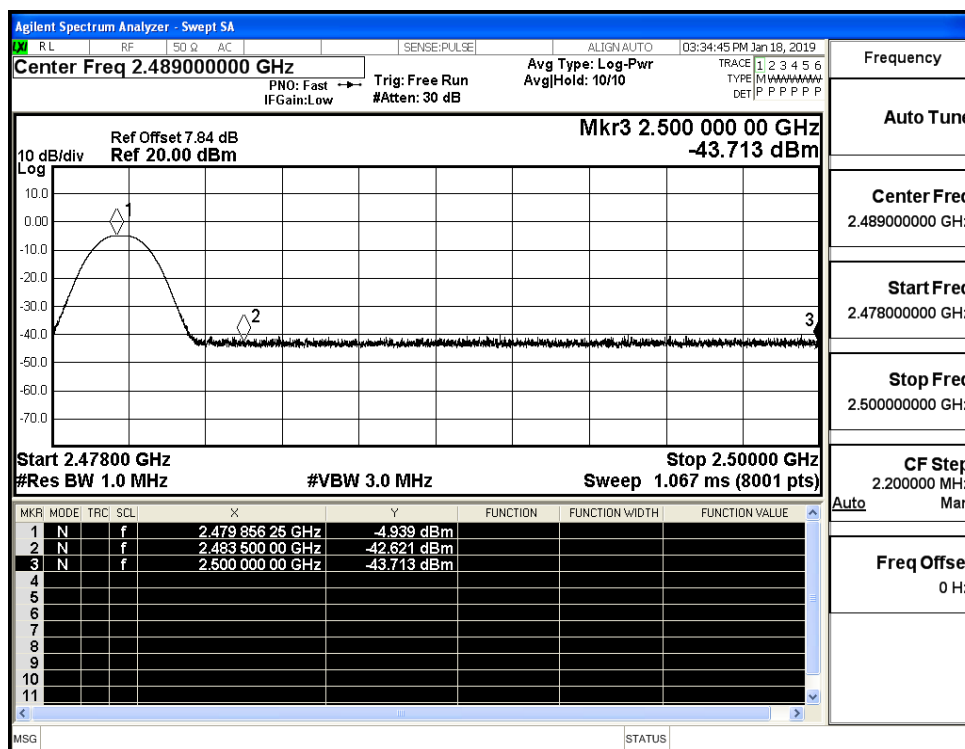
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



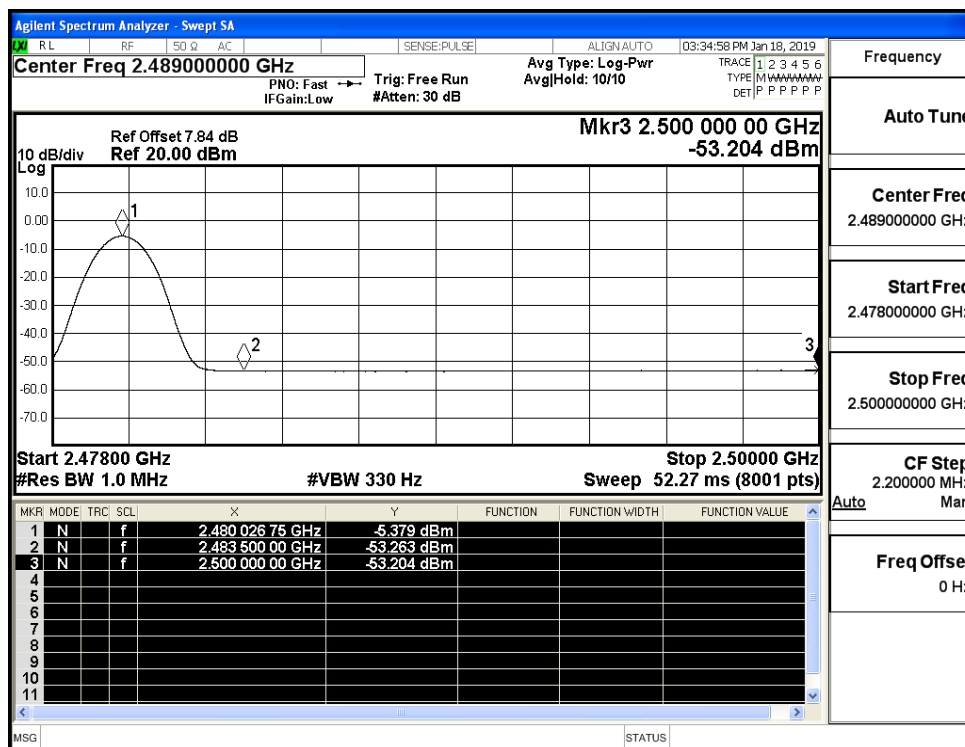
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)

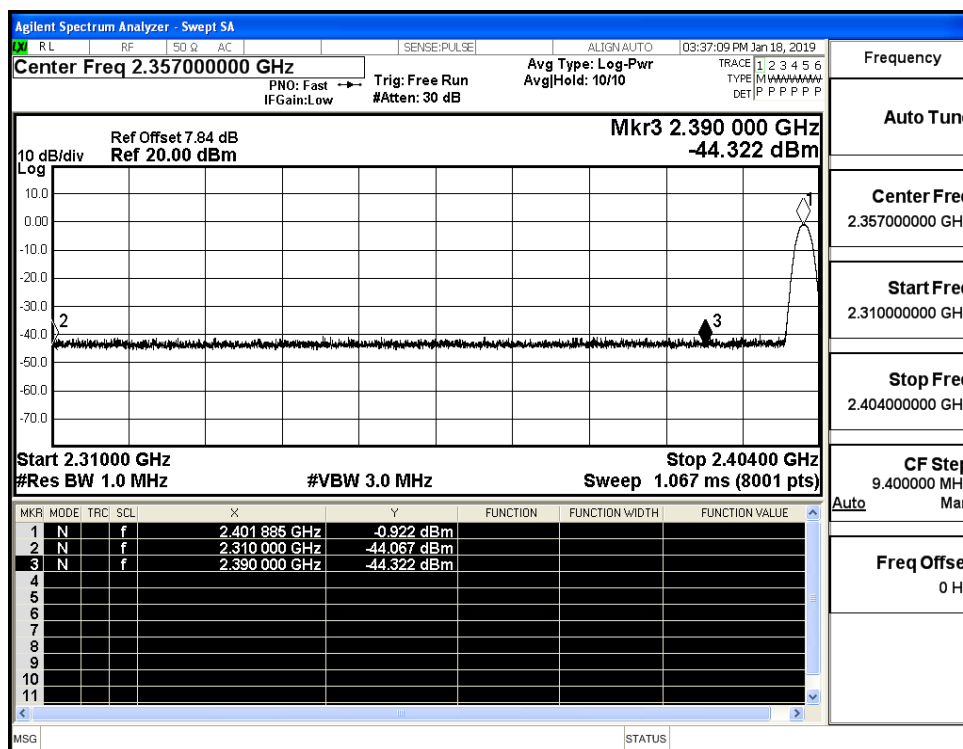
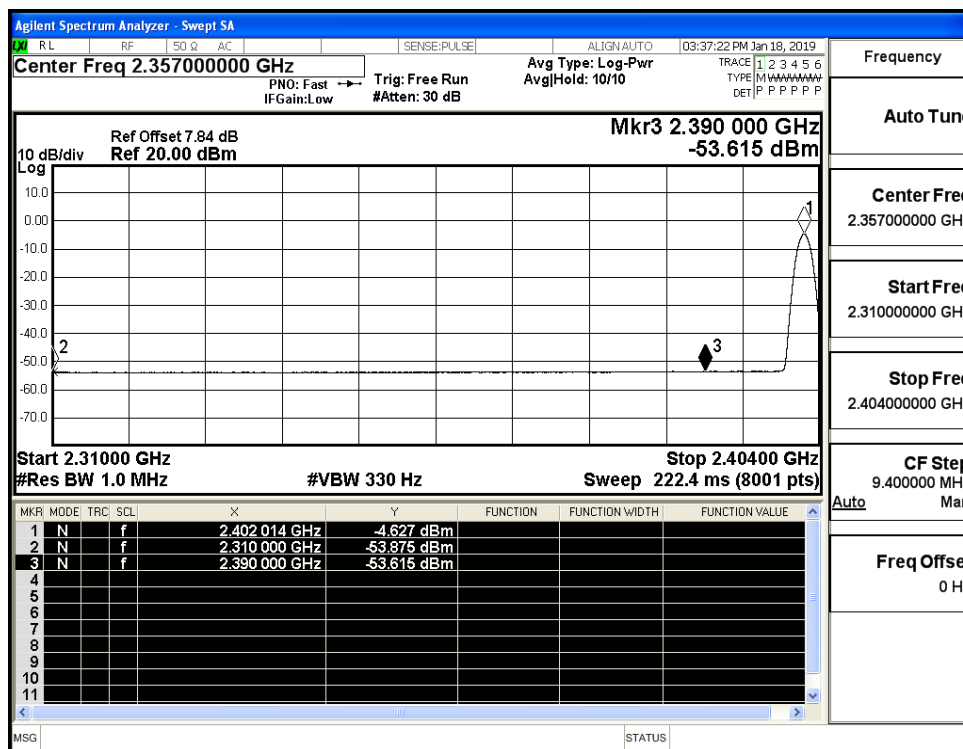


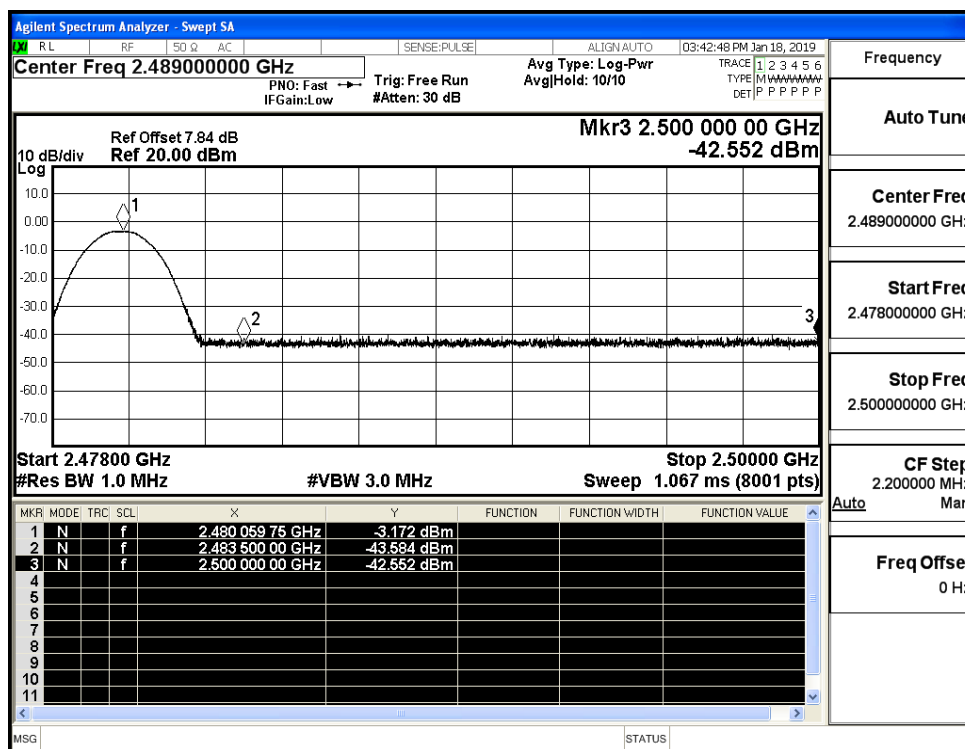
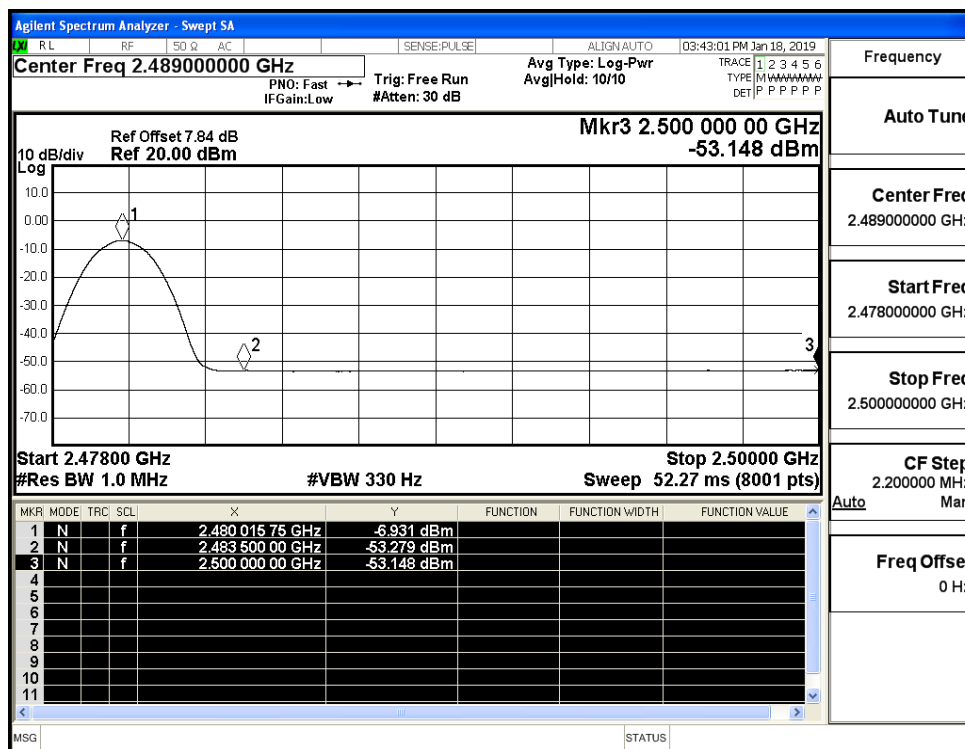
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)



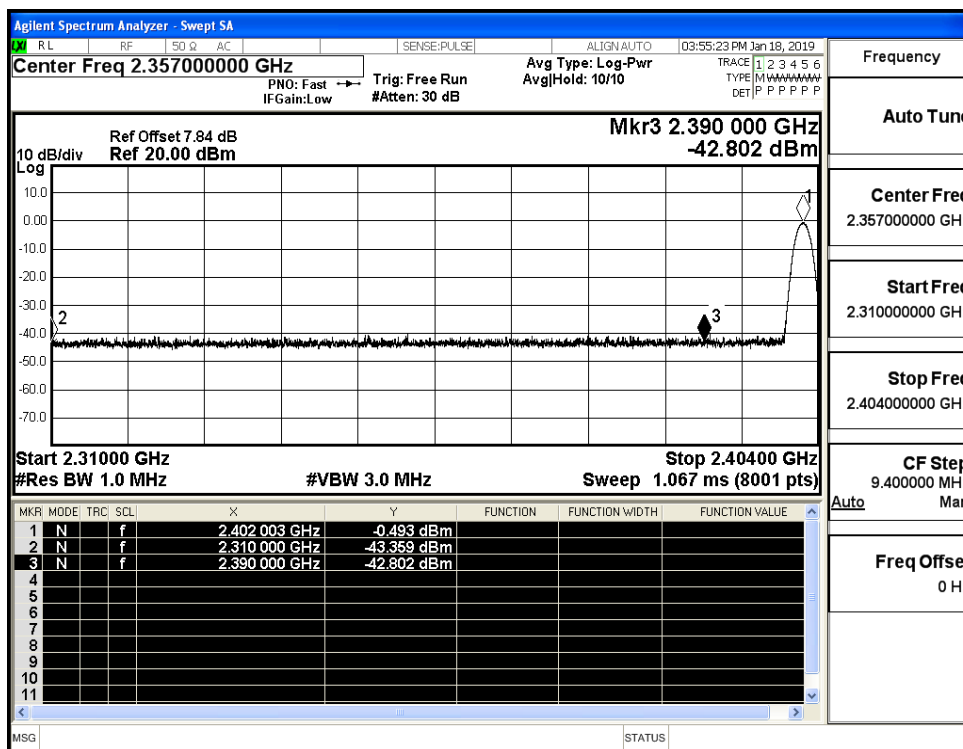
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)



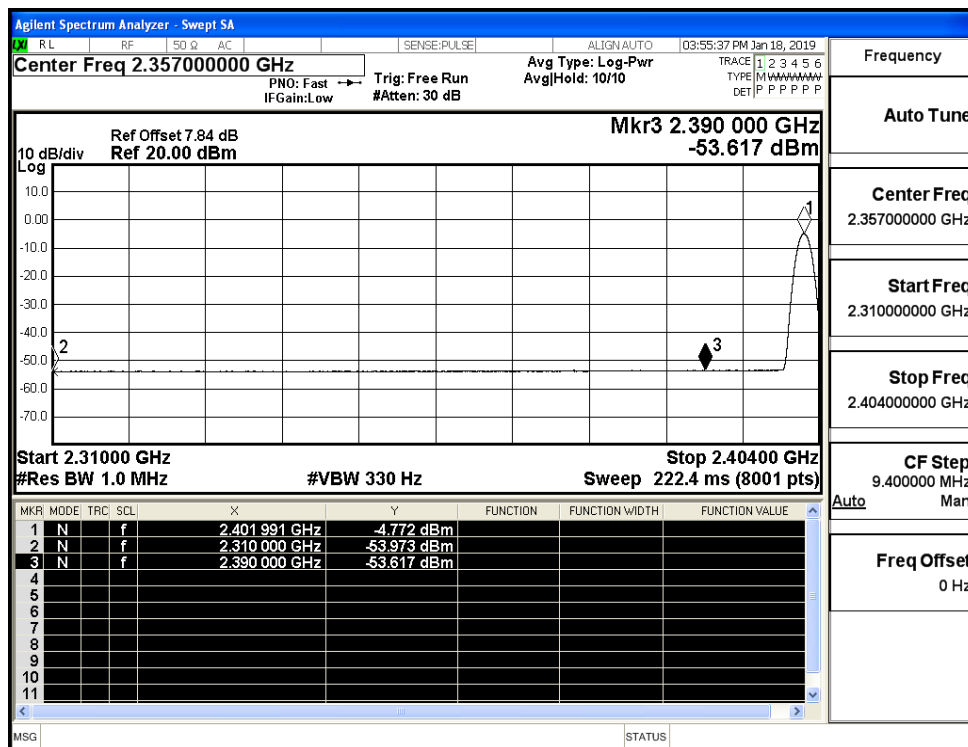
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (Low Channel)

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)

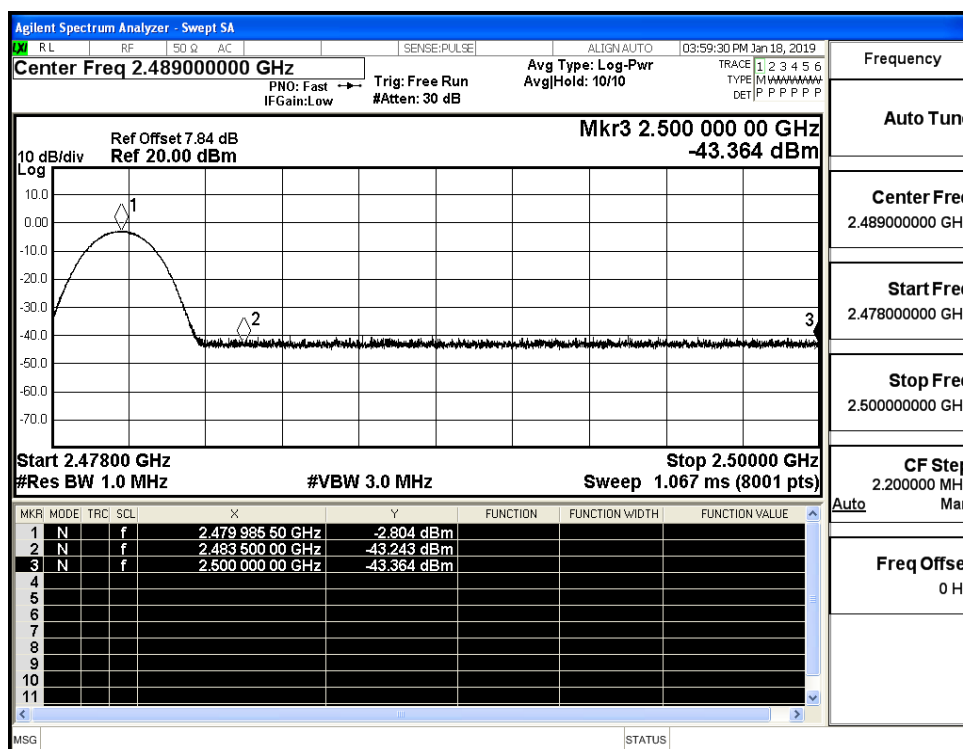
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)

