

Appendix A

RF Test Data for BT V4.1(BDR/EDR) (Conducted Measurement)

Product Name: Vivi Wireless Presentation

Trade Mark: Vivi

Test Model: VWP-200-16

Environmental Conditions

Temperature:	24.5°C
Relative Humidity:	52.8%
ATM Pressure:	100.0 kPa
Test Engineer:	Diamond.Lu
Supervised by:	Wang Chuang

A.1 Maximum Conducted Peak Output Power

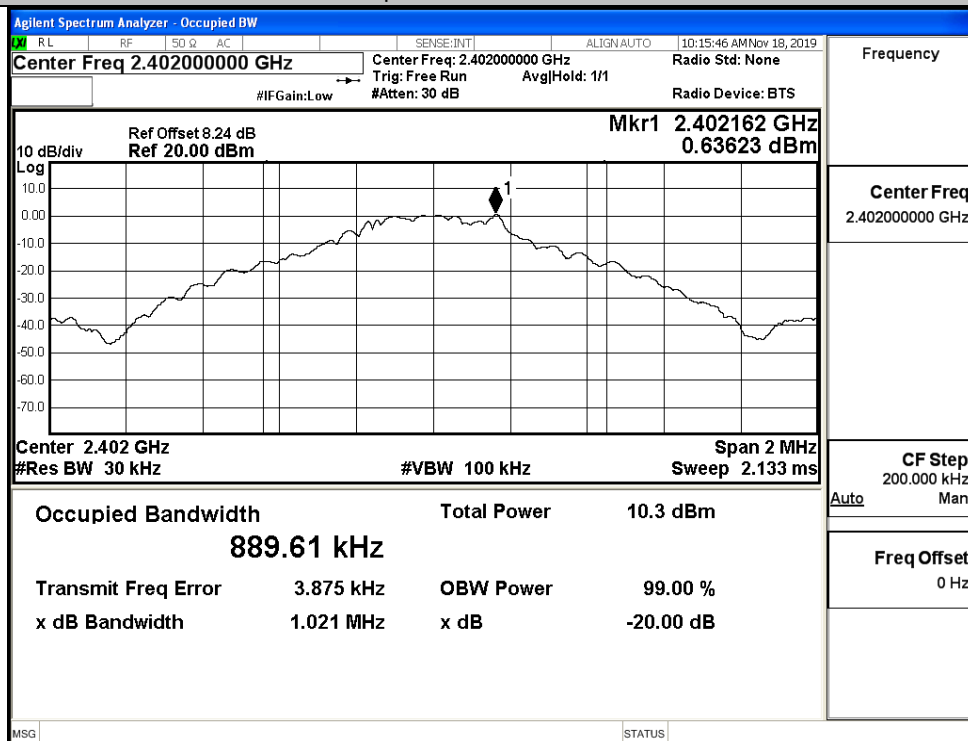
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2.980	21	PASS
	MCH	1.074	21	PASS
	HCH	2.251	21	PASS
$\pi/4$ DQPSK	LCH	2.194	21	PASS
	MCH	0.456	21	PASS
	HCH	1.497	21	PASS
8DPSK	LCH	2.415	21	PASS
	MCH	0.633	21	PASS
	HCH	1.797	21	PASS

A.2 20dB Bandwidth And 99% Bandwidth

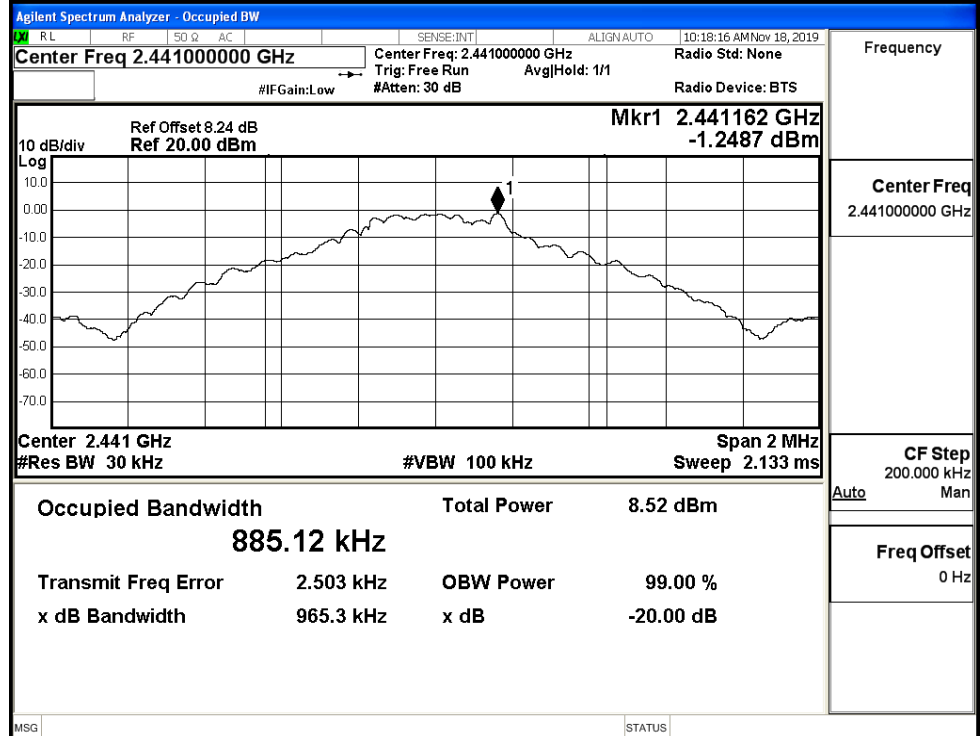
Mode	Channel.	20dB Bandwidth [MHz]	99% Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.021	0.890	Not Specified	PASS
	MCH	0.9653	0.885	Not Specified	PASS
	HCH	1.030	0.889	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.290	1.171	Not Specified	PASS
	MCH	1.294	1.178	Not Specified	PASS
	HCH	1.290	1.171	Not Specified	PASS
8DPSK	LCH	1.296	1.178	Not Specified	PASS
	MCH	1.299	1.188	Not Specified	PASS
	HCH	1.310	1.184	Not Specified	PASS

Test Graphs

GFSK/LCH



GFSK/MCH



Frequency

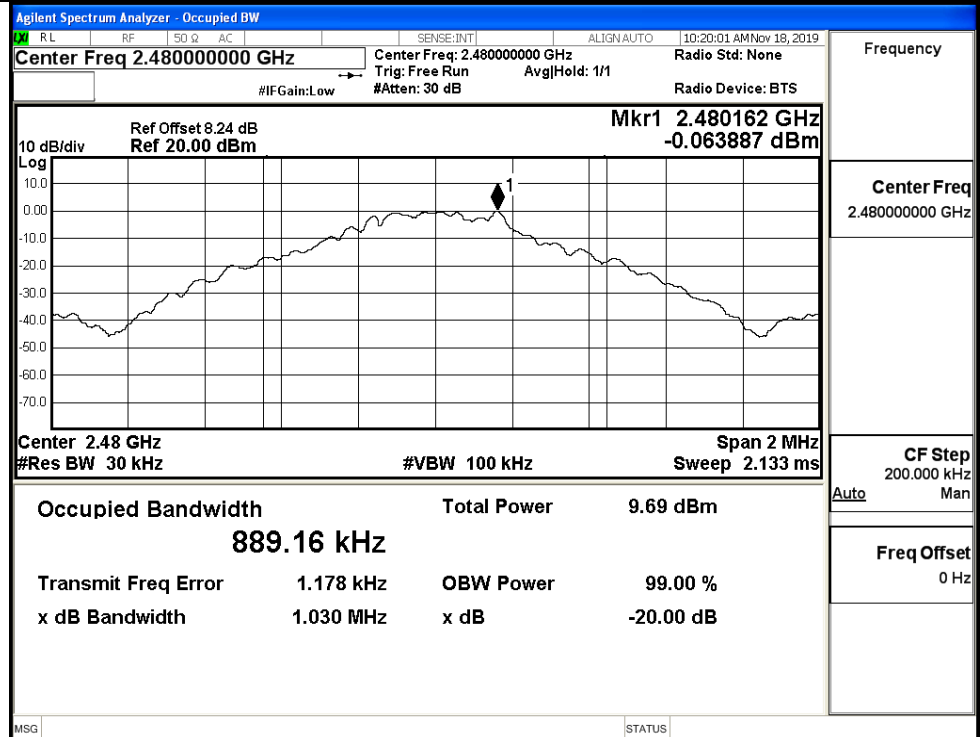
Center Freq
2.441000000 GHz

CF Step
200.000 kHz
Man

Auto

Freq Offset
0 Hz

GFSK/HCH



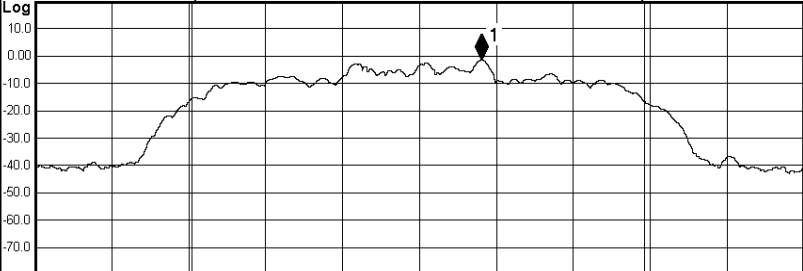
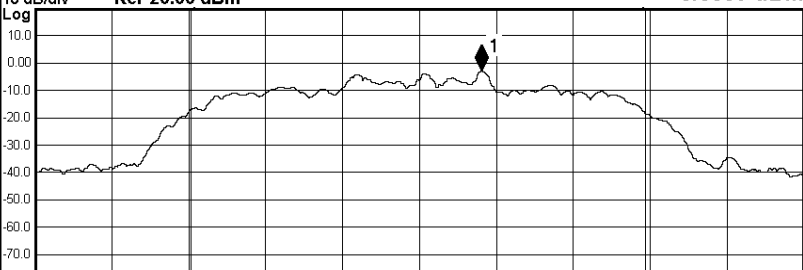
Frequency

Center Freq
2.480000000 GHz

CF Step
200.000 kHz
Man

Auto

Freq Offset
0 Hz

$\pi/4$DQPSK/LCH	Agilent Spectrum Analyzer - Occupied BW RL RF 50 Ω AC SENSE:INT ALIGN: AUTO 10:22:46 AM Nov 18, 2019 Center Freq 2.402000000 GHz Center Freq: 2.402000000 GHz Radio Std: None Trig: Free Run Avg/Hold: 1/1 Radio Device: BTS #IFGain: Low #Atten: 30 dB Ref Offset 8.24 dB Ref 20.00 dBm Mkr1 2.402162 GHz -1.5638 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 1.1712 MHz Total Power 8.50 dBm Transmit Freq Error -1.228 kHz OBW Power 99.00 % x dB Bandwidth 1.290 MHz x dB -20.00 dB MSG STATUS
$\pi/4$DQPSK/MCH	Agilent Spectrum Analyzer - Occupied BW RL RF 50 Ω AC SENSE:INT ALIGN: AUTO 10:25:19 AM Nov 18, 2019 Center Freq 2.441000000 GHz Center Freq: 2.441000000 GHz Radio Std: None Trig: Free Run Avg/Hold: 1/1 Radio Device: BTS #IFGain: Low #Atten: 30 dB Ref Offset 8.24 dB Ref 20.00 dBm Mkr1 2.441162 GHz -3.0359 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 1.1784 MHz Total Power 6.96 dBm Transmit Freq Error -1.675 kHz OBW Power 99.00 % x dB Bandwidth 1.294 MHz x dB -20.00 dB MSG STATUS

$\pi/4$ DQPSK/HCH

Agilent Spectrum Analyzer - Occupied BW

Center Freq 2.480000000 GHz

Mkr1 2.480162 GHz -2.1267 dBm

10 dB/div

Ref Offset 8.24 dB

Ref 20.00 dBm

Center 2.48 GHz

#Res BW 30 kHz

#VBW 100 kHz

Span 2 MHz

Sweep 2.133 ms

Occupied Bandwidth 1.1712 MHz

Total Power 7.91 dBm

Transmit Freq Error -2.706 kHz

OBW Power 99.00 %

x dB Bandwidth 1.290 MHz

x dB -20.00 dB

Frequency

Center Freq

2.480000000 GHz

CF Step

200.000 kHz

Man

Freq Offset

0 Hz

8DPSK/LCH

Agilent Spectrum Analyzer - Occupied BW

Center Freq 2.402000000 GHz

Mkr1 2.402156 GHz -0.98394 dBm

10 dB/div

Ref Offset 8.24 dB

Ref 20.00 dBm

Center 2.402 GHz

#Res BW 30 kHz

#VBW 100 kHz

Span 2 MHz

Sweep 2.133 ms

Occupied Bandwidth 1.1781 MHz

Total Power 8.47 dBm

Transmit Freq Error 2.150 kHz

OBW Power 99.00 %

x dB Bandwidth 1.296 MHz

x dB -20.00 dB

Frequency

Center Freq

2.402000000 GHz

CF Step

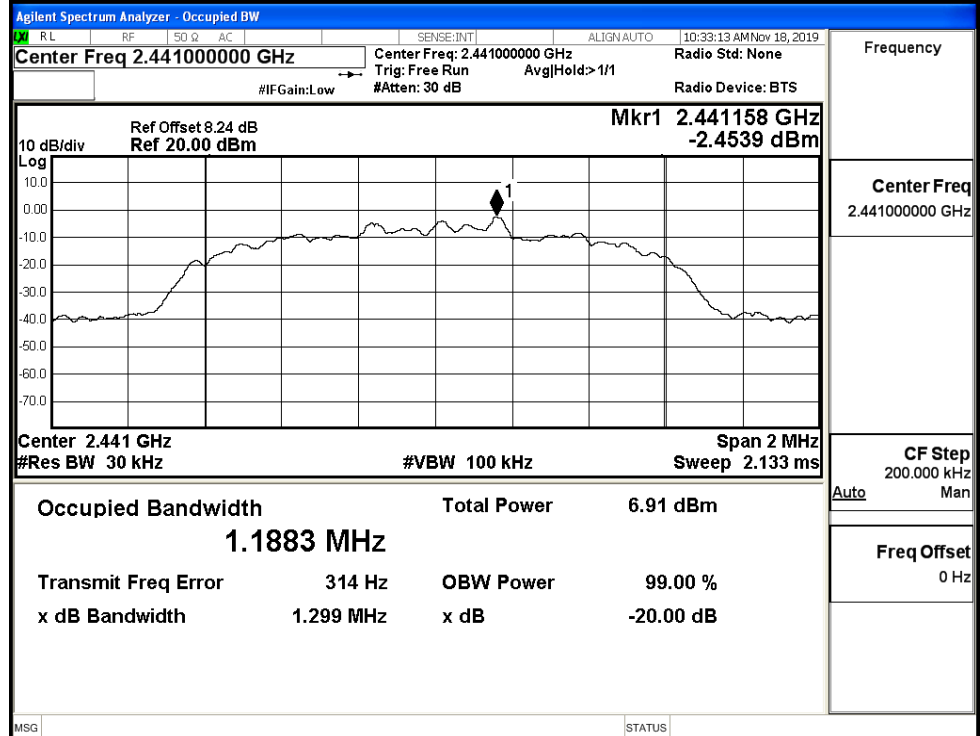
200.000 kHz

Man

Freq Offset

0 Hz

8DPSK/MCH



Frequency

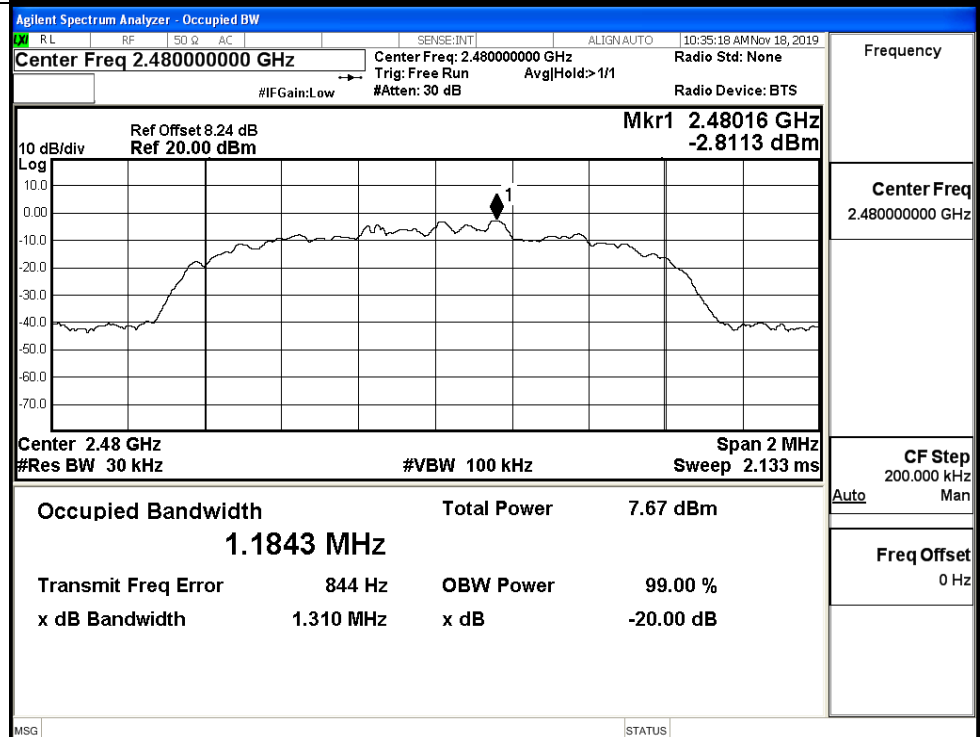
Center Freq
2.441000000 GHz

CF Step
200.000 kHz
Man

Auto

Freq Offset
0 Hz

8DPSK/HCH



Frequency

Center Freq
2.480000000 GHz

CF Step
200.000 kHz
Man

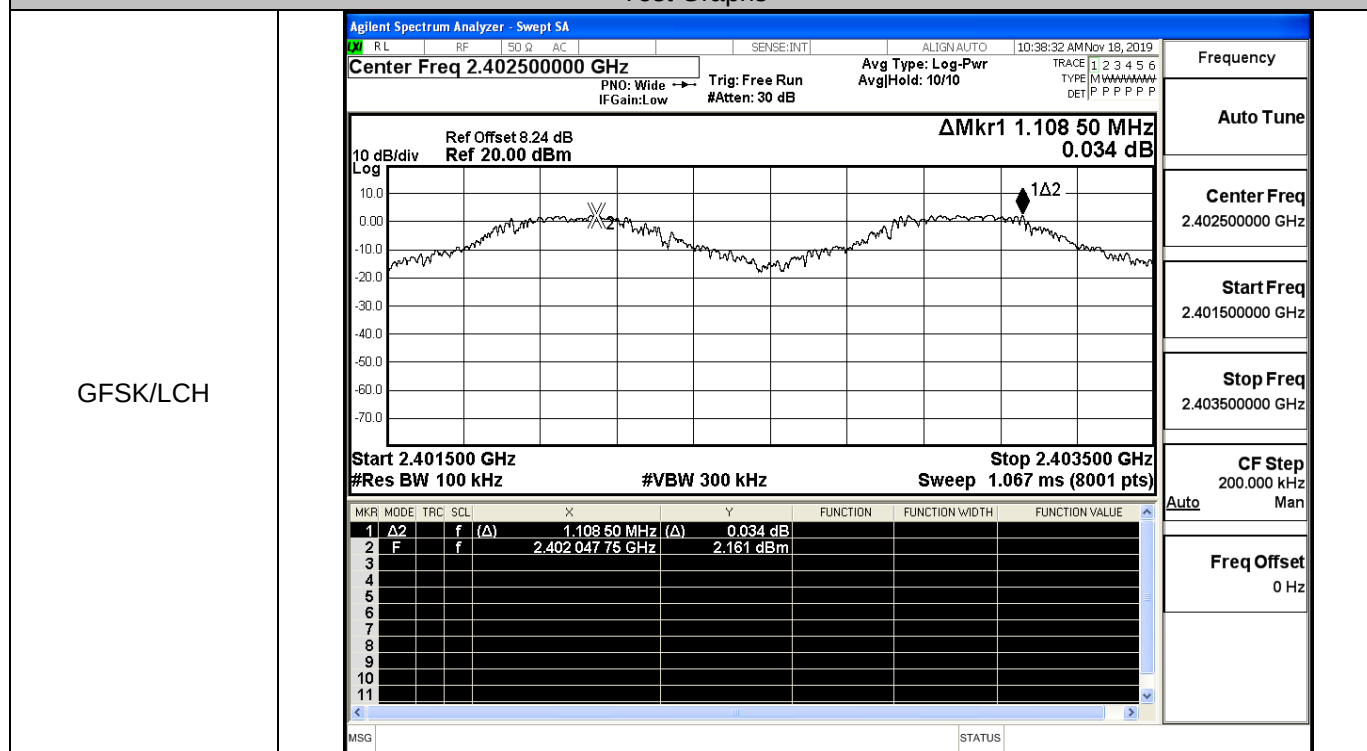
Auto

Freq Offset
0 Hz

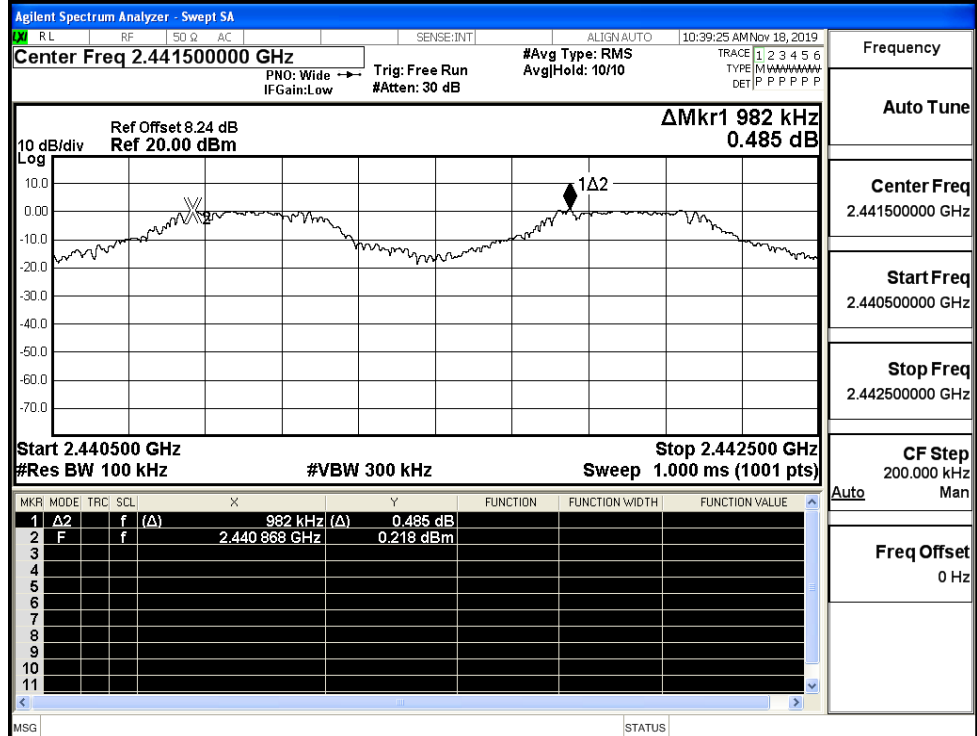
A.3 Carrier Frequency Separation

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.108	0.687	PASS
	MCH	0.982	0.687	PASS
	HCH	0.804	0.687	PASS
$\pi/4$ DQPSK	LCH	1.132	0.863	PASS
	MCH	1.238	0.863	PASS
	HCH	0.914	0.863	PASS
8DPSK	LCH	0.978	0.873	PASS
	MCH	0.952	0.873	PASS
	HCH	1.144	0.873	PASS

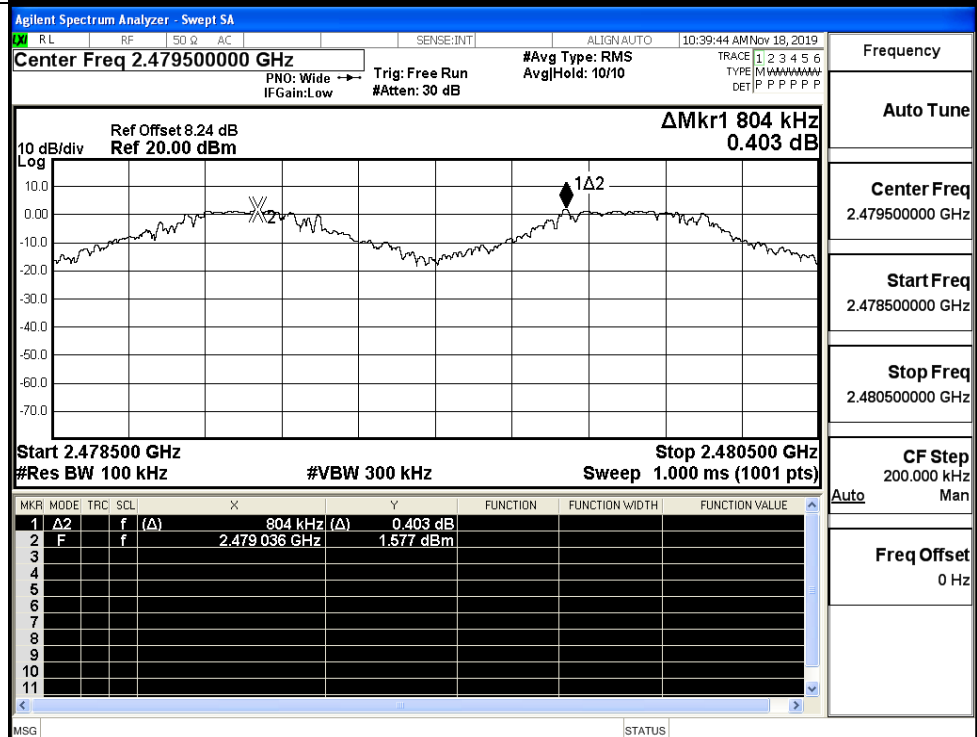
Test Graphs



GFSK/MCH



GFSK/HCH

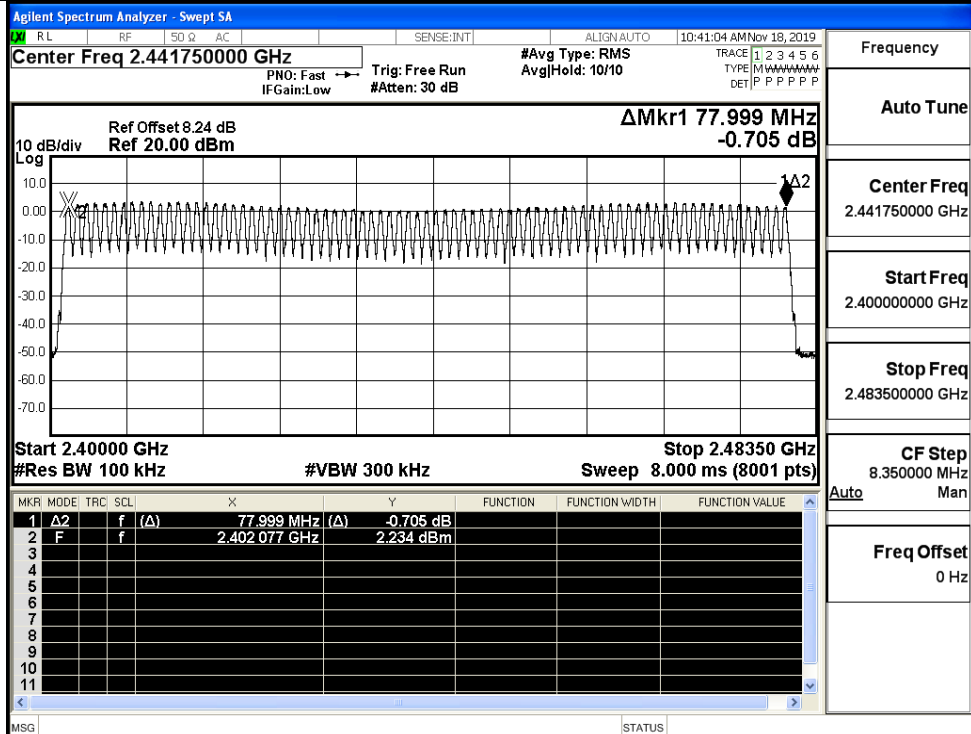
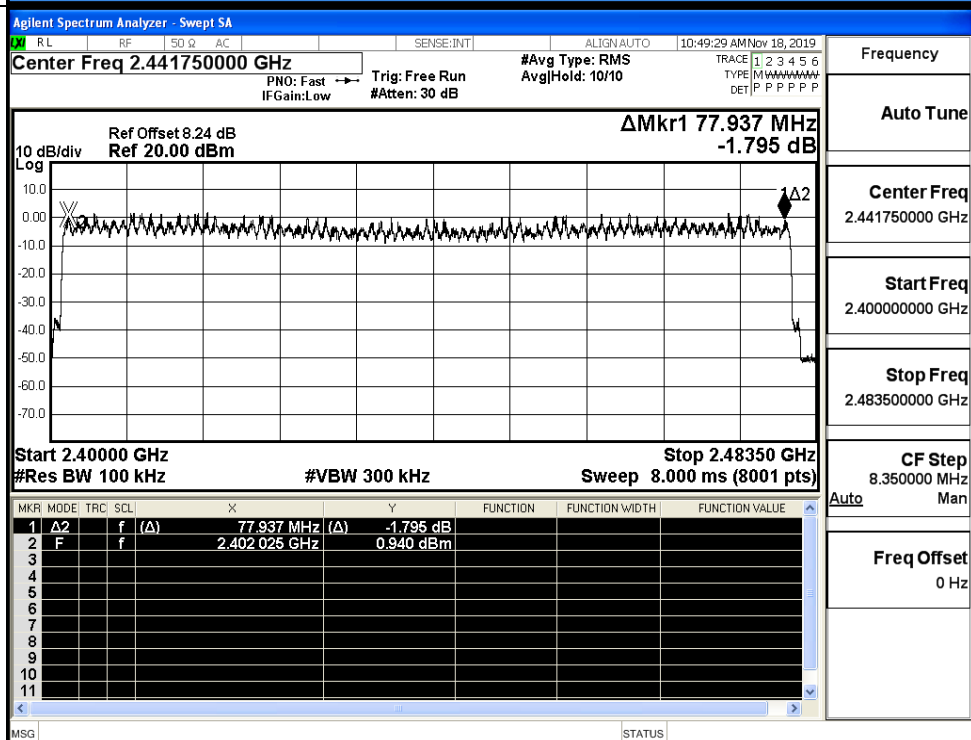


A.4 Hopping Channel Number

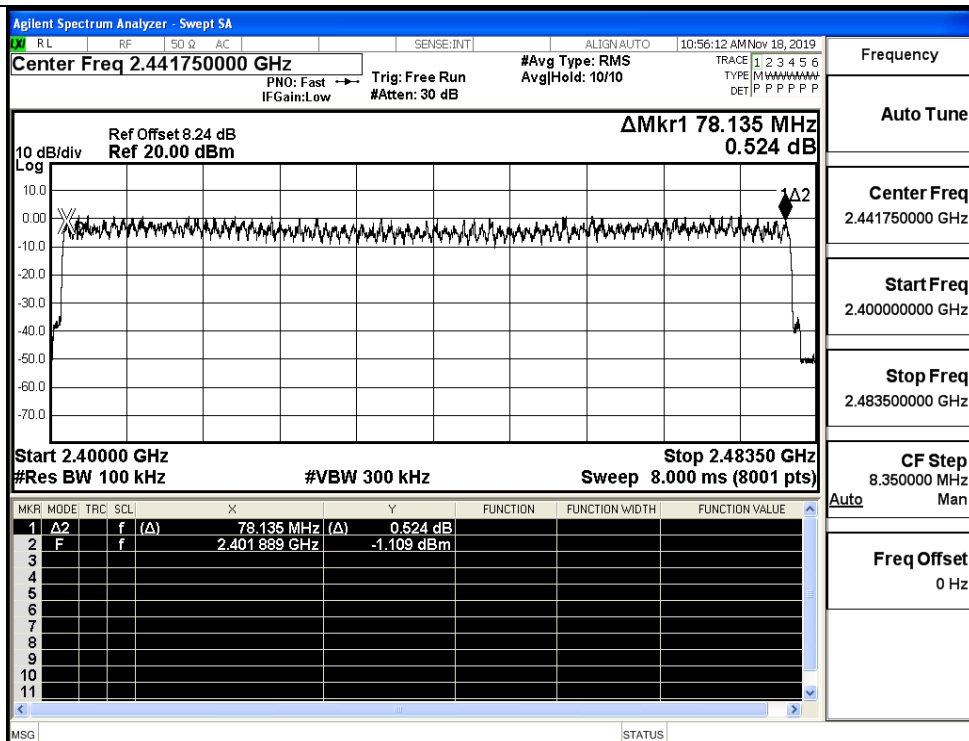
Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	>=15	PASS
$\pi/4$ DQPSK	Hop	79	>=15	PASS
8DPSK	Hop	79	>=15	PASS

Test Graphs

GFSK/Hop

 $\pi/4$ DQPSK/Hop

8DPSK/Hop

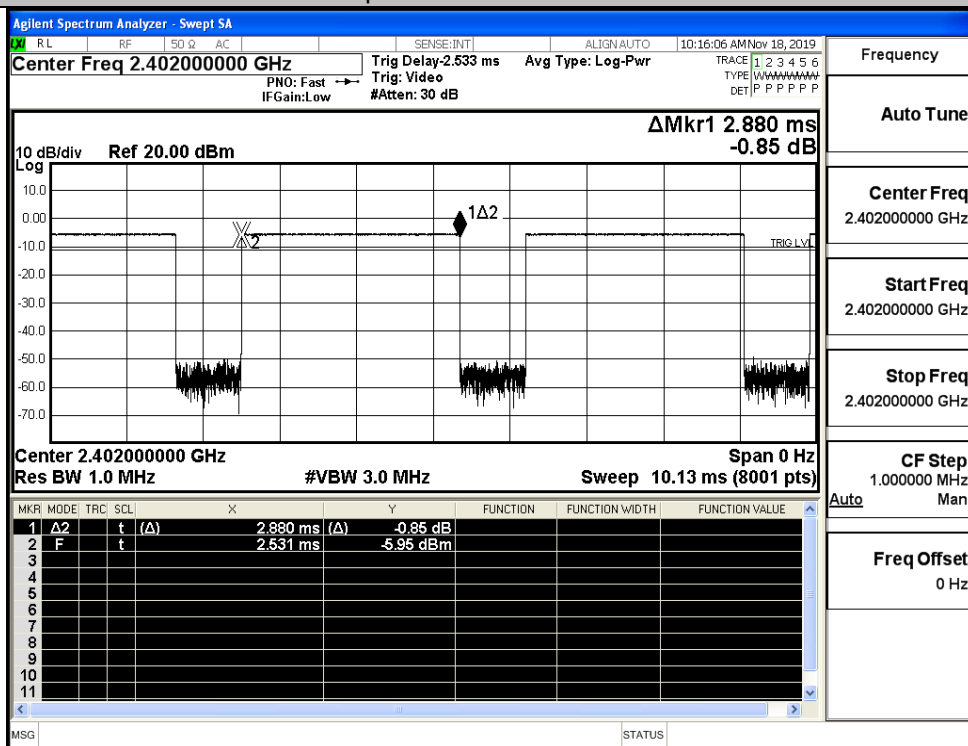


A.5 Dwell Time

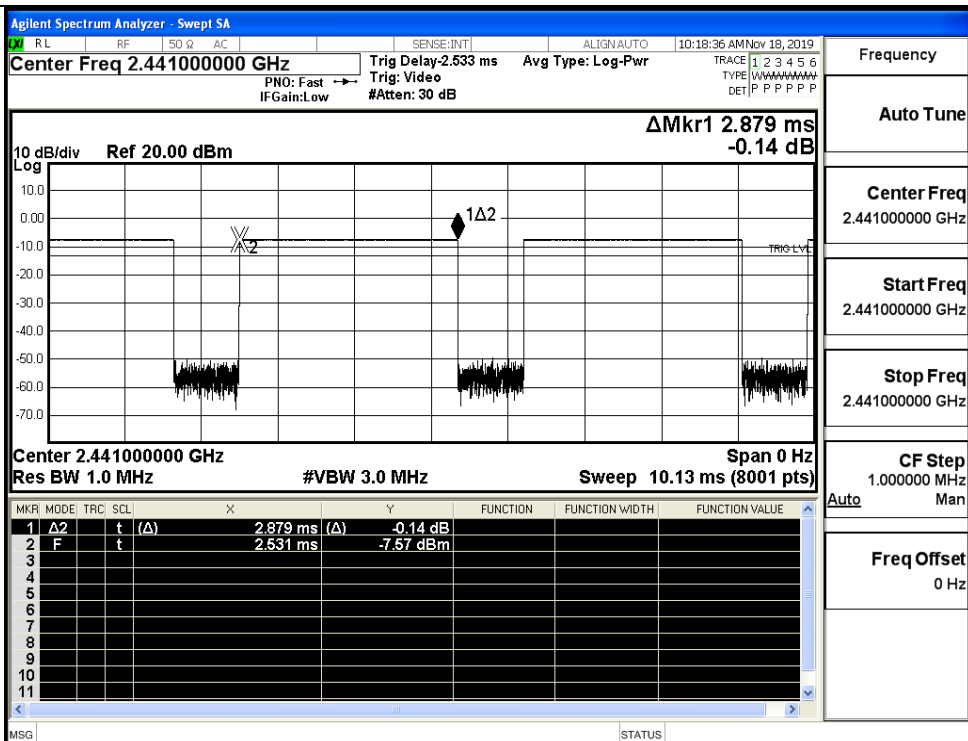
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.88	106.7	0.307	0.4	PASS
	DH5	MCH	2.88	106.7	0.307	0.4	PASS
	DH5	HCH	2.88	106.7	0.307	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.88	106.7	0.307	0.4	PASS
	2DH5	MCH	2.88	106.7	0.307	0.4	PASS
	2DH5	HCH	2.88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

Test Graphs

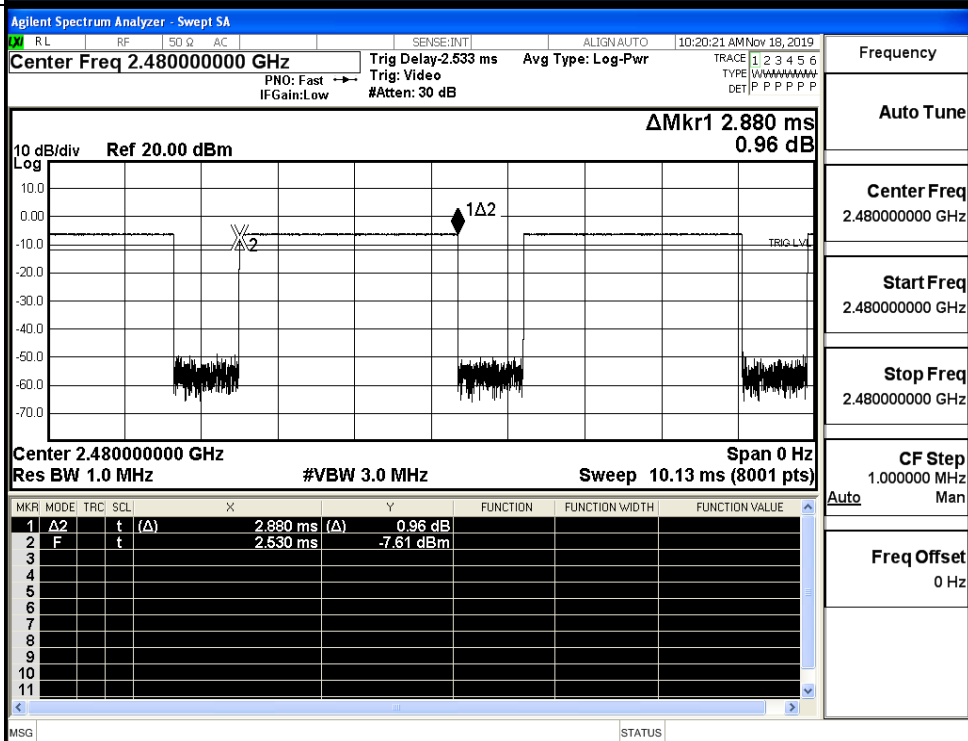
GFSK_DH5/LCH

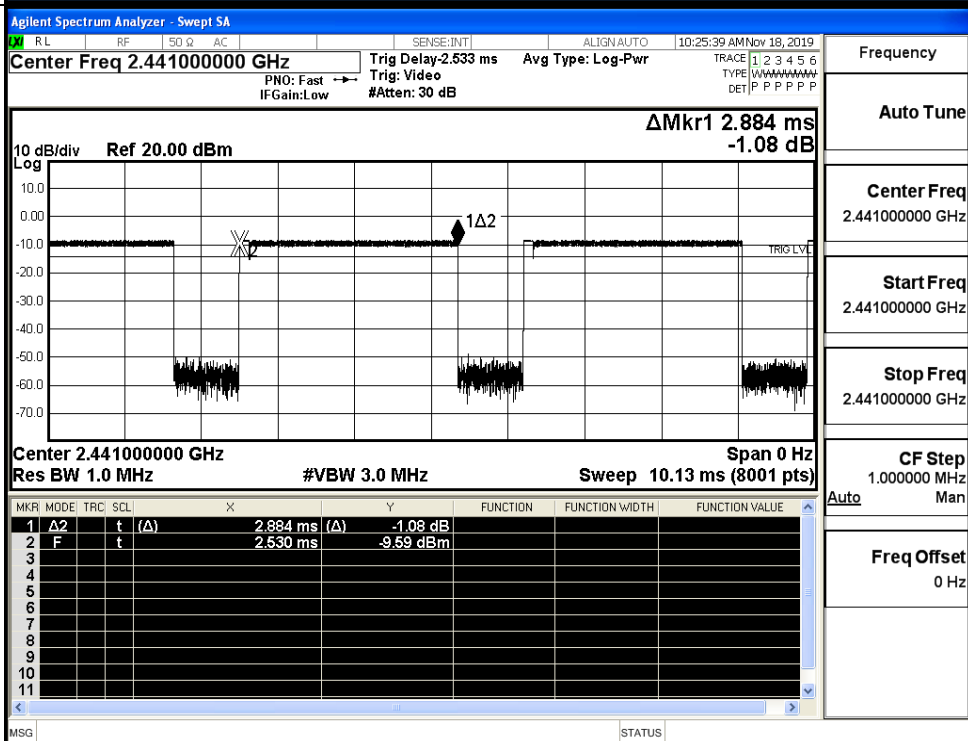
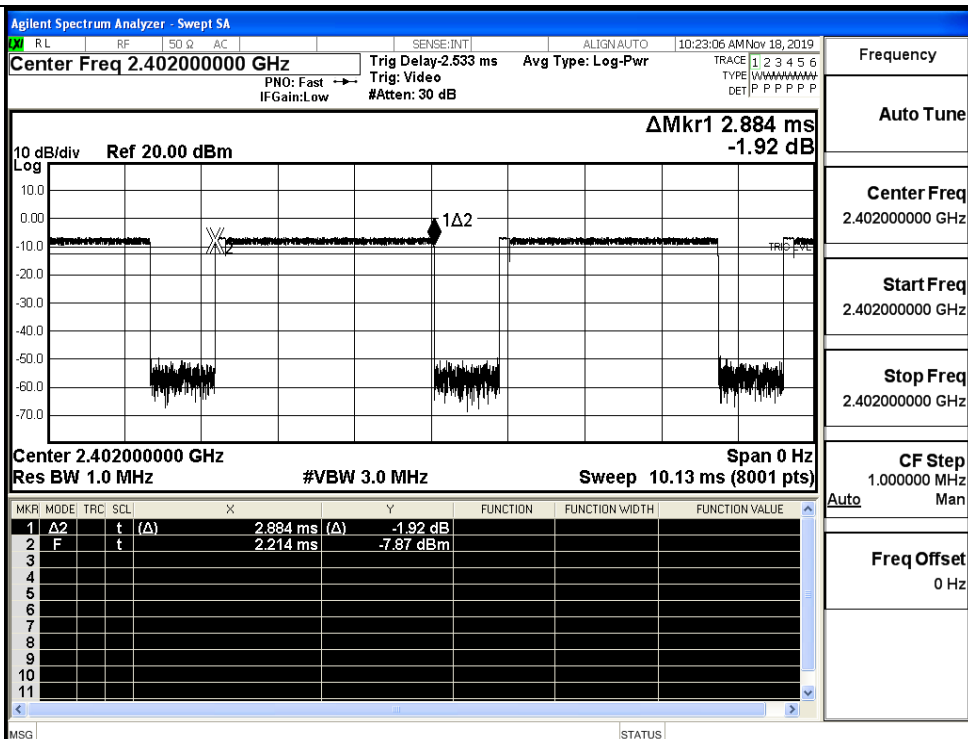


GFSK_DH5/MCH

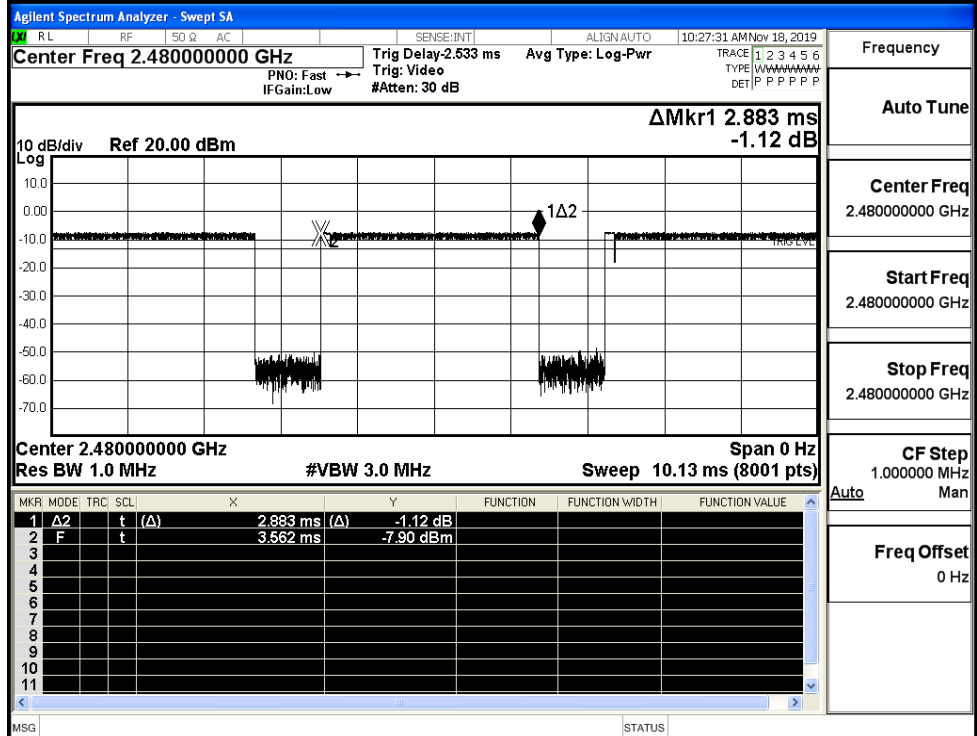


GFSK_DH5/HCH

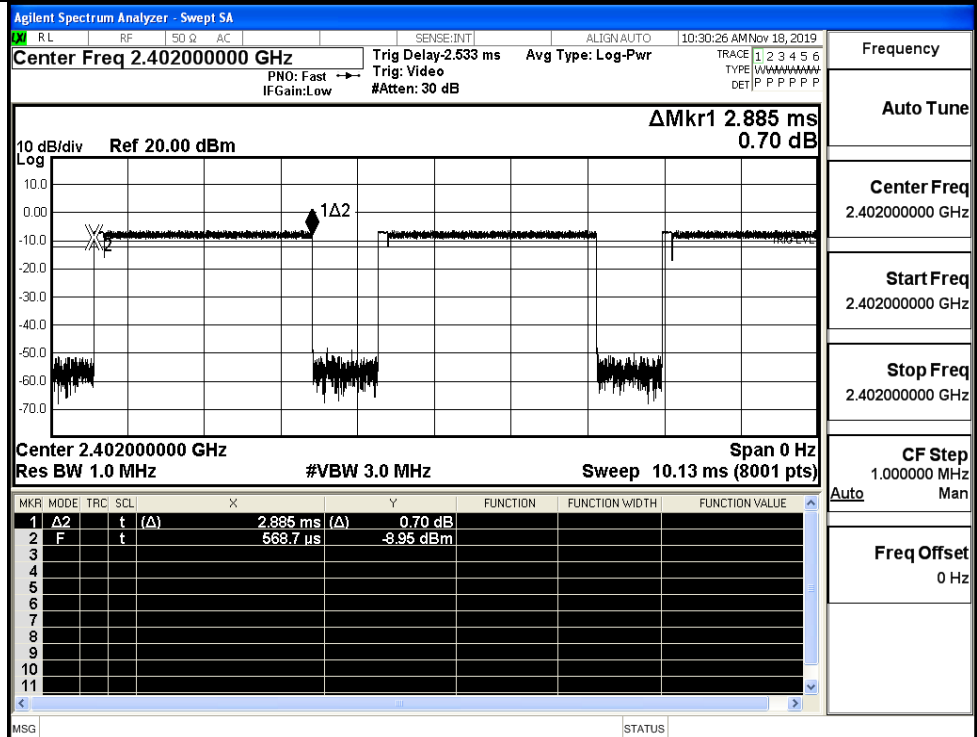




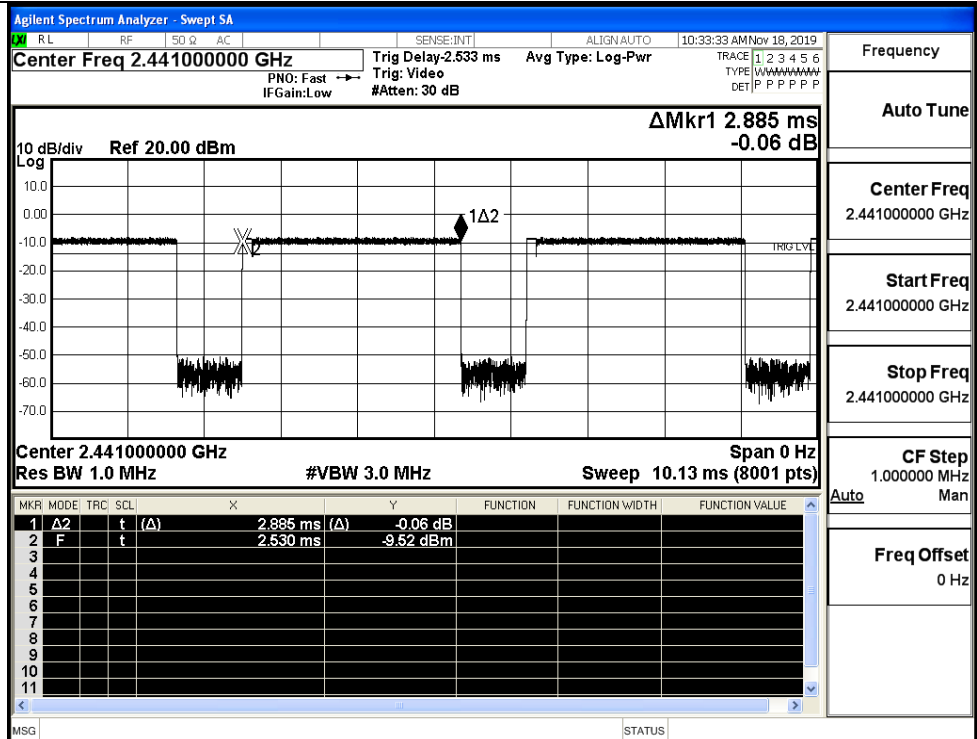
$\pi/4$ DQPSK
_2DH5/HCH



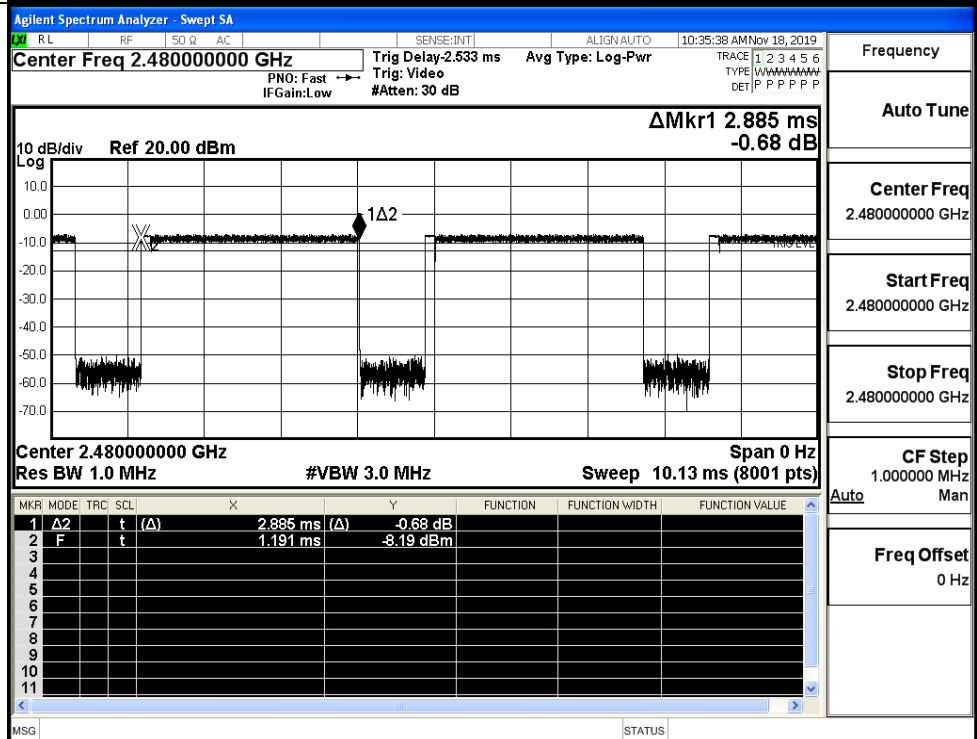
8DPSK_3DH5/LCH



8DPSK_3DH5/MCH



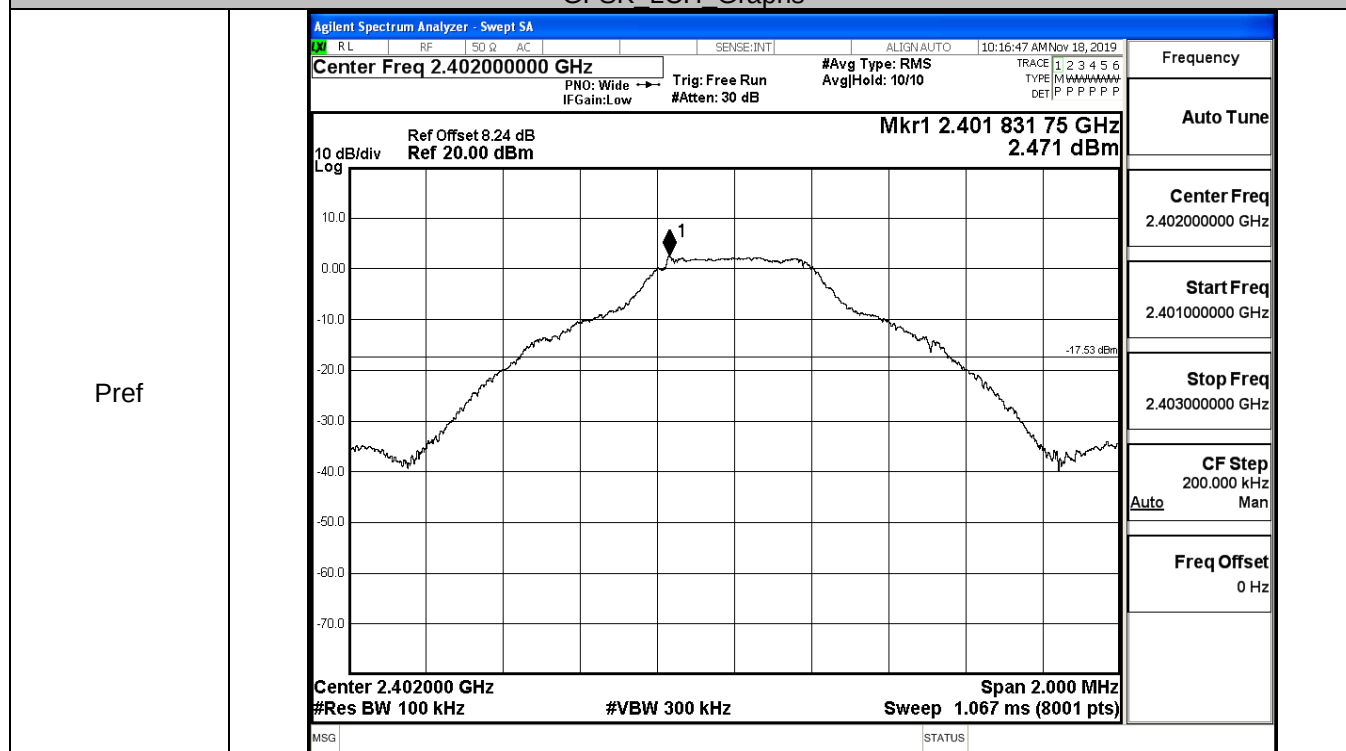
8DPSK_3DH5/HCH



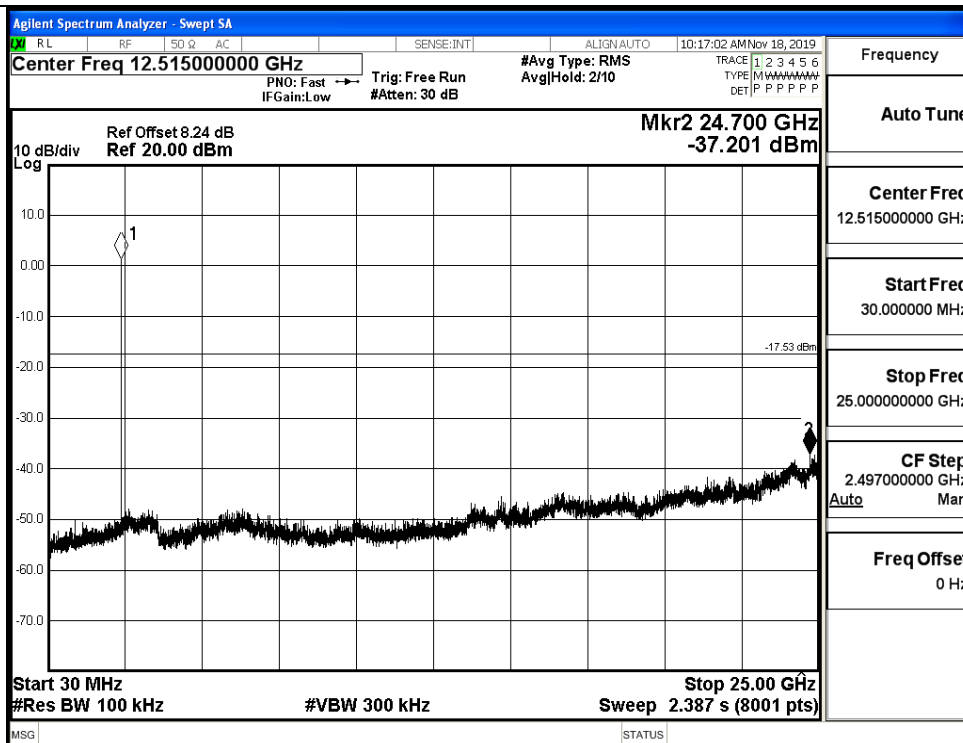
A.6 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2.471	-37.201	-17.529	PASS
	MCH	0.392	-37.587	-19.608	PASS
	HCH	1.945	-36.828	-18.055	PASS
$\pi/4$ DQPSK	LCH	0.661	-37.442	-19.339	PASS
	MCH	-0.252	-37.556	-20.252	PASS
	HCH	0.666	-37.538	-19.334	PASS
8DPSK	LCH	1.373	-37.846	-18.627	PASS
	MCH	-0.237	-37.752	-20.237	PASS
	HCH	0.595	-37.718	-19.405	PASS

GFSK LCH Graphs

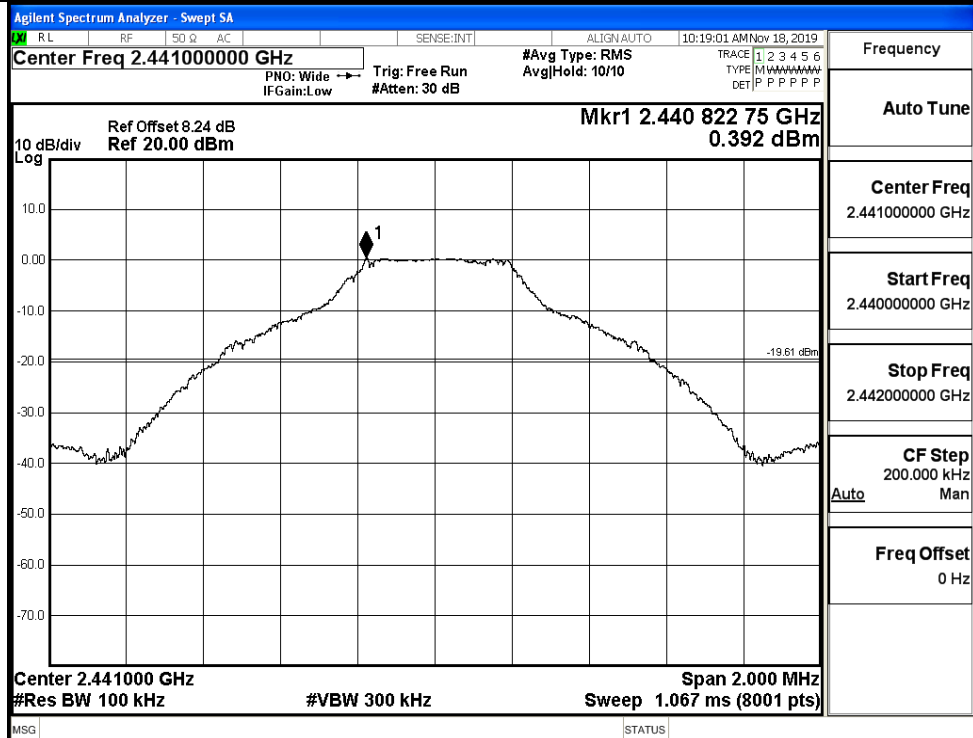


Puw

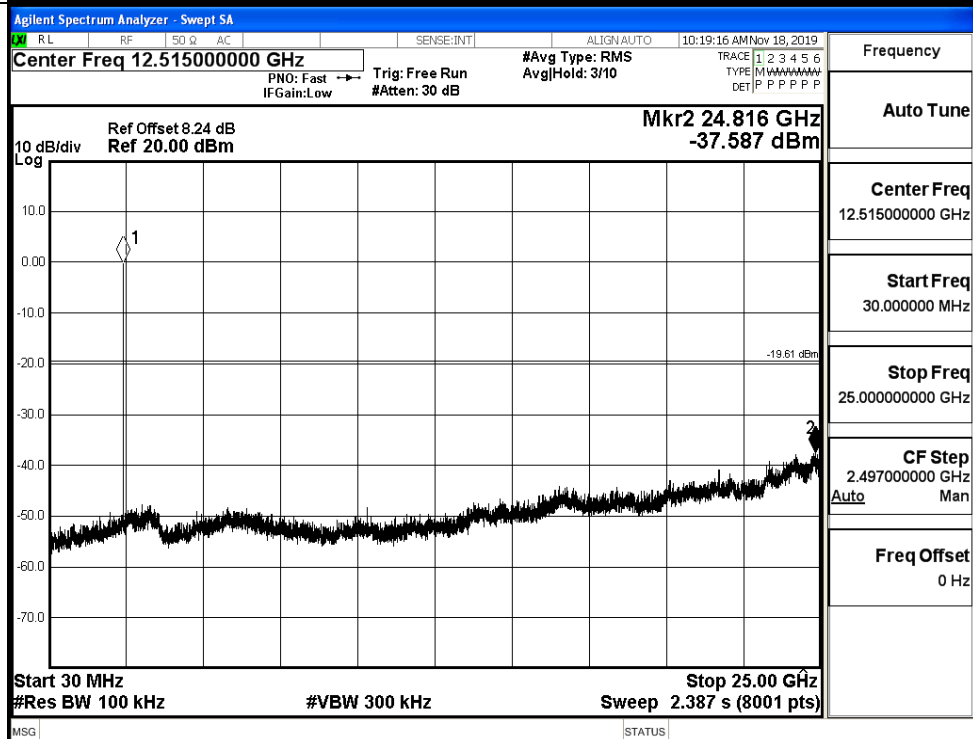


GFSK MCH Graphs

Pref

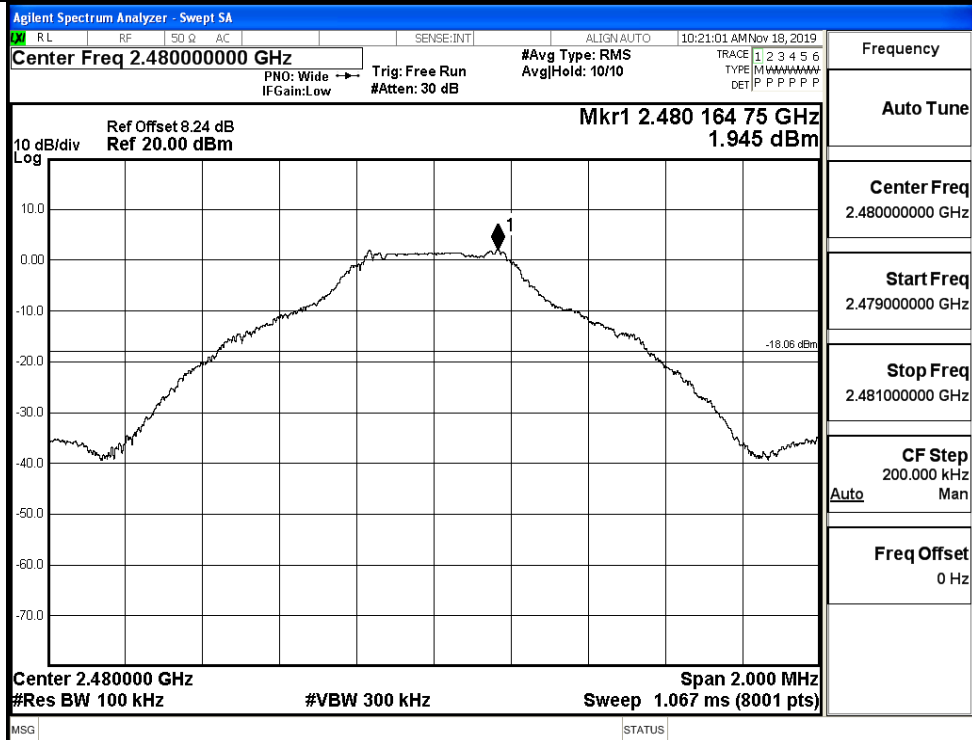


Puw

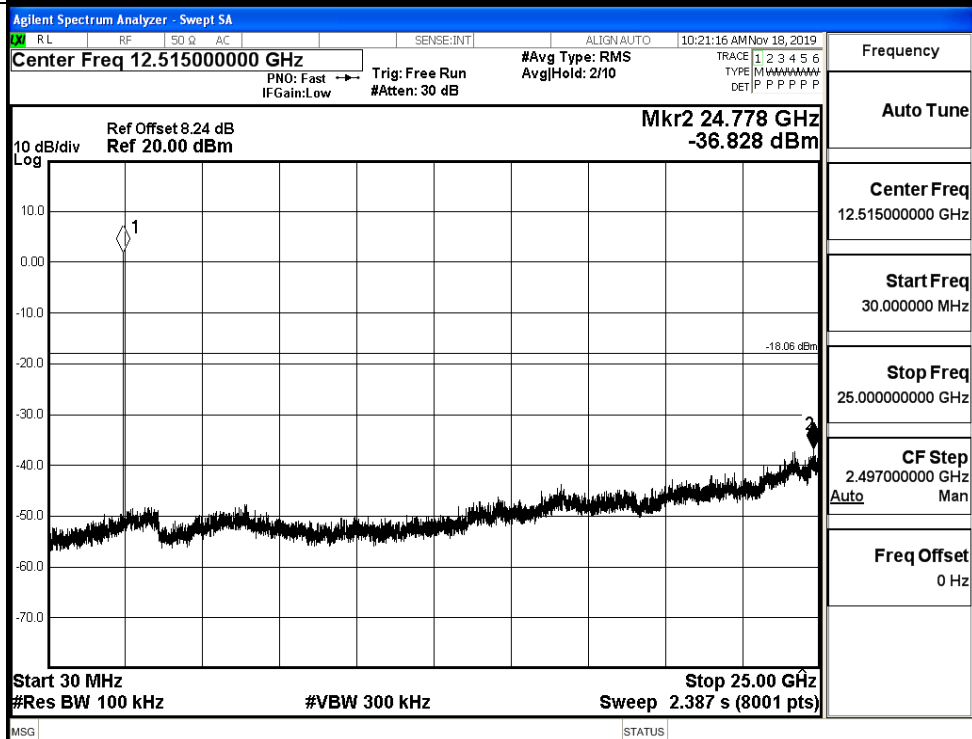


GFSK HCH Graphs

Pref

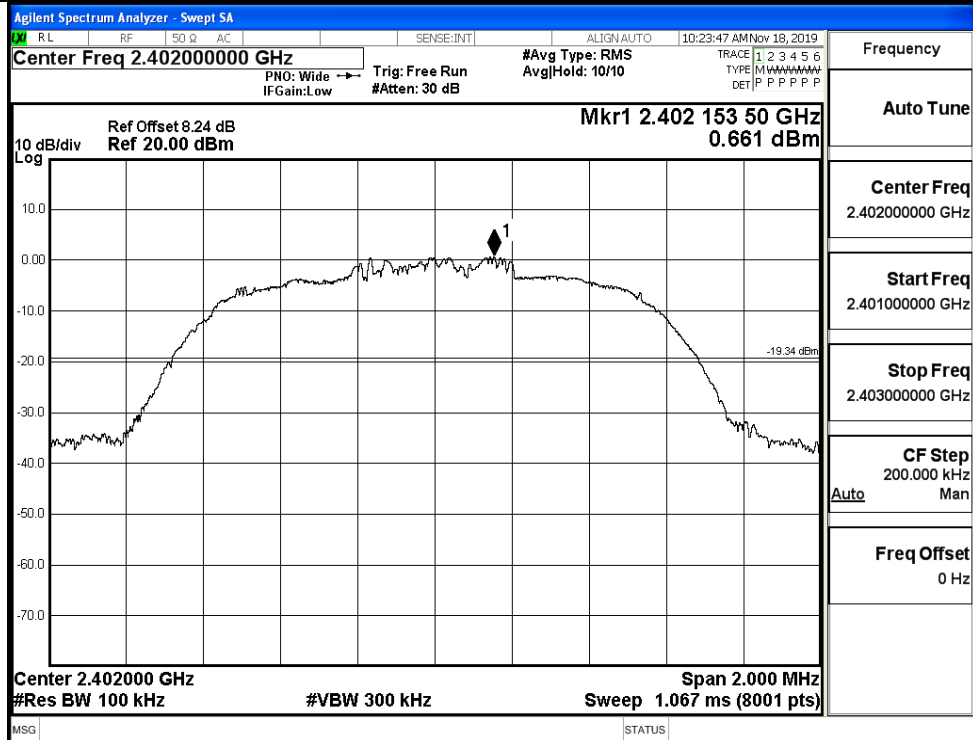


Puw

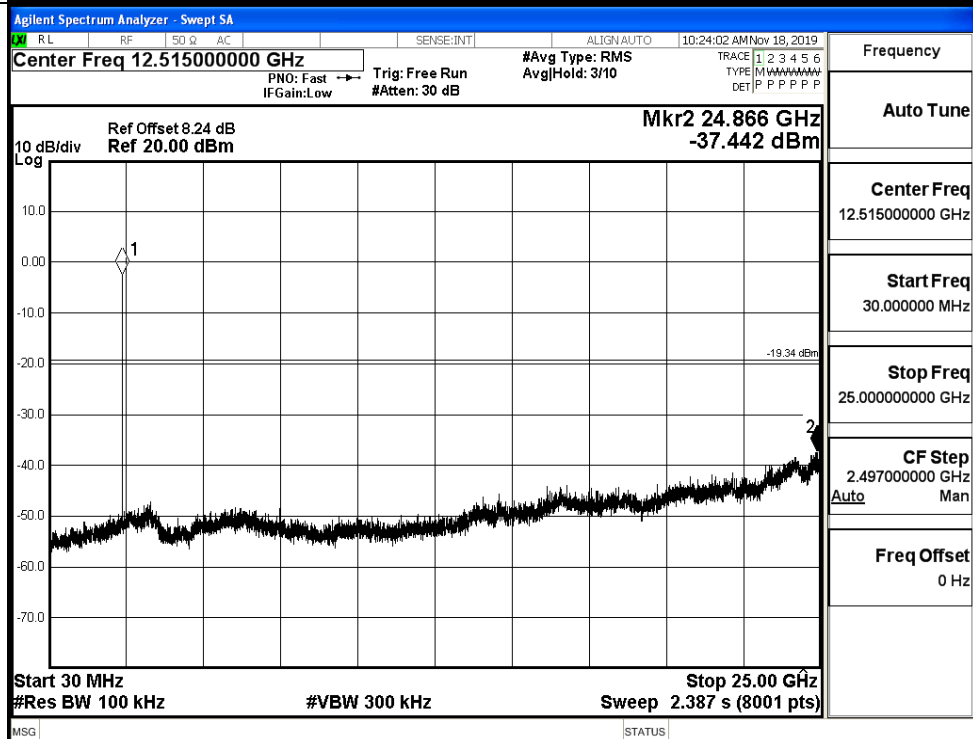


$\pi/4$ DQPSK LCH_Graphs

Pref

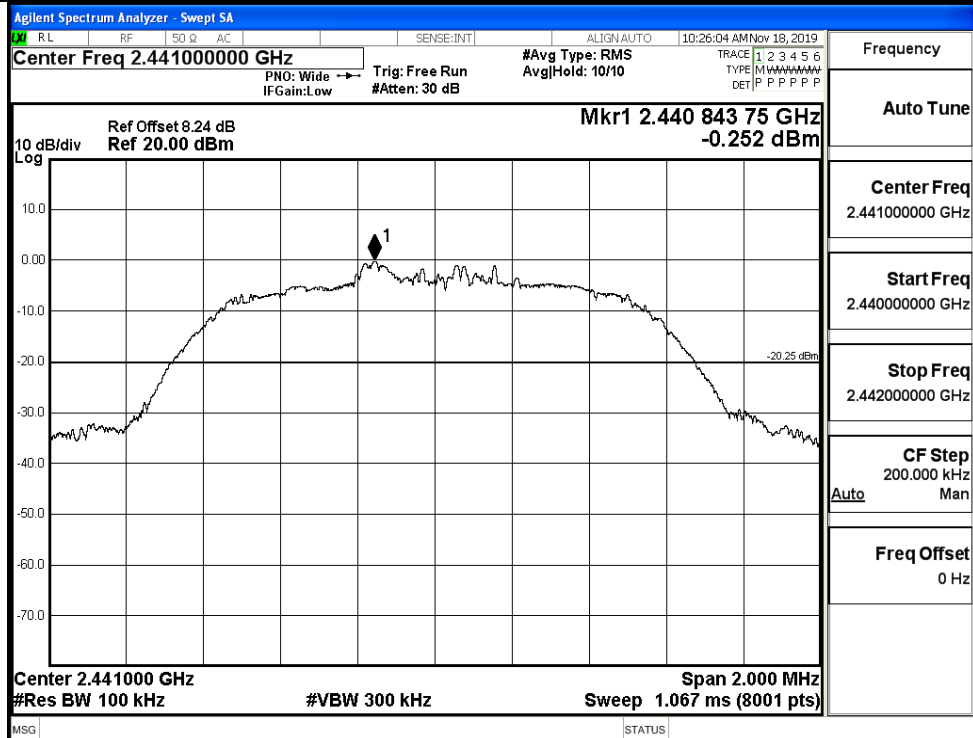


Puw

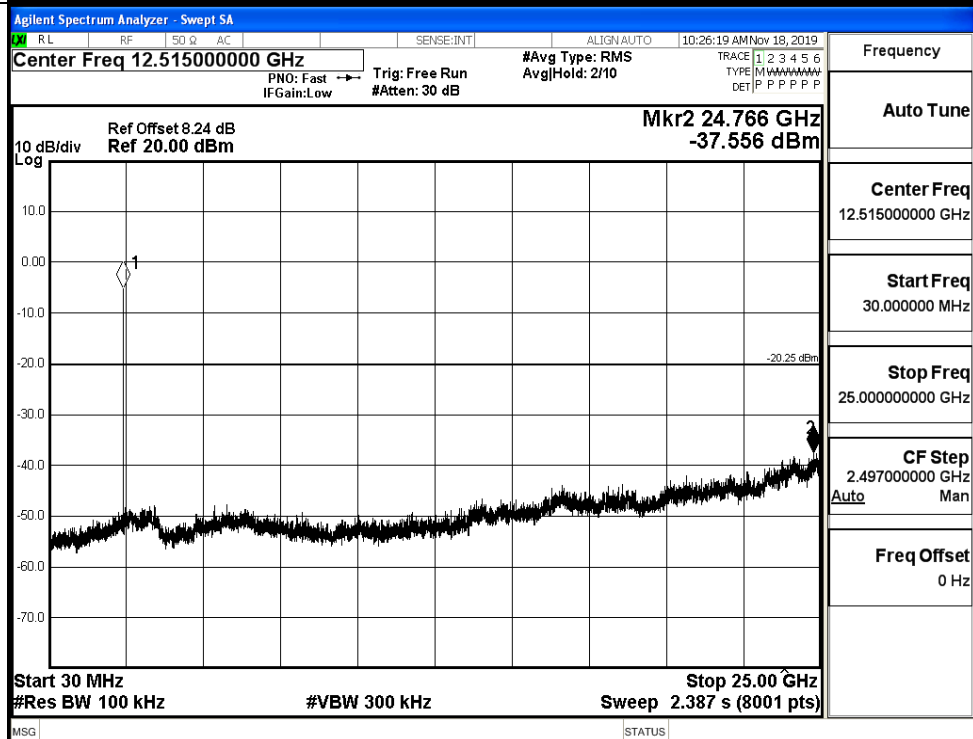


$\pi/4$ DQPSK_MCH_Graphs

Pref

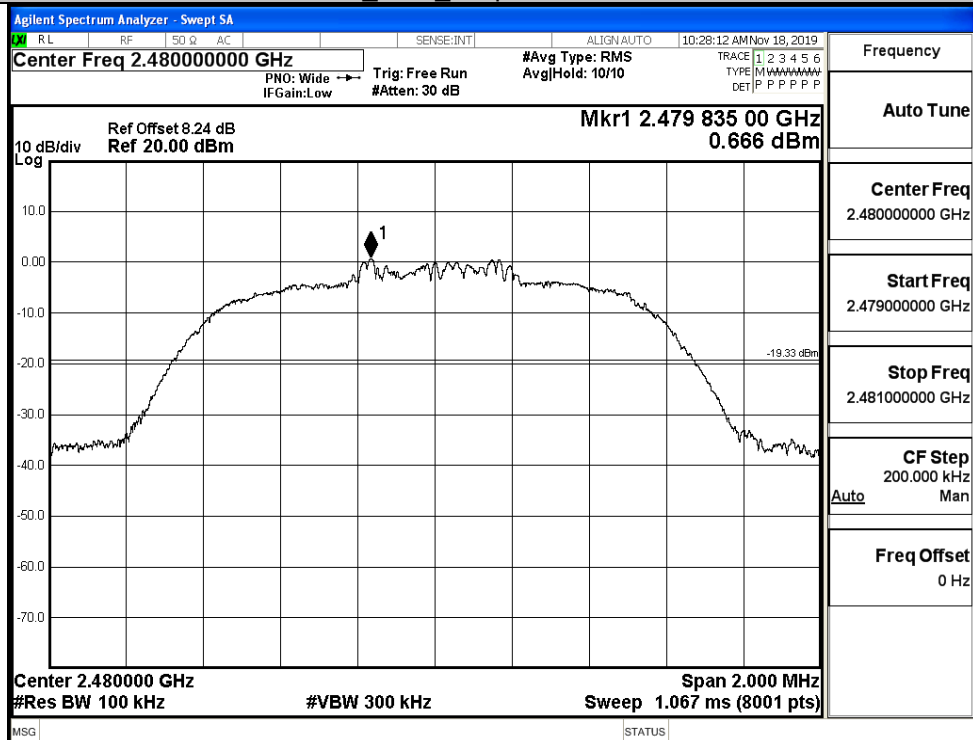


Puw

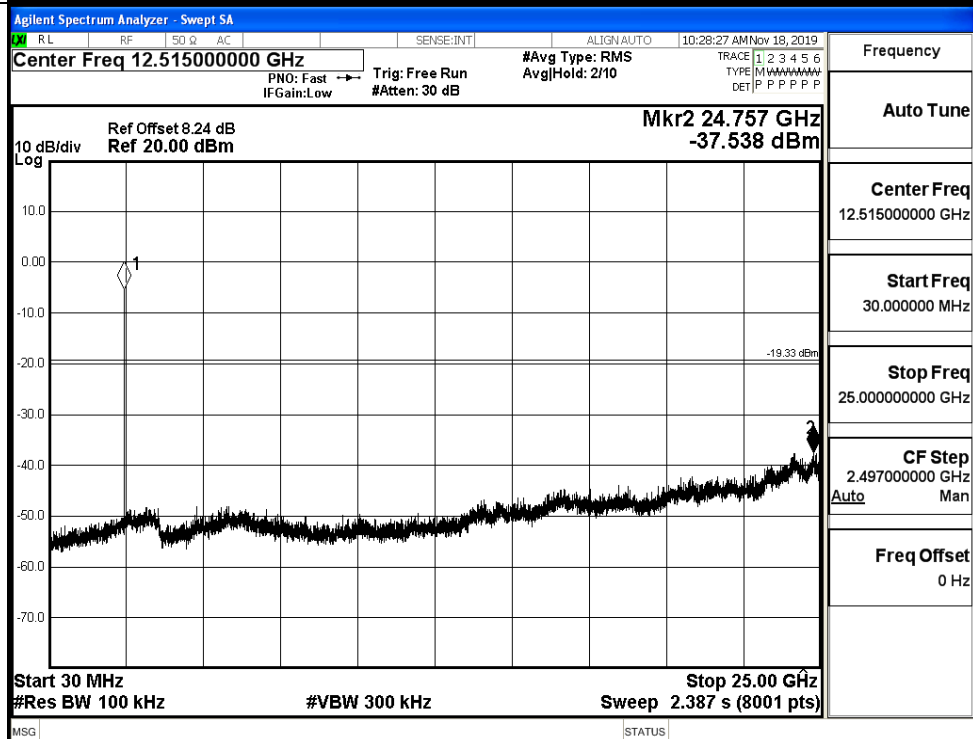


$\pi/4$ DQPSK_HCH_Graphs

Pref

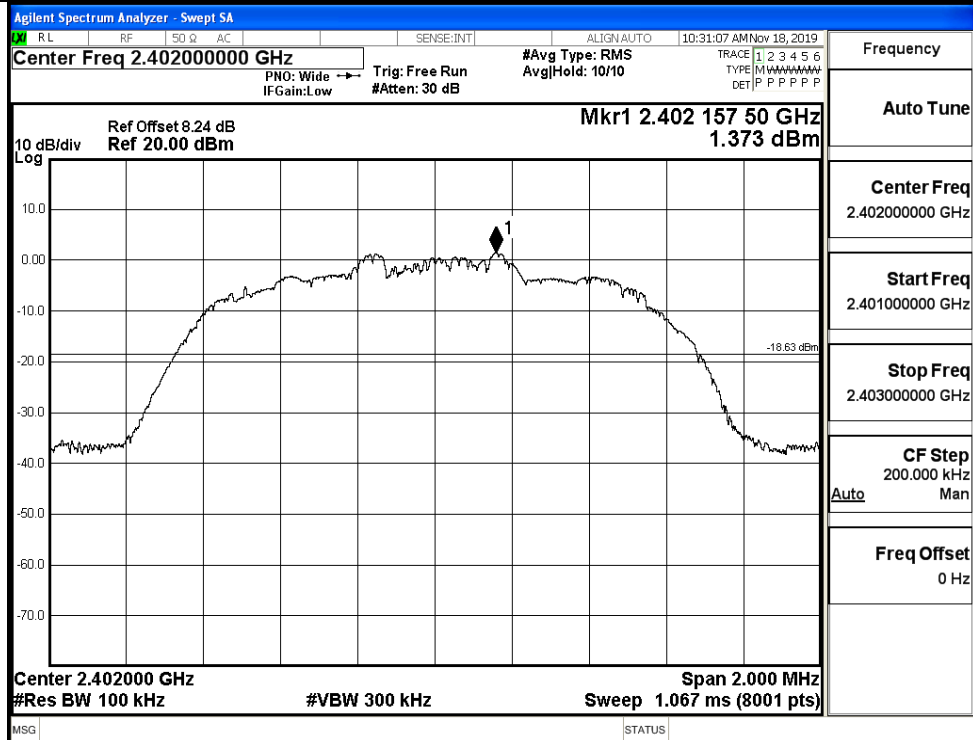


Puw

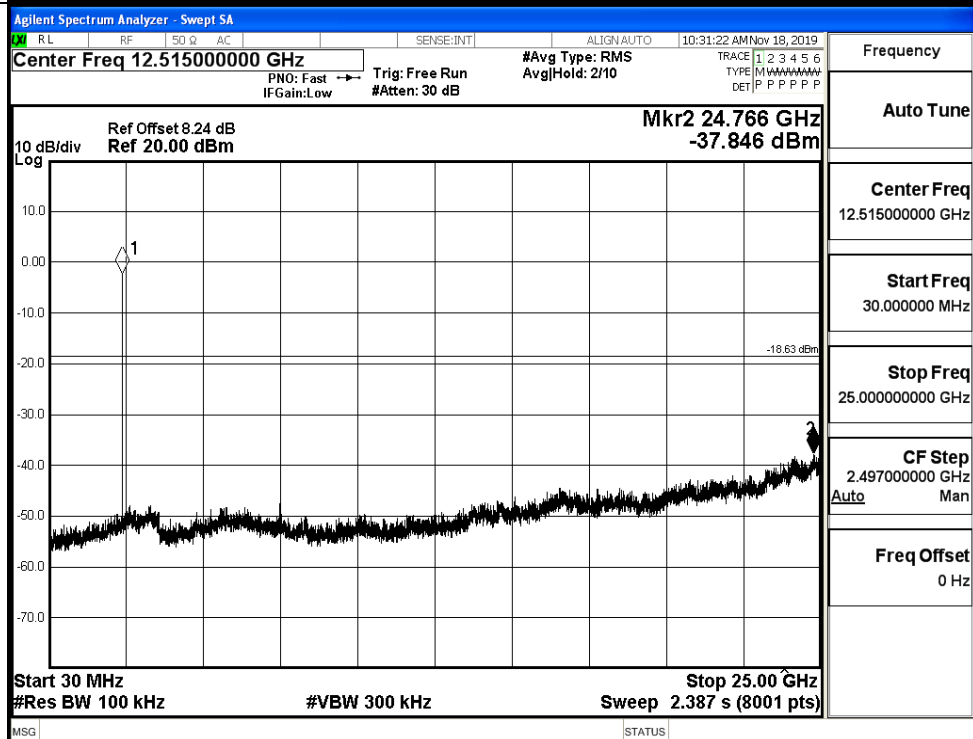


8DPSK LCH Graphs

Pref

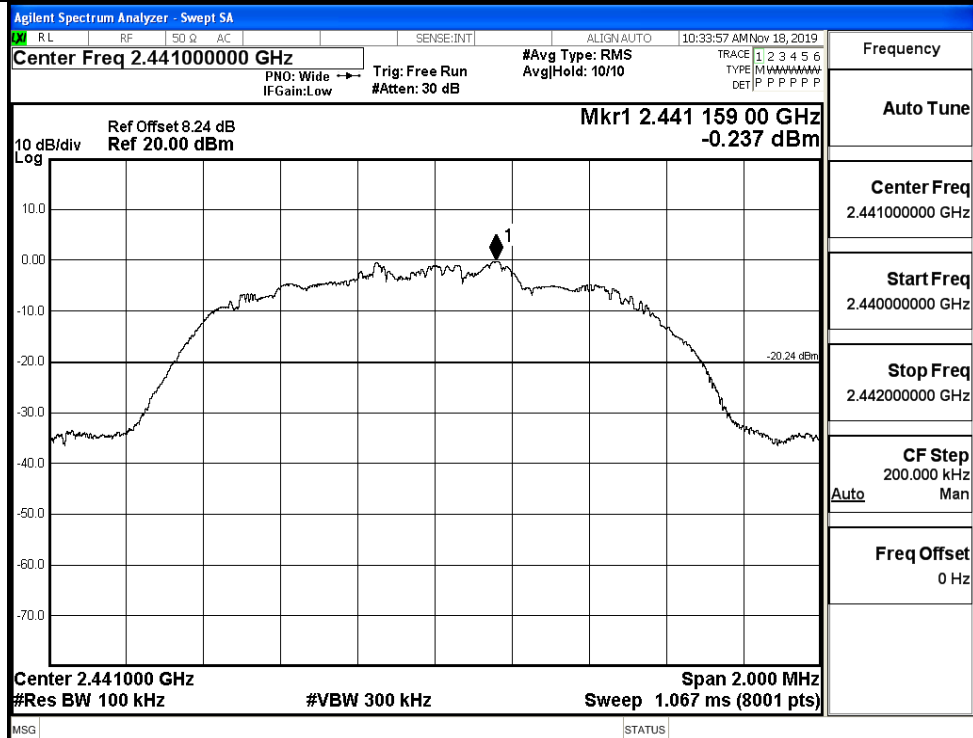


Puw

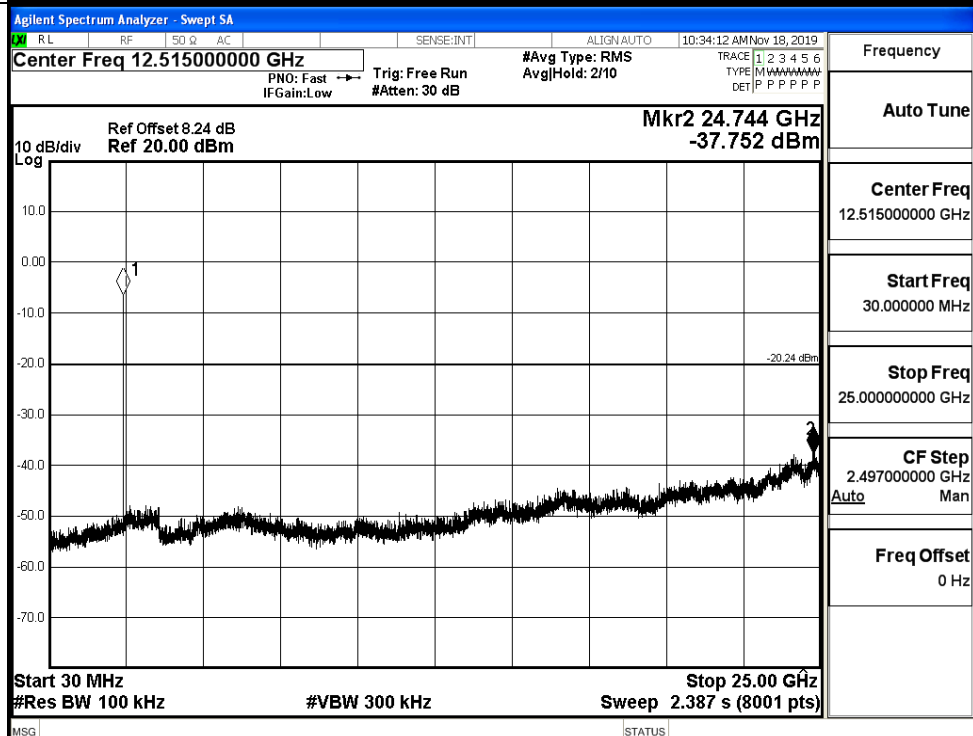


8DPSK MCH_Graphs

Pref

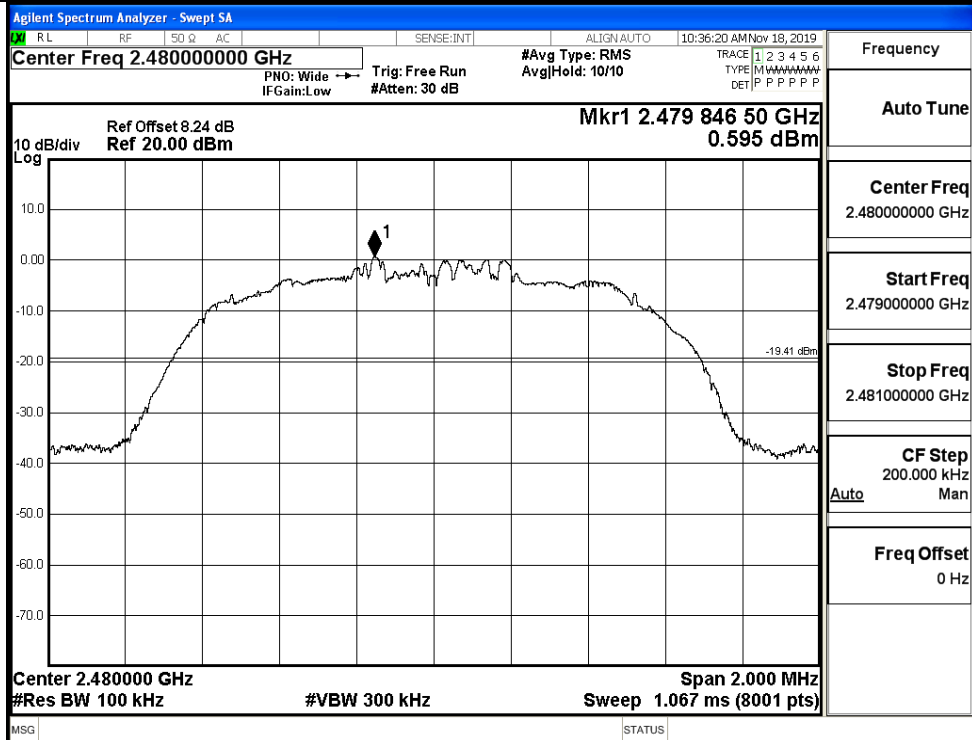


Puw

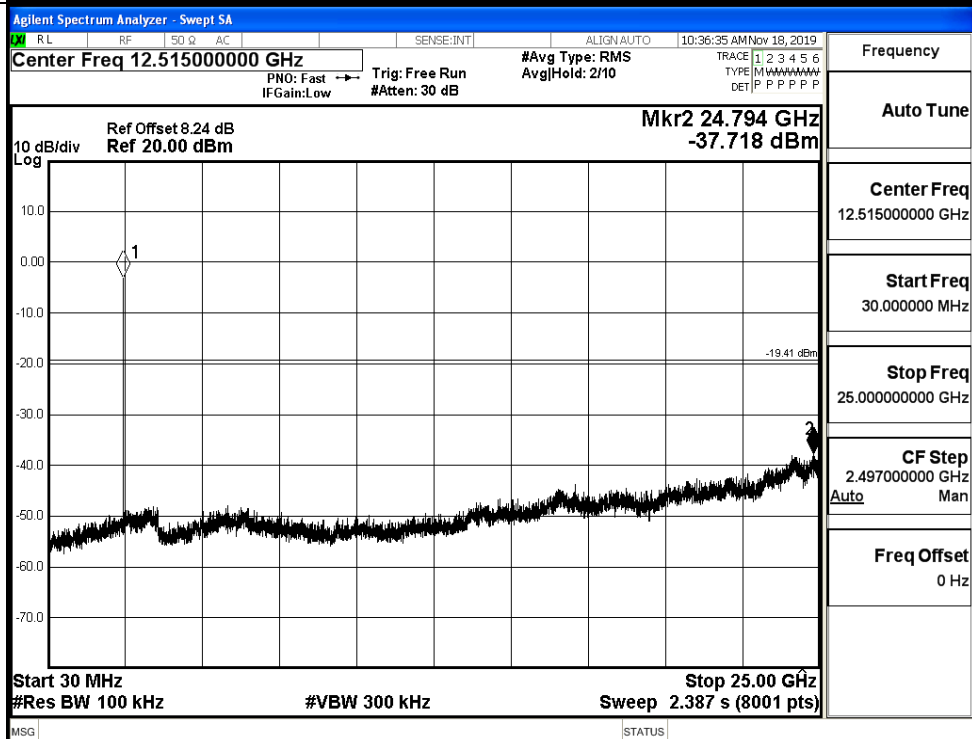


8DPSK_HCH_Graphs

Pref



Puw

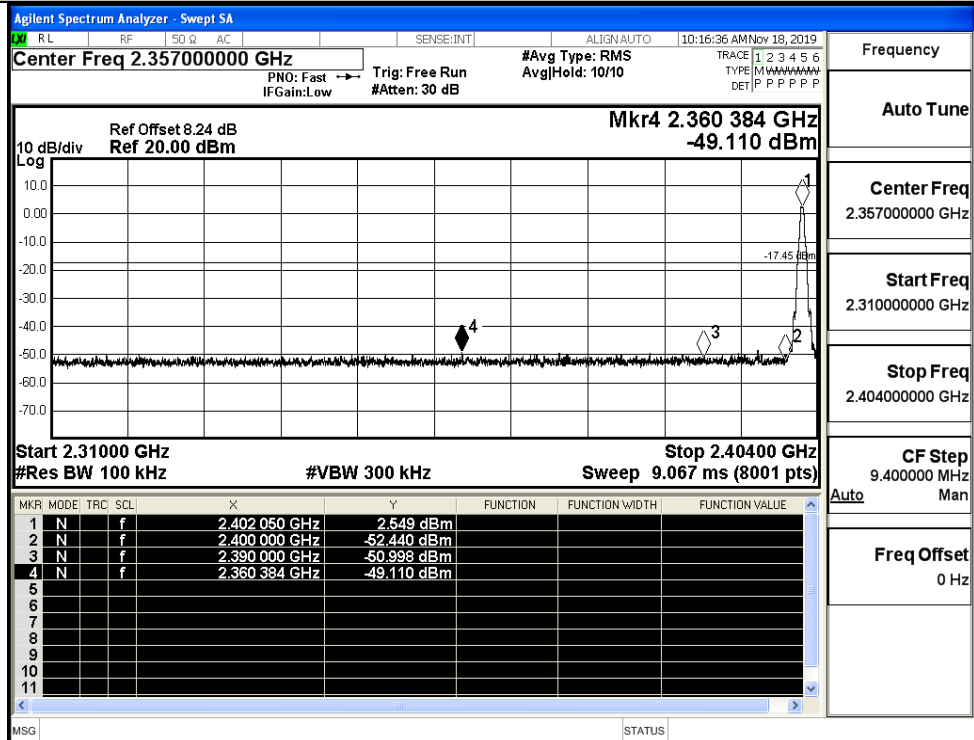


A.7 Band-edge for RF Conducted Emissions

Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	2.549	Off	-49.110	-17.45	PASS
			3.719	On	-49.067	-16.28	PASS
	HCH	2480	1.853	Off	-48.735	-18.15	PASS
			3.218	On	-49.141	-16.78	PASS
$\pi/4$ DQPSK	LCH	2402	1.380	Off	-49.605	-18.62	PASS
			1.928	On	-48.836	-18.07	PASS
	HCH	2480	0.604	Off	-47.851	-19.4	PASS
			1.769	On	-48.176	-18.23	PASS
8DPSK	LCH	2402	1.277	Off	-49.035	-18.72	PASS
			2.139	On	-48.508	-17.86	PASS
	HCH	2480	0.735	Off	-47.901	-19.27	PASS
			1.825	On	-48.652	-18.18	PASS

Test Graphs

GFSK/LCH/No Hop



Frequency

Auto Tune

Center Freq
2.357000000 GHz

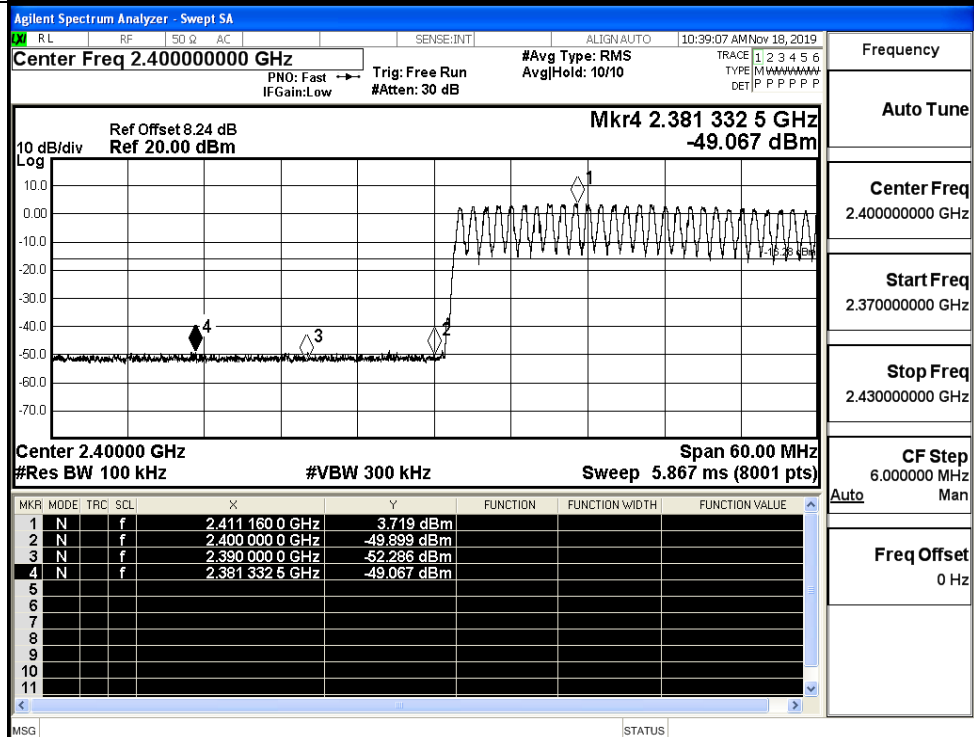
Start Freq
2.310000000 GHz

Stop Freq
2.404000000 GHz

CF Step
9.400000 MHz
Man

Freq Offset
0 Hz

GFSK/LCH/Hop



Frequency

Auto Tune

Center Freq
2.400000000 GHz

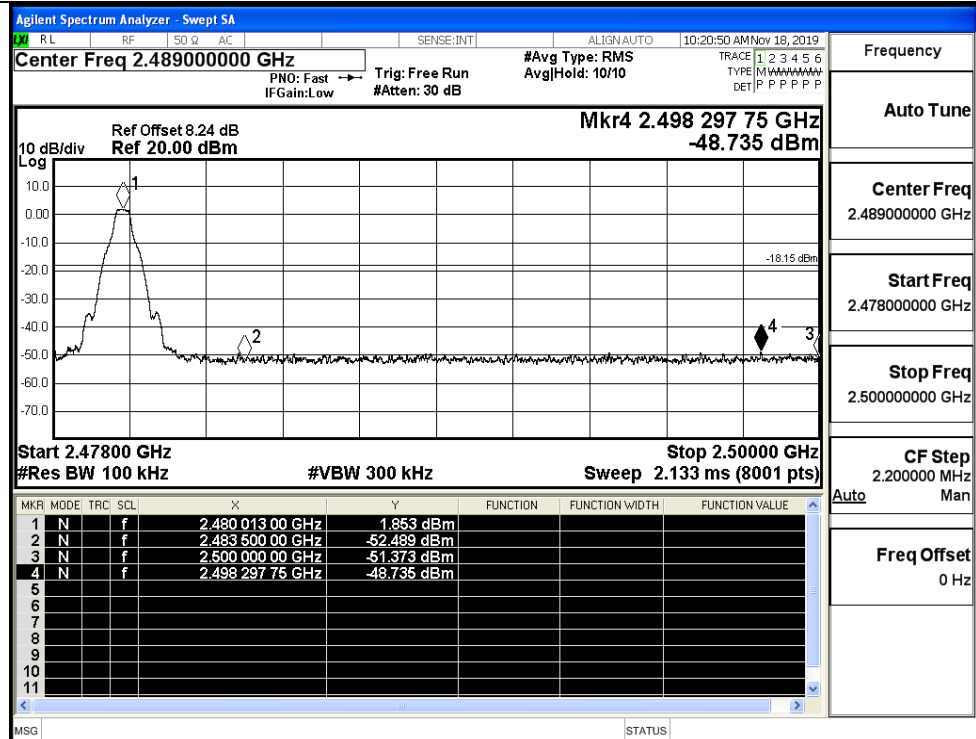
Start Freq
2.370000000 GHz

Stop Freq
2.430000000 GHz

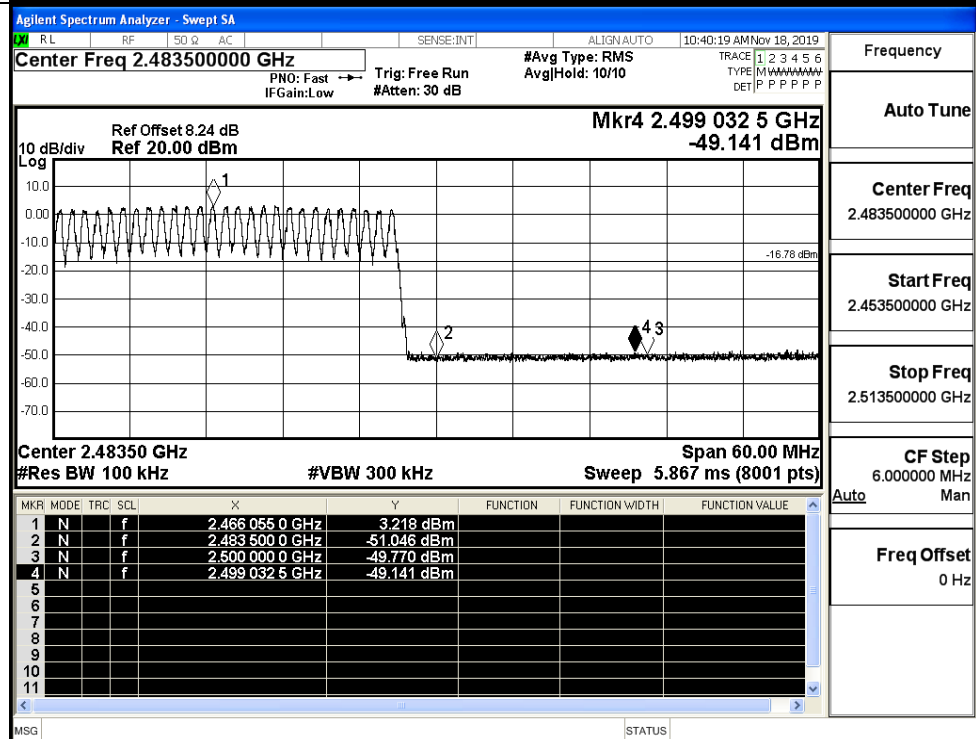
CF Step
6.000000 MHz
Man

Freq Offset
0 Hz

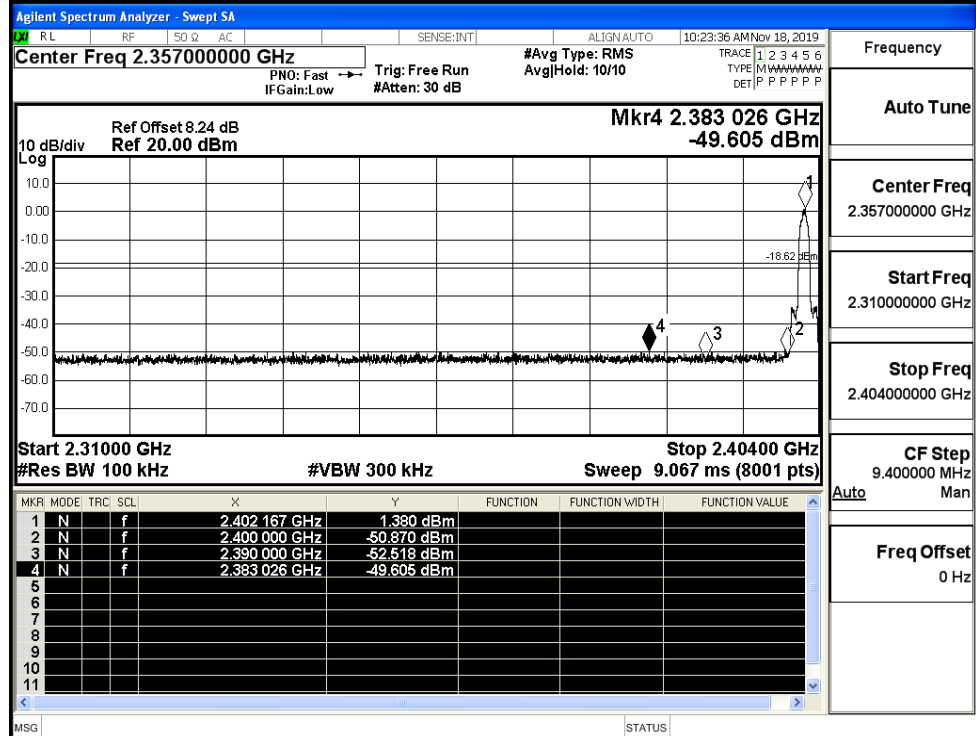
GFSK/HCH/No Hop



GFSK/HCH/Hop



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



Frequency

Auto Tune

Center Freq
2.357000000 GHz

Start Freq
2.310000000 GHz

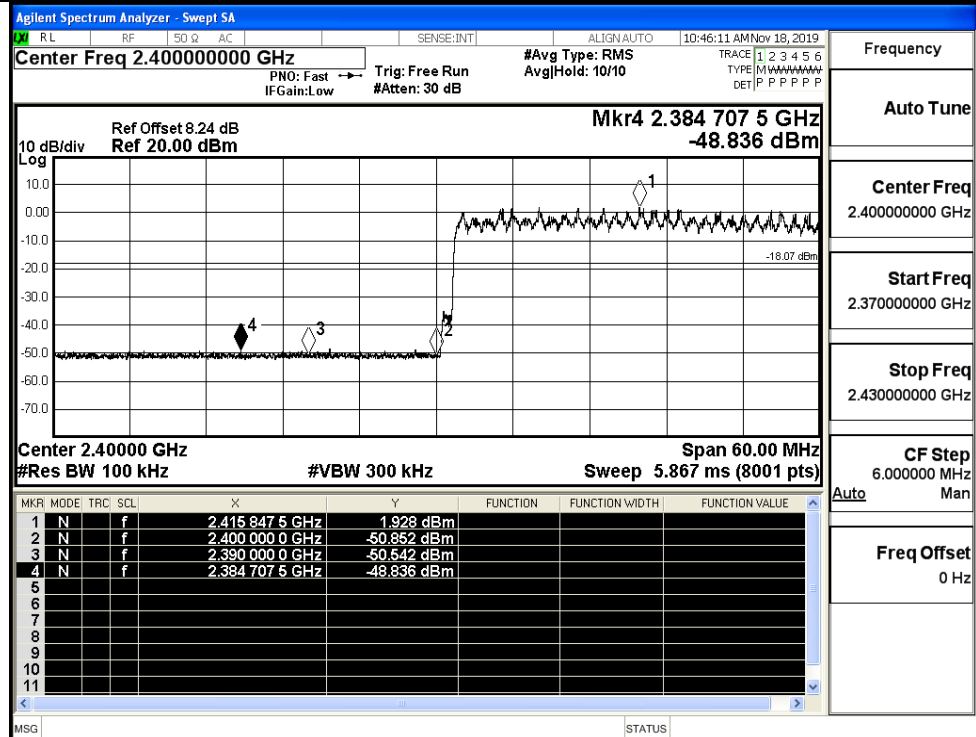
Stop Freq
2.404000000 GHz

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

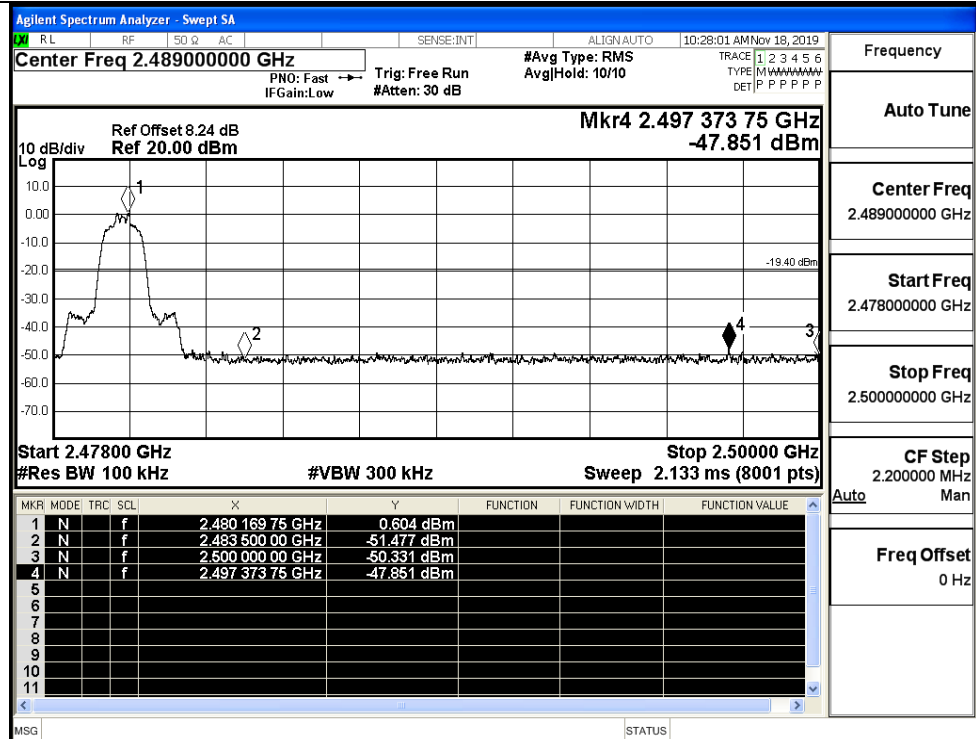
Stop Freq
2.430000000 GHz

CF Step
6.000000 MHz

Auto Man

Freq Offset
0 Hz

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



Frequency

Auto Tune

Center Freq
2.489000000 GHz

Start Freq
2.478000000 GHz

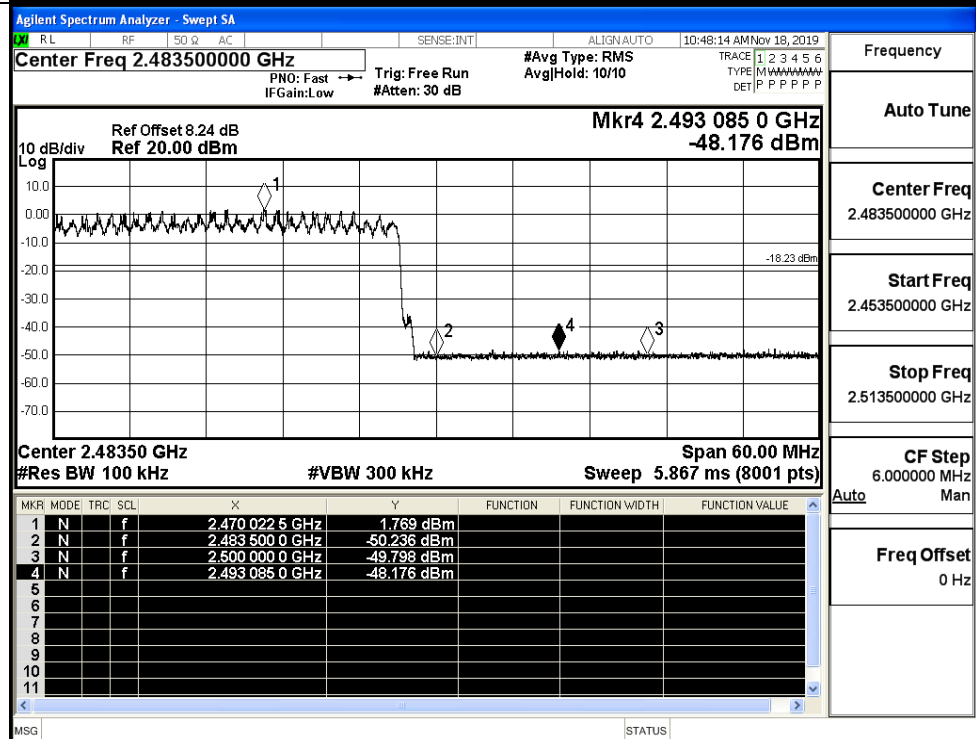
Stop Freq
2.500000000 GHz

CF Step
2.200000 MHz

Auto Man

Freq Offset
0 Hz

$\pi/4$ DQPSK/HCH/Hop



Frequency

Auto Tune

Center Freq
2.483500000 GHz

Start Freq
2.453500000 GHz

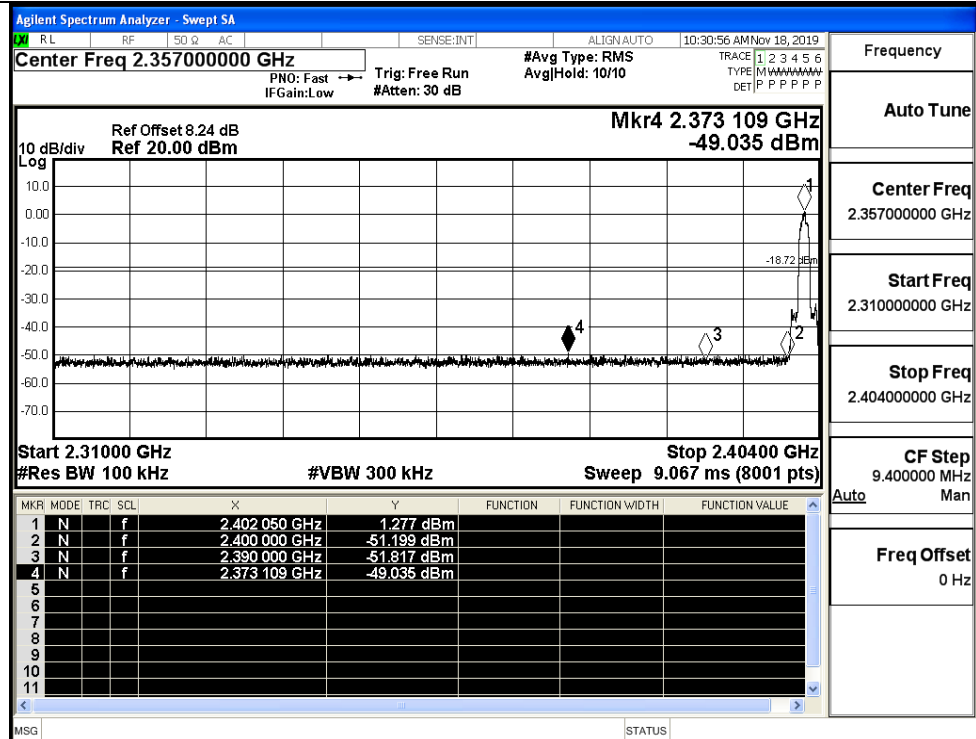
Stop Freq
2.513500000 GHz

CF Step
6.000000 MHz

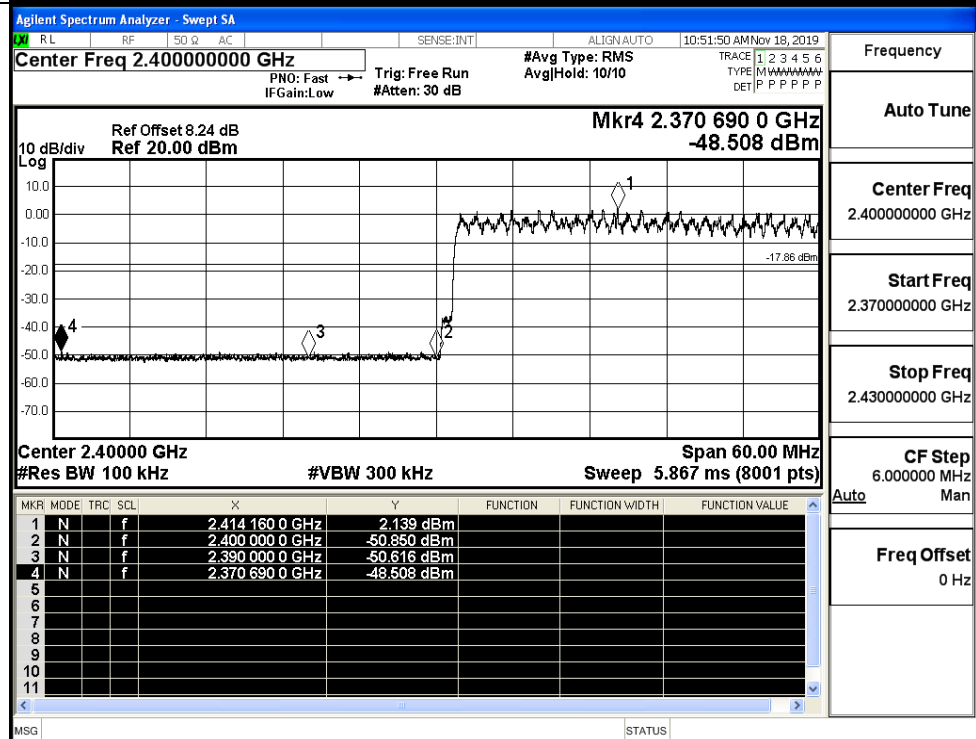
Auto Man

Freq Offset
0 Hz

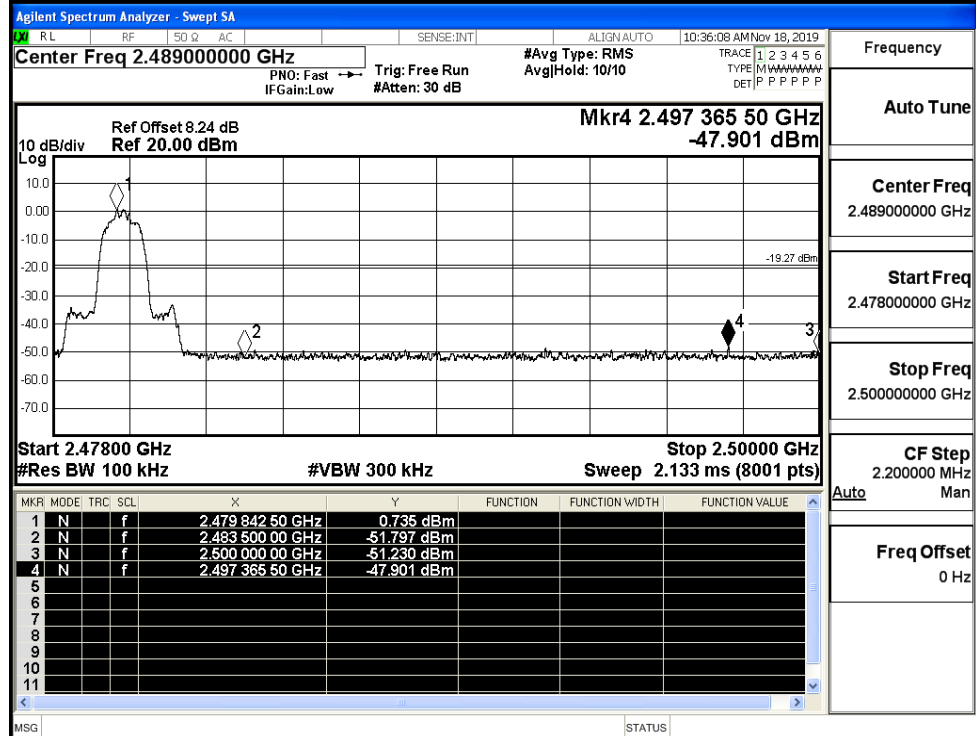
8DPSK/LCH/No Hop



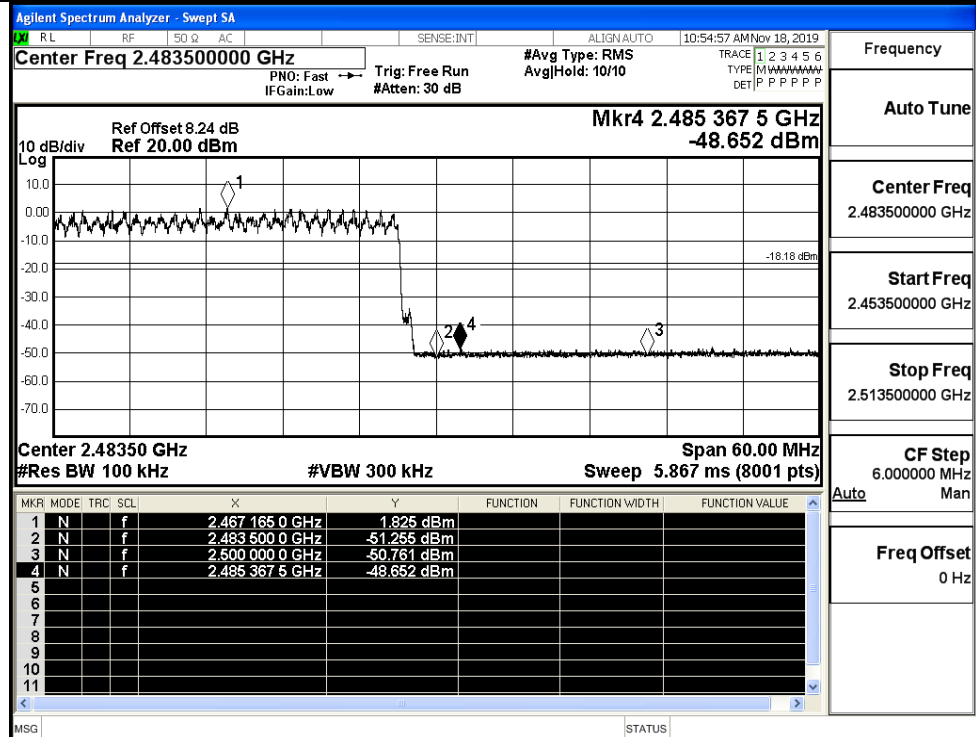
8DPSK/LCH/Hop



8DPSK/HCH/No Hop



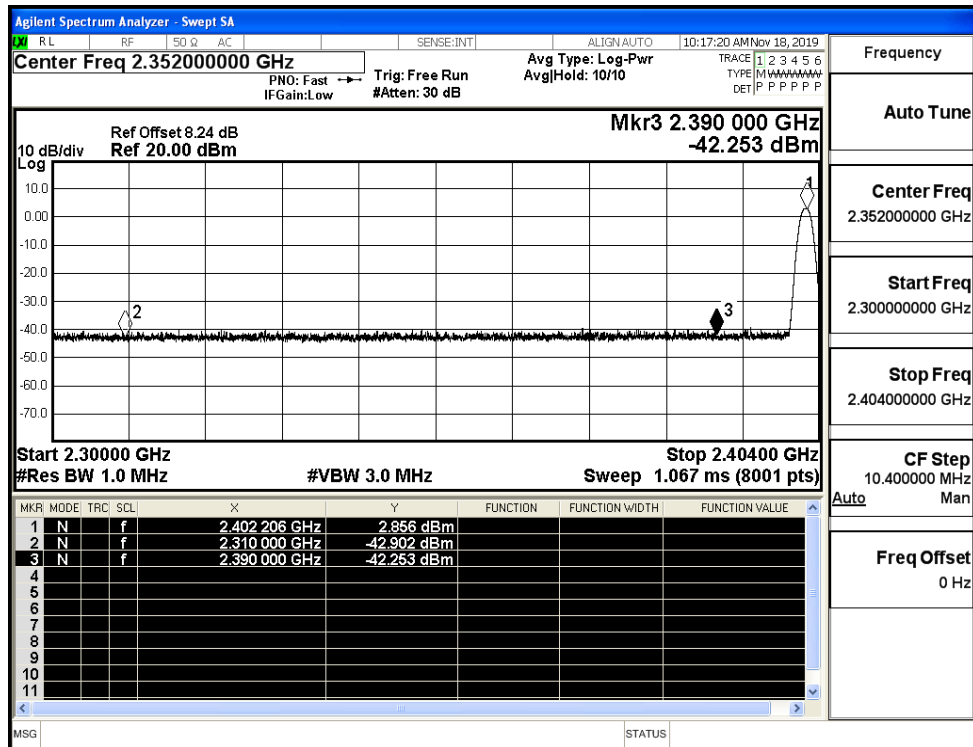
8DPSK/HCH/Hop



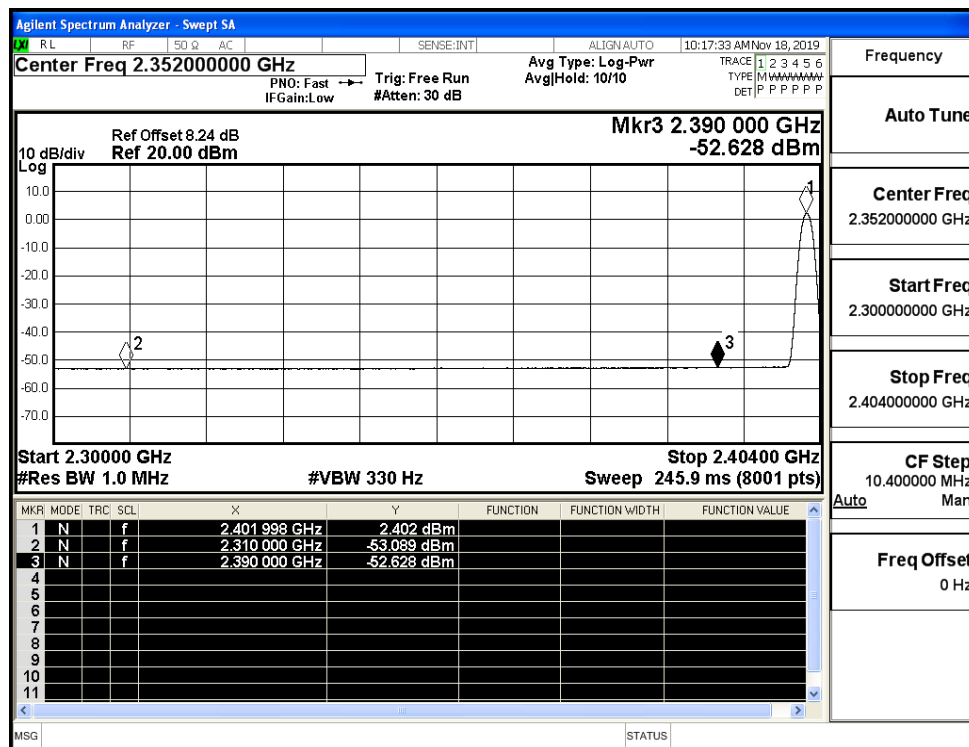
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-42.90	3.0	0	55.36	PEAK	74	PASS
	Off	2310.0	-53.09	3.0	0	45.17	AV	54	PASS
	Off	2390.0	-42.25	3.0	0	56.01	PEAK	74	PASS
	Off	2390.0	-52.63	3.0	0	45.63	AV	54	PASS
	Off	2483.5	-42.60	3.0	0	55.66	PEAK	74	PASS
	Off	2483.5	-52.18	3.0	0	46.08	AV	54	PASS
	Off	2500.0	-38.74	3.0	0	59.52	PEAK	74	PASS
	Off	2500.0	-52.09	3.0	0	46.17	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-43.38	3.0	0	54.88	PEAK	74	PASS
	Off	2310.0	-53.09	3.0	0	45.17	AV	54	PASS
	Off	2390.0	-43.04	3.0	0	55.22	PEAK	74	PASS
	Off	2390.0	-52.67	3.0	0	45.59	AV	54	PASS
	Off	2483.5	-41.04	3.0	0	57.22	PEAK	74	PASS
	Off	2483.5	-52.13	3.0	0	46.13	AV	54	PASS
	Off	2500.0	-39.64	3.0	0	58.62	PEAK	74	PASS
	Off	2500.0	-52.03	3.0	0	46.23	AV	54	PASS
8DPSK	Off	2310.0	-42.90	3.0	0	55.36	PEAK	74	PASS
	Off	2310.0	-53.00	3.0	0	45.26	AV	54	PASS
	Off	2390.0	-41.99	3.0	0	56.27	PEAK	74	PASS
	Off	2390.0	-52.72	3.0	0	45.54	AV	54	PASS
	Off	2483.5	-41.49	3.0	0	56.77	PEAK	74	PASS
	Off	2483.5	-52.01	3.0	0	46.25	AV	54	PASS
	Off	2500.0	-41.99	3.0	0	56.27	PEAK	74	PASS
	Off	2500.0	-52.07	3.0	0	46.19	AV	54	PASS

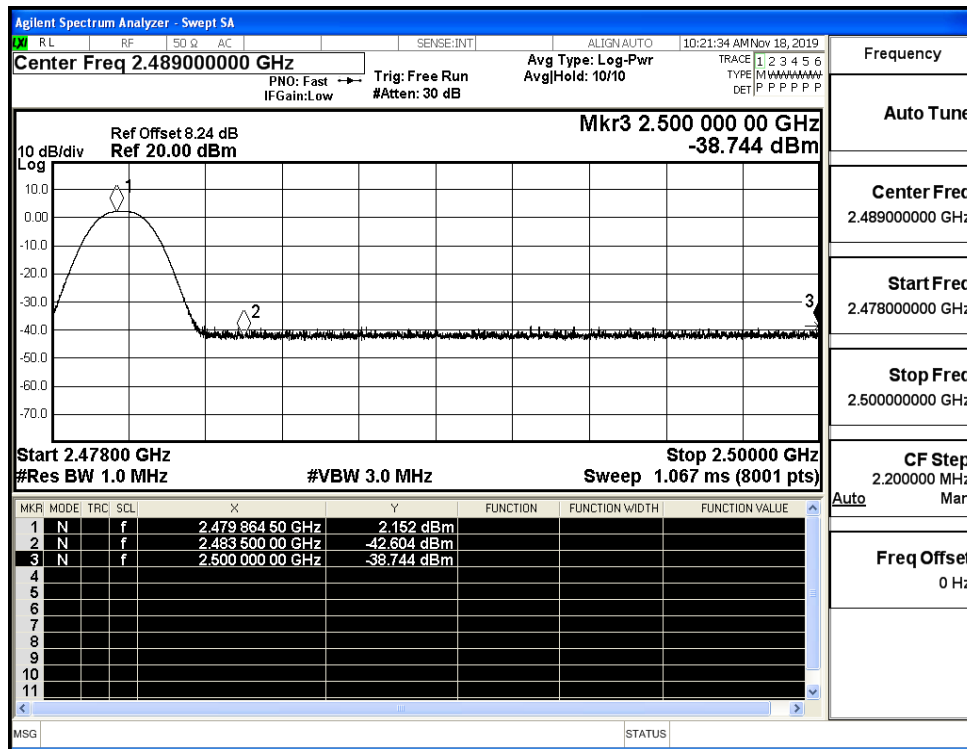
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



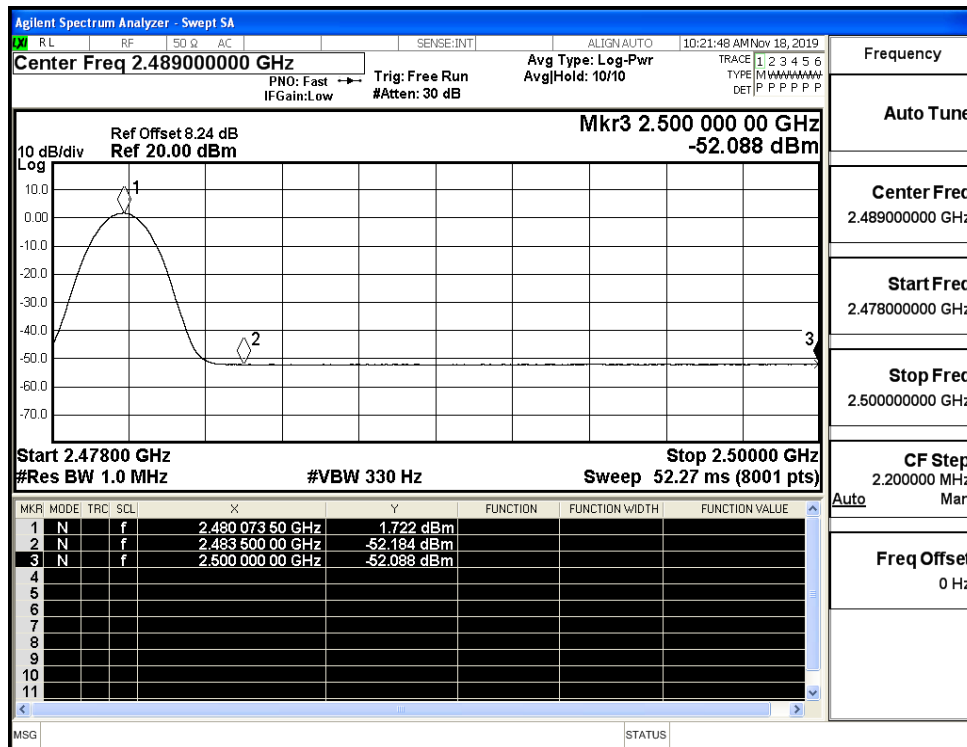
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)



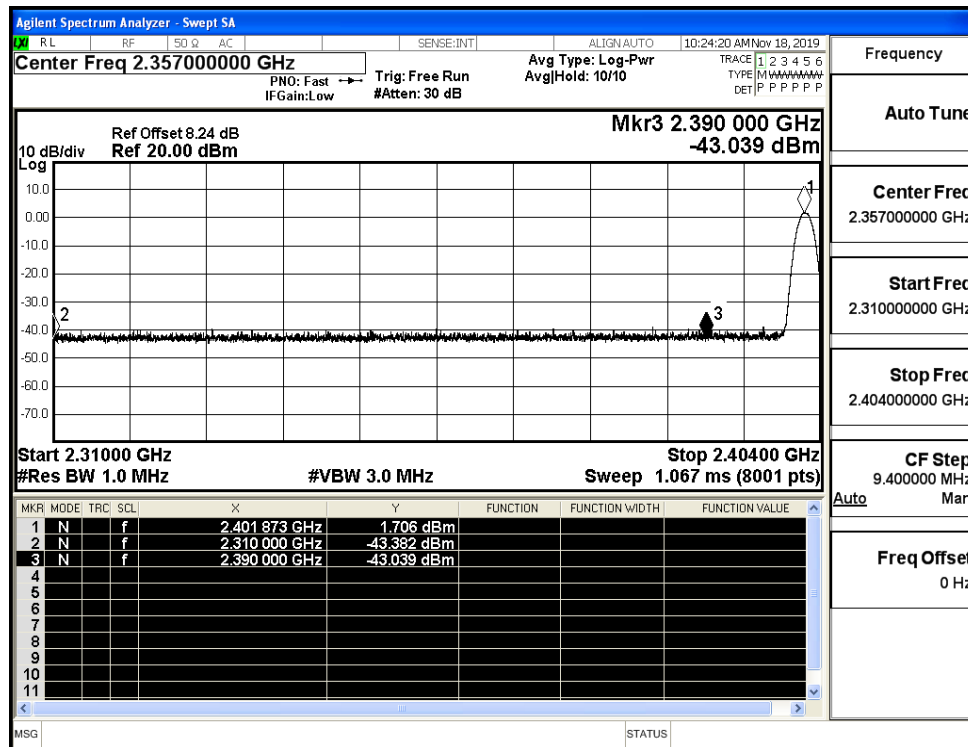
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)



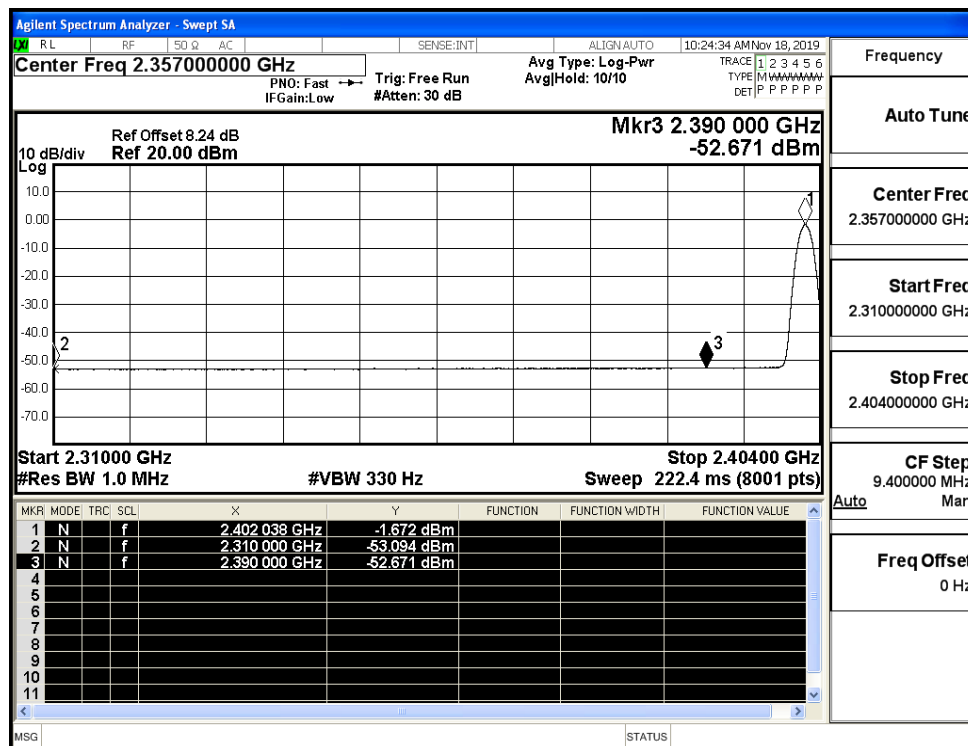
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)



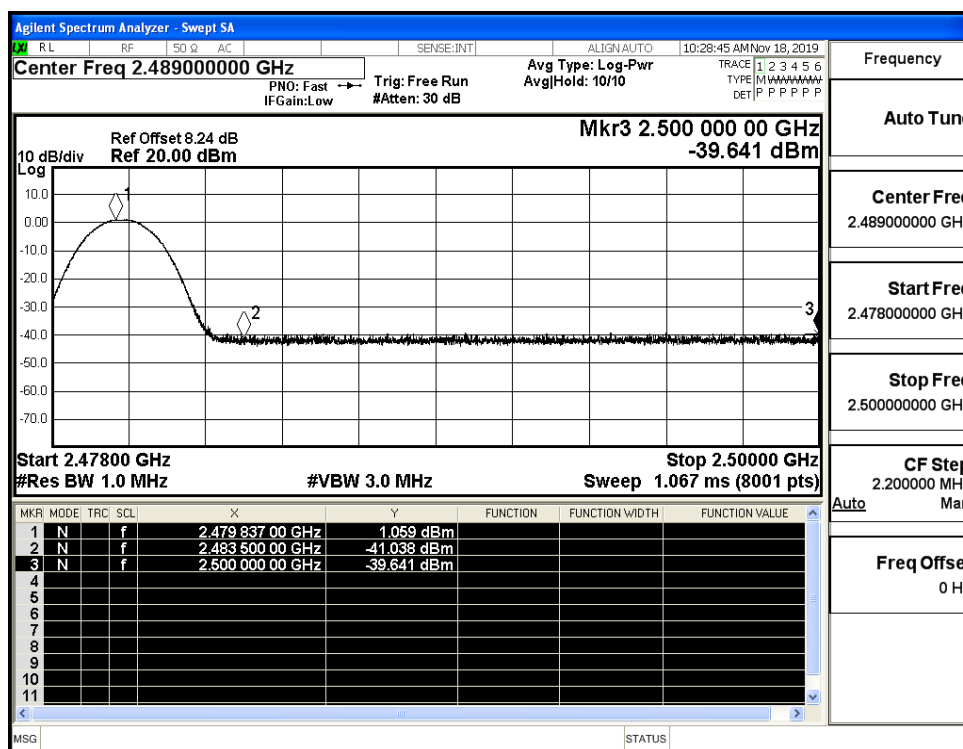
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (Low Channel)



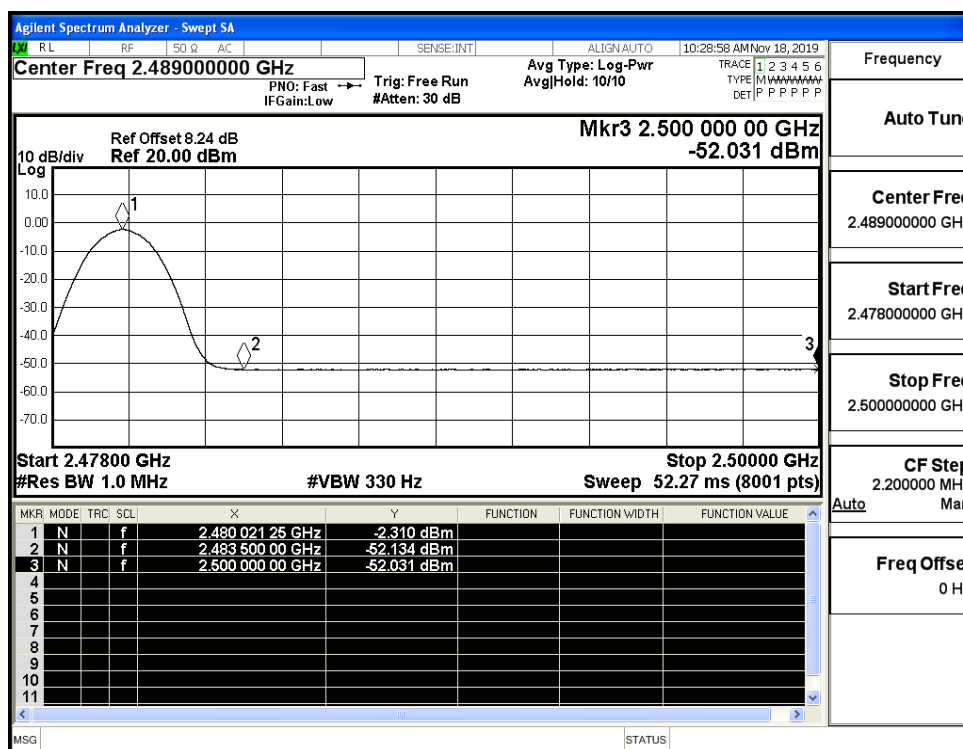
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (Low Channel)



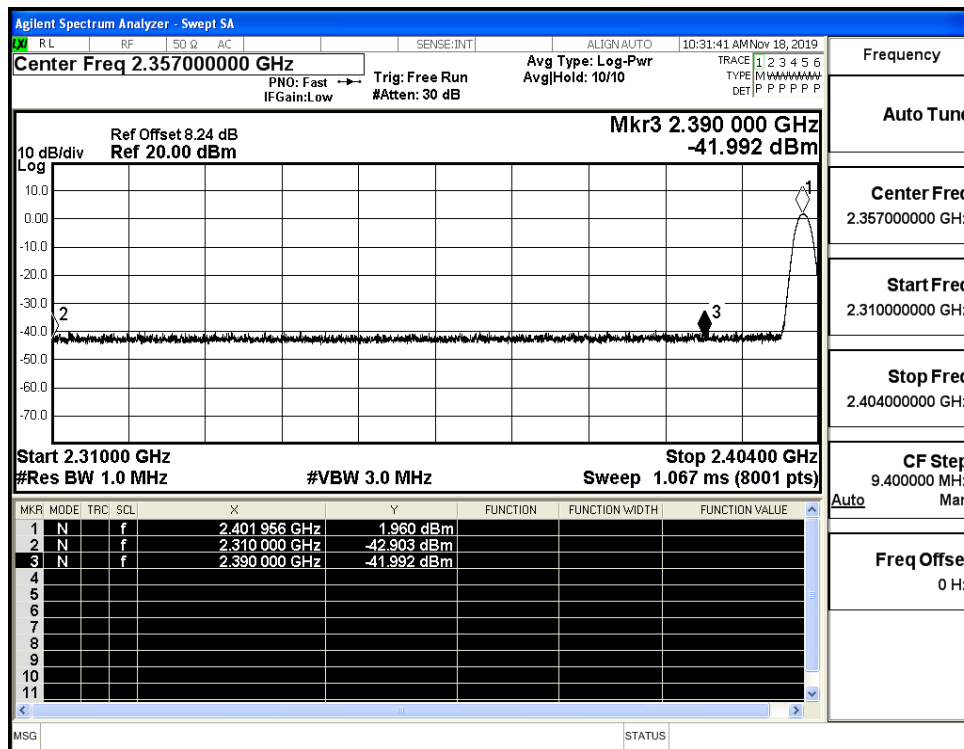
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (High Channel)



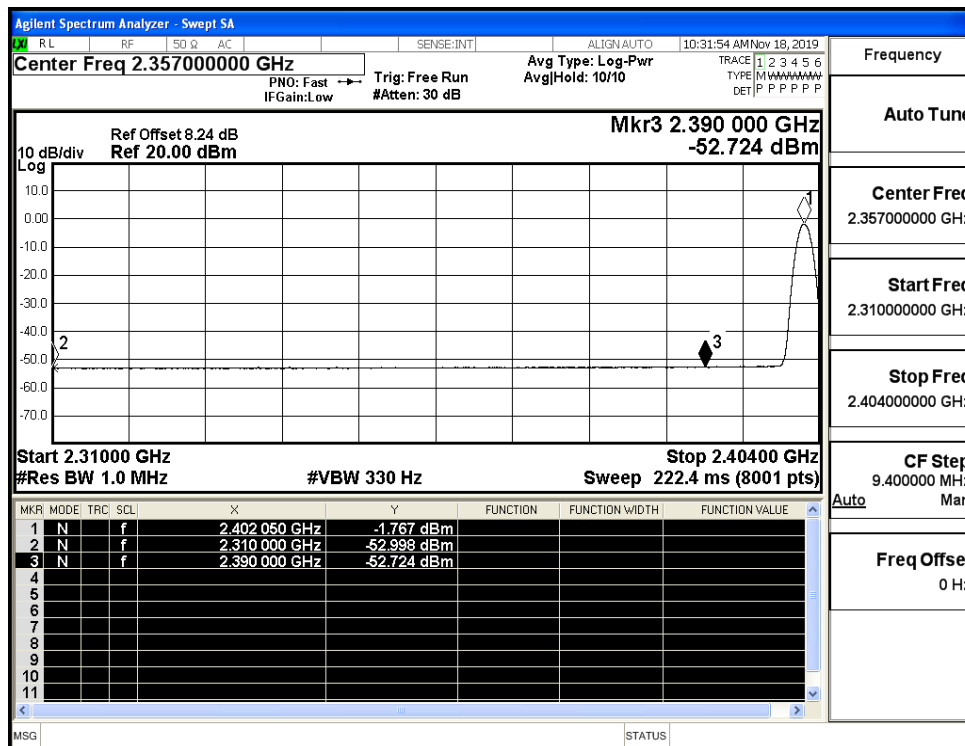
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (High Channel)



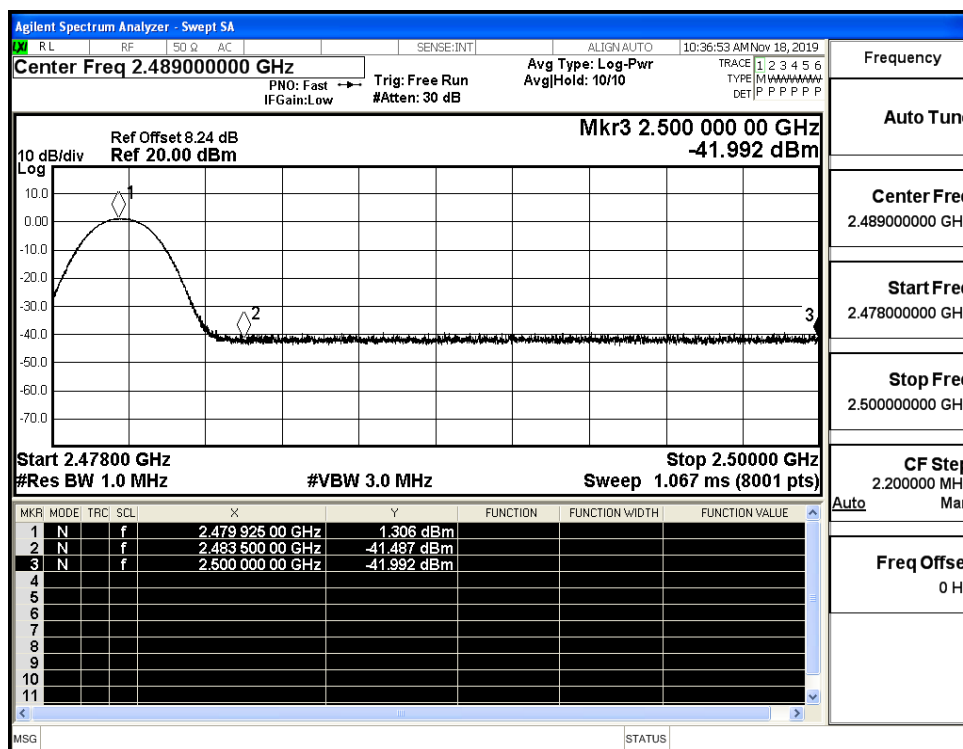
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)

