

Appendix A

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

Product Name: Bluetooth Speaker

Trade Mark: N/A

Test Model: RS19

FCC ID: 2ATOY-RS19

Environmental Conditions

Temperature:	22.7°C
Relative Humidity:	50%
ATM Pressure:	100.0 kPa
Test Engineer:	Gary Qian
Supervised by:	Eden Hu

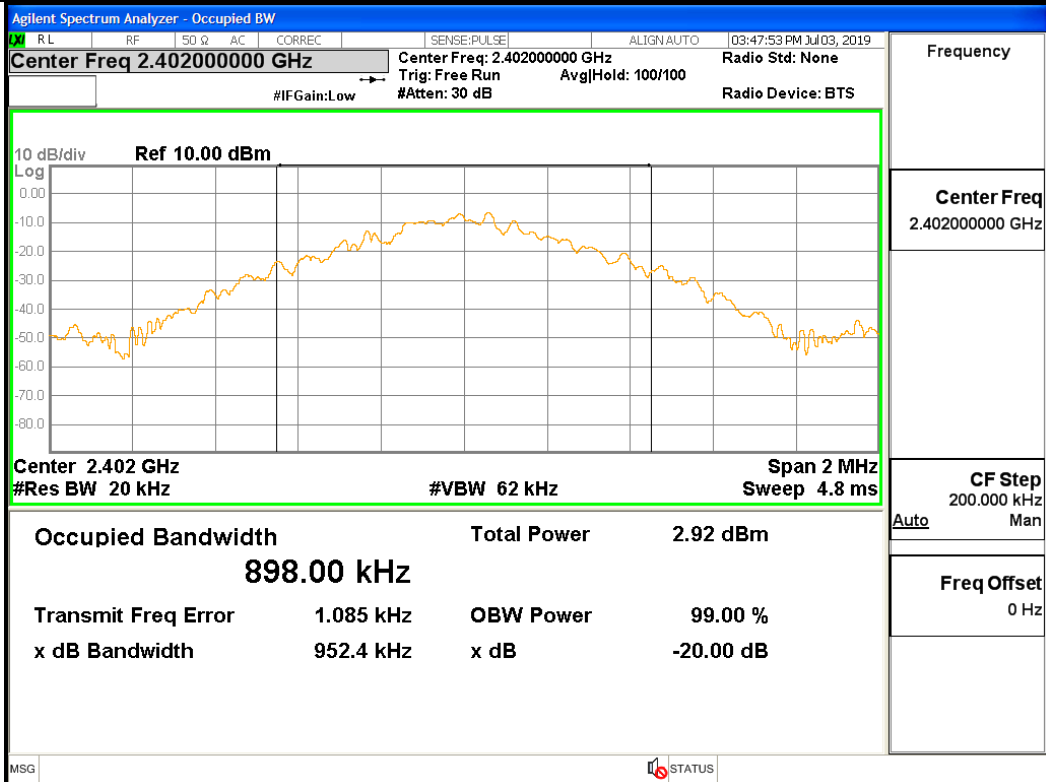
A.1 20 dB Bandwidth

Mode	Channel.	20dB Bandwidth [MHz]	Limit(MHz)	Verdict
GFSK	LCH	0.952	Not Specified	PASS
GFSK	MCH	0.950	Not Specified	PASS
GFSK	HCH	0.950	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.349	Not Specified	PASS
$\pi/4$ DQPSK	MCH	1.351	Not Specified	PASS
$\pi/4$ DQPSK	HCH	1.349	Not Specified	PASS
8DPSK	LCH	1.337	Not Specified	PASS
8DPSK	MCH	1.342	Not Specified	PASS
8DPSK	HCH	1.343	Not Specified	PASS

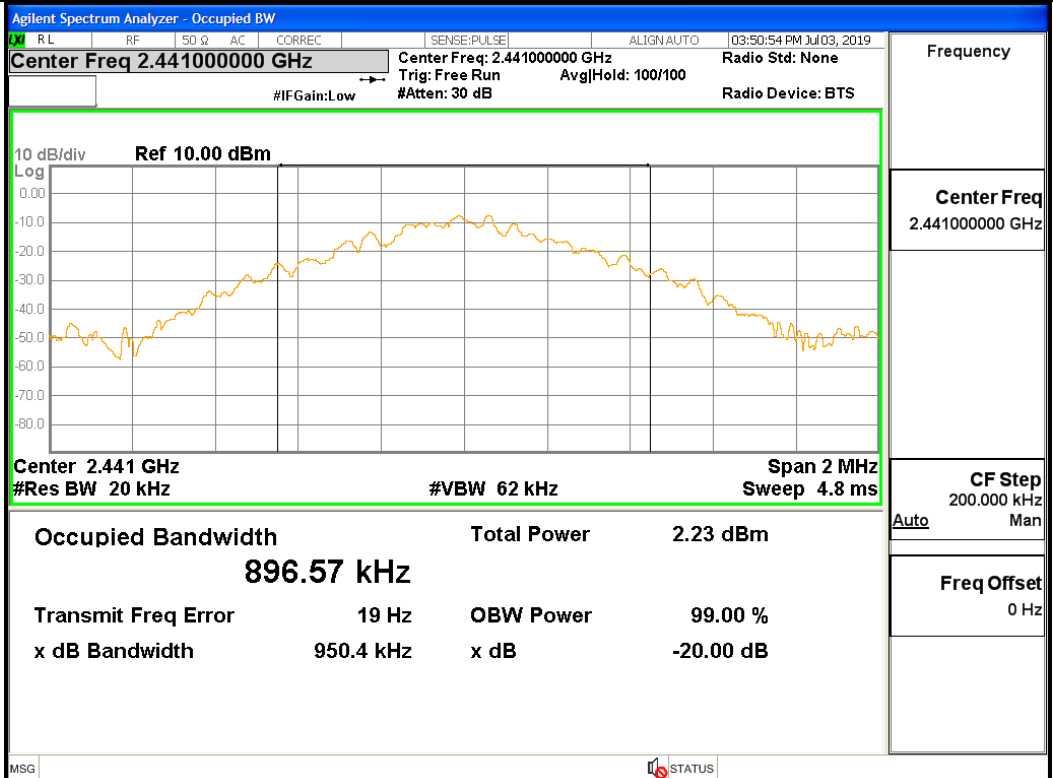
Test Graph

Graphs

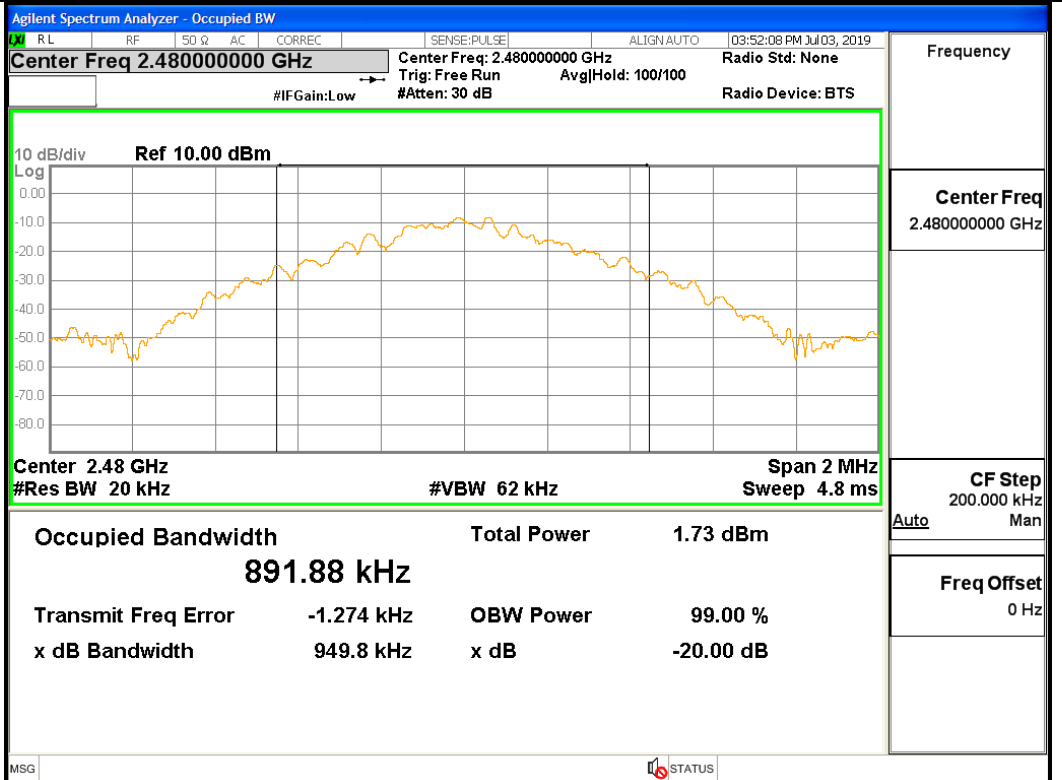
GFSK/LCH



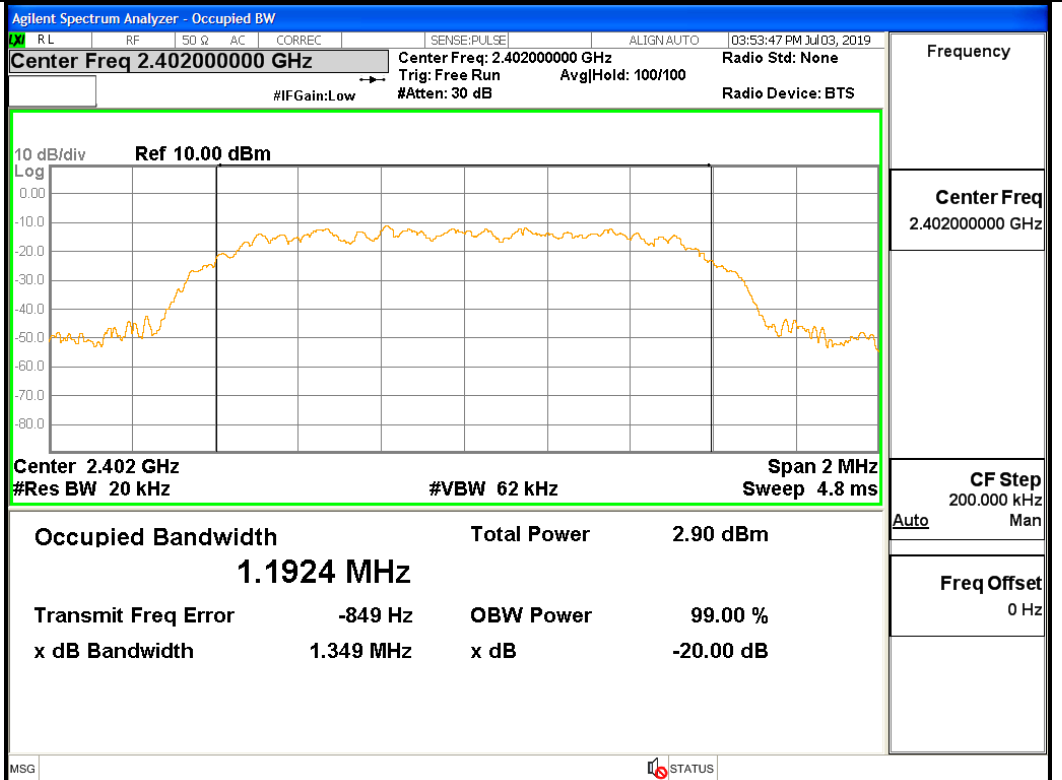
GFSK/MCH



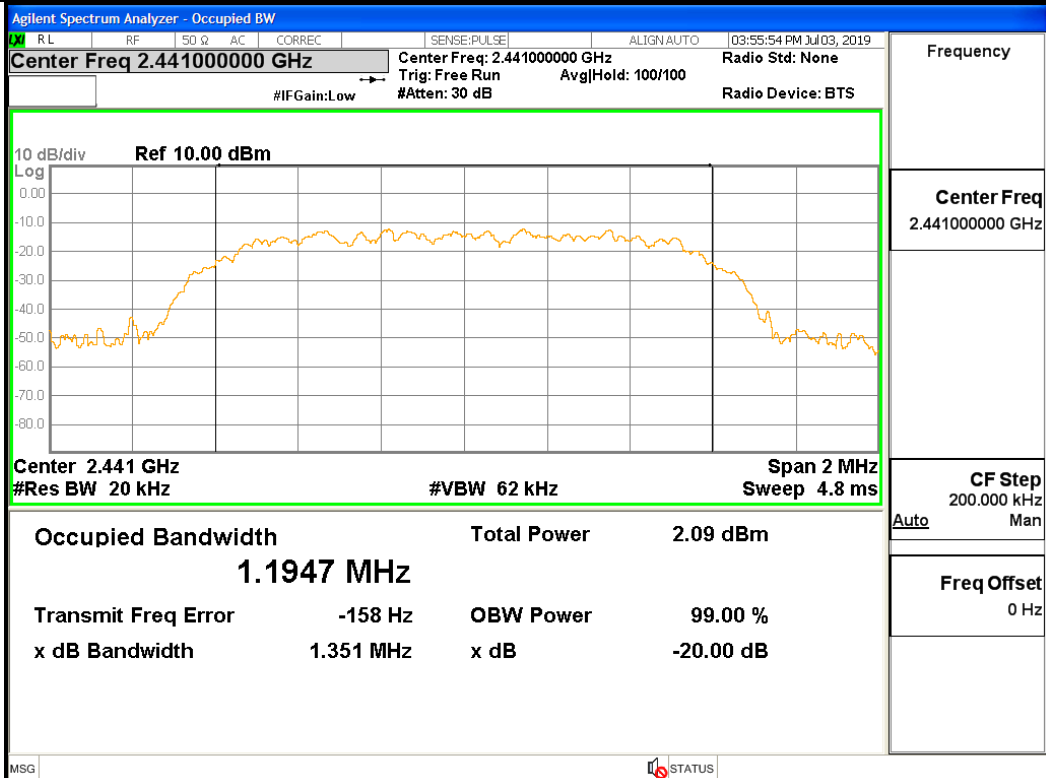
GFSK/HCH



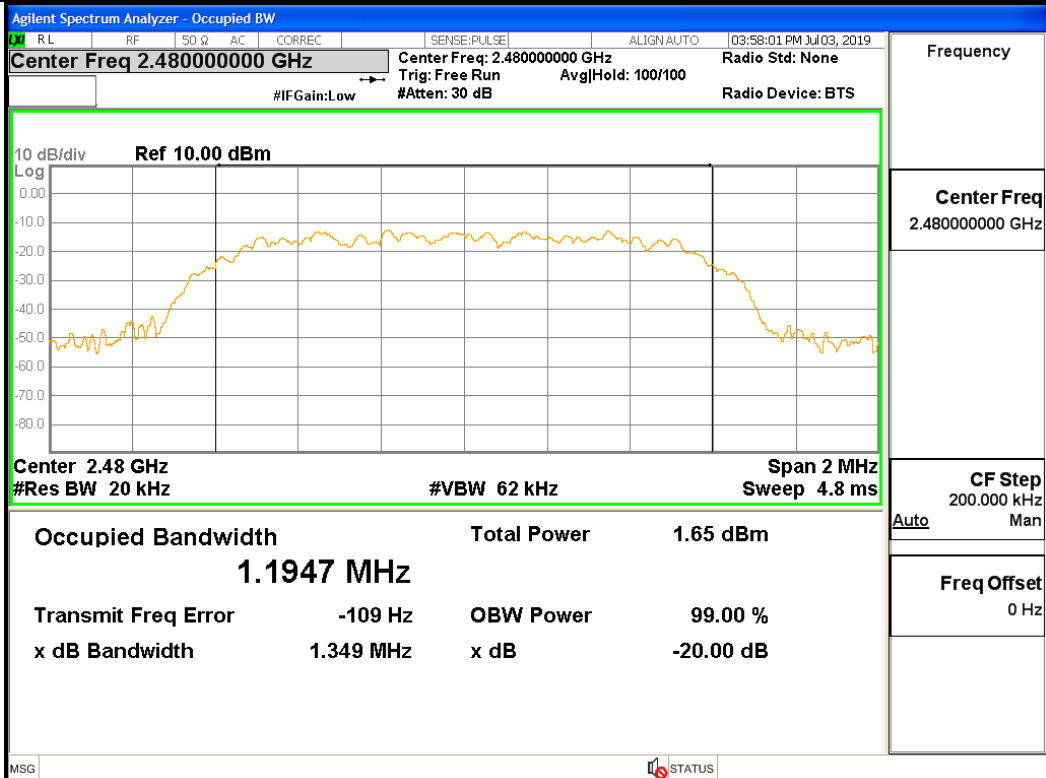
π /4DQPSK/LCH



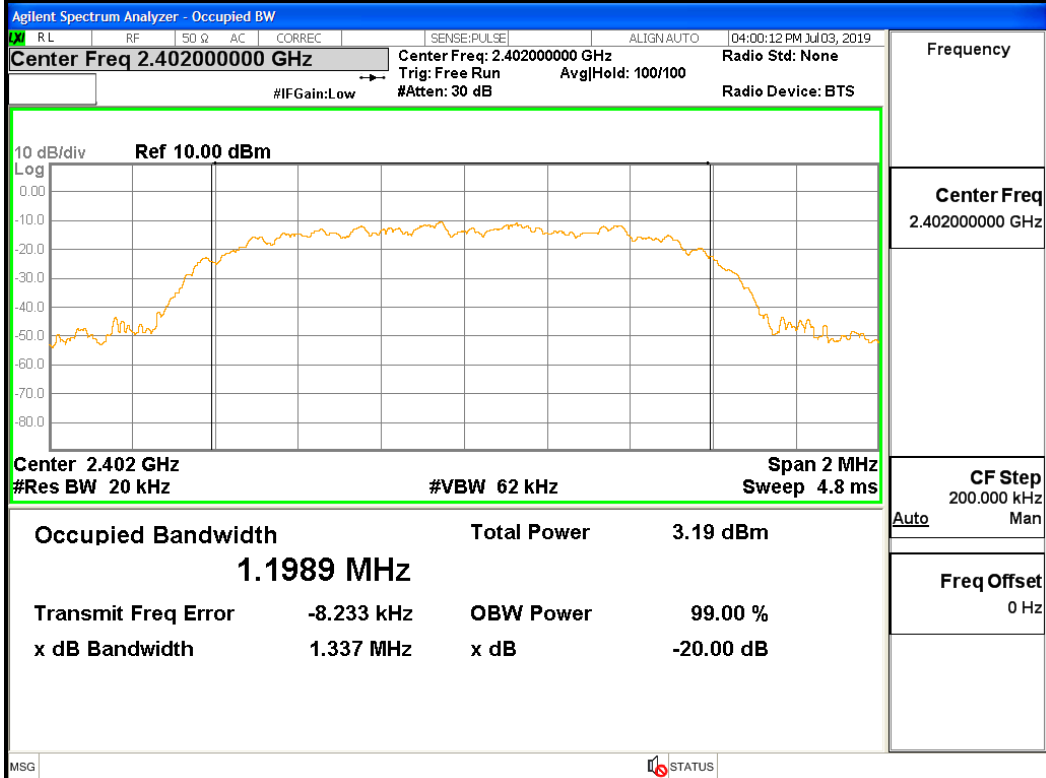
$\pi/4$ DQPSK/MCH



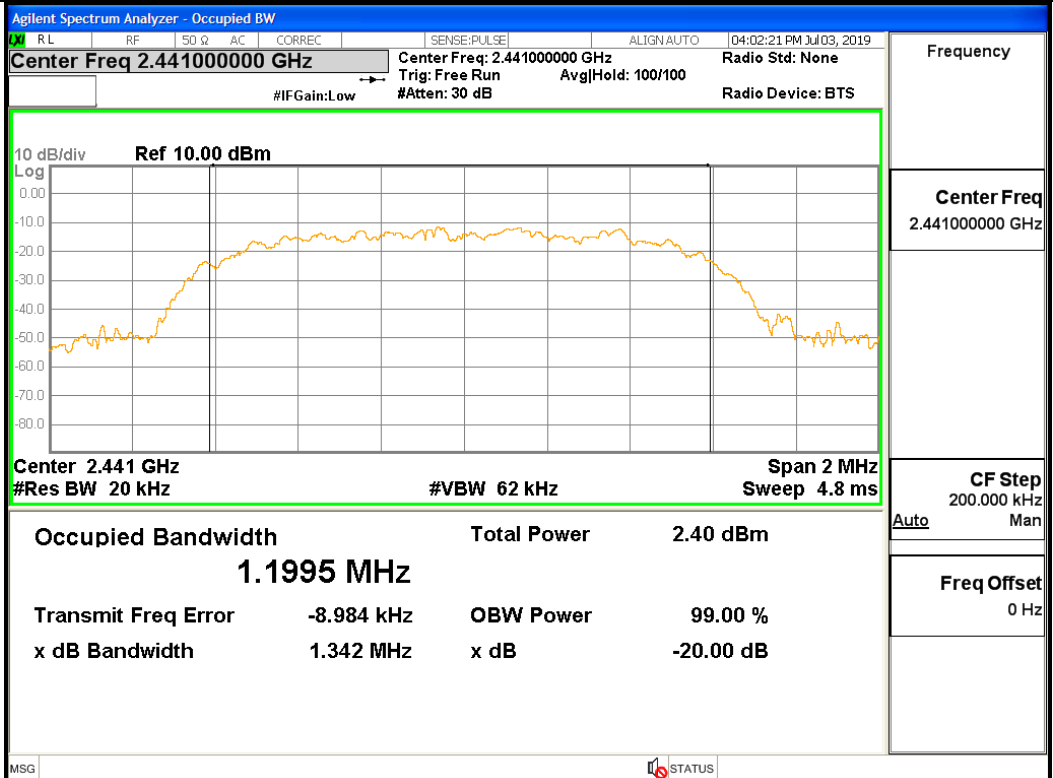
$\pi/4$ DQPSK/HCH

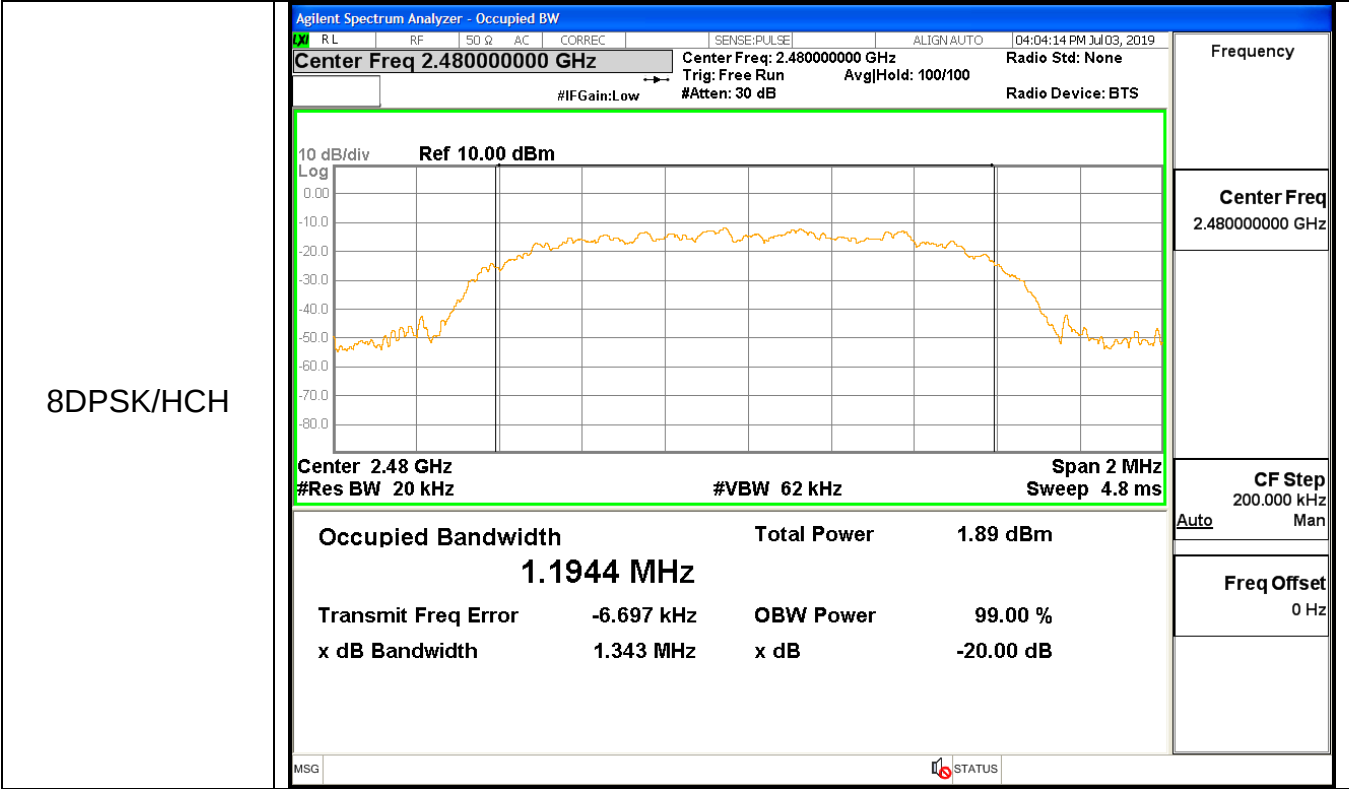


8DPSK/LCH



8DPSK/MCH

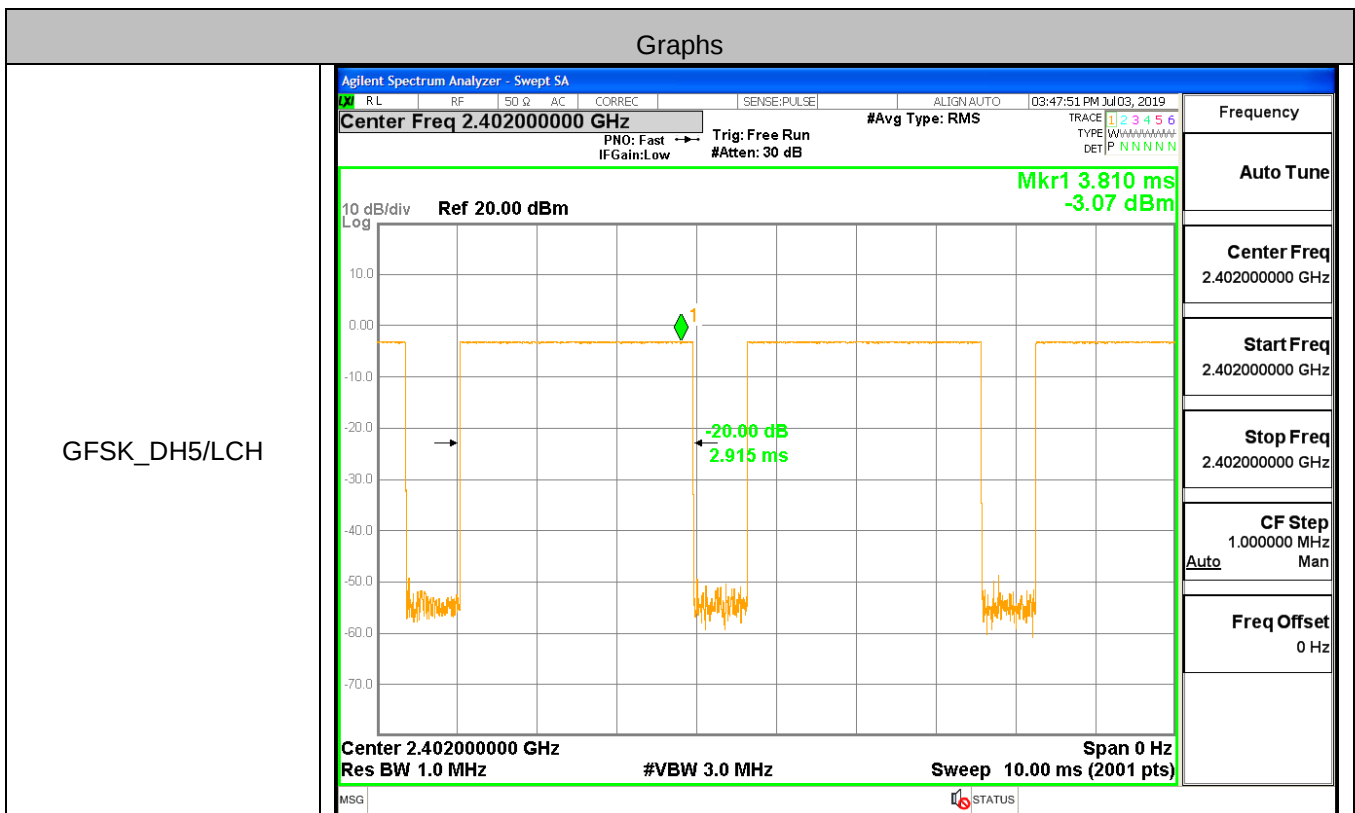




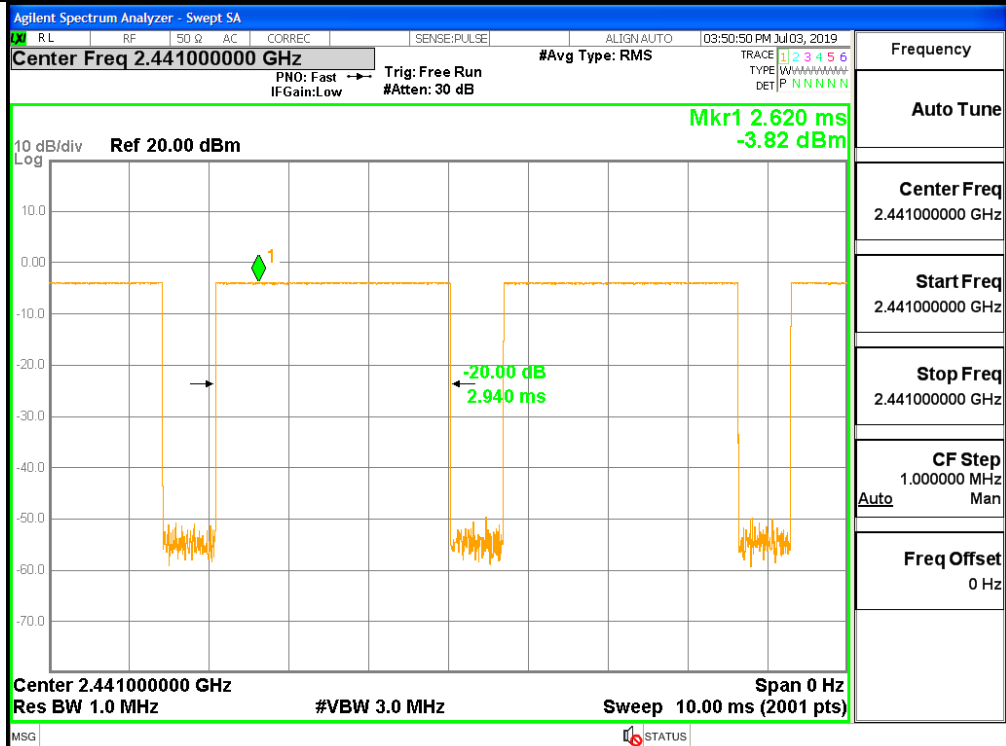
A.2 Dwell Time

Mode	Packet	Channel	Burst Width [s/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	0.002915	106.7	0.311037	0.4	PASS
GFSK	DH5	MCH	0.002940	106.7	0.313695	0.4	PASS
GFSK	DH5	HCH	0.002934	106.7	0.313098	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	0.002938	106.7	0.313484	0.4	PASS
$\pi/4$ DQPSK	2DH5	MCH	0.002939	106.7	0.313572	0.4	PASS
$\pi/4$ DQPSK	2DH5	HCH	0.002935	106.7	0.313128	0.4	PASS
8DPSK	3DH5	LCH	0.002937	106.7	0.313412	0.4	PASS
8DPSK	3DH5	MCH	0.002936	106.7	0.313249	0.4	PASS
8DPSK	3DH5	HCH	0.002934	106.7	0.313104	0.4	PASS

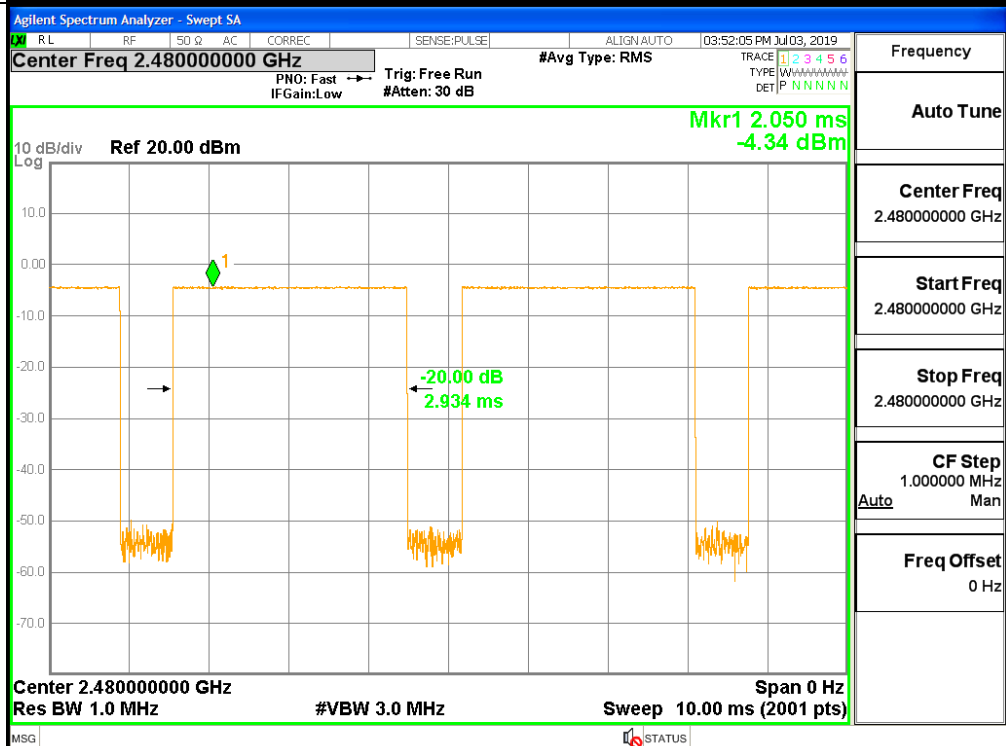
Test Graph



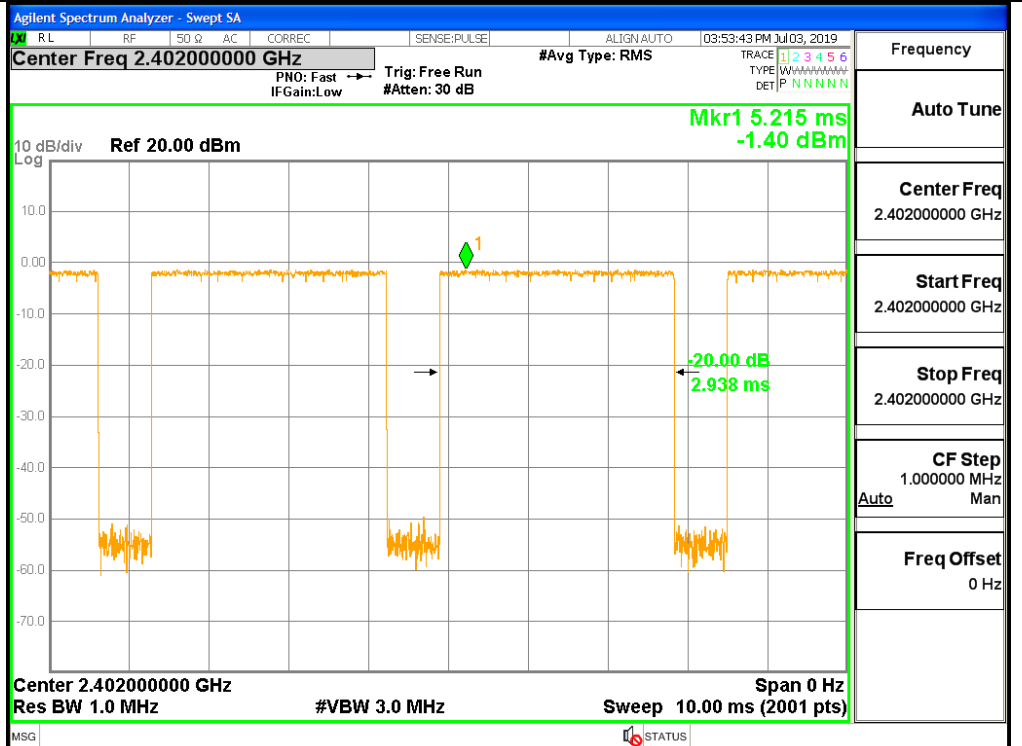
GFSK_DH5/MCH



GFSK_DH5/HCH



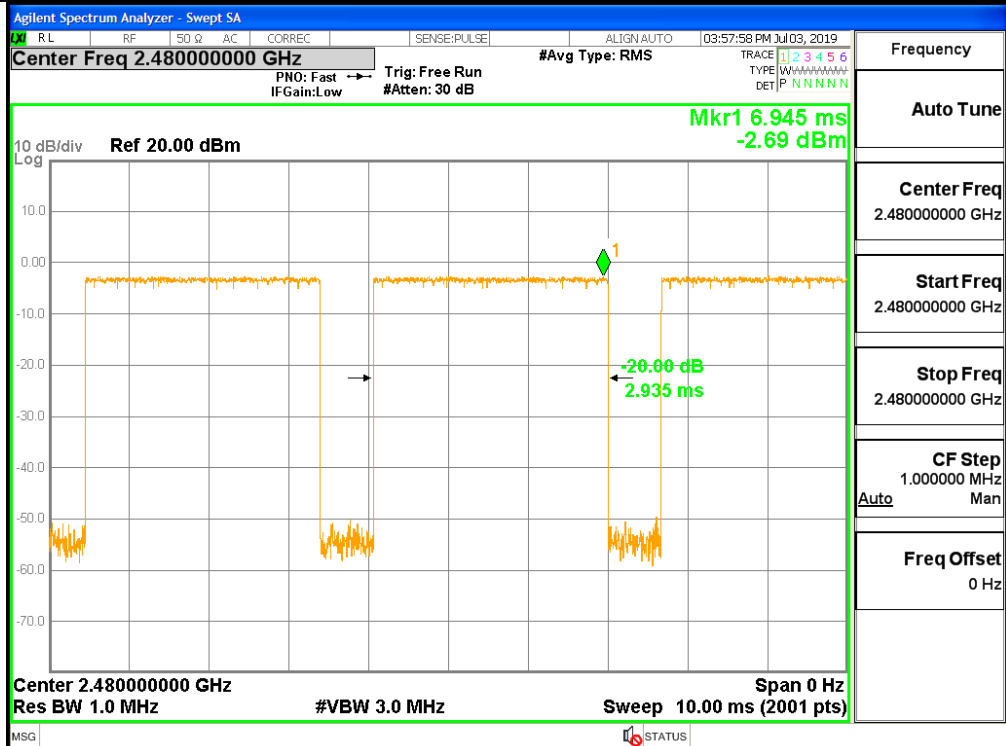
$\pi/4$ DQPSK
_2DH5/LCH



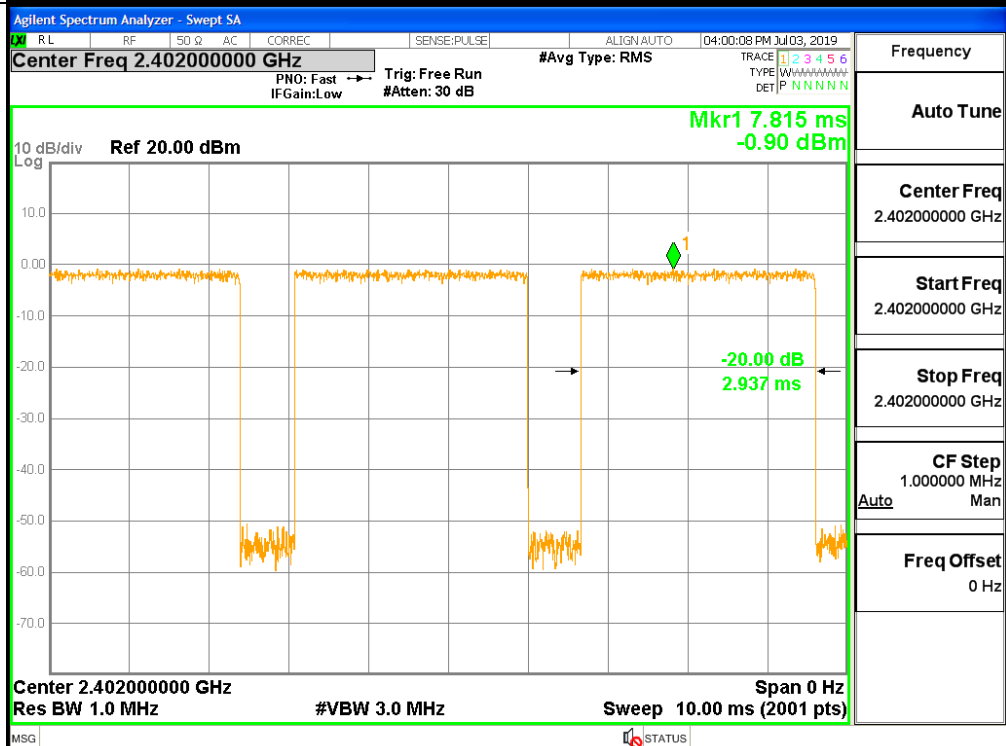
$\pi/4$ DQPSK
_2DH5/MCH

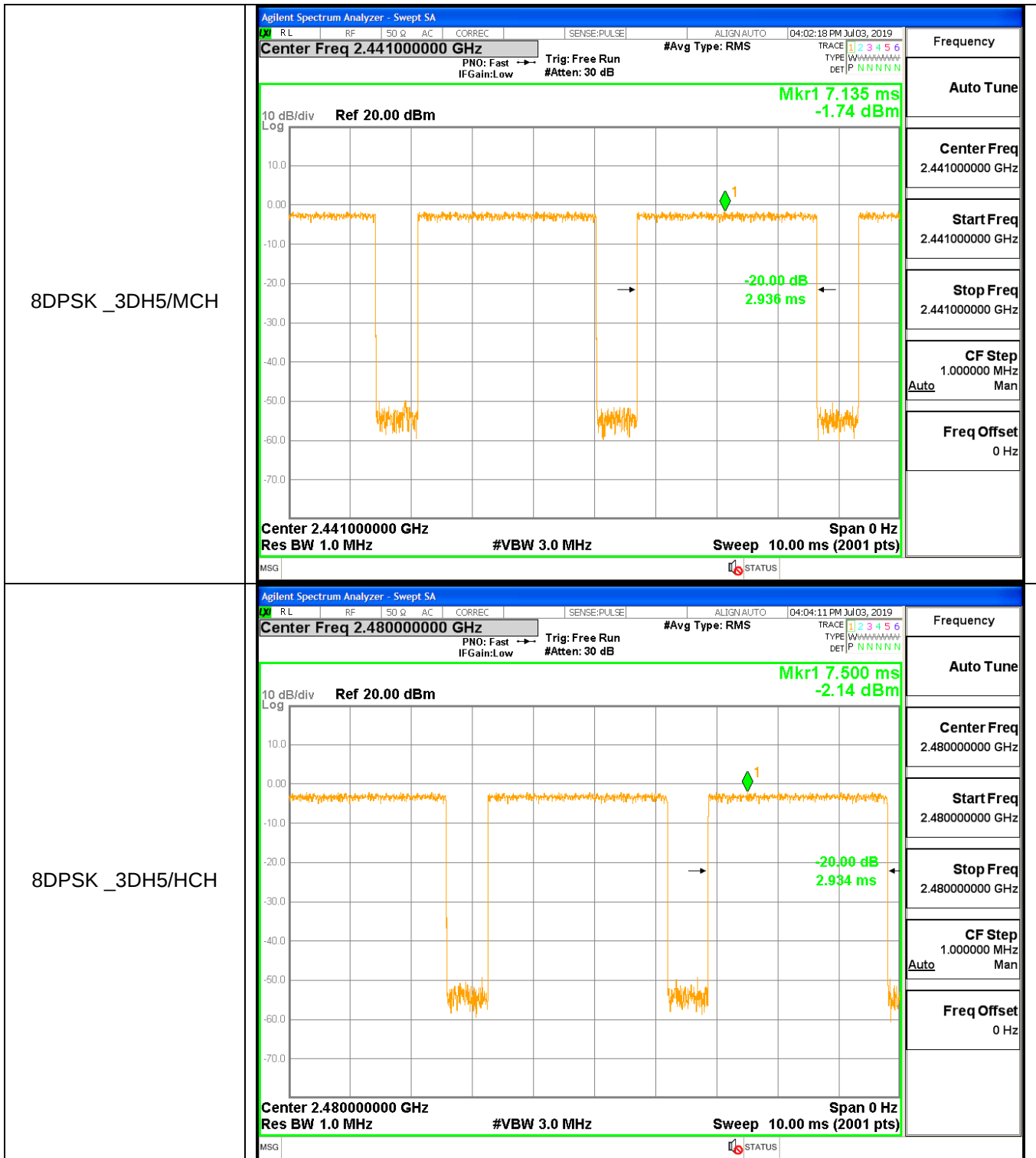


$\pi/4$ DQPSK
_2DH5/HCH



8DPSK_3DH5/LCH

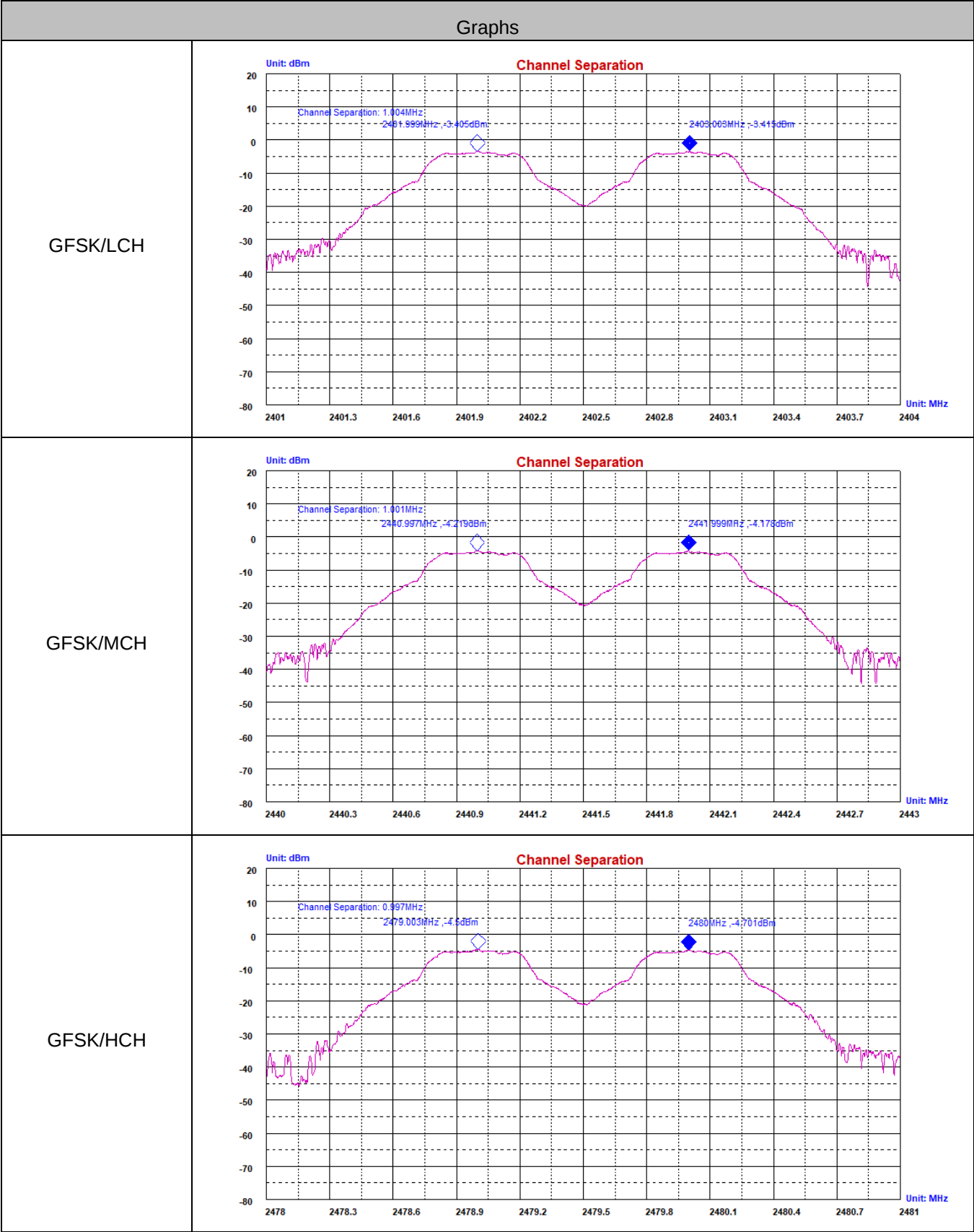


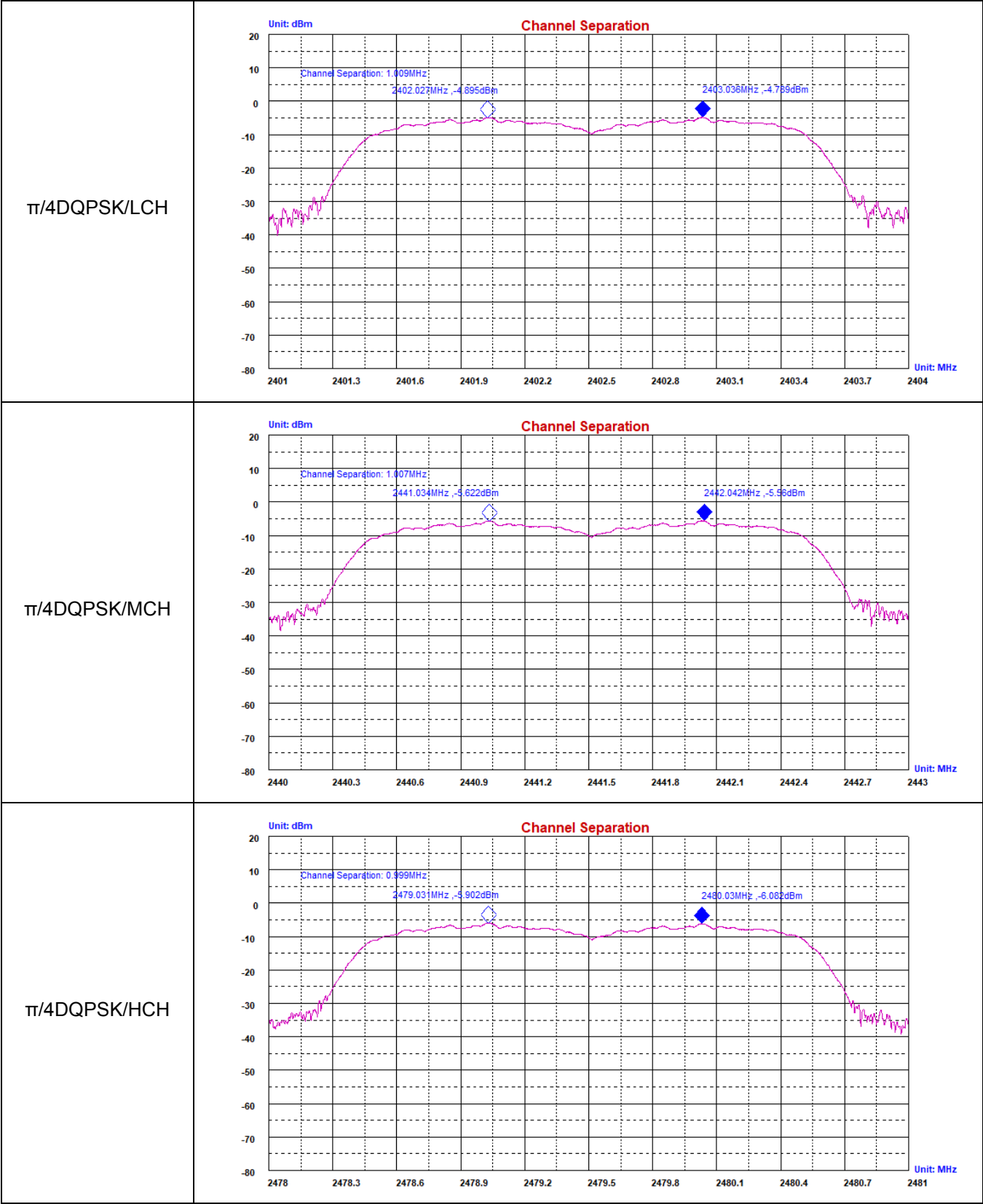


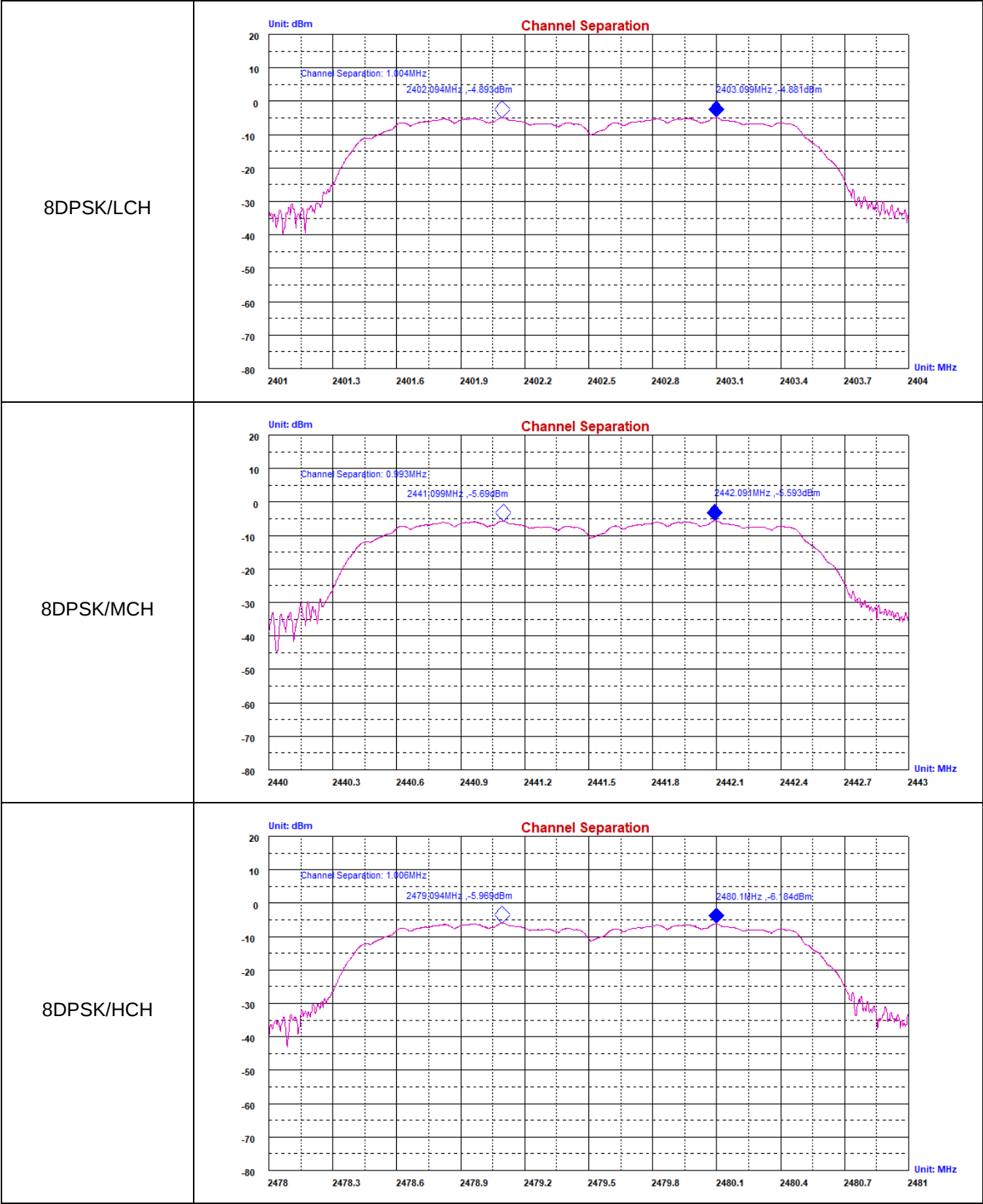
A.3 Carrier Frequency Separation

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.004	0.635	PASS
GFSK	MCH	1.001	0.633	PASS
GFSK	HCH	0.997	0.633	PASS
$\pi/4$ DQPSK	LCH	1.009	0.899	PASS
$\pi/4$ DQPSK	MCH	1.007	0.901	PASS
$\pi/4$ DQPSK	HCH	0.999	0.899	PASS
8DPSK	LCH	1.004	0.891	PASS
8DPSK	MCH	0.993	0.895	PASS
8DPSK	HCH	1.006	0.895	PASS

Test Graph



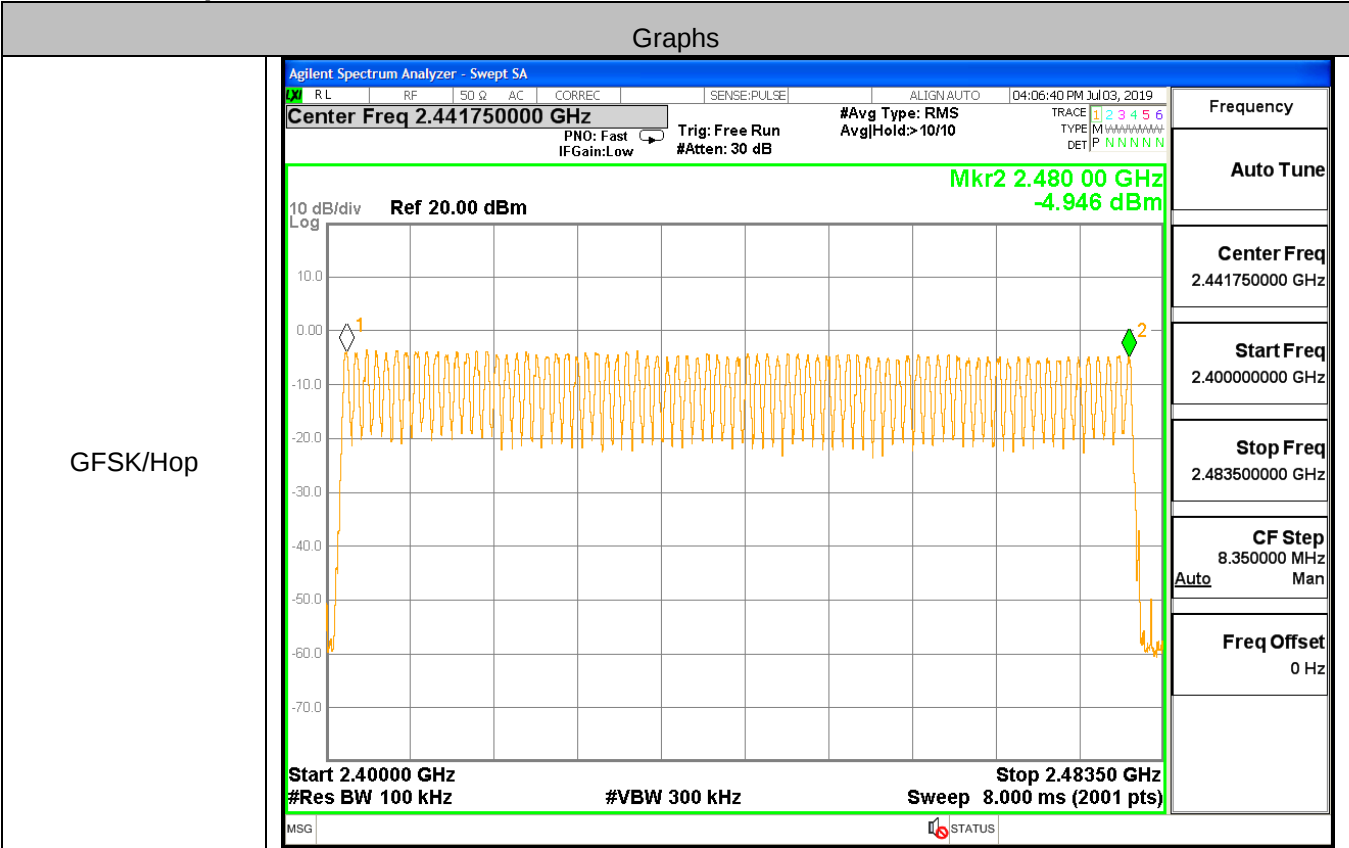


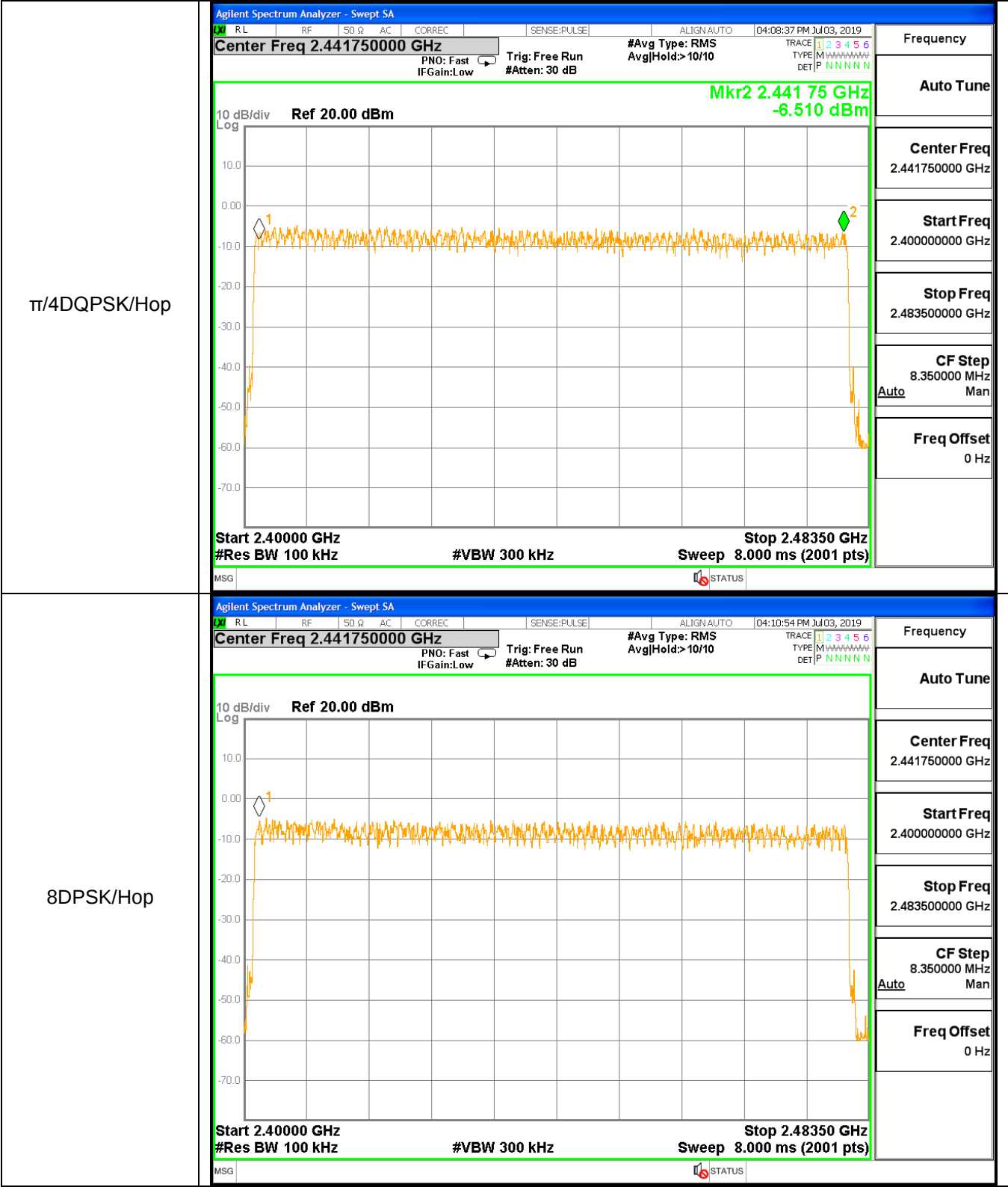


A.4 Hopping Channel Number

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 Graph

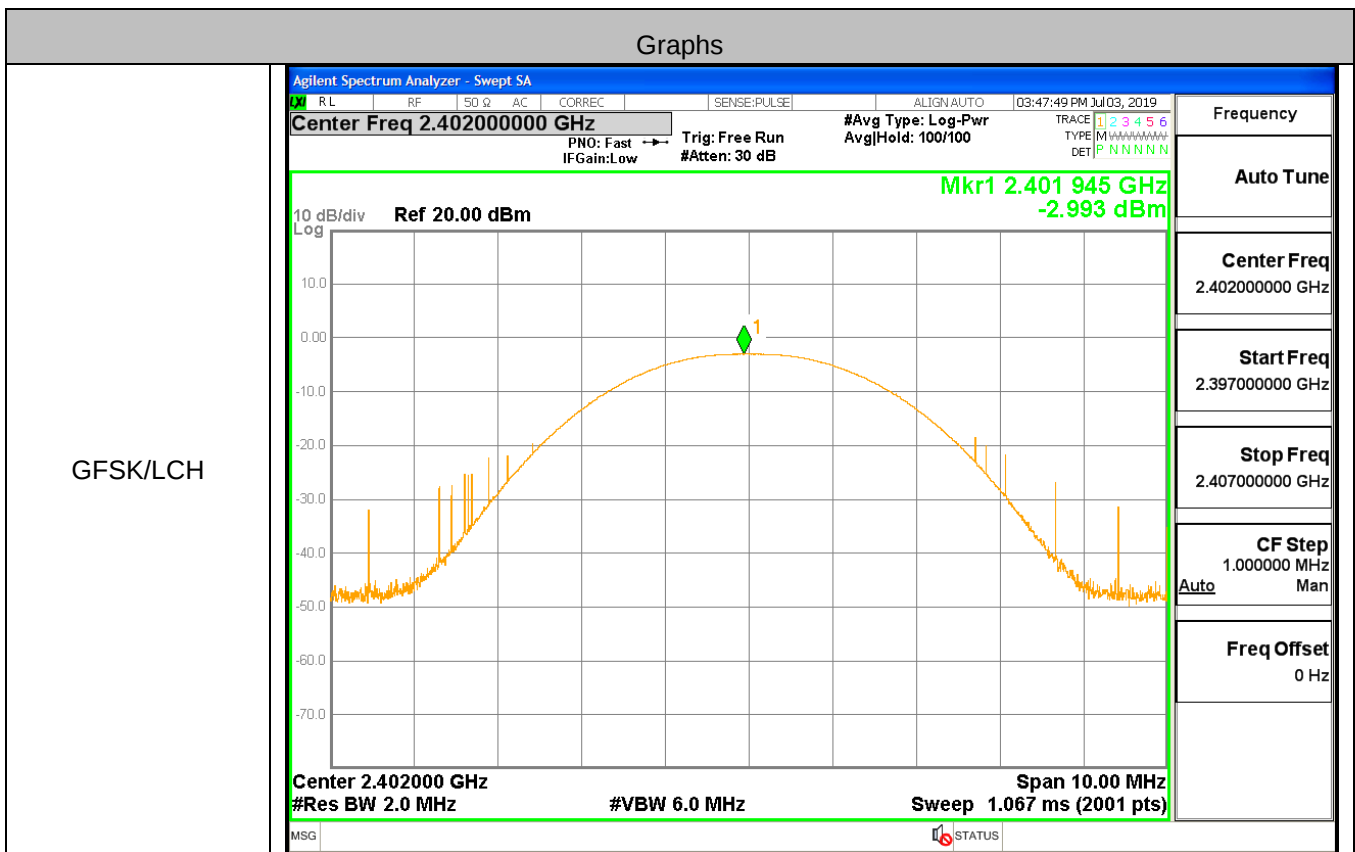




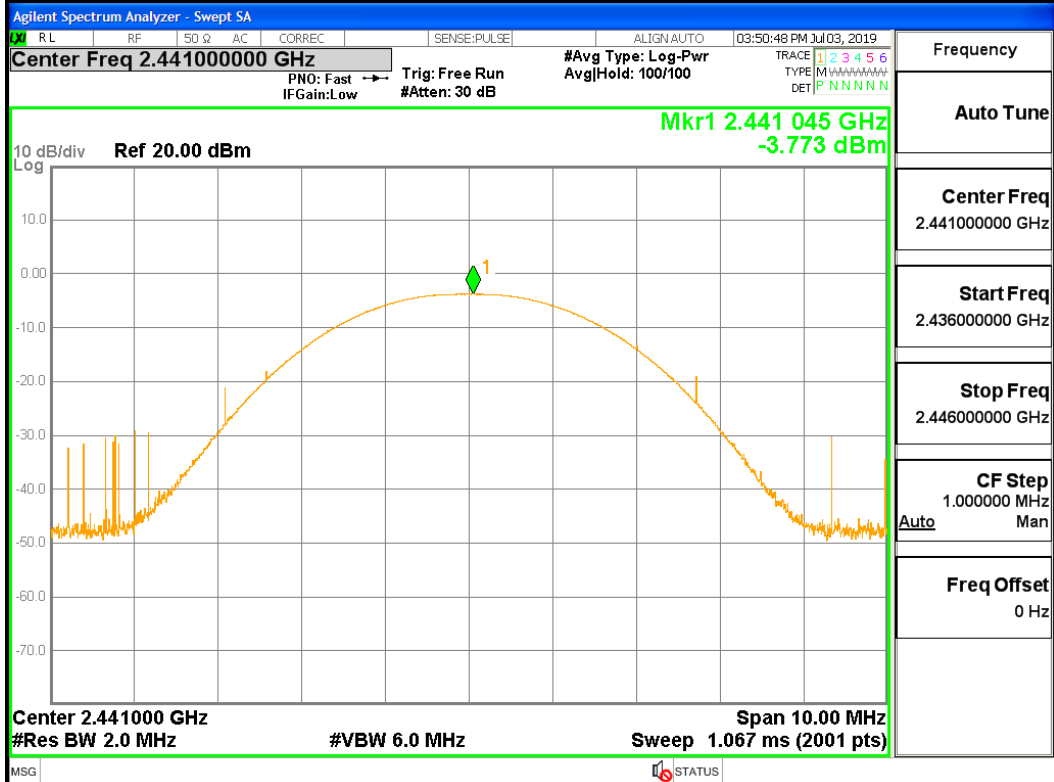
A.5 Conducted Peak Output Power

Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-2.993	21	PASS
GFSK	MCH	-3.773	21	PASS
GFSK	HCH	-4.285	21	PASS
$\pi/4$ DQPSK	LCH	-0.942	21	PASS
$\pi/4$ DQPSK	MCH	-1.721	21	PASS
$\pi/4$ DQPSK	HCH	-2.206	21	PASS
8DPSK	LCH	-0.413	21	PASS
8DPSK	MCH	-1.135	21	PASS
8DPSK	HCH	-1.640	21	PASS

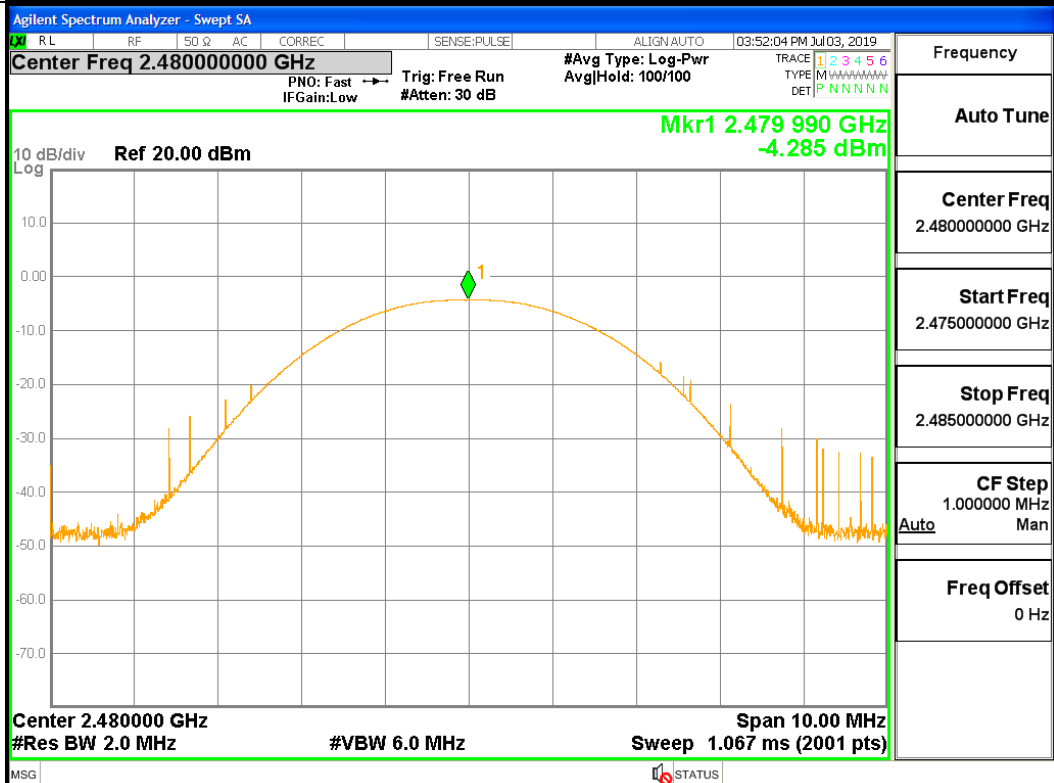
Test Graph

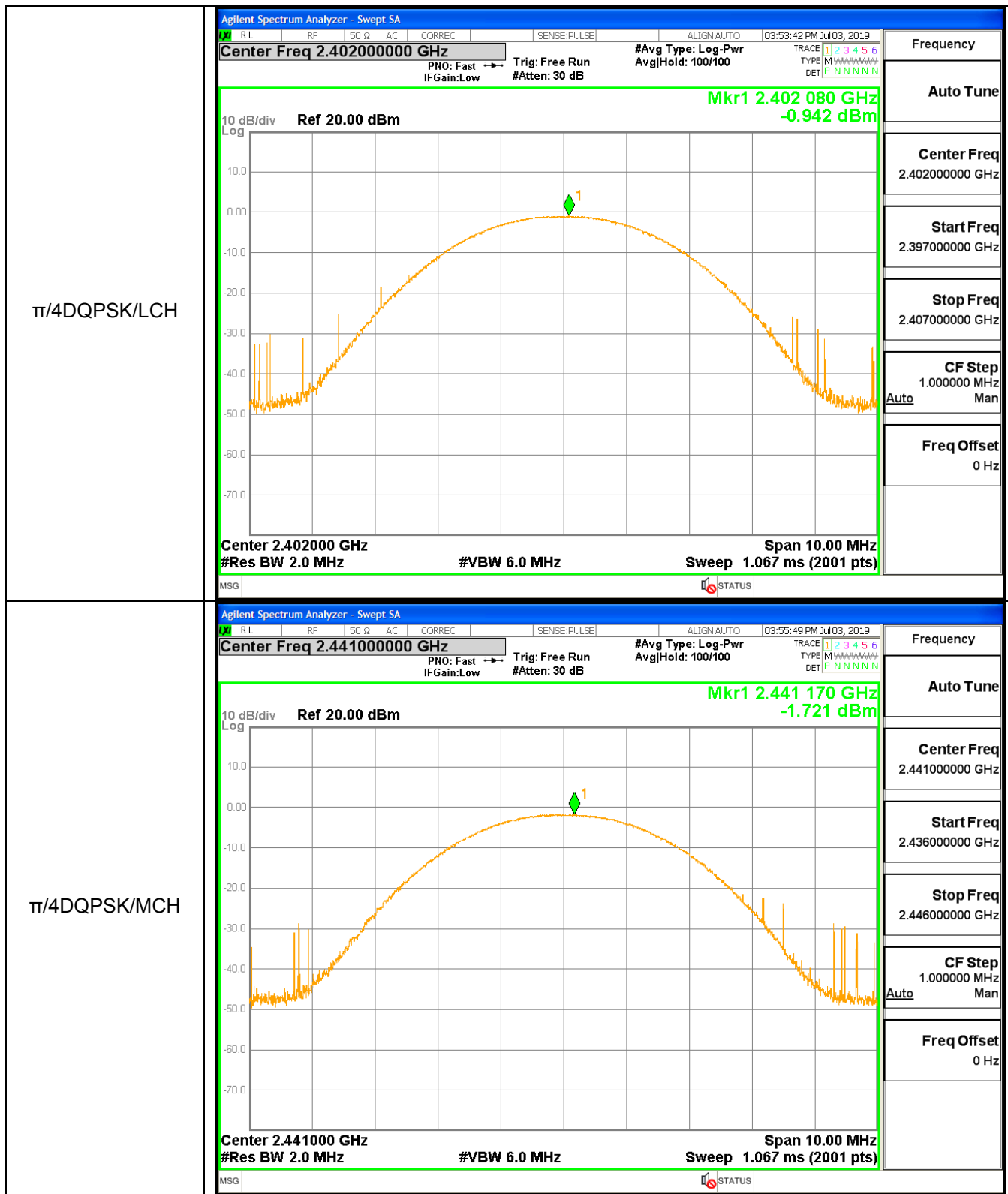


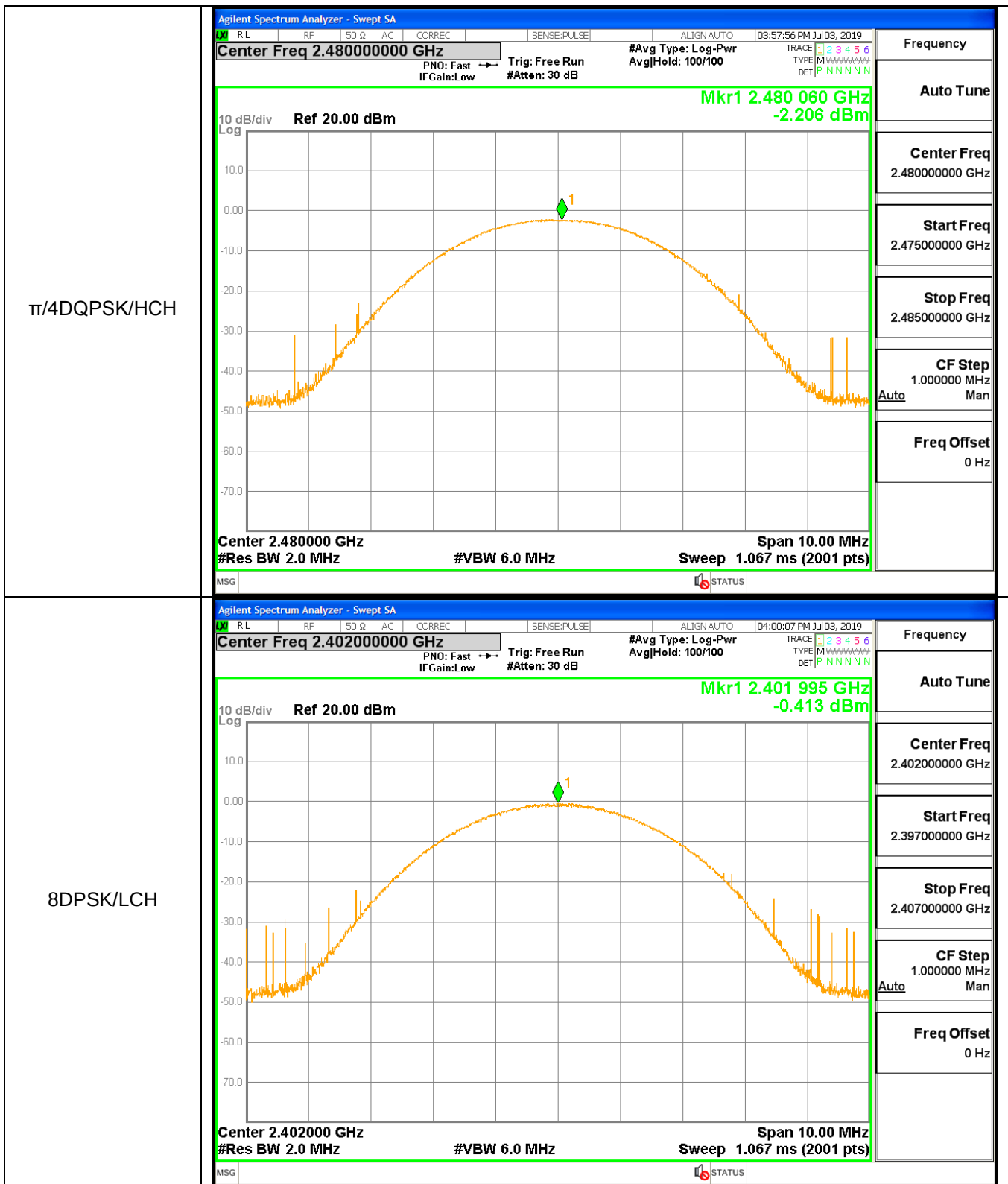
GFSK/MCH



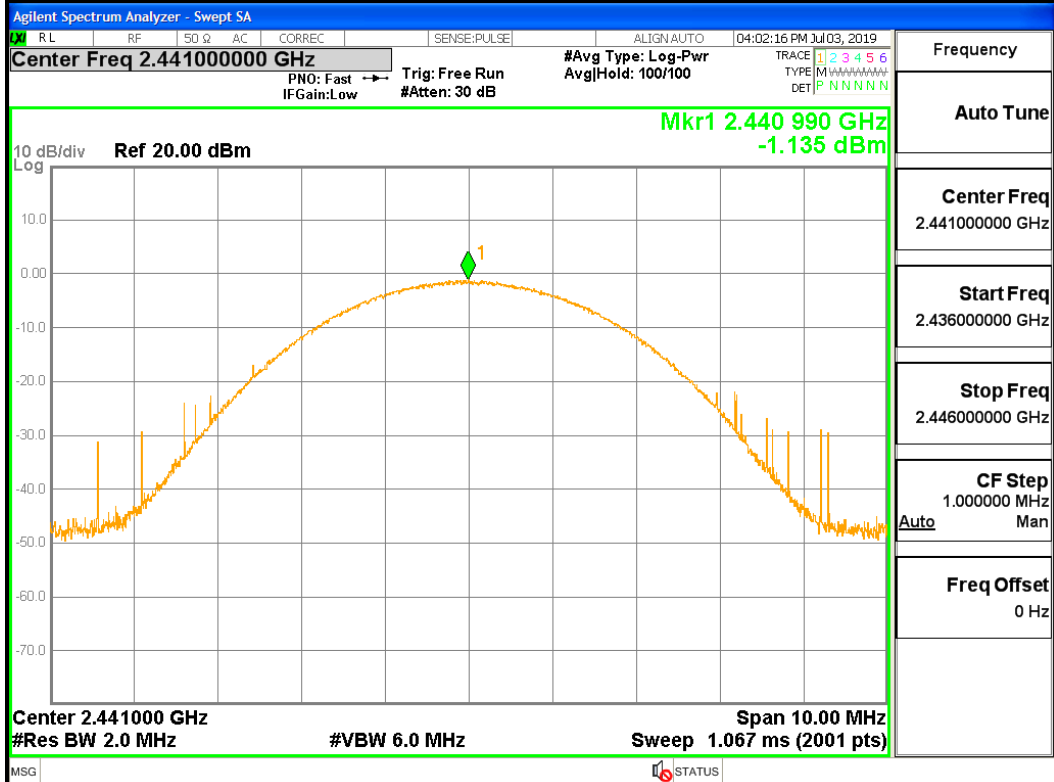
GFSK/HCH



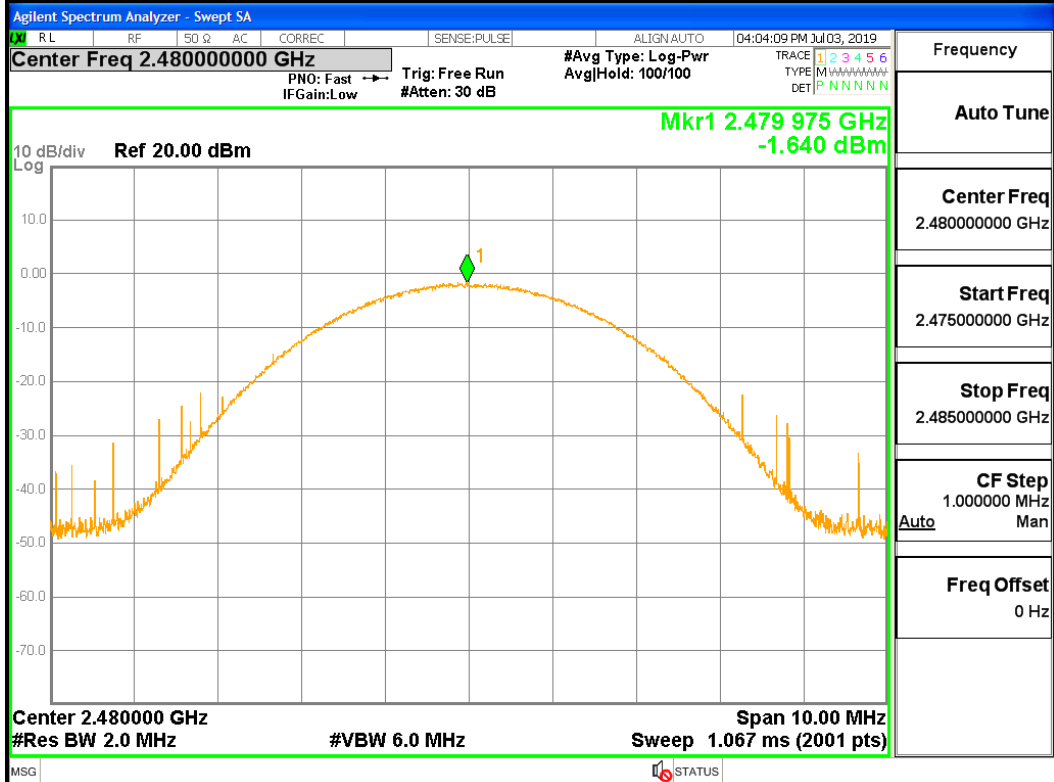




8DPSK/MCH



8DPSK/HCH



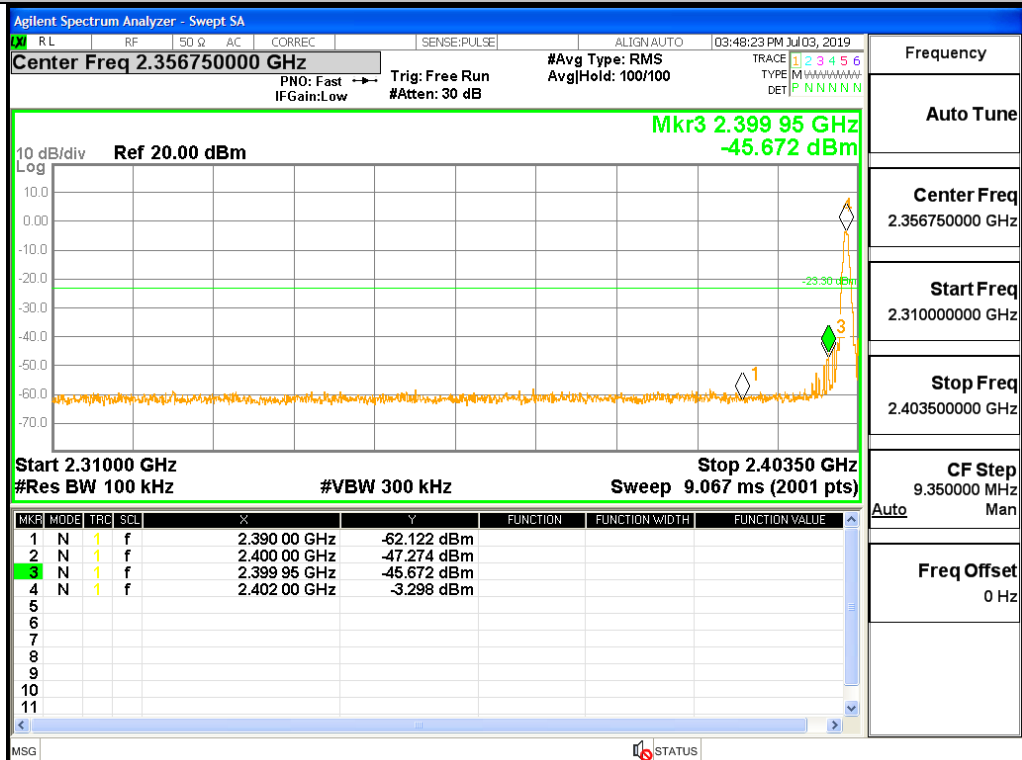
A.6 Band-edge for RF Conducted Emissions

Type	Carrier Frequency(MHz)	Frequency(MHz)	Carrier Frequency Power [dBm]	Bandedge Peak(dBm)	Upper limit(dBm)	Conclusion
1DH5	2402	2399.95	-3.298	-45.67	-23.298	Pass
1DH5	2480	2483.50	-4.580	-59.07	-24.580	Pass
2DH5	2402	2400.00	-4.580	-53.81	-24.580	Pass
2DH5	2480	2483.70	-6.274	-55.28	-26.274	Pass
3DH5	2402	2400.00	-4.720	-56.67	-24.720	Pass
3DH5	2480	2483.50	-6.050	-59.84	-26.050	Pass
1DH5-Hopping	2402	2400.00	-3.336	-60.12	-23.336	Pass
1DH5-Hopping	2480	2498.26	-4.462	-50.52	-24.462	Pass
2DH5-Hopping	2402	2400.00	-5.063	-59.29	-25.063	Pass
2DH5-Hopping	2480	2497.45	-5.830	-52.69	-25.830	Pass
3DH5-Hopping	2402	2400.00	-4.821	-59.27	-24.821	Pass
3DH5-Hopping	2480	2497.75	-5.674	-51.31	-25.674	Pass

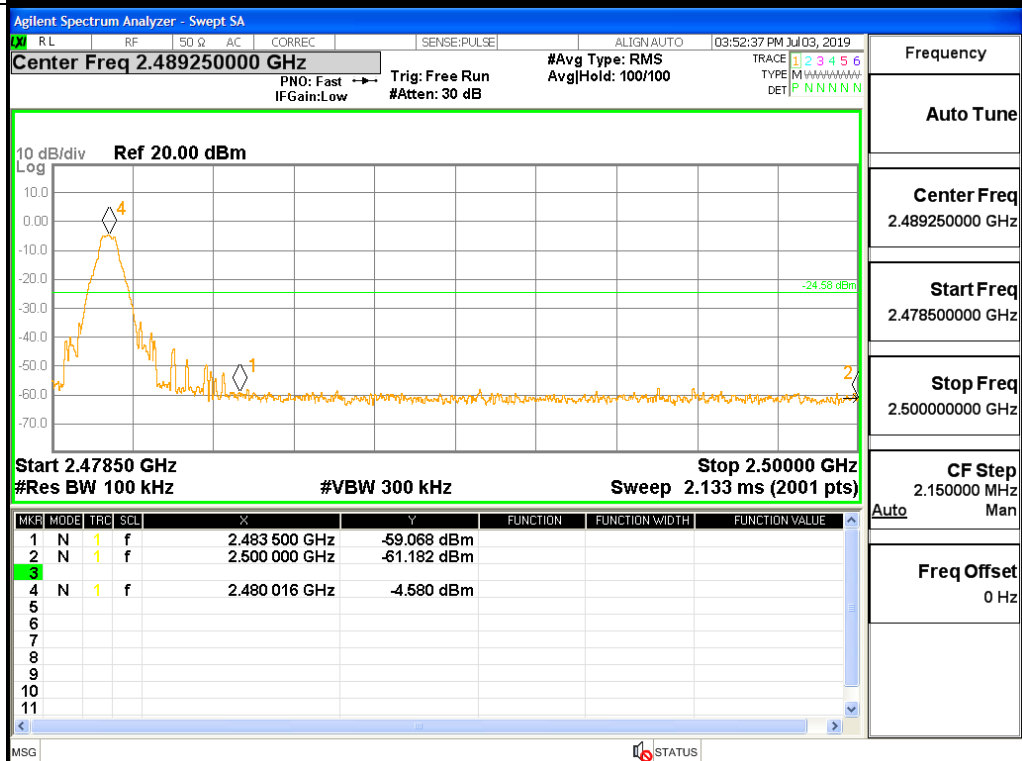
Test Graph

Graphs

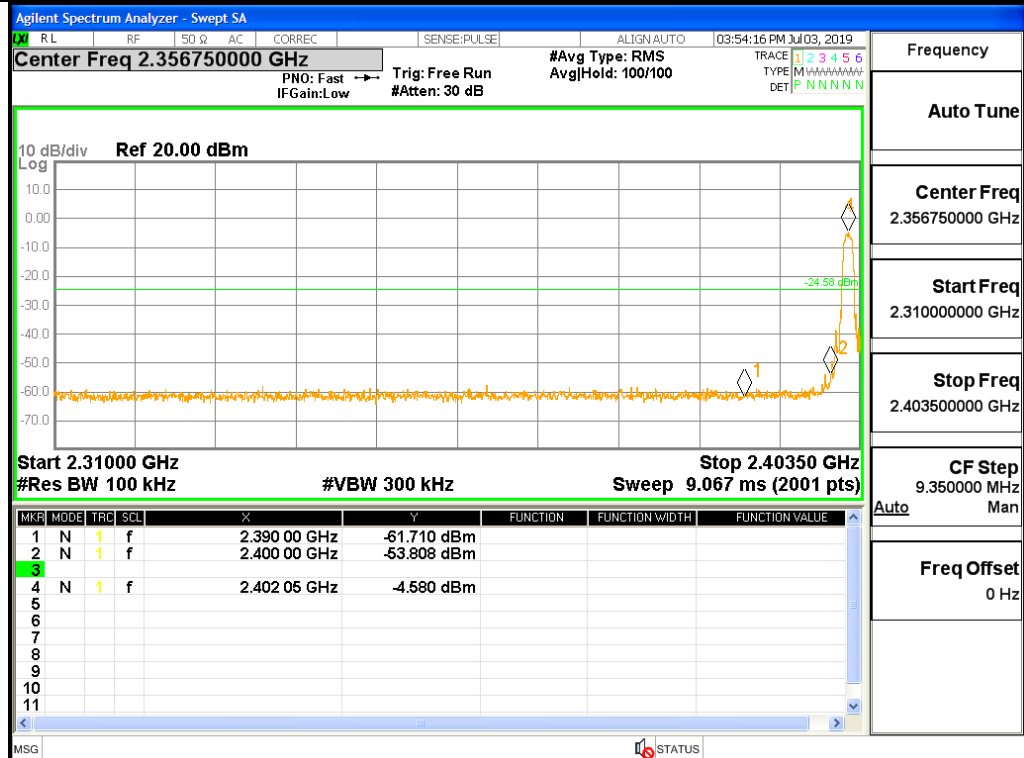
GFSK/LCH/No Hop



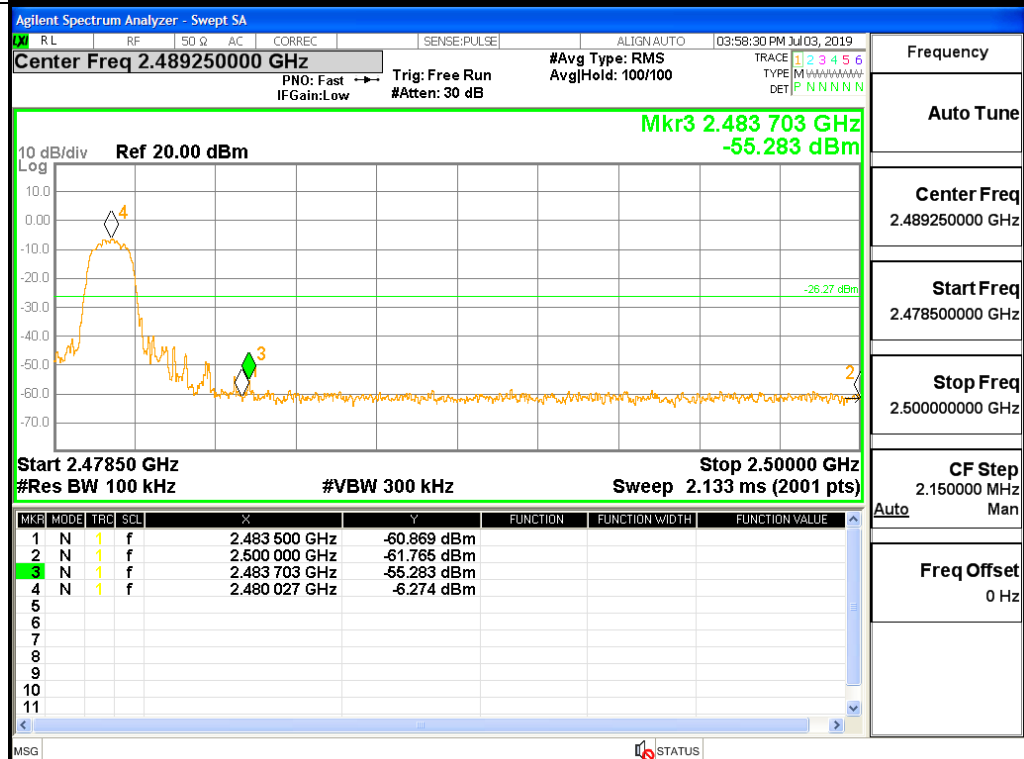
GFSK/HCH/No Hop



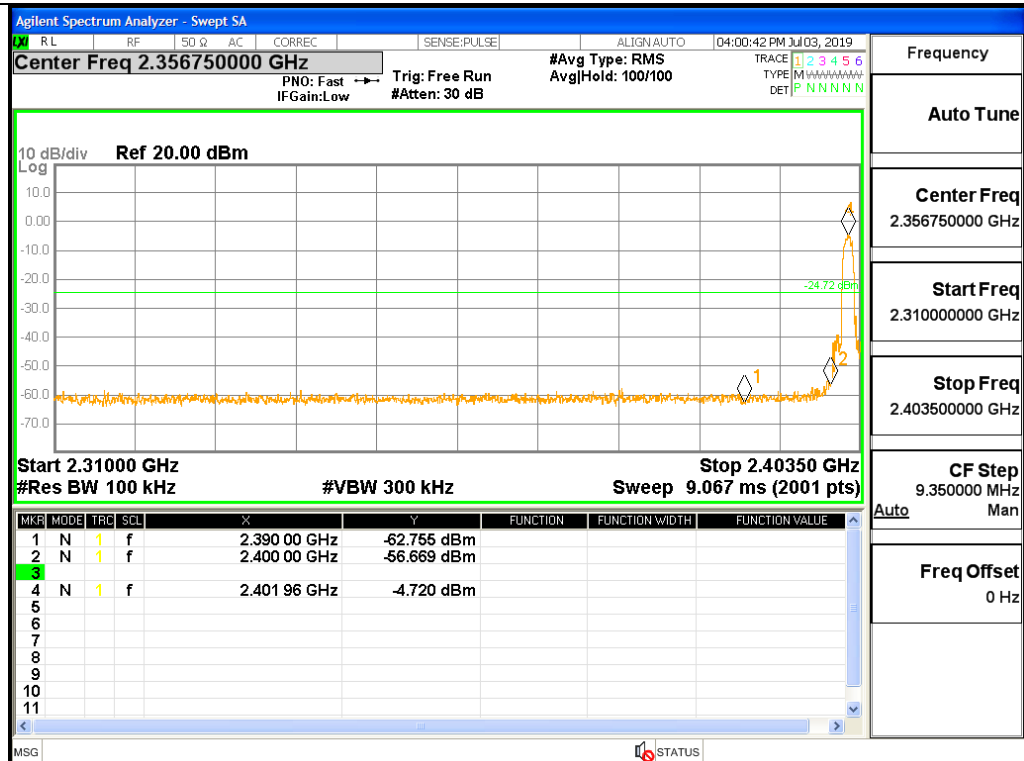
π /4DQPSK/LCH/No
Hop



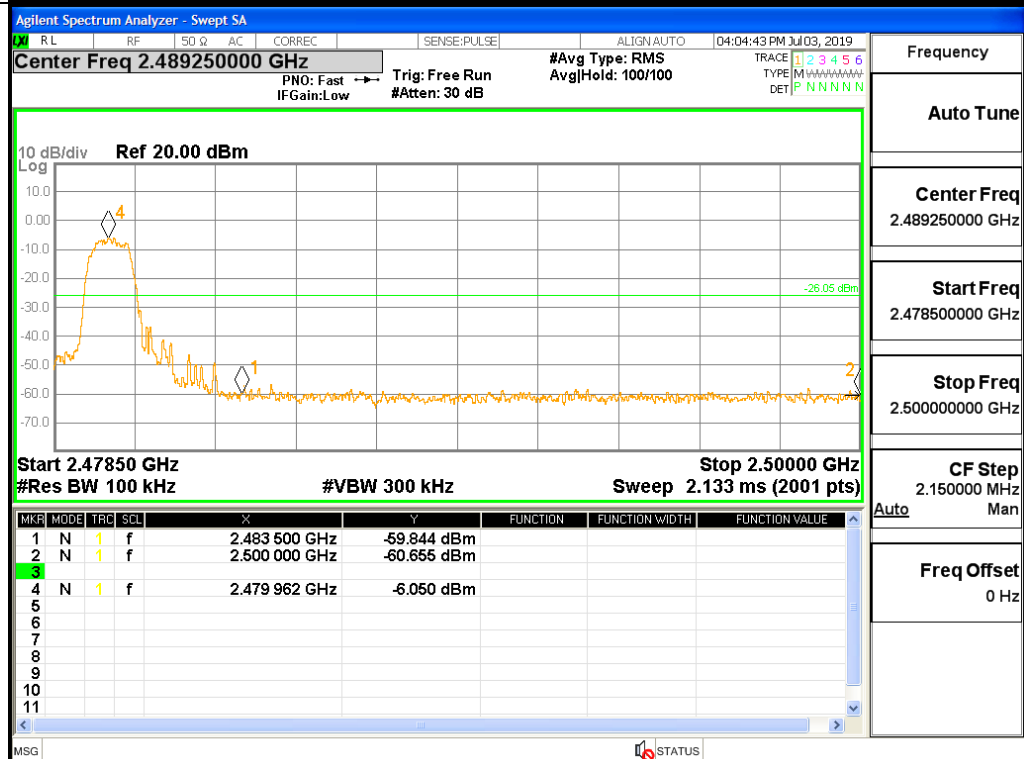
π /4DQPSK/HCH/No
Hop



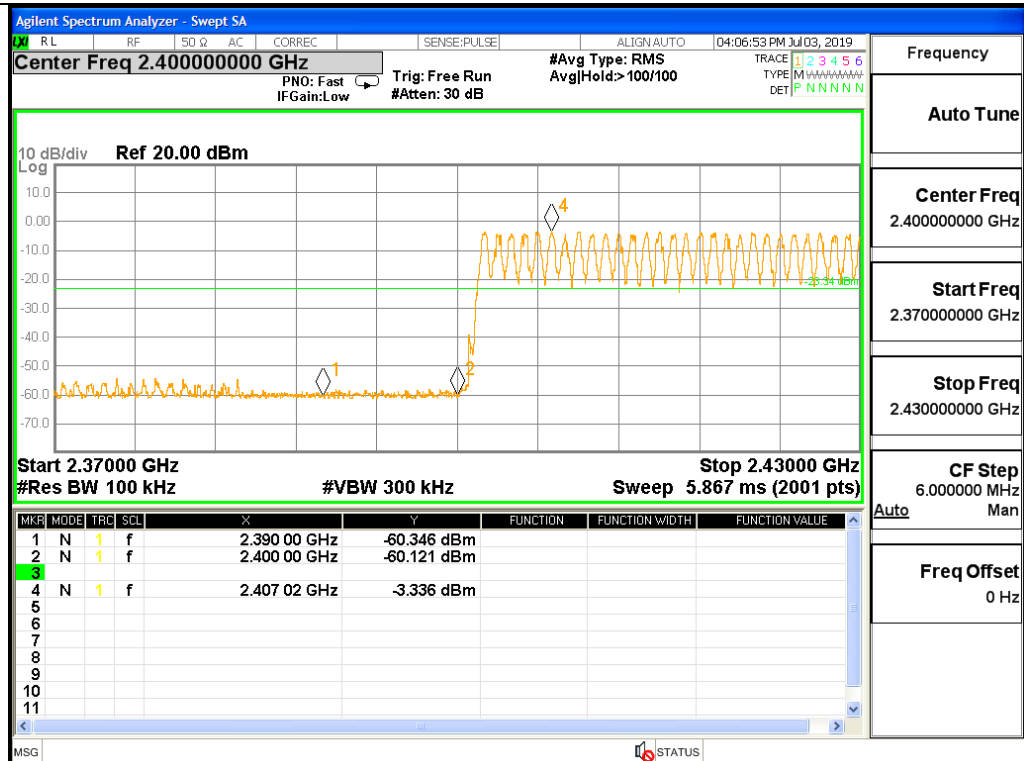
8DPSK/LCH/No Hop



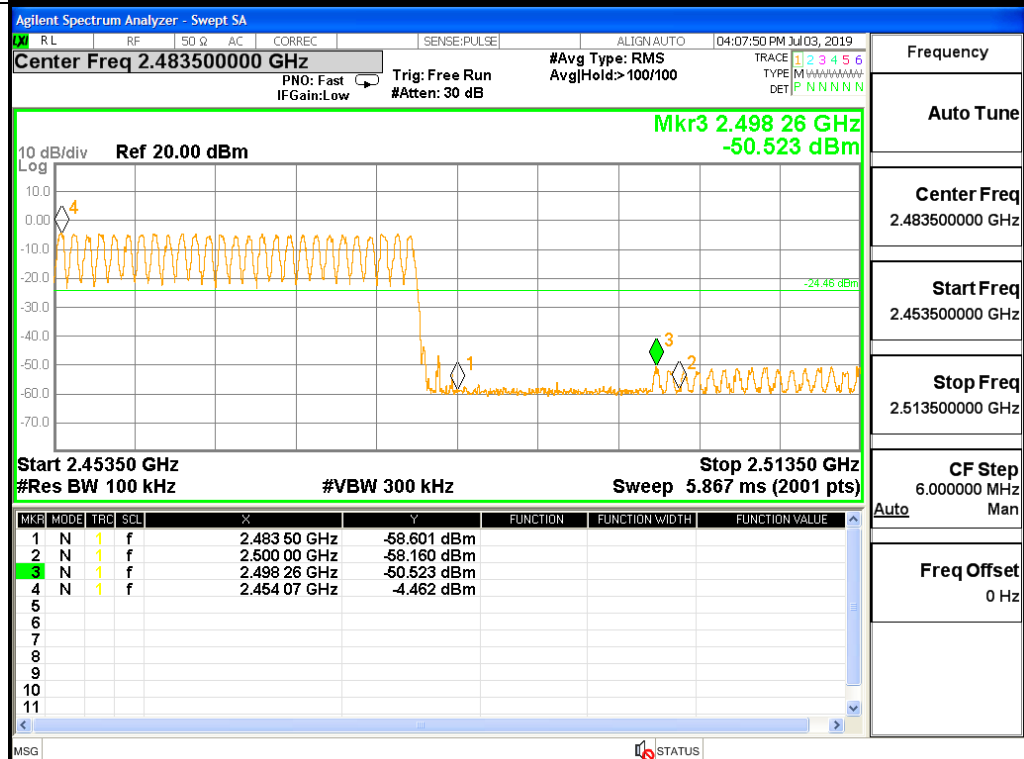
8DPSK/HCH/No Hop



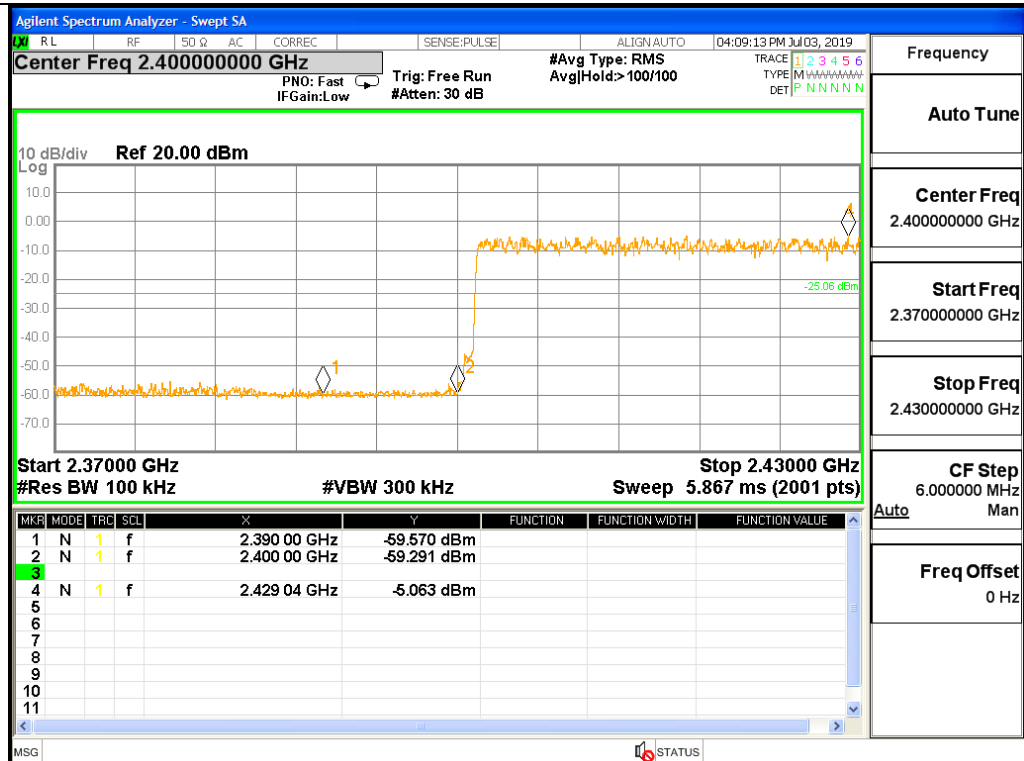
GFSK/LCH/Hop



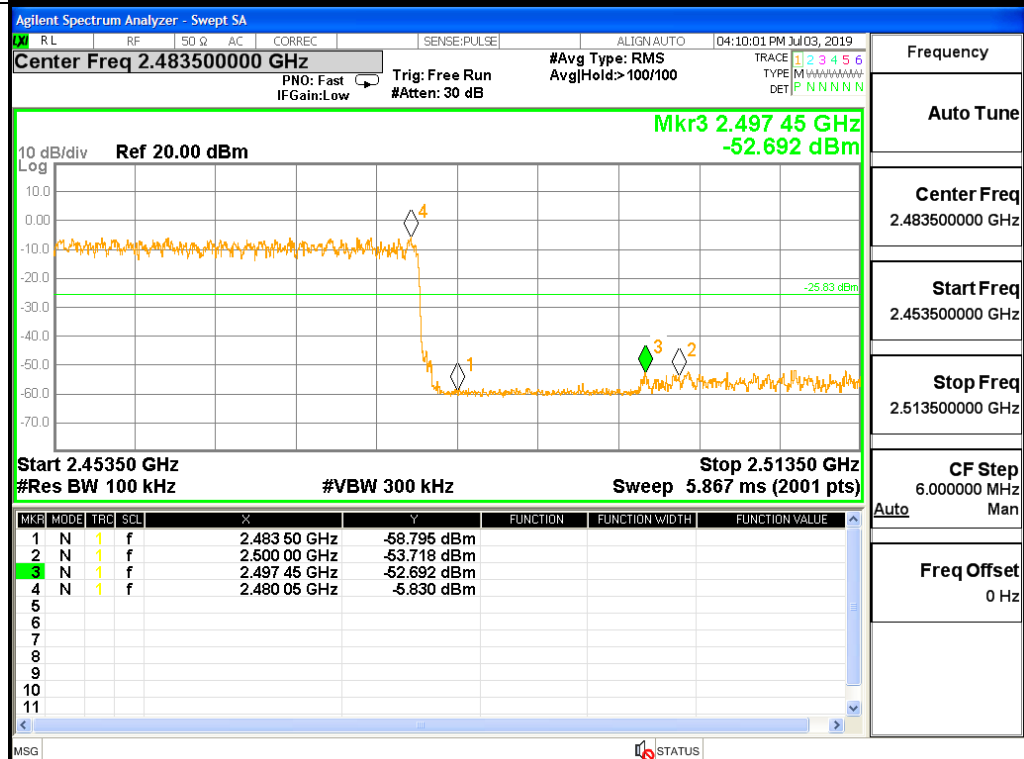
GFSK/HCH/Hop



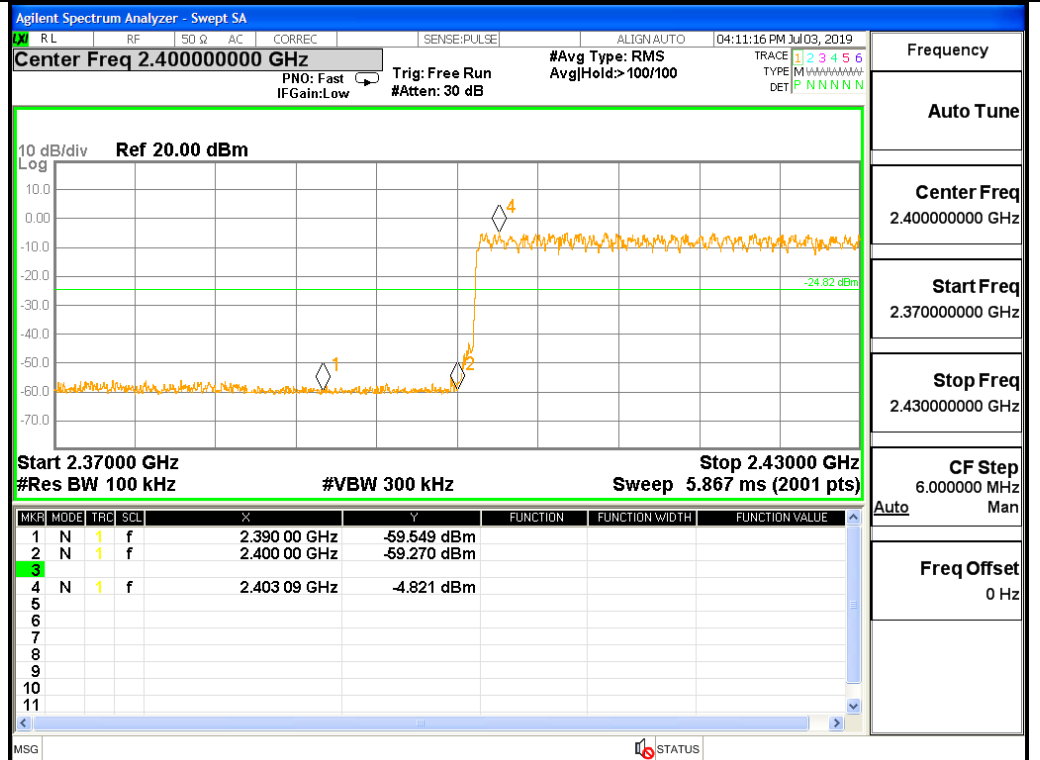
π /4DQPSK/LCH/Hop



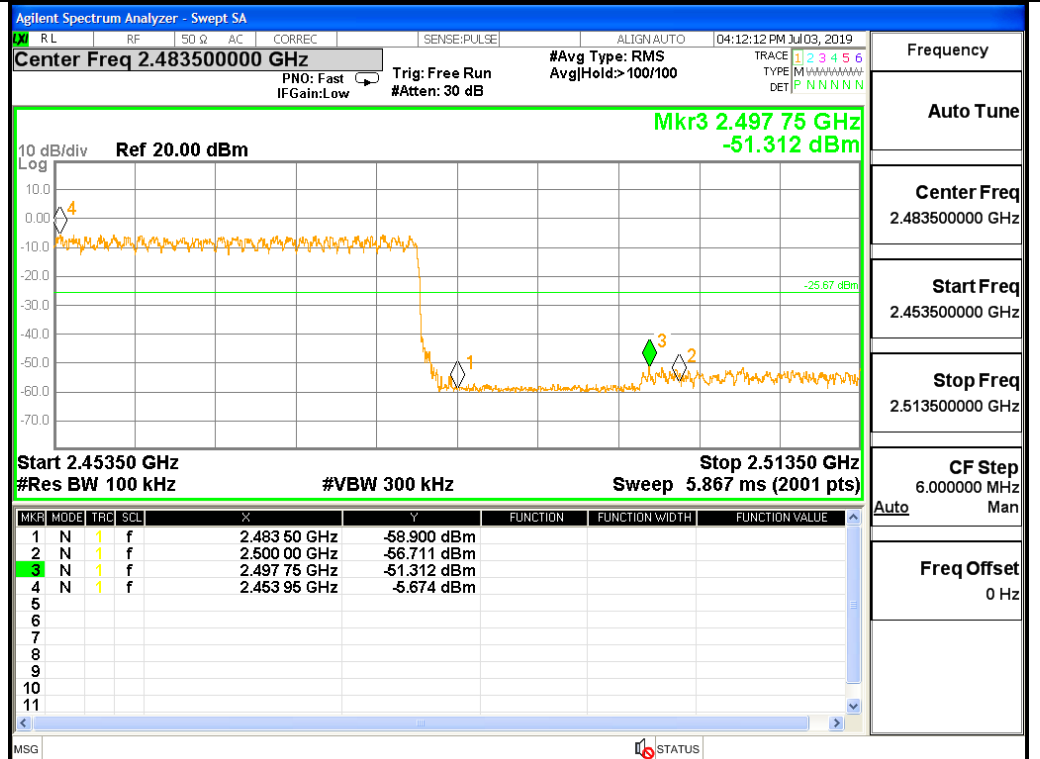
π /4DQPSK/HCH/Hop



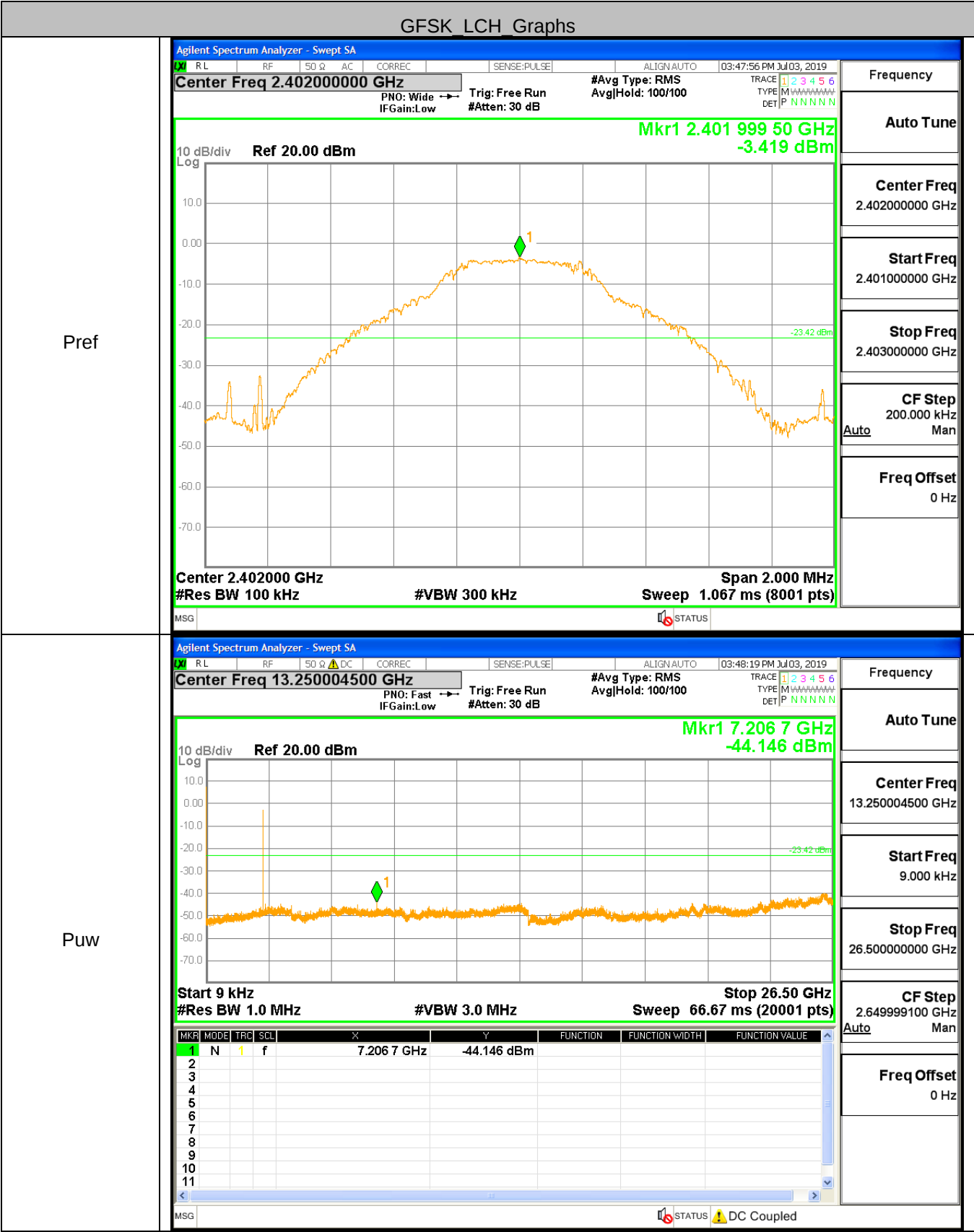
8DPSK/LCH/Hop



8DPSK/HCH/Hop

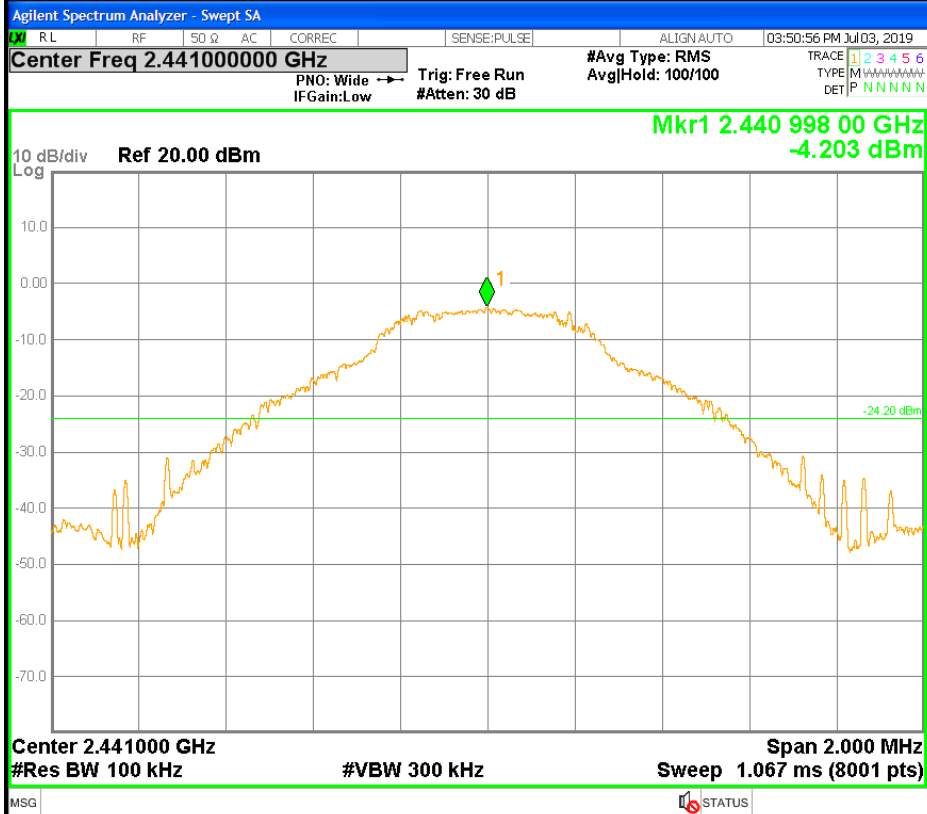


A.7 RF Conducted Spurious Emissions
Test Graph



GFSK MCH Graphs

Pref



Frequency

Auto Tune

Center Freq
2.441000000 GHz

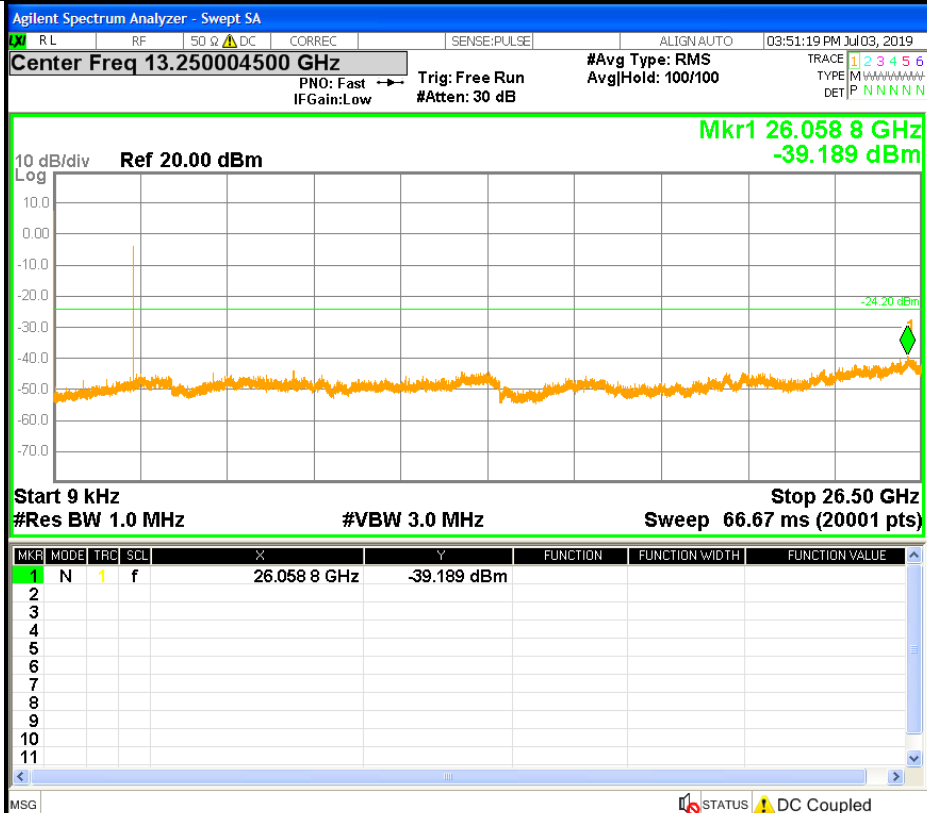
Start Freq
2.440000000 GHz

Stop Freq
2.442000000 GHz

CF Step
200.000 kHz
Auto Man

Freq Offset
0 Hz

Puw



Frequency

Auto Tune

Center Freq
13.250004500 GHz

Start Freq
9.000 kHz

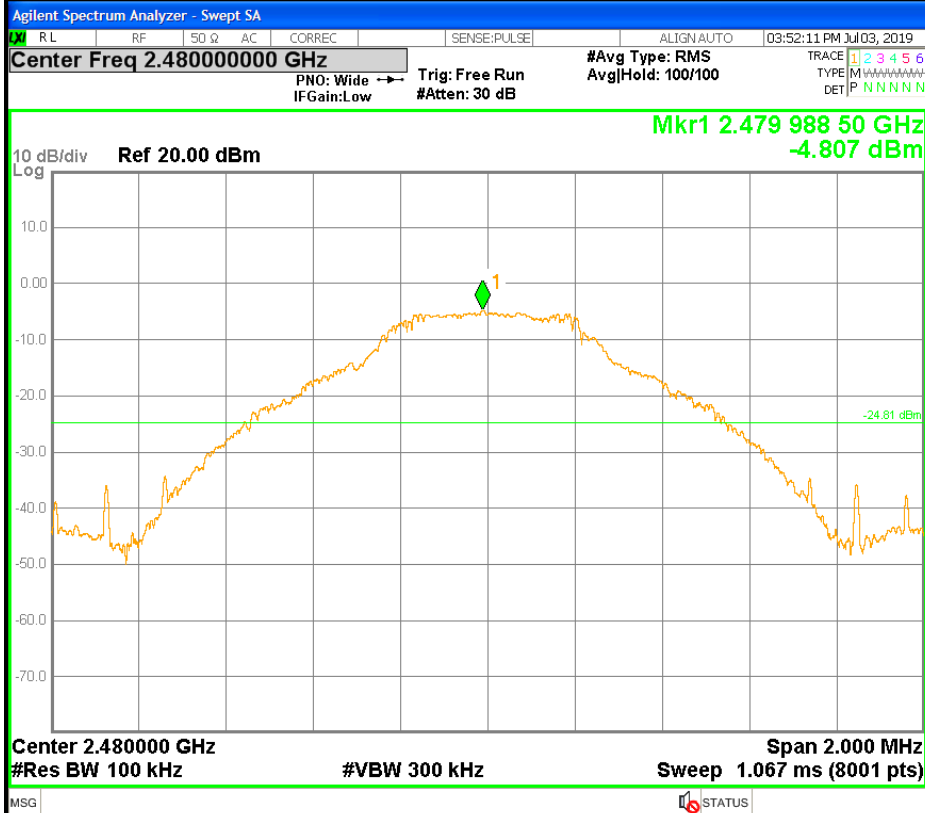
Stop Freq
26.500000000 GHz

CF Step
2.649999100 GHz
Auto Man

Freq Offset
0 Hz

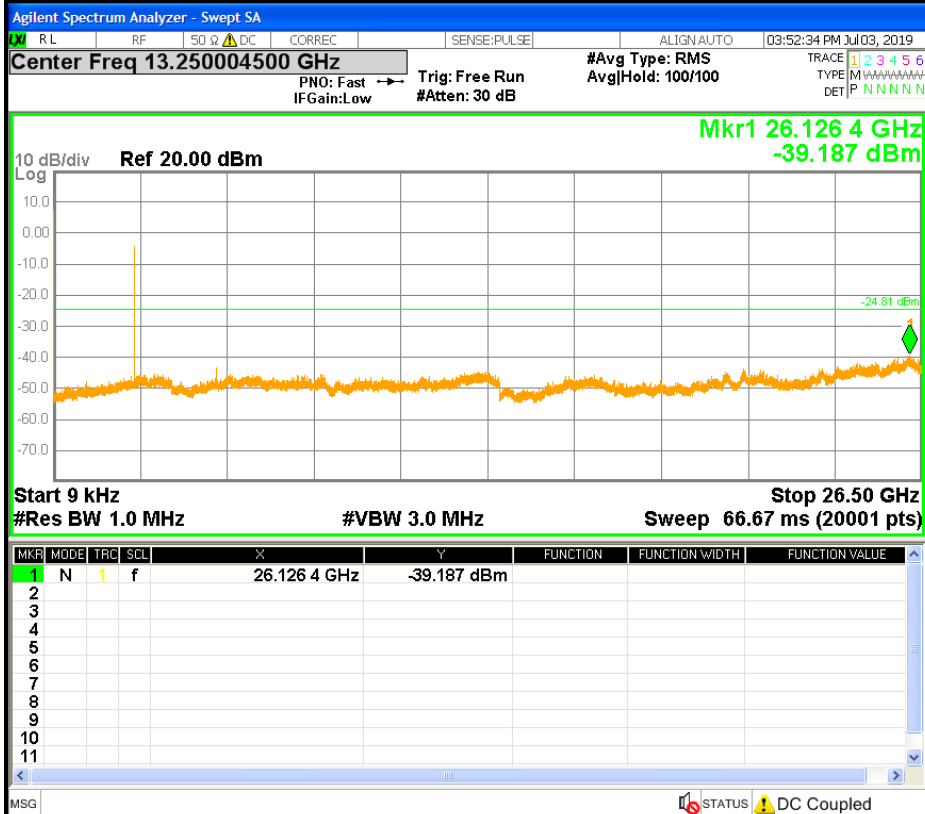
GFSK HCH Graphs

Pref



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

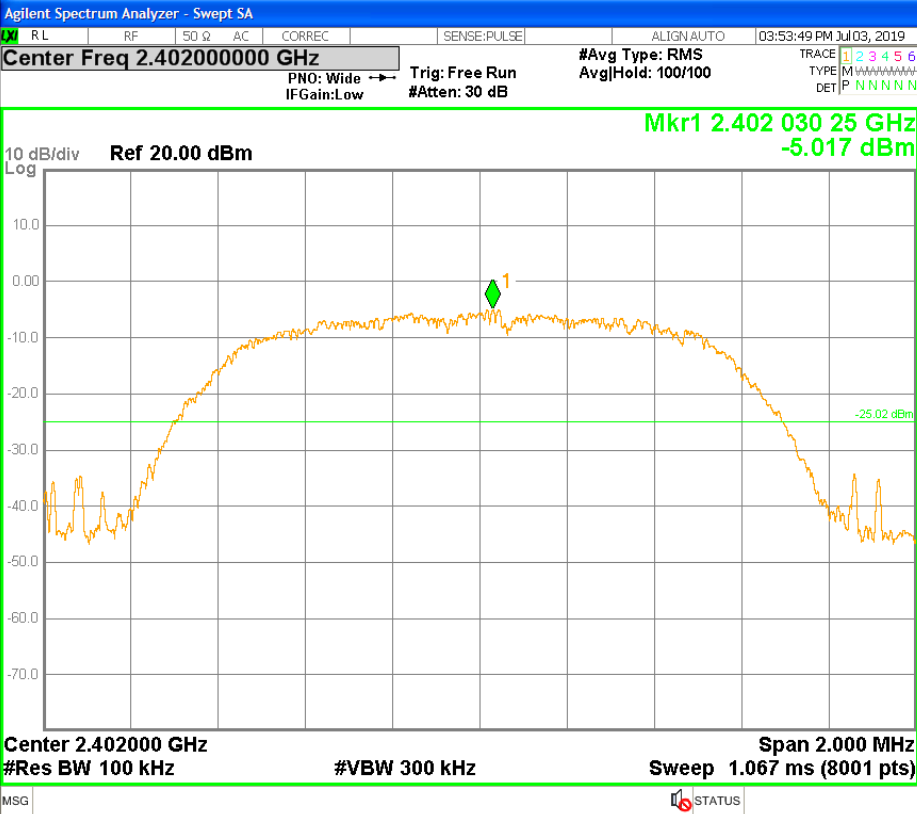
Puw



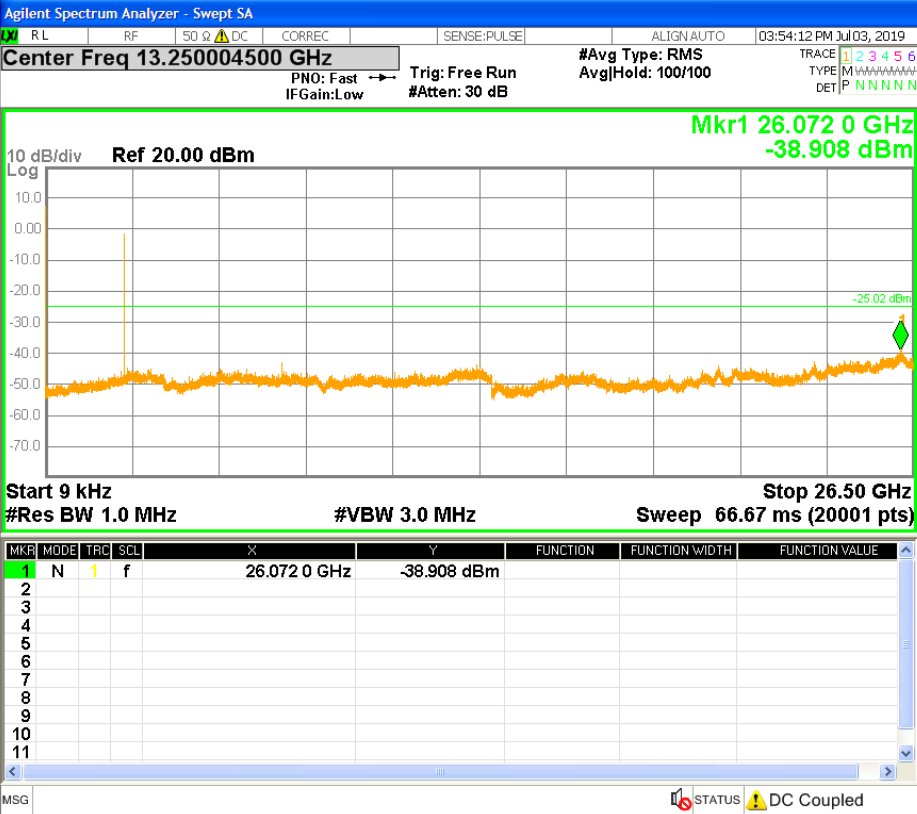
Frequency
Auto Tune
Center Freq 13.250004500 GHz
Start Freq 9.000 kHz
Stop Freq 26.500000000 GHz
CF Step 2.649999100 GHz Auto
Freq Offset 0 Hz

$\pi/4$ DQPSK LCH Graphs

Pref

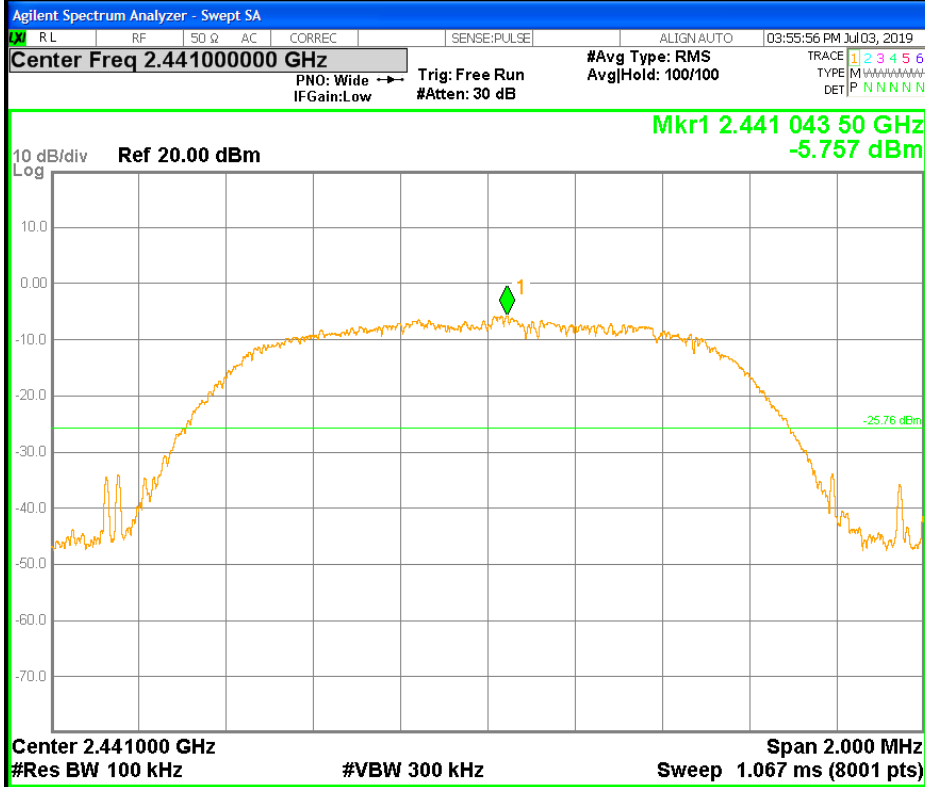


Puw



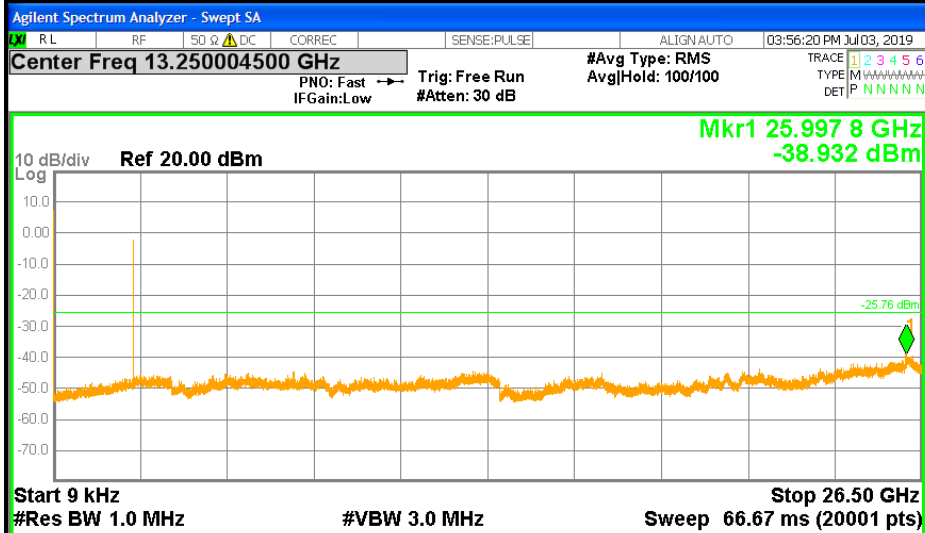
$\pi/4$ DQPSK MCH Graphs

Pref



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

Puw

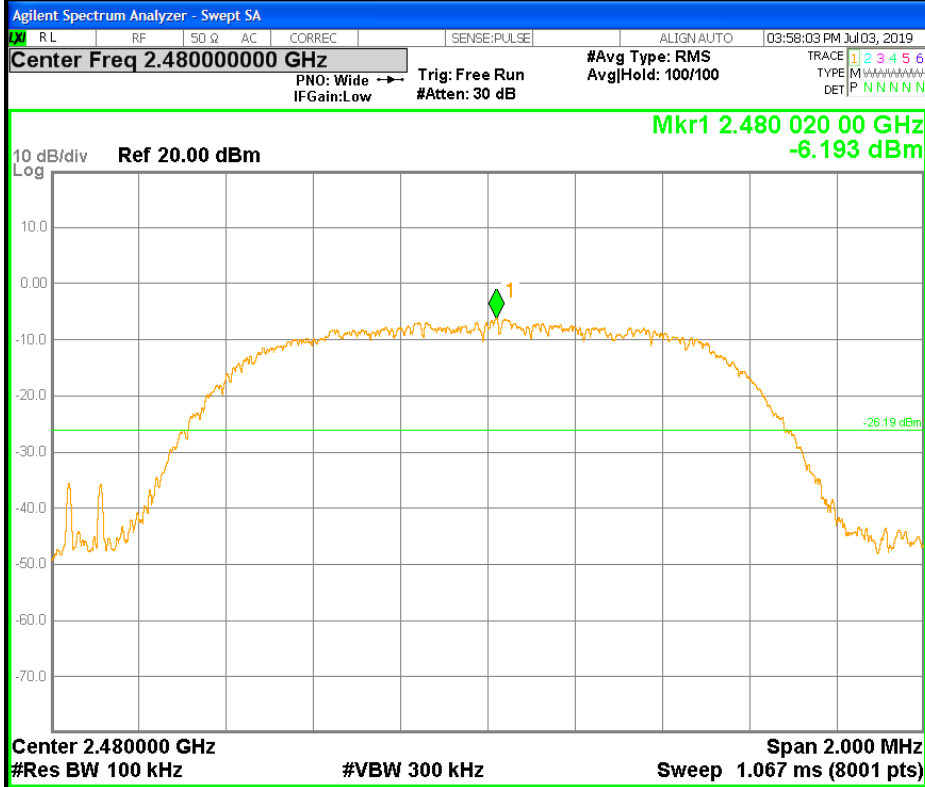


Frequency
Auto Tune
Center Freq 13.250004500 GHz
Start Freq 9.000 kHz
Stop Freq 26.500000000 GHz
CF Step 2.649999100 GHz Auto
Freq Offset 0 Hz

MR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	25.997 8 GHz	-38.932 dBm			
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								

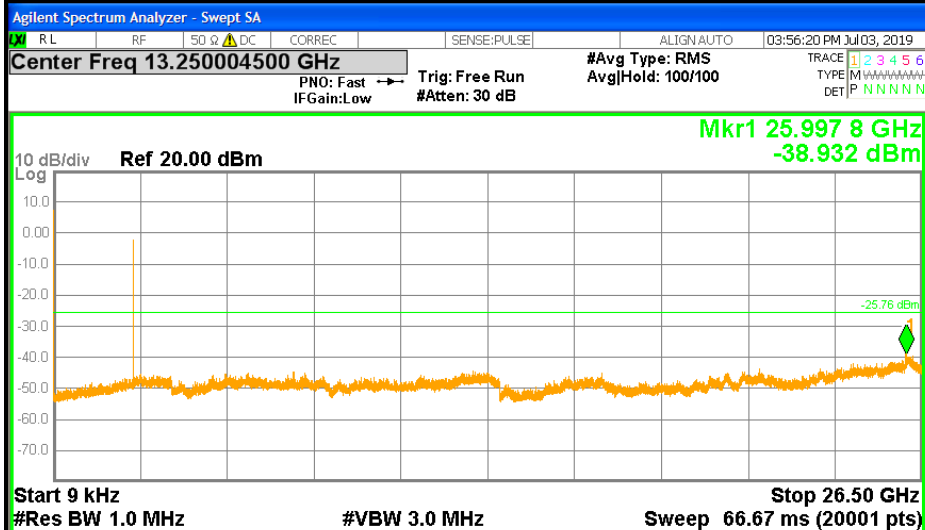
$\pi/4$ DQPSK HCH Graphs

Pref



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

Puw

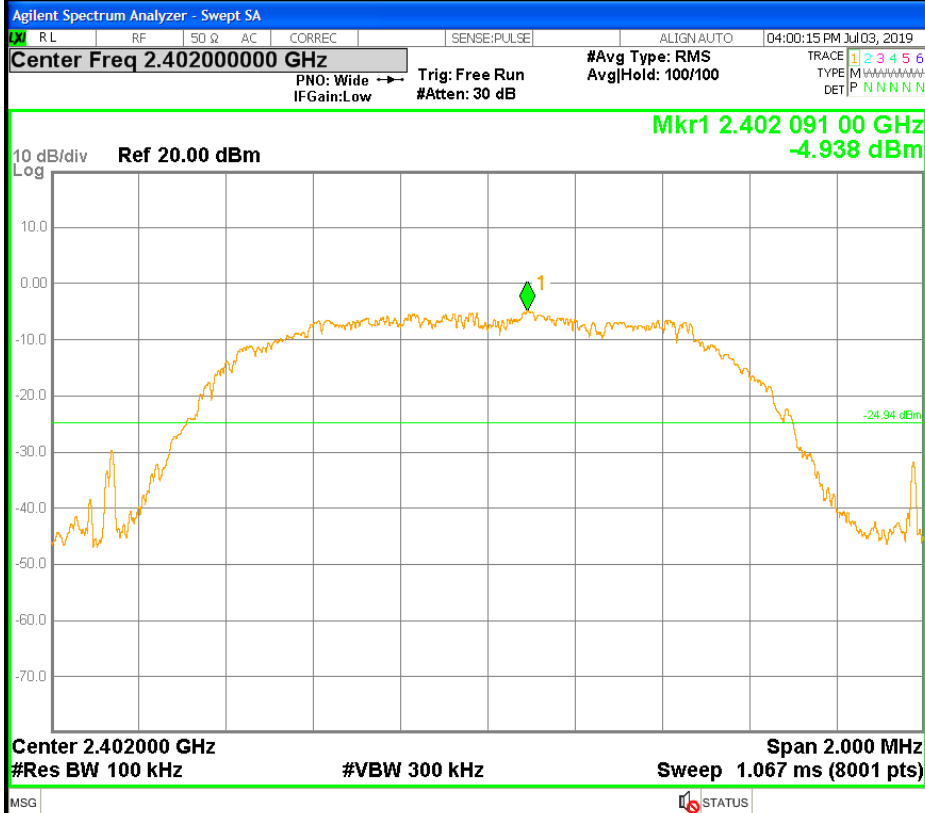


Frequency
Auto Tune
Center Freq 13.250004500 GHz
Start Freq 9.000 kHz
Stop Freq 26.500000000 GHz
CF Step 2.649999100 GHz Auto
Freq Offset 0 Hz

MR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	25.997 8 GHz	-38.932 dBm			
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								

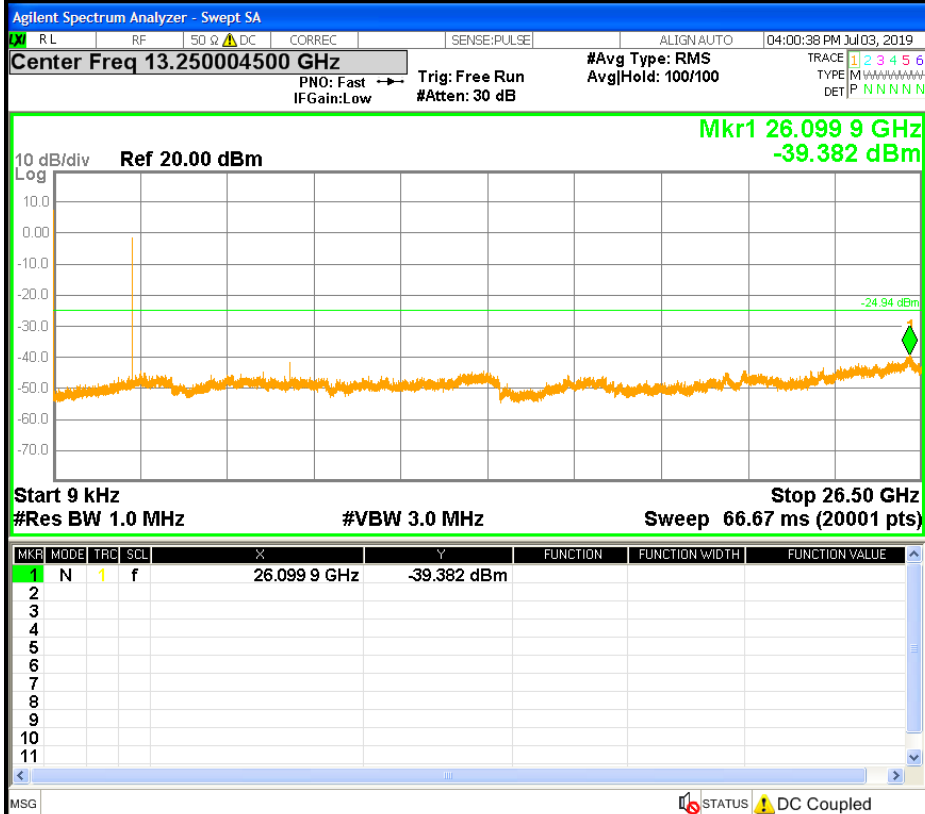
8DPSK LCH Graphs

Pref



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

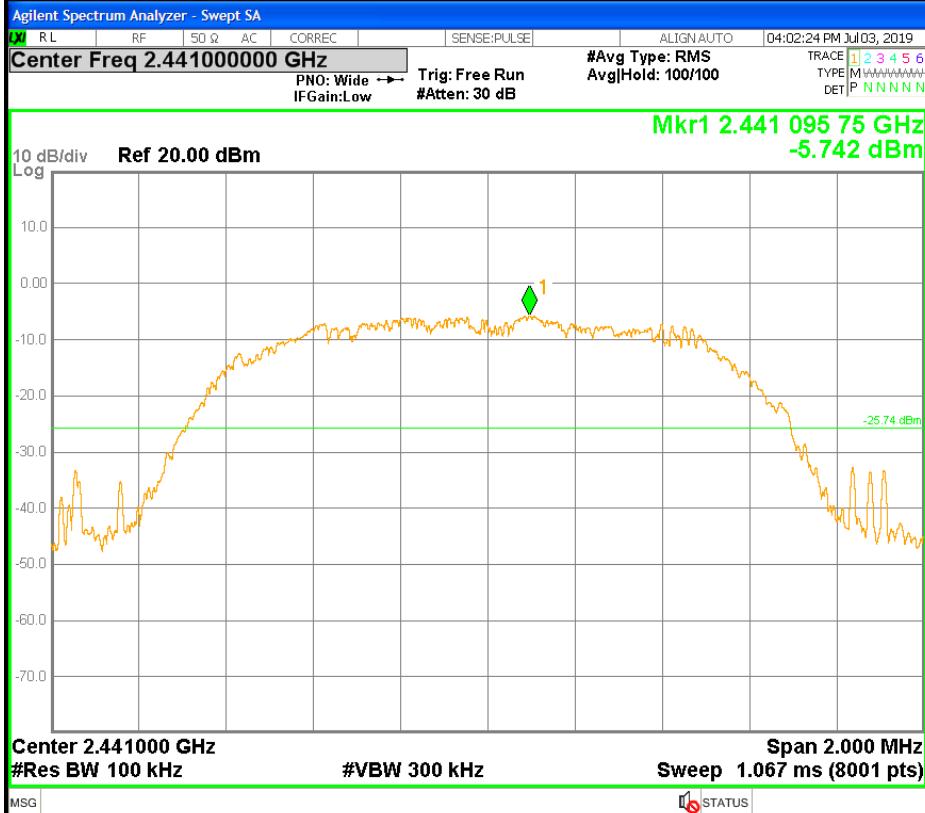
Puw



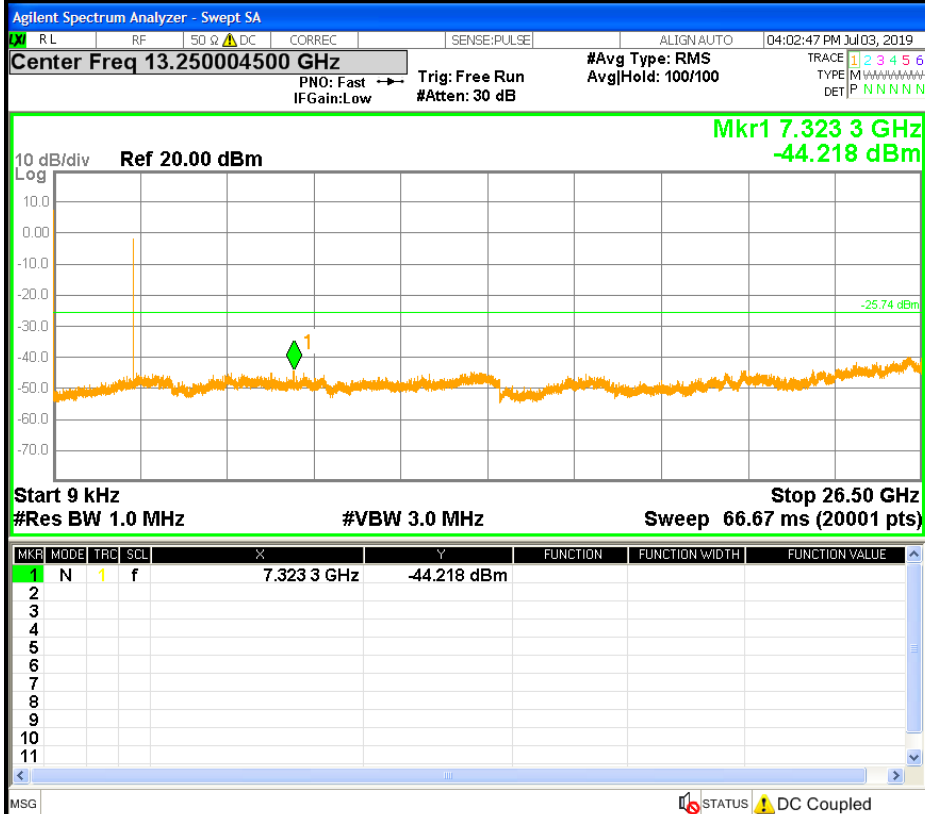
Frequency
Auto Tune
Center Freq 13.250004500 GHz
Start Freq 9.000 kHz
Stop Freq 26.500000000 GHz
CF Step 2.649999100 GHz Auto
Freq Offset 0 Hz

8DPSK MCH Graphs

Pref

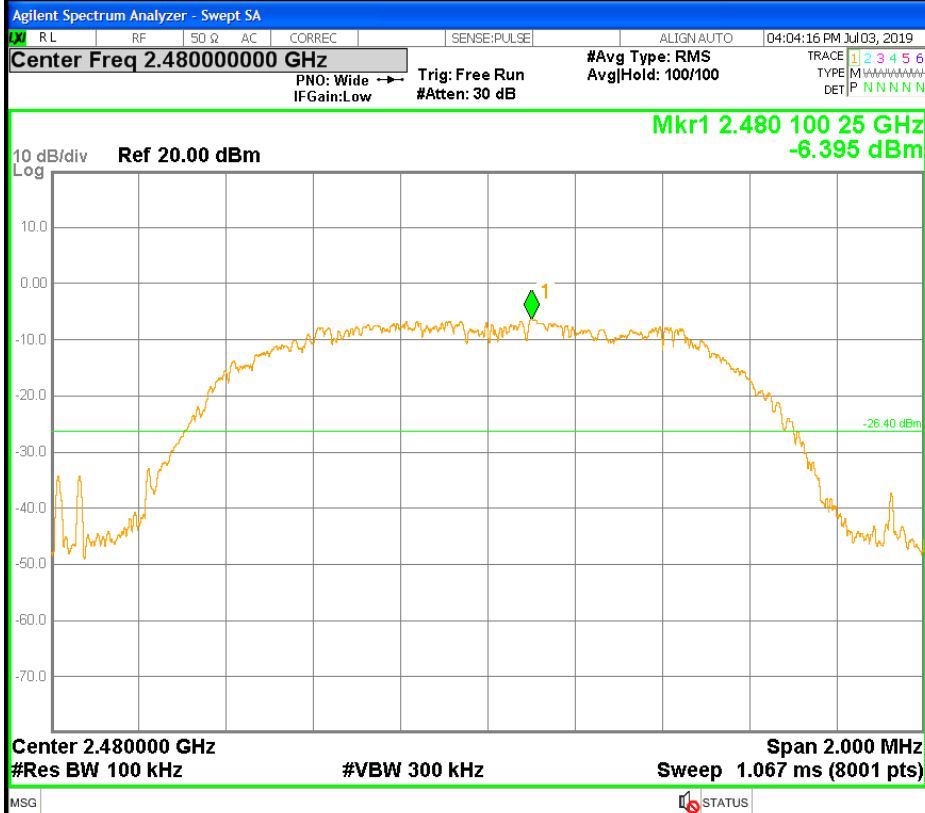


Puw



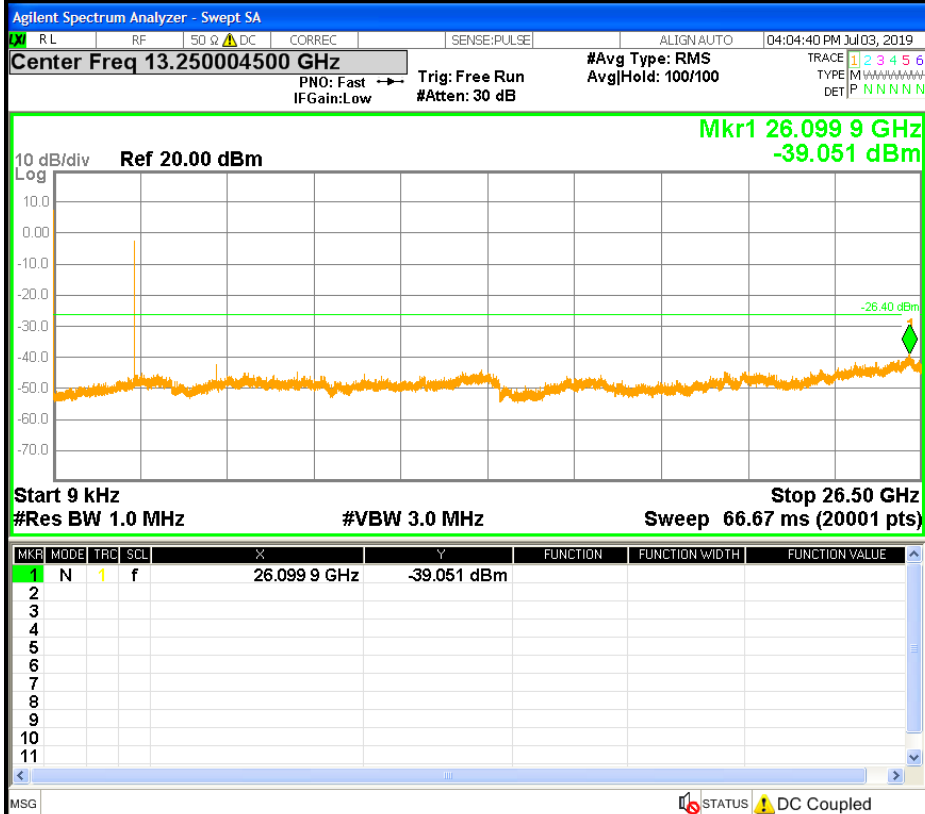
8DPSK HCH Graphs

Pref



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

Puw



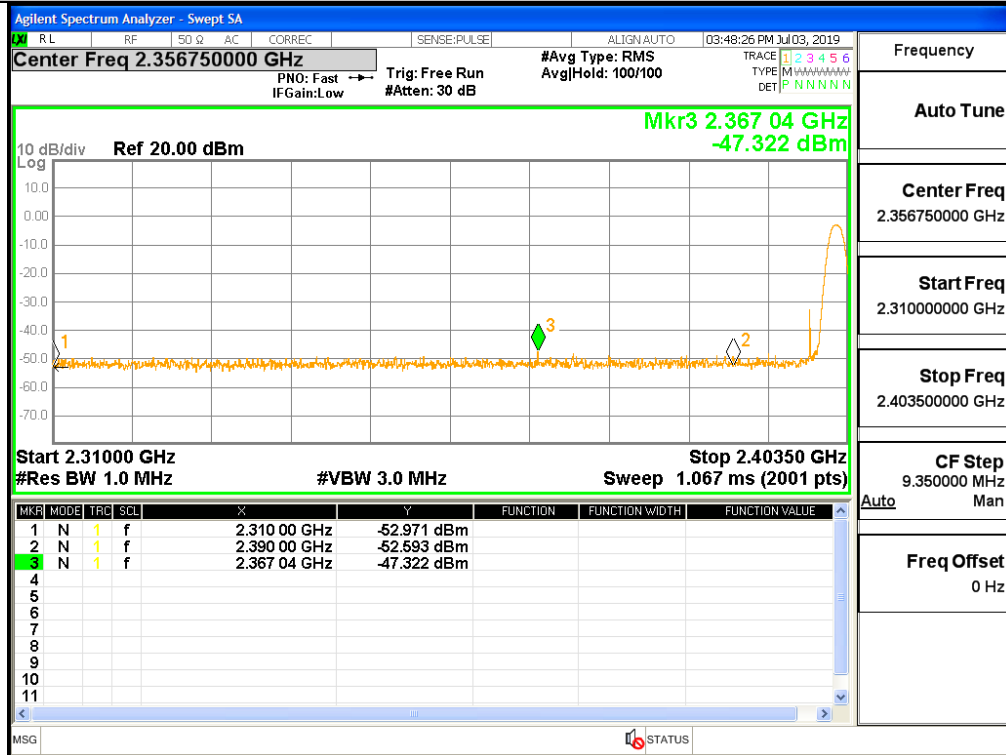
Frequency
Auto Tune
Center Freq 13.250004500 GHz
Start Freq 9.000 kHz
Stop Freq 26.500000000 GHz
CF Step 2.649999100 GHz Auto
Freq Offset 0 Hz

A.8 Restrict-band band-edge measurements

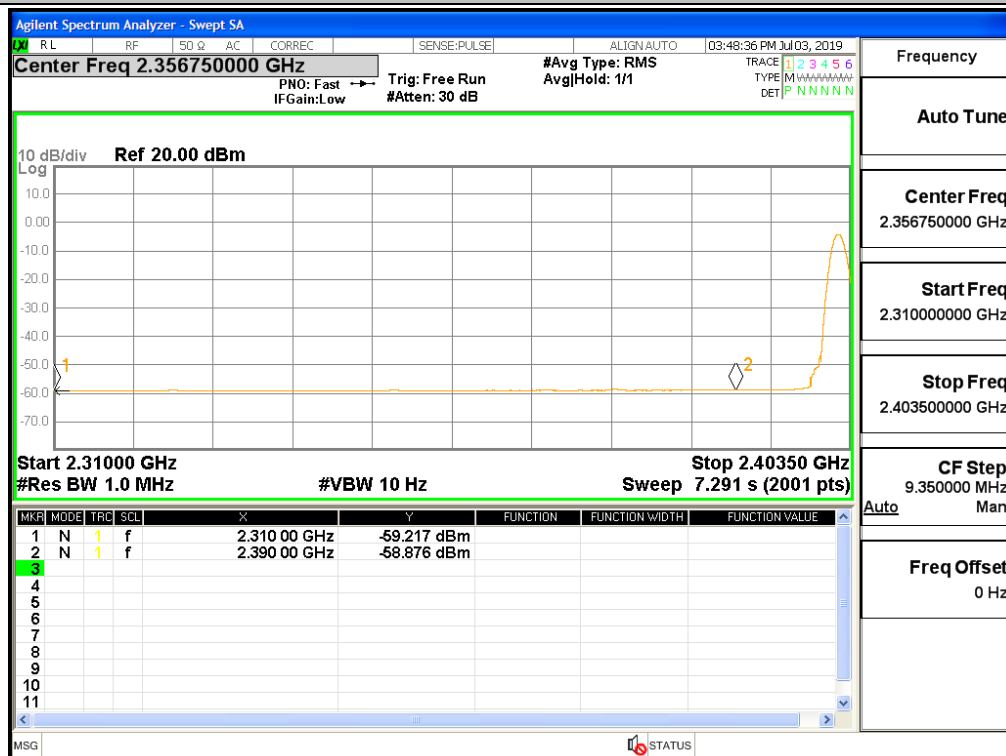
Type	Carrier Frequency (MHz)	Frequency(M Hz)	Gain	Ground Factor	Peak Value(dBm)	E [dBuV/m]	Limit [dBuV/m]	Conclusion
1DH5	2402	2367.04	2.00	0.00	-47.32	49.88	74	Pass
1DH5	2480	2484.50	2.00	0.00	-39.64	57.57	74	Pass
2DH5	2402	2310.00	2.00	0.00	-49.69	47.51	74	Pass
2DH5	2480	2485.85	2.00	0.00	-41.11	56.09	74	Pass
3DH5	2402	2390.00	2.00	0.00	-51.09	46.11	74	Pass
3DH5	2480	2483.67	2.00	0.00	-35.32	61.88	74	Pass

Type	Carrier Frequency (MHz)	Frequency(M Hz)	Gain	Ground Factor	Average Value(dBm)	E [dBuV/m]	Limit [dBuV/m]	Conclusion
1DH5	2402.00	2390.00	2.00	0.00	-58.88	38.32	54.00	Pass
1DH5	2480.00	2483.50	2.00	0.00	-57.26	39.94	54.00	Pass
2DH5	2402.00	2390.00	2.00	0.00	-58.86	38.34	54.00	Pass
2DH5	2480.00	2483.50	2.00	0.00	-56.63	40.57	54.00	Pass
3DH5	2402.00	2390.00	2.00	0.00	-58.89	38.31	54.00	Pass
3DH5	2480.00	2483.50	2.00	0.00	-56.53	40.67	54.00	Pass

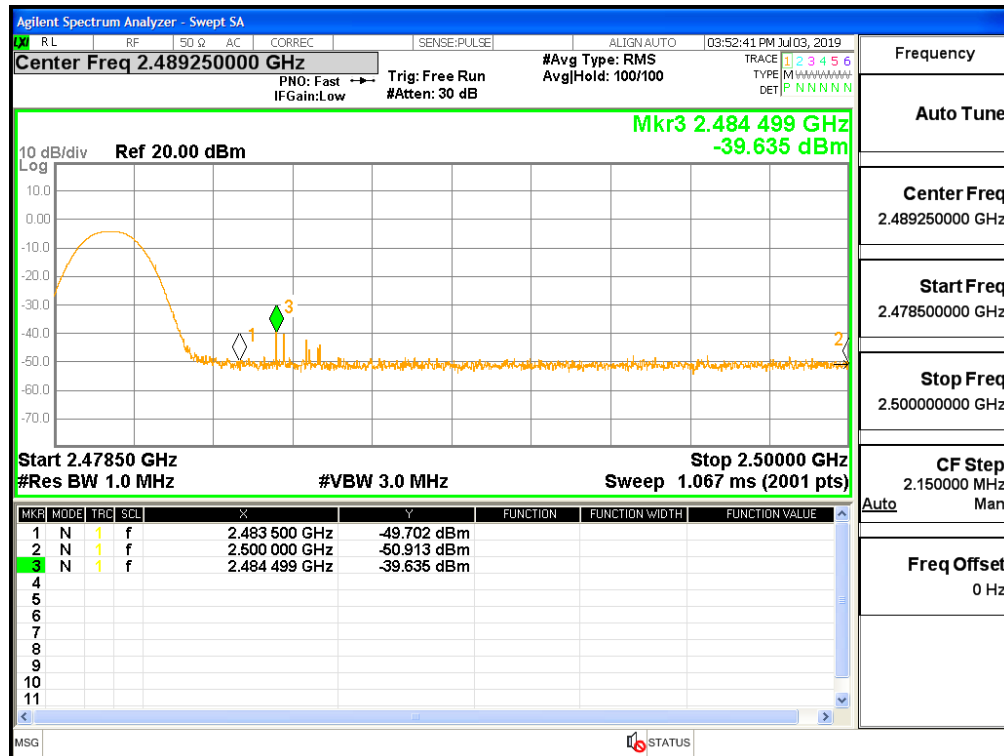
Restrict-band band-edge measurements_2402_PEAK_DH5



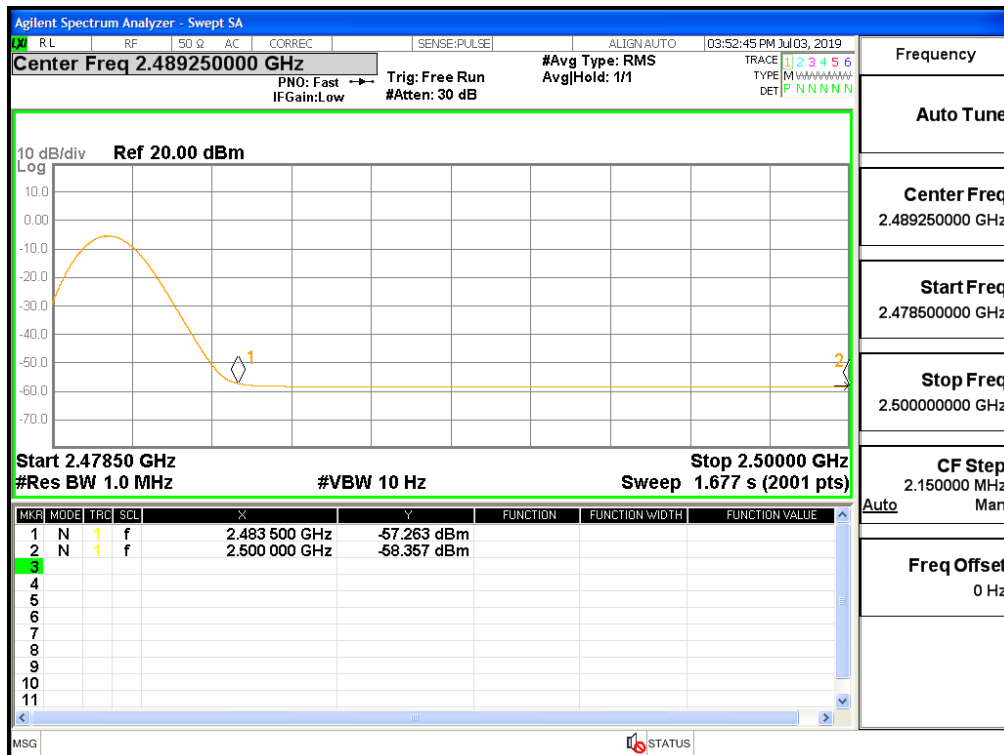
Restrict-band band-edge measurements_2402_AV_DH5



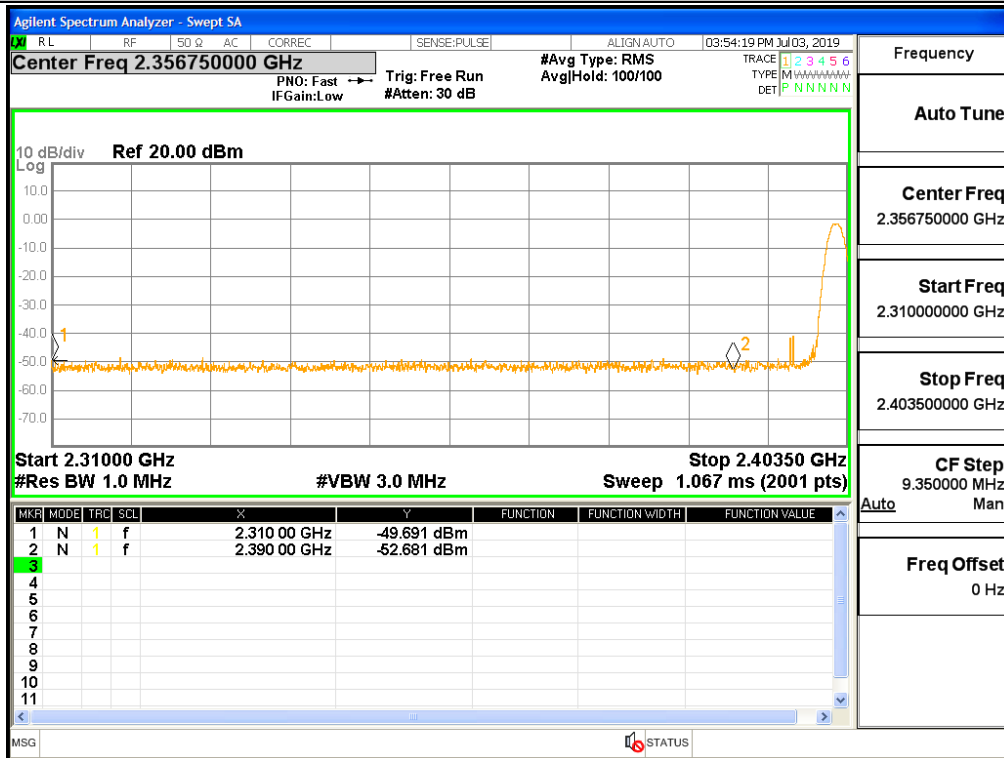
Restrict-band band-edge measurements_2480_PEAK_DH5



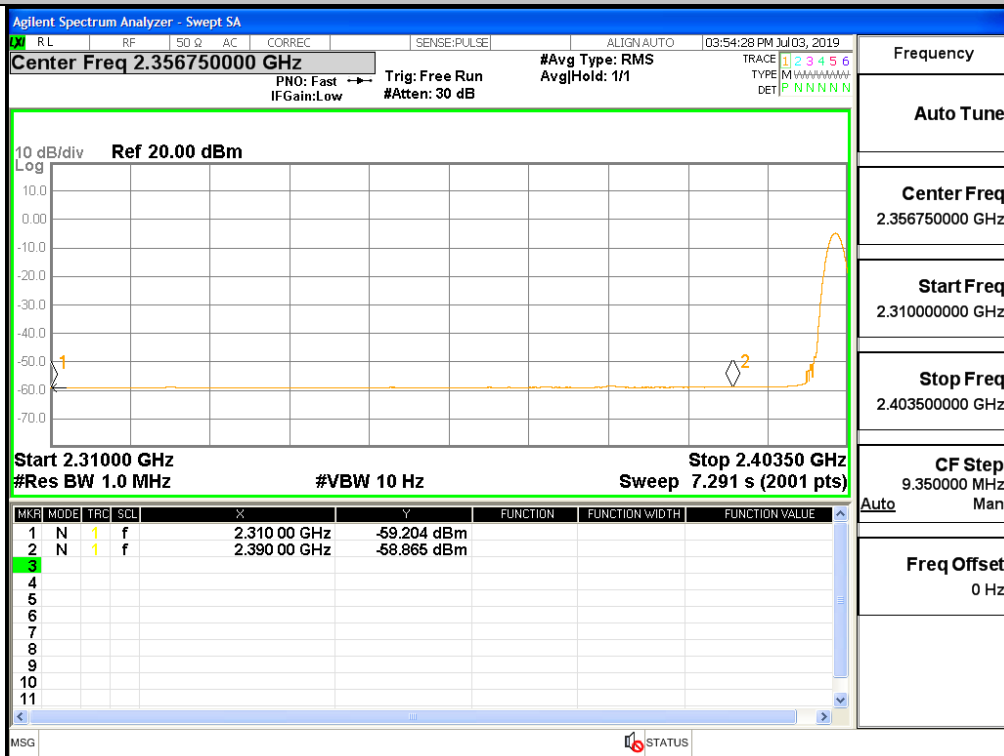
Restrict-band band-edge measurements_2480_AV_DH5



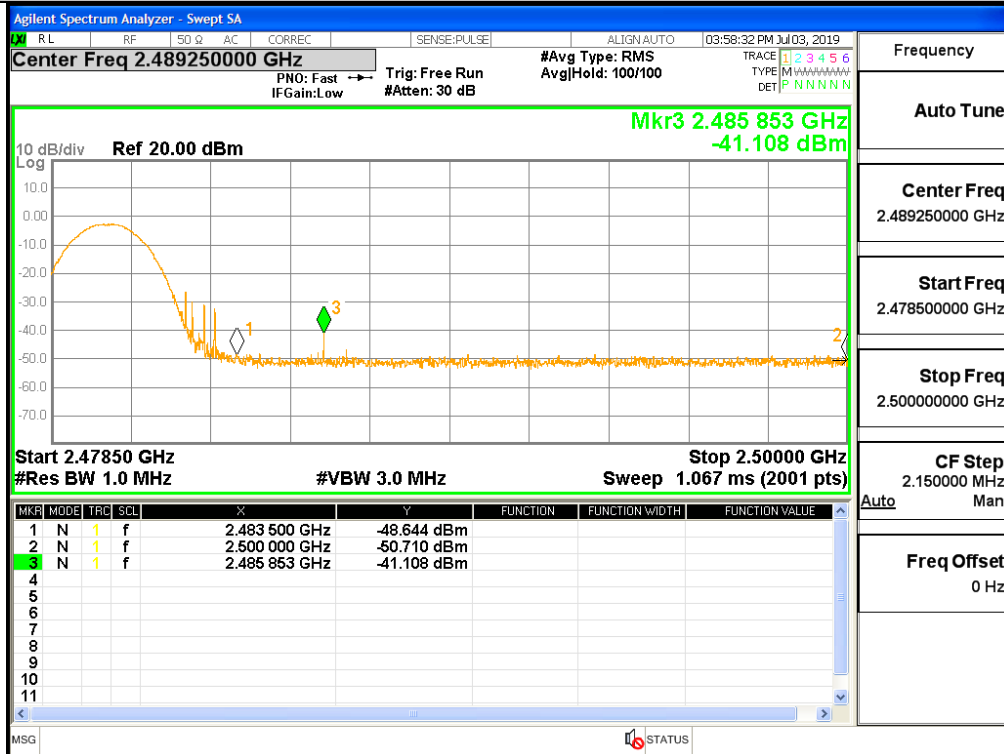
Restrict-band band-edge measurements_2402_PEAK_2DH5



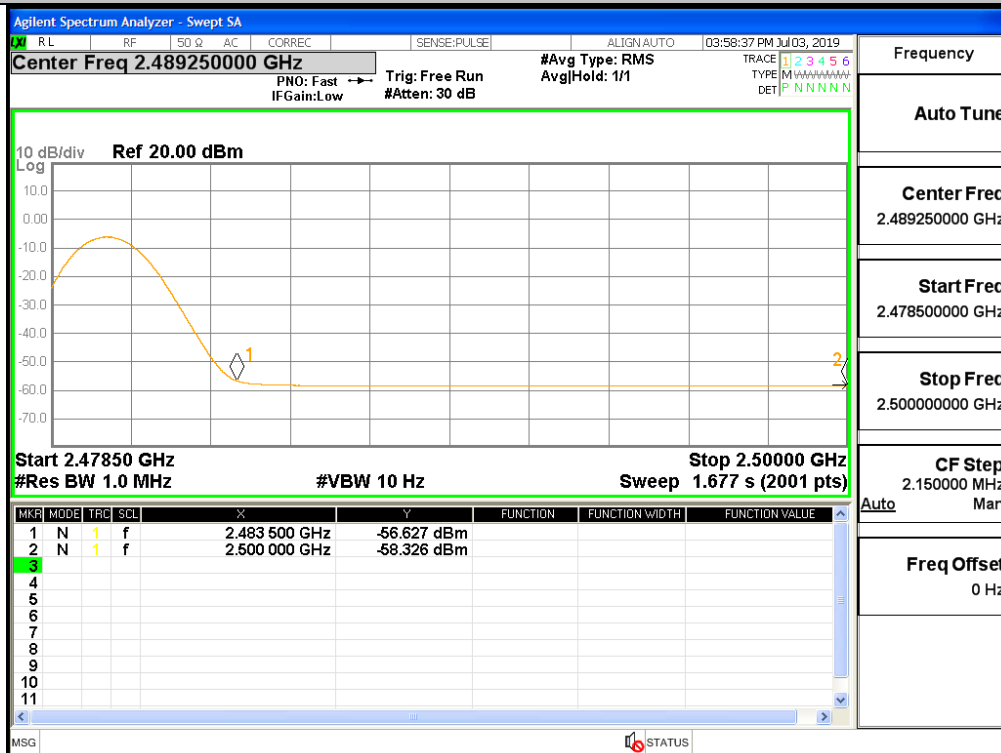
Restrict-band band-edge measurements_2402_AV_2DH5



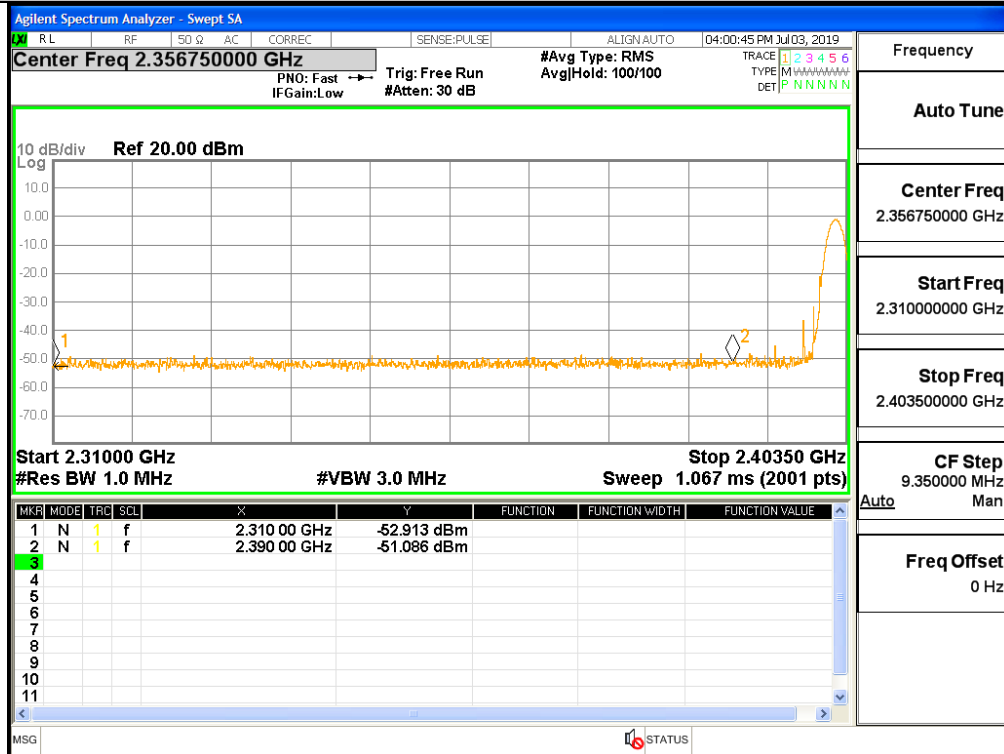
Restrict-band band-edge measurements_2480_PEAK_2DH5



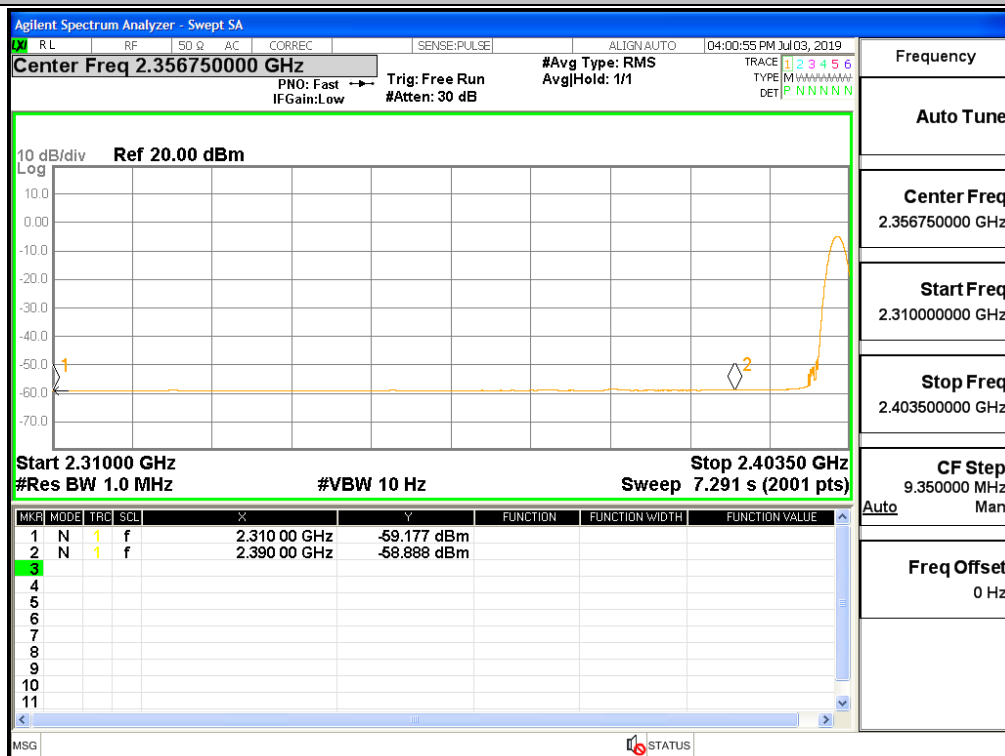
Restrict-band band-edge measurements_2480_AV_2DH5



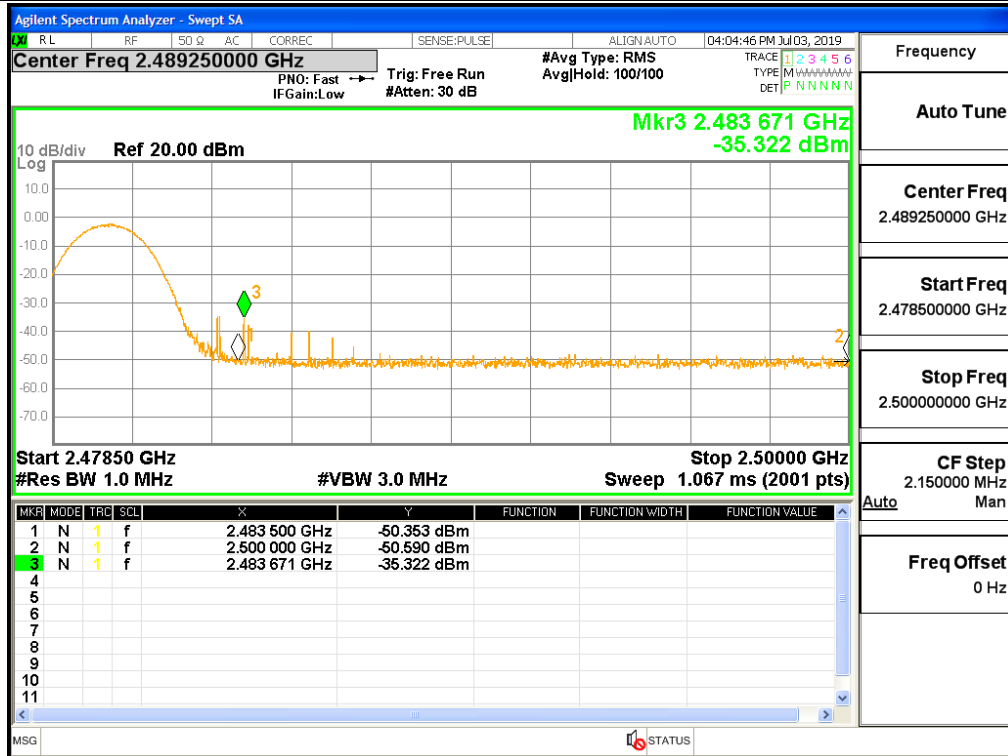
Restrict-band band-edge measurements_2402_PEAK_3DH5



Restrict-band band-edge measurements_2402_AV_3DH5



Restrict-band band-edge measurements_2480_PEAK_3DH5



Restrict-band band-edge measurements_2480_AV_3DH5

