

Appendix A

RF Test Data for BT V4.0 (BDR/EDR) (Conducted Measurement)

Product Name: TABLET PC

Trade Mark: FUSION5

Test Model: FWIN232 Plus

Environmental Conditions

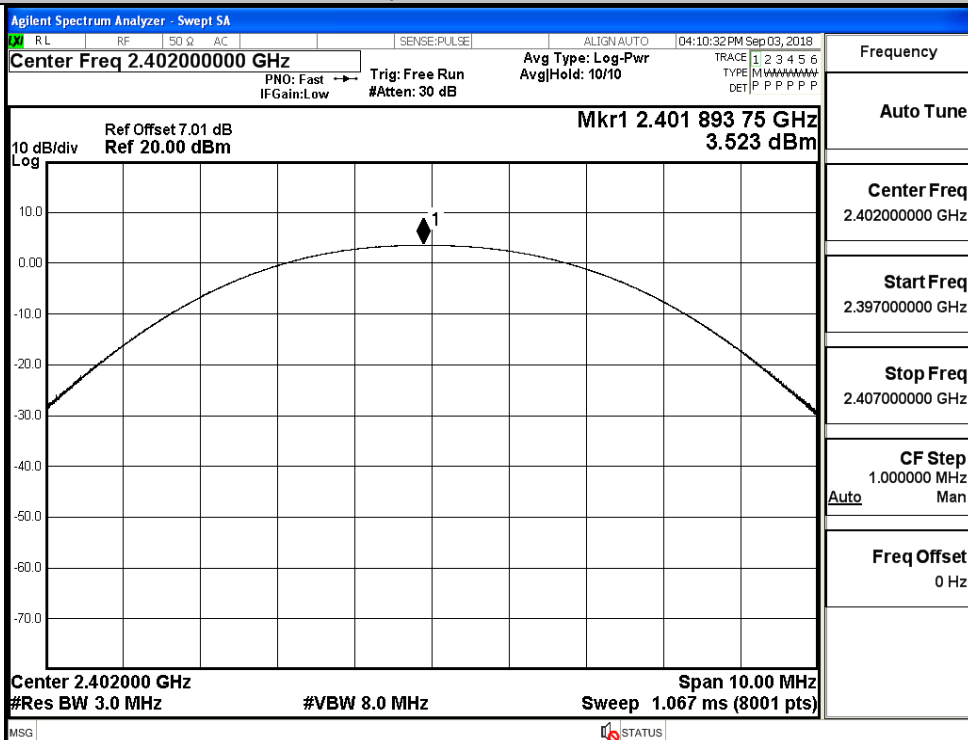
Temperature:	24.5 ° C
Relative Humidity:	54.2%
ATM Pressure:	100.0 kPa
Test Engineer:	Tom Liu
Supervised by:	Jayden Zhuo

A.1 Maximum Conducted Peak Output Power

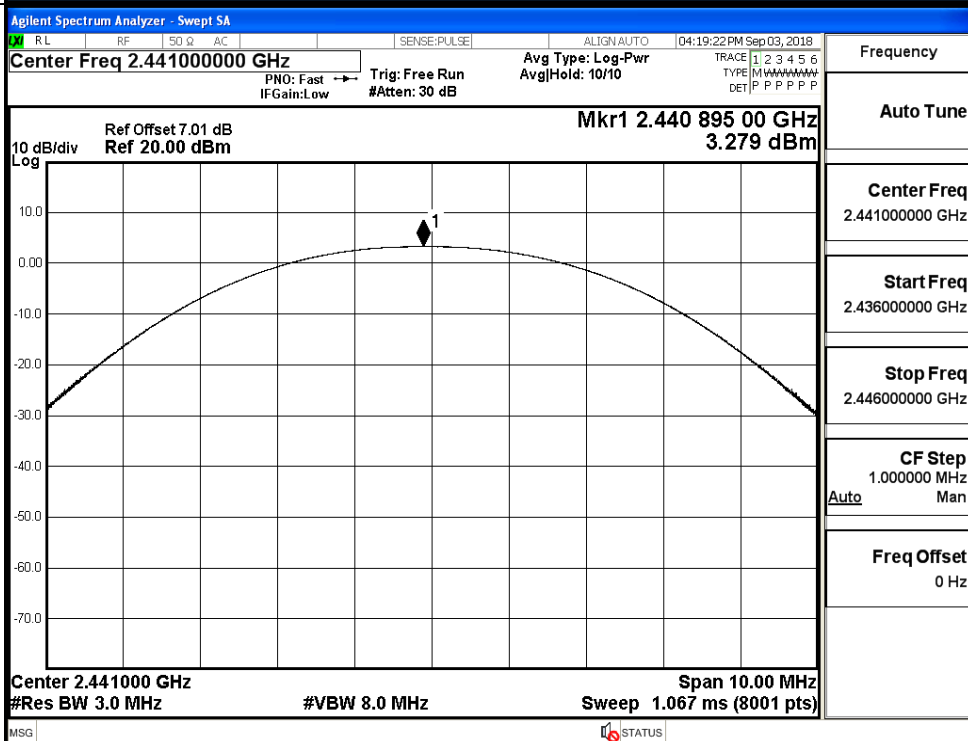
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	3.523	21	PASS
	MCH	3.279	21	PASS
	HCH	3.188	21	PASS
$\pi/4$ DQPSK	LCH	2.615	21	PASS
	MCH	2.555	21	PASS
	HCH	2.413	21	PASS
8DPSK	LCH	2.740	21	PASS
	MCH	2.642	21	PASS
	HCH	2.519	21	PASS

Test Graphs

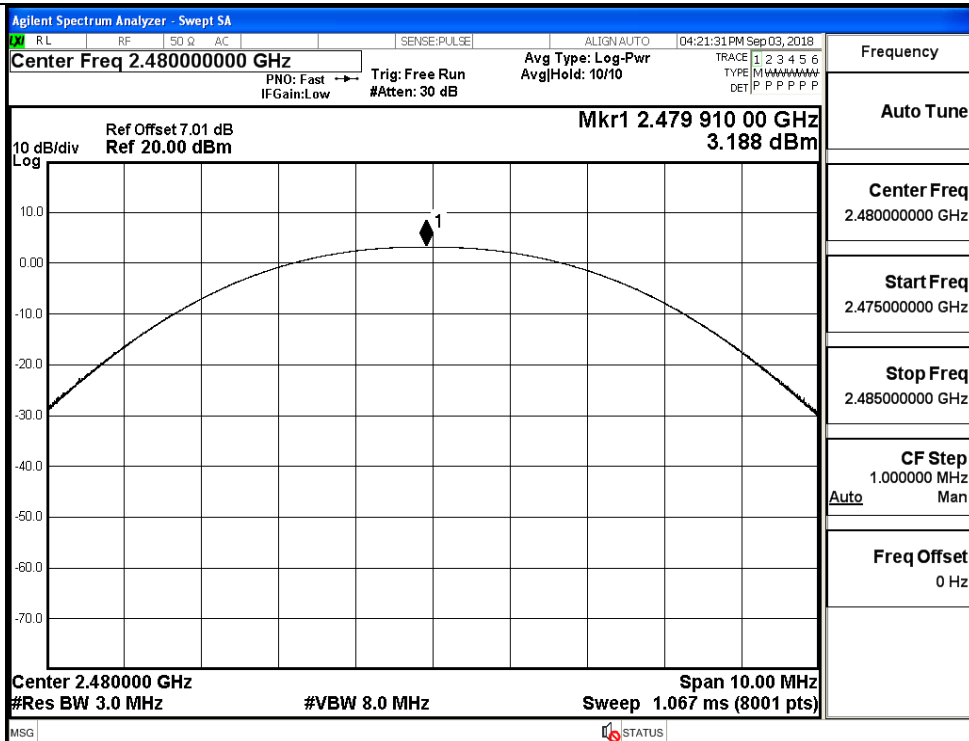
GFSK/LCH



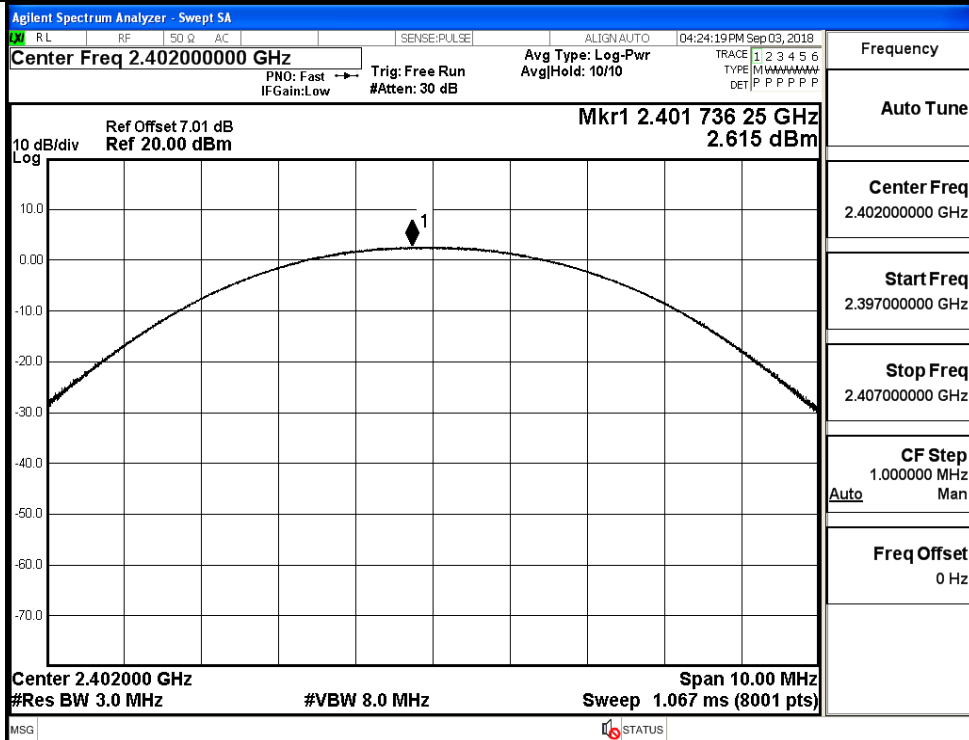
GFSK/MCH

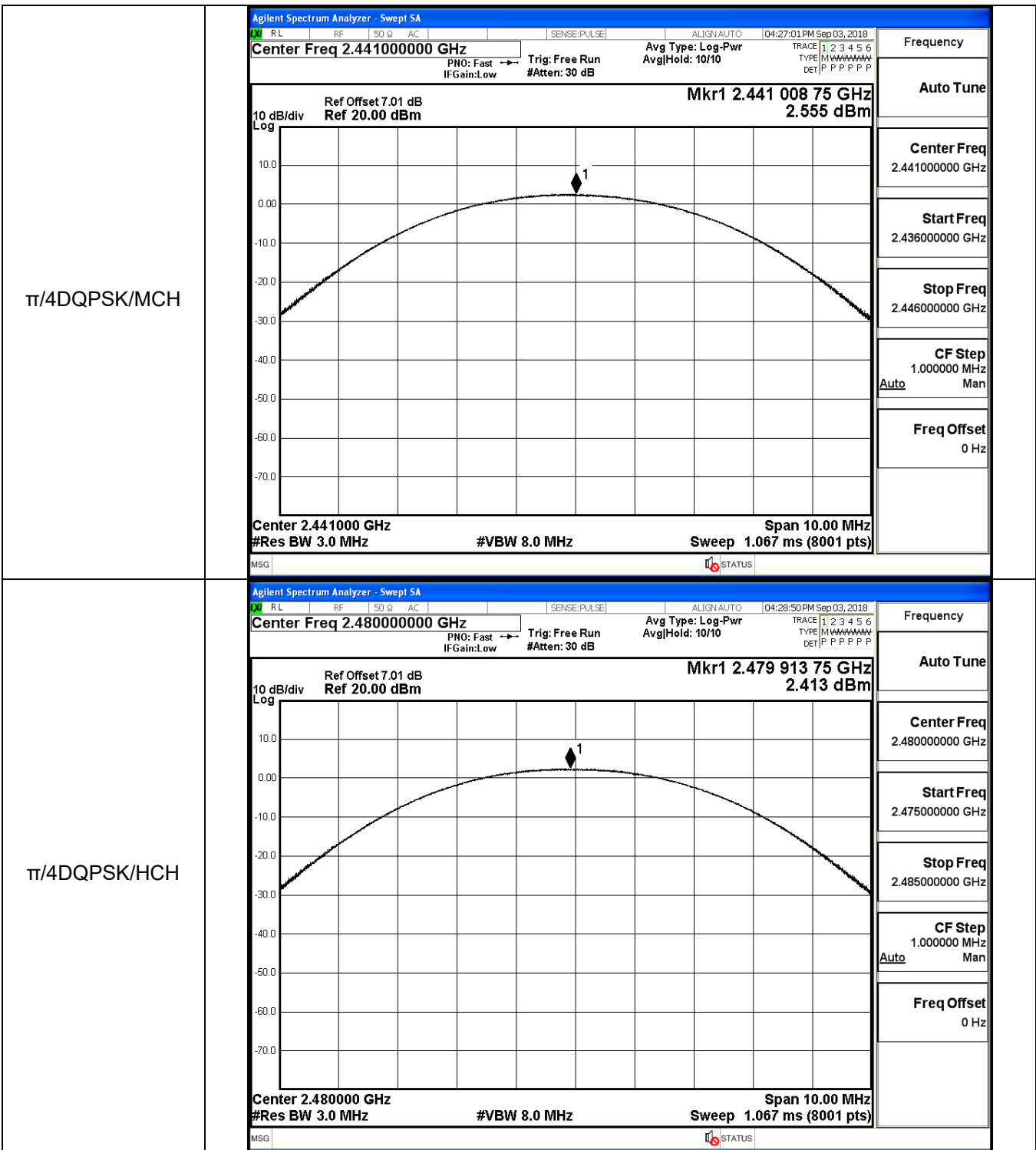


GFSK/HCH

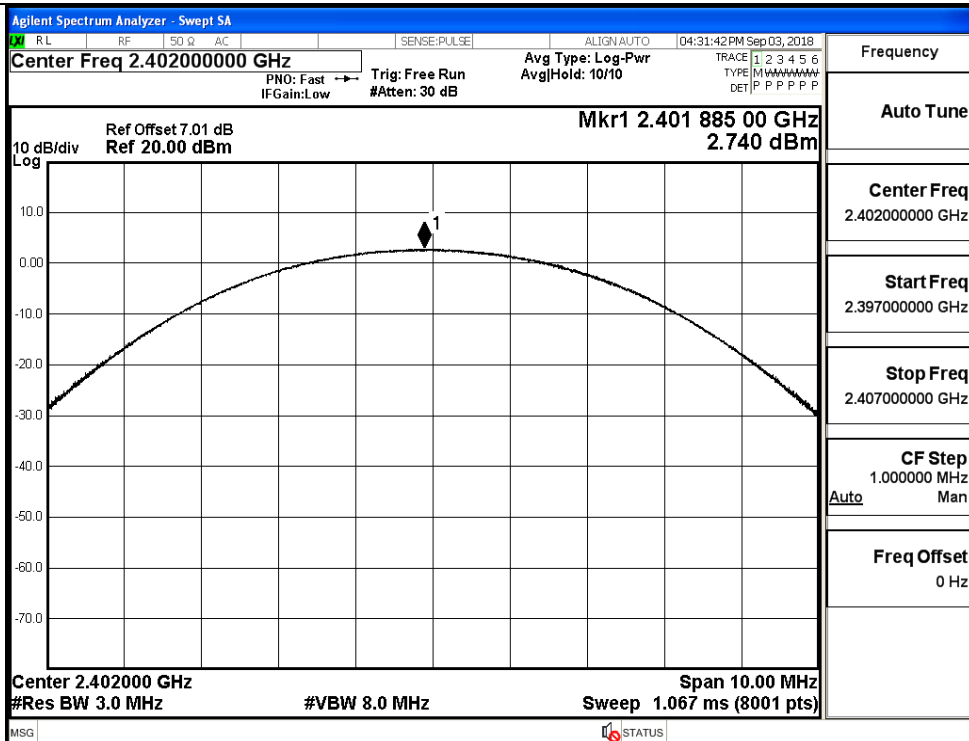


$\pi/4$ DQPSK/LCH

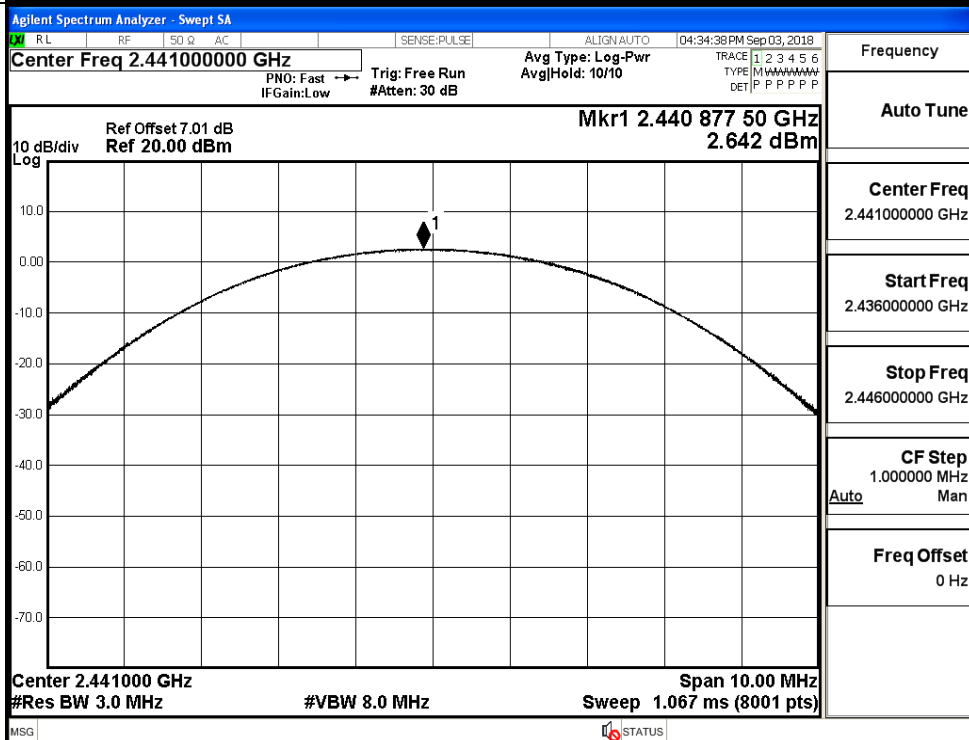




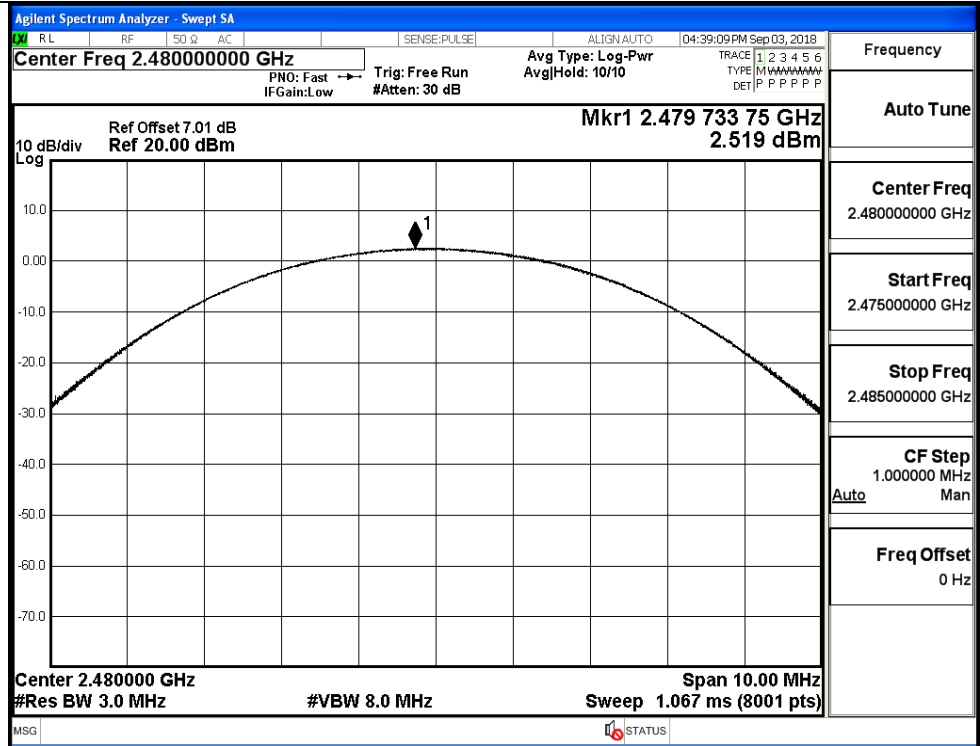
8DPSK/LCH



8DPSK/MCH

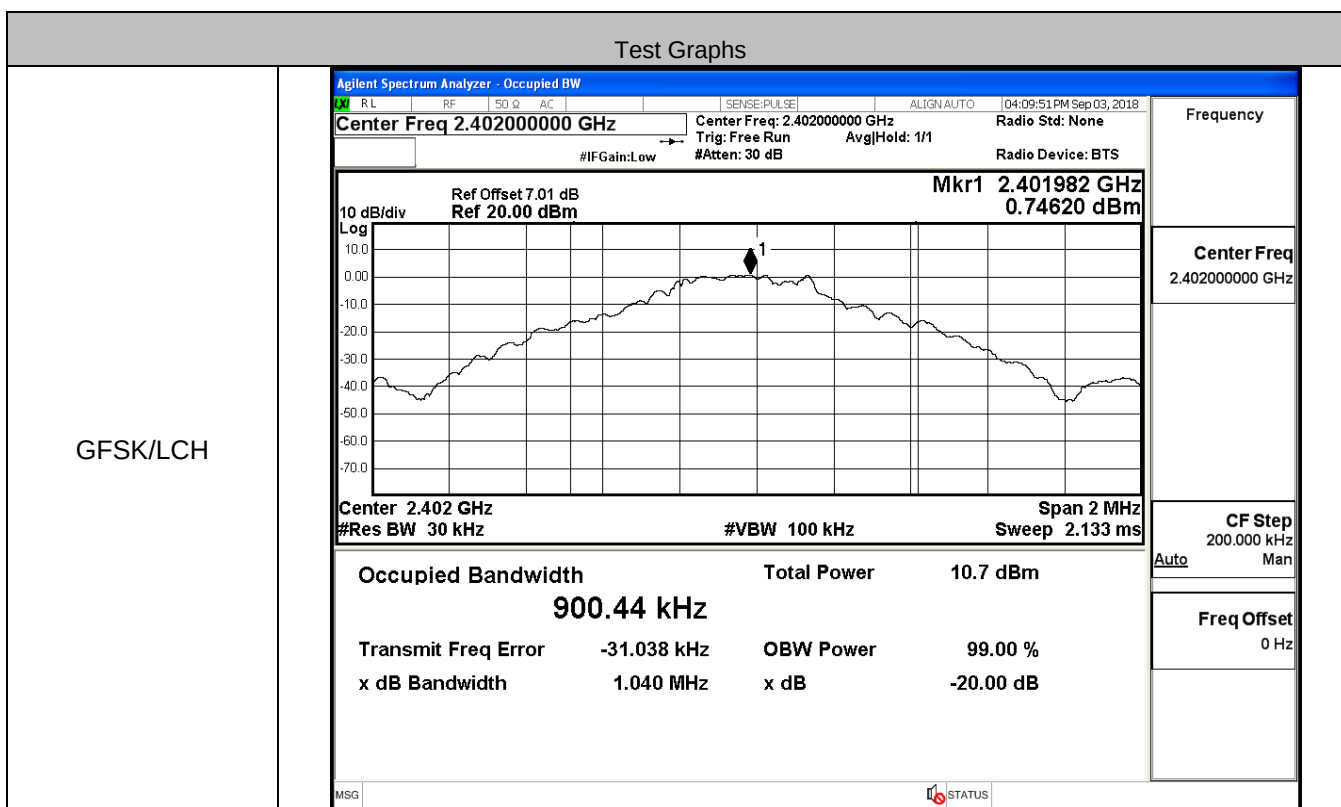


8DPSK/HCH

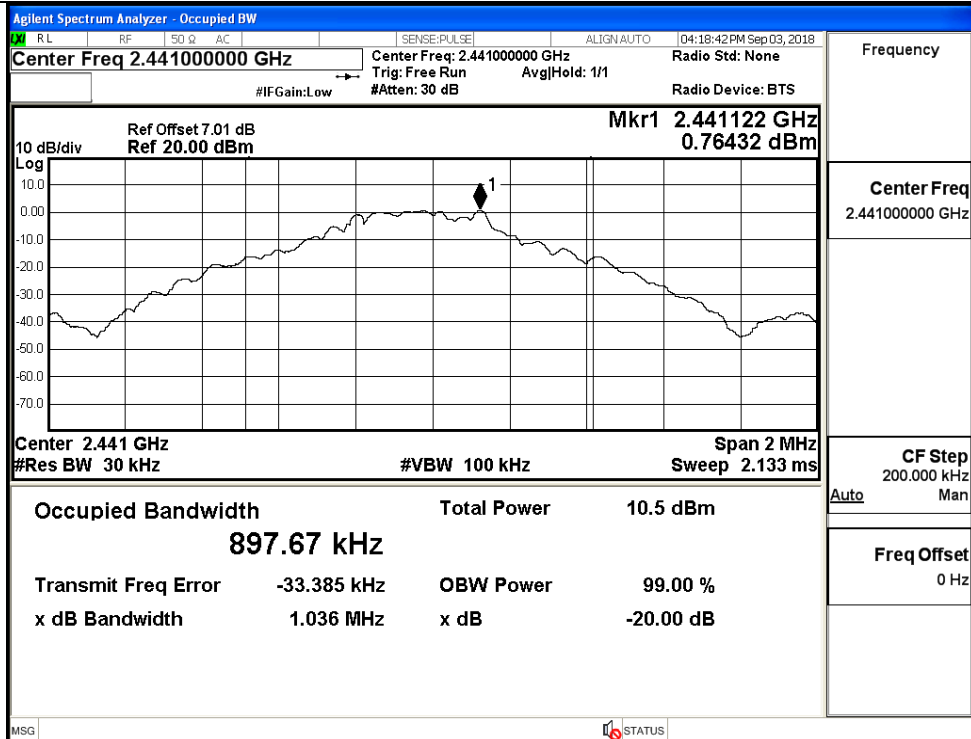


A.2 99% and 20dB Bandwidth

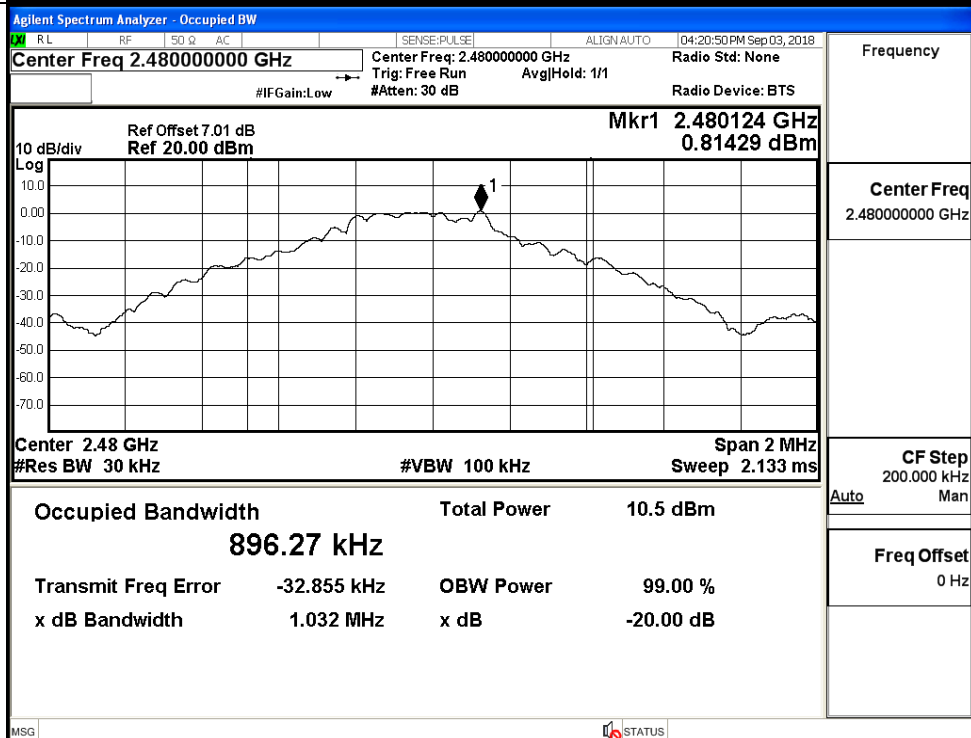
Mode	Channel.	99% Bandwidth [MHz]	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.90044	1.040	Not Specified	PASS
	MCH	0.89767	1.036	Not Specified	PASS
	HCH	0.89627	1.032	Not Specified	PASS
π /4DQPSK	LCH	1.1691	1.288	Not Specified	PASS
	MCH	1.1697	1.288	Not Specified	PASS
	HCH	1.1699	1.289	Not Specified	PASS
8DPSK	LCH	1.1764	1.291	Not Specified	PASS
	MCH	1.1773	1.293	Not Specified	PASS
	HCH	1.1794	1.298	Not Specified	PASS



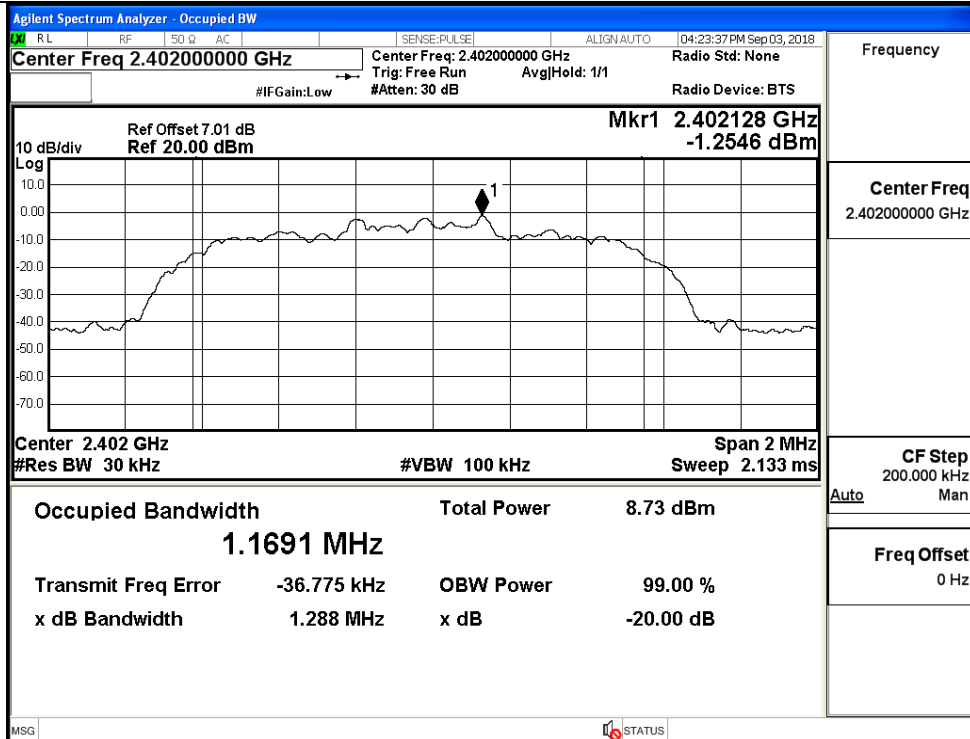
GFSK/MCH



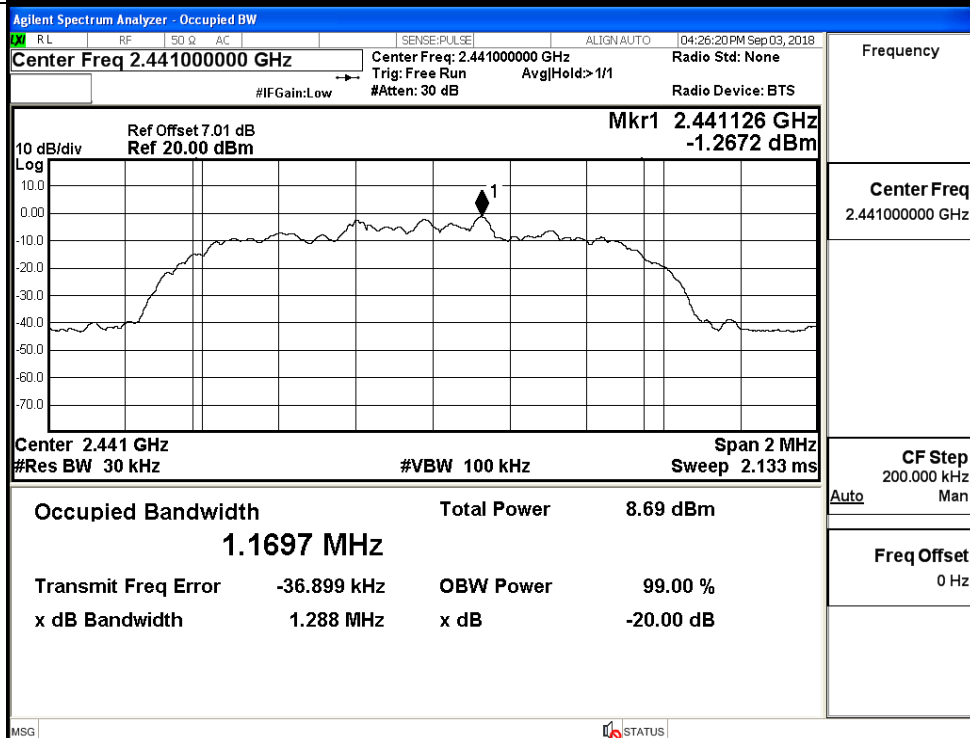
GFSK/HCH



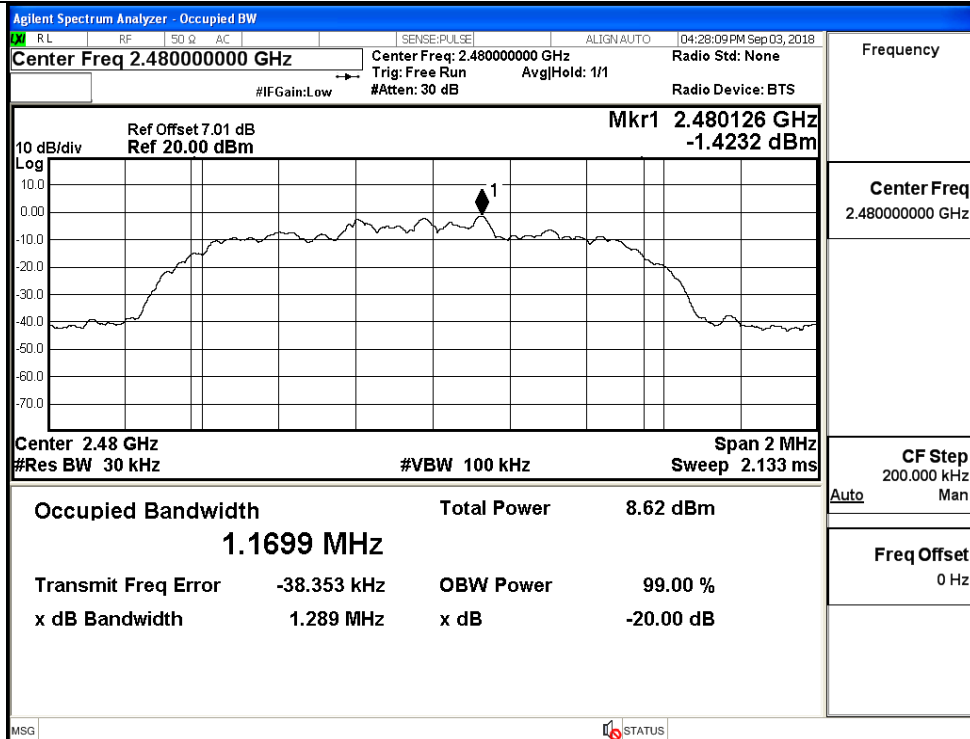
$\pi/4$ DQPSK/LCH



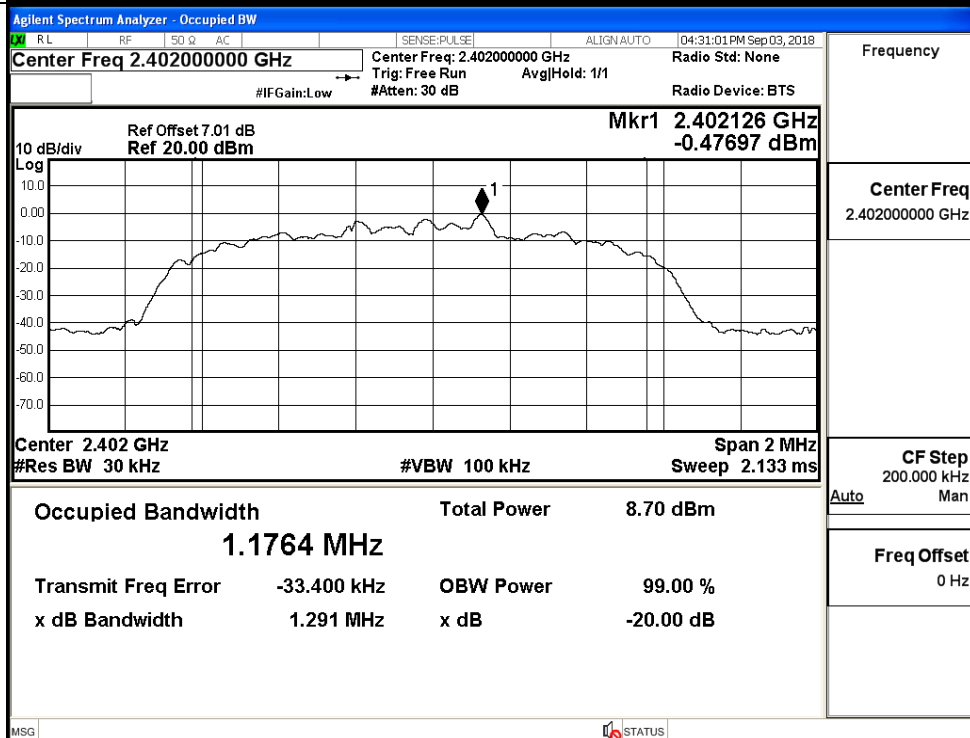
$\pi/4$ DQPSK/MCH



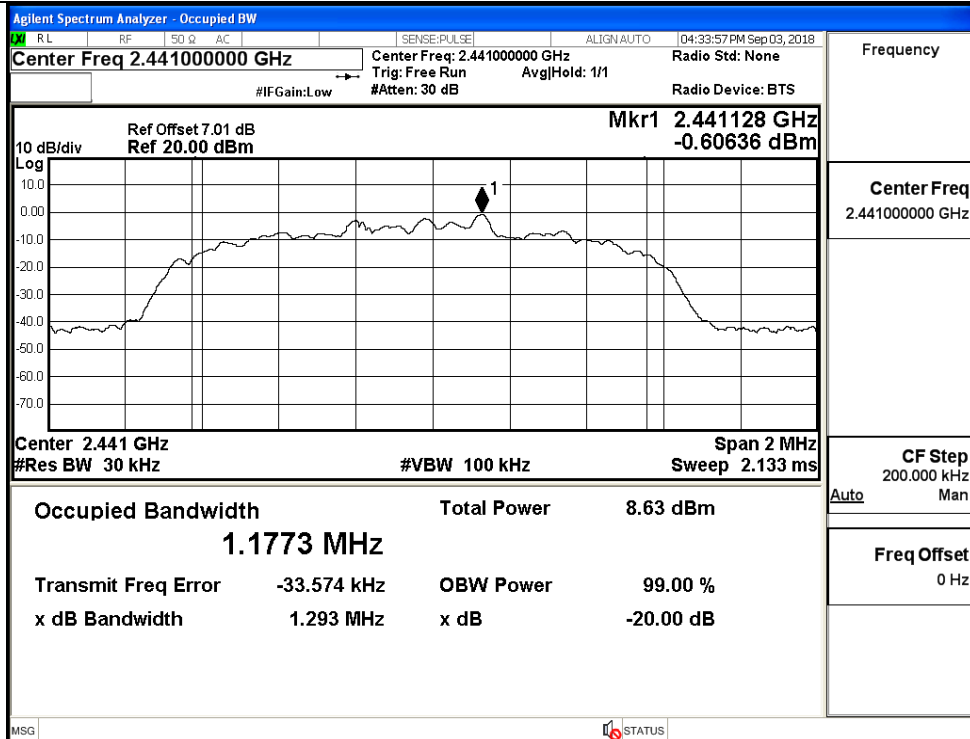
$\pi/4$ DQPSK/HCH



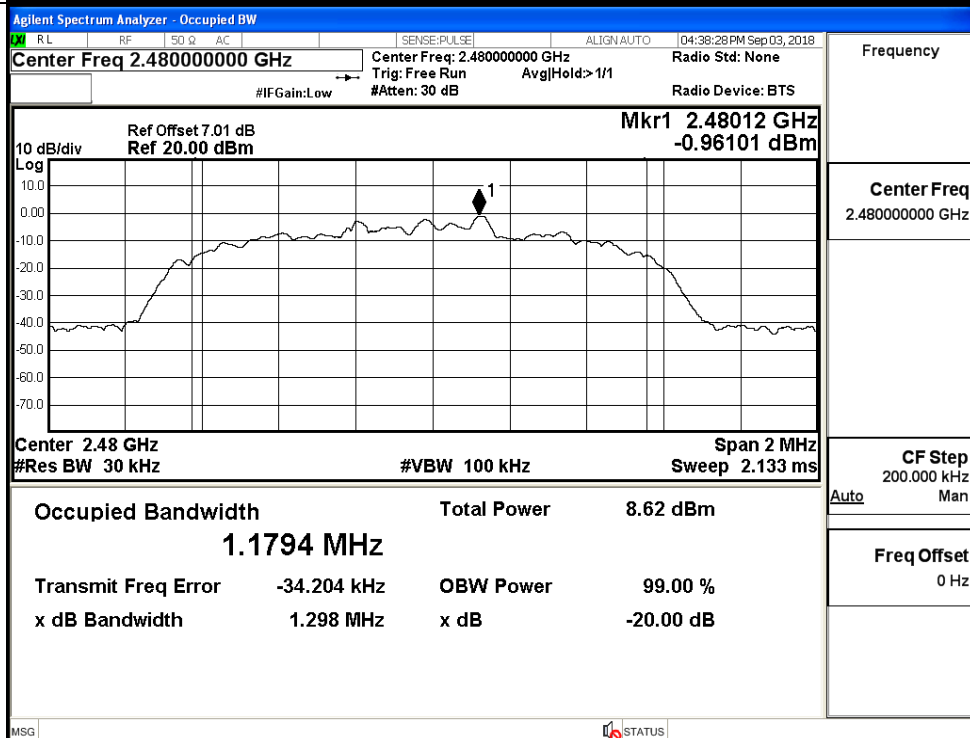
8DPSK/LCH



8DPSK/MCH



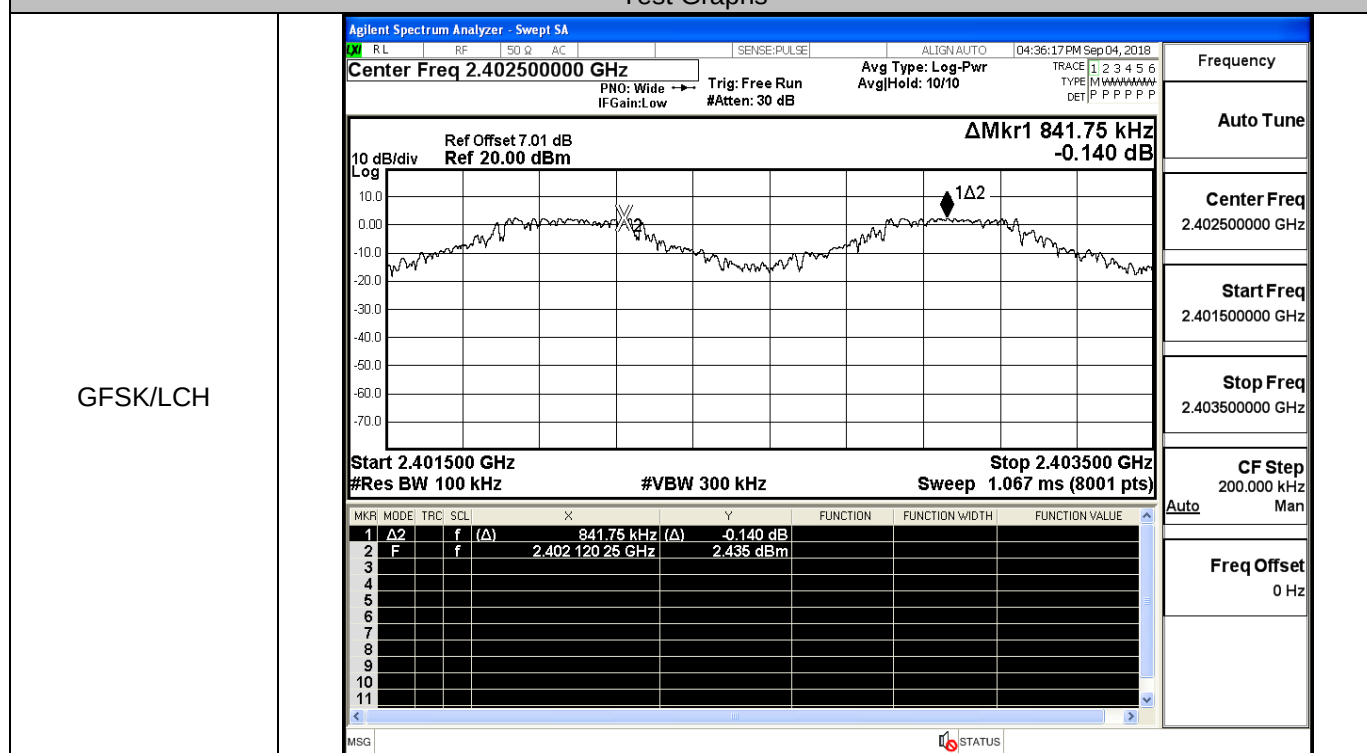
8DPSK/HCH



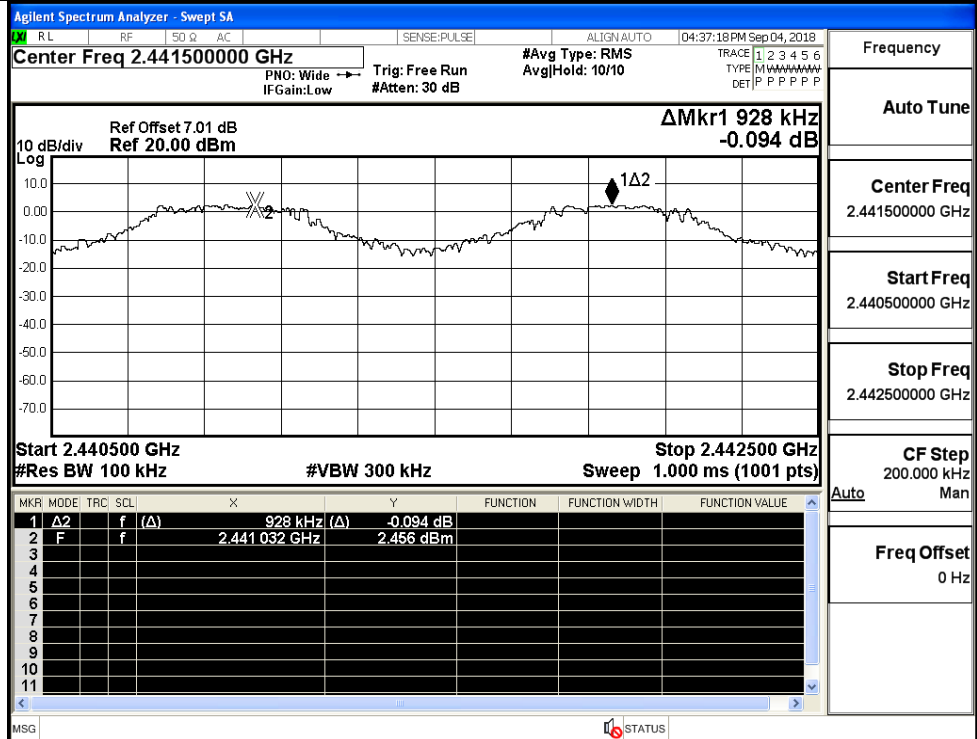
A.3 Carrier Frequency Separation

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.842	0.693	PASS
	MCH	0.928	0.691	PASS
	HCH	0.932	0.688	PASS
$\pi/4$ DQPSK	LCH	0.976	0.859	PASS
	MCH	1.044	0.859	PASS
	HCH	1.208	0.859	PASS
8DPSK	LCH	1.164	0.861	PASS
	MCH	1.340	0.862	PASS
	HCH	0.886	0.865	PASS

Test Graphs



GFSK/MCH



Frequency

Auto Tune

Center Freq
2.441500000 GHz

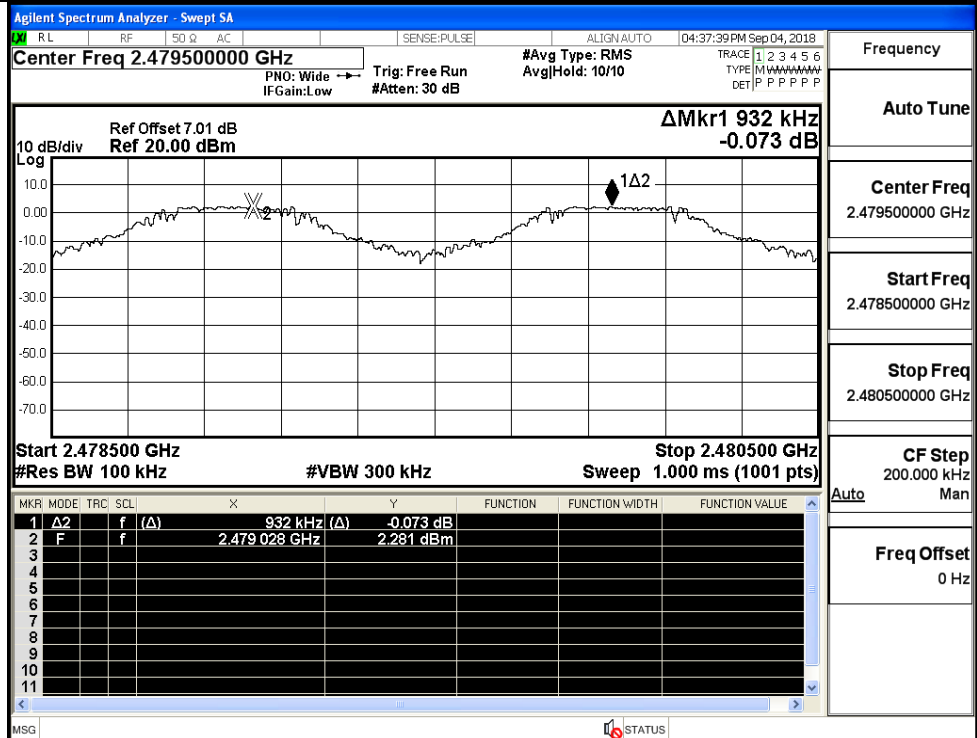
Start Freq
2.440500000 GHz

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	Agilent Spectrum Analyzer - Swept SA RL RF 50 Q AC SENSE:PULSE ALIGN: AUTO 04:39:50 PM Sep 04, 2018 Center Freq 2.402500000 GHz PN0: Wide IF Gain: Low Trig: Free Run #Atten: 30 dB #Avg Type: RMS AvgHld: 10/10 TRACE 1 2 3 4 5 6 TYPE M W W W W W W DET P P P P P P P Ref Offset 7.01 dB Ref 20.00 dBm ΔMkr1 976 kHz -3.961 dB 10 dB/div Log Start 2.401500 GHz #Res BW 100 kHz #VBW 300 kHz Stop 2.403500 GHz Sweep 1.000 ms (1001 pts) <table><tr><th>MKR</th><th>MODE</th><th>TRC</th><th>SCL</th><th>X</th><th>Y</th><th>FUNCTION</th><th>FUNCTION WIDTH</th><th>FUNCTION VALUE</th></tr><tr><td>1</td><td>Δ2</td><td>f</td><td>(Δ)</td><td>976 kHz (Δ)</td><td>-3.961 dB</td><td></td><td></td><td></td></tr><tr><td>2</td><td>F</td><td>f</td><td></td><td>2.402 116 GHz</td><td>1.255 dBm</td><td></td><td></td><td></td></tr><tr><td>3</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>4</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>5</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>6</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>7</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>8</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>9</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>10</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>11</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table> MSG STATUS 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	MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	Δ2	f	(Δ)	976 kHz (Δ)	-3.961 dB				2	F	f		2.402 116 GHz	1.255 dBm				3									4									5									6									7									8									9									10									11									Agilent Spectrum Analyzer - Swept SA RL RF 50 Q AC SENSE:PULSE ALIGN: AUTO 04:41:36 PM Sep 04, 2018 Center Freq 2.441500000 GHz PN0: Wide IF Gain: Low Trig: Free Run #Atten: 30 dB #Avg Type: RMS AvgHld: 10/10 TRACE 1 2 3 4 5 6 TYPE M W W W W W W DET P P P P P P P Ref Offset 7.01 dB Ref 20.00 dBm ΔMkr1 1.044 MHz 0.087 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) <table><tr><th>MKR</th><th>MODE</th><th>TRC</th><th>SCL</th><th>X</th><th>Y</th><th>FUNCTION</th><th>FUNCTION WIDTH</th><th>FUNCTION VALUE</th></tr><tr><td>1</td><td>Δ2</td><td>f</td><td>(Δ)</td><td>1.044 MHz (Δ)</td><td>0.087 dB</td><td></td><td></td><td></td></tr><tr><td>2</td><td>F</td><td>f</td><td></td><td>2.441 104 GHz</td><td>0.765 dBm</td><td></td><td></td><td></td></tr><tr><td>3</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>4</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>5</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>6</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>7</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>8</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>9</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>10</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>11</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table> 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	MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	Δ2	f	(Δ)	1.044 MHz (Δ)	0.087 dB				2	F	f		2.441 104 GHz	0.765 dBm				3									4									5									6									7									8									9									10									11								
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π/4DQPSK/HCH

8DPSK/LCH

Agilent Spectrum Analyzer - Swept SA

Center Freq 2.479500000 GHz

Ref Offset 7.01 dB
Ref 20.00 dBm

ΔMkr1 1.208 MHz
-0.087 dB

Start 2.478500 GHz
#Res BW 100 kHz

Stop 2.480500 GHz
#VBW 300 kHz
Sweep 1.000 ms (1001 pts)

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	Δ2	f	(Δ)	1.208 MHz	(Δ)	-0.087 dB		
2	F	f		2.478 806 GHz		0.728 dBm		

MSG STATUS

Agilent Spectrum Analyzer - Swept SA

Center Freq 2.402500000 GHz

Ref Offset 7.01 dB
Ref 20.00 dBm

ΔMkr1 1.164 MHz
0.466 dB

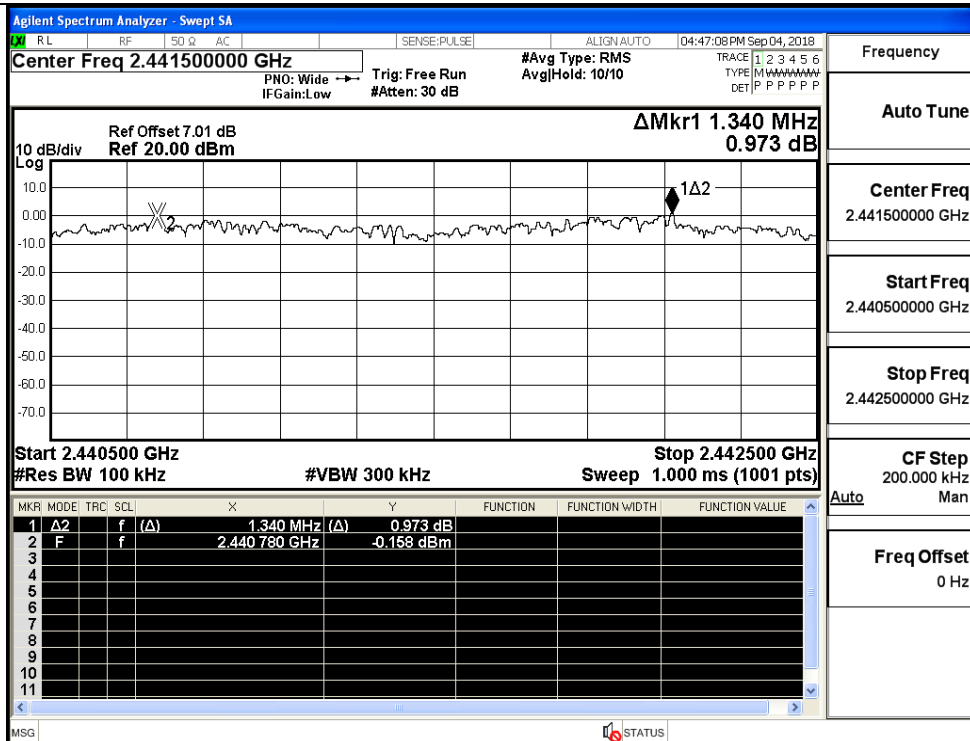
Start 2.401500 GHz
#Res BW 100 kHz

Stop 2.403500 GHz
#VBW 300 kHz
Sweep 1.000 ms (1001 pts)

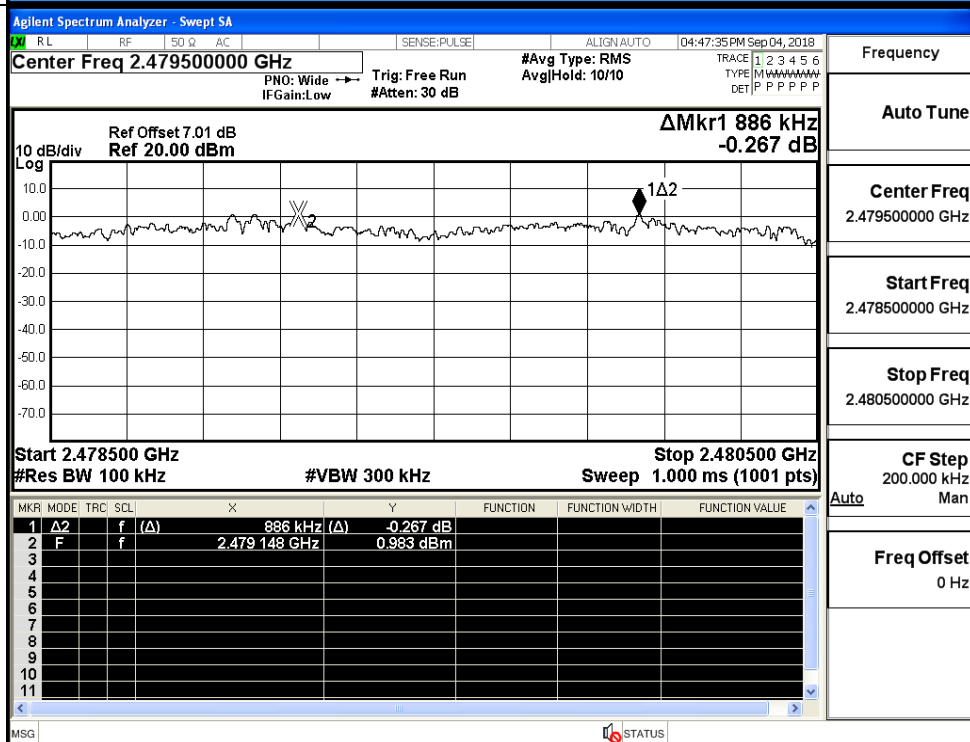
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	Δ2	f	(Δ)	1.164 MHz	(Δ)	0.466 dB		
2	F	f		2.401 920 GHz		-1.982 dBm		

MSG STATUS

8DPSK/MCH



8DPSK/HCH

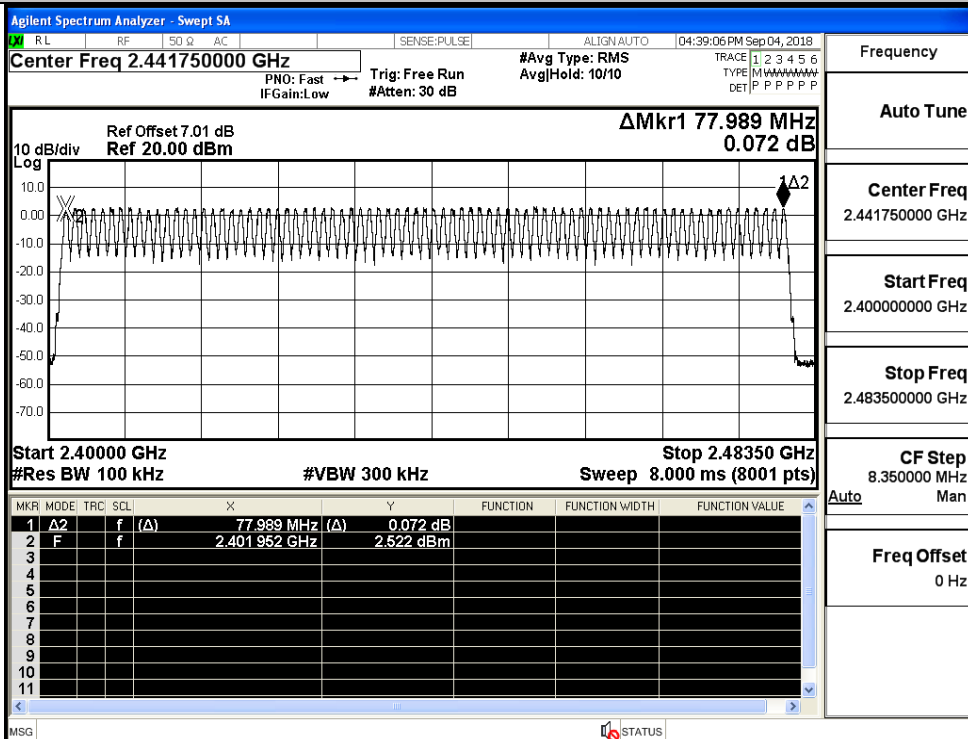


A.4 Hopping Channel Number

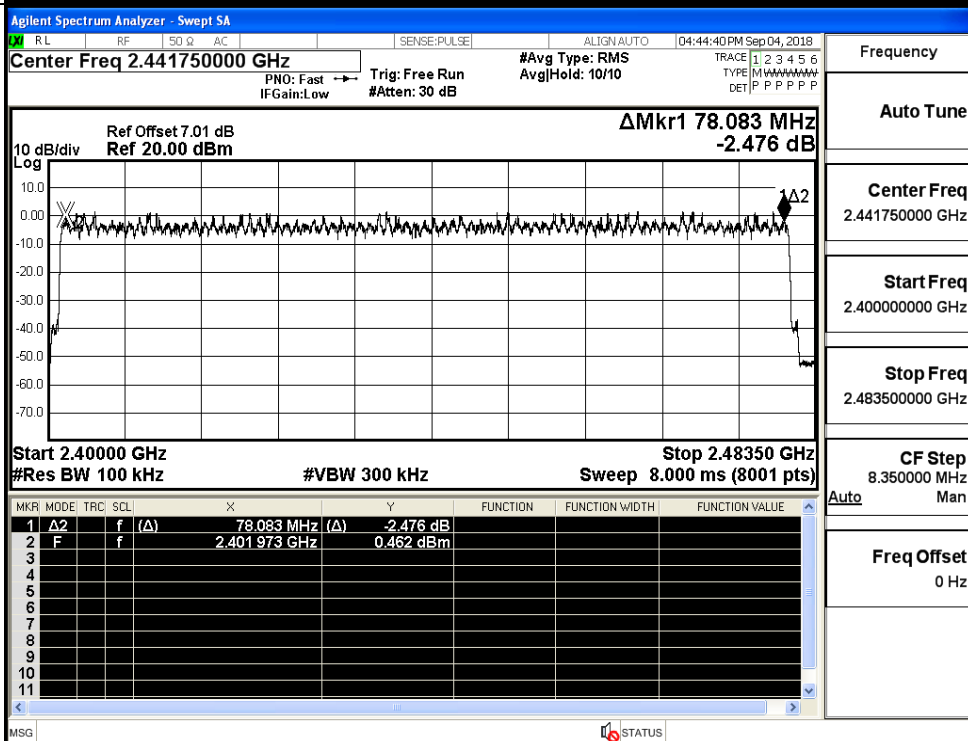
Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	>=15	PASS
$\pi/4$ DQPSK	Hop	79	>=15	PASS
8DPSK	Hop	79	>=15	PASS

Test Graphs

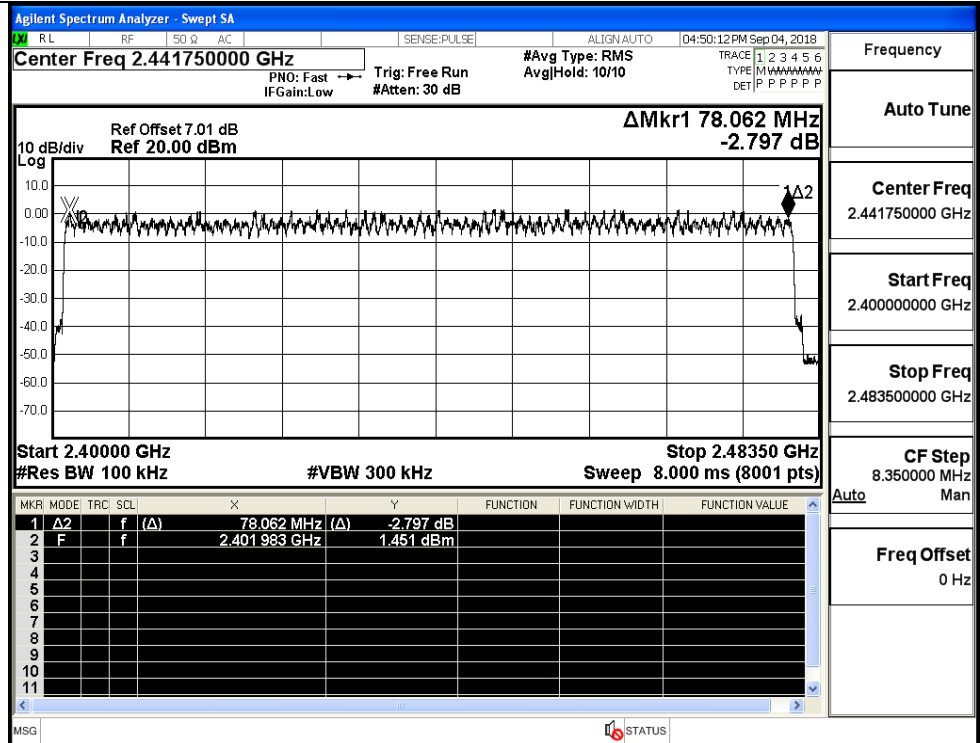
GFSK/Hop



$\pi/4$ DQPSK/Hop



8DPSK/Hop

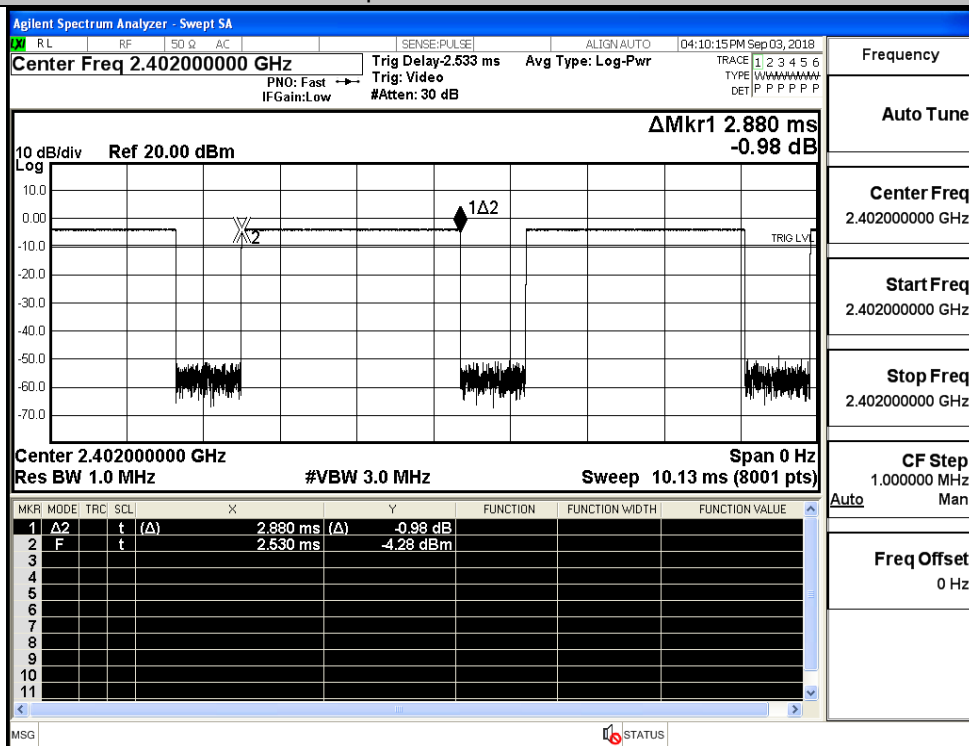


A.5 Dwell Time

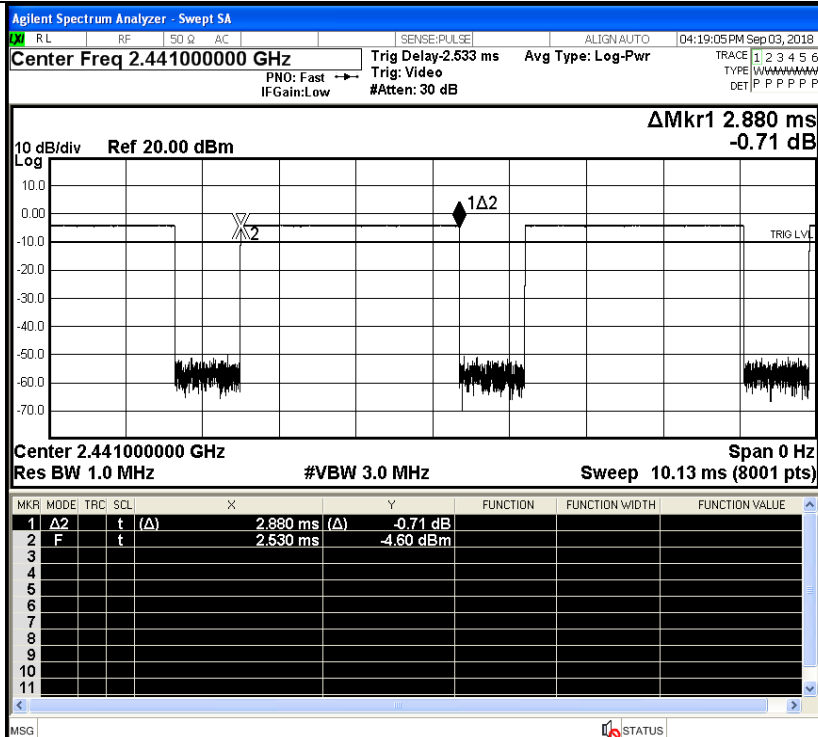
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.88	106.7	0.307	0.4	PASS
	DH5	MCH	2.88	106.7	0.307	0.4	PASS
	DH5	HCH	2.88	106.7	0.307	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.88	106.7	0.307	0.4	PASS
	2DH5	MCH	2.88	106.7	0.307	0.4	PASS
	2DH5	HCH	2.88	106.7	0.307	0.4	PASS
8DPSK	3DH5	LCH	2.89	106.7	0.308	0.4	PASS
	3DH5	MCH	2.89	106.7	0.308	0.4	PASS
	3DH5	HCH	2.89	106.7	0.308	0.4	PASS

Test Graphs

GFSK_DH5/LCH

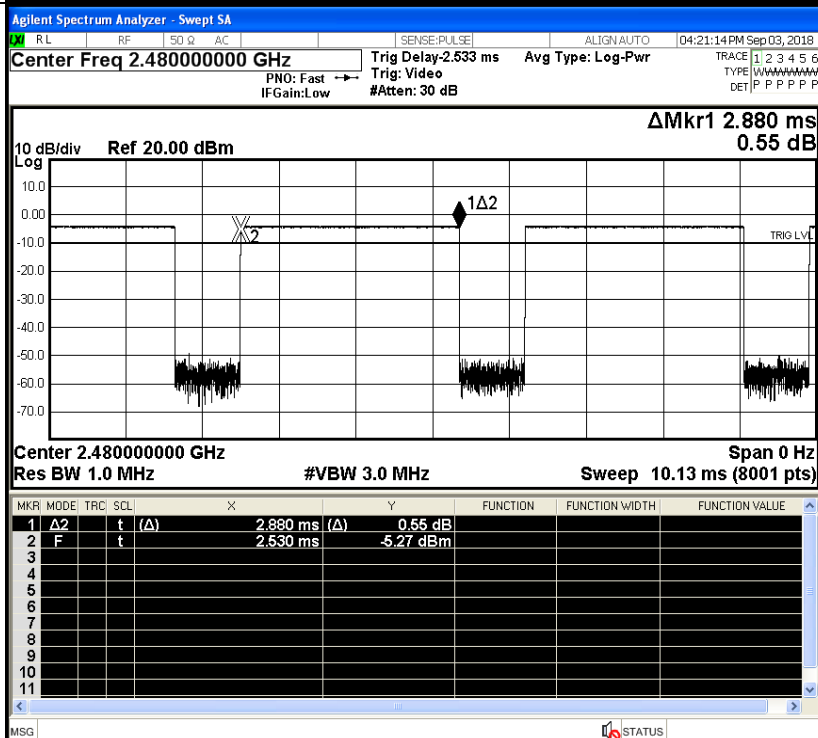


GFSK_DH5/MCH



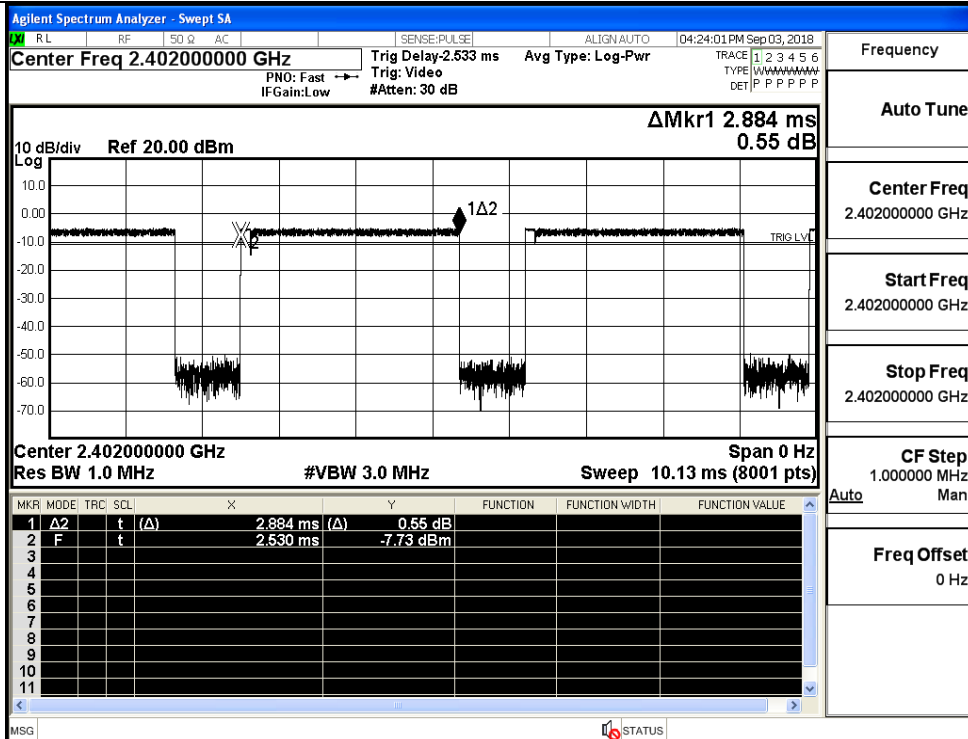
Frequency
Auto Tune
Center Freq 2.441000000 GHz
Start Freq 2.441000000 GHz
Stop Freq 2.441000000 GHz
CF Step 1.000000 MHz Auto
Freq Offset 0 Hz

GFSK_DH5/HCH

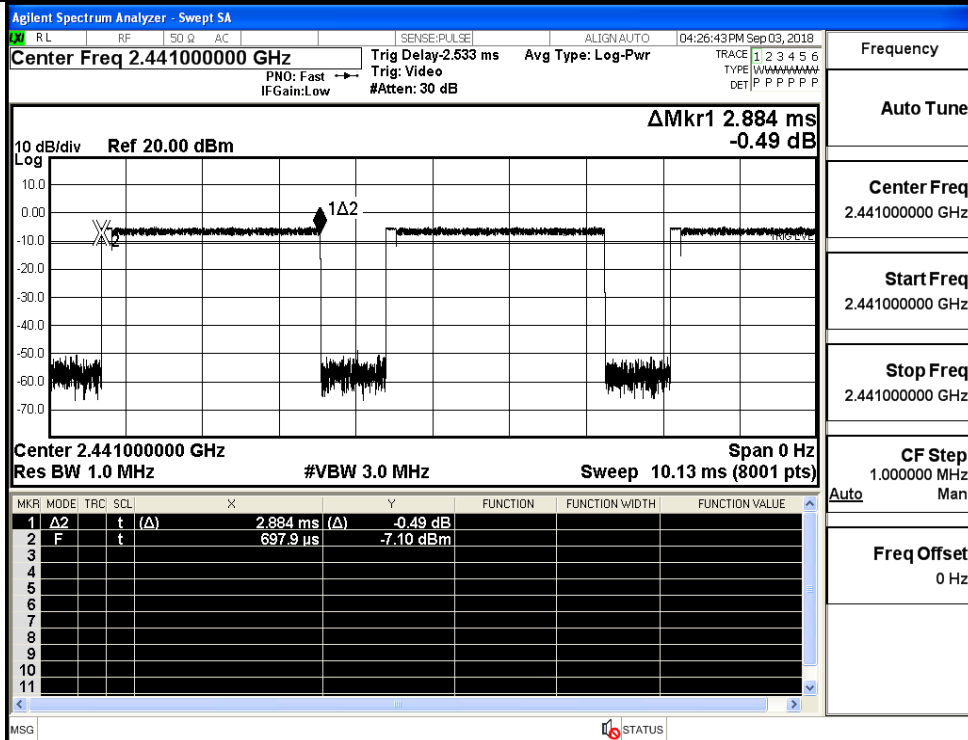


Frequency
Auto Tune
Center Freq 2.480000000 GHz
Start Freq 2.480000000 GHz
Stop Freq 2.480000000 GHz
CF Step 1.000000 MHz Auto
Freq Offset 0 Hz

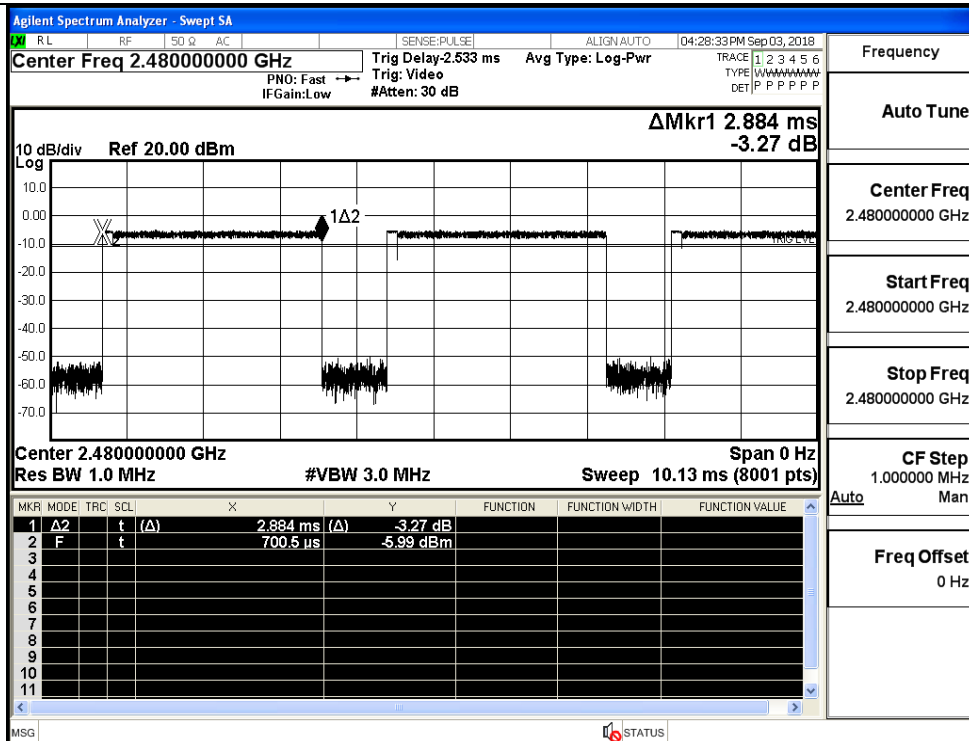
$\pi/4$ DQPSK
_2DH5/LCH



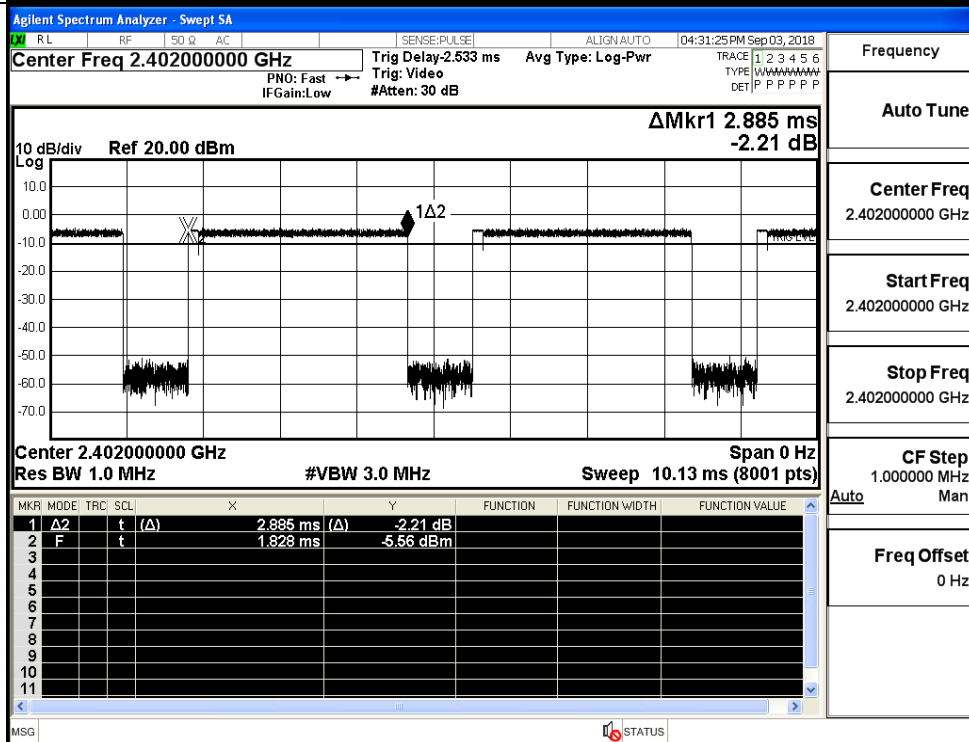
$\pi/4$ DQPSK
_2DH5/MCH



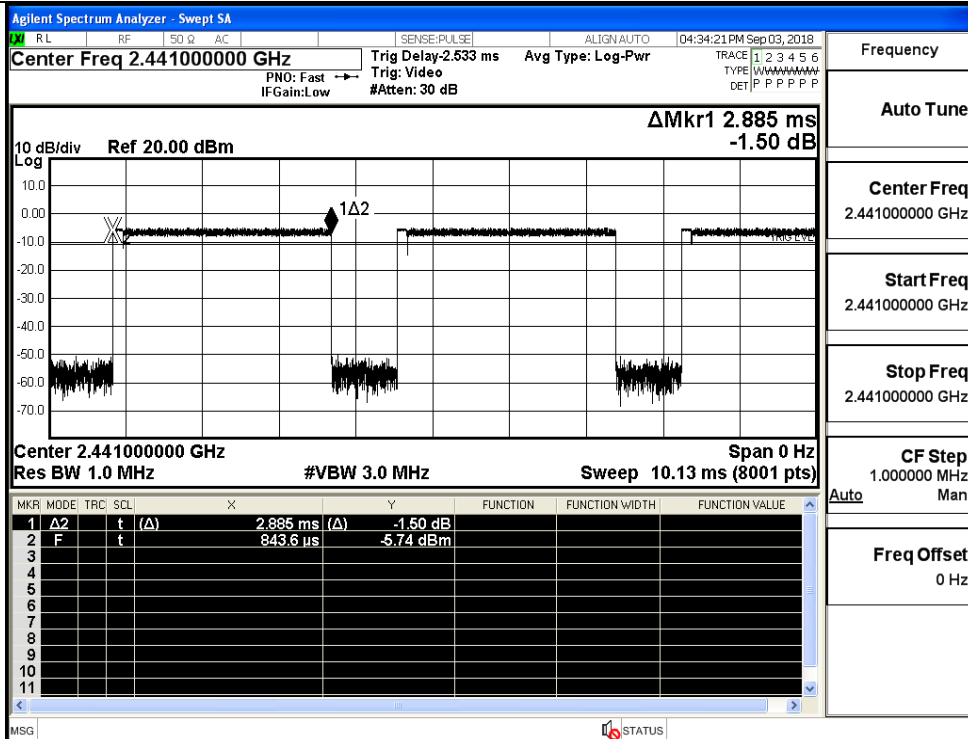
$\pi/4$ DQPSK
_2DH5/HCH



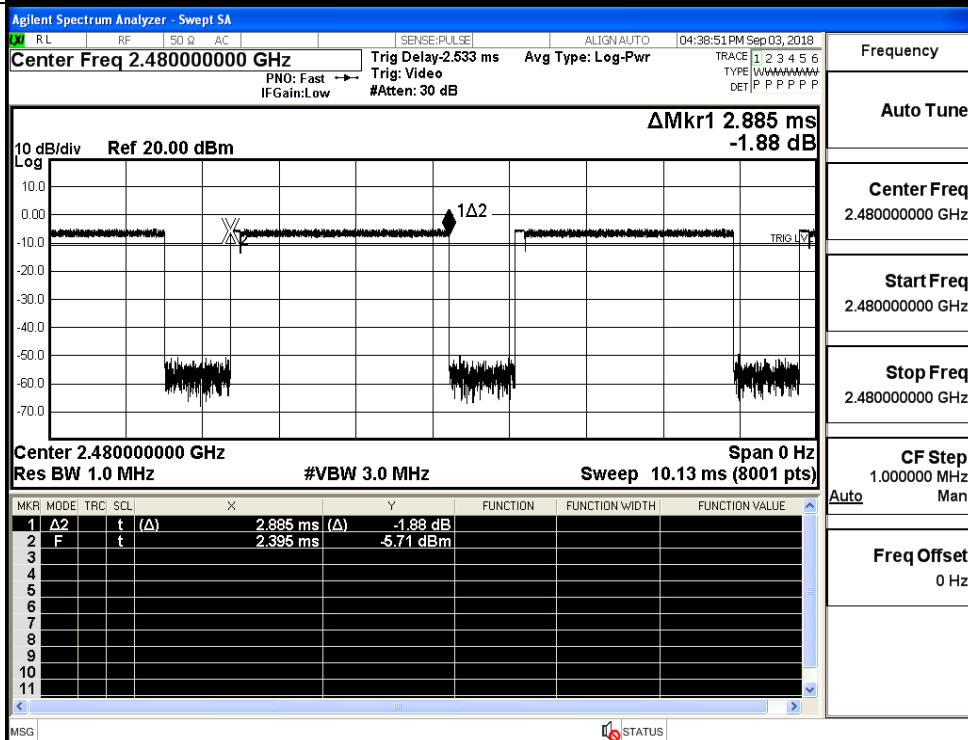
8DPSK_3DH5/LCH



8DPSK_3DH5/MCH



8DPSK_3DH5/HCH

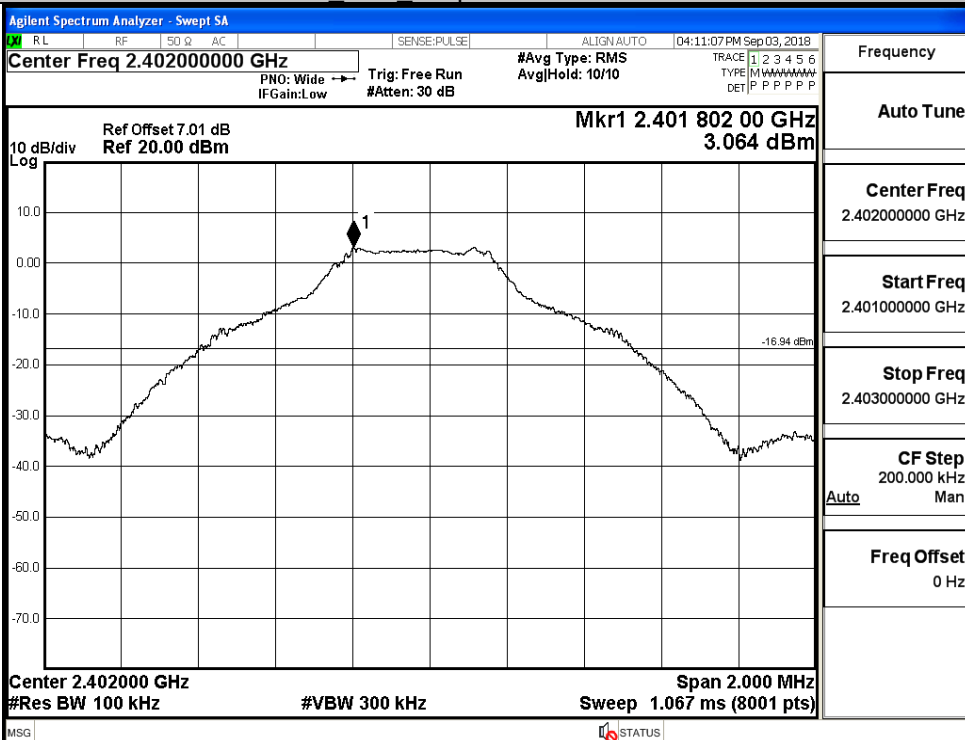


A.6 RF Conducted Spurious Emissions

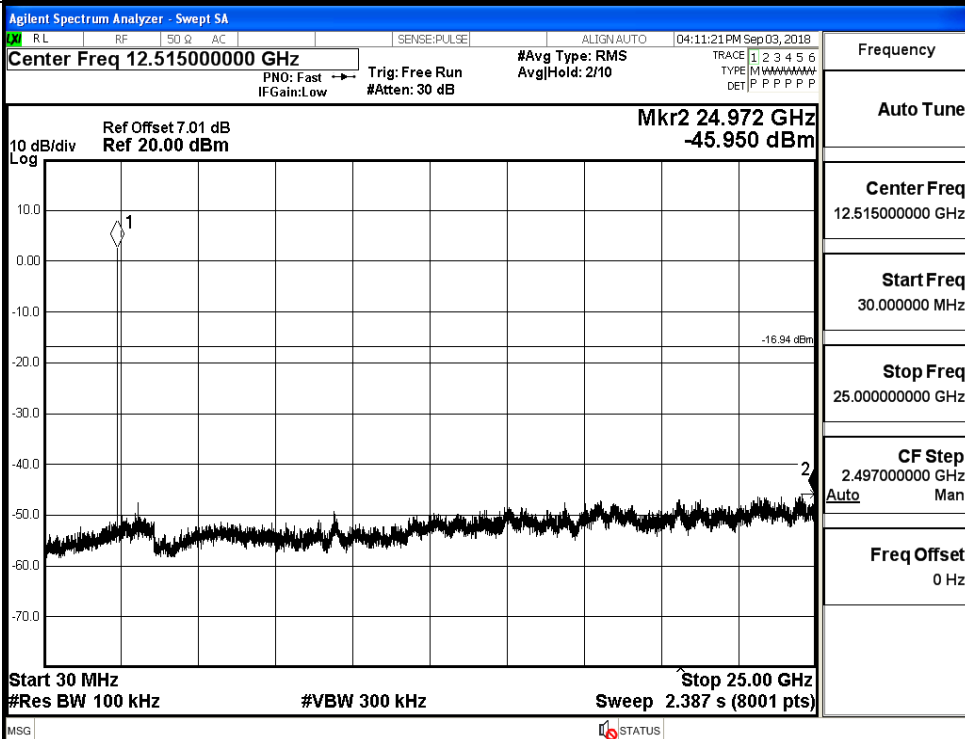
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	3.064	-45.950	-16.936	PASS
	MCH	2.848	-45.728	-17.152	PASS
	HCH	2.853	-45.728	-17.147	PASS
$\pi/4$ DQPSK	LCH	1.616	-45.651	-18.384	PASS
	MCH	1.41	-45.258	-18.590	PASS
	HCH	1.322	-45.383	-18.678	PASS
8DPSK	LCH	1.341	-46.241	-18.659	PASS
	MCH	1.51	-45.915	-18.490	PASS
	HCH	1.473	-45.637	-18.527	PASS

GFSK LCH Graphs

Pref

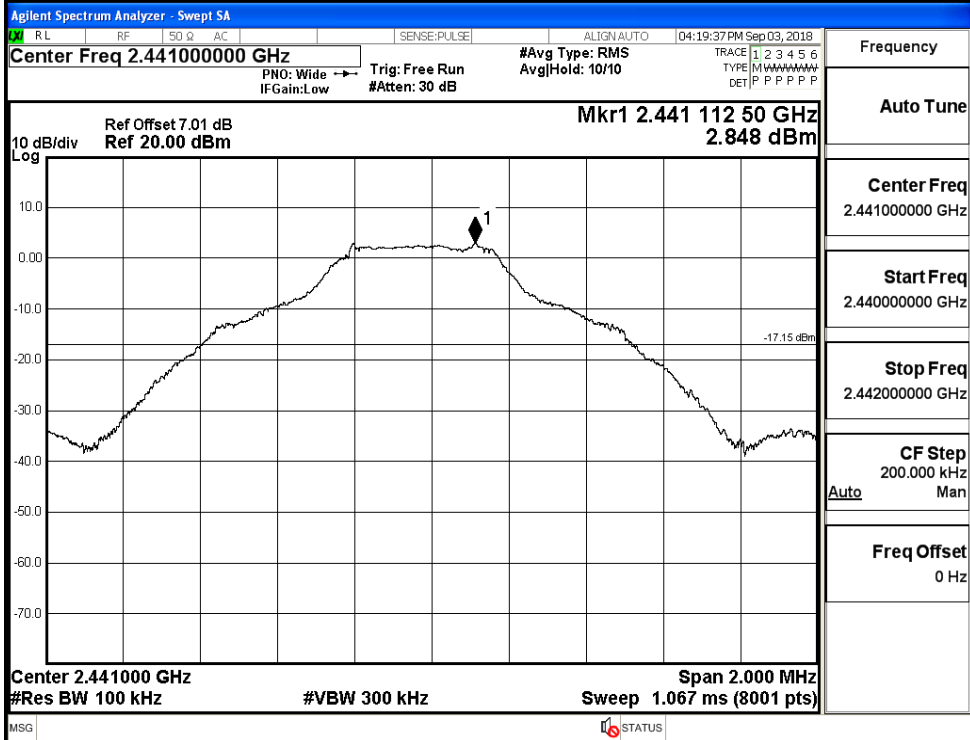


Puw

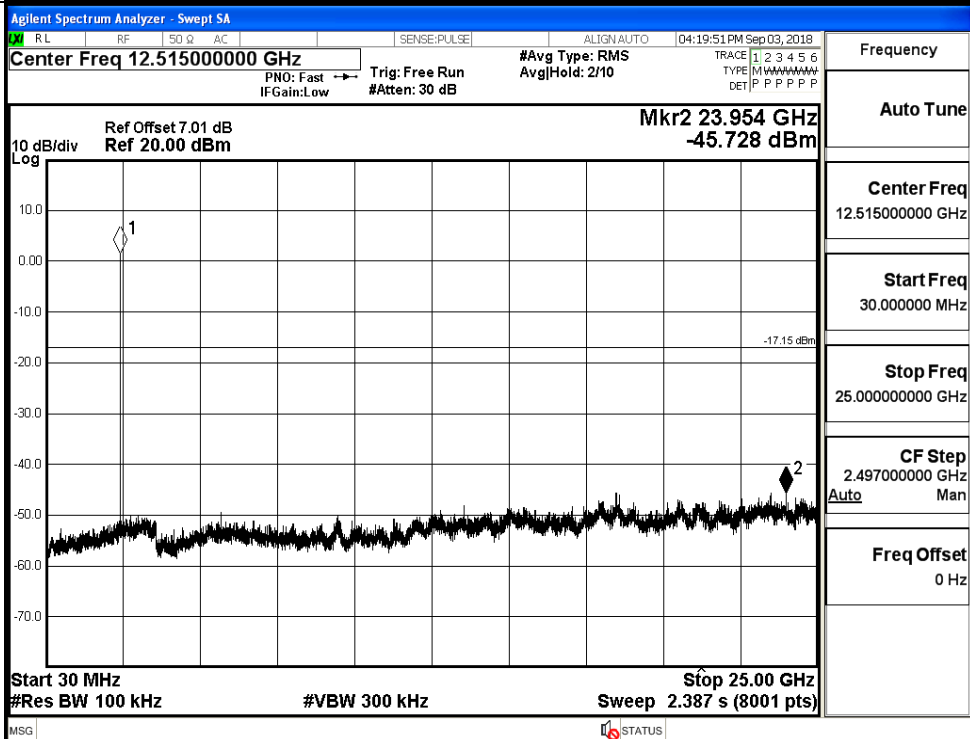


GFSK MCH Graphs

Pref

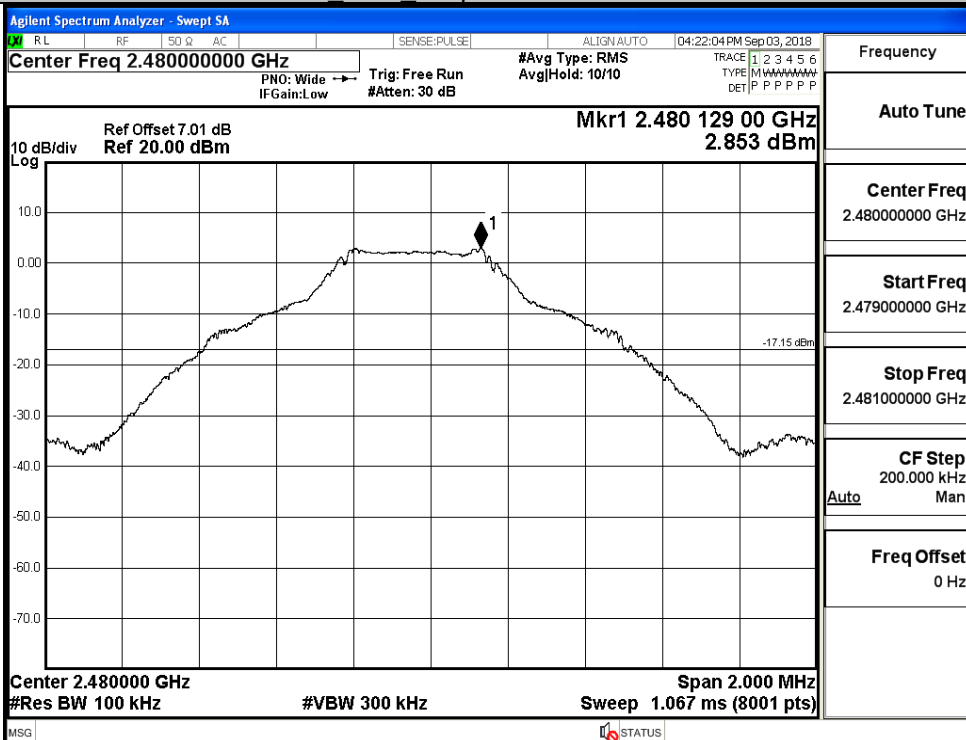


Puw

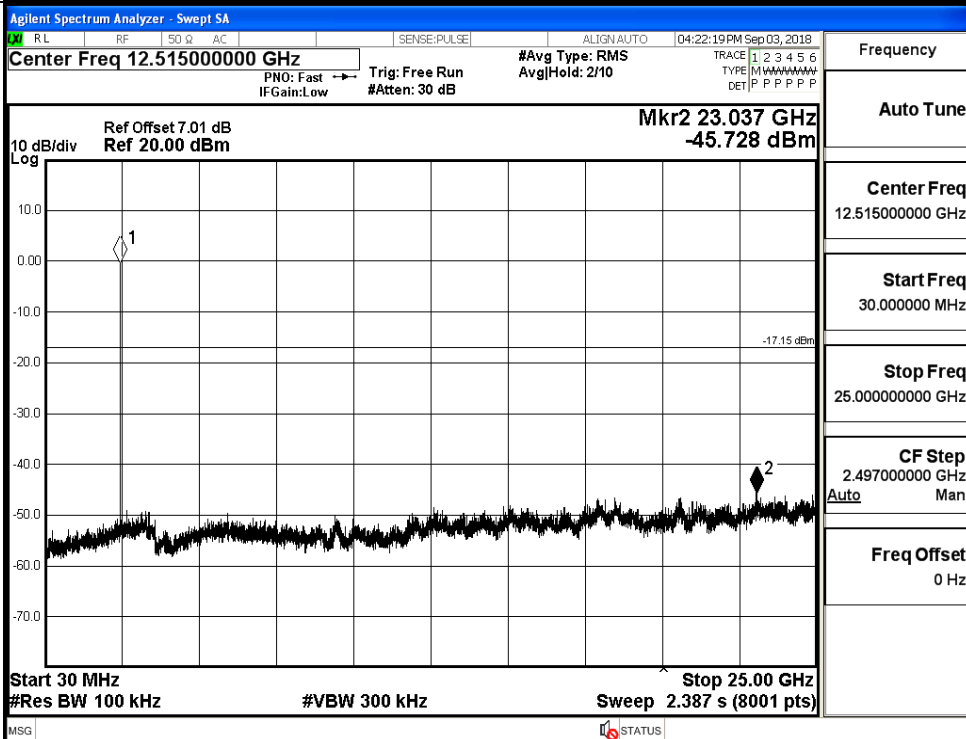


GFSK HCH Graphs

Pref

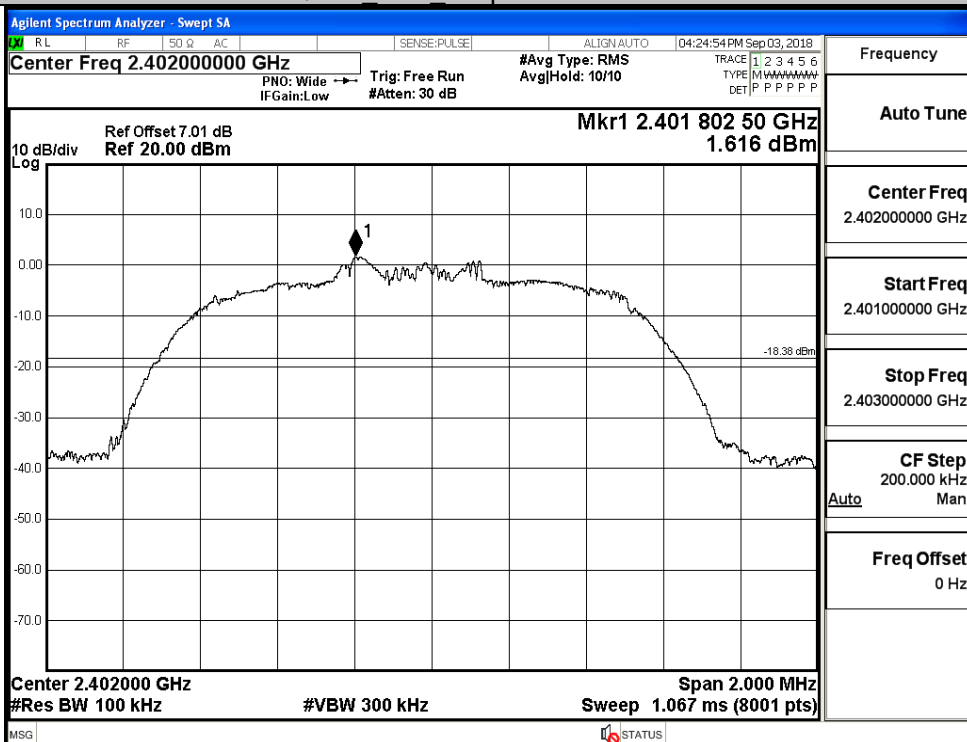


Puw

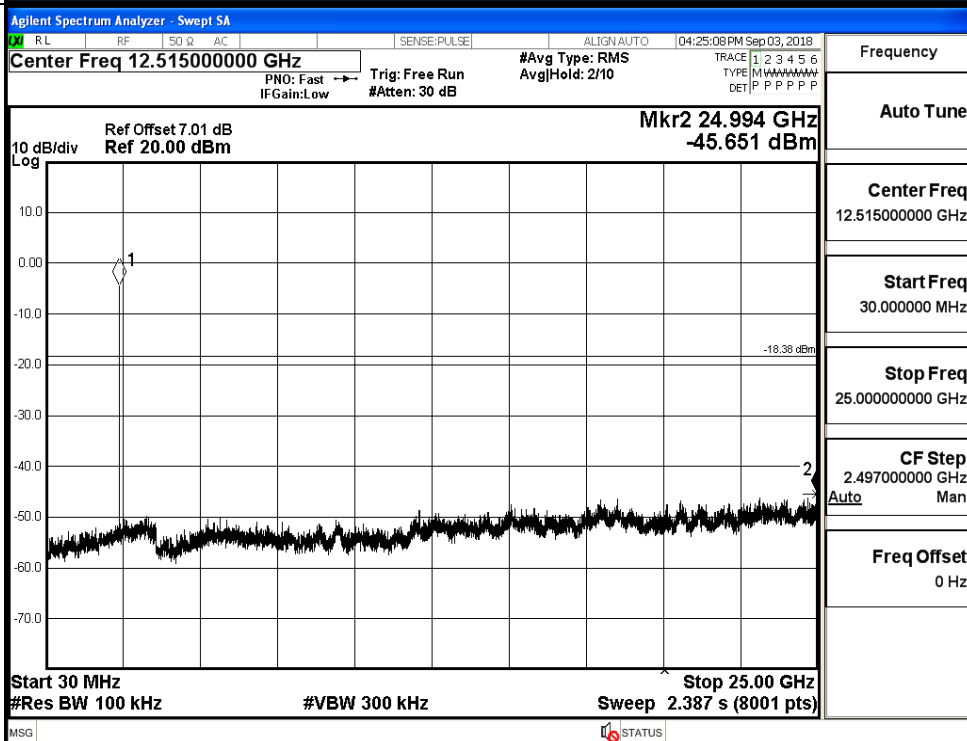


$\pi/4$ DQPSK LCH Graphs

Pref

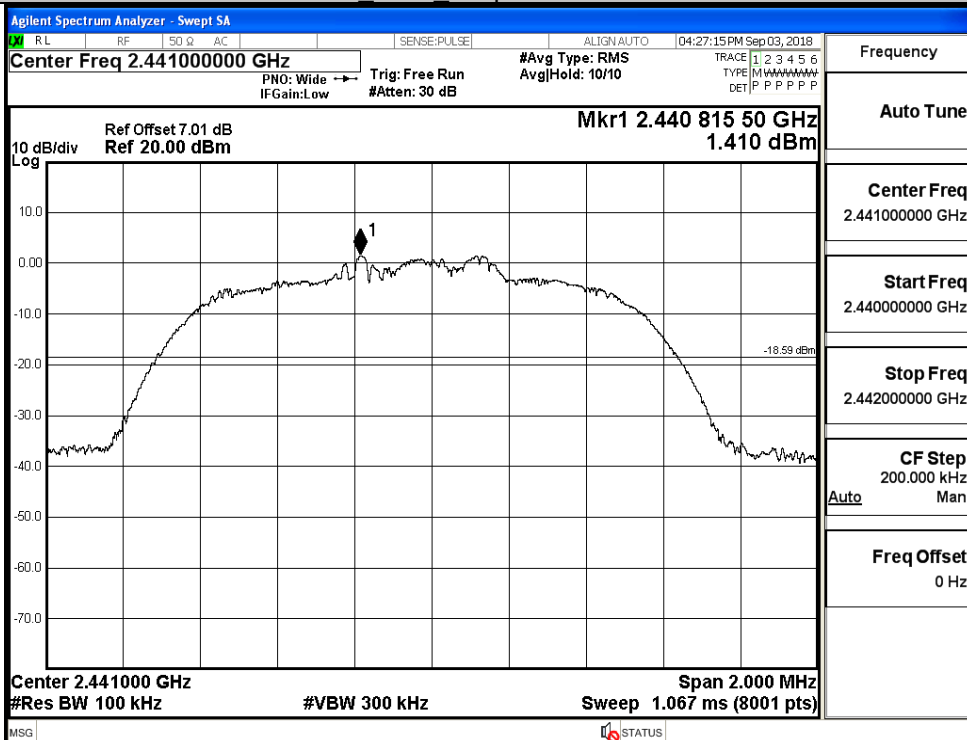


Puw

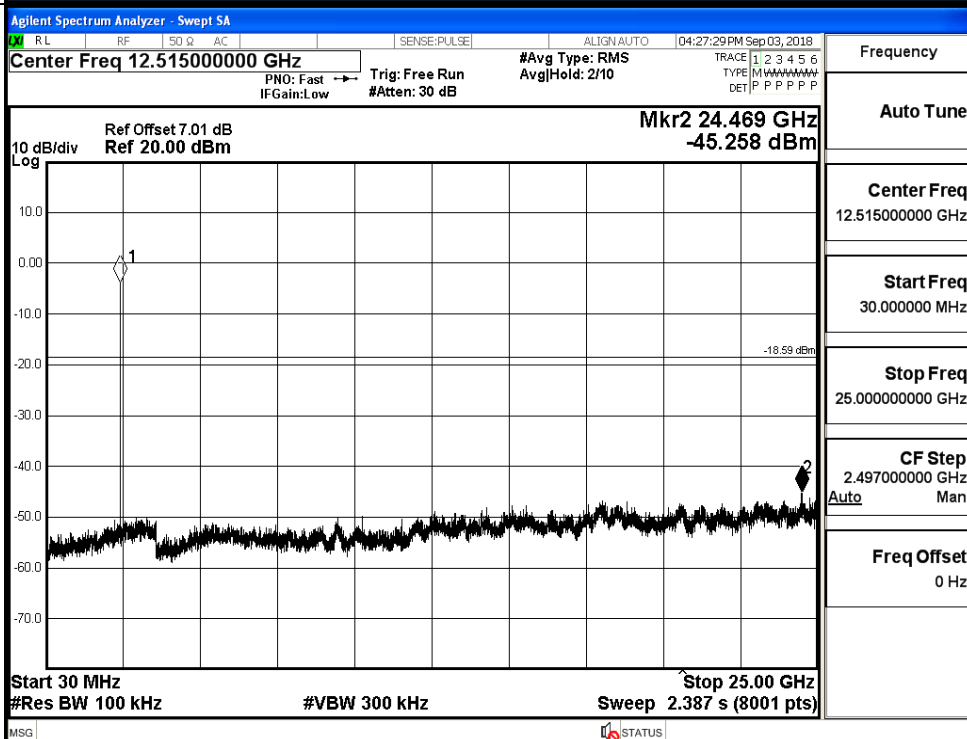


$\pi/4$ DQPSK MCH Graphs

Pref

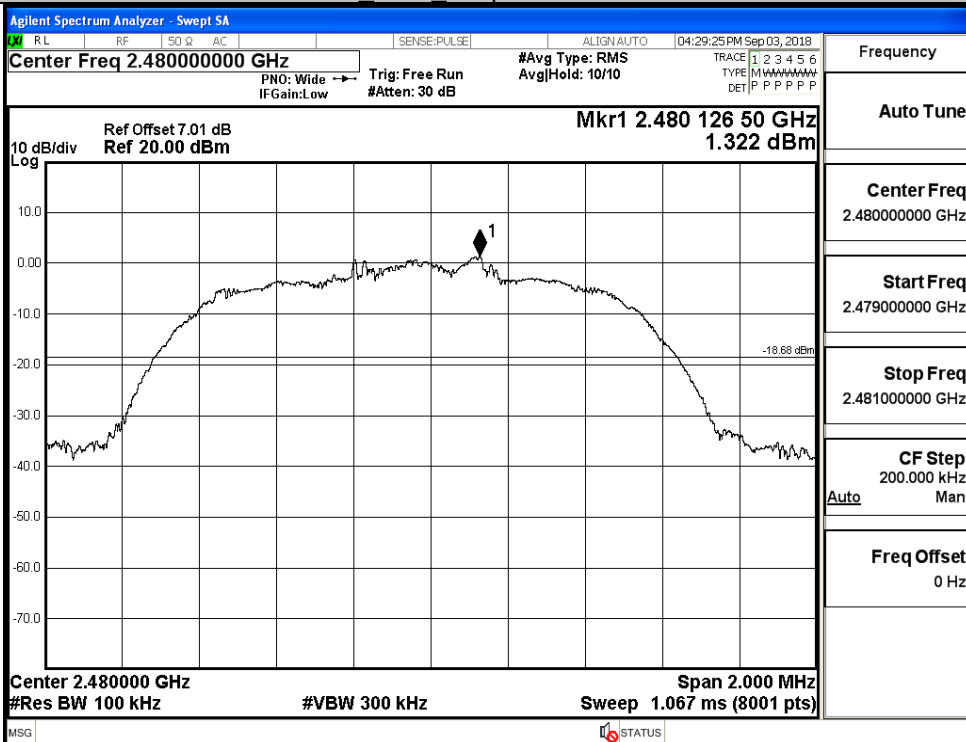


Puw

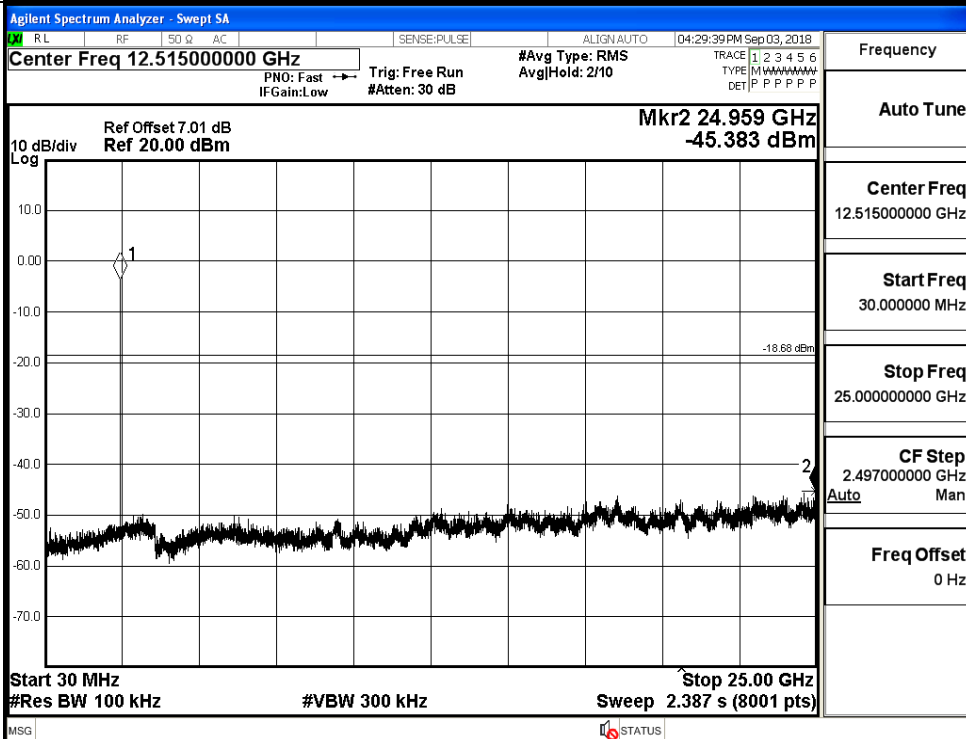


$\pi/4$ DQPSK HCH Graphs

Pref

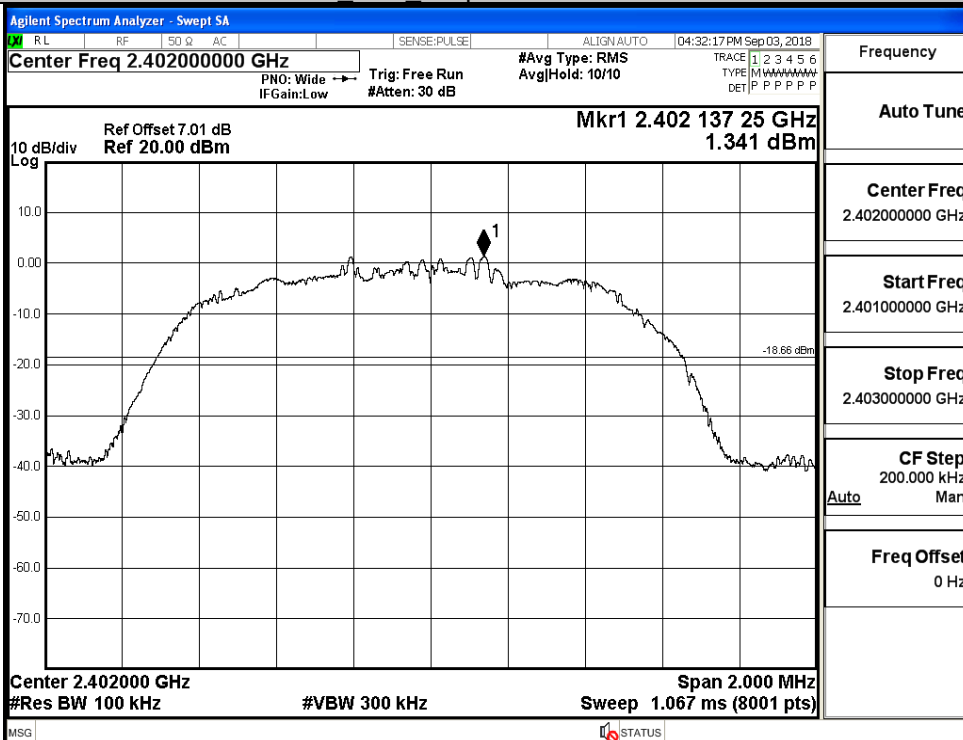


Puw

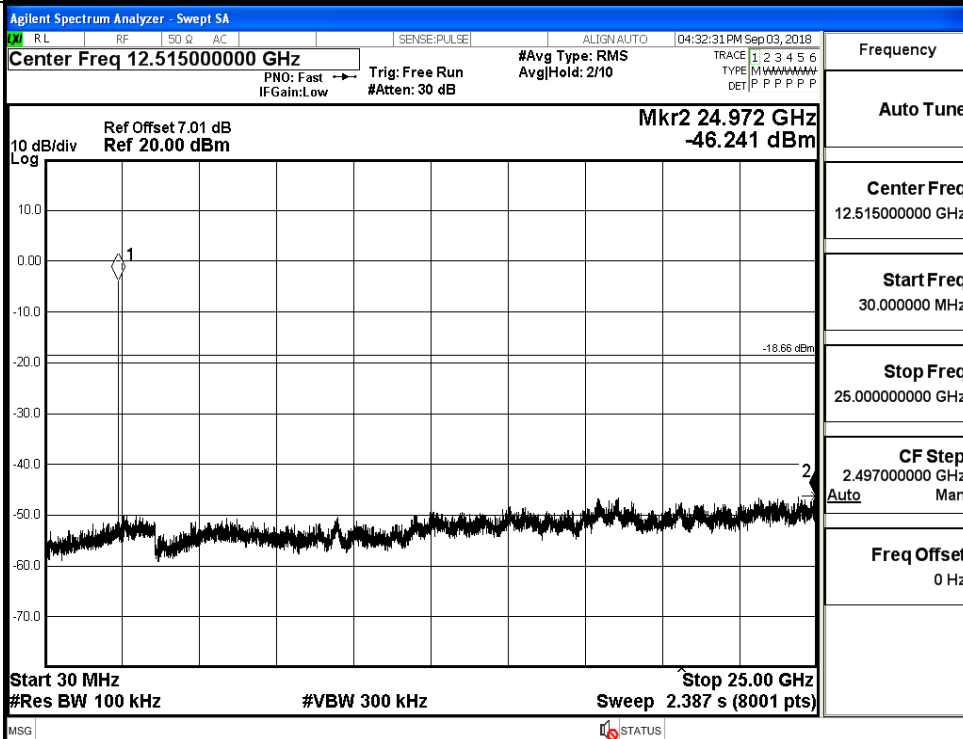


8DPSK LCH Graphs

Pref

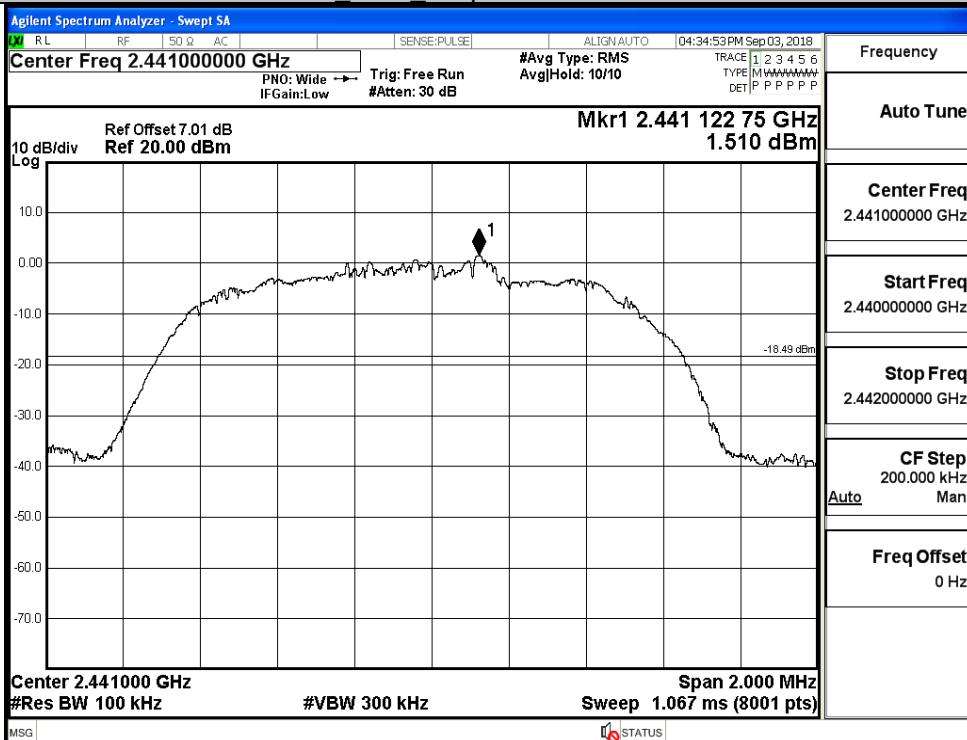


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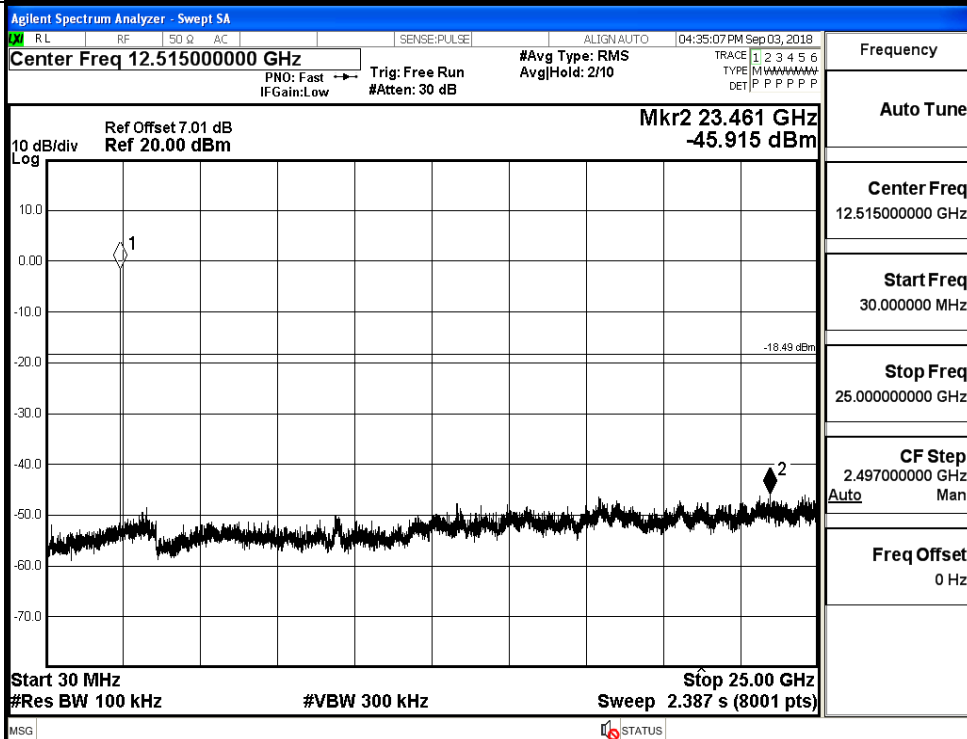


8DPSK MCH Graphs

Pref

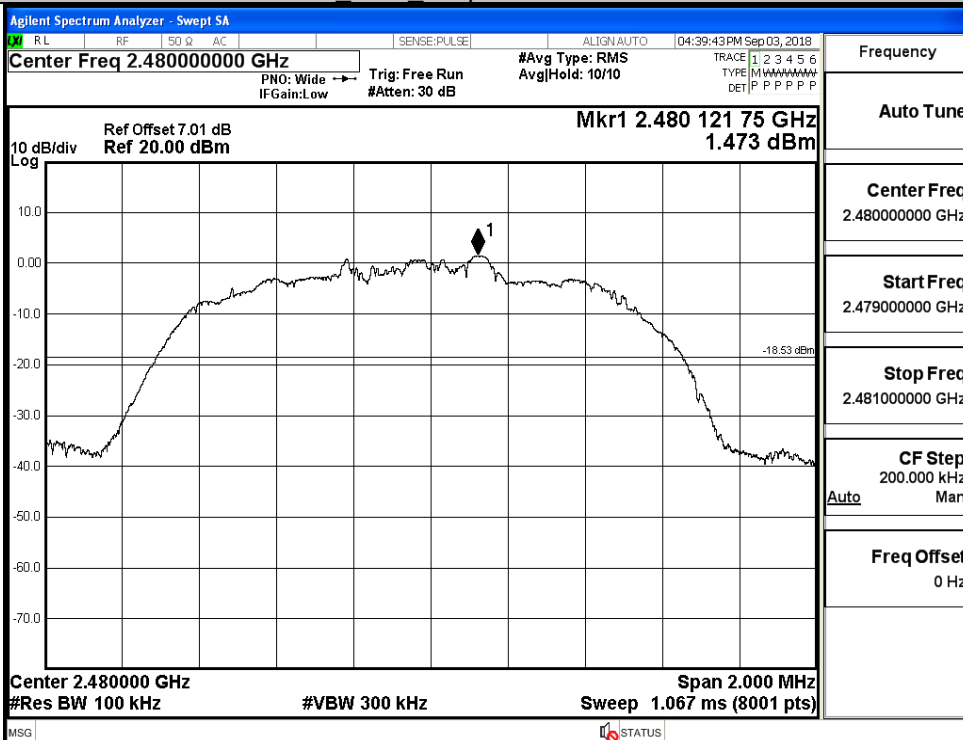


Puw

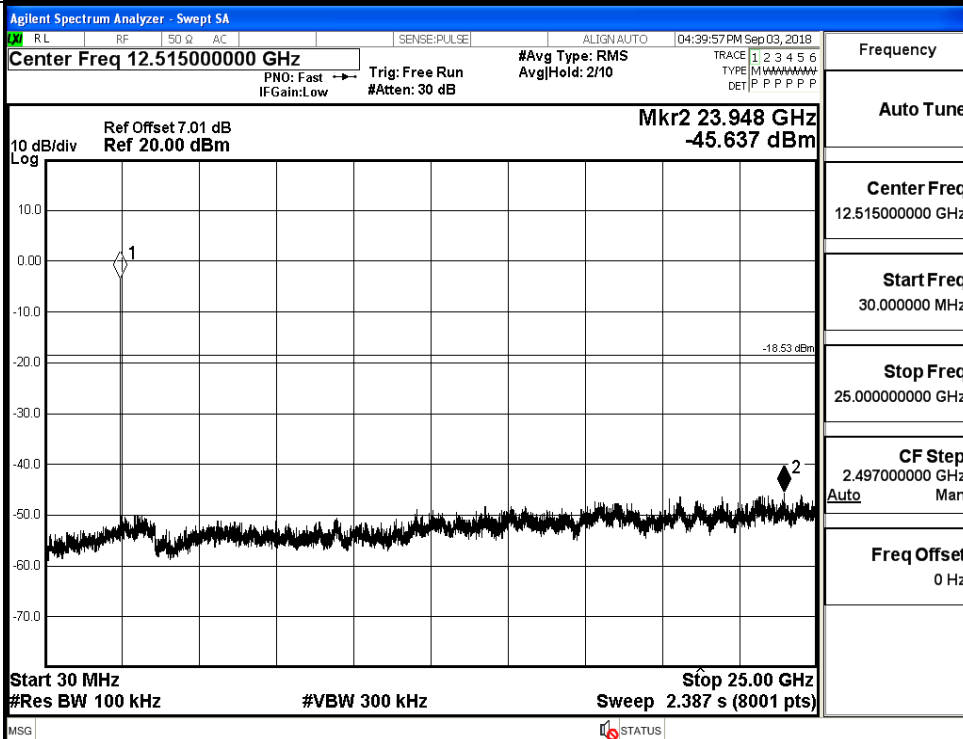


8DPSK_HCH Graphs

Pref



Puw

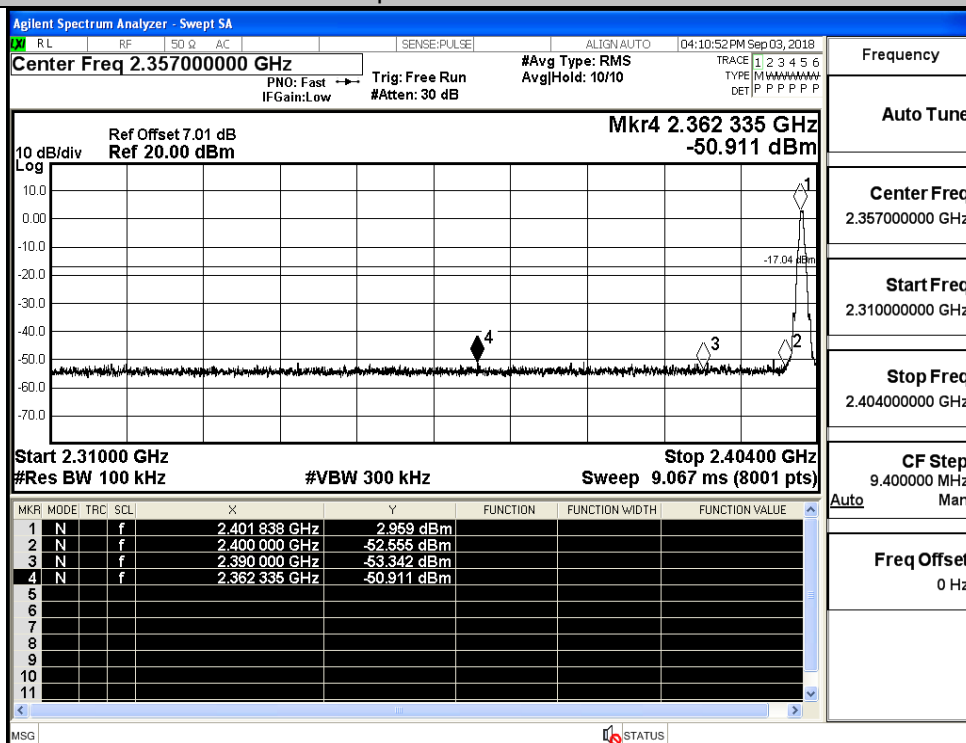


A.7 Band-edge for RF Conducted Emissions

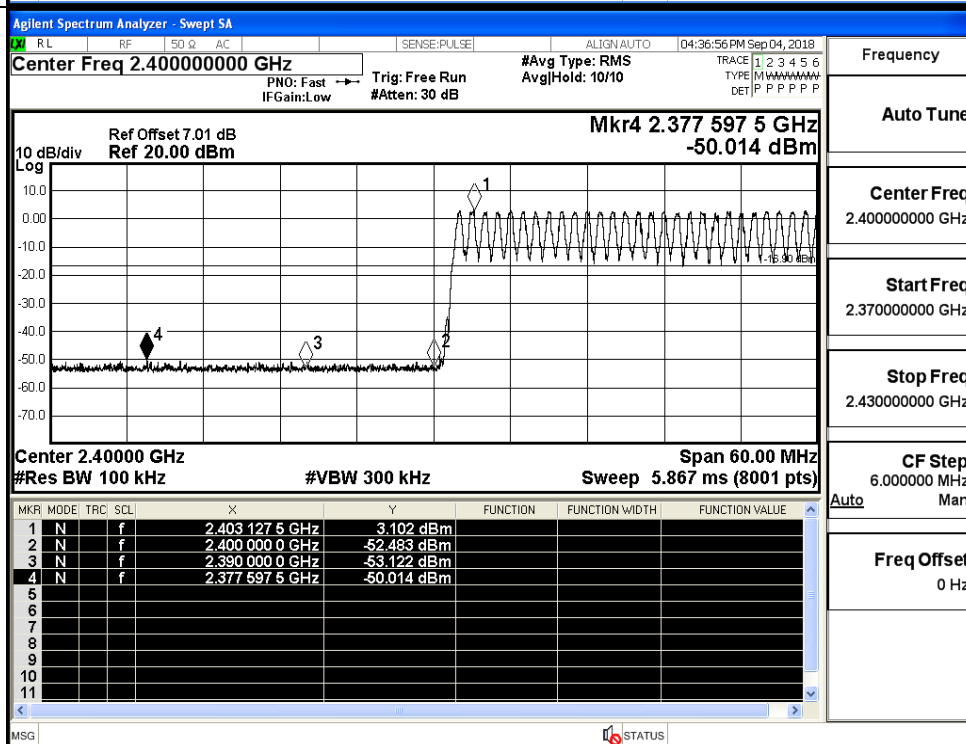
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	2.959	Off	-50.911	-17.04	PASS
			3.102	On	-50.014	-16.9	PASS
	HCH	2480	2.923	Off	-50.608	-17.08	PASS
			2.944	On	-50.415	-17.06	PASS
$\pi/4$ DQPSK	LCH	2402	-0.600	Off	-50.653	-20.6	PASS
			1.299	On	-49.907	-18.7	PASS
	HCH	2480	1.542	Off	-50.539	-18.46	PASS
			1.492	On	-50.304	-18.51	PASS
8DPSK	LCH	2402	1.341	Off	-50.610	-18.66	PASS
			1.403	On	-50.529	-18.6	PASS
	HCH	2480	1.530	Off	-50.687	-18.47	PASS
			1.509	On	-50.257	-18.49	PASS

Test Graphs

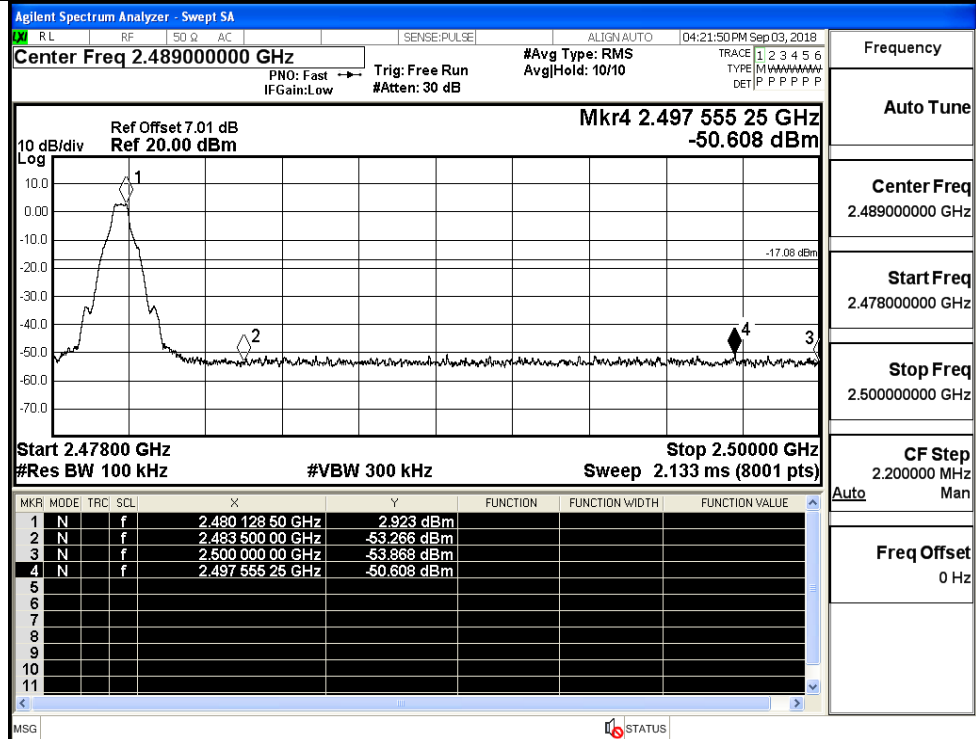
GFSK/LCH/No Hop



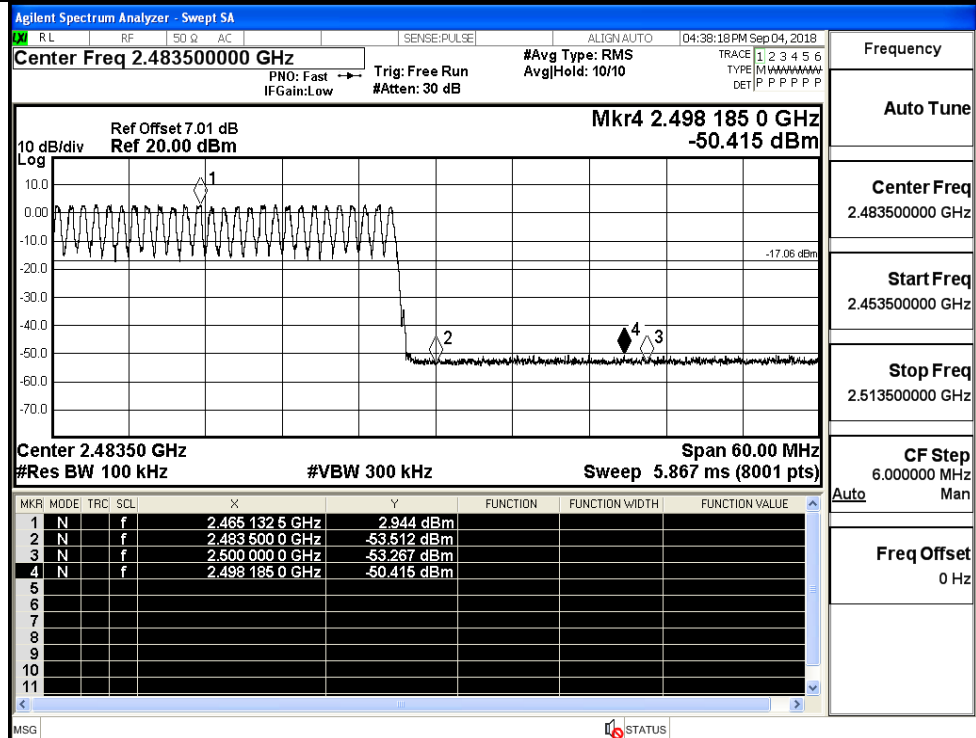
GFSK/LCH/Hop



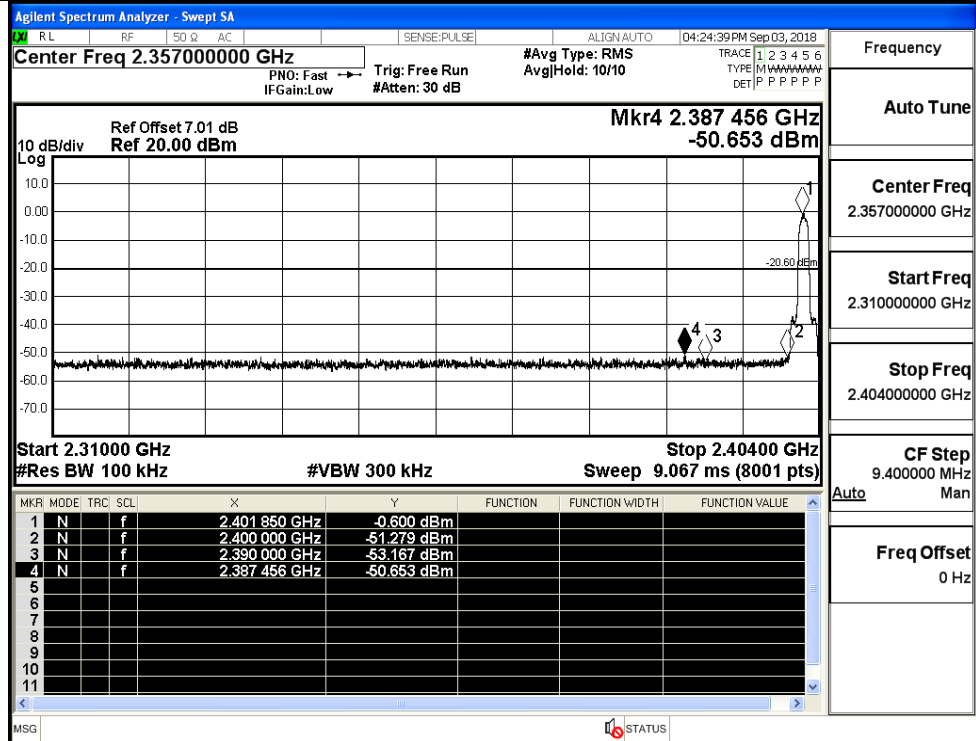
GFSK/HCH/No Hop



GFSK/HCH/Hop



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



Frequency

Auto Tune

Center Freq
2.357000000 GHz

Start Freq
2.310000000 GHz

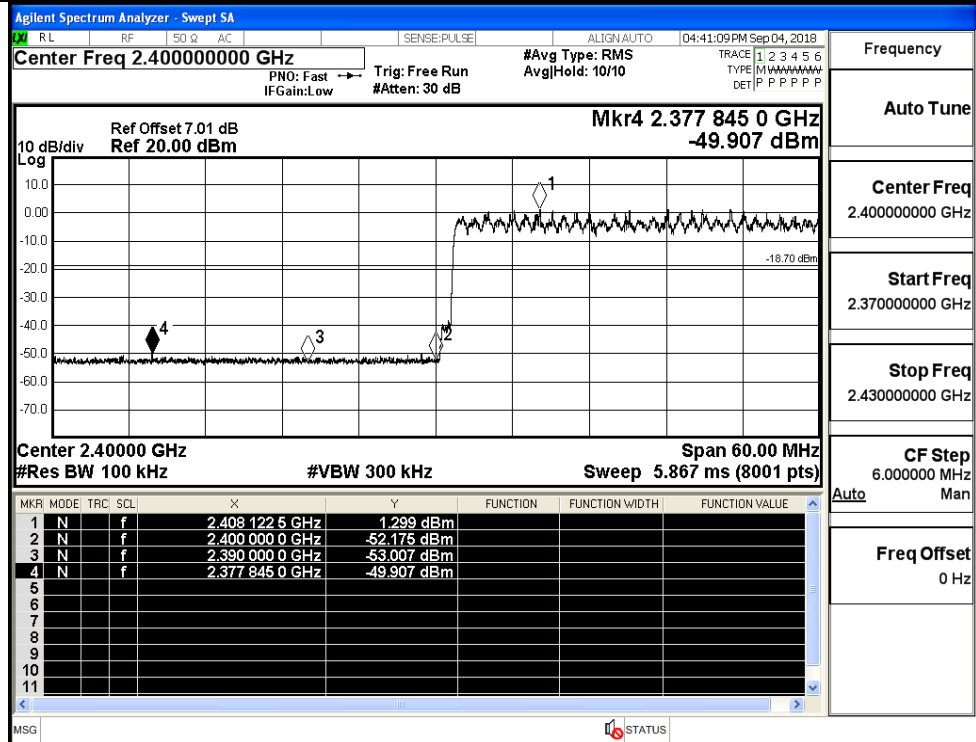
Stop Freq
2.404000000 GHz

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

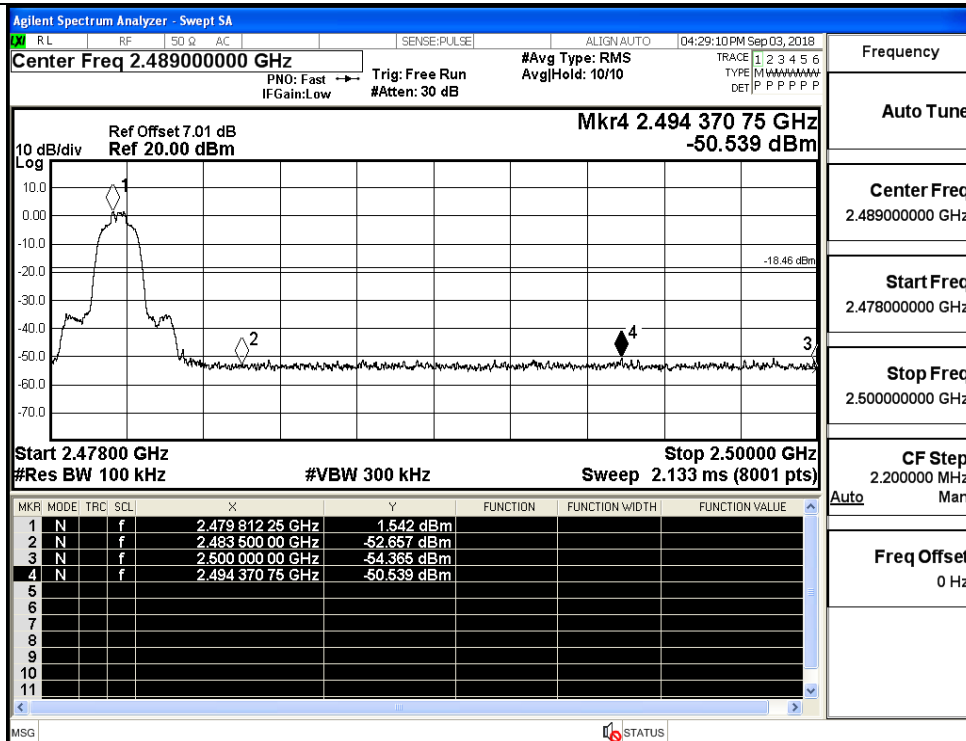
Stop Freq
2.430000000 GHz

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

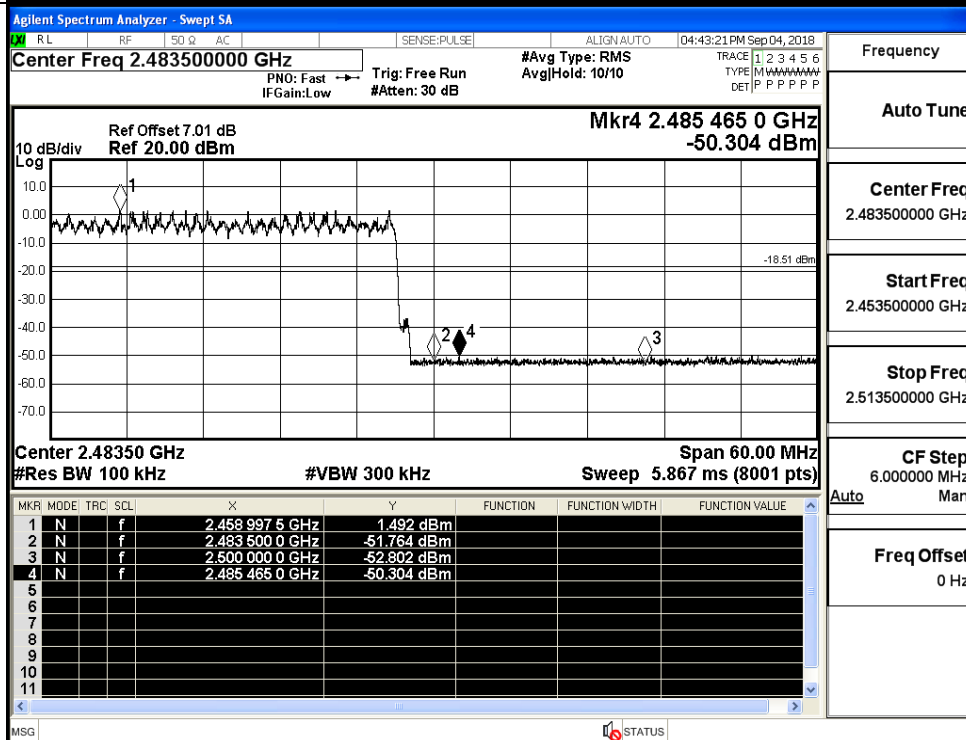
Start Freq
2.478000000 GHz

Stop Freq
2.500000000 GHz

CF Step
2.200000 MHz

Freq Offset
0 Hz

$\pi/4$ DQPSK/HCH/Hop



Frequency

Auto Tune

Center Freq
2.483500000 GHz

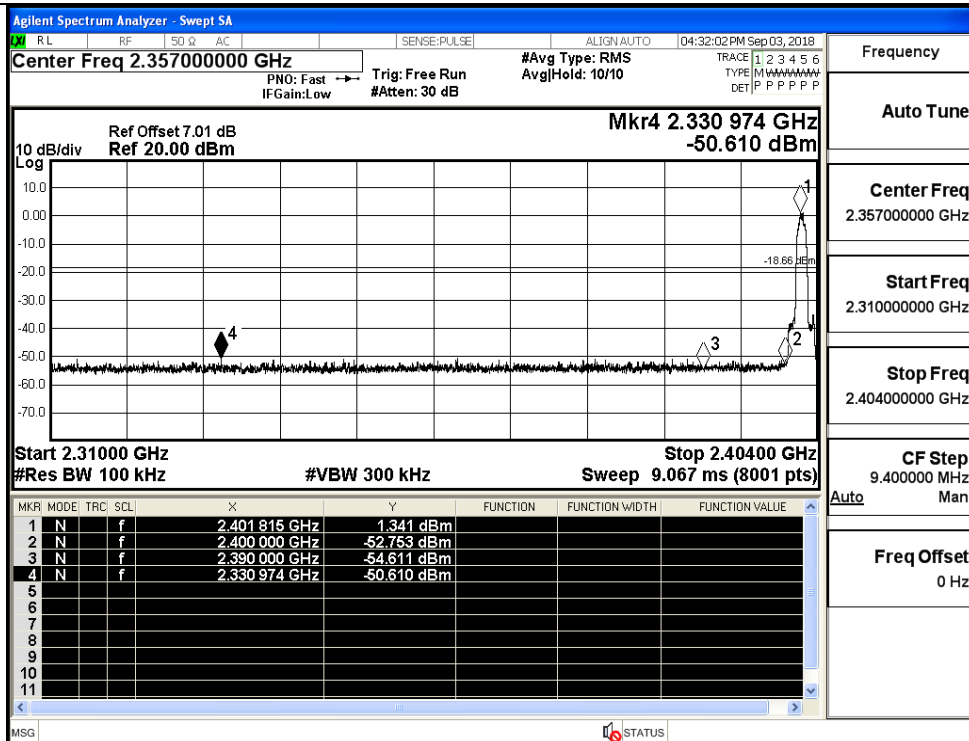
Start Freq
2.453500000 GHz

Stop Freq
2.513500000 GHz

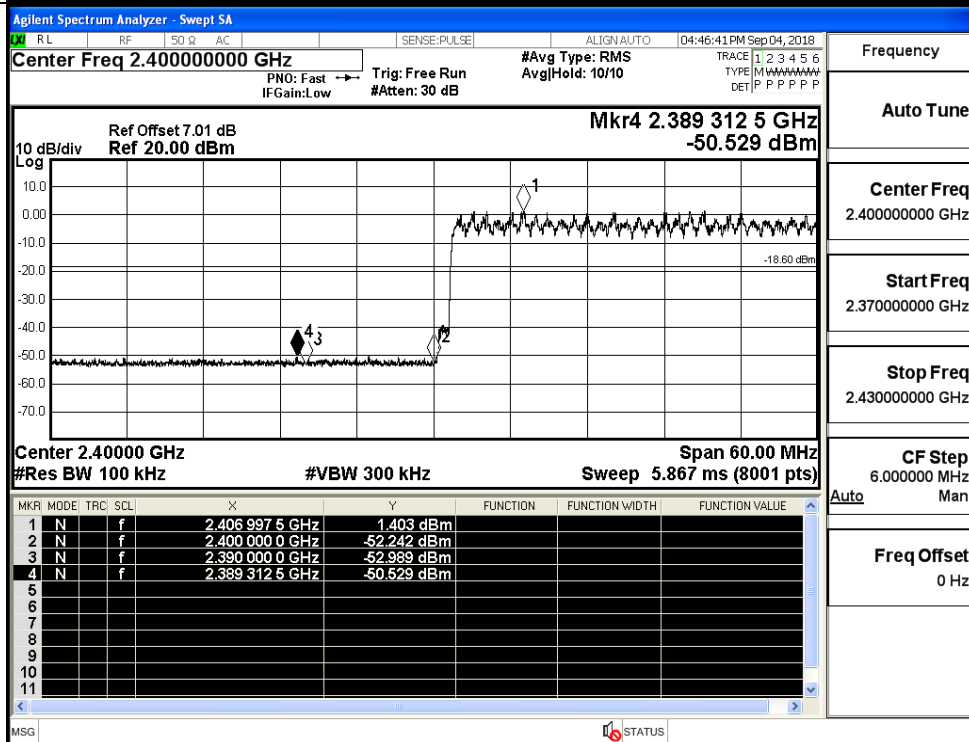
CF Step
6.000000 MHz

Freq Offset
0 Hz

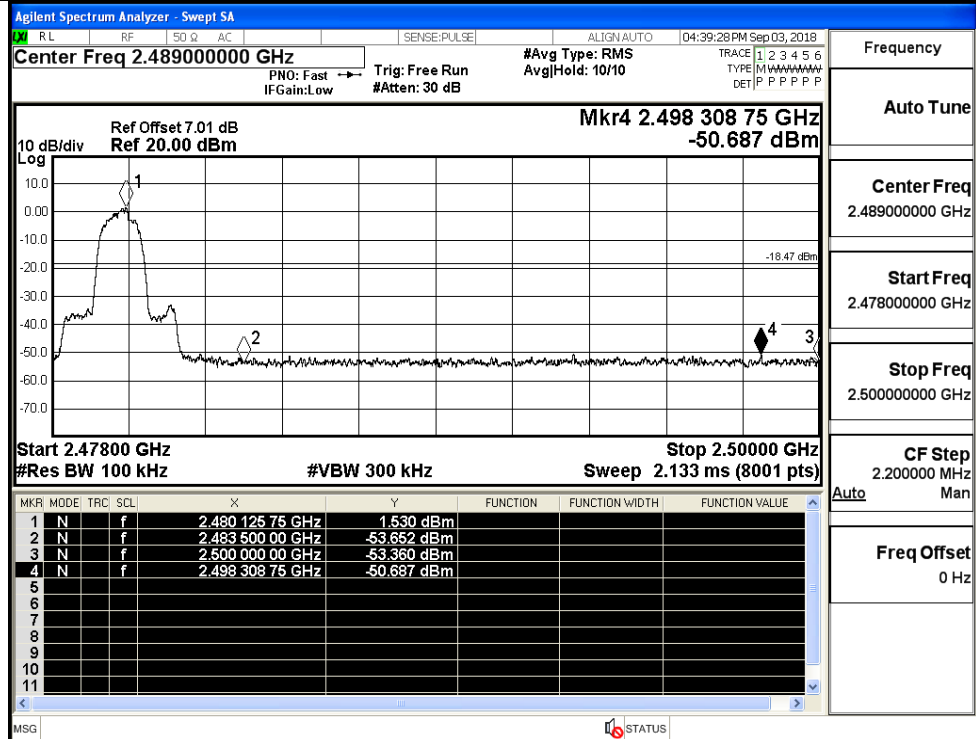
8DPSK/LCH/No Hop



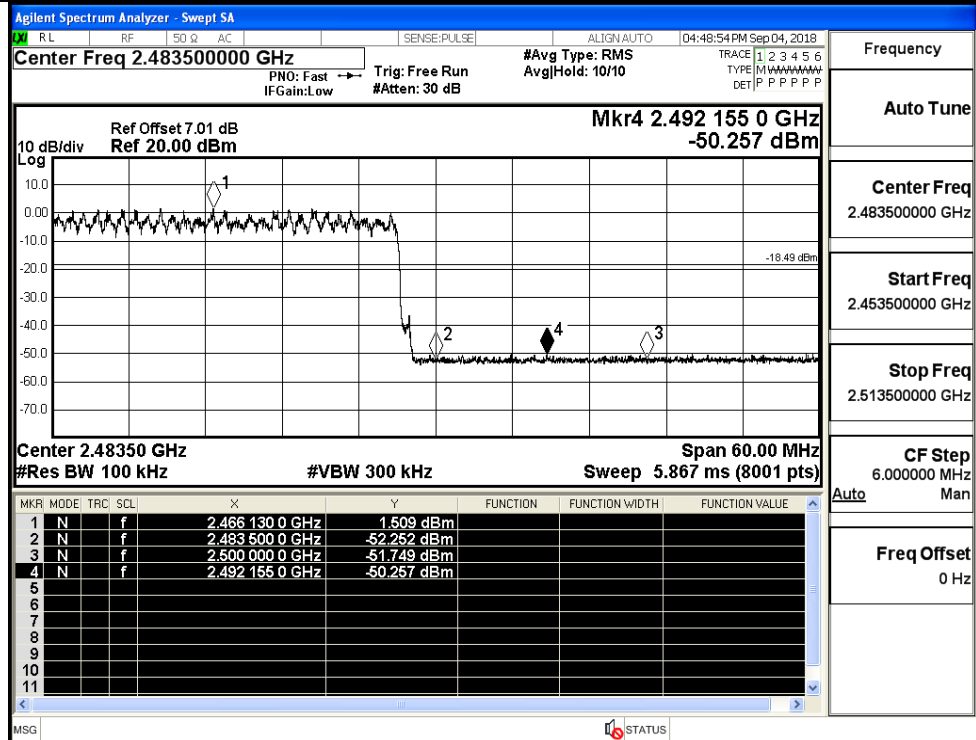
8DPSK/LCH/Hop



8DPSK/HCH/No Hop



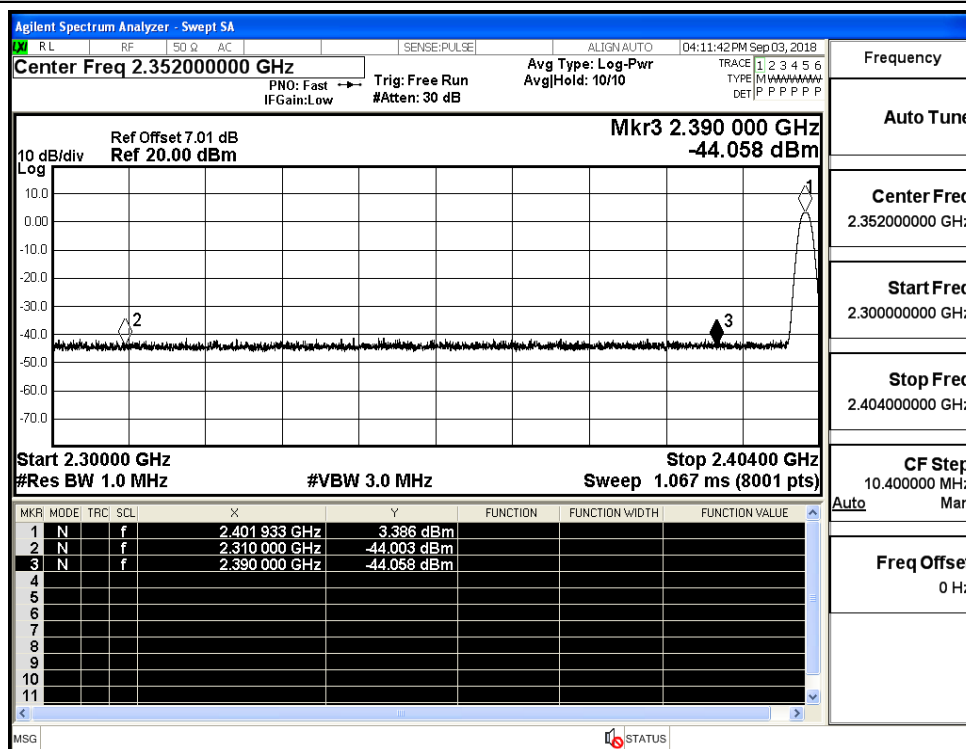
8DPSK/HCH/Hop



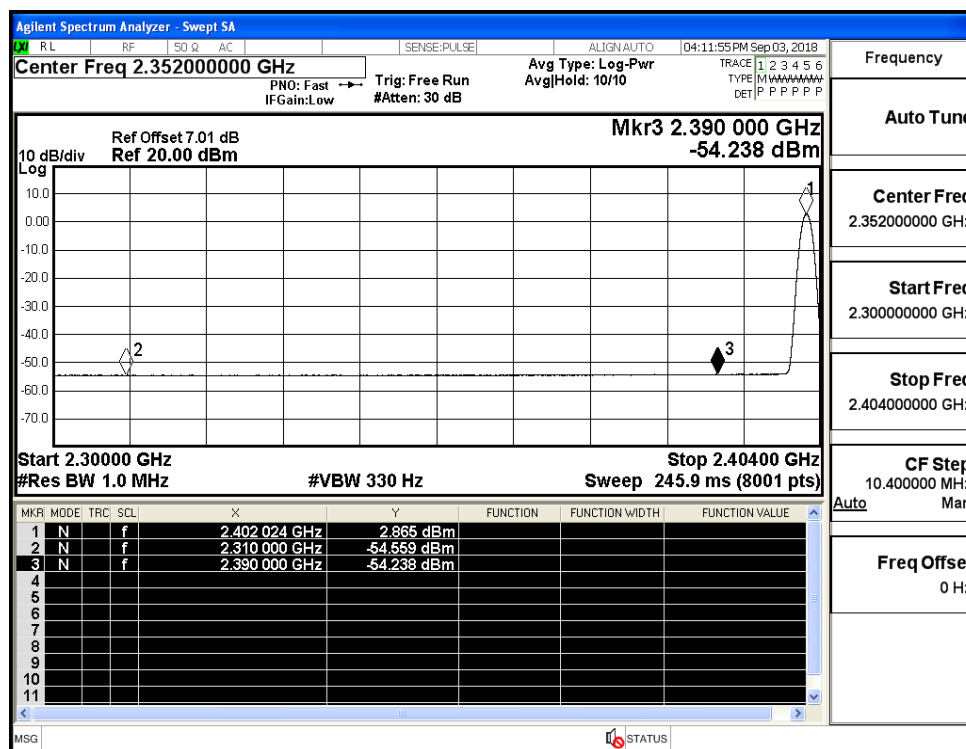
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-44.00	2.5	0	53.76	PEAK	74	PASS
	Off	2310.0	-54.56	2.5	0	43.20	AV	54	PASS
	Off	2390.0	-44.06	2.5	0	53.70	PEAK	74	PASS
	Off	2390.0	-54.24	2.5	0	43.52	AV	54	PASS
	Off	2483.5	-43.69	2.5	0	54.07	PEAK	74	PASS
	Off	2483.5	-53.81	2.5	0	43.95	AV	54	PASS
	Off	2500.0	-44.45	2.5	0	53.31	PEAK	74	PASS
	Off	2500.0	-53.93	2.5	0	43.83	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-44.67	2.5	0	53.09	PEAK	74	PASS
	Off	2310.0	-54.54	2.5	0	43.22	AV	54	PASS
	Off	2390.0	-44.98	2.5	0	52.78	PEAK	74	PASS
	Off	2390.0	-54.33	2.5	0	43.43	AV	54	PASS
	Off	2483.5	-44.56	2.5	0	53.20	PEAK	74	PASS
	Off	2483.5	-53.71	2.5	0	44.05	AV	54	PASS
	Off	2500.0	-44.81	2.5	0	52.95	PEAK	74	PASS
	Off	2500.0	-53.95	2.5	0	43.81	AV	54	PASS
8DPSK	Off	2310.0	-43.40	2.5	0	54.36	PEAK	74	PASS
	Off	2310.0	-54.67	2.5	0	43.09	AV	54	PASS
	Off	2390.0	-43.94	2.5	0	53.82	PEAK	74	PASS
	Off	2390.0	-54.33	2.5	0	43.43	AV	54	PASS
	Off	2483.5	-43.73	2.5	0	54.03	PEAK	74	PASS
	Off	2483.5	-53.98	2.5	0	43.78	AV	54	PASS
	Off	2500.0	-44.78	2.5	0	52.98	PEAK	74	PASS
	Off	2500.0	-53.93	2.5	0	43.83	AV	54	PASS

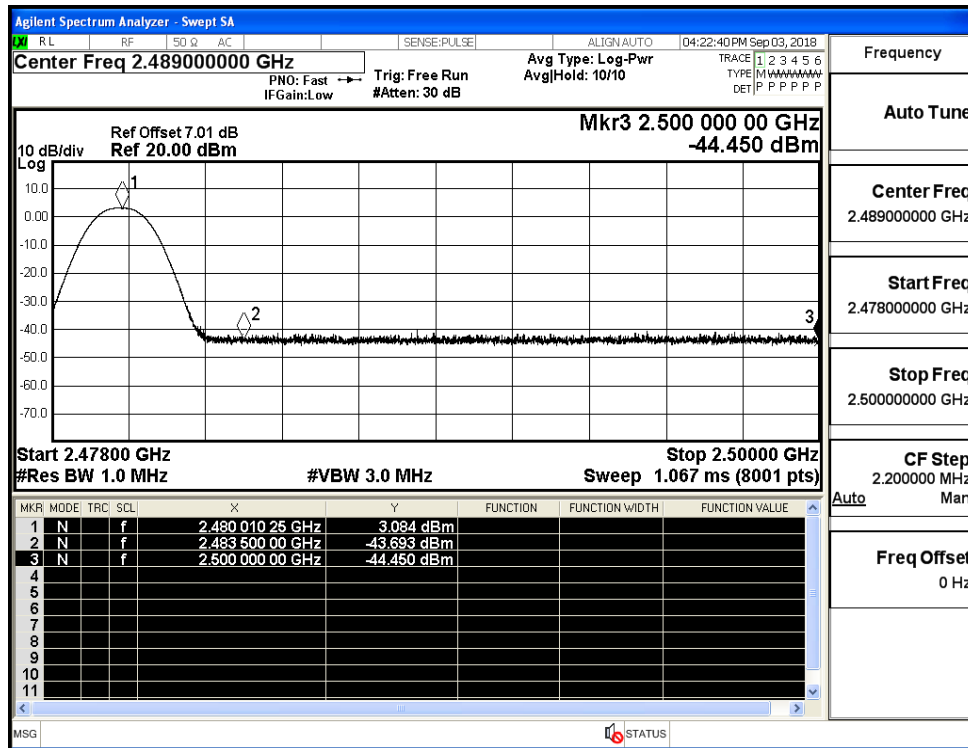
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



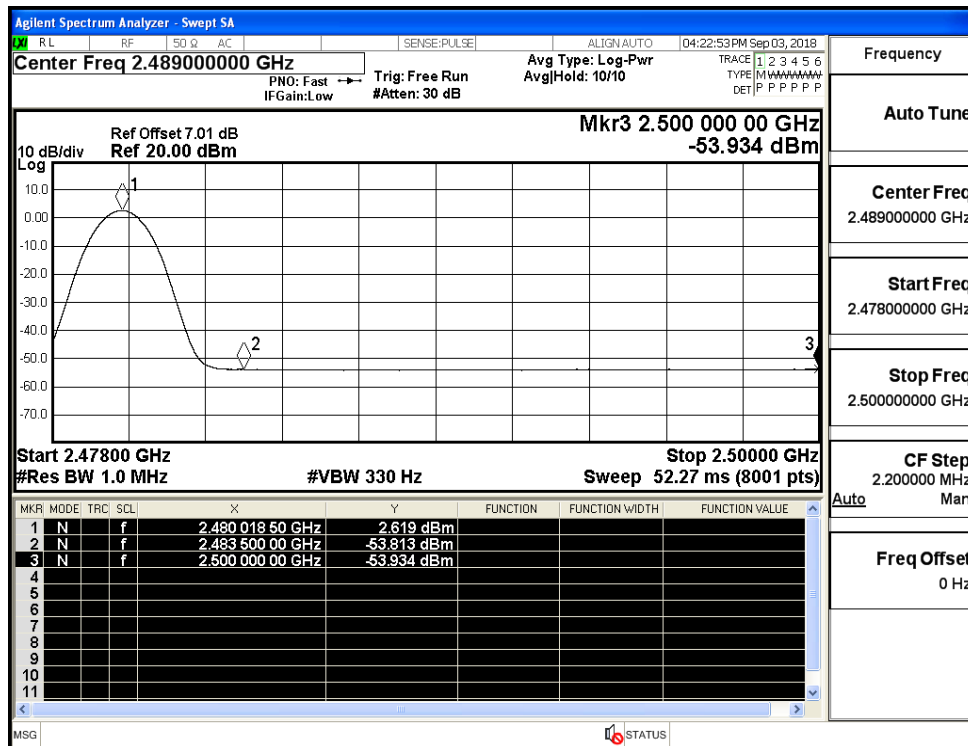
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)



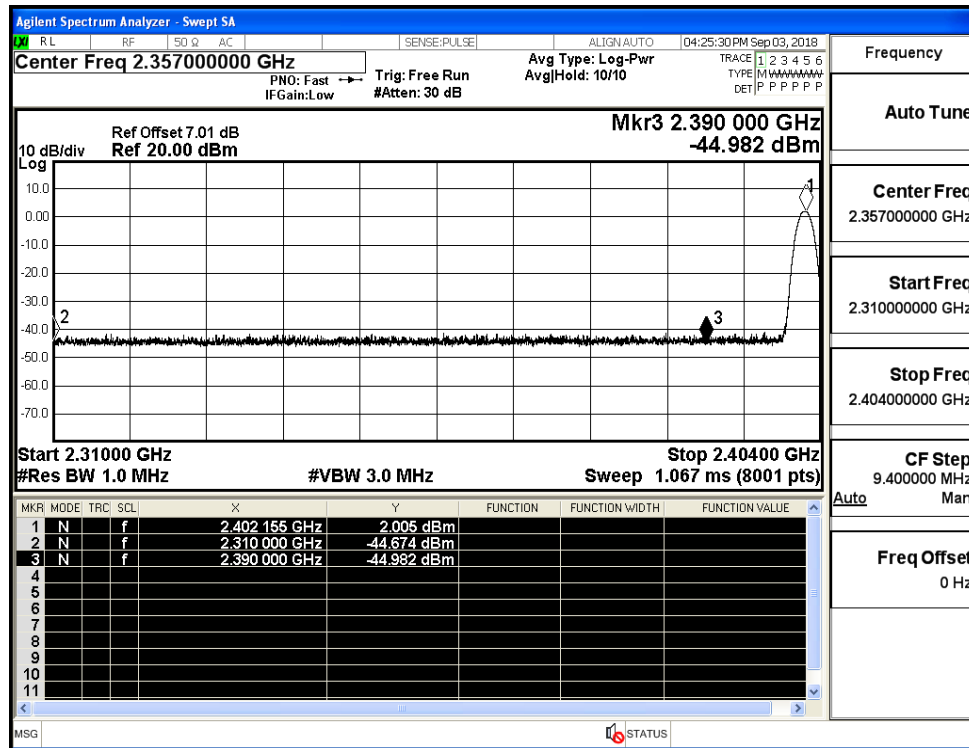
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)



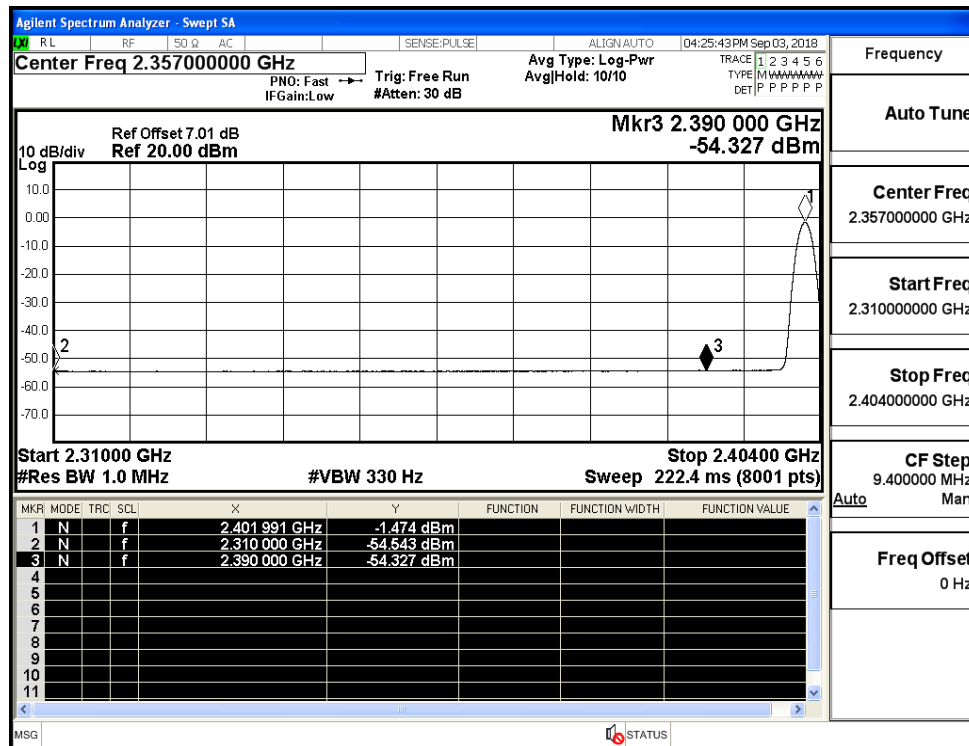
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)



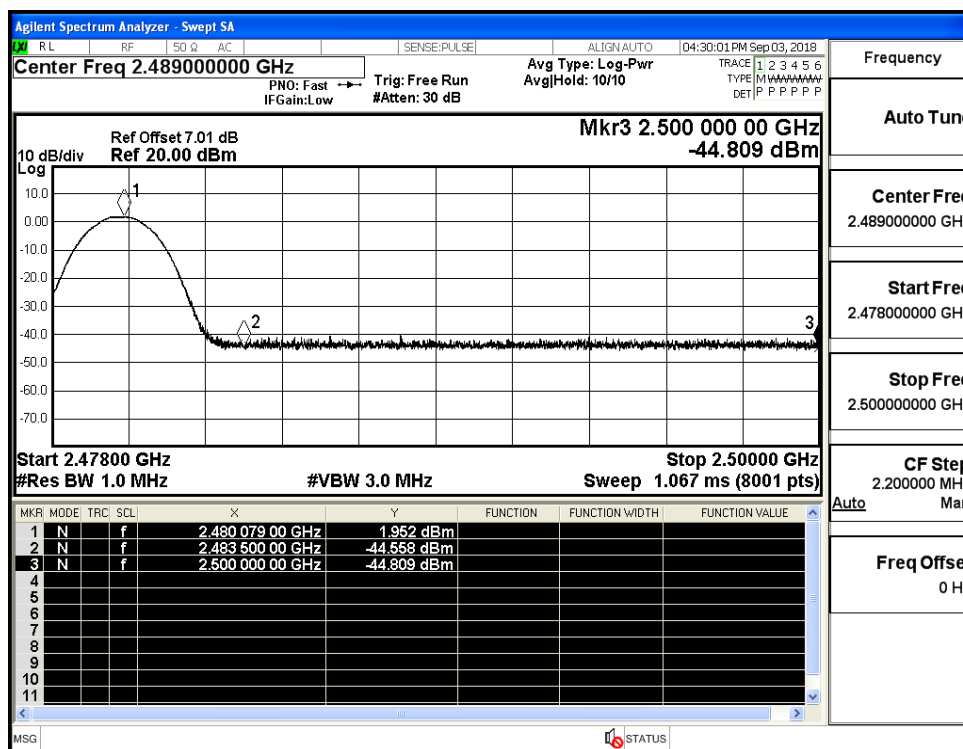
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)



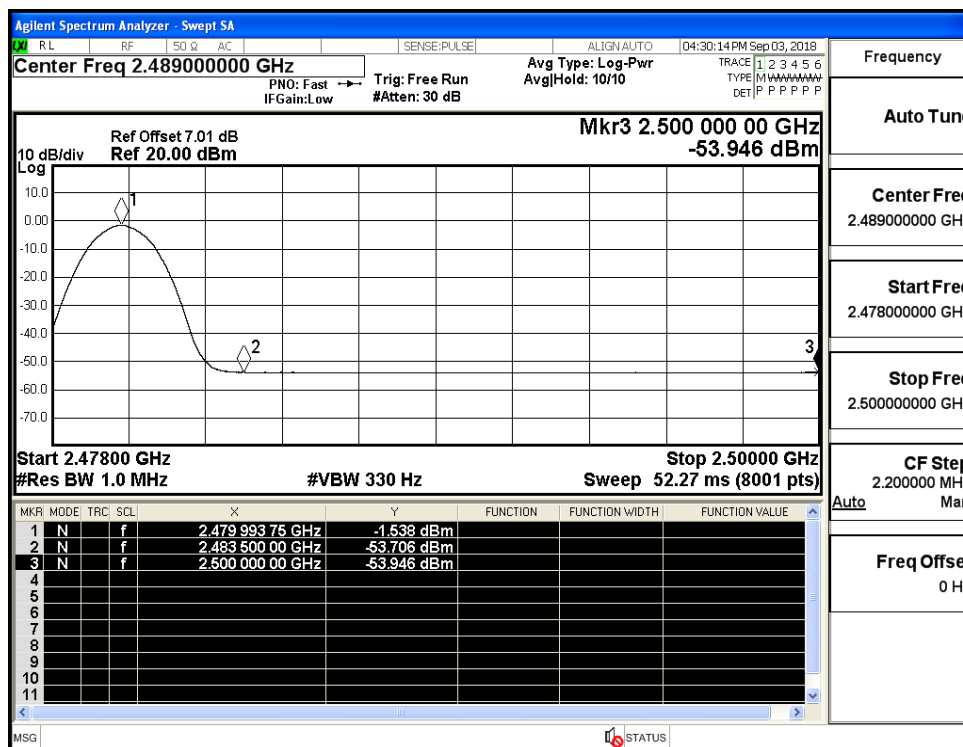
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (Low Channel)



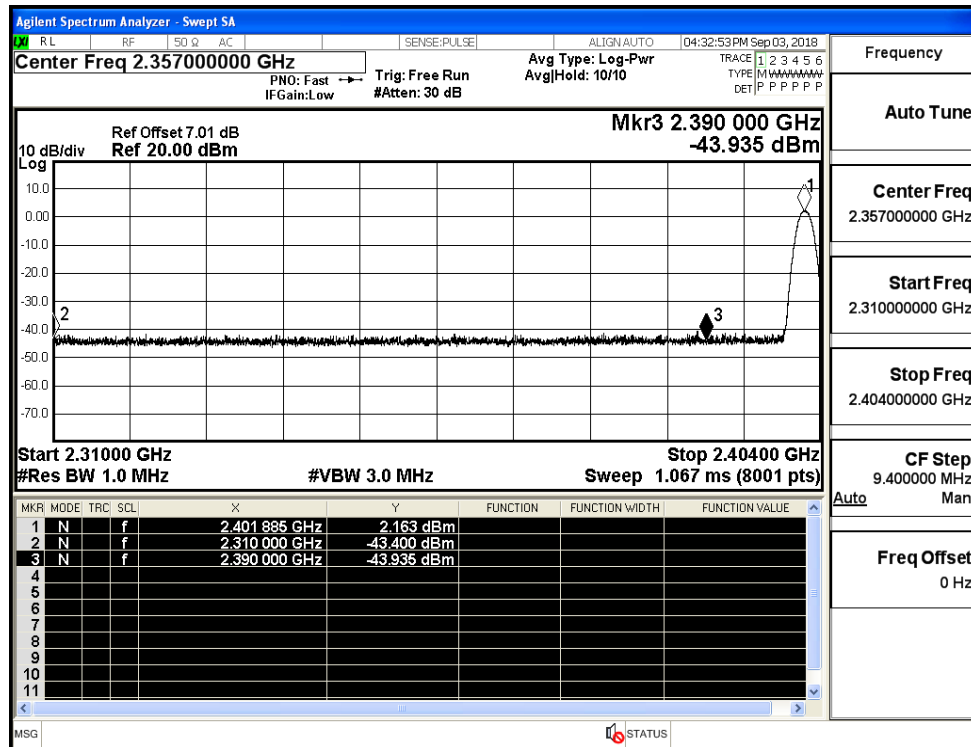
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (High Channel)



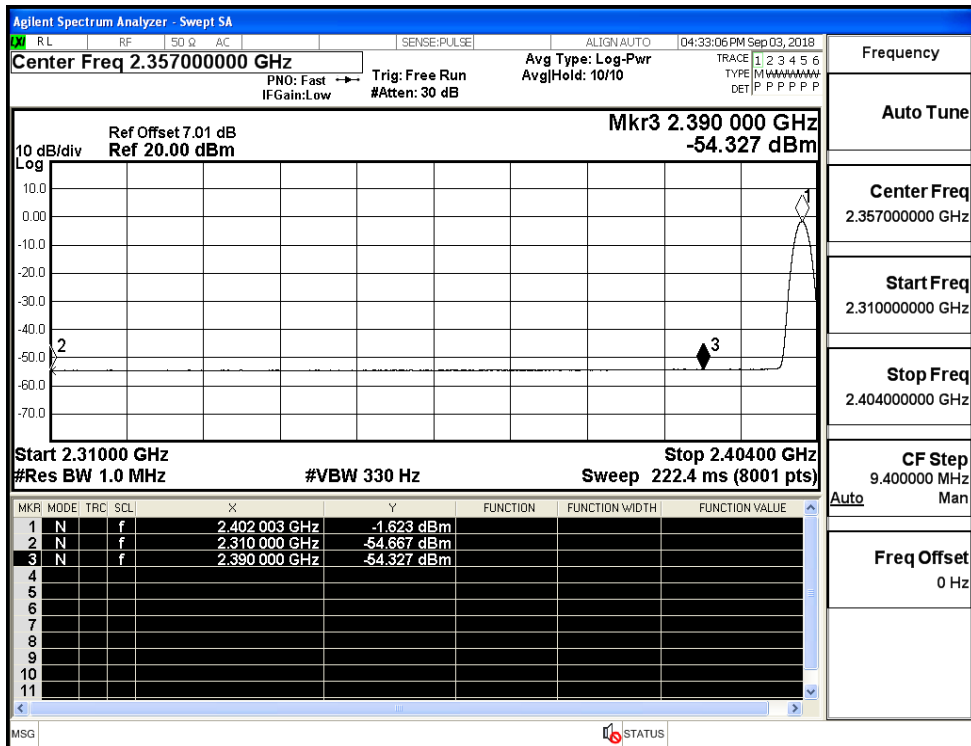
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (High Channel)



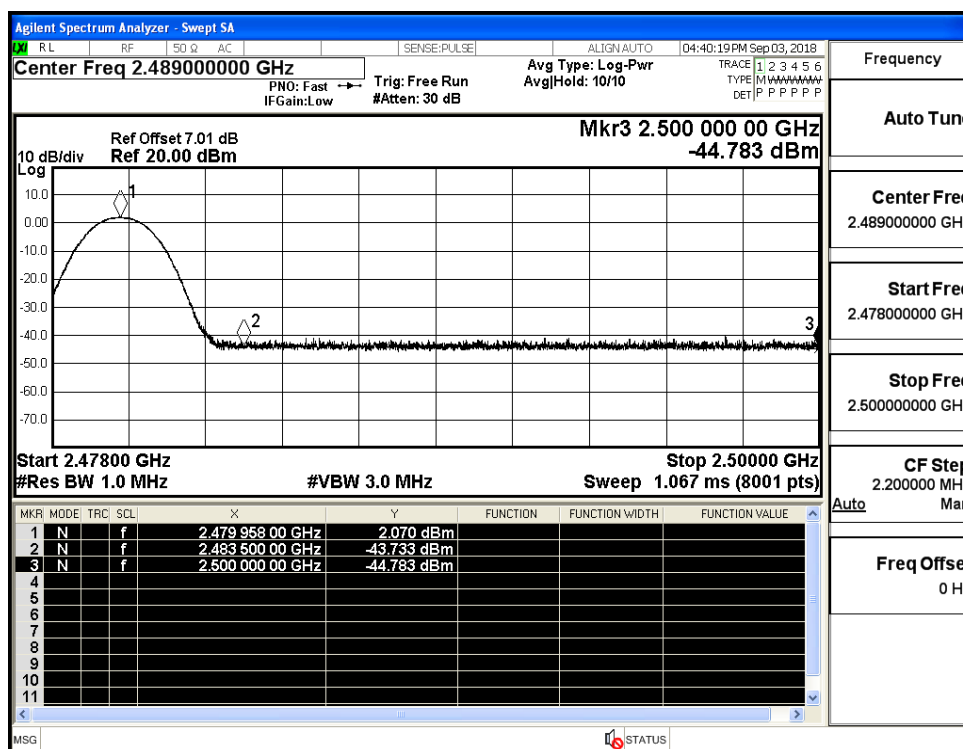
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)

