

Appendix A

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

Product Name: Ocean Star Lamp

Trade Mark: N/A

Test Model: XWG-102

Environmental Conditions

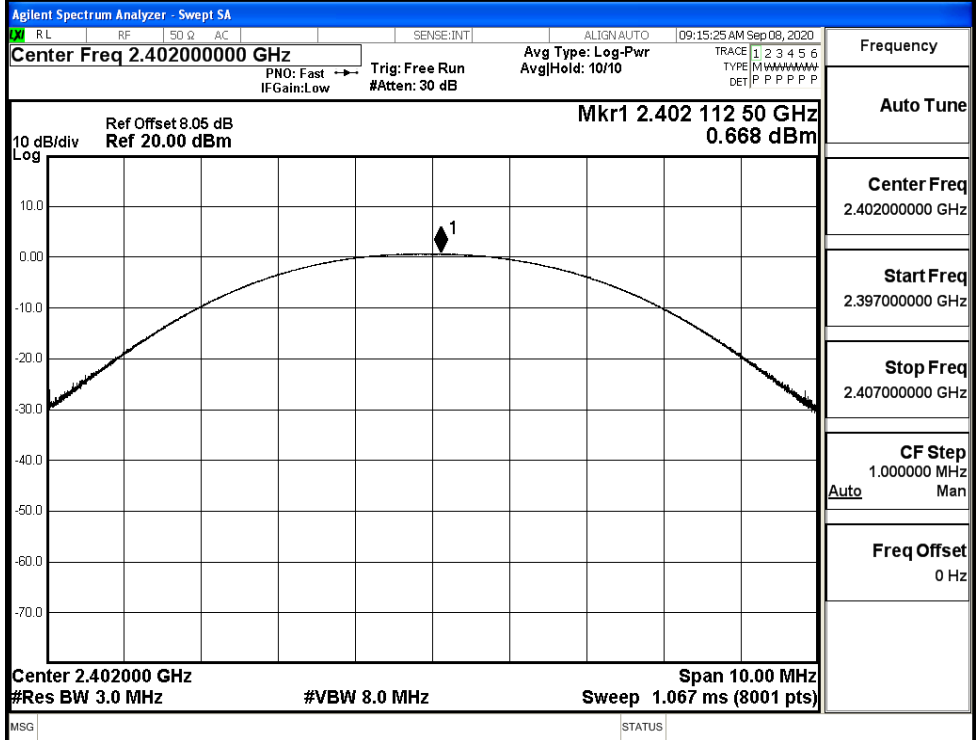
Temperature:	22.8 ° C
Relative Humidity:	53.2%
ATM Pressure:	100.0 kPa
Test Engineer:	Jam Zheng
Supervised by:	Li Huan

A.1 Maximum Conducted Peak Output Power

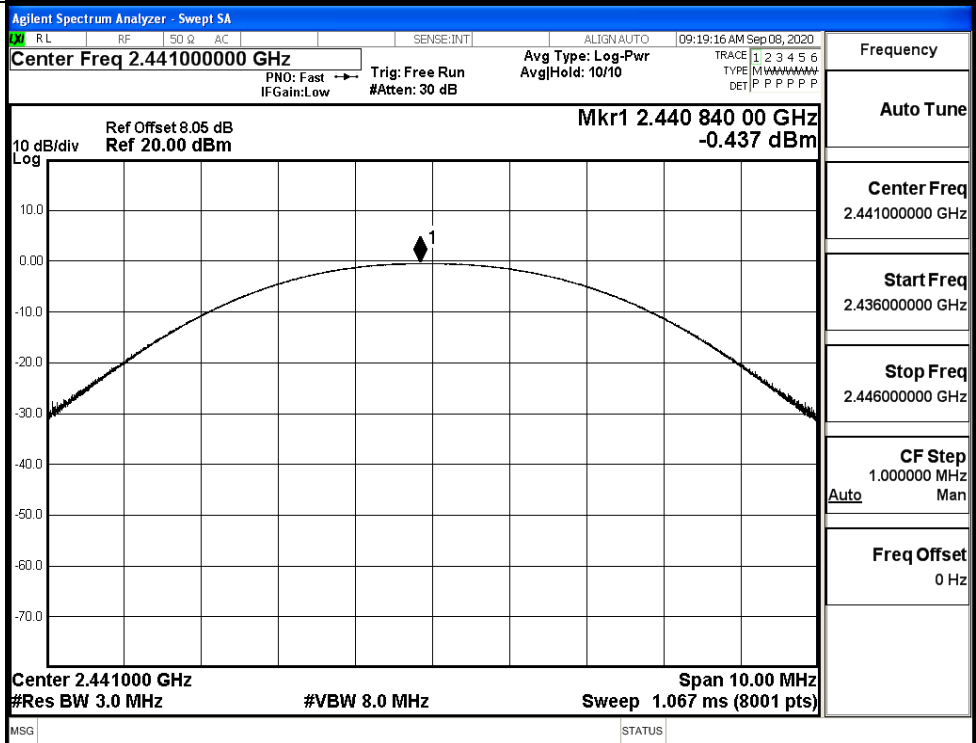
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	0.668	30	PASS
	MCH	-0.437	30	PASS
	HCH	-1.426	30	PASS
$\pi/4$ DQPSK	LCH	3.048	30	PASS
	MCH	2.302	30	PASS
	HCH	1.267	30	PASS

Test Graphs

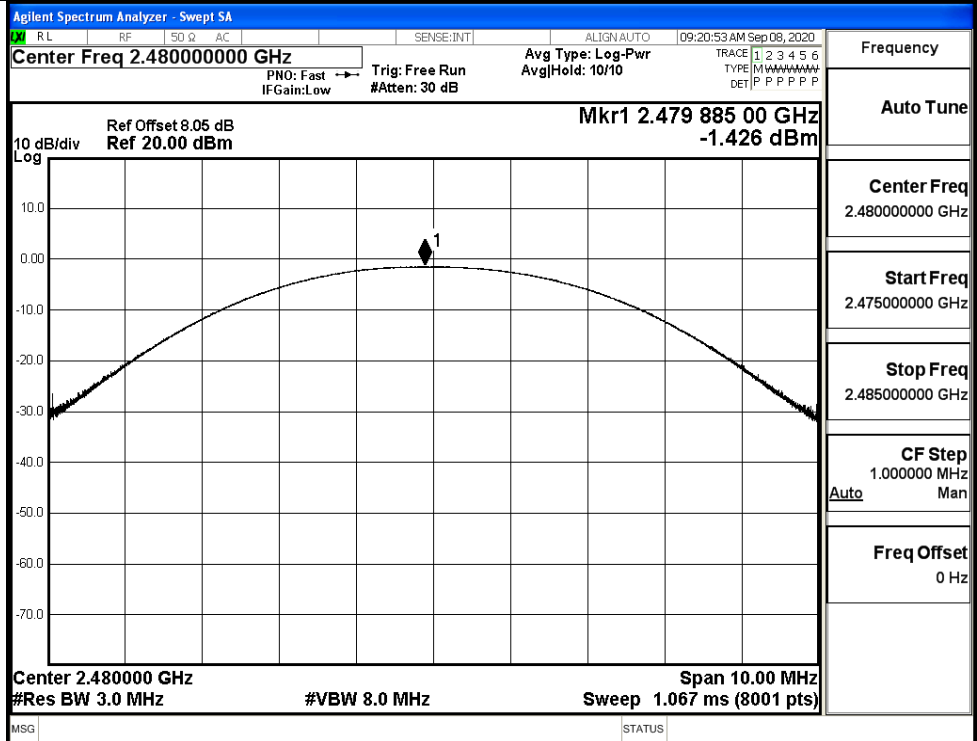
GFSK/LCH



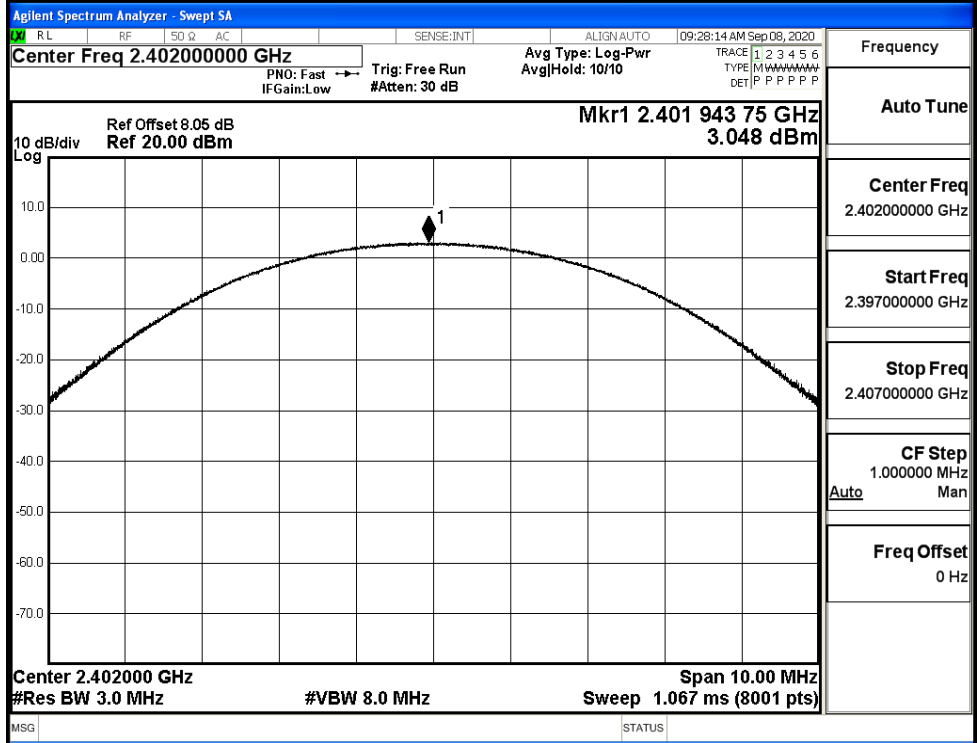
GFSK/MCH

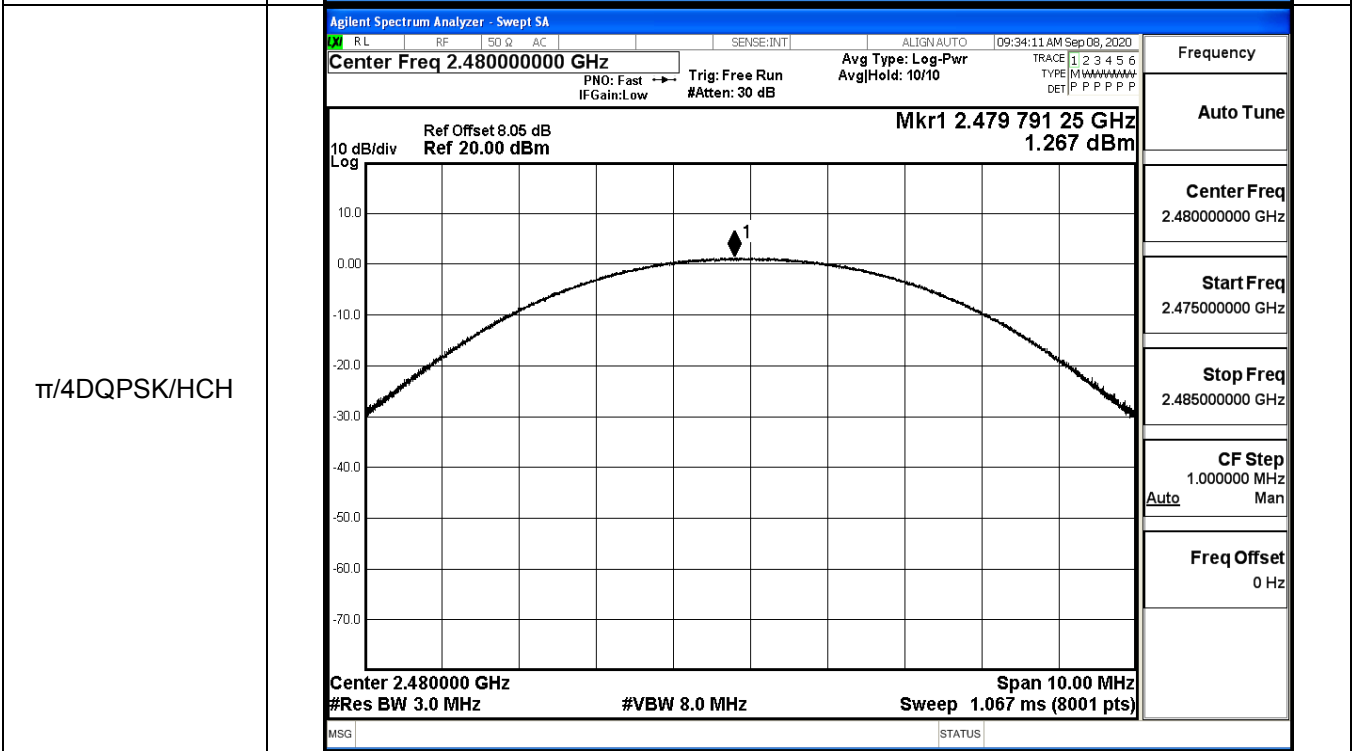
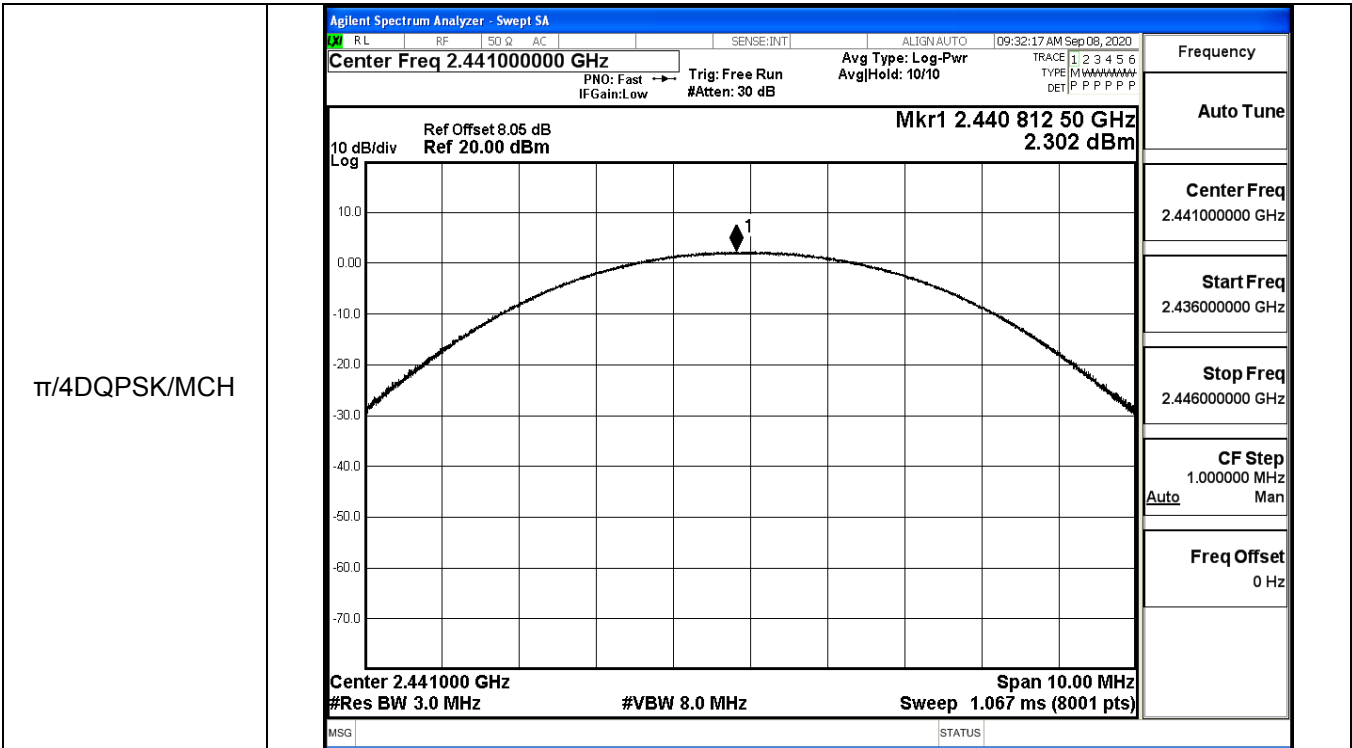


GFSK/HCH



$\pi/4$ DQPSK/LCH

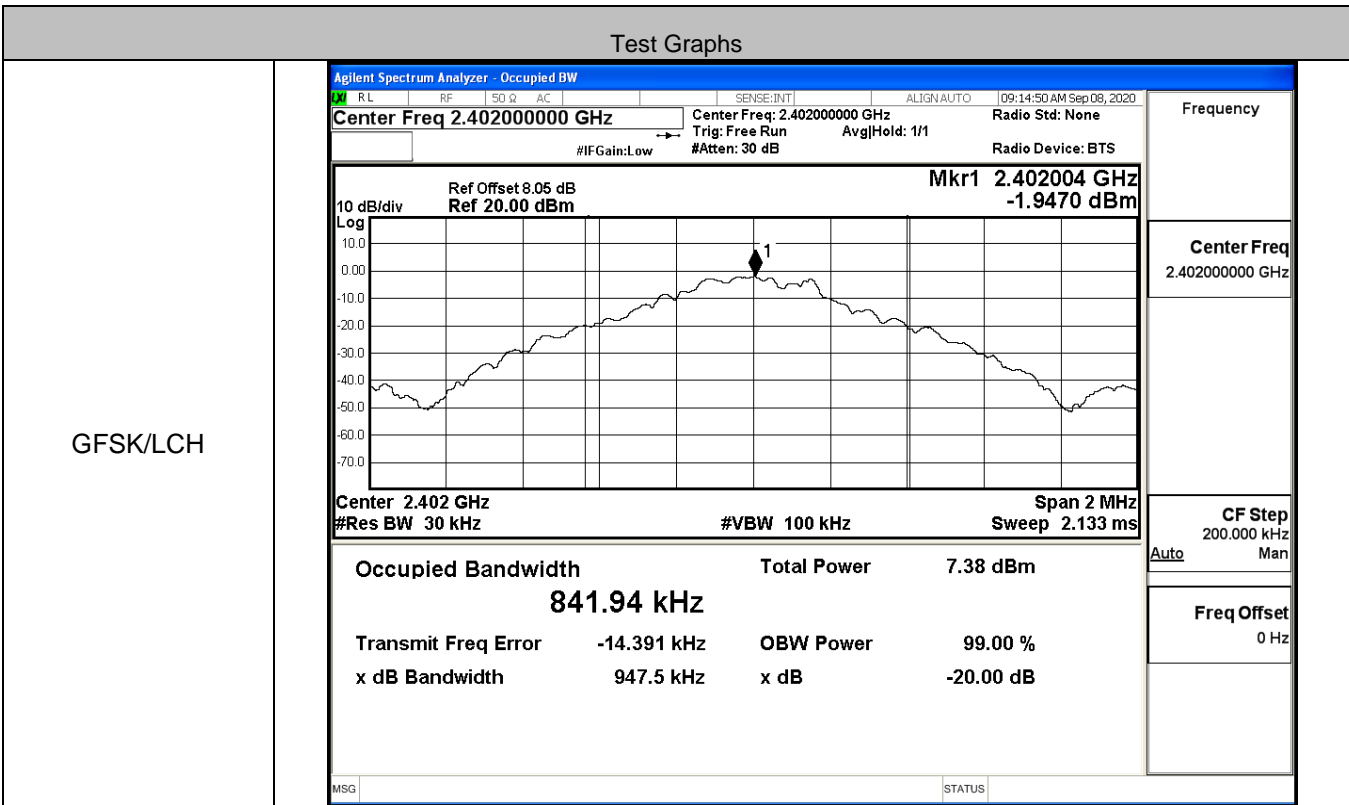




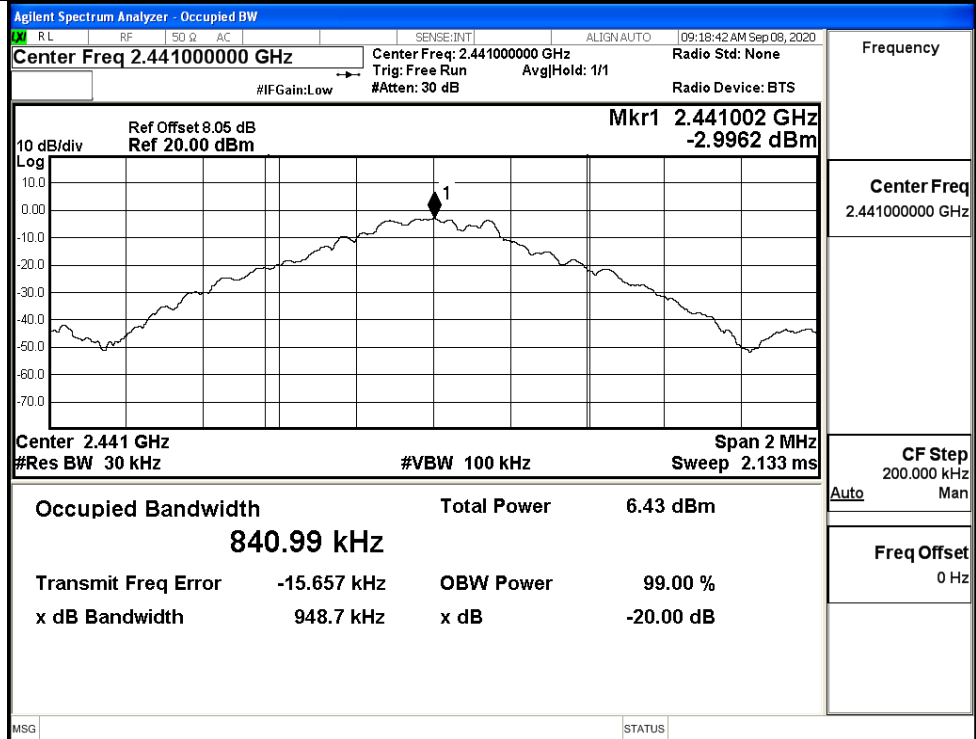
A.2 20dB Bandwidth

Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.9475	Not Specified	PASS
	MCH	0.9487	Not Specified	PASS
	HCH	0.9474	Not Specified	PASS
π/4DQPSK	LCH	1.320	Not Specified	PASS
	MCH	1.318	Not Specified	PASS
	HCH	1.316	Not Specified	PASS

Test Graphs

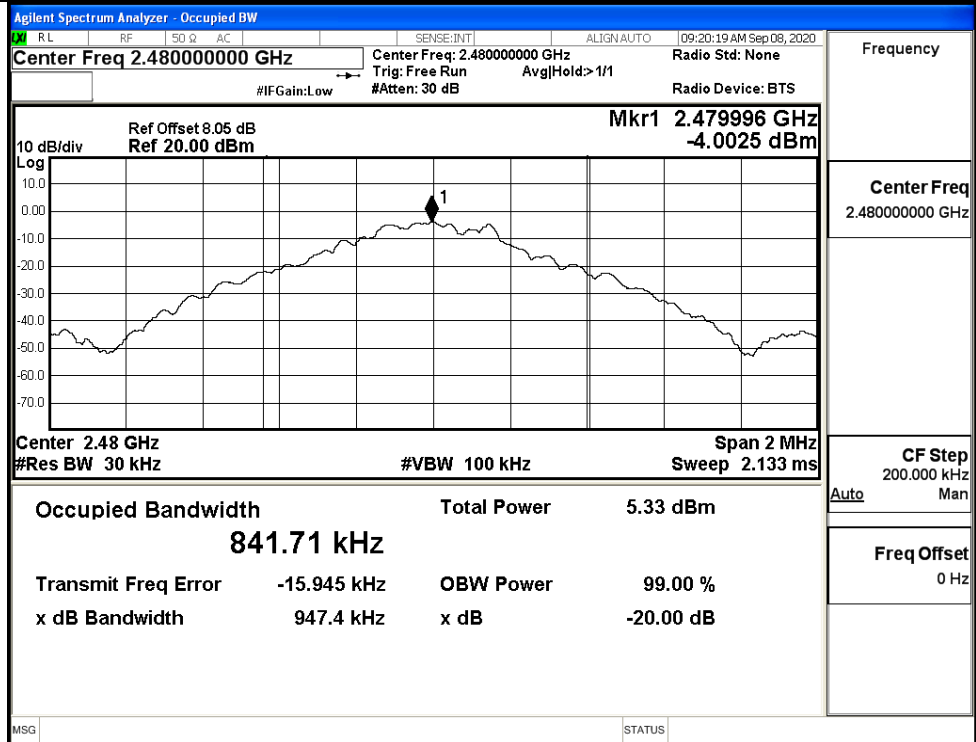


GFSK/MCH



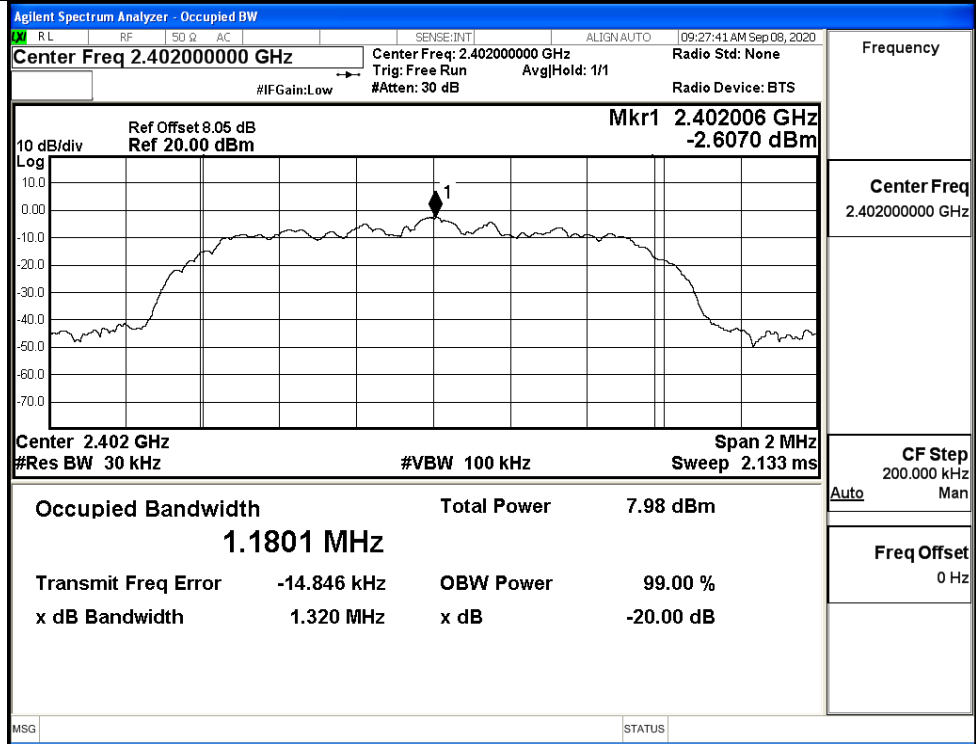
Frequency	2.441000000 GHz
Center Freq	2.441000000 GHz
CF Step	200.000 kHz
Auto	Man
Freq Offset	0 Hz

GFSK/HCH

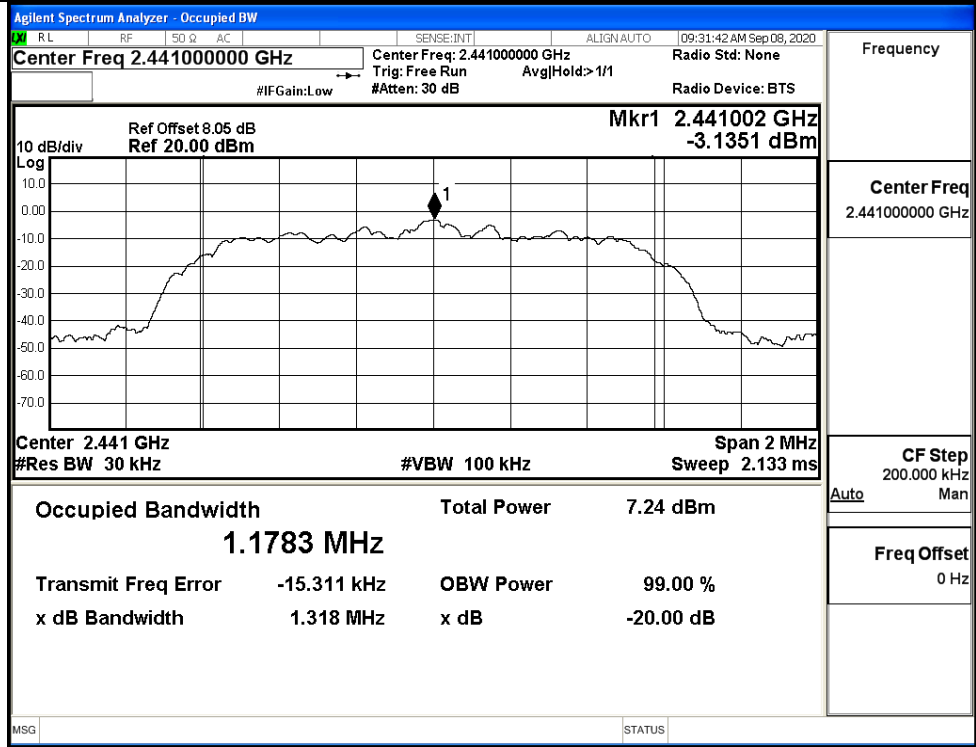


Frequency	2.480000000 GHz
Center Freq	2.480000000 GHz
CF Step	200.000 kHz
Auto	Man
Freq Offset	0 Hz

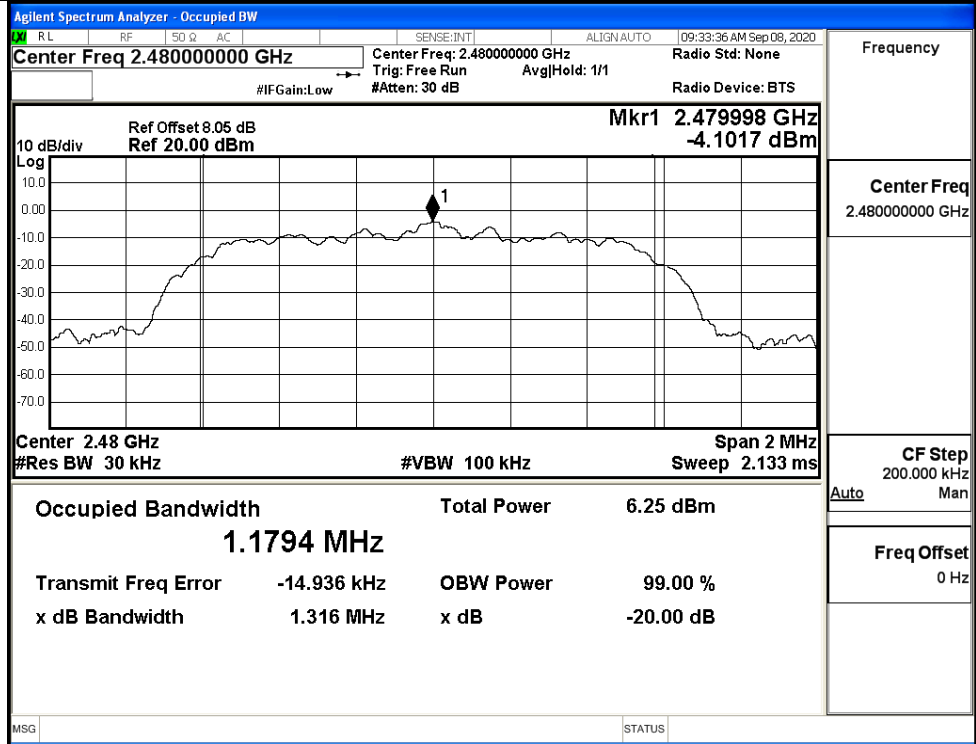
$\pi/4$ DQPSK/LCH



$\pi/4$ DQPSK/MCH

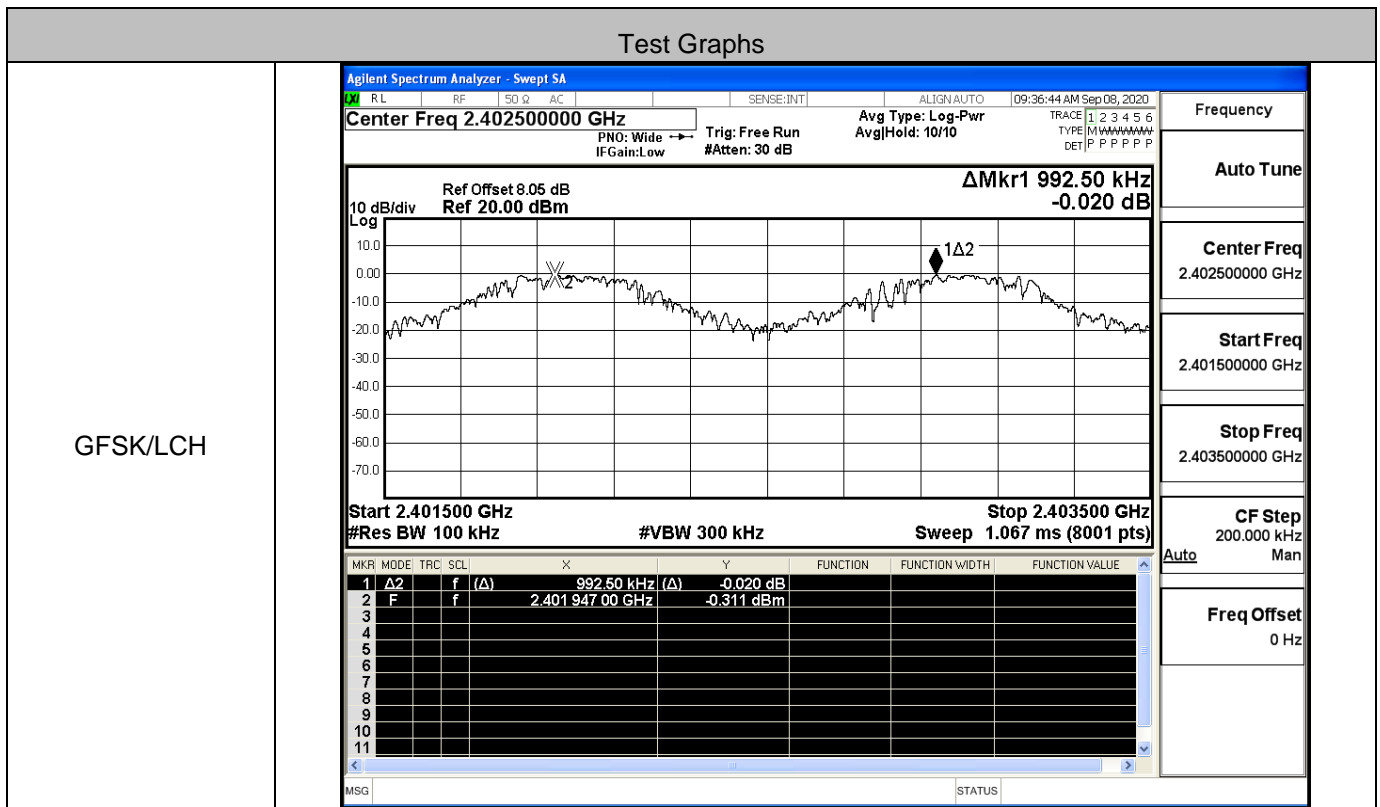


$\pi/4$ DQPSK/HCH

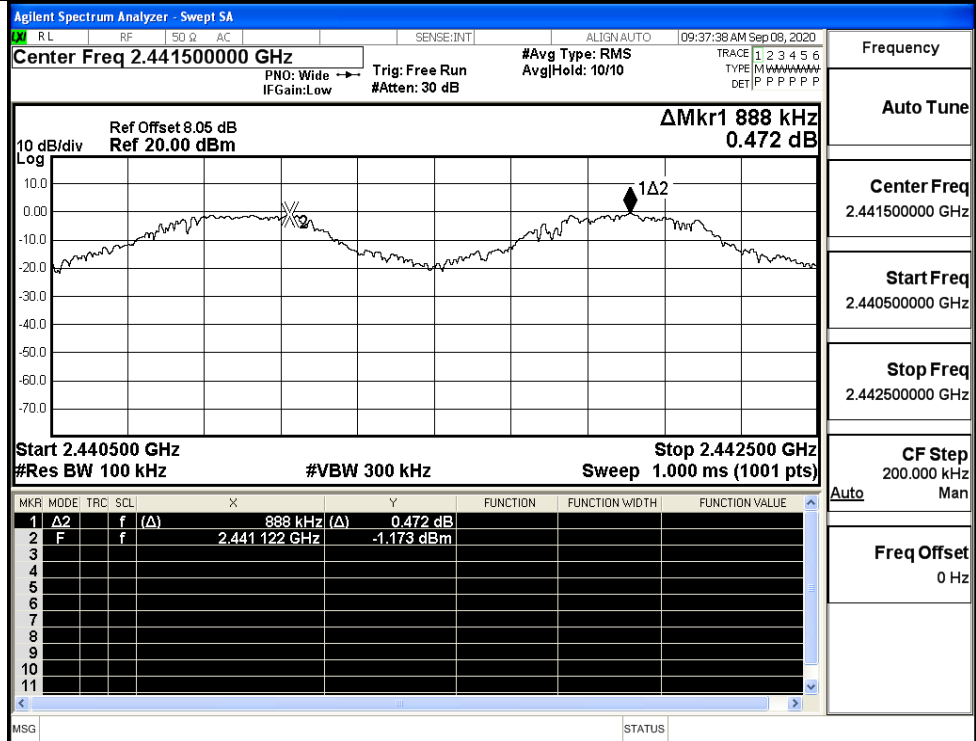


A.3 Carrier Frequency Separation

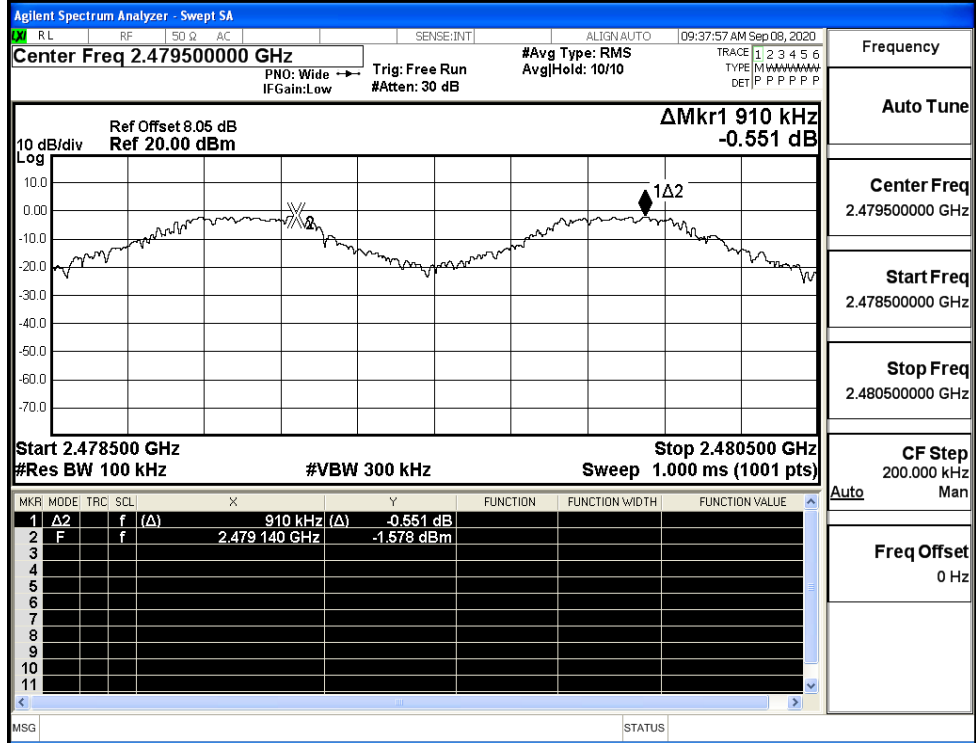
Mode	Channel	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.992	0.632	PASS
	MCH	0.888	0.632	PASS
	HCH	0.910	0.632	PASS
π/4DQPSK	LCH	1.044	0.880	PASS
	MCH	0.880	0.880	PASS
	HCH	0.974	0.880	PASS



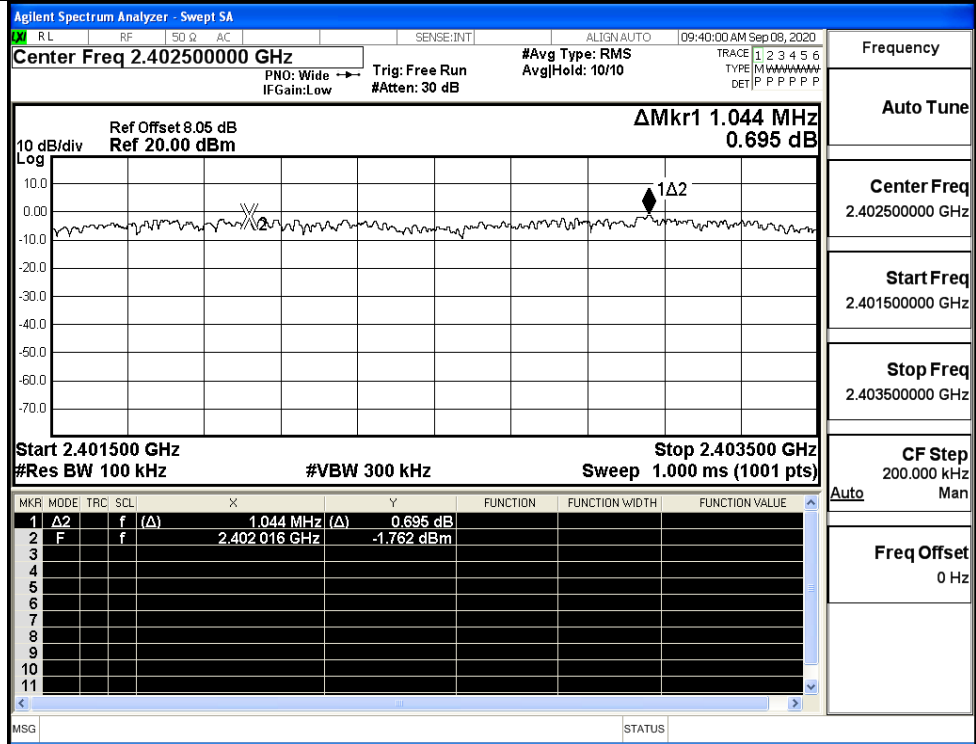
GFSK/MCH



GFSK/HCH

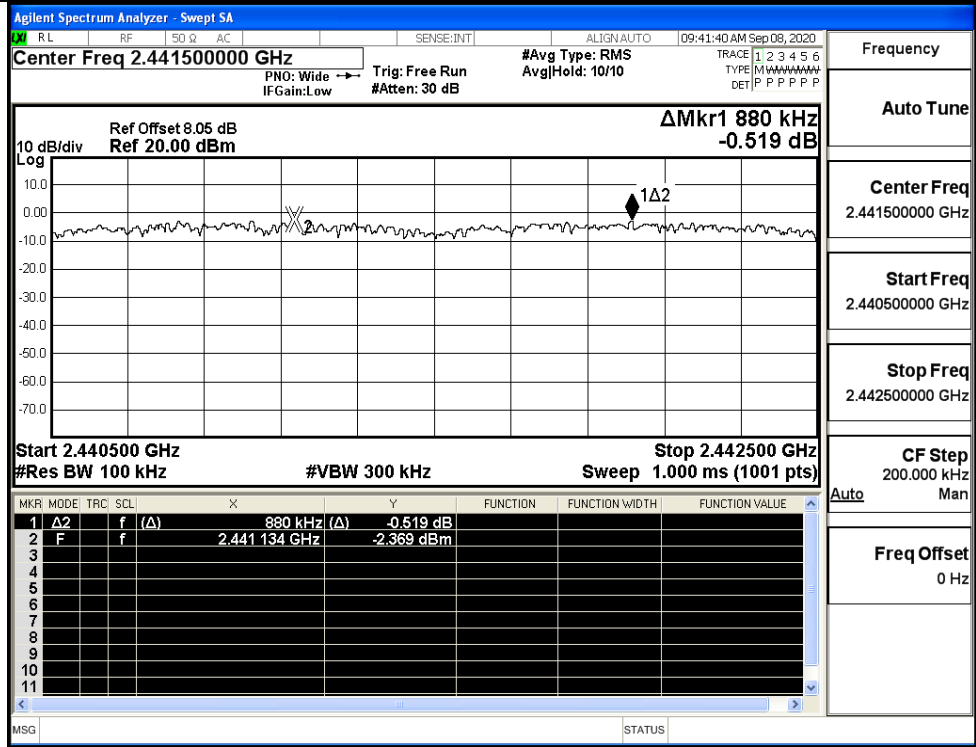


$\pi/4$ DQPSK/LCH



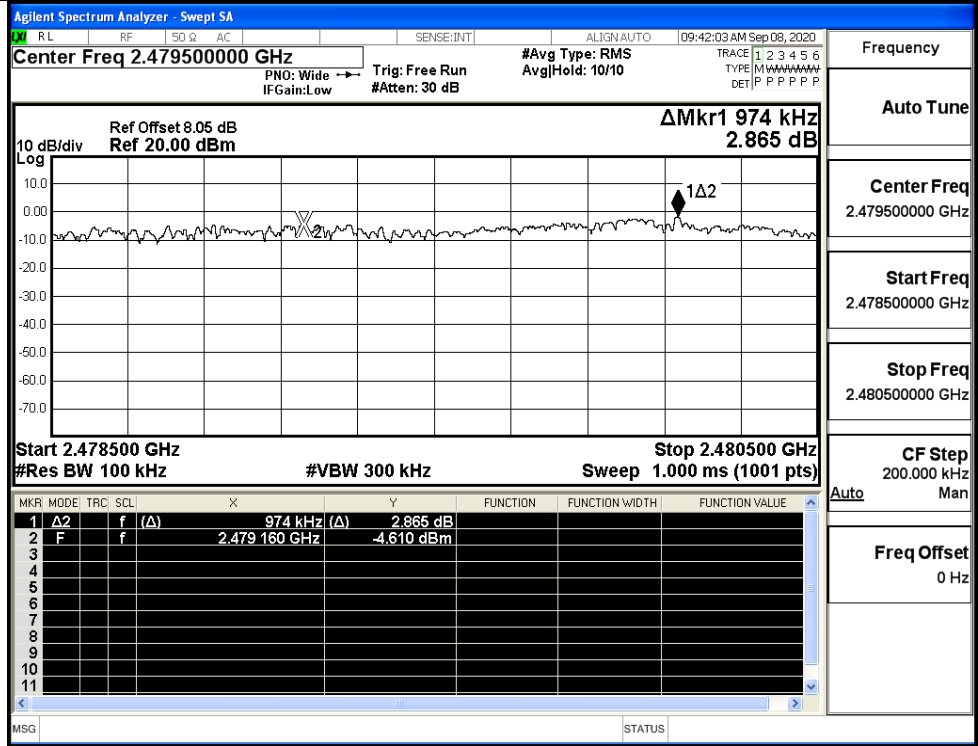
Frequency	2.402500000 GHz
Auto Tune	
Center Freq	2.402500000 GHz
Start Freq	2.401500000 GHz
Stop Freq	2.403500000 GHz
CF Step	200.000 kHz
Auto	Man
Freq Offset	0 Hz

$\pi/4$ DQPSK/MCH



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

$\pi/4$ DQPSK/HCH



A.4 Hopping Channel Number

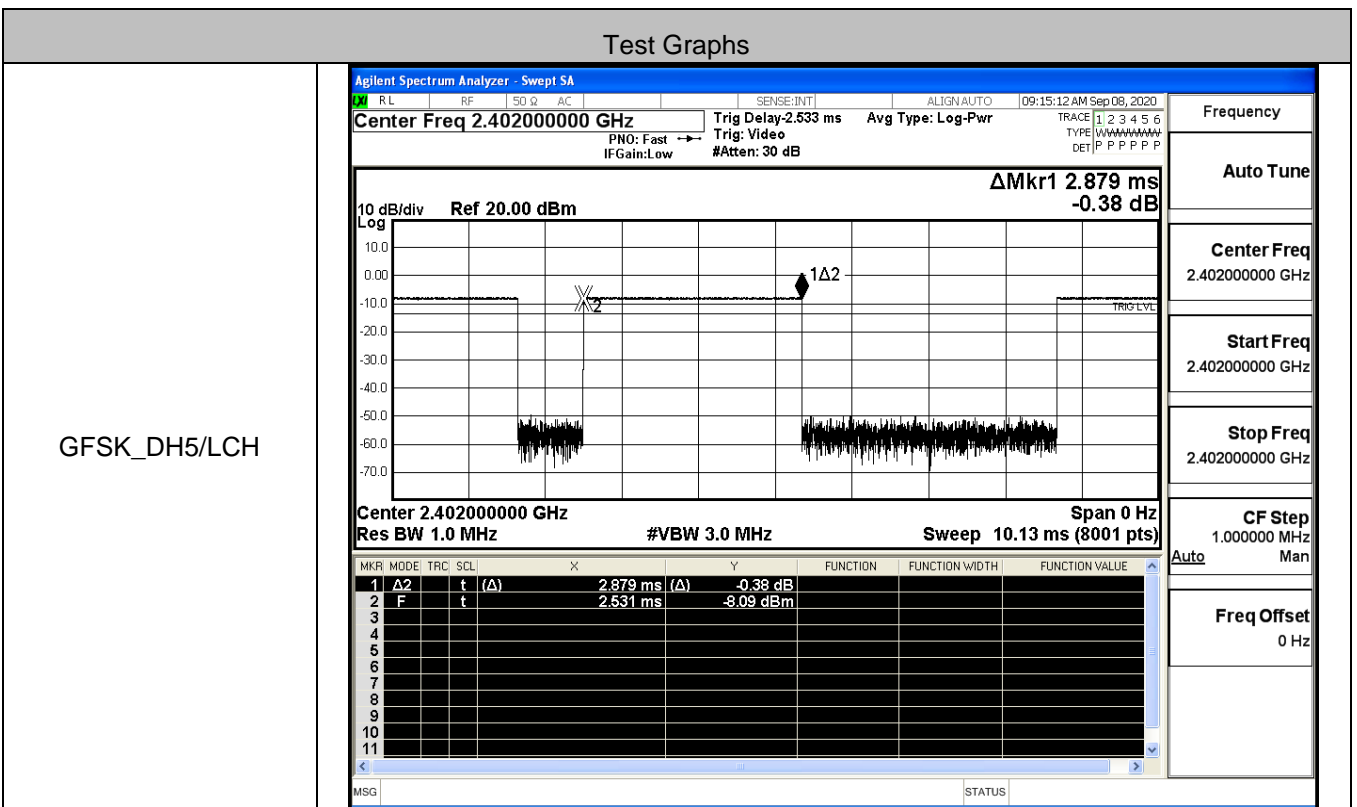
Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	>=15	PASS
$\pi/4$ DQPSK	Hop	79	>=15	PASS

Test Graphs

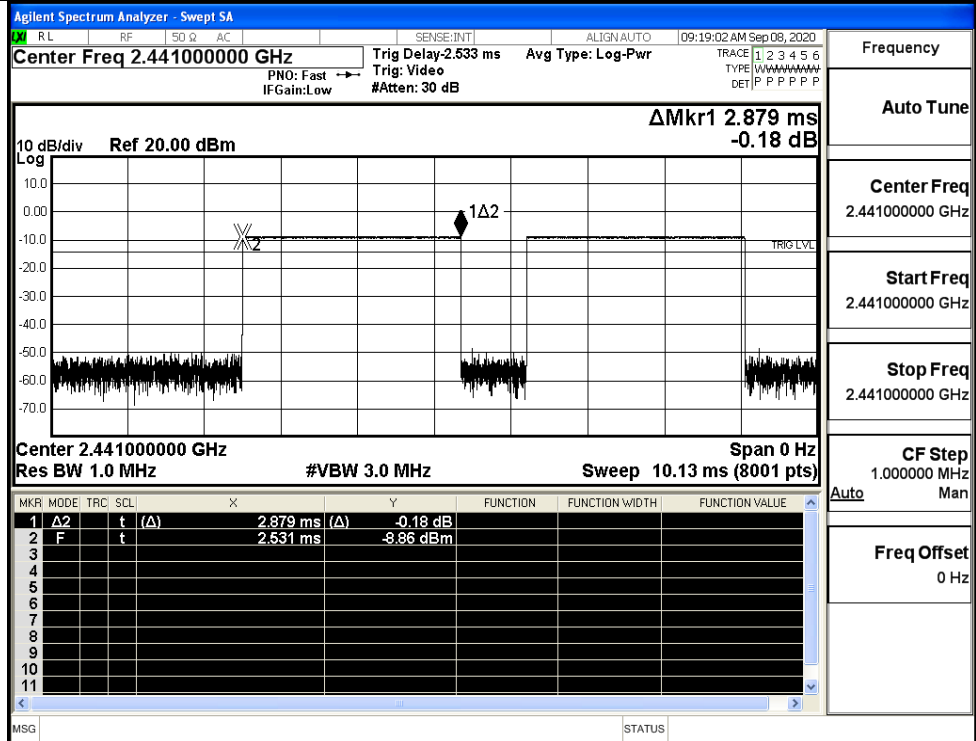
<p>GFSK/Hop</p>	<p>Agilent Spectrum Analyzer - Swept SA</p> <p>Center Freq 2.441750000 GHz</p> <p>Ref Offset 8.05 dB Ref 20.00 dBm</p> <p>ΔMkr1 78.187 MHz -1.702 dB</p> <p>Start 2.40000 GHz #Res BW 100 kHz</p> <p>Stop 2.48350 GHz #VBW 300 kHz Sweep 8.000 ms (8001 pts)</p> <table border="1"> <thead> <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> </thead> <tbody> <tr> <td>1</td> <td>Δ2</td> <td>f</td> <td>(Δ)</td> <td>78.187 MHz</td> <td>(Δ)</td> <td>-1.702 dB</td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>F</td> <td>f</td> <td></td> <td>2.401847 GHz</td> <td></td> <td>-0.214 dBm</td> <td></td> <td></td> </tr> </tbody> </table>	MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	Δ 2	f	(Δ)	78.187 MHz	(Δ)	-1.702 dB			2	F	f		2.401847 GHz		-0.214 dBm			<p>Frequency</p> <p>Auto Tune</p> <p>Center Freq 2.441750000 GHz</p> <p>Start Freq 2.400000000 GHz</p> <p>Stop Freq 2.483500000 GHz</p> <p>CF Step 8.350000 MHz Man</p> <p>Freq Offset 0 Hz</p>
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE																					
1	Δ 2	f	(Δ)	78.187 MHz	(Δ)	-1.702 dB																							
2	F	f		2.401847 GHz		-0.214 dBm																							
<p>$\pi/4$DQPSK/Hop</p>	<p>Agilent Spectrum Analyzer - Swept SA</p> <p>Center Freq 2.441750000 GHz</p> <p>Ref Offset 8.05 dB Ref 20.00 dBm</p> <p>ΔMkr1 78.146 MHz -1.497 dB</p> <p>Start 2.40000 GHz #Res BW 100 kHz</p> <p>Stop 2.48350 GHz #VBW 300 kHz Sweep 8.000 ms (8001 pts)</p> <table border="1"> <thead> <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> </thead> <tbody> <tr> <td>1</td> <td>Δ2</td> <td>f</td> <td>(Δ)</td> <td>78.146 MHz</td> <td>(Δ)</td> <td>-1.497 dB</td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>F</td> <td>f</td> <td></td> <td>2.401858 GHz</td> <td></td> <td>-1.661 dBm</td> <td></td> <td></td> </tr> </tbody> </table>	MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	Δ 2	f	(Δ)	78.146 MHz	(Δ)	-1.497 dB			2	F	f		2.401858 GHz		-1.661 dBm			<p>Frequency</p> <p>Auto Tune</p> <p>Center Freq 2.441750000 GHz</p> <p>Start Freq 2.400000000 GHz</p> <p>Stop Freq 2.483500000 GHz</p> <p>CF Step 8.350000 MHz Man</p> <p>Freq Offset 0 Hz</p>
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE																					
1	Δ 2	f	(Δ)	78.146 MHz	(Δ)	-1.497 dB																							
2	F	f		2.401858 GHz		-1.661 dBm																							

A.5 Dwell Time

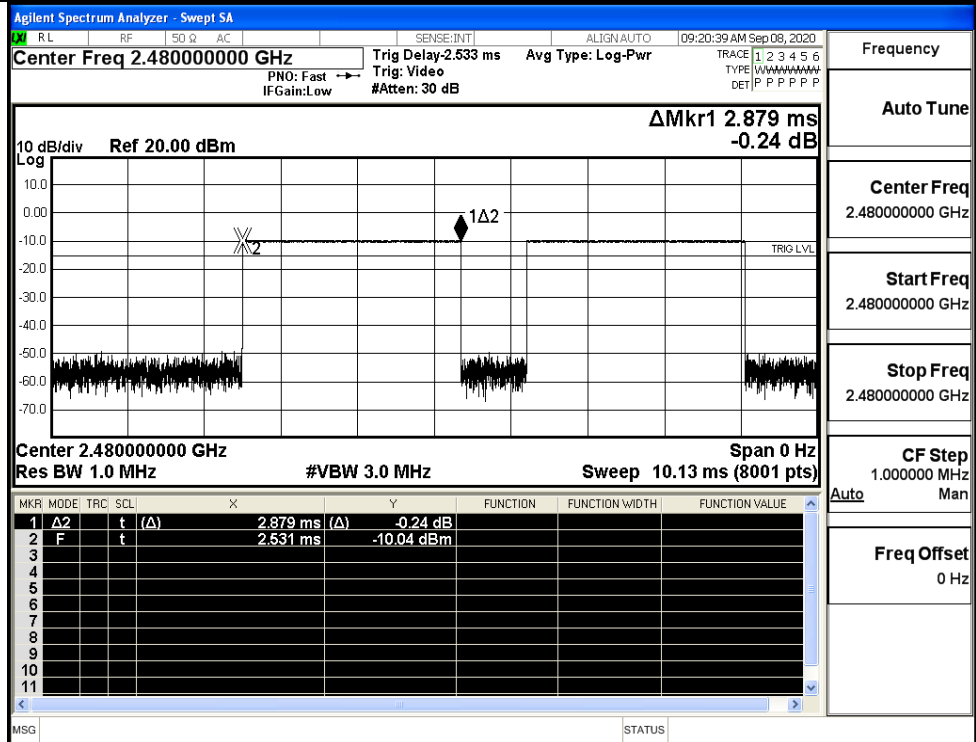
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.88	106.7	0.307	0.4	PASS
	DH5	MCH	2.88	106.7	0.307	0.4	PASS
	DH5	HCH	2.88	106.7	0.307	0.4	PASS
π/4DQPSK	2DH5	LCH	2.88	106.7	0.307	0.4	PASS
	2DH5	MCH	2.88	106.7	0.307	0.4	PASS
	2DH5	HCH	2.88	106.7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



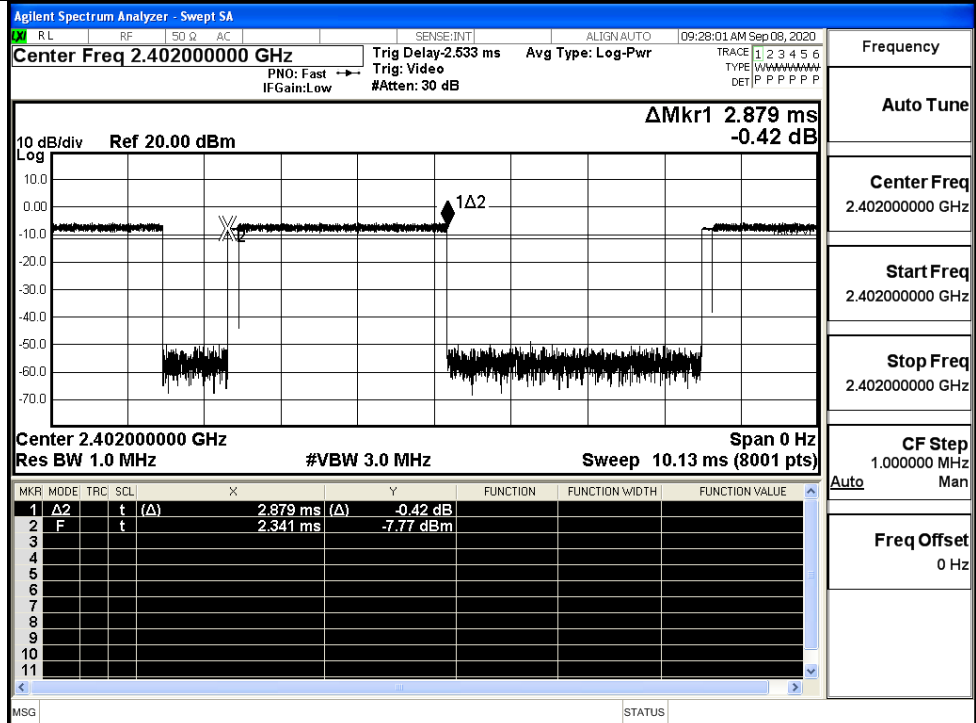
GFSK_DH5/MCH



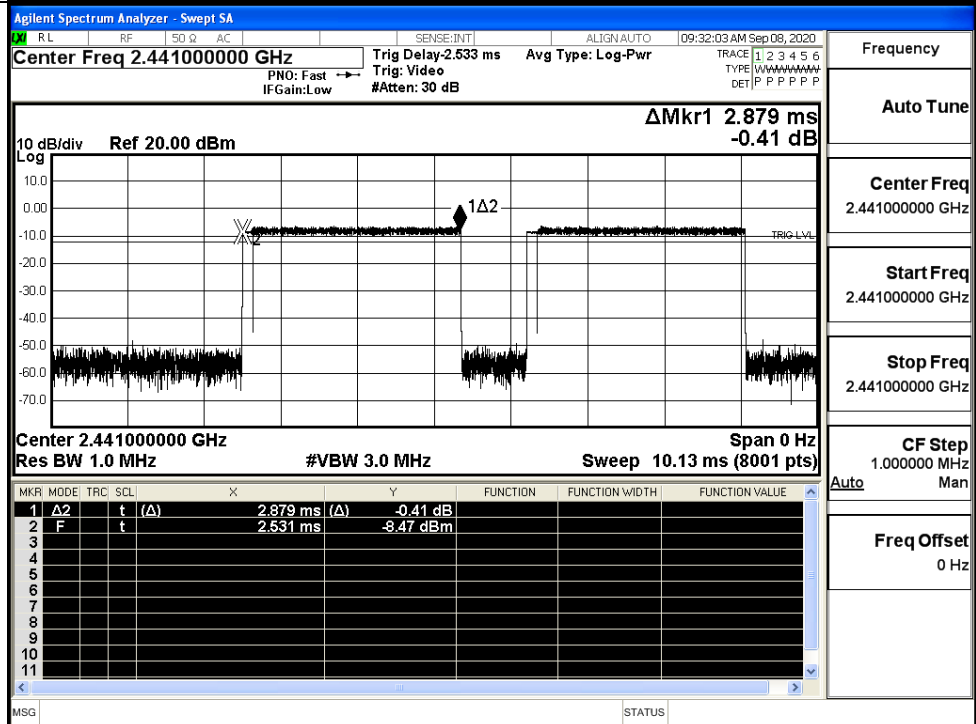
GFSK_DH5/HCH



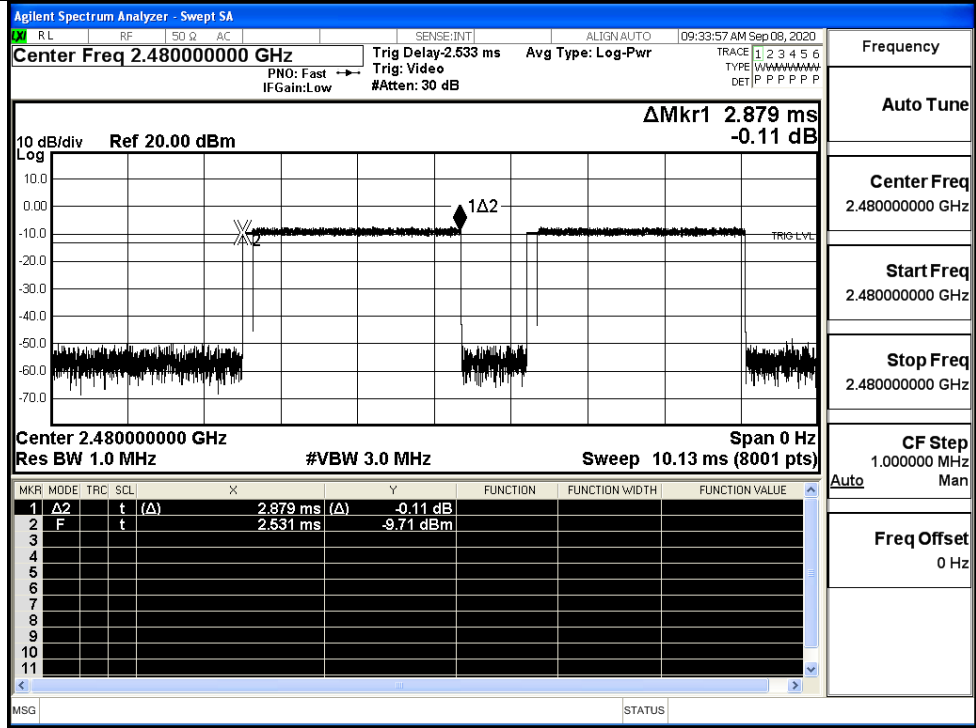
$\pi/4$ DQPSK
_2DH5/LCH



$\pi/4$ DQPSK
_2DH5/MCH



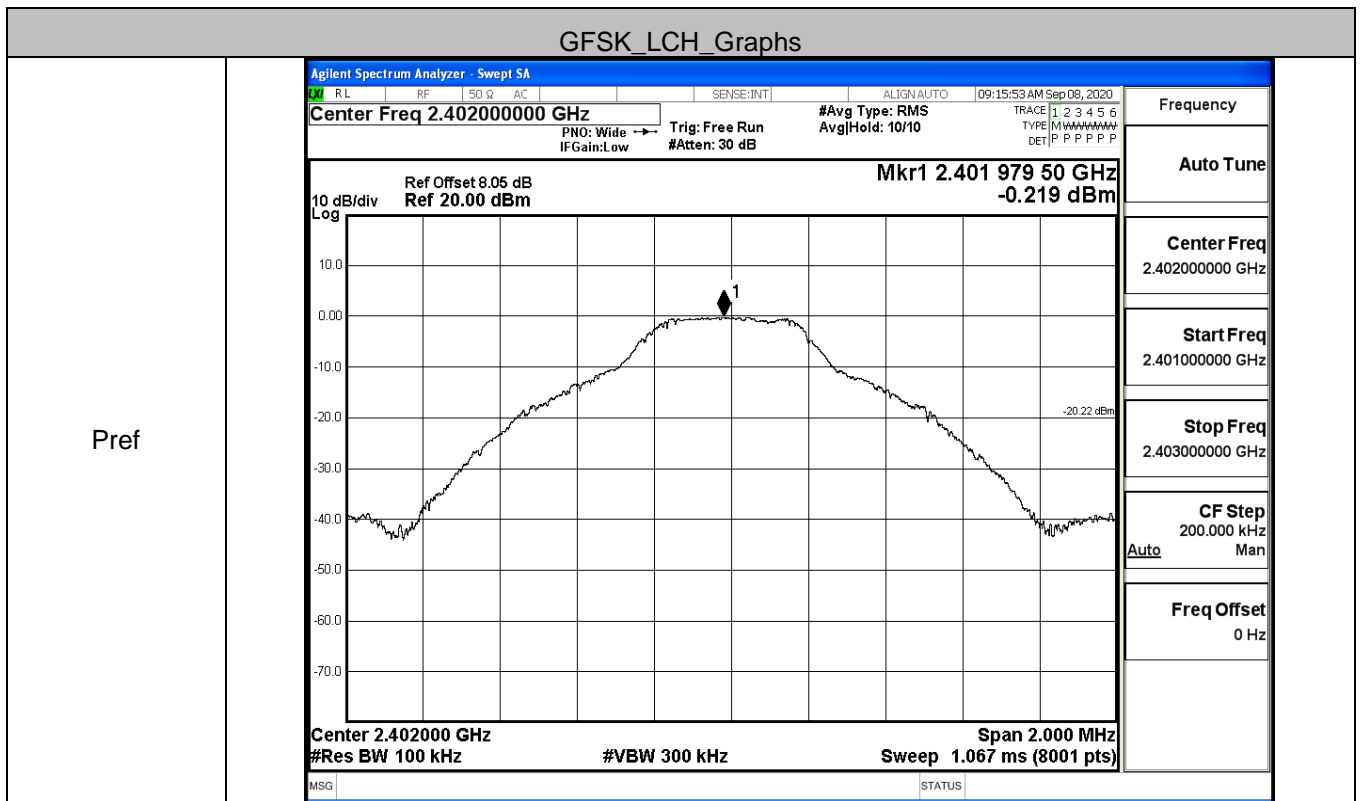
$\pi/4$ DQPSK
_2DH5/HCH

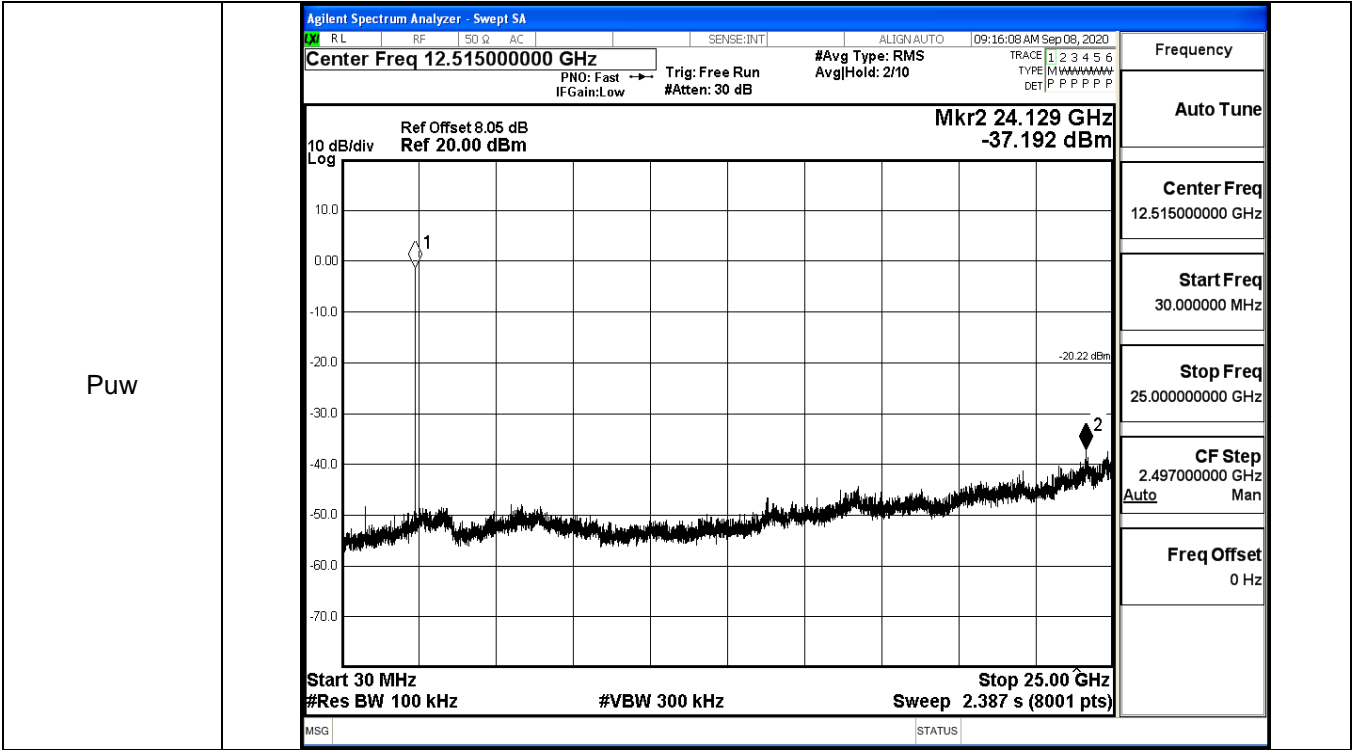


Frequency	
Auto Tune	
Center Freq	2.480000000 GHz
Start Freq	2.480000000 GHz
Stop Freq	2.480000000 GHz
CF Step	1.000000 MHz
Auto	Man
Freq Offset	0 Hz

A.6 RF Conducted Spurious Emissions

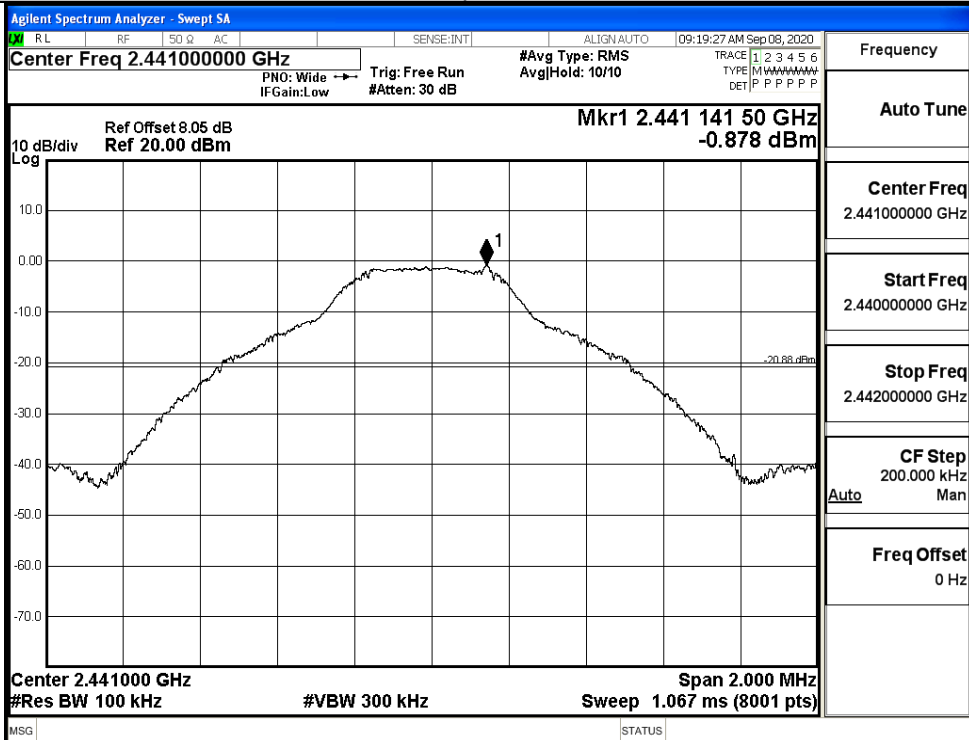
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-0.219	-37.192	-20.219	PASS
	MCH	-0.878	-35.447	-20.878	PASS
	HCH	-1.871	-37.142	-21.871	PASS
π/4DQPSK	LCH	0.057	-37.138	-19.943	PASS
	MCH	-0.729	-37.913	-20.729	PASS
	HCH	-1.636	-38.404	-21.636	PASS



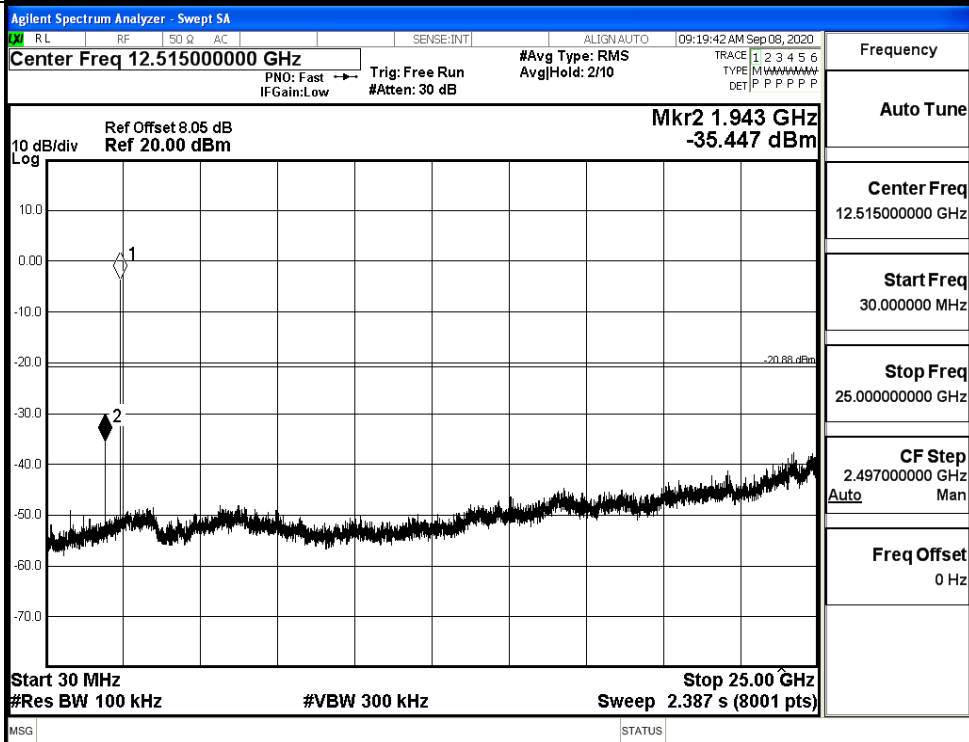


GFSK_MCH_Graphs

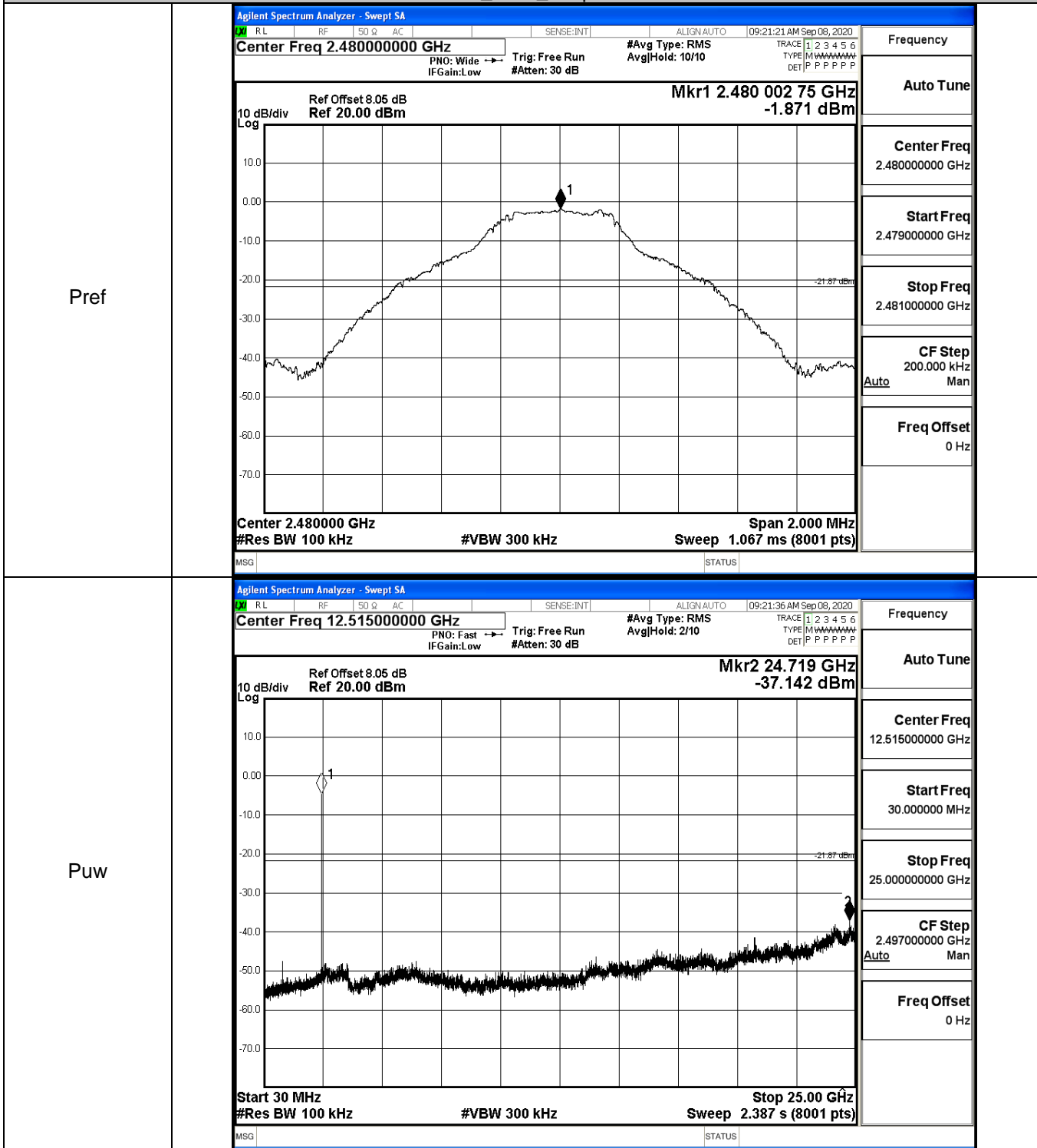
Pref



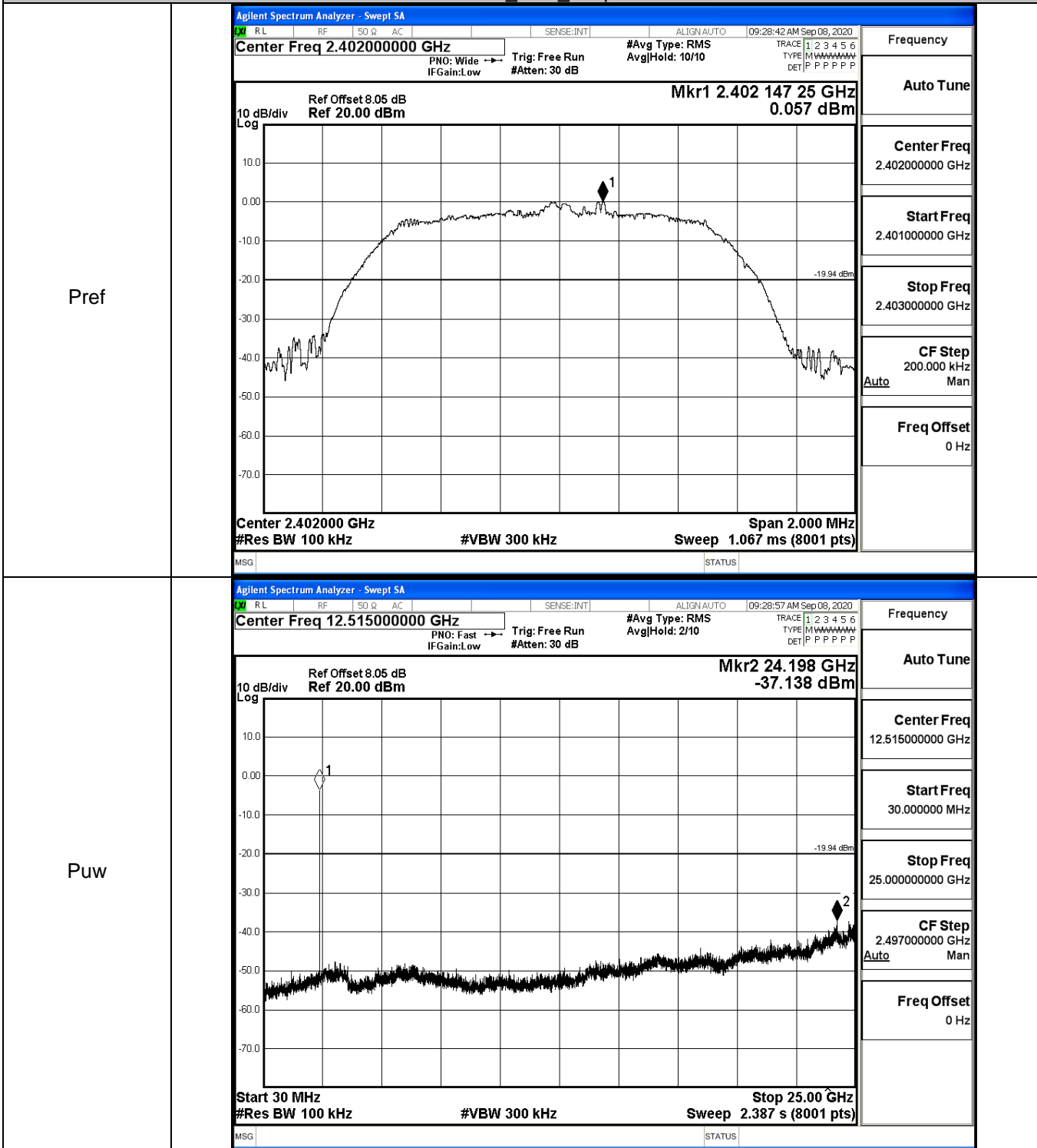
Puw



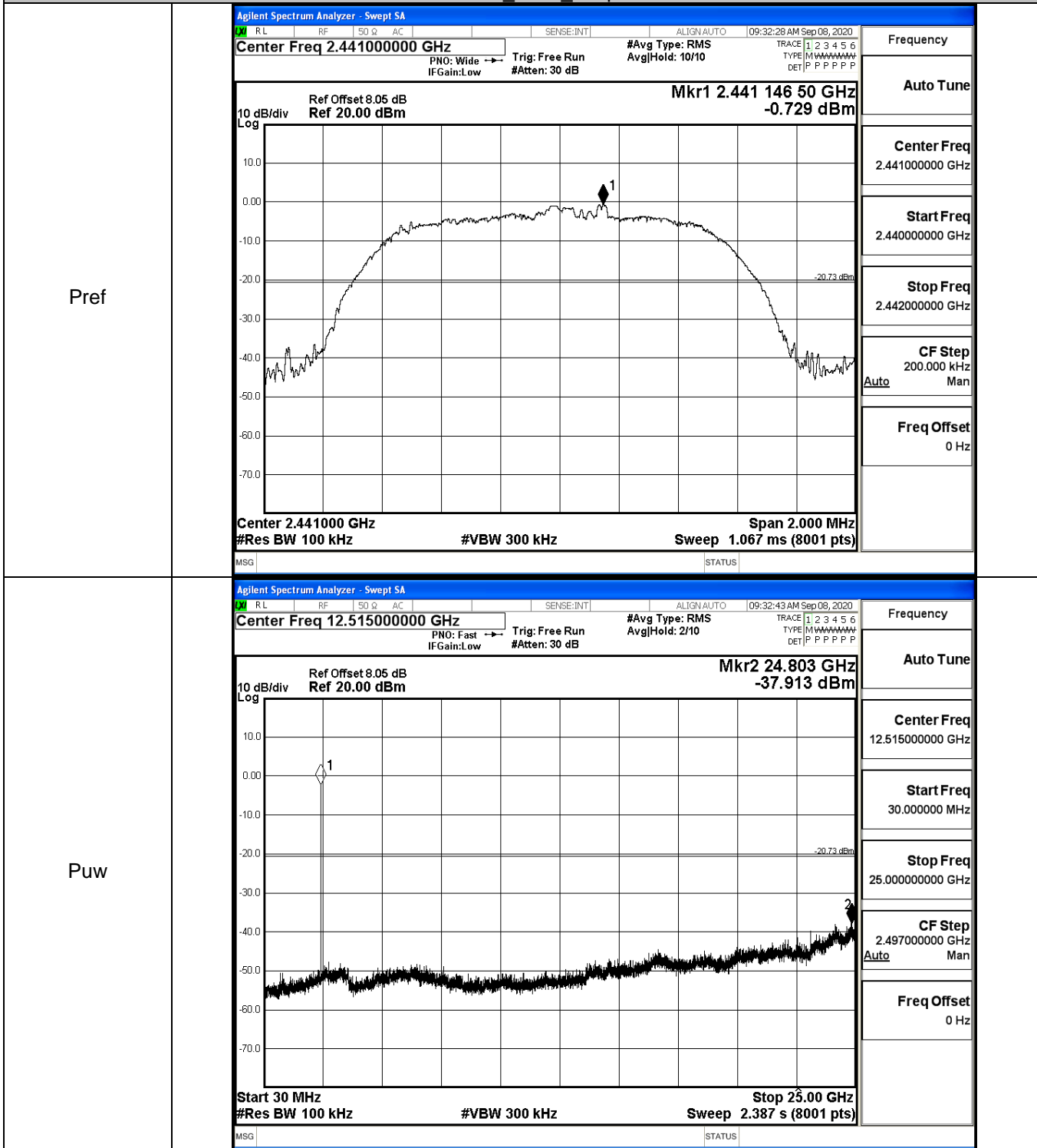
GFSK_HCH_Graphs



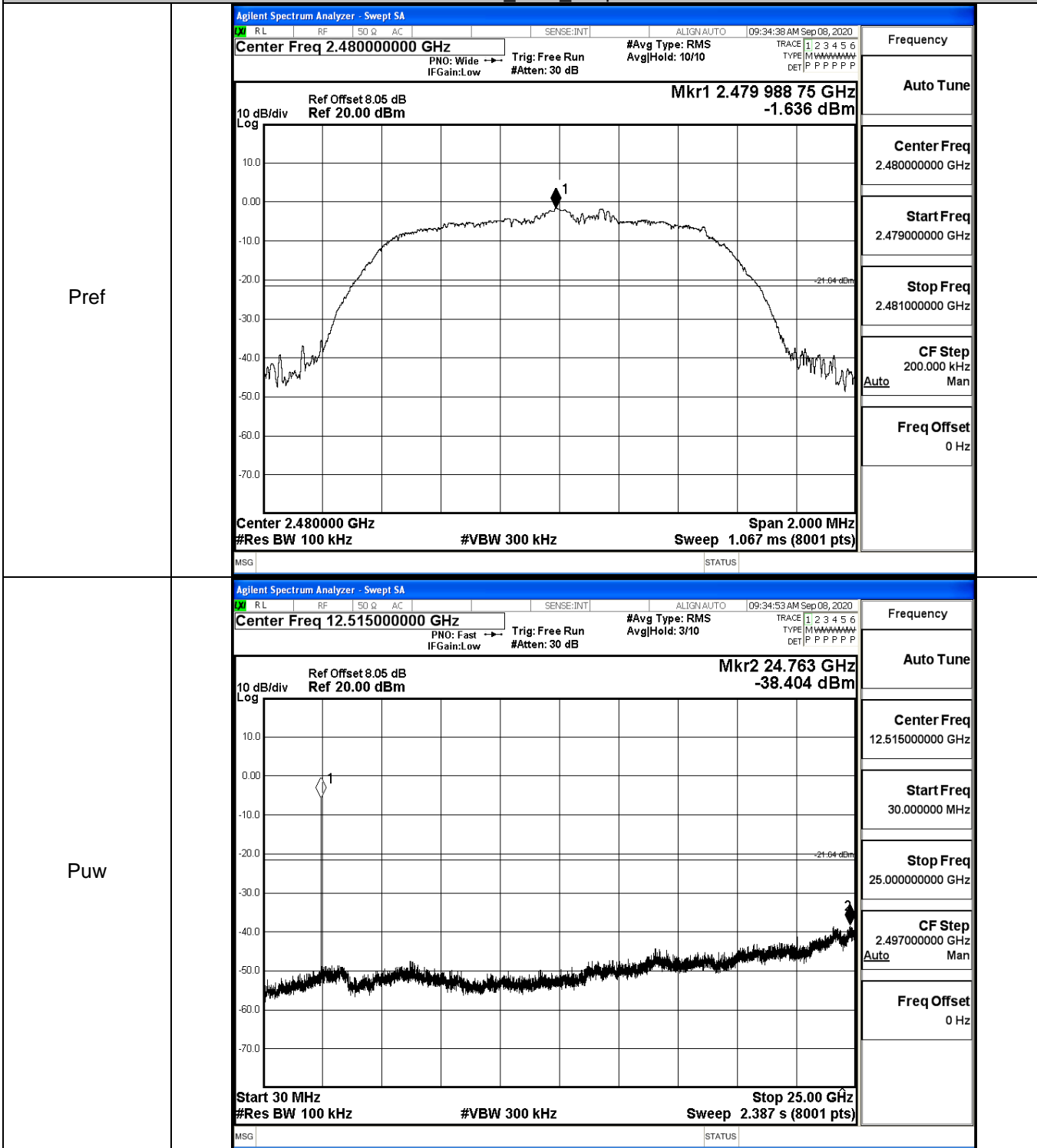
$\pi/4$ DQPSK_LCH_Graphs



$\pi/4$ DQPSK_MCH_Graphs



$\pi/4$ DQPSK_HCH_Graphs

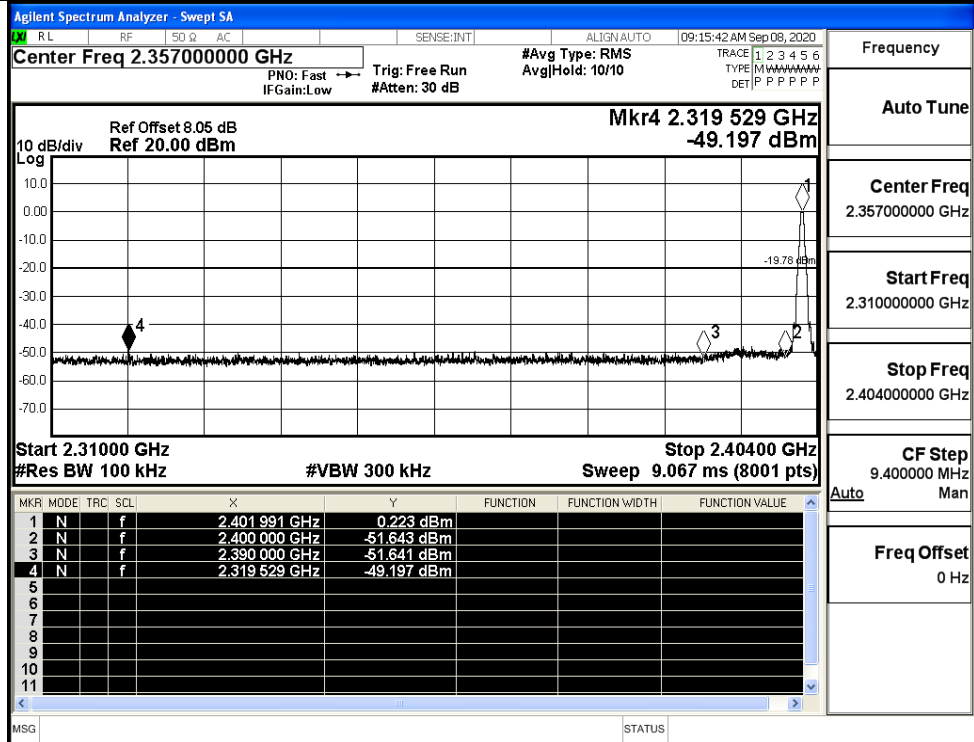


A.7 Band-edge for RF Conducted Emissions

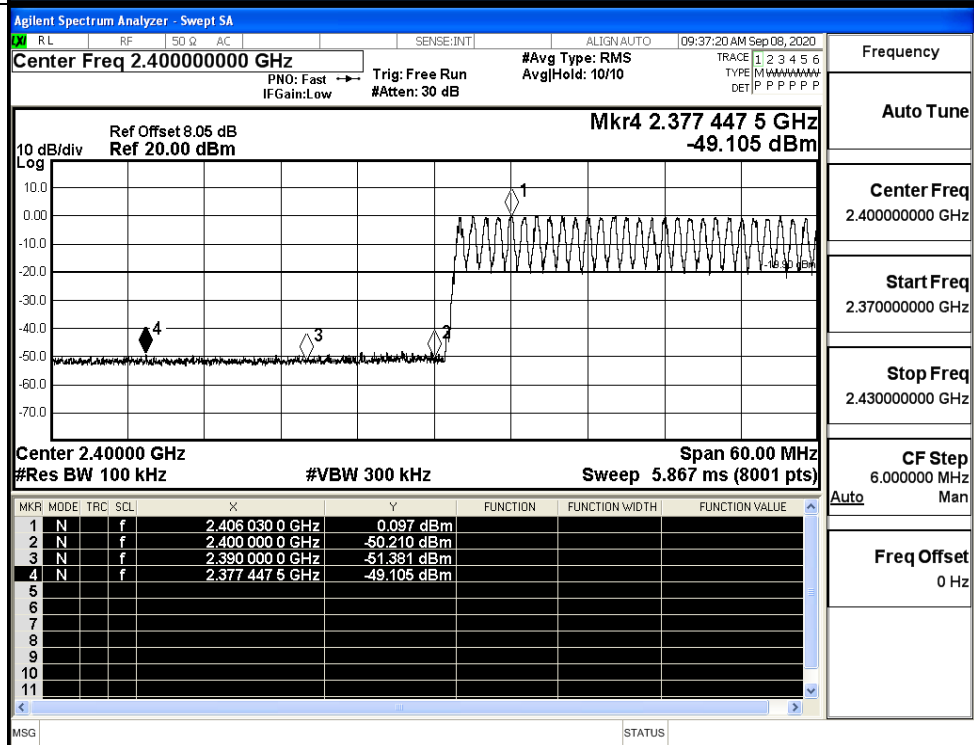
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	0.223	Off	-49.197	-19.78	PASS
			0.097	On	-49.105	-19.9	PASS
	HCH	2480	-1.628	Off	-48.776	-21.63	PASS
			-0.993	On	-48.553	-20.99	PASS
$\pi/4$ DQPSK	LCH	2402	-1.643	Off	-48.780	-21.64	PASS
			0.016	On	-48.752	-19.98	PASS
	HCH	2480	-1.698	Off	-48.589	-21.7	PASS
			-0.866	On	-47.686	-20.87	PASS

Test Graphs

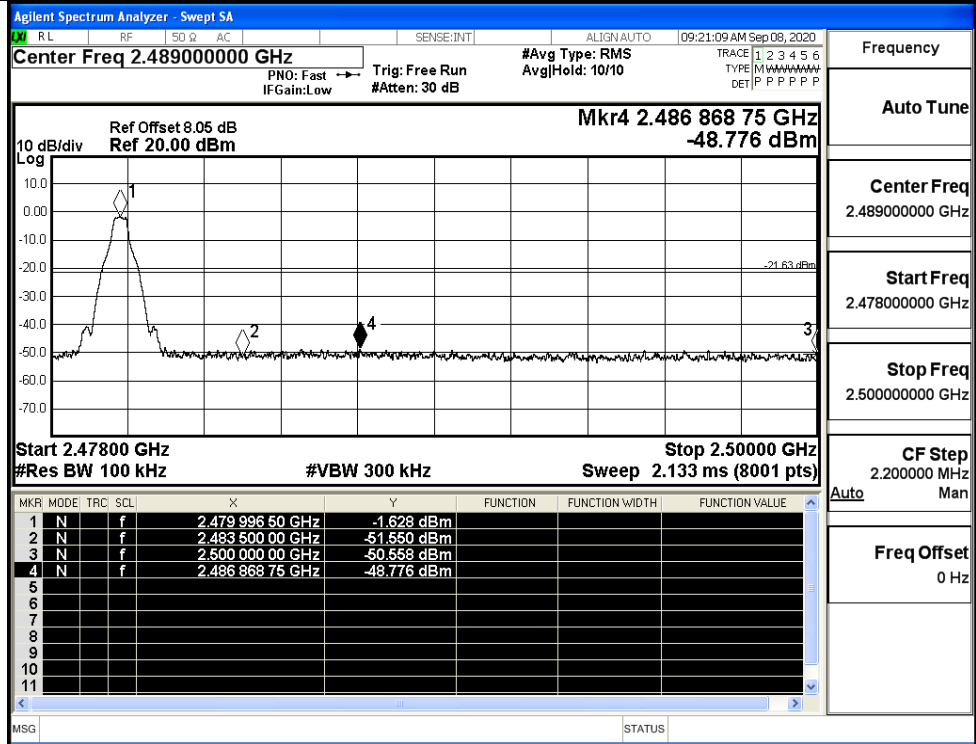
GFSK/LCH/No Hop



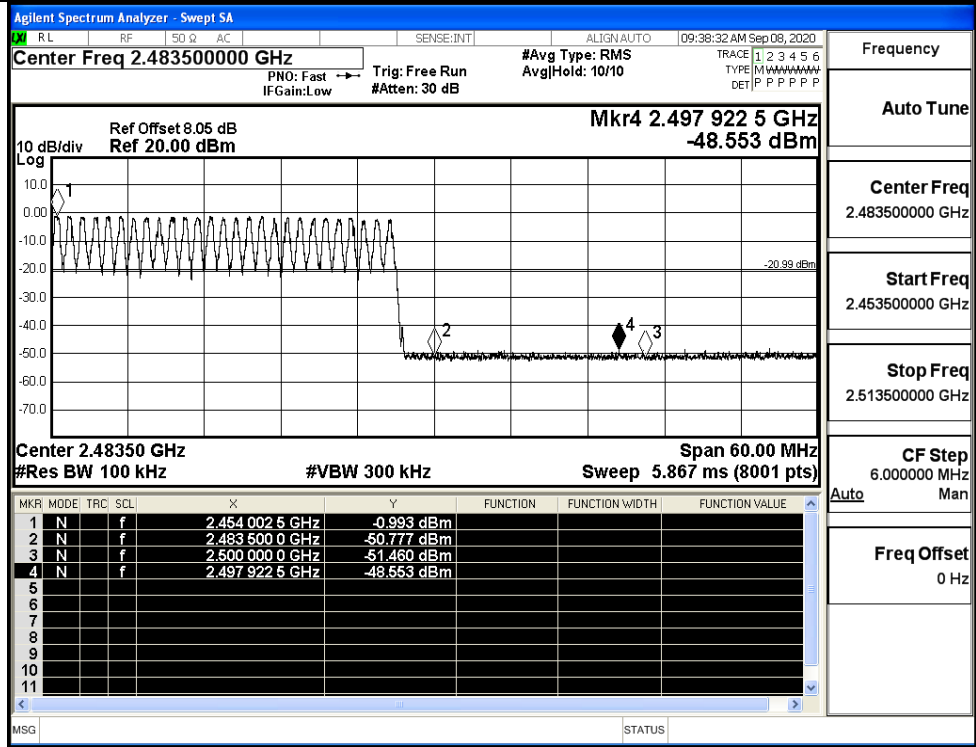
GFSK/LCH/Hop



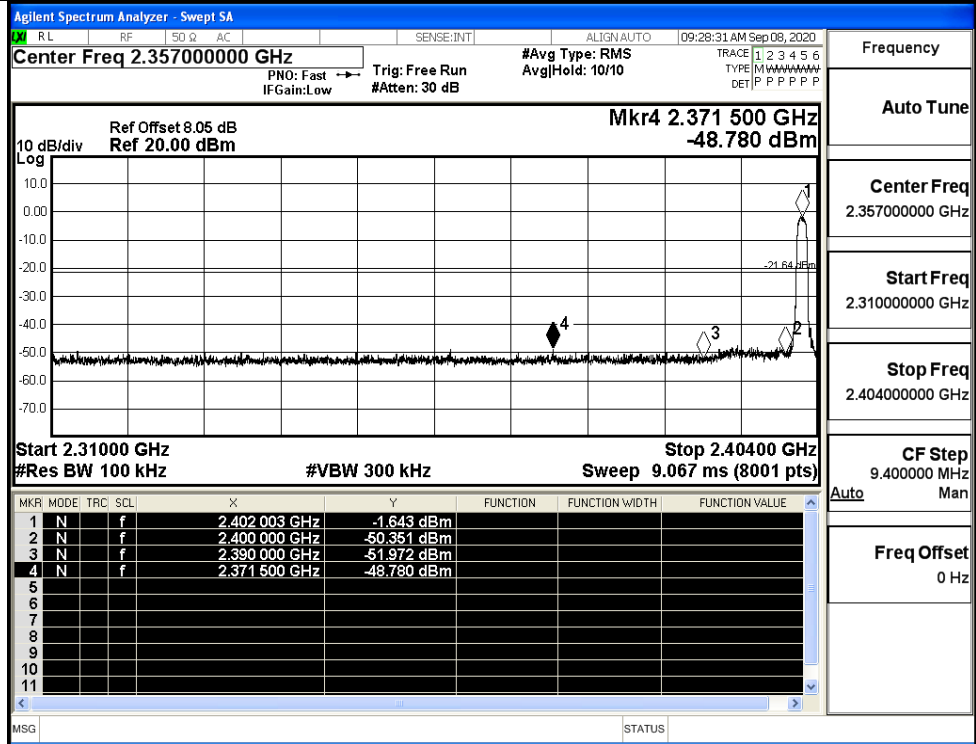
GFSK/HCH/No Hop



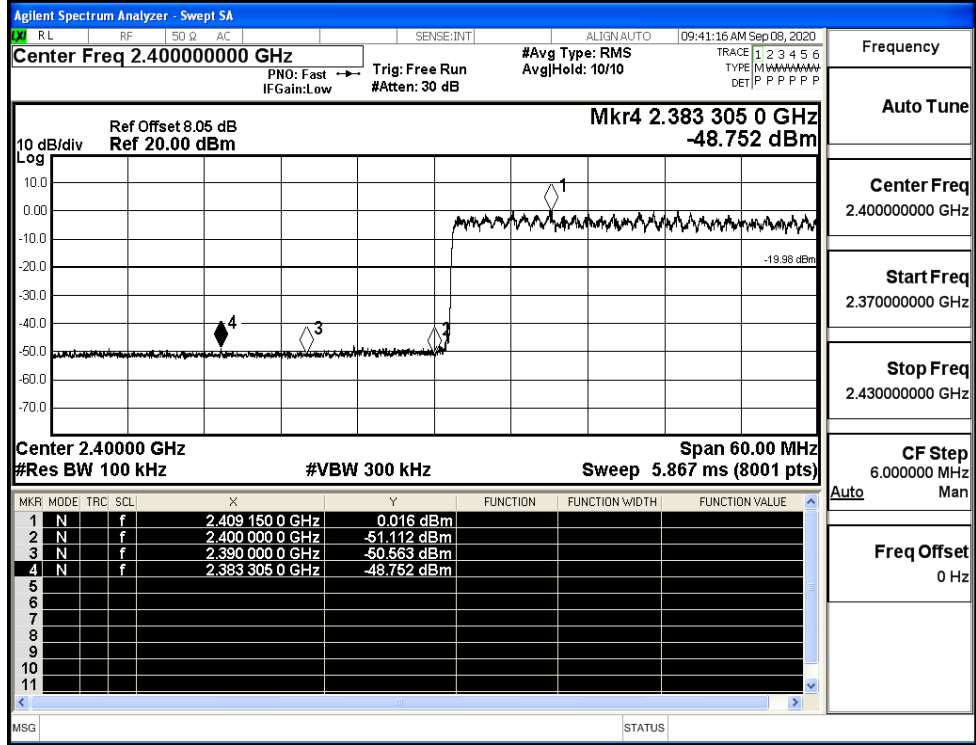
GFSK/HCH/Hop



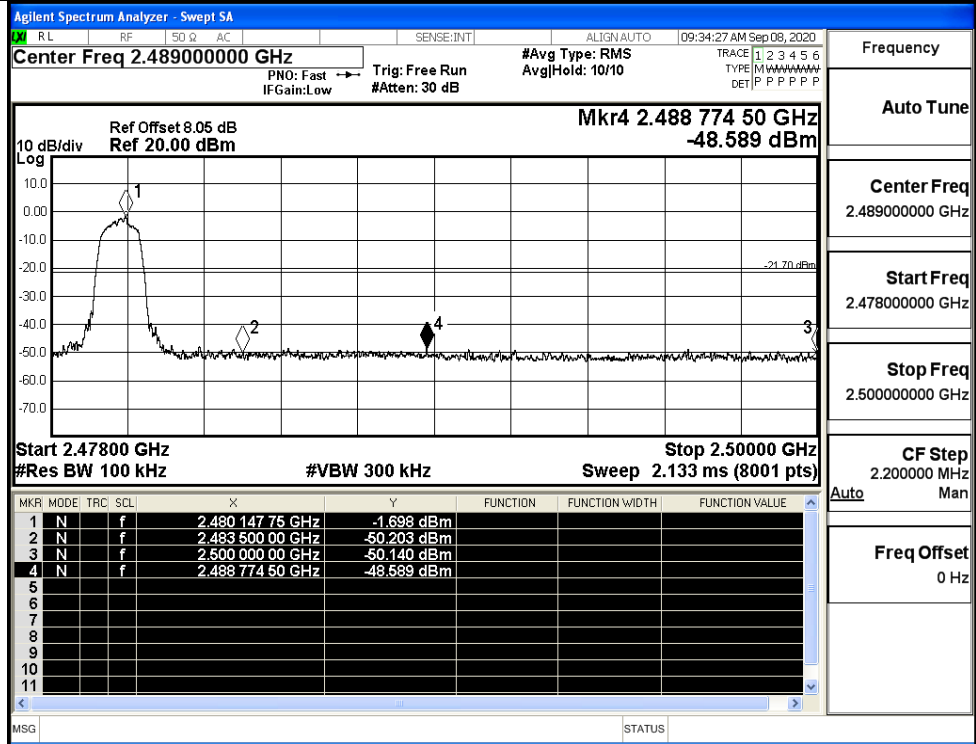
$\pi/4$ DQPSK/LCH/No Hop



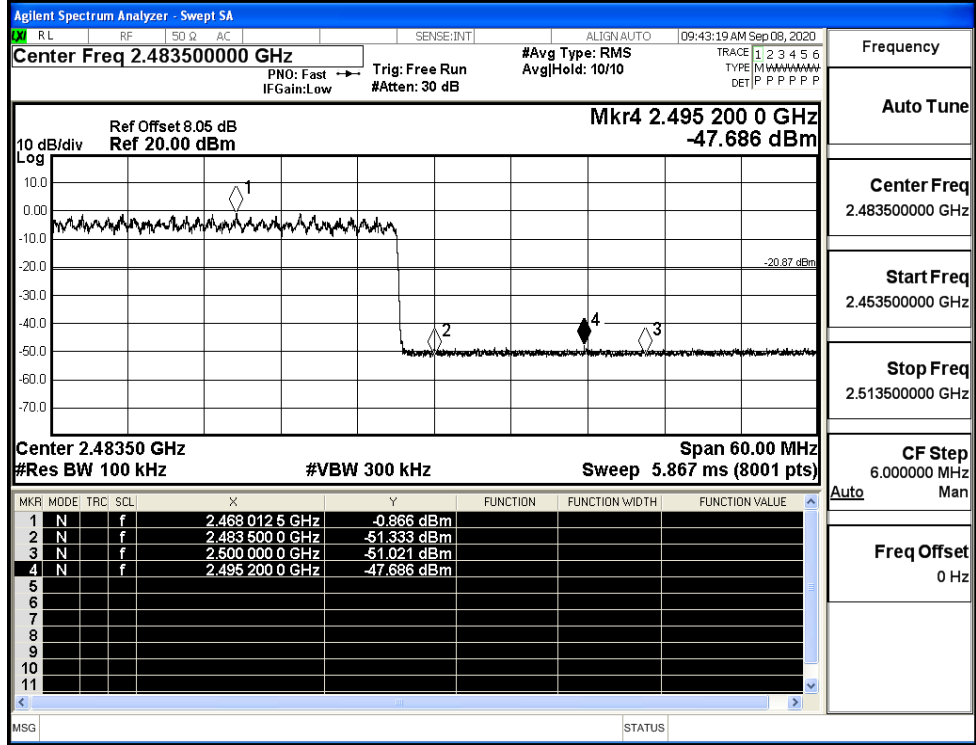
$\pi/4$ DQPSK/LCH/Hop



π /4DQPSK/HCH/No
Hop



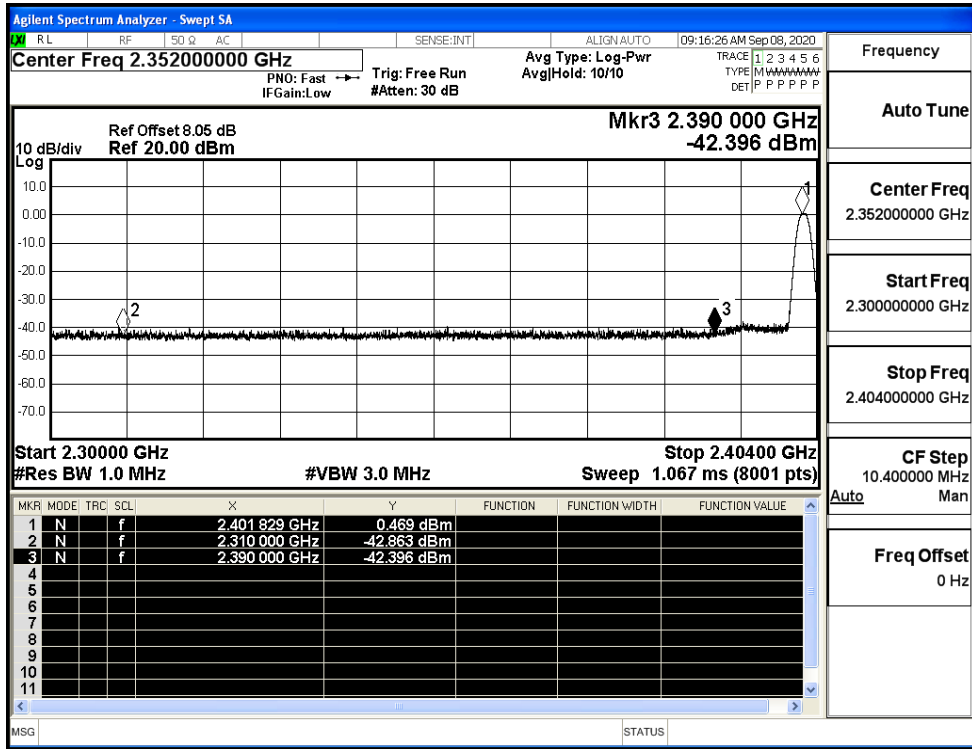
π /4DQPSK/HCH/Hop



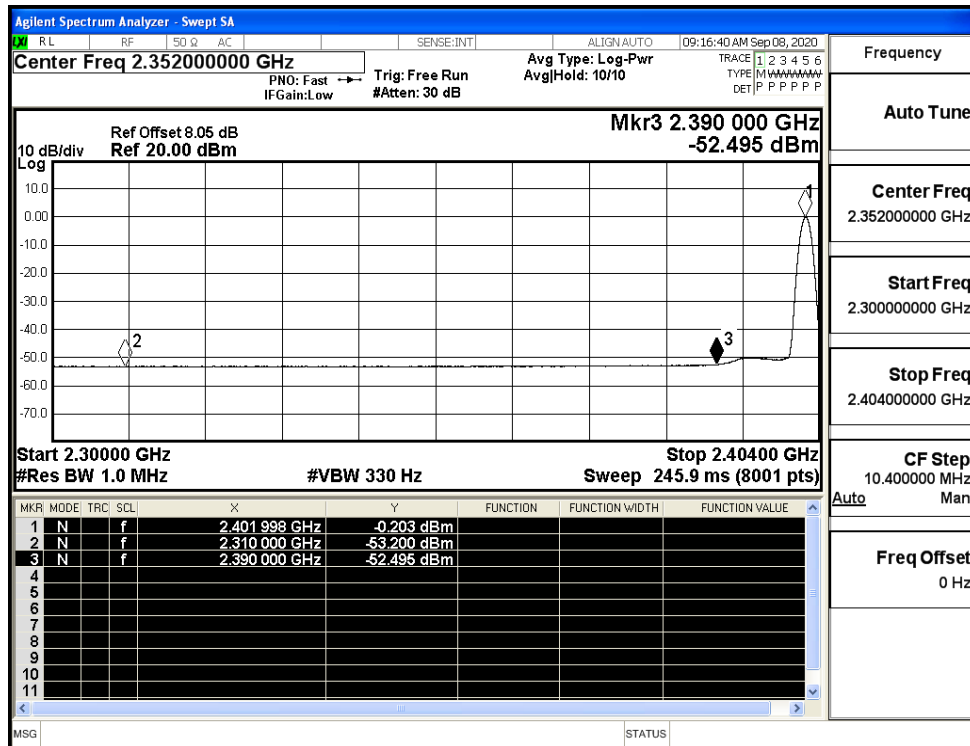
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-42.86	2.0	0	52.39	PEAK	74	PASS
	Off	2310.0	-53.20	2.0	0	42.06	AV	54	PASS
	Off	2390.0	-42.40	2.0	0	52.86	PEAK	74	PASS
	Off	2390.0	-52.50	2.0	0	42.76	AV	54	PASS
	Off	2483.5	-39.93	2.0	0	55.33	PEAK	74	PASS
	Off	2483.5	-51.30	2.0	0	43.96	AV	54	PASS
	Off	2500.0	-43.35	2.0	0	51.90	PEAK	74	PASS
	Off	2500.0	-52.14	2.0	0	43.12	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-43.30	2.0	0	51.96	PEAK	74	PASS
	Off	2310.0	-53.21	2.0	0	42.04	AV	54	PASS
	Off	2390.0	-42.62	2.0	0	52.64	PEAK	74	PASS
	Off	2390.0	-52.44	2.0	0	42.81	AV	54	PASS
	Off	2483.5	-41.39	2.0	0	53.87	PEAK	74	PASS
	Off	2483.5	-51.01	2.0	0	44.25	AV	54	PASS
	Off	2500.0	-39.56	2.0	0	55.70	PEAK	74	PASS
	Off	2500.0	-52.30	2.0	0	42.96	AV	54	PASS

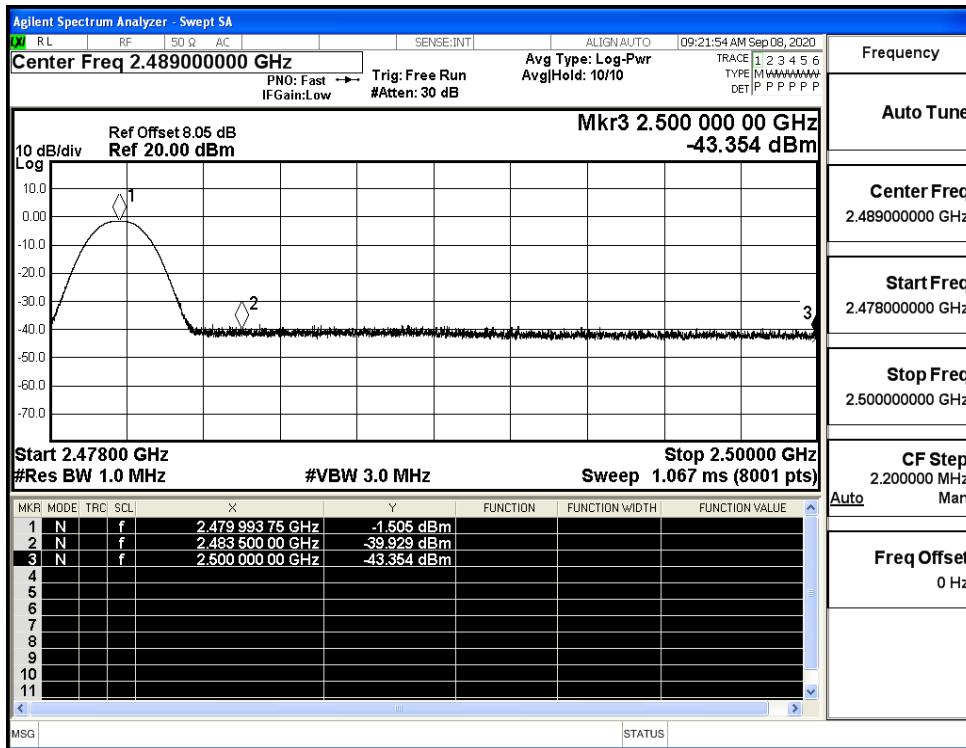
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



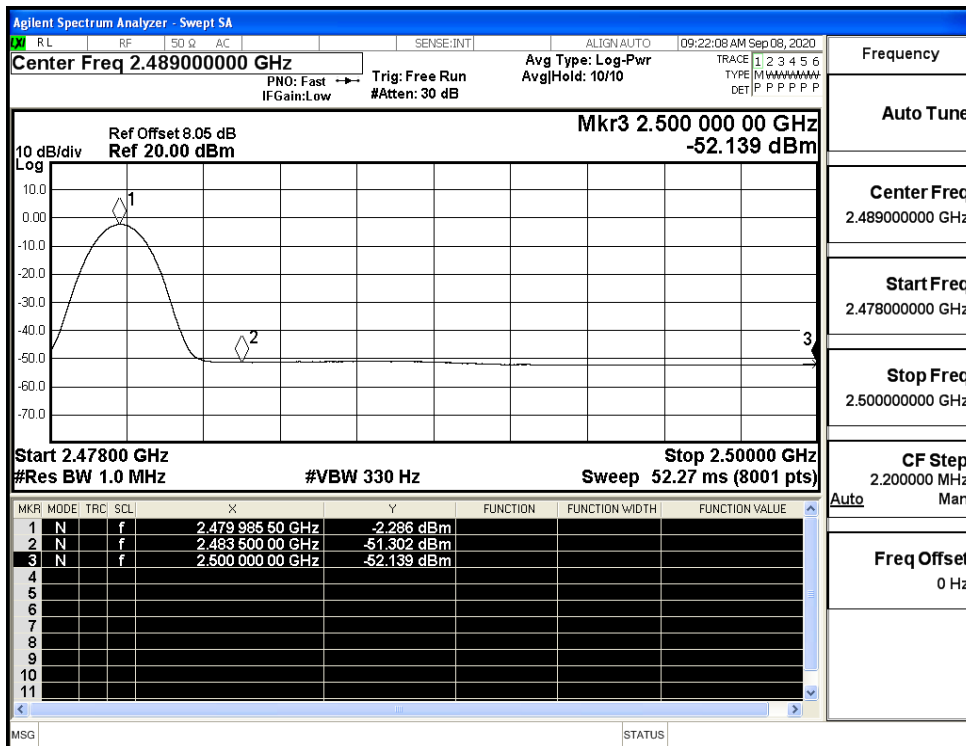
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)



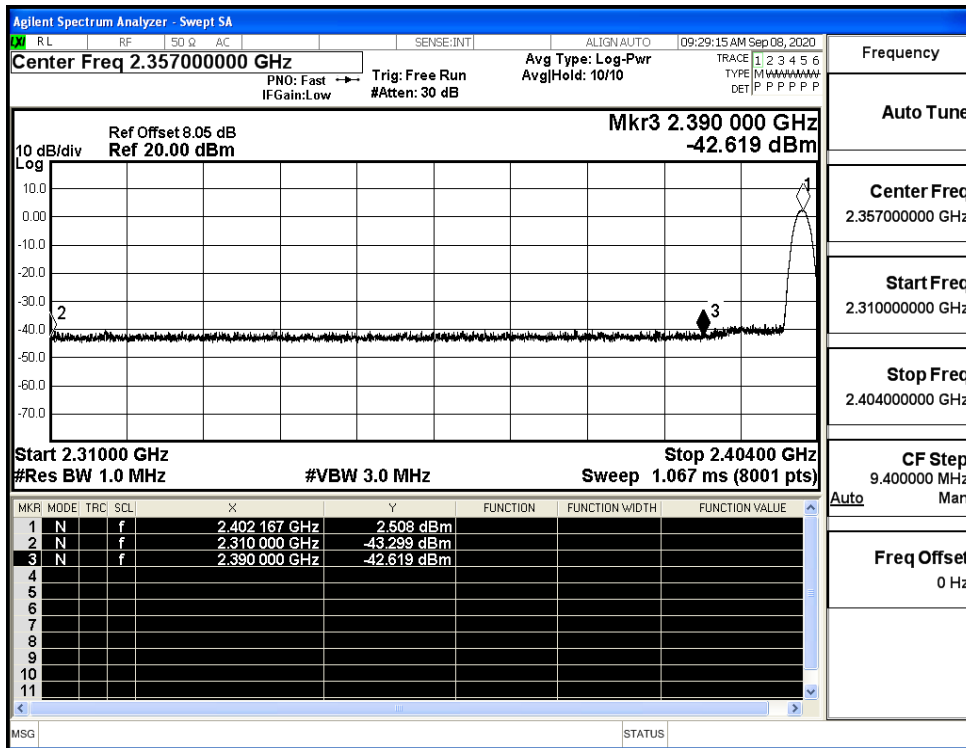
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)



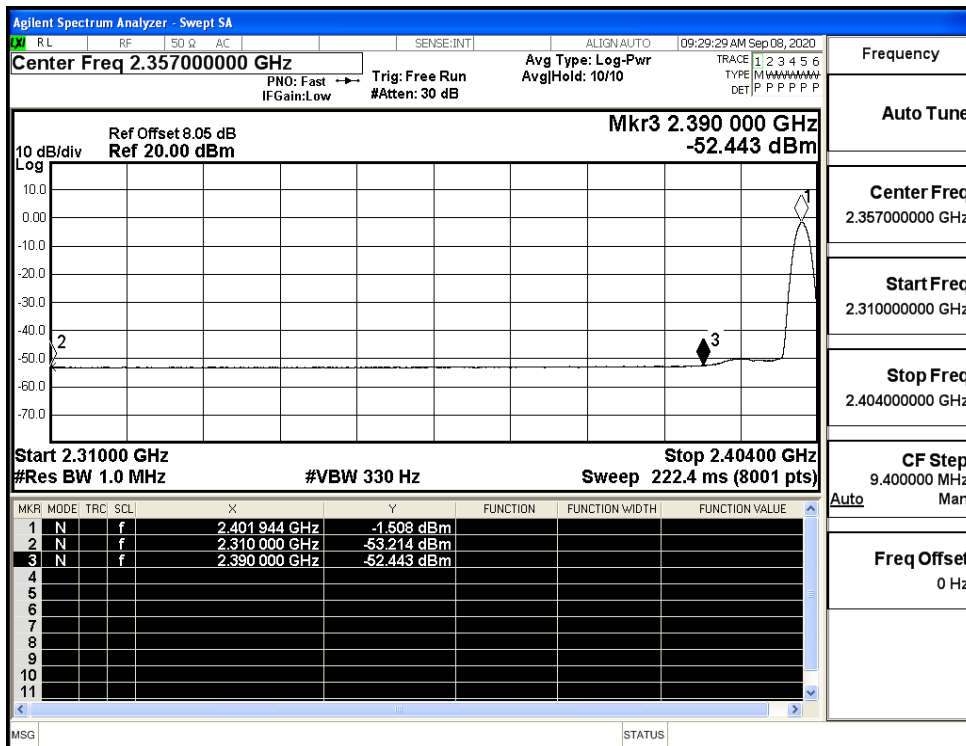
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)



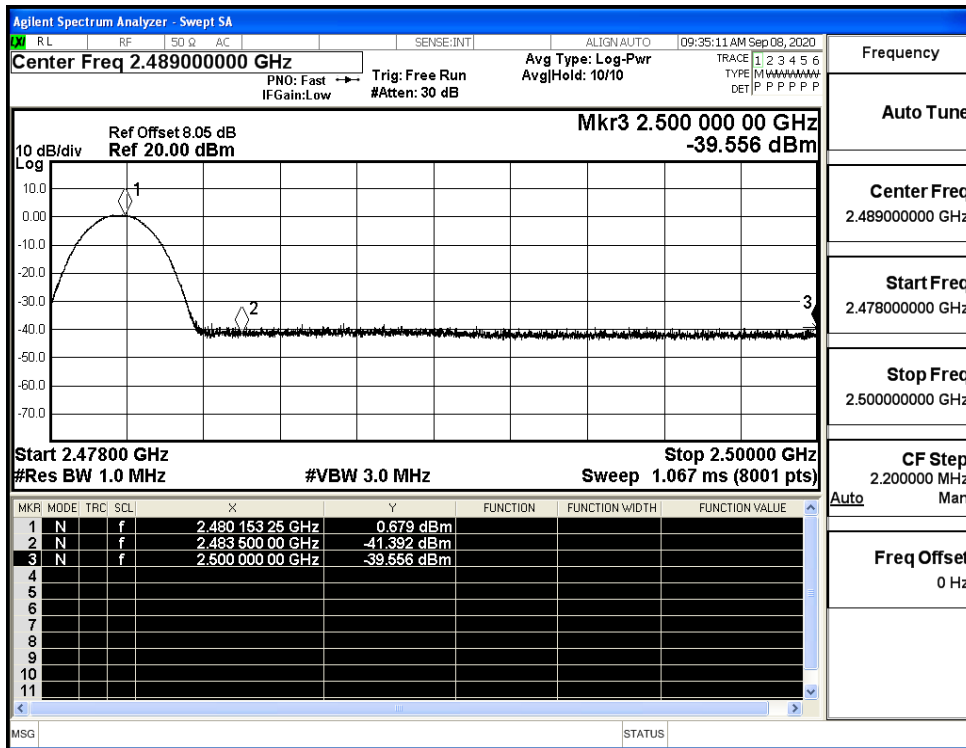
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)



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)

