

Appendix A

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

Product Name: NA6605

Trade Mark: /

Test Model: NA6605

Environmental Conditions

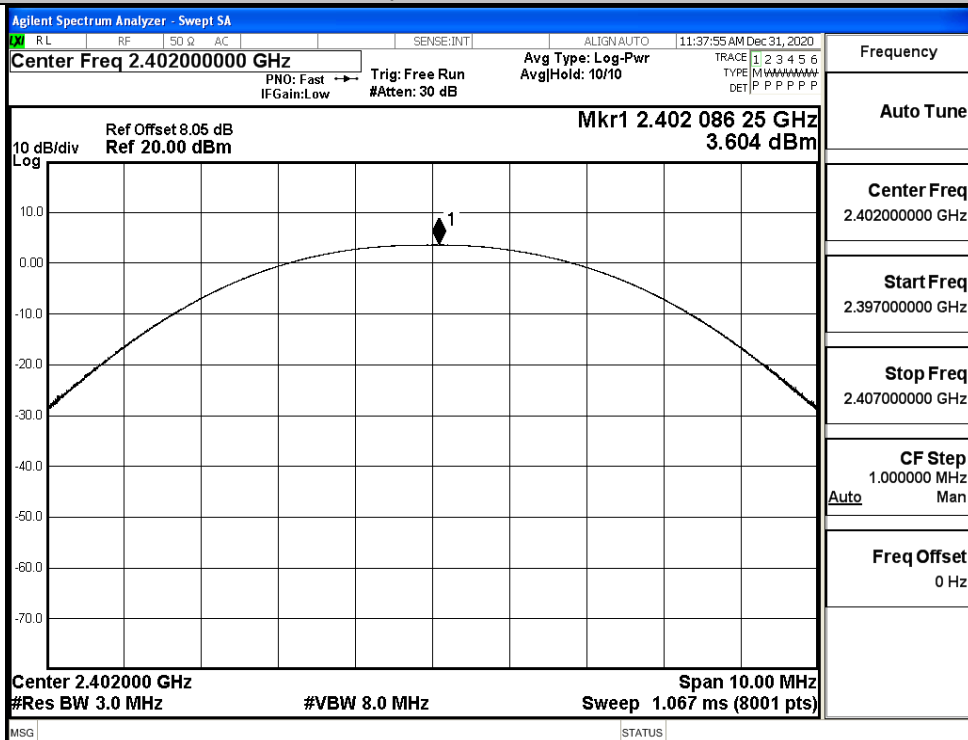
Temperature:	24.3 ° C
Relative Humidity:	52.7%
ATM Pressure:	100.0 kPa
Test Engineer:	Diamond Lu
Supervised by:	Li Huan

A.1 Maximum Conducted Peak Output Power

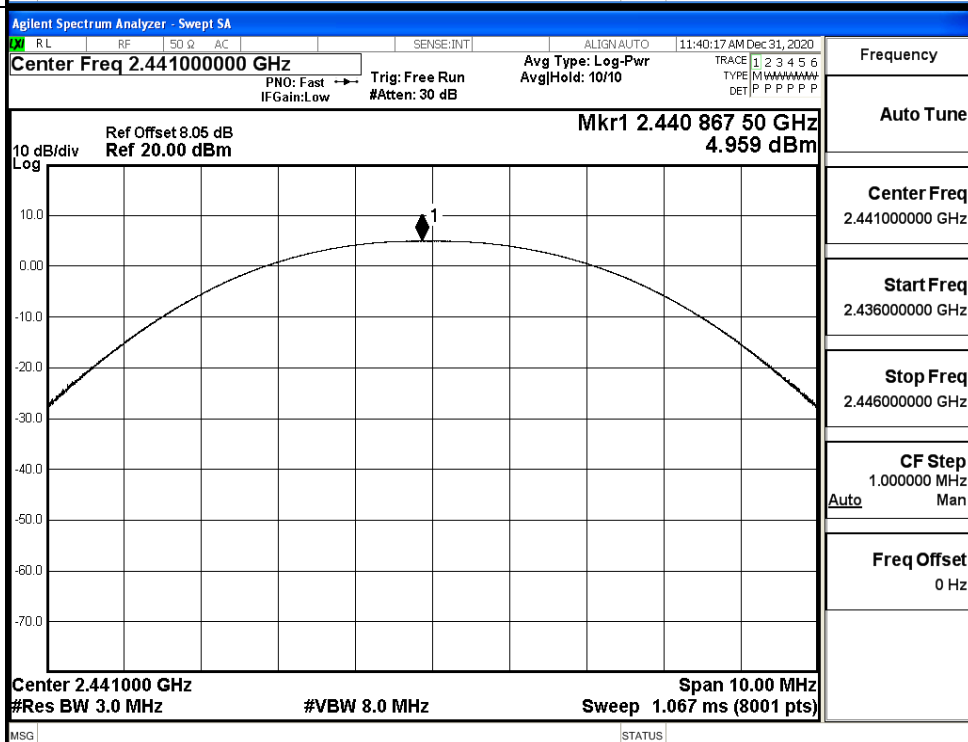
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	3.604	30	PASS
	MCH	4.959	30	PASS
	HCH	3.340	30	PASS
$\pi/4$ DQPSK	LCH	2.814	21	PASS
	MCH	4.188	21	PASS
	HCH	2.617	21	PASS
8DPSK	LCH	2.868	21	PASS
	MCH	4.279	21	PASS
	HCH	2.718	21	PASS

Test Graphs

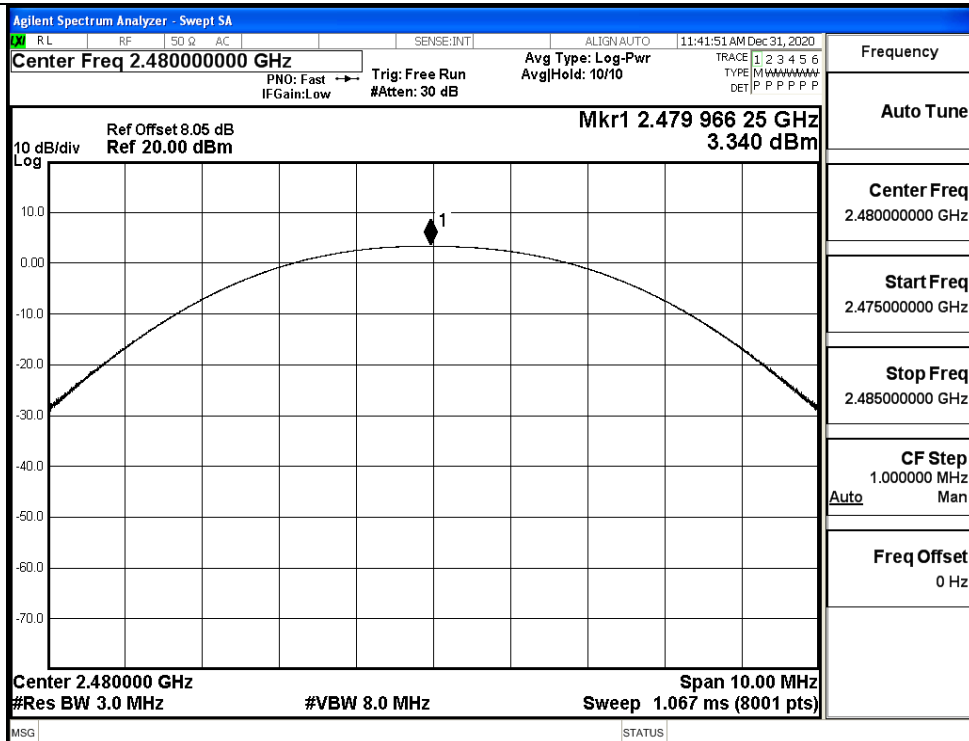
GFSK/LCH



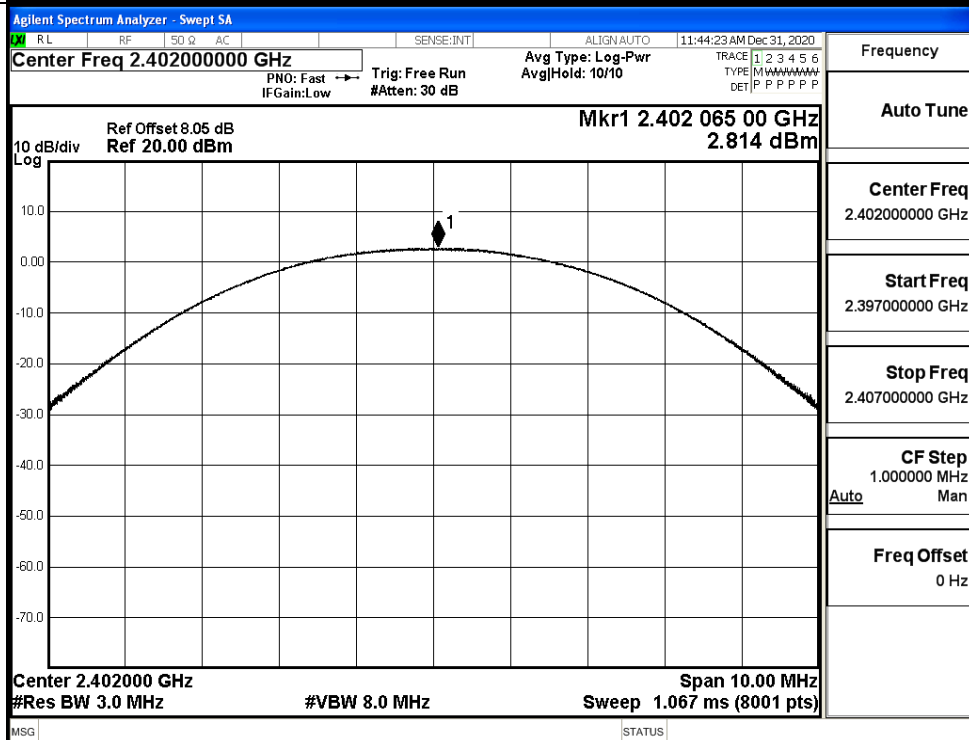
GFSK/MCH

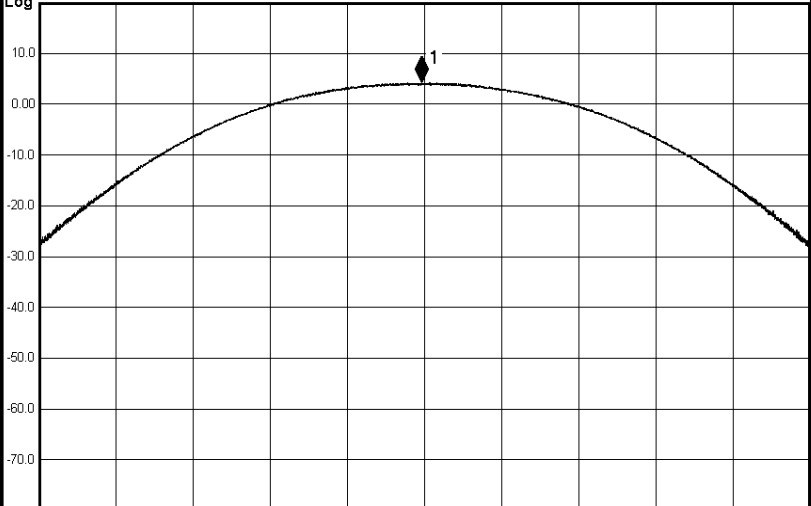
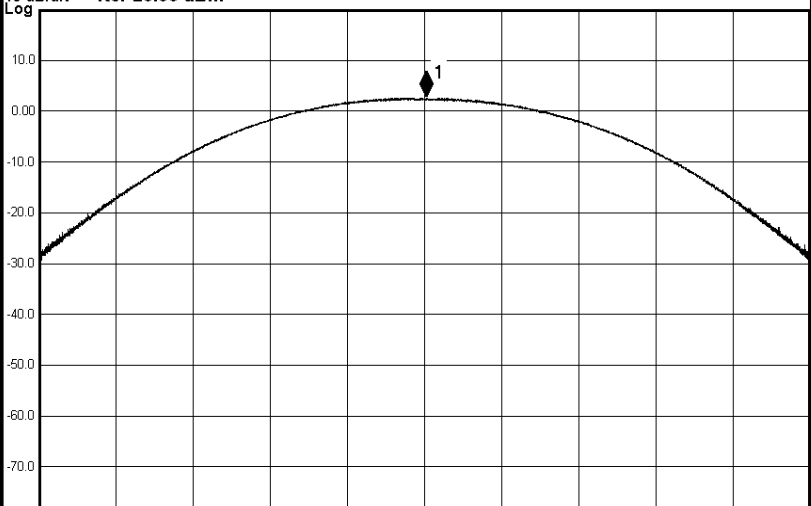


GFSK/HCH

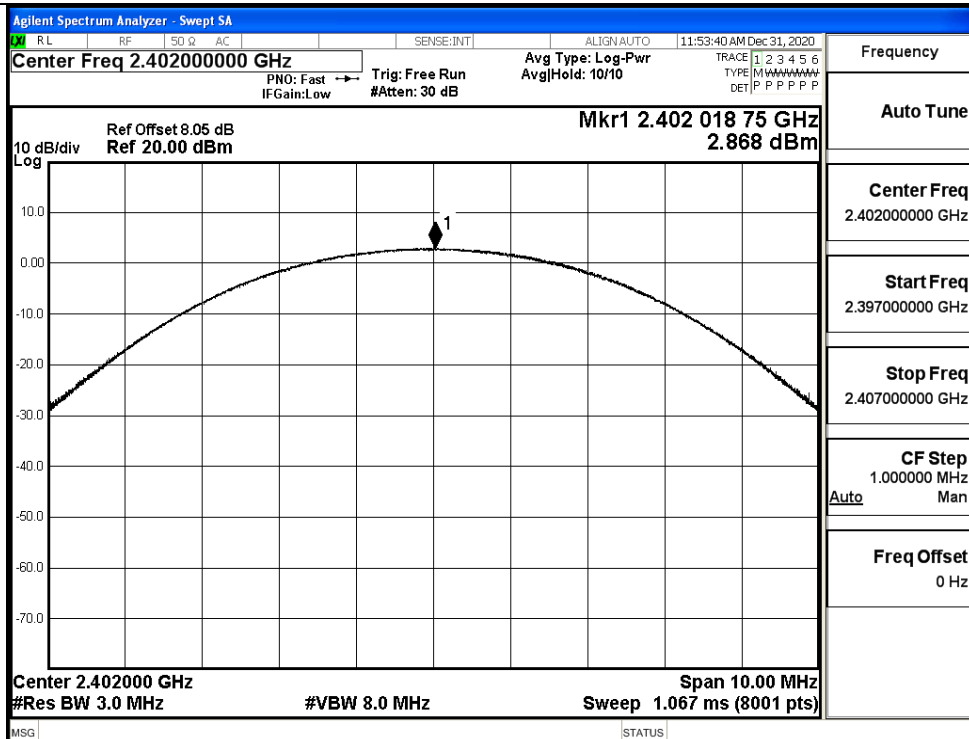


$\pi/4$ DQPSK/LCH

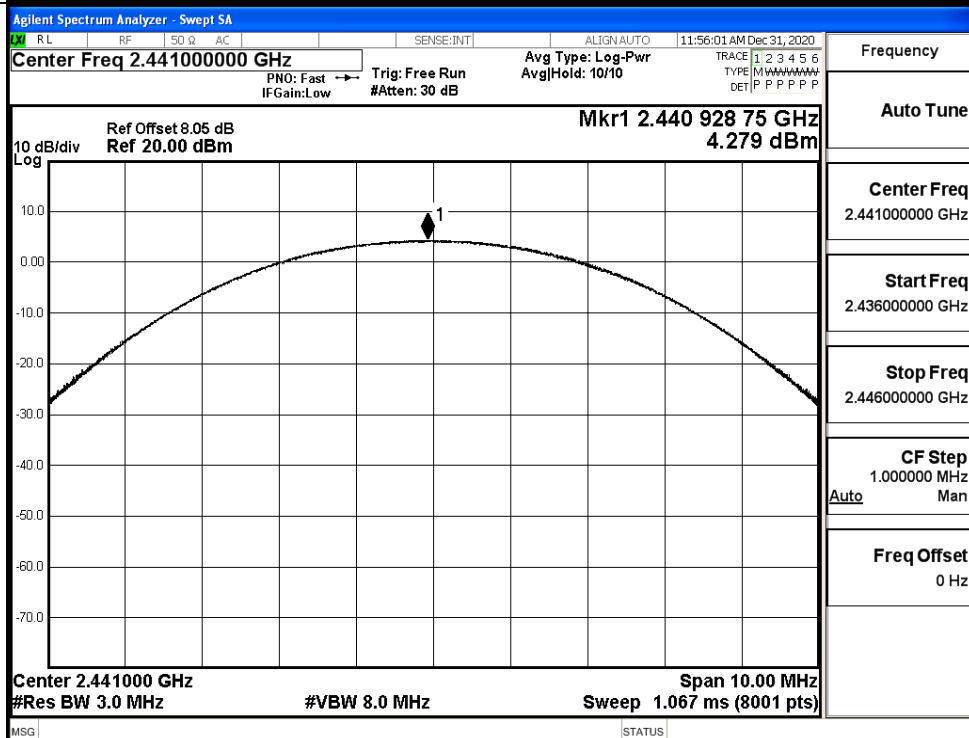


$\pi/4$DQPSK/MCH	Agilent Spectrum Analyzer - Swept SA RL RF 50 Q AC SENSE:INT ALIGN: AUTO 11:46:44 AM Dec 31, 2020 Center Freq 2.441000000 GHz PNO: Fast IF Gain: Low Trig: Free Run #Atten: 30 dB Avg Type: Log-Pwr AvgHold: 10/10 Mkr1 2.440 961 25 GHz 4.188 dBm Ref Offset 8.05 dB Ref 20.00 dBm 10 dB/div Log  Center 2.441000 GHz #Res BW 3.0 MHz #VBW 8.0 MHz Span 10.00 MHz Sweep 1.067 ms (8001 pts) MSG STATUS Frequency Auto Tune Center Freq 2.441000000 GHz Start Freq 2.436000000 GHz Stop Freq 2.446000000 GHz CF Step 1.000000 MHz Auto Man Freq Offset 0 Hz
$\pi/4$DQPSK/HCH	Agilent Spectrum Analyzer - Swept SA RL RF 50 Q AC SENSE:INT ALIGN: AUTO 11:49:07 AM Dec 31, 2020 Center Freq 2.480000000 GHz PNO: Fast IF Gain: Low Trig: Free Run #Atten: 30 dB Avg Type: Log-Pwr AvgHold: 10/10 Mkr1 2.480 030 00 GHz 2.617 dBm Ref Offset 8.05 dB Ref 20.00 dBm 10 dB/div Log  Center 2.480000 GHz #Res BW 3.0 MHz #VBW 8.0 MHz Span 10.00 MHz Sweep 1.067 ms (8001 pts) MSG STATUS Frequency Auto Tune Center Freq 2.480000000 GHz Start Freq 2.475000000 GHz Stop Freq 2.485000000 GHz CF Step 1.000000 MHz Auto Man Freq Offset 0 Hz

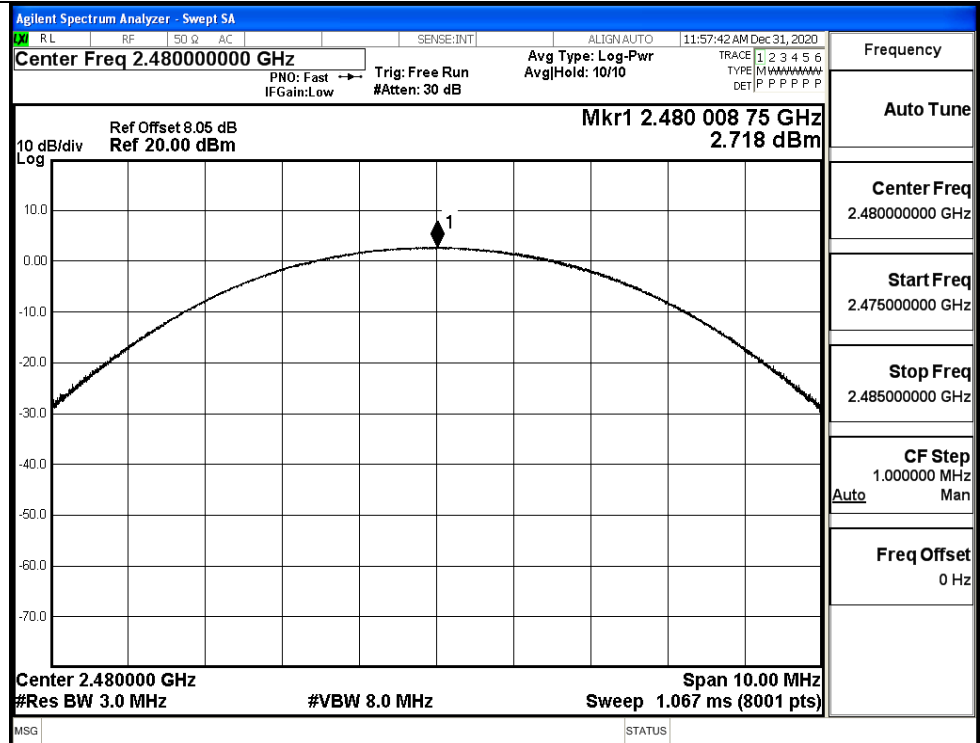
8DPSK/LCH



8DPSK/MCH



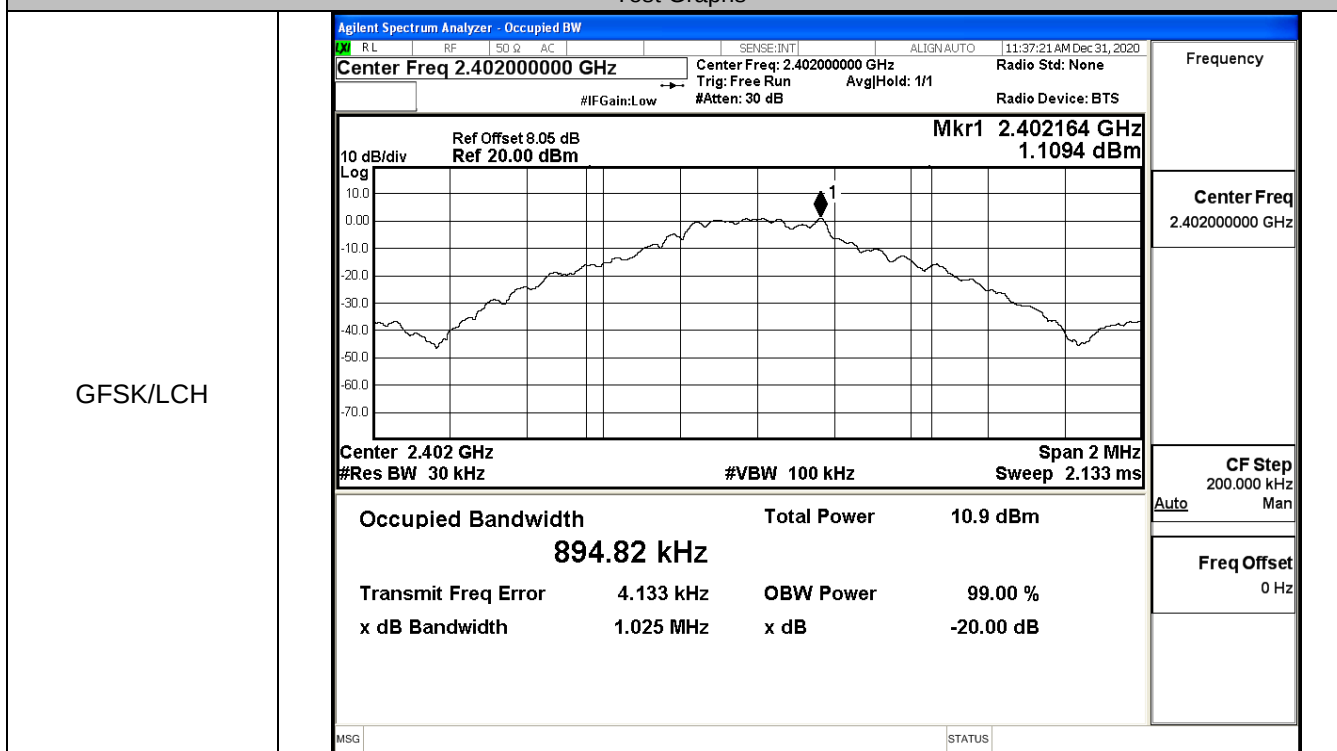
8DPSK/HCH



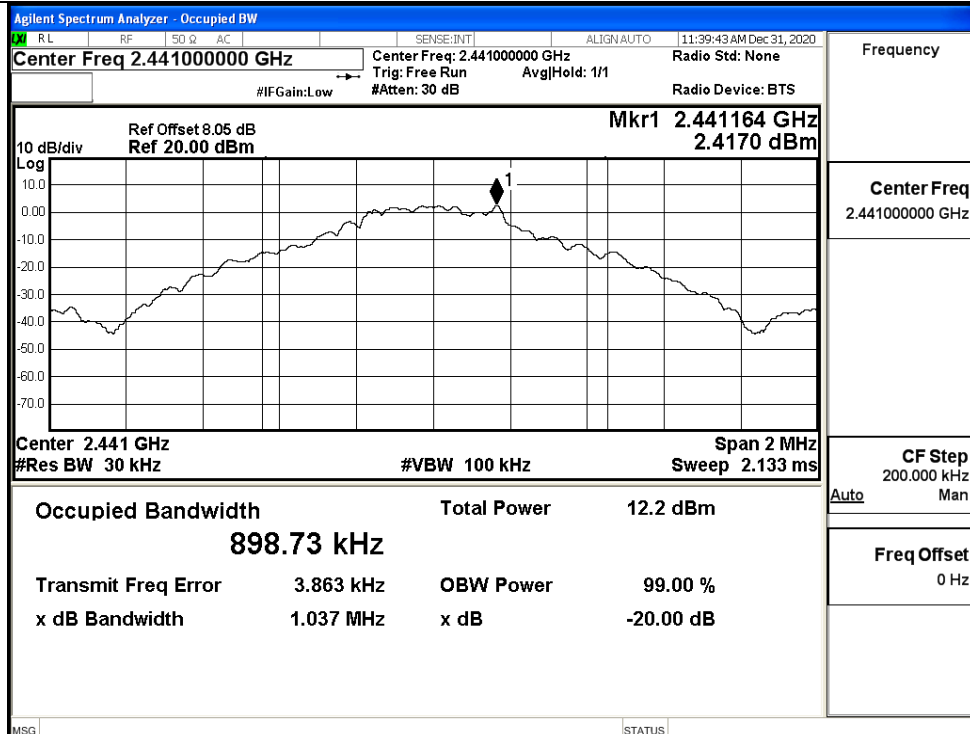
A.2 20dB Bandwidth

Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.025	Not Specified	PASS
	MCH	1.037	Not Specified	PASS
	HCH	1.036	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.287	Not Specified	PASS
	MCH	1.288	Not Specified	PASS
	HCH	1.289	Not Specified	PASS
8DPSK	LCH	1.291	Not Specified	PASS
	MCH	1.297	Not Specified	PASS
	HCH	1.292	Not Specified	PASS

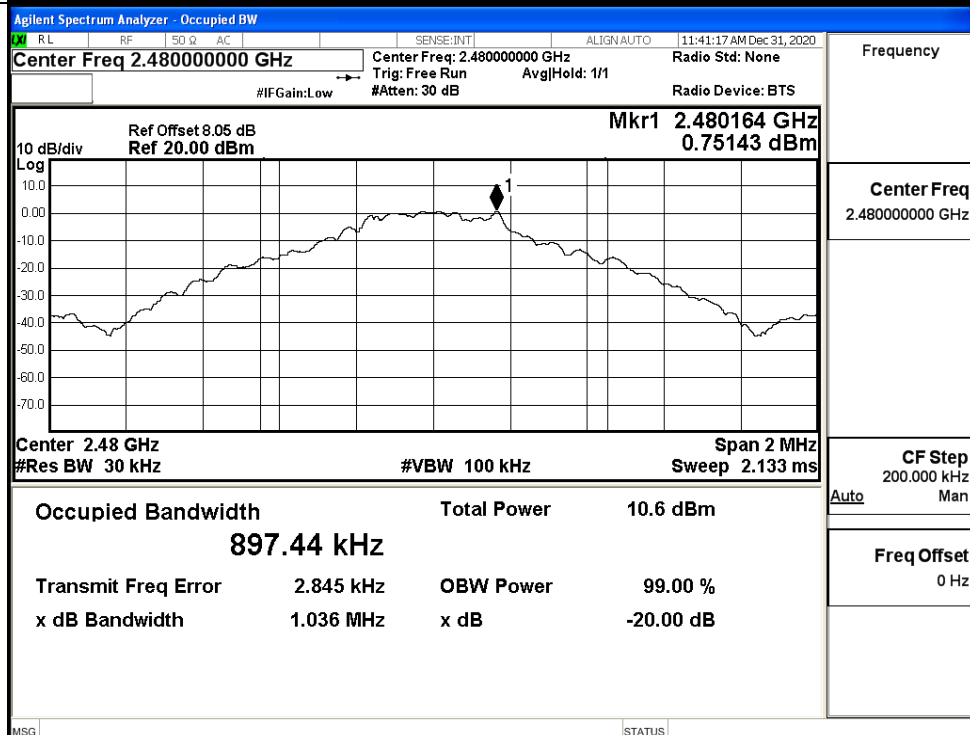
Test Graphs



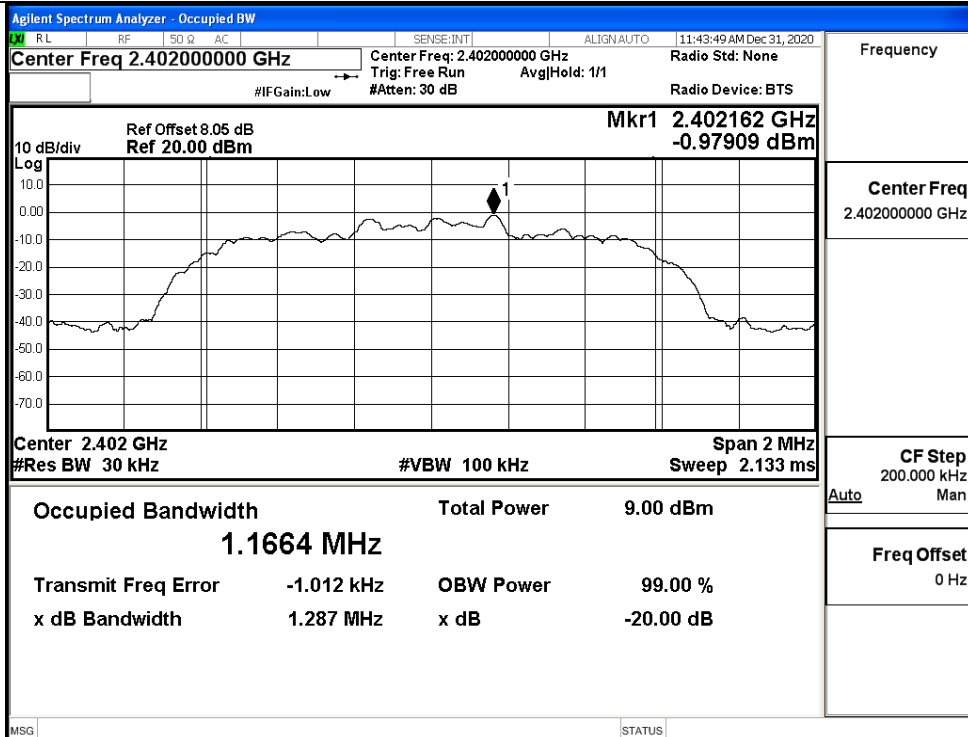
GFSK/MCH



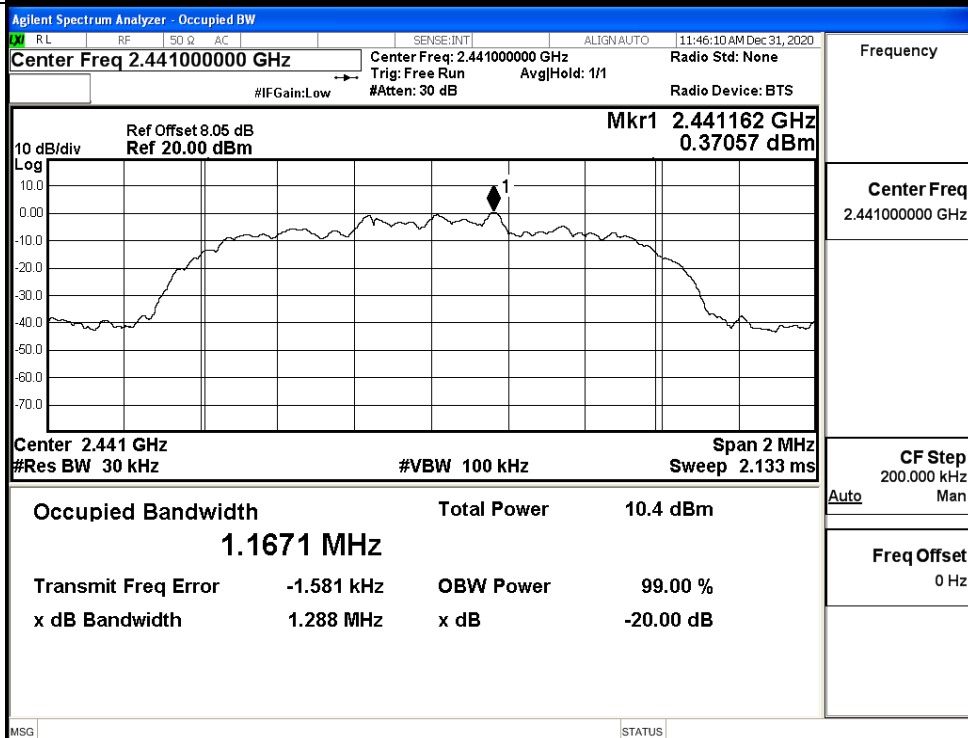
GFSK/HCH



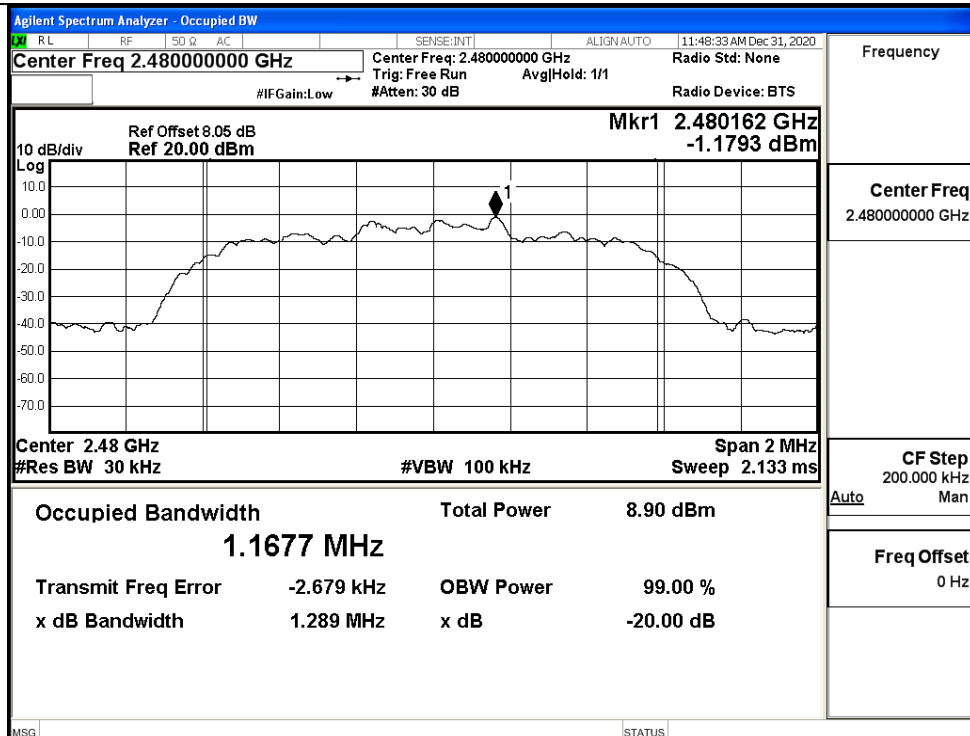
$\pi/4$ DQPSK/LCH



$\pi/4$ DQPSK/MCH



$\pi/4$ DQPSK/HCH



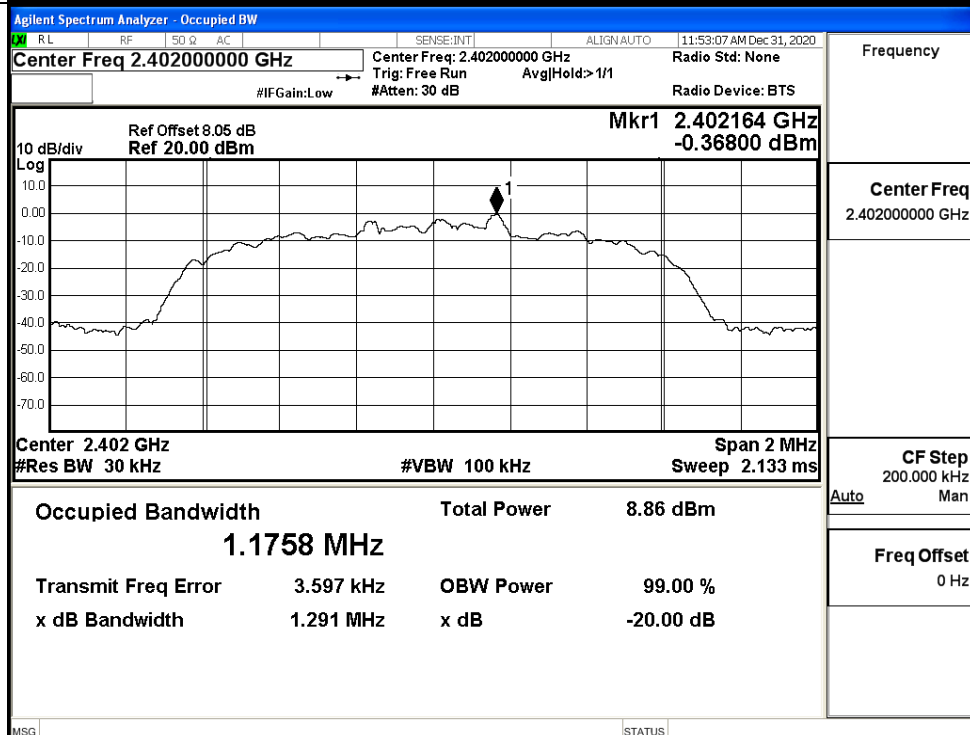
Frequency

Center Freq
2.480000000 GHz

CF Step
200.000 kHz
Auto Man

Freq Offset
0 Hz

8DPSK/LCH



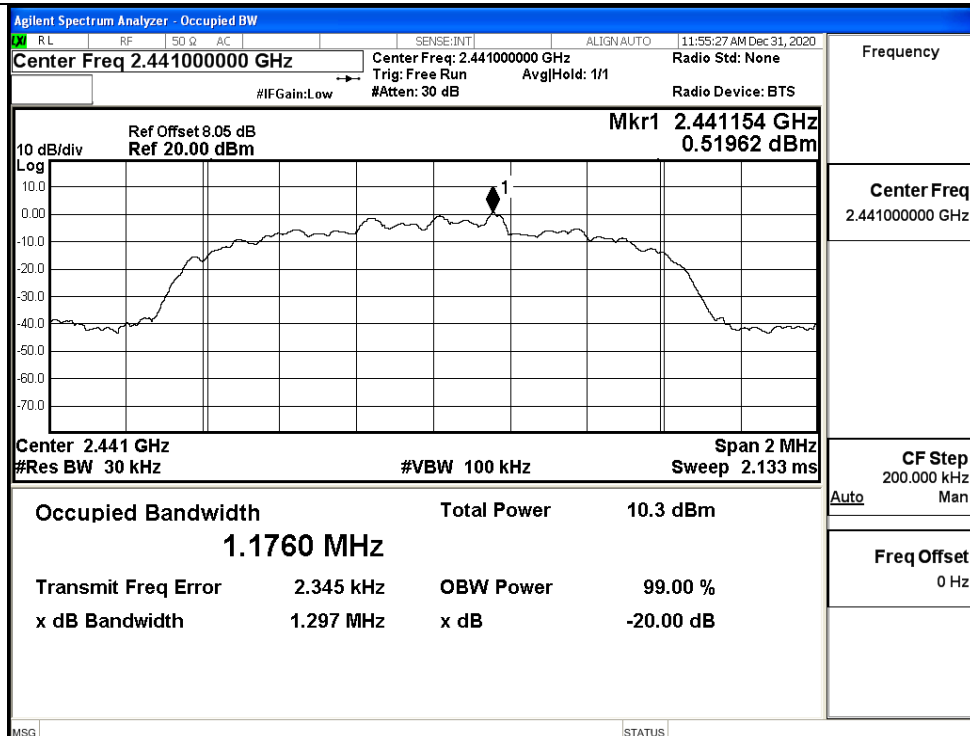
Frequency

Center Freq
2.402000000 GHz

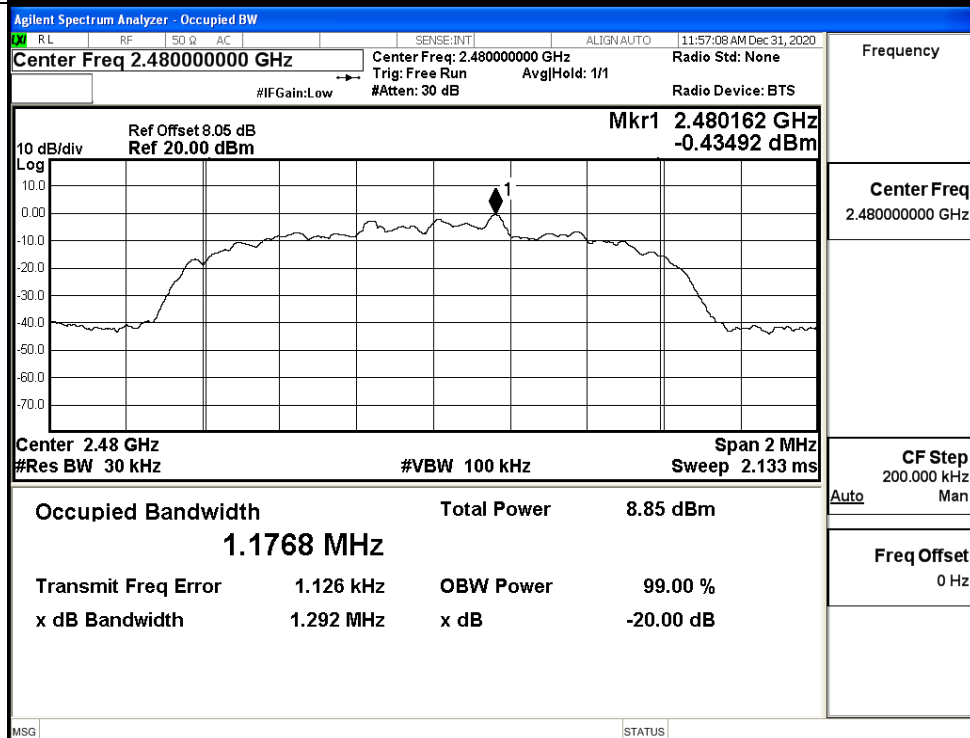
CF Step
200.000 kHz
Auto Man

Freq Offset
0 Hz

8DPSK/MCH



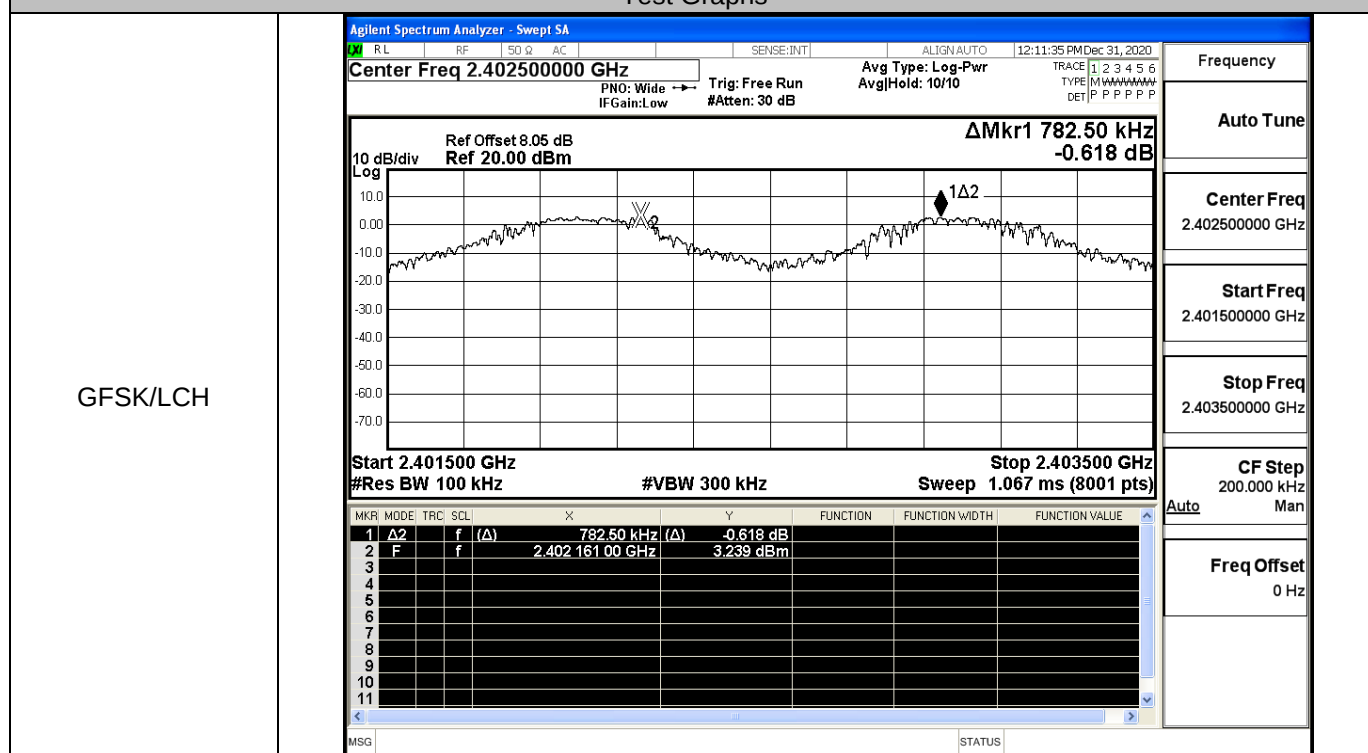
8DPSK/HCH



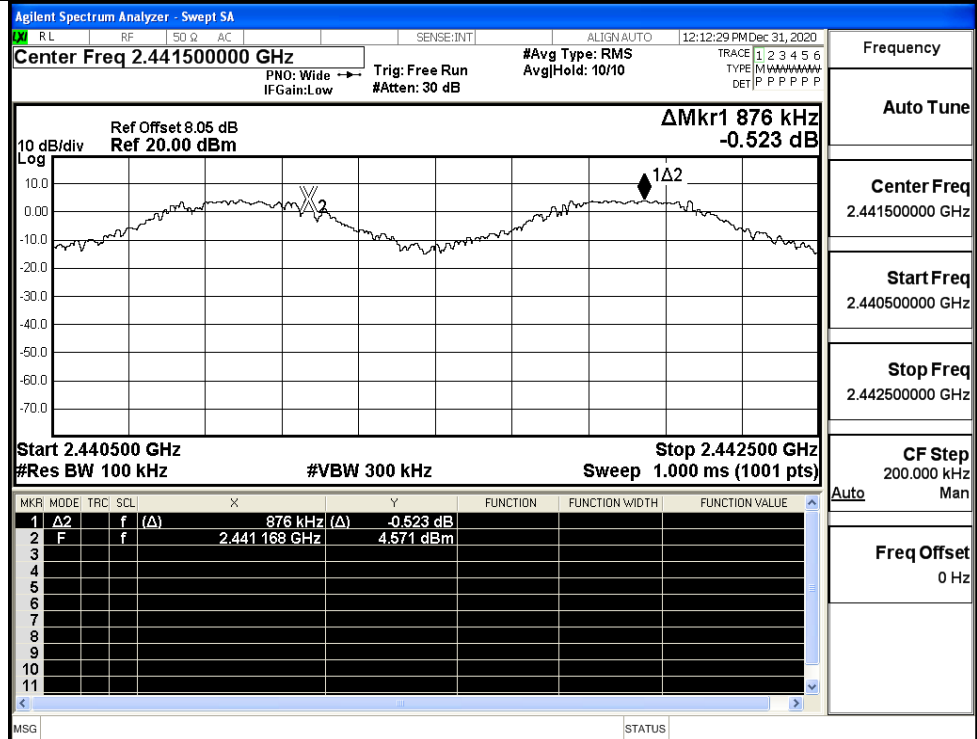
A.3 Carrier Frequency Separation

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.782	0.691	PASS
	MCH	0.876	0.691	PASS
	HCH	1.042	0.691	PASS
$\pi/4$ DQPSK	LCH	0.904	0.859	PASS
	MCH	0.930	0.859	PASS
	HCH	1.292	0.859	PASS
8DPSK	LCH	1.052	0.865	PASS
	MCH	1.184	0.865	PASS
	HCH	0.952	0.865	PASS

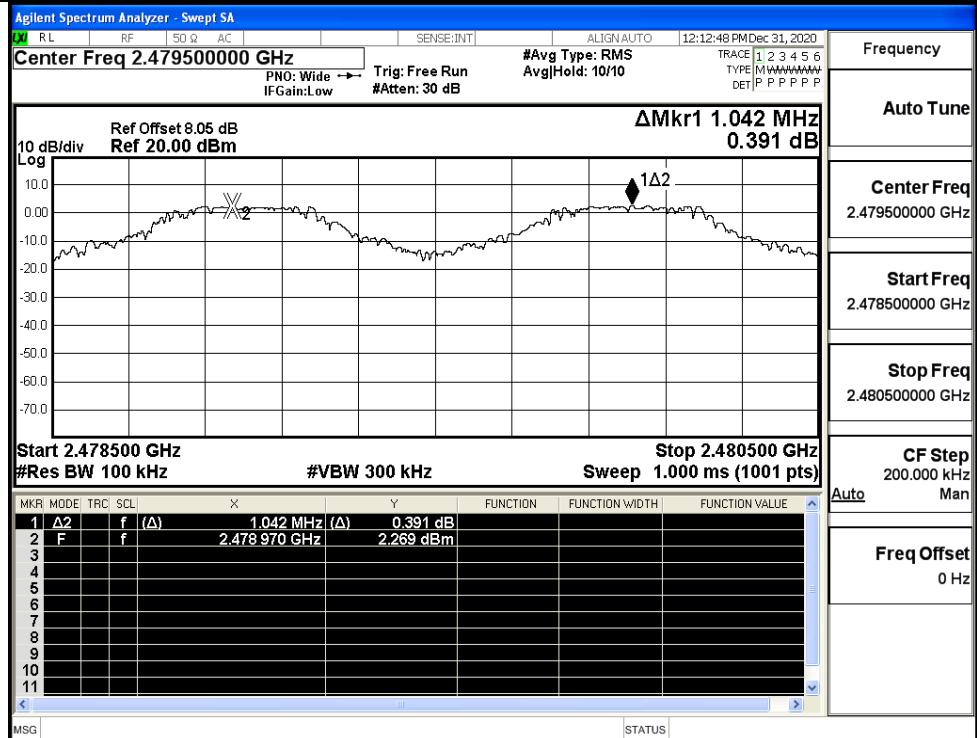
Test Graphs



GFSK/MCH



GFSK/HCH



$\pi/4$ DQPSK/LCH

$\pi/4$ DQPSK/MCH

Agilent Spectrum Analyzer - Swept SA

Center Freq 2.402500000 GHz
 Ref Offset 8.05 dB
 Ref 20.00 dBm
 PNO: Wide → IF Gain: Low
 Trig: Free Run #Atten: 30 dB
 #Avg Type: RMS Avg/Hold: 10/10
 TRACE 1 2 3 4 5 6 TYPE [M] [W] [W] [W] [W] [W] [W] DET [P] [P] [P] [P] [P] [P]

10 dB/div
 Log
 Ref Offset 8.05 dB
 Ref 20.00 dBm
 ΔMkr1 904 kHz
 -2.981 dB

Start 2.401500 GHz #Res BW 100 kHz
 #VBW 300 kHz
 Stop 2.403500 GHz Sweep 1.000 ms (1001 pts)

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	Δ2	f	(Δ)	904 kHz	(Δ) -2.981 dB			
2	F	f		2.402 162 GHz	1.024 dBm			

MSG STATUS

Agilent Spectrum Analyzer - Swept SA

Center Freq 2.441500000 GHz
 Ref Offset 8.05 dB
 Ref 20.00 dBm
 PNO: Wide → IF Gain: Low
 Trig: Free Run #Atten: 30 dB
 #Avg Type: RMS Avg/Hold: 10/10
 TRACE 1 2 3 4 5 6 TYPE [M] [W] [W] [W] [W] [W] [W] DET [P] [P] [P] [P] [P] [P]

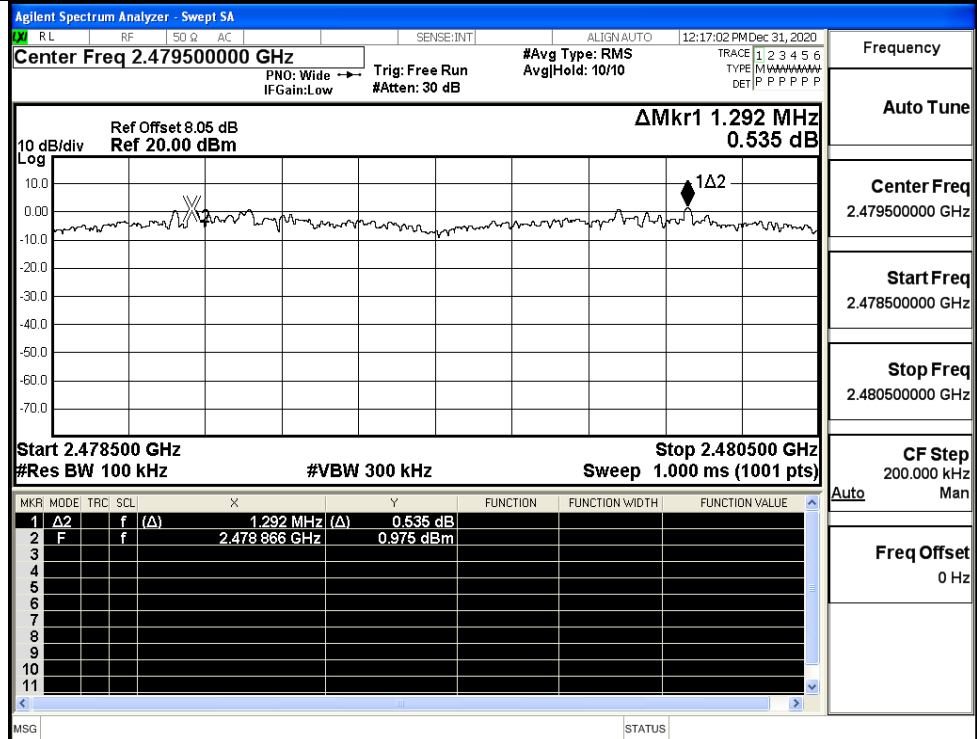
10 dB/div
 Log
 Ref Offset 8.05 dB
 Ref 20.00 dBm
 ΔMkr1 930 kHz
 3.589 dB

Start 2.440500 GHz #Res BW 100 kHz
 #VBW 300 kHz
 Stop 2.442500 GHz Sweep 1.000 ms (1001 pts)

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	Δ2	f	(Δ)	930 kHz	(Δ) 3.589 dB			
2	F	f		2.440 906 GHz	-0.450 dBm			

MSG STATUS

$\pi/4$ DQPSK/HCH



Frequency

Auto Tune

Center Freq
2.479500000 GHz

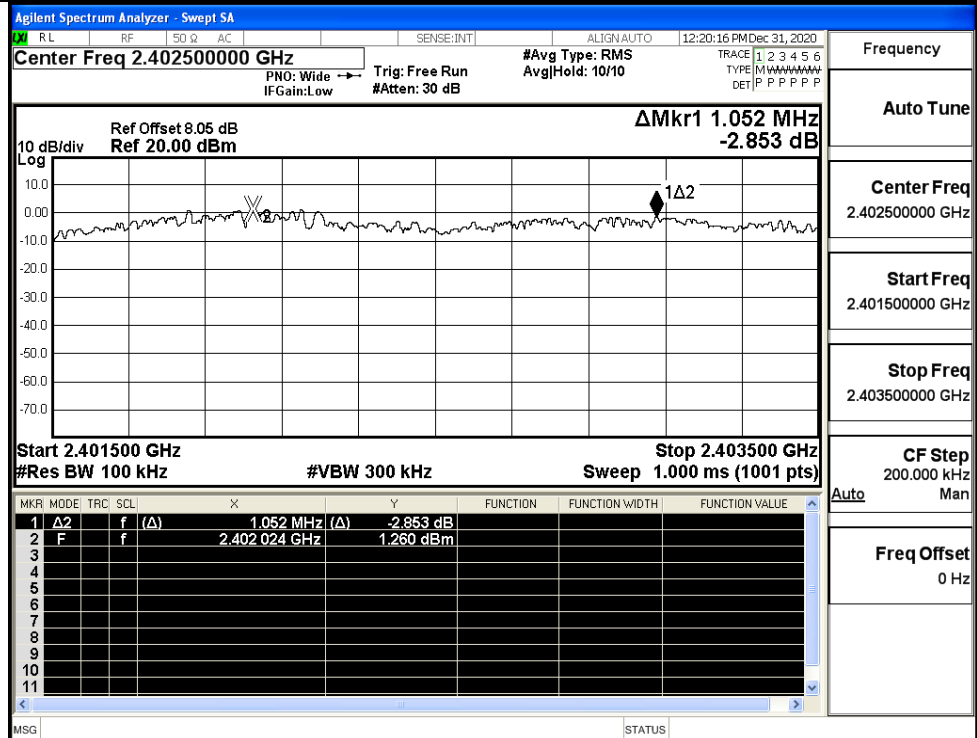
Start Freq
2.478500000 GHz

Stop Freq
2.480500000 GHz

CF Step
200.000 kHz
Man

Freq Offset
0 Hz

8DPSK/LCH



Frequency

Auto Tune

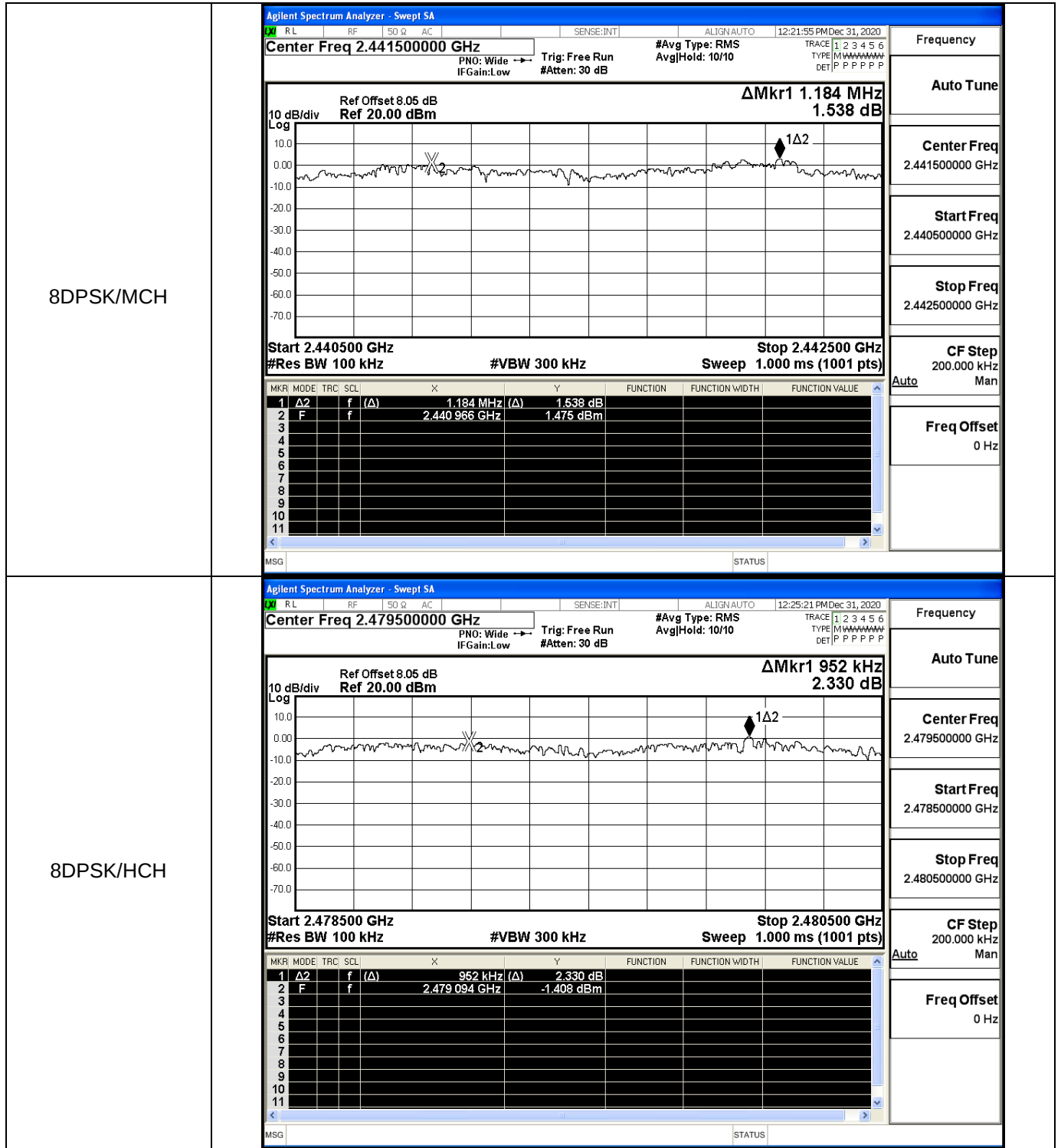
Center Freq
2.402500000 GHz

Start Freq
2.401500000 GHz

Stop Freq
2.403500000 GHz

CF Step
200.000 kHz
Man

Freq Offset
0 Hz

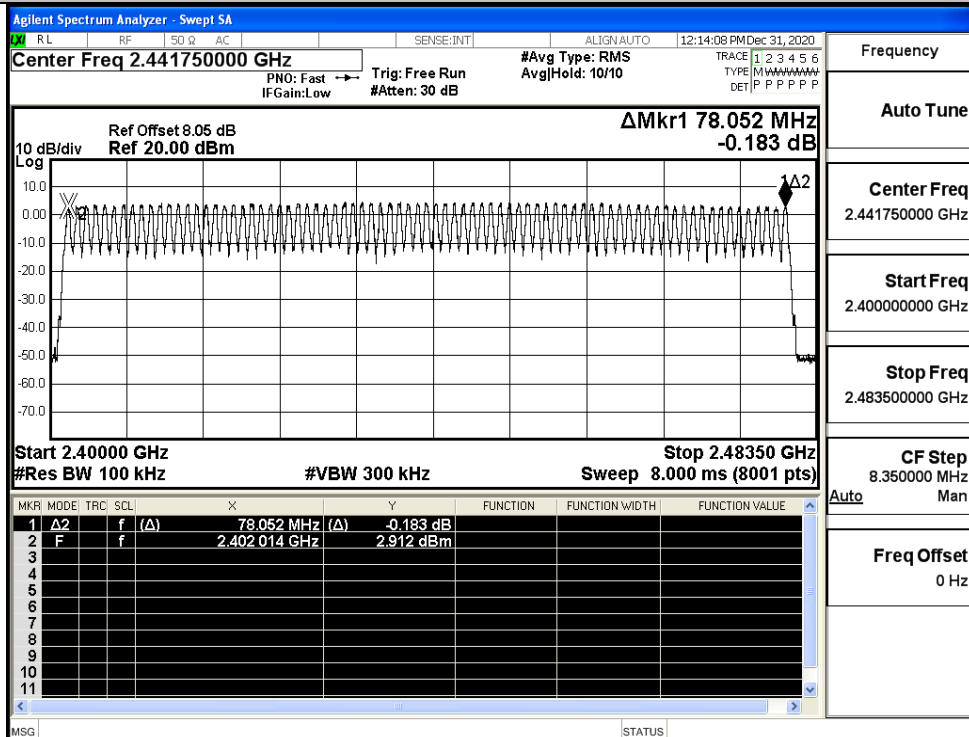


A.4 Hopping Channel Number

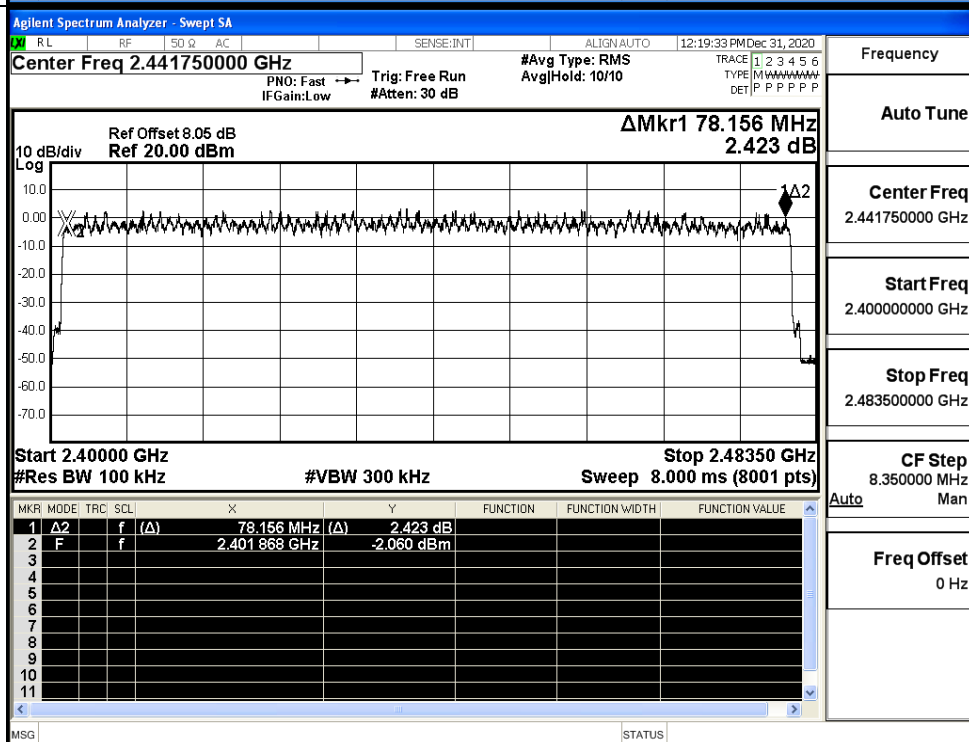
Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	>=15	PASS
$\pi/4$ DQPSK	Hop	79	>=15	PASS
8DPSK	Hop	79	>=15	PASS

Test Graphs

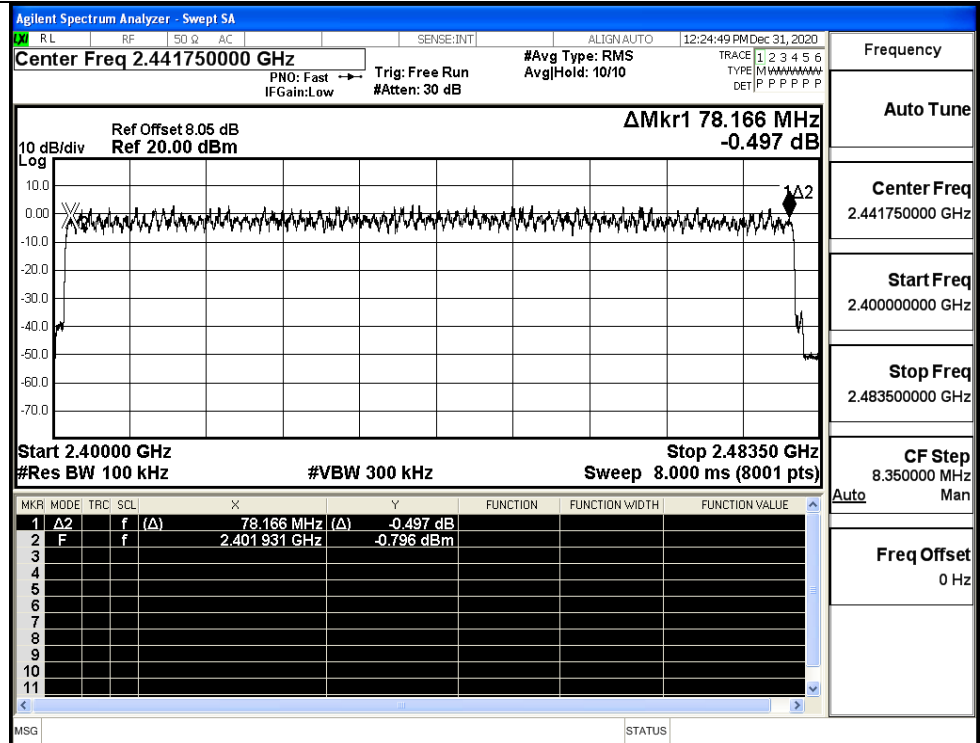
GFSK/Hop



π/4DQPSK/Hop



8DPSK/Hop

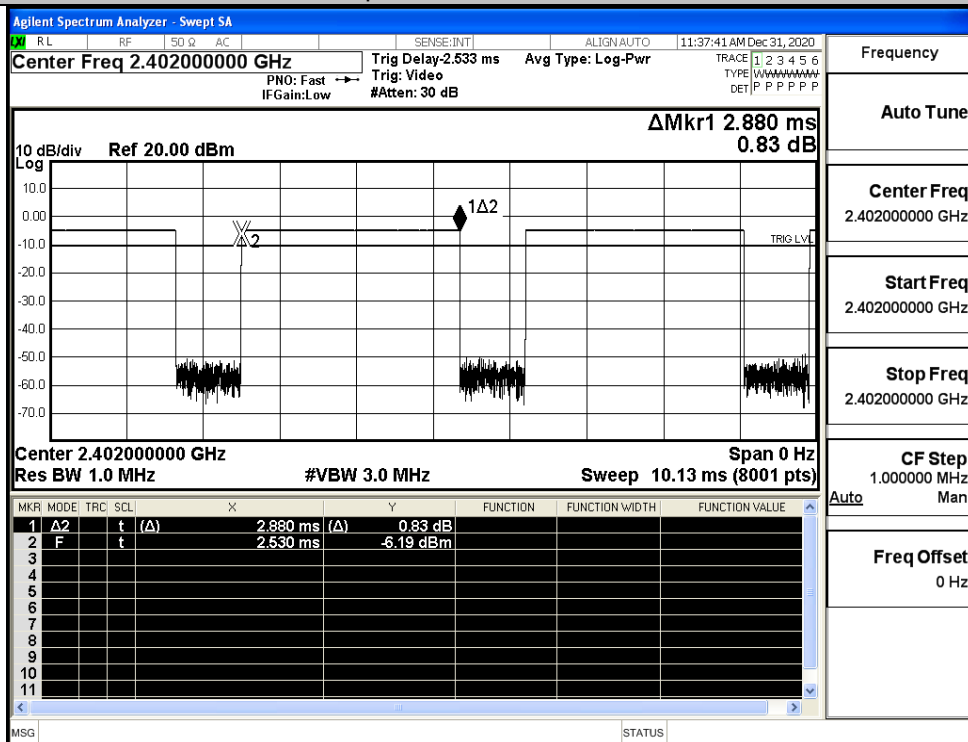


A.5 Dwell Time

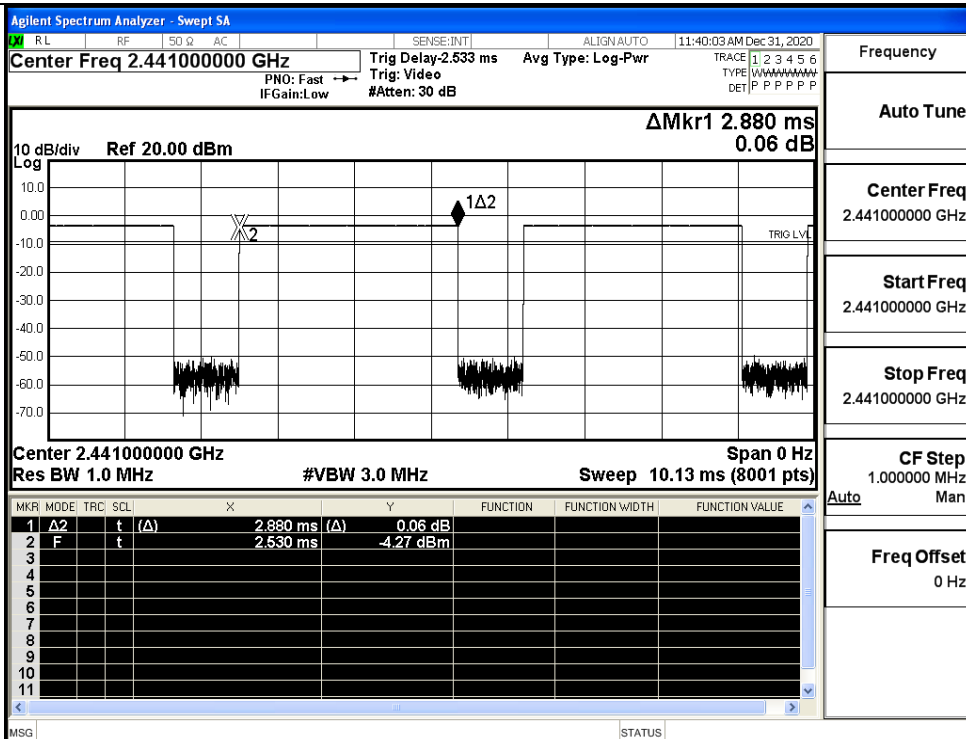
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.88	106.7	0.307	0.4	PASS
	DH5	MCH	2.88	106.7	0.307	0.4	PASS
	DH5	HCH	2.88	106.7	0.307	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.88	106.7	0.307	0.4	PASS
	2DH5	MCH	2.88	106.7	0.307	0.4	PASS
	2DH5	HCH	2.88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

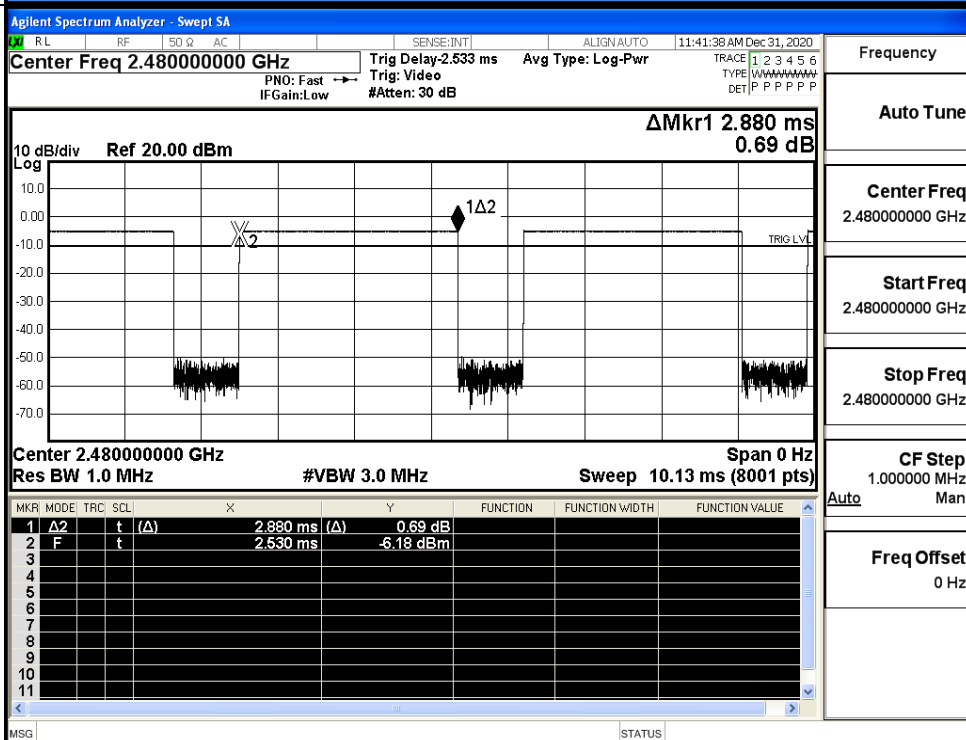
GFSK_DH5/LCH



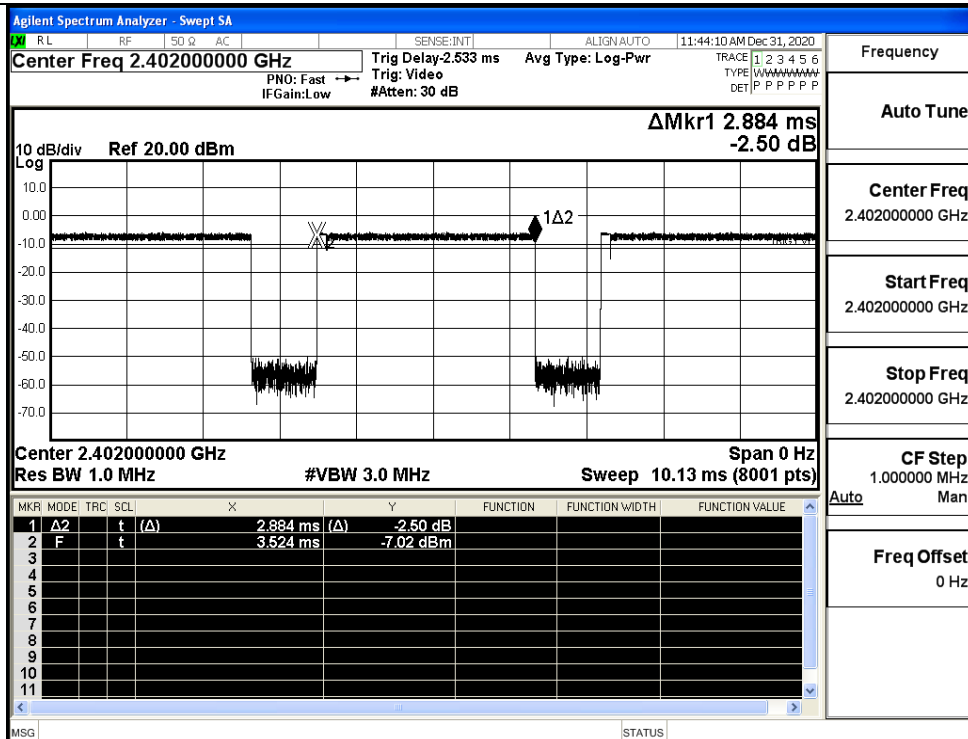
GFSK_DH5/MCH



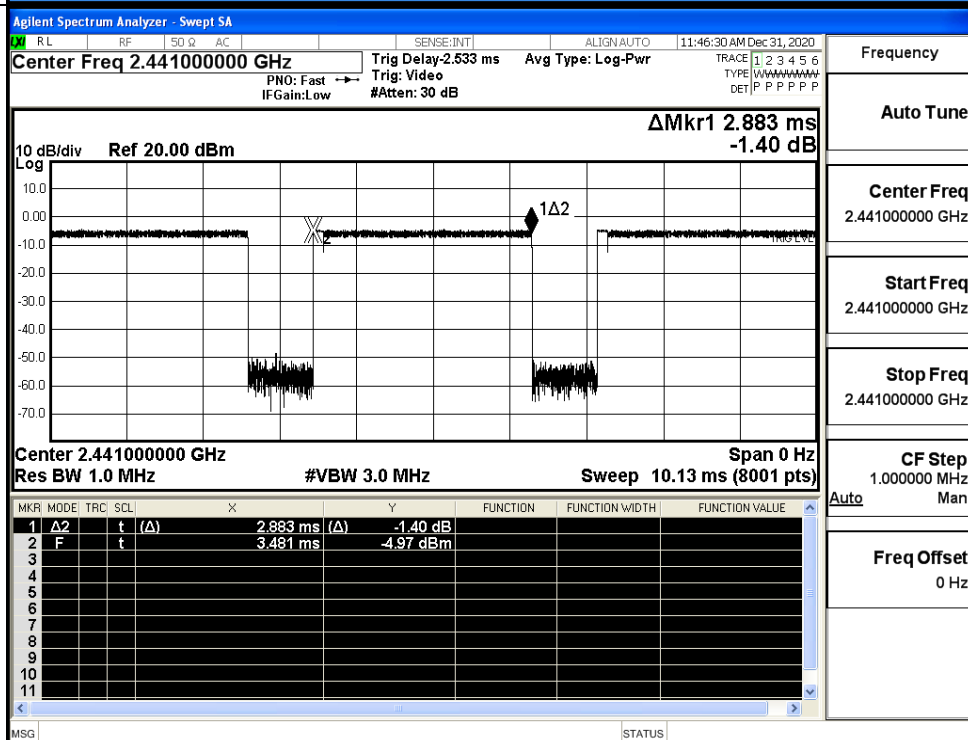
GFSK_DH5/HCH



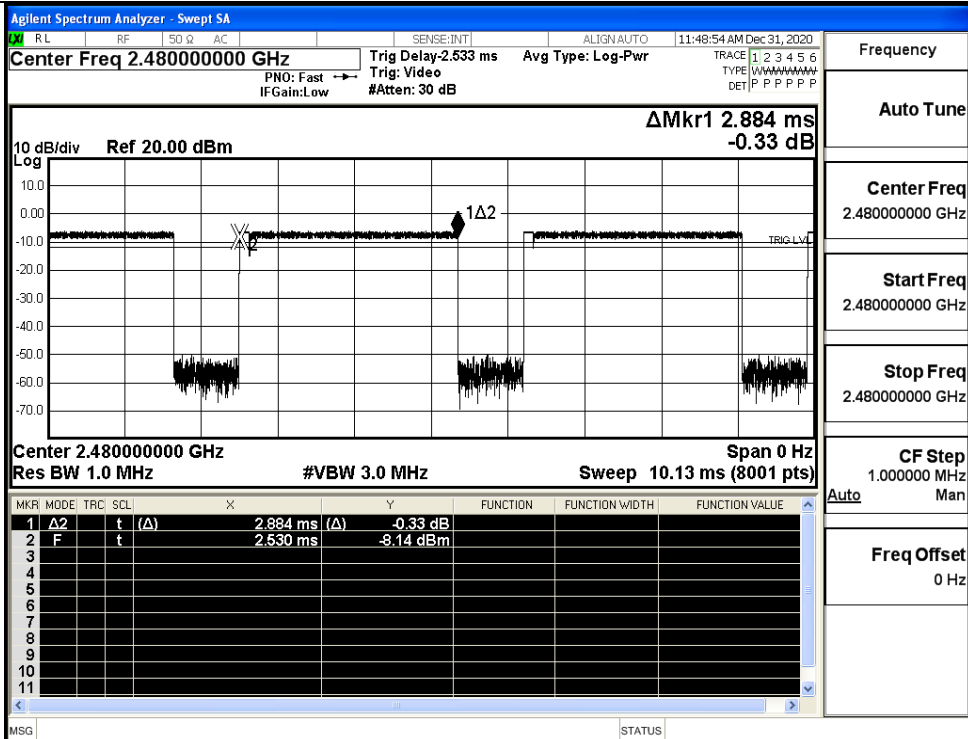
$\pi/4$ DQPSK
_2DH5/LCH



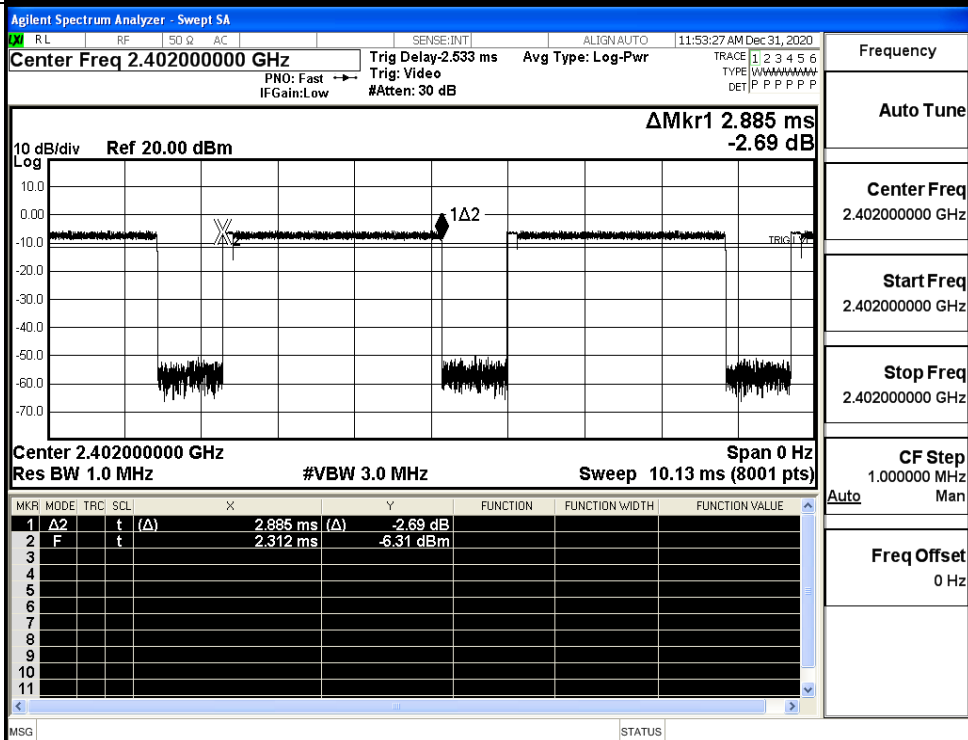
$\pi/4$ DQPSK
_2DH5/MCH



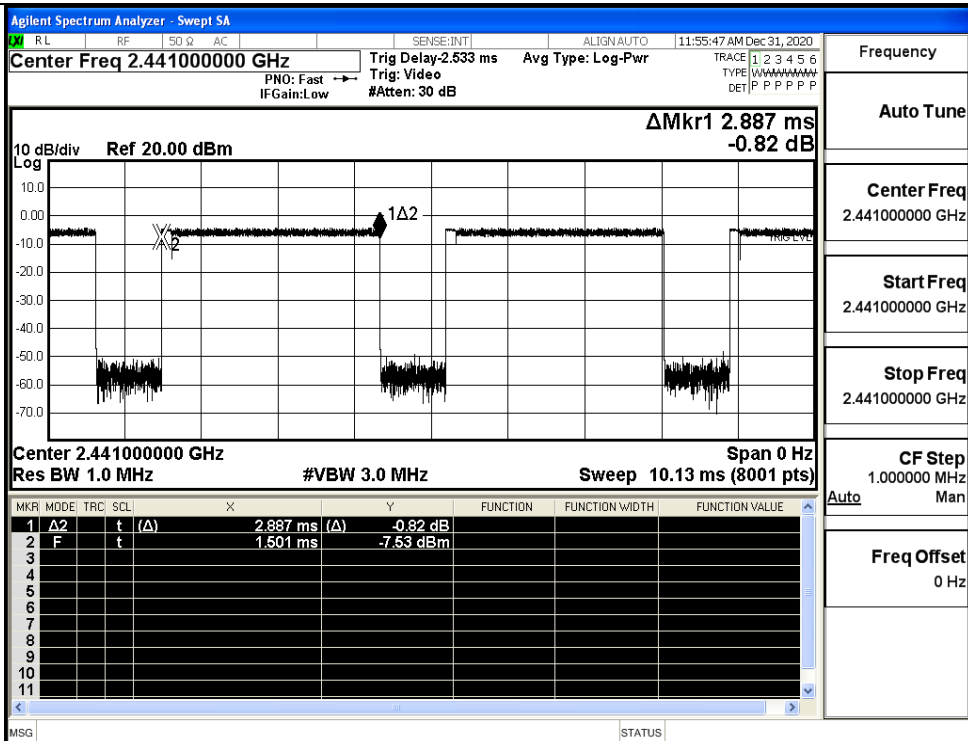
$\pi/4$ DQPSK
_2DH5/HCH



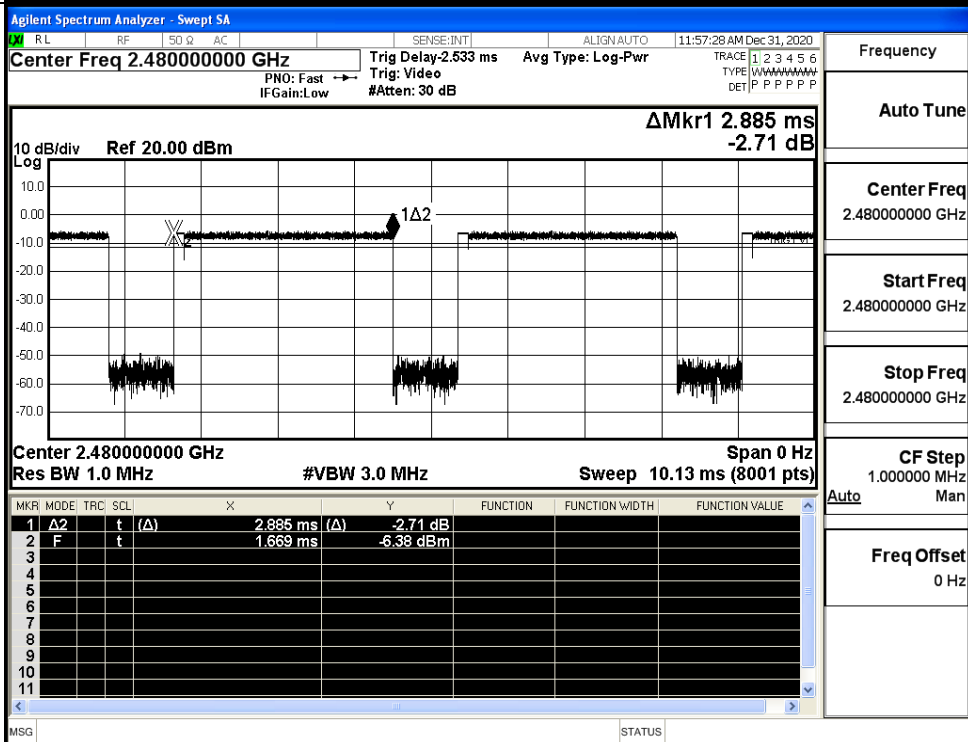
8DPSK _3DH5/LCH



8DPSK_3DH5/MCH



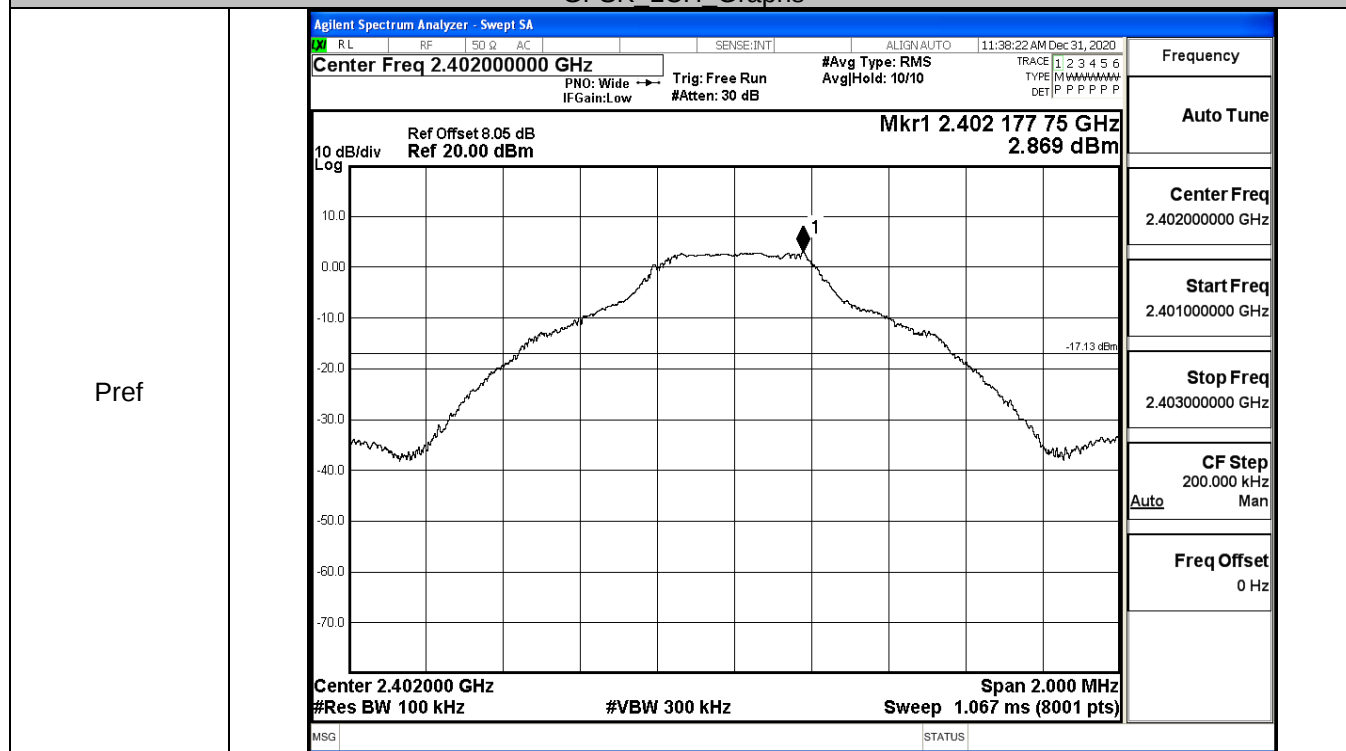
8DPSK_3DH5/HCH

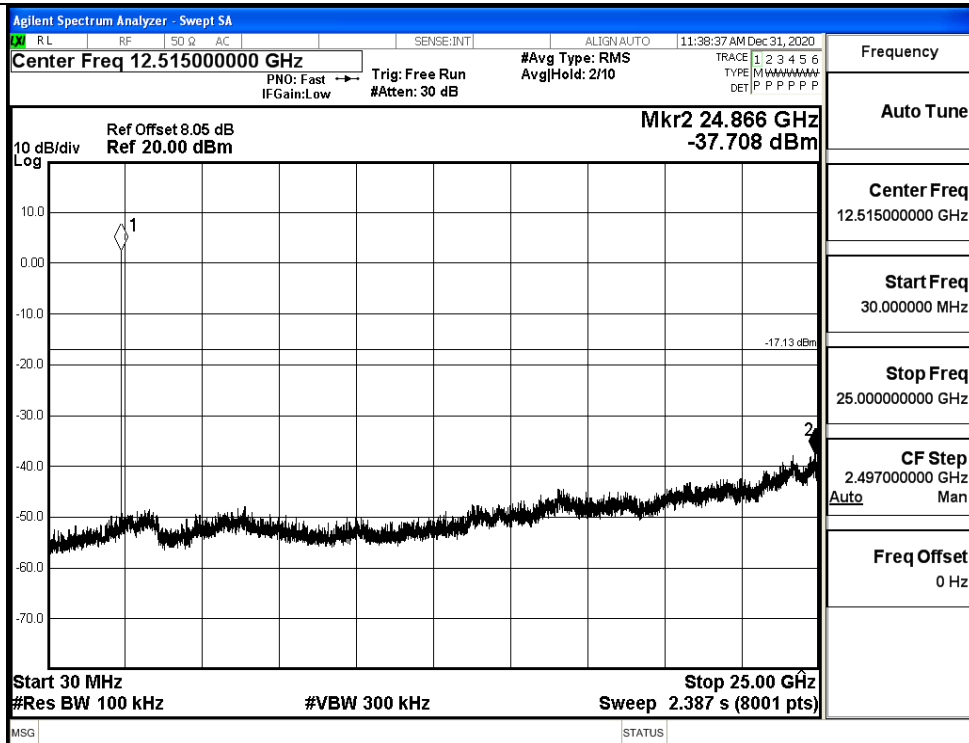


A.6 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2.869	-37.708	-17.131	PASS
	MCH	4.644	-37.335	-15.356	PASS
	HCH	3.015	-38.093	-16.985	PASS
$\pi/4$ DQPSK	LCH	1.719	-37.930	-18.281	PASS
	MCH	3.064	-38.170	-16.936	PASS
	HCH	1.397	-37.412	-18.603	PASS
8DPSK	LCH	1.763	-37.549	-18.237	PASS
	MCH	2.448	-37.593	-17.552	PASS
	HCH	1.622	-37.057	-18.378	PASS

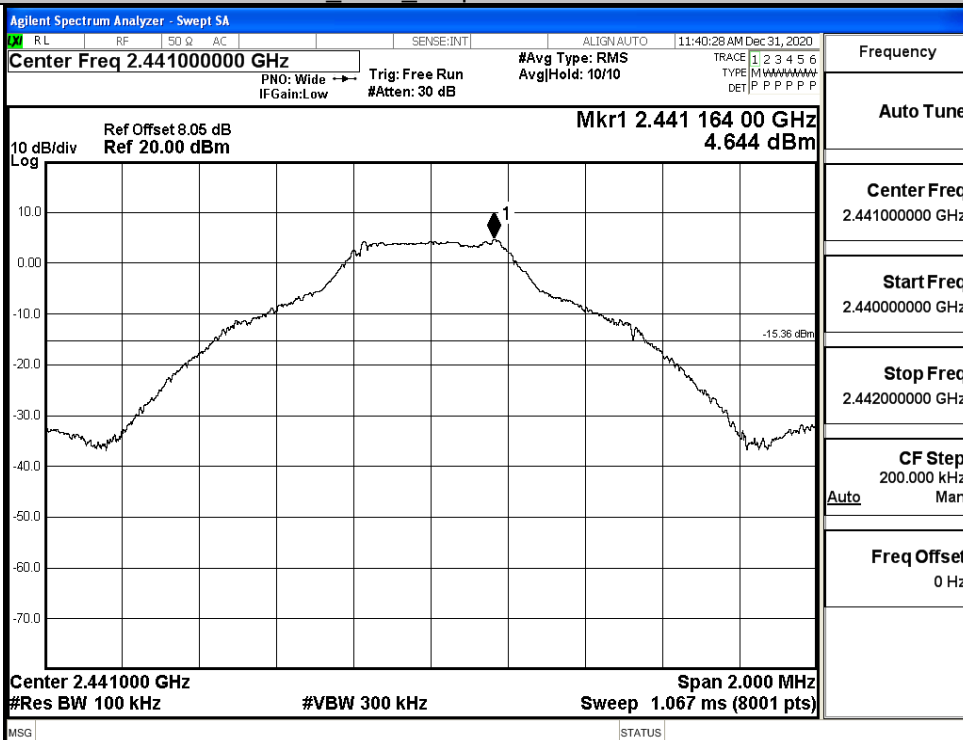
GFSK LCH Graphs



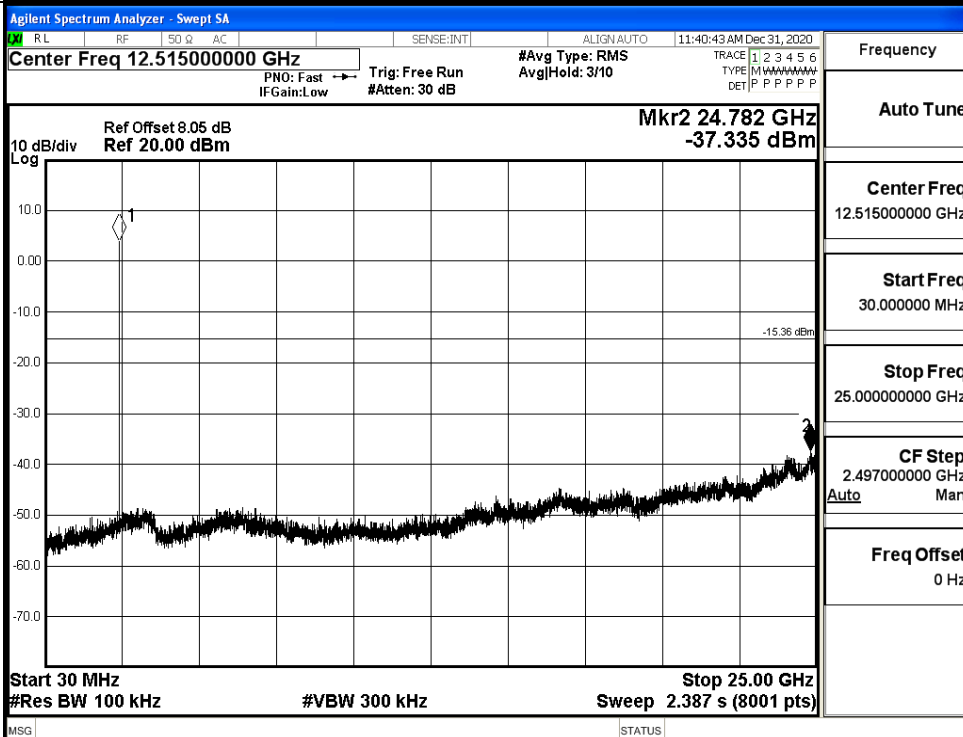


GFSK_MCH_Graphs

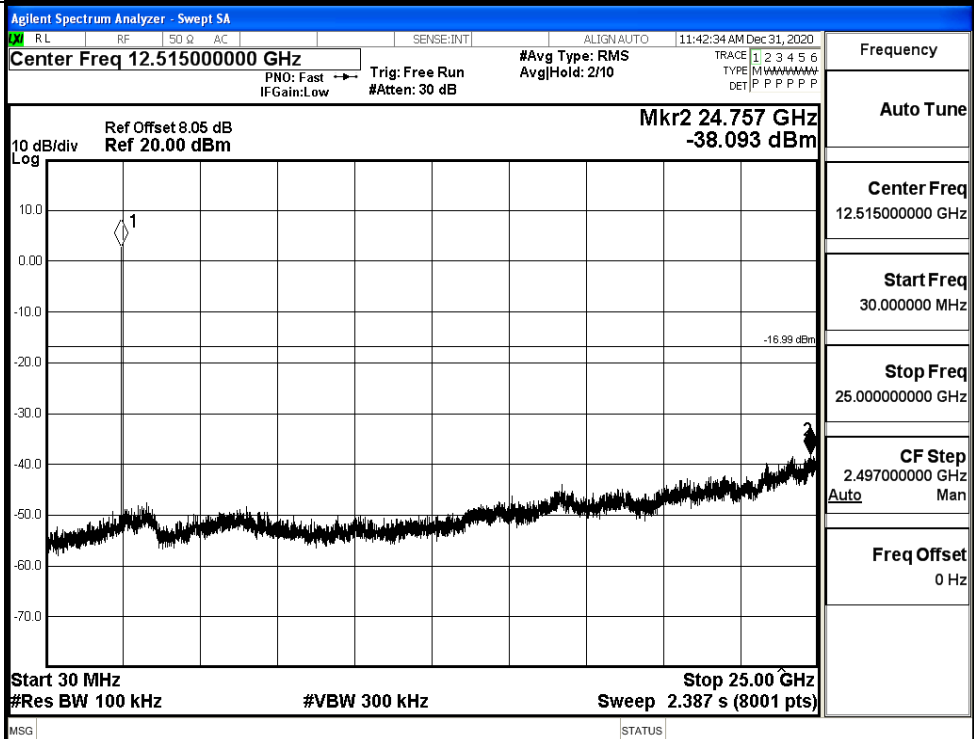
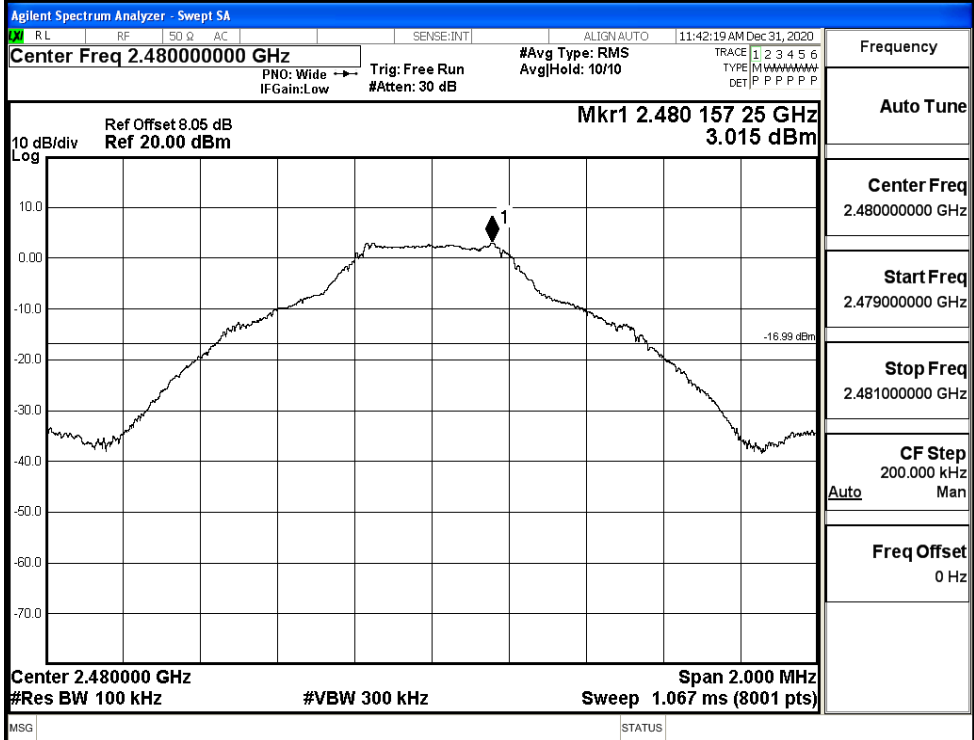
Pref



Puw

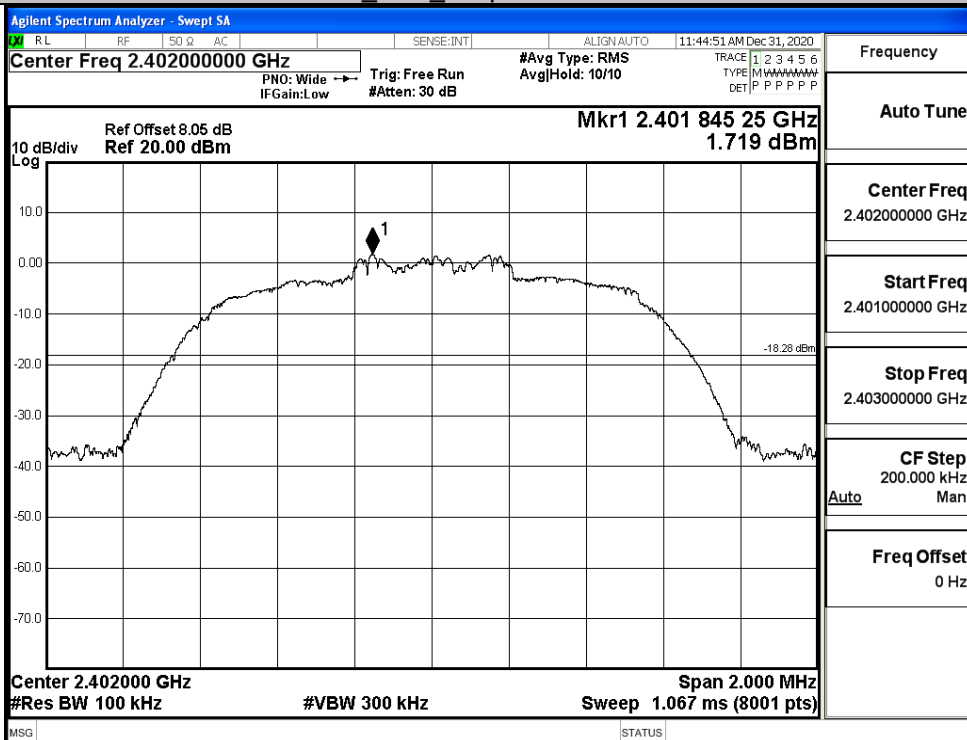


GFSK_HCH_Graphs

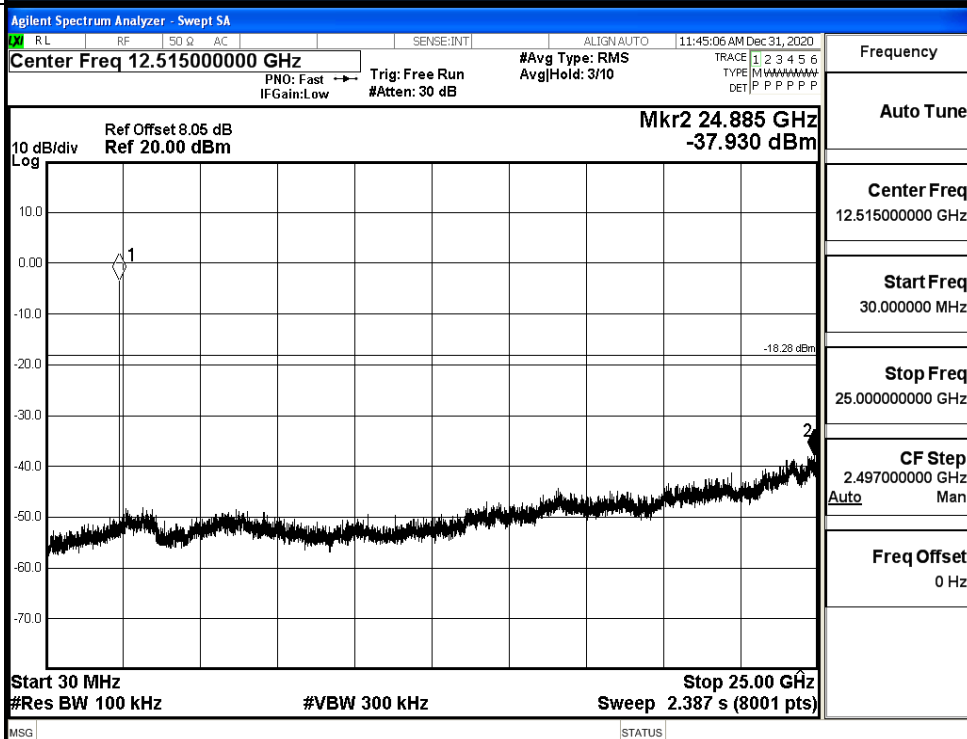


$\pi/4$ DQPSK_LCH_Graphs

Pref

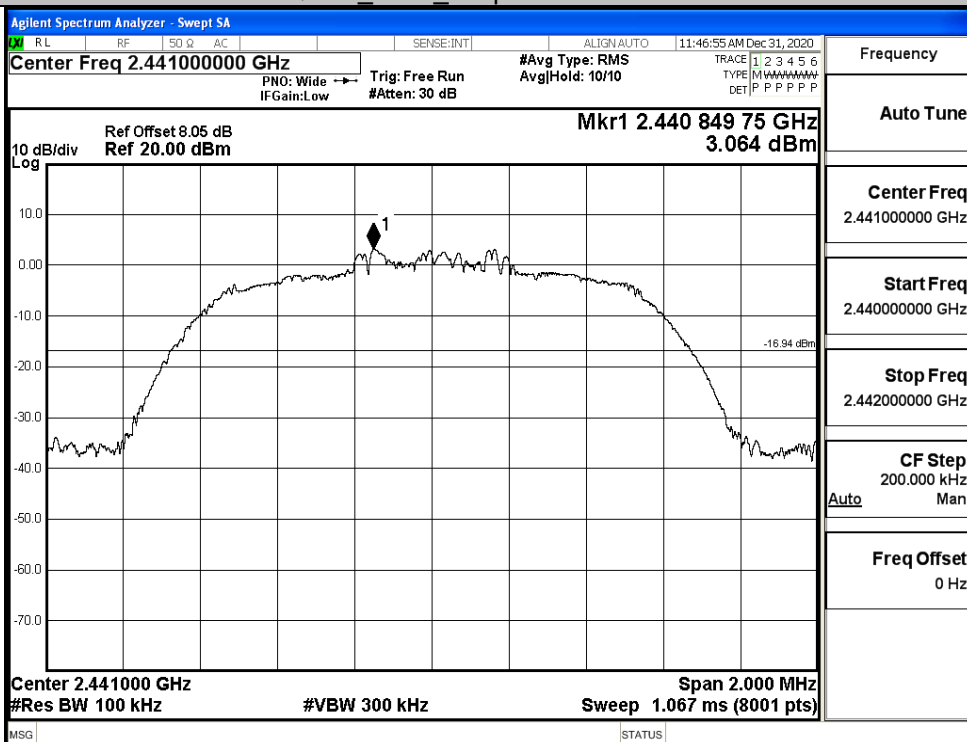


Puw

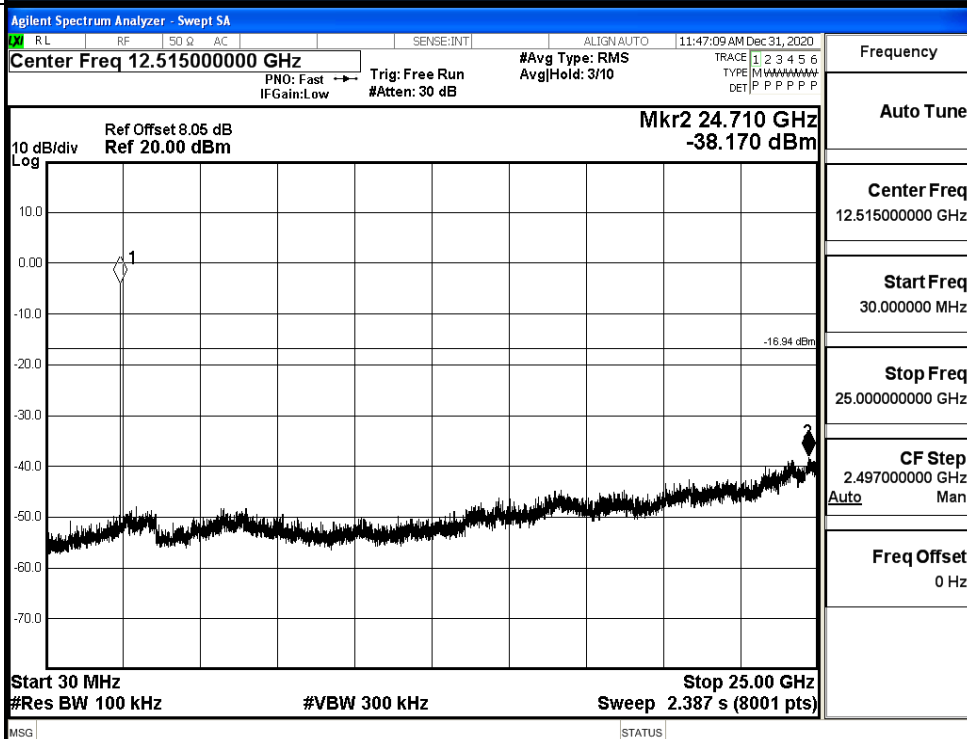


π /4DQPSK_MCH_Graphs

Pref

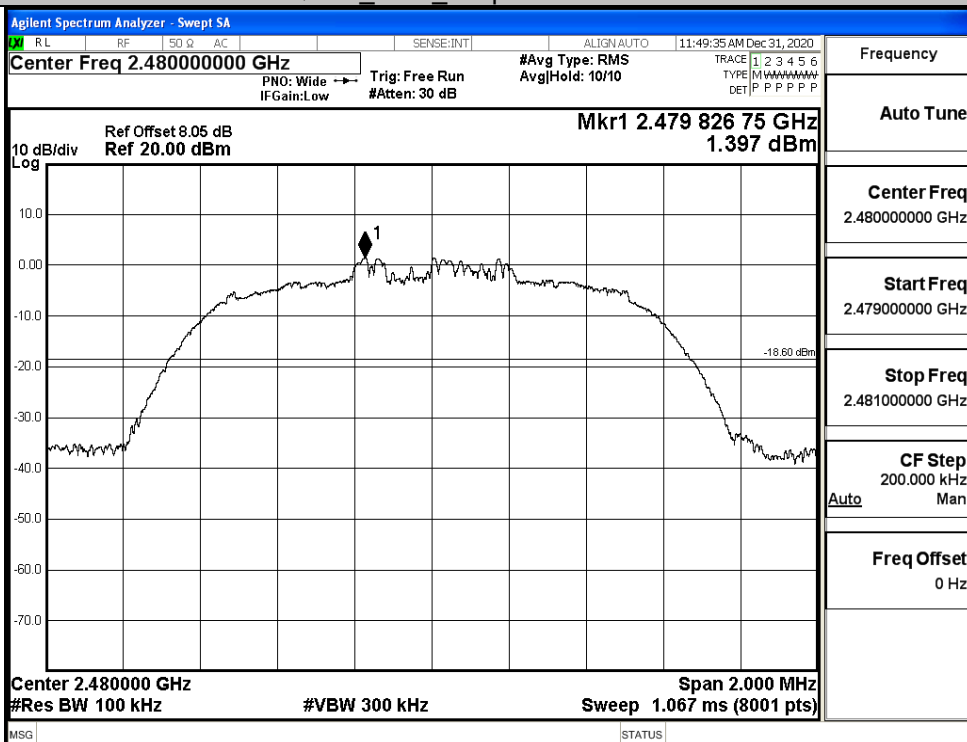


Puw

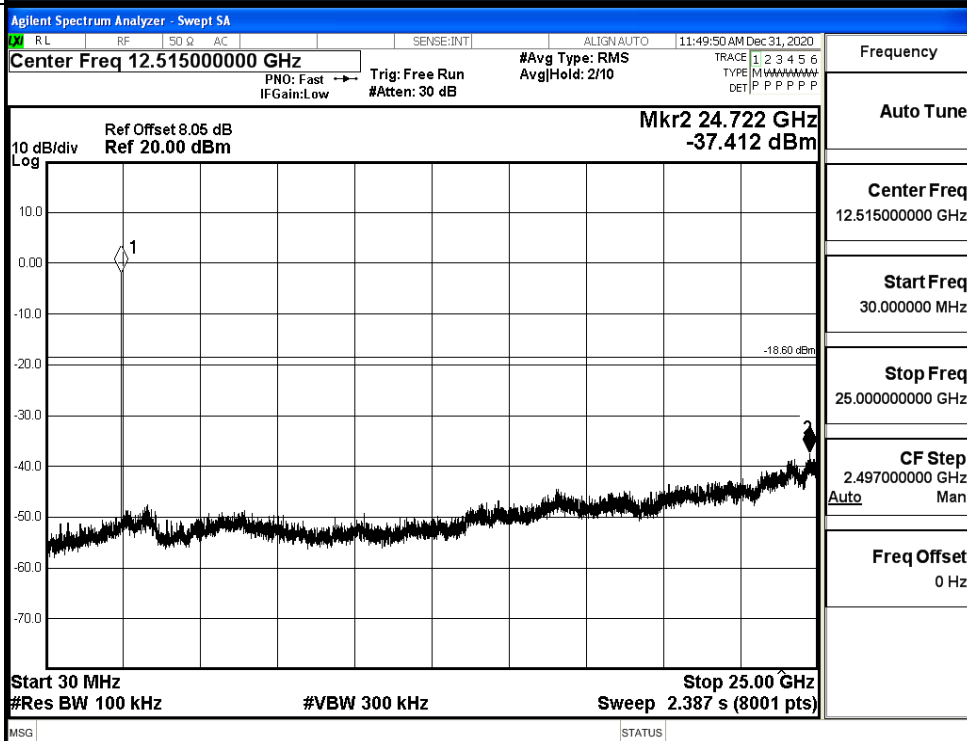


π /4DQPSK_HCH_Graphs

Pref

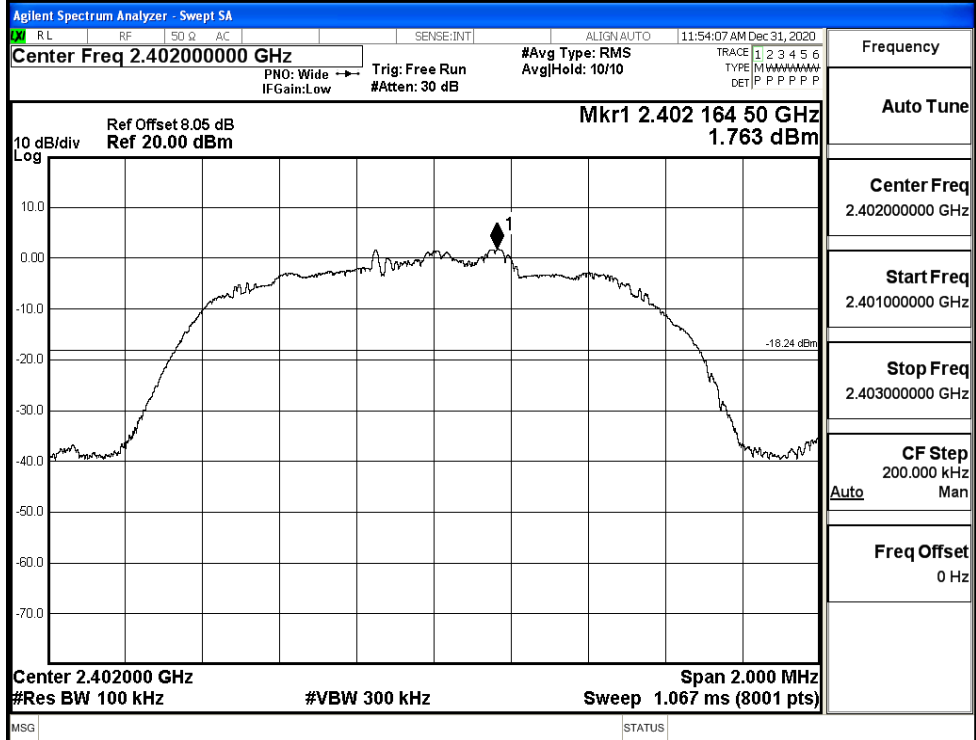


Puw

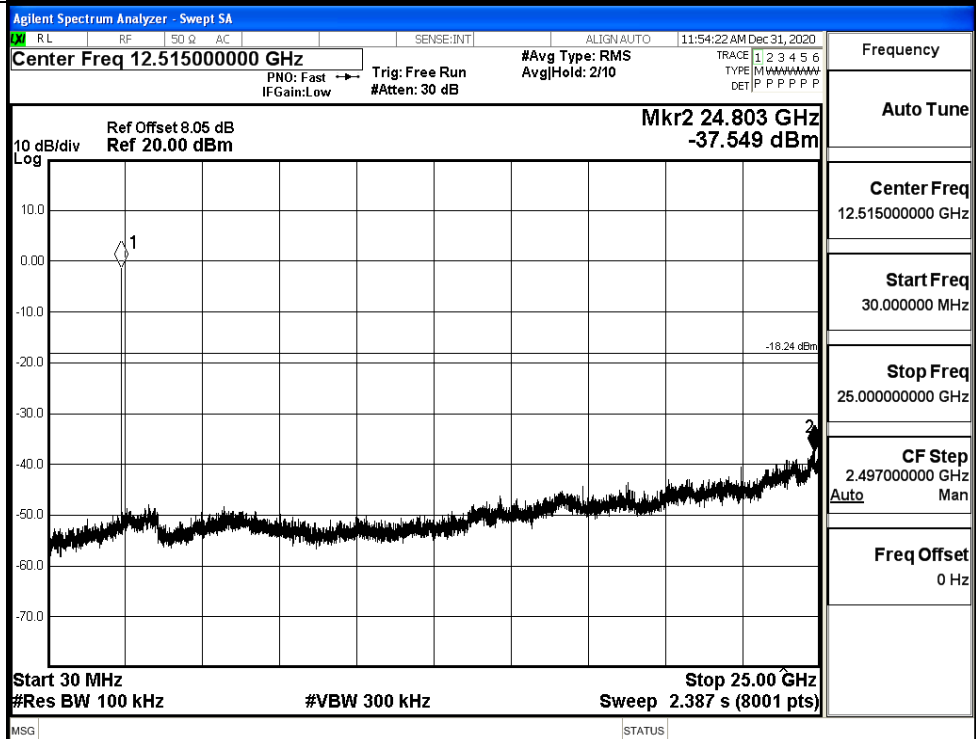


8DPSK_LCH_Graphs

Pref

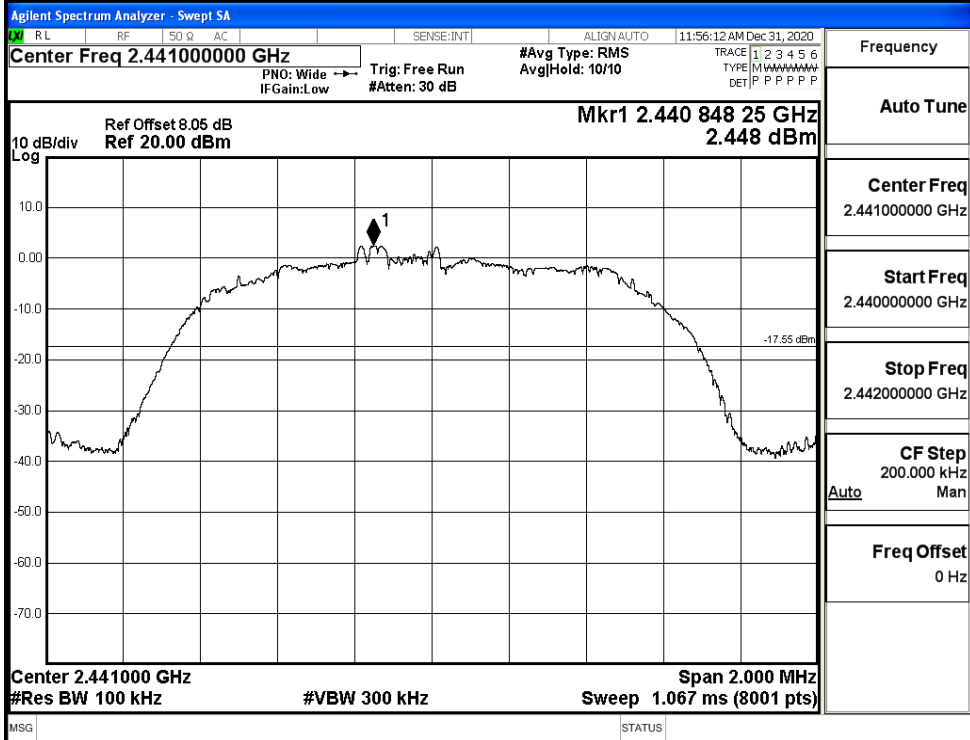


Puw

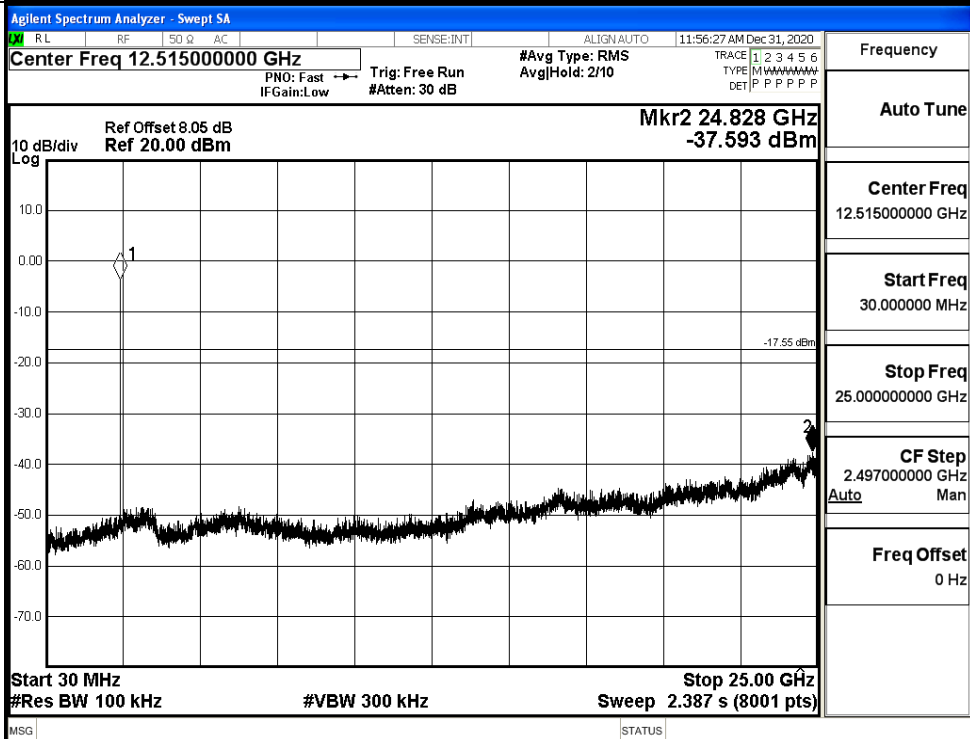


8DPSK_MCH_Graphs

Pref

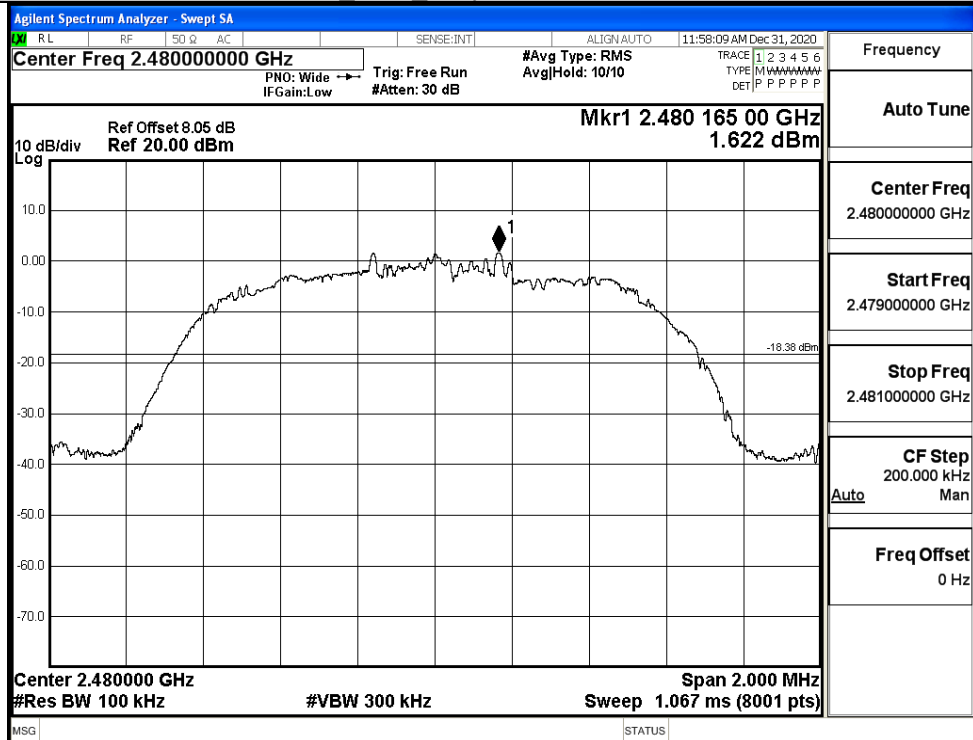


Puw

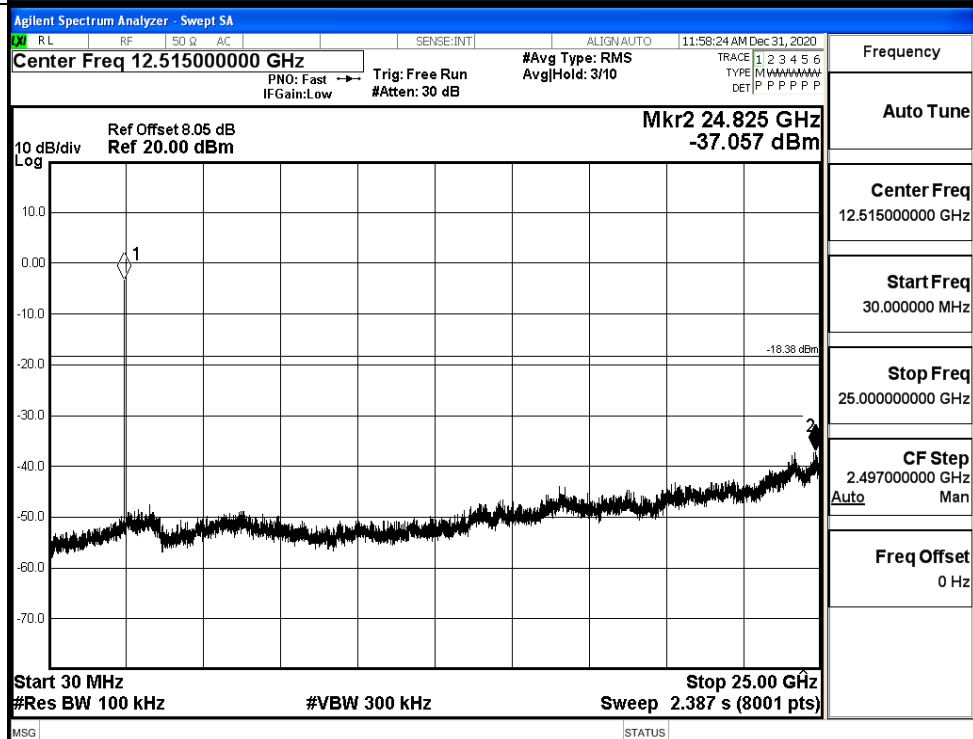


8DPSK_HCH_Graphs

Pref



Puw

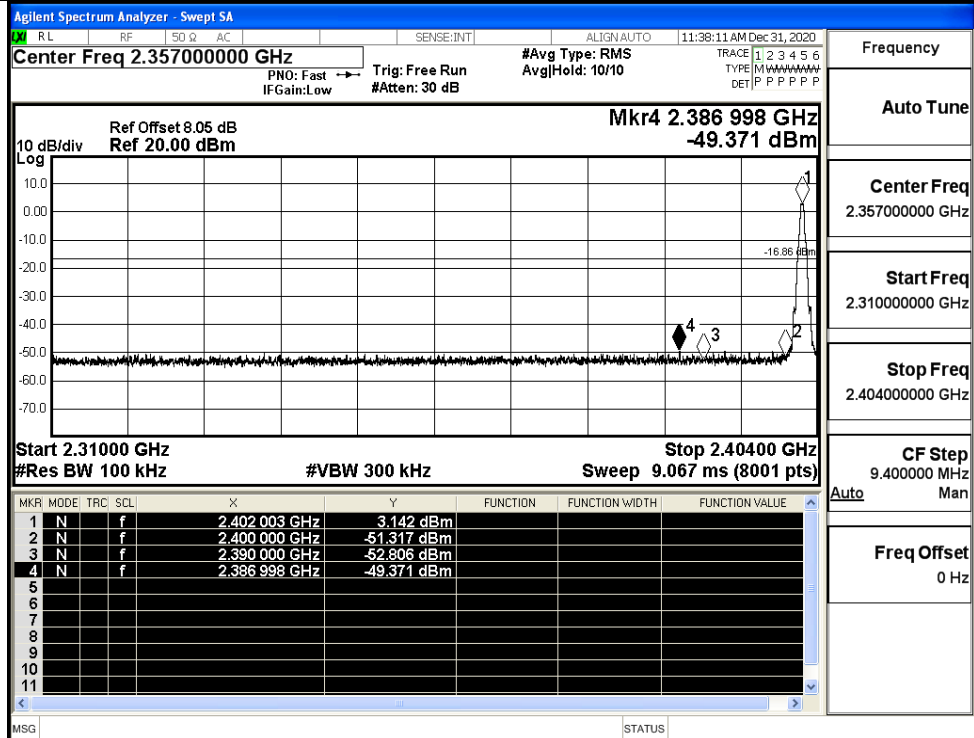


A.7 Band-edge for RF Conducted Emissions

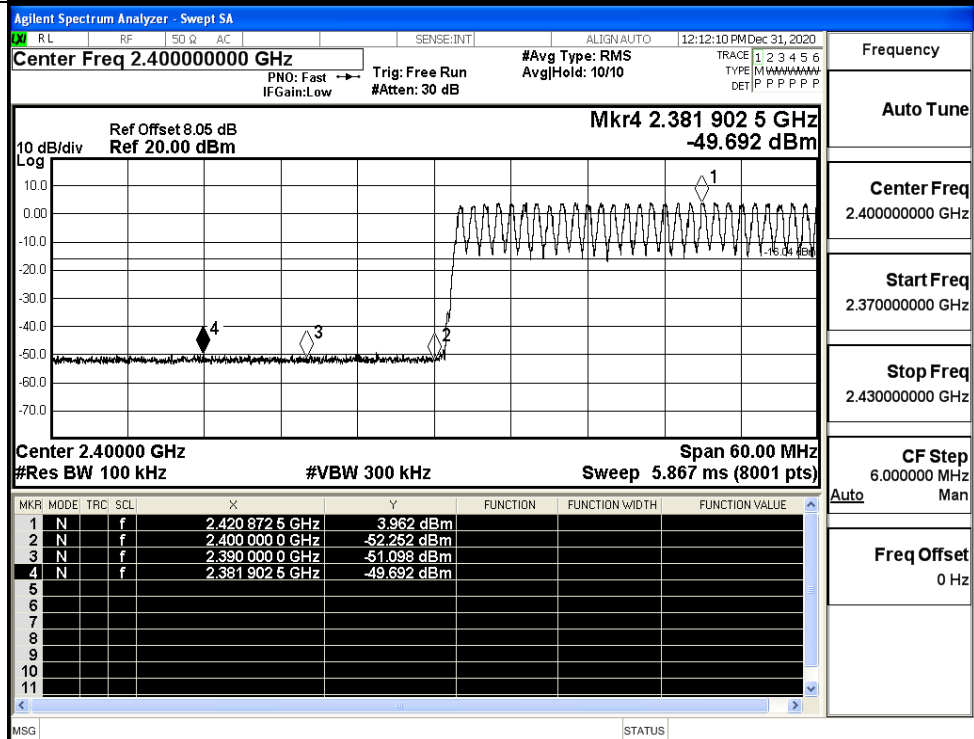
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	3.142	Off	-49.371	-16.86	PASS
			3.962	On	-49.692	-16.04	PASS
	HCH	2480	3.091	Off	-48.931	-16.91	PASS
			4.268	On	-48.876	-15.73	PASS
$\pi/4$ DQPSK	LCH	2402	1.768	Off	-49.734	-18.23	PASS
			2.854	On	-49.210	-17.15	PASS
	HCH	2480	1.827	Off	-49.358	-18.17	PASS
			2.539	On	-48.451	-17.46	PASS
8DPSK	LCH	2402	1.638	Off	-49.823	-18.36	PASS
			2.979	On	-48.831	-17.02	PASS
	HCH	2480	1.710	Off	-48.761	-18.29	PASS
			2.645	On	-48.435	-17.36	PASS

Test Graphs

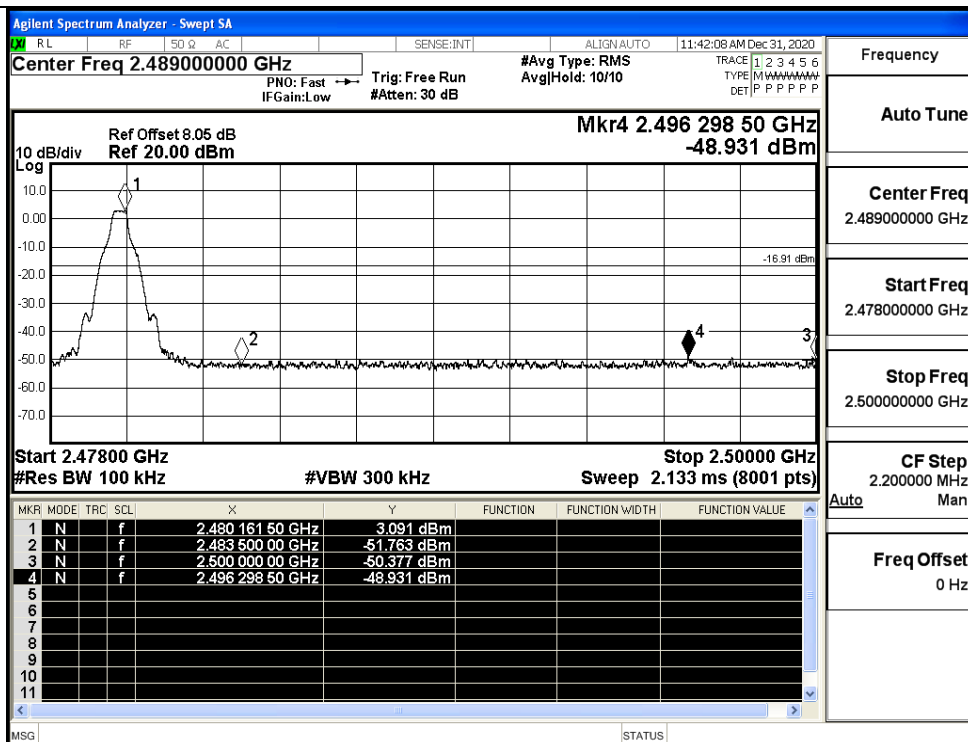
GFSK/LCH/No Hop



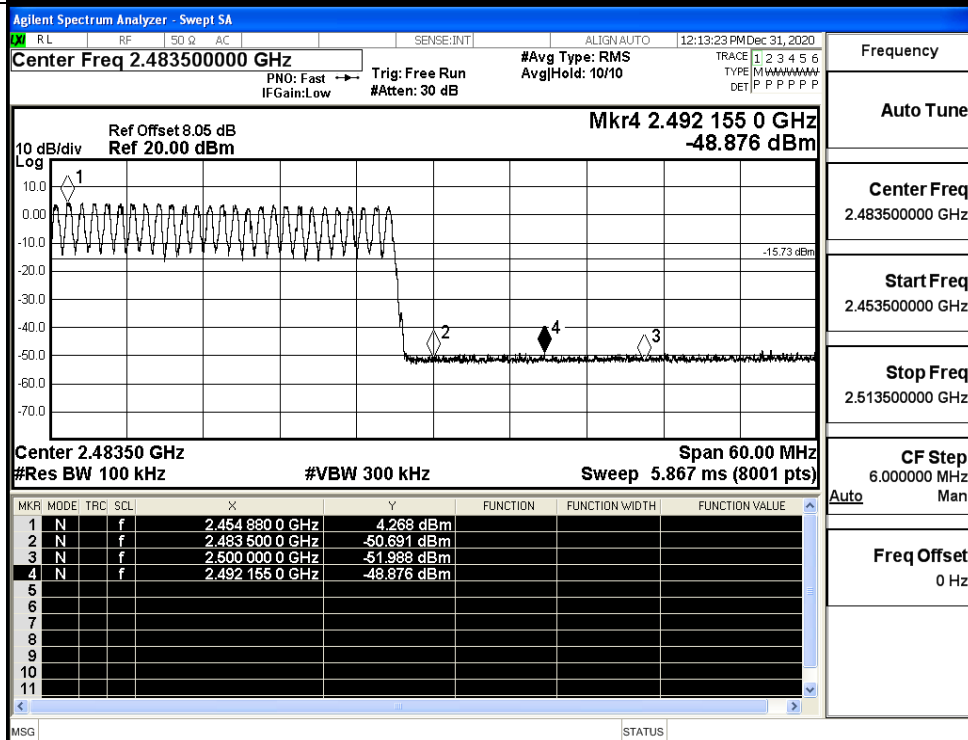
GFSK/LCH/Hop



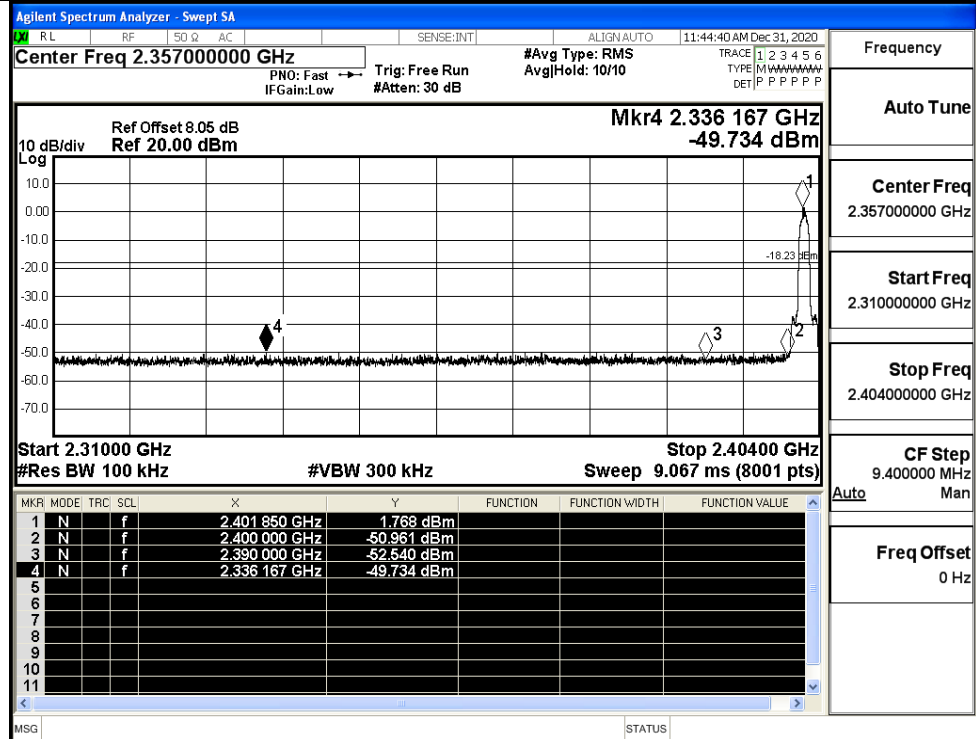
GFSK/HCH/No Hop



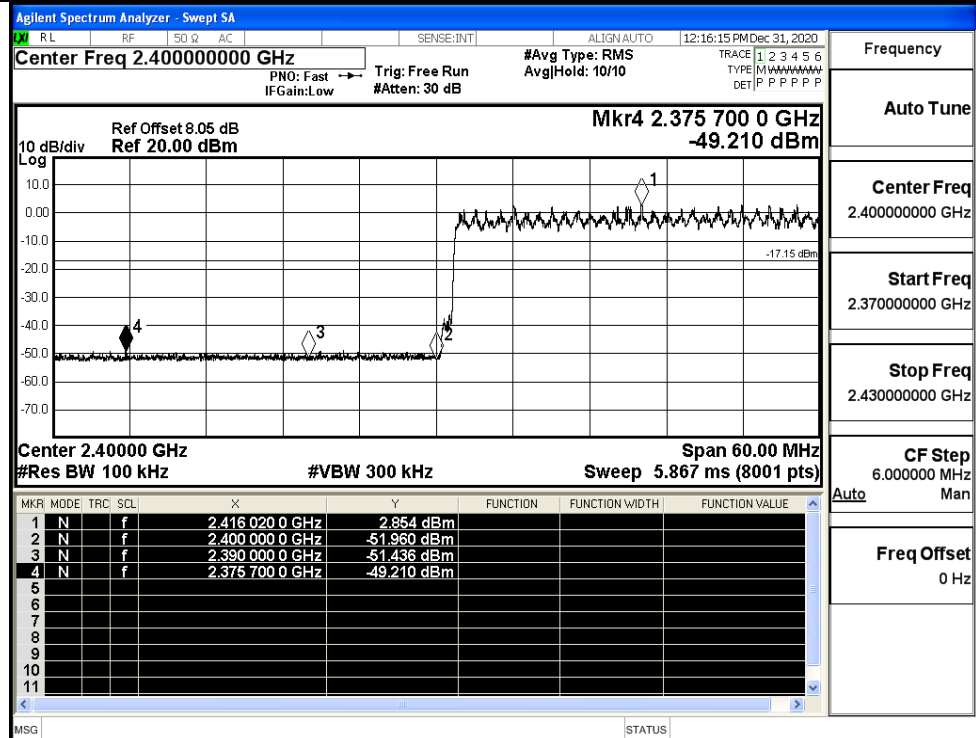
GFSK/HCH/Hop



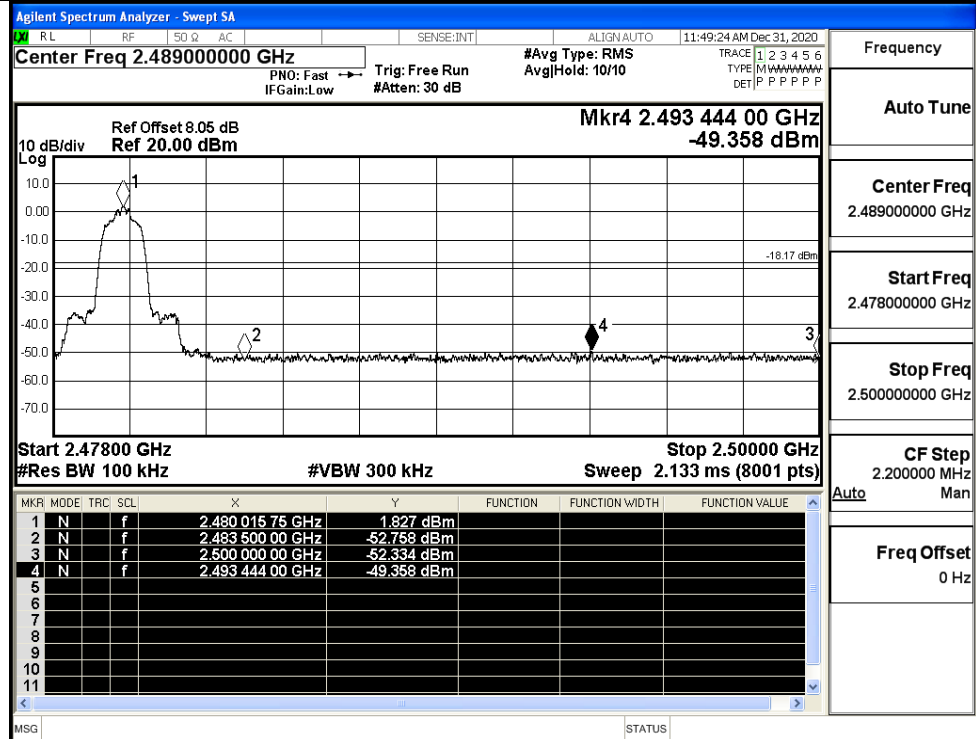
$\pi/4$ DQPSK/LCH/No
Hop



$\pi/4$ DQPSK/LCH/Hop



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



Frequency

Auto Tune

Center Freq
2.489000000 GHz

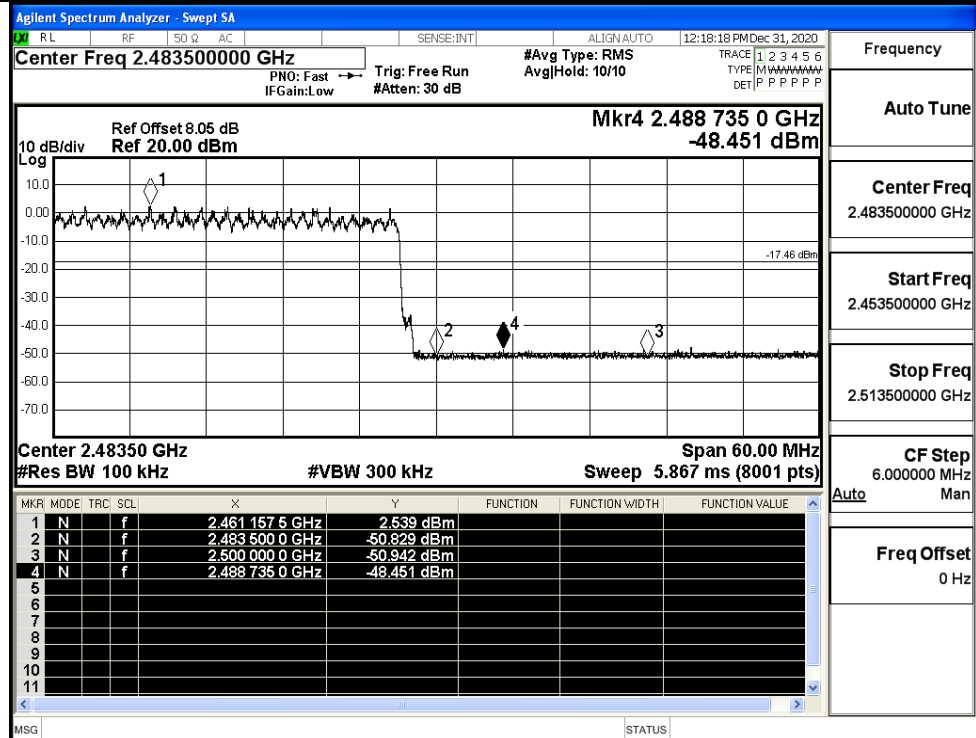
Start Freq
2.478000000 GHz

Stop Freq
2.500000000 GHz

CF Step
2.200000 MHz
Auto Man

Freq Offset
0 Hz

$\pi/4$ DQPSK/HCH/Hop



Frequency

Auto Tune

Center Freq
2.483500000 GHz

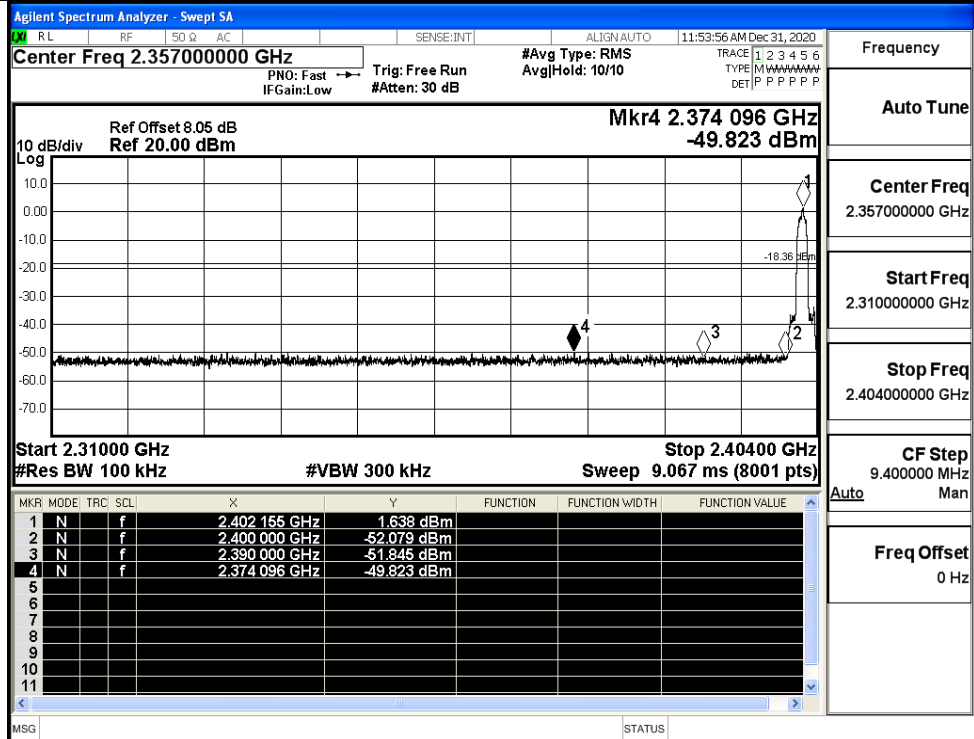
Start Freq
2.463500000 GHz

Stop Freq
2.513500000 GHz

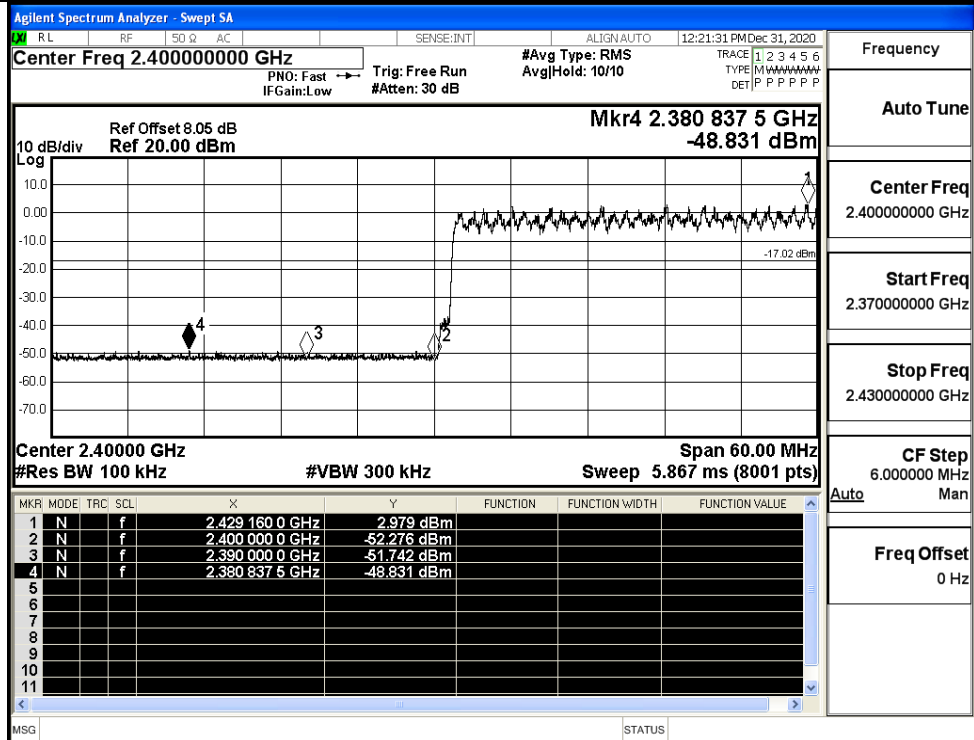
CF Step
6.000000 MHz
Auto Man

Freq Offset
0 Hz

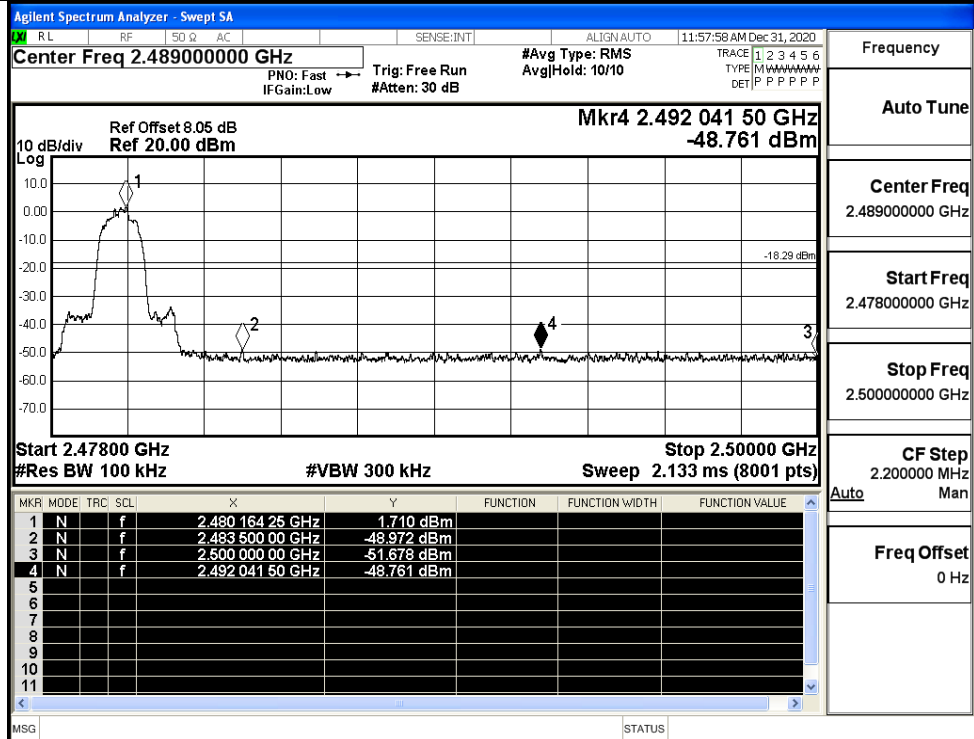
8DPSK/LCH/No Hop



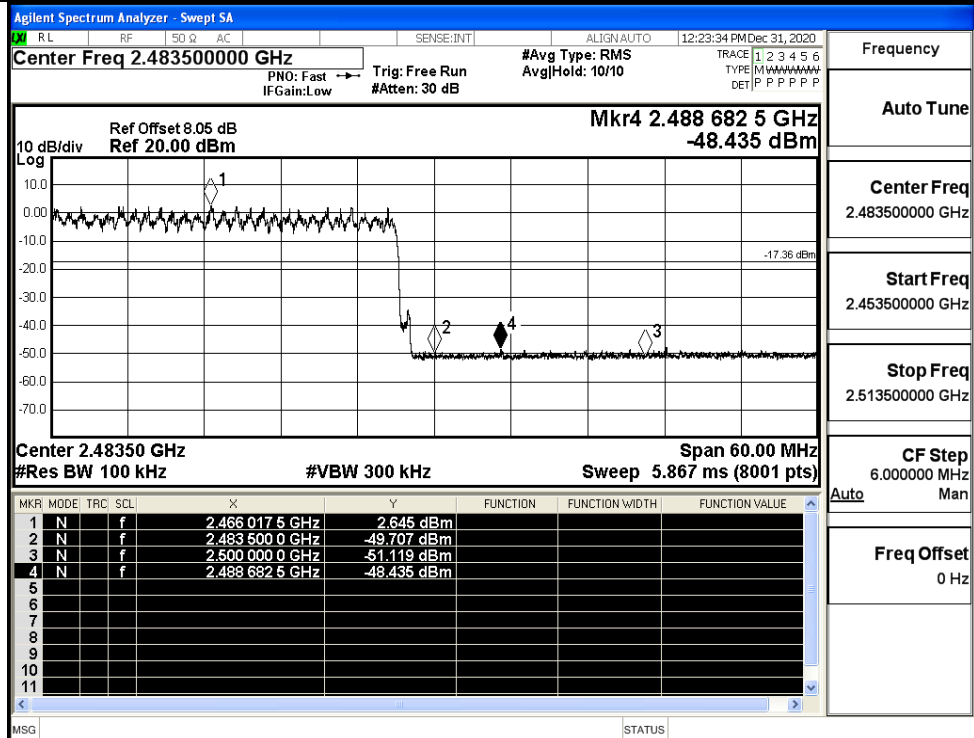
8DPSK/LCH/Hop



8DPSK/HCH/No Hop



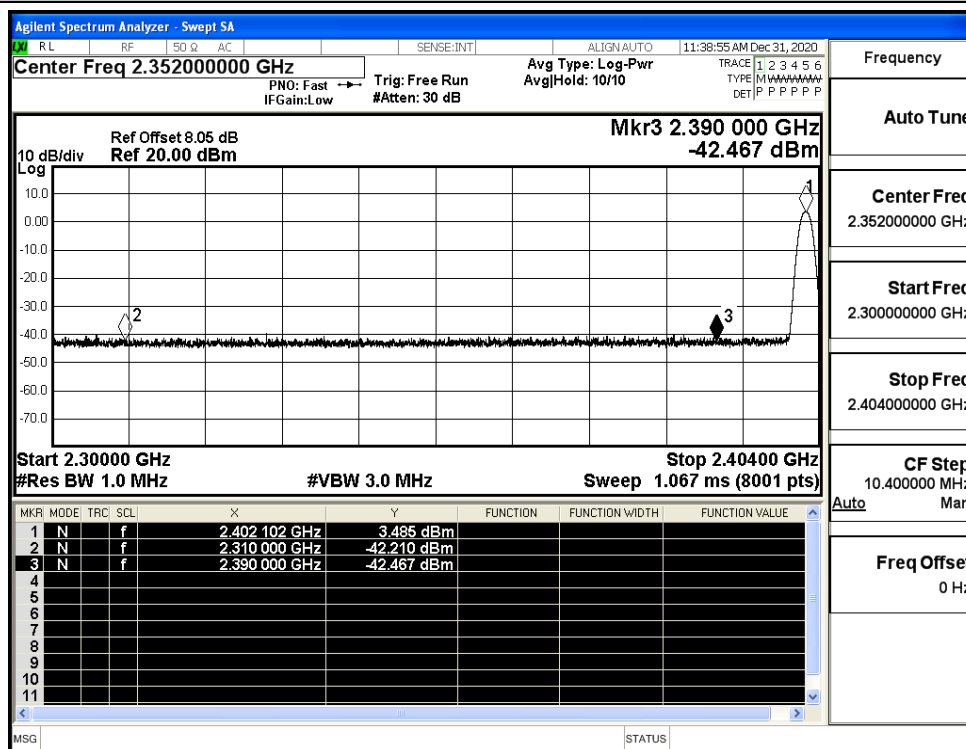
8DPSK/HCH/Hop



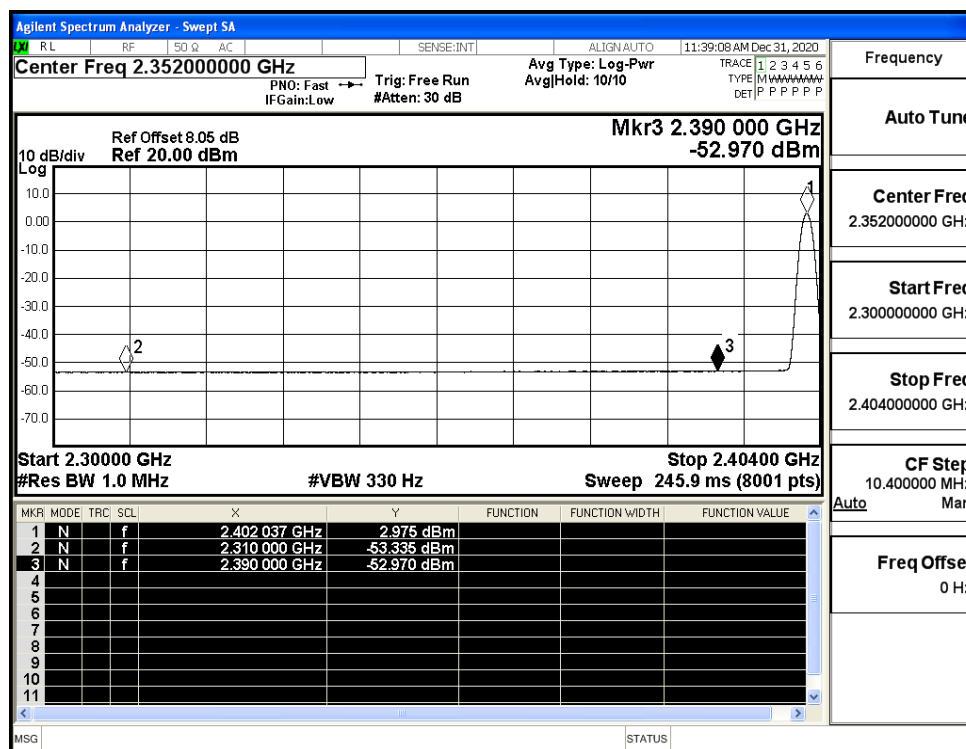
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-42.21	2.0	0	55.05	PEAK	74	PASS
	Off	2310.0	-53.34	2.0	0	43.92	AV	54	PASS
	Off	2390.0	-42.47	2.0	0	54.79	PEAK	74	PASS
	Off	2390.0	-52.97	2.0	0	44.29	AV	54	PASS
	Off	2483.5	-42.21	2.0	0	55.05	PEAK	74	PASS
	Off	2483.5	-52.45	2.0	0	44.81	AV	54	PASS
	Off	2500.0	-40.65	2.0	0	56.61	PEAK	74	PASS
	Off	2500.0	-52.50	2.0	0	44.76	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-43.15	2.0	0	54.11	PEAK	74	PASS
	Off	2310.0	-53.32	2.0	0	43.94	AV	54	PASS
	Off	2390.0	-42.25	2.0	0	55.01	PEAK	74	PASS
	Off	2390.0	-53.07	2.0	0	44.19	AV	54	PASS
	Off	2483.5	-41.91	2.0	0	55.35	PEAK	74	PASS
	Off	2483.5	-52.37	2.0	0	44.89	AV	54	PASS
	Off	2500.0	-42.03	2.0	0	55.23	PEAK	74	PASS
	Off	2500.0	-52.41	2.0	0	44.85	AV	54	PASS
8DPSK	Off	2310.0	-43.74	2.0	0	53.52	PEAK	74	PASS
	Off	2310.0	-53.38	2.0	0	43.88	AV	54	PASS
	Off	2390.0	-43.02	2.0	0	54.24	PEAK	74	PASS
	Off	2390.0	-53.08	2.0	0	44.18	AV	54	PASS
	Off	2483.5	-41.77	2.0	0	55.49	PEAK	74	PASS
	Off	2483.5	-52.42	2.0	0	44.84	AV	54	PASS
	Off	2500.0	-41.95	2.0	0	55.31	PEAK	74	PASS
	Off	2500.0	-52.38	2.0	0	44.88	AV	54	PASS

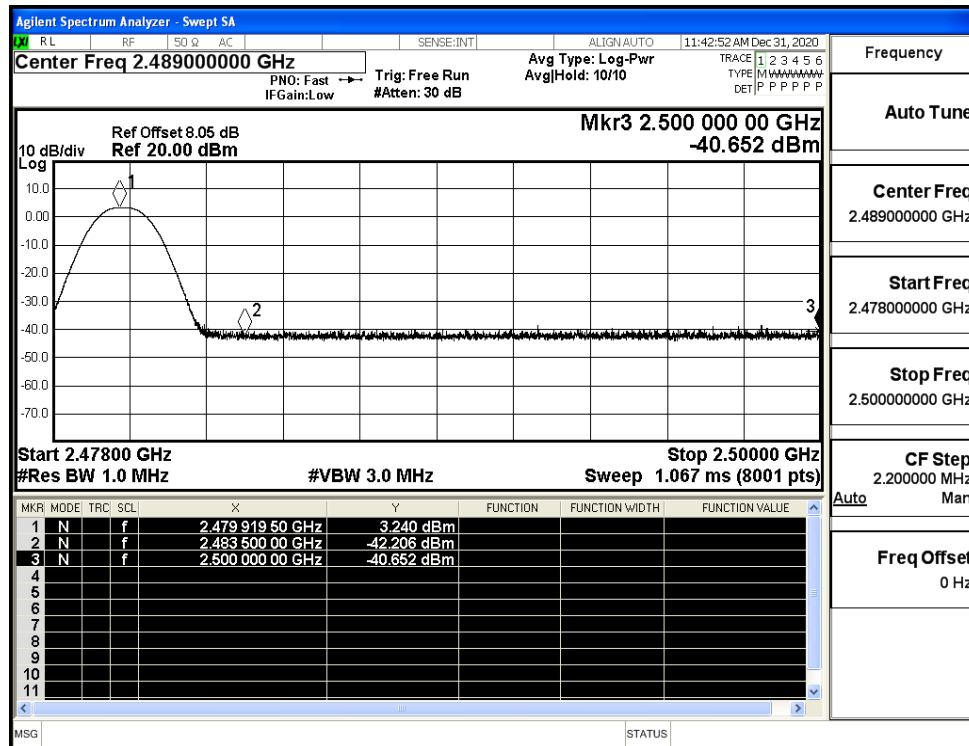
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



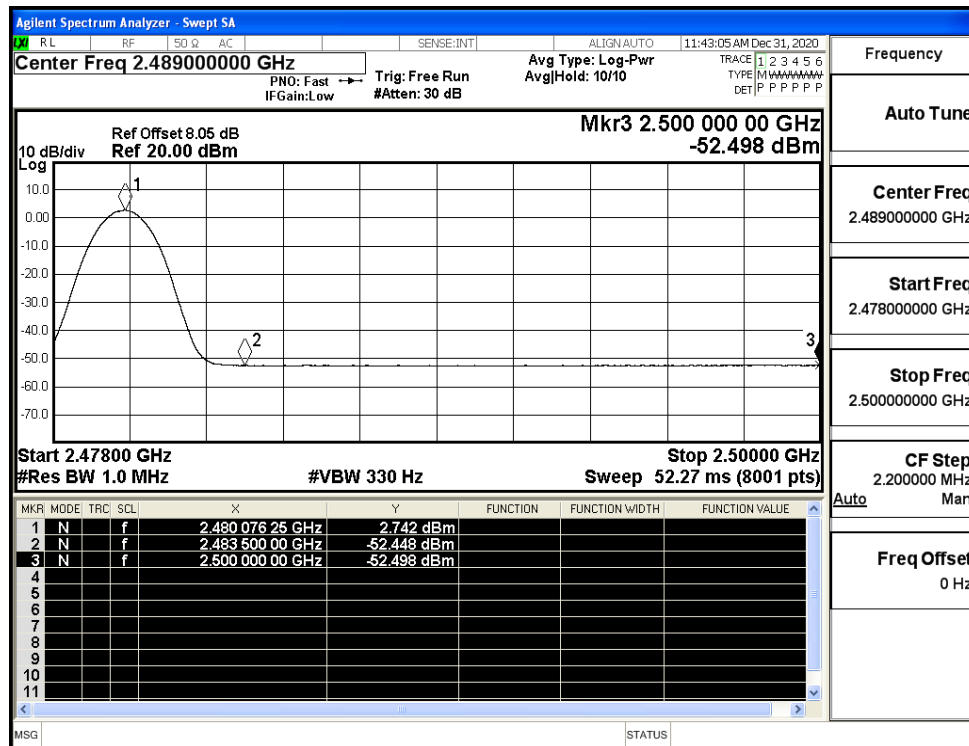
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)



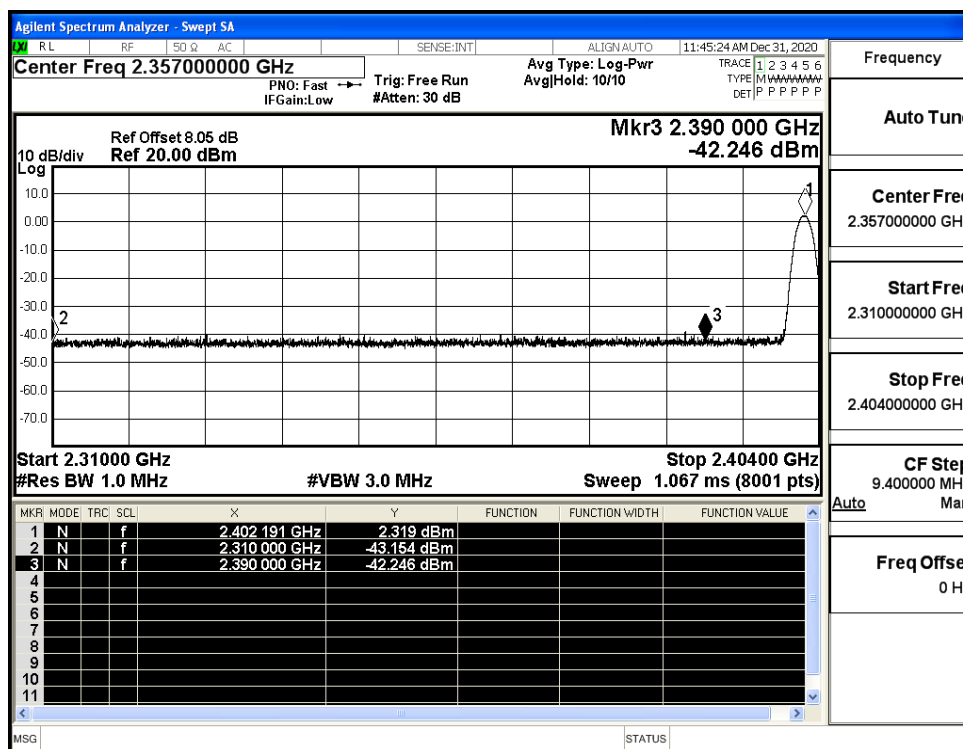
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)



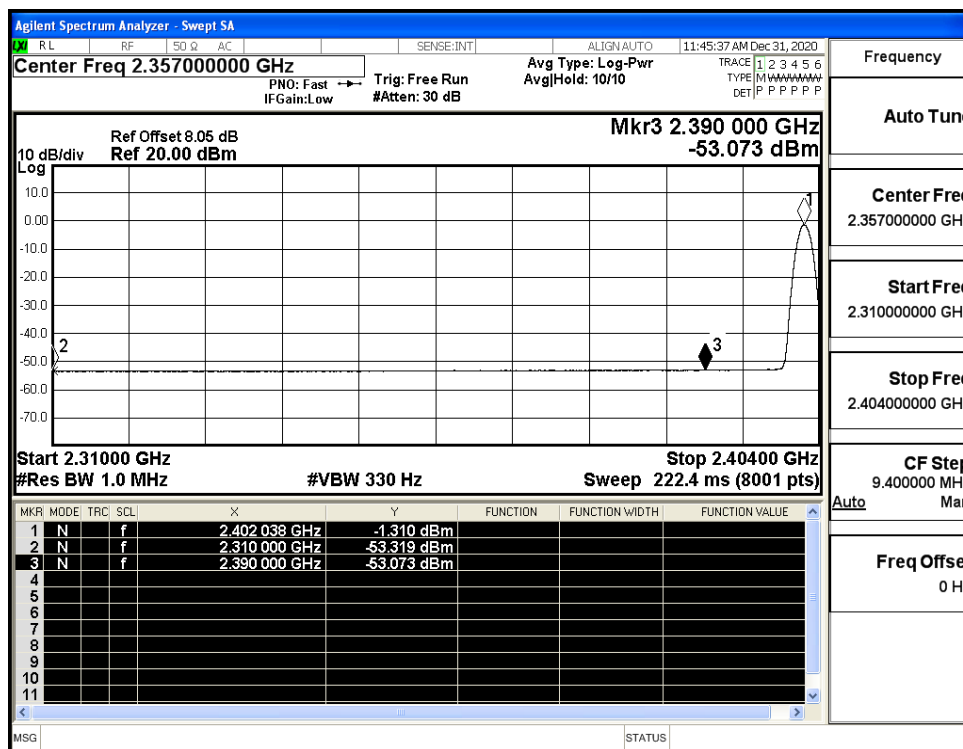
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)

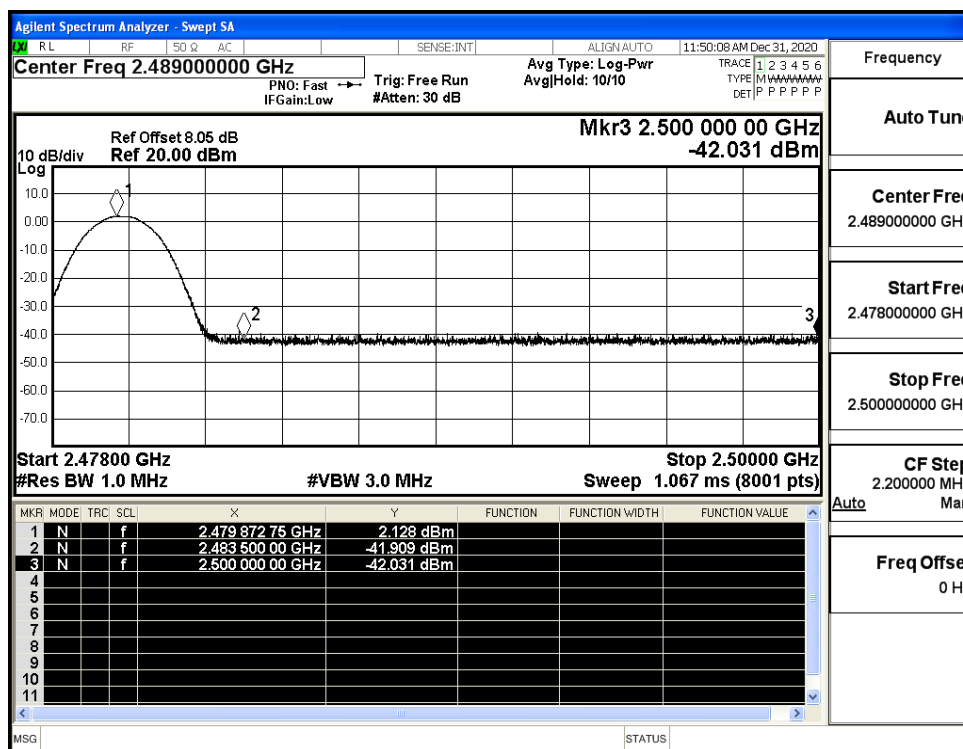
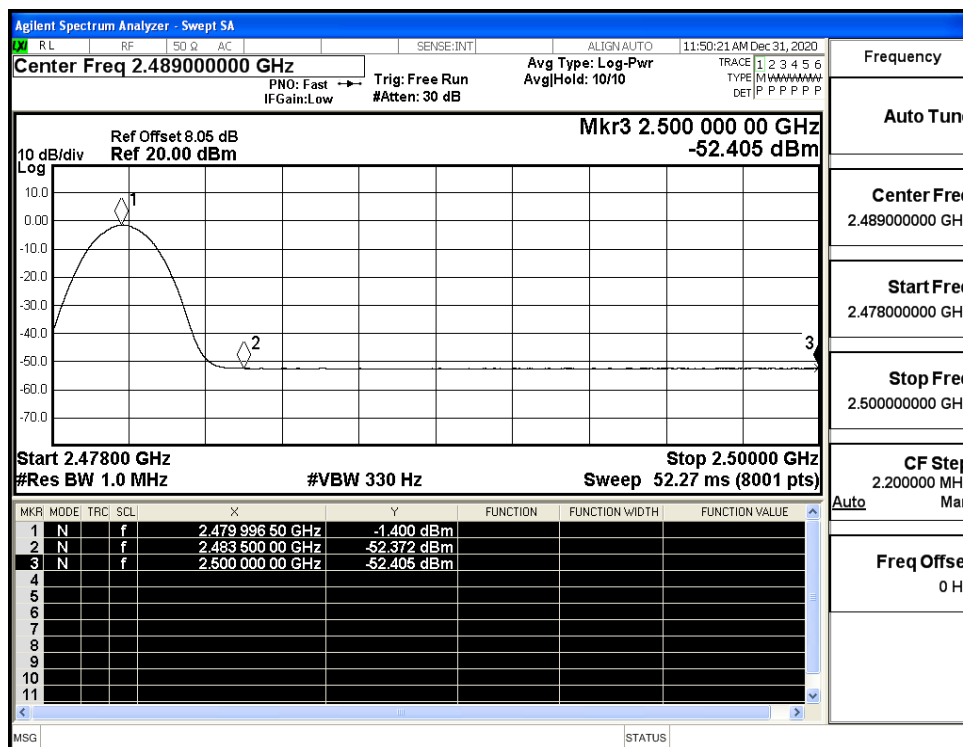


Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)

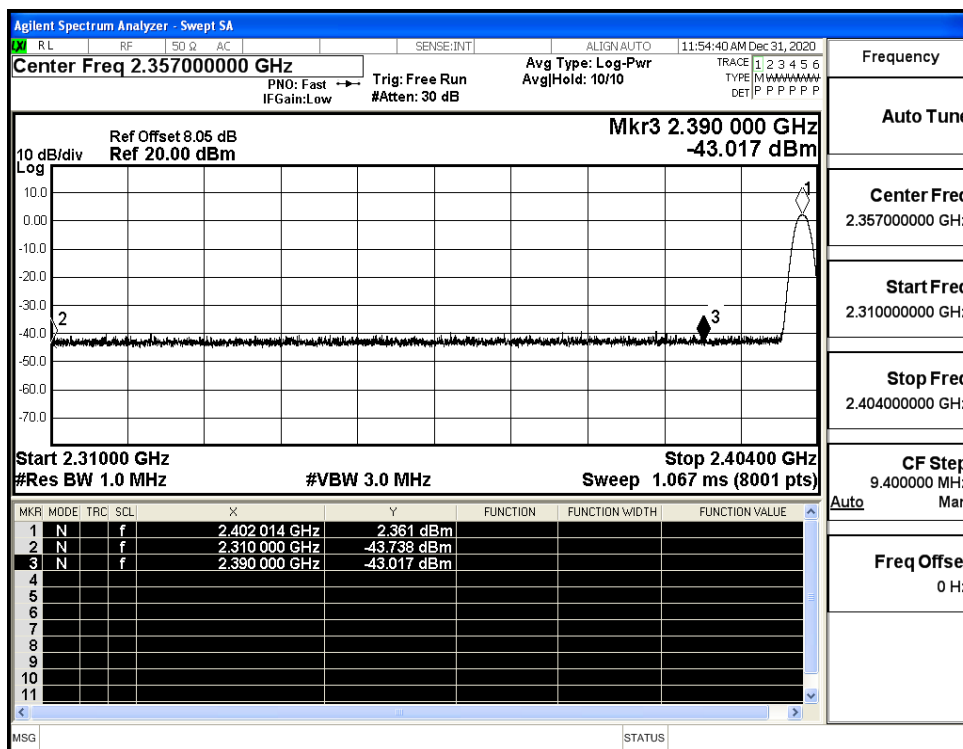


Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (Low Channel)

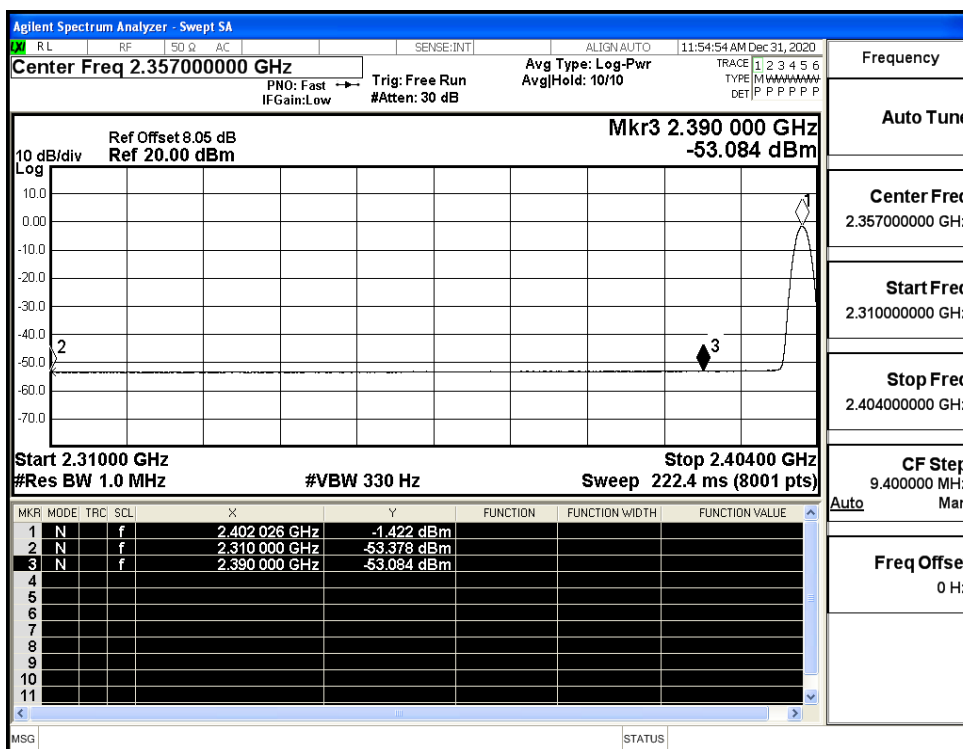


Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (High Channel)Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (High Channel)

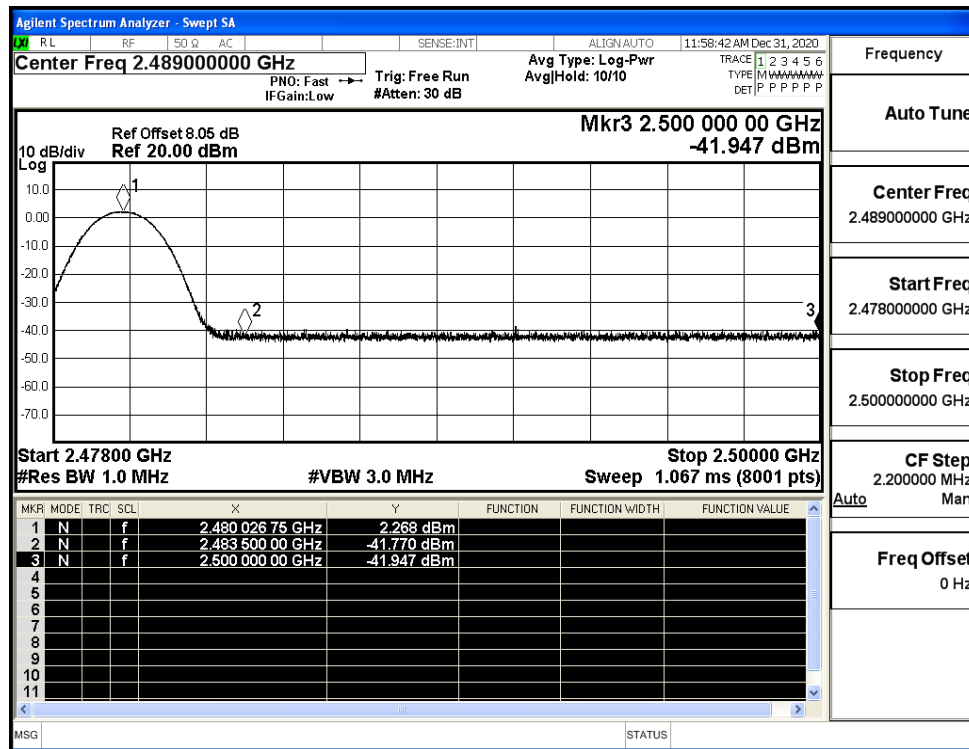
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)

