

Appendix A

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

Product Name: AMPLIFIER

Trade Mark: N/A

Test Model: K1

Environmental Conditions

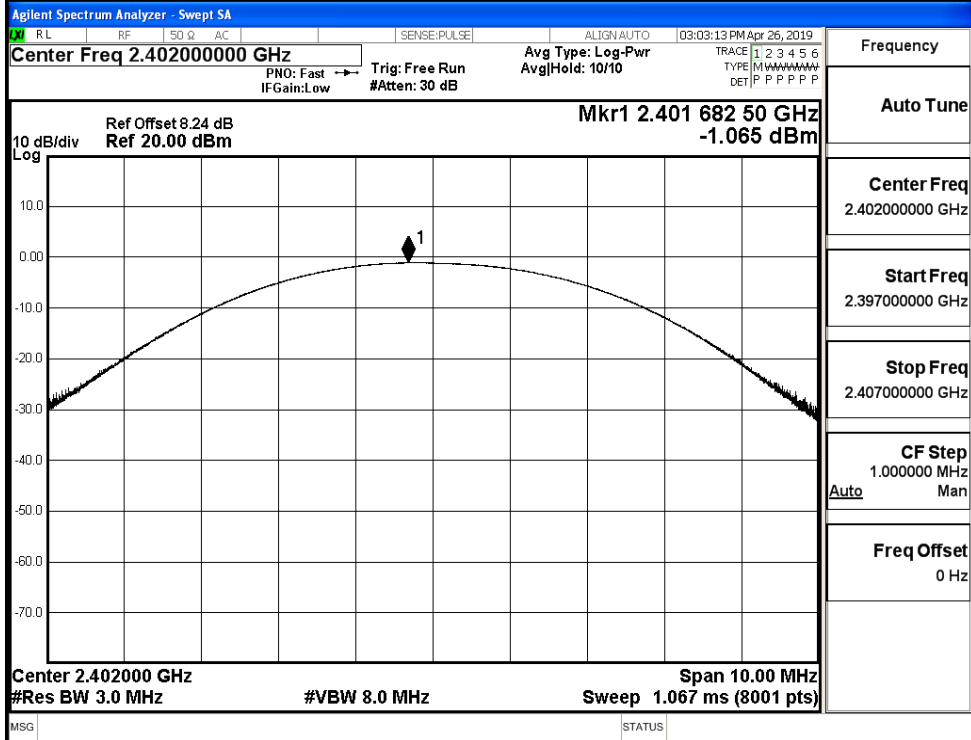
Temperature:	23.4 ° C
Relative Humidity:	52.6%
ATM Pressure:	100.0 kPa
Test Engineer:	David.Luo
Supervised by:	Tom.Liu

A.1 Maximum Conducted Peak Output Power

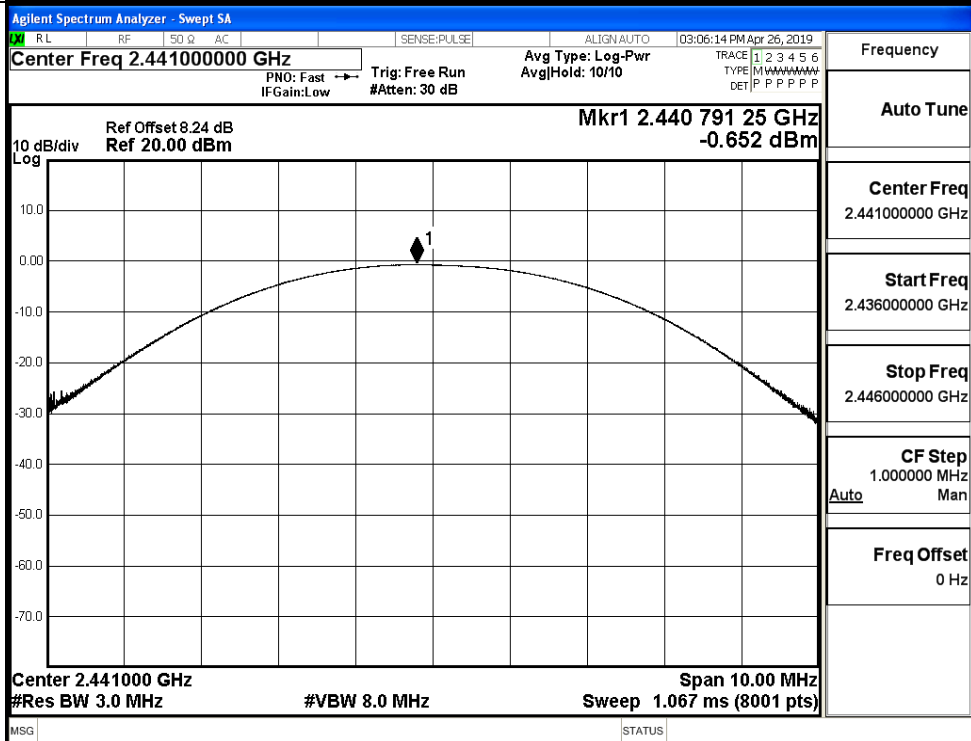
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-1.065	21	PASS
	MCH	-0.652	21	PASS
	HCH	-0.299	21	PASS
$\pi/4$ DQPSK	LCH	-0.516	21	PASS
	MCH	-0.108	21	PASS
	HCH	0.356	21	PASS

Test Graphs

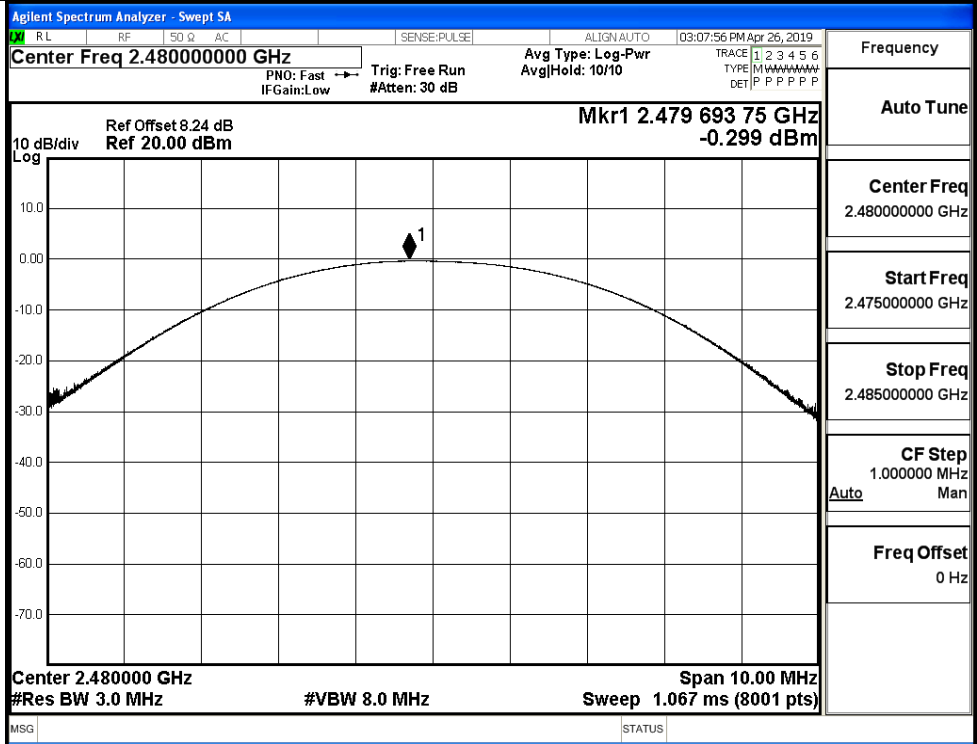
GFSK/LCH



GFSK/MCH

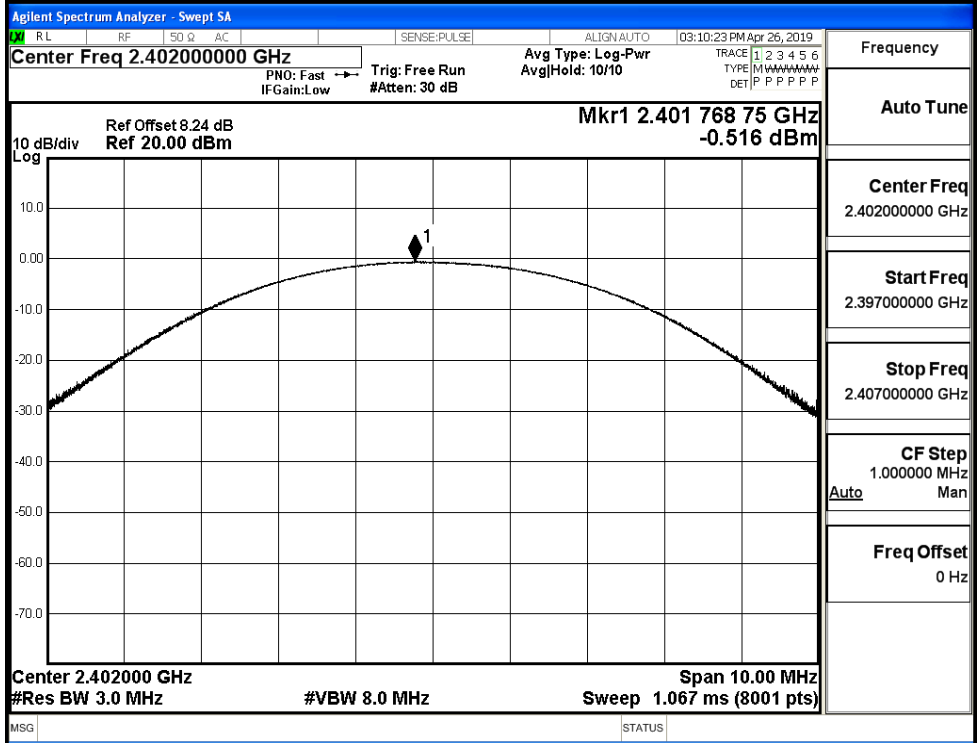


GFSK/HCH



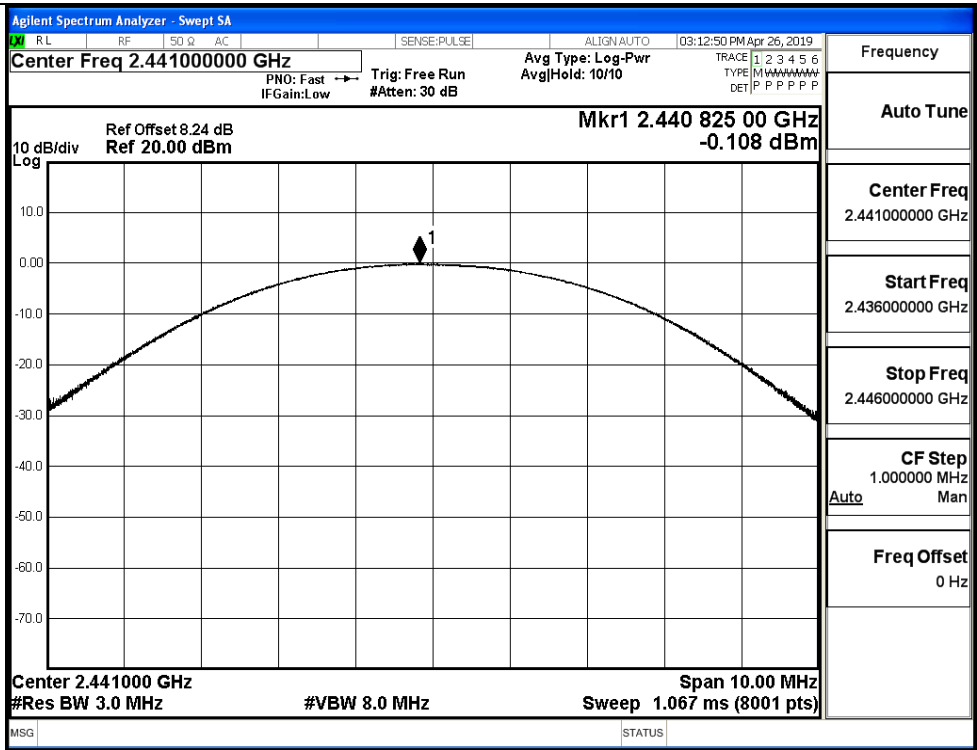
Frequency
Auto Tune
Center Freq 2.480000000 GHz
Start Freq 2.475000000 GHz
Stop Freq 2.485000000 GHz
CF Step 1.000000 MHz Auto Man
Freq Offset 0 Hz

π /4DQPSK/LCH

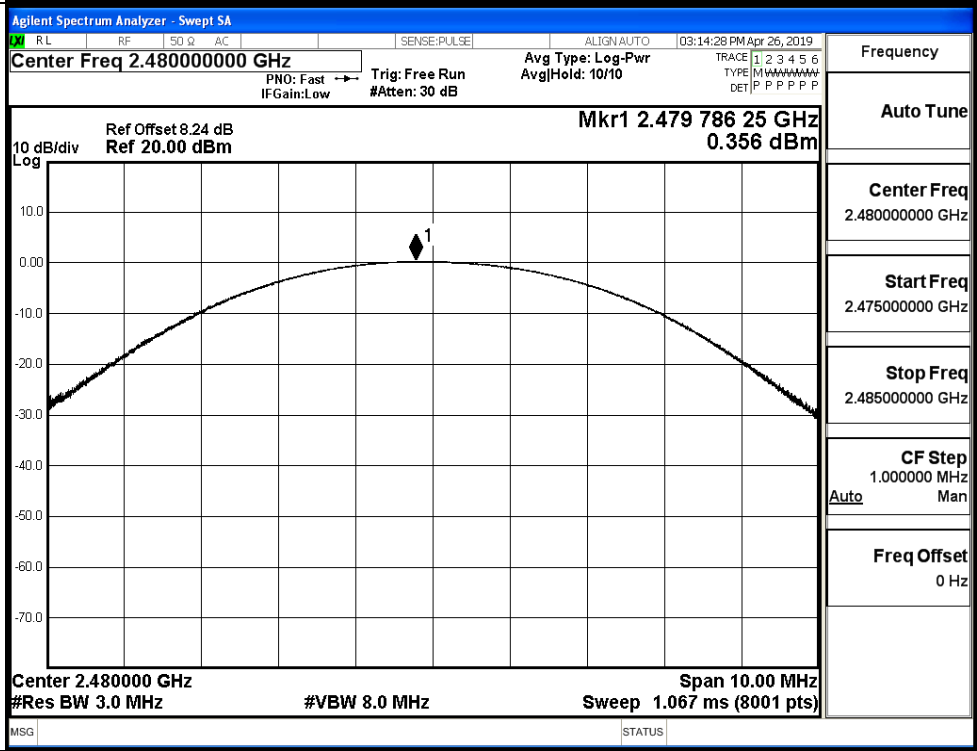


Frequency
Auto Tune
Center Freq 2.402000000 GHz
Start Freq 2.397000000 GHz
Stop Freq 2.407000000 GHz
CF Step 1.000000 MHz Auto Man
Freq Offset 0 Hz

π /4DQPSK/MCH

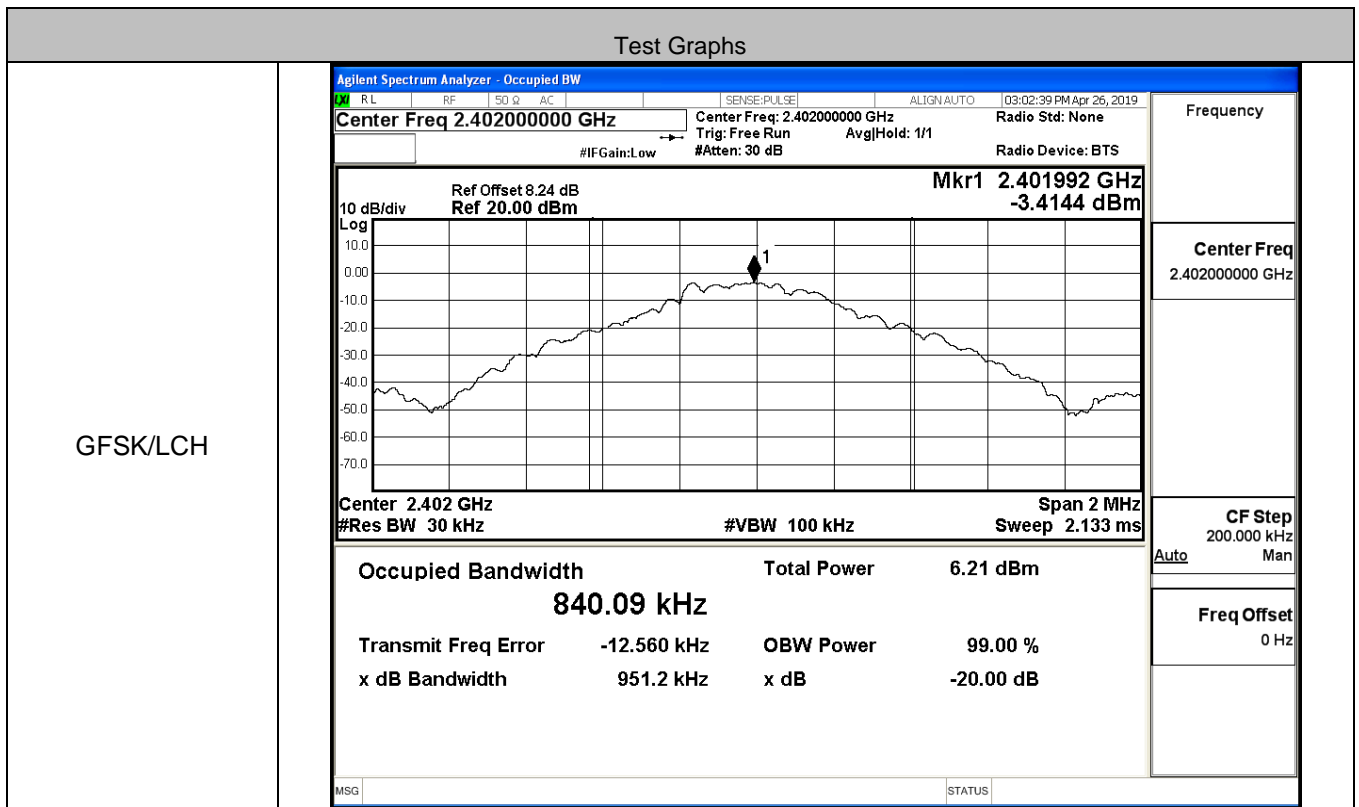


π /4DQPSK/HCH

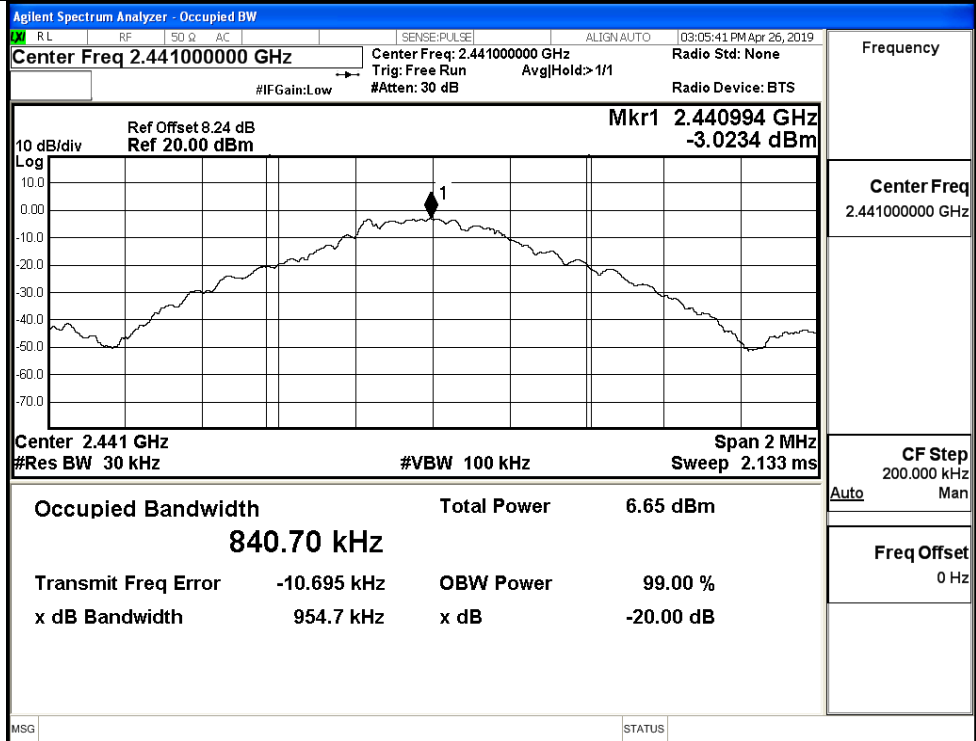


A.2 99% and 20dB Bandwidth

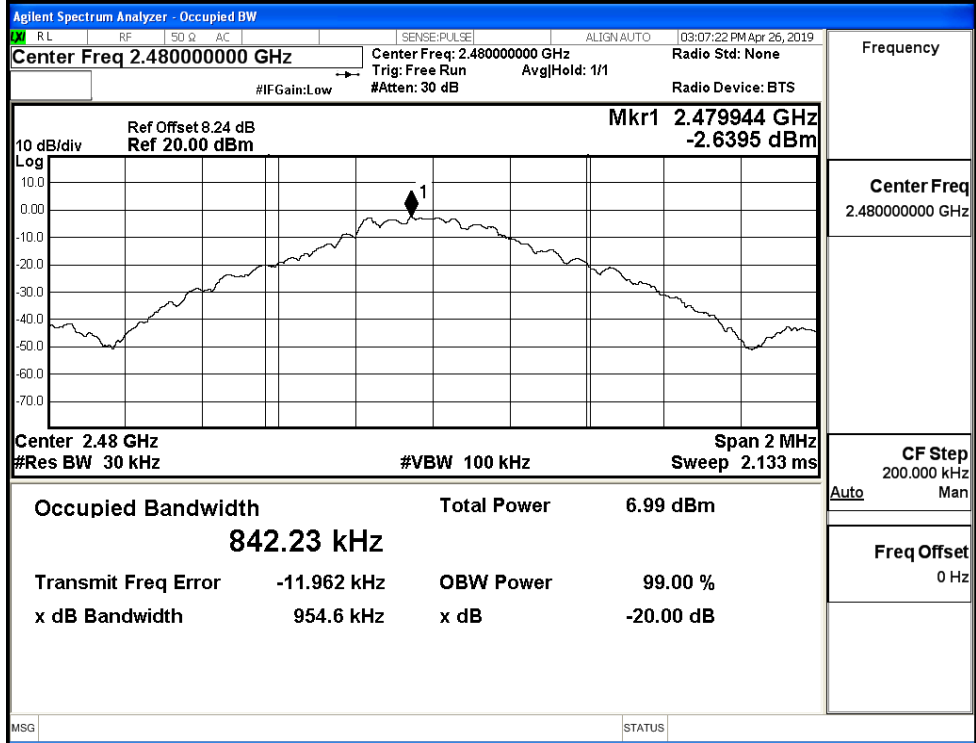
Mode	Channel.	99% Bandwidth [MHz]	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.84009	0.9512	Not Specified	PASS
	MCH	0.84070	0.9547	Not Specified	PASS
	HCH	0.84223	0.9546	Not Specified	PASS
π/4DQPSK	LCH	1.1738	1.315	Not Specified	PASS
	MCH	1.1758	1.313	Not Specified	PASS
	HCH	1.1739	1.311	Not Specified	PASS



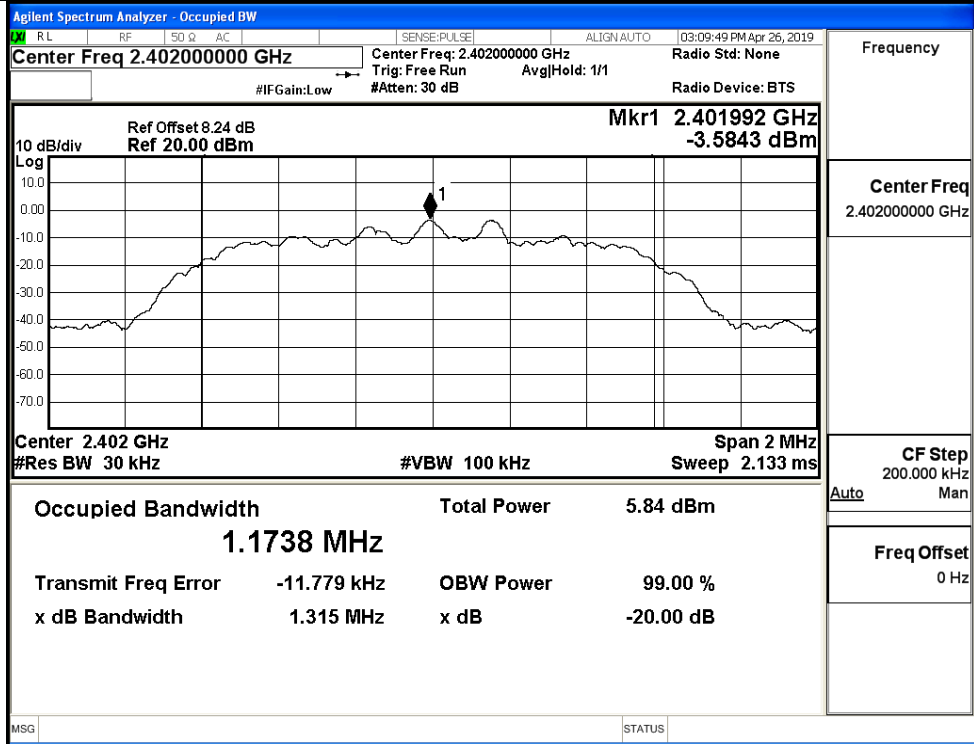
GFSK/MCH



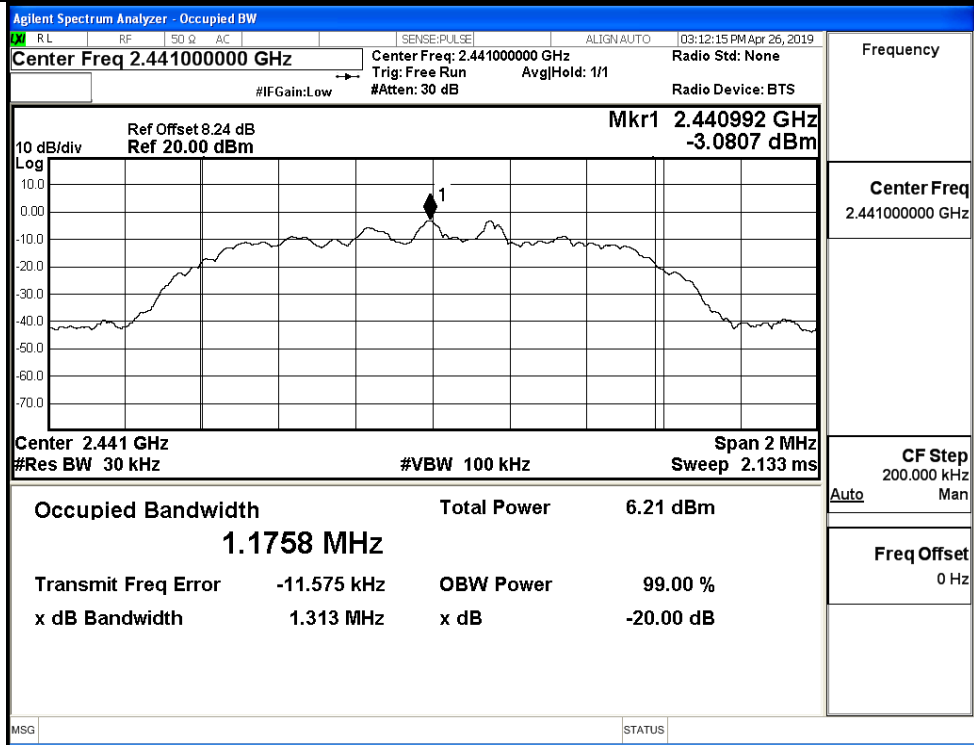
GFSK/HCH



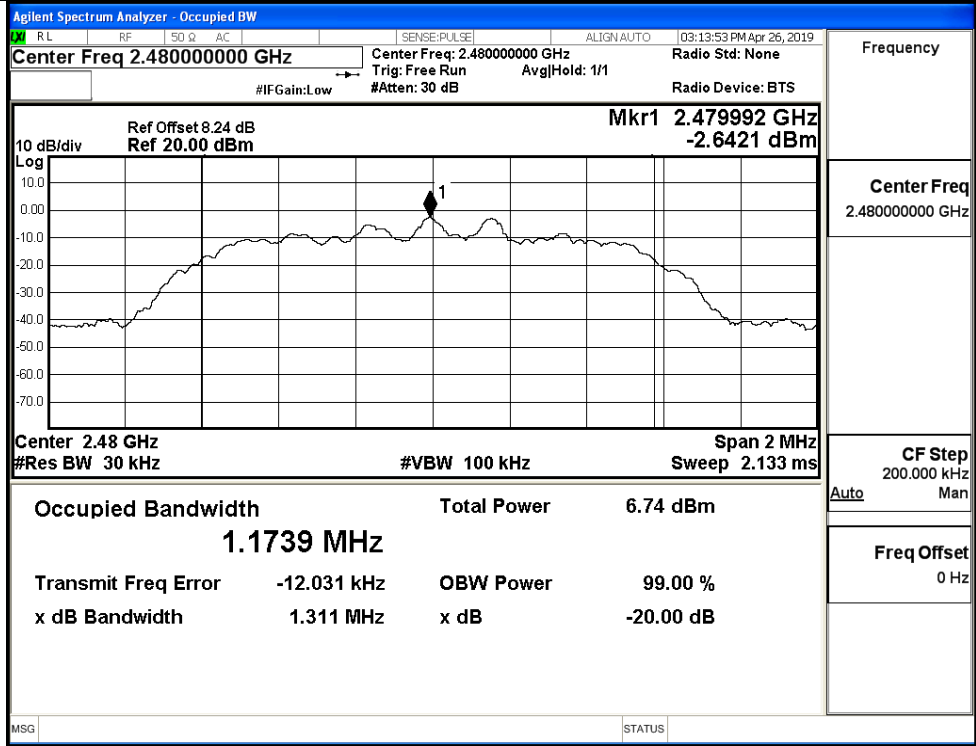
$\pi/4$ DQPSK/LCH



$\pi/4$ DQPSK/MCH

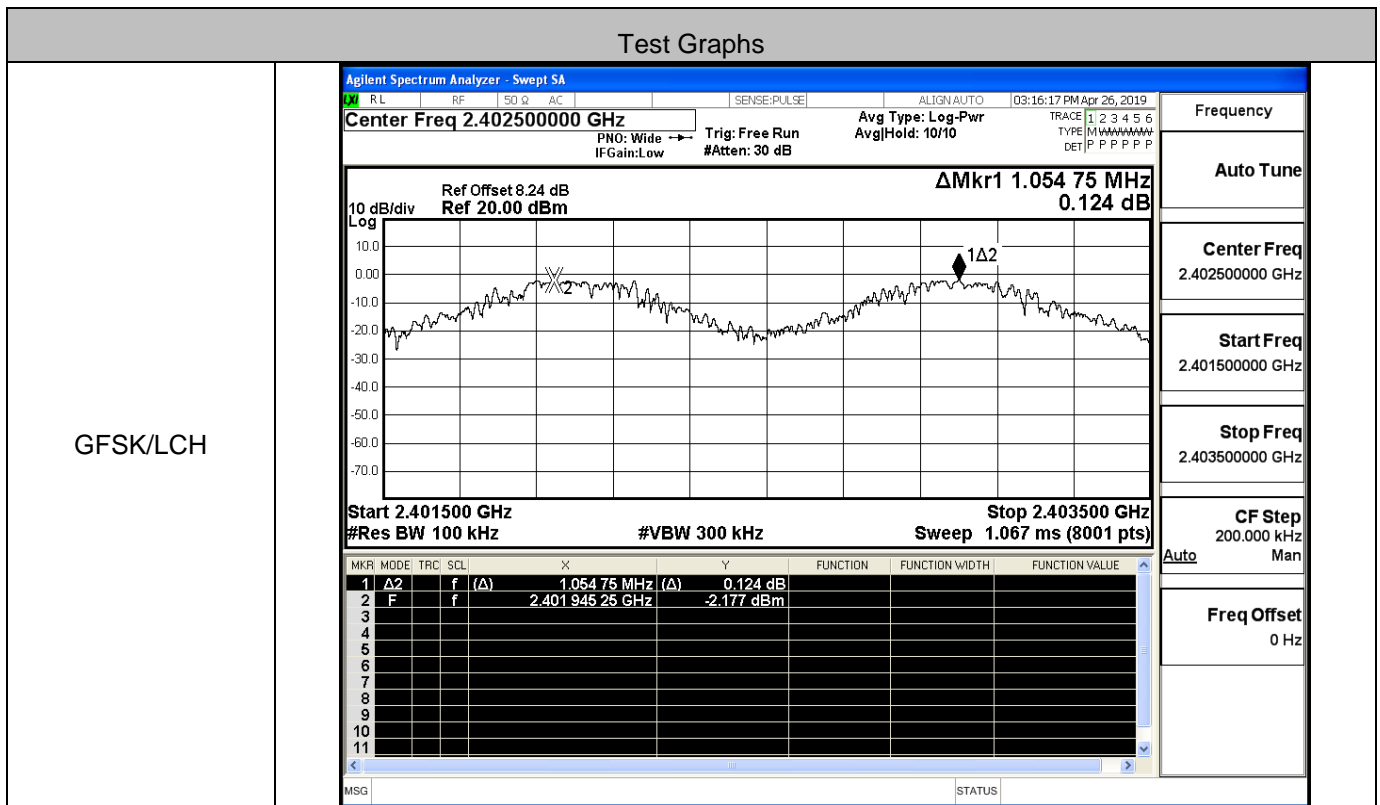


$\pi/4$ DQPSK/HCH

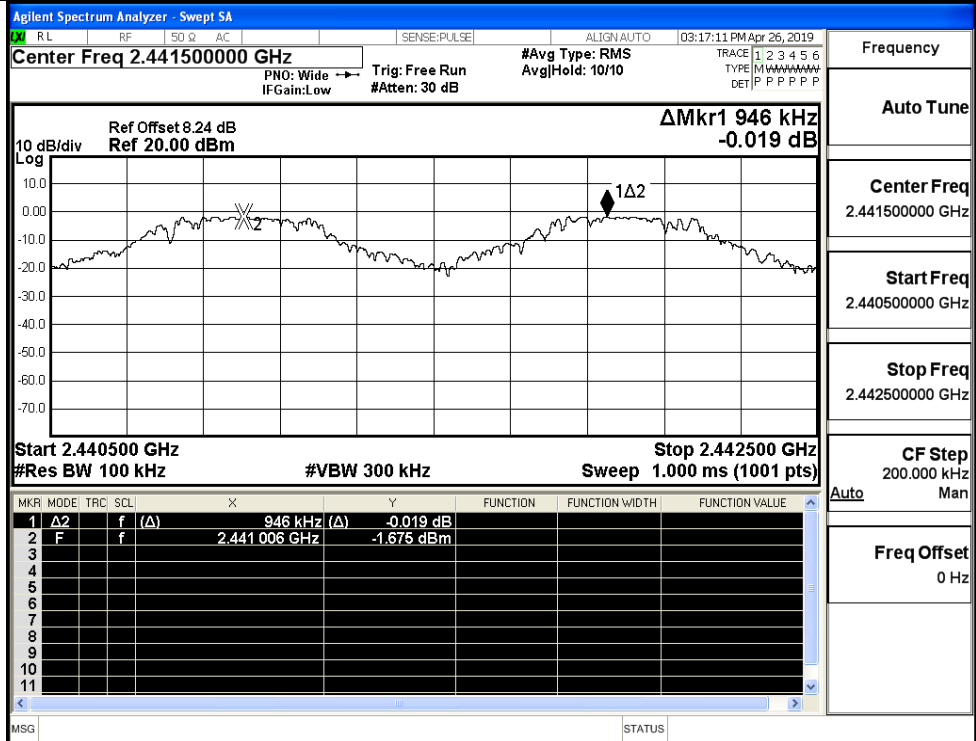


A.3 Carrier Frequency Separation

Mode	Channel	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.055	0.636	PASS
	MCH	0.946	0.636	PASS
	HCH	0.998	0.636	PASS
π/4DQPSK	LCH	1.246	0.877	PASS
	MCH	1.302	0.877	PASS
	HCH	1.032	0.877	PASS

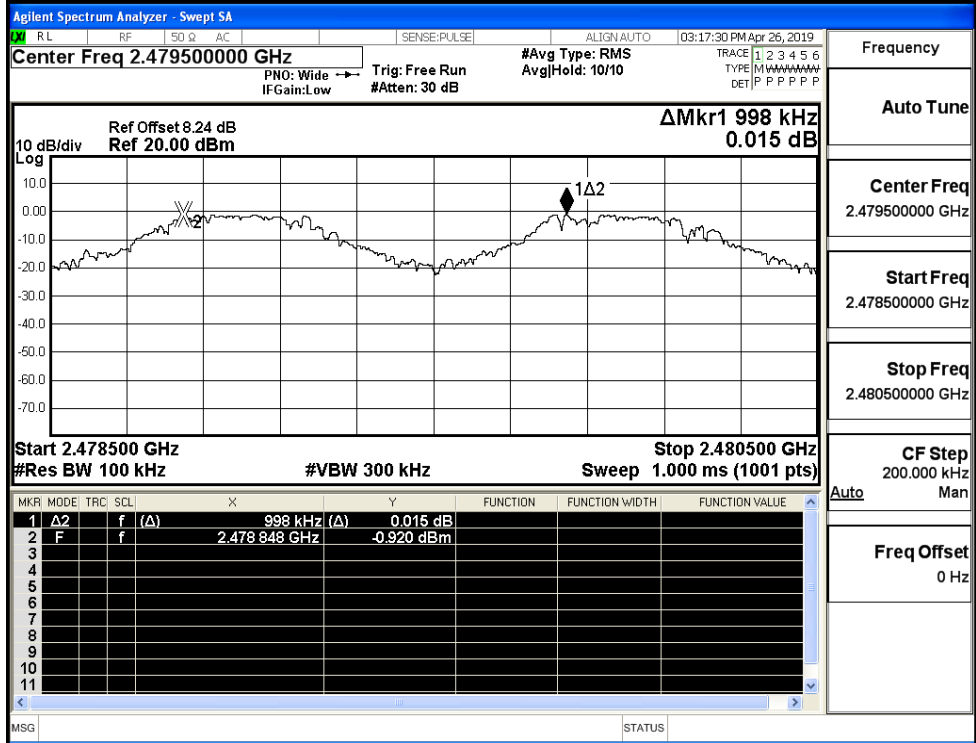


GFSK/MCH



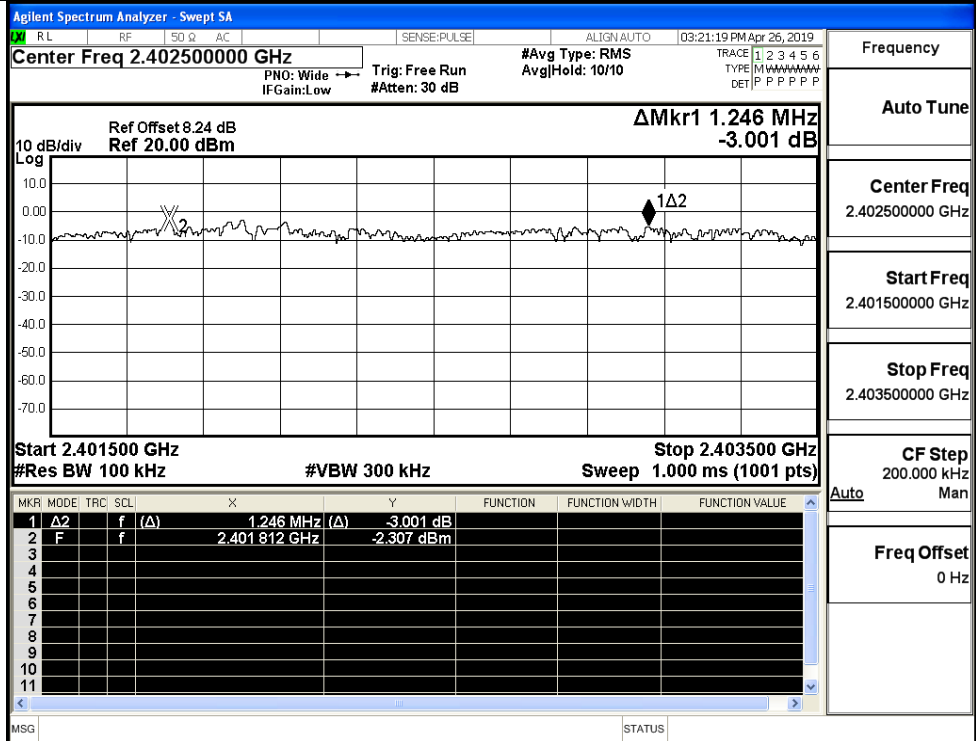
Frequency
Auto Tune
Center Freq
2.441500000 GHz
Start Freq
2.440500000 GHz
Stop Freq
2.442500000 GHz
CF Step
200.000 kHz
Auto Man
Freq Offset
0 Hz

GFSK/HCH



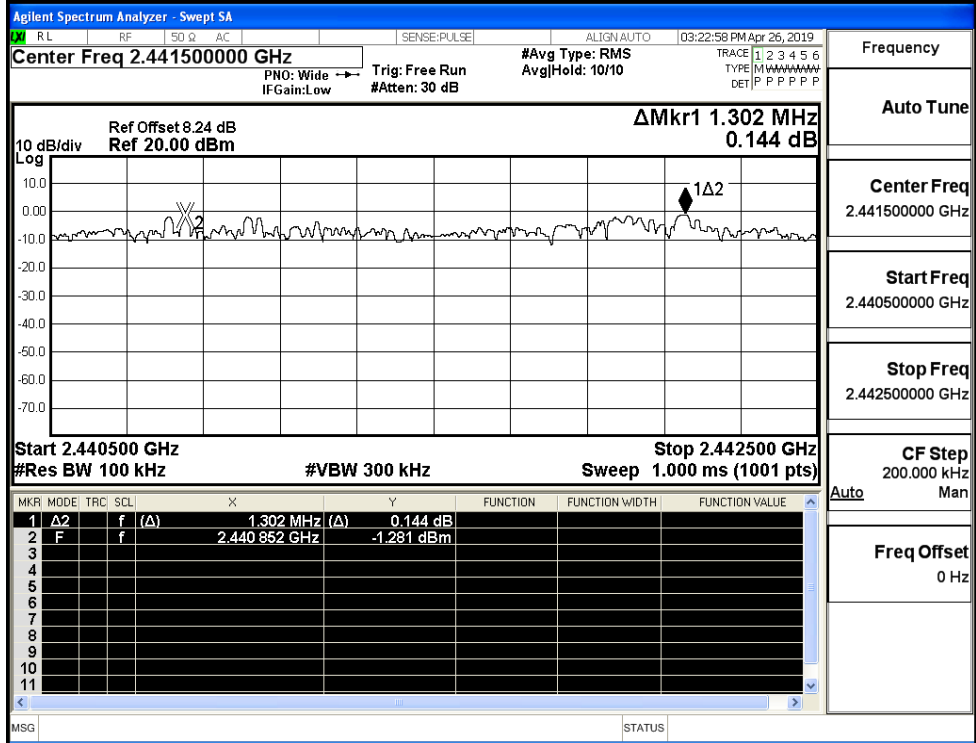
Frequency
Auto Tune
Center Freq
2.479500000 GHz
Start Freq
2.478500000 GHz
Stop Freq
2.480500000 GHz
CF Step
200.000 kHz
Auto Man
Freq Offset
0 Hz

π /4DQPSK/LCH



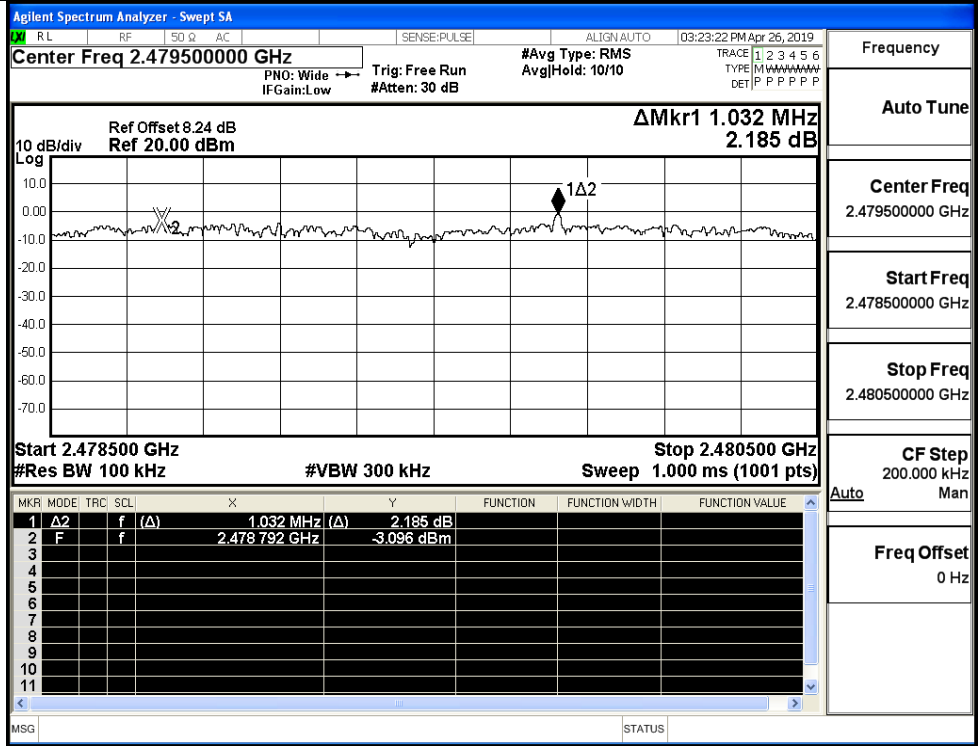
Frequency
Auto Tune
Center Freq
2.402500000 GHz
Start Freq
2.401500000 GHz
Stop Freq
2.403500000 GHz
CF Step
200.000 kHz
Auto
Man
Freq Offset
0 Hz

π /4DQPSK/MCH



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

$\pi/4$ DQPSK/HCH



A.4 Hopping Channel Number

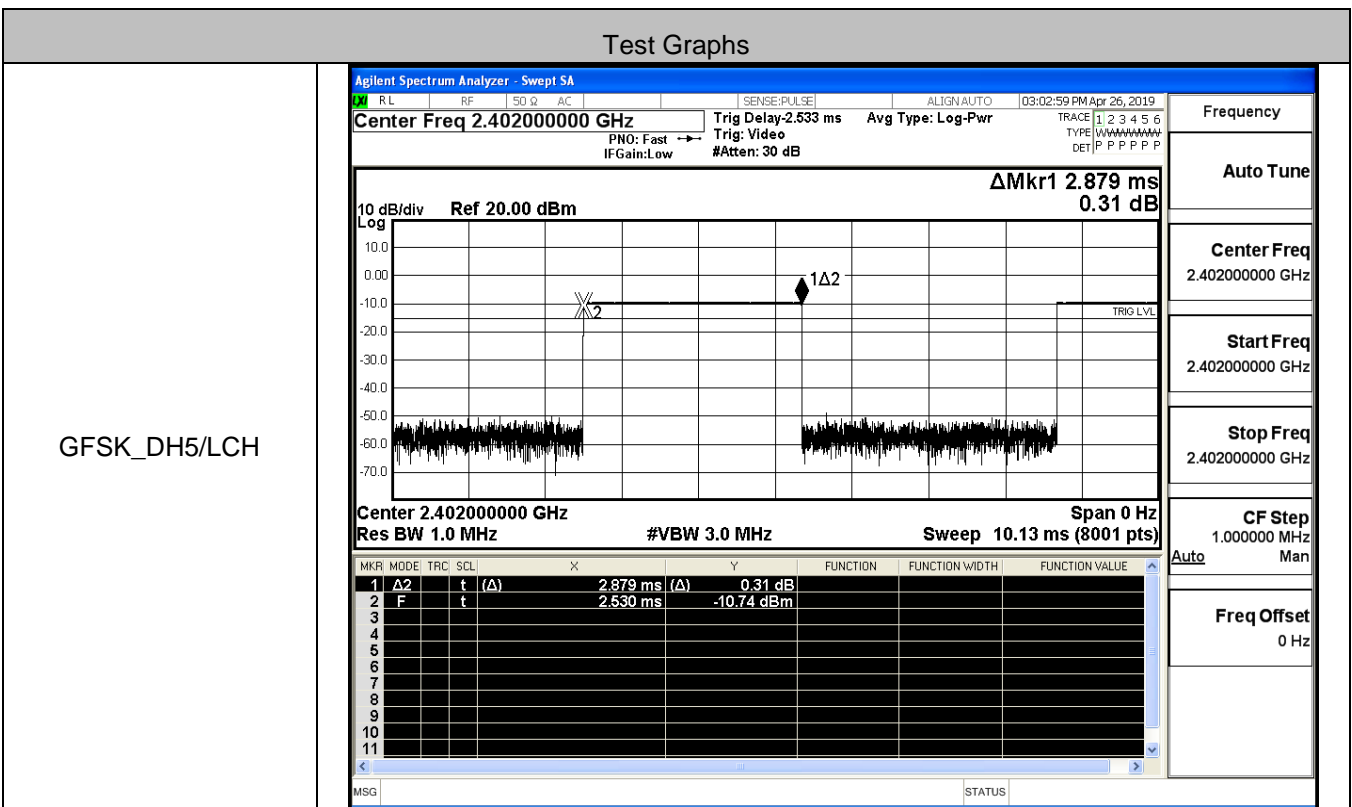
Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	>=15	PASS
$\pi/4$ DQPSK	Hop	79	>=15	PASS

Test Graphs

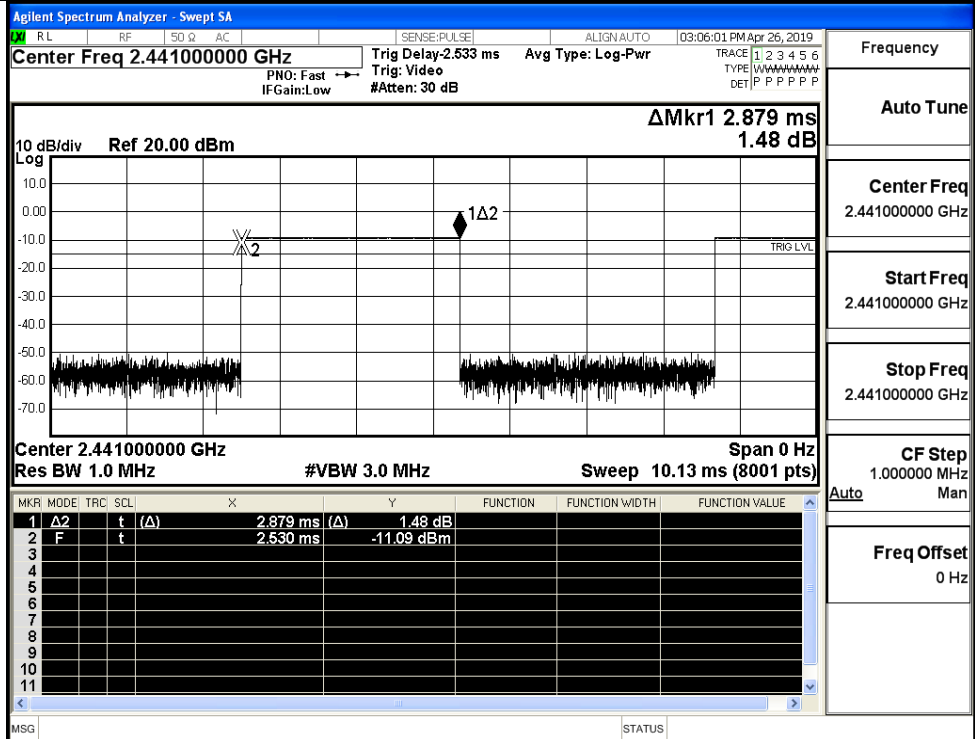
<p>GFSK/Hop</p>	<p>Agilent Spectrum Analyzer - Swept SA</p> <p>Center Freq 2.441750000 GHz</p> <p>Ref Offset 8.24 dB Ref 20.00 dBm</p> <p>ΔMkr1 77.874 MHz 1.465 dB</p> <p>Start 2.40000 GHz Stop 2.48350 GHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 8.000 ms (8001 pts)</p> <table border="1"> <thead> <tr> <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>77.874 MHz (Δ)</td> <td>1.465 dB</td> <td></td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>F</td> <td>f</td> <td></td> <td>2.401994 GHz</td> <td>-2.071 dBm</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	Δ2	f	(Δ)	77.874 MHz (Δ)	1.465 dB				2	F	f		2.401994 GHz	-2.071 dBm			
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE																				
1	Δ2	f	(Δ)	77.874 MHz (Δ)	1.465 dB																							
2	F	f		2.401994 GHz	-2.071 dBm																							
<p>$\pi/4$DQPSK/Hop</p>	<p>Agilent Spectrum Analyzer - Swept SA</p> <p>Center Freq 2.441750000 GHz</p> <p>Ref Offset 8.24 dB Ref 20.00 dBm</p> <p>ΔMkr1 78.177 MHz -2.002 dB</p> <p>Start 2.40000 GHz Stop 2.48350 GHz</p> <p>#Res BW 100 kHz #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>78.177 MHz (Δ)</td> <td>-2.002 dB</td> <td></td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>F</td> <td>f</td> <td></td> <td>2.401847 GHz</td> <td>-1.293 dBm</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	Δ2	f	(Δ)	78.177 MHz (Δ)	-2.002 dB				2	F	f		2.401847 GHz	-1.293 dBm			
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE																				
1	Δ2	f	(Δ)	78.177 MHz (Δ)	-2.002 dB																							
2	F	f		2.401847 GHz	-1.293 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	2.89	106.7	0.307	0.4	PASS
	2DH5	MCH	2.89	106.7	0.308	0.4	PASS
	2DH5	HCH	2.89	106.7	0.308	0.4	PASS



GFSK_DH5/MCH



Frequency

Auto Tune

Center Freq 2.441000000 GHz

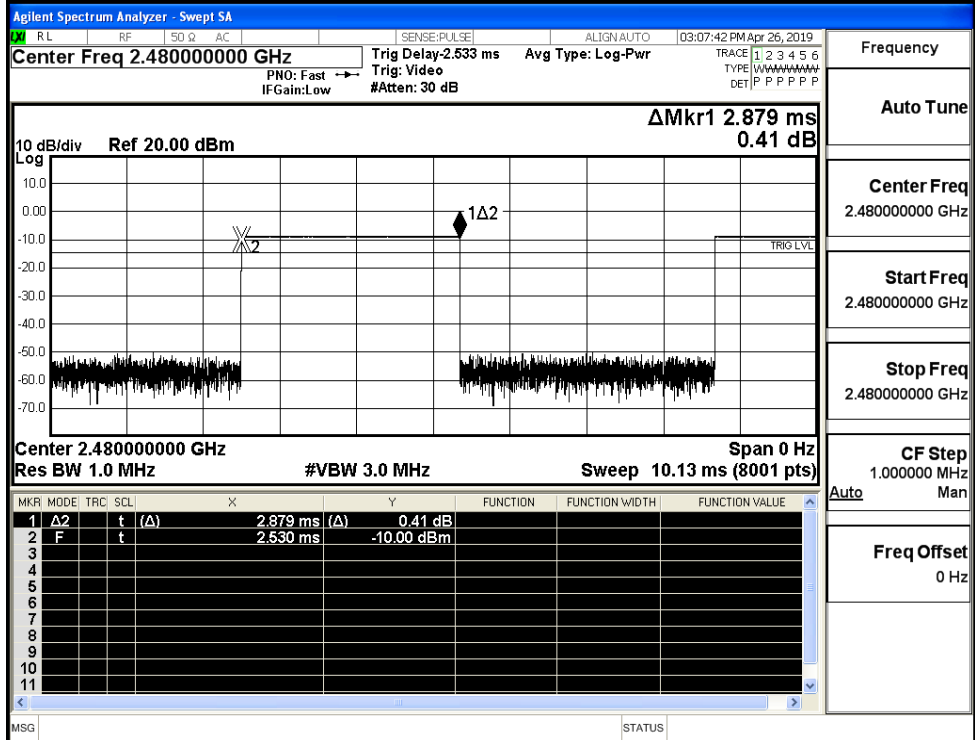
Start Freq 2.441000000 GHz

Stop Freq 2.441000000 GHz

CF Step 1.000000 MHz

Freq Offset 0 Hz

GFSK_DH5/HCH



Frequency

Auto Tune

Center Freq 2.480000000 GHz

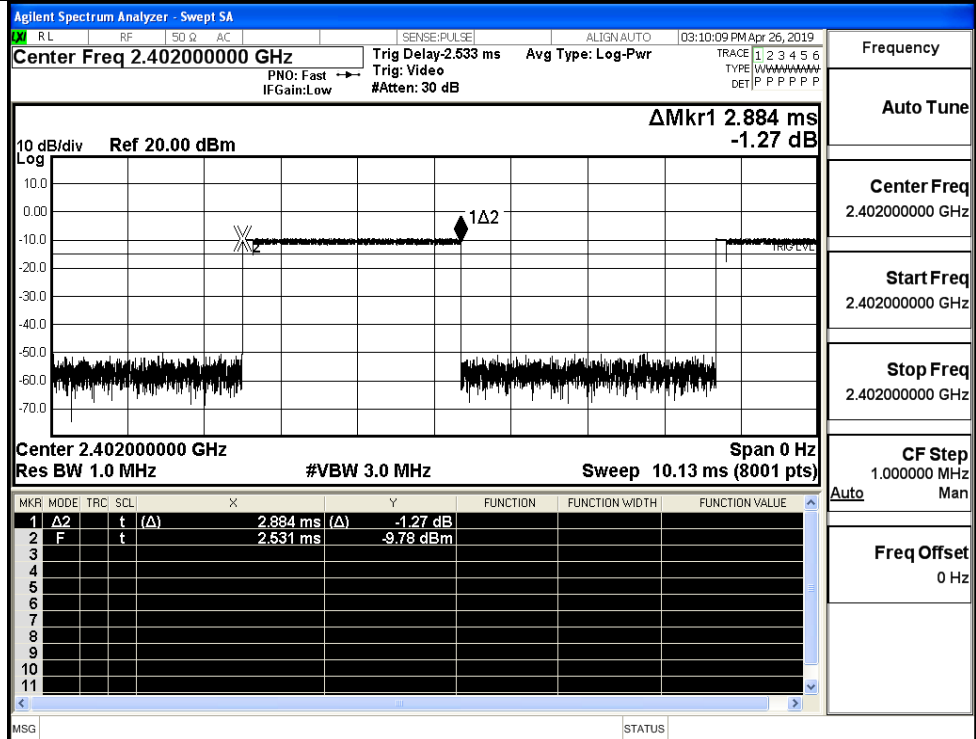
Start Freq 2.480000000 GHz

Stop Freq 2.480000000 GHz

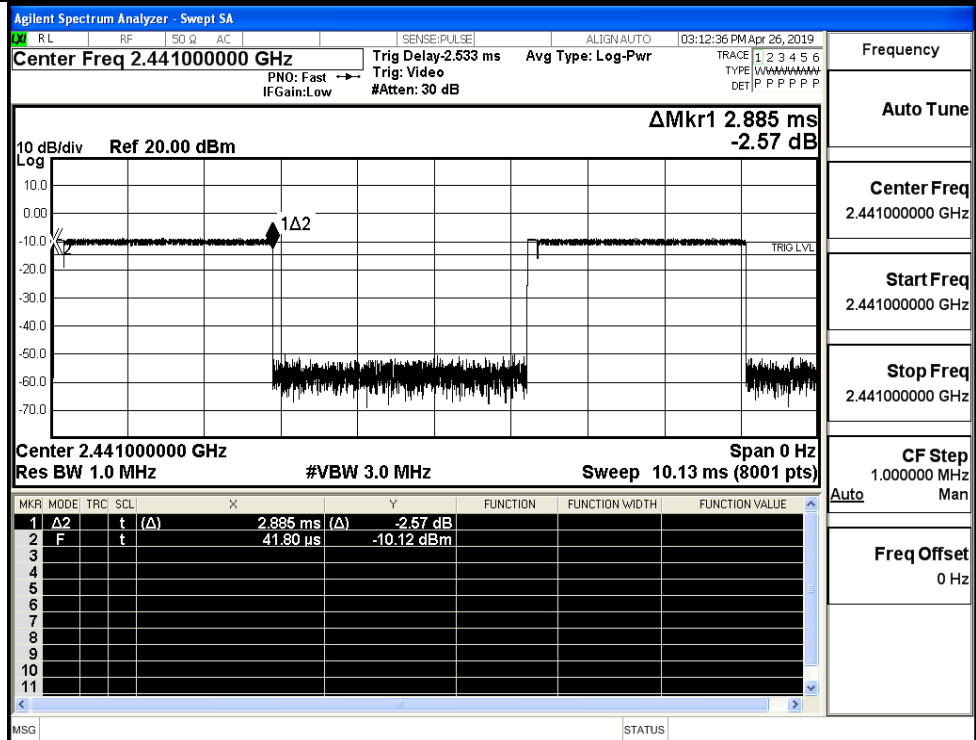
CF Step 1.000000 MHz

Freq Offset 0 Hz

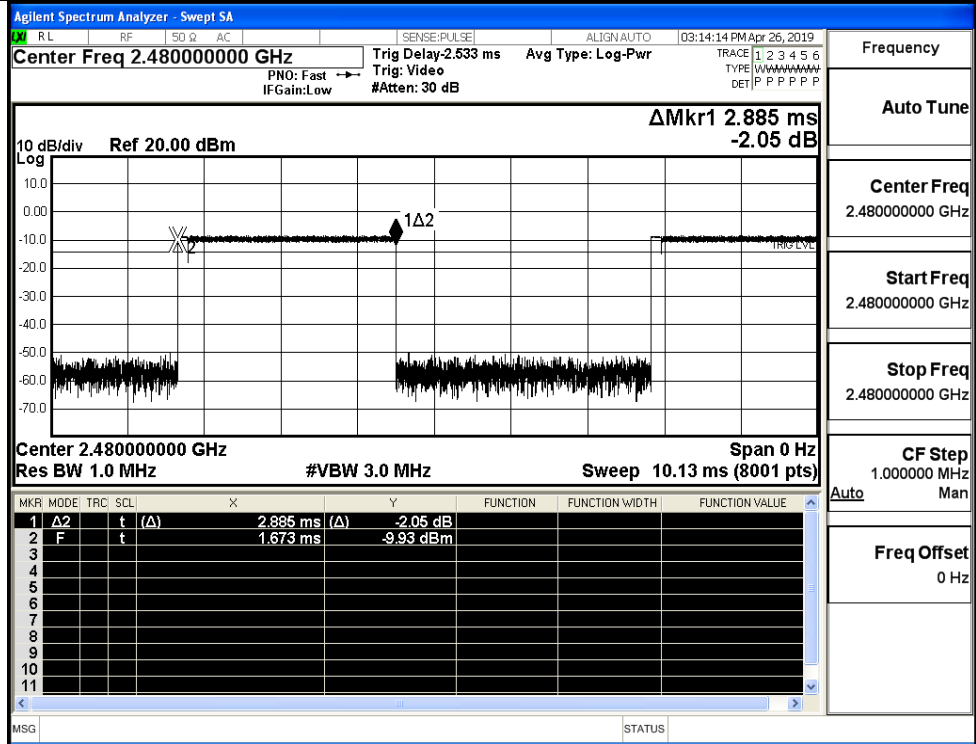
$\pi/4$ DQPSK
_2DH5/LCH



$\pi/4$ DQPSK
_2DH5/MCH



$\pi/4$ DQPSK
_2DH5/HCH

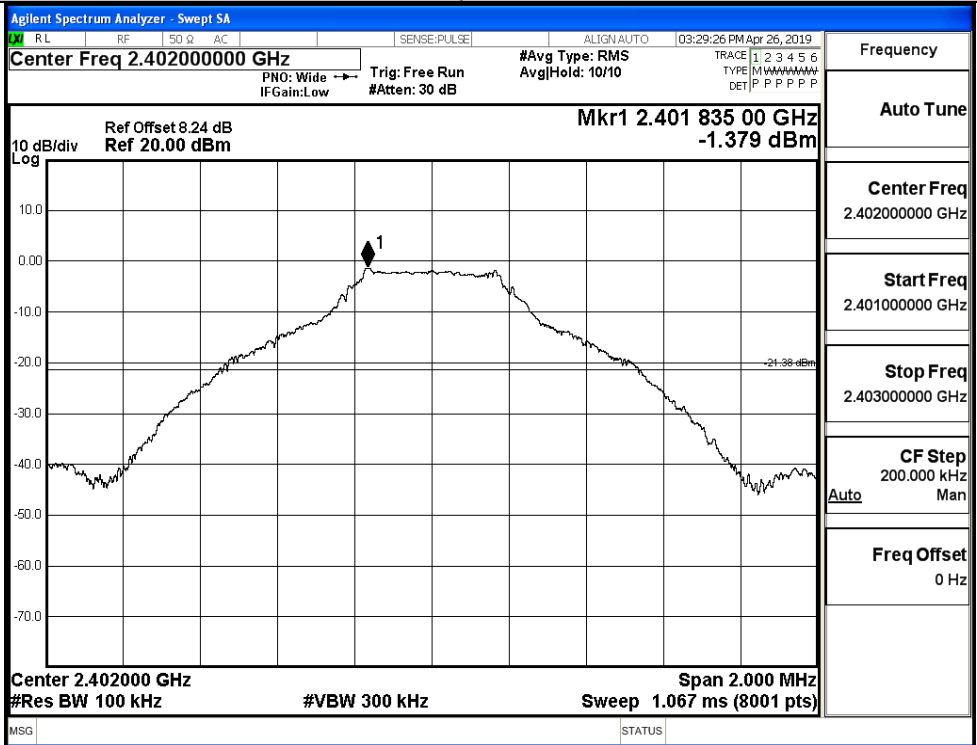


A.6 RF Conducted Spurious Emissions

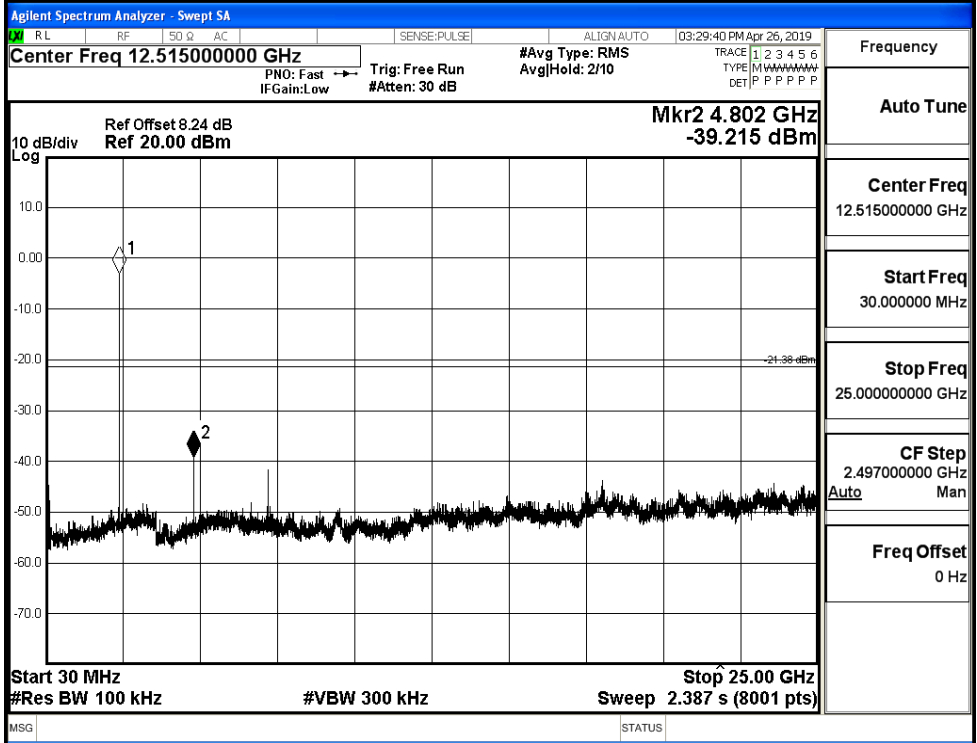
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-1.379	-39.215	-21.379	PASS
	MCH	-0.882	-42.981	-20.882	PASS
	HCH	-1.042	-41.836	-21.042	PASS
$\pi/4$ DQPSK	LCH	-1.409	-42.723	-21.409	PASS
	MCH	-1.053	-31.011	-21.053	PASS
	HCH	-0.575	-42.466	-20.575	PASS

GFSK_LCH_Graphs

Pref

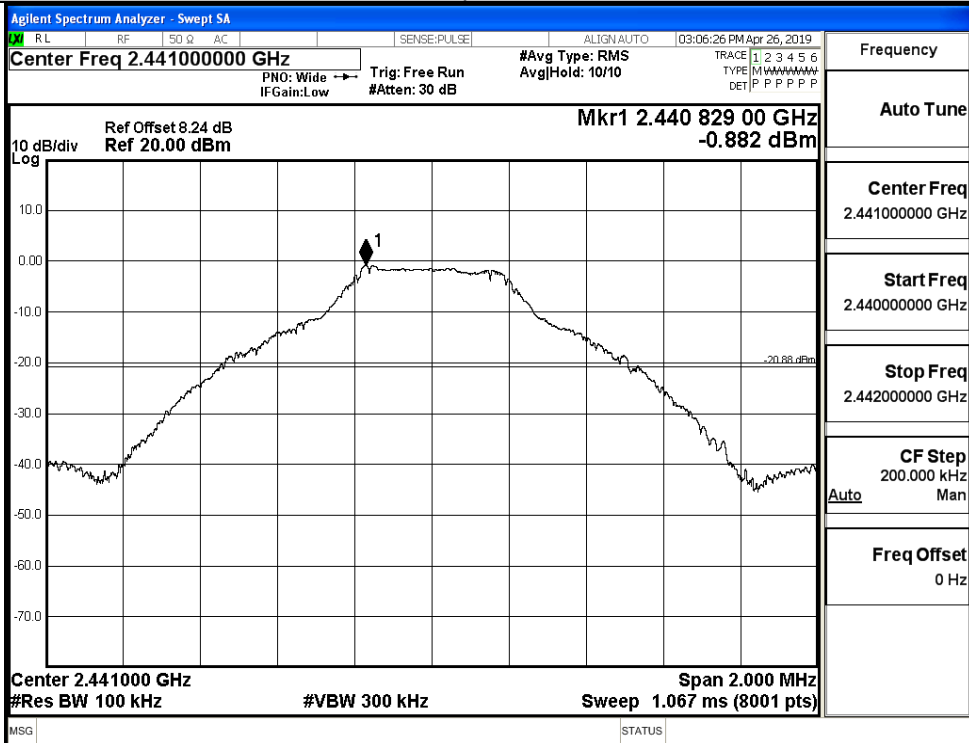


Puw

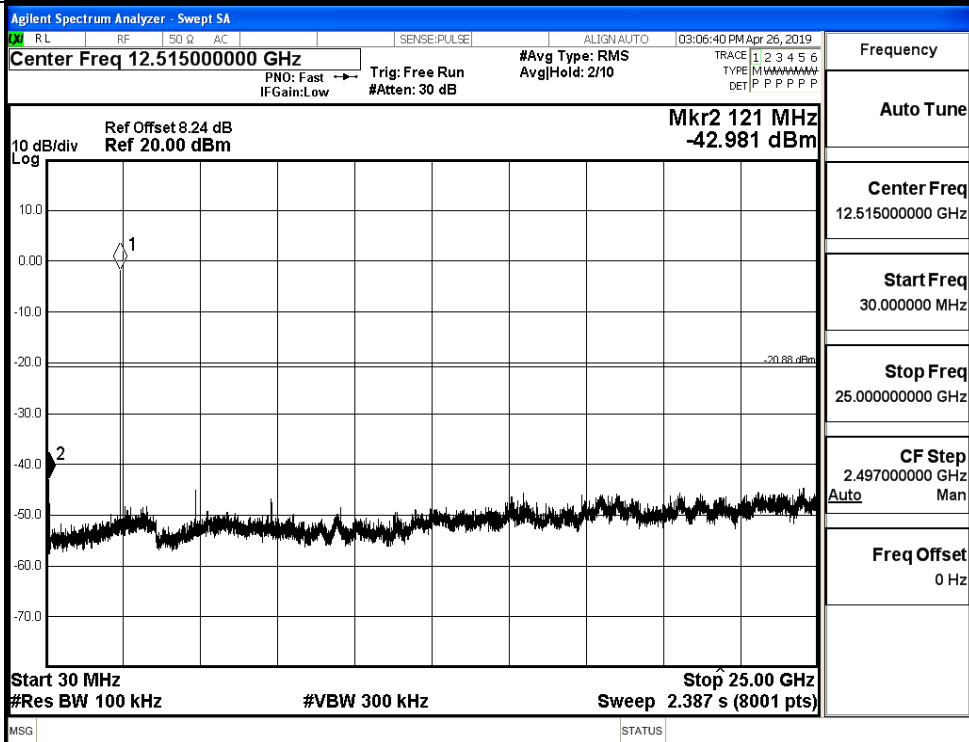


GFSK_MCH_Graphs

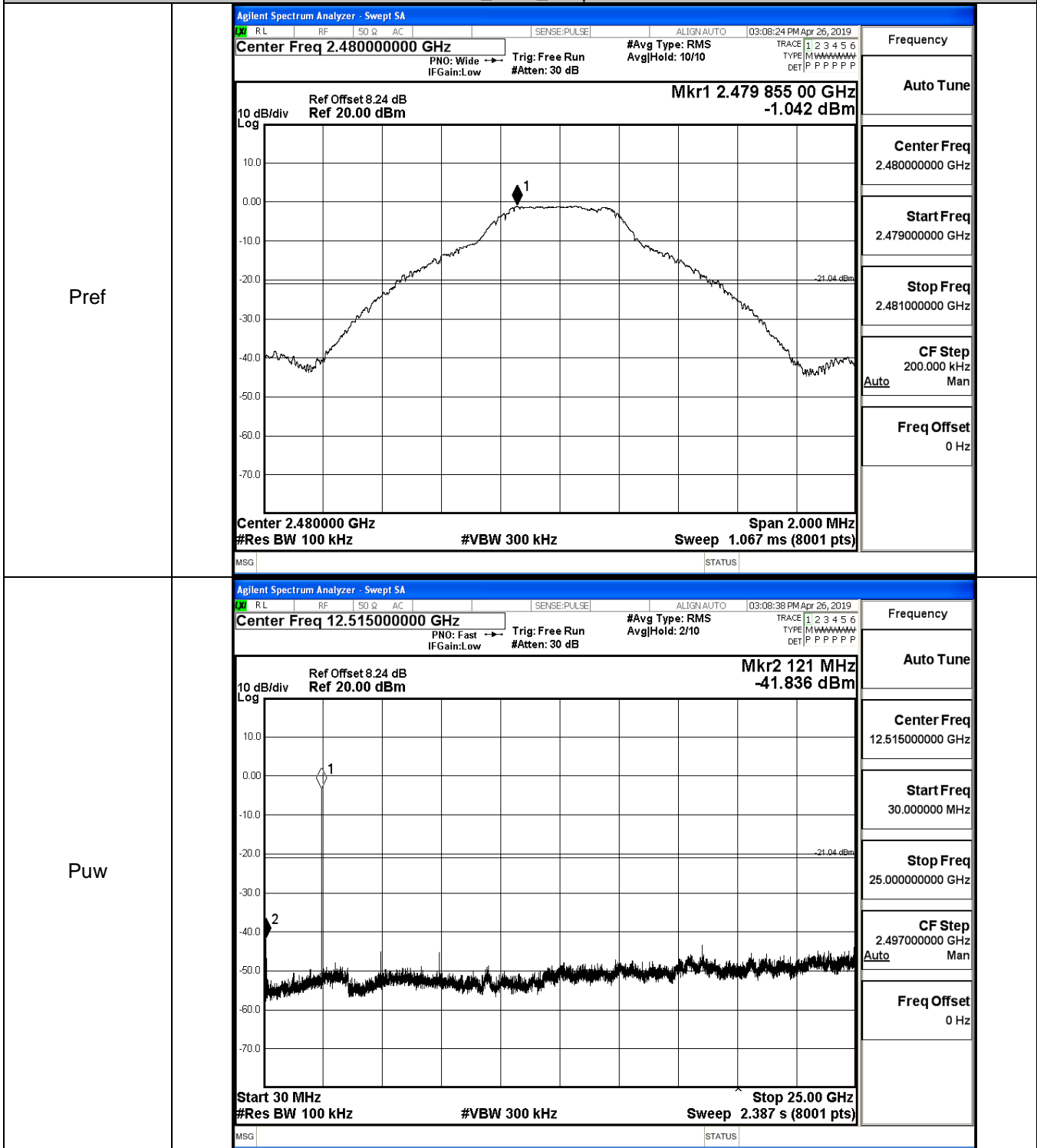
Pref



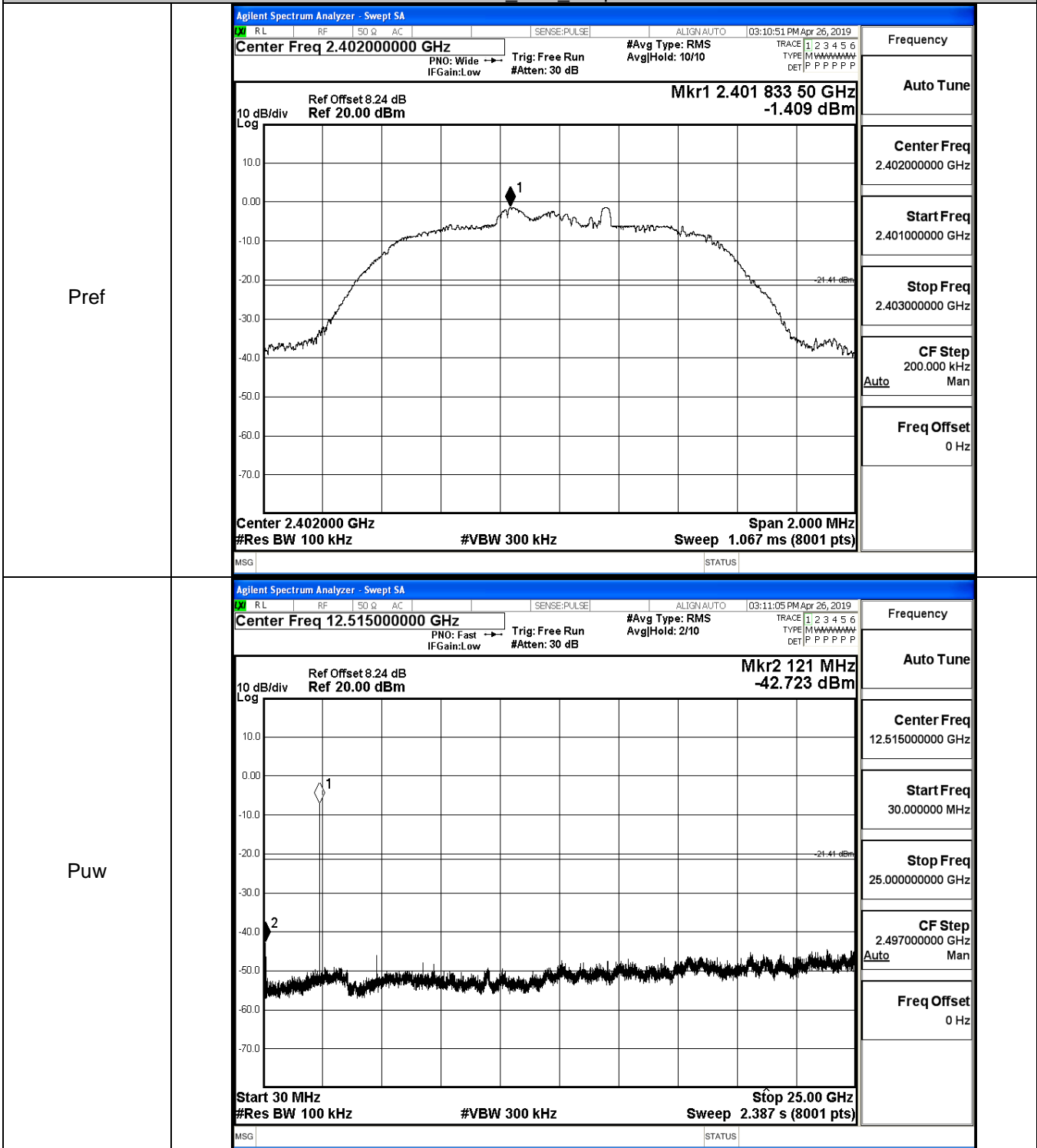
Puw



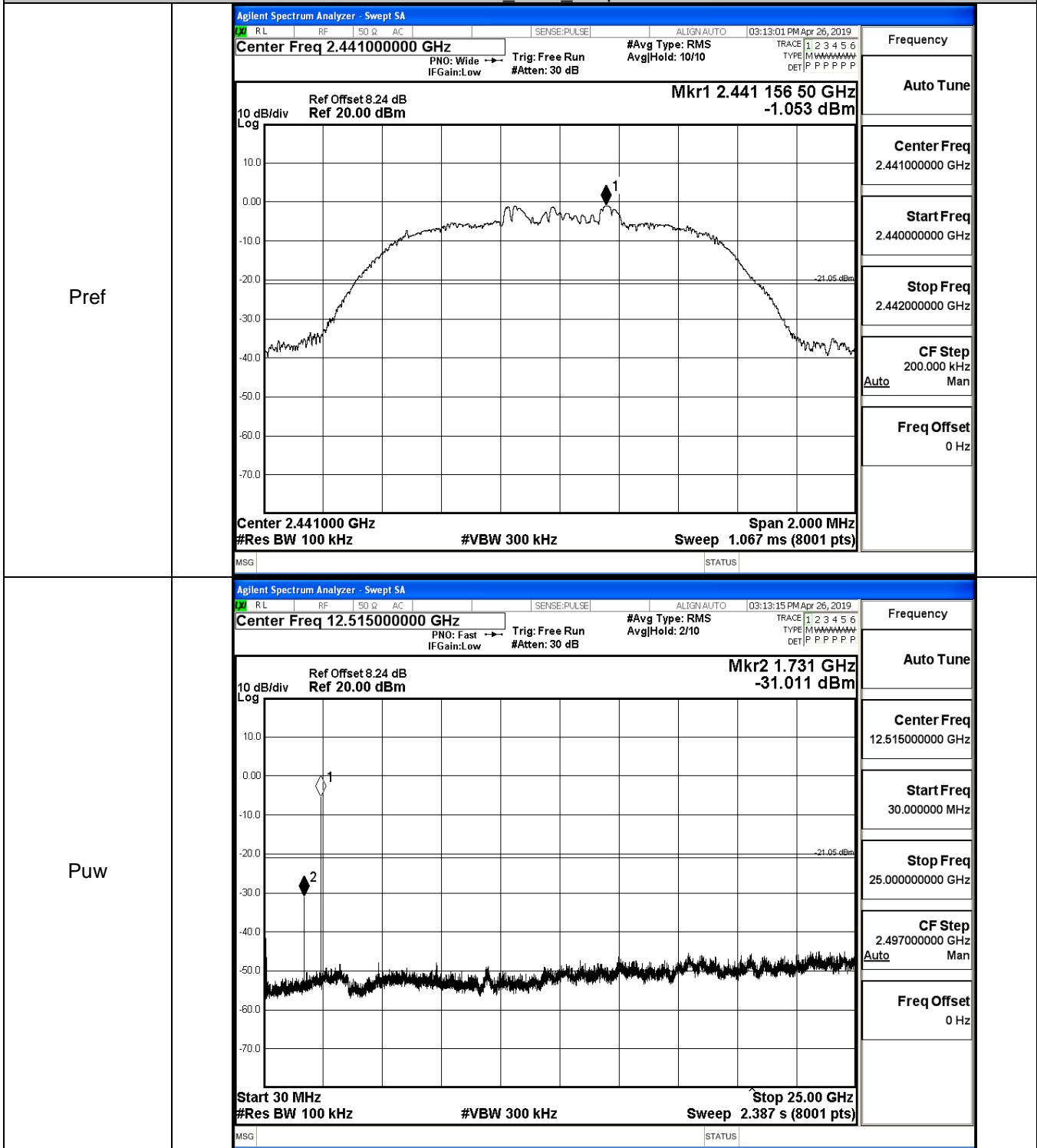
GFSK_HCH_Graphs



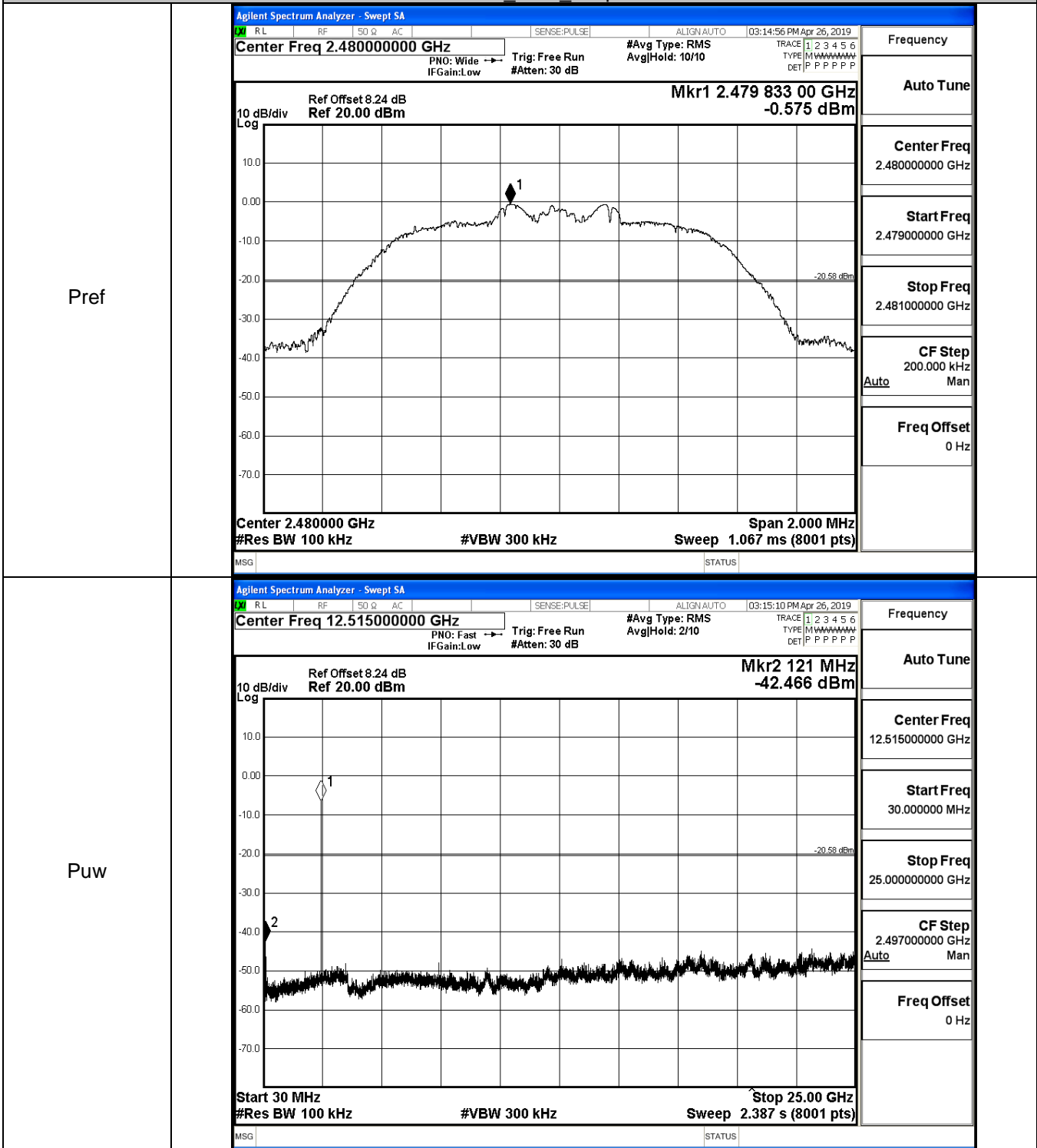
$\pi/4$ DQPSK LCH_Graphs



$\pi/4$ DQPSK_MCH_Graphs



$\pi/4$ DQPSK_HCH_Graphs

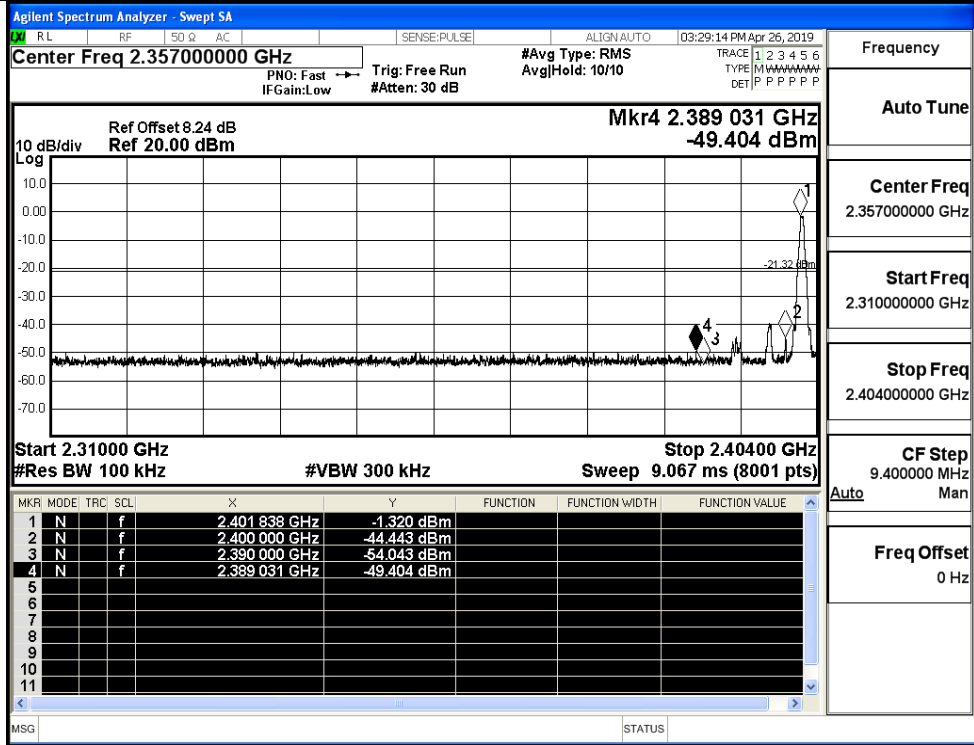


A.7 Band-edge for RF Conducted Emissions

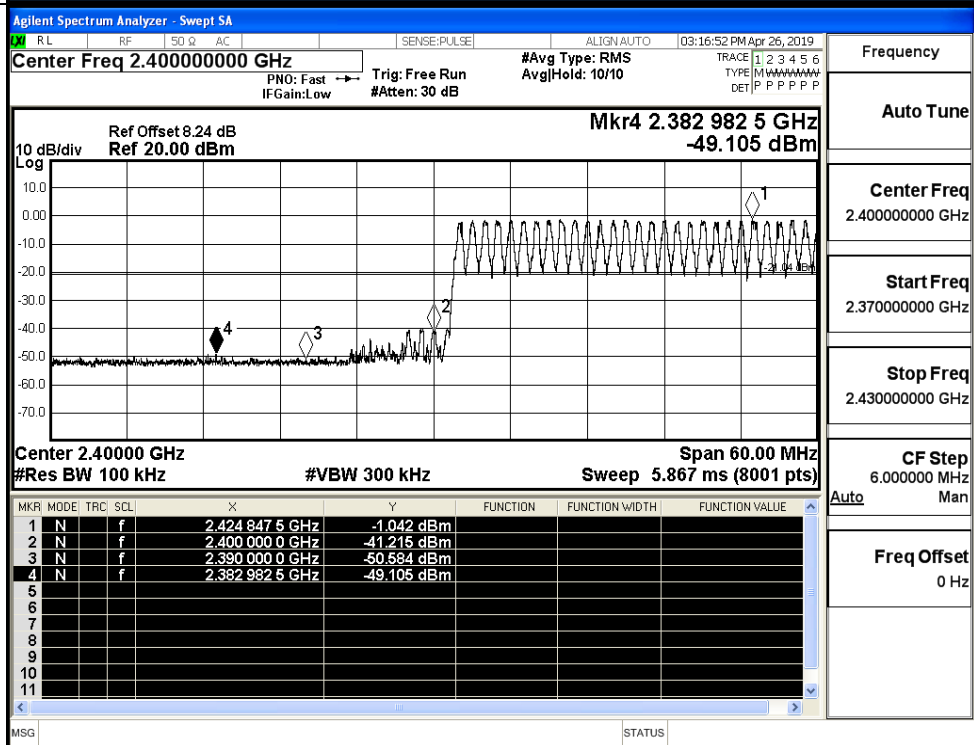
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	-1.320	Off	-49.404	-21.32	PASS
			-1.042	On	-49.105	-21.04	PASS
	HCH	2480	-0.650	Off	-48.795	-20.65	PASS
			-0.668	On	-49.225	-20.67	PASS
$\pi/4$ DQPSK	LCH	2402	-4.011	Off	-49.843	-24.01	PASS
			-1.103	On	-49.207	-21.1	PASS
	HCH	2480	-0.627	Off	-49.250	-20.63	PASS
			-0.608	On	-48.863	-20.61	PASS

Test Graphs

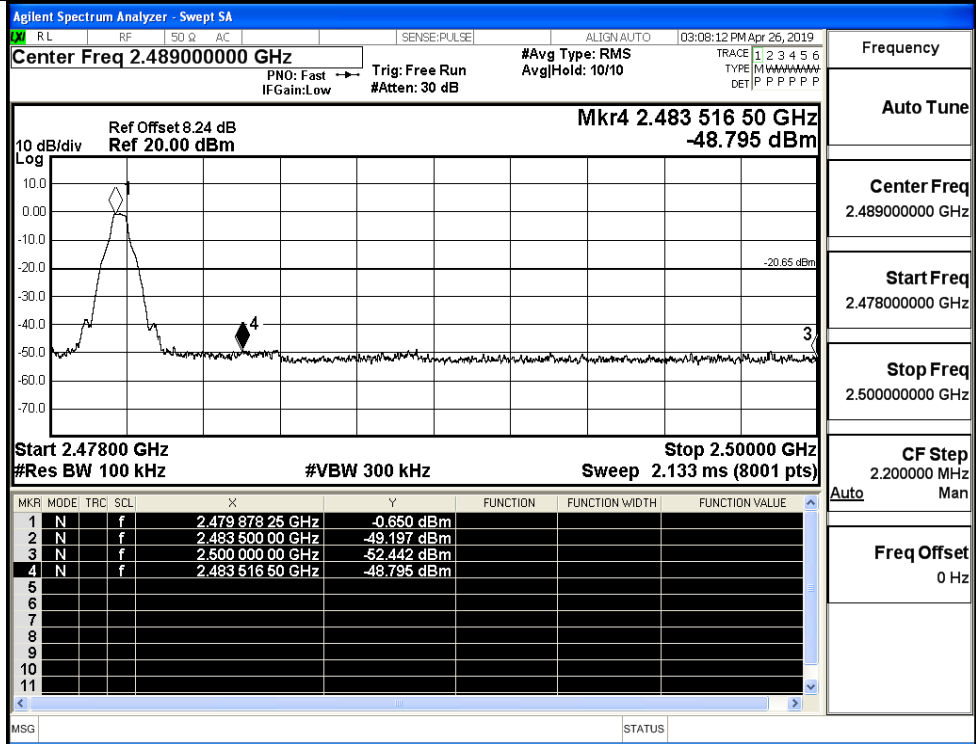
GFSK/LCH/No Hop



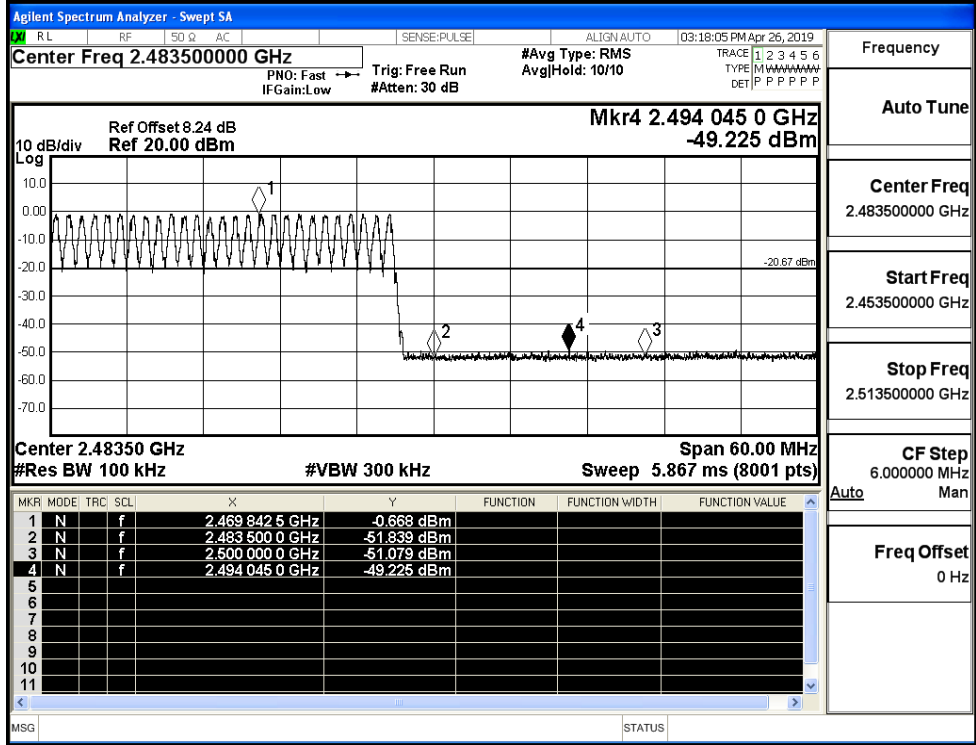
GFSK/LCH/Hop



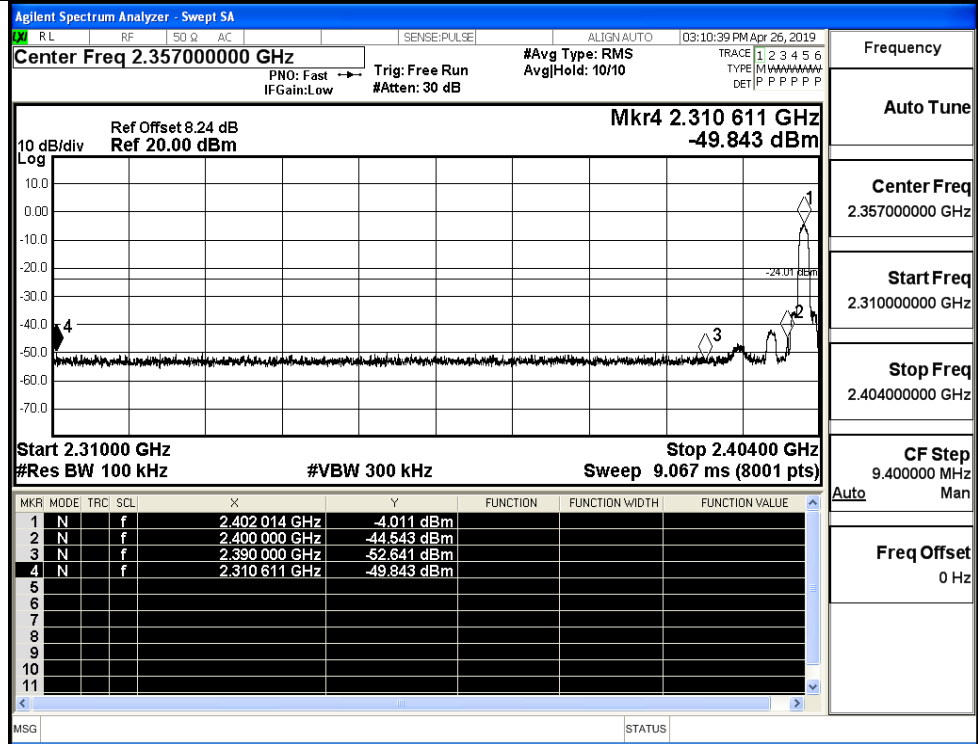
GFSK/HCH/No Hop



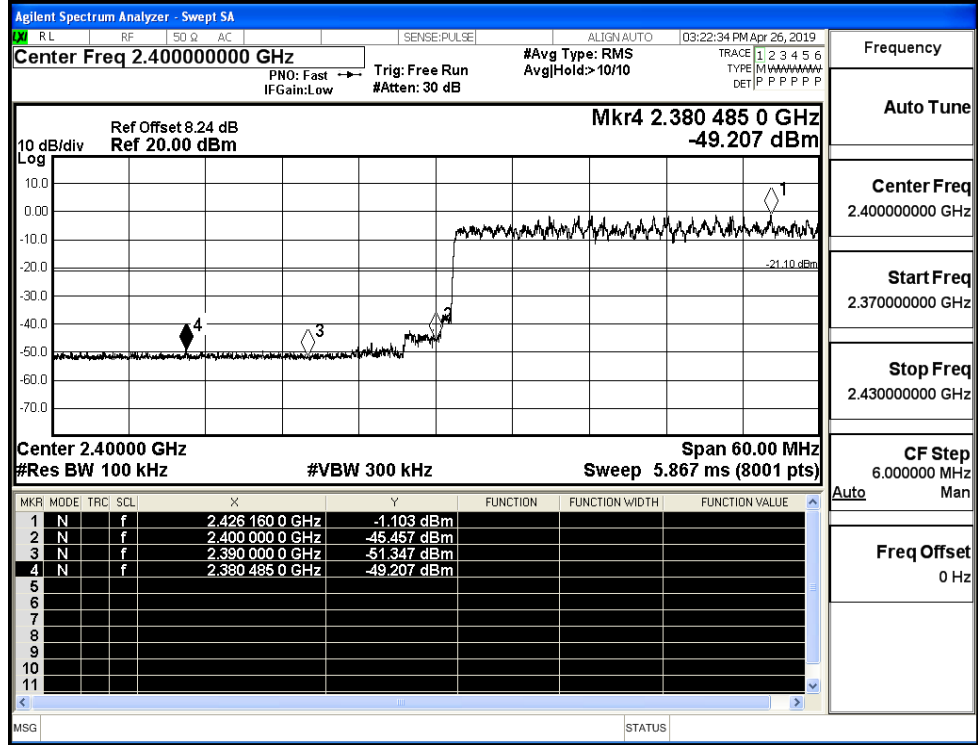
GFSK/HCH/Hop



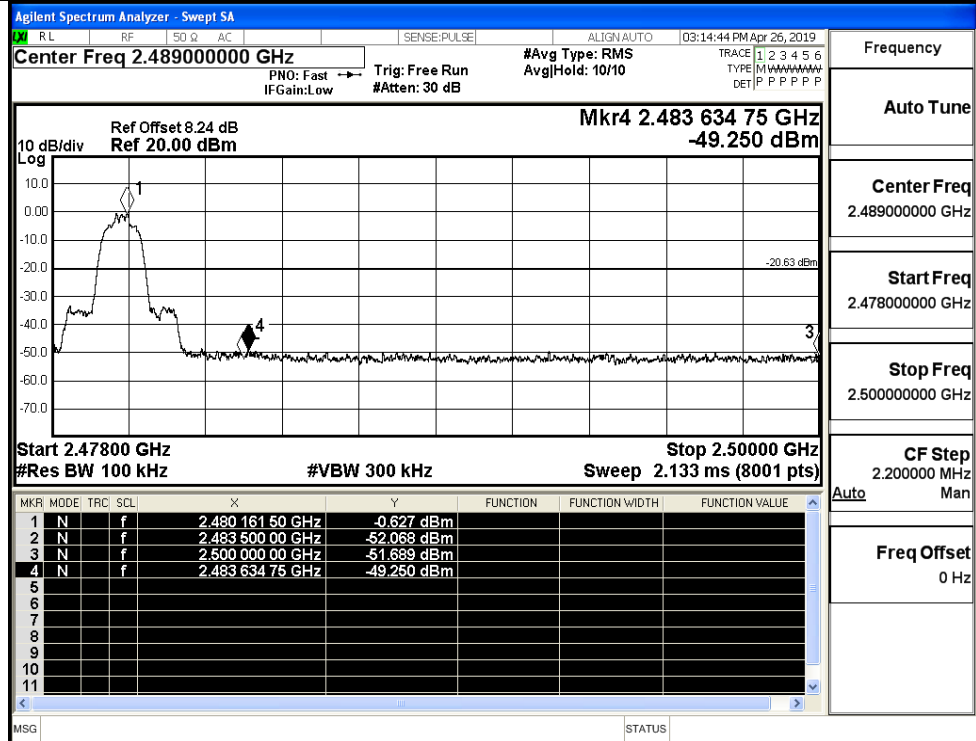
$\pi/4$ DQPSK/LCH/No Hop



$\pi/4$ DQPSK/LCH/Hop

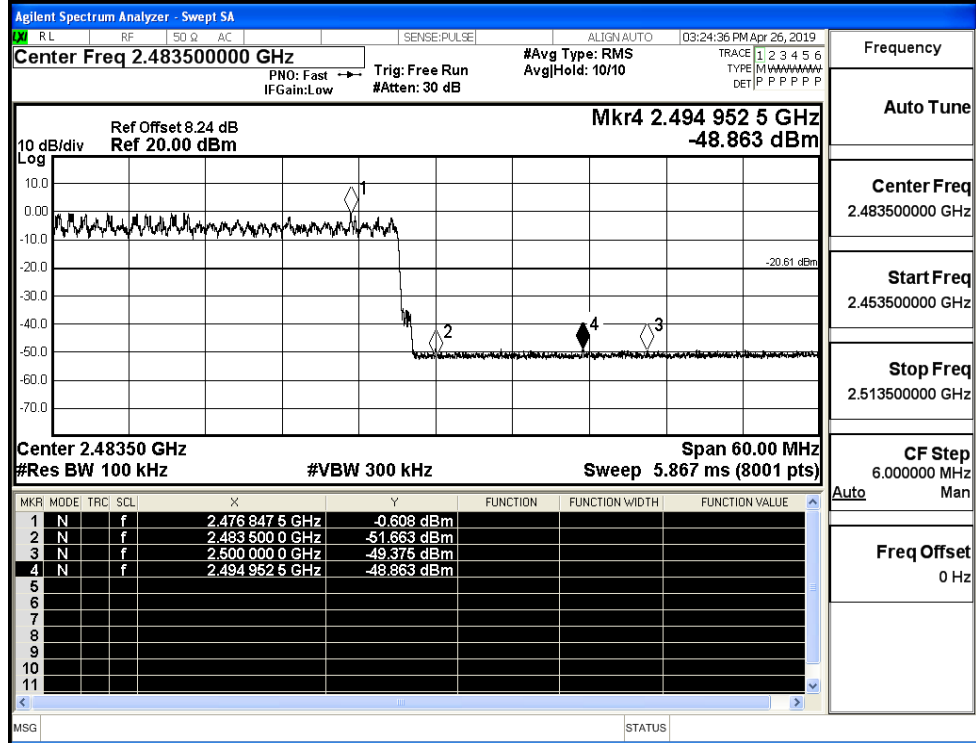


π /4DQPSK/HCH/No
Hop



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

π /4DQPSK/HCH/Hop

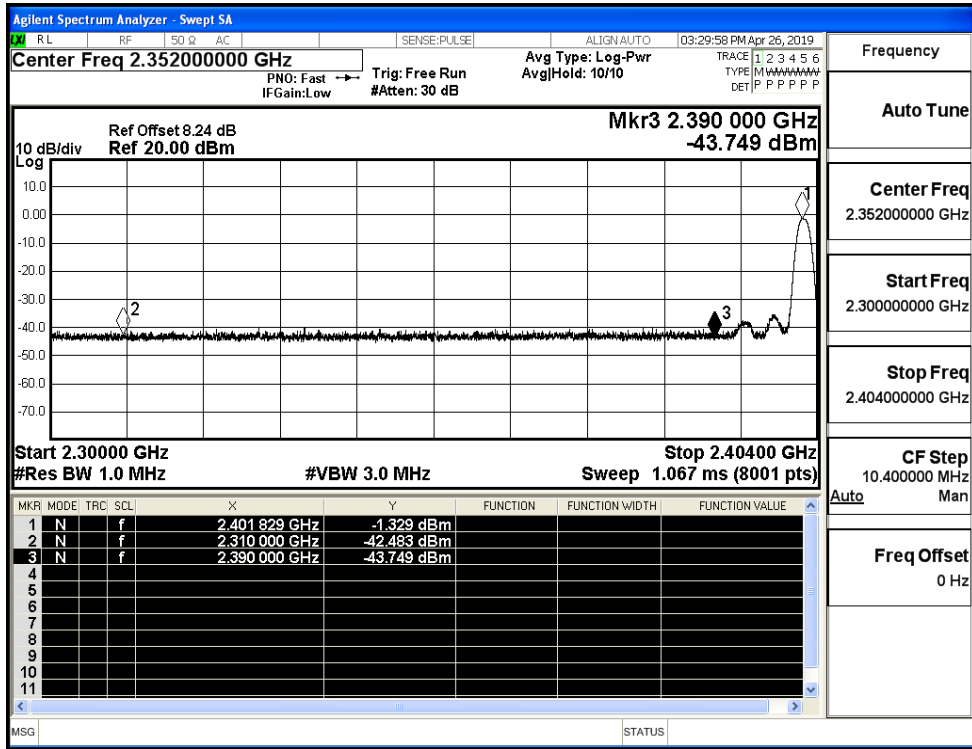


Frequency	
Auto Tune	
Center Freq	2.483500000 GHz
Start Freq	2.453500000 GHz
Stop Freq	2.513500000 GHz
CF Step	6.000000 MHz
Freq Offset	0 Hz

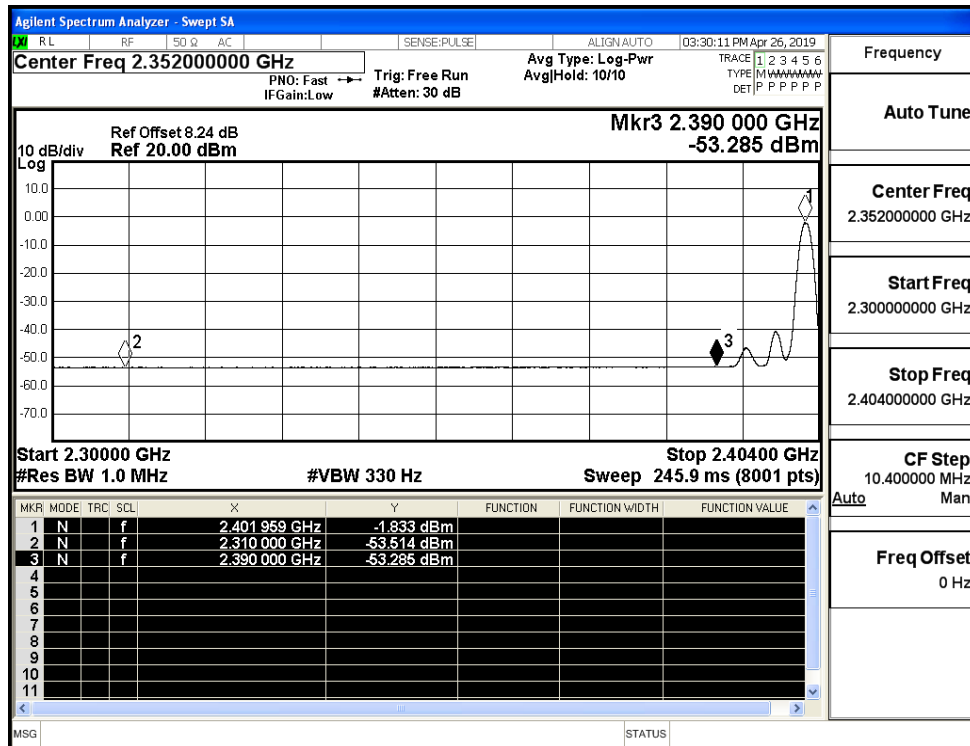
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-42.48	2.0	0	54.77	PEAK	74	PASS
	Off	2310.0	-53.51	2.0	0	43.74	AV	54	PASS
	Off	2390.0	-43.75	2.0	0	53.51	PEAK	74	PASS
	Off	2390.0	-53.29	2.0	0	43.97	AV	54	PASS
	Off	2483.5	-42.81	2.0	0	54.45	PEAK	74	PASS
	Off	2483.5	-50.85	2.0	0	46.41	AV	54	PASS
	Off	2500.0	-41.13	2.0	0	56.12	PEAK	74	PASS
	Off	2500.0	-52.96	2.0	0	44.30	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-41.48	2.0	0	55.78	PEAK	74	PASS
	Off	2310.0	-53.51	2.0	0	43.75	AV	54	PASS
	Off	2390.0	-43.47	2.0	0	53.79	PEAK	74	PASS
	Off	2390.0	-53.29	2.0	0	43.97	AV	54	PASS
	Off	2483.5	-41.42	2.0	0	55.84	PEAK	74	PASS
	Off	2483.5	-51.82	2.0	0	45.43	AV	54	PASS
	Off	2500.0	-42.50	2.0	0	54.76	PEAK	74	PASS
	Off	2500.0	-52.95	2.0	0	44.31	AV	54	PASS

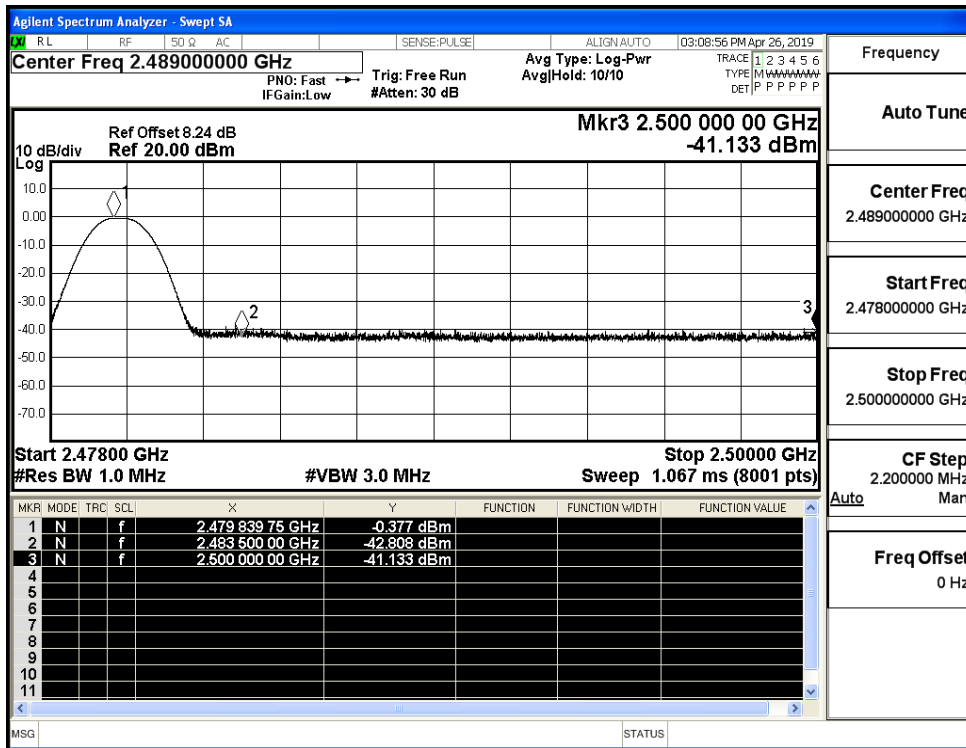
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



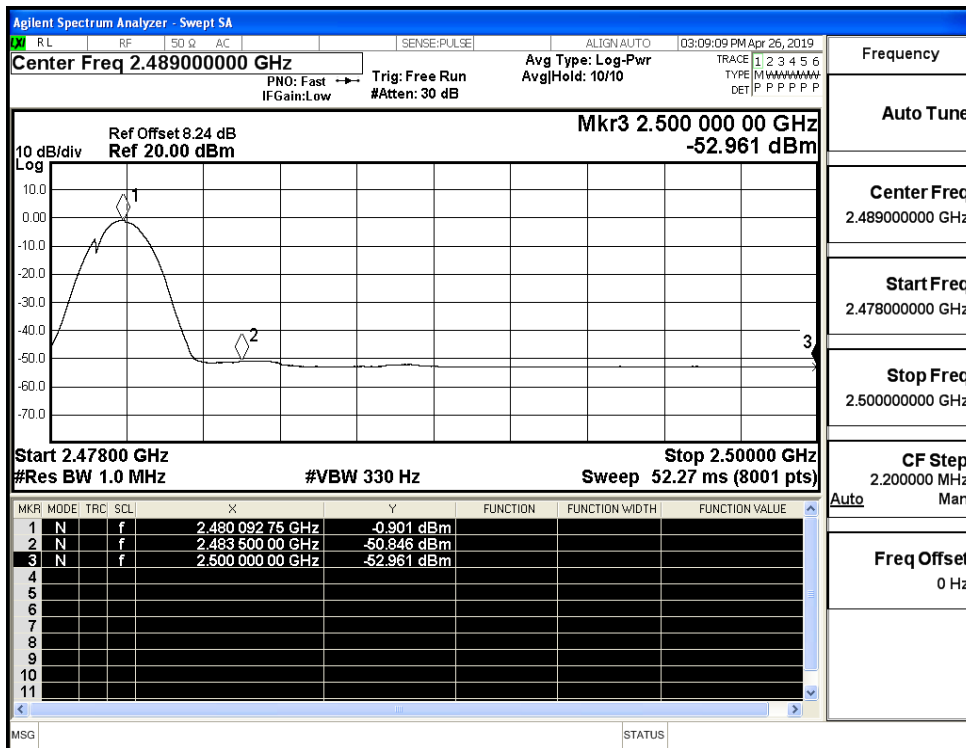
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)



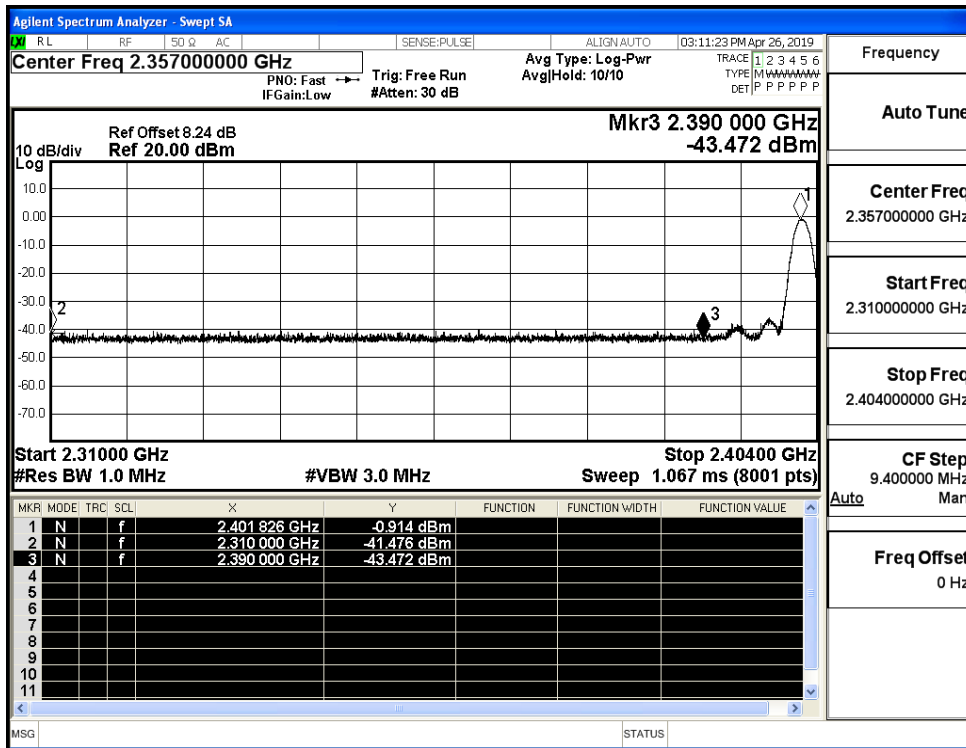
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)



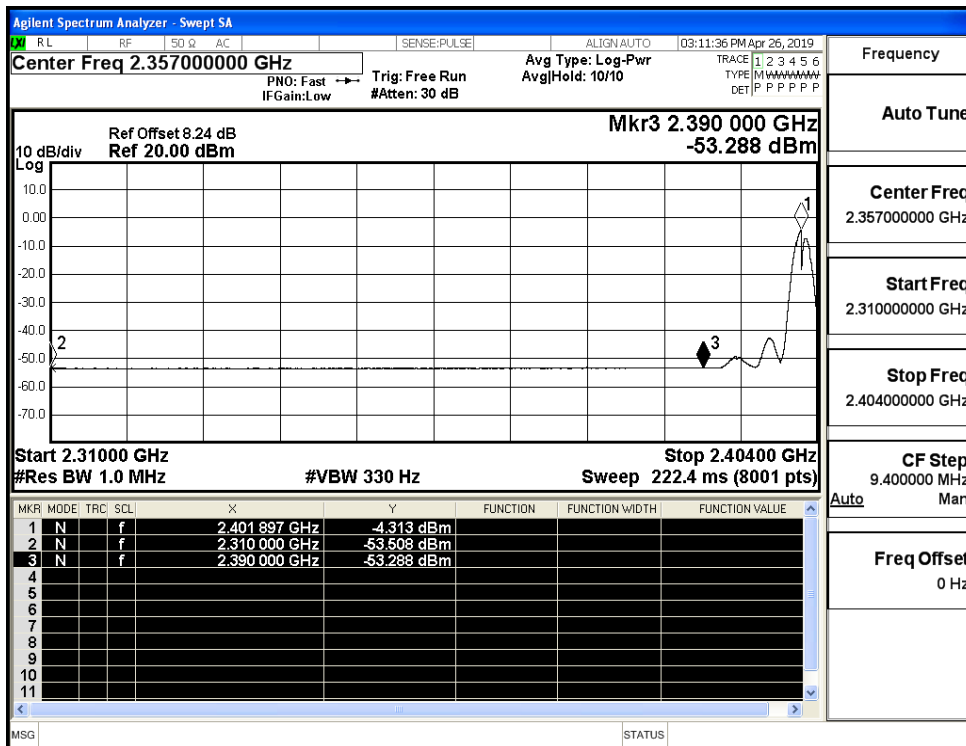
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)



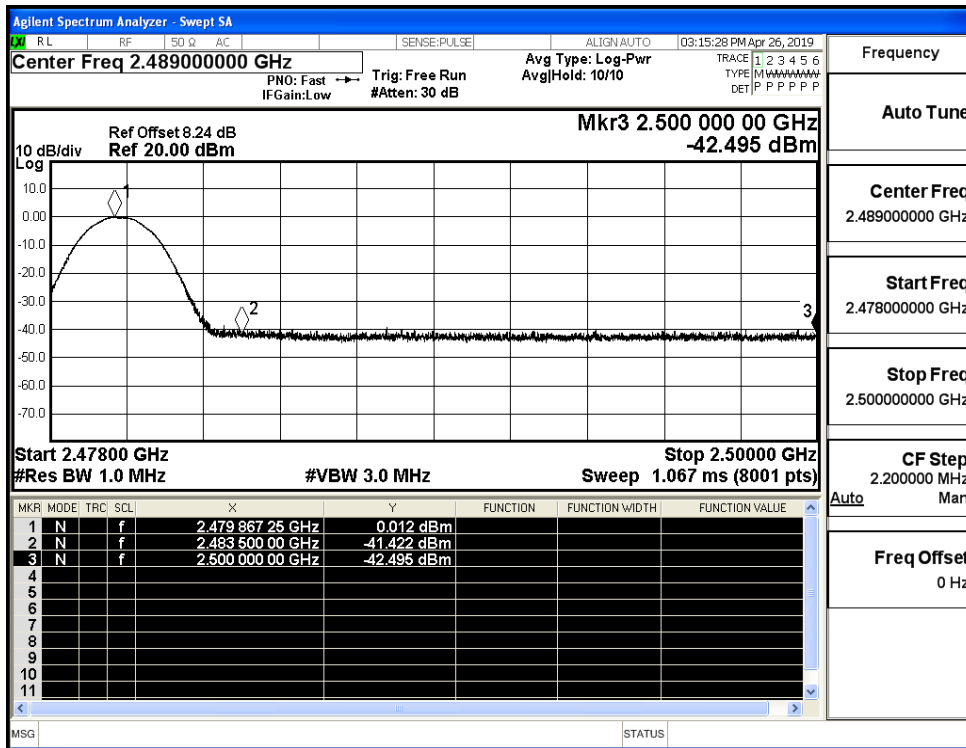
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)



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)

