

Appendix A

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

Product Name: Ride Vision 1

Trade Mark: Ride Vision

Test Model: Ride Vision 1

Environmental Conditions

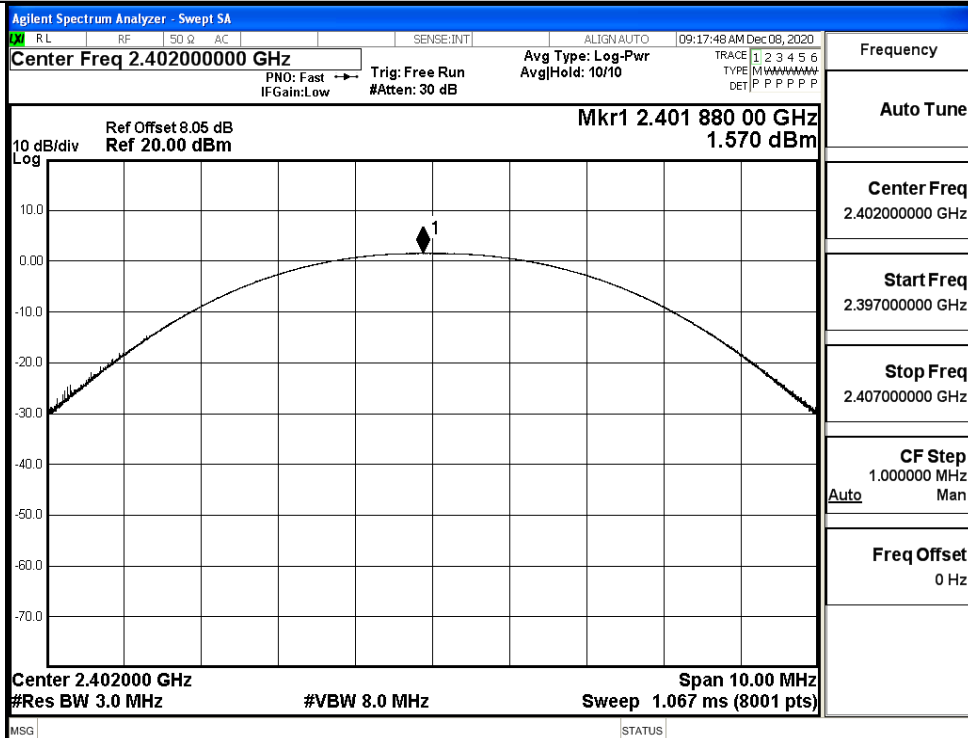
Temperature:	24.6° C
Relative Humidity:	54.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Jay Li
Supervised by:	Li Huan

A.1 Maximum Conducted Peak Output Power

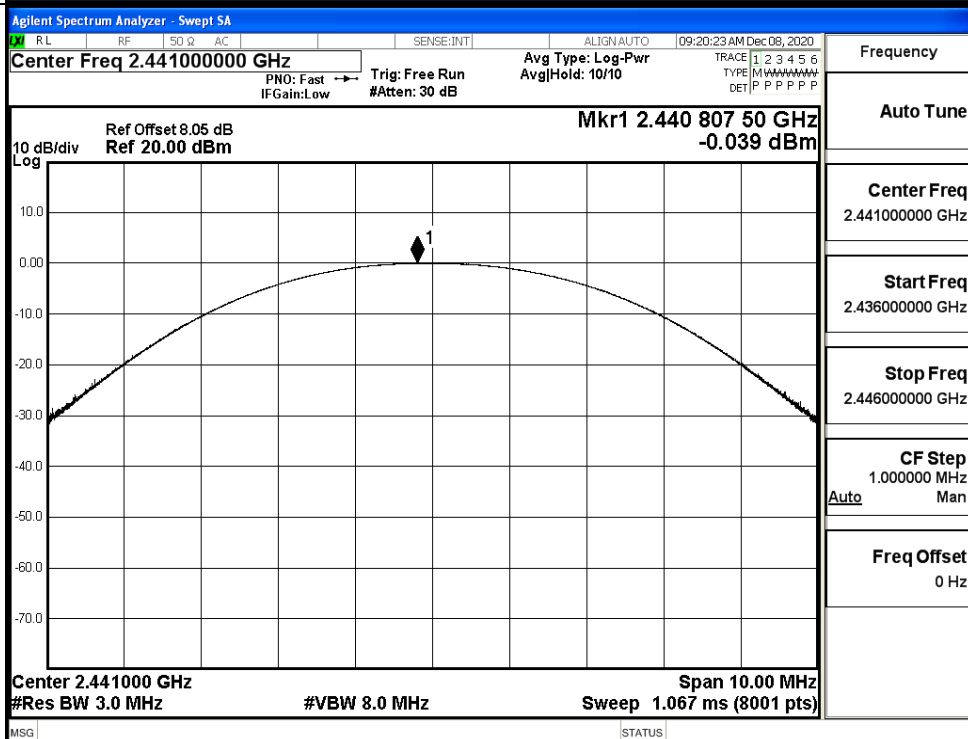
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	1.570	21	PASS
	MCH	-0.039	21	PASS
	HCH	-2.091	21	PASS
$\pi/4$ DQPSK	LCH	3.905	21	PASS
	MCH	2.264	21	PASS
	HCH	0.157	21	PASS
8DPSK	LCH	4.464	21	PASS
	MCH	2.785	21	PASS
	HCH	0.666	21	PASS

Test Graphs

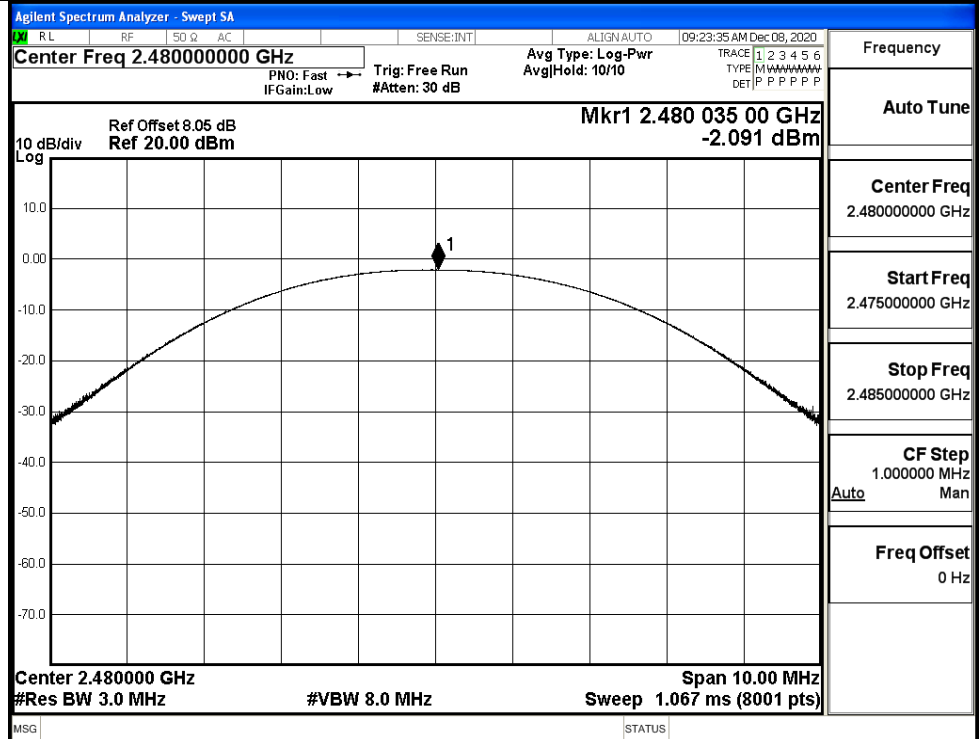
GFSK/LCH



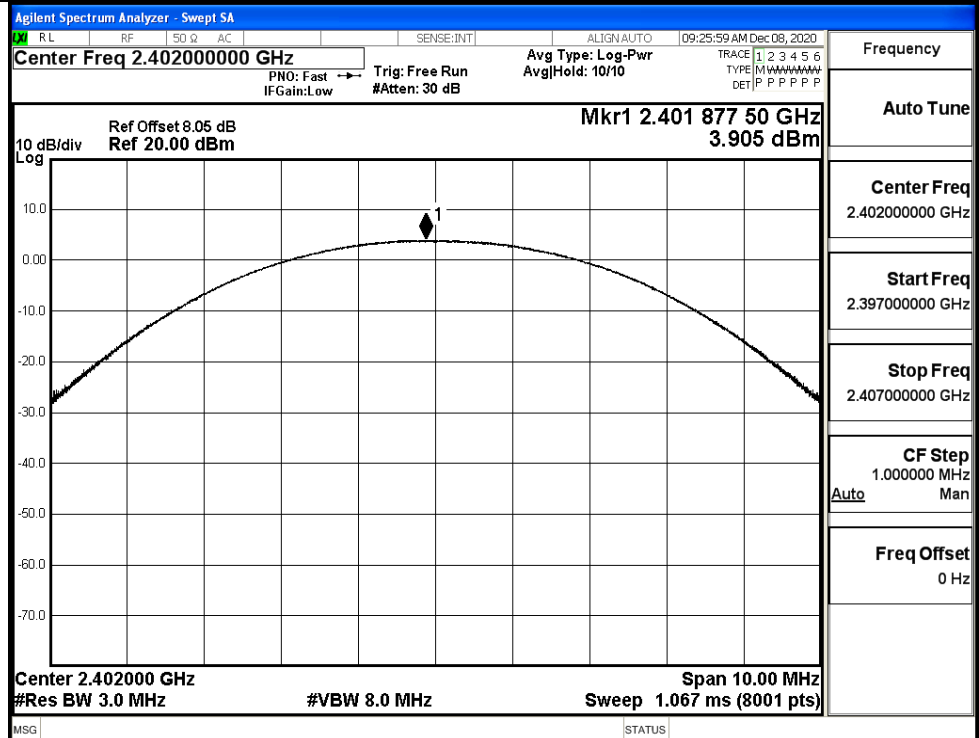
GFSK/MCH



GFSK/HCH

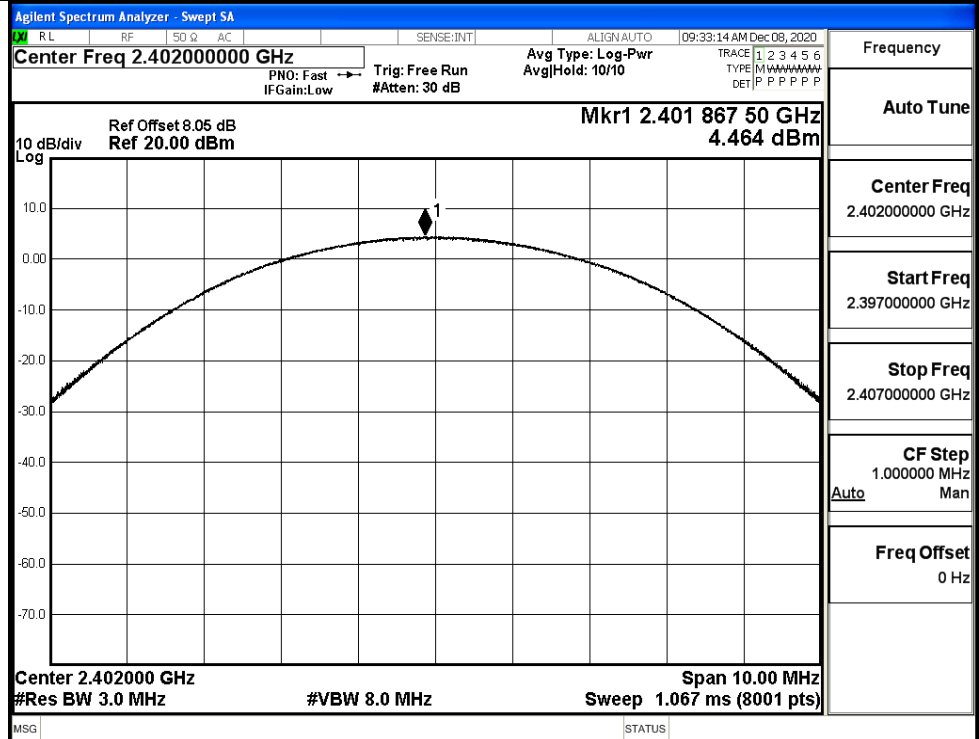


π /4DQPSK/LCH

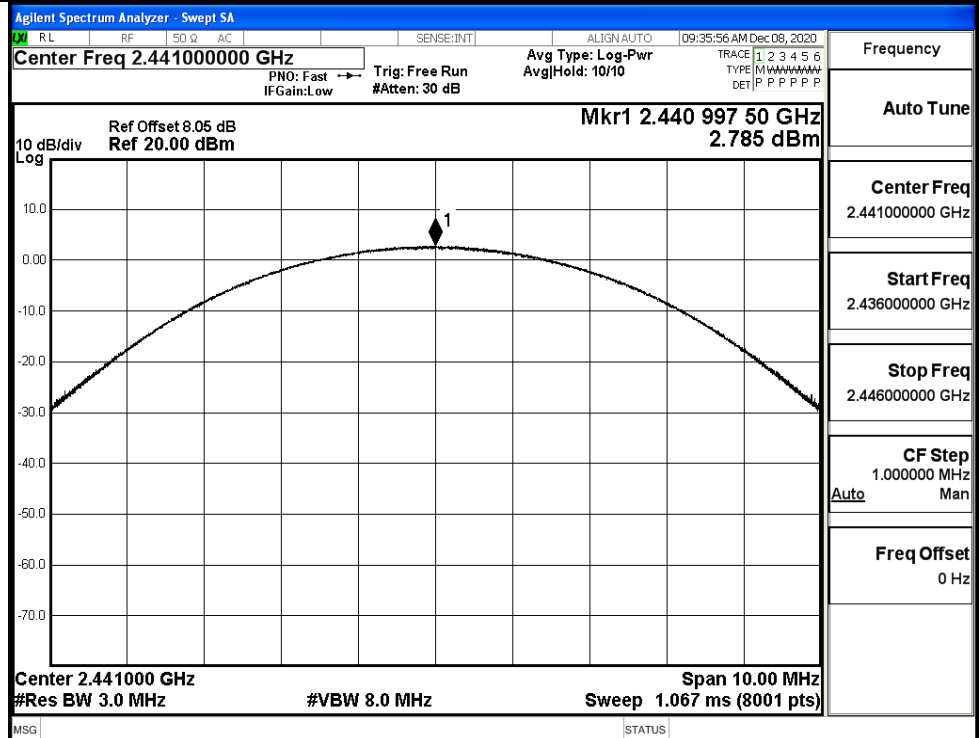


$\pi/4$DQPSK/MCH	Agilent Spectrum Analyzer - Swept SA RL RF 50 Q AC SENSE:INT ALIGN: AUTO 09:28:56 AM Dec 08, 2020 Center Freq 2.441000000 GHz PNO: Fast IF Gain: Low Trig: Free Run #Atten: 30 dB Avg Type: Log-Pwr Avg/Hold: 10/10 TRACE 1 2 3 4 5 6 TYPE M W W W W W W W DET P P P P P P P 10 dB/div Log Ref Offset 8.05 dB Ref 20.00 dBm Mkr1 2.440 846 25 GHz 2.264 dBm 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 09:30:44 AM Dec 08, 2020 Center Freq 2.480000000 GHz PNO: Fast IF Gain: Low Trig: Free Run #Atten: 30 dB Avg Type: Log-Pwr Avg/Hold: 10/10 TRACE 1 2 3 4 5 6 TYPE M W W W W W W W DET P P P P P P P 10 dB/div Log Ref Offset 8.05 dB Ref 20.00 dBm Mkr1 2.480 066 25 GHz 0.157 dBm 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

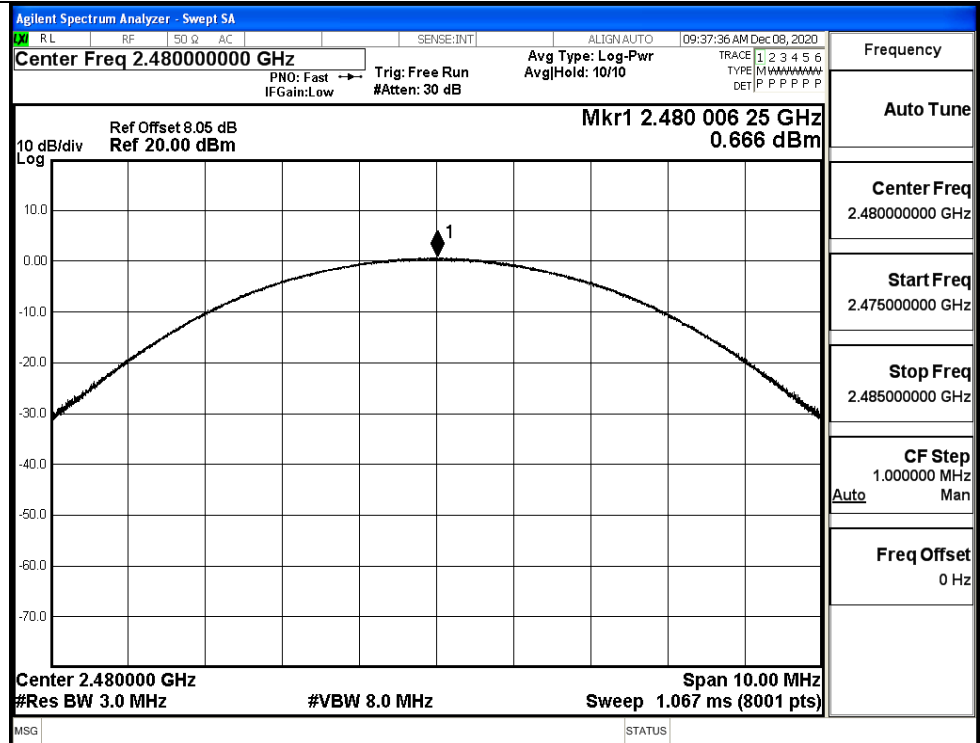
8DPSK/LCH



8DPSK/MCH



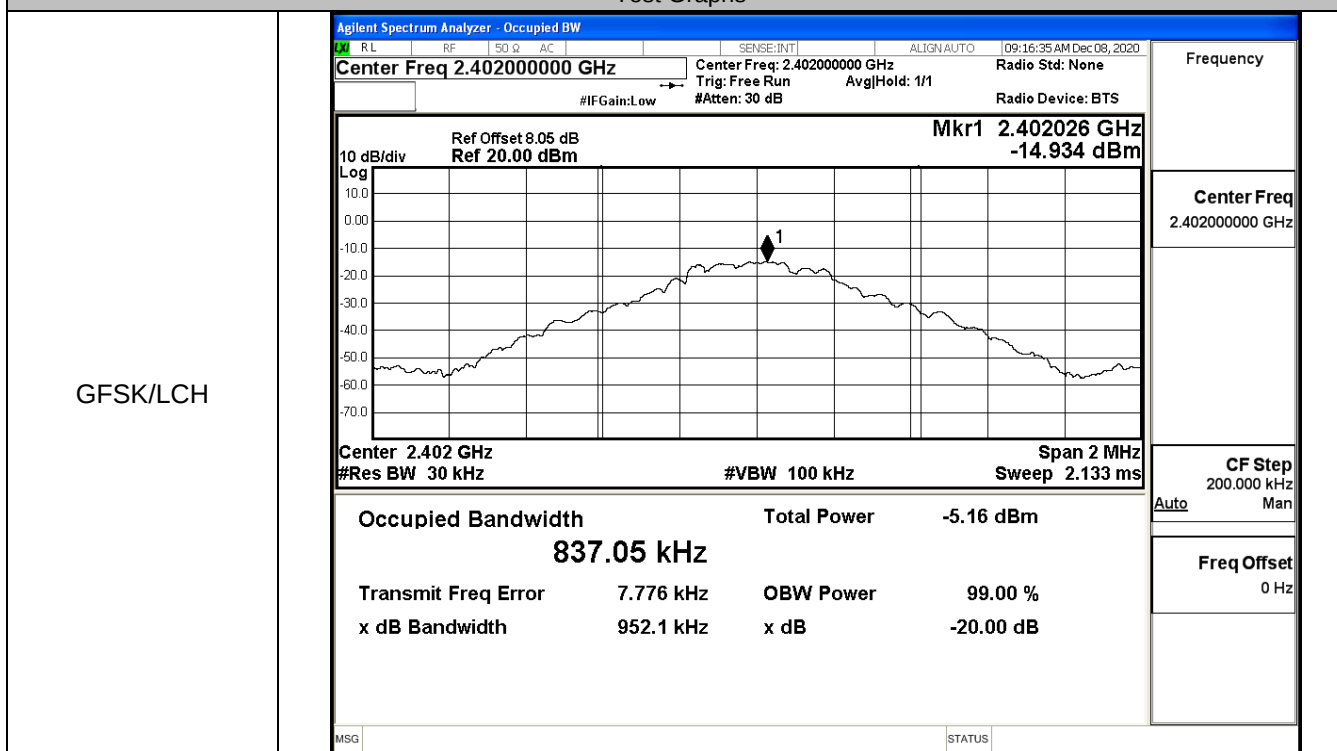
8DPSK/HCH



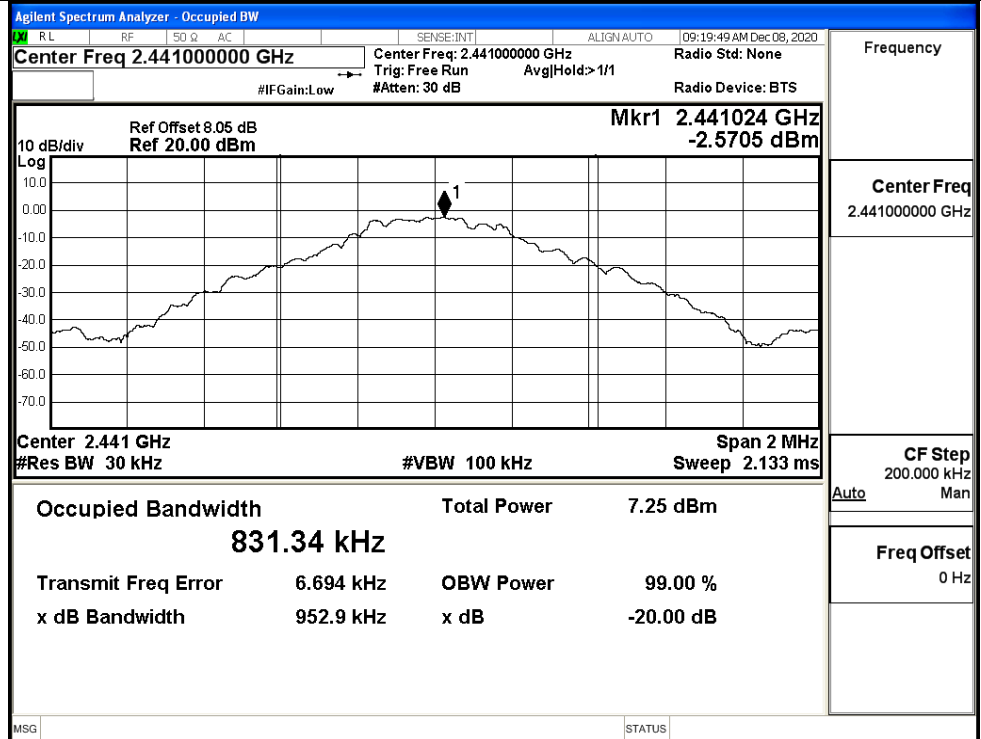
A.2 20dB Bandwidth

Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.9521	Not Specified	PASS
	MCH	0.9529	Not Specified	PASS
	HCH	0.9522	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.318	Not Specified	PASS
	MCH	1.319	Not Specified	PASS
	HCH	1.319	Not Specified	PASS
8DPSK	LCH	1.301	Not Specified	PASS
	MCH	1.305	Not Specified	PASS
	HCH	1.302	Not Specified	PASS

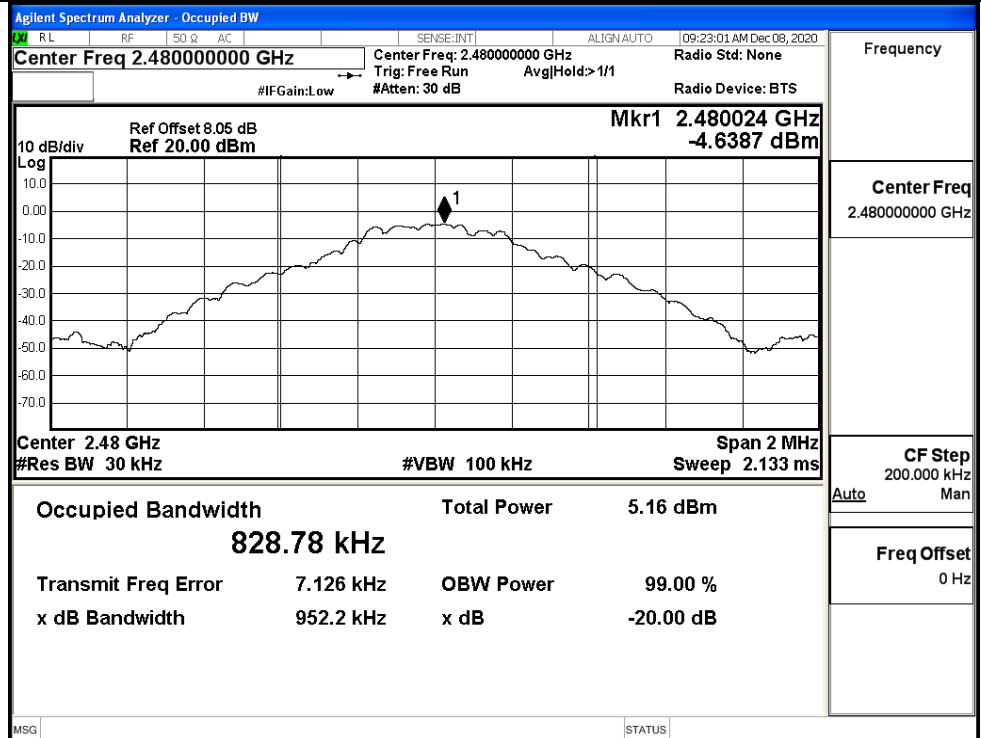
Test Graphs

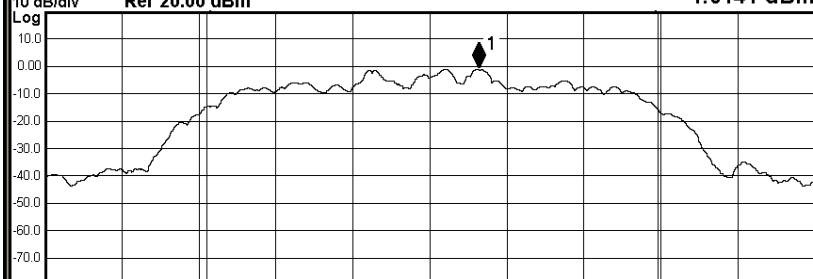
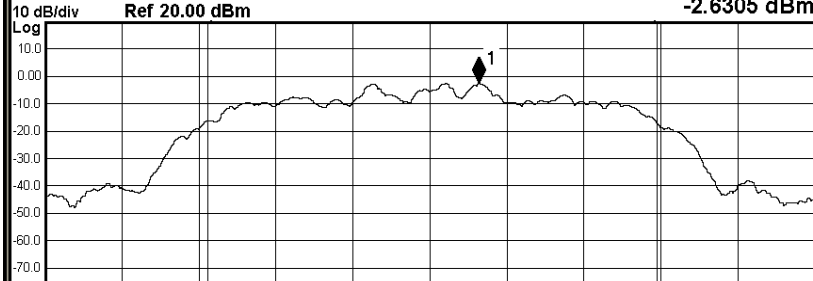


GFSK/MCH

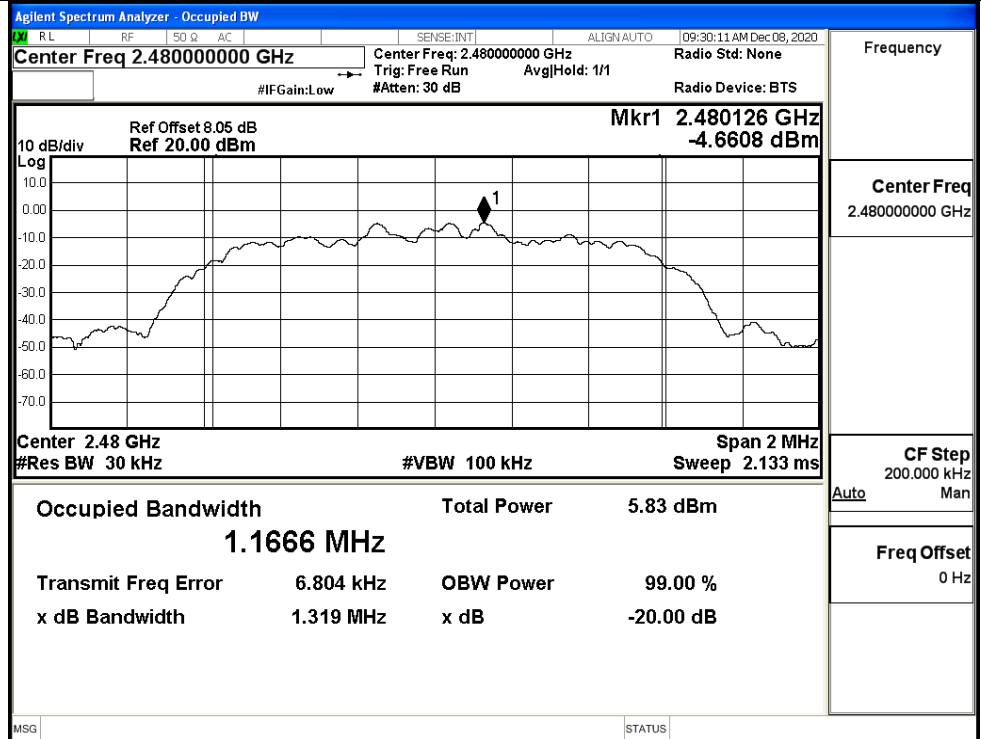


GFSK/HCH

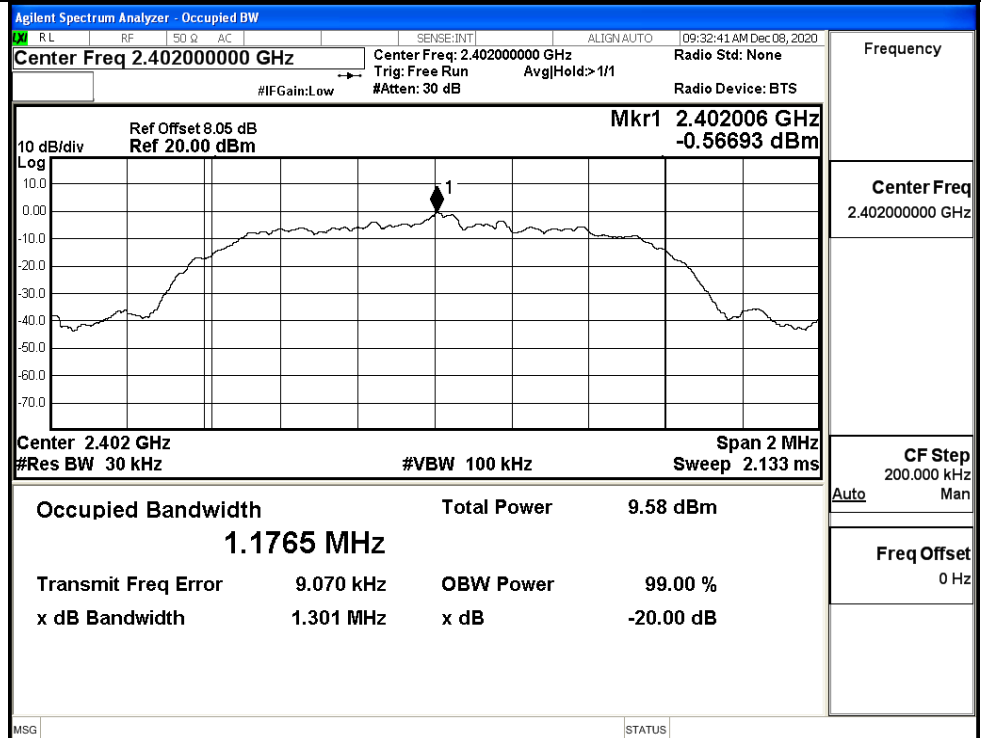


$\pi/4$ DQPSK/LCH	Agilent Spectrum Analyzer - Occupied BW RL RF 50 Ω AC SENSE:INT ALIGN: AUTO 09:25:25 AM Dec 08, 2020 Center Freq 2.402000000 GHz Center Freq: 2.402000000 GHz Trig: Free Run Avg/Hold: > 1/1 Radio Std: None Radio Device: BTS #IFGain: Low #Atten: 30 dB Ref Offset 8.05 dB Ref 20.00 dBm Mkr1 2.402126 GHz -1.0141 dBm  Center 2.402 GHz #Res BW 30 kHz #VBW 100 kHz Span 2 MHz Sweep 2.133 ms Occupied Bandwidth 1.1678 MHz Total Power 9.52 dBm Transmit Freq Error 6.915 kHz OBW Power 99.00 % x dB Bandwidth 1.318 MHz x dB -20.00 dB	Frequency Center Freq 2.402000000 GHz CF Step 200.000 kHz Auto Man Freq Offset 0 Hz	
	MSG STATUS		
	$\pi/4$ DQPSK/MCH	Agilent Spectrum Analyzer - Occupied BW RL RF 50 Ω AC SENSE:INT ALIGN: AUTO 09:28:22 AM Dec 08, 2020 Center Freq 2.441000000 GHz Center Freq: 2.441000000 GHz Trig: Free Run Avg/Hold: > 1/1 Radio Std: None Radio Device: BTS #IFGain: Low #Atten: 30 dB Ref Offset 8.05 dB Ref 20.00 dBm Mkr1 2.441128 GHz -2.6305 dBm  Center 2.441 GHz #Res BW 30 kHz #VBW 100 kHz Span 2 MHz Sweep 2.133 ms Occupied Bandwidth 1.1663 MHz Total Power 7.92 dBm Transmit Freq Error 6.530 kHz OBW Power 99.00 % x dB Bandwidth 1.319 MHz x dB -20.00 dB	Frequency Center Freq 2.441000000 GHz CF Step 200.000 kHz Auto Man Freq Offset 0 Hz
		MSG STATUS	

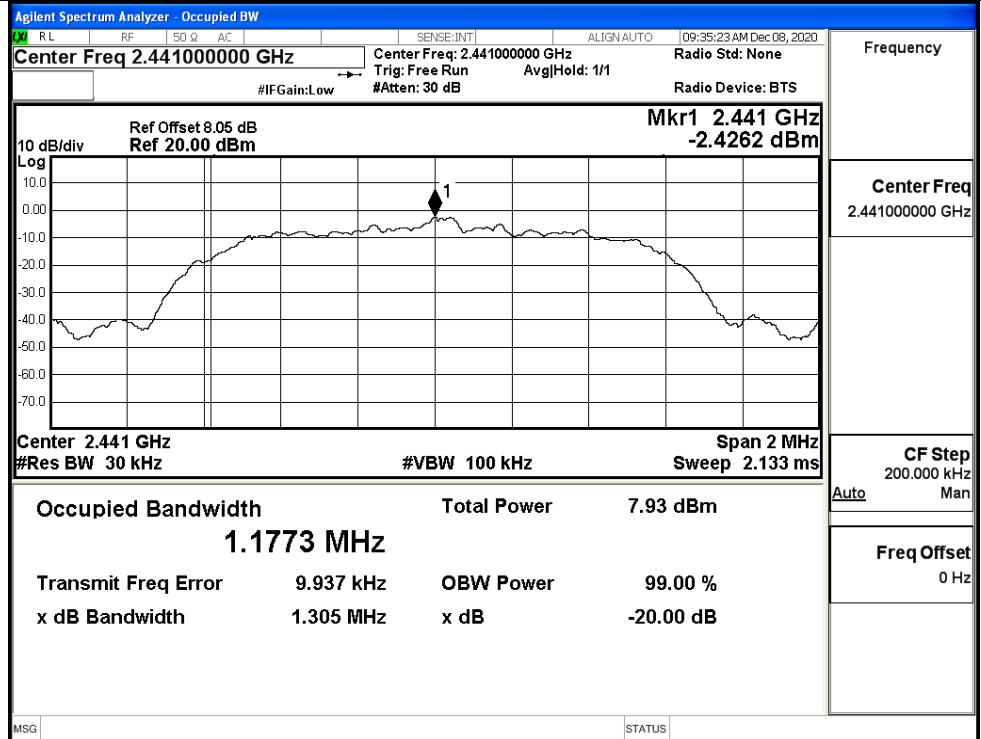
$\pi/4$ DQPSK/HCH



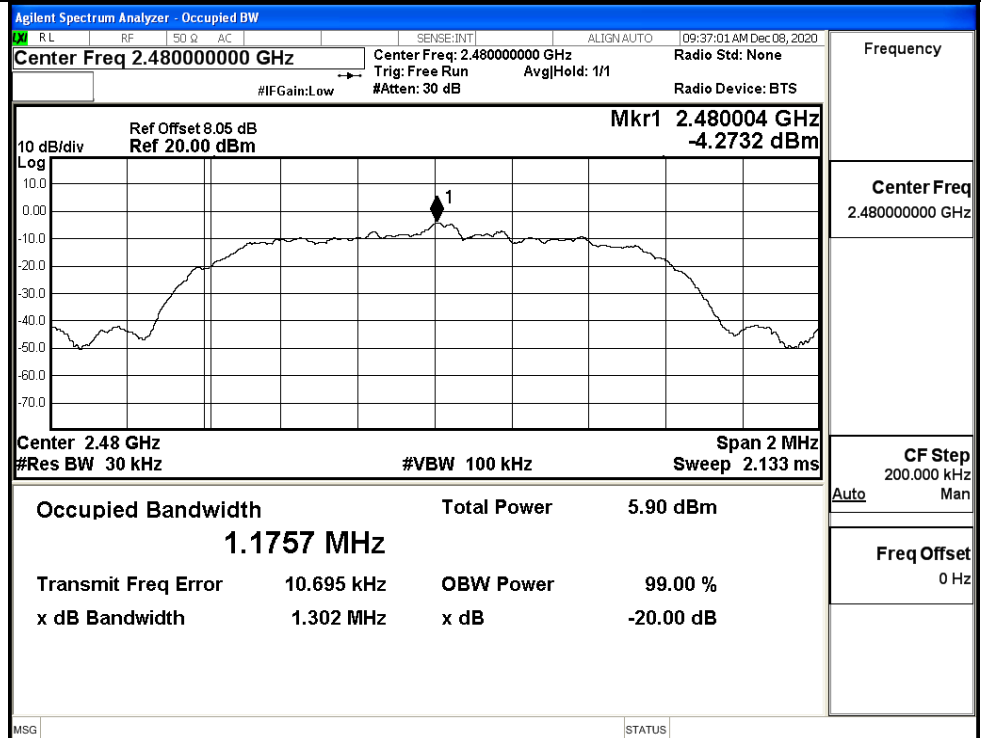
8DPSK/LCH



8DPSK/MCH



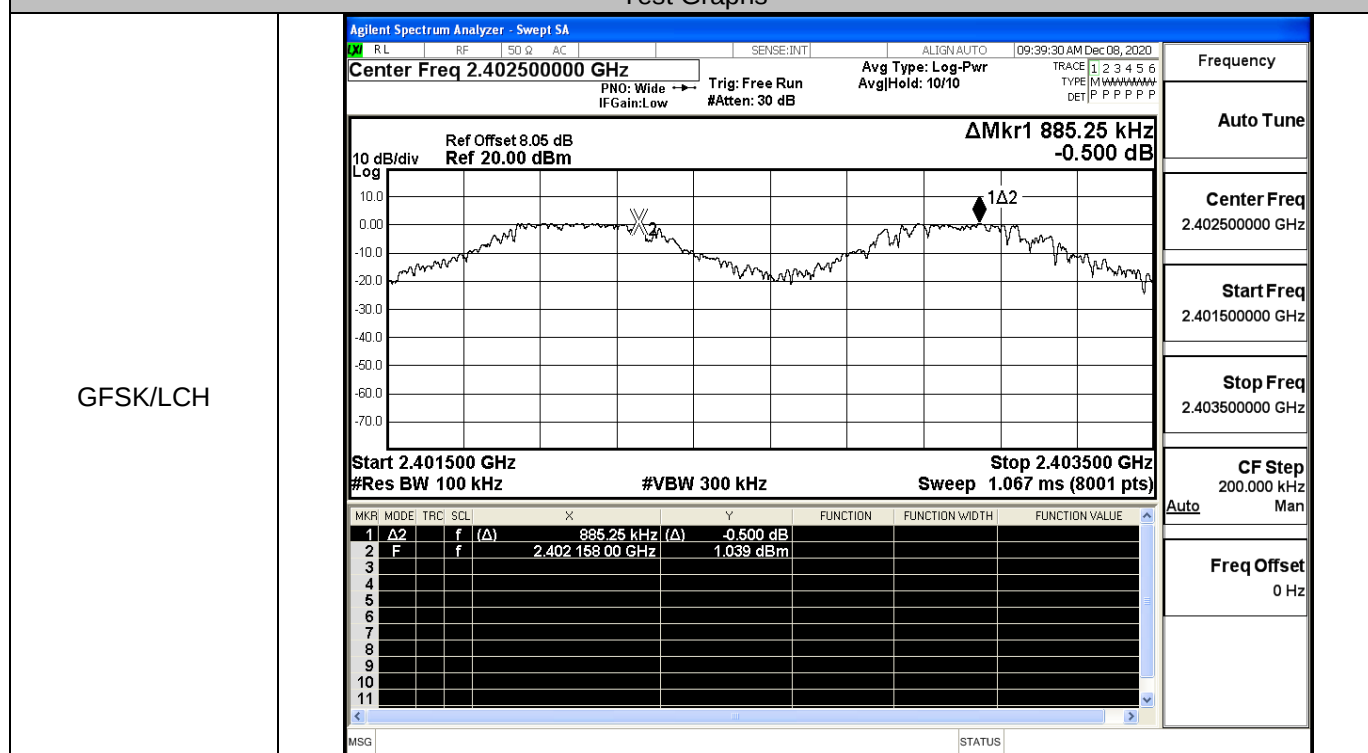
8DPSK/HCH



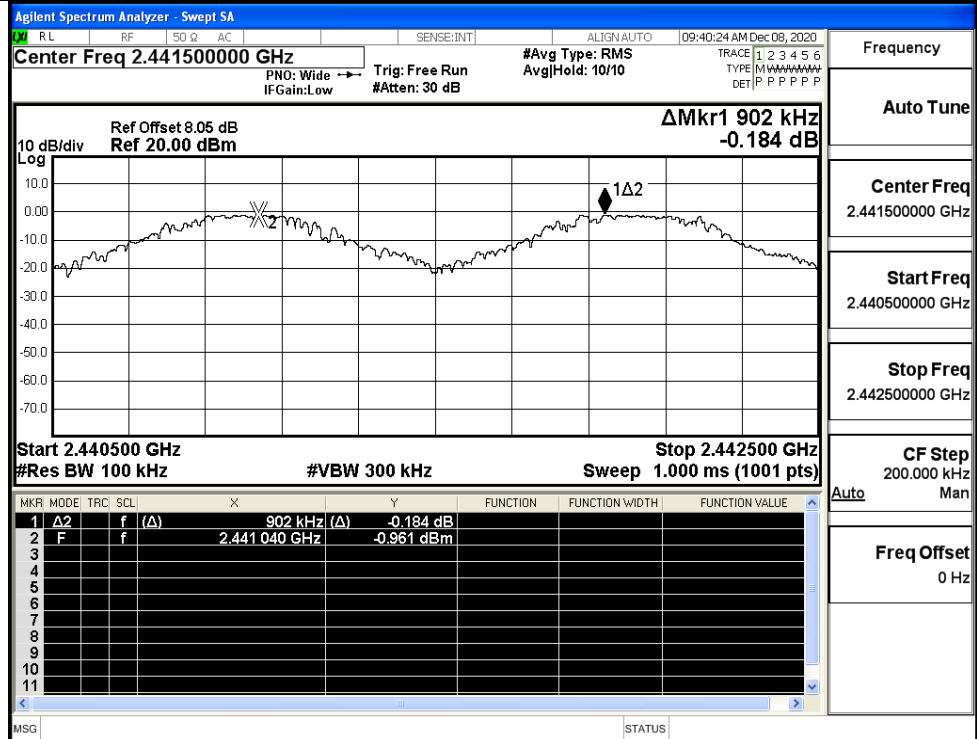
A.3 Carrier Frequency Separation

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.885	0.635	PASS
	MCH	0.902	0.635	PASS
	HCH	1.188	0.635	PASS
$\pi/4$ DQPSK	LCH	0.894	0.879	PASS
	MCH	1.106	0.879	PASS
	HCH	1.298	0.879	PASS
8DPSK	LCH	1.166	0.870	PASS
	MCH	0.880	0.870	PASS
	HCH	1.140	0.870	PASS

Test Graphs



GFSK/MCH



Frequency

Auto Tune

Center Freq
2.441500000 GHz

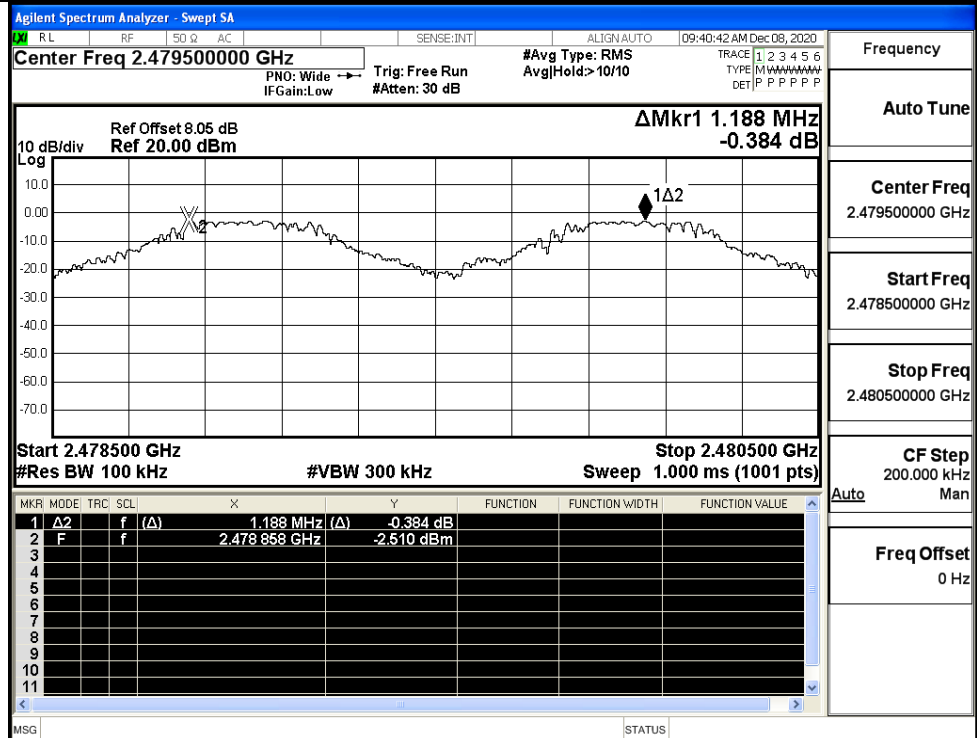
Start Freq
2.440500000 GHz

Stop Freq
2.442500000 GHz

CF Step
200.000 kHz
Man

Freq Offset
0 Hz

GFSK/HCH



Frequency

Auto Tune

Center Freq
2.479500000 GHz

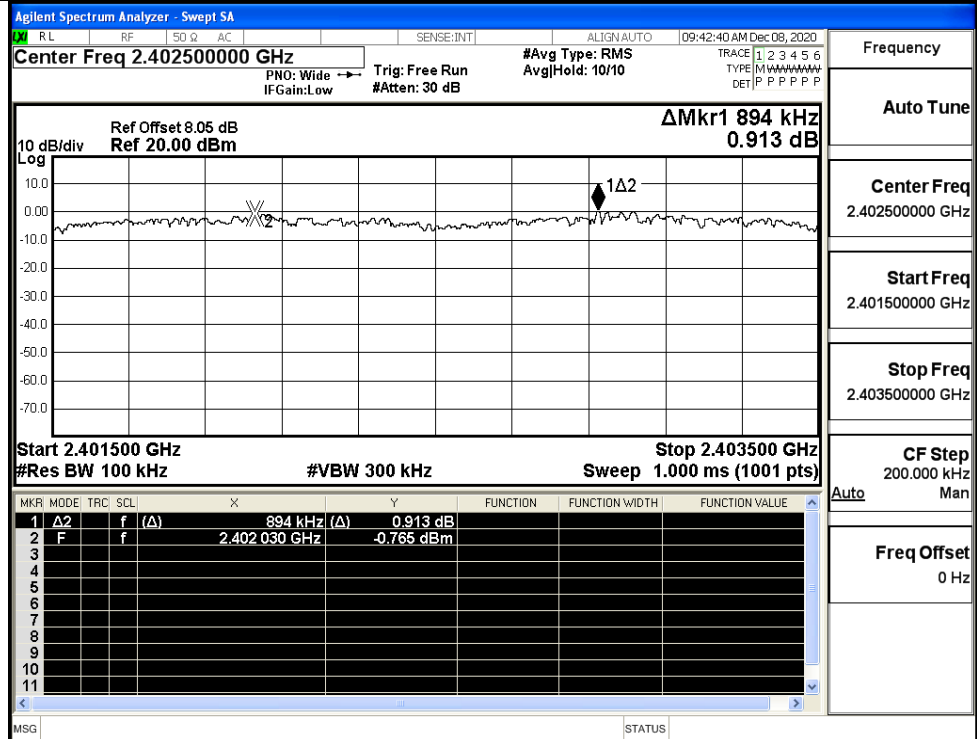
Start Freq
2.478500000 GHz

Stop Freq
2.480500000 GHz

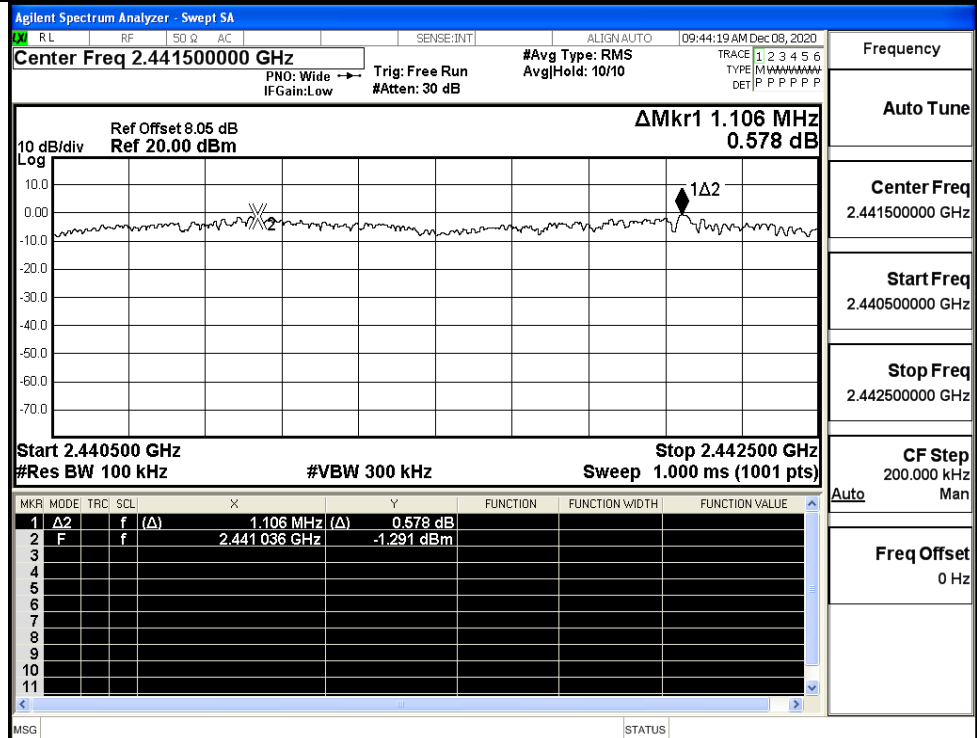
CF Step
200.000 kHz
Man

Freq Offset
0 Hz

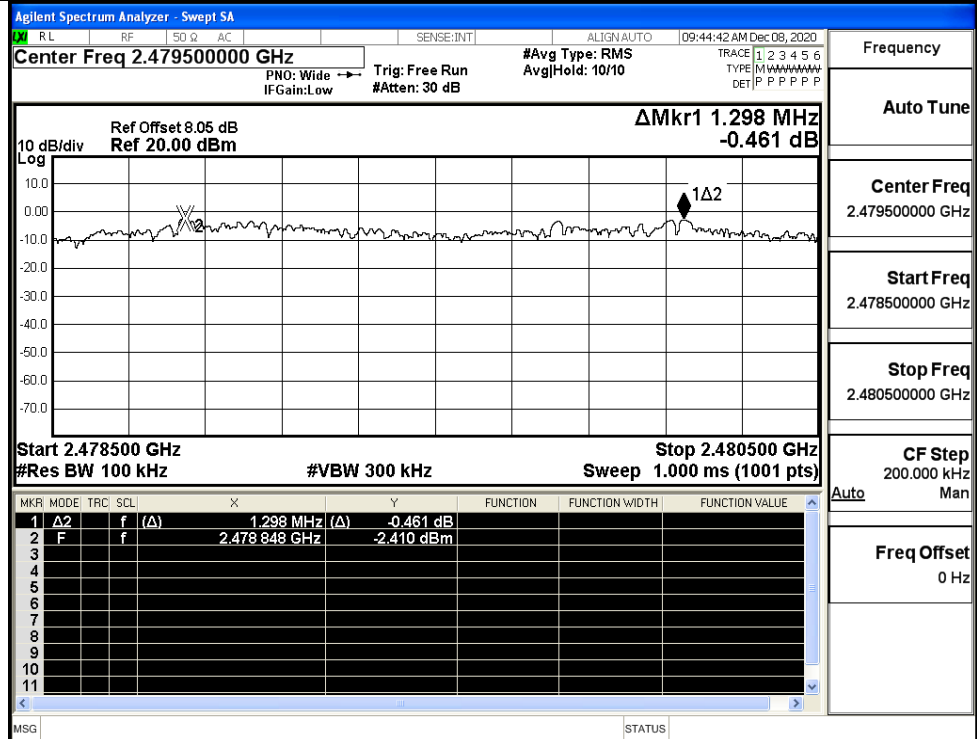
$\pi/4$ DQPSK/LCH



$\pi/4$ DQPSK/MCH



$\pi/4$ DQPSK/HCH



Frequency

Auto Tune

Center Freq
2.479500000 GHz

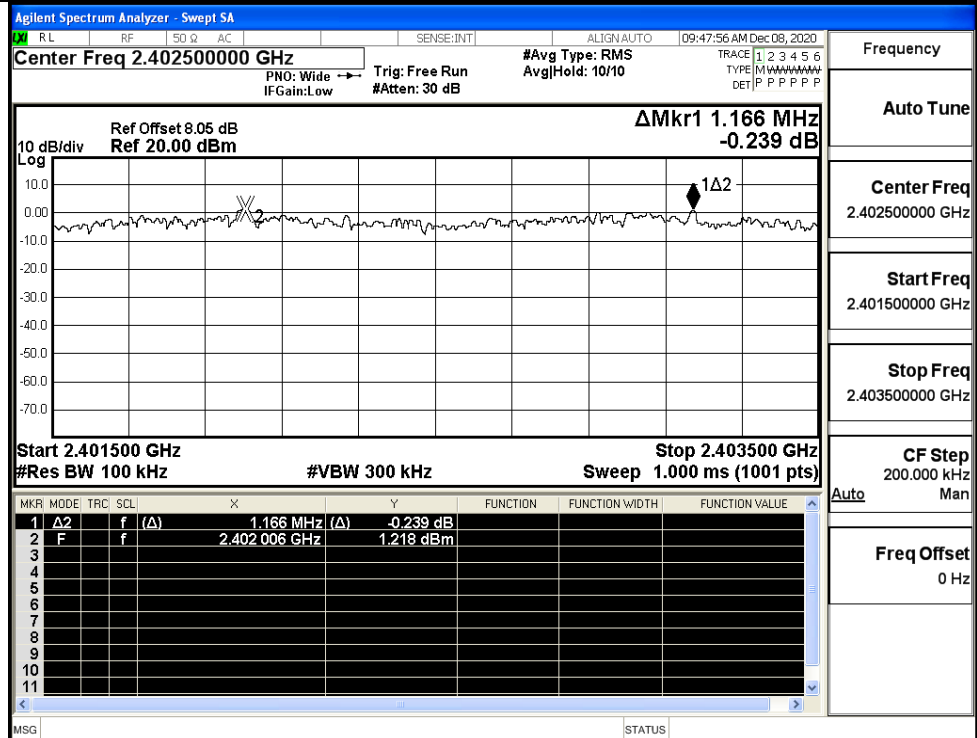
Start Freq
2.478500000 GHz

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

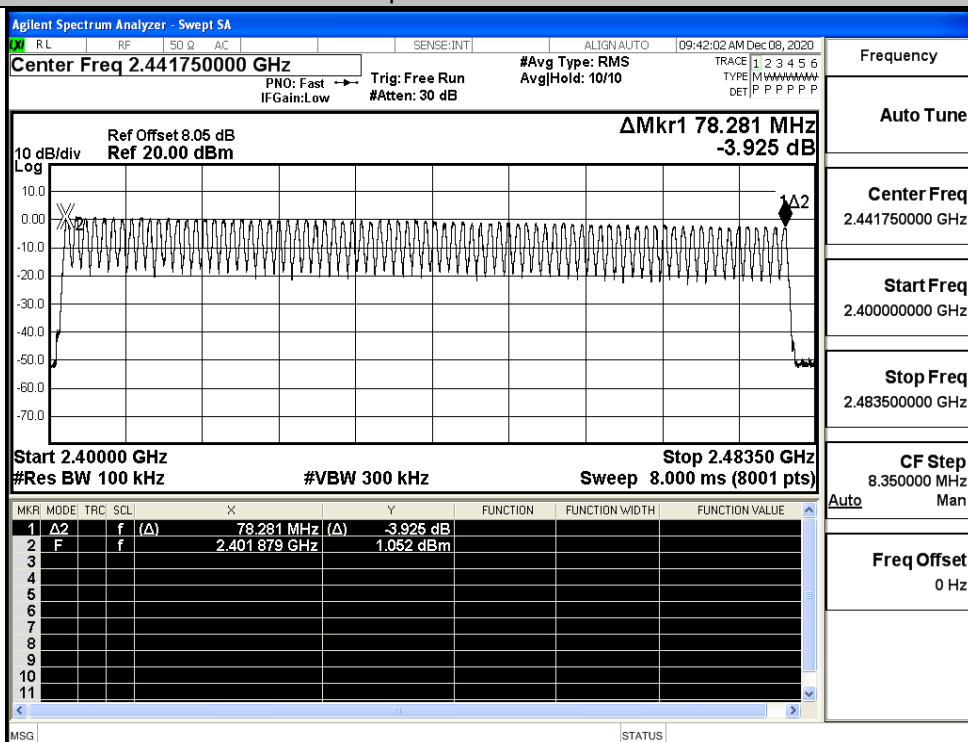
8DPSK/MCH	Agilent Spectrum Analyzer - Swept SA RL RF 50 Q AC SENSE:INT ALIGN AUTO 09:49:34 AM Dec 08, 2020 Center Freq 2.441500000 GHz PNO: Wide IFGain:Low Trig: Free Run #Atten: 30 dB #Avg Type: RMS AvgHold: 10/10 TRACE 1 2 3 4 5 6 TYPE M W M M M M M M M M DET P P P P P P P P Ref Offset 8.05 dB Ref 20.00 dBm ΔMkr1 880 kHz -2.129 dB 10 dB/div Log 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) 880 kHz (Δ) -2.129 dB 2 F f 2.441 004 GHz -0.402 dBm 3 4 5 6 7 8 9 10 11 MSG STATUS Frequency Auto Tune Center Freq 2.441500000 GHz Start Freq 2.440500000 GHz Stop Freq 2.442500000 GHz CF Step 200.000 kHz Man Freq Offset 0 Hz
8DPSK/HCH	Agilent Spectrum Analyzer - Swept SA RL RF 50 Q AC SENSE:INT ALIGN AUTO 09:49:58 AM Dec 08, 2020 Center Freq 2.479500000 GHz PNO: Wide IFGain:Low Trig: Free Run #Atten: 30 dB #Avg Type: RMS AvgHold: 10/10 TRACE 1 2 3 4 5 6 TYPE M W M M M M M M DET P P P P P P P P Ref Offset 8.05 dB Ref 20.00 dBm ΔMkr1 1.140 MHz 0.721 dB 10 dB/div Log Start 2.478500 GHz #Res BW 100 kHz #VBW 300 kHz Stop 2.480500 GHz Sweep 1.000 ms (1001 pts) MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE 1 Δ2 f (Δ) 1.140 MHz (Δ) 0.721 dB 2 F f 2.479 026 GHz -3.308 dBm 3 4 5 6 7 8 9 10 11 MSG STATUS 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

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

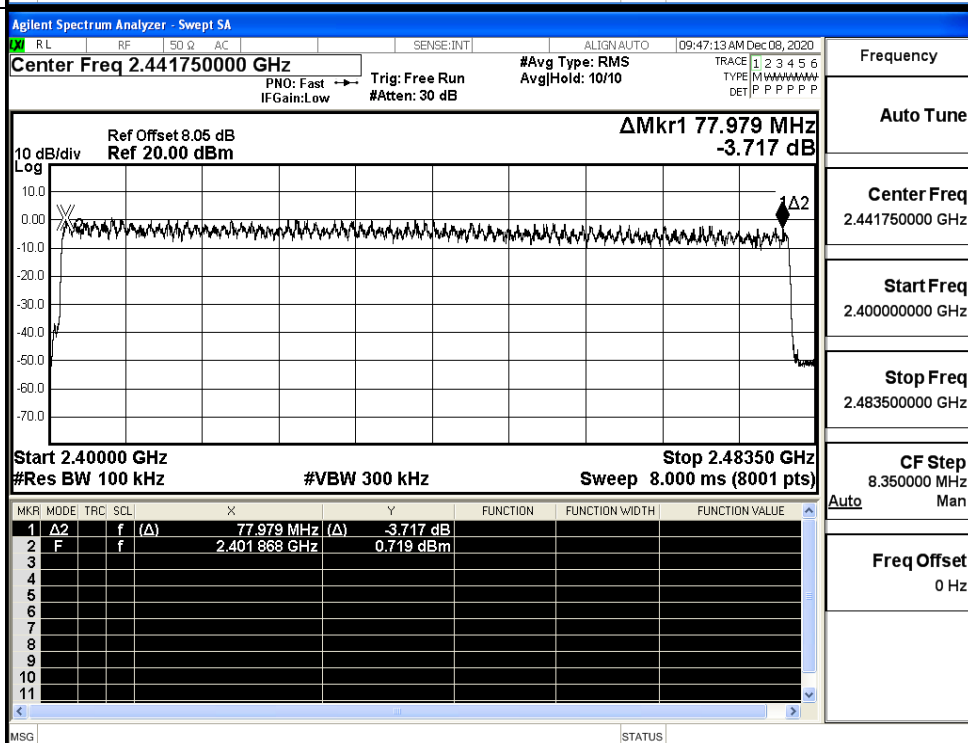
Test Graphs

GFSK/Hop



Frequency

Auto Tune

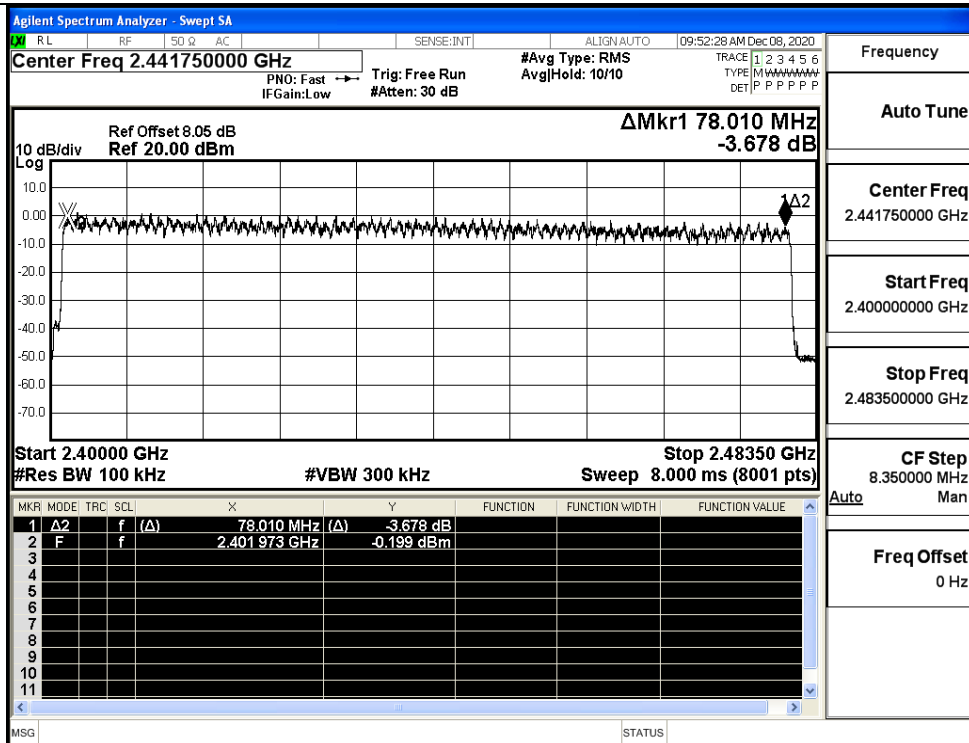
Center Freq
2.441750000 GHzStart Freq
2.400000000 GHzStop Freq
2.483500000 GHzCF Step
8.350000 MHz
ManFreq Offset
0 Hz $\pi/4$ DQPSK/Hop

Frequency

Auto Tune

Center Freq
2.441750000 GHzStart Freq
2.400000000 GHzStop Freq
2.483500000 GHzCF Step
8.350000 MHz
ManFreq Offset
0 Hz

8DPSK/Hop

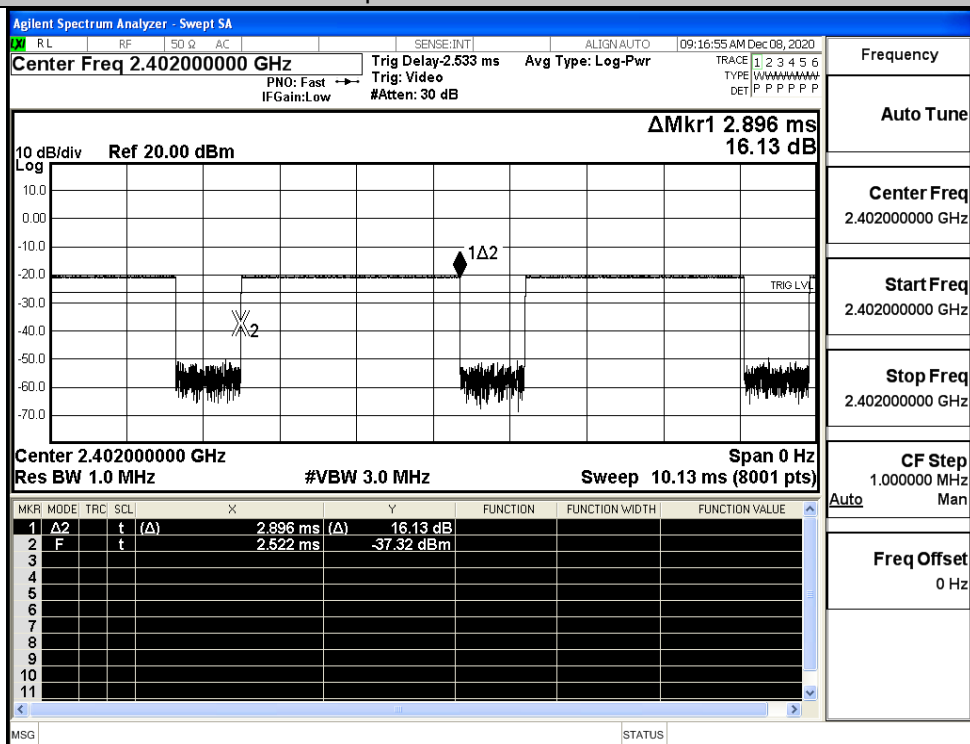


A.5 Dwell Time

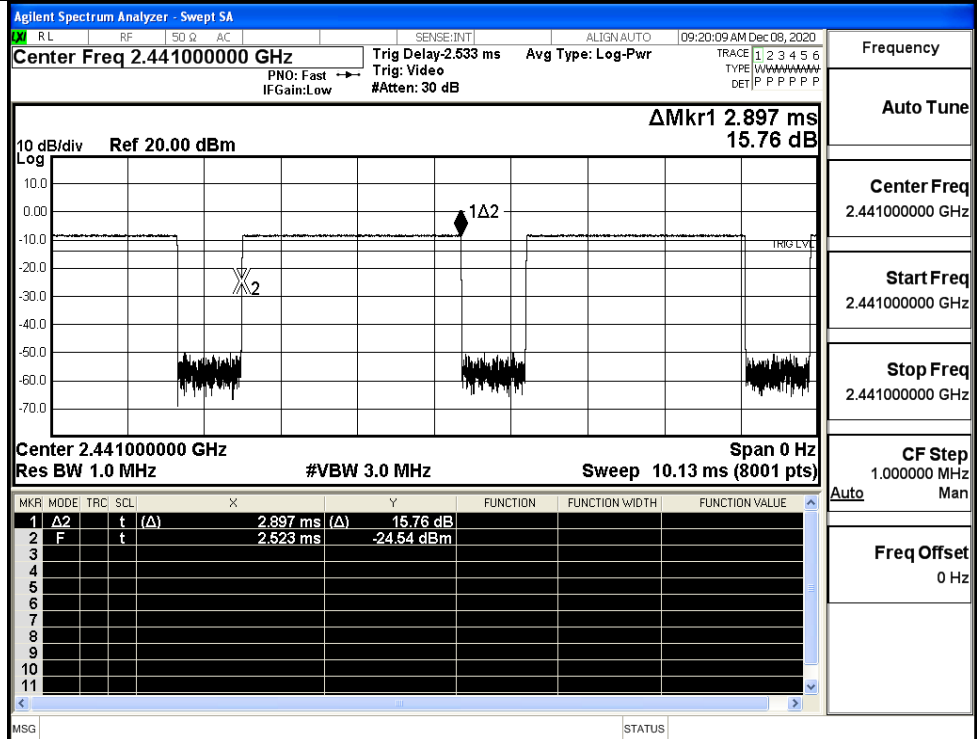
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.9	106.7	0.309	0.4	PASS
	DH5	MCH	2.9	106.7	0.309	0.4	PASS
	DH5	HCH	2.9	106.7	0.309	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.9	106.7	0.309	0.4	PASS
	2DH5	MCH	2.9	106.7	0.309	0.4	PASS
	2DH5	HCH	2.9	106.7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

Test Graphs

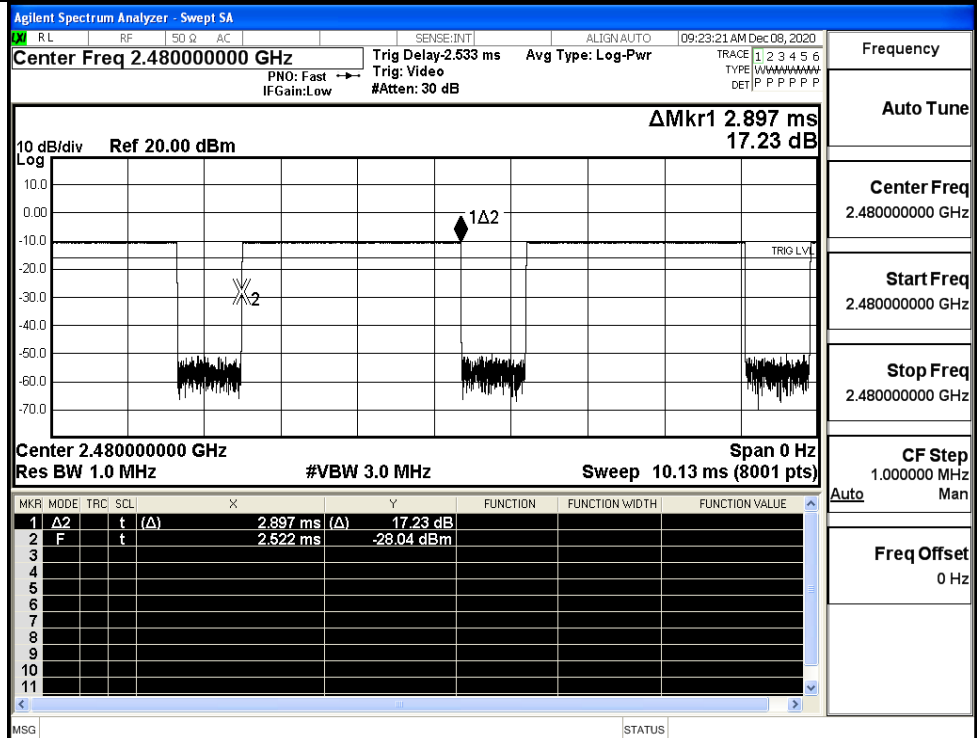
GFSK_DH5/LCH



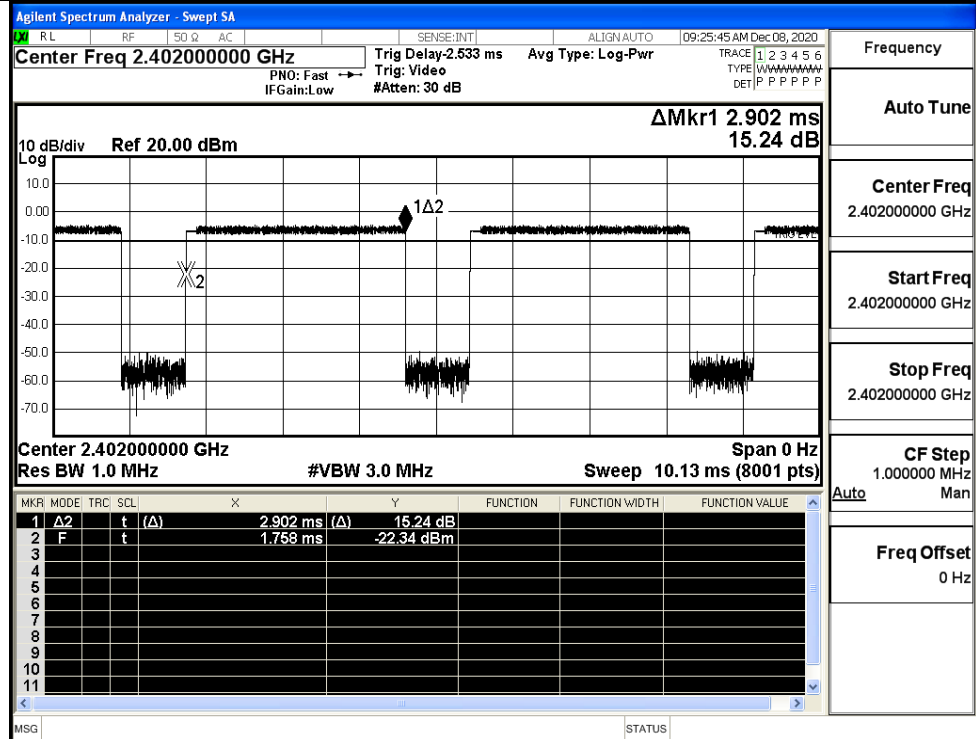
GFSK_DH5/MCH



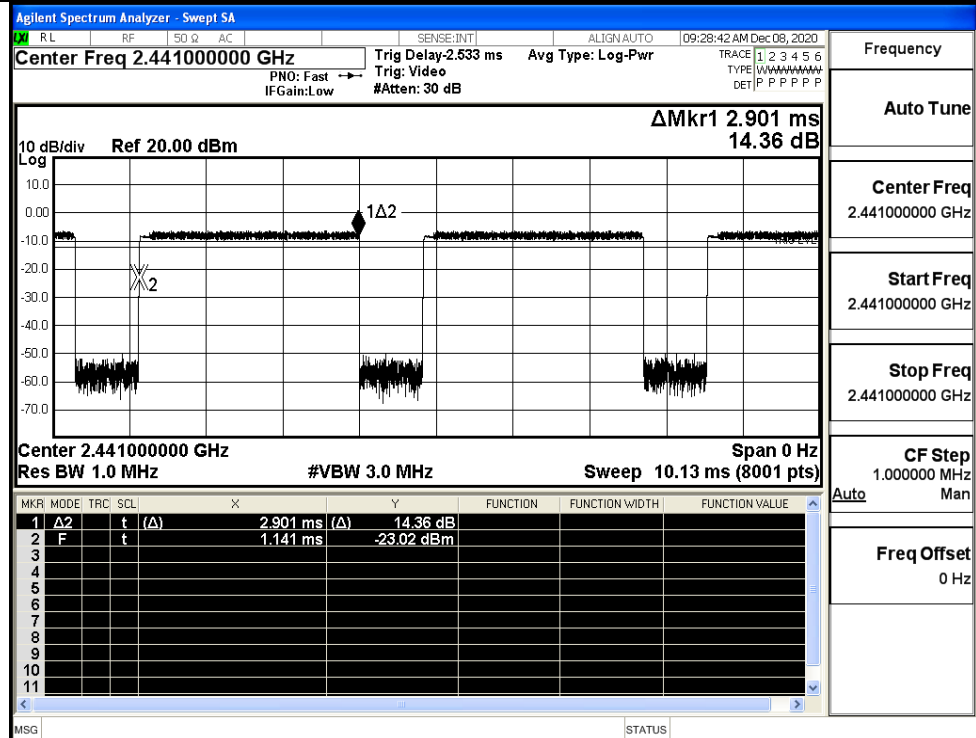
GFSK_DH5/HCH



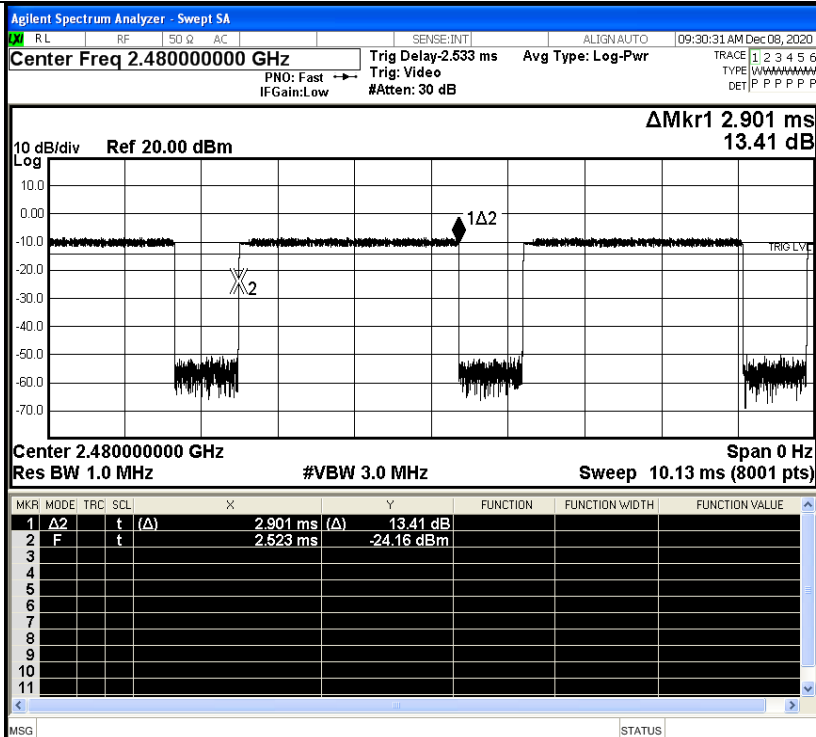
$\pi/4$ DQPSK
_2DH5/LCH



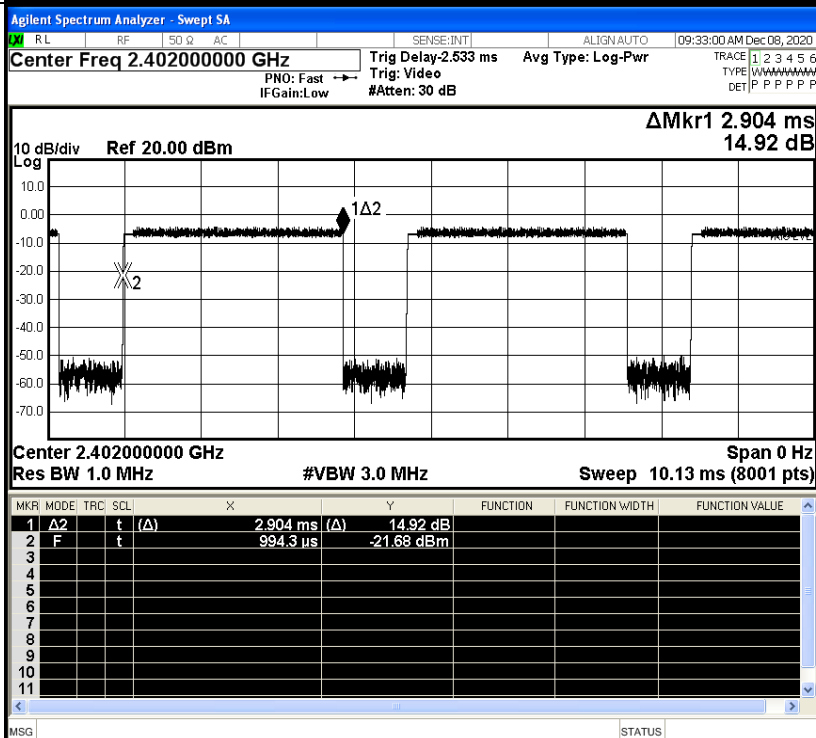
$\pi/4$ DQPSK
_2DH5/MCH



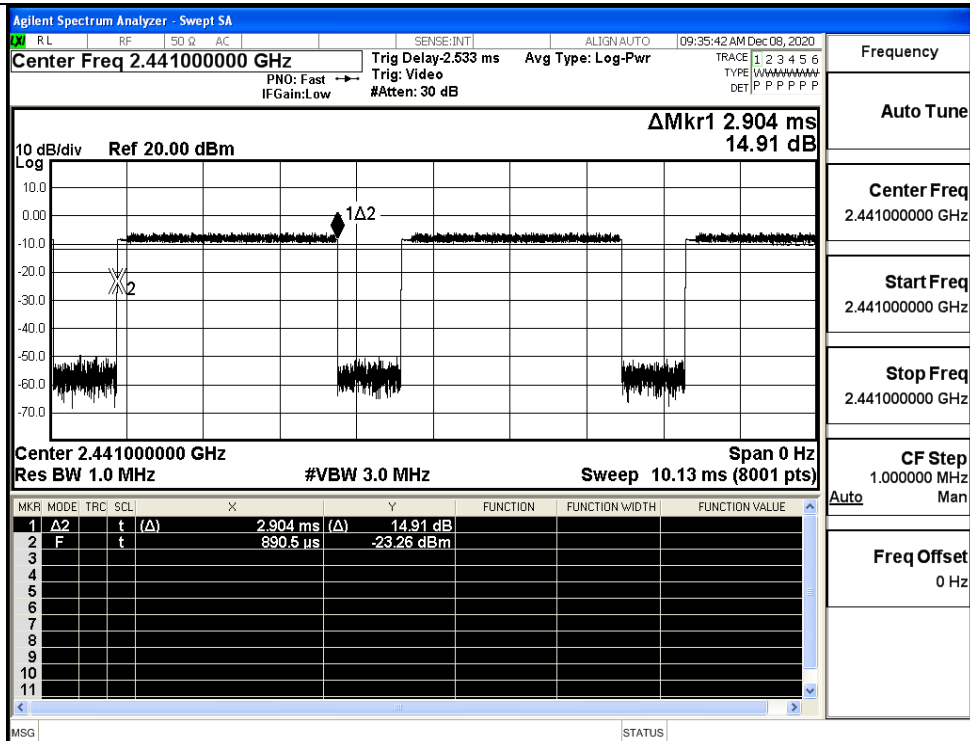
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_2DH5/HCH



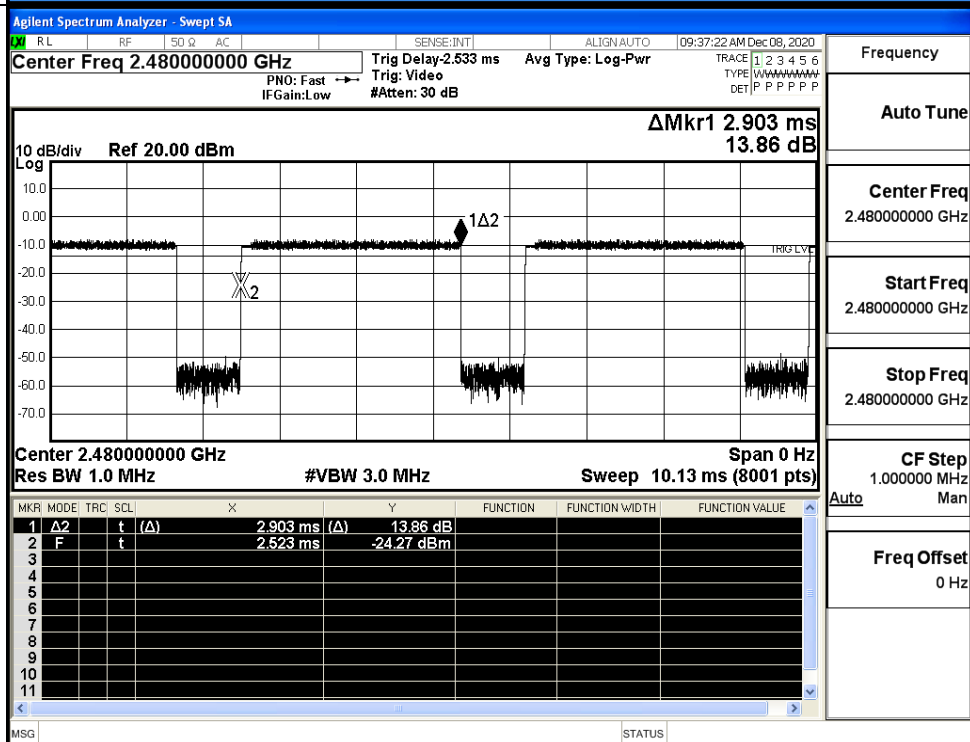
8DPSK _3DH5/LCH



8DPSK_3DH5/MCH



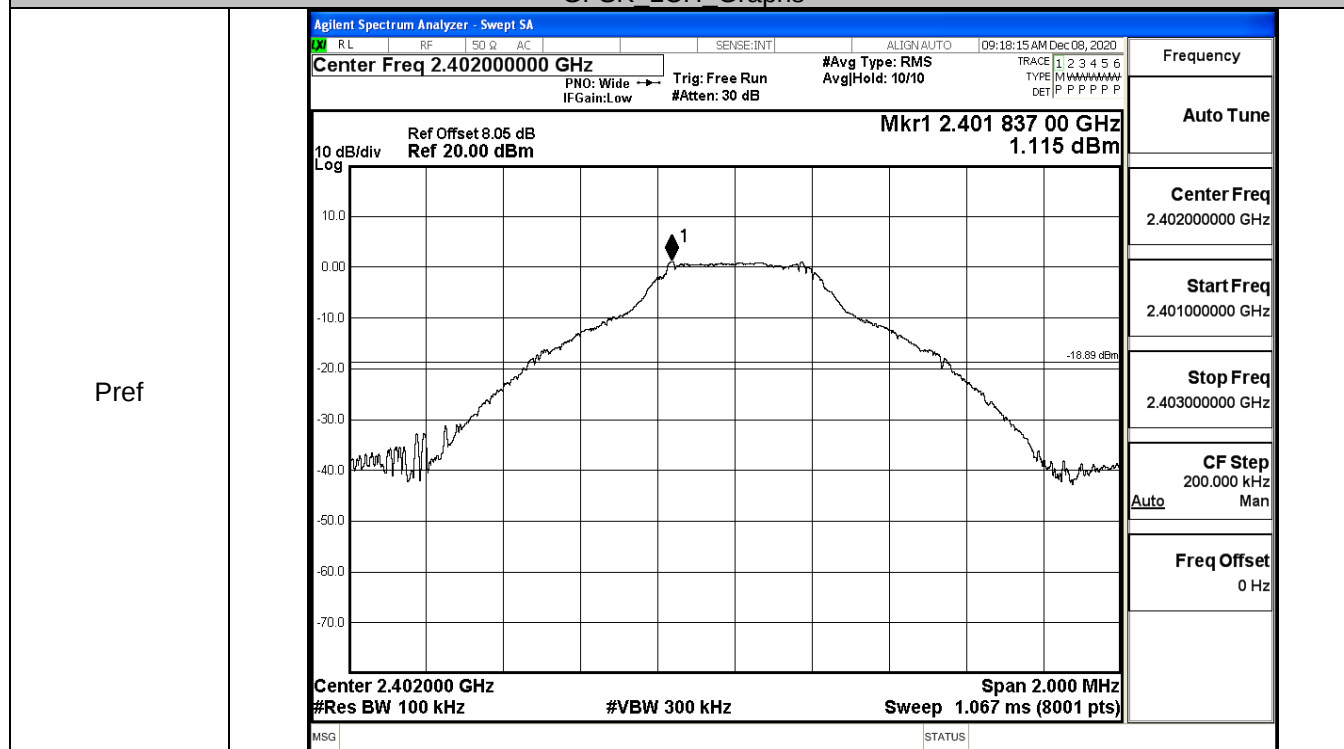
8DPSK_3DH5/HCH



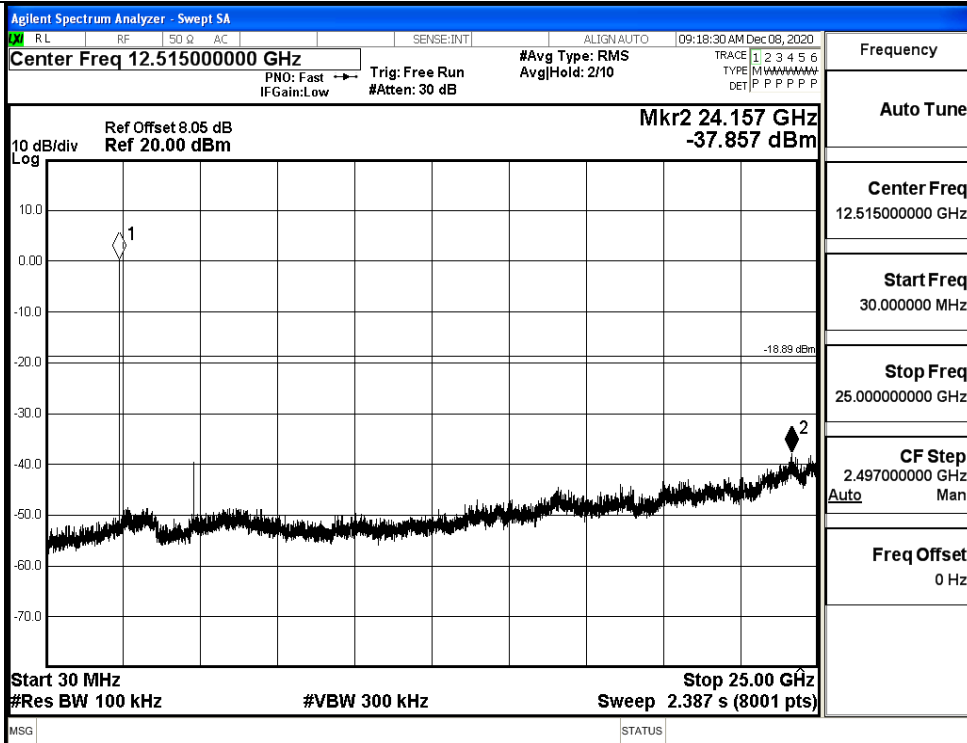
A.6 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	1.115	-37.857	-18.885	PASS
	MCH	-0.466	-36.808	-20.466	PASS
	HCH	-2.378	-37.776	-22.378	PASS
$\pi/4$ DQPSK	LCH	1.345	-37.648	-18.655	PASS
	MCH	-0.261	-37.963	-20.261	PASS
	HCH	-2.374	-37.710	-22.374	PASS
8DPSK	LCH	1.283	-38.362	-18.717	PASS
	MCH	-0.323	-37.314	-20.323	PASS
	HCH	-2.448	-38.051	-22.448	PASS

GFSK LCH Graphs

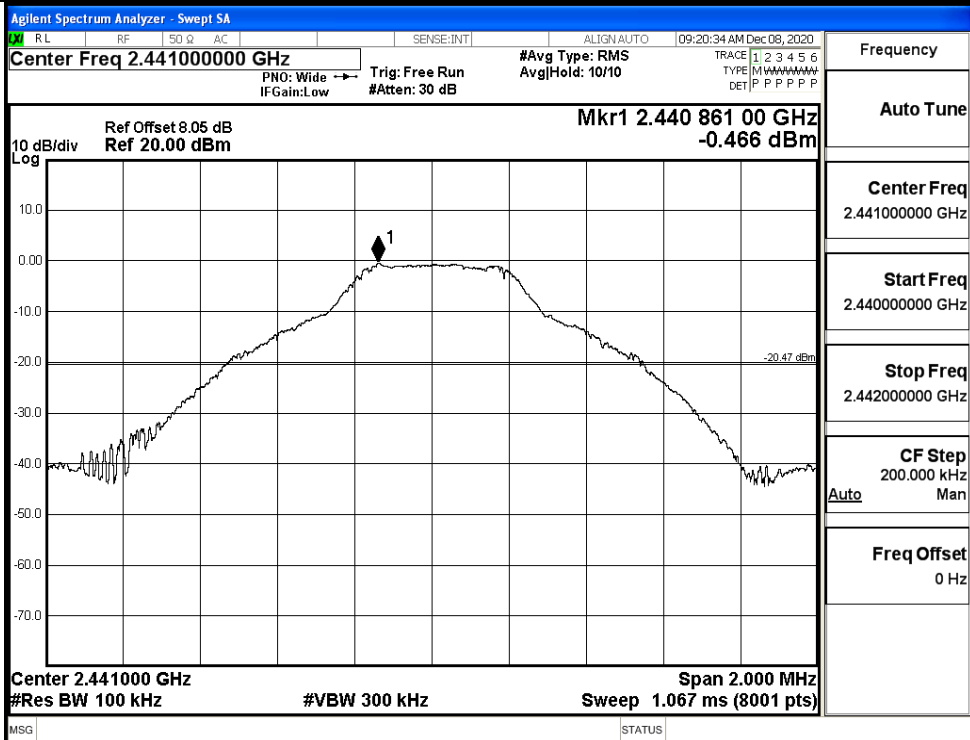


Puw

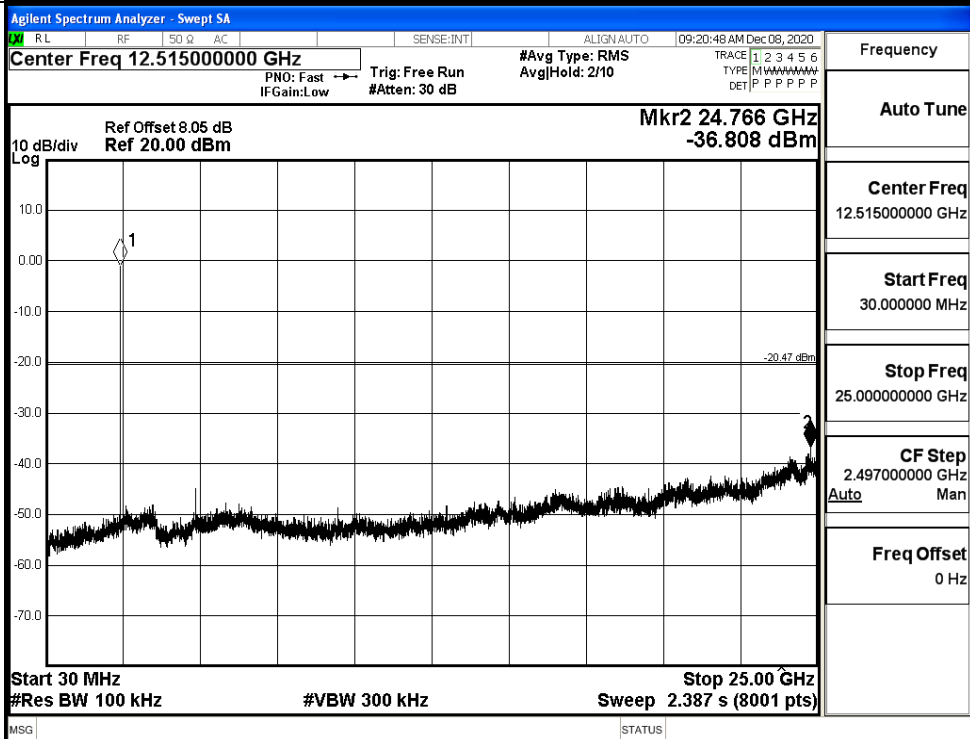


GFSK MCH Graphs

Pref

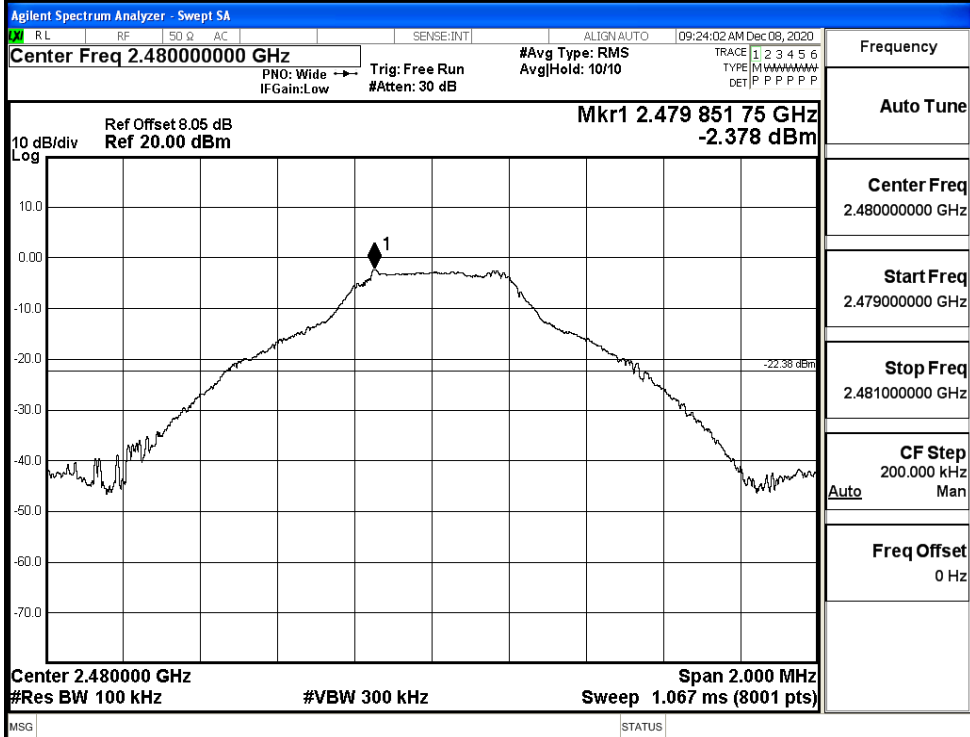


Puw

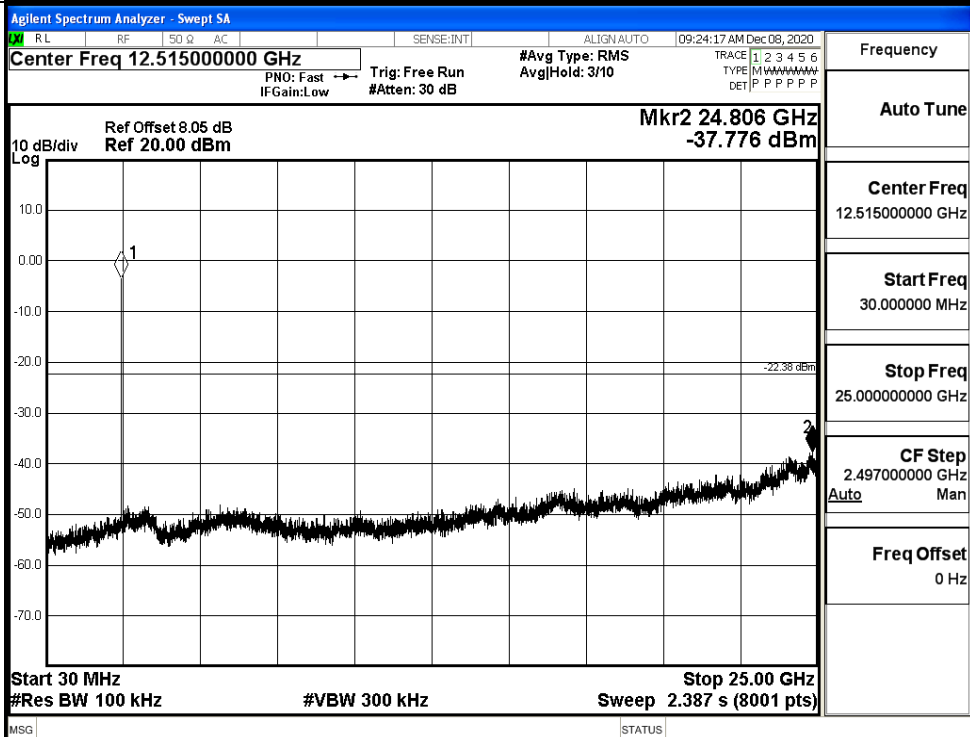


GFSK HCH Graphs

Pref

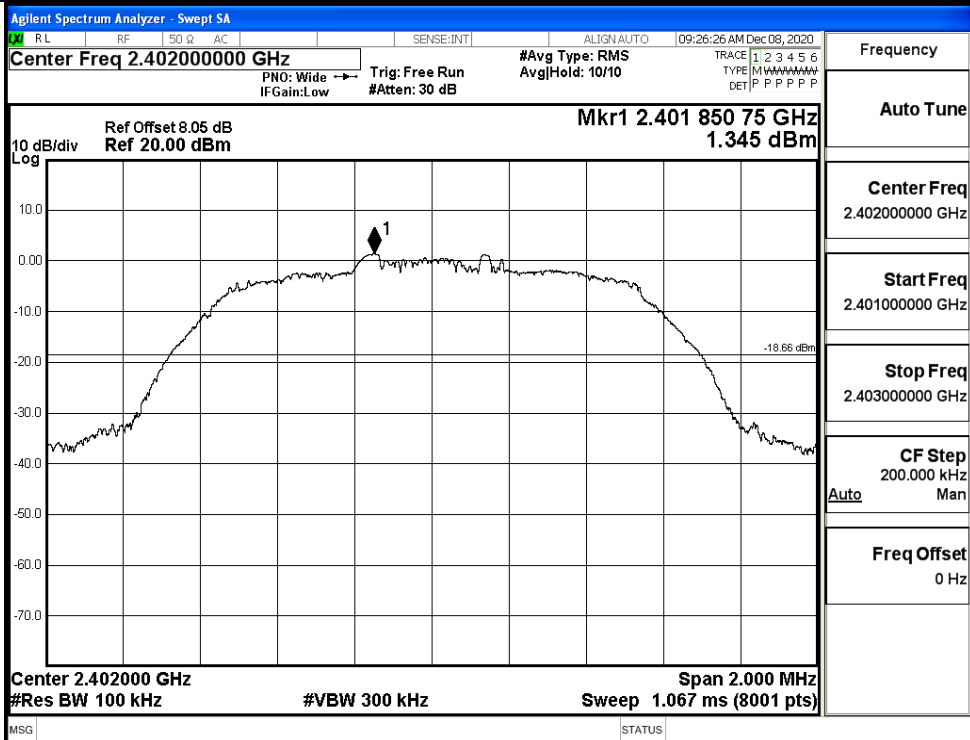


Puw

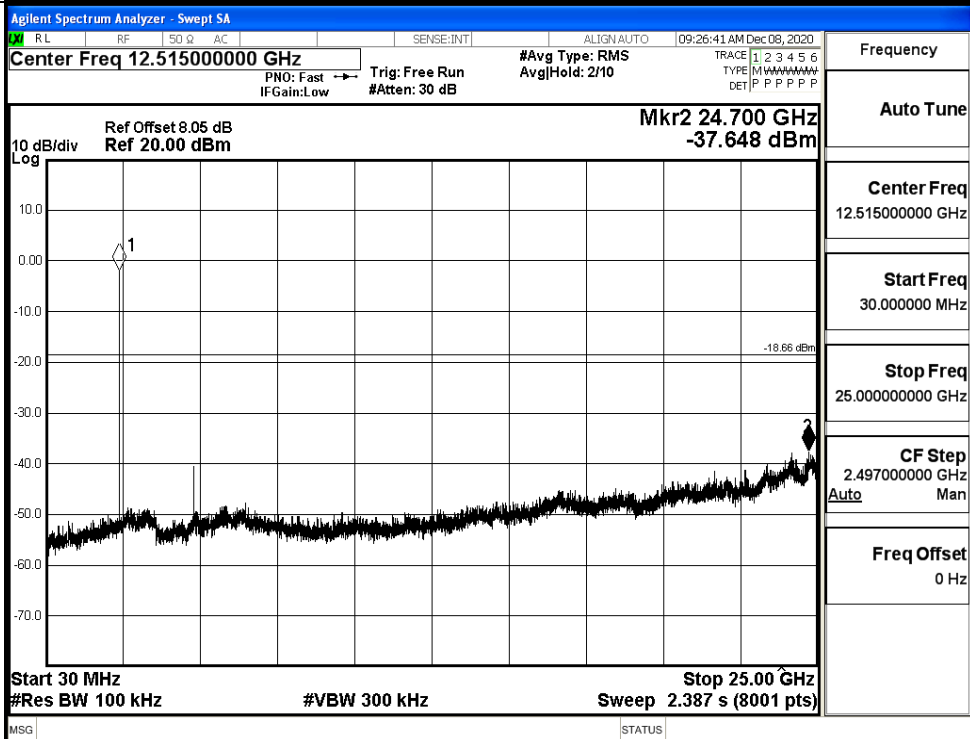


$\pi/4$ DQPSK LCH Graphs

Pref

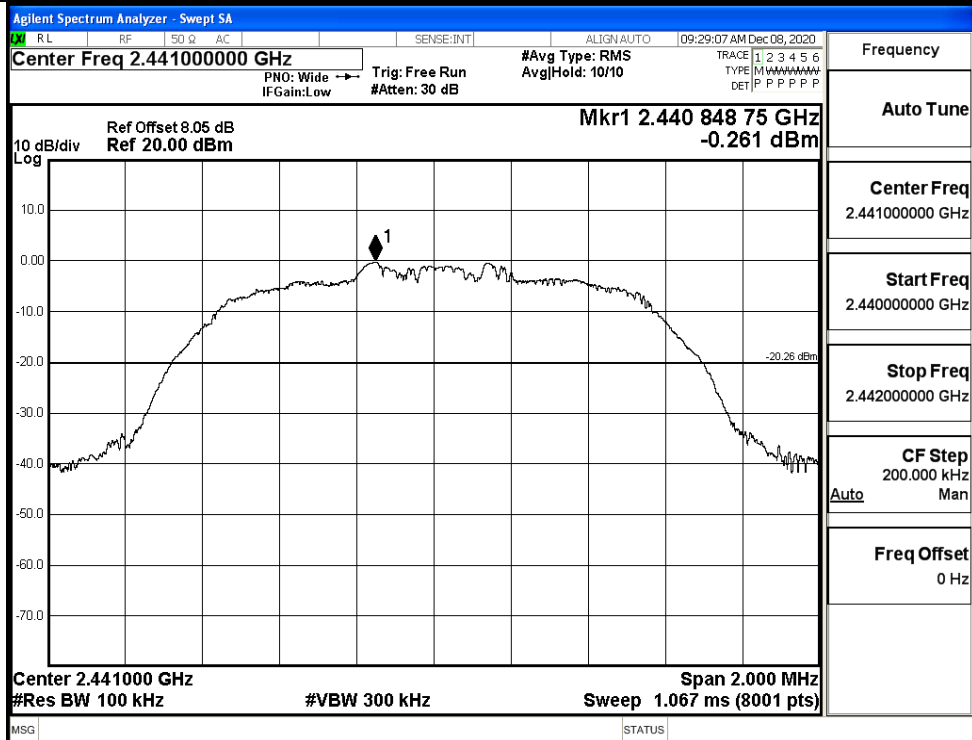


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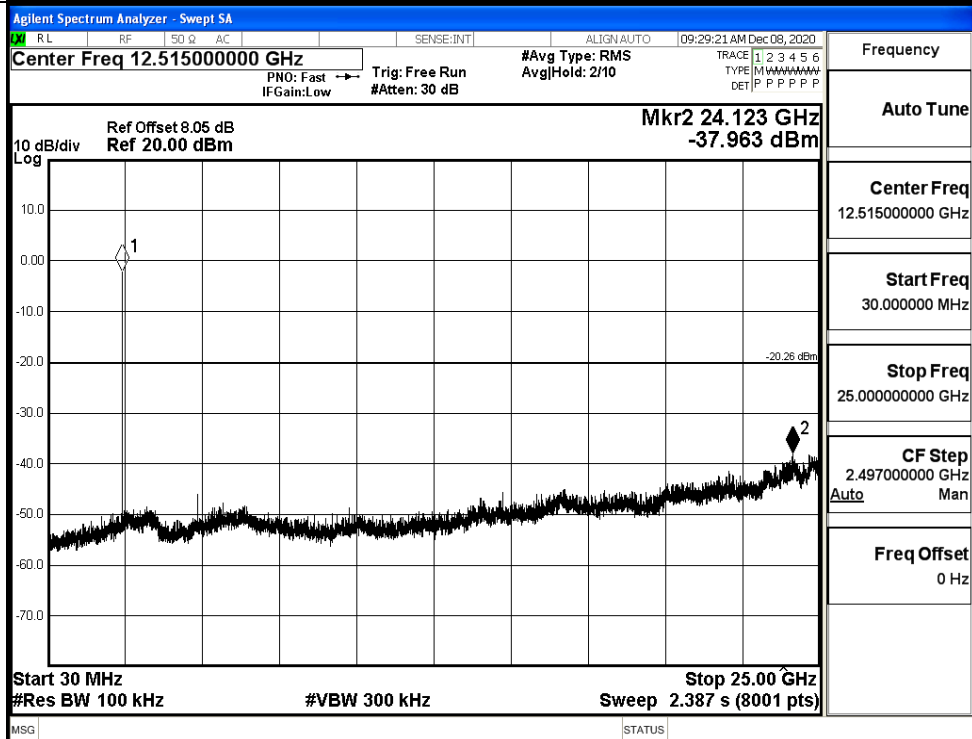


$\pi/4$ DQPSK MCH Graphs

Pref

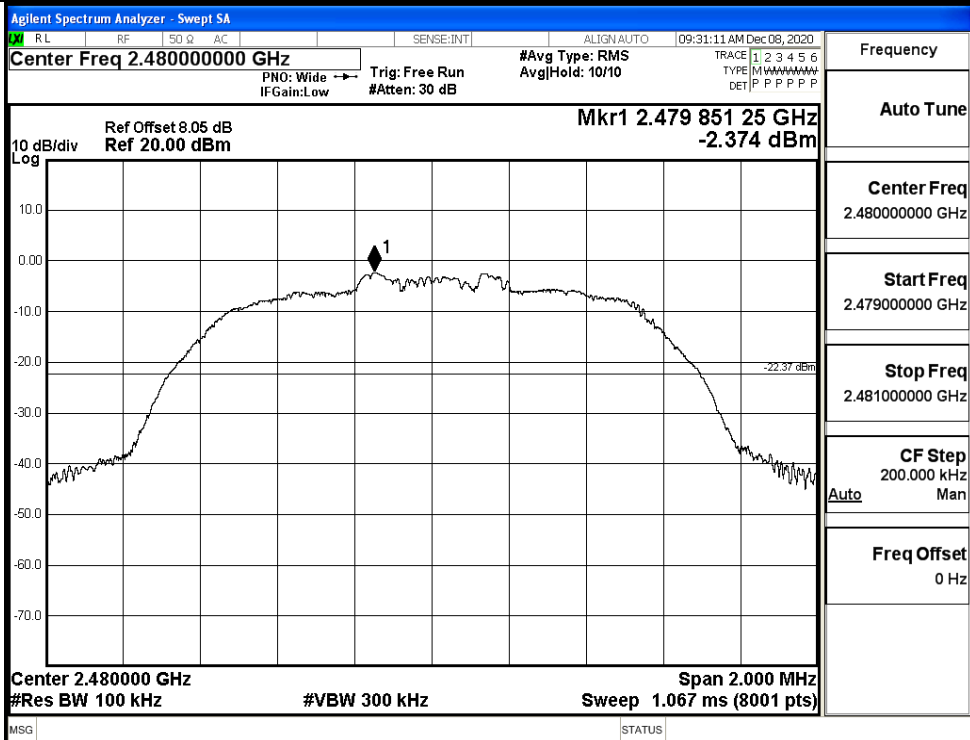


Puw

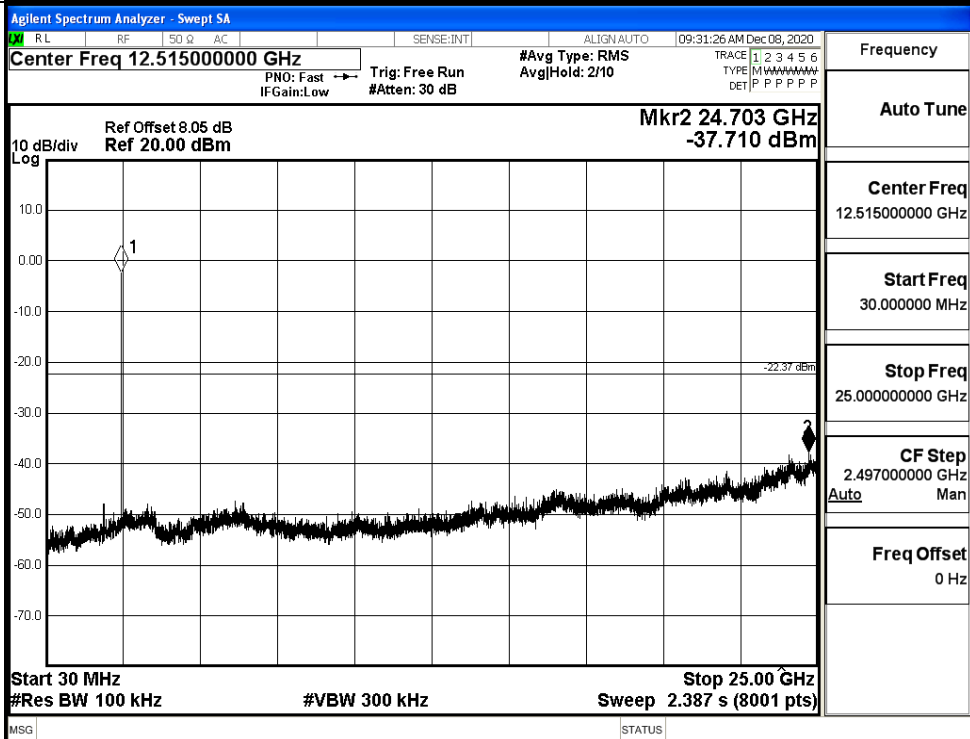


$\pi/4$ DQPSK HCH Graphs

Pref

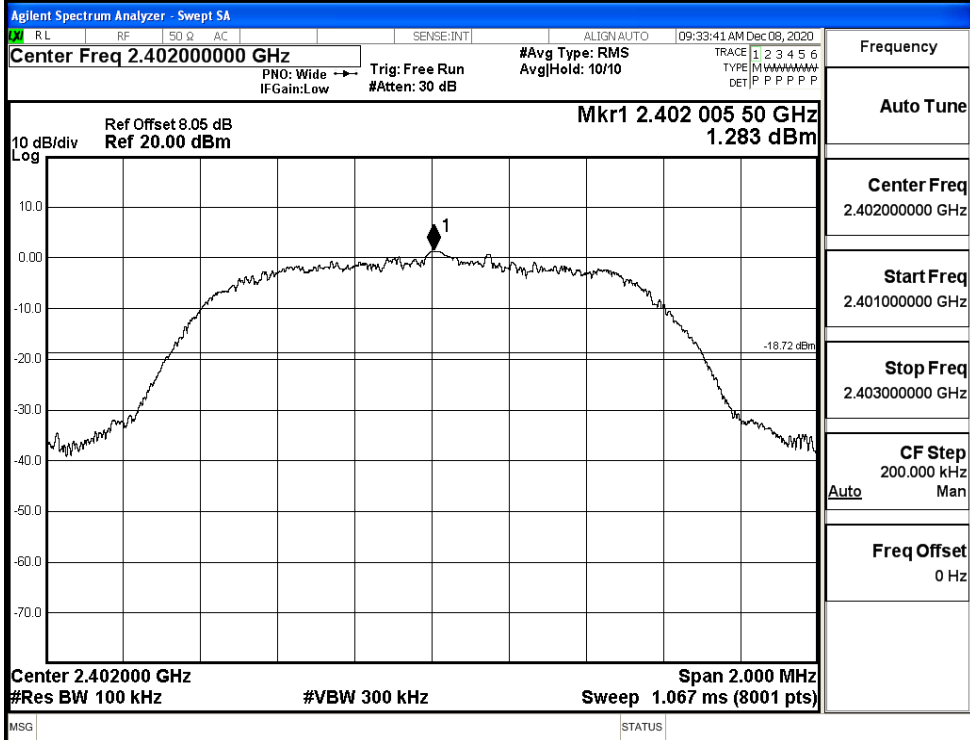


Puw

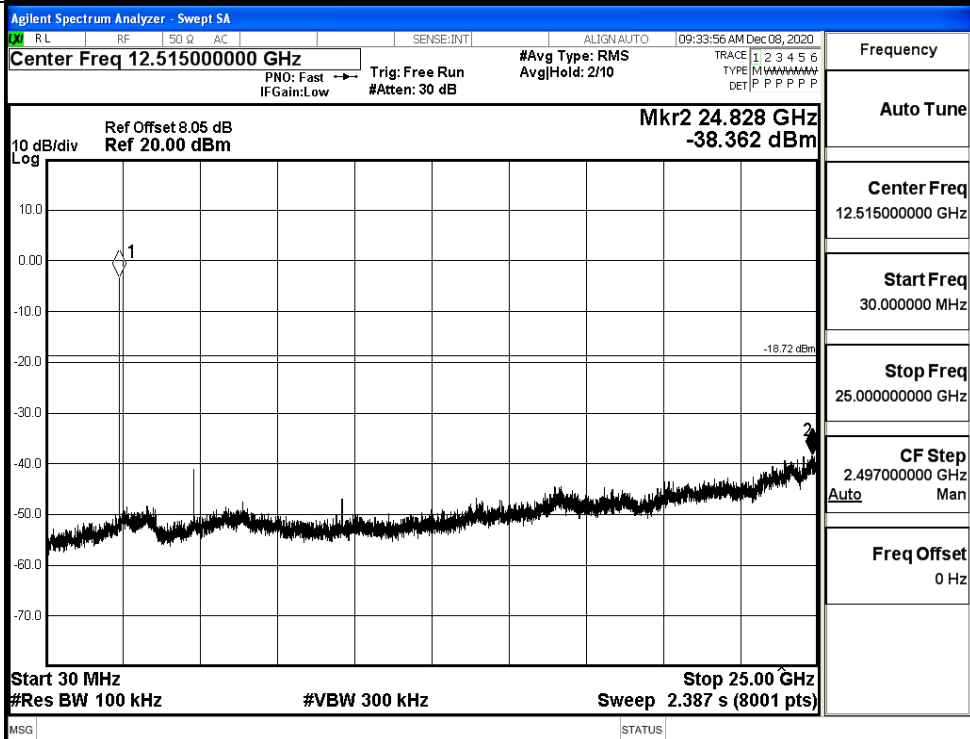


8DPSK LCH Graphs

Pref

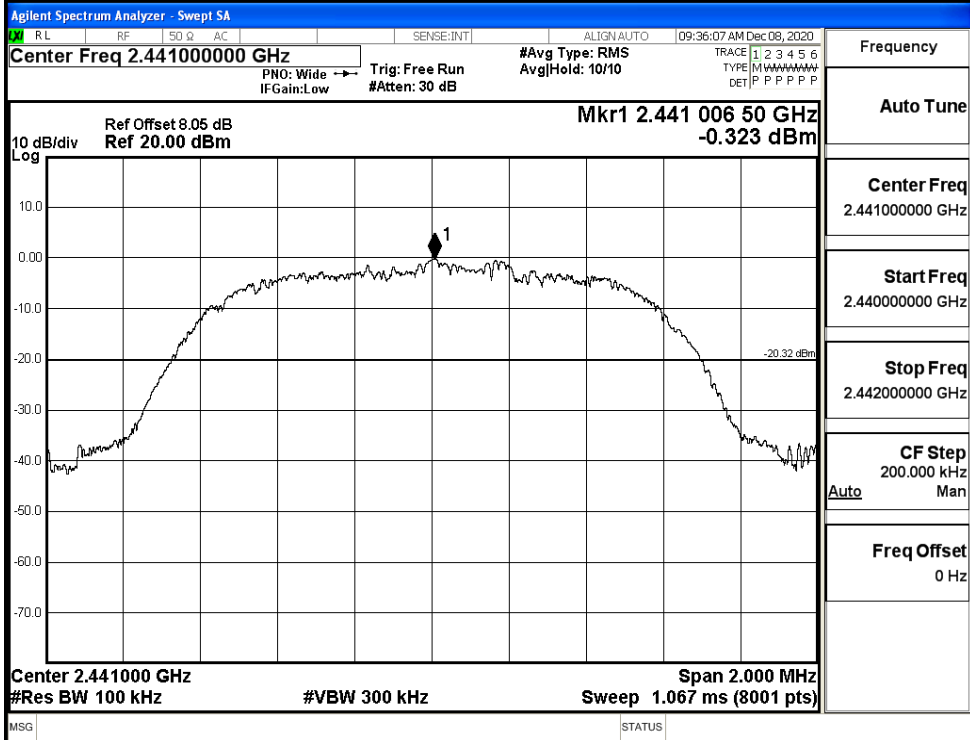


Puw

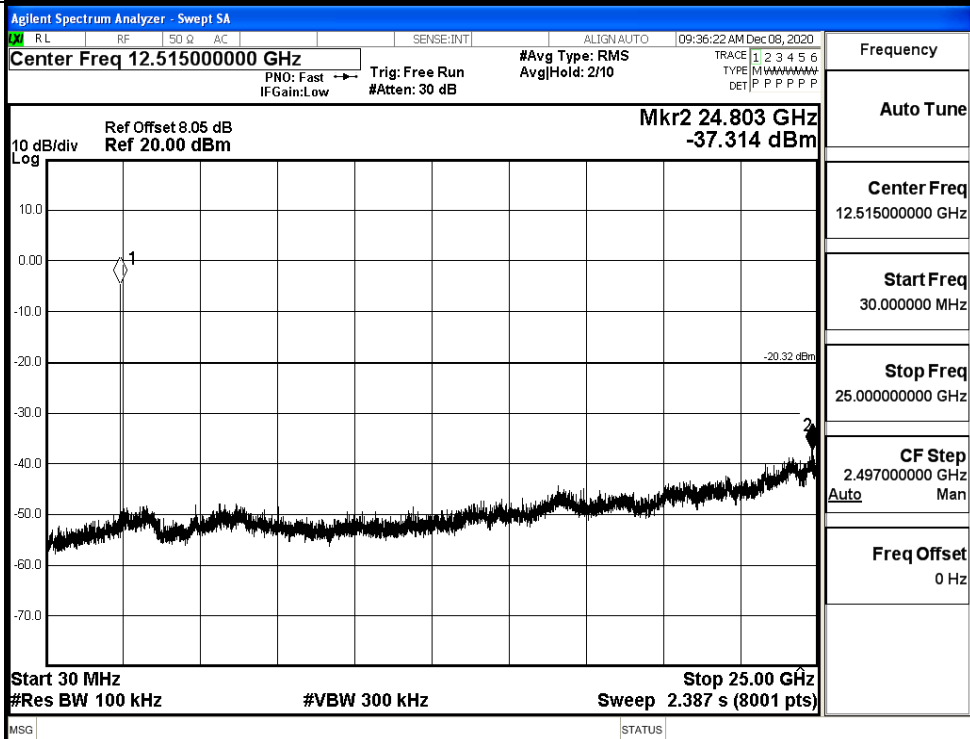


8DPSK MCH Graphs

Pref

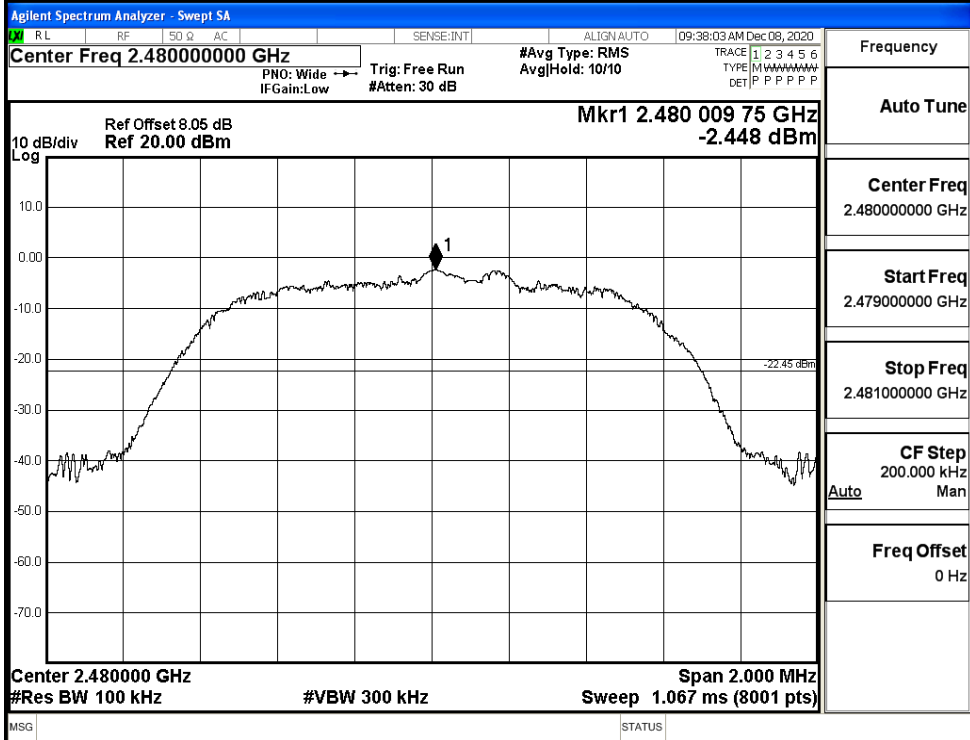


Puw

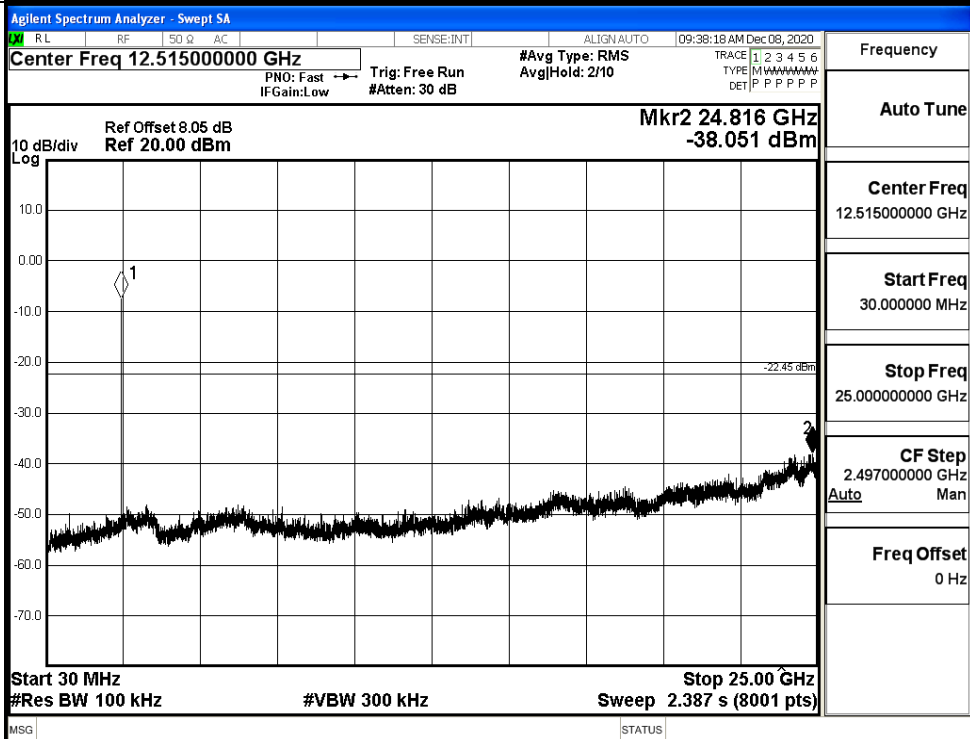


8DPSK_HCH Graphs

Pref



Puw

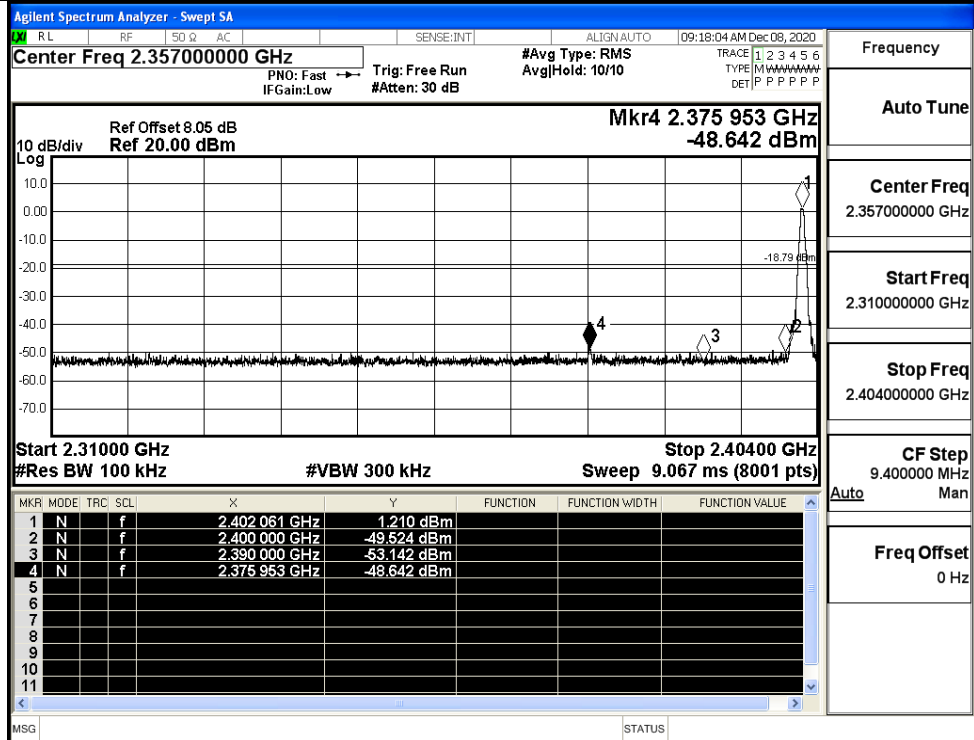


A.7 Band-edge for RF Conducted Emissions

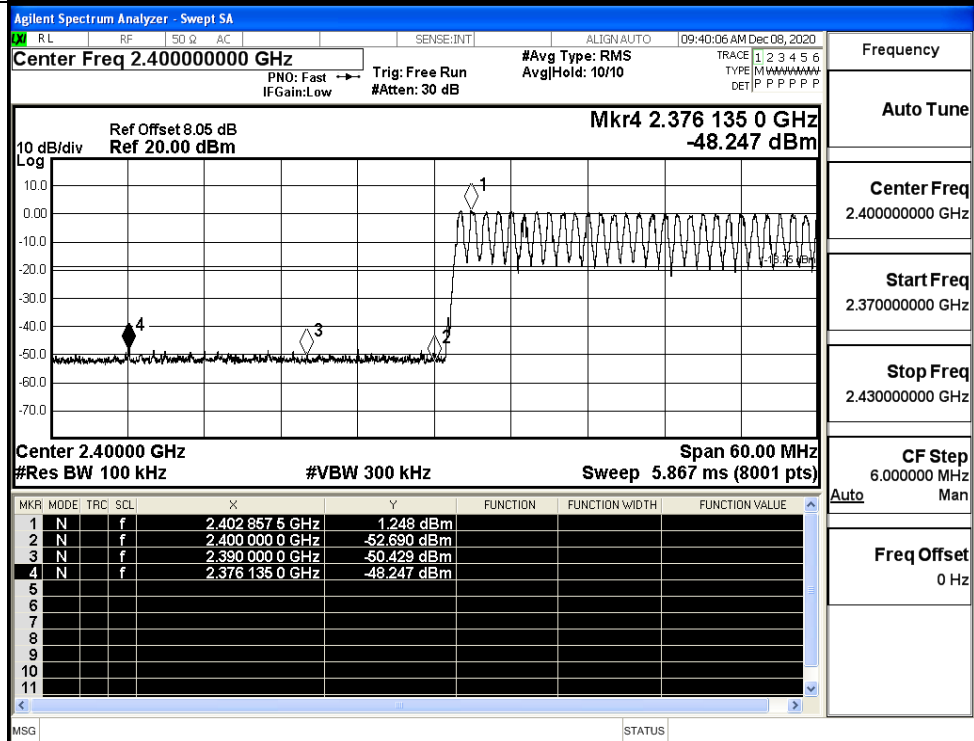
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	1.210	Off	-48.642	-18.79	PASS
			1.248	On	-48.247	-18.75	PASS
	HCH	2480	-2.367	Off	-49.764	-22.37	PASS
			-1.435	On	-49.001	-21.44	PASS
$\pi/4$ DQPSK	LCH	2402	0.928	Off	-49.318	-19.07	PASS
			1.153	On	-48.072	-18.85	PASS
	HCH	2480	-2.353	Off	-49.230	-22.35	PASS
			-1.599	On	-49.069	-21.6	PASS
8DPSK	LCH	2402	1.290	Off	-49.352	-18.71	PASS
			1.010	On	-47.918	-18.99	PASS
	HCH	2480	-2.431	Off	-48.736	-22.43	PASS
			-1.174	On	-48.226	-21.17	PASS

Test Graphs

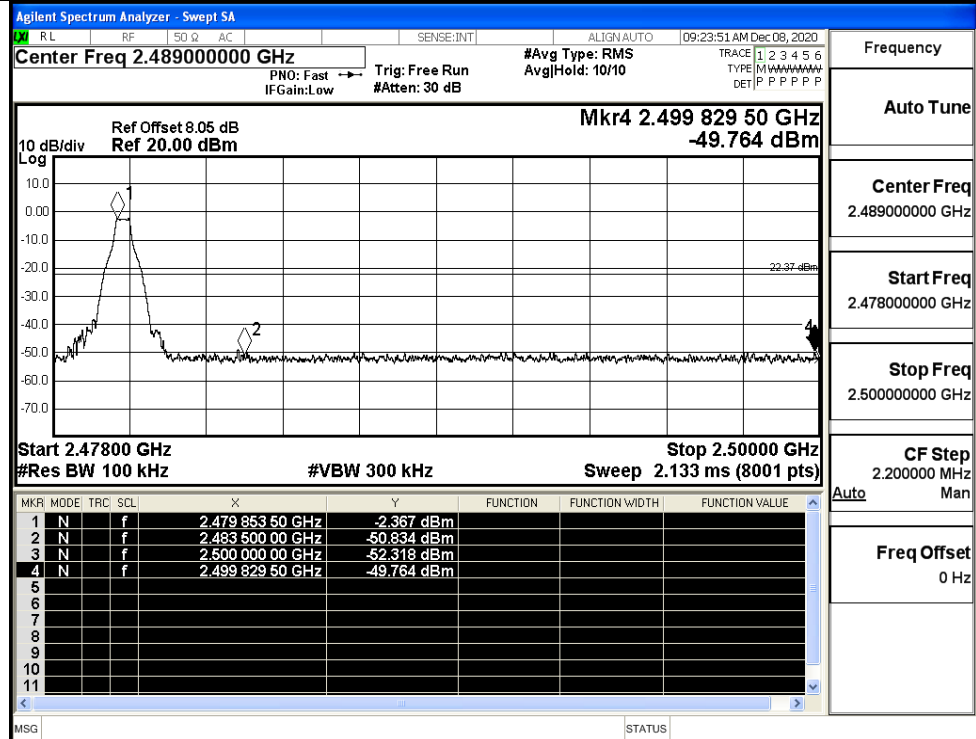
GFSK/LCH/No Hop



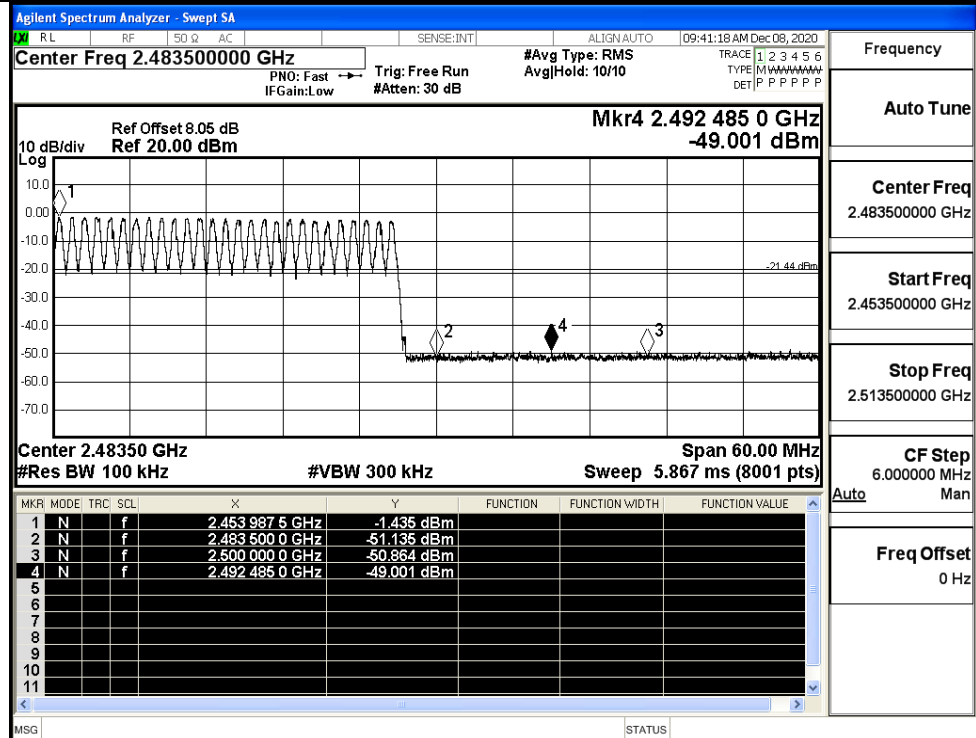
GFSK/LCH/Hop



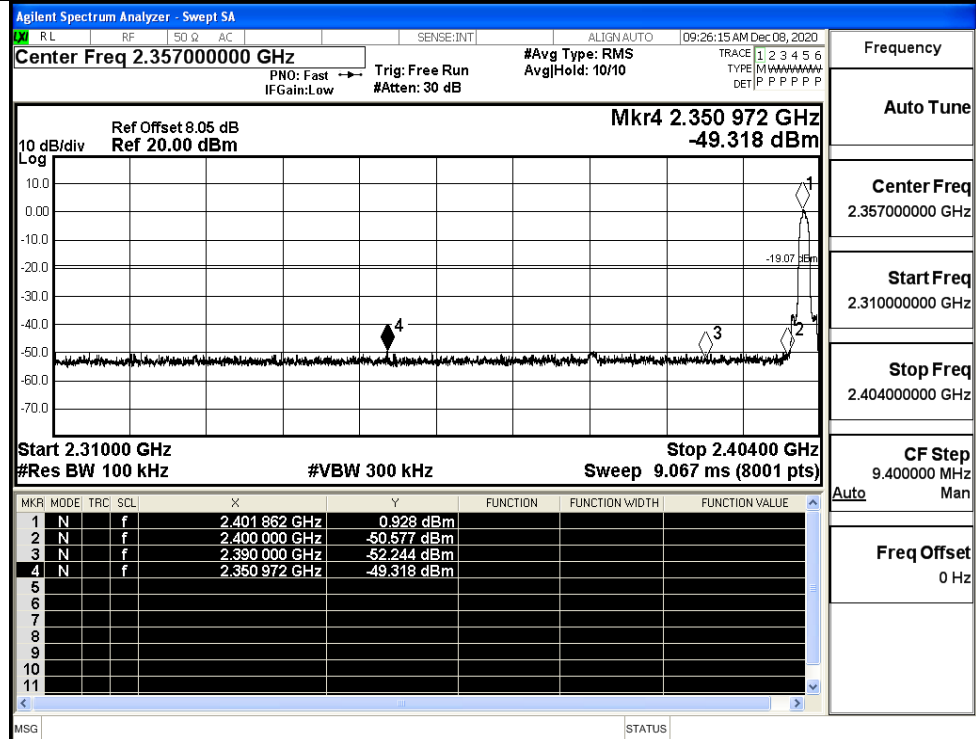
GFSK/HCH/No Hop



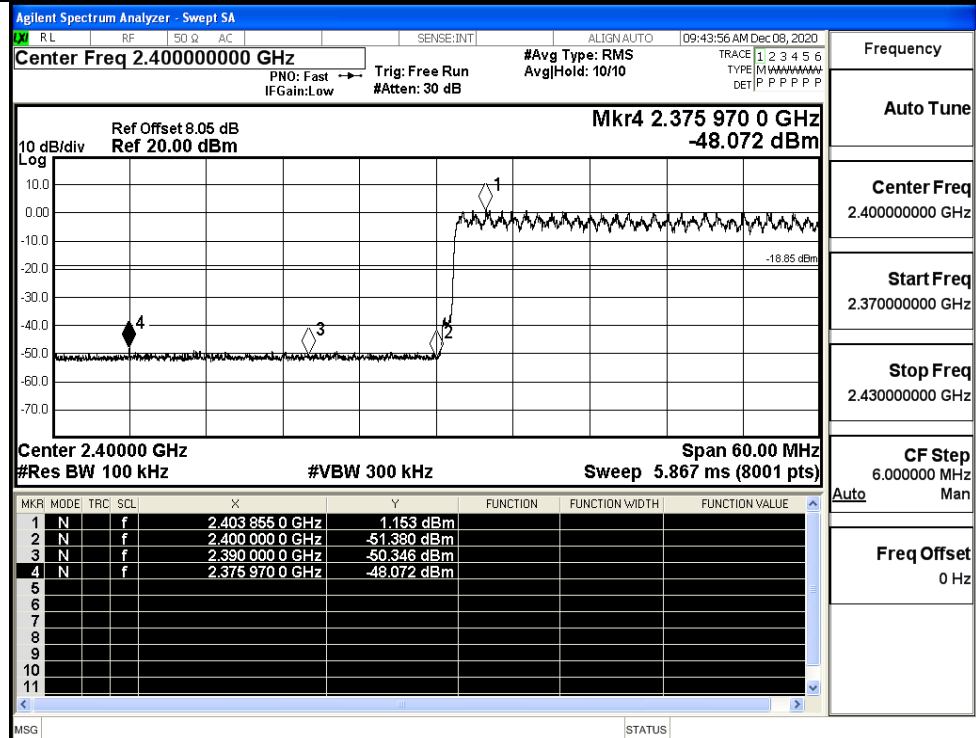
GFSK/HCH/Hop



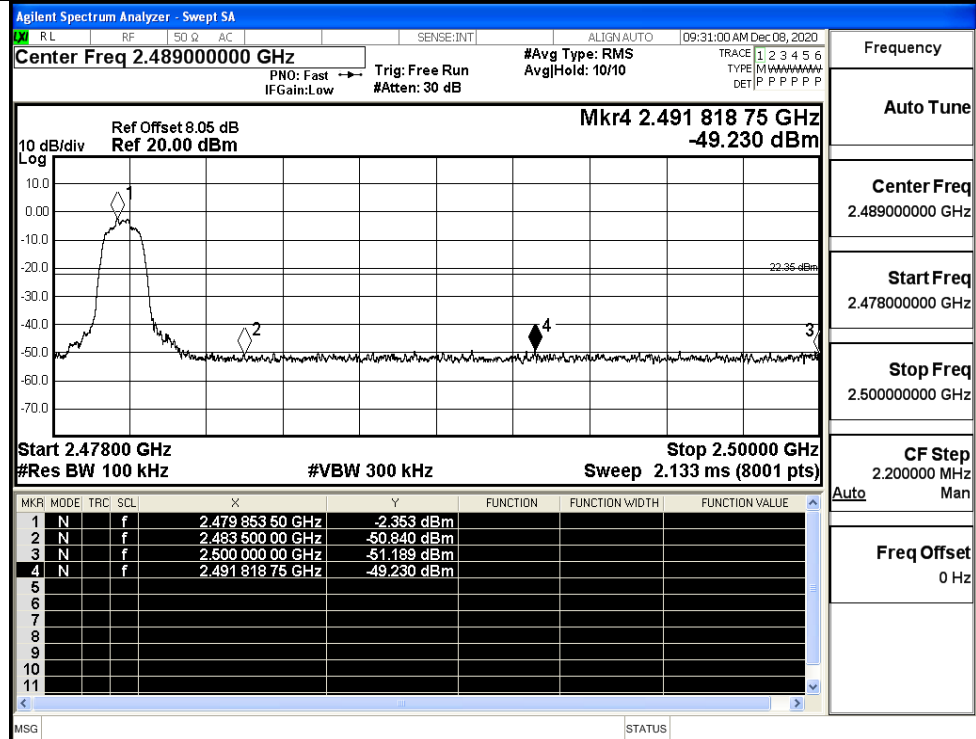
$\pi/4$ DQPSK/LCH/No
Hop



$\pi/4$ DQPSK/LCH/Hop



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



Frequency

Auto Tune

Center Freq
2.489000000 GHz

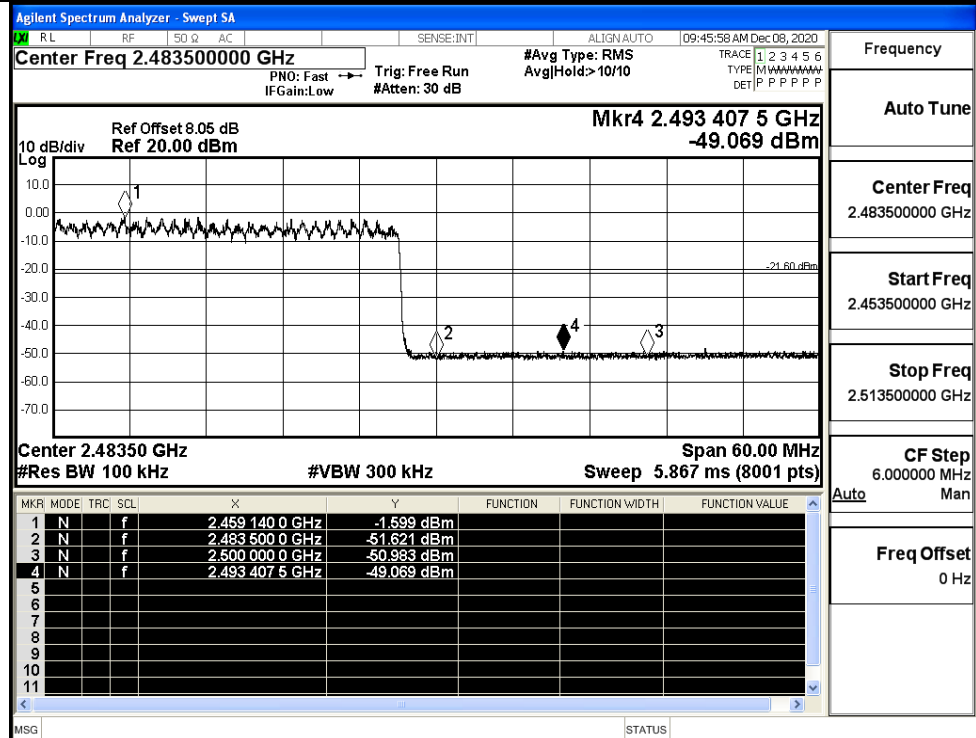
Start Freq
2.478000000 GHz

Stop Freq
2.500000000 GHz

CF Step
2.200000 MHz

Freq Offset
0 Hz

$\pi/4$ DQPSK/HCH/Hop



Frequency

Auto Tune

Center Freq
2.483500000 GHz

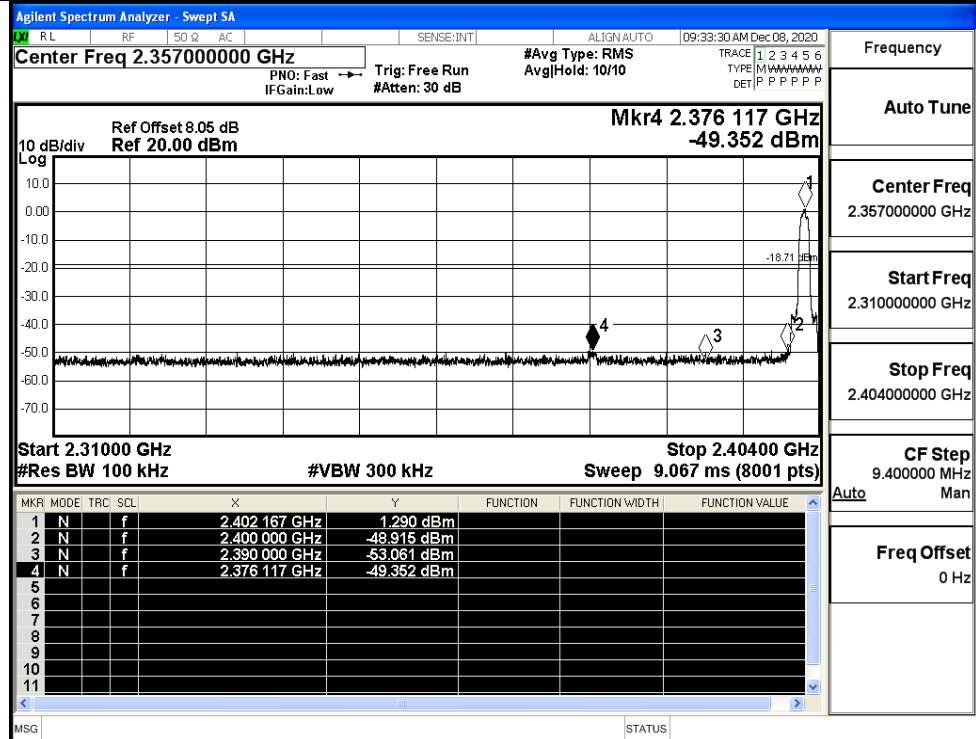
Start Freq
2.453500000 GHz

Stop Freq
2.513500000 GHz

CF Step
6.000000 MHz

Freq Offset
0 Hz

8DPSK/LCH/No Hop



Frequency

Auto Tune

Center Freq
2.357000000 GHz

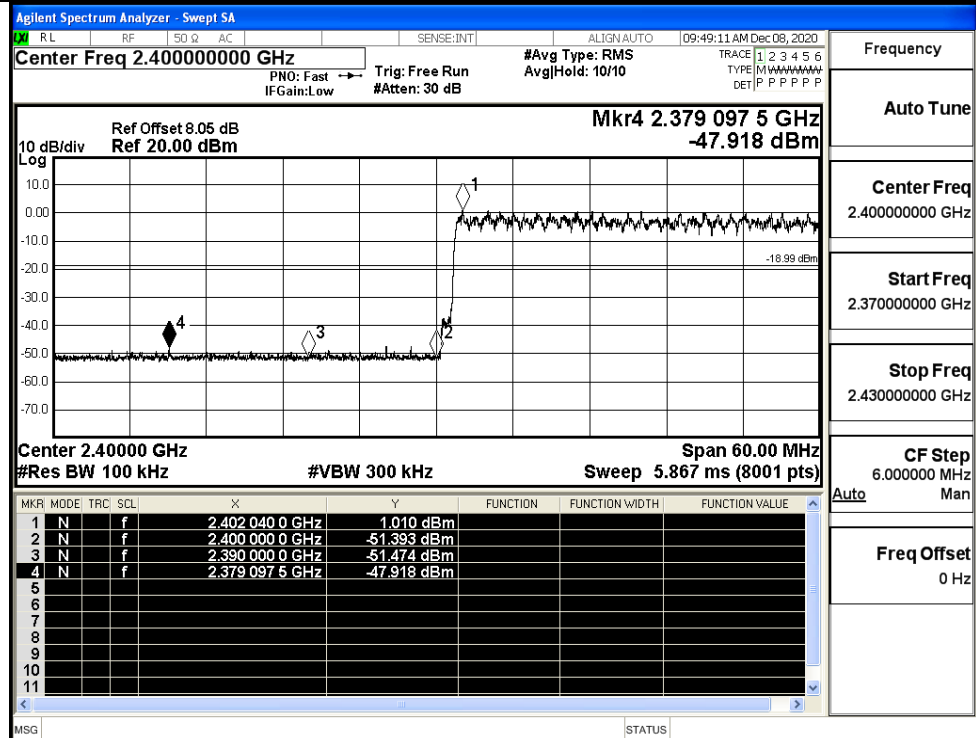
Start Freq
2.310000000 GHz

Stop Freq
2.404000000 GHz

CF Step
9.400000 MHz
Auto Man

Freq Offset
0 Hz

8DPSK/LCH/Hop



Frequency

Auto Tune

Center Freq
2.400000000 GHz

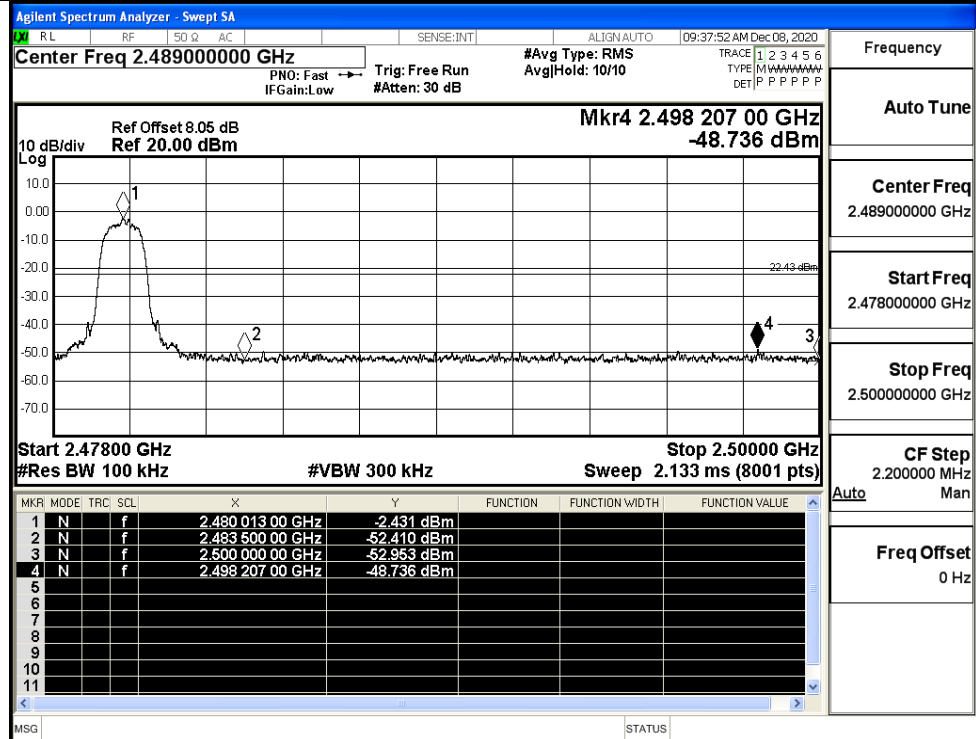
Start Freq
2.370000000 GHz

Stop Freq
2.430000000 GHz

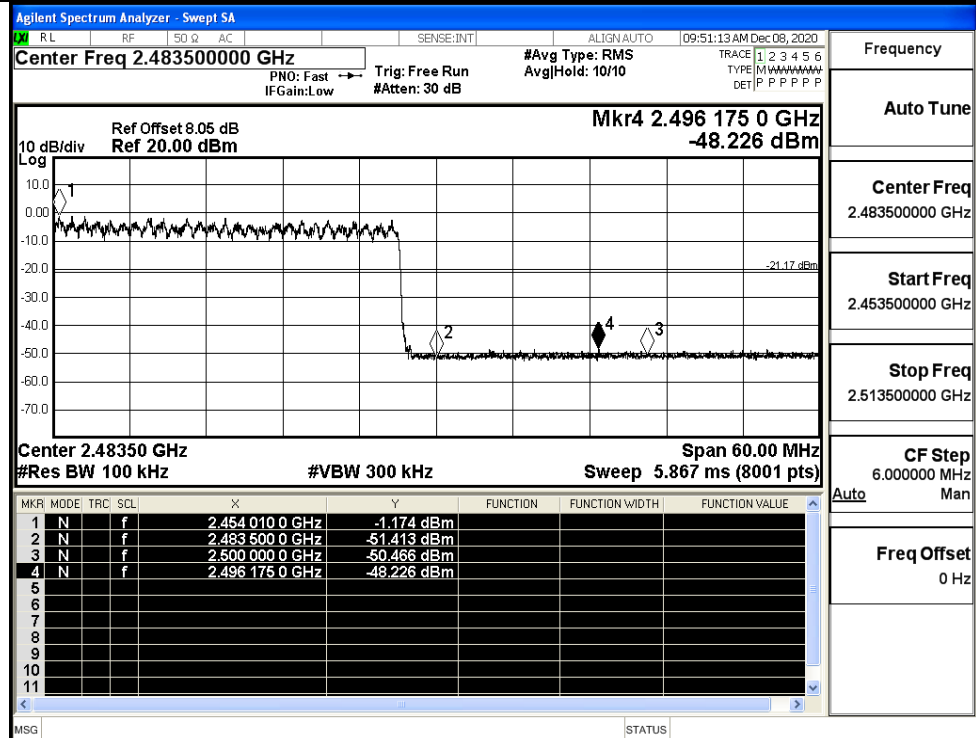
CF Step
6.000000 MHz
Auto Man

Freq Offset
0 Hz

8DPSK/HCH/No Hop



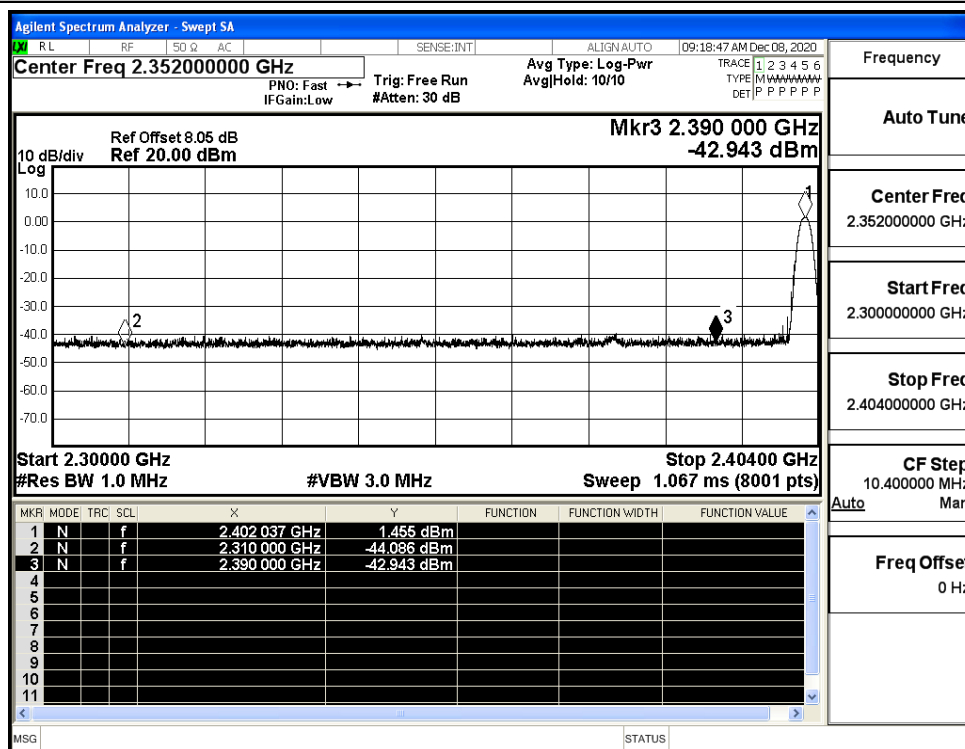
8DPSK/HCH/Hop



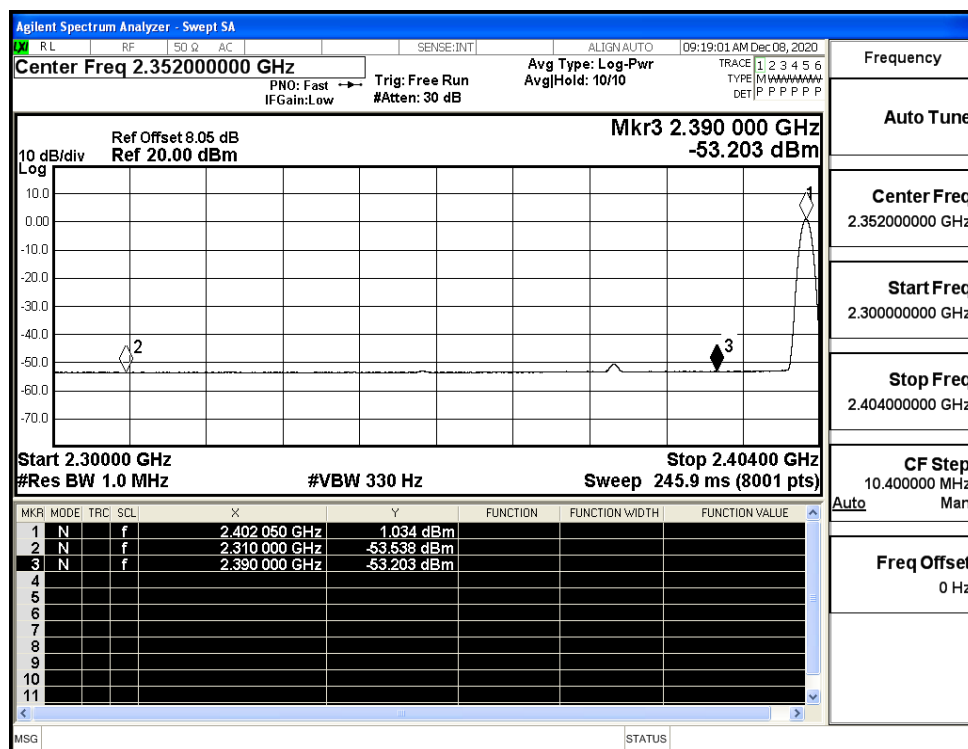
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-44.09	4.0	0	55.14	PEAK	74	PASS
	Off	2310.0	-53.54	4.0	0	45.69	AV	54	PASS
	Off	2390.0	-42.94	4.0	0	56.29	PEAK	74	PASS
	Off	2390.0	-53.20	4.0	0	46.03	AV	54	PASS
	Off	2483.5	-42.64	4.0	0	56.59	PEAK	74	PASS
	Off	2483.5	-52.64	4.0	0	46.59	AV	54	PASS
	Off	2500.0	-42.76	4.0	0	56.47	PEAK	74	PASS
	Off	2500.0	-52.53	4.0	0	46.70	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-44.04	4.0	0	55.19	PEAK	74	PASS
	Off	2310.0	-53.65	4.0	0	45.58	AV	54	PASS
	Off	2390.0	-42.61	4.0	0	56.62	PEAK	74	PASS
	Off	2390.0	-53.07	4.0	0	46.16	AV	54	PASS
	Off	2483.5	-43.01	4.0	0	56.22	PEAK	74	PASS
	Off	2483.5	-52.61	4.0	0	46.62	AV	54	PASS
	Off	2500.0	-43.14	4.0	0	56.09	PEAK	74	PASS
	Off	2500.0	-52.50	4.0	0	46.73	AV	54	PASS
8DPSK	Off	2310.0	-42.90	4.0	0	56.33	PEAK	74	PASS
	Off	2310.0	-53.66	4.0	0	45.57	AV	54	PASS
	Off	2390.0	-43.36	4.0	0	55.87	PEAK	74	PASS
	Off	2390.0	-53.20	4.0	0	46.03	AV	54	PASS
	Off	2483.5	-42.68	4.0	0	56.55	PEAK	74	PASS
	Off	2483.5	-52.55	4.0	0	46.68	AV	54	PASS
	Off	2500.0	-41.40	4.0	0	57.83	PEAK	74	PASS
	Off	2500.0	-52.56	4.0	0	46.67	AV	54	PASS

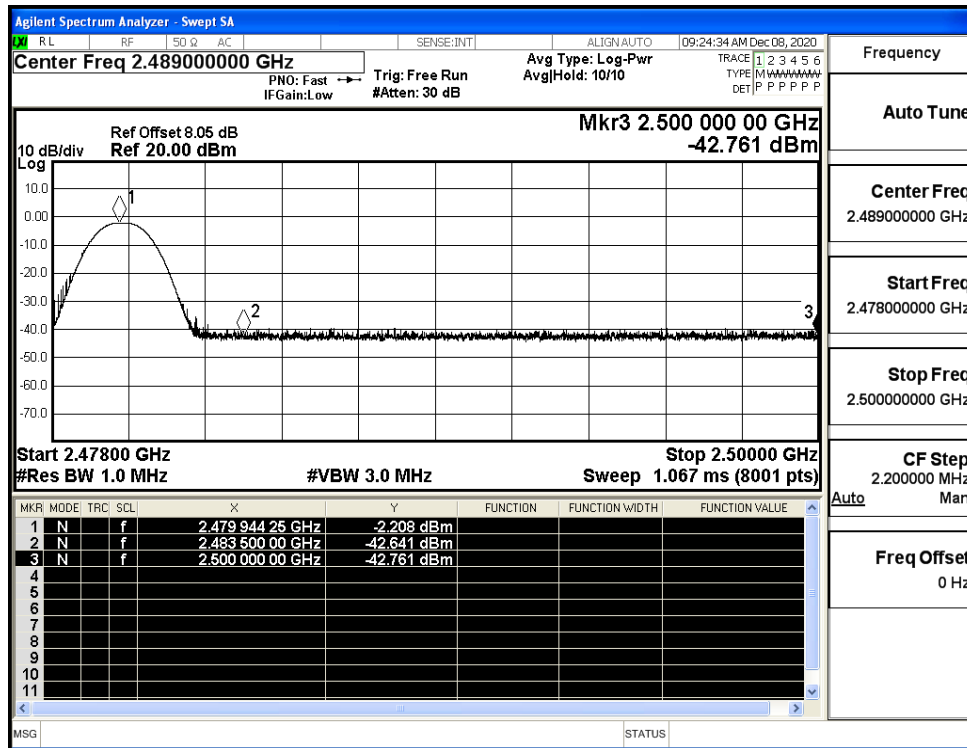
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



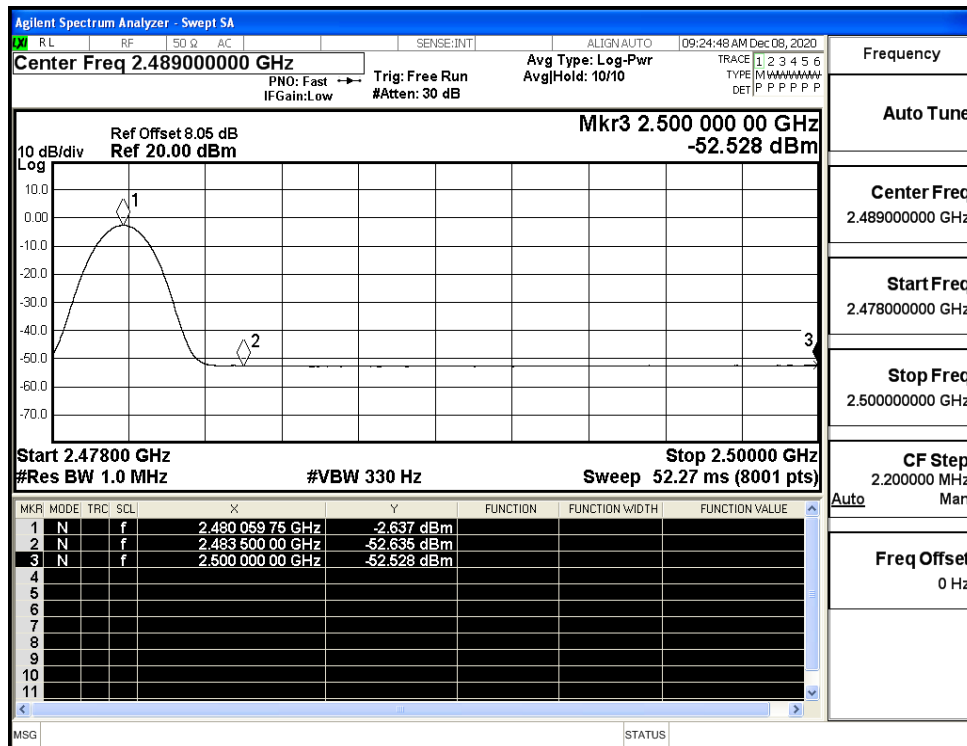
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)



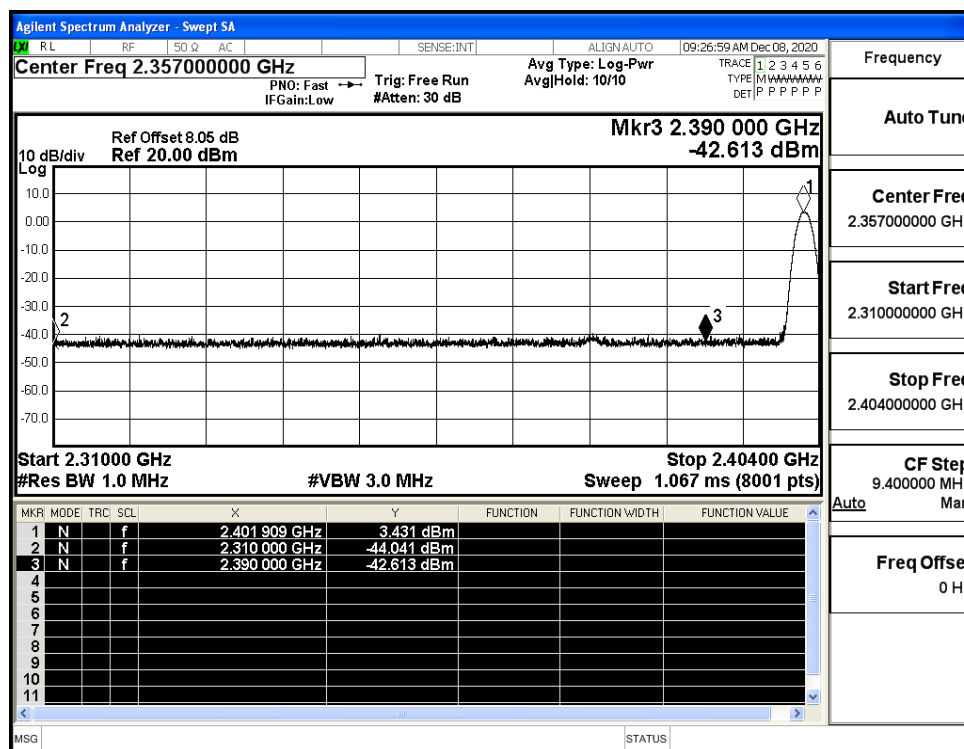
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)



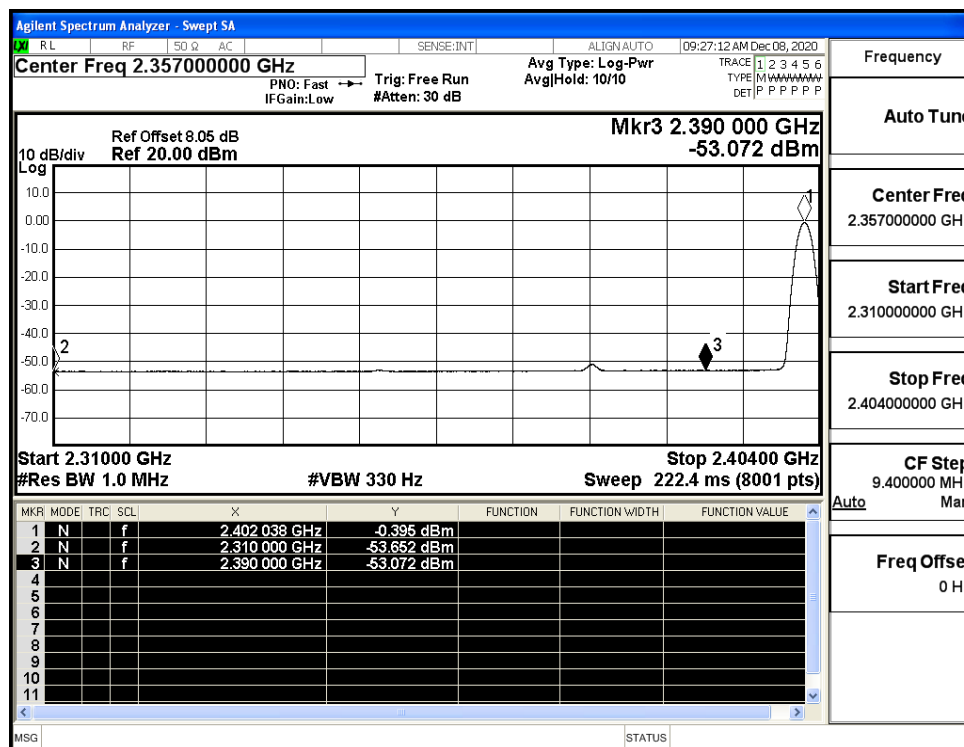
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)



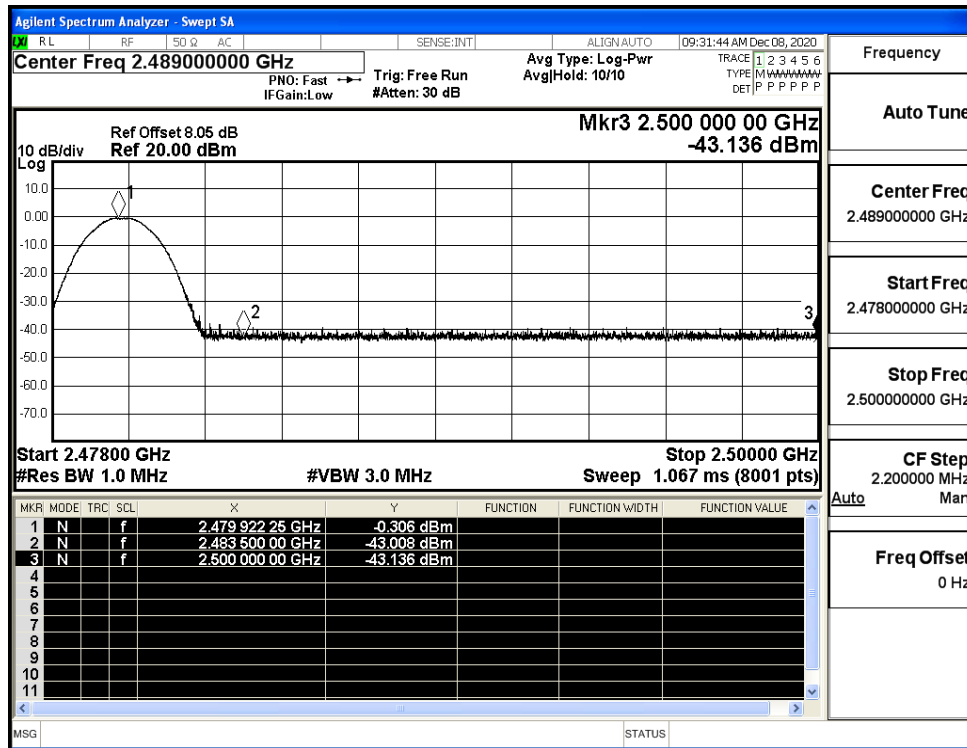
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)



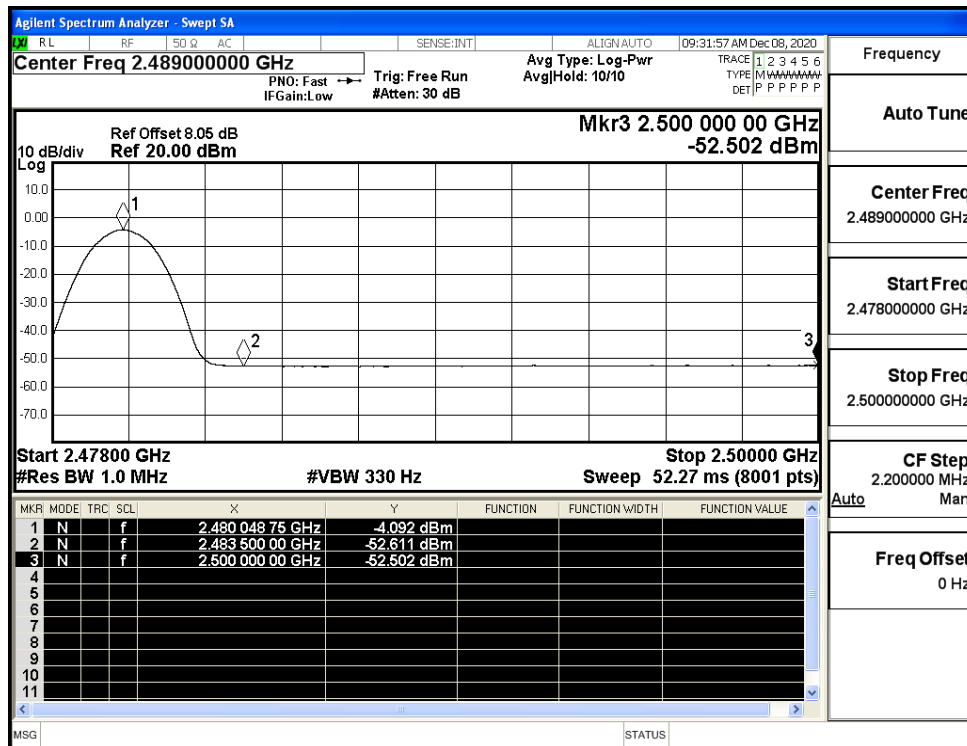
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (Low Channel)



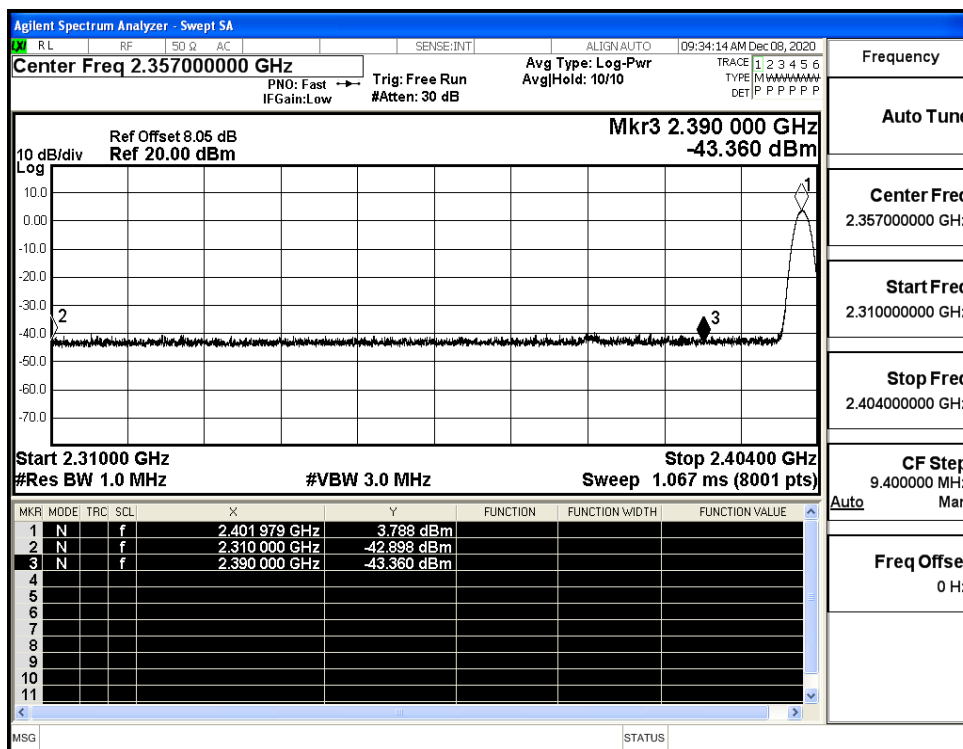
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (High Channel)



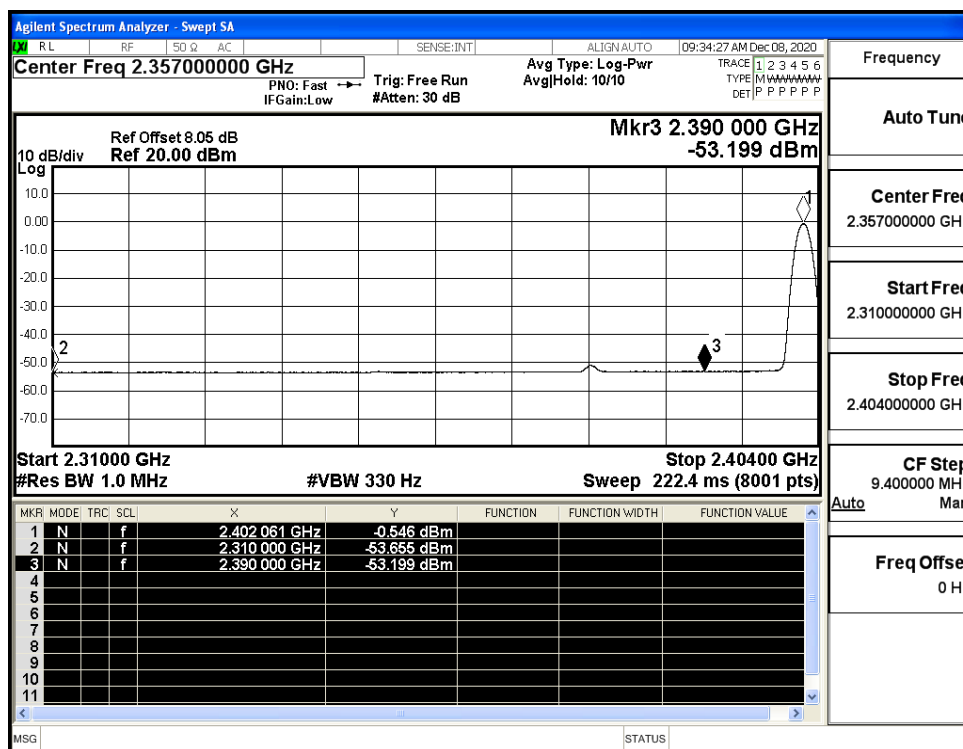
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (High Channel)



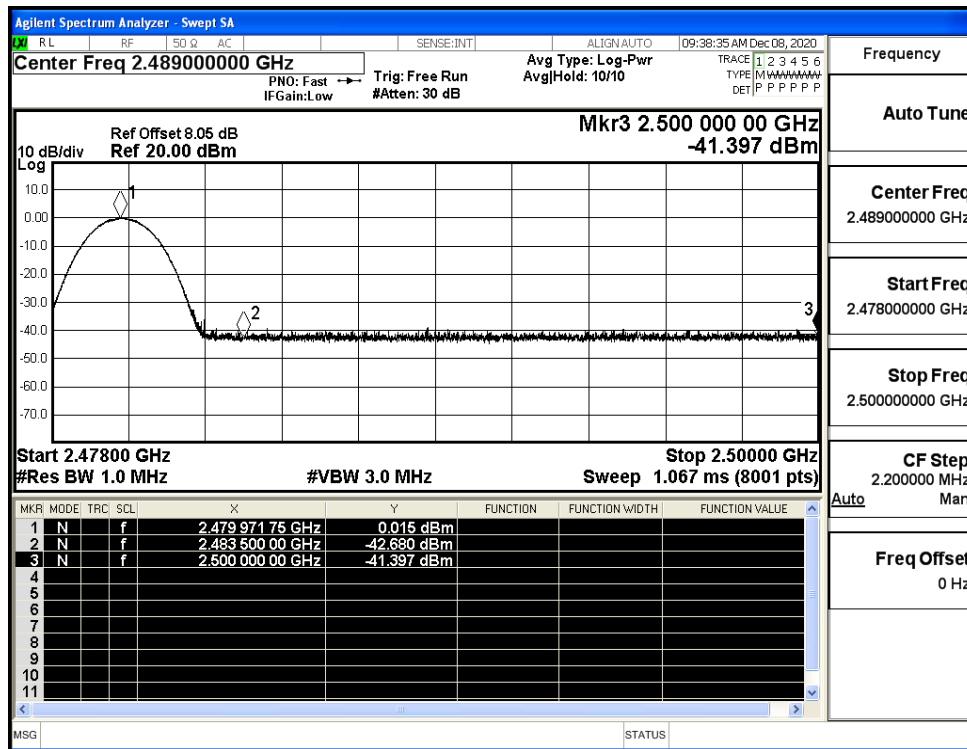
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)

