

Appendix A

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

Product Name: CD+G/MP3+G KARAOKE PLAYER WITH BLUETOOTH

Trade Mark: singing machine

Test Model: SML385UBK

Environmental Conditions

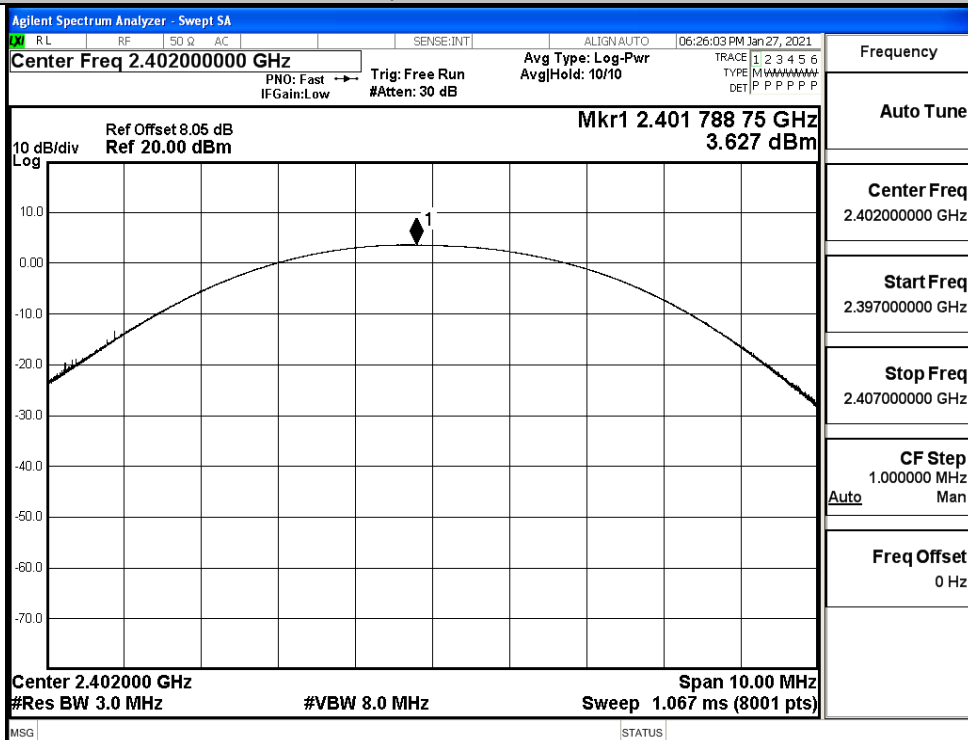
Temperature:	24.6° C
Relative Humidity:	54.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Kay Hu
Supervised by:	Li Huan

A.1 Maximum Conducted Peak Output Power

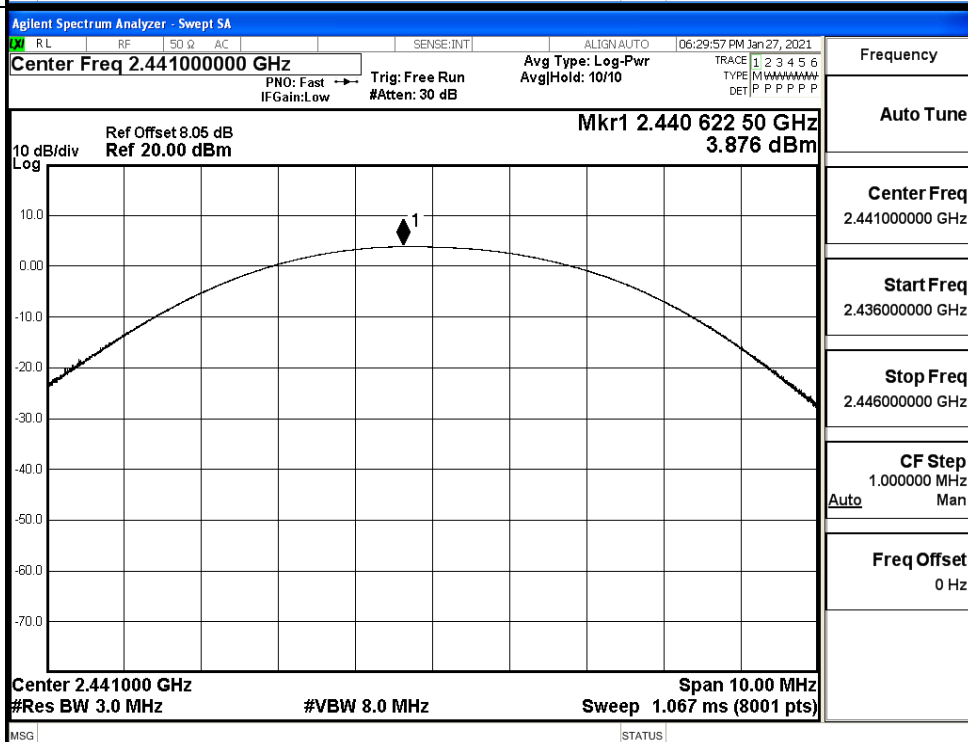
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	3.627	21	PASS
	MCH	3.876	21	PASS
	HCH	3.606	21	PASS
$\pi/4$ DQPSK	LCH	2.894	21	PASS
	MCH	3.161	21	PASS
	HCH	2.891	21	PASS

Test Graphs

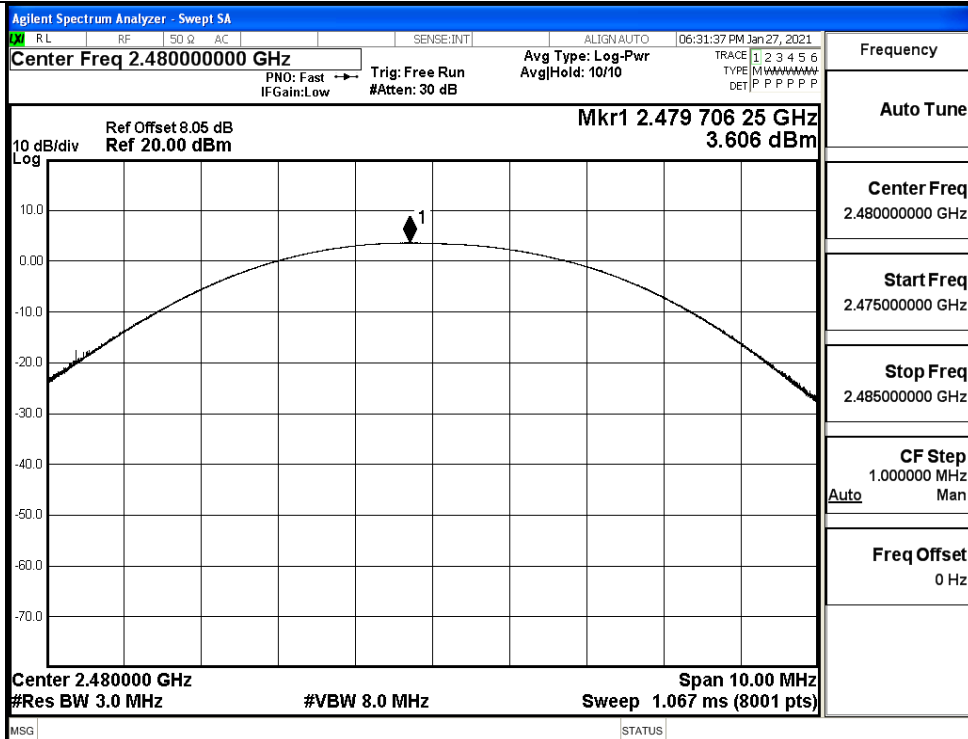
GFSK/LCH



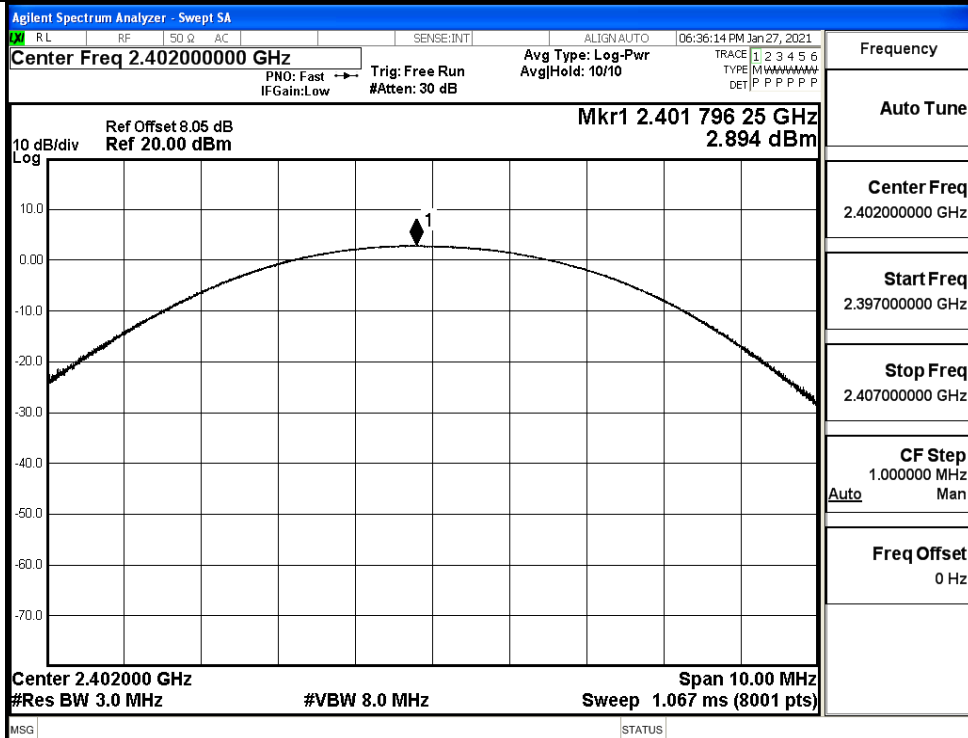
GFSK/MCH

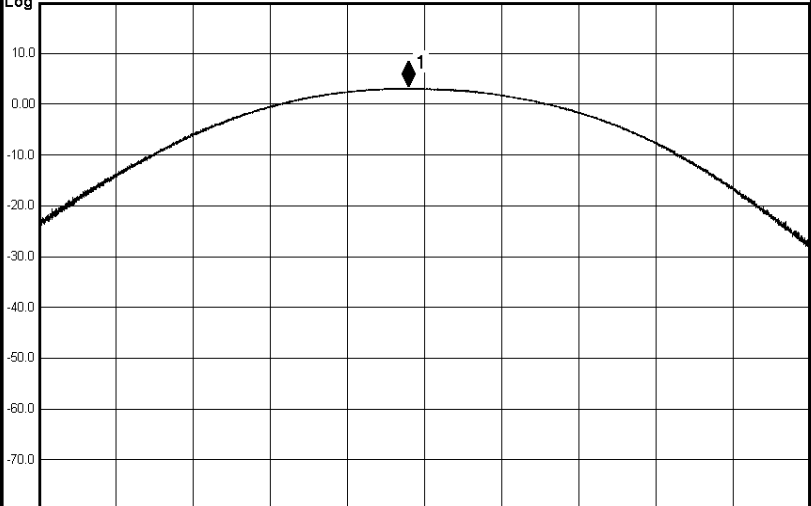
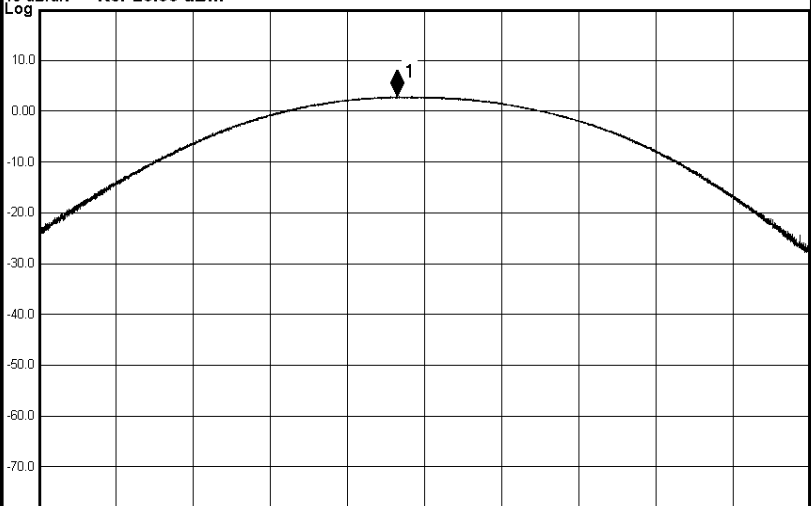


GFSK/HCH



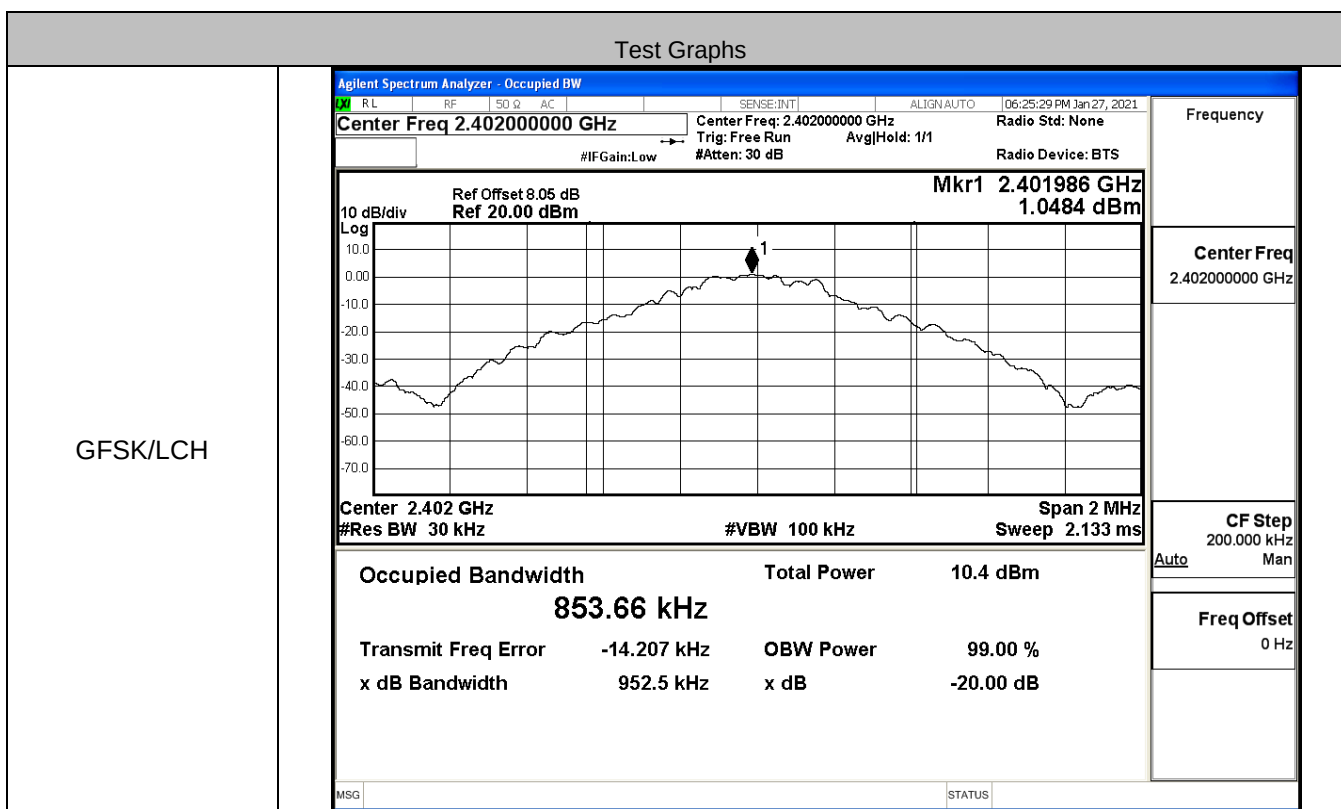
$\pi/4$ DQPSK/LCH



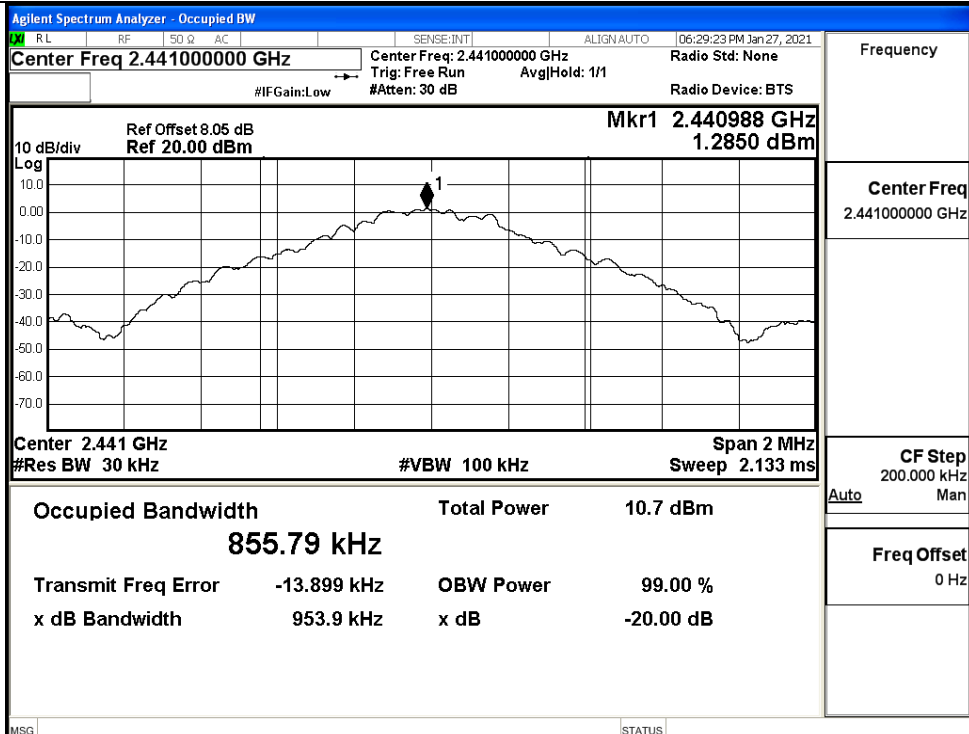
$\pi/4$DQPSK/MCH	Agilent Spectrum Analyzer - Swept SA RL RF 50 Q AC SENSE:INT ALIGN:AUTO 06:38:47 PM Jan 27, 2021 Center Freq 2.441000000 GHz PNO: Fast IF Gain: Low Trig: Free Run #Atten: 30 dB Avg Type: Log-Pwr AvgHold: 10/10 Mkr1 2.440 791 25 GHz 3.161 dBm Ref Offset 8.05 dB Ref 20.00 dBm 10 dB/div Log  Center 2.441000 GHz #Res BW 3.0 MHz #VBW 8.0 MHz Span 10.00 MHz Sweep 1.067 ms (8001 pts) MSG STATUS 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
$\pi/4$DQPSK/HCH	Agilent Spectrum Analyzer - Swept SA RL RF 50 Q AC SENSE:INT ALIGN:AUTO 06:40:48 PM Jan 27, 2021 Center Freq 2.480000000 GHz PNO: Fast IF Gain: Low Trig: Free Run #Atten: 30 dB Avg Type: Log-Pwr AvgHold: 10/10 Mkr1 2.479 641 25 GHz 2.891 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 Span 10.00 MHz Sweep 1.067 ms (8001 pts) MSG STATUS 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

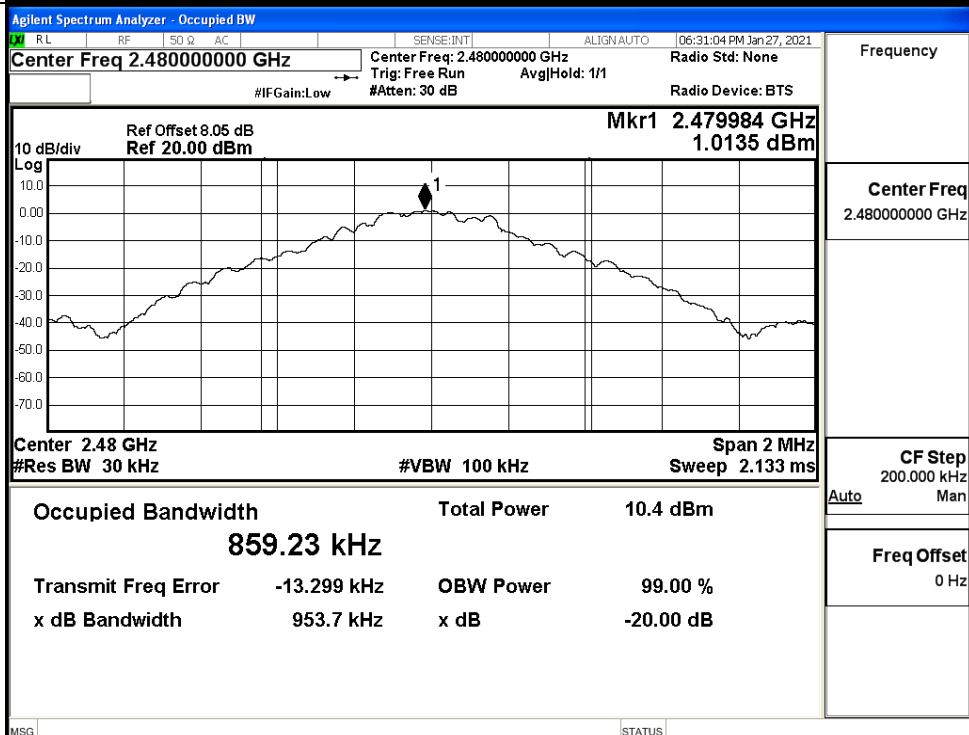
Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.9525	Not Specified	PASS
	MCH	0.9539	Not Specified	PASS
	HCH	0.9537	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.310	Not Specified	PASS
	MCH	1.312	Not Specified	PASS
	HCH	1.312	Not Specified	PASS



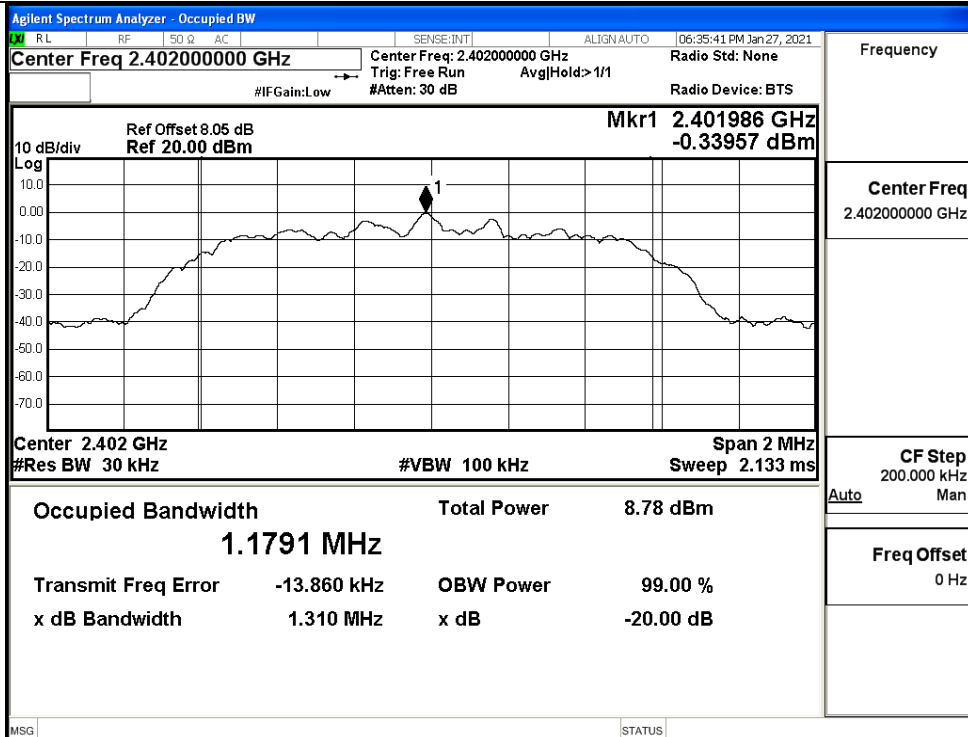
GFSK/MCH



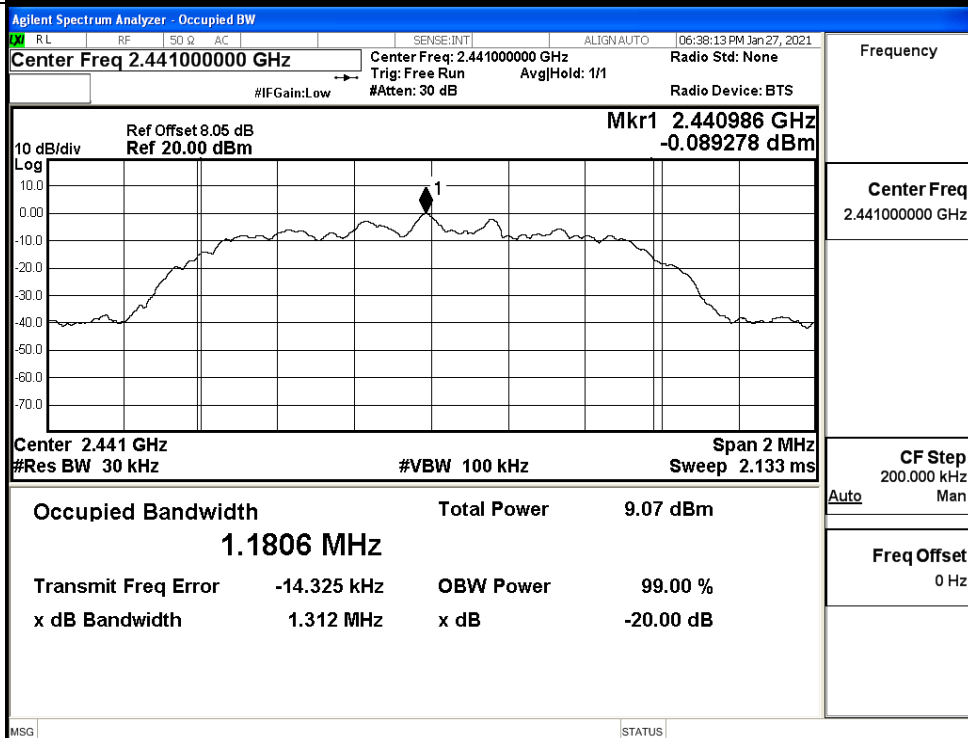
GFSK/HCH



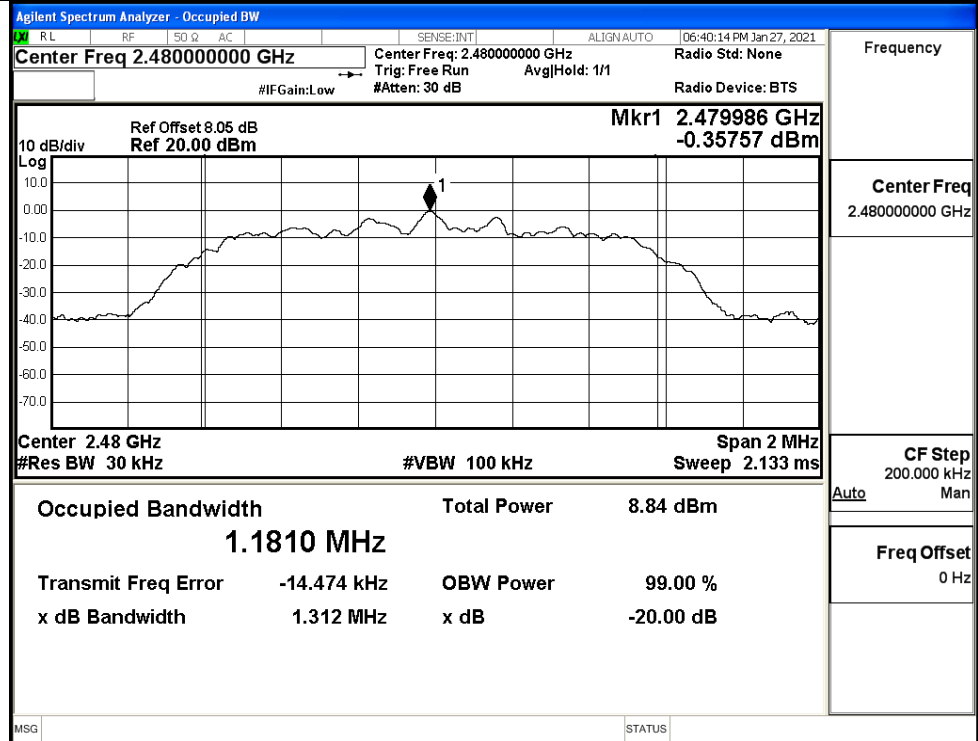
$\pi/4$ DQPSK/LCH



$\pi/4$ DQPSK/MCH

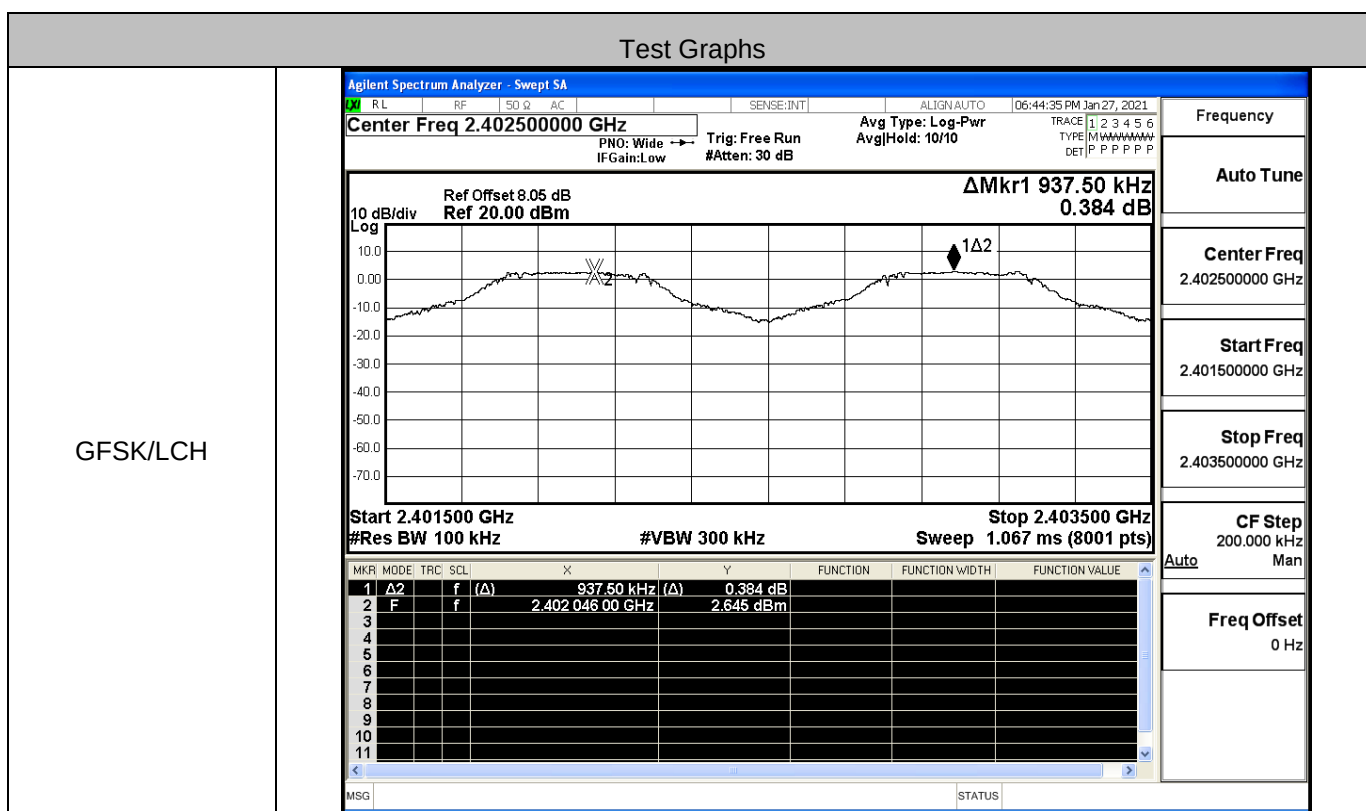


$\pi/4$ DQPSK/HCH

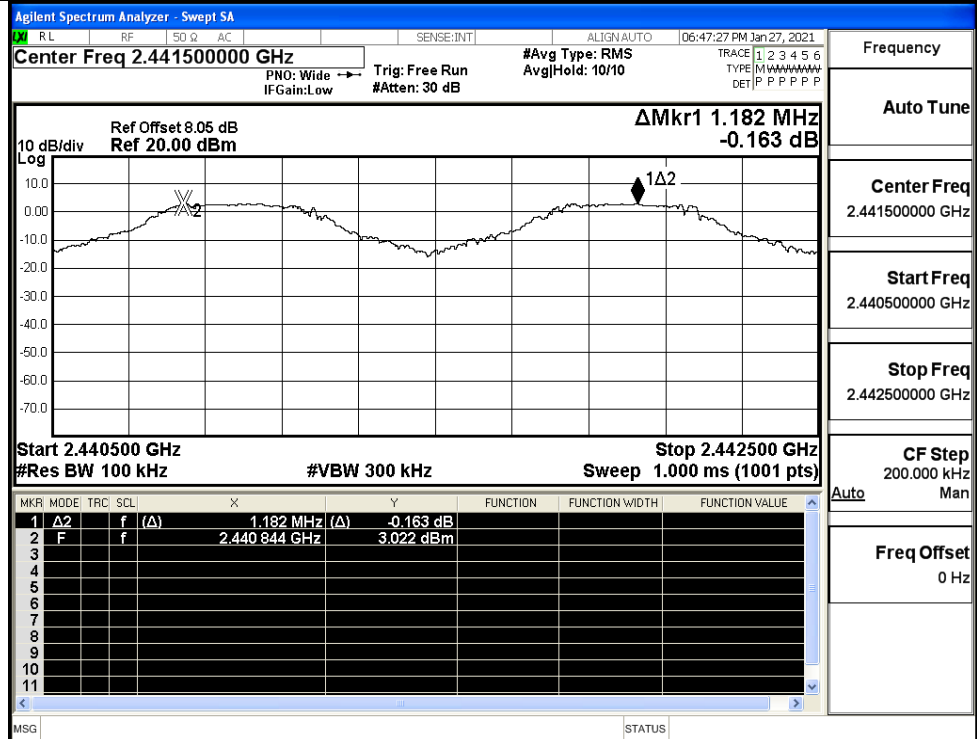


A.3 Carrier Frequency Separation

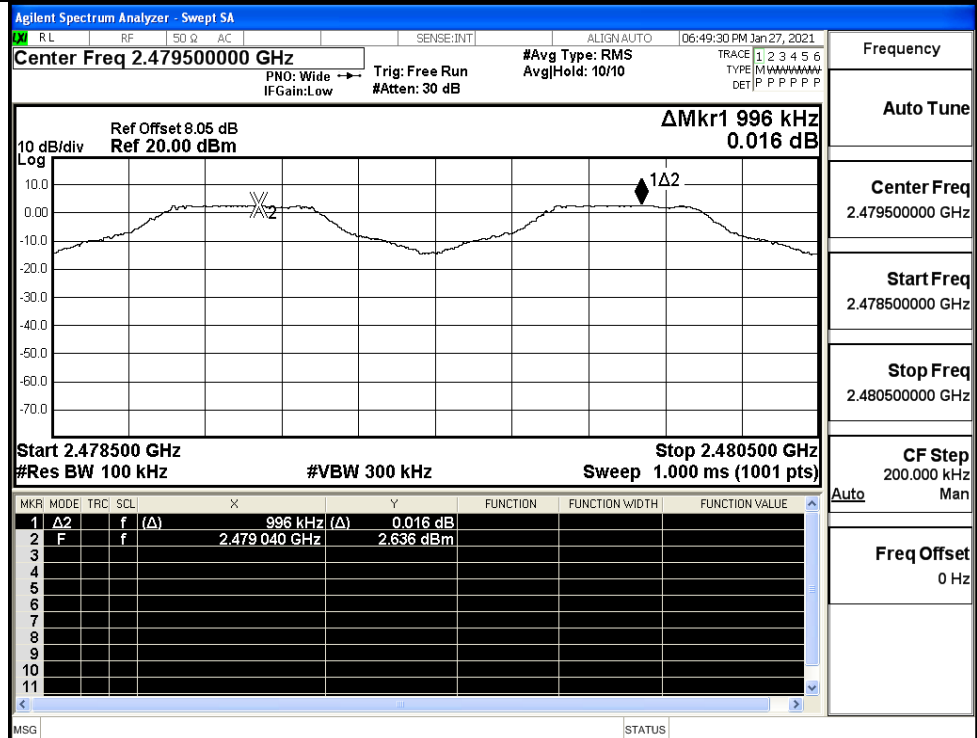
Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.938	0.636	PASS
	MCH	1.182	0.636	PASS
	HCH	0.996	0.636	PASS
$\pi/4$ DQPSK	LCH	1.050	0.875	PASS
	MCH	1.008	0.875	PASS
	HCH	1.008	0.875	PASS



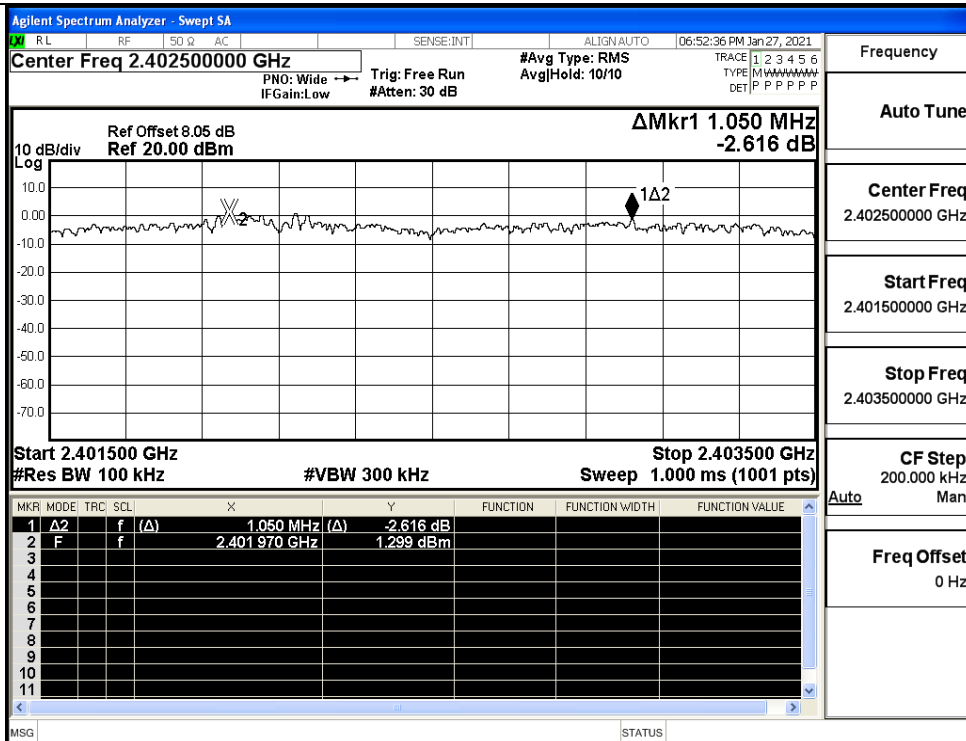
GFSK/MCH



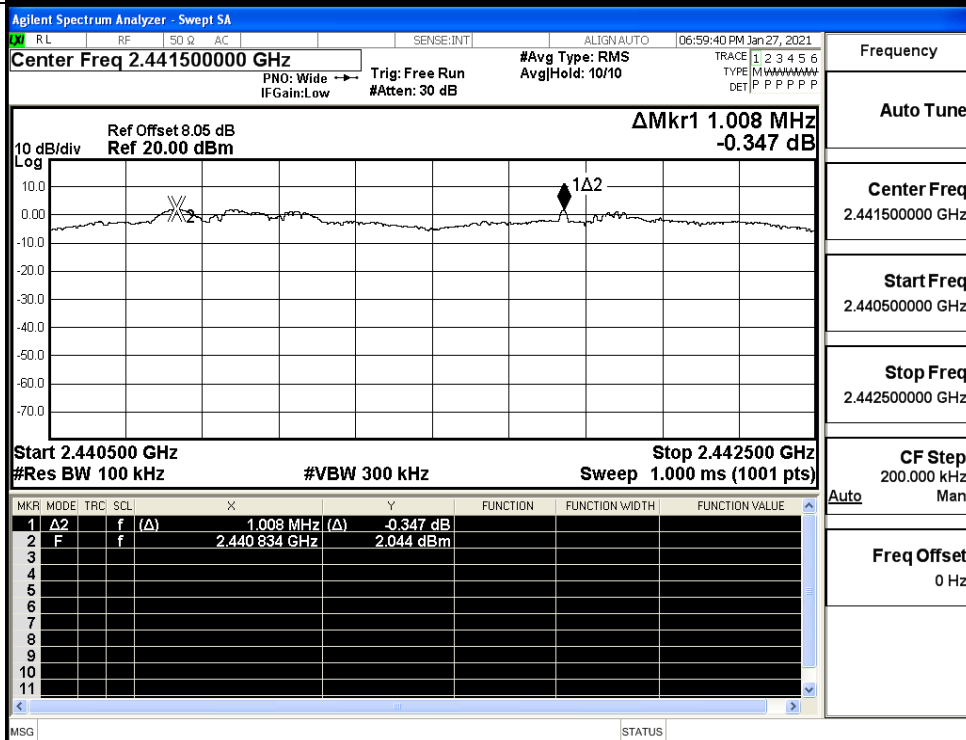
GFSK/HCH



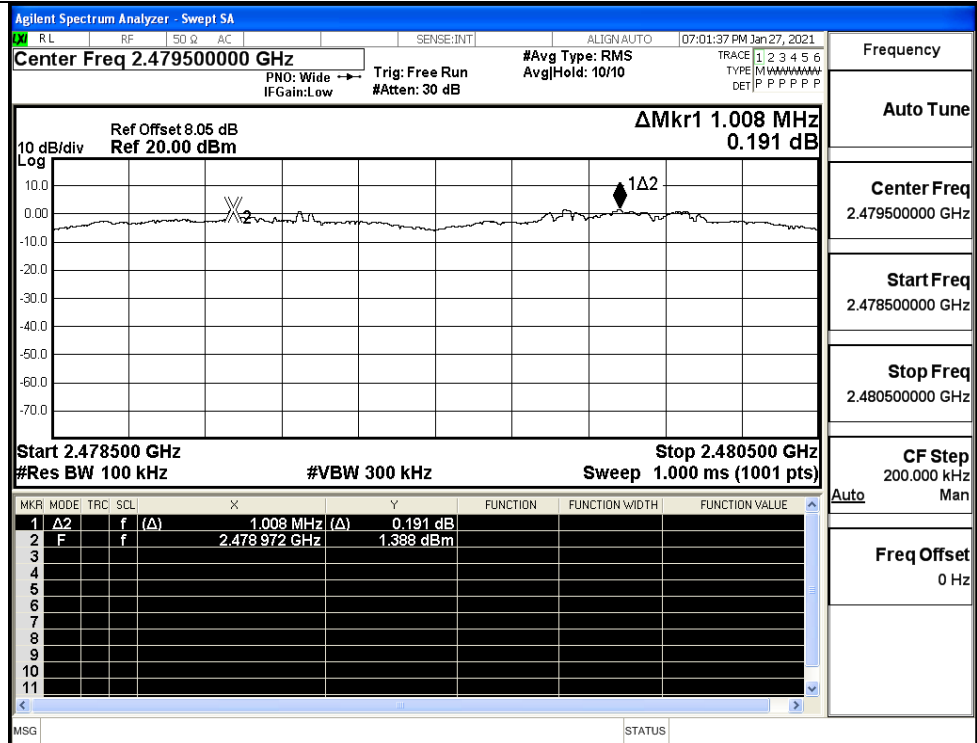
$\pi/4$ DQPSK/LCH



$\pi/4$ DQPSK/MCH



$\pi/4$ DQPSK/HCH

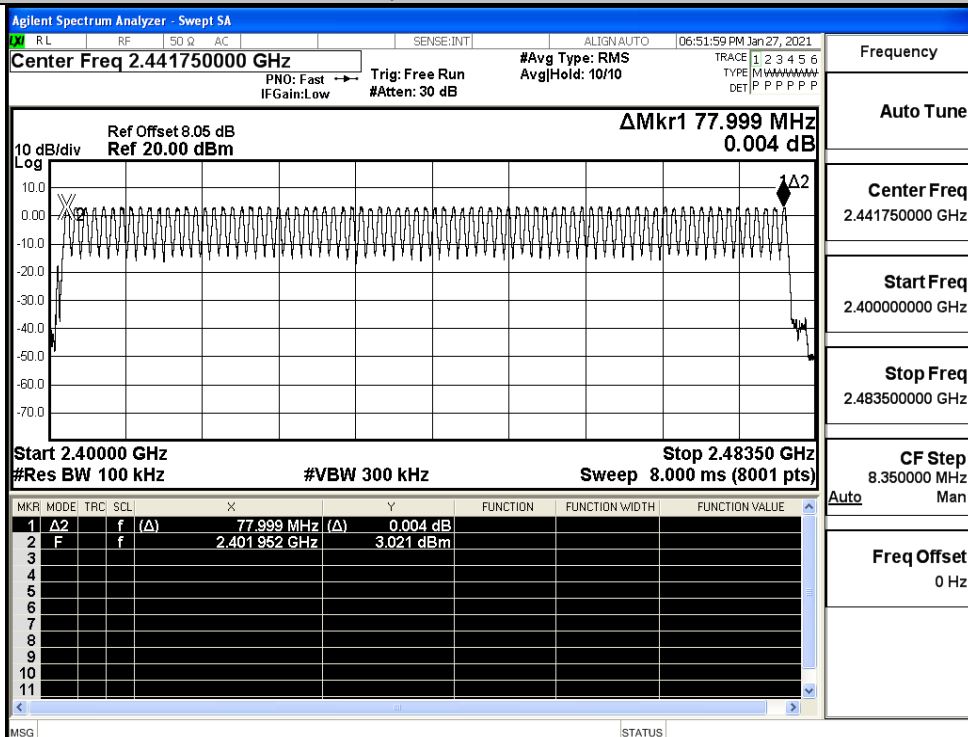


A.4 Hopping Channel Number

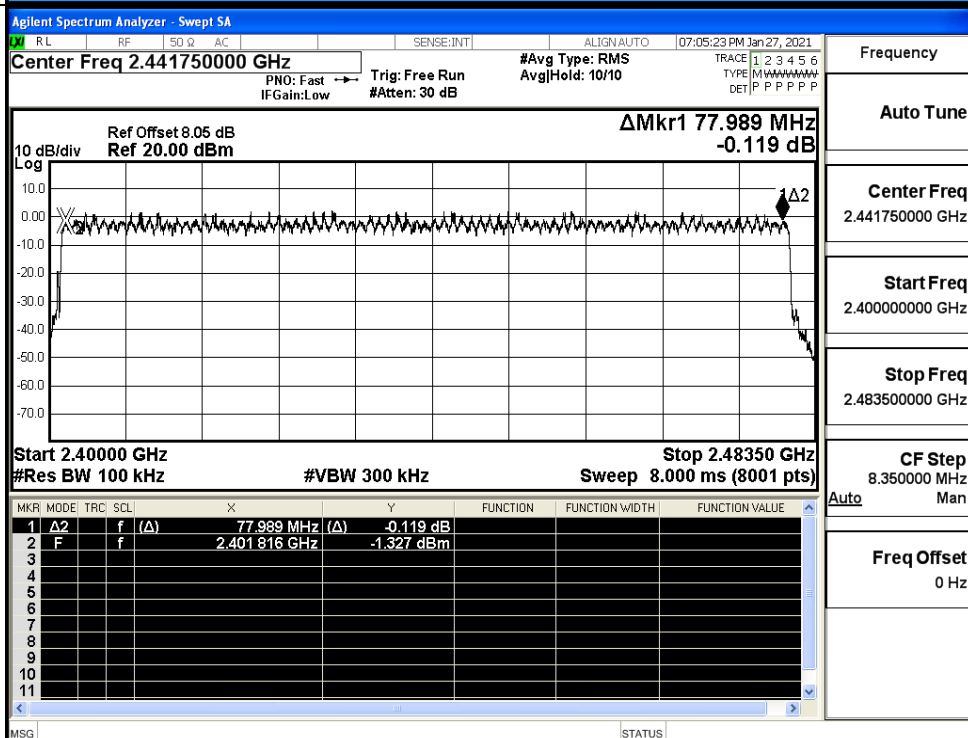
Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	≥ 15	PASS
$\pi/4$ DQPSK	Hop	79	≥ 15	PASS

Test Graphs

GFSK/Hop

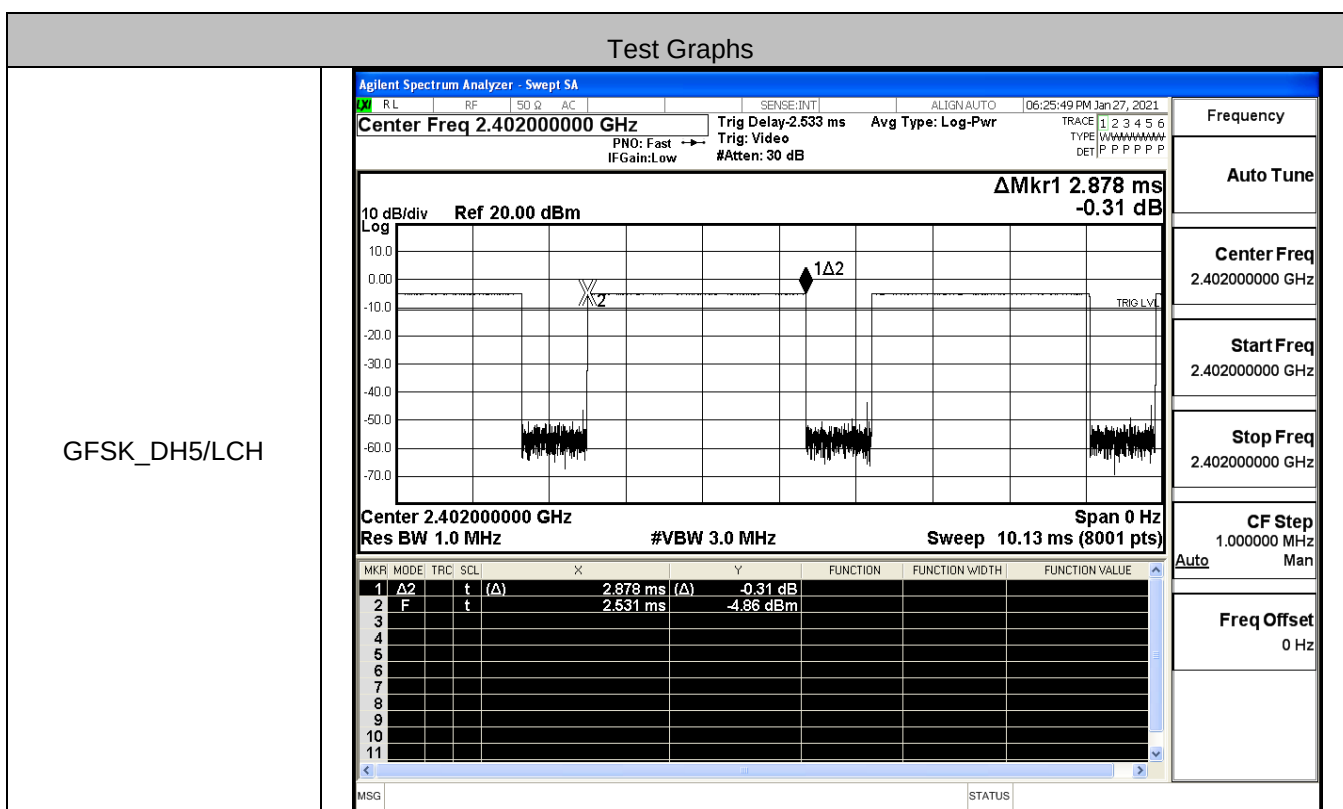


$\pi/4$ DQPSK/Hop

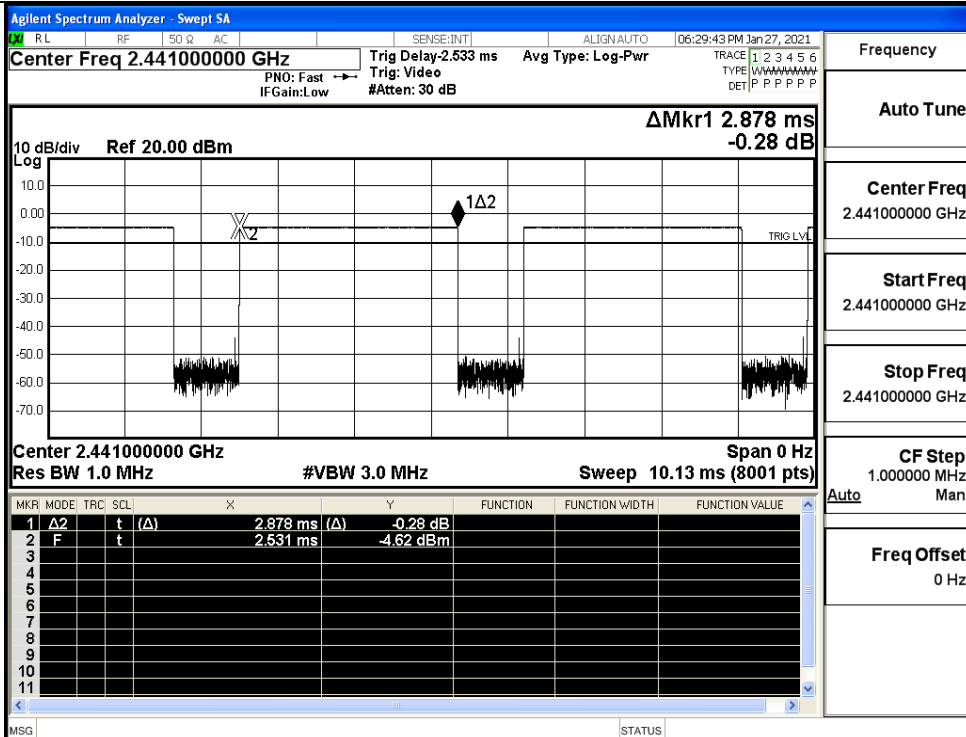


A.5 Dwell Time

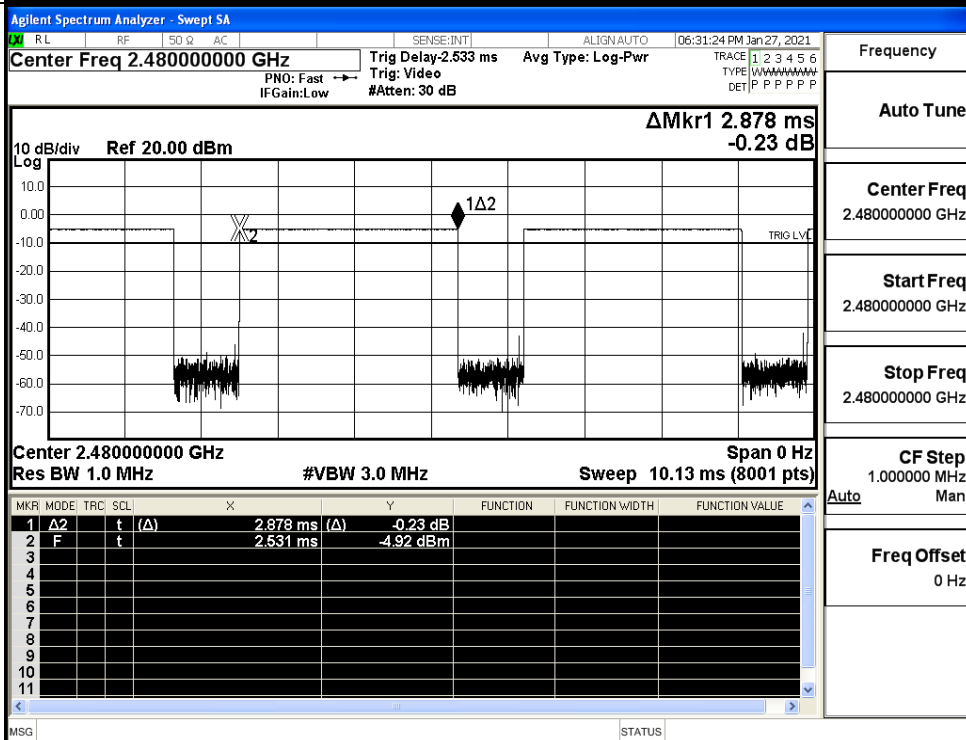
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.88	106.7	0.307	0.4	PASS
	DH5	MCH	2.88	106.7	0.307	0.4	PASS
	DH5	HCH	2.88	106.7	0.307	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.88	106.7	0.307	0.4	PASS
	2DH5	MCH	2.88	106.7	0.307	0.4	PASS
	2DH5	HCH	2.88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



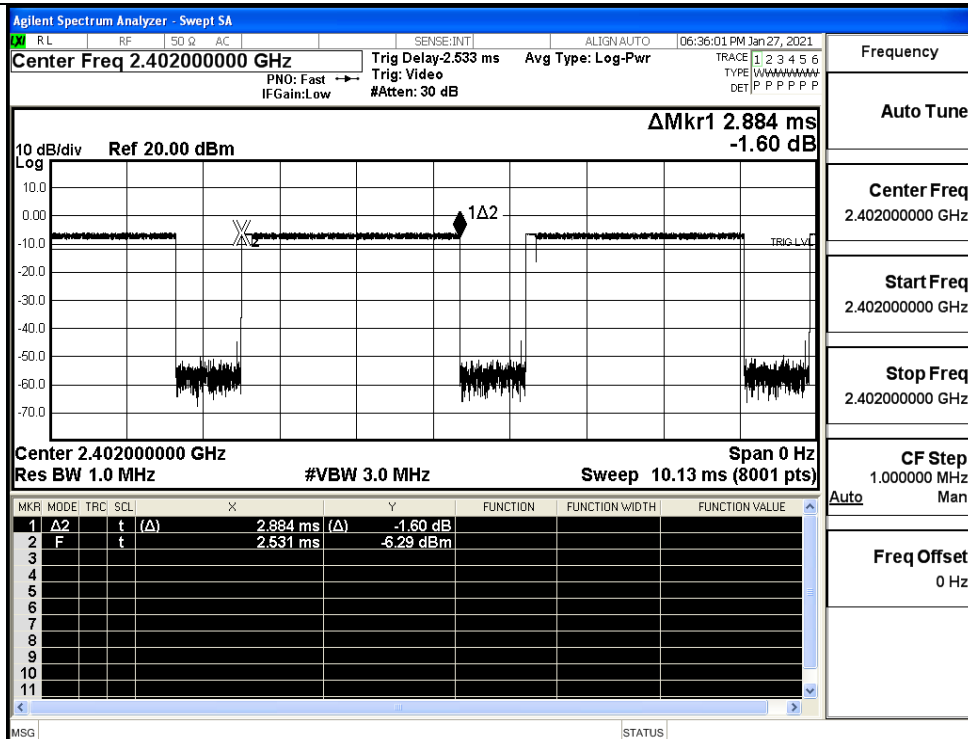
GFSK_DH5/MCH



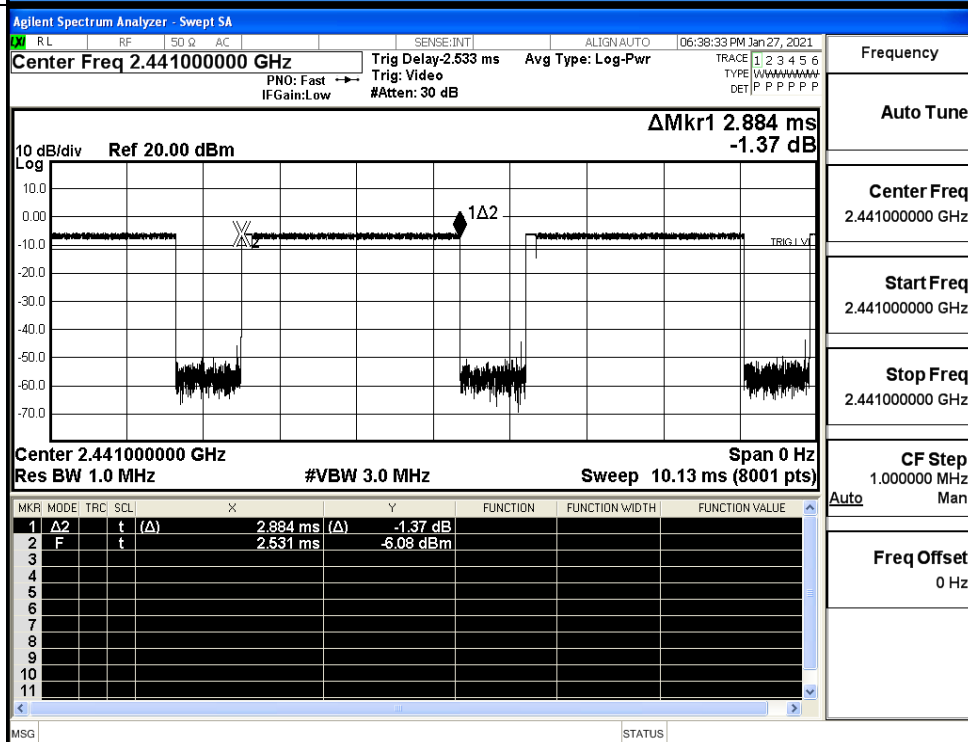
GFSK_DH5/HCH



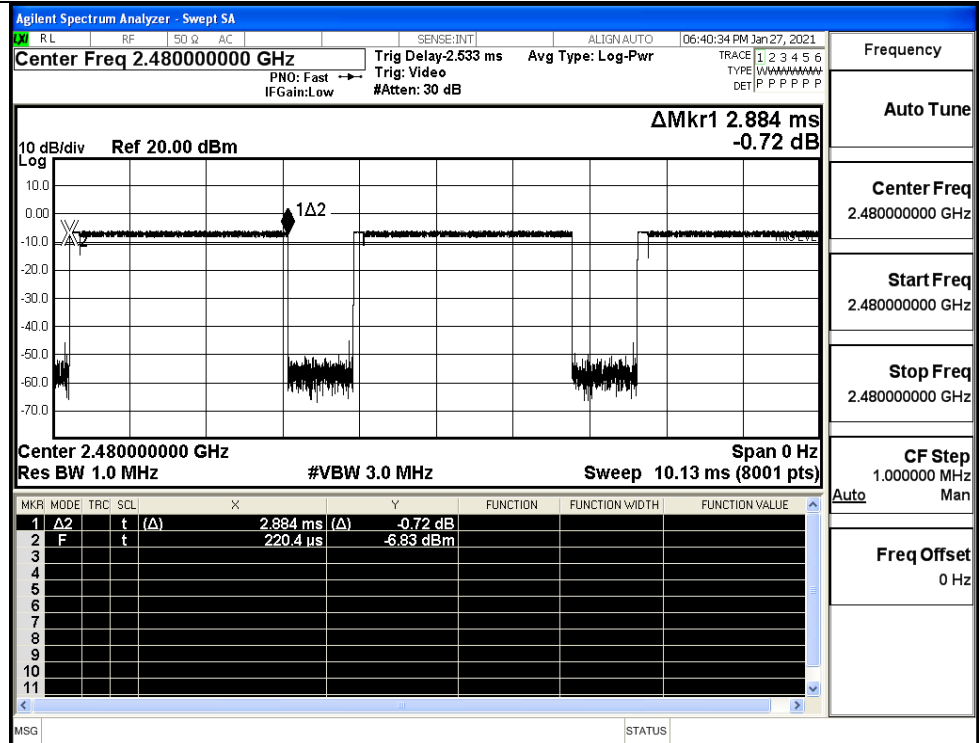
$\pi/4$ DQPSK
_2DH5/LCH



$\pi/4$ DQPSK
_2DH5/MCH

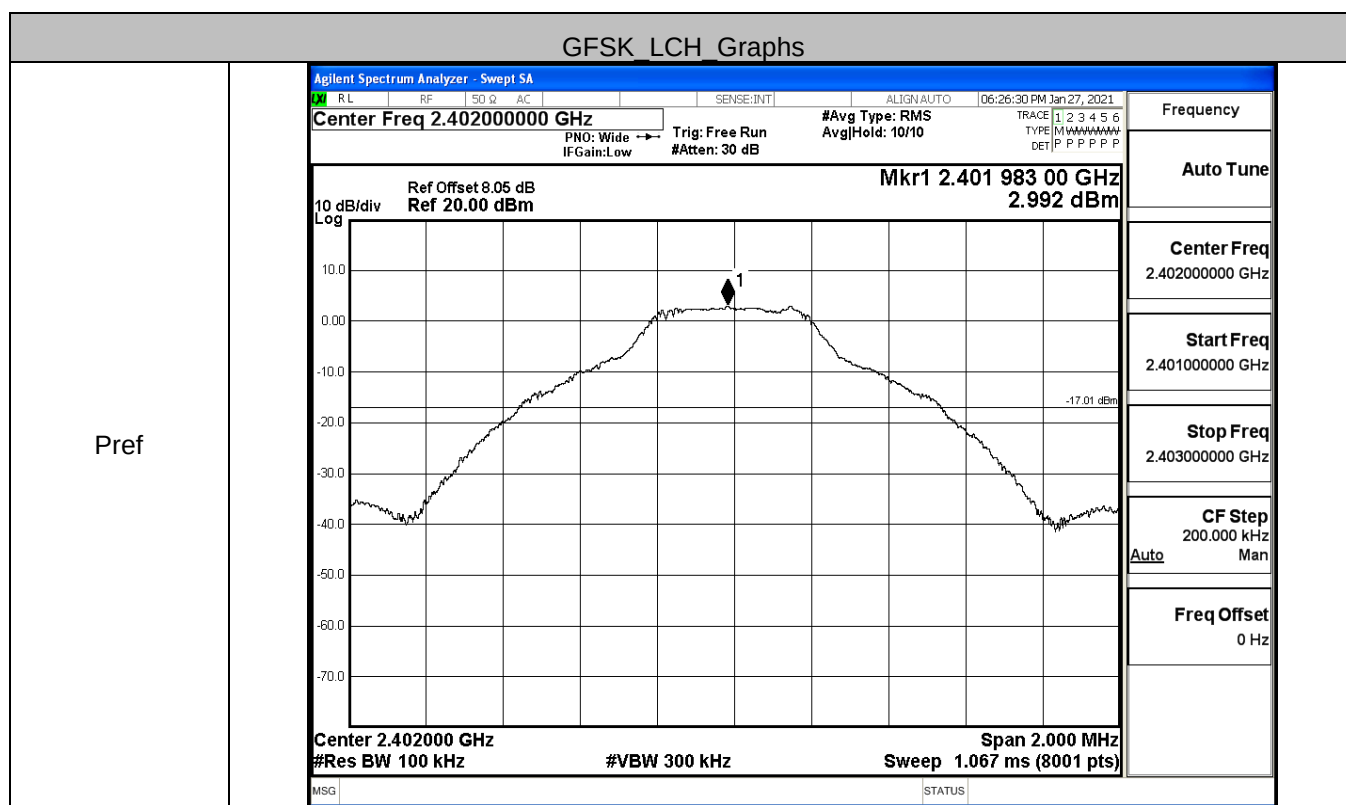


$\pi/4$ DQPSK
_2DH5/HCH



A.6 RF Conducted Spurious Emissions

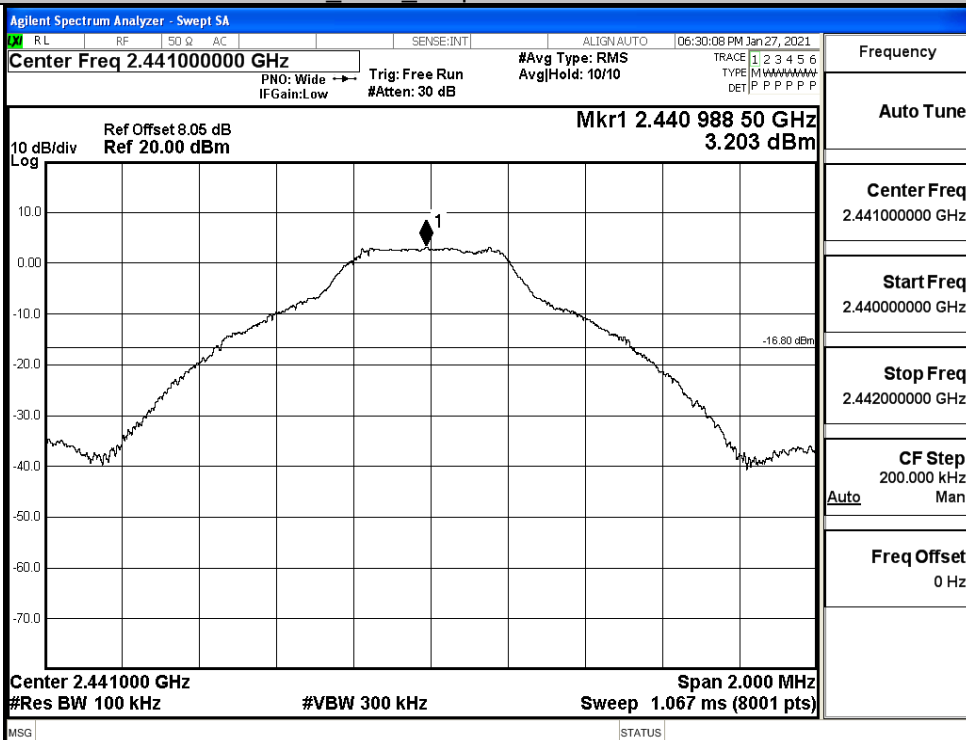
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2.992	-36.400	-17.008	PASS
	MCH	3.203	-37.708	-16.797	PASS
	HCH	2.931	-37.784	-17.069	PASS
π /4DQPSK	LCH	1.27	-37.528	-18.730	PASS
	MCH	2.026	-38.065	-17.974	PASS
	HCH	0.941	-37.028	-19.059	PASS



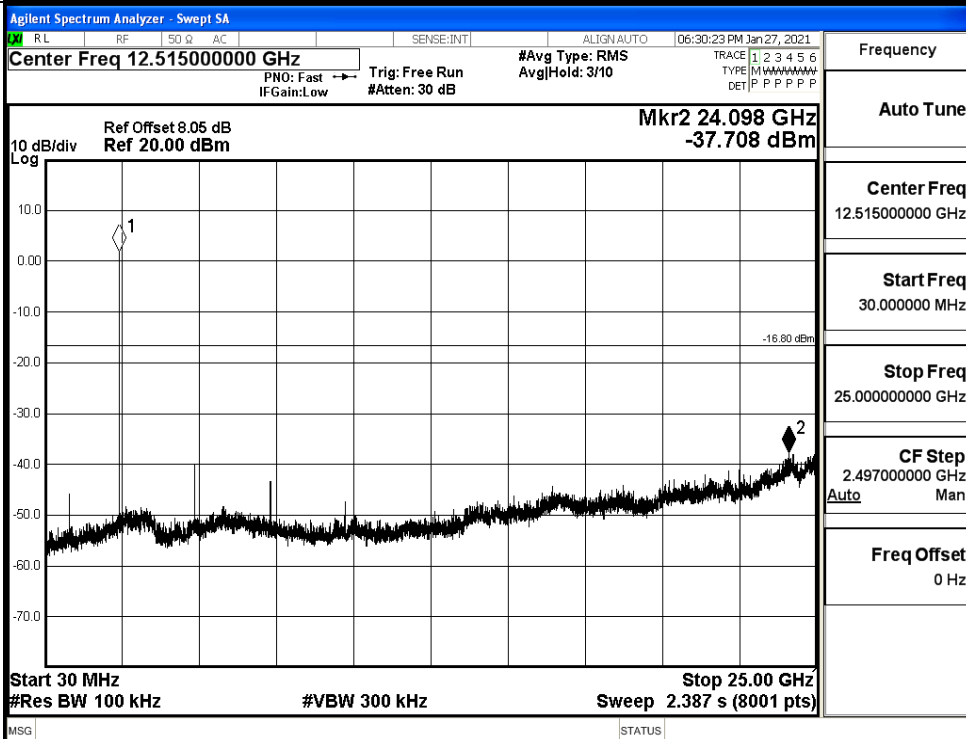


GFSK_MCH_Graphs

Pref

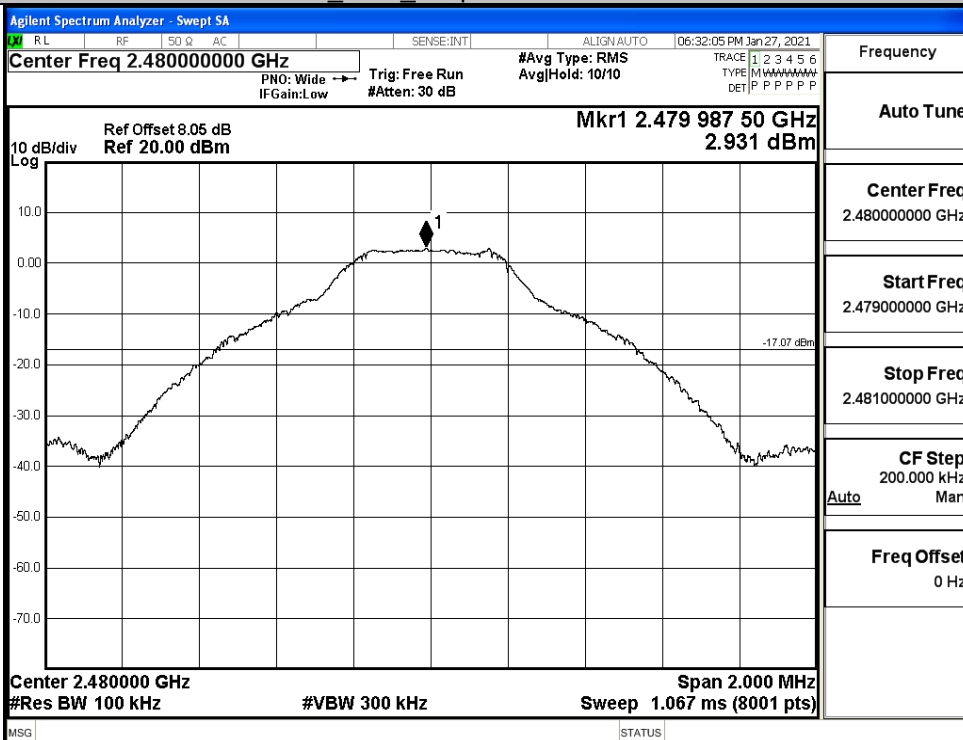


Puw

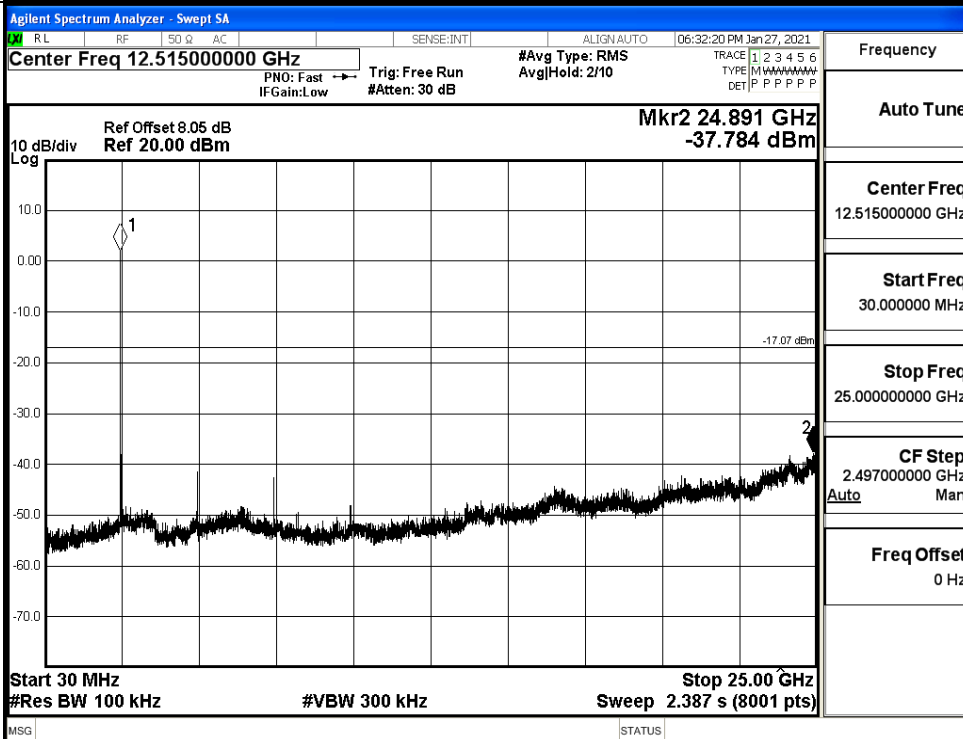


GFSK HCH_Graphs

Pref

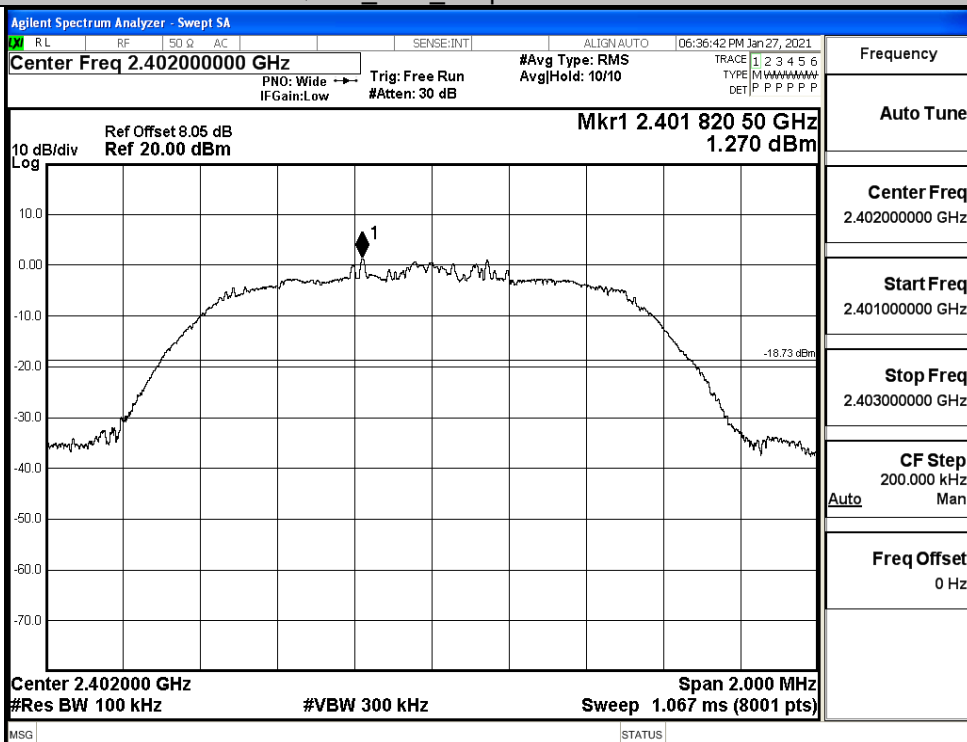


Puw

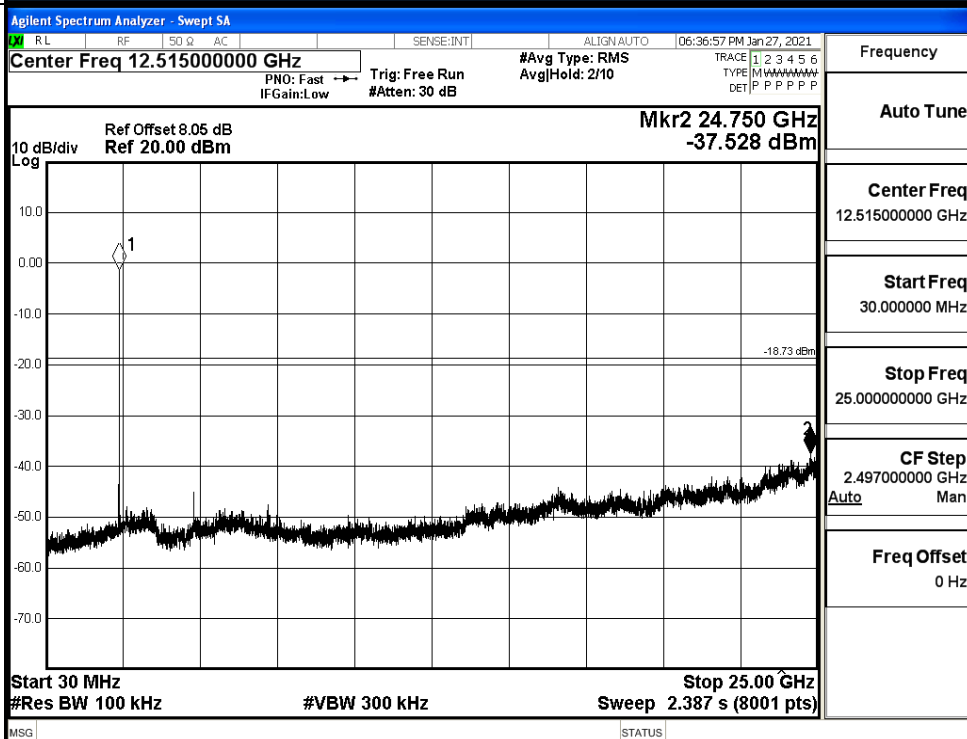


$\pi/4$ DQPSK_LCH_Graphs

Pref

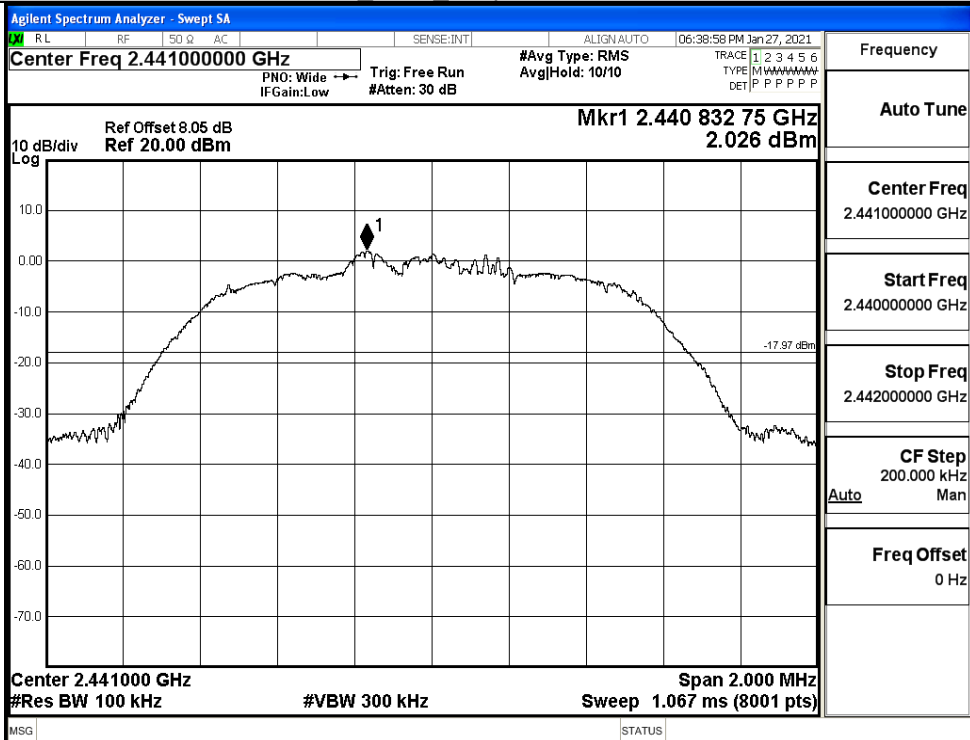


Puw

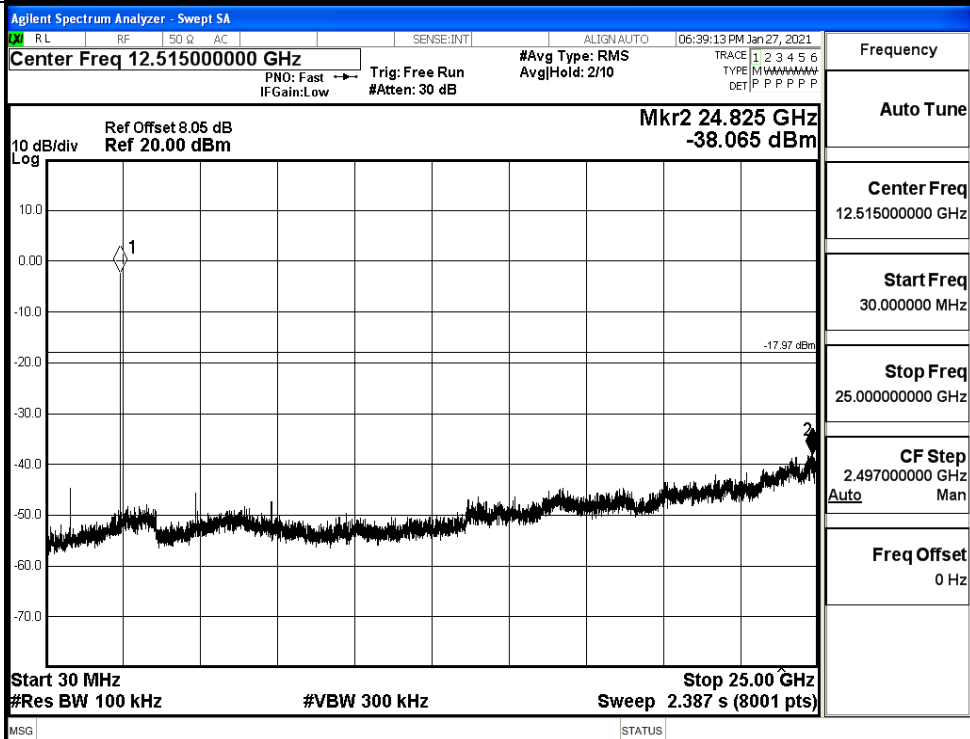


π /4DQPSK_MCH_Graphs

Pref

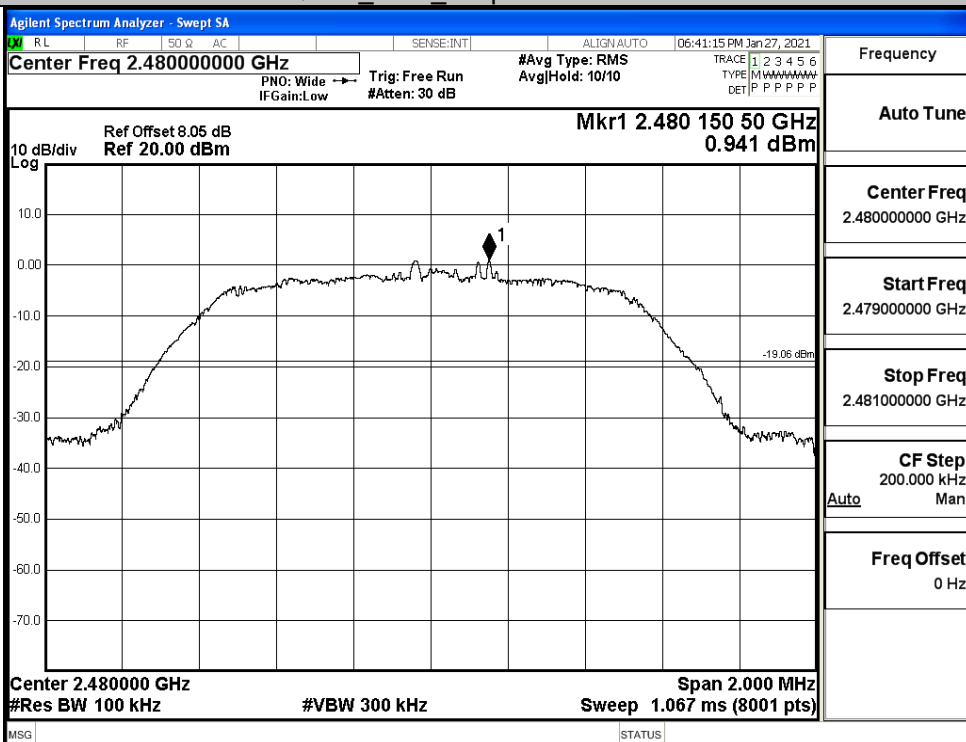


Puw

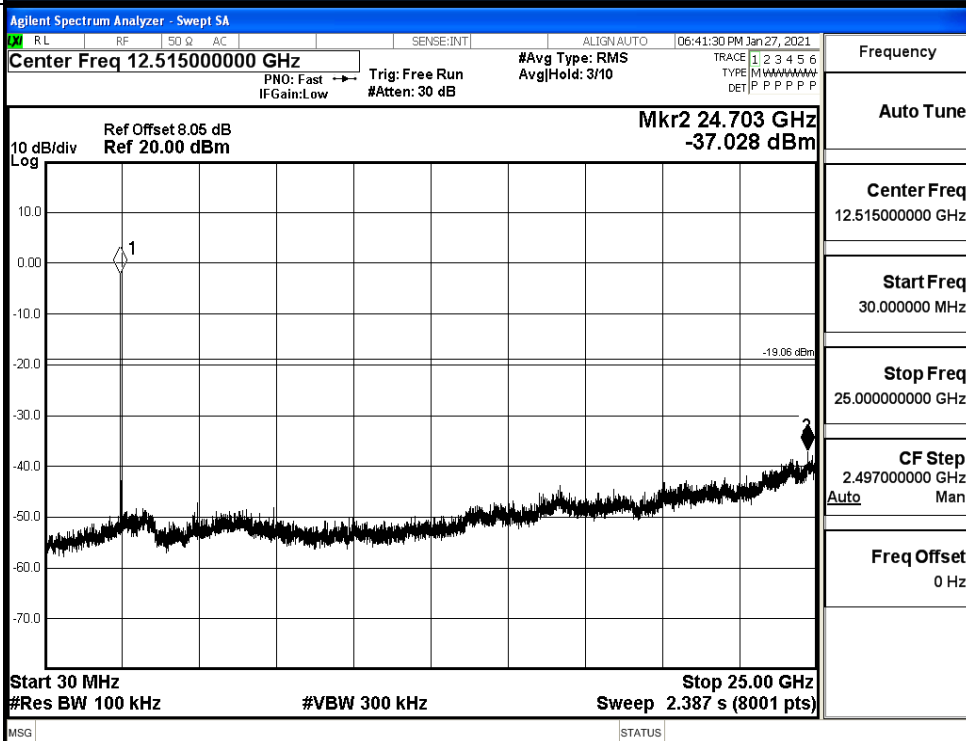


$\pi/4$ DQPSK_HCH_Graphs

Pref



Puw

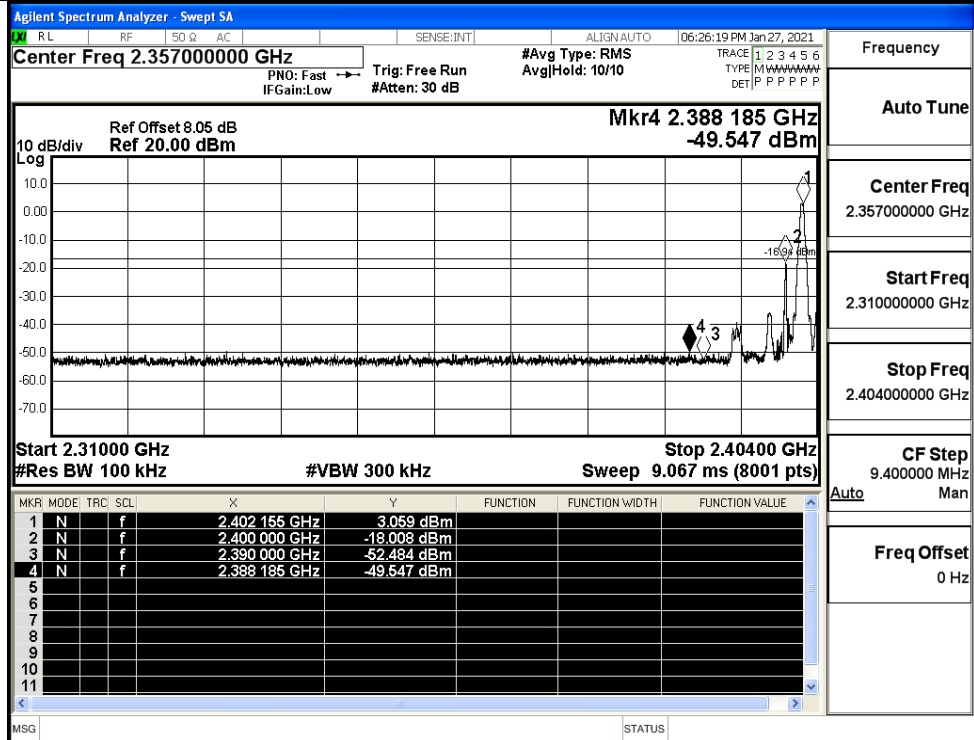


A.7 Band-edge for RF Conducted Emissions

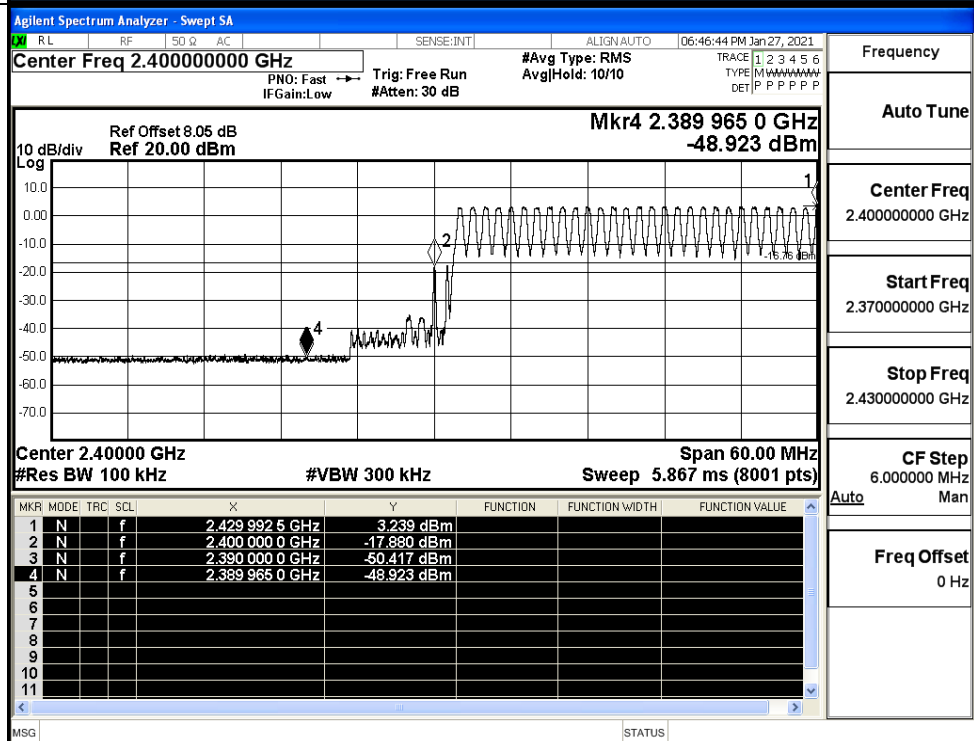
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	3.059	Off	-49.547	-16.94	PASS
			3.239	On	-48.923	-16.76	PASS
	HCH	2480	3.111	Off	-46.643	-16.89	PASS
			3.292	On	-47.109	-16.71	PASS
$\pi/4$ DQPSK	LCH	2402	0.116	Off	-49.469	-19.88	PASS
			1.993	On	-48.109	-18.01	PASS
	HCH	2480	1.585	Off	-48.556	-18.42	PASS
			2.029	On	-48.037	-17.97	PASS

Test Graphs

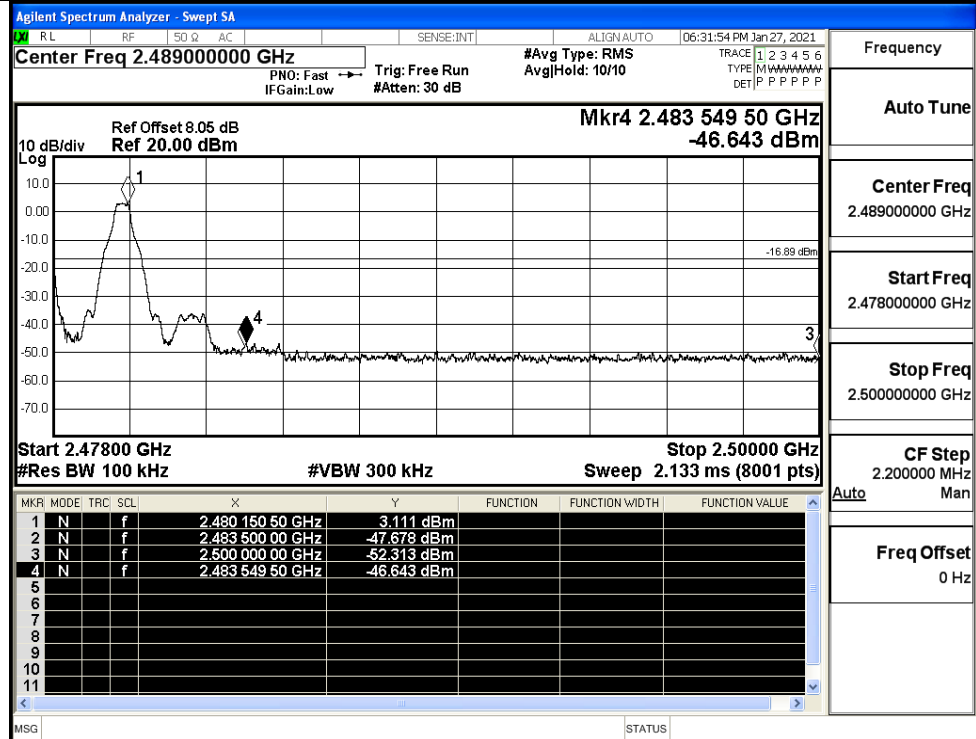
GFSK/LCH/No Hop



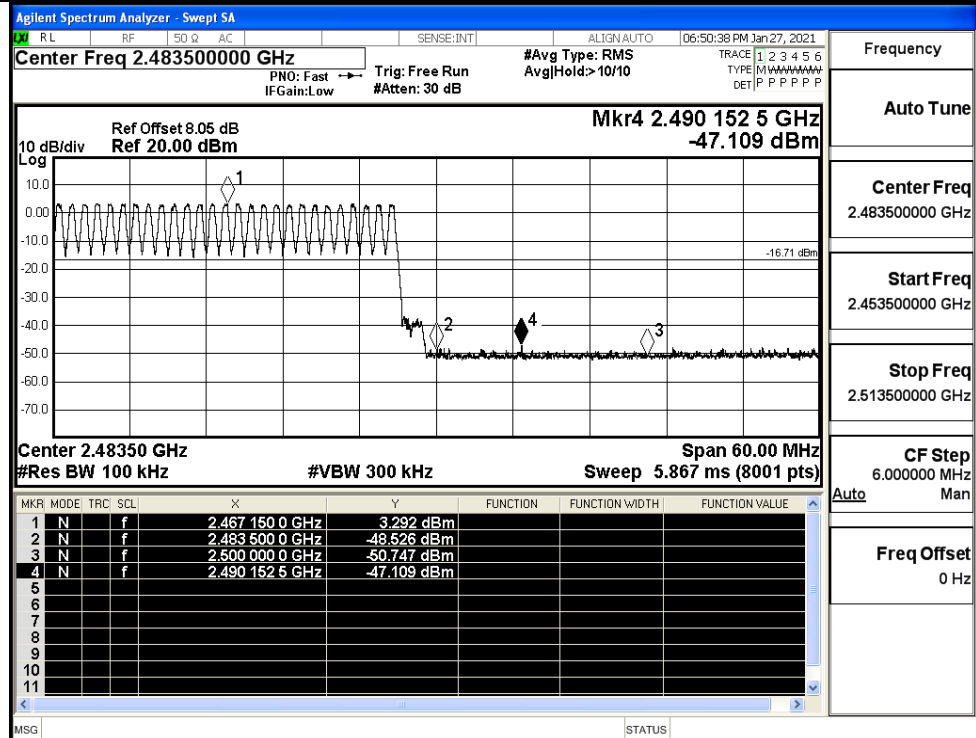
GFSK/LCH/Hop



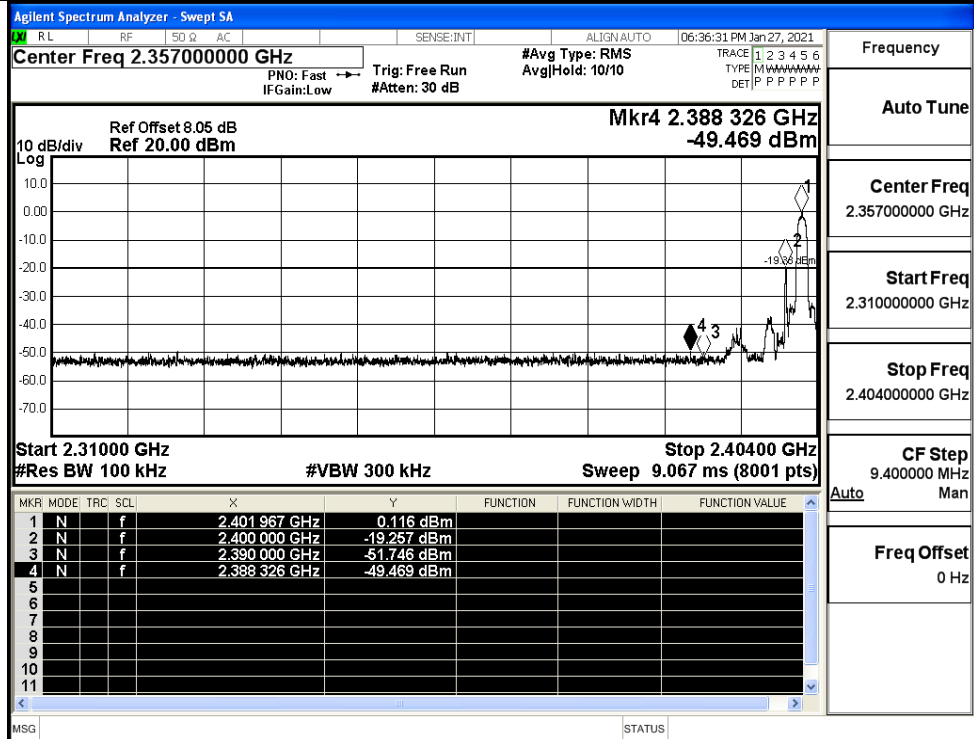
GFSK/HCH/No Hop



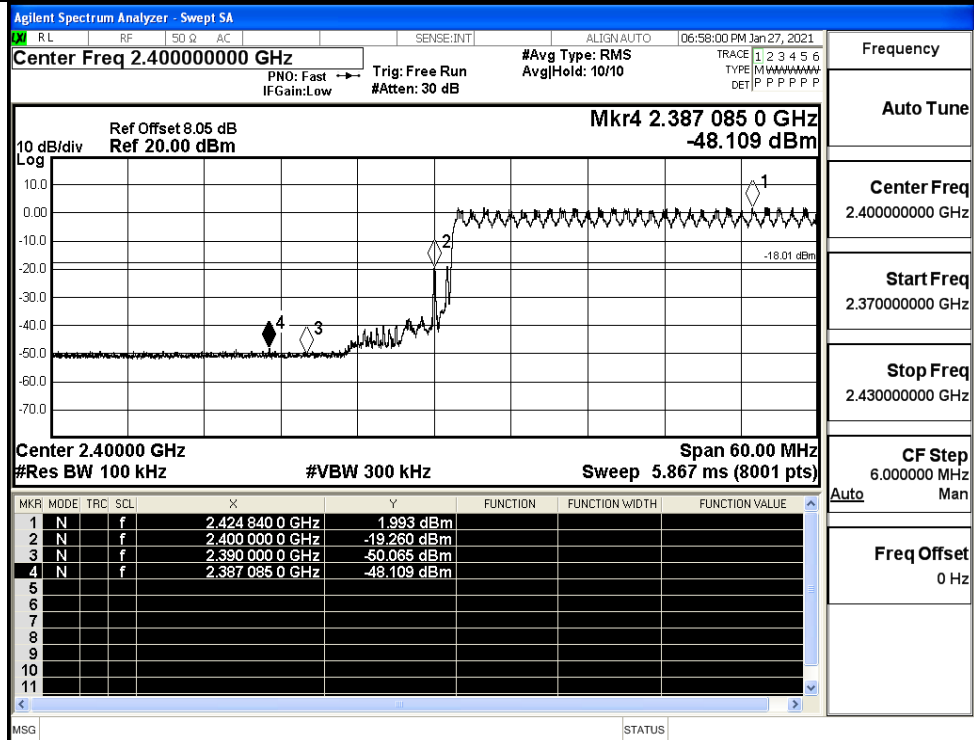
GFSK/HCH/Hop



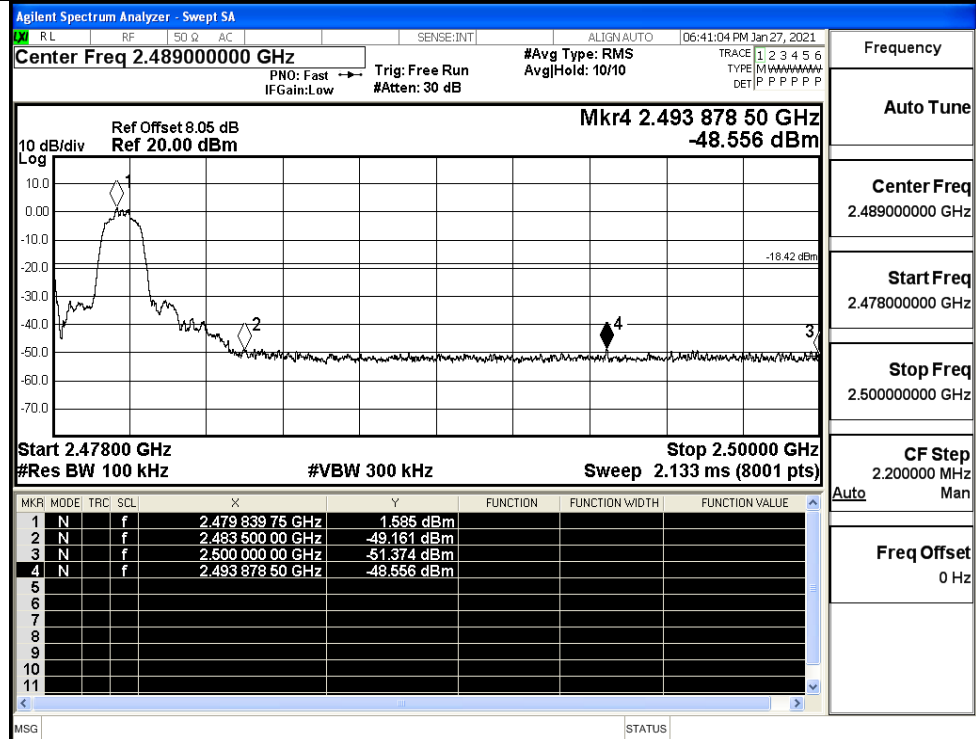
$\pi/4$ DQPSK/LCH/No
Hop



$\pi/4$ DQPSK/LCH/Hop



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



Frequency

Auto Tune

Center Freq
2.489000000 GHz

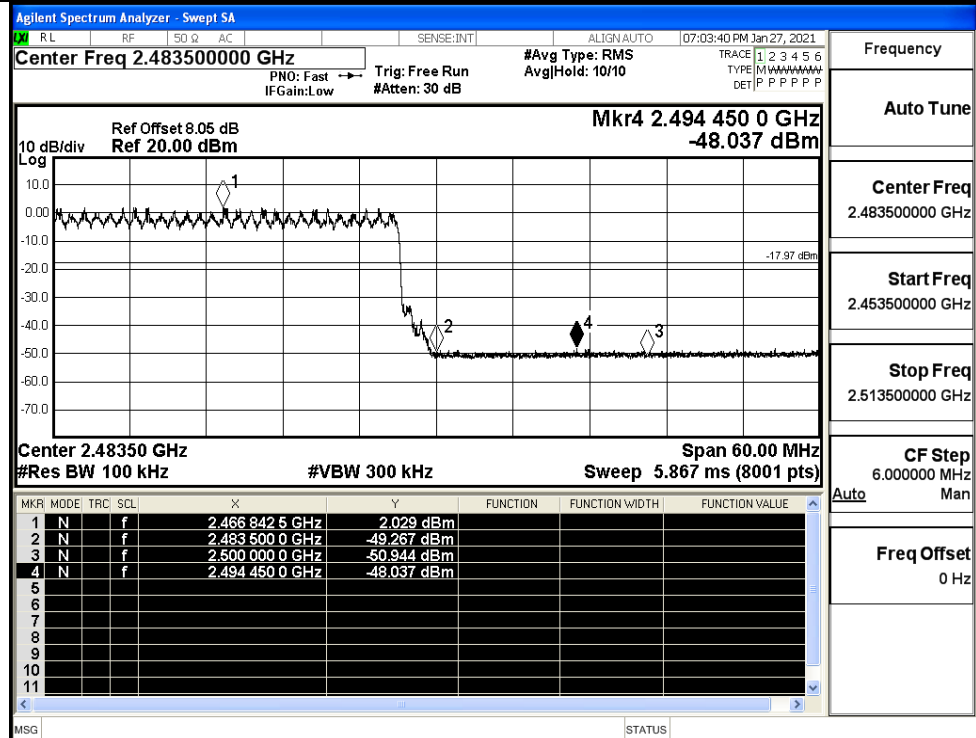
Start Freq
2.478000000 GHz

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

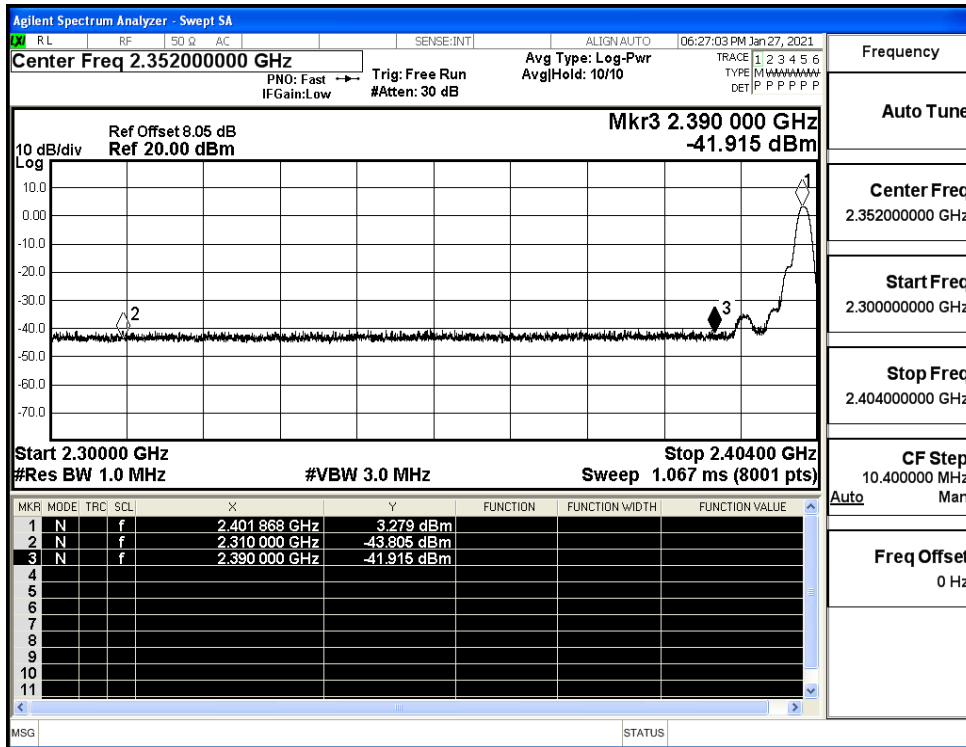
CF Step
6.000000 MHz

Freq Offset
0 Hz

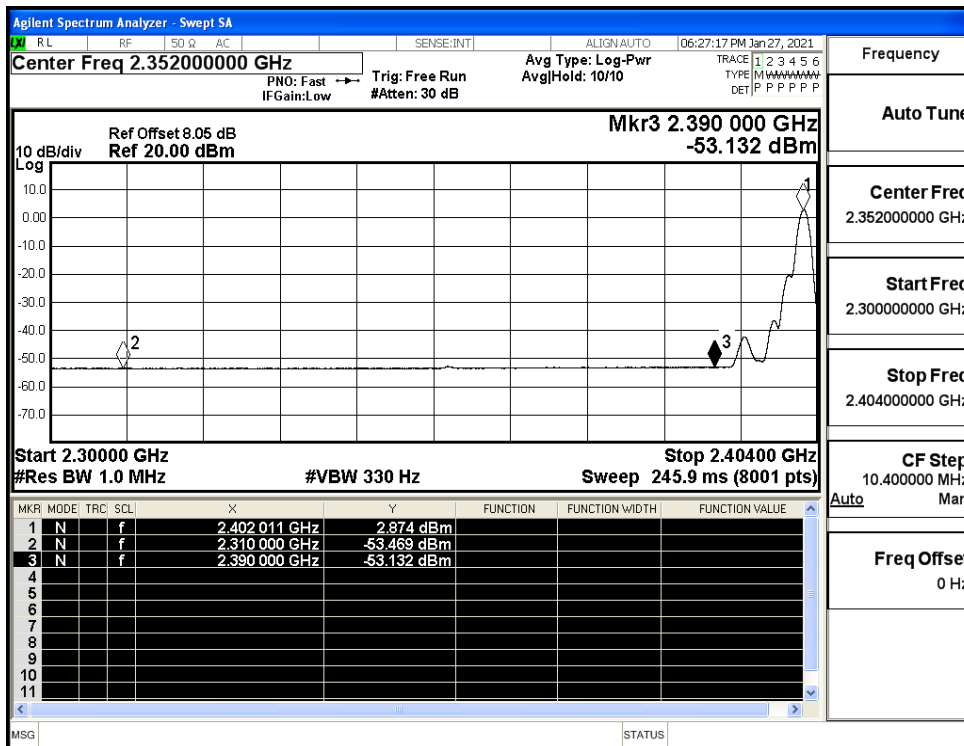
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-43.81	2.0	0	53.45	PEAK	74	PASS
	Off	2310.0	-53.47	2.0	0	43.79	AV	54	PASS
	Off	2390.0	-41.92	2.0	0	55.34	PEAK	74	PASS
	Off	2390.0	-53.13	2.0	0	44.13	AV	54	PASS
	Off	2483.5	-39.65	2.0	0	57.61	PEAK	74	PASS
	Off	2483.5	-48.49	2.0	0	48.77	AV	54	PASS
	Off	2500.0	-41.35	2.0	0	55.91	PEAK	74	PASS
	Off	2500.0	-52.40	2.0	0	44.86	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-43.13	2.0	0	54.13	PEAK	74	PASS
	Off	2310.0	-53.52	2.0	0	43.74	AV	54	PASS
	Off	2390.0	-42.70	2.0	0	54.56	PEAK	74	PASS
	Off	2390.0	-53.15	2.0	0	44.11	AV	54	PASS
	Off	2483.5	-39.30	2.0	0	57.96	PEAK	74	PASS
	Off	2483.5	-49.49	2.0	0	47.77	AV	54	PASS
	Off	2500.0	-42.52	2.0	0	54.74	PEAK	74	PASS
	Off	2500.0	-52.51	2.0	0	44.75	AV	54	PASS

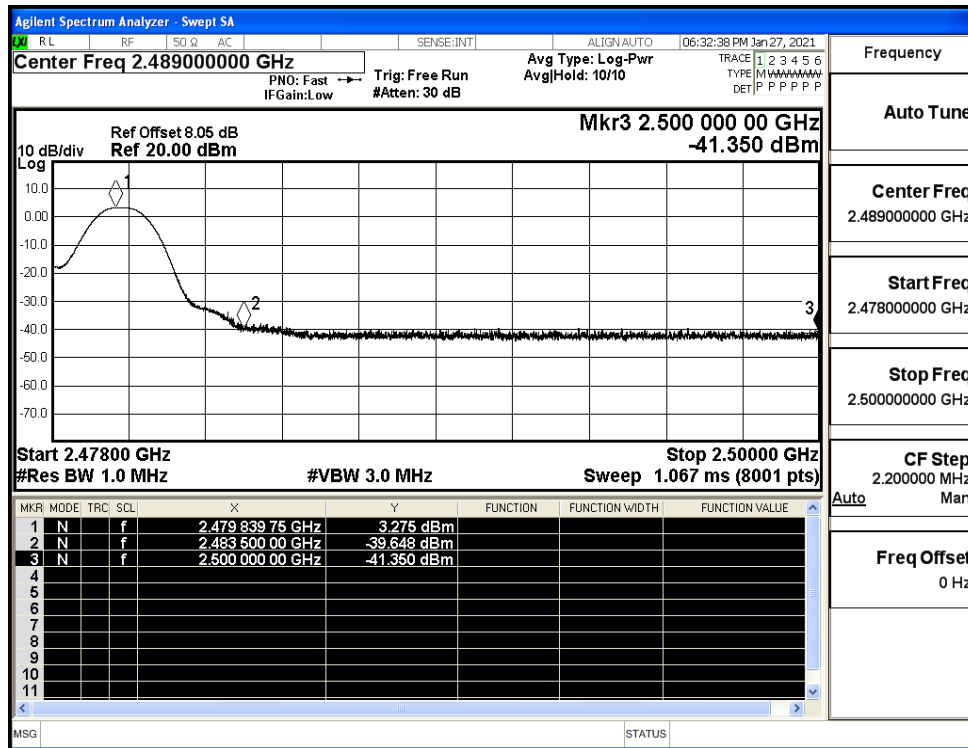
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



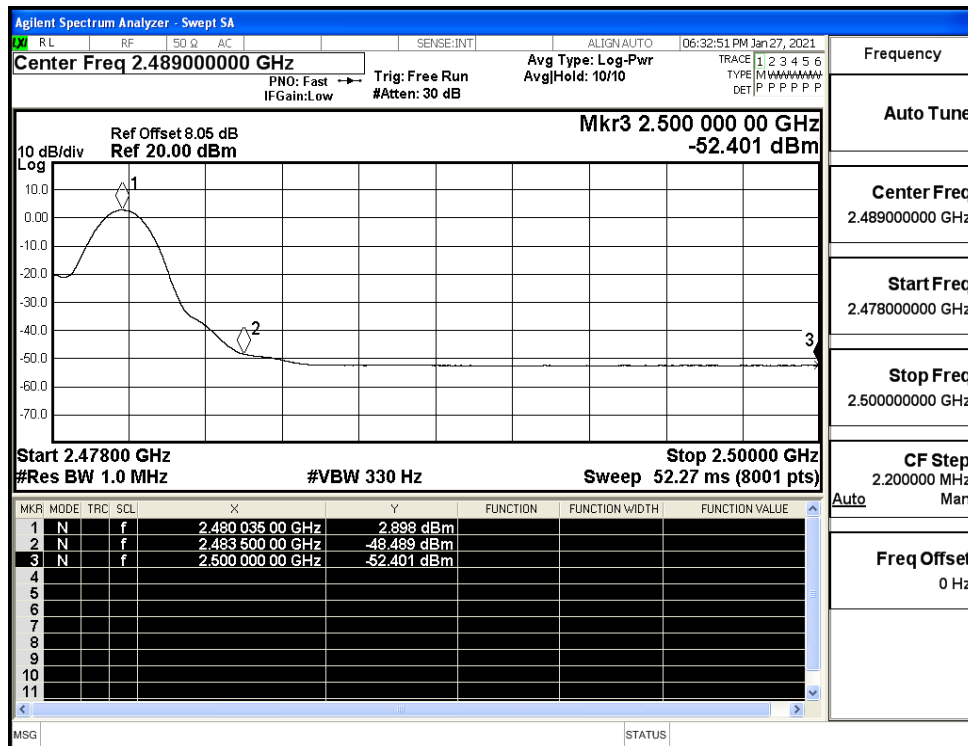
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)



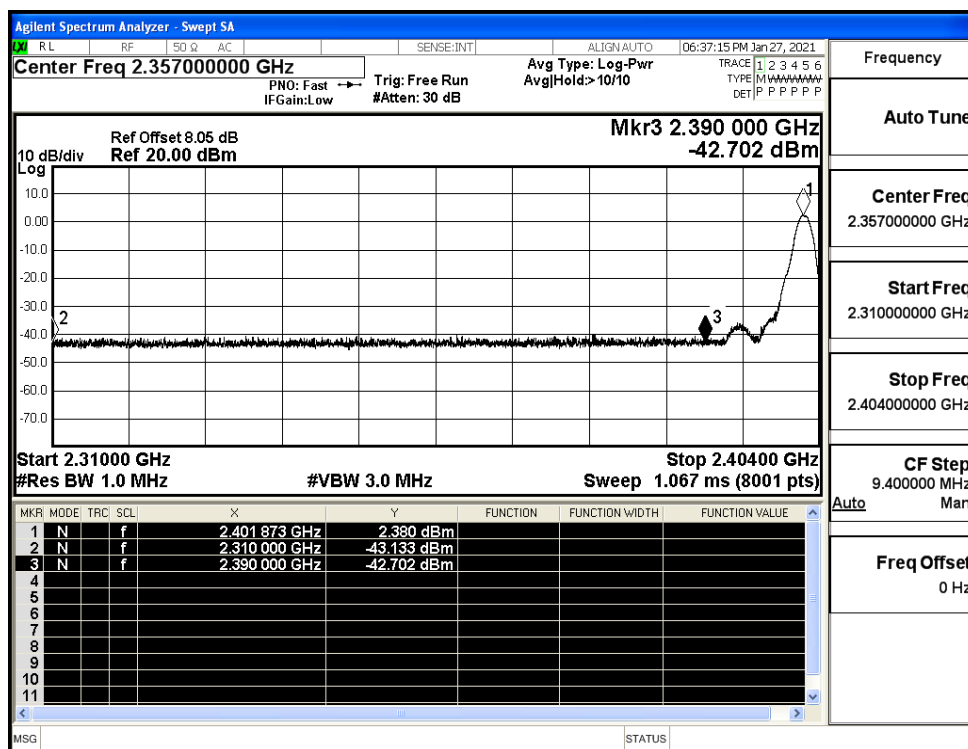
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (High Channel)



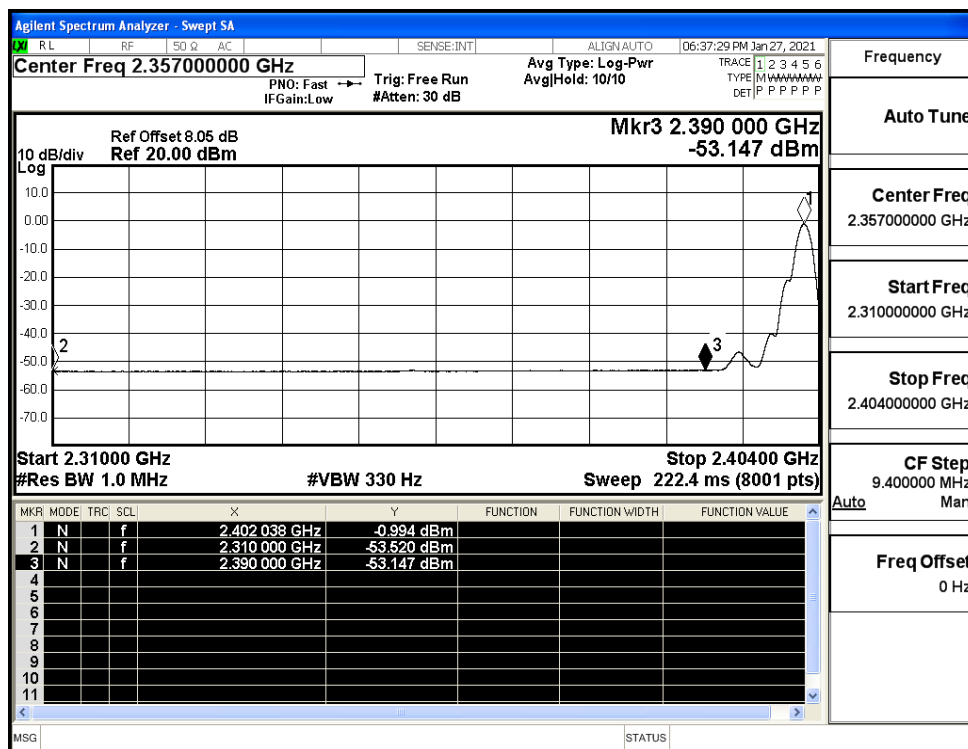
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (High Channel)



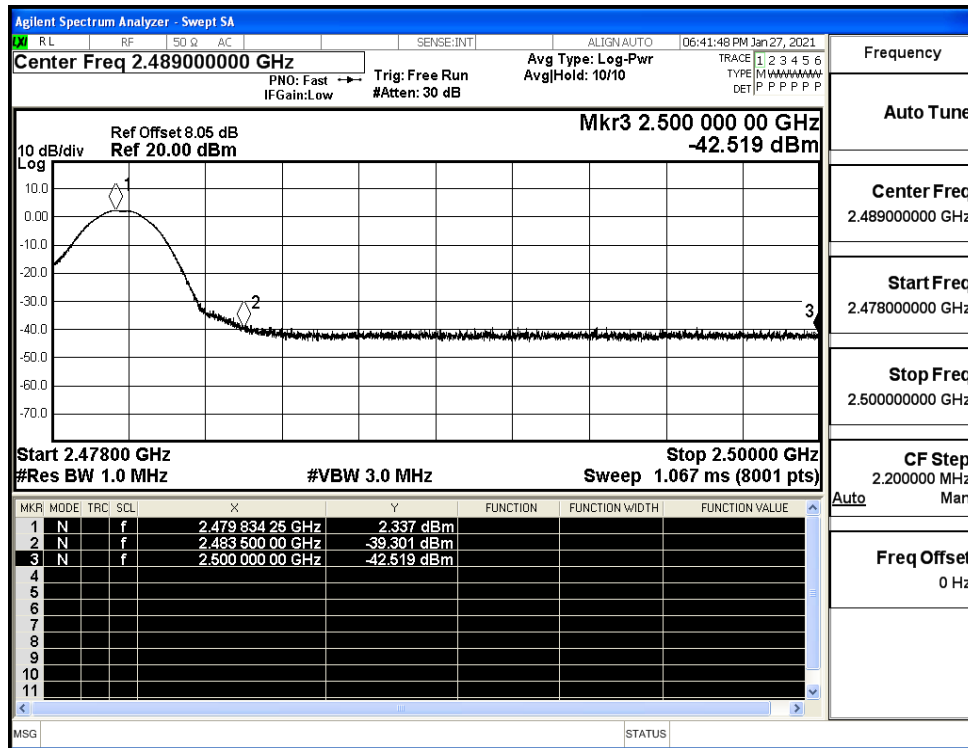
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (Low Channel)



Restrict-band band-edge measurements_Hopping Off_π/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)

