



Appendix A

RF Test Data for BT V5.0(DSS) (Conducted Measurement)

Product Name: Elevoc Clear

Trade Mark: ELEVOC

Test Model: Elevoc Clear Black

Environmental Conditions

Temperature:	24.6 ° C
Relative Humidity:	54.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Kay Hu
Supervised by:	Li Huan

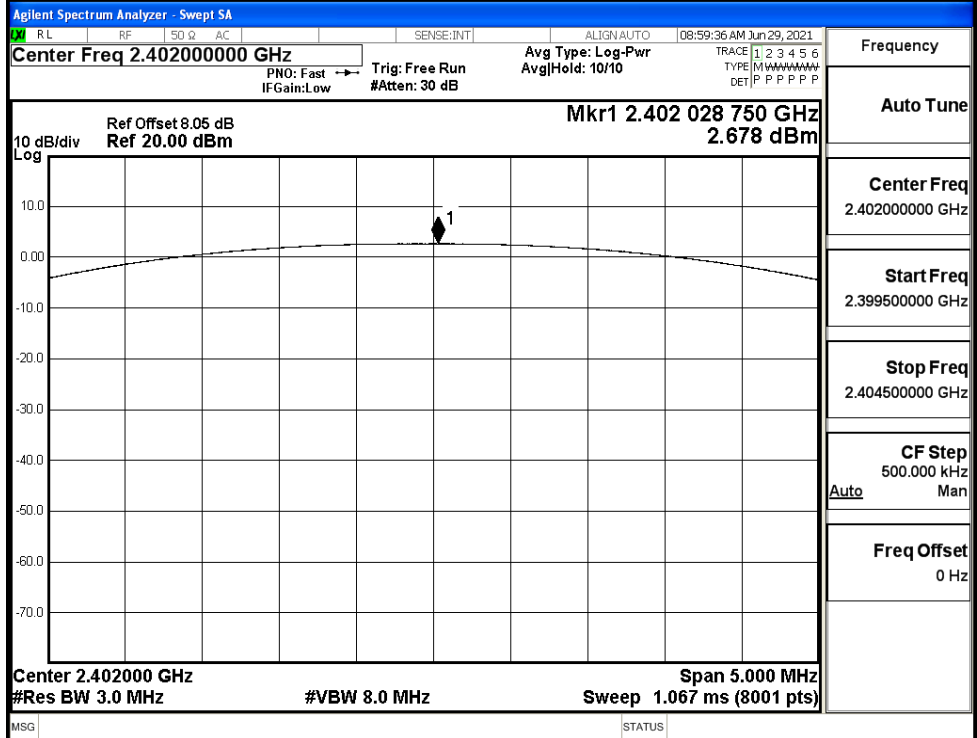
A.1 Maximum Conducted Peak Output Power

Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2.678	21	PASS
	MCH	2.753	21	PASS
	HCH	2.044	21	PASS
$\pi/4$ DQPSK	LCH	2.755	21	PASS
	MCH	2.690	21	PASS
	HCH	1.996	21	PASS
8DPSK	LCH	2.722	21	PASS
	MCH	2.686	21	PASS
	HCH	2.048	21	PASS

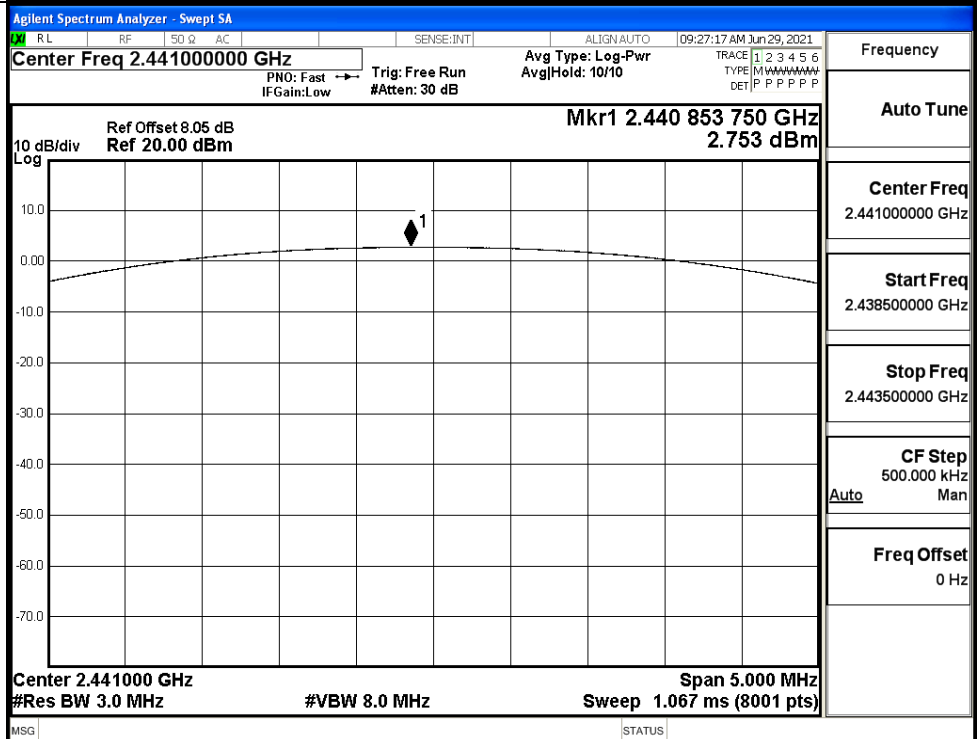


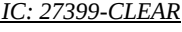
Test Graphs

GFSK/LCH

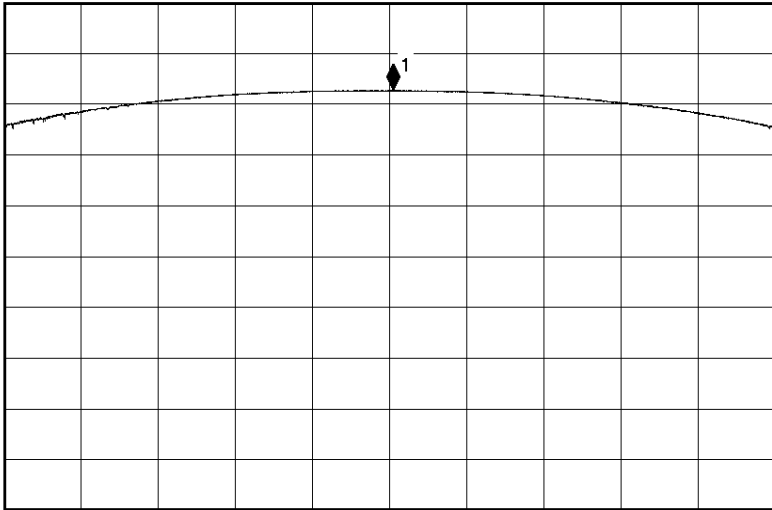
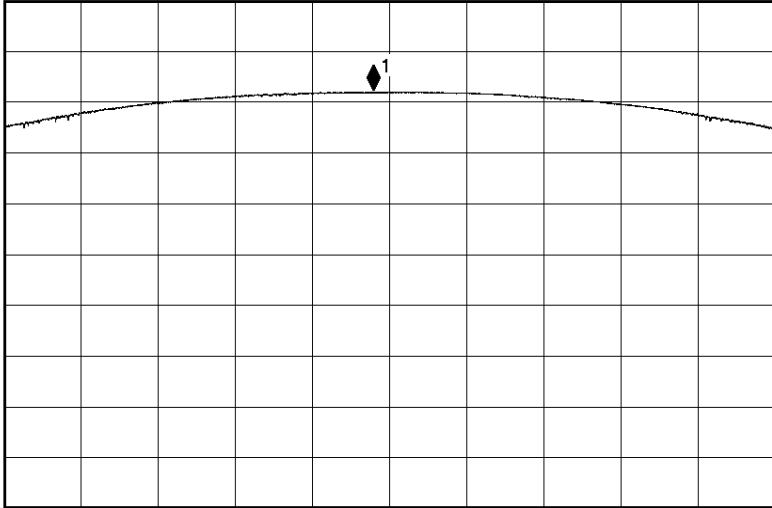


GFSK/MCH



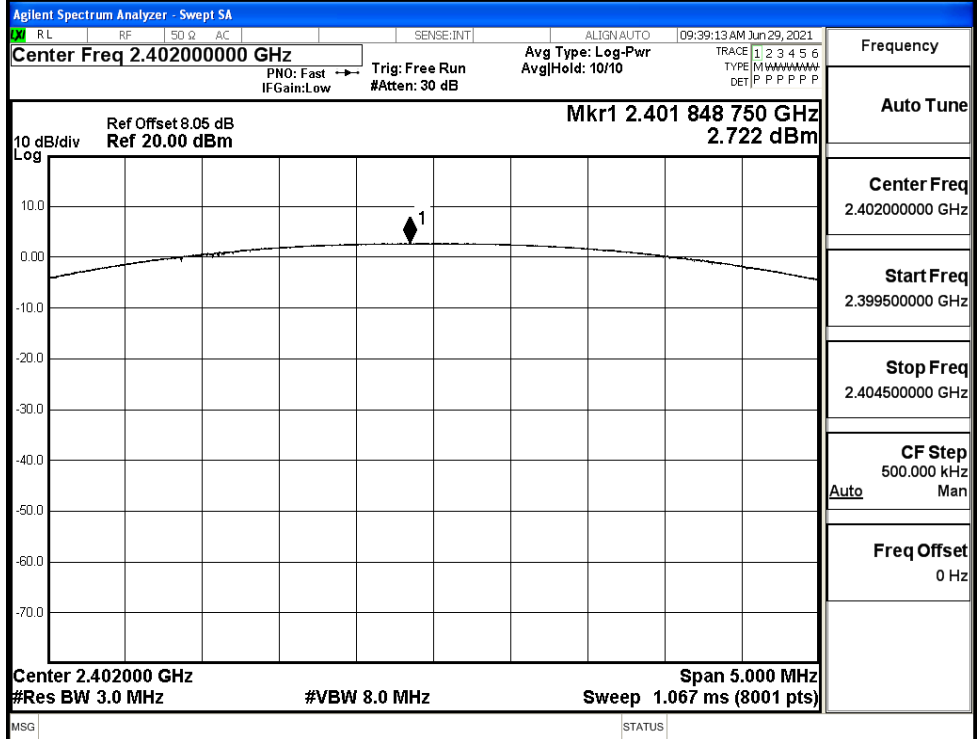
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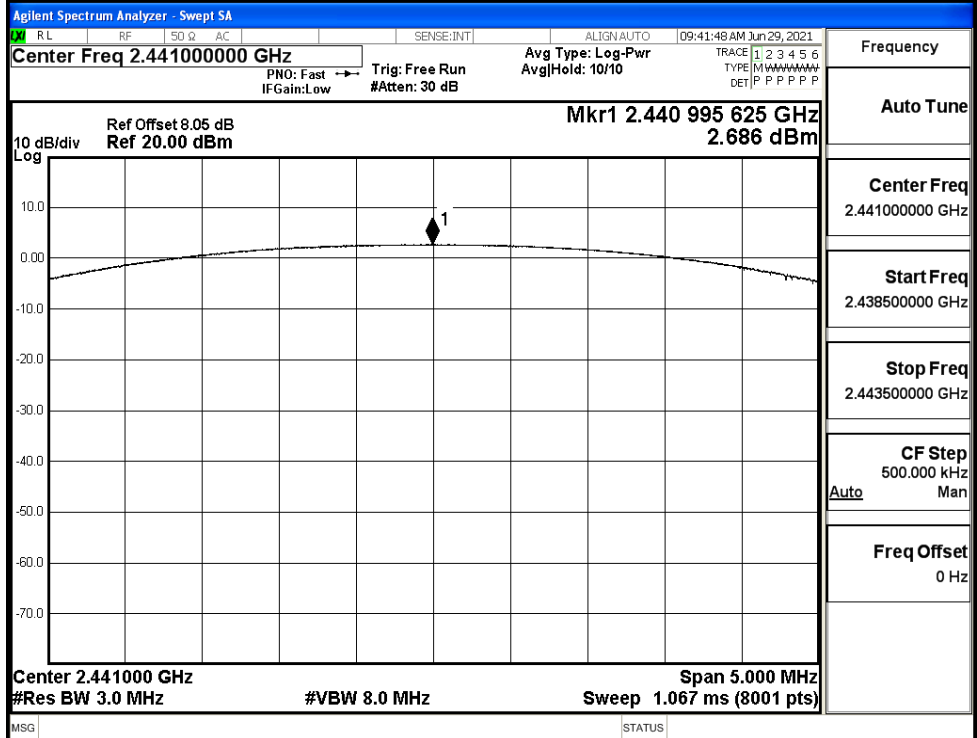
π /4DQPSK/MCH	Agilent Spectrum Analyzer - Swept SA RL RF 50 Ω AC SENSE:INT ALIGN:AUTO 09:34:28 AM Jun 29, 2021 Center Freq 2.441000000 GHz PNO: Fast IFGain:Low Trig: Free Run #Atten: 30 dB Avg Type: Log-Pwr AvgHold: 10/10 TRACE 1 2 3 4 5 6 TYPE M W W W W W W W DET P P P P P P Ref Offset 8.05 dB Ref 20.00 dBm Mkr1 2.441 024 375 GHz 2.690 dBm 10 dB/div Log  Center 2.441000 GHz #Res BW 3.0 MHz #VBW 8.0 MHz Span 5.000 MHz Sweep 1.067 ms (8001 pts) MSG STATUS	Frequency Auto Tune Center Freq 2.441000000 GHz Start Freq 2.438500000 GHz Stop Freq 2.443500000 GHz CF Step 500.000 kHz Auto Man Freq Offset 0 Hz	
	π /4DQPSK/HCH	Agilent Spectrum Analyzer - Swept SA RL RF 50 Ω AC SENSE:INT ALIGN:AUTO 09:36:16 AM Jun 29, 2021 Center Freq 2.480000000 GHz PNO: Fast IFGain:Low Trig: Free Run #Atten: 30 dB Avg Type: Log-Pwr AvgHold: 10/10 TRACE 1 2 3 4 5 6 TYPE M W W W W W W W DET P P P P P P Ref Offset 8.05 dB Ref 20.00 dBm Mkr1 2.479 895 625 GHz 1.996 dBm 10 dB/div Log  Center 2.480000 GHz #Res BW 3.0 MHz #VBW 8.0 MHz Span 5.000 MHz Sweep 1.067 ms (8001 pts) MSG STATUS	Frequency Auto Tune Center Freq 2.480000000 GHz Start Freq 2.477500000 GHz Stop Freq 2.482500000 GHz CF Step 500.000 kHz Auto Man Freq Offset 0 Hz

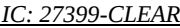


8DPSK/LCH



8DPSK/MCH





Agilent Spectrum Analyzer - Swept SA

R L	RF	50 Ω	AC		SENSE:INT	ALIGN:AUTO	09:43:36 AM Jun 29, 2021
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Center Freq 2.48000000 GHz

PNO: Fast → Trig: Free Run
IF Gain: Low #Atten: 30 dB

Avg Type: Log-Pwr Avg/Hold: 10/10

TRACE 1 2 3 4 5 6
TYPE [M] [W] [S] [P]
DET [P] [P] [P] [P] [P]

Frequency

Auto Tune

Center Freq
2.480000000 GHz

Start Freq
2.477500000 GHz

Stop Freq
2.482500000 GHz

CF Step
500.000 kHz
Auto Man

Freq Offset
0 Hz

Ref Offset 8.05 dB
Ref 20.00 dBm

Mkr1 2.479 886 875 GHz
2.048 dBm

10 dB/div
Log

Center 2.480000 GHz
#Res BW 3.0 MHz

#VBW 8.0 MHz

Span 5.000 MHz
Sweep 1.067 ms (8001 pts)

MSG STATUS

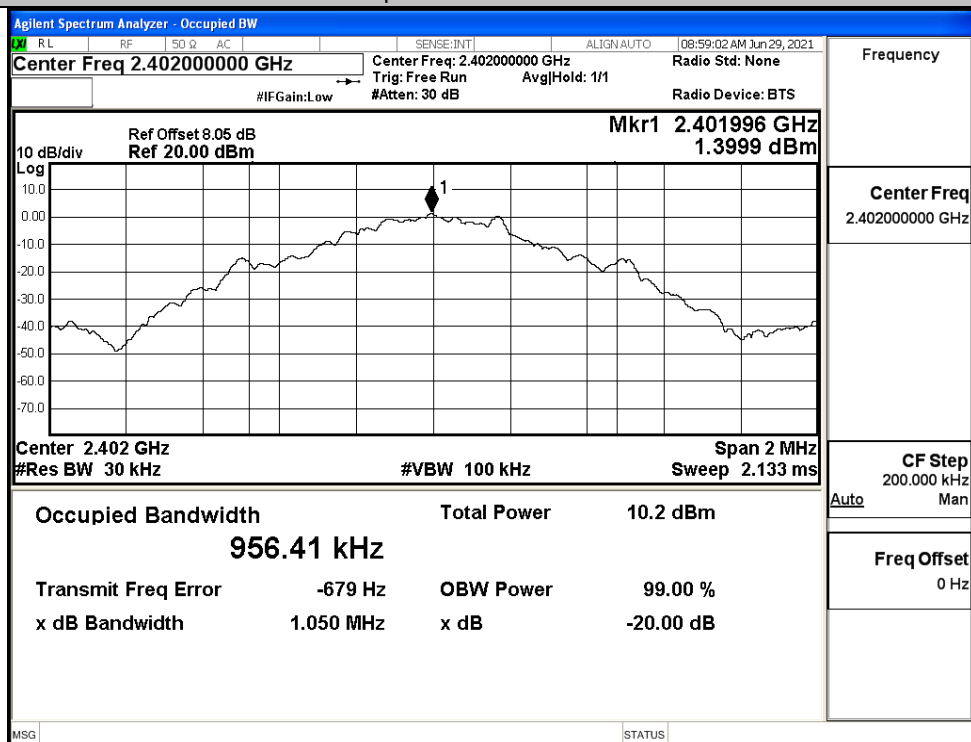


A.2 20dB Bandwidth

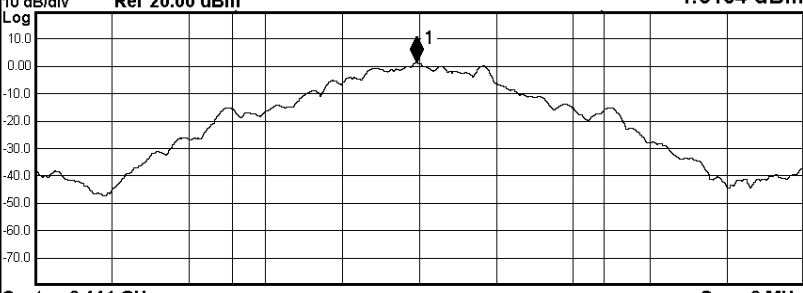
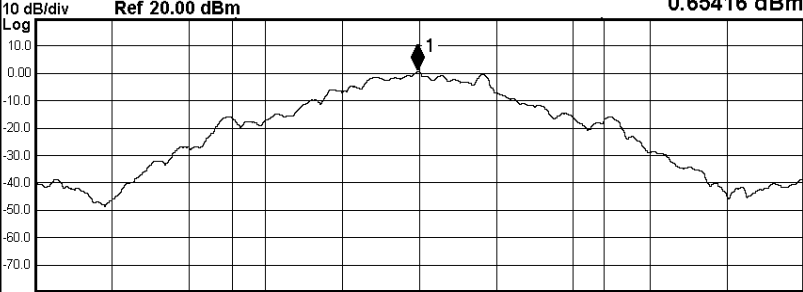
Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.050	Not Specified	PASS
	MCH	1.051	Not Specified	PASS
	HCH	1.050	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.191	Not Specified	PASS
	MCH	1.191	Not Specified	PASS
	HCH	1.192	Not Specified	PASS
8DPSK	LCH	1.238	Not Specified	PASS
	MCH	1.235	Not Specified	PASS
	HCH	1.239	Not Specified	PASS

Test Graphs

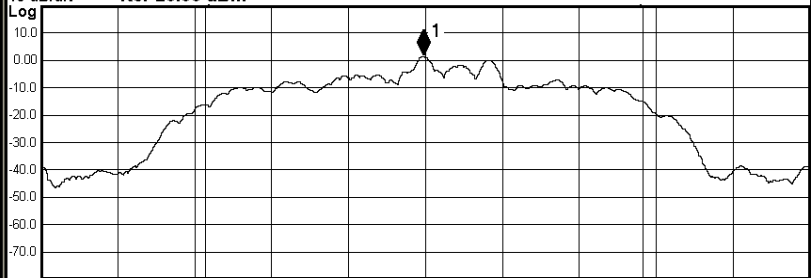
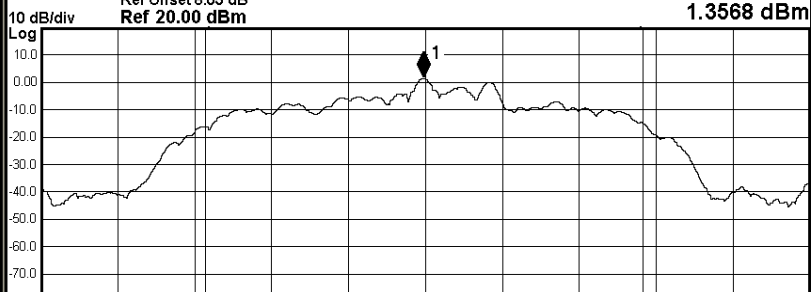
GFSK/LCH

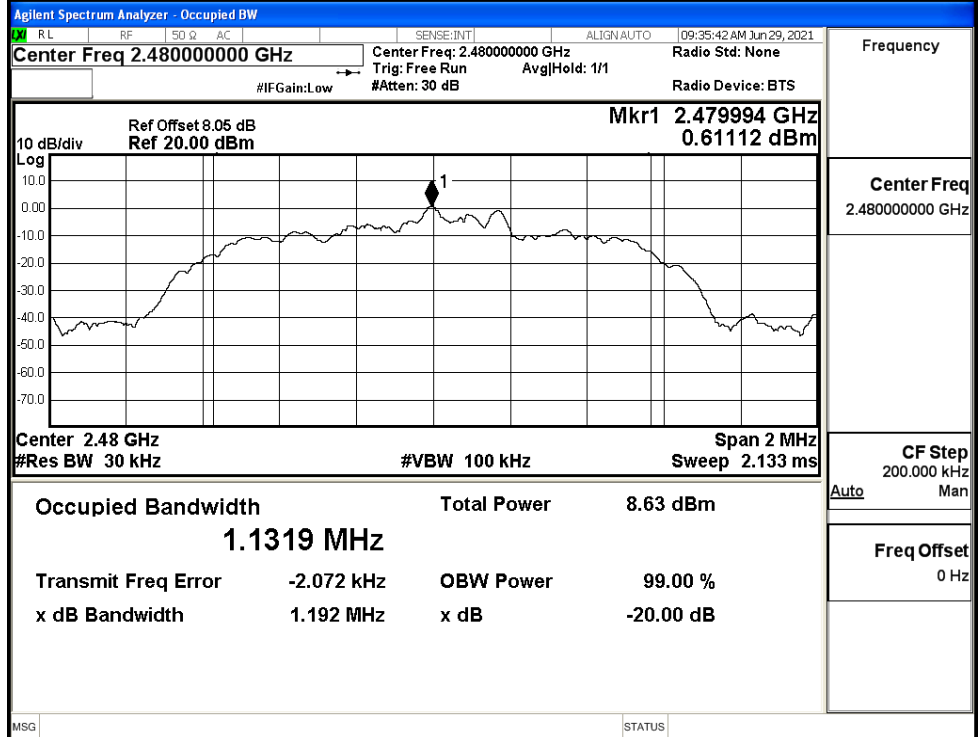




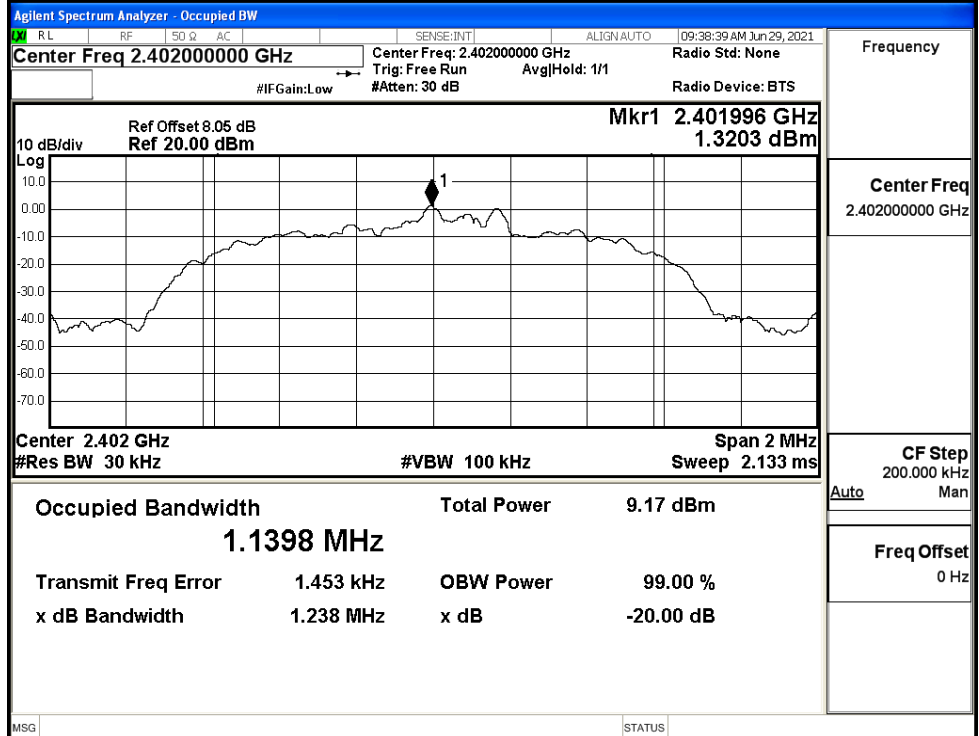
GFSK/MCH	Agilent Spectrum Analyzer - Occupied BW Center Freq 2.441000000 GHz Center Freq: 2.441000000 GHz Trig: Free Run AvgHold: 1/1 #IFGain: Low #Atten: 30 dB Align Auto Radio Std: None Radio Device: BTS 09:26:44 AM Jun 29, 2021 Ref Offset 8.05 dB Ref 20.00 dBm Mkr1 2.440992 GHz 1.3154 dBm  Center 2.441 GHz #Res BW 30 kHz #VBW 100 kHz Span 2 MHz Sweep 2.133 ms Occupied Bandwidth 960.13 kHz Total Power 10.2 dBm Transmit Freq Error -1.582 kHz OBW Power 99.00 % x dB Bandwidth 1.051 MHz x dB -20.00 dB MSG STATUS <td data-bbox="1420 136 1476 880"> Frequency Center Freq 2.441000000 GHz CF Step 200.000 kHz Auto Man Freq Offset 0 Hz </td>	Frequency Center Freq 2.441000000 GHz CF Step 200.000 kHz Auto Man Freq Offset 0 Hz
GFSK/HCH	Agilent Spectrum Analyzer - Occupied BW Center Freq 2.480000000 GHz Center Freq: 2.480000000 GHz Trig: Free Run AvgHold: 1/1 #IFGain: Low #Atten: 30 dB Align Auto Radio Std: None Radio Device: BTS 09:28:39 AM Jun 29, 2021 Ref Offset 8.05 dB Ref 20.00 dBm Mkr1 2.479996 GHz 0.65416 dBm  Center 2.48 GHz #Res BW 30 kHz #VBW 100 kHz Span 2 MHz Sweep 2.133 ms Occupied Bandwidth 960.49 kHz Total Power 9.41 dBm Transmit Freq Error -1.902 kHz OBW Power 99.00 % x dB Bandwidth 1.050 MHz x dB -20.00 dB MSG STATUS <td data-bbox="1420 880 1476 1630"> Frequency Center Freq 2.480000000 GHz CF Step 200.000 kHz Auto Man Freq Offset 0 Hz </td>	Frequency Center Freq 2.480000000 GHz CF Step 200.000 kHz Auto Man Freq Offset 0 Hz



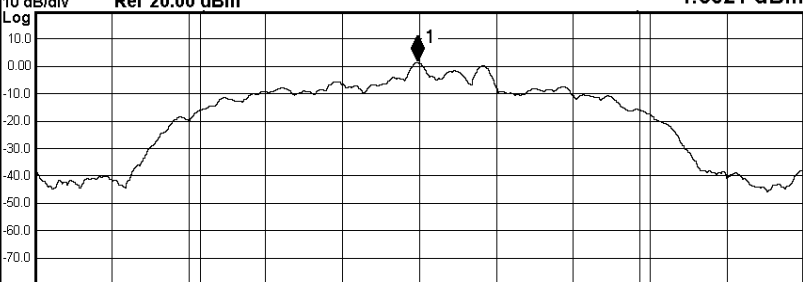
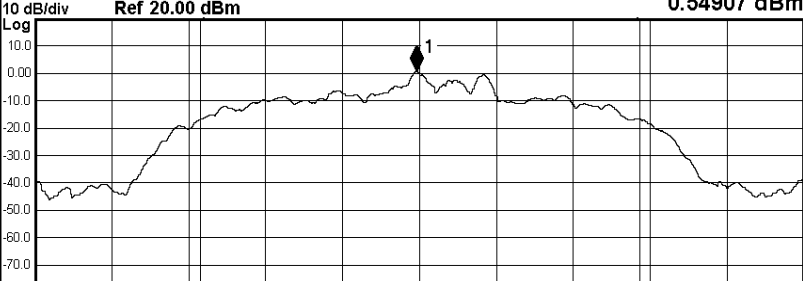
$\pi/4$DQPSK/LCH	Agilent Spectrum Analyzer - Occupied BW RL RF 50 Ω AC SENSE:INT ALIGN: AUTO 09:31:06 AM Jun 29, 2021 Center Freq 2.40200000 GHz Center Freq: 2.40200000 GHz Trig: Free Run Avg/Hold: 1/1 Radio Std: None #IFGain: Low #Atten: 30 dB Radio Device: BTS Ref Offset 8.05 dB Ref 20.00 dBm Mkr1 2.401996 GHz 1.3723 dBm 10 dB/div Log  Center 2.402 GHz #Res BW 30 kHz #VBW 100 kHz Span 2 MHz Sweep 2.133 ms Occupied Bandwidth 1.1332 MHz Total Power 9.30 dBm Transmit Freq Error -2.426 kHz OBW Power 99.00 % x dB Bandwidth 1.191 MHz x dB -20.00 dB MSG STATUS	Frequency Center Freq 2.40200000 GHz CF Step 200.000 kHz Auto Man Freq Offset 0 Hz
$\pi/4$DQPSK/MCH	Agilent Spectrum Analyzer - Occupied BW RL RF 50 Ω AC SENSE:INT ALIGN: AUTO 09:33:54 AM Jun 29, 2021 Center Freq 2.44100000 GHz Center Freq: 2.44100000 GHz Trig: Free Run Avg/Hold: 1/1 Radio Std: None #IFGain: Low #Atten: 30 dB Radio Device: BTS Ref Offset 8.05 dB Ref 20.00 dBm Mkr1 2.440994 GHz 1.3568 dBm 10 dB/div Log  Center 2.441 GHz #Res BW 30 kHz #VBW 100 kHz Span 2 MHz Sweep 2.133 ms Occupied Bandwidth 1.1313 MHz Total Power 9.40 dBm Transmit Freq Error -1.819 kHz OBW Power 99.00 % x dB Bandwidth 1.191 MHz x dB -20.00 dB MSG STATUS	Frequency Center Freq 2.44100000 GHz CF Step 200.000 kHz Auto Man Freq Offset 0 Hz

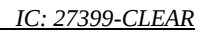
 $\pi/4$ DQPSK/HCH

8DPSK/LCH





8DPSK/MCH	Agilent Spectrum Analyzer - Occupied BW Center Freq 2.441000000 GHz Center Freq: 2.441000000 GHz Trig: Free Run AvgHold: 1/1 #IFGain: Low #Atten: 30 dB Align Auto Radio Std: None Radio Device: BTS 09:41:15 AM Jun 29, 2021 Ref Offset 8.05 dB Ref 20.00 dBm Mkr1 2.440996 GHz 1.3521 dBm  Center 2.441 GHz #Res BW 30 kHz #VBW 100 kHz Span 2 MHz Sweep 2.133 ms Occupied Bandwidth 1.1392 MHz Total Power 9.23 dBm Transmit Freq Error 1.659 kHz OBW Power 99.00 % x dB Bandwidth 1.235 MHz x dB -20.00 dB MSG STATUS <td data-bbox="1420 136 1476 880"> Frequency Center Freq 2.441000000 GHz CF Step 200.000 kHz Auto Man Freq Offset 0 Hz </td>	Frequency Center Freq 2.441000000 GHz CF Step 200.000 kHz Auto Man Freq Offset 0 Hz
8DPSK/HCH	Agilent Spectrum Analyzer - Occupied BW Center Freq 2.480000000 GHz Center Freq: 2.480000000 GHz Trig: Free Run AvgHold: 1/1 #IFGain: Low #Atten: 30 dB Align Auto Radio Std: None Radio Device: BTS 09:43:03 AM Jun 29, 2021 Ref Offset 8.05 dB Ref 20.00 dBm Mkr1 2.479992 GHz 0.54907 dBm  Center 2.48 GHz #Res BW 30 kHz #VBW 100 kHz Span 2 MHz Sweep 2.133 ms Occupied Bandwidth 1.1397 MHz Total Power 8.47 dBm Transmit Freq Error 1.472 kHz OBW Power 99.00 % x dB Bandwidth 1.239 MHz x dB -20.00 dB MSG STATUS <td data-bbox="1420 880 1476 1630"> Frequency Center Freq 2.480000000 GHz CF Step 200.000 kHz Auto Man Freq Offset 0 Hz </td>	Frequency Center Freq 2.480000000 GHz CF Step 200.000 kHz Auto Man Freq Offset 0 Hz

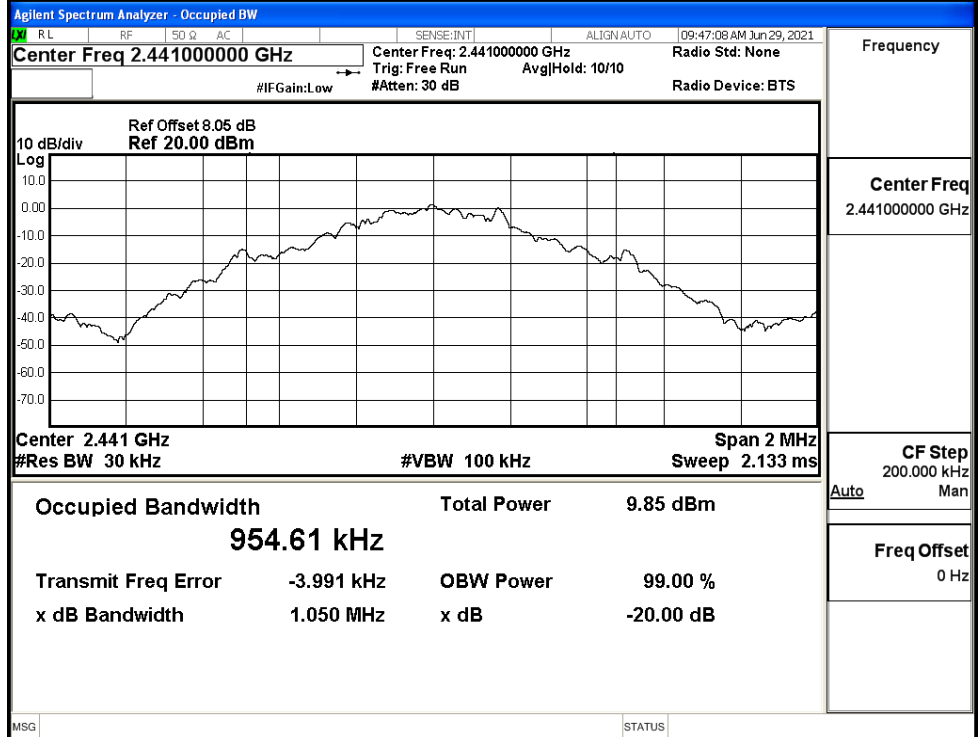


Mode	Channel.	Occupied Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.94165	Not Specified	PASS
	MCH	0.95461	Not Specified	PASS
	HCH	0.95516	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.1407	Not Specified	PASS
	MCH	1.1358	Not Specified	PASS
	HCH	1.1379	Not Specified	PASS
8DPSK	LCH	1.1434	Not Specified	PASS
	MCH	1.1413	Not Specified	PASS
	HCH	1.1397	Not Specified	PASS

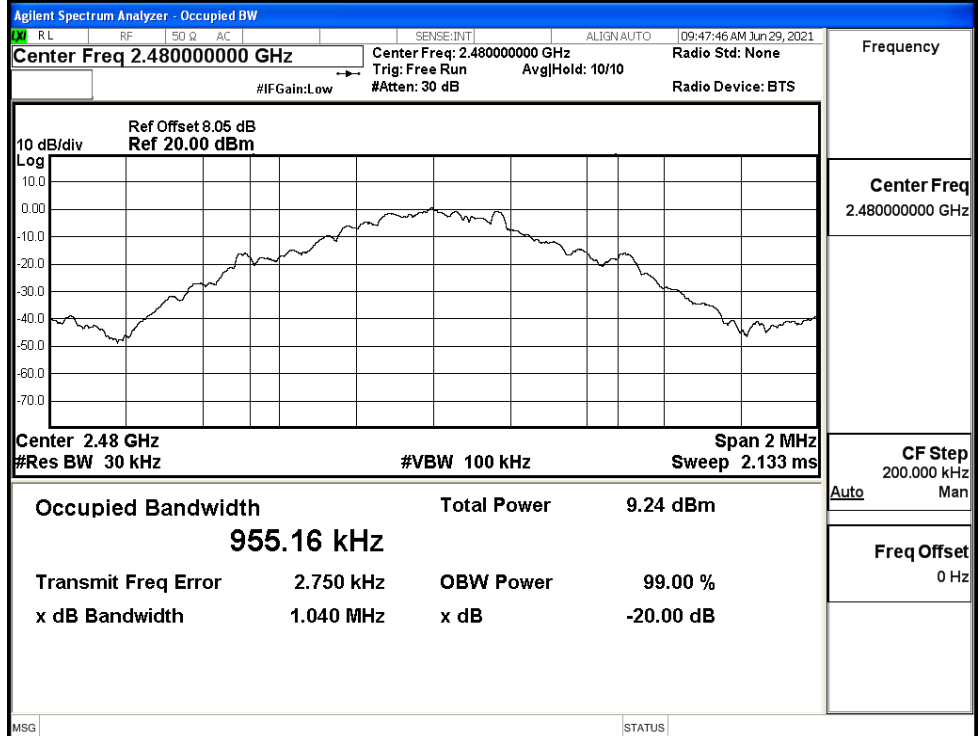


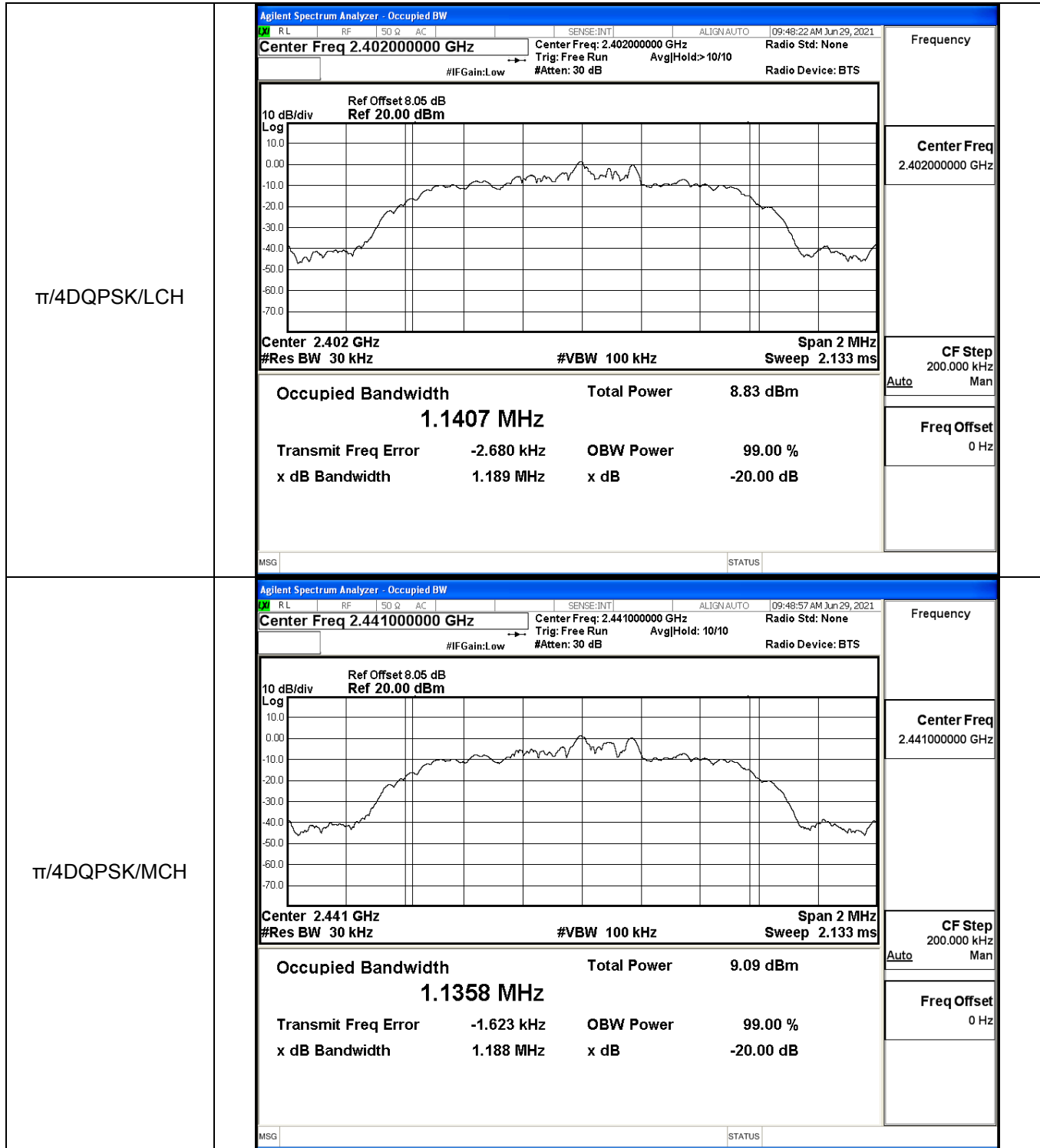


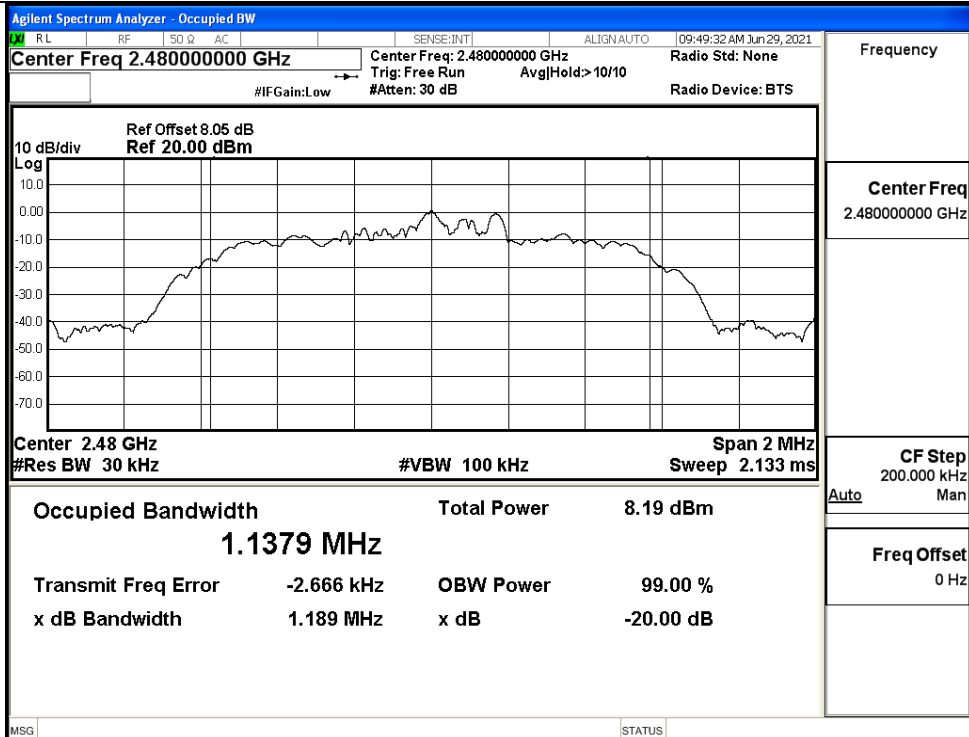
GFSK/MCH



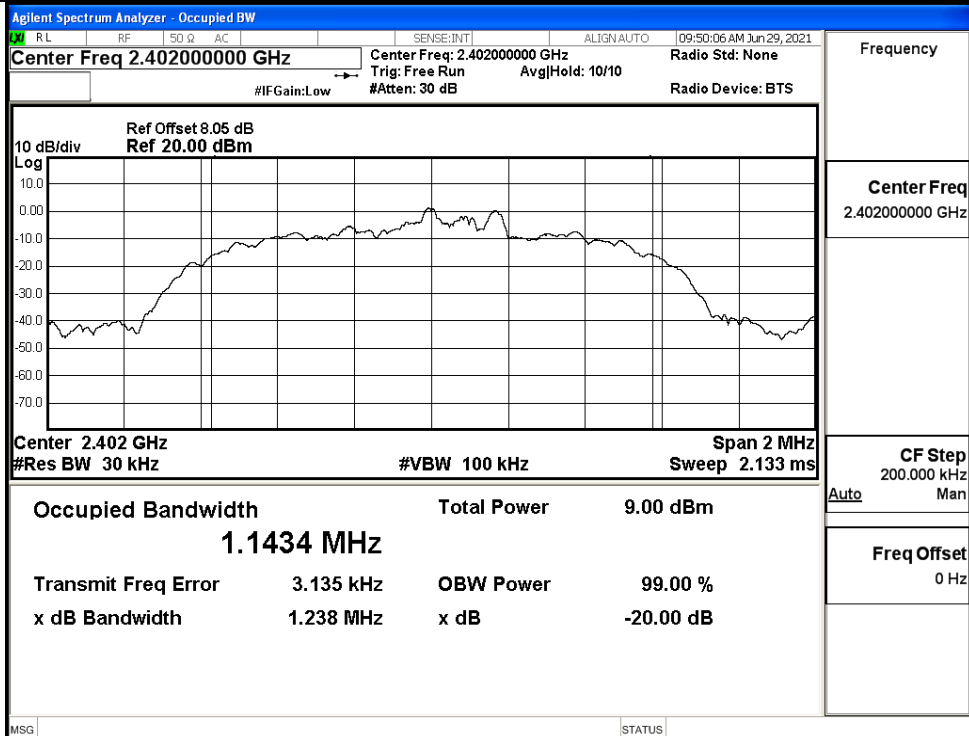
GFSK/HCH





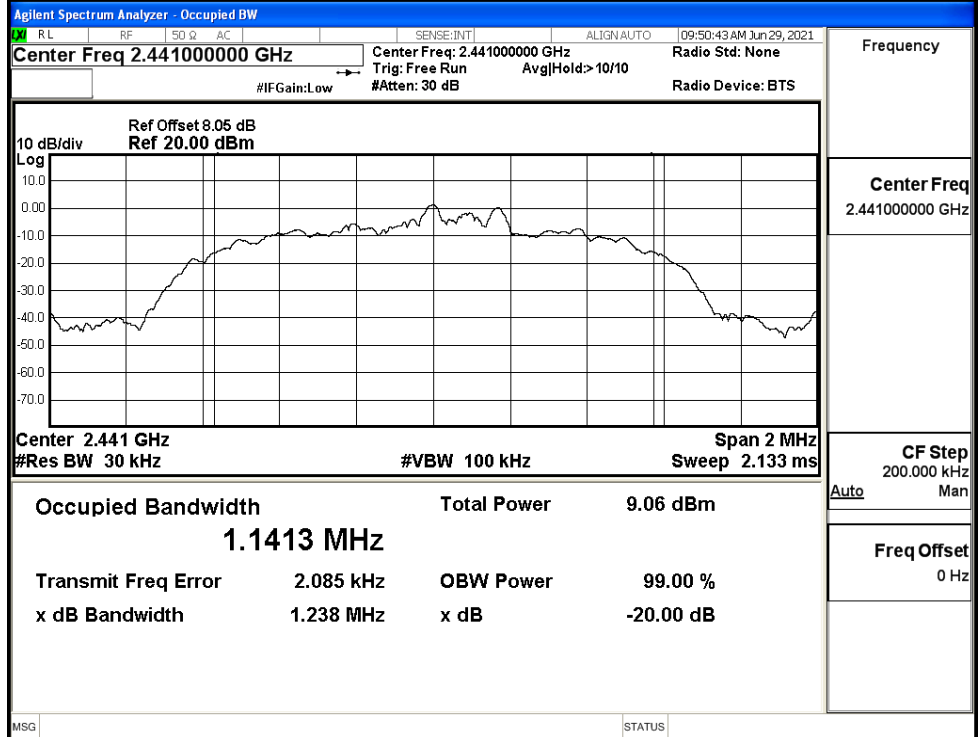
 $\pi/4$ DQPSK/HCH

8DPSK/LCH

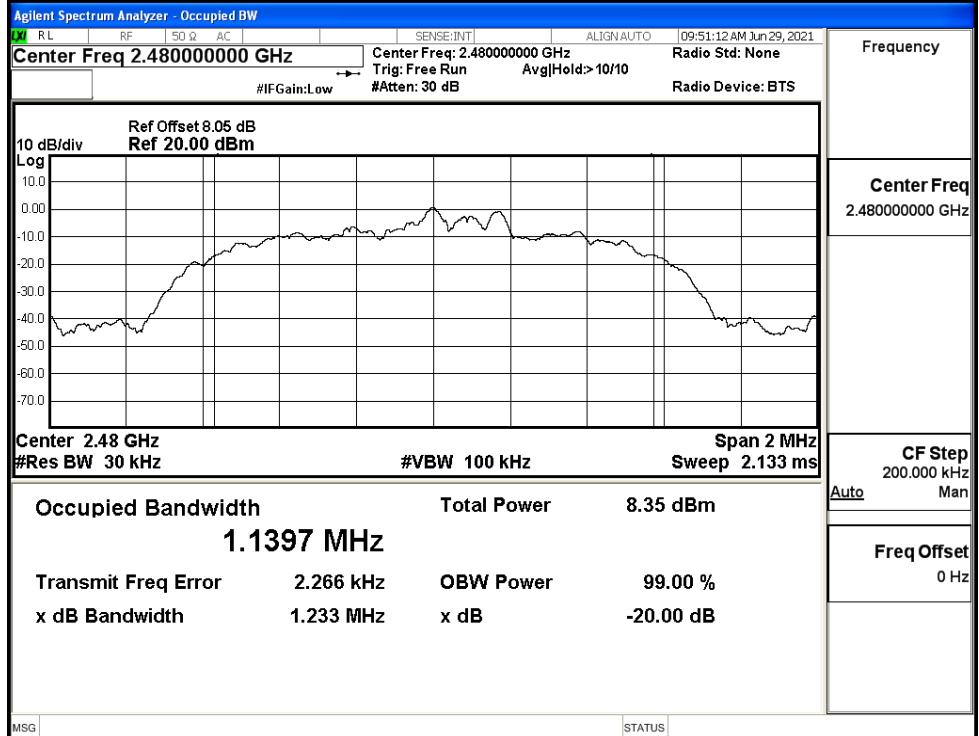


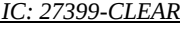


8DPSK/MCH



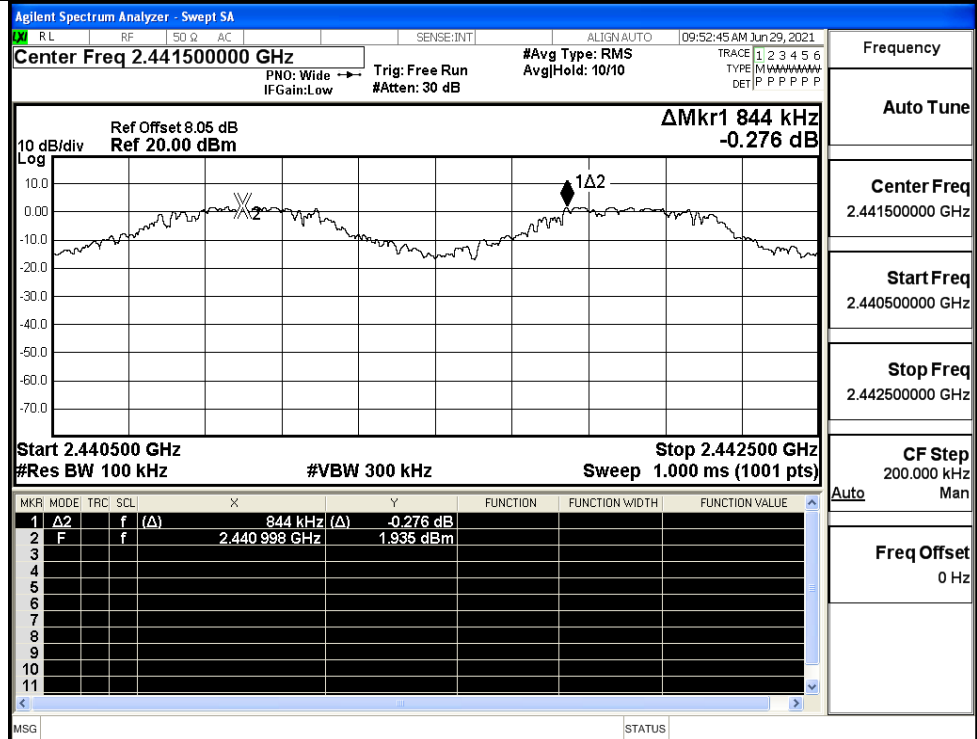
8DPSK/HCH



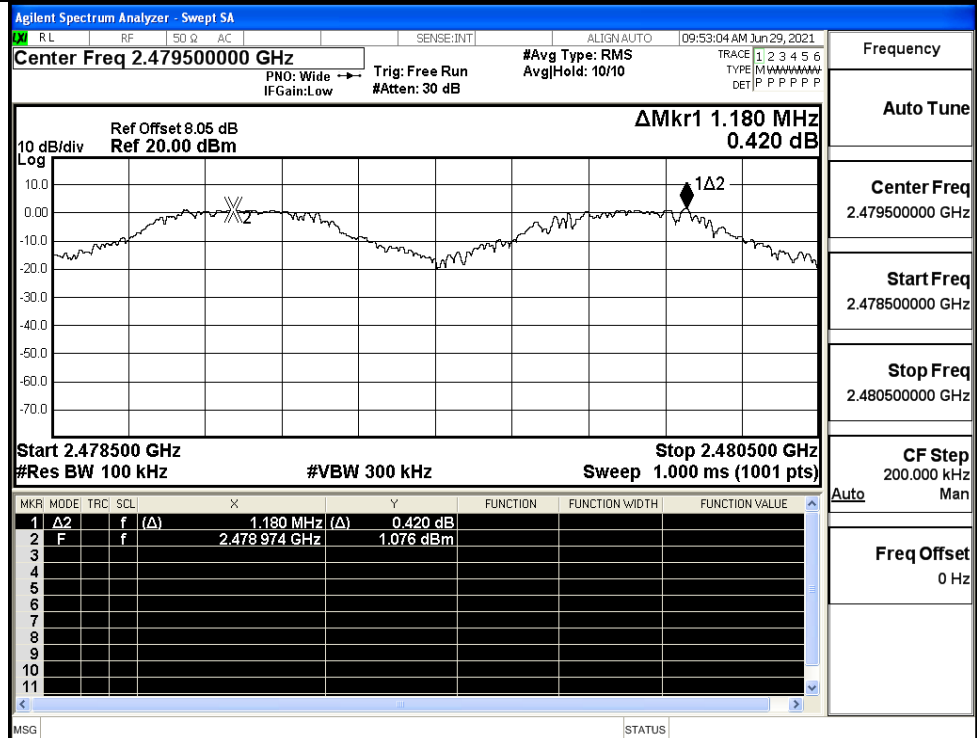


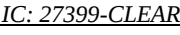


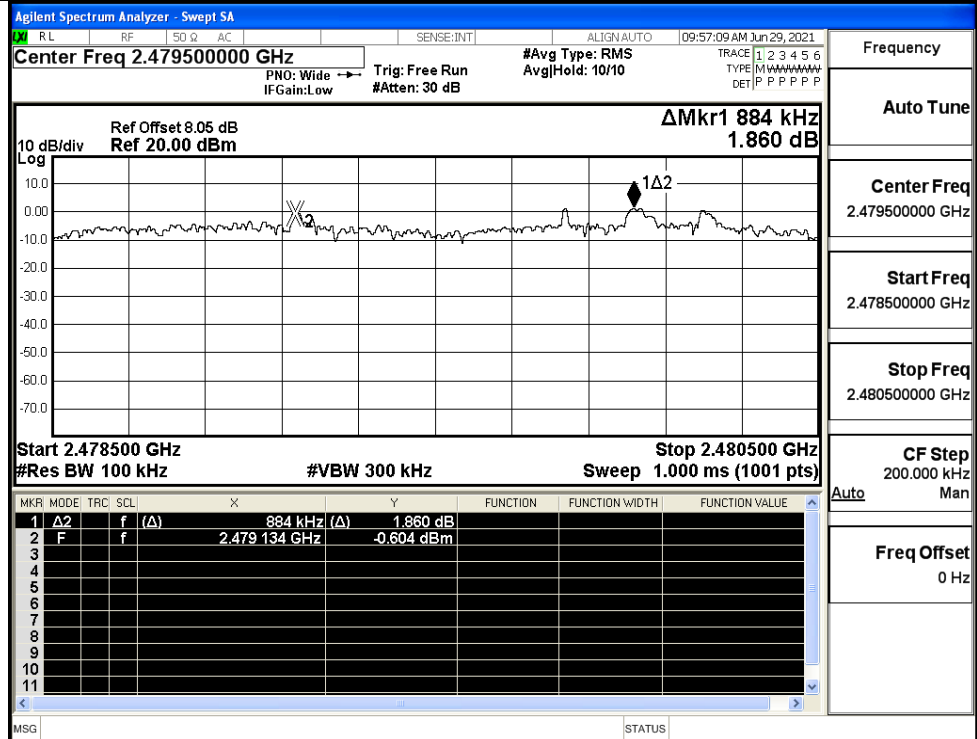
GFSK/MCH



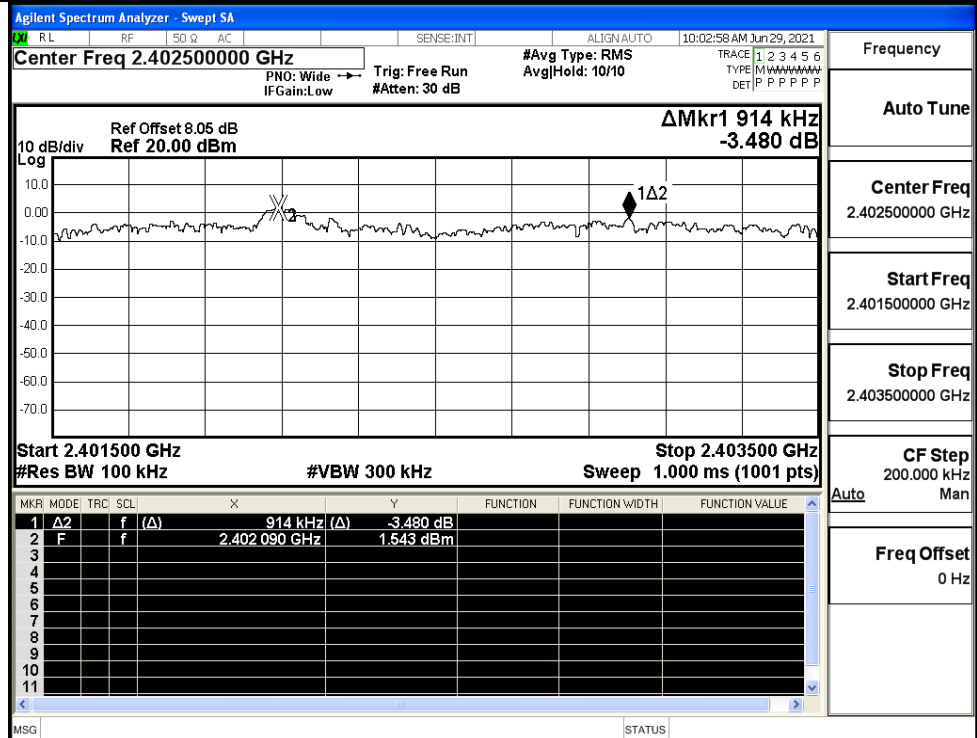
GFSK/HCH

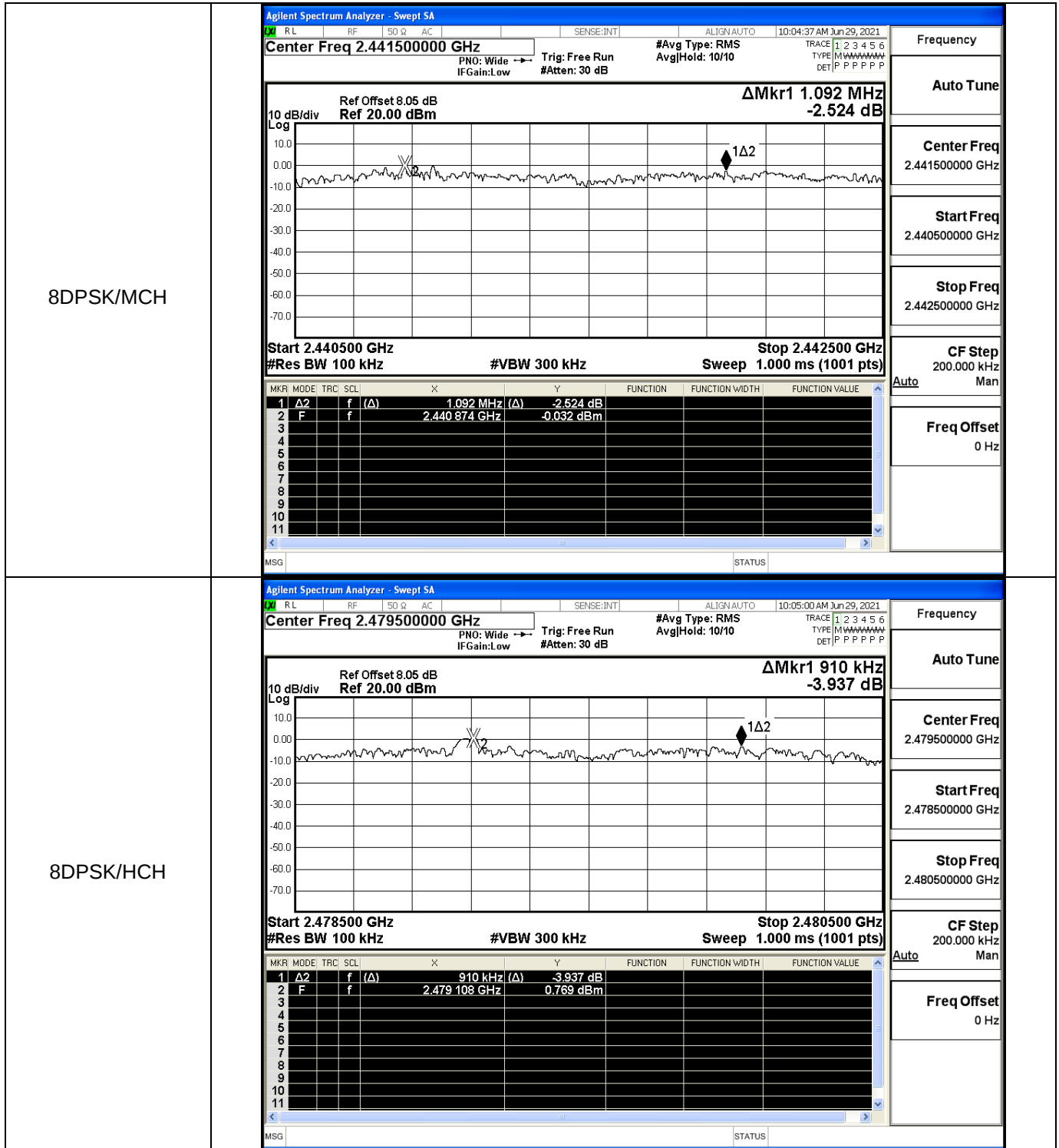


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 $\pi/4$ DQPSK/HCH

8DPSK/LCH





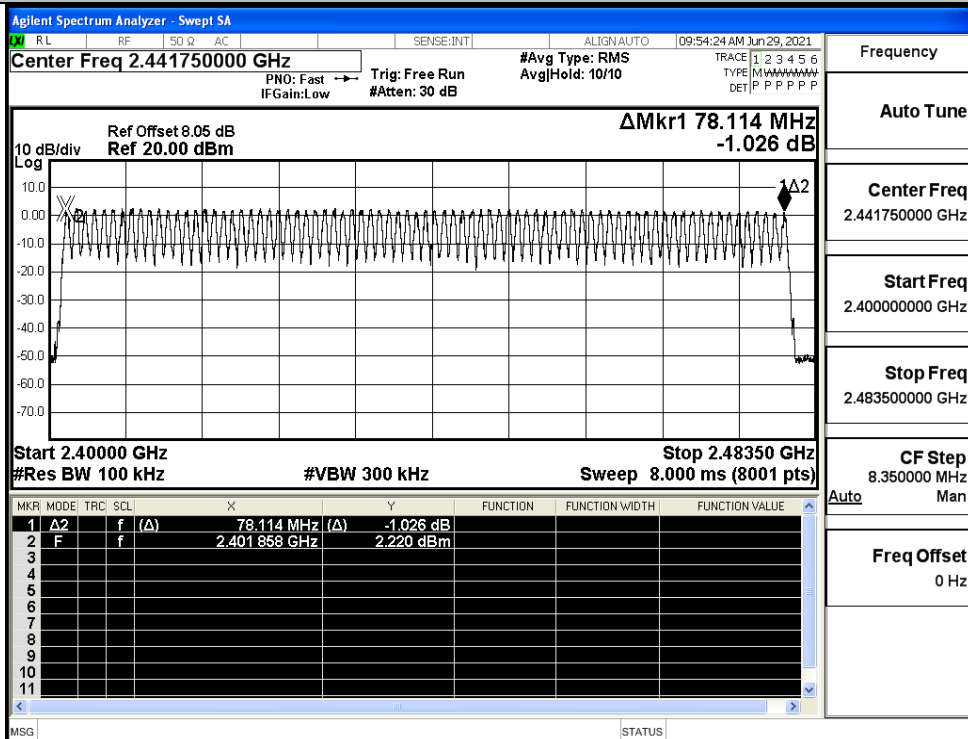
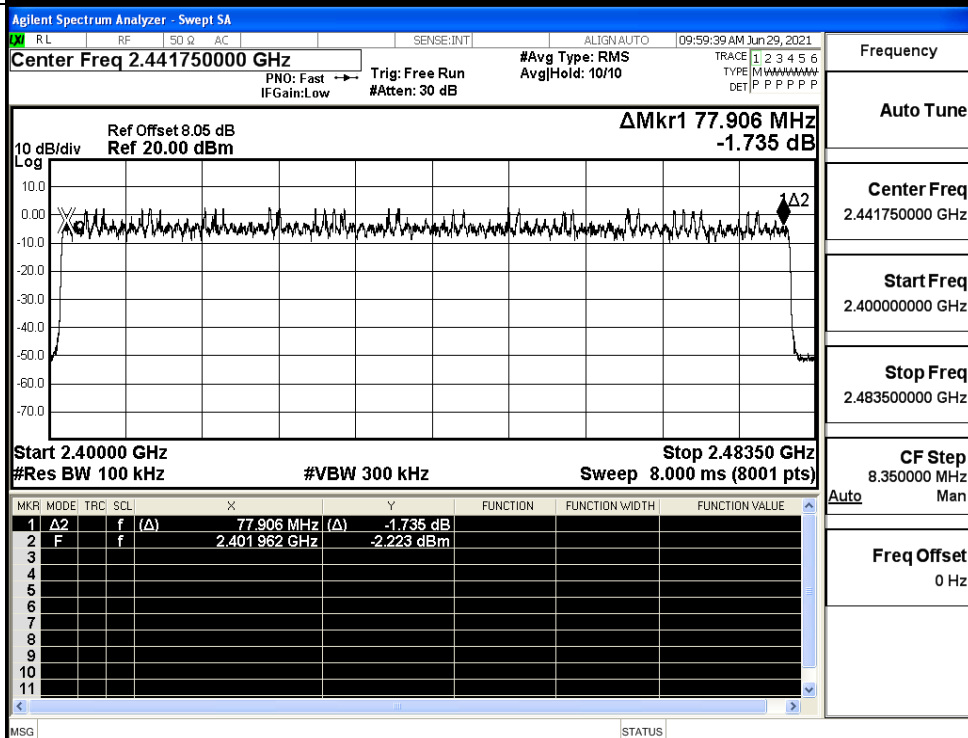


A.5 Hopping Channel Number

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

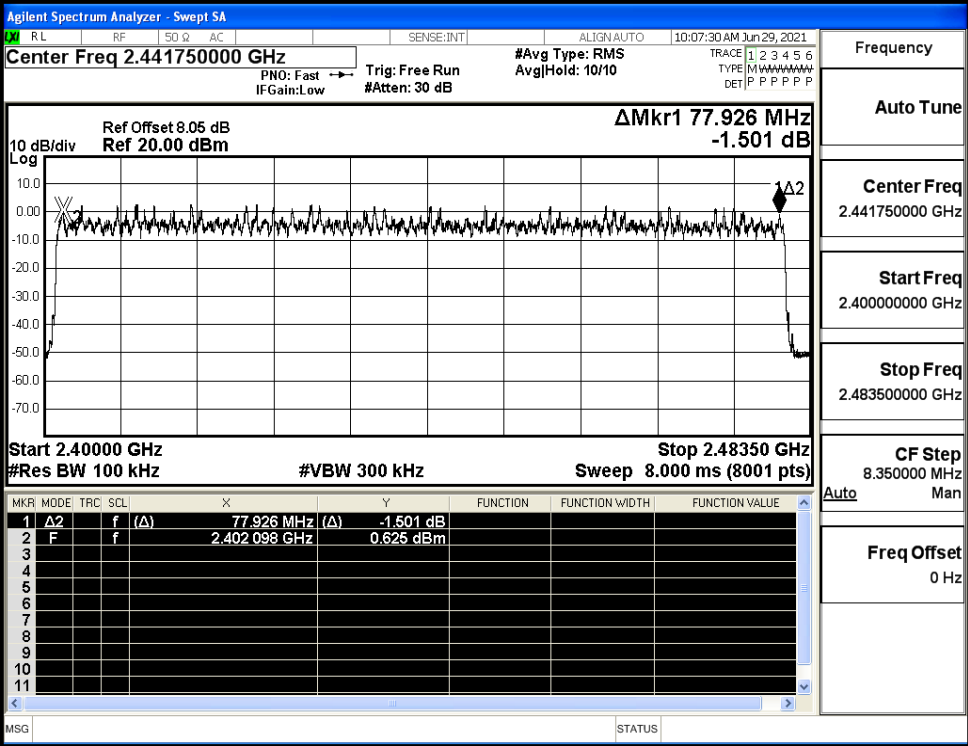
Test Graphs

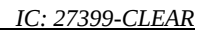
GFSK/Hop

 $\pi/4$ DQPSK/Hop



8DPSK/Hop





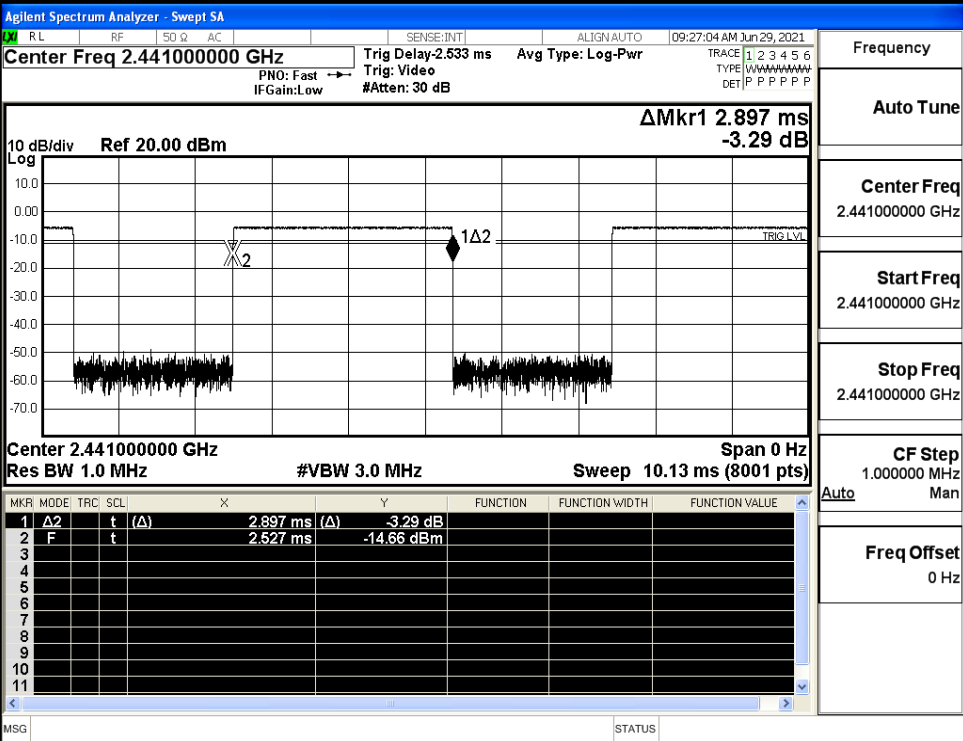
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.9	106.7	0.309	0.4	PASS
	DH5	MCH	2.9	106.7	0.309	0.4	PASS
	DH5	HCH	2.9	106.7	0.309	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.9	106.7	0.309	0.4	PASS
	2DH5	MCH	2.9	106.7	0.309	0.4	PASS
	2DH5	HCH	2.9	106.7	0.309	0.4	PASS
8DPSK	3DH5	LCH	2.9	106.7	0.309	0.4	PASS
	3DH5	MCH	2.9	106.7	0.309	0.4	PASS
	3DH5	HCH	2.9	106.7	0.309	0.4	PASS



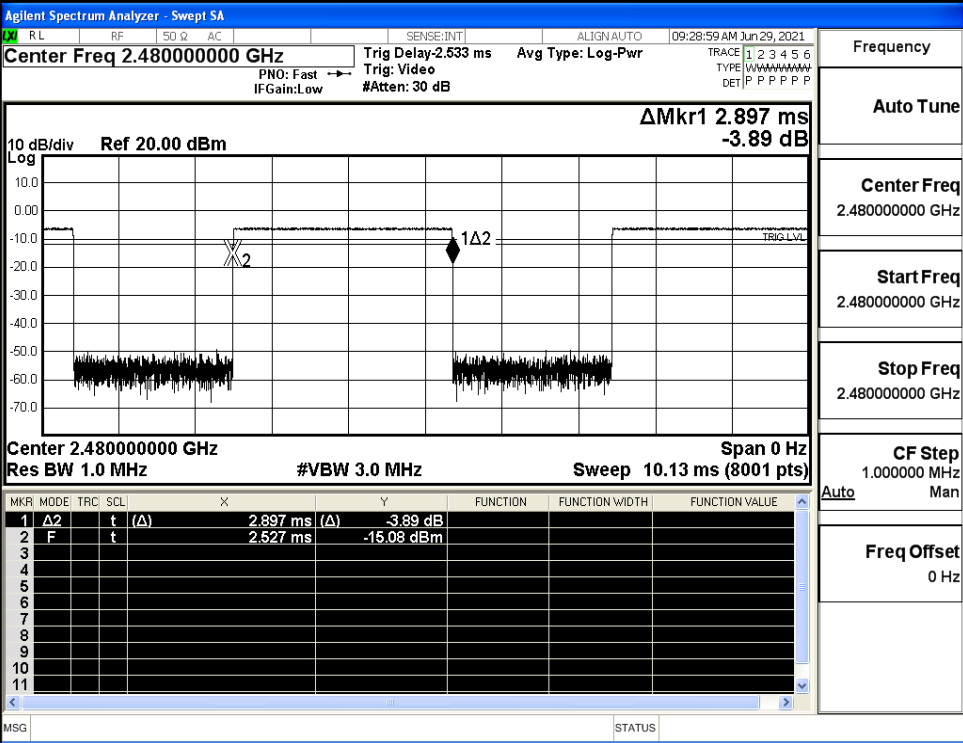
GFSK_DH5/LCH



GFSK_DH5/MCH

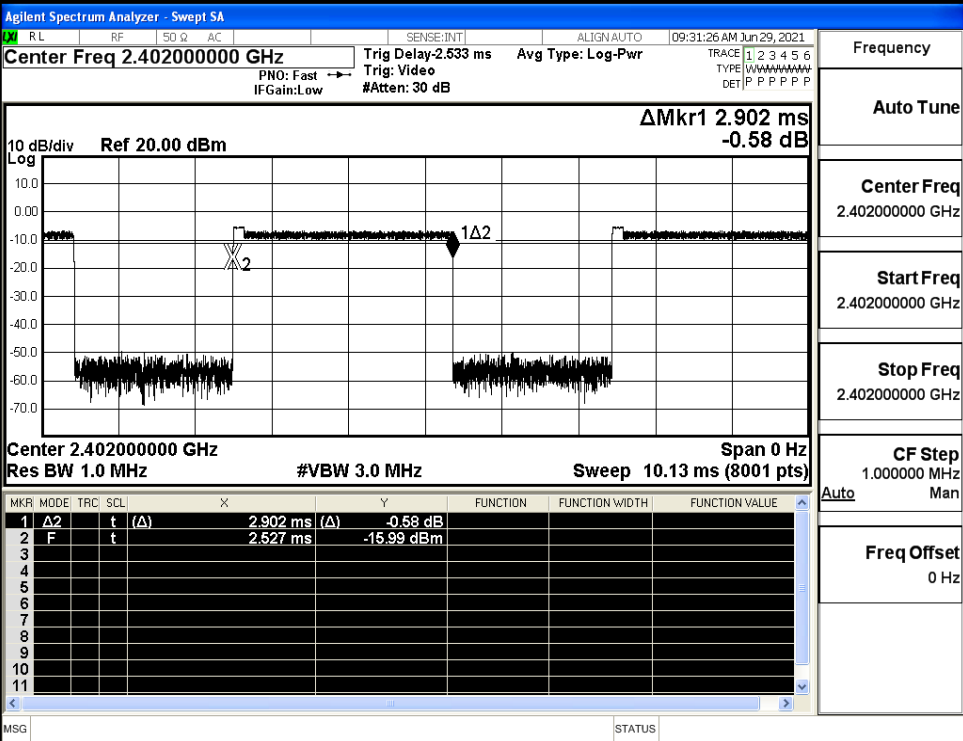


GFSK_DH5/HCH

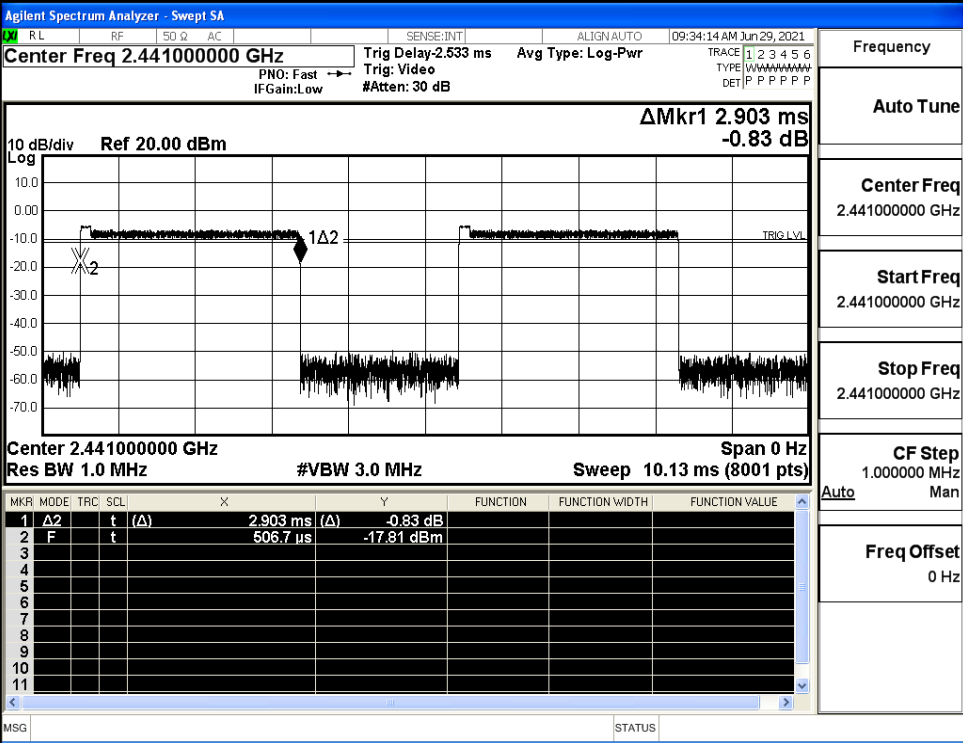




$\pi/4$ DQPSK
_2DH5/LCH

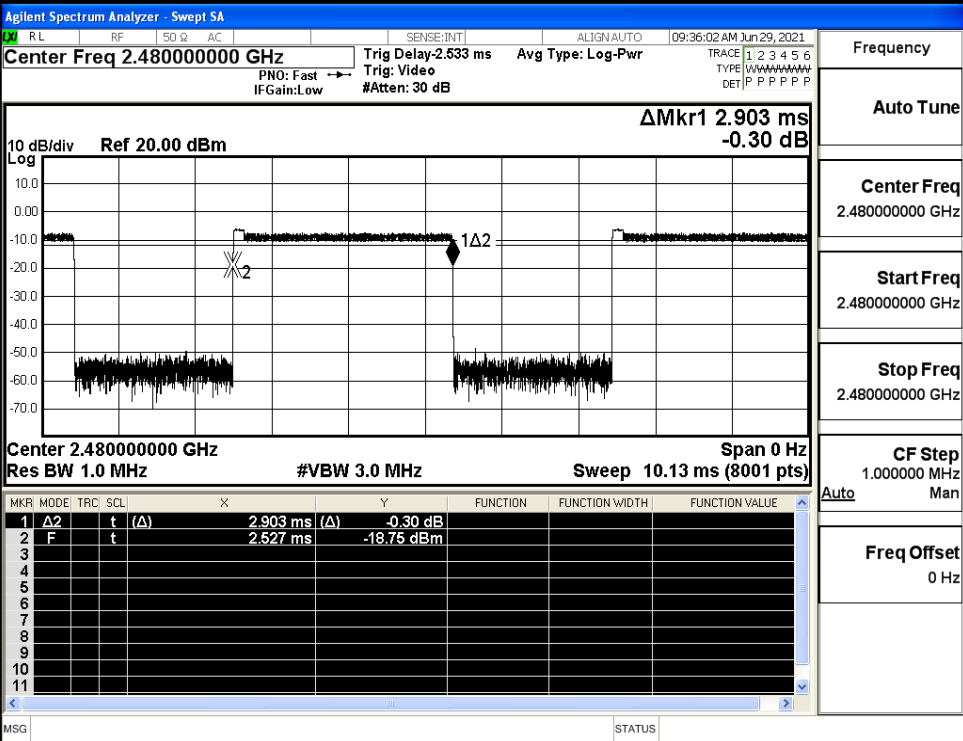


$\pi/4$ DQPSK
_2DH5/MCH

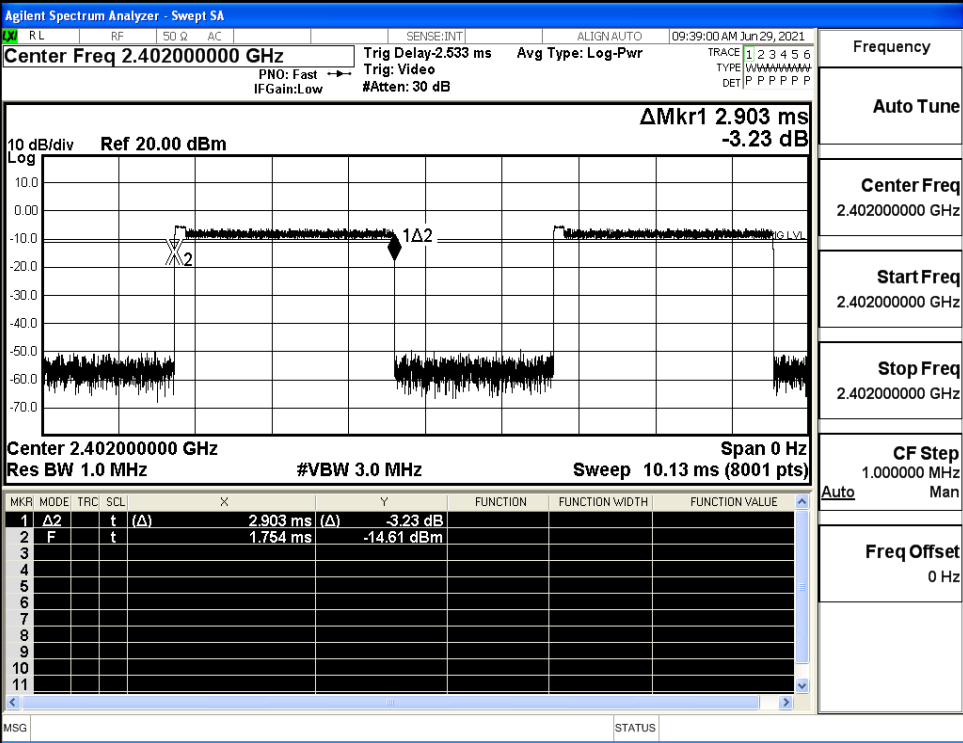


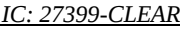


$\pi/4$ DQPSK
_2DH5/HCH



8DPSK _3DH5/LCH



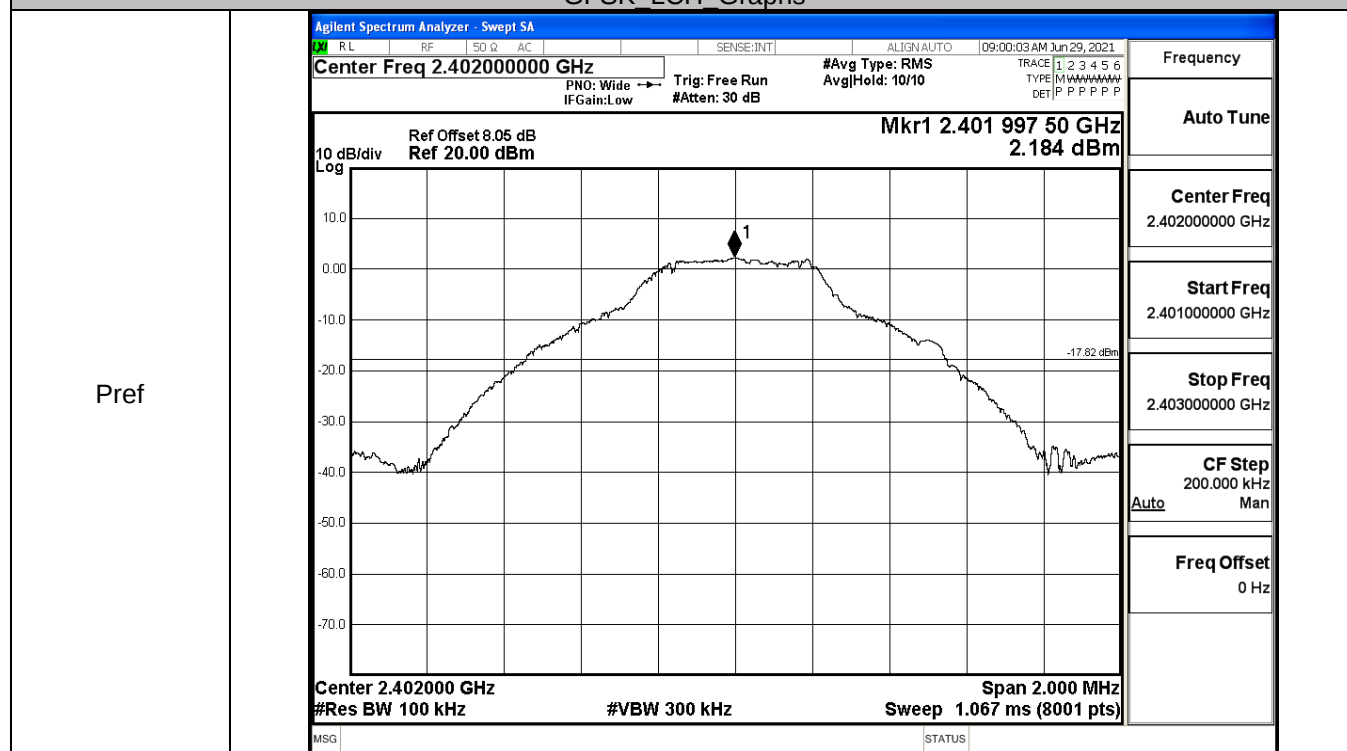
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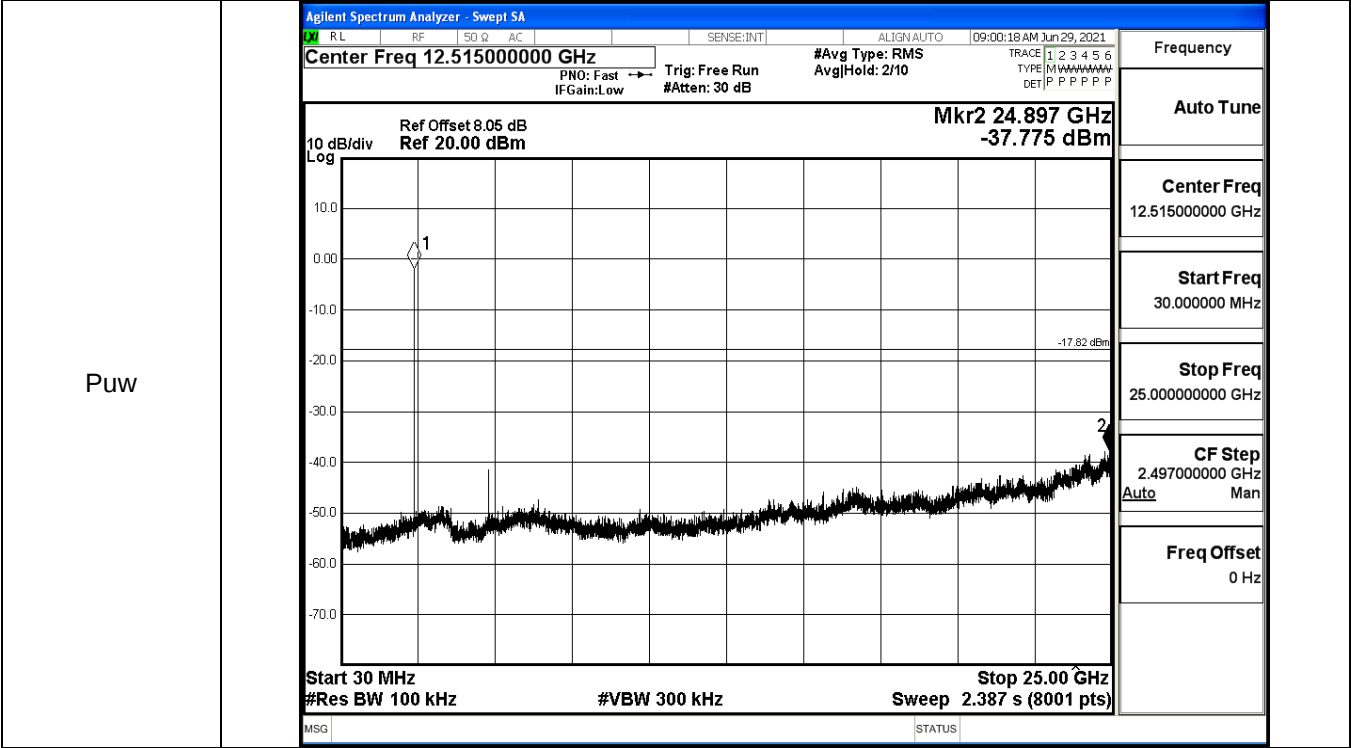


A.7 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2.184	-37.775	-17.816	PASS
	MCH	2.469	-38.027	-17.531	PASS
	HCH	1.226	-38.232	-18.774	PASS
$\pi/4$ DQPSK	LCH	2.29	-37.696	-17.710	PASS
	MCH	2.277	-37.494	-17.723	PASS
	HCH	1.548	-38.402	-18.452	PASS
8DPSK	LCH	2.452	-38.088	-17.548	PASS
	MCH	2.438	-37.789	-17.562	PASS
	HCH	1.283	-37.624	-18.717	PASS

GFSK LCH Graphs

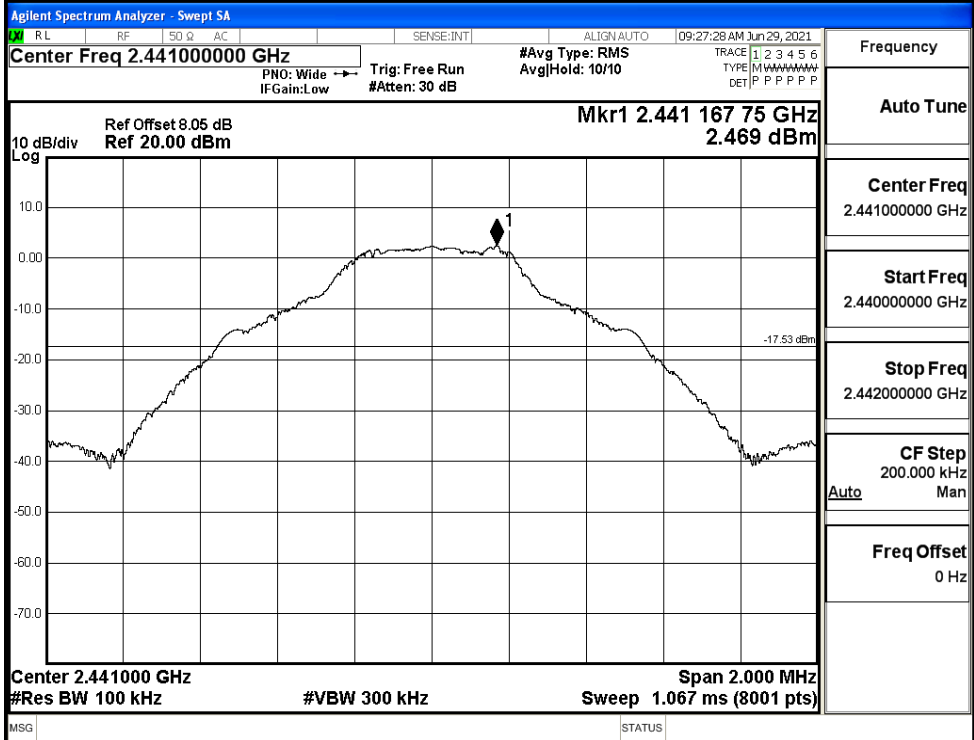




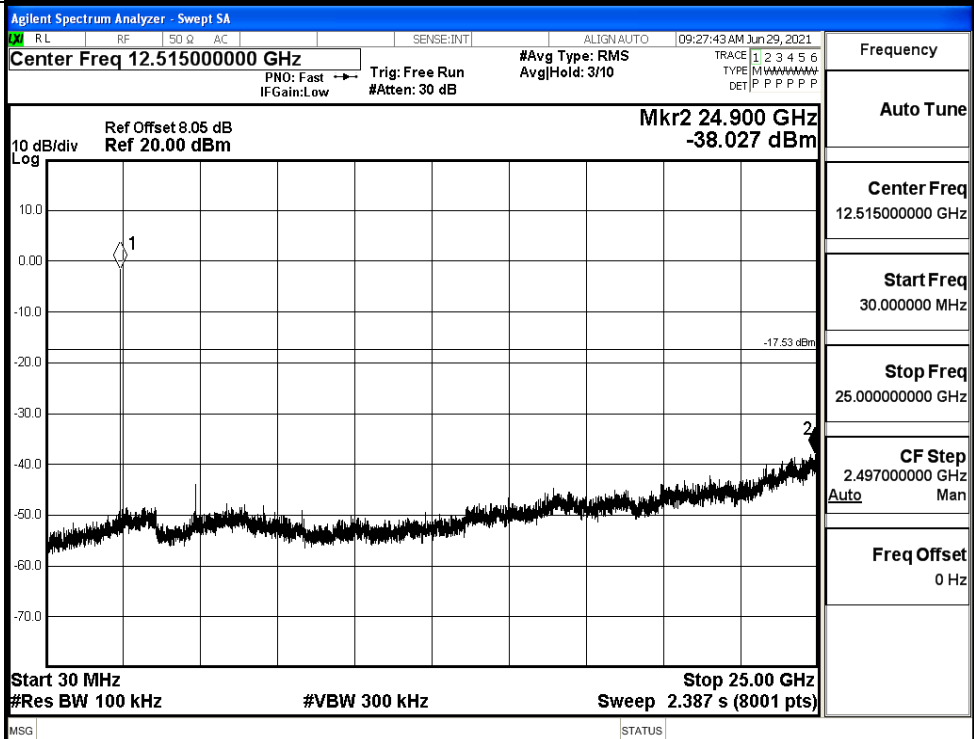


GFSK_MCH_Graphs

Pref



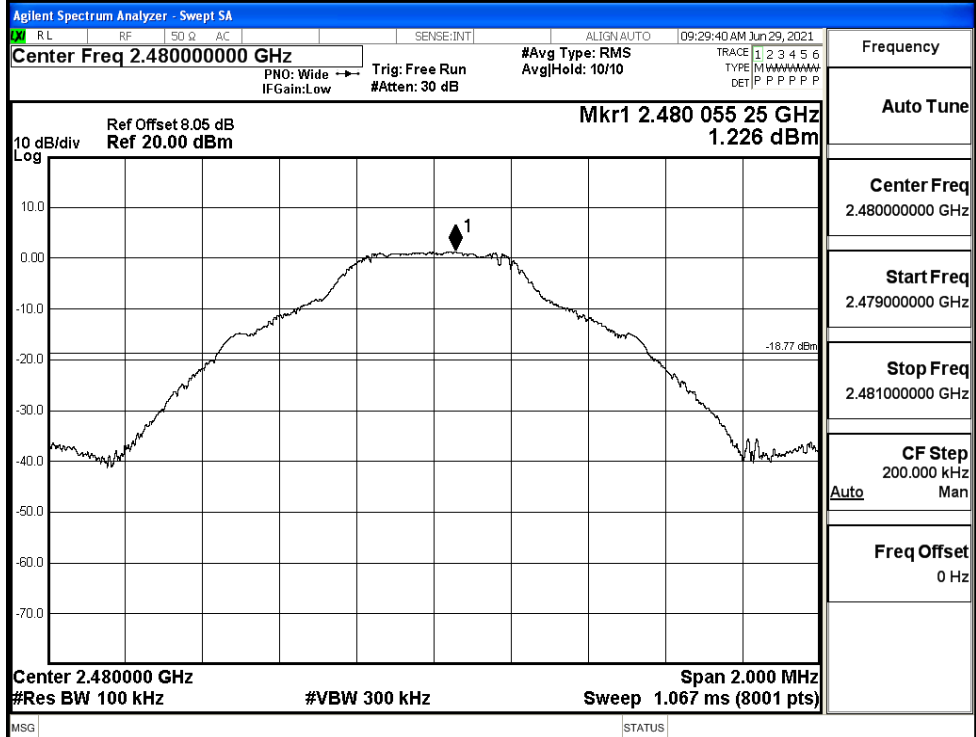
Puw



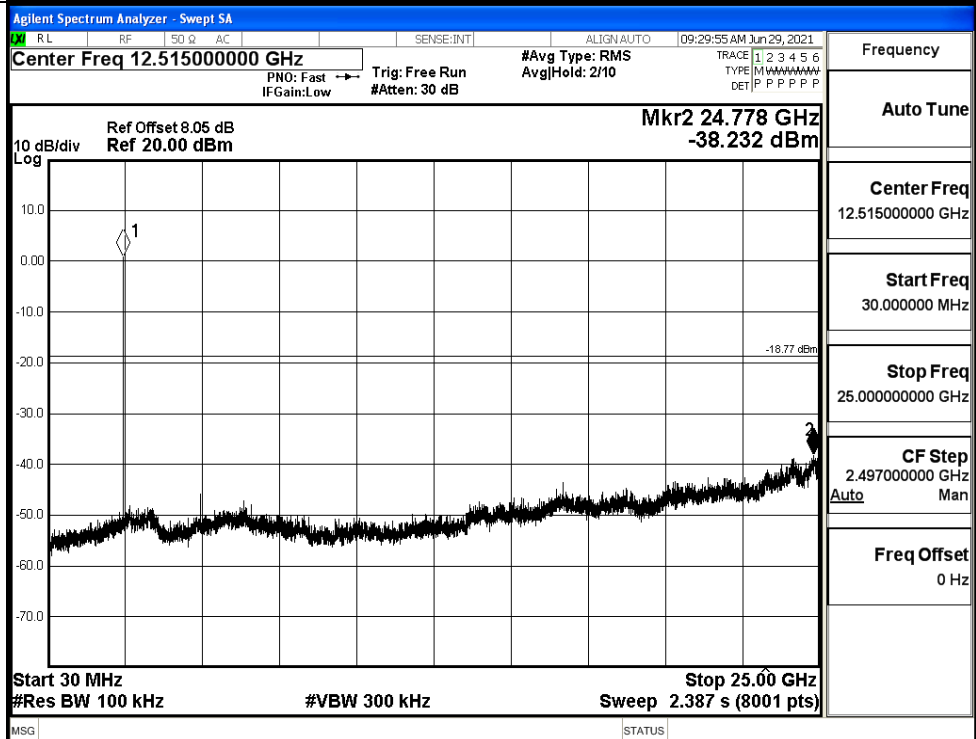


GFSK HCH Graphs

Pref

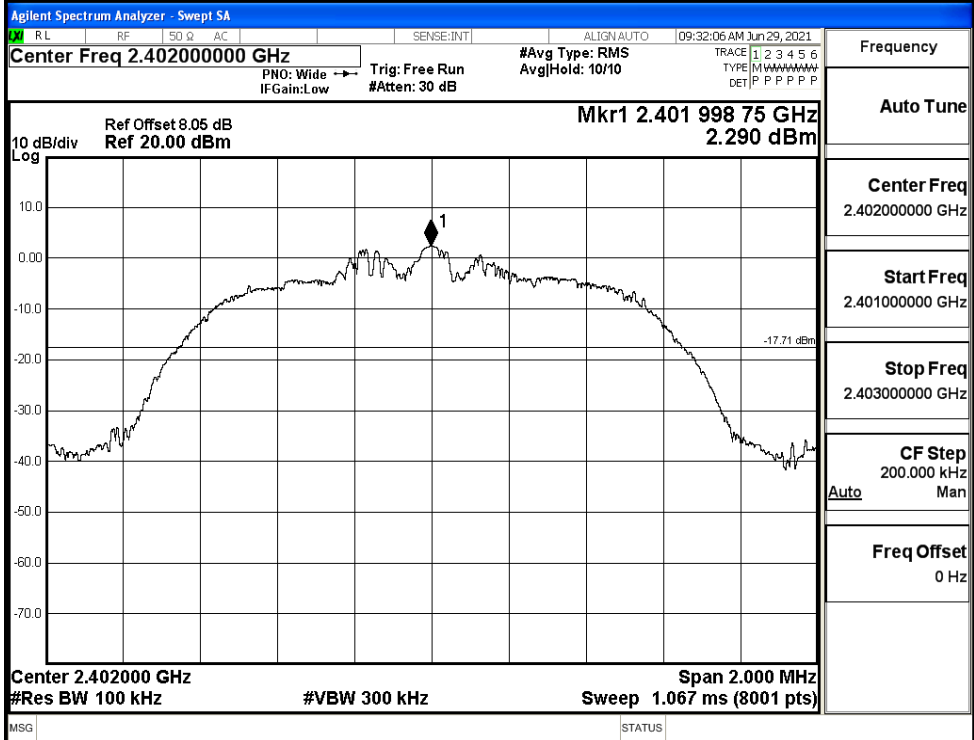


Puw

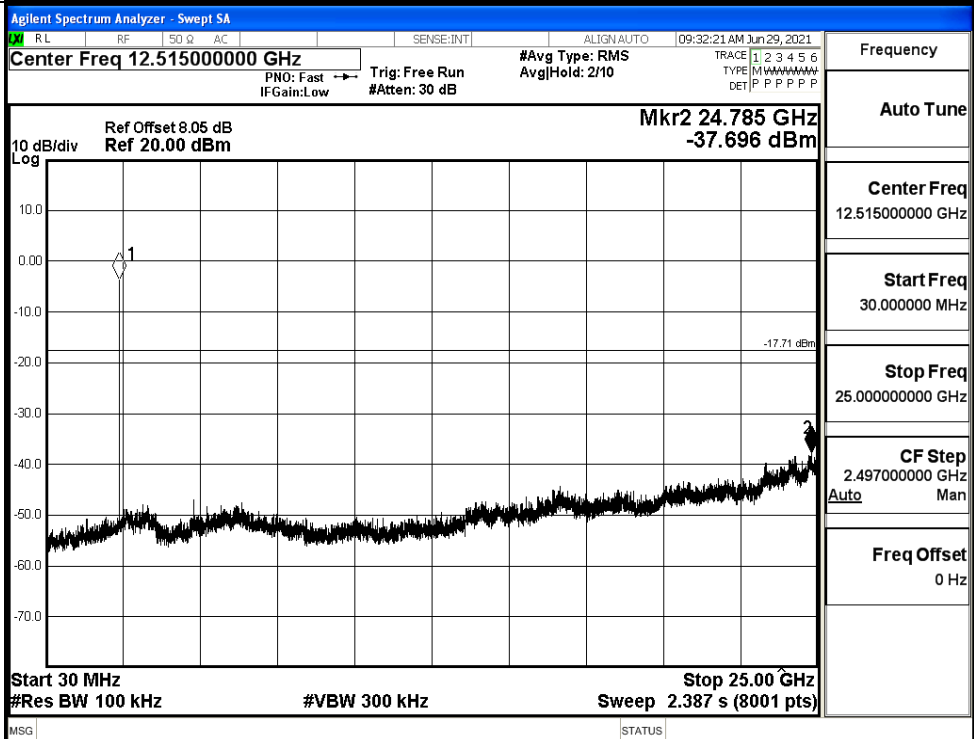


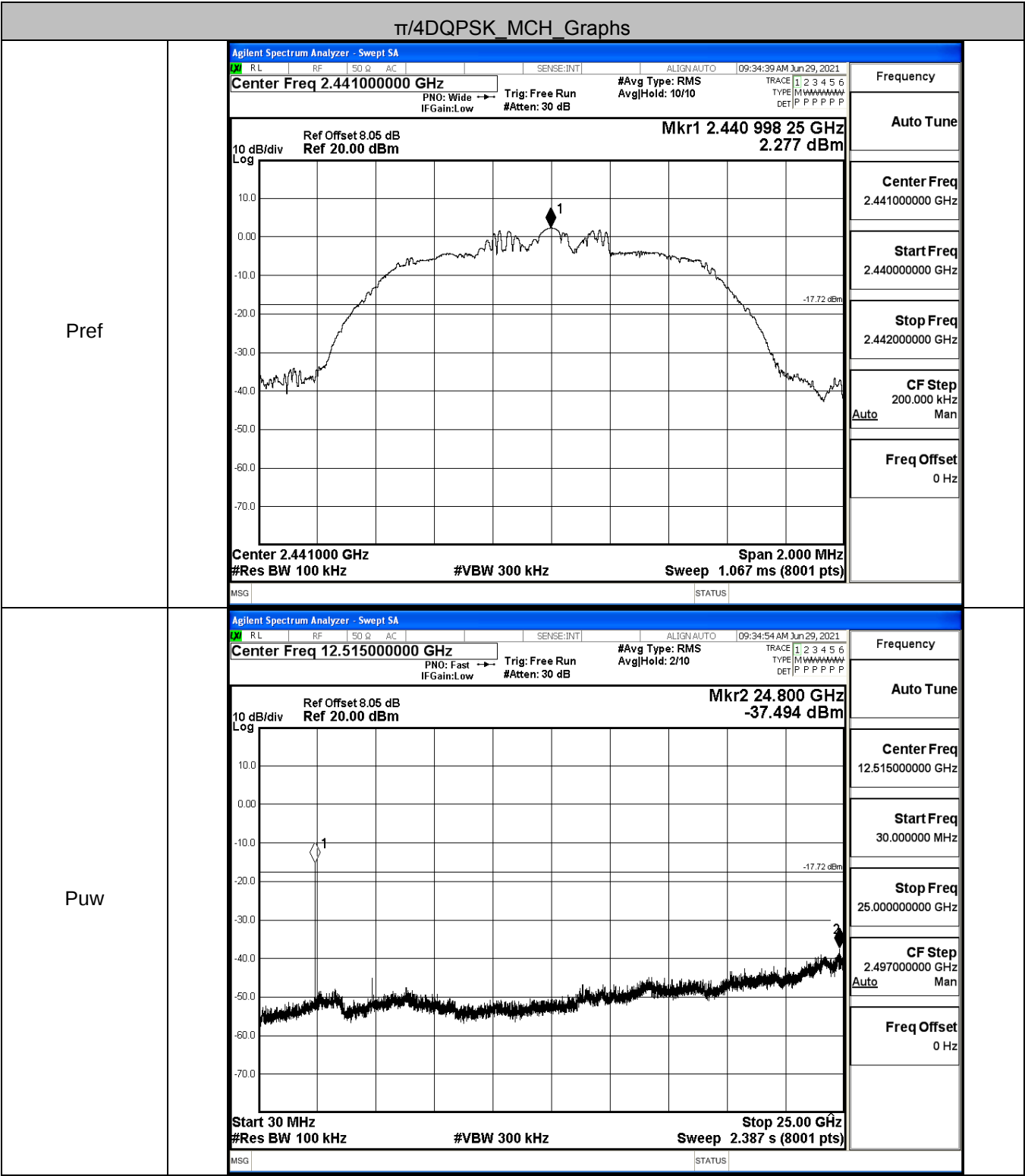
 $\pi/4$ DQPSK_LCH_Graphs

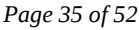
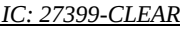
Pref

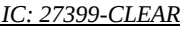


Puw





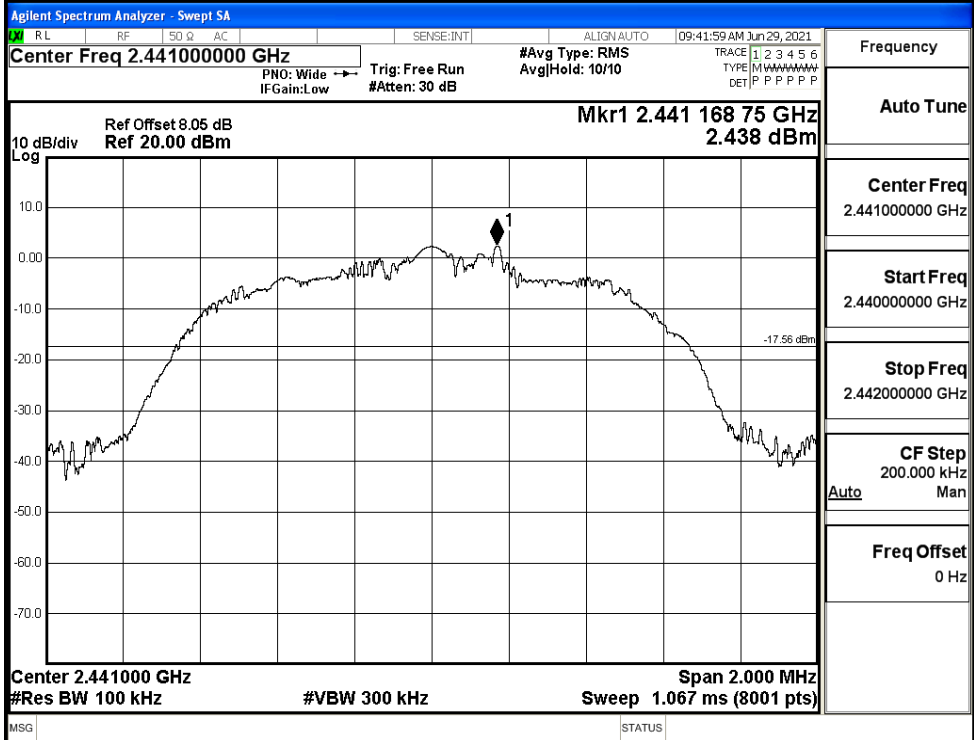


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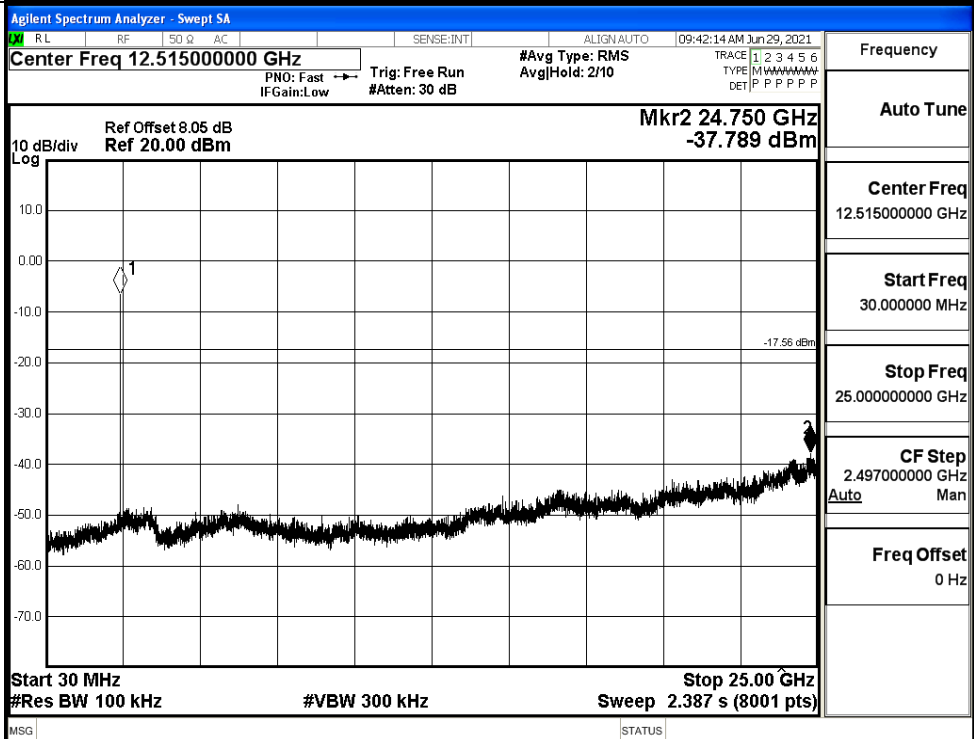


8DPSK_MCH_Graphs

Pref



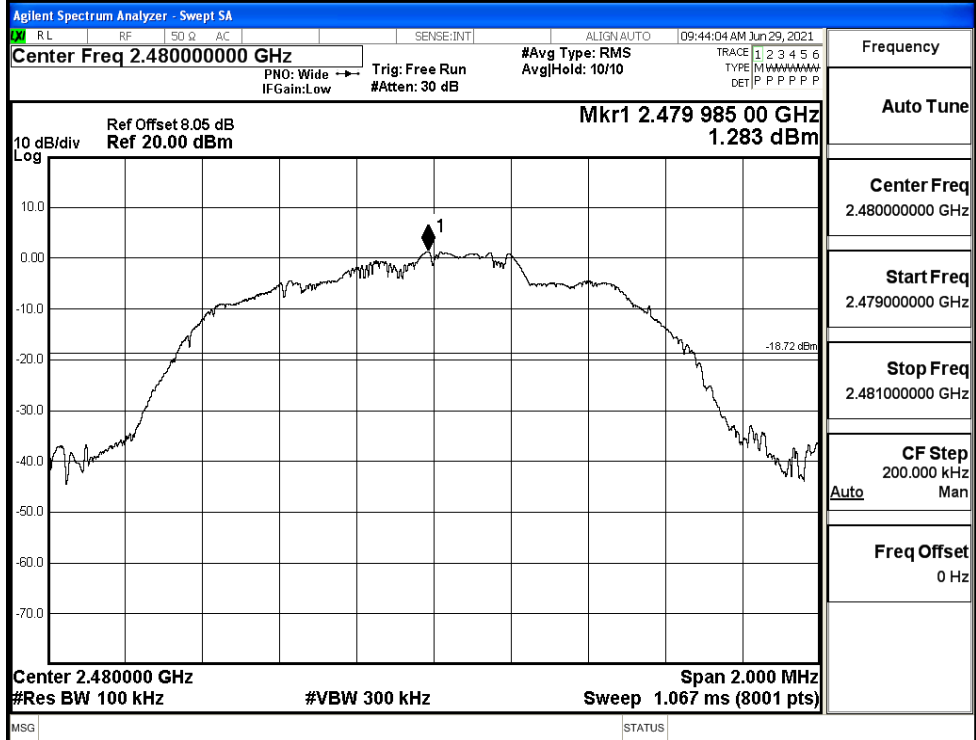
Puw



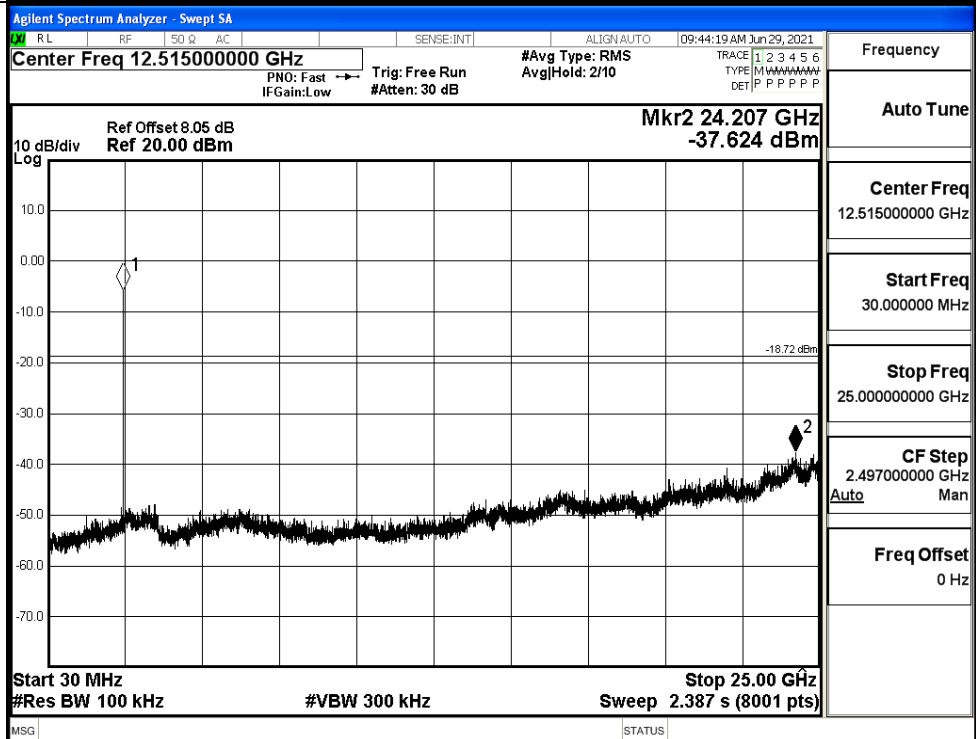


8DPSK_HCH_Graphs

Pref



Puw





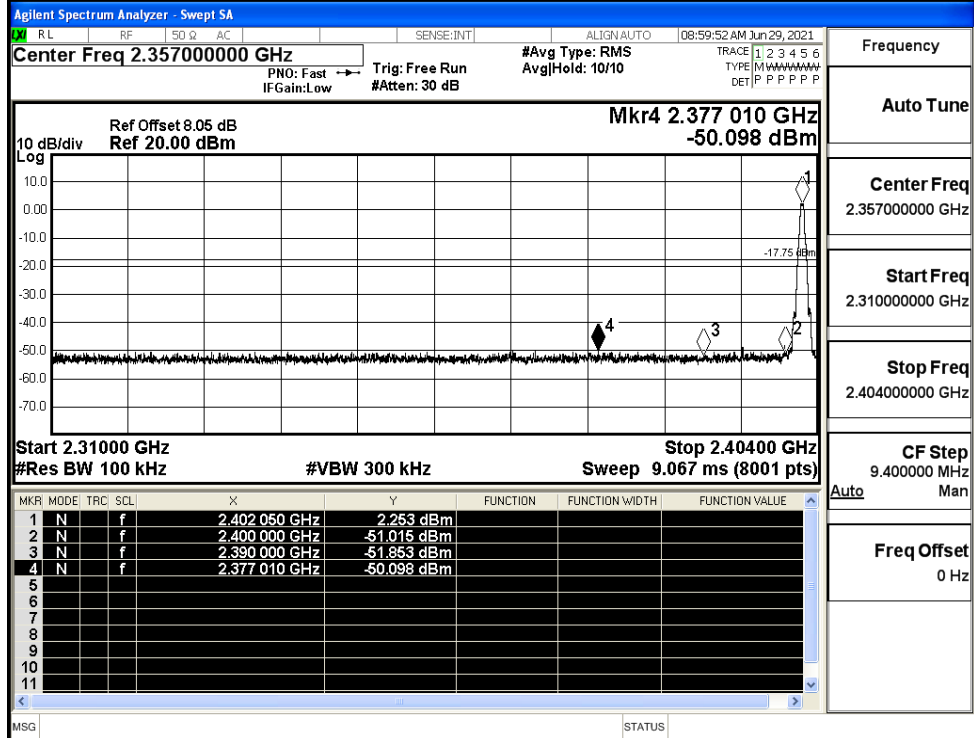
A.8 Band-edge for RF Conducted Emissions

Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	2.253	Off	-50.098	-17.75	PASS
			2.497	On	-49.082	-17.5	PASS
	HCH	2480	1.616	Off	-49.302	-18.38	PASS
			2.328	On	-48.425	-17.67	PASS
$\pi/4$ DQPSK	LCH	2402	1.840	Off	-49.259	-18.16	PASS
			2.616	On	-49.275	-17.38	PASS
	HCH	2480	1.666	Off	-48.547	-18.33	PASS
			2.319	On	-48.835	-17.68	PASS
8DPSK	LCH	2402	2.379	Off	-49.204	-17.62	PASS
			2.443	On	-49.041	-17.56	PASS
	HCH	2480	1.565	Off	-49.545	-18.44	PASS
			2.364	On	-47.760	-17.64	PASS

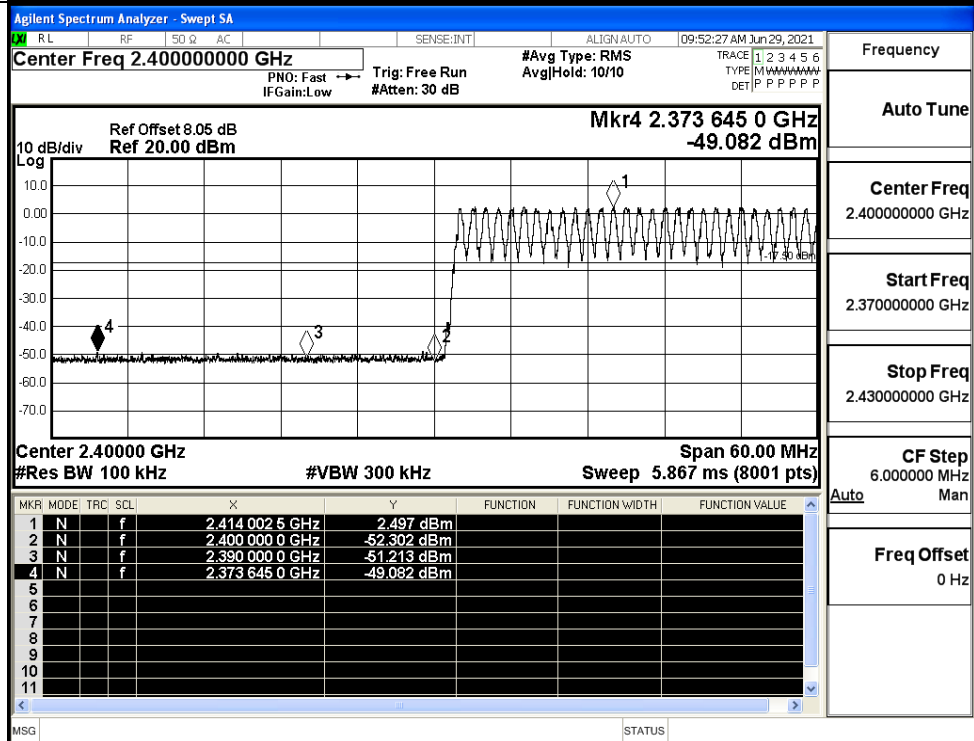


Test Graphs

GFSK/LCH/No Hop

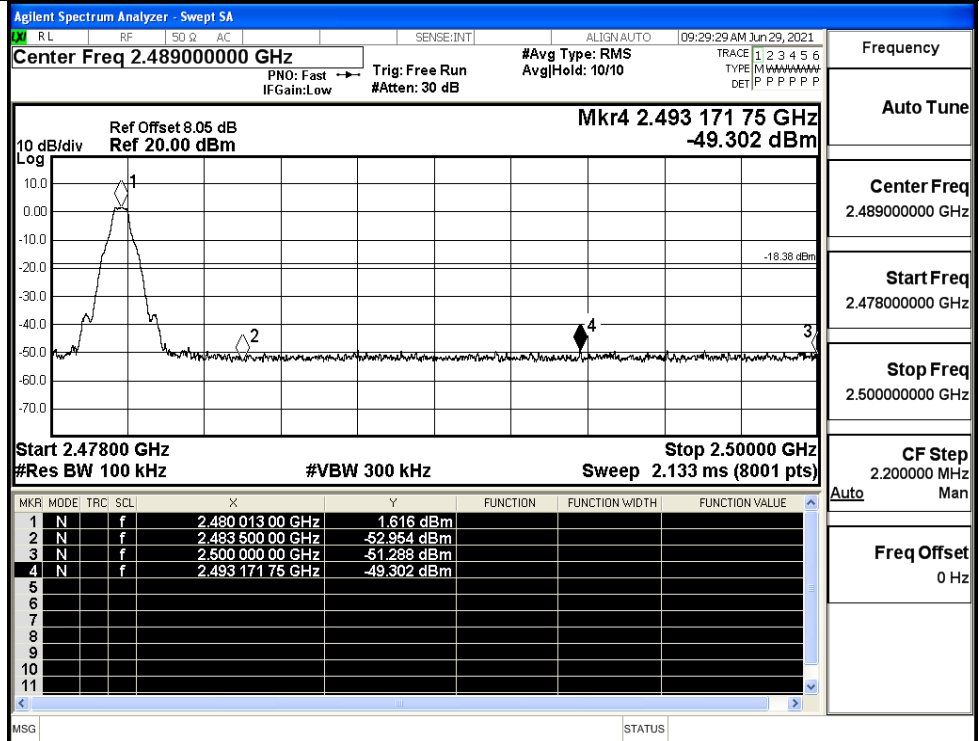


GFSK/LCH/Hop

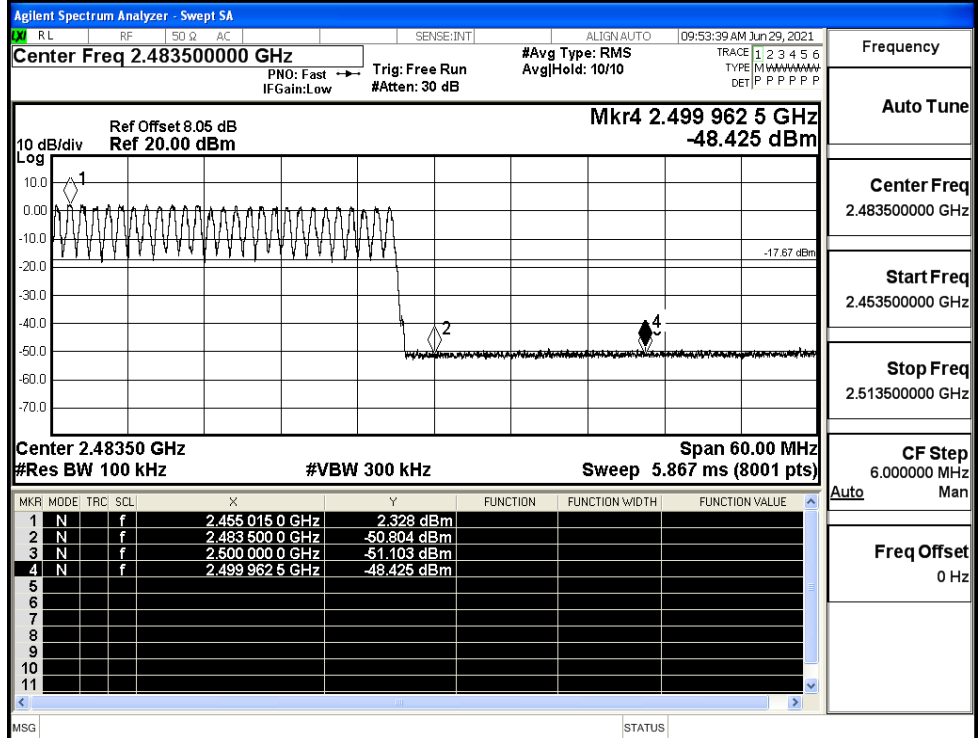




GFSK/HCH/No Hop

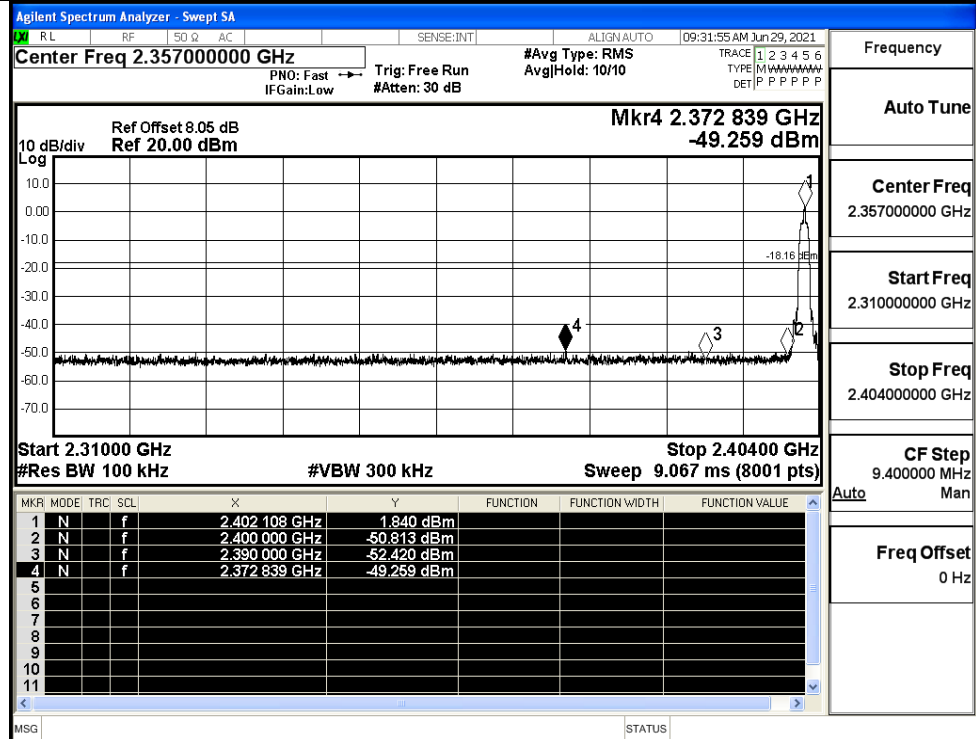


GFSK/HCH/Hop

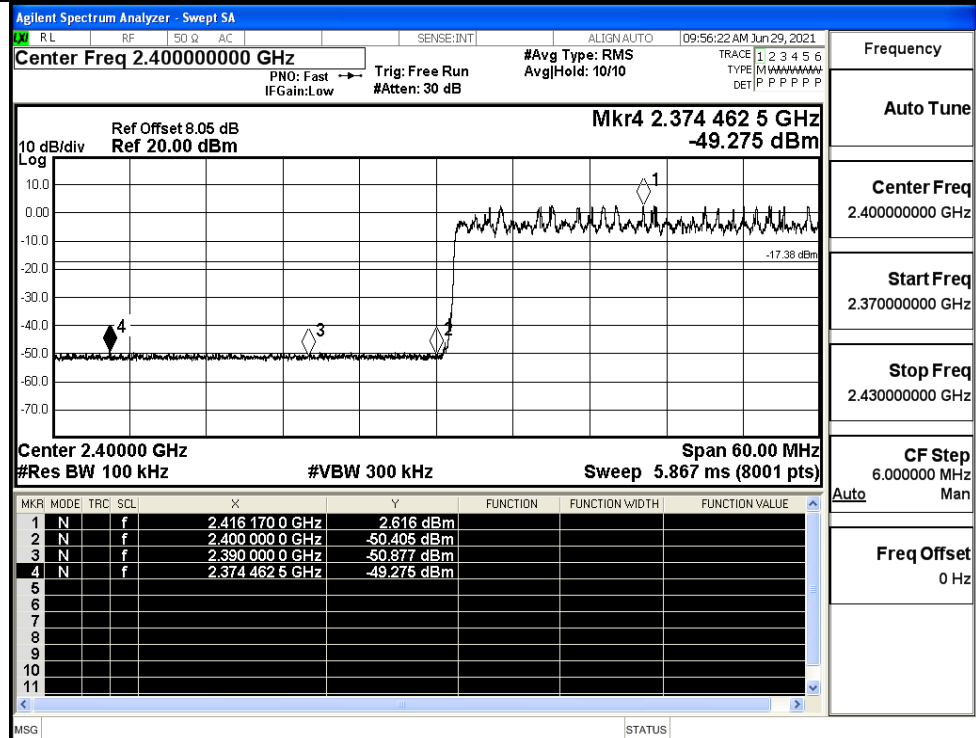




$\pi/4$ DQPSK/LCH/No
Hop

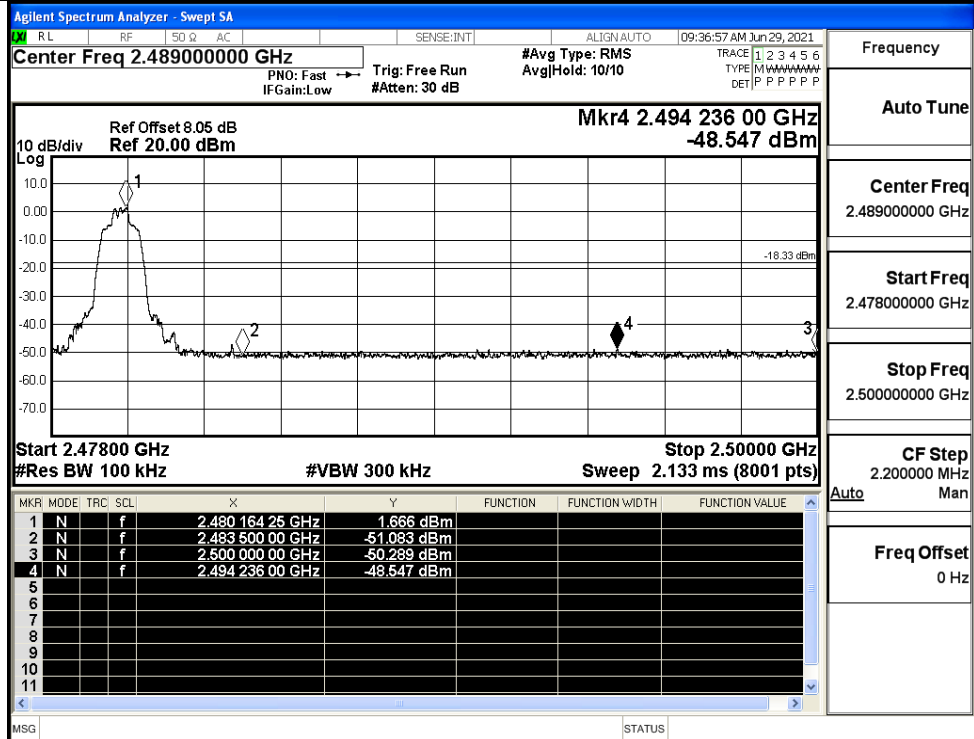


$\pi/4$ DQPSK/LCH/Hop

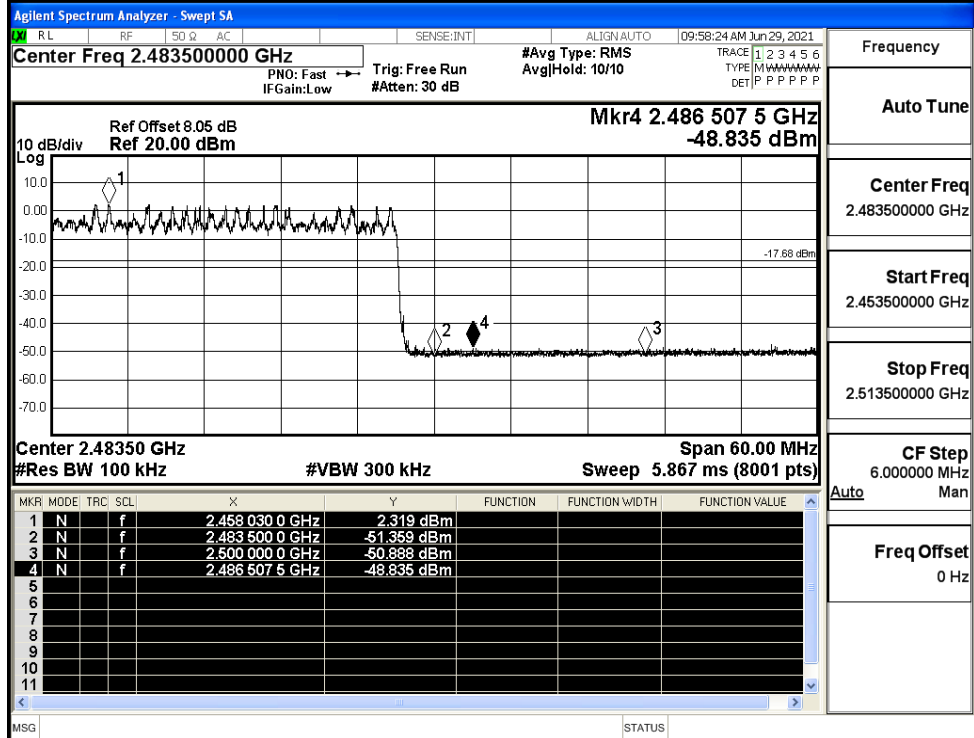




$\pi/4$ DQPSK/HCH/No
Hop

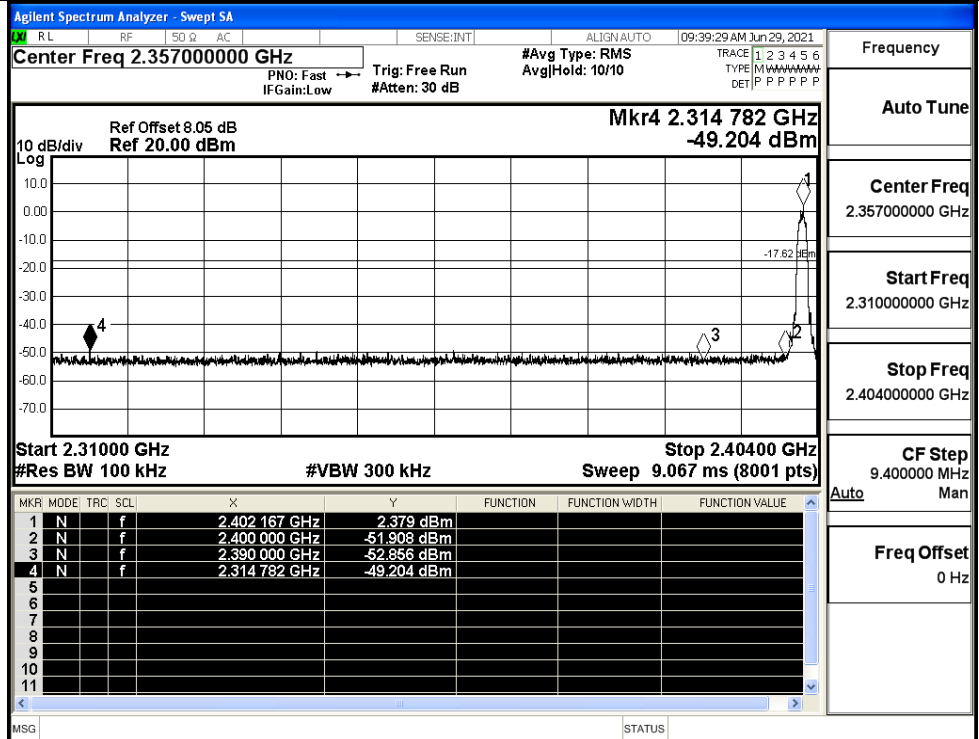


$\pi/4$ DQPSK/HCH/Hop

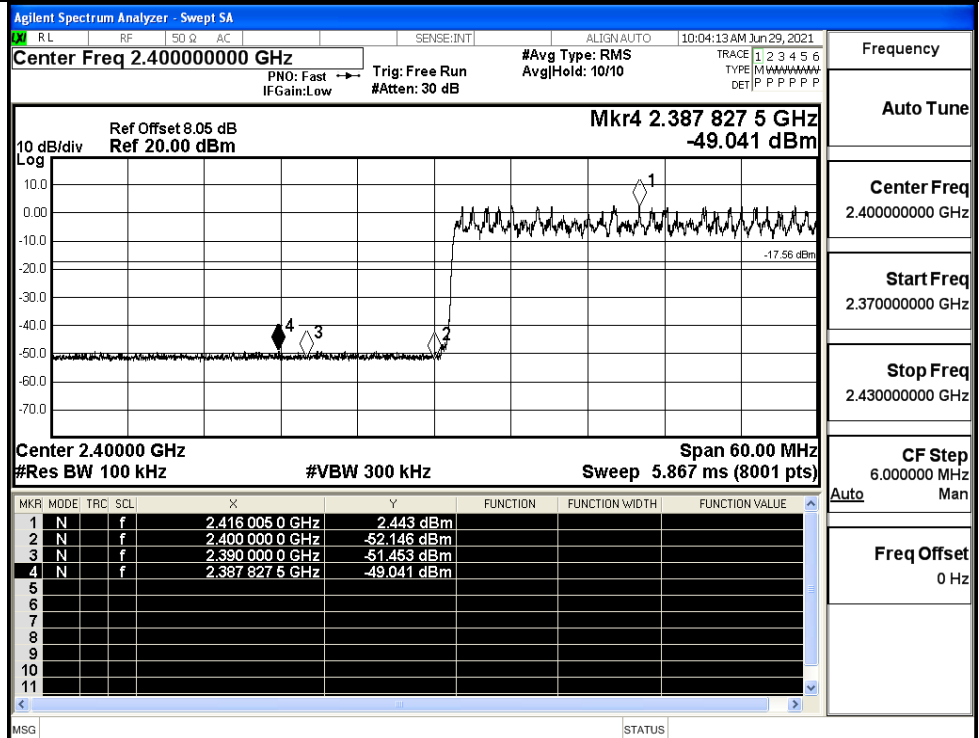




8DPSK/LCH/No Hop

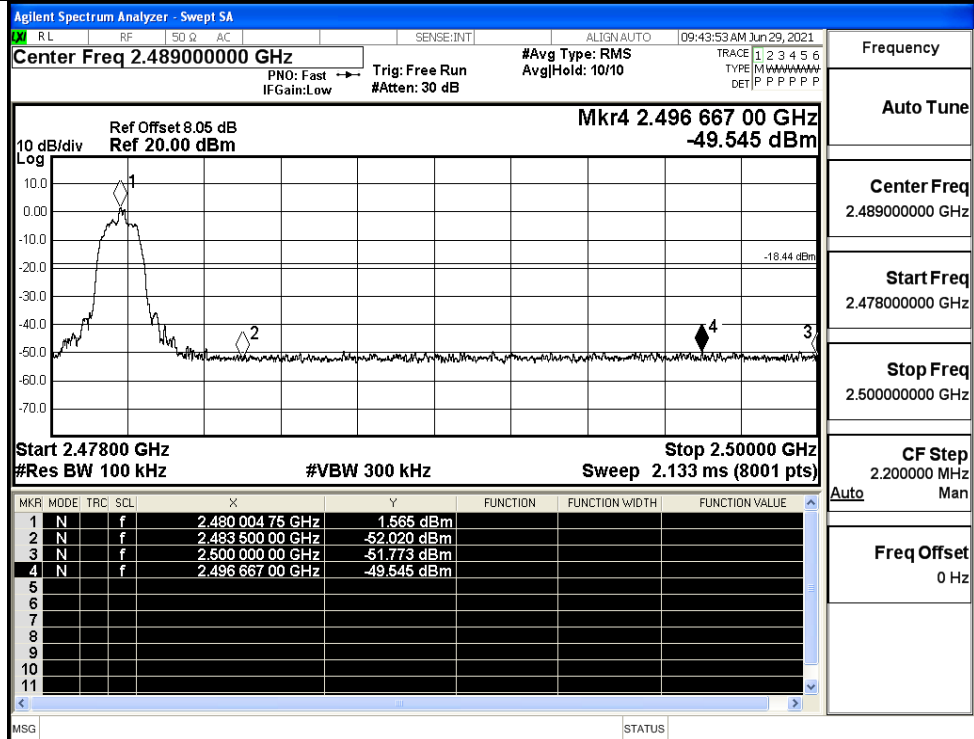


8DPSK/LCH/Hop

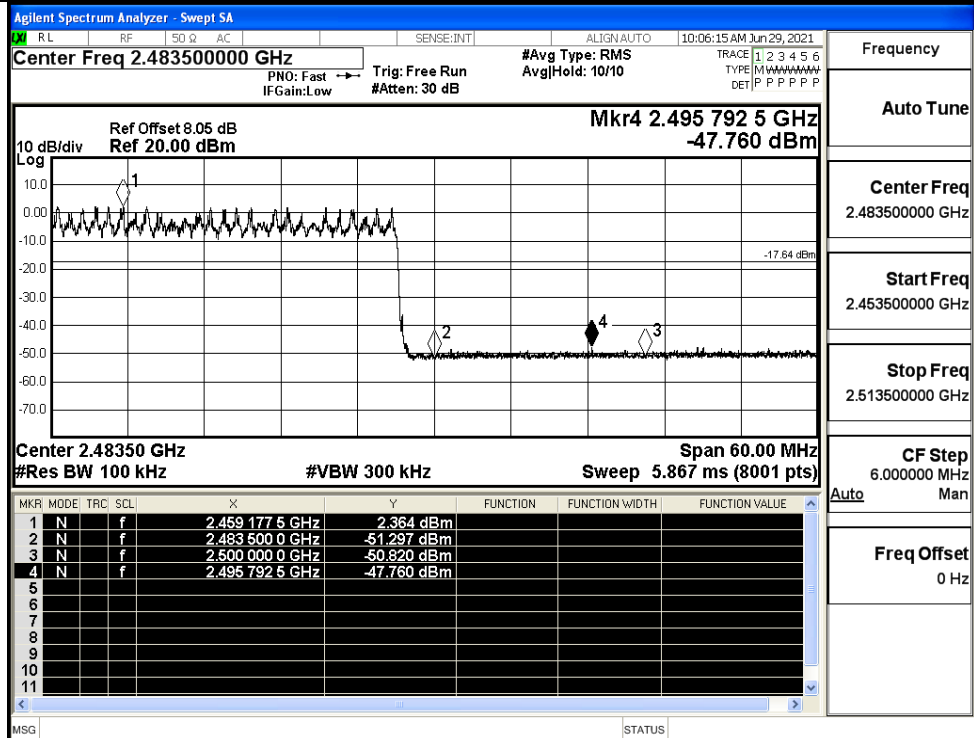




8DPSK/HCH/No Hop



8DPSK/HCH/Hop



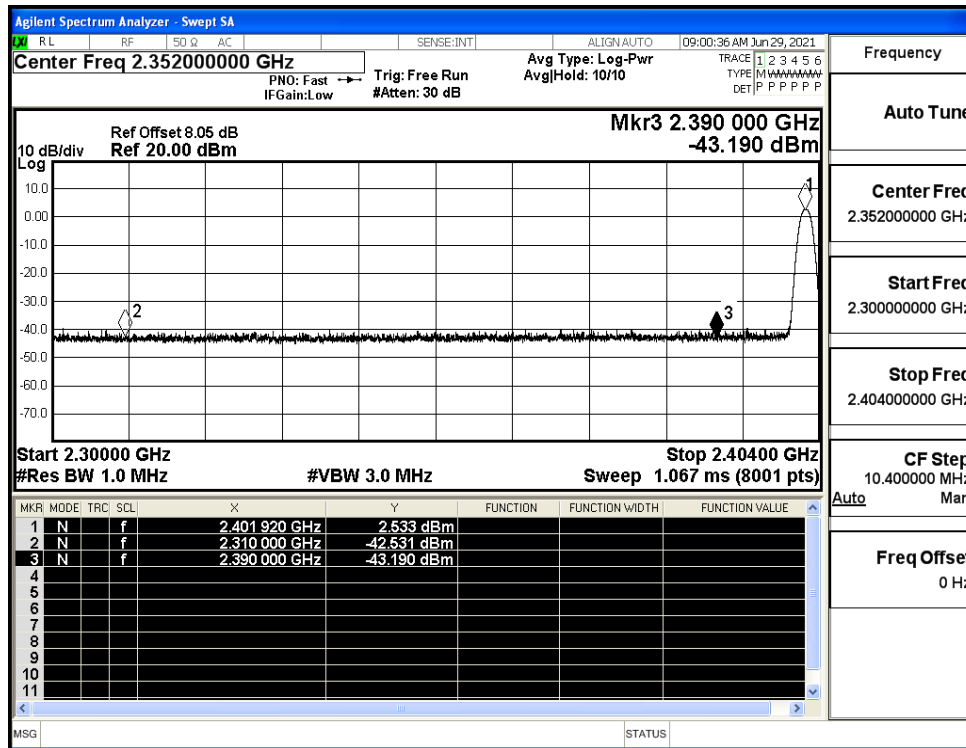


A.9 Restrict-band band-edge measurements

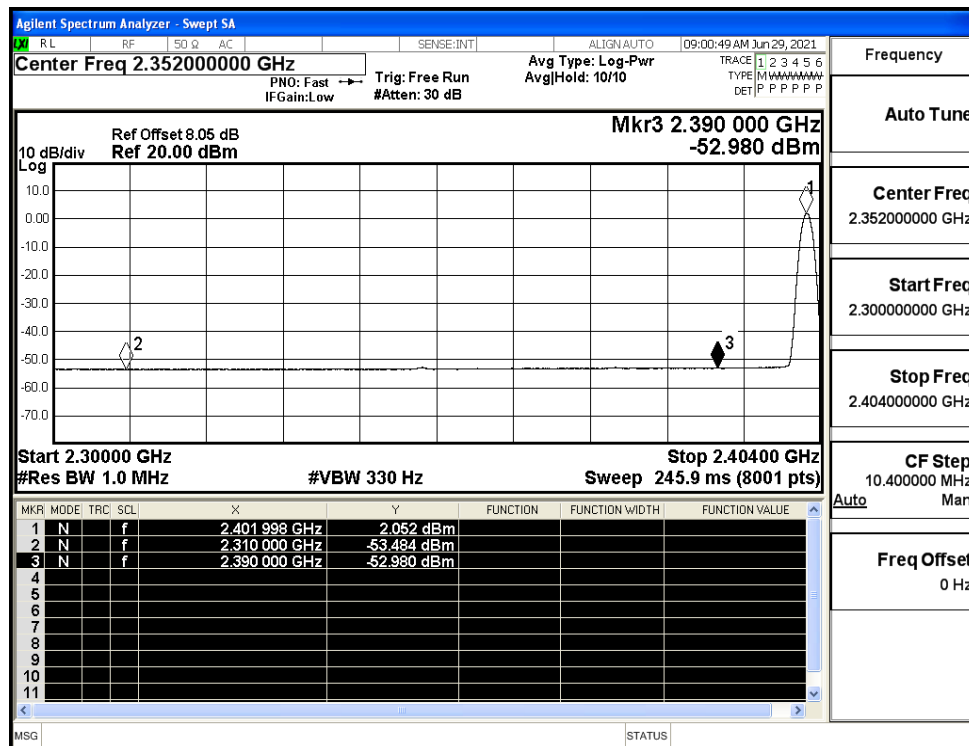
Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-42.53	2.0	0	54.73	PEAK	74	PASS
	Off	2310.0	-53.48	2.0	0	43.77	AV	54	PASS
	Off	2390.0	-43.19	2.0	0	54.07	PEAK	74	PASS
	Off	2390.0	-52.98	2.0	0	44.28	AV	54	PASS
	Off	2483.5	-41.18	2.0	0	56.08	PEAK	74	PASS
	Off	2483.5	-52.17	2.0	0	45.09	AV	54	PASS
	Off	2500.0	-41.63	2.0	0	55.63	PEAK	74	PASS
	Off	2500.0	-52.23	2.0	0	45.02	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-43.33	2.0	0	53.93	PEAK	74	PASS
	Off	2310.0	-53.37	2.0	0	43.89	AV	54	PASS
	Off	2390.0	-43.23	2.0	0	54.03	PEAK	74	PASS
	Off	2390.0	-52.86	2.0	0	44.4	AV	54	PASS
	Off	2483.5	-42.81	2.0	0	54.45	PEAK	74	PASS
	Off	2483.5	-52.34	2.0	0	44.92	AV	54	PASS
	Off	2500.0	-42.30	2.0	0	54.96	PEAK	74	PASS
	Off	2500.0	-52.24	2.0	0	45.02	AV	54	PASS
8DPSK	Off	2310.0	-43.04	2.0	0	54.22	PEAK	74	PASS
	Off	2310.0	-53.48	2.0	0	43.78	AV	54	PASS
	Off	2390.0	-42.04	2.0	0	55.22	PEAK	74	PASS
	Off	2390.0	-52.84	2.0	0	44.42	AV	54	PASS
	Off	2483.5	-42.42	2.0	0	54.83	PEAK	74	PASS
	Off	2483.5	-52.46	2.0	0	44.80	AV	54	PASS
	Off	2500.0	-42.06	2.0	0	55.20	PEAK	74	PASS
	Off	2500.0	-52.35	2.0	0	44.91	AV	54	PASS



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

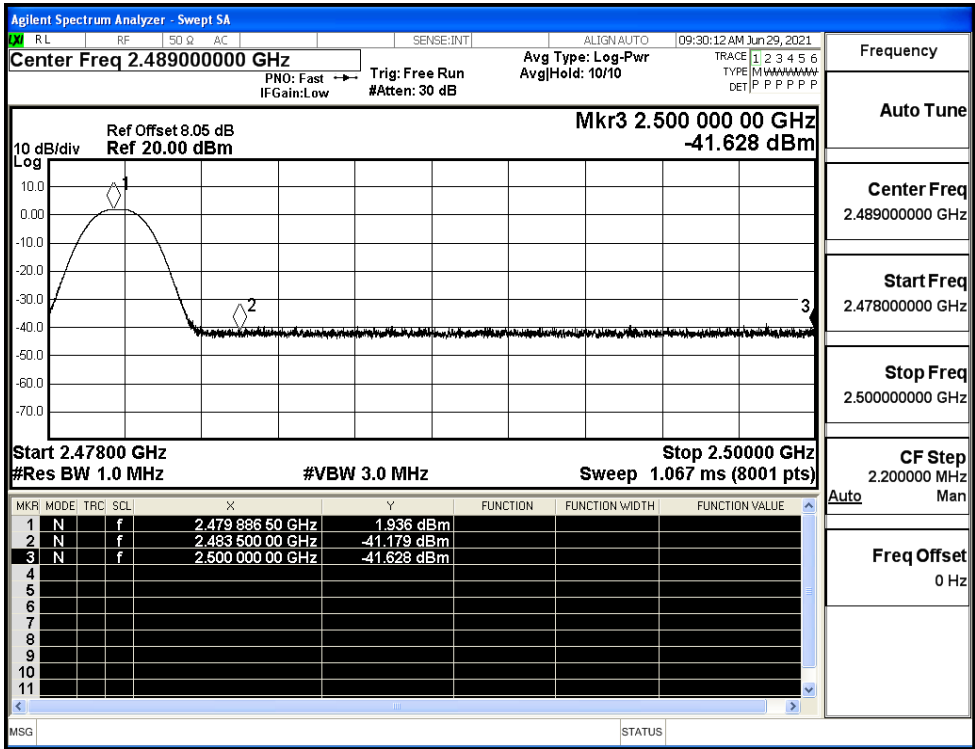


Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)

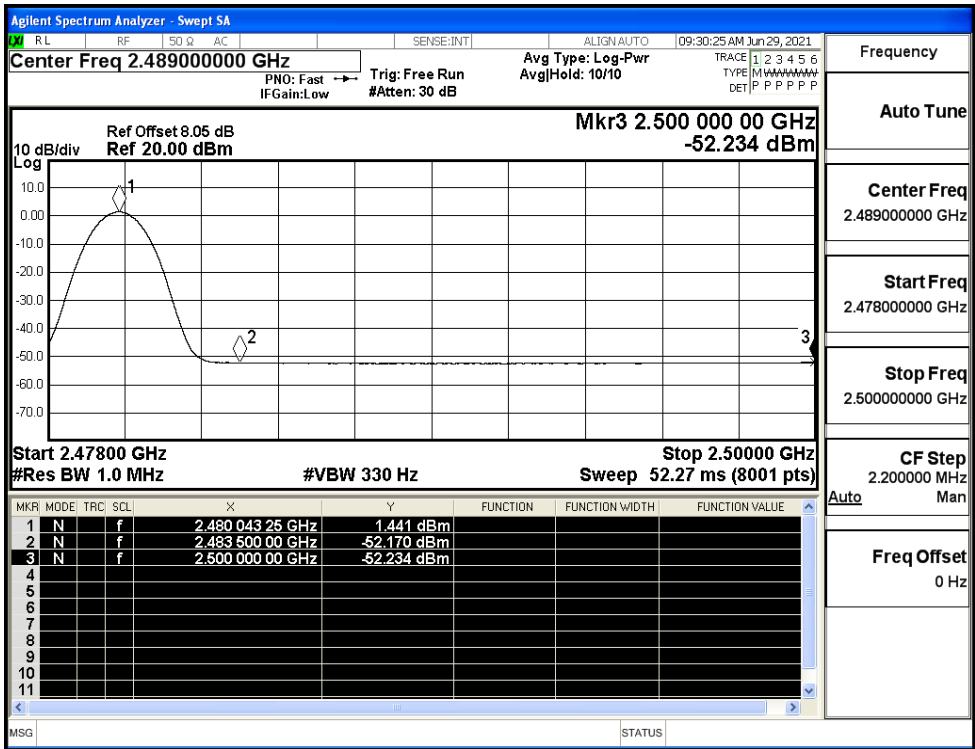


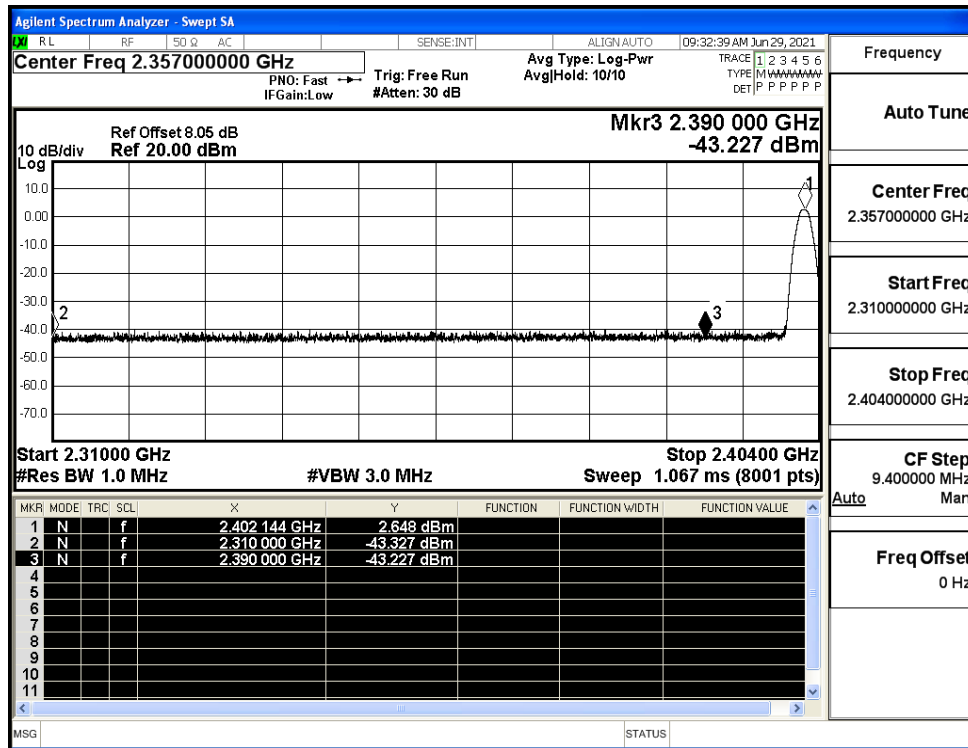
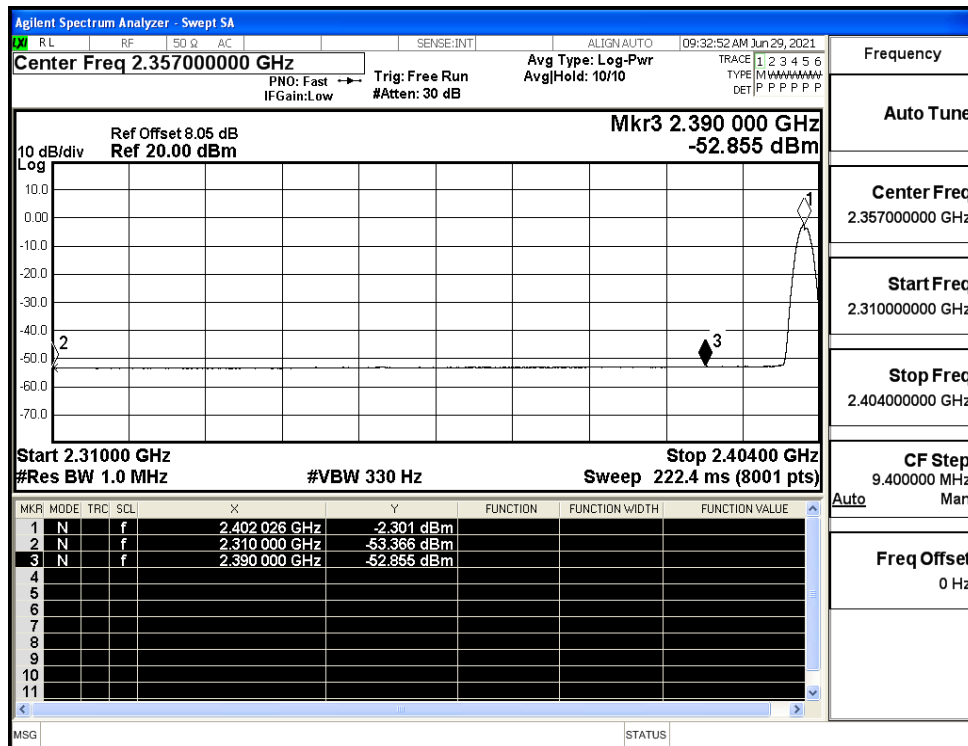


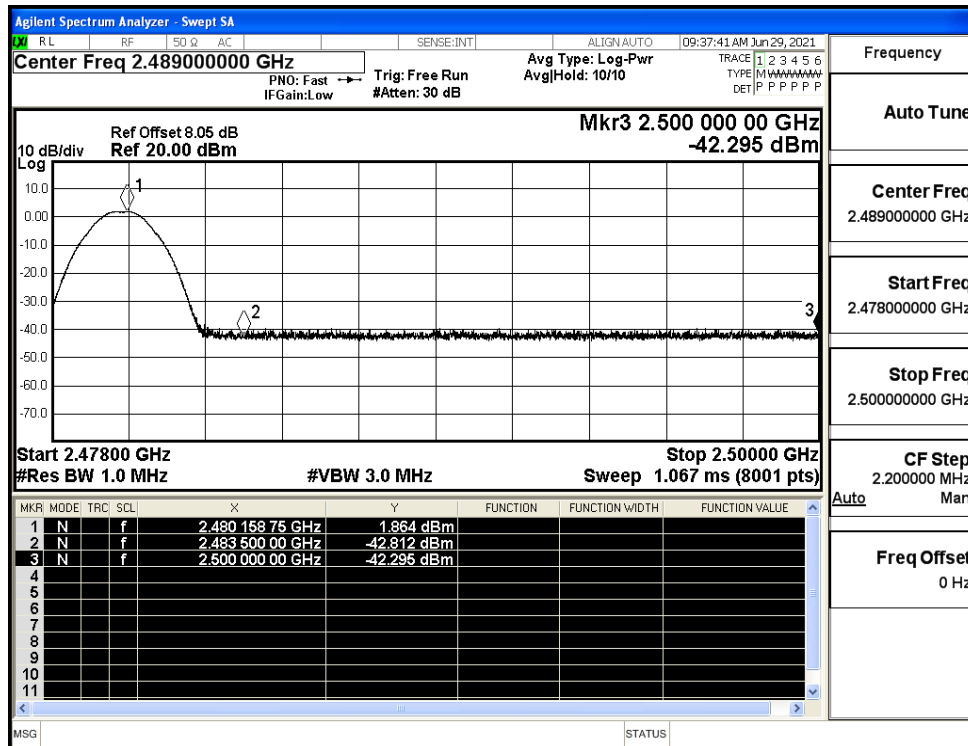
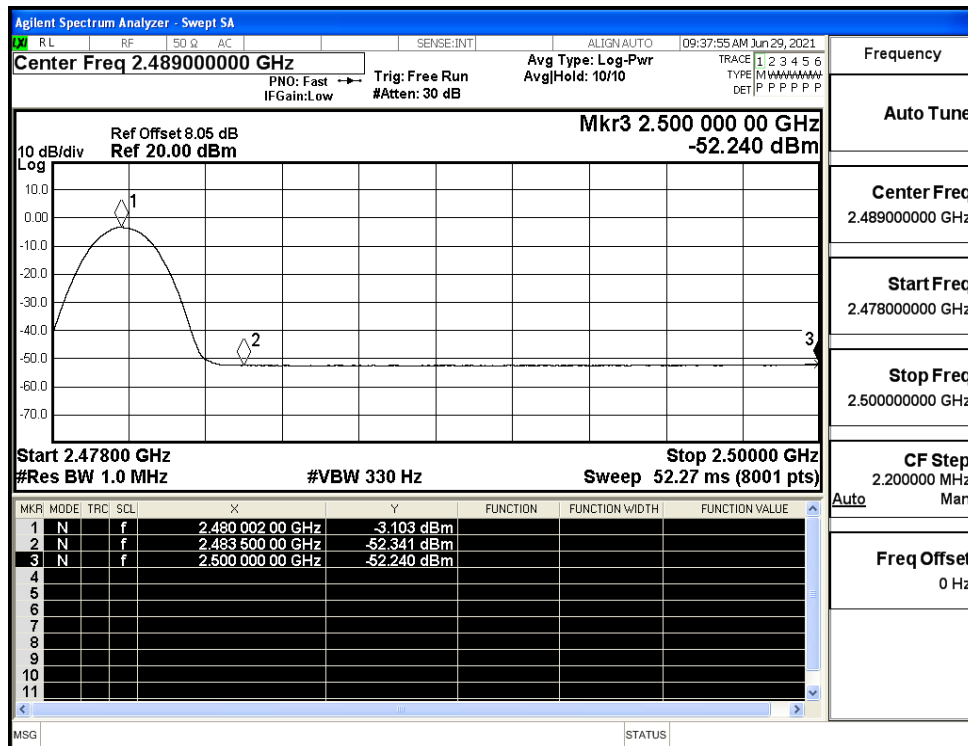
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)



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

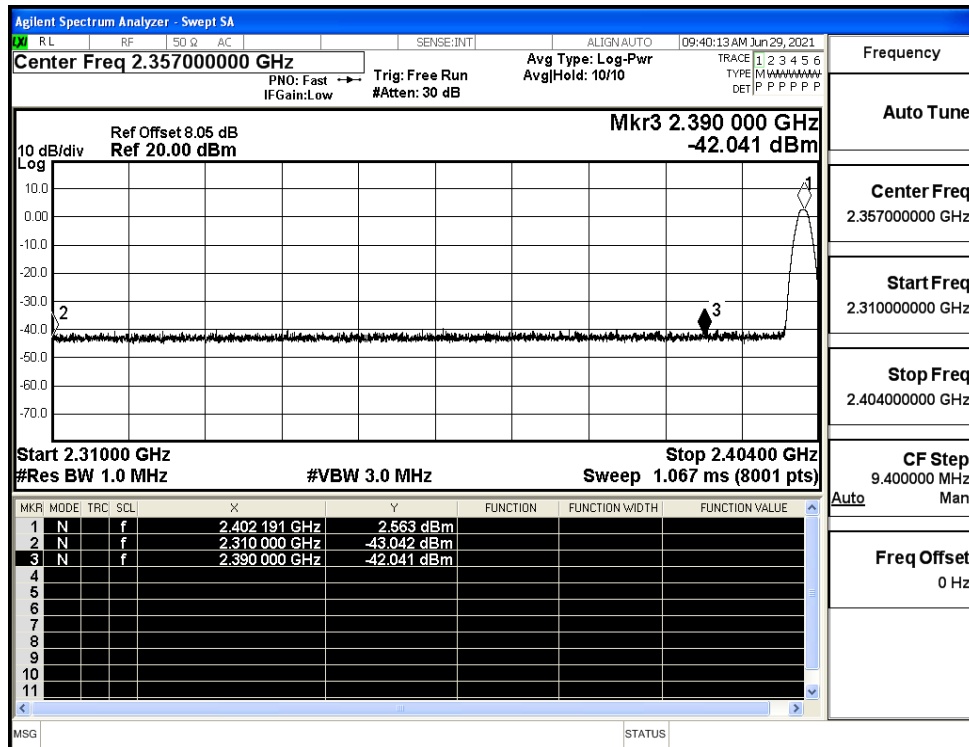


Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (Low Channel)

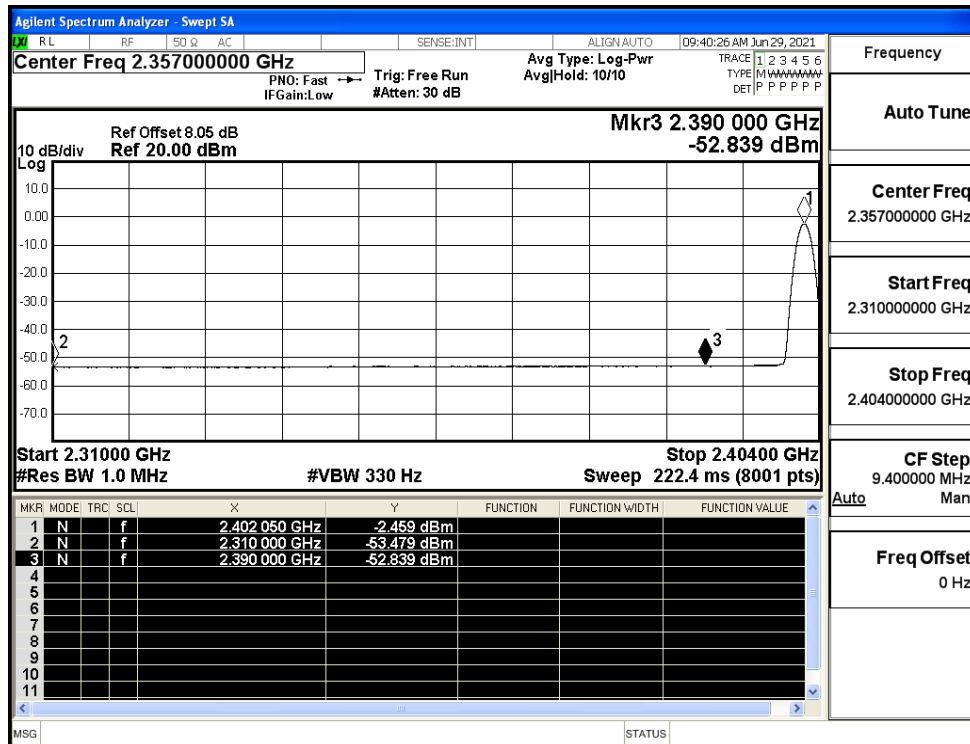
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (High Channel)Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (High Channel)



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

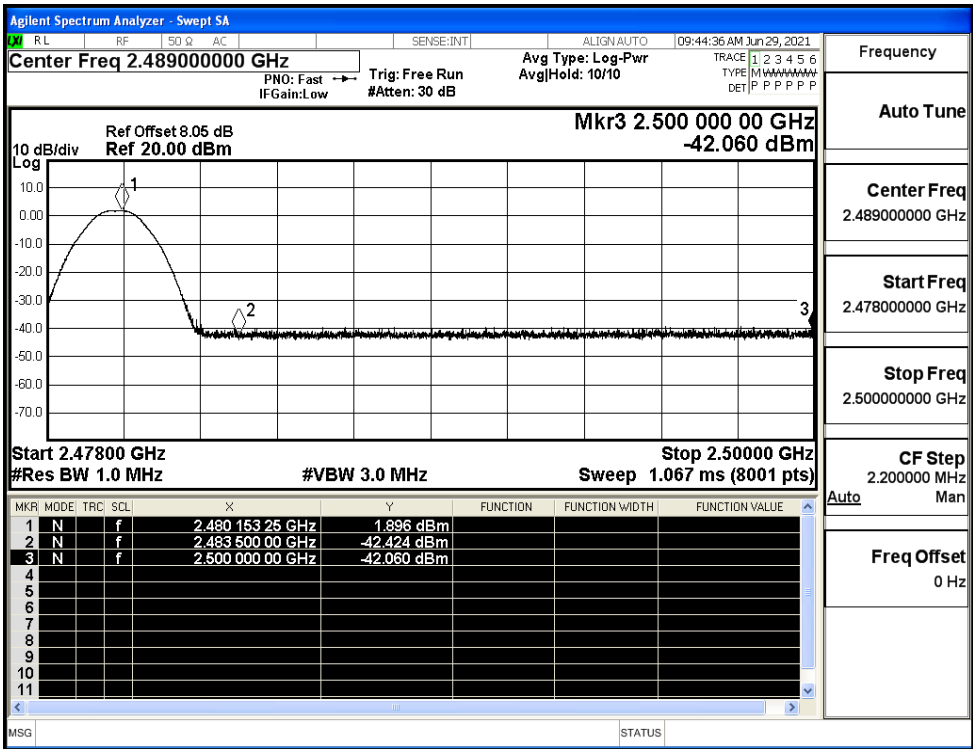


Restrict-band band-edge measurements_Hopping Off_8DPSK_Average (Low Channel)





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



Restrict-band band-edge measurements_Hopping Off_8DPSK_Average (High Channel)

