

Appendix A

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

Product Name: TV Speaker

Trade Mark: Serene

Test Model: BT-100

Environmental Conditions

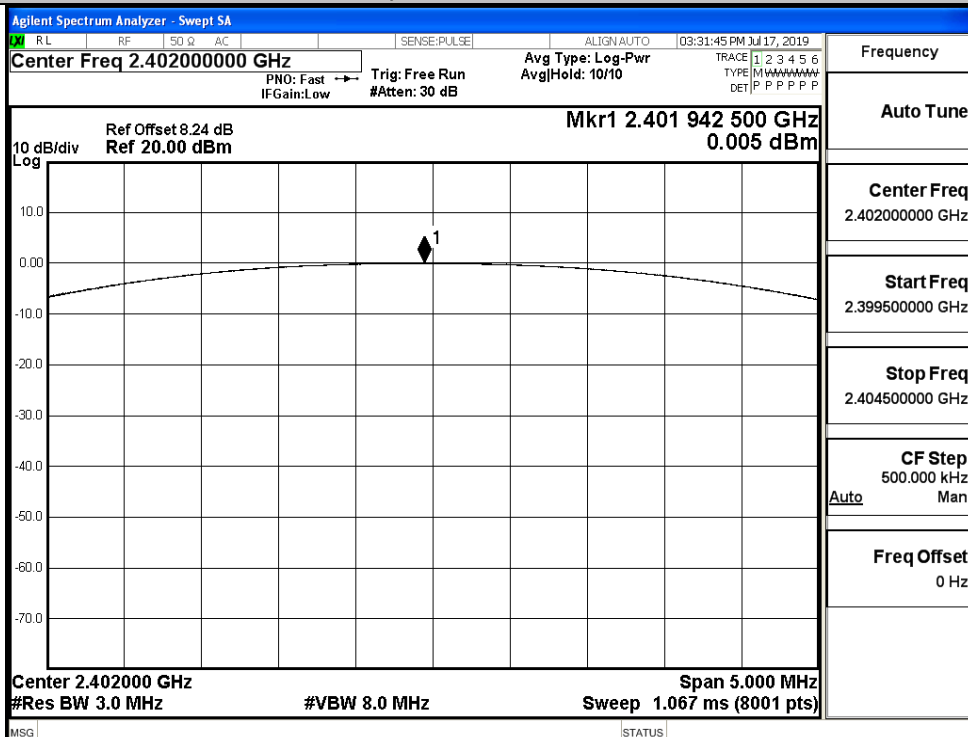
Temperature:	23.7 ° C
Relative Humidity:	53.4%
ATM Pressure:	100.0 kPa
Test Engineer:	David Luo
Supervised by:	Wang.Chuang

A.1 Maximum Conducted Peak Output Power

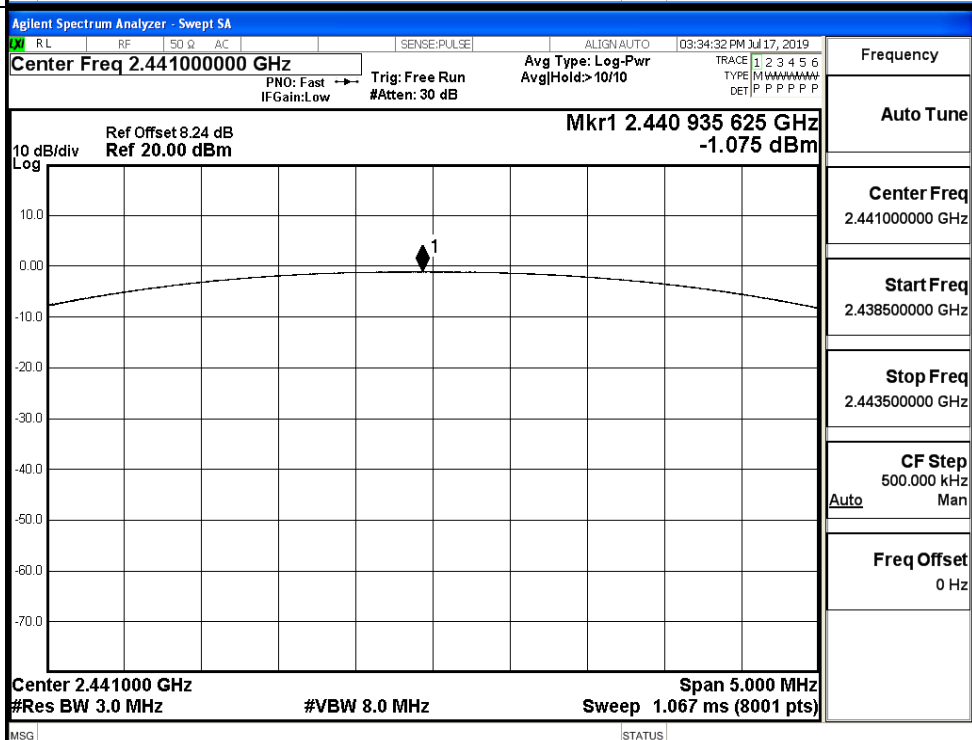
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	0.005	30	PASS
	MCH	-1.075	30	PASS
	HCH	-1.889	30	PASS
$\pi/4$ DQPSK	LCH	-0.019	21	PASS
	MCH	-1.074	21	PASS
	HCH	-1.888	21	PASS
8DPSK	LCH	-0.024	21	PASS
	MCH	-1.059	21	PASS
	HCH	-1.903	21	PASS

Test Graphs

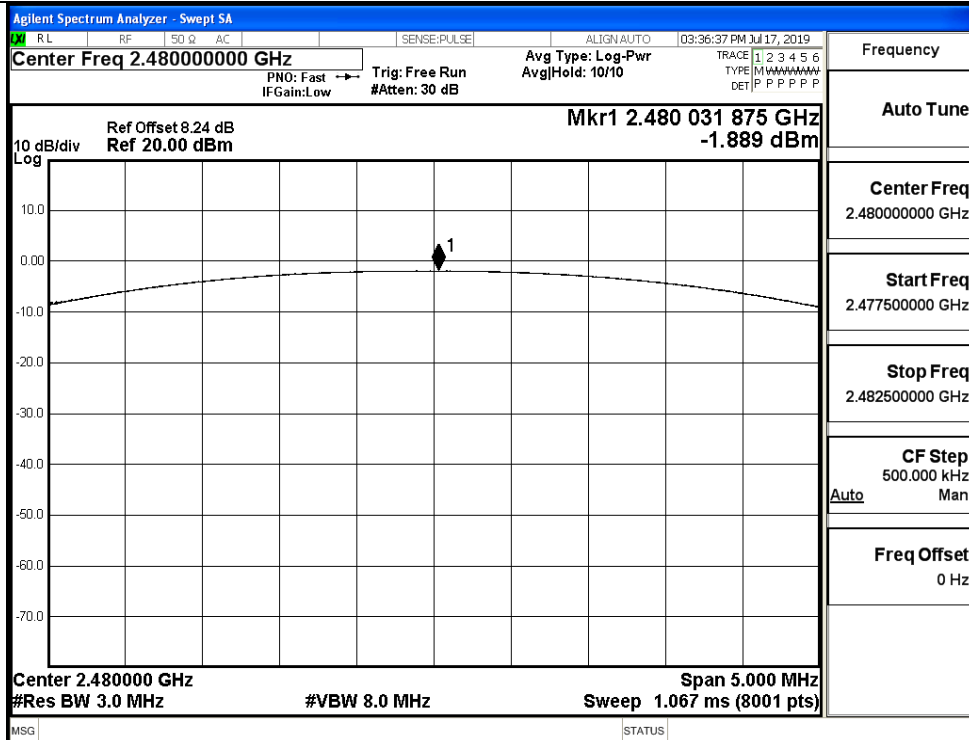
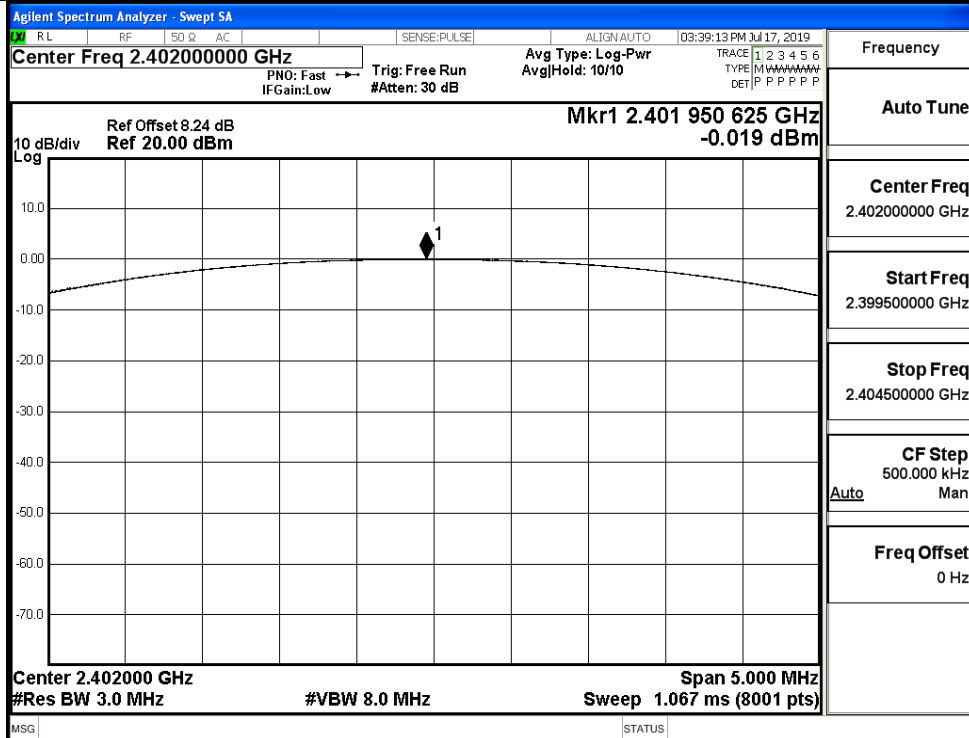
GFSK/LCH

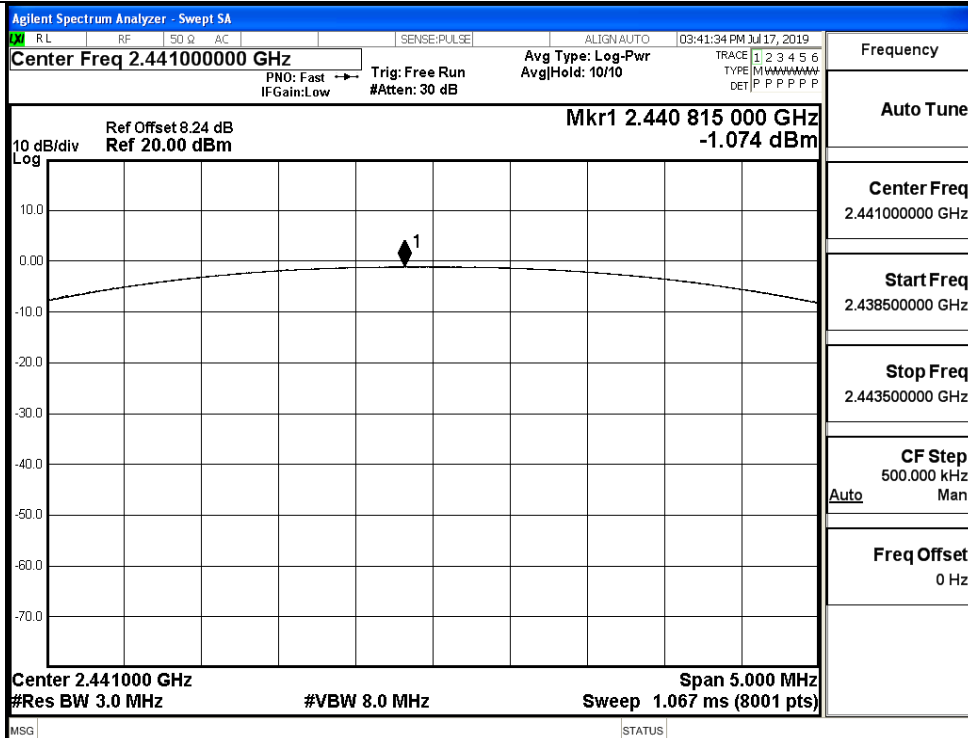
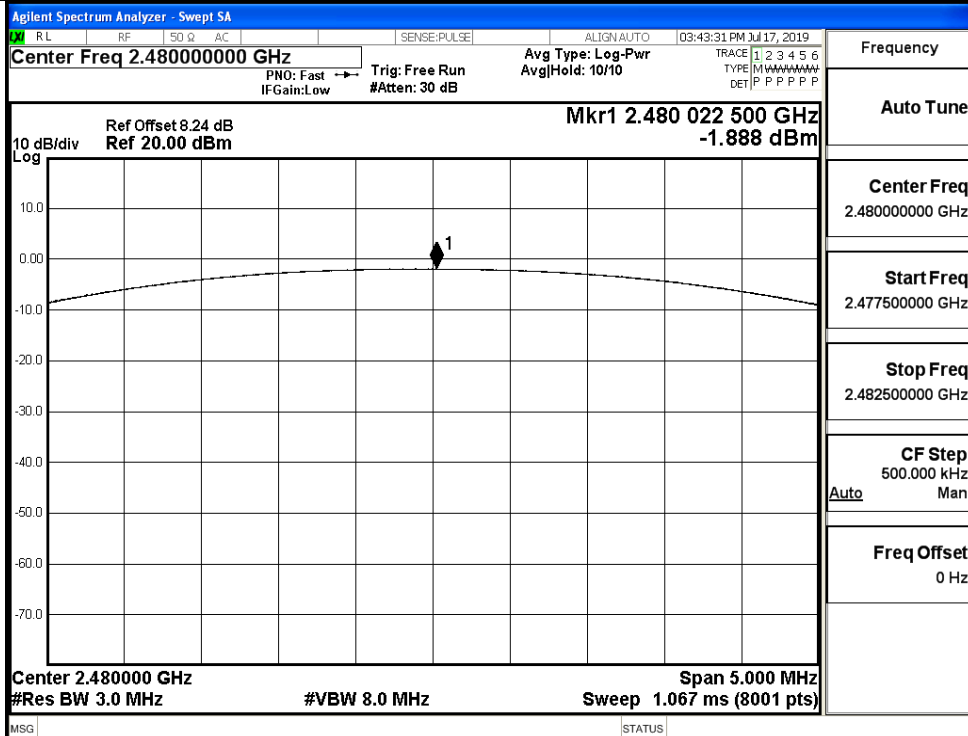


GFSK/MCH

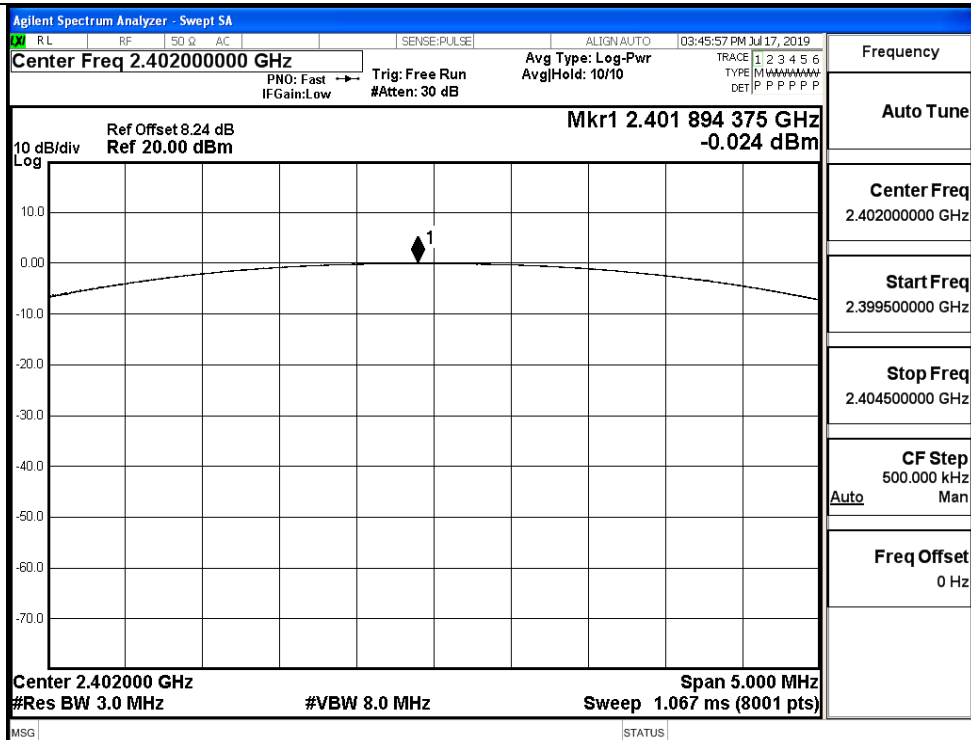


GFSK/HCH

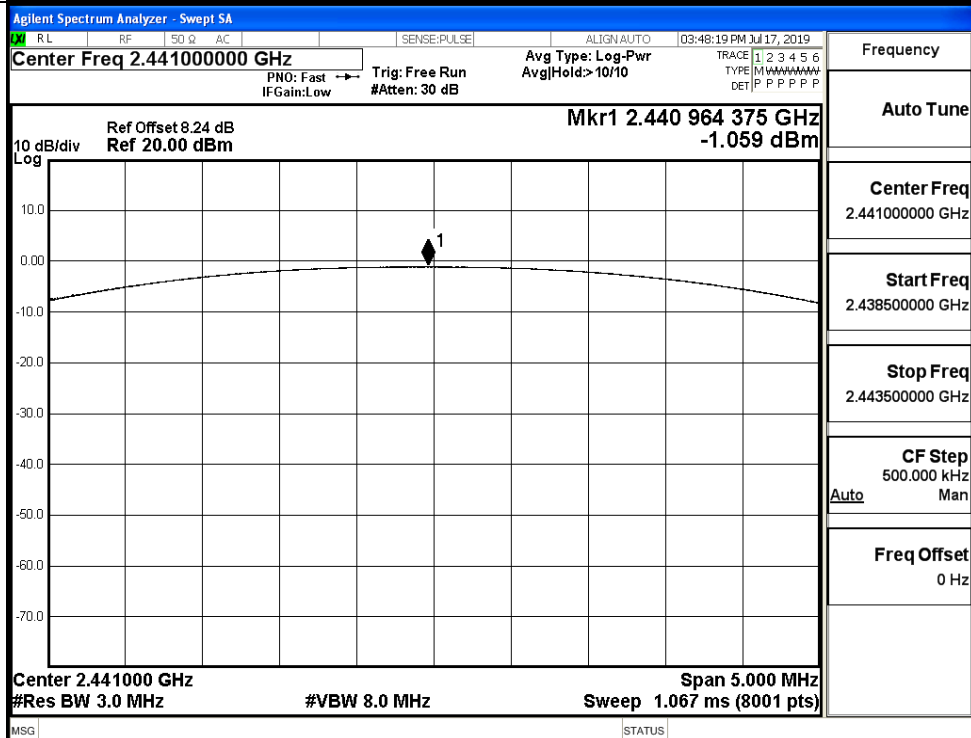
 $\pi/4$ DQPSK/LCH

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

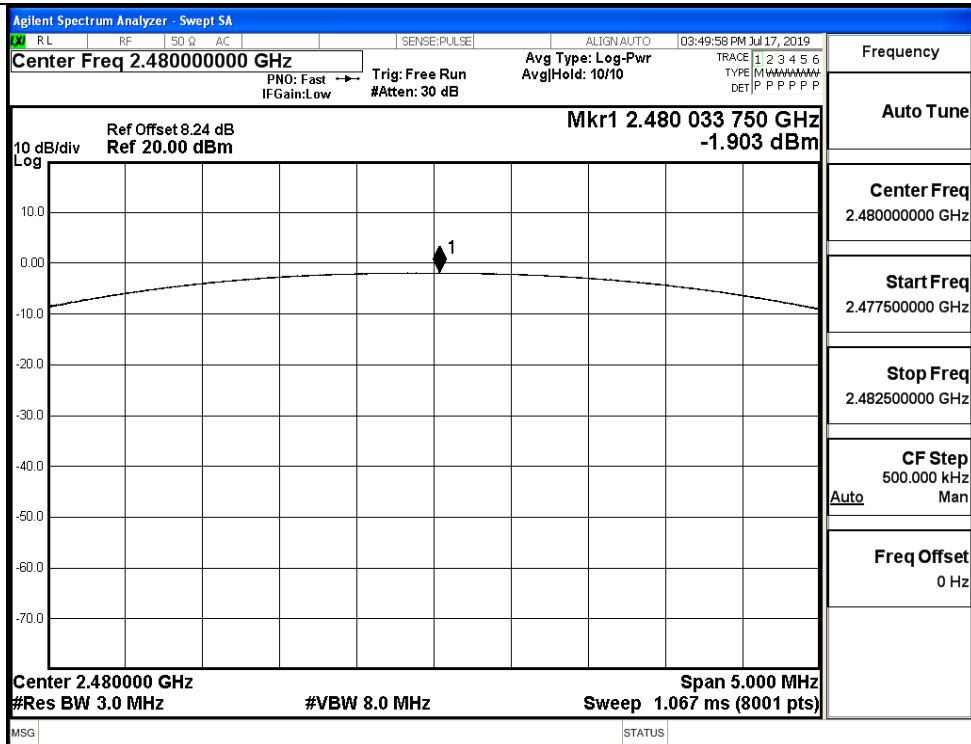
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

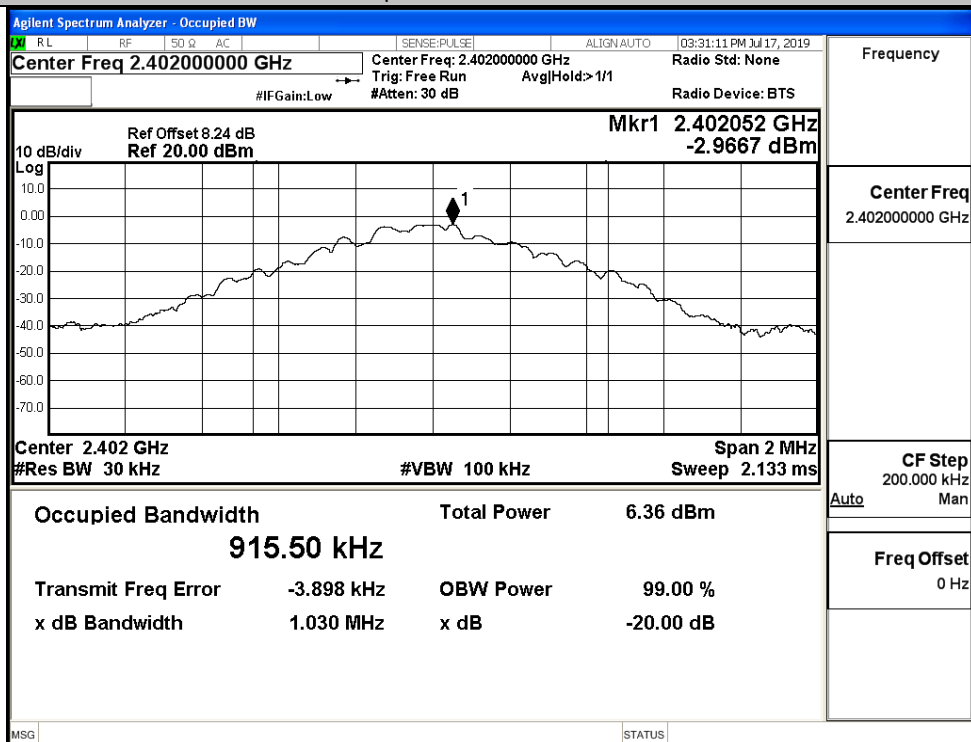


A.2 20dB Bandwidth

Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.030	Not Specified	PASS
	MCH	1.029	Not Specified	PASS
	HCH	1.030	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.028	Not Specified	PASS
	MCH	1.028	Not Specified	PASS
	HCH	1.029	Not Specified	PASS
8DPSK	LCH	1.030	Not Specified	PASS
	MCH	1.029	Not Specified	PASS
	HCH	1.029	Not Specified	PASS

Test Graphs

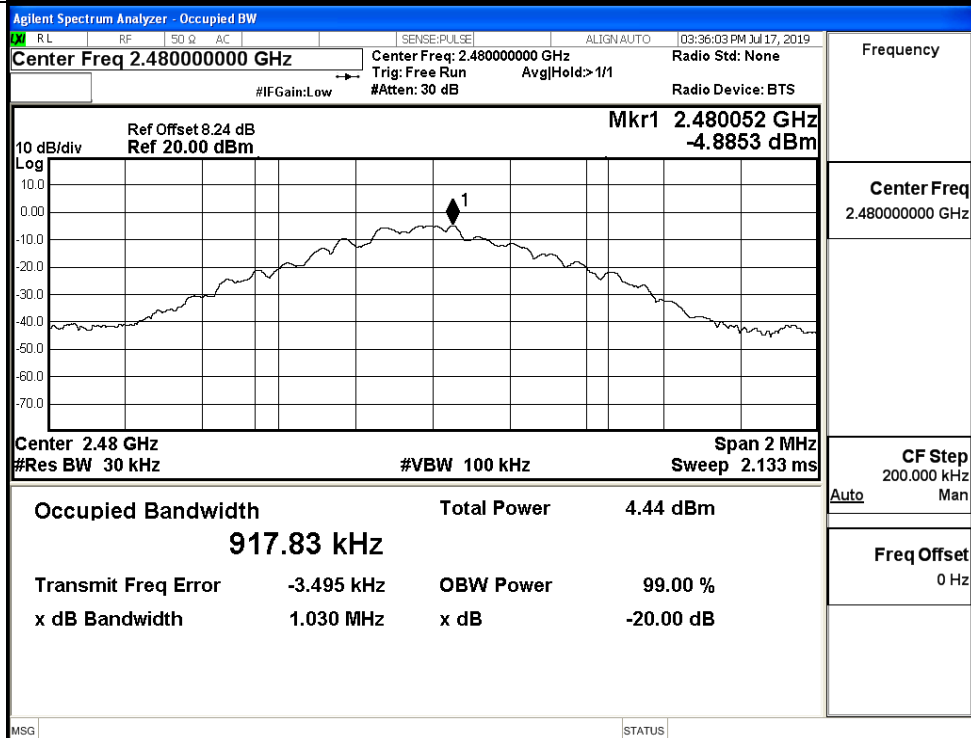
GFSK/LCH



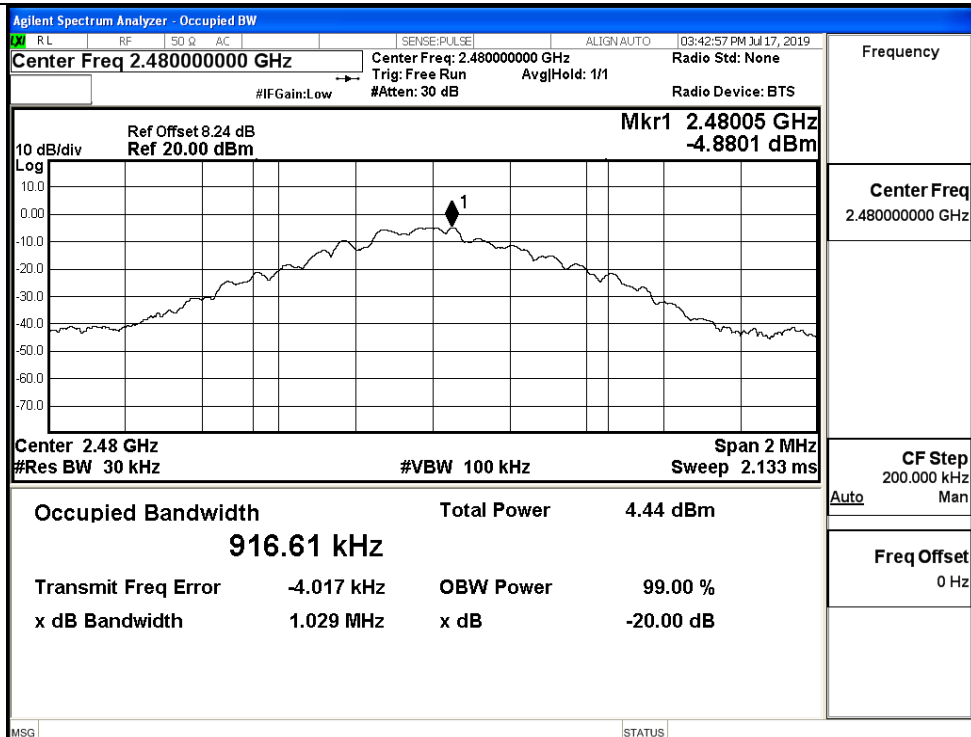
GFSK/MCH



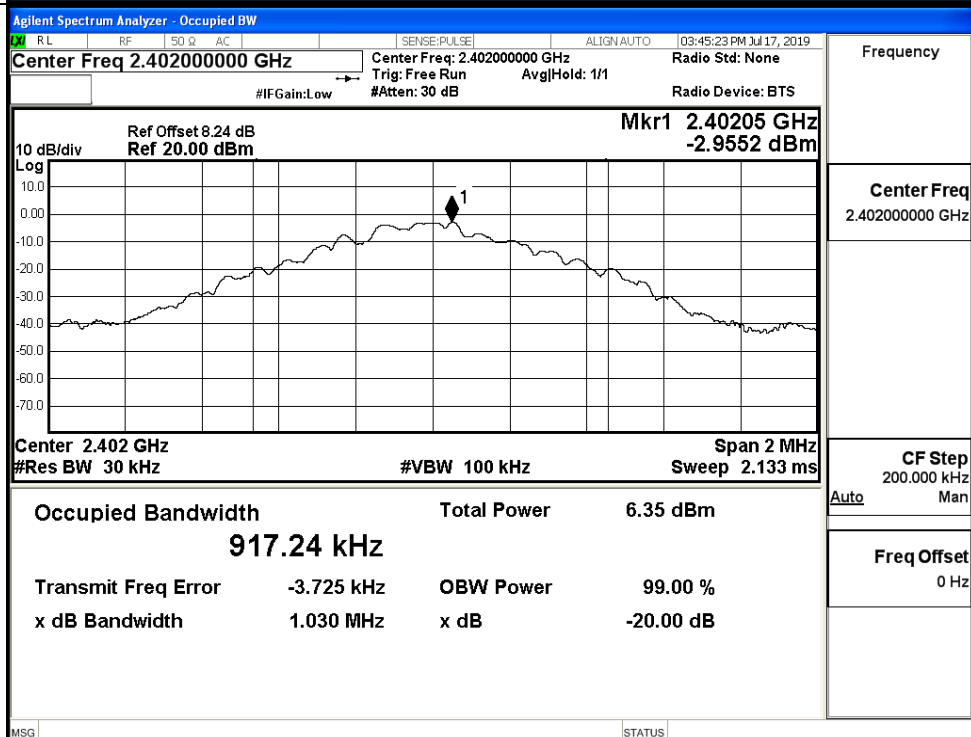
GFSK/HCH



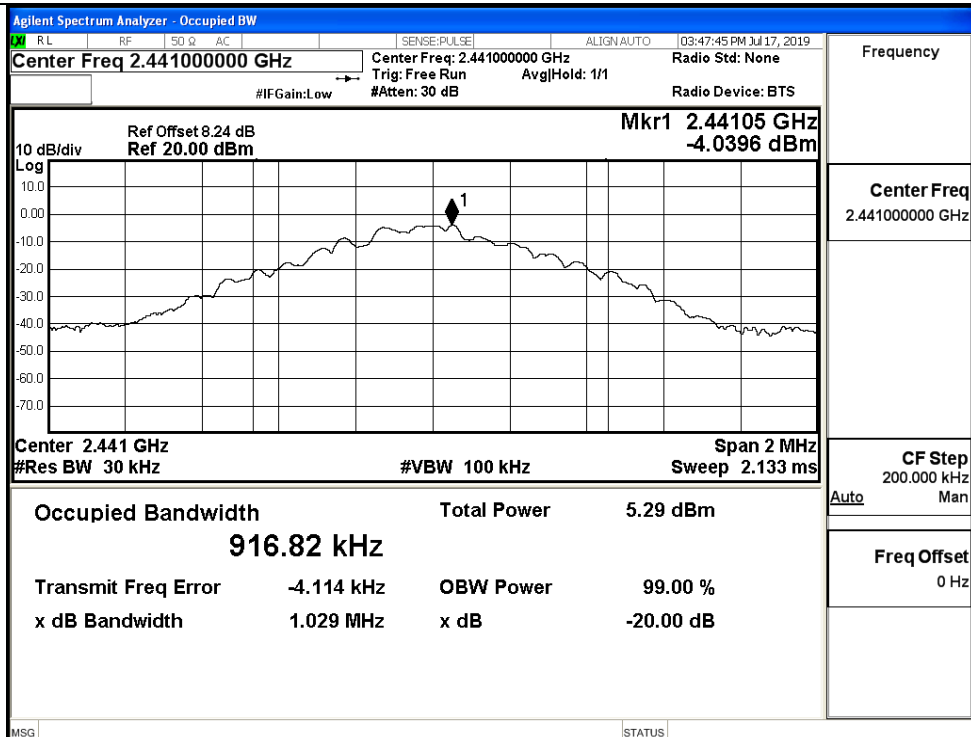
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

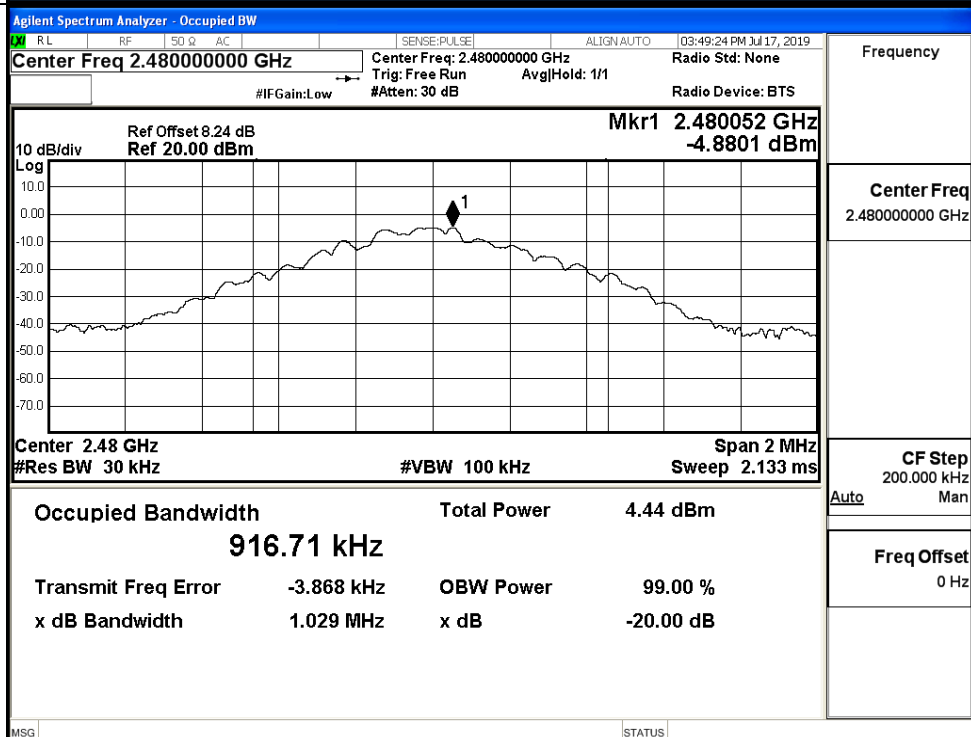
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH



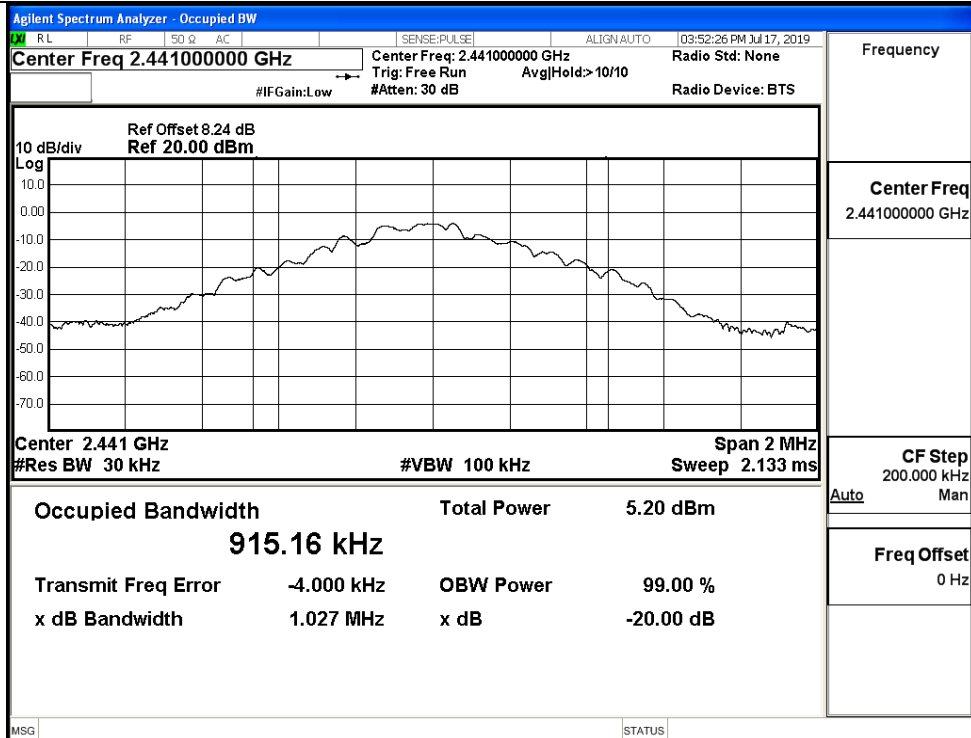
A.3 Occupied Bandwidth

Mode	Channel.	Occupied Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.91538	Not Specified	PASS
	MCH	0.91516	Not Specified	PASS
	HCH	0.91517	Not Specified	PASS
$\pi/4$ DQPSK	LCH	0.91552	Not Specified	PASS
	MCH	0.91547	Not Specified	PASS
	HCH	0.91571	Not Specified	PASS
8DPSK	LCH	0.91524	Not Specified	PASS
	MCH	0.91572	Not Specified	PASS
	HCH	0.91503	Not Specified	PASS

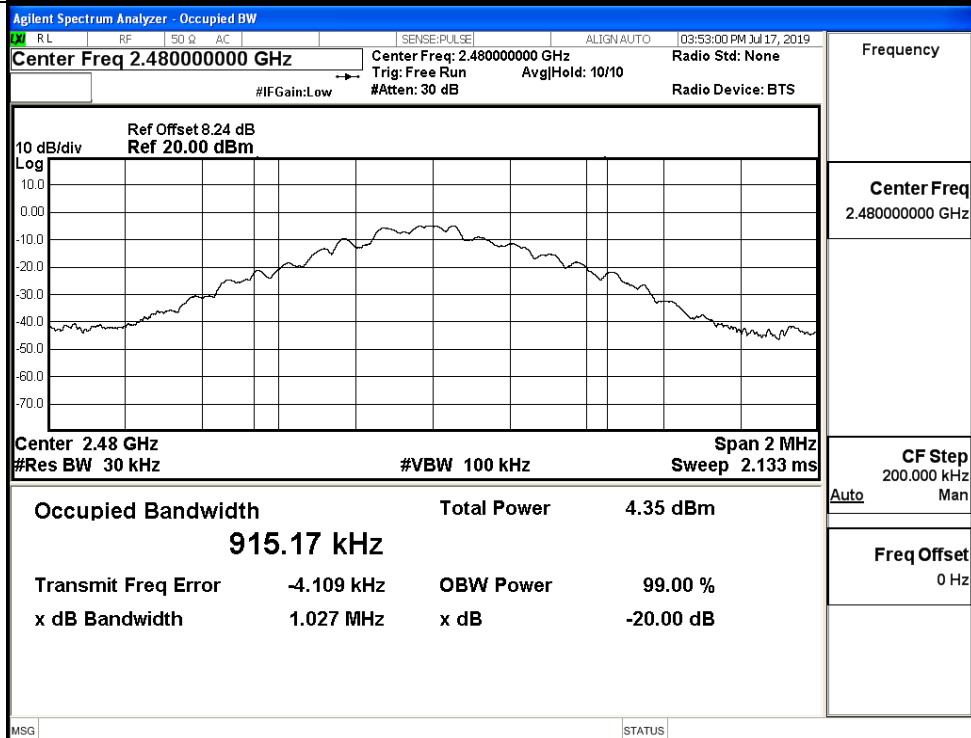
Test Graphs

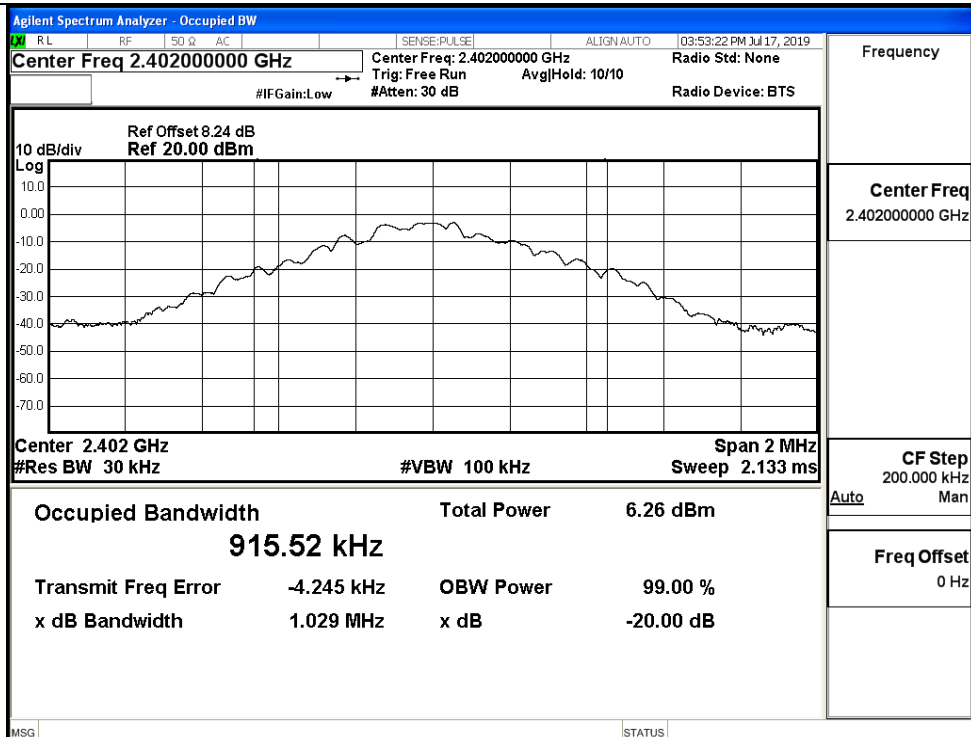


GFSK/MCH



GFSK/HCH

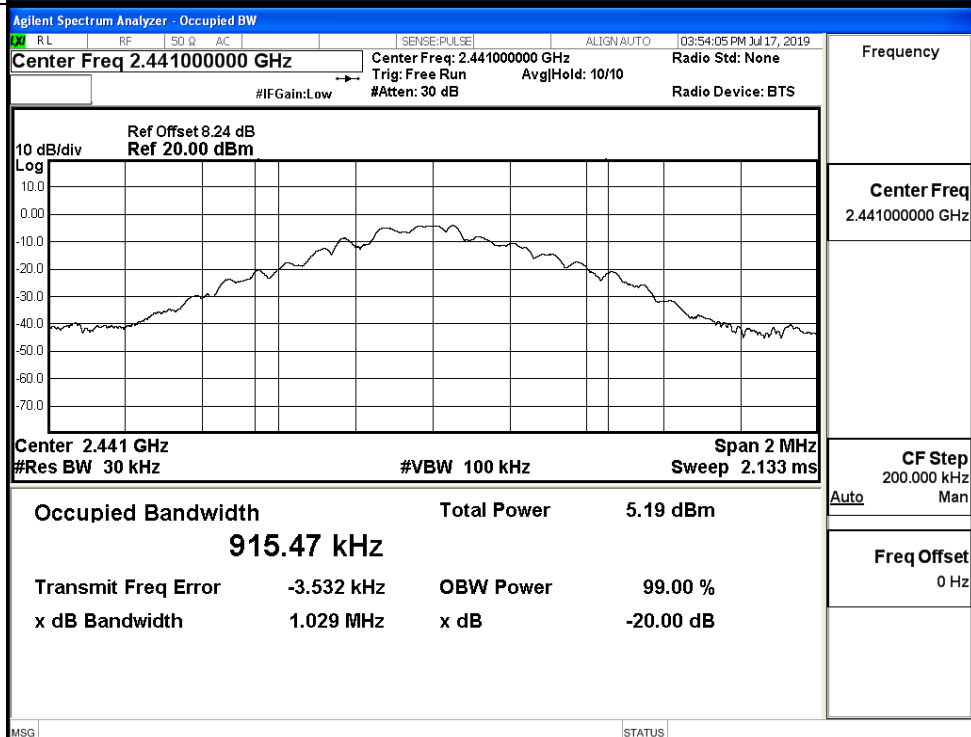


$\pi/4$ DQPSK/LCH

Frequency

Center Freq
2.40200000 GHzCF Step
200.000 kHz
Man

Auto

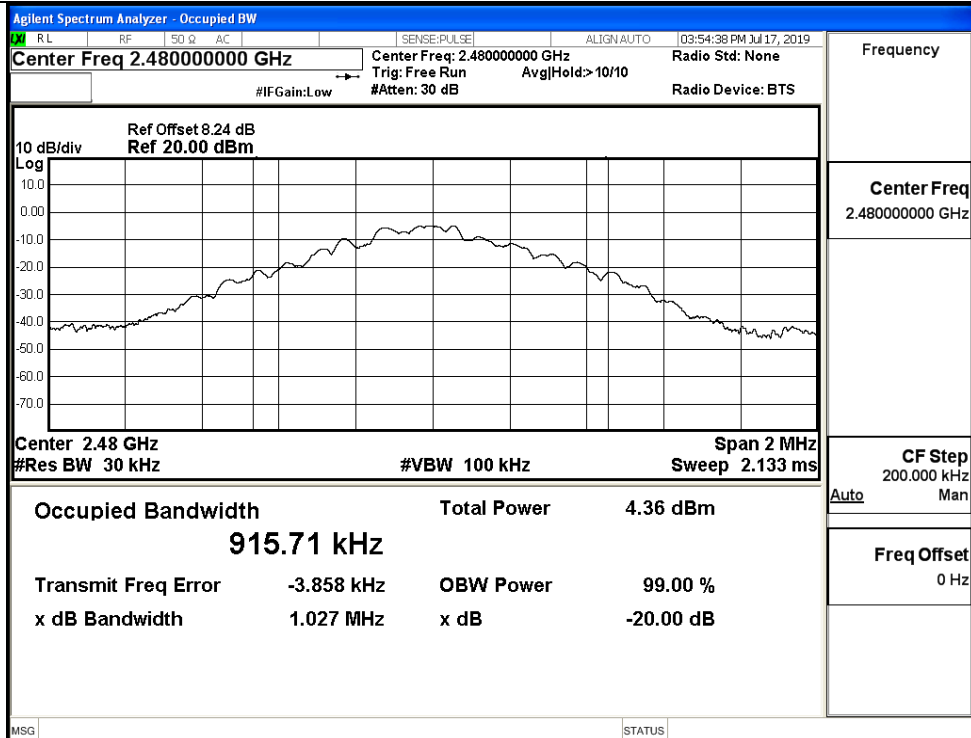
Freq Offset
0 Hz $\pi/4$ DQPSK/MCH

Frequency

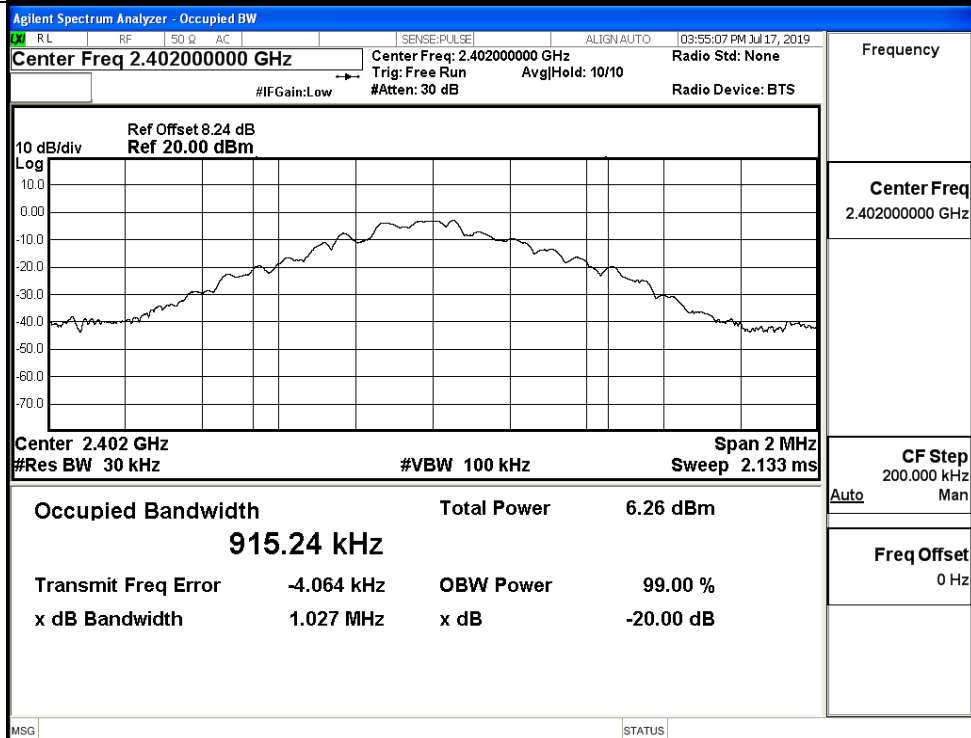
Center Freq
2.44100000 GHzCF Step
200.000 kHz
Man

Auto

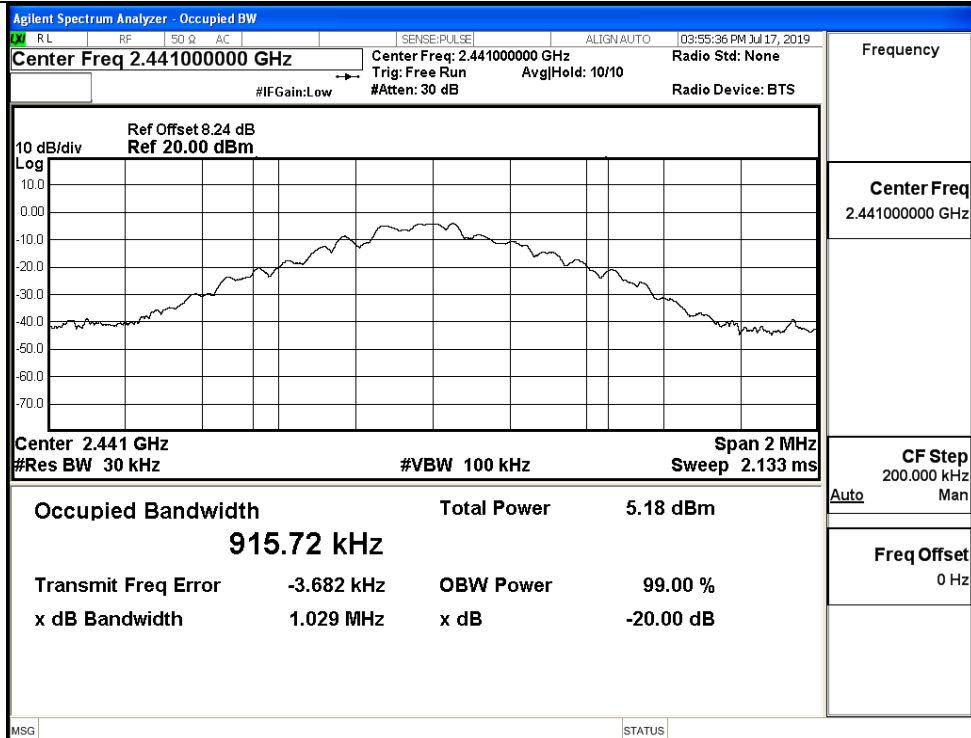
Freq Offset
0 Hz

$\pi/4$ DQPSK/HCH

8DPSK/LCH



8DPSK/MCH



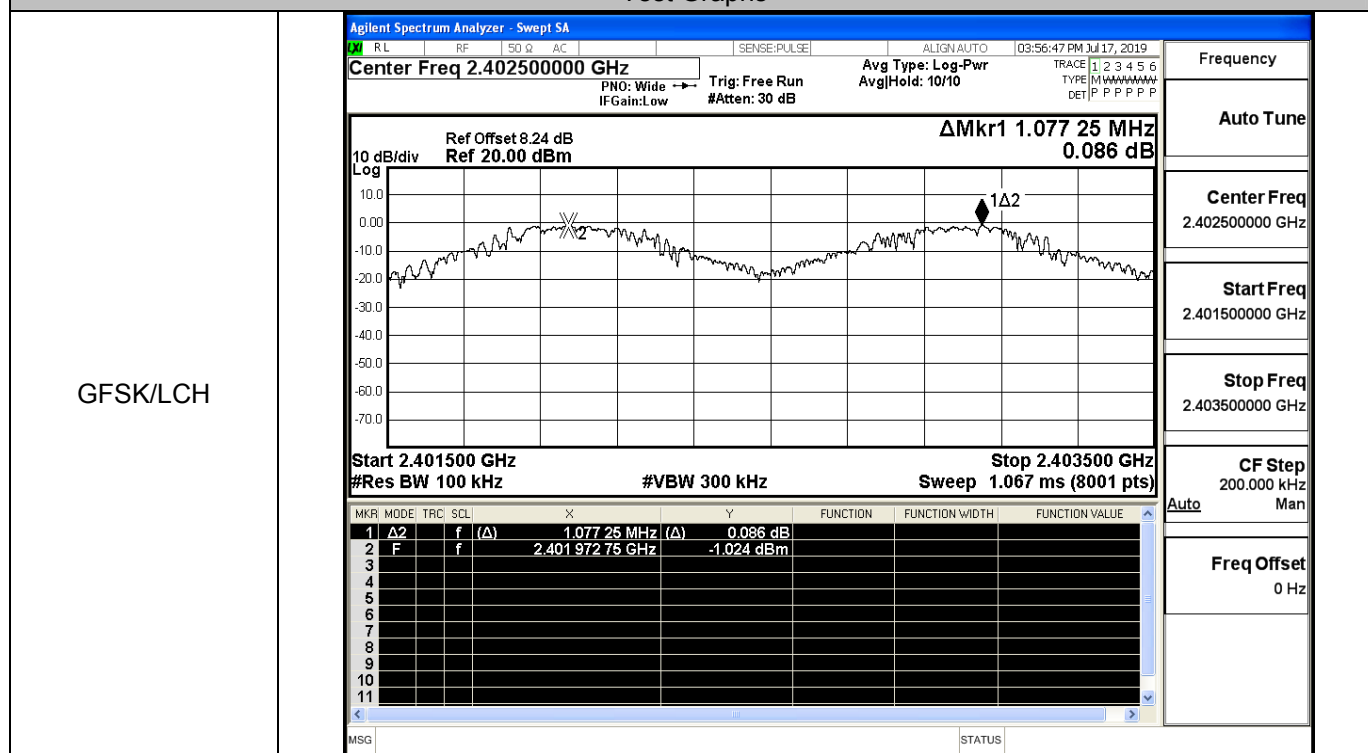
8DPSK/HCH



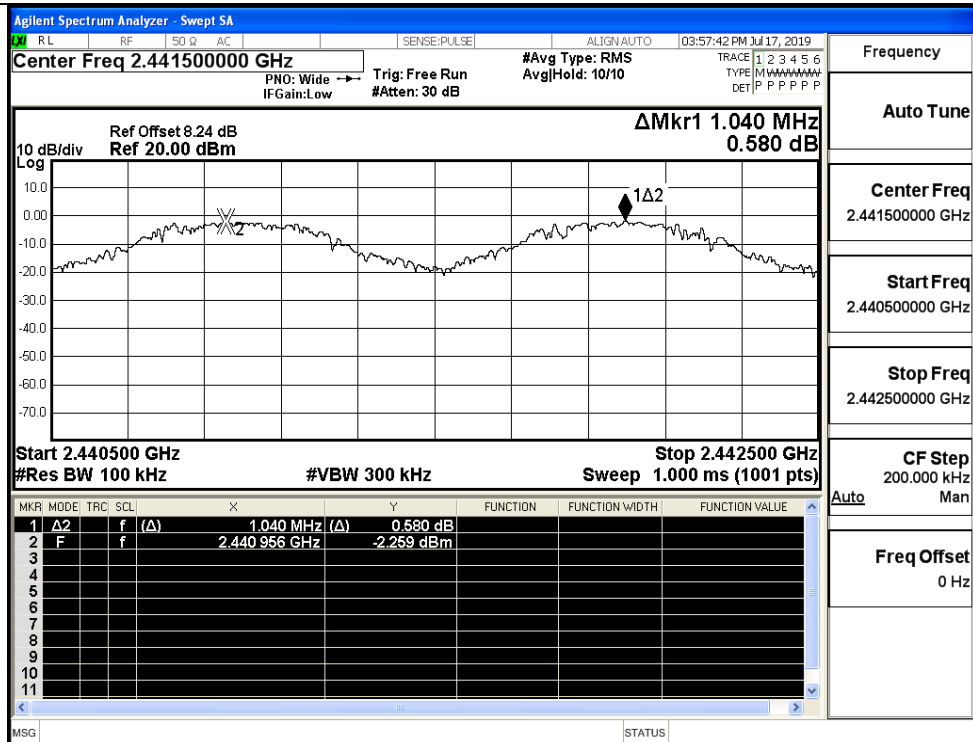
A.4 Carrier Frequency Separation

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.077	0.687	PASS
	MCH	1.040	0.687	PASS
	HCH	0.944	0.687	PASS
$\pi/4$ DQPSK	LCH	1.018	0.686	PASS
	MCH	1.004	0.686	PASS
	HCH	0.992	0.686	PASS
8DPSK	LCH	1.048	0.687	PASS
	MCH	0.984	0.687	PASS
	HCH	0.950	0.687	PASS

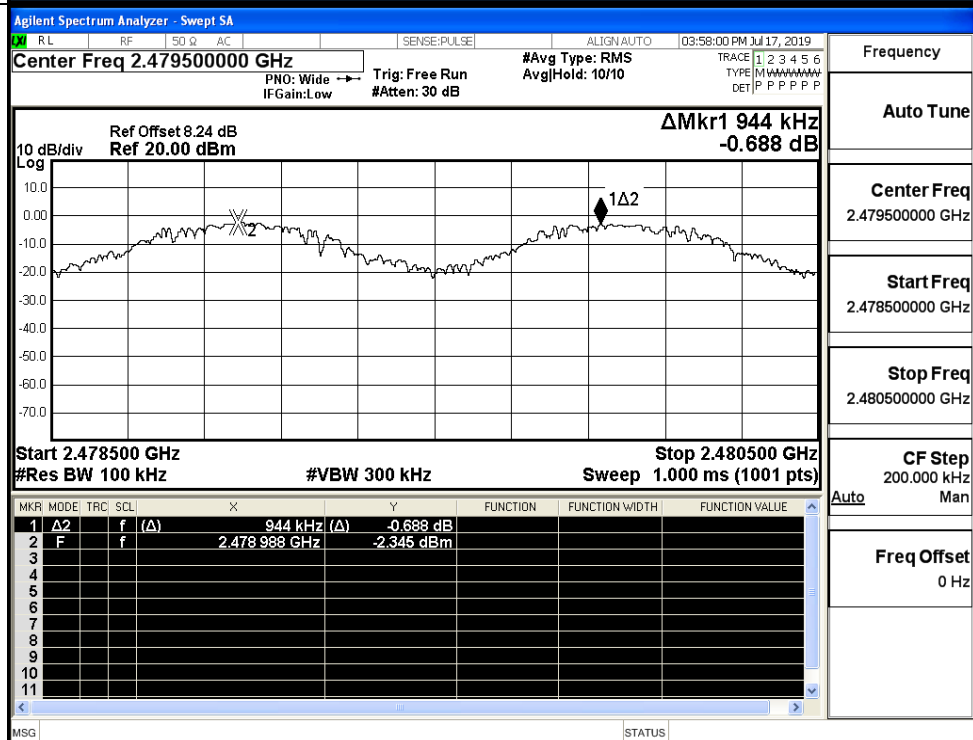
Test Graphs

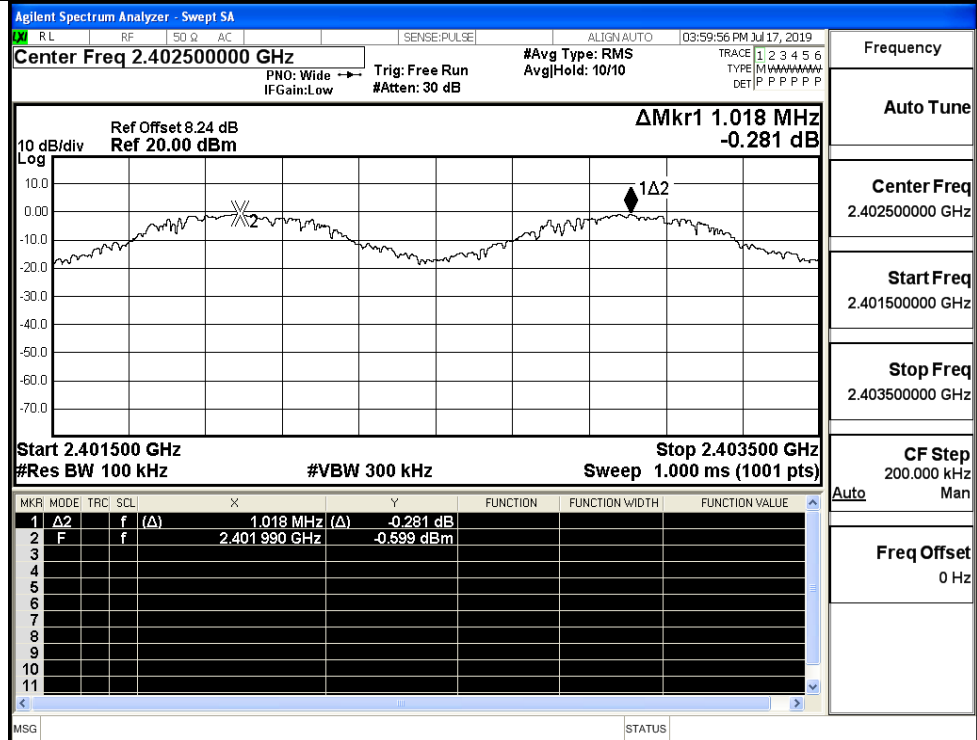


GFSK/MCH



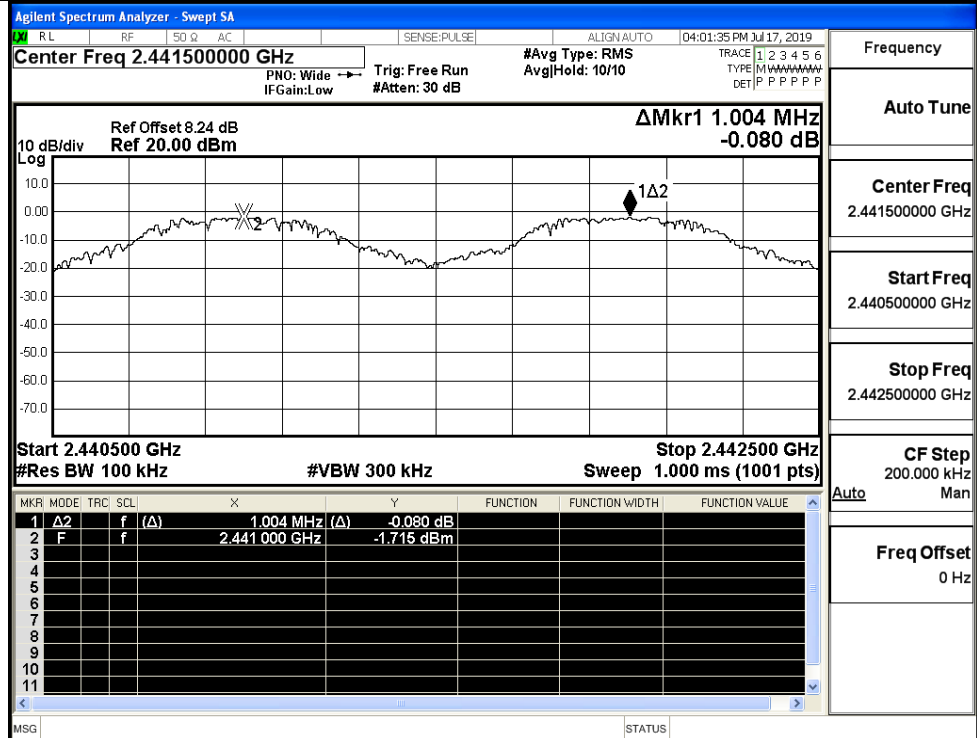
GFSK/HCH



π /4DQPSK/LCH

Frequency

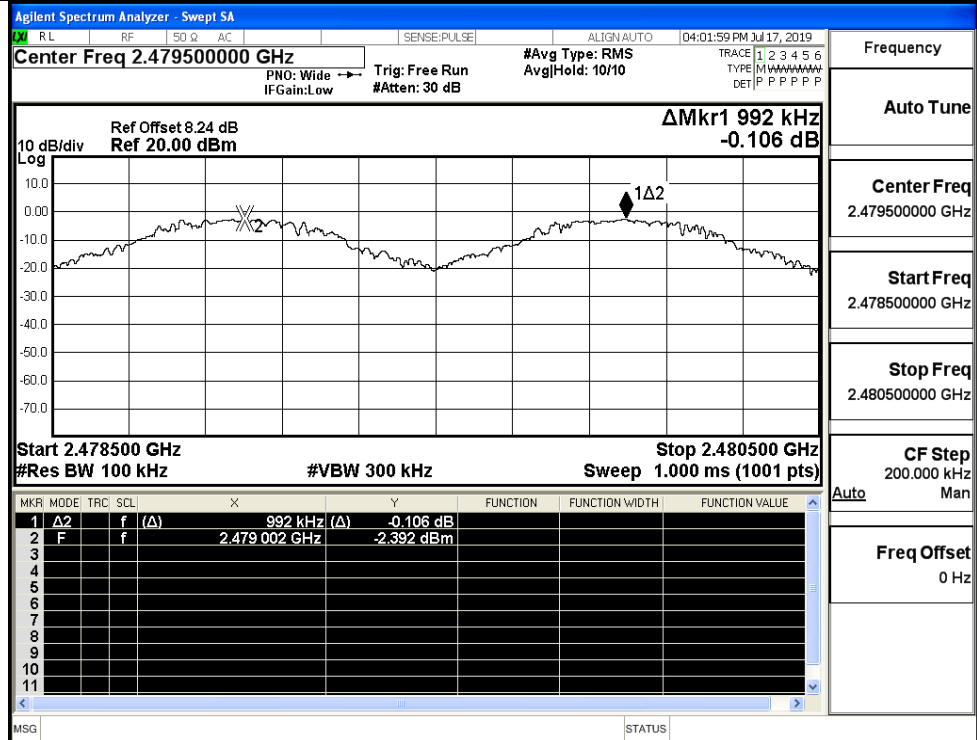
Auto Tune

Center Freq
2.402500000 GHzStart Freq
2.401500000 GHzStop Freq
2.403500000 GHzCF Step
200.000 kHz
ManFreq Offset
0 Hz π /4DQPSK/MCH

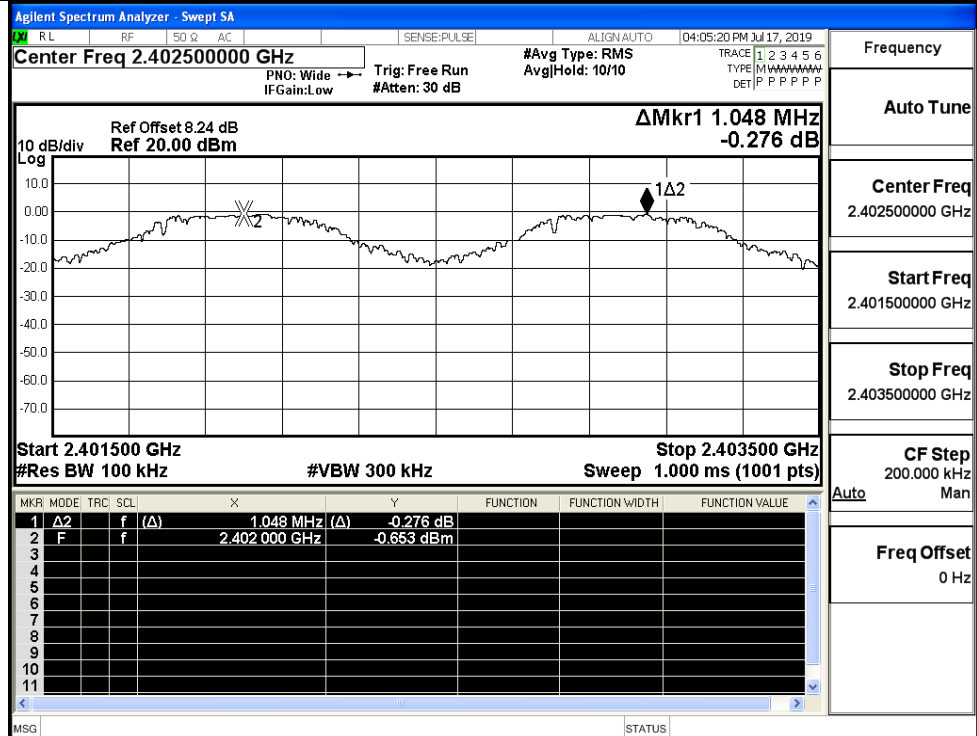
Frequency

Auto Tune

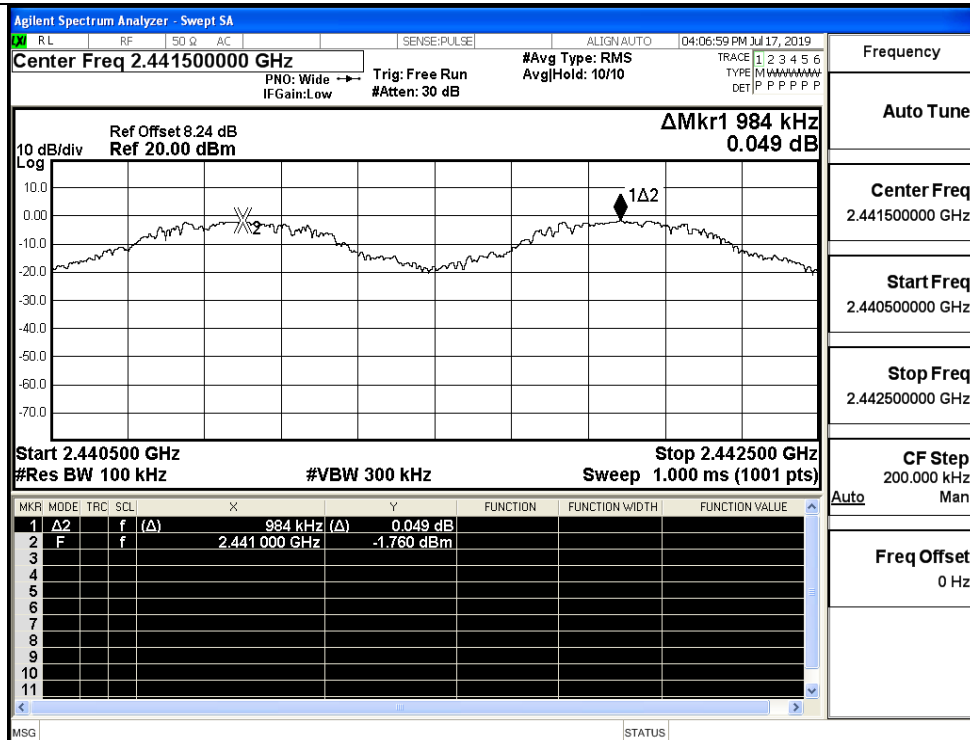
Center Freq
2.441500000 GHzStart Freq
2.440500000 GHzStop Freq
2.442500000 GHzCF Step
200.000 kHz
ManFreq Offset
0 Hz

π /4DQPSK/HCH

8DPSK/LCH



8DPSK/MCH



Frequency

Auto Tune

Center Freq
2.441500000 GHz

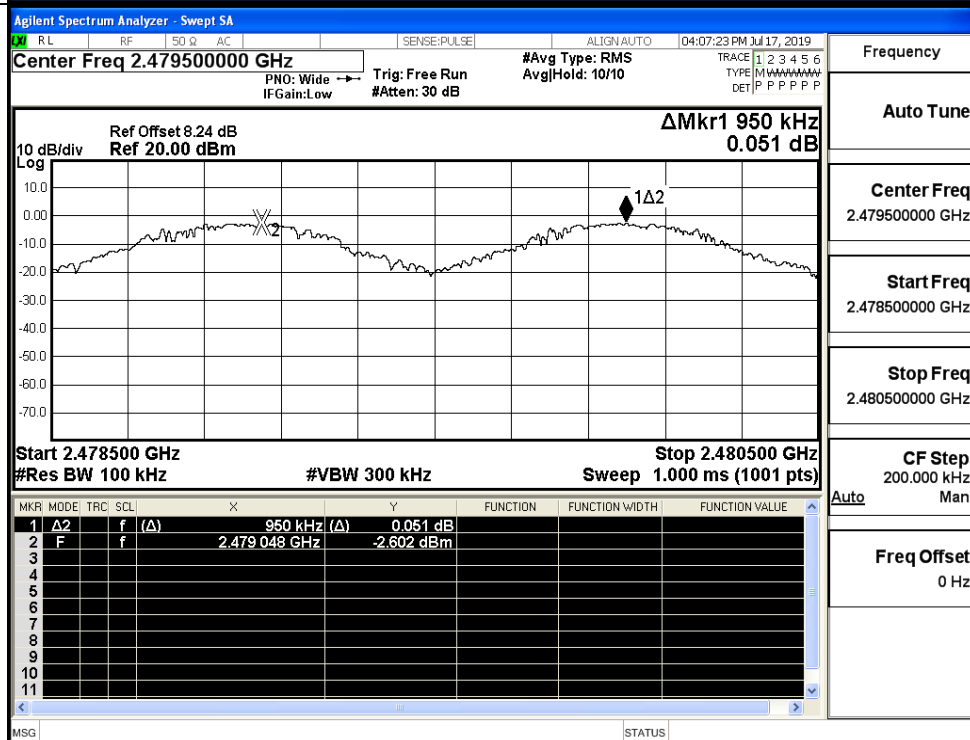
Start Freq
2.440500000 GHz

Stop Freq
2.442500000 GHz

CF Step
200.000 kHz
Man

Freq Offset
0 Hz

8DPSK/HCH



Frequency

Auto Tune

Center Freq
2.479500000 GHz

Start Freq
2.478500000 GHz

Stop Freq
2.480500000 GHz

CF Step
200.000 kHz
Man

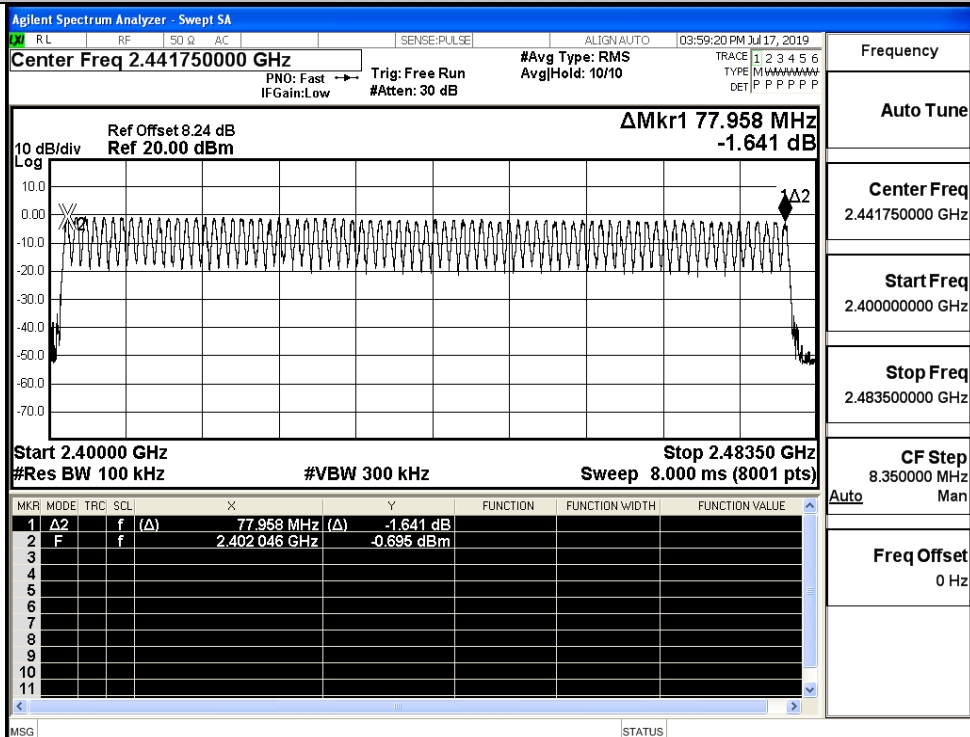
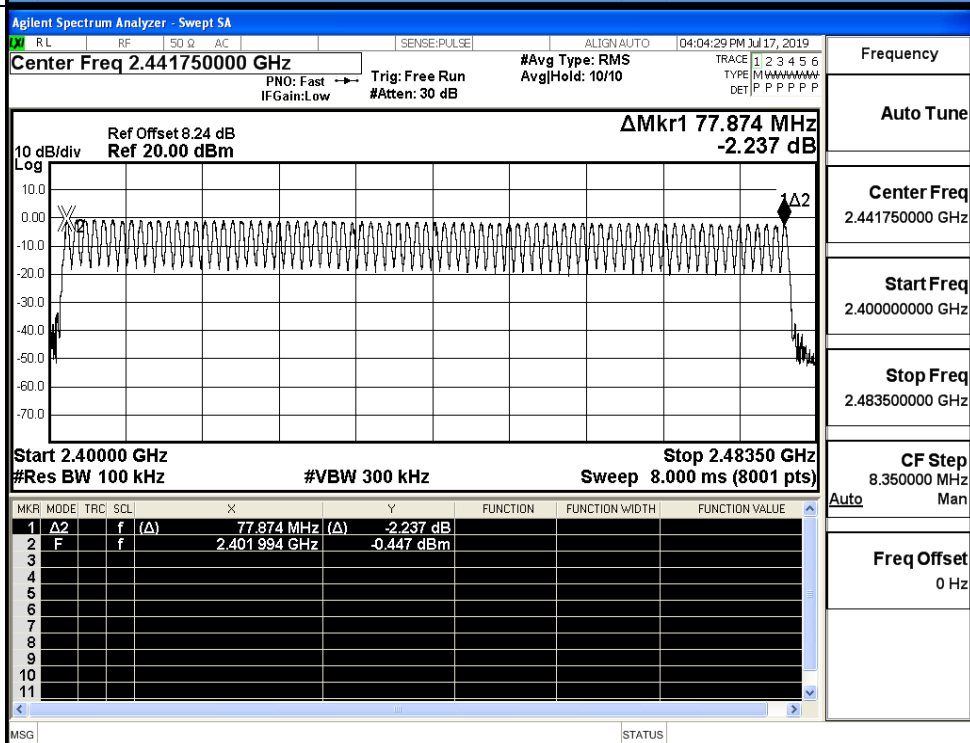
Freq Offset
0 Hz

A.5 Hopping Channel Number

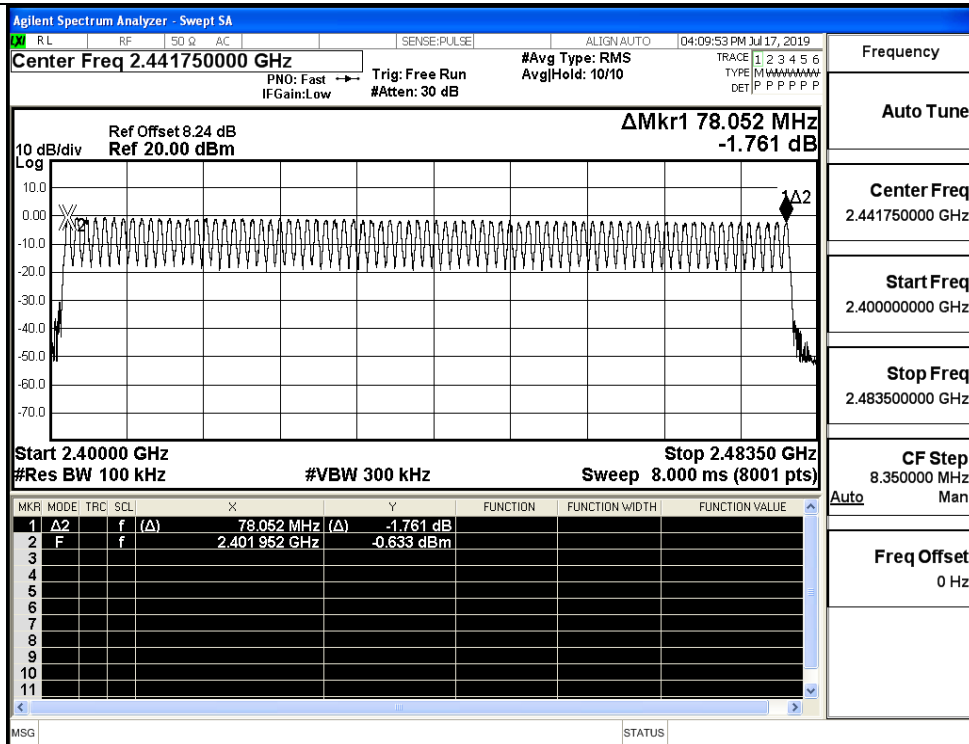
Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	>=15	PASS
π/4DQPSK	Hop	79	>=15	PASS
8DPSK	Hop	79	>=15	PASS

Test Graphs

GFSK/Hop

 $\pi/4$ DQPSK/Hop

8DPSK/Hop

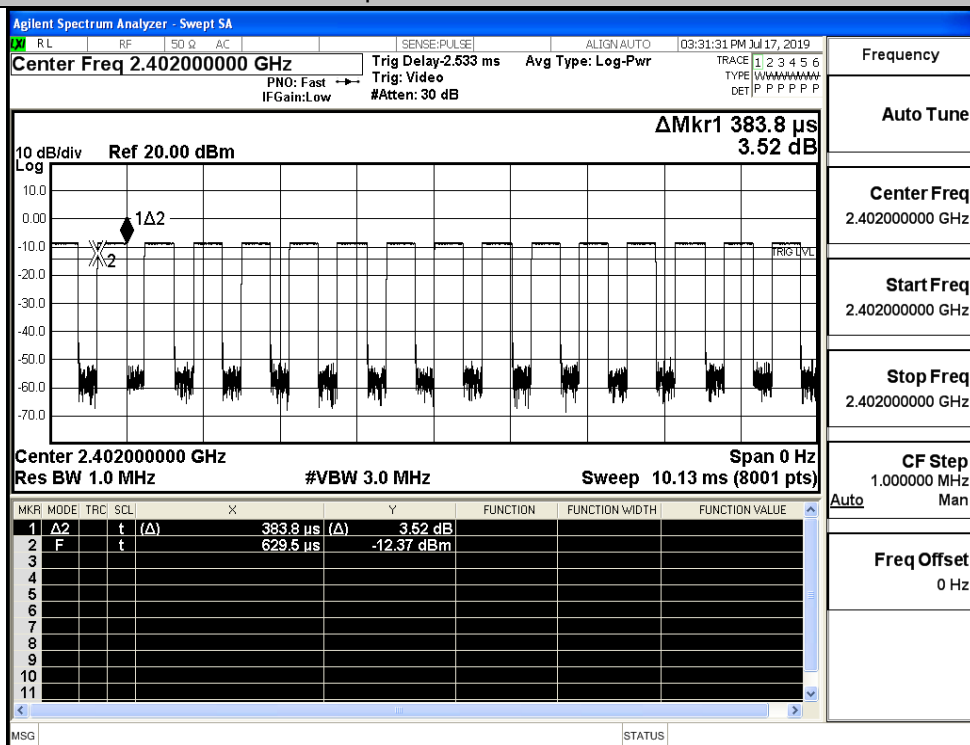


A.6 Dwell Time

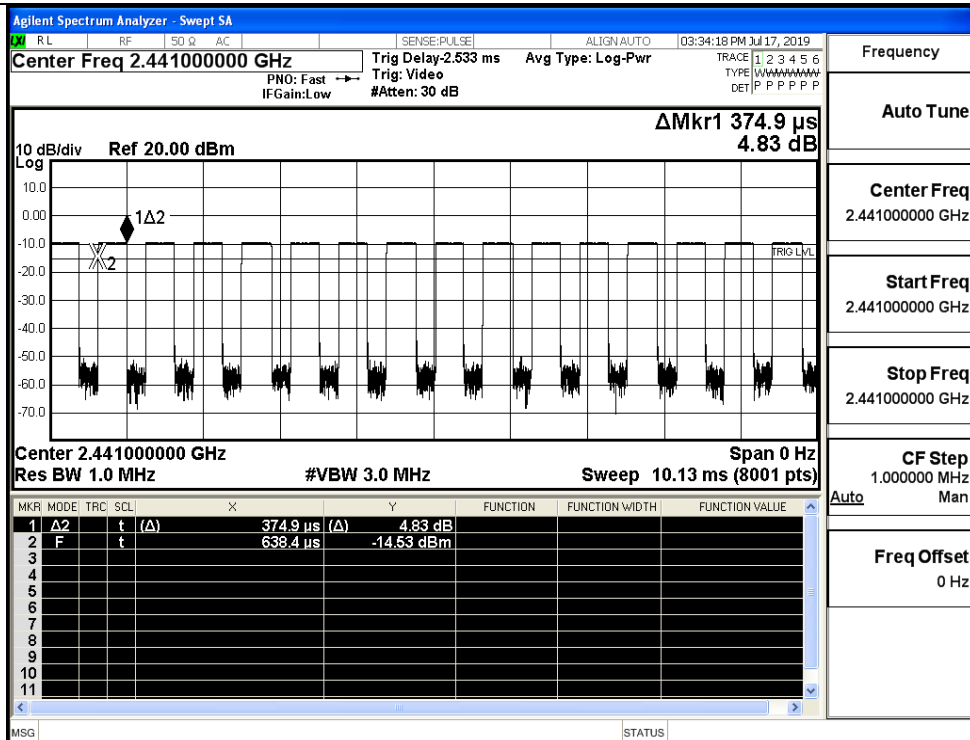
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	0.38	106.7	0.041	0.4	PASS
	DH5	MCH	0.37	106.7	0.039	0.4	PASS
	DH5	HCH	0.37	106.7	0.039	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	0.38	106.7	0.043	0.4	PASS
	2DH5	MCH	0.37	106.7	0.039	0.4	PASS
	2DH5	HCH	0.37	106.7	0.039	0.4	PASS
8DPSK	3DH5	LCH	0.38	106.7	0.041	0.4	PASS
	3DH5	MCH	0.37	106.7	0.041	0.4	PASS
	3DH5	HCH	0.37	106.7	0.043	0.4	PASS

Test Graphs

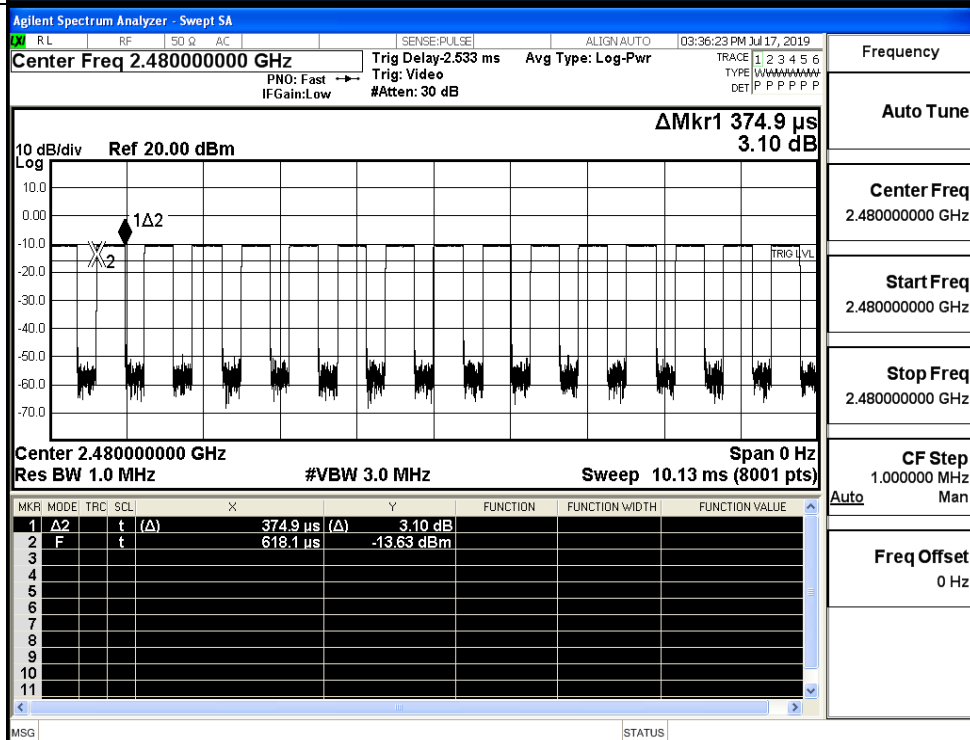
GFSK_DH5/LCH



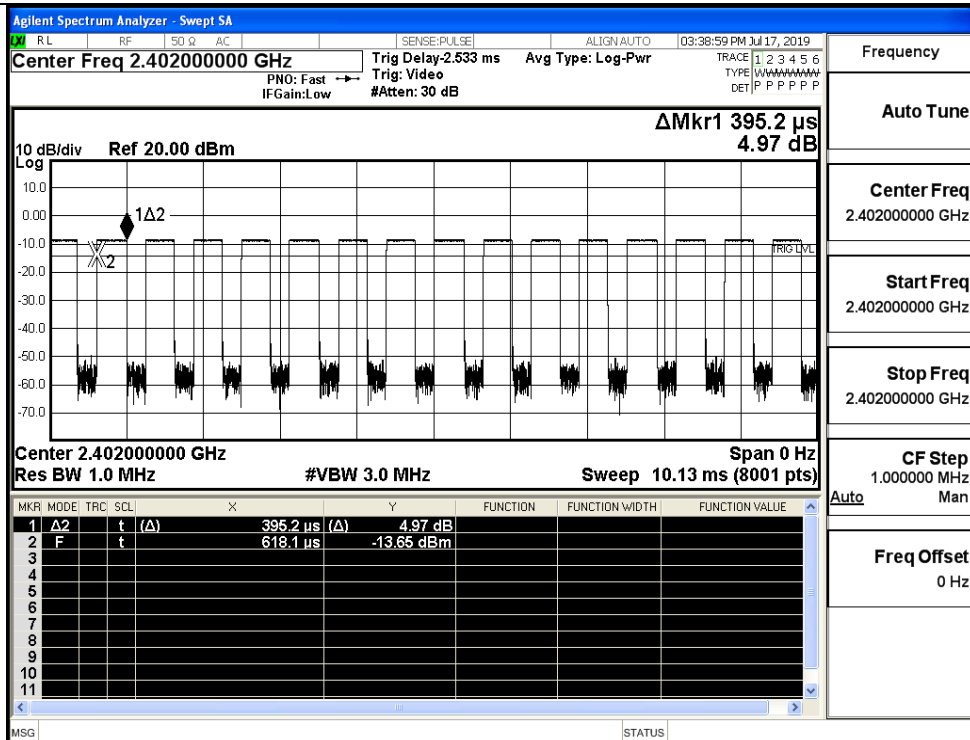
GFSK_DH5/MCH



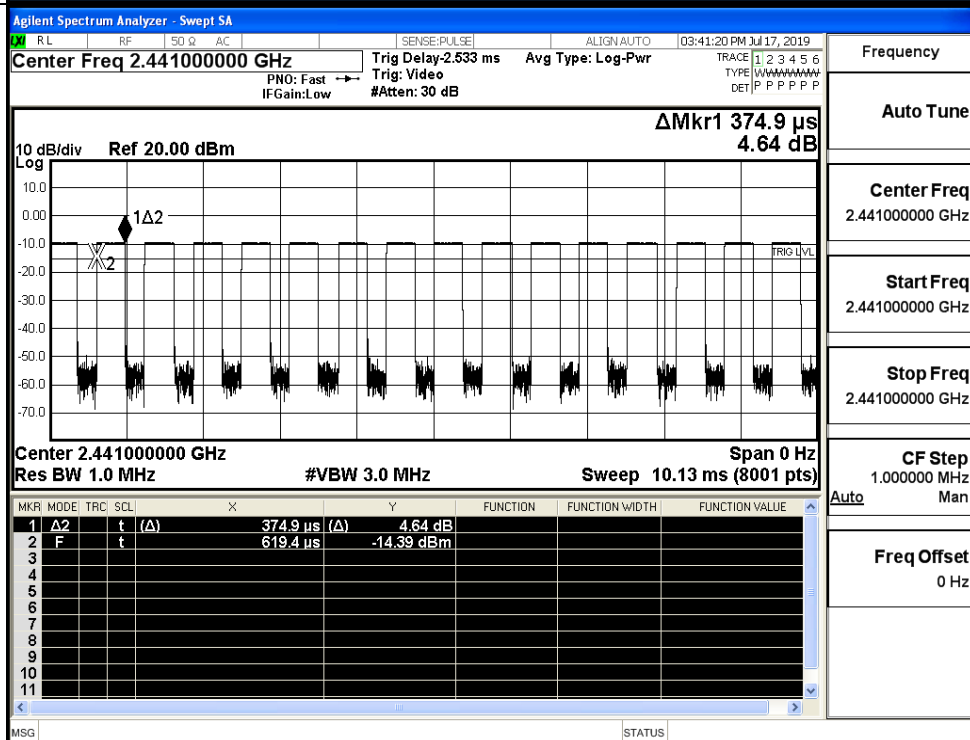
GFSK_DH5/HCH



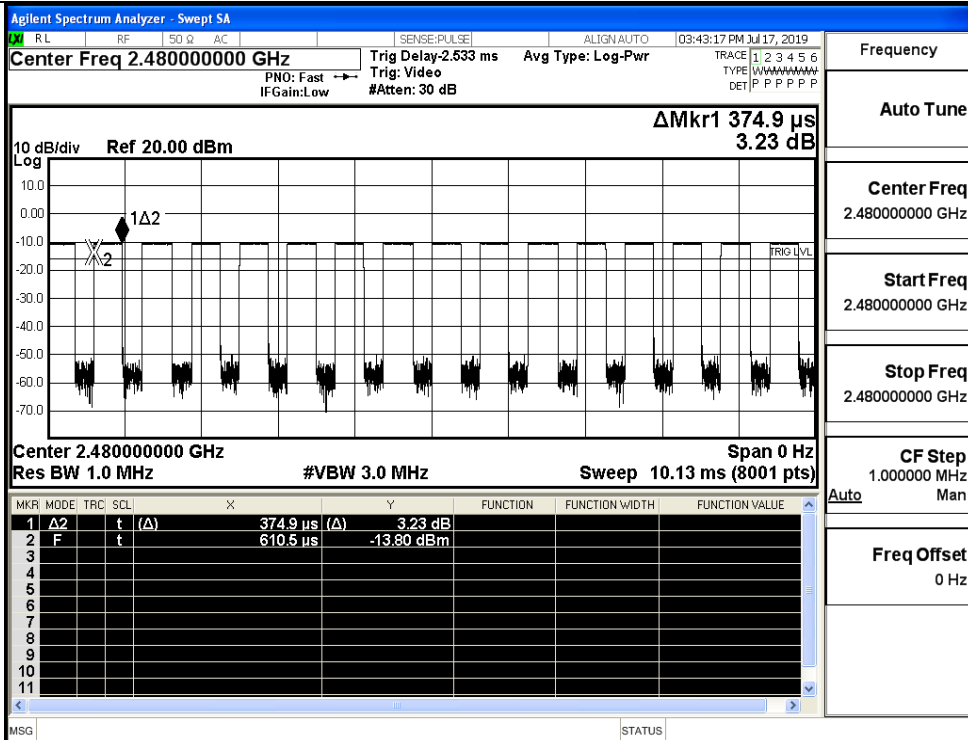
$\pi/4$ DQPSK
_2DH5/LCH



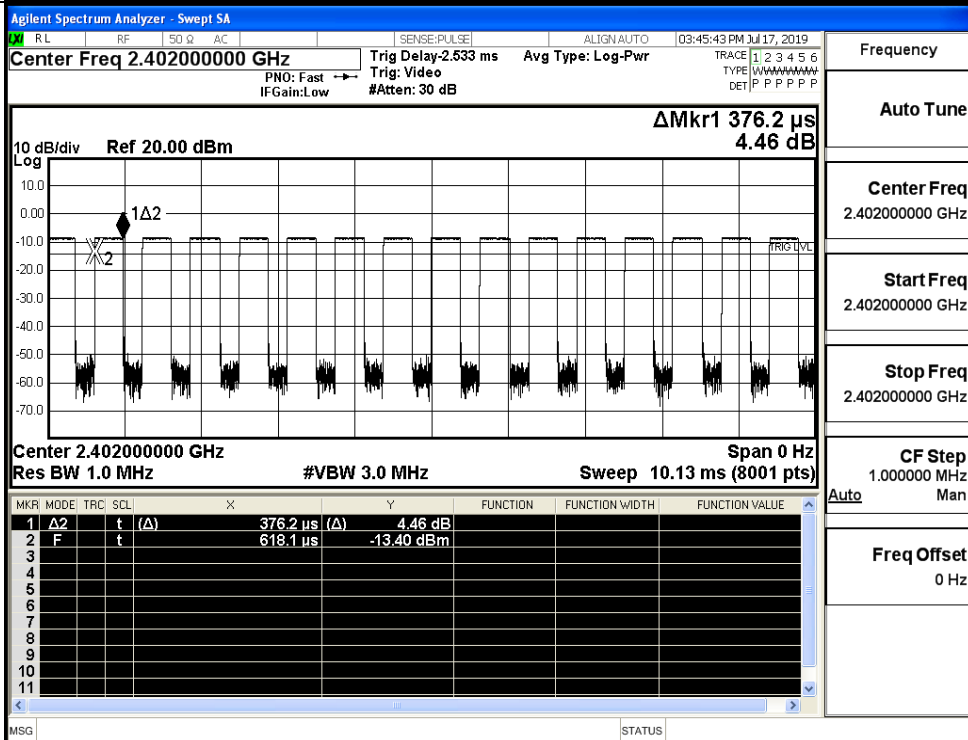
$\pi/4$ DQPSK
_2DH5/MCH



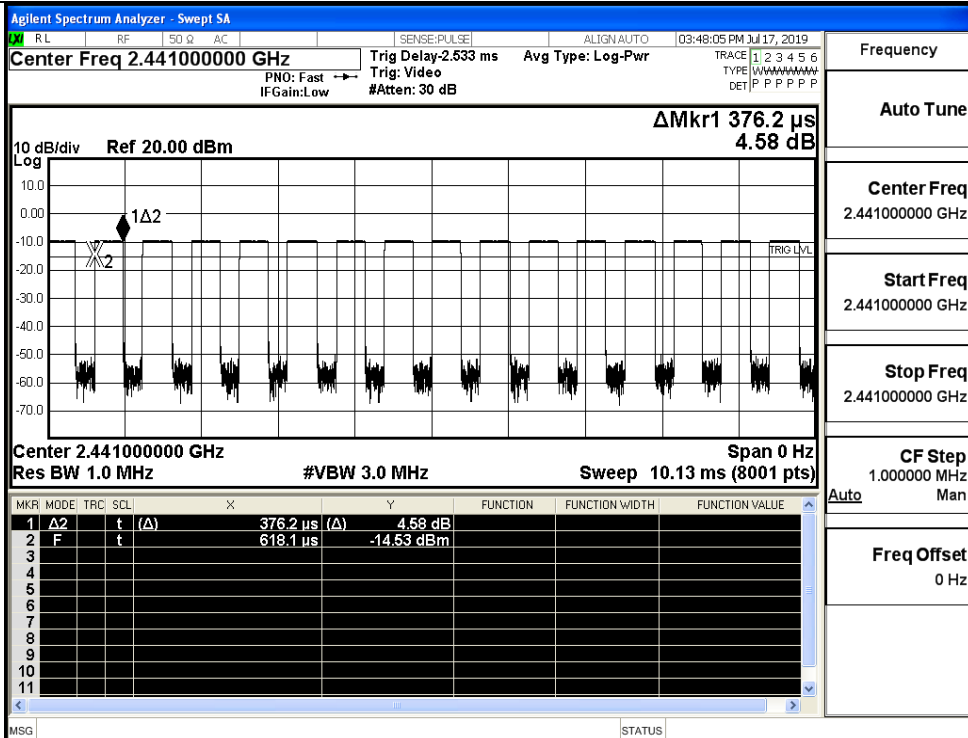
$\pi/4$ DQPSK
_2DH5/HCH



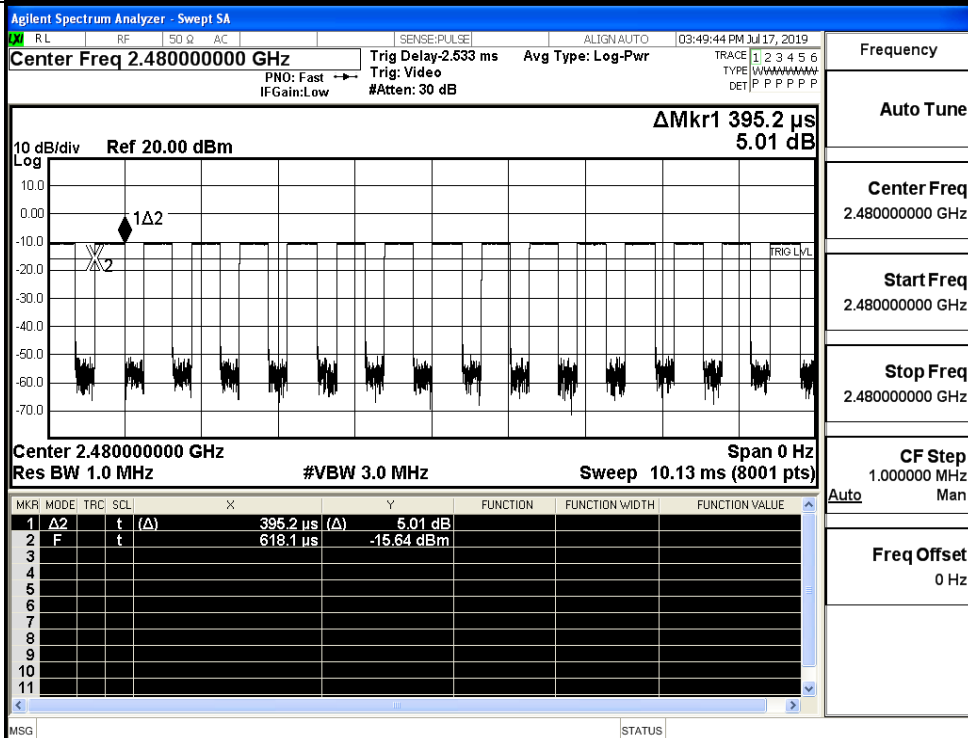
8DPSK _3DH5/LCH



8DPSK_3DH5/MCH



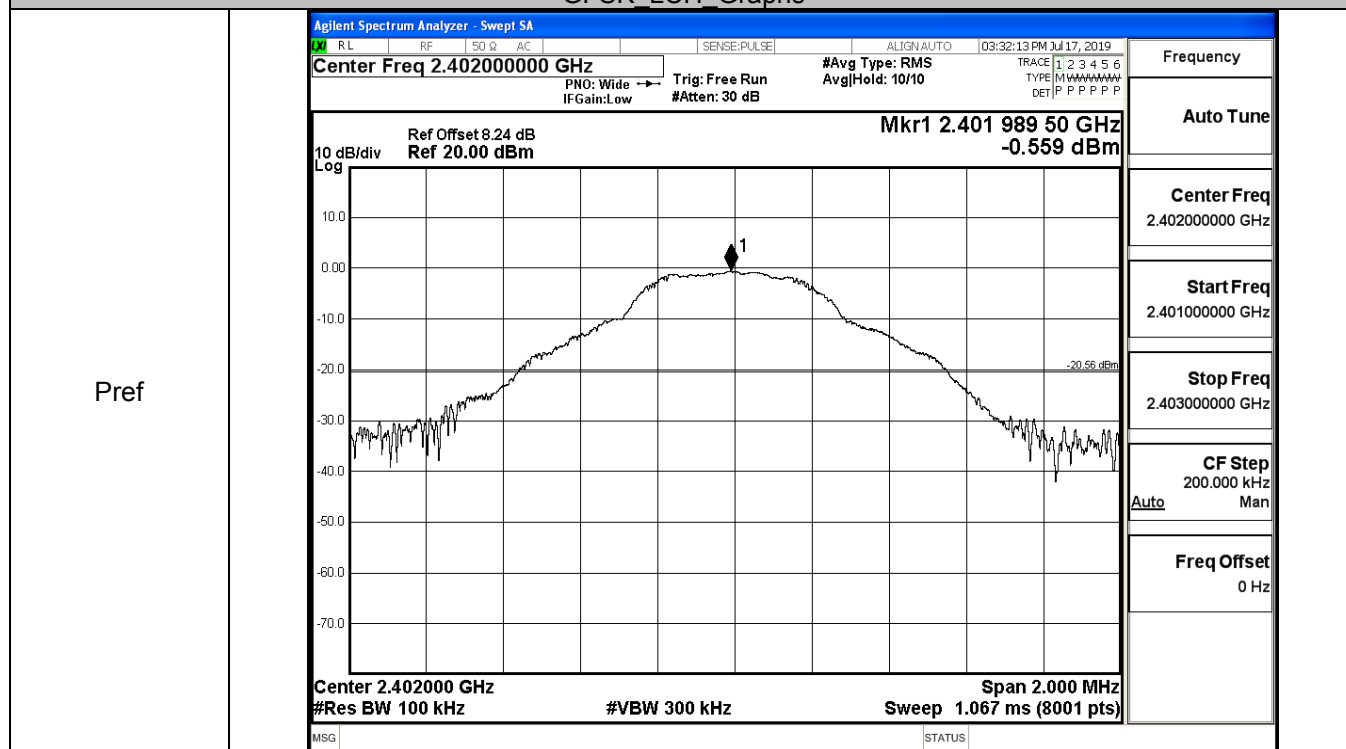
8DPSK_3DH5/HCH



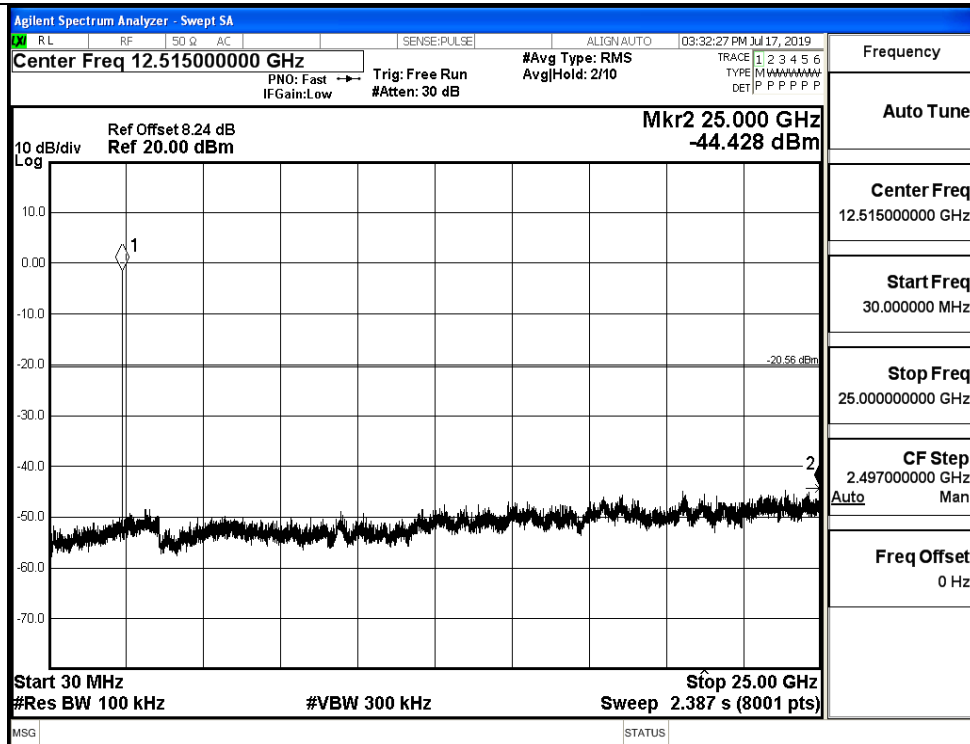
A.7 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-0.559	-44.428	-20.559	PASS
	MCH	-1.634	-44.699	-21.634	PASS
	HCH	-2.495	-44.361	-22.495	PASS
$\pi/4$ DQPSK	LCH	-0.583	-44.949	-20.583	PASS
	MCH	-1.634	-44.740	-21.634	PASS
	HCH	-2.51	-44.766	-22.510	PASS
8DPSK	LCH	-0.612	-43.624	-20.612	PASS
	MCH	-1.617	-44.597	-21.617	PASS
	HCH	-2.482	-44.259	-22.482	PASS

GFSK LCH Graphs

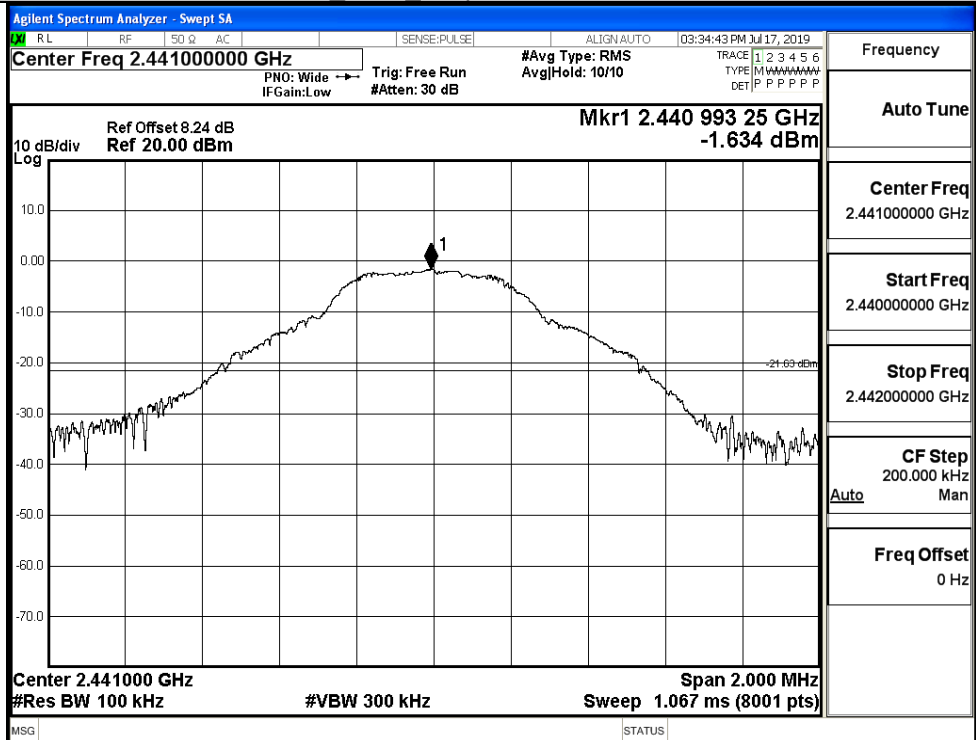


Puw

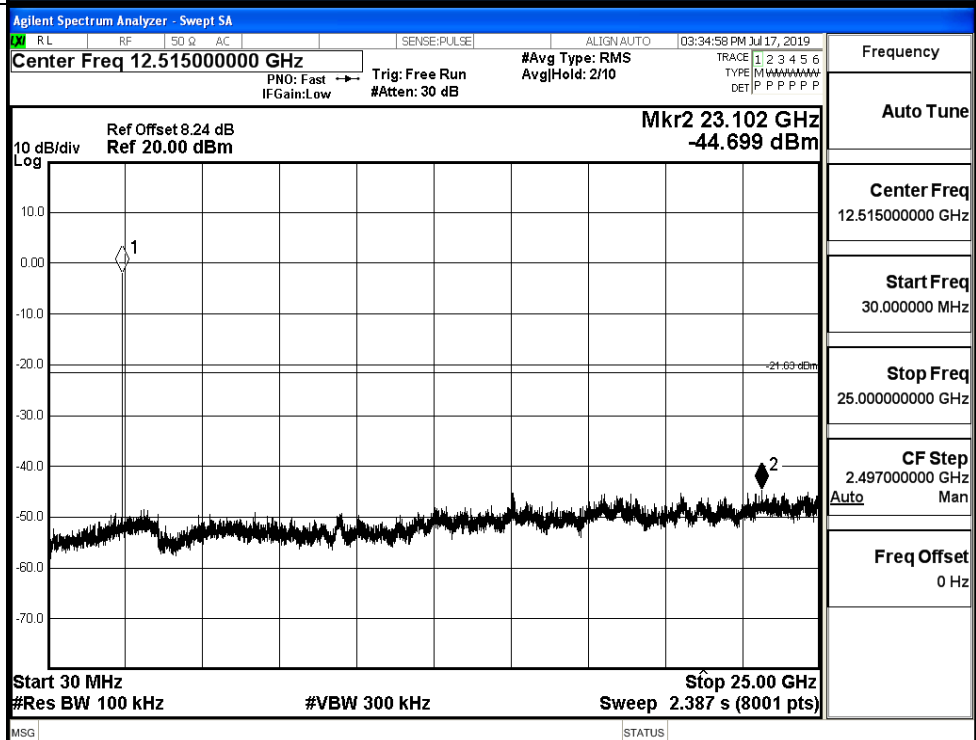


GFSK_MCH_Graphs

Pref

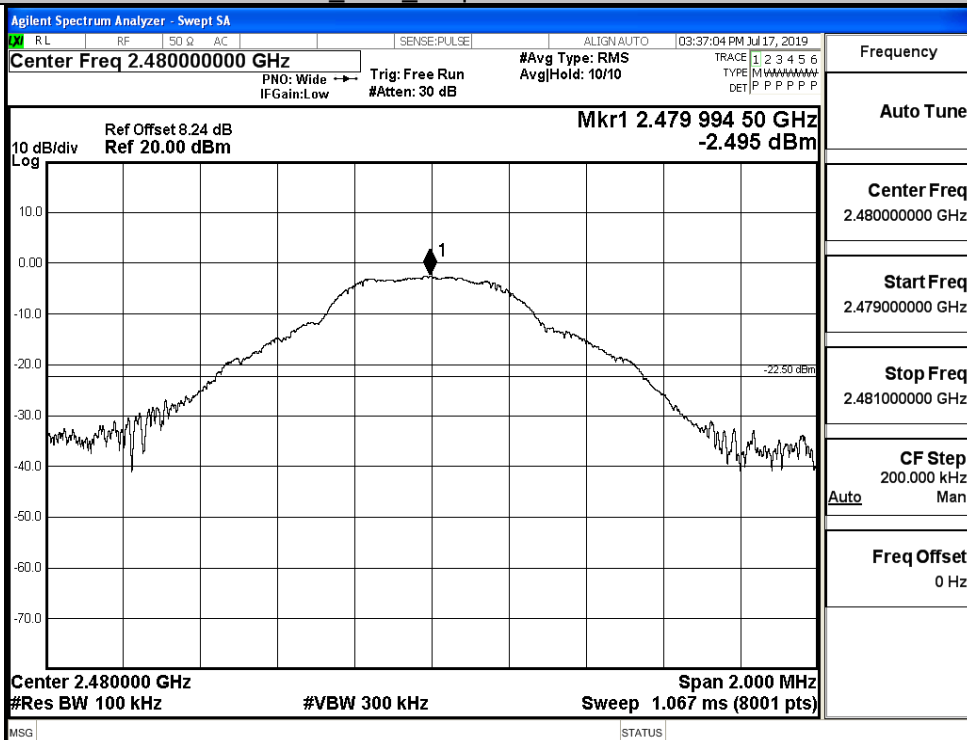


Puw

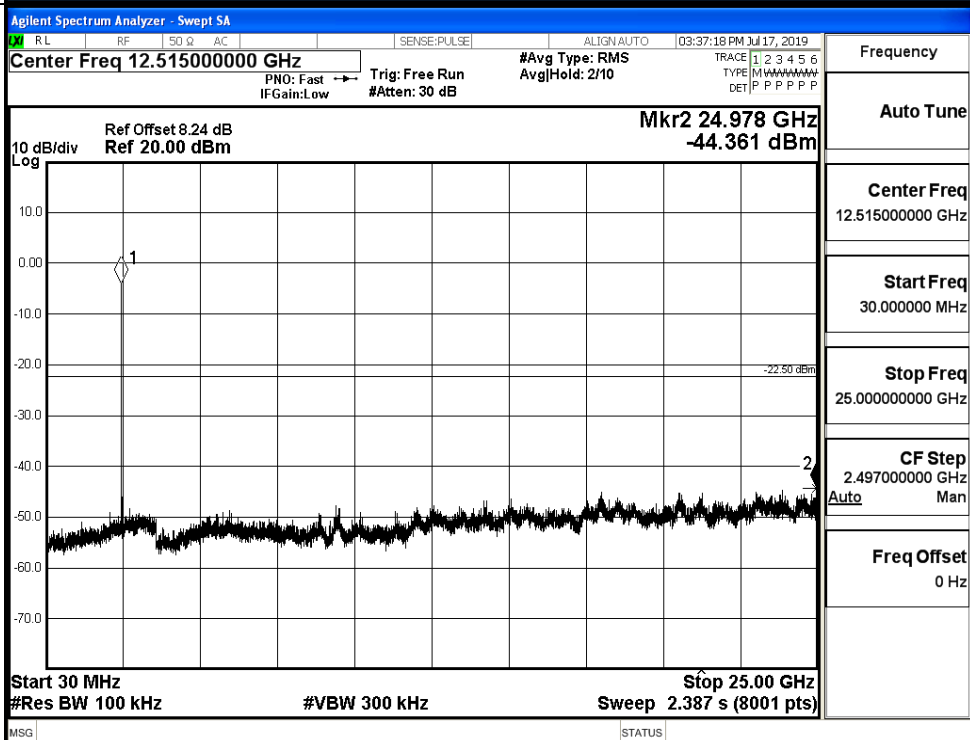


GFSK_HCH_Graphs

Pref

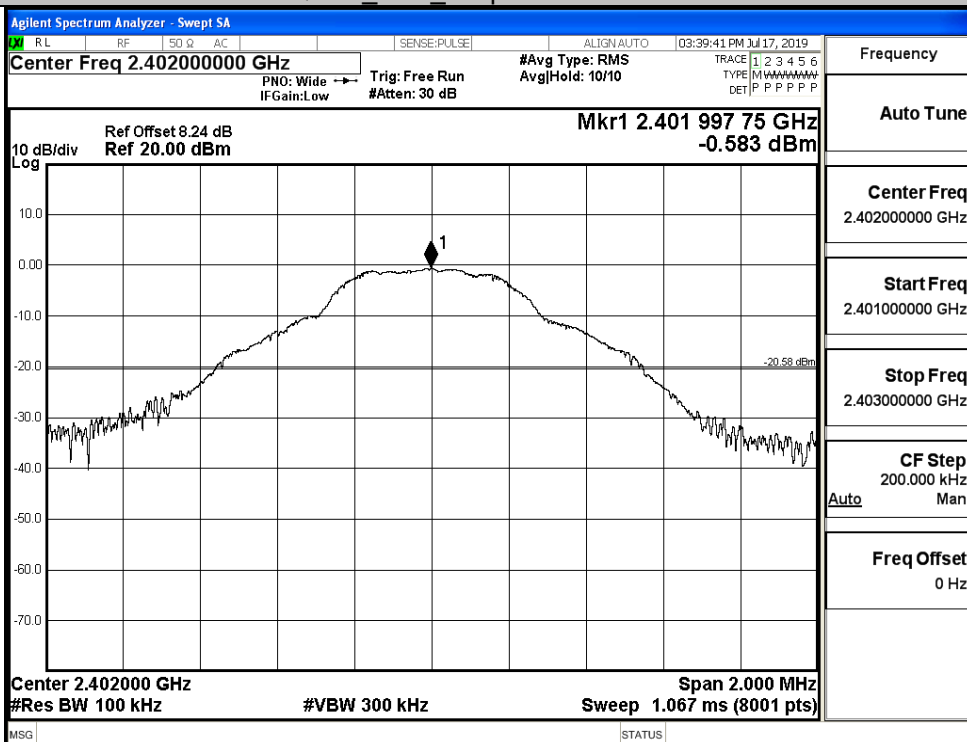


Puw

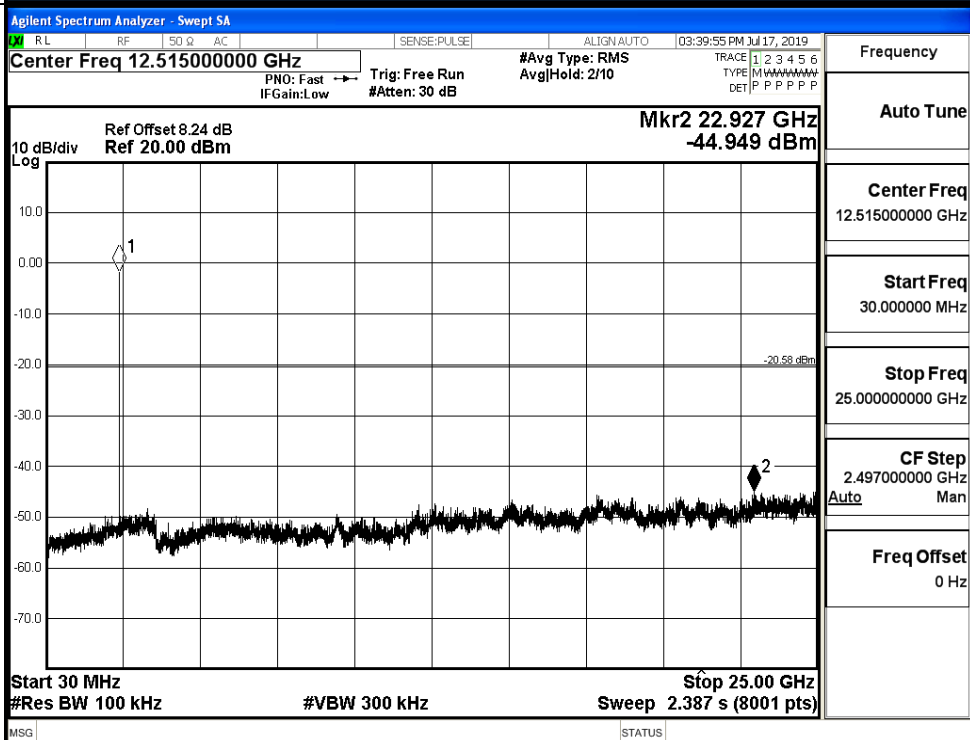


$\pi/4$ DQPSK_LCH_Graphs

Pref

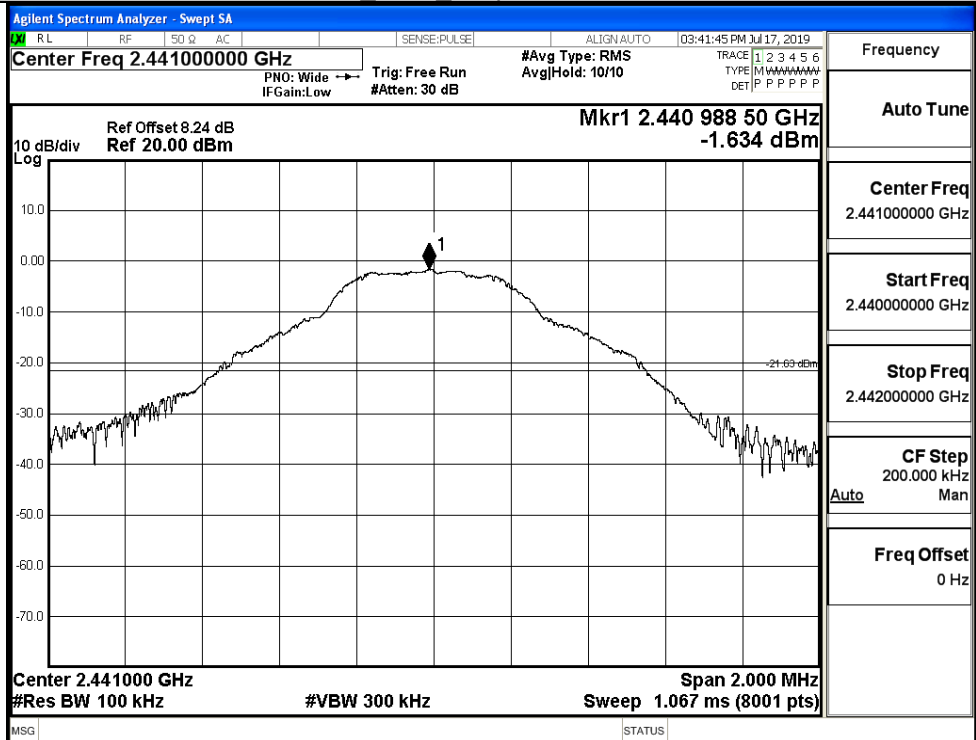


Puw

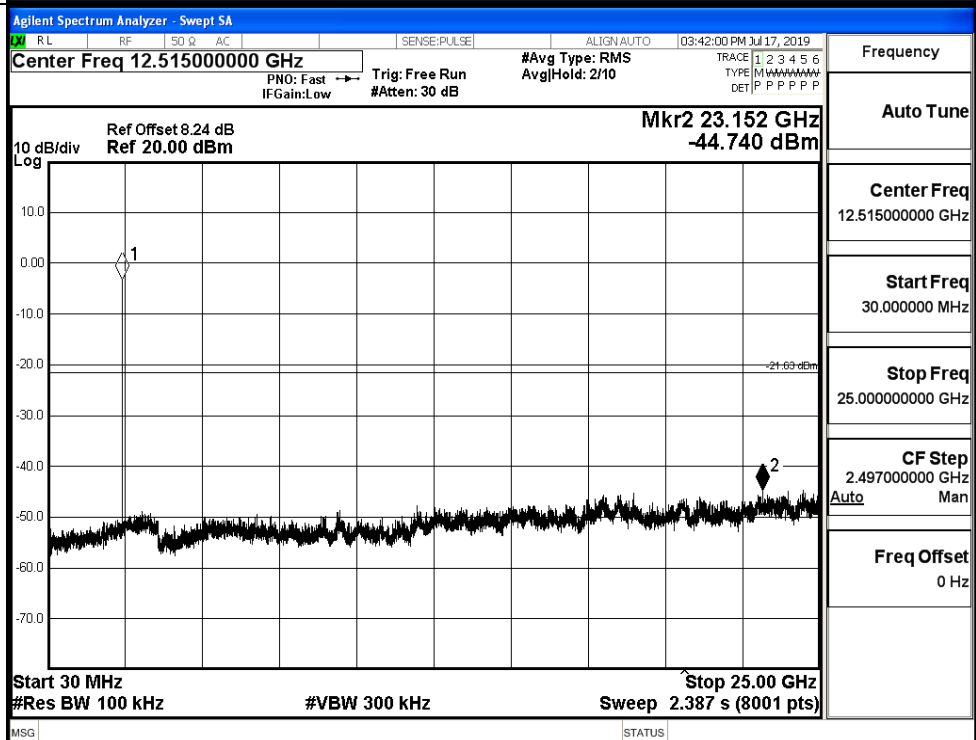


π /4DQPSK_MCH_Graphs

Pref

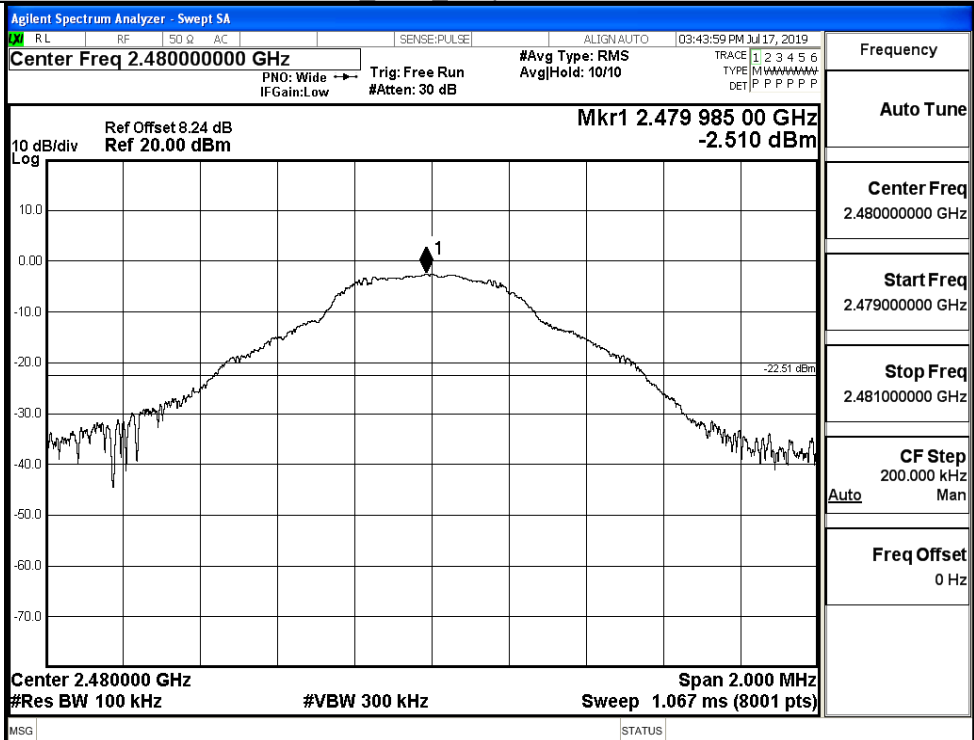


Puw

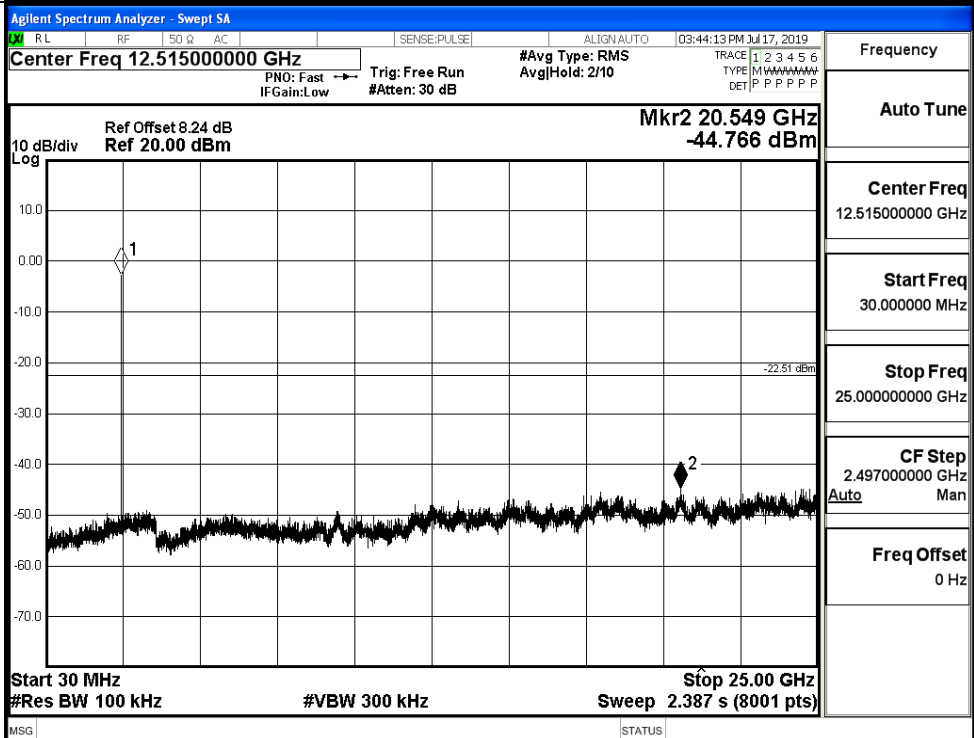


$\pi/4$ DQPSK_HCH_Graphs

Pref

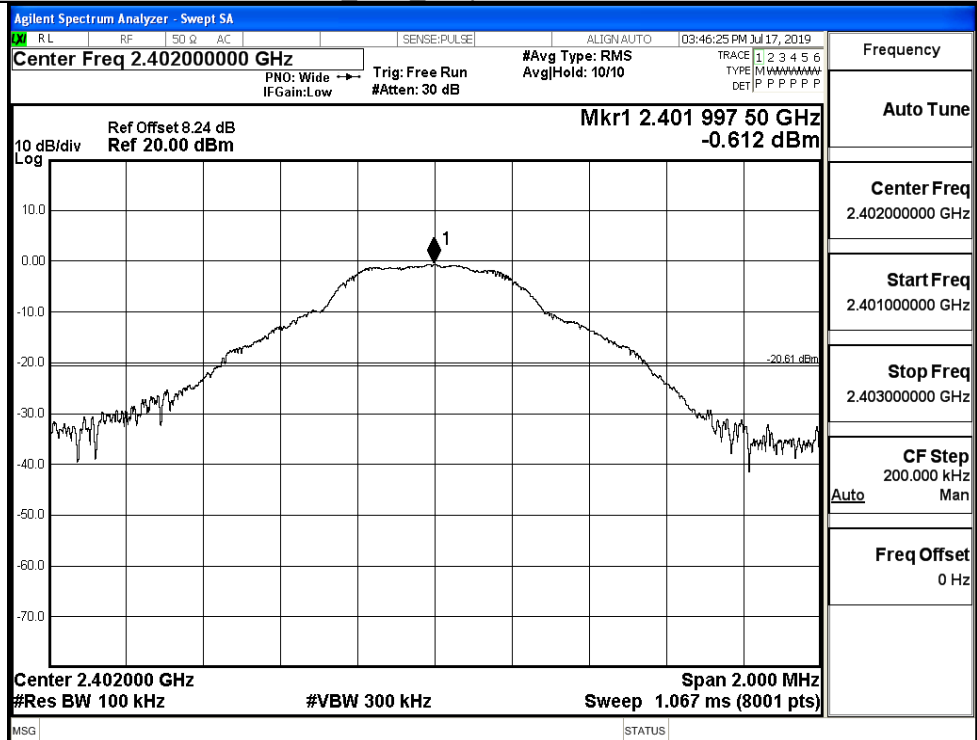


Puw

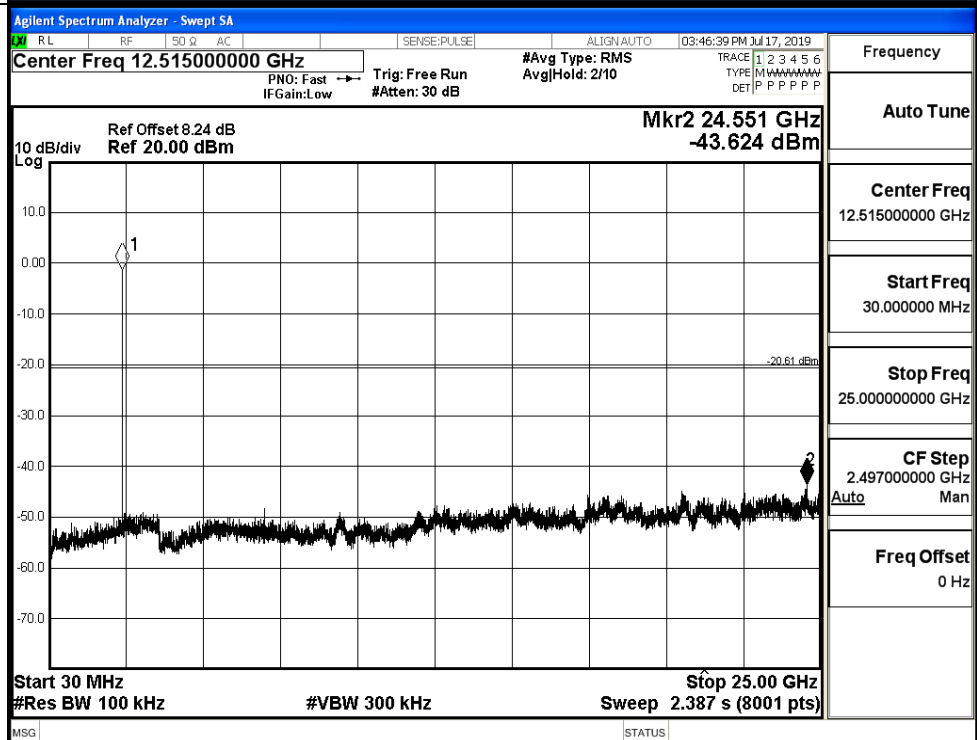


8DPSK_LCH_Graphs

Pref

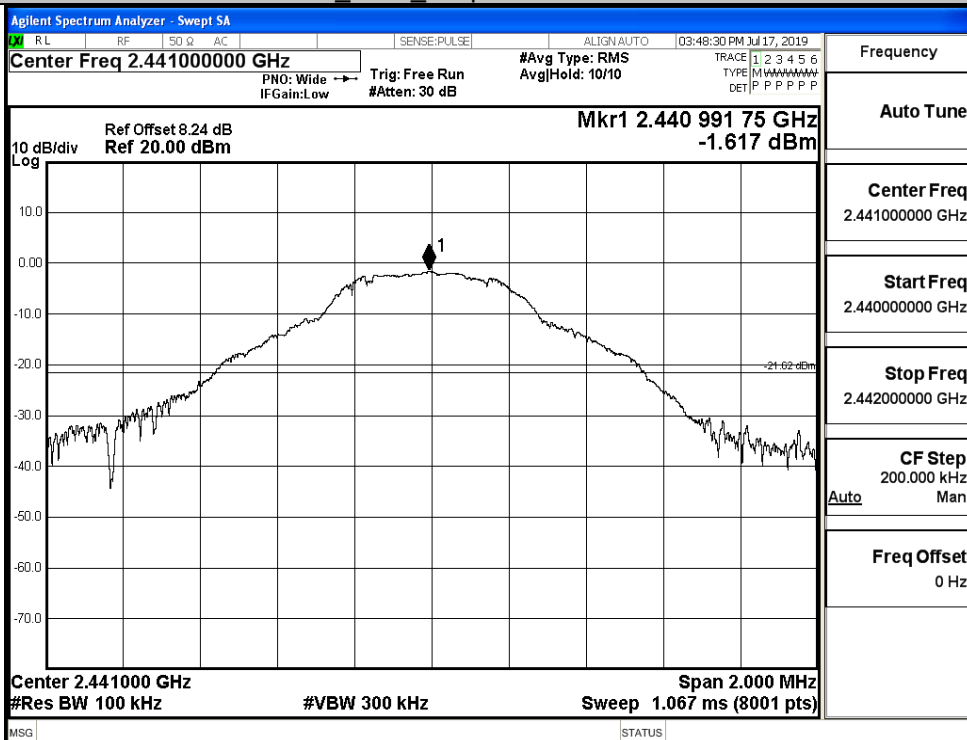


Puw

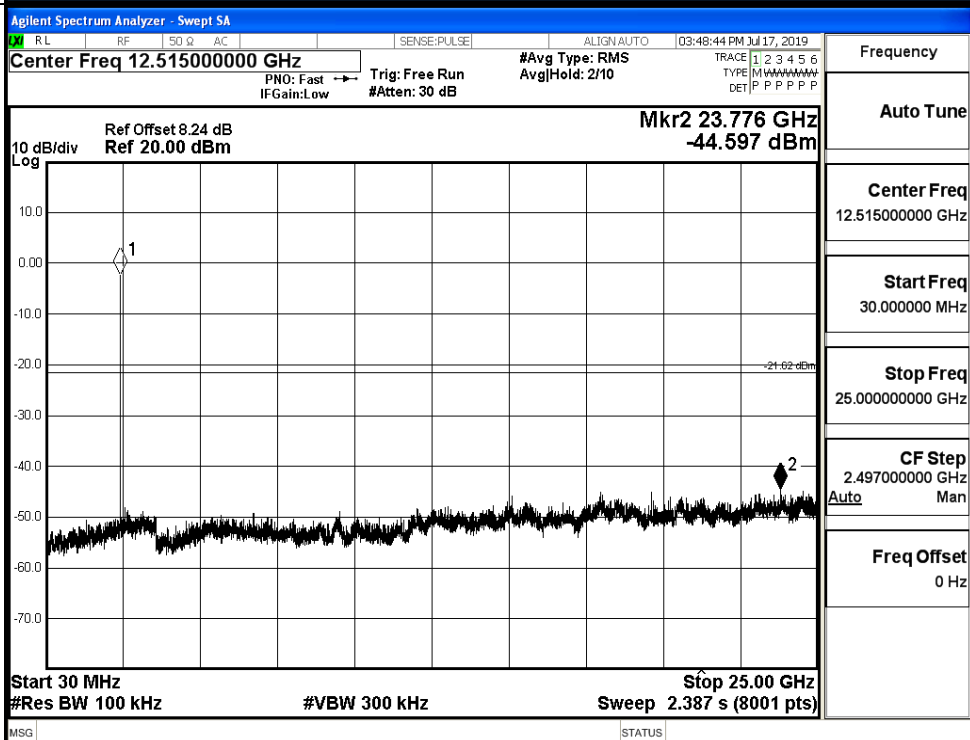


8DPSK_MCH_Graphs

Pref

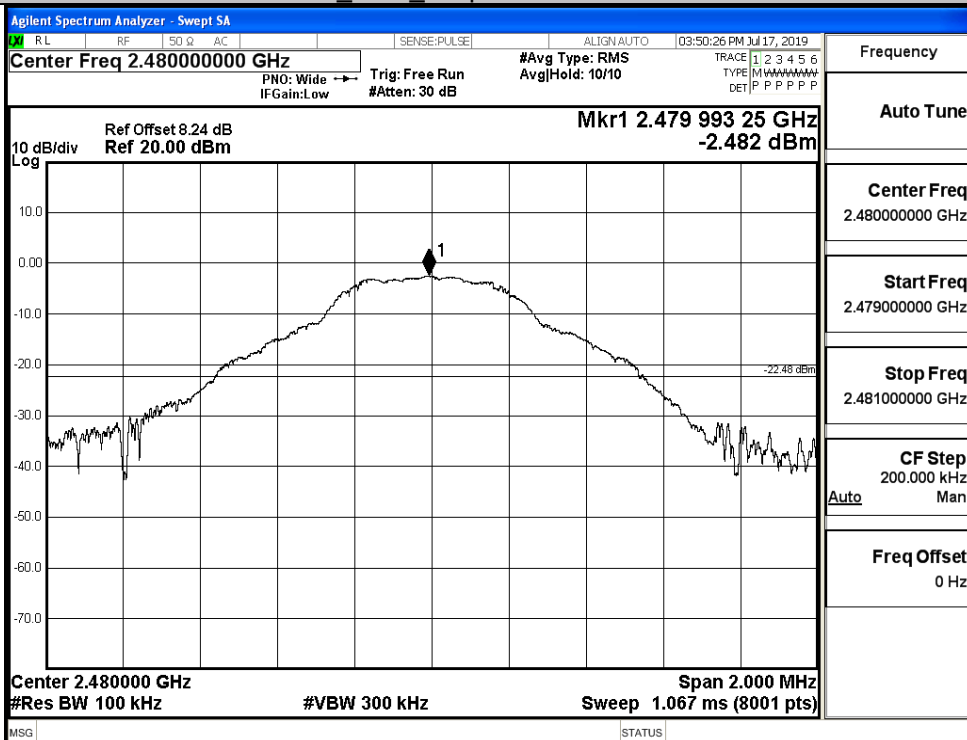


Puw

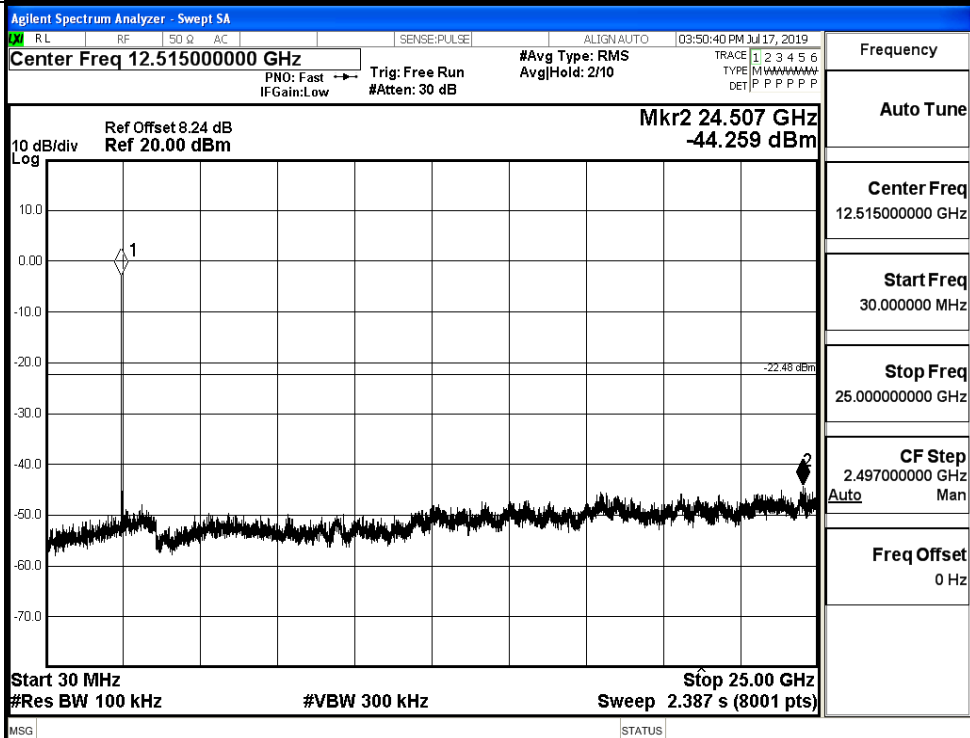


8DPSK_HCH_Graphs

Pref



Puw

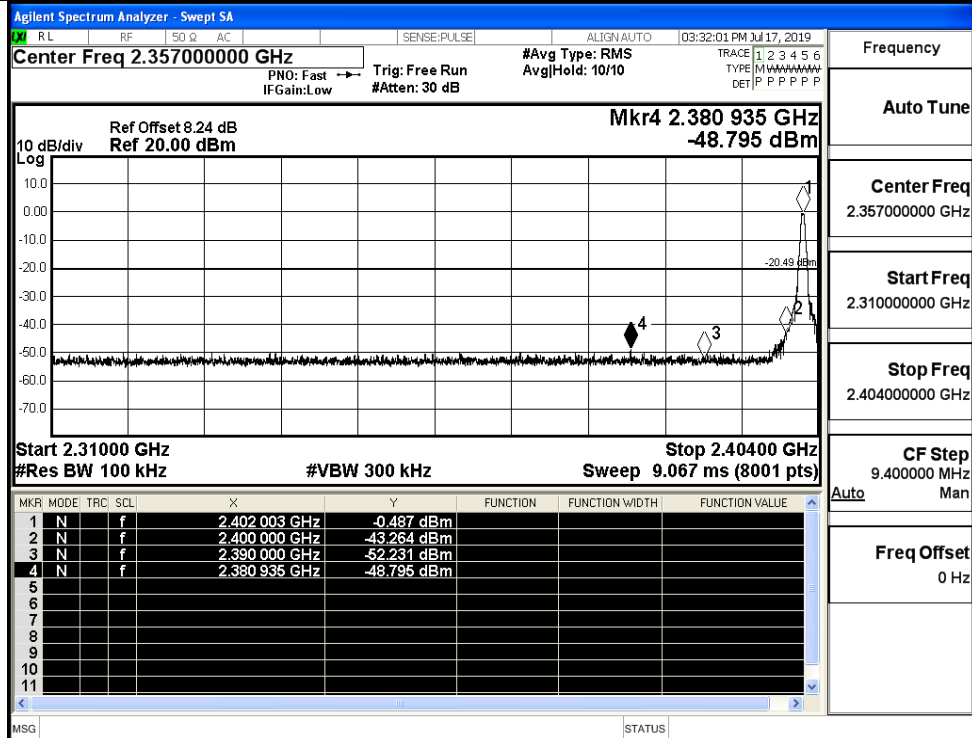


A.8 Band-edge for RF Conducted Emissions

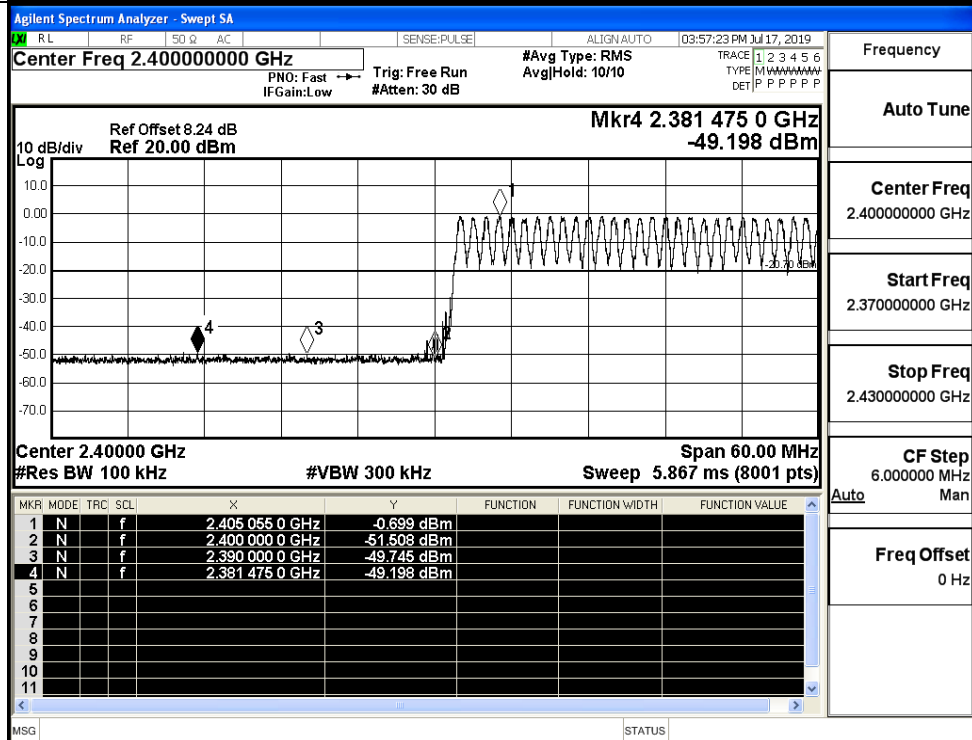
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	-0.487	Off	-48.795	-20.49	PASS
			-0.699	On	-49.198	-20.7	PASS
	HCH	2480	-2.347	Off	-49.308	-22.35	PASS
			-1.749	On	-48.934	-21.75	PASS
$\pi/4$ DQPSK	LCH	2402	-0.434	Off	-49.863	-20.43	PASS
			-0.460	On	-48.813	-20.46	PASS
	HCH	2480	-2.373	Off	-48.525	-22.37	PASS
			-1.776	On	-49.164	-21.78	PASS
8DPSK	LCH	2402	-0.422	Off	-49.943	-20.42	PASS
			-0.617	On	-49.652	-20.62	PASS
	HCH	2480	-2.350	Off	-49.093	-22.35	PASS
			-1.748	On	-48.585	-21.75	PASS

Test Graphs

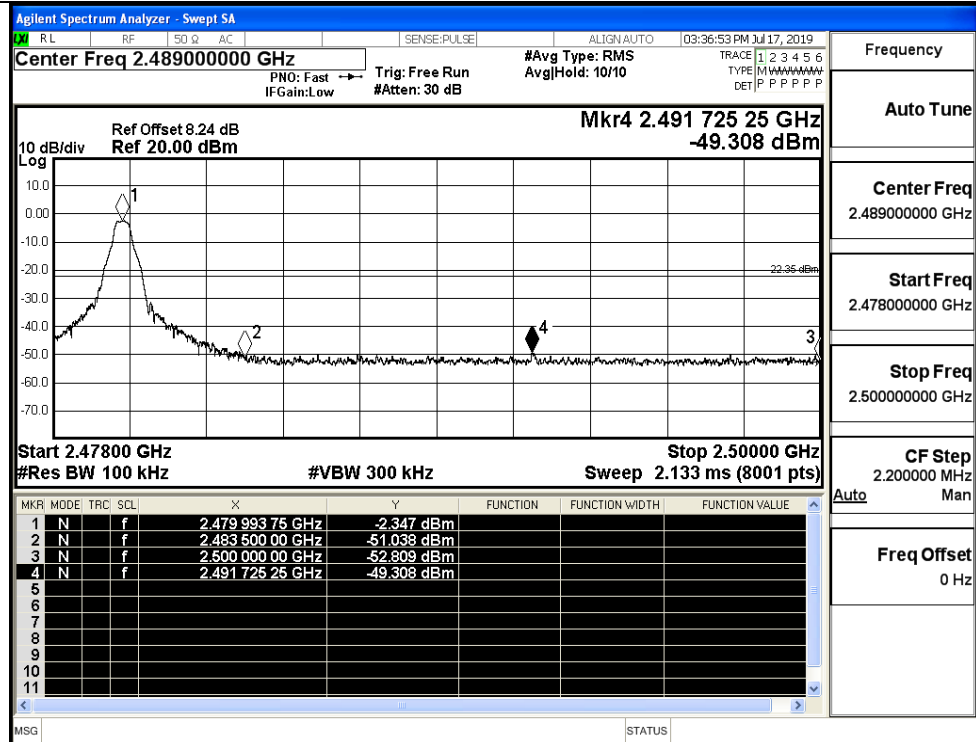
GFSK/LCH/No Hop



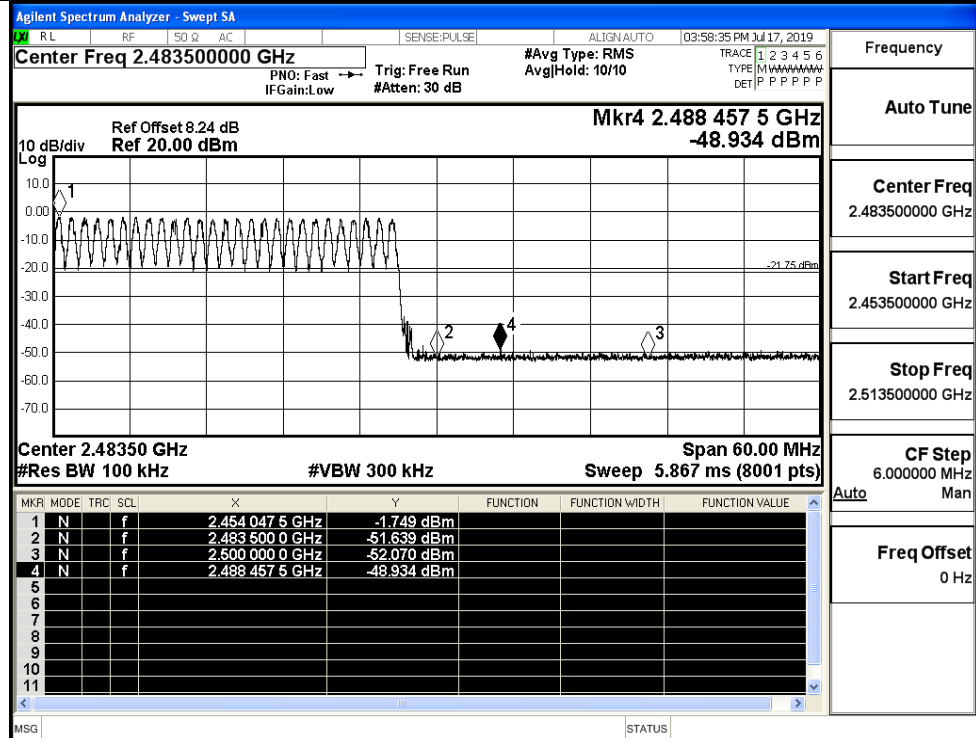
GFSK/LCH/Hop



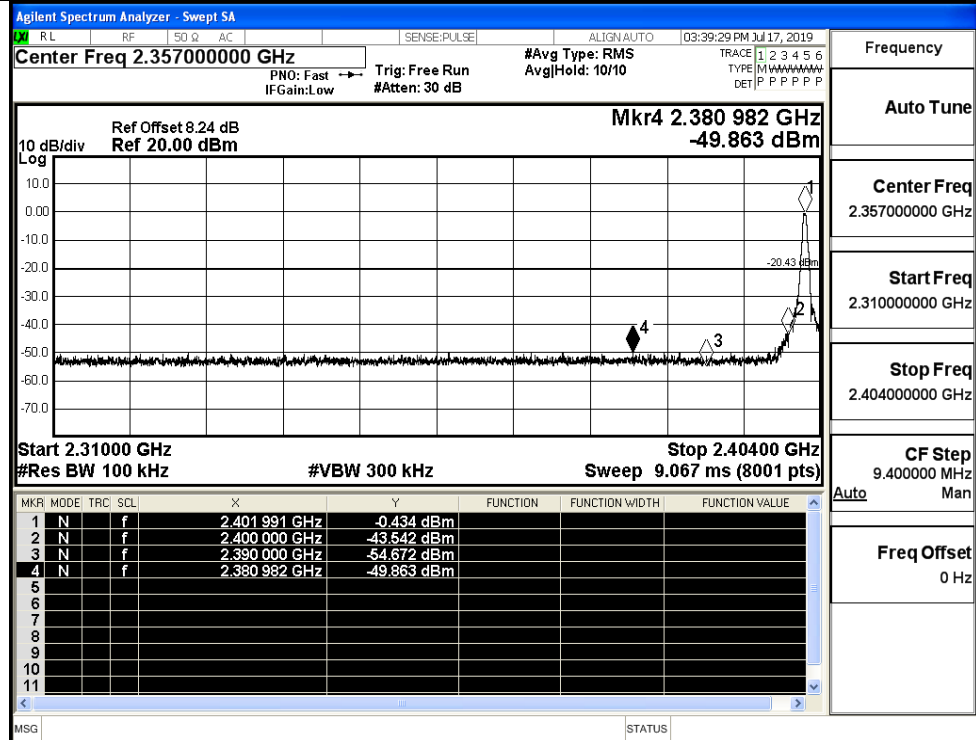
GFSK/HCH/No Hop



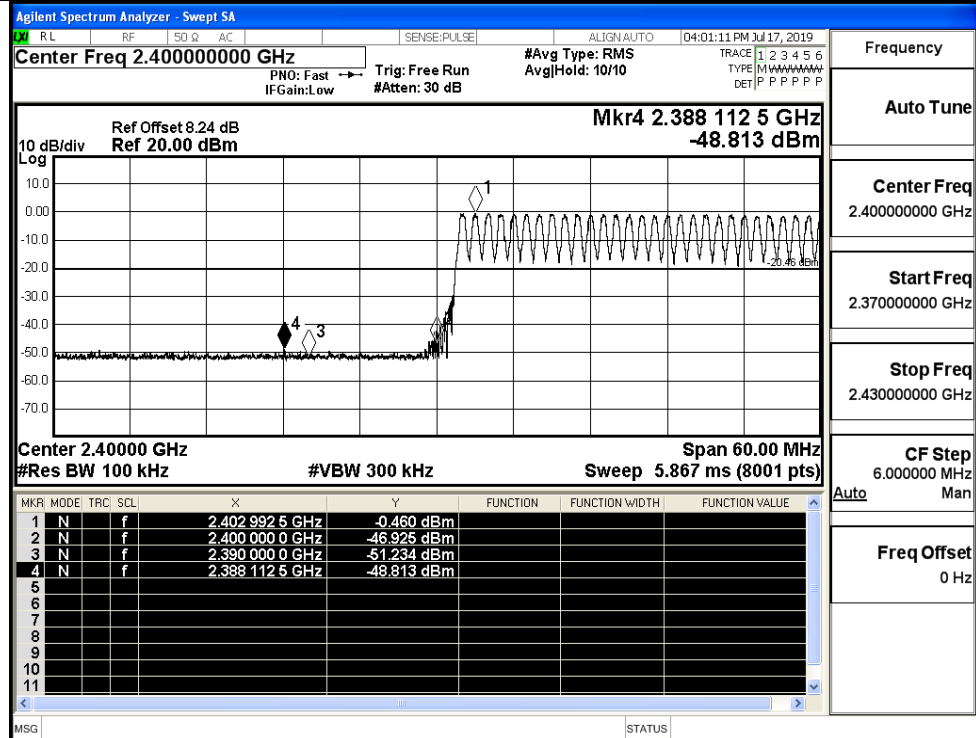
GFSK/HCH/Hop



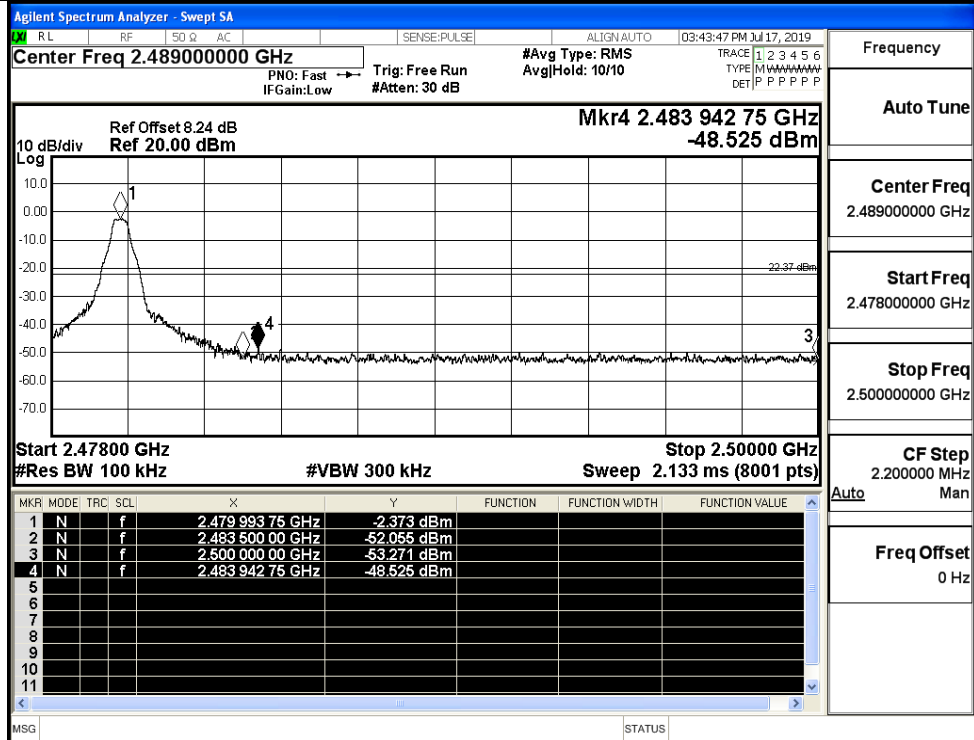
$\pi/4$ DQPSK/LCH/No
Hop



$\pi/4$ DQPSK/LCH/Hop



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



Frequency

Auto Tune

Center Freq
2.489000000 GHz

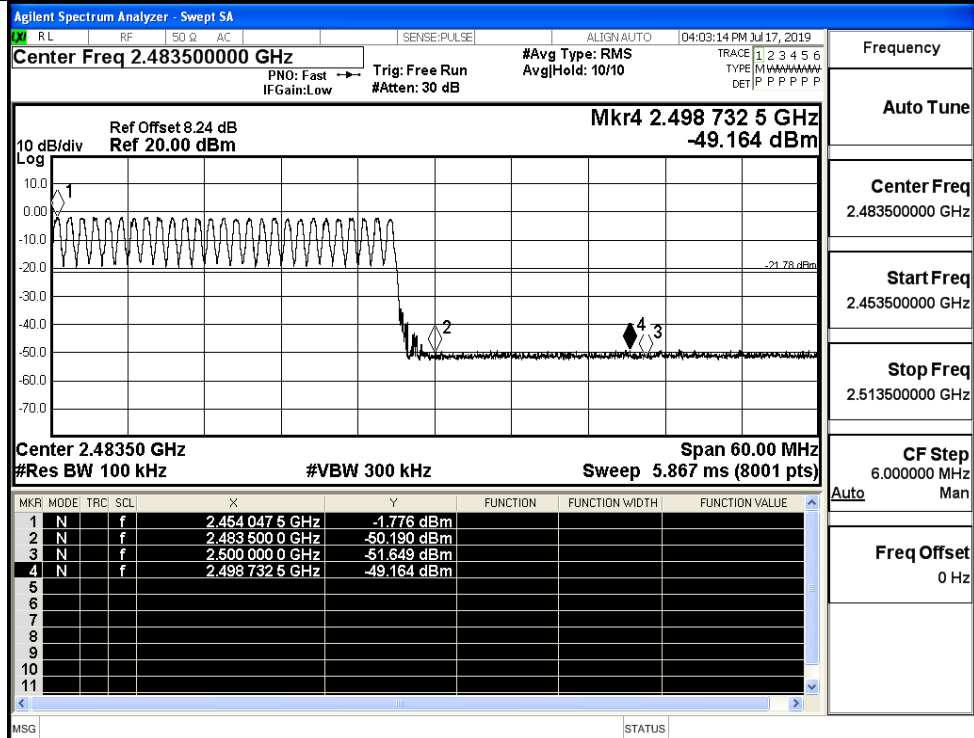
Start Freq
2.478000000 GHz

Stop Freq
2.500000000 GHz

CF Step
2.200000 MHz
Auto Man

Freq Offset
0 Hz

$\pi/4$ DQPSK/HCH/Hop



Frequency

Auto Tune

Center Freq
2.483500000 GHz

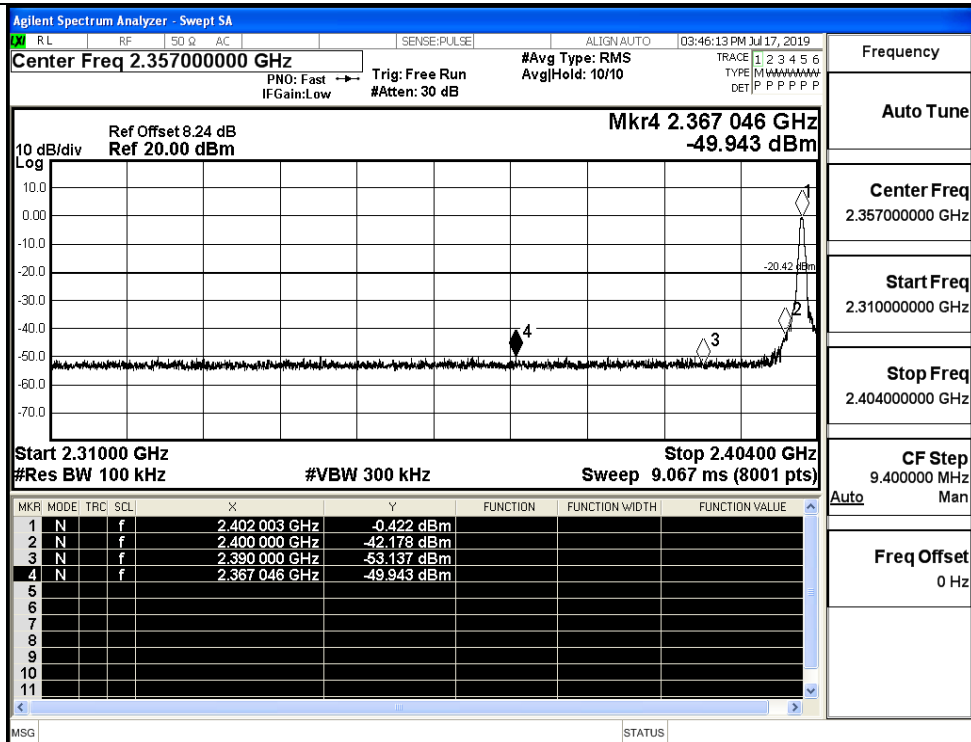
Start Freq
2.453500000 GHz

Stop Freq
2.513500000 GHz

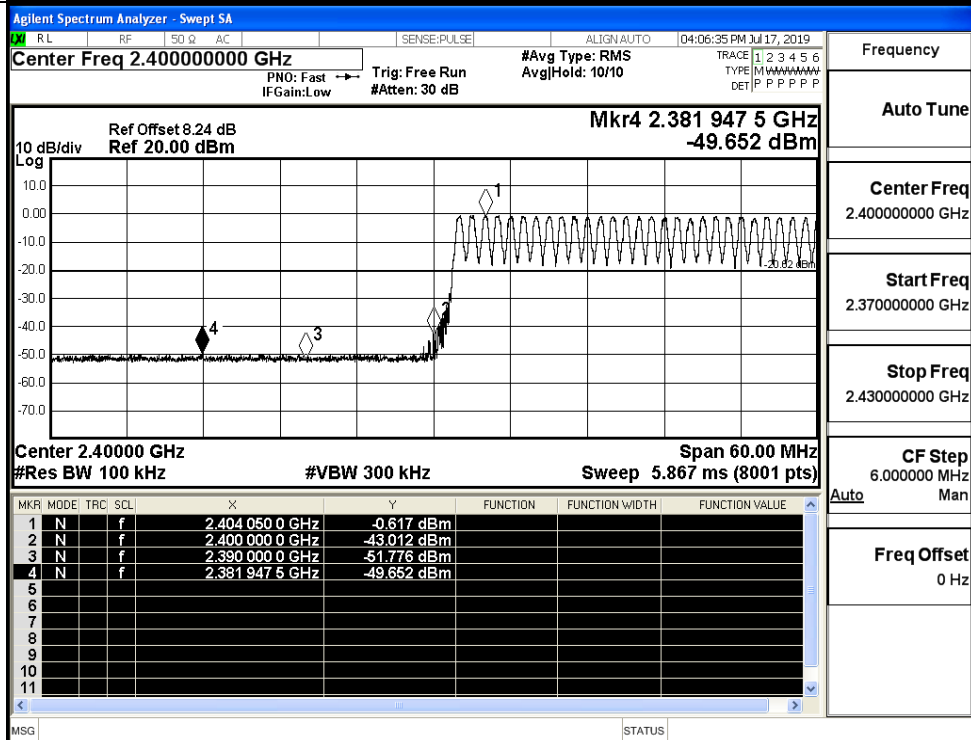
CF Step
6.000000 MHz
Auto Man

Freq Offset
0 Hz

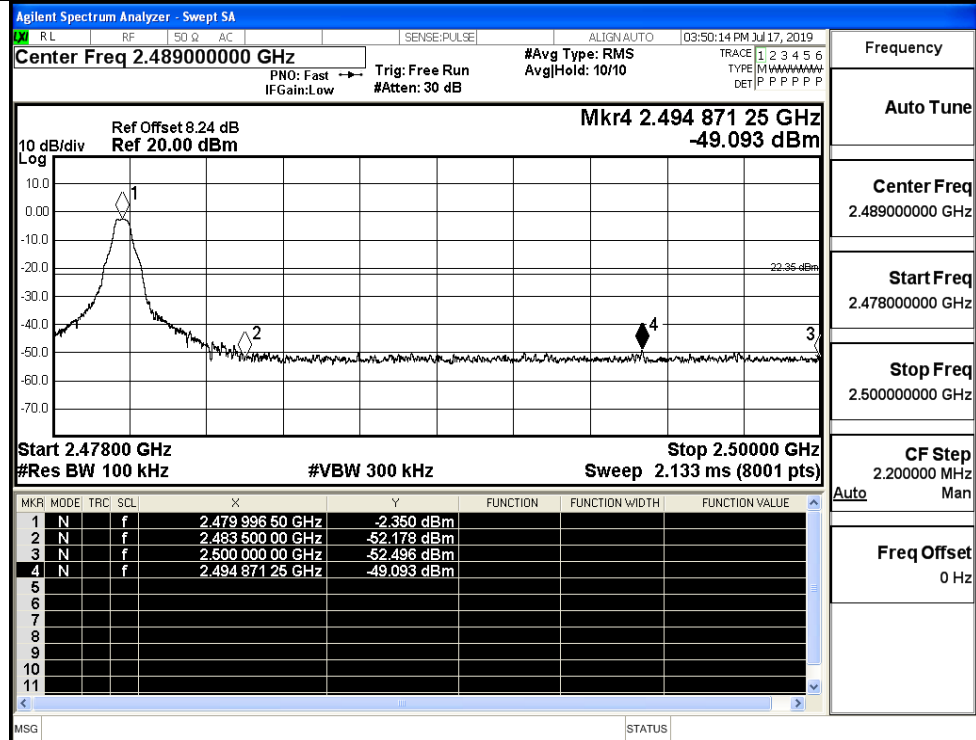
8DPSK/LCH/No Hop



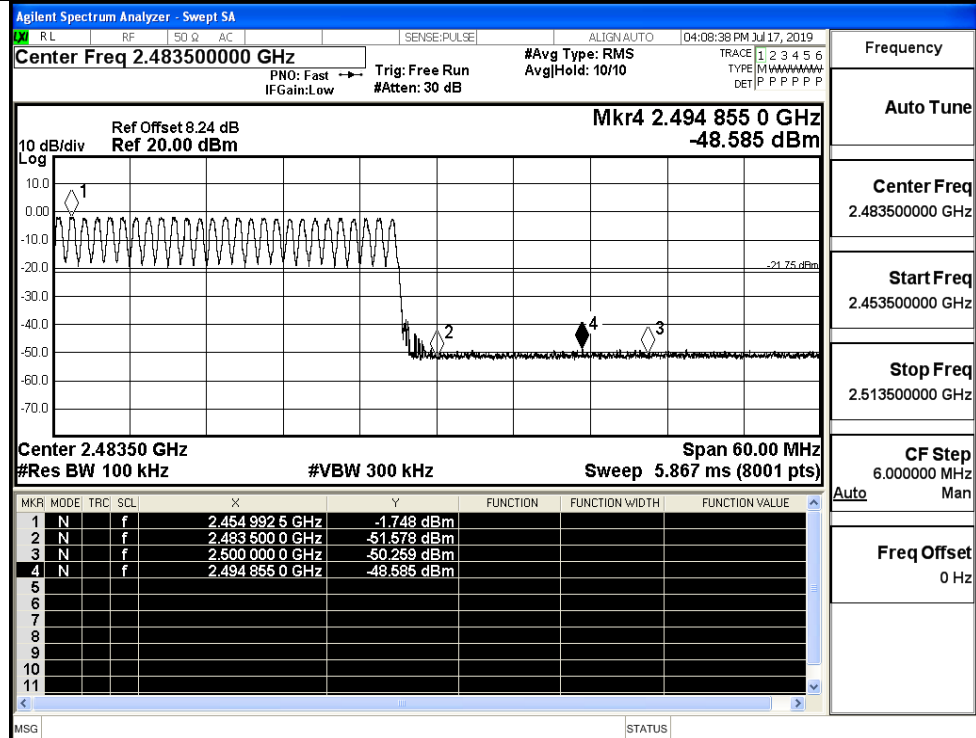
8DPSK/LCH/Hop



8DPSK/HCH/No Hop



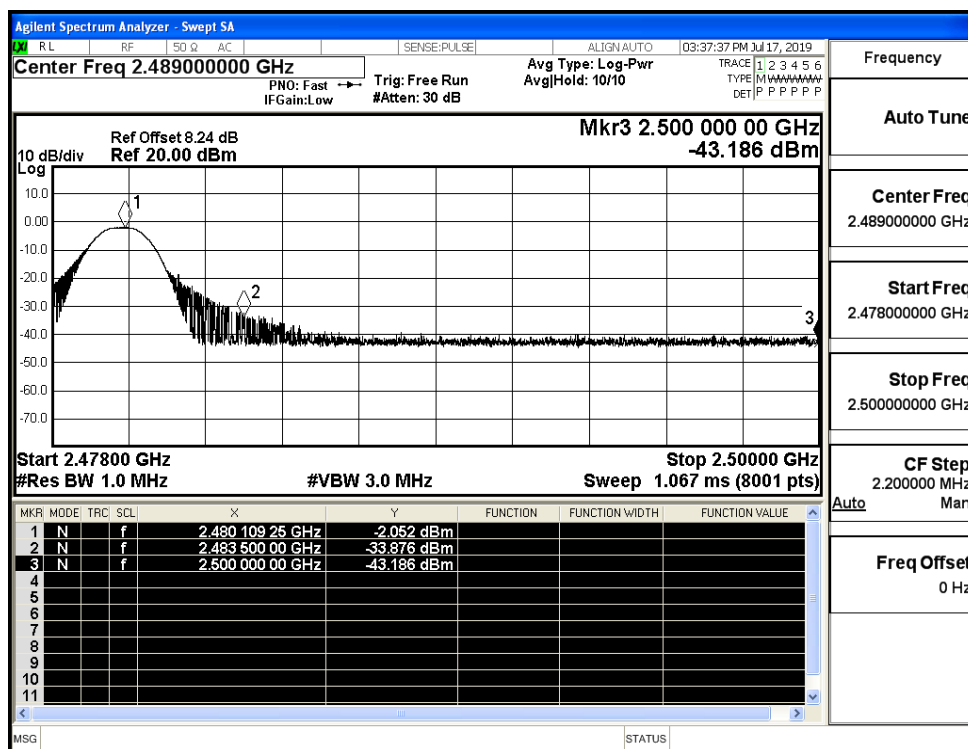
8DPSK/HCH/Hop



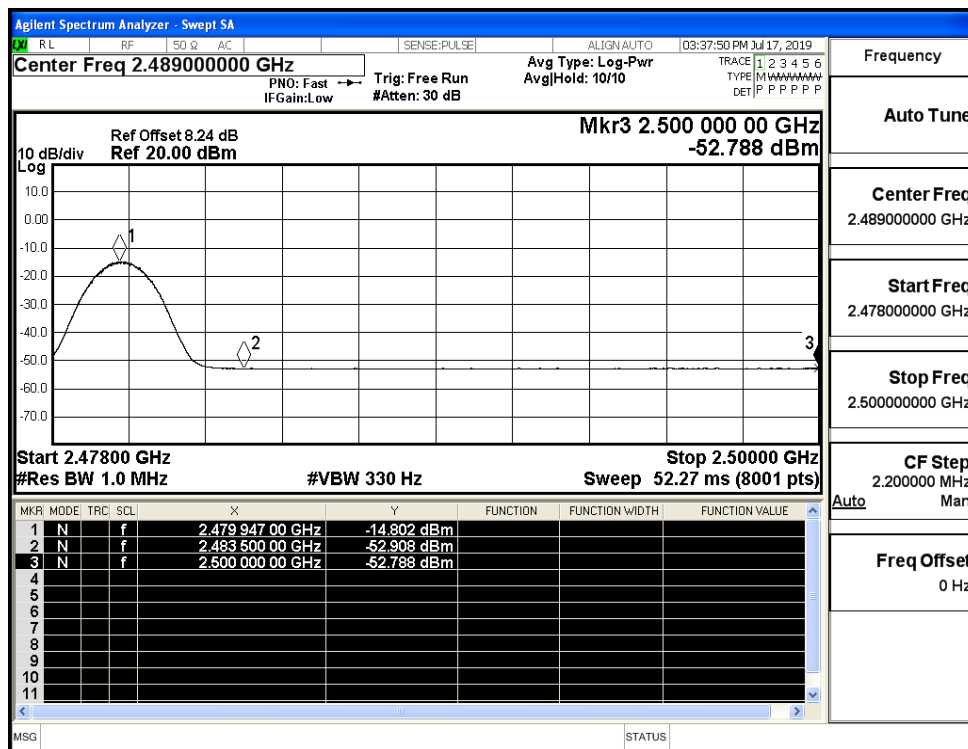
A.8 Restrict-band band-edge measurements

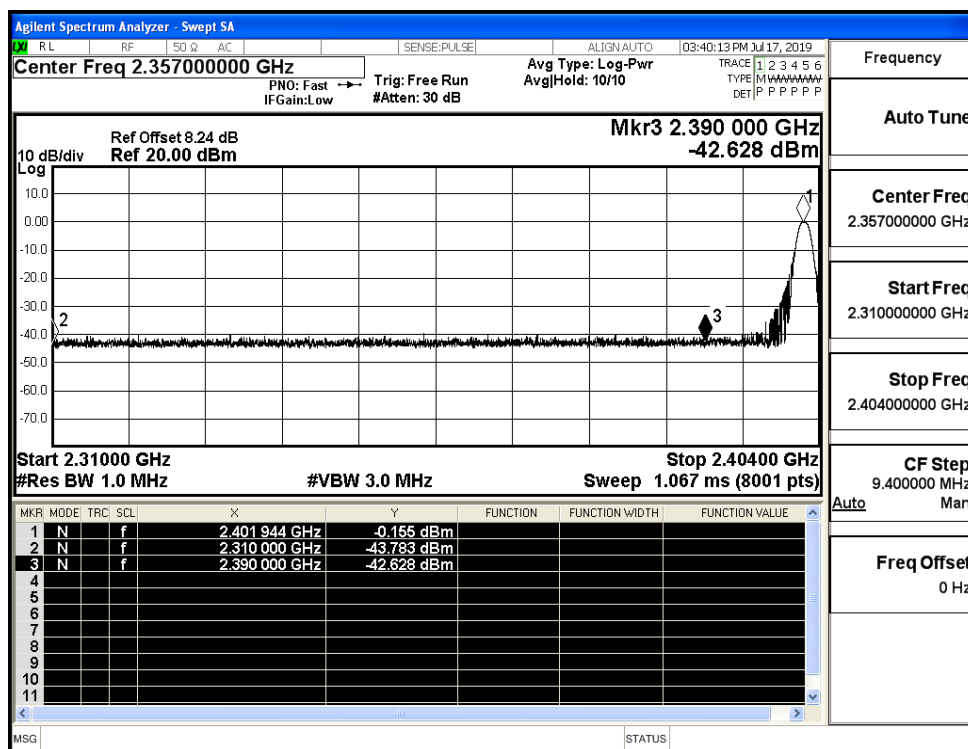
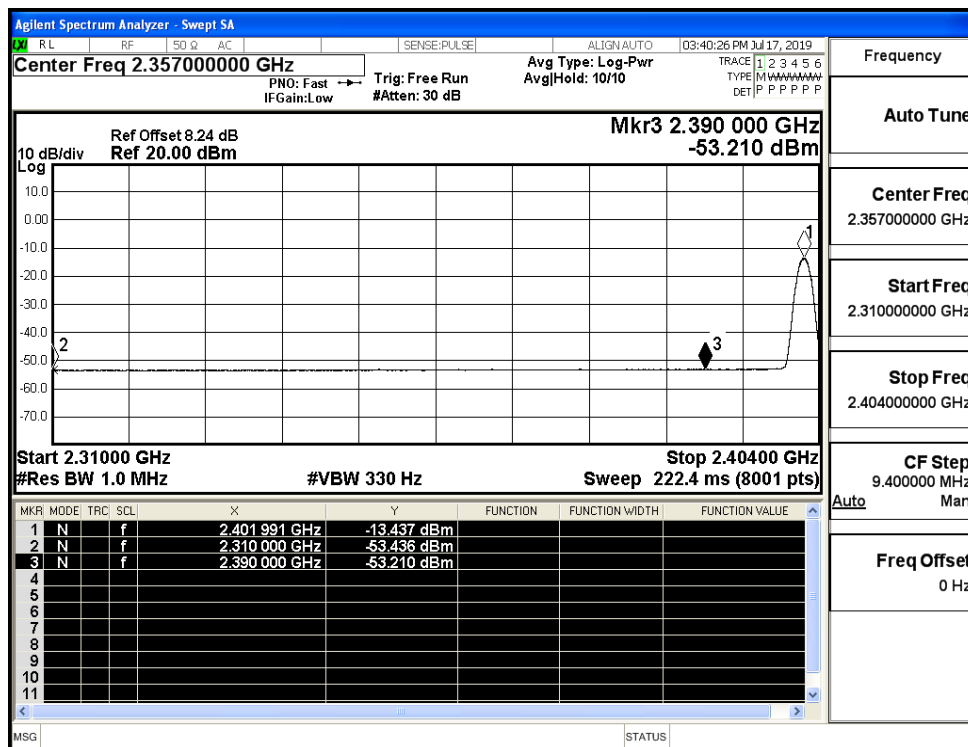
Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-44.06	2.0	0	53.20	PEAK	74	PASS
	Off	2310.0	-53.43	2.0	0	43.83	AV	54	PASS
	Off	2390.0	-41.31	2.0	0	55.94	PEAK	74	PASS
	Off	2390.0	-53.07	2.0	0	44.19	AV	54	PASS
	Off	2483.5	-33.88	2.0	0	63.38	PEAK	74	PASS
	Off	2483.5	-52.91	2.0	0	44.35	AV	54	PASS
	Off	2500.0	-43.19	2.0	0	54.07	PEAK	74	PASS
	Off	2500.0	-52.79	2.0	0	44.47	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-43.78	2.0	0	53.47	PEAK	74	PASS
	Off	2310.0	-53.44	2.0	0	43.82	AV	54	PASS
	Off	2390.0	-42.63	2.0	0	54.63	PEAK	74	PASS
	Off	2390.0	-53.21	2.0	0	44.05	AV	54	PASS
	Off	2483.5	-43.30	2.0	0	53.96	PEAK	74	PASS
	Off	2483.5	-52.78	2.0	0	44.48	AV	54	PASS
	Off	2500.0	-43.60	2.0	0	53.66	PEAK	74	PASS
	Off	2500.0	-52.83	2.0	0	44.43	AV	54	PASS
8DPSK	Off	2310.0	-42.94	2.0	0	54.31	PEAK	74	PASS
	Off	2310.0	-53.48	2.0	0	43.77	AV	54	PASS
	Off	2390.0	-42.32	2.0	0	54.93	PEAK	74	PASS
	Off	2390.0	-53.10	2.0	0	44.16	AV	54	PASS
	Off	2483.5	-41.71	2.0	0	55.55	PEAK	74	PASS
	Off	2483.5	-52.82	2.0	0	44.44	AV	54	PASS
	Off	2500.0	-41.93	2.0	0	55.32	PEAK	74	PASS
	Off	2500.0	-52.85	2.0	0	44.41	AV	54	PASS

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

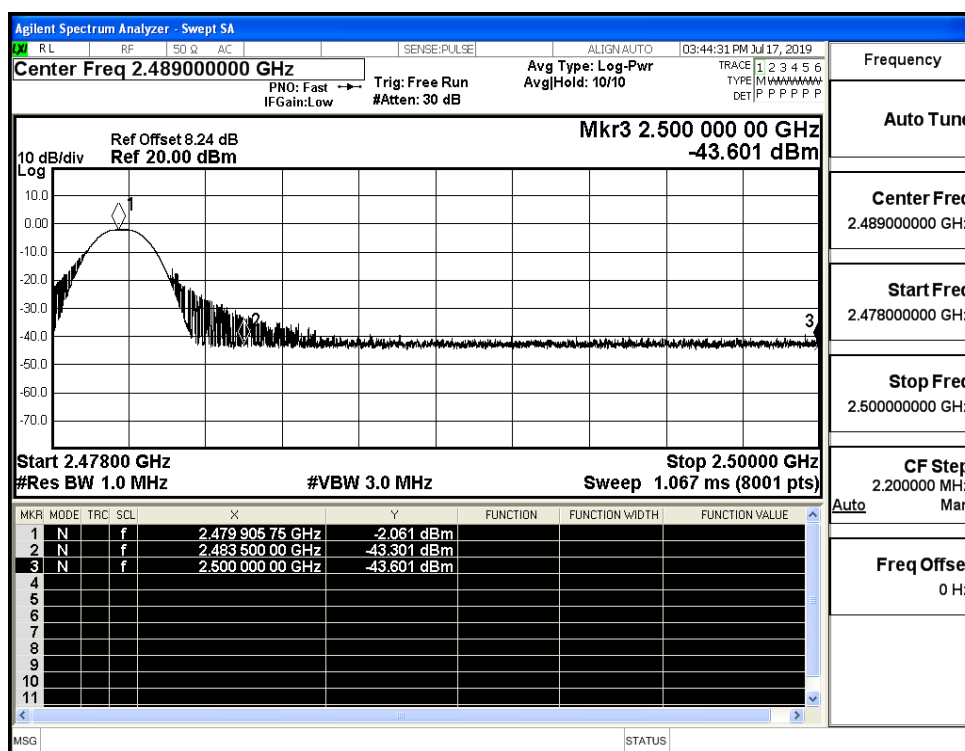


Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (High Channel)

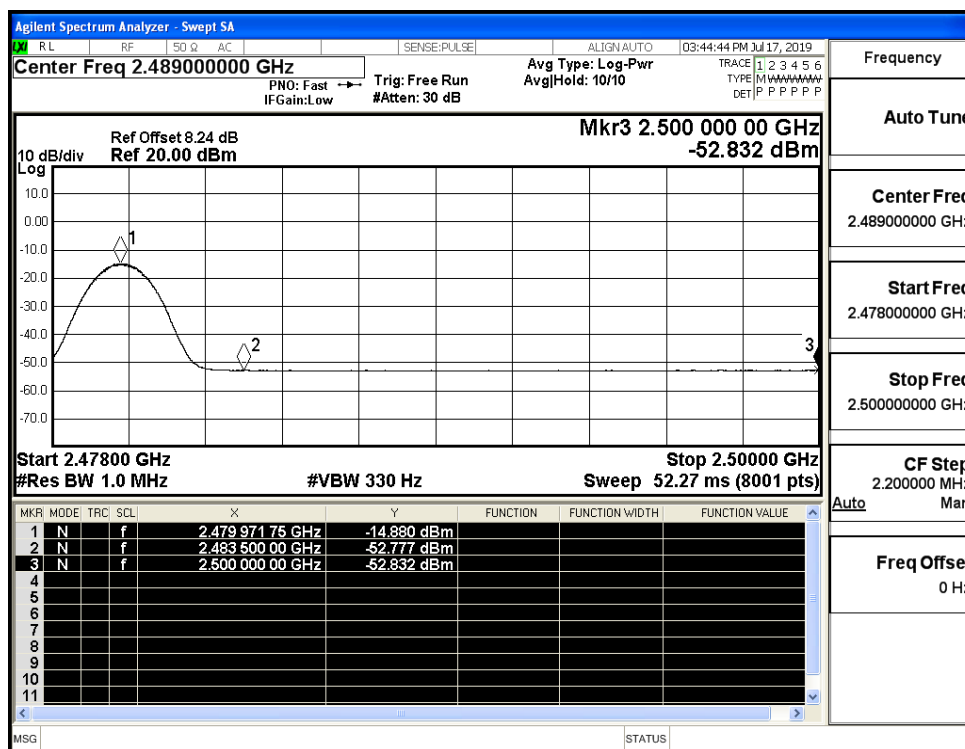


Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (Low Channel)

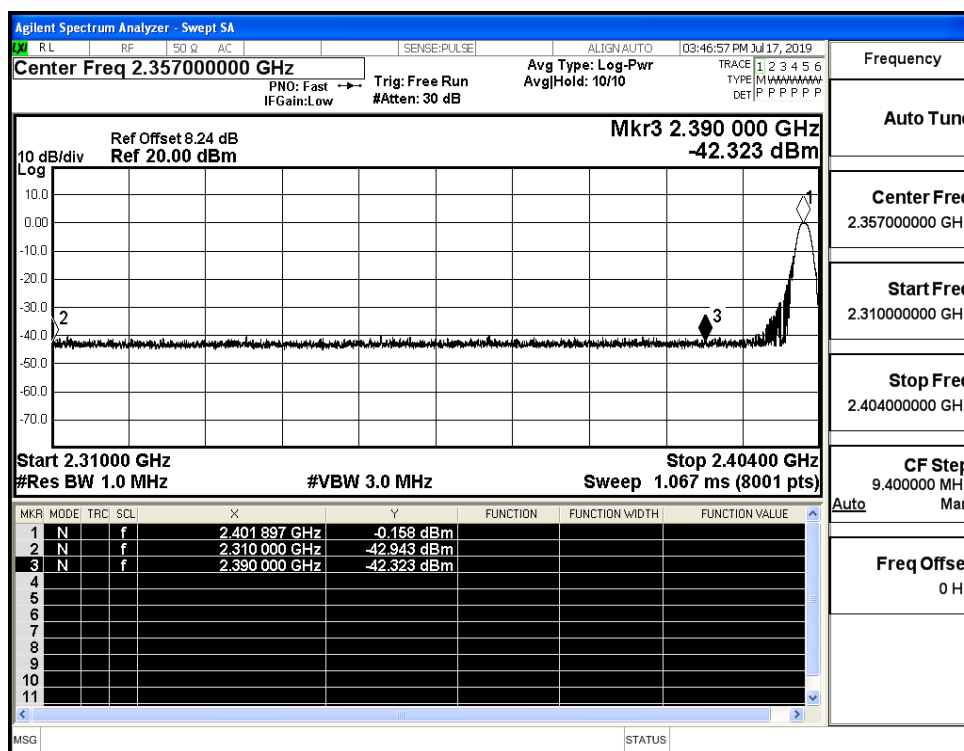
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (High Channel)



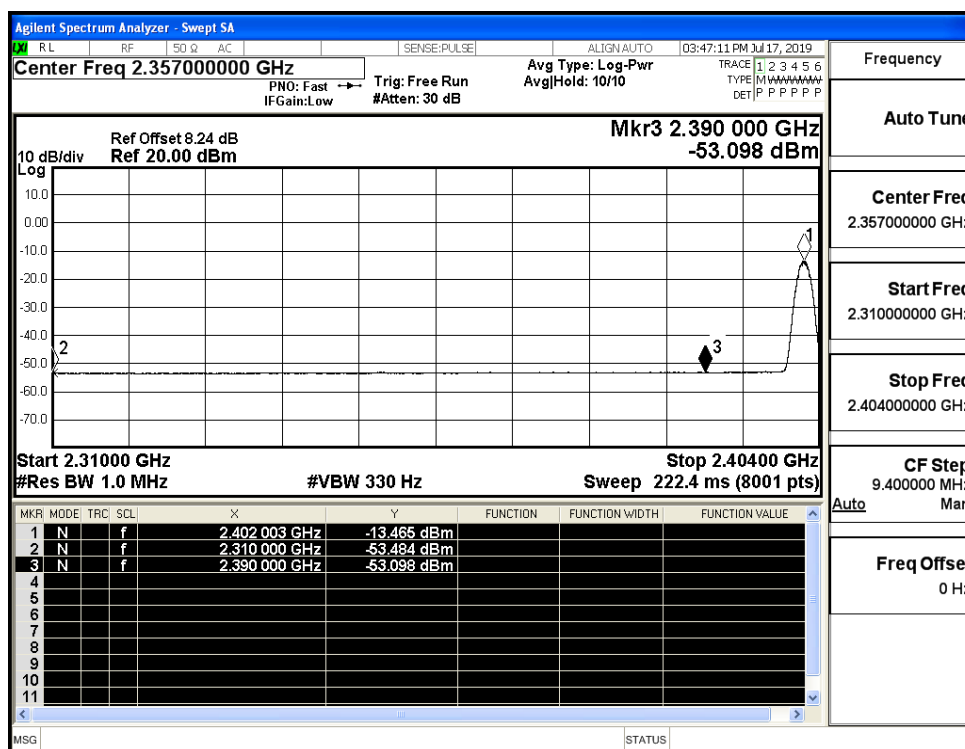
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (High Channel)



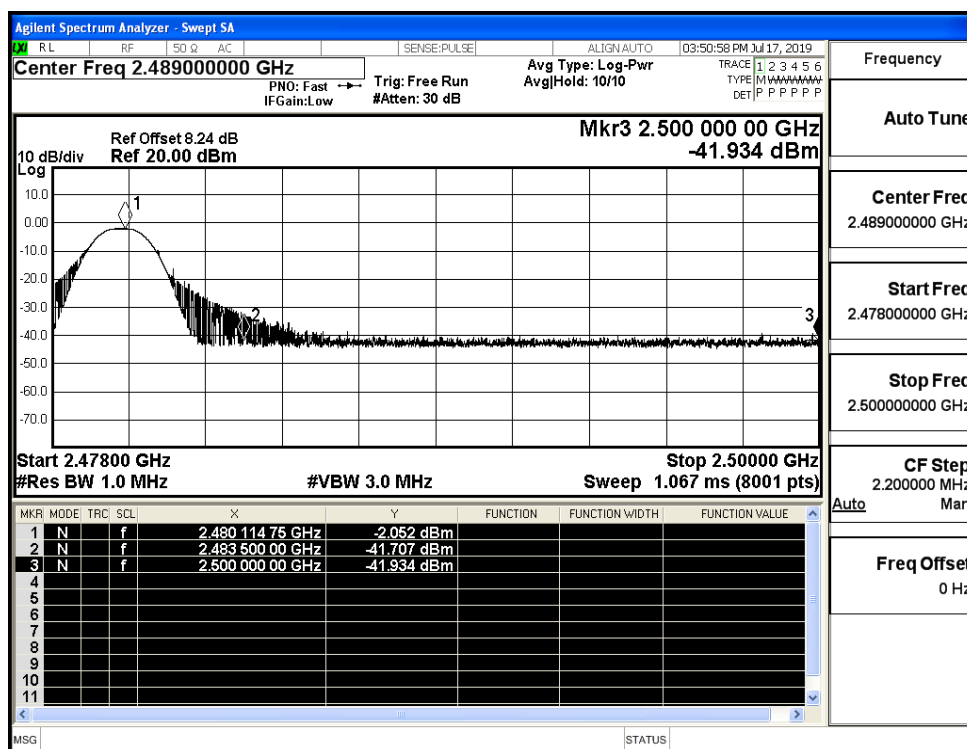
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)

