

Appendix A

RF Test Data for BT V5.1(DSS) (Conducted Measurement)

Product Name: BLUETOOTH HEADPHONE

Trade Mark: N/A

Test Model: PDB1077B-HP

Environmental Conditions

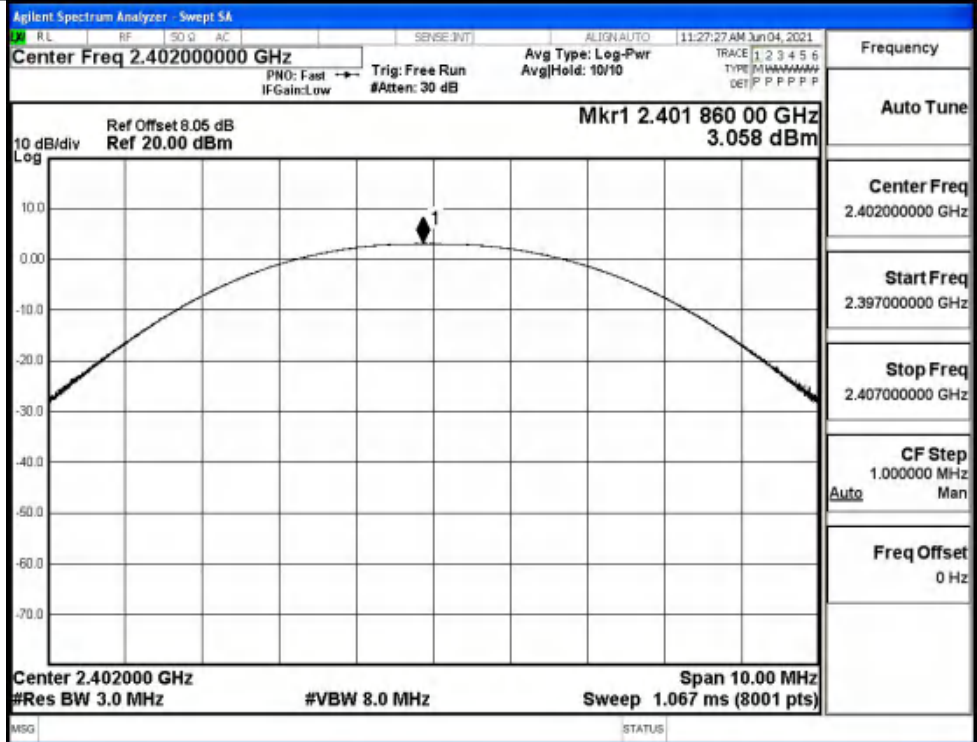
Temperature:	24.3 ° C
Relative Humidity:	52.8%
ATM Pressure:	100.0 kPa
Test Engineer:	Carl Fu
Supervised by:	Li Huan

A.1 Maximum Conducted Peak Output Power

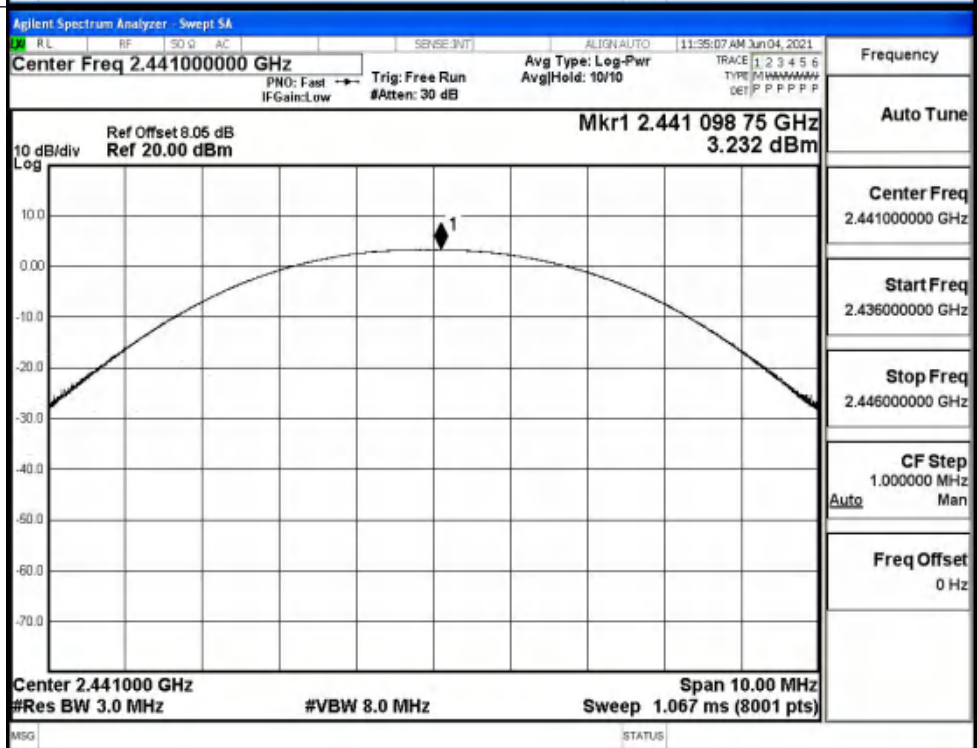
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	3.058	21	PASS
	MCH	3.232	21	PASS
	HCH	3.678	21	PASS
π/4DQPSK	LCH	5.824	21	PASS
	MCH	6.138	21	PASS
	HCH	6.784	21	PASS

Test Graphs

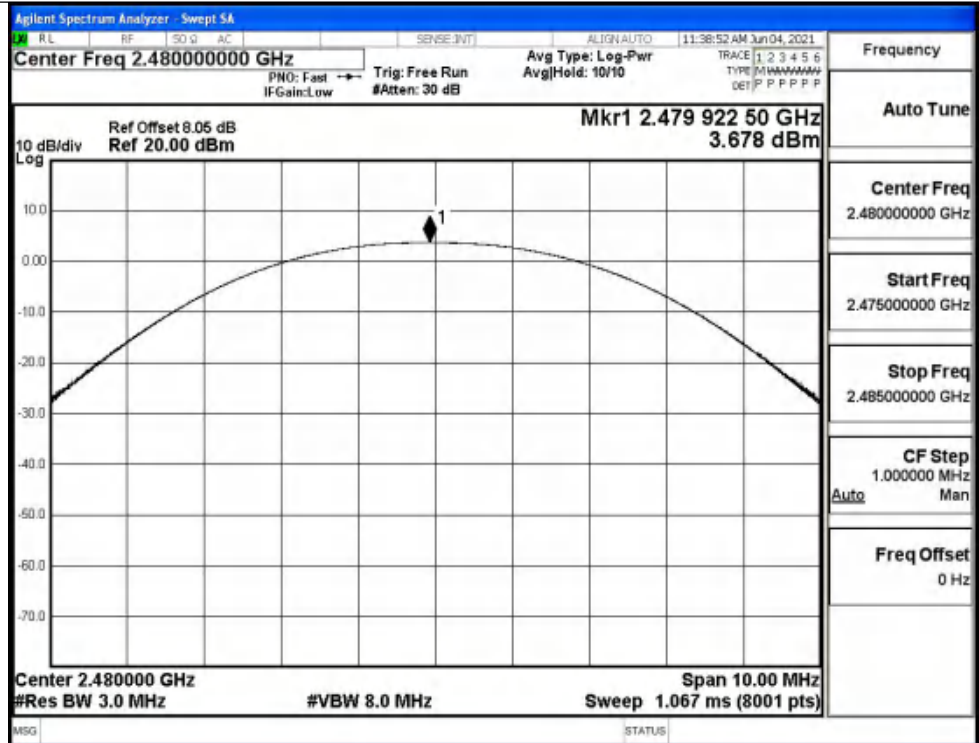
GFSK/LCH



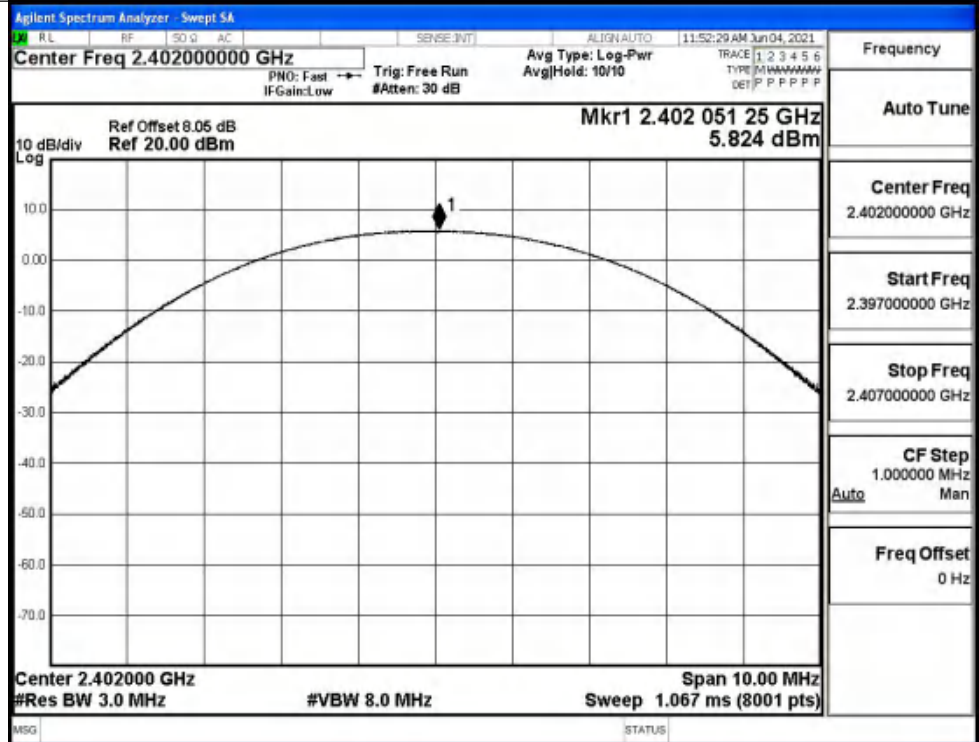
GFSK/MCH



GFSK/HCH



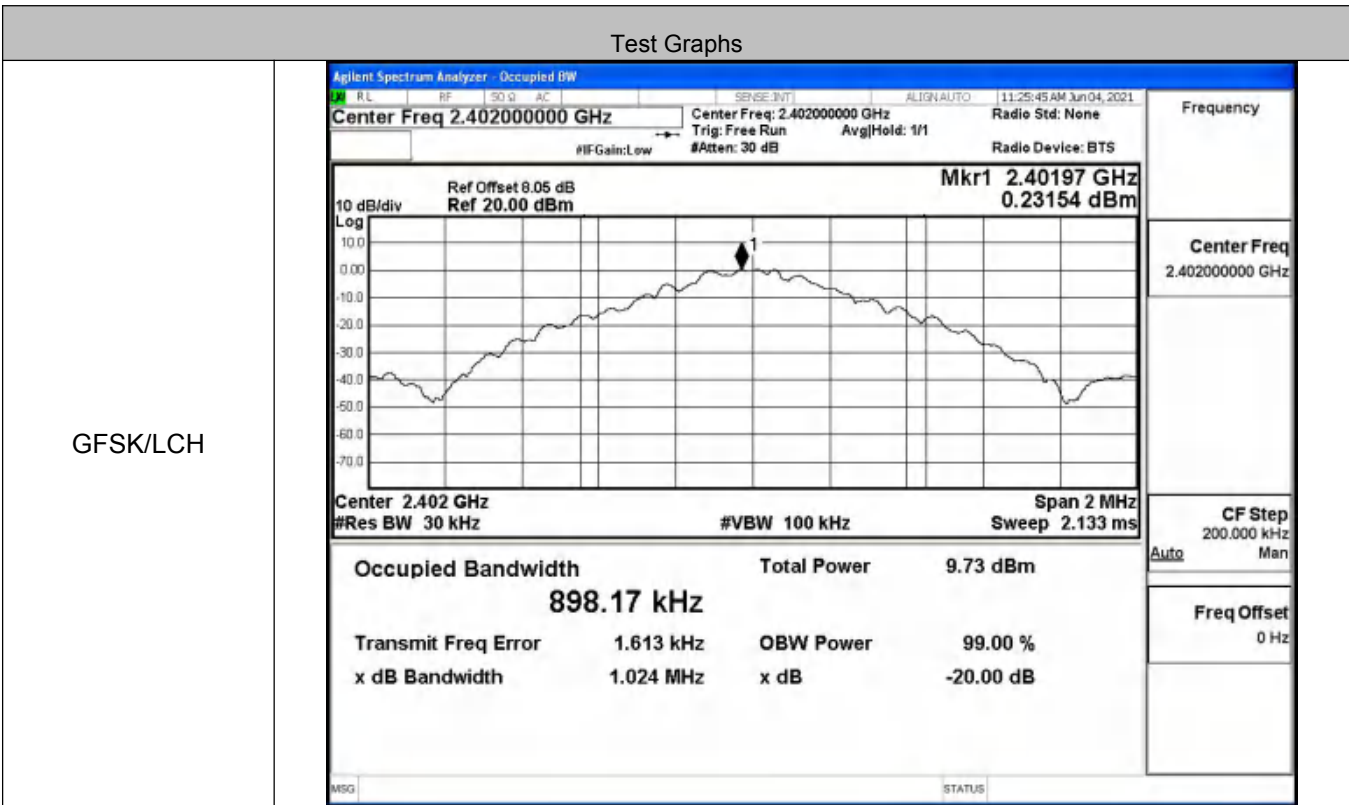
$\pi/4$ DQPSK/LCH



<p>$\pi/4$DQPSK/MCH</p>	<p>Agilent Spectrum Analyzer - Swept SA Center Freq 2.441000000 GHz Mkr1 2.440 726 25 GHz 6.138 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 Sweep 1.067 ms (8001 pts) Span 10.00 MHz</p> <table border="1"> <tr><td>Frequency</td></tr> <tr><td>Auto Tune</td></tr> <tr><td>Center Freq 2.441000000 GHz</td></tr> <tr><td>Start Freq 2.436000000 GHz</td></tr> <tr><td>Stop Freq 2.446000000 GHz</td></tr> <tr><td>CF Step 1.000000 MHz Auto Man</td></tr> <tr><td>Freq Offset 0 Hz</td></tr> </table>	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
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								
<p>$\pi/4$DQPSK/HCH</p>	<p>Agilent Spectrum Analyzer - Swept SA Center Freq 2.480000000 GHz Mkr1 2.479 955 00 GHz 6.784 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 Sweep 1.067 ms (8001 pts) Span 10.00 MHz</p> <table border="1"> <tr><td>Frequency</td></tr> <tr><td>Auto Tune</td></tr> <tr><td>Center Freq 2.480000000 GHz</td></tr> <tr><td>Start Freq 2.475000000 GHz</td></tr> <tr><td>Stop Freq 2.485000000 GHz</td></tr> <tr><td>CF Step 1.000000 MHz Auto Man</td></tr> <tr><td>Freq Offset 0 Hz</td></tr> </table>	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
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								

A.2 20dB Bandwidth

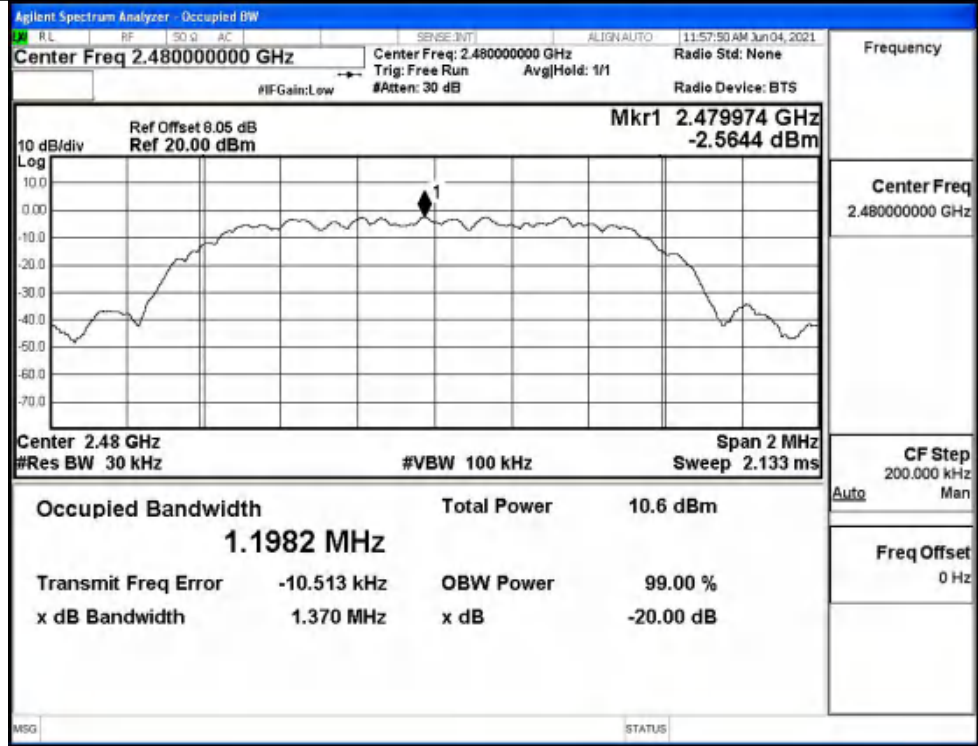
Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.024	Not Specified	PASS
	MCH	1.024	Not Specified	PASS
	HCH	1.027	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.371	Not Specified	PASS
	MCH	1.371	Not Specified	PASS
	HCH	1.370	Not Specified	PASS



<p>GFSK/MCH</p>		<p>Frequency 2.441000000 GHz</p> <p>Center Freq 2.441000000 GHz</p> <p>CF Step 200.000 kHz</p> <p>Freq Offset 0 Hz</p>
<p>GFSK/HCH</p>		<p>Frequency 2.480000000 GHz</p> <p>Center Freq 2.480000000 GHz</p> <p>CF Step 200.000 kHz</p> <p>Freq Offset 0 Hz</p>

<p>π/4DQPSK/LCH</p>	<p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.40200000 GHz</p> <p>Mkr1 2.40213 GHz -3.5097 dBm</p> <p>Occupied Bandwidth 1.1986 MHz</p> <p>Total Power 9.66 dBm</p> <p>Transmit Freq Error -10.119 kHz</p> <p>OBW Power 99.00 %</p> <p>x dB Bandwidth 1.371 MHz</p> <p>x dB -20.00 dB</p>	<p>Frequency</p> <p>Center Freq 2.40200000 GHz</p> <p>CF Step 200.000 kHz</p> <p>Freq Offset 0 Hz</p>
<p>π/4DQPSK/MCH</p>	<p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.44100000 GHz</p> <p>Mkr1 2.441132 GHz -3.3174 dBm</p> <p>Occupied Bandwidth 1.1986 MHz</p> <p>Total Power 9.86 dBm</p> <p>Transmit Freq Error -10.556 kHz</p> <p>OBW Power 99.00 %</p> <p>x dB Bandwidth 1.371 MHz</p> <p>x dB -20.00 dB</p>	<p>Frequency</p> <p>Center Freq 2.44100000 GHz</p> <p>CF Step 200.000 kHz</p> <p>Freq Offset 0 Hz</p>

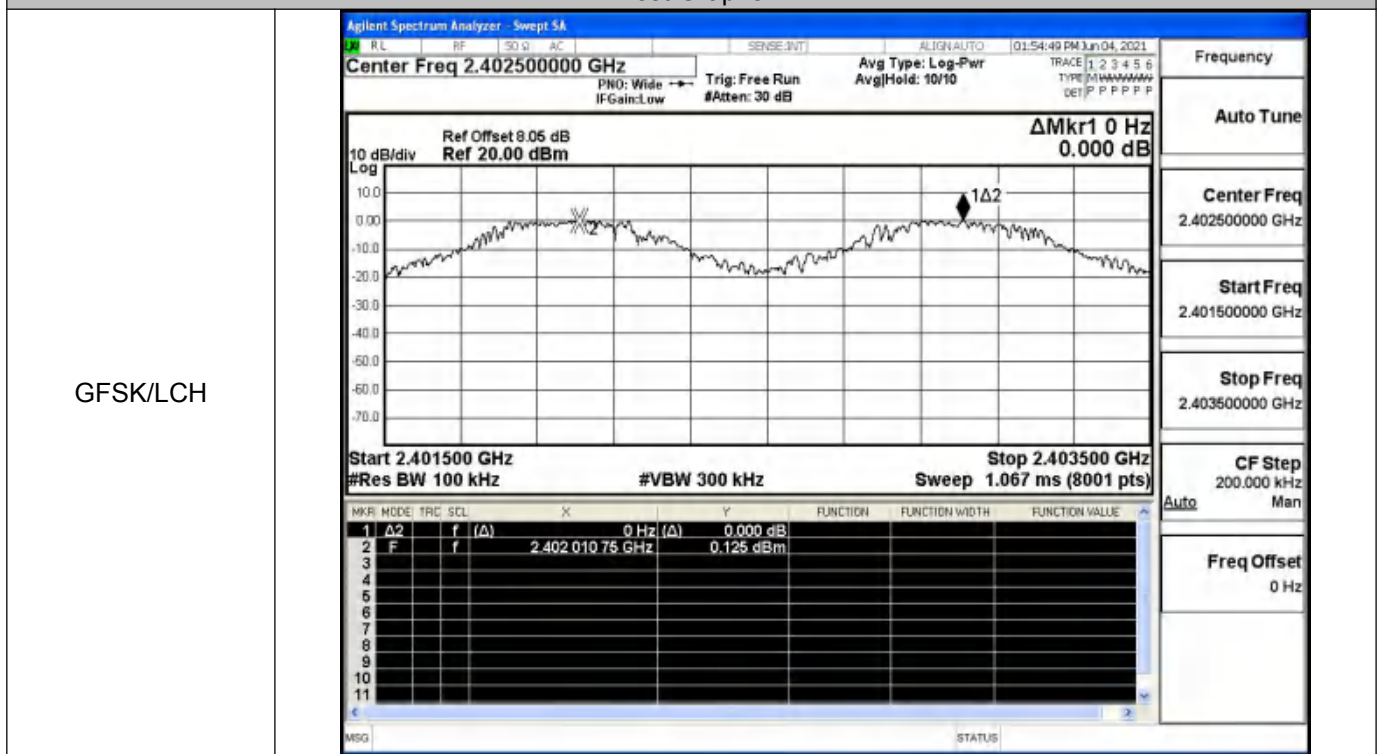
$\pi/4$ DQPSK/HCH



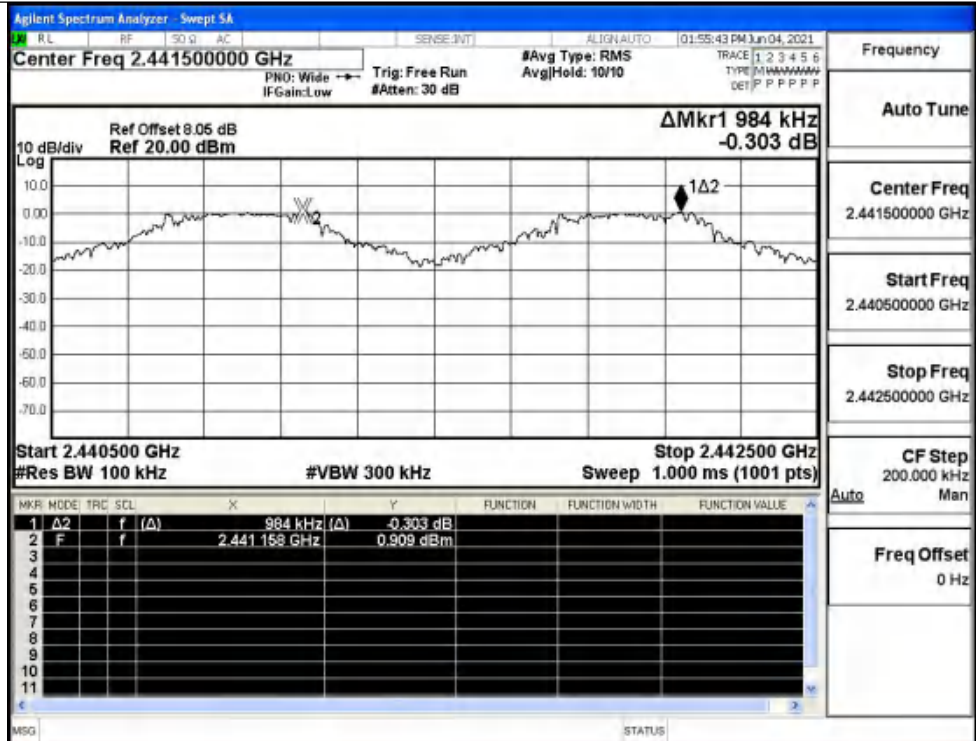
A.3 Carrier Frequency Separation

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.998	0.685	PASS
	MCH	0.984	0.685	PASS
	HCH	0.966	0.685	PASS
π/4DQPSK	LCH	1.342	0.914	PASS
	MCH	1.084	0.914	PASS
	HCH	1.104	0.914	PASS

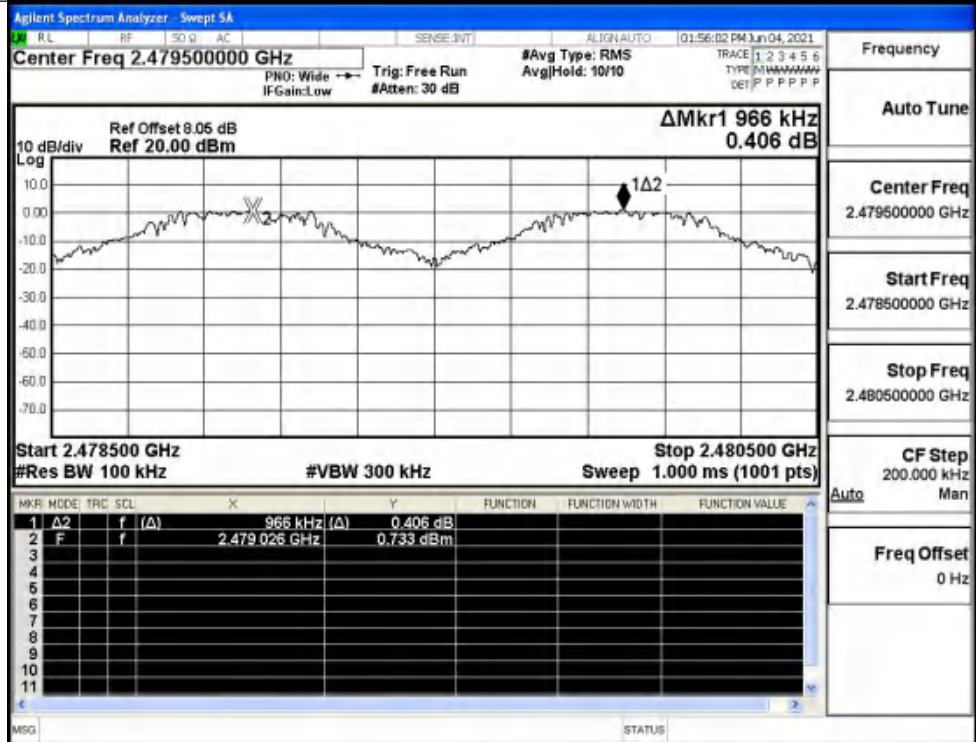
Test Graphs



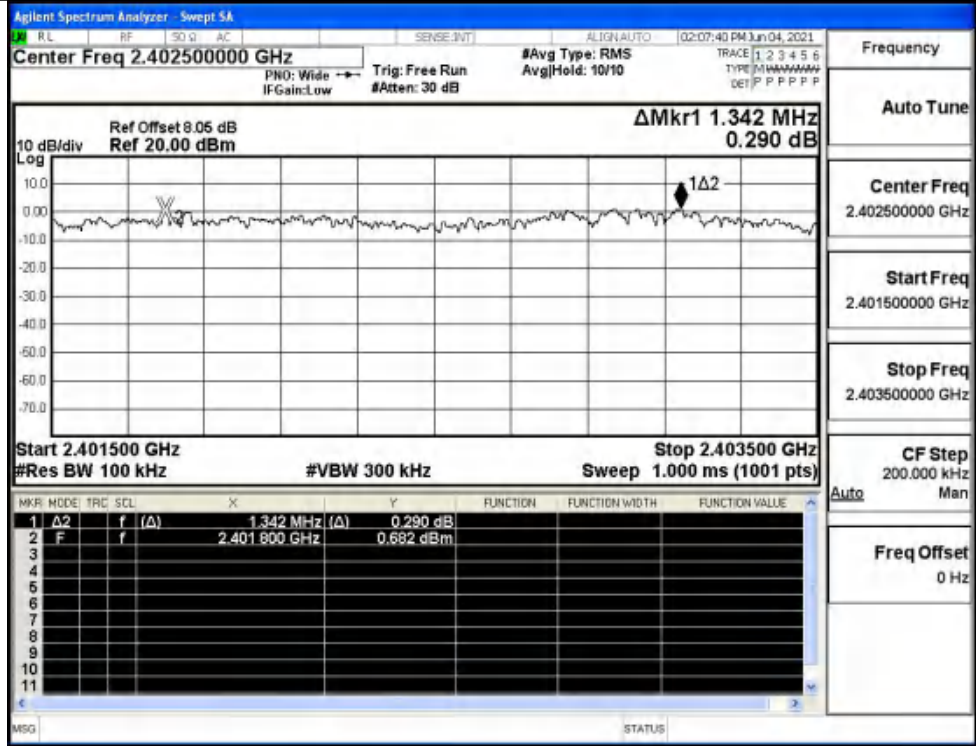
GFSK/MCH



GFSK/HCH

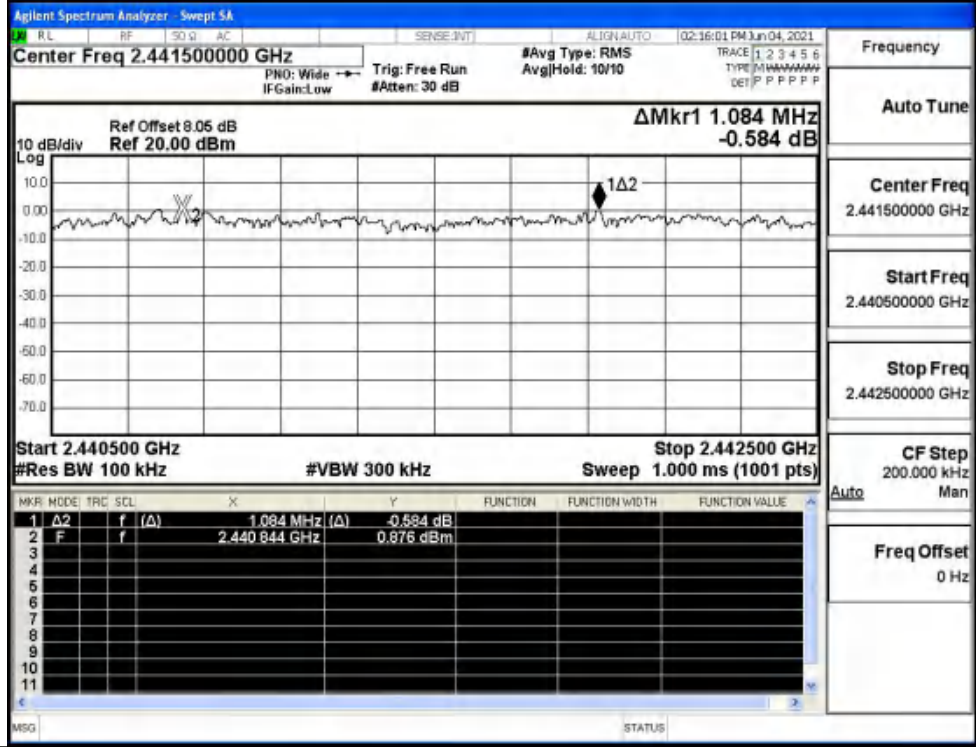


$\pi/4$ DQPSK/LCH



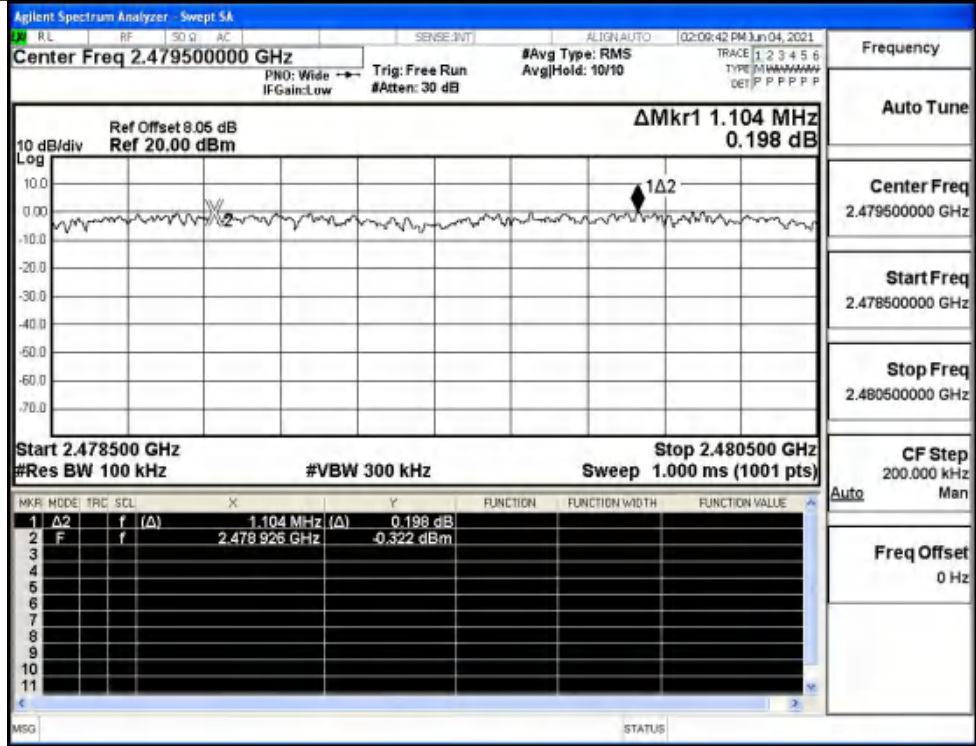
Frequency
Auto Tune
Center Freq 2.402500000 GHz
Start Freq 2.401500000 GHz
Stop Freq 2.403500000 GHz
CF Step 200.000 kHz Auto Man
Freq Offset 0 Hz

$\pi/4$ DQPSK/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

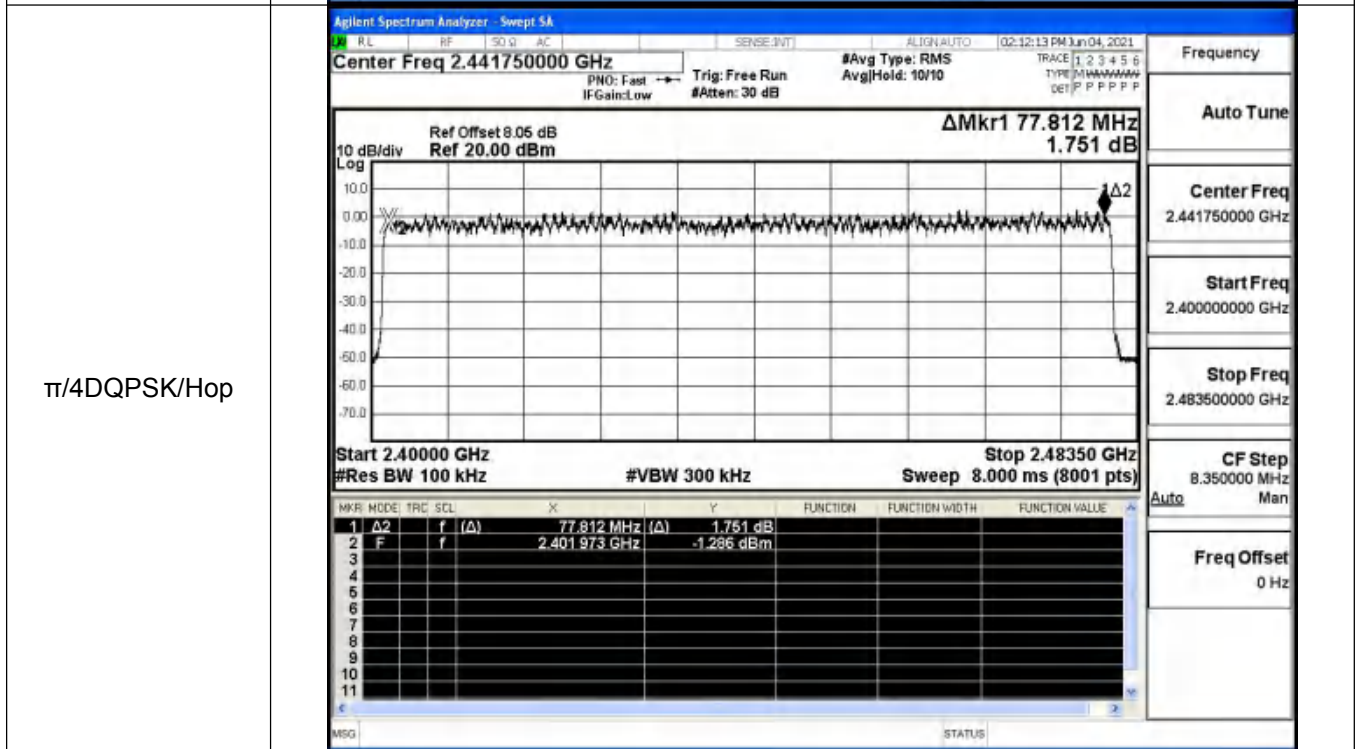
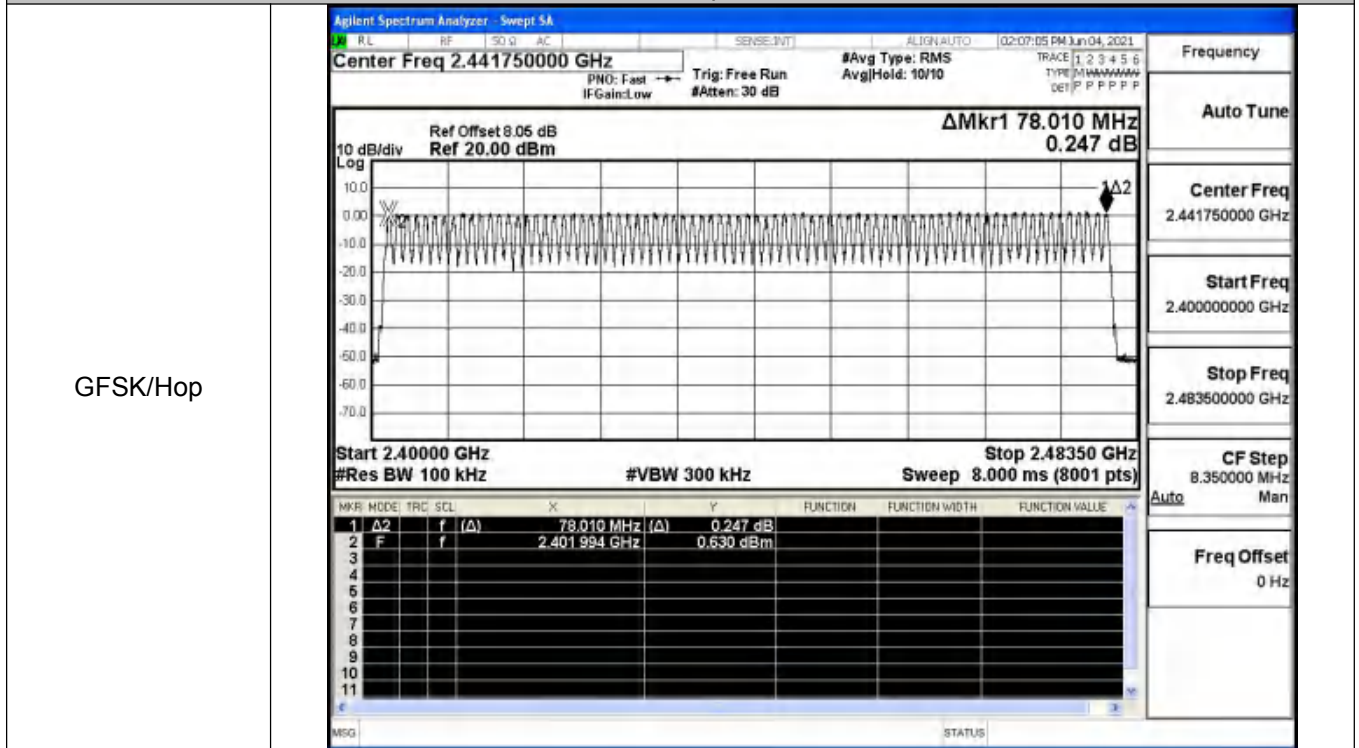
$\pi/4$ DQPSK/HCH



A.4 Hopping Channel Number

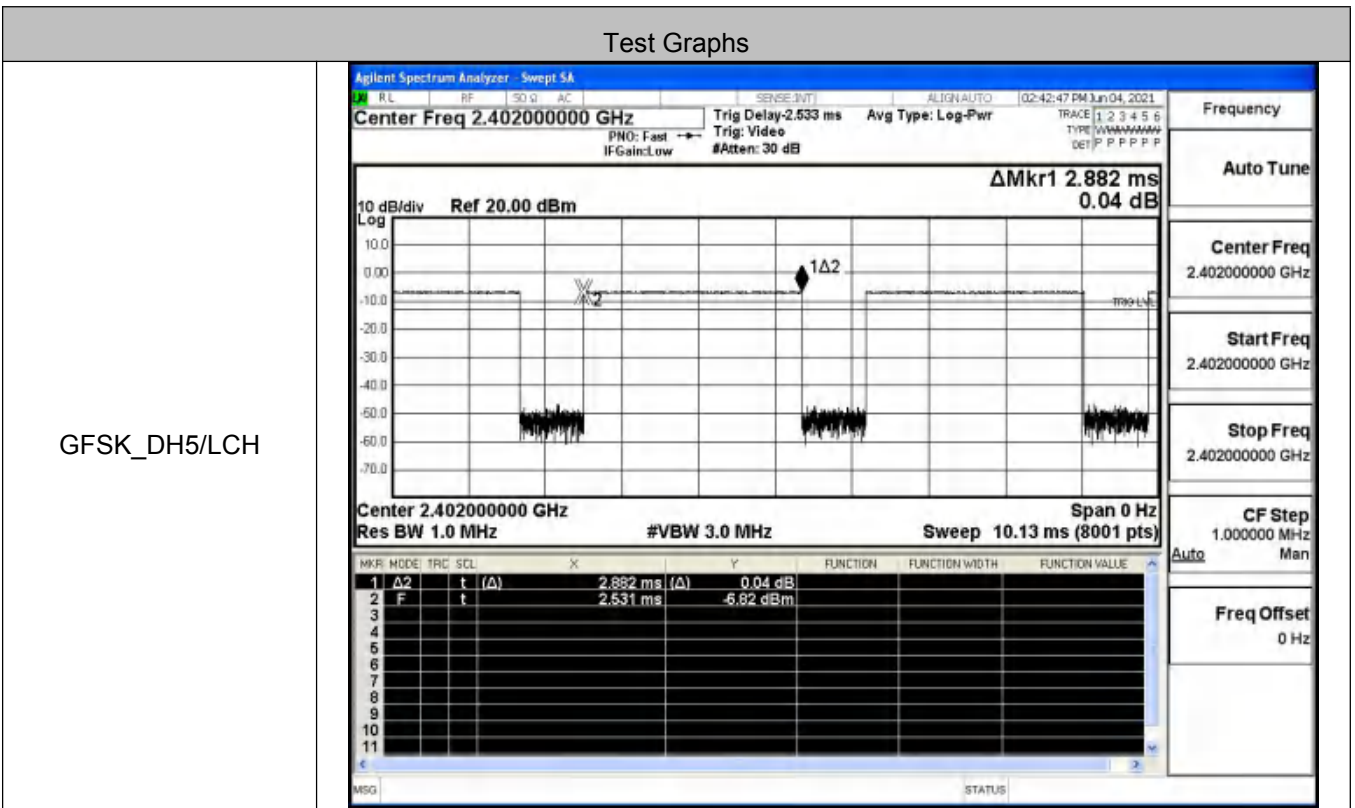
Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	>=15	PASS
$\pi/4$ DQPSK	Hop	79	>=15	PASS

Test Graphs

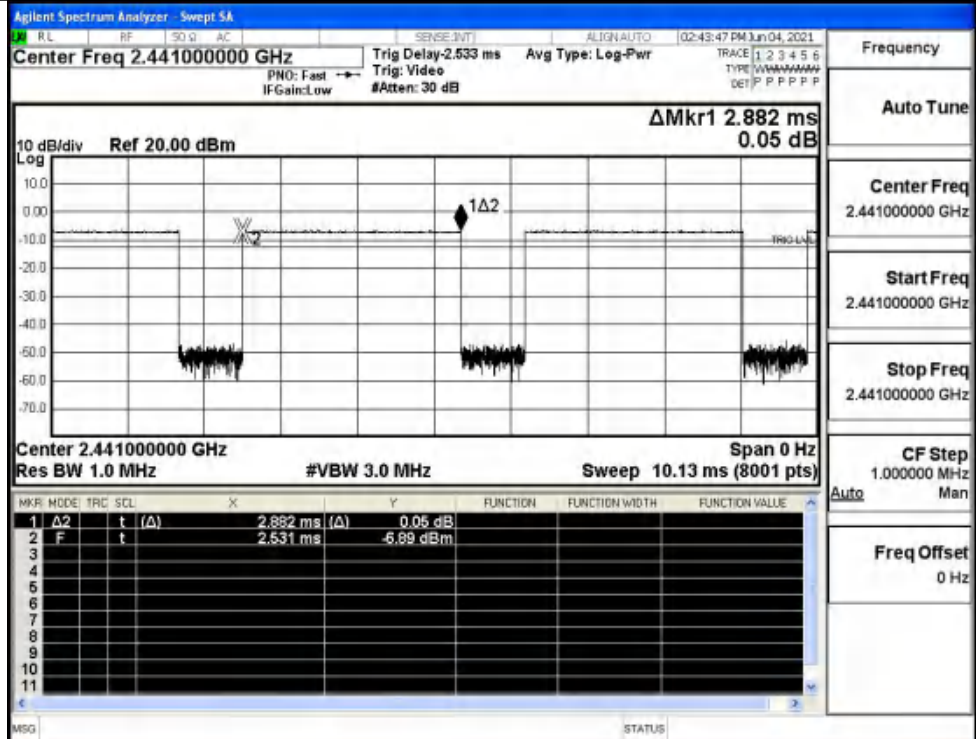


A.5 Dwell Time

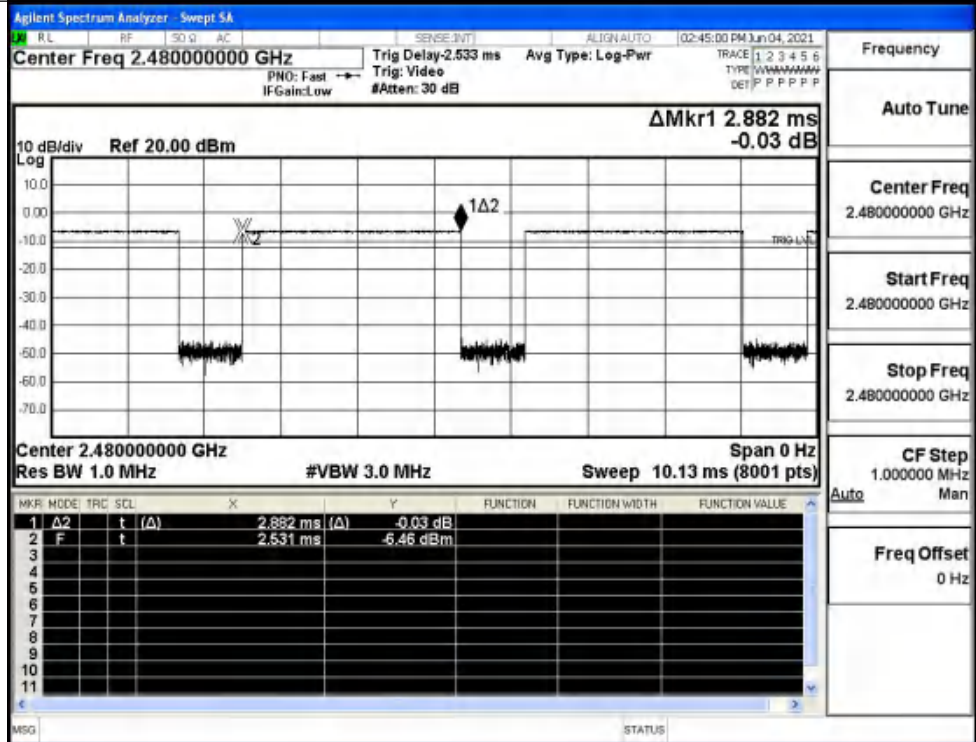
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.88	106.7	0.307	0.4	PASS
	DH5	MCH	2.88	106.7	0.307	0.4	PASS
	DH5	HCH	2.88	106.7	0.307	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.88	106.7	0.307	0.4	PASS
	2DH5	MCH	2.88	106.7	0.307	0.4	PASS
	2DH5	HCH	2.88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



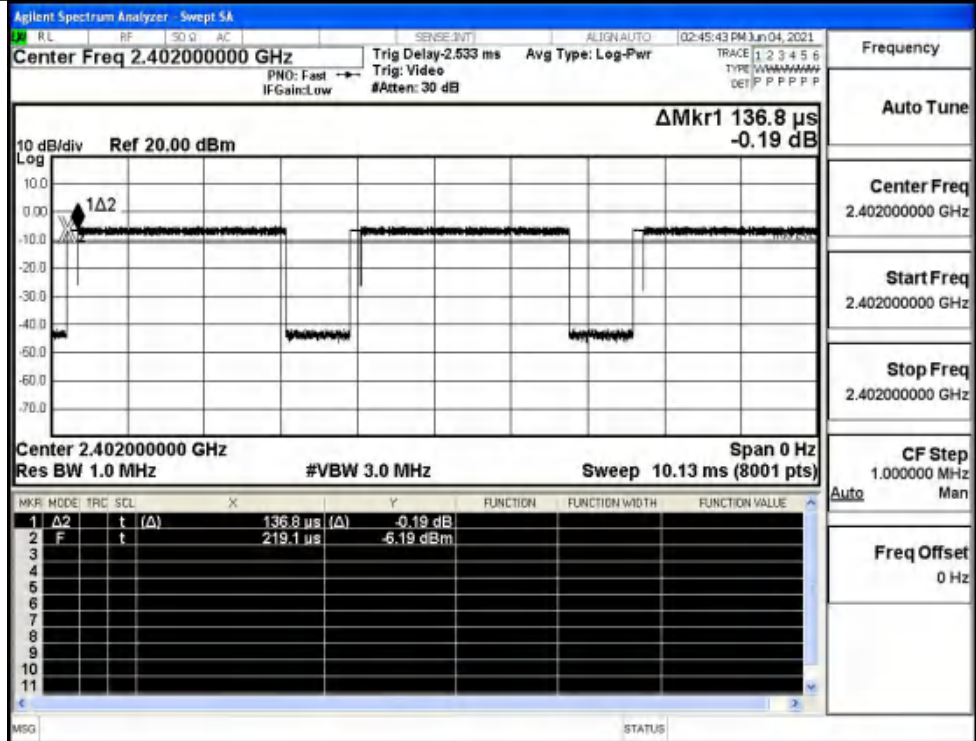
GFSK_DH5/MCH



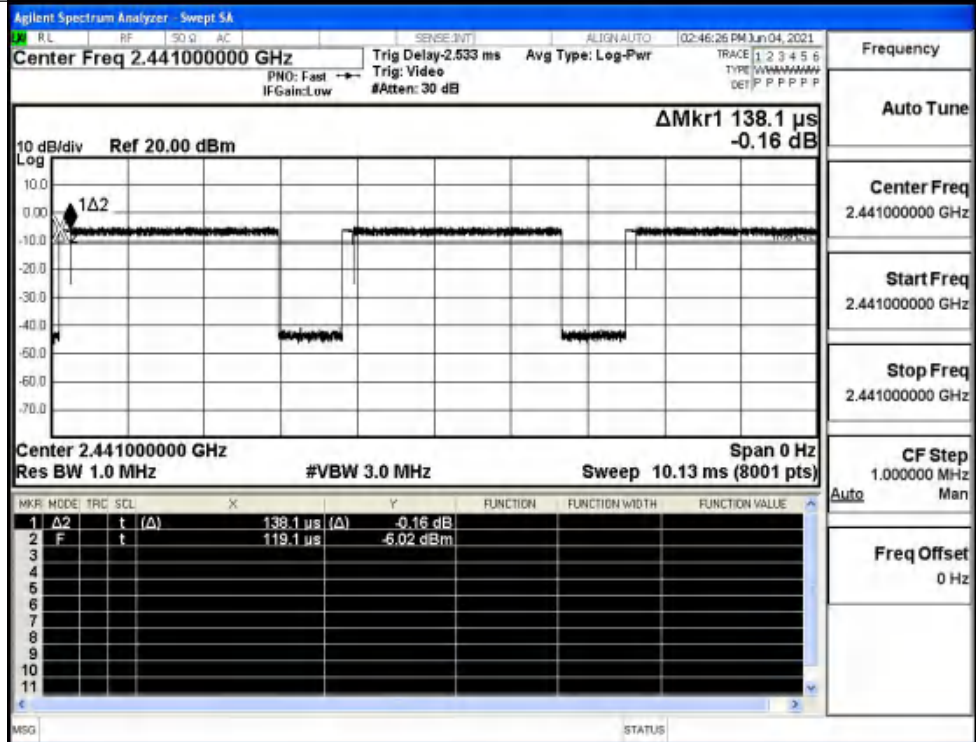
GFSK_DH5/HCH



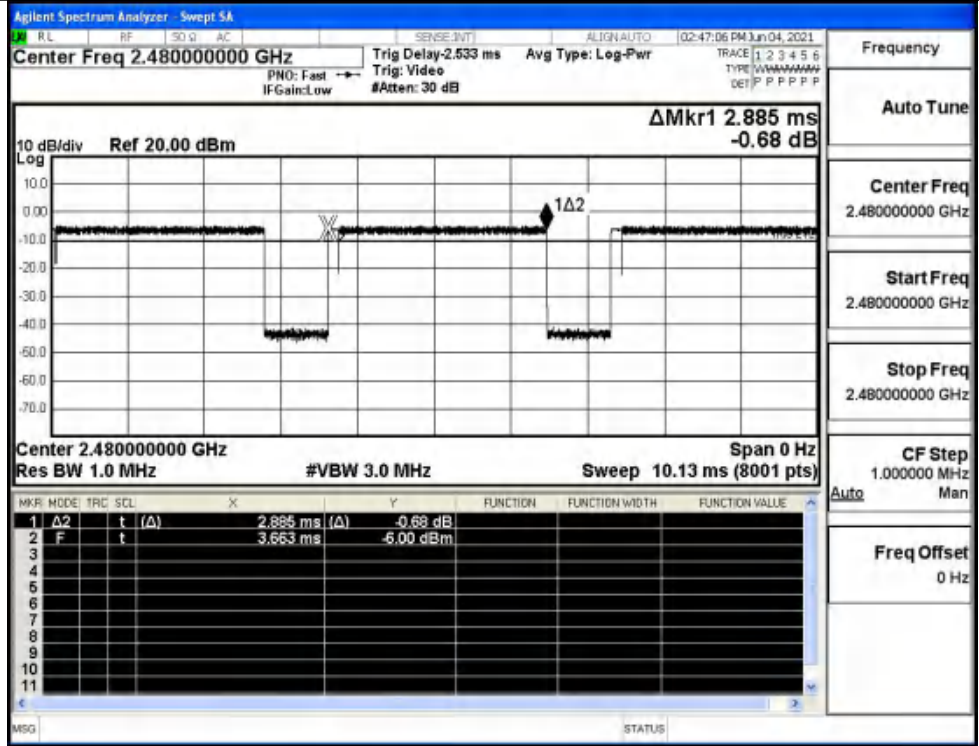
$\pi/4$ DQPSK
_2DH5/LCH



$\pi/4$ DQPSK
_2DH5/MCH



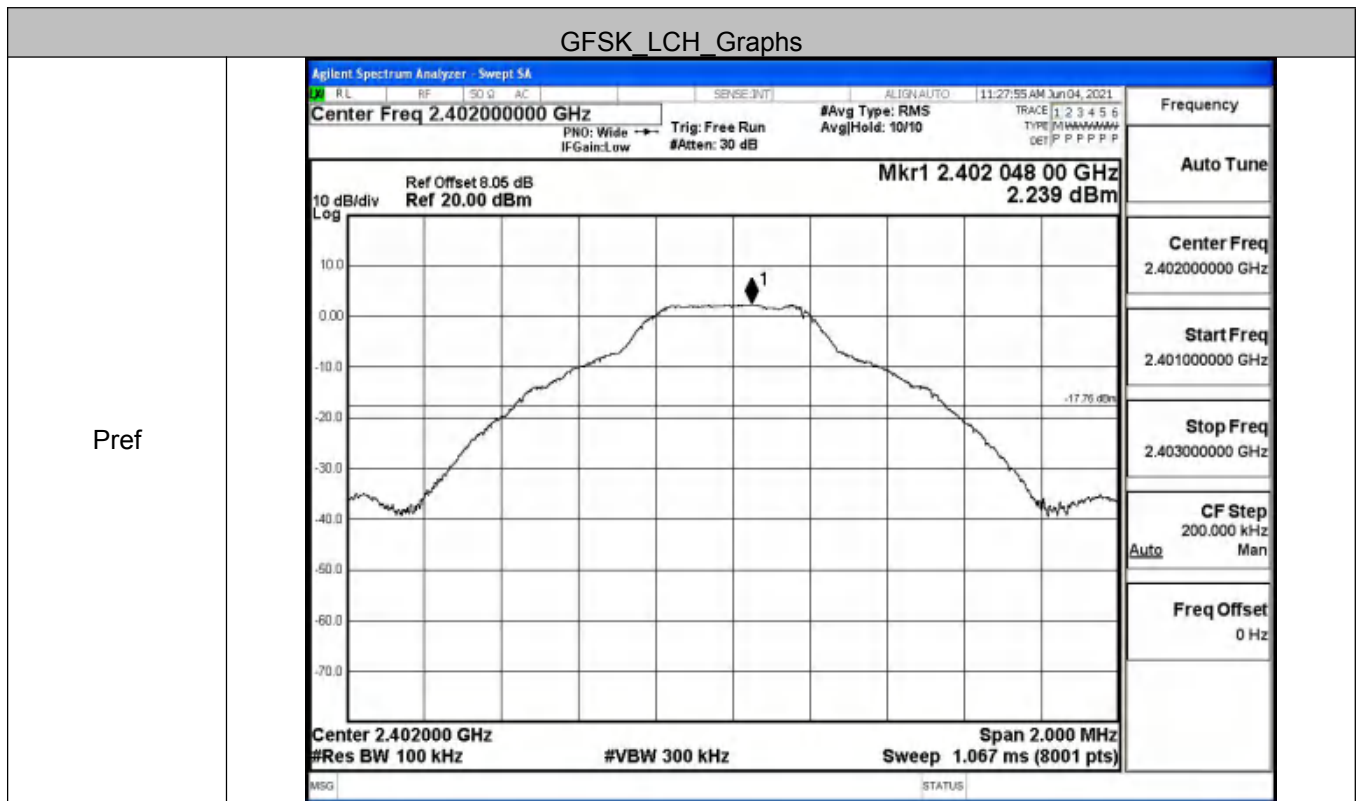
$\pi/4$ DQPSK
_2DH5/HCH



A.6 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2.239	-37.762	-17.761	PASS
	MCH	2.444	-37.825	-17.556	PASS
	HCH	2.923	-38.148	-17.077	PASS
π/4DQPSK	LCH	1.427	-37.486	-18.573	PASS
	MCH	1.227	-38.144	-18.773	PASS
	HCH	1.974	-38.006	-18.026	PASS

GFSK LCH Graphs

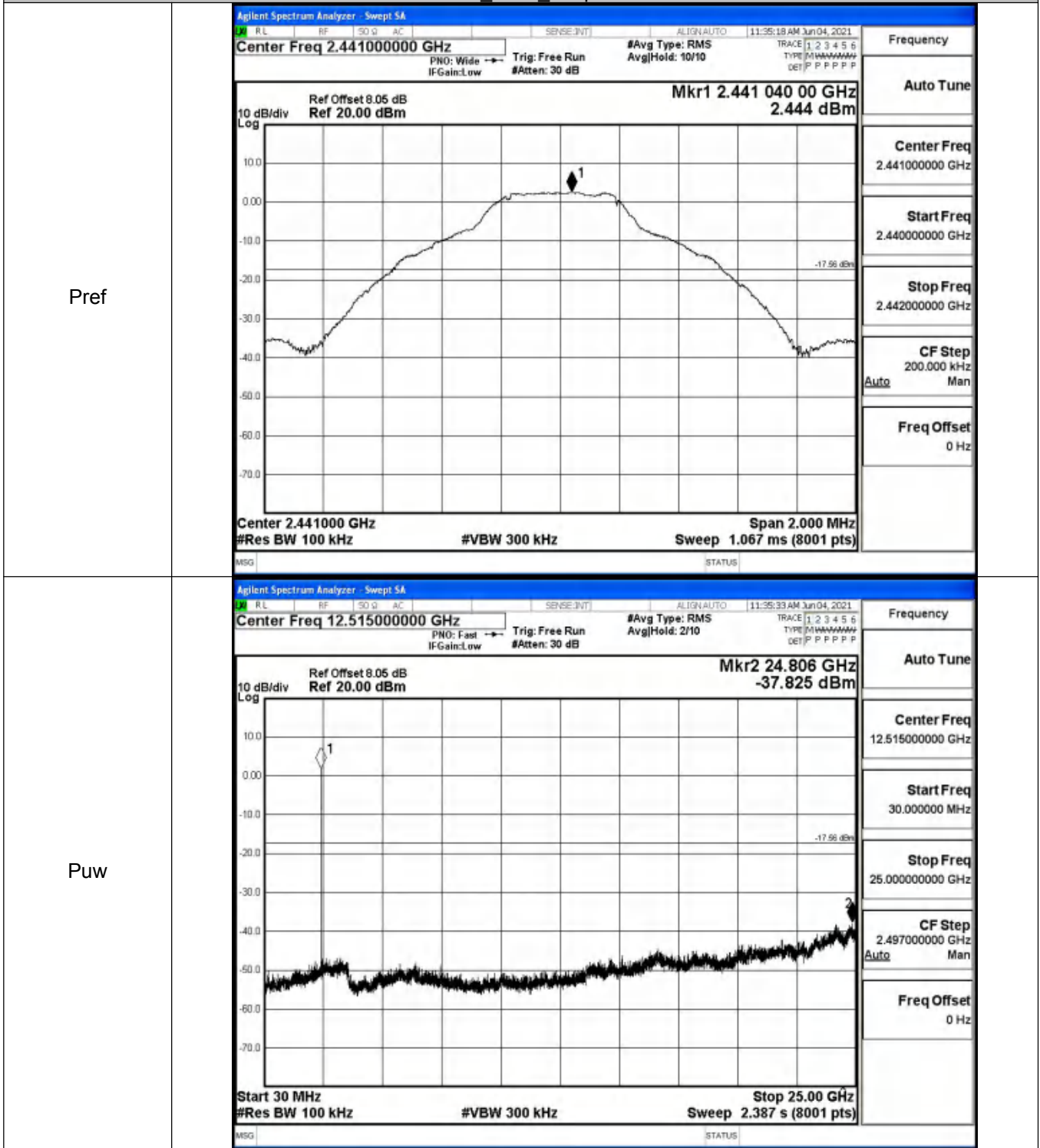


Pref

P_w



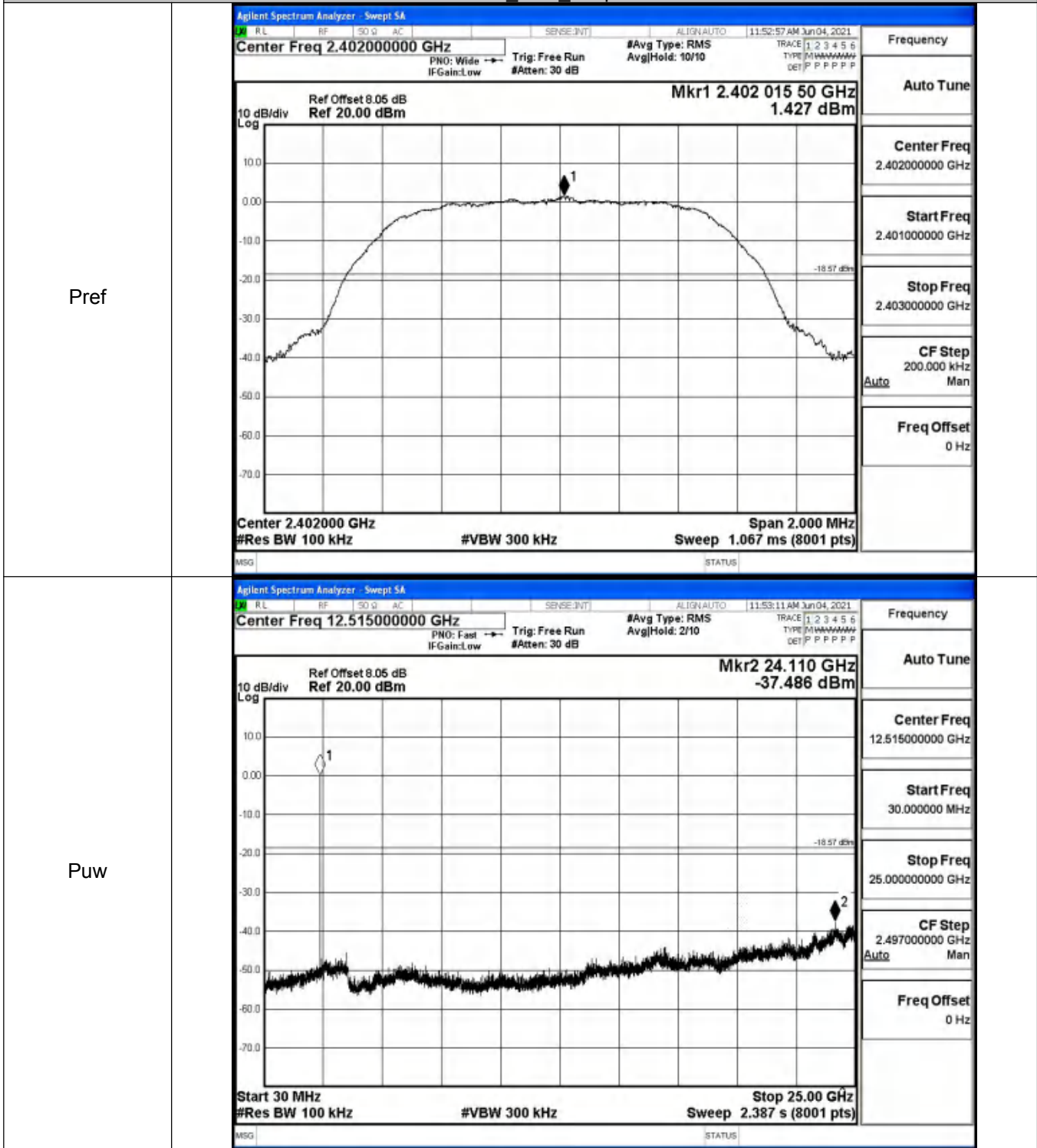
GFSK_MCH_Graphs



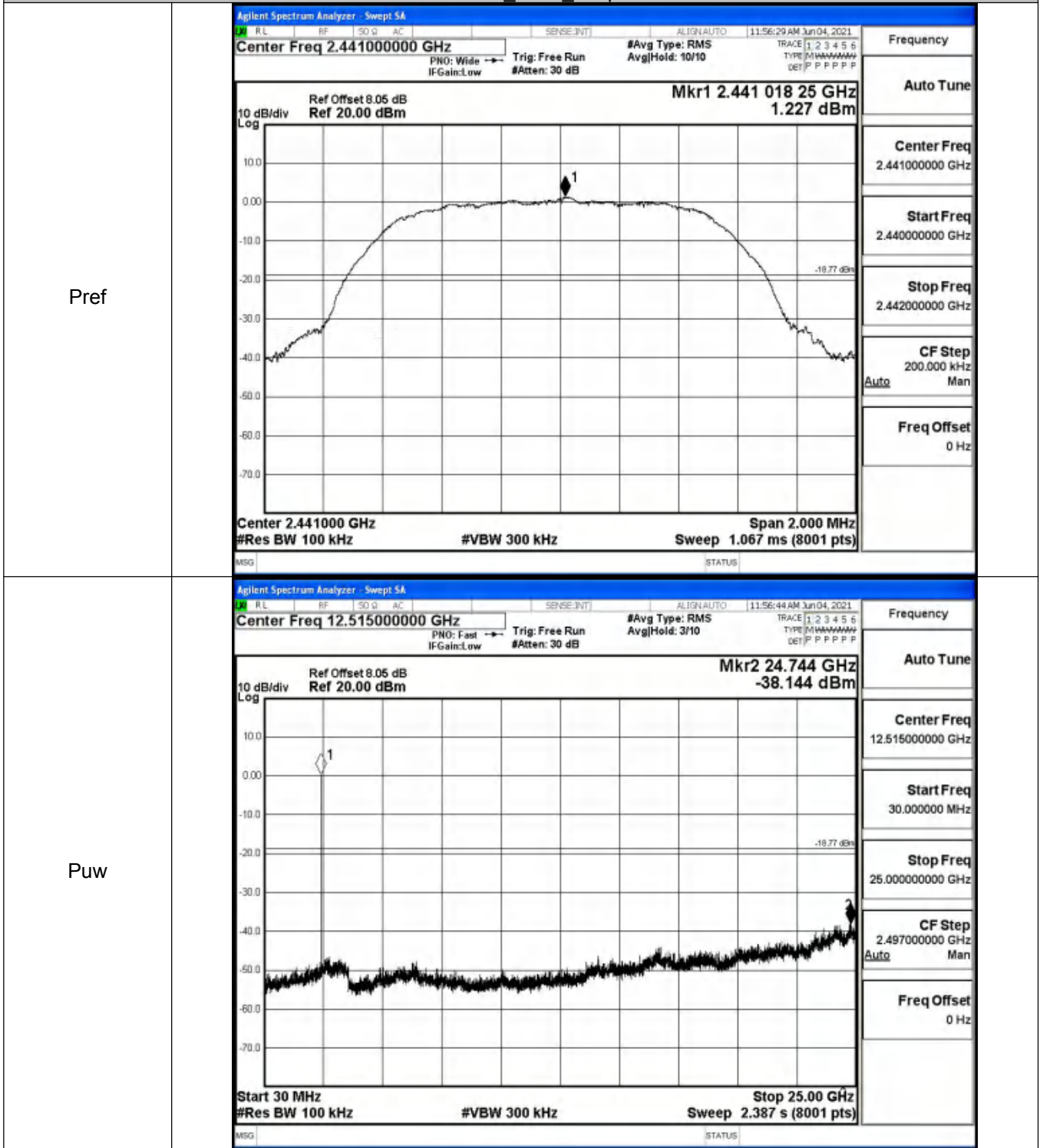
GFSK_HCH_Graphs

<p>Pref</p>	<p>Agilent Spectrum Analyzer - Swept SA Center Freq 2.48000000 GHz Ref Offset 8.05 dB Ref 20.00 dBm Mkr1 2.480 038 50 GHz 2.923 dBm 10 dB/div Log Center 2.480000 GHz #Res BW 100 kHz #VBW 300 kHz Span 2.000 MHz Sweep 1.067 ms (8001 pts)</p>	<p>Frequency Auto Tune Center Freq 2.48000000 GHz Start Freq 2.479000000 GHz Stop Freq 2.481000000 GHz CF Step 200.000 kHz Auto Man Freq Offset 0 Hz</p>
<p>Puw</p>	<p>Agilent Spectrum Analyzer - Swept SA Center Freq 12.51500000 GHz Ref Offset 8.05 dB Ref 20.00 dBm Mkr2 24.782 GHz -38.148 dBm 10 dB/div Log Start 30 MHz #Res BW 100 kHz #VBW 300 kHz Stop 25.00 GHz Sweep 2.387 s (8001 pts)</p>	<p>Frequency Auto Tune Center Freq 12.51500000 GHz Start Freq 30.000000 MHz Stop Freq 25.000000000 GHz CF Step 2.497000000 GHz Auto Man Freq Offset 0 Hz</p>

$\pi/4$ DQPSK_LCH_Graphs

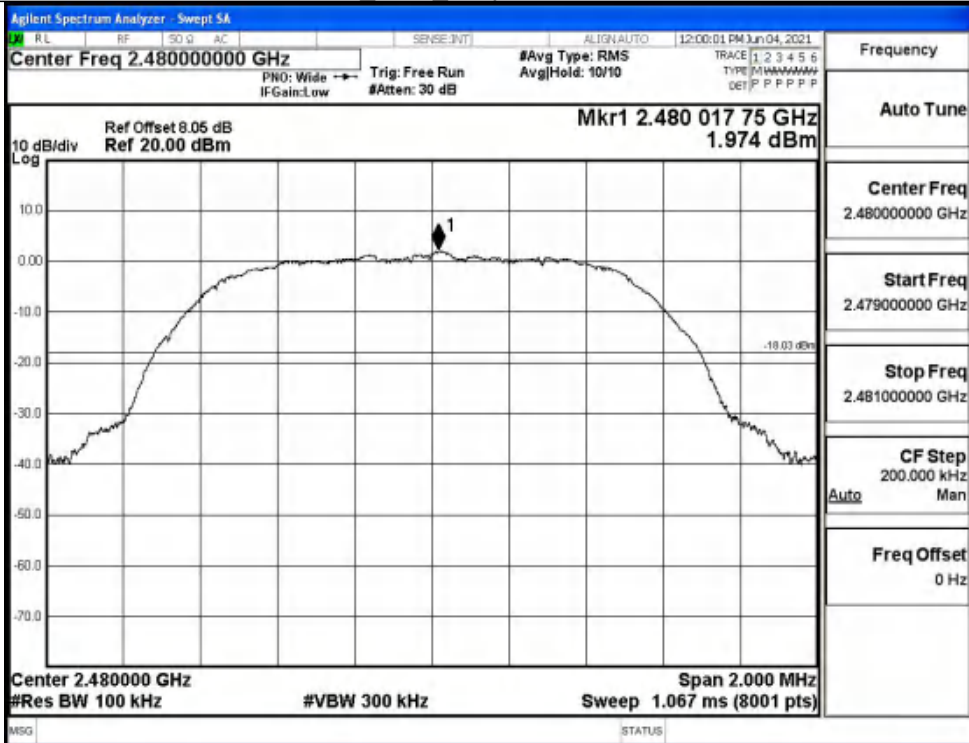


$\pi/4$ DQPSK_MCH_Graphs

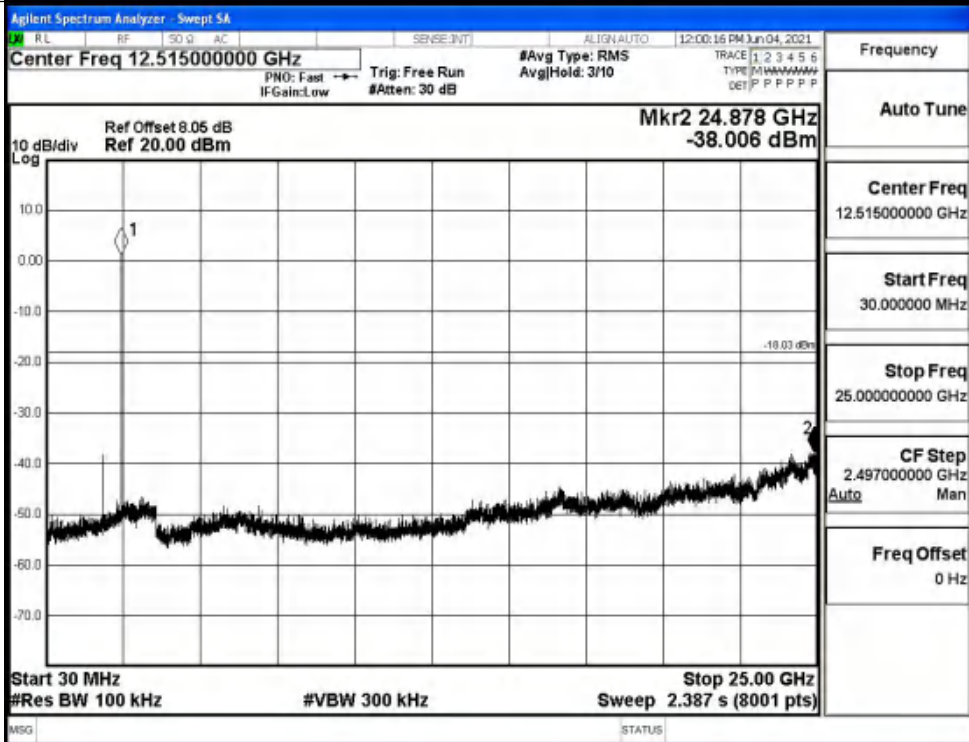


$\pi/4$ DQPSK_HCH_Graphs

Pref



Puw

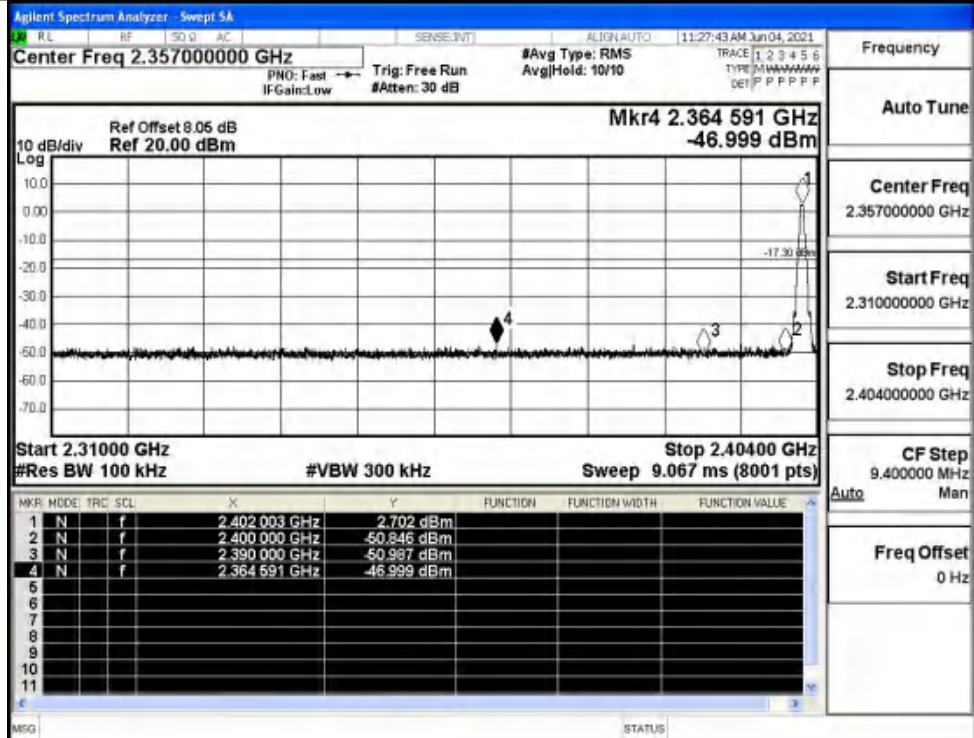


A.7 Band-edge for RF Conducted Emissions

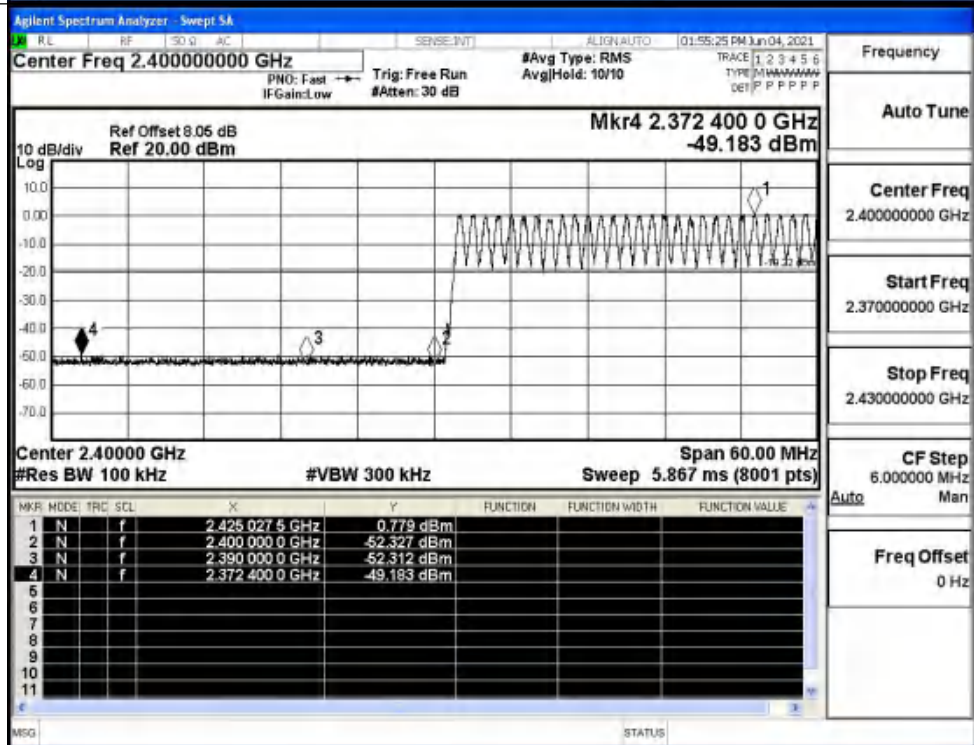
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	2.702	Off	-46.999	-17.3	PASS
			0.779	On	-49.183	-19.22	PASS
	HCH	2480	3.344	Off	-46.059	-16.66	PASS
			1.544	On	-48.879	-18.46	PASS
π/4DQPSK	LCH	2402	1.787	Off	-46.885	-18.21	PASS
			1.368	On	-49.424	-18.63	PASS
	HCH	2480	2.437	Off	-47.071	-17.56	PASS
			2.589	On	-47.034	-17.41	PASS

Test Graphs

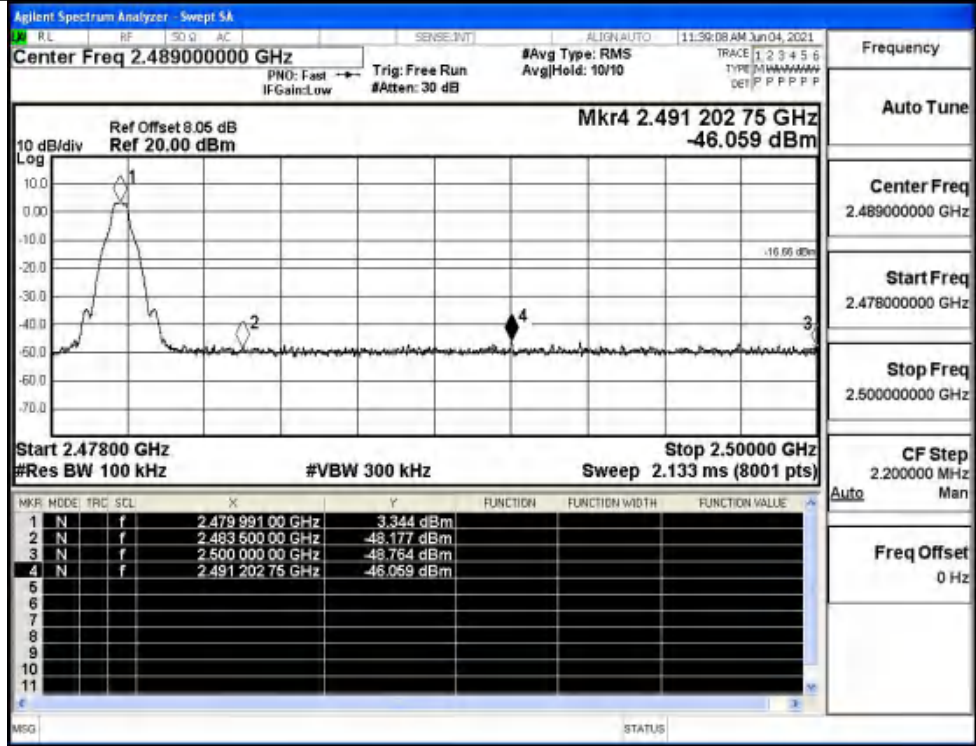
GFSK/LCH/No Hop



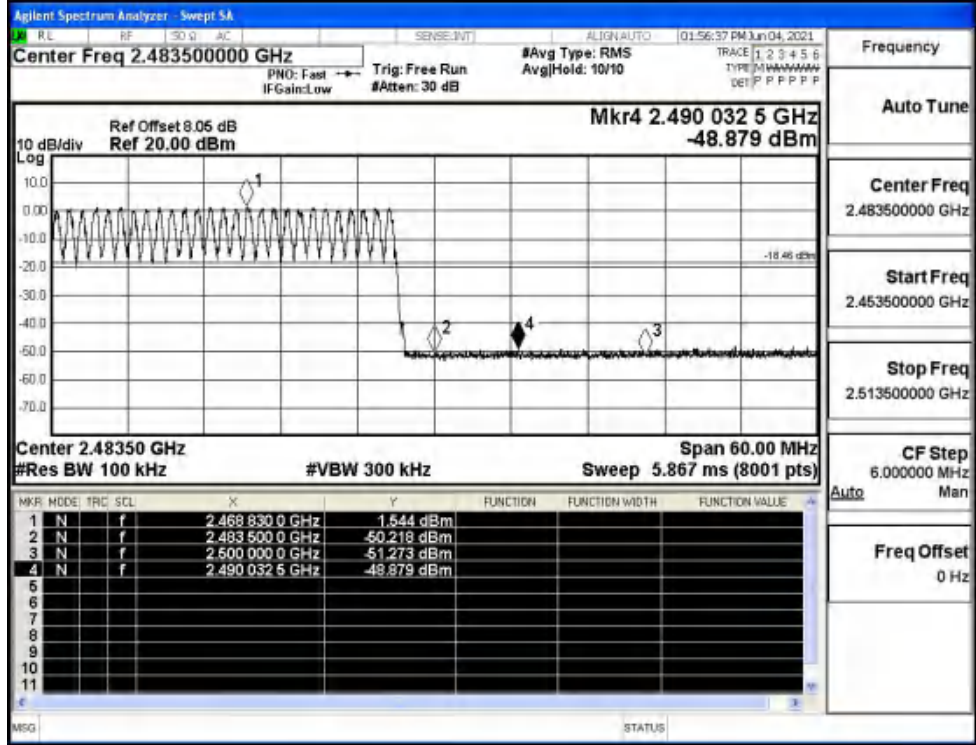
GFSK/LCH/Hop



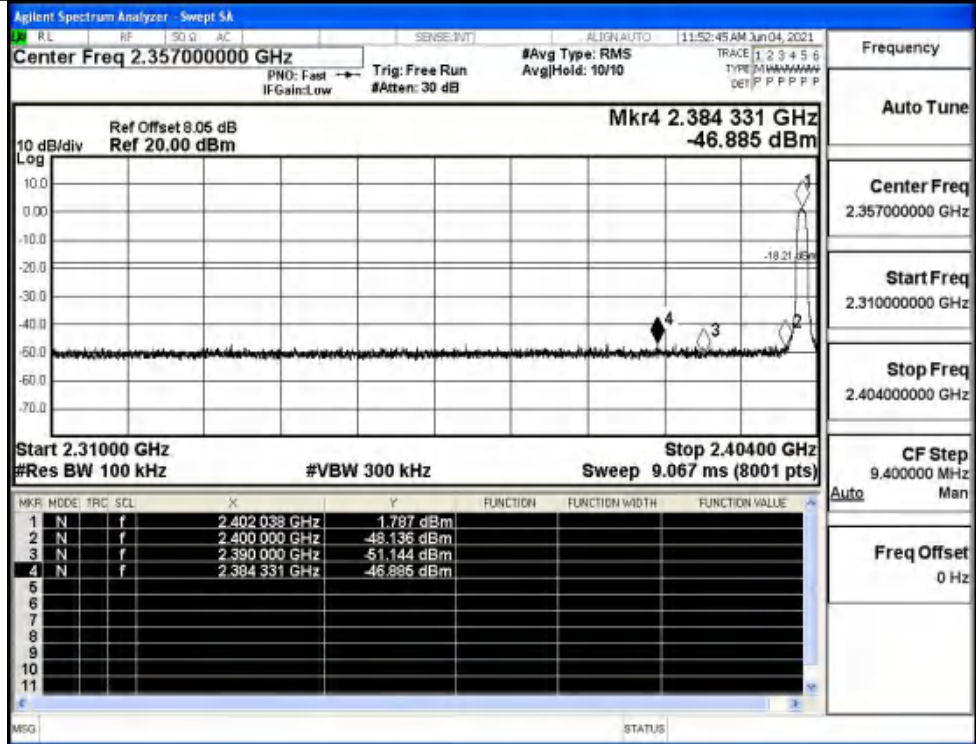
GFSK/HCH/No Hop



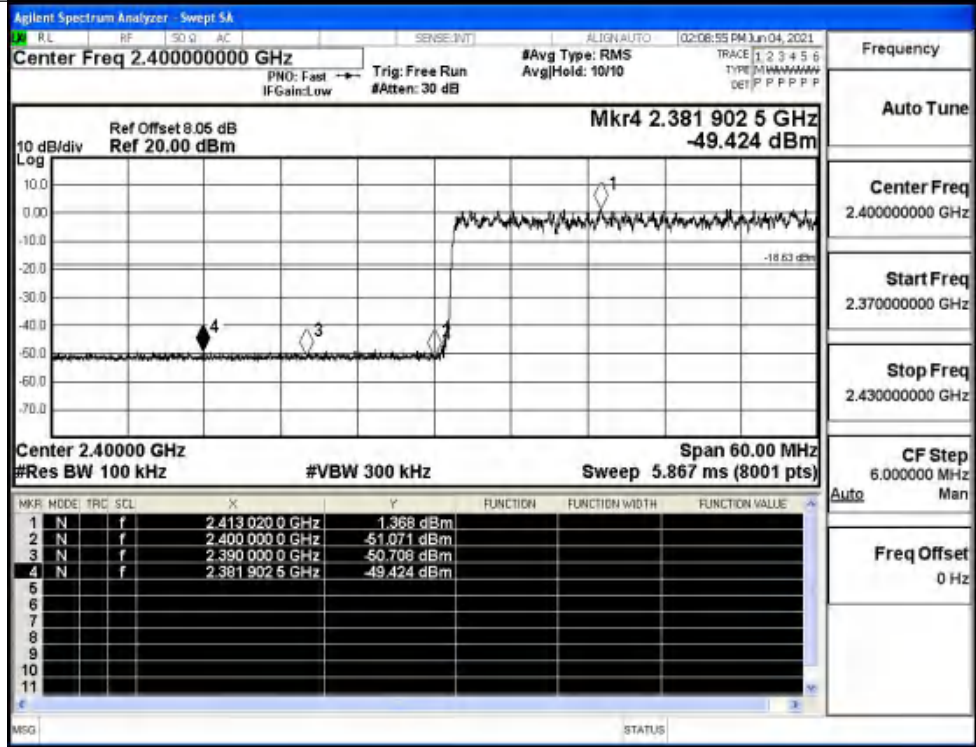
GFSK/HCH/Hop



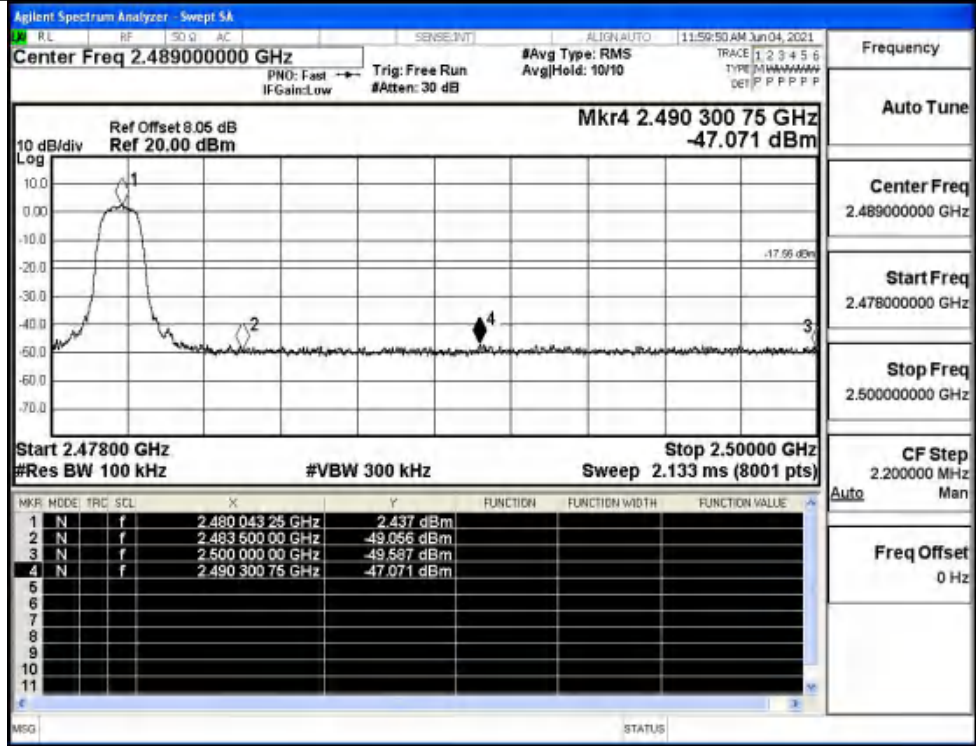
$\pi/4$ DQPSK/LCH/No Hop



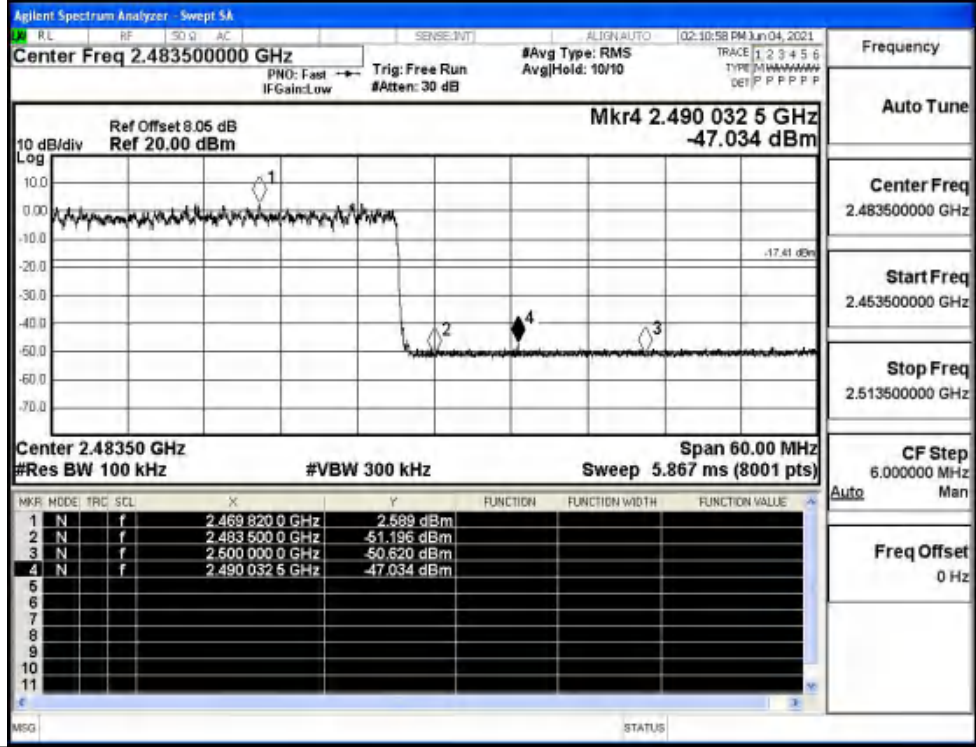
$\pi/4$ DQPSK/LCH/Hop



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



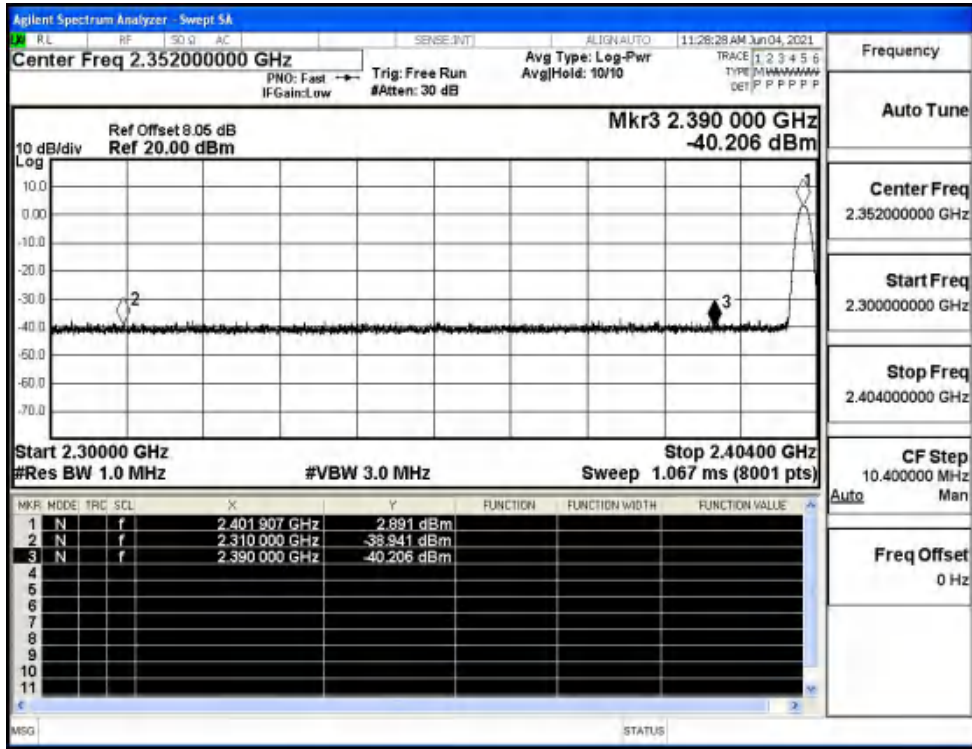
$\pi/4$ DQPSK/HCH/Hop



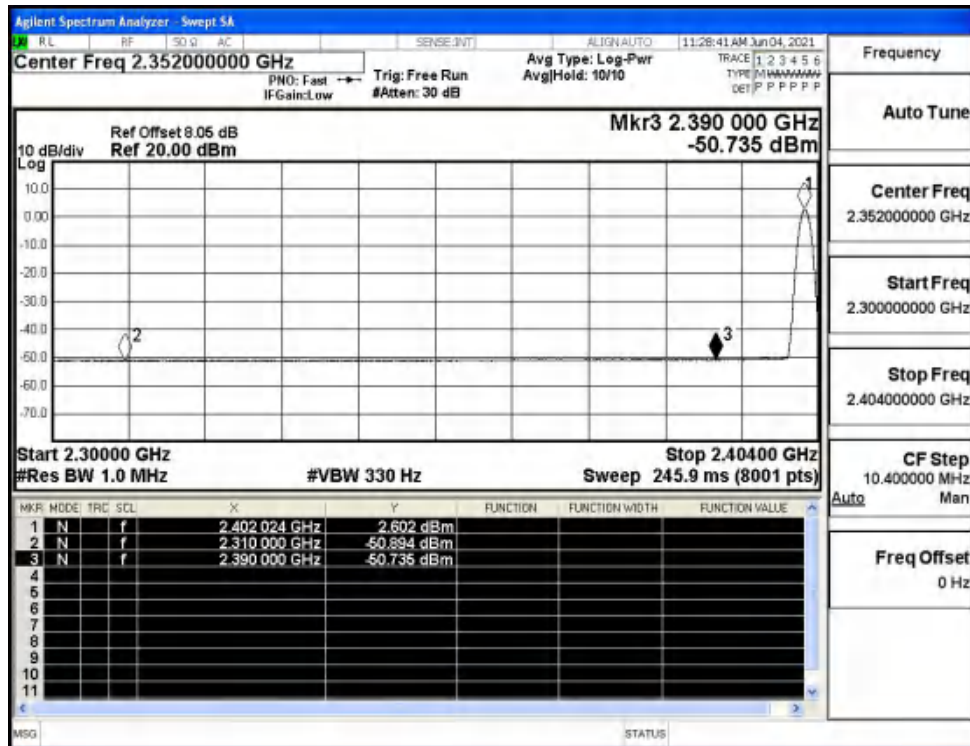
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-38.94	2.0	0	58.29	PEAK	74	PASS
	Off	2310.0	-50.89	2.0	0	46.34	AV	54	PASS
	Off	2390.0	-40.21	2.0	0	57.02	PEAK	74	PASS
	Off	2390.0	-50.74	2.0	0	46.49	AV	54	PASS
	Off	2483.5	-41.09	2.0	0	56.14	PEAK	74	PASS
	Off	2483.5	-49.98	2.0	0	47.25	AV	54	PASS
	Off	2500.0	-40.70	2.0	0	56.53	PEAK	74	PASS
	Off	2500.0	-49.91	2.0	0	47.32	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-40.11	2.0	0	57.12	PEAK	74	PASS
	Off	2310.0	-51.03	2.0	0	46.20	AV	54	PASS
	Off	2390.0	-40.61	2.0	0	56.62	PEAK	74	PASS
	Off	2390.0	-50.58	2.0	0	46.65	AV	54	PASS
	Off	2483.5	-39.07	2.0	0	58.16	PEAK	74	PASS
	Off	2483.5	-49.99	2.0	0	47.24	AV	54	PASS
	Off	2500.0	-39.90	2.0	0	57.33	PEAK	74	PASS
	Off	2500.0	-49.89	2.0	0	47.34	AV	54	PASS

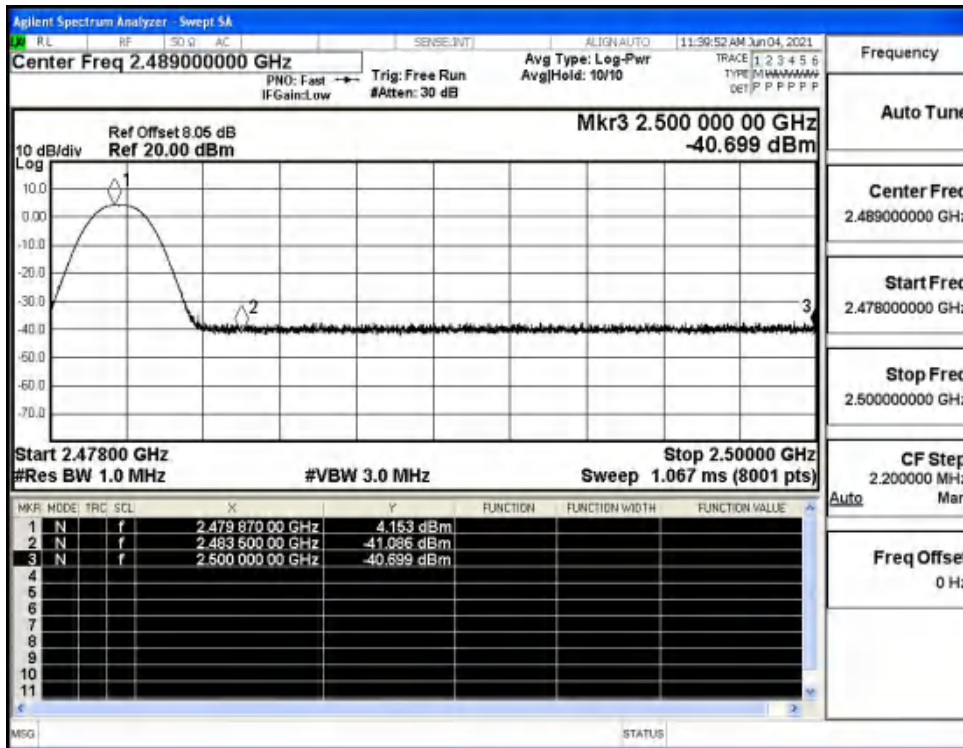
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



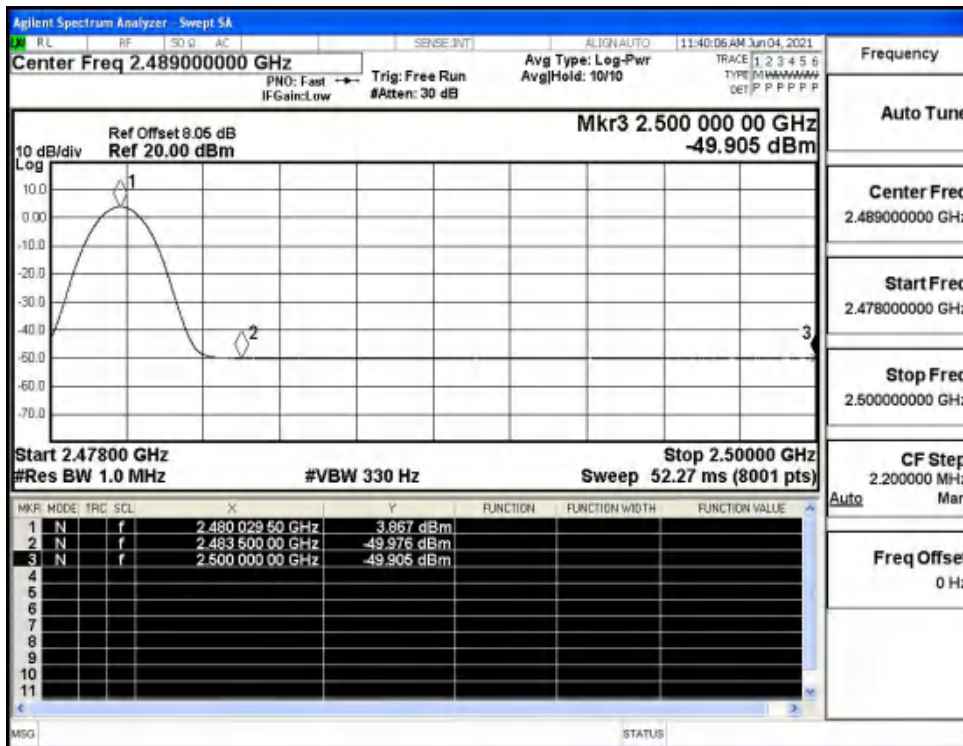
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)



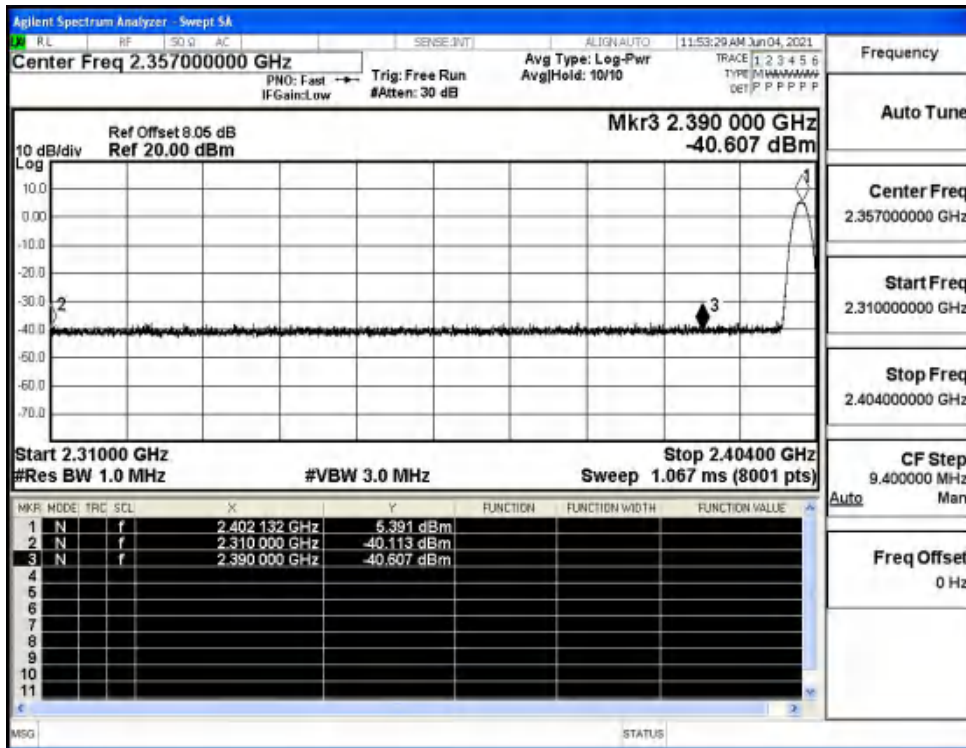
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (High Channel)



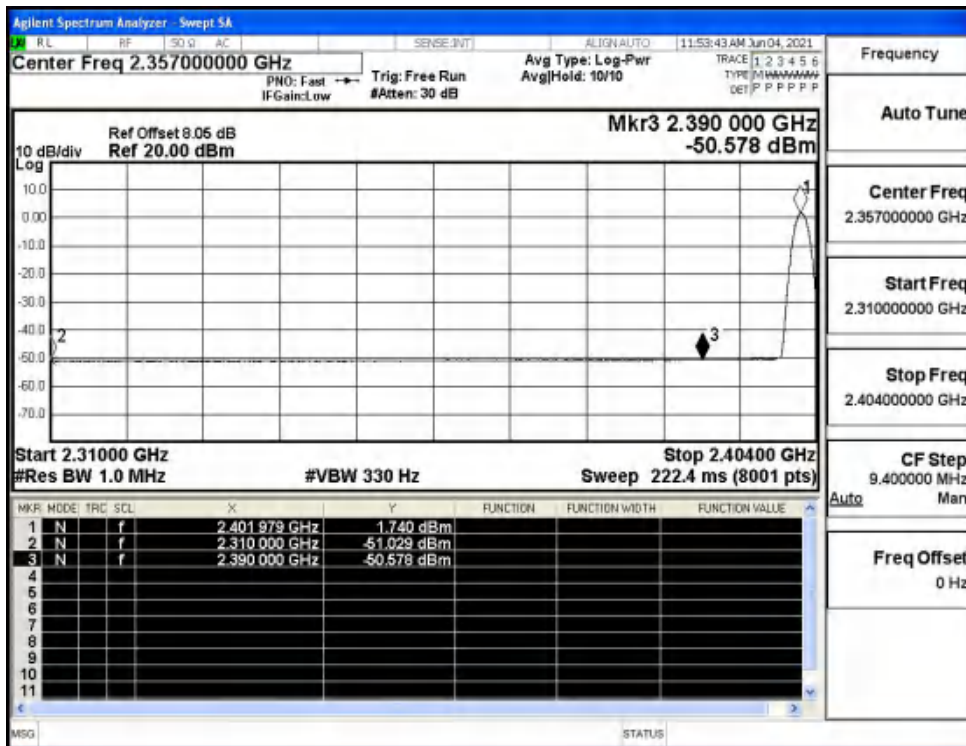
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (High Channel)



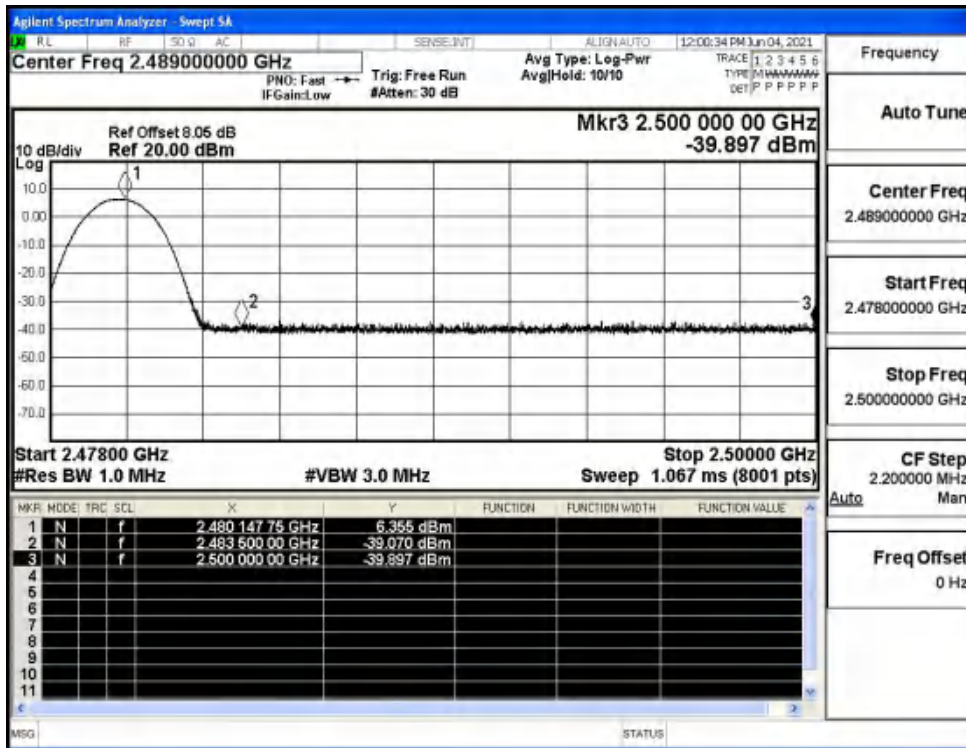
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)



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)

