

Appendix A

RF Test Data for BT V4.2(BDR/EDR) (Conducted Measurement)

Product Name: BT Mesh Smart 28 Key Remote Controller

Trade Mark: N/A

Test Model: ZJ-BMRC-28K

Environmental Conditions

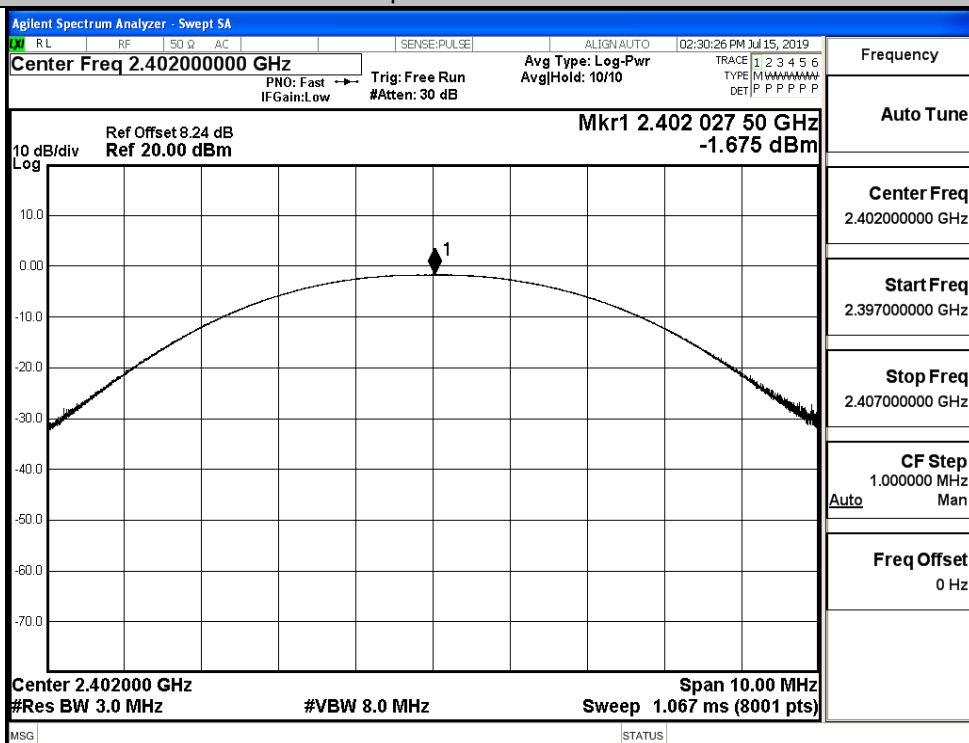
Temperature:	24.2 ° C
Relative Humidity:	53.7%
ATM Pressure:	100.0 kPa
Test Engineer:	Jerry Zeng
Supervised by:	Wang.Chuang

A.1 Maximum Conducted Peak Output Power

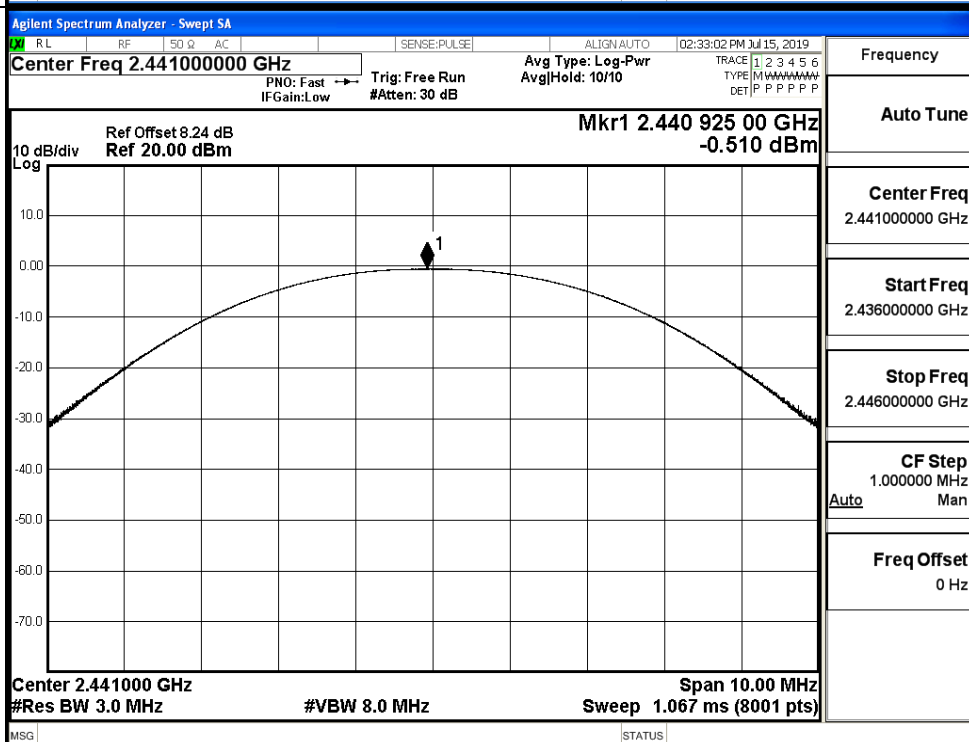
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-1.675	30	PASS
	MCH	-0.510	30	PASS
	HCH	-1.265	30	PASS
$\pi/4$ DQPSK	LCH	-2.269	21	PASS
	MCH	-1.137	21	PASS
	HCH	-1.797	21	PASS
8DPSK	LCH	-2.156	21	PASS
	MCH	-1.025	21	PASS
	HCH	-1.840	21	PASS

Test Graphs

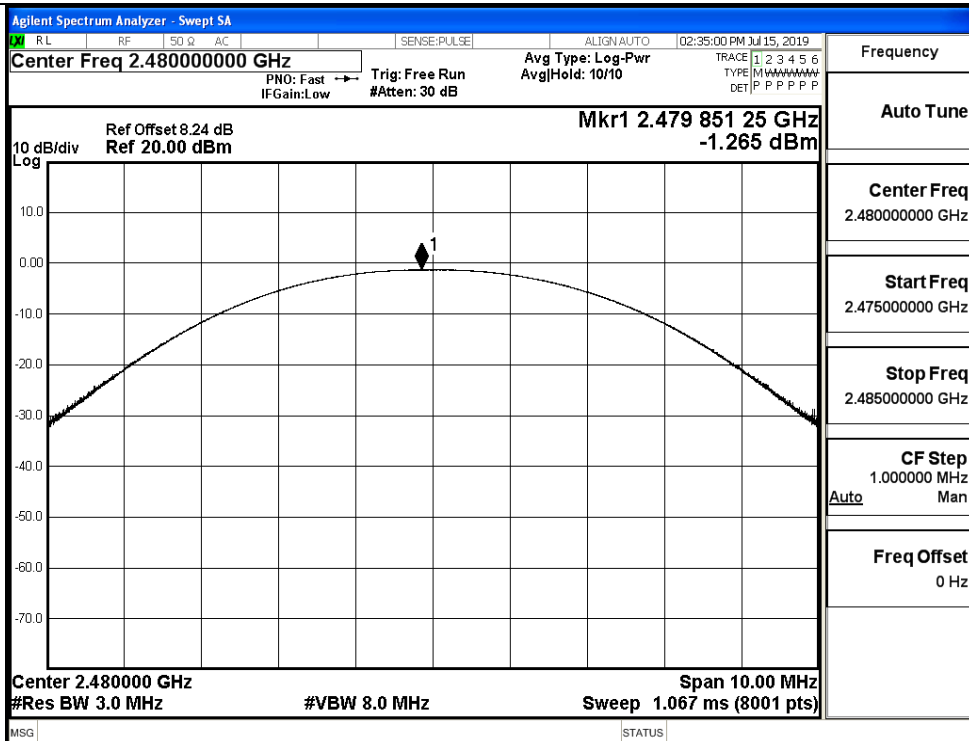
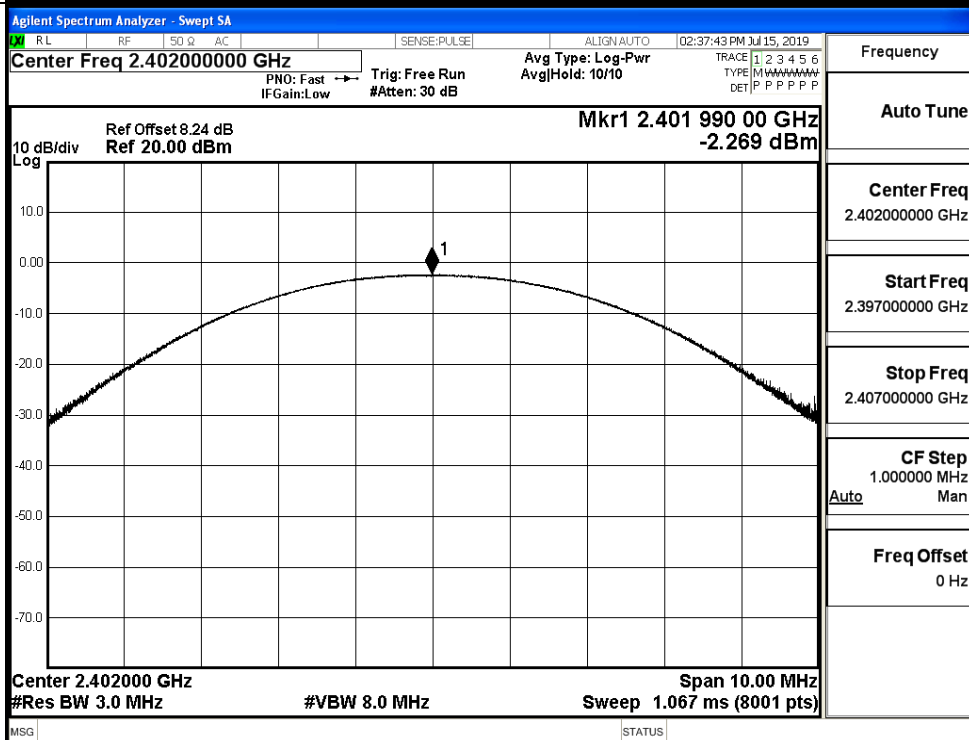
GFSK/LCH

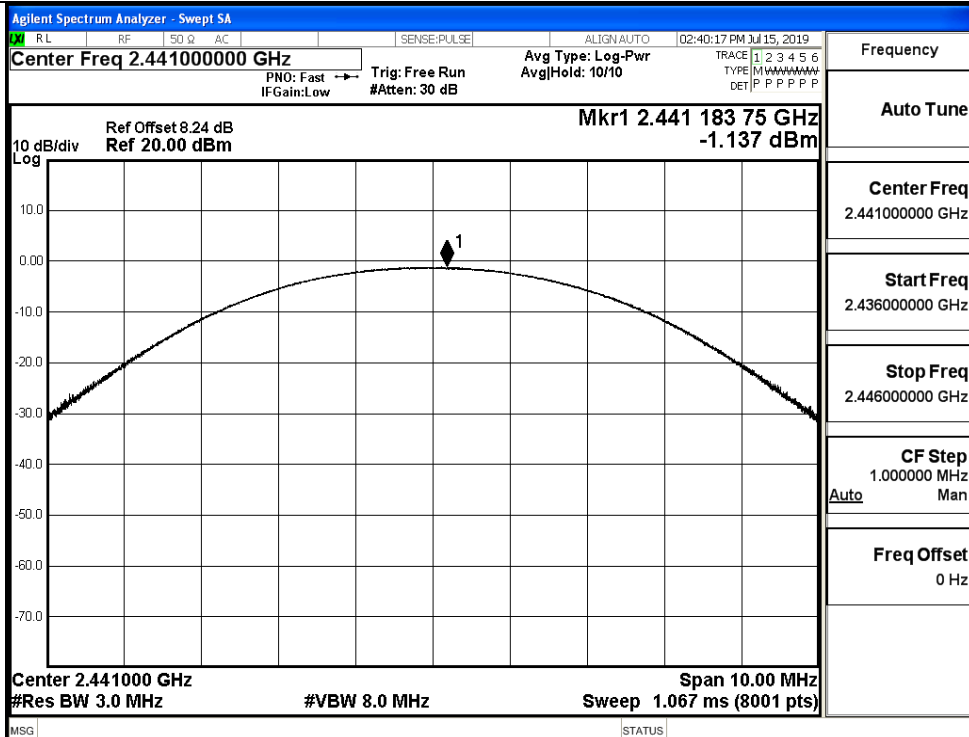
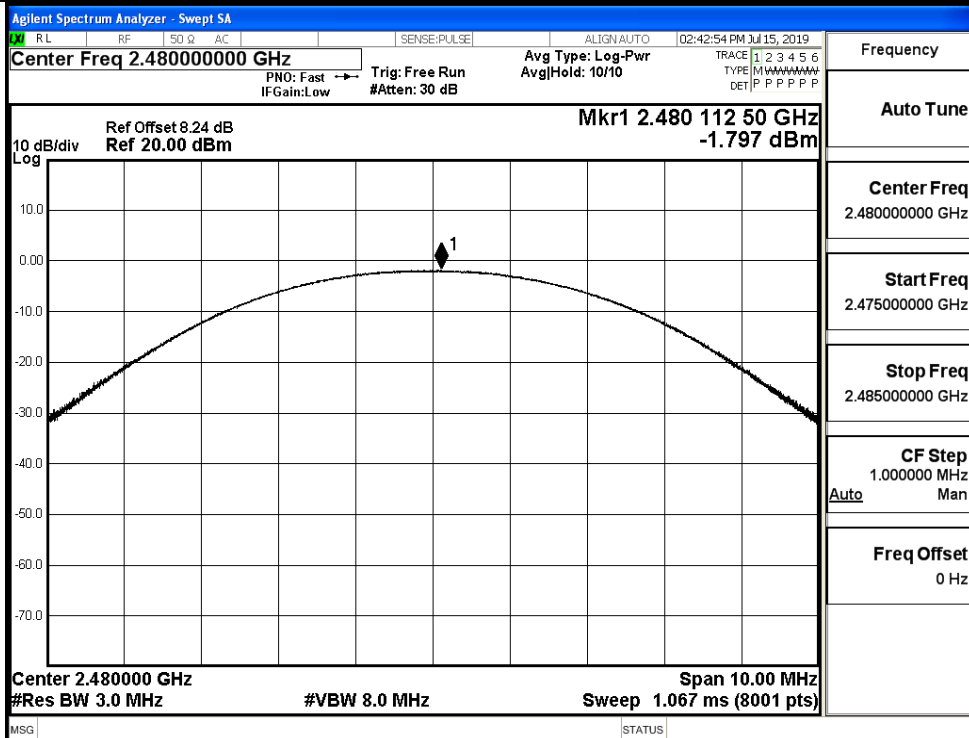


GFSK/MCH

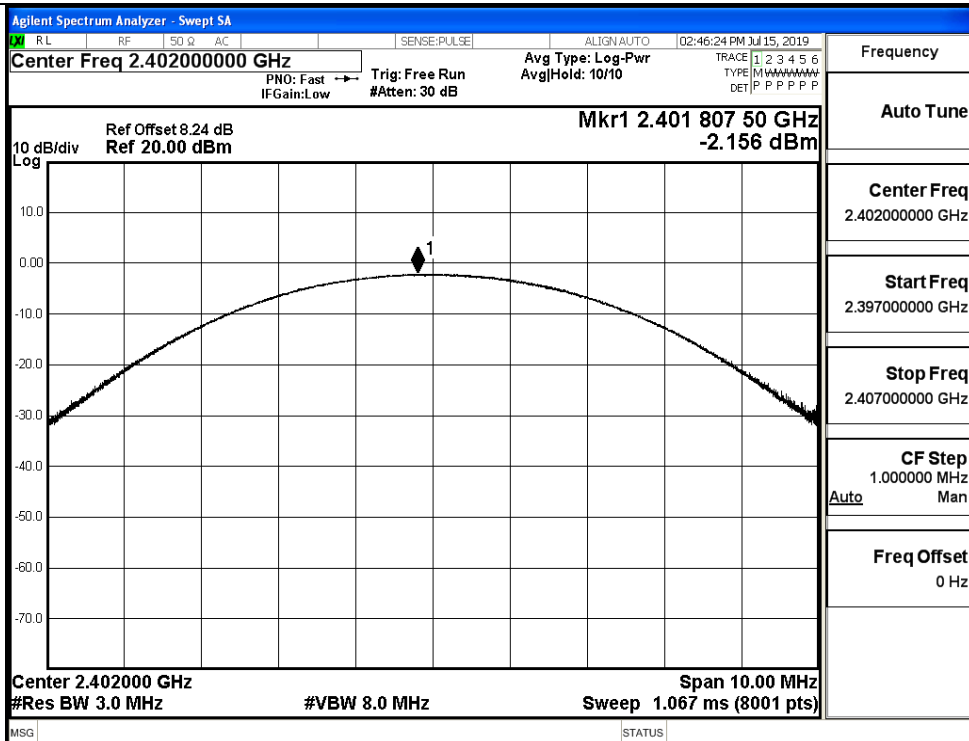


GFSK/HCH

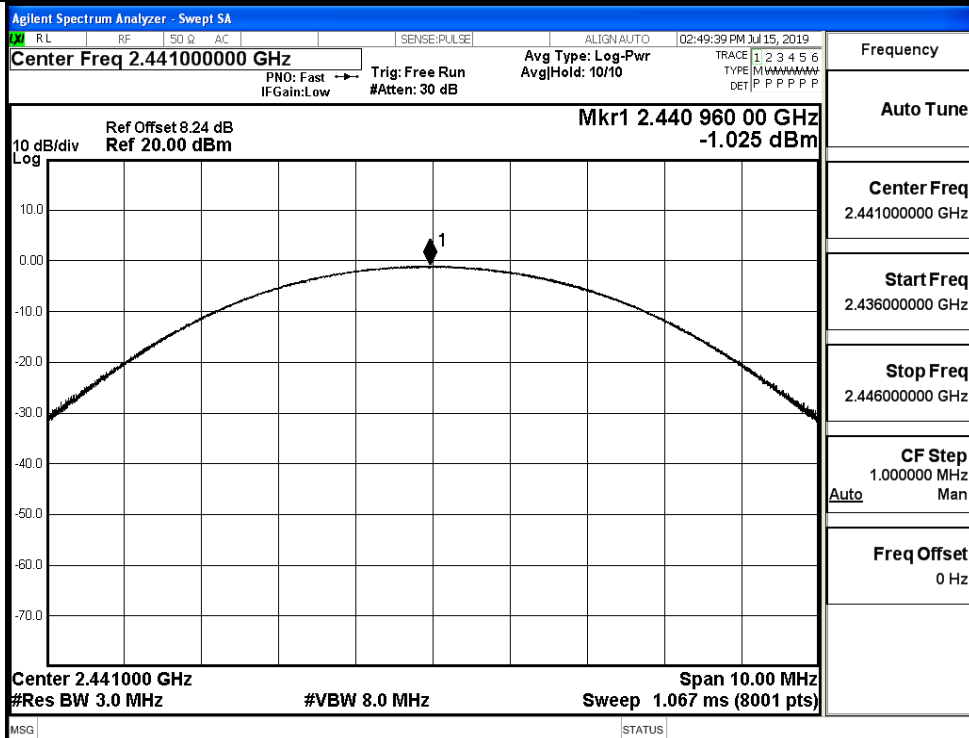
 $\pi/4$ DQPSK/LCH

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

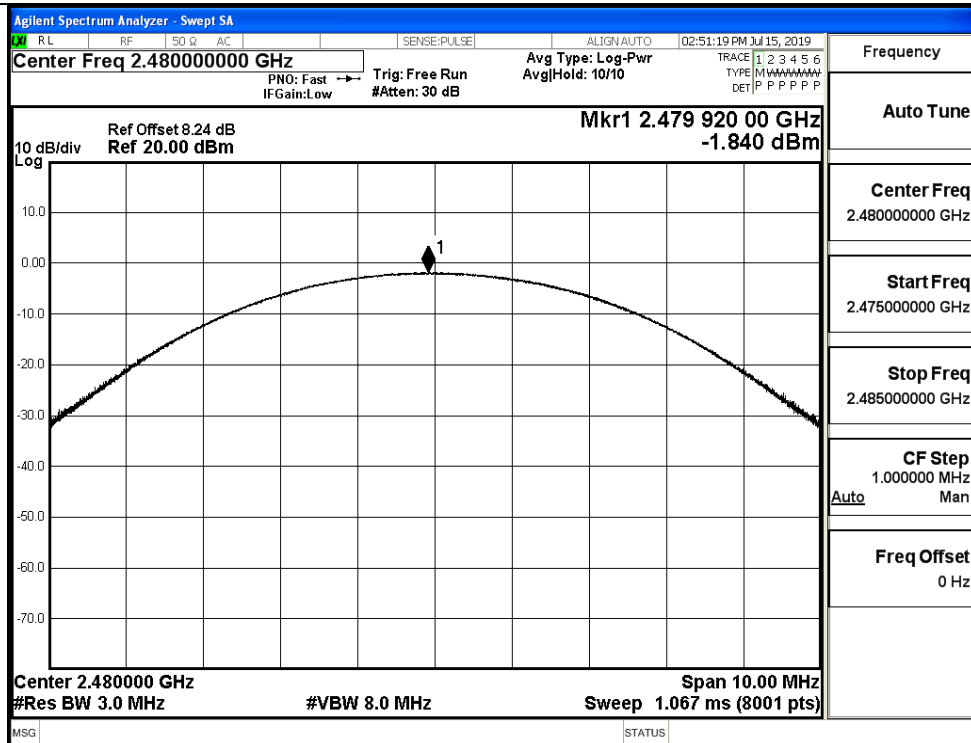
8DPSK/LCH



8DPSK/MCH



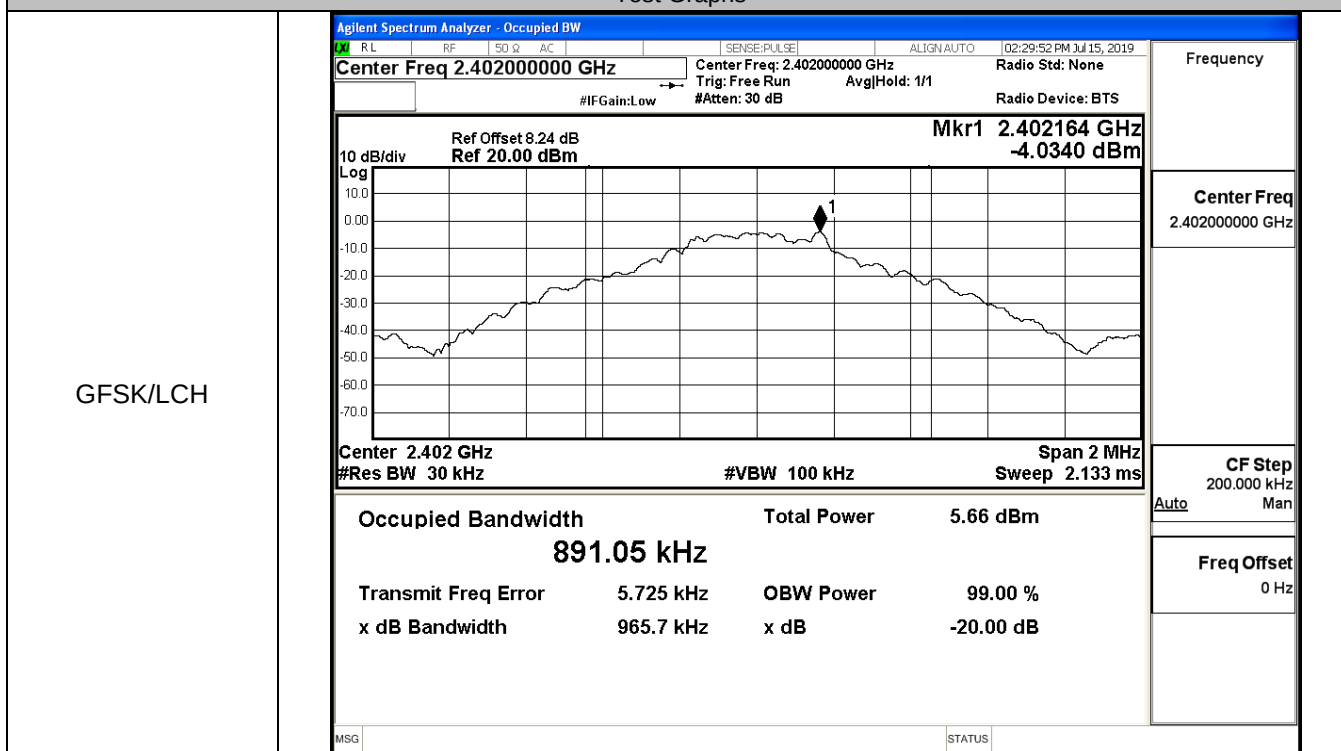
8DPSK/HCH



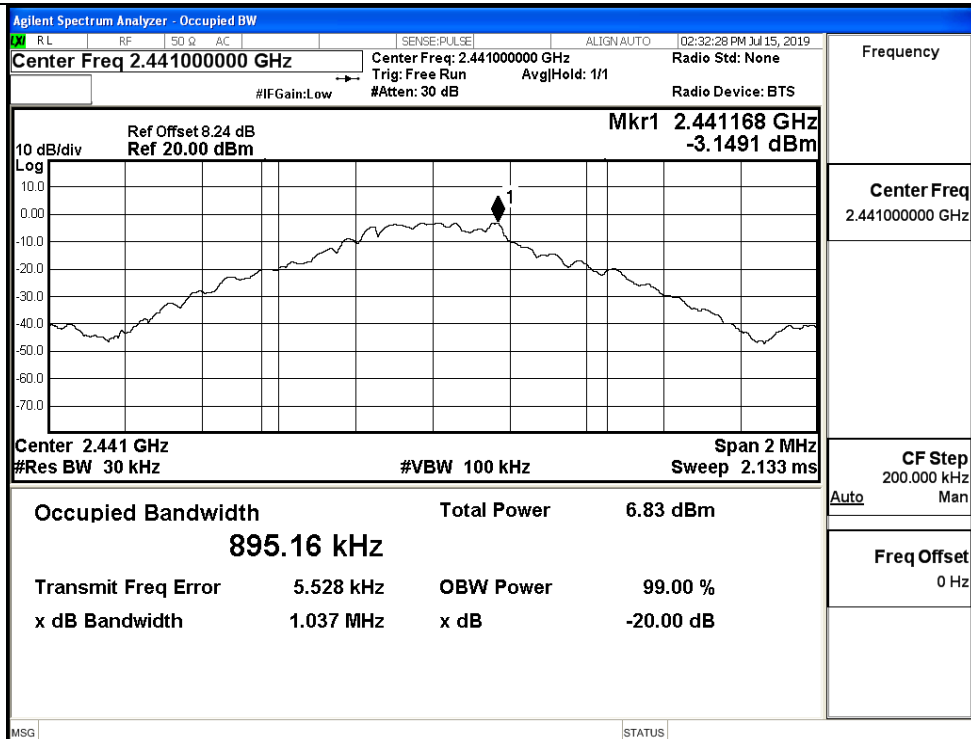
A.2 20dB Bandwidth

Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.9657	Not Specified	PASS
	MCH	1.037	Not Specified	PASS
	HCH	1.034	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.292	Not Specified	PASS
	MCH	1.306	Not Specified	PASS
	HCH	1.317	Not Specified	PASS
8DPSK	LCH	1.299	Not Specified	PASS
	MCH	1.296	Not Specified	PASS
	HCH	1.295	Not Specified	PASS

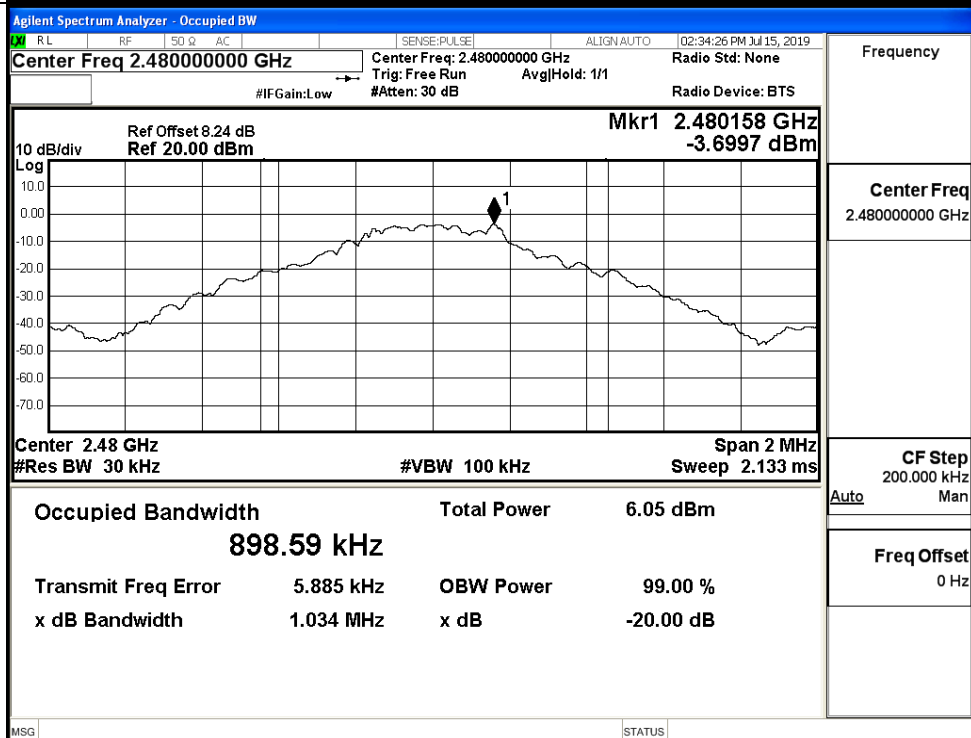
Test Graphs

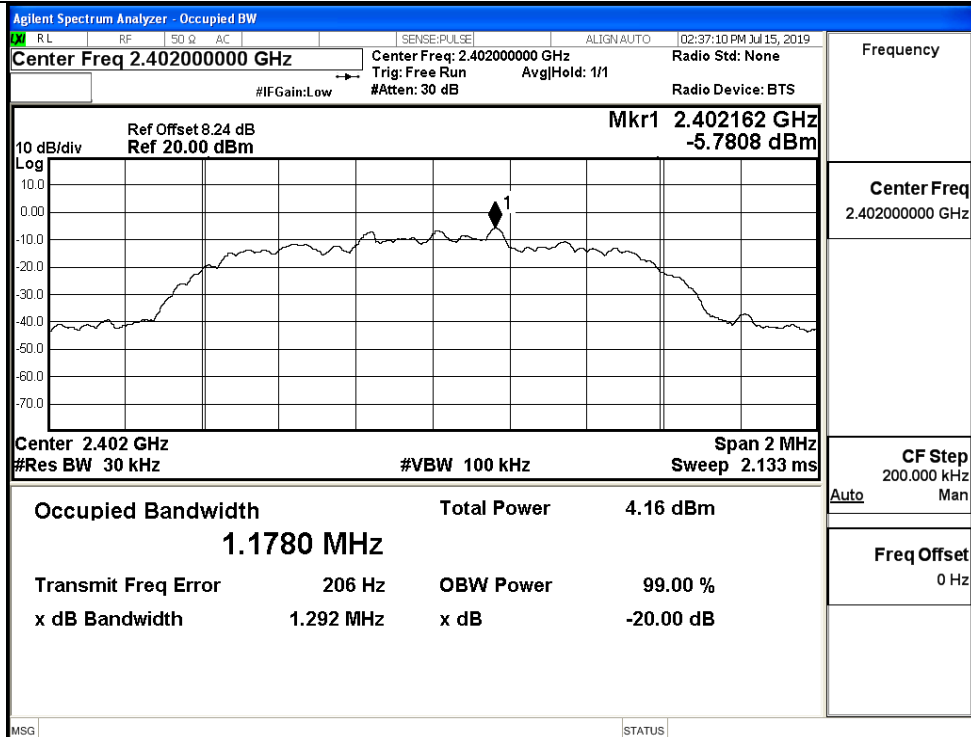
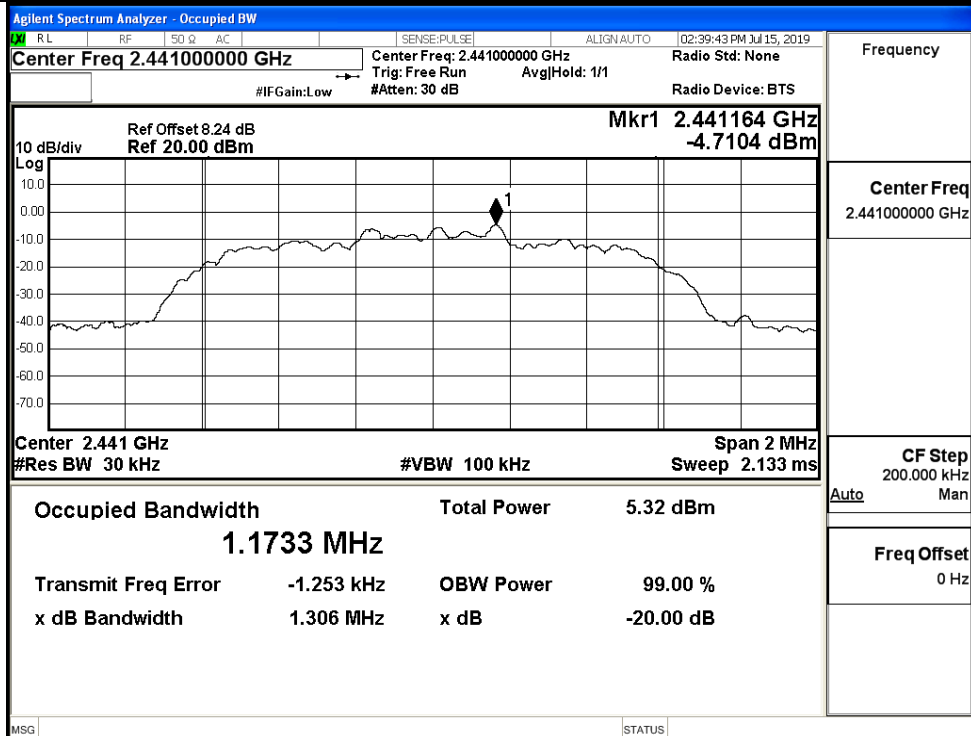


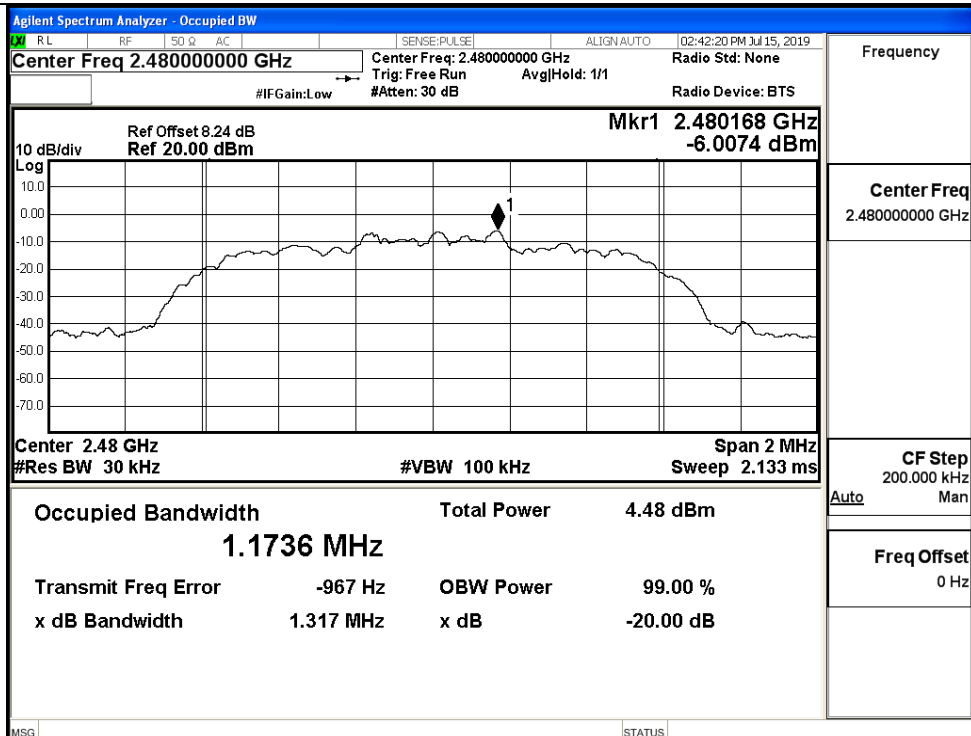
GFSK/MCH



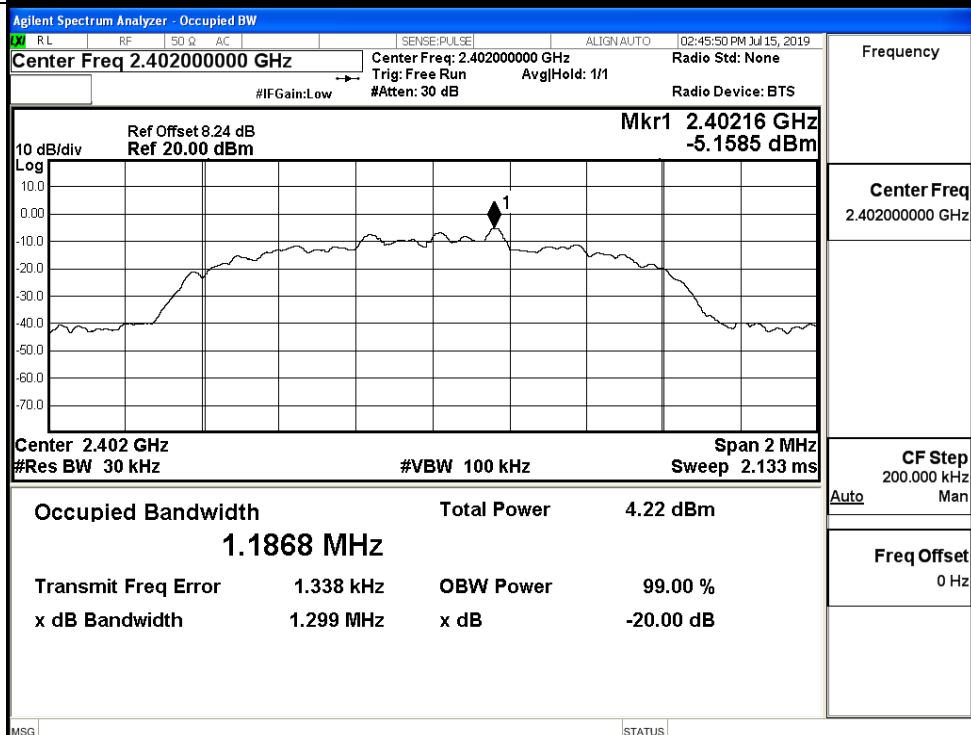
GFSK/HCH



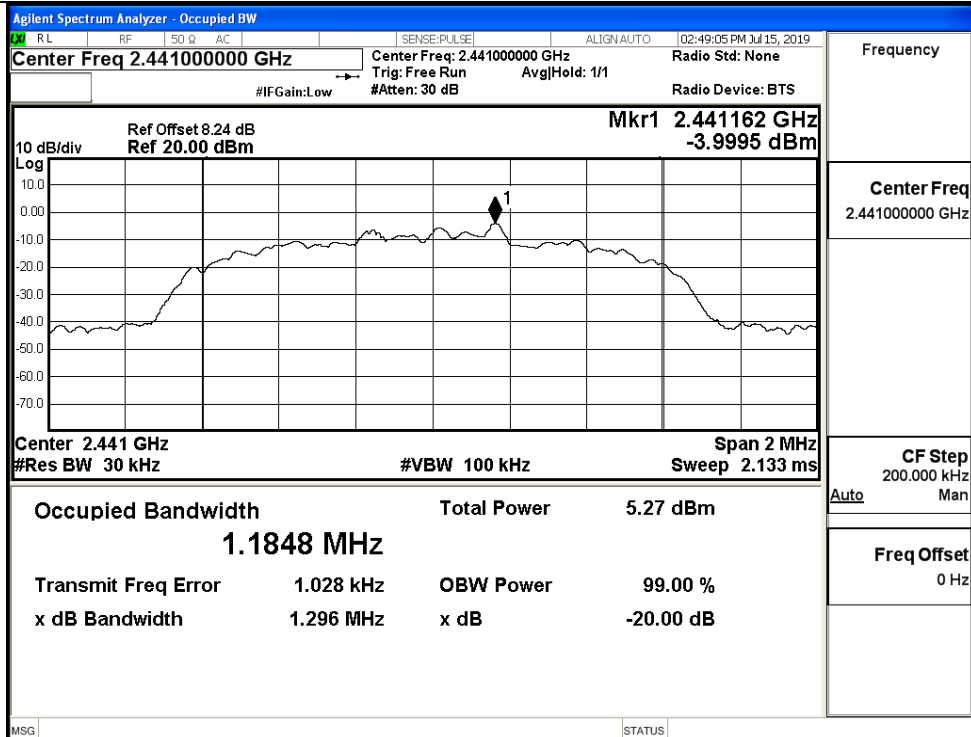
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

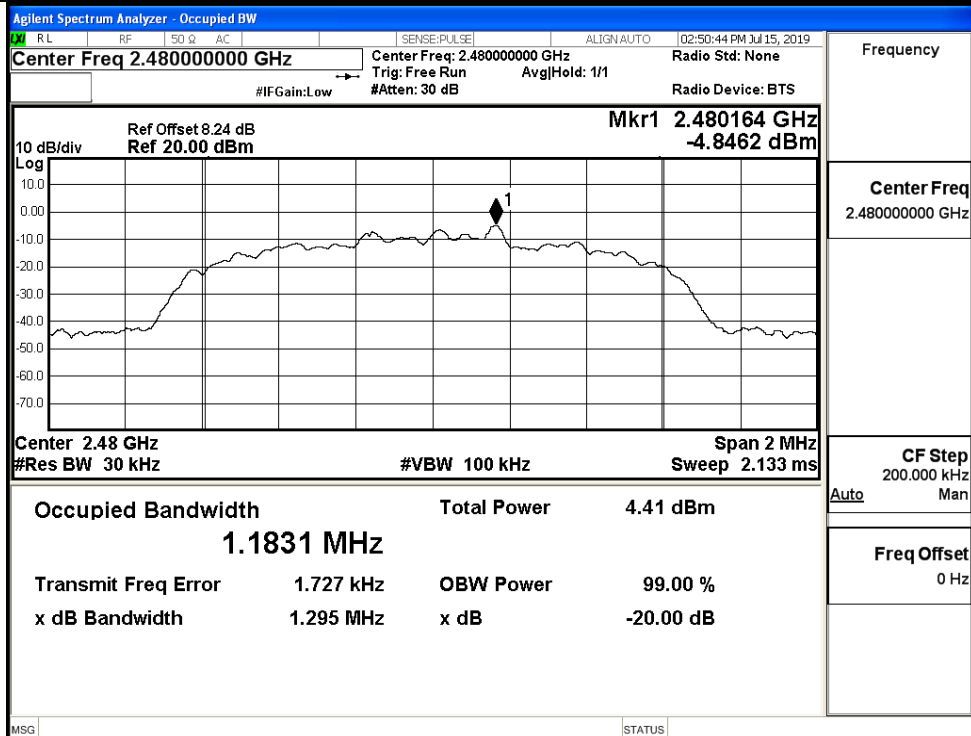
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

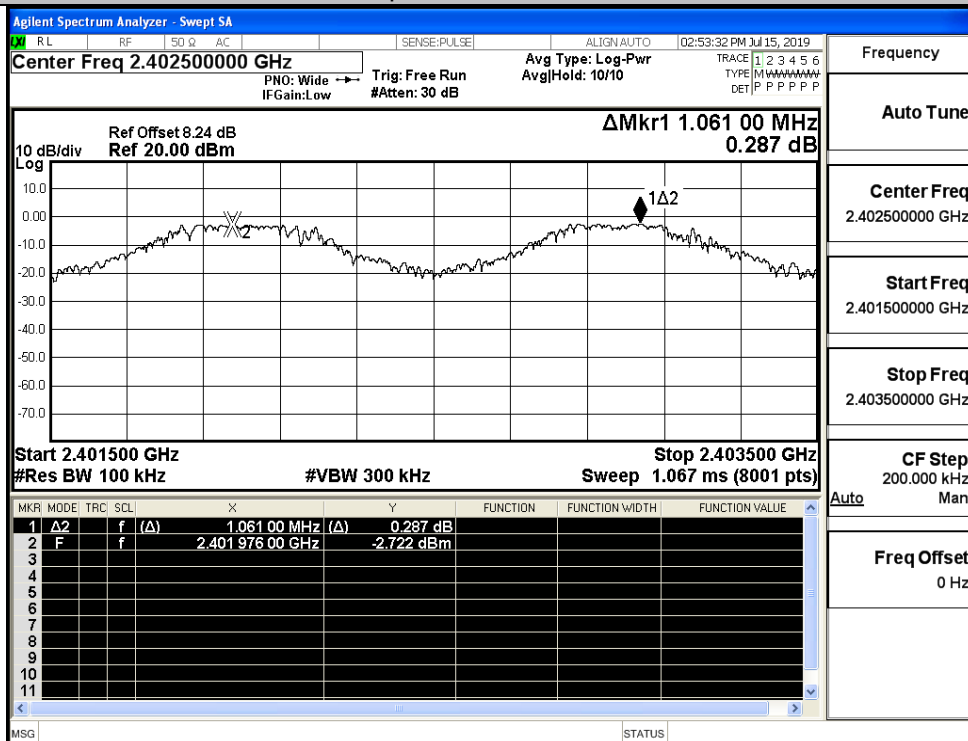


A.3 Carrier Frequency Separation

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.061	0.691	PASS
	MCH	1.034	0.691	PASS
	HCH	1.010	0.691	PASS
$\pi/4$ DQPSK	LCH	1.126	0.878	PASS
	MCH	1.150	0.878	PASS
	HCH	0.946	0.878	PASS
8DPSK	LCH	1.044	0.866	PASS
	MCH	1.076	0.866	PASS
	HCH	1.172	0.866	PASS

Test Graphs

GFSK/LCH

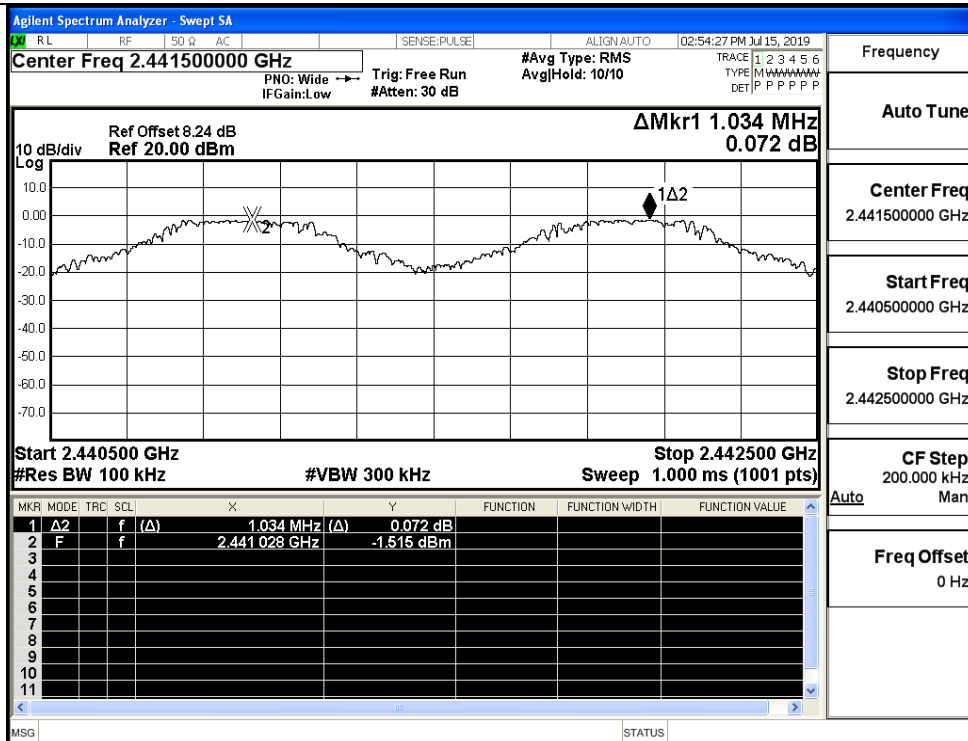


Frequency

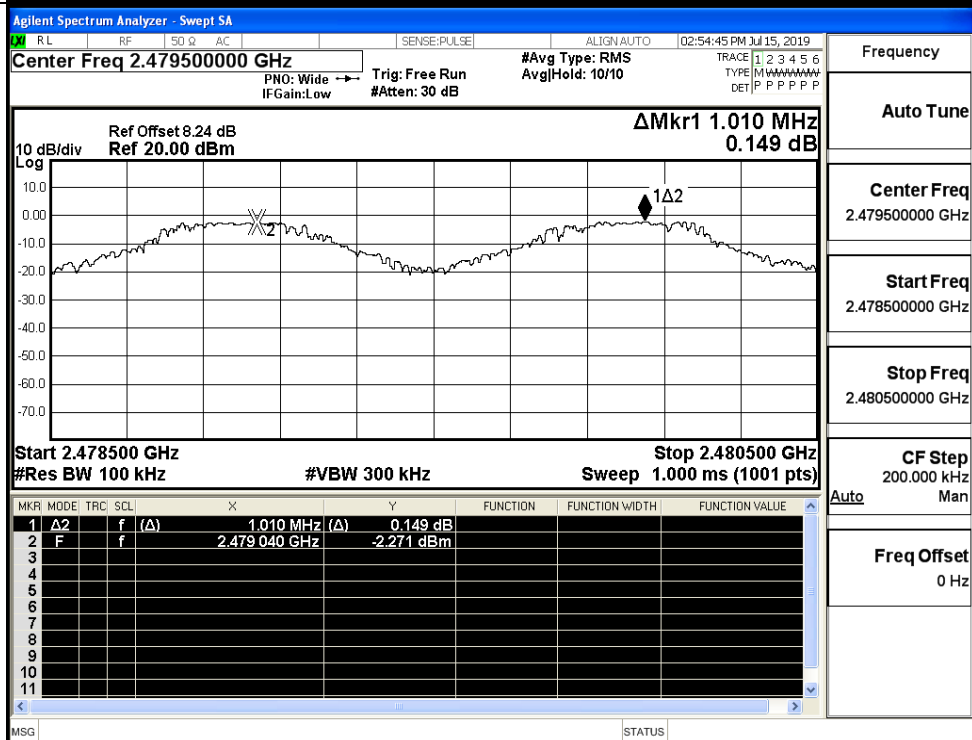
Auto Tune

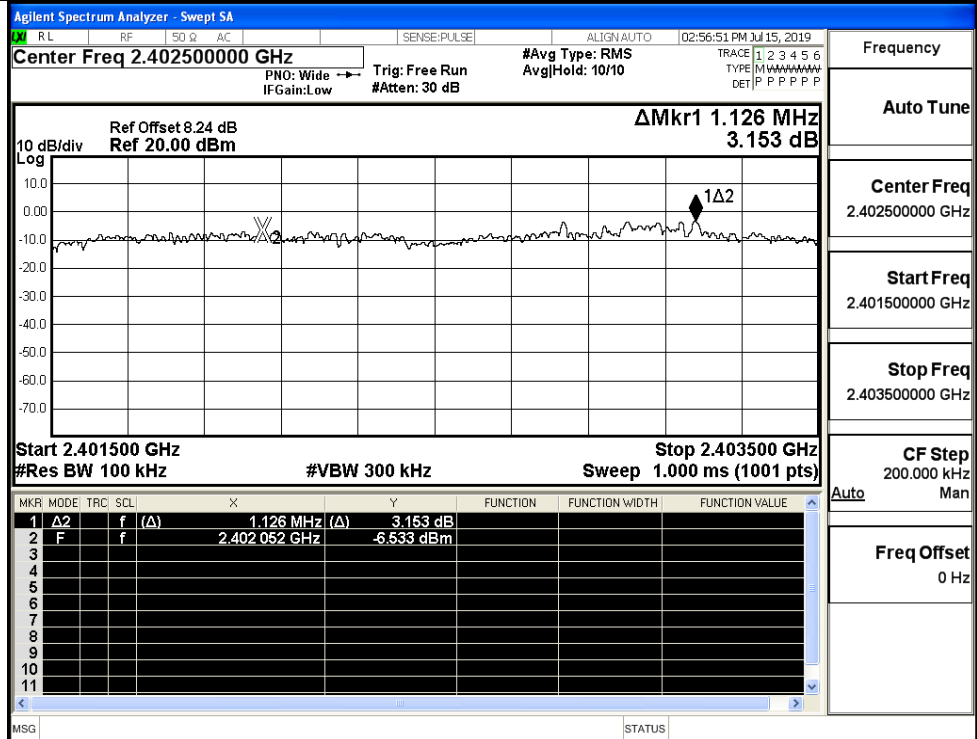
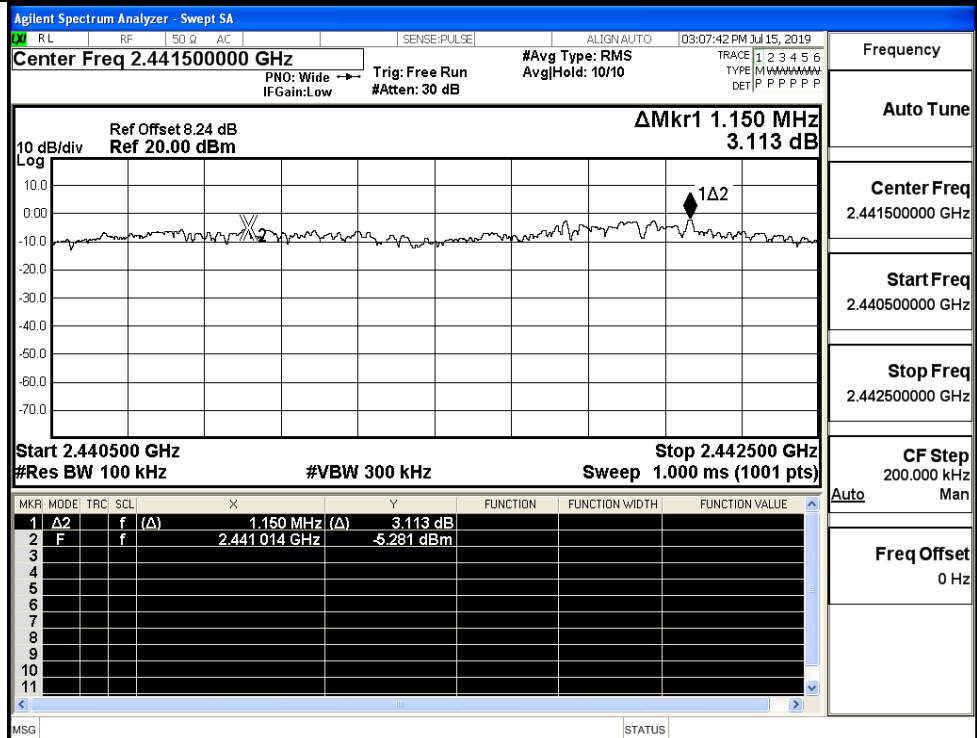
Center Freq
2.402500000 GHzStart Freq
2.401500000 GHzStop Freq
2.403500000 GHzCF Step
200.000 kHz
ManFreq Offset
0 Hz

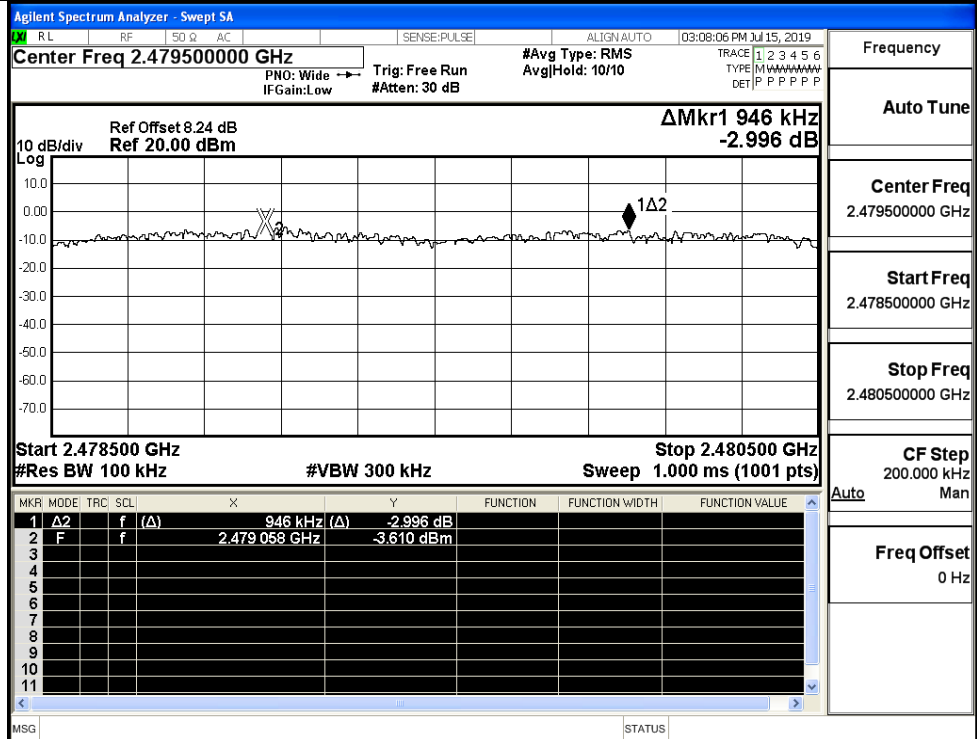
GFSK/MCH



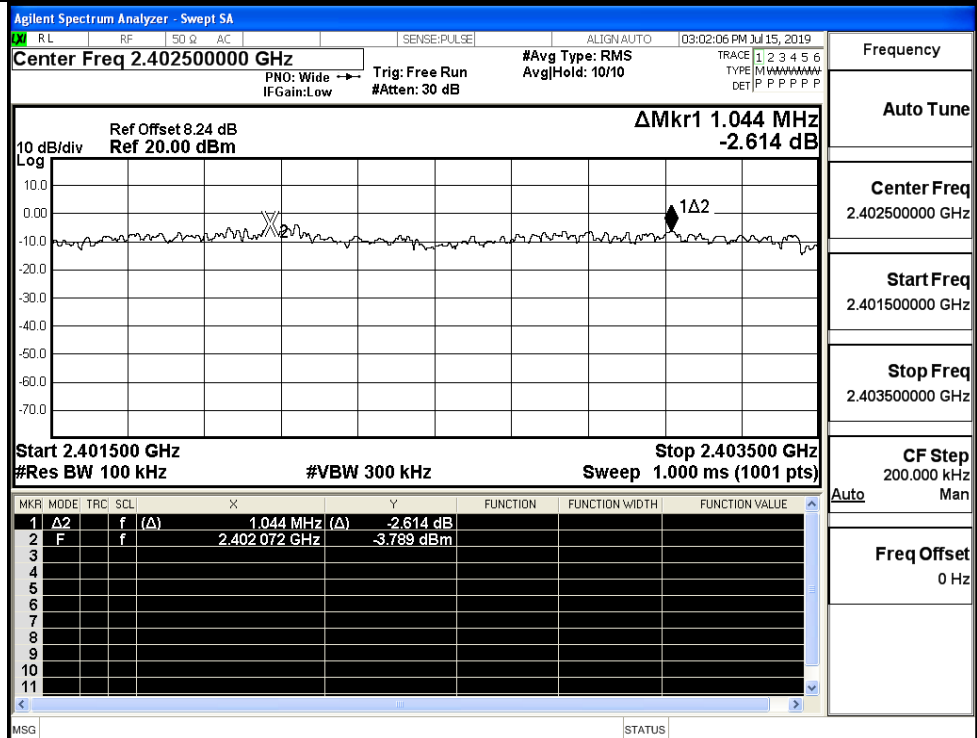
GFSK/HCH



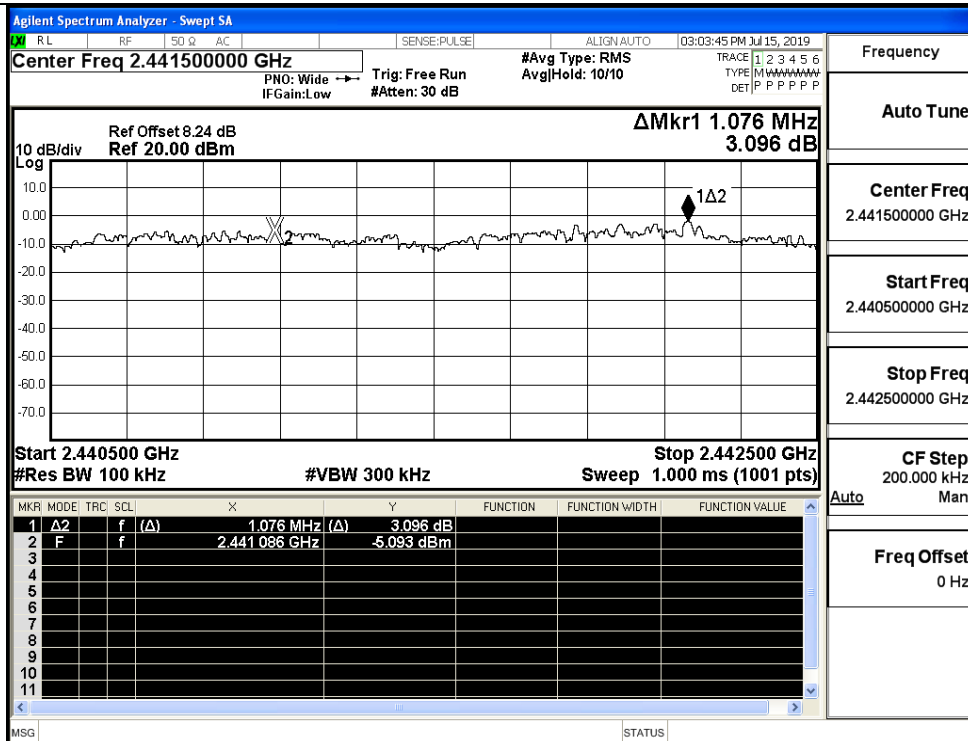
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

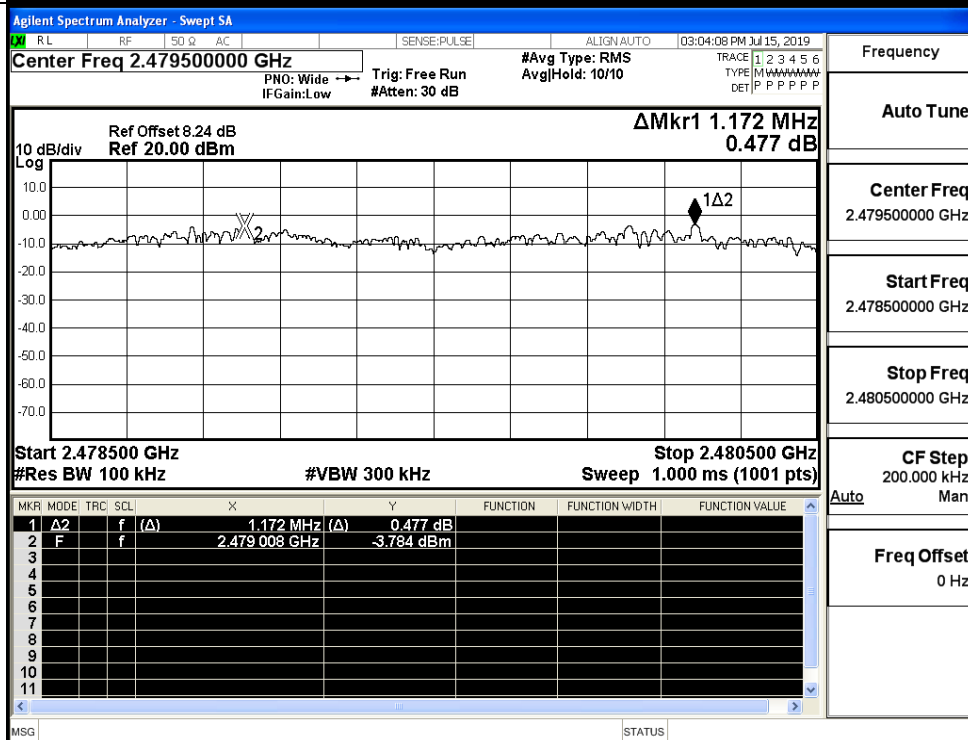
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

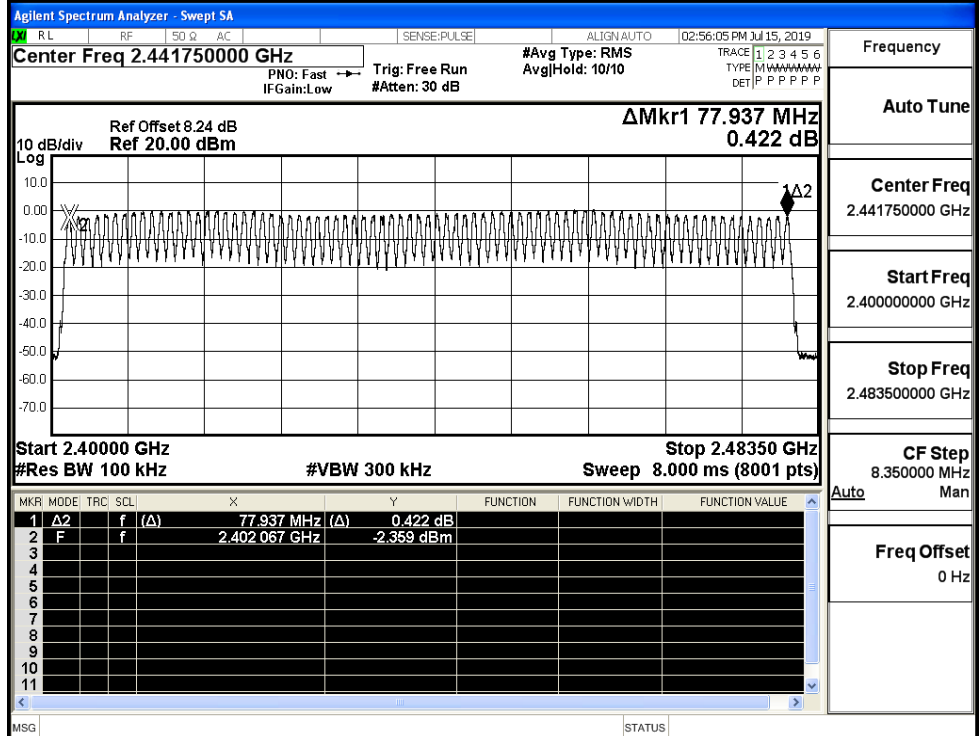
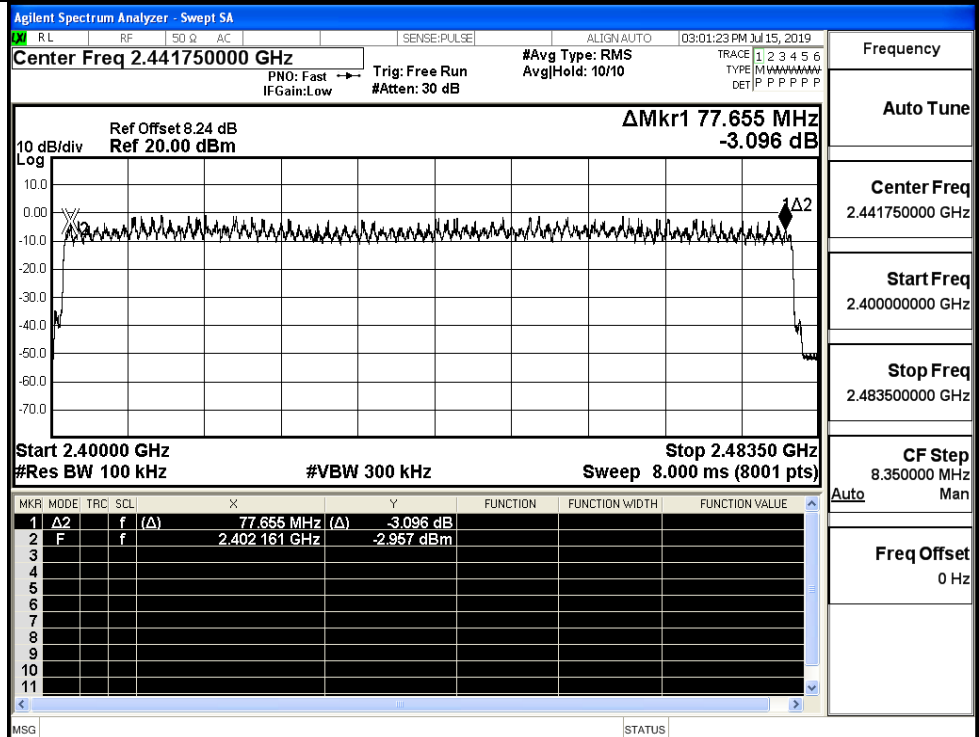


A.4 Hopping Channel Number

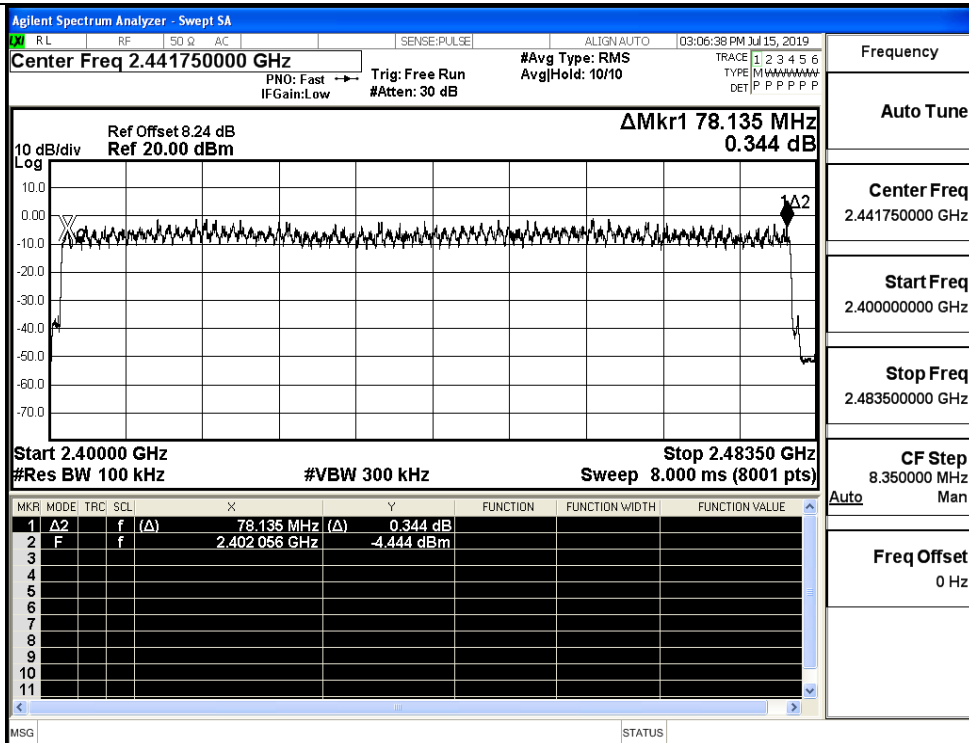
Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	>=15	PASS
$\pi/4$ DQPSK	Hop	79	>=15	PASS
8DPSK	Hop	79	>=15	PASS

Test Graphs

GFSK/Hop

 $\pi/4$ DQPSK/Hop

8DPSK/Hop

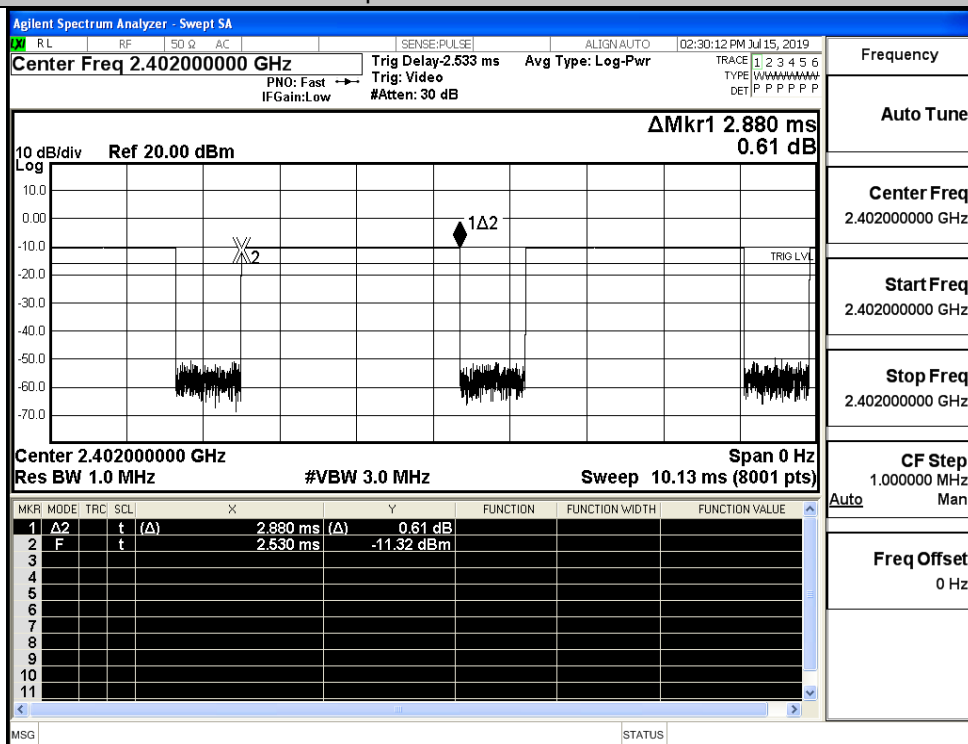


A.5 Dwell Time

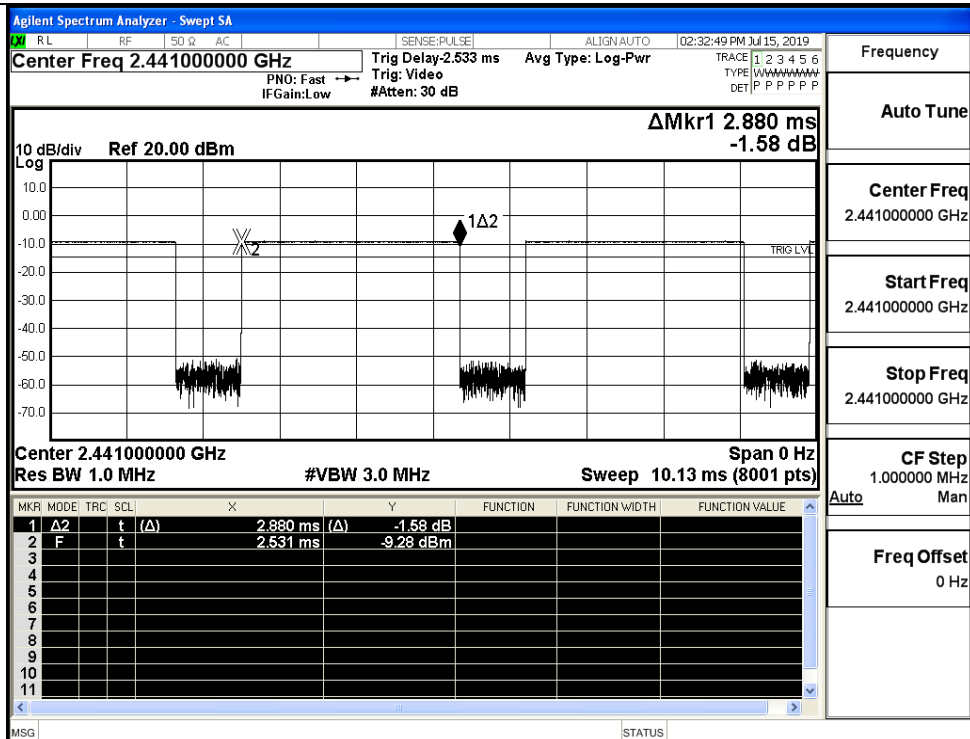
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.88	106.7	0.307	0.4	PASS
	DH5	MCH	2.88	106.7	0.307	0.4	PASS
	DH5	HCH	2.88	106.7	0.307	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.88	106.7	0.307	0.4	PASS
	2DH5	MCH	2.88	106.7	0.307	0.4	PASS
	2DH5	HCH	2.88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

Test Graphs

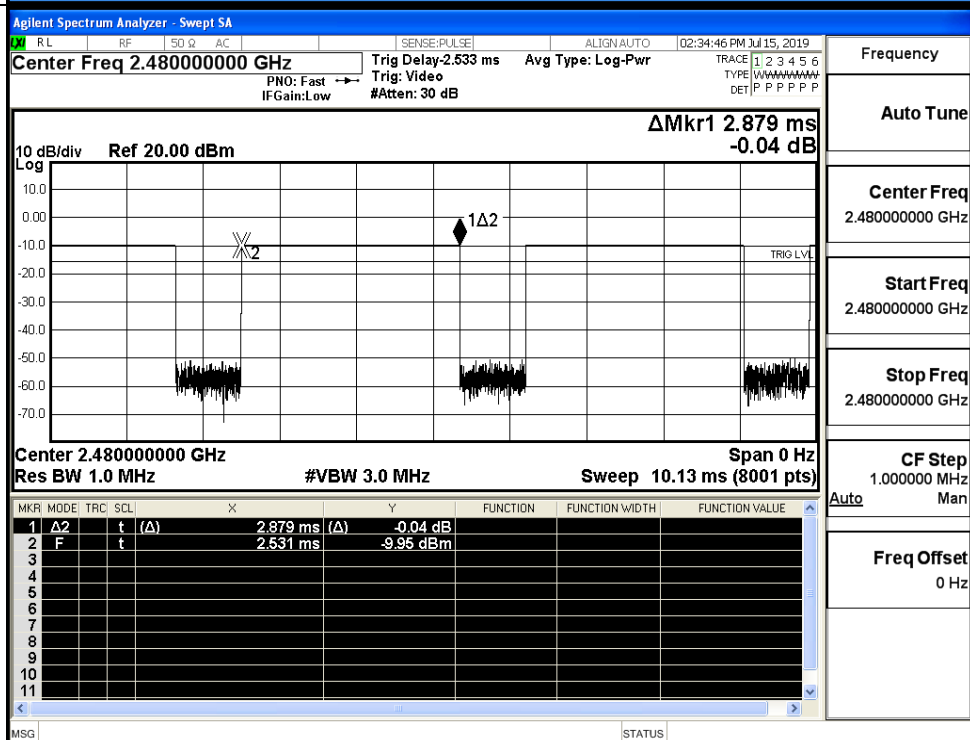
GFSK_DH5/LCH



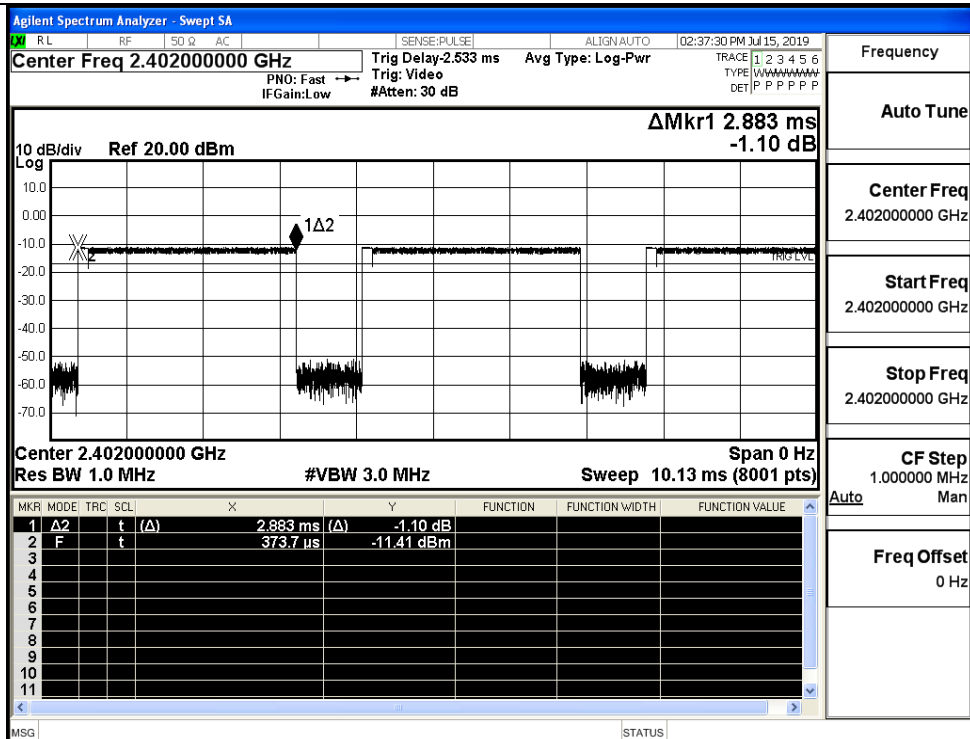
GFSK_DH5/MCH



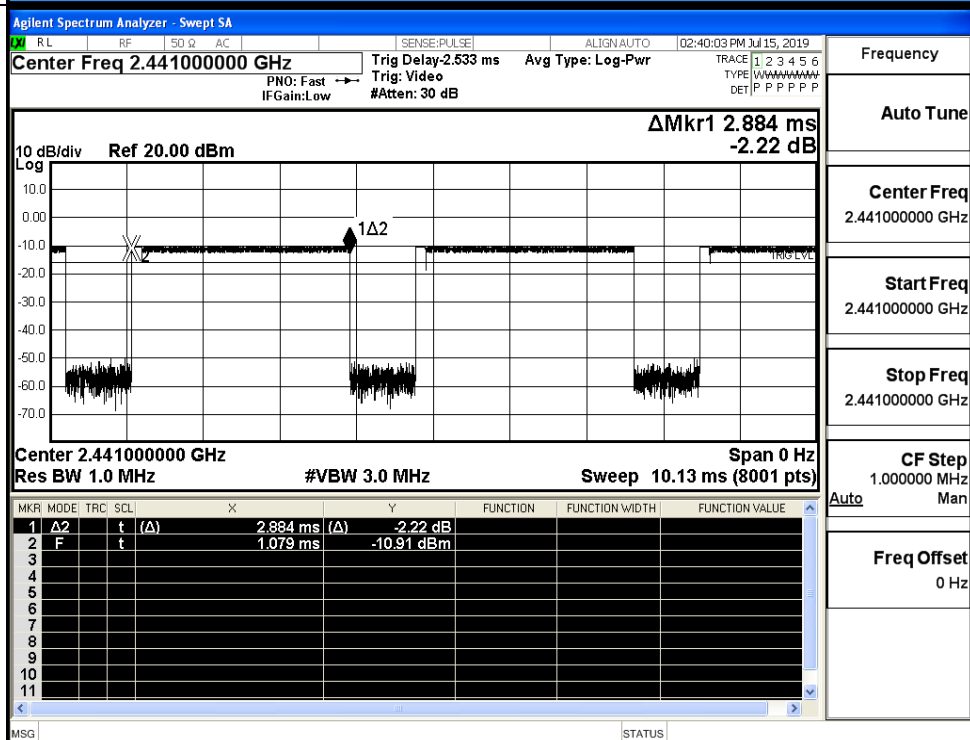
GFSK_DH5/HCH



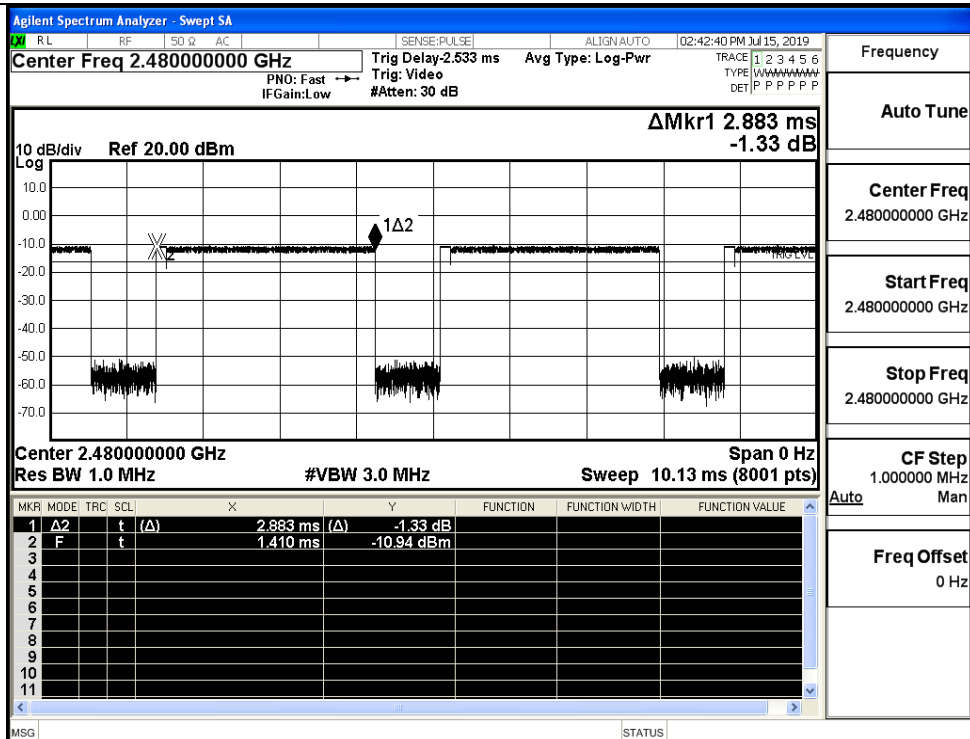
$\pi/4$ DQPSK
_2DH5/LCH



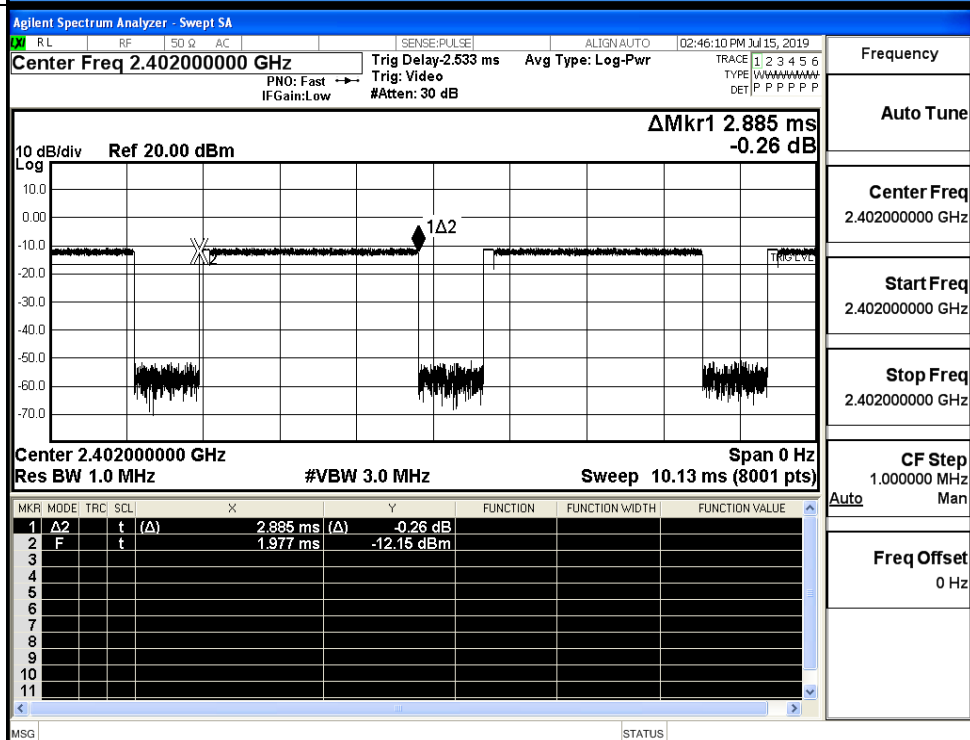
$\pi/4$ DQPSK
_2DH5/MCH



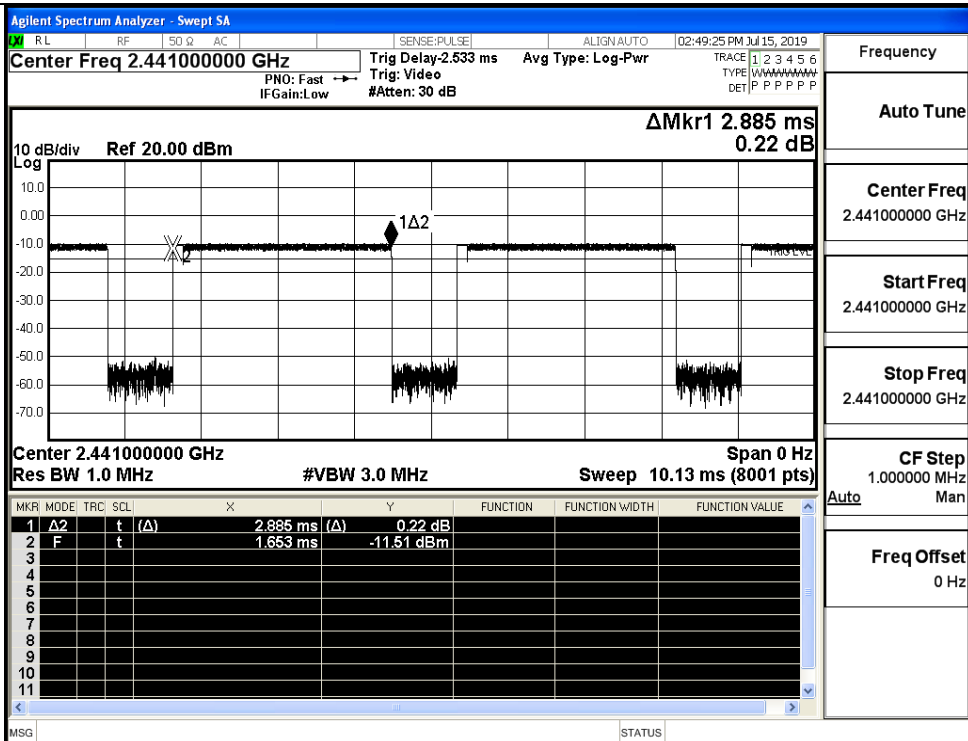
$\pi/4$ DQPSK
_2DH5/HCH



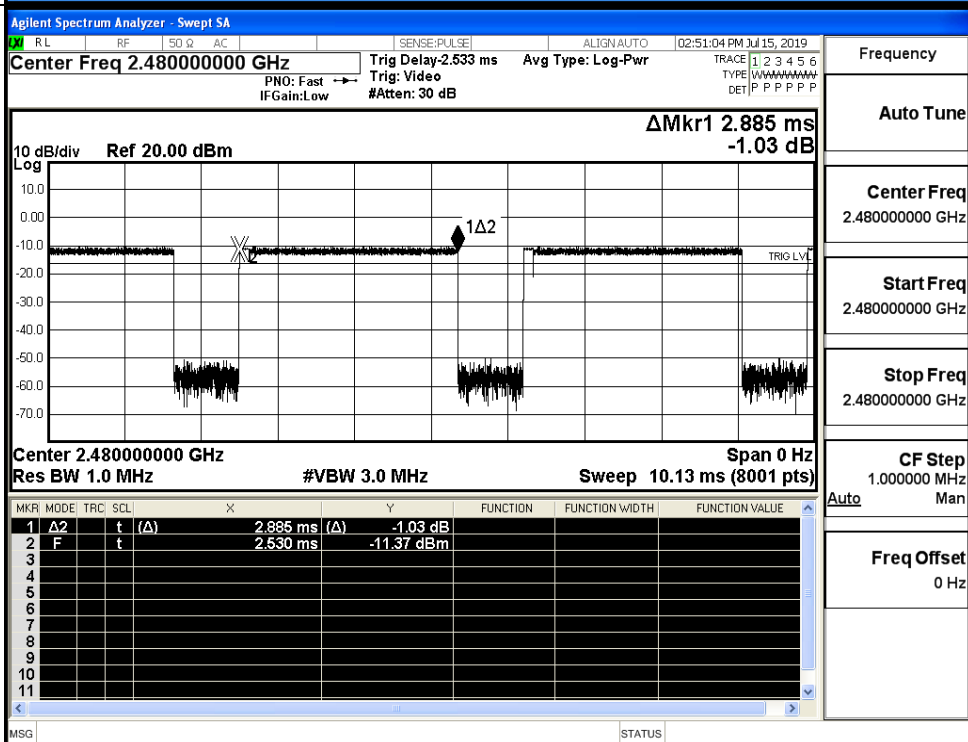
8DPSK _3DH5/LCH



8DPSK_3DH5/MCH



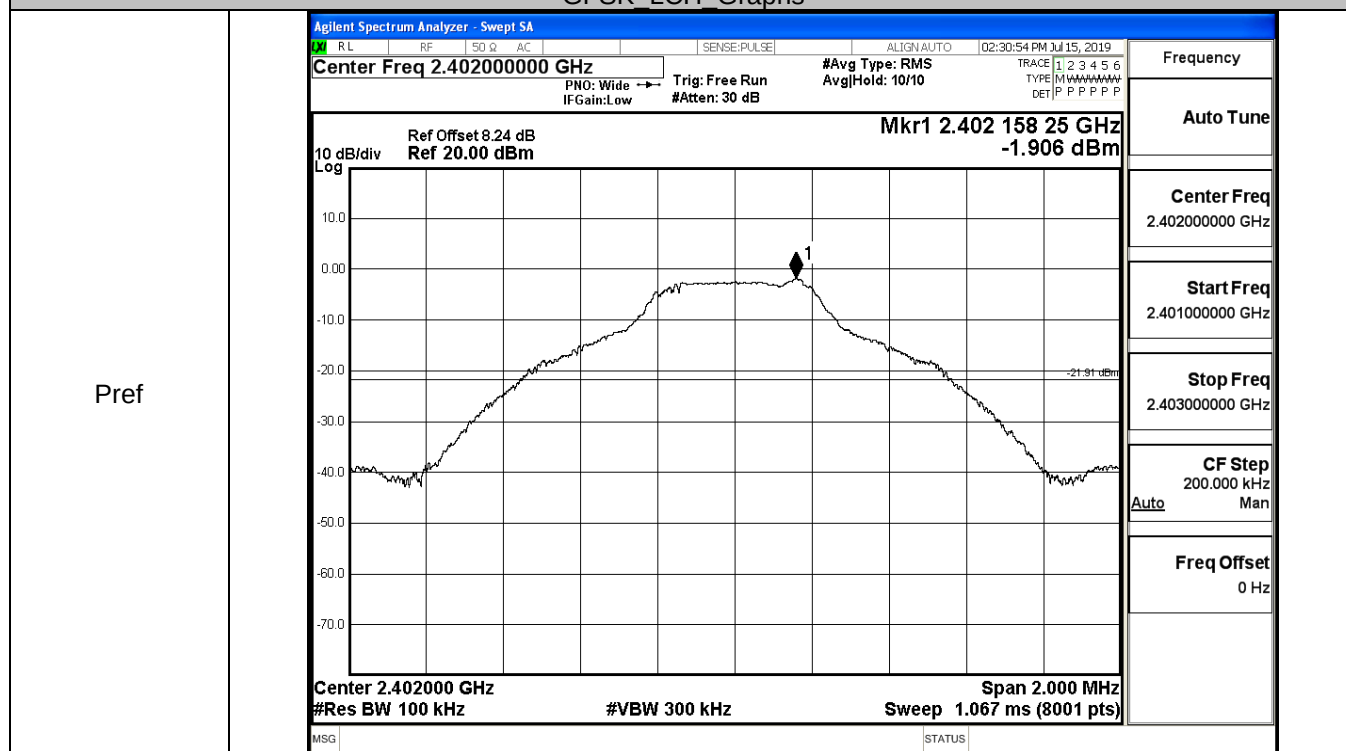
8DPSK_3DH5/HCH



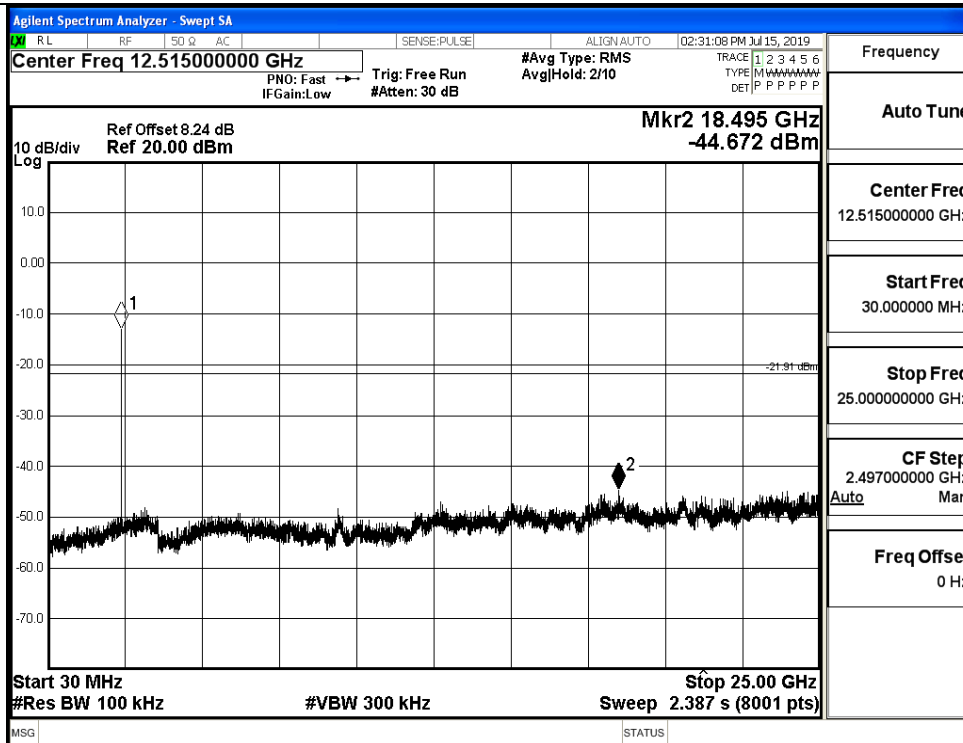
A.6 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-1.906	-44.672	-21.906	PASS
	MCH	-0.859	-44.622	-20.859	PASS
	HCH	-1.55	-43.851	-21.550	PASS
$\pi/4$ DQPSK	LCH	-3.232	-40.078	-23.232	PASS
	MCH	-2.062	-45.415	-22.062	PASS
	HCH	-2.738	-44.644	-22.738	PASS
8DPSK	LCH	-3.098	-44.763	-23.098	PASS
	MCH	-2.066	-44.274	-22.066	PASS
	HCH	-2.832	-44.448	-22.832	PASS

GFSK LCH Graphs

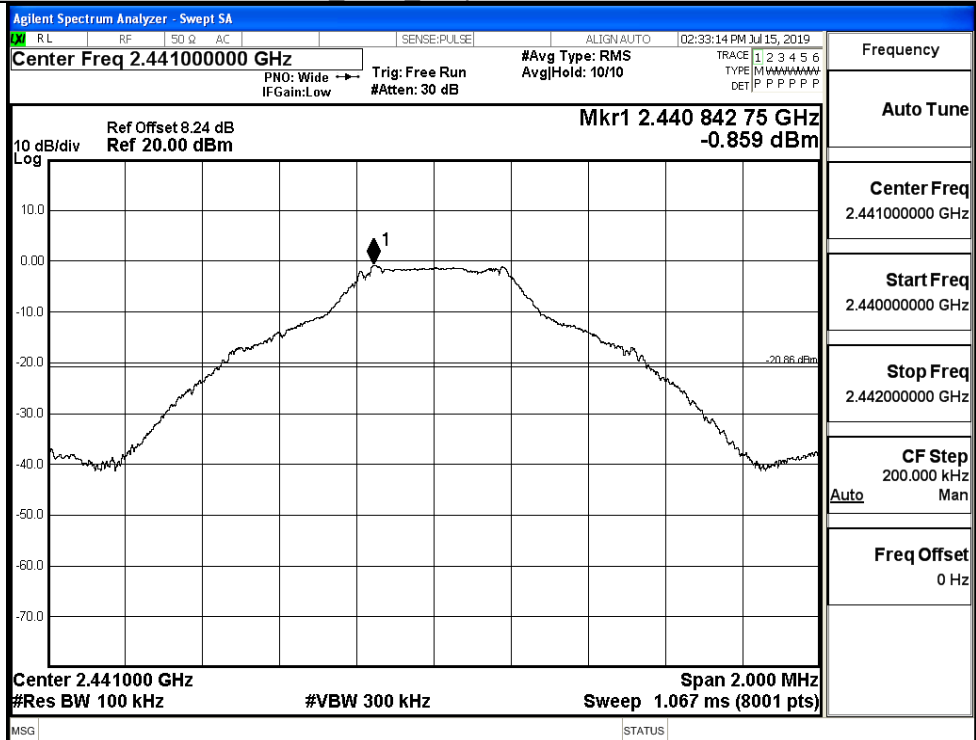


Puw

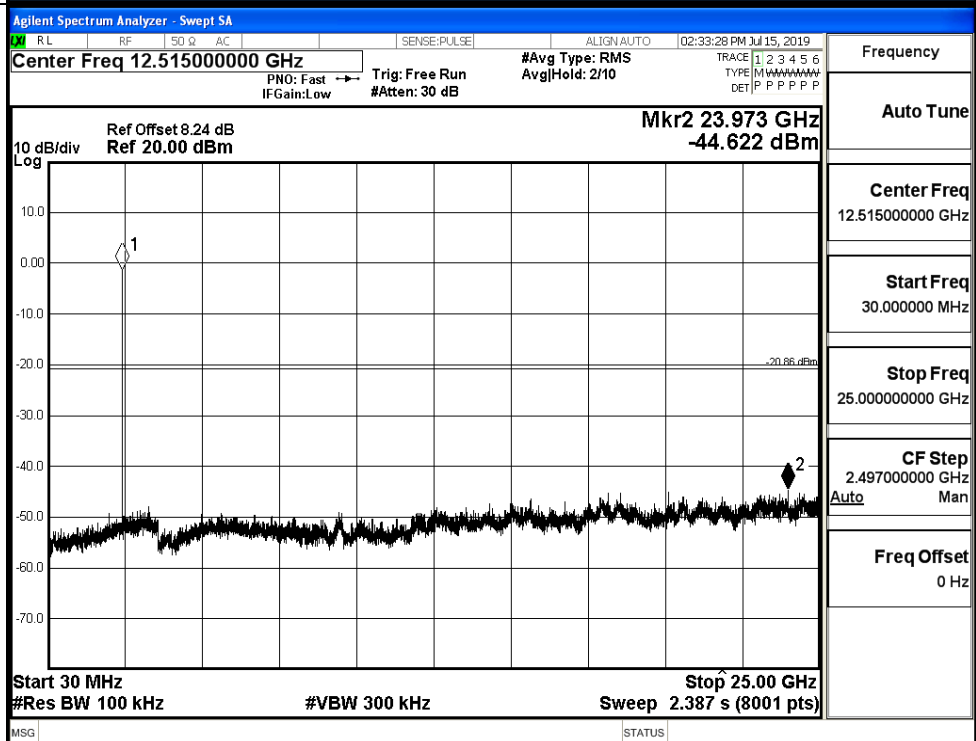


GFSK_MCH_Graphs

Pref

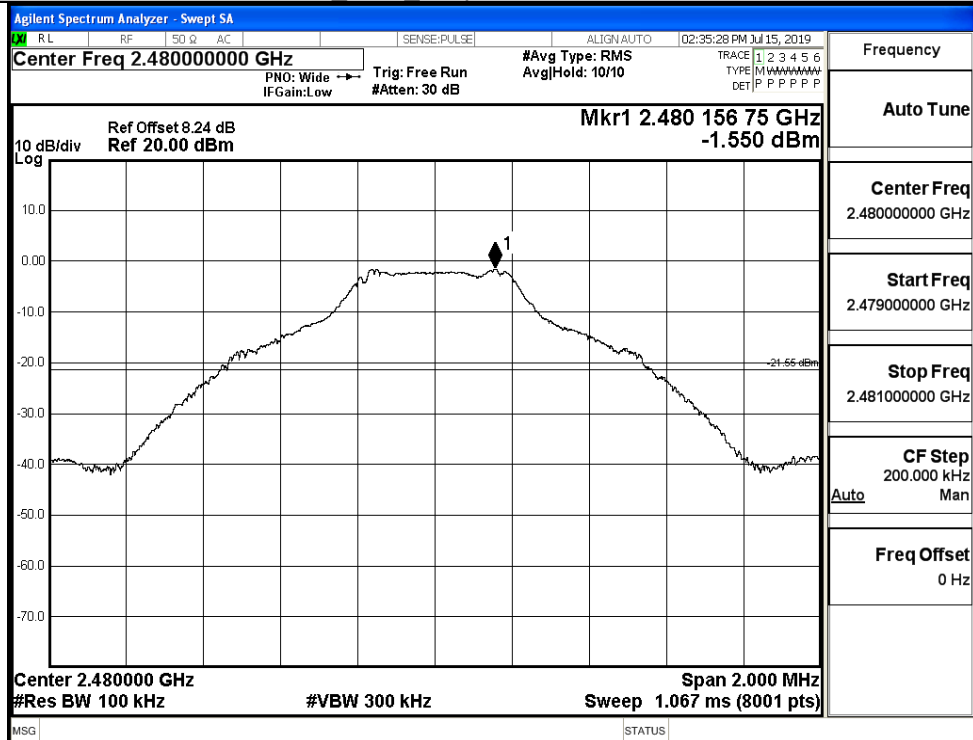


Puw

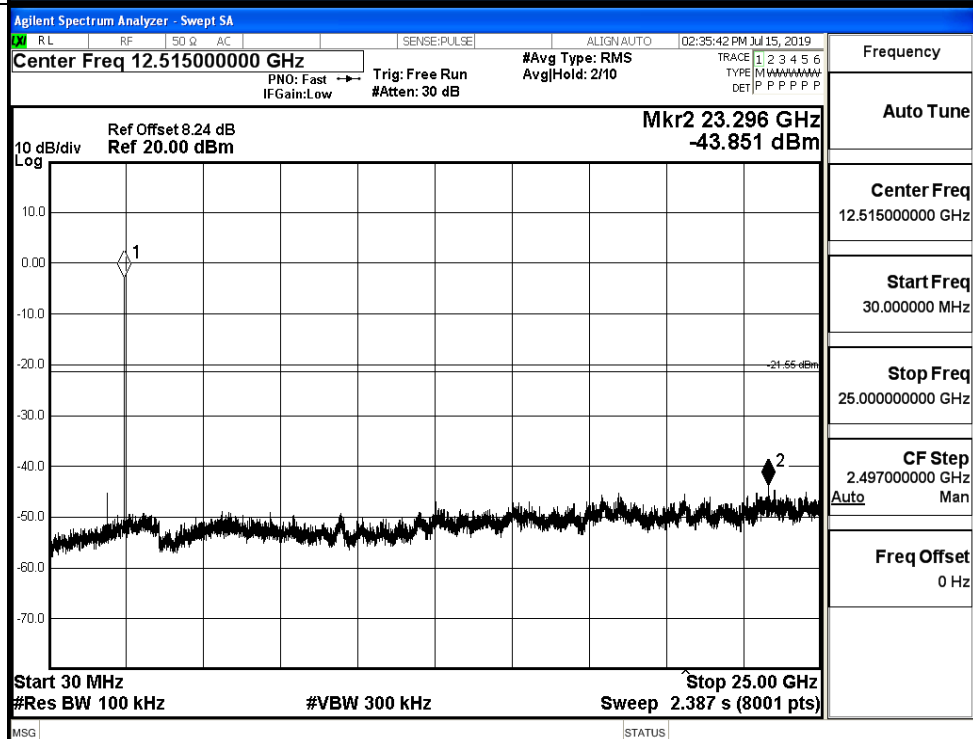


GFSK HCH_Graphs

Pref

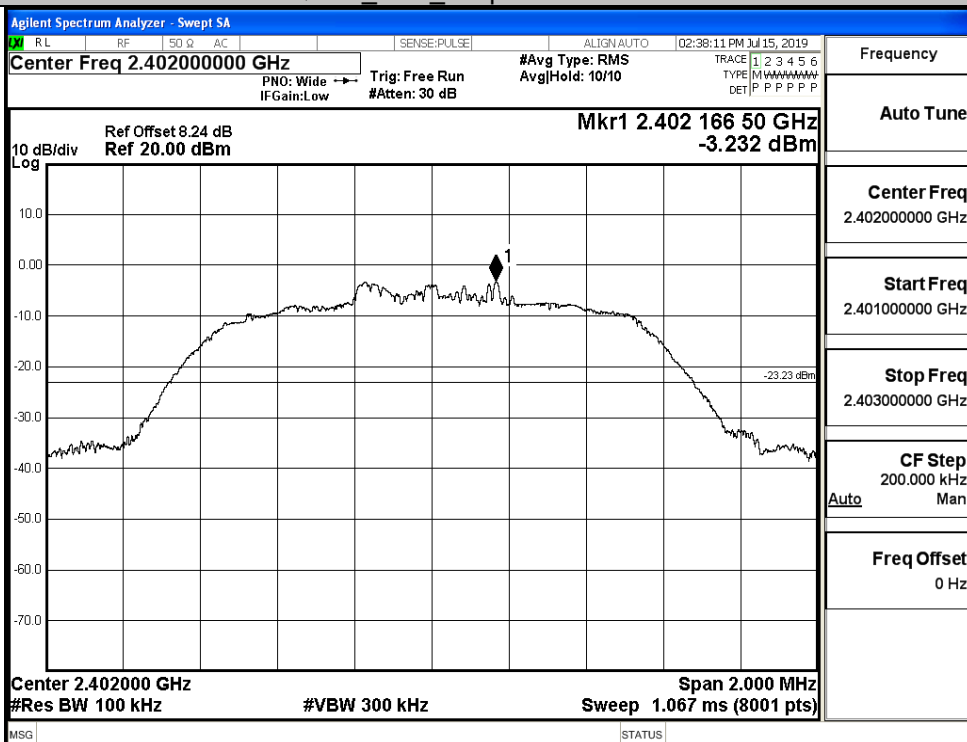


Puw

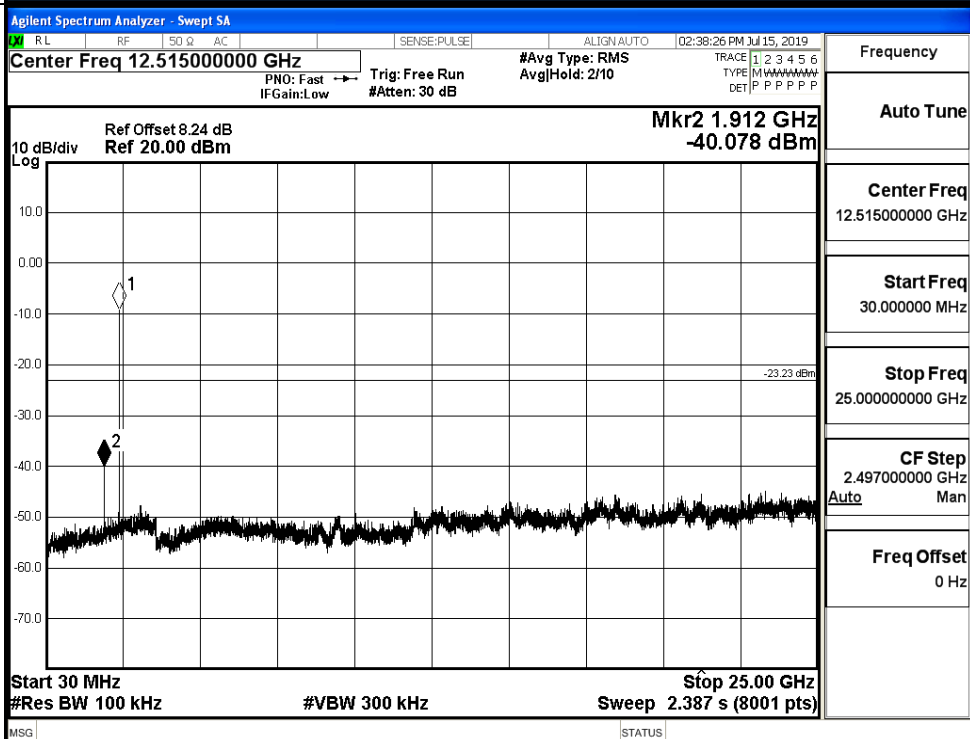


$\pi/4$ DQPSK_LCH_Graphs

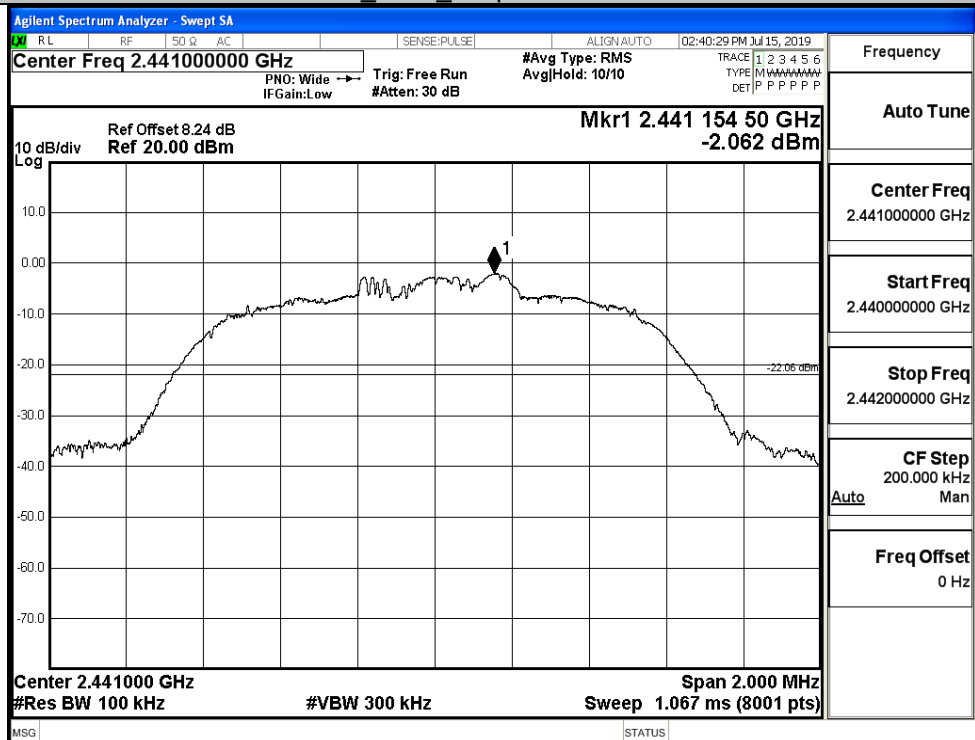
Pref



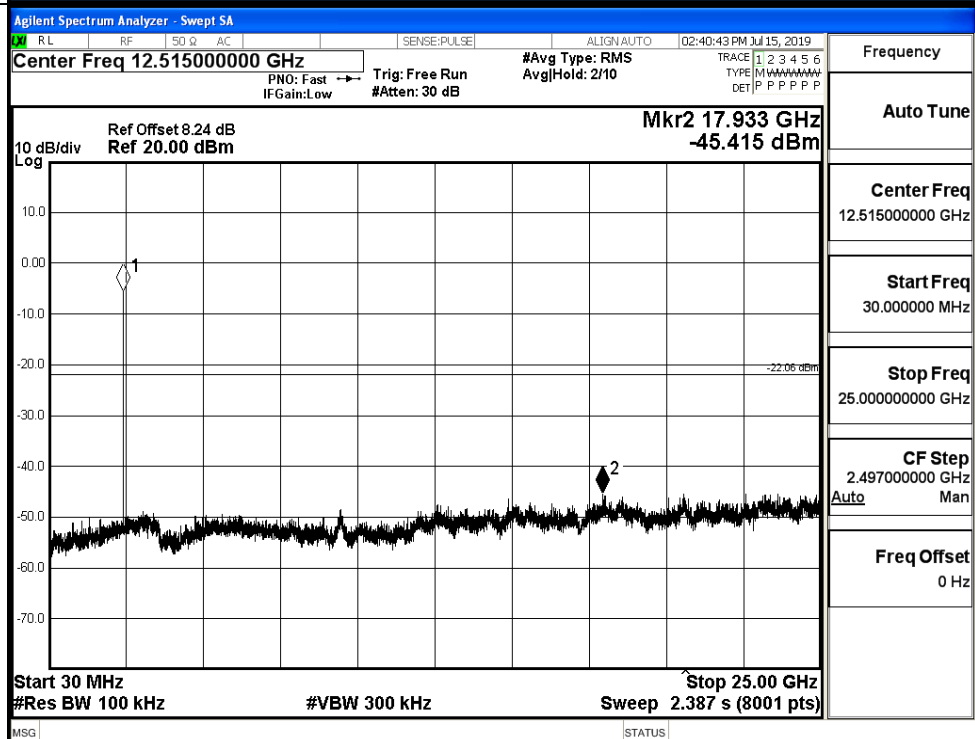
Puw



Pref

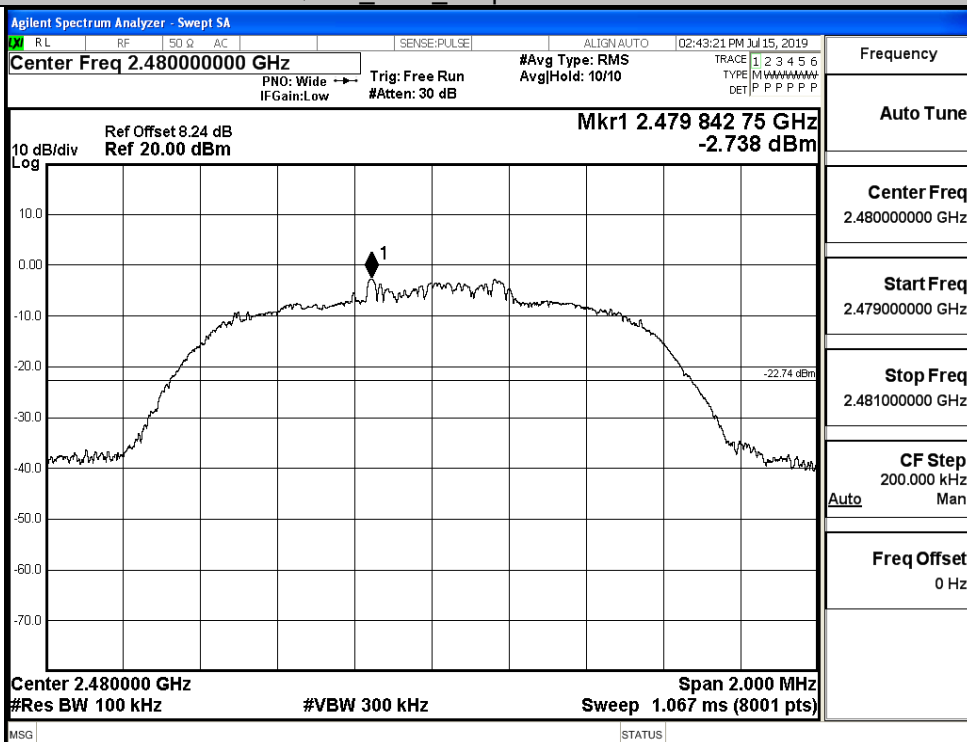


Puw

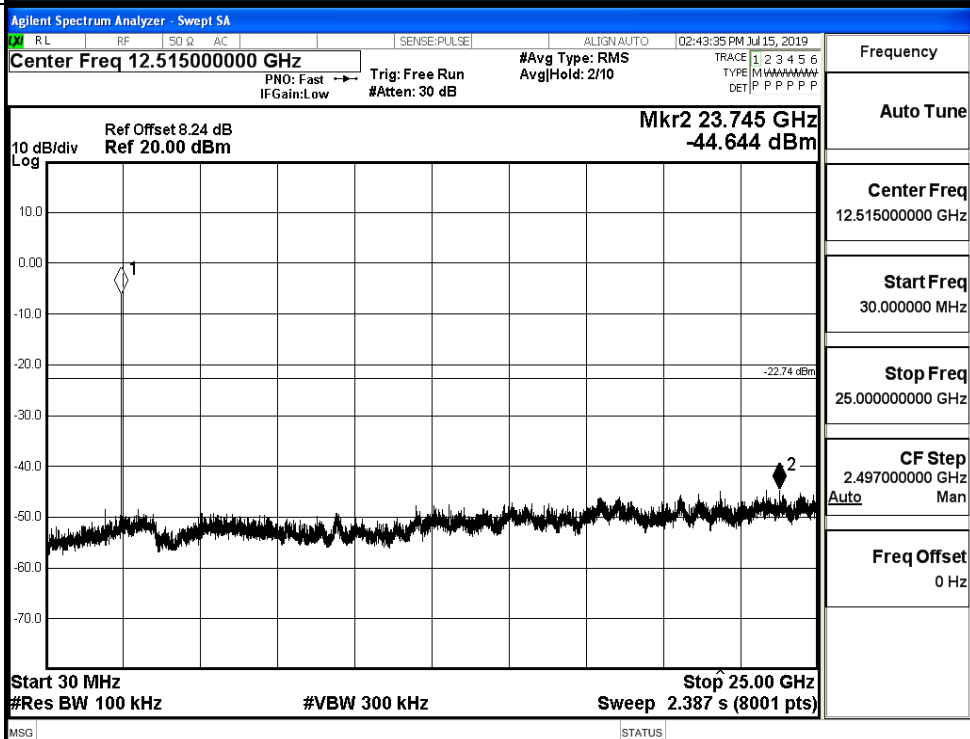


$\pi/4$ DQPSK_HCH_Graphs

Pref

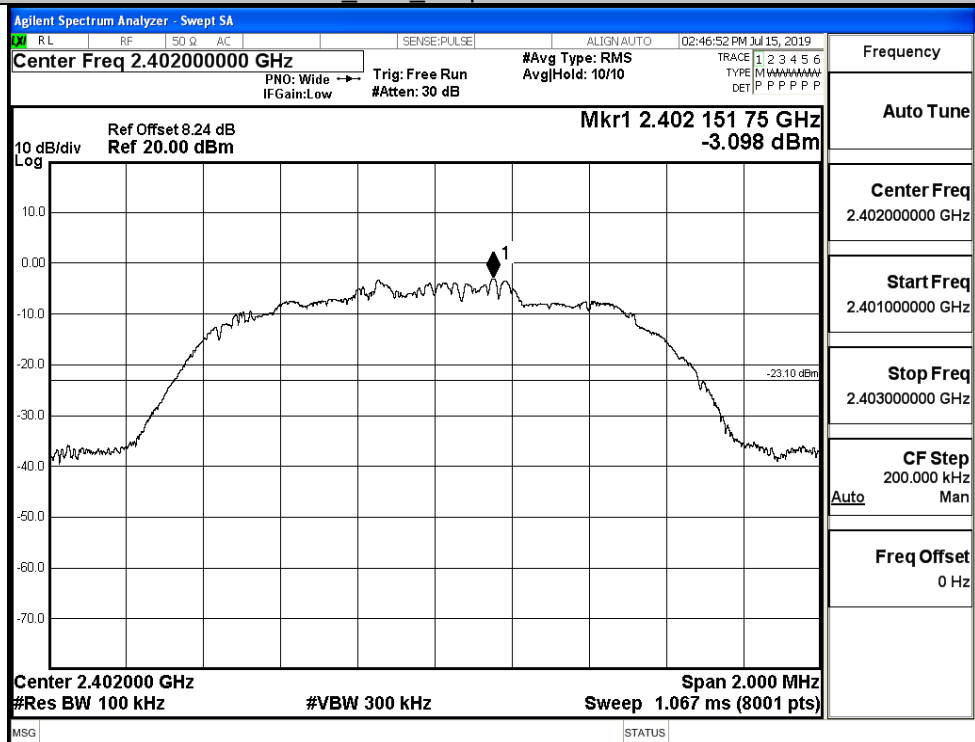


Puw

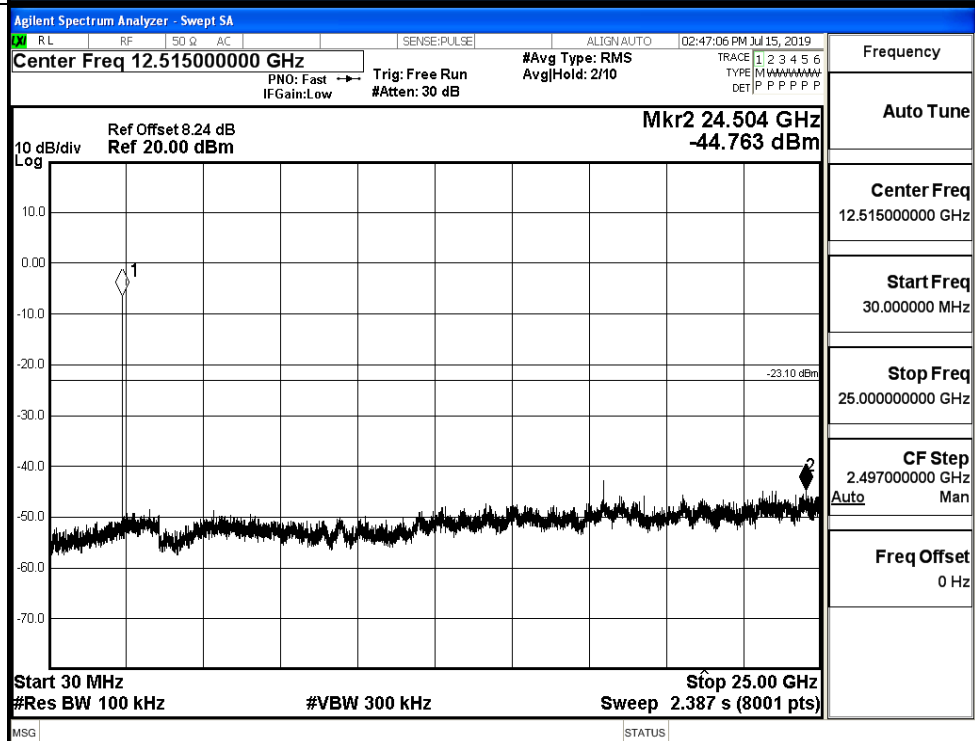


8DPSK_LCH_Graphs

Pref

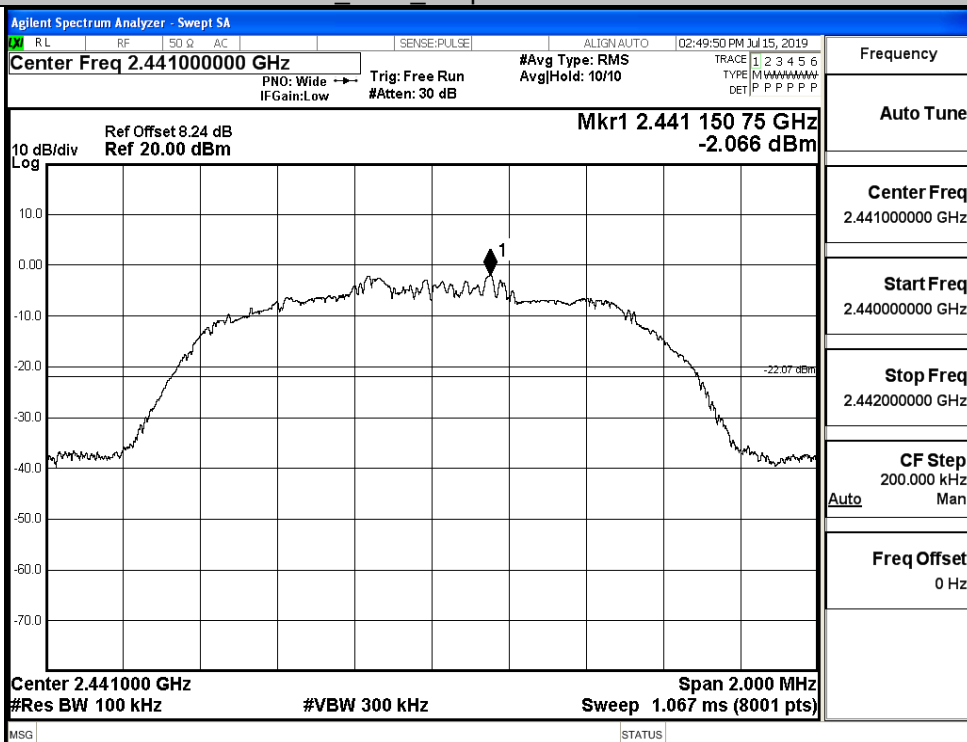


Puw

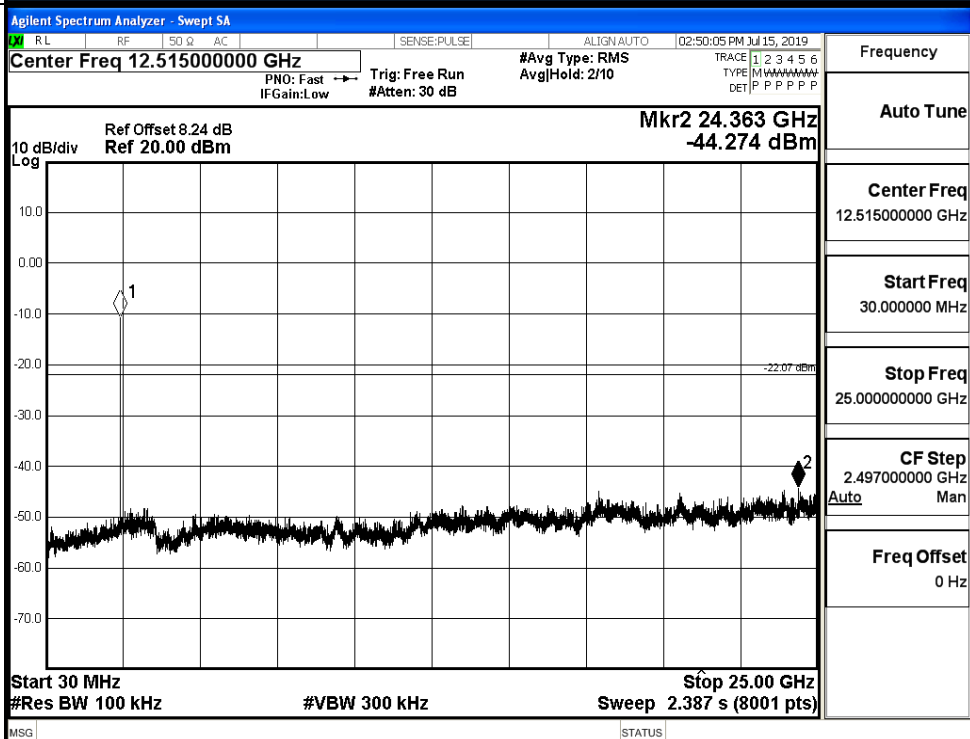


8DPSK_MCH_Graphs

Pref

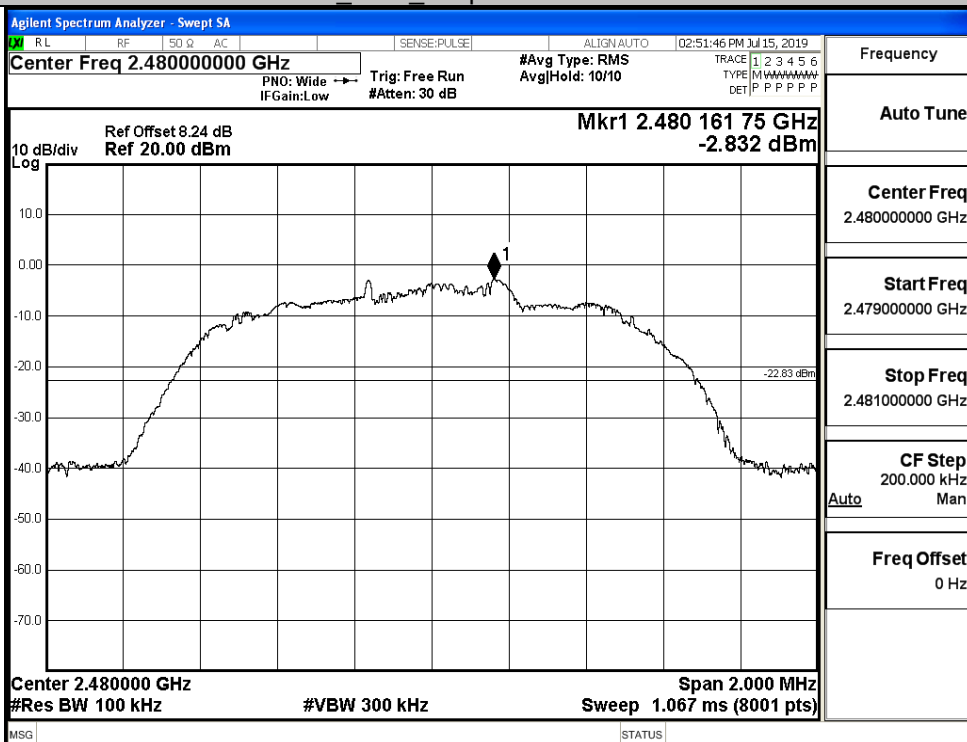


Puw

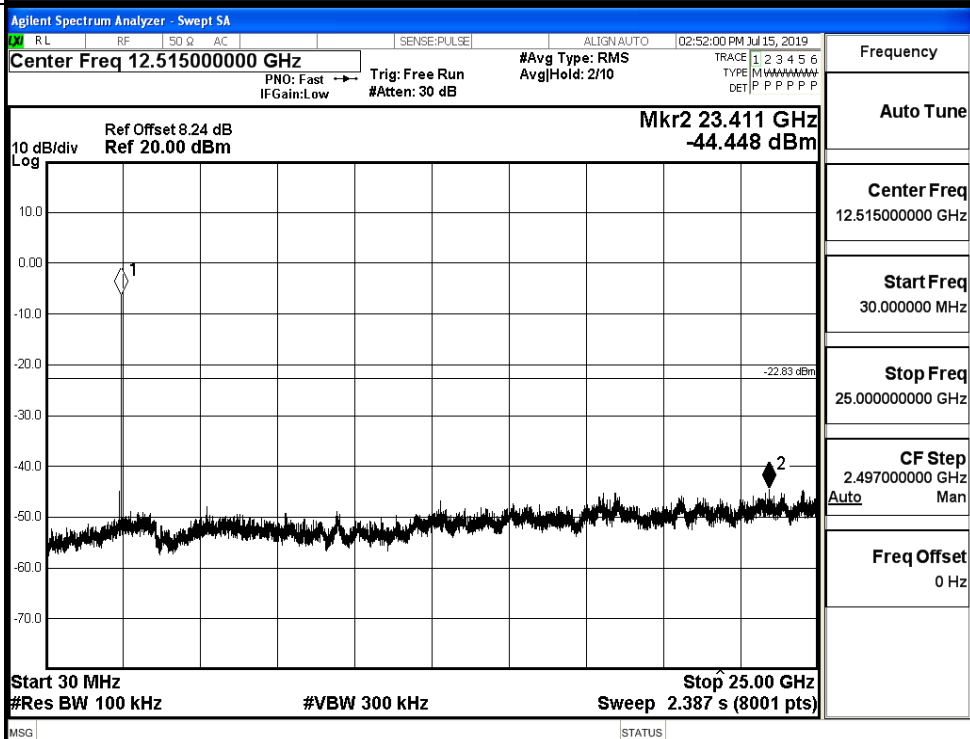


8DPSK_HCH_Graphs

Pref



Puw

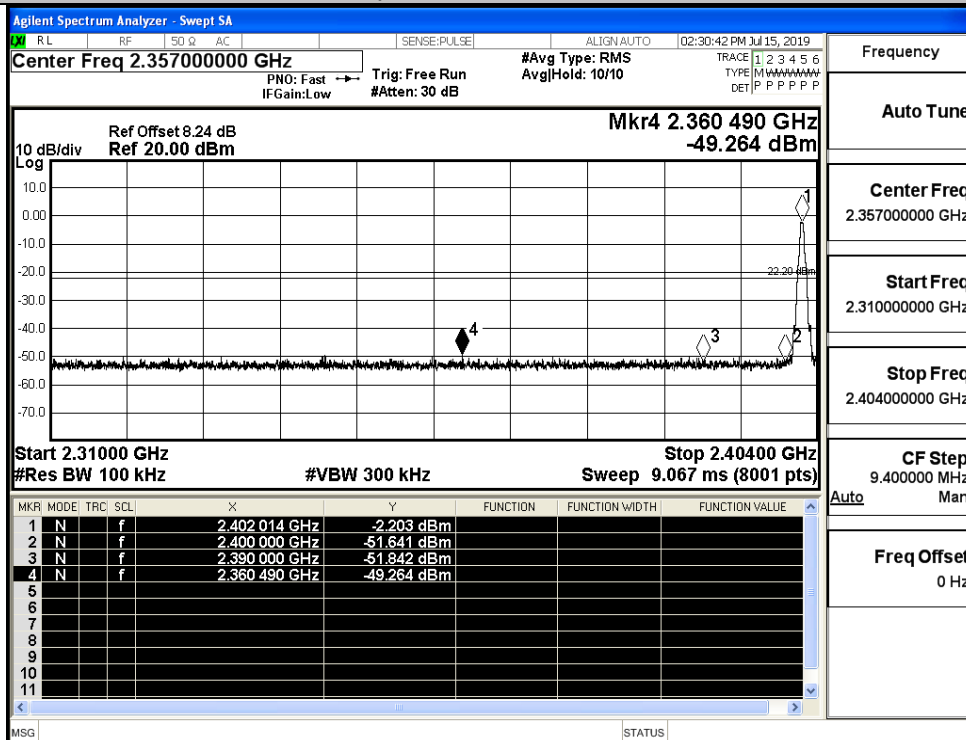


A.7 Band-edge for RF Conducted Emissions

Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	-2.203	Off	-49.264	-22.2	PASS
			0.232	On	-49.774	-19.77	PASS
	HCH	2480	-1.462	Off	-49.904	-21.46	PASS
			0.357	On	-48.905	-19.64	PASS
$\pi/4$ DQPSK	LCH	2402	-3.088	Off	-49.641	-23.09	PASS
			-1.252	On	-49.769	-21.25	PASS
	HCH	2480	-2.691	Off	-49.473	-22.69	PASS
			-0.855	On	-49.306	-20.86	PASS
8DPSK	LCH	2402	-2.969	Off	-49.135	-22.97	PASS
			-0.847	On	-49.024	-20.85	PASS
	HCH	2480	-2.875	Off	-49.395	-22.88	PASS
			-0.881	On	-48.912	-20.88	PASS

Test Graphs

GFSK/LCH/No Hop

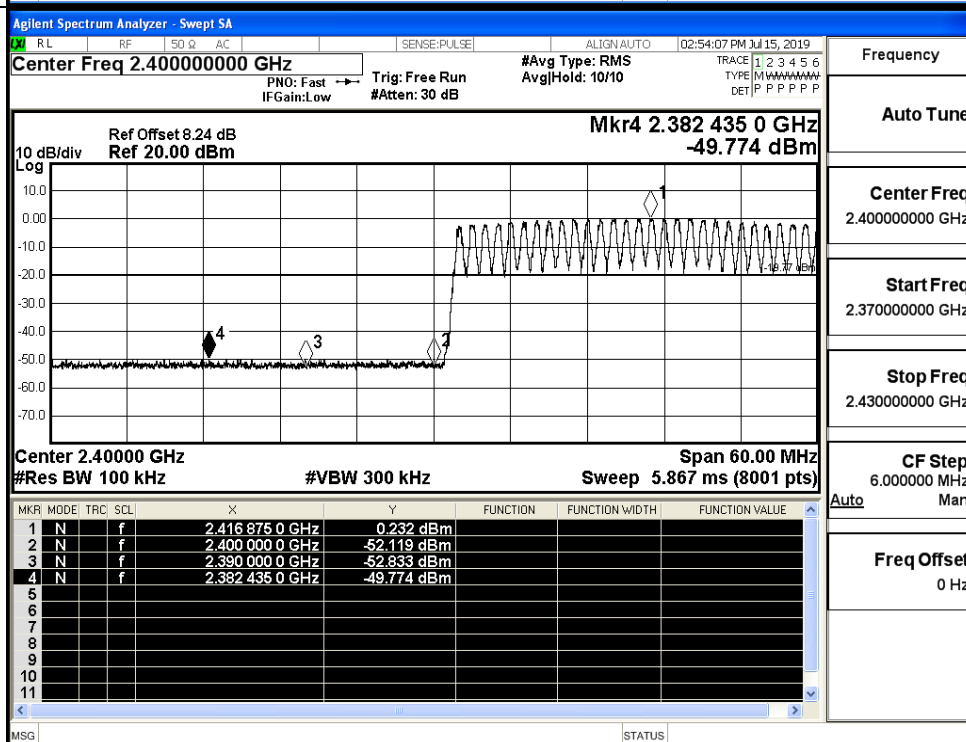


Frequency

Auto Tune

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

GFSK/LCH/Hop

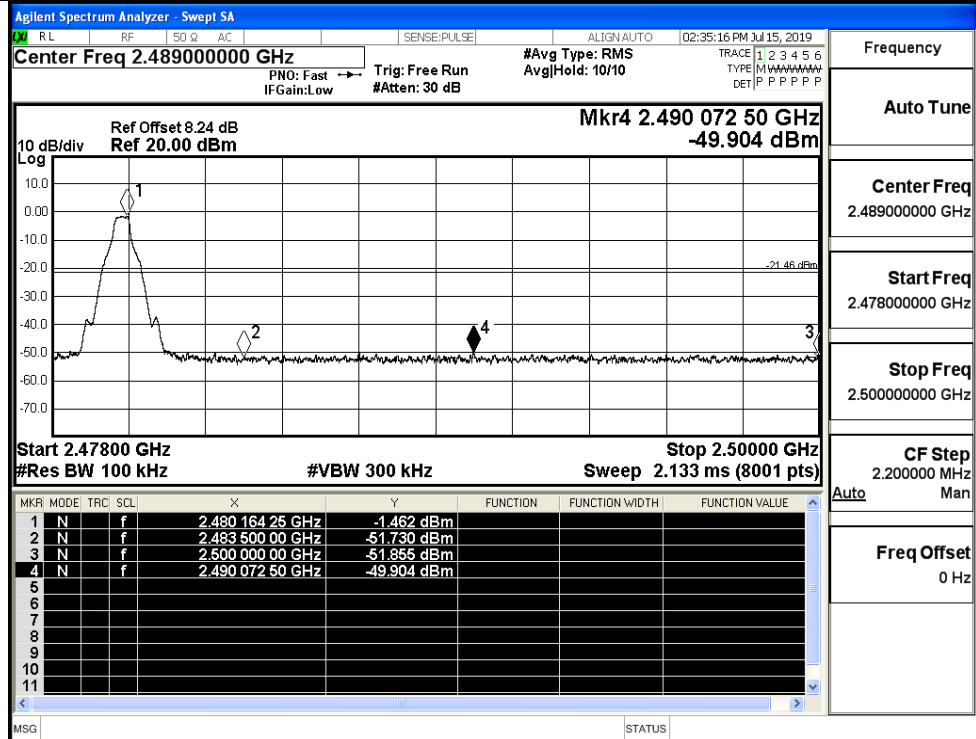


Frequency

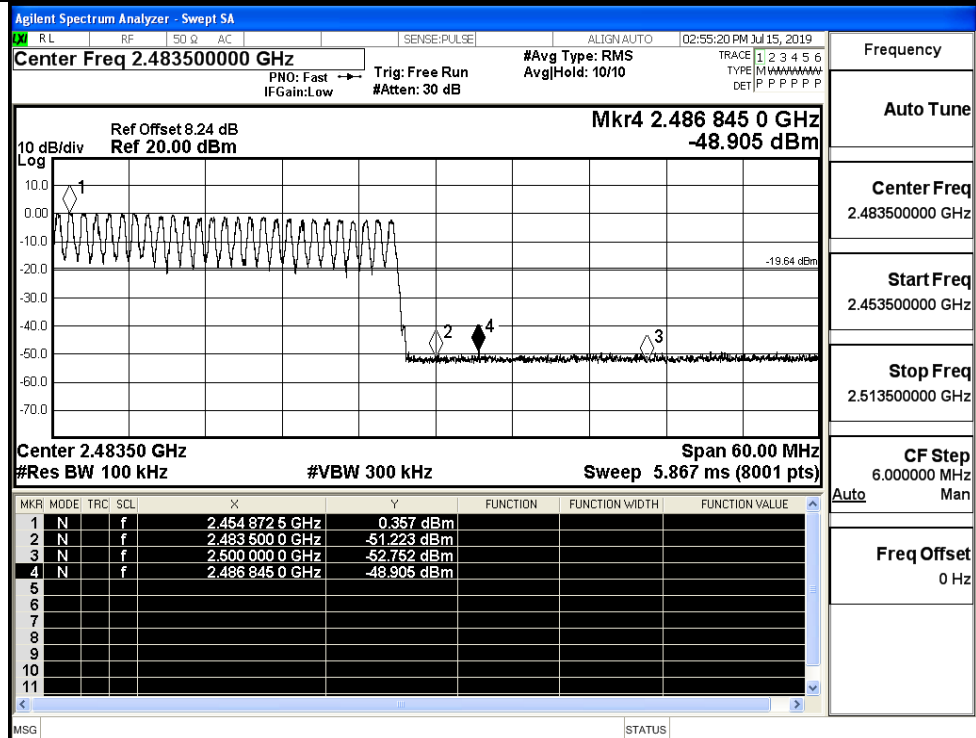
Auto Tune

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

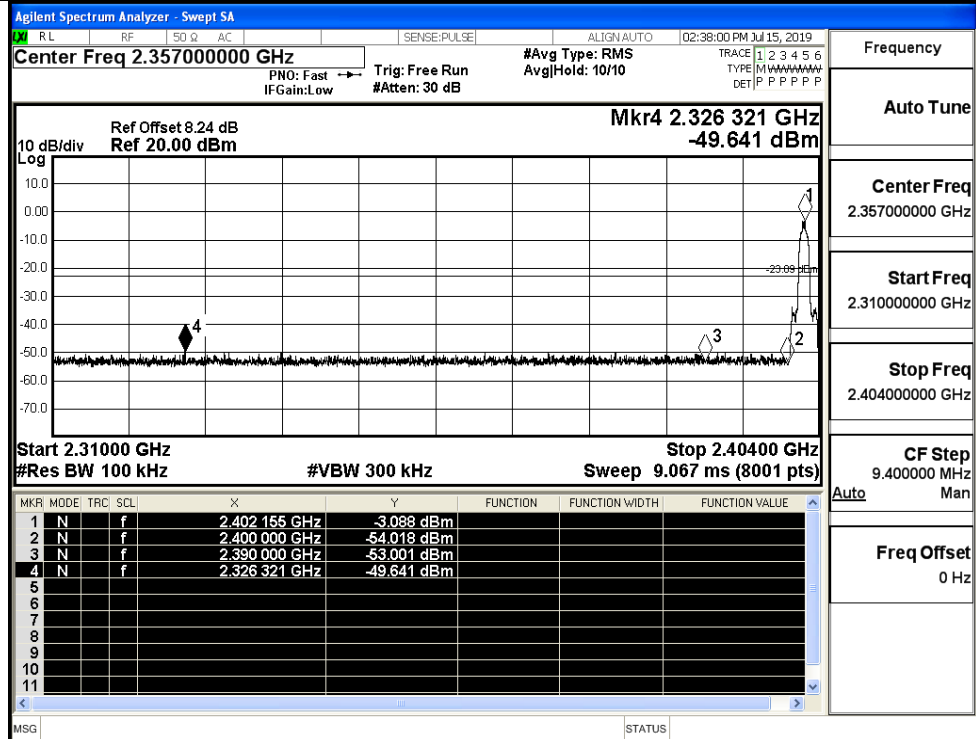
GFSK/HCH/No Hop



GFSK/HCH/Hop



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



Frequency

Auto Tune

Center Freq
2.357000000 GHz

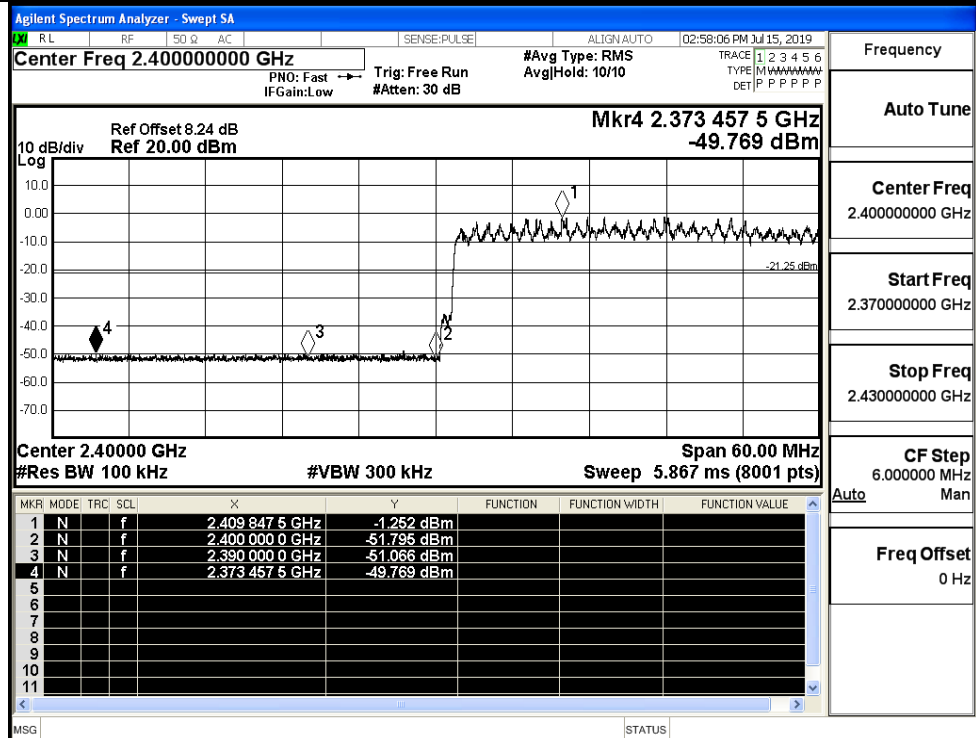
Start Freq
2.310000000 GHz

Stop Freq
2.404000000 GHz

CF Step
9.400000 MHz
Auto Man

Freq Offset
0 Hz

$\pi/4$ DQPSK/LCH/Hop



Frequency

Auto Tune

Center Freq
2.400000000 GHz

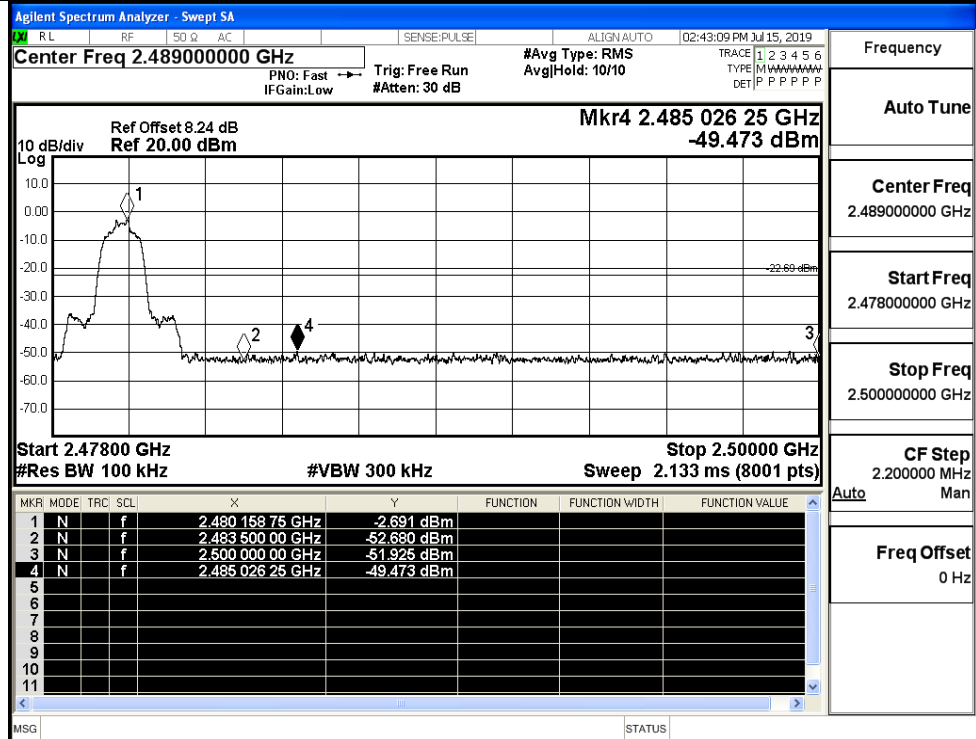
Start Freq
2.370000000 GHz

Stop Freq
2.430000000 GHz

CF Step
6.000000 MHz
Auto Man

Freq Offset
0 Hz

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

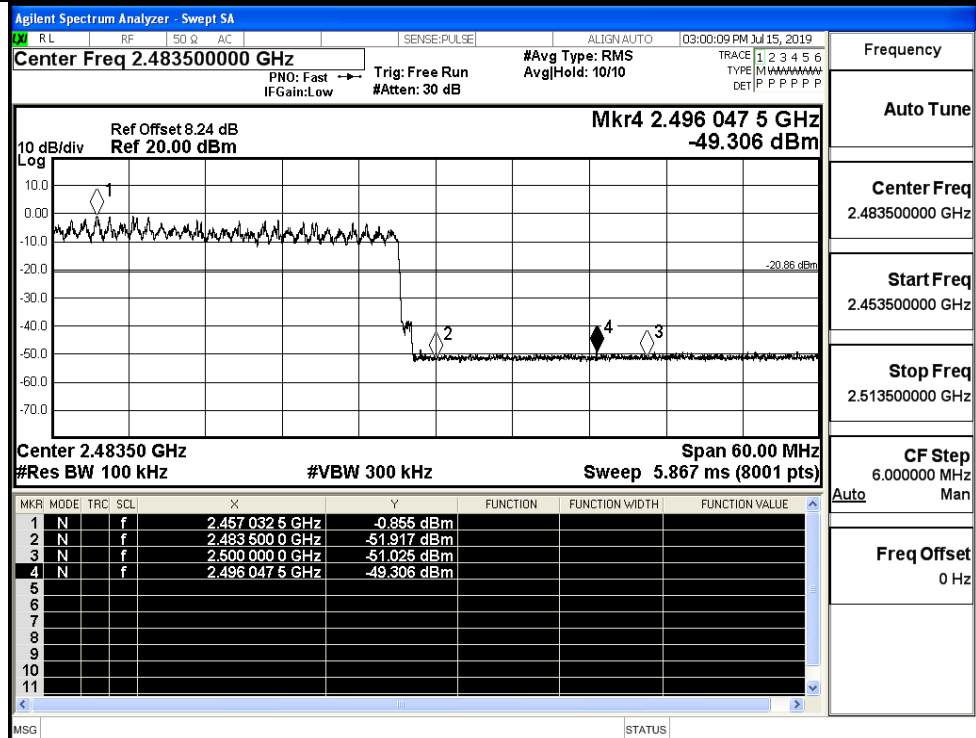


Frequency

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

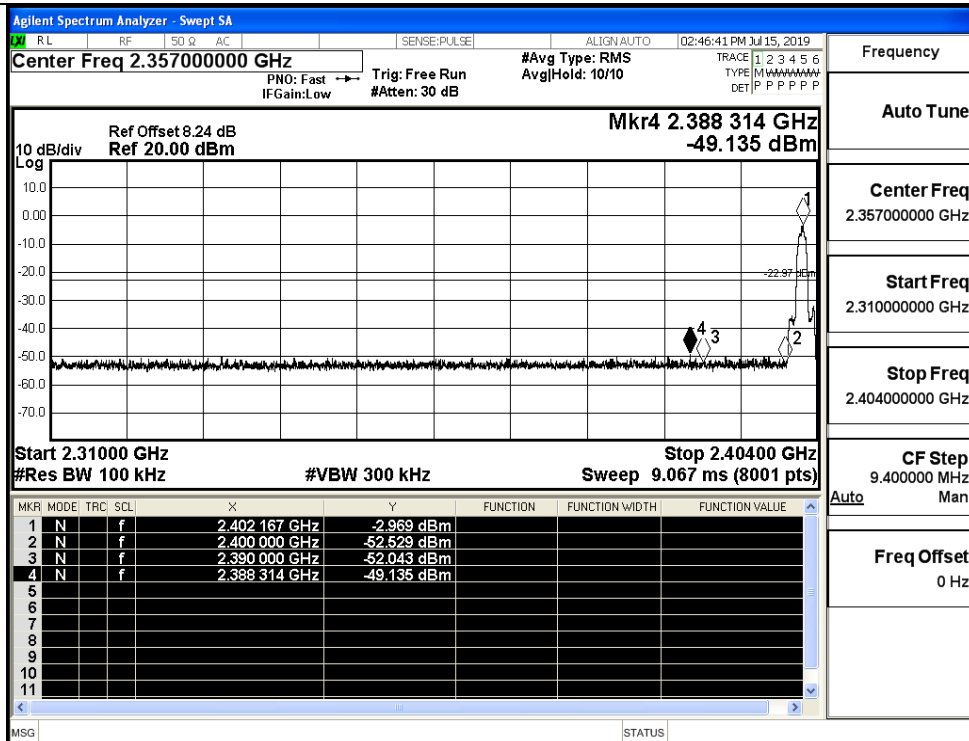


Frequency

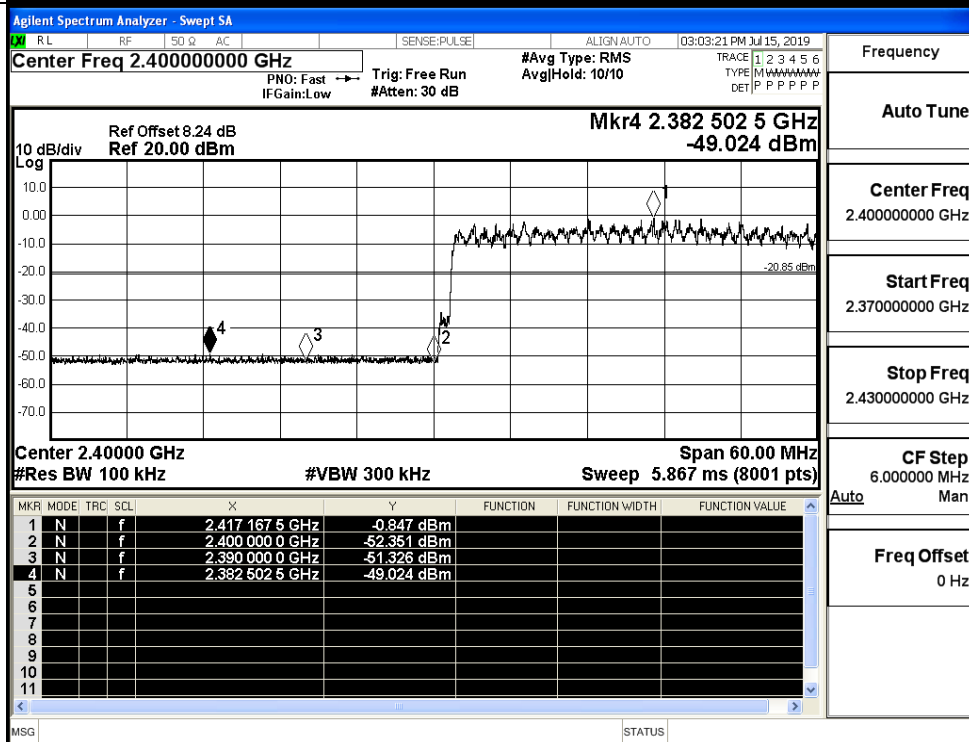
Auto Tune

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

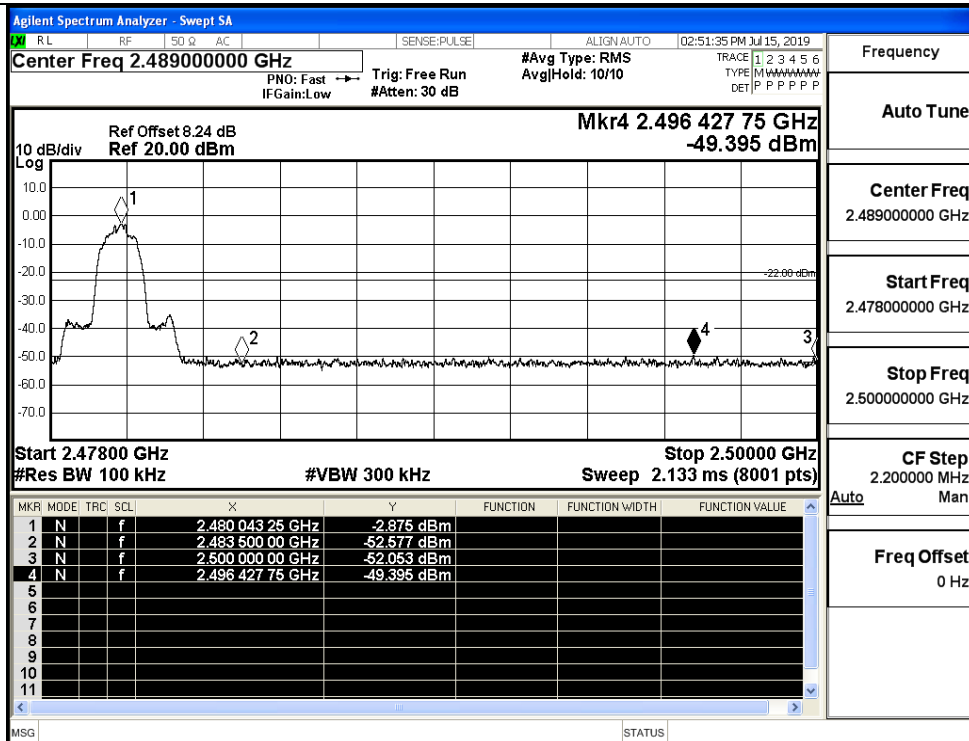
8DPSK/LCH/No Hop



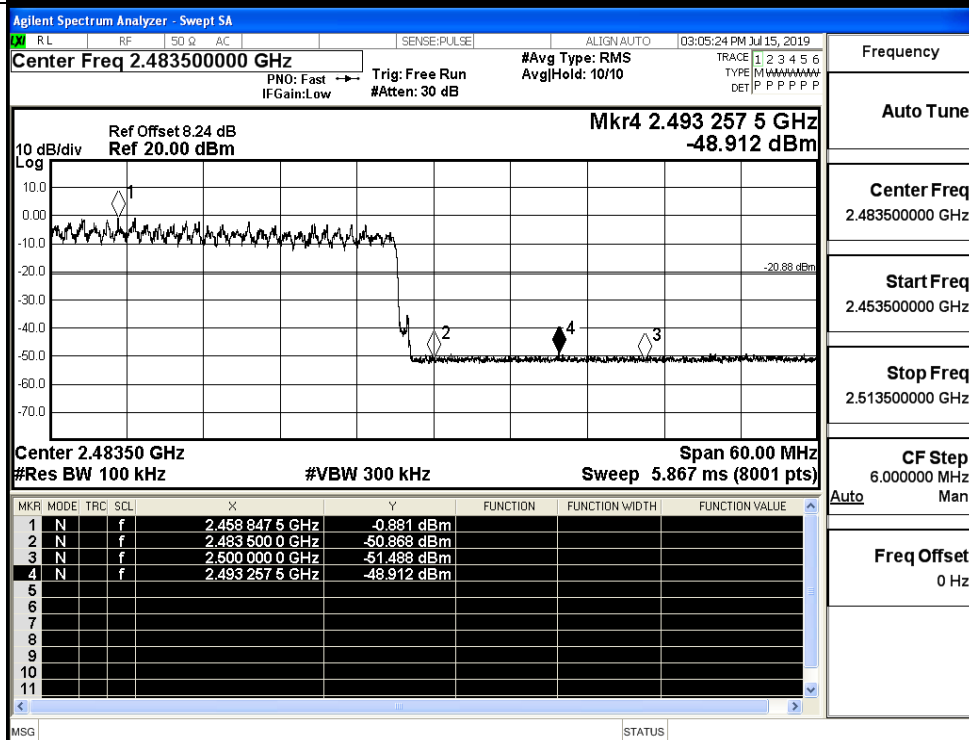
8DPSK/LCH/Hop



8DPSK/HCH/No Hop



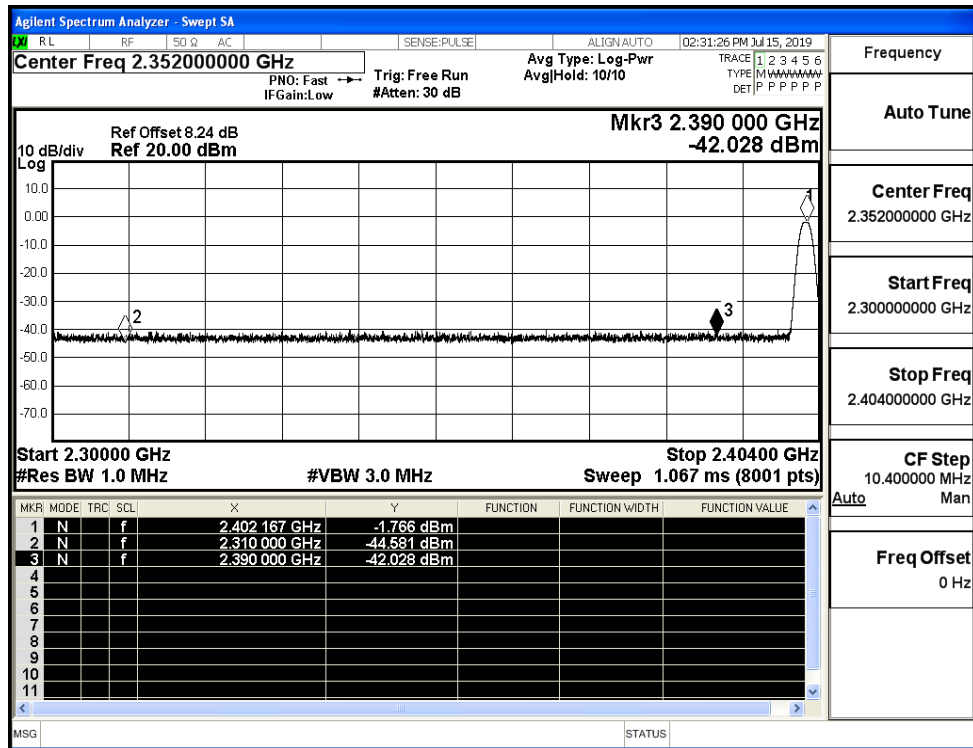
8DPSK/HCH/Hop



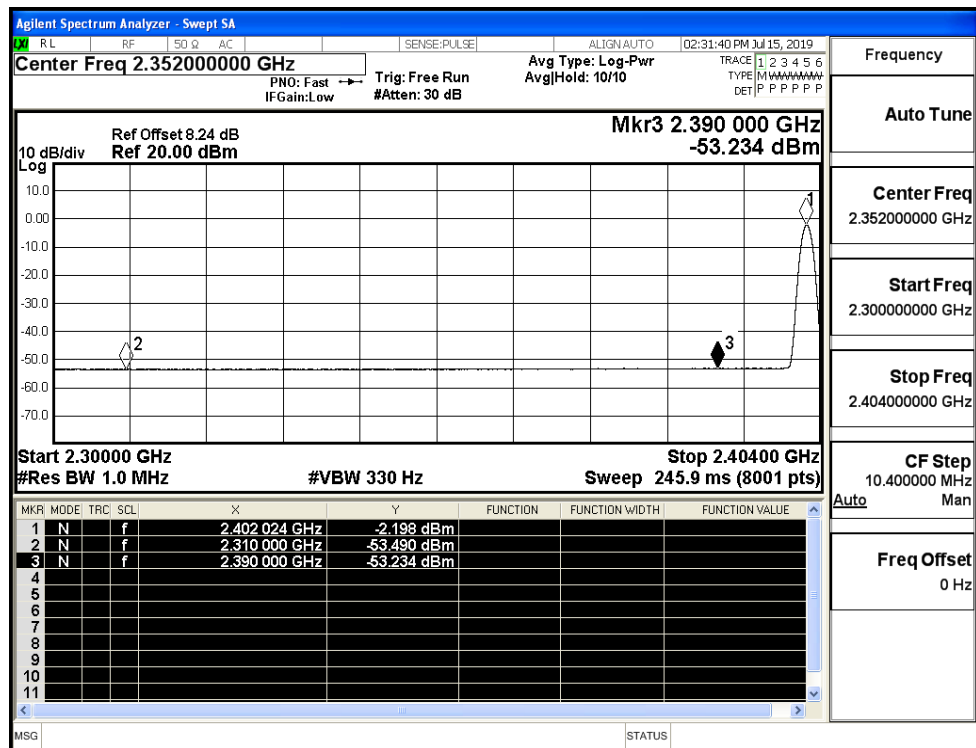
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-44.58	2.0	0	50.68	PEAK	74	PASS
	Off	2310.0	-53.49	2.0	0	41.77	AV	54	PASS
	Off	2390.0	-42.03	2.0	0	53.23	PEAK	74	PASS
	Off	2390.0	-53.23	2.0	0	42.02	AV	54	PASS
	Off	2483.5	-42.34	2.0	0	52.92	PEAK	74	PASS
	Off	2483.5	-53.00	2.0	0	42.26	AV	54	PASS
	Off	2500.0	-42.86	2.0	0	52.40	PEAK	74	PASS
	Off	2500.0	-52.84	2.0	0	42.42	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-44.25	2.0	0	51.01	PEAK	74	PASS
	Off	2310.0	-53.54	2.0	0	41.72	AV	54	PASS
	Off	2390.0	-43.31	2.0	0	51.95	PEAK	74	PASS
	Off	2390.0	-53.19	2.0	0	42.06	AV	54	PASS
	Off	2483.5	-42.03	2.0	0	53.23	PEAK	74	PASS
	Off	2483.5	-52.84	2.0	0	42.41	AV	54	PASS
	Off	2500.0	-41.57	2.0	0	53.69	PEAK	74	PASS
	Off	2500.0	-52.85	2.0	0	42.41	AV	54	PASS
8DPSK	Off	2310.0	-43.67	2.0	0	51.59	PEAK	74	PASS
	Off	2310.0	-53.37	2.0	0	41.89	AV	54	PASS
	Off	2390.0	-43.77	2.0	0	51.49	PEAK	74	PASS
	Off	2390.0	-53.27	2.0	0	41.99	AV	54	PASS
	Off	2483.5	-43.43	2.0	0	51.83	PEAK	74	PASS
	Off	2483.5	-52.87	2.0	0	42.39	AV	54	PASS
	Off	2500.0	-41.60	2.0	0	53.66	PEAK	74	PASS
	Off	2500.0	-52.91	2.0	0	42.34	AV	54	PASS

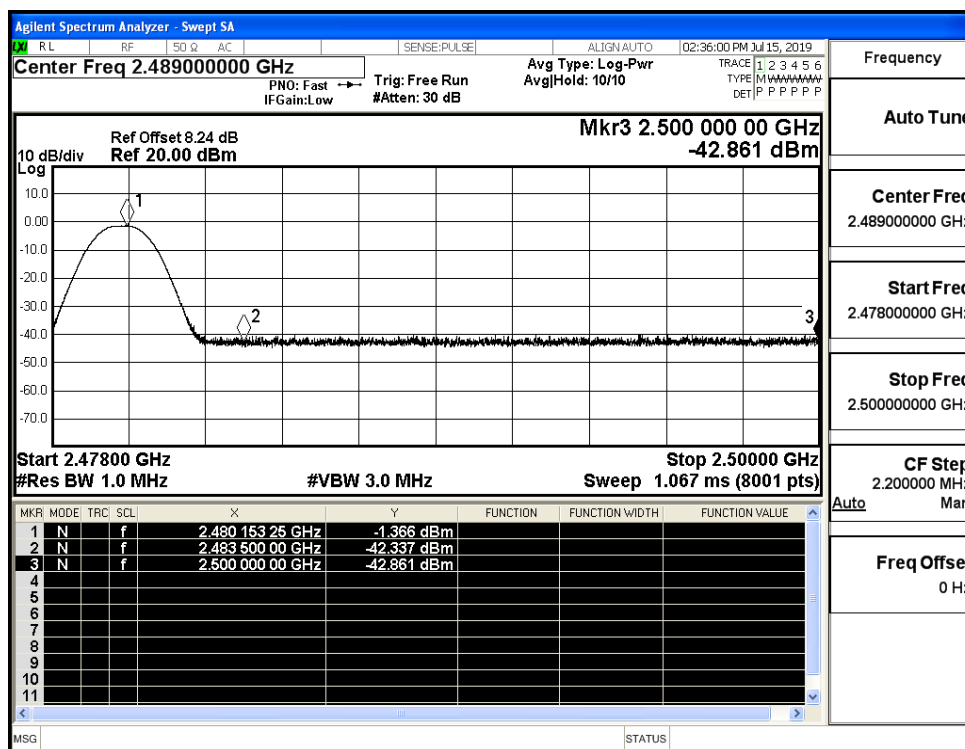
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



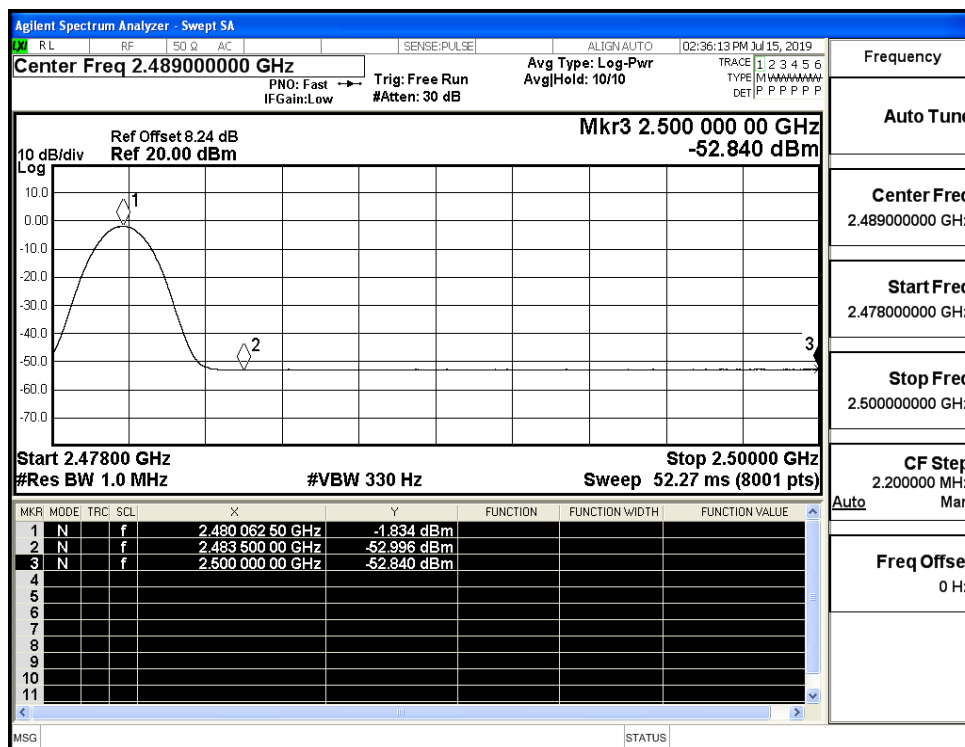
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)

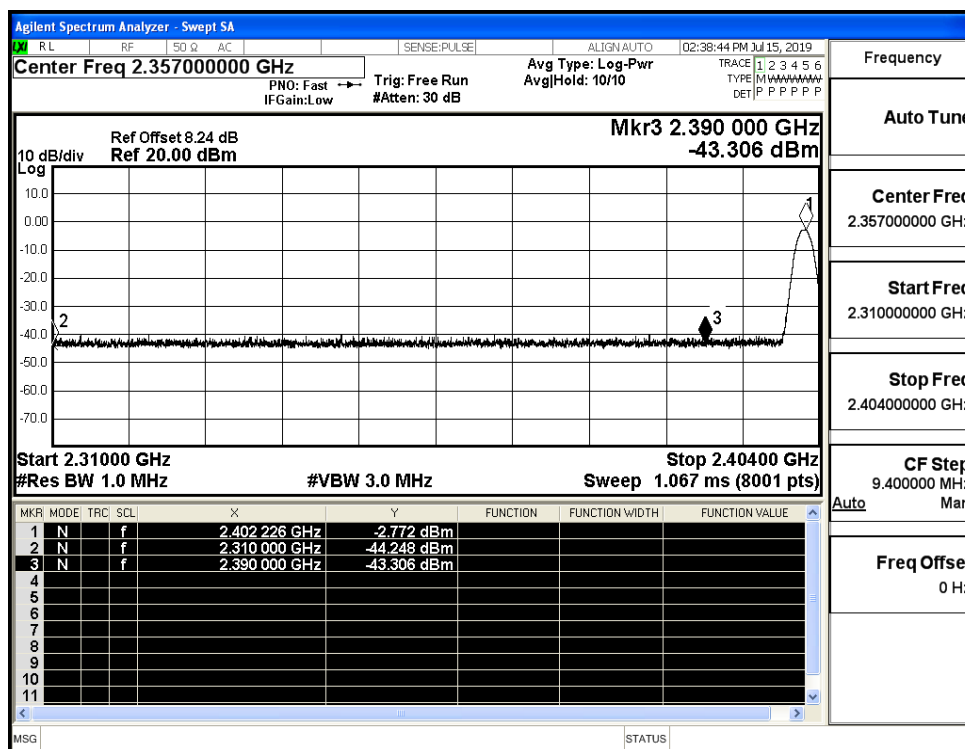
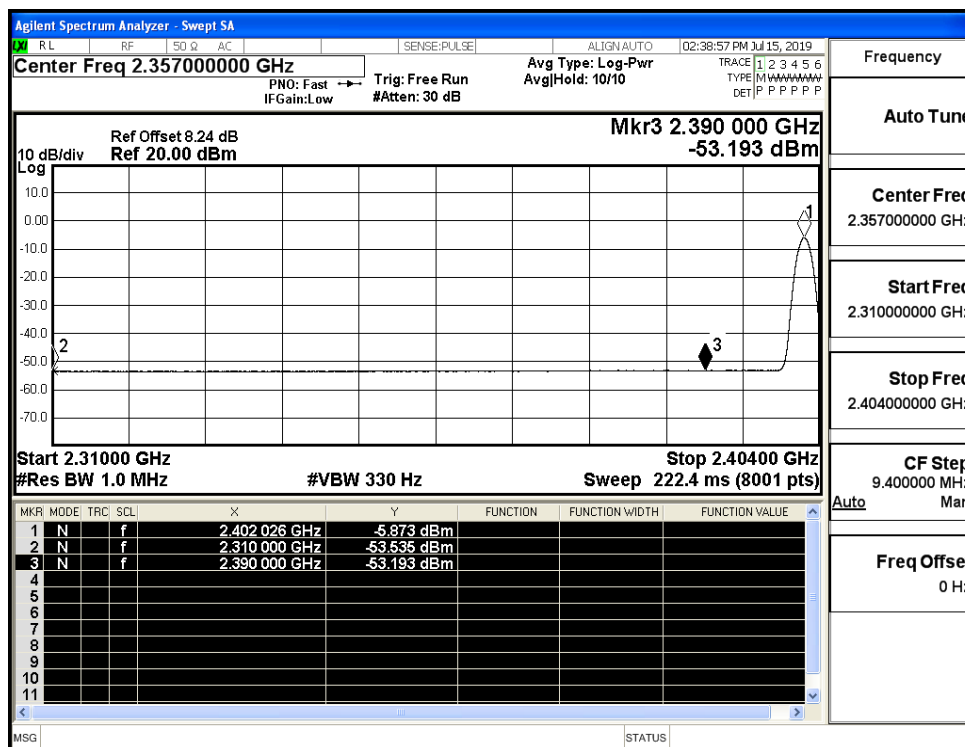


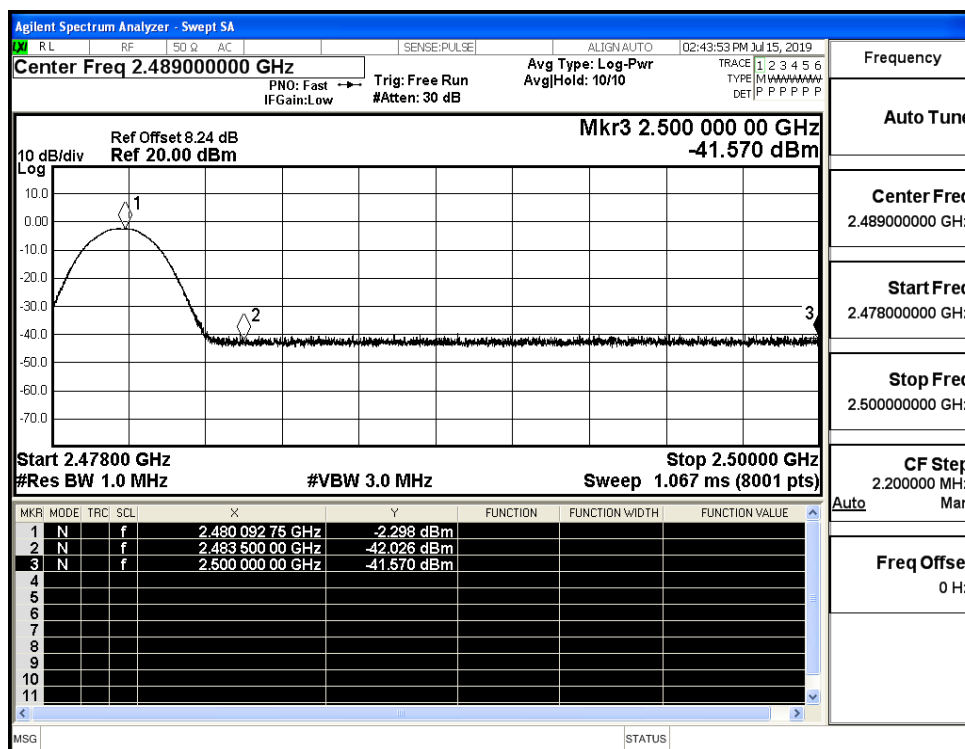
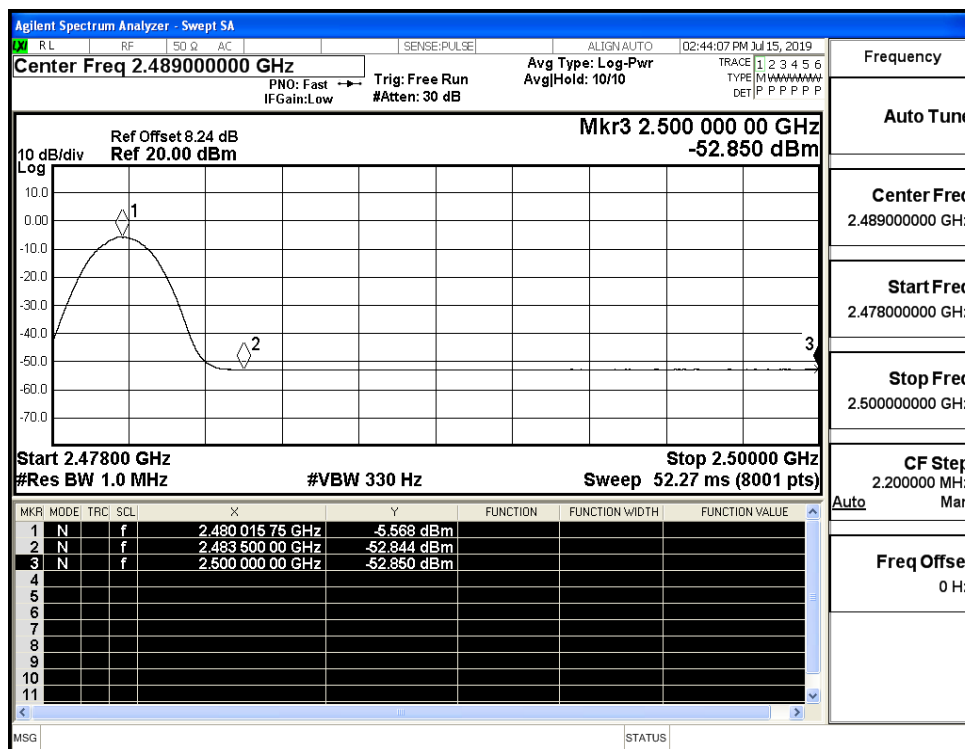
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)



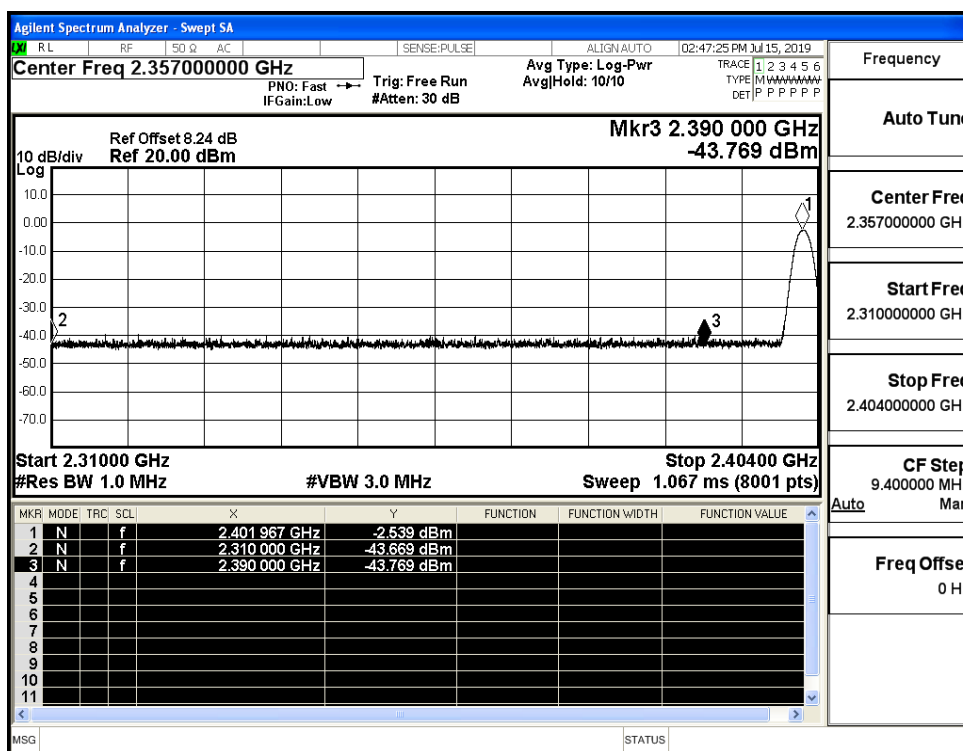
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)



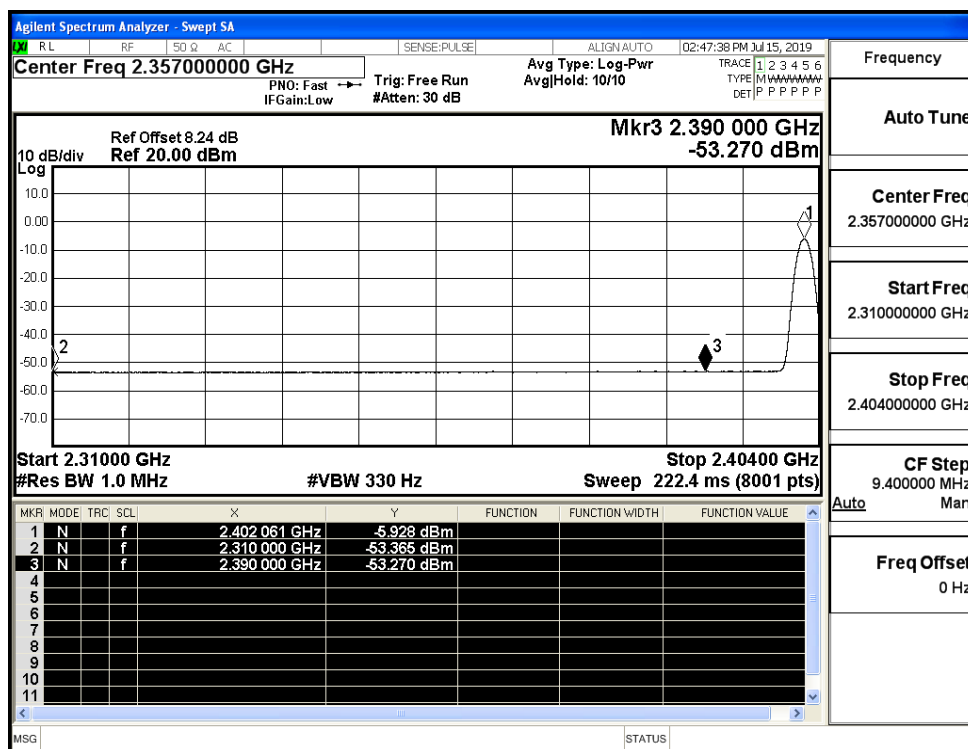
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (Low Channel)

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)

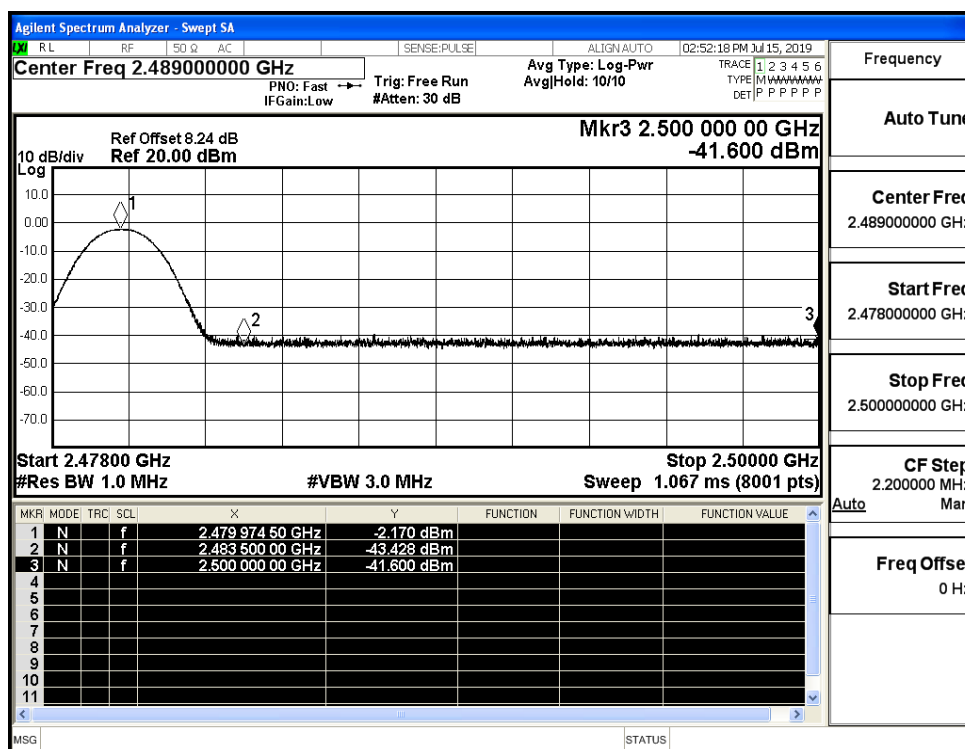
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)

