

Appendix A

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

Product Name: HyTabPlus

Trade Mark: HYUNDAI

Test Model: HT10LB3MBKLTM

Environmental Conditions

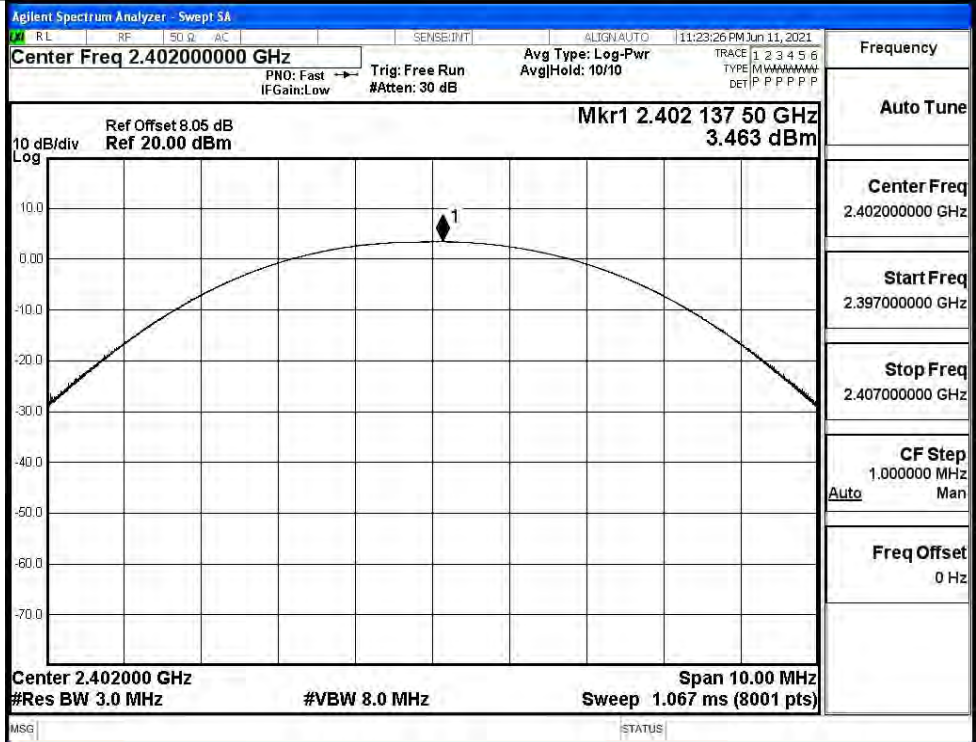
Temperature:	21.6° C
Relative Humidity:	52.7%
ATM Pressure:	100.0 kPa
Test Engineer:	Ken He
Supervised by:	Li Huan

A.1 Maxmum Conducted Peak Output Power

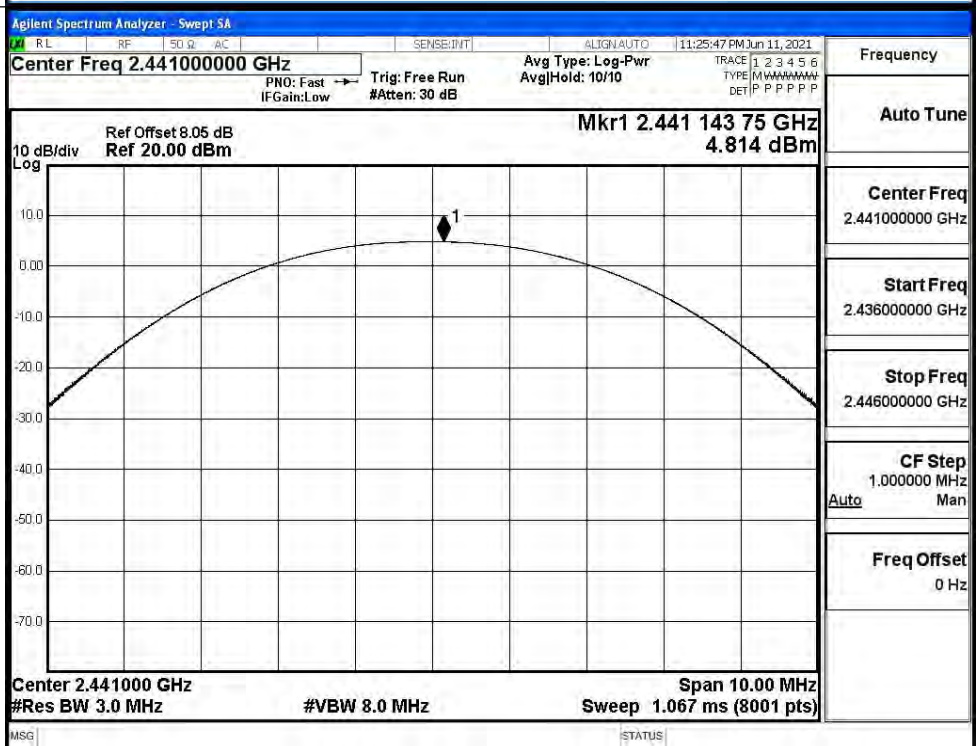
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	3.463	21	PASS
	MCH	4.814	21	PASS
	HCH	3.213	21	PASS
$\pi/4$ DQPSK	LCH	2.707	21	PASS
	MCH	4.040	21	PASS
	HCH	2.464	21	PASS
8DPSK	LCH	2.777	21	PASS
	MCH	4.160	21	PASS
	HCH	2.628	21	PASS

Test Graphs

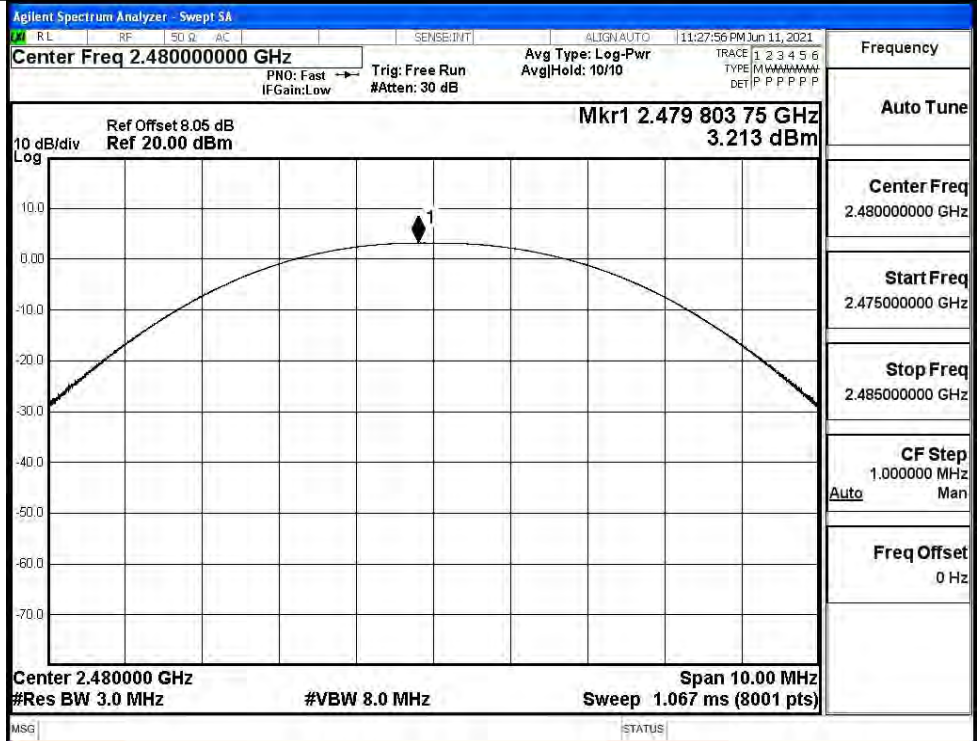
GFSK/LCH



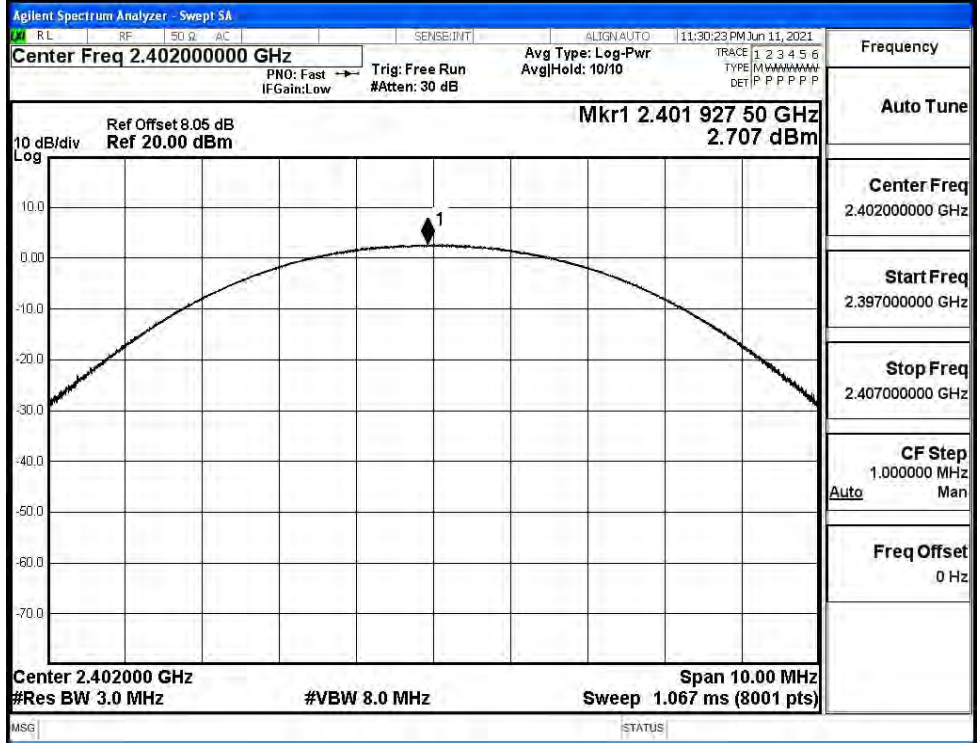
GFSK/MCH



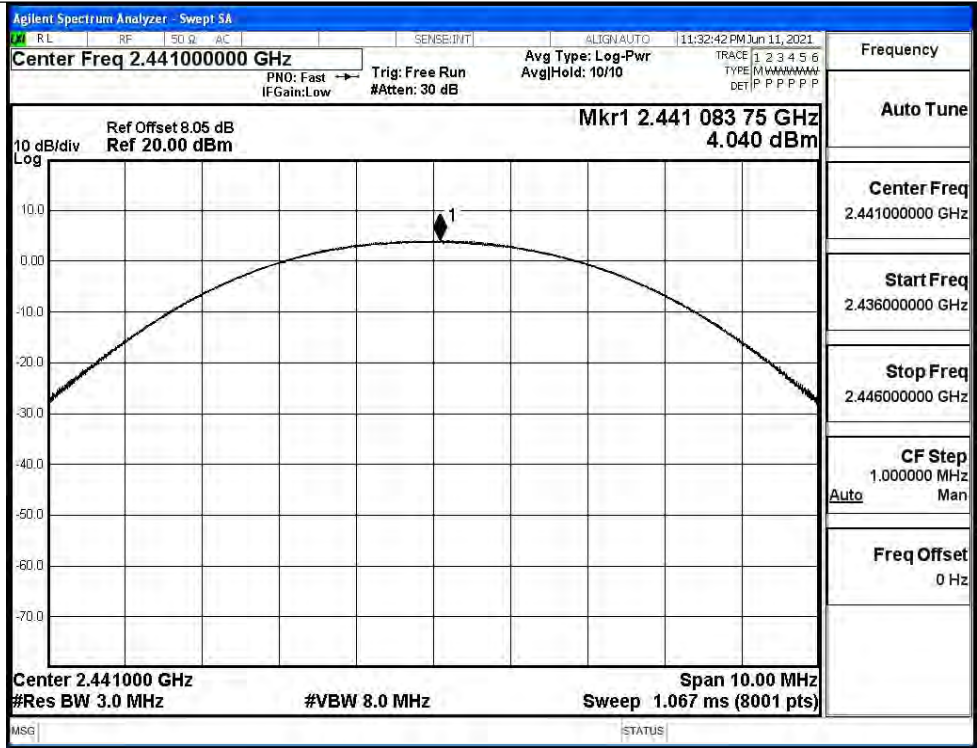
GFSK/HCH



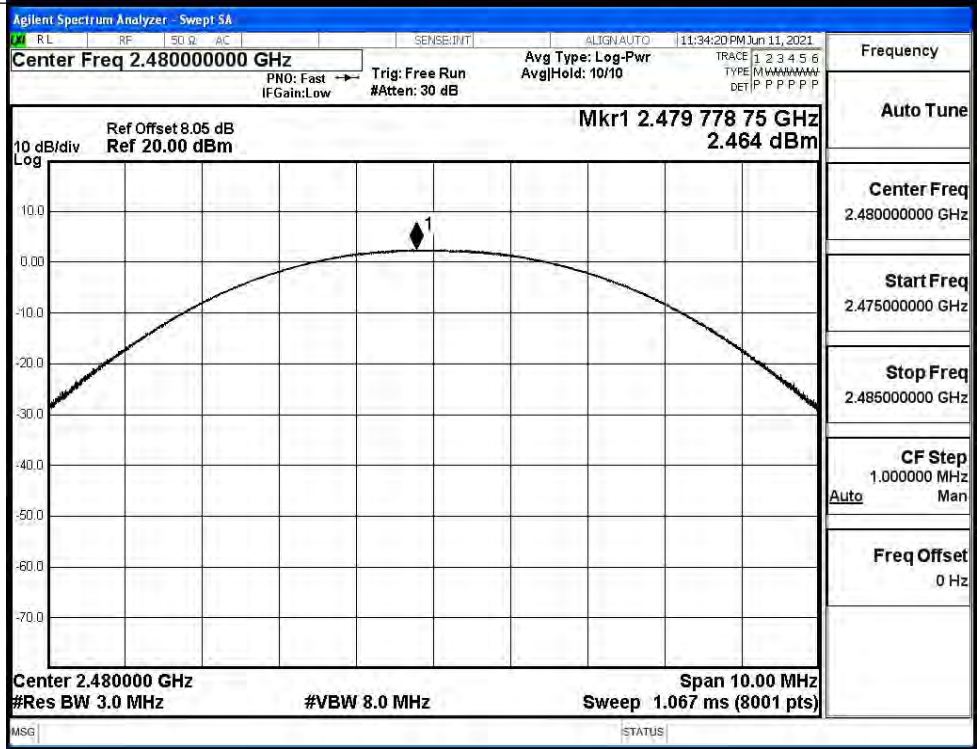
π /4DQPSK/LCH



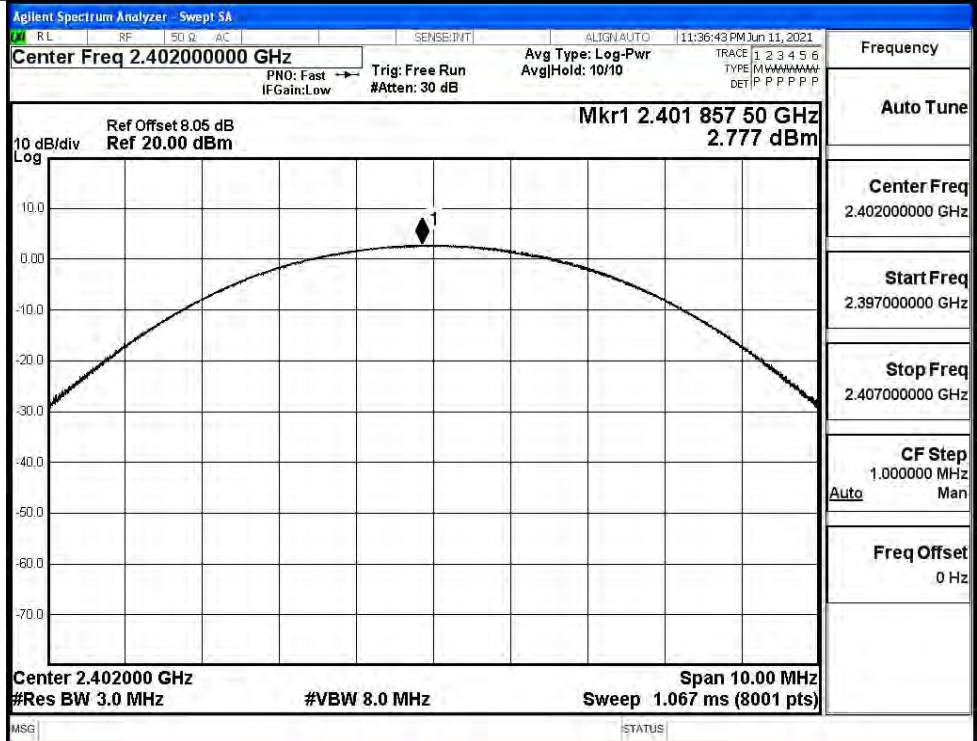
π /4DQPSK/MCH



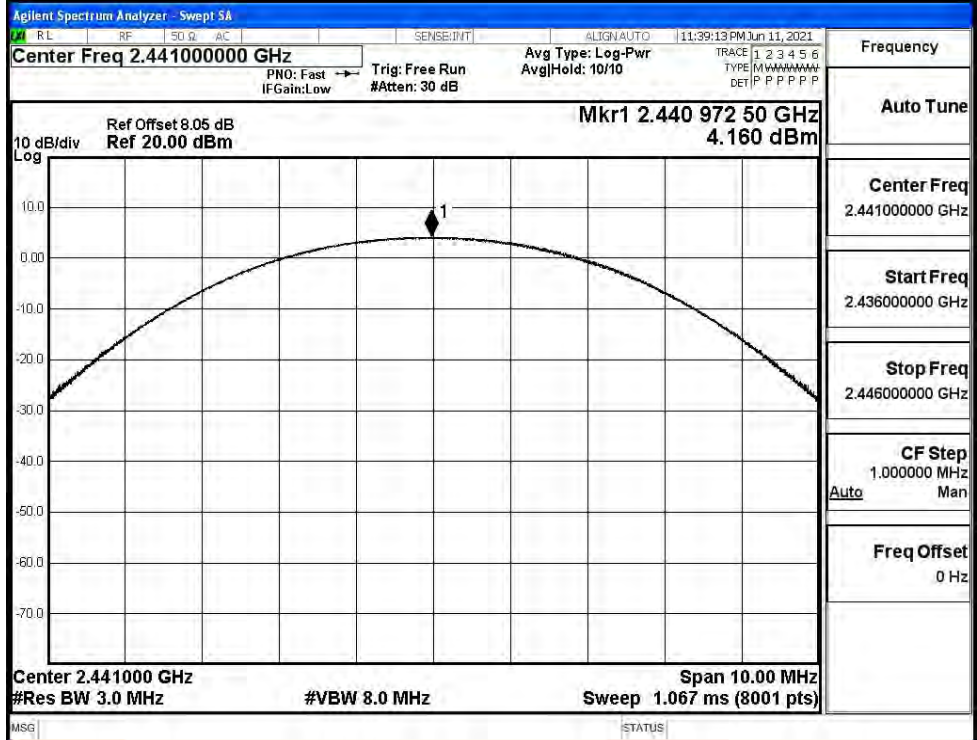
π /4DQPSK/HCH



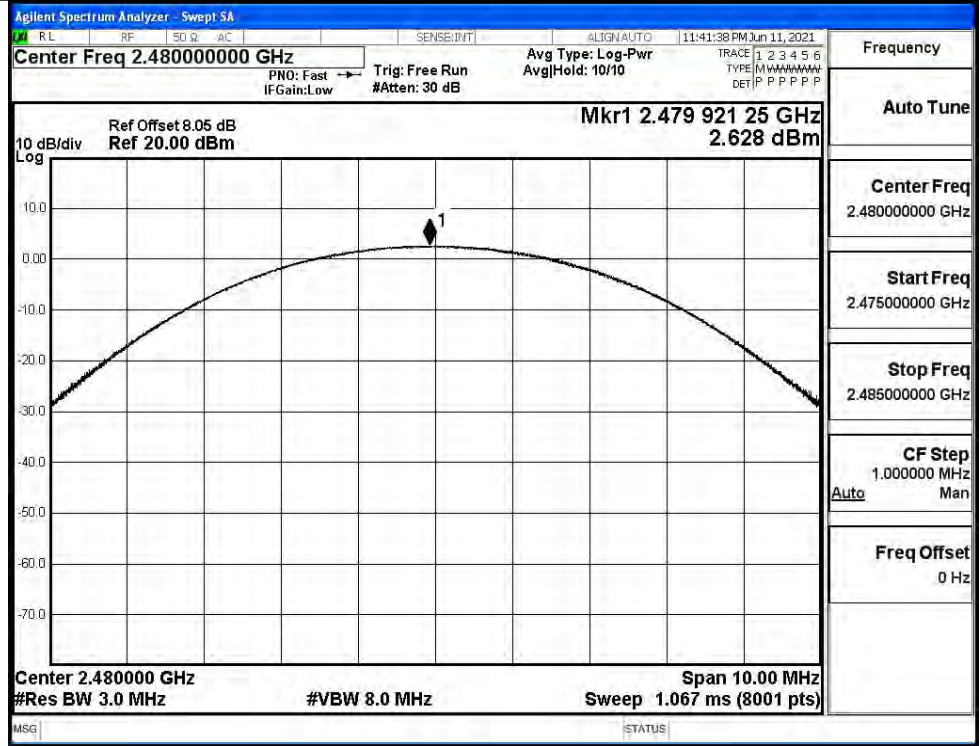
8DPSK/LCH



8DPSK/MCH

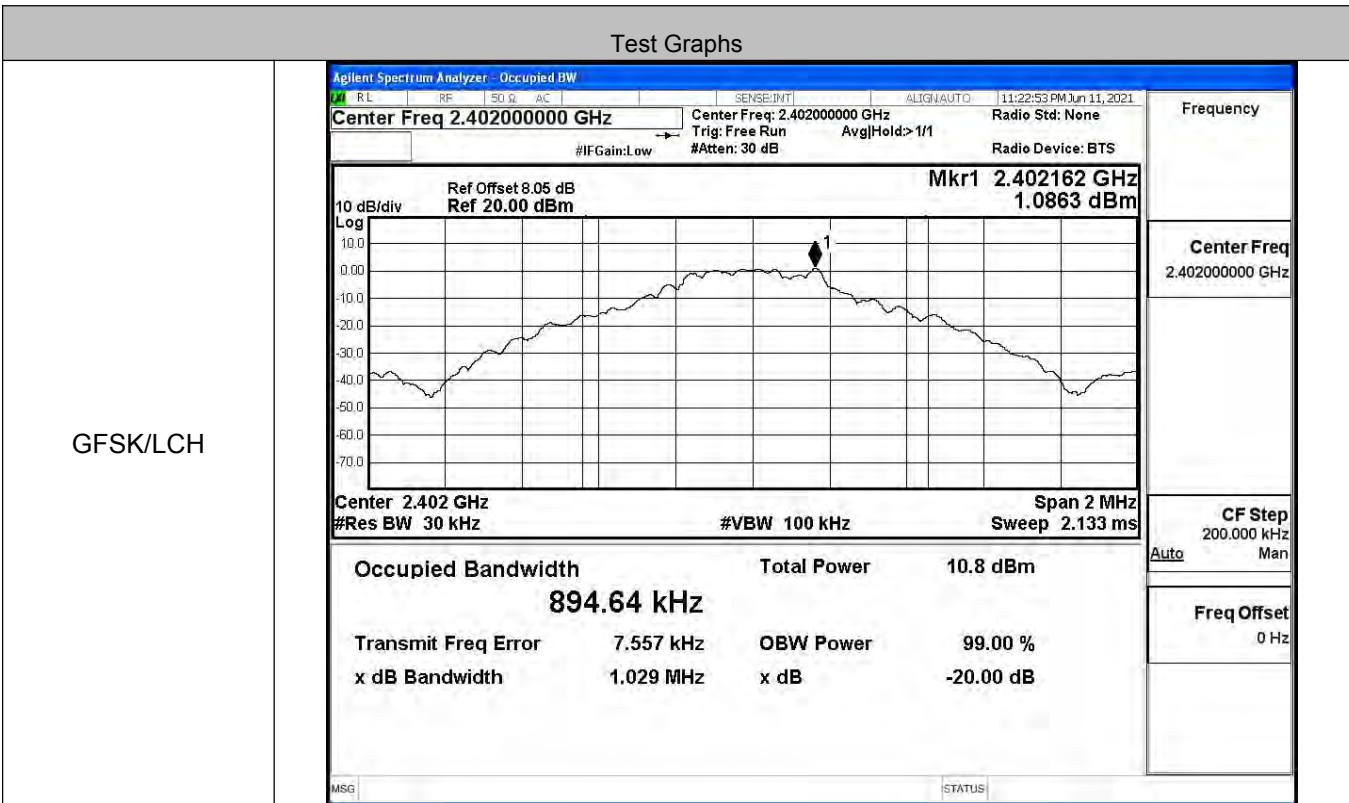


8DPSK/HCH



A.2 20dB Bandwidth

Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.029	Not Specified	PASS
	MCH	1.023	Not Specified	PASS
	HCH	1.038	Not Specified	PASS
π/4DQPSK	LCH	1.287	Not Specified	PASS
	MCH	1.289	Not Specified	PASS
	HCH	1.288	Not Specified	PASS
8DPSK	LCH	1.292	Not Specified	PASS
	MCH	1.297	Not Specified	PASS
	HCH	1.293	Not Specified	PASS

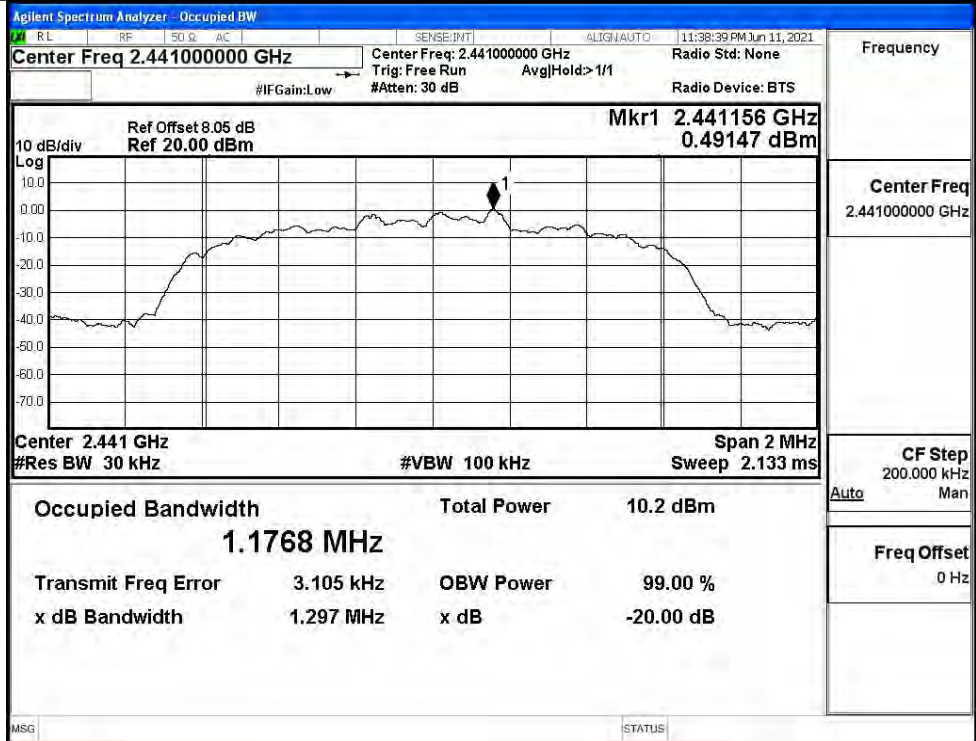


<p>GFSK/MCH</p>	<p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.44100000 GHz</p> <p>Center Freq: 2.44100000 GHz Trig: Free Run #IFGain: Low #Atten: 30 dB</p> <p>Mkr1 2.441162 GHz 2.4334 dBm</p> <p>10 dB/div Log Ref Offset 8.05 dB Ref 20.00 dBm</p> <p>Center 2.441 GHz #Res BW 30 kHz</p> <p>#VBW 100 kHz Span 2 MHz Sweep 2.133 ms</p> <p>Occupied Bandwidth 895.07 kHz Total Power 12.1 dBm</p> <p>Transmit Freq Error 4.596 kHz x dB Bandwidth 1.023 MHz</p> <p>OBW Power 99.00 % x dB -20.00 dB</p>	<p>Frequency</p> <p>Center Freq 2.441000000 GHz</p> <p>CF Step 200.000 kHz Auto Man</p> <p>Freq Offset 0 Hz</p>
<p>GFSK/HCH</p>	<p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.480000000 GHz</p> <p>Center Freq: 2.480000000 GHz Trig: Free Run #IFGain: Low #Atten: 30 dB</p> <p>Mkr1 2.480014 GHz 0.54758 dBm</p> <p>10 dB/div Log Ref Offset 8.05 dB Ref 20.00 dBm</p> <p>Center 2.48 GHz #Res BW 30 kHz</p> <p>#VBW 100 kHz Span 2 MHz Sweep 2.133 ms</p> <p>Occupied Bandwidth 899.68 kHz Total Power 10.4 dBm</p> <p>Transmit Freq Error 3.403 kHz x dB Bandwidth 1.038 MHz</p> <p>OBW Power 99.00 % x dB -20.00 dB</p>	<p>Frequency</p> <p>Center Freq 2.480000000 GHz</p> <p>CF Step 200.000 kHz Auto Man</p> <p>Freq Offset 0 Hz</p>

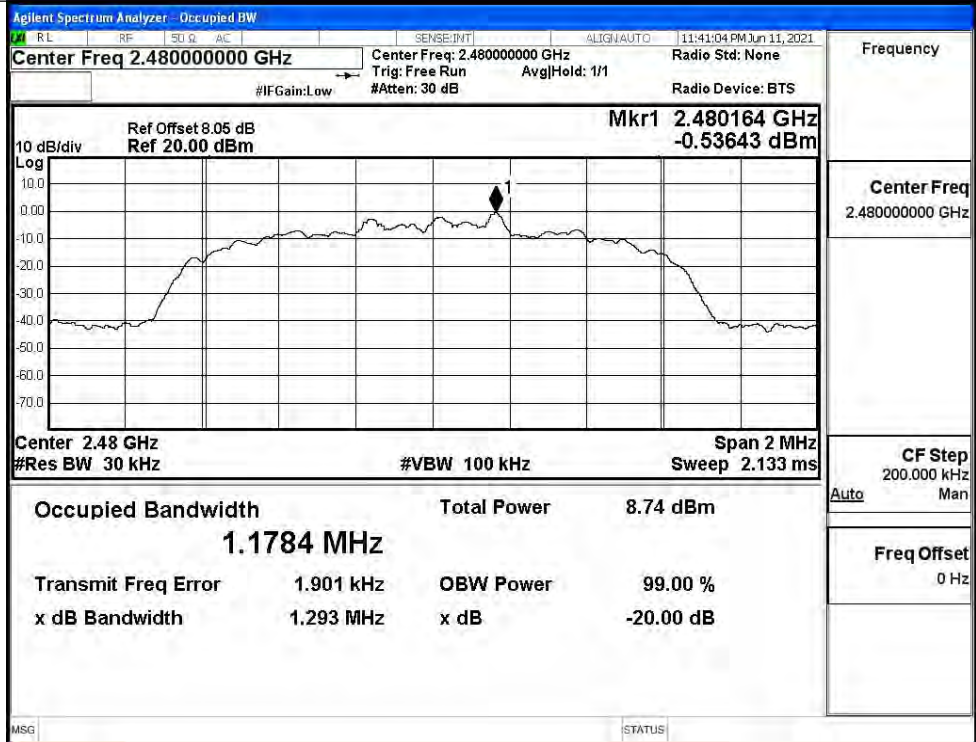
<p style="text-align: center;">π/4DQPSK/LCH</p>	<p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.40200000 GHz</p> <p>Ref Offset 8.05 dB Ref 20.00 dBm</p> <p>Mkr1 2.402164 GHz -1.0651 dBm</p> <p>Center 2.402 GHz #Res BW 30 kHz</p> <p>Span 2 MHz Sweep 2.133 ms</p> <p>#VBW 100 kHz</p> <p>Occupied Bandwidth 1.1678 MHz</p> <p>Total Power 8.87 dBm</p> <p>Transmit Freq Error 702 Hz</p> <p>OBW Power 99.00 %</p> <p>x dB Bandwidth 1.287 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 style="text-align: center;">π/4DQPSK/MCH</p>	<p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.44100000 GHz</p> <p>Ref Offset 8.05 dB Ref 20.00 dBm</p> <p>Mkr1 2.441162 GHz 0.19648 dBm</p> <p>Center 2.441 GHz #Res BW 30 kHz</p> <p>Span 2 MHz Sweep 2.133 ms</p> <p>#VBW 100 kHz</p> <p>Occupied Bandwidth 1.1667 MHz</p> <p>Total Power 10.3 dBm</p> <p>Transmit Freq Error -640 Hz</p> <p>OBW Power 99.00 %</p> <p>x dB Bandwidth 1.289 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>

<p style="text-align: center;">π/4DQPSK/HCH</p>	<p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.48000000 GHz Center Freq: 2.48000000 GHz Radio Std: None Trig: Free Run AvgHold: 1/1 #IFGain: Low #Atten: 30 dB Radio Device: BTS</p> <p>Ref Offset 8.05 dB Mkr1 2.480164 GHz Ref 20.00 dBm -1.2254 dBm</p> <p>Center 2.48 GHz Span 2 MHz #Res BW 30 kHz #VBW 100 kHz Sweep 2.133 ms</p> <p>Occupied Bandwidth Total Power 8.78 dBm 1.1684 MHz</p> <p>Transmit Freq Error -1.616 kHz OBW Power 99.00 % x dB Bandwidth 1.288 MHz x dB -20.00 dB</p>	<p>Frequency 2.48000000 GHz</p> <p>Center Freq 2.48000000 GHz</p> <p>CF Step 200.000 kHz Auto Man</p> <p>Freq Offset 0 Hz</p>
<p style="text-align: center;">8DPSK/LCH</p>	<p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.40200000 GHz Center Freq: 2.40200000 GHz Radio Std: None Trig: Free Run AvgHold: 1/1 #IFGain: Low #Atten: 30 dB Radio Device: BTS</p> <p>Ref Offset 8.05 dB Mkr1 2.402164 GHz Ref 20.00 dBm -0.42823 dBm</p> <p>Center 2.402 GHz Span 2 MHz #Res BW 30 kHz #VBW 100 kHz Sweep 2.133 ms</p> <p>Occupied Bandwidth Total Power 8.80 dBm 1.1759 MHz</p> <p>Transmit Freq Error 4.256 kHz OBW Power 99.00 % x dB Bandwidth 1.292 MHz x dB -20.00 dB</p>	<p>Frequency 2.40200000 GHz</p> <p>Center Freq 2.40200000 GHz</p> <p>CF Step 200.000 kHz Auto Man</p> <p>Freq Offset 0 Hz</p>

8DPSK/MCH

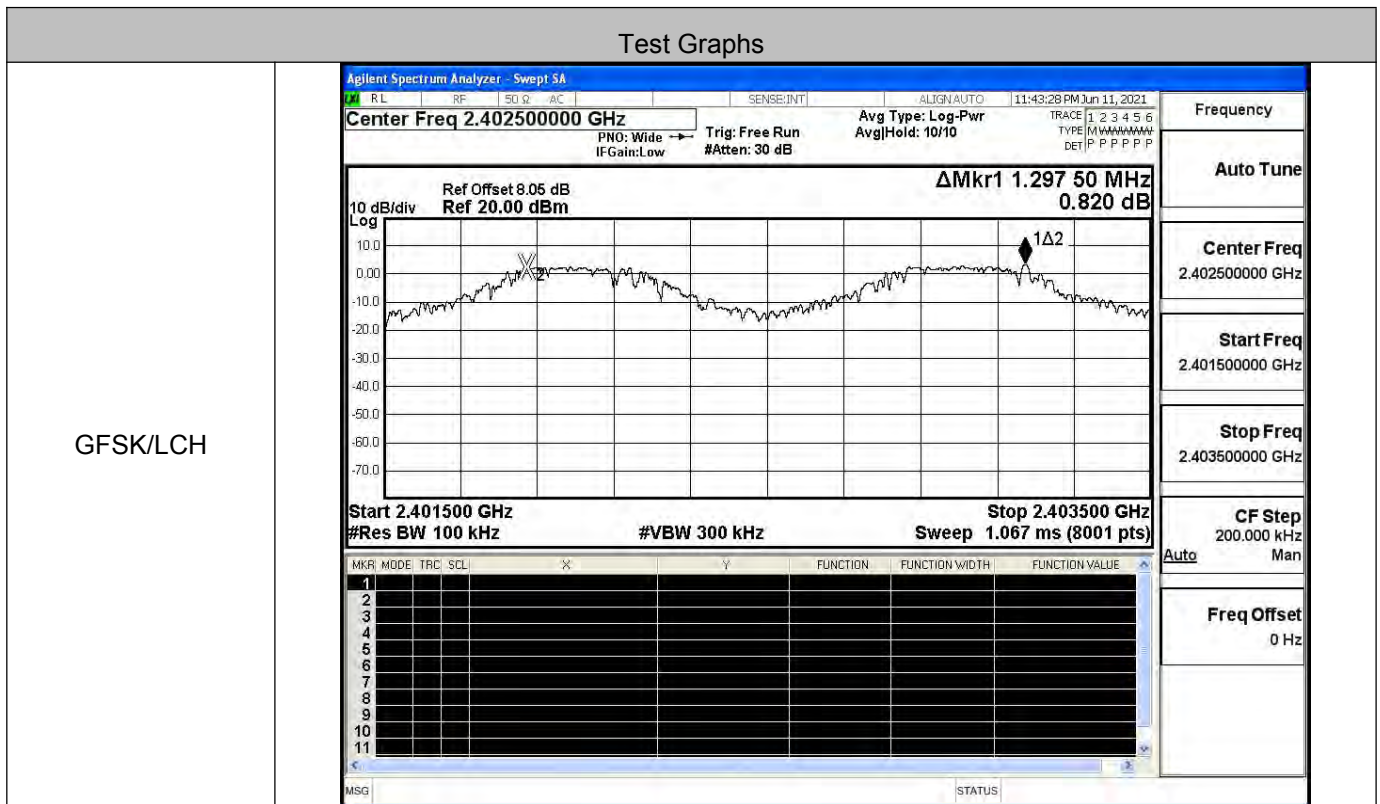


8DPSK/HCH

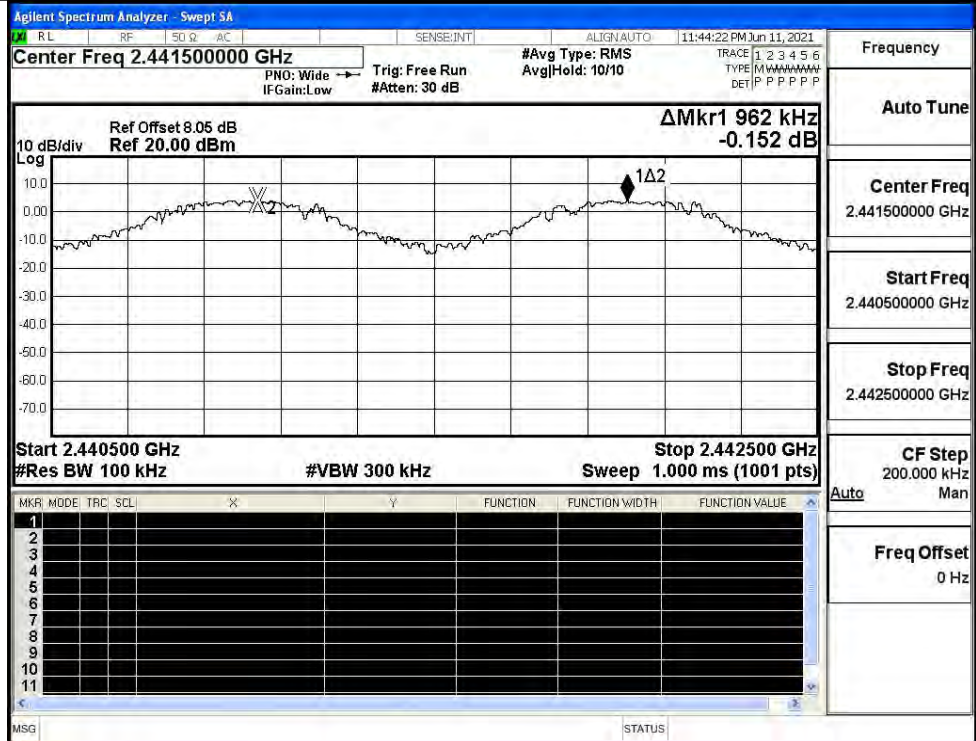


A.3 Carrier Frequency Separation

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.298	0.686	PASS
	MCH	0.962	0.682	PASS
	HCH	1.020	0.692	PASS
π/4DQPSK	LCH	1.028	0.858	PASS
	MCH	0.870	0.859	PASS
	HCH	0.886	0.859	PASS
8DPSK	LCH	0.874	0.861	PASS
	MCH	0.912	0.865	PASS
	HCH	1.130	0.862	PASS

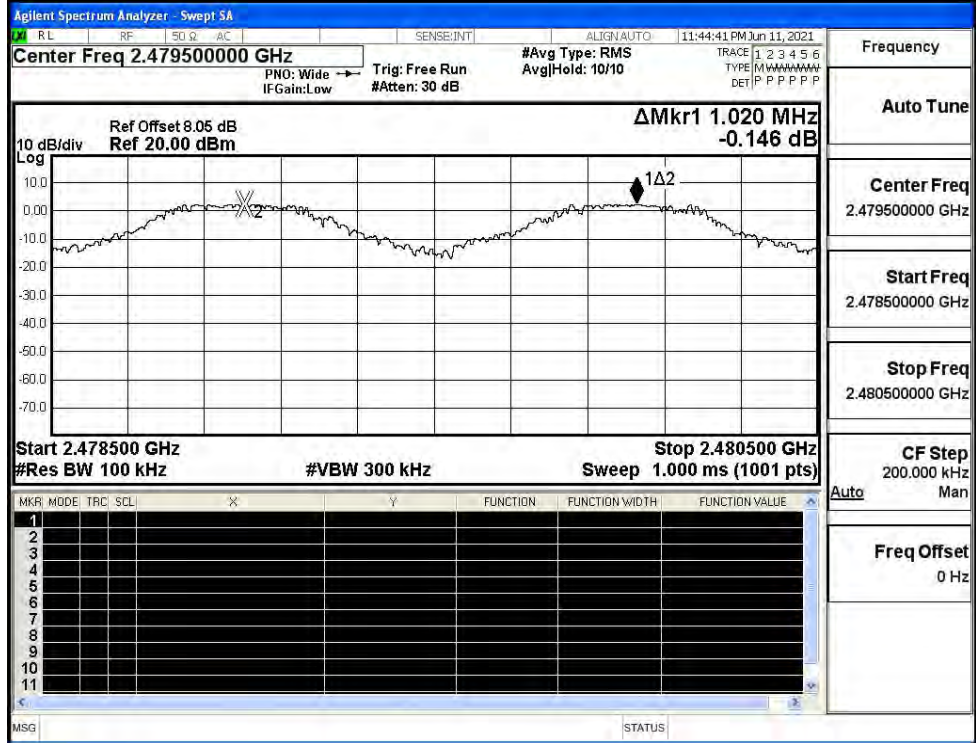


GFSK/MCH



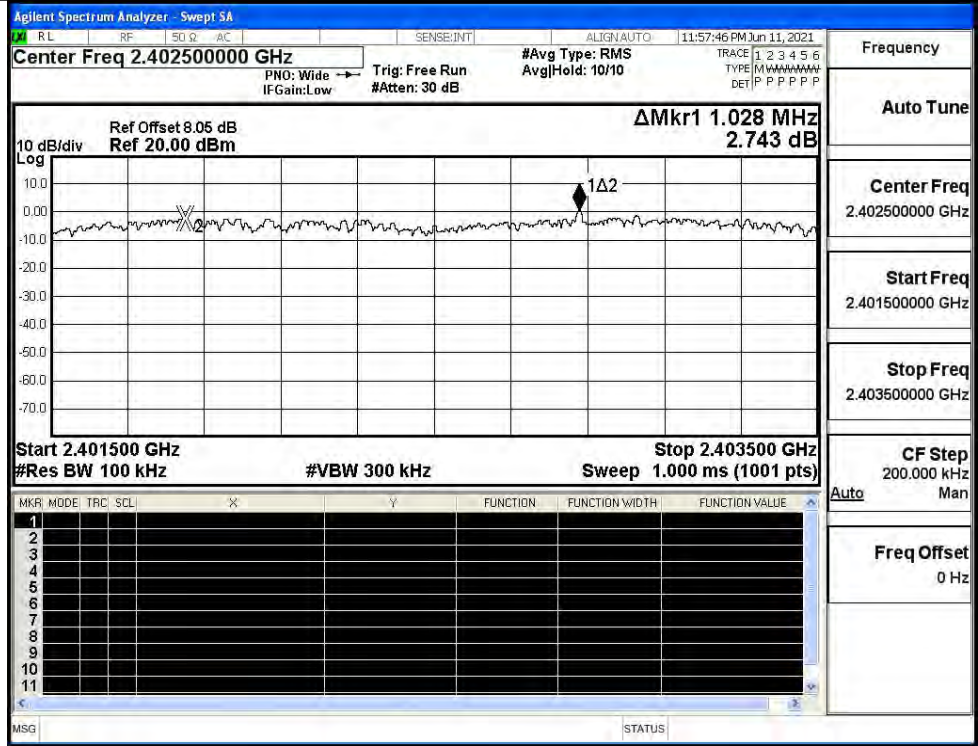
Frequency
Auto Tune
Center Freq 2.441500000 GHz
Start Freq 2.440500000 GHz
Stop Freq 2.442500000 GHz
CF Step 200.000 kHz Auto Man
Freq Offset 0 Hz

GFSK/HCH



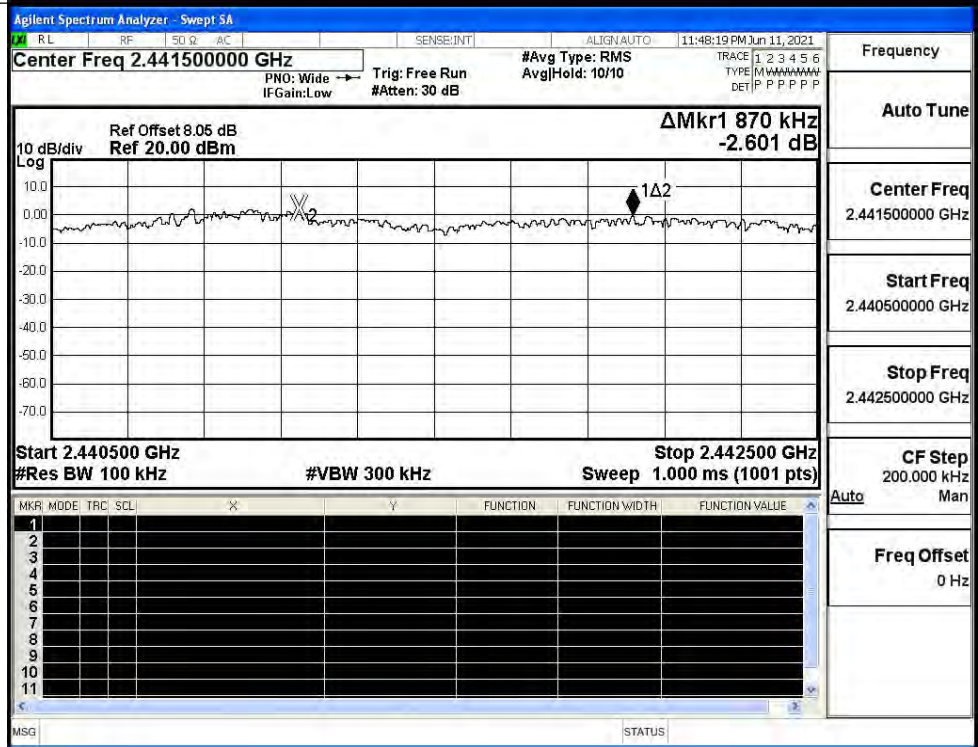
Frequency
Auto Tune
Center Freq 2.479500000 GHz
Start Freq 2.478500000 GHz
Stop Freq 2.480500000 GHz
CF Step 200.000 kHz Auto Man
Freq Offset 0 Hz

$\pi/4$ DQPSK/LCH



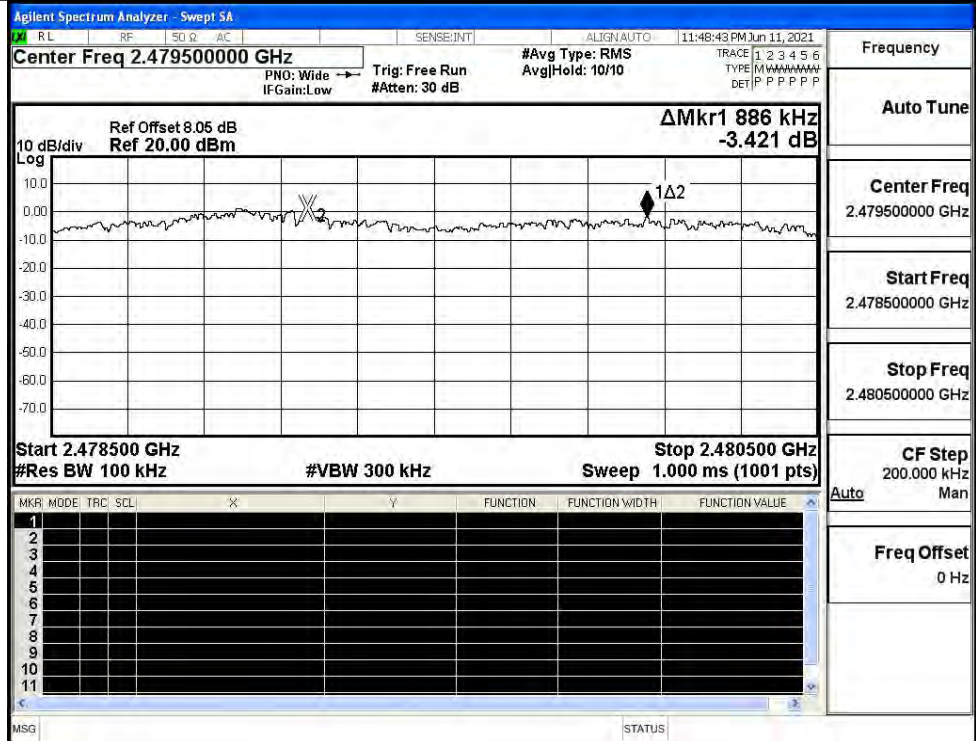
Frequency
Auto Tune
Center Freq 2.402500000 GHz
Start Freq 2.401500000 GHz
Stop Freq 2.403500000 GHz
CF Step 200.000 kHz Auto Man
Freq Offset 0 Hz

$\pi/4$ DQPSK/MCH



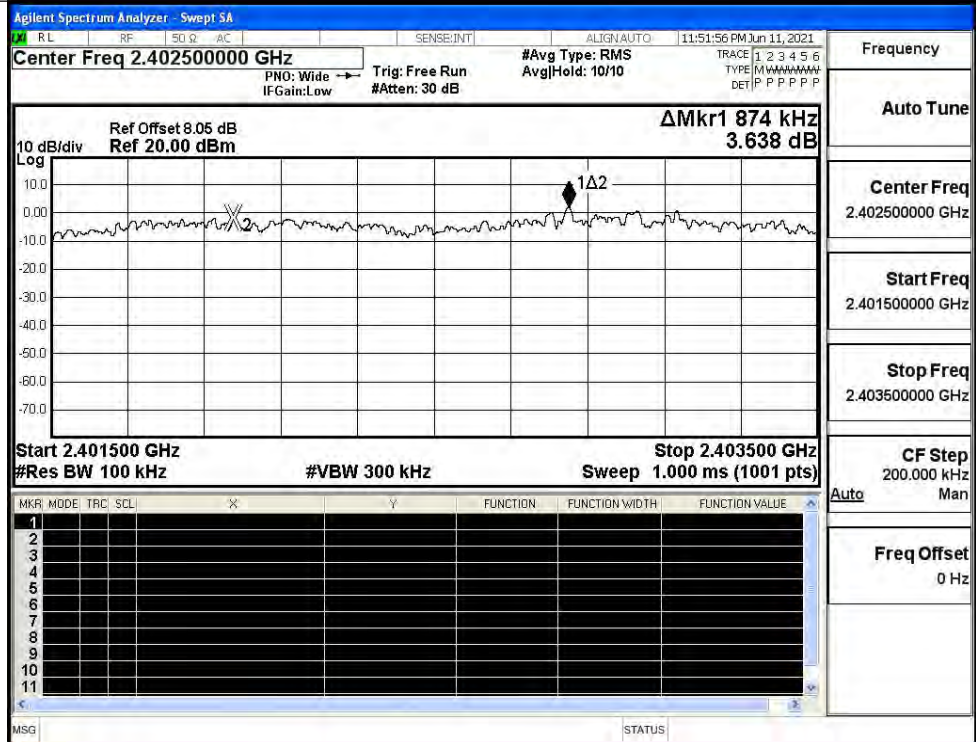
Frequency
Auto Tune
Center Freq 2.441500000 GHz
Start Freq 2.440500000 GHz
Stop Freq 2.442500000 GHz
CF Step 200.000 kHz Auto Man
Freq Offset 0 Hz

π/4DQPSK/HCH



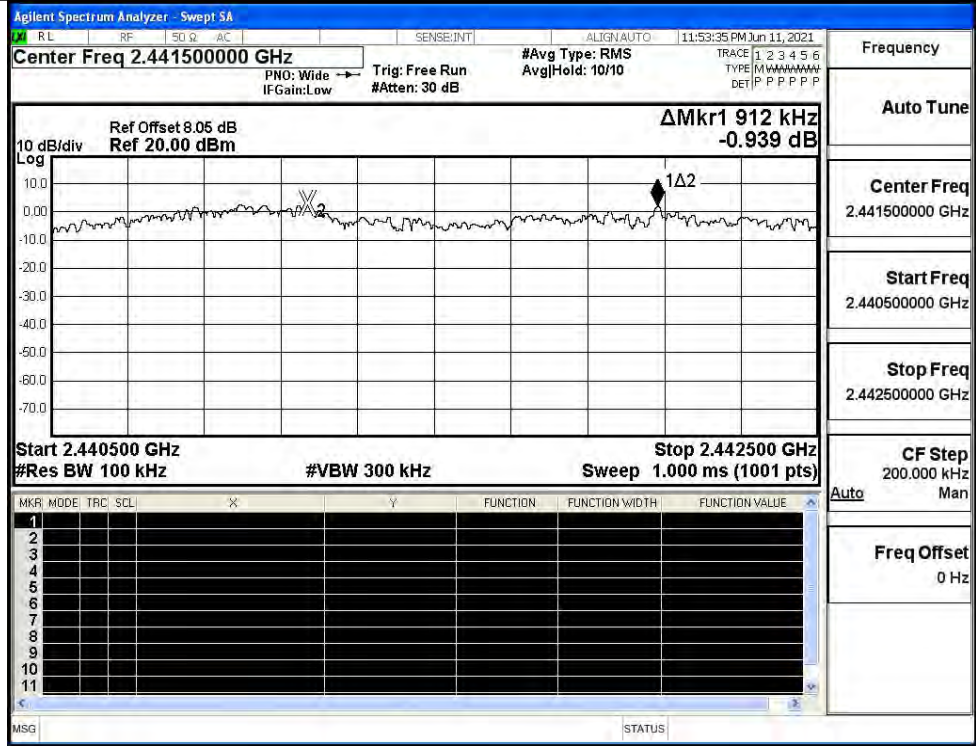
Frequency
Auto Tune
Center Freq
2.479500000 GHz
Start Freq
2.478500000 GHz
Stop Freq
2.480500000 GHz
CF Step
200.000 kHz
Auto Man
Freq Offset
0 Hz

8DPSK/LCH

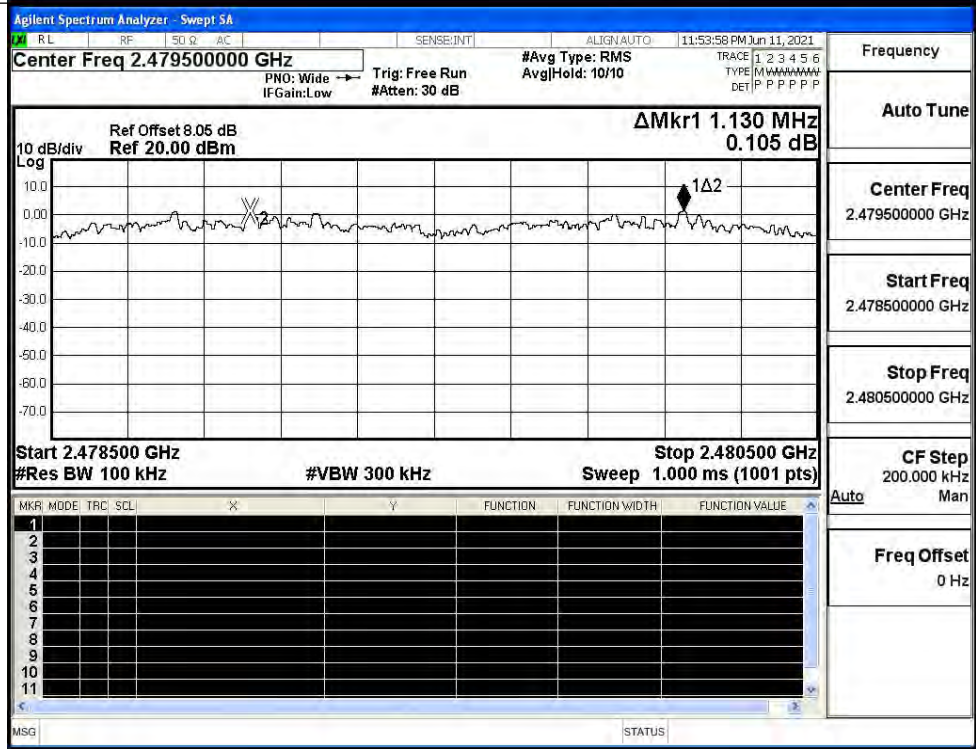


Frequency
Auto Tune
Center Freq
2.402500000 GHz
Start Freq
2.401500000 GHz
Stop Freq
2.403500000 GHz
CF Step
200.000 kHz
Auto Man
Freq Offset
0 Hz

8DPSK/MCH



8DPSK/HCH



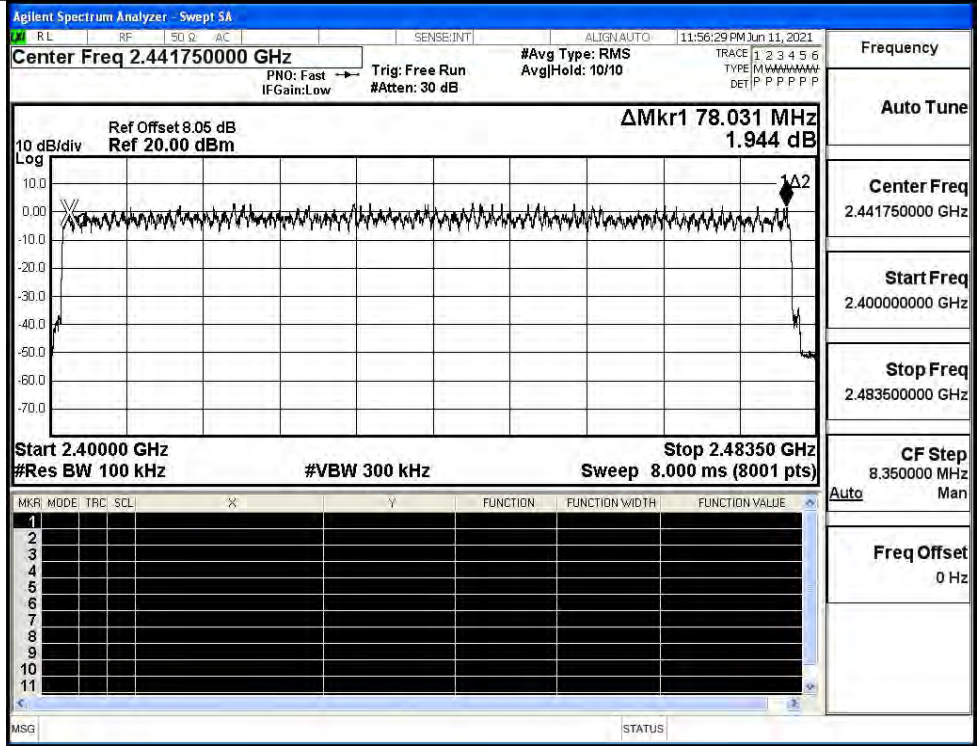
A.4 Hopping Channel Number

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

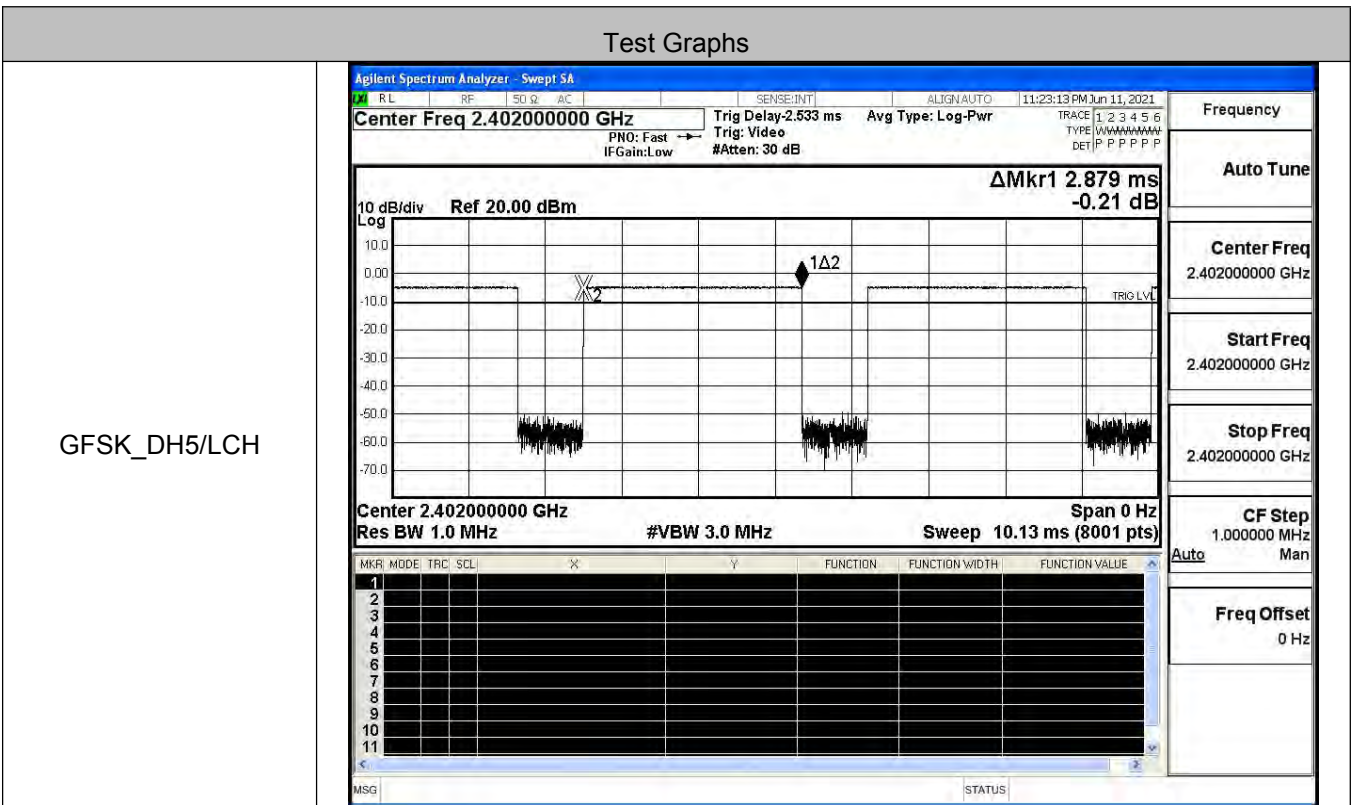
GFSK/Hop	
$\pi/4$ DQPSK/Hop	

8DPSK/Hop

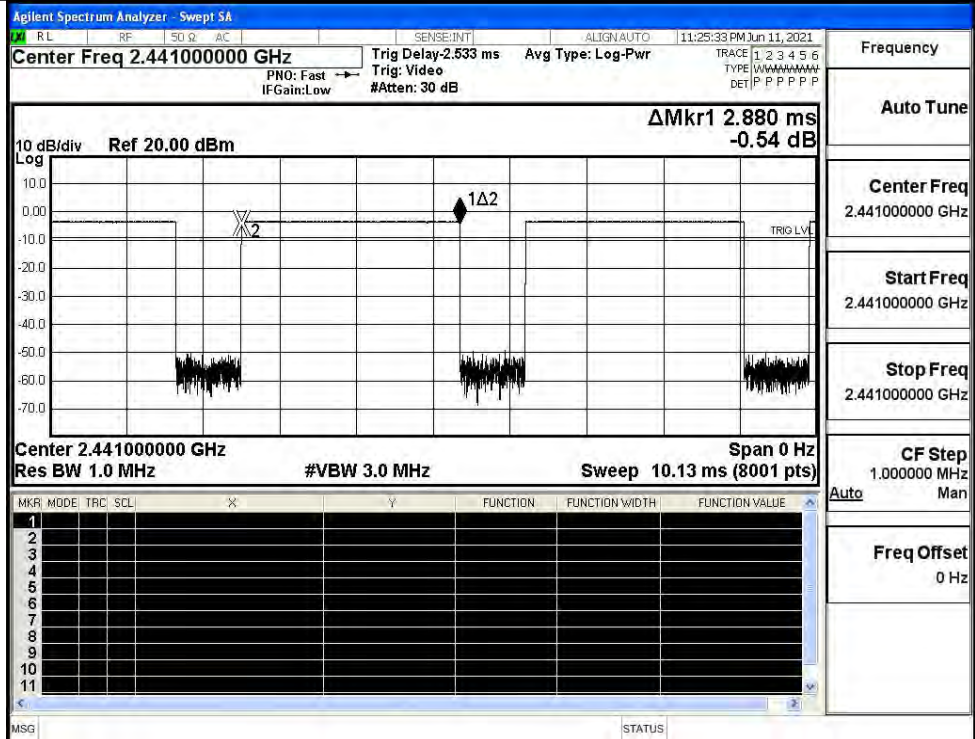


A.5 Dwell Time

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
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
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

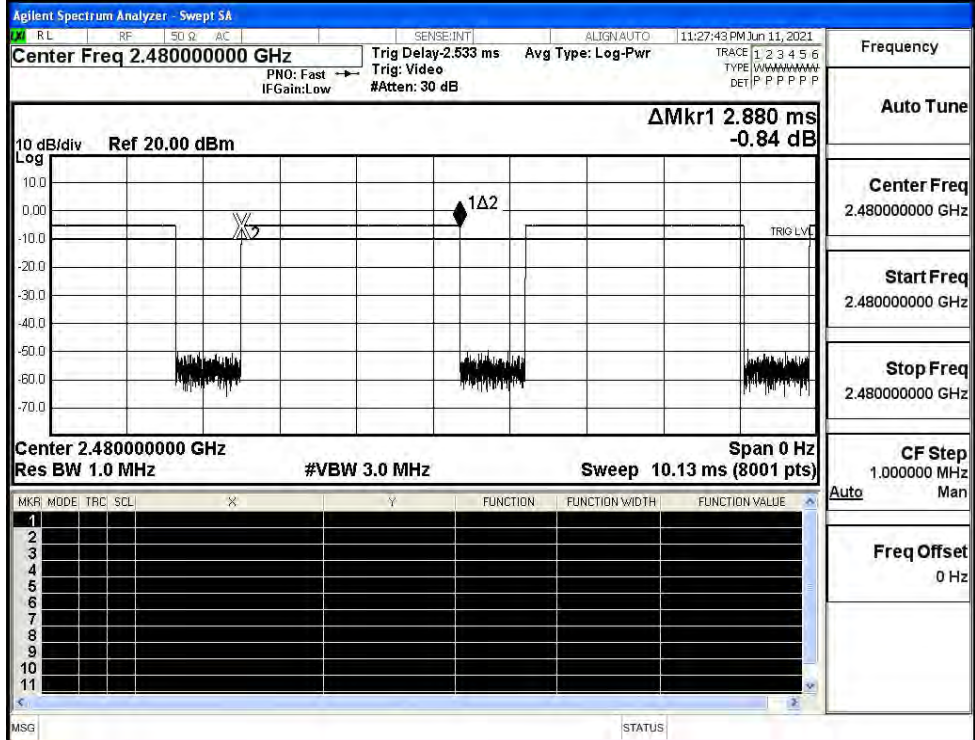


GFSK_DH5/MCH



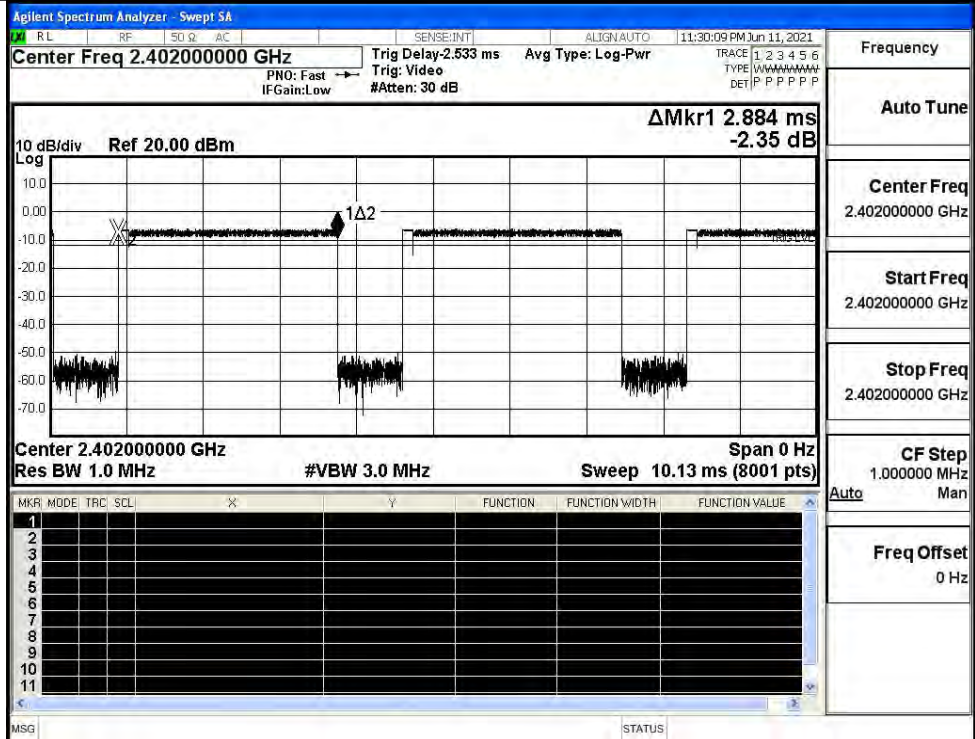
Frequency	
Auto Tune	
Center Freq	2.441000000 GHz
Start Freq	2.441000000 GHz
Stop Freq	2.441000000 GHz
CF Step	1.000000 MHz
Auto	Man
Freq Offset	0 Hz

GFSK_DH5/HCH

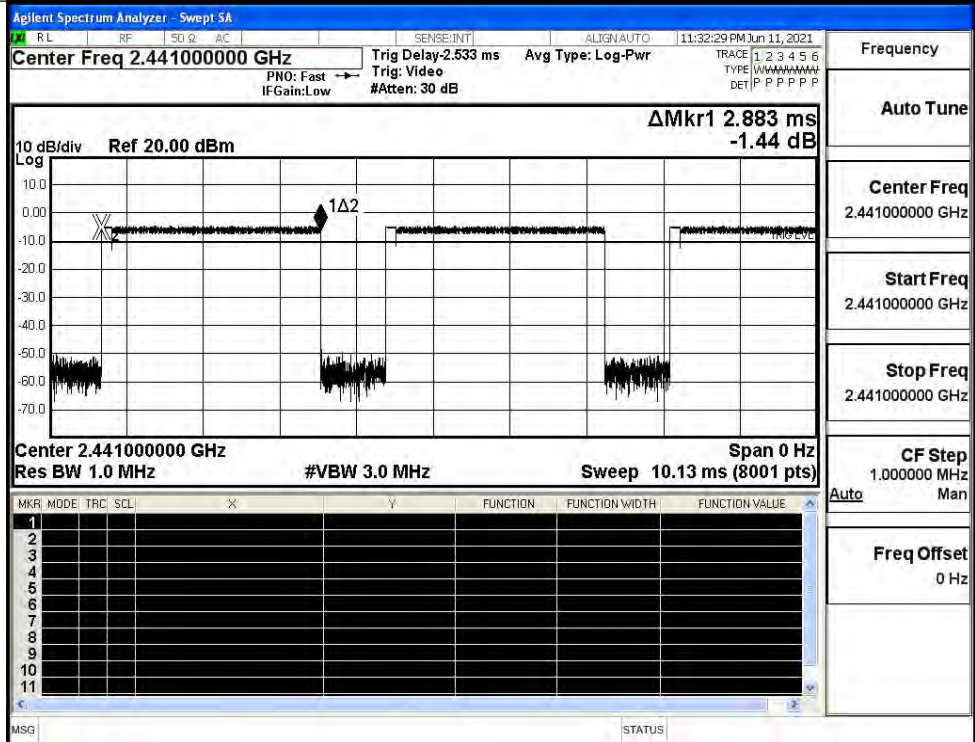


Frequency	
Auto Tune	
Center Freq	2.480000000 GHz
Start Freq	2.480000000 GHz
Stop Freq	2.480000000 GHz
CF Step	1.000000 MHz
Auto	Man
Freq Offset	0 Hz

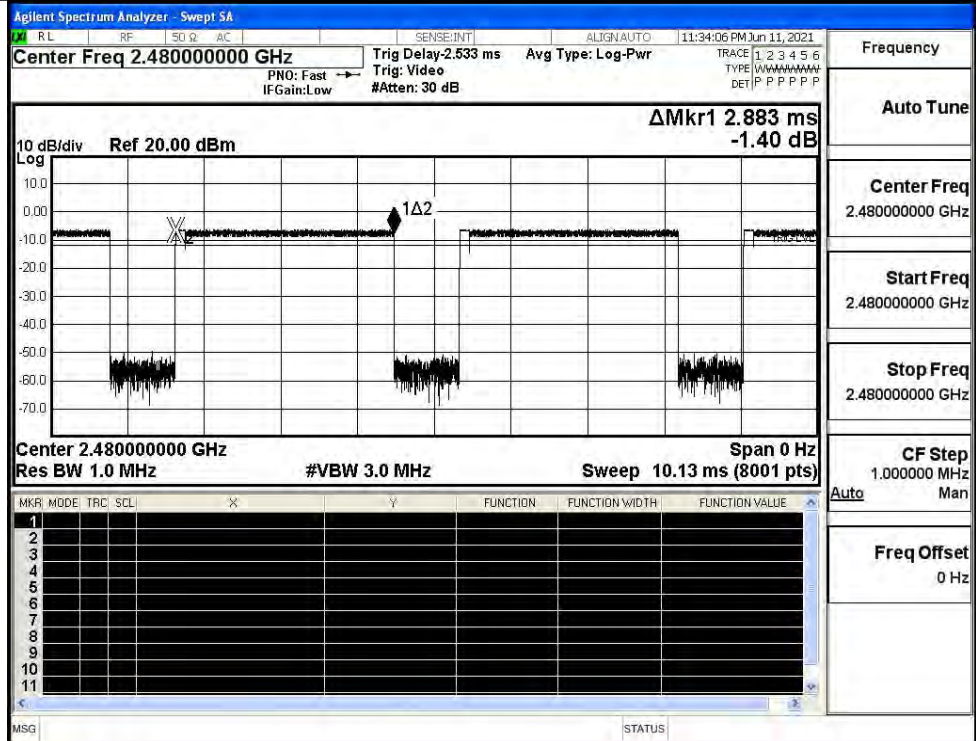
$\pi/4$ DQPSK
_2DH5/LCH



$\pi/4$ DQPSK
_2DH5/MCH

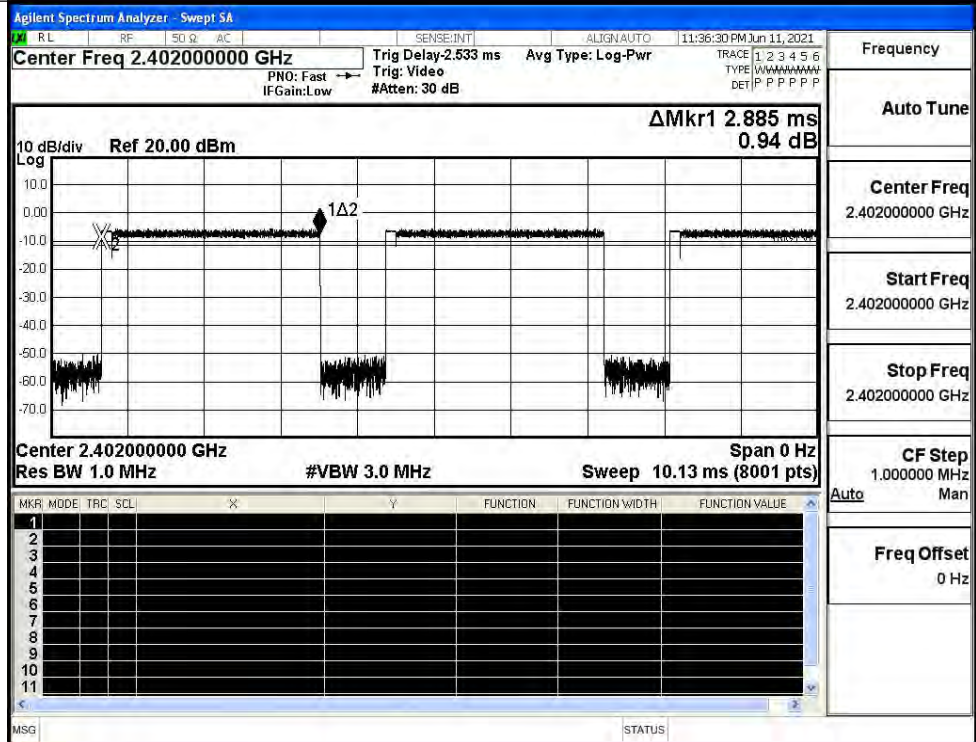


$\pi/4$ DQPSK
_2DH5/HCH



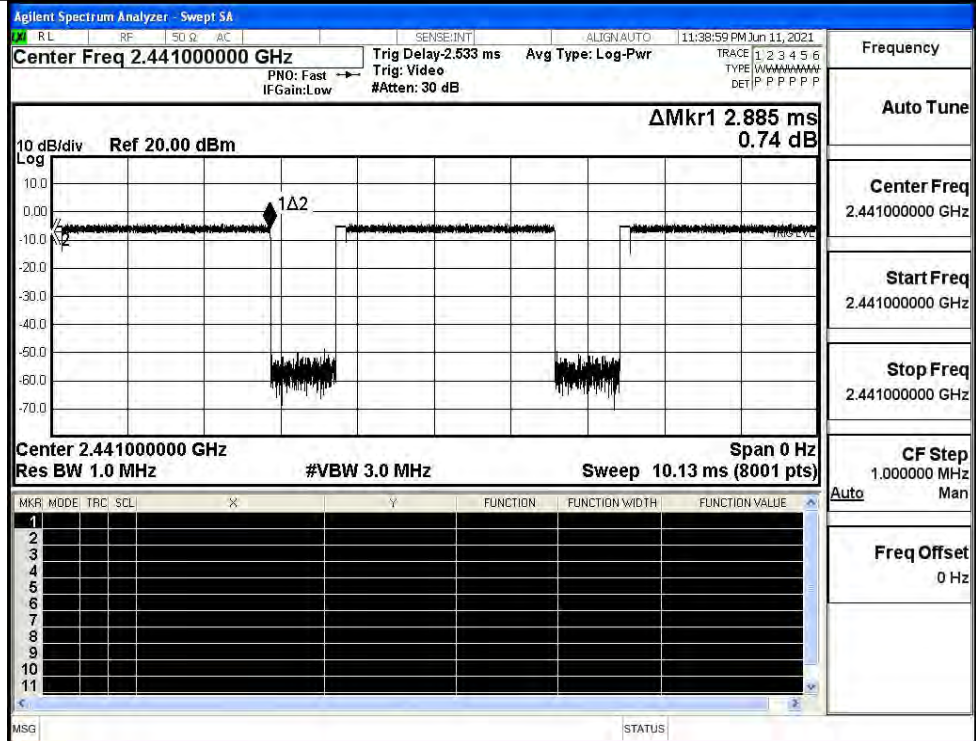
Frequency
Auto Tune
Center Freq 2.480000000 GHz
Start Freq 2.480000000 GHz
Stop Freq 2.480000000 GHz
CF Step 1.000000 MHz Auto Man
Freq Offset 0 Hz

8DPSK_3DH5/LCH

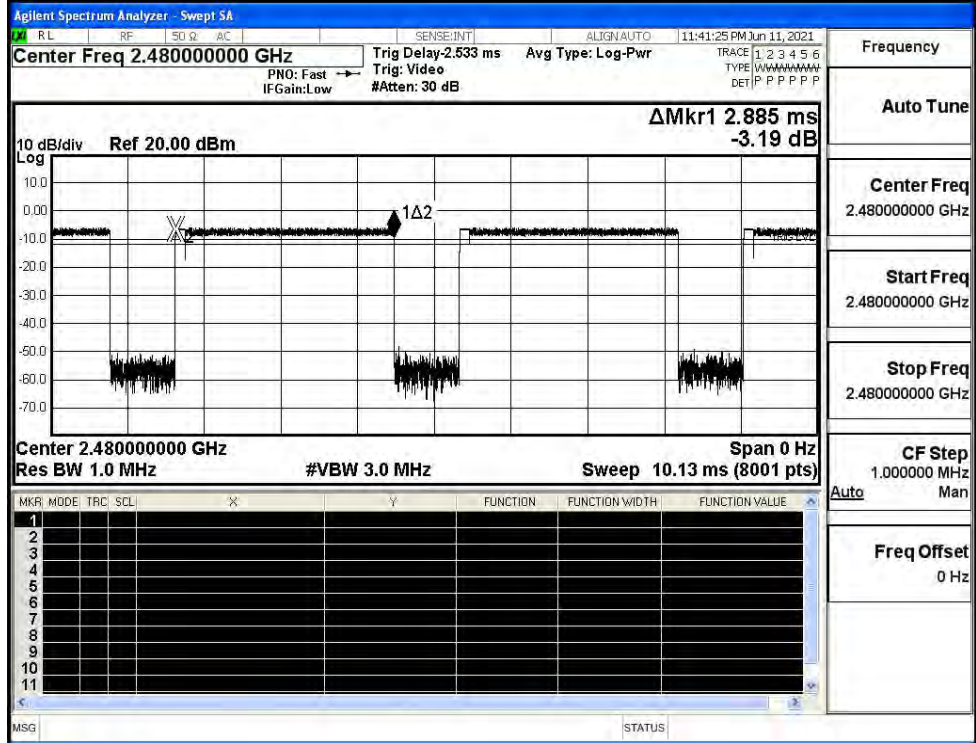


Frequency
Auto Tune
Center Freq 2.402000000 GHz
Start Freq 2.402000000 GHz
Stop Freq 2.402000000 GHz
CF Step 1.000000 MHz Auto Man
Freq Offset 0 Hz

8DPSK_3DH5/MCH



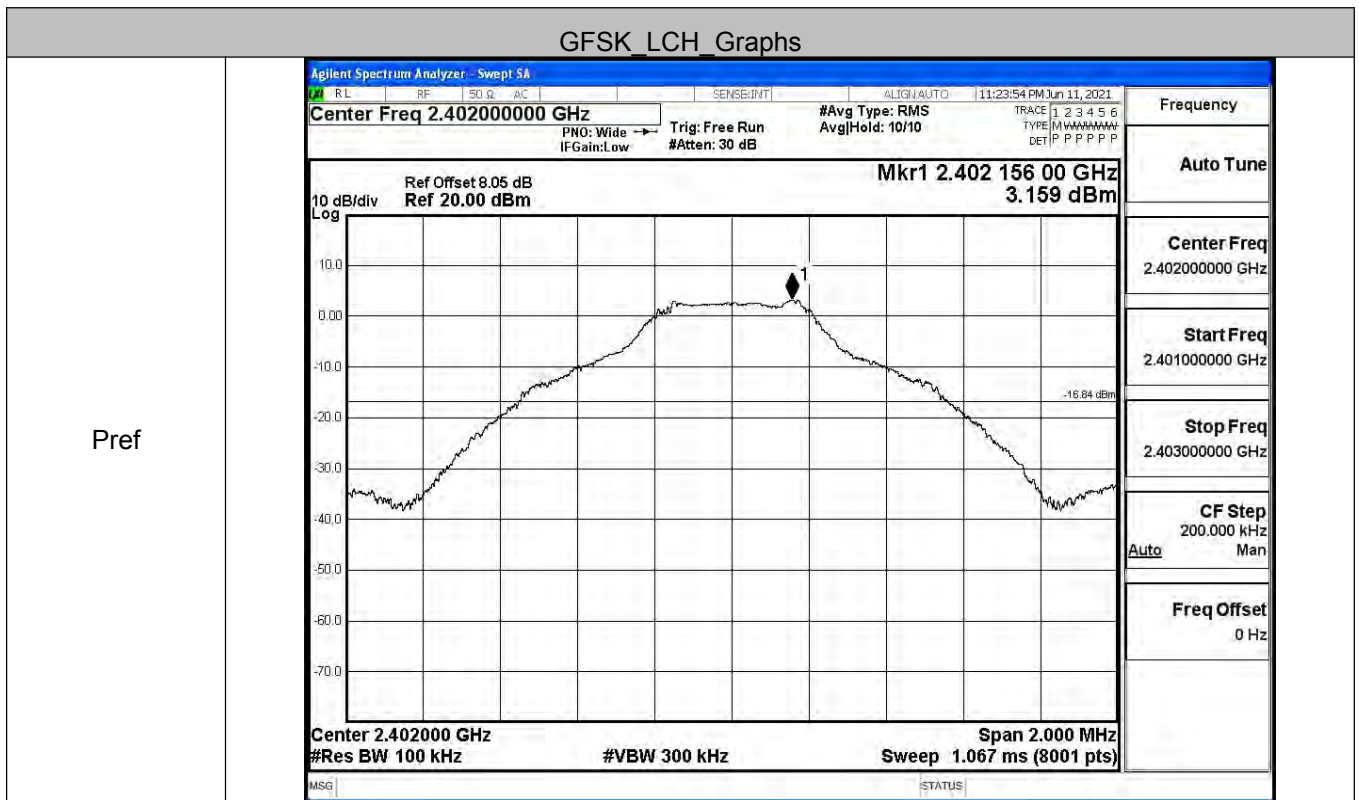
8DPSK_3DH5/HCH



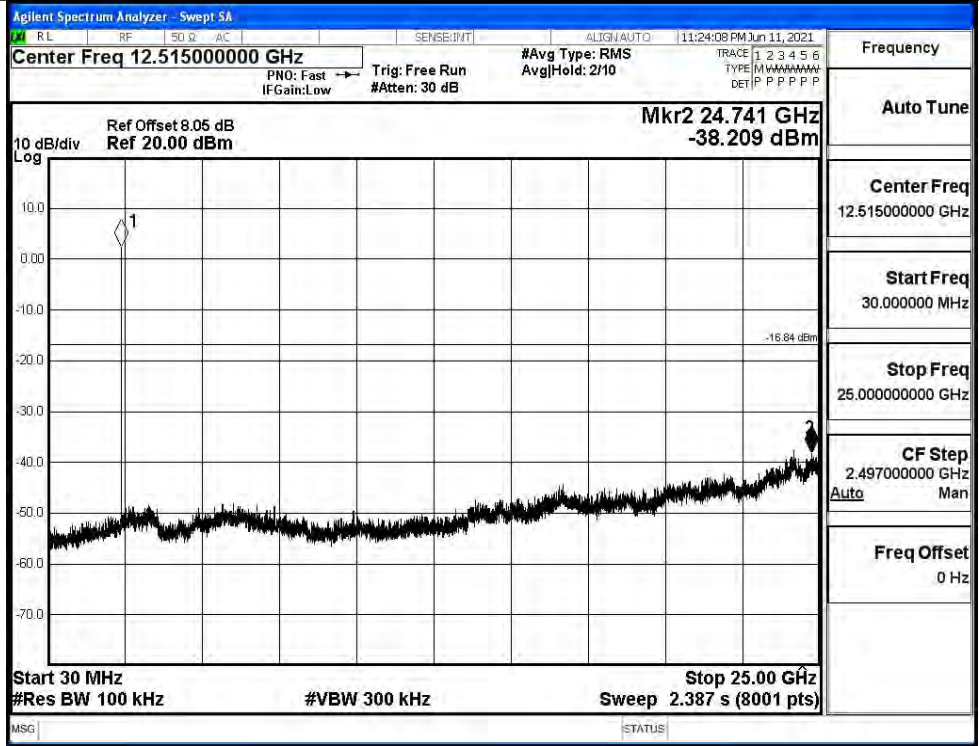
A.6 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	3.159	-38.209	-16.841	PASS
	MCH	4.504	-37.712	-15.496	PASS
	HCH	2.88	-37.698	-17.120	PASS
π/4DQPSK	LCH	1.413	-38.487	-18.587	PASS
	MCH	2.972	-38.169	-17.028	PASS
	HCH	1.579	-38.096	-18.421	PASS
8DPSK	LCH	1.71	-37.090	-18.290	PASS
	MCH	3.002	-38.557	-16.998	PASS
	HCH	1.485	-37.668	-18.515	PASS

GFSK LCH Graphs

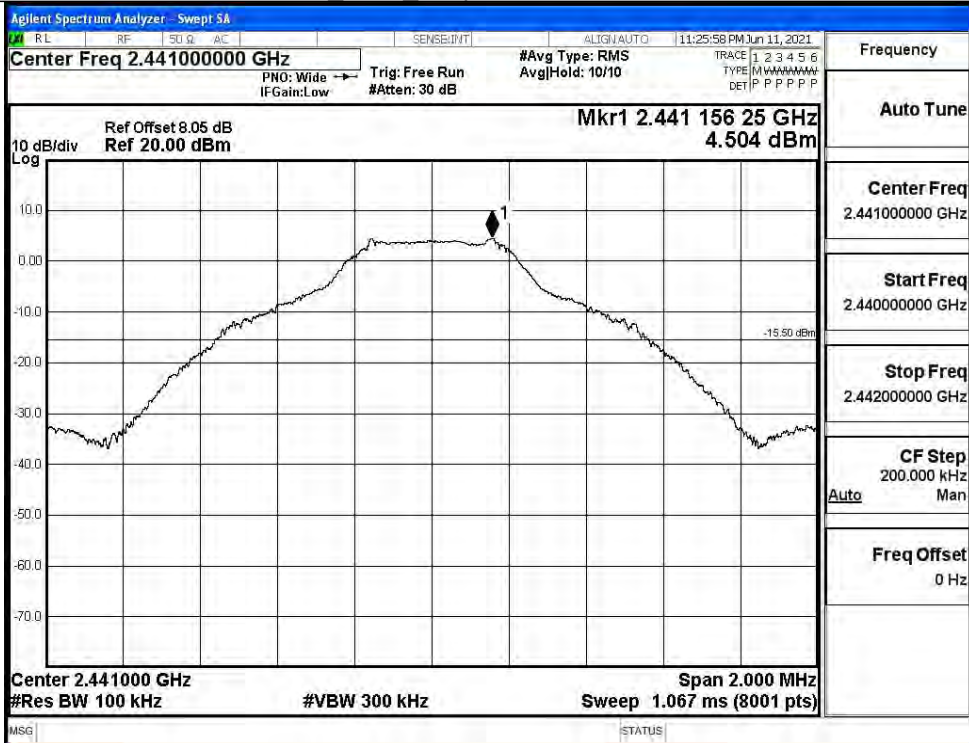


P_{uw}



GFSK_MCH_Graphs

Pref

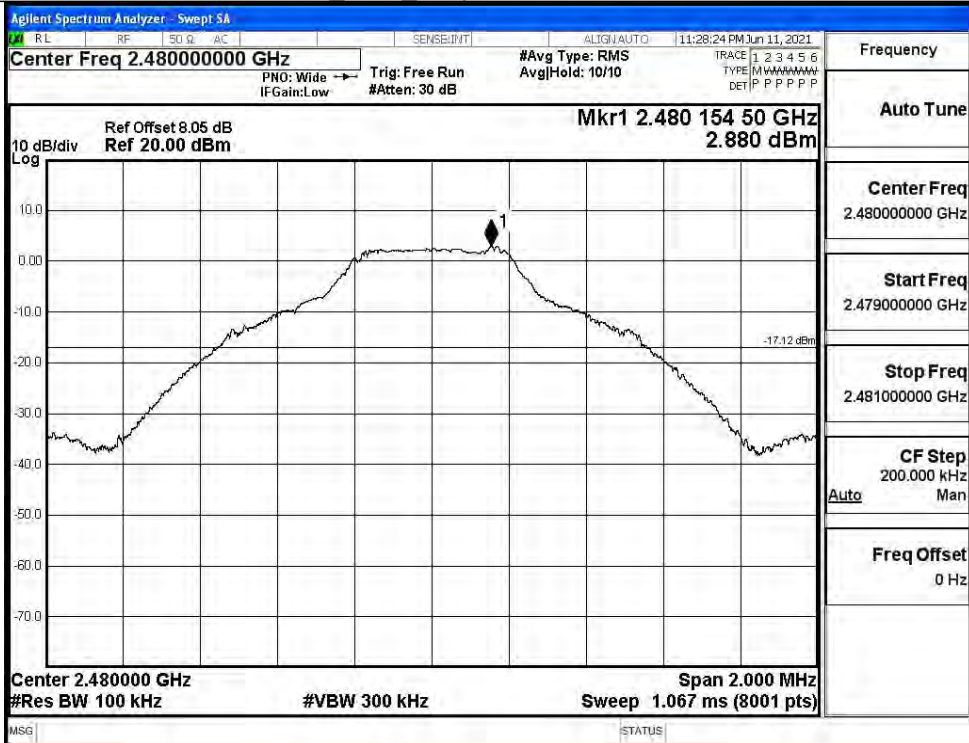


Puw

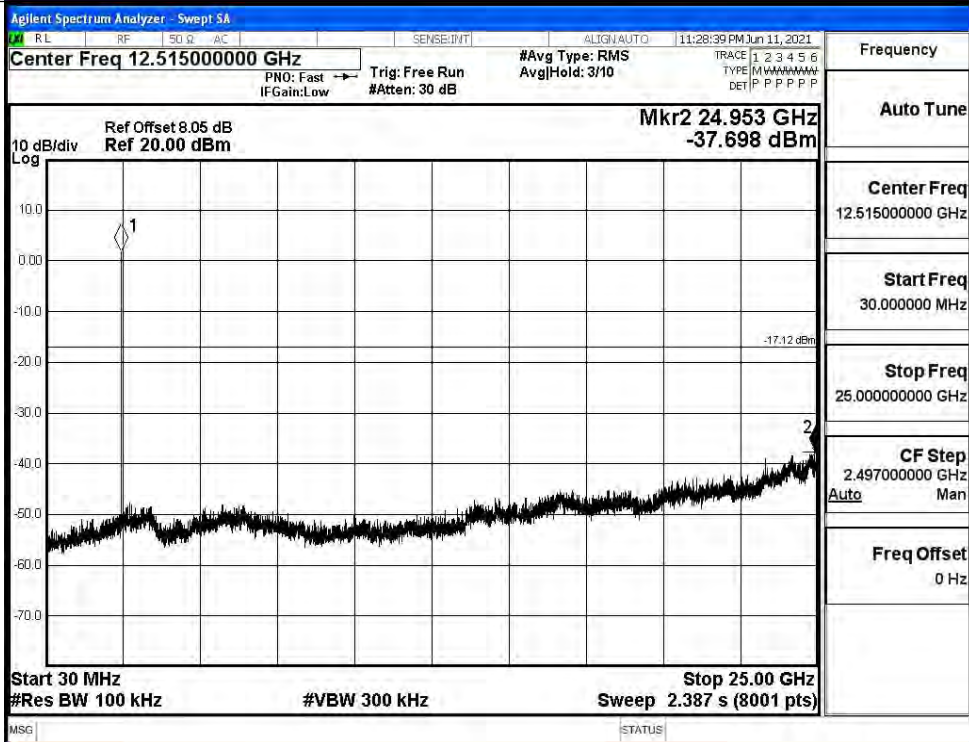


GFSK_HCH_Graphs

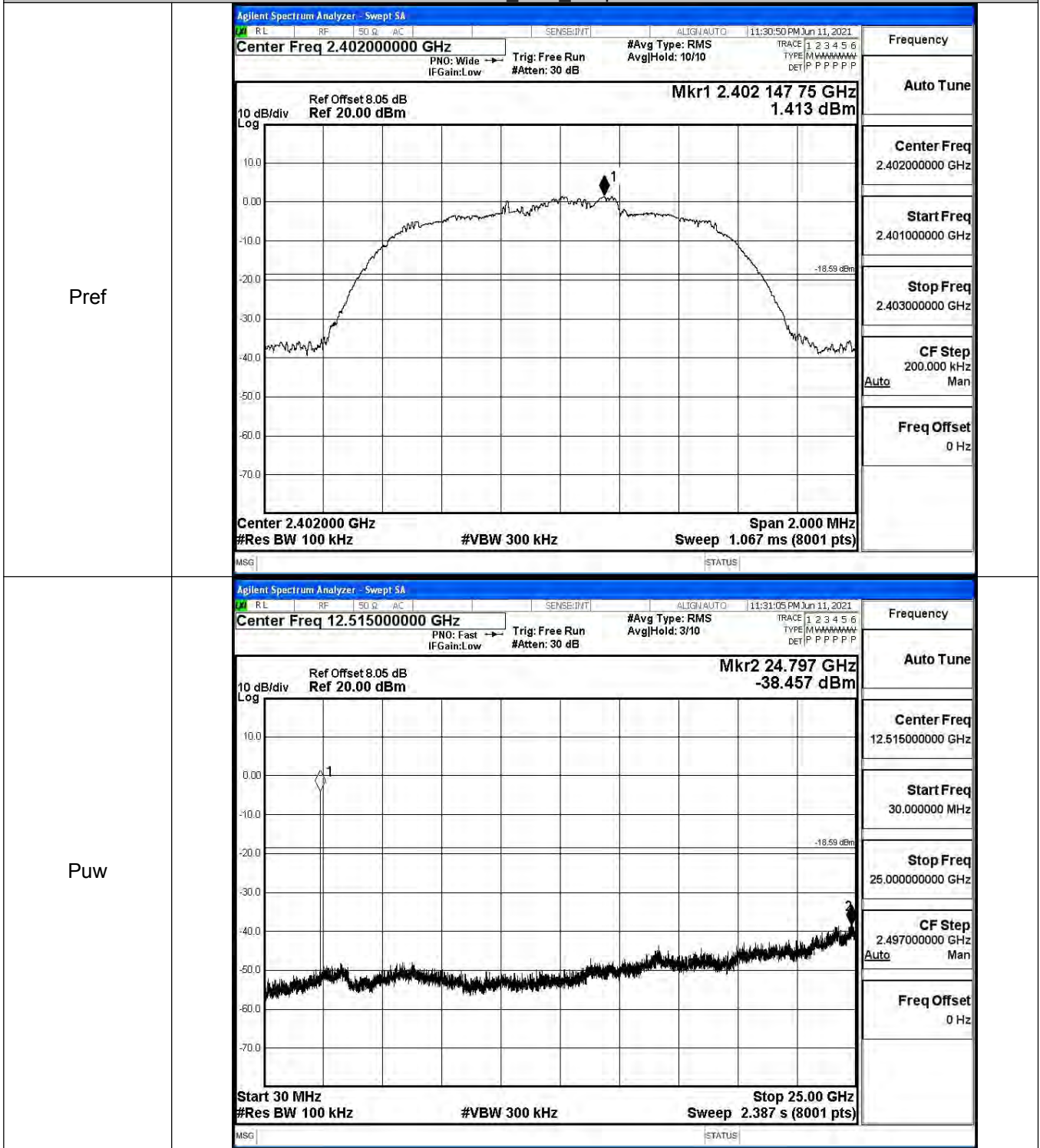
Pref



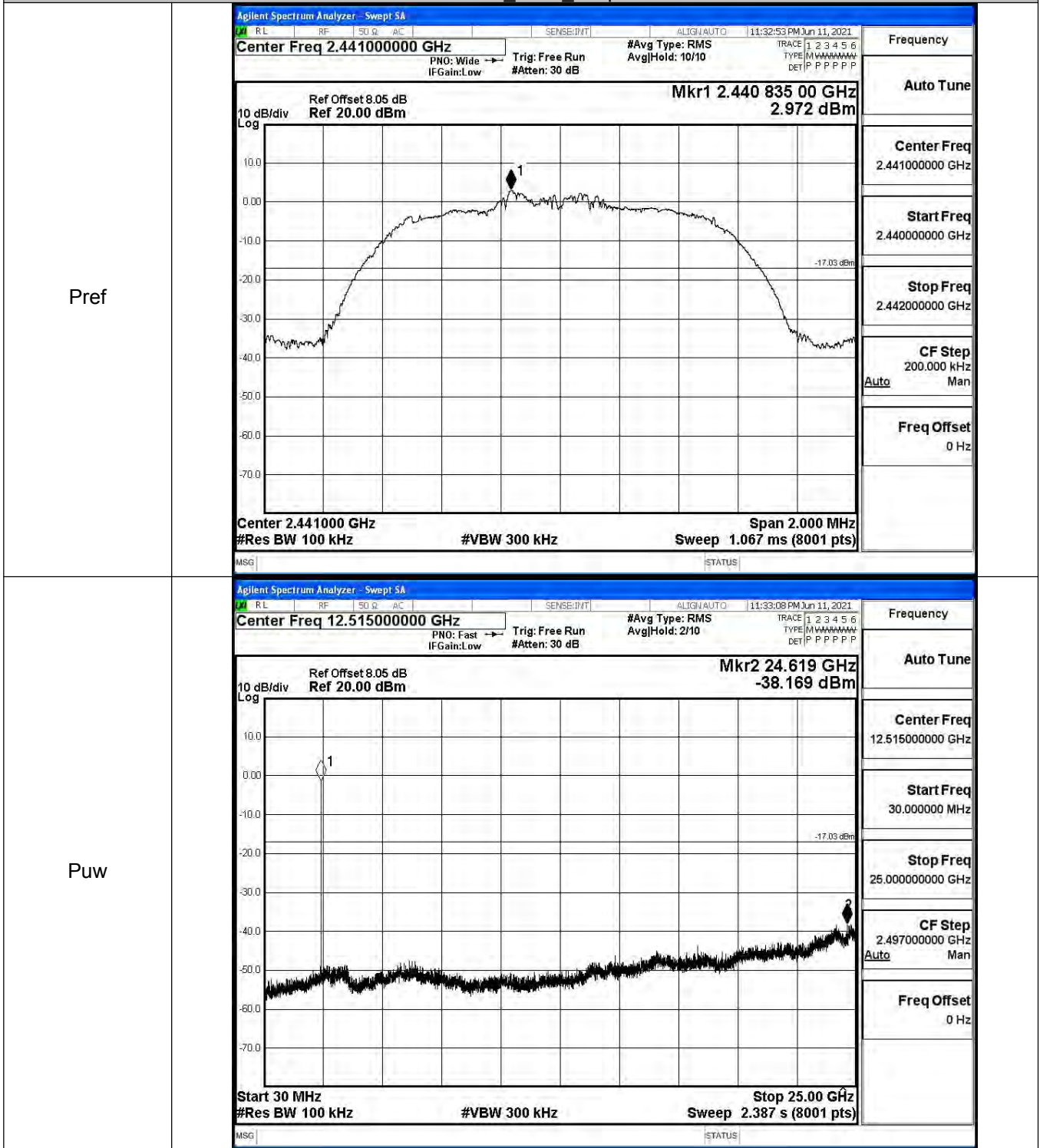
Puw



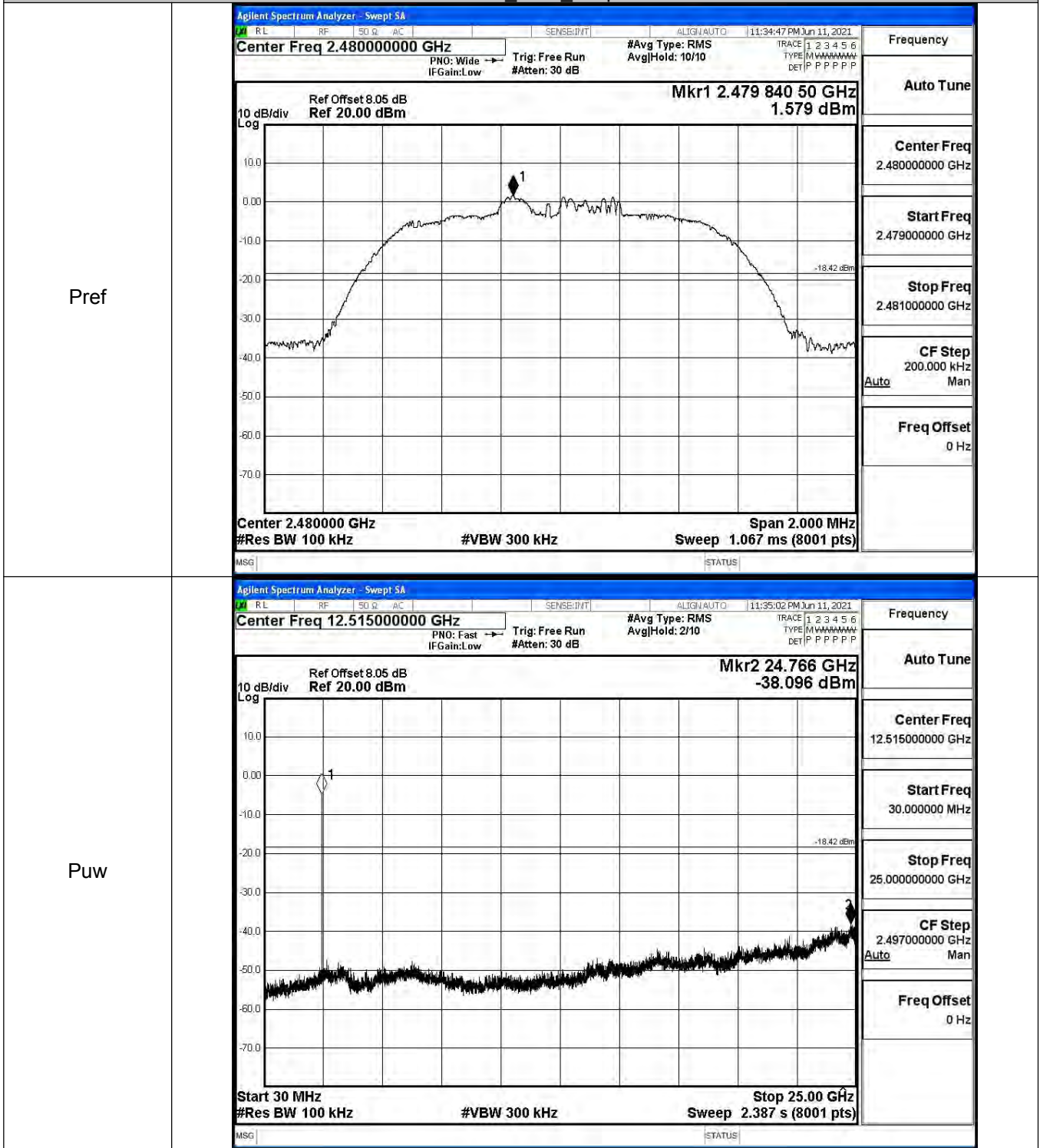
$\pi/4$ DQPSK_LCH_Graphs



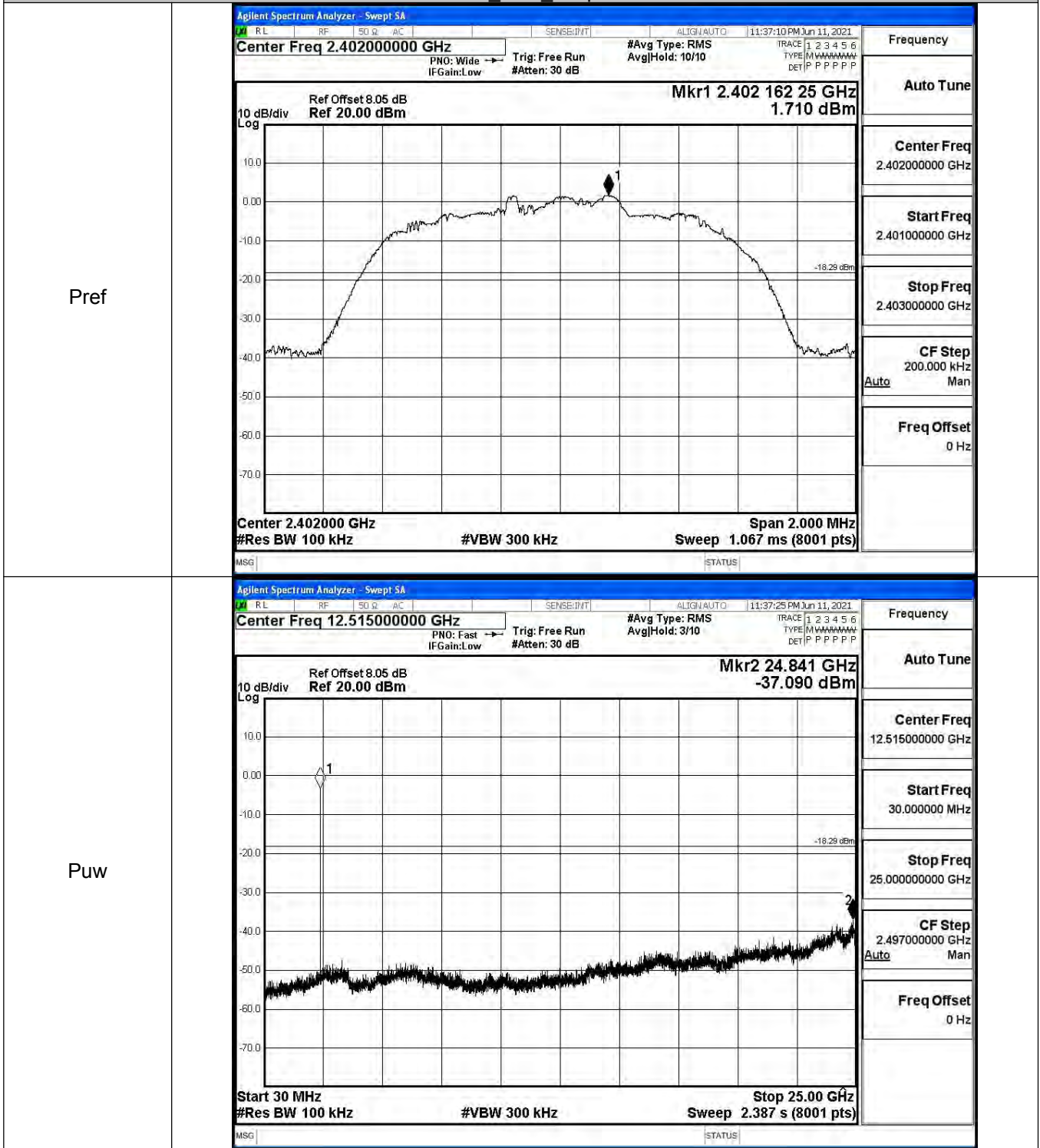
$\pi/4$ DQPSK_MCH_Graphs



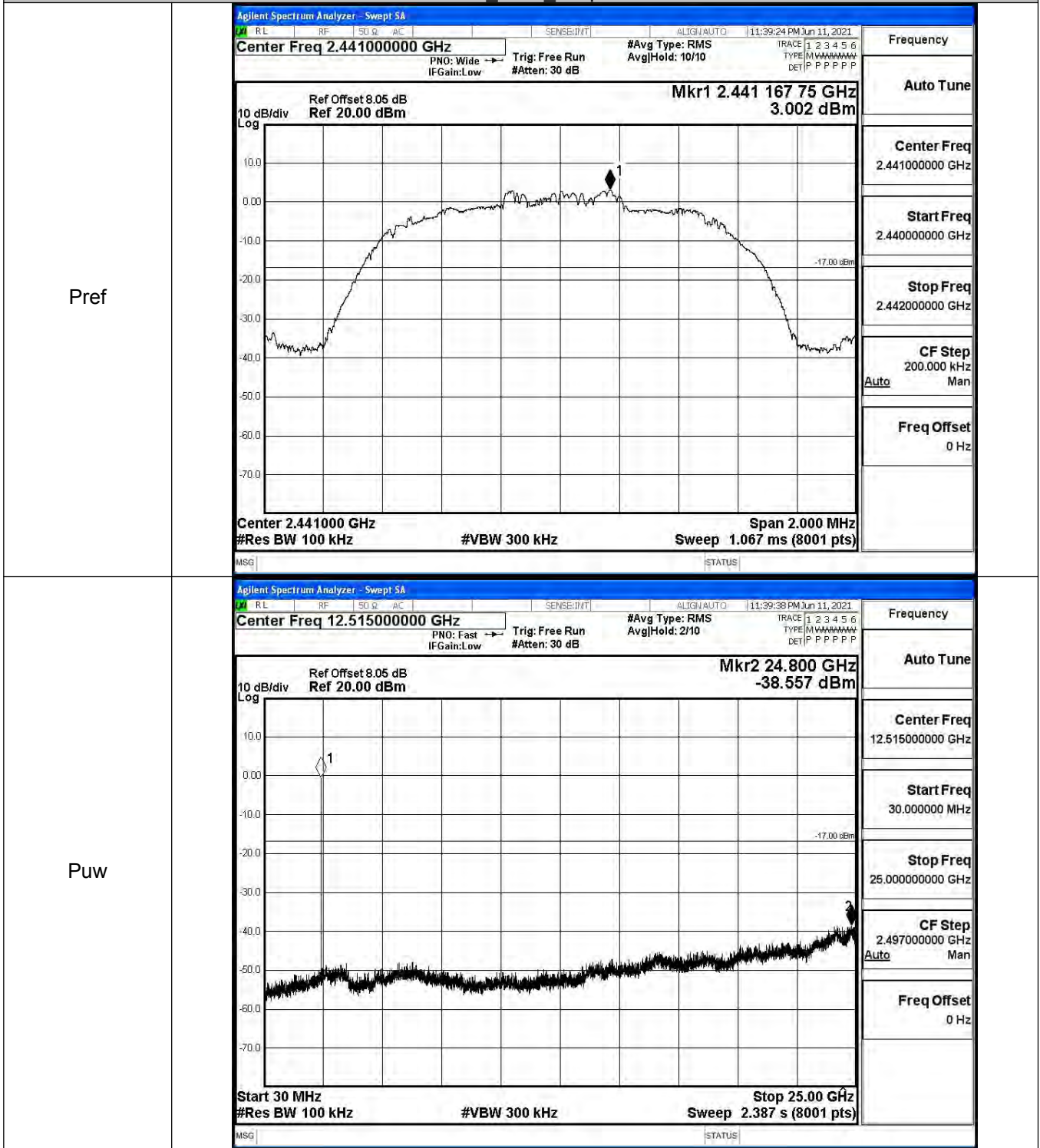
$\pi/4$ DQPSK_HCH_Graphs



8DPSK_LCH_Graphs

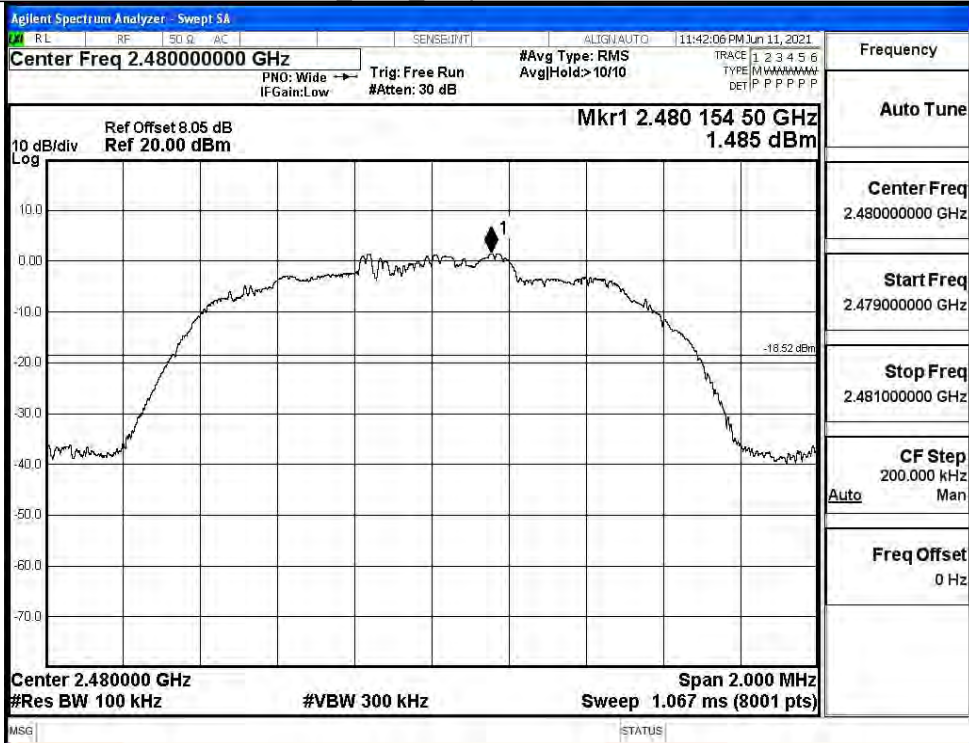


8DPSK_MCH_Graphs

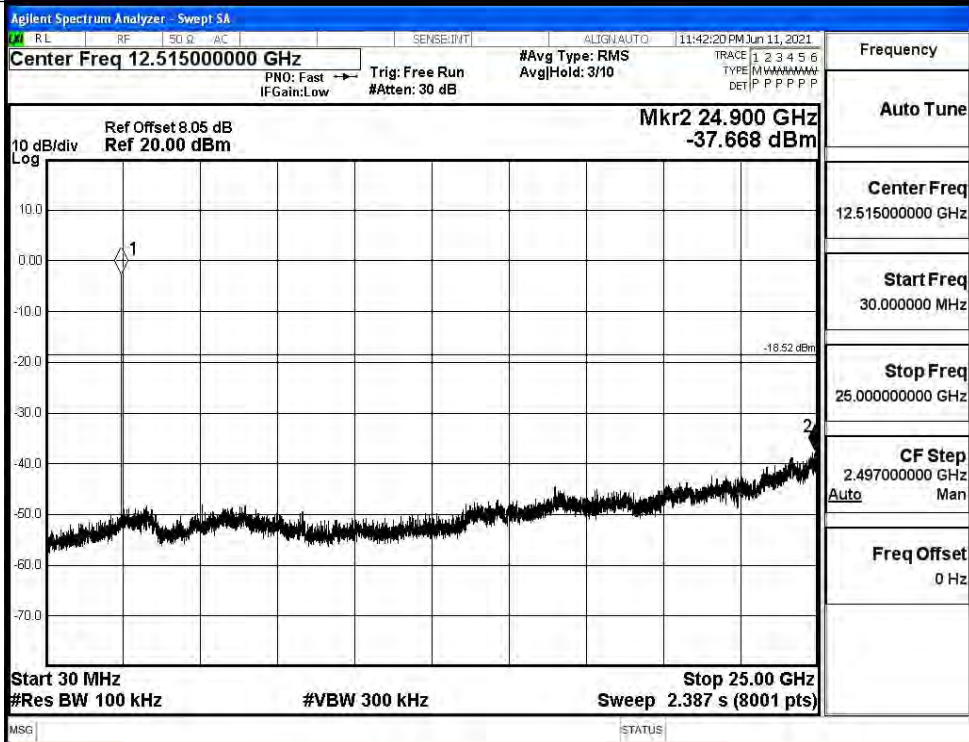


8DPSK_HCH_Graphs

Pref



Puw

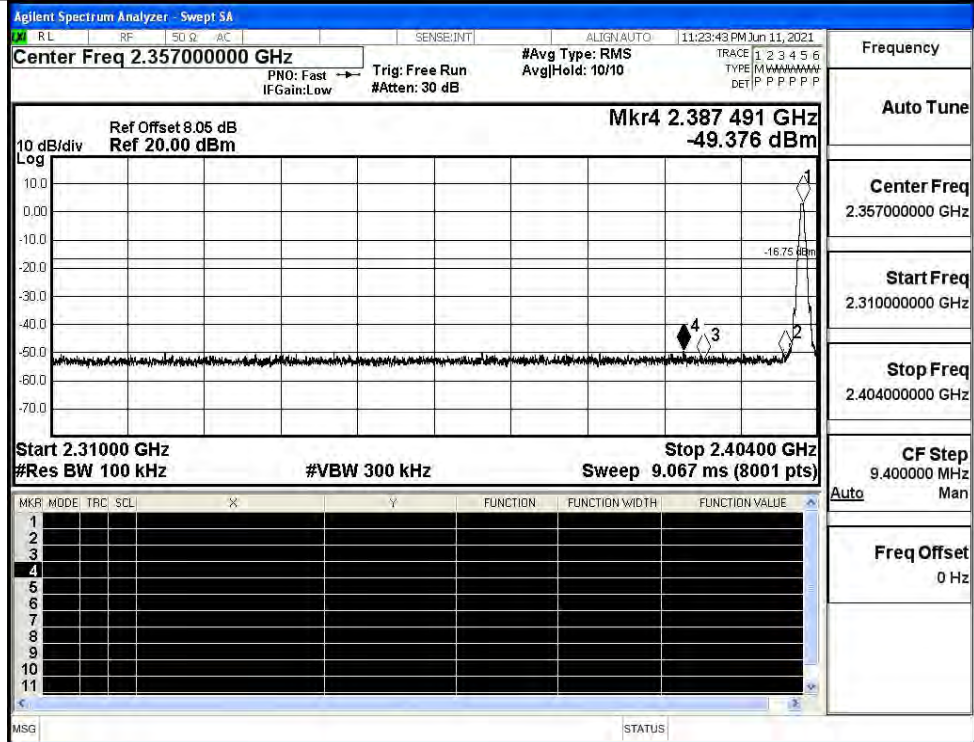


A.7 Band-edge for RF Conducted Emissions

Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	3.254	Off	-49.376	-16.75	PASS
			4.212	On	-49.315	-15.79	PASS
	HCH	2480	2.837	Off	-49.461	-17.16	PASS
			4.407	On	-48.485	-15.59	PASS
π/4DQPSK	LCH	2402	1.420	Off	-49.151	-18.58	PASS
			2.467	On	-48.757	-17.53	PASS
	HCH	2480	1.683	Off	-49.446	-18.32	PASS
			2.450	On	-48.690	-17.55	PASS
8DPSK	LCH	2402	1.729	Off	-49.558	-18.27	PASS
			2.938	On	-49.110	-17.06	PASS
	HCH	2480	1.705	Off	-49.378	-18.3	PASS
			2.669	On	-48.227	-17.33	PASS

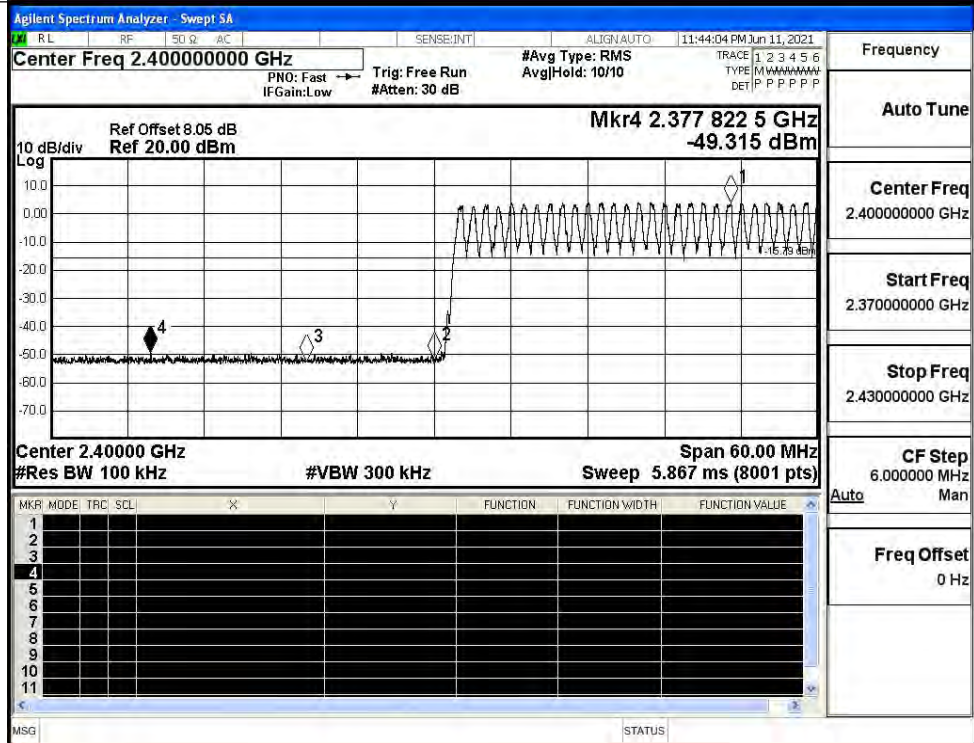
Test Graphs

GFSK/LCH/No Hop



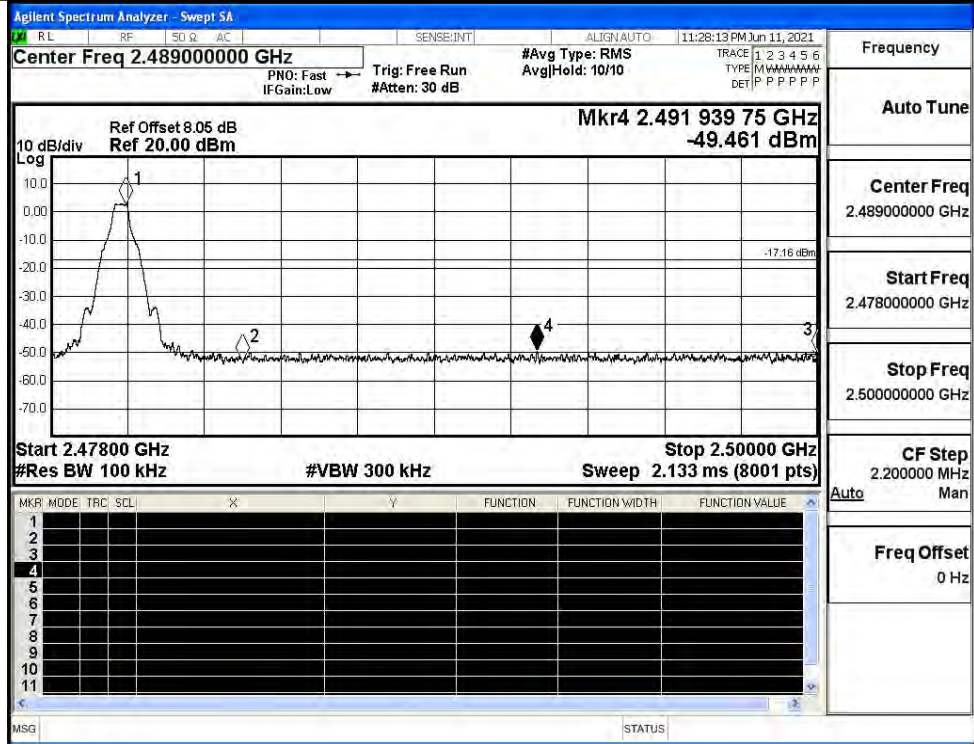
Frequency
Auto Tune
Center Freq 2.357000000 GHz
Start Freq 2.310000000 GHz
Stop Freq 2.404000000 GHz
CF Step 9.400000 MHz
Auto Man
Freq Offset 0 Hz

GFSK/LCH/Hop

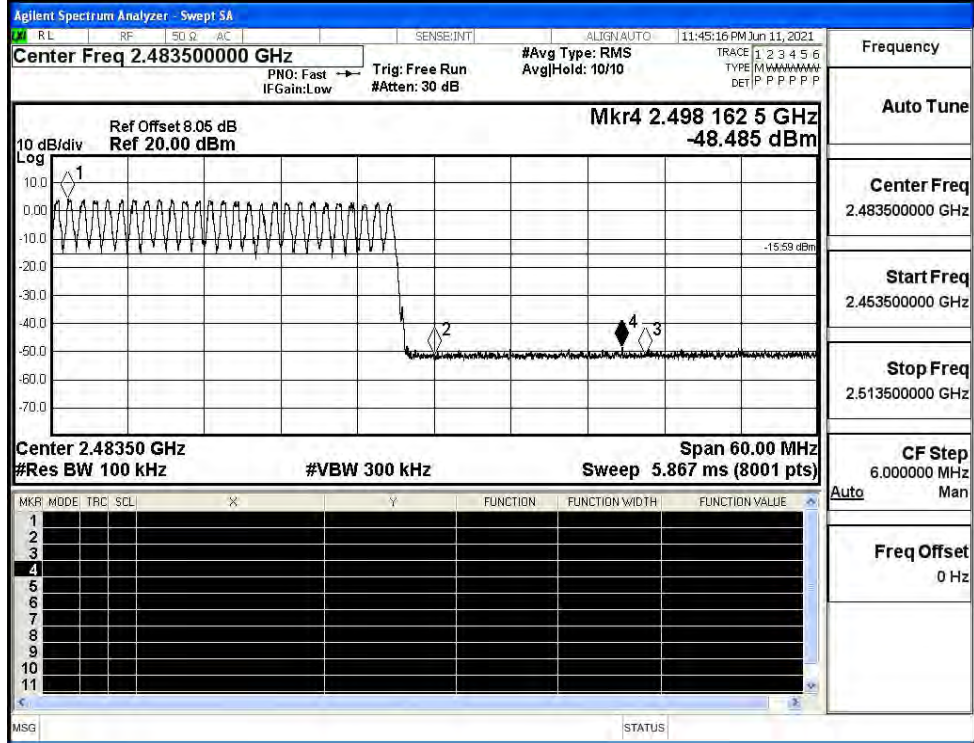


Frequency
Auto Tune
Center Freq 2.400000000 GHz
Start Freq 2.370000000 GHz
Stop Freq 2.430000000 GHz
CF Step 6.000000 MHz
Auto Man
Freq Offset 0 Hz

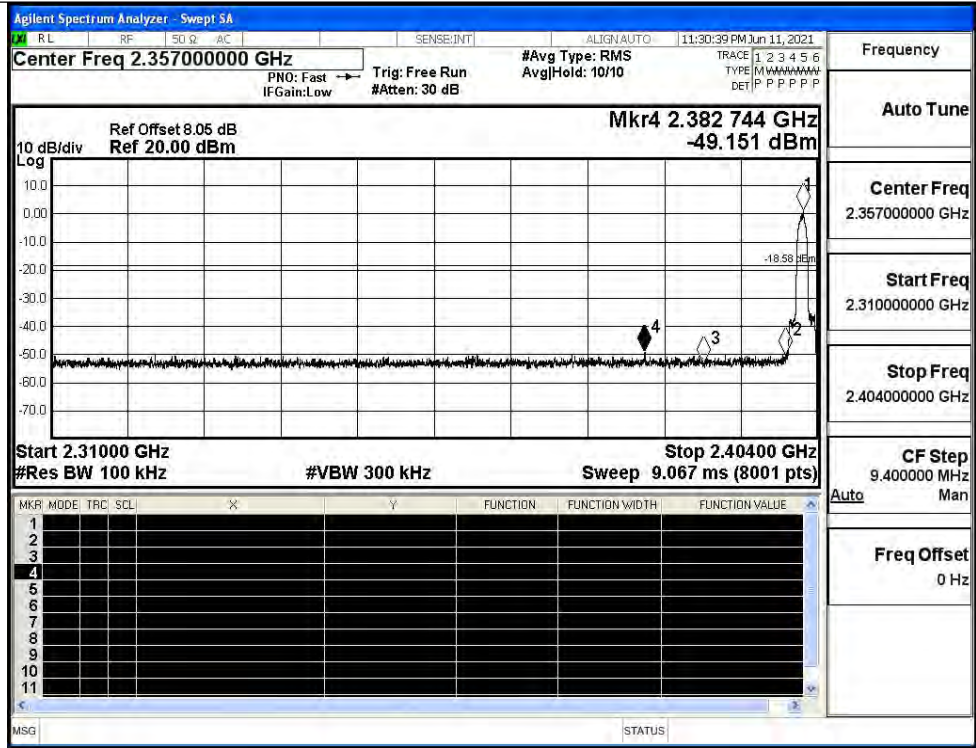
GFSK/HCH/No Hop



GFSK/HCH/Hop

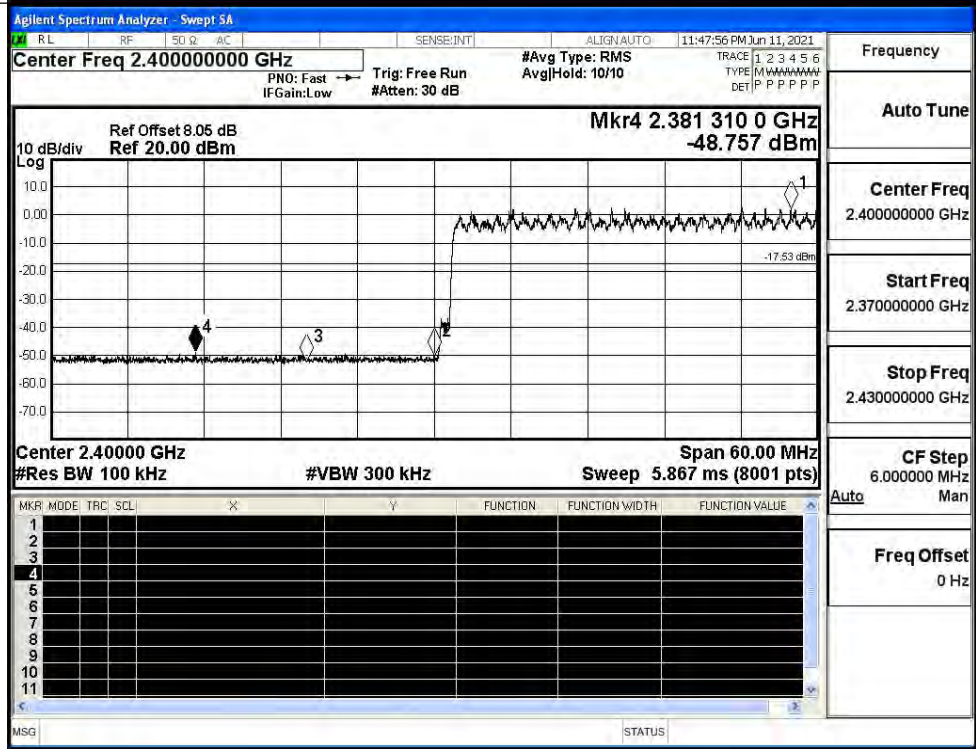


$\pi/4$ DQPSK/LCH/No
Hop



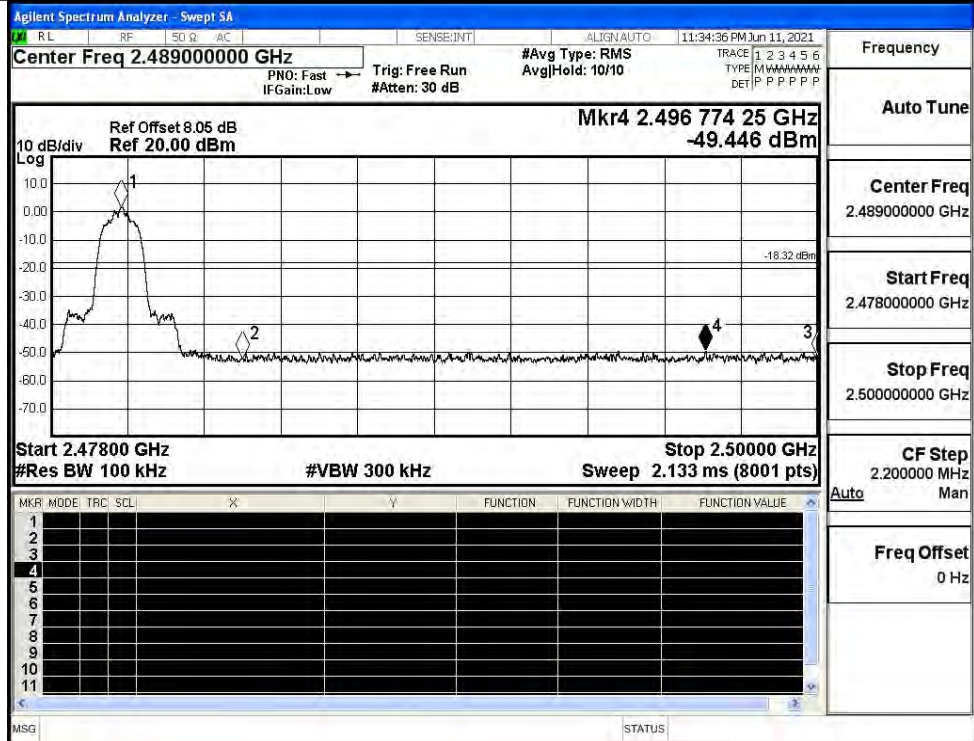
Frequency
Auto Tune
Center Freq 2.357000000 GHz
Start Freq 2.310000000 GHz
Stop Freq 2.404000000 GHz
CF Step 9.400000 MHz
Auto Man
Freq Offset 0 Hz

$\pi/4$ DQPSK/LCH/Hop



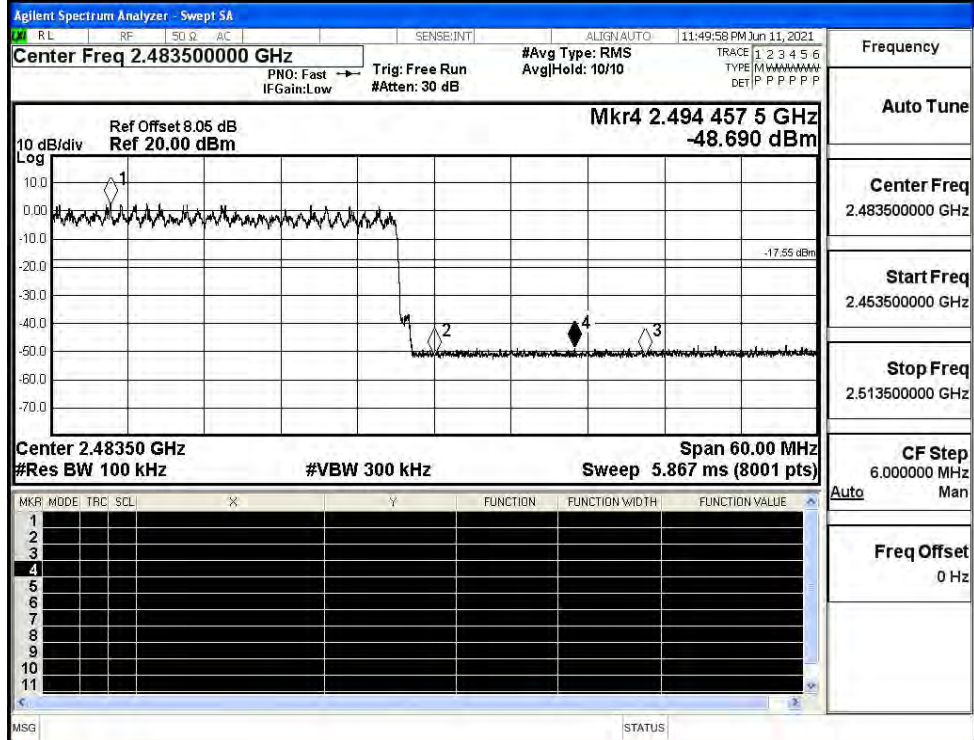
Frequency
Auto Tune
Center Freq 2.400000000 GHz
Start Freq 2.370000000 GHz
Stop Freq 2.430000000 GHz
CF Step 6.000000 MHz
Auto Man
Freq Offset 0 Hz

π /4DQPSK/HCH/No Hop



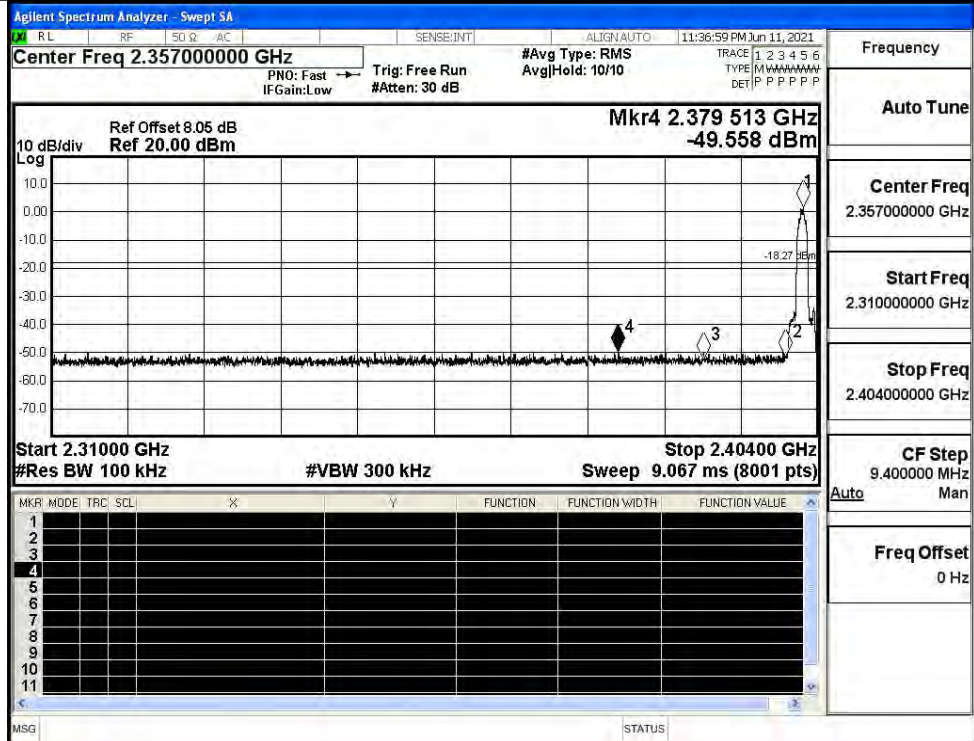
Frequency
Auto Tune
Center Freq 2.489000000 GHz
Start Freq 2.478000000 GHz
Stop Freq 2.500000000 GHz
CF Step 2.200000 MHz
Auto Man
Freq Offset 0 Hz

π /4DQPSK/HCH/Hop



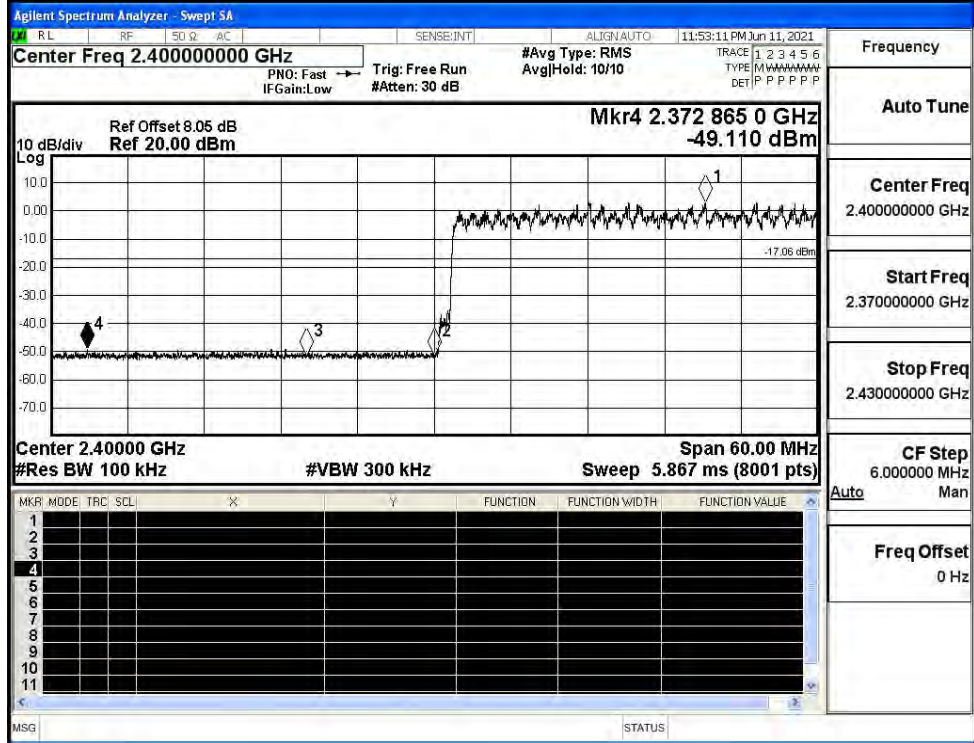
Frequency
Auto Tune
Center Freq 2.483500000 GHz
Start Freq 2.463500000 GHz
Stop Freq 2.513500000 GHz
CF Step 6.000000 MHz
Auto Man
Freq Offset 0 Hz

8DPSK/LCH/No Hop



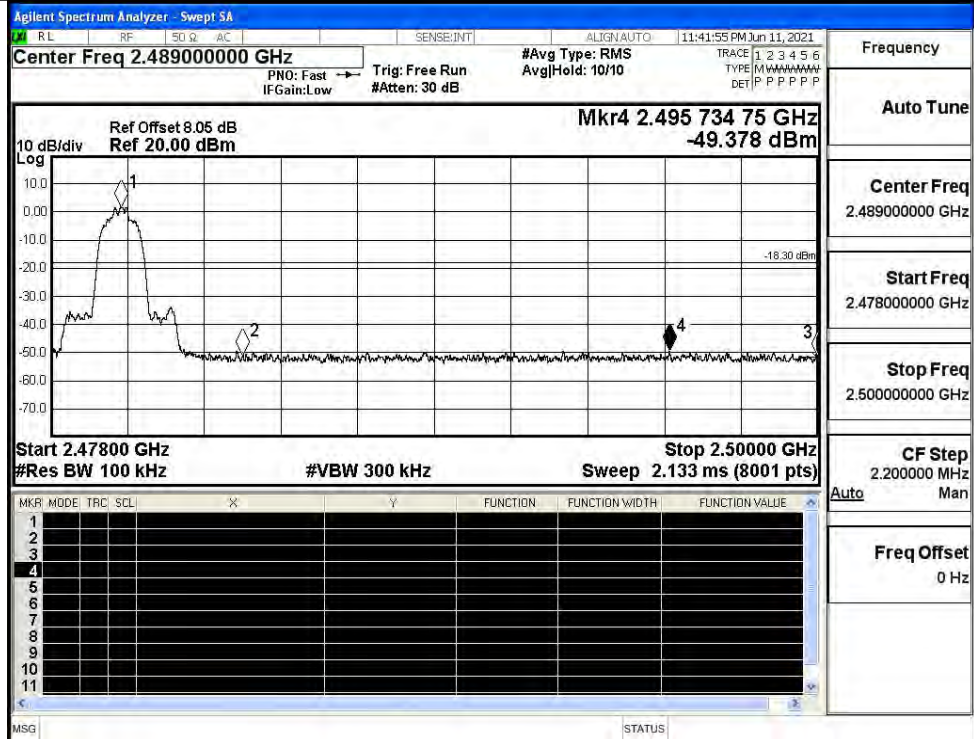
Frequency
Auto Tune
Center Freq 2.357000000 GHz
Start Freq 2.310000000 GHz
Stop Freq 2.404000000 GHz
CF Step 9.400000 MHz
Auto Man
Freq Offset 0 Hz

8DPSK/LCH/Hop



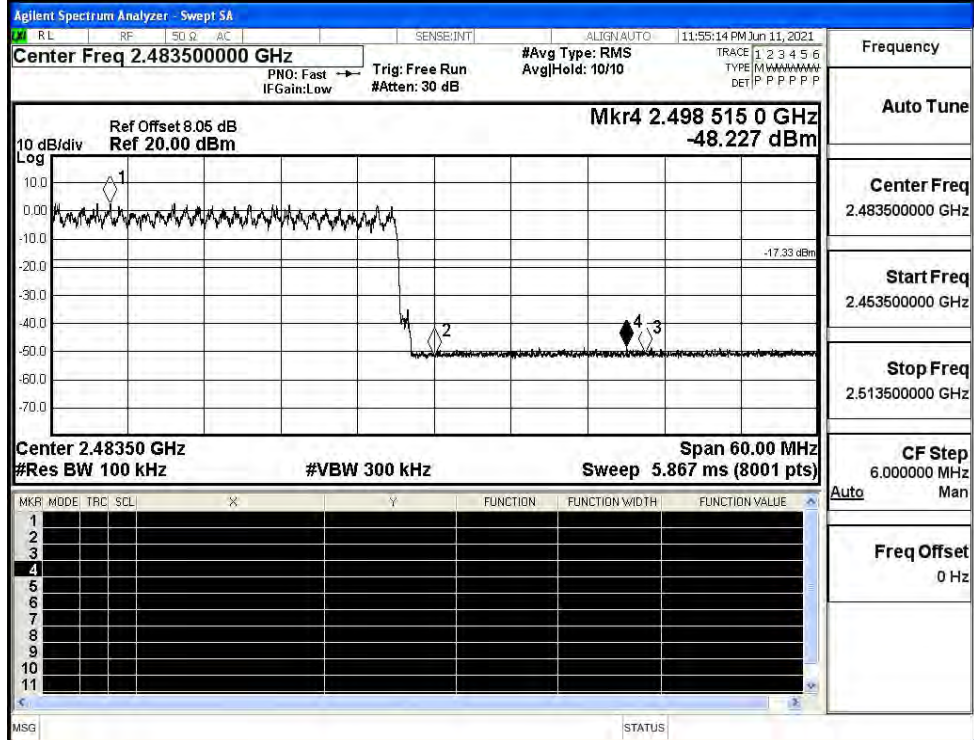
Frequency
Auto Tune
Center Freq 2.400000000 GHz
Start Freq 2.370000000 GHz
Stop Freq 2.430000000 GHz
CF Step 6.000000 MHz
Auto Man
Freq Offset 0 Hz

8DPSK/HCH/No Hop



Frequency
Auto Tune
Center Freq 2.489000000 GHz
Start Freq 2.478000000 GHz
Stop Freq 2.500000000 GHz
CF Step 2.200000 MHz
Auto Man
Freq Offset 0 Hz

8DPSK/HCH/Hop

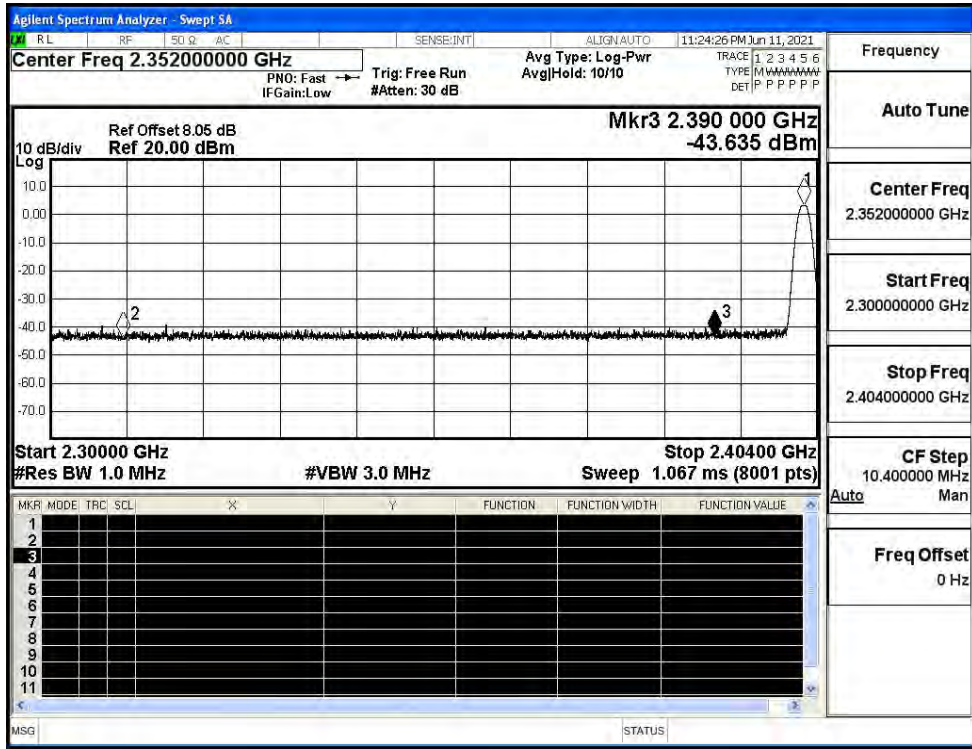


Frequency
Auto Tune
Center Freq 2.483500000 GHz
Start Freq 2.453500000 GHz
Stop Freq 2.513500000 GHz
CF Step 6.000000 MHz
Auto Man
Freq Offset 0 Hz

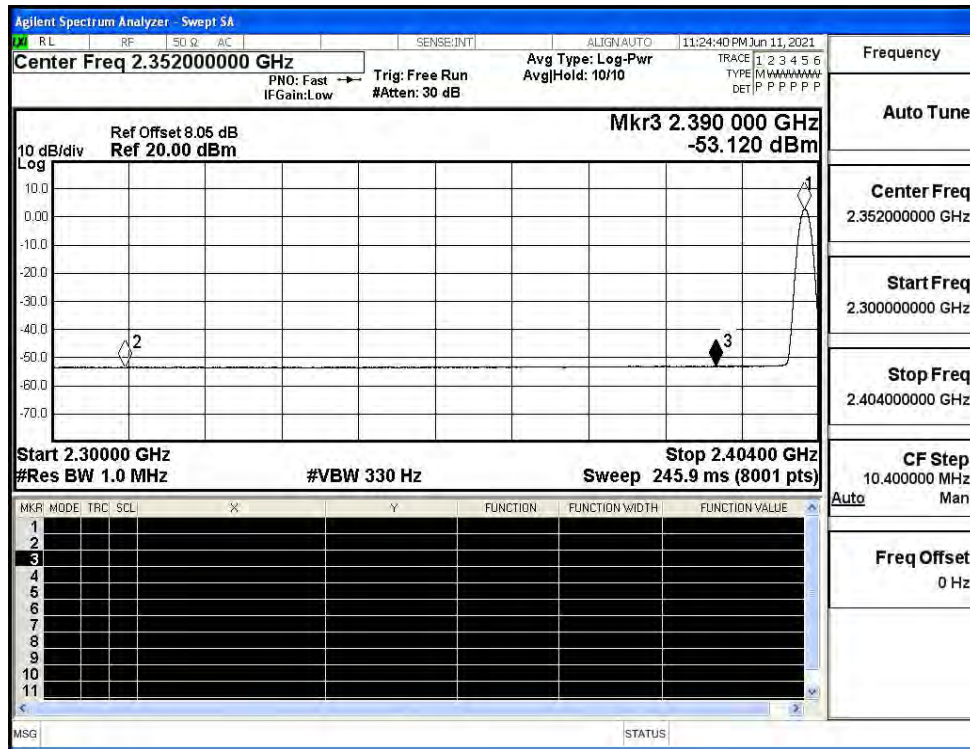
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-44.18	2.0	0	53.05	PEAK	74	PASS
	Off	2310.0	-53.59	2.0	0	43.64	AV	54	PASS
	Off	2390.0	-43.64	2.0	0	53.59	PEAK	74	PASS
	Off	2390.0	-53.12	2.0	0	44.11	AV	54	PASS
	Off	2483.5	-42.49	2.0	0	54.74	PEAK	74	PASS
	Off	2483.5	-52.57	2.0	0	44.66	AV	54	PASS
	Off	2500.0	-41.84	2.0	0	55.39	PEAK	74	PASS
	Off	2500.0	-52.56	2.0	0	44.67	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-43.65	2.0	0	53.58	PEAK	74	PASS
	Off	2310.0	-53.46	2.0	0	43.77	AV	54	PASS
	Off	2390.0	-43.06	2.0	0	54.17	PEAK	74	PASS
	Off	2390.0	-53.10	2.0	0	44.13	AV	54	PASS
	Off	2483.5	-40.67	2.0	0	56.56	PEAK	74	PASS
	Off	2483.5	-52.42	2.0	0	44.81	AV	54	PASS
	Off	2500.0	-43.06	2.0	0	54.17	PEAK	74	PASS
	Off	2500.0	-52.52	2.0	0	44.71	AV	54	PASS
8DPSK	Off	2310.0	-42.74	2.0	0	54.49	PEAK	74	PASS
	Off	2310.0	-53.57	2.0	0	43.66	AV	54	PASS
	Off	2390.0	-42.31	2.0	0	54.92	PEAK	74	PASS
	Off	2390.0	-53.20	2.0	0	44.03	AV	54	PASS
	Off	2483.5	-43.24	2.0	0	53.99	PEAK	74	PASS
	Off	2483.5	-52.52	2.0	0	44.71	AV	54	PASS
	Off	2500.0	-40.71	2.0	0	56.52	PEAK	74	PASS
	Off	2500.0	-52.54	2.0	0	44.69	AV	54	PASS

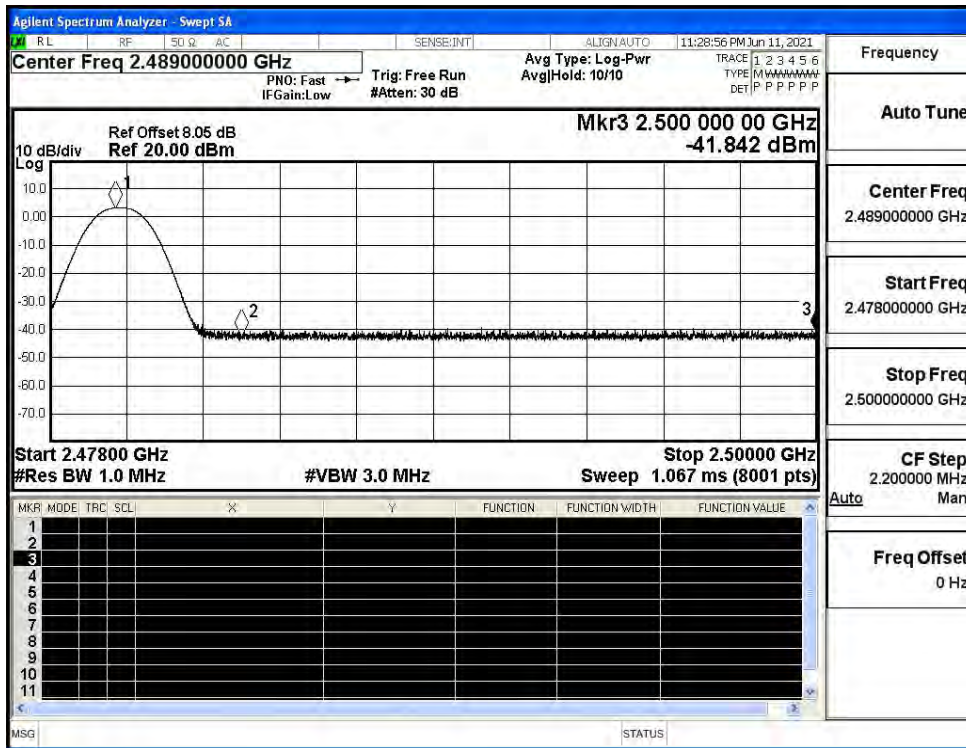
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



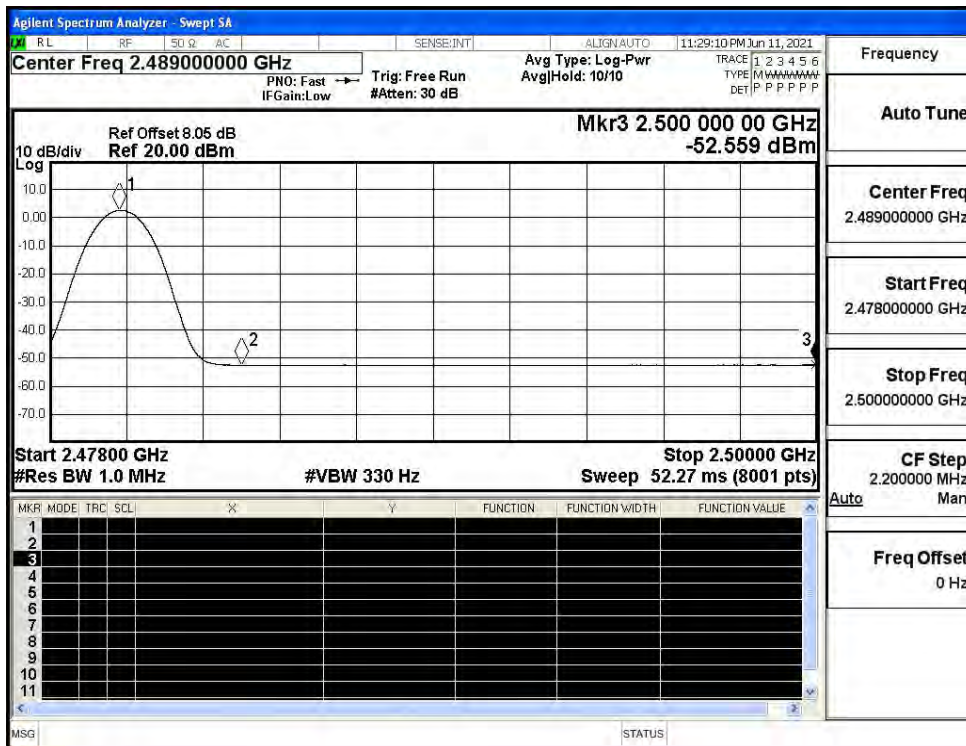
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)



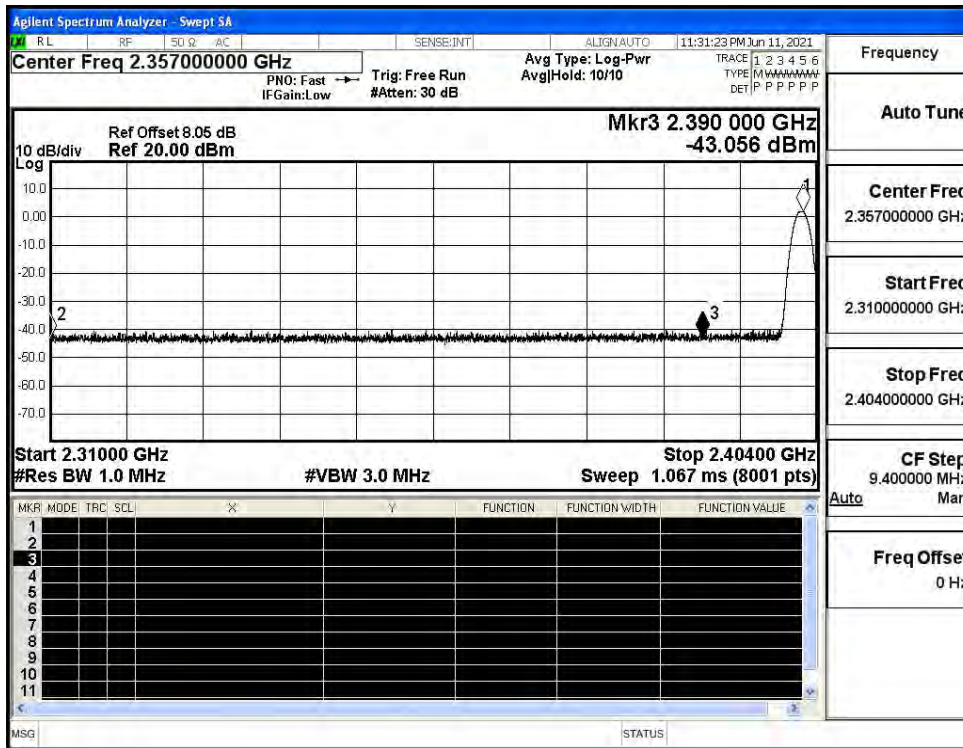
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (High Channel)



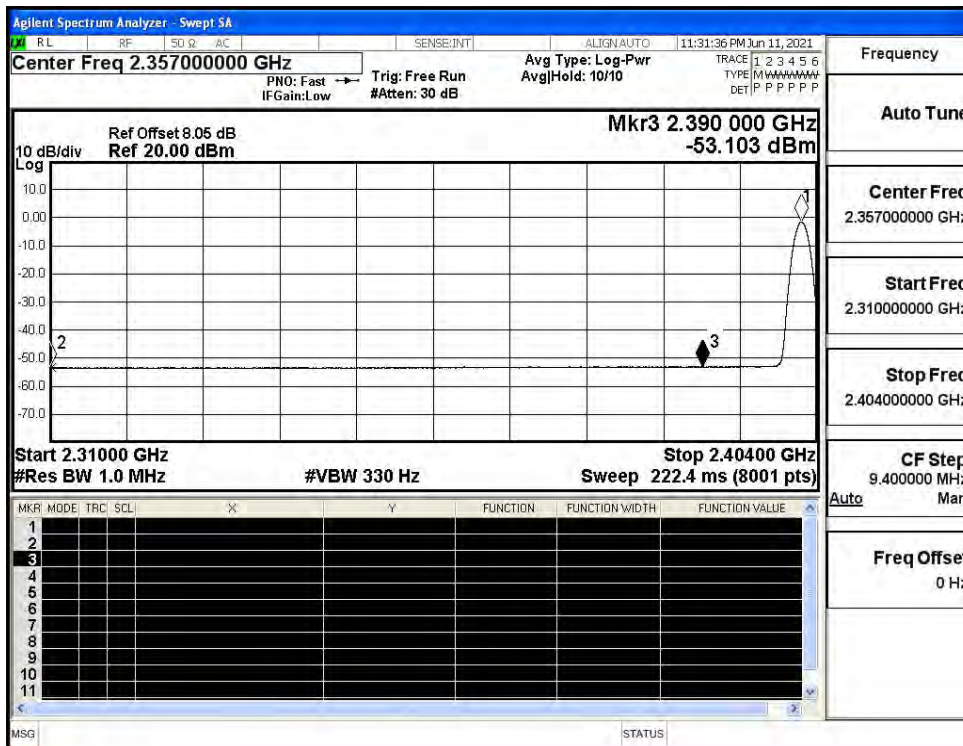
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (High Channel)



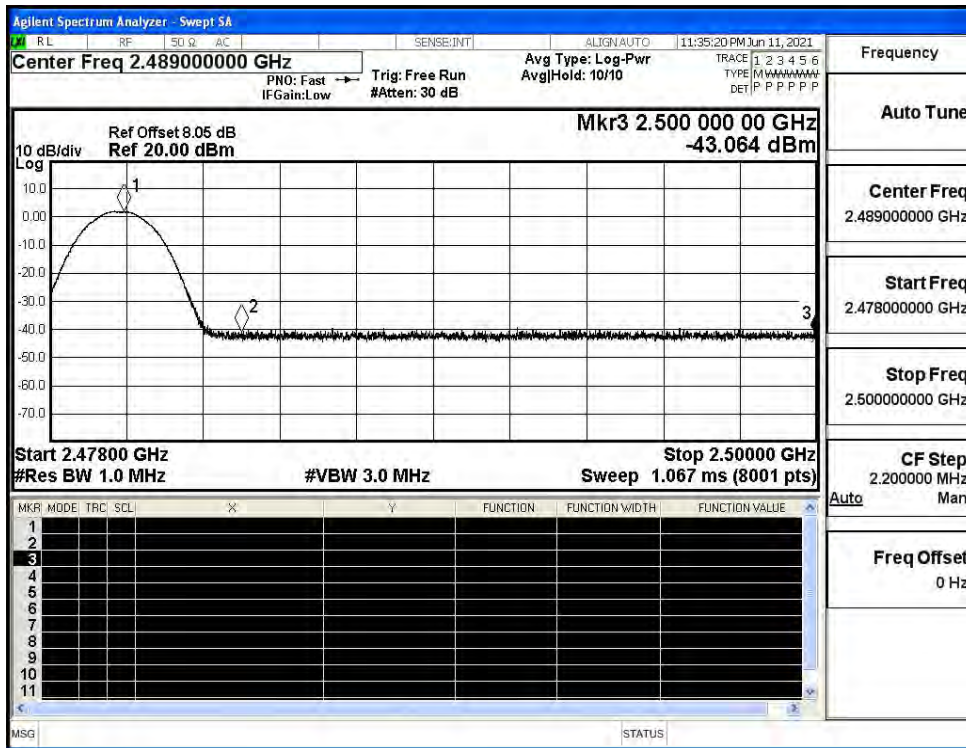
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)



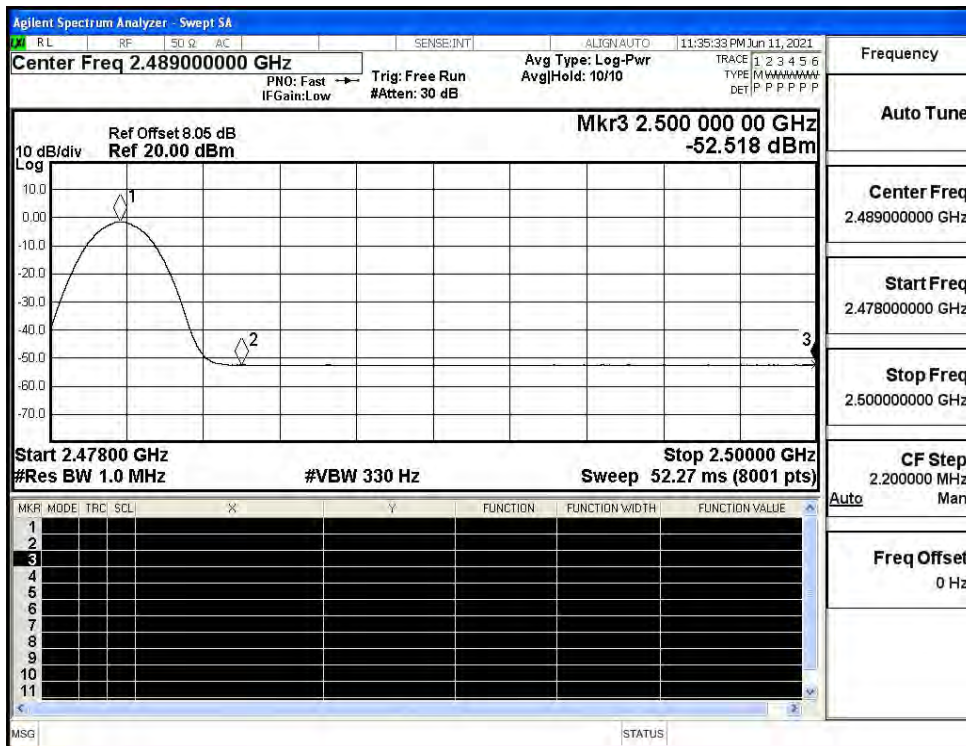
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (Low Channel)



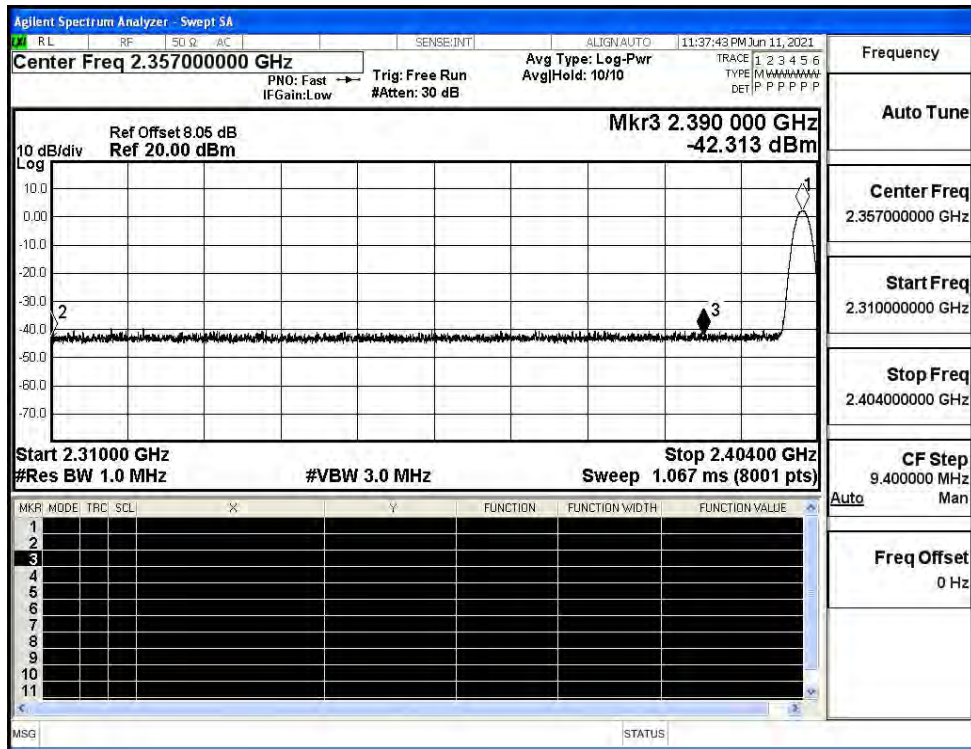
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (High Channel)



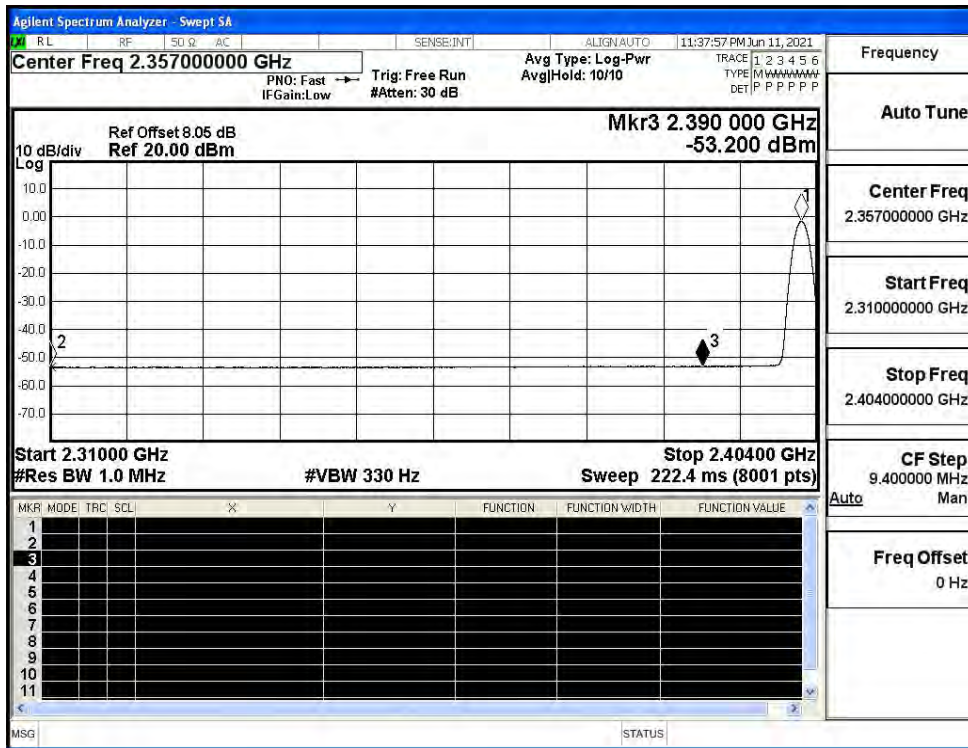
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (High Channel)



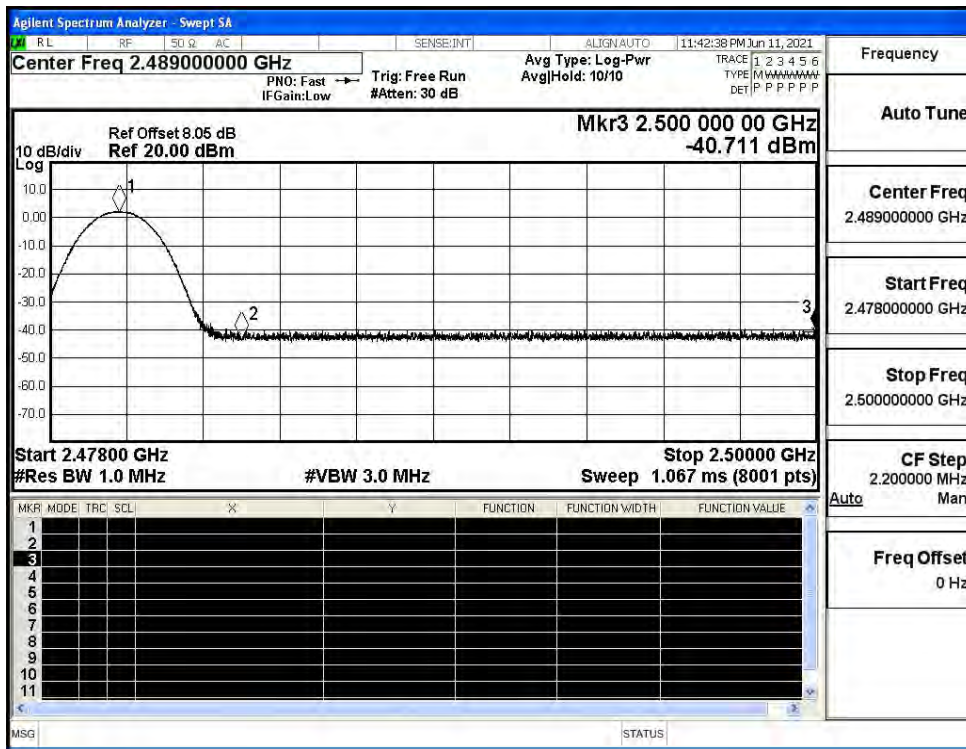
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)

