

Appendix A

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

Product Name: Mishiko Collar

Trade Mark: MISHIKO

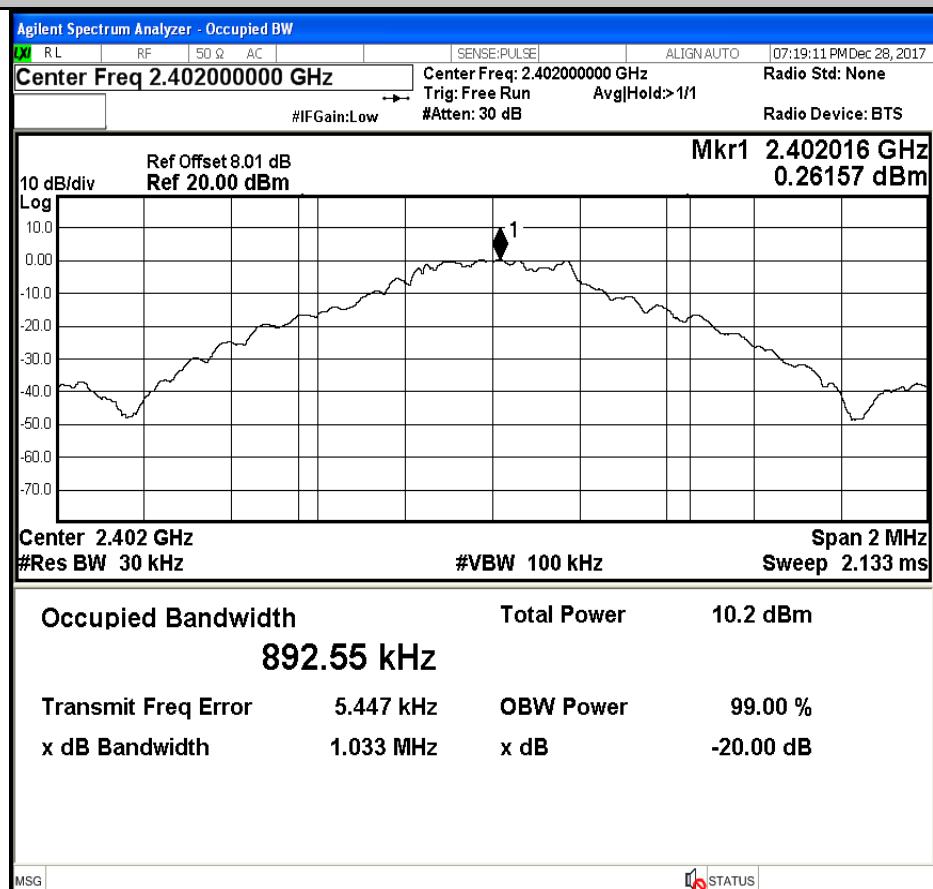
Test Model: M103

FCC ID: 2AID9M103

A.1 20 dB Bandwidth

Test Mode	Test Channel	EBW[MHz]	Limit[MHz]	Verdict
GFSK	2402	1.033	---	PASS
	2441	0.9665	---	PASS
	2480	1.032	---	PASS
$\pi/4$ -DQPSK	2402	1.289	---	PASS
	2441	1.288	---	PASS
	2480	1.288	---	PASS
8-DPSK	2402	1.290	---	PASS
	2441	1.298	---	PASS
	2480	1.296	---	PASS

20 dB Bandwidth_GFSK_2402



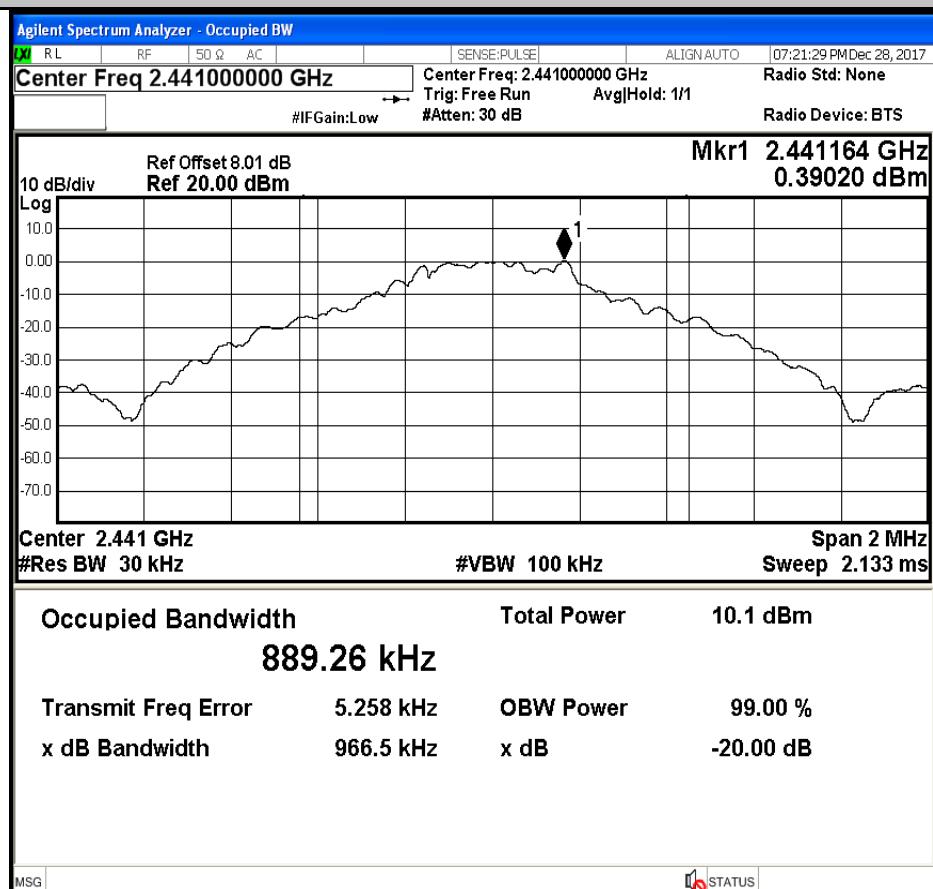
Frequency

Center Freq
2.402000000 GHz

CF Step
200.000 kHz
Auto

Freq Offset
0 Hz

20 dB Bandwidth_GFSK_2441

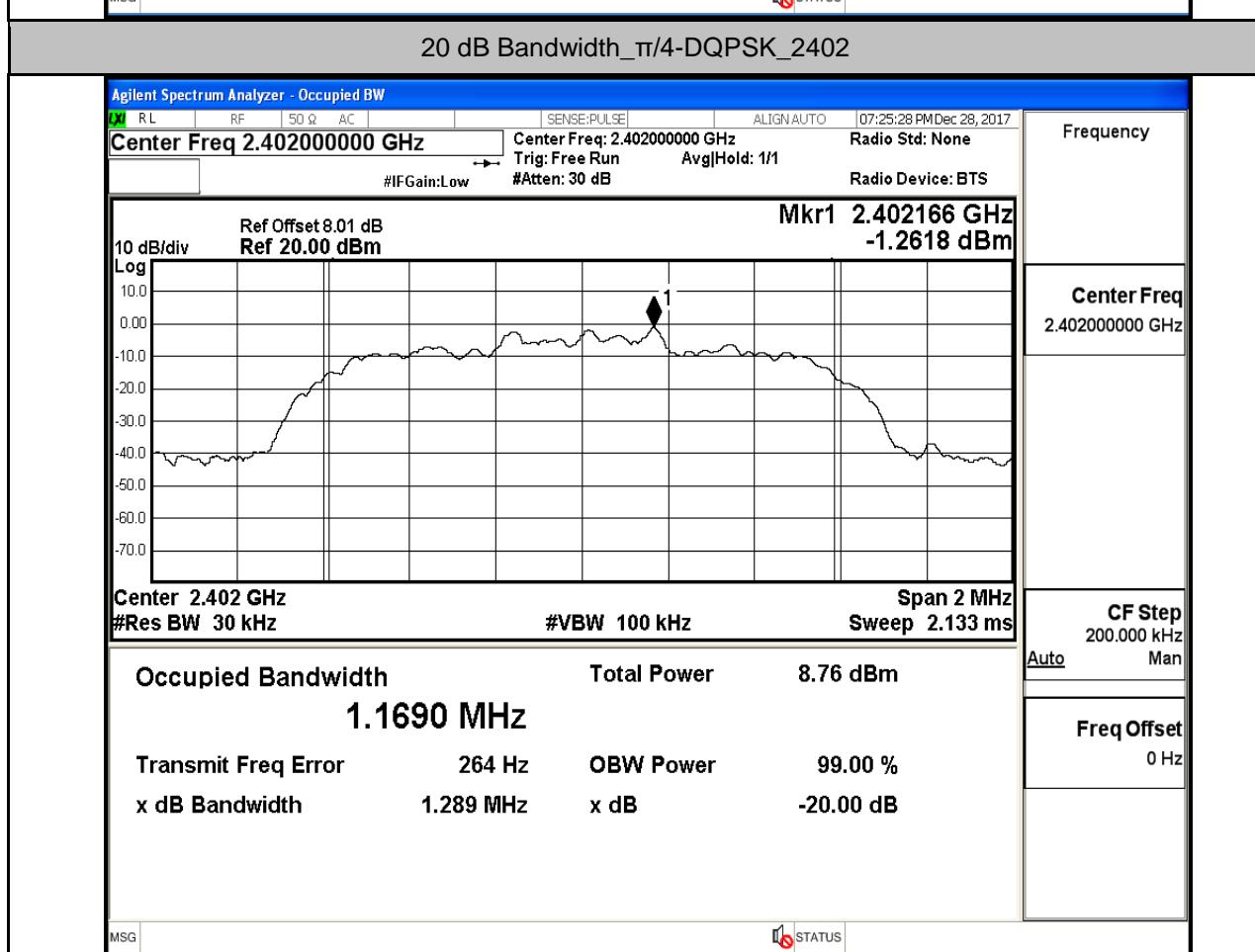
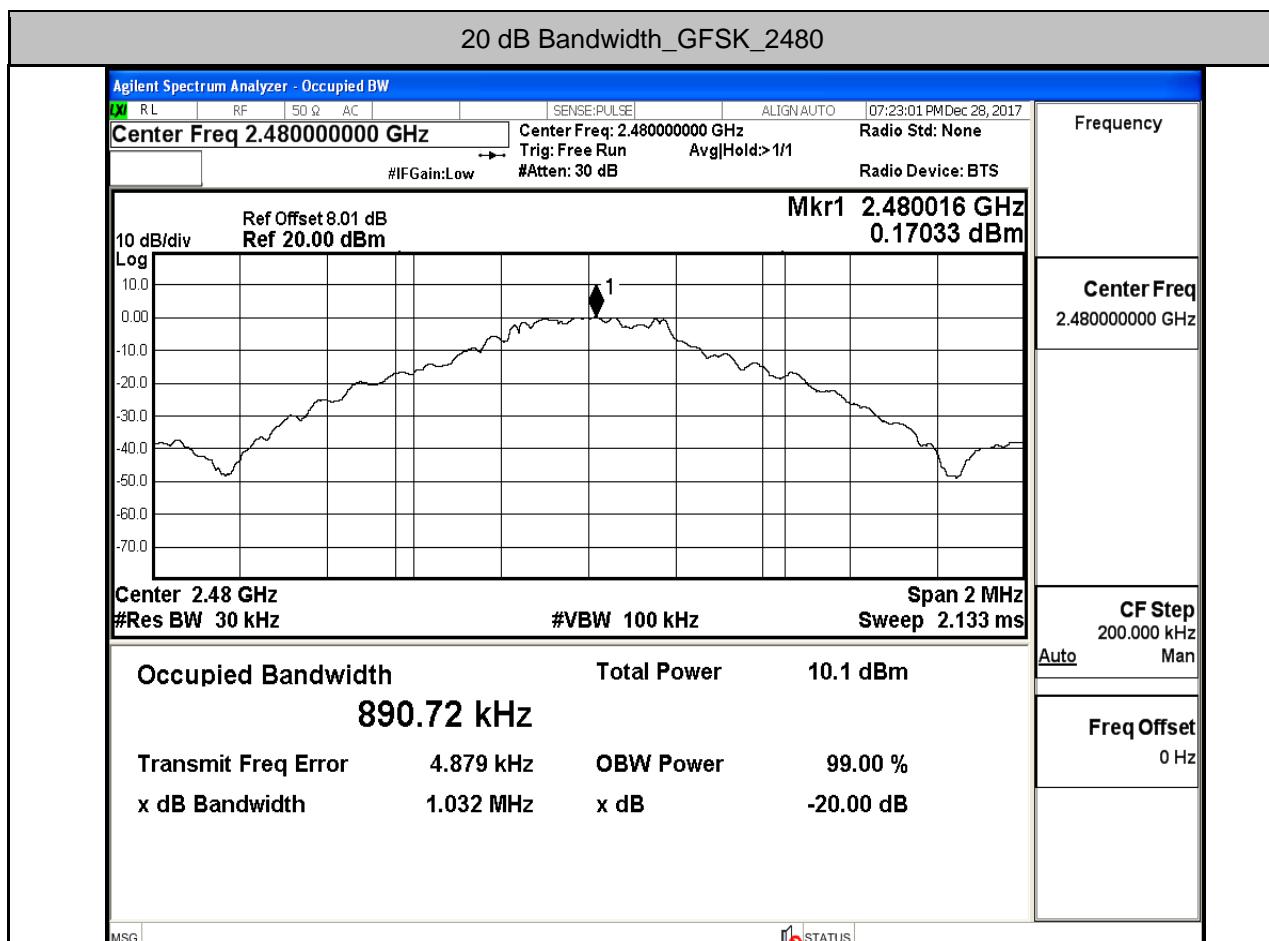


Frequency

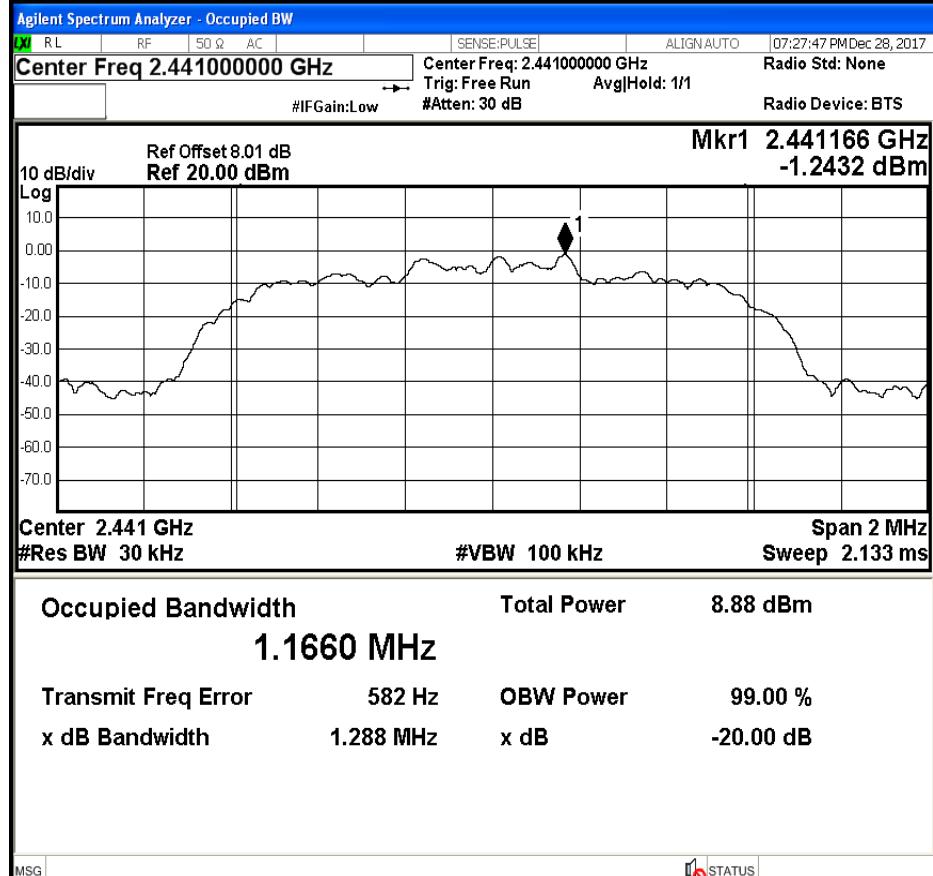
Center Freq
2.441000000 GHz

CF Step
200.000 kHz
Auto

Freq Offset
0 Hz



20 dB Bandwidth_π/4-DQPSK_2441



Frequency

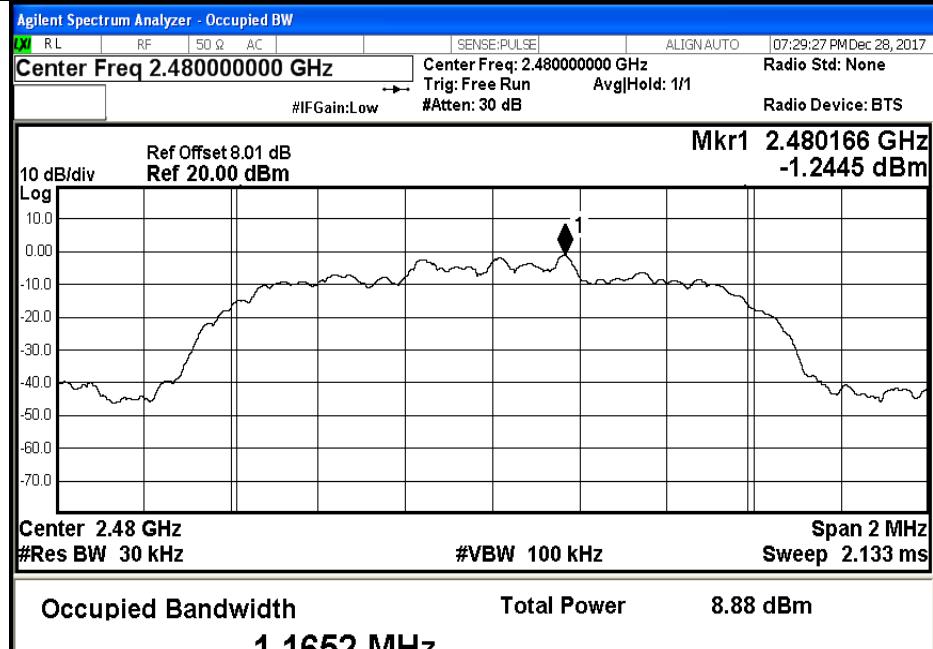
Center Freq
2.441000000 GHz

CF Step
200.000 kHz

Auto Man

Freq Offset
0 Hz

20 dB Bandwidth_π/4-DQPSK_2480



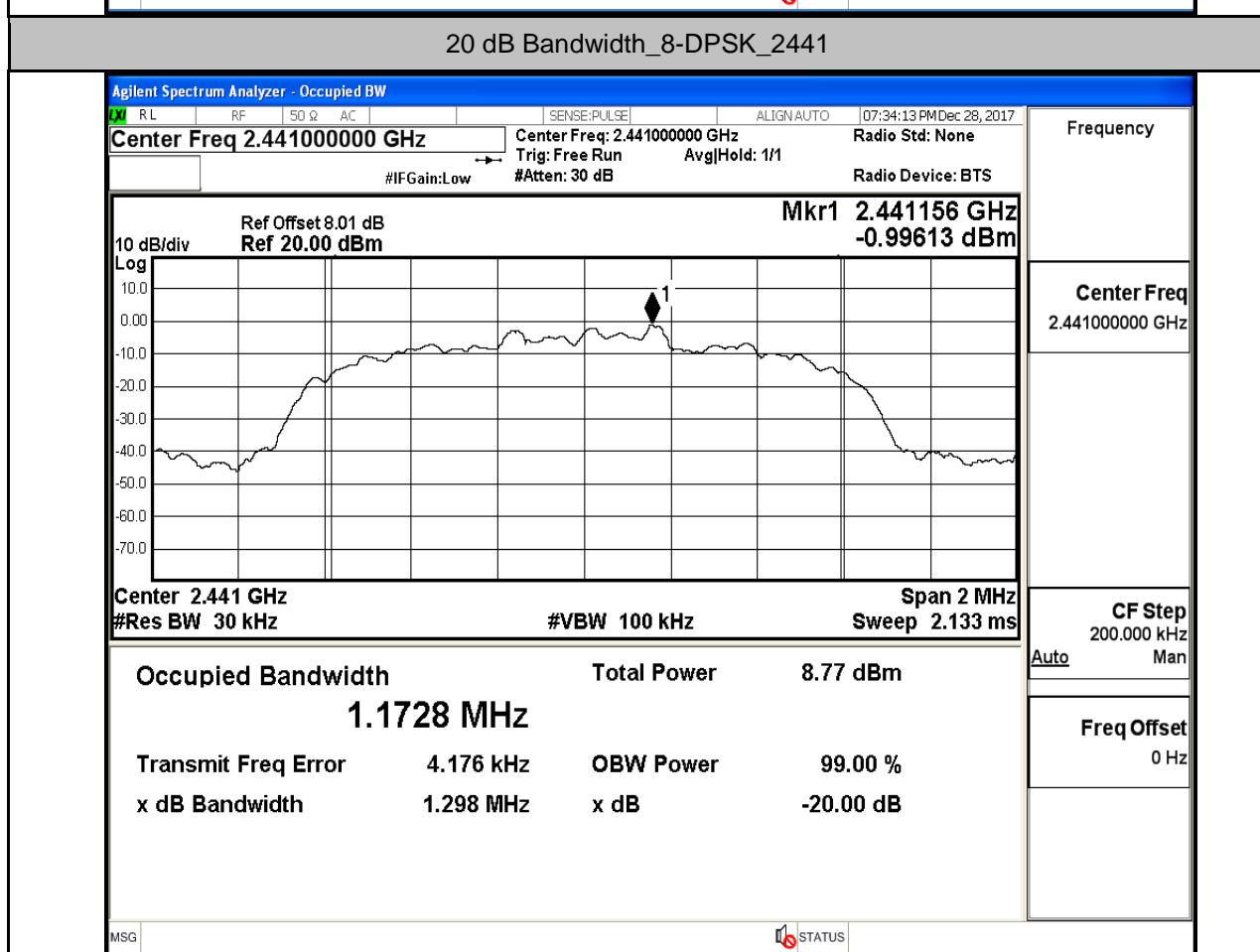
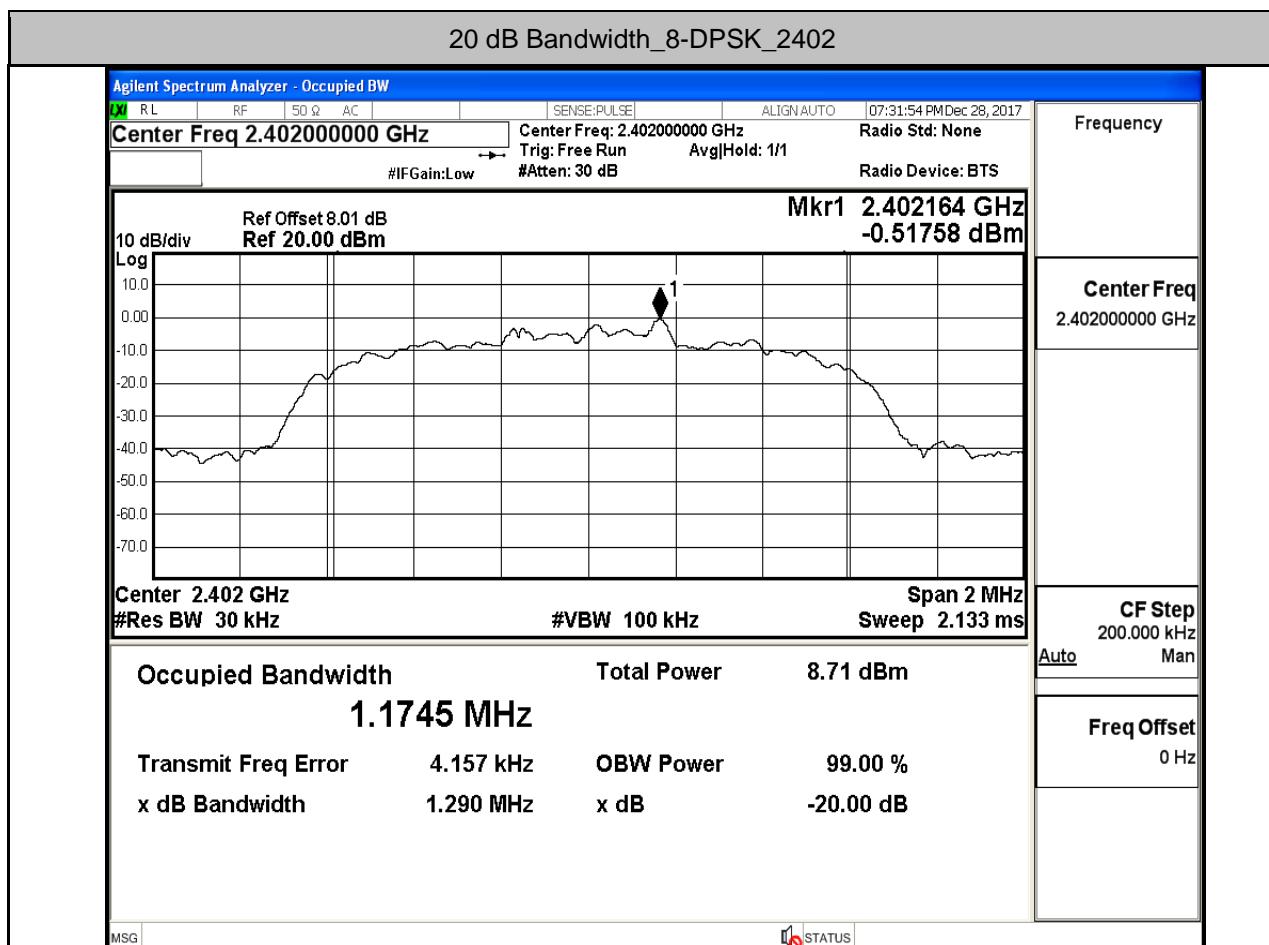
Frequency

Center Freq
2.480000000 GHz

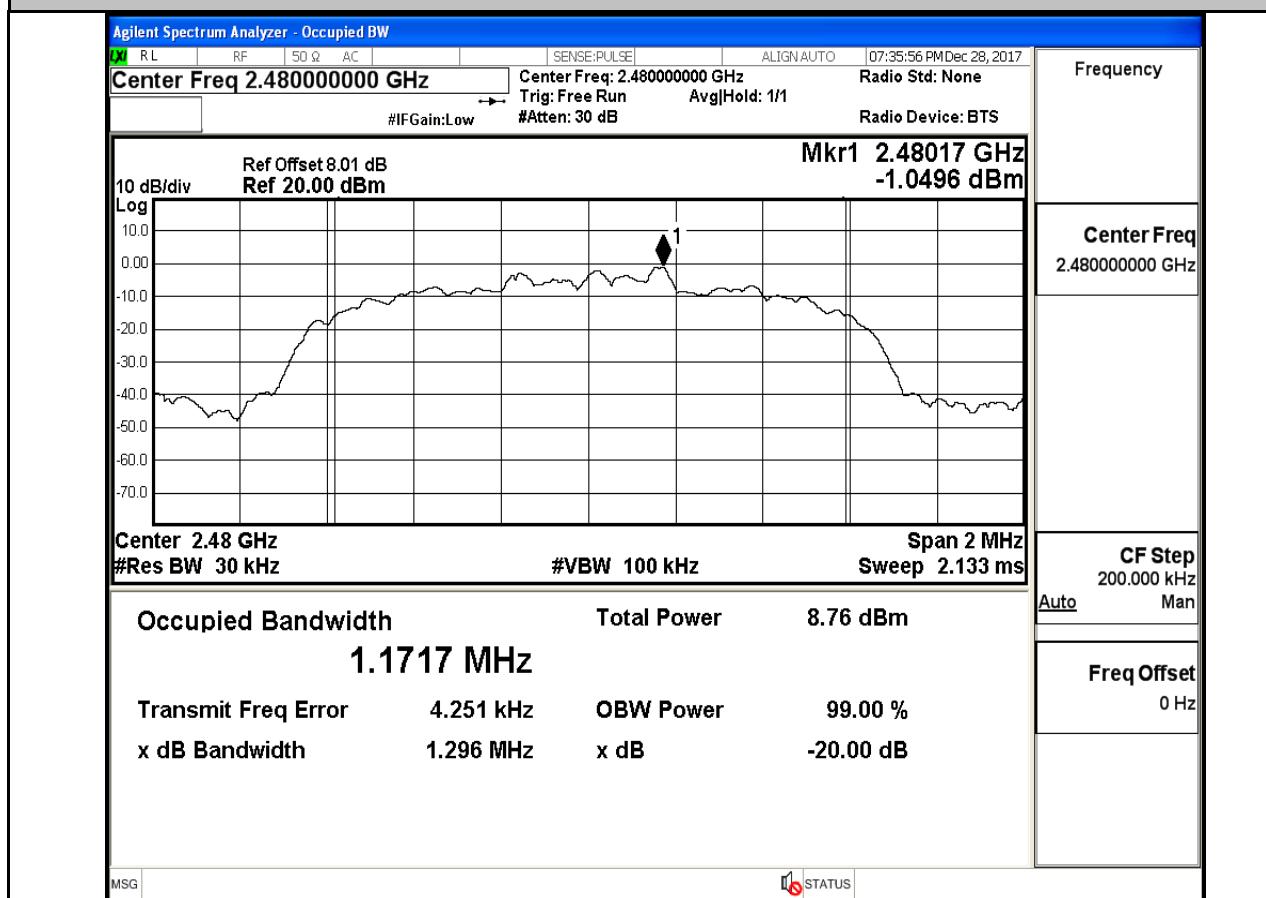
CF Step
200.000 kHz

Auto Man

Freq Offset
0 Hz



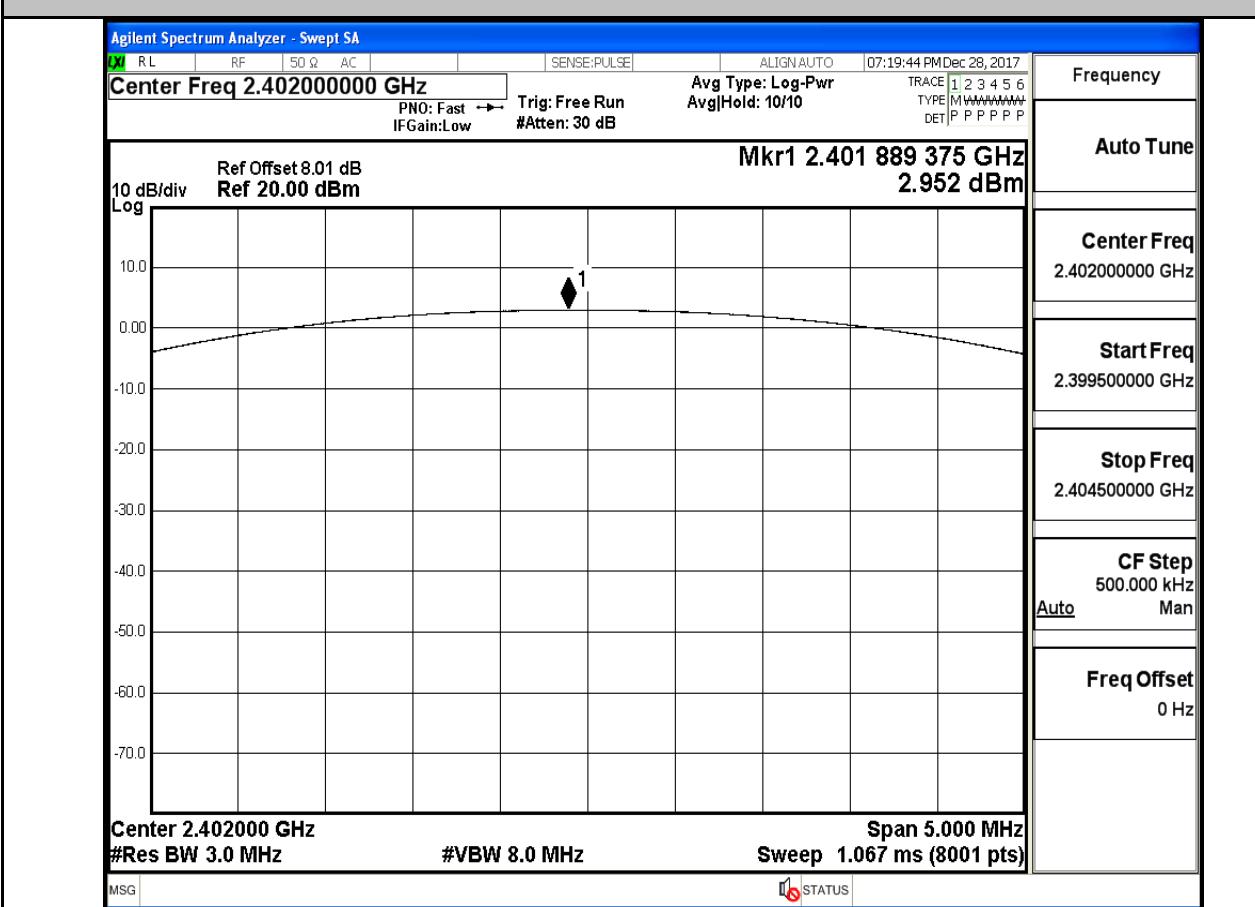
20 dB Bandwidth_8-DPSK_2480



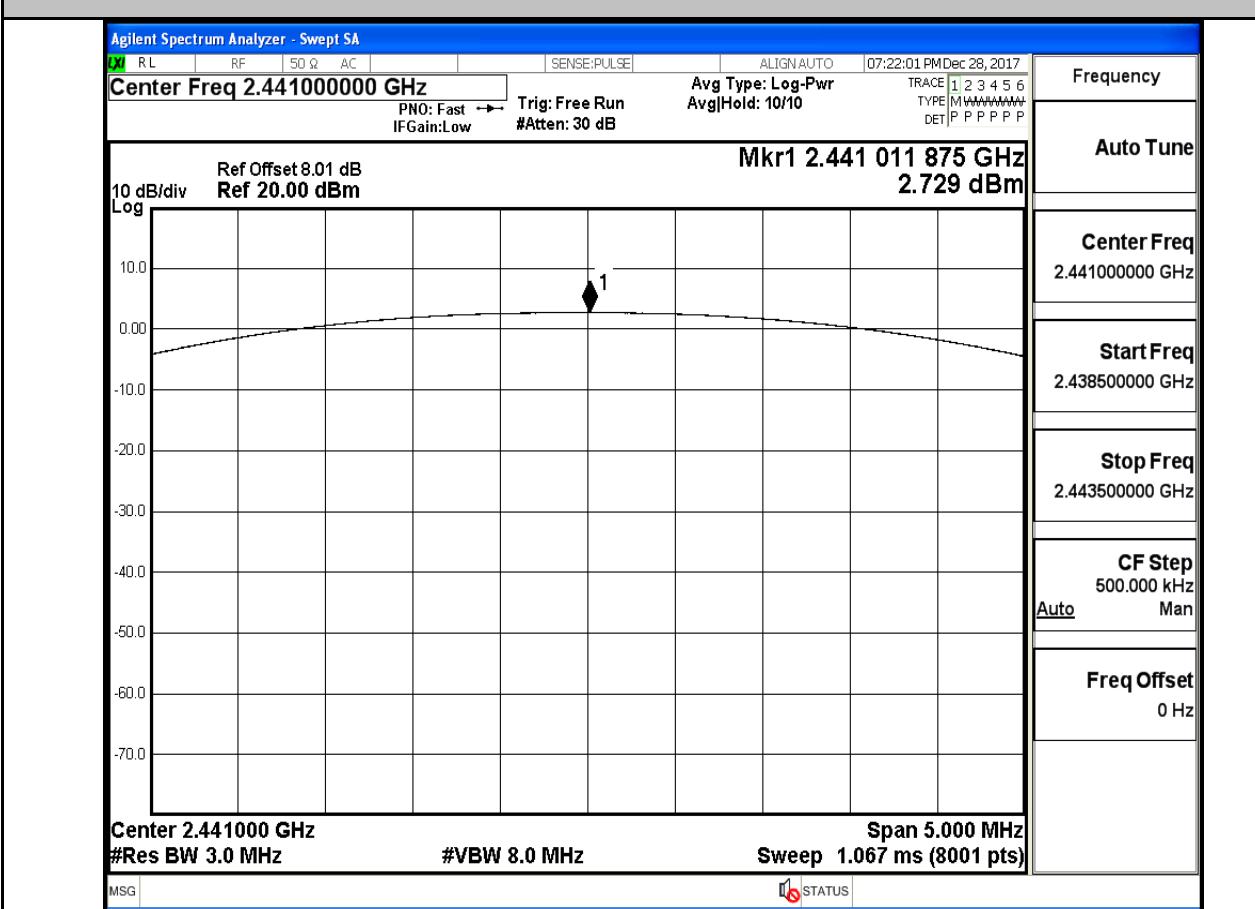
A.2 Conducted Peak Output Power

Test Mode	Test Channel	Power[dBm]	Limit[dBm]	Verdict
GFSK	2402	2.952	21	PASS
	2441	2.729	21	PASS
	2480	2.813	21	PASS
$\pi/4$ -DQPSK	2402	2.459	21	PASS
	2441	2.563	21	PASS
	2480	2.642	21	PASS
8-DPSK	2402	2.688	21	PASS
	2441	2.817	21	PASS
	2480	2.876	21	PASS

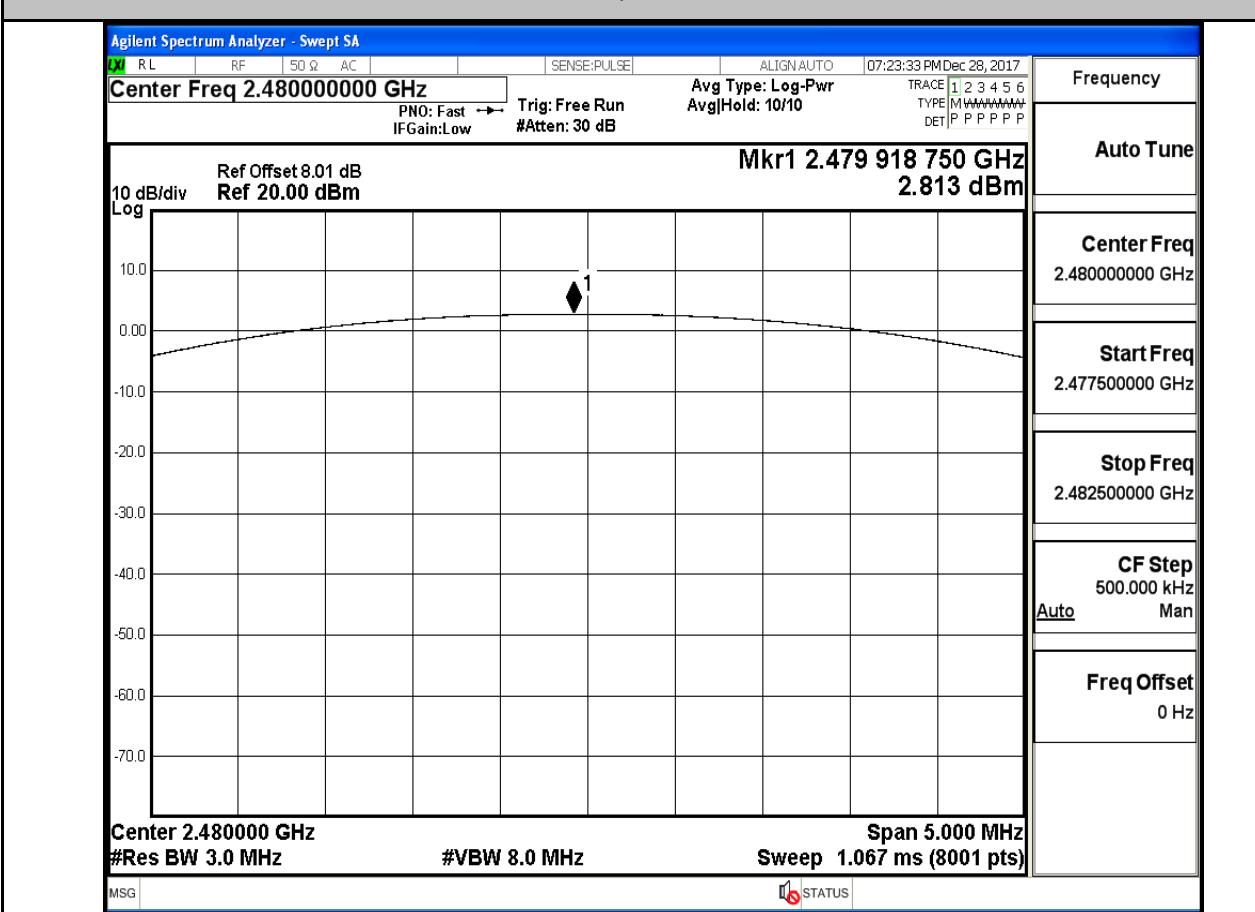
Conducted Peak Output Power_GFSK_2402



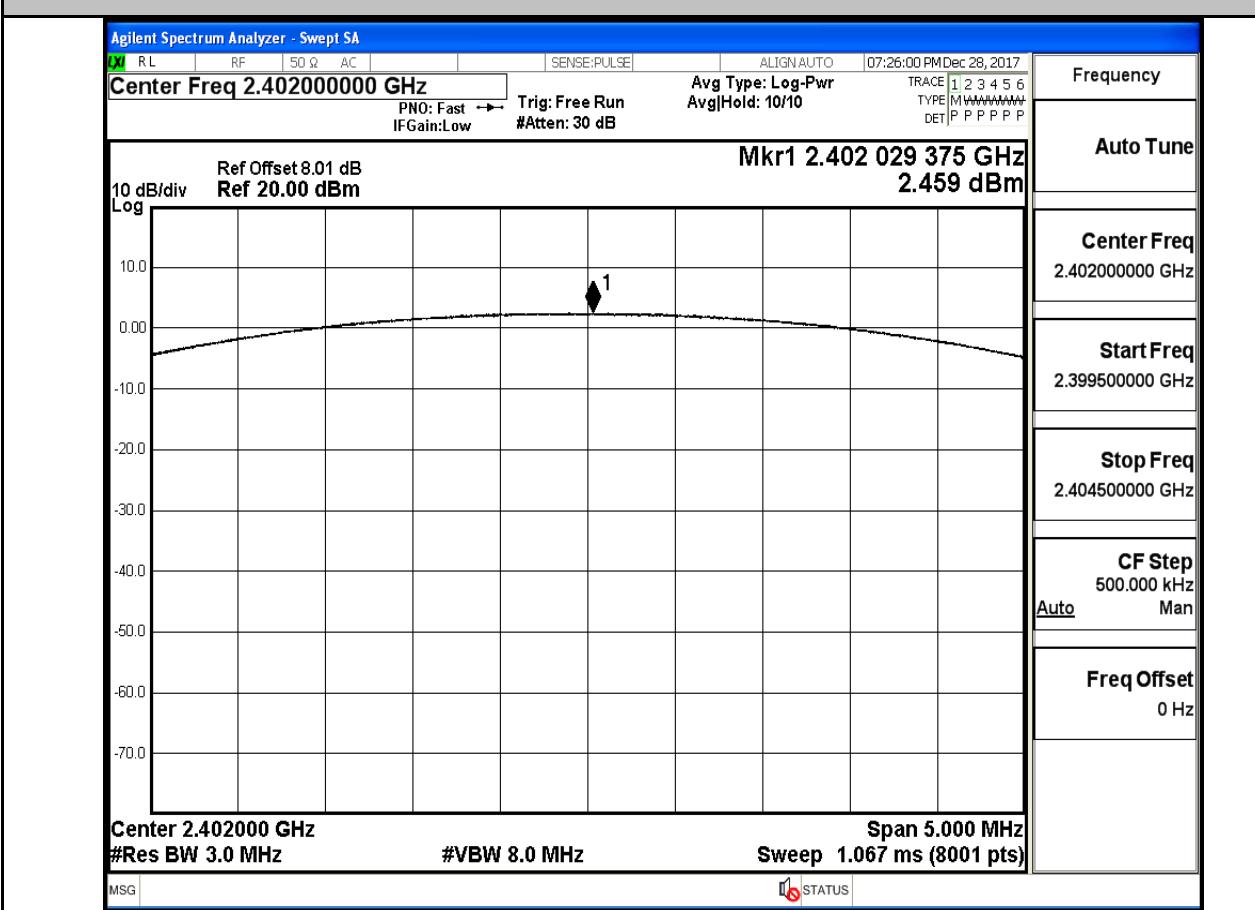
Conducted Peak Output Power_GFSK_2441



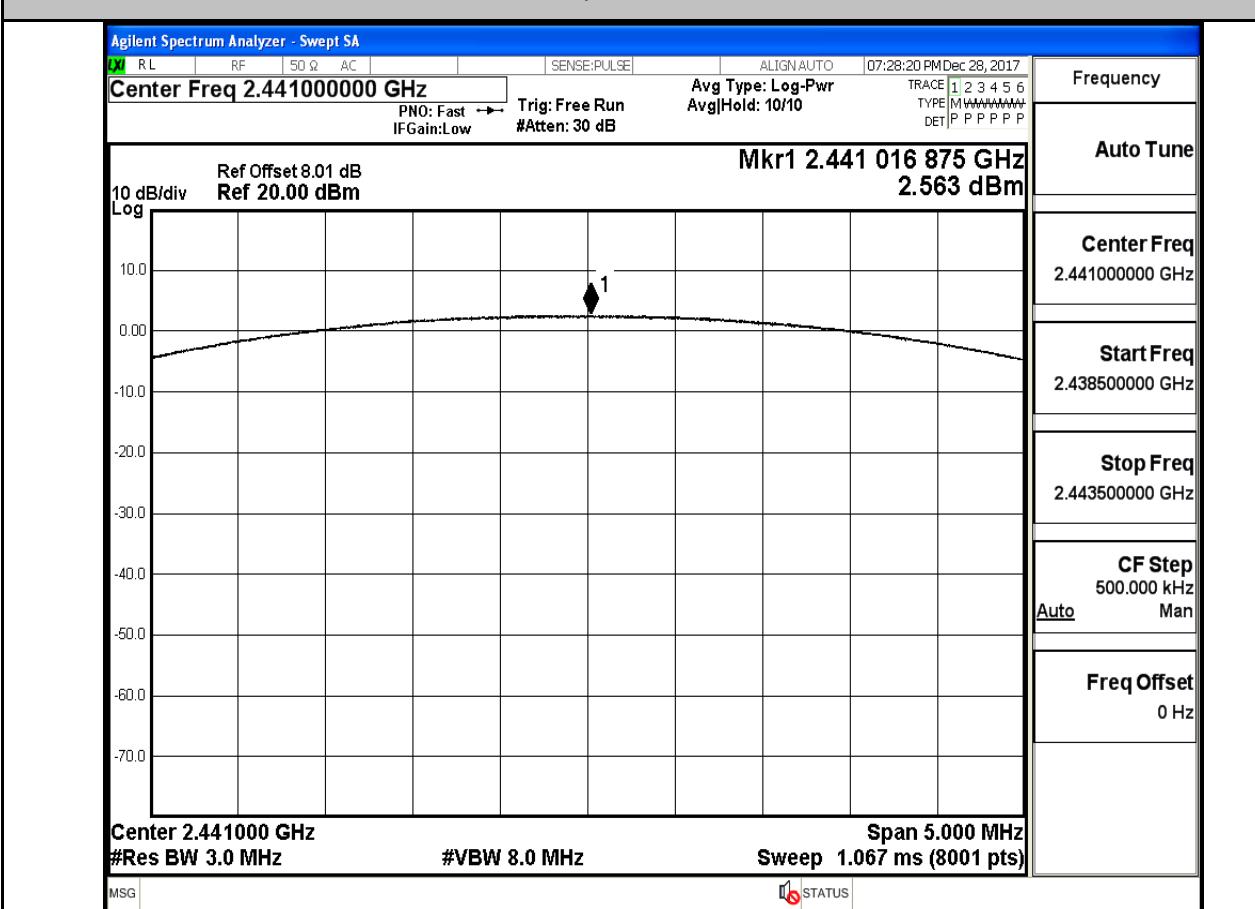
Conducted Peak Output Power_GFSK_2480



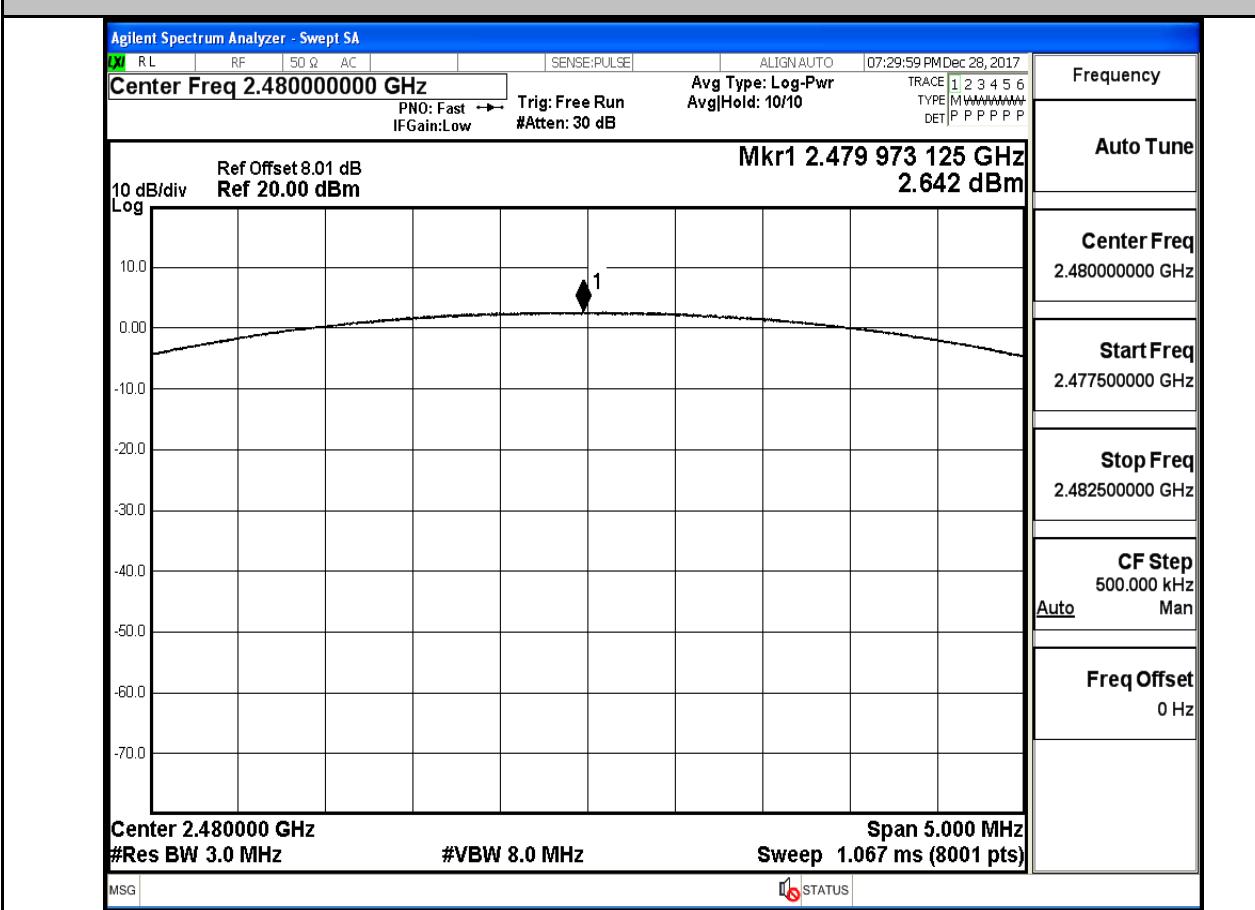
Conducted Peak Output Power_π/4-DQPSK_2402



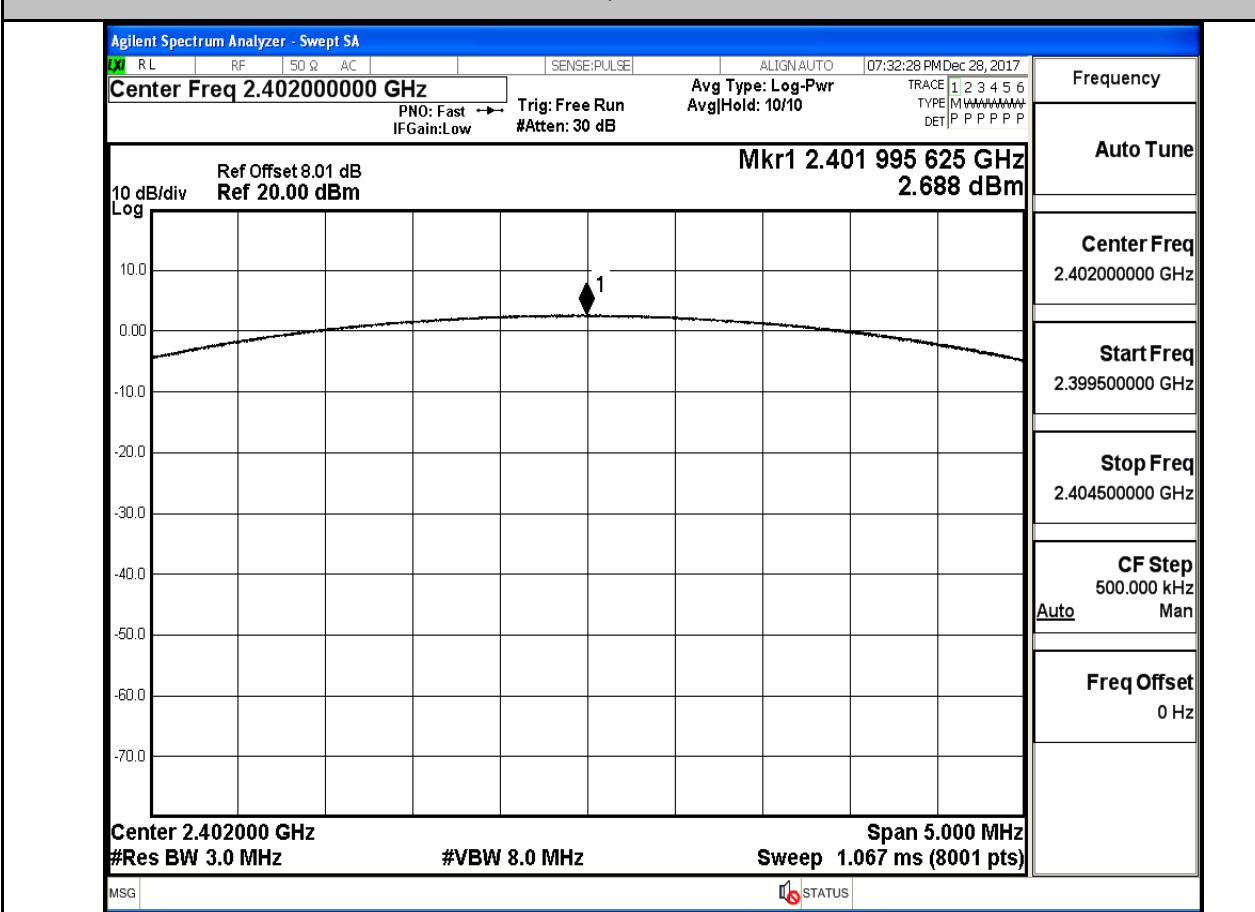
Conducted Peak Output Power_π/4-DQPSK_2441



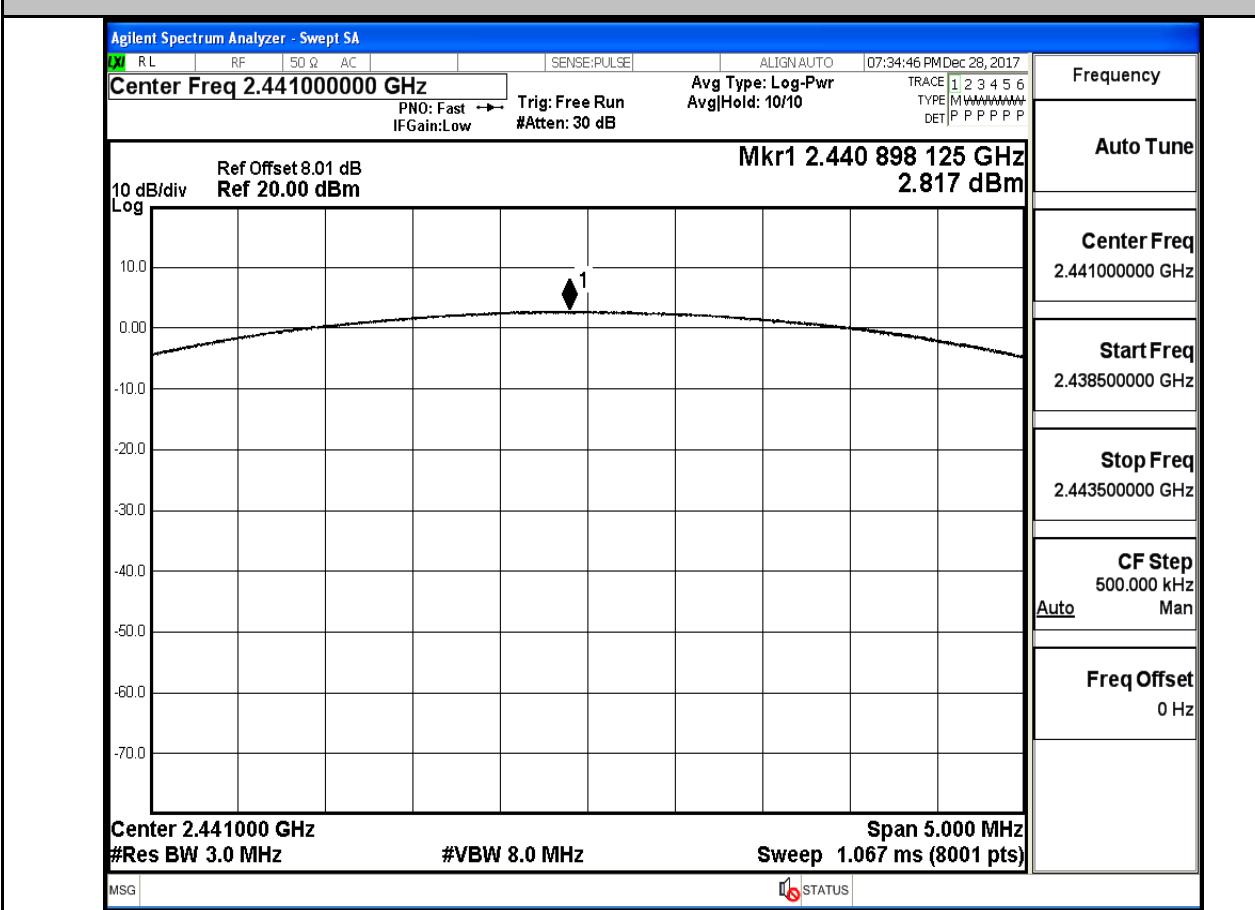
Conducted Peak Output Power_π/4-DQPSK_2480



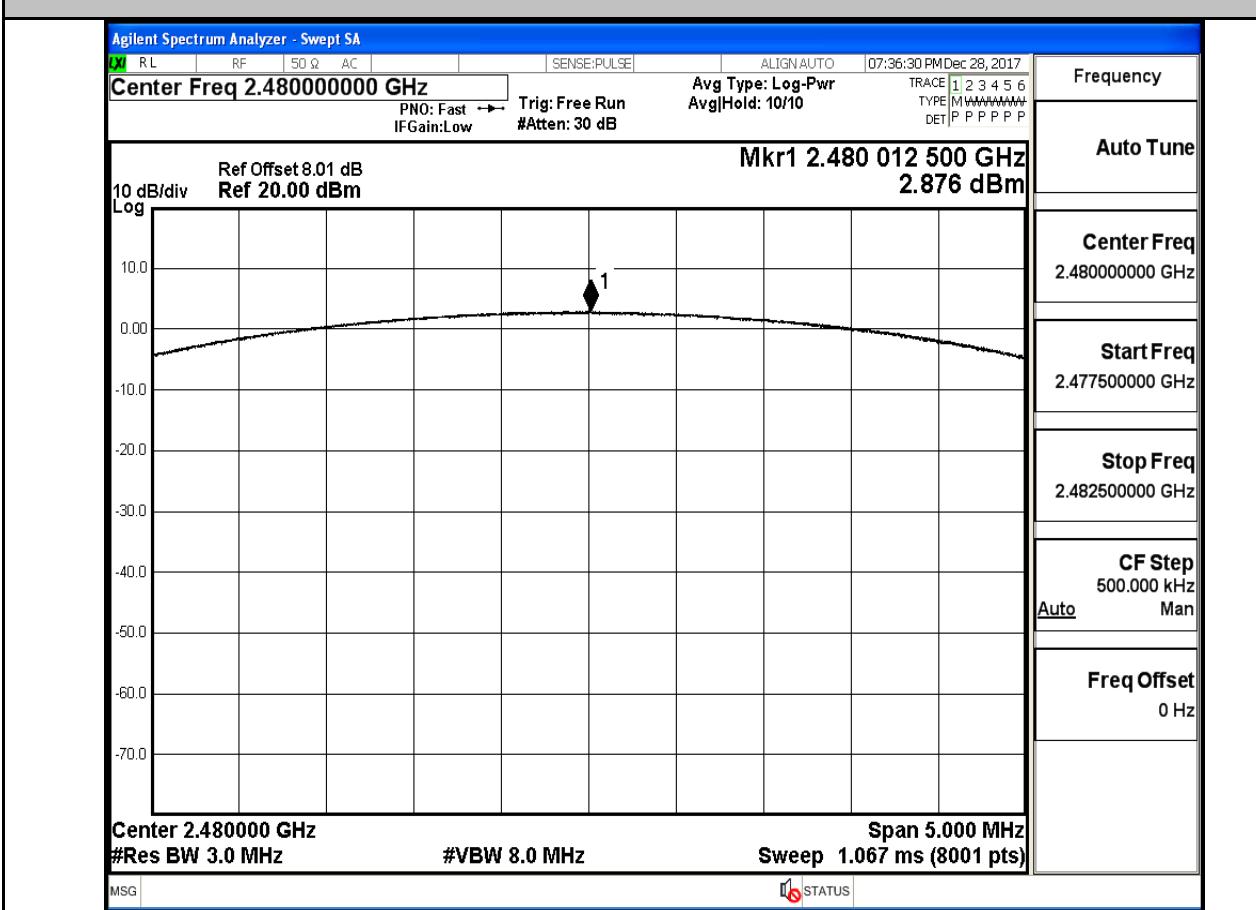
Conducted Peak Output Power_8-DPSK_2402



Conducted Peak Output Power_8-DPSK_2441



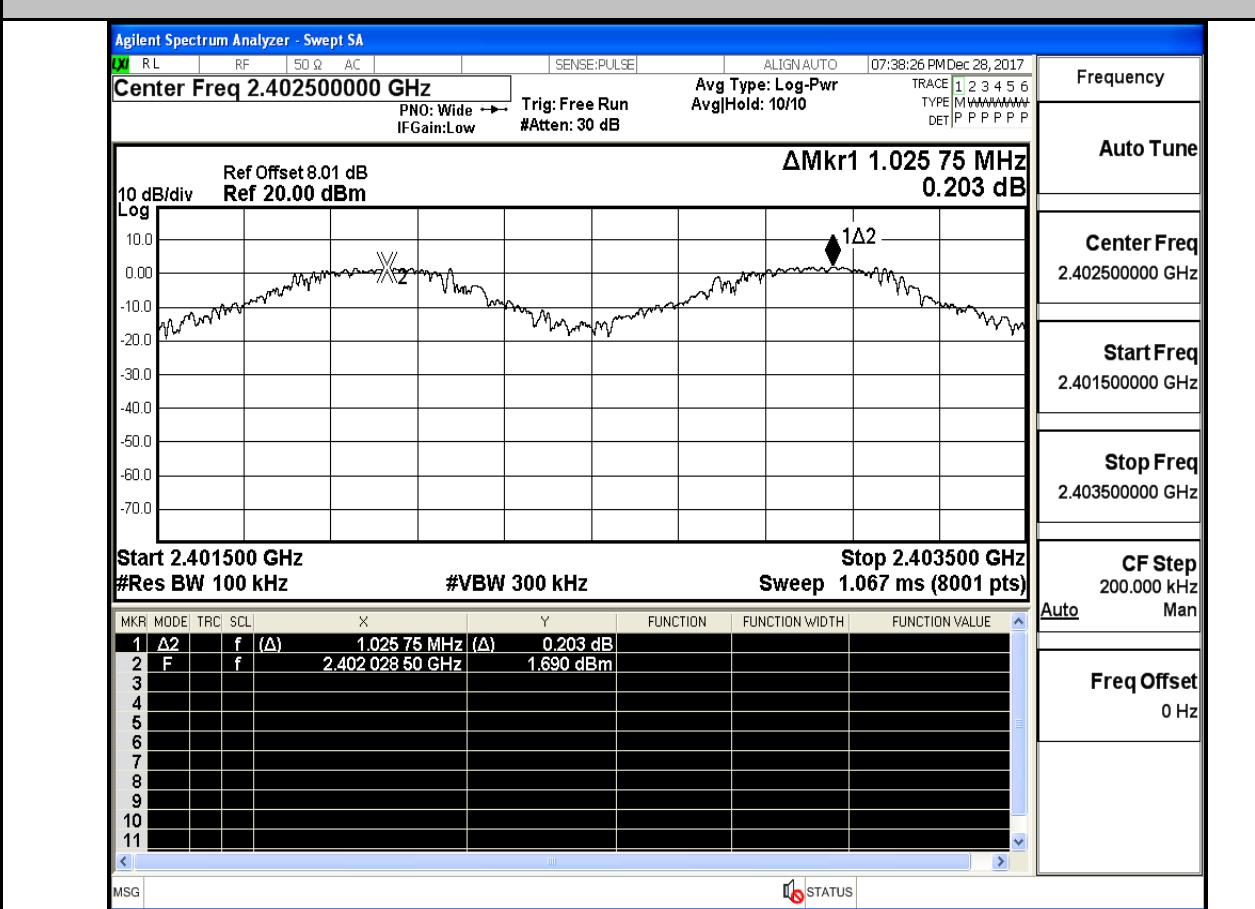
Conducted Peak Output Power_8-DPSK_2480



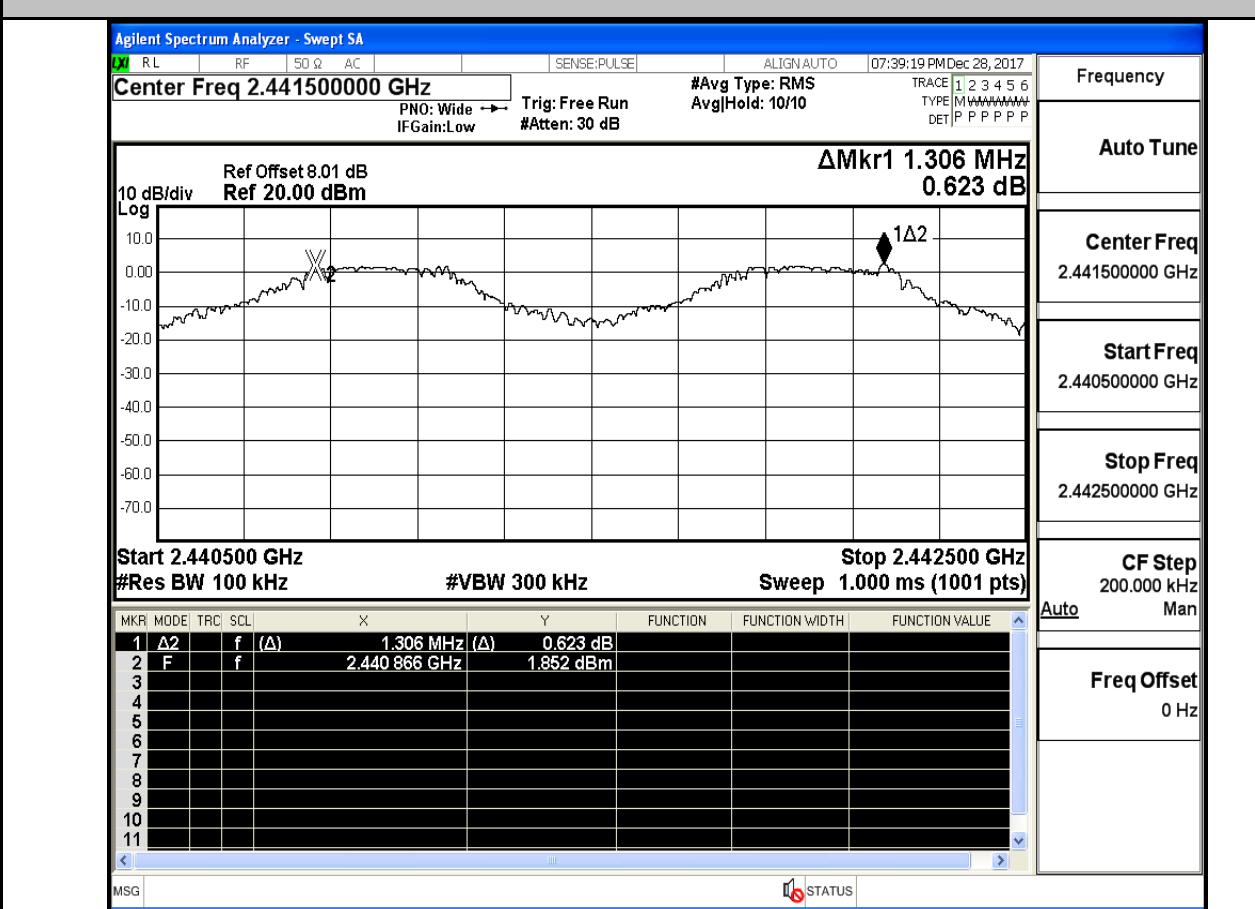
A.3 Carrier Frequency Separation

Test Mode	Test Channel	Result[MHz]	Limit[MHz]	Verdict
GFSK	2402	1.026	0.69	PASS
	2441	1.306	0.64	PASS
	2480	1.106	0.69	PASS
$\pi/4$ -DQPSK	2402	1.142	0.86	PASS
	2441	0.98	0.86	PASS
	2480	0.86	0.86	PASS
8-DPSK	2402	0.944	0.86	PASS
	2441	1.21	0.87	PASS
	2480	0.976	0.86	PASS

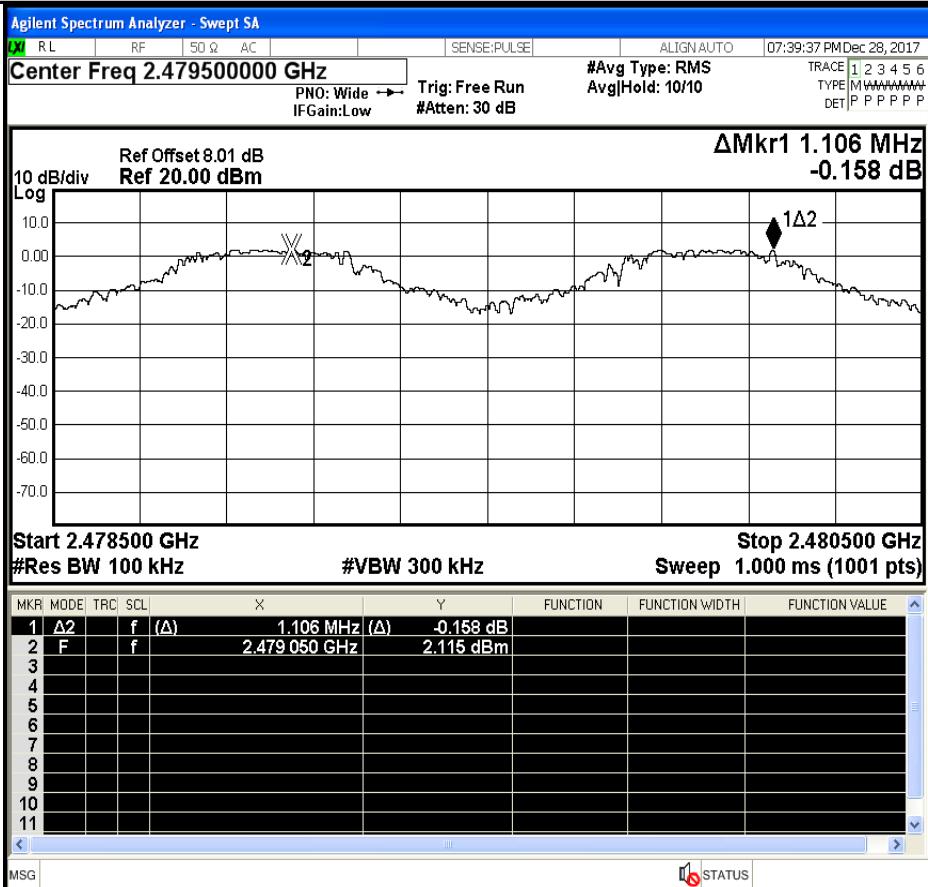
Carrier Frequency Separation_GFSK_2402



Carrier Frequency Separation_GFSK_2441



Carrier Frequency Separation_GFSK_2480



Frequency

Auto Tune

Center Freq

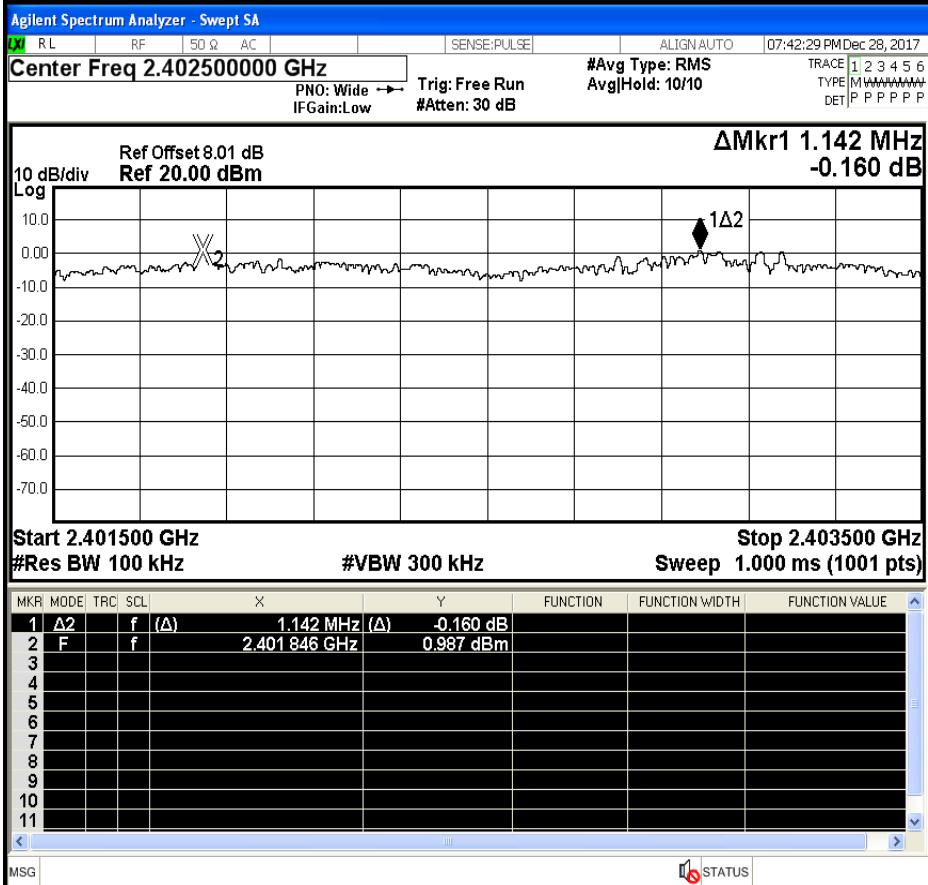
Start Freq

Stop Freq

CF Step
200.000 kHz
Auto Man

Freq Offset
0 Hz

Carrier Frequency Separation_π/4-DQPSK_2402



Frequency

Auto Tune

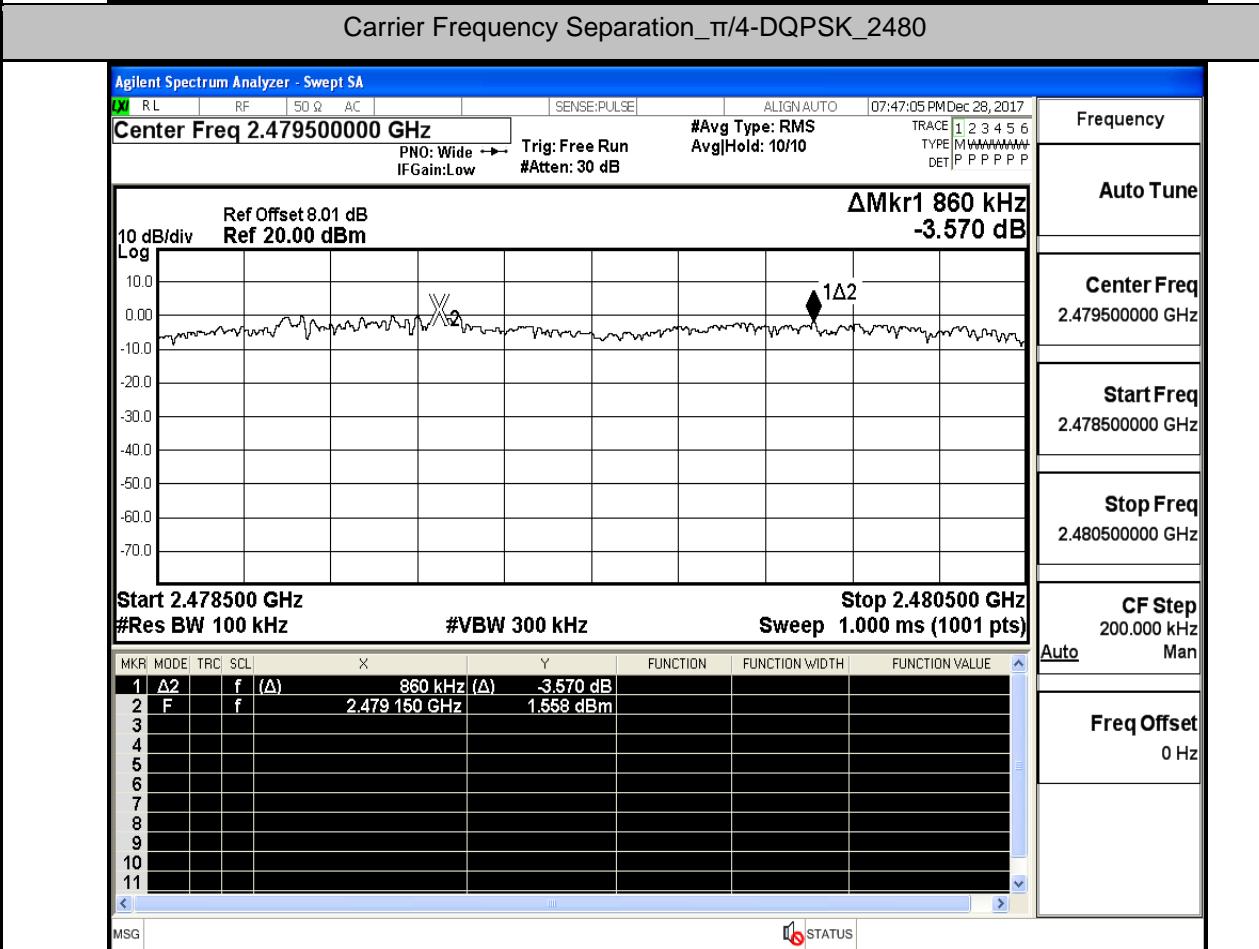
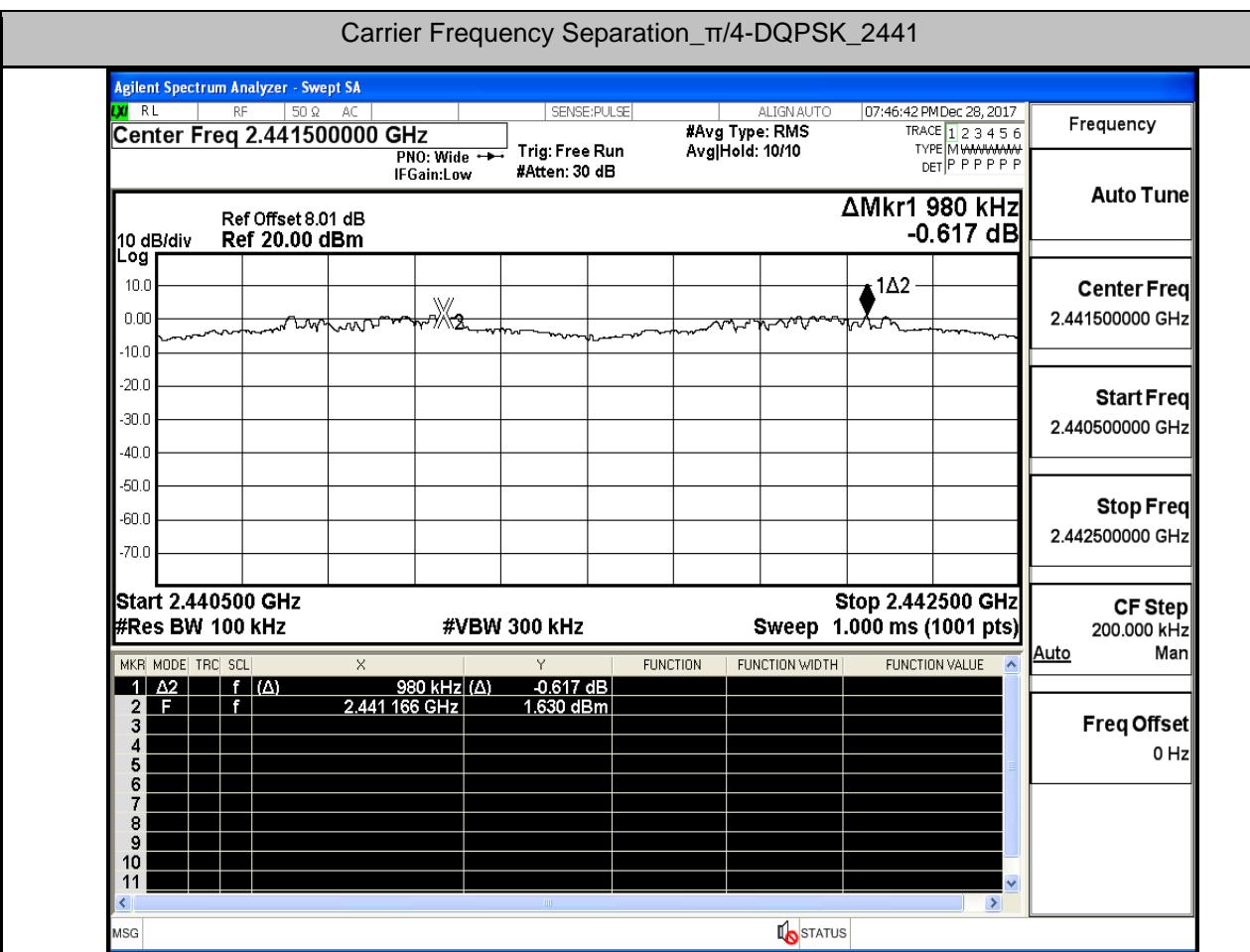
Center Freq
2.402500000 GHz

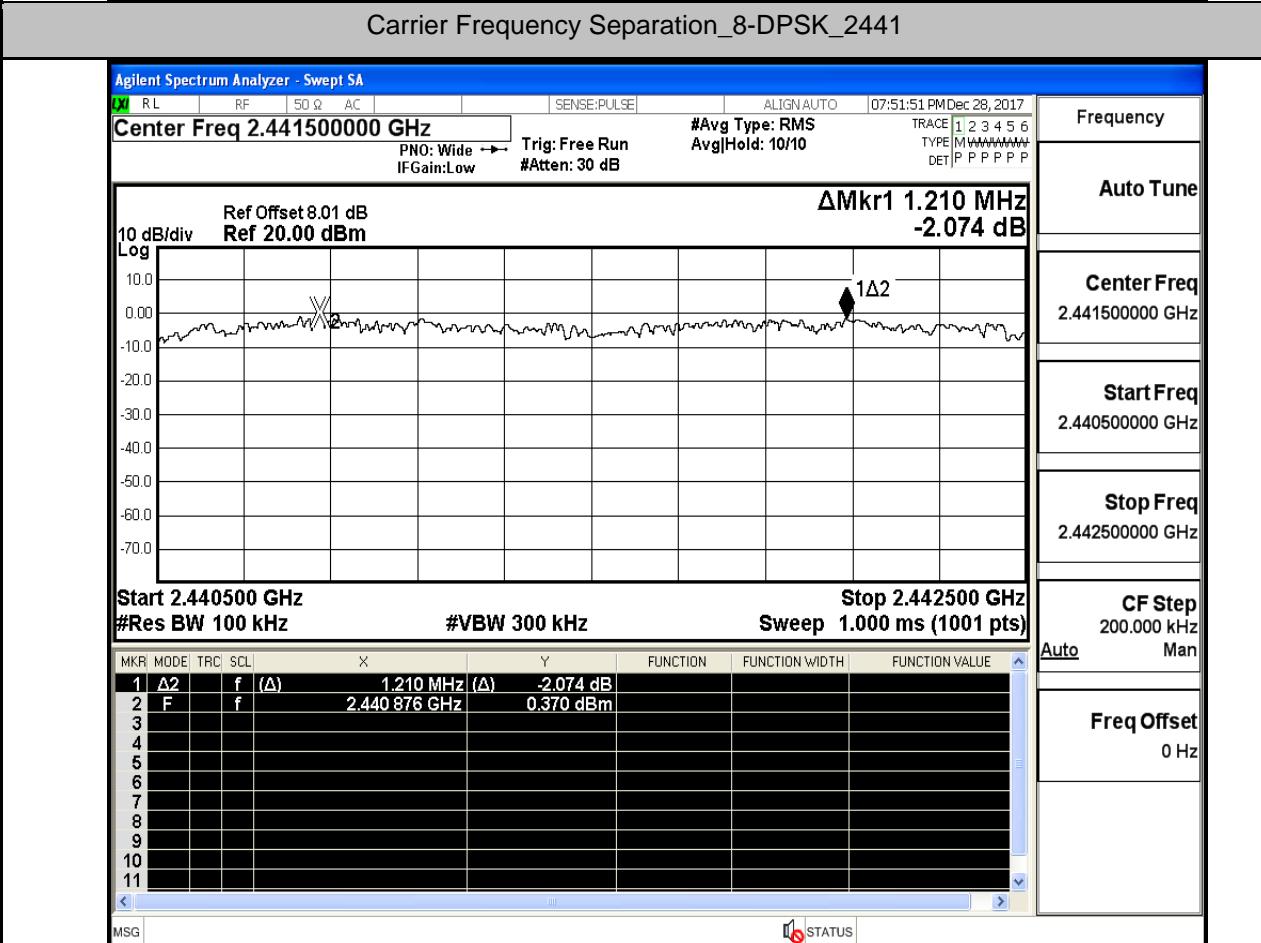
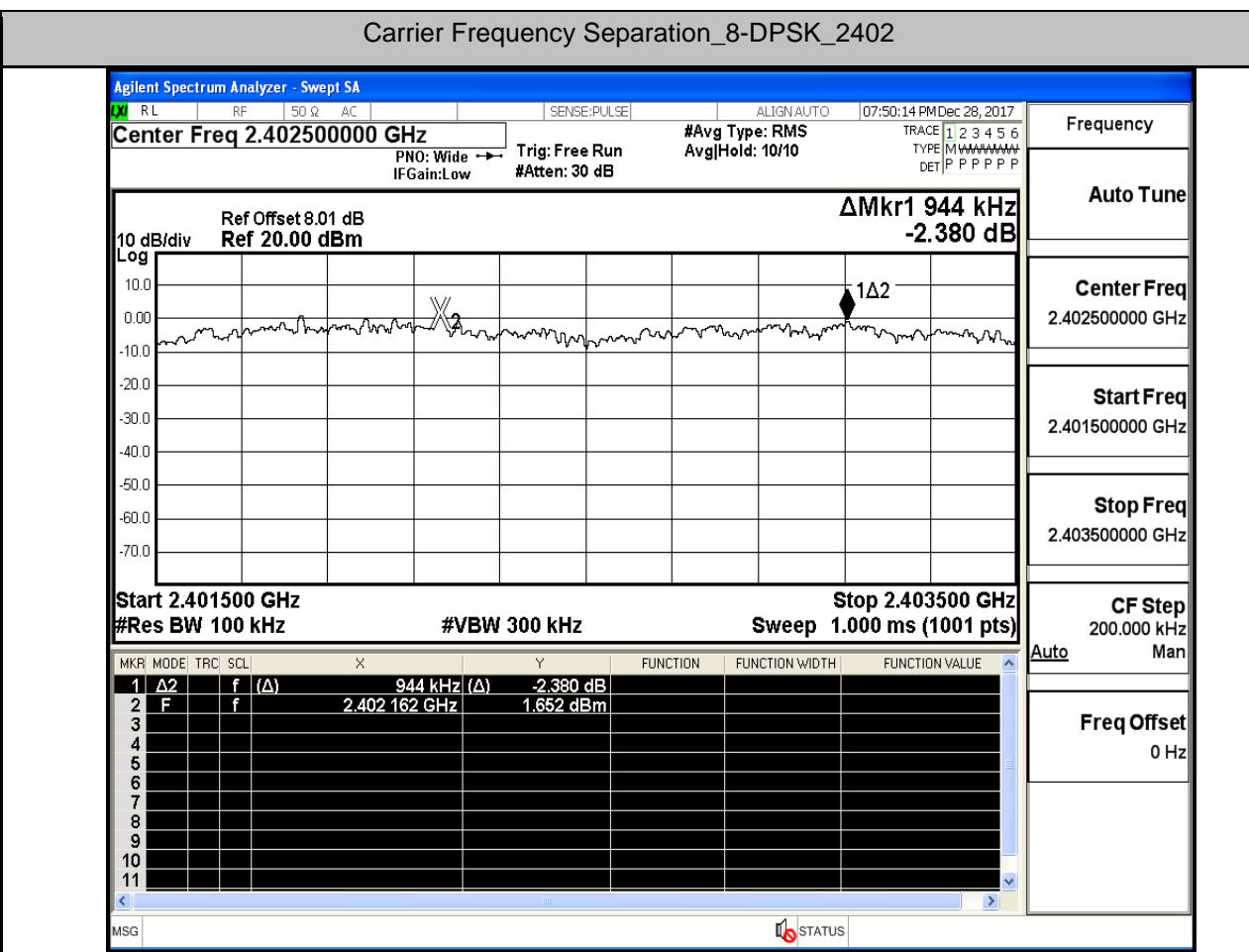
Start Freq
2.401500000 GHz

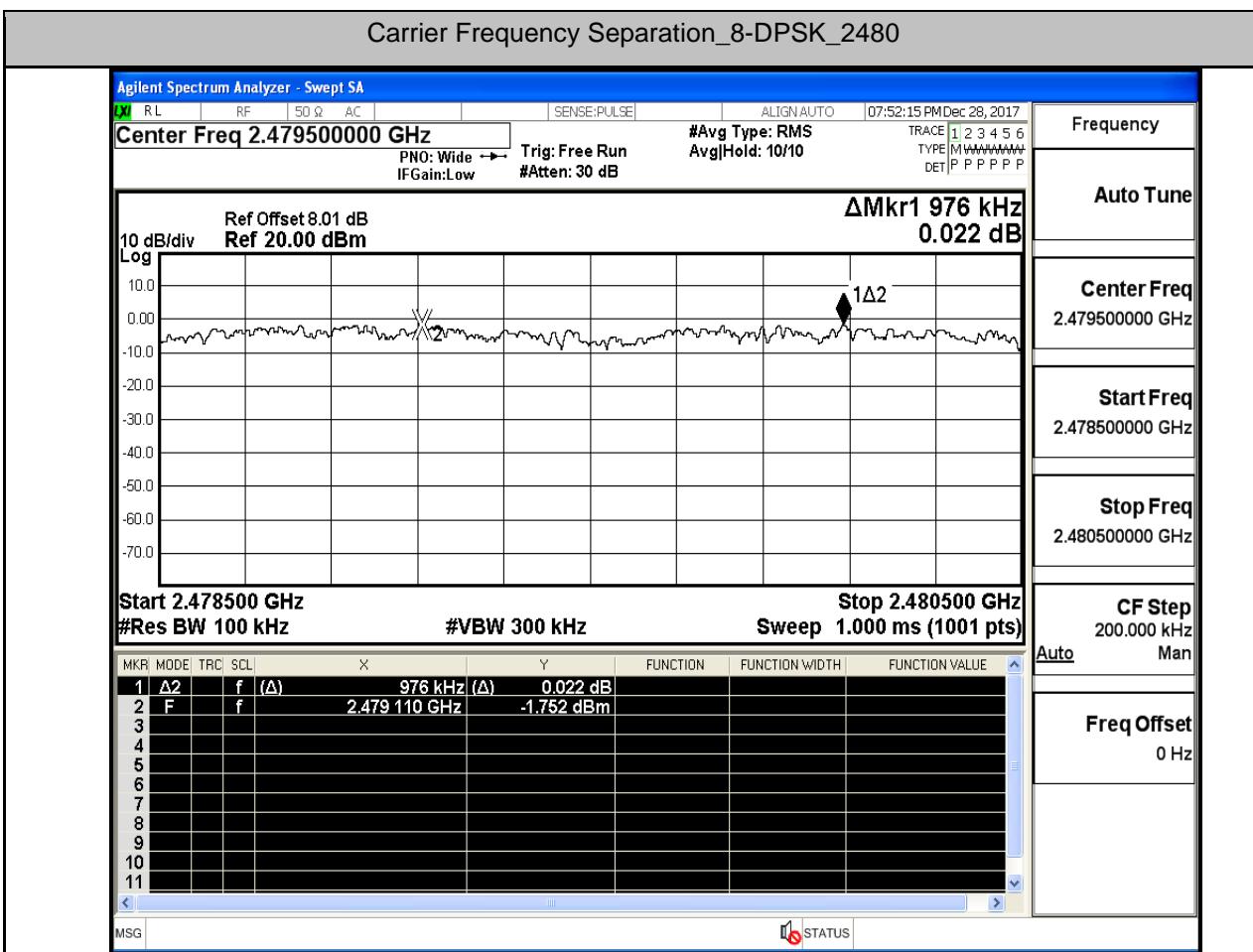
Stop Freq
2.403500000 GHz

CF Step
200.000 kHz
Auto Man

Freq Offset
0 Hz

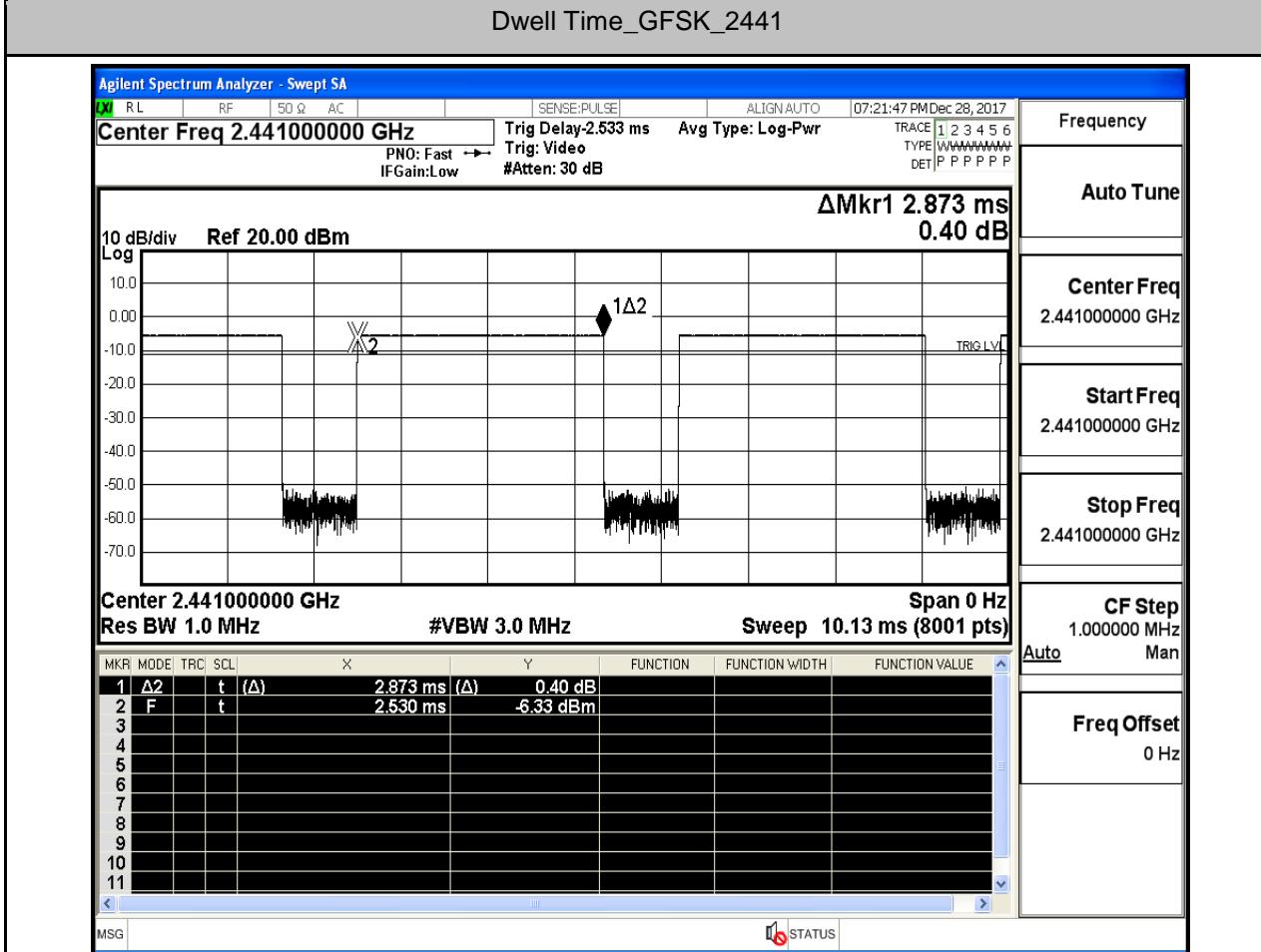
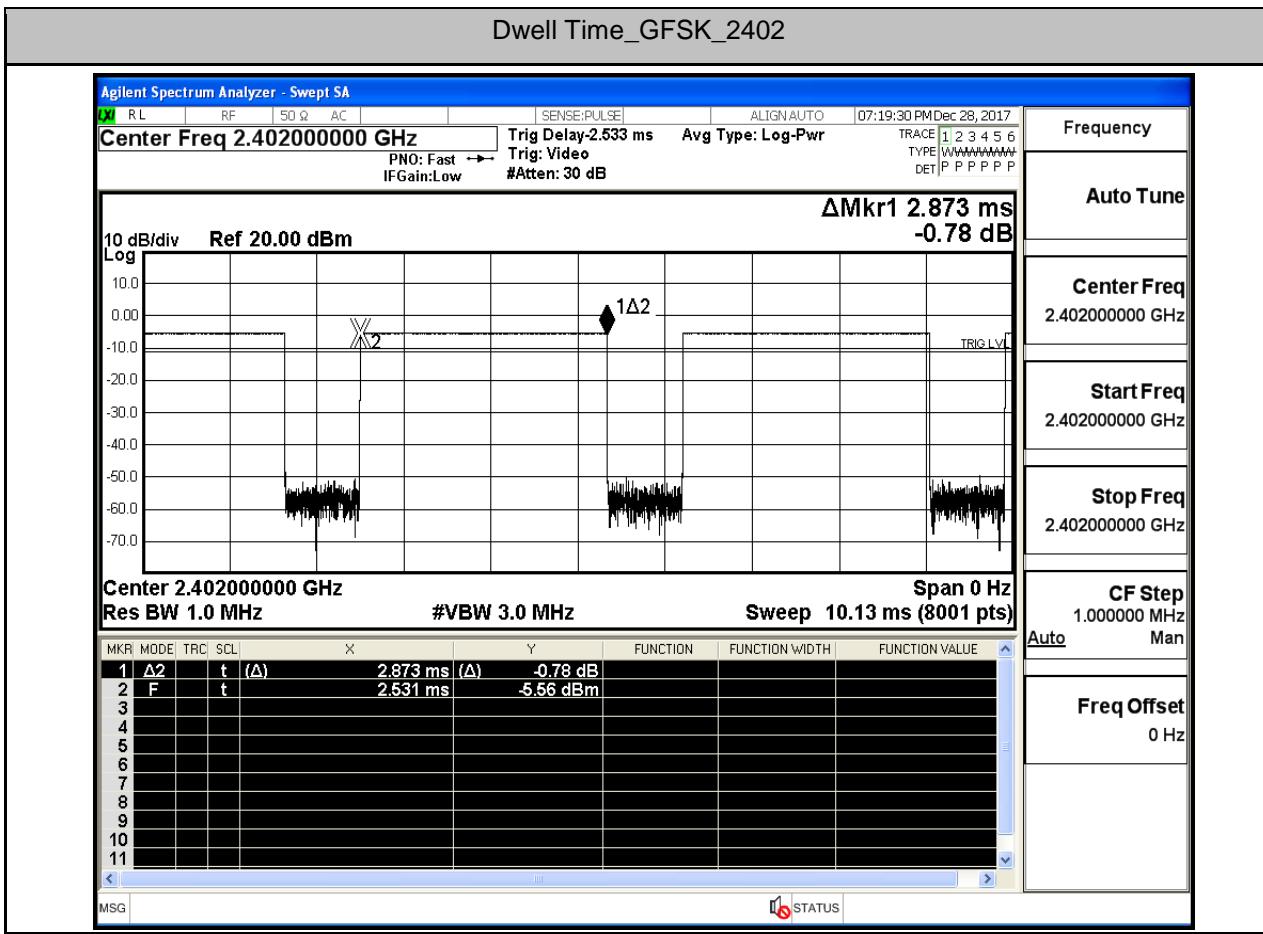




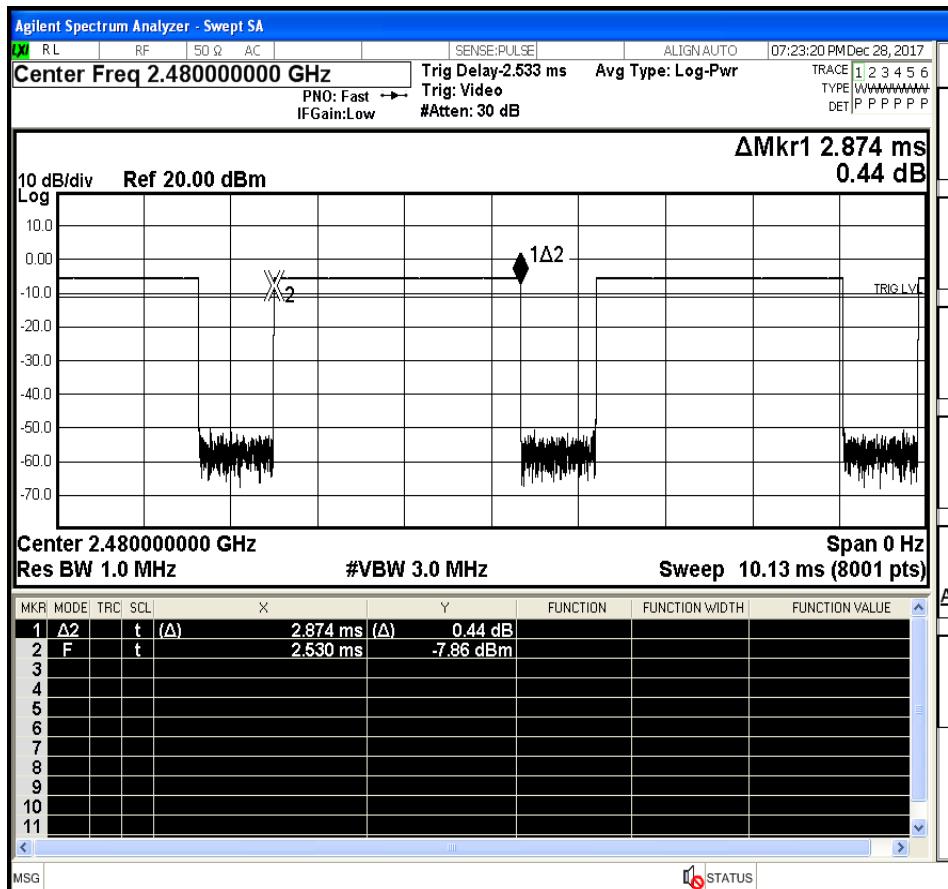


A.4 Dwell Time

Test Mode	Test Channel	Burst Width[ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit[s]	Verdict
GFSK	2402	2.873	106.7	0.306	0.4	PASS
	2441	2.873	106.7	0.306	0.4	PASS
	2480	2.874	106.7	0.306	0.4	PASS
$\pi/4$ -DQPSK	2402	2.877	106.7	0.307	0.4	PASS
	2441	2.877	106.7	0.307	0.4	PASS
	2480	2.877	106.7	0.307	0.4	PASS
8-DPSK	2402	2.878	106.7	0.307	0.4	PASS
	2441	2.879	106.7	0.307	0.4	PASS
	2480	2.879	106.7	0.307	0.4	PASS



Dwell Time_GFSK_2480



Frequency

Auto Tune

Center Freq

2.480000000 GHz

Start Freq

2.480000000 GHz

Stop Freq

2.480000000 GHz

CF Step

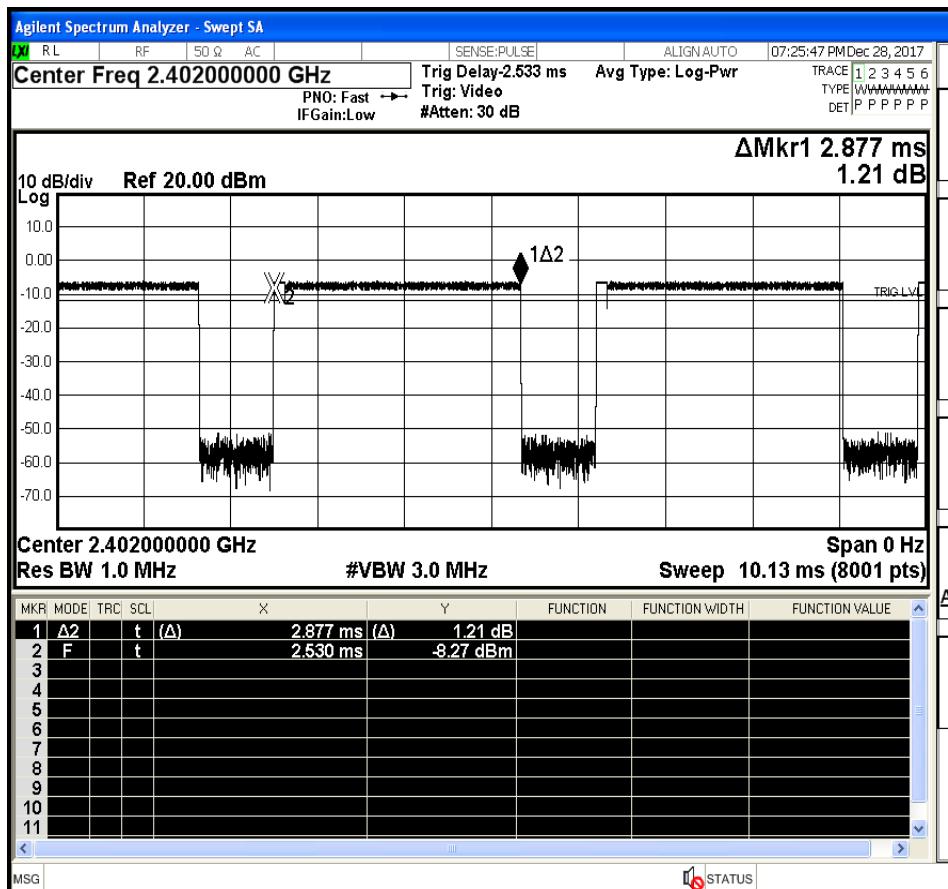
1.000000 MHz

Auto Man

Freq Offset

0 Hz

Dwell Time_π/4-DQPSK_2402



Frequency

Auto Tune

Center Freq

2.402000000 GHz

Start Freq

2.402000000 GHz

Stop Freq

2.402000000 GHz

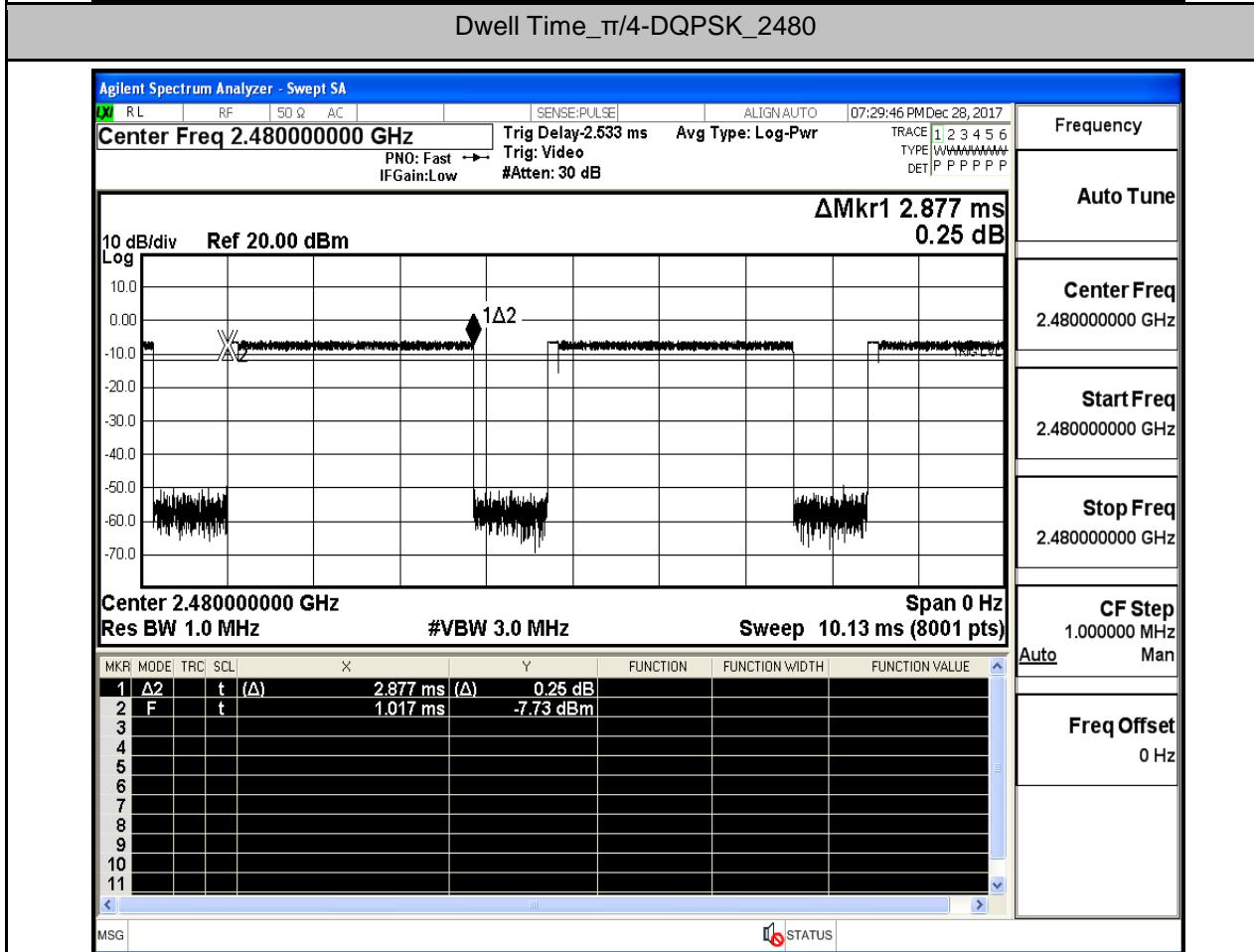
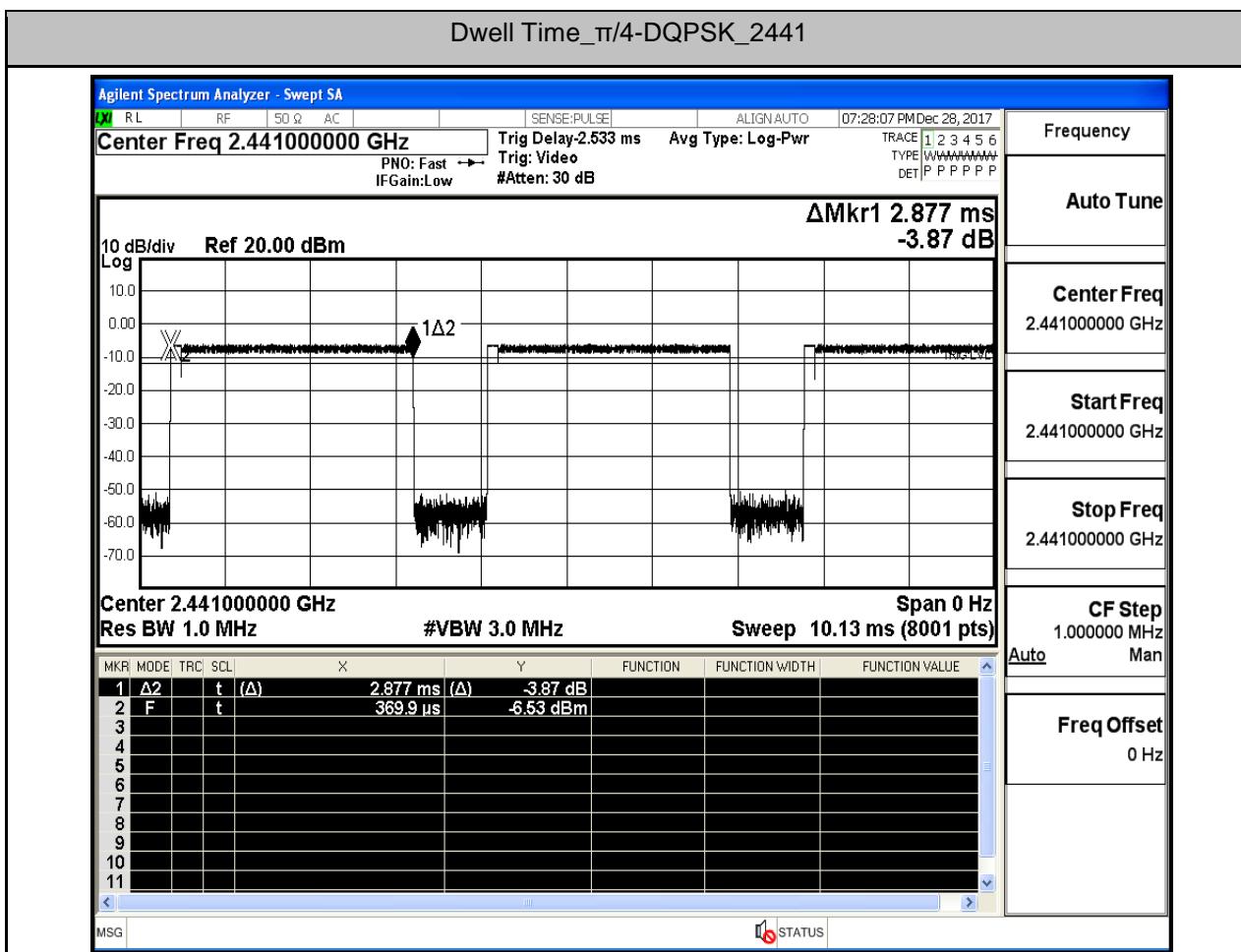
CF Step

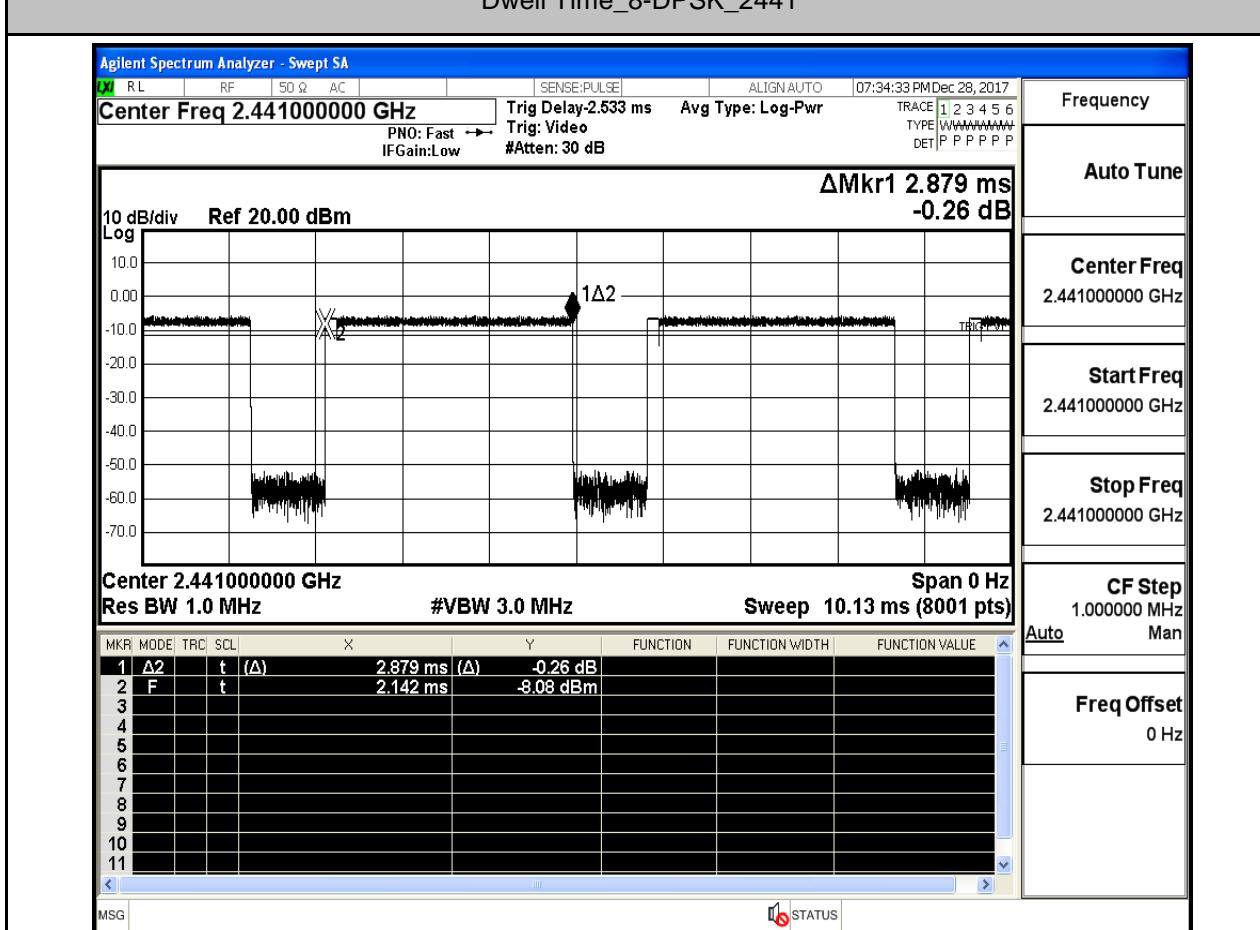
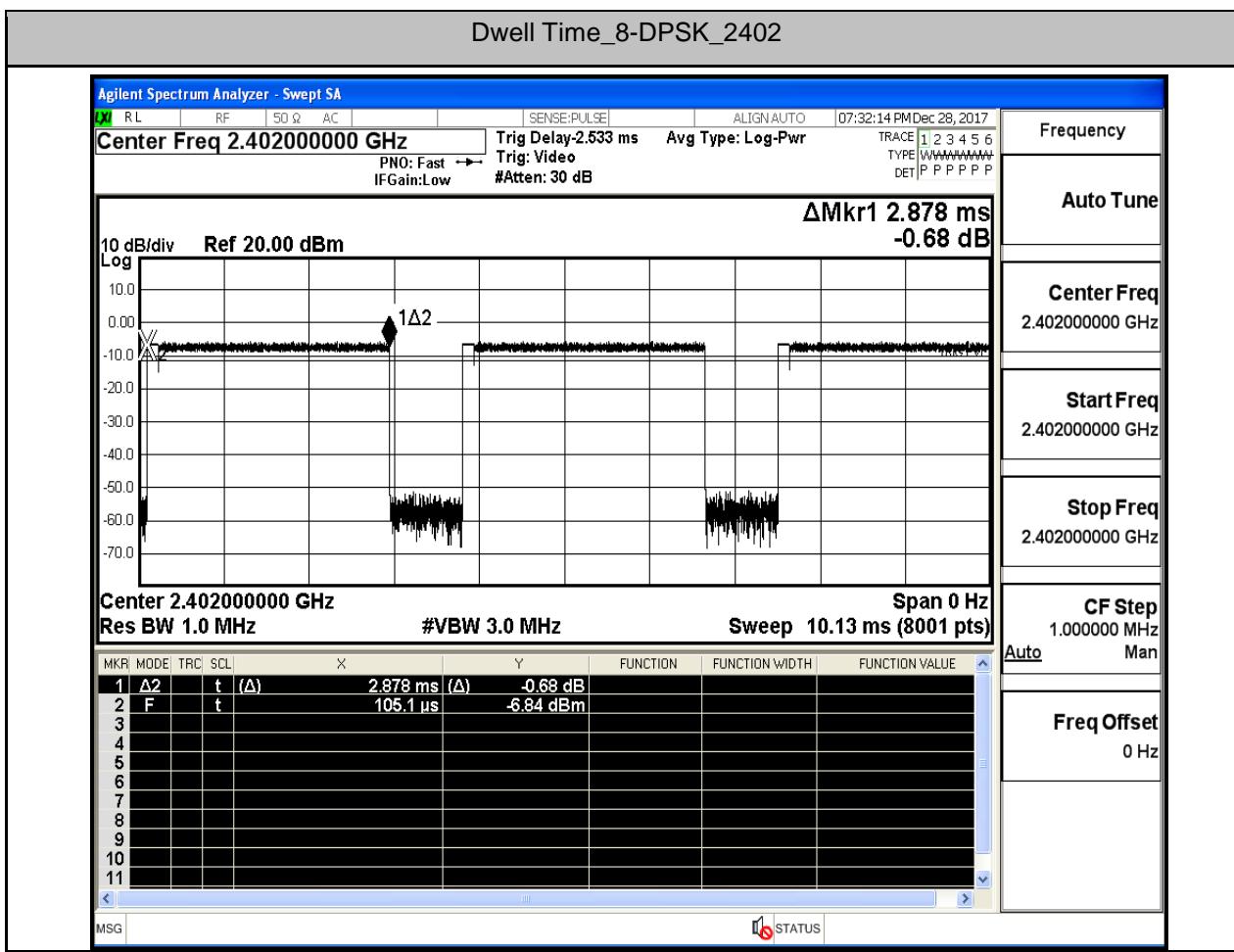
1.000000 MHz

Auto Man

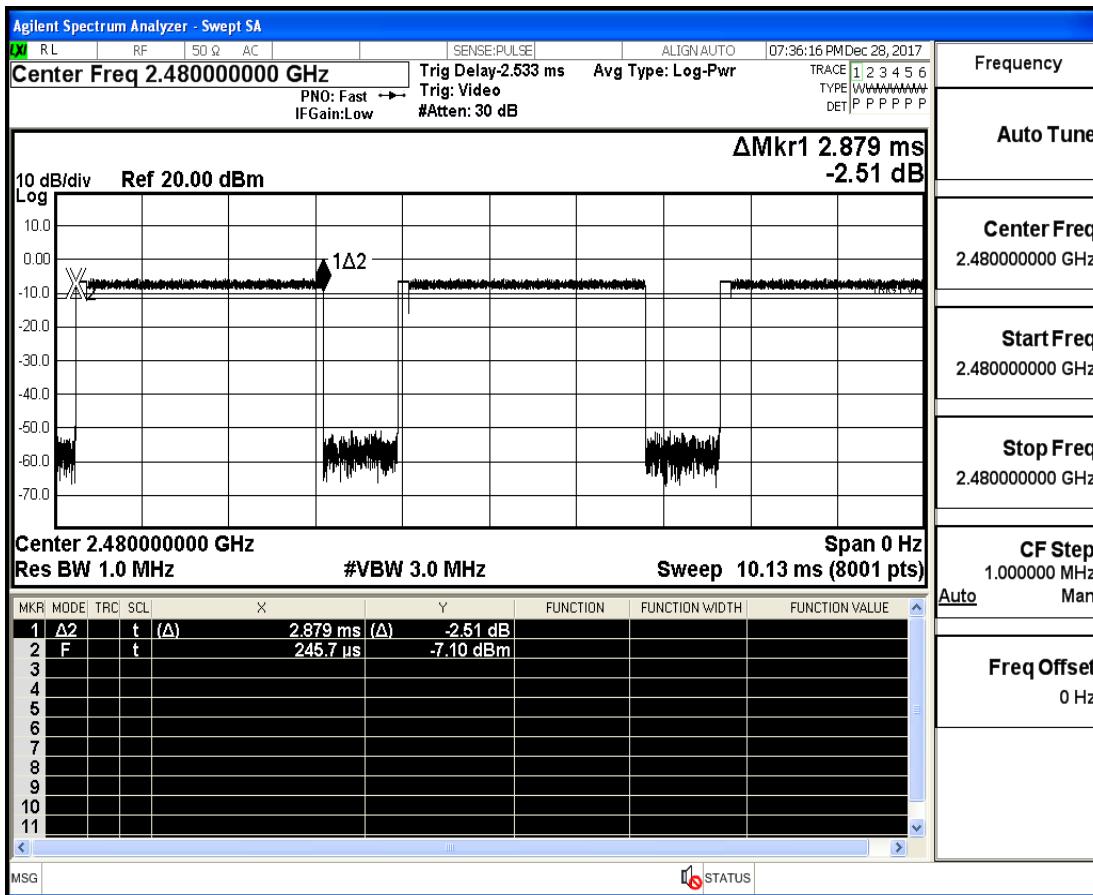
Freq Offset

0 Hz



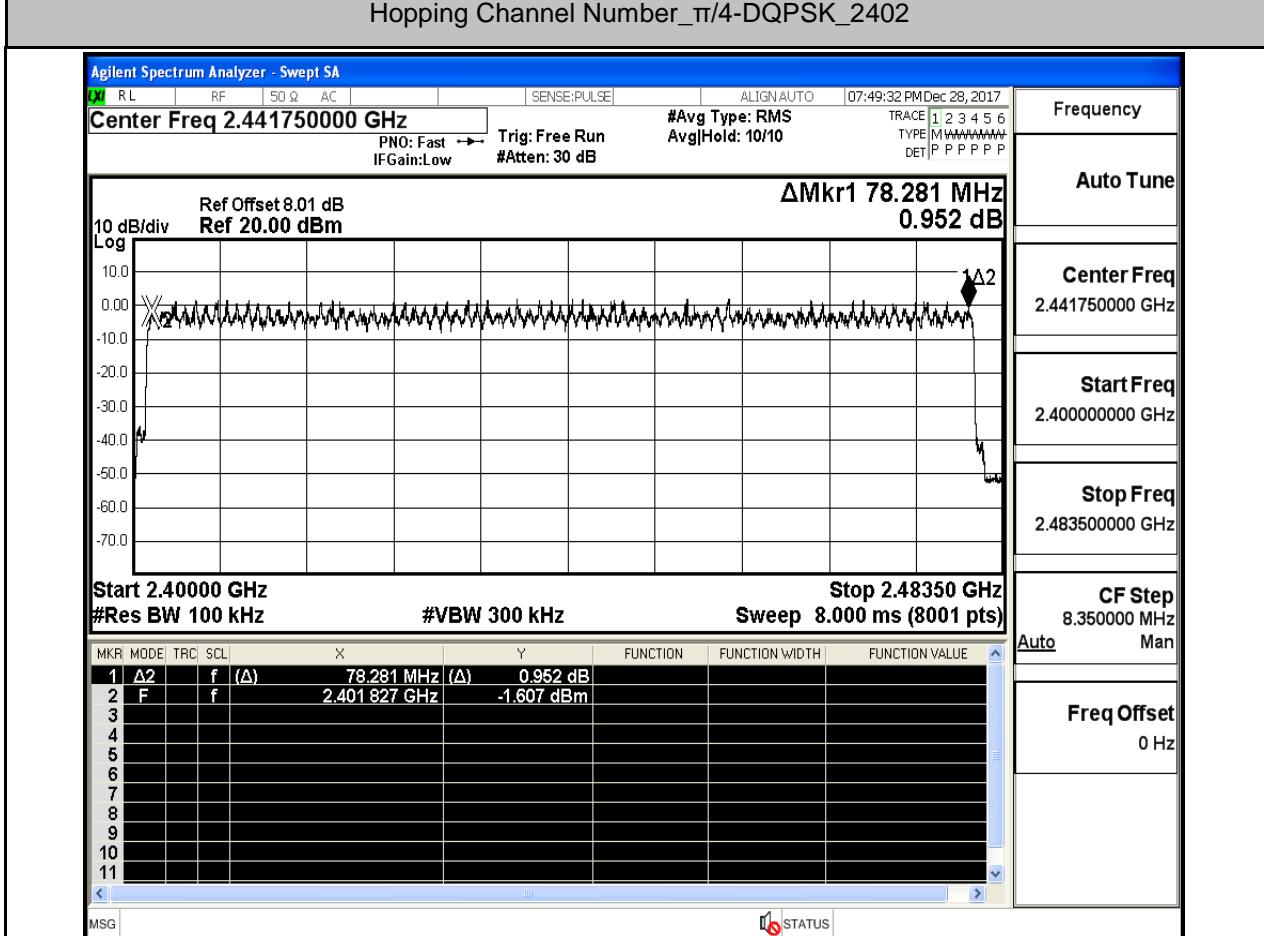
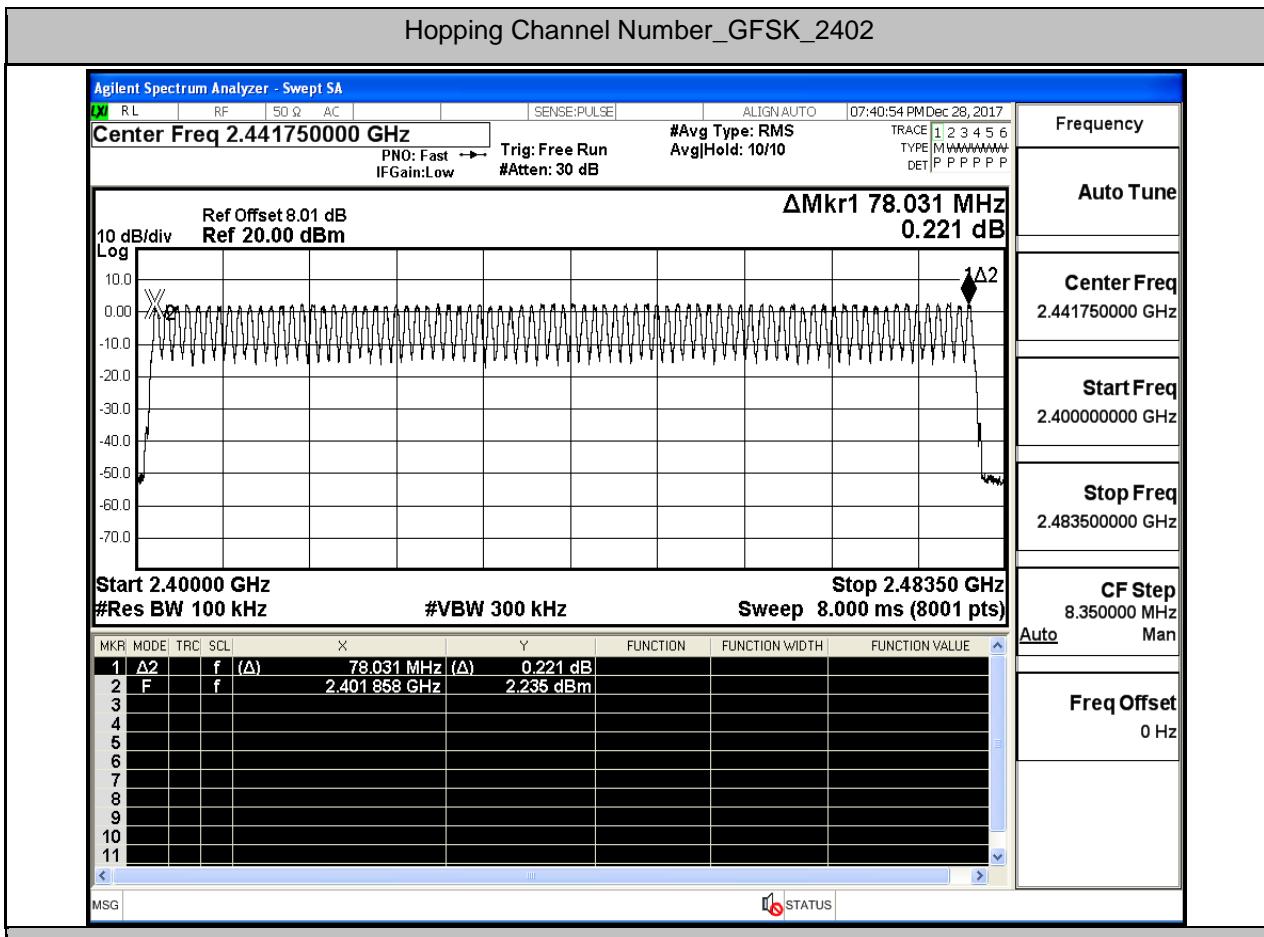


Dwell Time_8-DPSK_2480

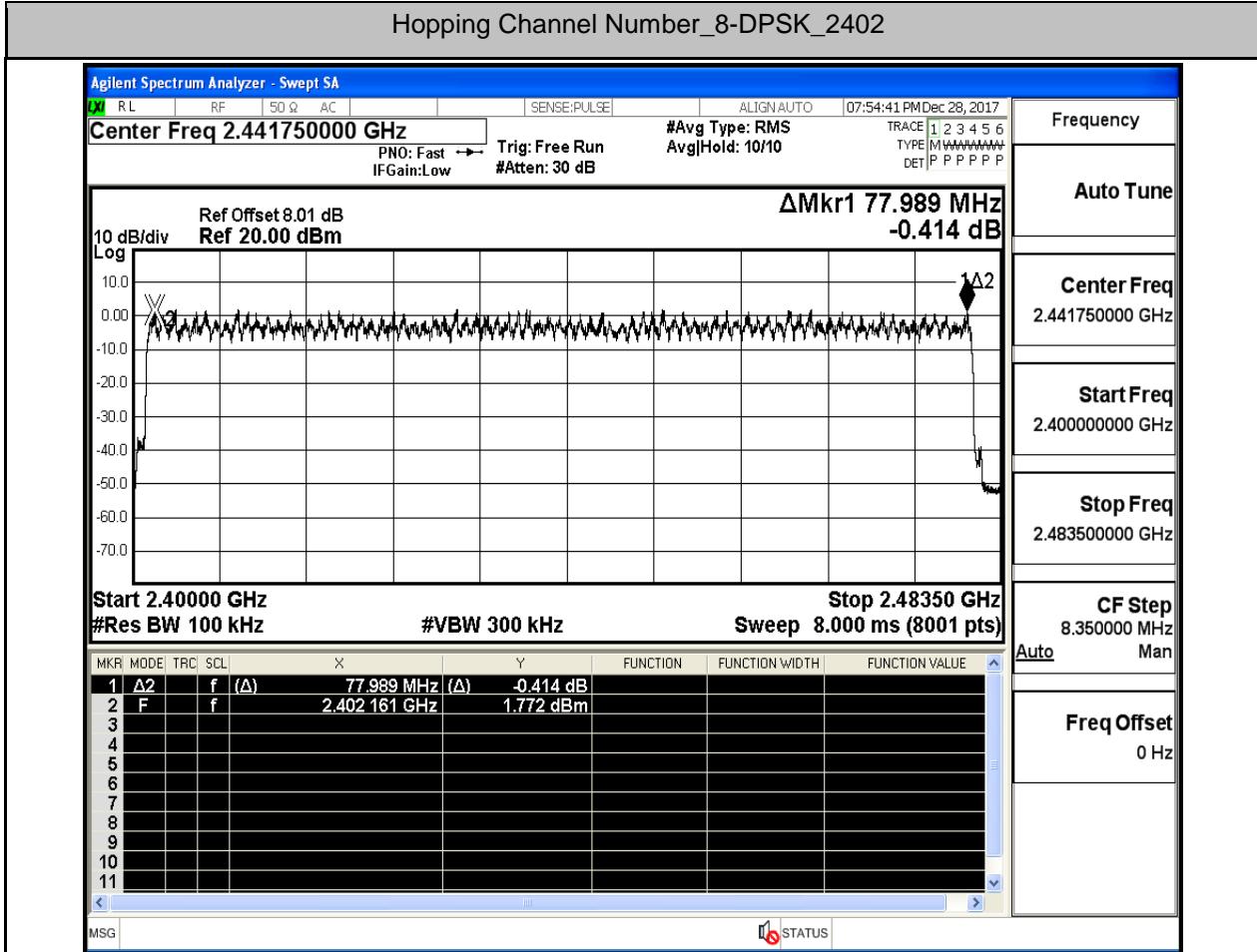


A.5 Hopping Channel Number

Test Mode	Test Channel	Number of Hopping Channel[N]	Limit[N]	Verdict
GFSK	2402	79	≥ 15	PASS
$\pi/4$ -DQPSK	2402	79	≥ 15	PASS
8-DPSK	2402	79	≥ 15	PASS

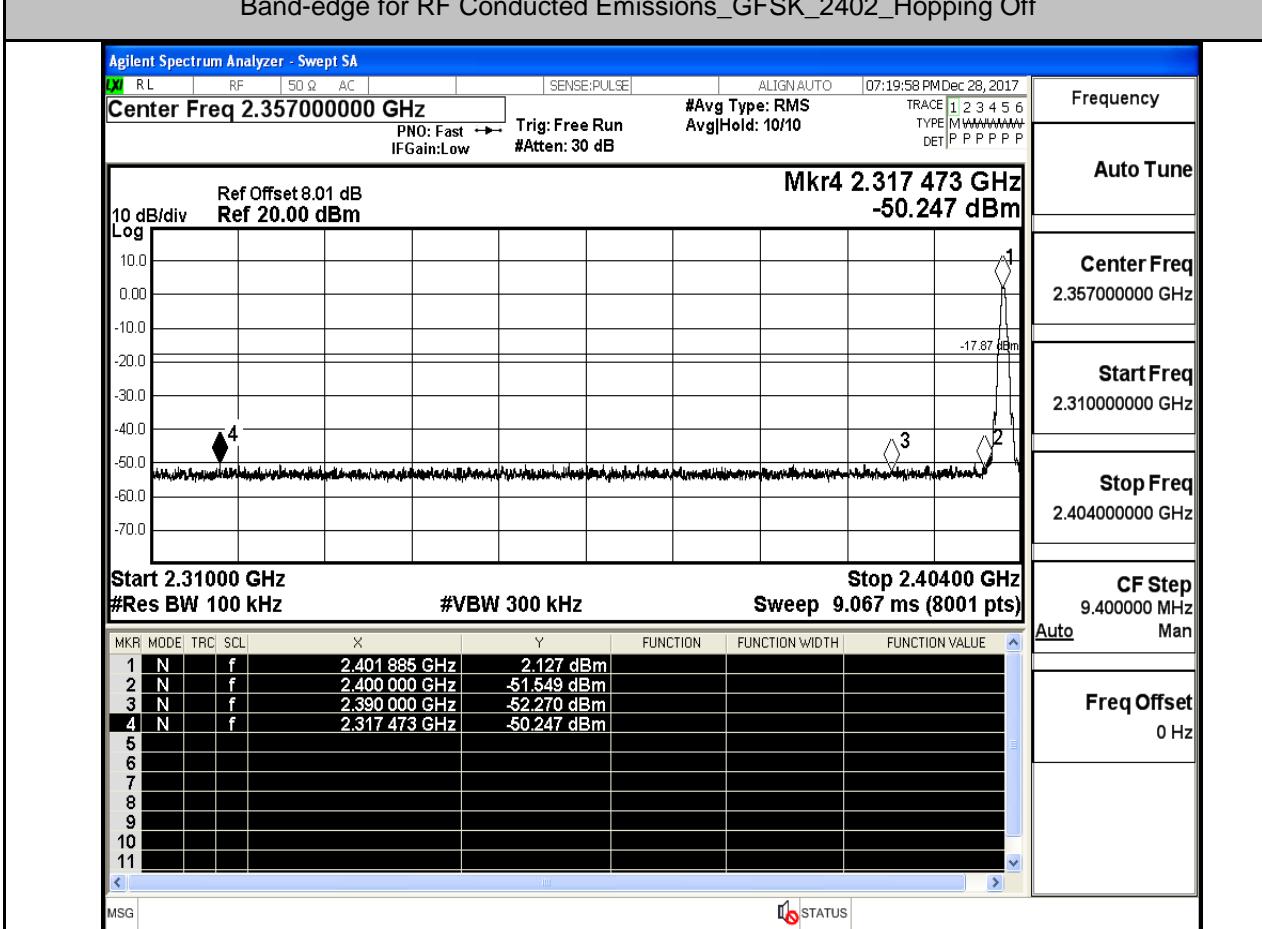
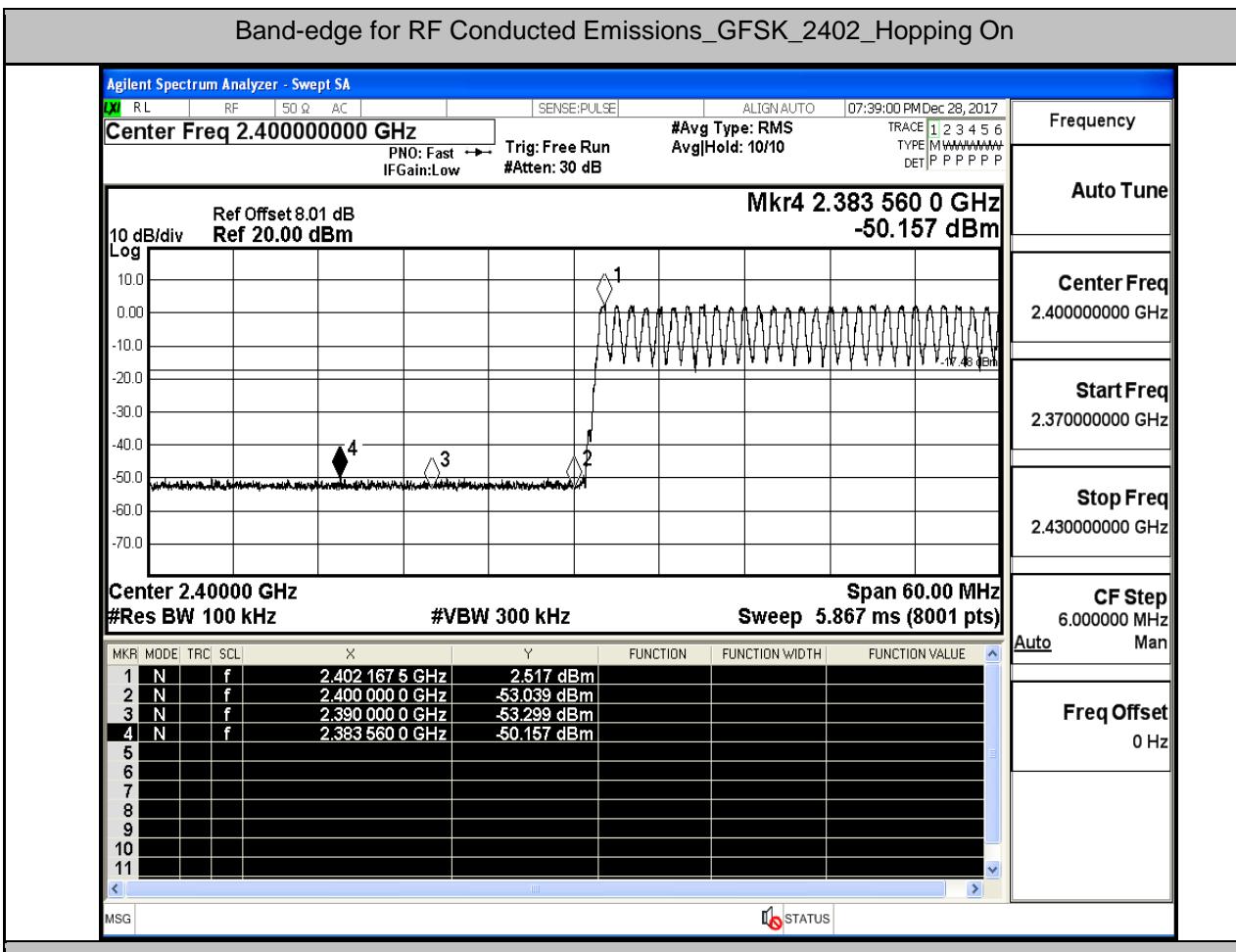


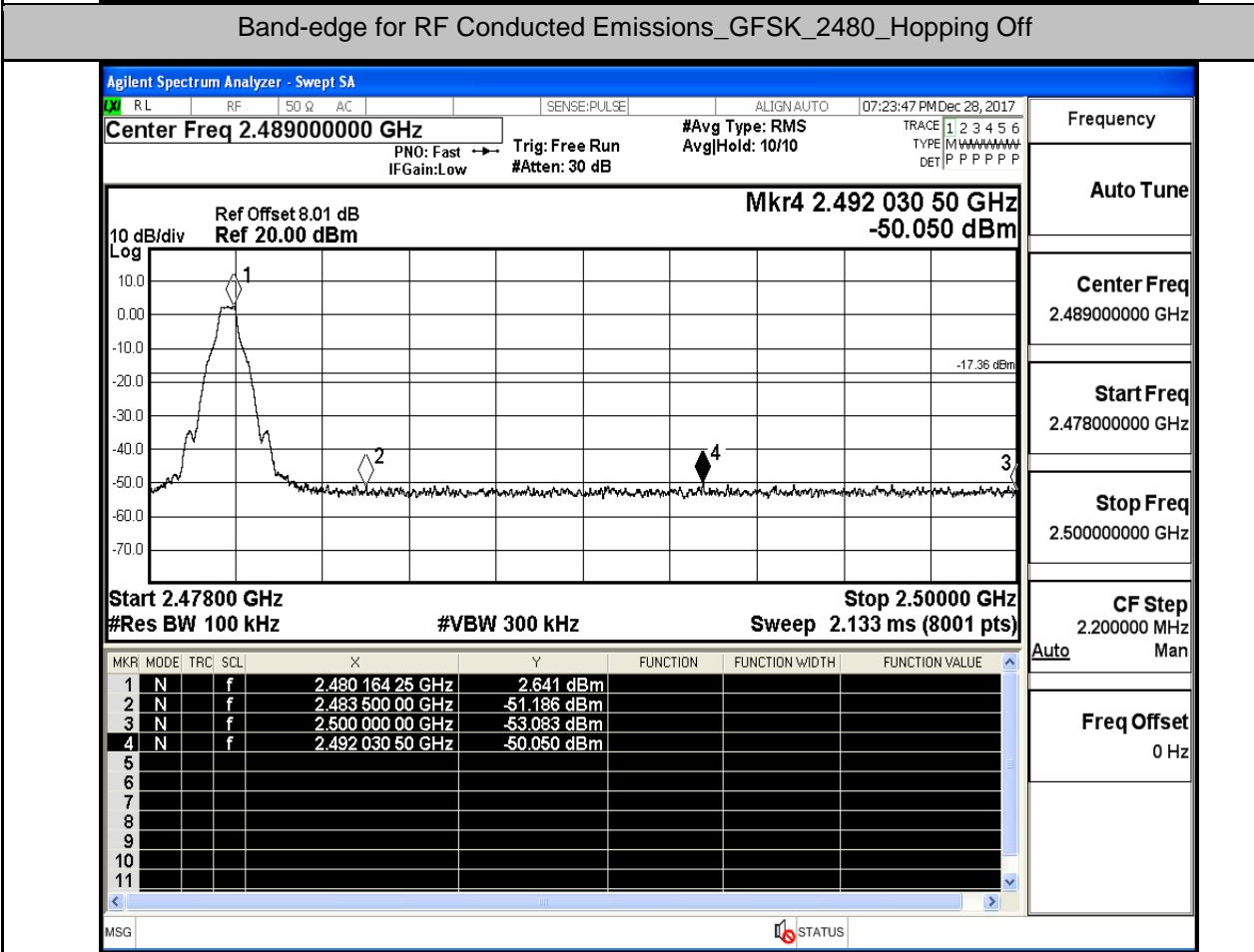
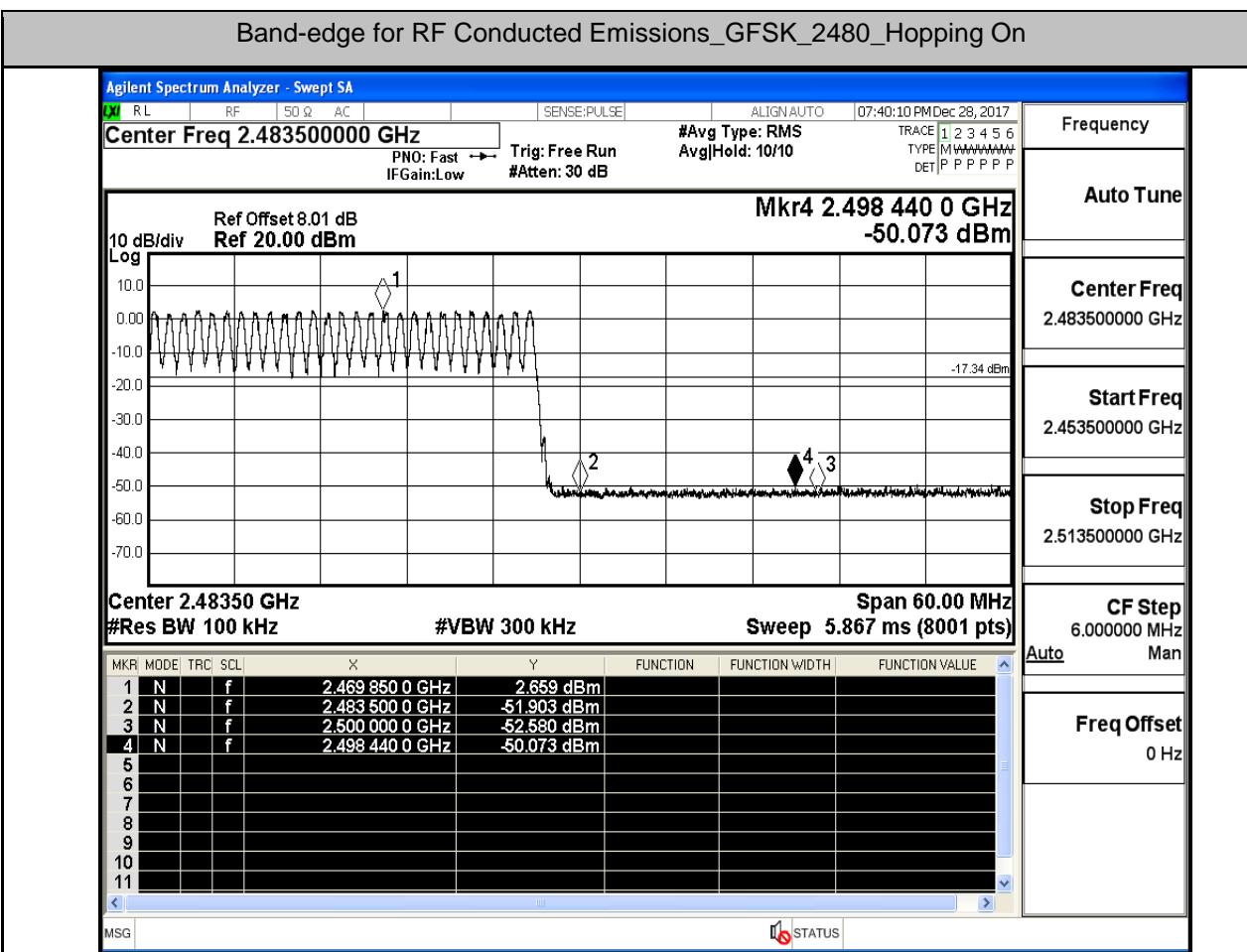
Hopping Channel Number_8-DPSK_2402



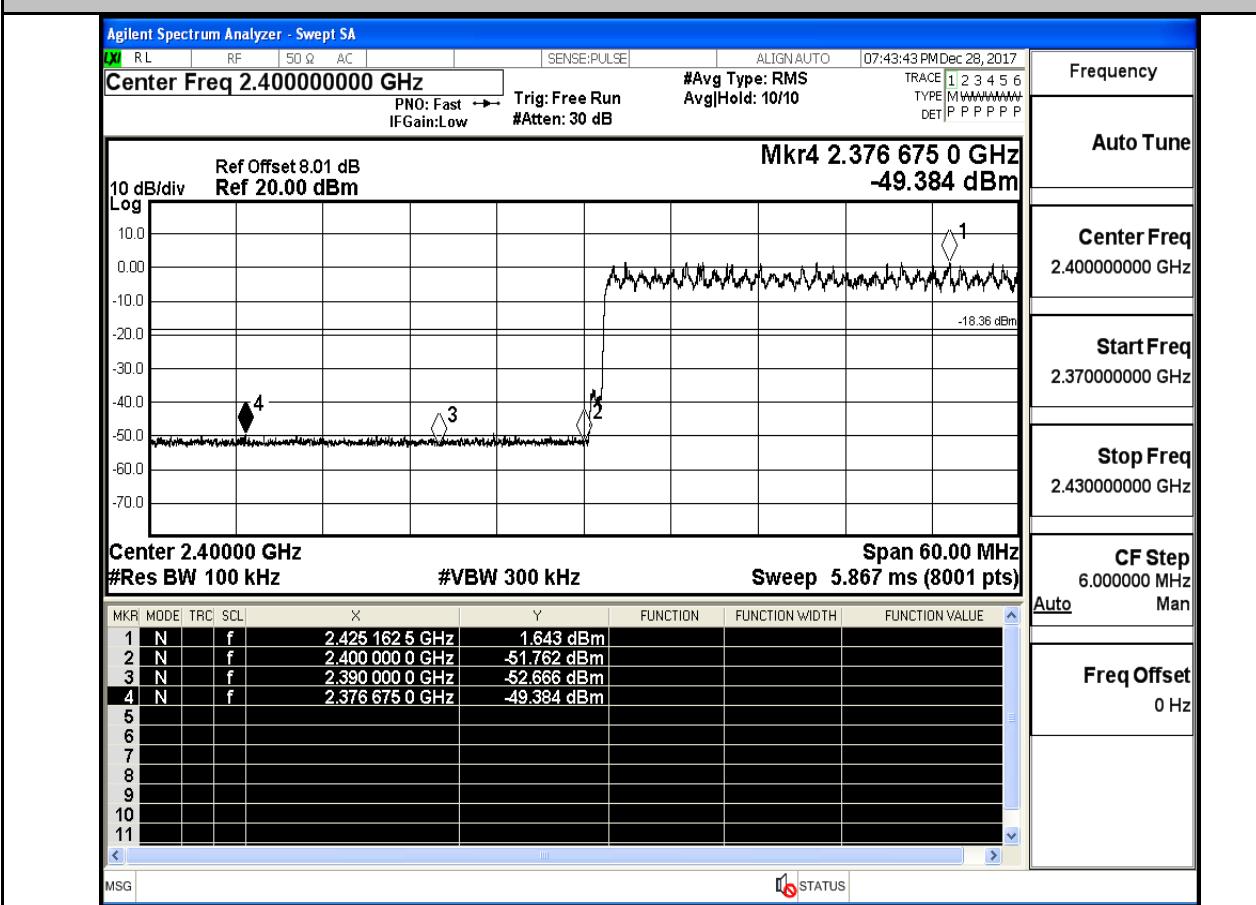
A.6 Band-edge for RF Conducted Emissions

Test Mode	Test Channel	Hopping	Carrier Power[dBm]	Max. Spurious Level [dBm]	Limit[dBm]	Verdict
GFSK	2402	On	2.517	-50.157	-17.48	PASS
	2402	Off	2.127	-50.247	-17.87	PASS
	2480	On	2.659	-50.073	-17.34	PASS
	2480	Off	2.641	-50.050	-17.36	PASS
$\pi/4$ -DQPSK	2402	On	1.643	-49.384	-18.36	PASS
	2402	Off	0.933	-49.992	-19.07	PASS
	2480	On	1.613	-49.023	-18.39	PASS
	2480	Off	1.117	-49.011	-18.88	PASS
8-DPSK	2402	On	1.615	-49.244	-18.39	PASS
	2402	Off	1.652	-49.432	-18.35	PASS
	2480	On	1.755	-49.016	-18.25	PASS
	2480	Off	1.757	-48.970	-18.24	PASS

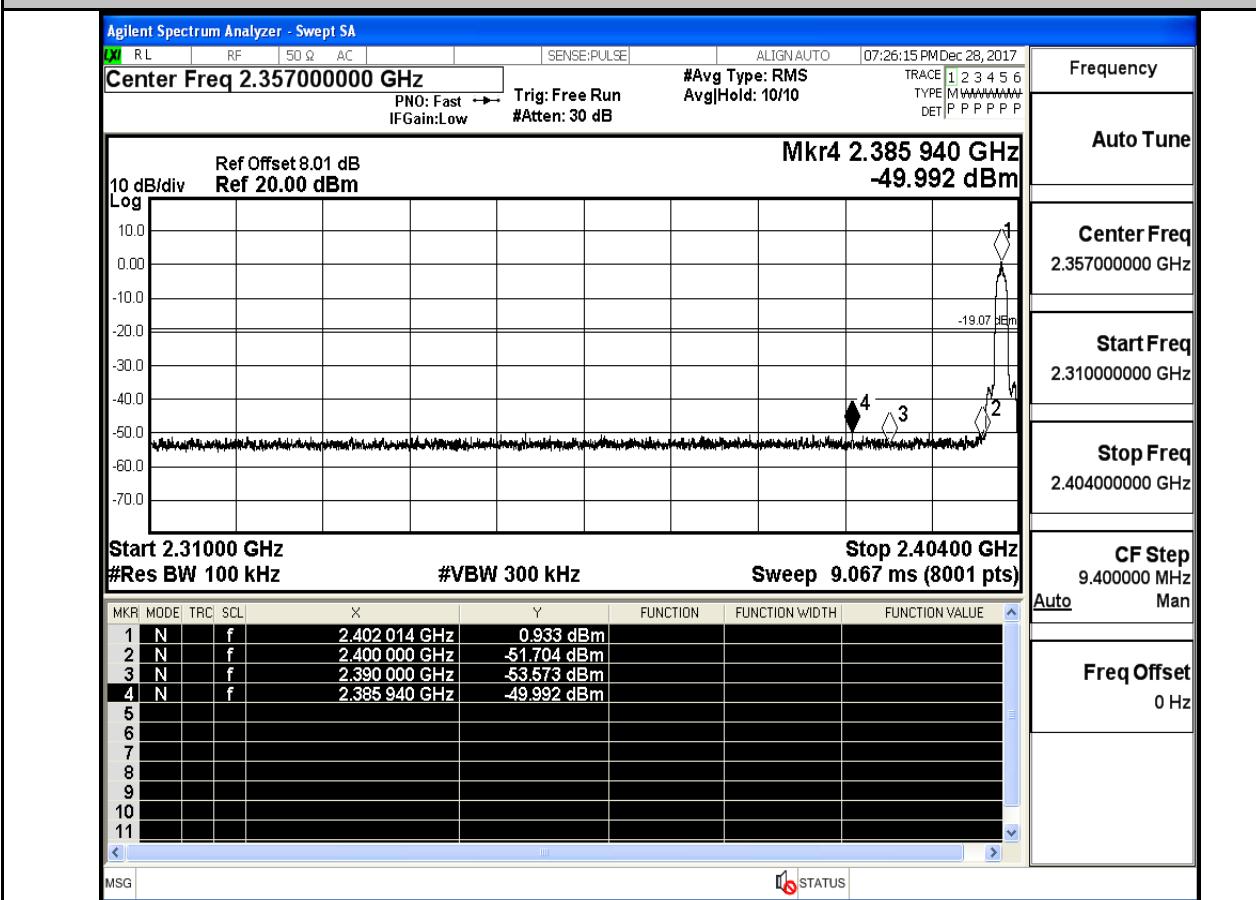


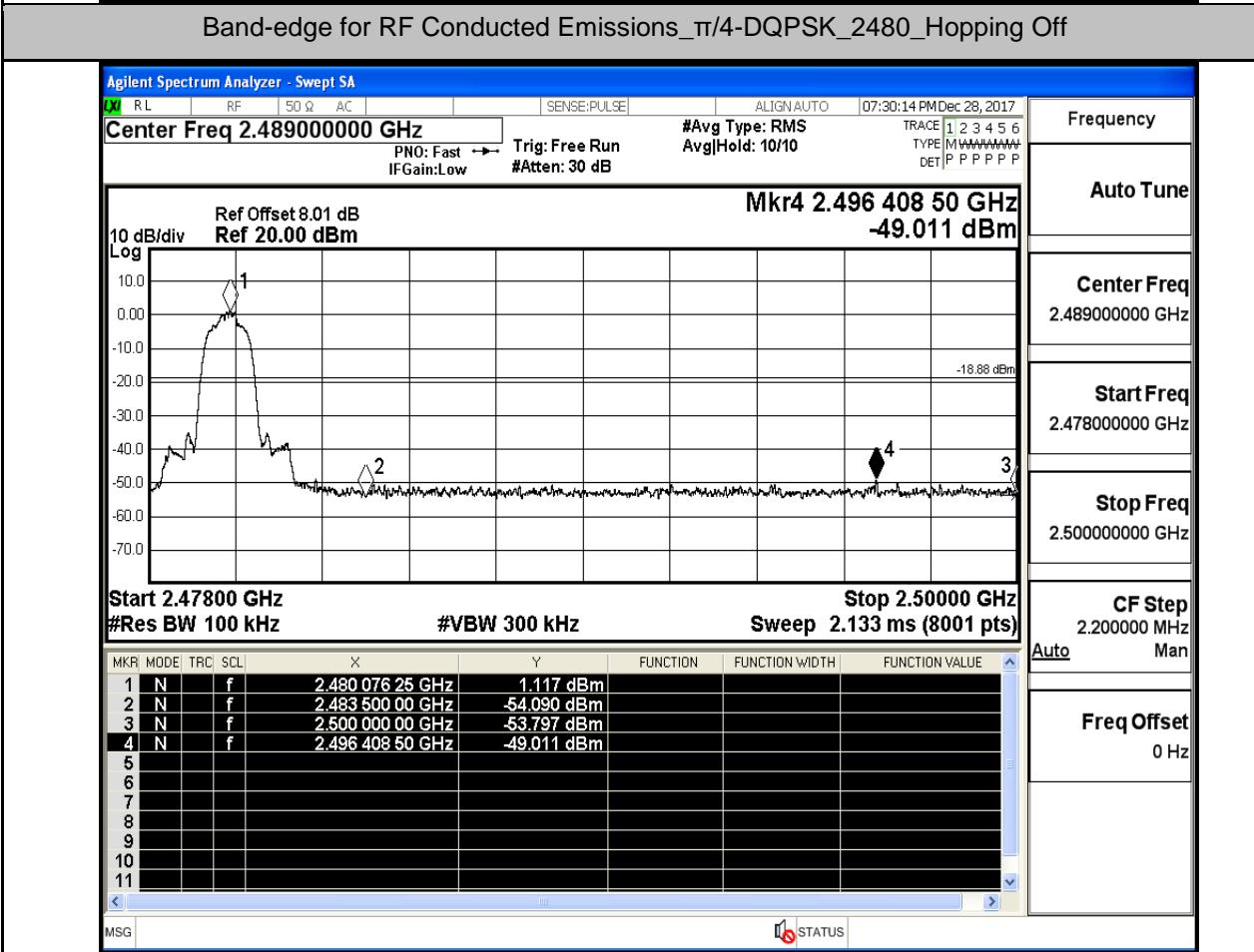
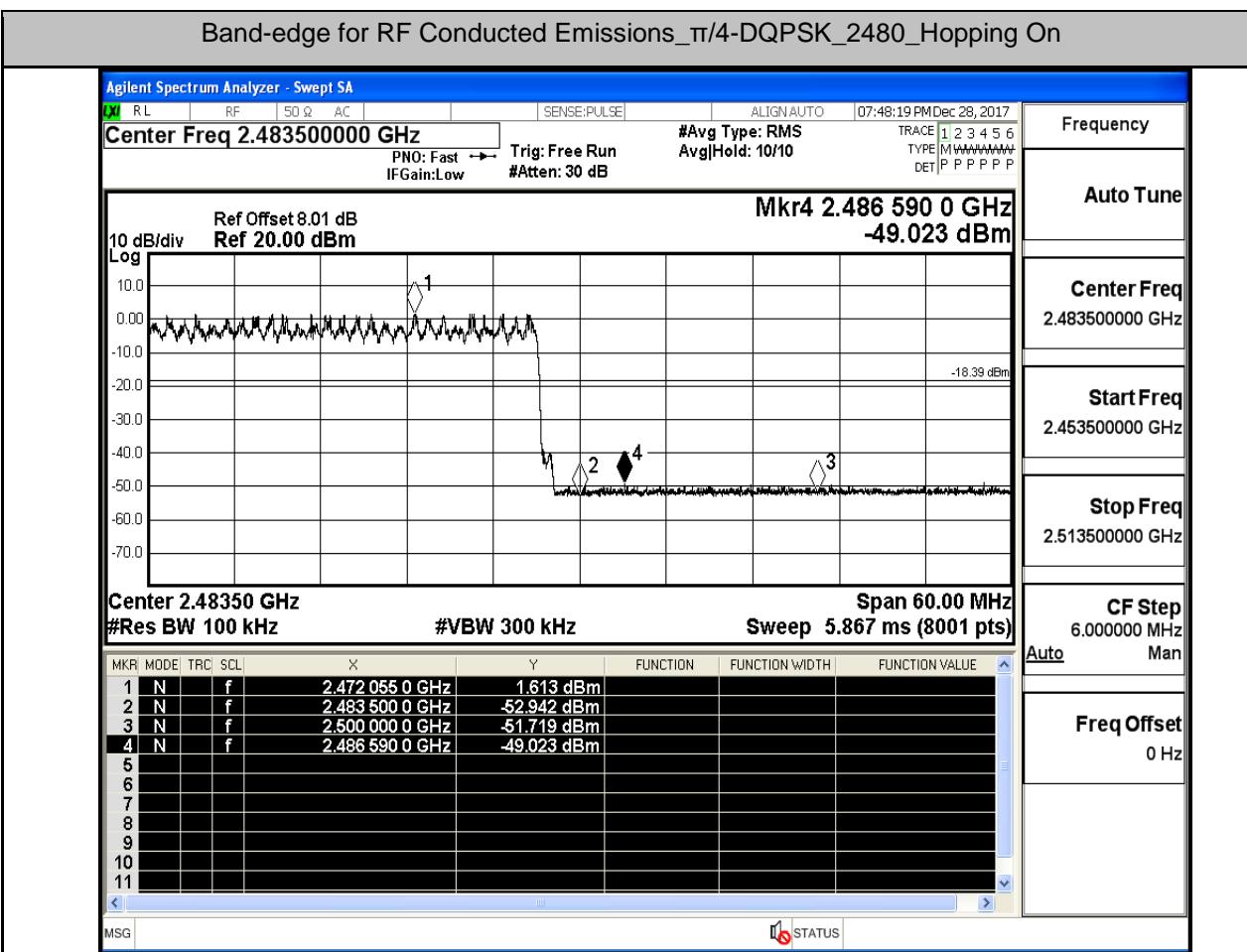


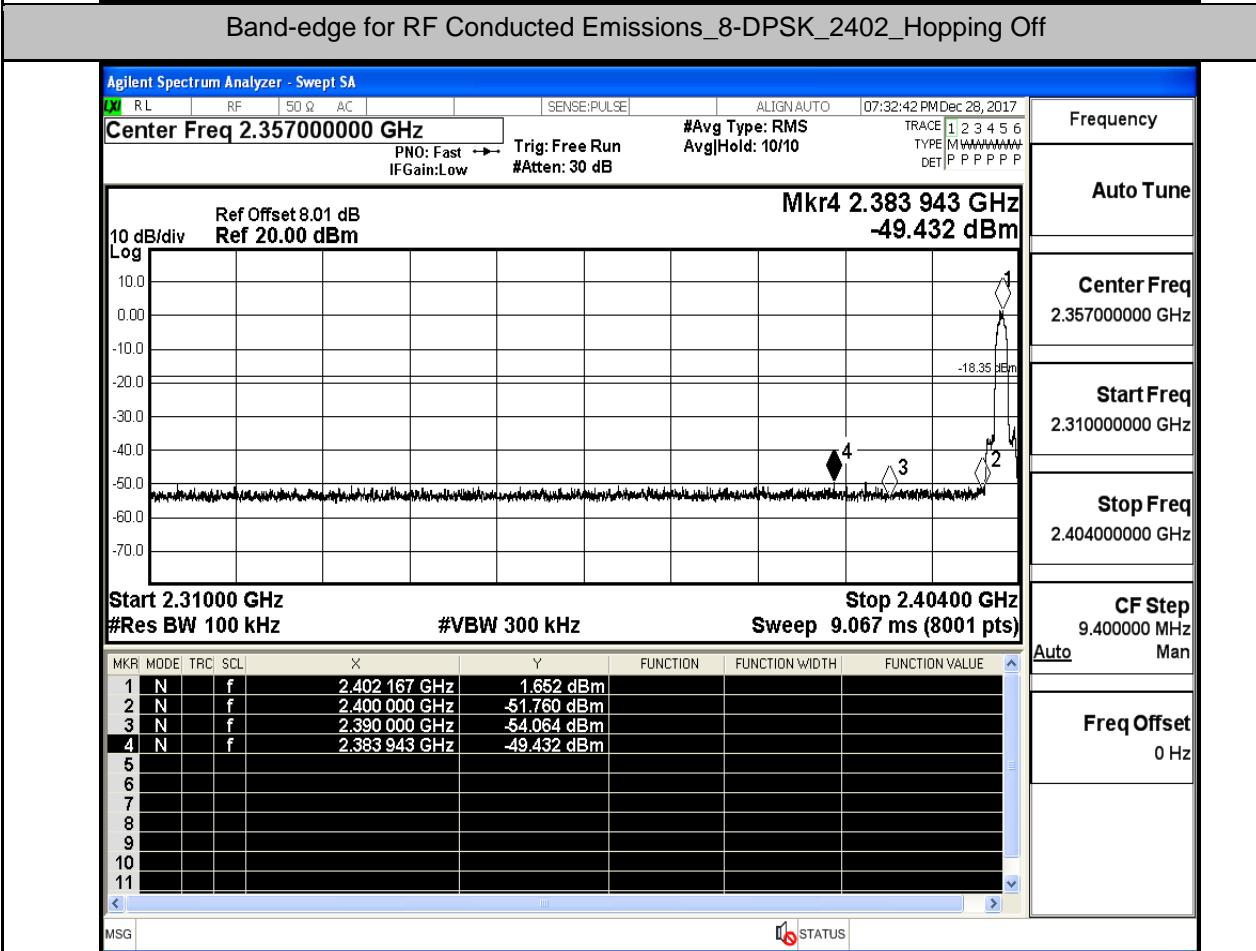
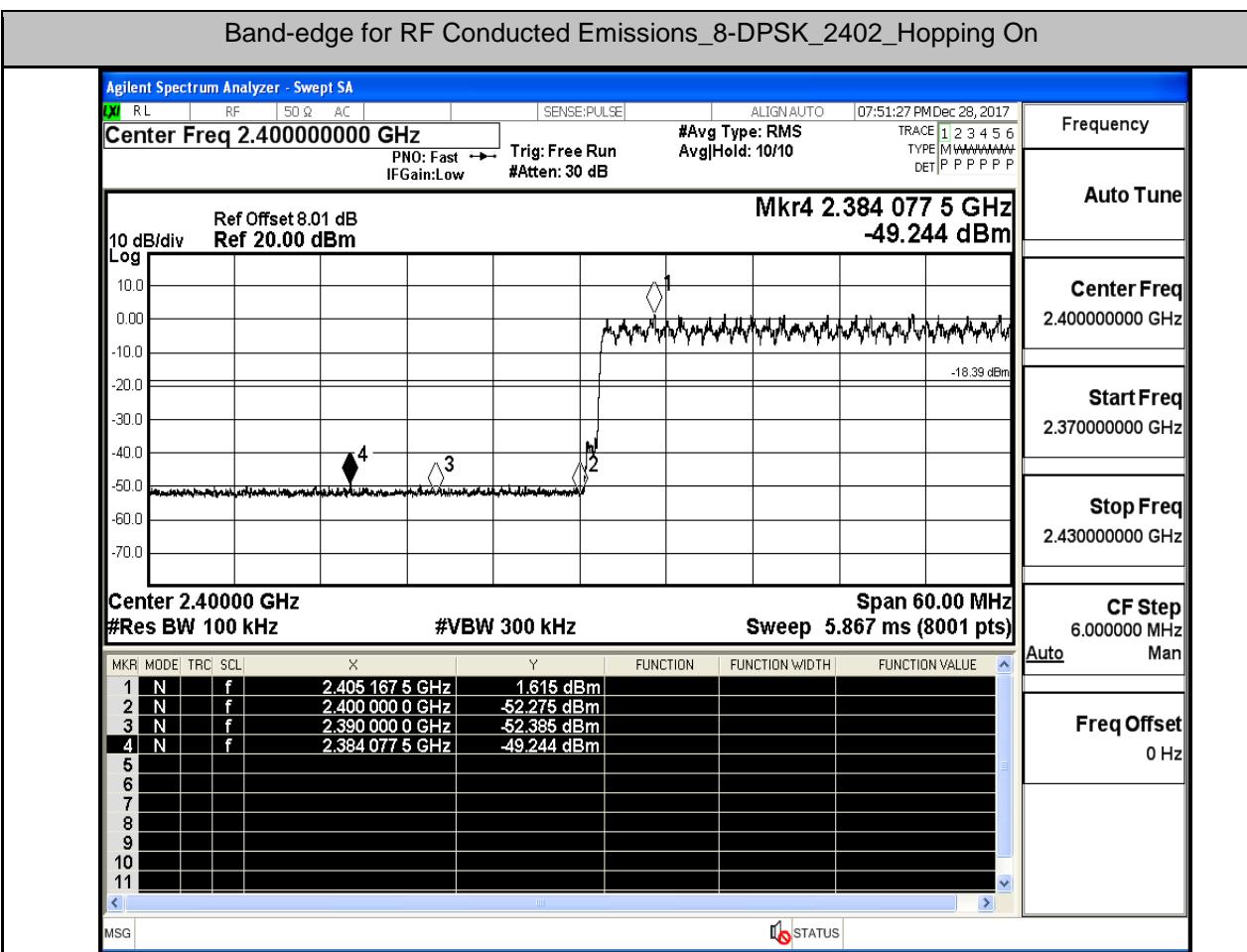
Band-edge for RF Conducted Emissions_π/4-DQPSK_2402_Hopping On

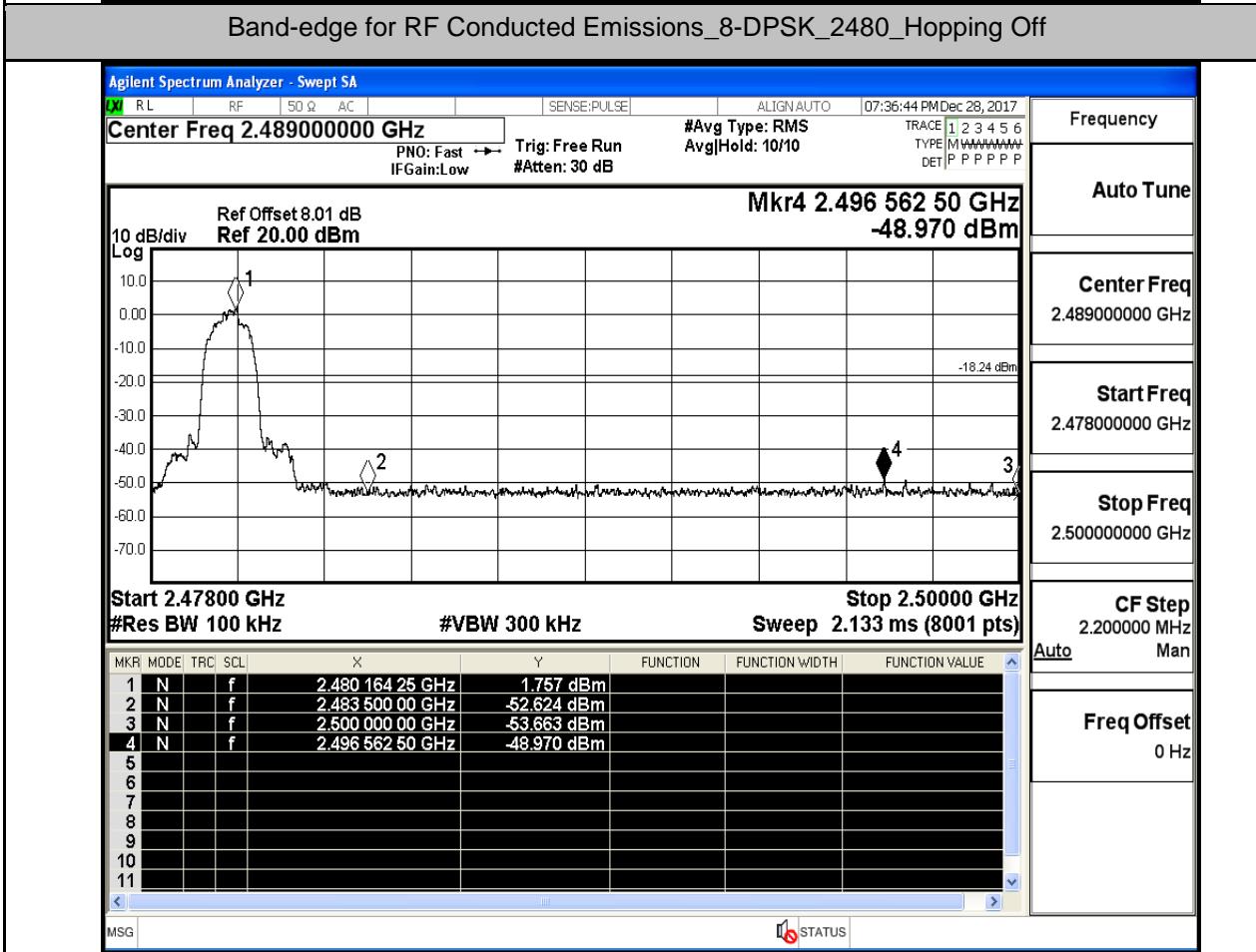
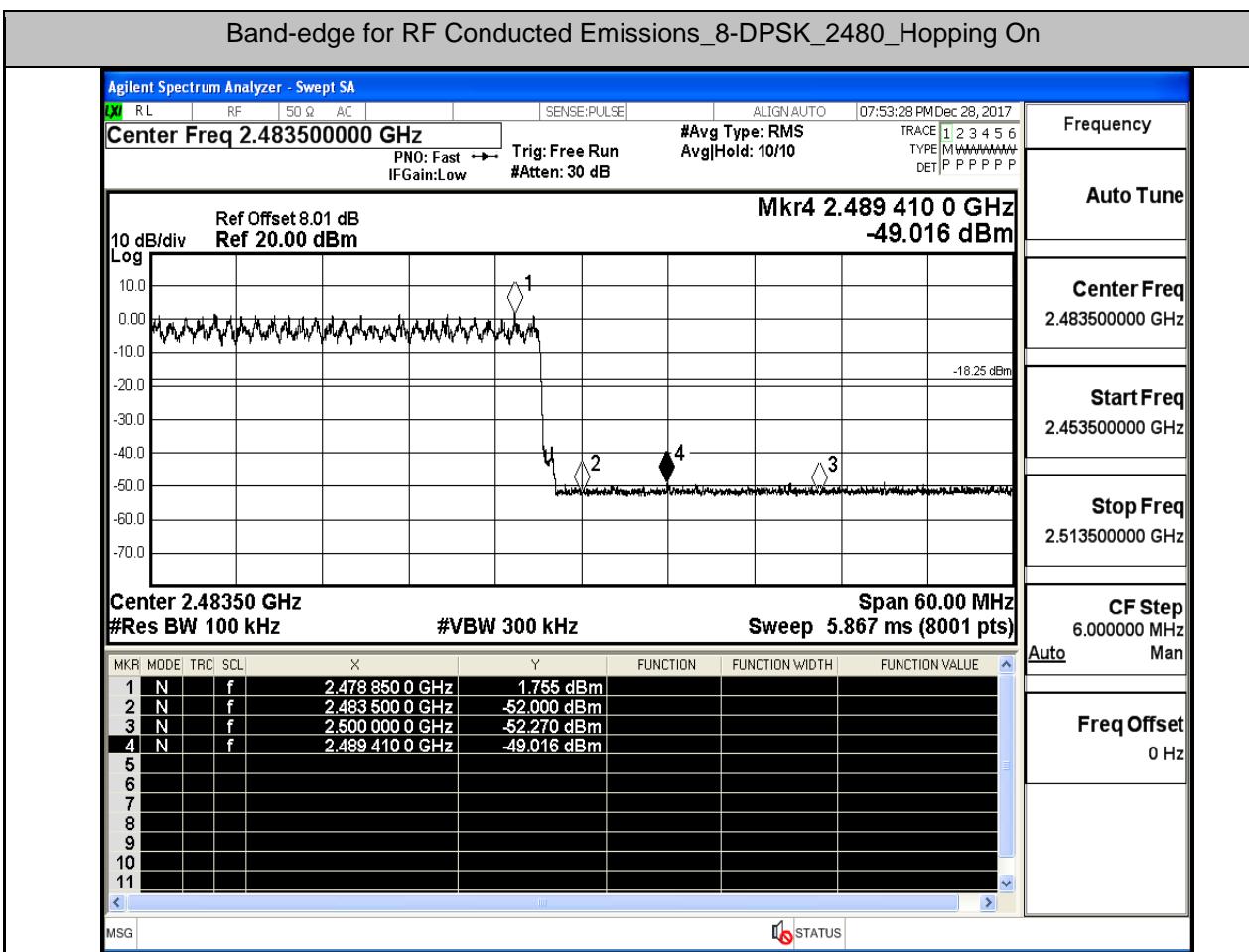


Band-edge for RF Conducted Emissions_π/4-DQPSK_2402_Hopping Off





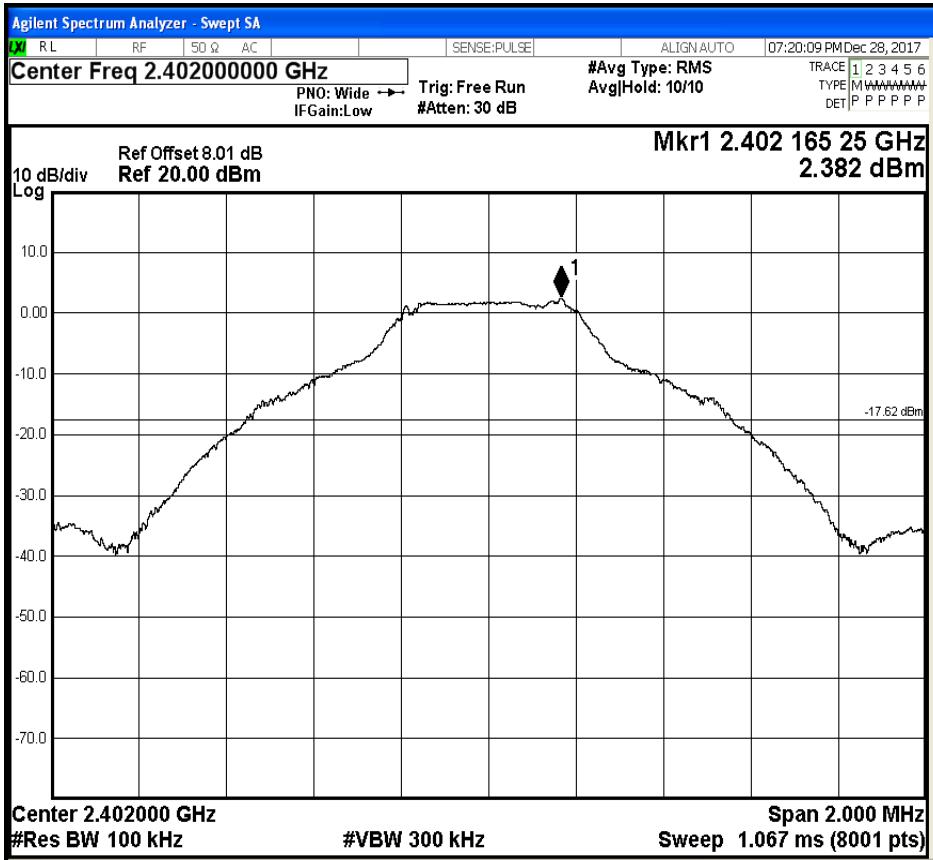




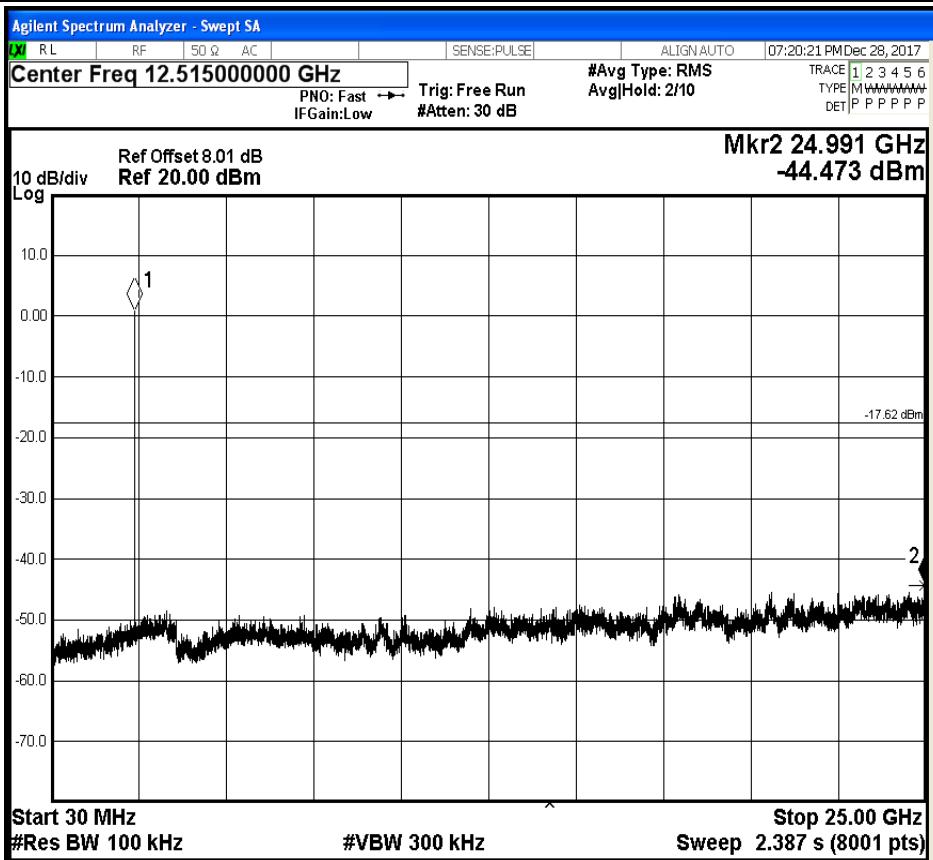
A.7 RF Conducted Spurious Emissions

Test Mode	Test Channel	StartFre [MHz]	StopFre [MHz]	RBW [kHz]	VBW [kHz]	Pref[dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	2402	30	25000	100	300	2.382	-44.473	<- 17.618	PASS
	2441	30	25000	100	300	2.477	-44.421	<- 17.523	PASS
	2480	30	25000	100	300	2.567	-45.031	<- 17.433	PASS
$\pi/4$ -DQPSK	2402	30	25000	100	300	1.497	-44.261	<- 18.503	PASS
	2441	30	25000	100	300	0.98	-45.016	<-19.02	PASS
	2480	30	25000	100	300	1.587	-43.900	<- 18.413	PASS
8-DPSK	2402	30	25000	100	300	1.569	-44.288	<- 18.431	PASS
	2441	30	25000	100	300	1.586	-45.158	<- 18.414	PASS
	2480	30	25000	100	300	1.631	-44.970	<- 18.369	PASS

RF Conducted Spurious Emissions_GFSK_2402

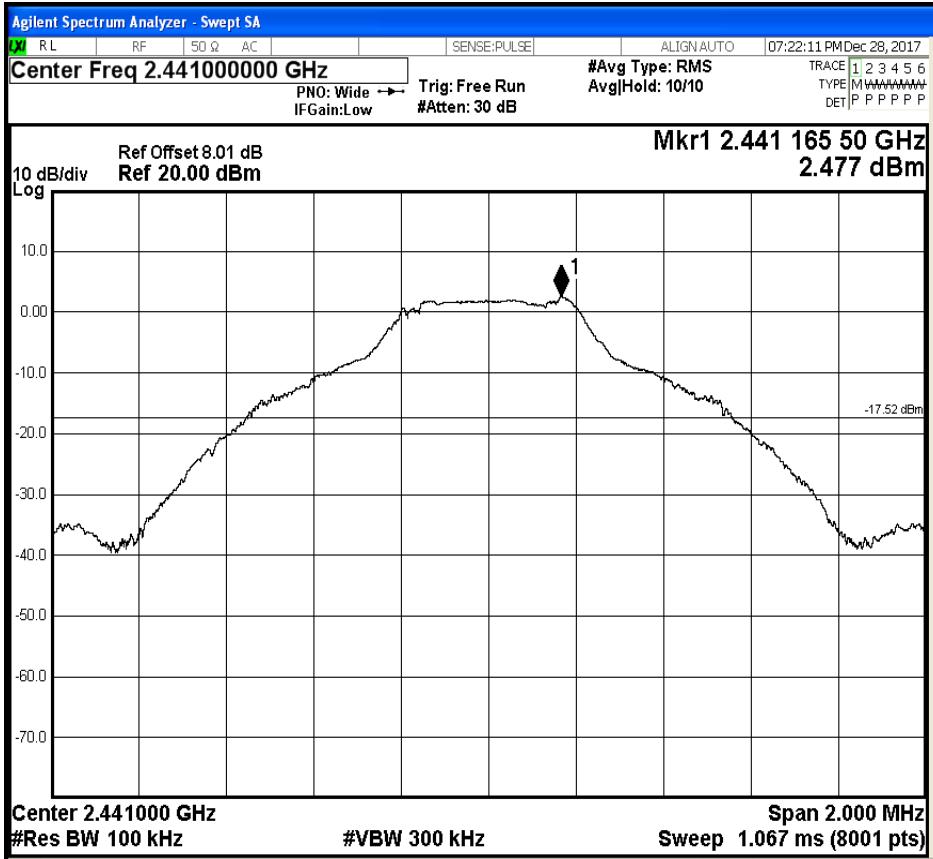


Frequency
Auto Tune
Center Freq 2.402000000 GHz
Start Freq 2.401000000 GHz
Stop Freq 2.403000000 GHz
CF Step 200.000 kHz Auto
Freq Offset 0 Hz



Frequency
Auto Tune
Center Freq 12.515000000 GHz
Start Freq 30.000000 MHz
Stop Freq 25.000000000 GHz
CF Step 2.497000000 GHz Auto
Freq Offset 0 Hz

RF Conducted Spurious Emissions_GFSK_2441



Frequency

Auto Tune

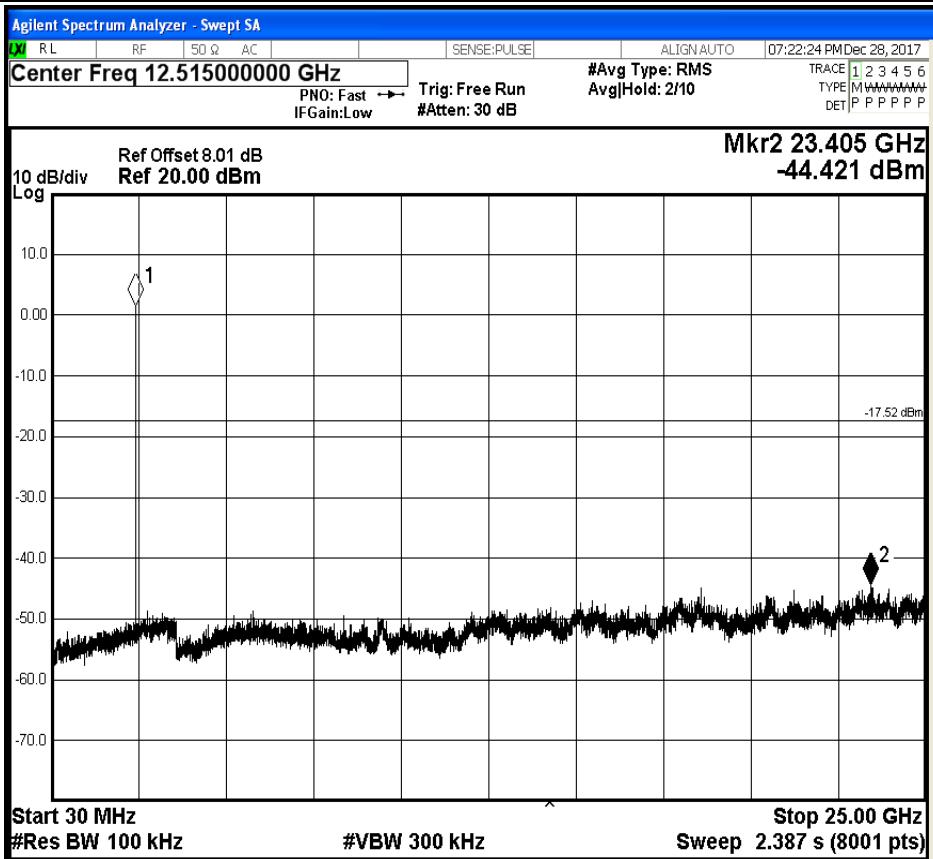
Center Freq
2.441000000 GHz

Start Freq
2.440000000 GHz

Stop Freq
2.442000000 GHz

CF Step
200.000 kHz
Auto

Freq Offset
0 Hz



Frequency

Auto Tune

Center Freq
12.515000000 GHz

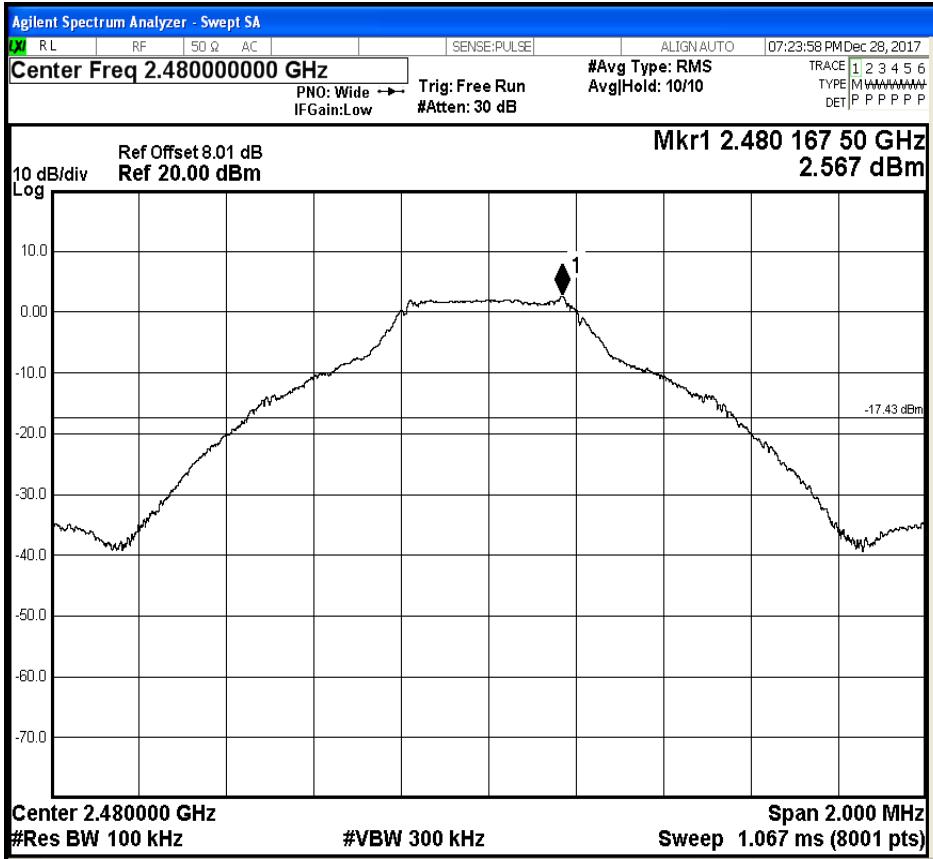
Start Freq
30.000000 MHz

Stop Freq
25.000000000 GHz

CF Step
2.497000000 GHz
Auto

Freq Offset
0 Hz

RF Conducted Spurious Emissions_GFSK_2480



Frequency

Auto Tune

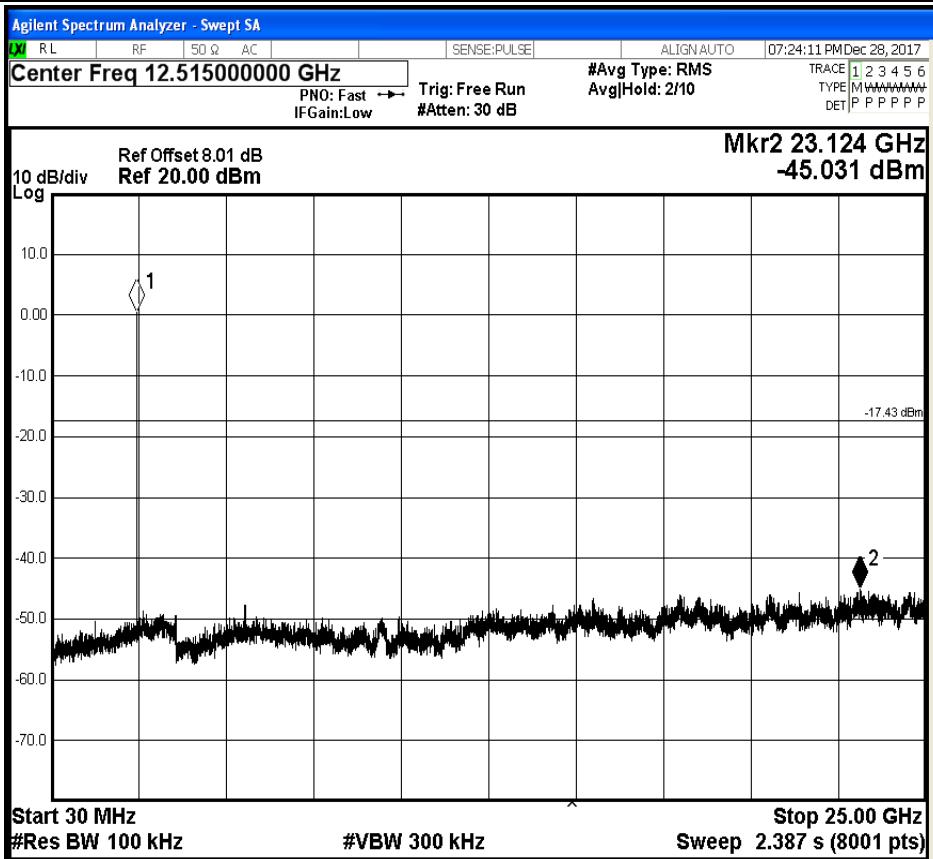
Center Freq
2.480000000 GHz

Start Freq
2.479000000 GHz

Stop Freq
2.481000000 GHz

CF Step
200.000 kHz
Auto Man

Freq Offset
0 Hz



Frequency

Auto Tune

Center Freq
12.515000000 GHz

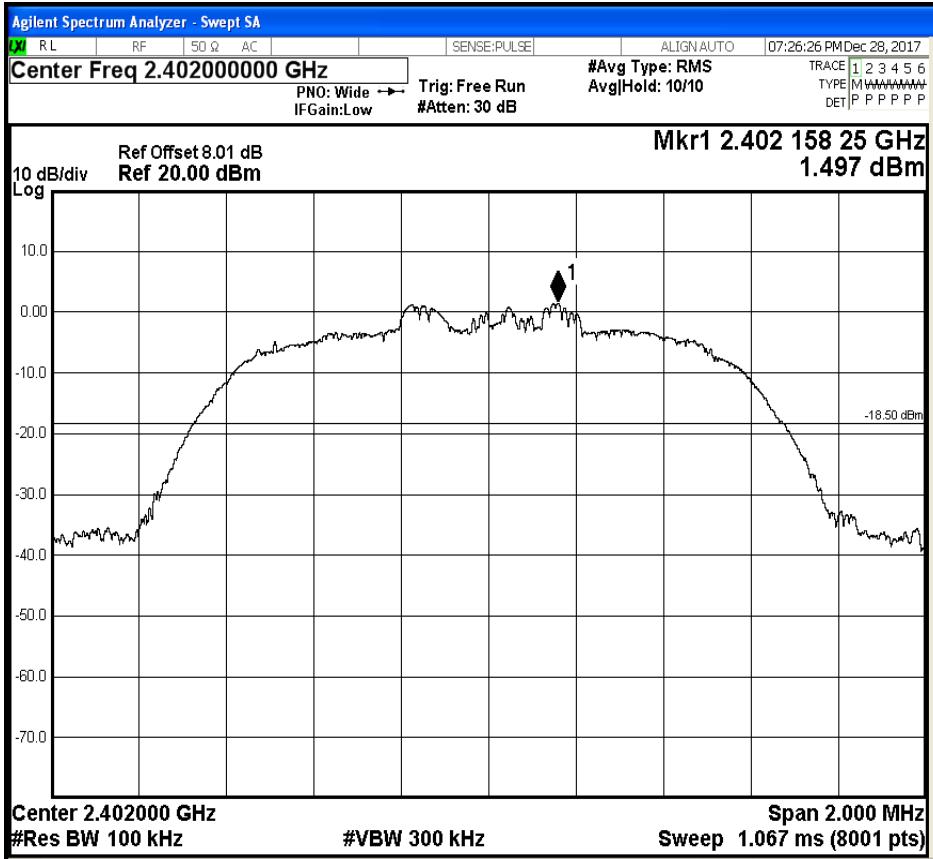
Start Freq
30.000000 MHz

Stop Freq
25.000000000 GHz

CF Step
2.497000000 GHz
Auto Man

Freq Offset
0 Hz

RF Conducted Spurious Emissions_π/4-DQPSK_2402



Frequency

Auto Tune

Center Freq
2.402000000 GHz

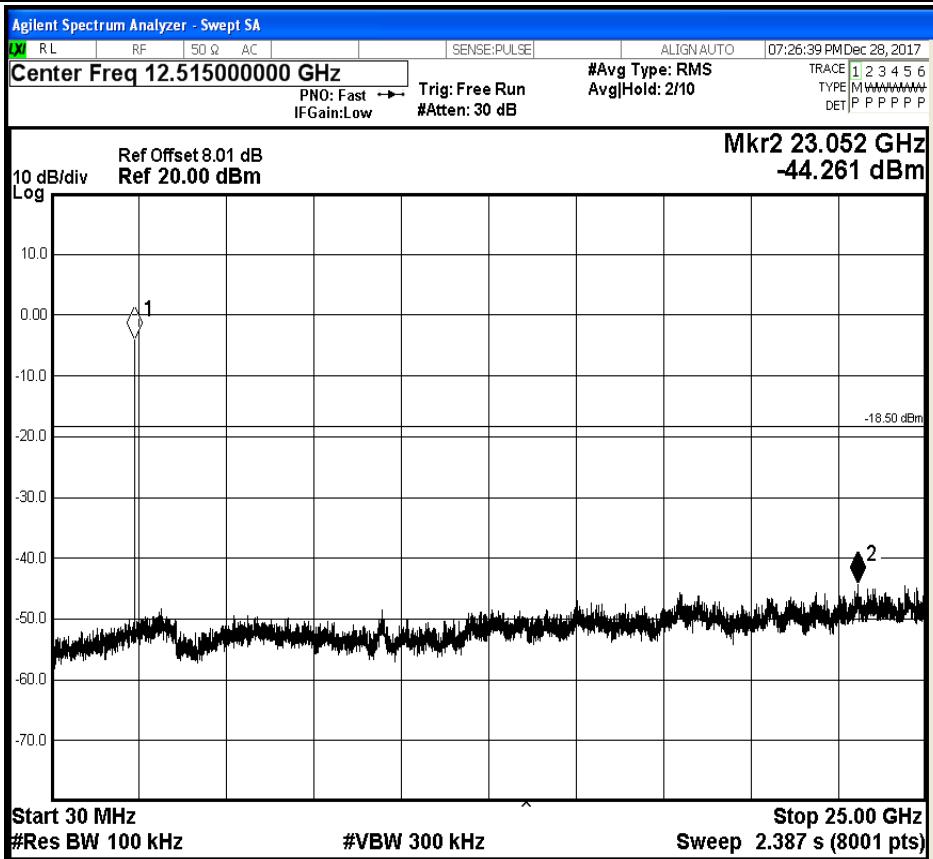
Start Freq
2.401000000 GHz

Stop Freq
2.403000000 GHz

CF Step
200.000 kHz

Auto Man

Freq Offset
0 Hz



Frequency

Auto Tune

Center Freq
12.515000000 GHz

Start Freq
30.000000 MHz

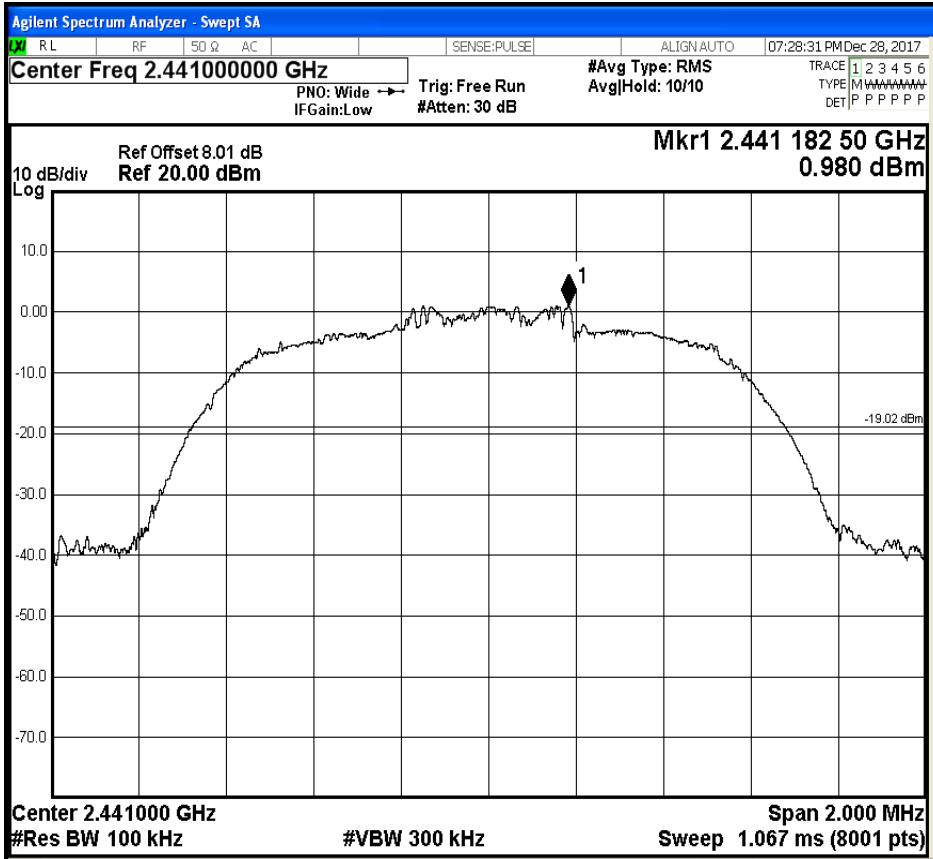
Stop Freq
25.000000000 GHz

CF Step
2.497000000 GHz

Auto Man

Freq Offset
0 Hz

RF Conducted Spurious Emissions_π/4-DQPSK_2441



Frequency

Auto Tune

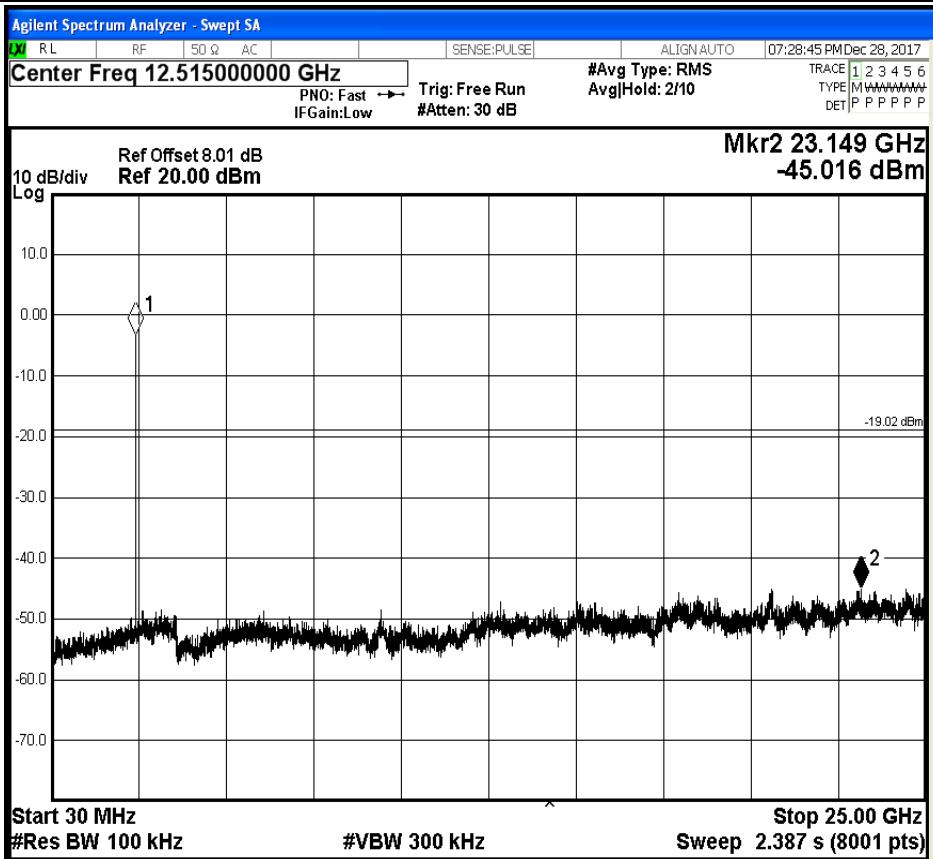
Center Freq
2.441000000 GHz

Start Freq
2.440000000 GHz

Stop Freq
2.442000000 GHz

CF Step
200.000 kHz
Auto

Freq Offset
0 Hz



Frequency

Auto Tune

Center Freq
12.515000000 GHz

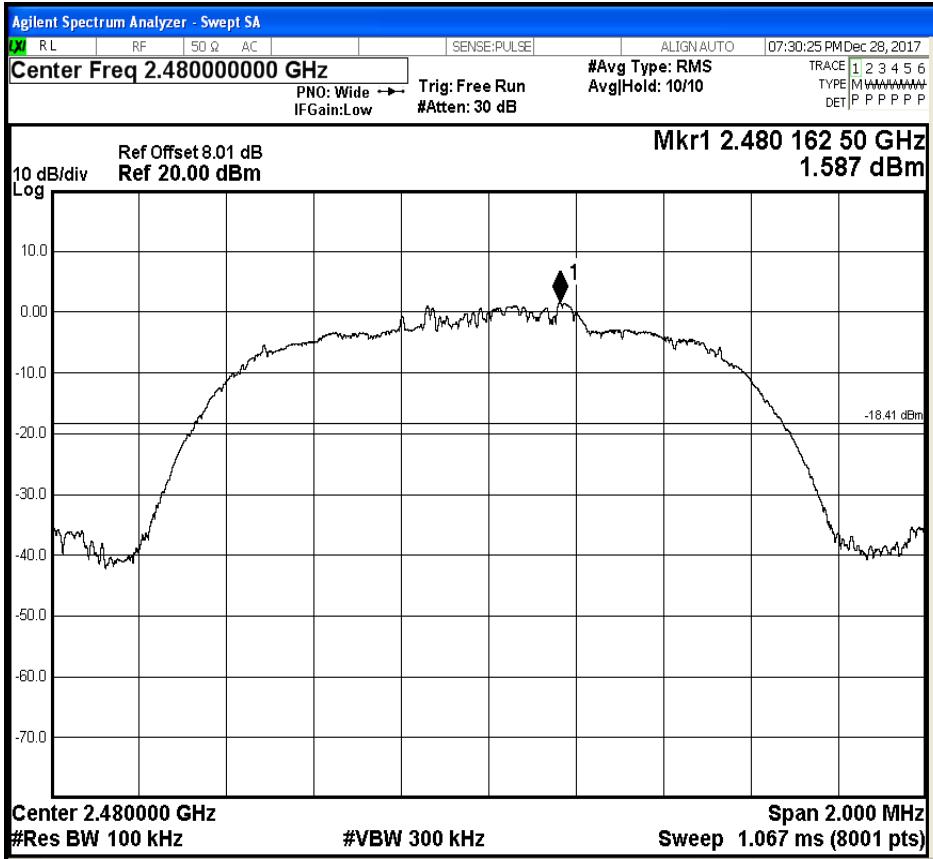
Start Freq
30.000000 MHz

Stop Freq
25.000000000 GHz

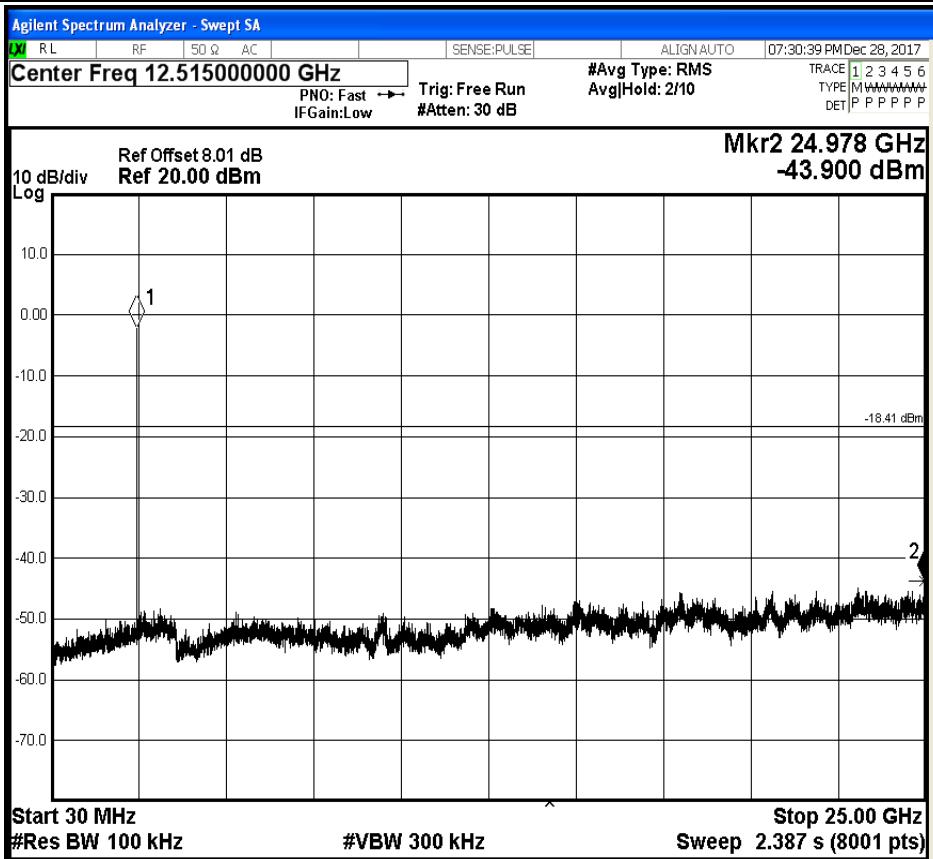
CF Step
2.497000000 GHz
Auto

Freq Offset
0 Hz

RF Conducted Spurious Emissions_π/4-DQPSK_2480

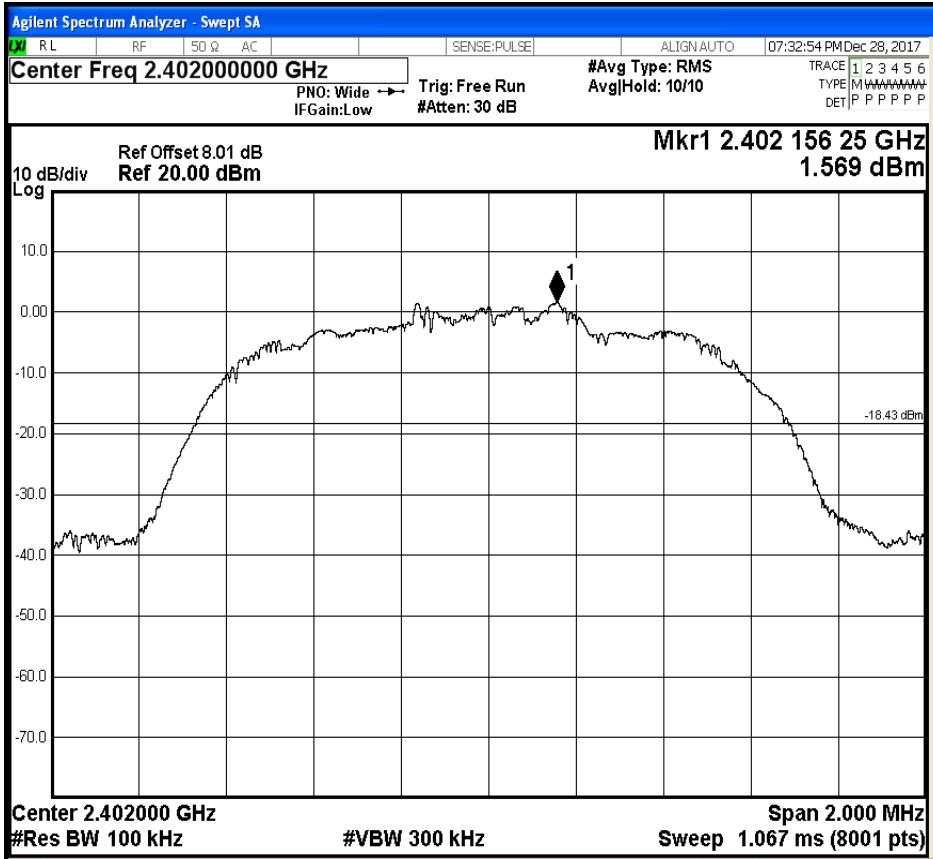


Frequency
Auto Tune
Center Freq
2.480000000 GHz
Start Freq
2.479000000 GHz
Stop Freq
2.481000000 GHz
CF Step
200.000 kHz
Auto
Freq Offset
0 Hz



Frequency
Auto Tune
Center Freq
12.515000000 GHz
Start Freq
30.000000 MHz
Stop Freq
25.000000000 GHz
CF Step
2.497000000 GHz
Auto
Freq Offset
0 Hz

RF Conducted Spurious Emissions_8-DPSK_2402



Frequency

Auto Tune

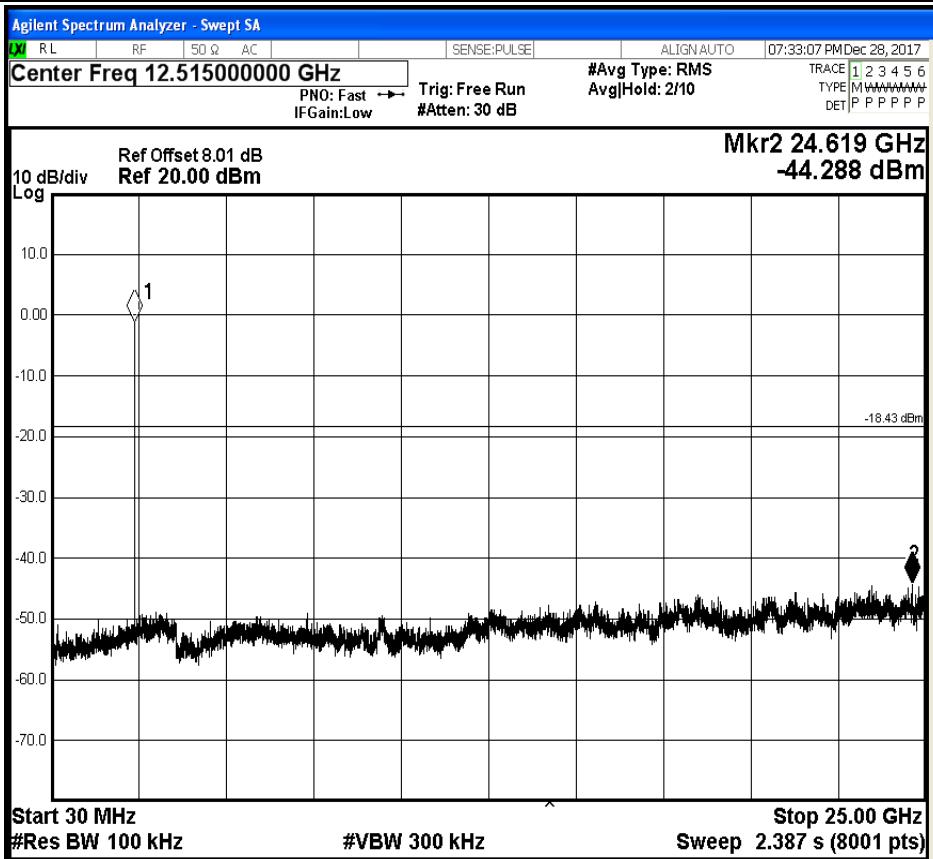
Center Freq
2.402000000 GHz

Start Freq
2.401000000 GHz

Stop Freq
2.403000000 GHz

CF Step
200.000 kHz
Auto

Freq Offset
0 Hz



Frequency

Auto Tune

Center Freq
12.515000000 GHz

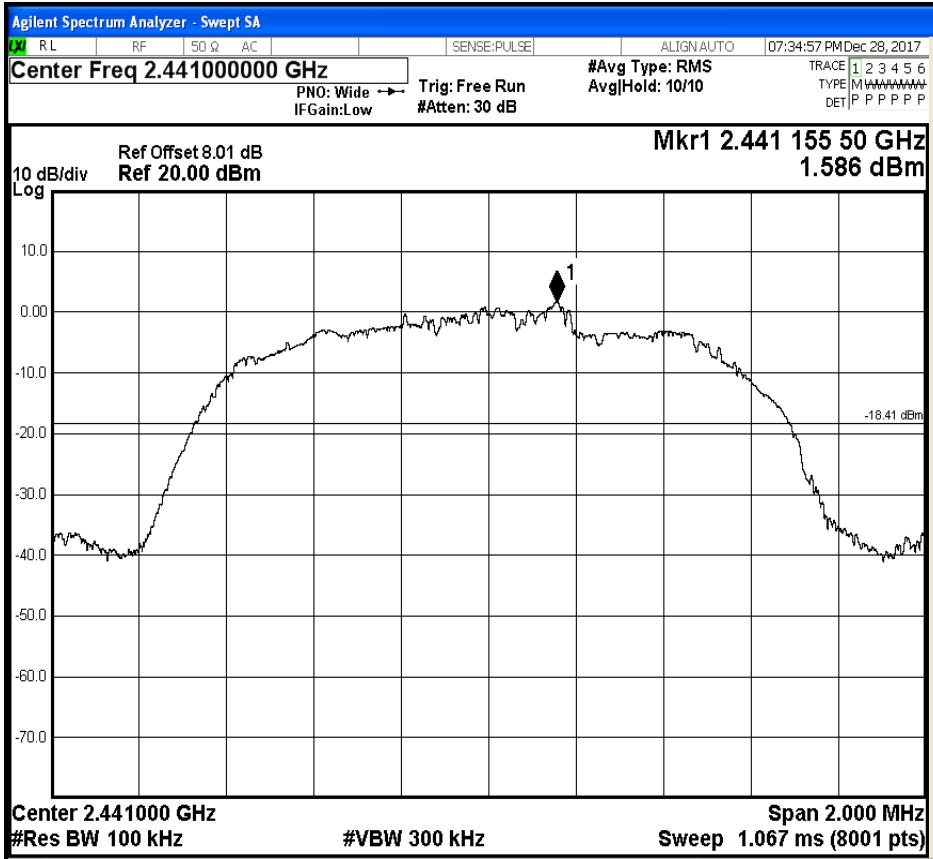
Start Freq
30.000000 MHz

Stop Freq
25.000000000 GHz

CF Step
2.497000000 GHz
Auto

Freq Offset
0 Hz

RF Conducted Spurious Emissions_8-DPSK_2441



Frequency

Auto Tune

Center Freq
2.441000000 GHz

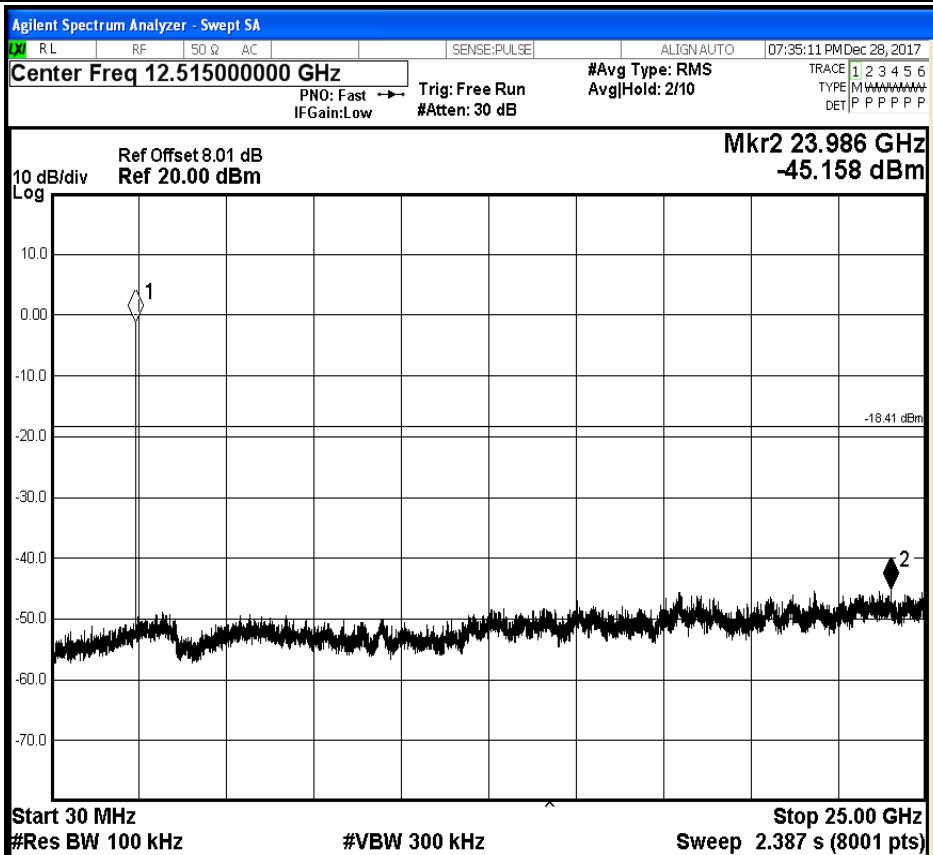
Start Freq
2.440000000 GHz

Stop Freq
2.442000000 GHz

CF Step
200.000 kHz

Auto

Freq Offset
0 Hz



Frequency

Auto Tune

Center Freq
12.515000000 GHz

Start Freq
30.000000 MHz

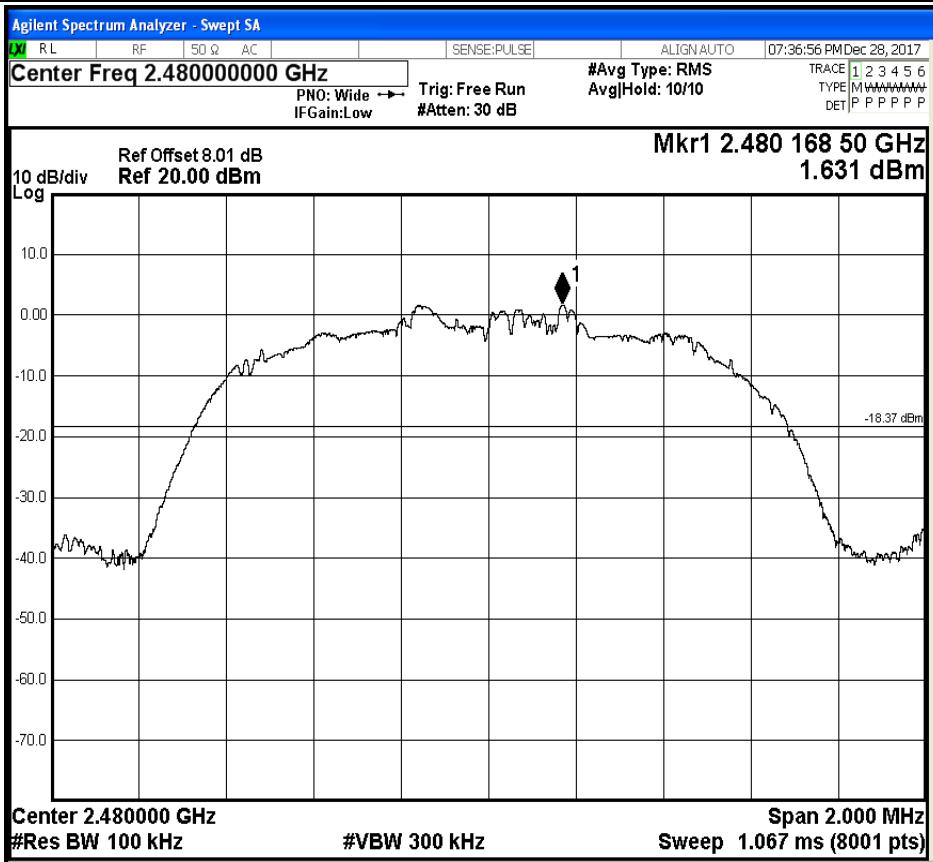
Stop Freq
25.000000000 GHz

CF Step
2.497000000 GHz

Auto

Freq Offset
0 Hz

RF Conducted Spurious Emissions_8-DPSK_2480



Frequency

Auto Tune

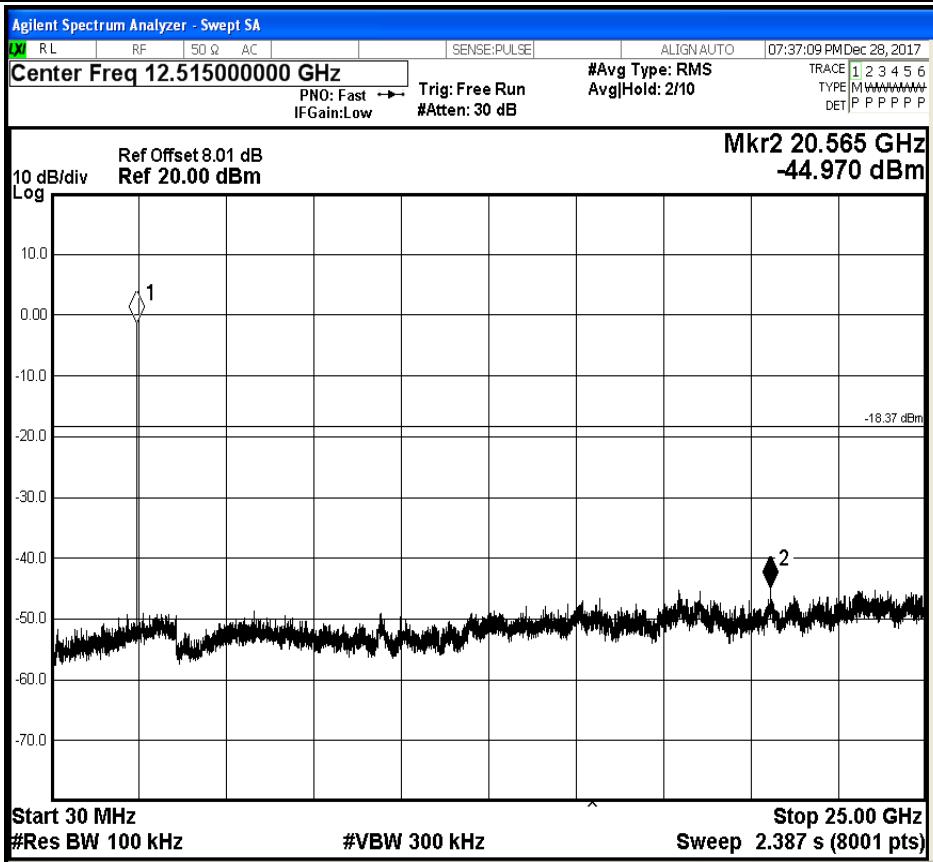
Center Freq
2.480000000 GHz

Start Freq
2.479000000 GHz

Stop Freq
2.481000000 GHz

CF Step
200.000 kHz
Auto

Freq Offset
0 Hz



Frequency

Auto Tune

Center Freq
12.515000000 GHz

Start Freq
30.000000 MHz

Stop Freq
25.000000000 GHz

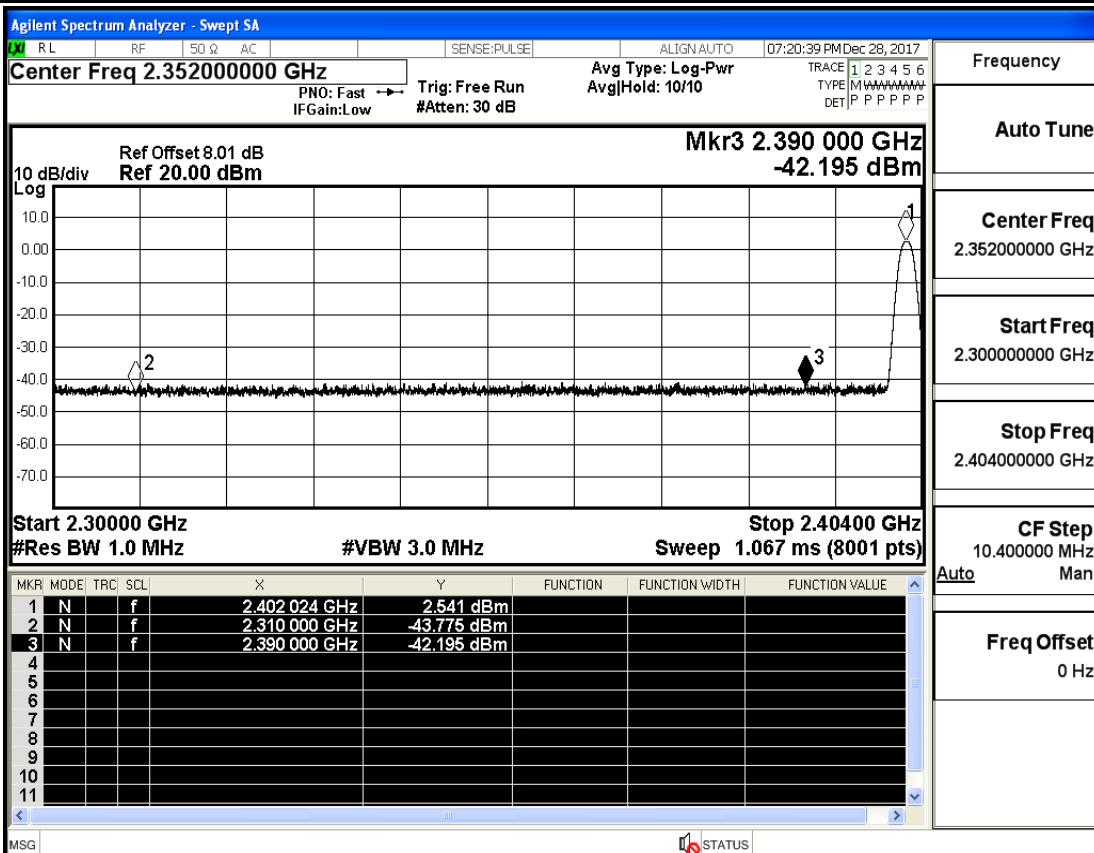
CF Step
2.497000000 GHz
Auto

Freq Offset
0 Hz

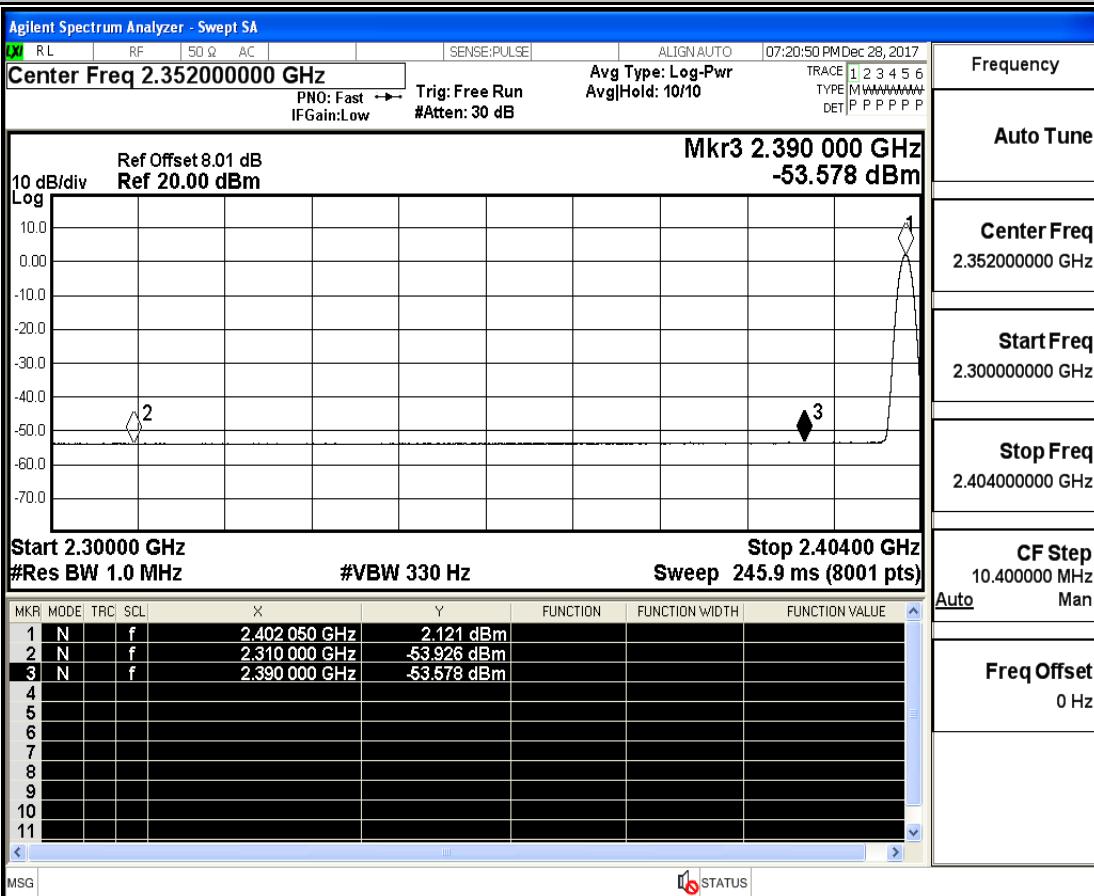
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-43.78	2	0	53.48	PEAK	74	PASS
	Off	2310.0	-53.93	2	0	43.33	AV	54	PASS
	Off	2390.0	-42.20	2	0	55.06	PEAK	74	PASS
	Off	2390.0	-53.58	2	0	43.68	AV	54	PASS
	Off	2483.5	-43.35	2	0	53.91	PEAK	74	PASS
	Off	2483.5	-53.33	2	0	43.93	AV	54	PASS
	Off	2500.0	-42.85	2	0	54.41	PEAK	74	PASS
	Off	2500.0	-53.10	2	0	44.16	AV	54	PASS
$\pi/4$ -DQPSK	Off	2310.0	-44.60	2	0	52.66	PEAK	74	PASS
	Off	2310.0	-53.98	2	0	43.28	AV	54	PASS
	Off	2390.0	-43.76	2	0	53.50	PEAK	74	PASS
	Off	2390.0	-53.63	2	0	43.62	AV	54	PASS
	Off	2483.5	-43.83	2	0	53.43	PEAK	74	PASS
	Off	2483.5	-53.21	2	0	44.04	AV	54	PASS
	Off	2500.0	-44.77	2	0	52.49	PEAK	74	PASS
	Off	2500.0	-53.27	2	0	43.99	AV	54	PASS
8-DPSK	Off	2310.0	-42.44	2	0	54.82	PEAK	74	PASS
	Off	2310.0	-54.00	2	0	43.26	AV	54	PASS
	Off	2390.0	-43.86	2	0	53.39	PEAK	74	PASS
	Off	2390.0	-53.76	2	0	43.50	AV	54	PASS
	Off	2483.5	-43.03	2	0	54.23	PEAK	74	PASS
	Off	2483.5	-53.31	2	0	43.95	AV	54	PASS
	Off	2500.0	-43.40	2	0	53.86	PEAK	74	PASS
	Off	2500.0	-53.22	2	0	44.04	AV	54	PASS

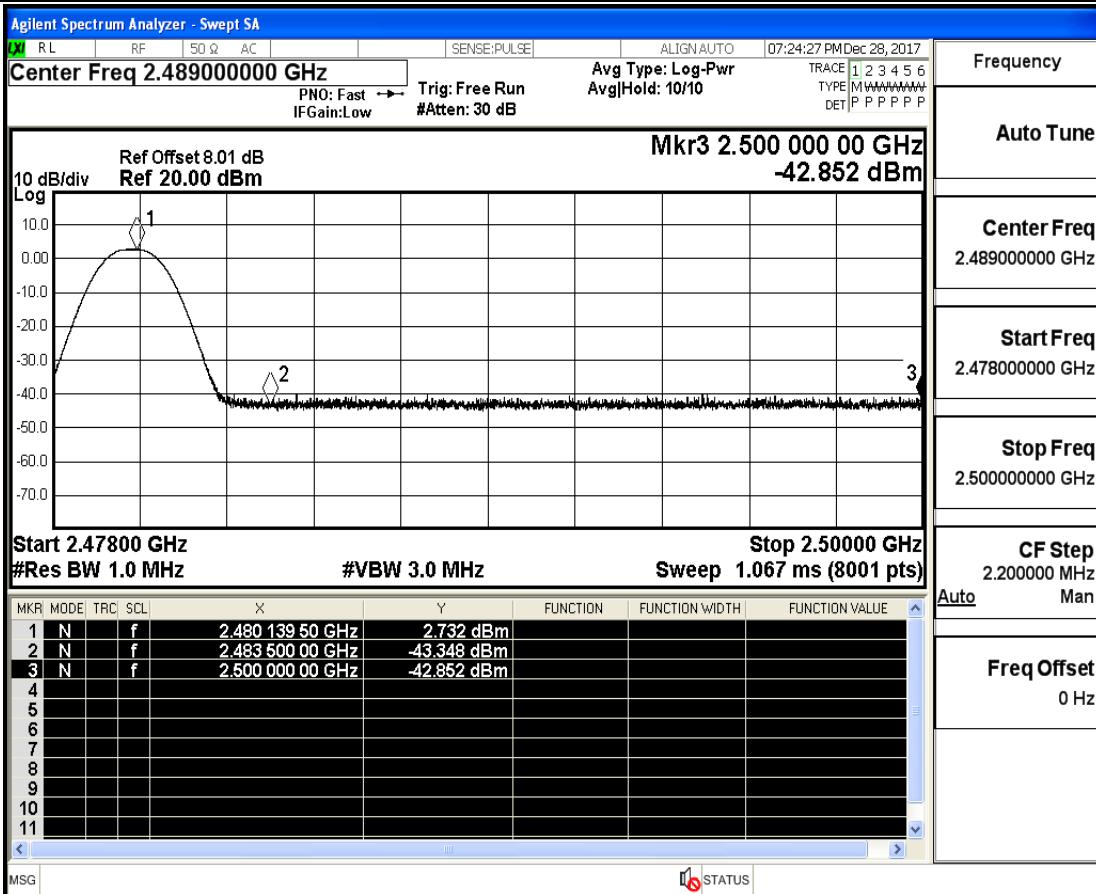
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK



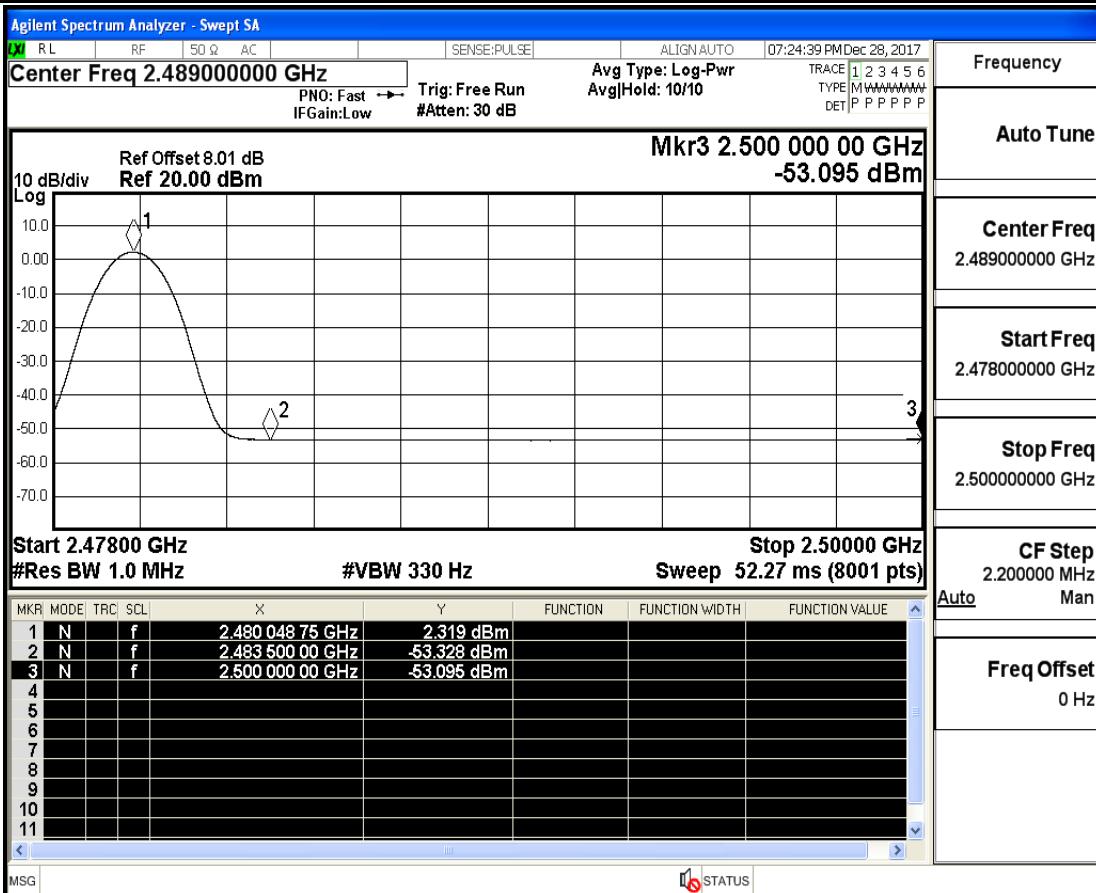
Restrict-band band-edge measurements_Hopping Off_GFSK_Average



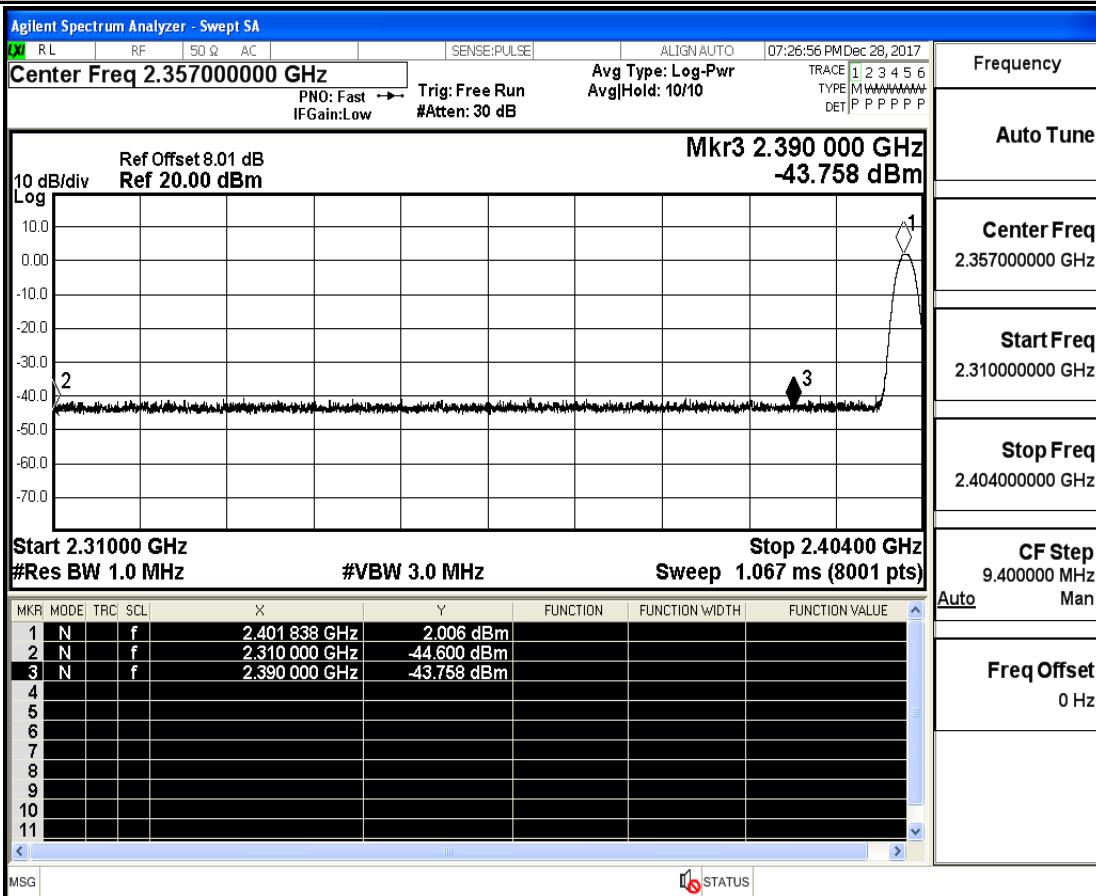
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK



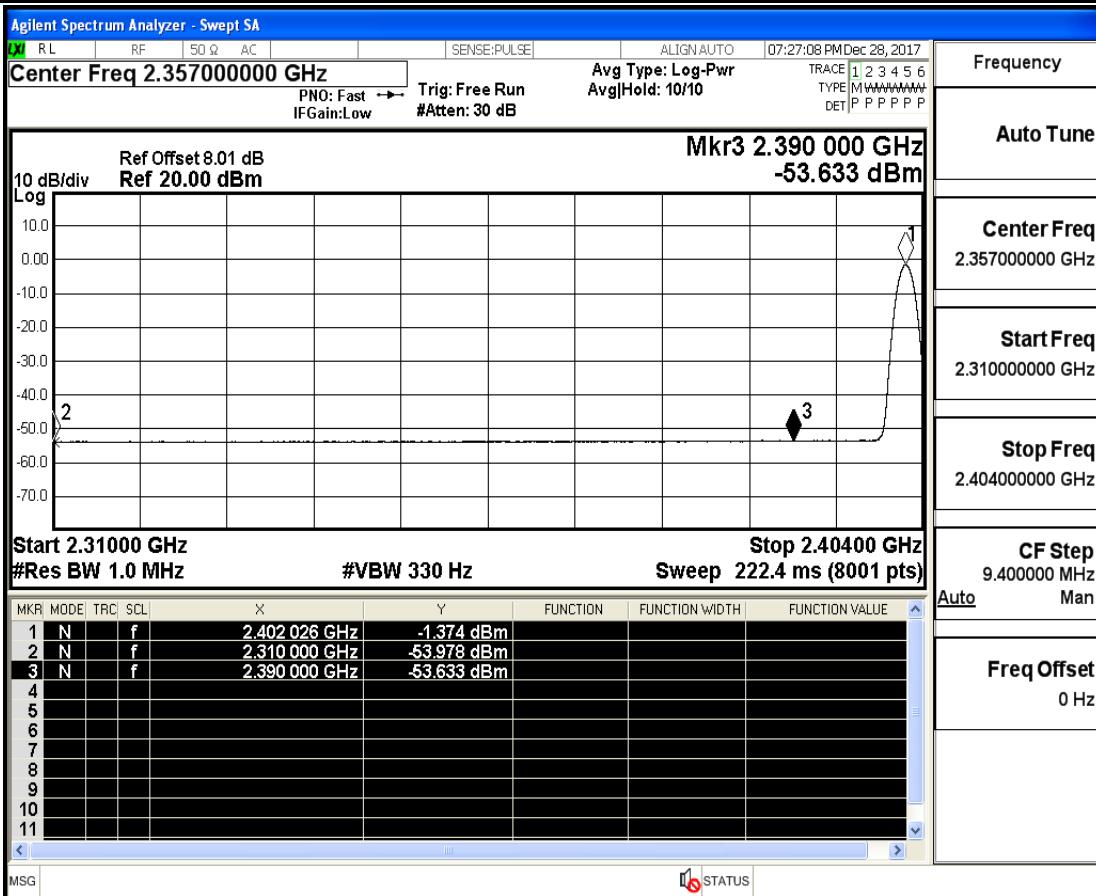
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average



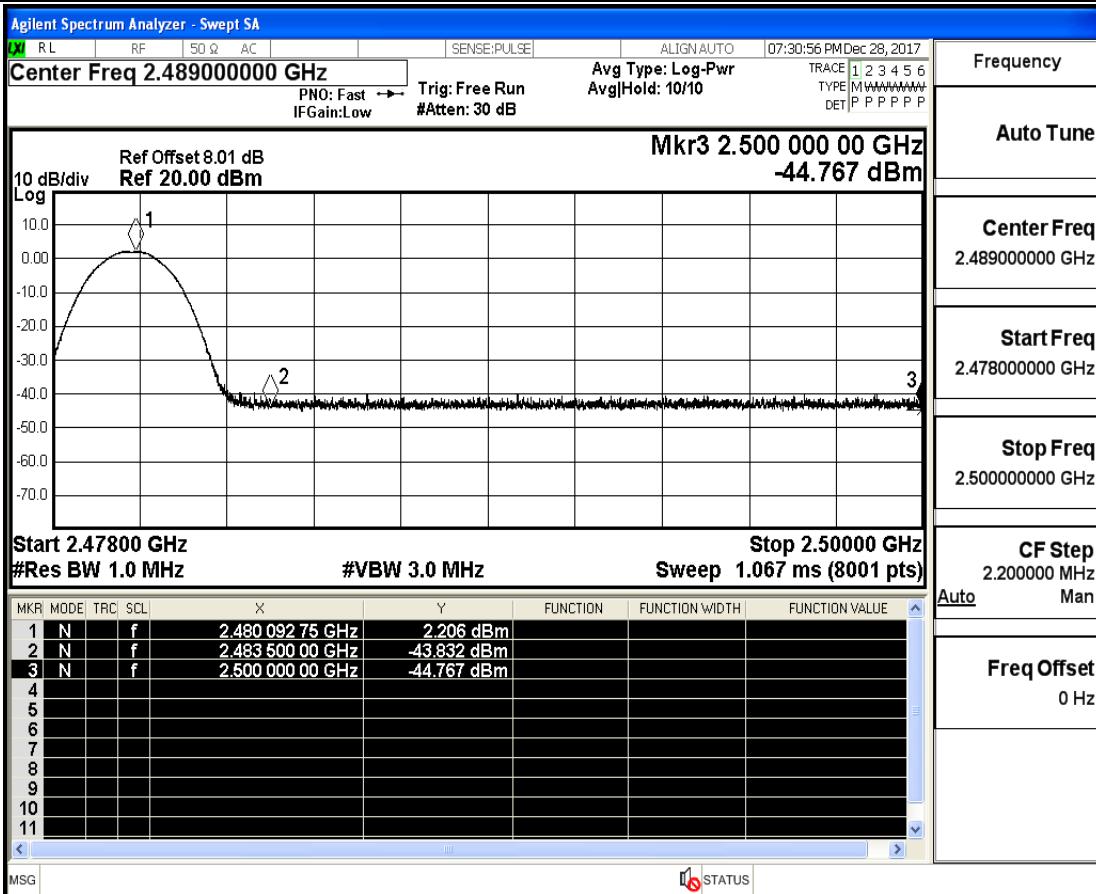
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK



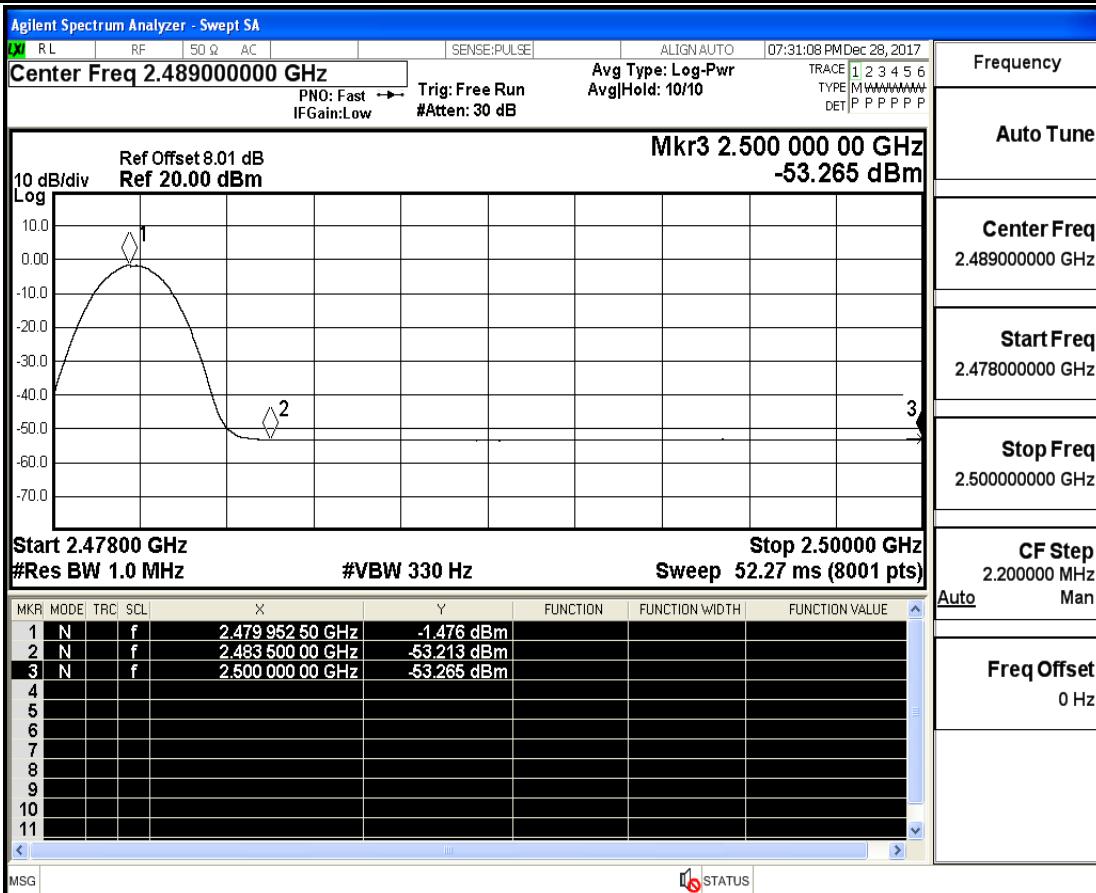
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average



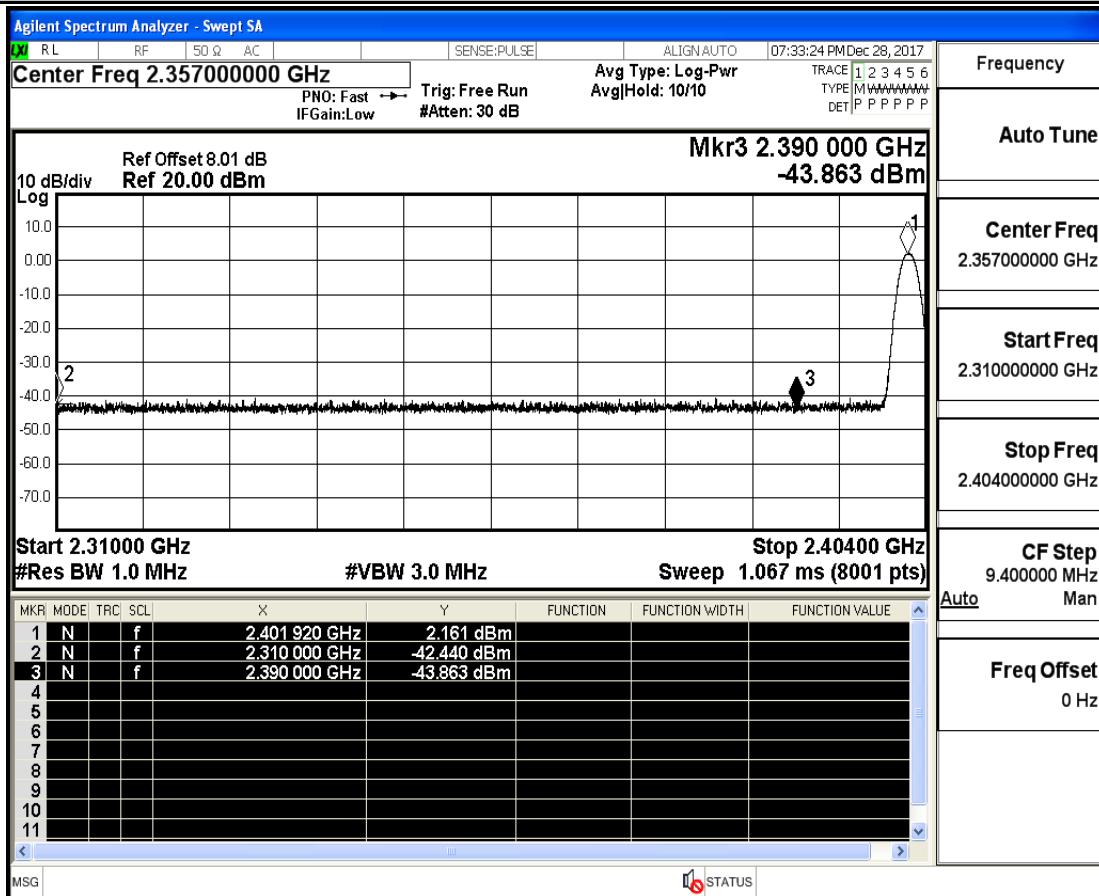
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK



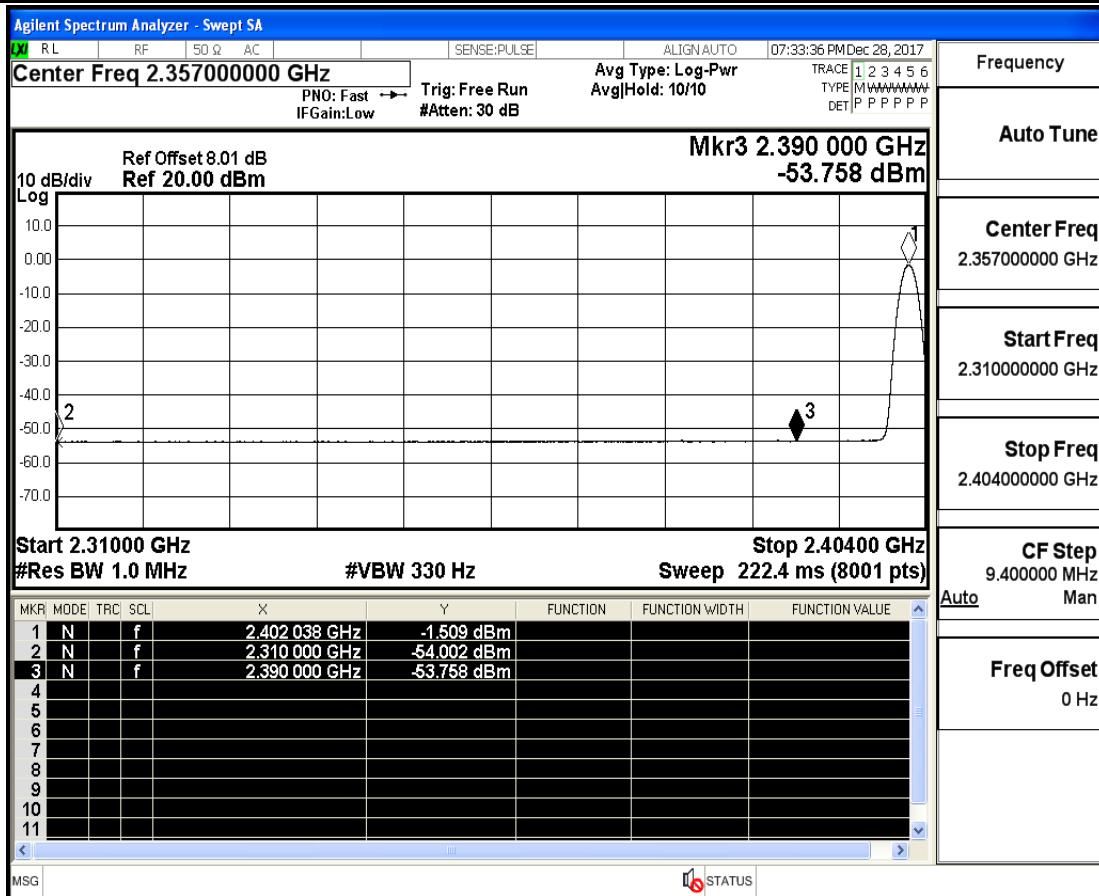
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average



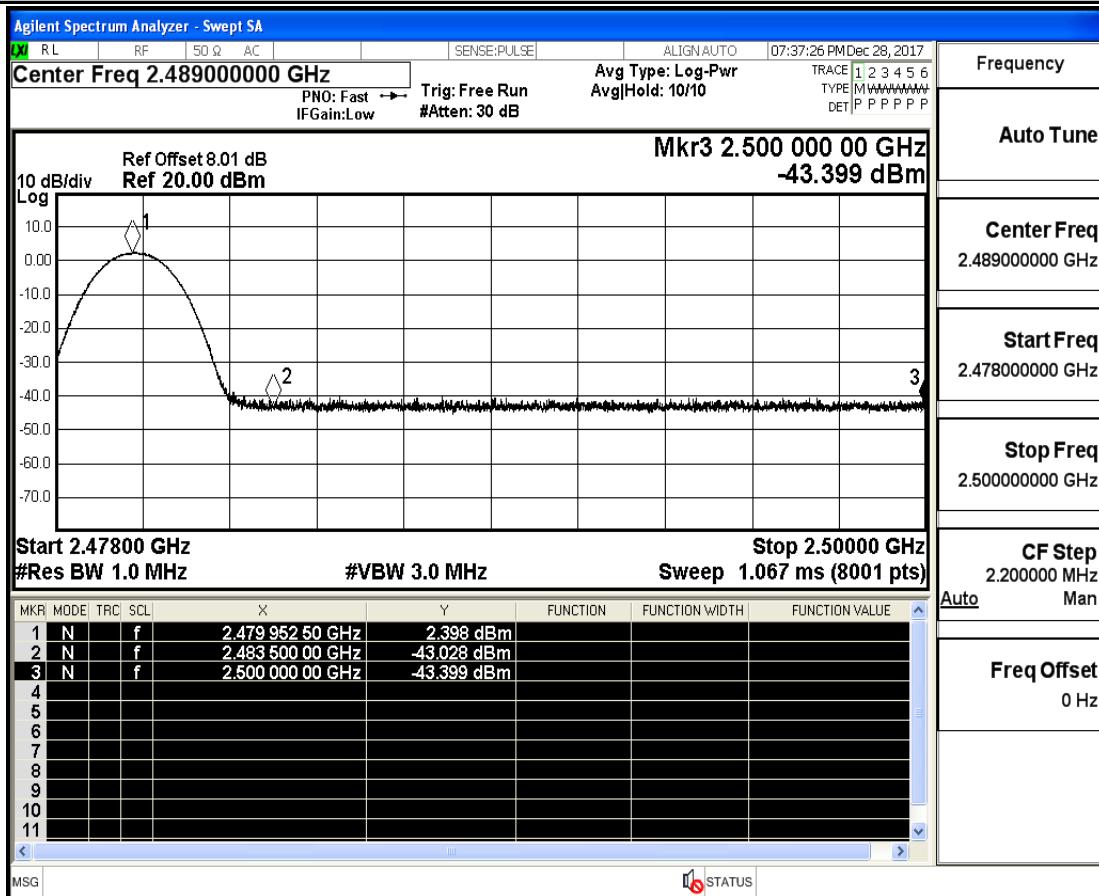
Restrict-band band-edge measurements_Hopping Off_8-DPSK_PEAK



Restrict-band band-edge measurements_Hopping Off_8-DPSK_Average



Restrict-band band-edge measurements_Hopping Off_8-DPSK_PEAK



Restrict-band band-edge measurements_Hopping Off_8-DPSK_Average

