

Appendix A

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

Product Name: SPEAKER

Trade Mark: ALTEC

Test Model: AL800

Environmental Conditions

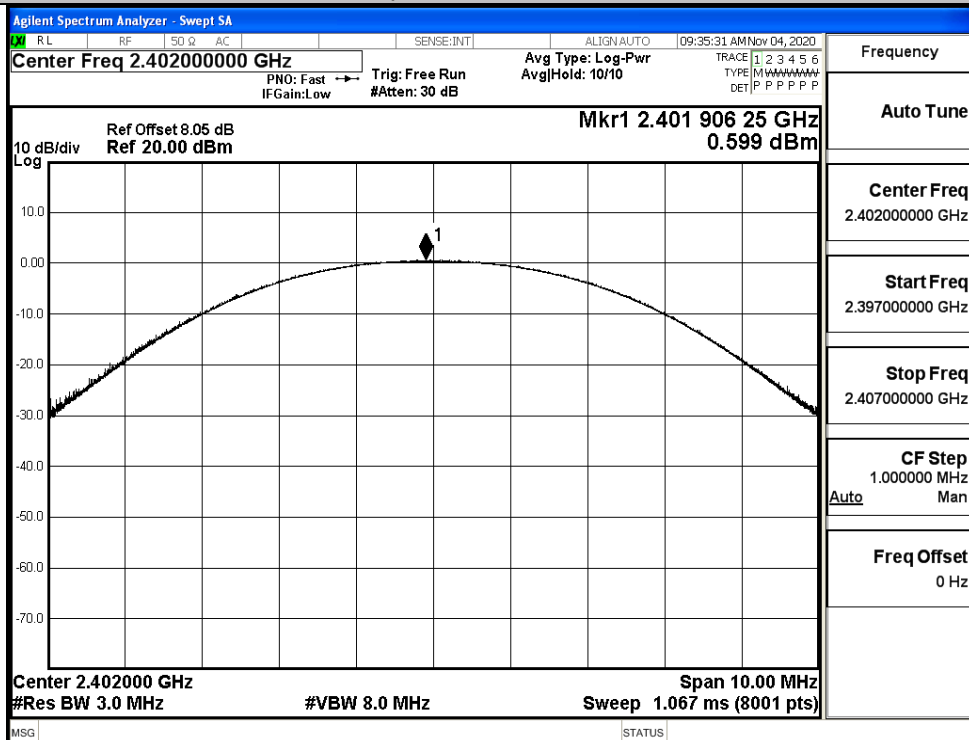
Temperature:	22.6°C
Relative Humidity:	51.7%
ATM Pressure:	100.0 kPa
Test Engineer:	Kay Hu
Supervised by:	Li Huan

A.1 Maximum Conducted Peak Output Power

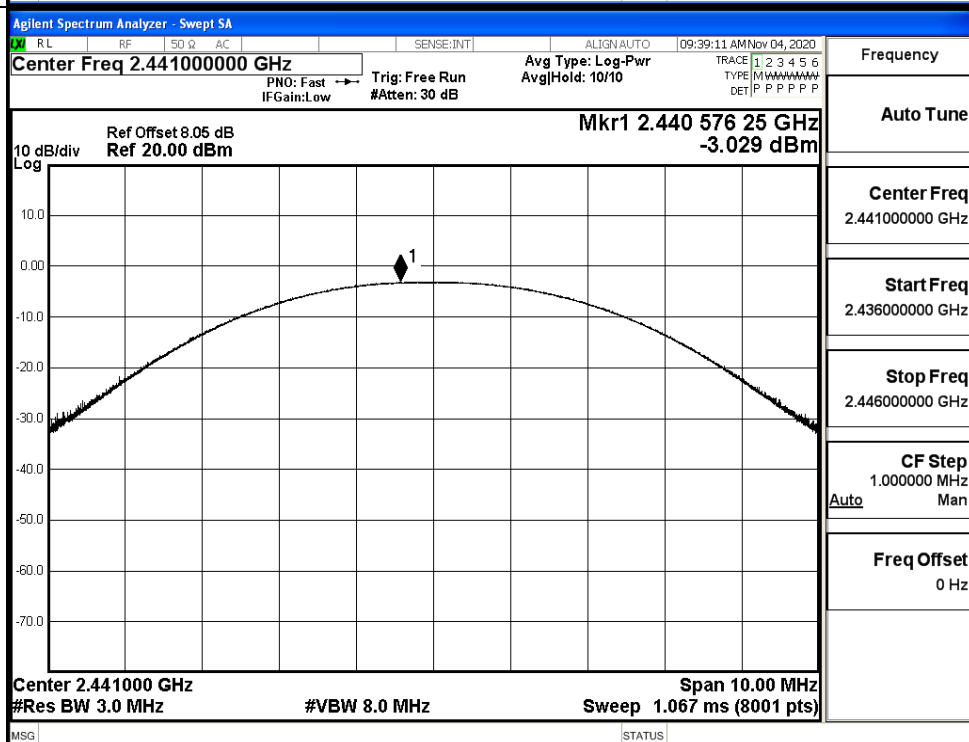
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	0.599	21	PASS
	MCH	-3.029	21	PASS
	HCH	-6.009	21	PASS
$\pi/4$ DQPSK	LCH	0.468	21	PASS
	MCH	-3.238	21	PASS
	HCH	-6.187	21	PASS
8DPSK	LCH	0.370	21	PASS
	MCH	-3.138	21	PASS
	HCH	-6.071	21	PASS

Test Graphs

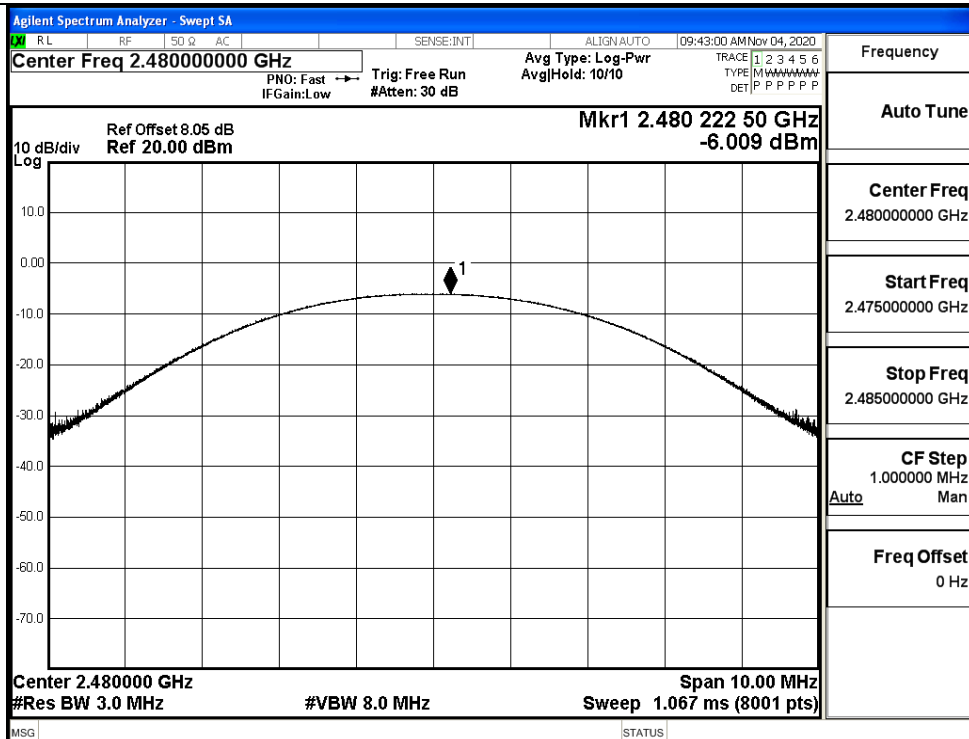
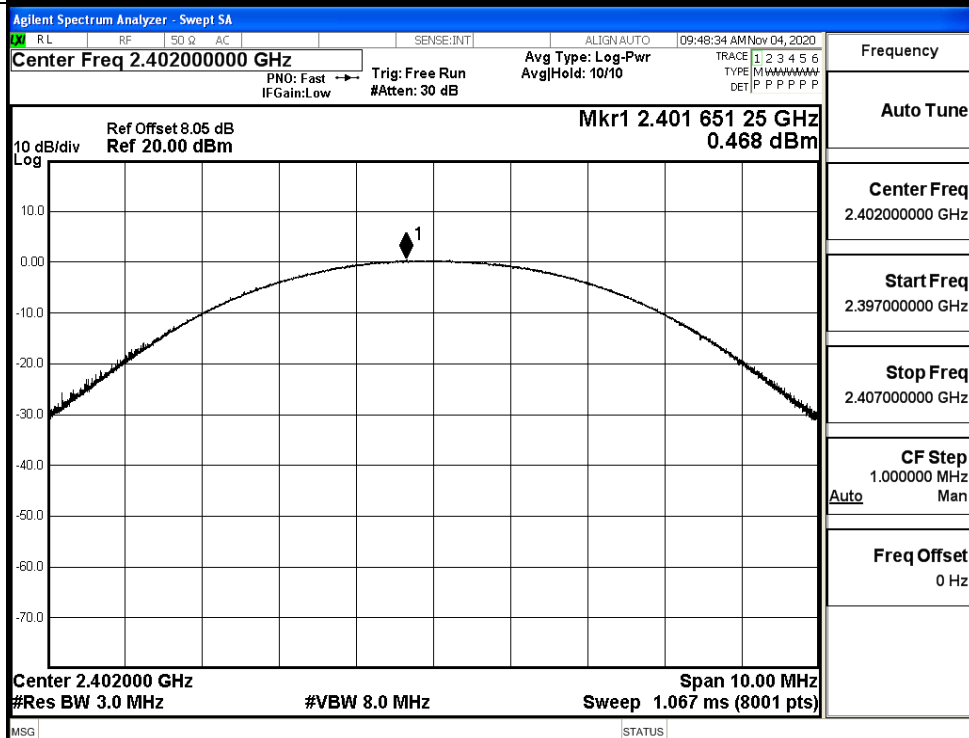
GFSK/LCH

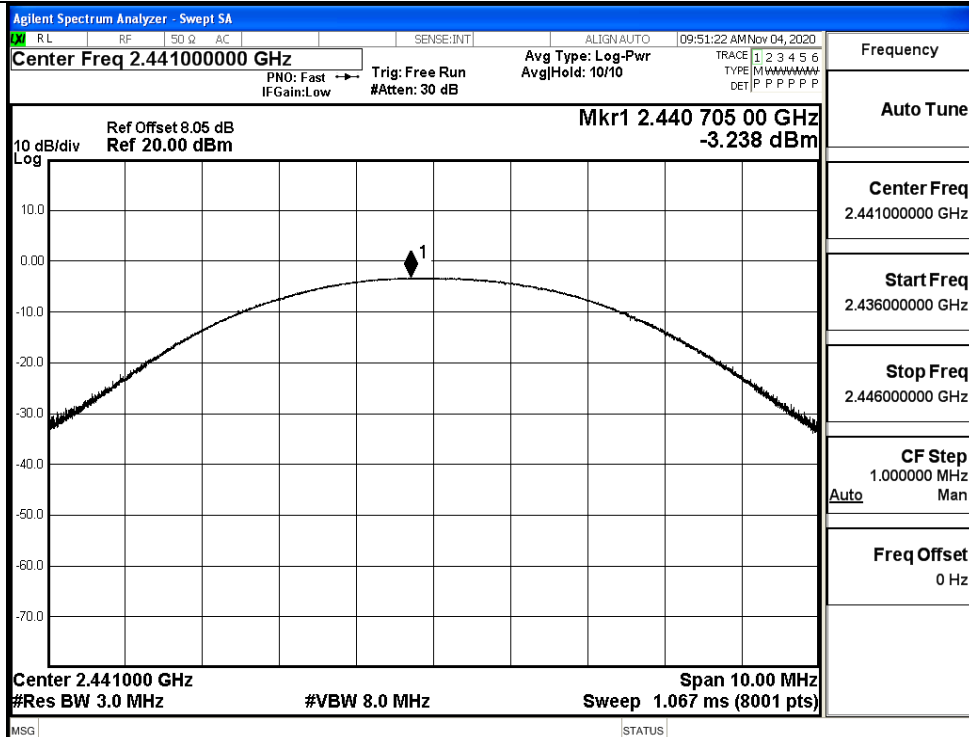
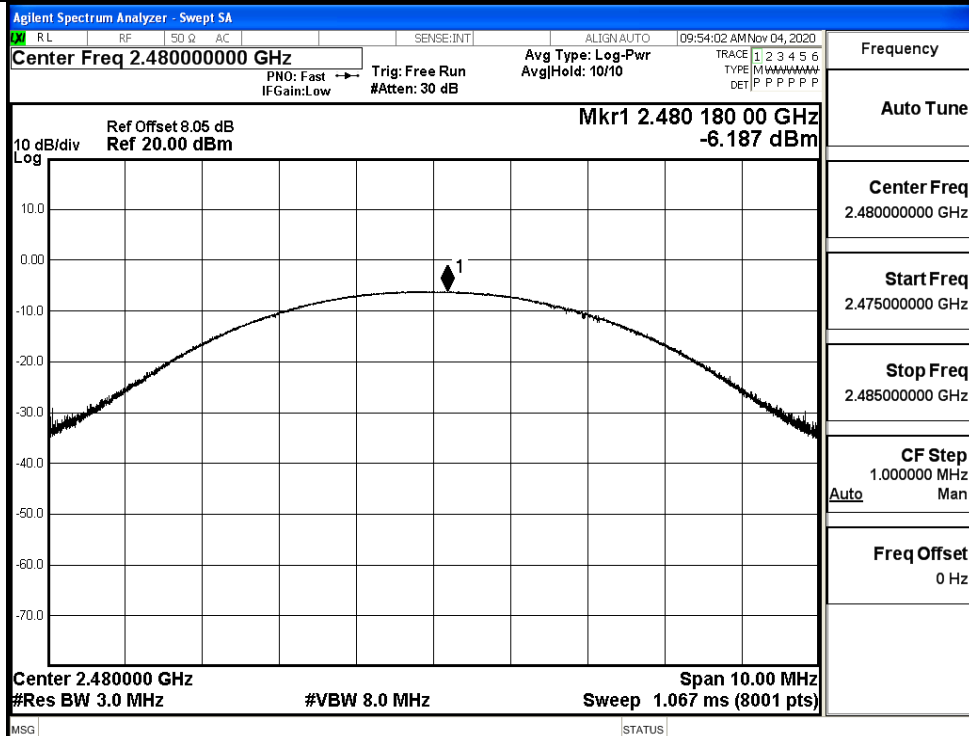


GFSK/MCH

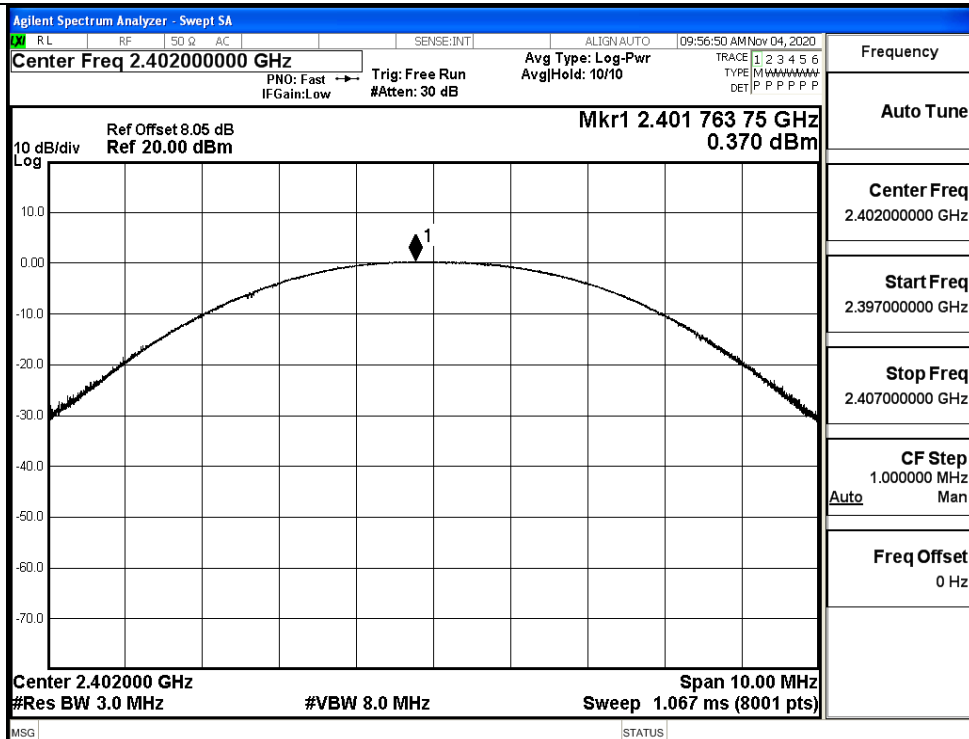


GFSK/HCH

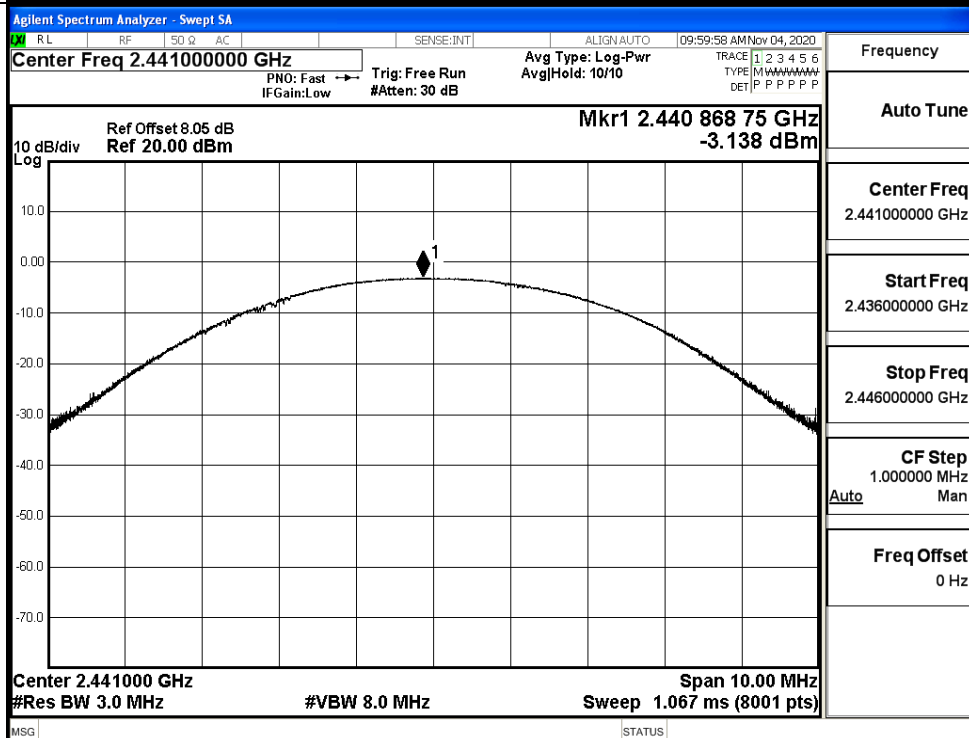
 $\pi/4$ DQPSK/LCH

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

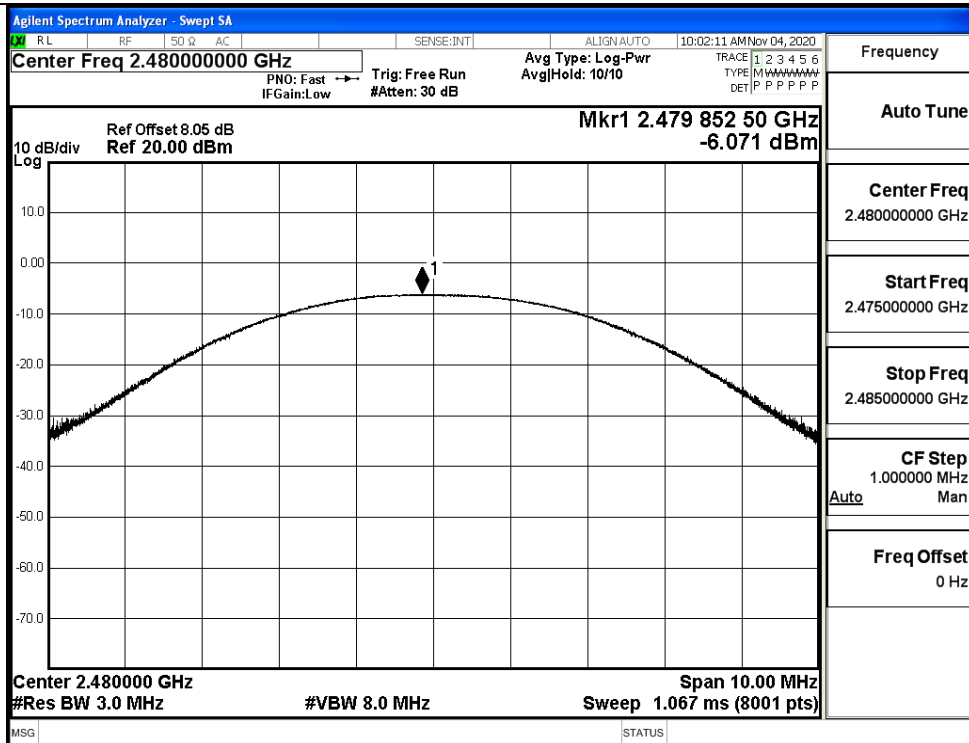
8DPSK/LCH



8DPSK/MCH



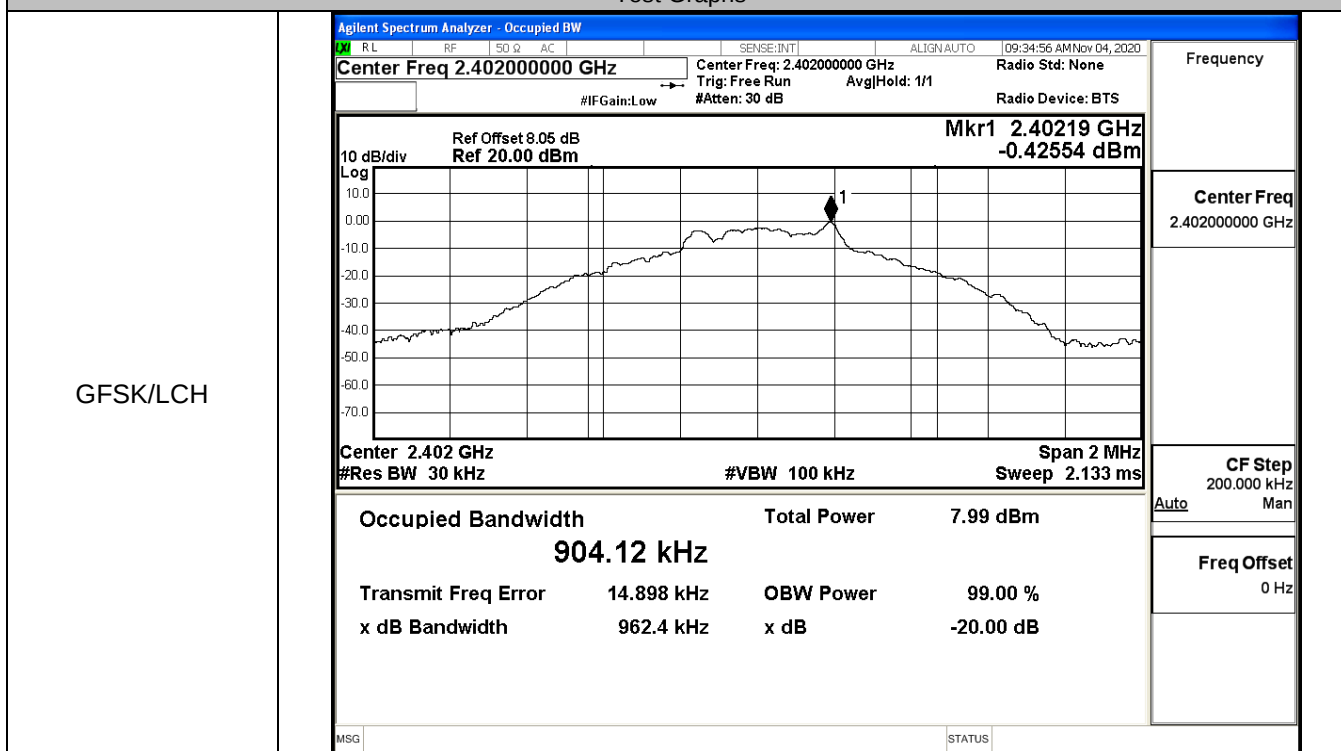
8DPSK/HCH



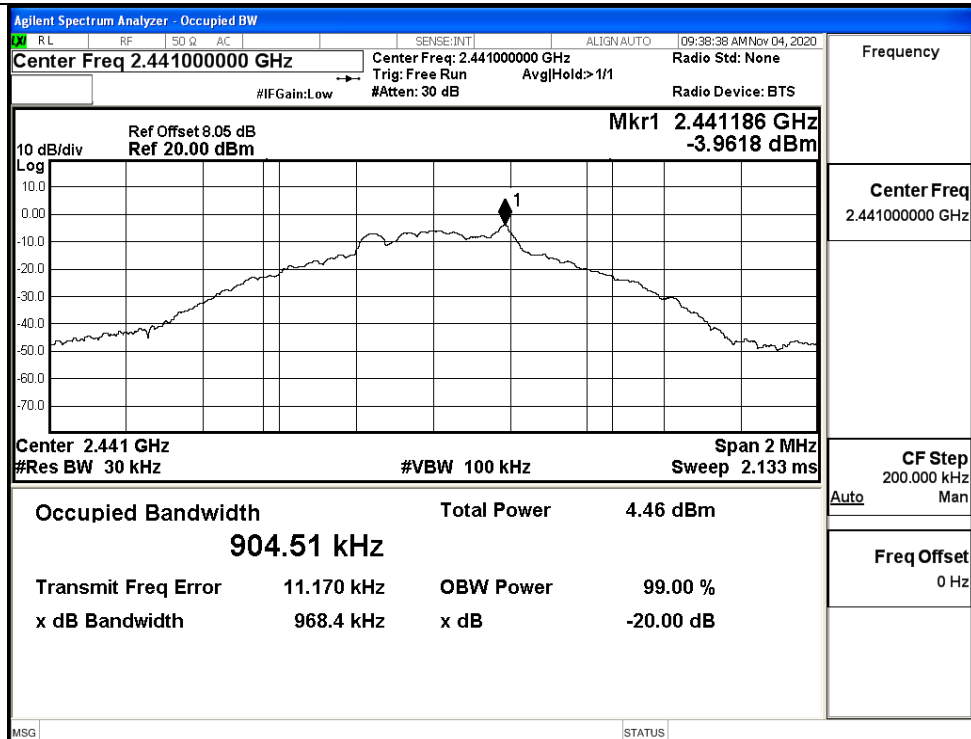
A.2 20dB Bandwidth

Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.9624	Not Specified	PASS
	MCH	0.9684	Not Specified	PASS
	HCH	0.9715	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.306	Not Specified	PASS
	MCH	1.315	Not Specified	PASS
	HCH	1.315	Not Specified	PASS
8DPSK	LCH	1.297	Not Specified	PASS
	MCH	1.300	Not Specified	PASS
	HCH	1.301	Not Specified	PASS

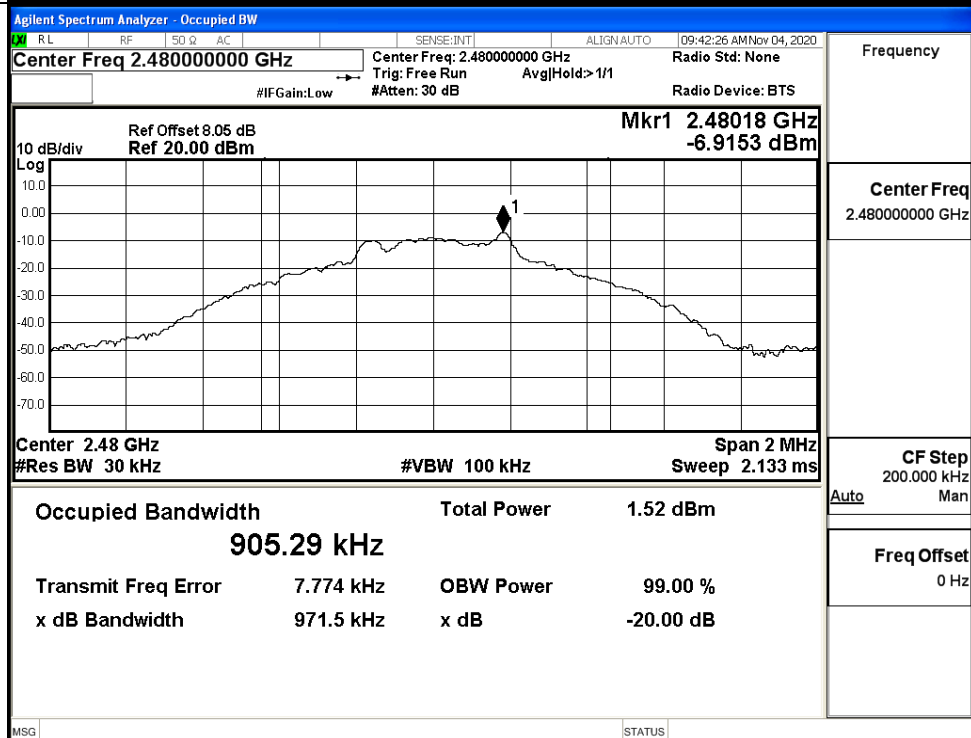
Test Graphs

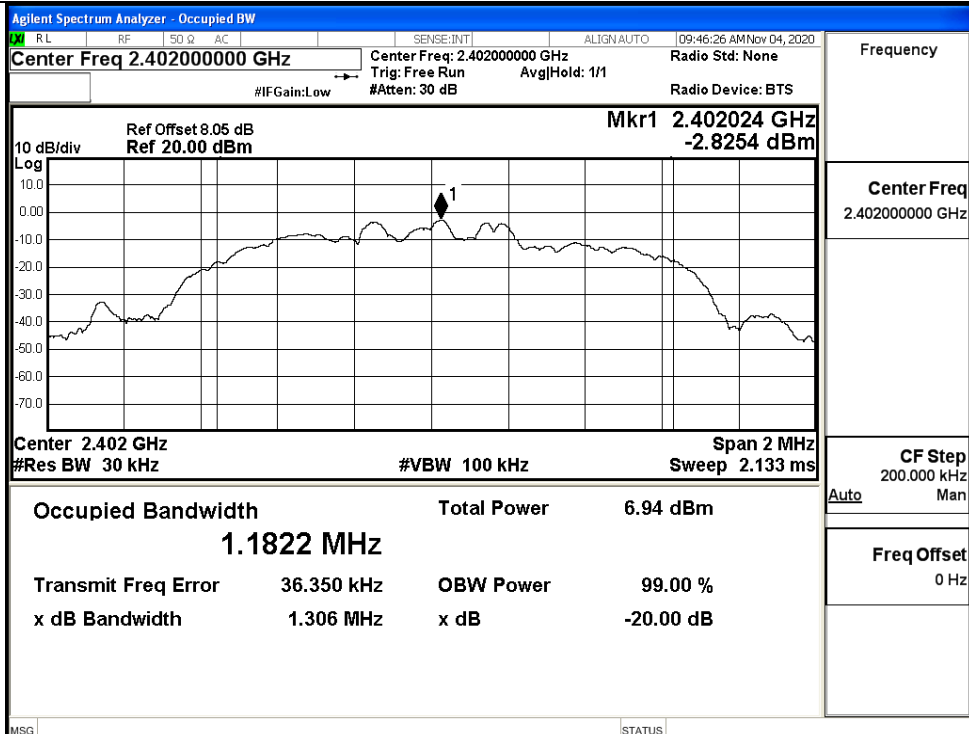


GFSK/MCH

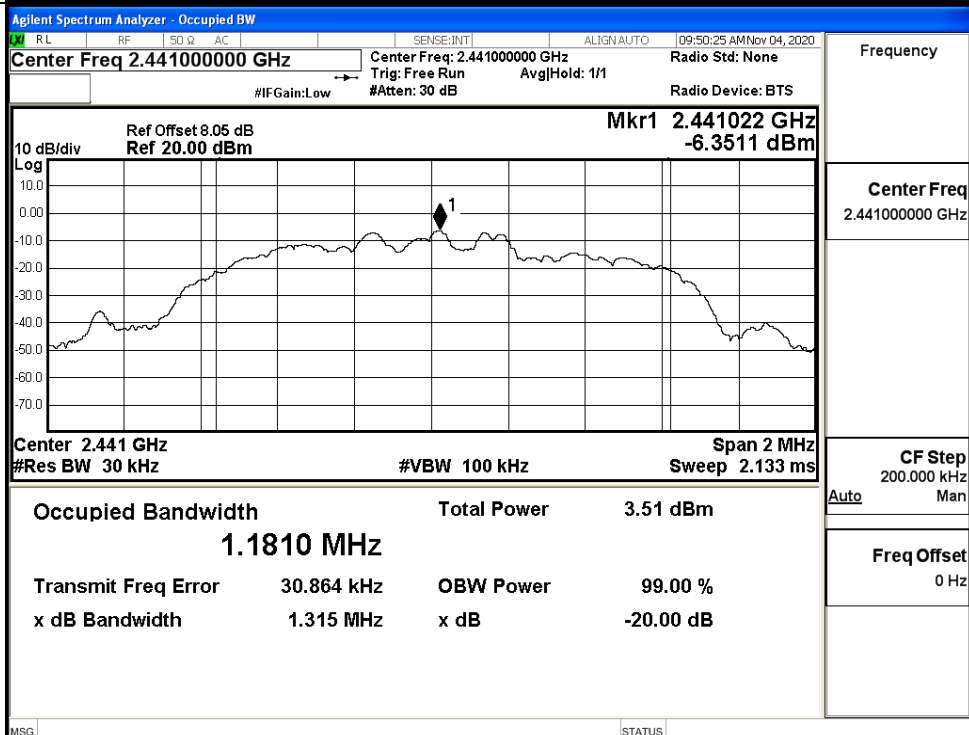


GFSK/HCH



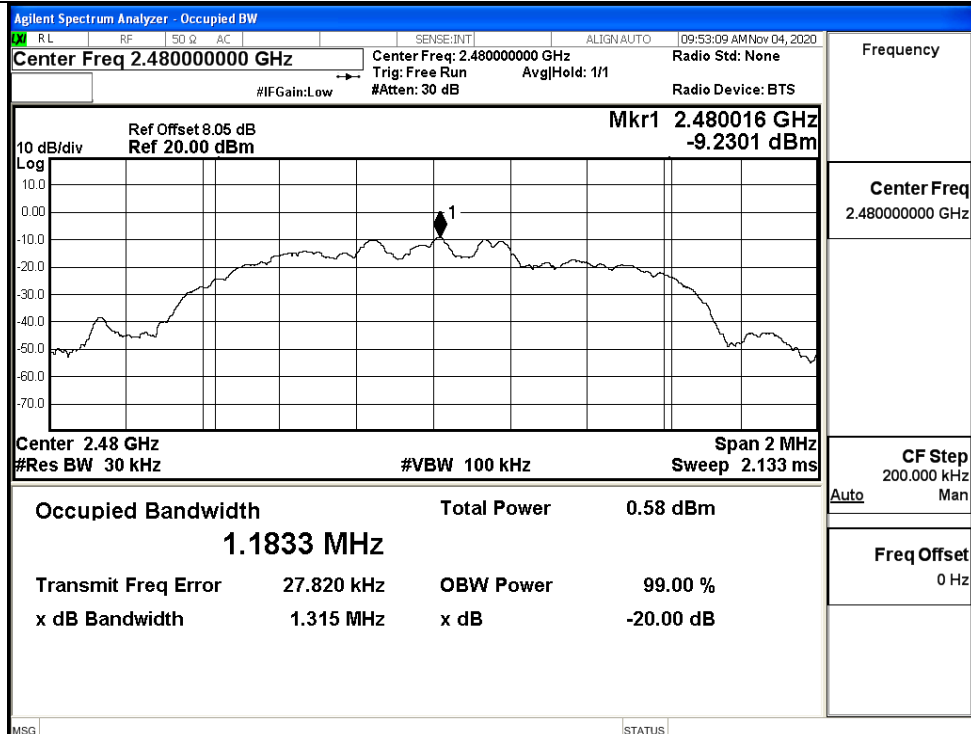
$\pi/4$ DQPSK/LCH

Frequency

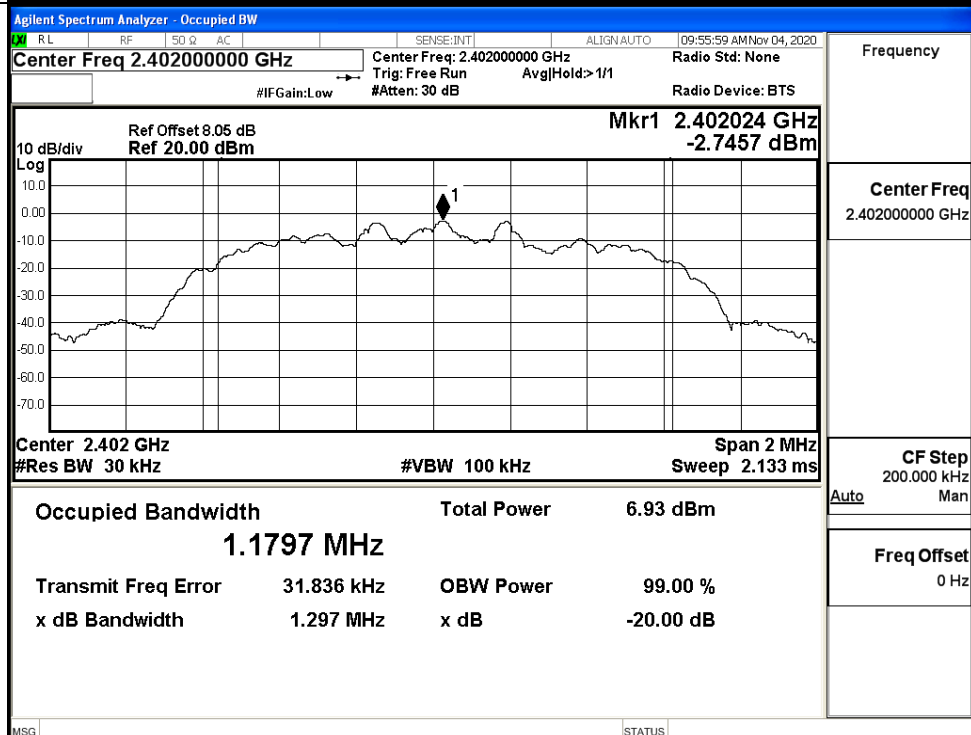
Center Freq
2.40200000 GHzCF Step
200.000 kHz
Auto ManFreq Offset
0 Hz $\pi/4$ DQPSK/MCH

Frequency

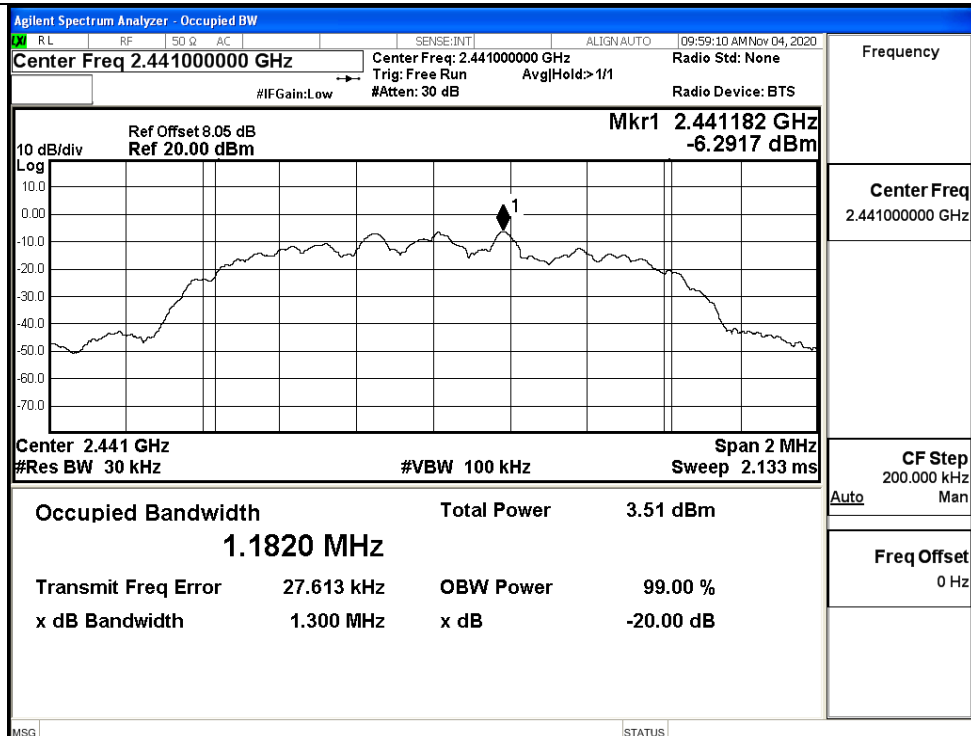
Center Freq
2.44100000 GHzCF Step
200.000 kHz
Auto ManFreq Offset
0 Hz

$\pi/4$ DQPSK/HCH

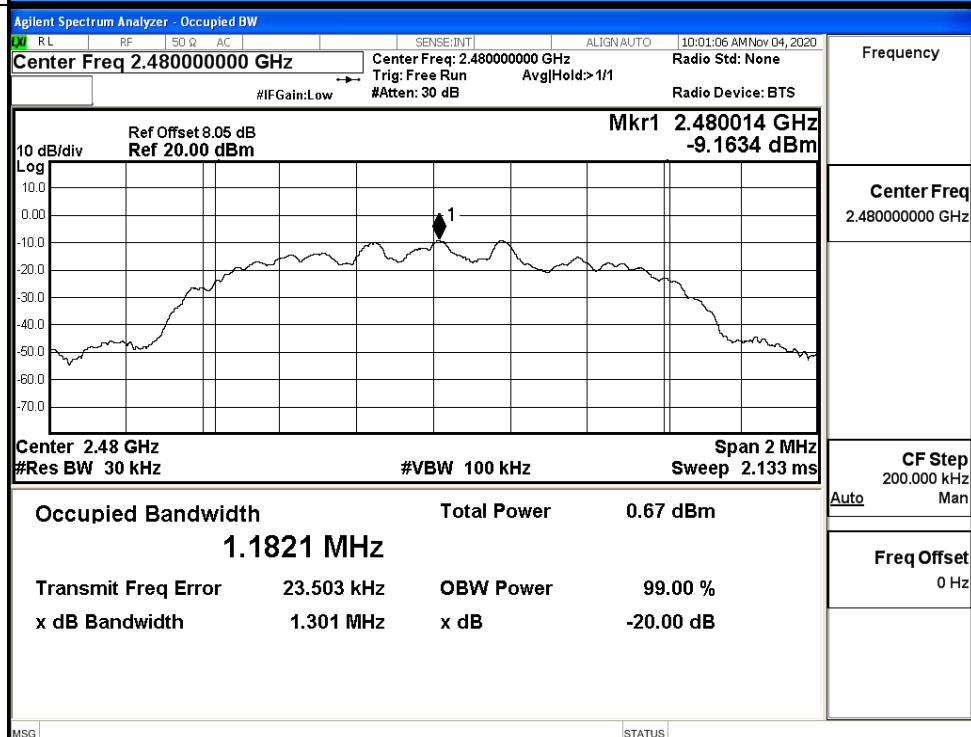
8DPSK/LCH



8DPSK/MCH



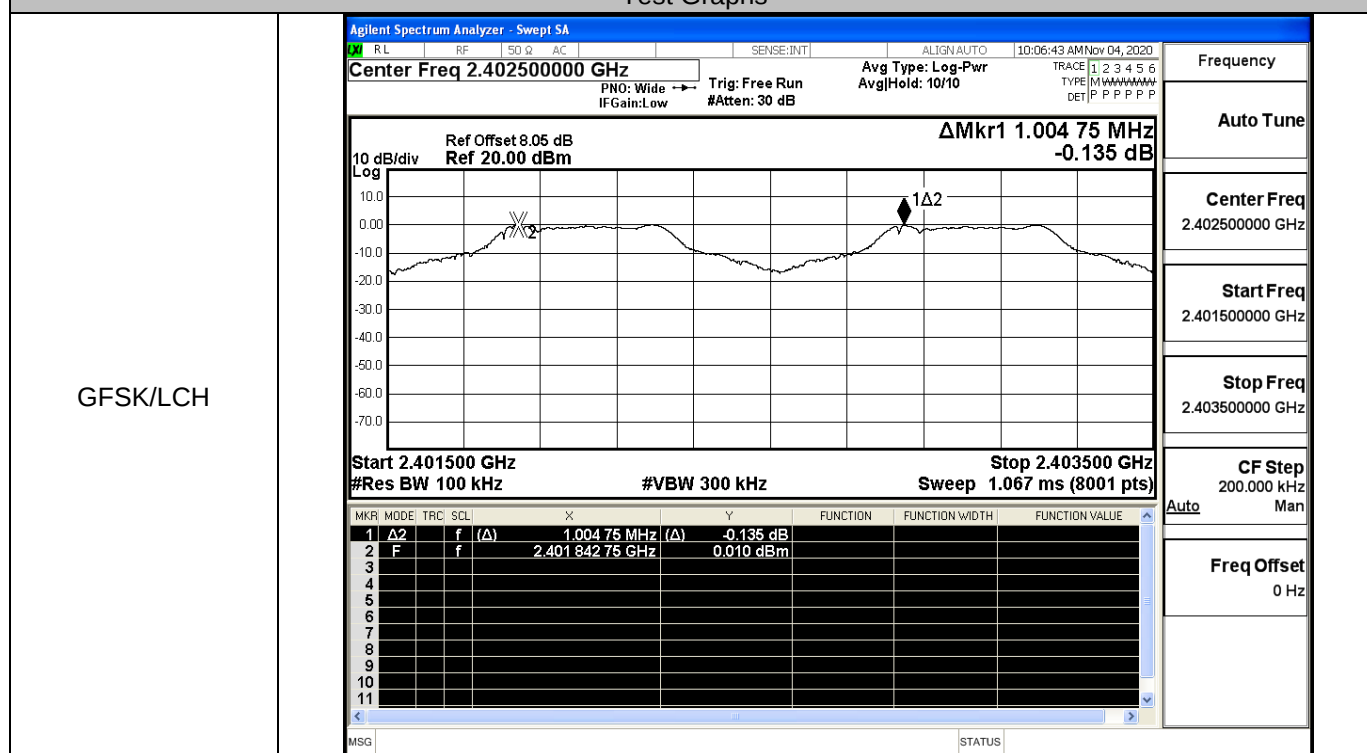
8DPSK/HCH



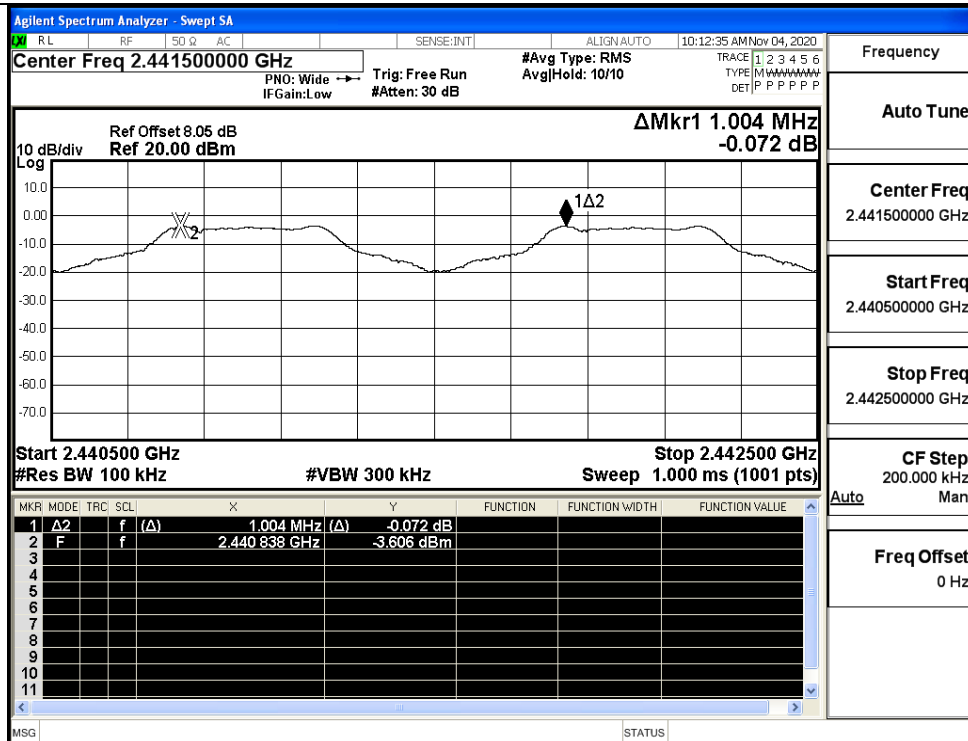
A.3 Carrier Frequency Separation

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.005	0.648	PASS
	MCH	1.004	0.648	PASS
	HCH	1.000	0.648	PASS
$\pi/4$ DQPSK	LCH	1.300	0.877	PASS
	MCH	0.964	0.877	PASS
	HCH	0.984	0.877	PASS
8DPSK	LCH	1.000	0.867	PASS
	MCH	1.010	0.867	PASS
	HCH	0.998	0.867	PASS

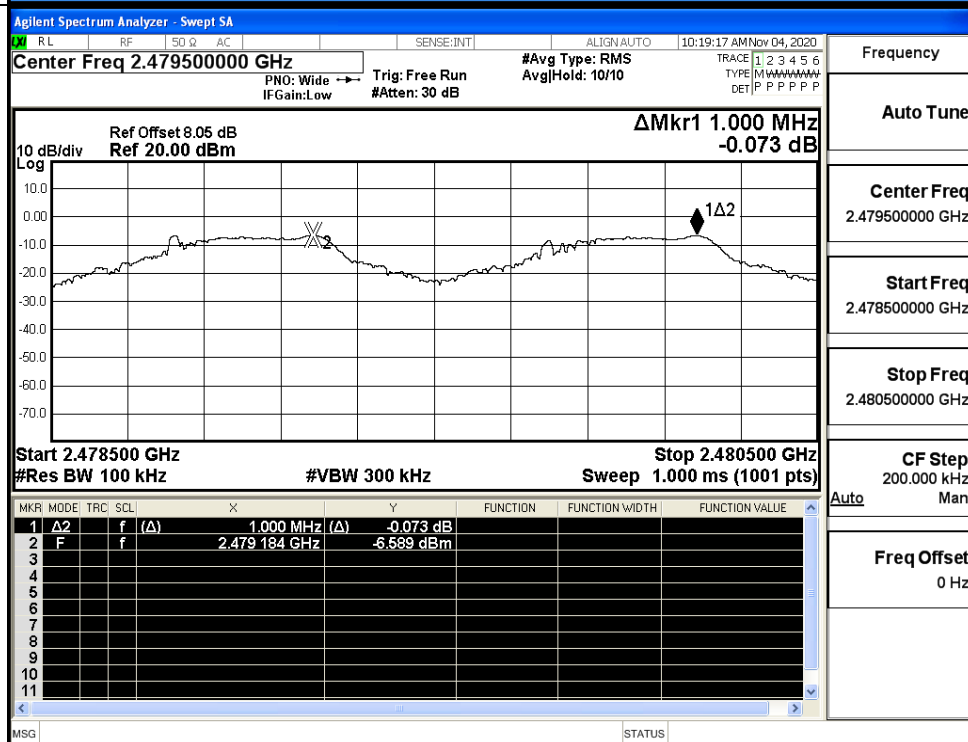
Test Graphs

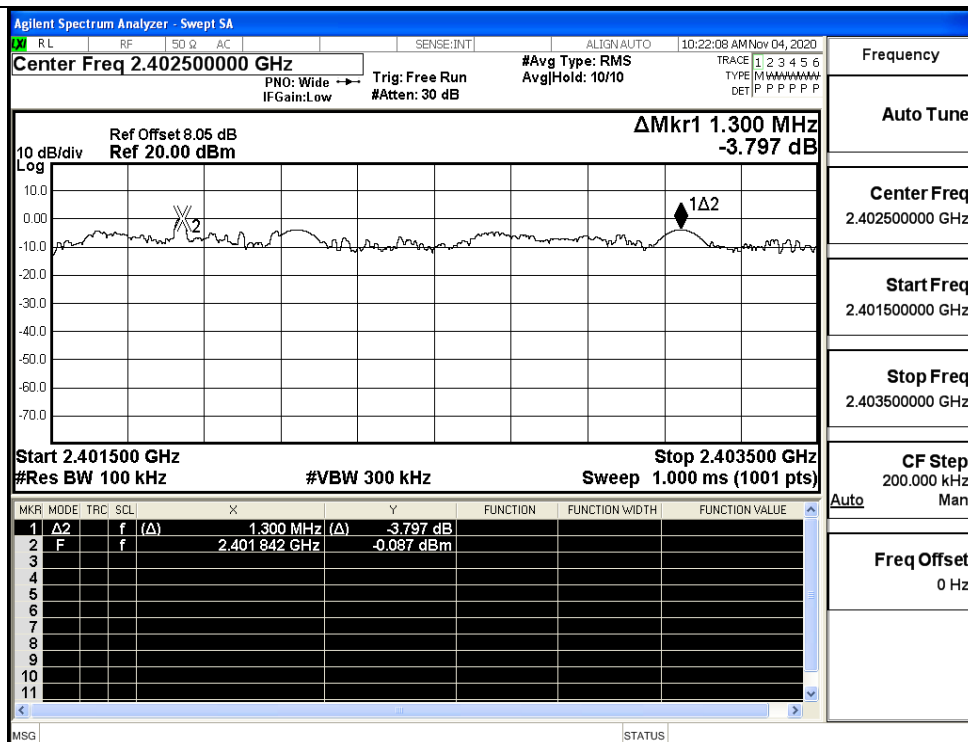


GFSK/MCH



GFSK/HCH



$\pi/4$ DQPSK/LCH

Frequency

Auto Tune

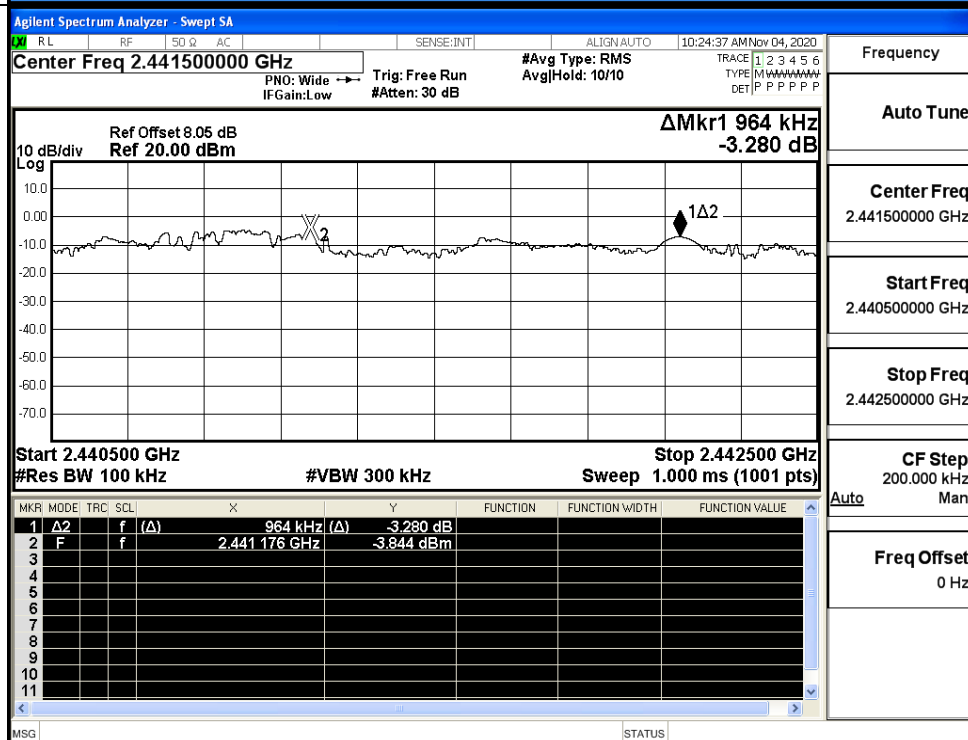
Center Freq
2.402500000 GHz

Start Freq
2.401500000 GHz

Stop Freq
2.403500000 GHz

CF Step
200.000 kHz
Man

Freq Offset
0 Hz

 $\pi/4$ DQPSK/MCH

Frequency

Auto Tune

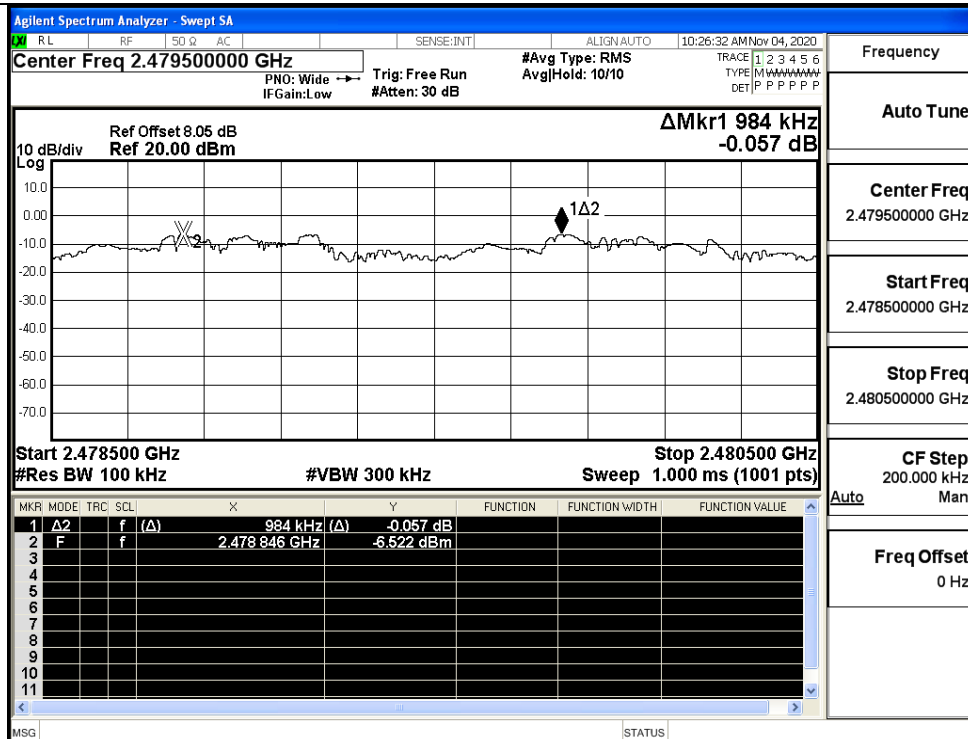
Center Freq
2.441500000 GHz

Start Freq
2.440500000 GHz

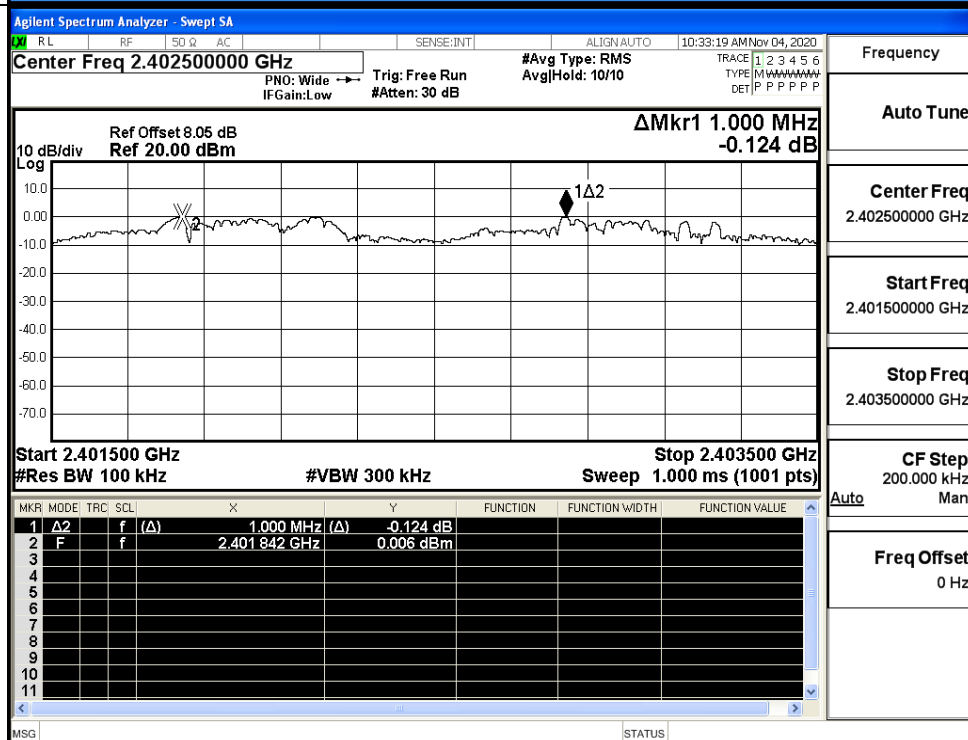
Stop Freq
2.442500000 GHz

CF Step
200.000 kHz
Man

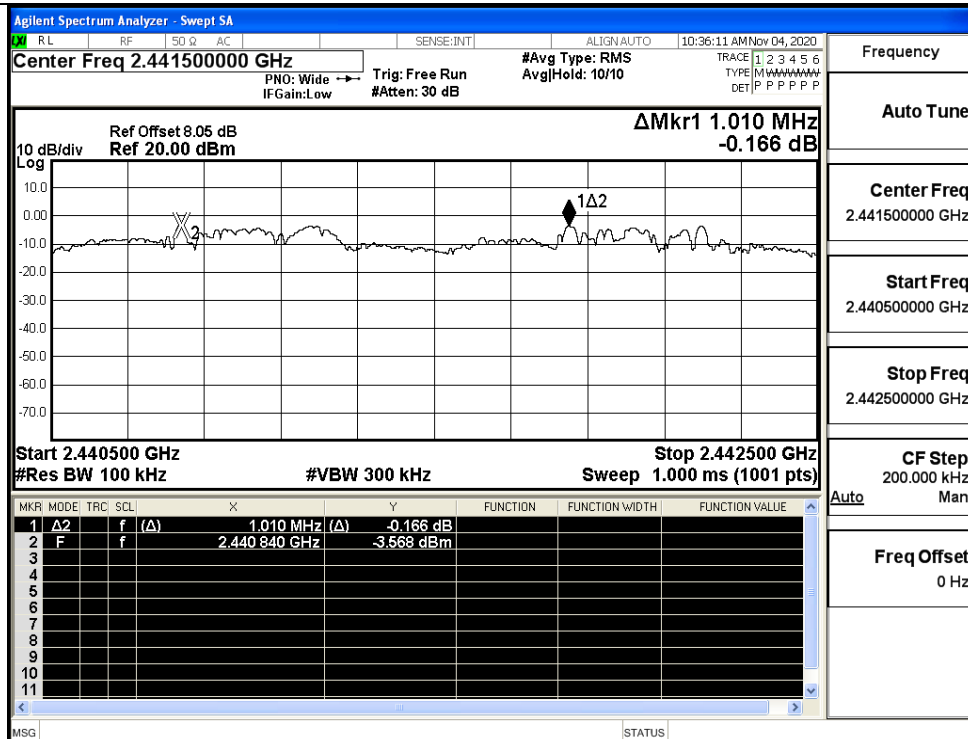
Freq Offset
0 Hz

$\pi/4$ DQPSK/HCH

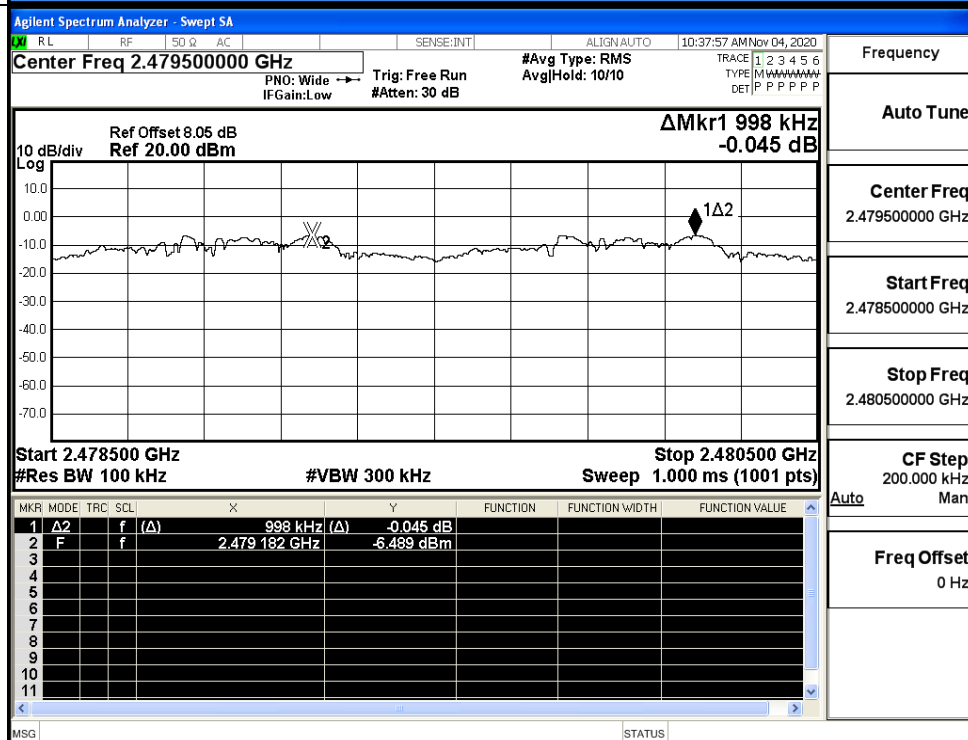
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

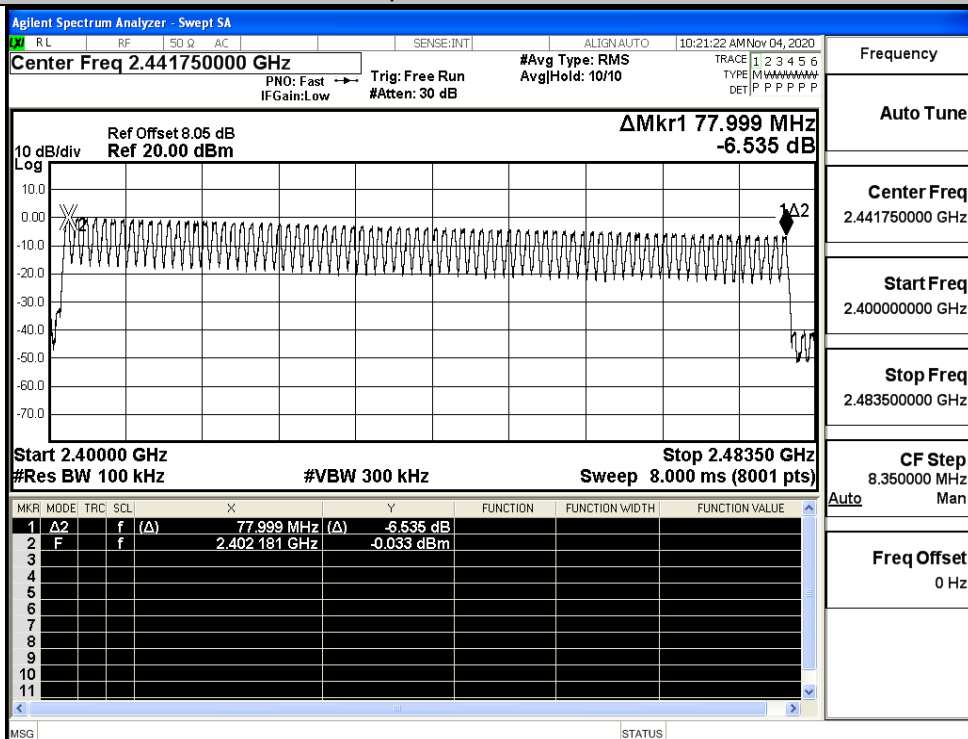


A.4 Hopping Channel Number

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



Frequency

Auto Tune

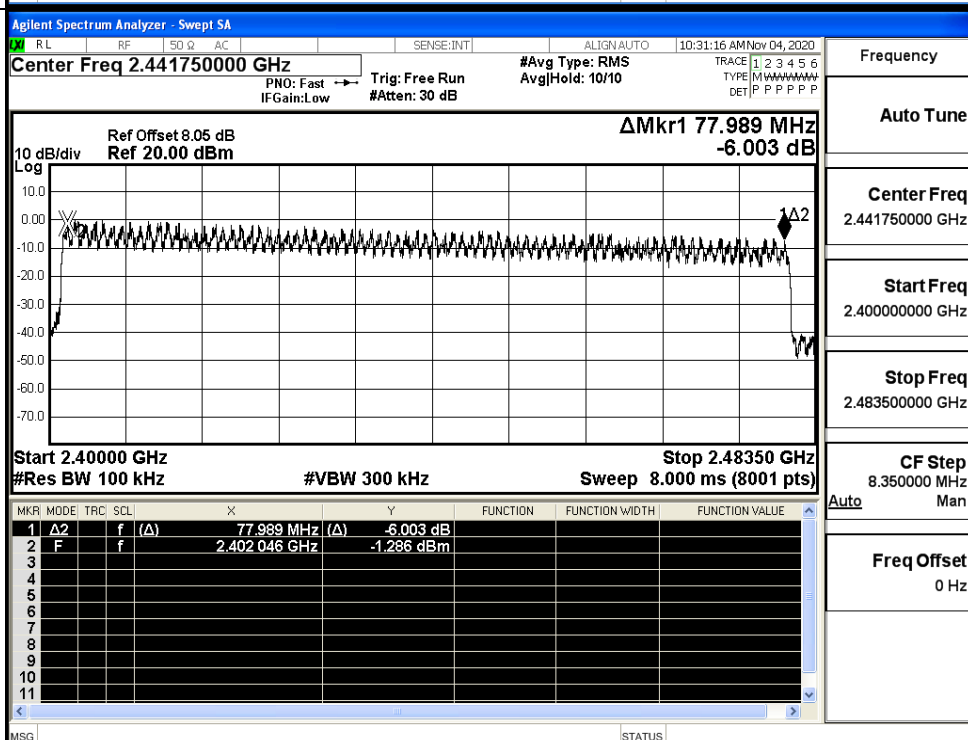
Center Freq
2.441750000 GHz

Start Freq
2.400000000 GHz

Stop Freq
2.483500000 GHz

CF Step
8.350000 MHz
Man

Freq Offset
0 Hz

 $\pi/4$ DQPSK/Hop

Frequency

Auto Tune

Center Freq
2.441750000 GHz

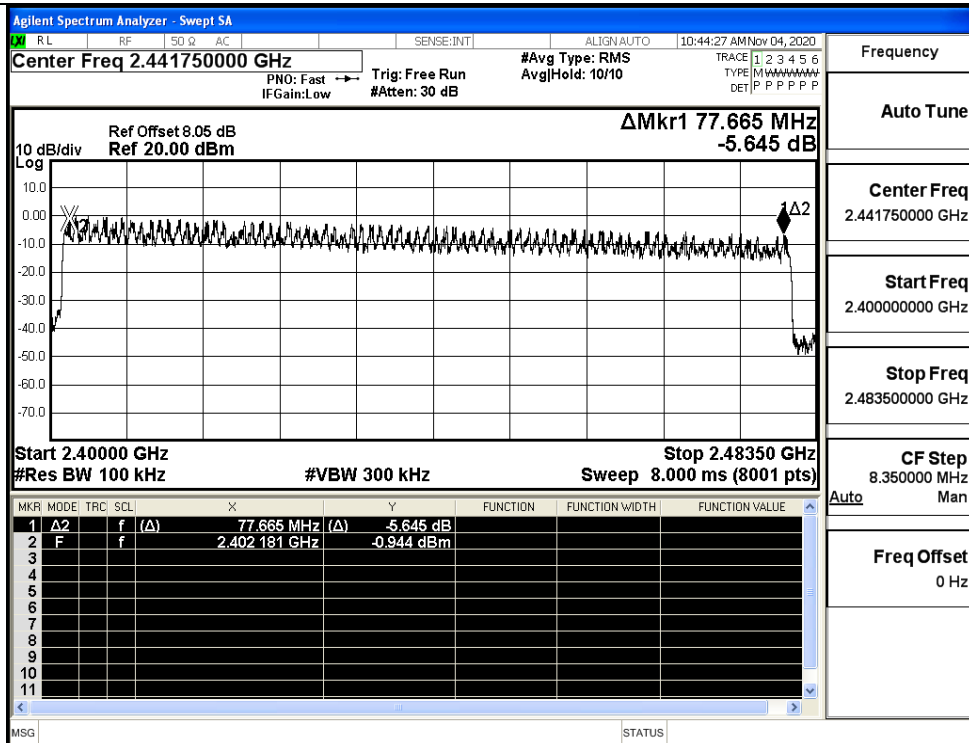
Start Freq
2.400000000 GHz

Stop Freq
2.483500000 GHz

CF Step
8.350000 MHz
Man

Freq Offset
0 Hz

8DPSK/Hop

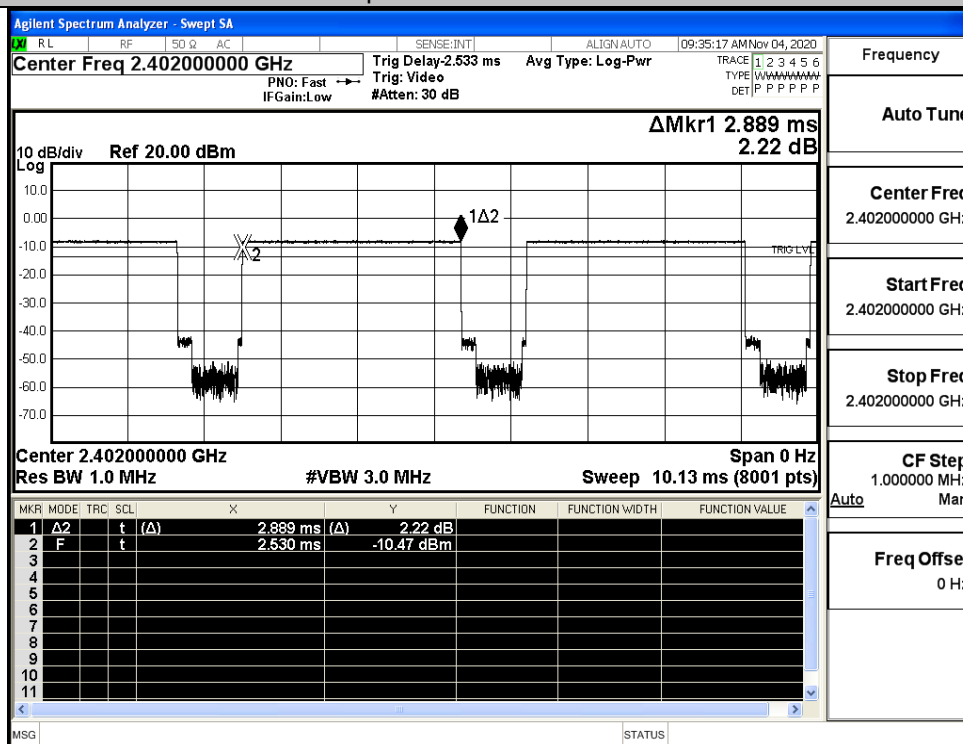


A.5 Dwell Time

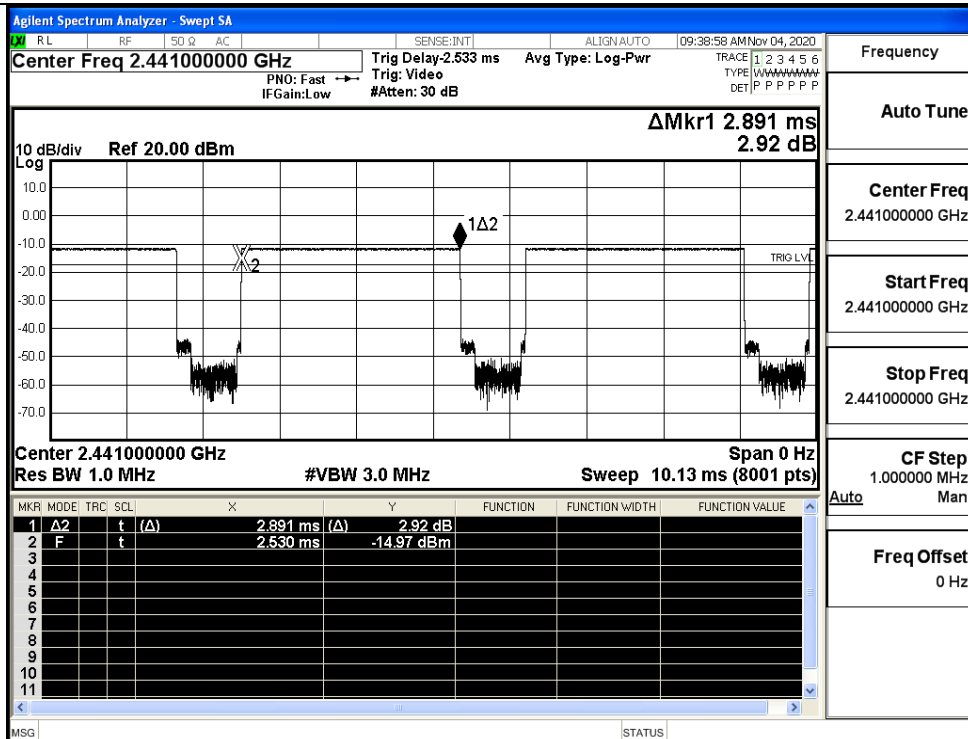
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.89	106.7	0.308	0.4	PASS
	DH5	MCH	2.89	106.7	0.308	0.4	PASS
	DH5	HCH	2.89	106.7	0.308	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.89	106.7	0.014	0.4	PASS
	2DH5	MCH	2.89	106.7	0.014	0.4	PASS
	2DH5	HCH	2.89	106.7	0.014	0.4	PASS
8DPSK	3DH5	LCH	2.89	106.7	0.014	0.4	PASS
	3DH5	MCH	2.89	106.7	0.014	0.4	PASS
	3DH5	HCH	2.89	106.7	0.014	0.4	PASS

Test Graphs

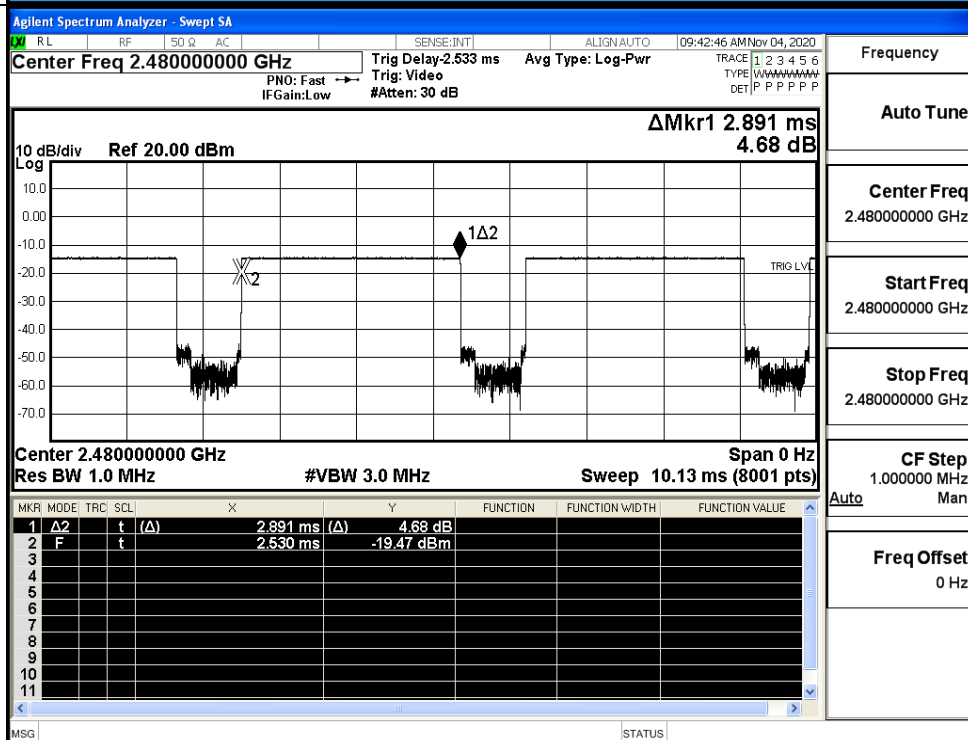
GFSK_DH5/LCH



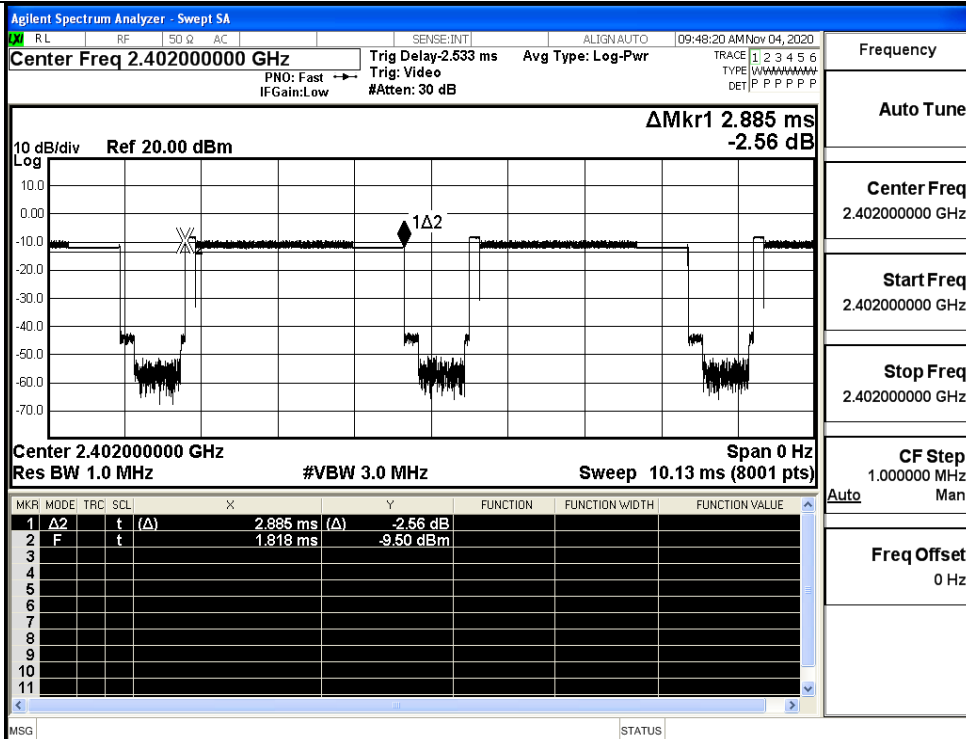
GFSK_DH5/MCH



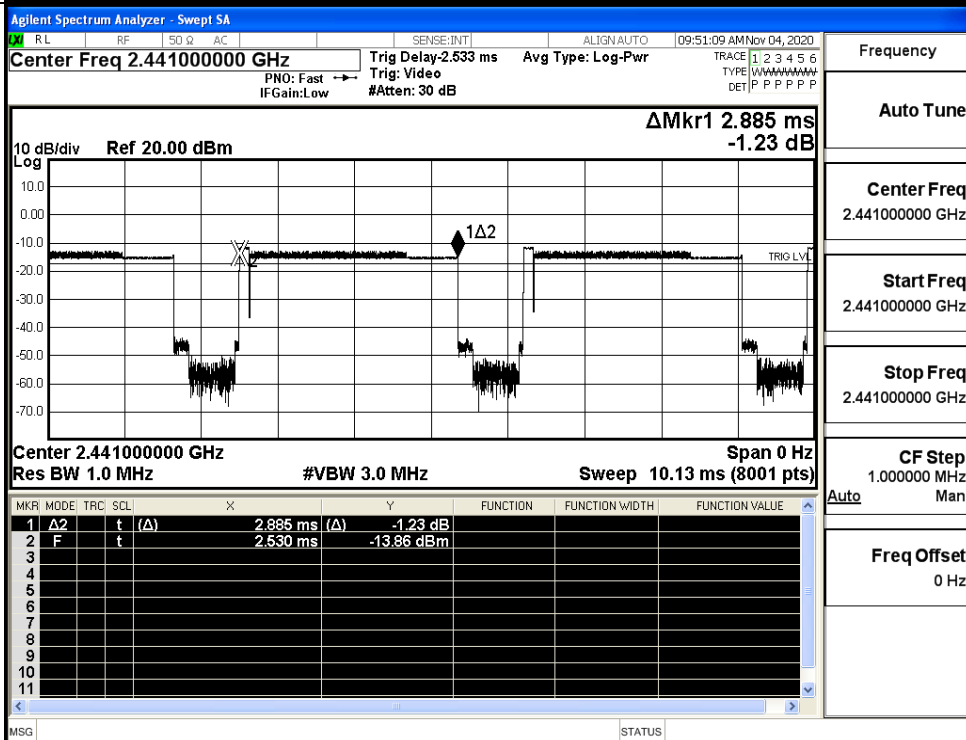
GFSK_DH5/HCH



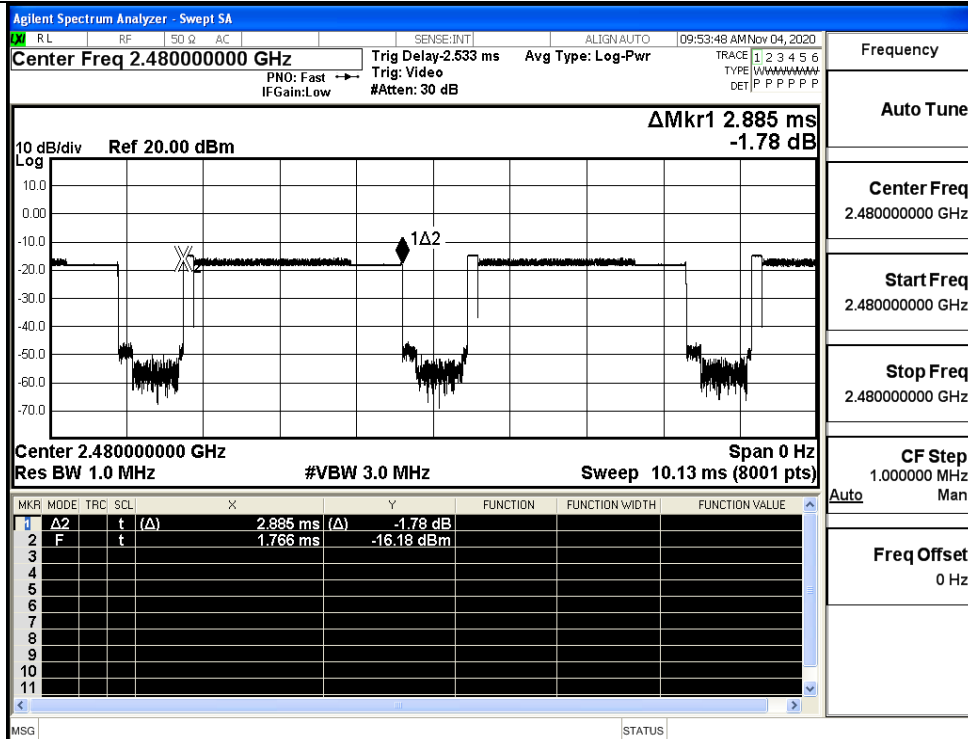
$\pi/4$ DQPSK
_2DH5/LCH



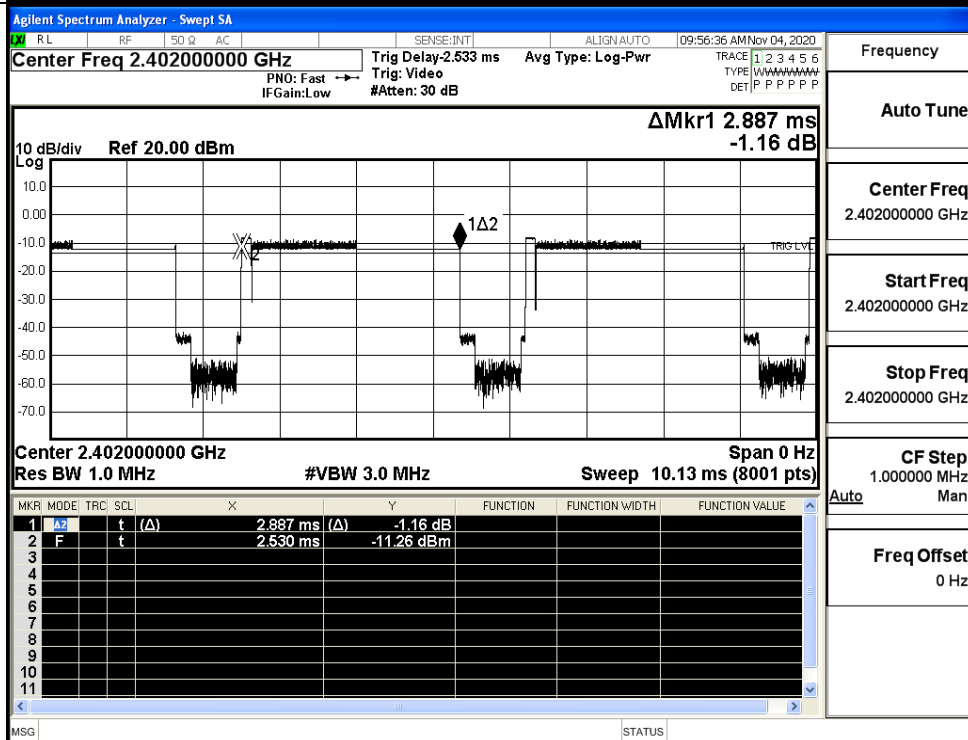
$\pi/4$ DQPSK
_2DH5/MCH



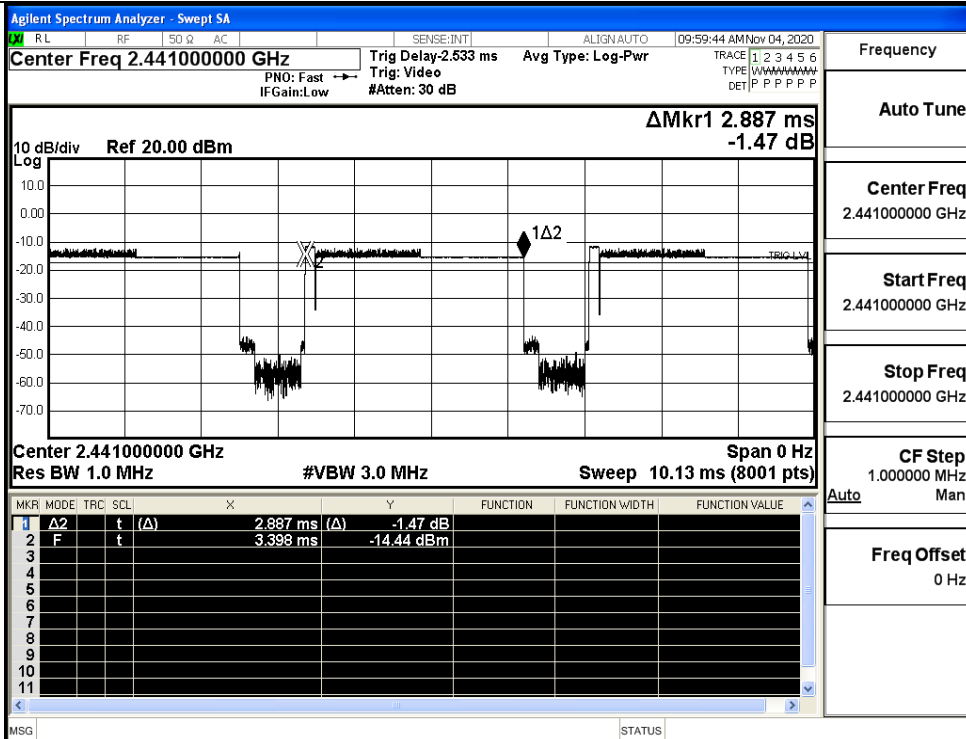
$\pi/4$ DQPSK
_2DH5/HCH



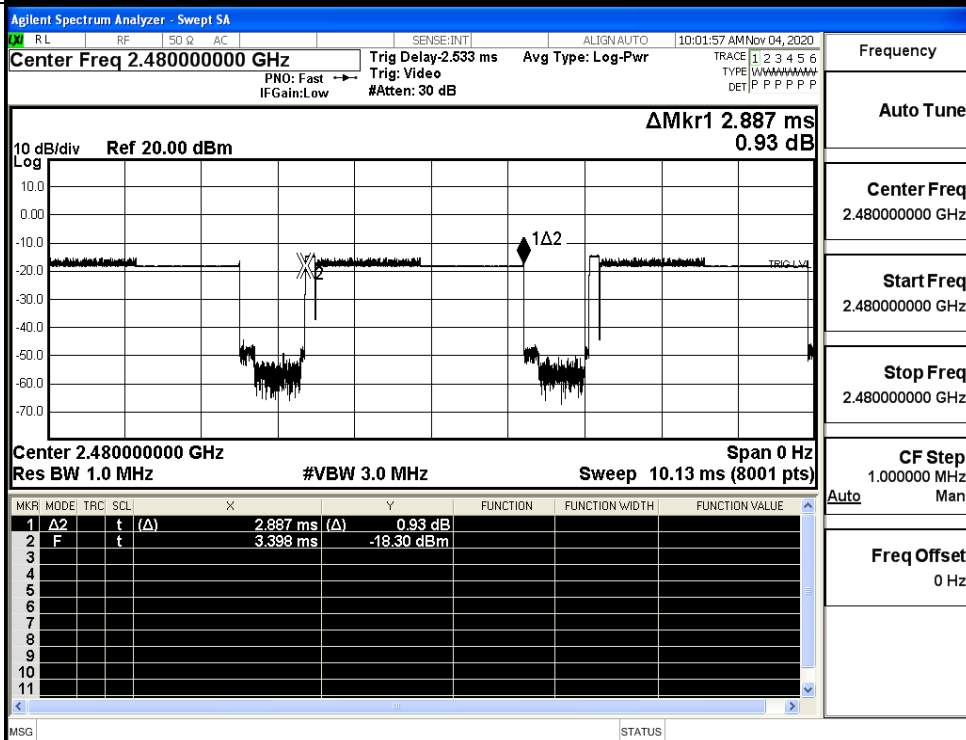
8DPSK _3DH5/LCH



8DPSK_3DH5/MCH



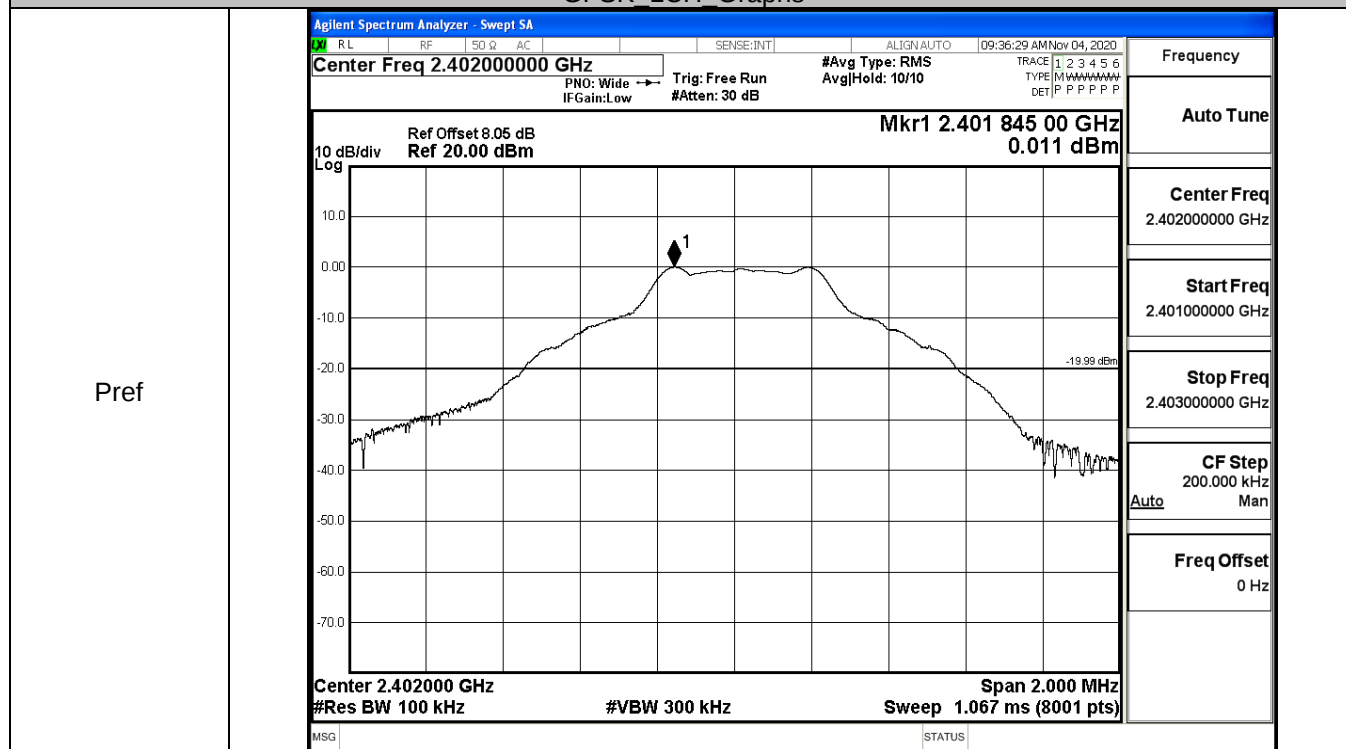
8DPSK_3DH5/HCH

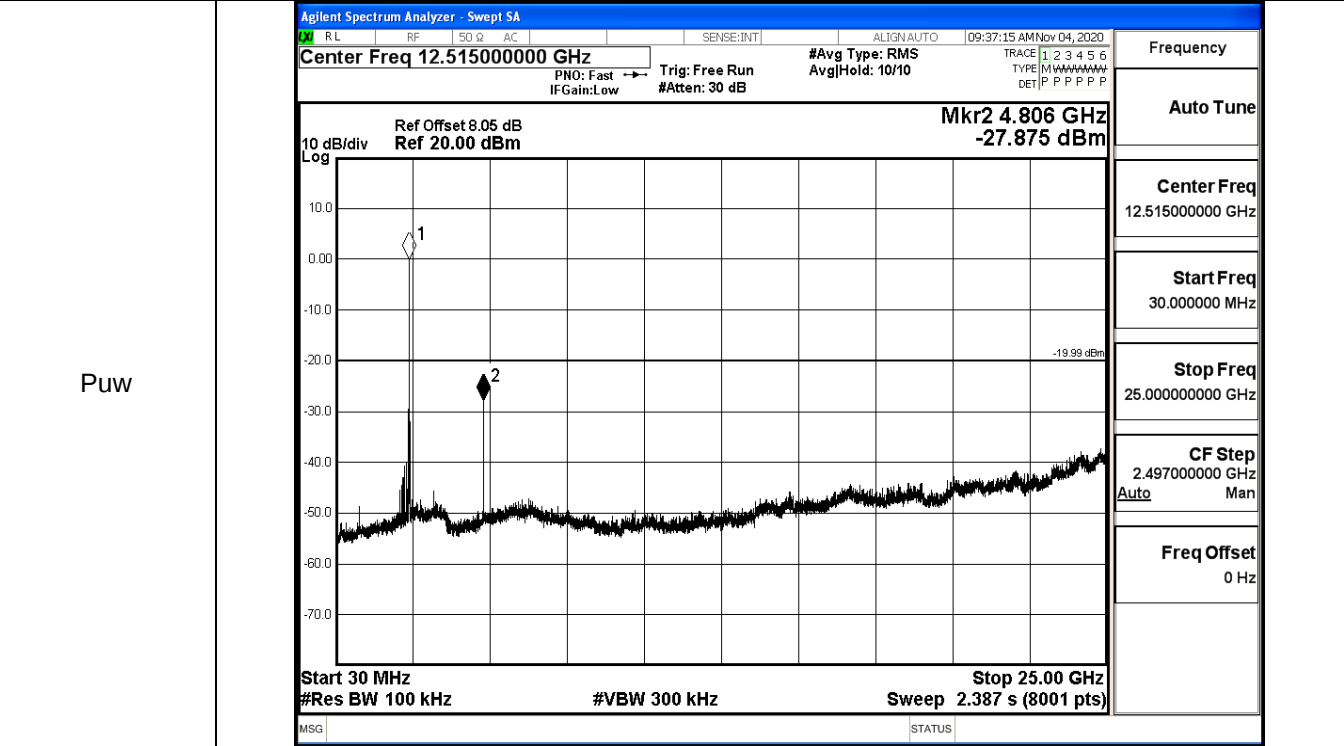


A.6 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	0.011	-27.875	-19.989	PASS
	MCH	-3.571	-33.644	-23.571	PASS
	HCH	-6.523	-37.668	-26.523	PASS
$\pi/4$ DQPSK	LCH	-0.097	-37.956	-20.097	PASS
	MCH	-3.692	-37.469	-23.692	PASS
	HCH	-6.957	-38.646	-26.957	PASS
8DPSK	LCH	-0.159	-37.307	-20.159	PASS
	MCH	-3.56	-37.890	-23.560	PASS
	HCH	-6.523	-38.392	-26.523	PASS

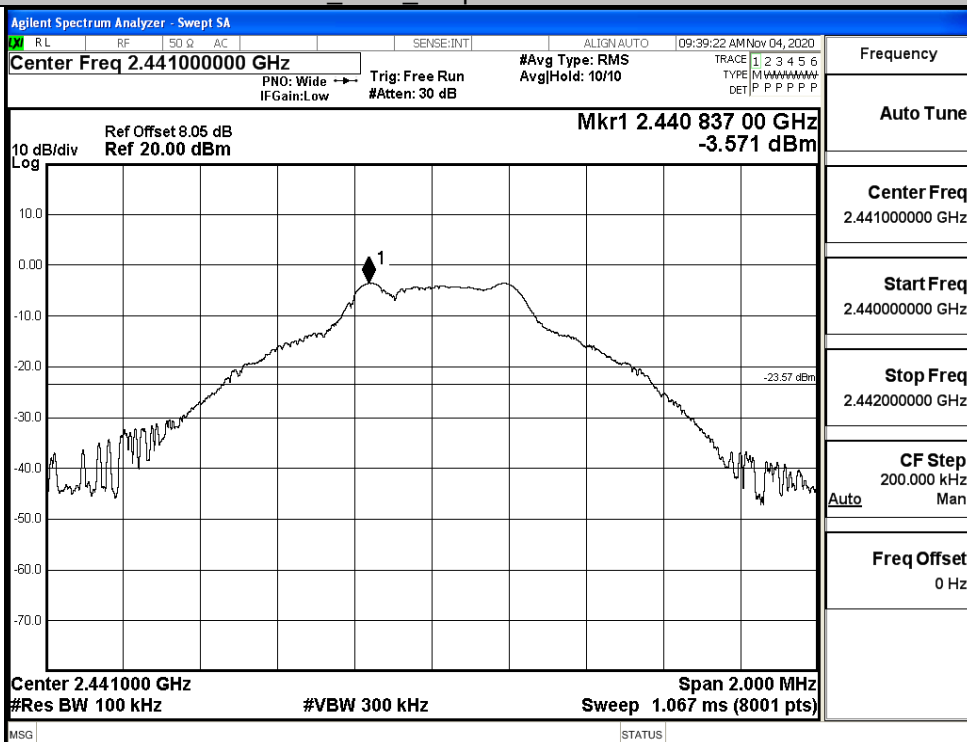
GFSK LCH Graphs



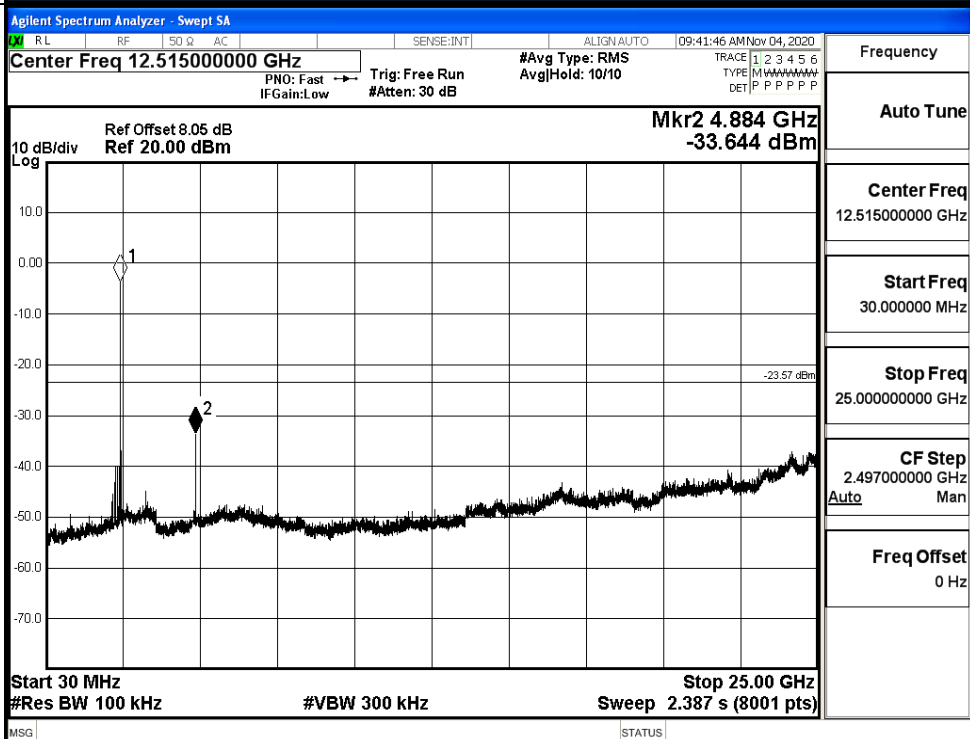


GFSK_MCH_Graphs

Pref

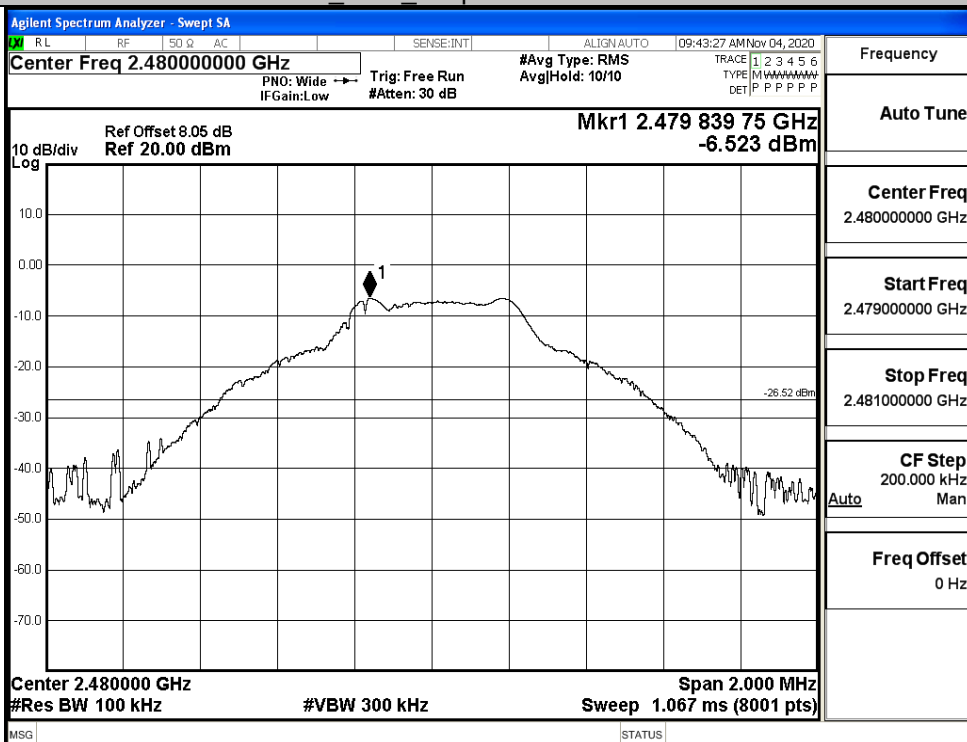


Puw

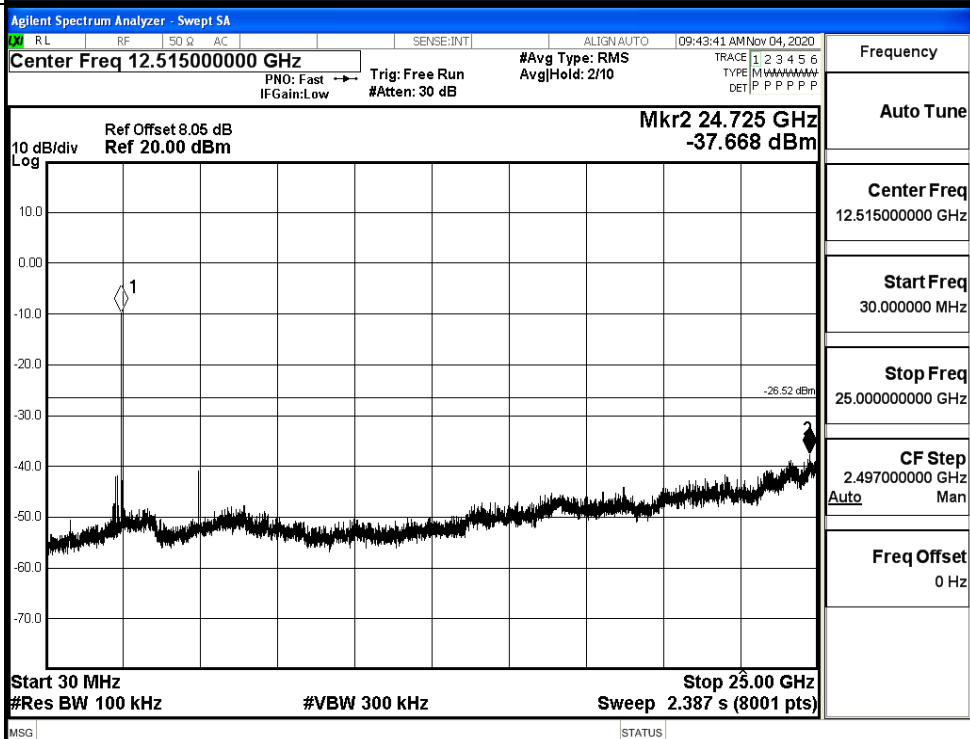


GFSK_HCH_Graphs

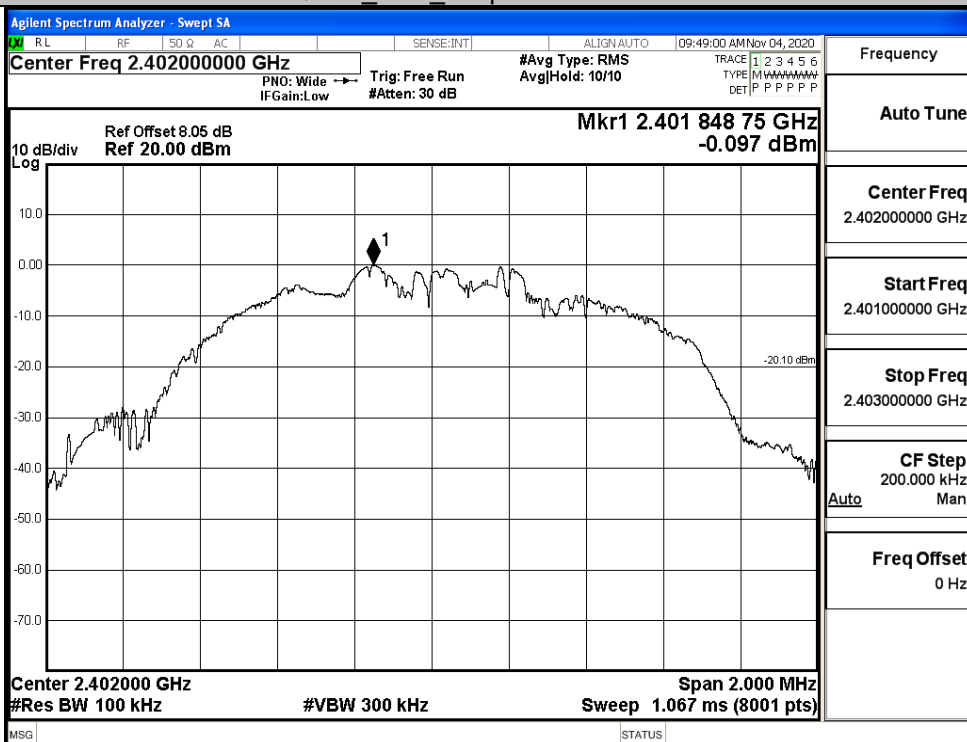
Pref



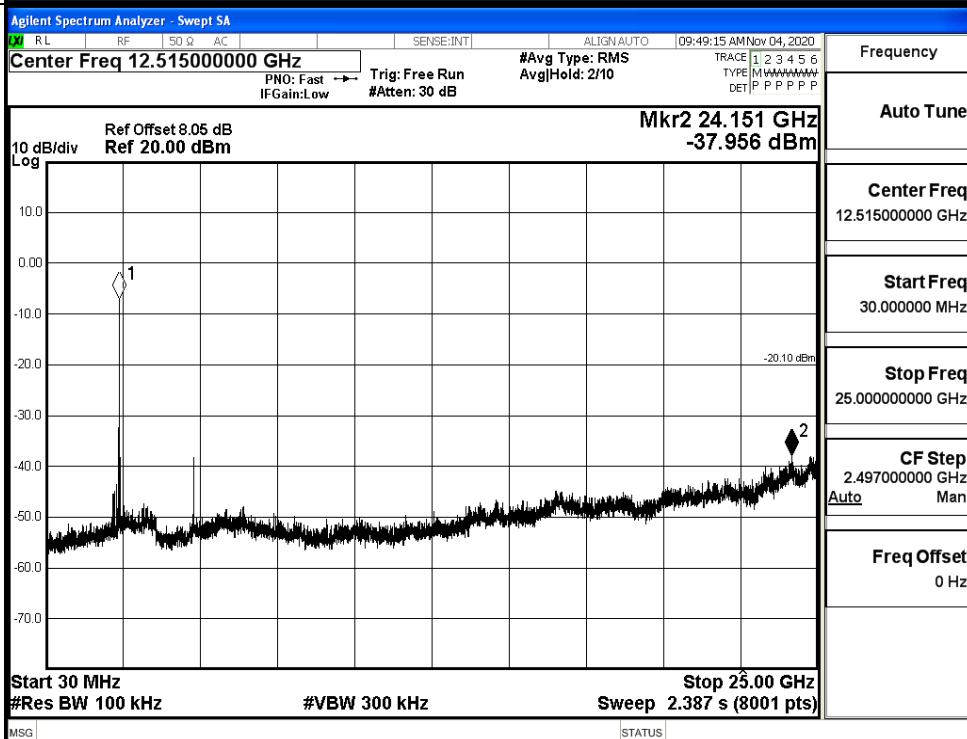
Puw



Pref

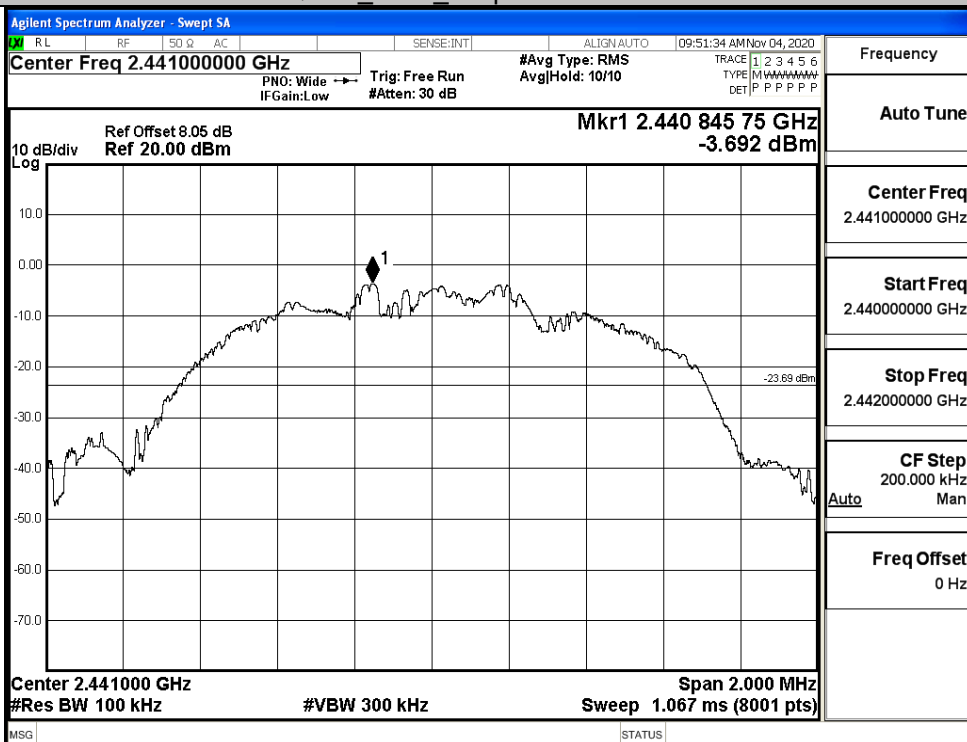


Puw

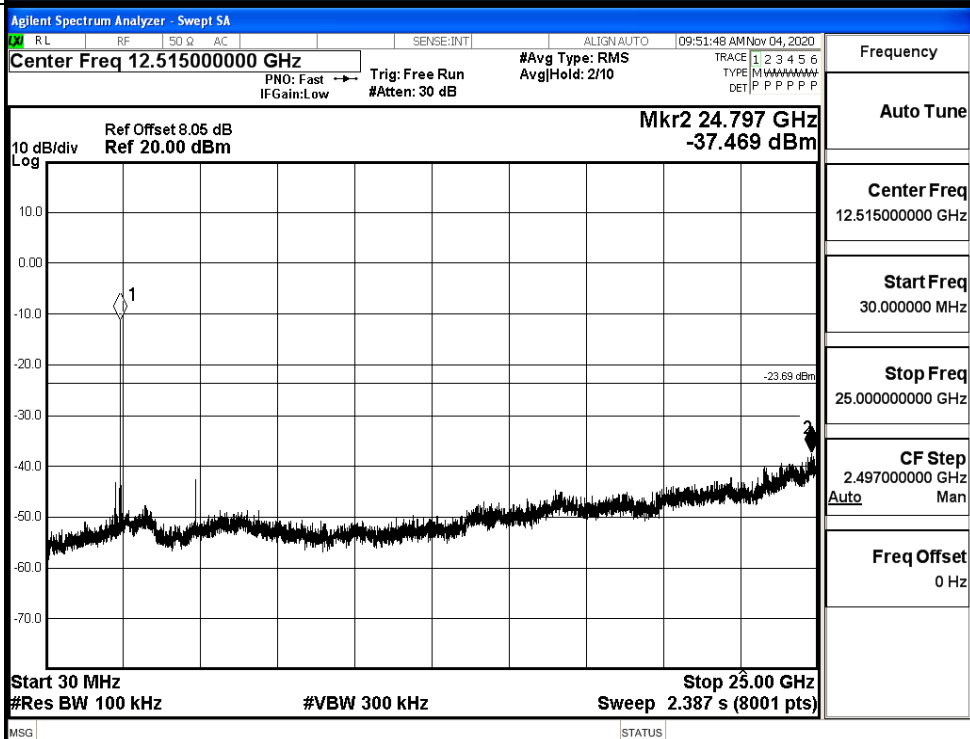


$\pi/4$ DQPSK_MCH_Graphs

Pref

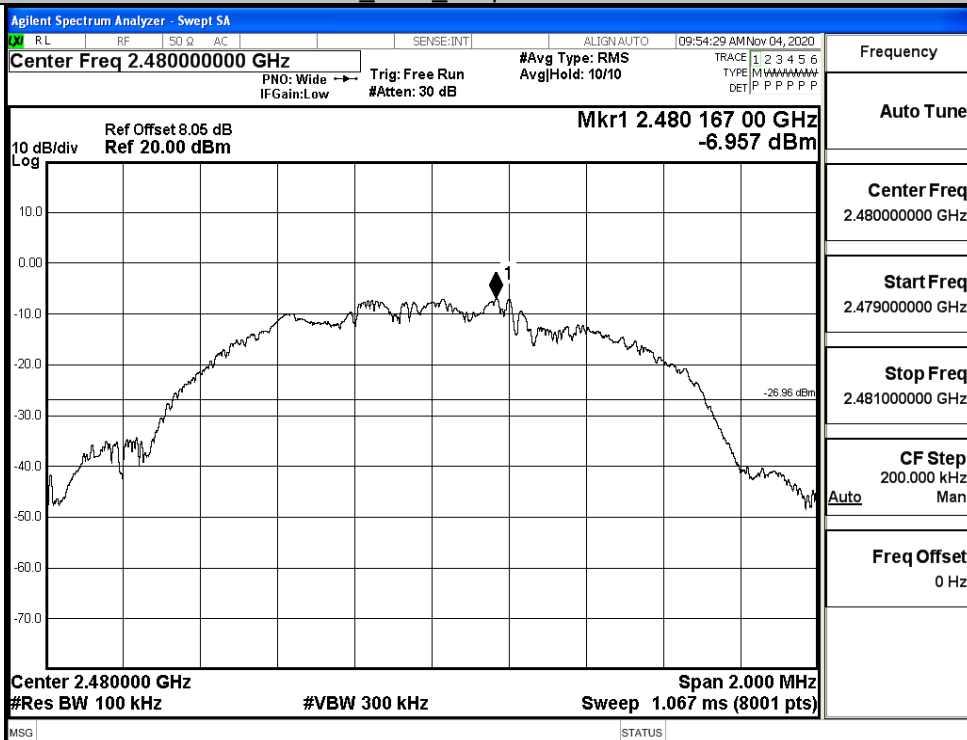


Puw

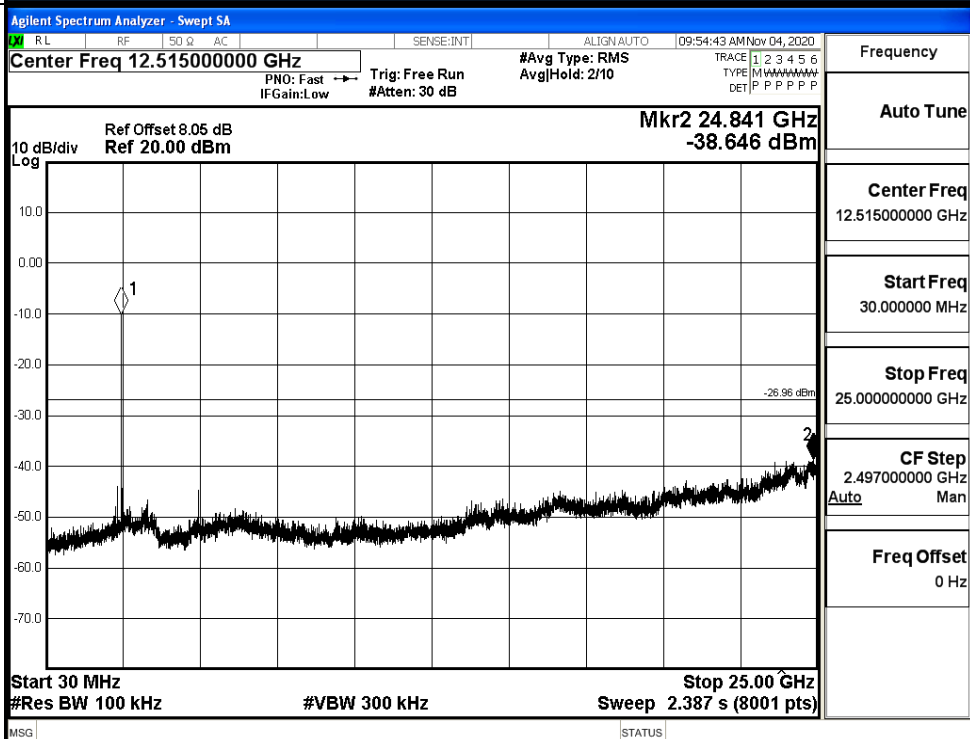


π /4DQPSK_HCH_Graphs

Pref

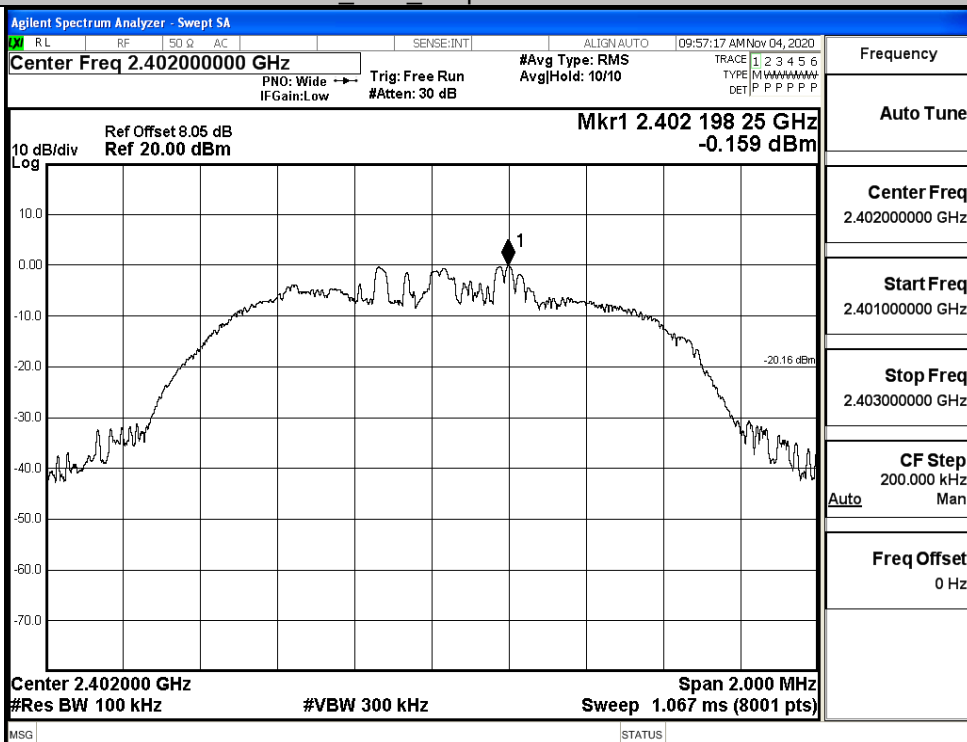


Puw

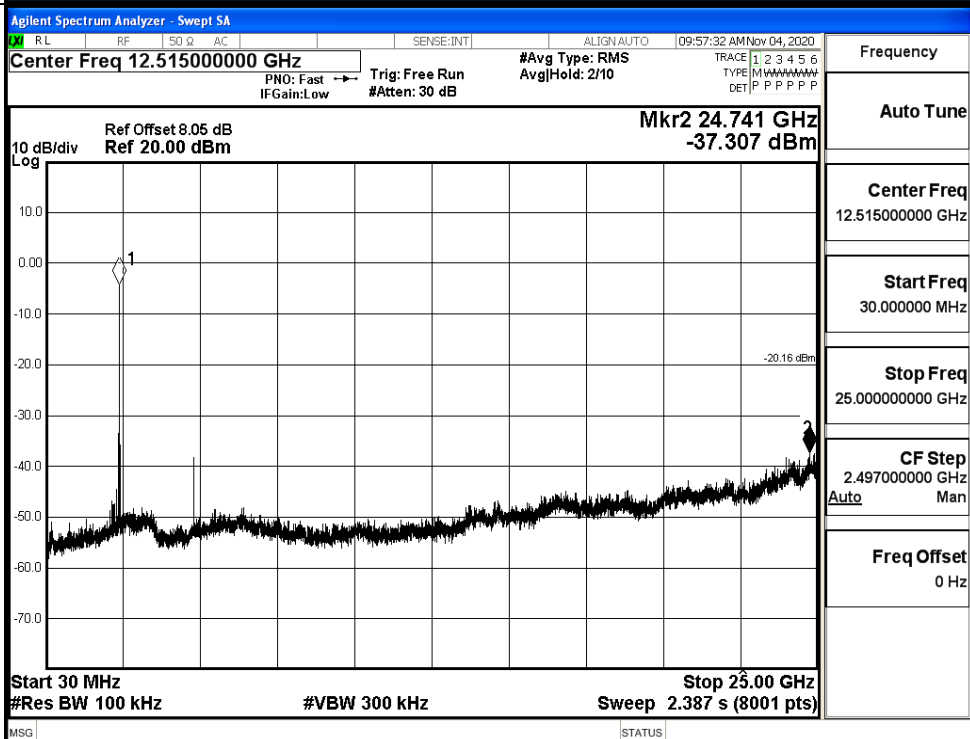


8DPSK_LCH_Graphs

Pref

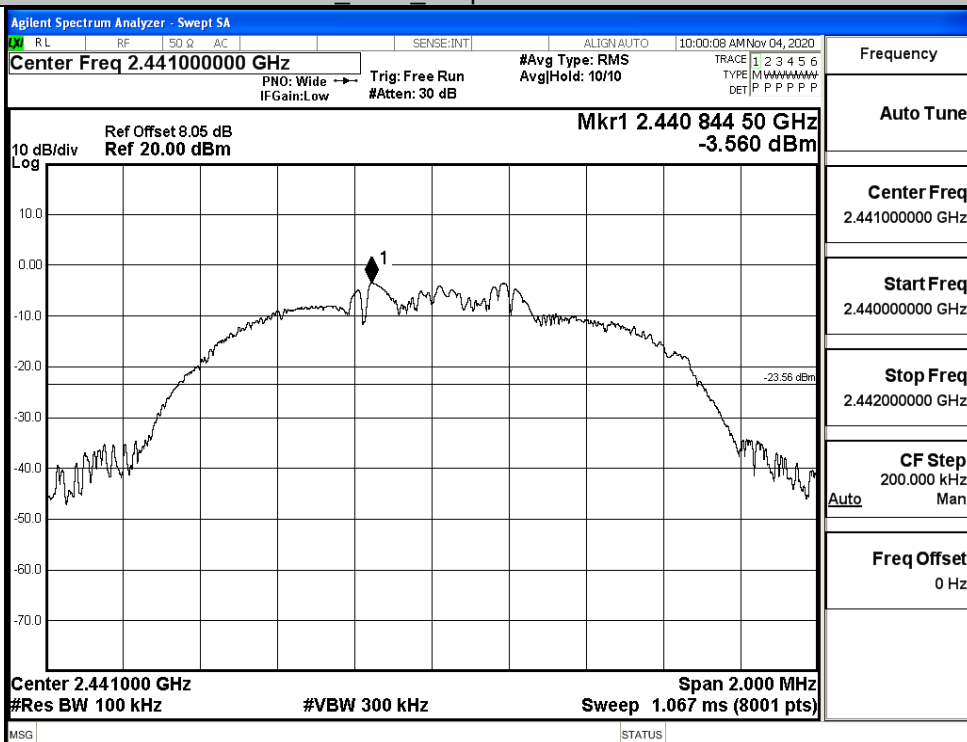


Puw

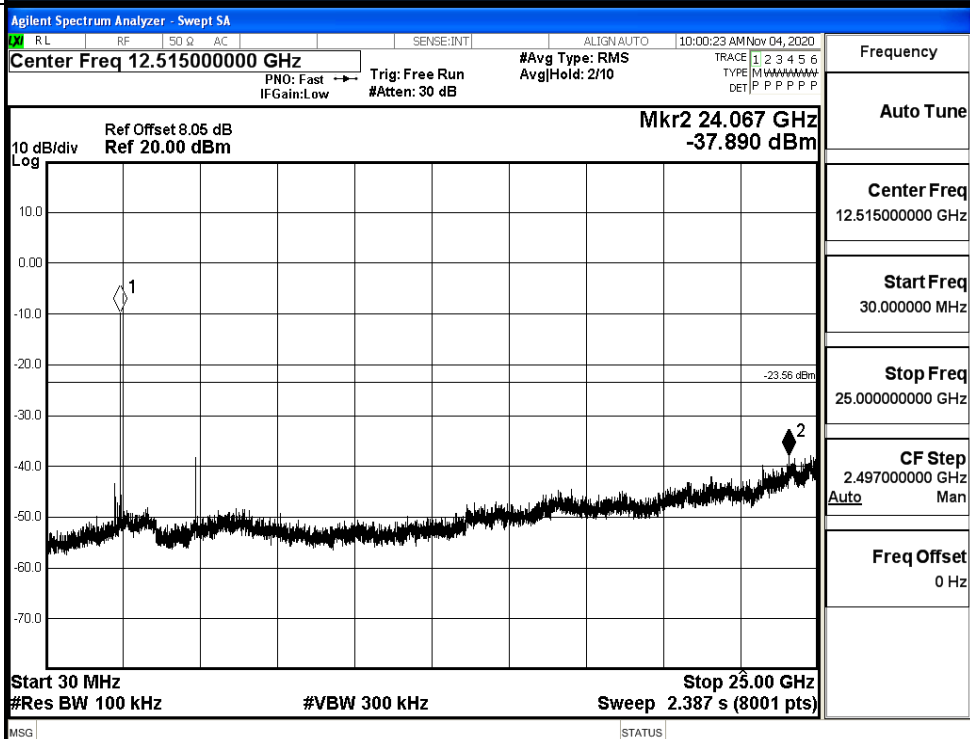


8DPSK_MCH_Graphs

Pref

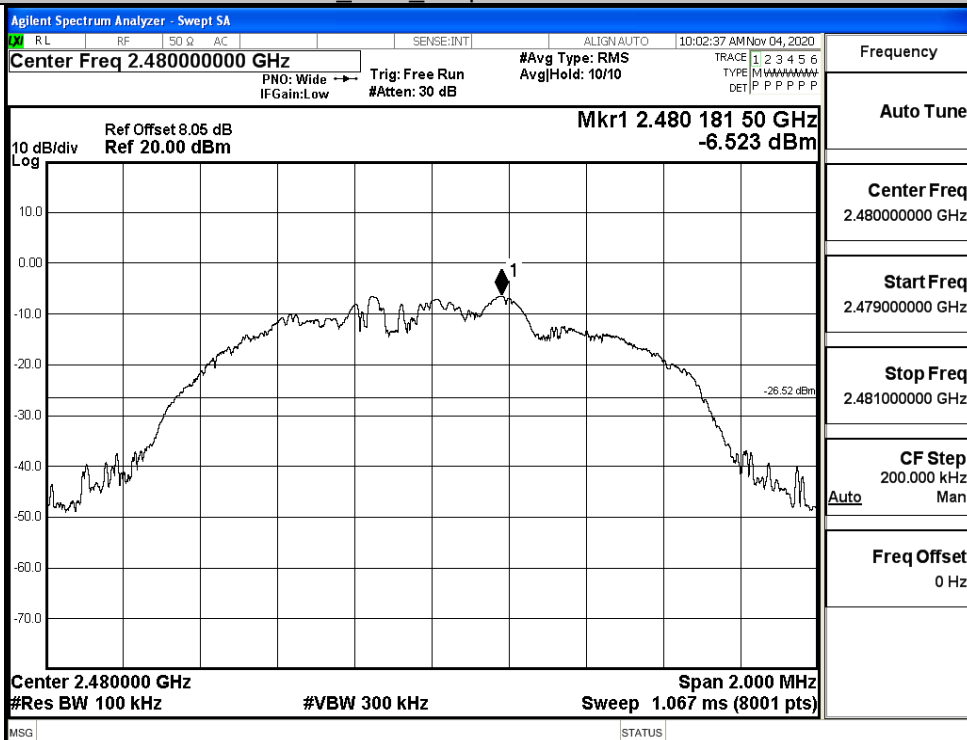


Puw

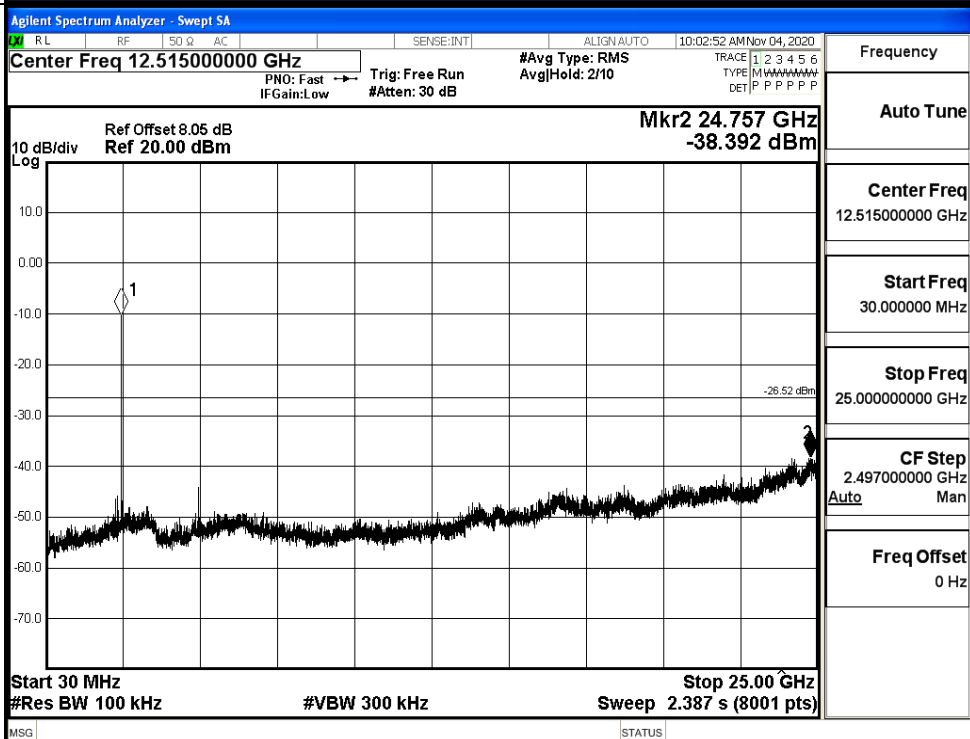


8DPSK_HCH_Graphs

Pref



Puw

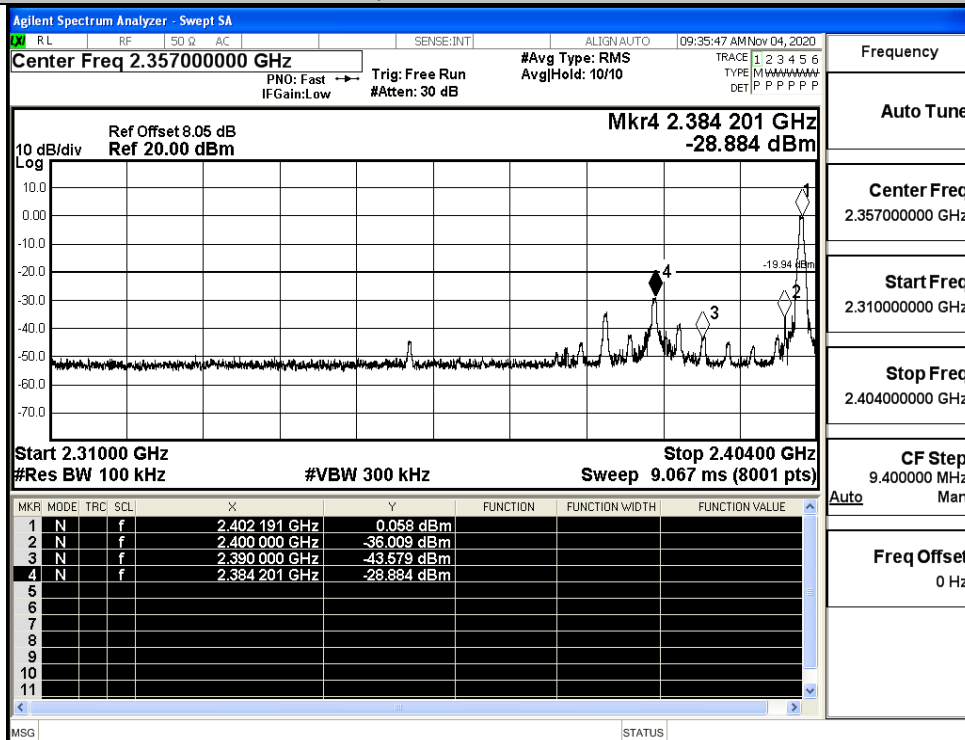


A.7 Band-edge for RF Conducted Emissions

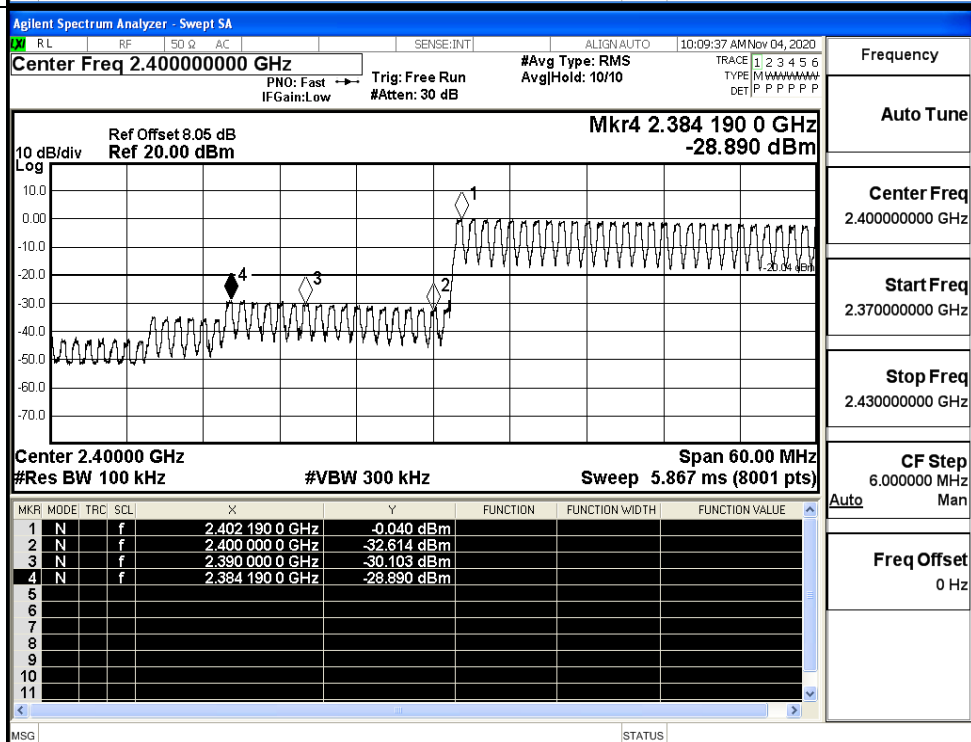
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	0.058	Off	-28.884	-19.94	PASS
			-0.040	On	-28.890	-20.04	PASS
	HCH	2480	-6.418	Off	-40.875	-26.42	PASS
			-4.674	On	-40.684	-24.67	PASS
$\pi/4$ DQPSK	LCH	2402	-0.551	Off	-30.254	-20.55	PASS
			-0.445	On	-29.947	-20.45	PASS
	HCH	2480	-6.572	Off	-41.312	-26.57	PASS
			-4.690	On	-39.307	-24.69	PASS
8DPSK	LCH	2402	-0.022	Off	-30.704	-20.02	PASS
			-0.227	On	-29.069	-20.23	PASS
	HCH	2480	-6.552	Off	-42.200	-26.55	PASS
			-4.659	On	-40.261	-24.66	PASS

Test Graphs

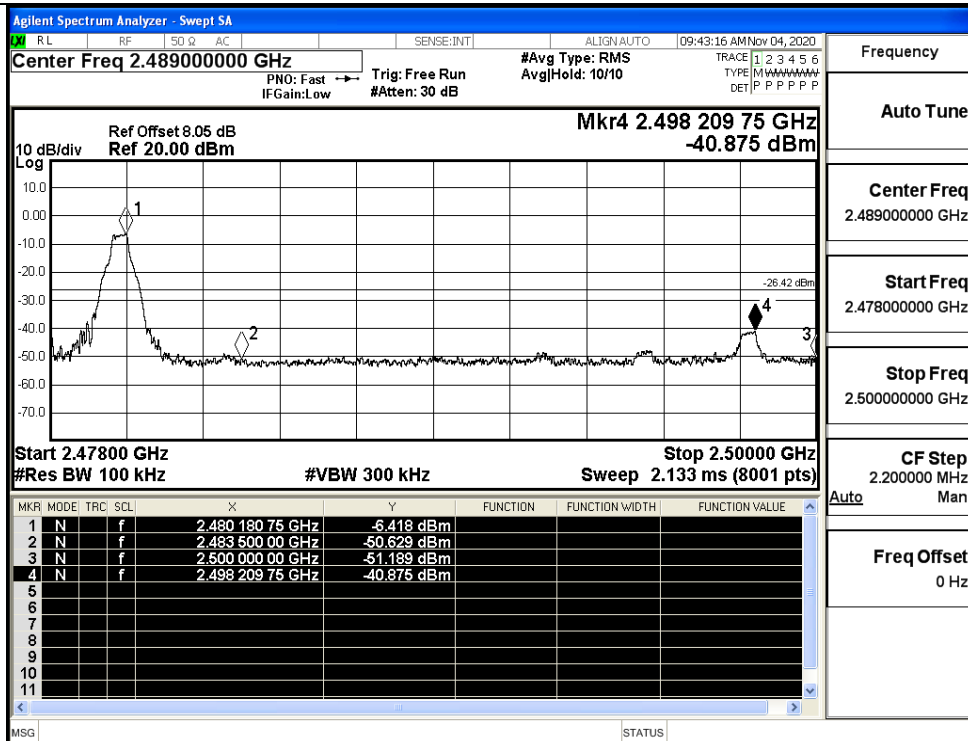
GFSK/LCH/No Hop



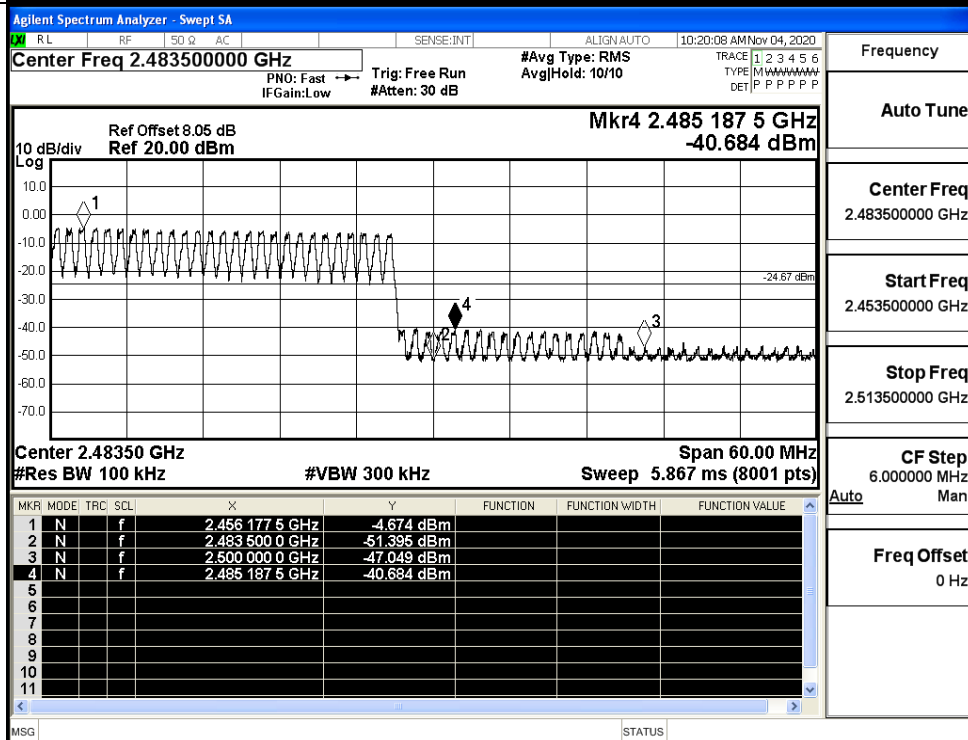
GFSK/LCH/Hop



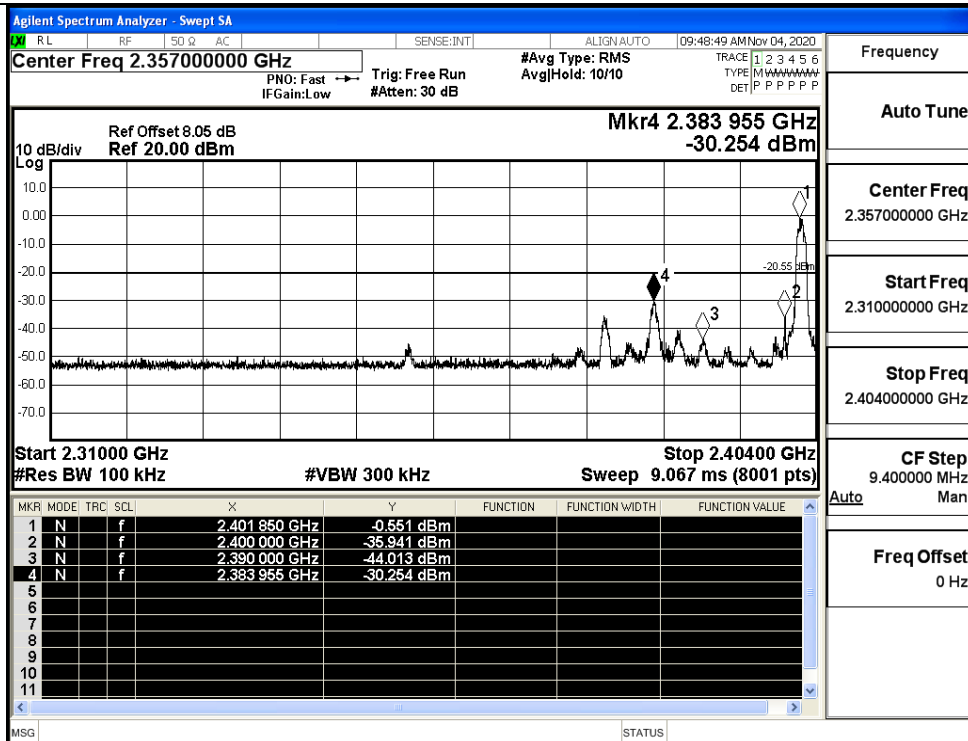
GFSK/HCH/No Hop



GFSK/HCH/Hop



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

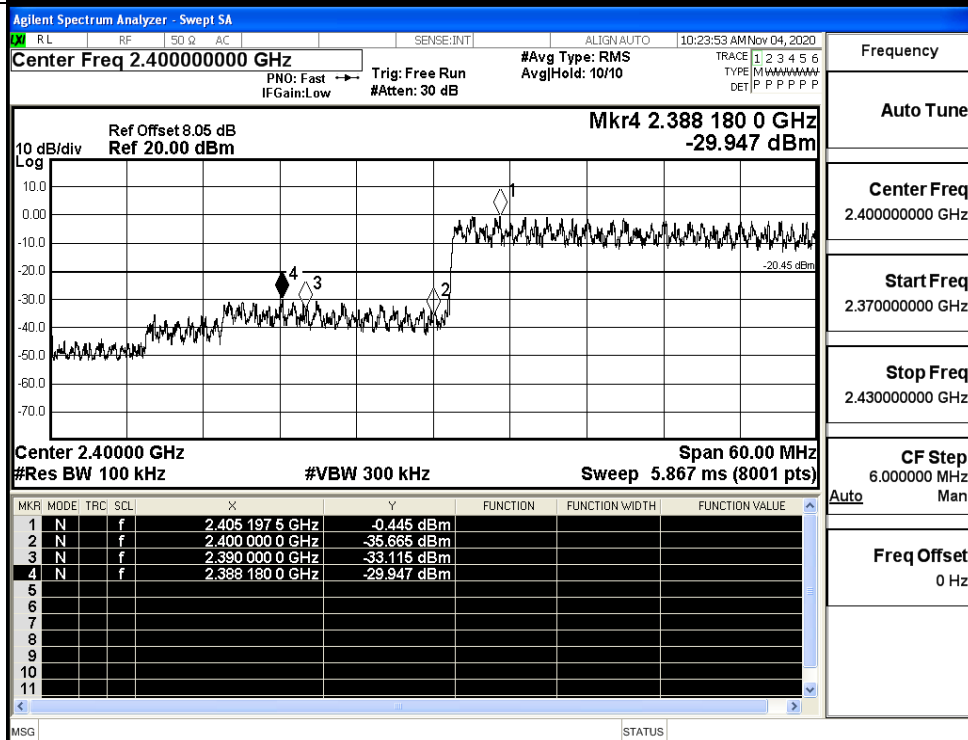


Frequency

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

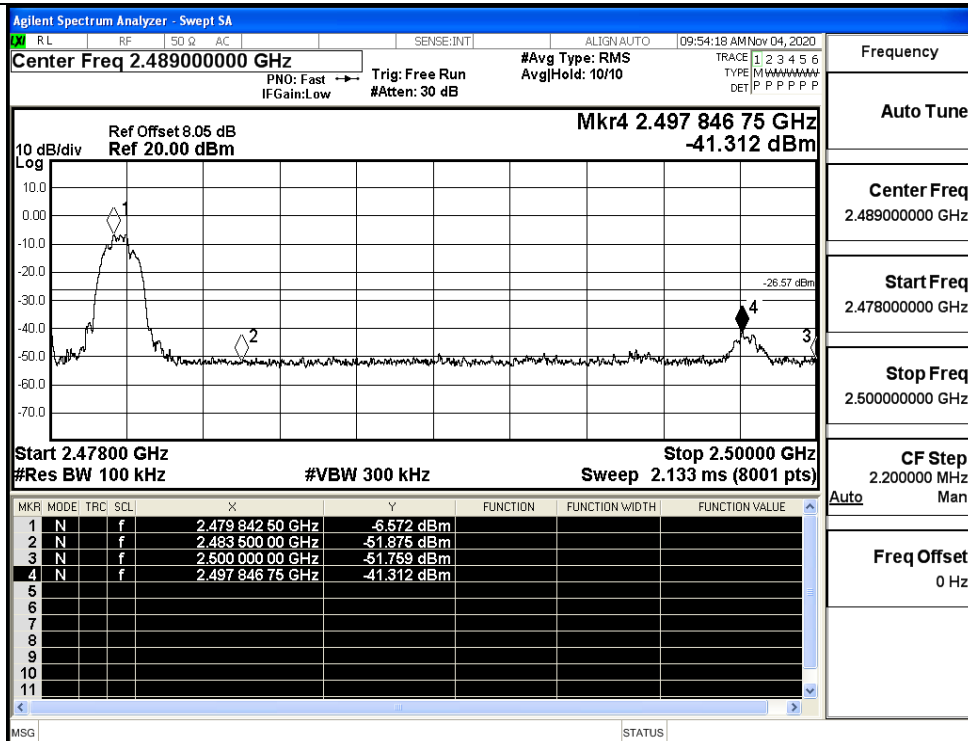


Frequency

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

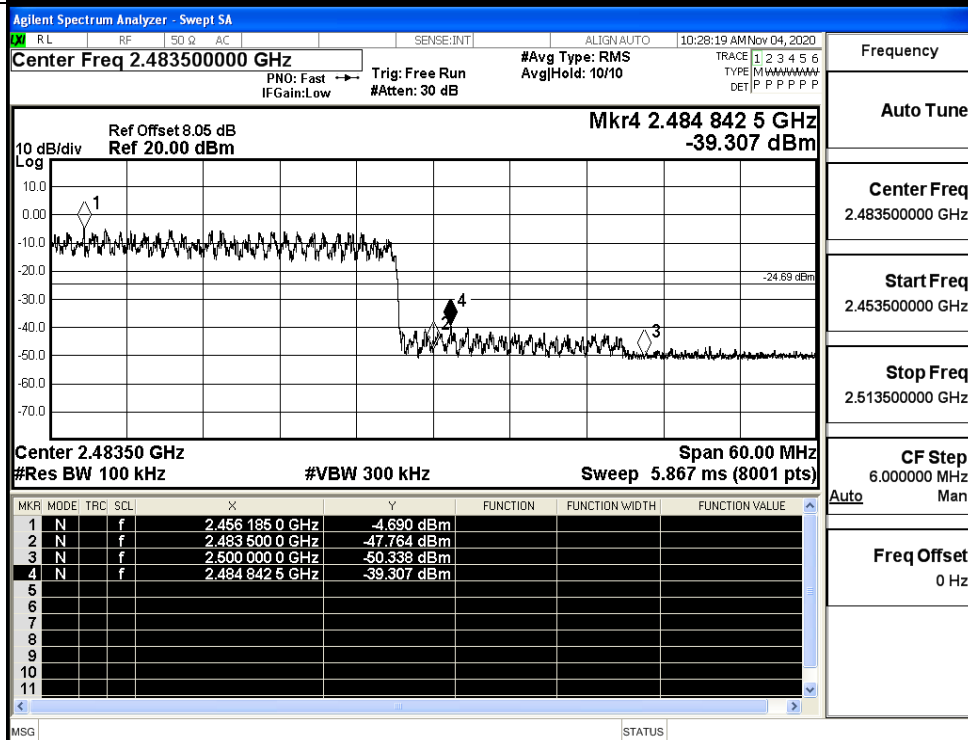


Frequency

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

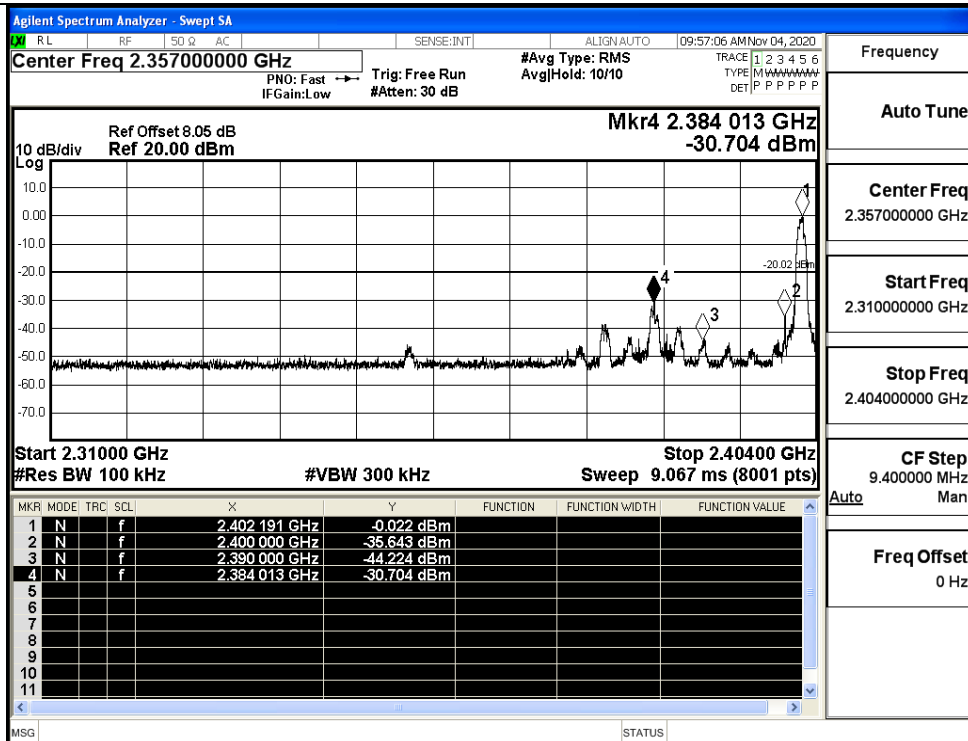


Frequency

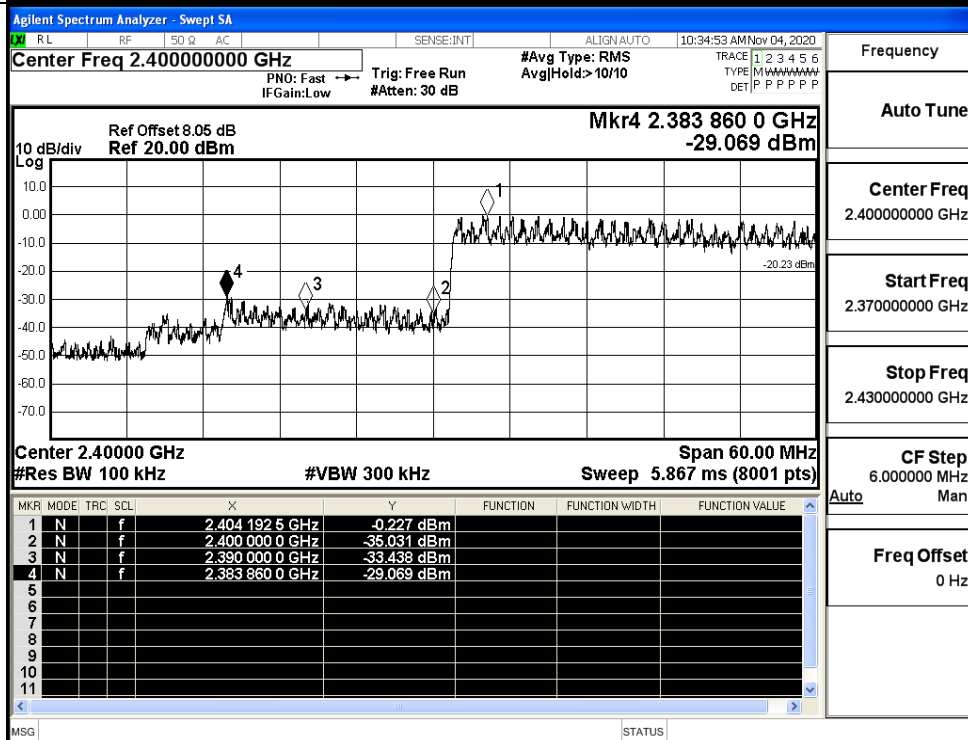
Auto Tune

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

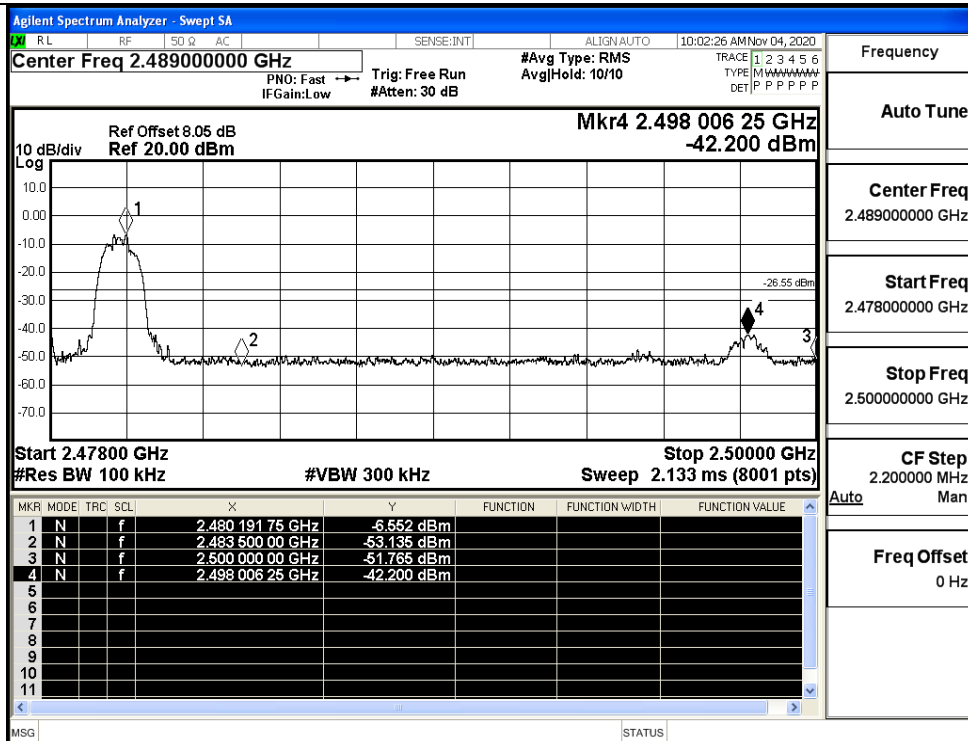
8DPSK/LCH/No Hop



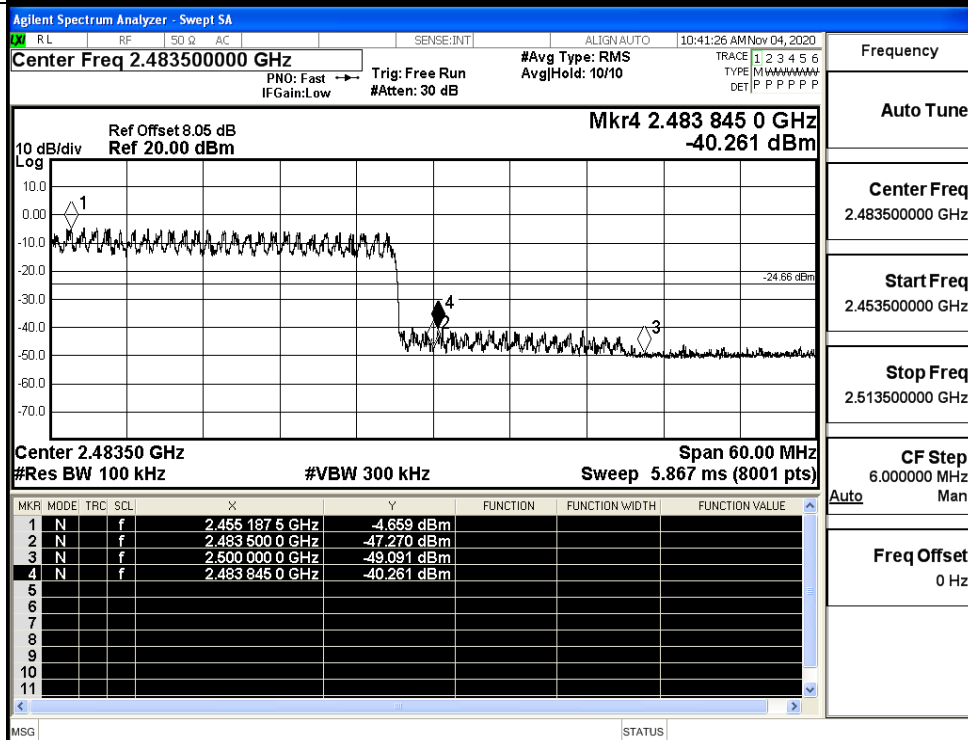
8DPSK/LCH/Hop



8DPSK/HCH/No Hop



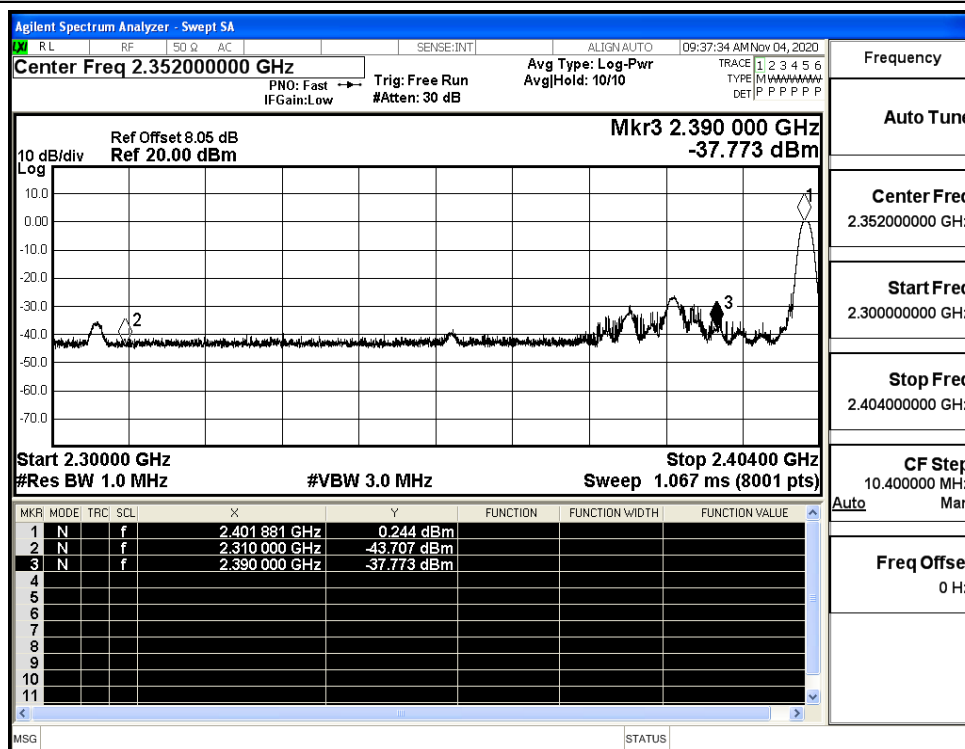
8DPSK/HCH/Hop



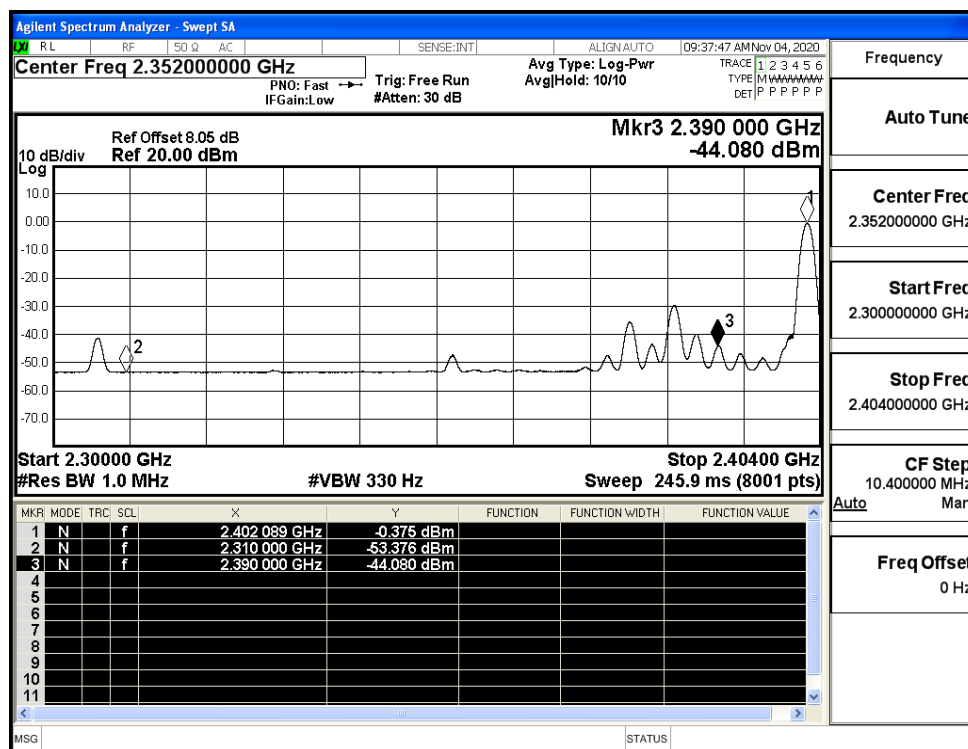
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-43.71	2.0	0	53.55	PEAK	74	PASS
	Off	2310.0	-53.38	2.0	0	43.88	AV	54	PASS
	Off	2390.0	-37.77	2.0	0	59.49	PEAK	74	PASS
	Off	2390.0	-44.08	2.0	0	53.18	AV	54	PASS
	Off	2483.5	-42.82	2.0	0	54.44	PEAK	74	PASS
	Off	2483.5	-52.03	2.0	0	45.23	AV	54	PASS
	Off	2500.0	-41.92	2.0	0	55.34	PEAK	74	PASS
	Off	2500.0	-52.18	2.0	0	45.08	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-42.71	2.0	0	54.55	PEAK	74	PASS
	Off	2310.0	-53.42	2.0	0	43.84	AV	54	PASS
	Off	2390.0	-39.59	2.0	0	57.67	PEAK	74	PASS
	Off	2390.0	-47.00	2.0	0	50.26	AV	54	PASS
	Off	2483.5	-42.83	2.0	0	54.43	PEAK	74	PASS
	Off	2483.5	-52.31	2.0	0	44.95	AV	54	PASS
	Off	2500.0	-41.44	2.0	0	55.82	PEAK	74	PASS
	Off	2500.0	-52.07	2.0	0	45.19	AV	54	PASS
8DPSK	Off	2310.0	-42.37	2.0	0	54.89	PEAK	74	PASS
	Off	2310.0	-53.48	2.0	0	43.78	AV	54	PASS
	Off	2390.0	-39.28	2.0	0	57.98	PEAK	74	PASS
	Off	2390.0	-47.25	2.0	0	50.01	AV	54	PASS
	Off	2483.5	-41.69	2.0	0	55.57	PEAK	74	PASS
	Off	2483.5	-52.33	2.0	0	44.93	AV	54	PASS
	Off	2500.0	-41.14	2.0	0	56.12	PEAK	74	PASS
	Off	2500.0	-52.22	2.0	0	45.04	AV	54	PASS

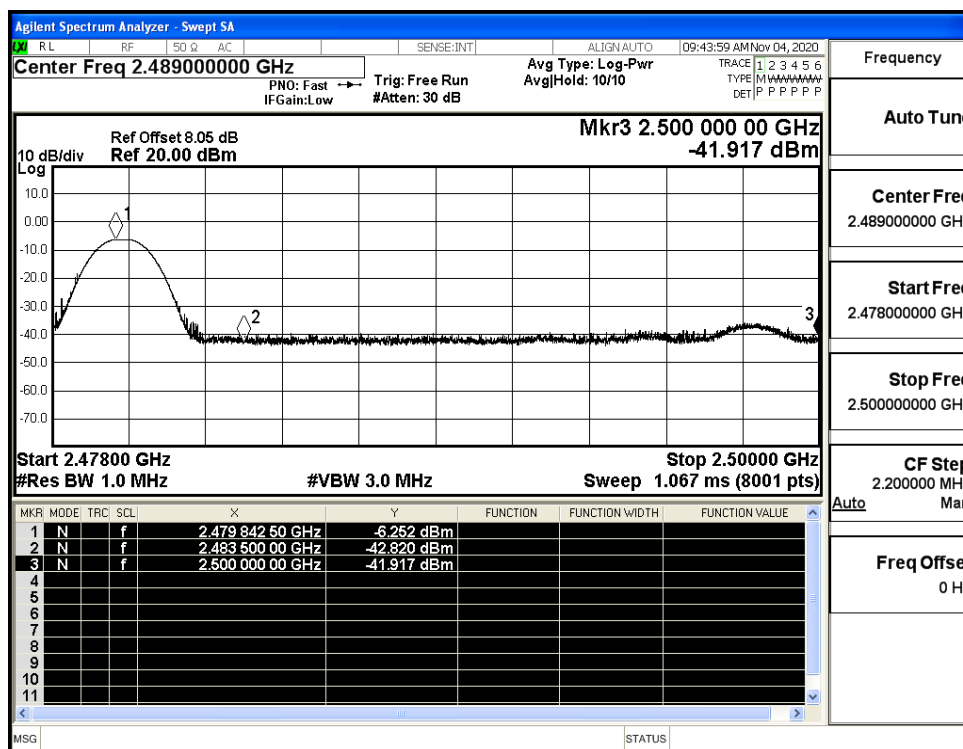
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



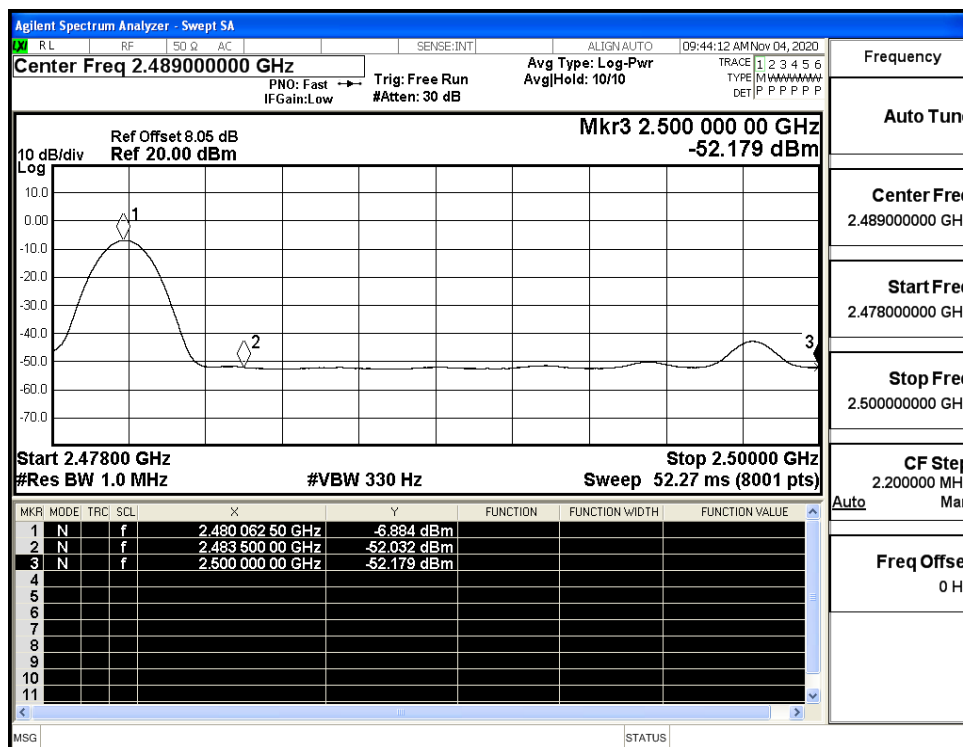
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)

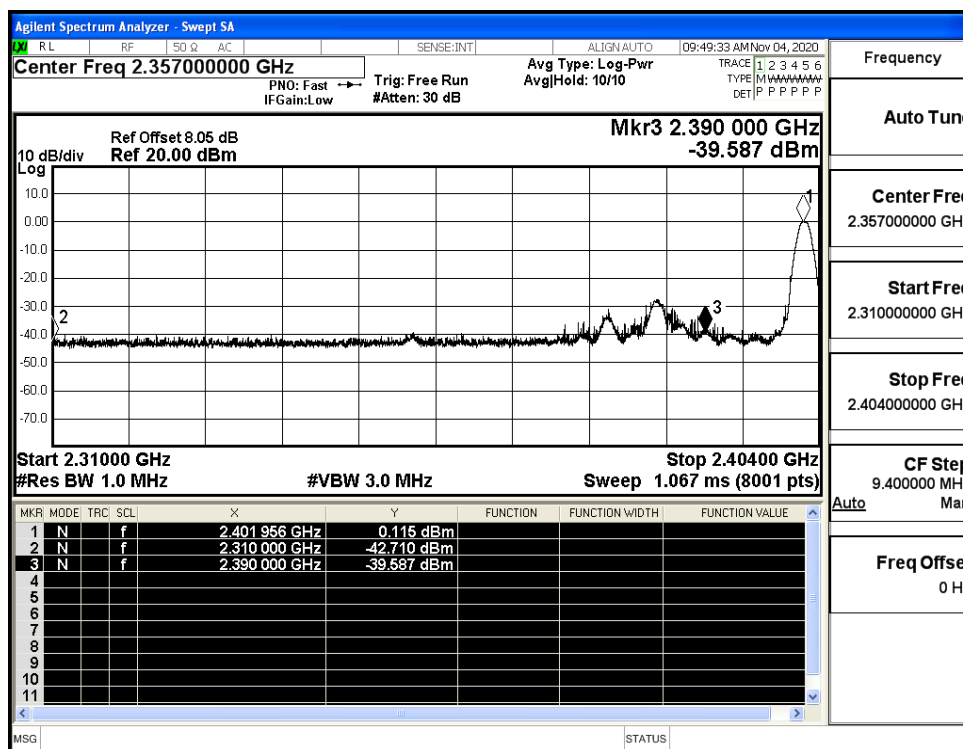
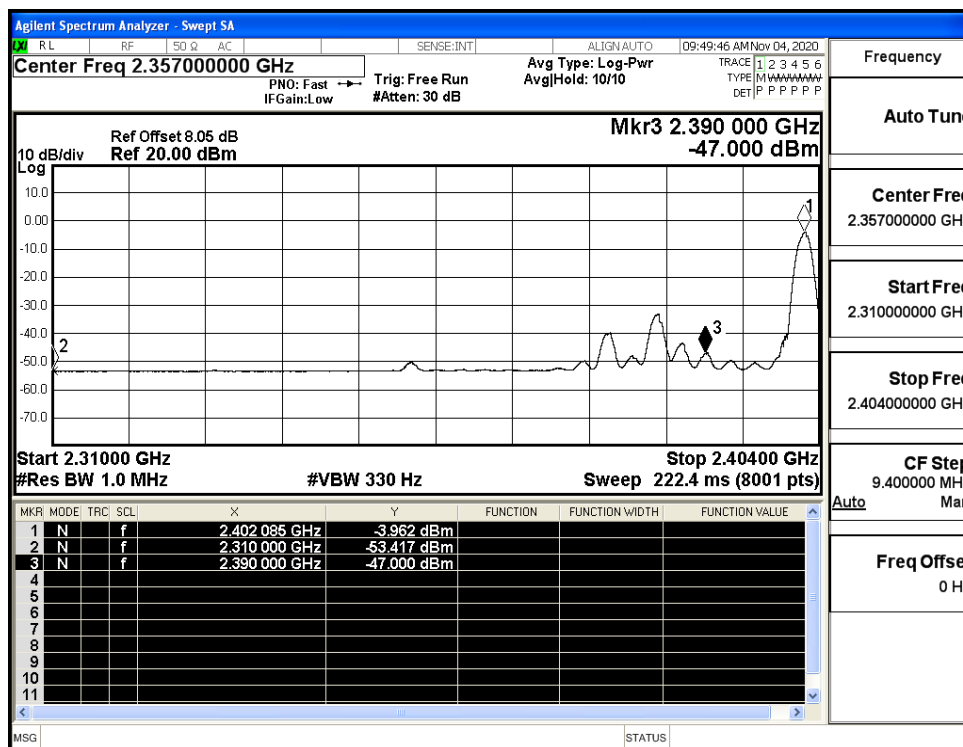


Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)

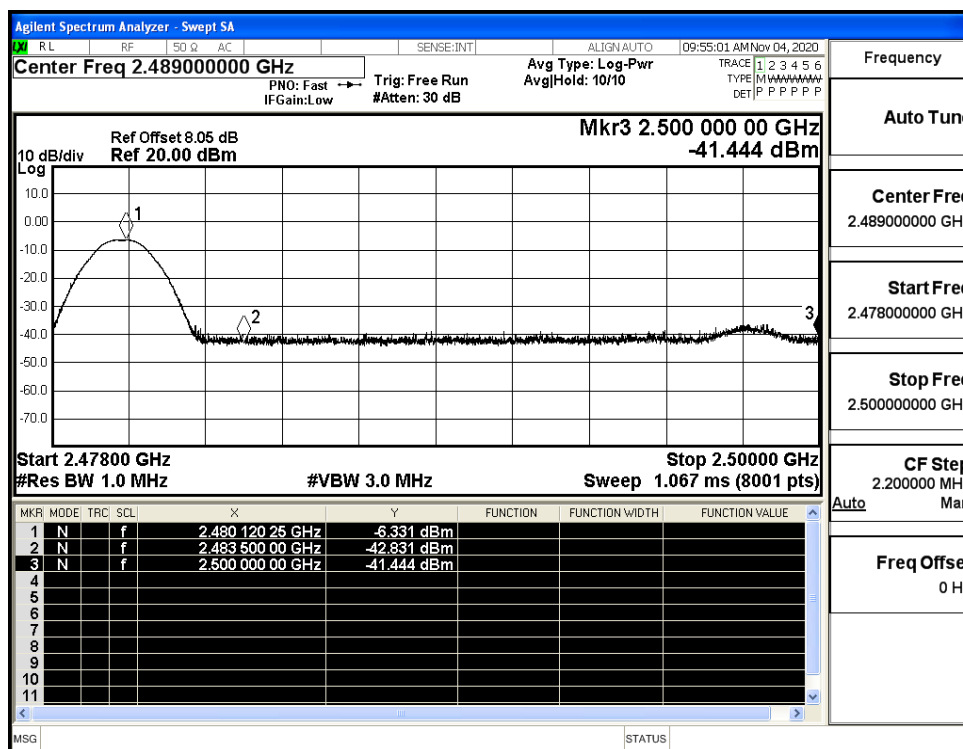


Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)

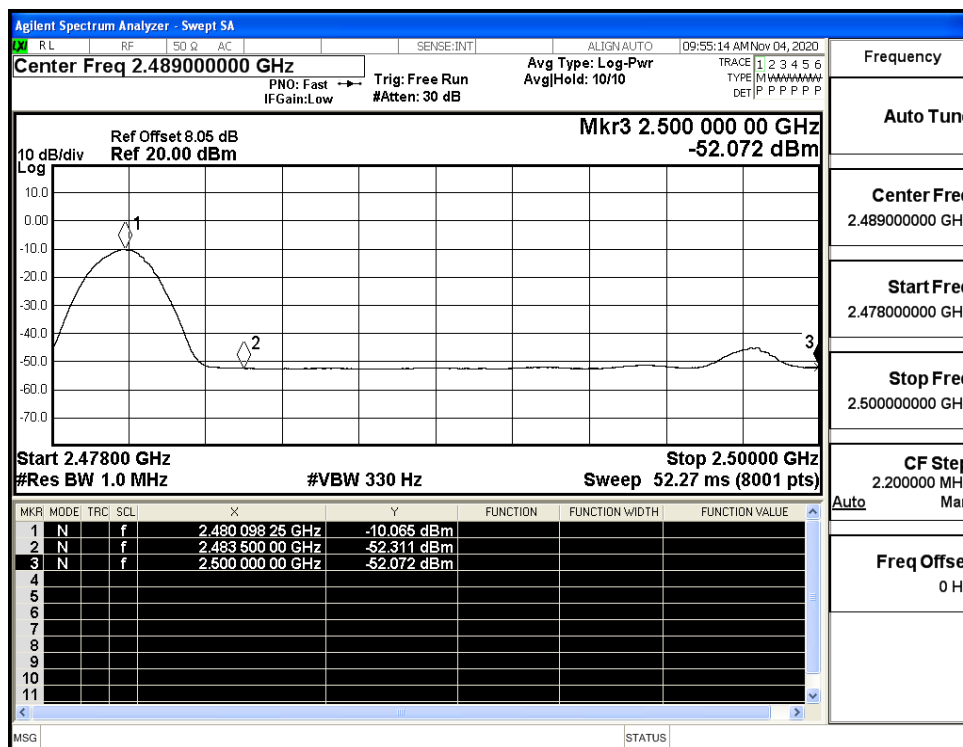


Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (Low Channel)

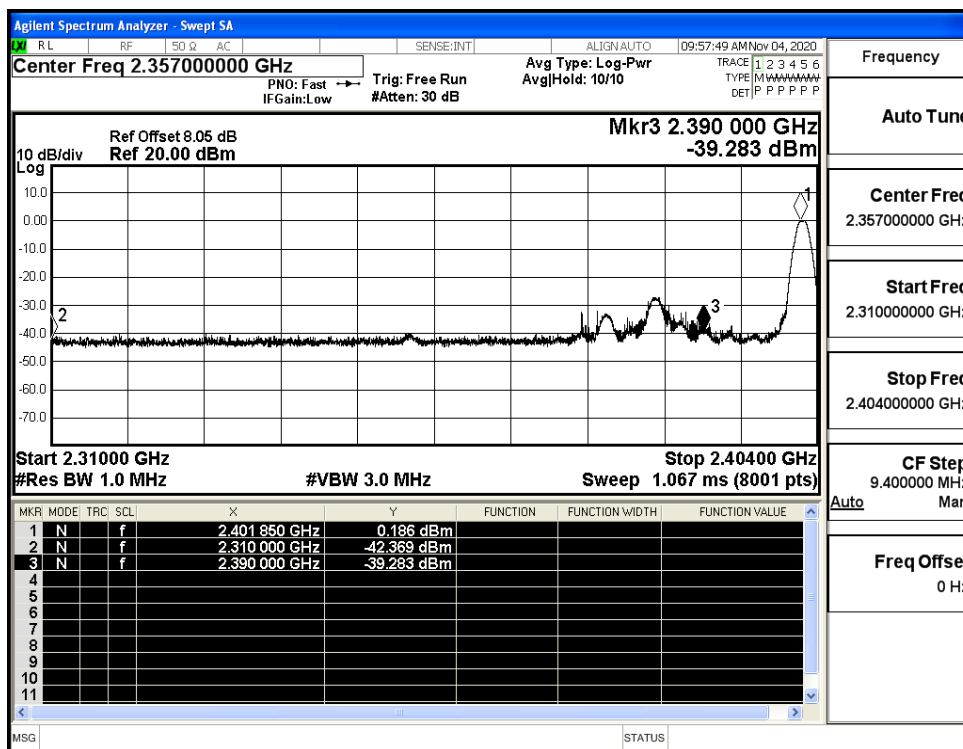
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (High Channel)



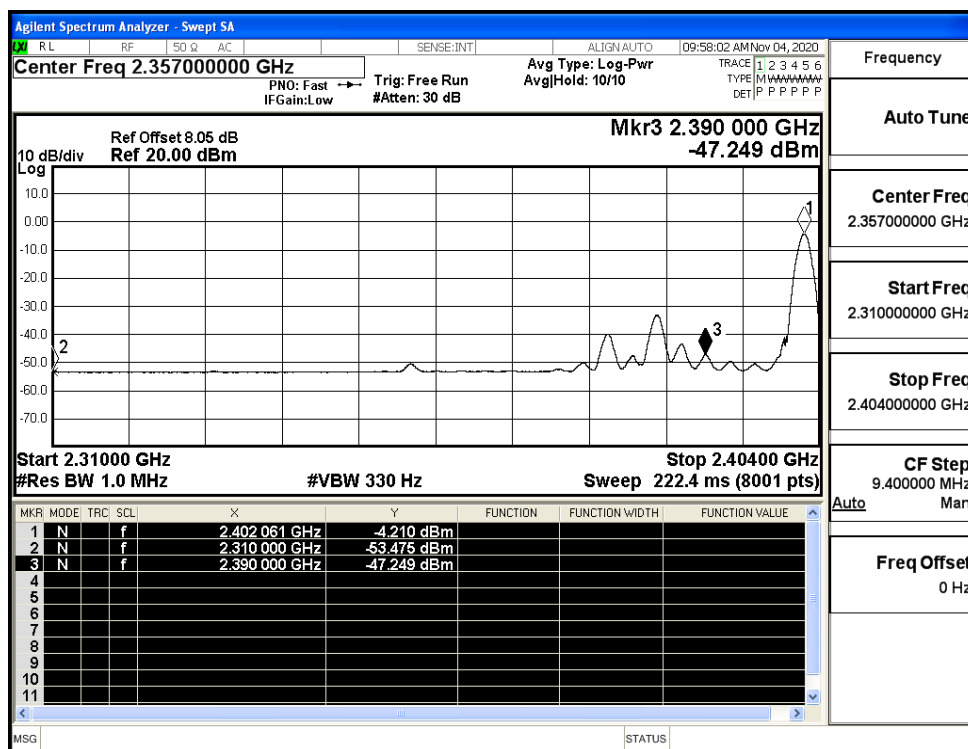
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (High Channel)



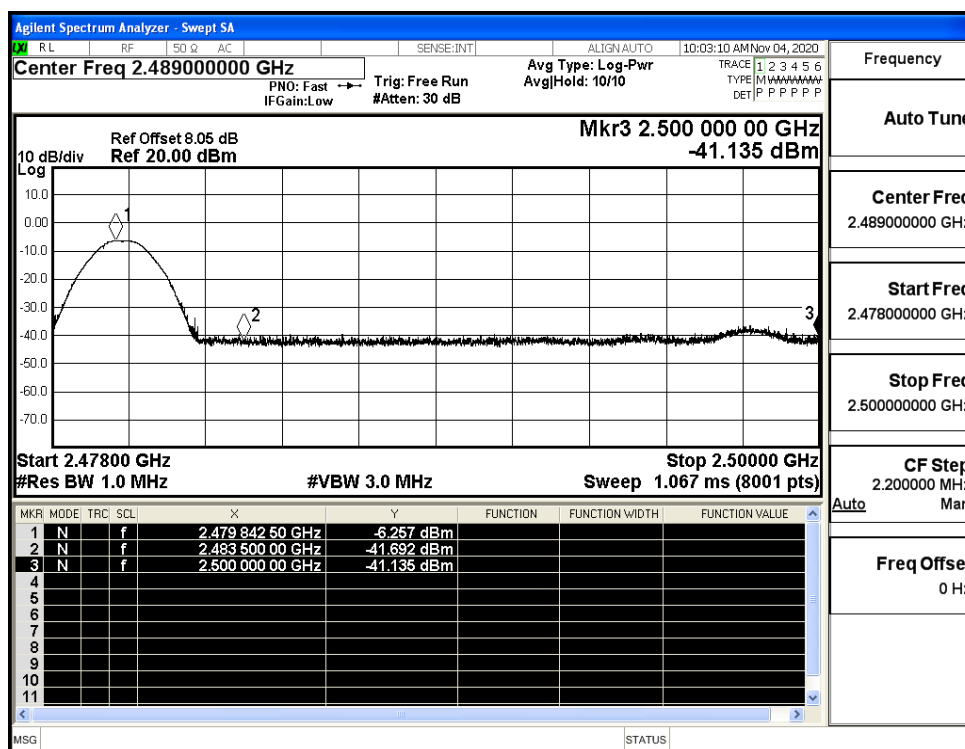
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)

