

Appendix A

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

Product Name: IPTV Receiver

Trade Mark: FORMULER

Test Model: Z ALPHA

Environmental Conditions

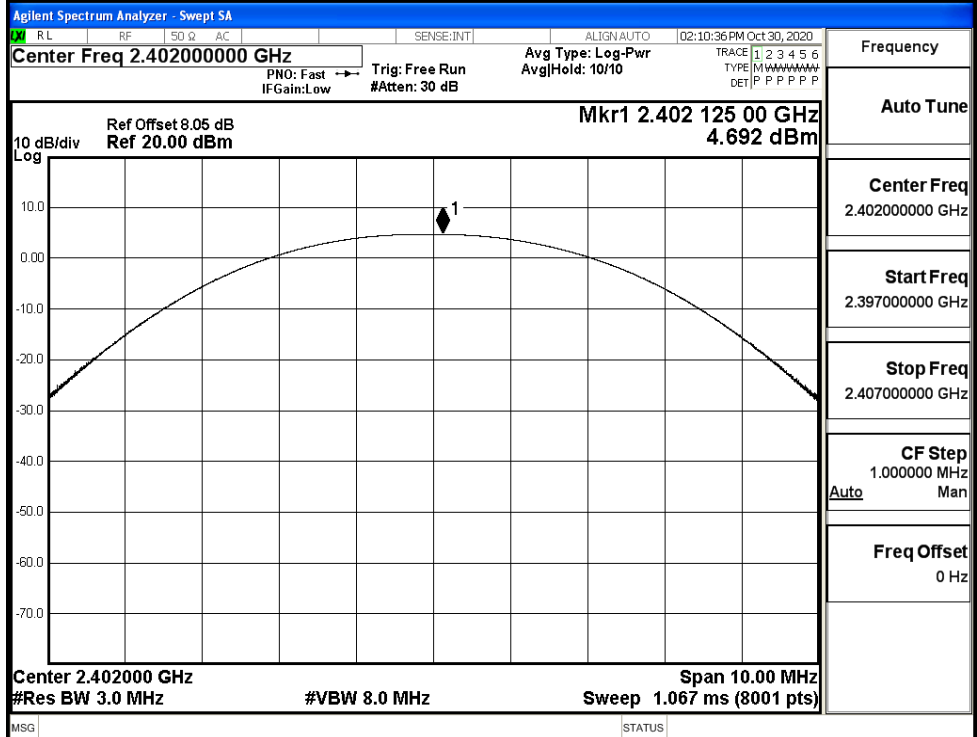
Temperature:	24.6° C
Relative Humidity:	54.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Ken He
Supervised by:	Li Huan

A.1 Maxmum Conducted Peak Output Power

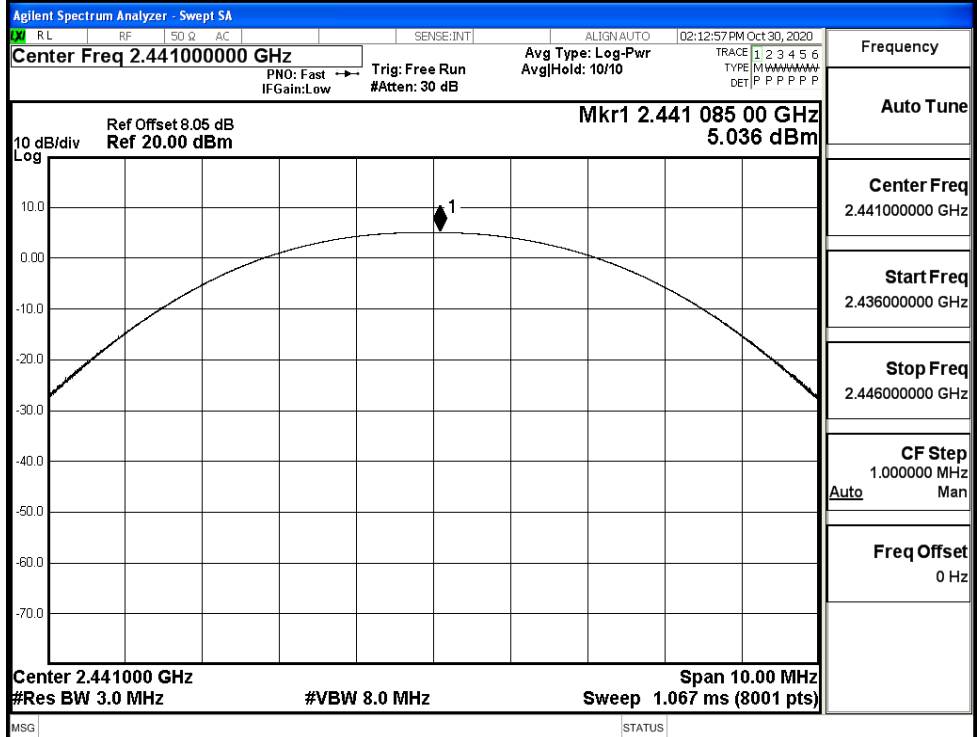
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	4.692	21	PASS
	MCH	5.036	21	PASS
	HCH	4.483	21	PASS
$\pi/4$ DQPSK	LCH	1.104	21	PASS
	MCH	1.560	21	PASS
	HCH	1.014	21	PASS
8DPSK	LCH	1.325	21	PASS
	MCH	1.797	21	PASS
	HCH	1.237	21	PASS

Test Graphs

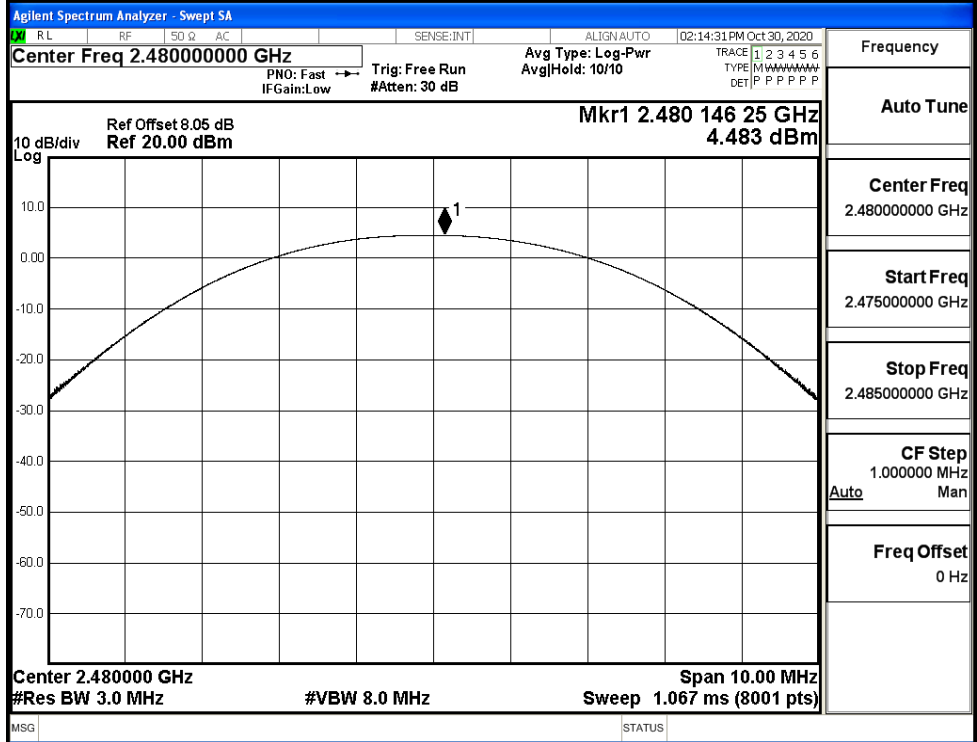
GFSK/LCH



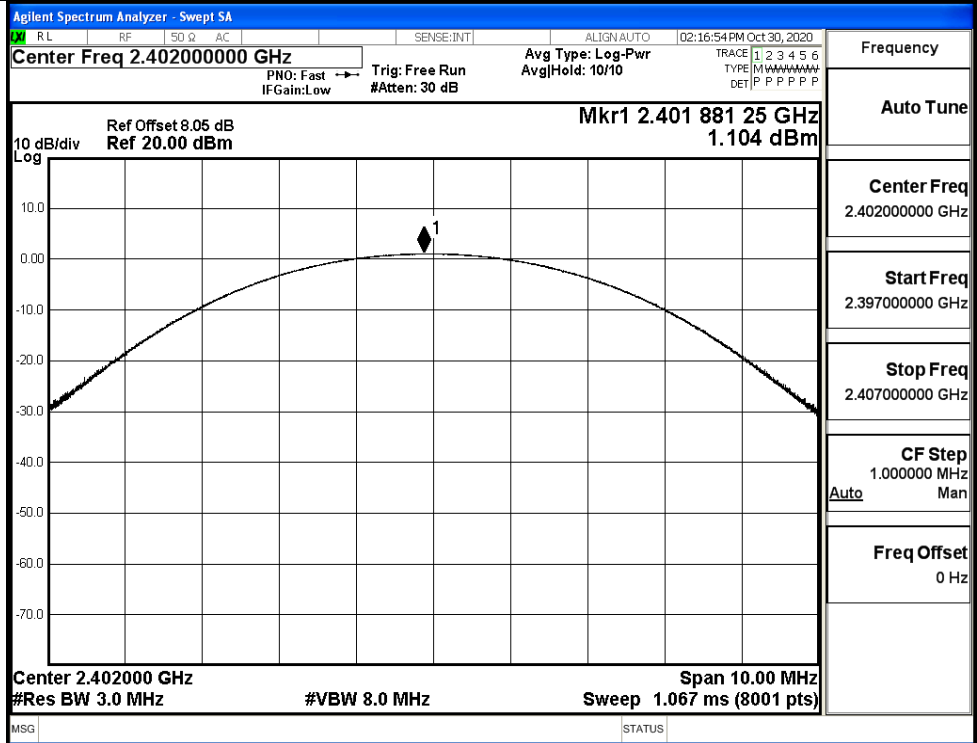
GFSK/MCH



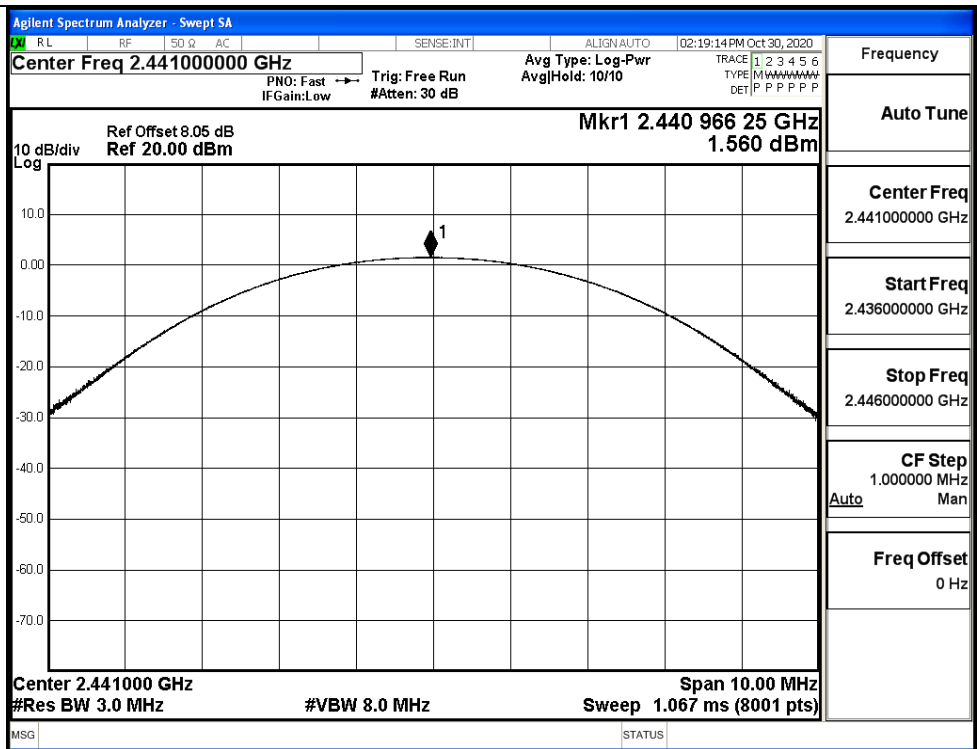
GFSK/HCH



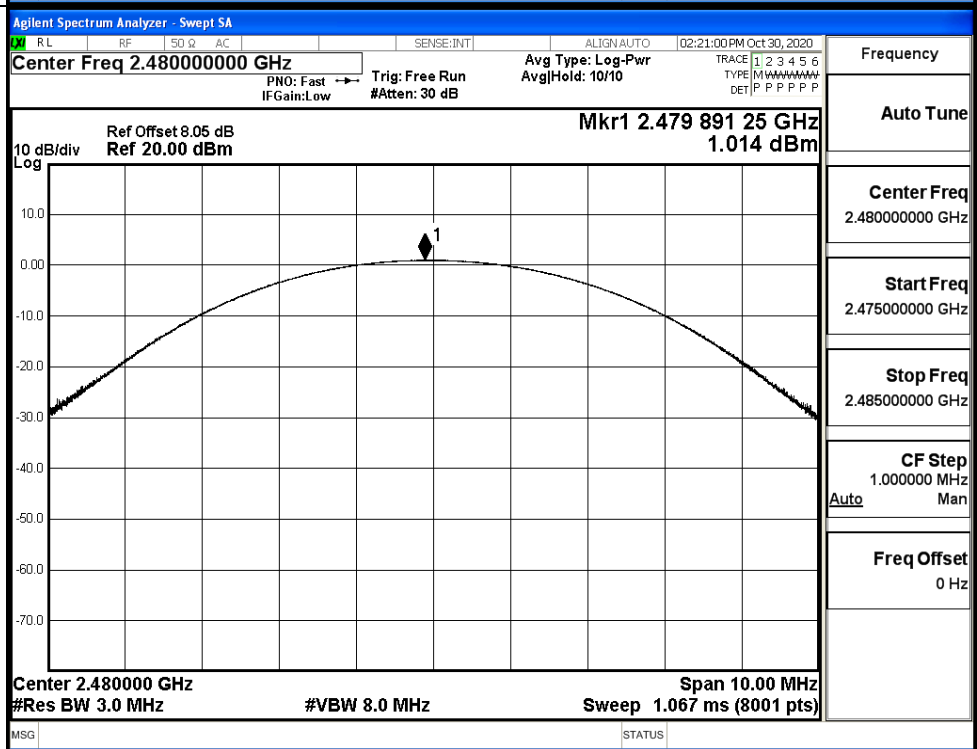
π /4DQPSK/LCH



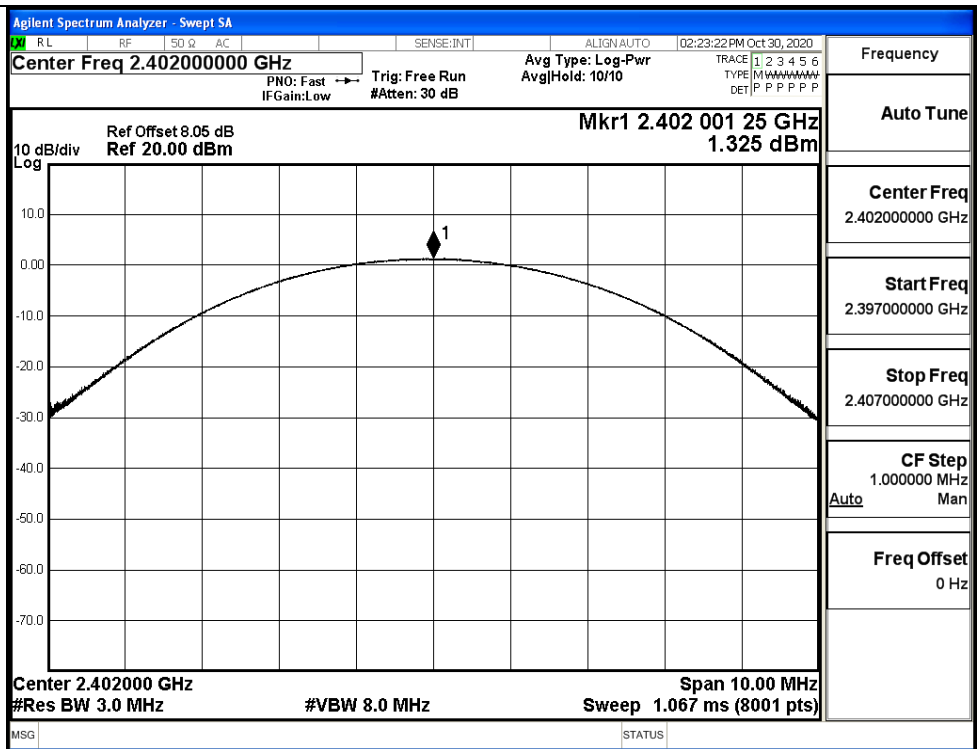
π /4DQPSK/MCH



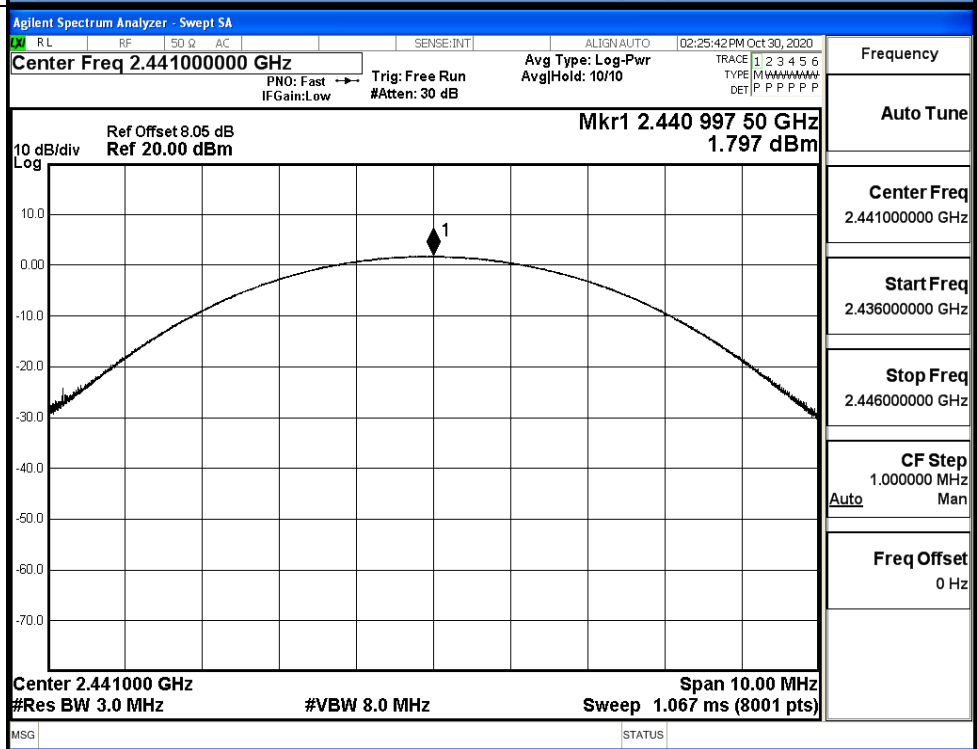
π /4DQPSK/HCH

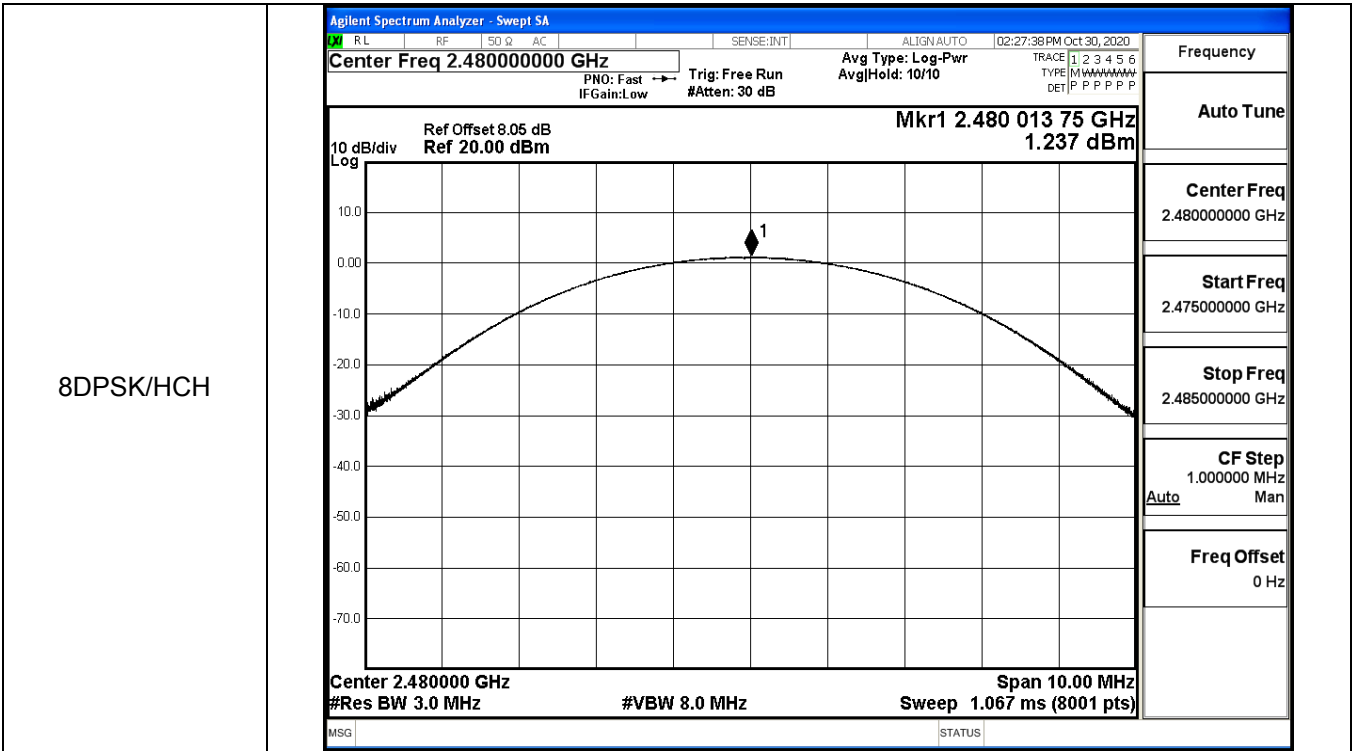


8DPSK/LCH



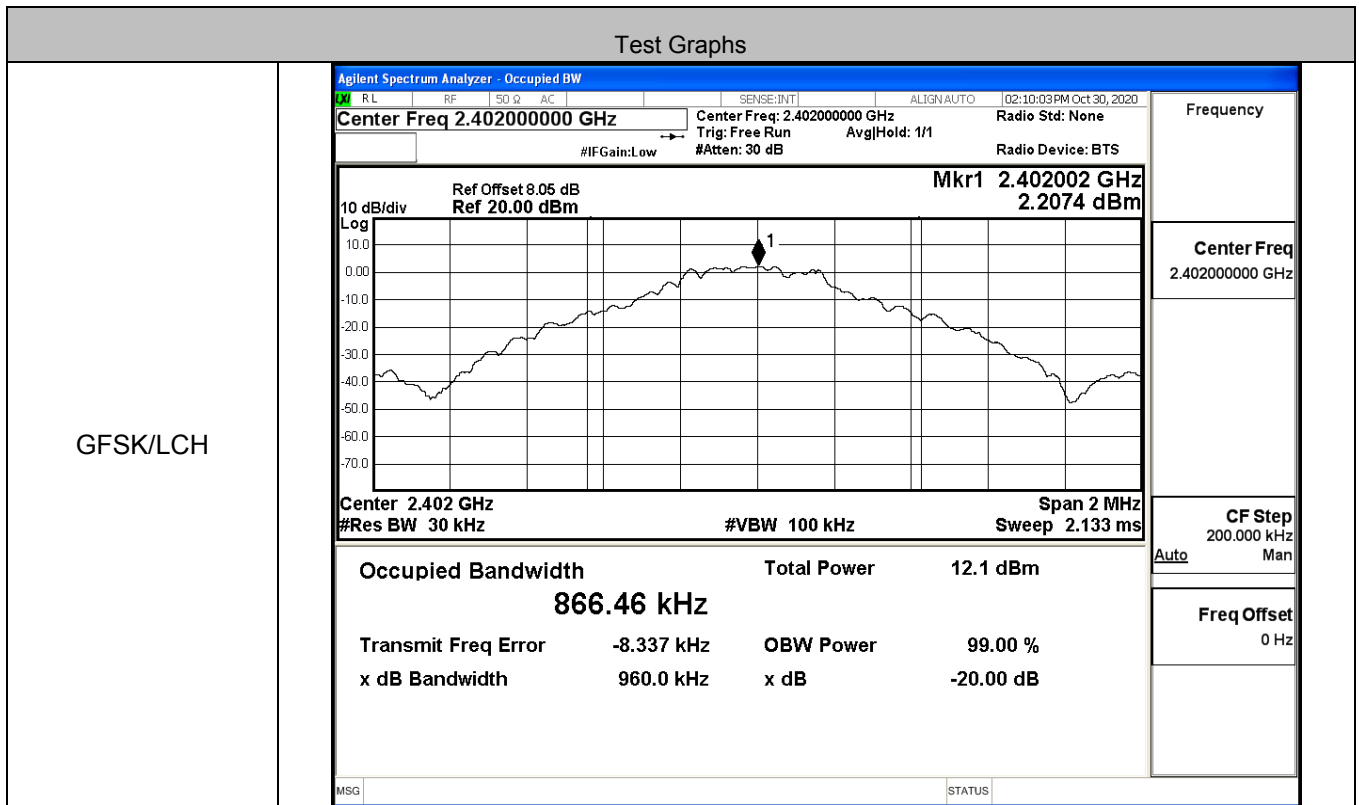
8DPSK/MCH



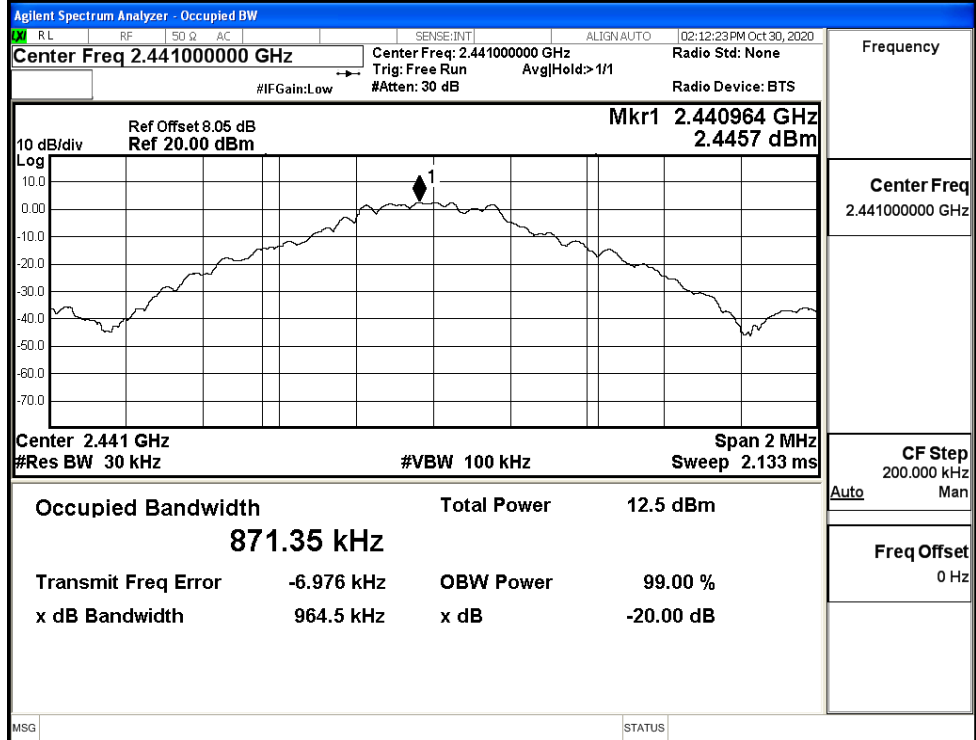


A.2 20dB Bandwidth

Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.9600	Not Specified	PASS
	MCH	0.9645	Not Specified	PASS
	HCH	0.9646	Not Specified	PASS
π/4DQPSK	LCH	1.521	Not Specified	PASS
	MCH	1.521	Not Specified	PASS
	HCH	1.520	Not Specified	PASS
8DPSK	LCH	1.513	Not Specified	PASS
	MCH	1.511	Not Specified	PASS
	HCH	1.512	Not Specified	PASS

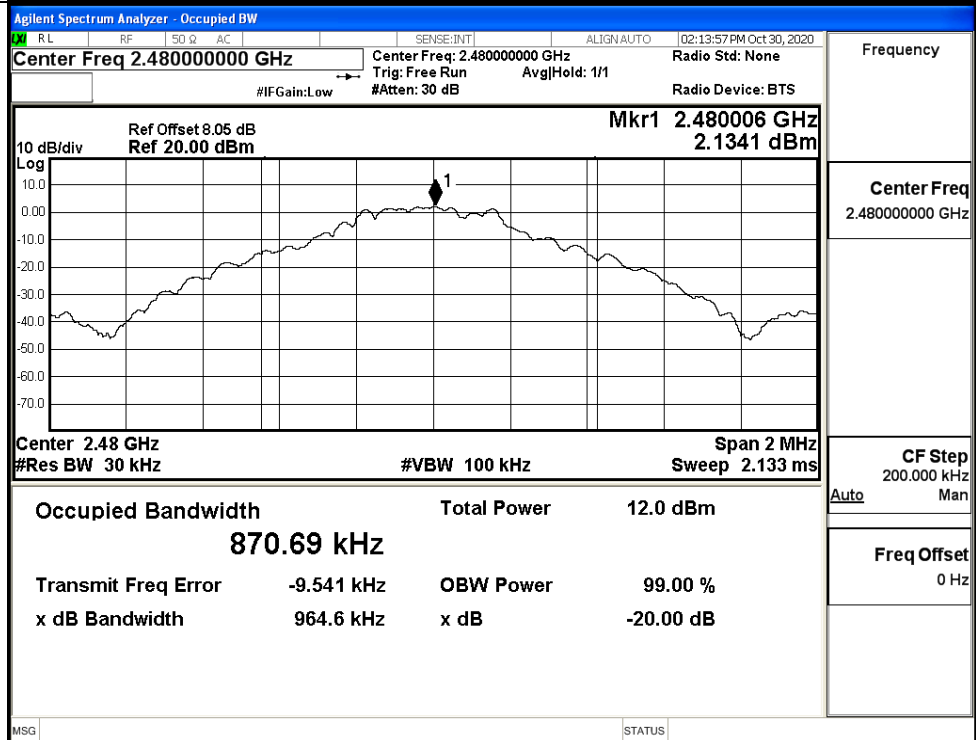


GFSK/MCH



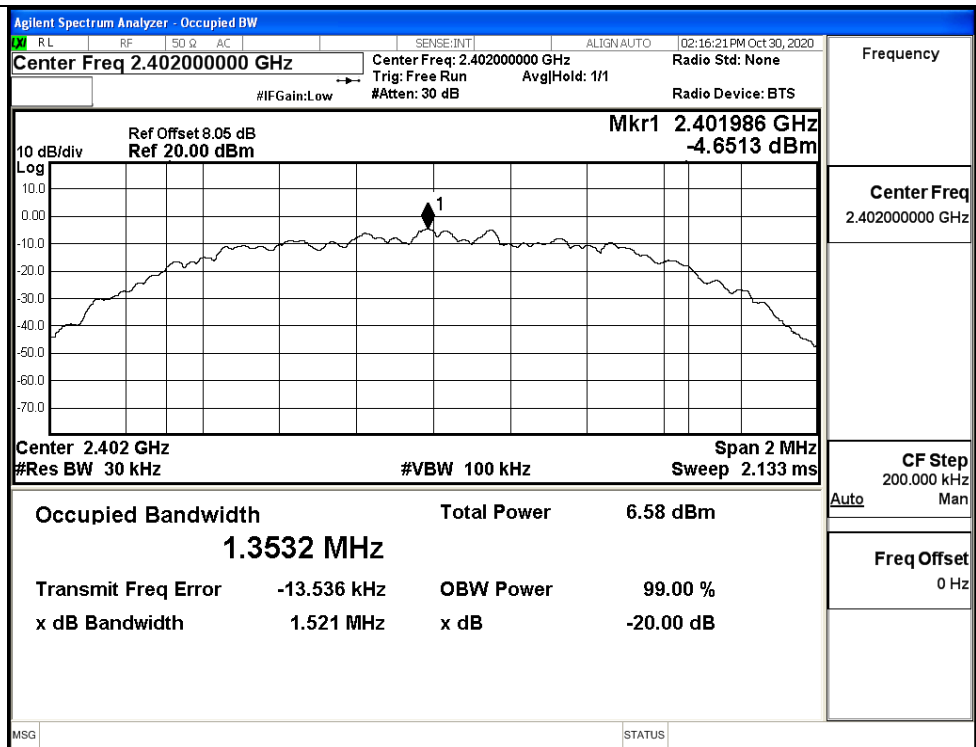
Frequency	2.441000000 GHz
Center Freq	2.441000000 GHz
CF Step	200.000 kHz
Auto	Man
Freq Offset	0 Hz

GFSK/HCH

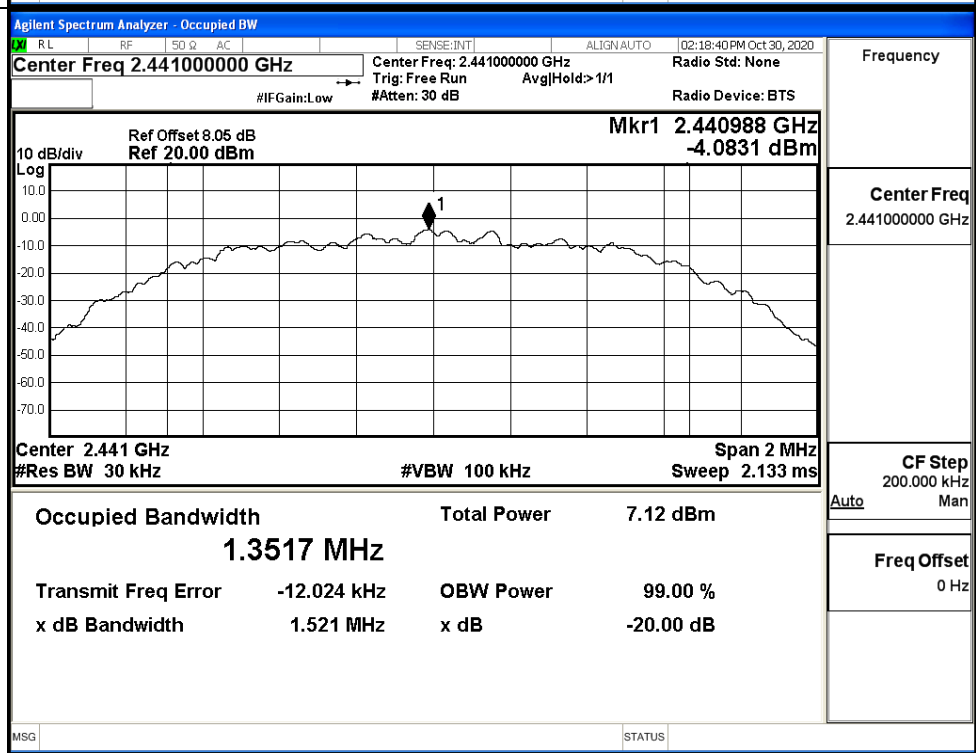


Frequency	2.480000000 GHz
Center Freq	2.480000000 GHz
CF Step	200.000 kHz
Auto	Man
Freq Offset	0 Hz

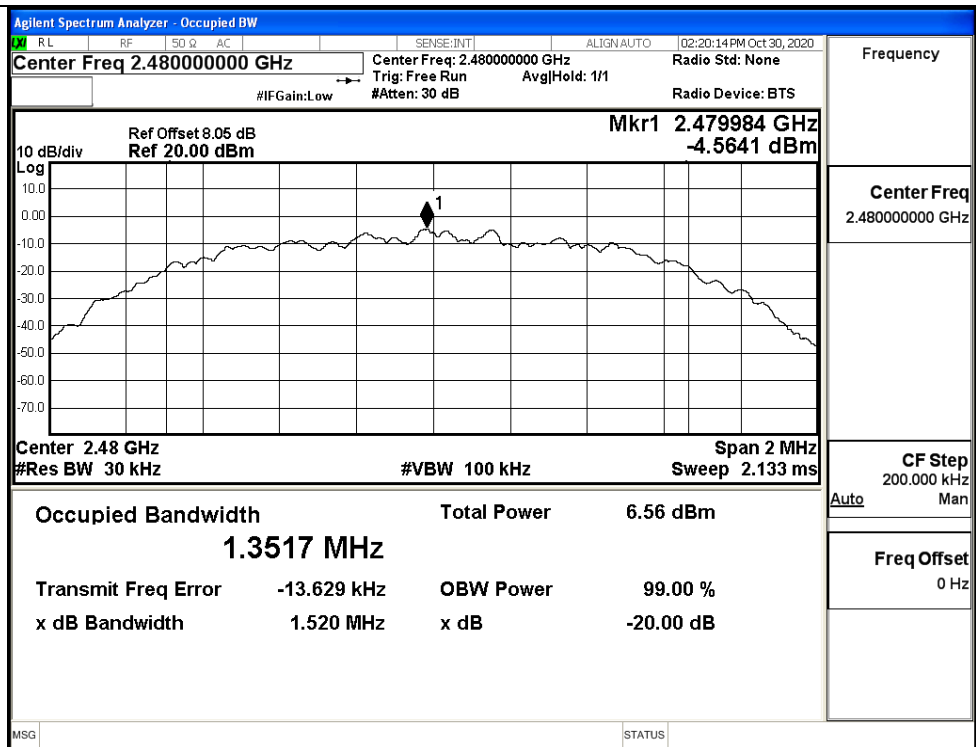
π/4DQPSK/LCH



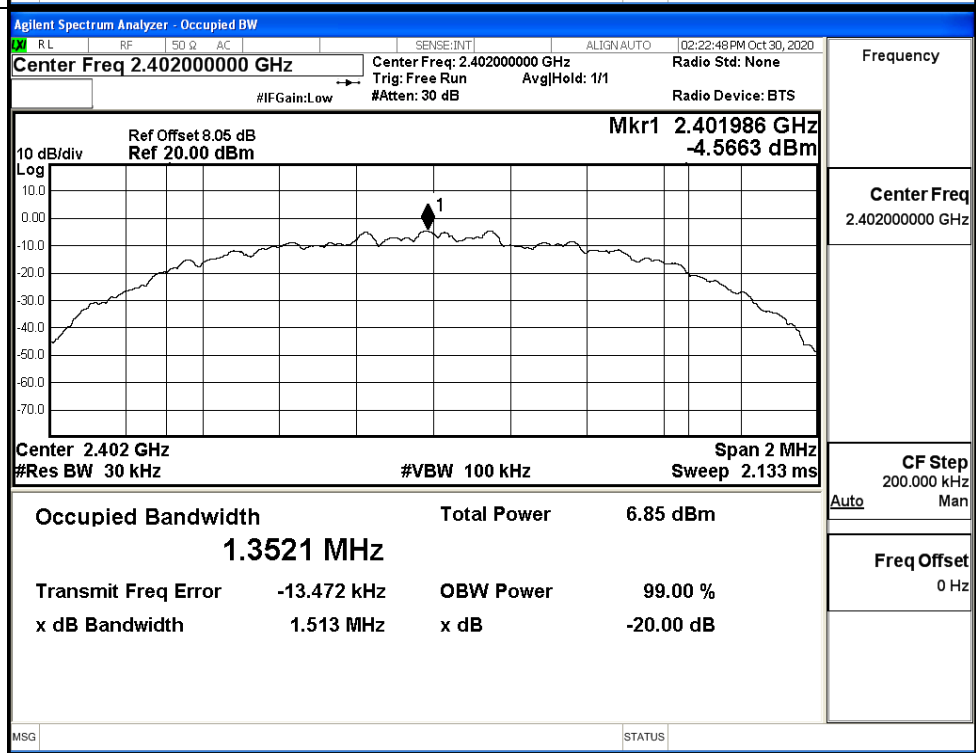
π/4DQPSK/MCH



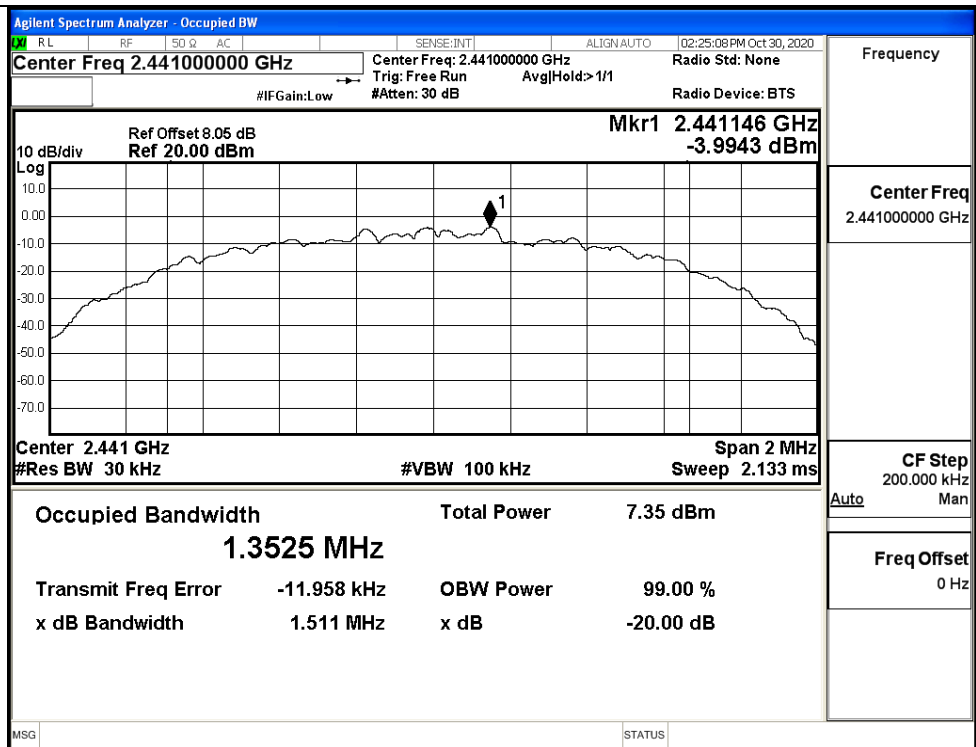
π /4DQPSK/HCH



8DPSK/LCH

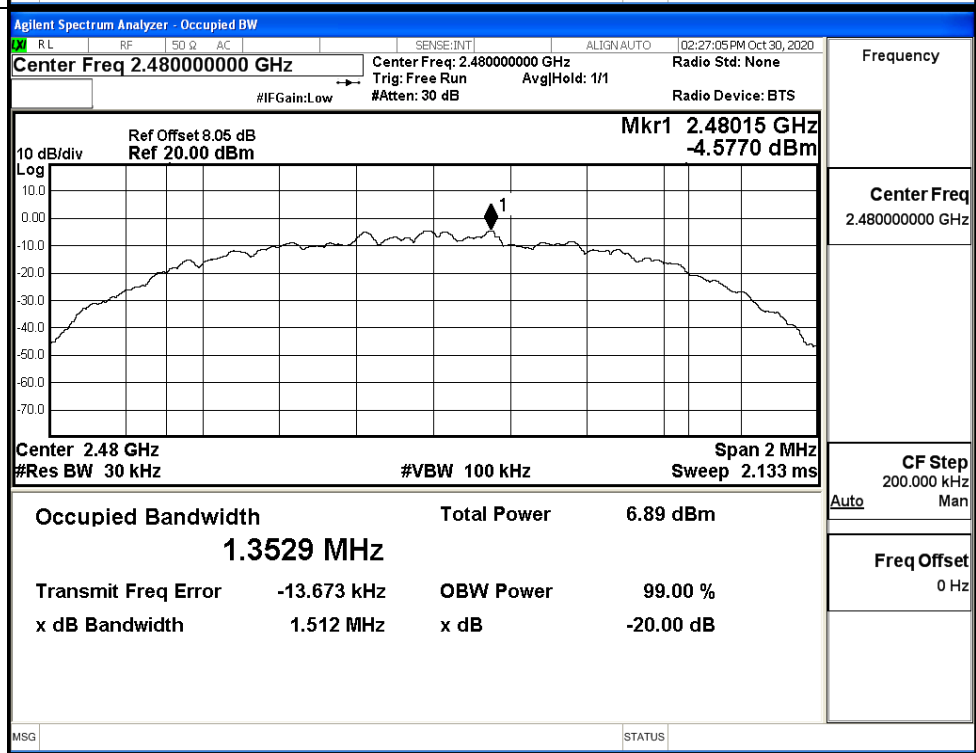


8DPSK/MCH



Frequency	2.441000000 GHz
Center Freq	2.441000000 GHz
CF Step	200.000 kHz
Auto	Man
Freq Offset	0 Hz

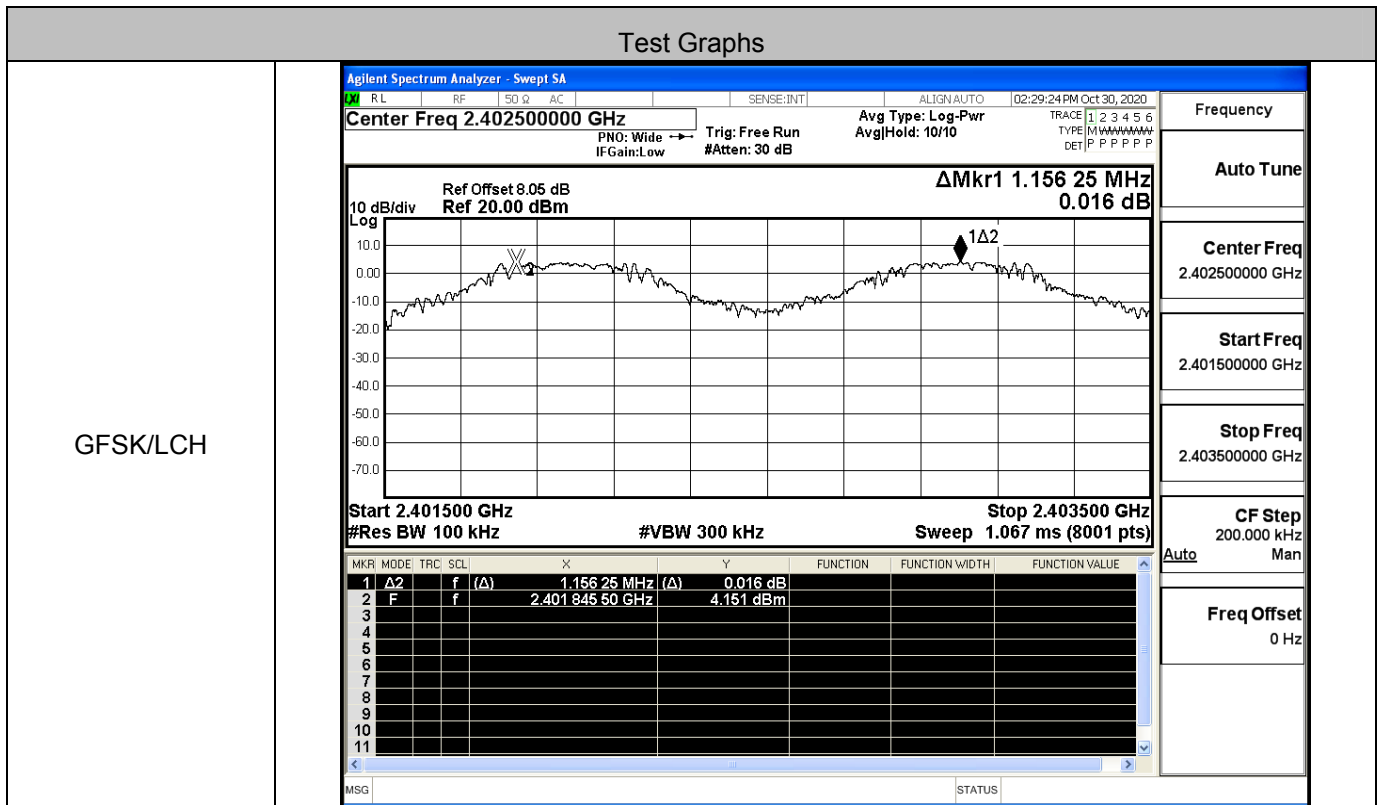
8DPSK/HCH



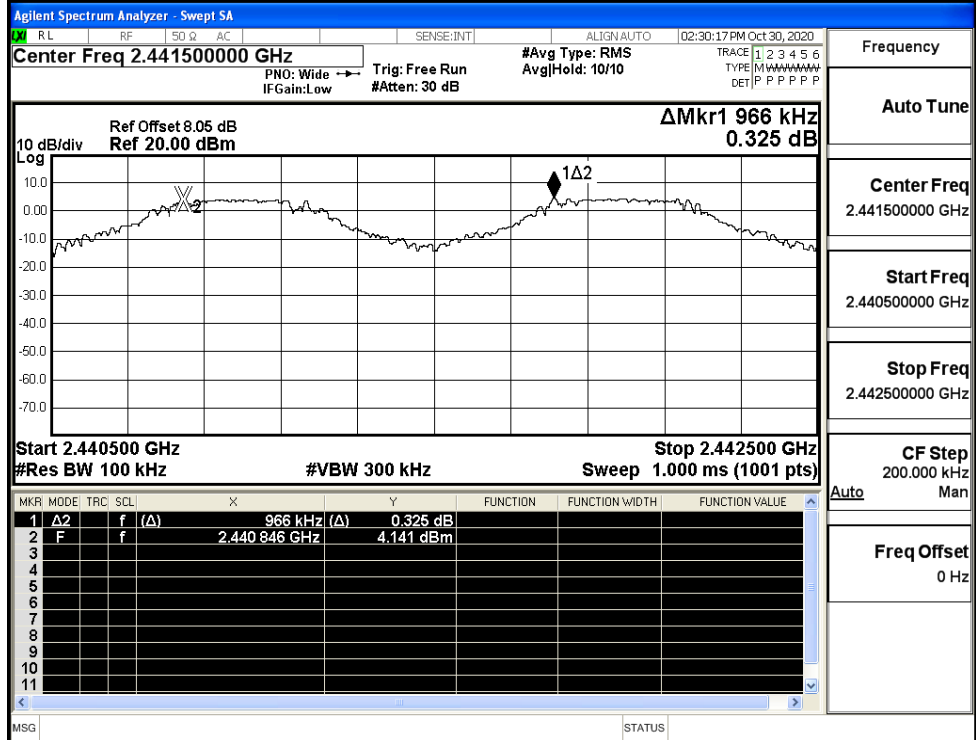
Frequency	2.480000000 GHz
Center Freq	2.480000000 GHz
CF Step	200.000 kHz
Auto	Man
Freq Offset	0 Hz

A.3 Carrier Frequency Separation

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.156	0.643	PASS
	MCH	0.966	0.643	PASS
	HCH	0.902	0.643	PASS
π/4DQPSK	LCH	1.154	1.014	PASS
	MCH	1.030	1.014	PASS
	HCH	1.206	1.014	PASS
8DPSK	LCH	1.246	1.009	PASS
	MCH	1.208	1.009	PASS
	HCH	0.940	1.009	PASS

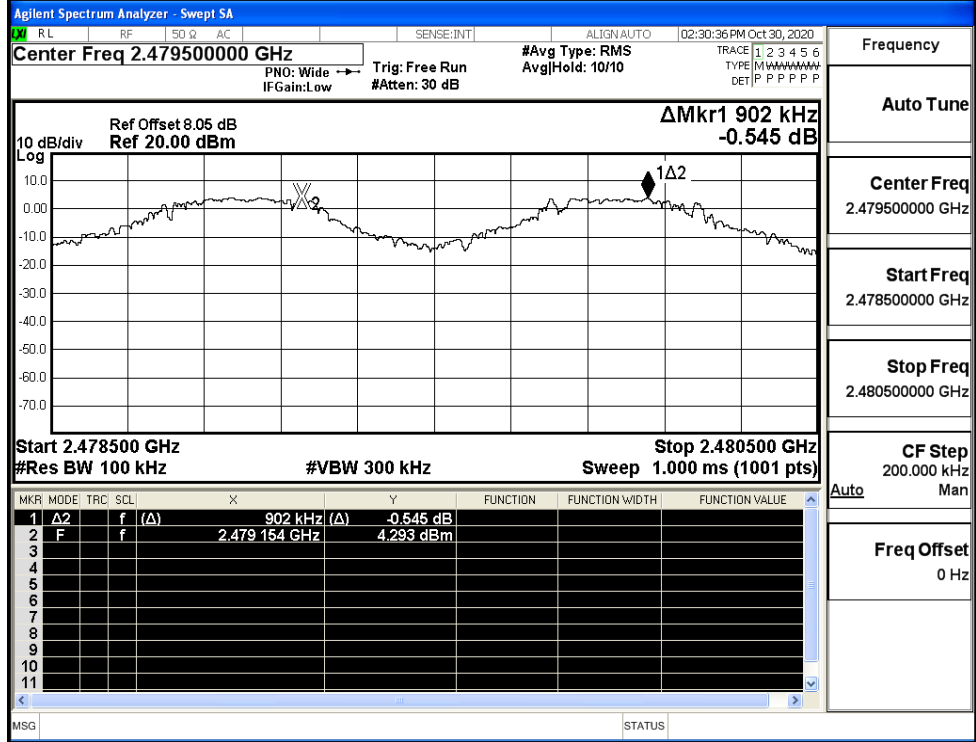


GFSK/MCH



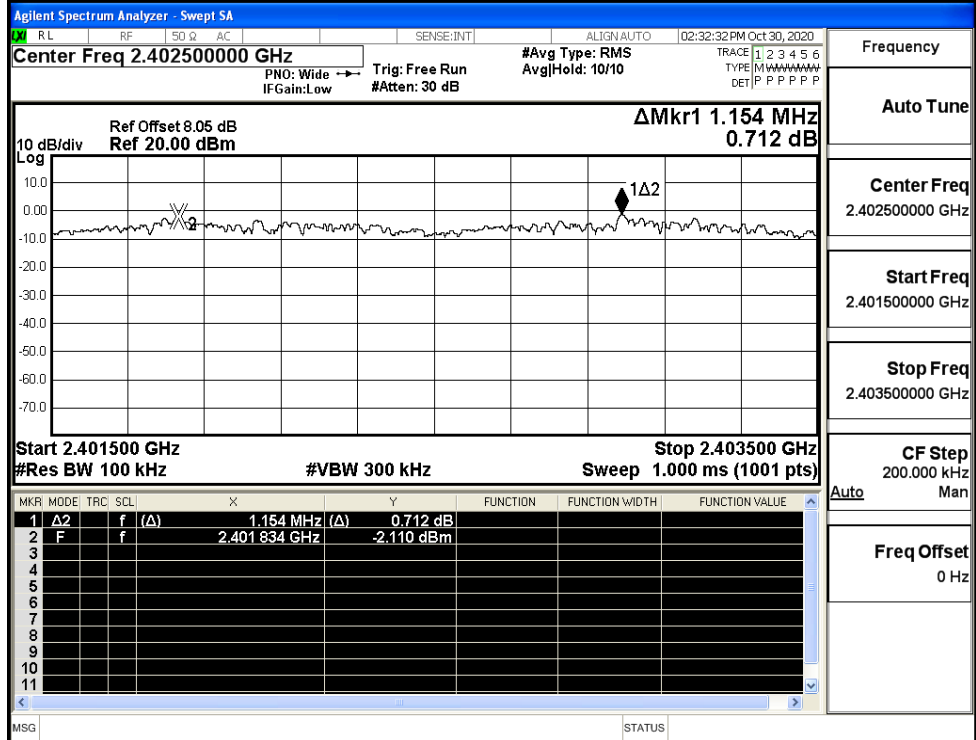
Frequency
Auto Tune
Center Freq 2.441500000 GHz
Start Freq 2.440500000 GHz
Stop Freq 2.442500000 GHz
CF Step 200.000 kHz
Auto Man
Freq Offset 0 Hz

GFSK/HCH

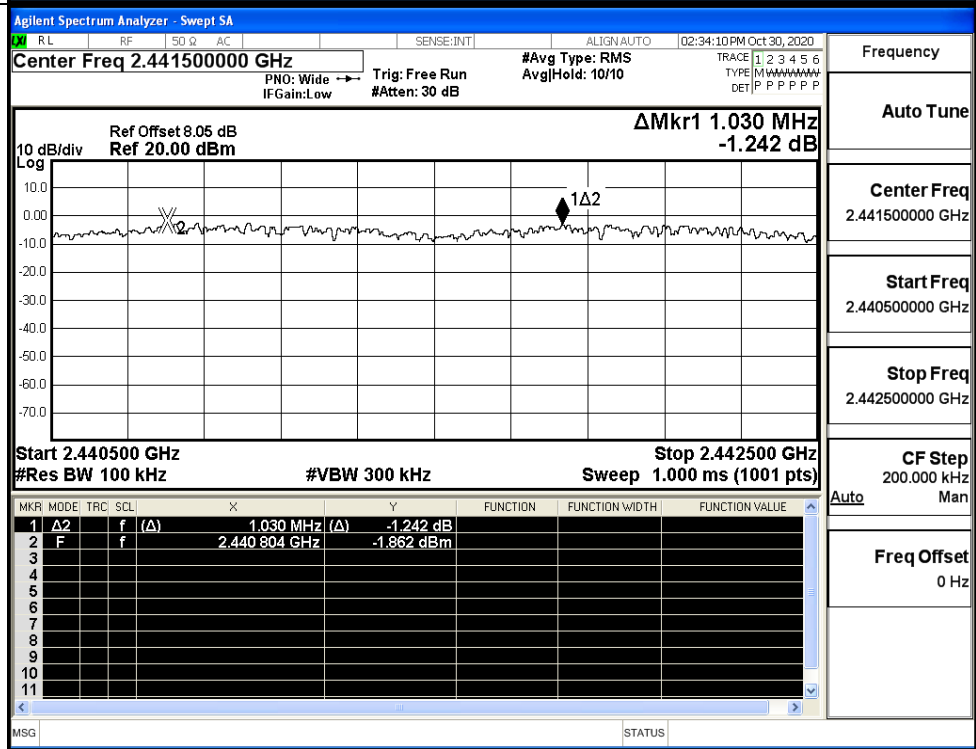


Frequency
Auto Tune
Center Freq 2.479500000 GHz
Start Freq 2.478500000 GHz
Stop Freq 2.480500000 GHz
CF Step 200.000 kHz
Auto Man
Freq Offset 0 Hz

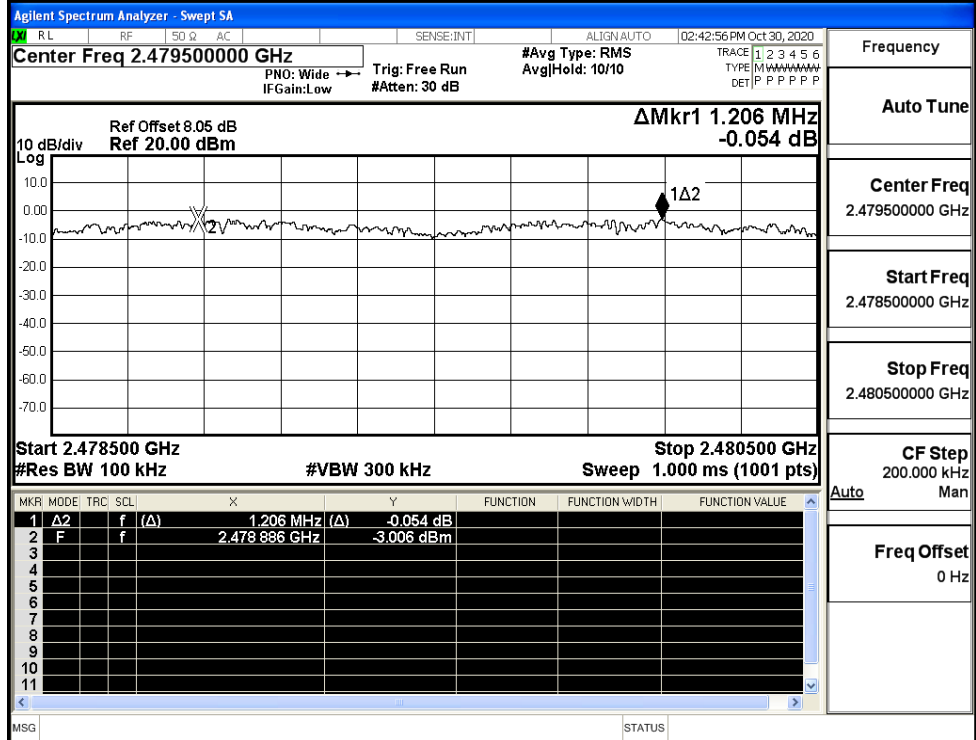
$\pi/4$ DQPSK/LCH



$\pi/4$ DQPSK/MCH

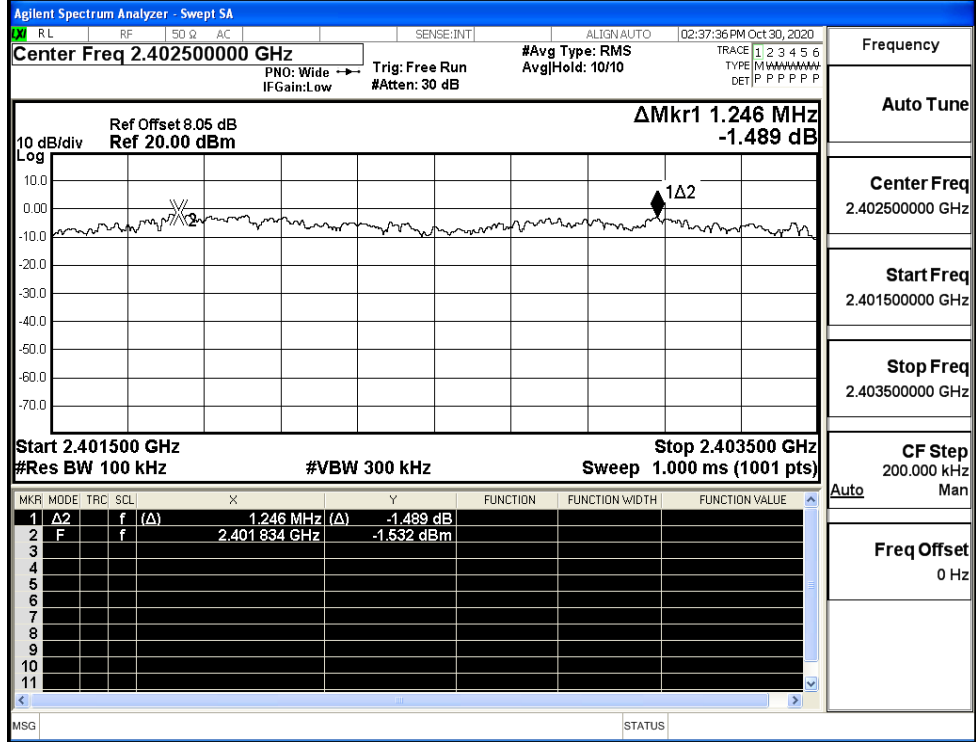


TT/4DQPSK/HCH



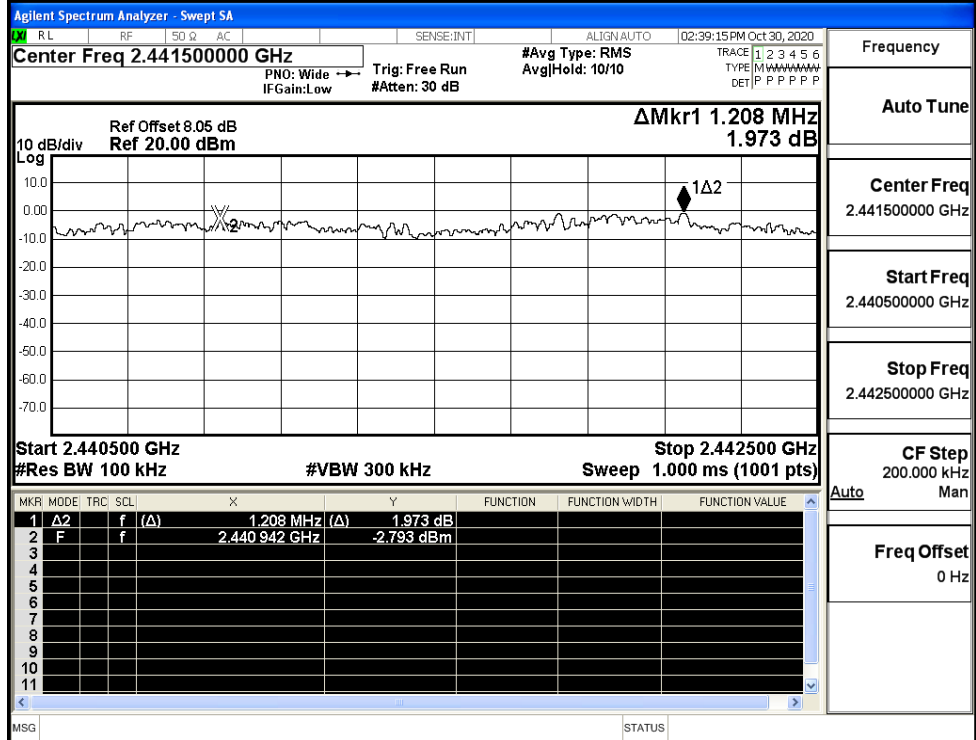
Frequency
Auto Tune
Center Freq 2.479500000 GHz
Start Freq 2.478500000 GHz
Stop Freq 2.480500000 GHz
CF Step 200.000 kHz
Auto Man
Freq Offset 0 Hz

8DPSK/LCH



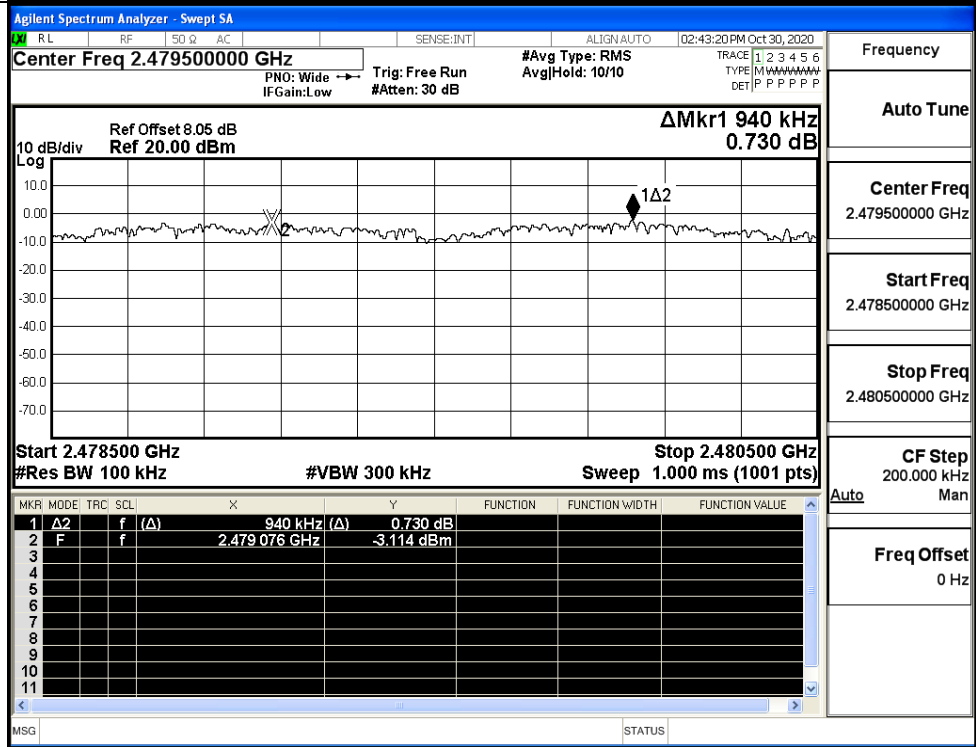
Frequency
Auto Tune
Center Freq 2.402500000 GHz
Start Freq 2.401500000 GHz
Stop Freq 2.403500000 GHz
CF Step 200.000 kHz
Auto Man
Freq Offset 0 Hz

8DPSK/MCH



Frequency
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

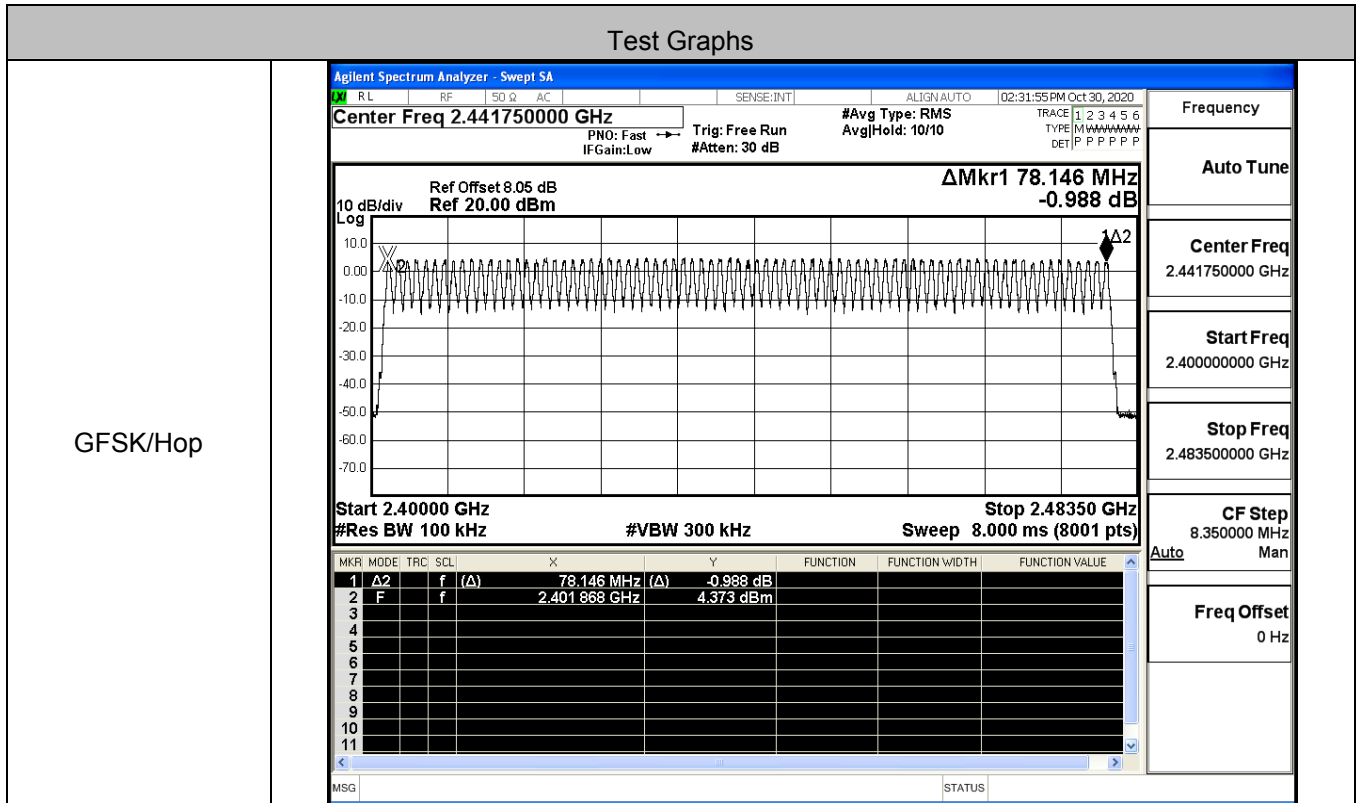
8DPSK/HCH



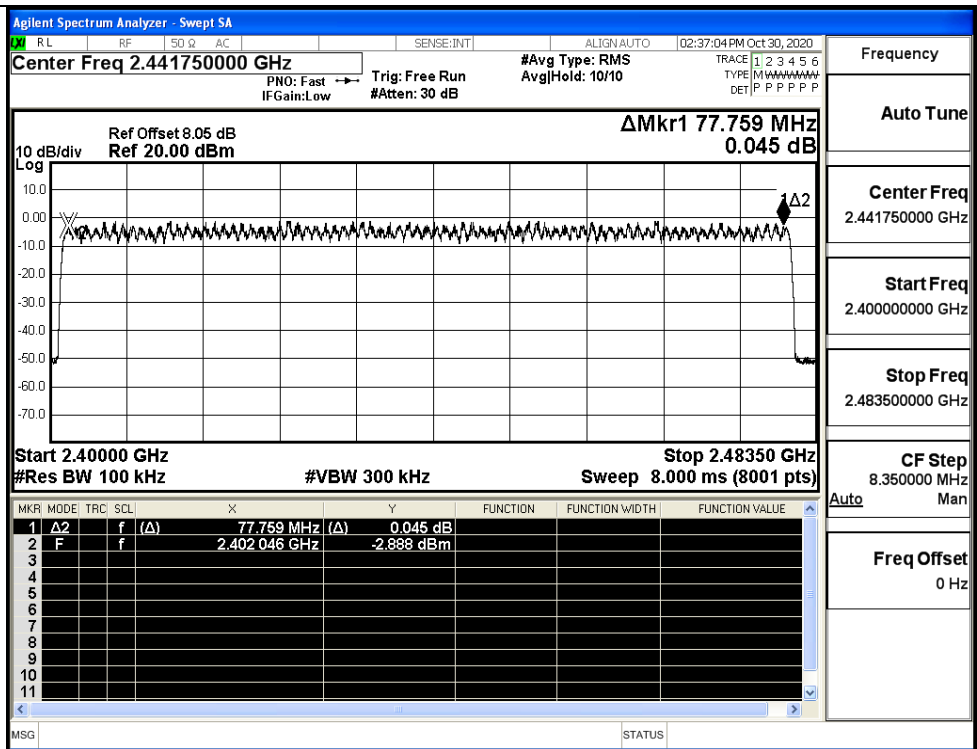
Frequency
Auto Tune
Center Freq 2.479500000 GHz
Start Freq 2.478500000 GHz
Stop Freq 2.480500000 GHz
CF Step 200.000 kHz
Auto Man
Freq Offset 0 Hz

A.4 Hopping Channel Number

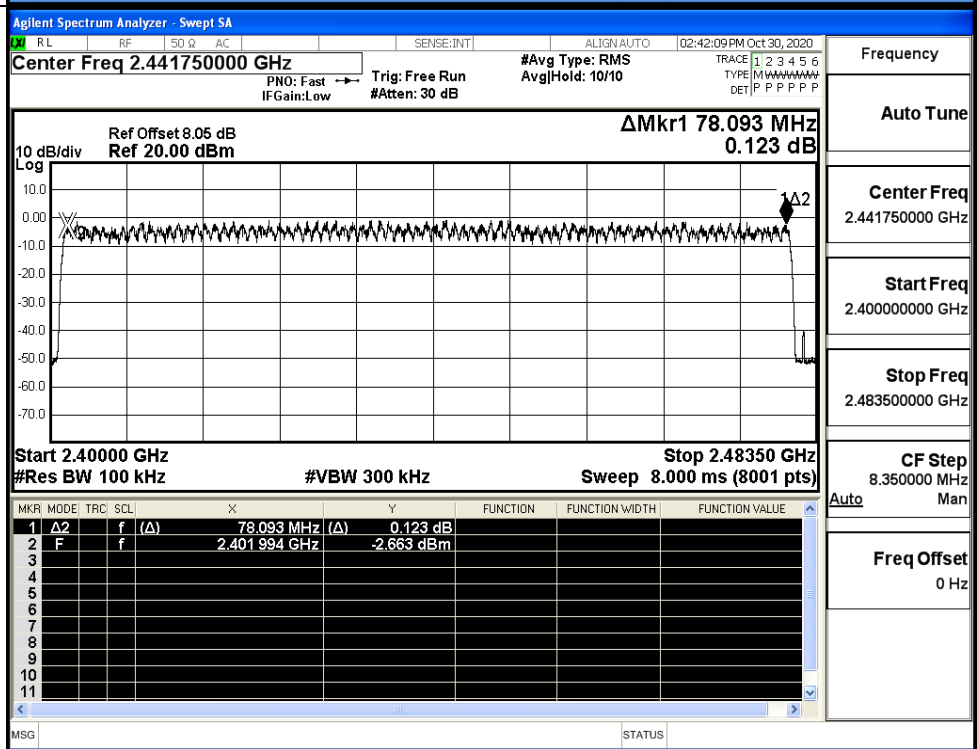
Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	>=15	PASS
$\pi/4$ DQPSK	Hop	79	>=15	PASS
8DPSK	Hop	79	>=15	PASS



$\pi/4$ DQPSK/Hop

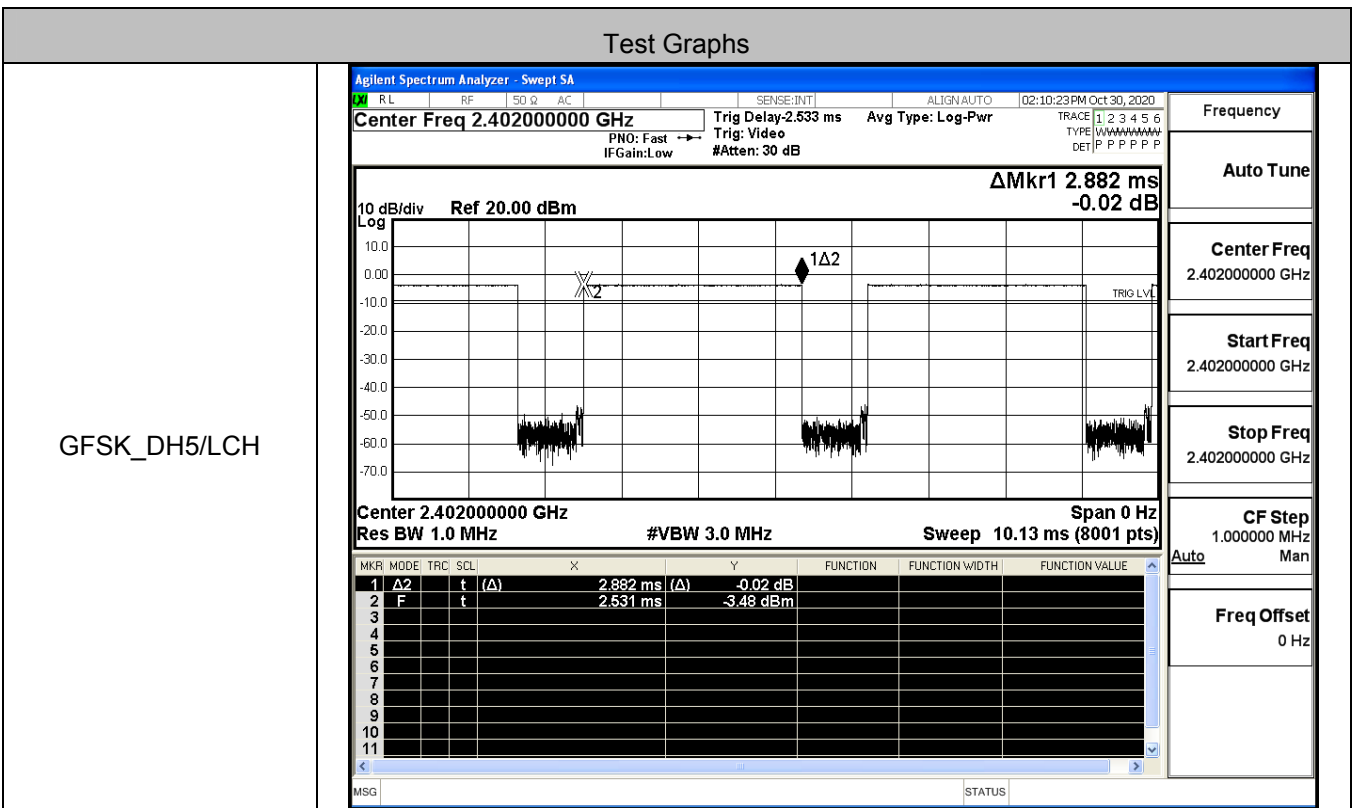


8DPSK/Hop

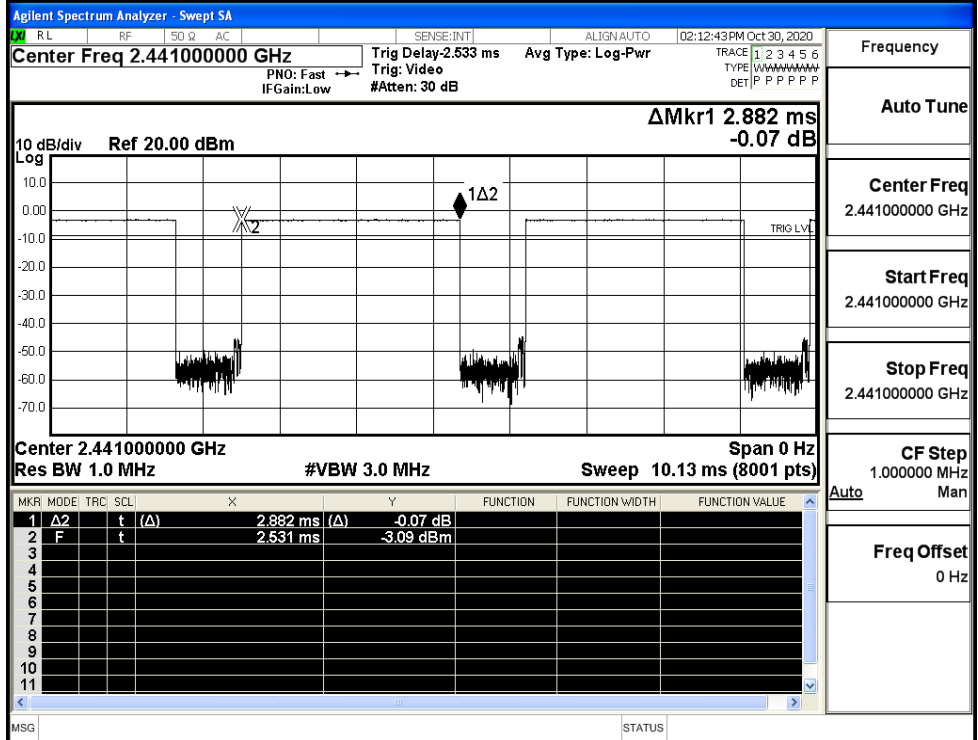


A.5 Dwell Time

Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.88	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
π/4DQPSK	2DH5	LCH	2.88	106.7	0.015	0.4	PASS
	2DH5	MCH	2.88	106.7	0.015	0.4	PASS
	2DH5	HCH	2.88	106.7	0.015	0.4	PASS
8DPSK	3DH5	LCH	2.88	106.7	0.015	0.4	PASS
	3DH5	MCH	2.88	106.7	0.015	0.4	PASS
	3DH5	HCH	2.88	106.7	0.015	0.4	PASS



GFSK_DH5/MCH



Frequency

Auto Tune

Center Freq
2.441000000 GHz

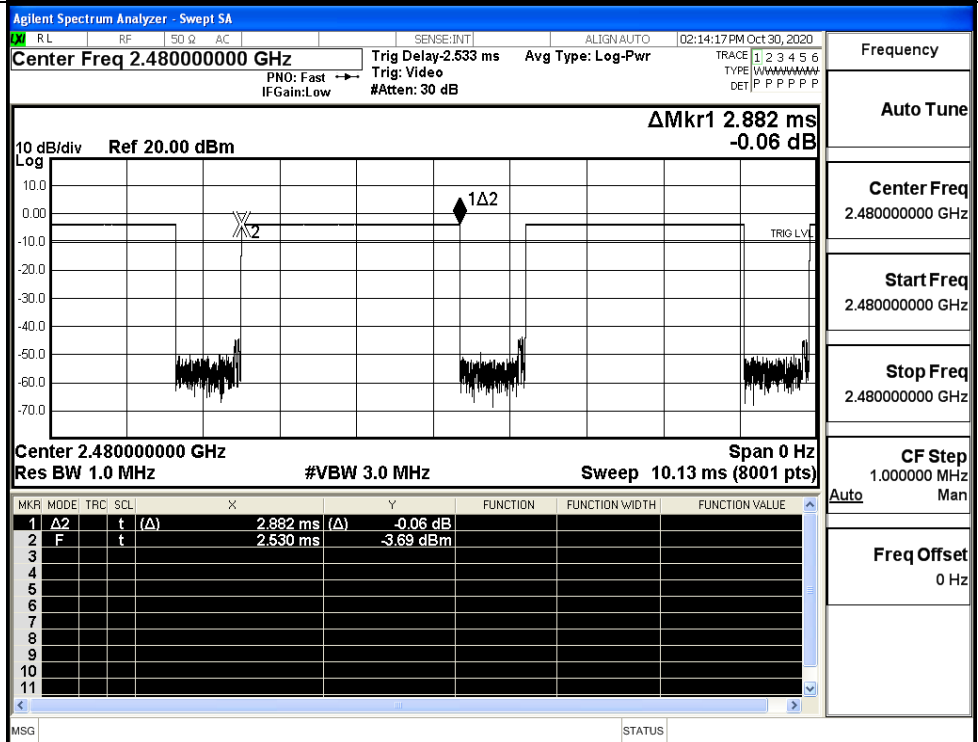
Start Freq
2.441000000 GHz

Stop Freq
2.441000000 GHz

CF Step
1.000000 MHz

Freq Offset
0 Hz

GFSK_DH5/HCH



Frequency

Auto Tune

Center Freq
2.480000000 GHz

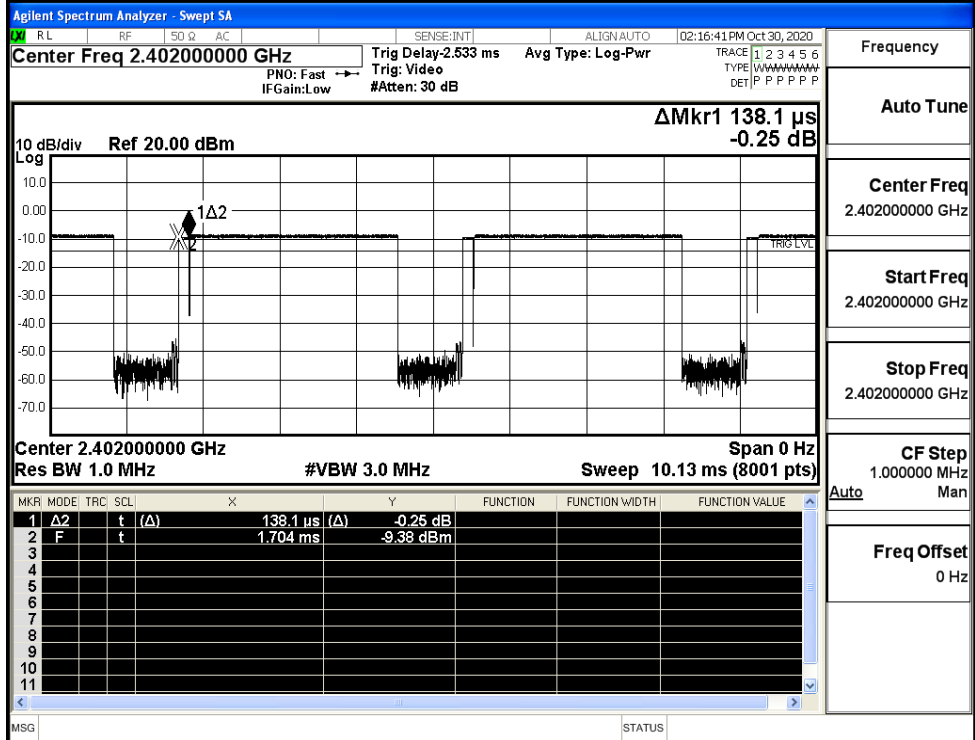
Start Freq
2.480000000 GHz

Stop Freq
2.480000000 GHz

CF Step
1.000000 MHz

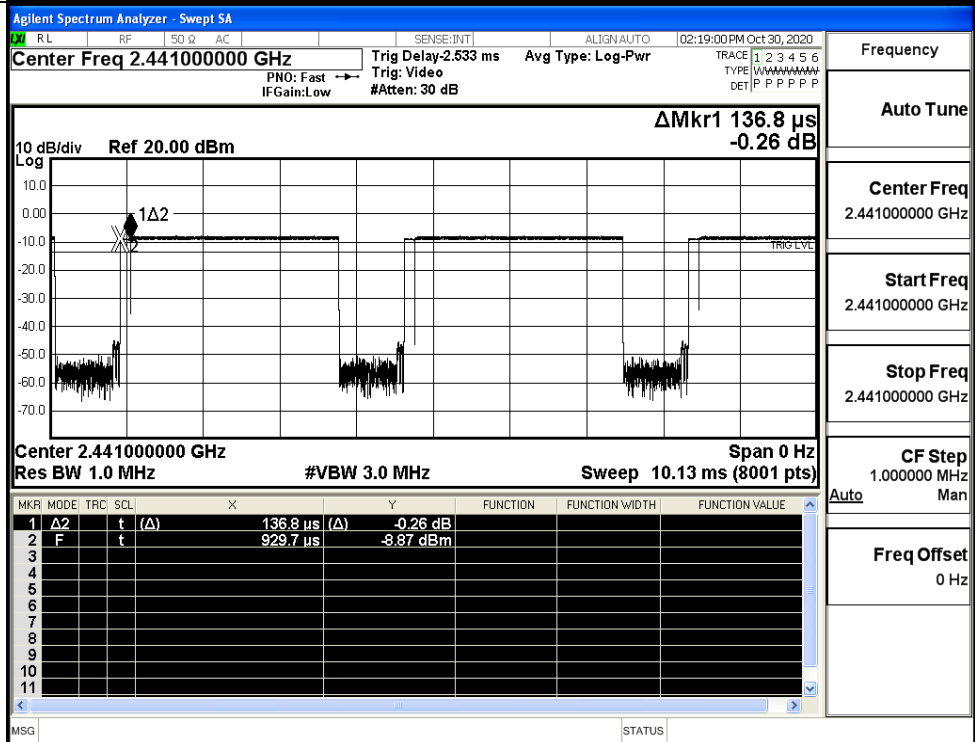
Freq Offset
0 Hz

$\pi/4$ DQPSK
_2DH5/LCH



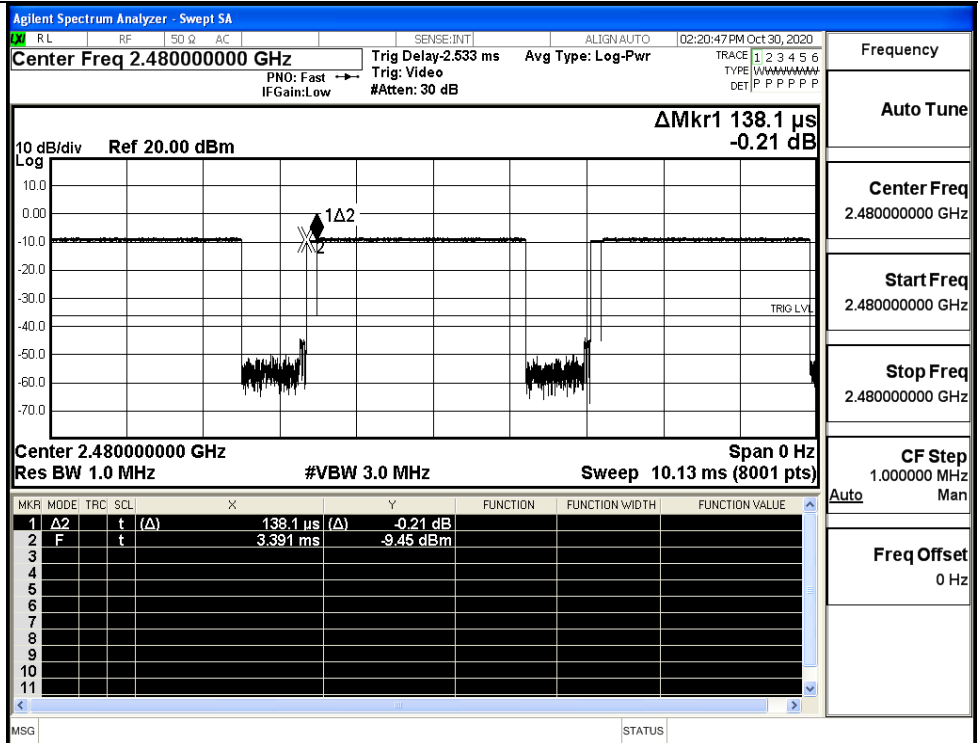
Frequency	
Auto Tune	
Center Freq	2.402000000 GHz
Start Freq	2.402000000 GHz
Stop Freq	2.402000000 GHz
CF Step	1.000000 MHz
Freq Offset	0 Hz

$\pi/4$ DQPSK
_2DH5/MCH



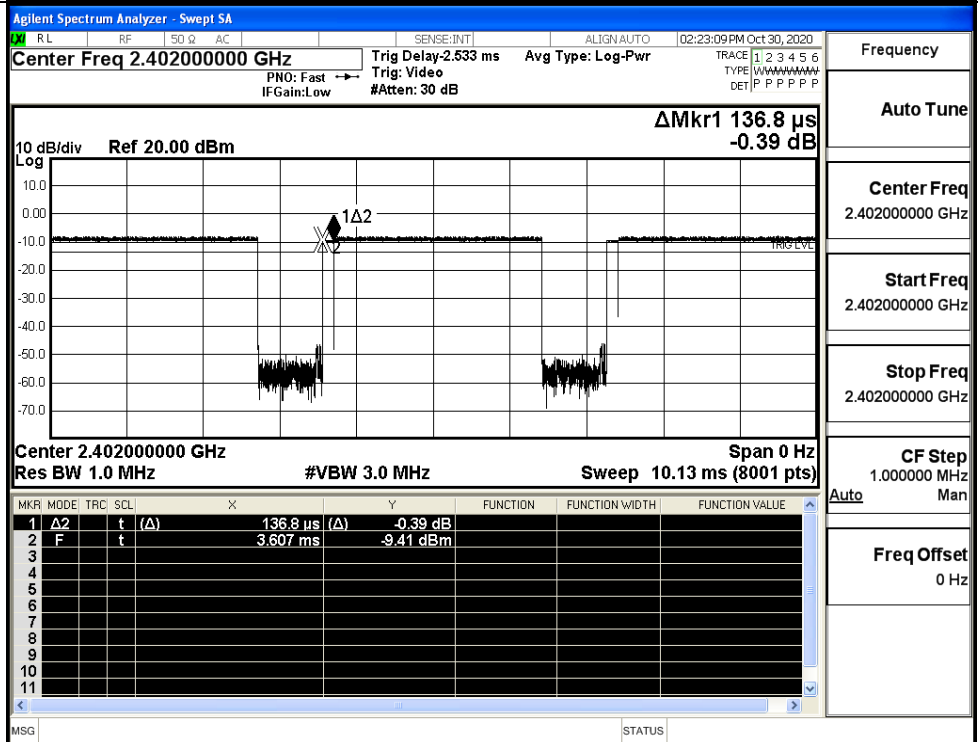
Frequency	
Auto Tune	
Center Freq	2.441000000 GHz
Start Freq	2.441000000 GHz
Stop Freq	2.441000000 GHz
CF Step	1.000000 MHz
Freq Offset	0 Hz

$\pi/4$ DQPSK
_2DH5/HCH



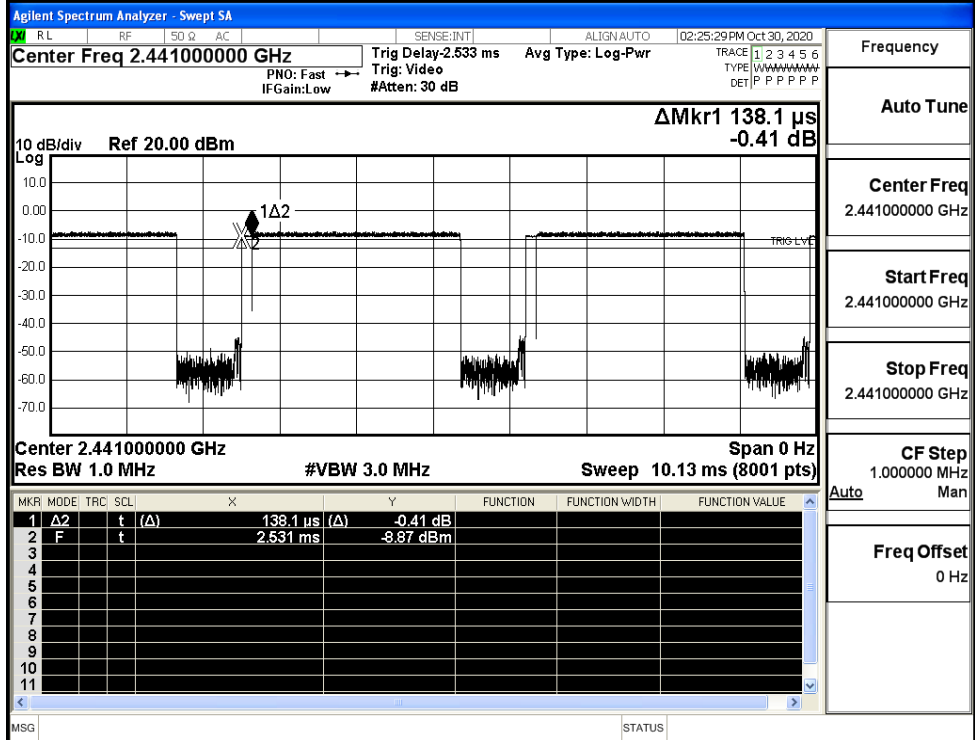
Frequency	2.480000000 GHz
Auto Tune	
Center Freq	2.480000000 GHz
Start Freq	2.480000000 GHz
Stop Freq	2.480000000 GHz
CF Step	1.000000 MHz
Freq Offset	0 Hz

8DPSK_3DH5/LCH

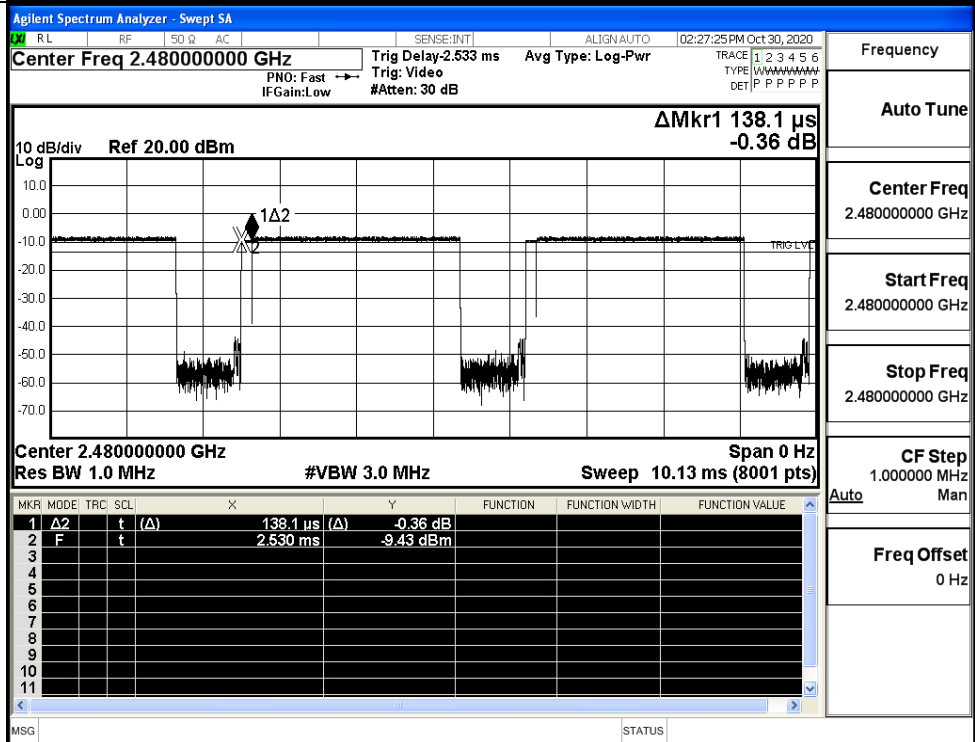


Frequency	2.402000000 GHz
Auto Tune	
Center Freq	2.402000000 GHz
Start Freq	2.402000000 GHz
Stop Freq	2.402000000 GHz
CF Step	1.000000 MHz
Freq Offset	0 Hz

8DPSK_3DH5/MCH

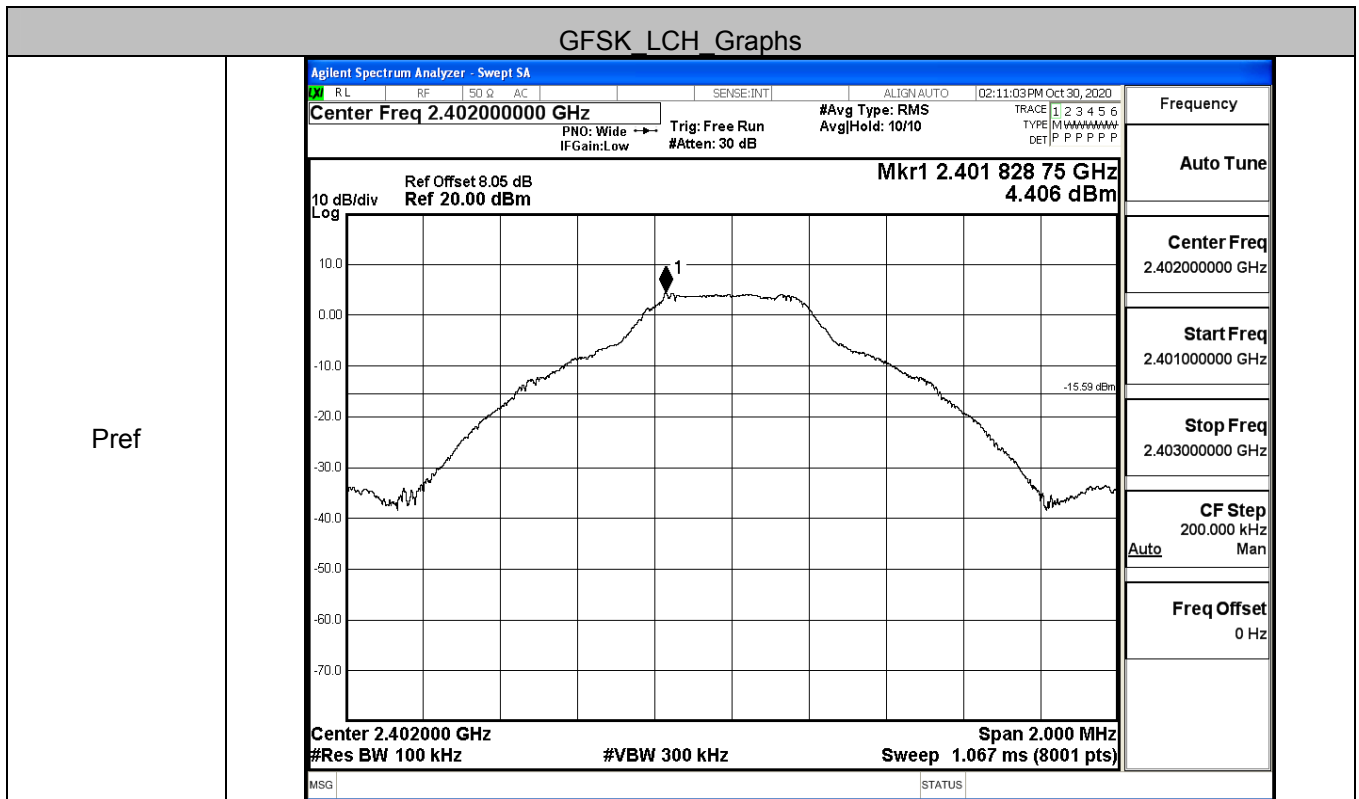


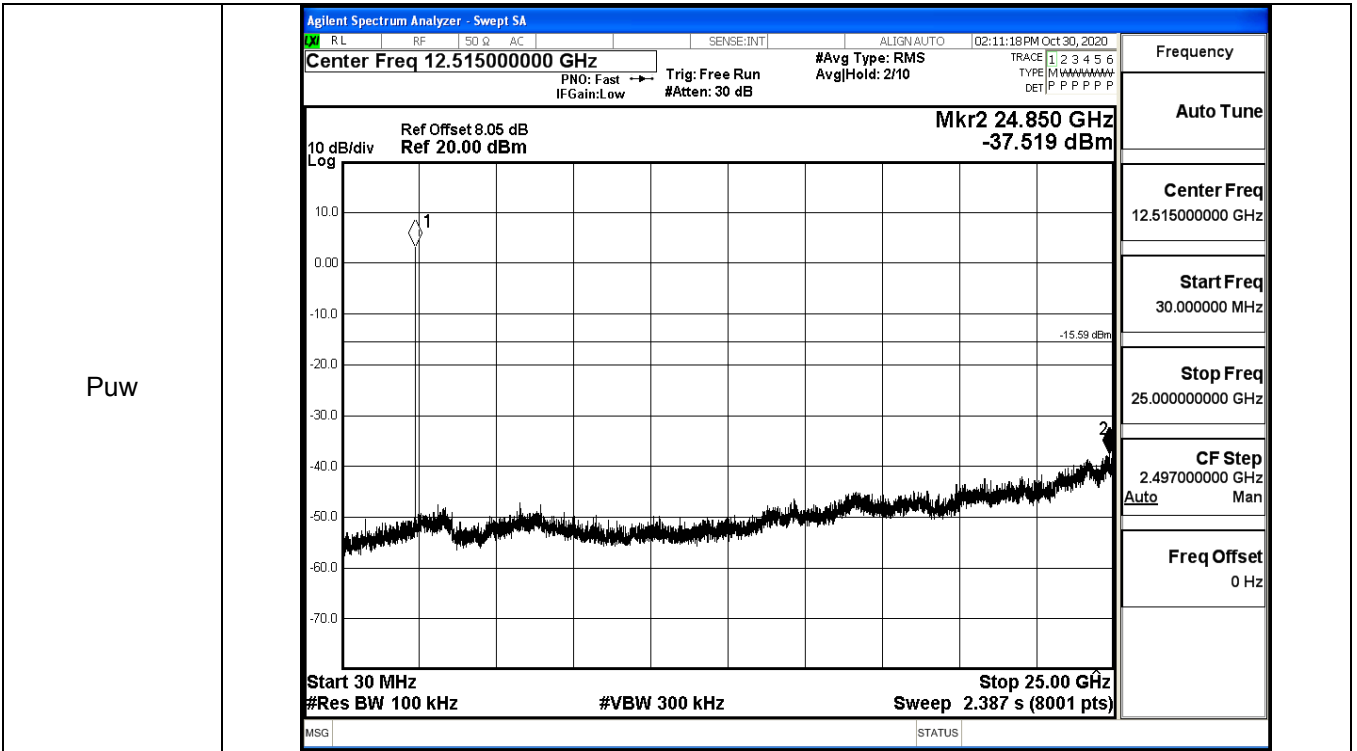
8DPSK_3DH5/HCH



A.6 RF Conducted Spurious Emissions

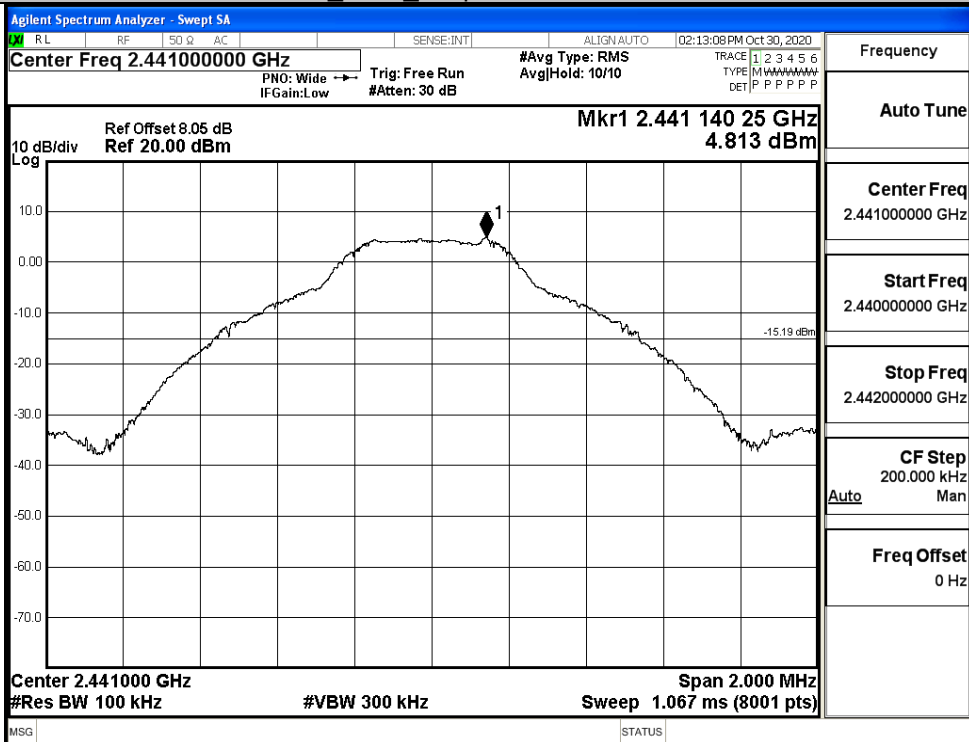
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	4.406	-37.519	-15.594	PASS
	MCH	4.813	-37.778	-15.187	PASS
	HCH	4.329	-37.666	-15.671	PASS
π/4DQPSK	LCH	-1.531	-37.742	-21.531	PASS
	MCH	-0.987	-37.492	-20.987	PASS
	HCH	-1.534	-37.327	-21.534	PASS
8DPSK	LCH	-1.394	-37.964	-21.394	PASS
	MCH	-0.971	-37.566	-20.971	PASS
	HCH	-1.389	-37.784	-21.389	PASS



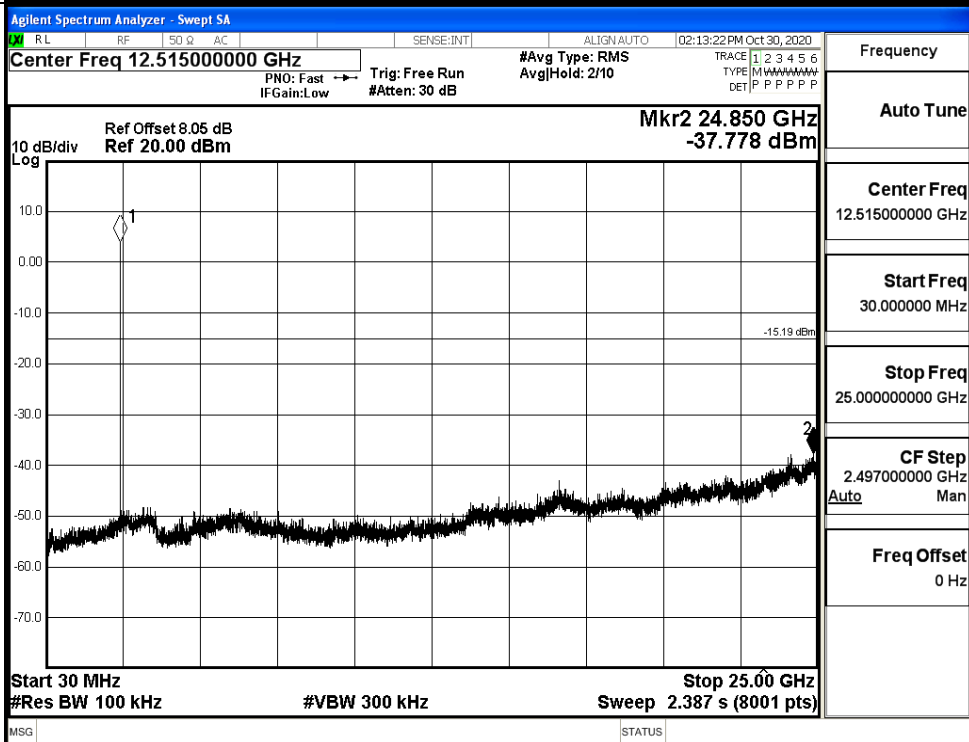


GFSK_MCH_Graphs

Pref

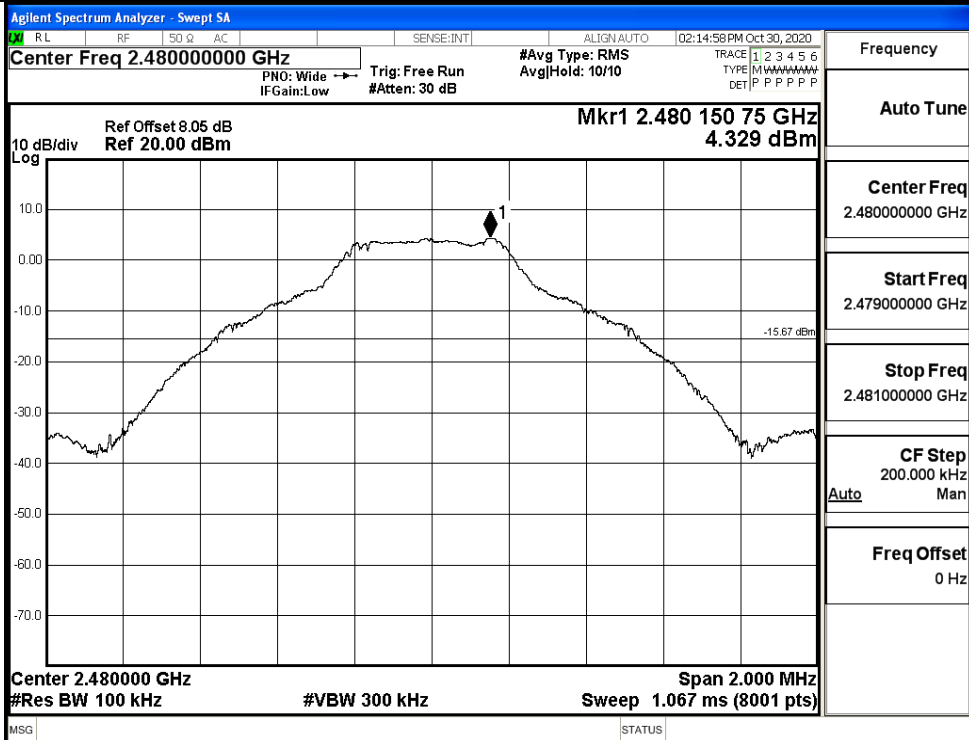


Puw

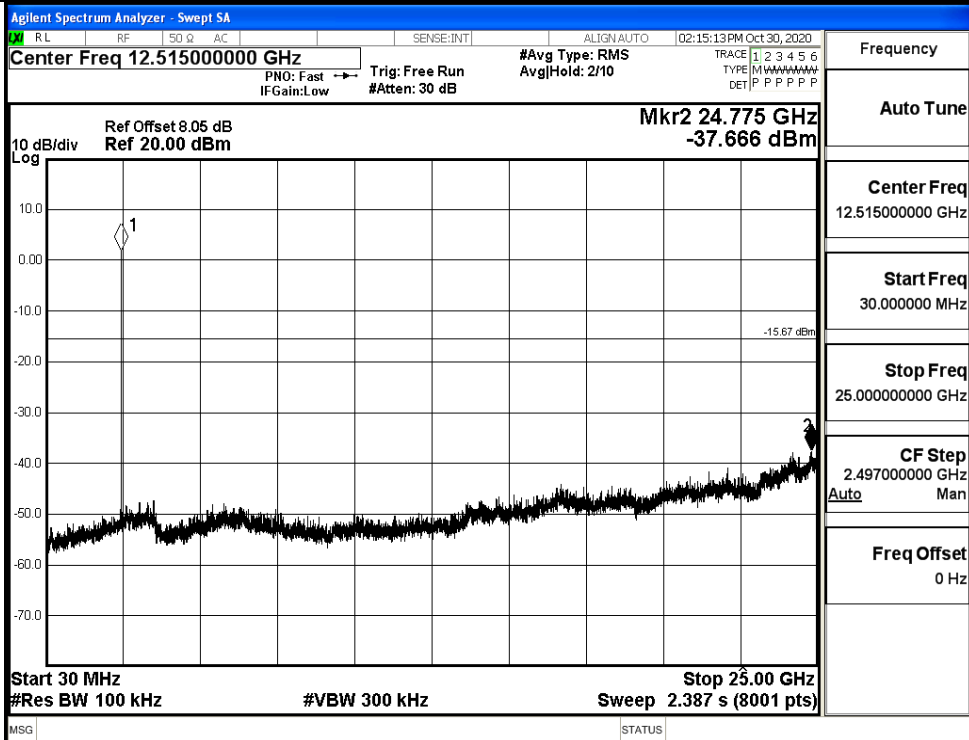


GFSK HCH Graphs

Pref

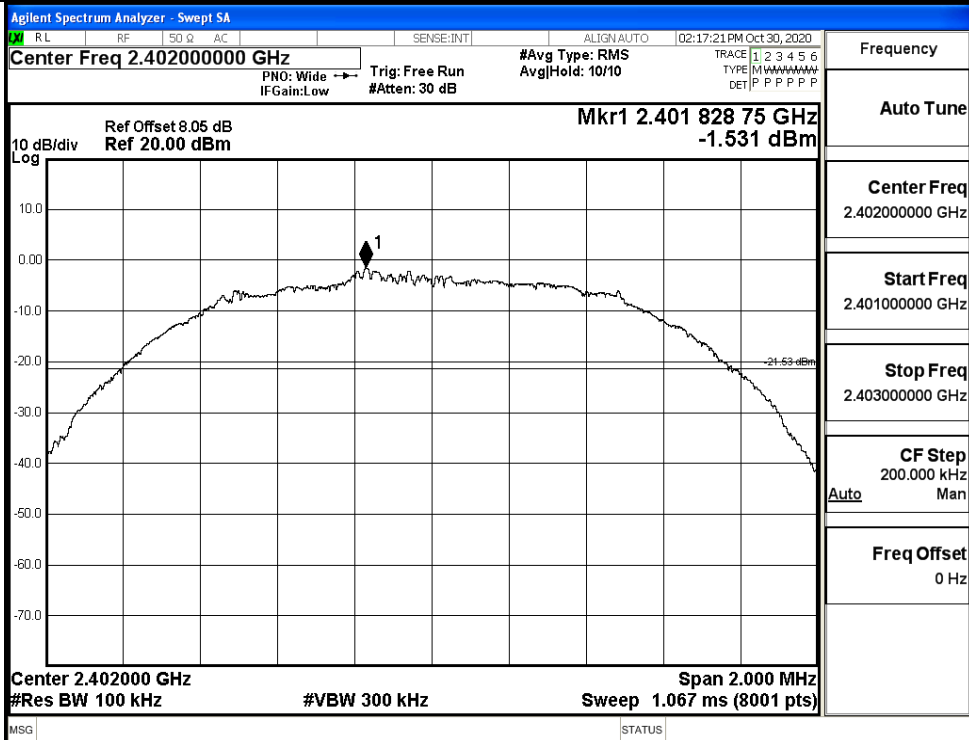


Puw

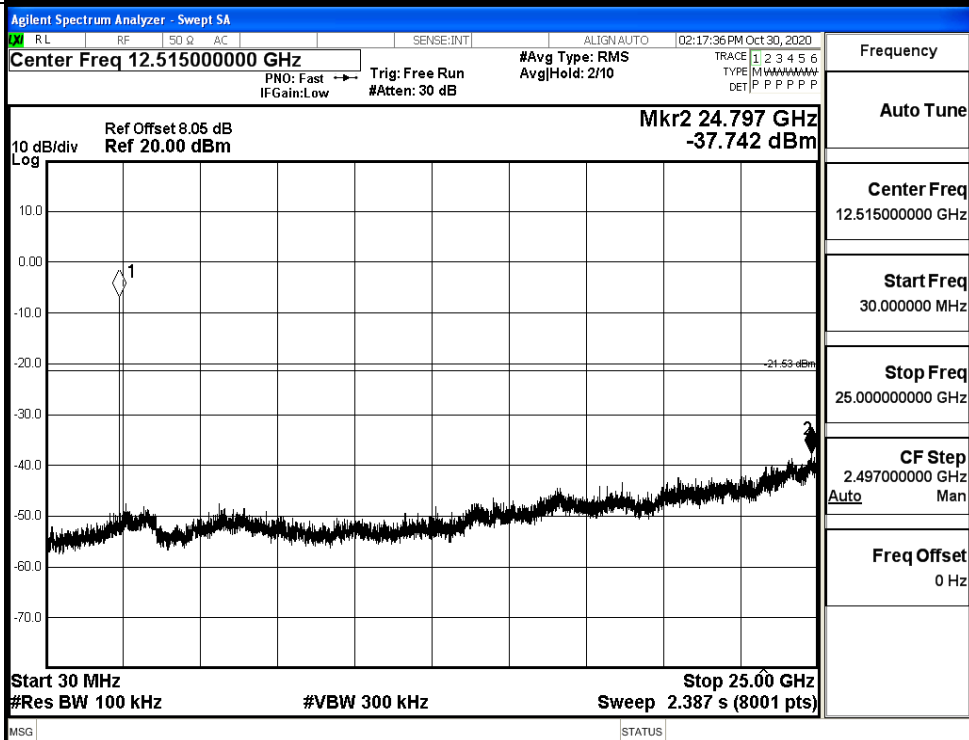


$\pi/4$ DQPSK LCH Graphs

Pref

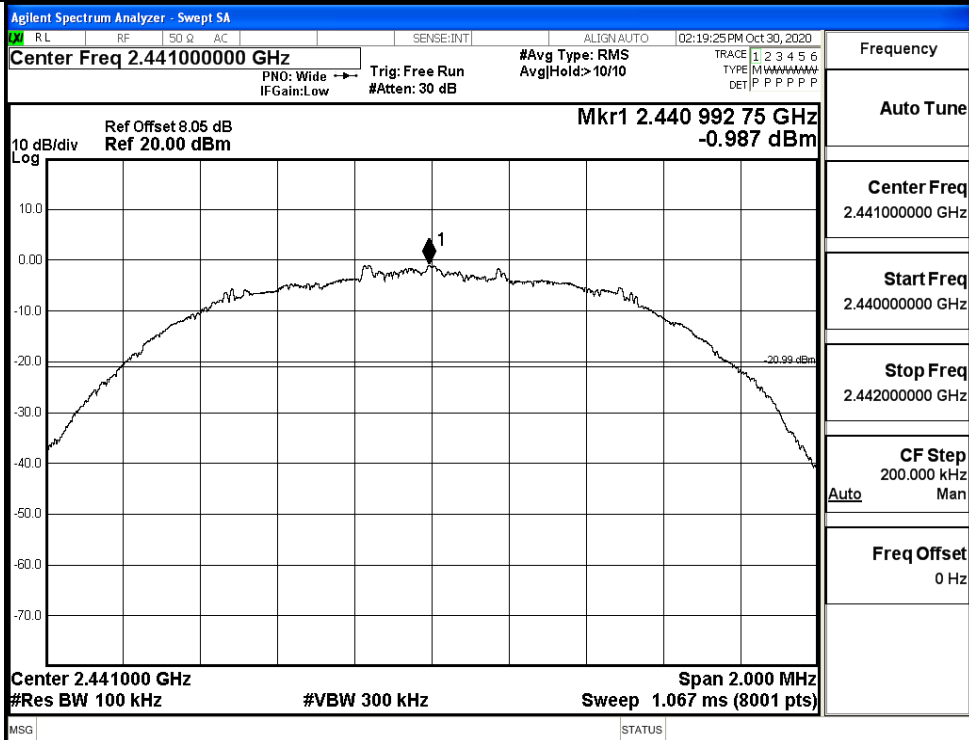


Puw

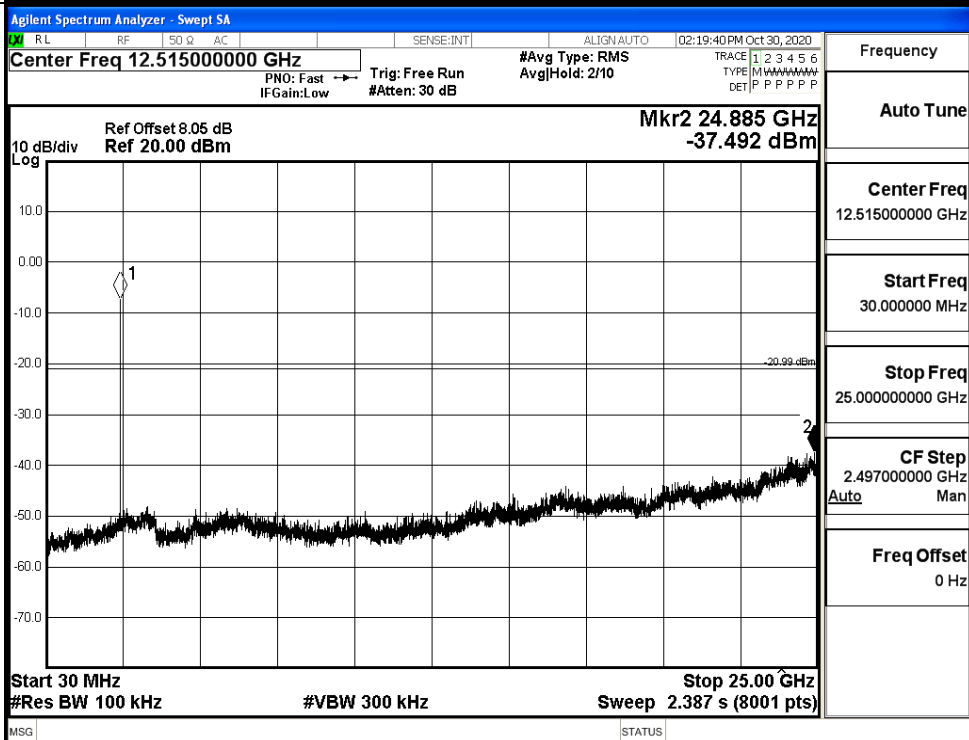


$\pi/4$ DQPSK MCH_Graphs

Pref

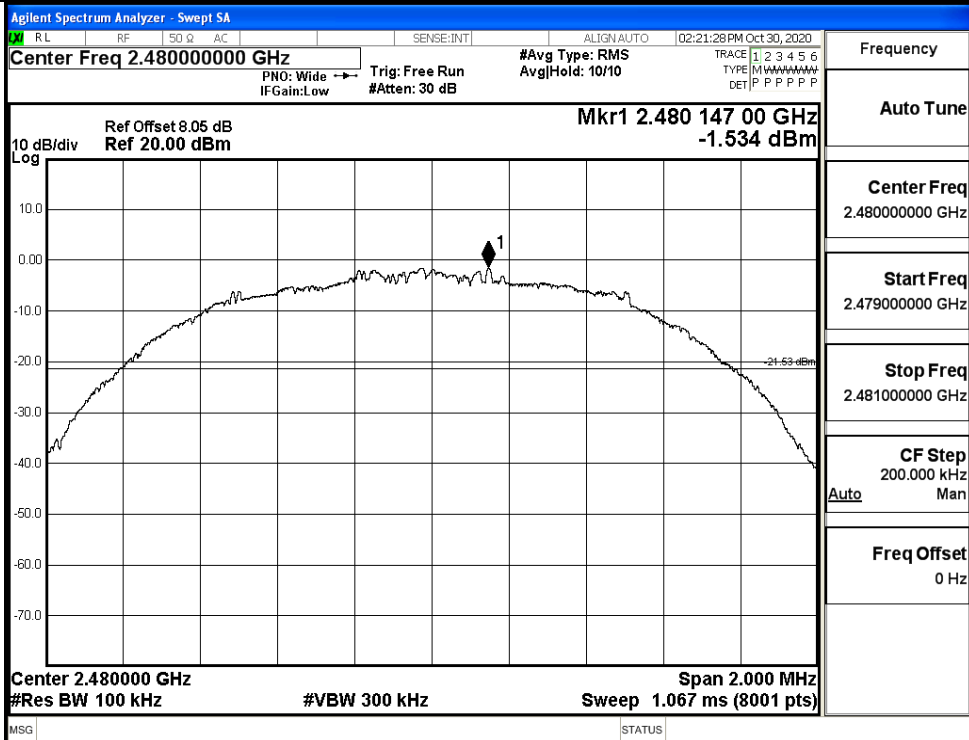


Puw

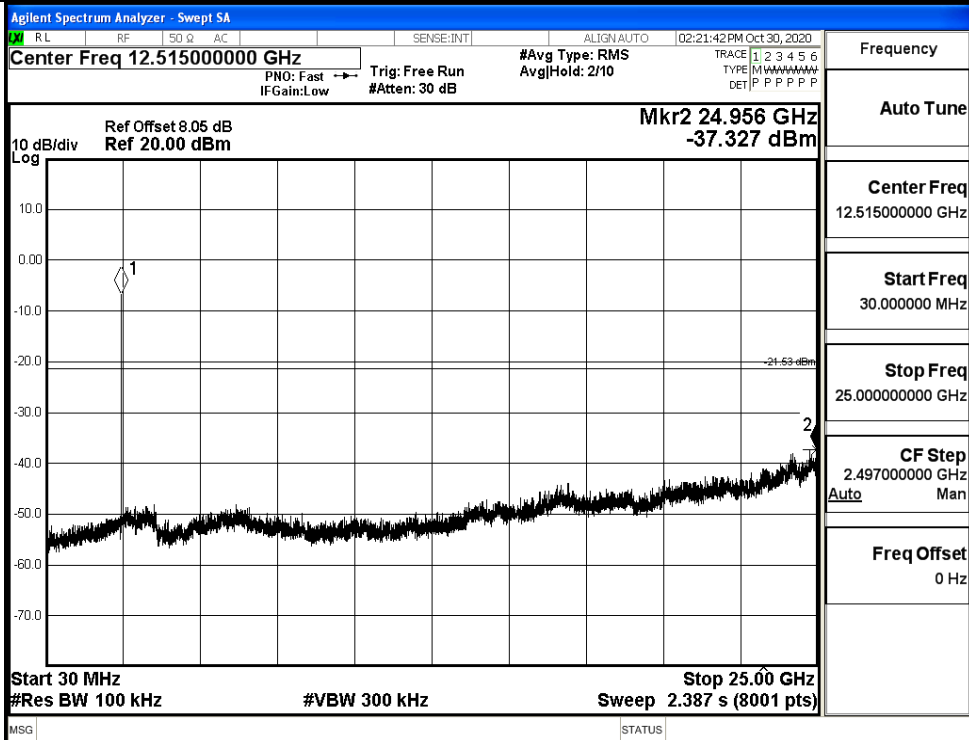


$\pi/4$ DQPSK HCH Graphs

Pref

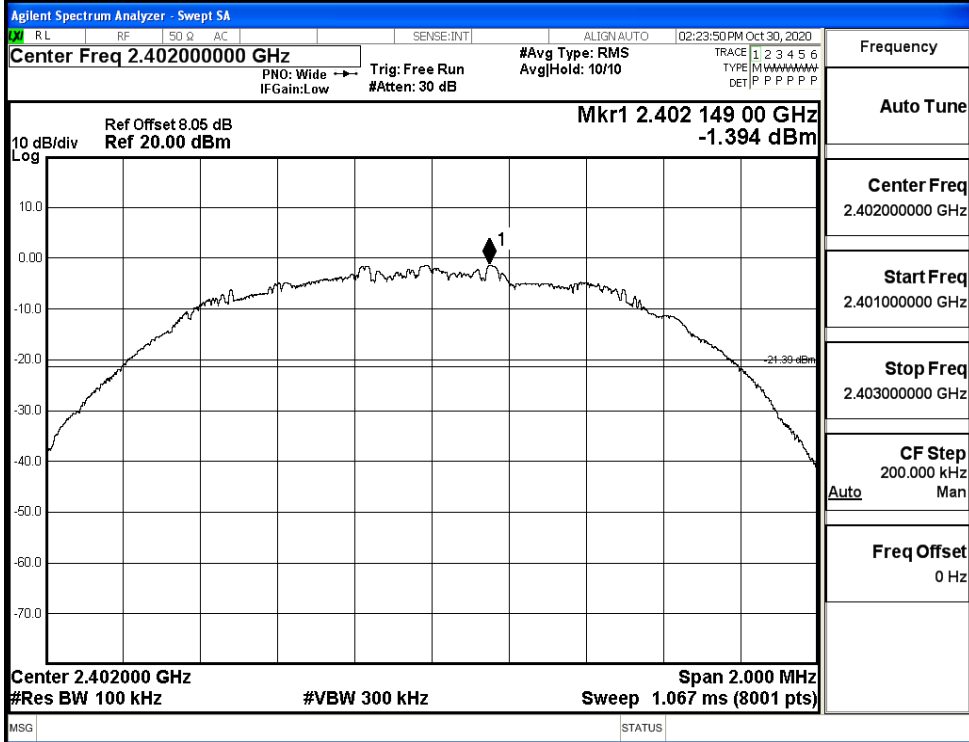


Puw

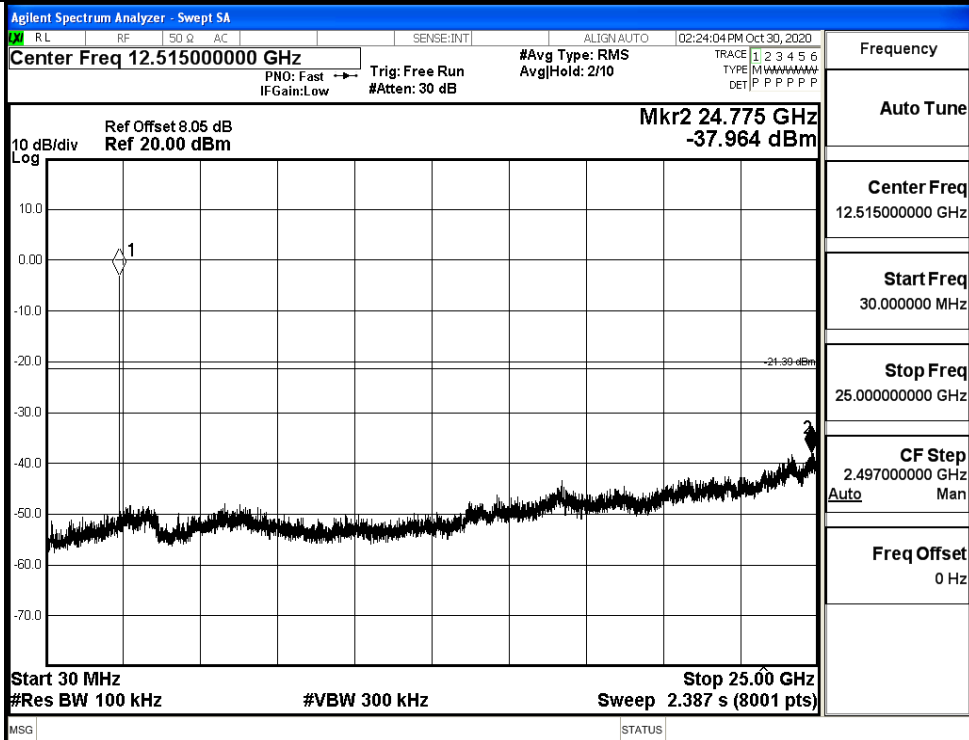


8DPSK LCH Graphs

Pref

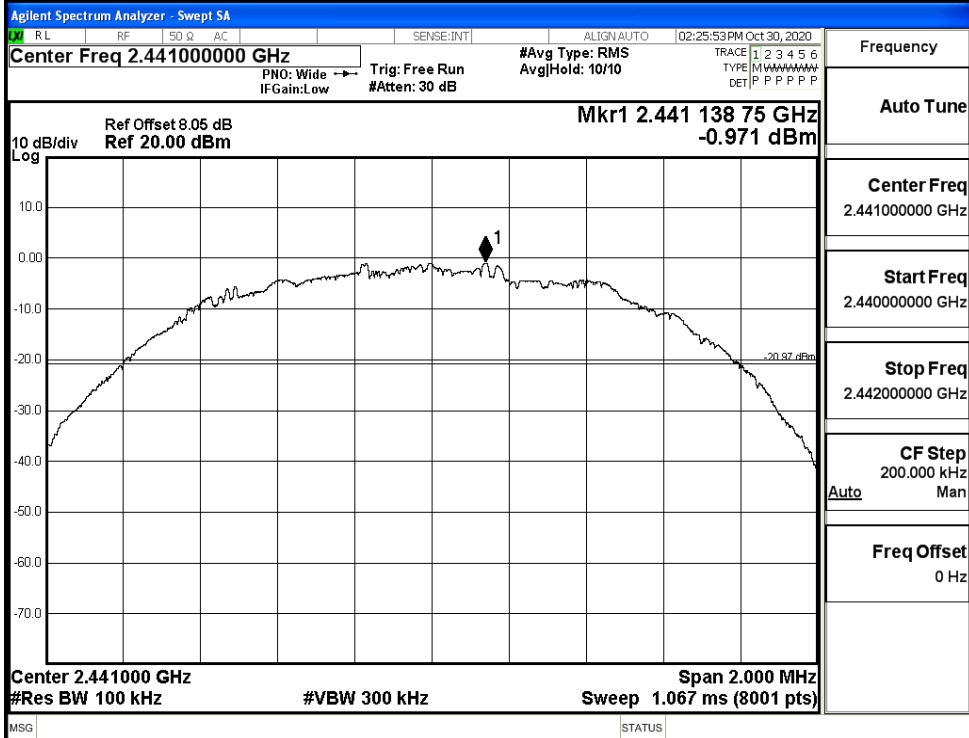


Puw

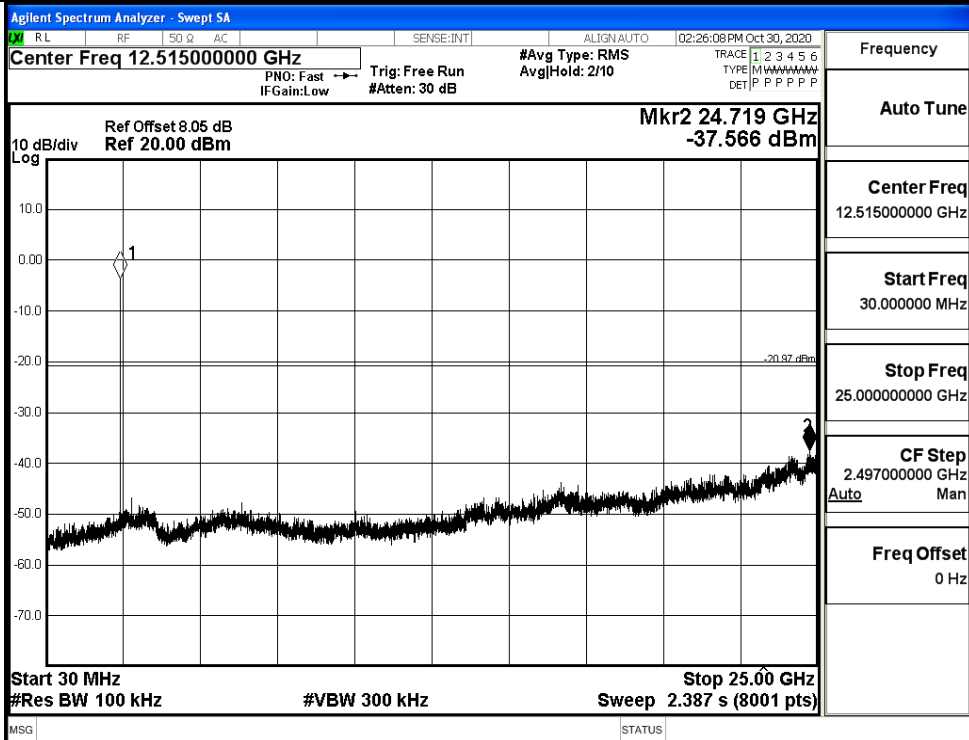


8DPSK MCH_Graphs

Pref

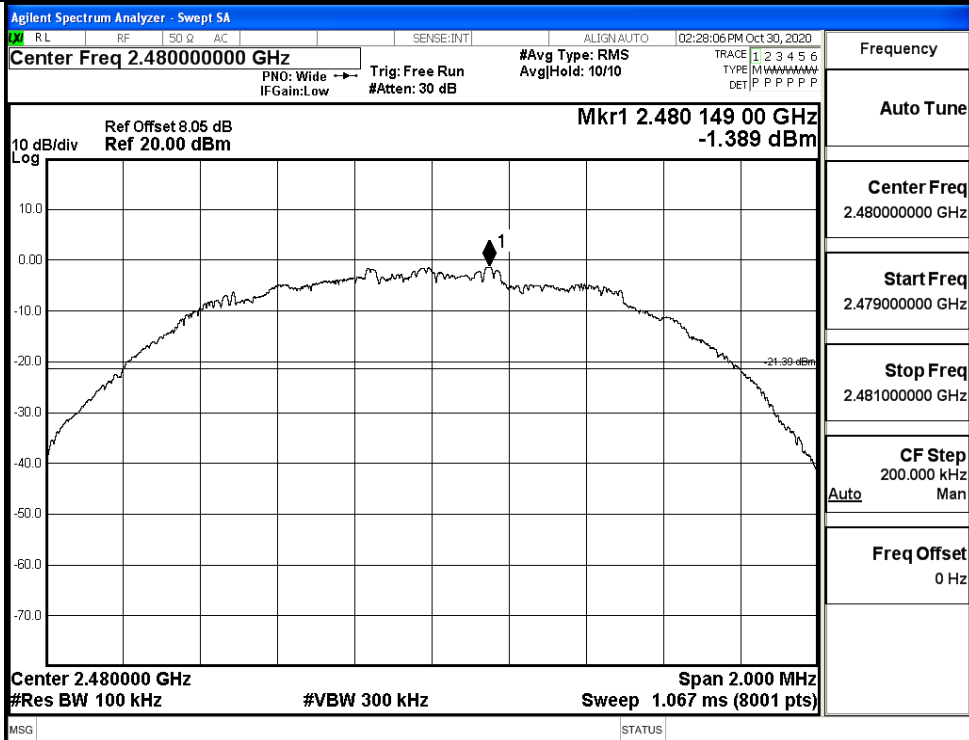


Puw

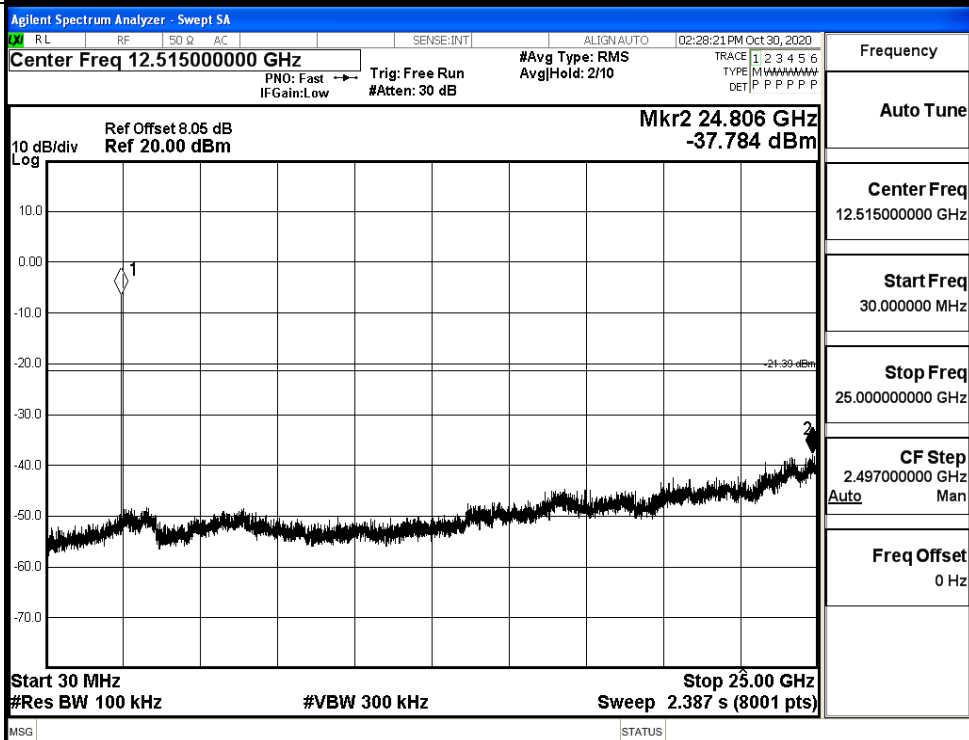


8DPSK HCH Graphs

Pref



Puw

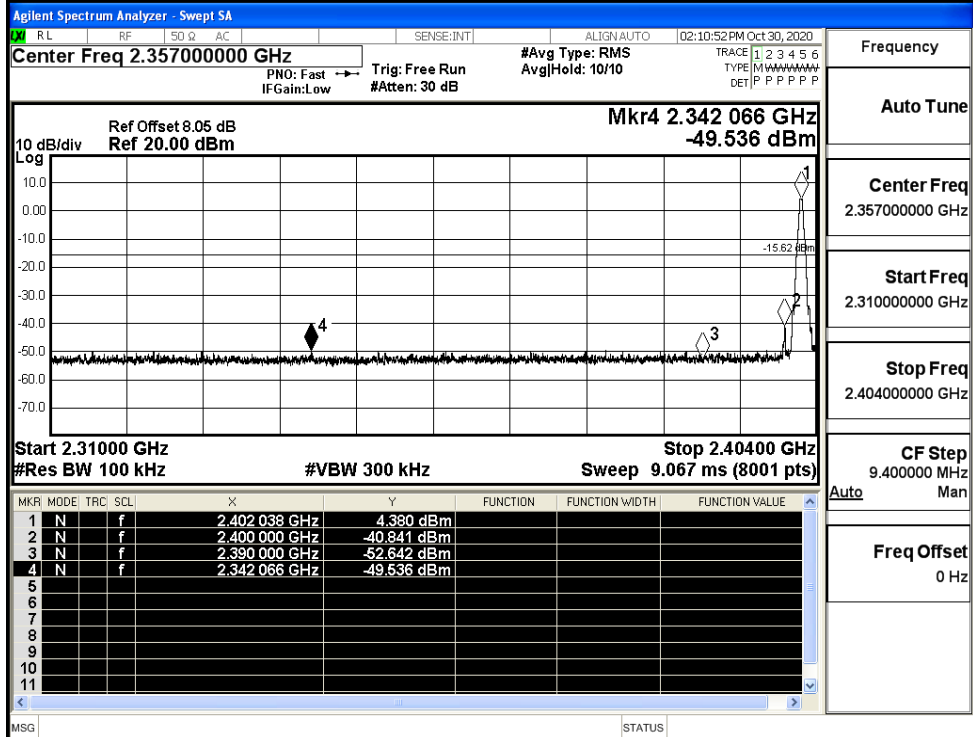


A.7 Band-edge for RF Conducted Emissions

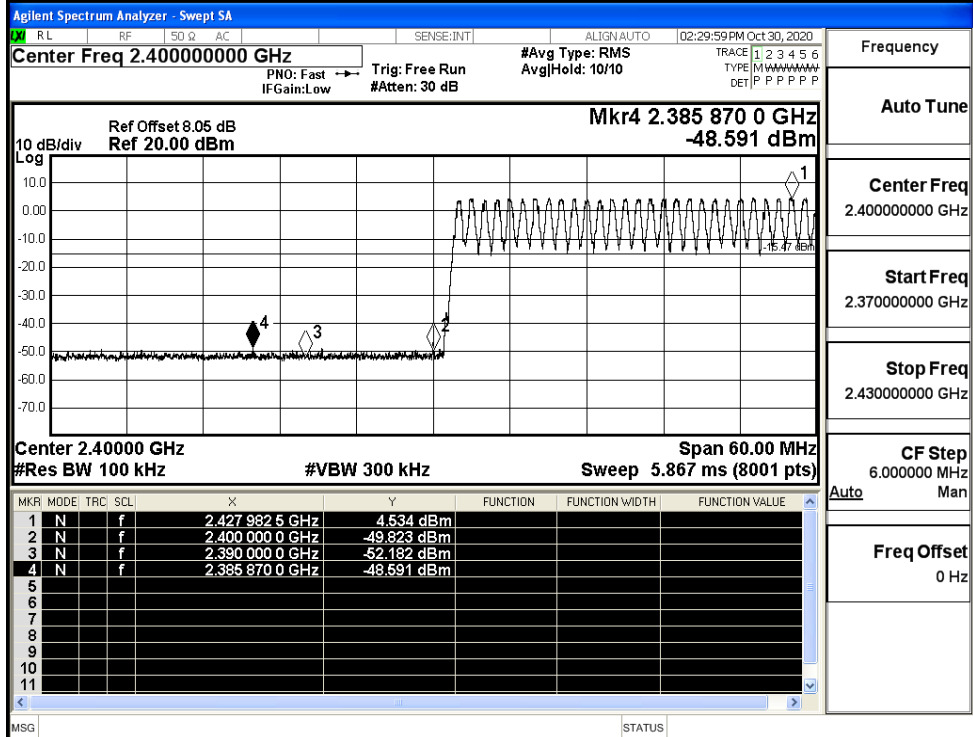
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	4.380	Off	-49.536	-15.62	PASS
			4.534	On	-48.591	-15.47	PASS
	HCH	2480	4.333	Off	-39.795	-15.67	PASS
			4.645	On	-38.634	-15.36	PASS
$\pi/4$ DQPSK	LCH	2402	-1.472	Off	-49.497	-21.47	PASS
			-1.358	On	-48.708	-21.36	PASS
	HCH	2480	-1.452	Off	-38.884	-21.45	PASS
			-1.160	On	-39.097	-21.16	PASS
8DPSK	LCH	2402	-1.354	Off	-49.582	-21.35	PASS
			-0.931	On	-49.186	-20.93	PASS
	HCH	2480	-1.517	Off	-39.498	-21.52	PASS
			-0.996	On	-48.432	-21	PASS

Test Graphs

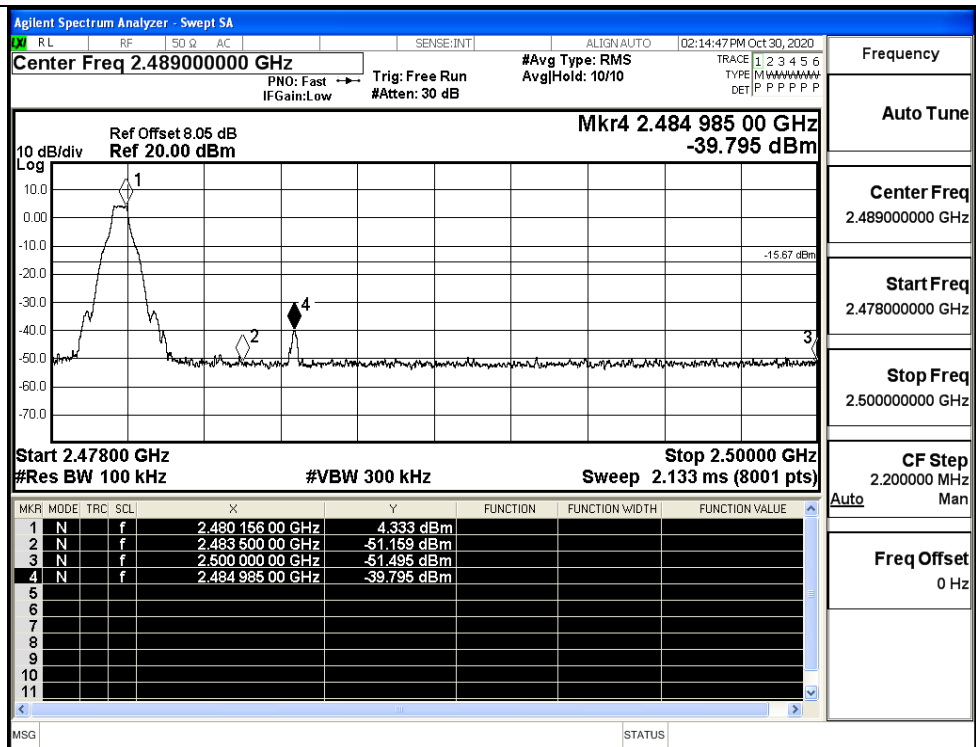
GFSK/LCH/No Hop



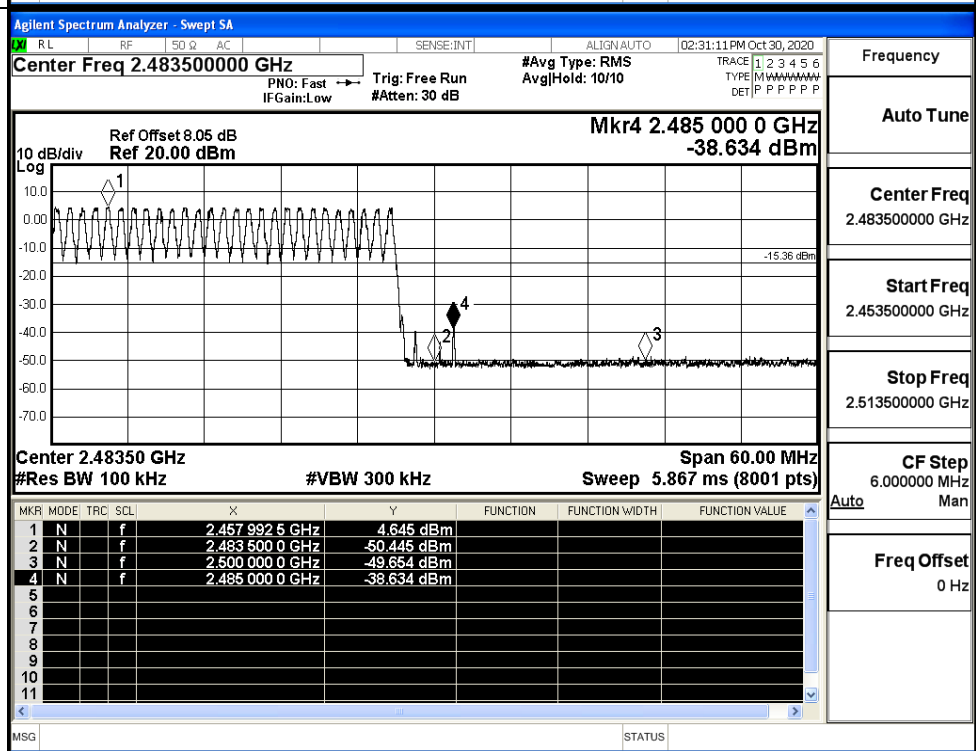
GFSK/LCH/Hop



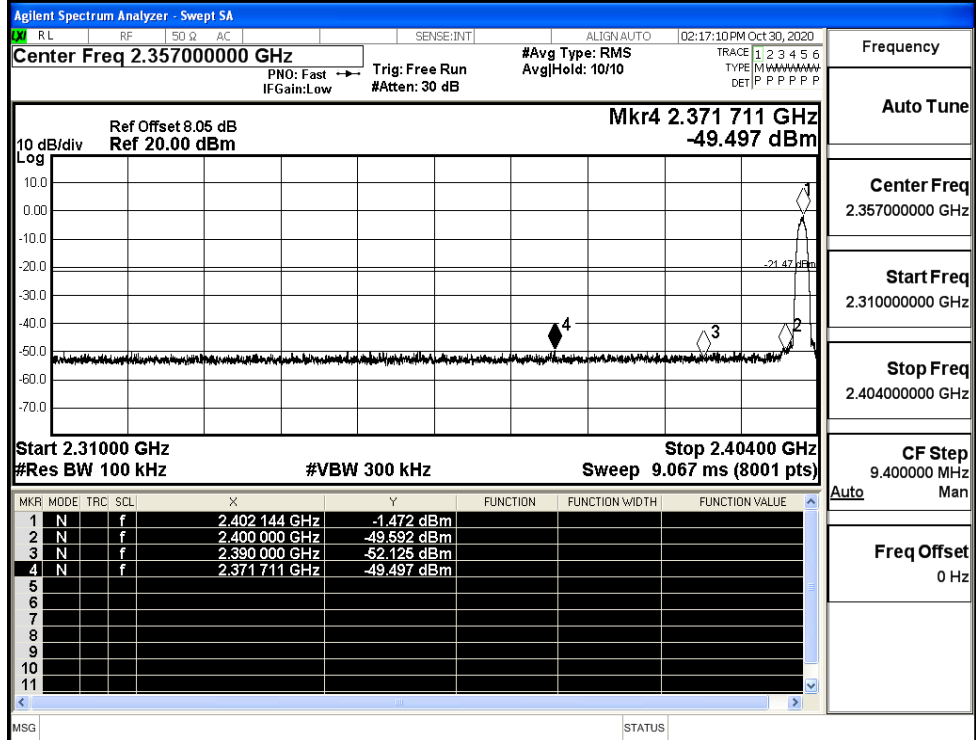
GFSK/HCH/No Hop



GFSK/HCH/Hop

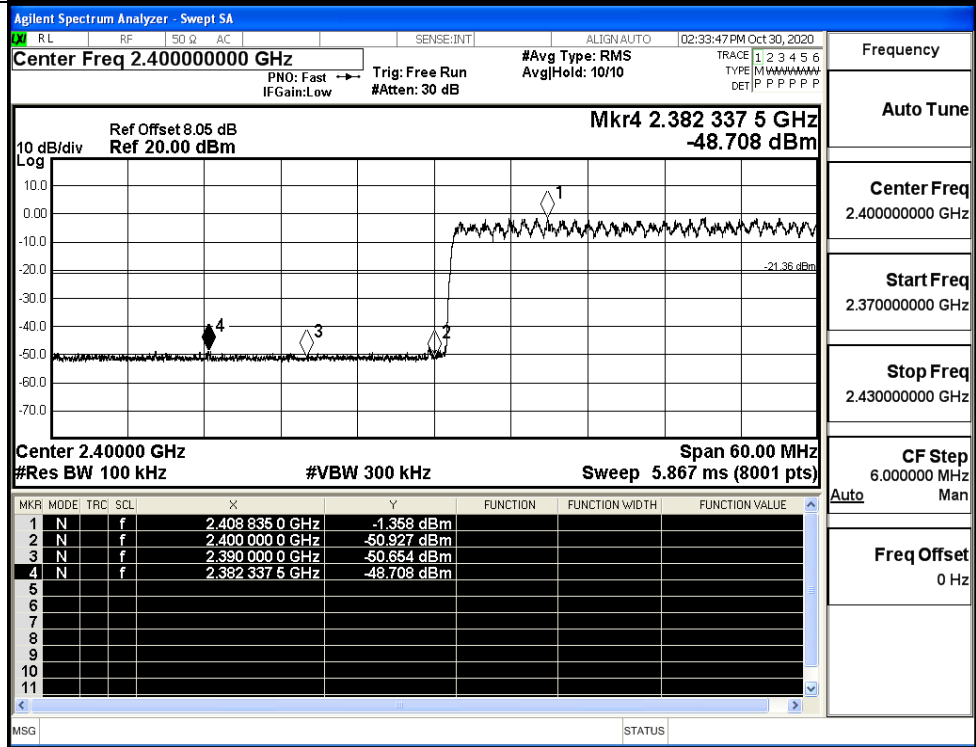


$\pi/4$ DQPSK/LCH/No
Hop



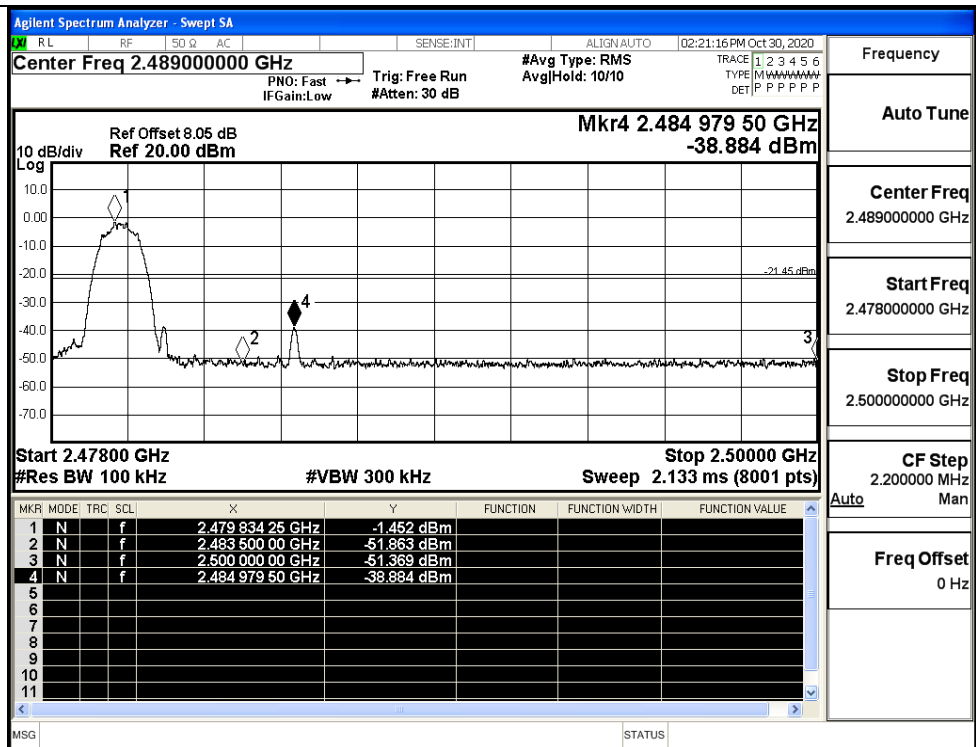
Frequency	
Auto Tune	
Center Freq	2.357000000 GHz
Start Freq	2.310000000 GHz
Stop Freq	2.404000000 GHz
CF Step	9.400000 MHz
Auto	Man
Freq Offset	0 Hz

$\pi/4$ DQPSK/LCH/Hop



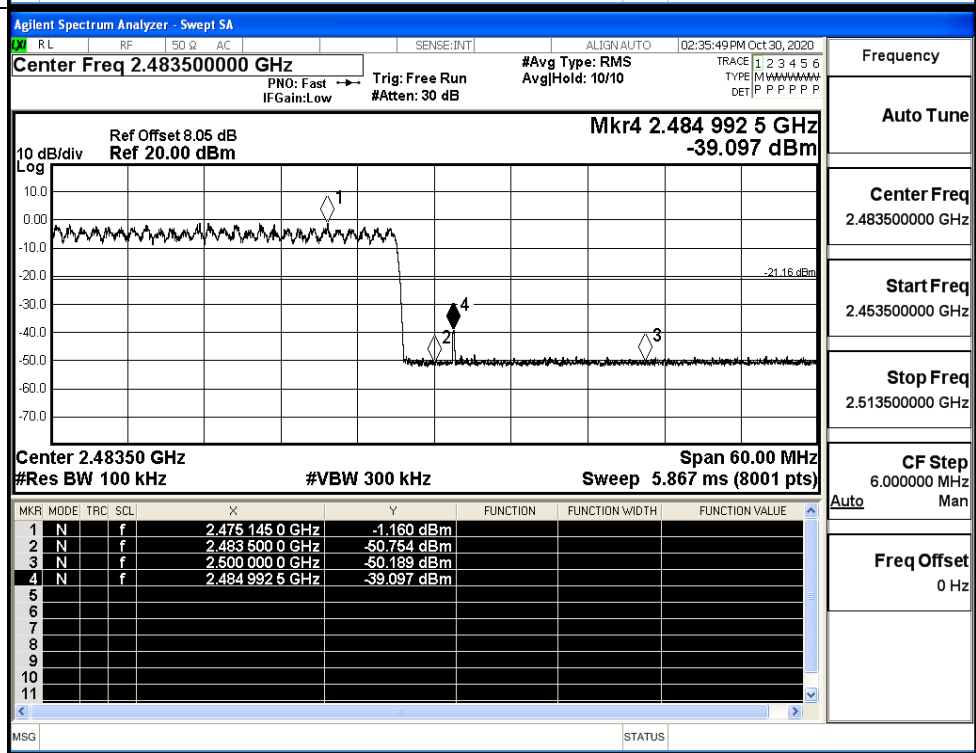
Frequency	
Auto Tune	
Center Freq	2.400000000 GHz
Start Freq	2.370000000 GHz
Stop Freq	2.430000000 GHz
CF Step	6.000000 MHz
Auto	Man
Freq Offset	0 Hz

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



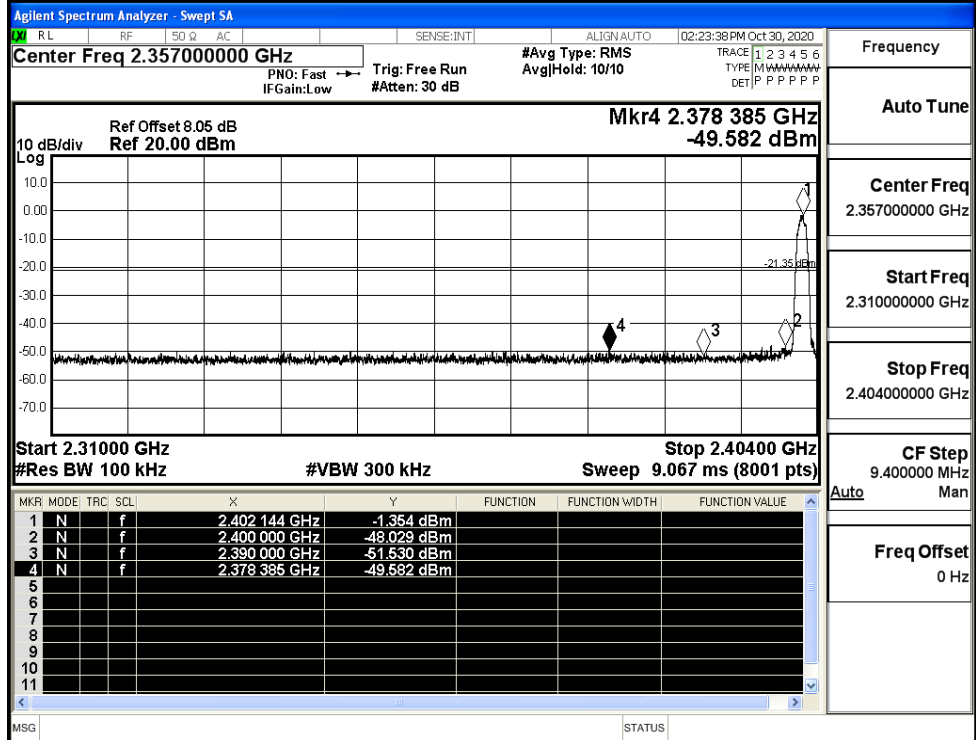
Frequency	
Auto Tune	
Center Freq	2.489000000 GHz
Start Freq	2.478000000 GHz
Stop Freq	2.500000000 GHz
CF Step	2.200000 MHz
Auto	Man
Freq Offset	0 Hz

$\pi/4$ DQPSK/HCH/Hop



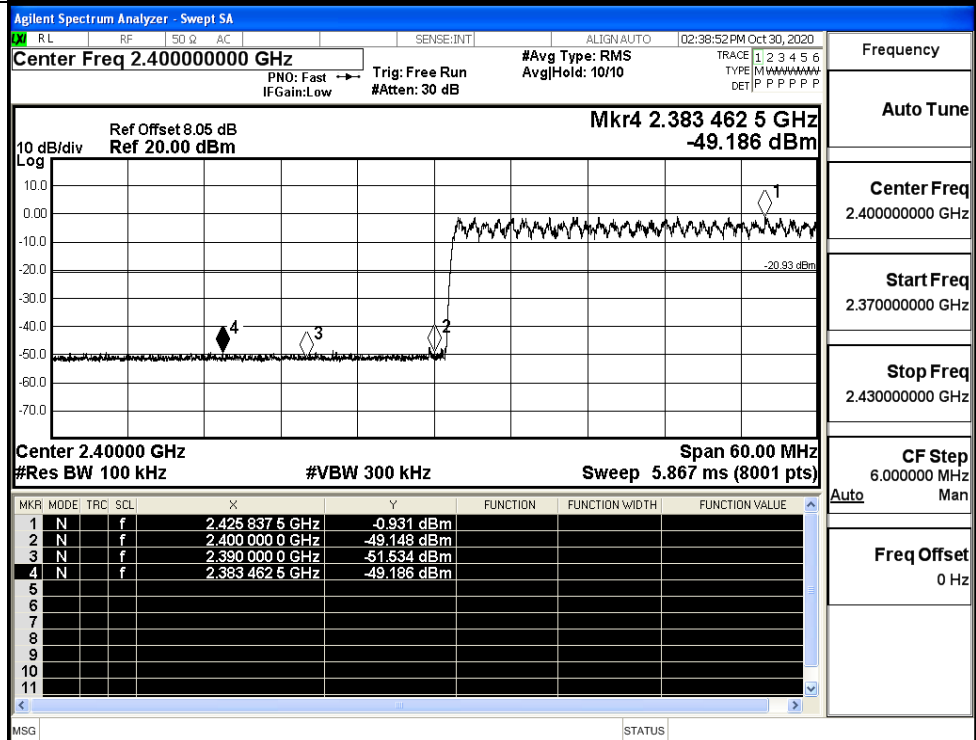
Frequency	
Auto Tune	
Center Freq	2.483500000 GHz
Start Freq	2.453500000 GHz
Stop Freq	2.513500000 GHz
CF Step	6.000000 MHz
Auto	Man
Freq Offset	0 Hz

8DPSK/LCH/No Hop



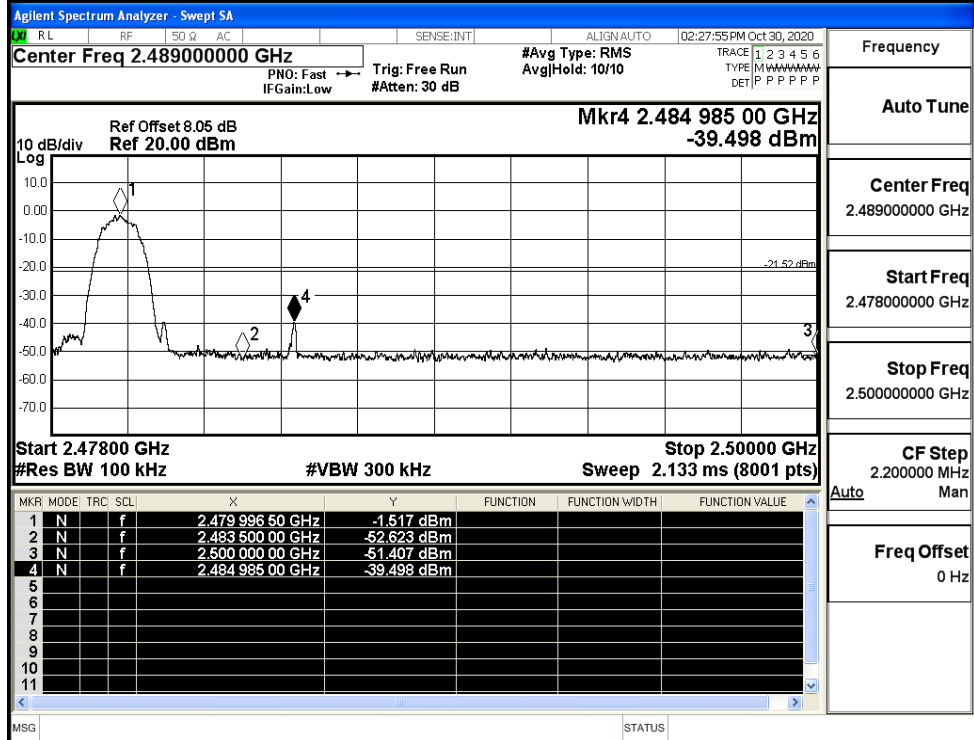
Frequency	2.357000000 GHz
Auto Tune	
Center Freq	2.357000000 GHz
Start Freq	2.310000000 GHz
Stop Freq	2.404000000 GHz
CF Step	9.400000 MHz
Auto	Man
Freq Offset	0 Hz

8DPSK/LCH/Hop



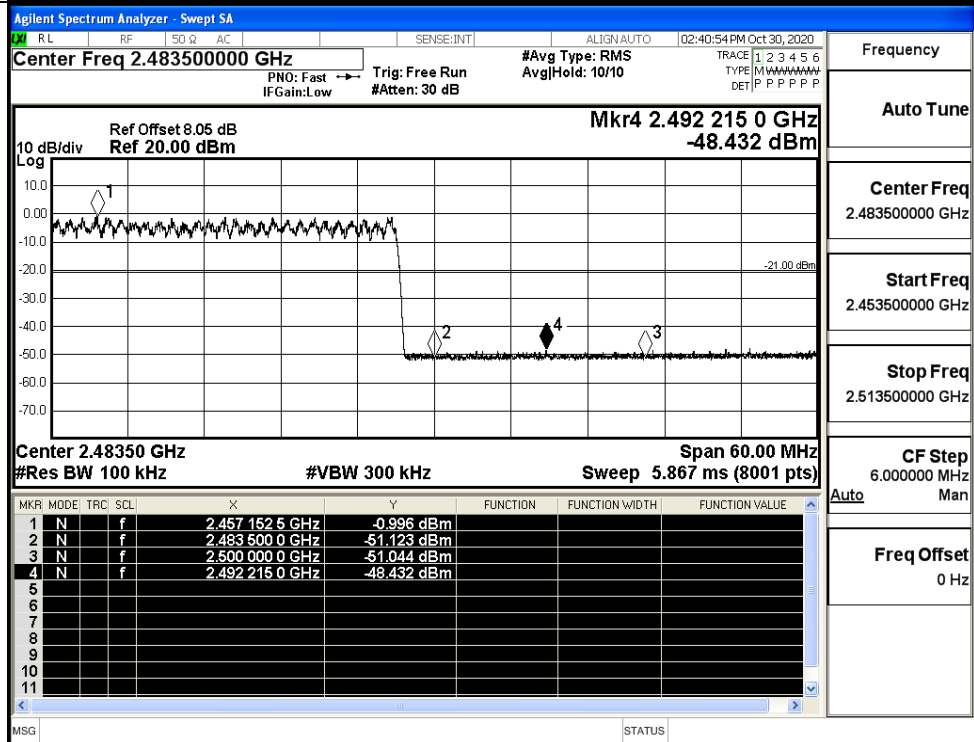
Frequency	2.400000000 GHz
Auto Tune	
Center Freq	2.400000000 GHz
Start Freq	2.370000000 GHz
Stop Freq	2.430000000 GHz
CF Step	6.000000 MHz
Auto	Man
Freq Offset	0 Hz

8DPSK/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

8DPSK/HCH/Hop

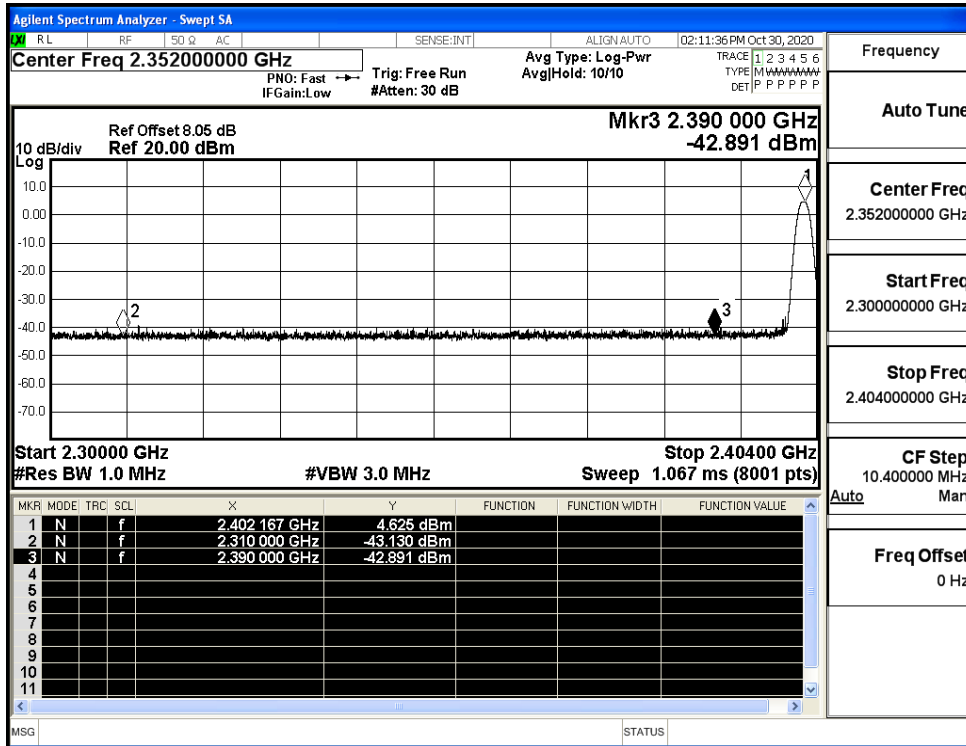


Frequency	
Auto Tune	
Center Freq	2.483500000 GHz
Start Freq	2.453500000 GHz
Stop Freq	2.513500000 GHz
CF Step	6.000000 MHz
Auto	Man
Freq Offset	0 Hz

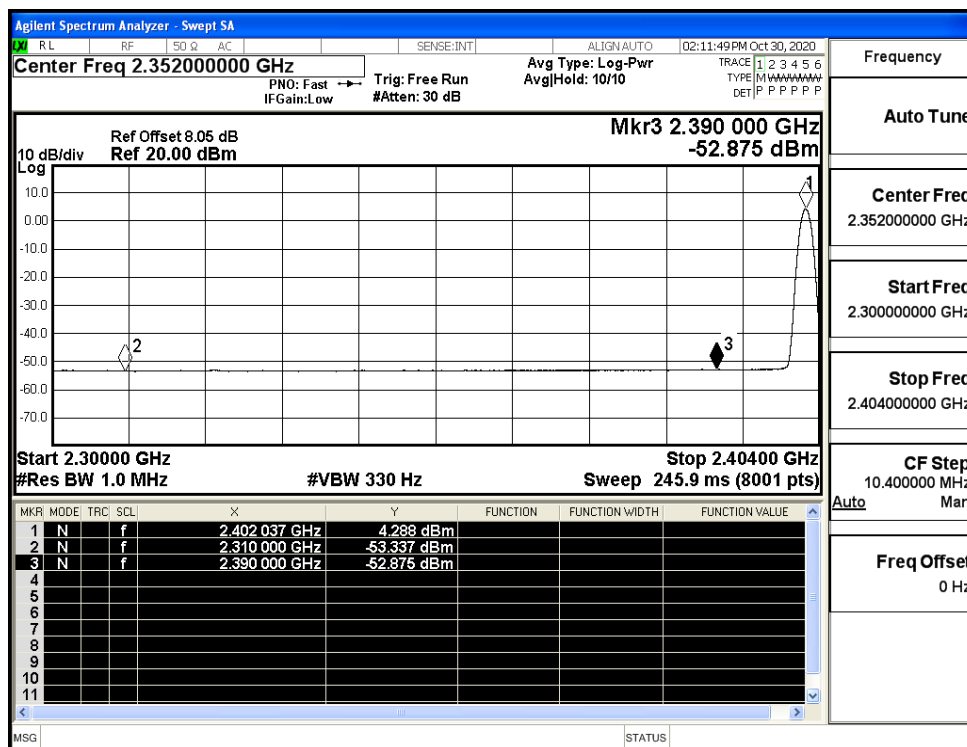
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-43.13	2.0	0	52.13	PEAK	74	PASS
	Off	2310.0	-53.34	2.0	0	41.92	AV	54	PASS
	Off	2390.0	-42.89	2.0	0	52.37	PEAK	74	PASS
	Off	2390.0	-52.88	2.0	0	42.38	AV	54	PASS
	Off	2483.5	-41.27	2.0	0	53.99	PEAK	74	PASS
	Off	2483.5	-52.14	2.0	0	43.12	AV	54	PASS
	Off	2500.0	-42.08	2.0	0	53.17	PEAK	74	PASS
	Off	2500.0	-52.26	2.0	0	43.00	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-43.92	2.0	0	51.34	PEAK	74	PASS
	Off	2310.0	-53.25	2.0	0	42.01	AV	54	PASS
	Off	2390.0	-43.75	2.0	0	51.51	PEAK	74	PASS
	Off	2390.0	-53.02	2.0	0	42.24	AV	54	PASS
	Off	2483.5	-42.53	2.0	0	52.72	PEAK	74	PASS
	Off	2483.5	-52.07	2.0	0	43.19	AV	54	PASS
	Off	2500.0	-40.62	2.0	0	54.64	PEAK	74	PASS
	Off	2500.0	-52.29	2.0	0	42.97	AV	54	PASS
8DPSK	Off	2310.0	-43.18	2.0	0	52.08	PEAK	74	PASS
	Off	2310.0	-53.32	2.0	0	41.94	AV	54	PASS
	Off	2390.0	-42.30	2.0	0	52.96	PEAK	74	PASS
	Off	2390.0	-52.98	2.0	0	42.28	AV	54	PASS
	Off	2483.5	-41.31	2.0	0	53.94	PEAK	74	PASS
	Off	2483.5	-52.11	2.0	0	43.15	AV	54	PASS
	Off	2500.0	-41.03	2.0	0	54.23	PEAK	74	PASS
	Off	2500.0	-52.25	2.0	0	43.00	AV	54	PASS

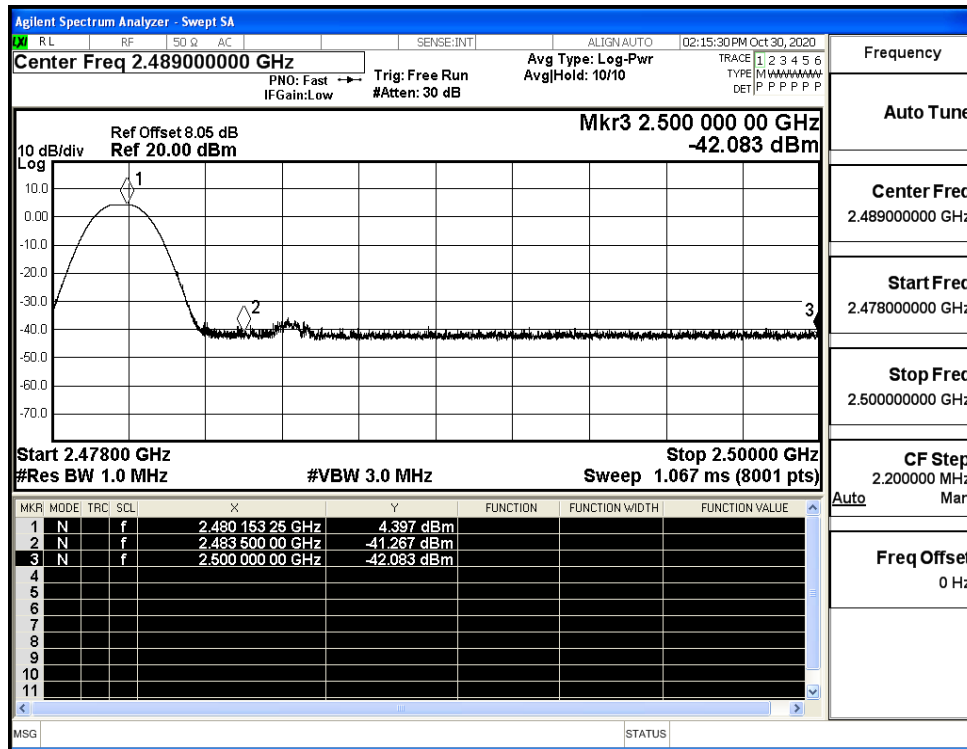
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



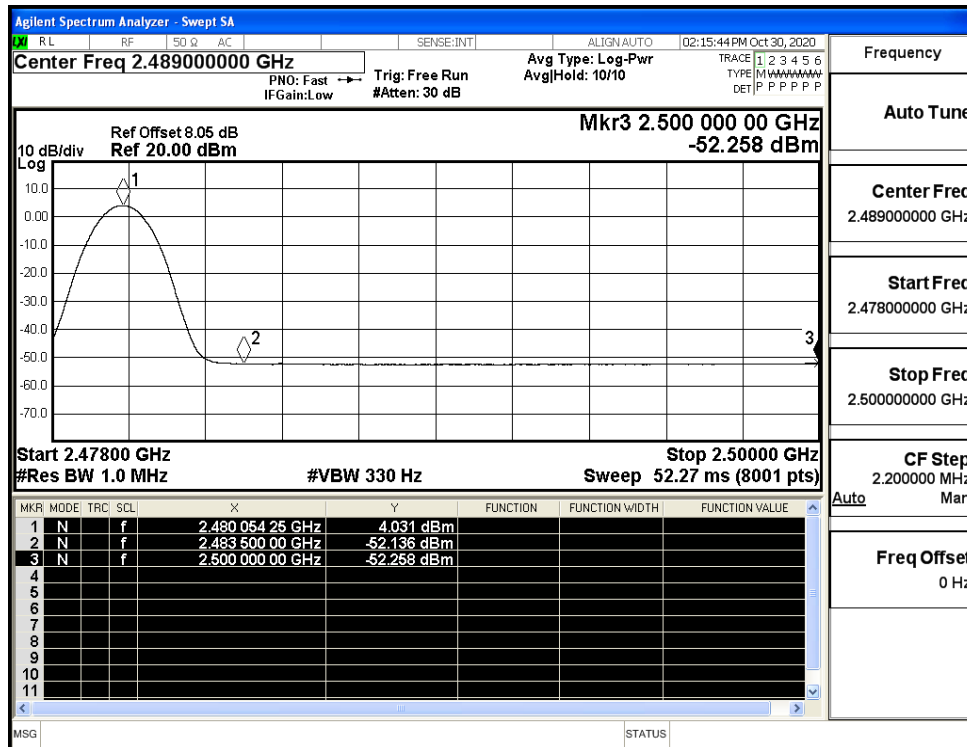
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)



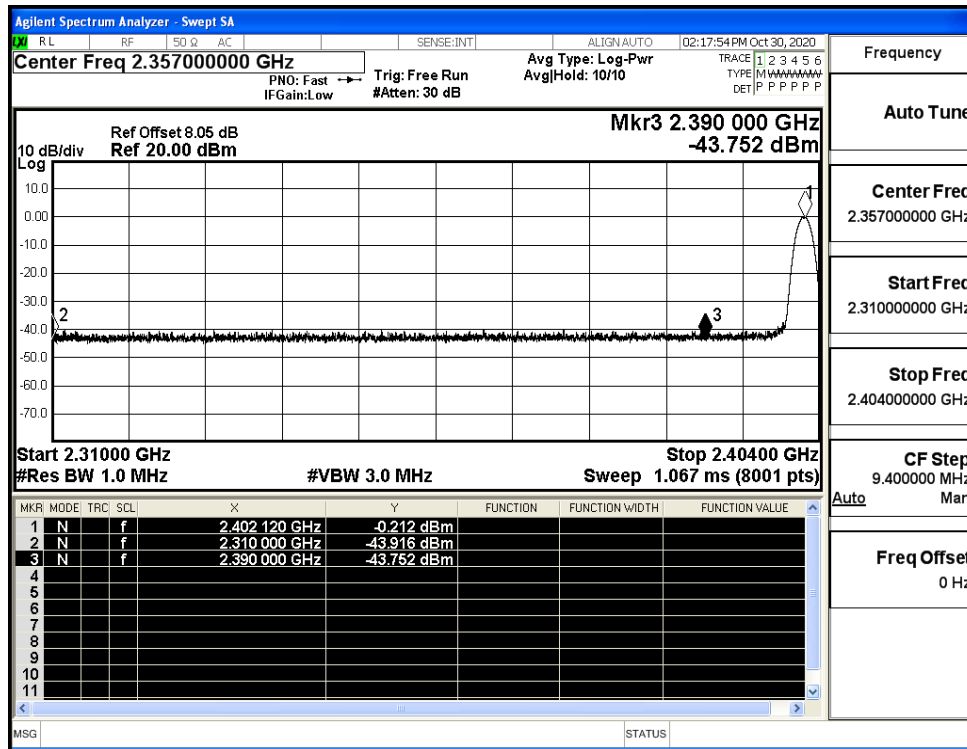
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)



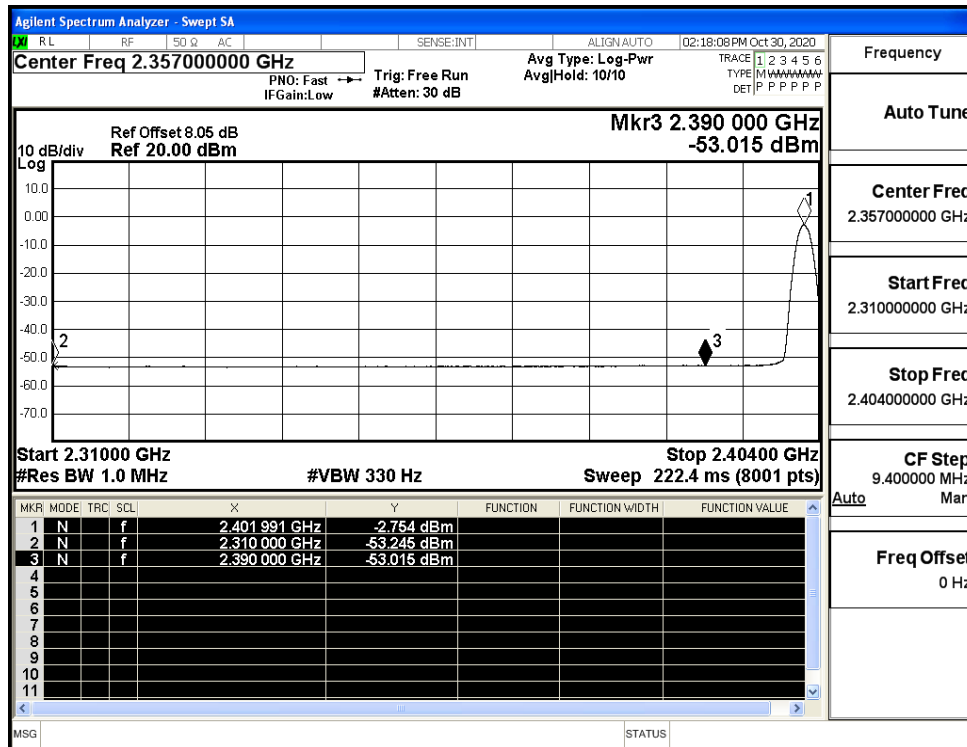
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)



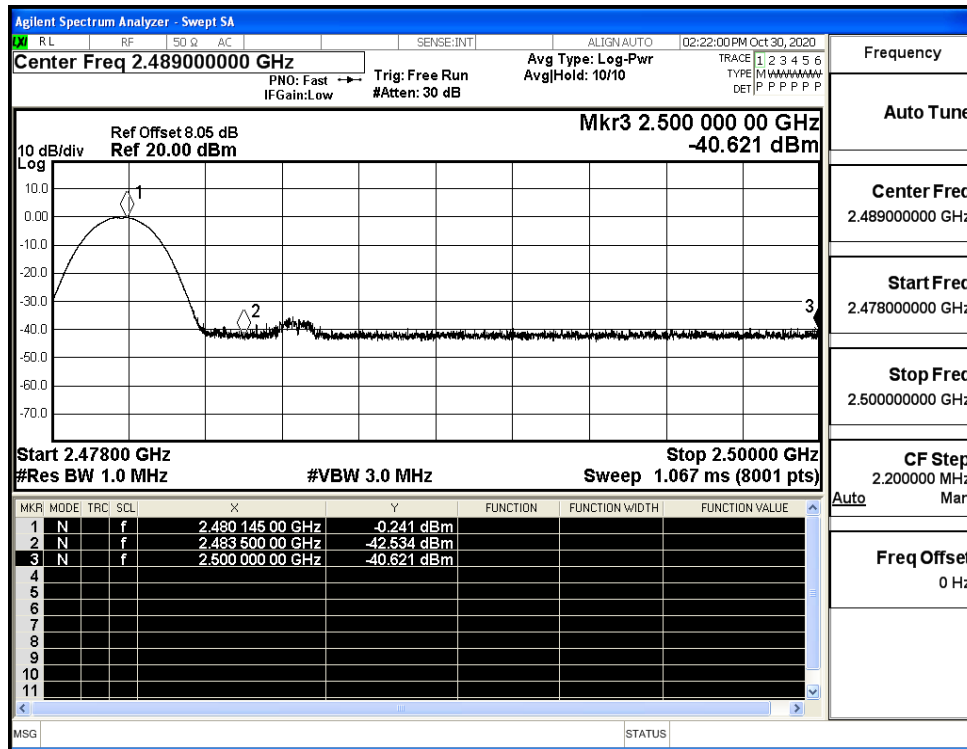
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)



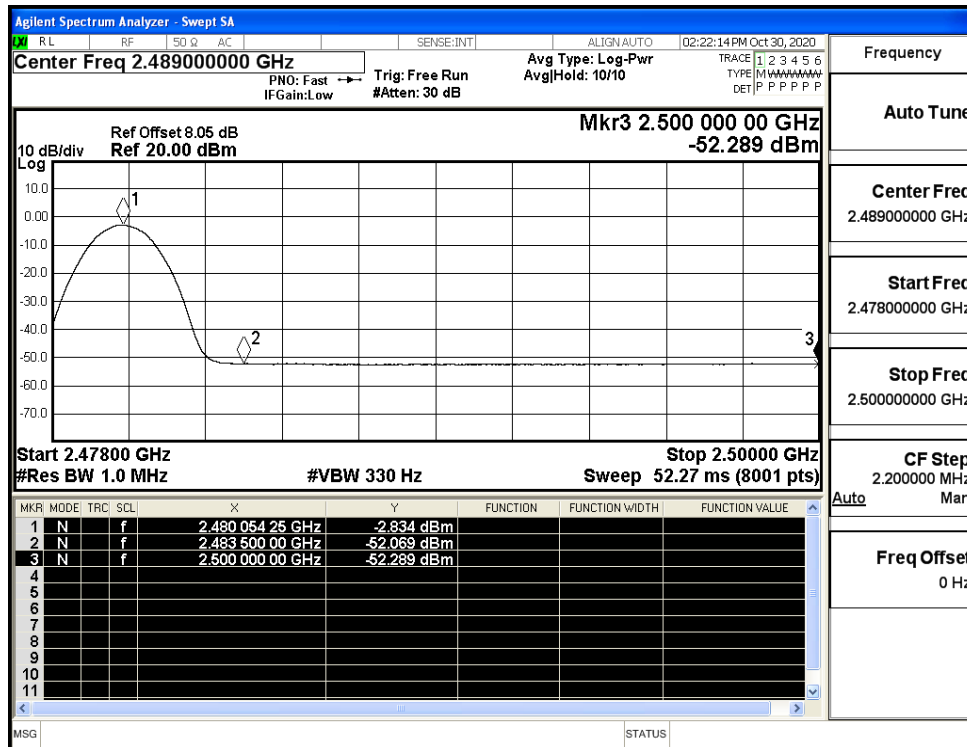
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (Low Channel)



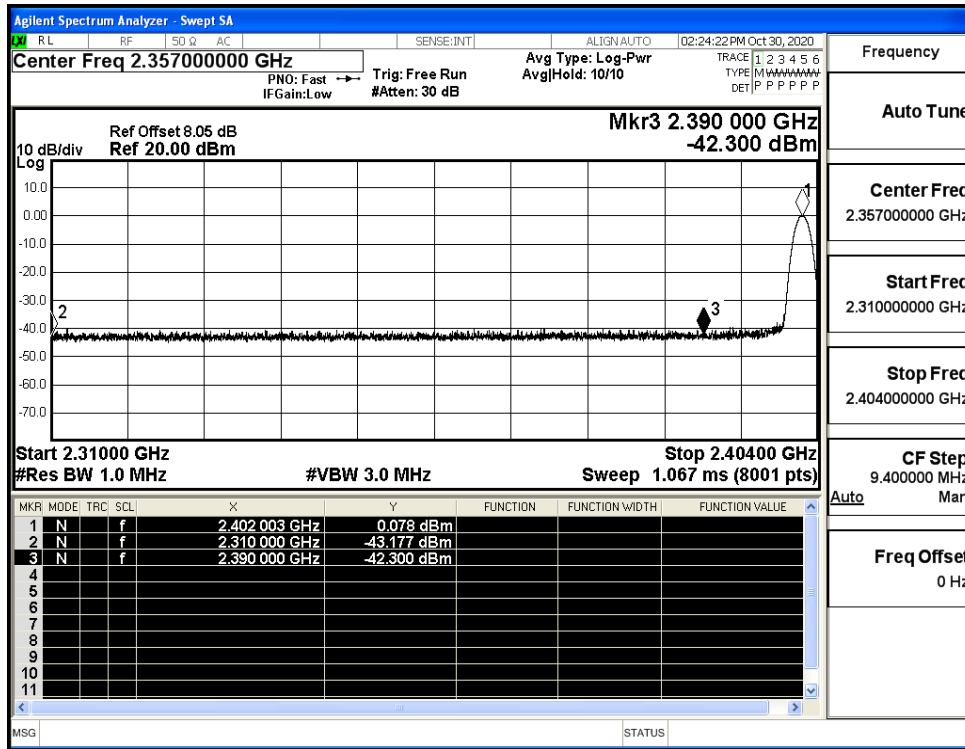
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (High Channel)



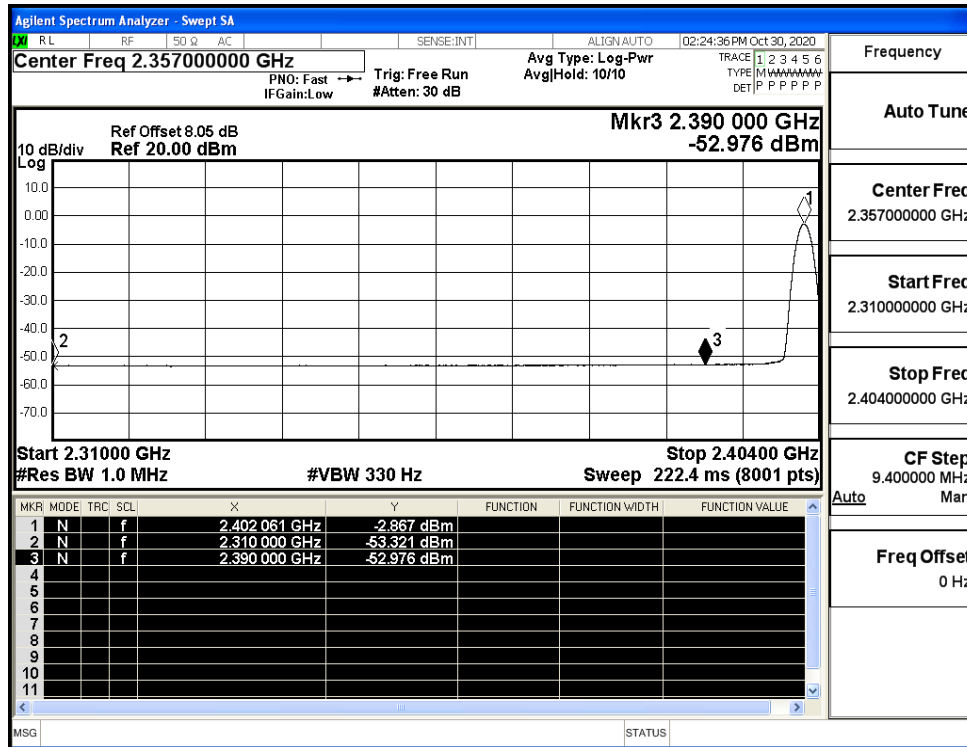
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (High Channel)



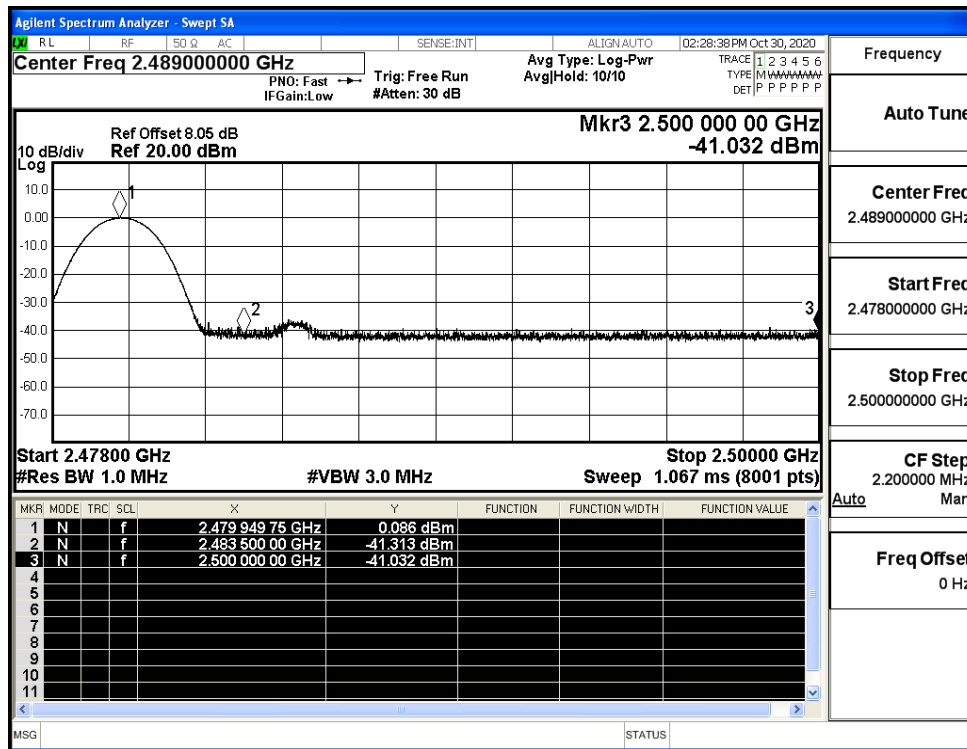
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)

