

Appendix A

RF Test Data for BT V4.1(BDR/EDR) (Conducted Measurement)

Product Name: Diagnosis System

Trade Mark: XTOOL

Test Model: PS70 Pro

Environmental Conditions

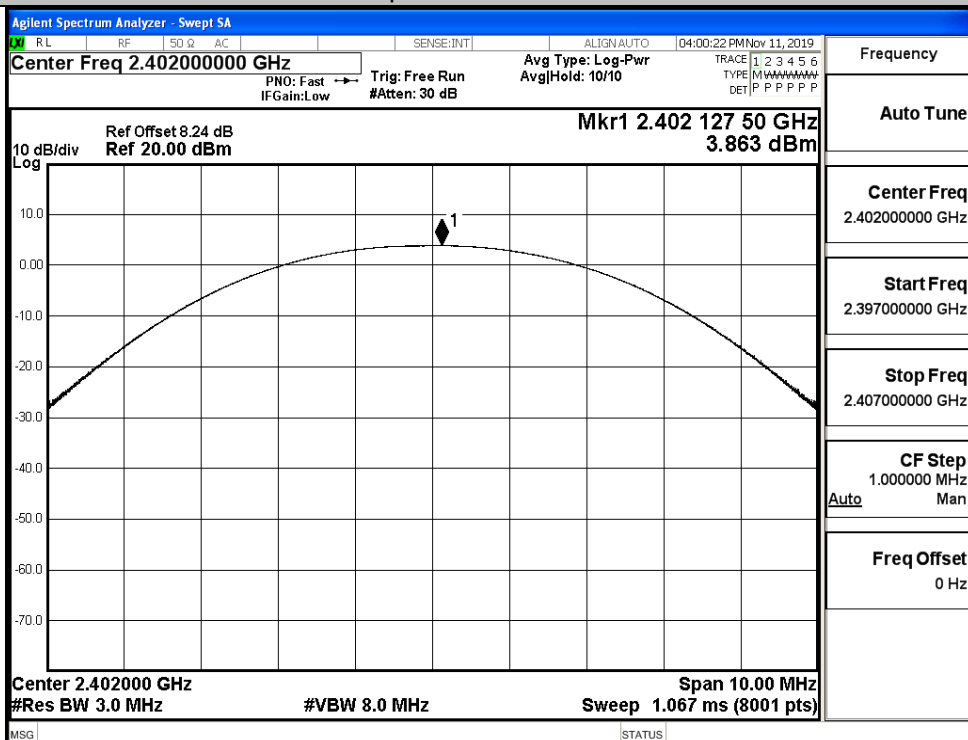
Temperature:	22.5°C
Relative Humidity:	52.7%
ATM Pressure:	100.0 kPa
Test Engineer:	Alisa Huang
Supervised by:	Tom.Liu

A.1 Maxmum Conducted Peak Output Power

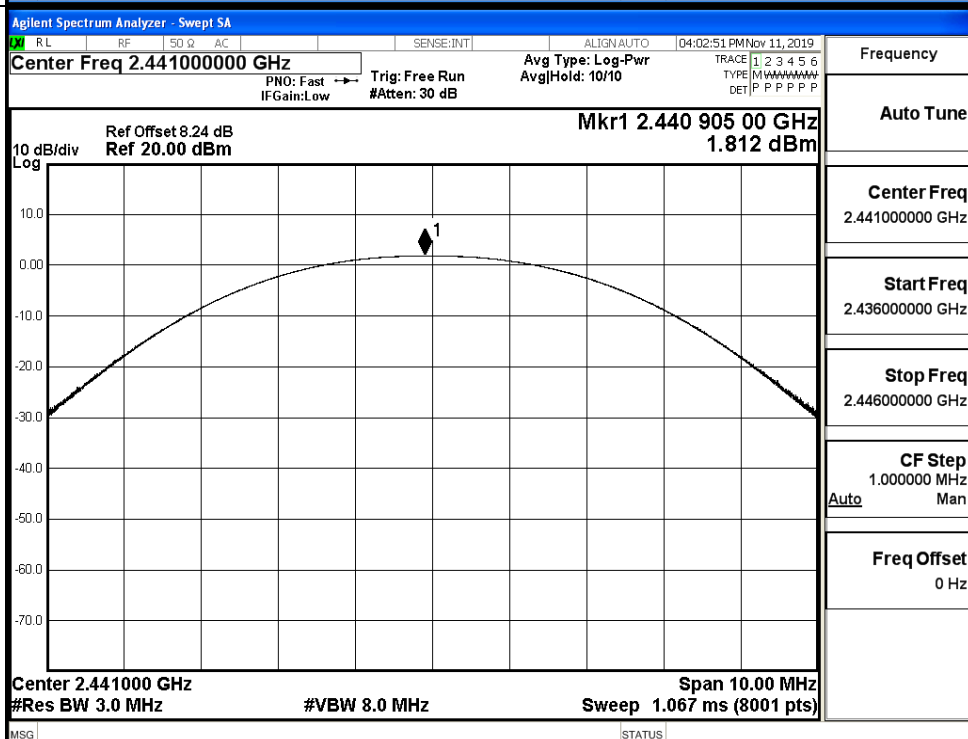
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	3.863	21	PASS
	MCH	1.812	21	PASS
	HCH	2.776	21	PASS
$\pi/4$ DQPSK	LCH	2.841	21	PASS
	MCH	1.093	21	PASS
	HCH	2.372	21	PASS
8DPSK	LCH	3.051	21	PASS
	MCH	1.437	21	PASS
	HCH	2.270	21	PASS

Test Graphs

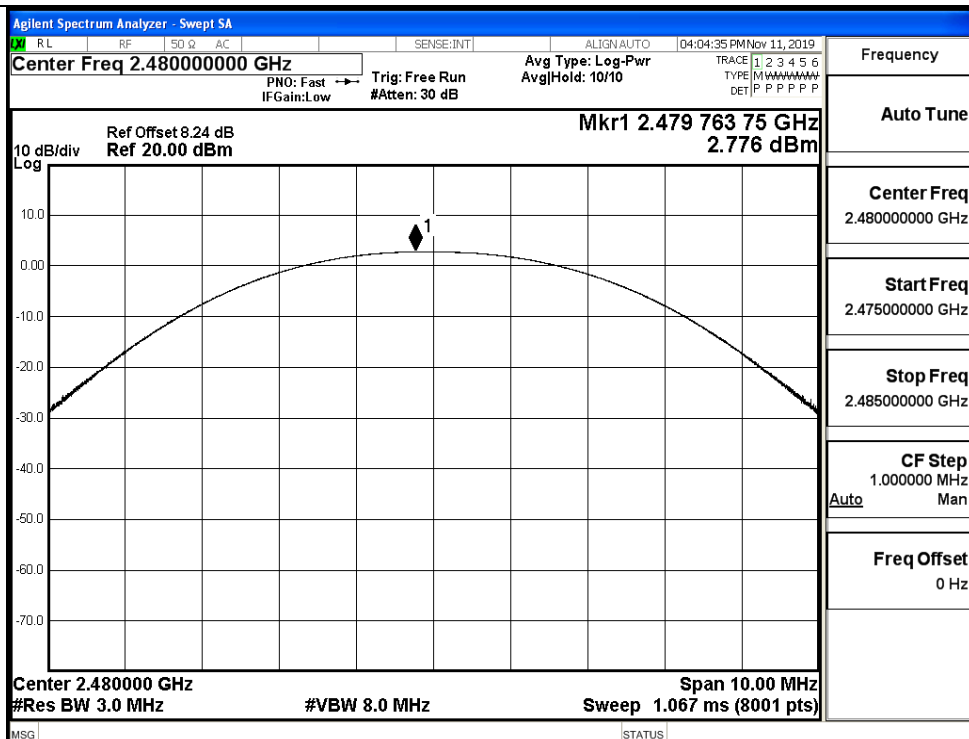
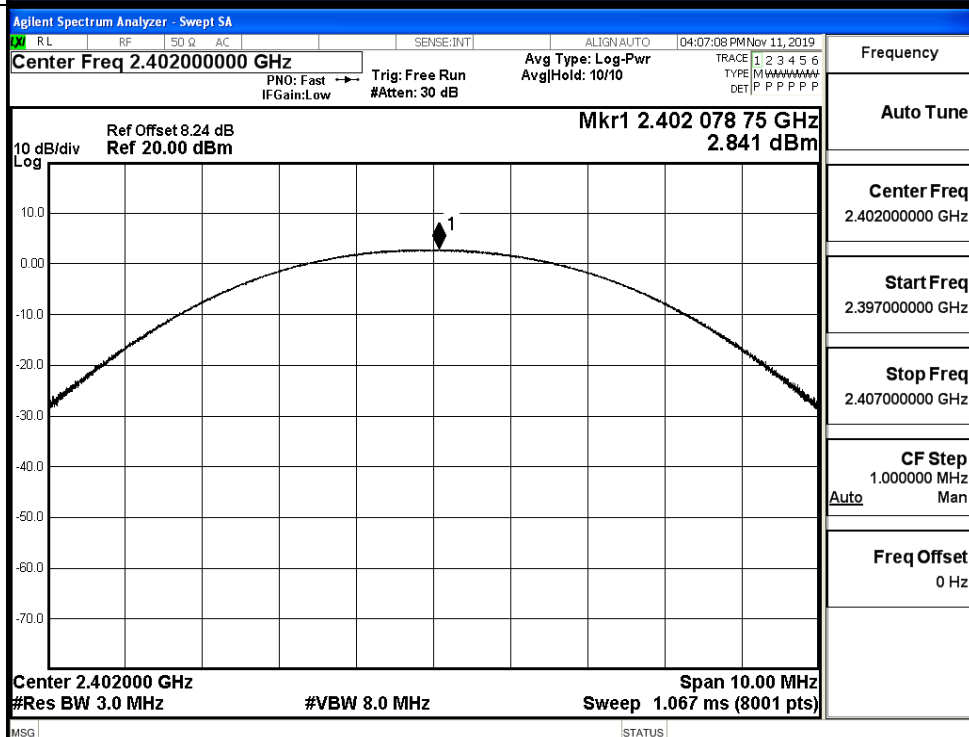
GFSK/LCH

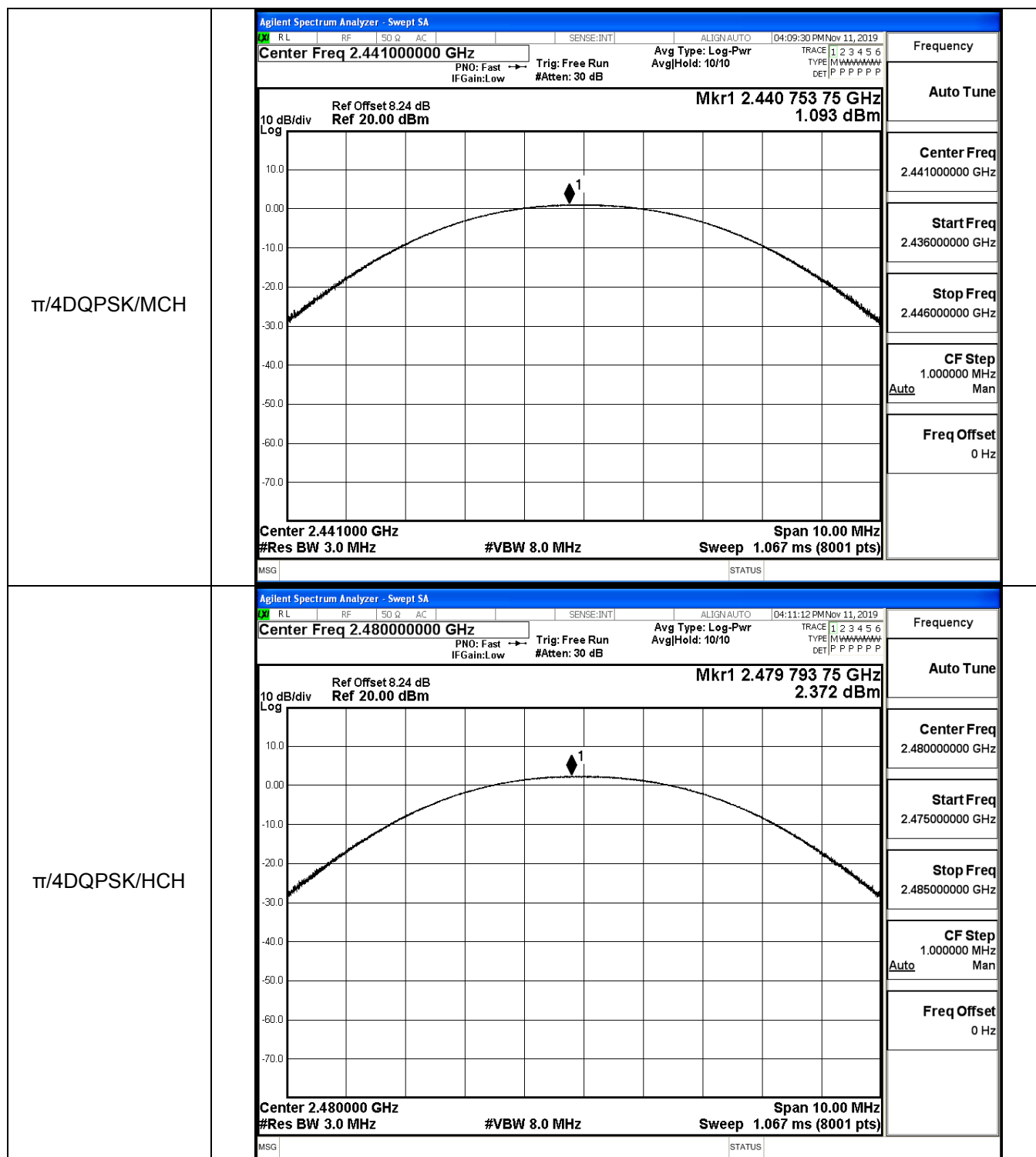


GFSK/MCH

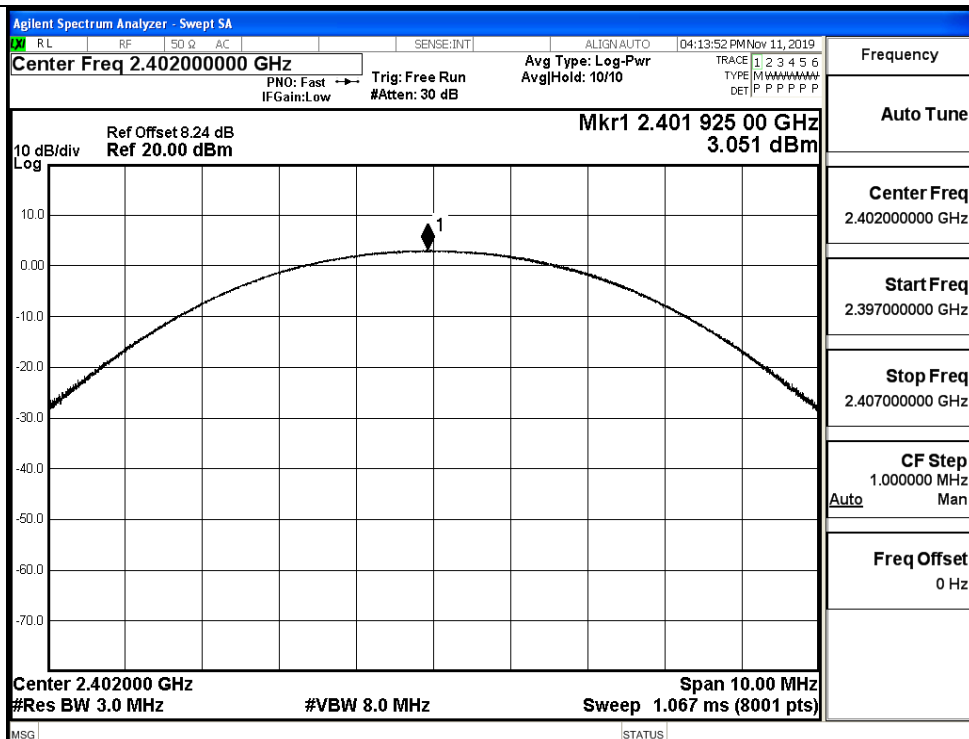


GFSK/HCH

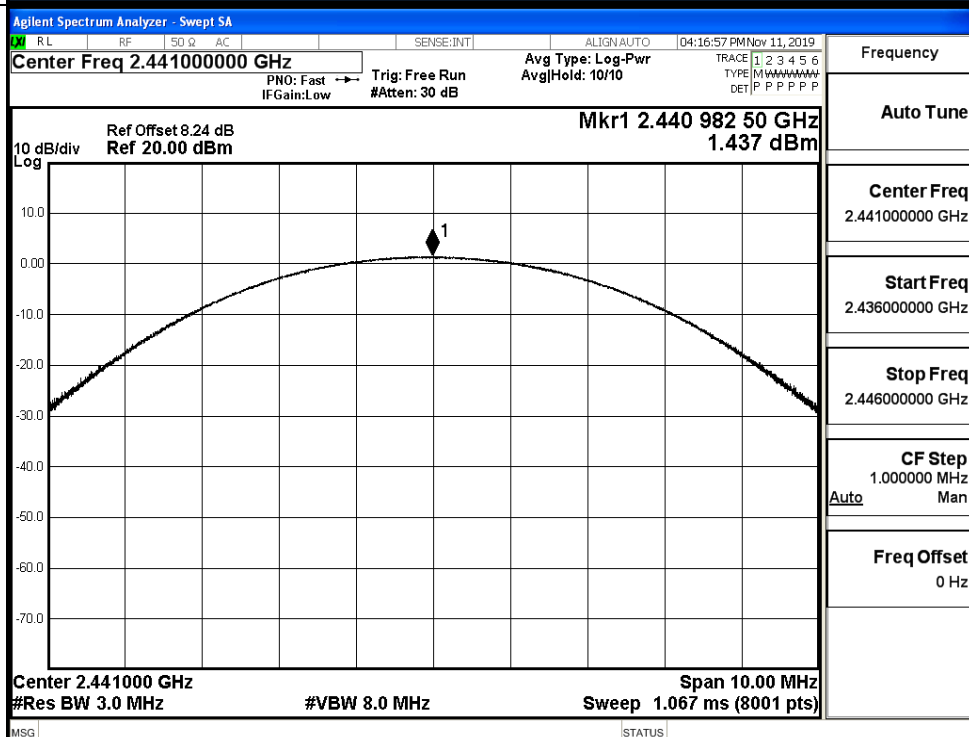
 π /4DQPSK/LCH



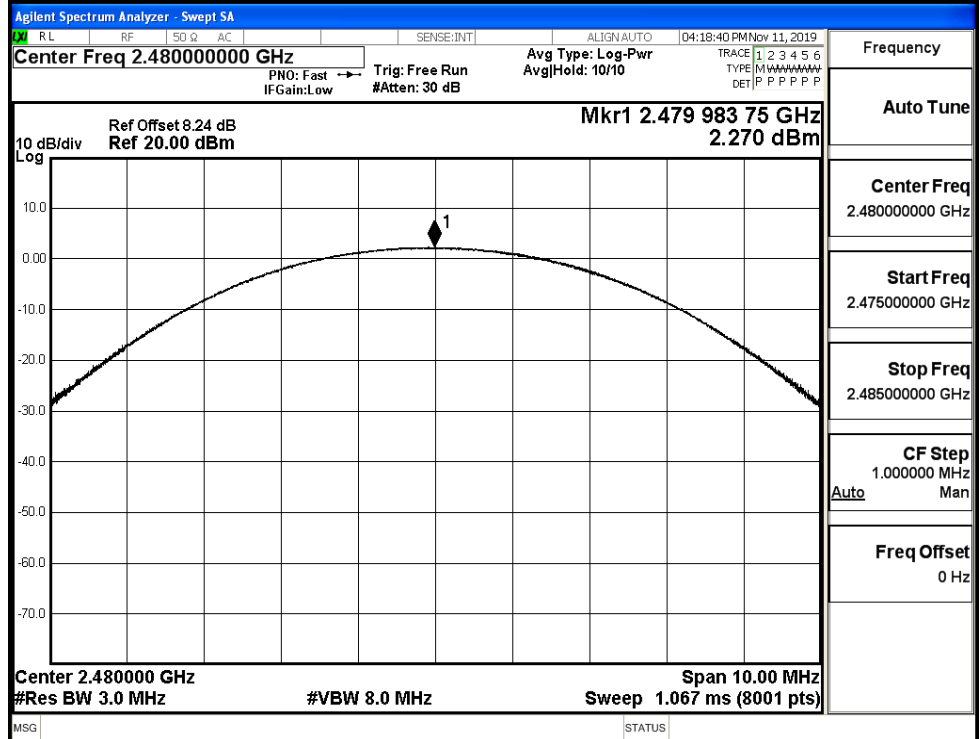
8DPSK/LCH



8DPSK/MCH



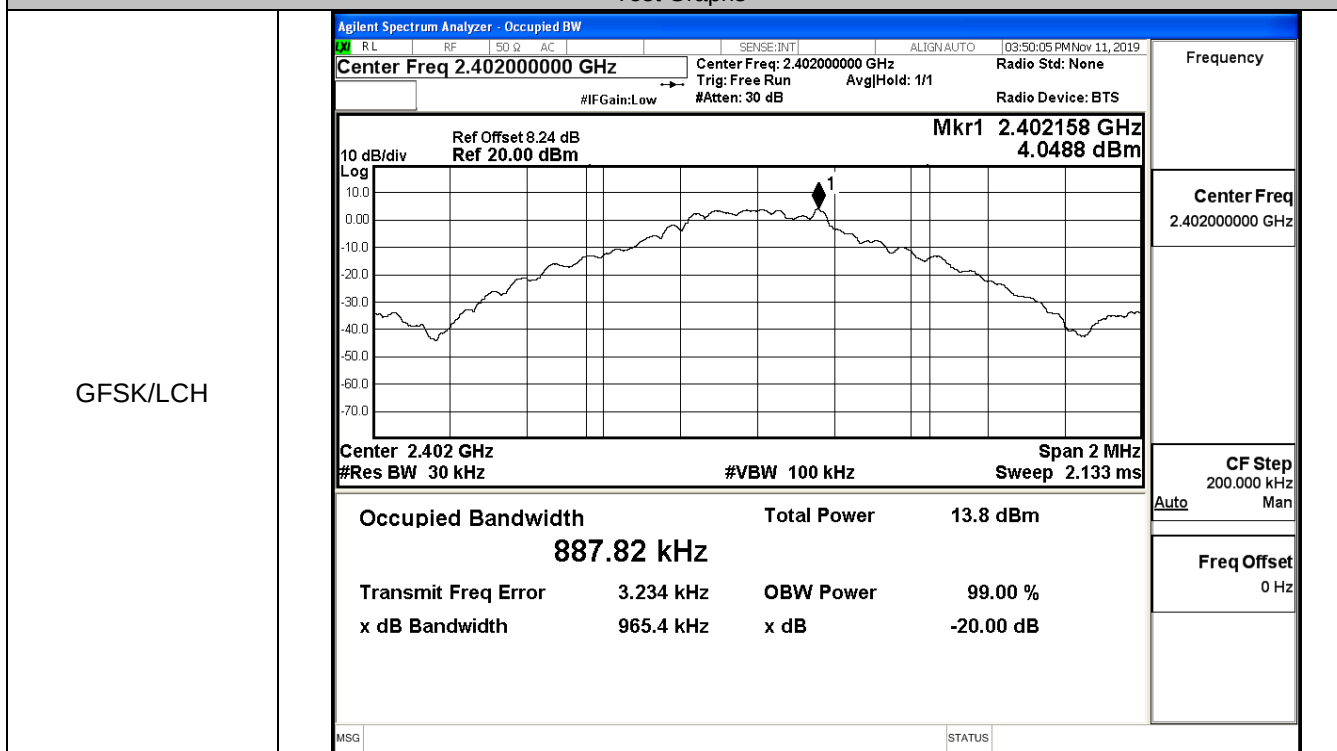
8DPSK/HCH



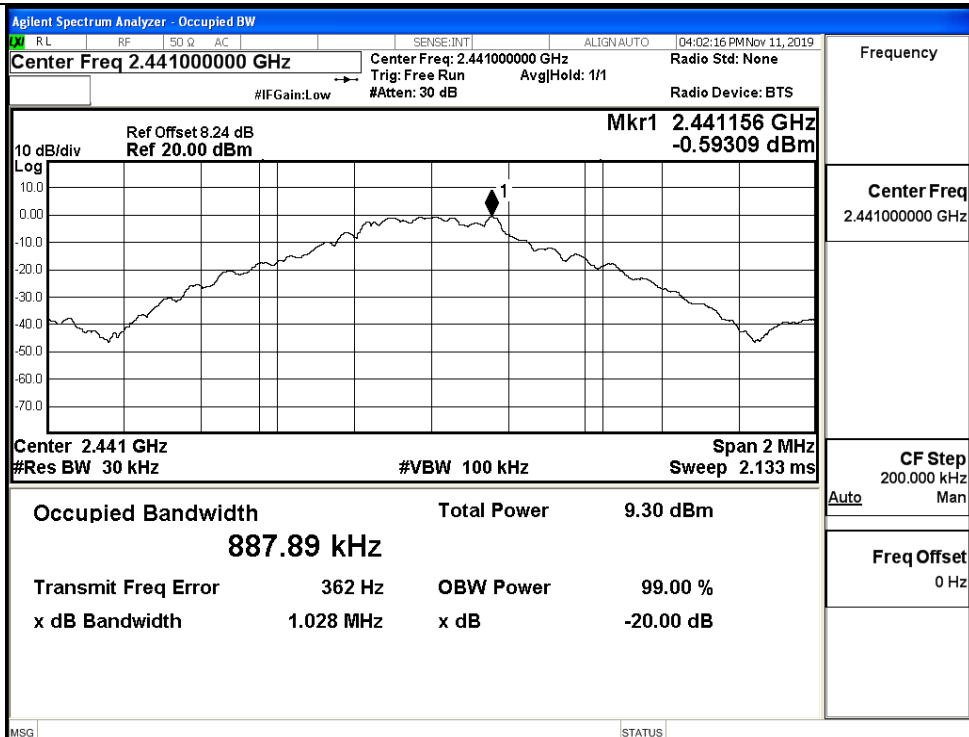
A.2 20dB Bandwidth

Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.9654	Not Specified	PASS
	MCH	1.028	Not Specified	PASS
	HCH	1.033	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.291	Not Specified	PASS
	MCH	1.312	Not Specified	PASS
	HCH	1.295	Not Specified	PASS
8DPSK	LCH	1.292	Not Specified	PASS
	MCH	1.300	Not Specified	PASS
	HCH	1.295	Not Specified	PASS

Test Graphs



GFSK/MCH



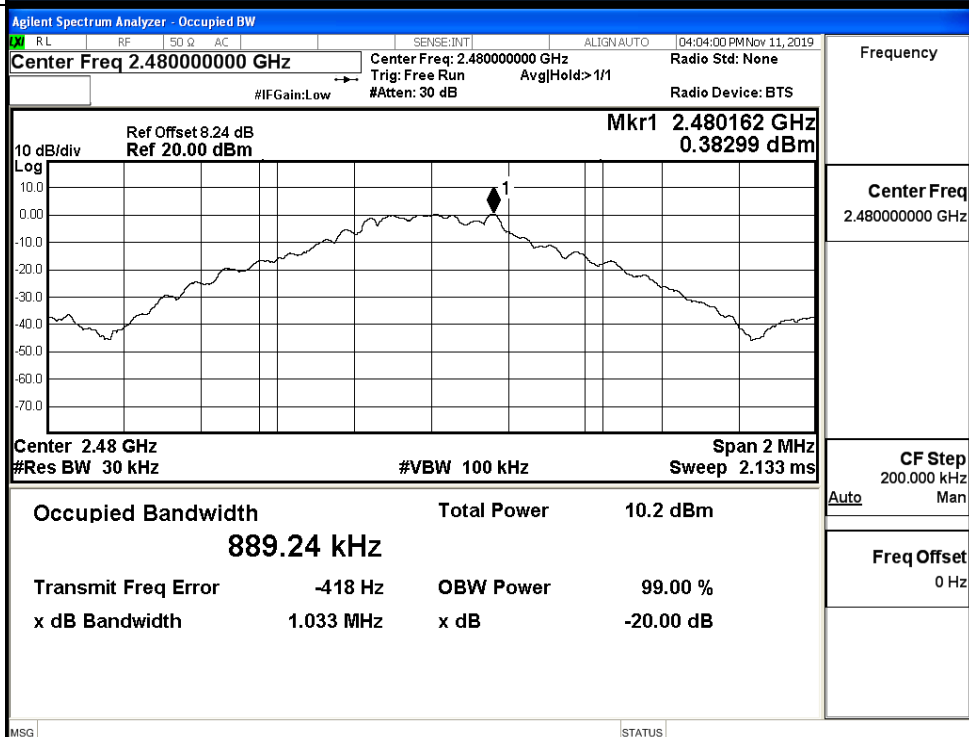
Frequency

Center Freq
2.441000000 GHzCF Step
200.000 kHz
Man

Auto

Freq Offset
0 Hz

GFSK/HCH

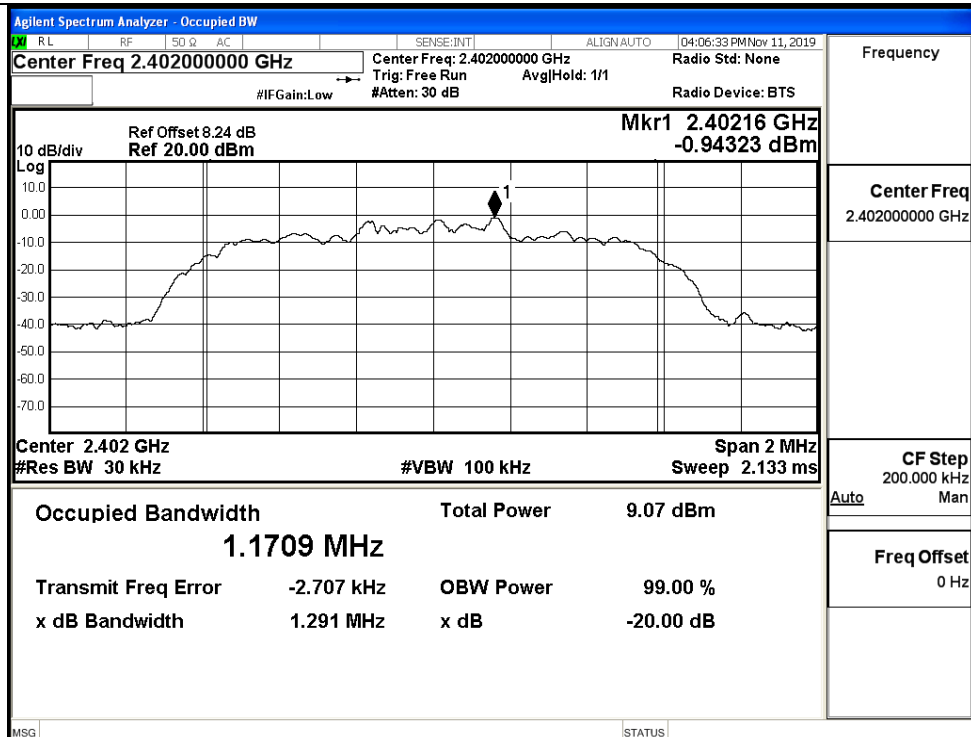


Frequency

Center Freq
2.480000000 GHzCF Step
200.000 kHz
Man

Auto

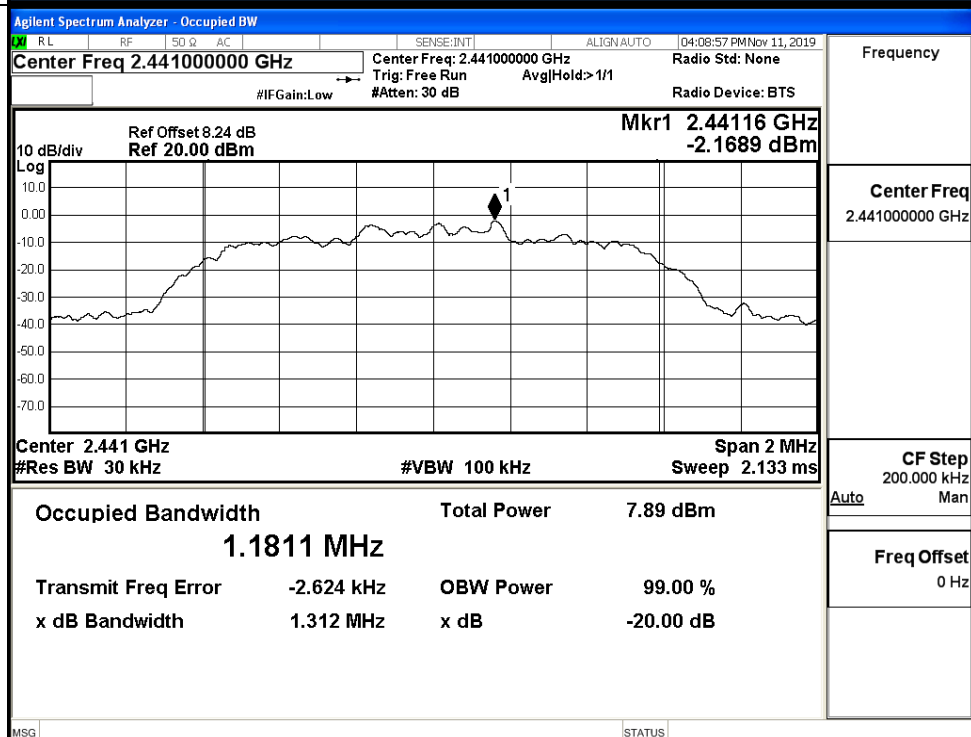
Freq Offset
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$\pi/4$ DQPSK/LCH

Frequency

Center Freq
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200.000 kHz
Man

Auto

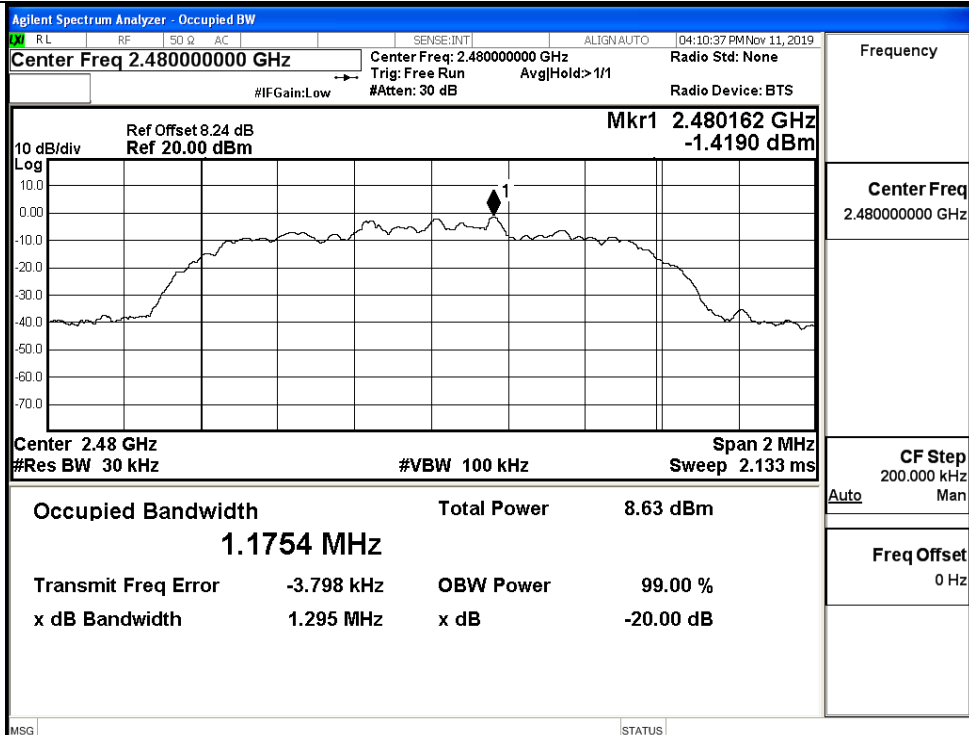
Freq Offset
0 Hz $\pi/4$ DQPSK/MCH

Frequency

Center Freq
2.441000000 GHzCF Step
200.000 kHz
Man

Auto

Freq Offset
0 Hz

$\pi/4$ DQPSK/HCH

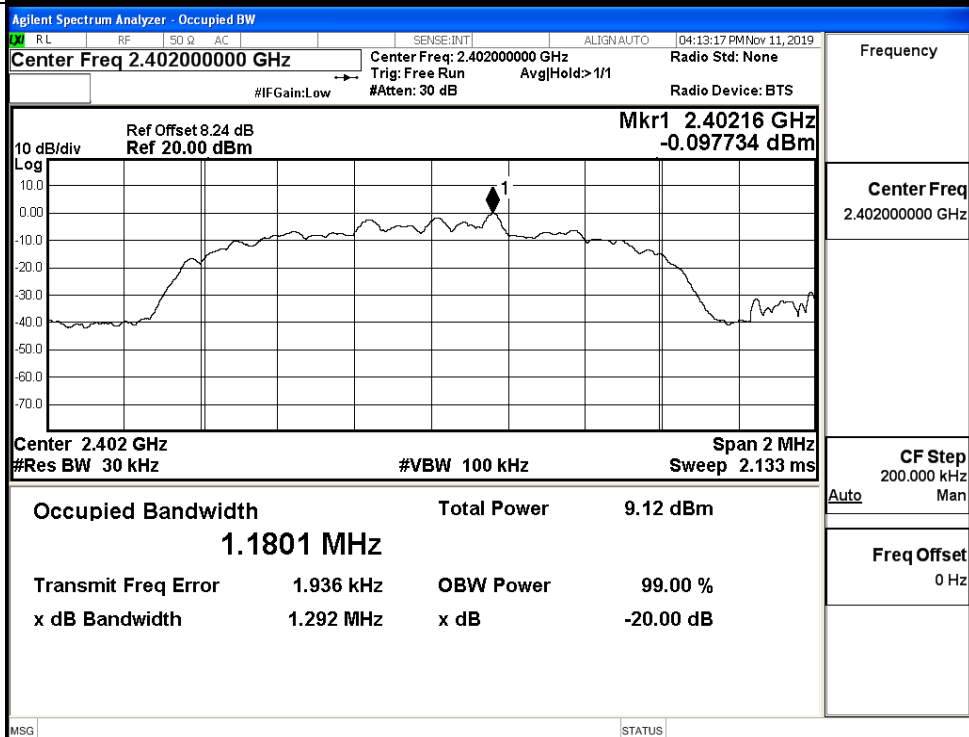
Frequency

Center Freq
2.480000000 GHzCF Step
200.000 kHz
Man

Auto

Freq Offset
0 Hz

8DPSK/LCH



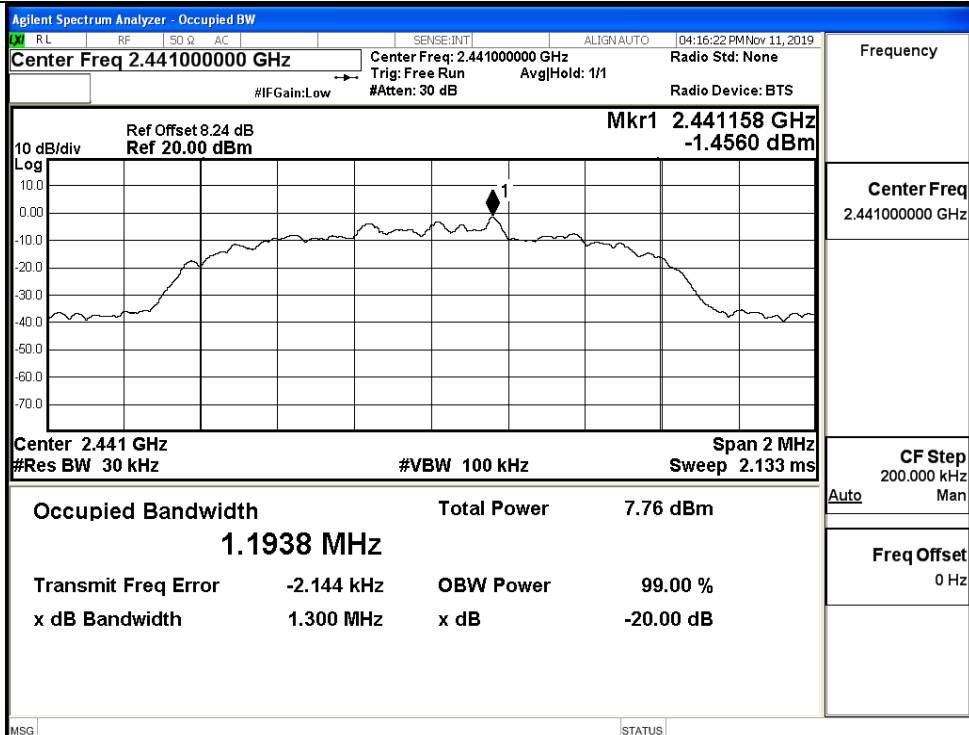
Frequency

Center Freq
2.402000000 GHzCF Step
200.000 kHz
Man

Auto

Freq Offset
0 Hz

8DPSK/MCH



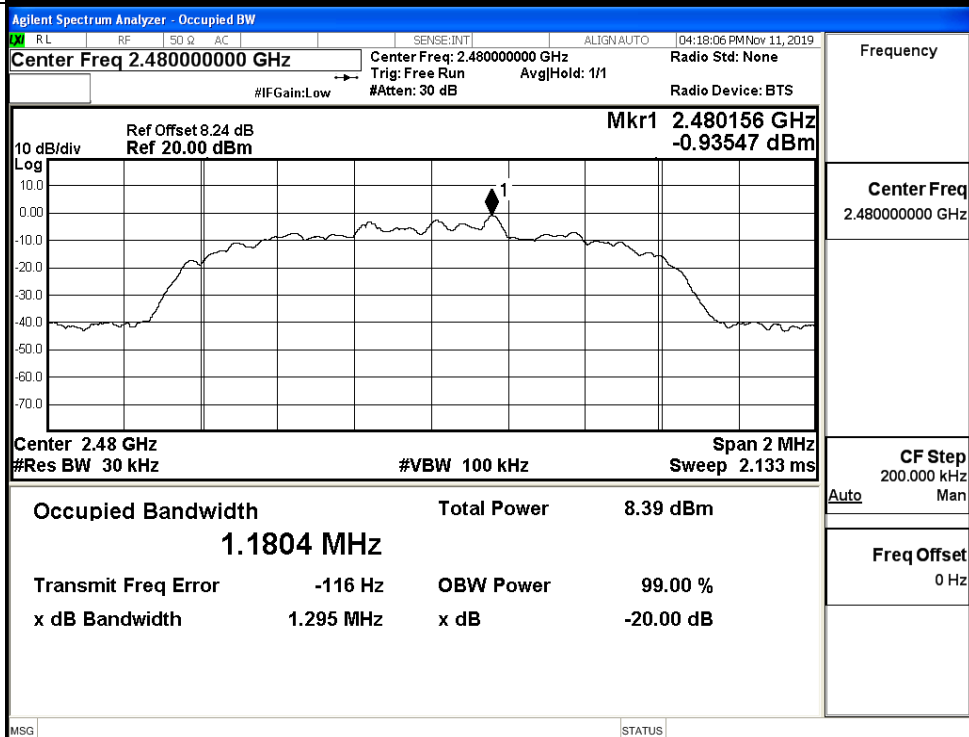
Frequency

Center Freq
2.441000000 GHzCF Step
200.000 kHz
Man

Auto

Freq Offset
0 Hz

8DPSK/HCH



Frequency

Center Freq
2.480000000 GHzCF Step
200.000 kHz
Man

Auto

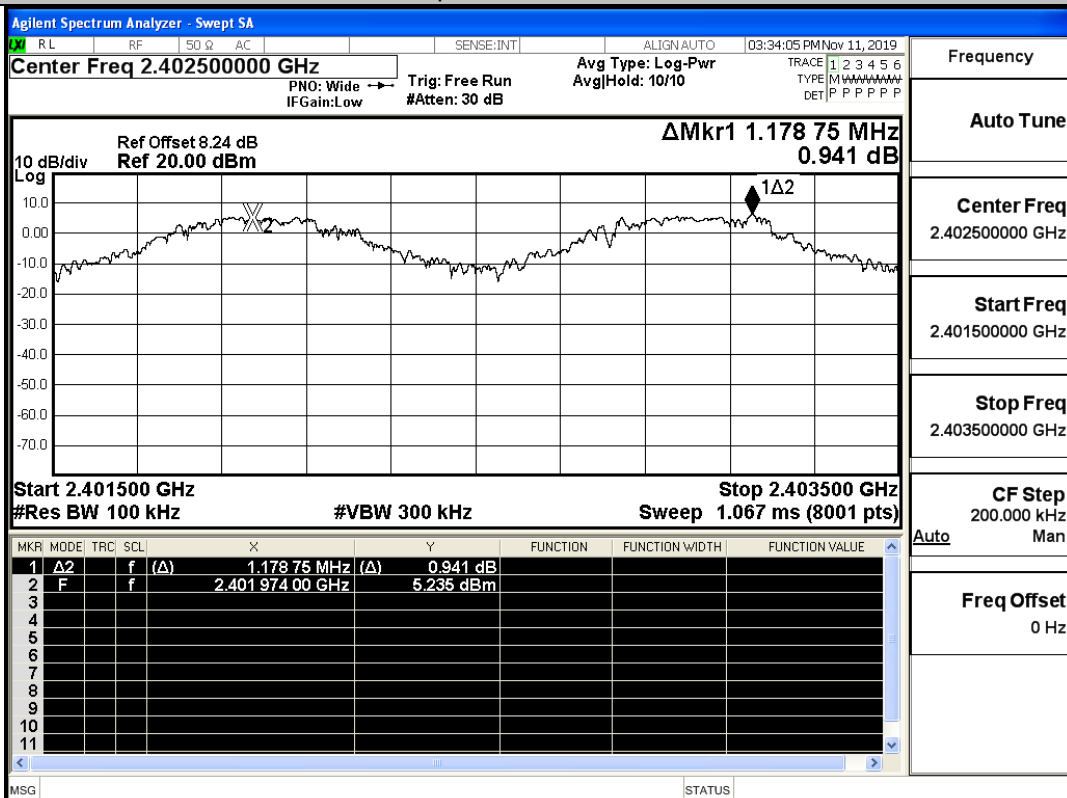
Freq Offset
0 Hz

A.3 Carrier Frequency Separation

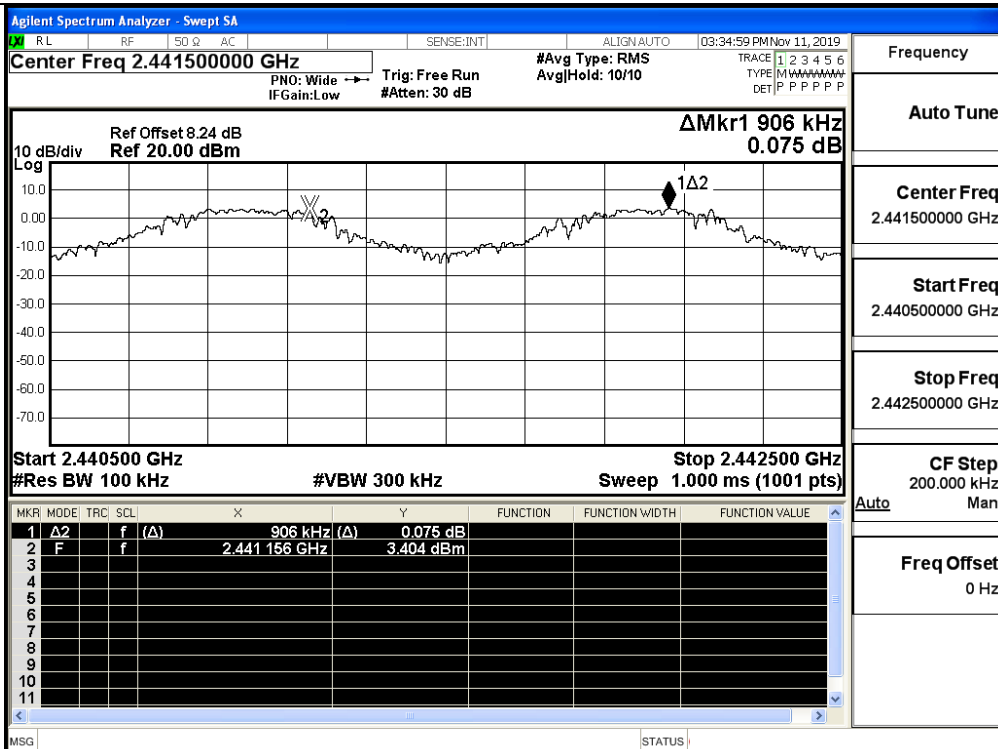
Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.179	0.563	PASS
	MCH	0.906	0.563	PASS
	HCH	1.002	0.563	PASS
$\pi/4$ DQPSK	LCH	1.010	0.849	PASS
	MCH	1.198	0.849	PASS
	HCH	1.076	0.849	PASS
8DPSK	LCH	1.206	0.852	PASS
	MCH	1.078	0.852	PASS
	HCH	1.158	0.852	PASS

Test Graphs

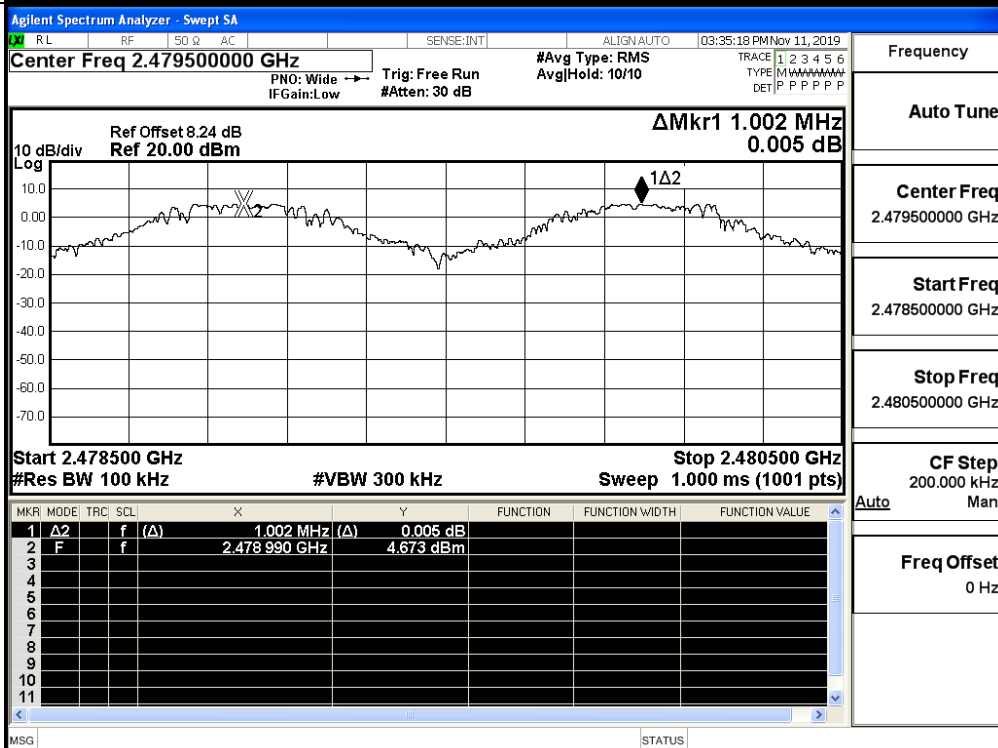
GFSK/LCH

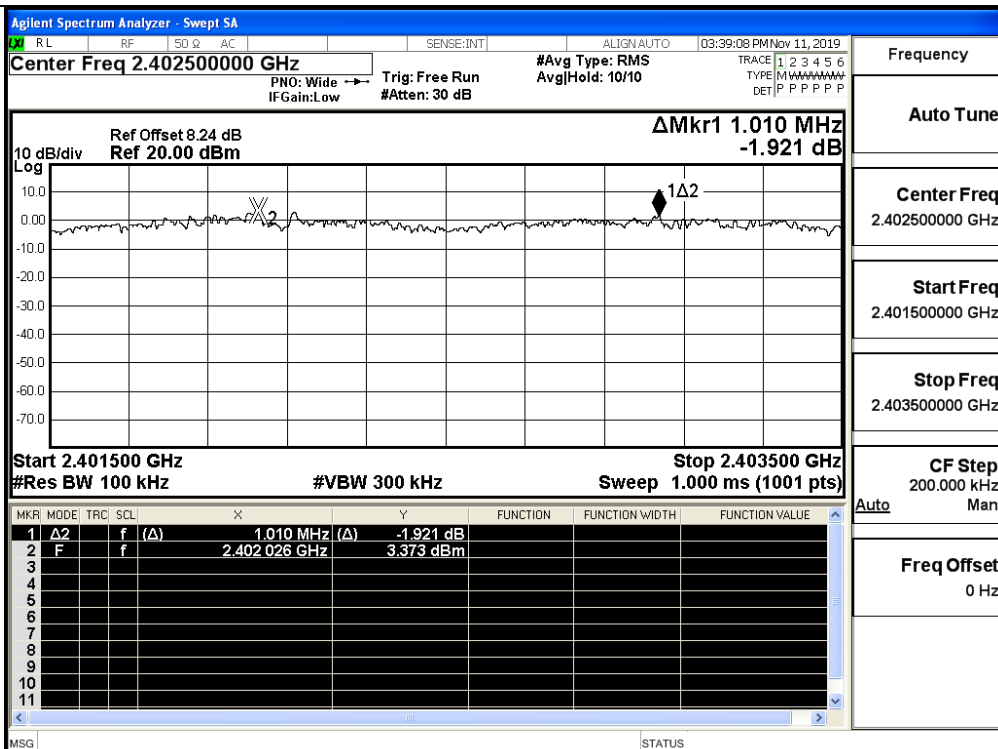
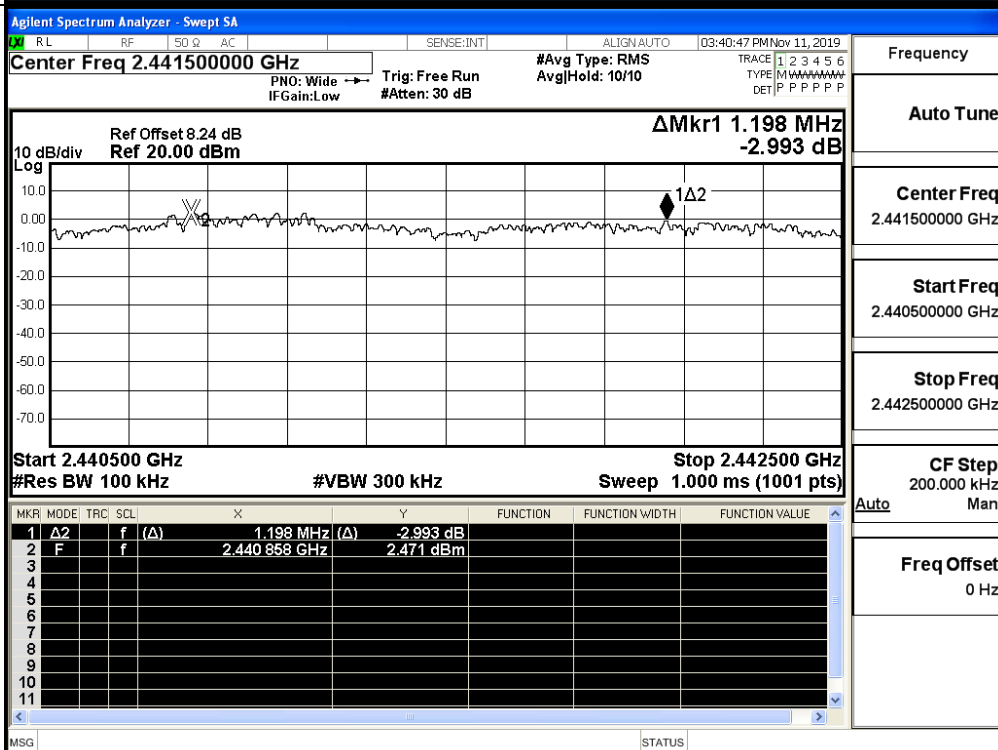


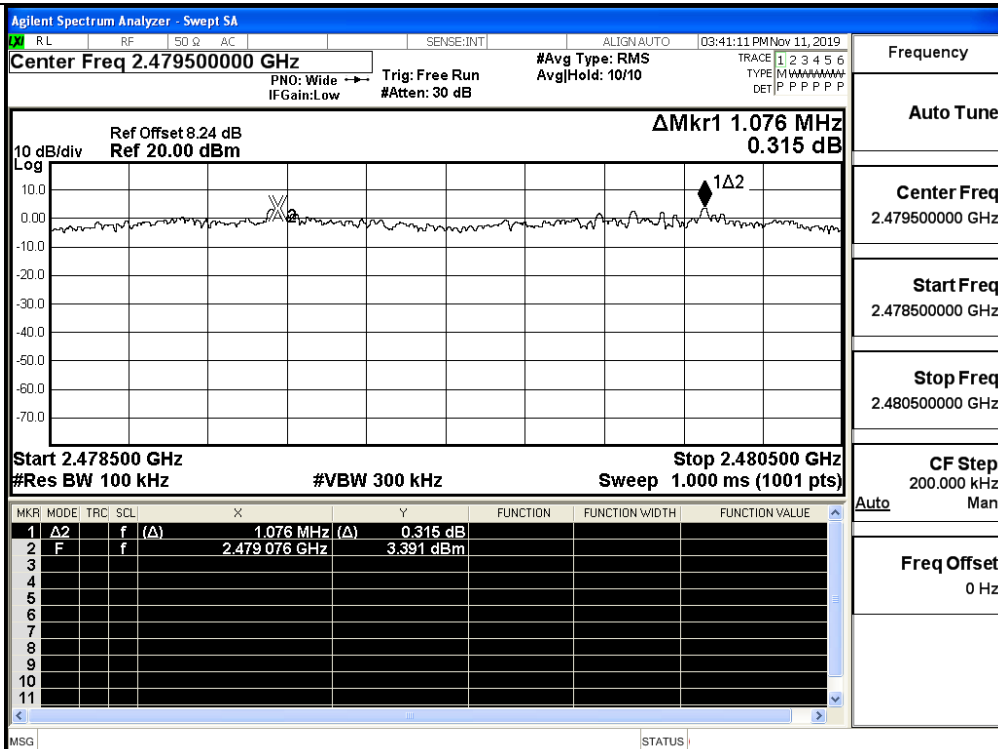
GFSK/MCH



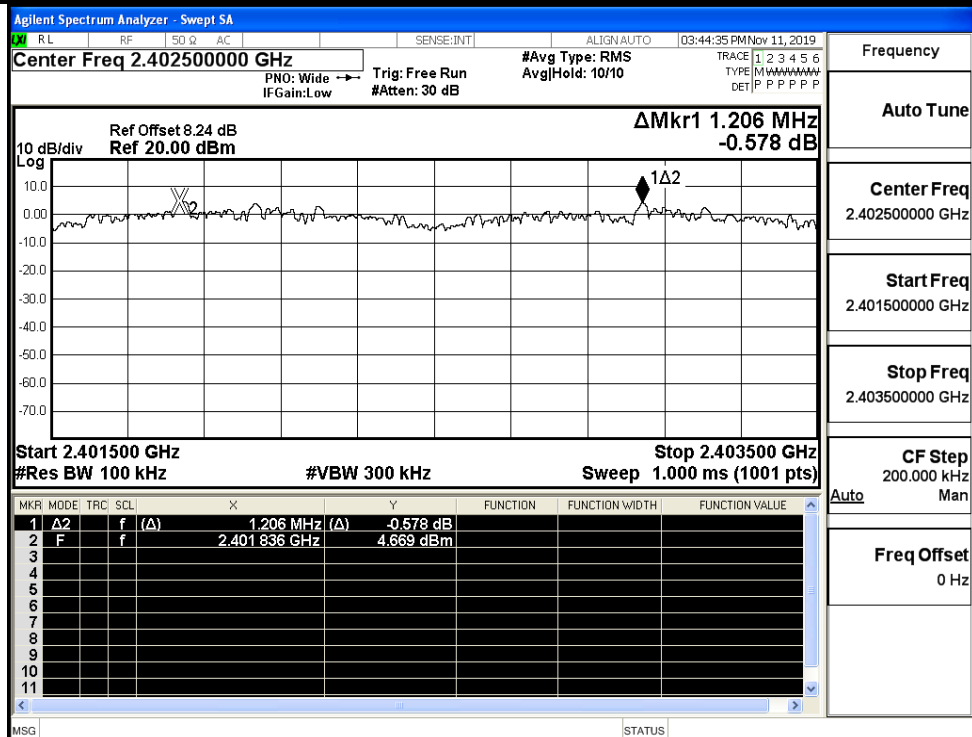
GFSK/HCH



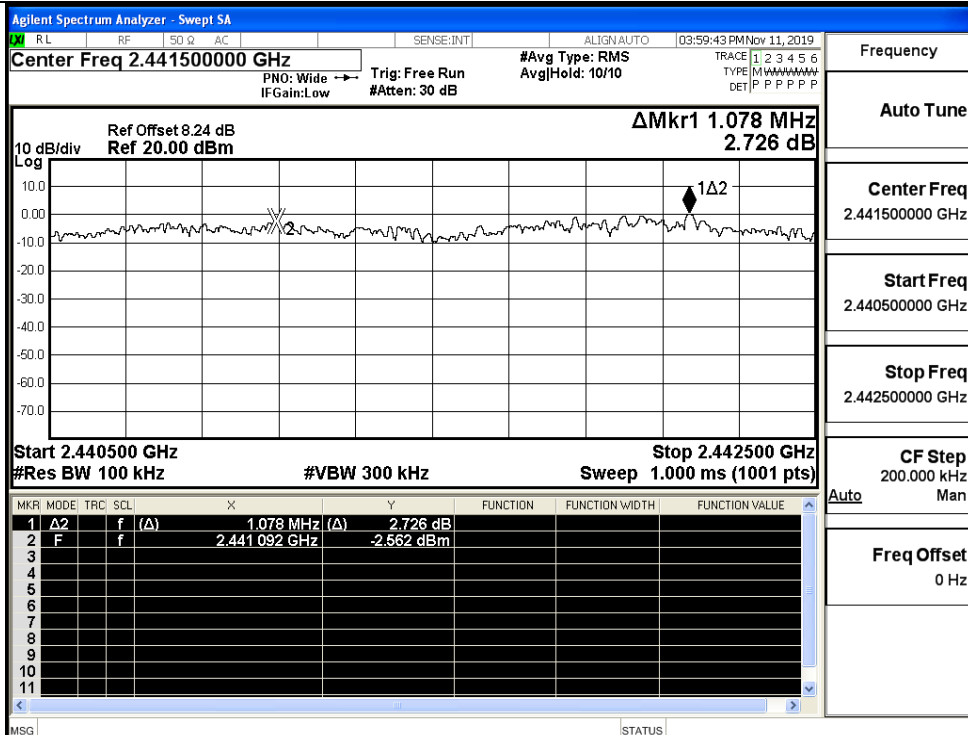
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

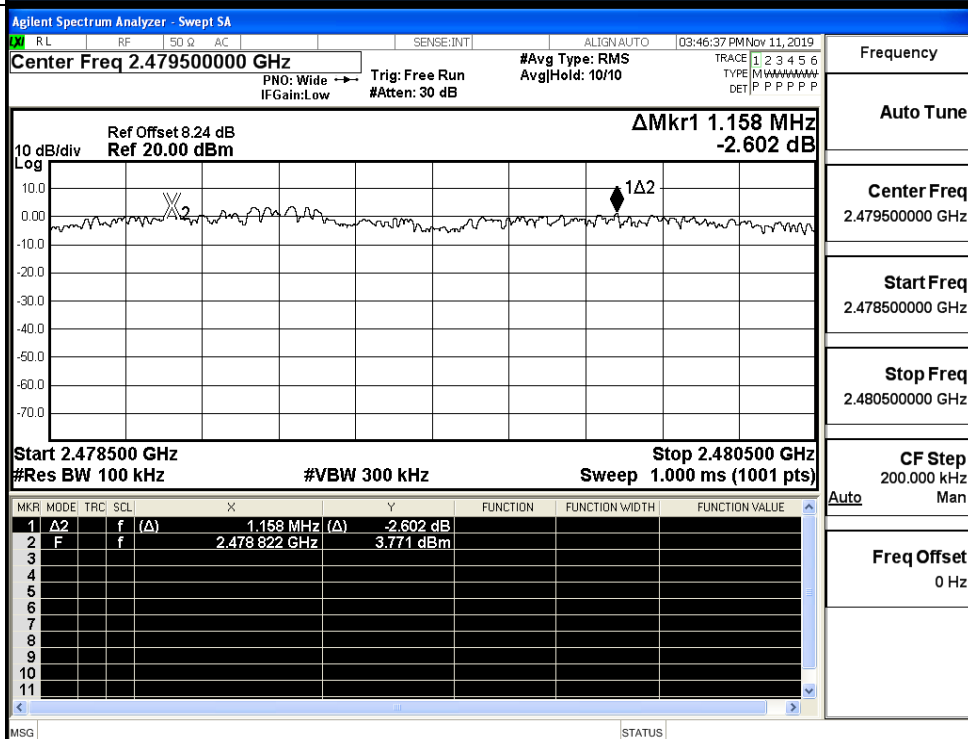
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

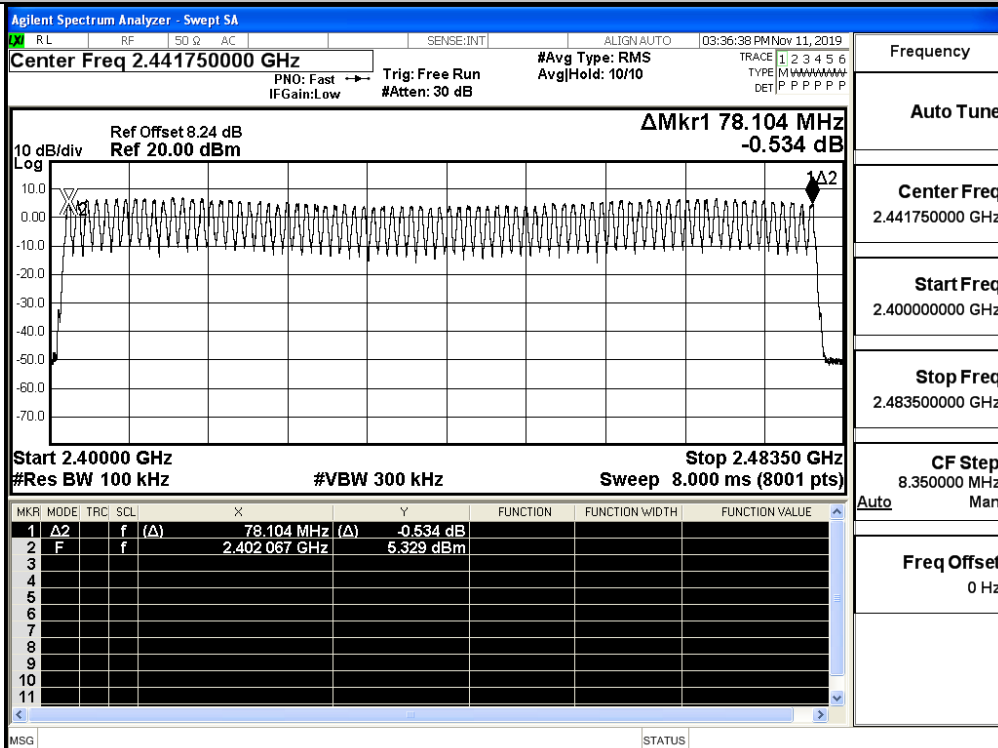
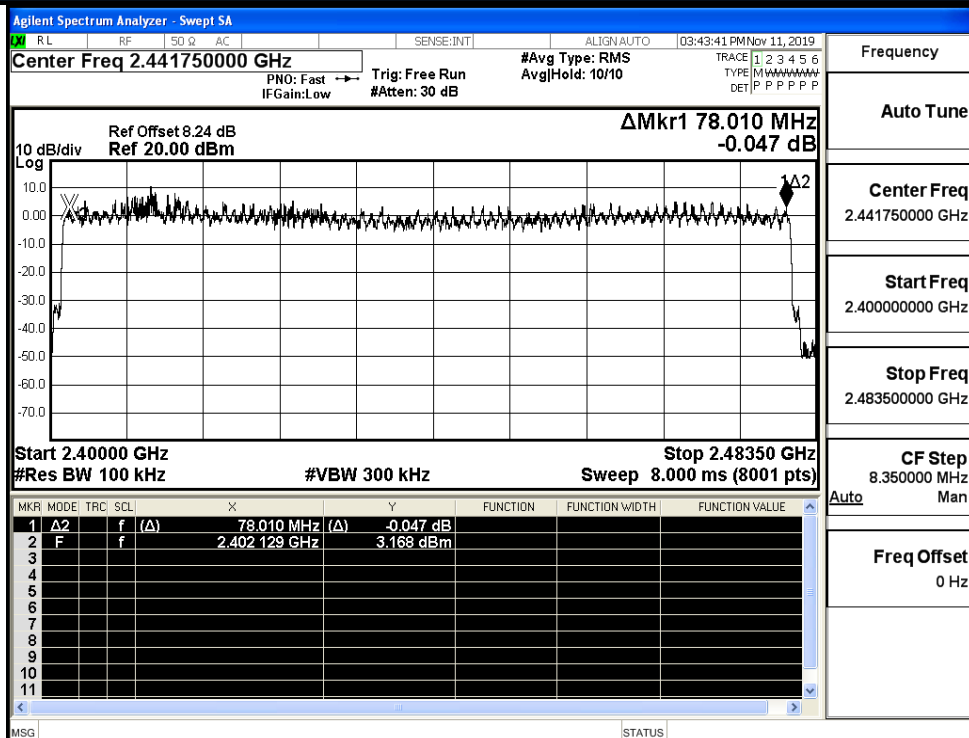


A.4 Hopping Channel Number

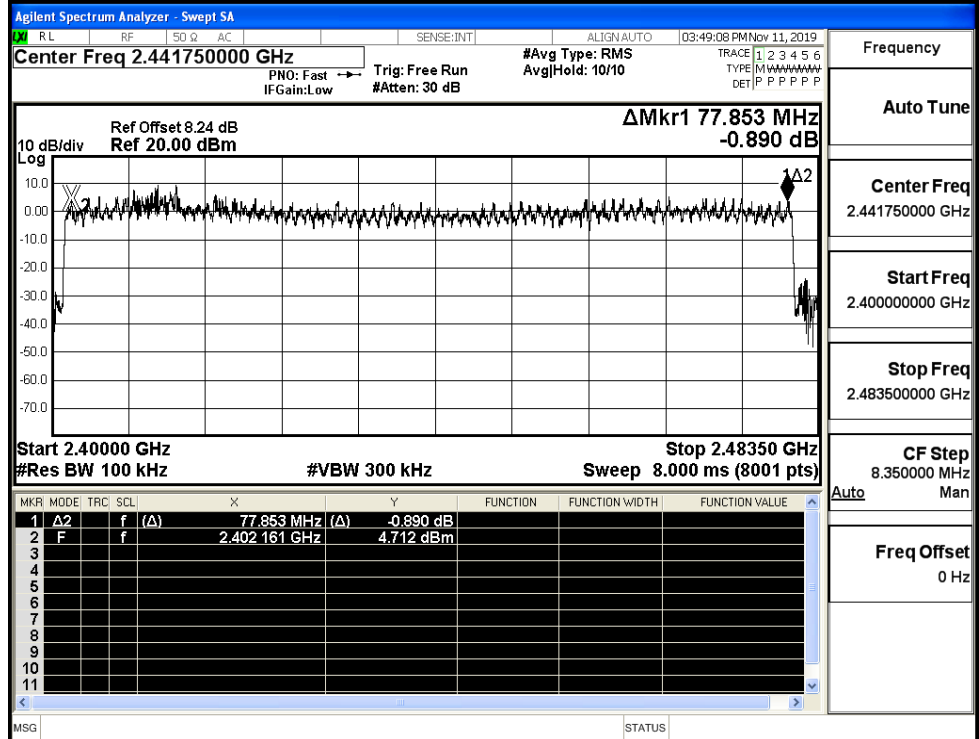
Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	≥ 15	PASS
$\pi/4$ DQPSK	Hop	79	≥ 15	PASS
8DPSK	Hop	79	≥ 15	PASS

Test Graphs

GFSK/Hop

 $\pi/4$ DQPSK/Hop

8DPSK/Hop

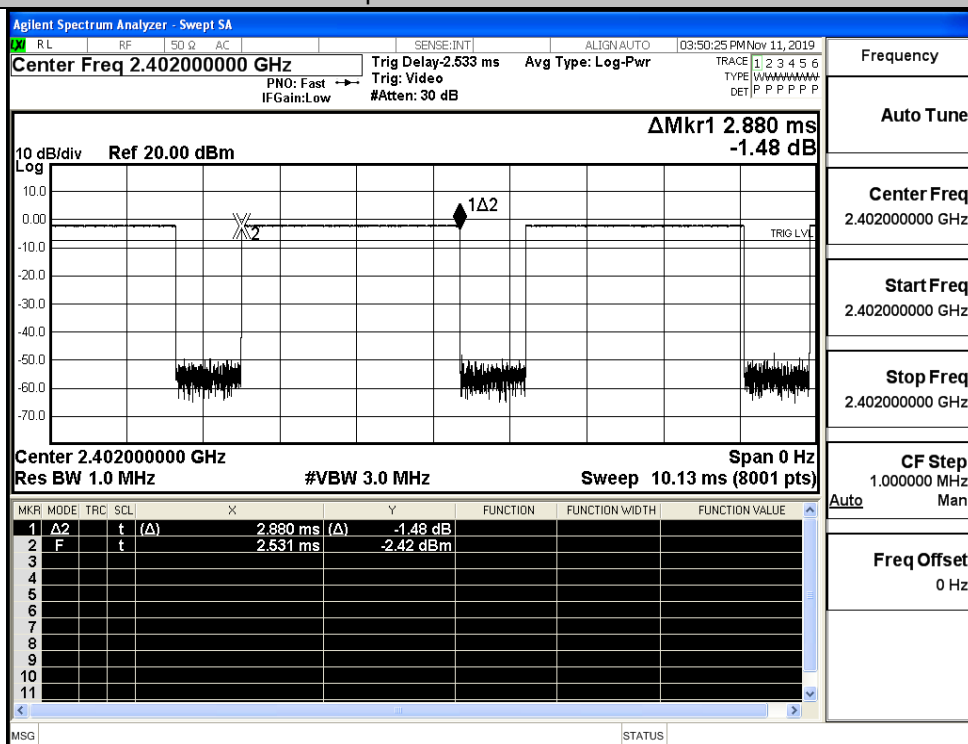


A.5 Dwell Time

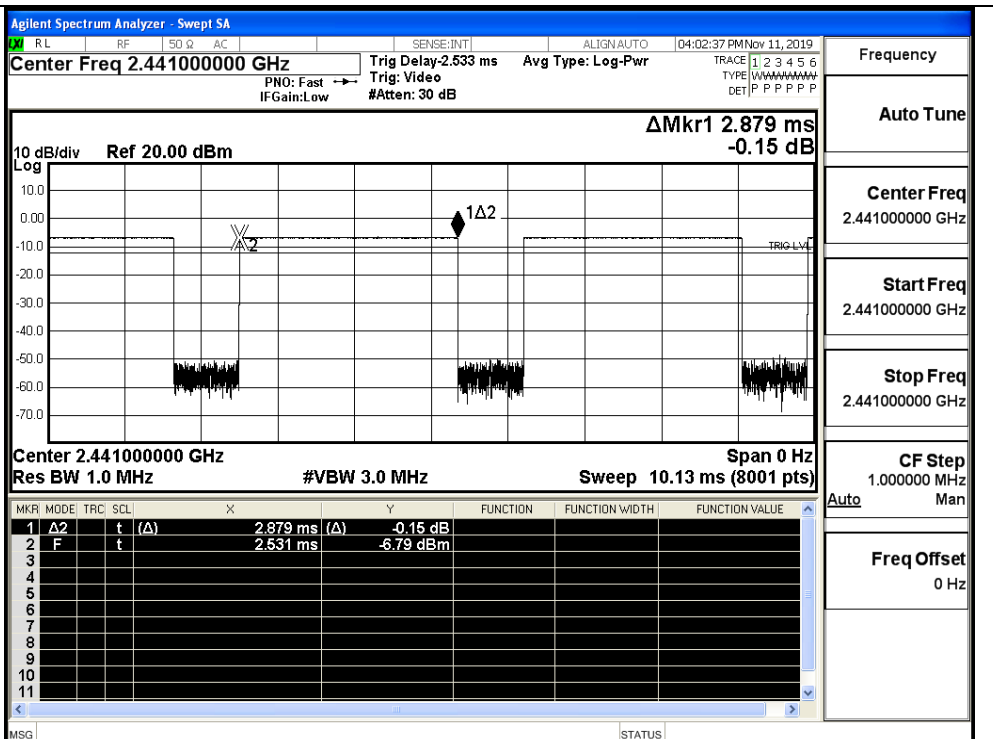
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.88	106.7	0.307	0.4	PASS
	DH5	MCH	2.88	106.7	0.307	0.4	PASS
	DH5	HCH	2.88	106.7	0.307	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.88	106.7	0.307	0.4	PASS
	2DH5	MCH	2.88	106.7	0.307	0.4	PASS
	2DH5	HCH	2.88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

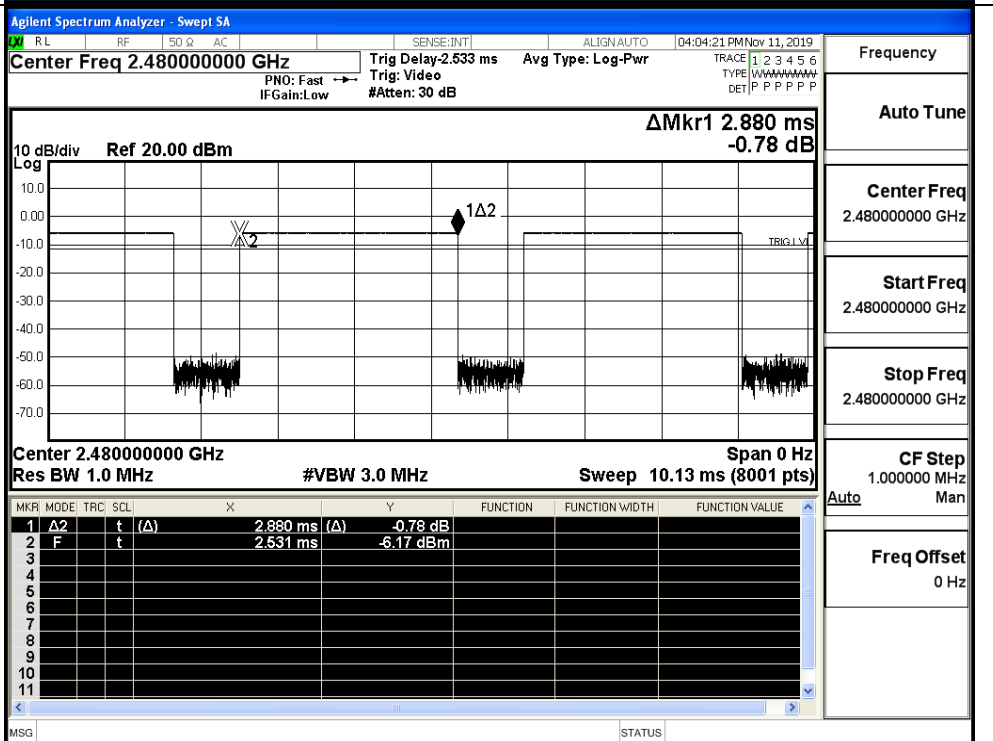
GFSK_DH5/LCH

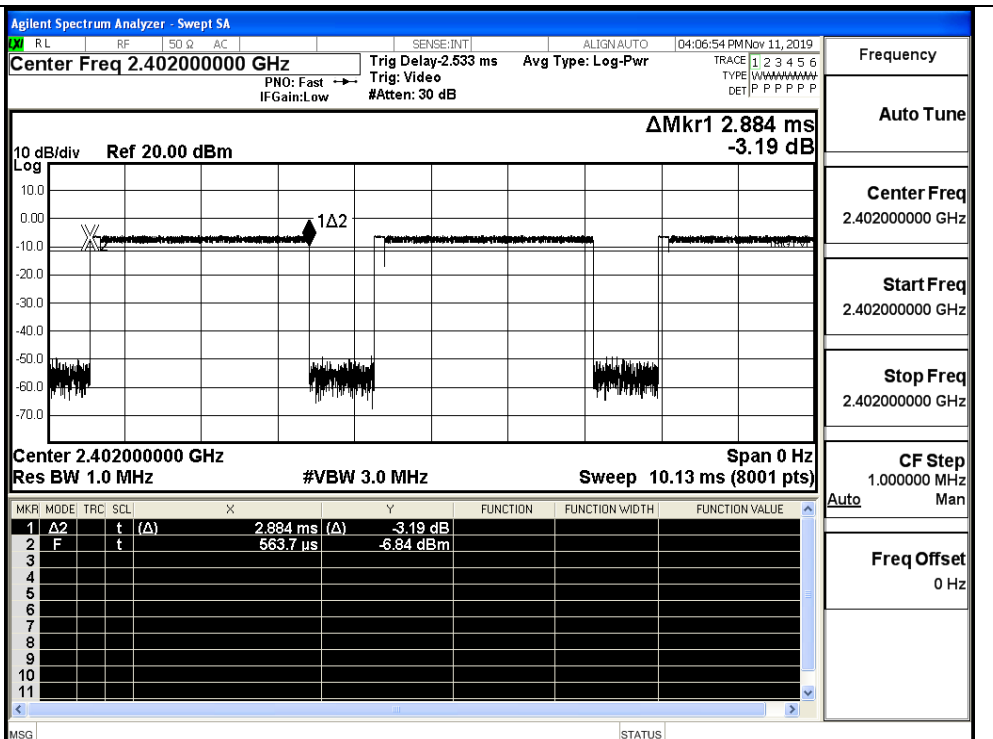
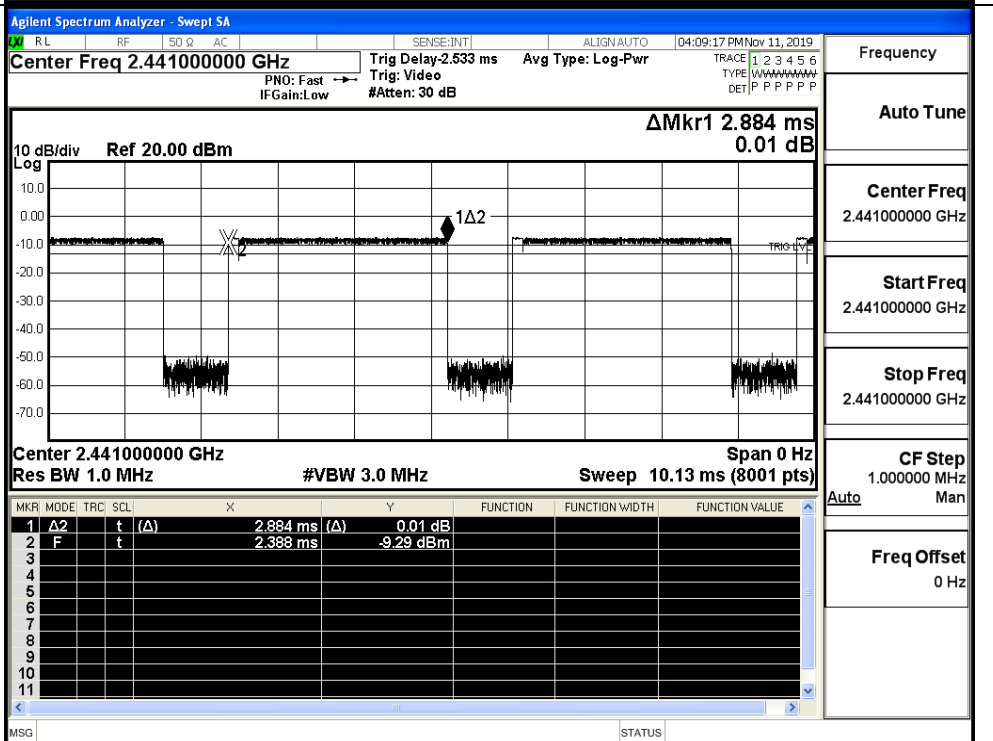


GFSK_DH5/MCH

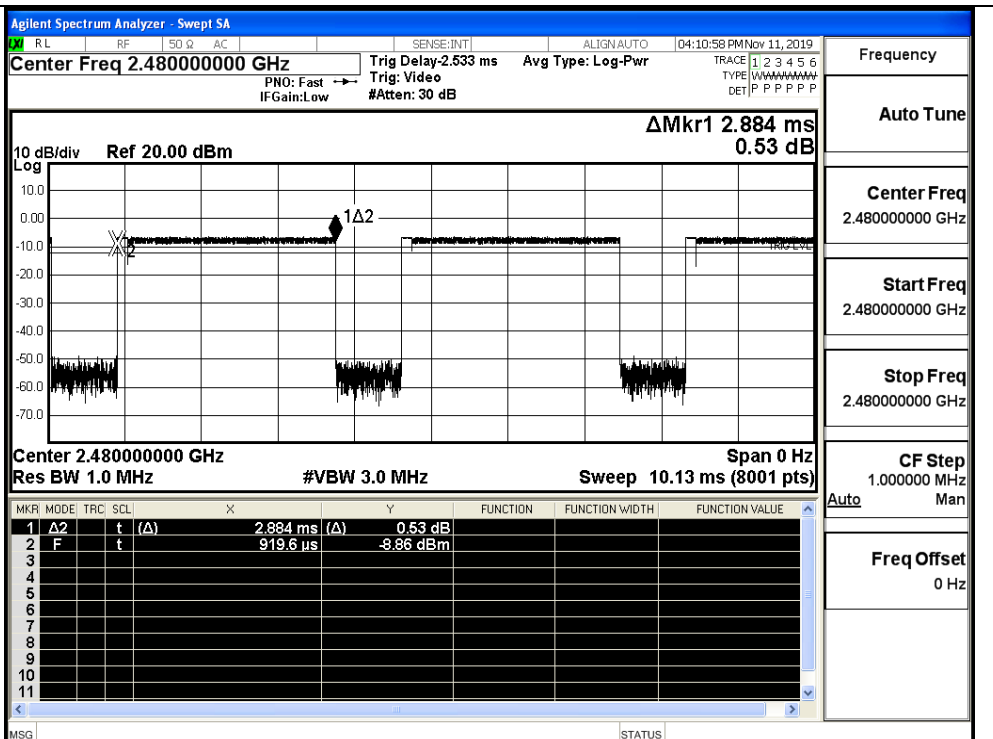


GFSK_DH5/HCH

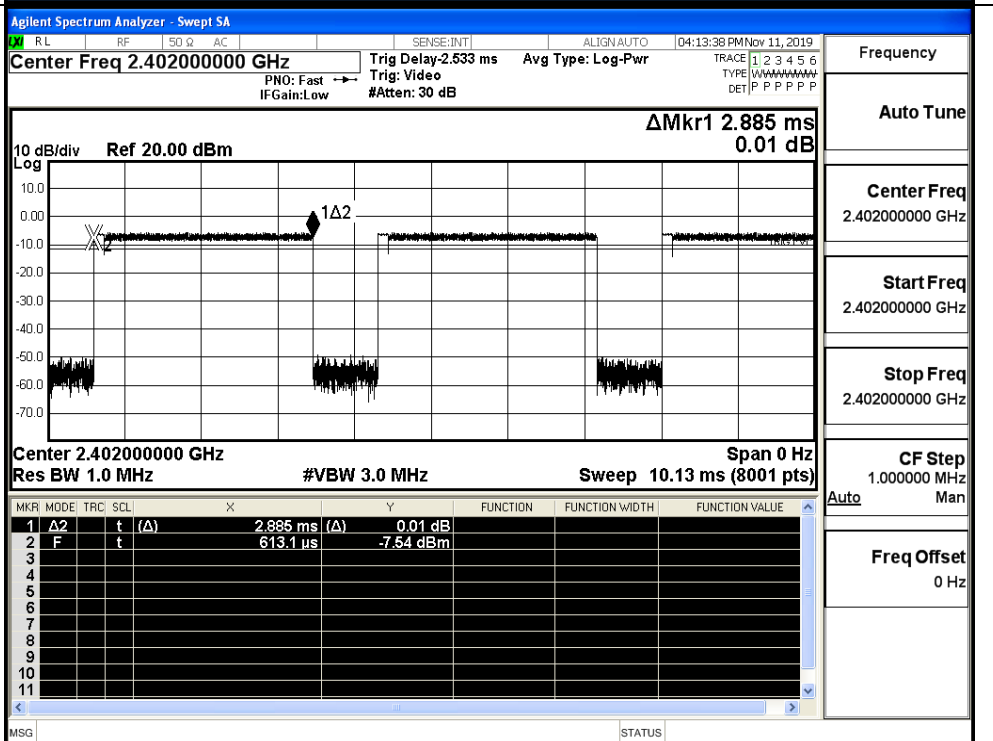


$\pi/4$ DQPSK
_2DH5/LCH $\pi/4$ DQPSK
_2DH5/MCH

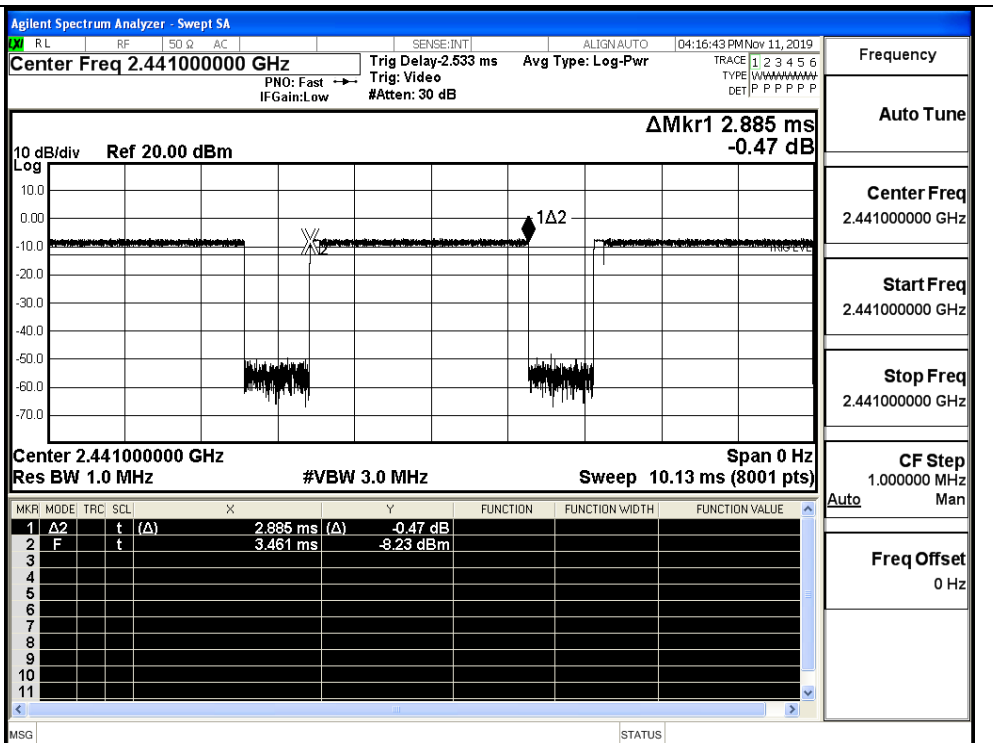
$\pi/4$ DQPSK
_2DH5/HCH



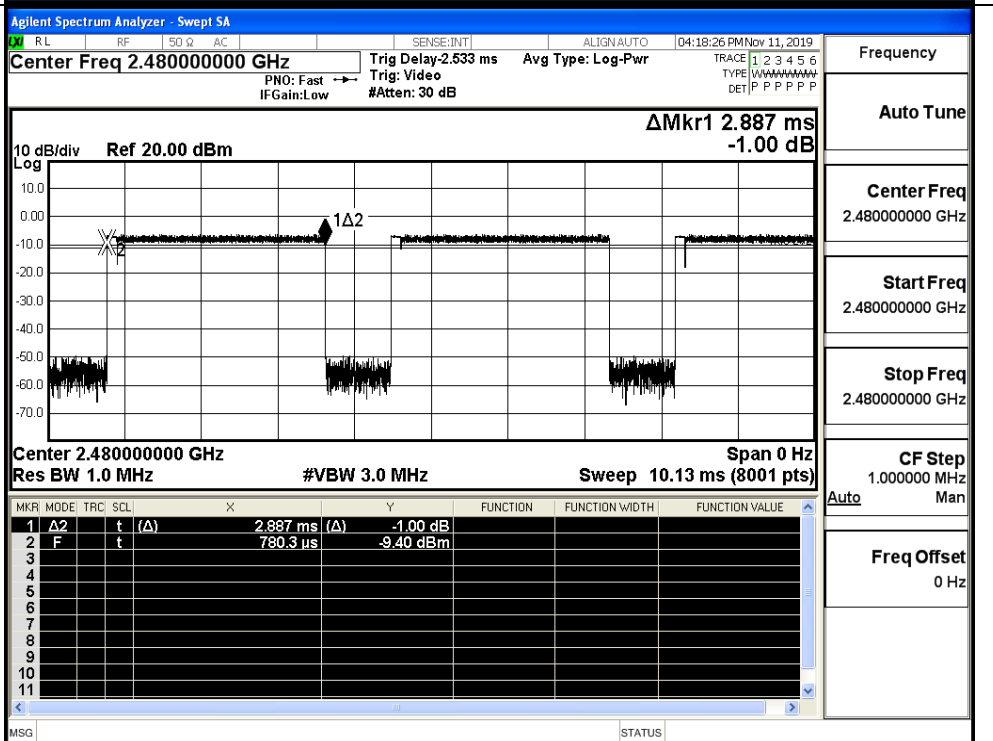
8DPSK _3DH5/LCH



8DPSK_3DH5/MCH



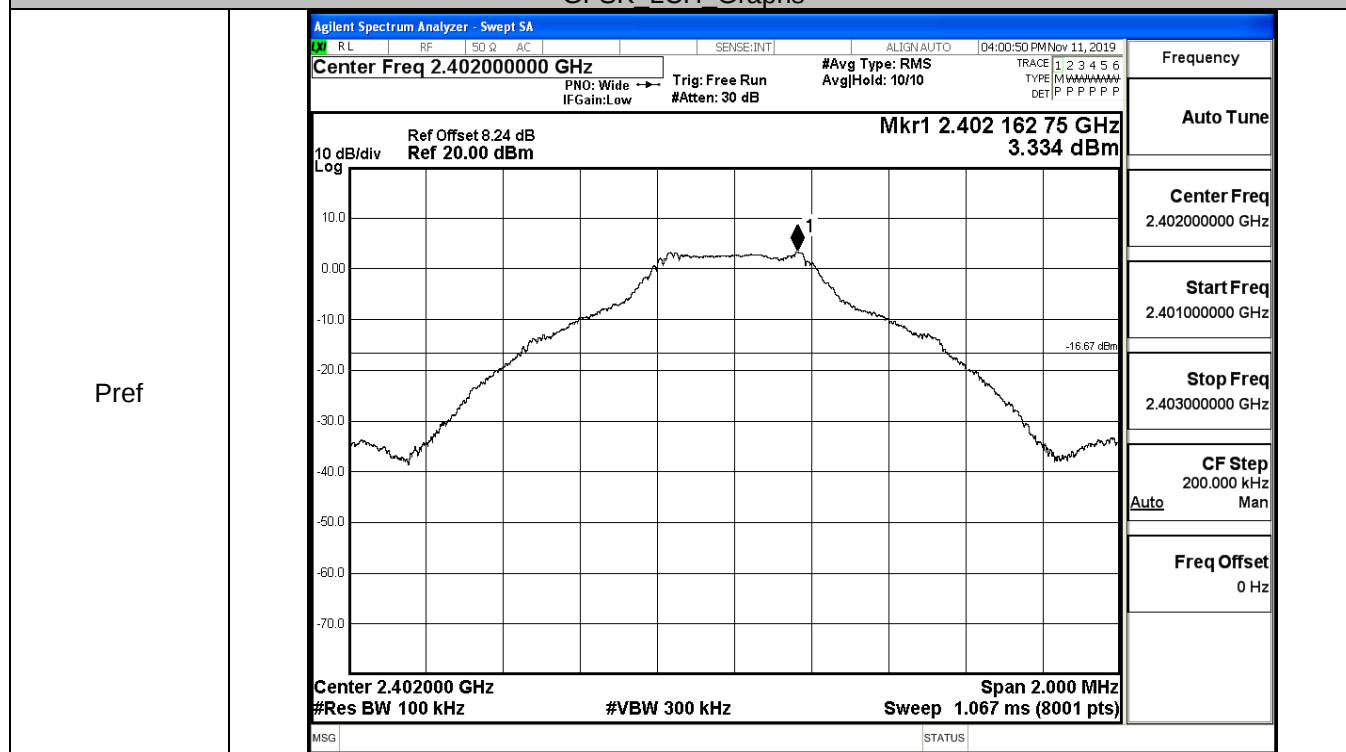
8DPSK_3DH5/HCH



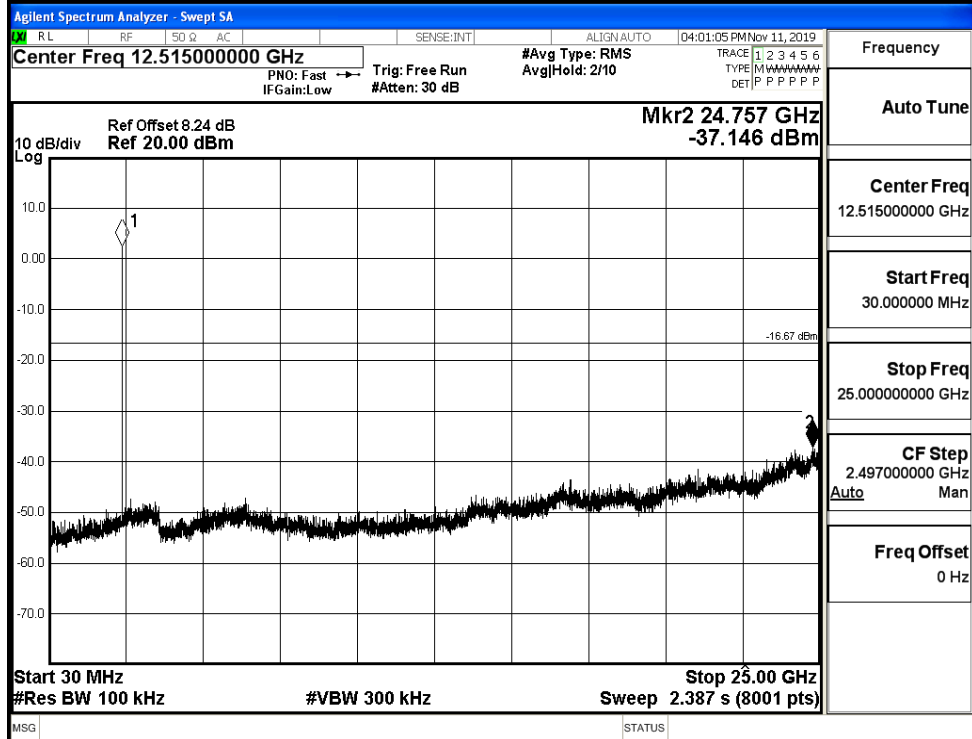
A.6 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	3.334	-37.146	-16.666	PASS
	MCH	1.567	-36.923	-18.433	PASS
	HCH	2.448	-37.948	-17.552	PASS
$\pi/4$ DQPSK	LCH	1.924	-37.767	-18.076	PASS
	MCH	-0.362	-36.470	-20.362	PASS
	HCH	0.844	-36.817	-19.156	PASS
8DPSK	LCH	1.95	-37.362	-18.050	PASS
	MCH	0.578	-36.024	-19.422	PASS
	HCH	0.531	-36.835	-19.469	PASS

GFSK LCH Graphs

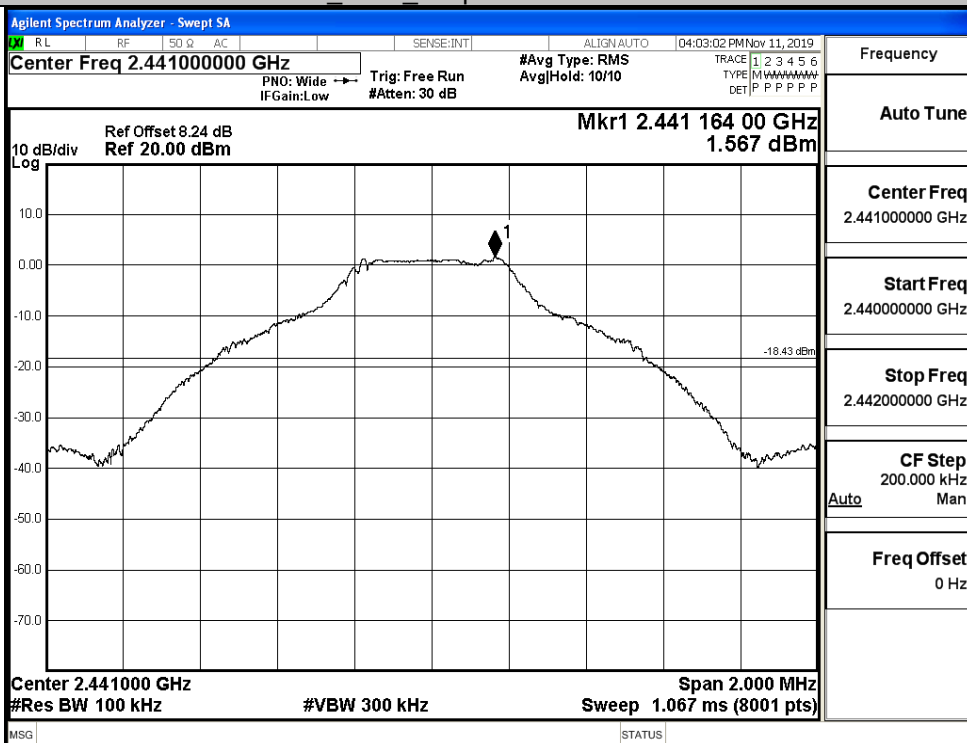


Puw

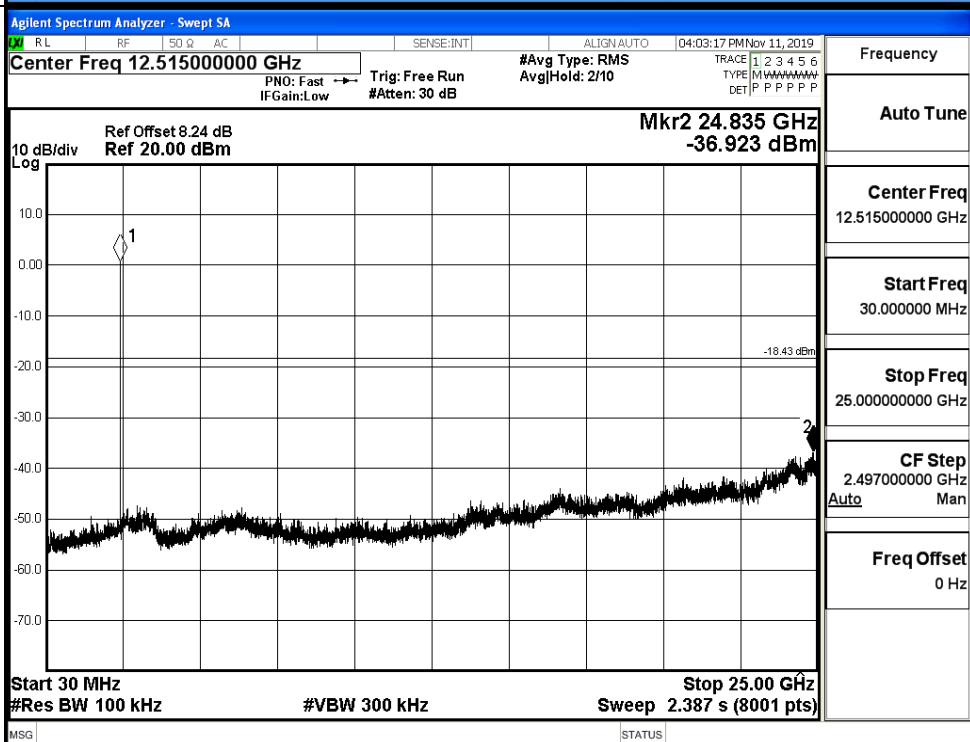


GFSK MCH Graphs

Pref

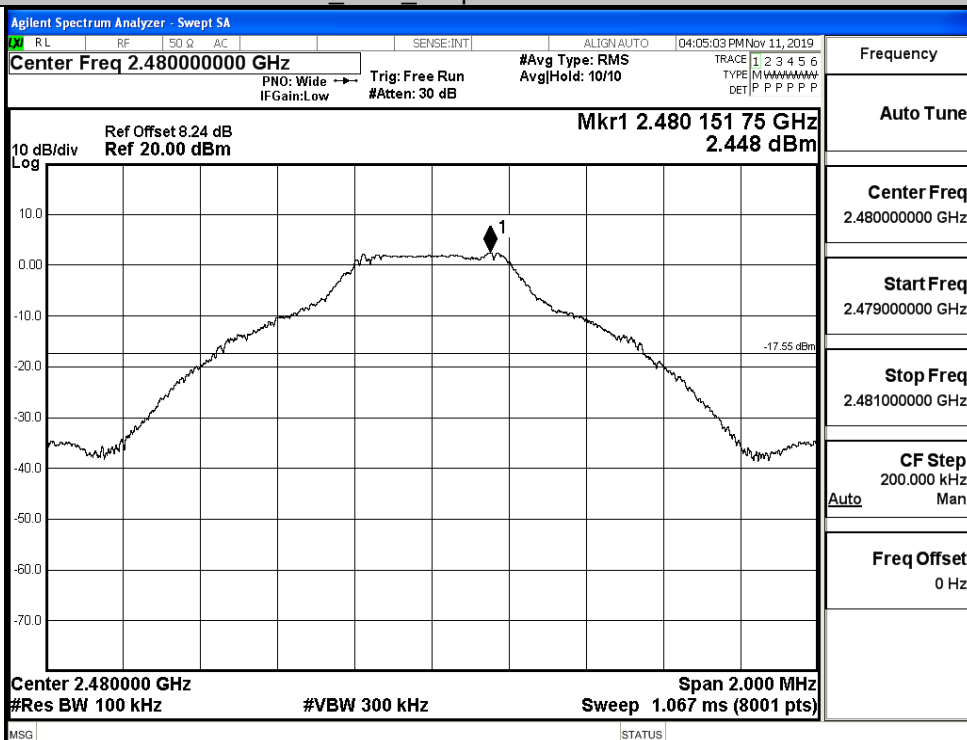


Puw

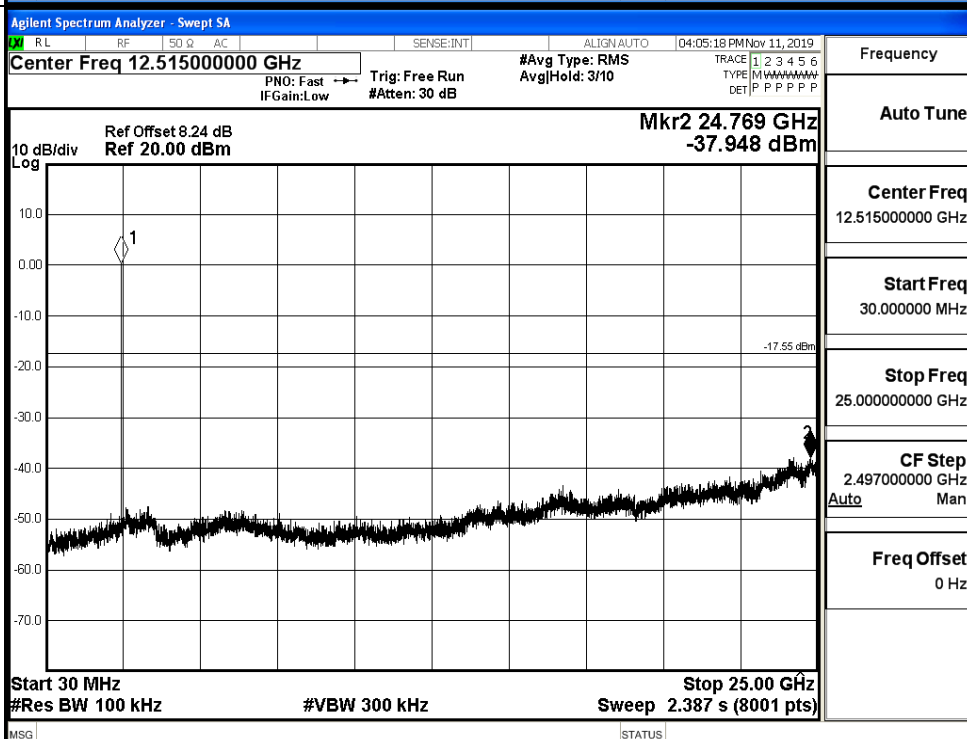


GFSK HCH Graphs

Pref

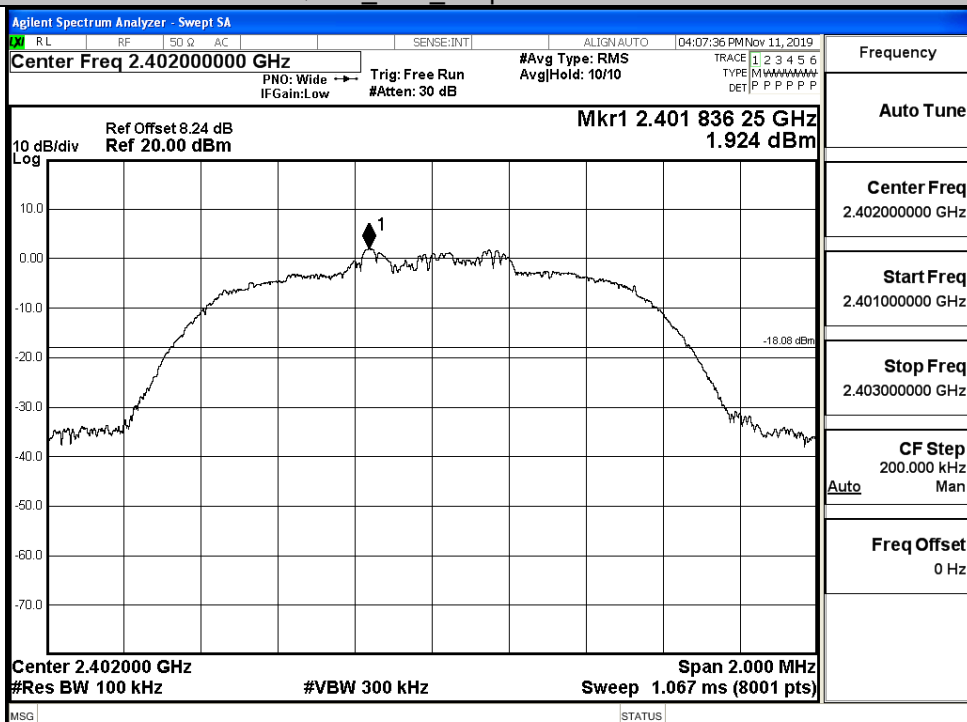


Puw

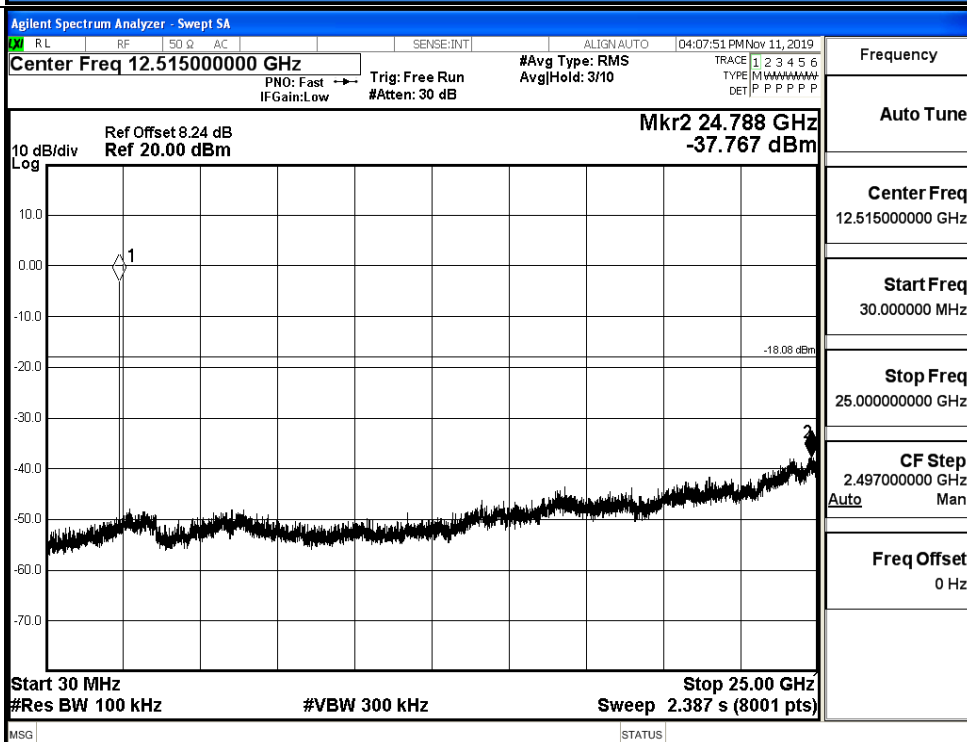


$\pi/4$ DQPSK_LCH_Graphs

Pref

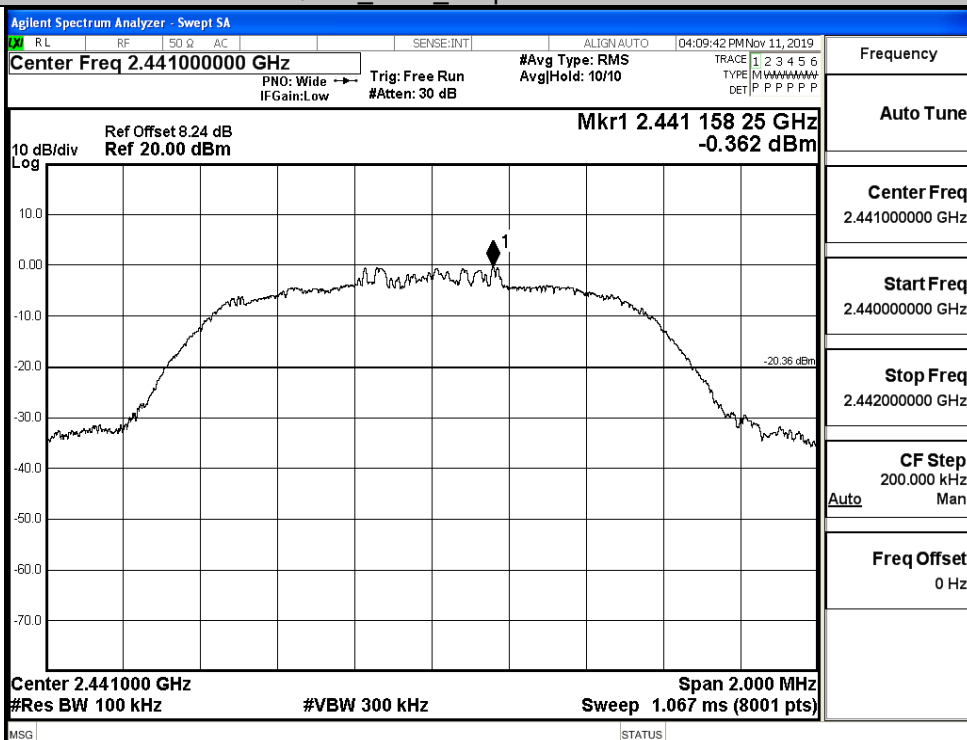


Puw

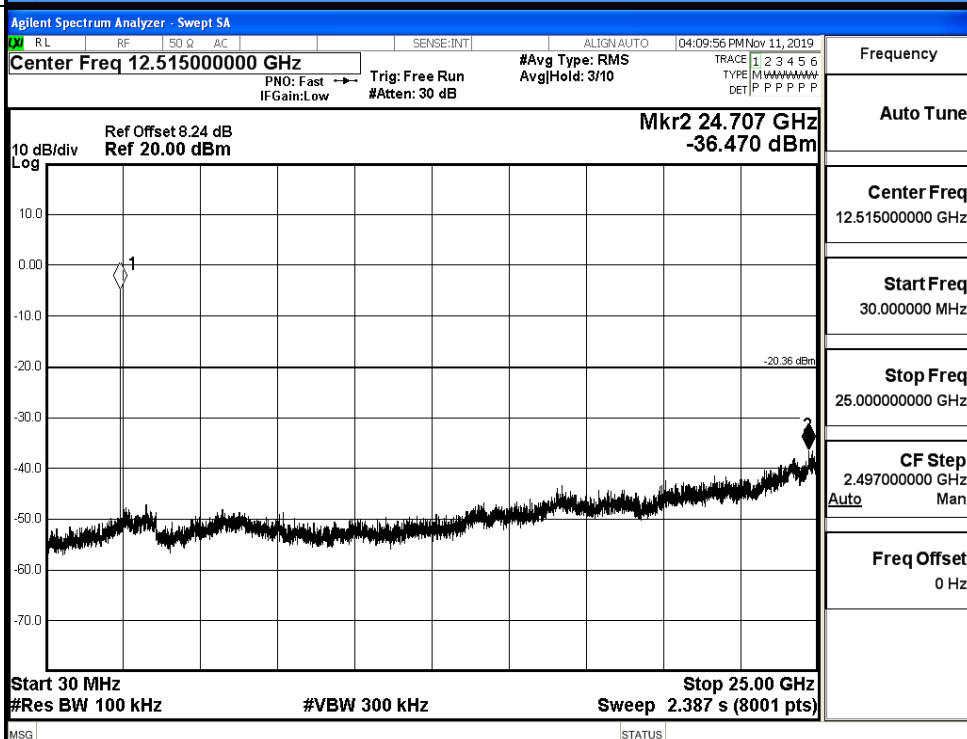


$\pi/4$ DQPSK_MCH_Graphs

Pref

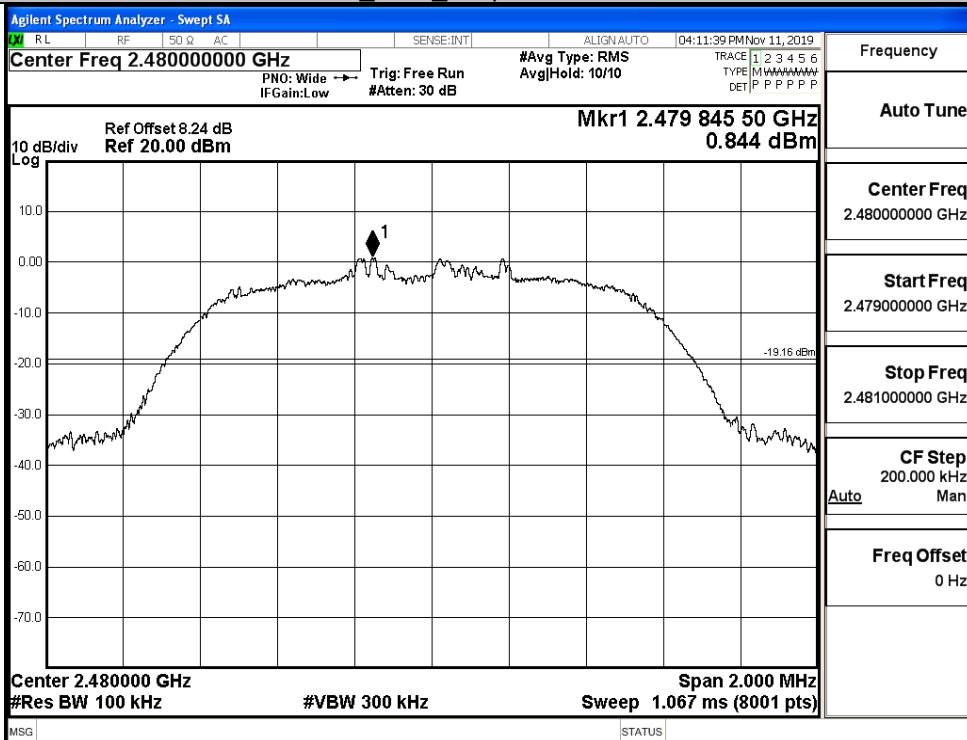


Puw

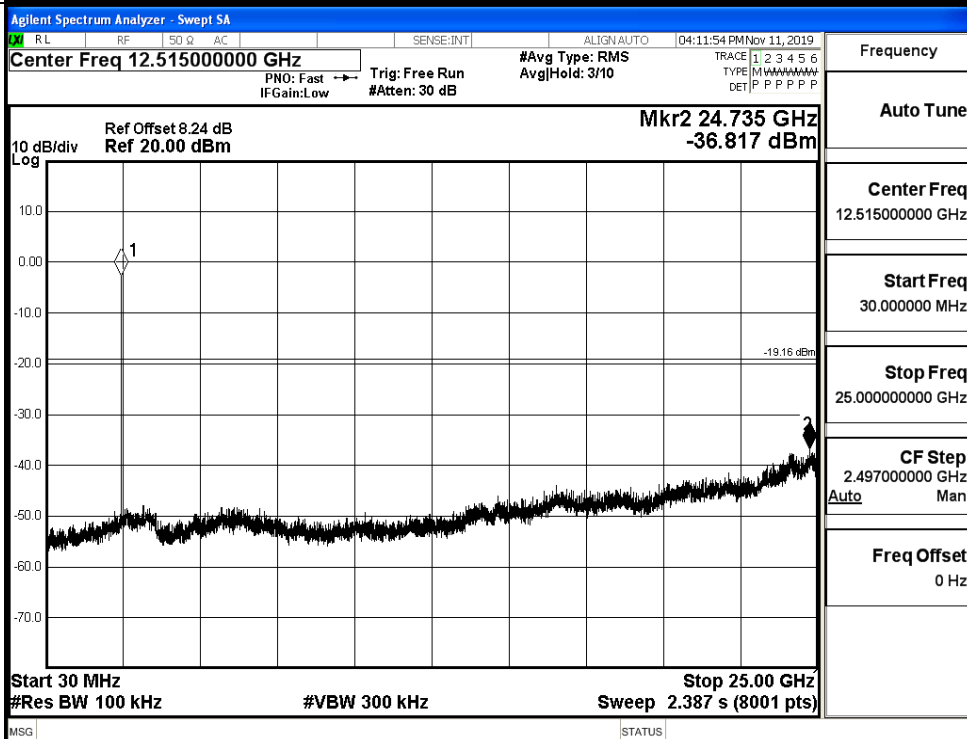


$\pi/4$ DQPSK_HCH_Graphs

Pref

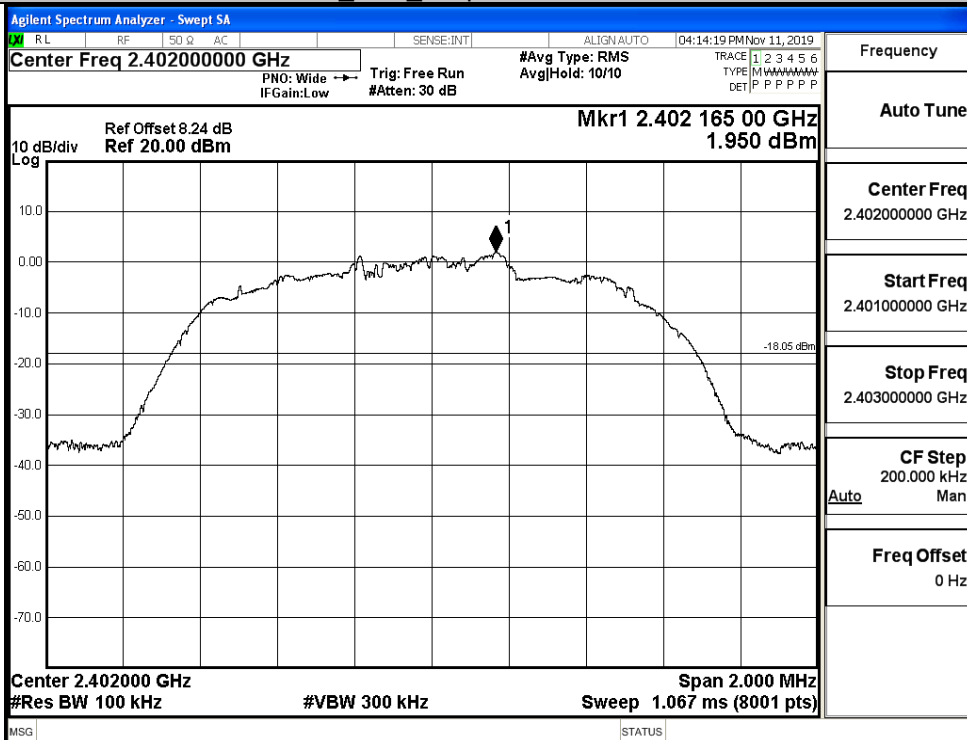


Puw

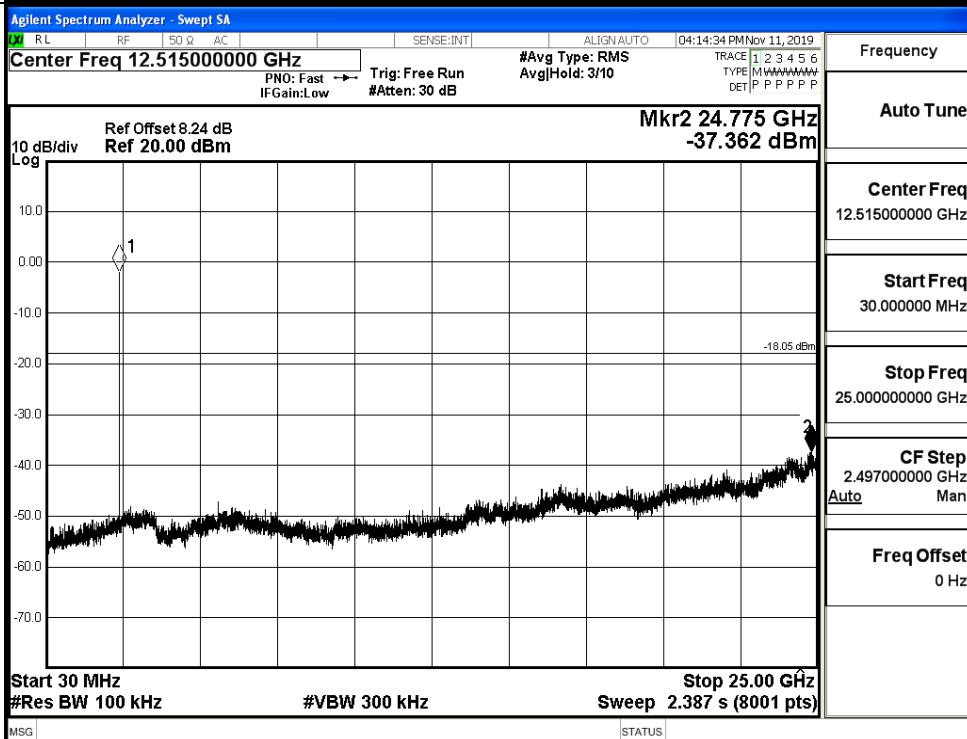


8DPSK_LCH_Graphs

Pref

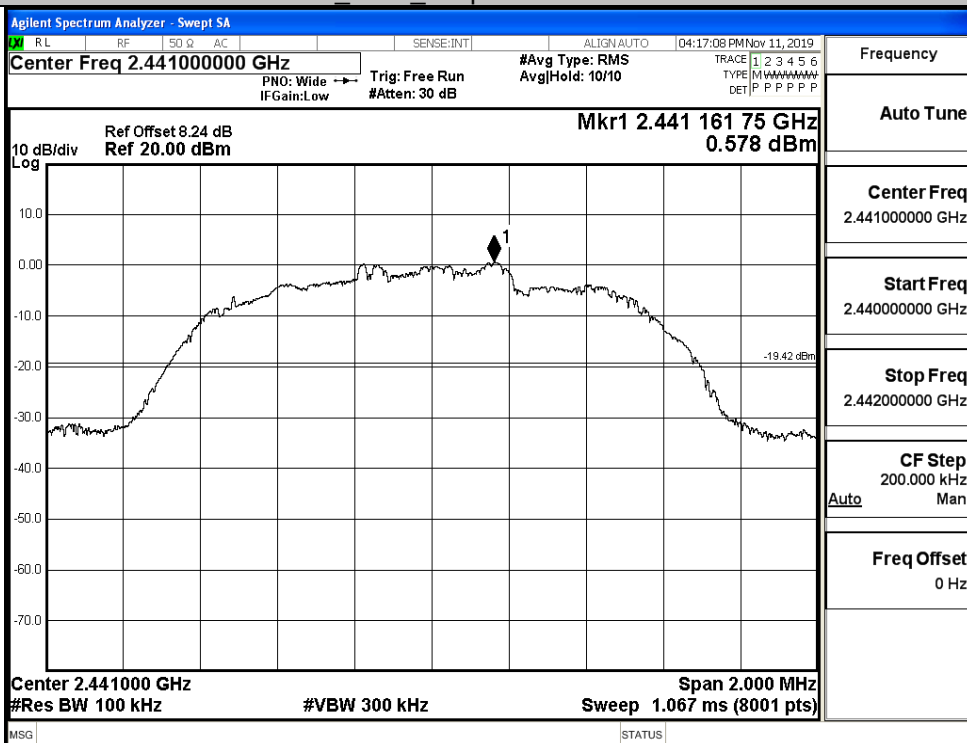


Puw

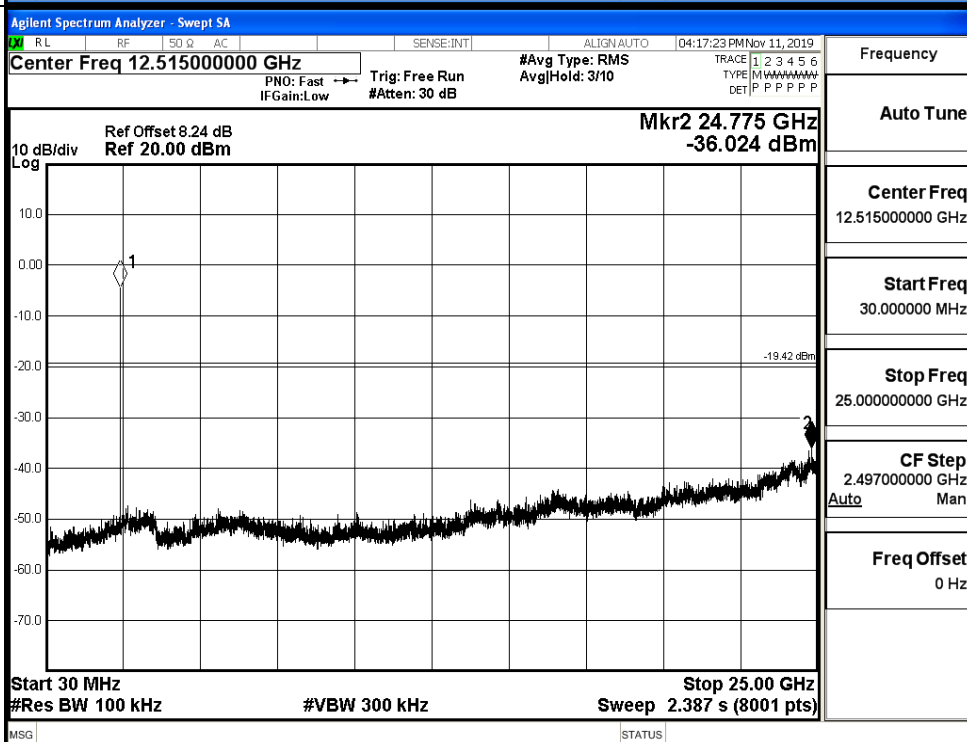


8DPSK MCH_Graphs

Pref

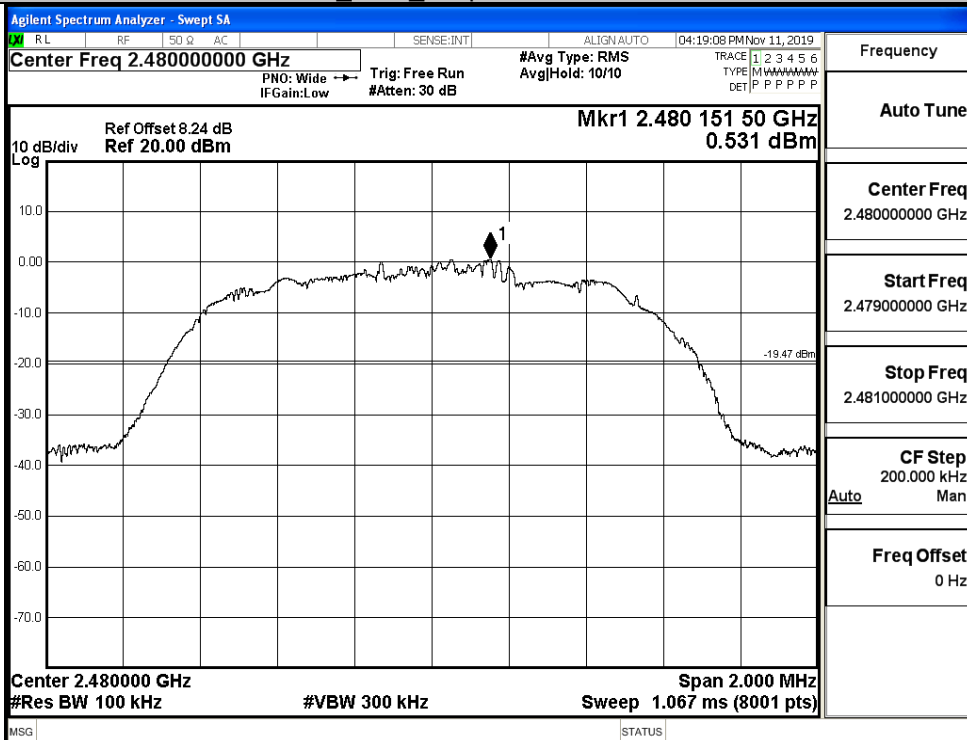


Puw

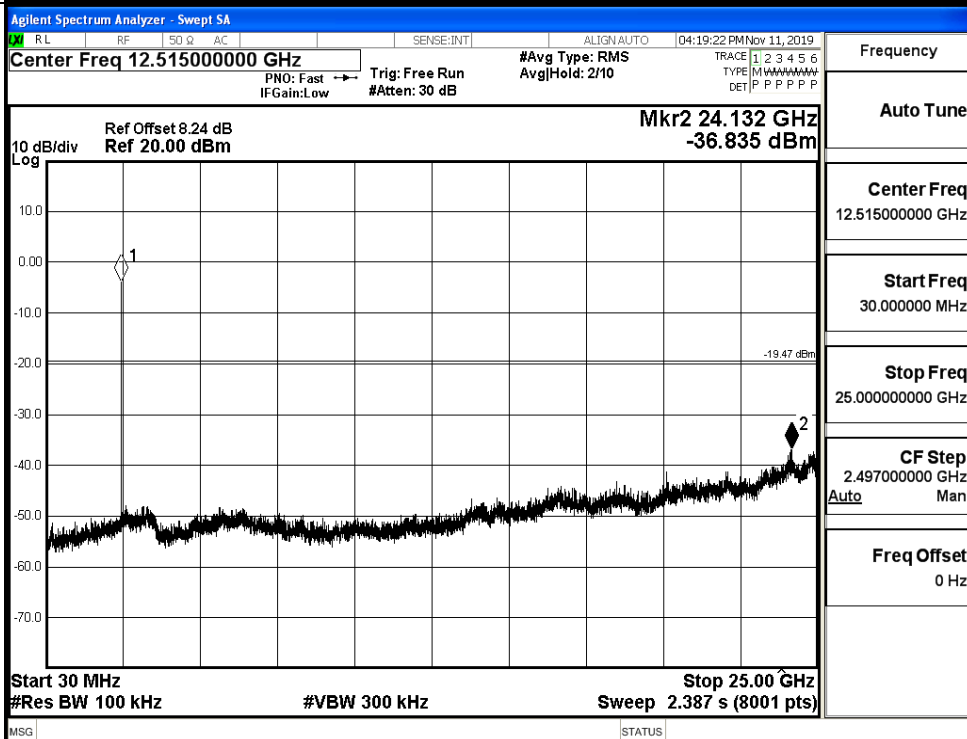


8DPSK_HCH_Graphs

Pref



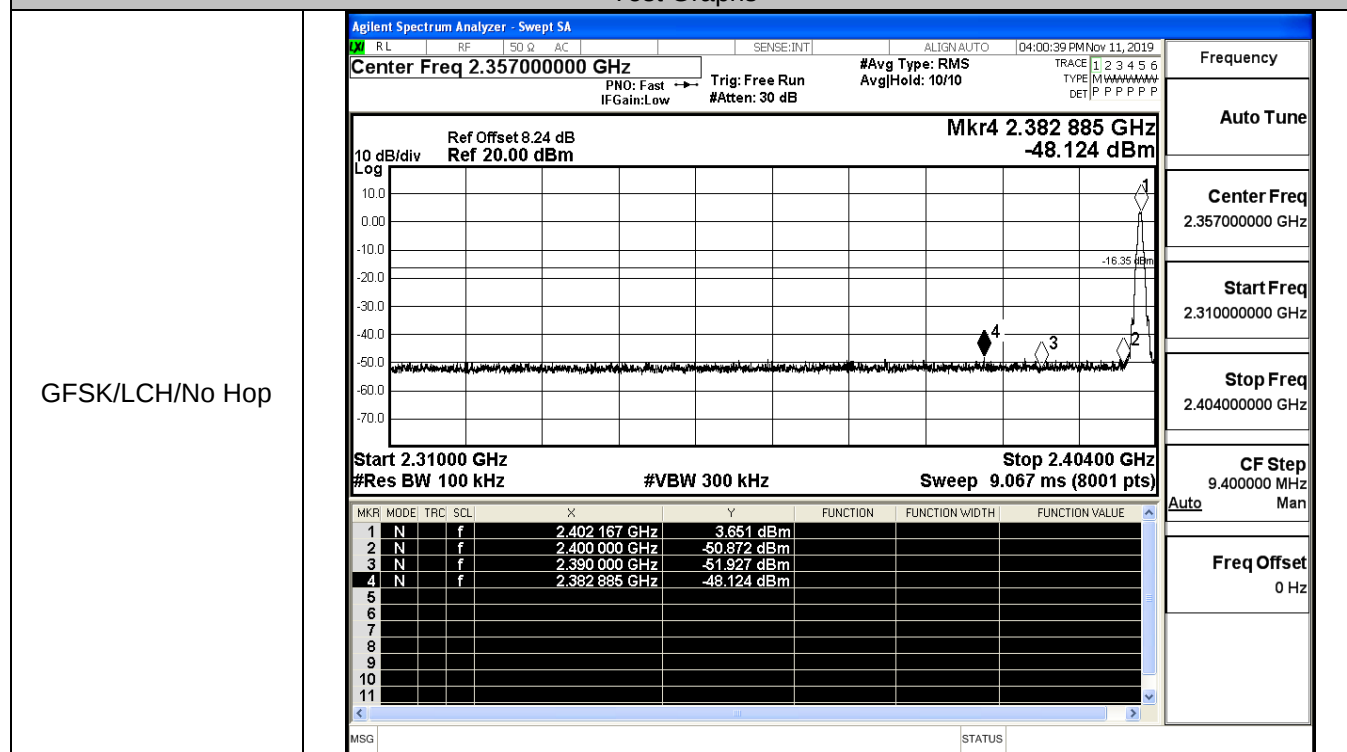
Puw



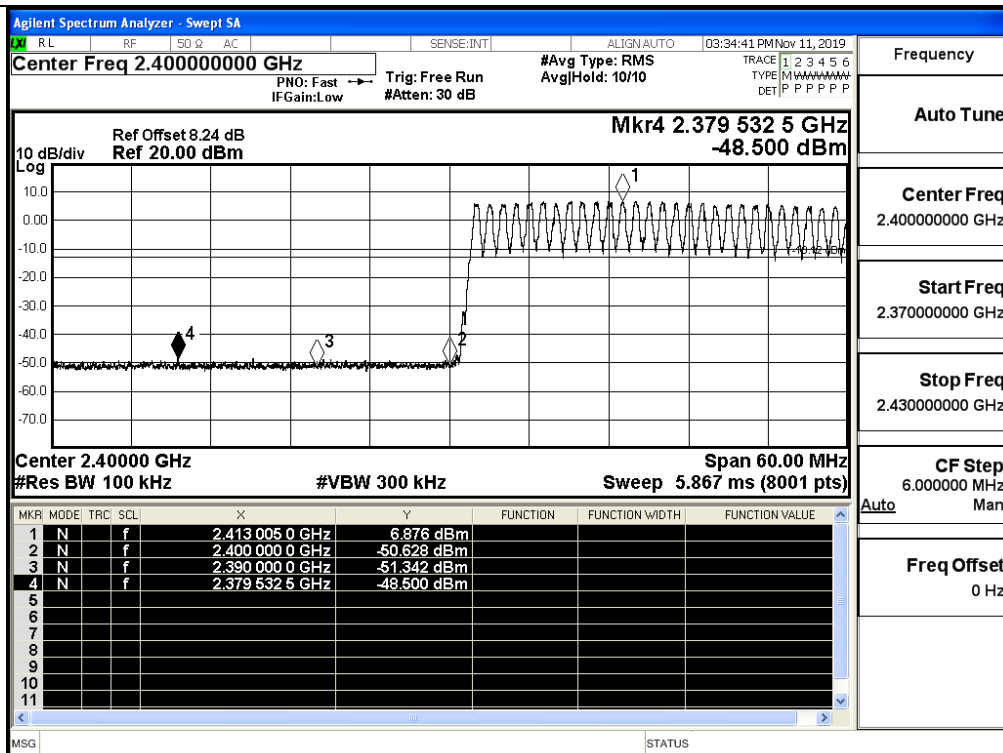
A.7 Band-edge for RF Conducted Emissions

Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	3.651	Off	-48.124	-16.35	PASS
			6.876	On	-48.500	-13.12	PASS
	HCH	2480	2.465	Off	-48.341	-17.54	PASS
			6.544	On	-42.919	-13.46	PASS
π /4DQPSK	LCH	2402	0.390	Off	-48.761	-19.61	PASS
			5.004	On	-48.551	-15	PASS
	HCH	2480	1.234	Off	-48.411	-18.77	PASS
			5.326	On	-47.191	-14.67	PASS
8DPSK	LCH	2402	0.697	Off	-48.947	-19.3	PASS
			5.494	On	-48.262	-14.51	PASS
	HCH	2480	1.023	Off	-48.671	-18.98	PASS
			5.339	On	-47.897	-14.66	PASS

Test Graphs



GFSK/LCH/Hop

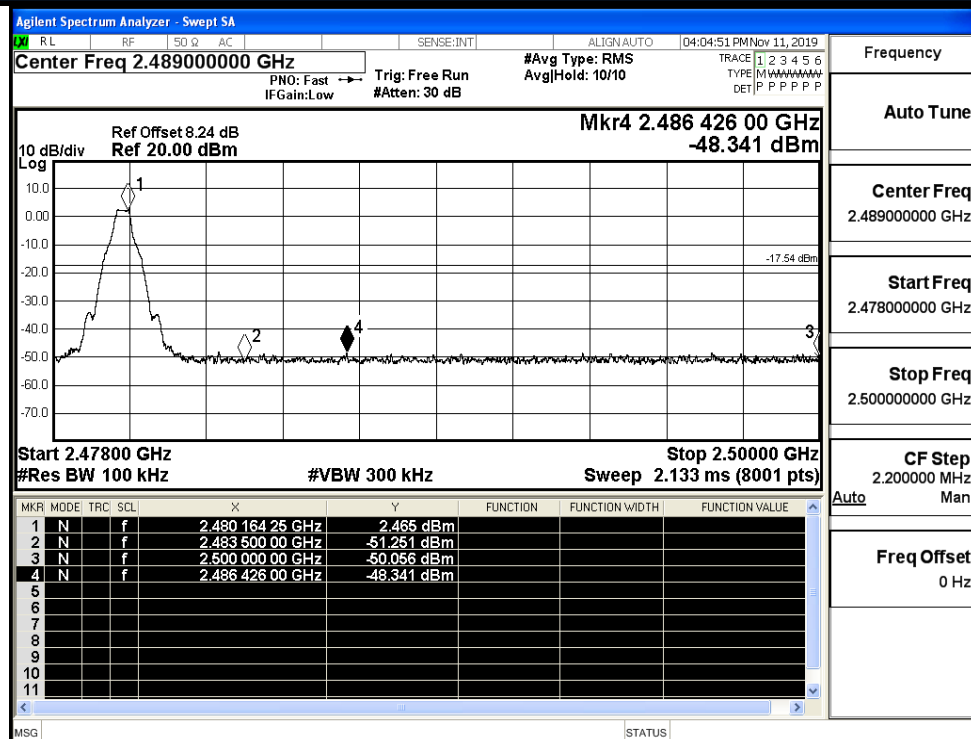


Frequency

Auto Tune

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

GFSK/HCH/No Hop

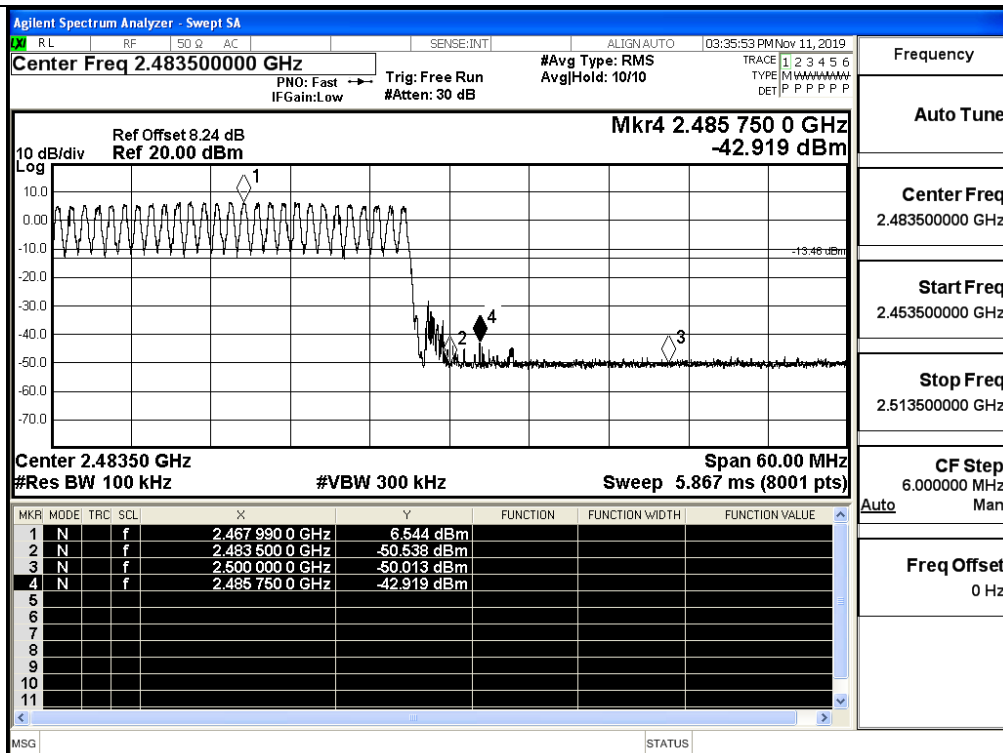


Frequency

Auto Tune

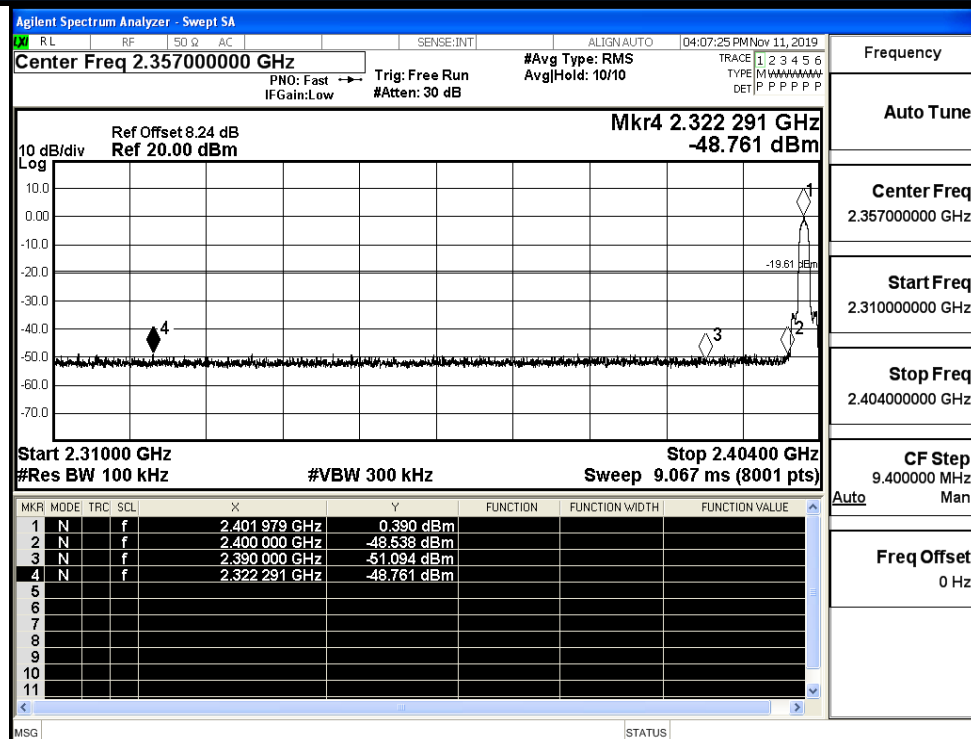
Center Freq
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2.478000000 GHzStop Freq
2.500000000 GHzCF Step
2.200000 MHz
AutoFreq Offset
0 Hz

GFSK/HCH/Hop



Frequency

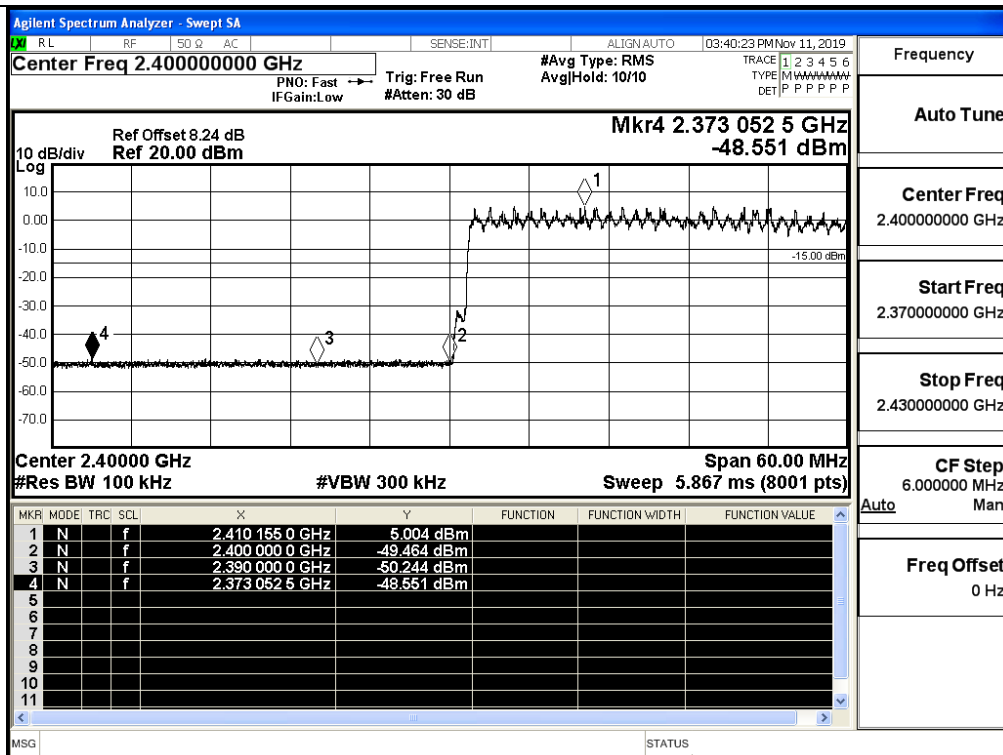
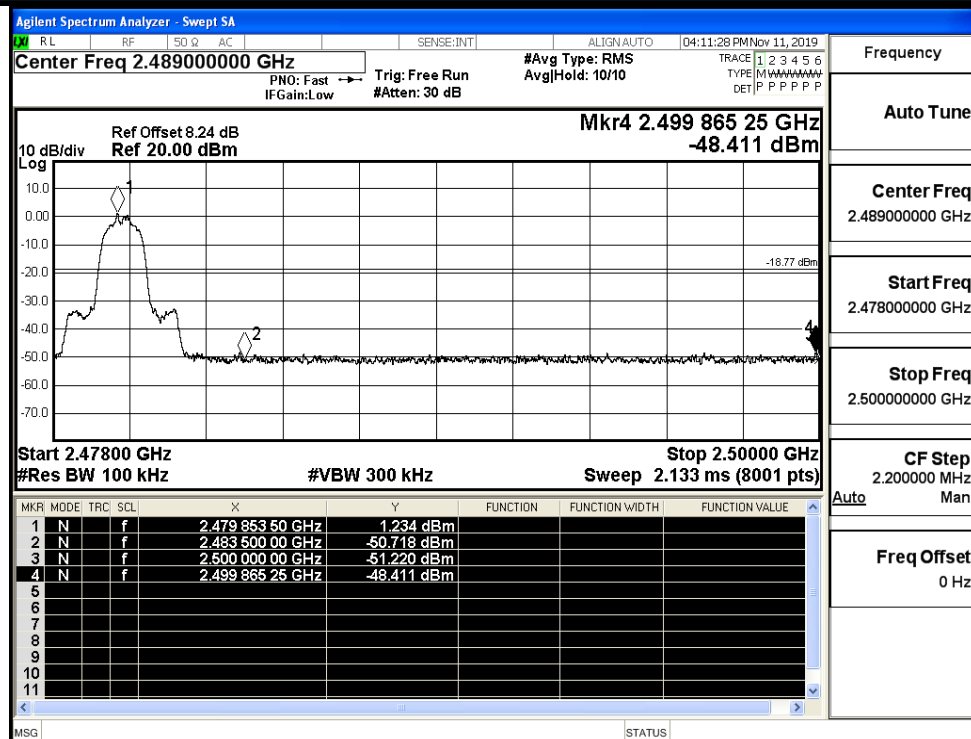
Auto Tune

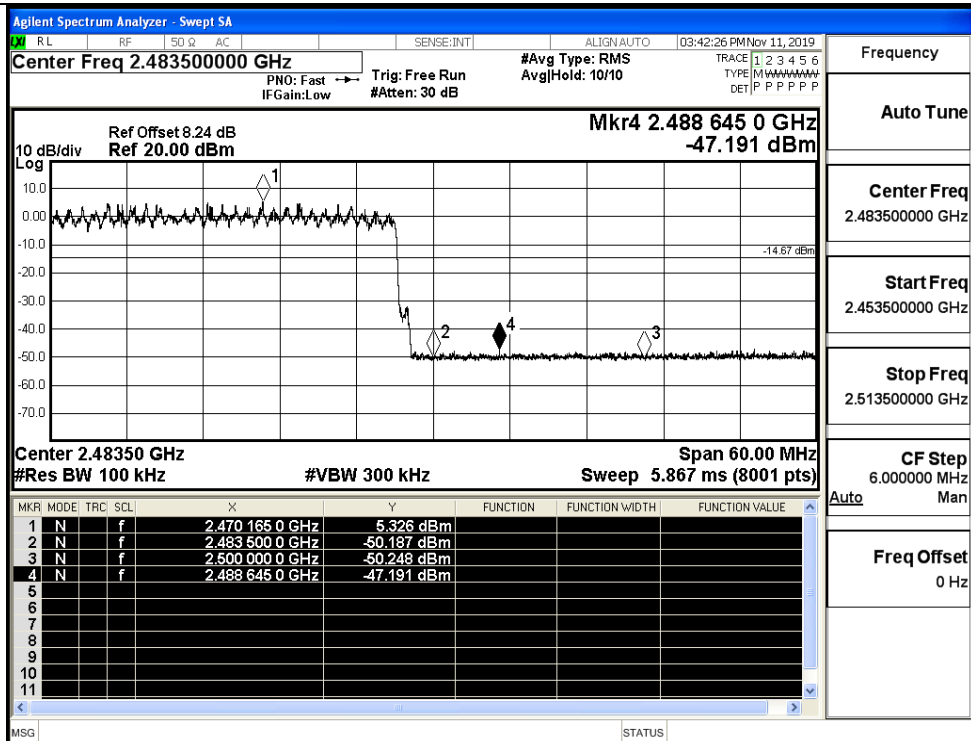
Center Freq
2.483500000 GHzStart Freq
2.453500000 GHzStop Freq
2.513500000 GHzCF Step
6.000000 MHz
AutoFreq Offset
0 Hz π /4DQPSK/LCH/No
Hop

Frequency

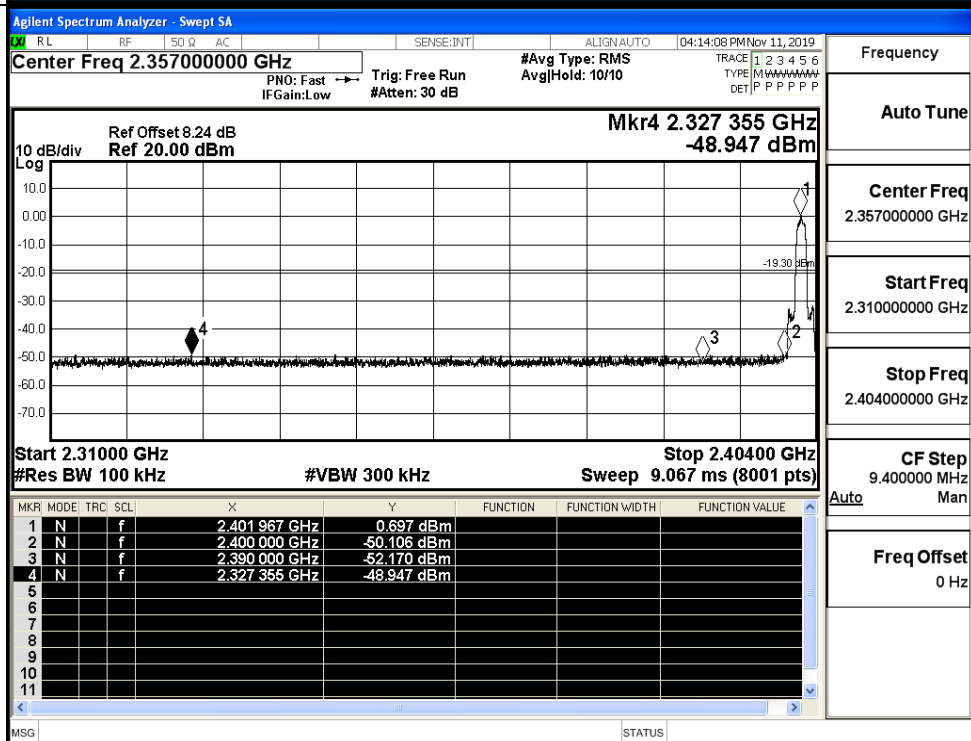
Auto Tune

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

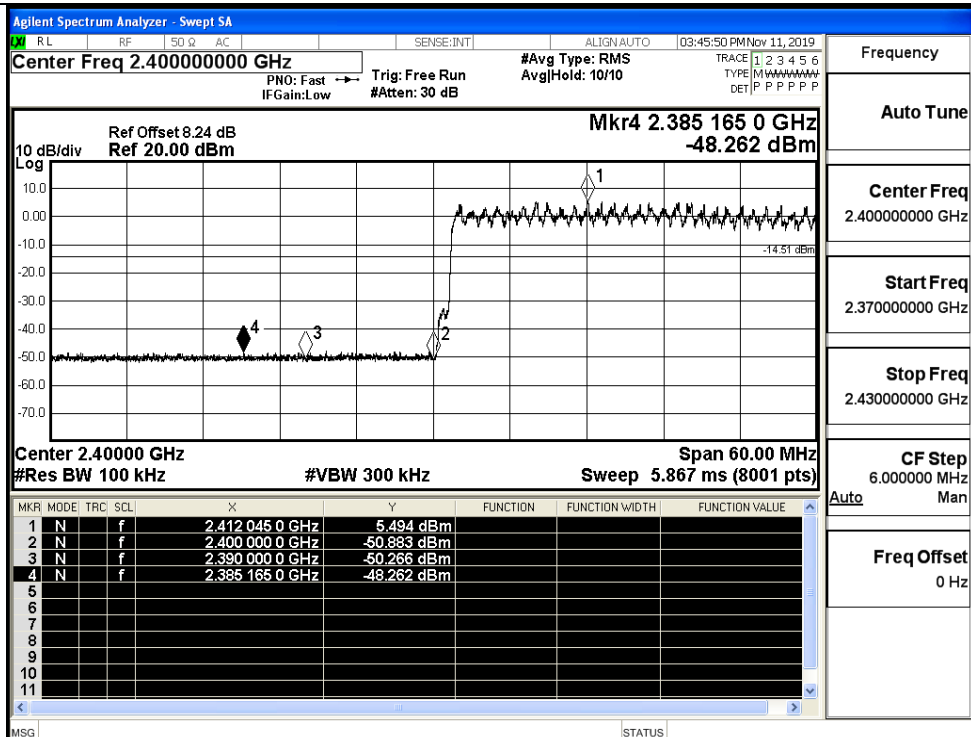
$\pi/4$ DQPSK/LCH/Hop $\pi/4$ DQPSK/HCH/No
Hop

$\pi/4$ DQPSK/HCH/Hop

8DPSK/LCH/No Hop



8DPSK/LCH/Hop



Frequency

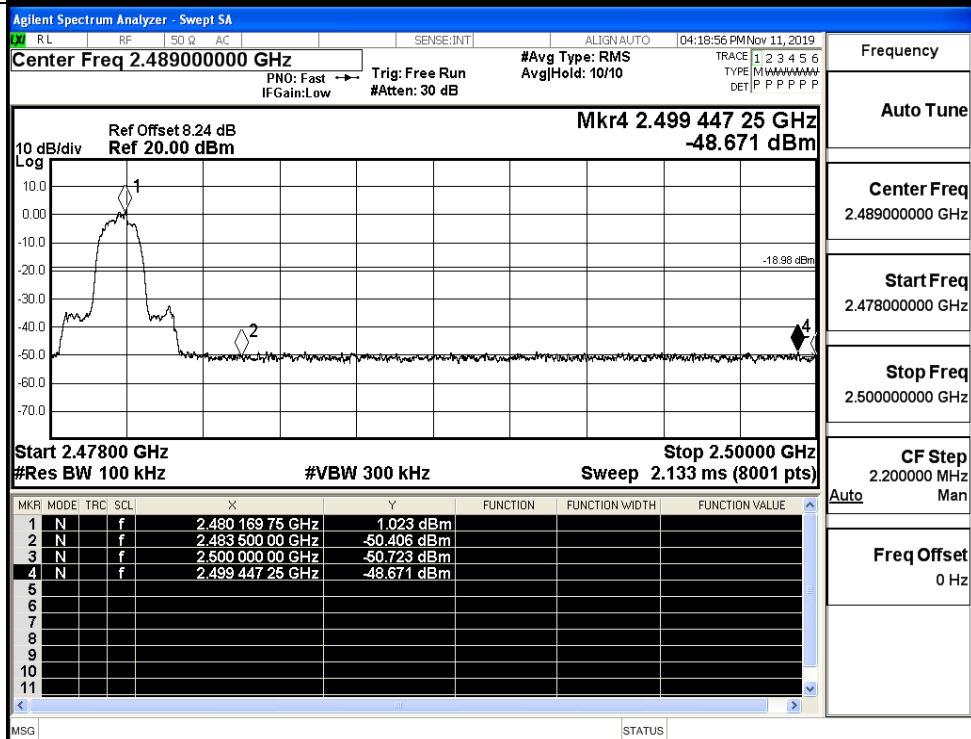
Auto Tune

Center Freq
2.400000000 GHzStart Freq
2.370000000 GHzStop Freq
2.430000000 GHzCF Step
6.000000 MHz

Auto

Freq Offset
0 Hz

8DPSK/HCH/No Hop



Frequency

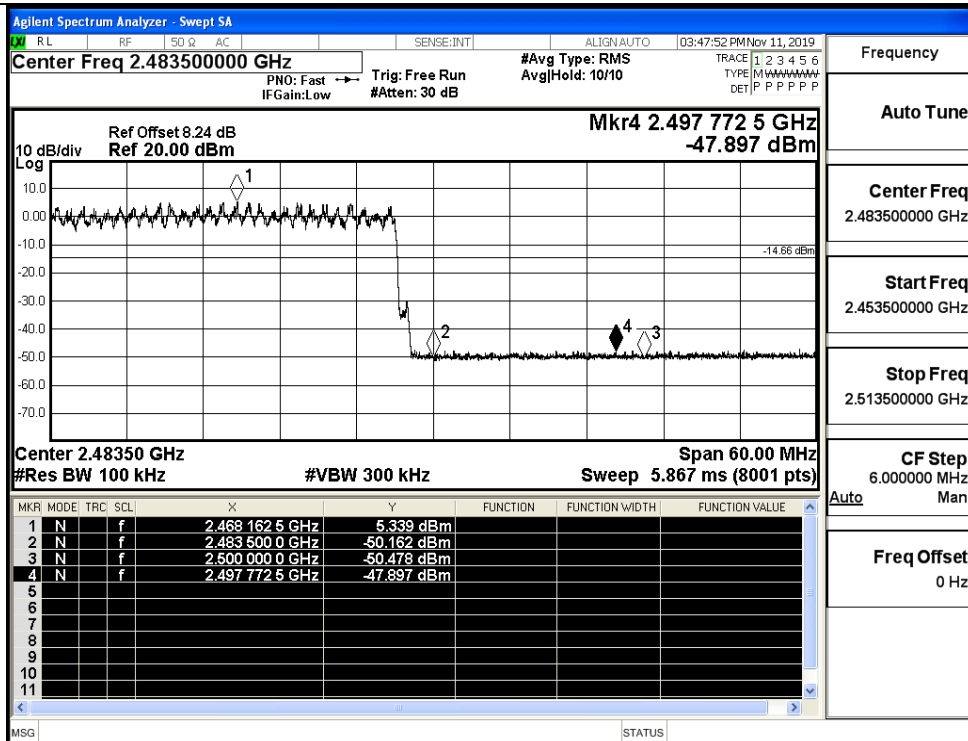
Auto Tune

Center Freq
2.489000000 GHzStart Freq
2.478000000 GHzStop Freq
2.500000000 GHzCF Step
2.200000 MHz

Auto

Freq Offset
0 Hz

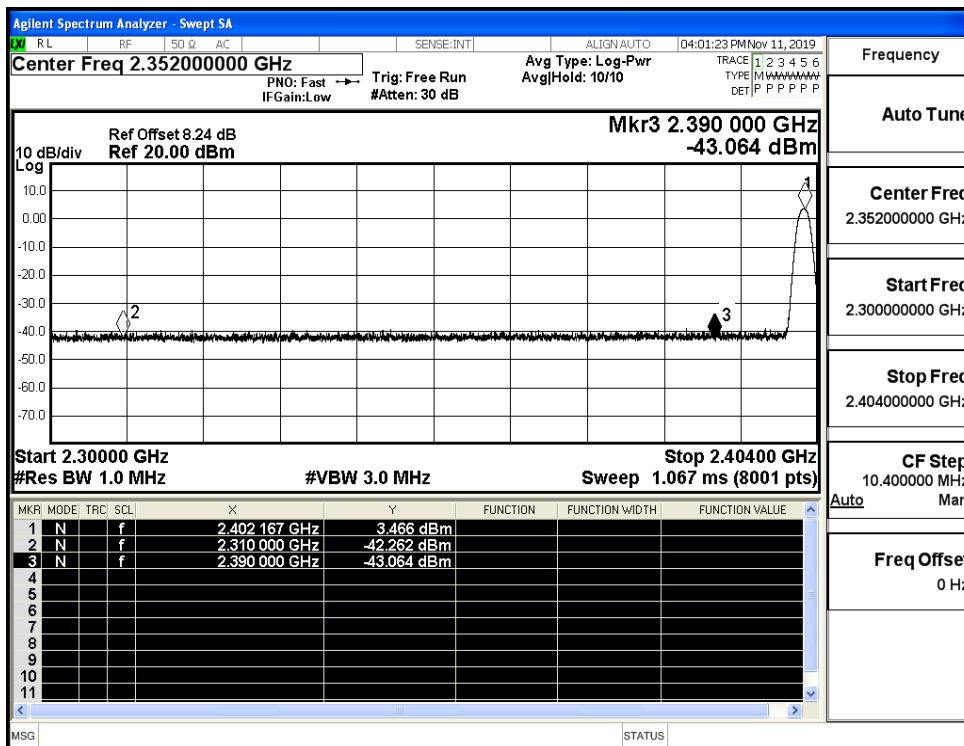
8DPSK/HCH/Hop



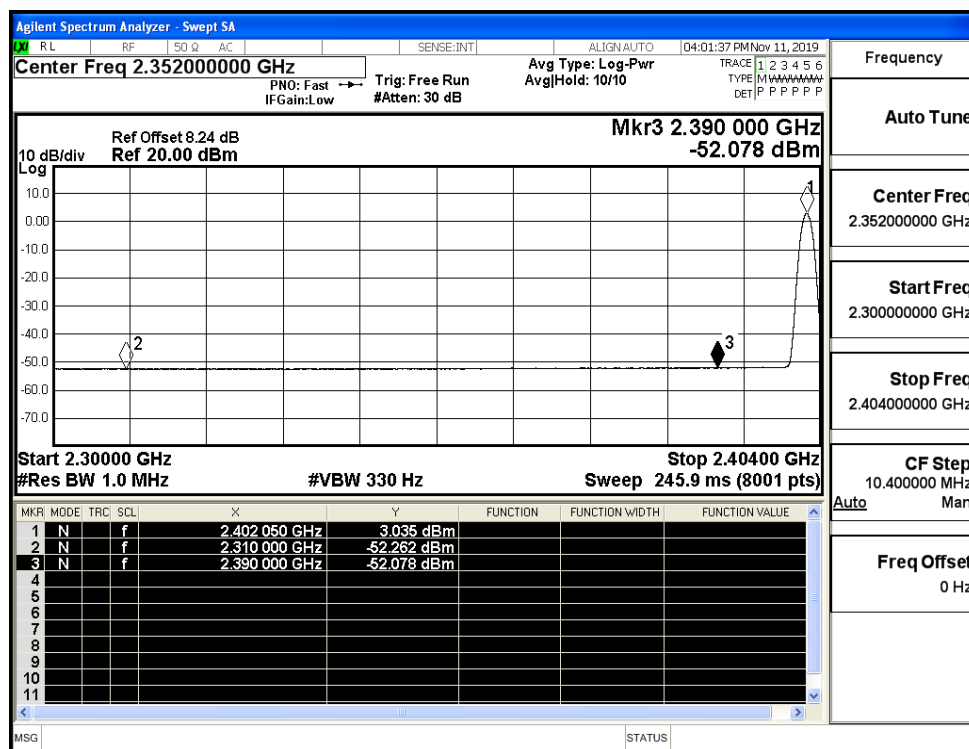
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-42.26	2.0	0	54.97	PEAK	74	PASS
	Off	2310.0	-52.26	2.0	0	44.97	AV	54	PASS
	Off	2390.0	-43.06	2.0	0	54.17	PEAK	74	PASS
	Off	2390.0	-52.08	2.0	0	45.15	AV	54	PASS
	Off	2483.5	-42.22	2.0	0	55.01	PEAK	74	PASS
	Off	2483.5	-51.60	2.0	0	45.63	AV	54	PASS
	Off	2500.0	-41.37	2.0	0	55.86	PEAK	74	PASS
	Off	2500.0	-51.36	2.0	0	45.87	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-41.83	2.0	0	55.40	PEAK	74	PASS
	Off	2310.0	-52.24	2.0	0	44.99	AV	54	PASS
	Off	2390.0	-41.84	2.0	0	55.39	PEAK	74	PASS
	Off	2390.0	-51.94	2.0	0	45.29	AV	54	PASS
	Off	2483.5	-40.71	2.0	0	56.52	PEAK	74	PASS
	Off	2483.5	-51.52	2.0	0	45.71	AV	54	PASS
	Off	2500.0	-41.32	2.0	0	55.91	PEAK	74	PASS
	Off	2500.0	-51.33	2.0	0	45.90	AV	54	PASS
8DPSK	Off	2310.0	-42.92	2.0	0	54.31	PEAK	74	PASS
	Off	2310.0	-52.28	2.0	0	44.95	AV	54	PASS
	Off	2390.0	-41.94	2.0	0	55.29	PEAK	74	PASS
	Off	2390.0	-51.96	2.0	0	45.27	AV	54	PASS
	Off	2483.5	-40.37	2.0	0	56.86	PEAK	74	PASS
	Off	2483.5	-51.50	2.0	0	45.73	AV	54	PASS
	Off	2500.0	-41.86	2.0	0	55.37	PEAK	74	PASS
	Off	2500.0	-51.38	2.0	0	45.85	AV	54	PASS

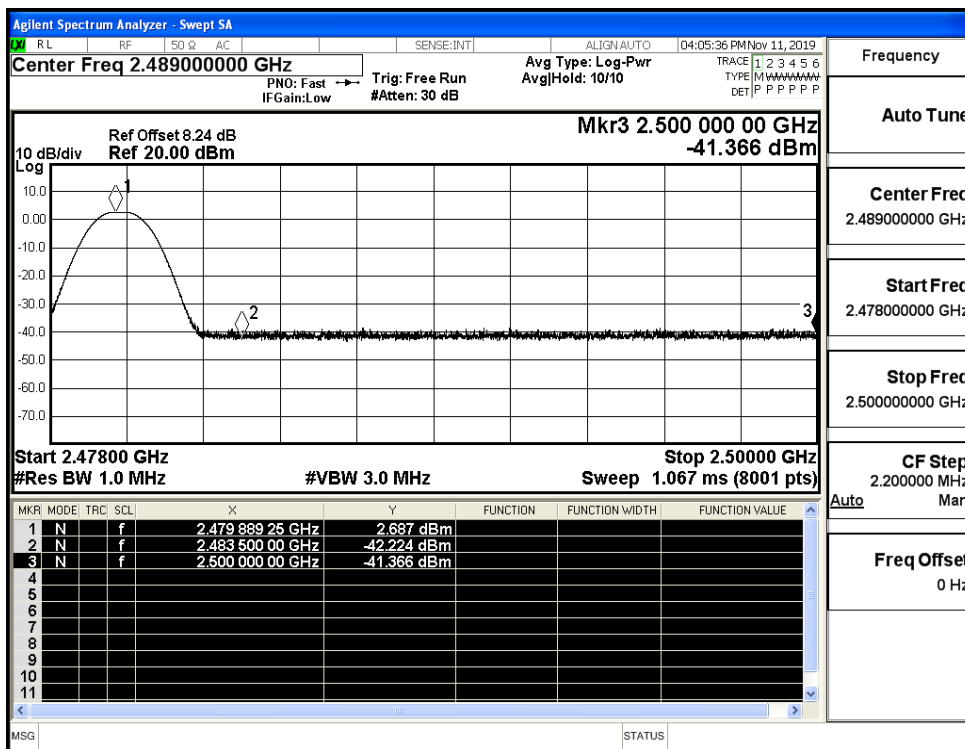
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



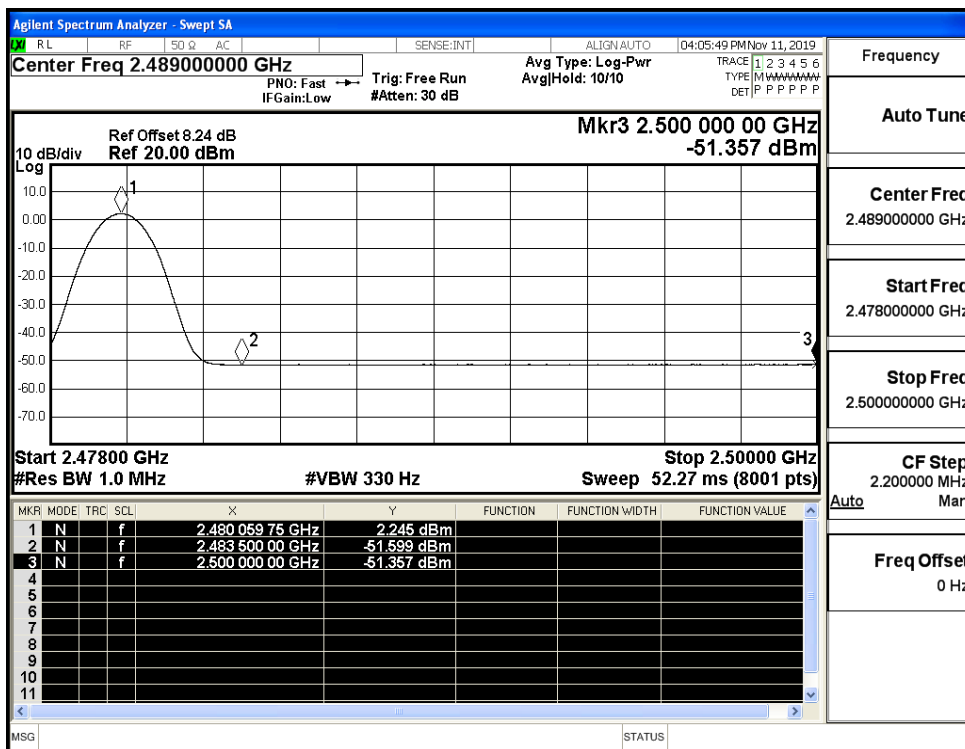
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)



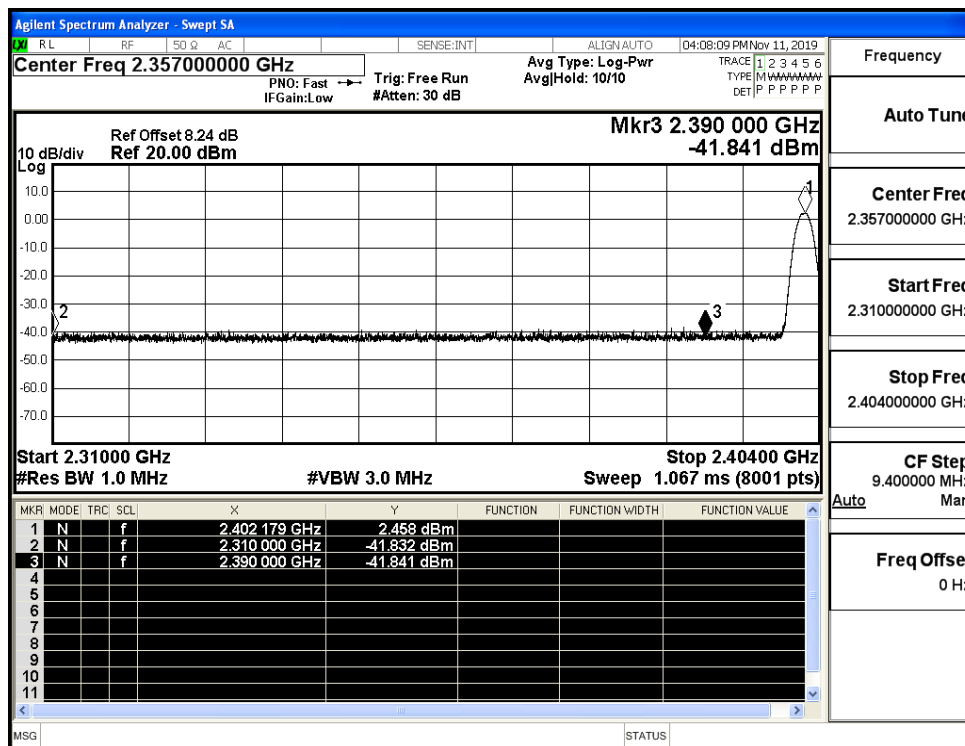
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)



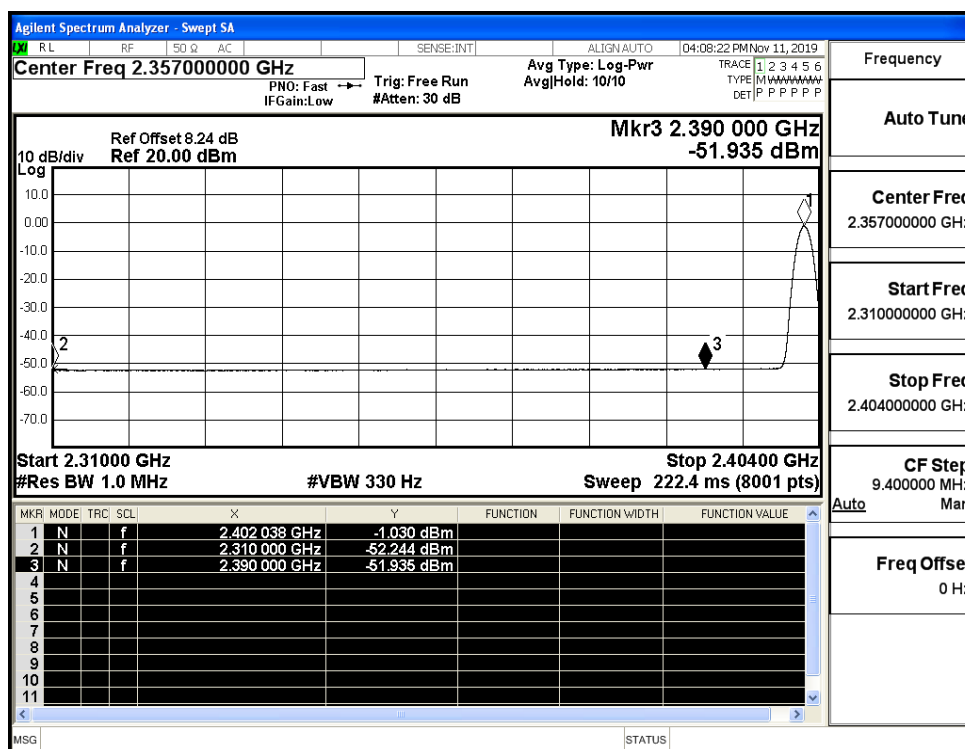
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)



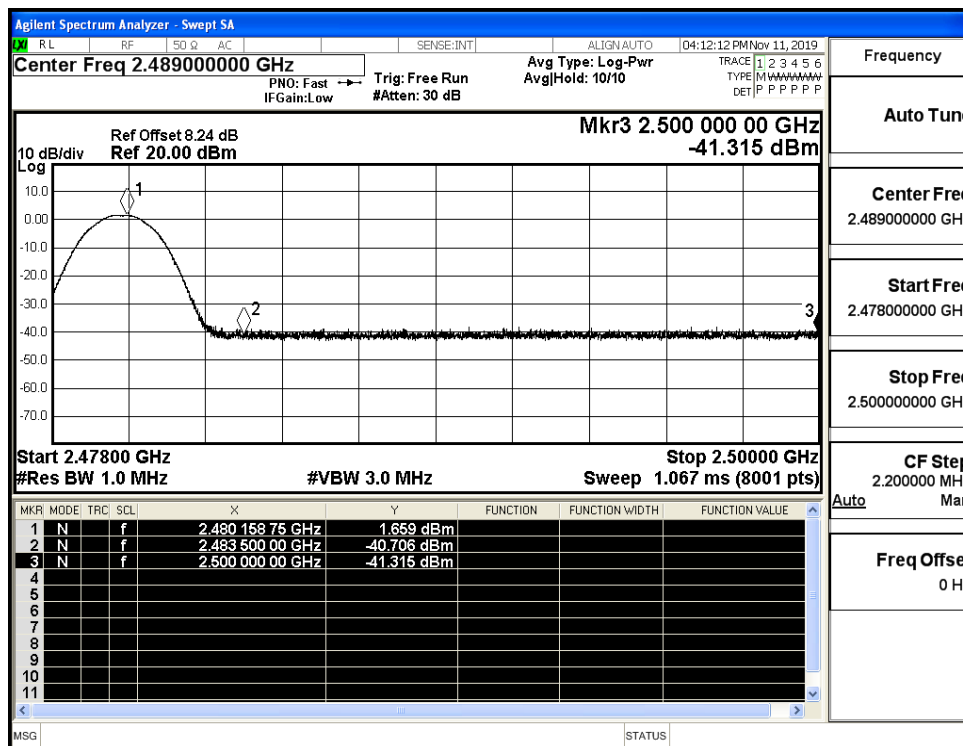
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (Low Channel)



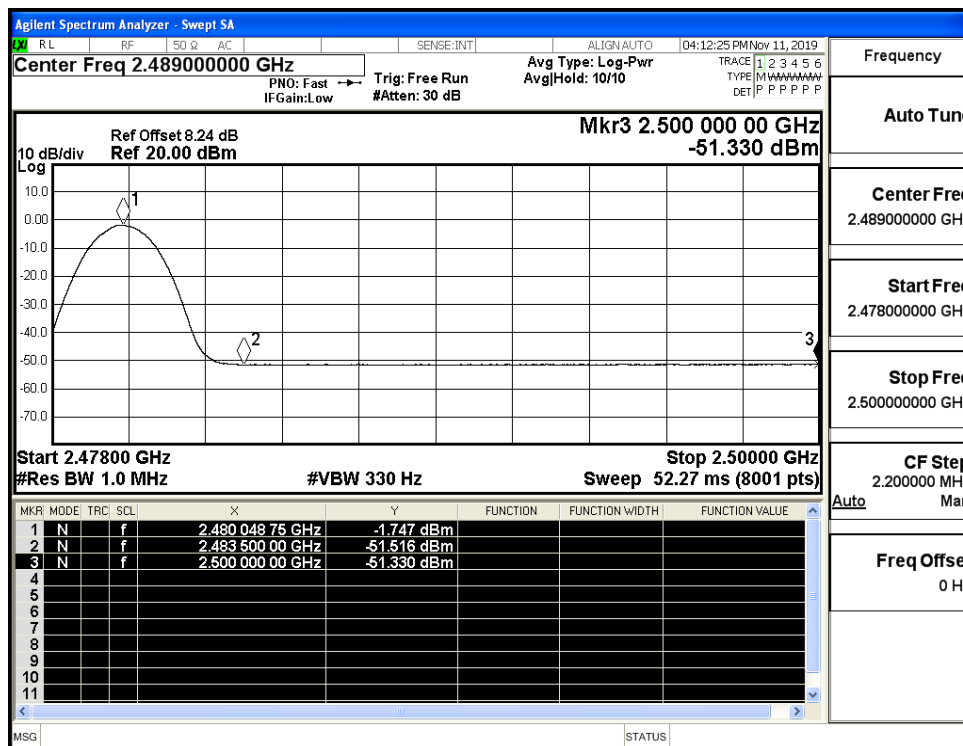
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (Low Channel)



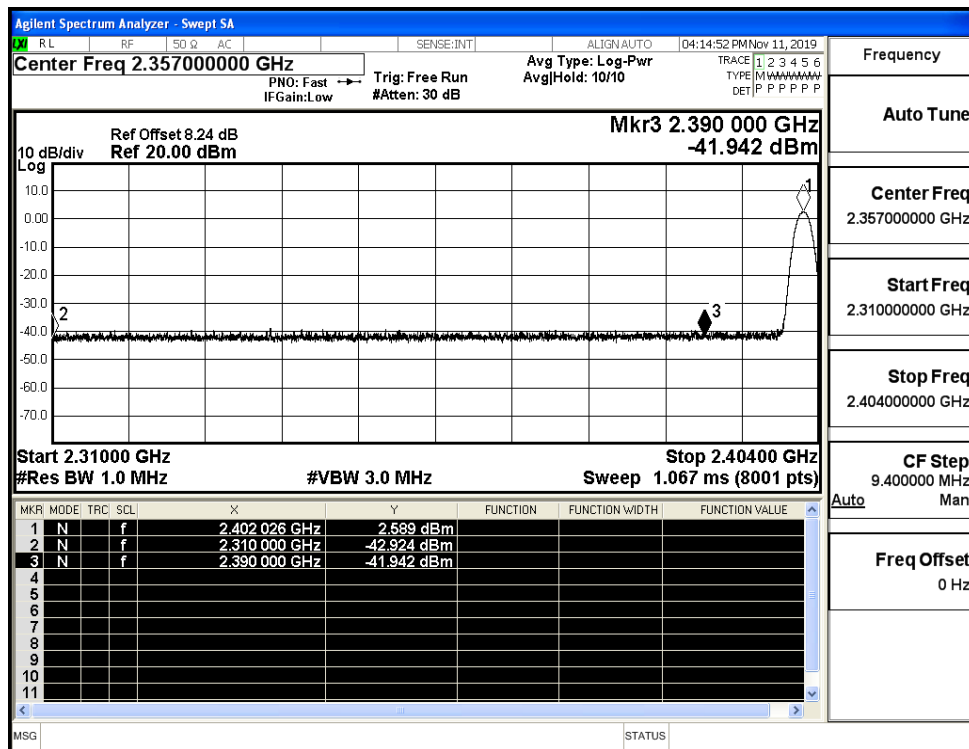
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (High Channel)



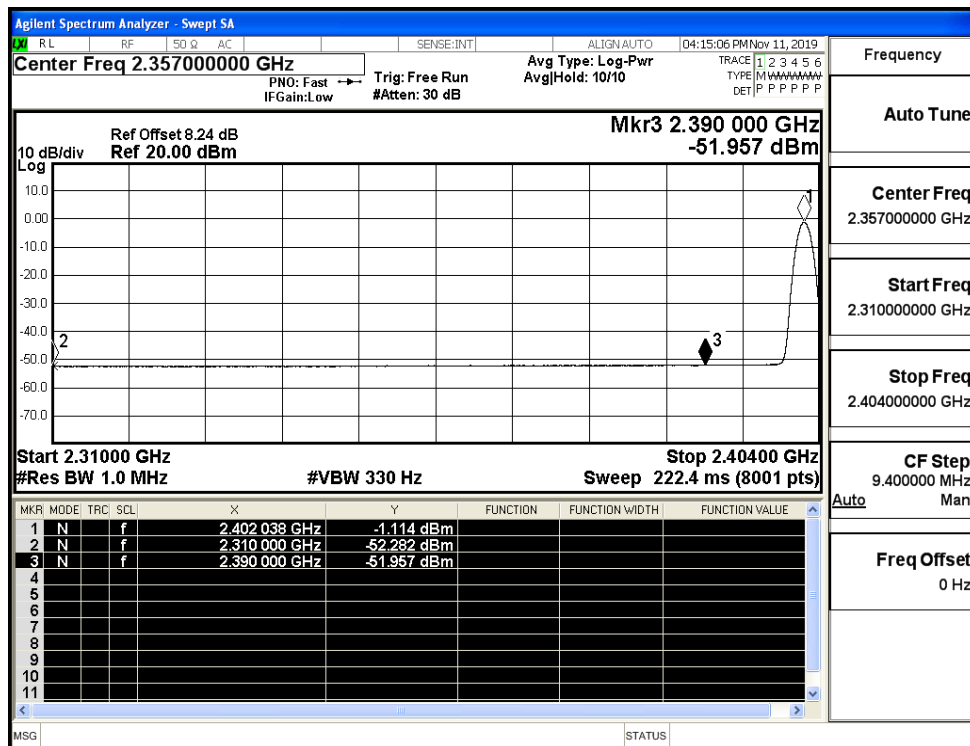
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (High Channel)



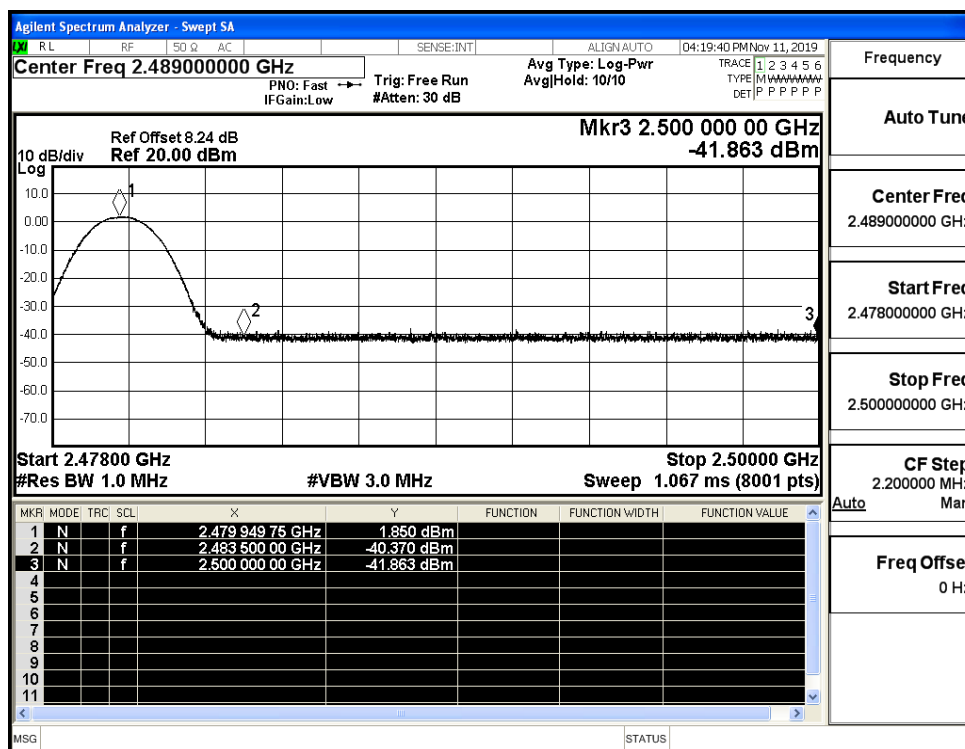
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)

