

Appendix A

RF Test Data for BT V4.2 (BDR/EDR) (Conducted Measurement)

Product Name: Laptop

Trade Mark: FUSION5

Test Model: T90B+ Pro

Environmental Conditions

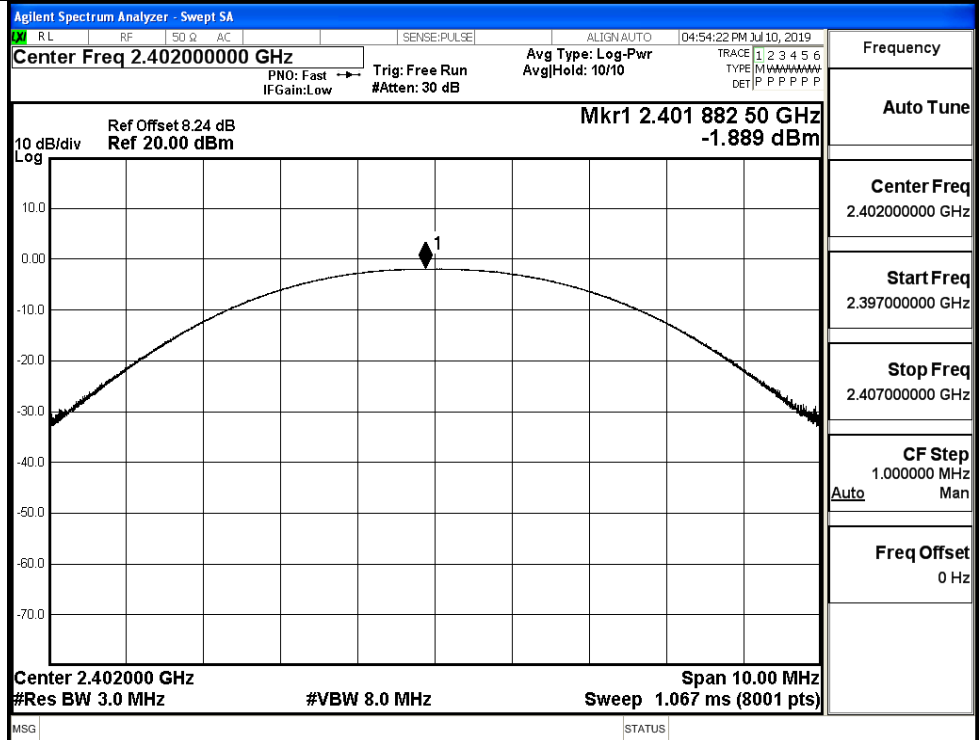
Temperature:	24.3 ° C
Relative Humidity:	52.8%
ATM Pressure:	100.0 kPa
Test Engineer:	JERRY.ZENG
Supervised by:	Wang.Chuang

A.1 Maximum Conducted Peak Output Power

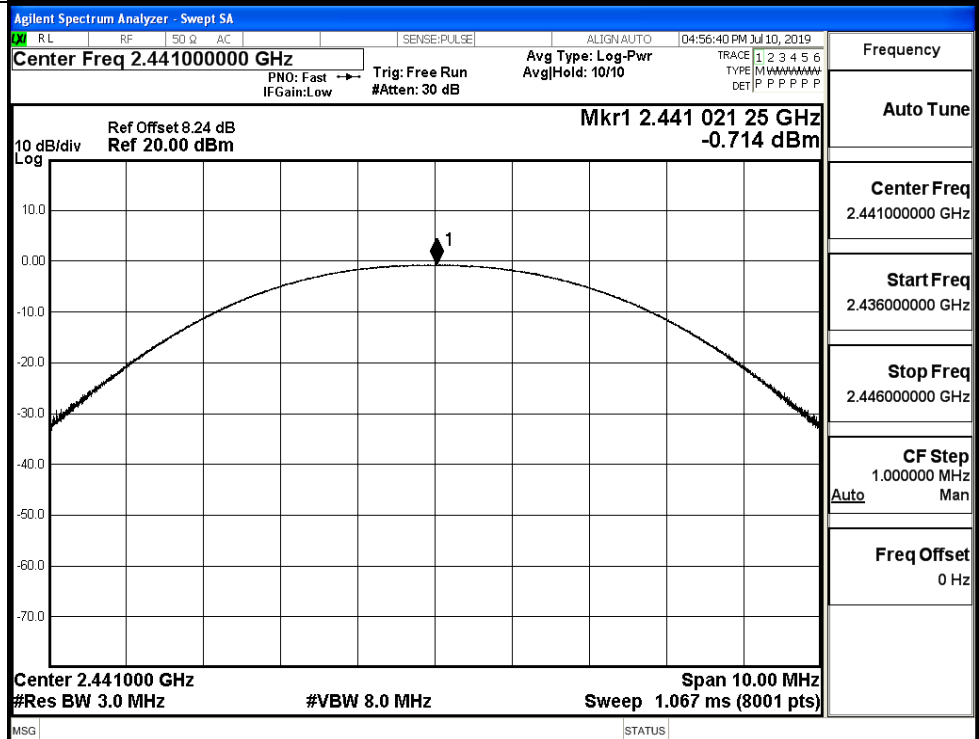
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-1.889	30	PASS
	MCH	-0.714	30	PASS
	HCH	-4.467	30	PASS
$\pi/4$ DQPSK	LCH	-3.207	21	PASS
	MCH	-3.148	21	PASS
	HCH	-2.322	21	PASS
8DPSK	LCH	-2.061	21	PASS
	MCH	-1.121	21	PASS
	HCH	-2.161	21	PASS

Test Graphs

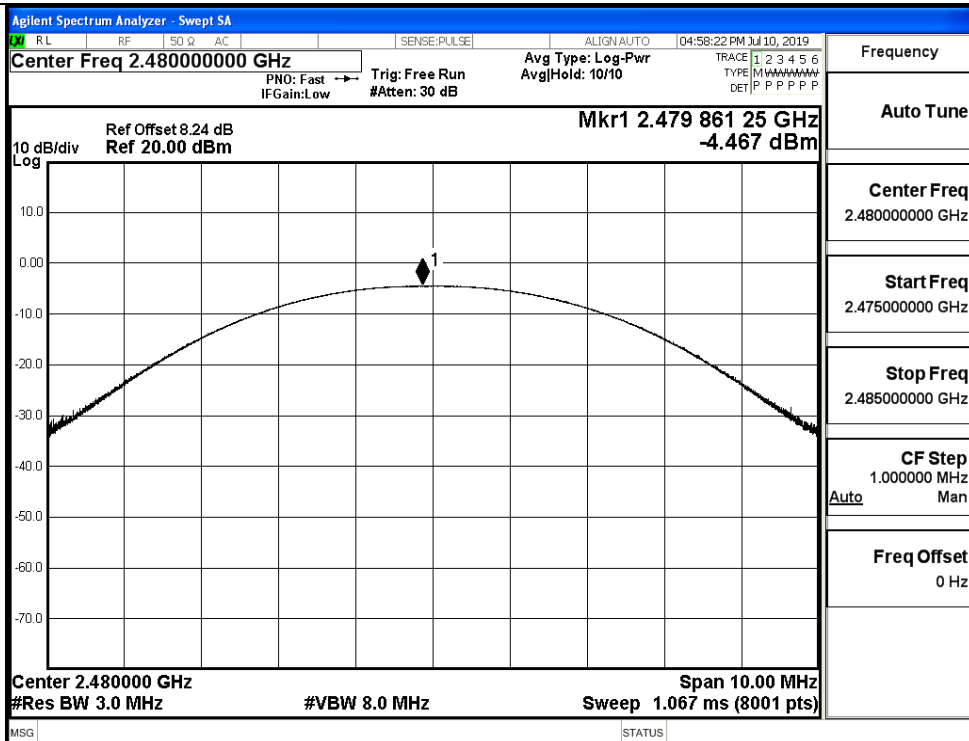
GFSK/LCH



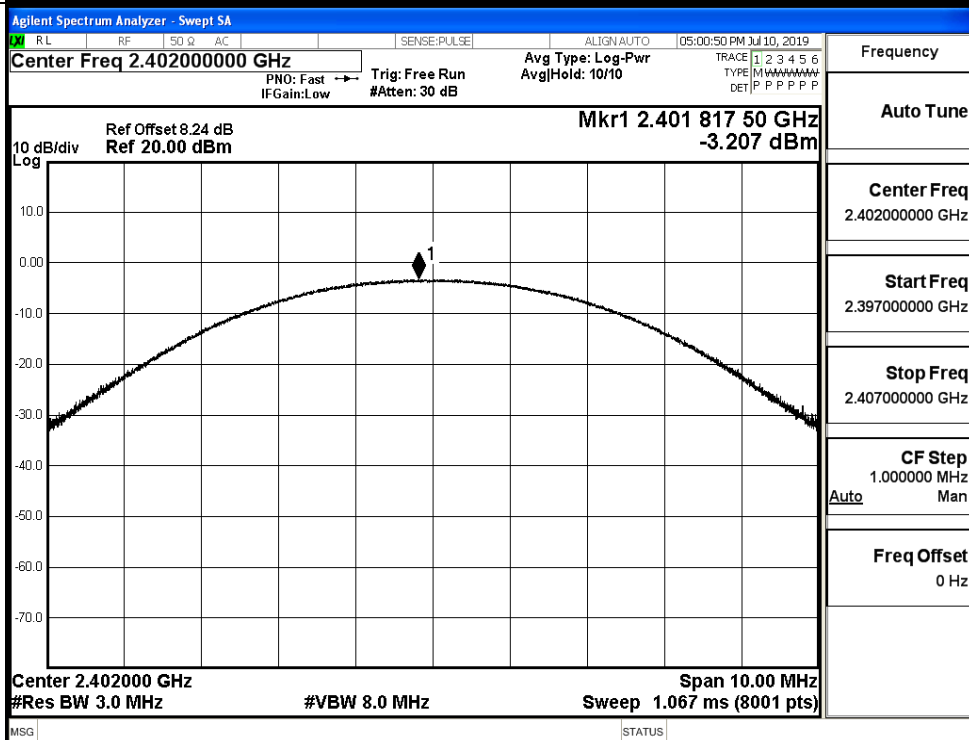
GFSK/MCH



GFSK/HCH

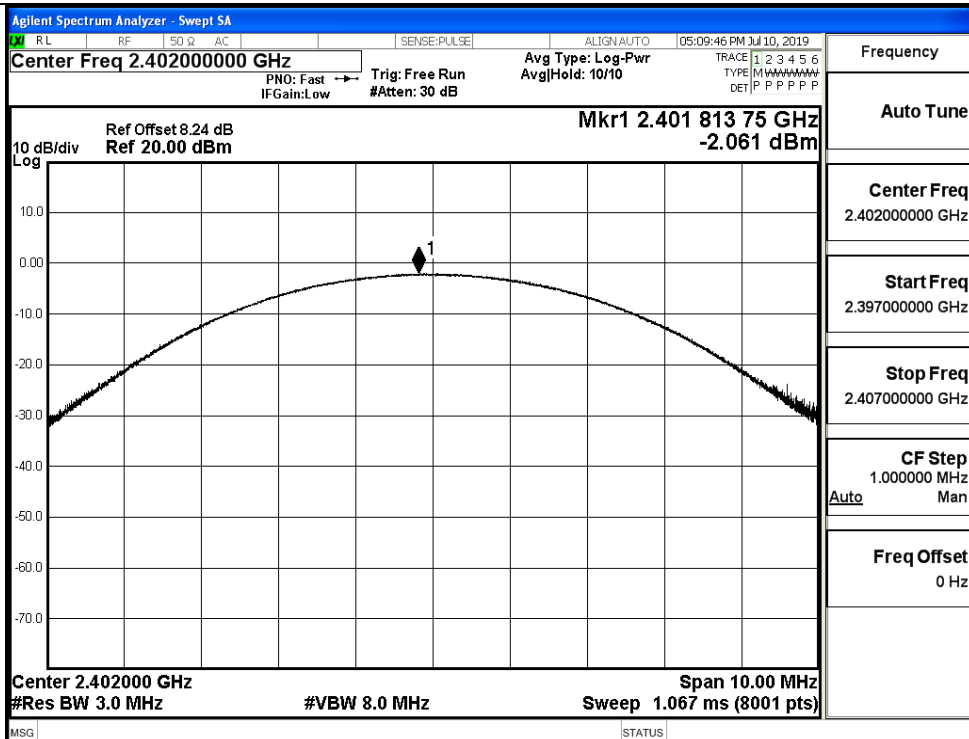


π /4DQPSK/LCH

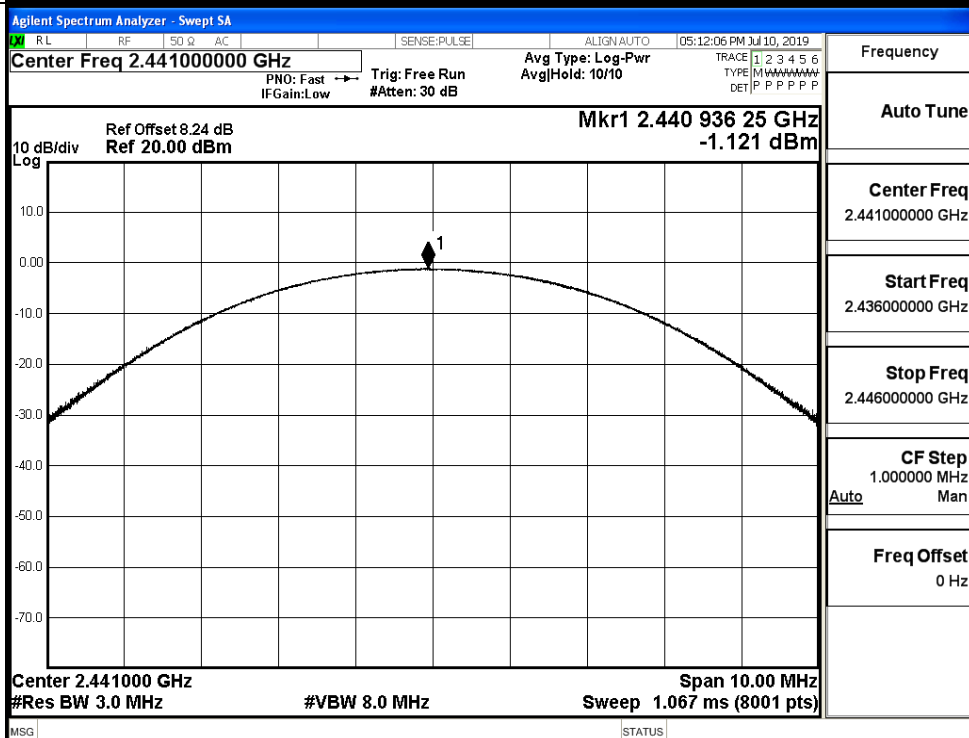


<p>$\pi/4$DQPSK/MCH</p>	<div> <div> Agilent Spectrum Analyzer - Swept SA <input checked="" type="checkbox"/> R L <input type="checkbox"/> RF <input type="checkbox"/> 50 Ω <input type="checkbox"/> AC <input type="checkbox"/> SENSE:PULSE <input type="checkbox"/> ALIGN:AUTO 05:03:08 PM Jul 10, 2019 Center Freq 2.441000000 GHz PNO: Fast \rightarrow Trig: Free Run Avg Type: Log-Pwr IF Gain: Low #Atten: 30 dB AvgHld: 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 </div> <div> Ref Offset 8.24 dB Ref 20.00 dBm Mkr1 2.440 887 50 GHz -3.148 dBm </div> <div> </div> <div> Center 2.441000 GHz #Res BW 3.0 MHz #VBW 8.0 MHz Span 10.00 MHz Sweep 1.067 ms (8001 pts) </div> <div> MSG <input type="checkbox"/> STATUS <input type="checkbox"/> </div> </div> <div> 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 </div>
<p>$\pi/4$DQPSK/HCH</p>	<div> <div> Agilent Spectrum Analyzer - Swept SA <input checked="" type="checkbox"/> R L <input type="checkbox"/> RF <input type="checkbox"/> 50 Ω <input type="checkbox"/> AC <input type="checkbox"/> SENSE:PULSE <input type="checkbox"/> ALIGN:AUTO 05:07:18 PM Jul 10, 2019 Center Freq 2.480000000 GHz PNO: Fast \rightarrow Trig: Free Run Avg Type: Log-Pwr IF Gain: Low #Atten: 30 dB AvgHld: 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 </div> <div> Ref Offset 8.24 dB Ref 20.00 dBm Mkr1 2.480 095 00 GHz -2.322 dBm </div> <div> </div> <div> Center 2.480000 GHz #Res BW 3.0 MHz #VBW 8.0 MHz Span 10.00 MHz Sweep 1.067 ms (8001 pts) </div> <div> MSG <input type="checkbox"/> STATUS <input type="checkbox"/> </div> </div> <div> 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 </div>

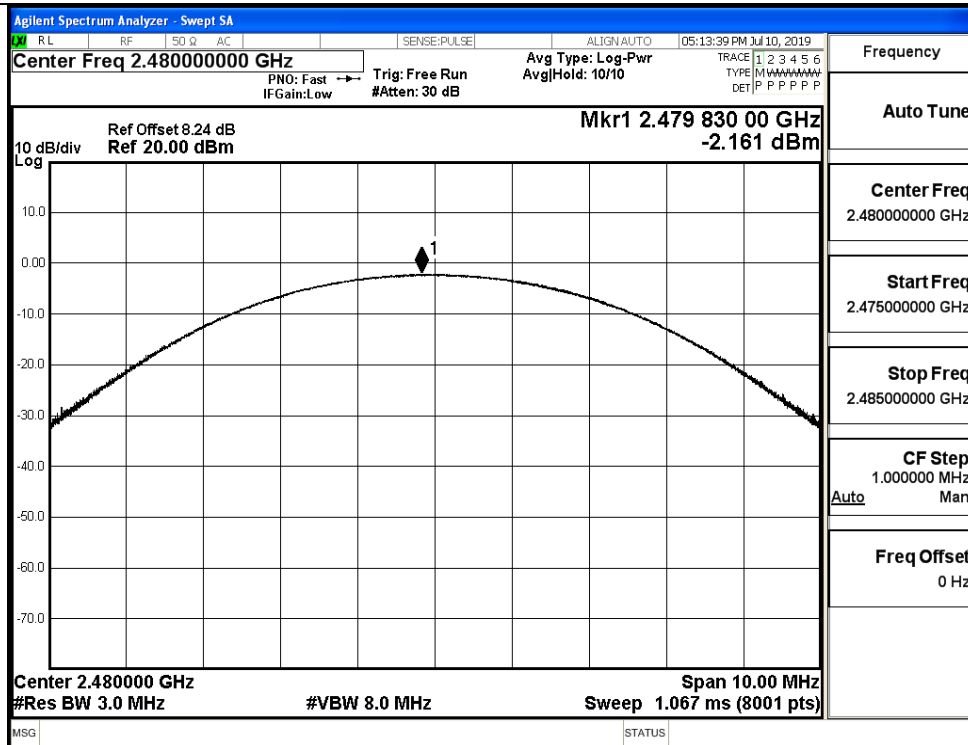
8DPSK/LCH



8DPSK/MCH



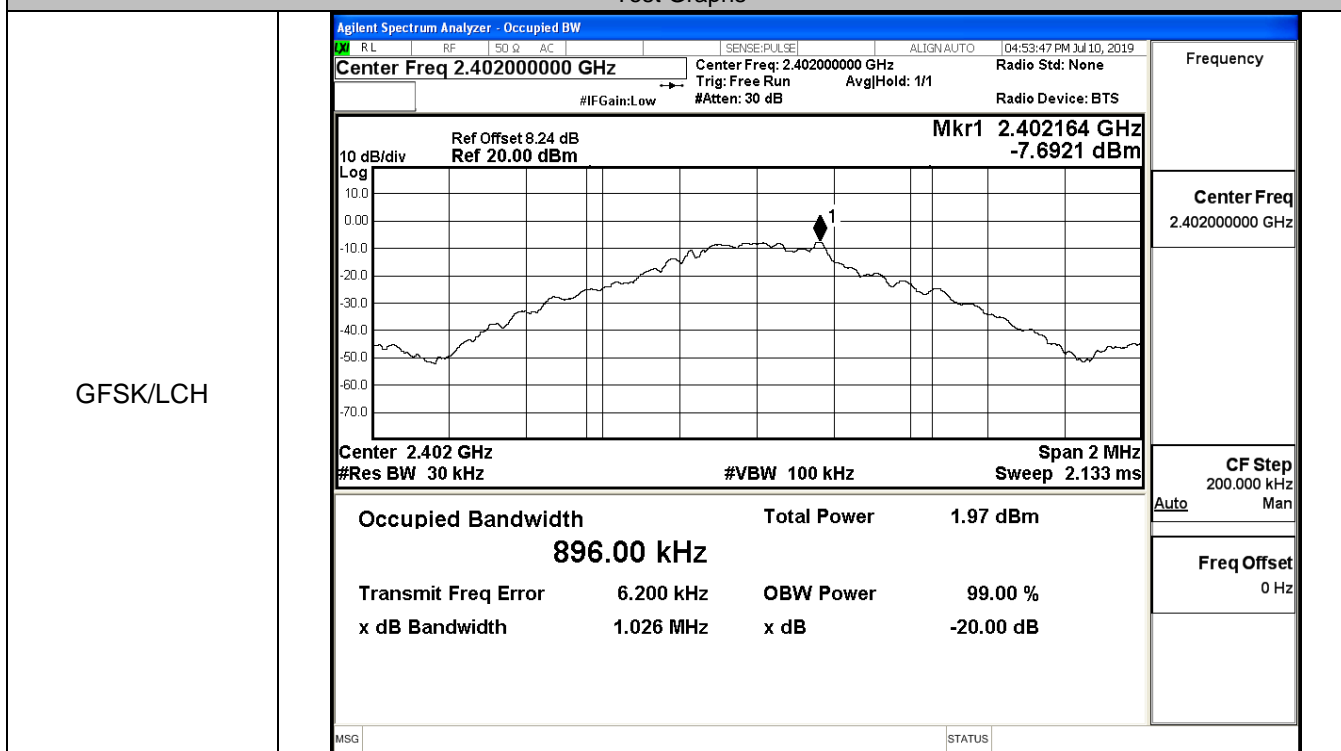
8DPSK/HCH



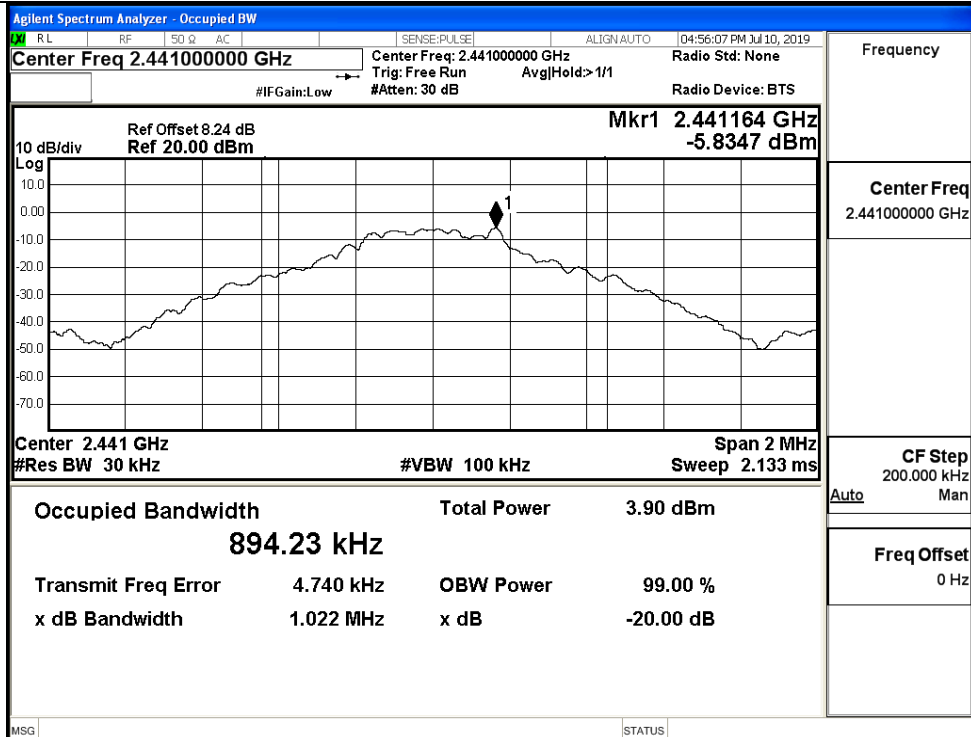
A.2 20dB Bandwidth

Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.026	Not Specified	PASS
	MCH	1.022	Not Specified	PASS
	HCH	1.028	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.291	Not Specified	PASS
	MCH	1.312	Not Specified	PASS
	HCH	1.292	Not Specified	PASS
8DPSK	LCH	1.299	Not Specified	PASS
	MCH	1.297	Not Specified	PASS
	HCH	1.297	Not Specified	PASS

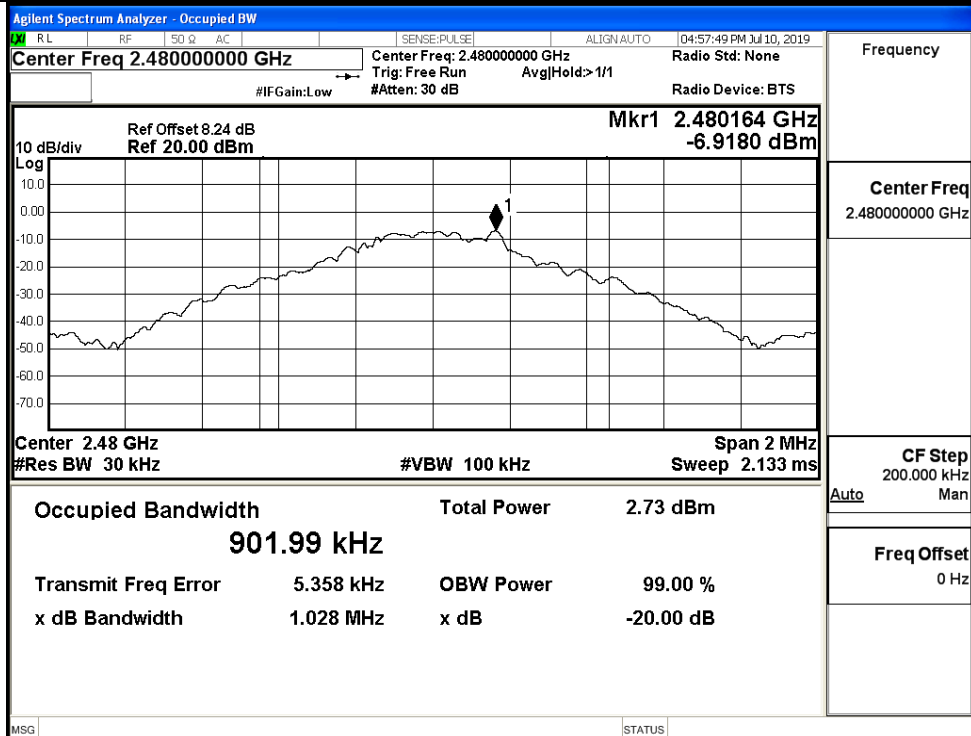
Test Graphs



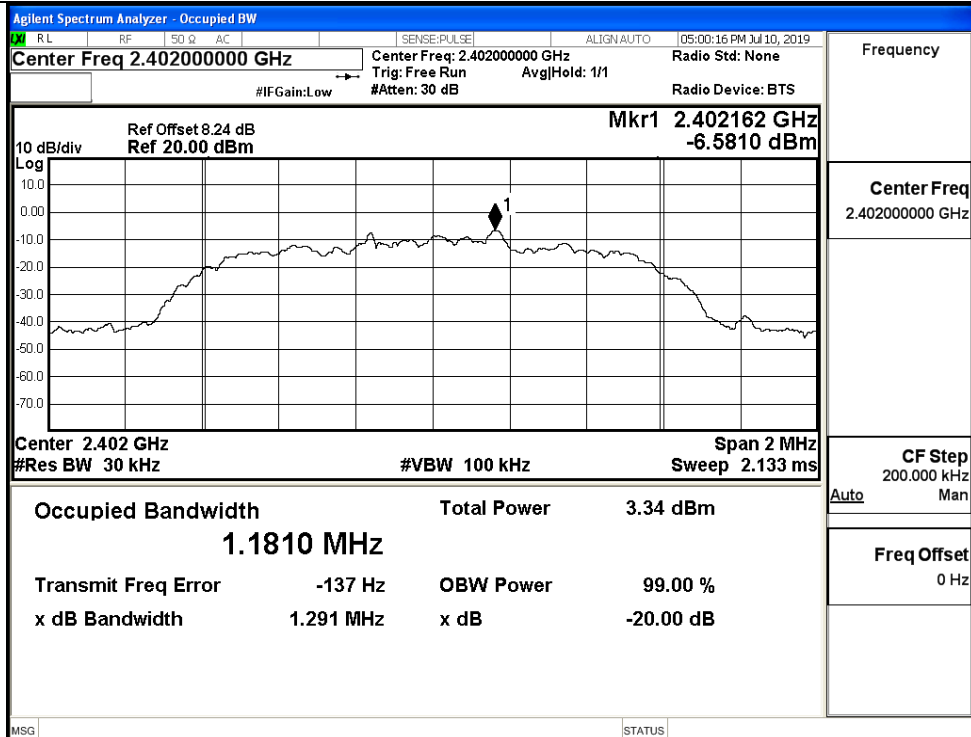
GFSK/MCH



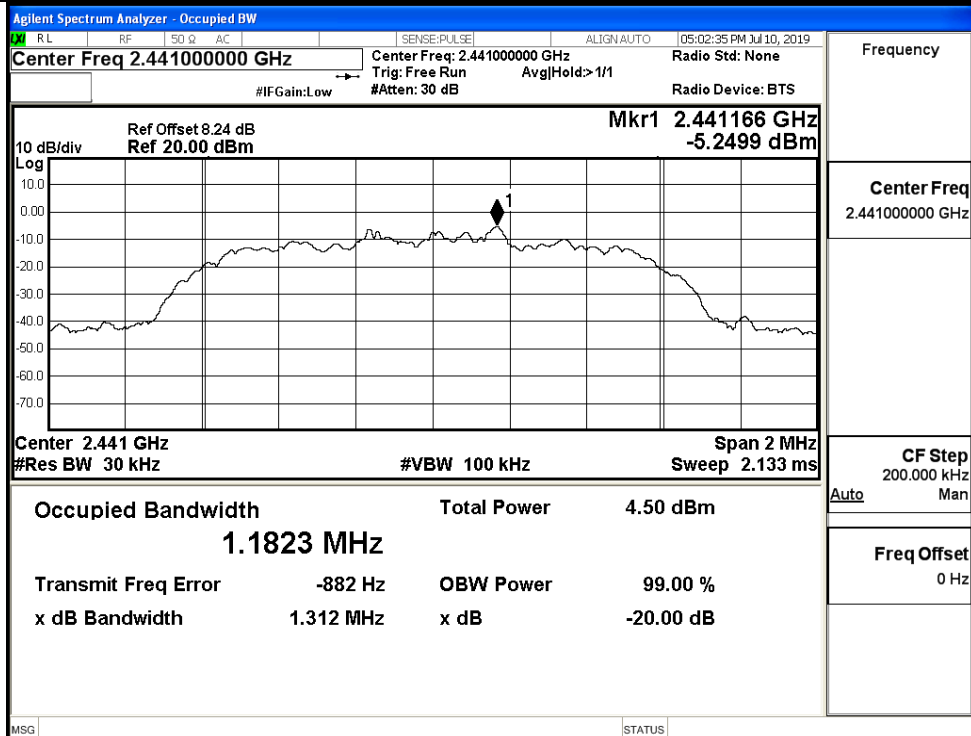
GFSK/HCH

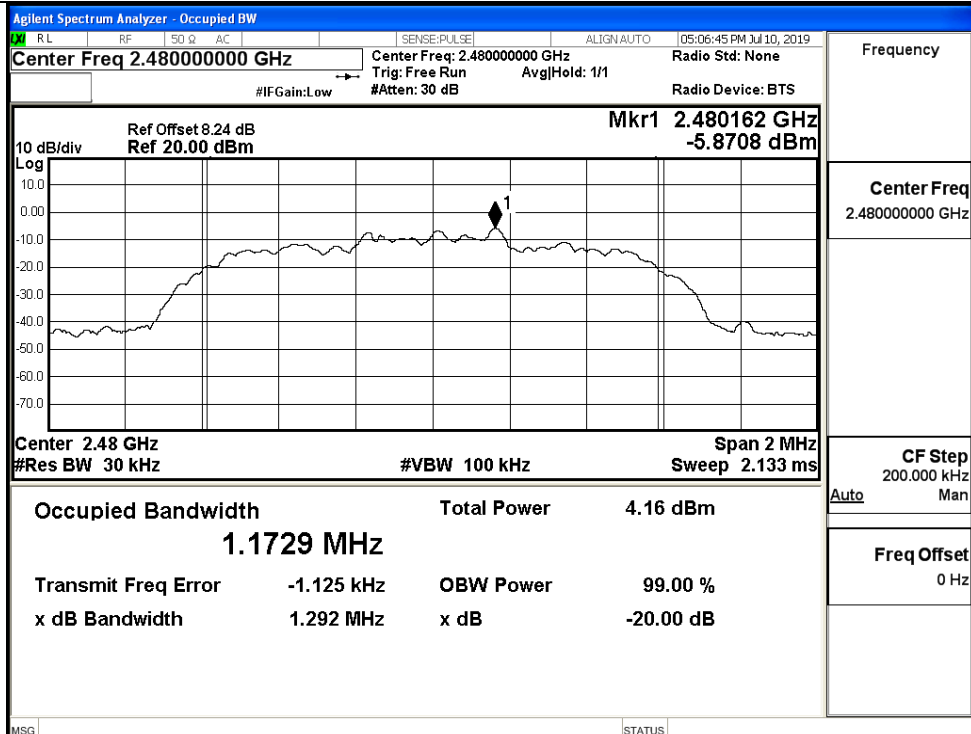


$\pi/4$ DQPSK/LCH

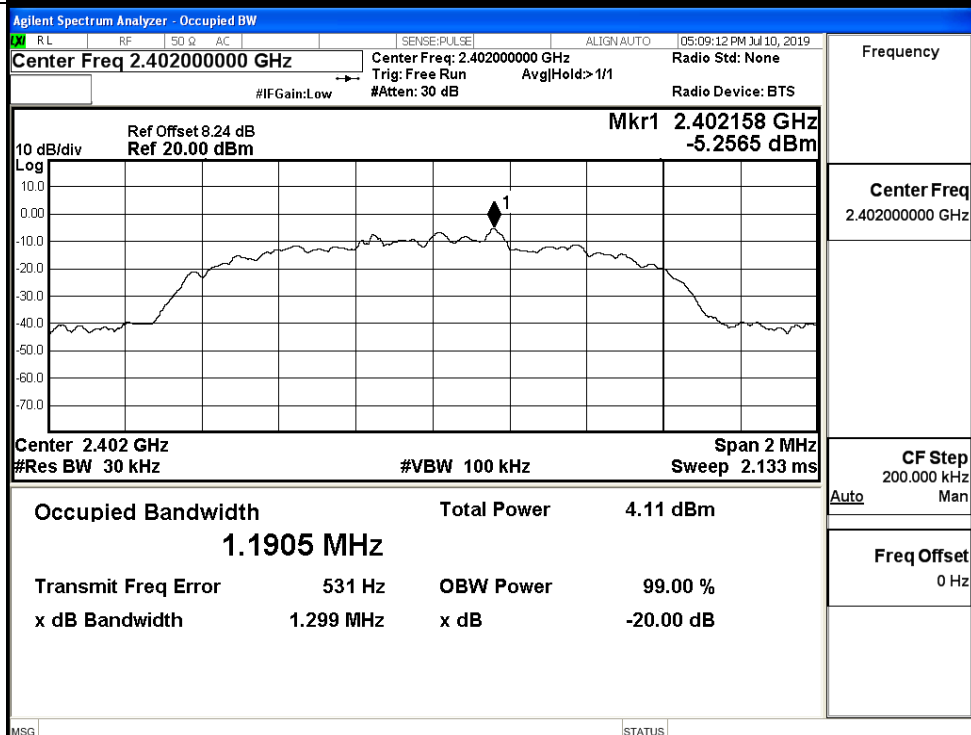


$\pi/4$ DQPSK/MCH

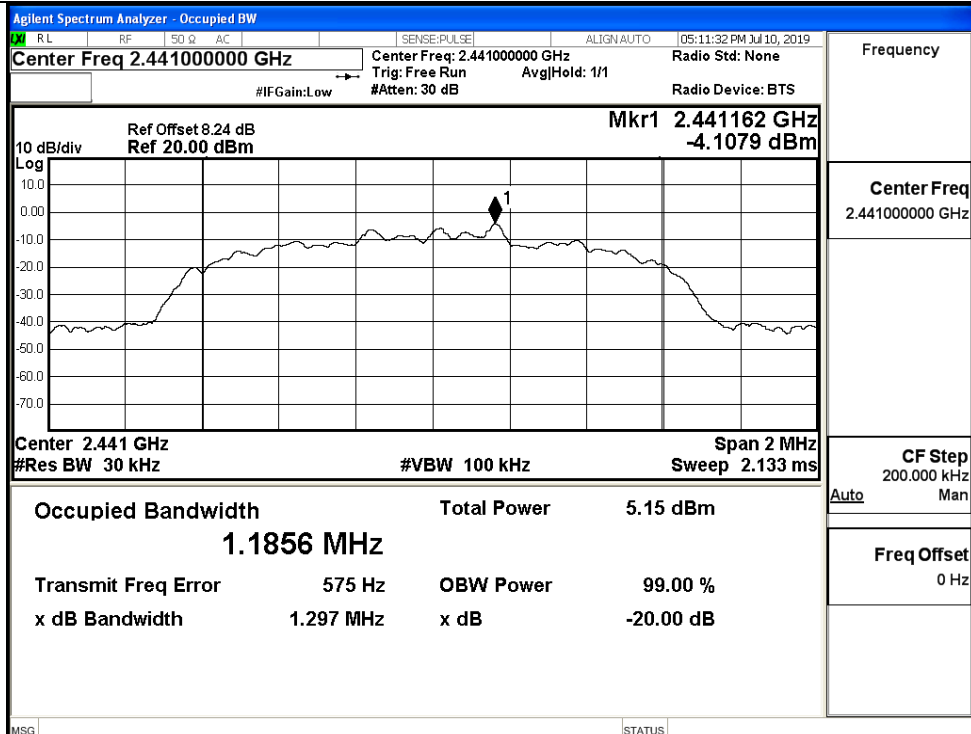


$\pi/4$ DQPSK/HCH

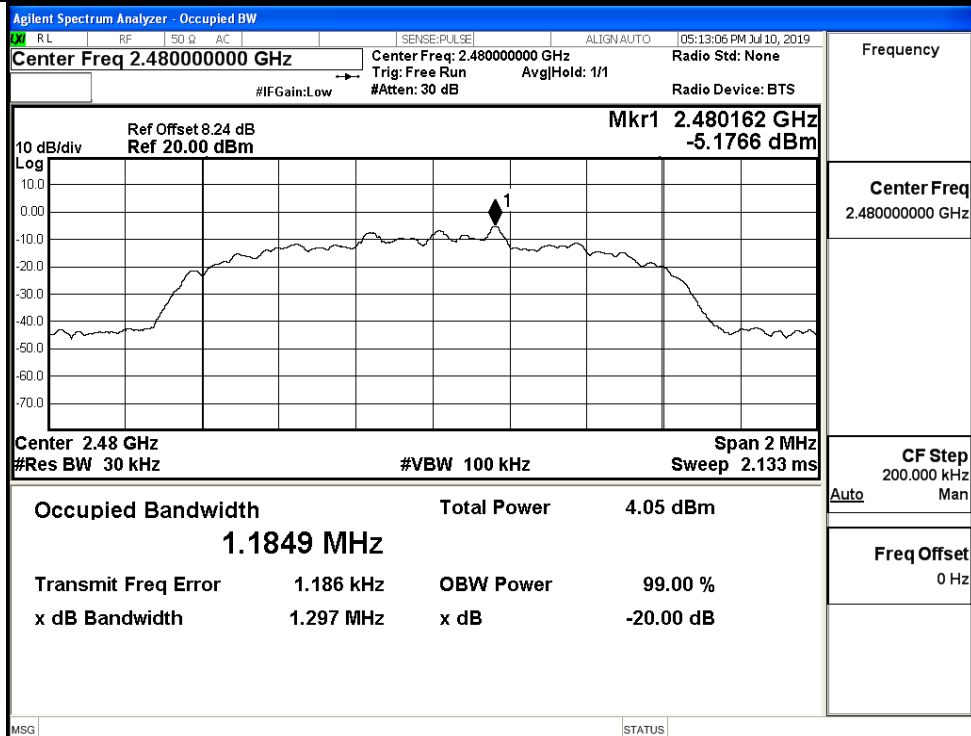
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

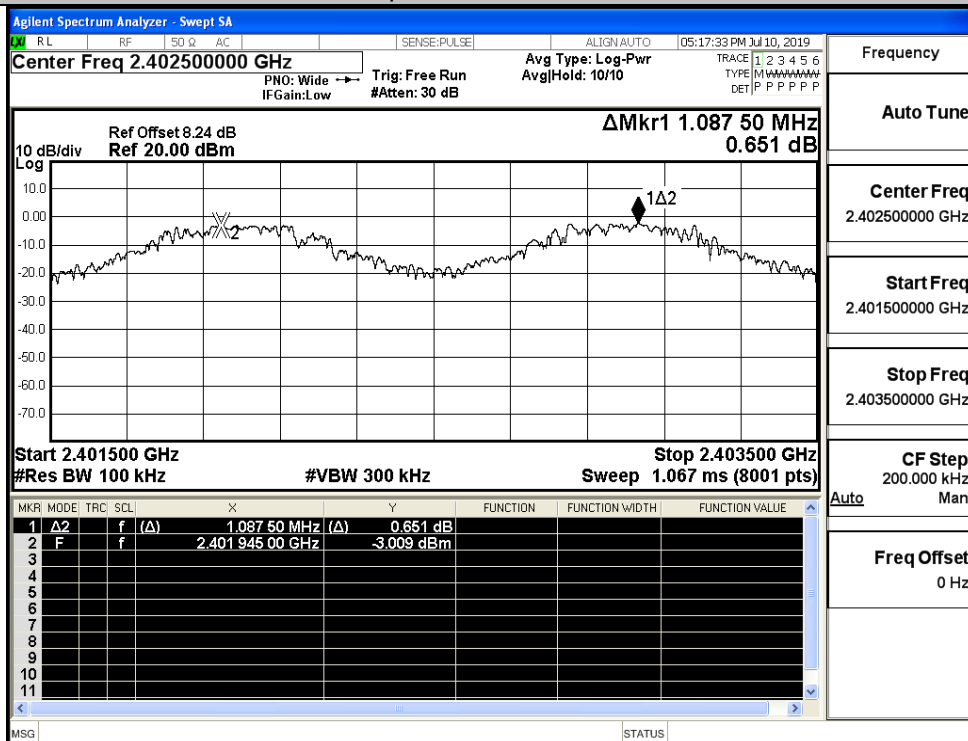


A.3 Carrier Frequency Separation

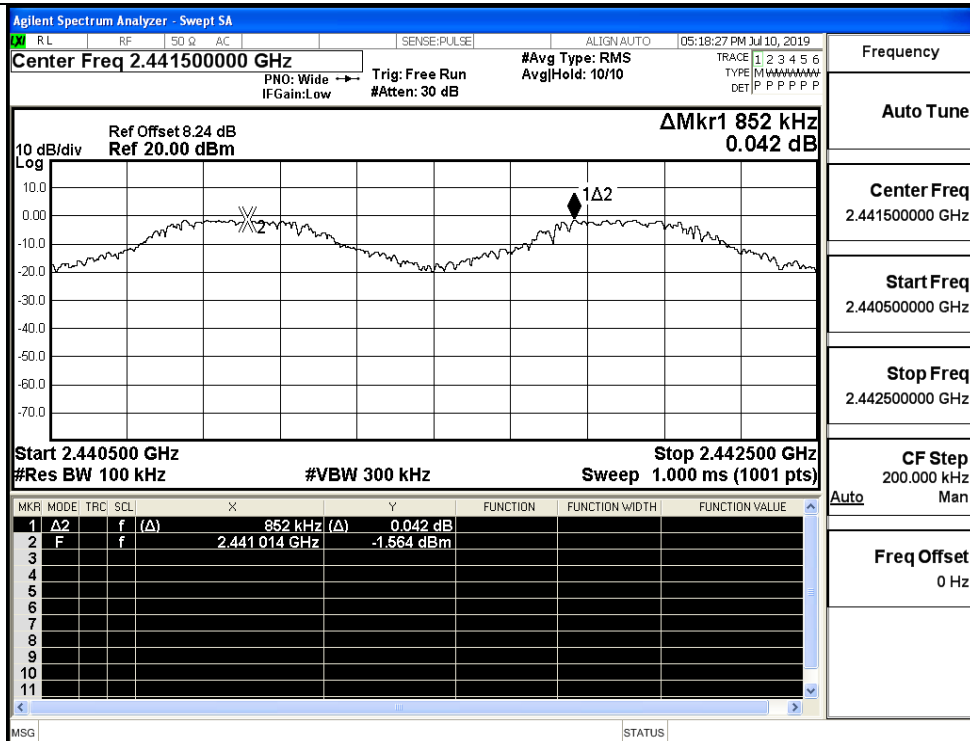
Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.087	0.685	PASS
	MCH	0.852	0.685	PASS
	HCH	1.026	0.685	PASS
$\pi/4$ DQPSK	LCH	0.976	0.875	PASS
	MCH	0.948	0.875	PASS
	HCH	0.982	0.875	PASS
8DPSK	LCH	1.146	0.866	PASS
	MCH	1.116	0.866	PASS
	HCH	0.940	0.866	PASS

Test Graphs

GFSK/LCH



GFSK/MCH



Frequency

Auto Tune

Center Freq
2.441500000 GHz

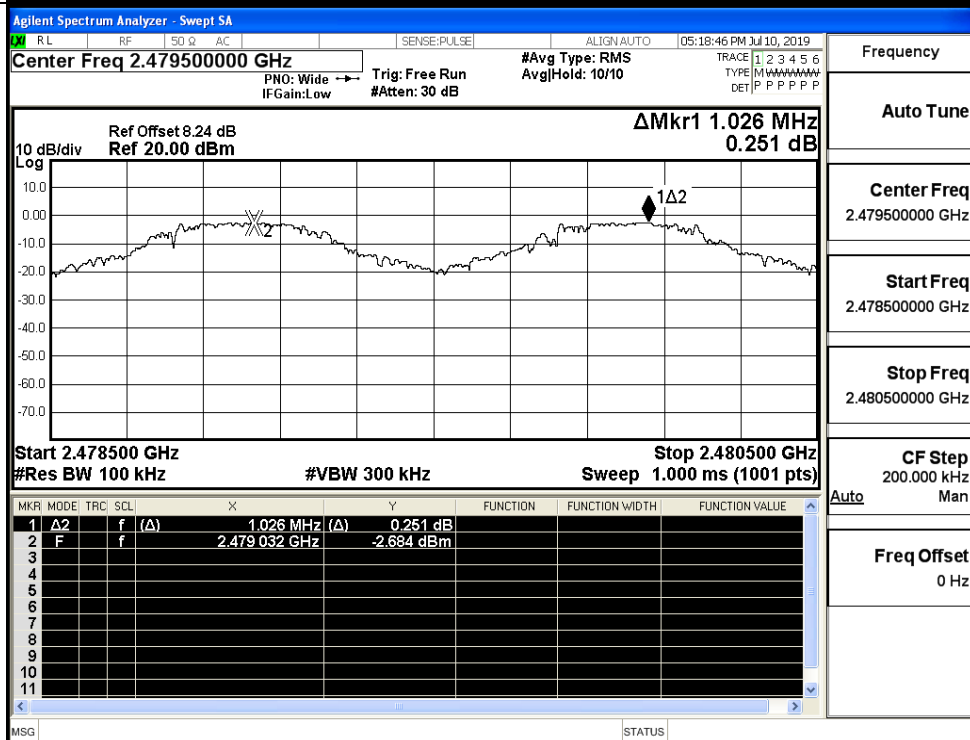
Start Freq
2.440500000 GHz

Stop Freq
2.442500000 GHz

CF Step
200.000 kHz
Man

Freq Offset
0 Hz

GFSK/HCH



Frequency

Auto Tune

Center Freq
2.479500000 GHz

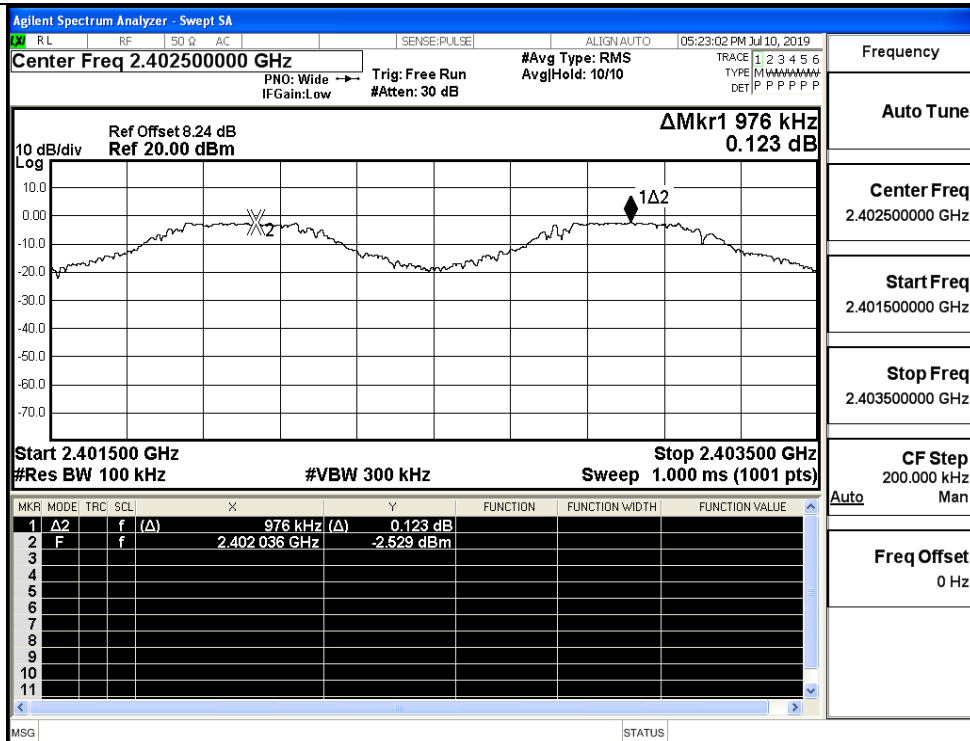
Start Freq
2.478500000 GHz

Stop Freq
2.480500000 GHz

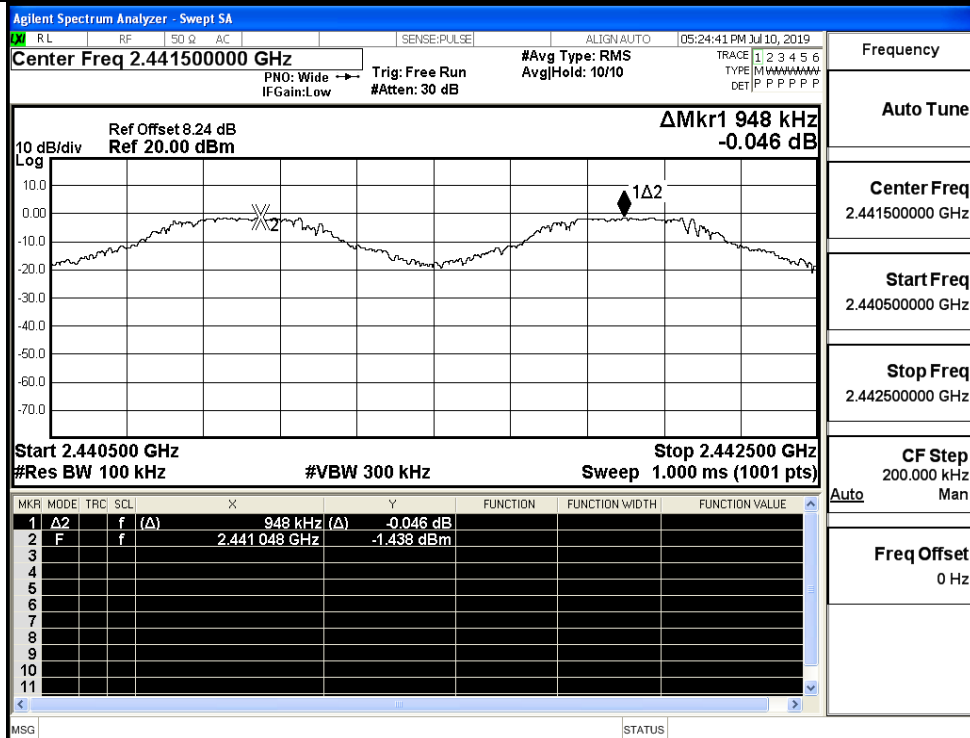
CF Step
200.000 kHz
Man

Freq Offset
0 Hz

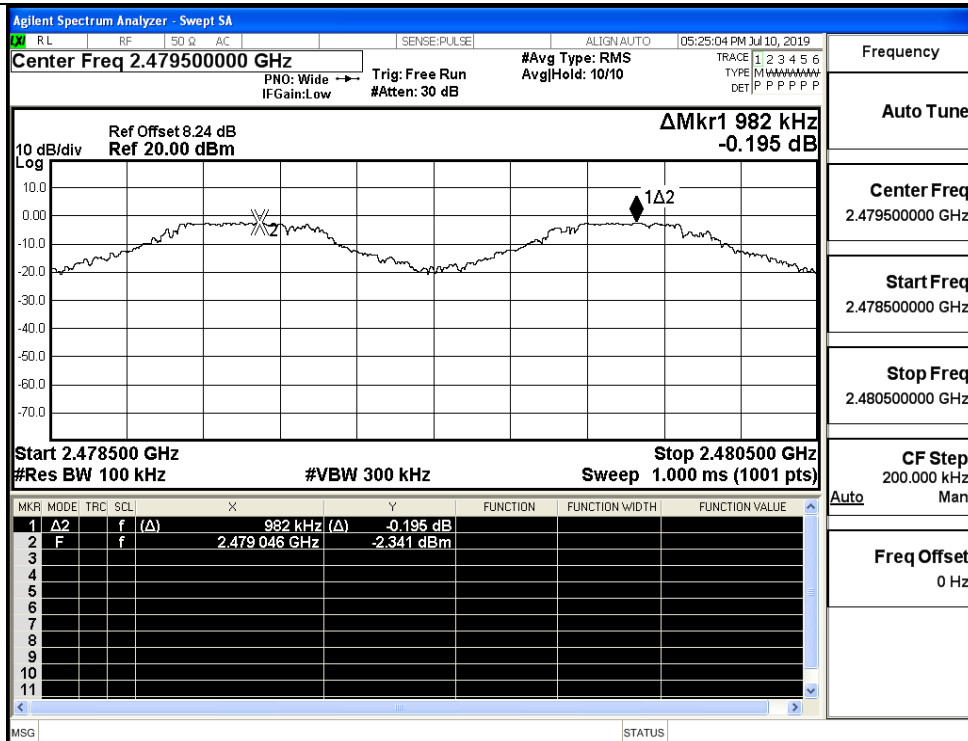
$\pi/4$ DQPSK/LCH



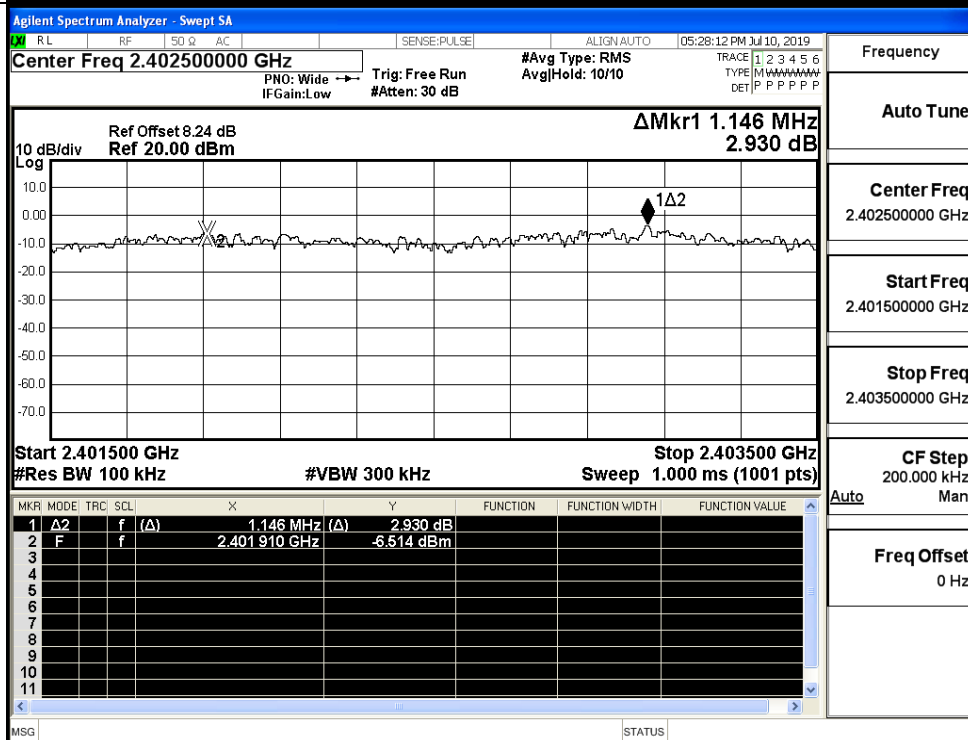
$\pi/4$ DQPSK/MCH

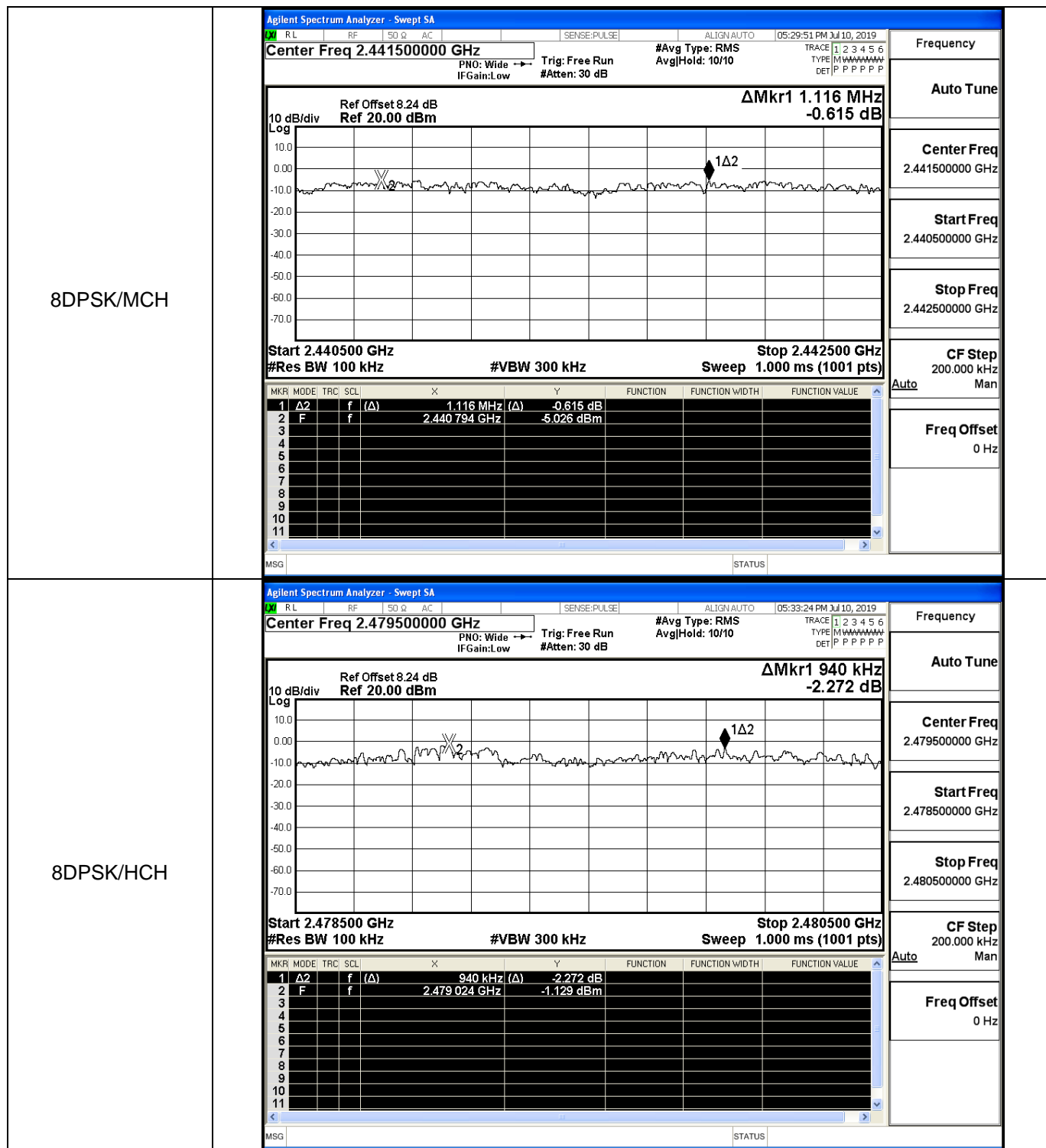


$\pi/4$ DQPSK/HCH



8DPSK/LCH



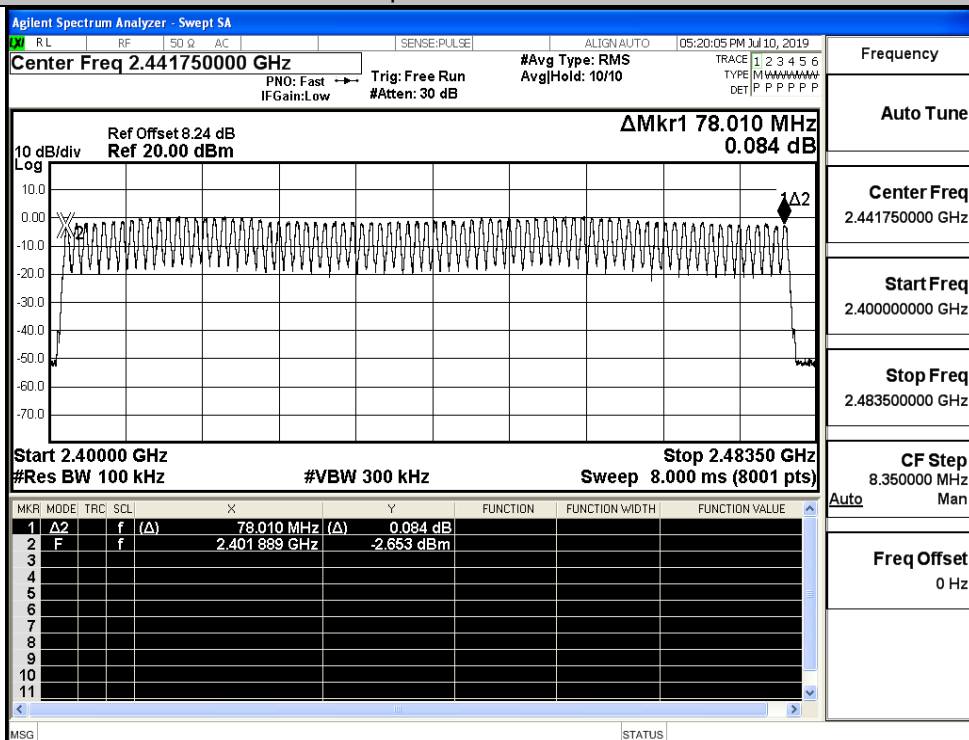
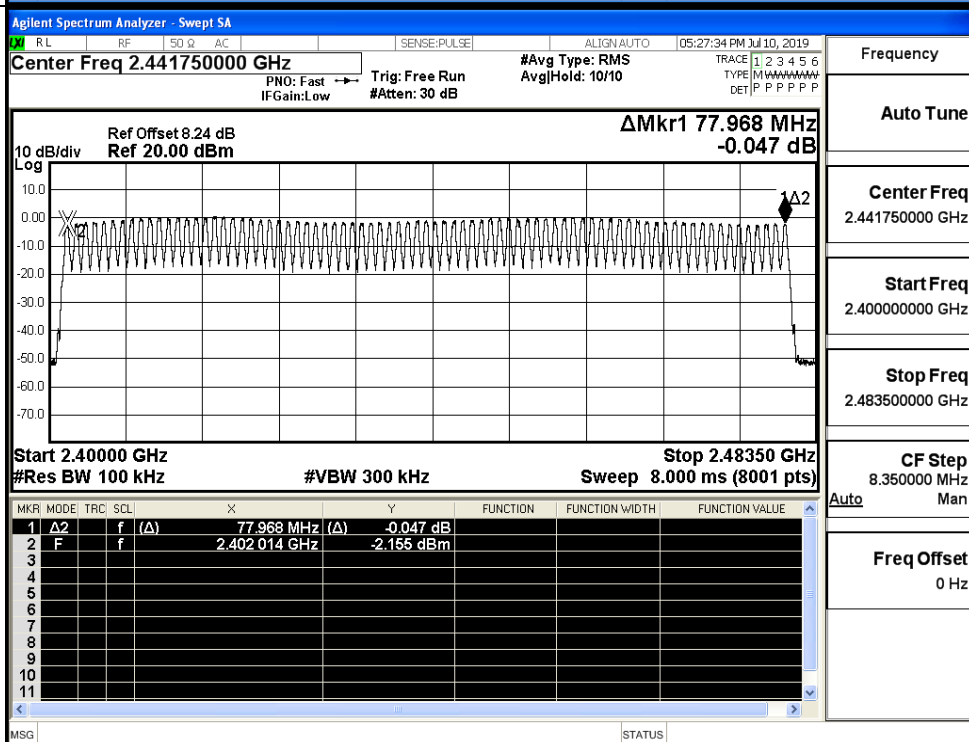


A.4 Hopping Channel Number

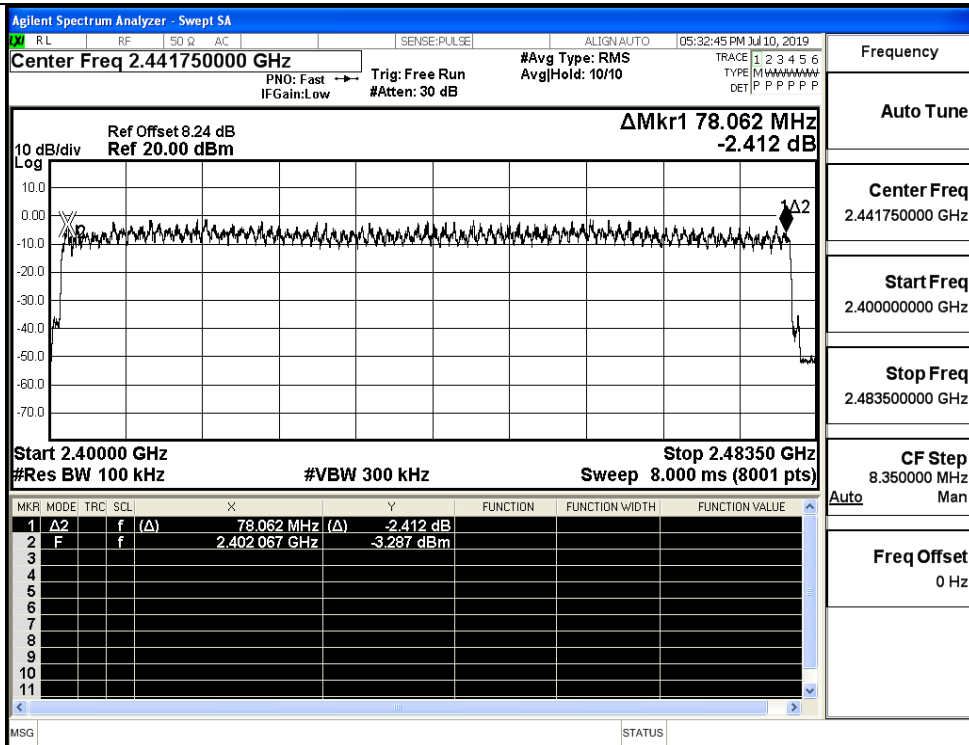
Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	>=15	PASS
$\pi/4$ DQPSK	Hop	79	>=15	PASS
8DPSK	Hop	79	>=15	PASS

Test Graphs

GFSK/Hop

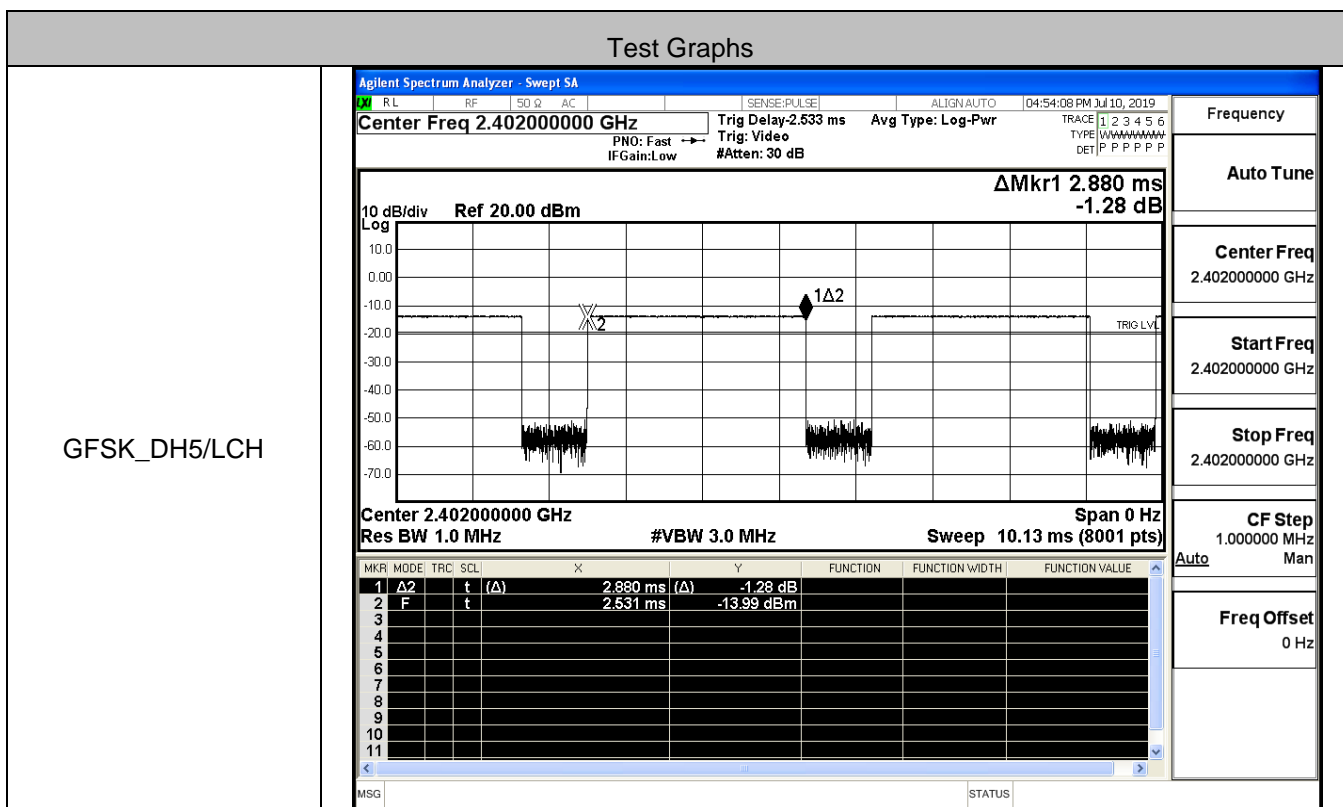
 $\pi/4$ DQPSK/Hop

8DPSK/Hop

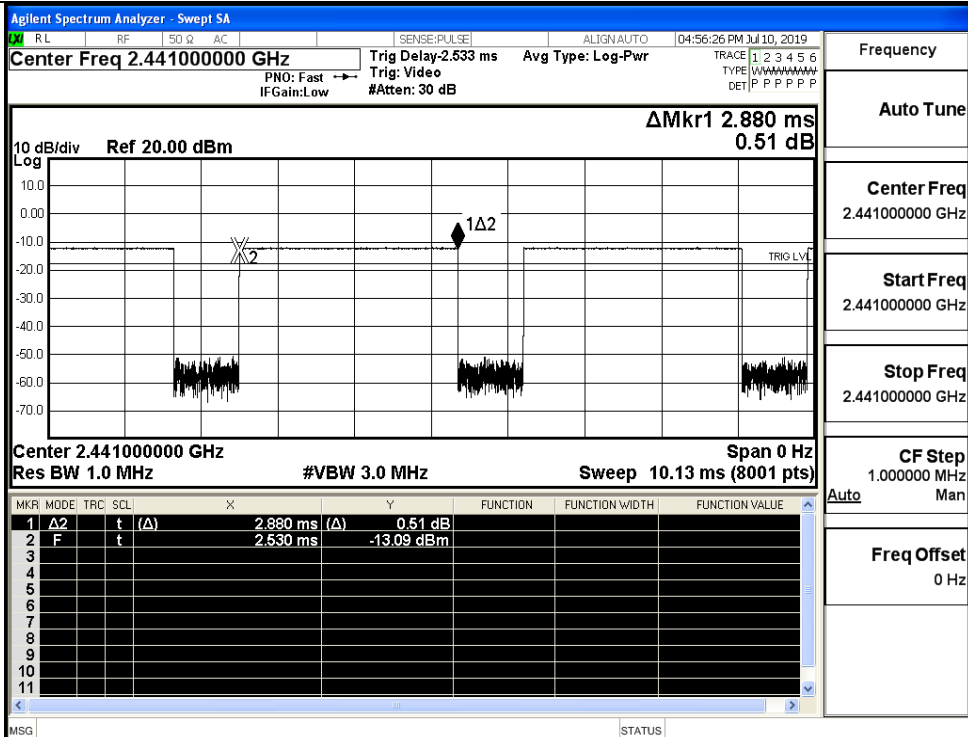


A.5 Dwell Time

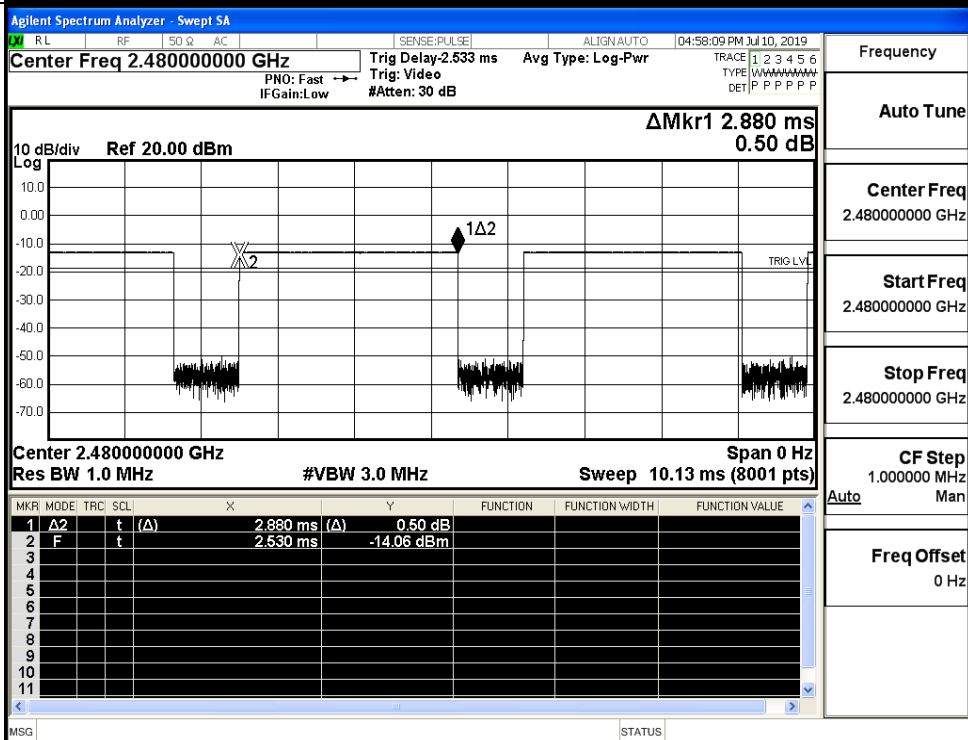
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.88	106.7	0.307	0.4	PASS
	DH5	MCH	2.88	106.7	0.307	0.4	PASS
	DH5	HCH	2.88	106.7	0.307	0.4	PASS
π/4DQPSK	2DH5	LCH	2.88	106.7	0.307	0.4	PASS
	2DH5	MCH	2.88	106.7	0.307	0.4	PASS
	2DH5	HCH	2.88	106.7	0.307	0.4	PASS
8DPSK	3DH5	LCH	2.88	106.7	0.308	0.4	PASS
	3DH5	MCH	2.88	106.7	0.308	0.4	PASS
	3DH5	HCH	2.88	106.7	0.308	0.4	PASS



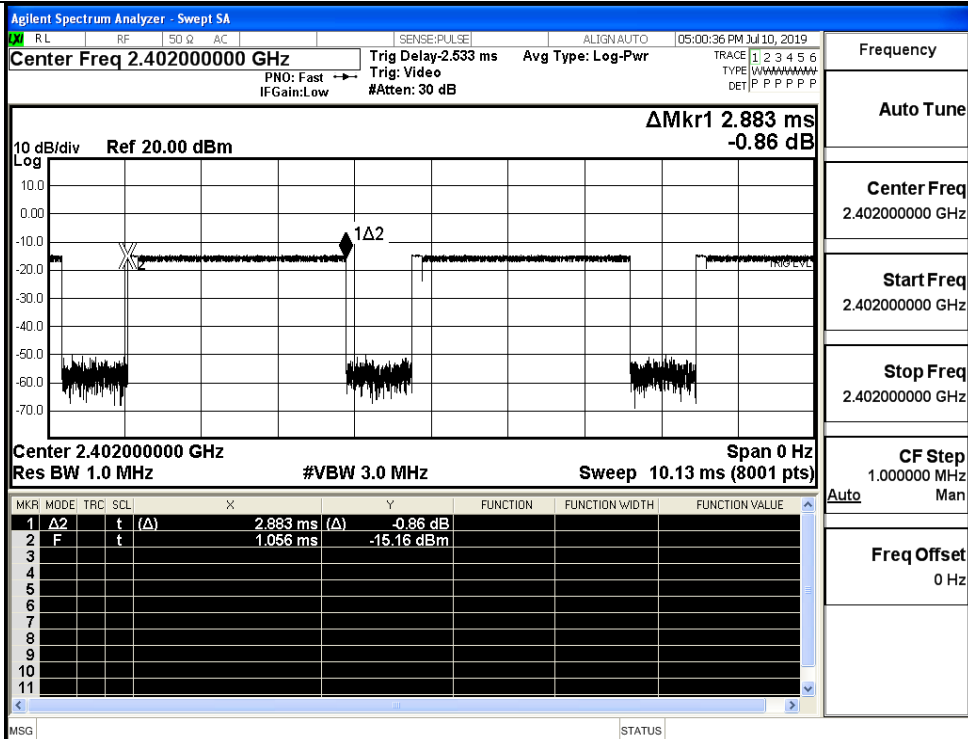
GFSK_DH5/MCH



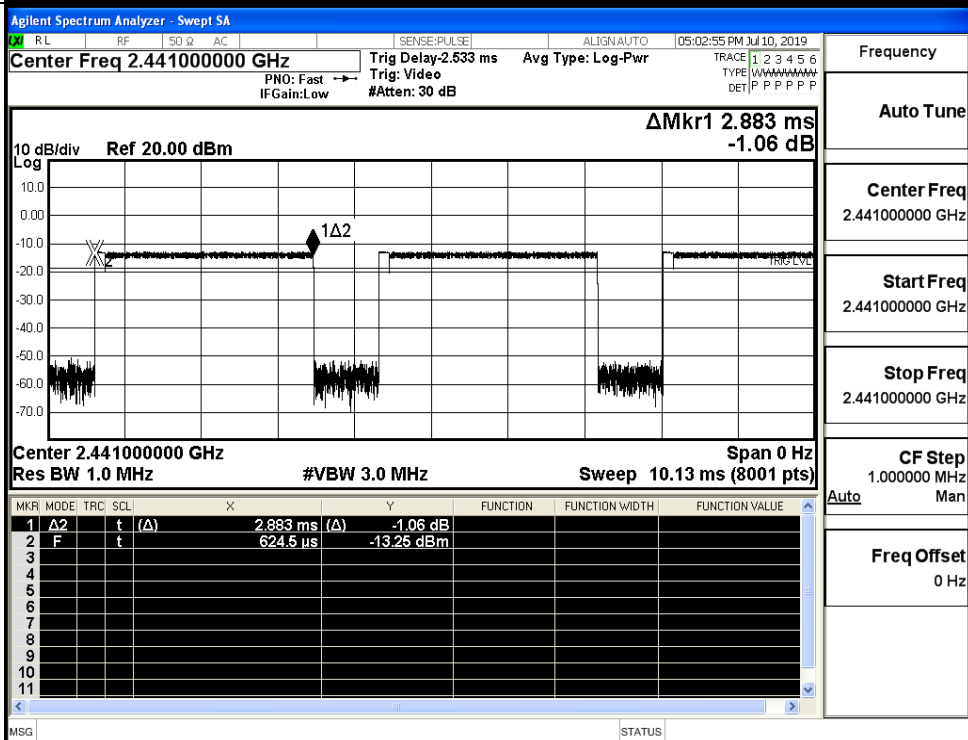
GFSK_DH5/HCH



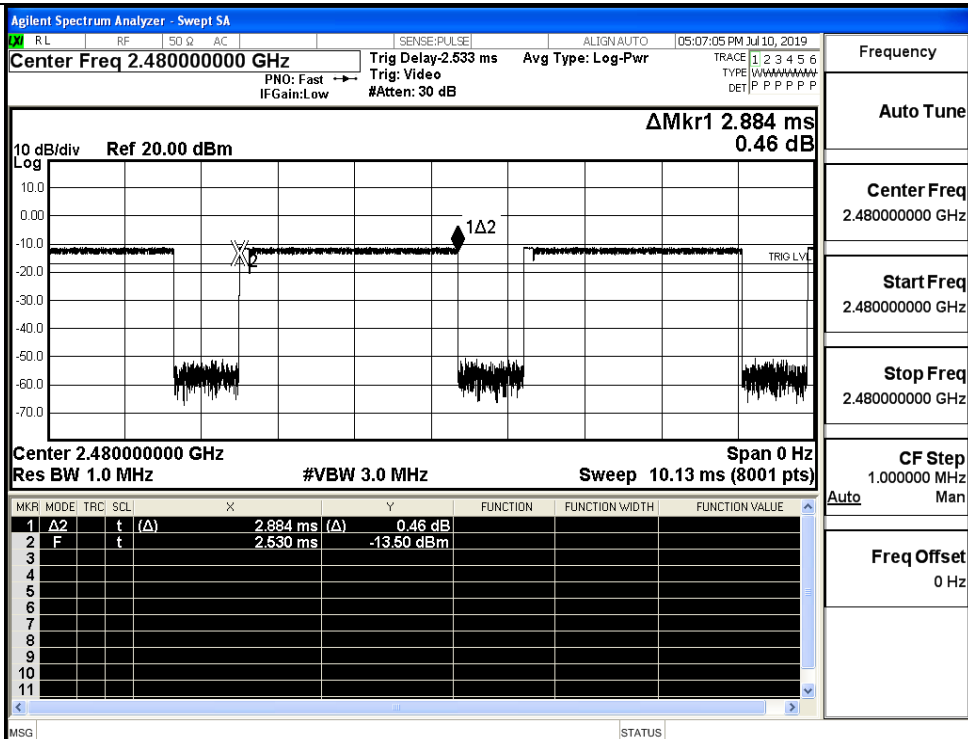
$\pi/4$ DQPSK
_2DH5/LCH



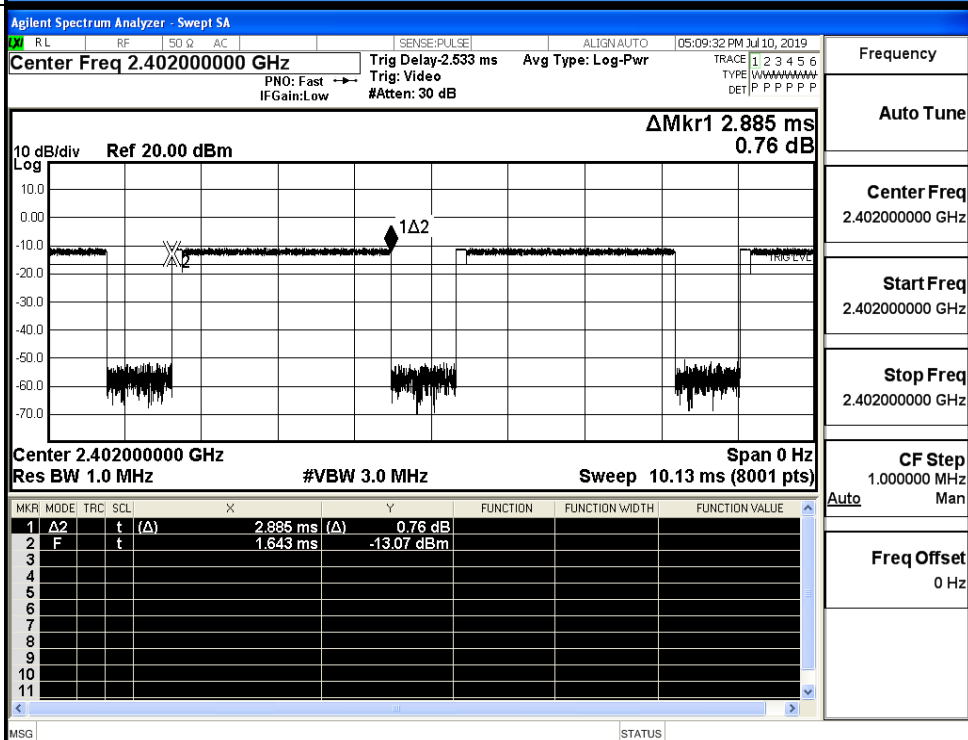
$\pi/4$ DQPSK
_2DH5/MCH



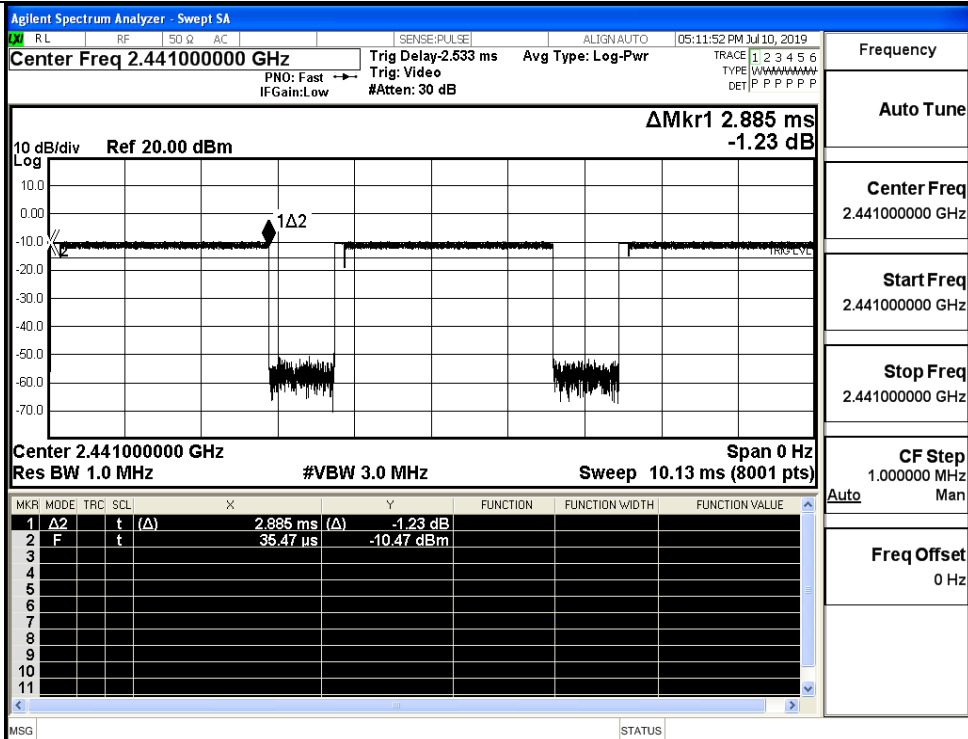
π/4DQPSK
2DH5/HCH



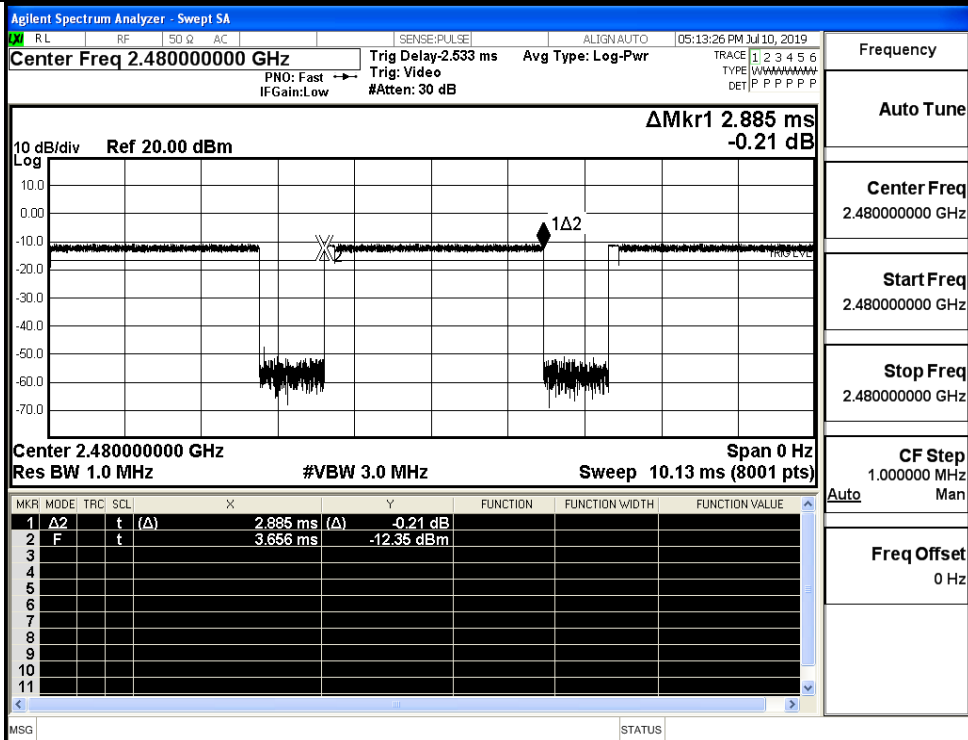
8DPSK 3DH5/LCH



8DPSK_3DH5/MCH



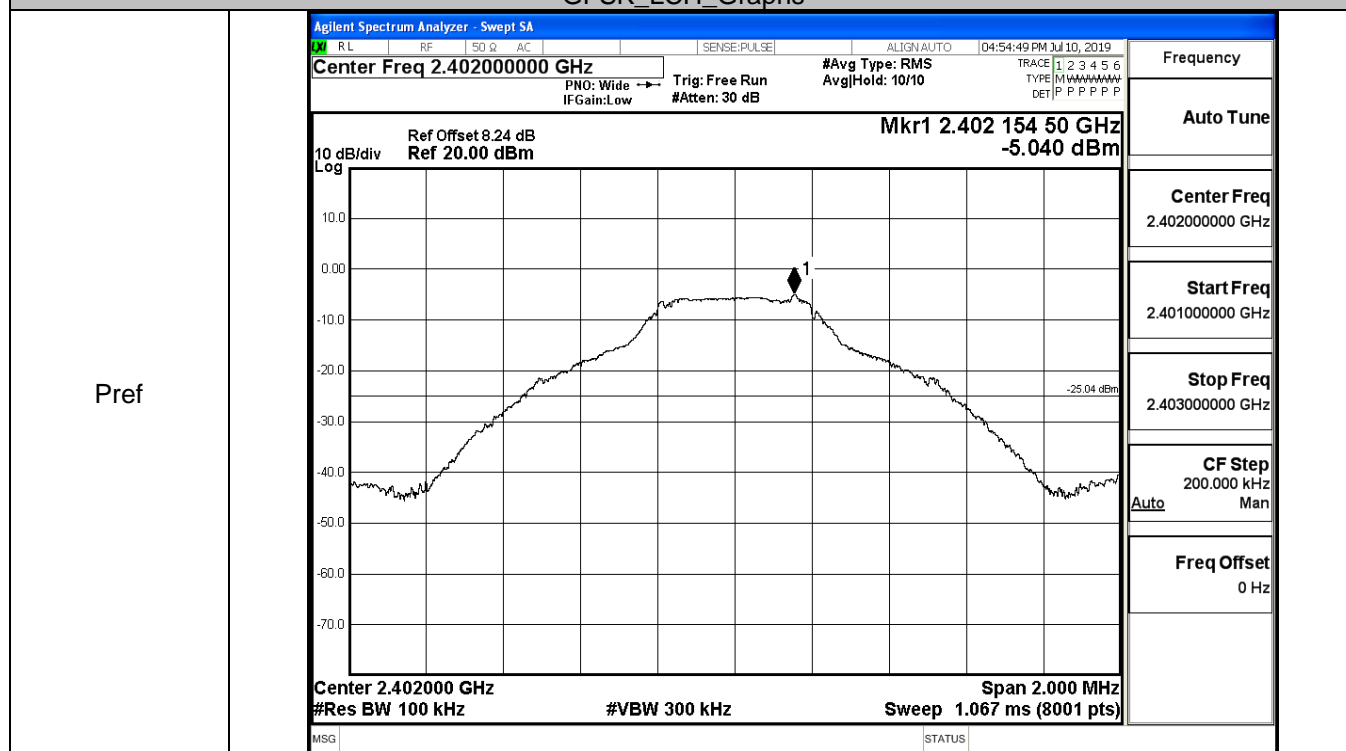
8DPSK_3DH5/HCH

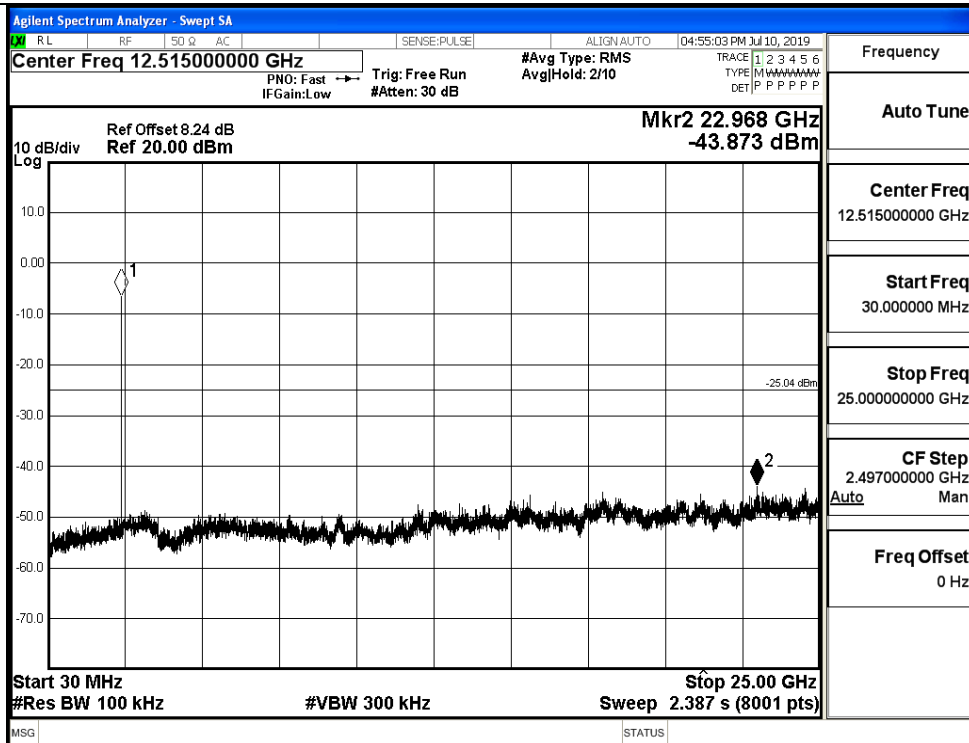


A.6 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-5.04	-43.873	-25.040	PASS
	MCH	-3.791	-44.536	-23.791	PASS
	HCH	-5.589	-44.264	-25.589	PASS
$\pi/4$ DQPSK	LCH	-6.093	-45.045	-26.093	PASS
	MCH	-4.074	-44.982	-24.074	PASS
	HCH	-3.342	-43.417	-23.342	PASS
8DPSK	LCH	-3.241	-44.277	-23.241	PASS
	MCH	-2.093	-44.802	-22.093	PASS
	HCH	-3.336	-44.300	-23.336	PASS

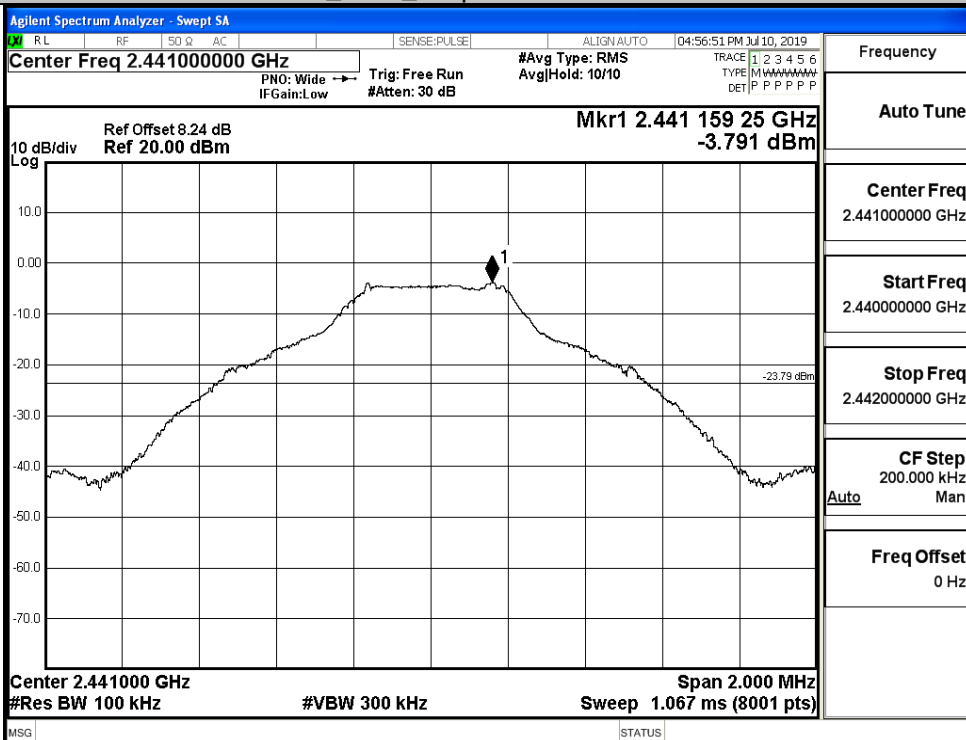
GFSK_LCH_Graphs



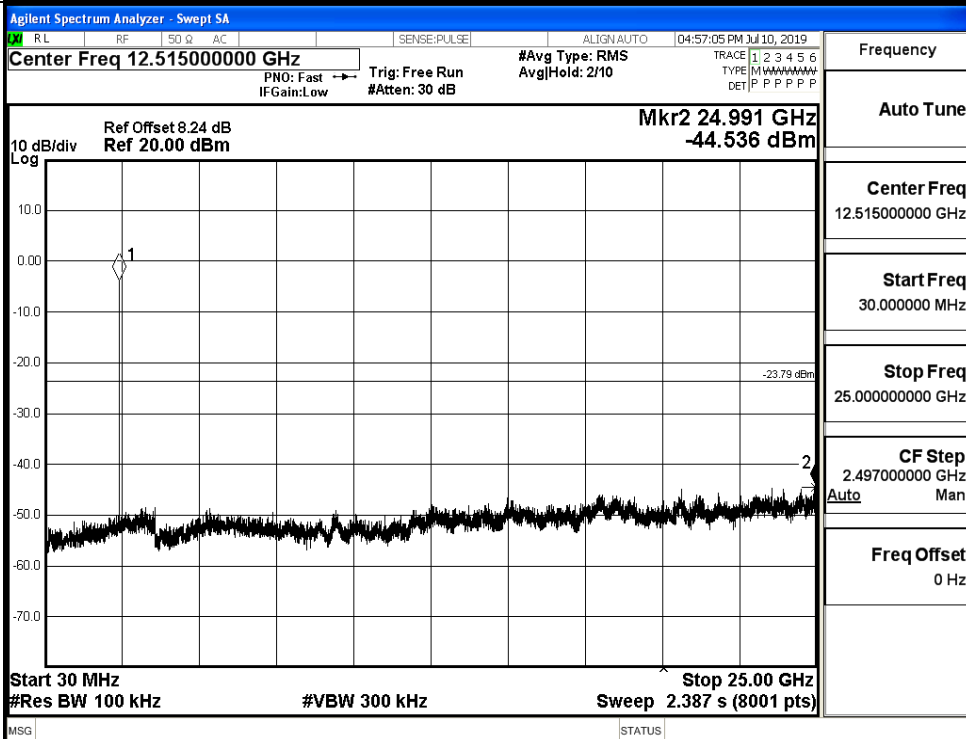


GFSK_MCH_Graphs

Pref

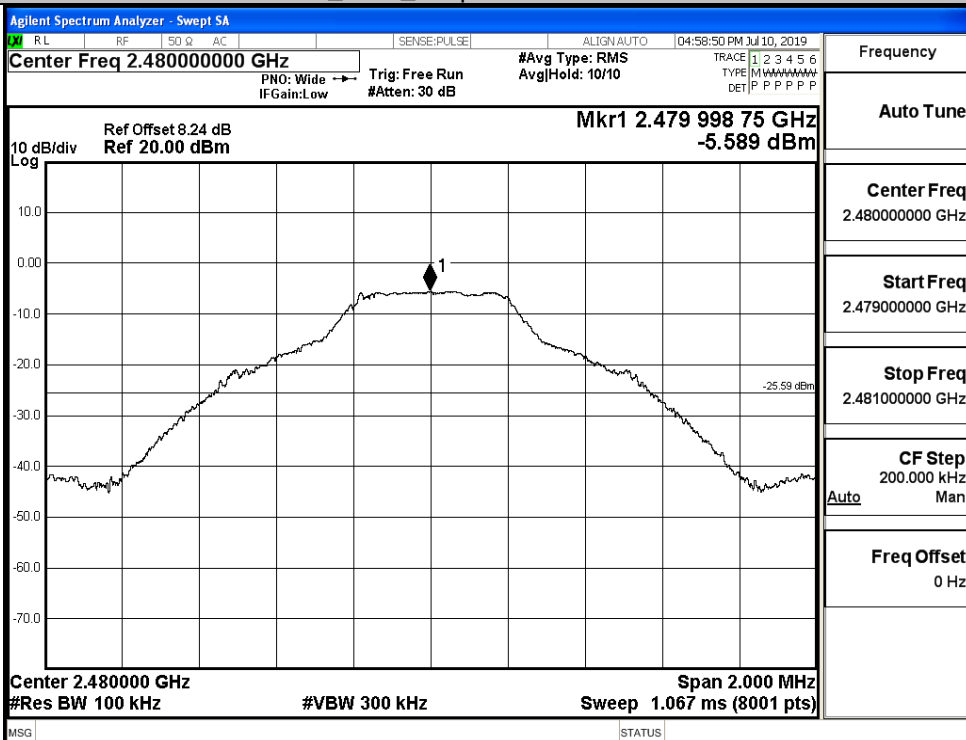


Puw

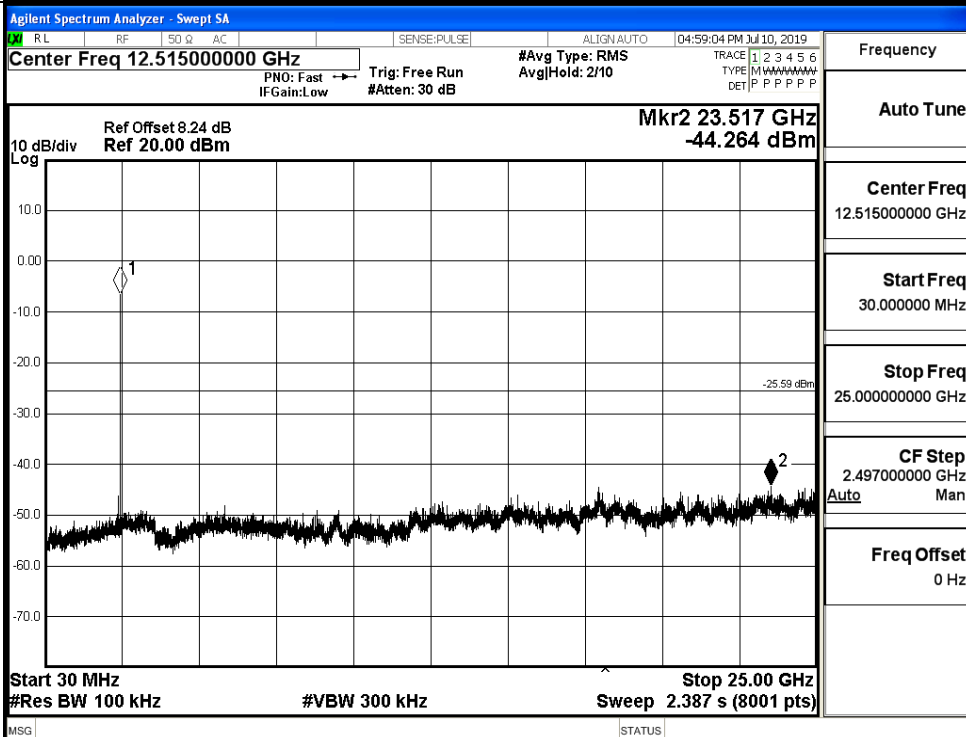


GFSK_HCH_Graphs

Pref

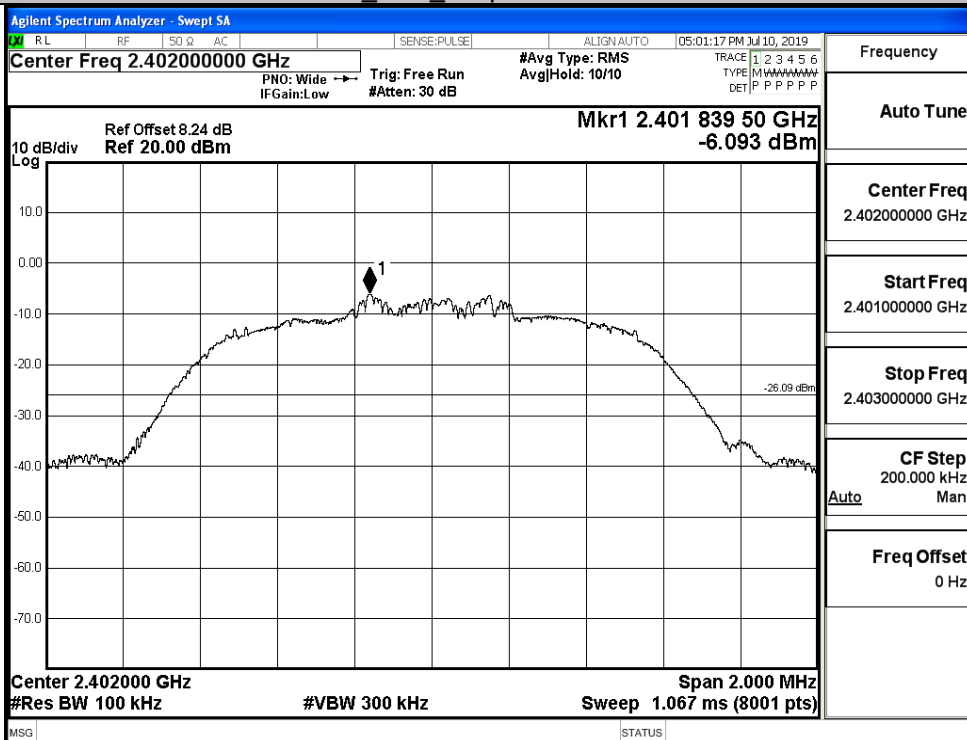


Puw

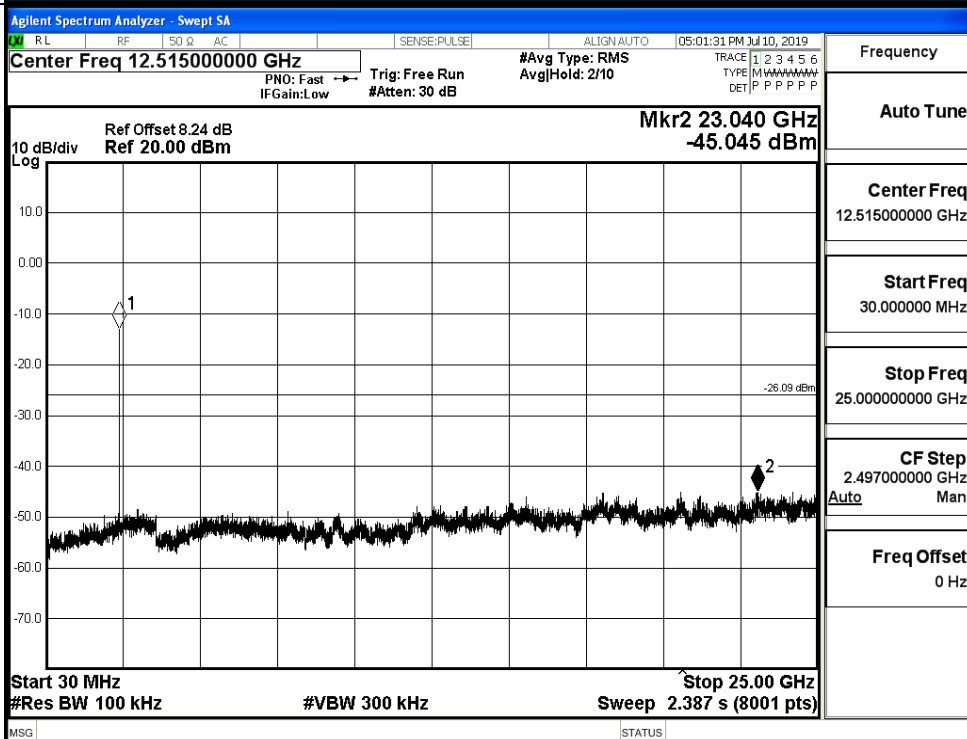


$\pi/4$ DQPSK_LCH_Graphs

Pref

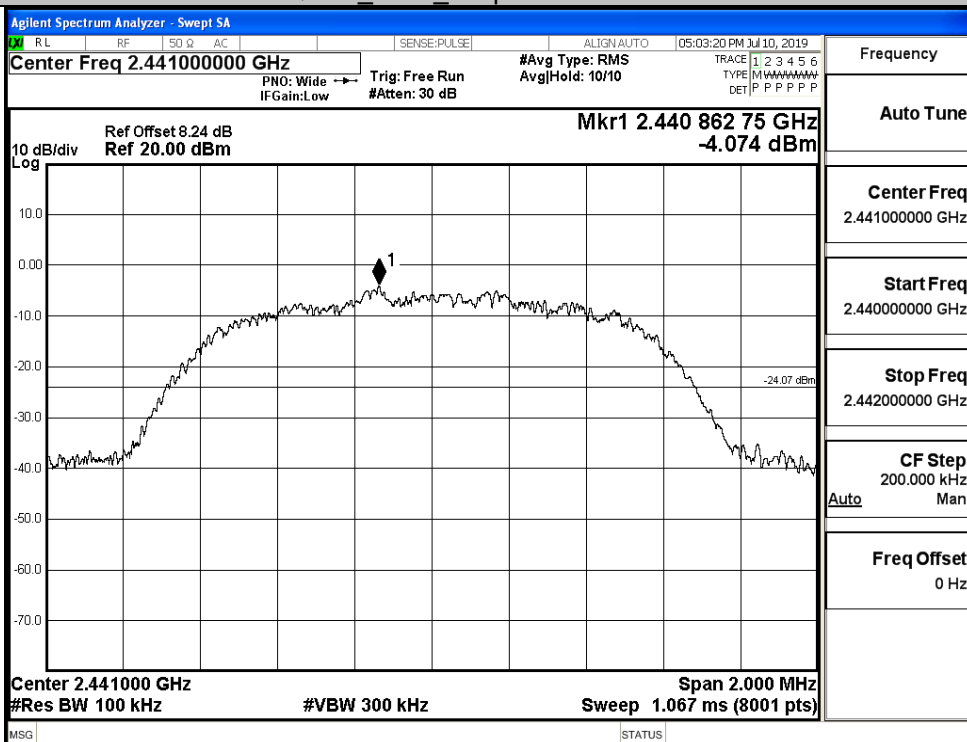


Puw

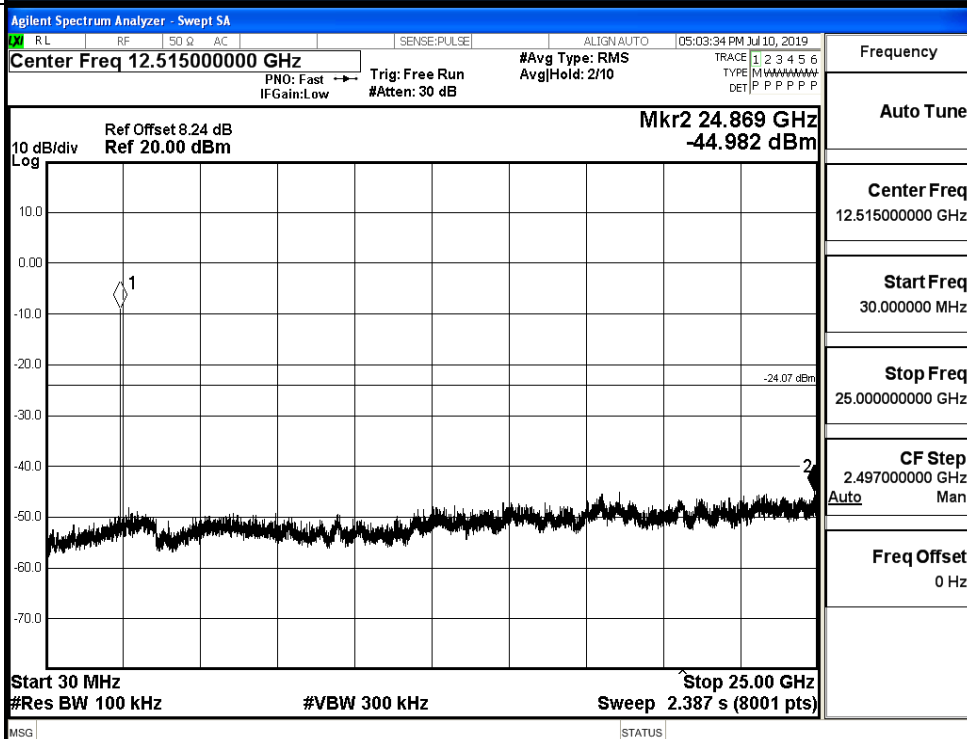


$\pi/4$ DQPSK_MCH_Graphs

Pref

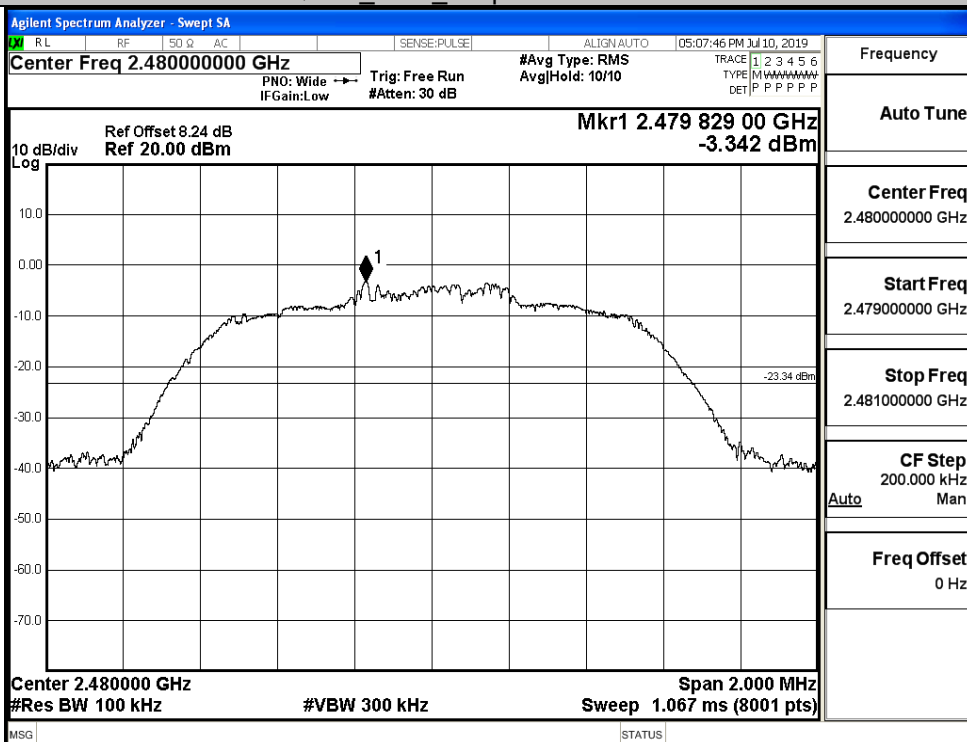


Puw

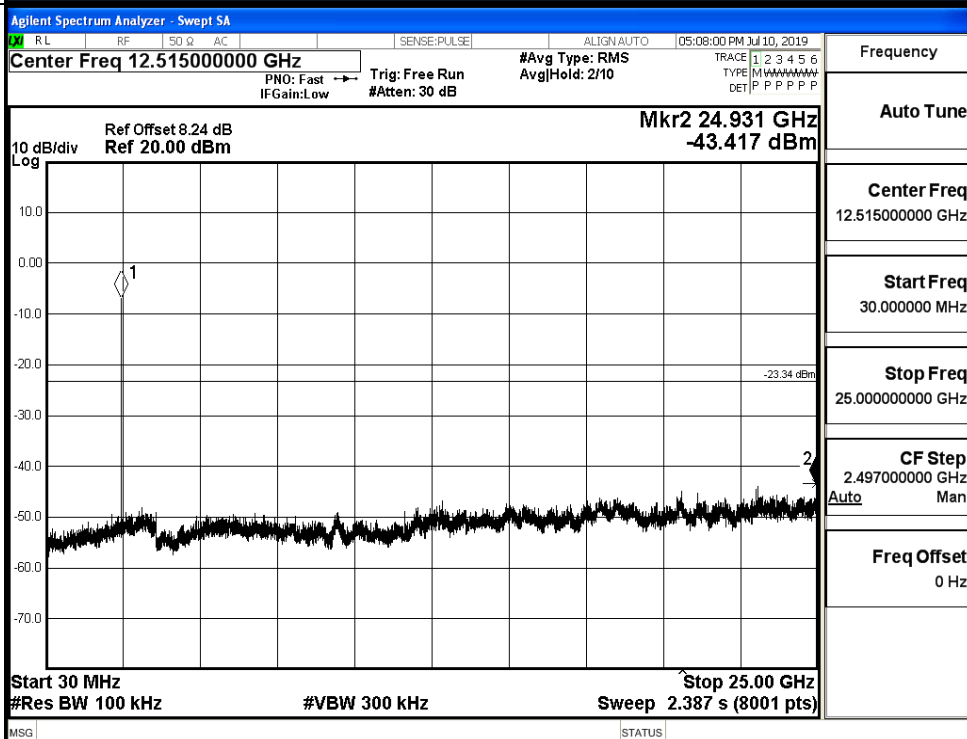


$\pi/4$ DQPSK_HCH_Graphs

Pref

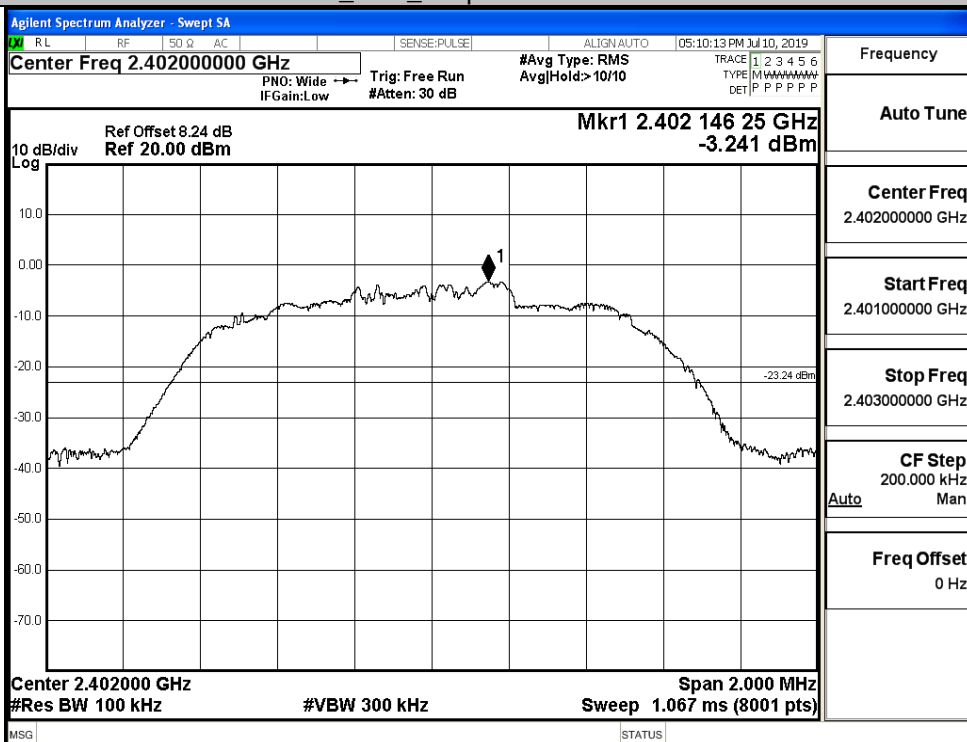


Puw

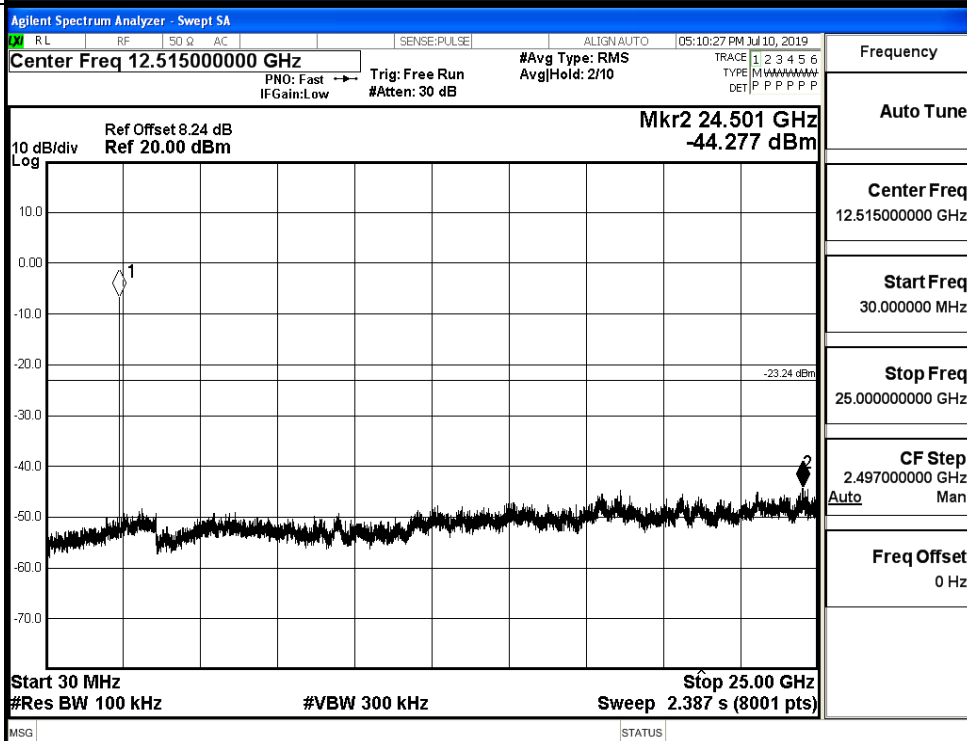


8DPSK_LCH_Graphs

Pref

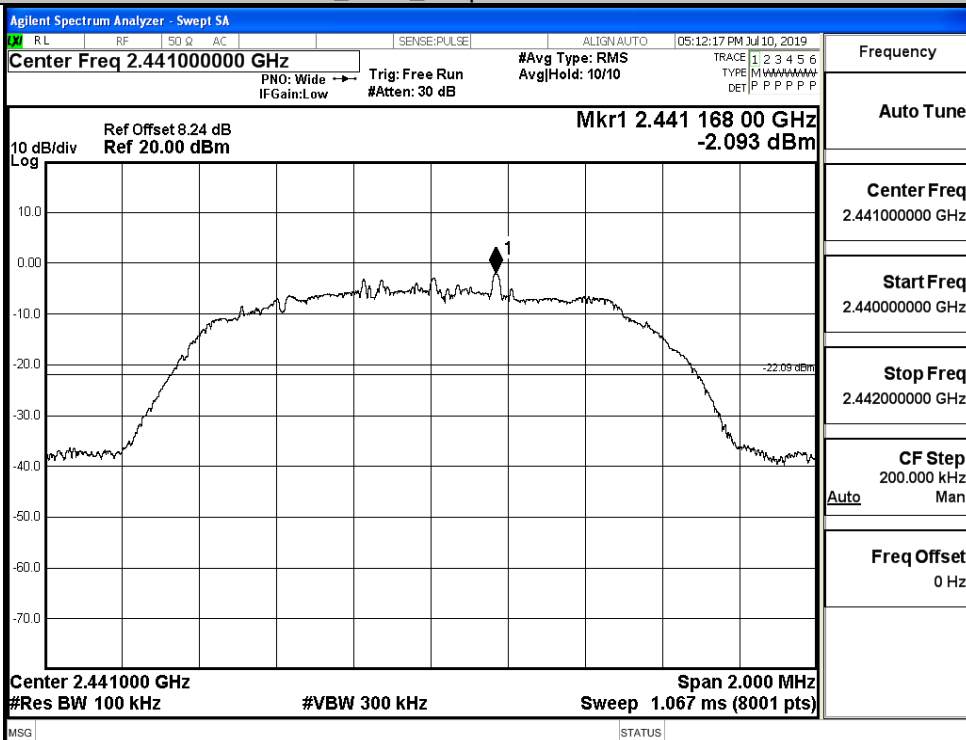


Puw

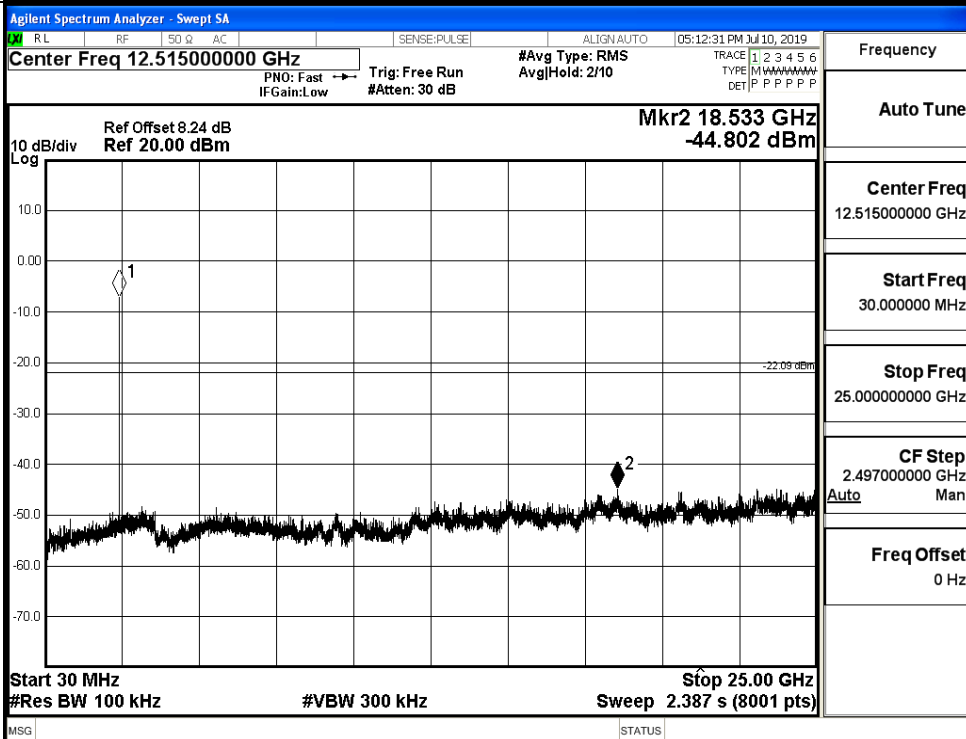


8DPSK_MCH_Graphs

Pref

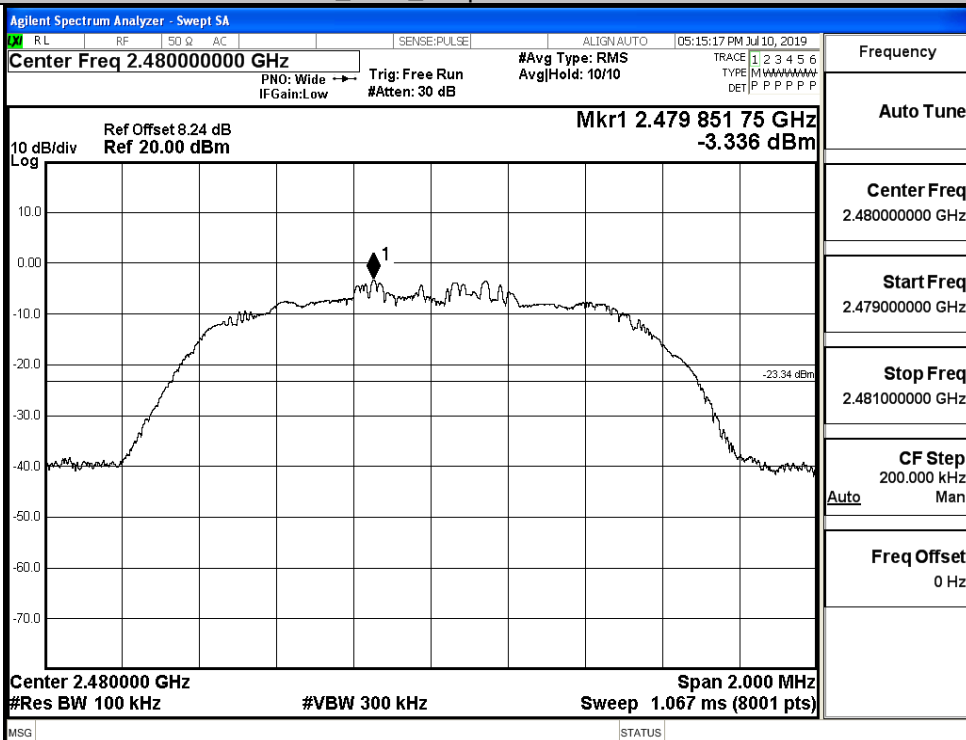


Puw

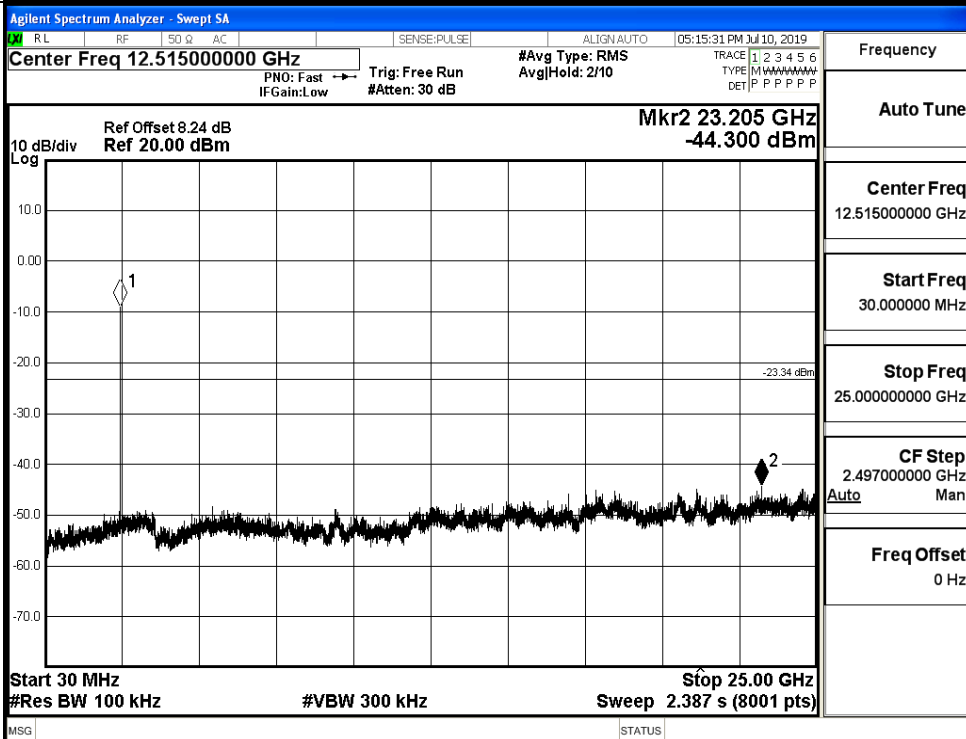


8DPSK_HCH_Graphs

Pref



Puw

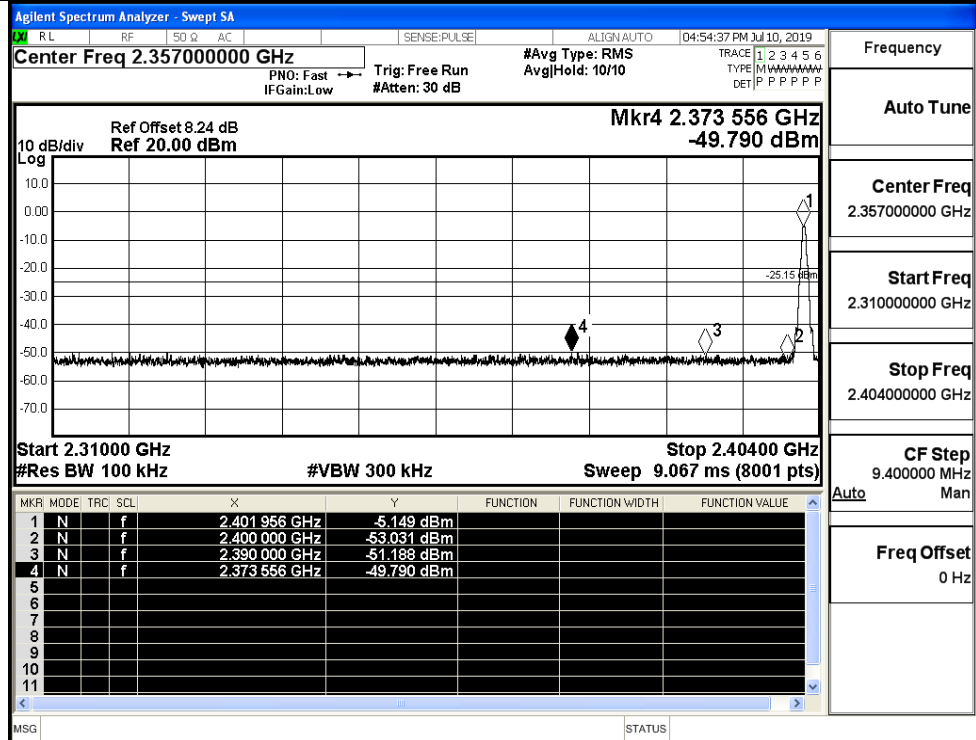


A.7 Band-edge for RF Conducted Emissions

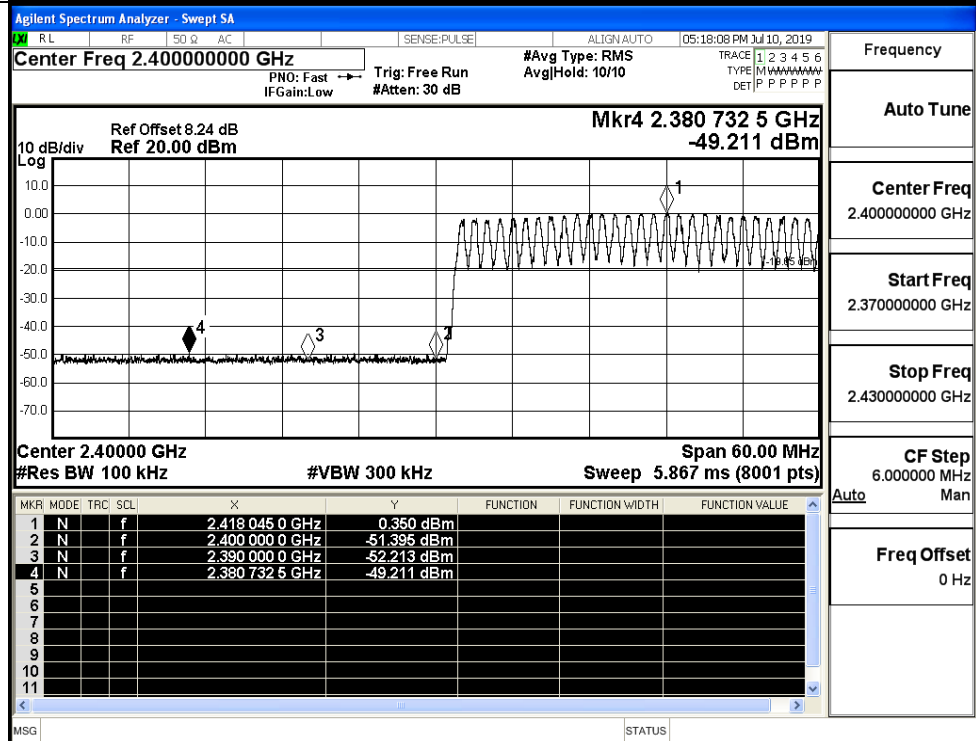
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	-5.149	Off	-49.790	-25.15	PASS
			0.350	On	-49.211	-19.65	PASS
	HCH	2480	-1.850	Off	-50.183	-21.85	PASS
			0.463	On	-49.506	-19.54	PASS
$\pi/4$ DQPSK	LCH	2402	-6.092	Off	-49.636	-26.09	PASS
			0.421	On	-49.294	-19.58	PASS
	HCH	2480	-3.183	Off	-49.251	-23.18	PASS
			0.340	On	-49.441	-19.66	PASS
8DPSK	LCH	2402	-2.846	Off	-49.579	-22.85	PASS
			-0.926	On	-48.778	-20.93	PASS
	HCH	2480	-3.617	Off	-49.393	-23.62	PASS
			-1.131	On	-48.759	-21.13	PASS

Test Graphs

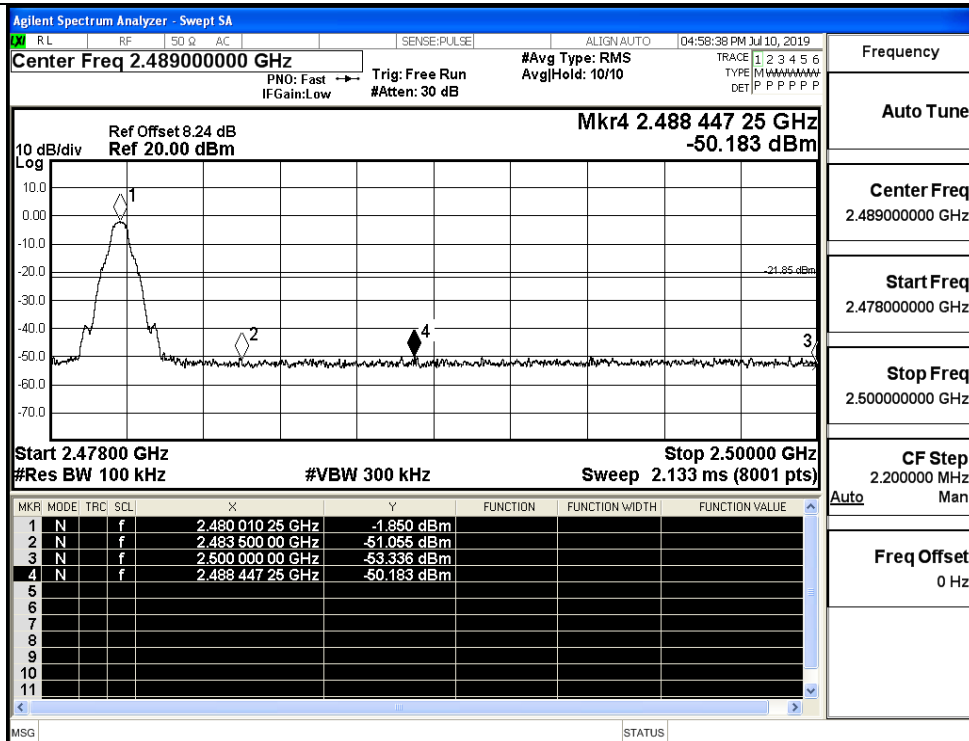
GFSK/LCH/No Hop



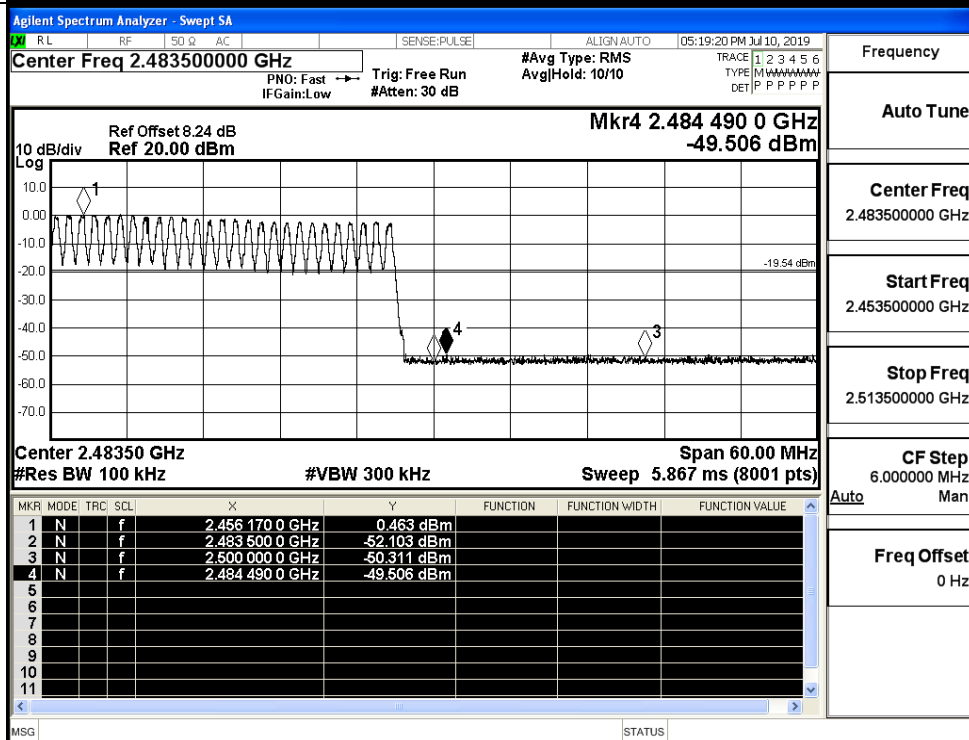
GFSK/LCH/Hop



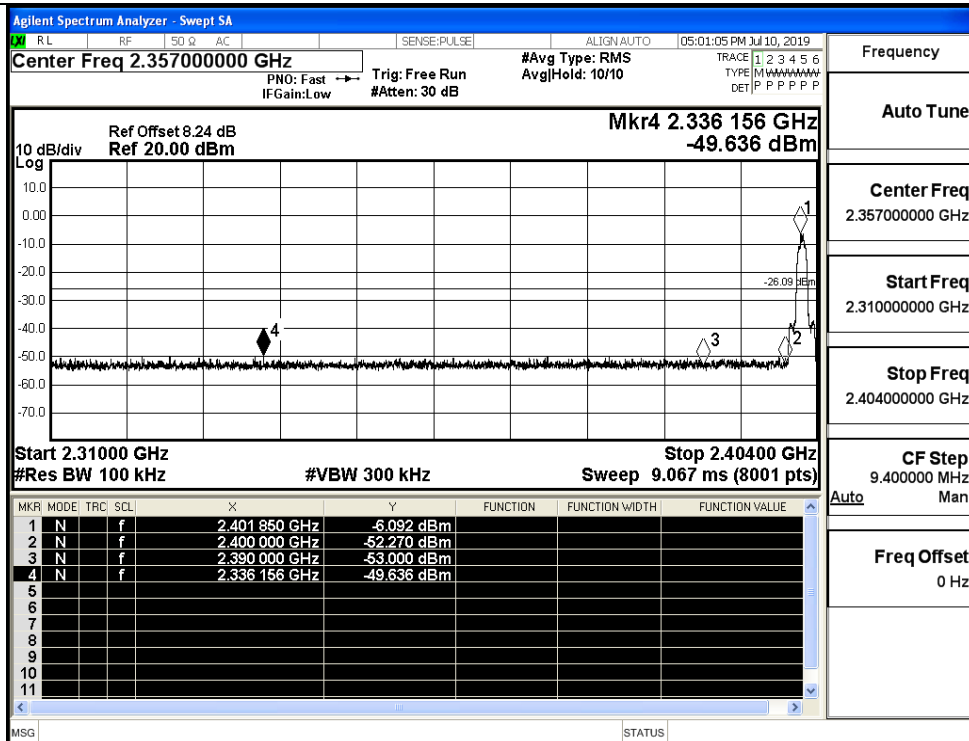
GFSK/HCH/No Hop



GFSK/HCH/Hop



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



Frequency

Auto Tune

Center Freq
2.357000000 GHz

Start Freq
2.310000000 GHz

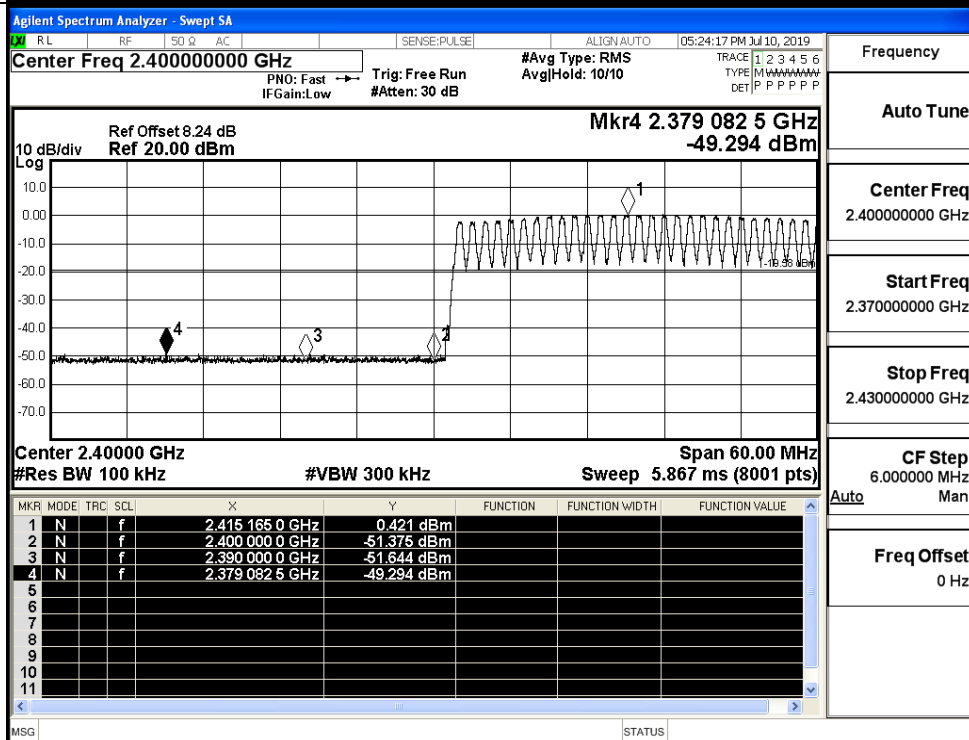
Stop Freq
2.404000000 GHz

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

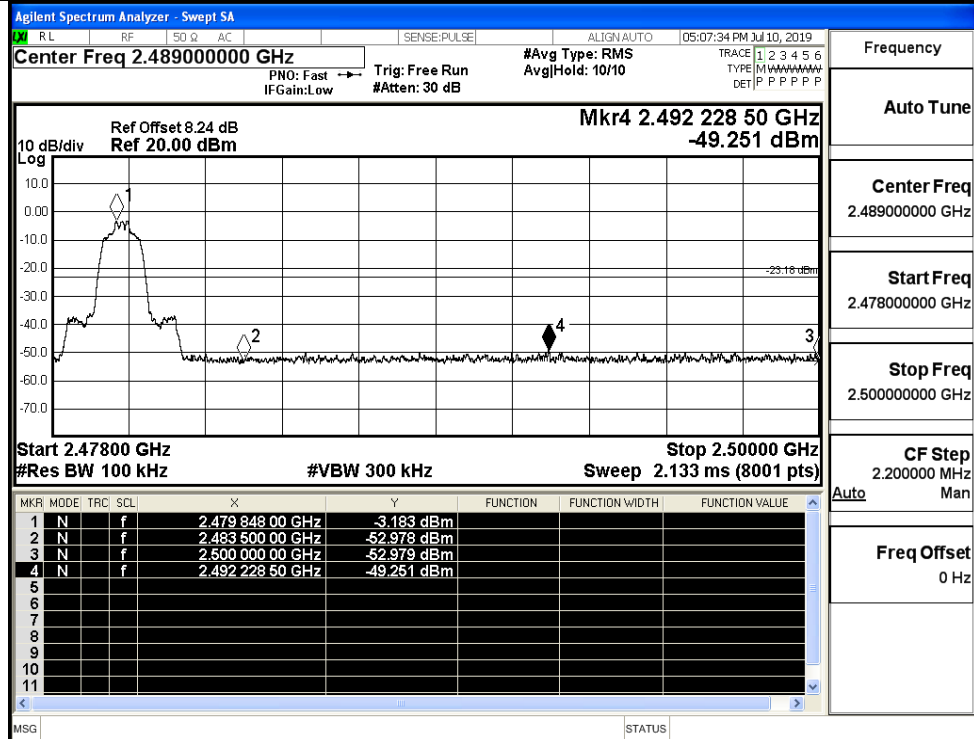
Stop Freq
2.430000000 GHz

CF Step
6.000000 MHz

Auto Man

Freq Offset
0 Hz

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



Frequency

Auto Tune

Center Freq
2.489000000 GHz

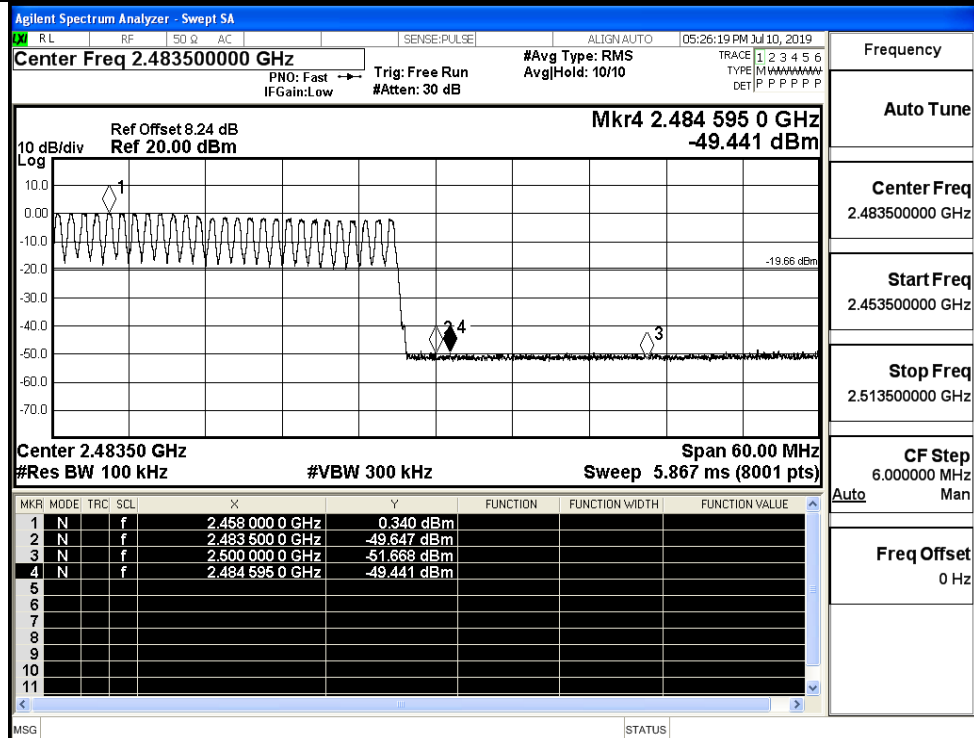
Start Freq
2.478000000 GHz

Stop Freq
2.500000000 GHz

CF Step
2.200000 MHz

Freq Offset
0 Hz

$\pi/4$ DQPSK/HCH/Hop



Frequency

Auto Tune

Center Freq
2.483500000 GHz

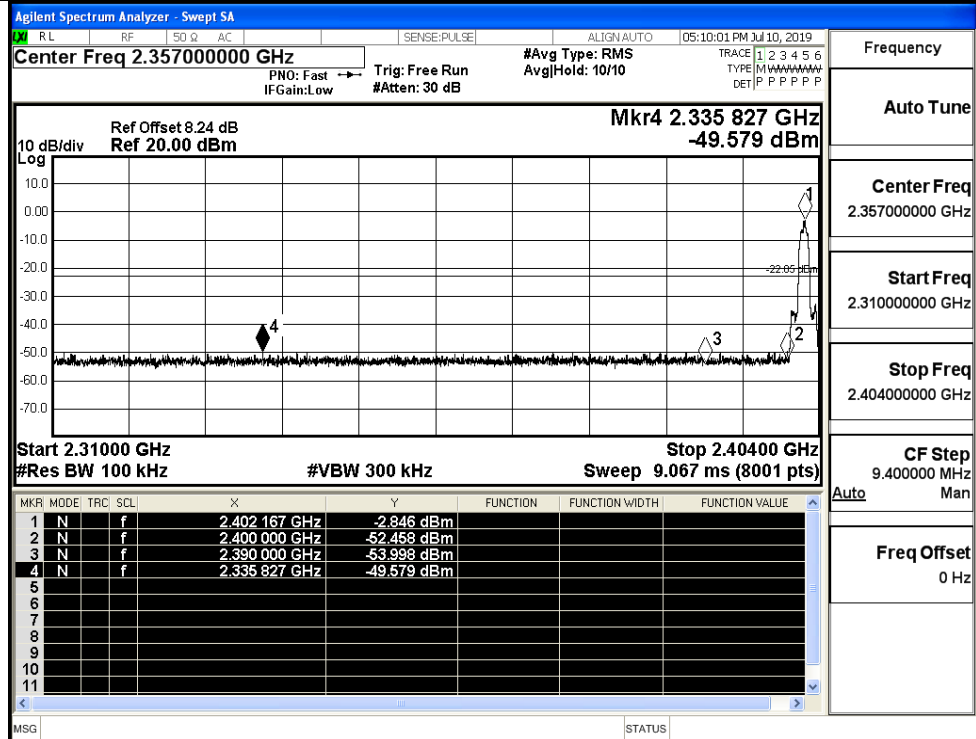
Start Freq
2.453500000 GHz

Stop Freq
2.513500000 GHz

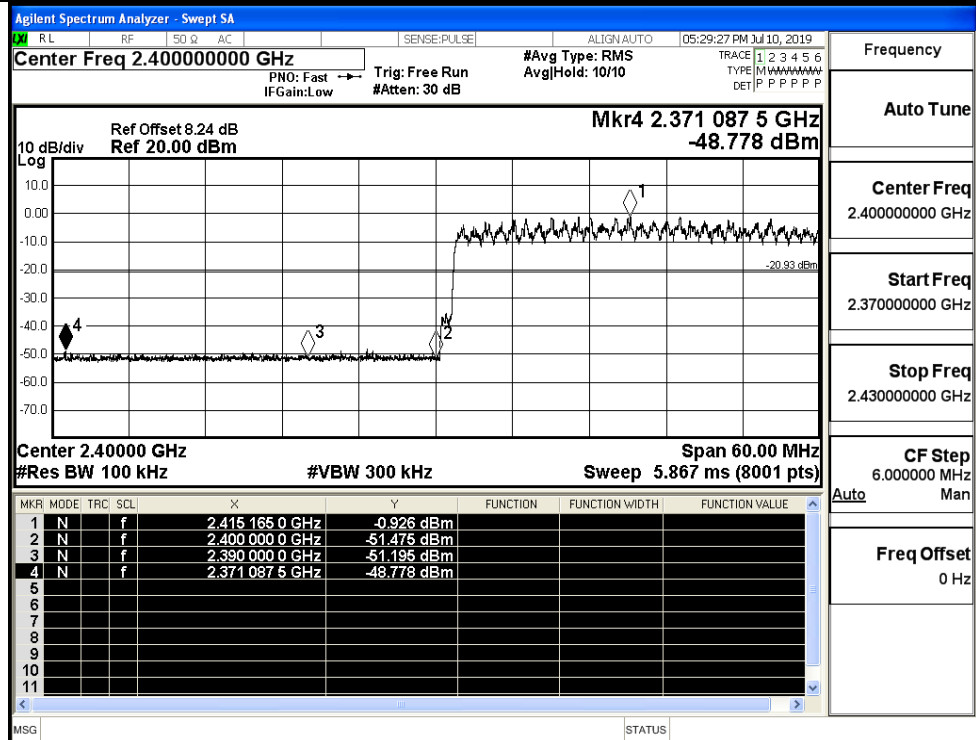
CF Step
6.000000 MHz

Freq Offset
0 Hz

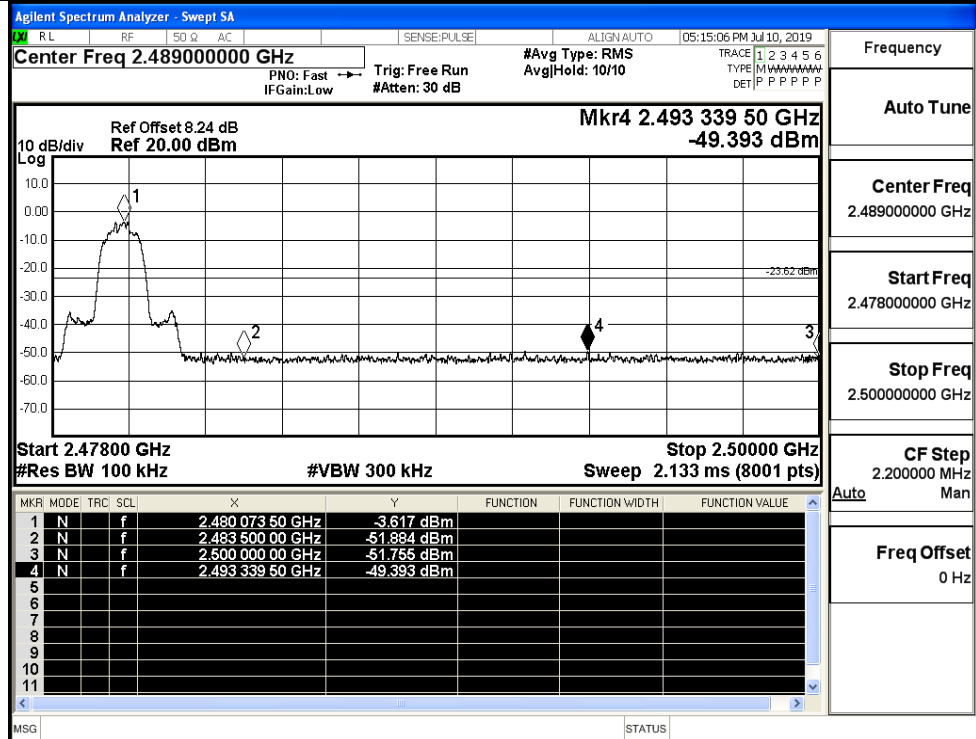
8DPSK/LCH/No Hop



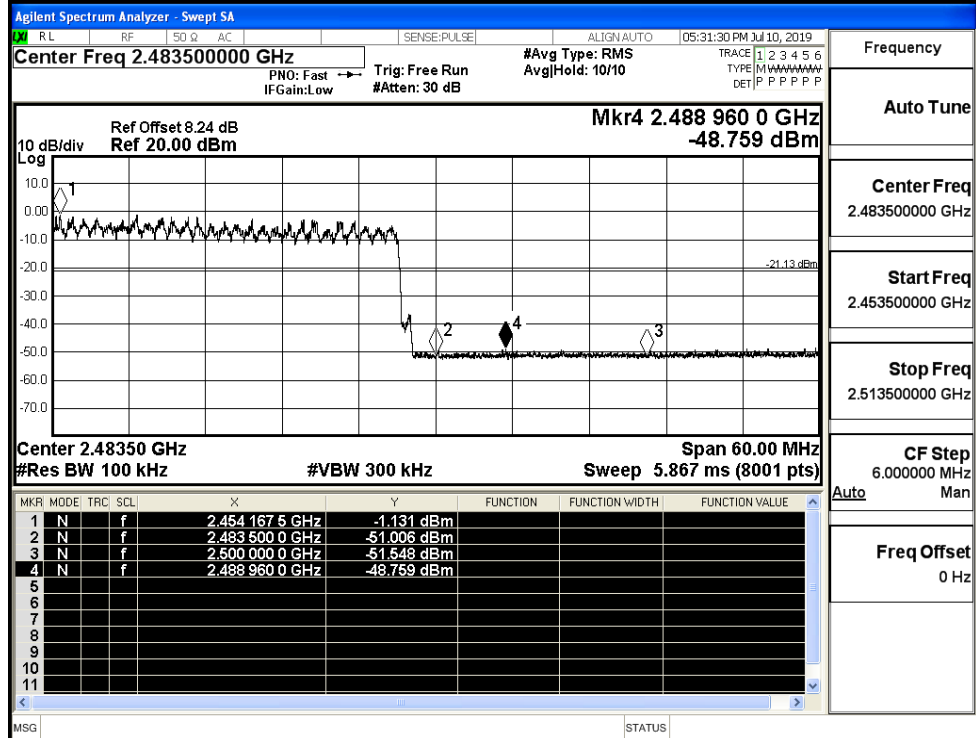
8DPSK/LCH/Hop



8DPSK/HCH/No Hop



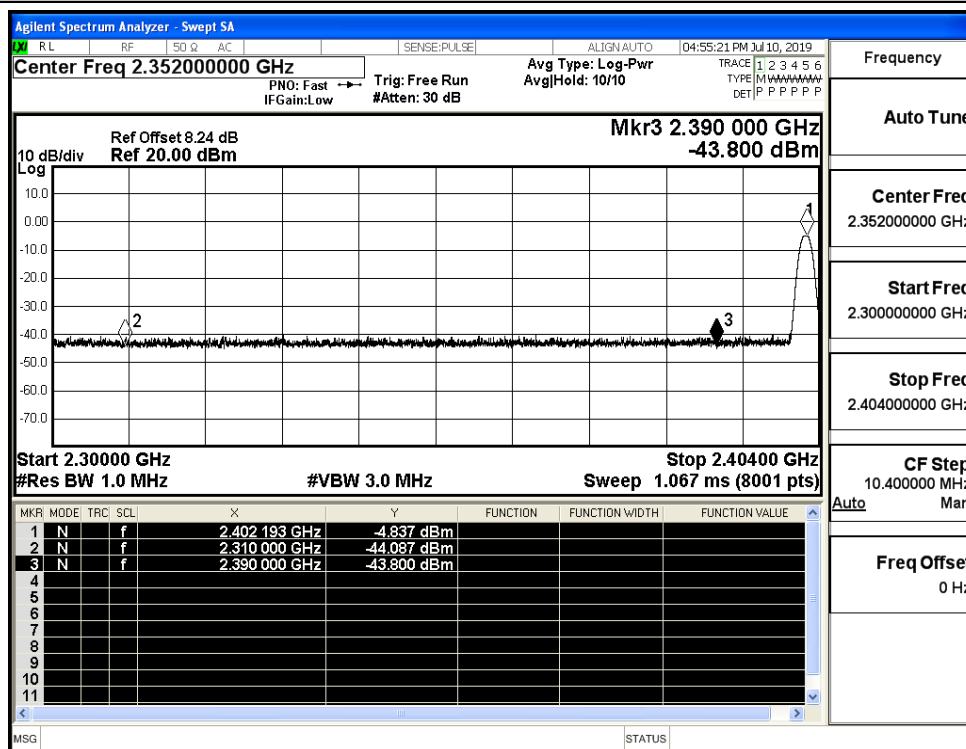
8DPSK/HCH/Hop



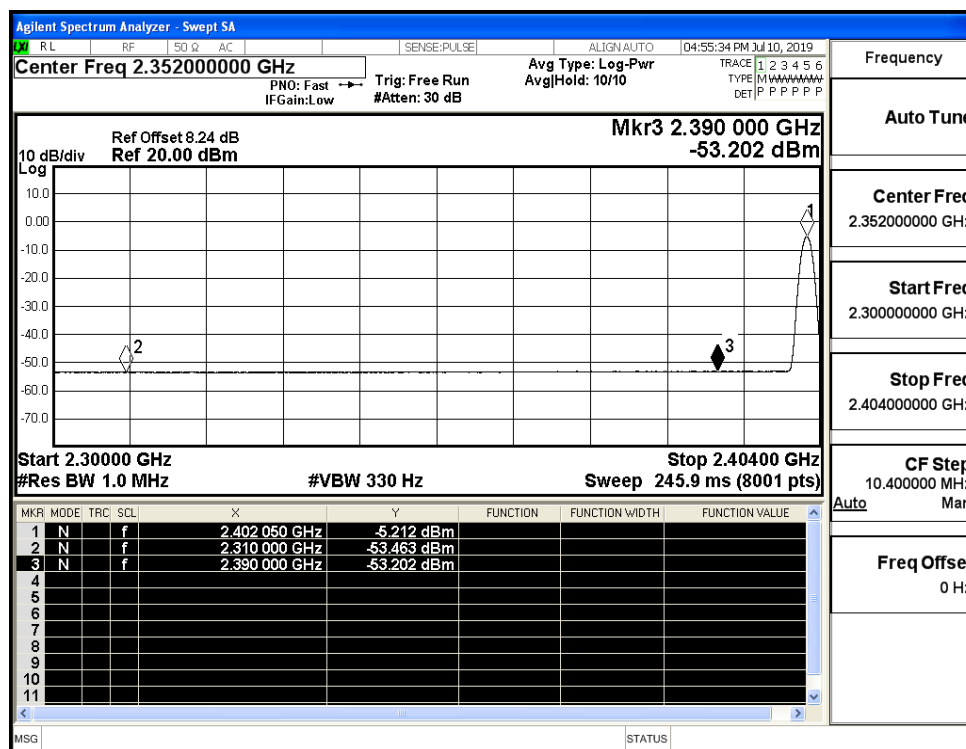
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-44.09	2.0	0	51.17	PEAK	74	PASS
	Off	2310.0	-53.46	2.0	0	41.79	AV	54	PASS
	Off	2390.0	-43.80	2.0	0	51.46	PEAK	74	PASS
	Off	2390.0	-53.20	2.0	0	42.06	AV	54	PASS
	Off	2483.5	-43.76	2.0	0	51.50	PEAK	74	PASS
	Off	2483.5	-52.89	2.0	0	42.37	AV	54	PASS
	Off	2500.0	-42.76	2.0	0	52.49	PEAK	74	PASS
	Off	2500.0	-52.86	2.0	0	42.40	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-43.91	2.0	0	51.35	PEAK	74	PASS
	Off	2310.0	-53.49	2.0	0	41.76	AV	54	PASS
	Off	2390.0	-42.89	2.0	0	52.37	PEAK	74	PASS
	Off	2390.0	-53.14	2.0	0	42.12	AV	54	PASS
	Off	2483.5	-42.16	2.0	0	53.10	PEAK	74	PASS
	Off	2483.5	-52.89	2.0	0	42.37	AV	54	PASS
	Off	2500.0	-41.97	2.0	0	53.28	PEAK	74	PASS
	Off	2500.0	-52.82	2.0	0	42.44	AV	54	PASS
8DPSK	Off	2310.0	-42.08	2.0	0	53.18	PEAK	74	PASS
	Off	2310.0	-53.34	2.0	0	41.92	AV	54	PASS
	Off	2390.0	-41.41	2.0	0	53.85	PEAK	74	PASS
	Off	2390.0	-53.18	2.0	0	42.08	AV	54	PASS
	Off	2483.5	-43.12	2.0	0	52.14	PEAK	74	PASS
	Off	2483.5	-52.84	2.0	0	42.42	AV	54	PASS
	Off	2500.0	-42.51	2.0	0	52.75	PEAK	74	PASS
	Off	2500.0	-52.77	2.0	0	42.48	AV	54	PASS

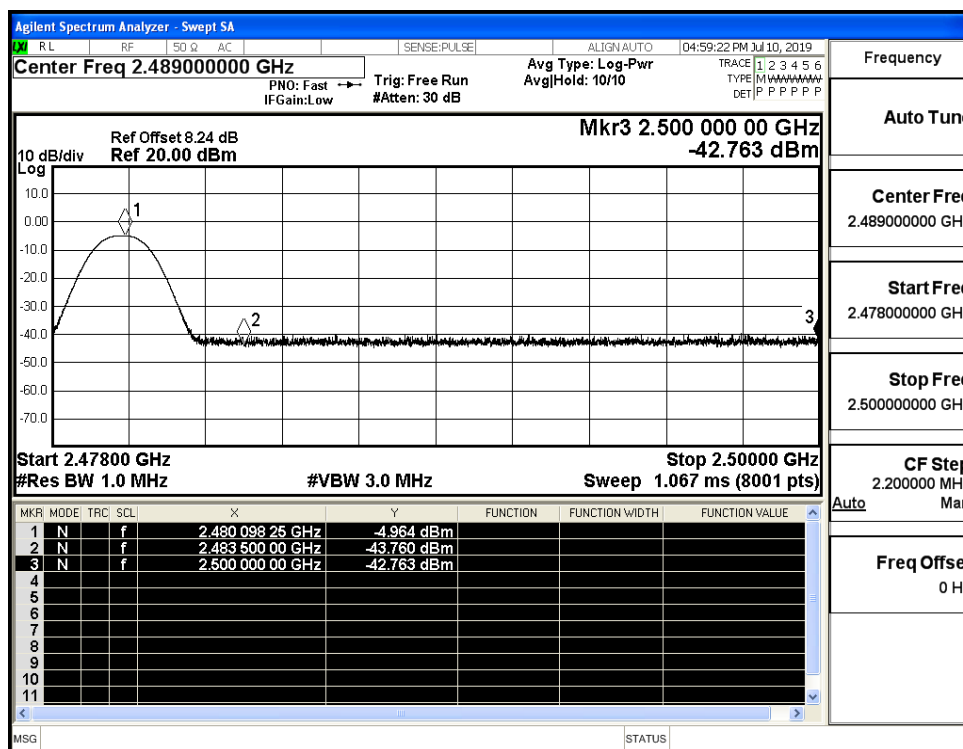
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (Low Channel)



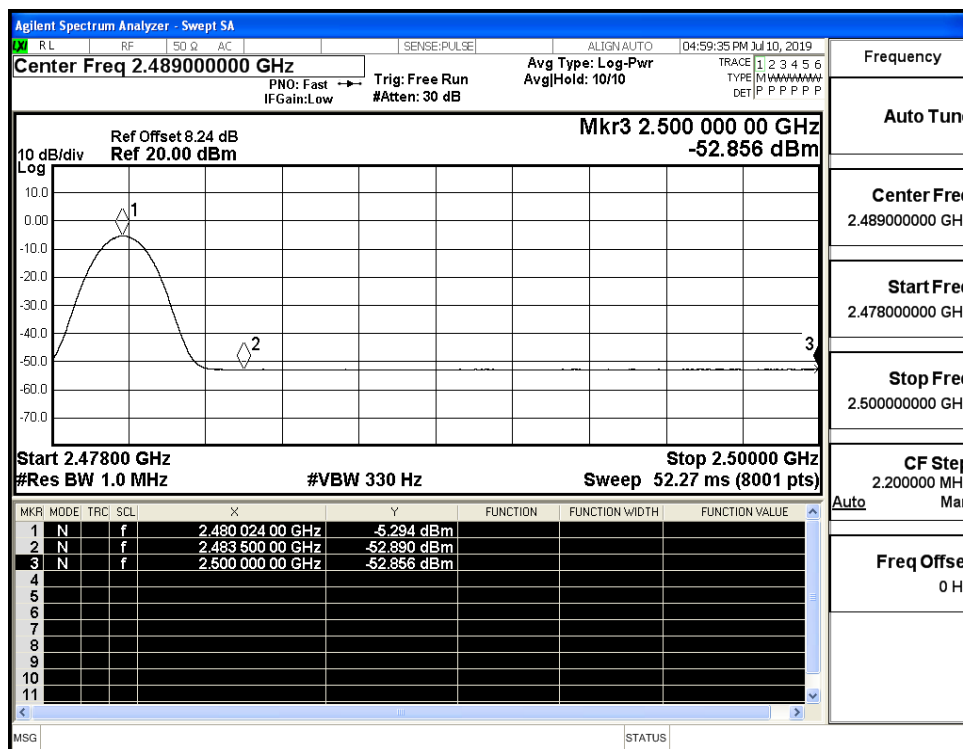
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (Low Channel)



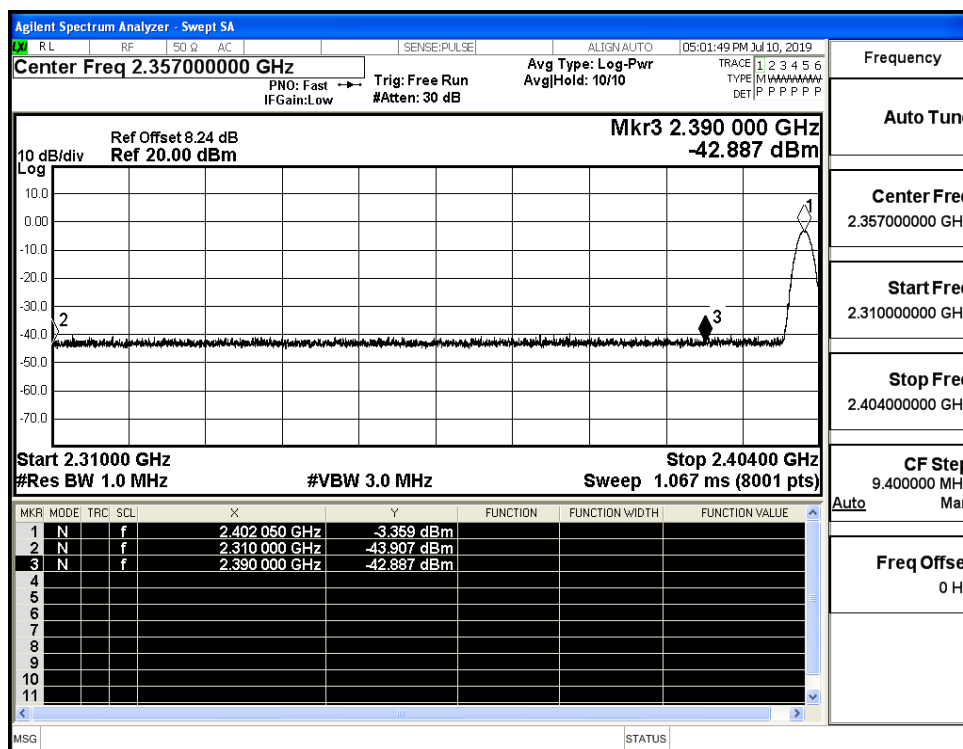
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (High Channel)



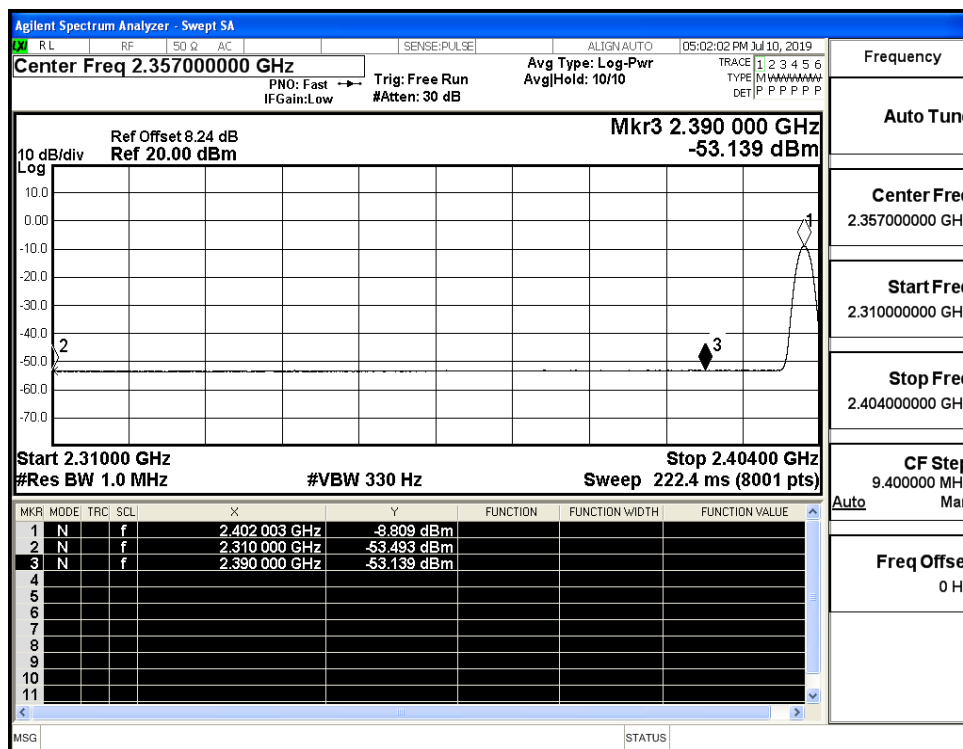
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (High Channel)



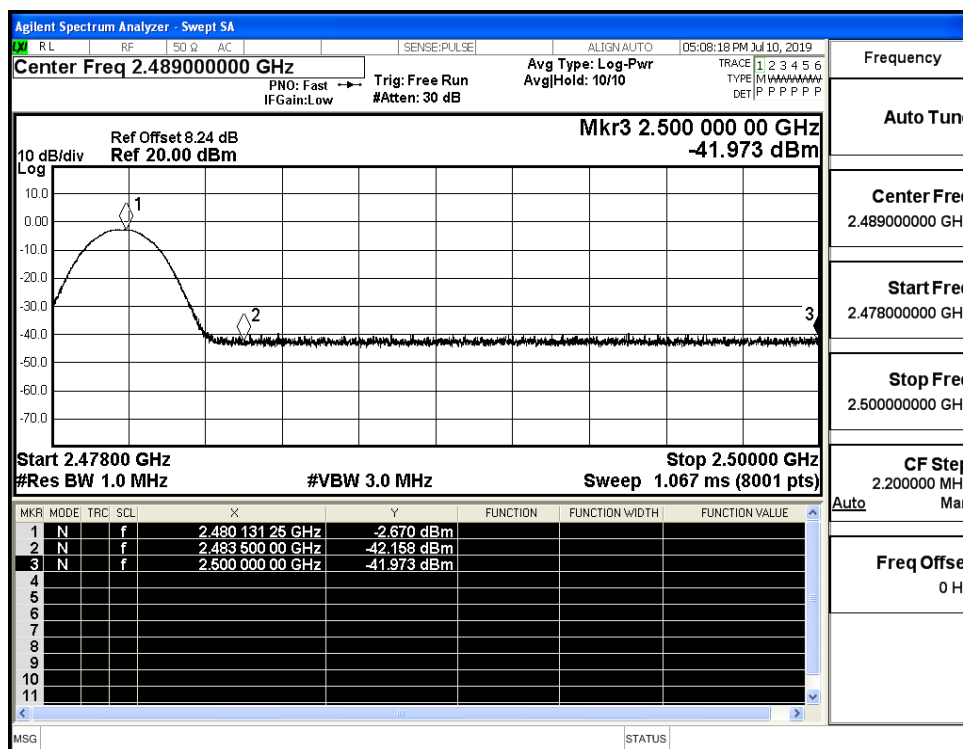
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)



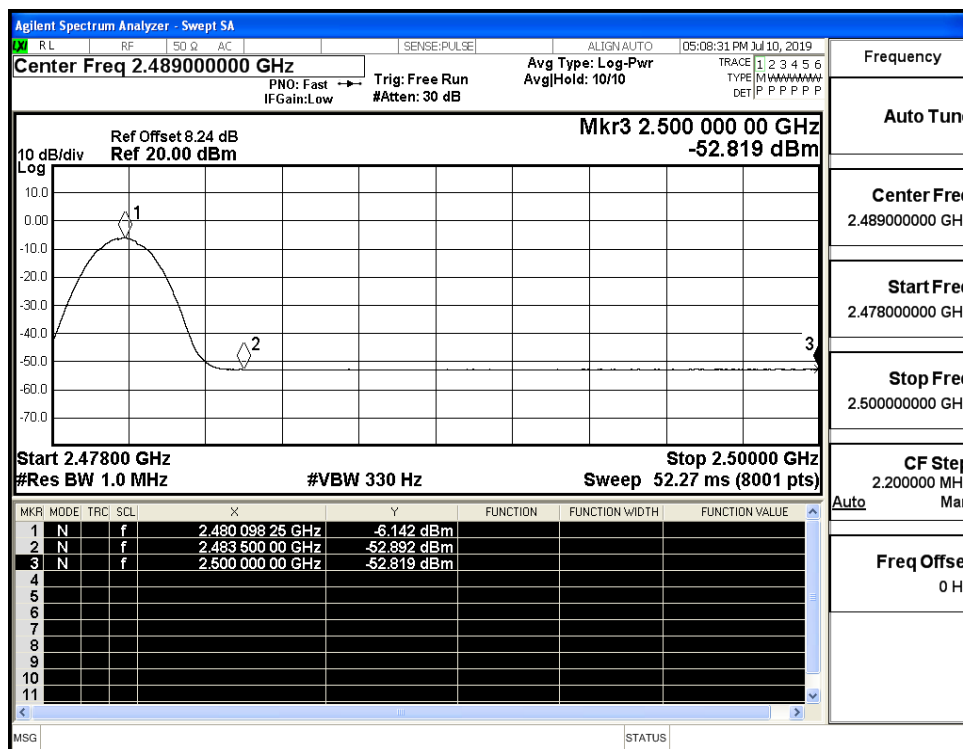
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (Low Channel)



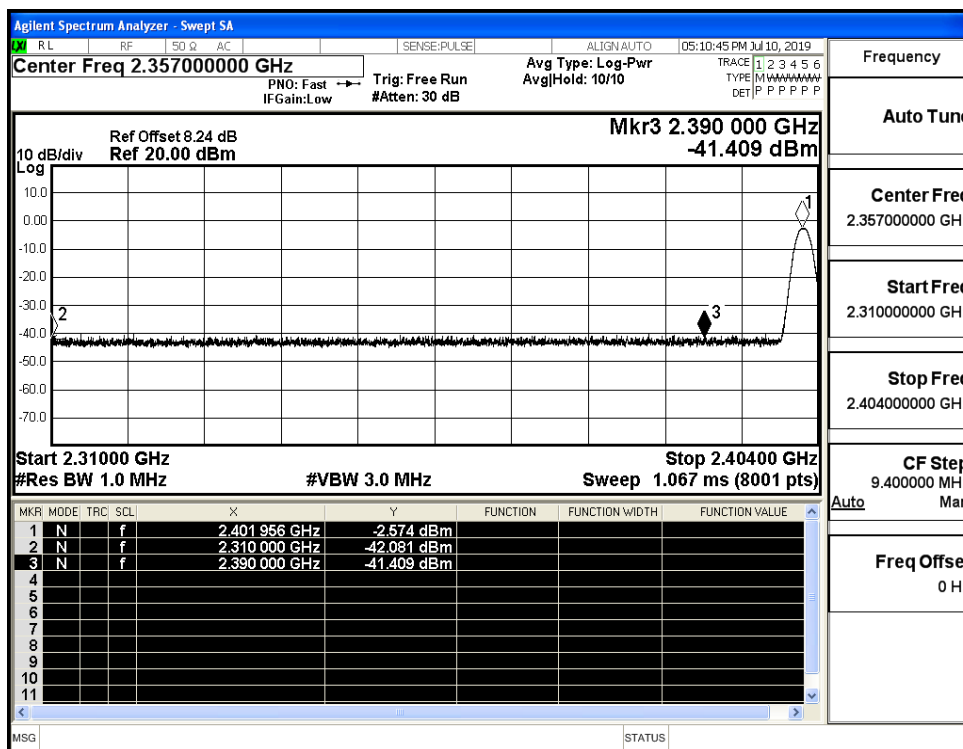
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (High Channel)



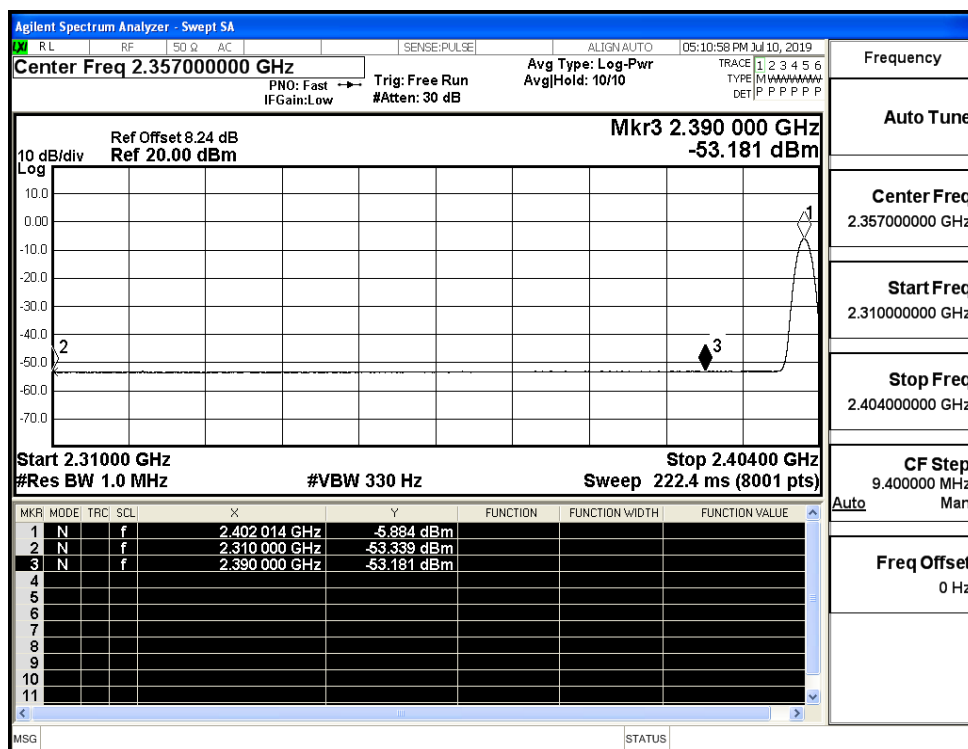
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (High Channel)



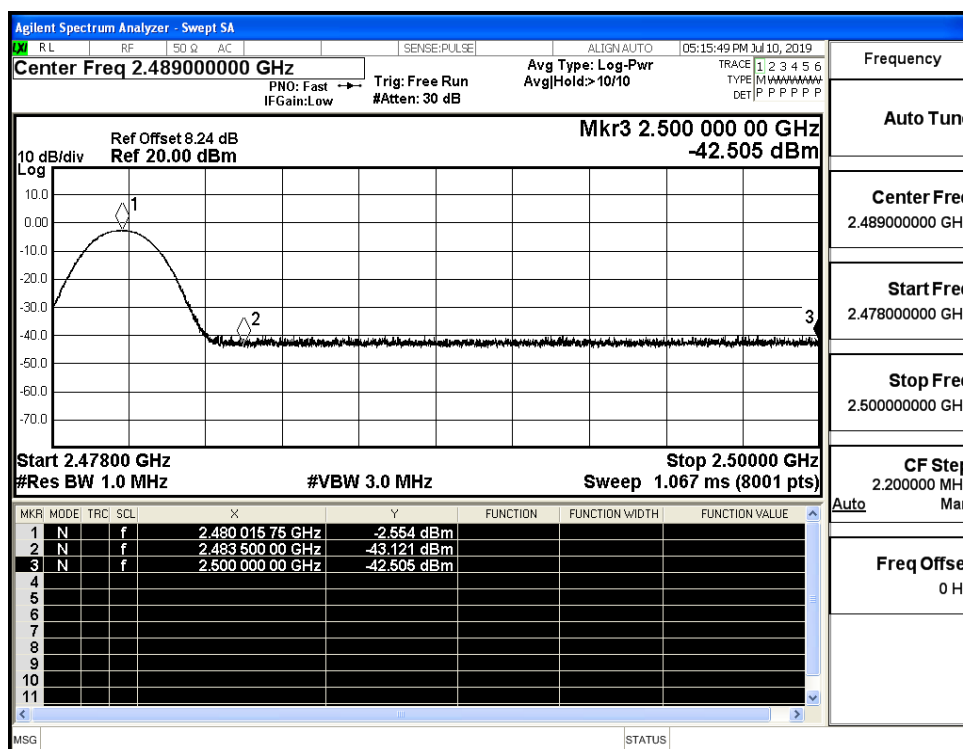
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)

