

Appendix A

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

Product Name: Bluetooth Speaker

Trade Mark: Cyber Acoustics

Test Model: CA-2885BT

Environmental Conditions

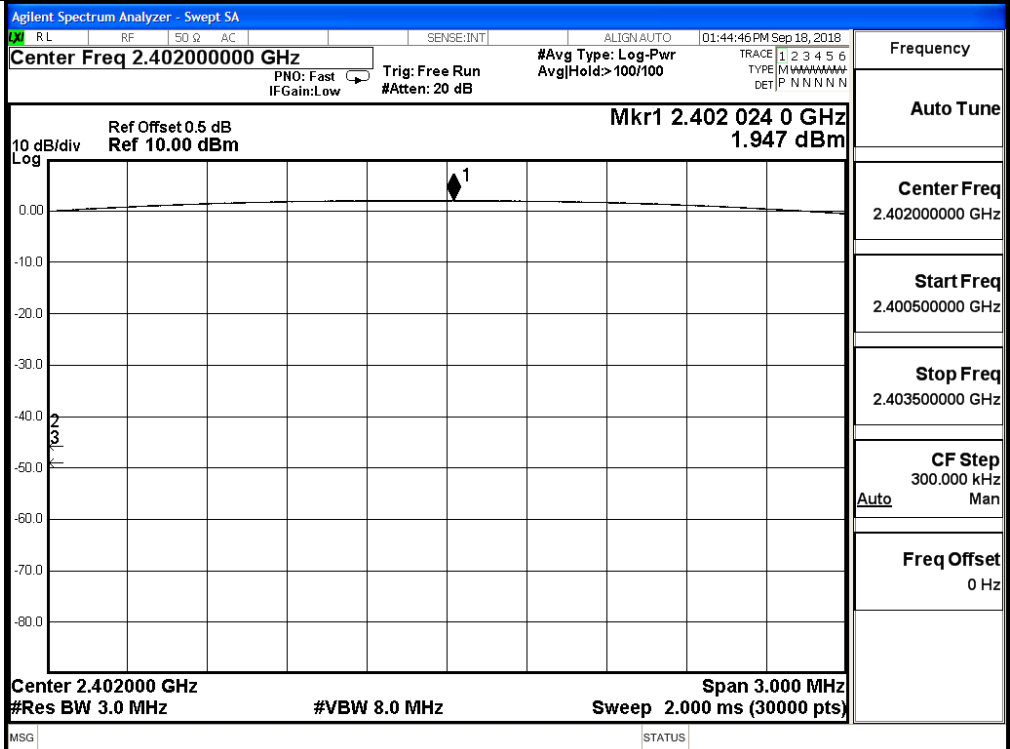
Temperature:	23.8 ° C
Relative Humidity:	51.7%
ATM Pressure:	100.0 kPa
Test Engineer:	Tom.Liu
Supervised by:	Jayden.Zhuo

A.1 Maximum Conducted Peak Output Power

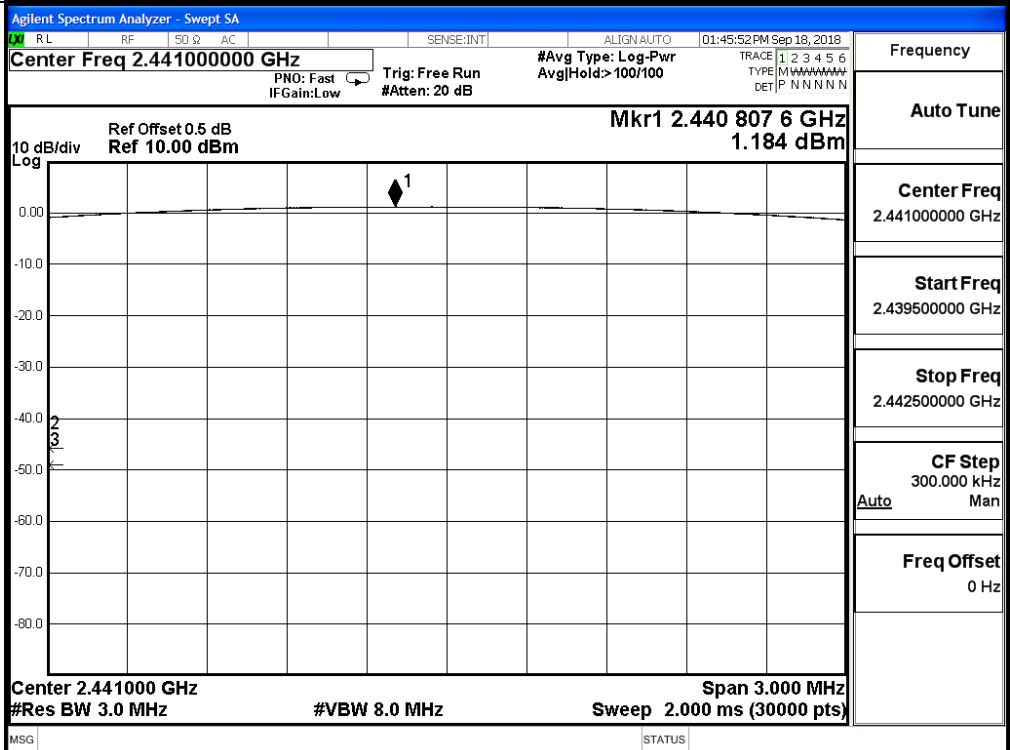
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	1.947	21	PASS
	MCH	1.184	21	PASS
	HCH	-0.472	21	PASS
$\pi/4$ DQPSK	LCH	0.921	21	PASS
	MCH	0.281	21	PASS
	HCH	-1.184	21	PASS
8DPSK	LCH	1.239	21	PASS
	MCH	0.489	21	PASS
	HCH	-0.939	21	PASS

Test Graphs

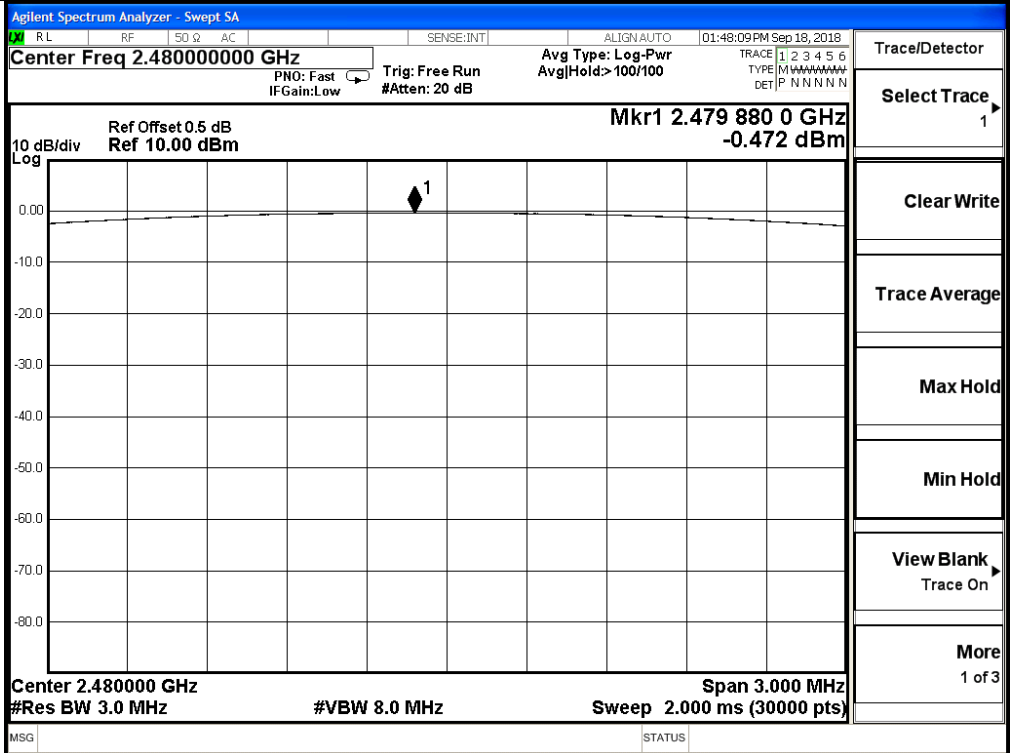
GFSK/LCH



GFSK/MCH



GFSK/HCH



Trace/Detector

Select Trace 1

Clear Write

Trace Average

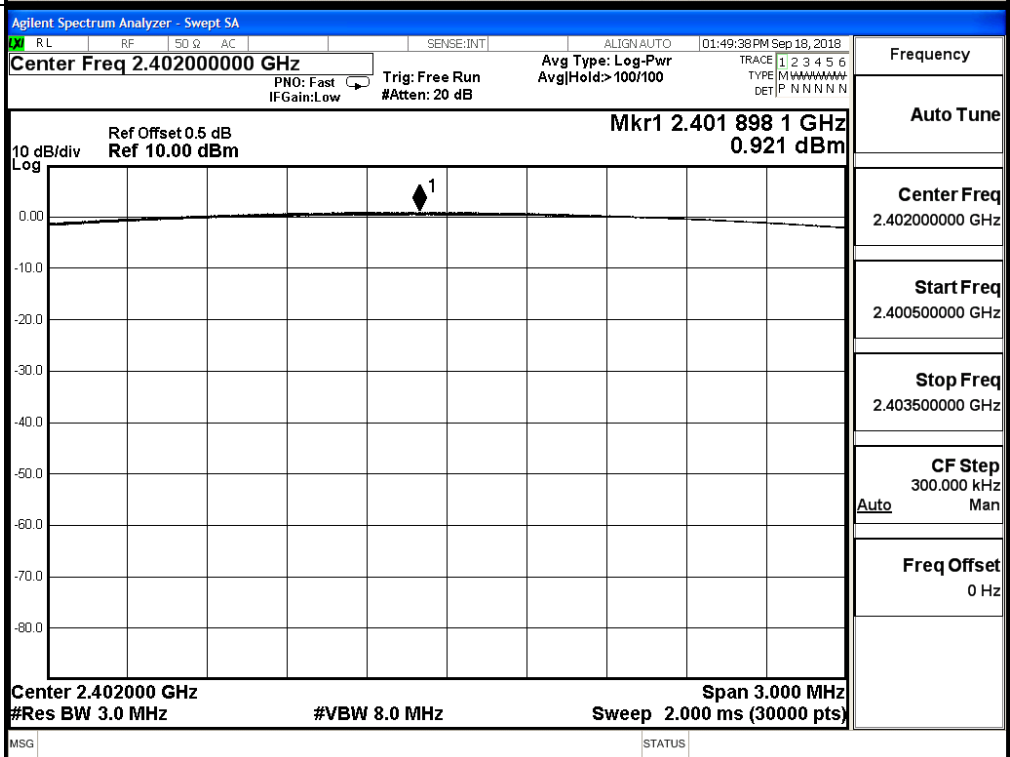
Max Hold

Min Hold

View Blank Trace On

More 1 of 3

π /4DQPSK/LCH



Frequency

Auto Tune

Center Freq 2.402000000 GHz

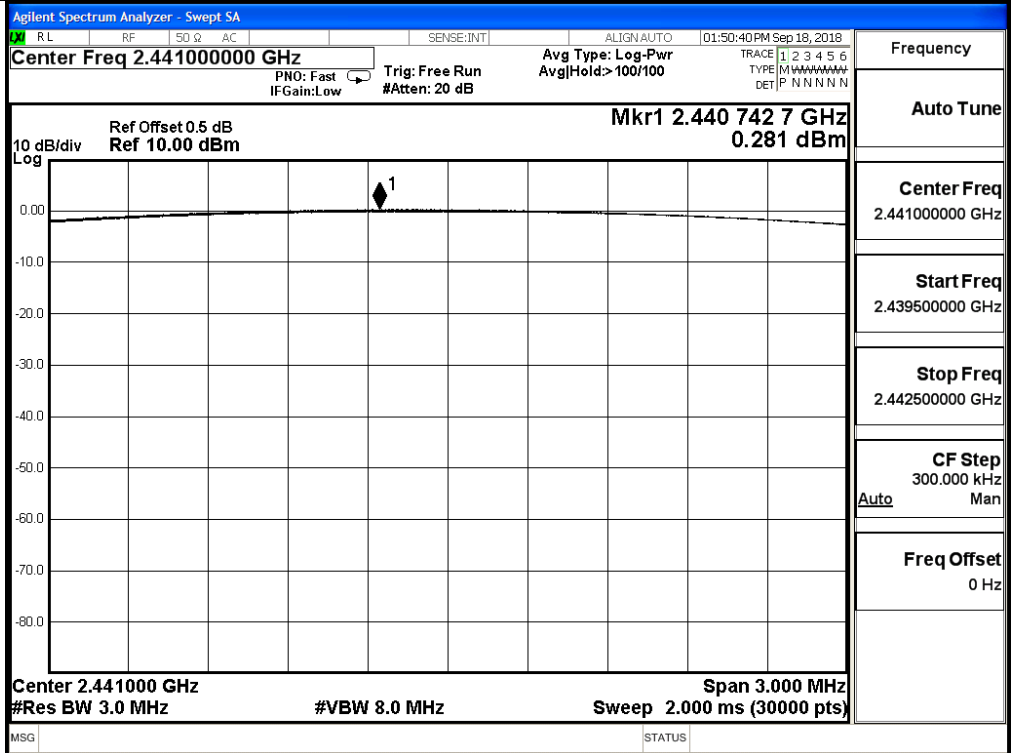
Start Freq 2.400500000 GHz

Stop Freq 2.403500000 GHz

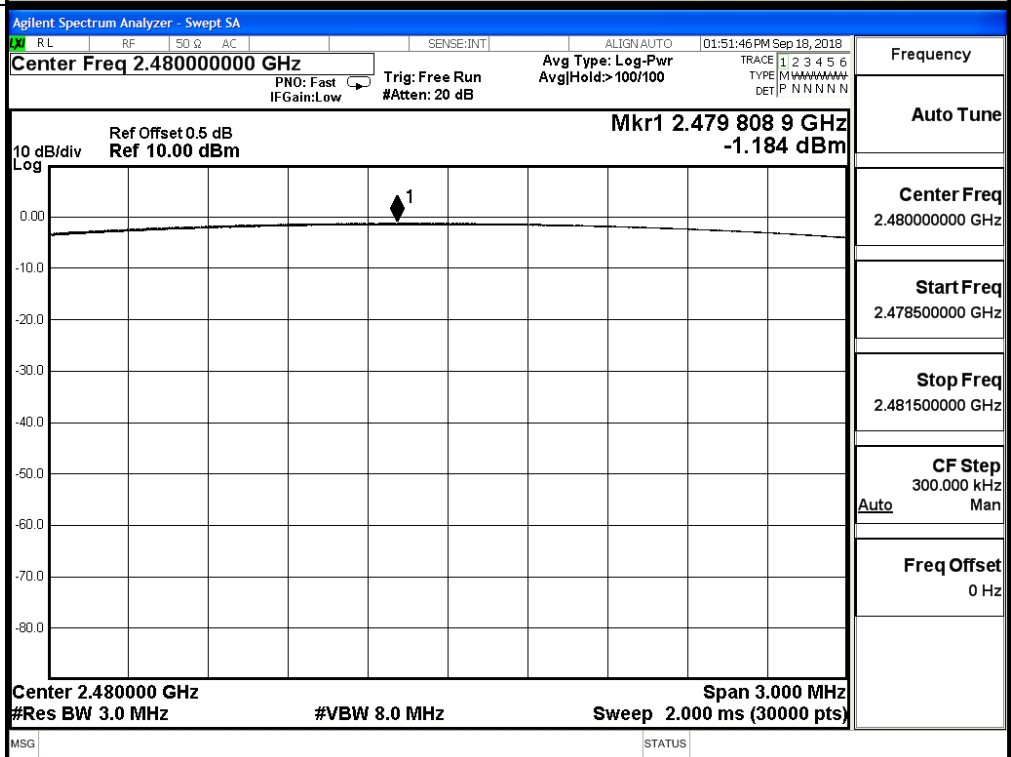
CF Step 300.000 kHz
Auto Man

Freq Offset 0 Hz

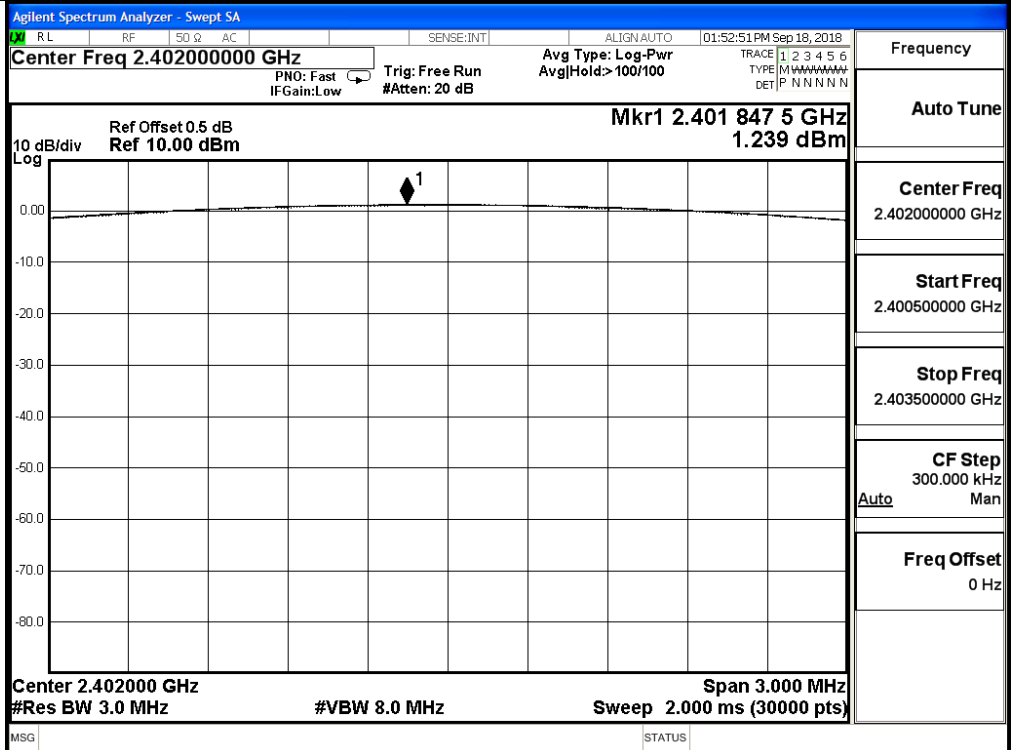
$\pi/4$ DQPSK/MCH



$\pi/4$ DQPSK/HCH

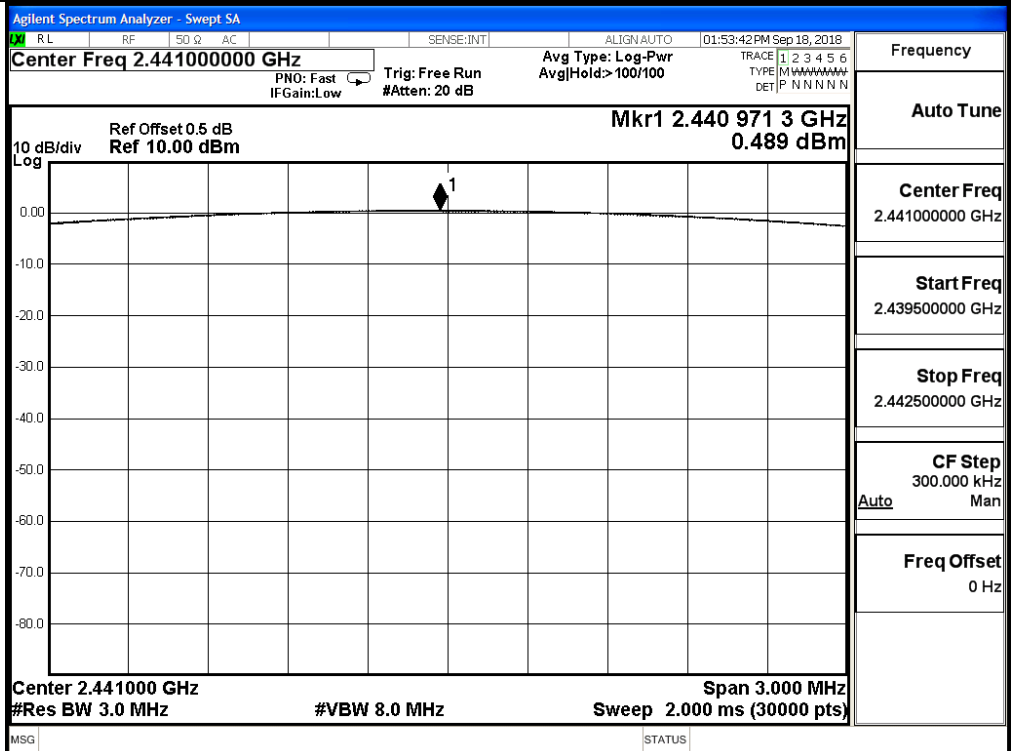


8DPSK/LCH

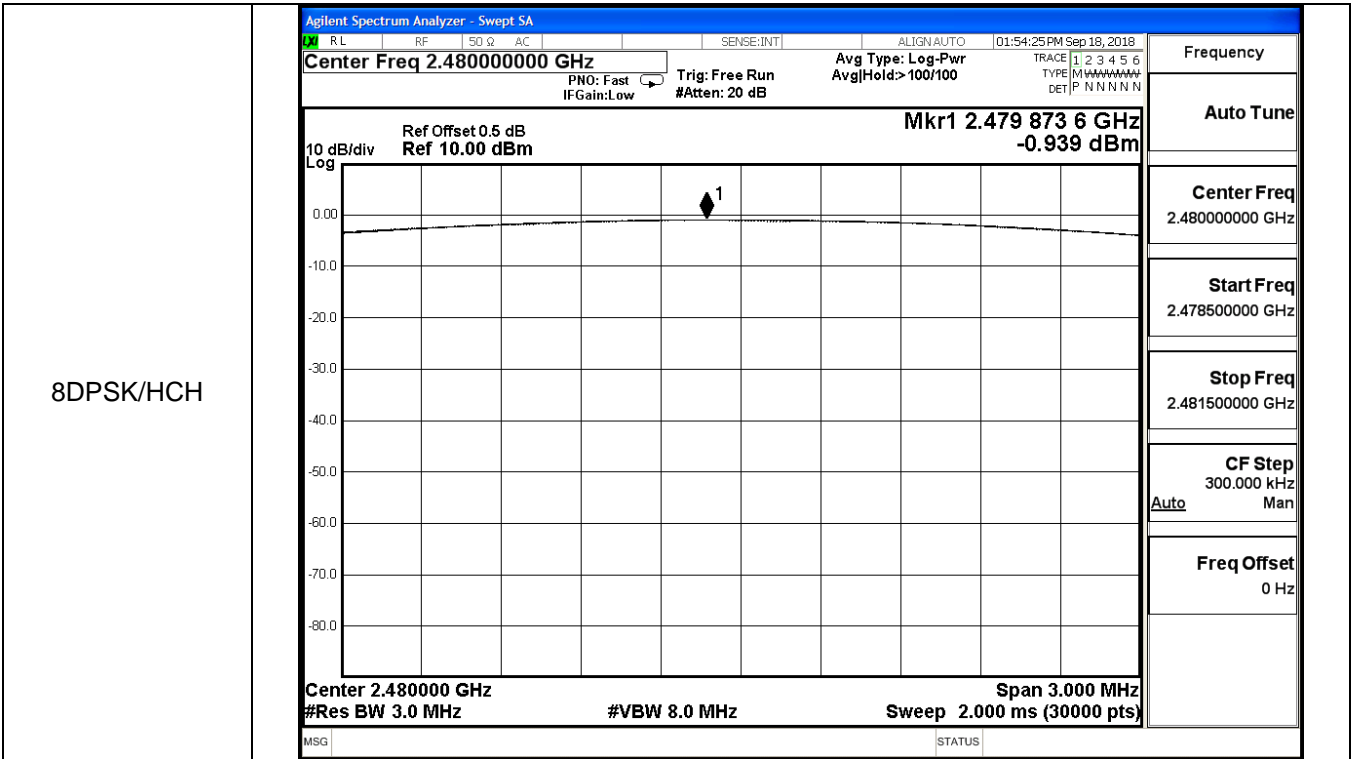


Frequency	
Auto Tune	
Center Freq	2.402000000 GHz
Start Freq	2.400500000 GHz
Stop Freq	2.403500000 GHz
CF Step	300.000 kHz
Auto	Man
Freq Offset	0 Hz

8DPSK/MCH

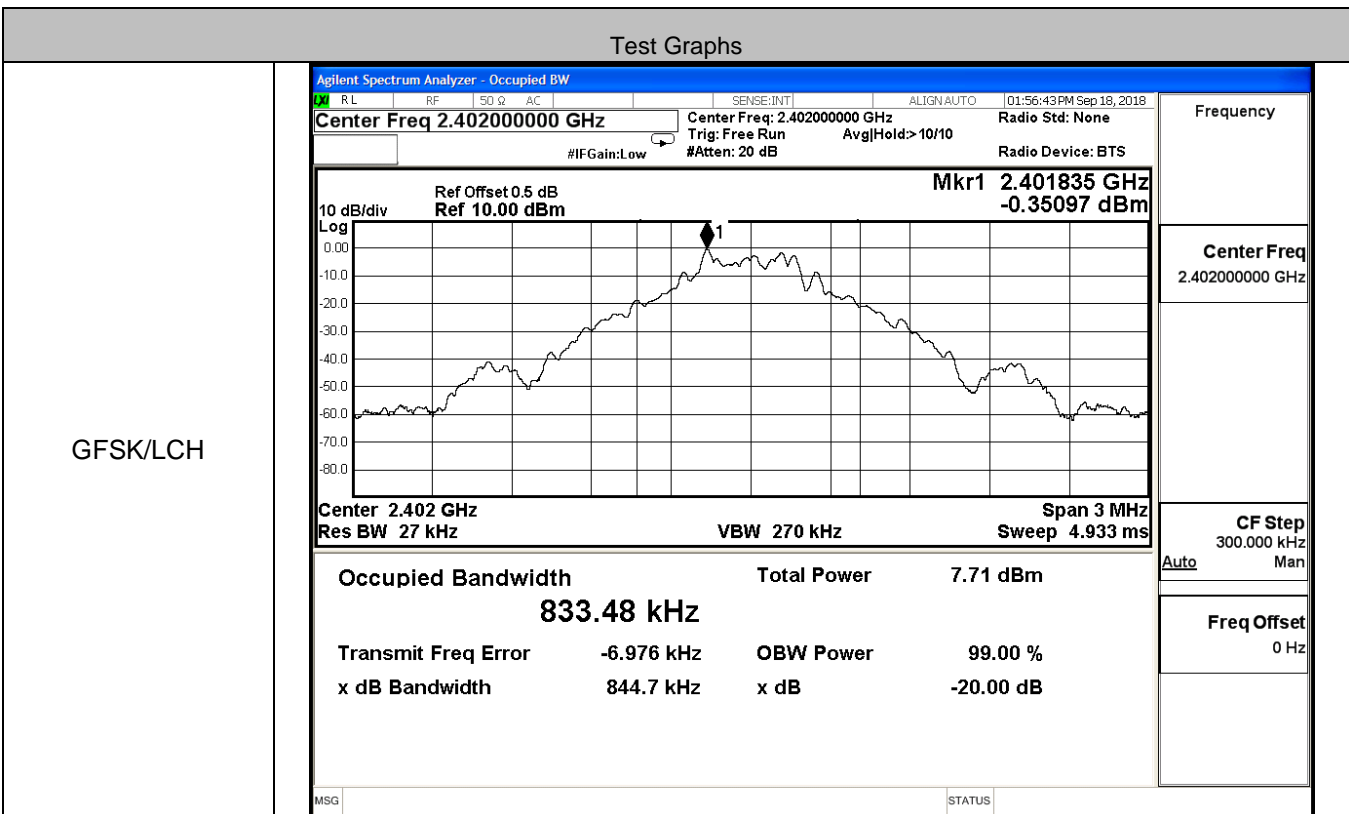


Frequency	
Auto Tune	
Center Freq	2.441000000 GHz
Start Freq	2.439500000 GHz
Stop Freq	2.442500000 GHz
CF Step	300.000 kHz
Auto	Man
Freq Offset	0 Hz

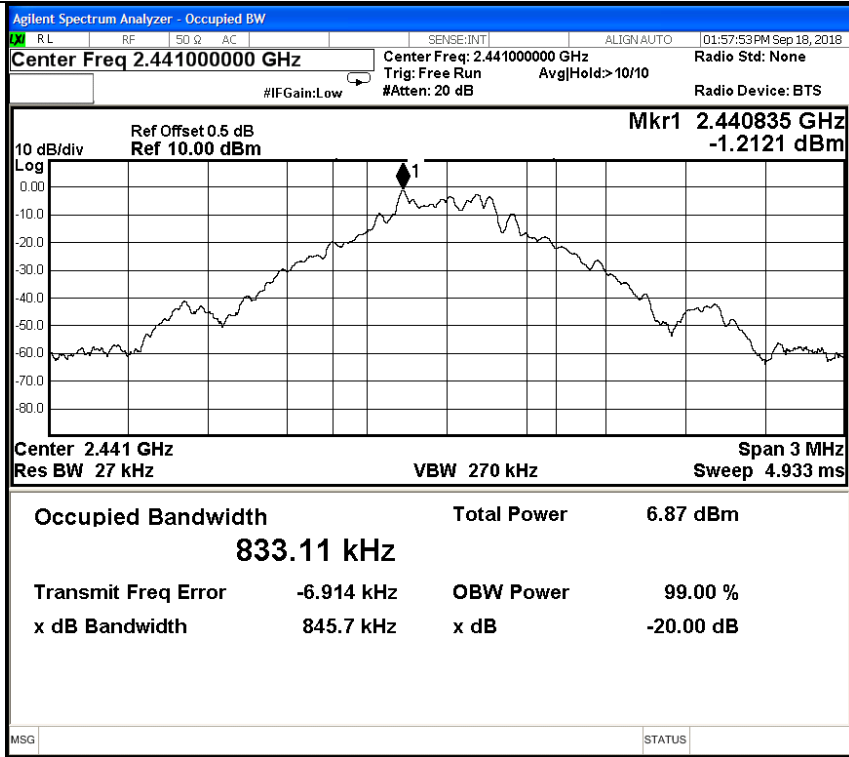


A.2 20dB Bandwidth

Mode	Channel.	99% Bandwidth [MHz]	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.83349	0.8447	Not Specified	PASS
	MCH	0.83311	0.8457	Not Specified	PASS
	HCH	0.83418	0.8448	Not Specified	PASS
π/4DQPSK	LCH	1.1756	1.285	Not Specified	PASS
	MCH	1.1909	1.285	Not Specified	PASS
	HCH	1.2008	1.287	Not Specified	PASS
8DPSK	LCH	1.1239	1.273	Not Specified	PASS
	MCH	1.1291	1.275	Not Specified	PASS
	HCH	1.1334	1.276	Not Specified	PASS

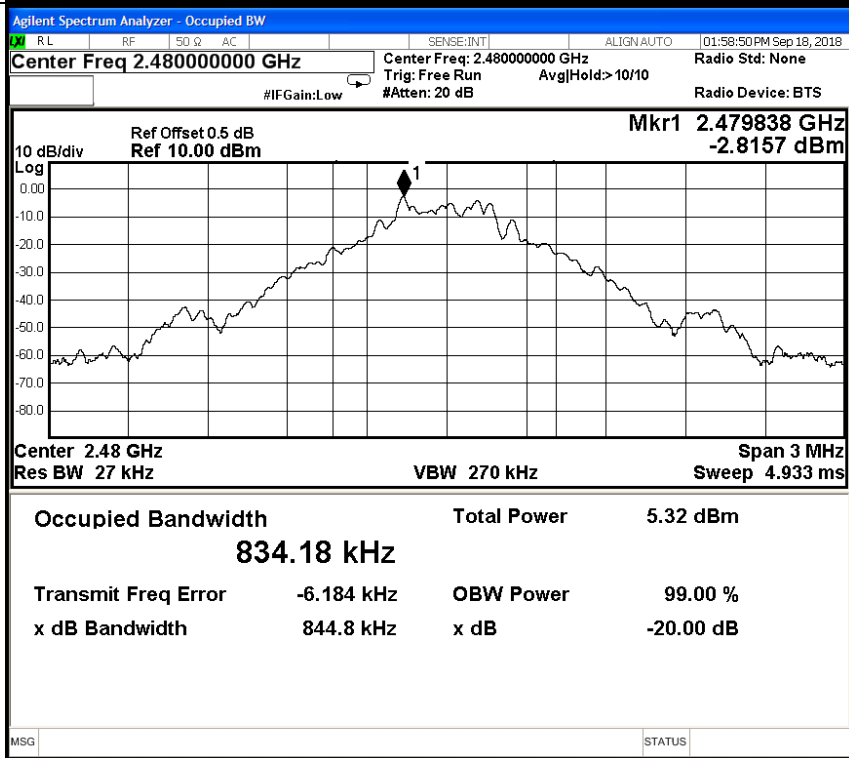


GFSK/MCH



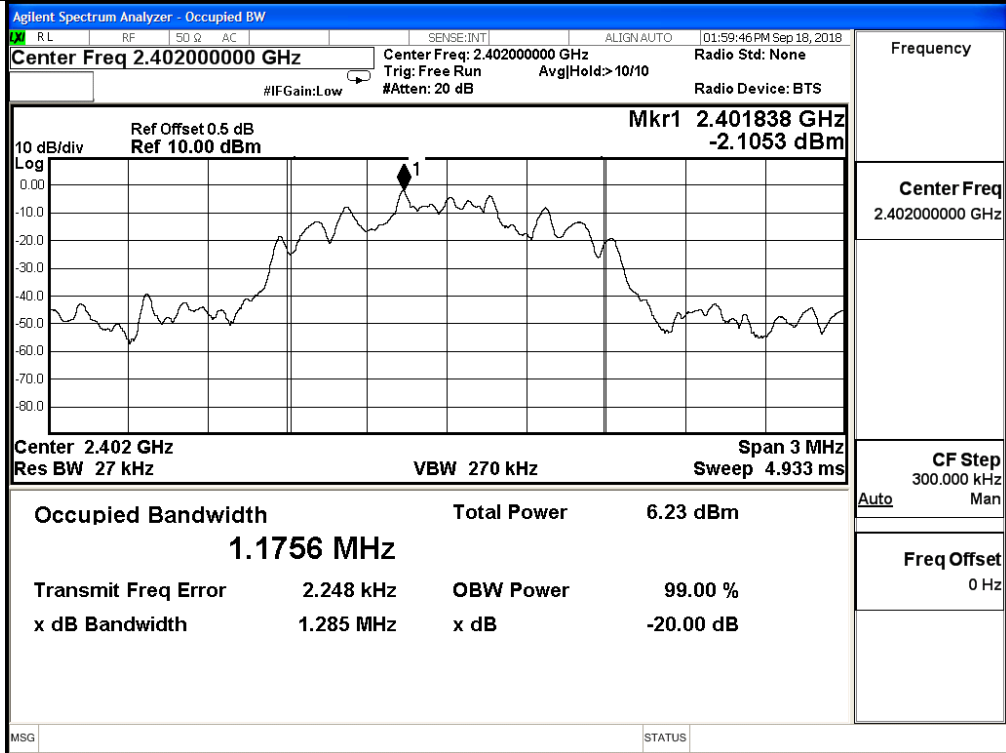
Frequency	2.441000000 GHz
Center Freq	2.441000000 GHz
CF Step	300.000 kHz
Auto	Man
Freq Offset	0 Hz

GFSK/HCH

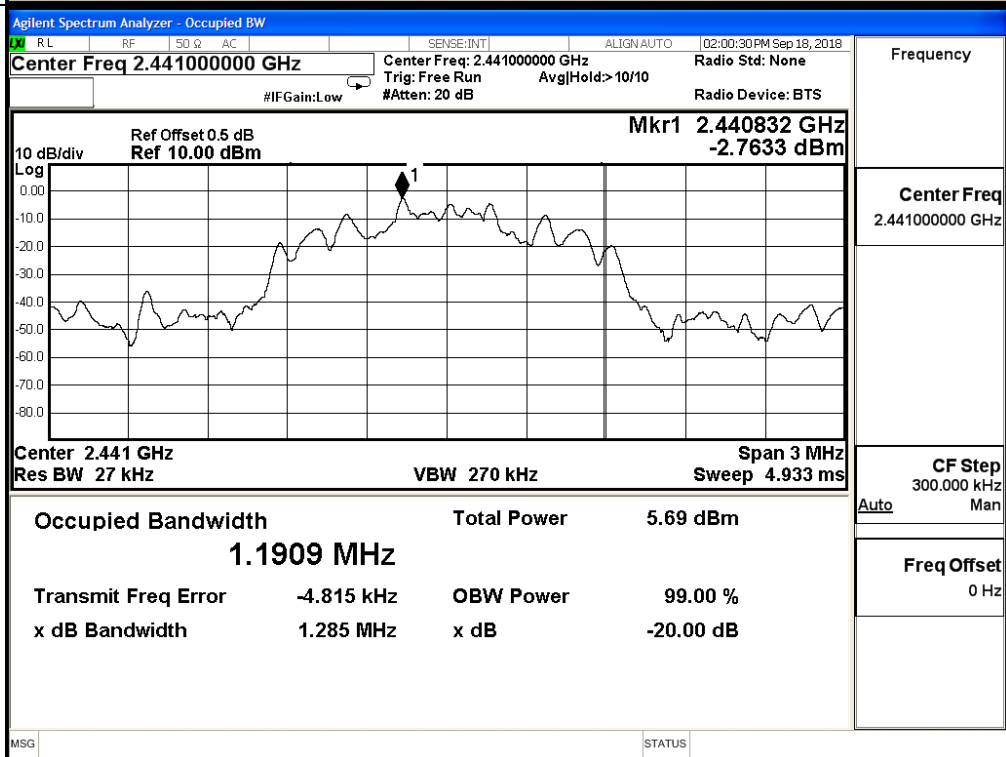


Frequency	2.480000000 GHz
Center Freq	2.480000000 GHz
CF Step	300.000 kHz
Auto	Man
Freq Offset	0 Hz

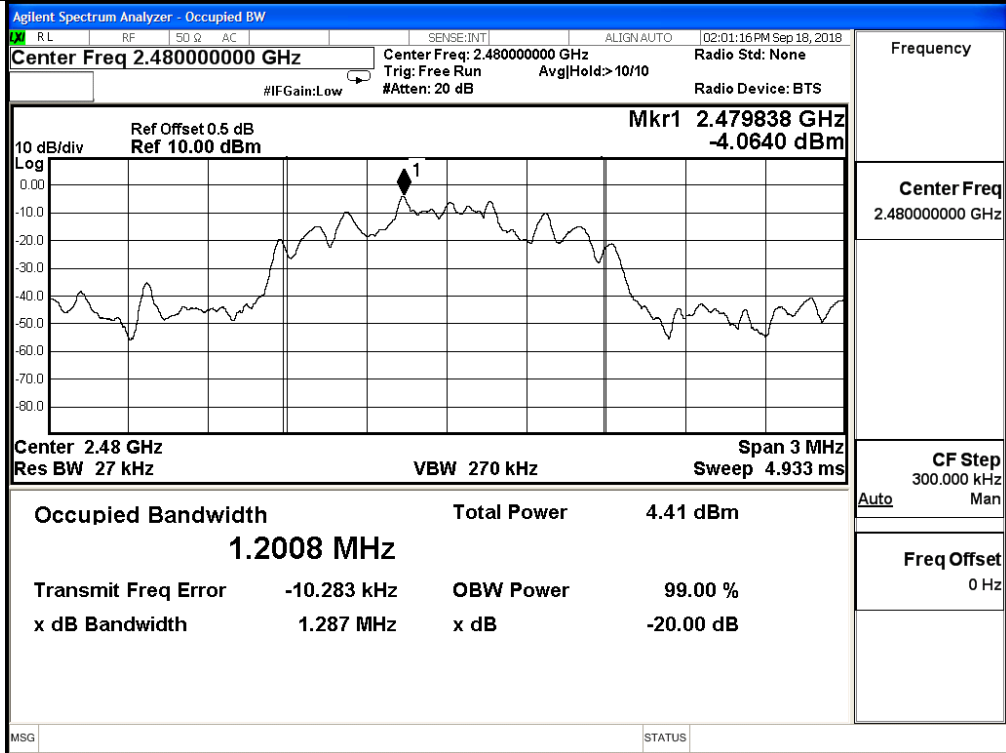
π/4DQPSK/LCH



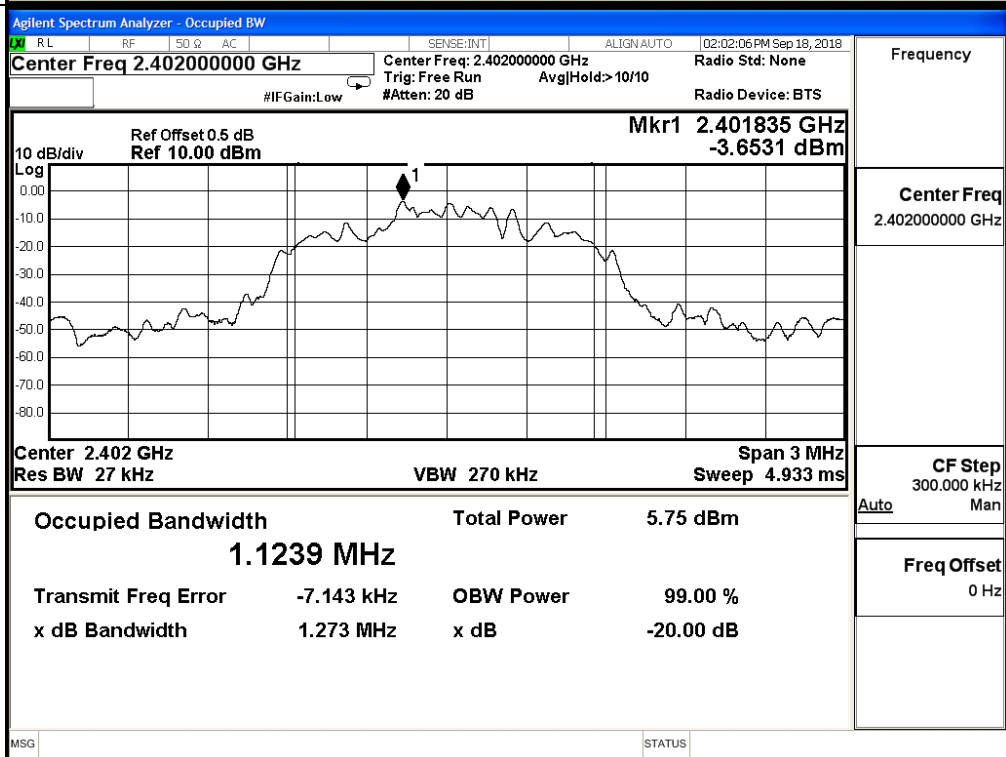
π/4DQPSK/MCH



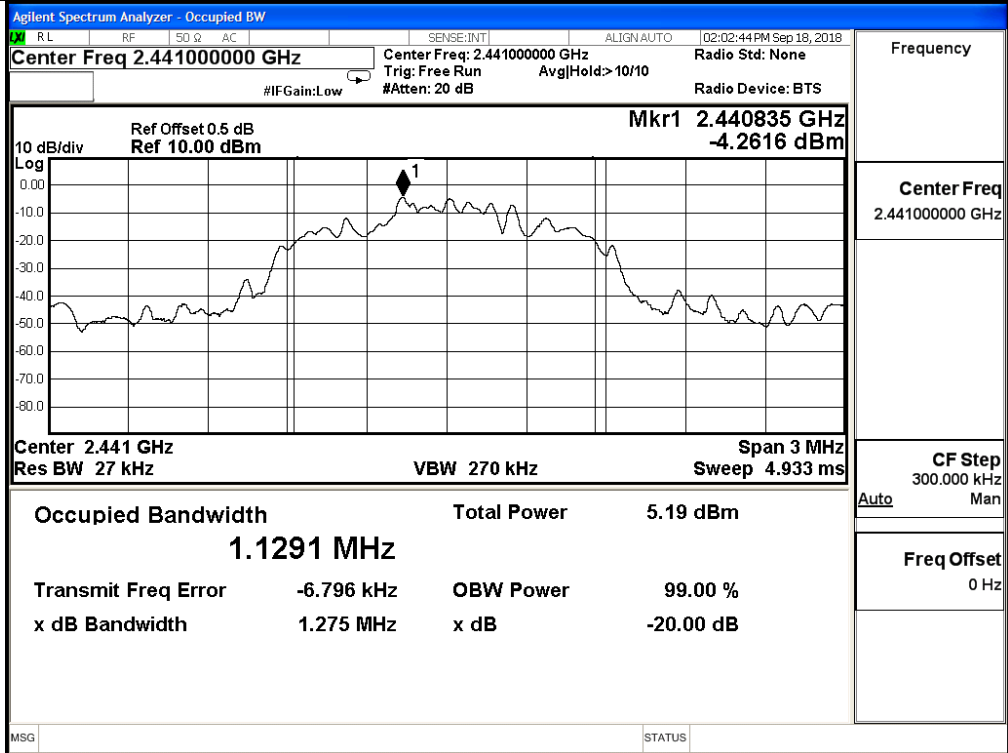
π/4DQPSK/HCH



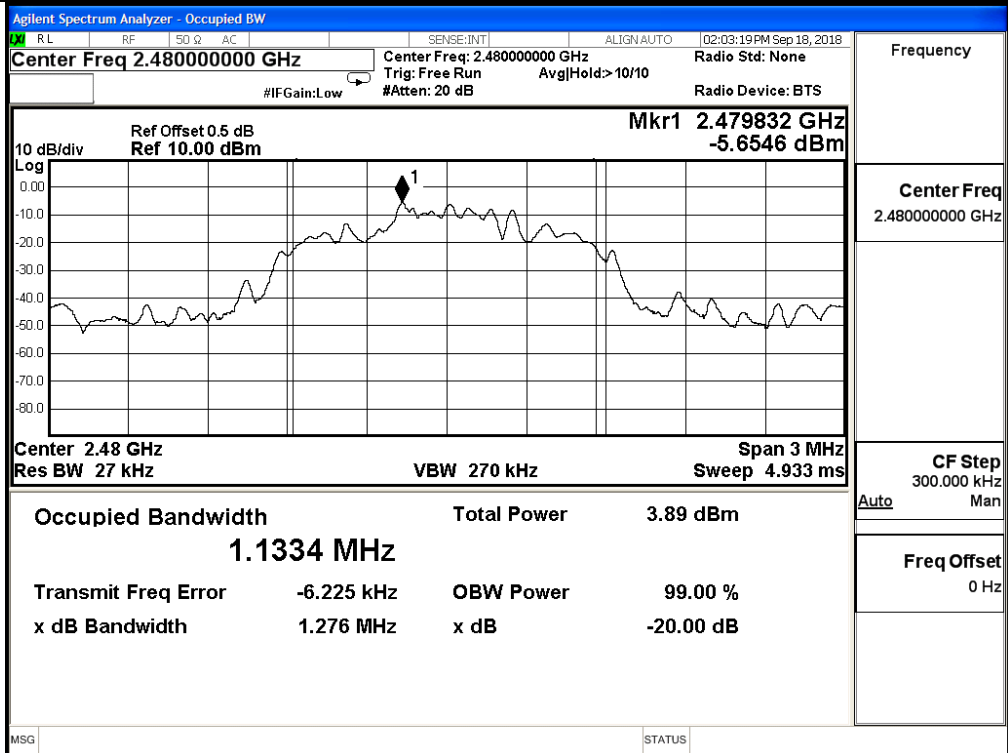
8DPSK/LCH



8DPSK/MCH

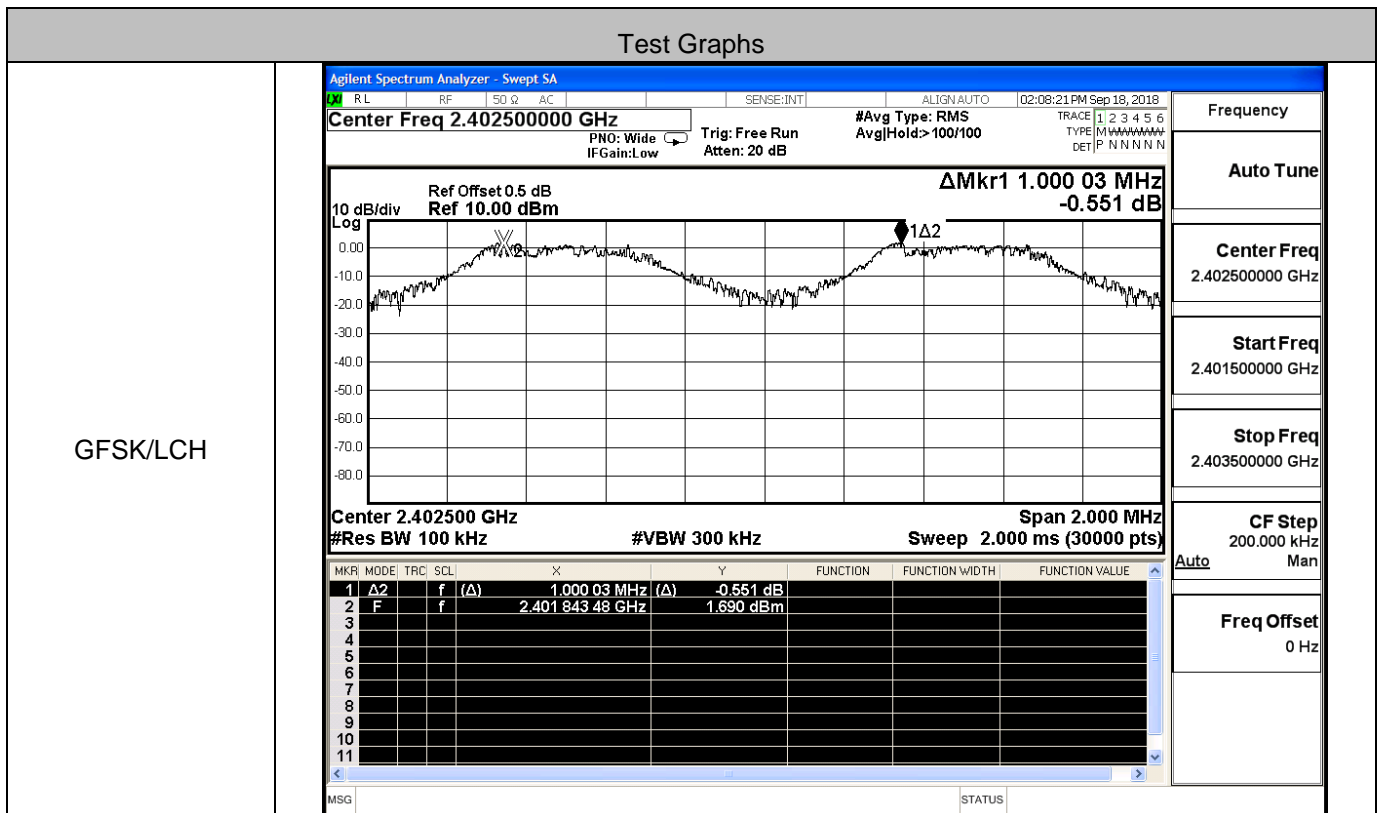


8DPSK/HCH

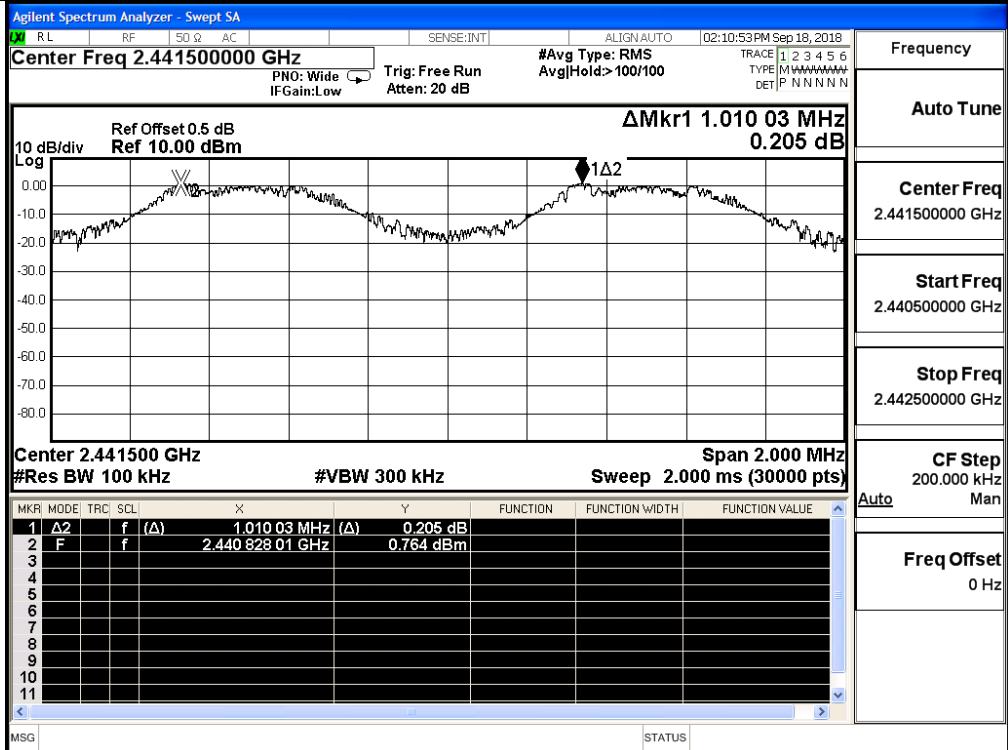


A.3 Carrier Frequency Separation

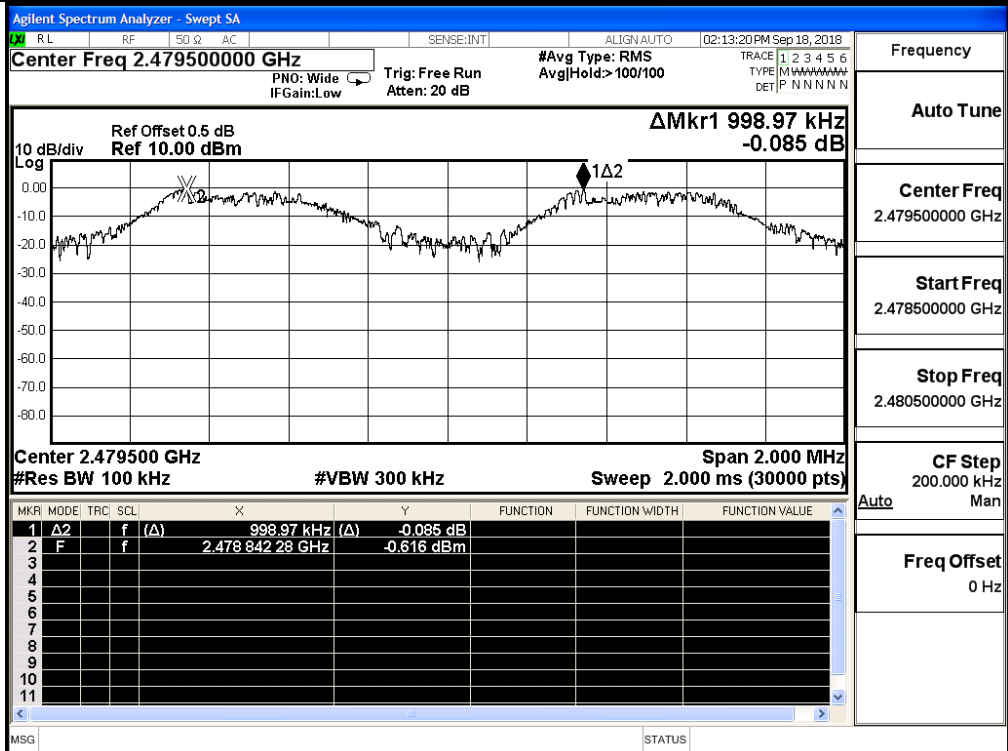
Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.000	0.5638	PASS
	MCH	1.010	0.5638	PASS
	HCH	0.999	0.5638	PASS
π/4DQPSK	LCH	0.995	0.858	PASS
	MCH	1.006	0.858	PASS
	HCH	0.998	0.858	PASS
8DPSK	LCH	0.994	0.851	PASS
	MCH	1.003	0.851	PASS
	HCH	1.018	0.851	PASS



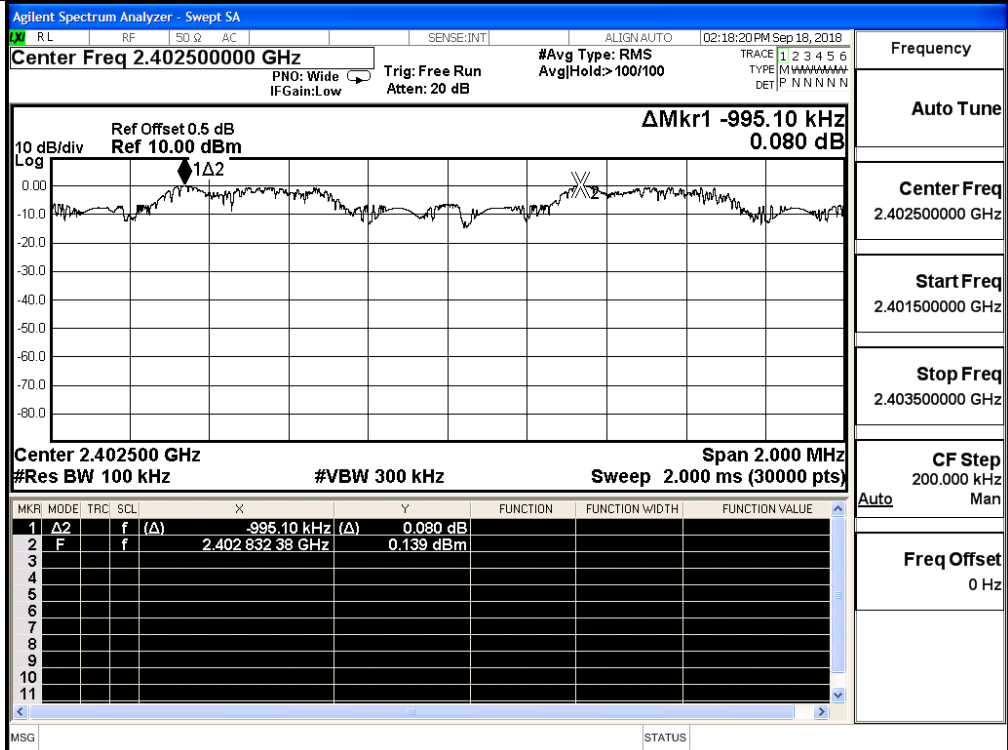
GFSK/MCH



GFSK/HCH

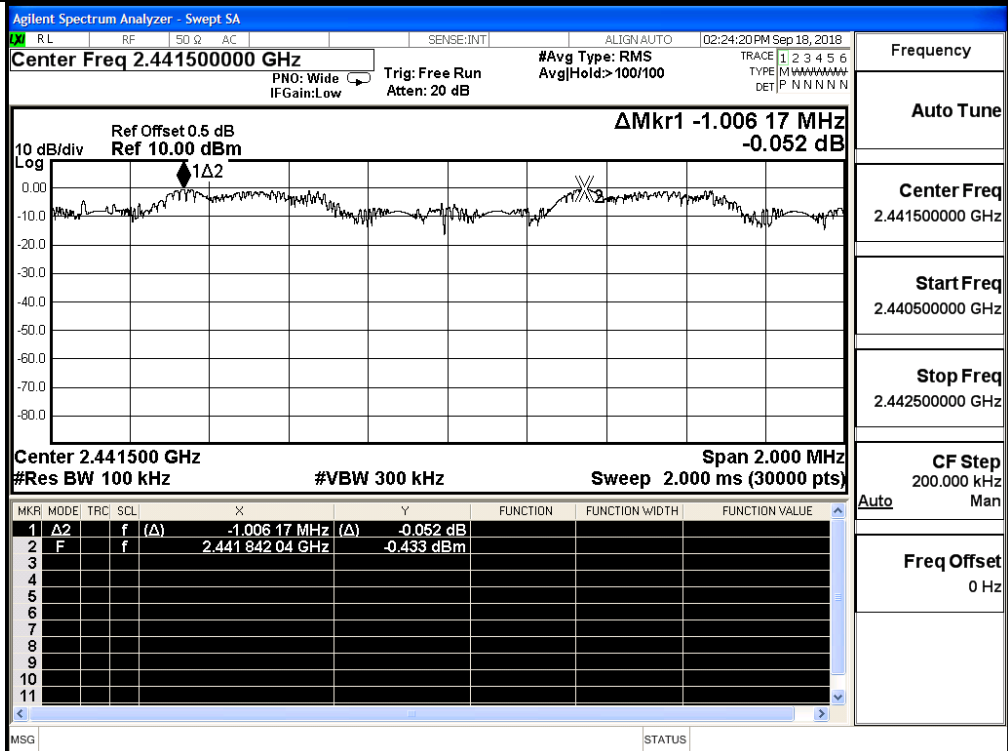


$\pi/4$ DQPSK/LCH



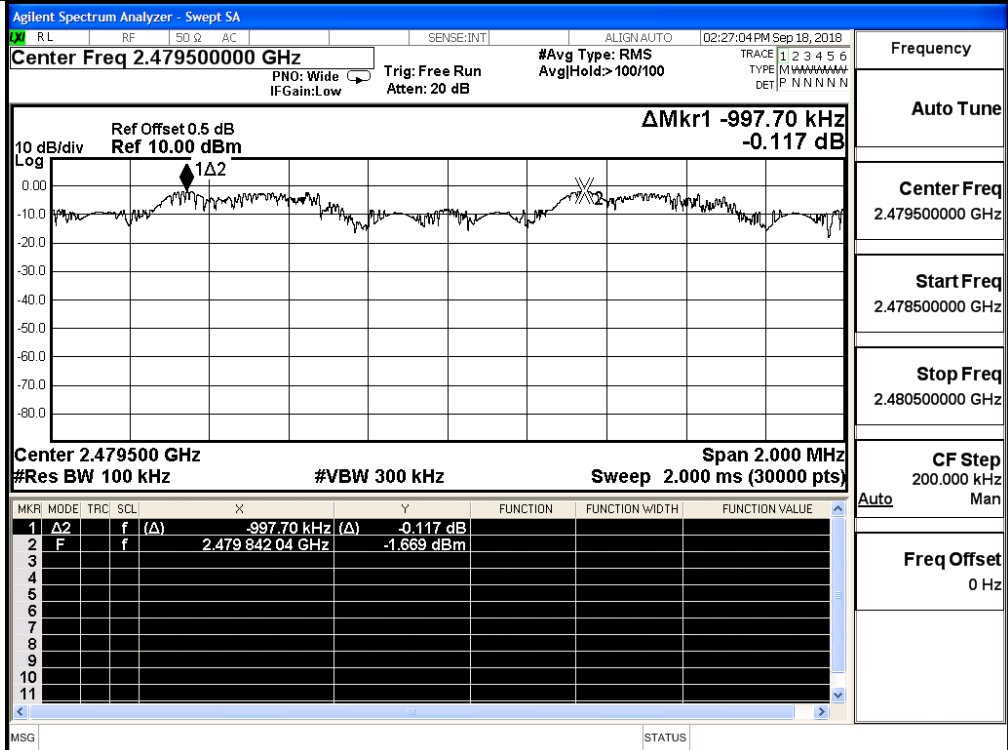
Frequency	
Auto Tune	
Center Freq	2.402500000 GHz
Start Freq	2.401500000 GHz
Stop Freq	2.403500000 GHz
CF Step	200.000 kHz
Auto	Man
Freq Offset	0 Hz

$\pi/4$ DQPSK/MCH



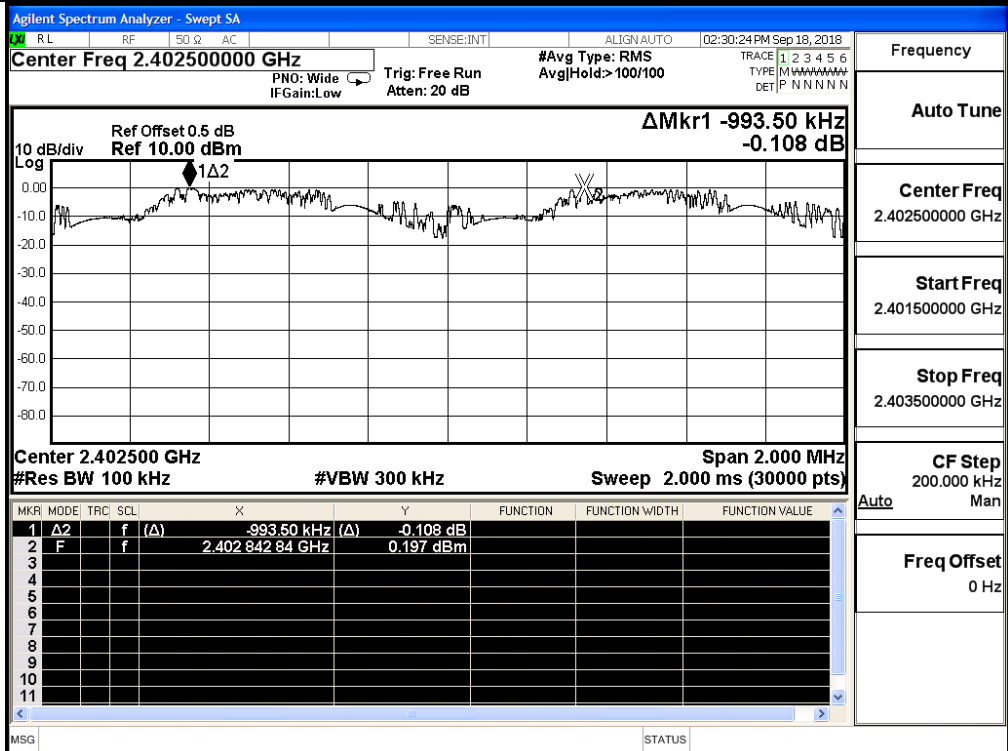
Frequency	
Auto Tune	
Center Freq	2.441500000 GHz
Start Freq	2.440500000 GHz
Stop Freq	2.442500000 GHz
CF Step	200.000 kHz
Auto	Man
Freq Offset	0 Hz

TT/4DQPSK/HCH



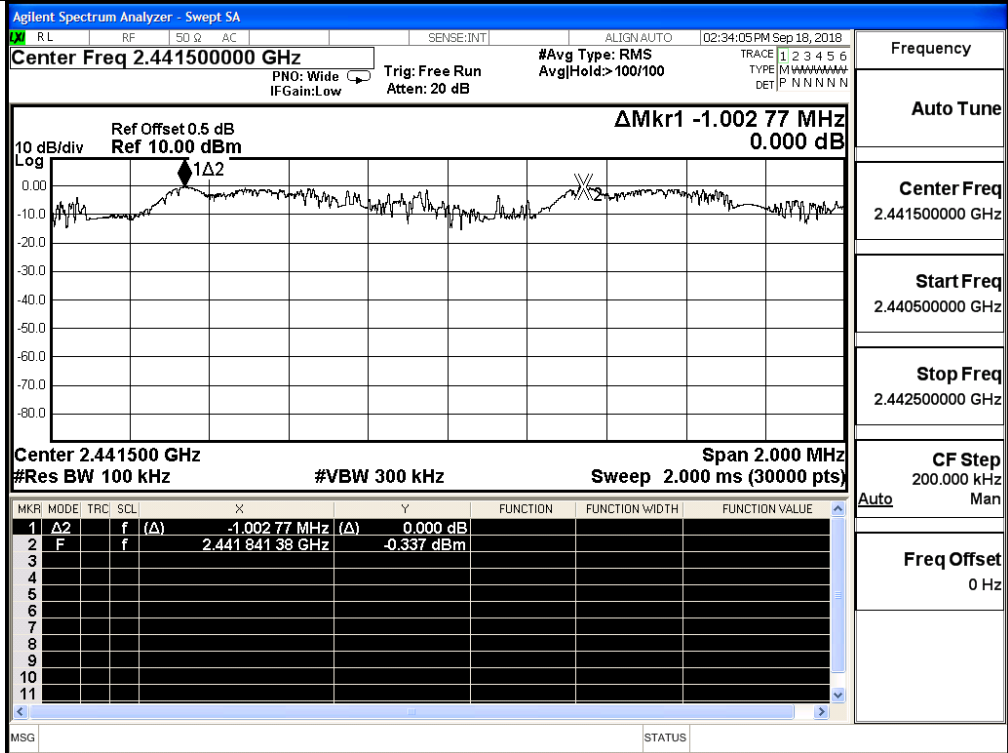
Frequency
Auto Tune
Center Freq 2.479500000 GHz
Start Freq 2.478500000 GHz
Stop Freq 2.480500000 GHz
CF Step 200.000 kHz
Auto Man
Freq Offset 0 Hz

8DPSK/LCH



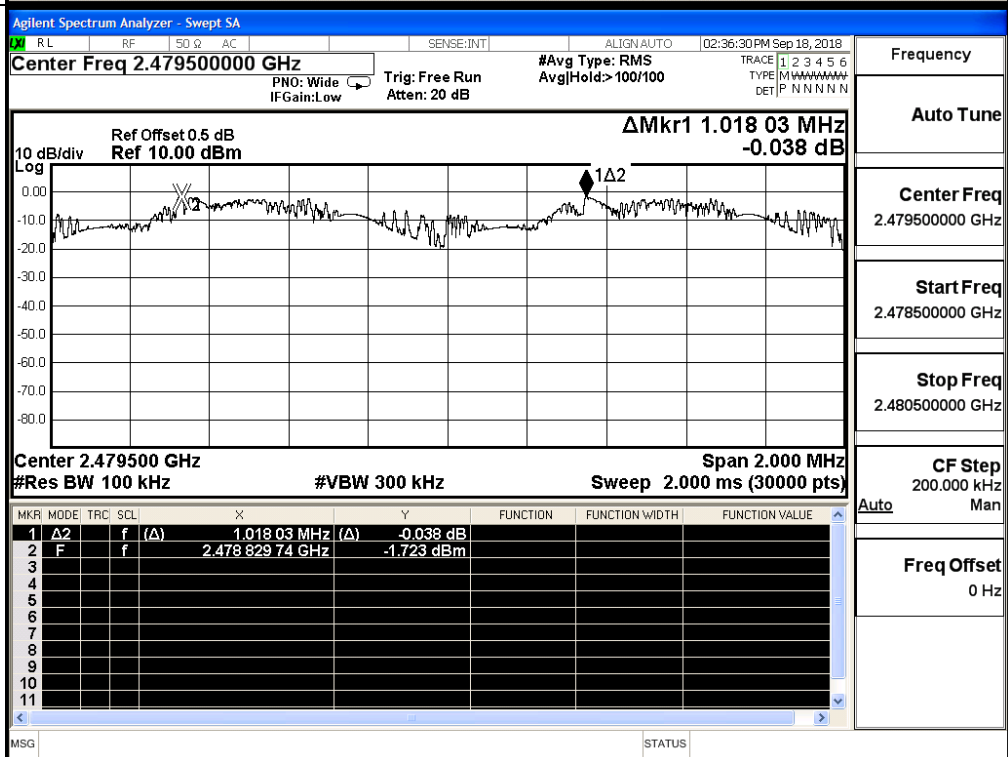
Frequency
Auto Tune
Center Freq 2.402500000 GHz
Start Freq 2.401500000 GHz
Stop Freq 2.403500000 GHz
CF Step 200.000 kHz
Auto Man
Freq Offset 0 Hz

8DPSK/MCH



Frequency	2.441500000 GHz
Auto Tune	
Center Freq	2.441500000 GHz
Start Freq	2.440500000 GHz
Stop Freq	2.442500000 GHz
CF Step	200.000 kHz
Freq Offset	0 Hz

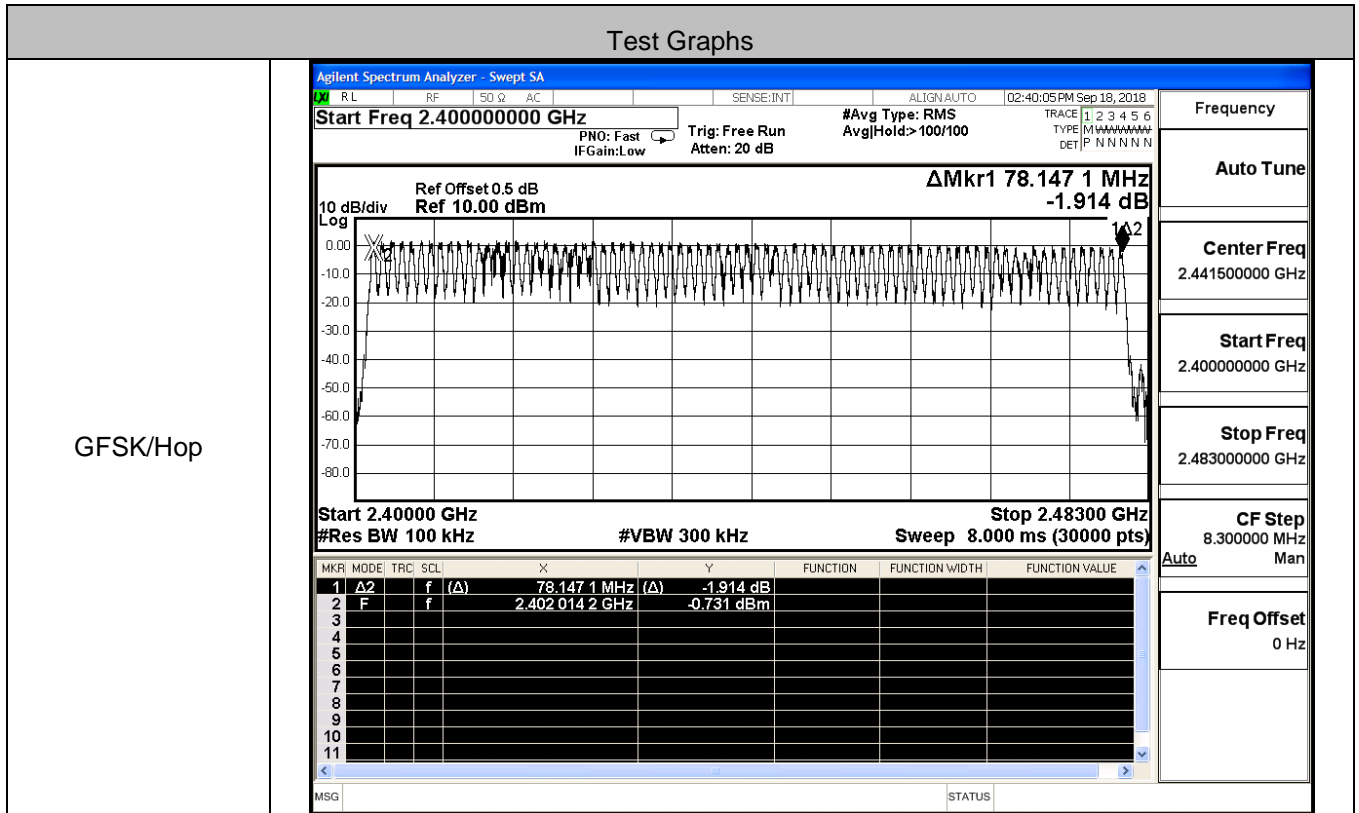
8DPSK/HCH



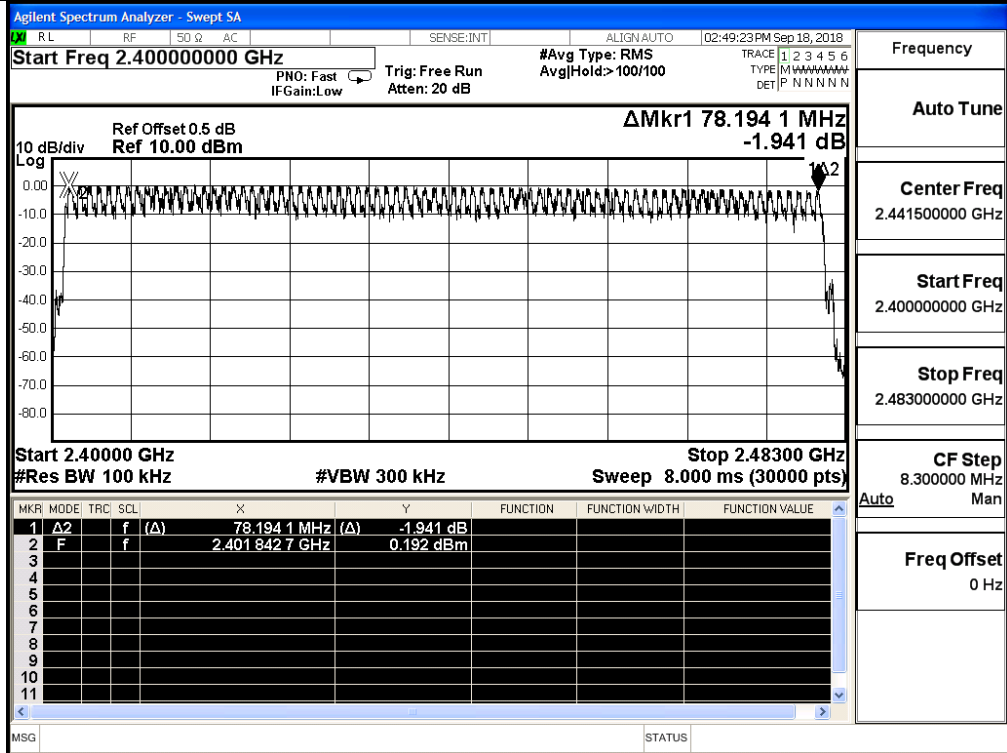
Frequency	2.479500000 GHz
Auto Tune	
Center Freq	2.479500000 GHz
Start Freq	2.478500000 GHz
Stop Freq	2.480500000 GHz
CF Step	200.000 kHz
Freq Offset	0 Hz

A.4 Hopping Channel Number

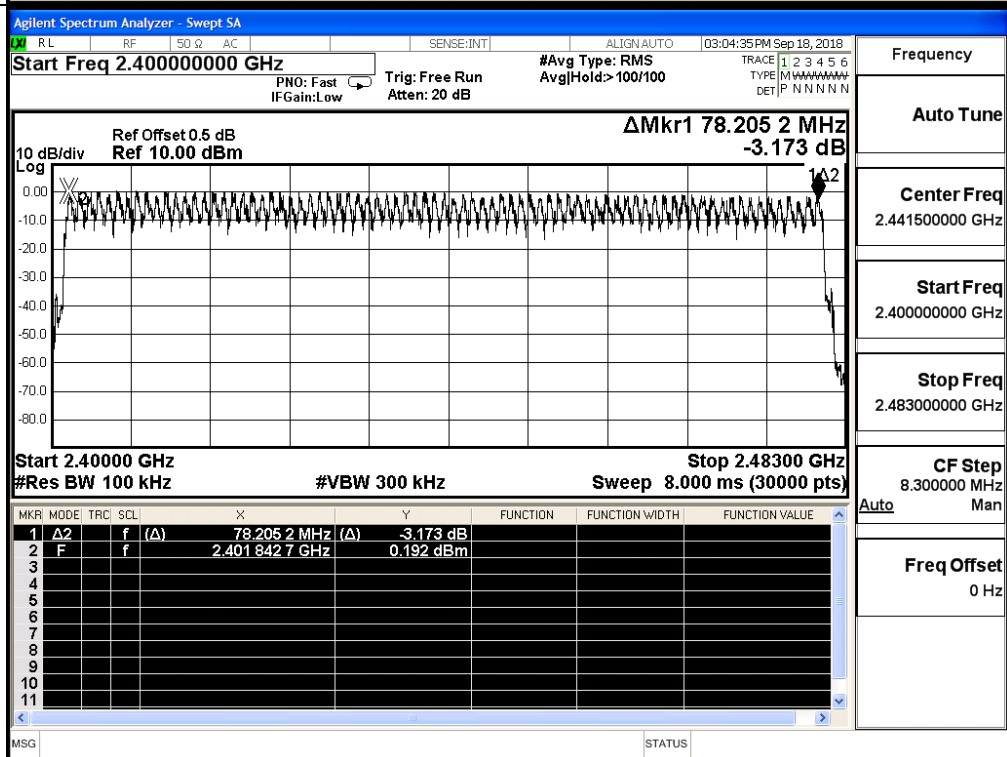
Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	>=15	PASS
$\pi/4$ DQPSK	Hop	79	>=15	PASS
8DPSK	Hop	79	>=15	PASS



$\pi/4$ DQPSK/Hop

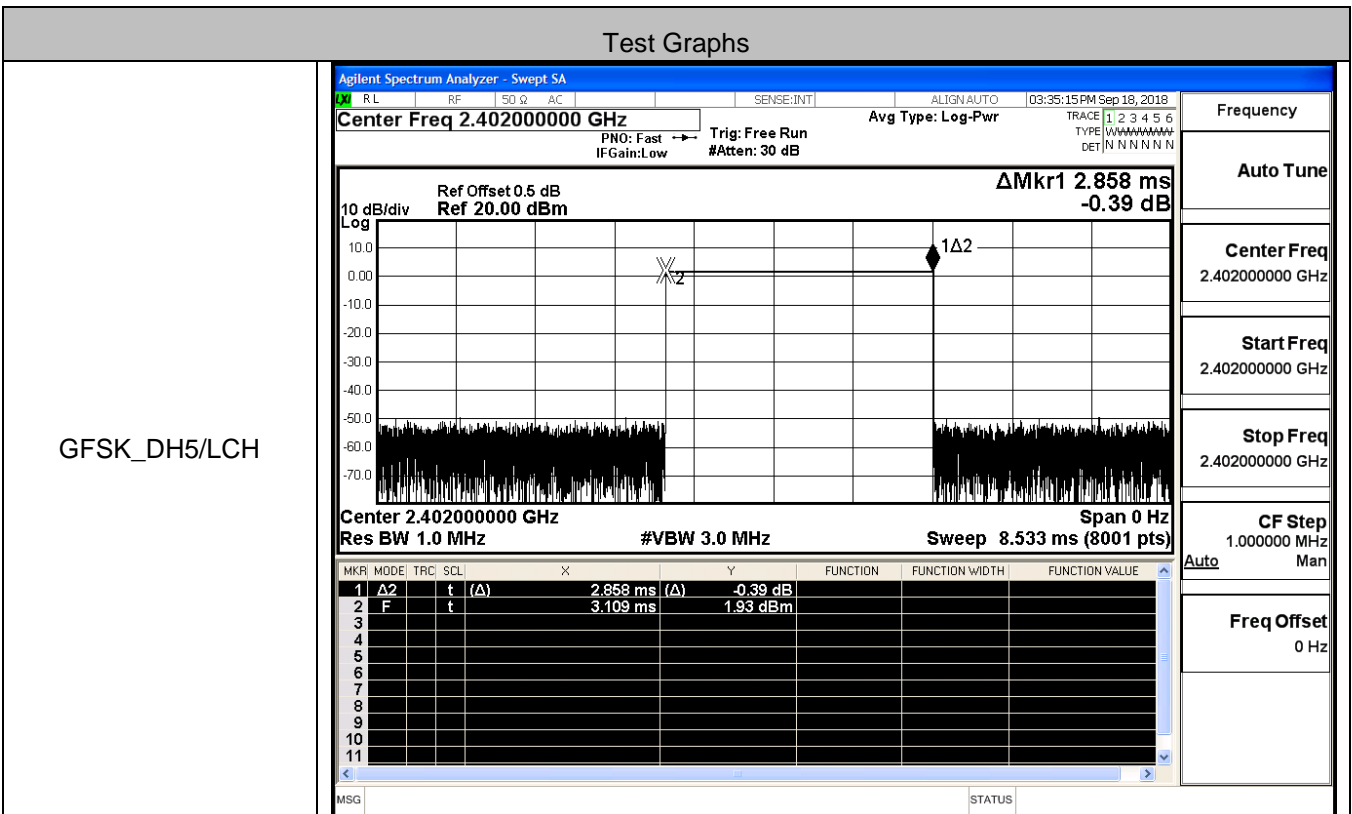


8DPSK/Hop

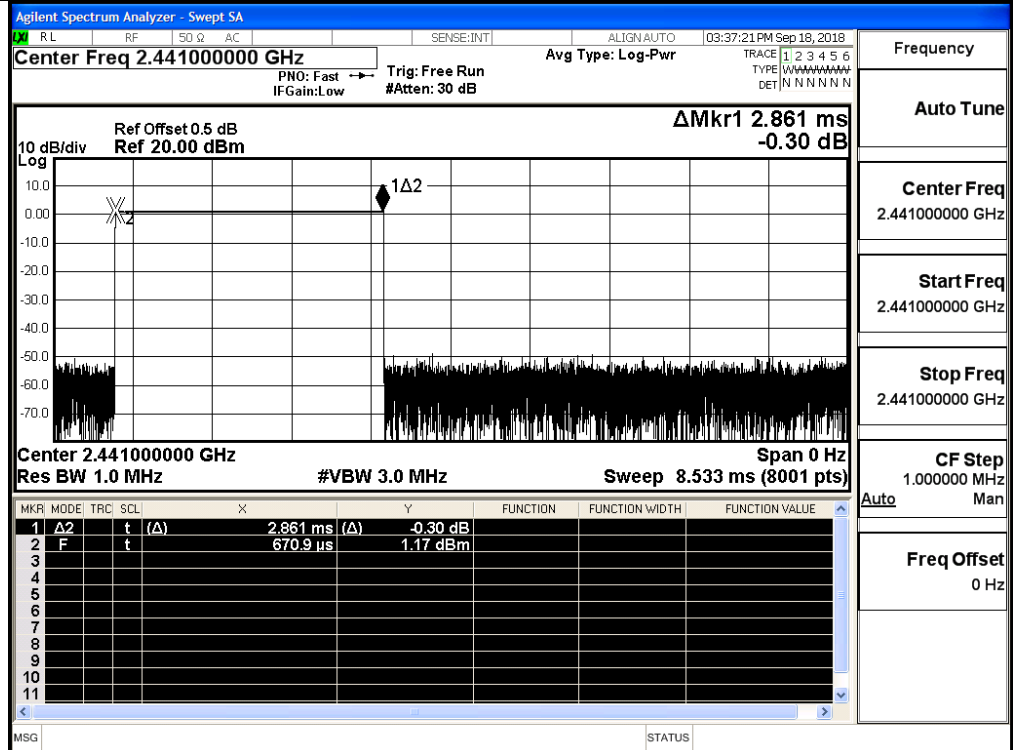


A.5 Dwell Time

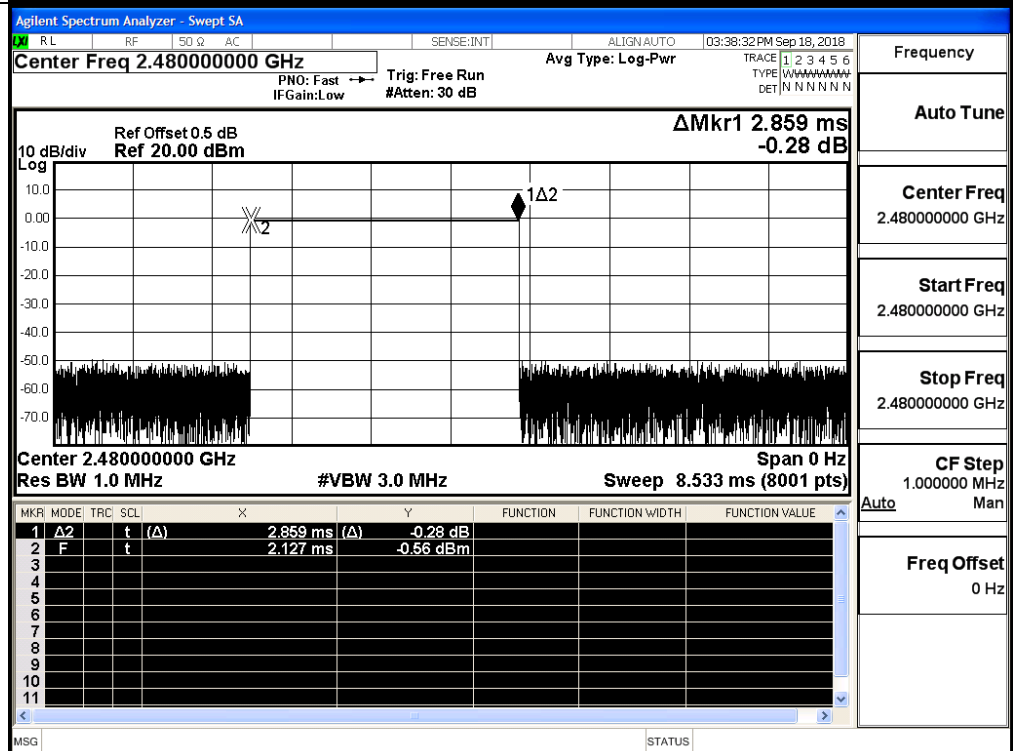
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.9	106.7	0.309	0.4	PASS
	DH5	MCH	2.9	106.7	0.309	0.4	PASS
	DH5	HCH	2.9	106.7	0.309	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.9	106.7	0.309	0.4	PASS
	2DH5	MCH	2.9	106.7	0.309	0.4	PASS
	2DH5	HCH	2.9	106.7	0.309	0.4	PASS
8DPSK	3DH5	LCH	2.9	106.7	0.309	0.4	PASS
	3DH5	MCH	2.9	106.7	0.309	0.4	PASS
	3DH5	HCH	2.9	106.7	0.309	0.4	PASS



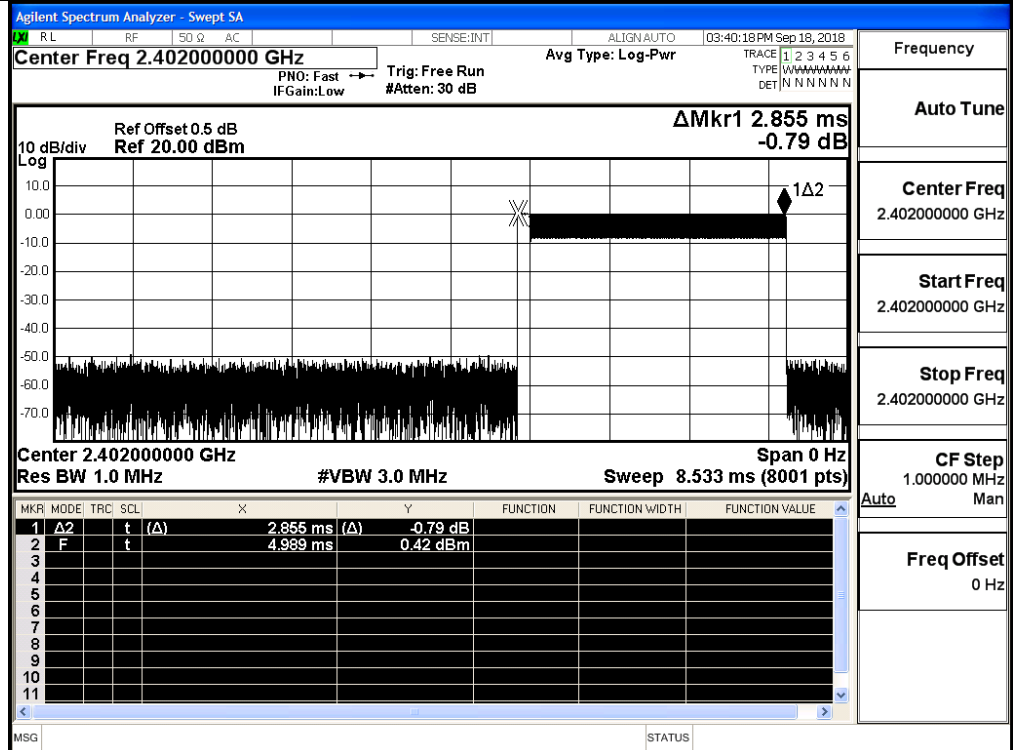
GFSK_DH5/MCH



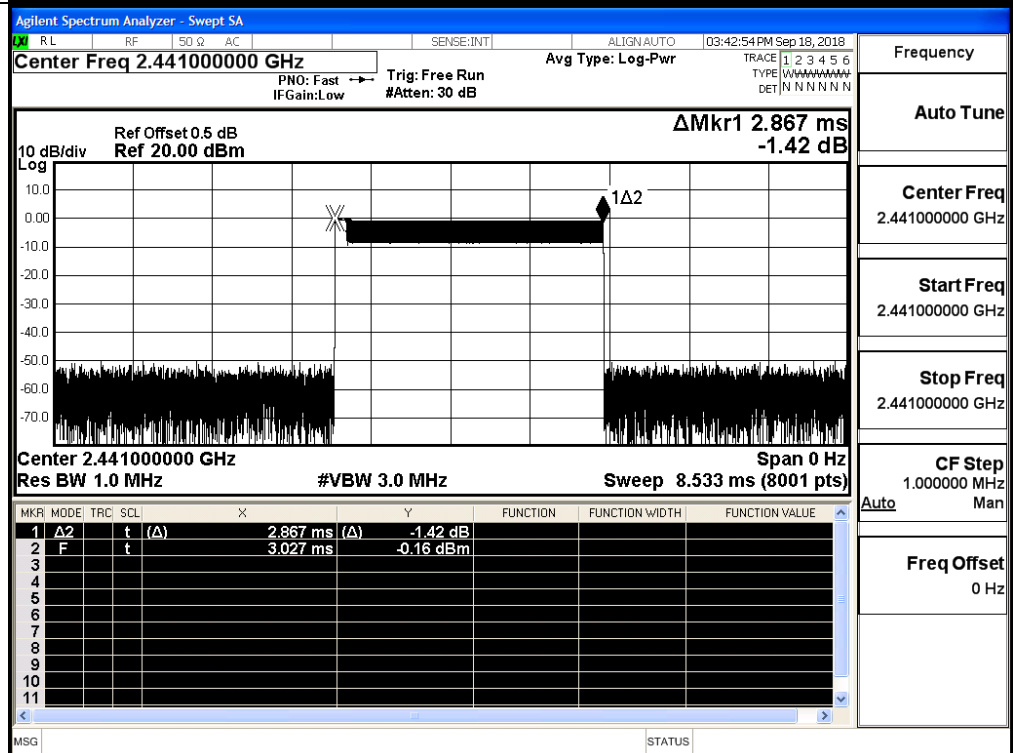
GFSK_DH5/HCH



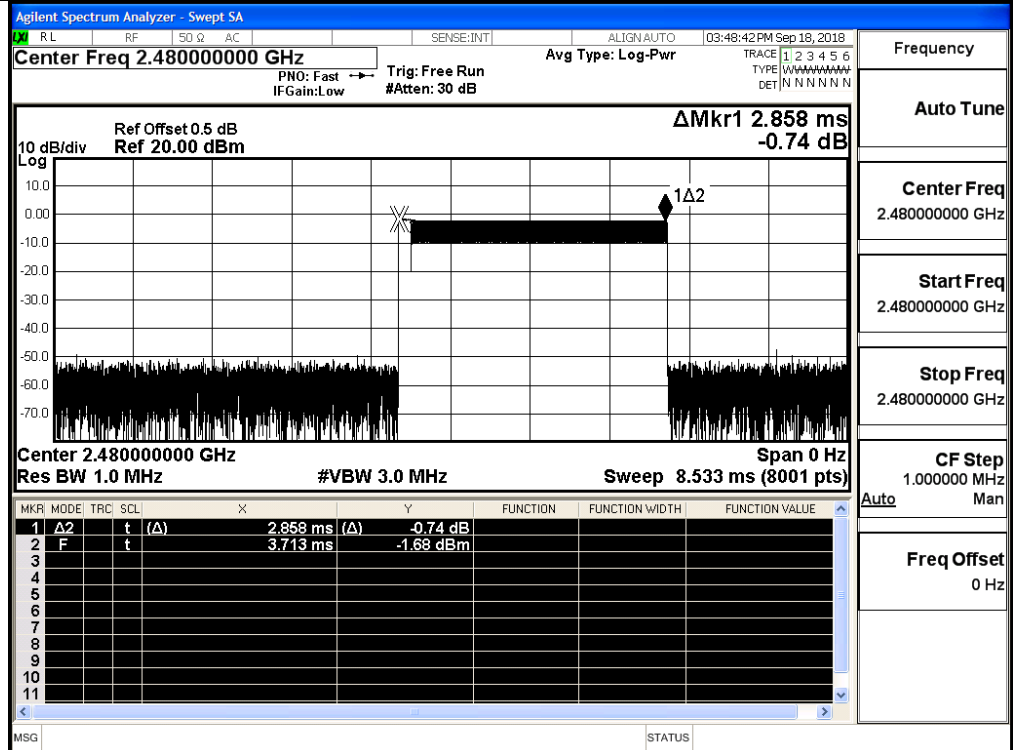
$\pi/4$ DQPSK
_2DH5/LCH



$\pi/4$ DQPSK
_2DH5/MCH

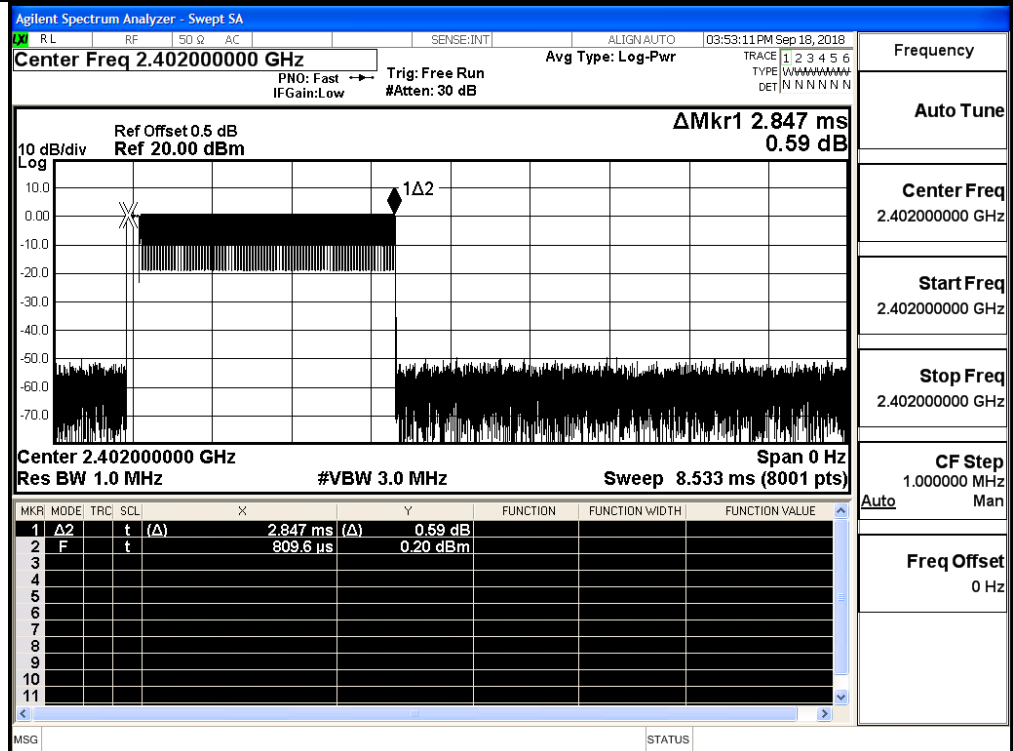


$\pi/4$ DQPSK
_2DH5/HCH



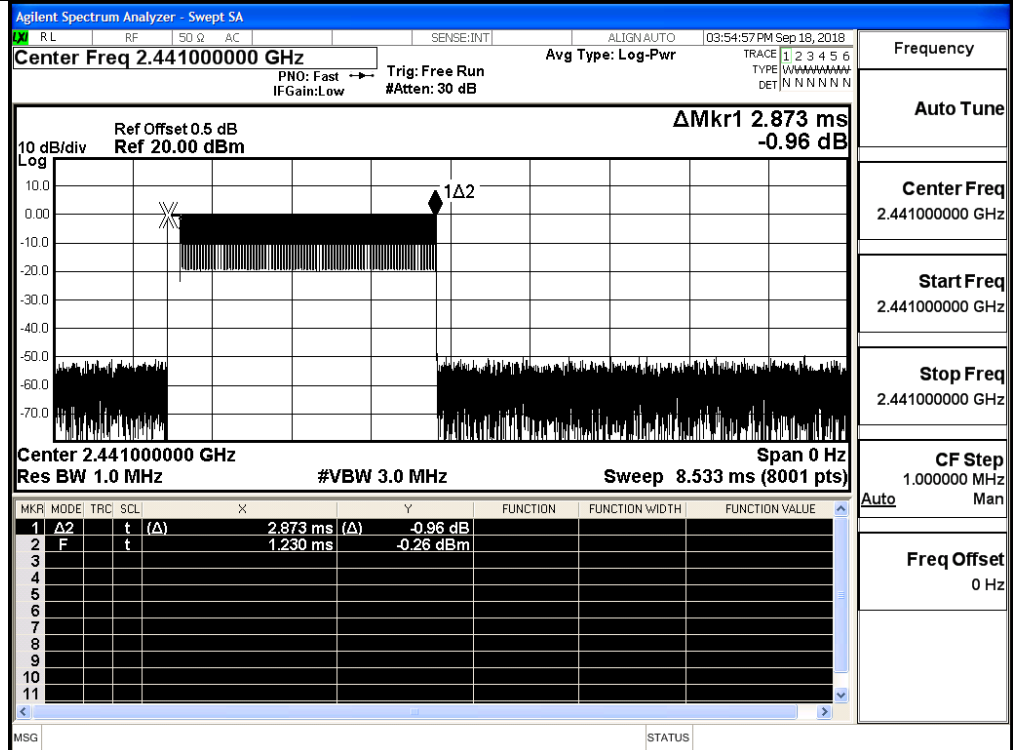
Frequency
Auto Tune
Center Freq 2.48000000 GHz
Start Freq 2.48000000 GHz
Stop Freq 2.48000000 GHz
CF Step 1.000000 MHz
Freq Offset 0 Hz

8DPSK_3DH5/LCH

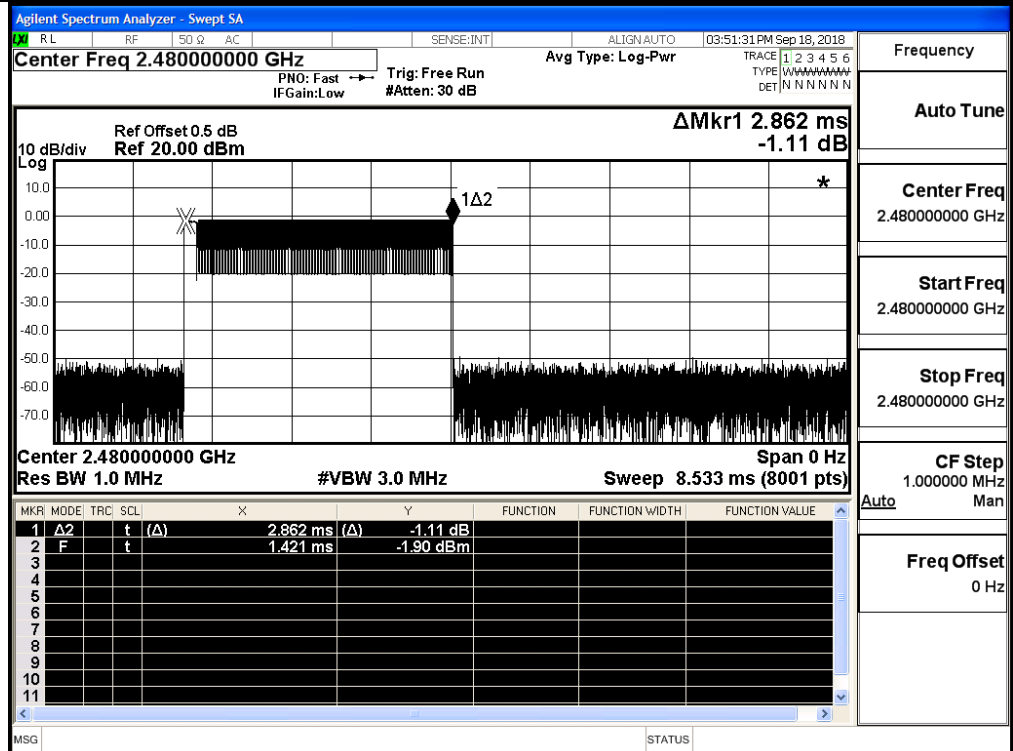


Frequency
Auto Tune
Center Freq 2.40200000 GHz
Start Freq 2.40200000 GHz
Stop Freq 2.40200000 GHz
CF Step 1.000000 MHz
Freq Offset 0 Hz

8DPSK_3DH5/MCH



8DPSK_3DH5/HCH

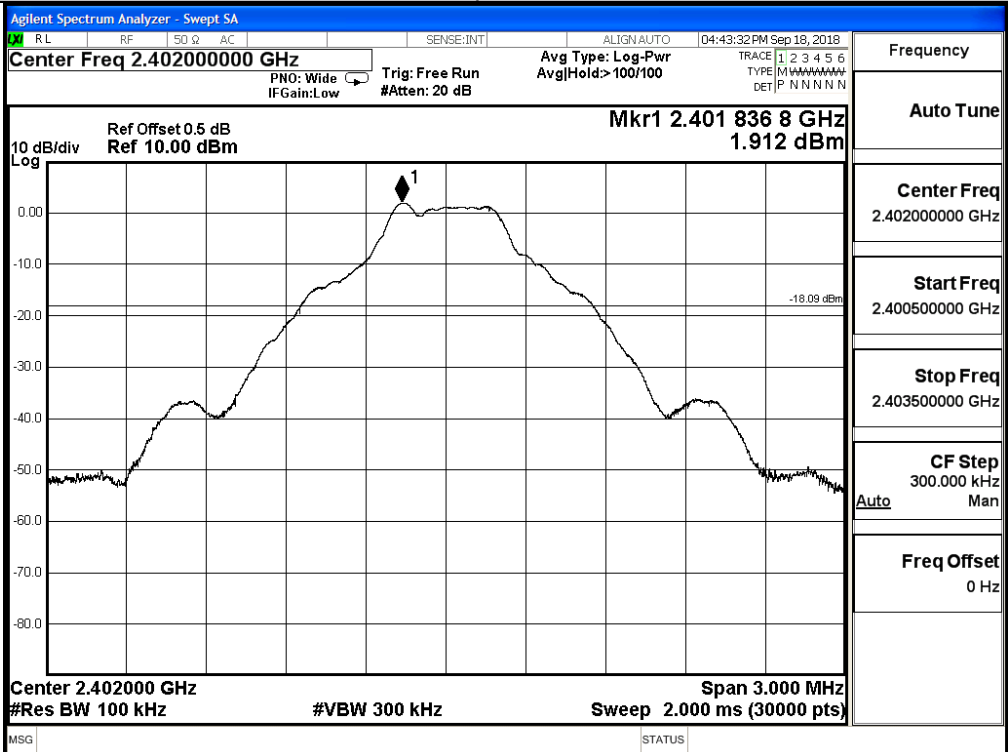


A.6 RF Conducted Spurious Emissions

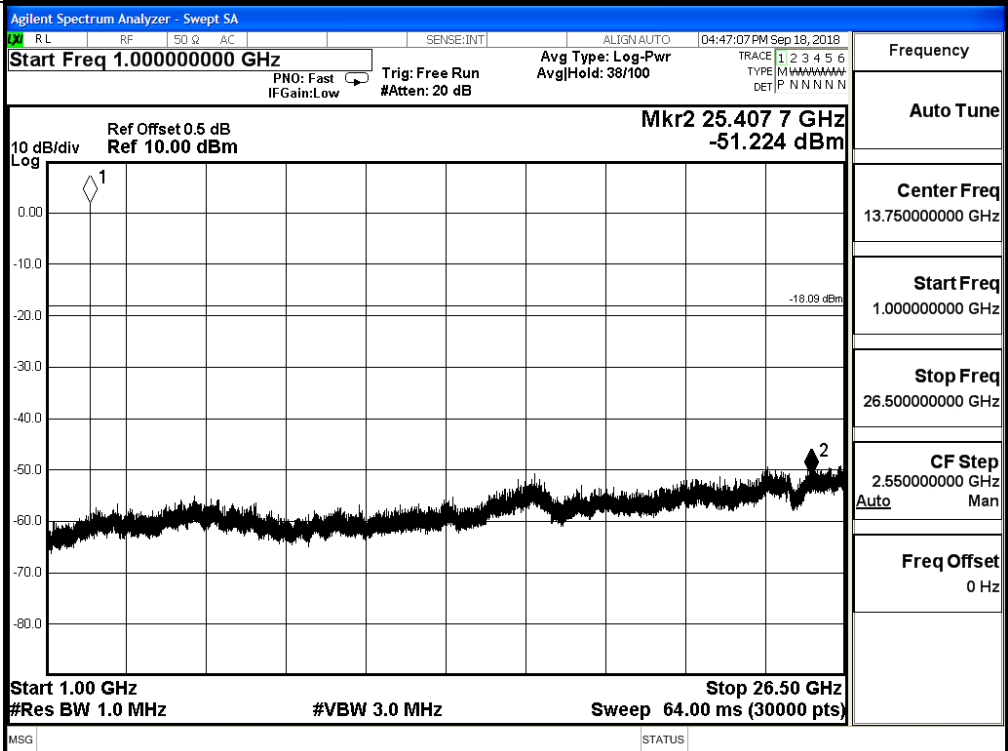
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	1.912	-51.224	-18.09	PASS
	MCH	1.038	-49.748	-18.96	PASS
	HCH	-0.458	-49.922	-20.46	PASS
$\pi/4$ DQPSK	LCH	0.324	-48.984	-19.68	PASS
	MCH	-0.374	-49.417	-20.37	PASS
	HCH	-1.708	-52.378	-21.71	PASS
8DPSK	LCH	0.209	-50.122	-19.79	PASS
	MCH	-0.281	-47.686	-20.28	PASS
	HCH	-1.599	-47.449	-21.60	PASS

GFSK_LCH_Graphs

Pref

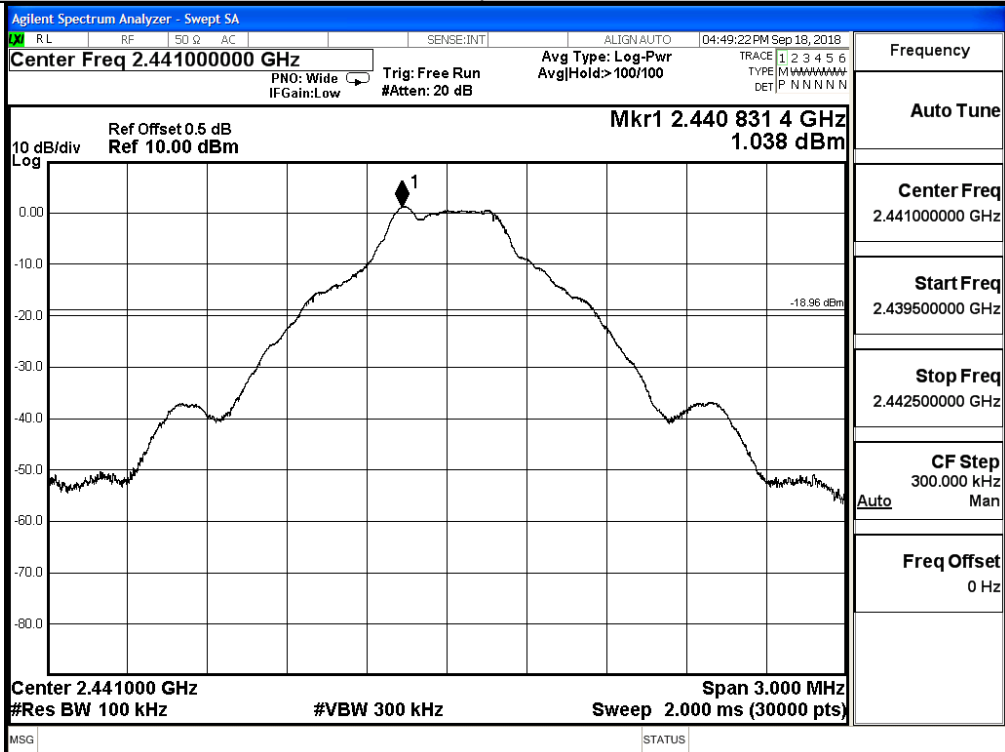


Puw

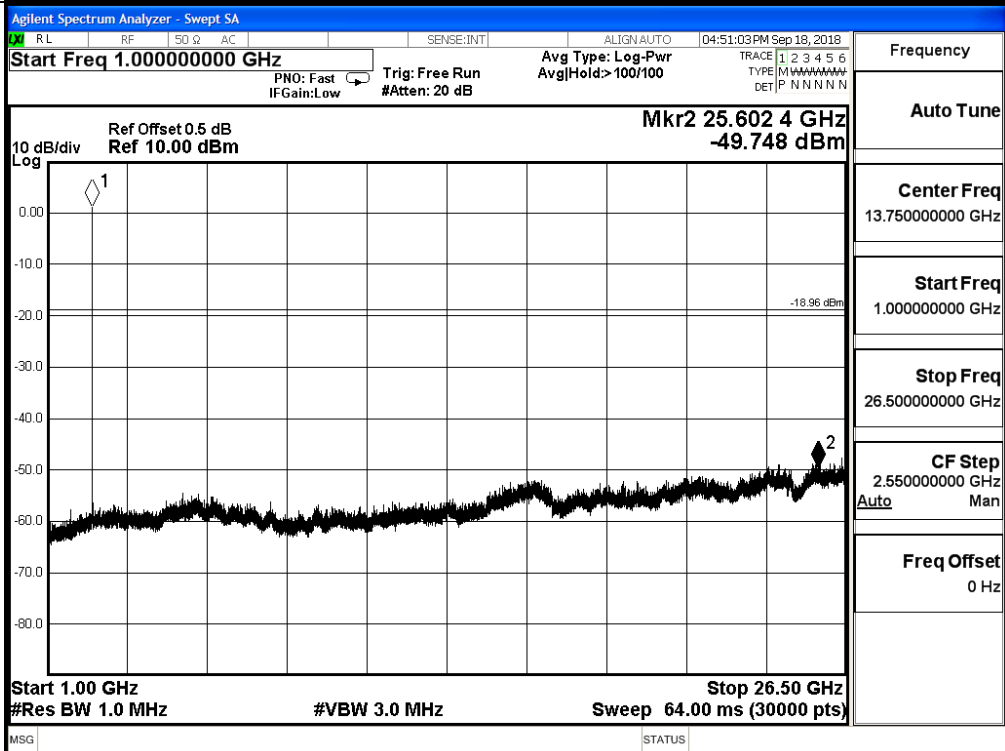


GFSK_MCH_Graphs

Pref

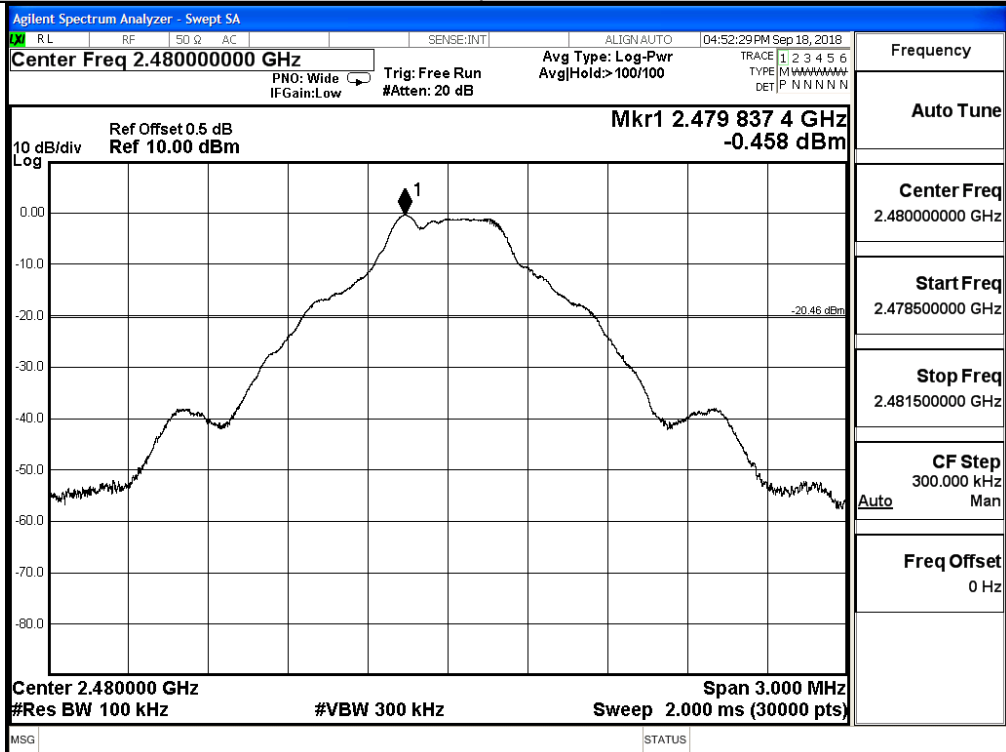


Puw



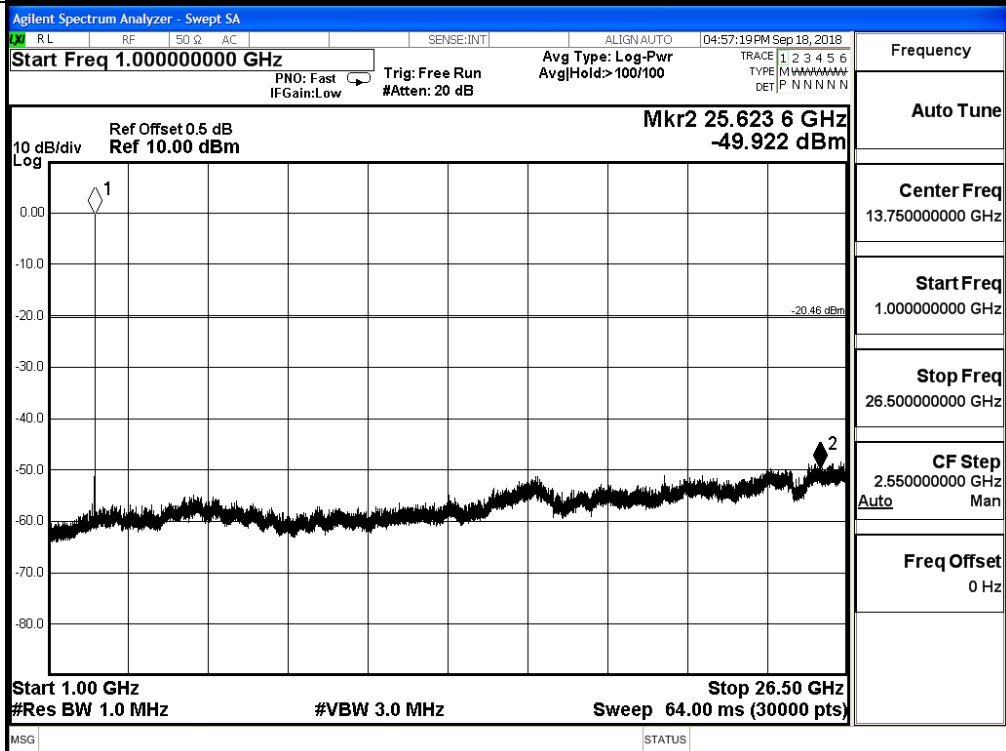
GFSK_HCH_Graphs

Pref



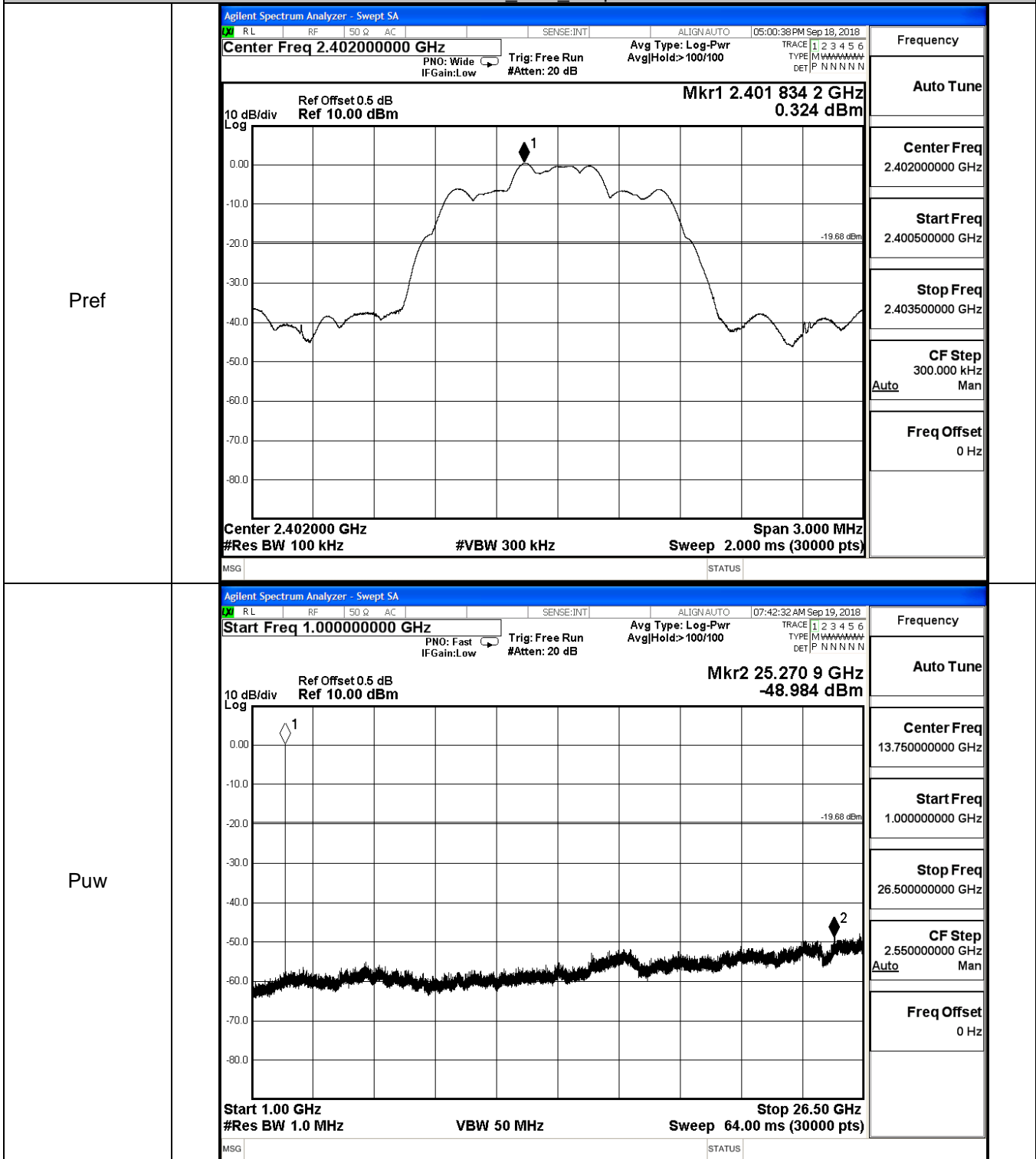
Frequency	
Auto Tune	
Center Freq	2.480000000 GHz
Start Freq	2.478500000 GHz
Stop Freq	2.481500000 GHz
CF Step	300.000 kHz
Auto	Man
Freq Offset	0 Hz

Puw



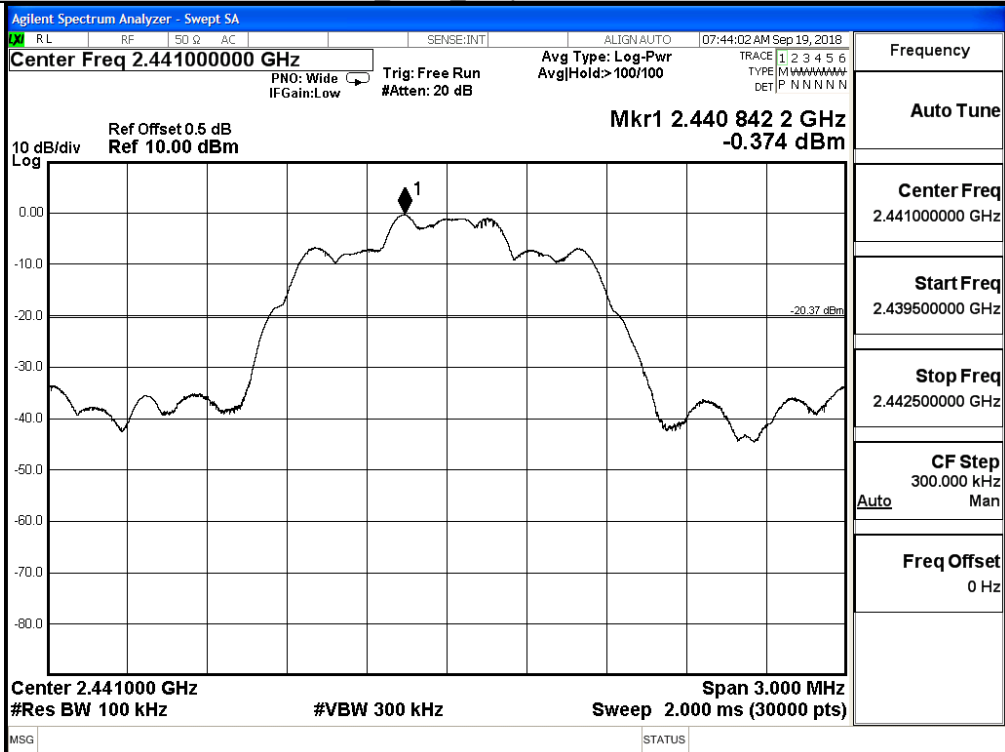
Frequency	
Auto Tune	
Center Freq	13.750000000 GHz
Start Freq	1.000000000 GHz
Stop Freq	26.500000000 GHz
CF Step	2.550000000 GHz
Auto	Man
Freq Offset	0 Hz

$\pi/4$ DQPSK LCH_Graphs

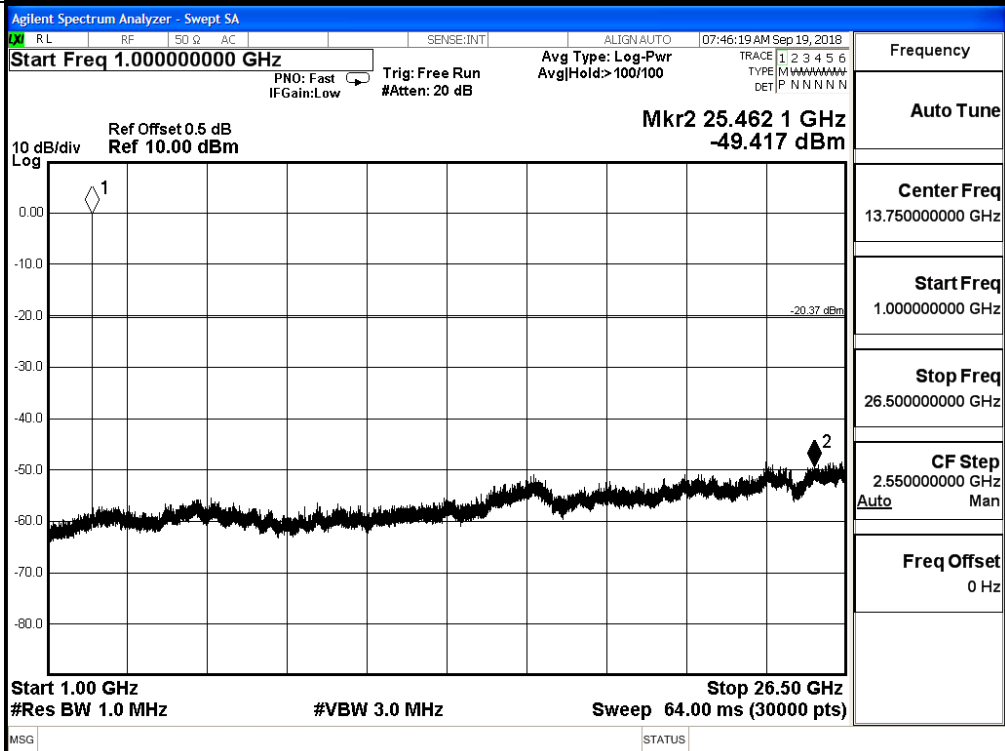


$\pi/4$ DQPSK_MCH_Graphs

Pref

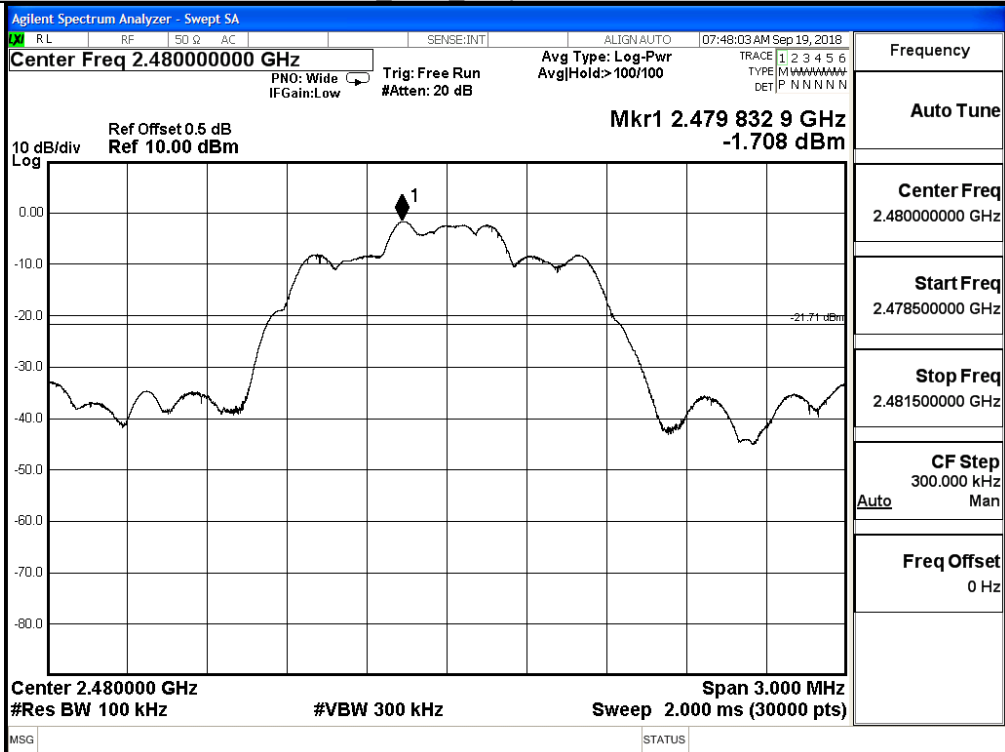


Puw

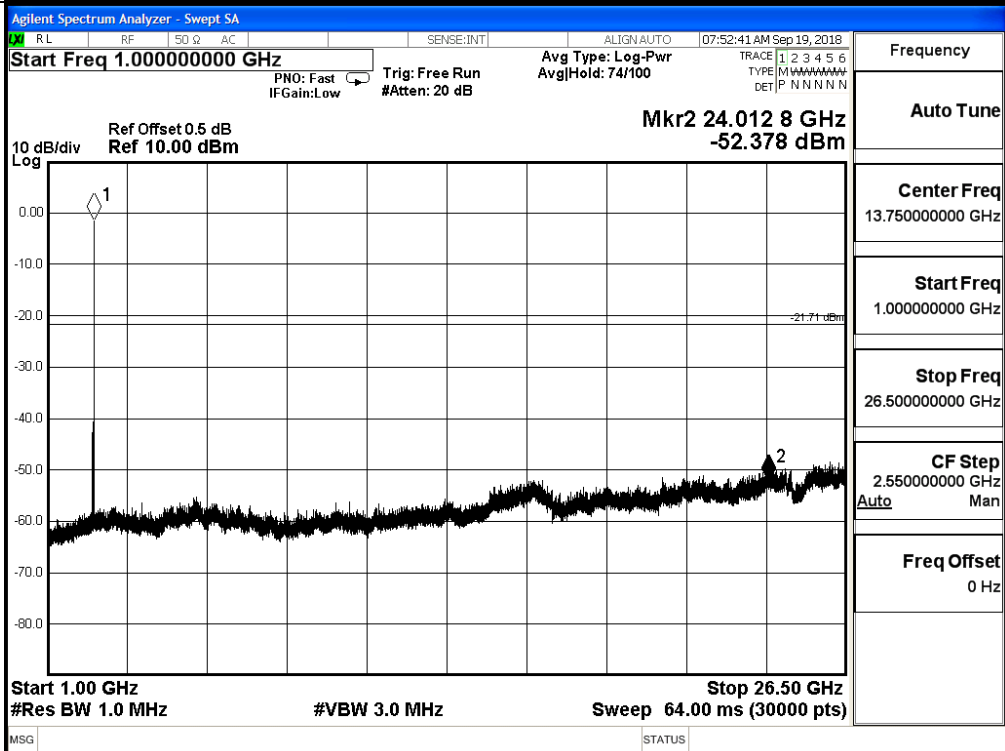


$\pi/4$ DQPSK_HCH_Graphs

Pref

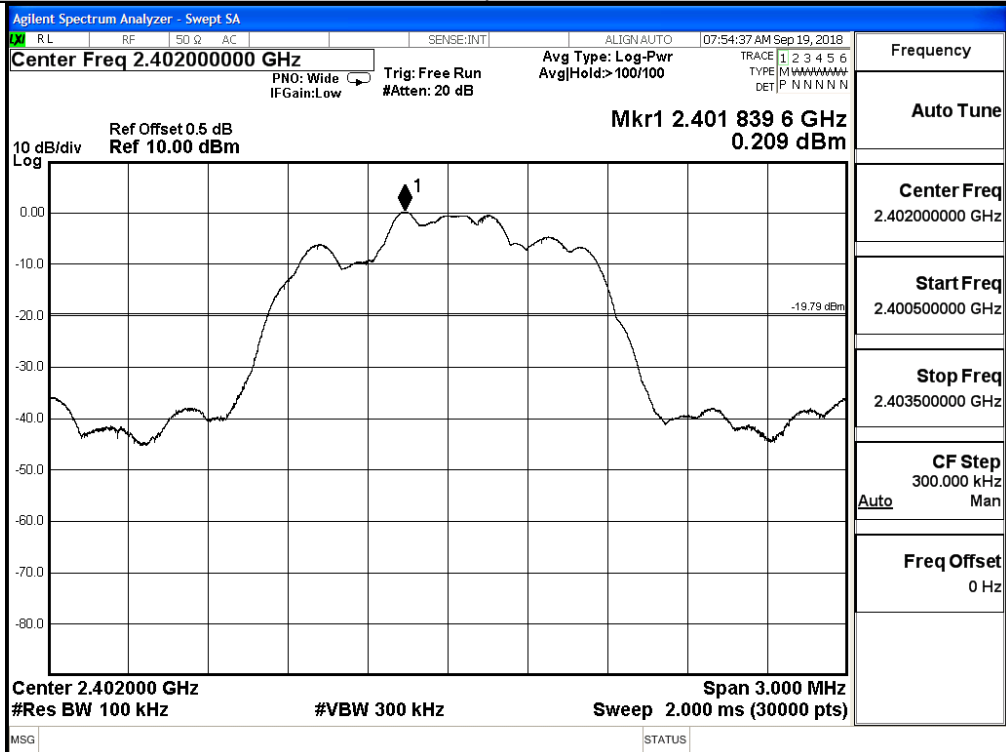


Puw

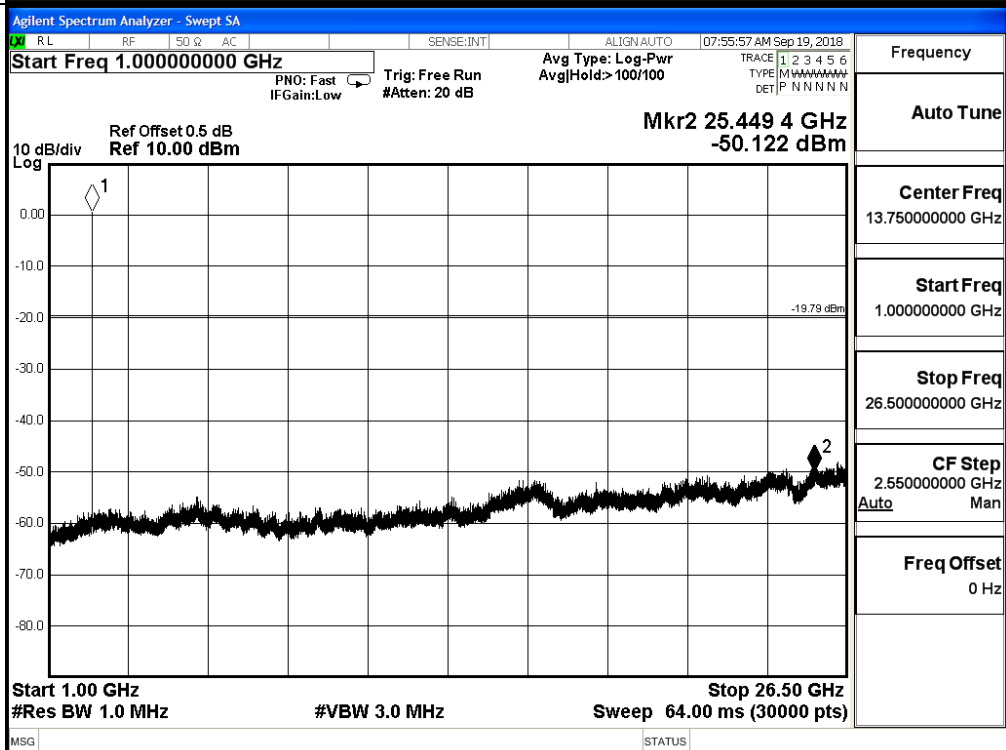


8DPSK_LCH_Graphs

Pref

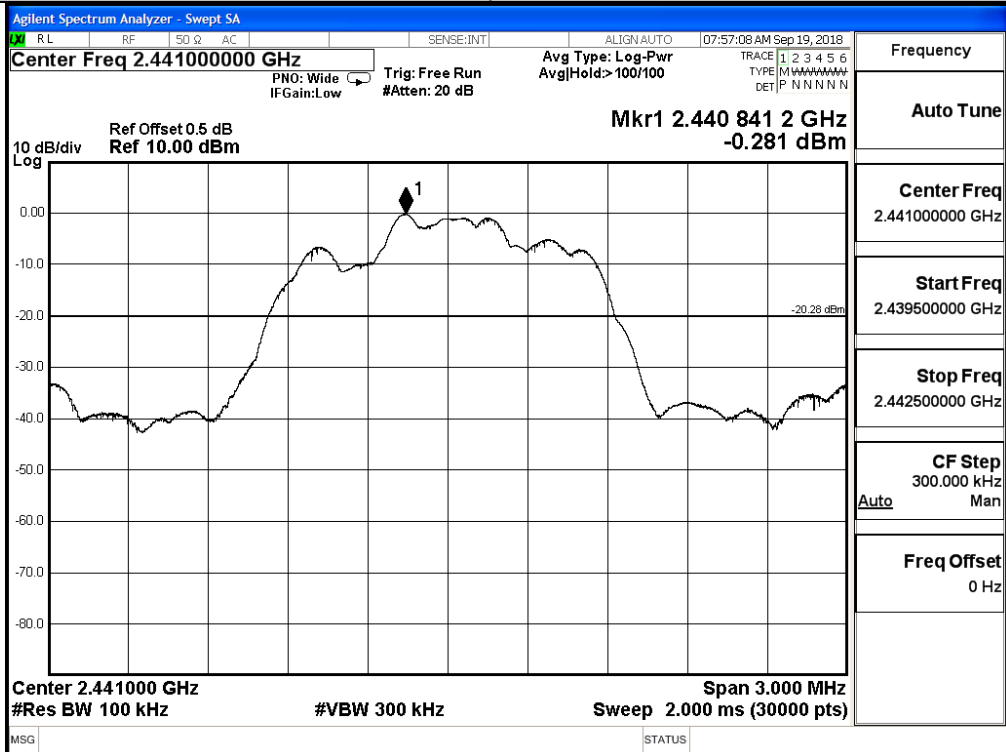


Puw

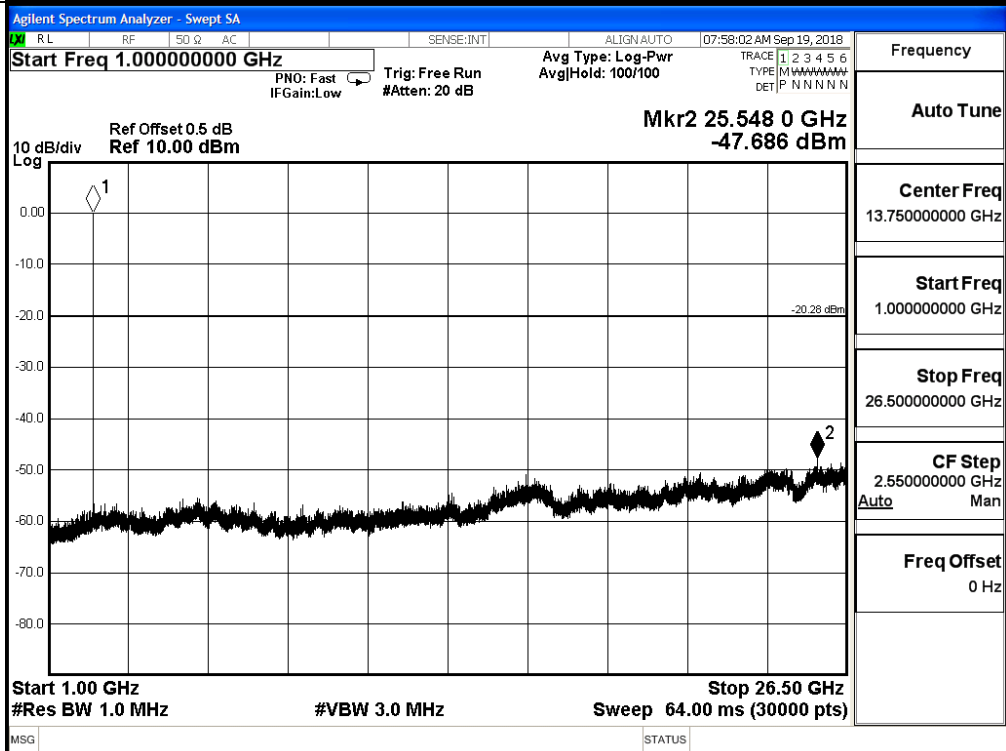


8DPSK_MCH_Graphs

Pref

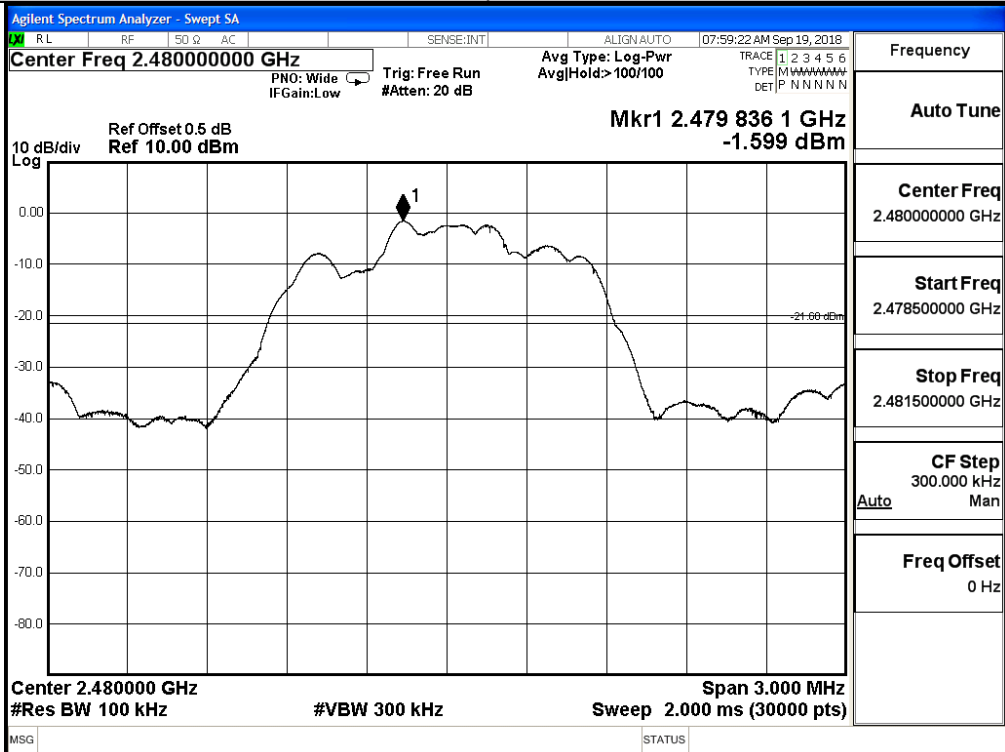


Puw

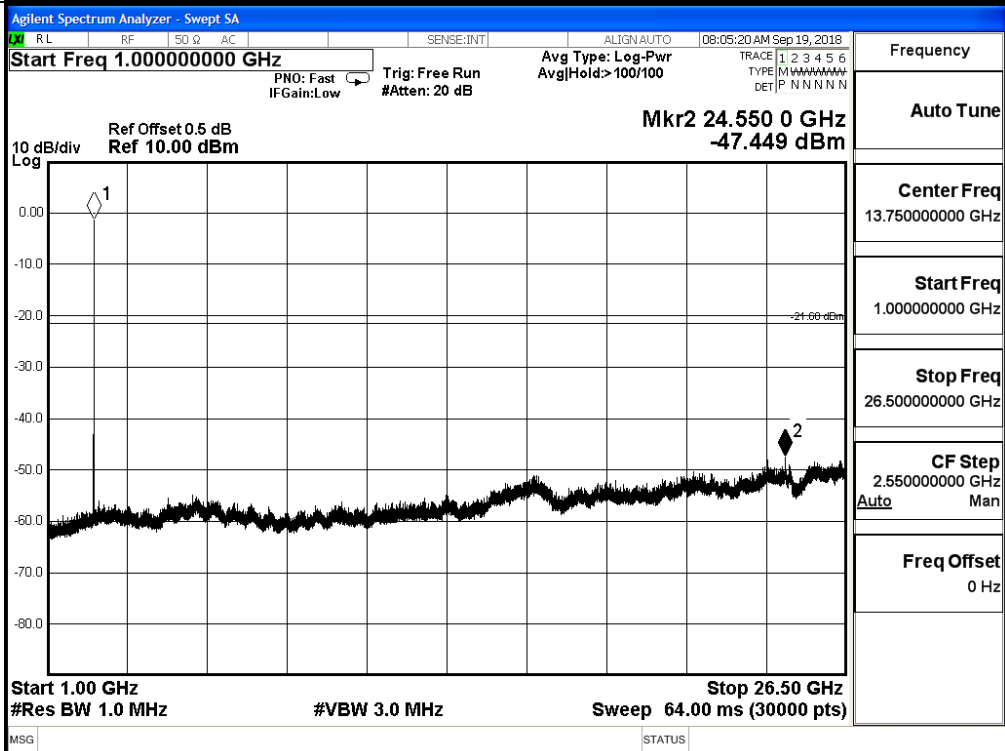


8DPSK_HCH_Graphs

Pref



Puw

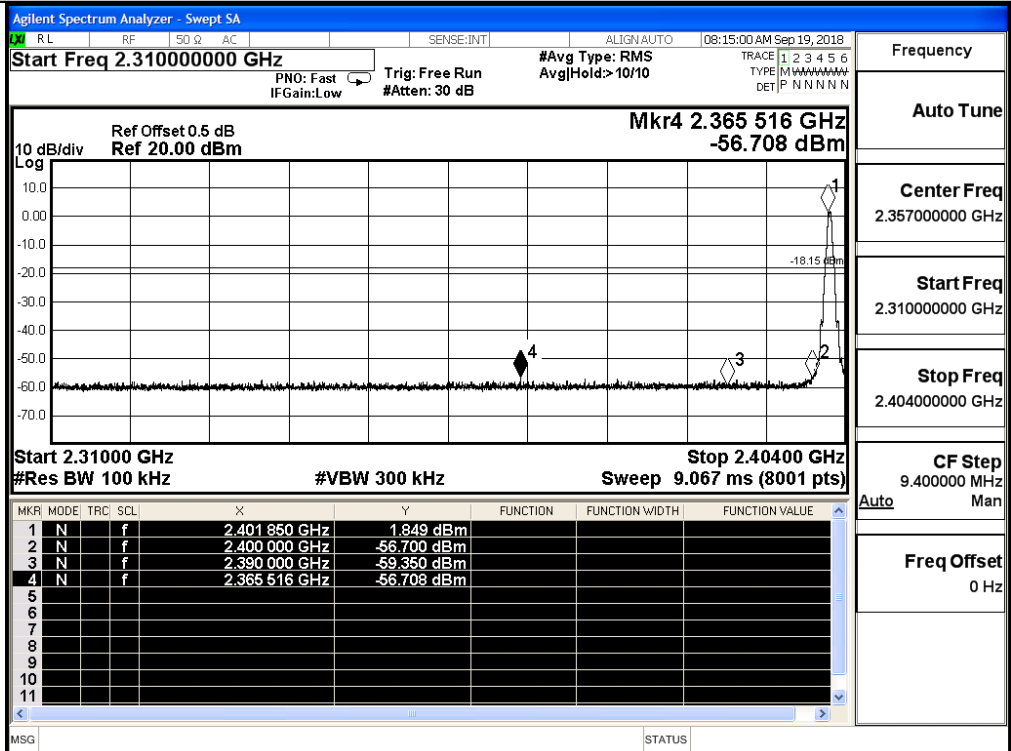


A.7 Band-edge for RF Conducted Emissions

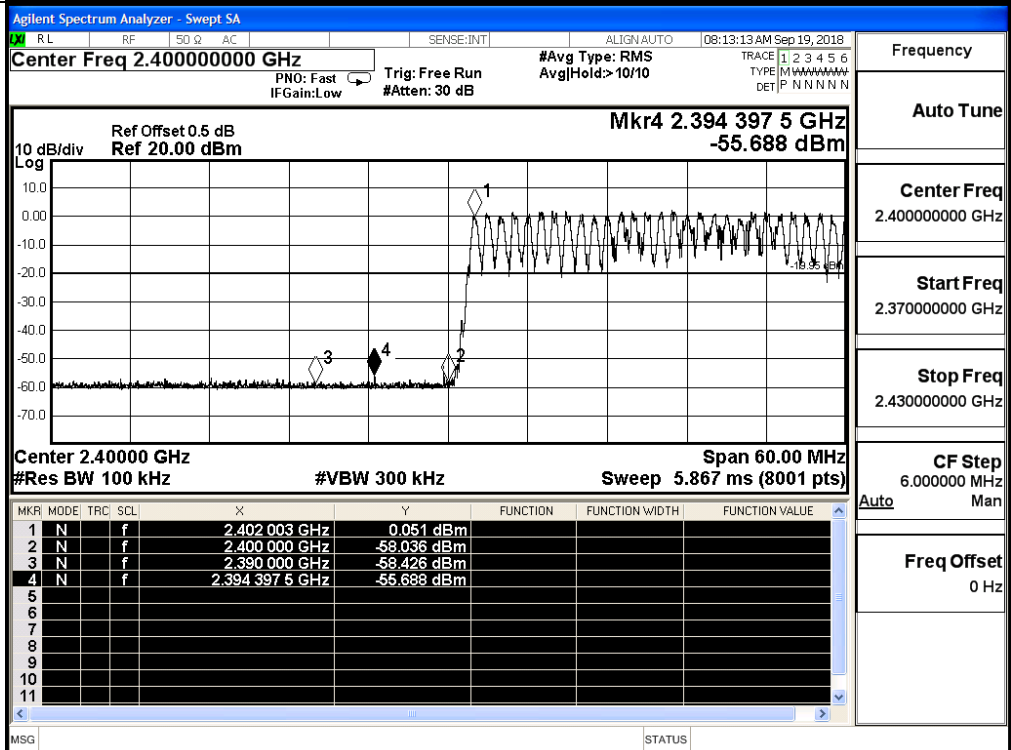
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	1.849	Off	-56.708	-18.15	PASS
			0.051	On	-55.688	-19.95	PASS
	HCH	2480	-0.490	Off	-58.522	-20.49	PASS
			-1.453	On	-58.021	-21.45	PASS
$\pi/4$ DQPSK	LCH	2402	0.280	Off	-57.816	-19.72	PASS
			-1.006	On	-56.122	-21.01	PASS
	HCH	2480	-1.561	Off	-56.277	-21.56	PASS
			-1.748	On	-57.787	-21.75	PASS
8DPSK	LCH	2402	0.218	Off	-60.342	-19.78	PASS
			-0.004	On	-57.108	-20.00	PASS
	HCH	2480	-1.692	Off	-57.914	-21.69	PASS
			-1.686	On	-59.219	-21.69	PASS

Test Graphs

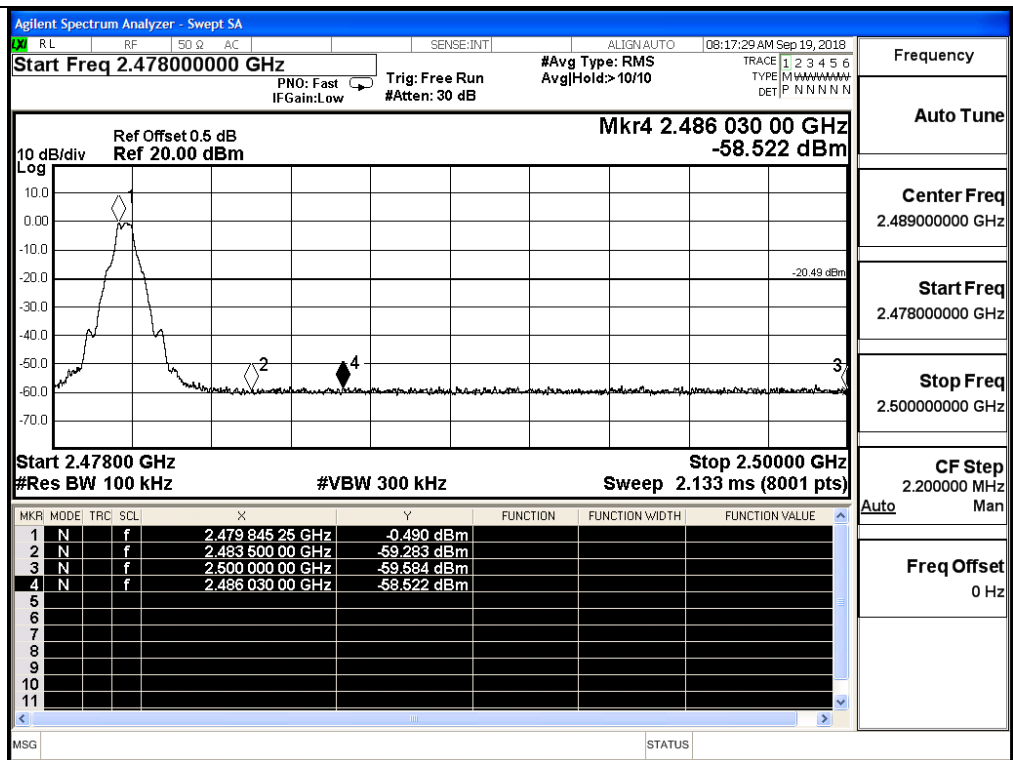
GFSK/LCH/No Hop



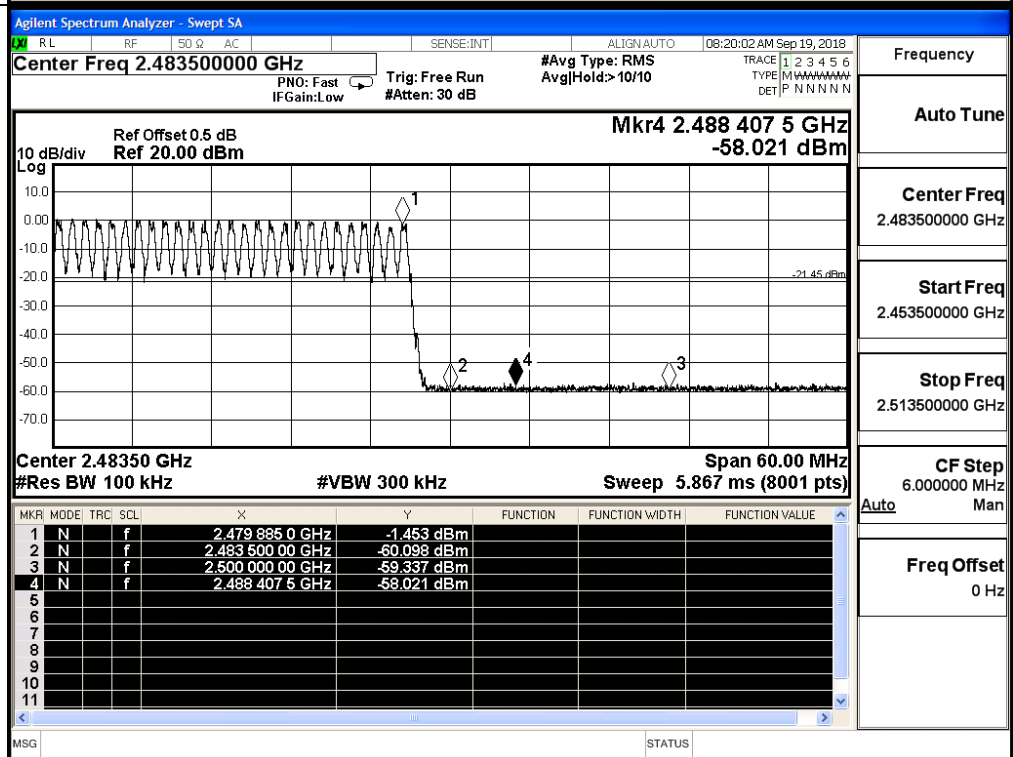
GFSK/LCH/Hop



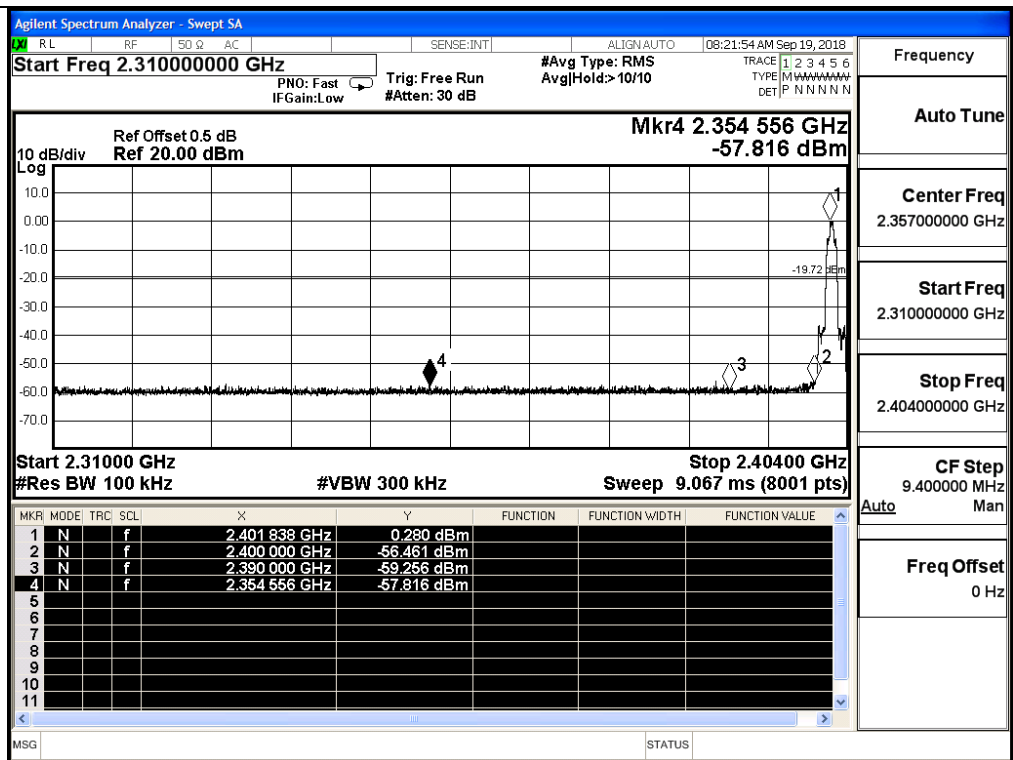
GFSK/HCH/No Hop



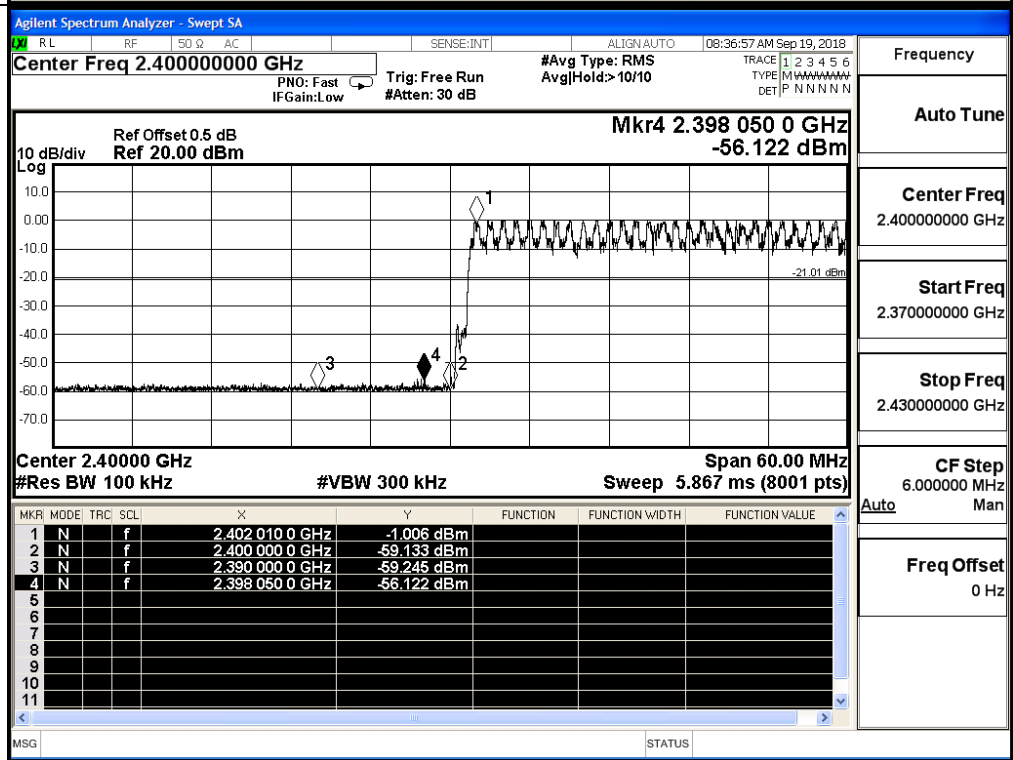
GFSK/HCH/Hop



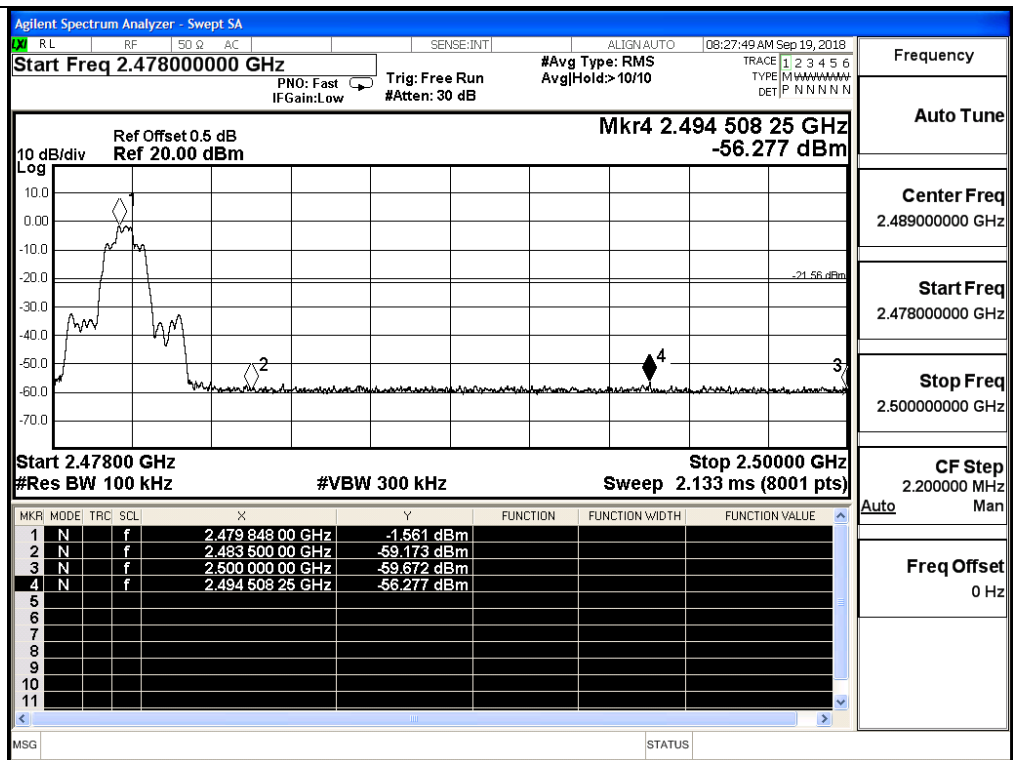
$\pi/4$ DQPSK/LCH/No Hop



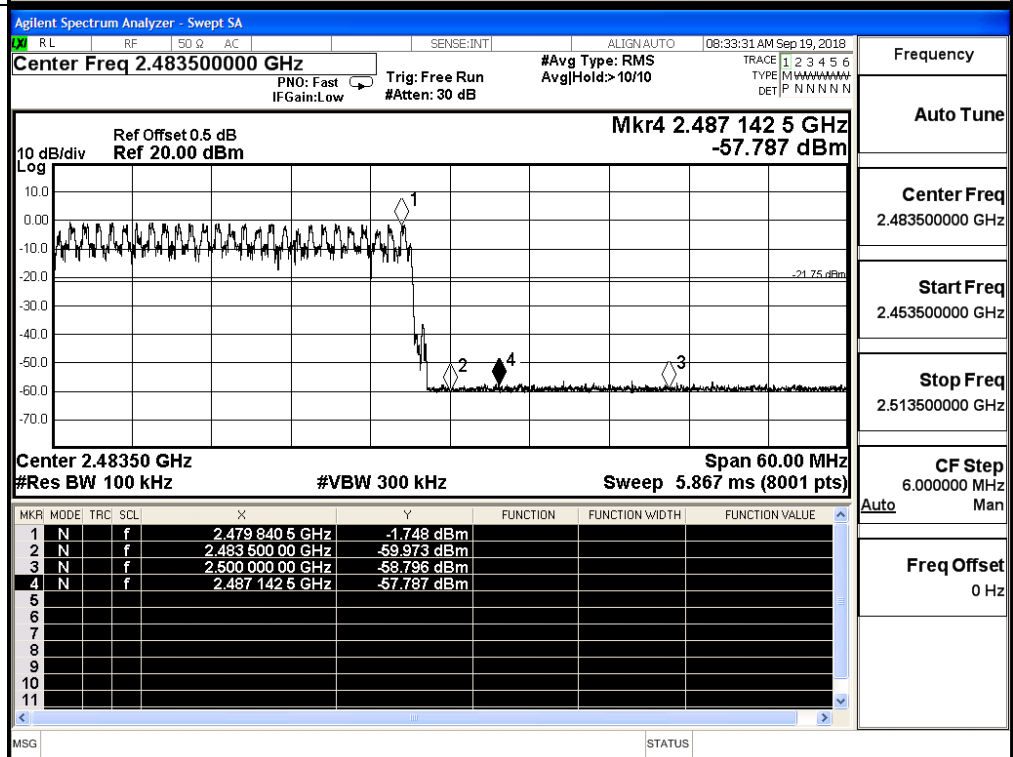
$\pi/4$ DQPSK/LCH/Hop



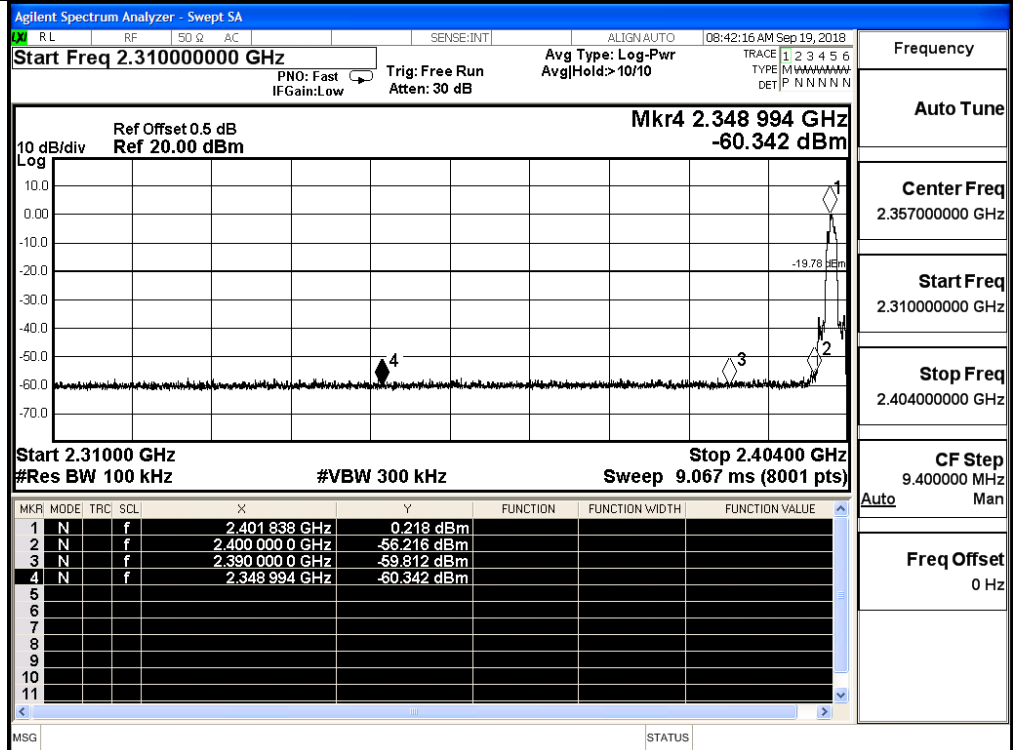
π /4DQPSK/HCH/No
Hop



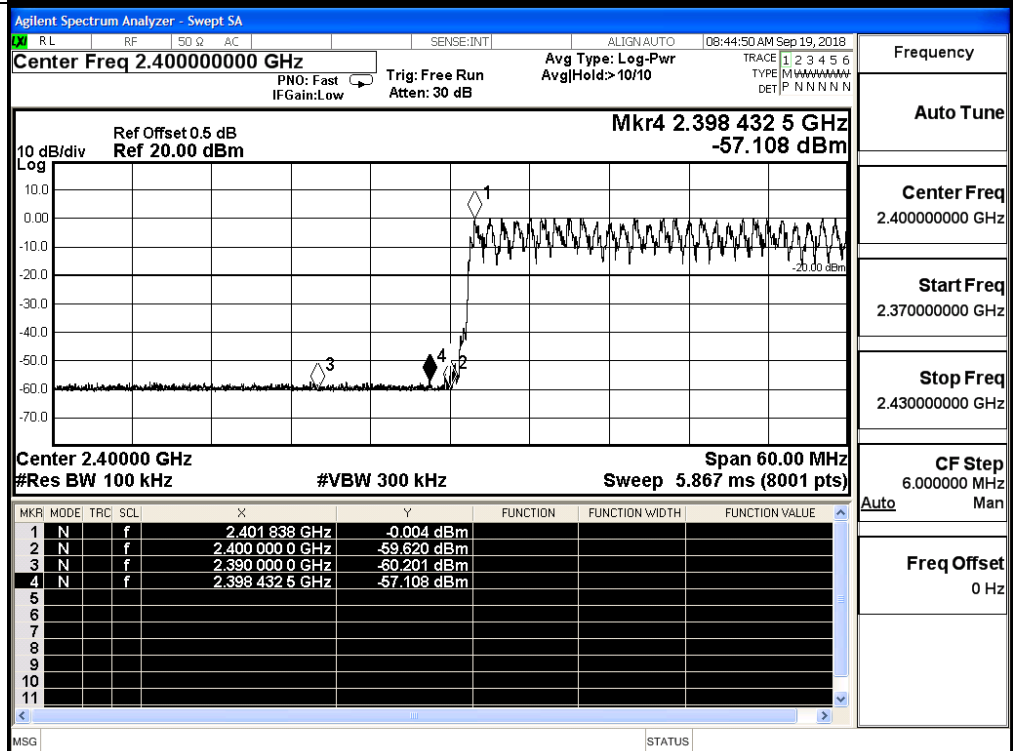
π /4DQPSK/HCH/Hop



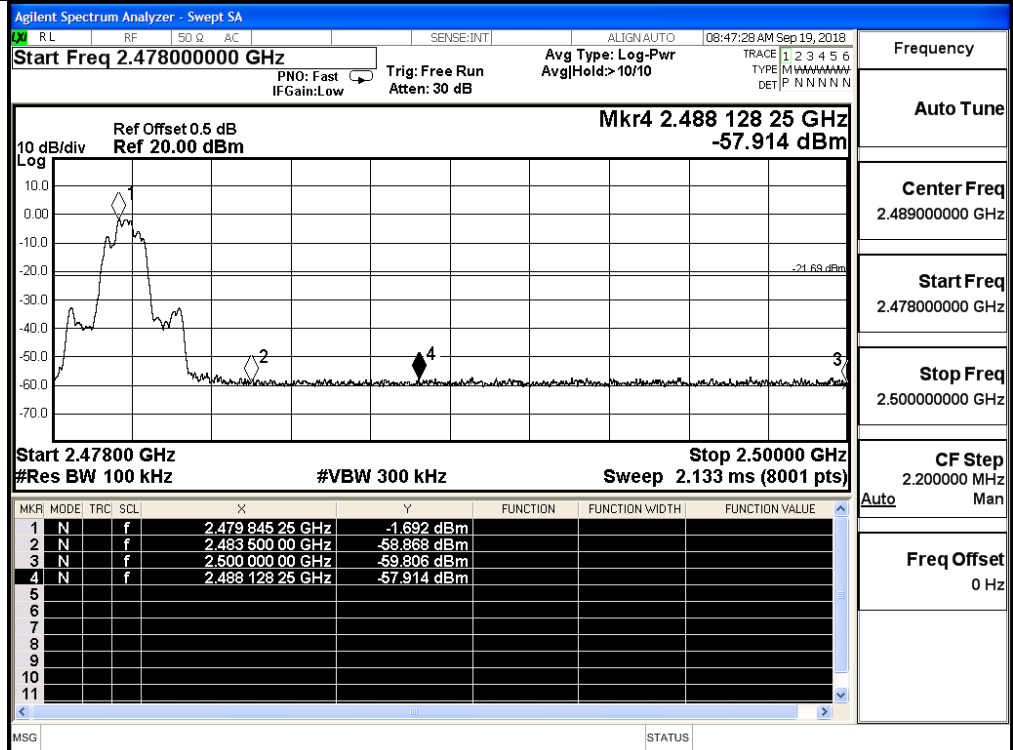
8DPSK/LCH/No Hop



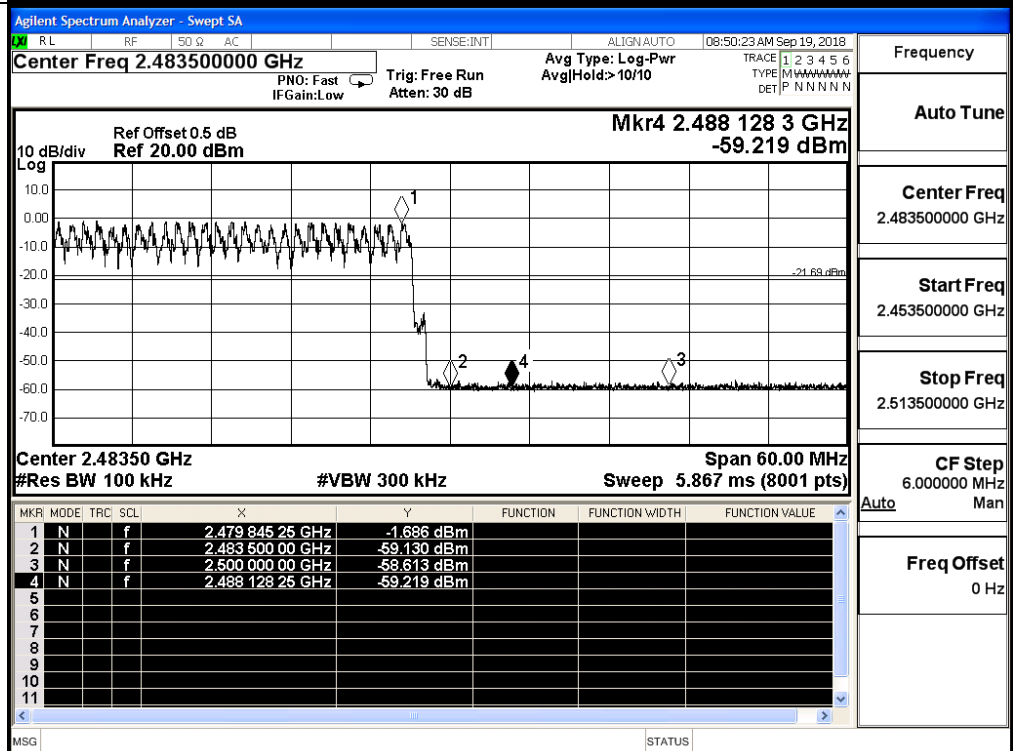
8DPSK/LCH/Hop



8DPSK/HCH/No Hop



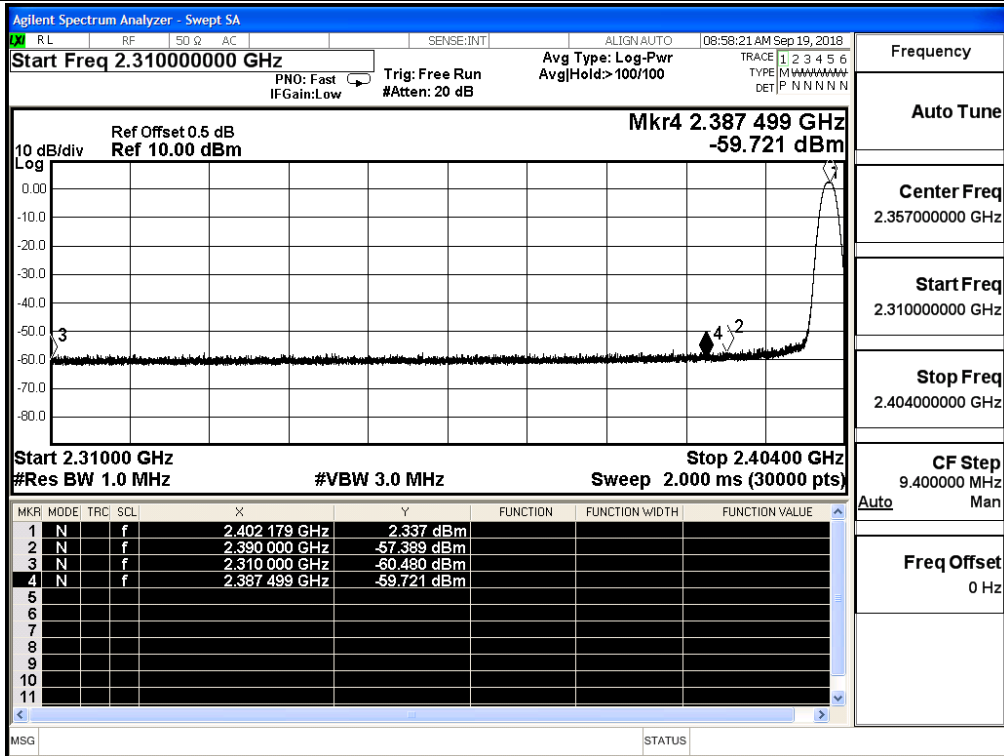
8DPSK/HCH/Hop



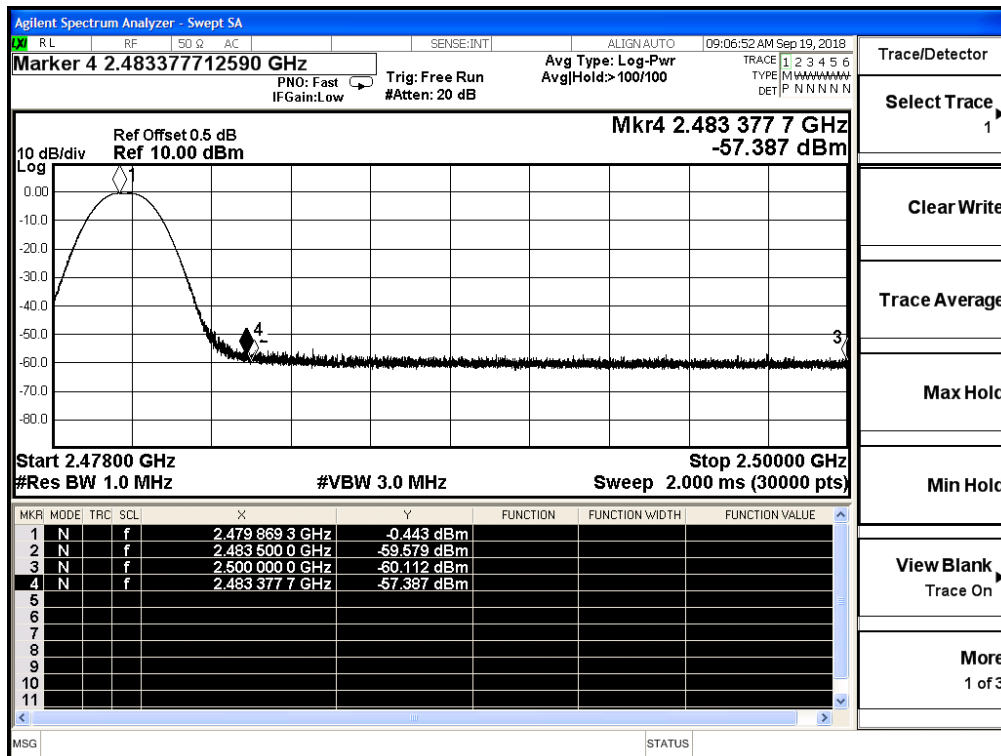
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-60.480	2.0	0	36.78	PEAK	74	PASS
	Off	2390.0	-57.389	2.0	0	39.87	PEAK	74	PASS
	Off	2483.5	-59.579	2.0	0	37.68	PEAK	74	PASS
	Off	2500.0	-60.112	2.0	0	37.15	PEAK	74	PASS
$\pi/4$ DQPSK	Off	2310.0	-61.922	2.0	0	35.34	PEAK	74	PASS
	Off	2390.0	-59.522	2.0	0	37.74	PEAK	74	PASS
	Off	2483.5	-55.869	2.0	0	41.39	PEAK	74	PASS
	Off	2500.0	-60.120	2.0	0	37.14	PEAK	74	PASS
8DPSK	Off	2310.0	-60.740	2.0	0	36.52	PEAK	74	PASS
	Off	2390.0	-59.578	2.0	0	37.68	PEAK	74	PASS
	Off	2483.5	-55.205	2.0	0	42.06	PEAK	74	PASS
	Off	2500.0	-60.062	2.0	0	37.20	PEAK	74	PASS

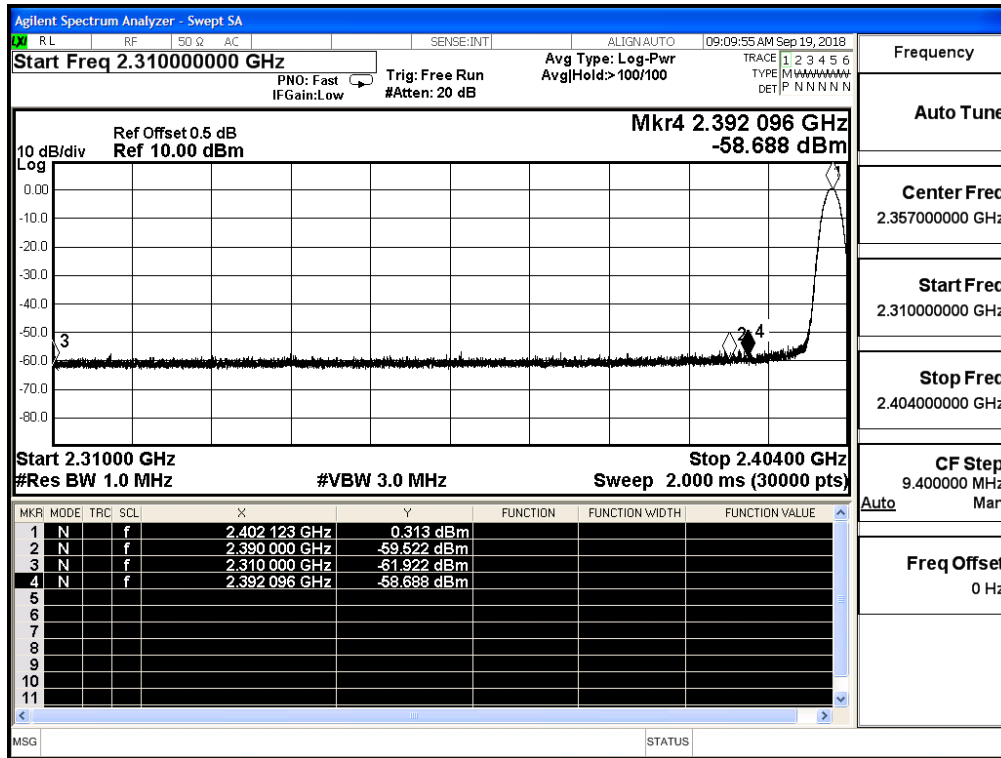
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



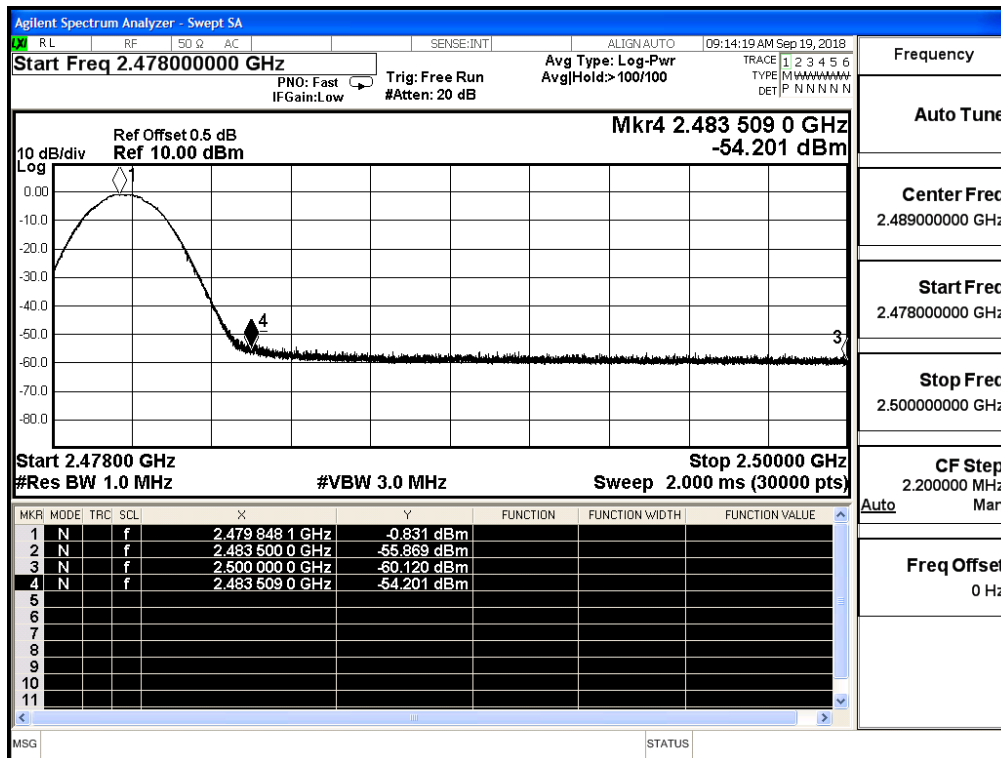
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)



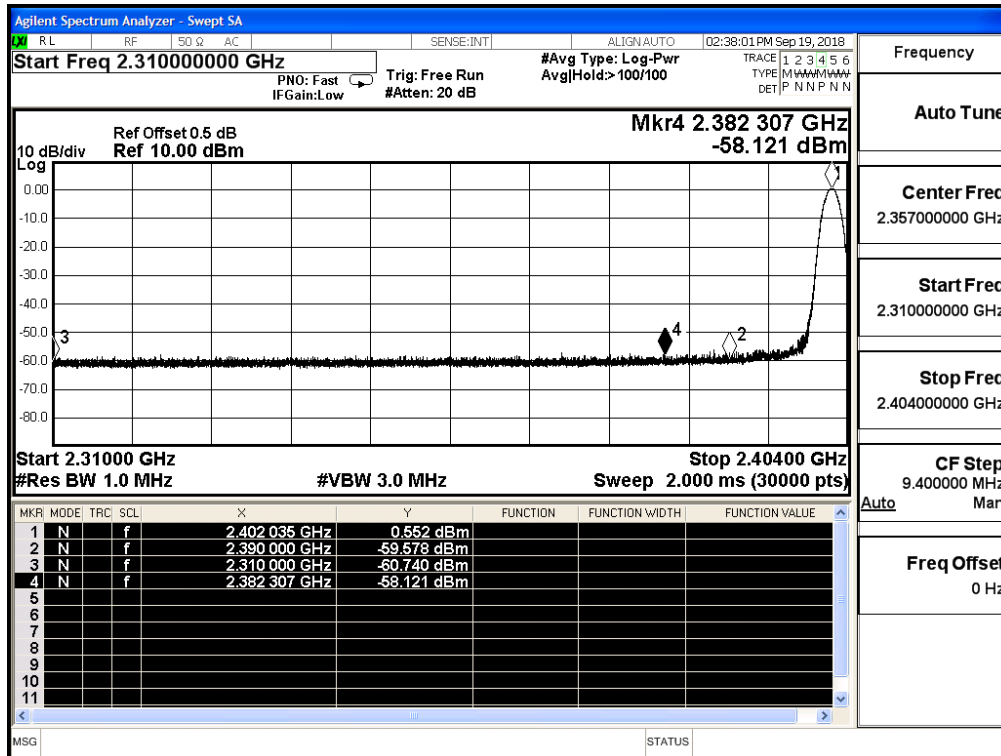
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)



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



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



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

