

Appendix A

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

Product Name: Bluetooth Speaker

Trade Mark: N/A

Test Model: RS12

FCC ID: 2ATOY-RS12

Environmental Conditions

Temperature:	22.6 ° C
Relative Humidity:	50%
ATM Pressure:	100.0 kPa
Test Engineer:	Gary Qian
Supervised by:	Eden Hu

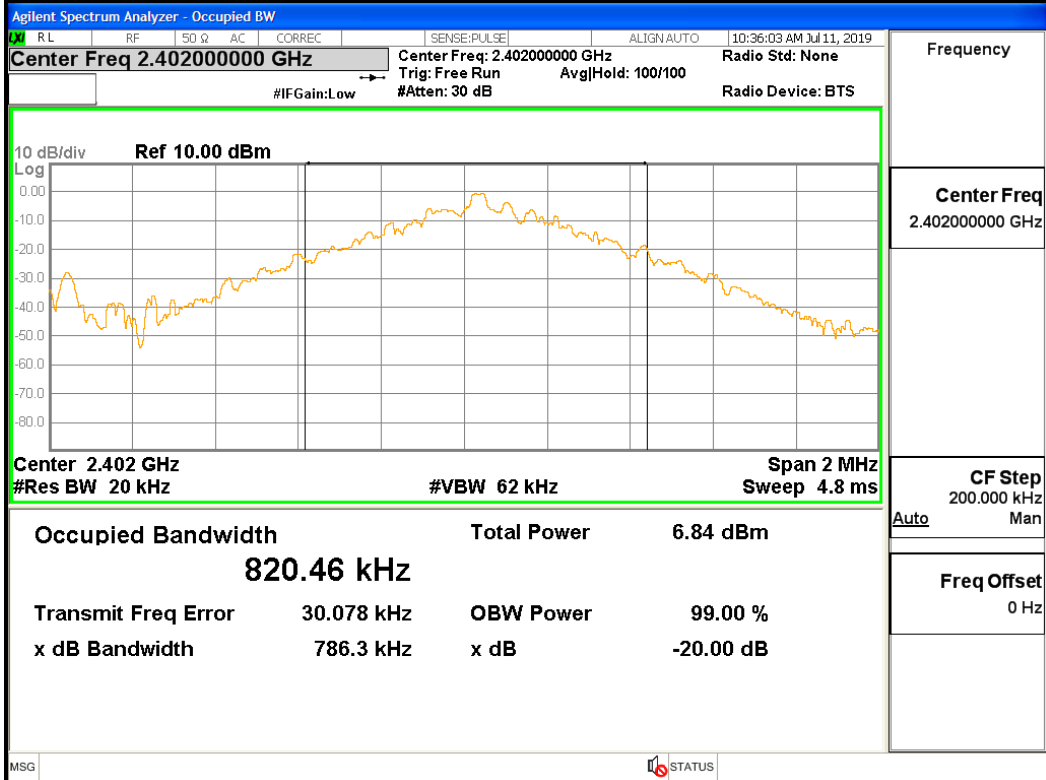
A.1 20 dB Bandwidth

Mode	Channel.	20dB Bandwidth [MHz]	Limit(MHz)	Verdict
GFSK	LCH	0.786	Not Specified	PASS
GFSK	MCH	0.792	Not Specified	PASS
GFSK	HCH	0.765	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.183	Not Specified	PASS
$\pi/4$ DQPSK	MCH	1.176	Not Specified	PASS
$\pi/4$ DQPSK	HCH	1.181	Not Specified	PASS
8DPSK	LCH	1.212	Not Specified	PASS
8DPSK	MCH	1.224	Not Specified	PASS
8DPSK	HCH	1.220	Not Specified	PASS

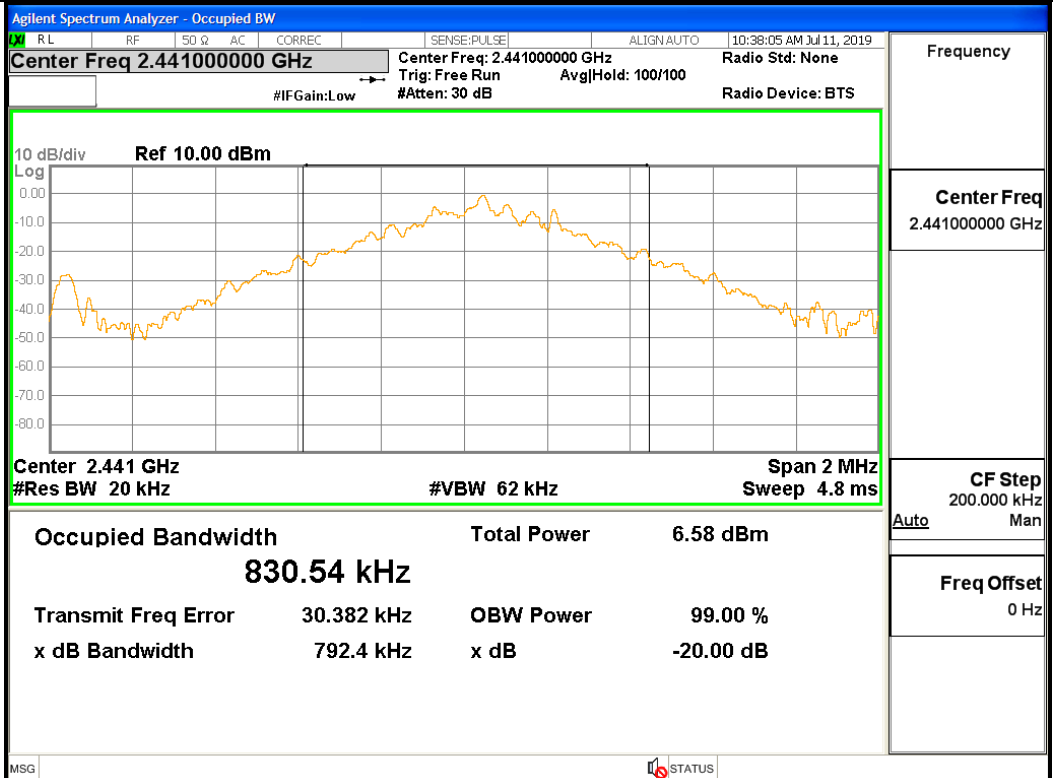
Test Graph

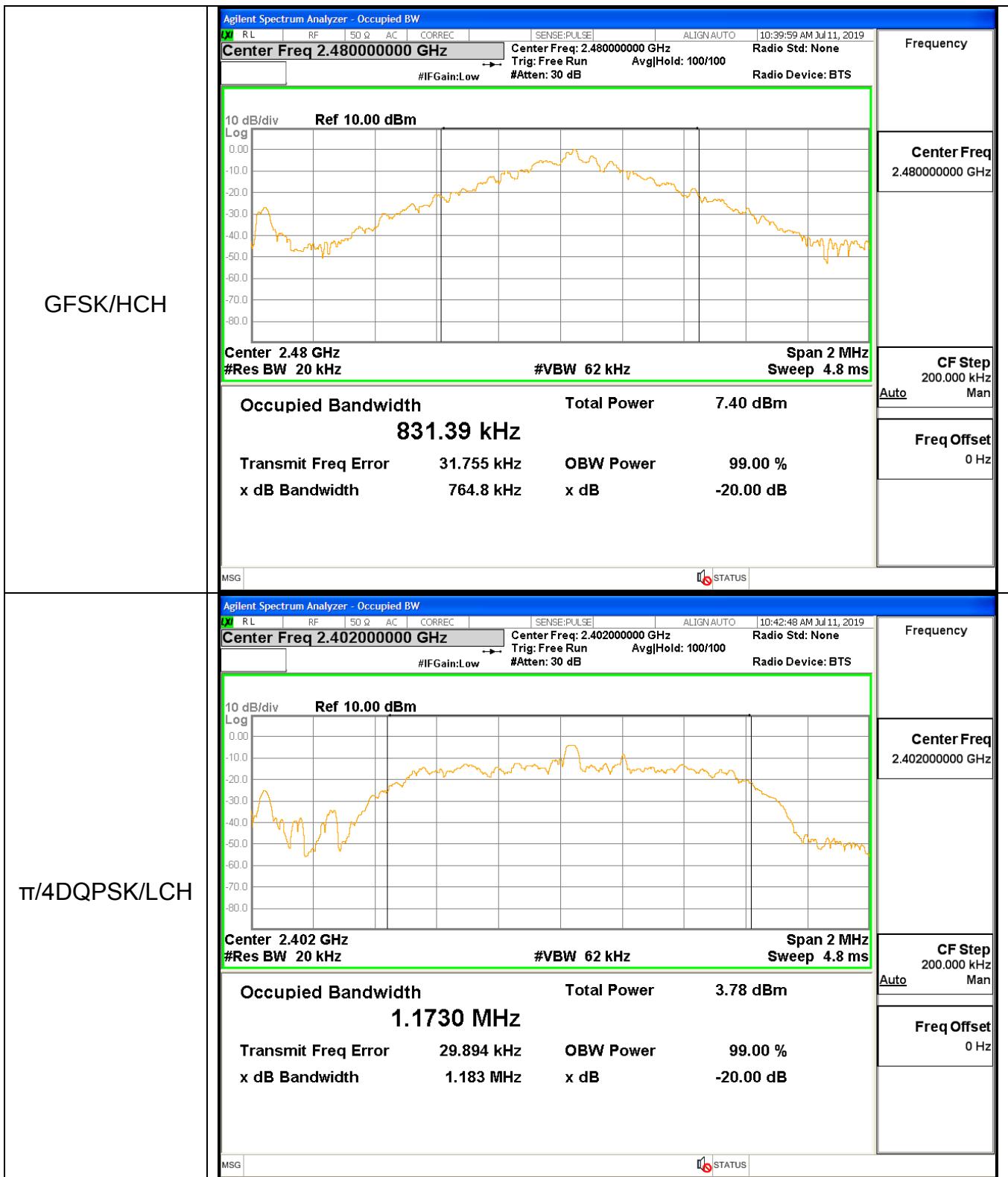
Graphs

GFSK/LCH

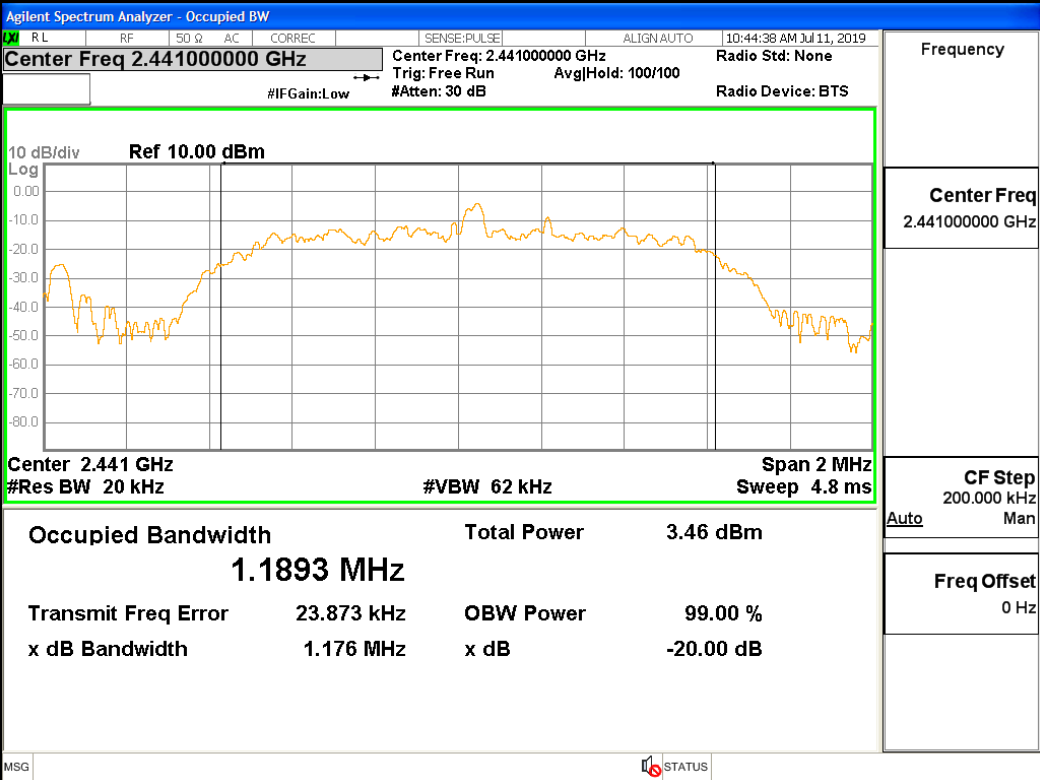


GFSK/MCH

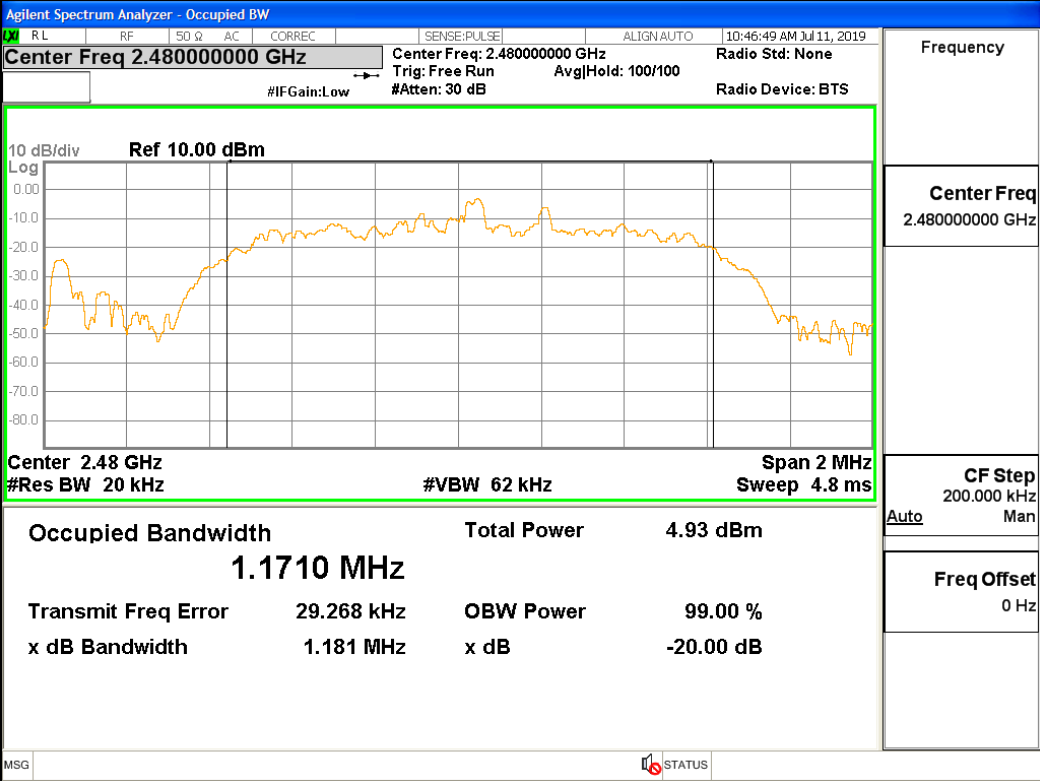


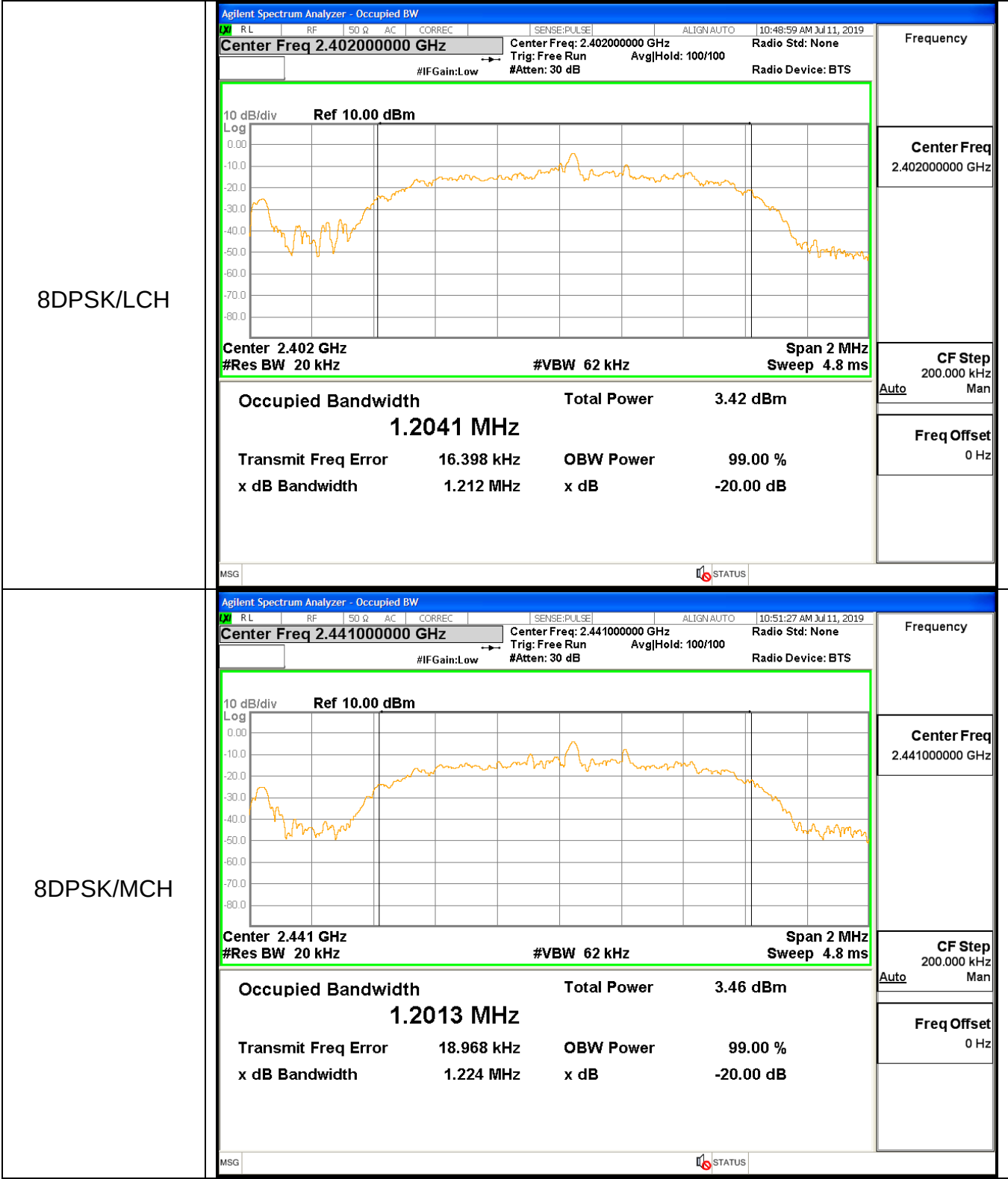


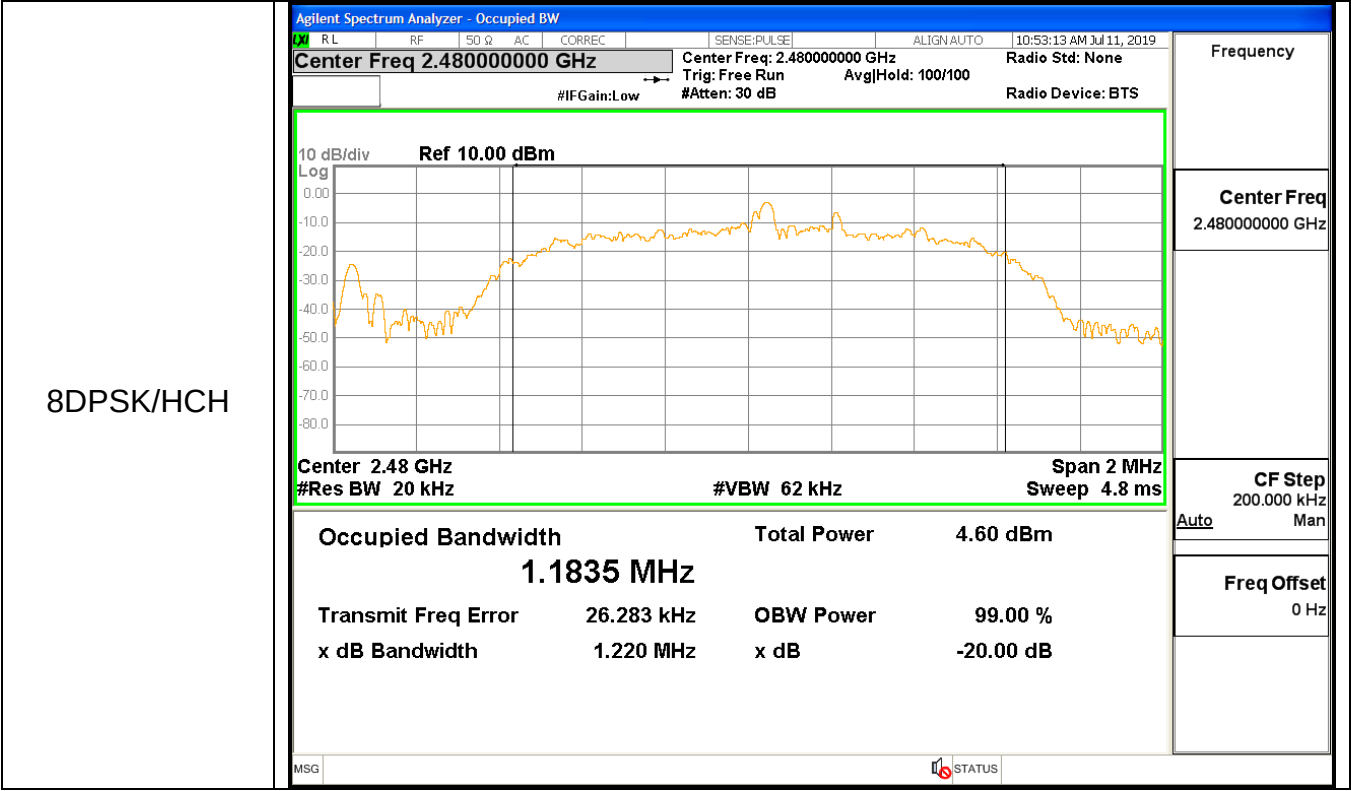
π /4DQPSK/MCH



π /4DQPSK/HCH



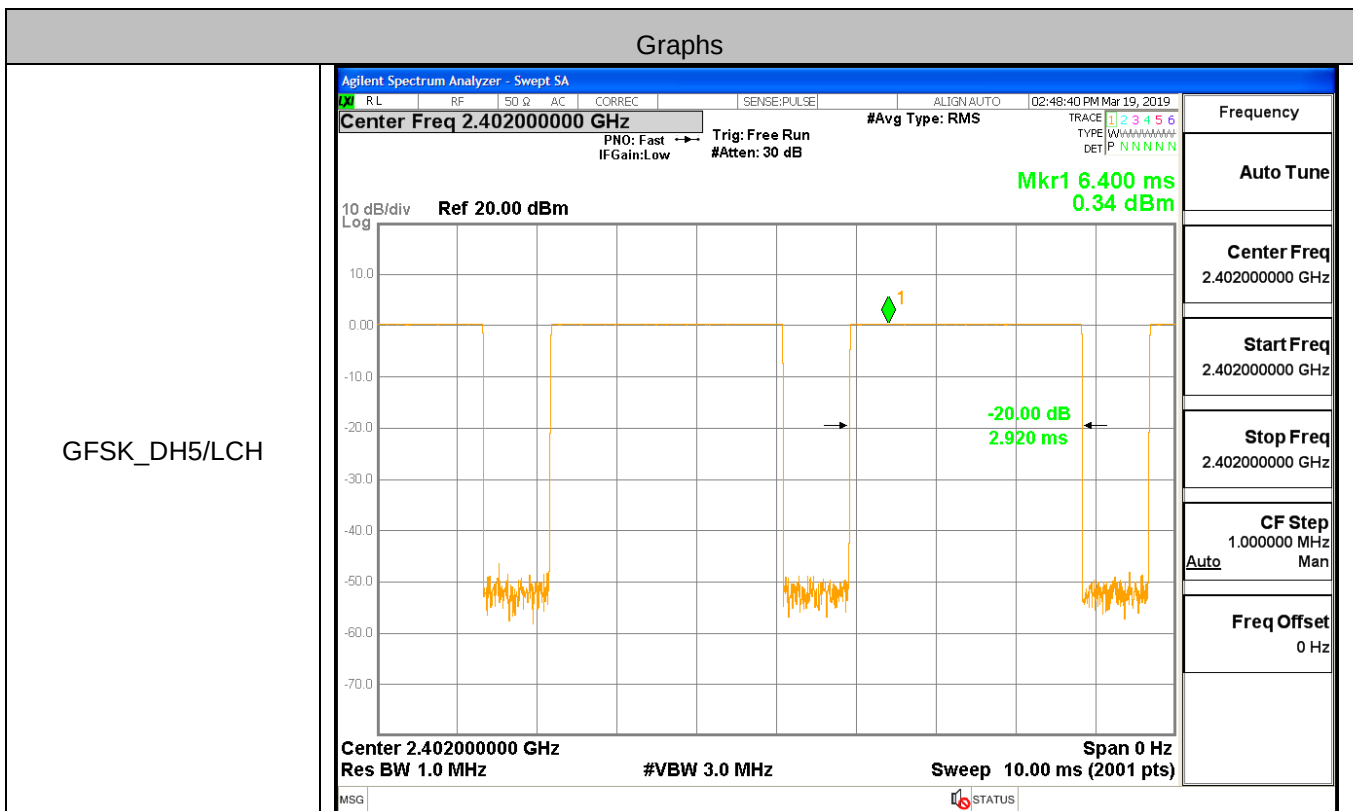




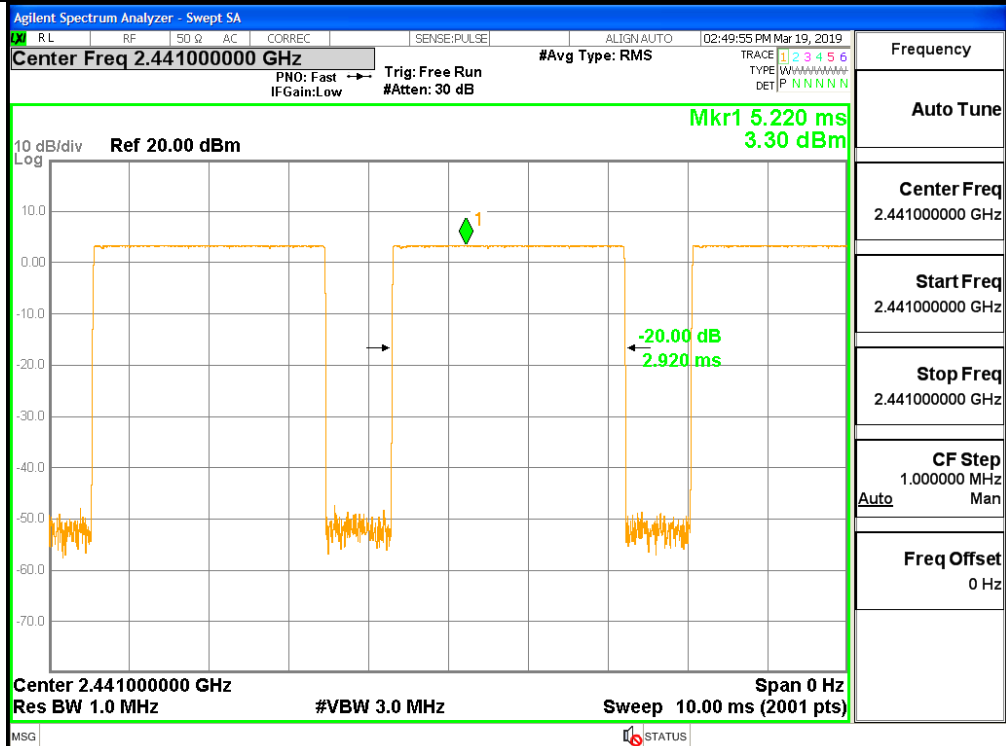
A.2 Dwell Time

Mode	Packet	Channel	Burst Width [s/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	0.002920	106.7	0.311530	0.4	PASS
GFSK	DH5	MCH	0.002920	106.7	0.311526	0.4	PASS
GFSK	DH5	HCH	0.002920	106.7	0.311525	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	0.002927	106.7	0.312324	0.4	PASS
$\pi/4$ DQPSK	2DH5	MCH	0.002926	106.7	0.312215	0.4	PASS
$\pi/4$ DQPSK	2DH5	HCH	0.002926	106.7	0.312202	0.4	PASS
8DPSK	3DH5	LCH	0.002928	106.7	0.312394	0.4	PASS
8DPSK	3DH5	MCH	0.002928	106.7	0.312385	0.4	PASS
8DPSK	3DH5	HCH	0.002927	106.7	0.312329	0.4	PASS

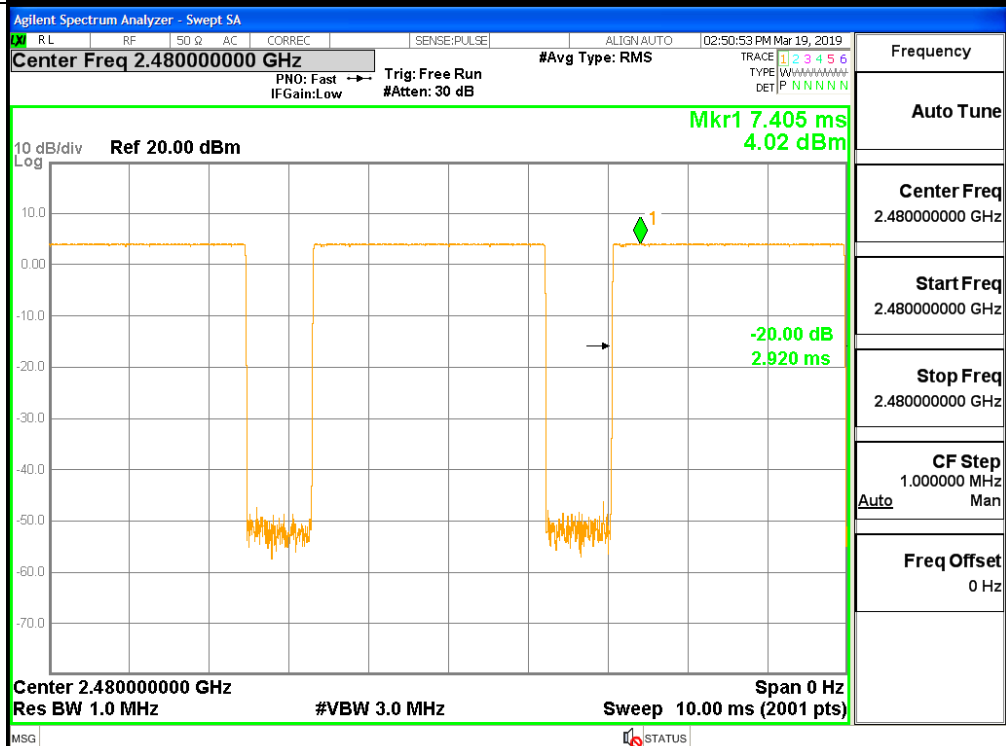
Test Graph



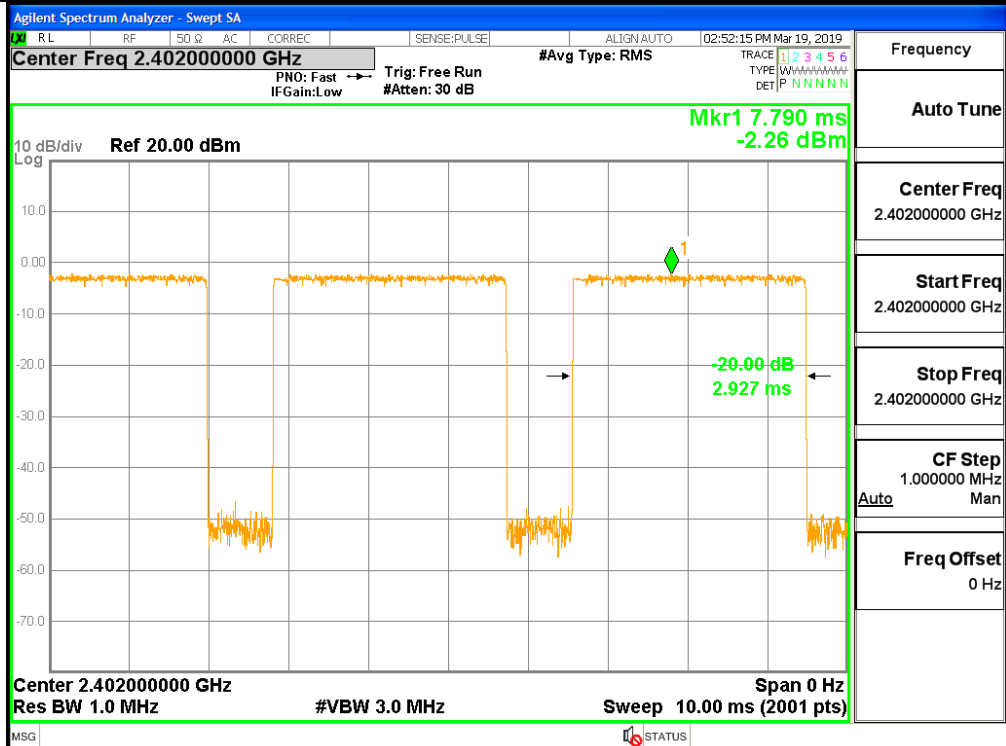
GFSK_DH5/MCH



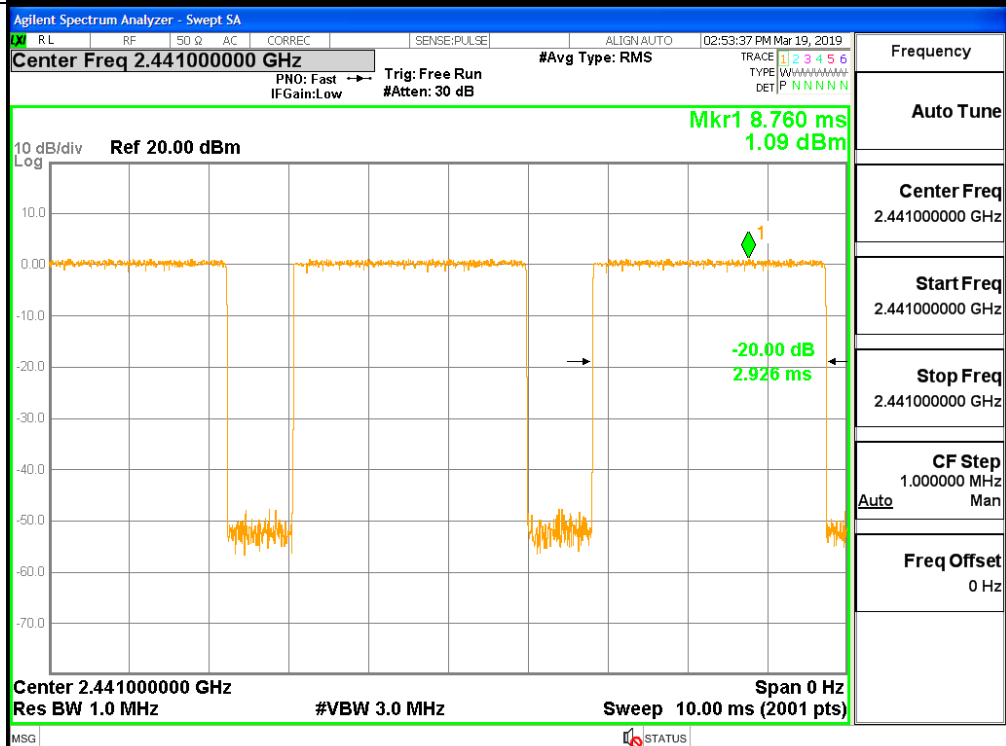
GFSK_DH5/HCH



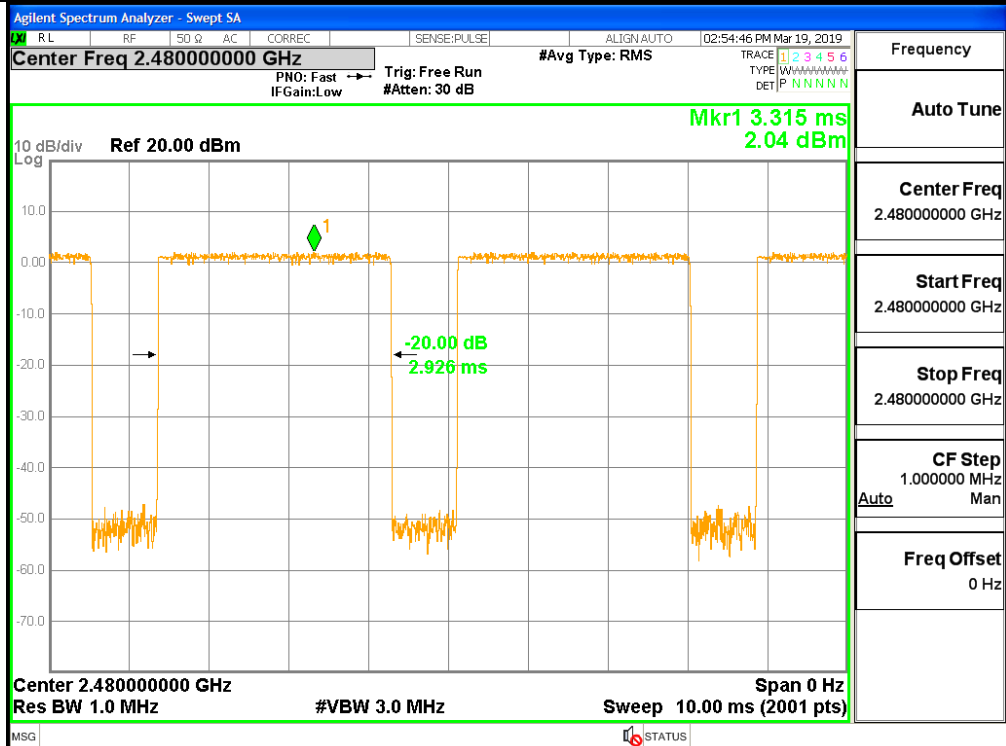
$\pi/4$ DQPSK
_2DH5/LCH



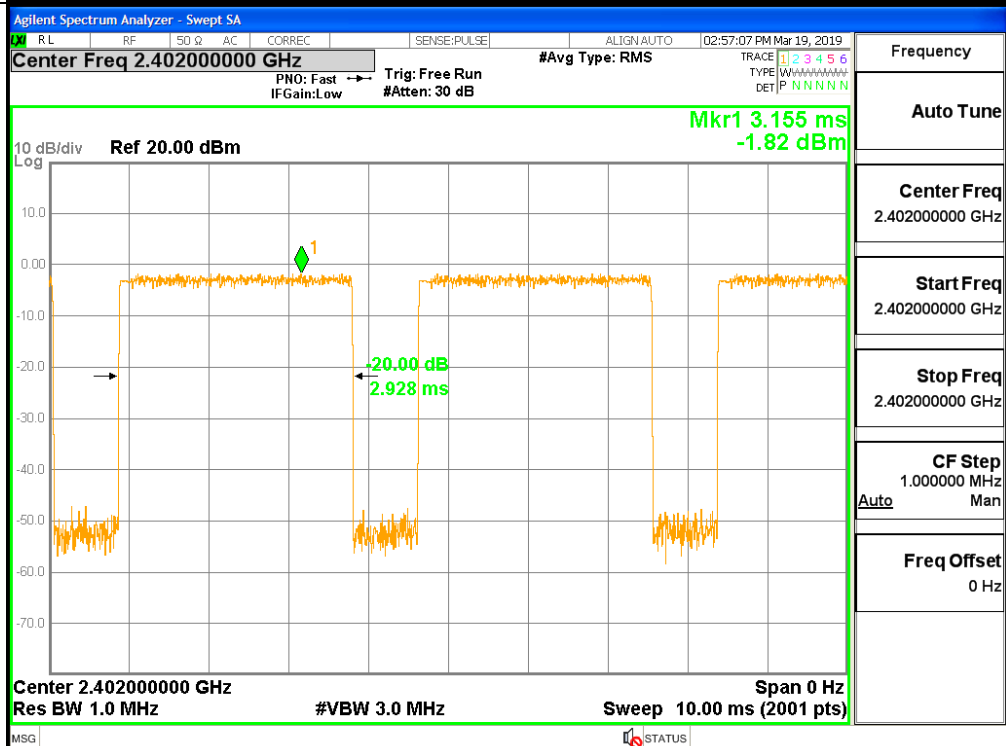
$\pi/4$ DQPSK
_2DH5/MCH

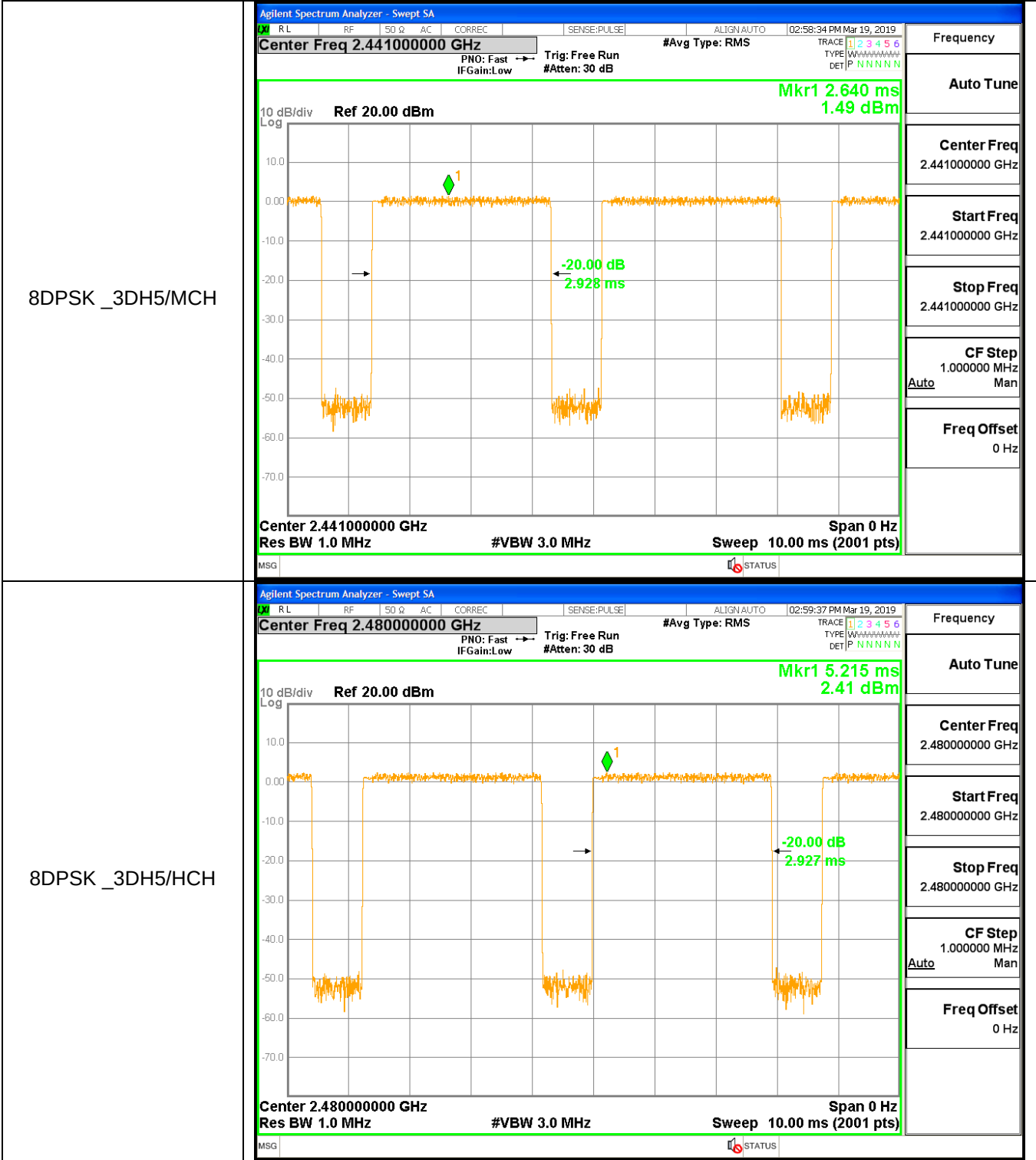


$\pi/4$ DQPSK
_2DH5/HCH



8DPSK_3DH5/LCH

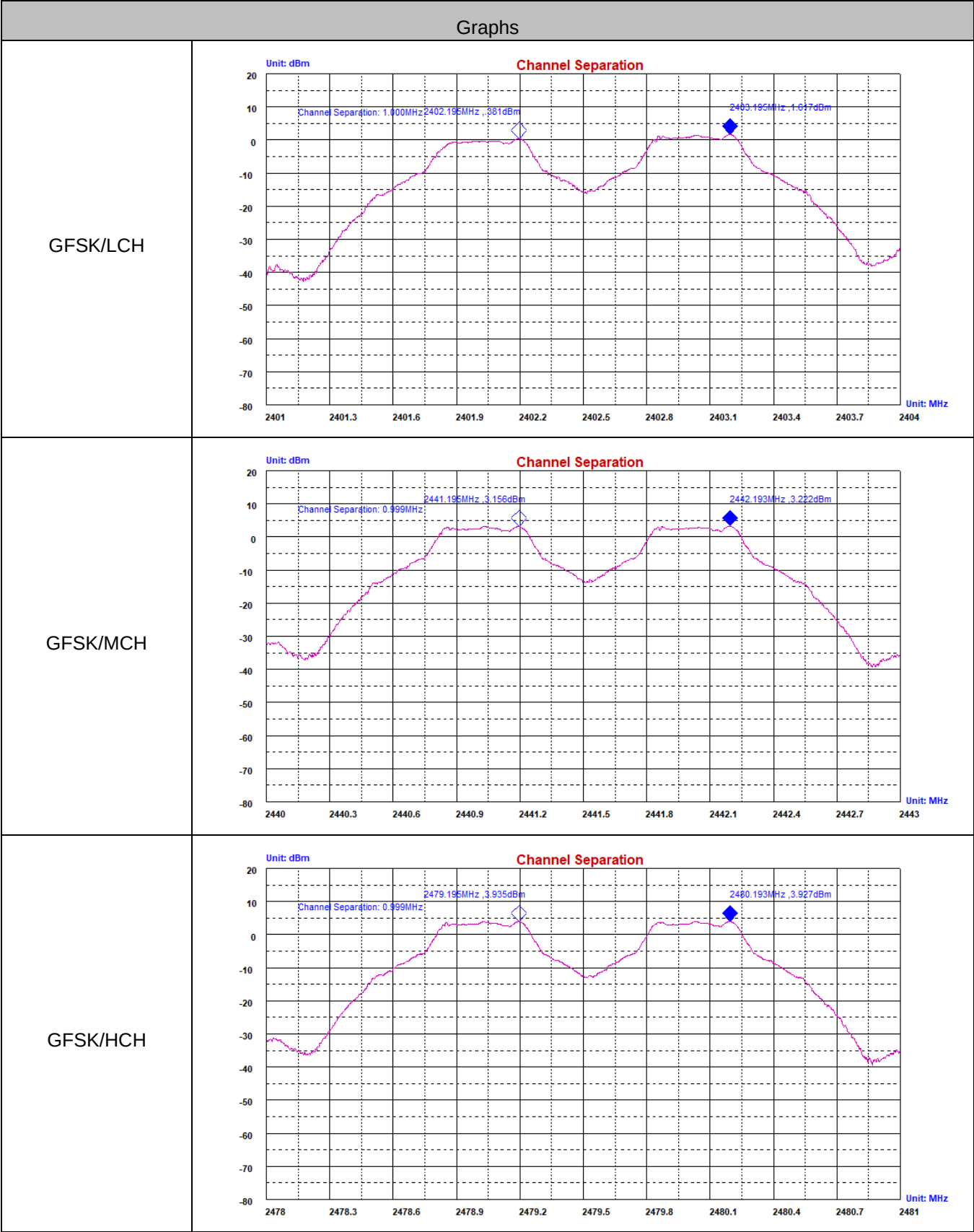


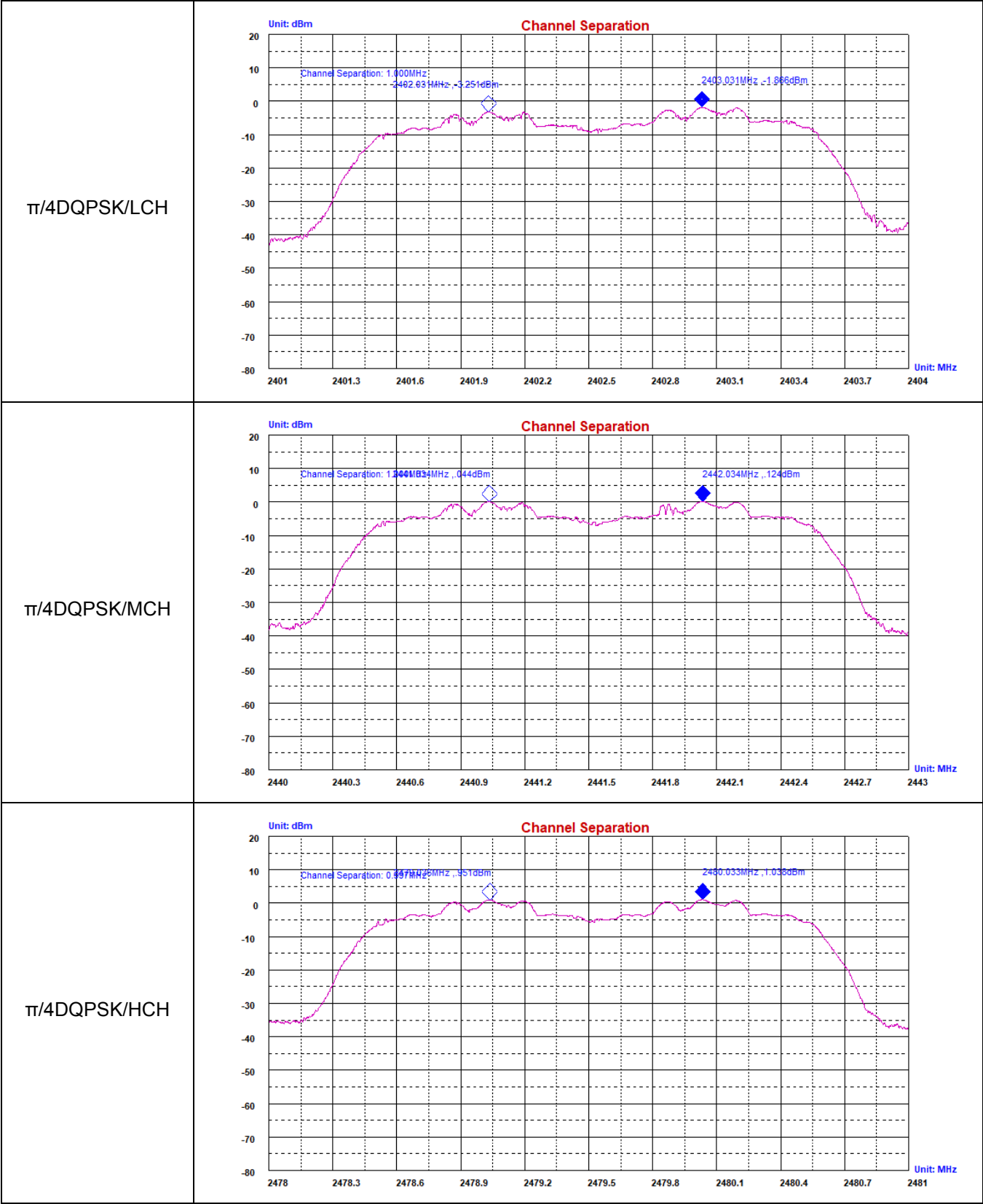


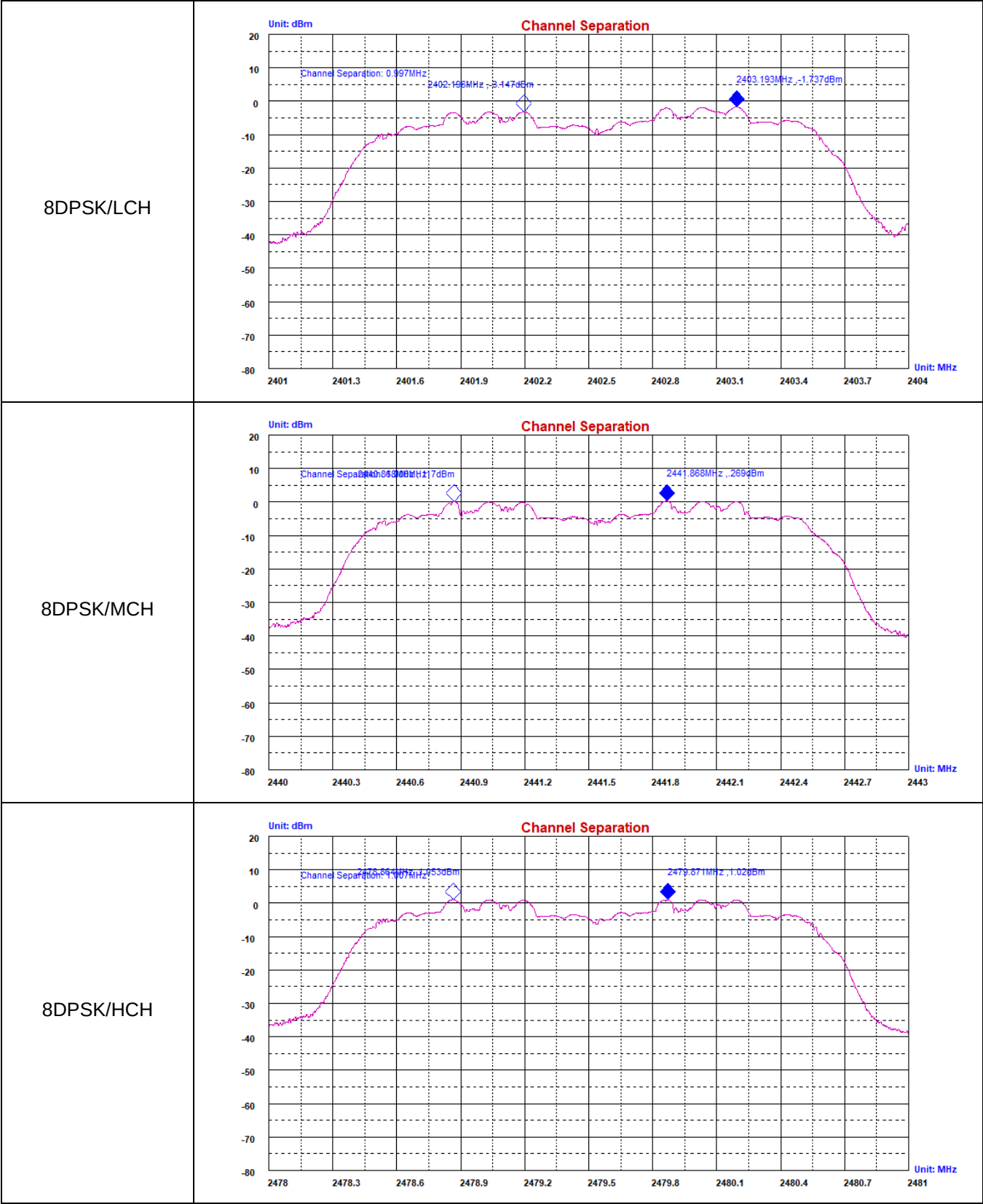
A.3 Carrier Frequency Separation

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.000	0.524	PASS
GFSK	MCH	0.999	0.528	PASS
GFSK	HCH	0.999	0.510	PASS
$\pi/4$ DQPSK	LCH	1.000	0.789	PASS
$\pi/4$ DQPSK	MCH	1.000	0.784	PASS
$\pi/4$ DQPSK	HCH	0.997	0.787	PASS
8DPSK	LCH	0.997	0.808	PASS
8DPSK	MCH	1.000	0.816	PASS
8DPSK	HCH	1.007	0.813	PASS

Test Graph



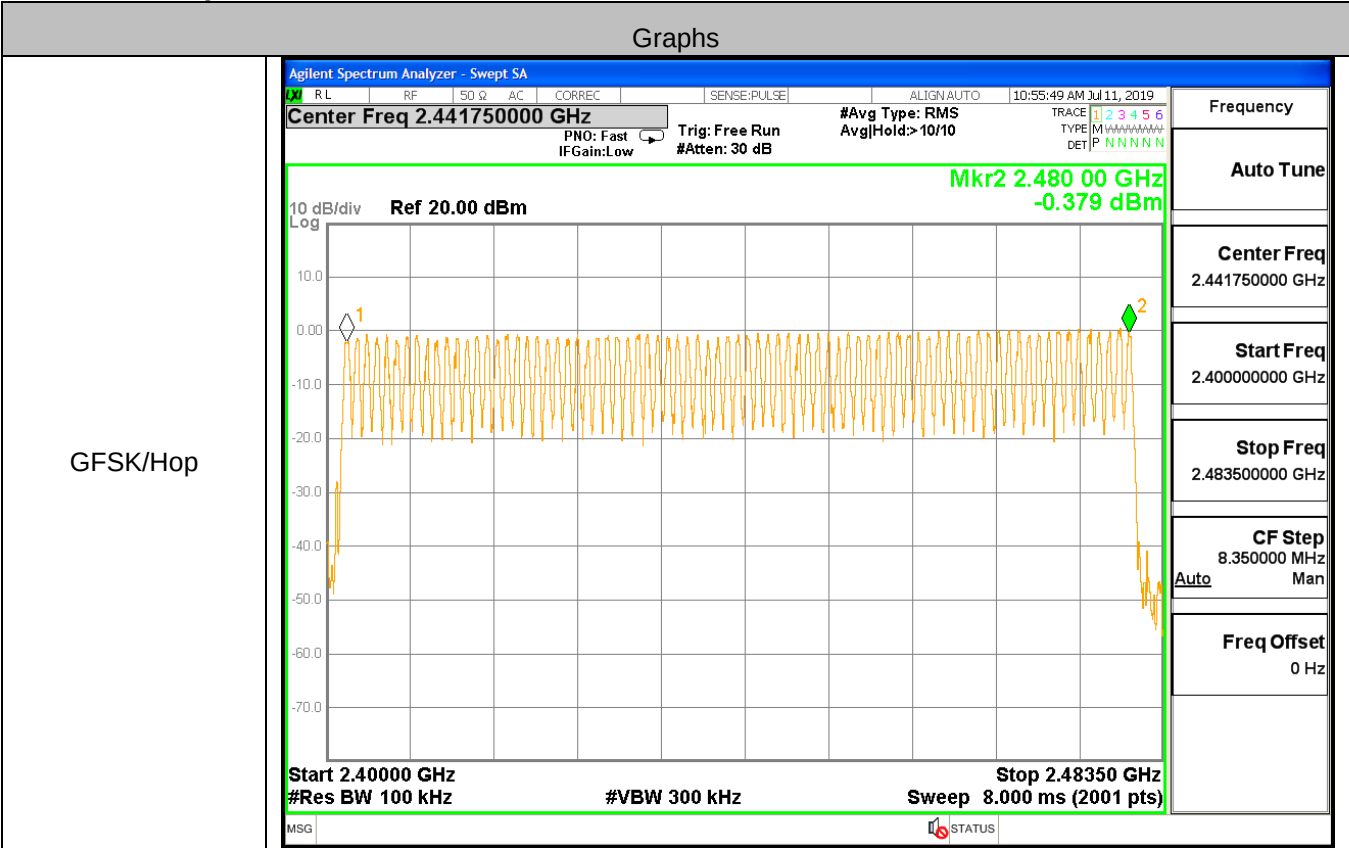


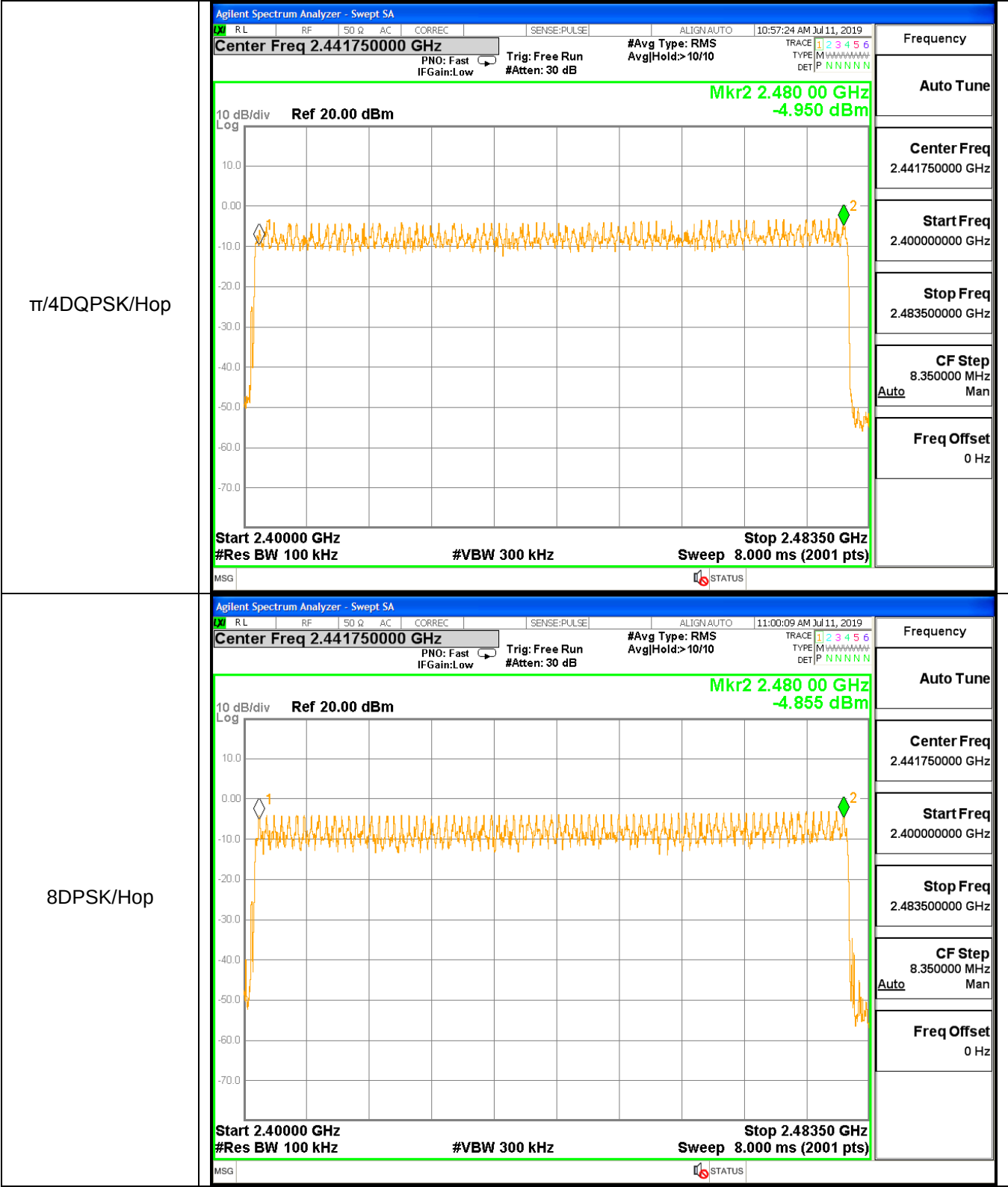


A.4 Hopping Channel Number

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

Test Graph

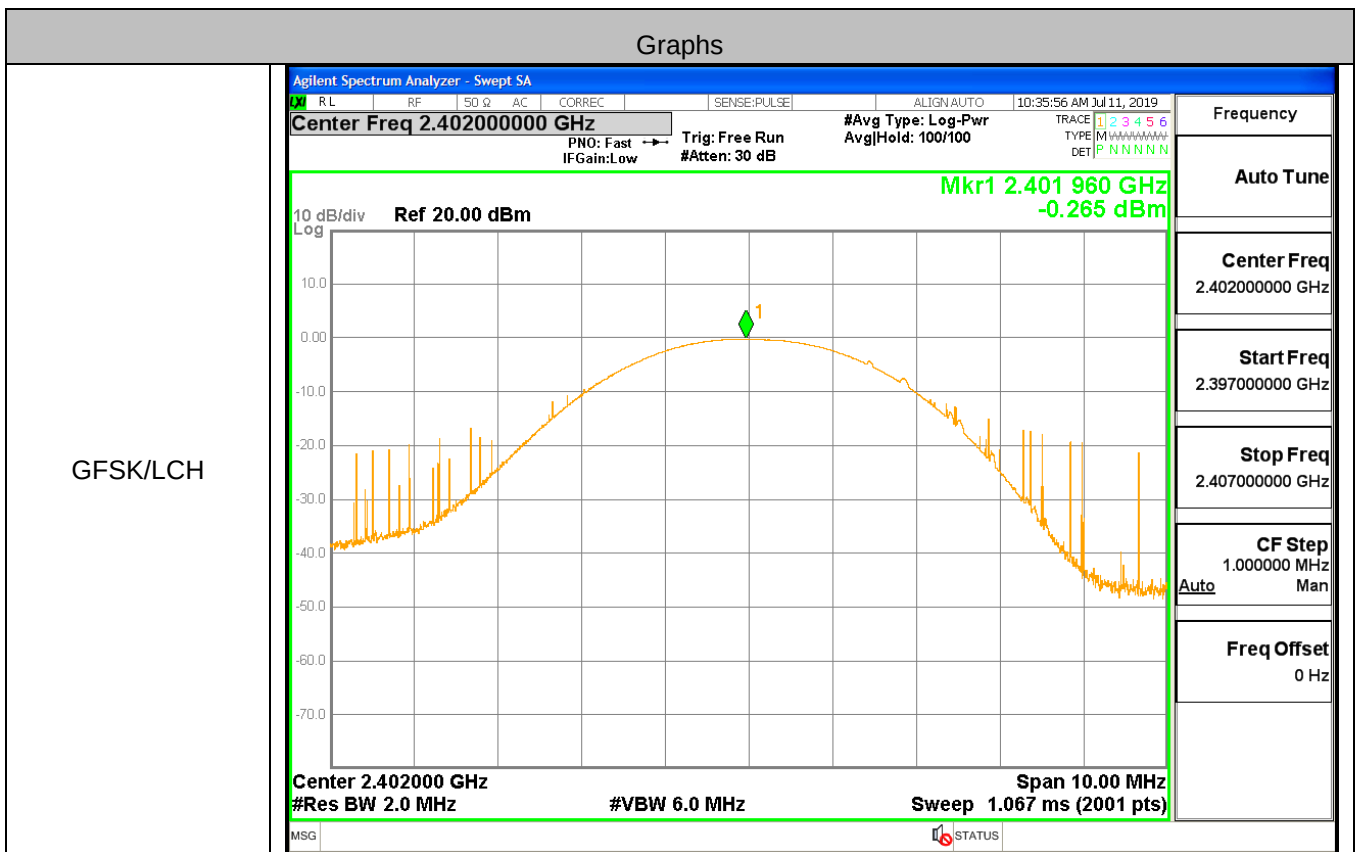




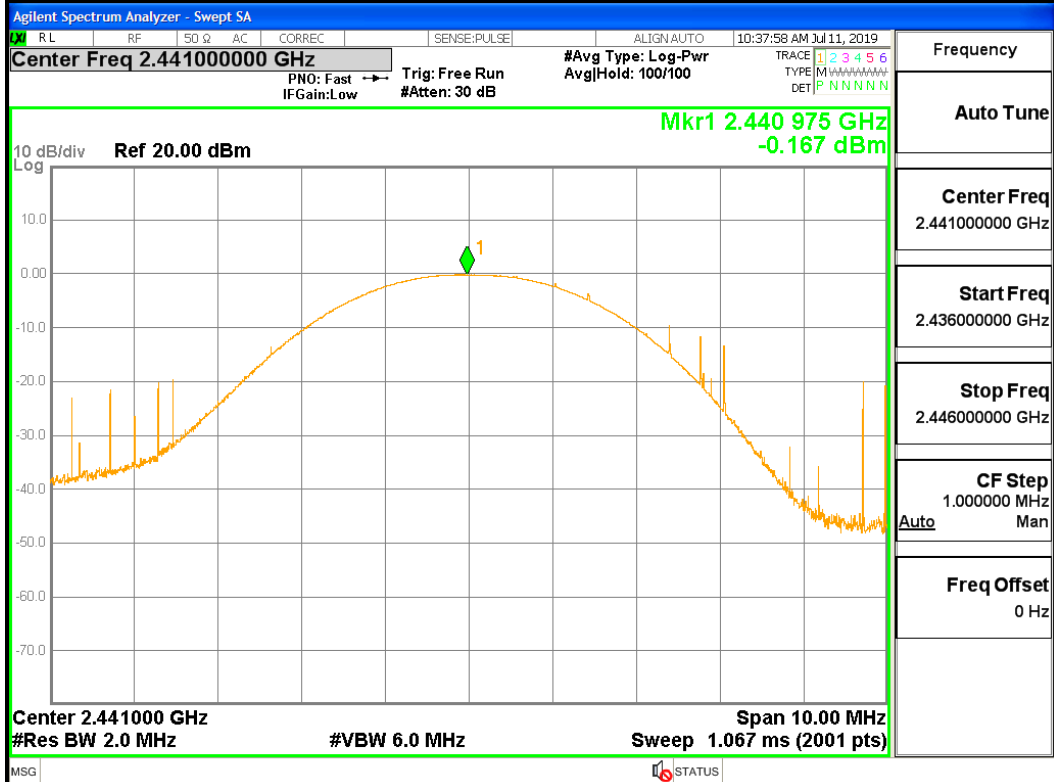
A.5 Conducted Peak Output Power

Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-0.265	21	PASS
GFSK	MCH	-0.167	21	PASS
GFSK	HCH	0.751	21	PASS
$\pi/4$ DQPSK	LCH	-1.570	21	PASS
$\pi/4$ DQPSK	MCH	-1.421	21	PASS
$\pi/4$ DQPSK	HCH	-0.545	21	PASS
8DPSK	LCH	-1.093	21	PASS
8DPSK	MCH	-0.930	21	PASS
8DPSK	HCH	-0.237	21	PASS

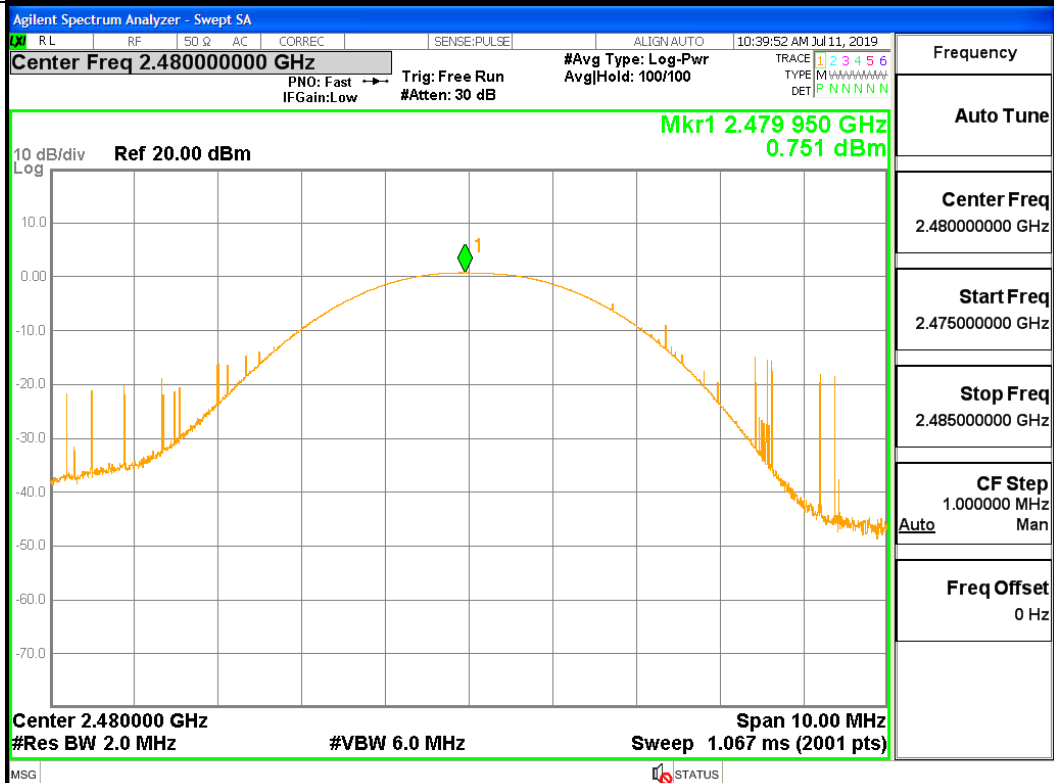
Test Graph

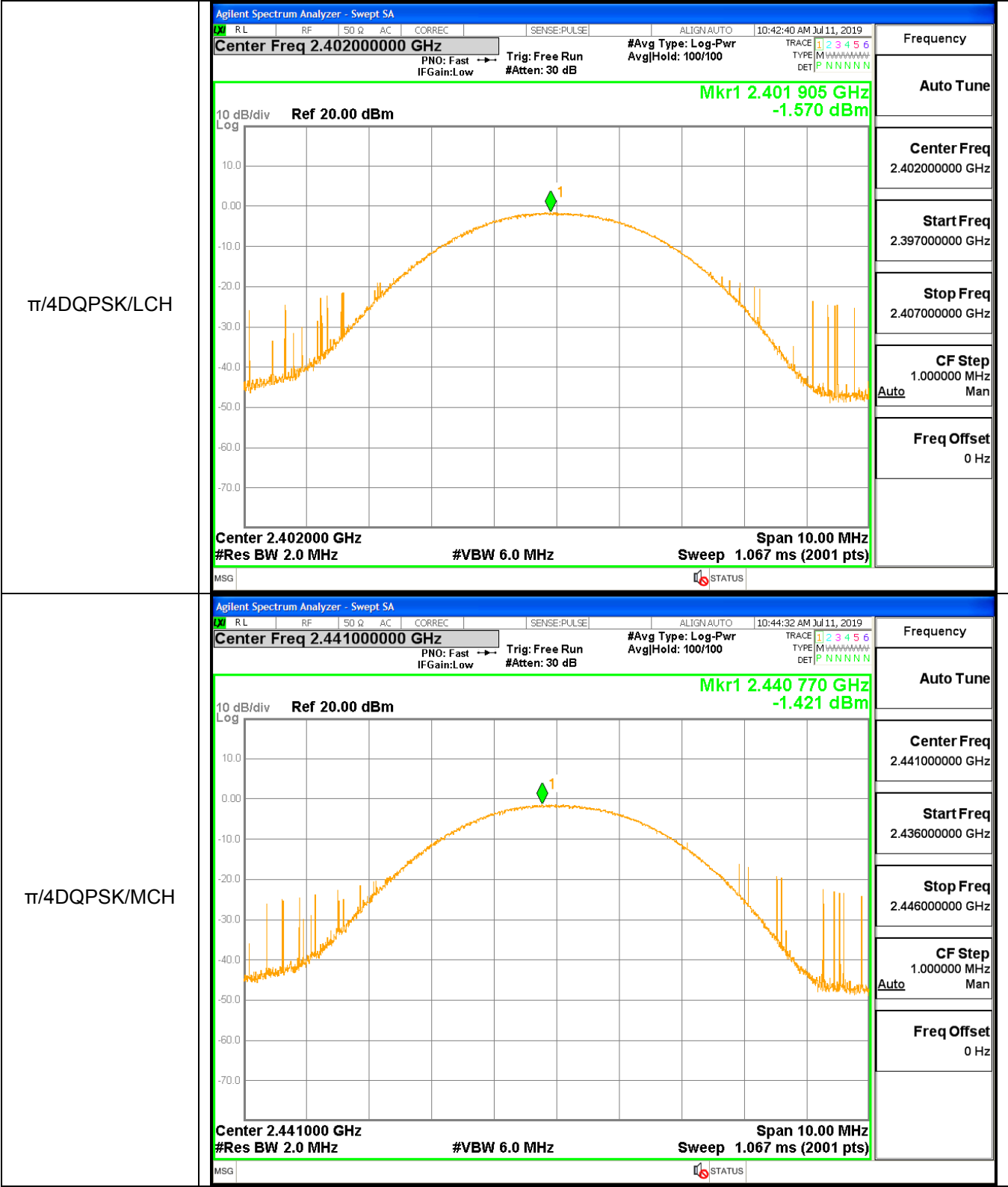


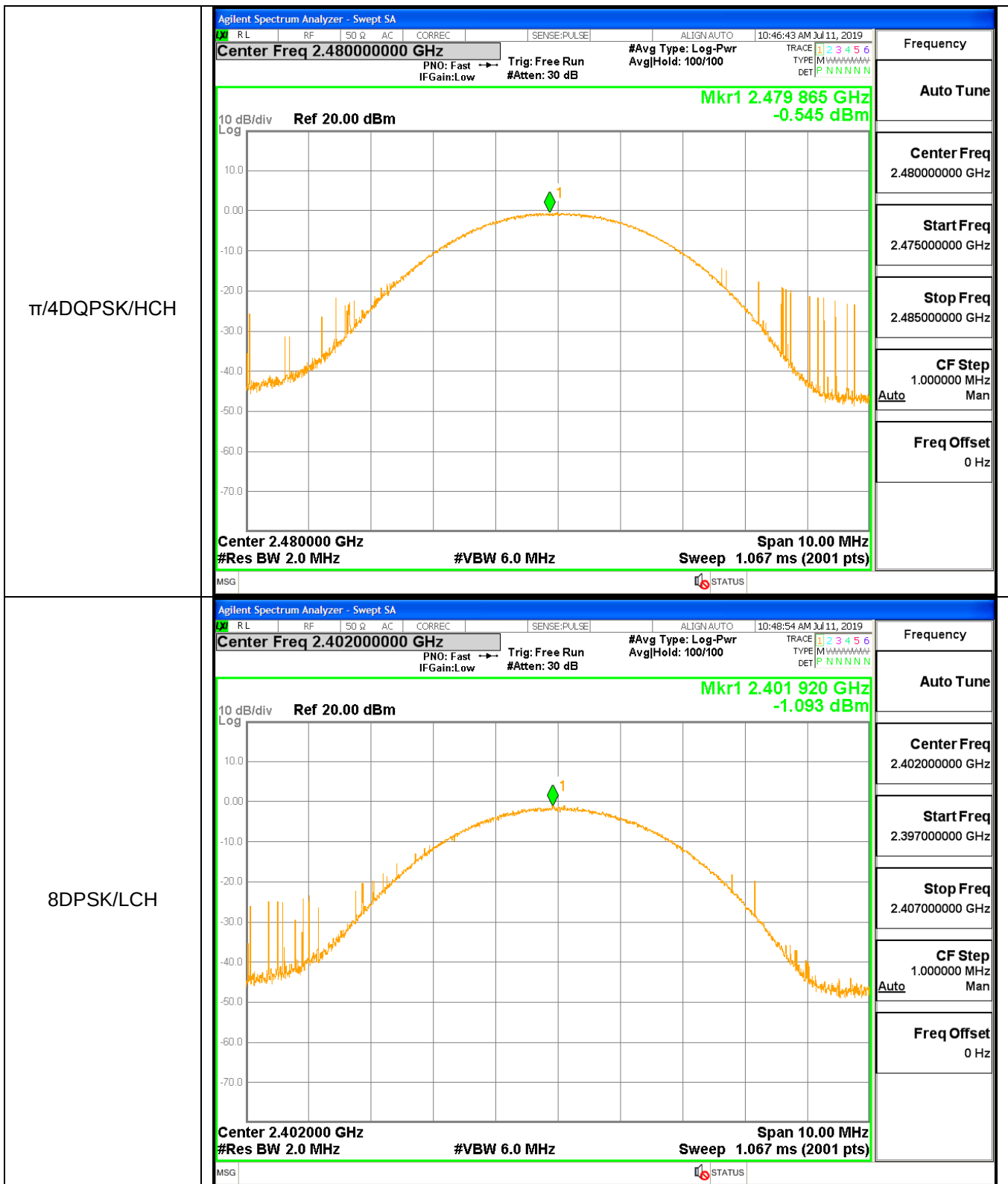
GFSK/MCH



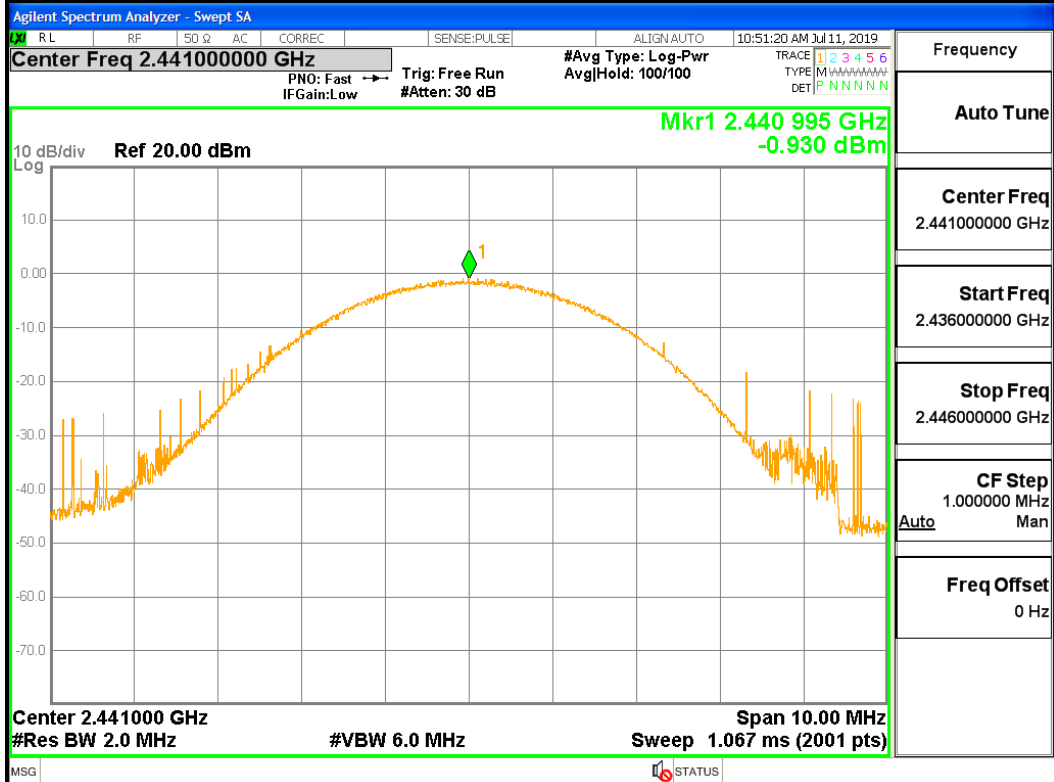
GFSK/HCH



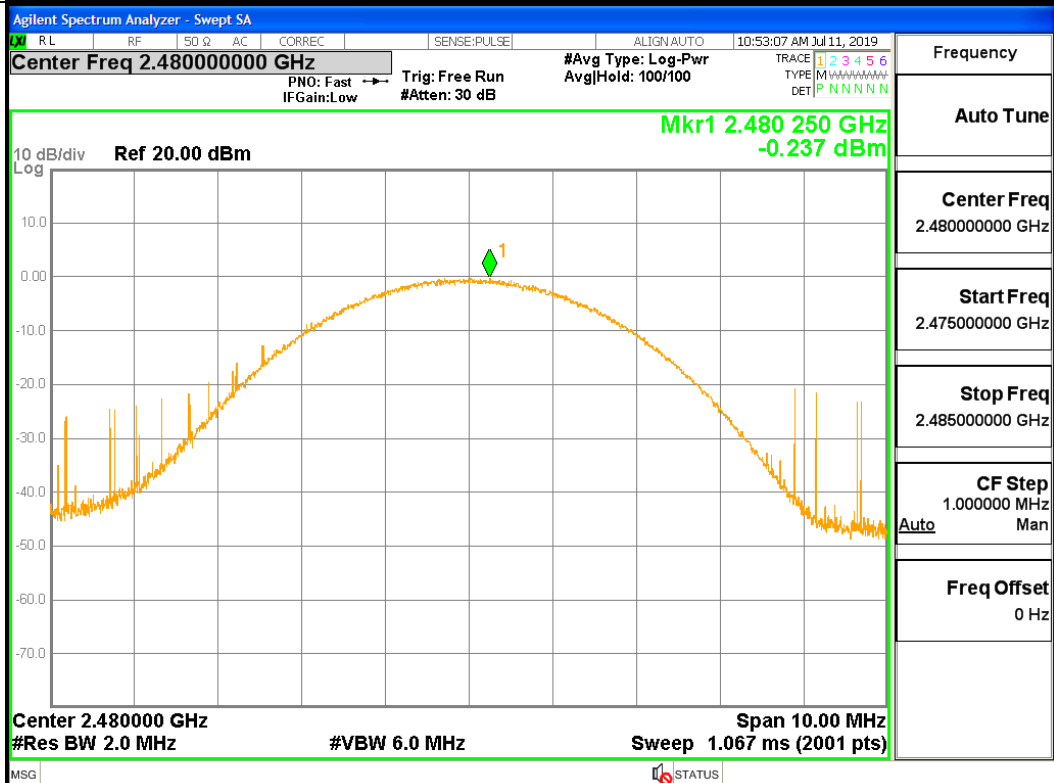




8DPSK/MCH



8DPSK/HCH

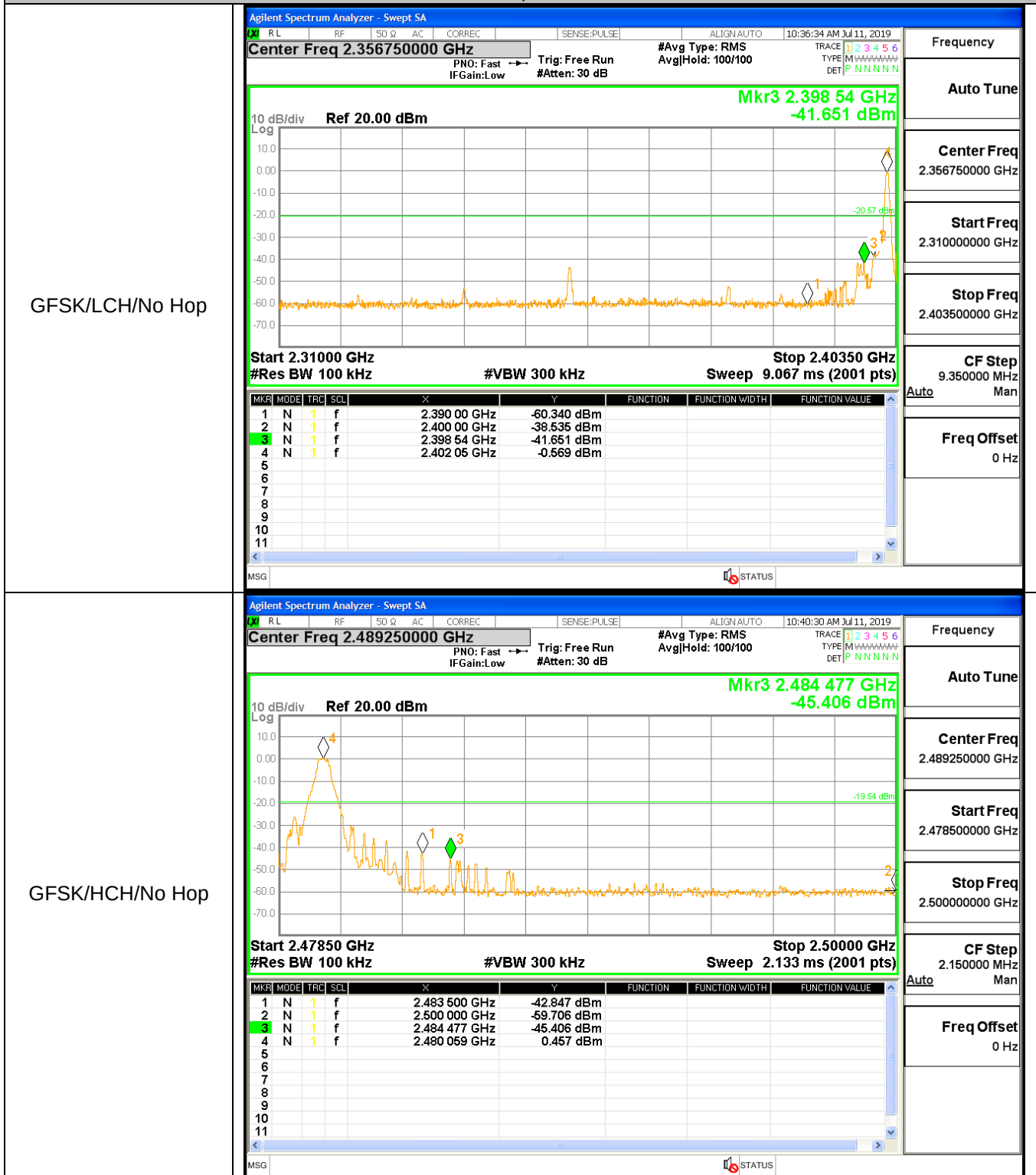


A.6 Band-edge for RF Conducted Emissions

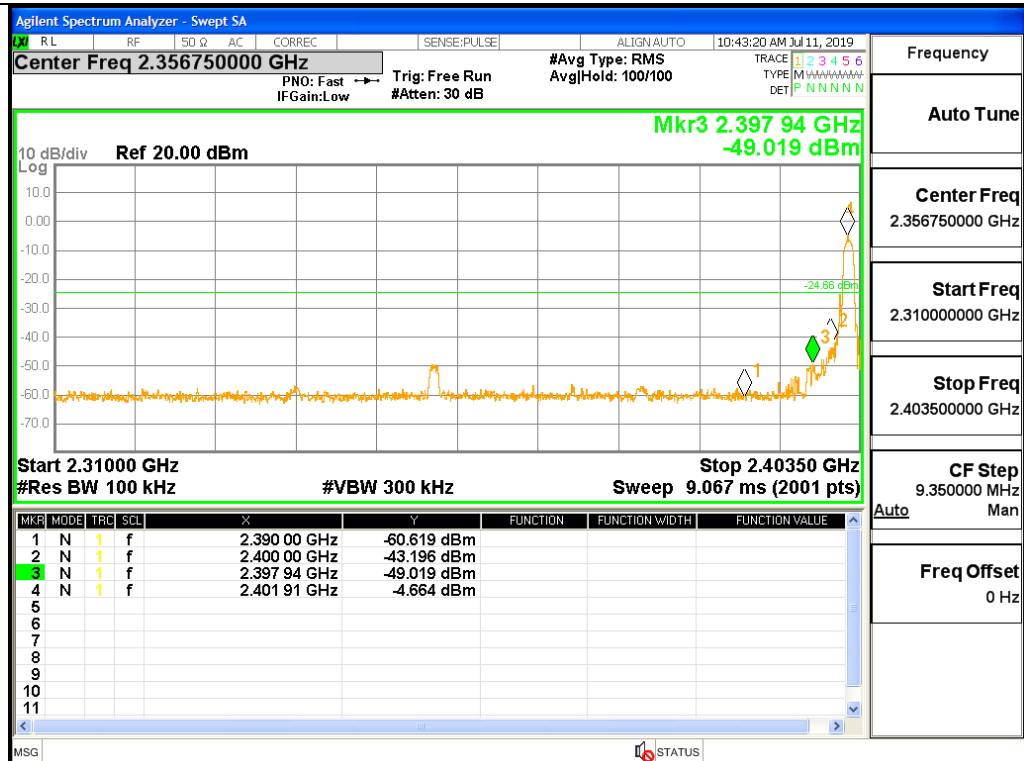
Type	Carrier Frequency(MHz)	Frequency(MHz)	Carrier Frequency Power [dBm]	Bandedge Peak(dBm)	Upper limit(dBm)	Conclusion
1DH5	2402	2400	-0.569	-38.53	-20.569	Pass
1DH5	2480	2483.5	0.457	-42.85	-19.543	Pass
2DH5	2402	2400	-4.664	-43.2	-24.664	Pass
2DH5	2480	2483.746	-3.102	-47.6	-23.102	Pass
3DH5	2402	2400	-4.062	-46.72	-24.062	Pass
3DH5	2480	2483.725	-3.088	-46.81	-23.088	Pass
1DH5-Hopping	2402	2400	-0.663	-38.3	-20.663	Pass
1DH5-Hopping	2480	2499.04	0.292	-44.912	-19.708	Pass
2DH5-Hopping	2402	2400	-4.093	-47.05	-24.093	Pass
2DH5-Hopping	2480	2499.22	-3.101	-47.287	-23.101	Pass
3DH5-Hopping	2402	2399.55	-4.127	-45.385	-24.127	Pass
3DH5-Hopping	2480	2498.05	-3.072	-47.931	-23.072	Pass

Test Graph

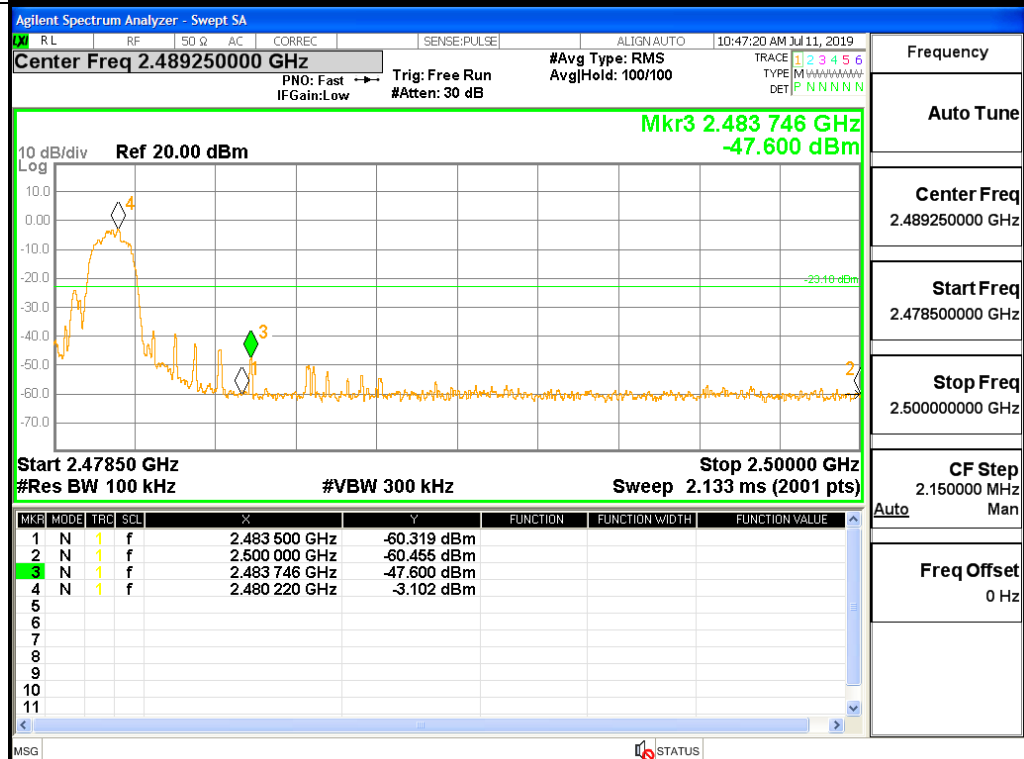
Graphs



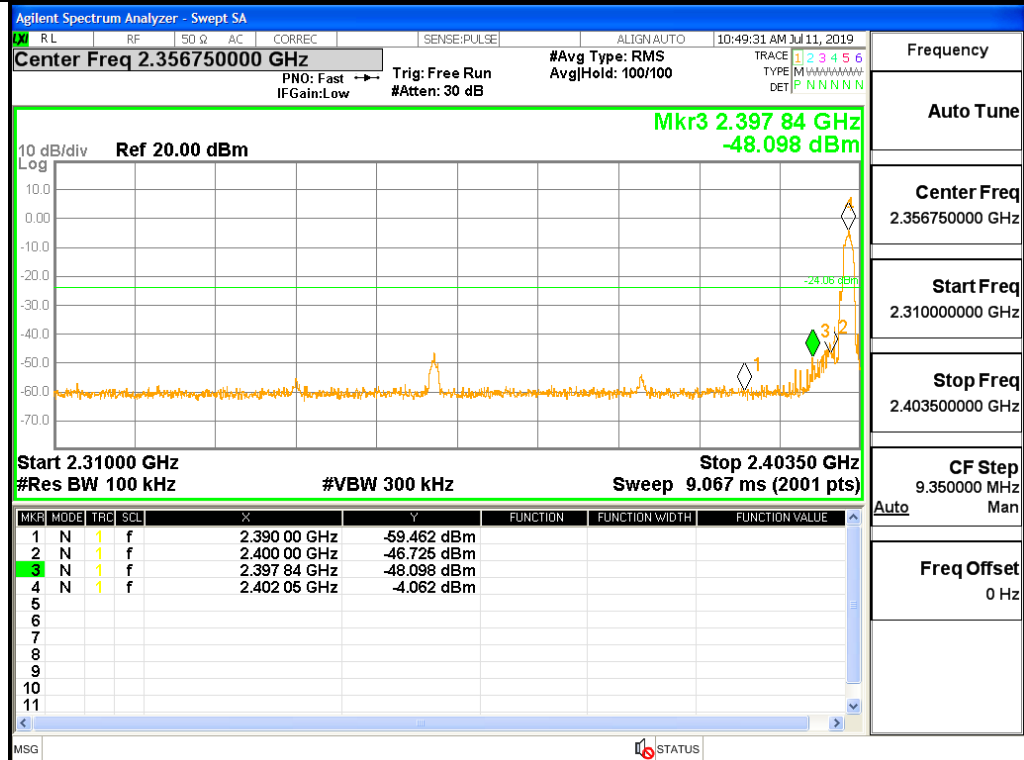
π /4DQPSK/LCH/No
Hop



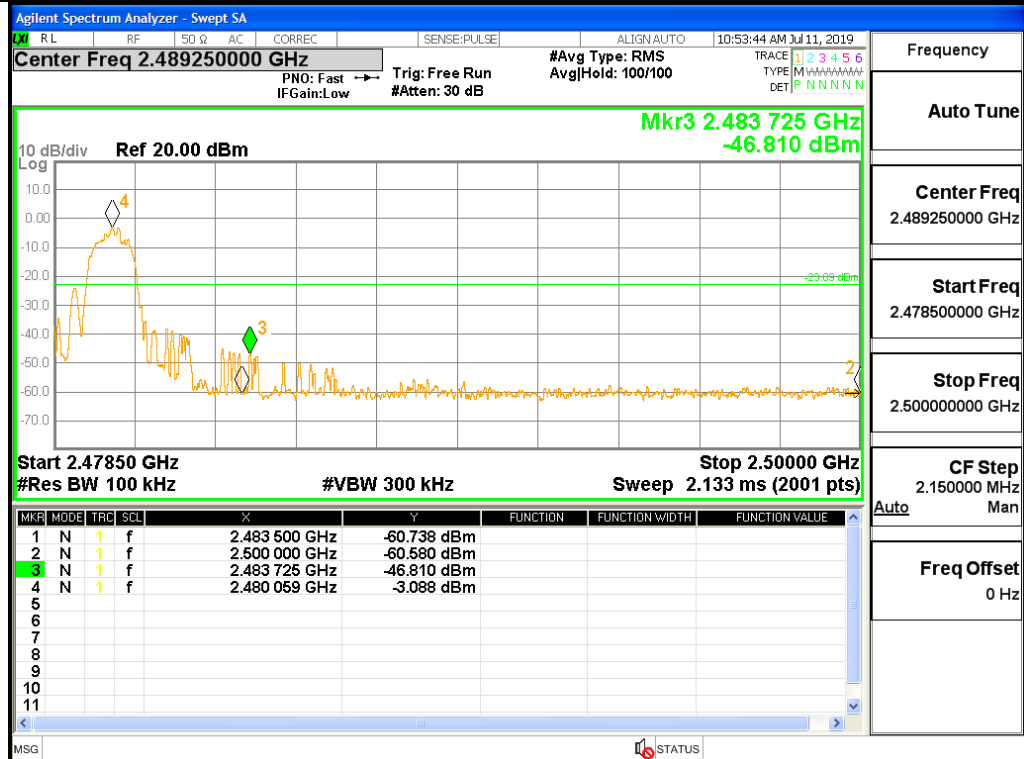
π /4DQPSK/HCH/No
Hop



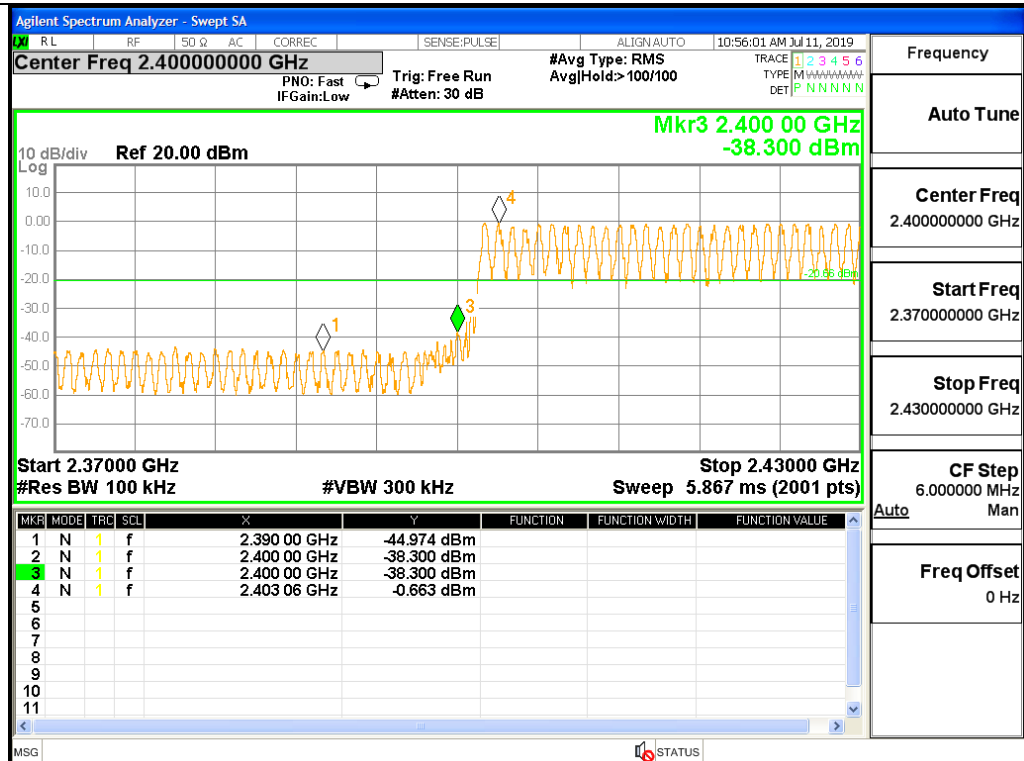
8DPSK/LCH/No Hop



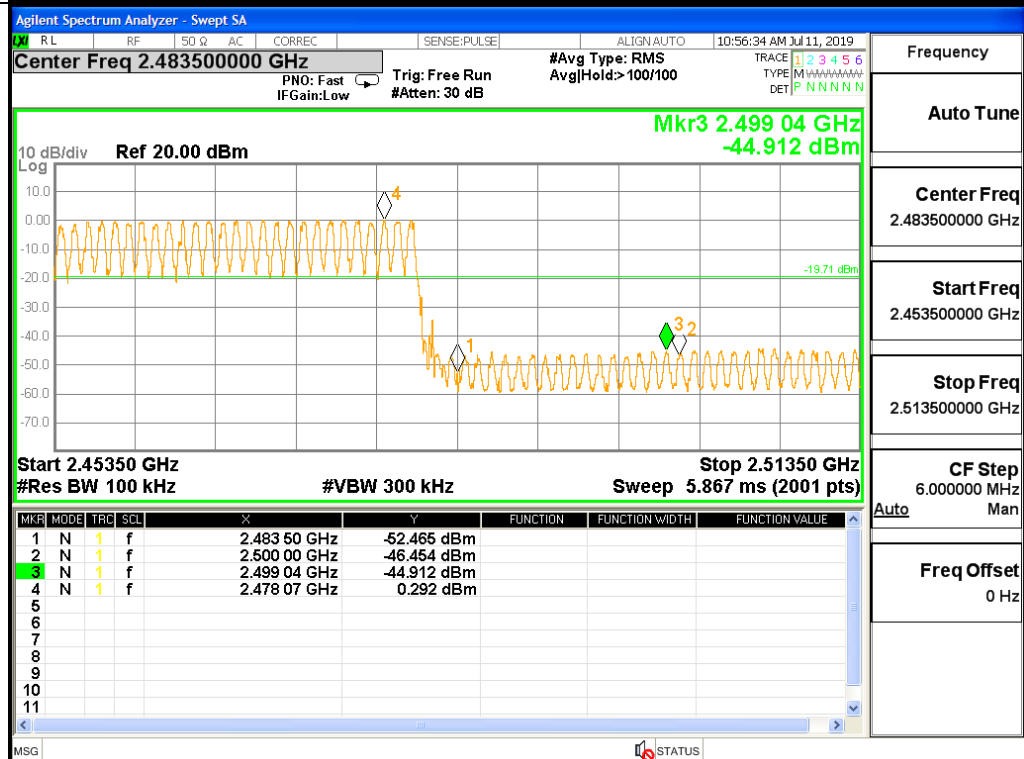
8DPSK/HCH/No Hop



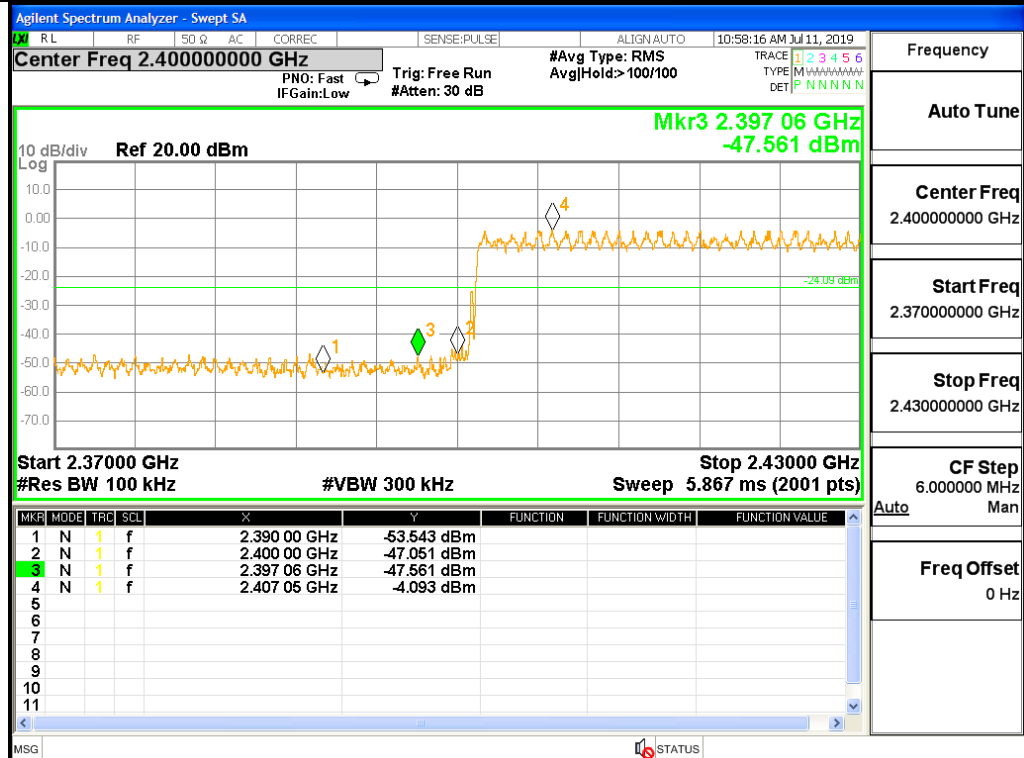
GFSK/LCH/Hop



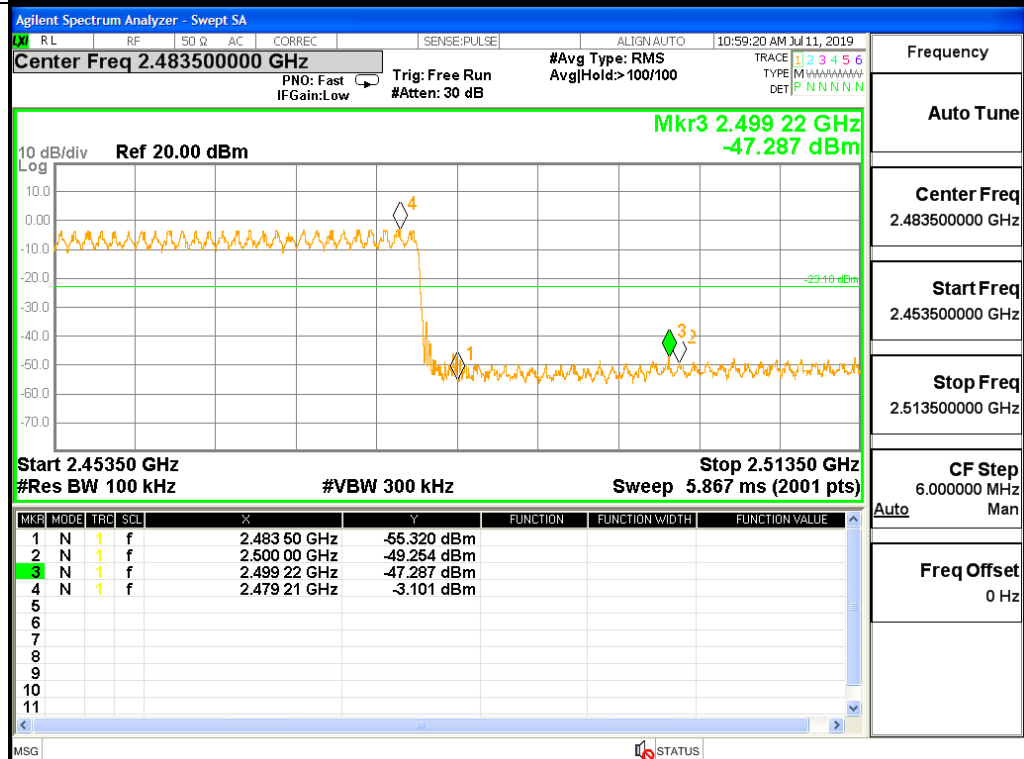
GFSK/HCH/Hop



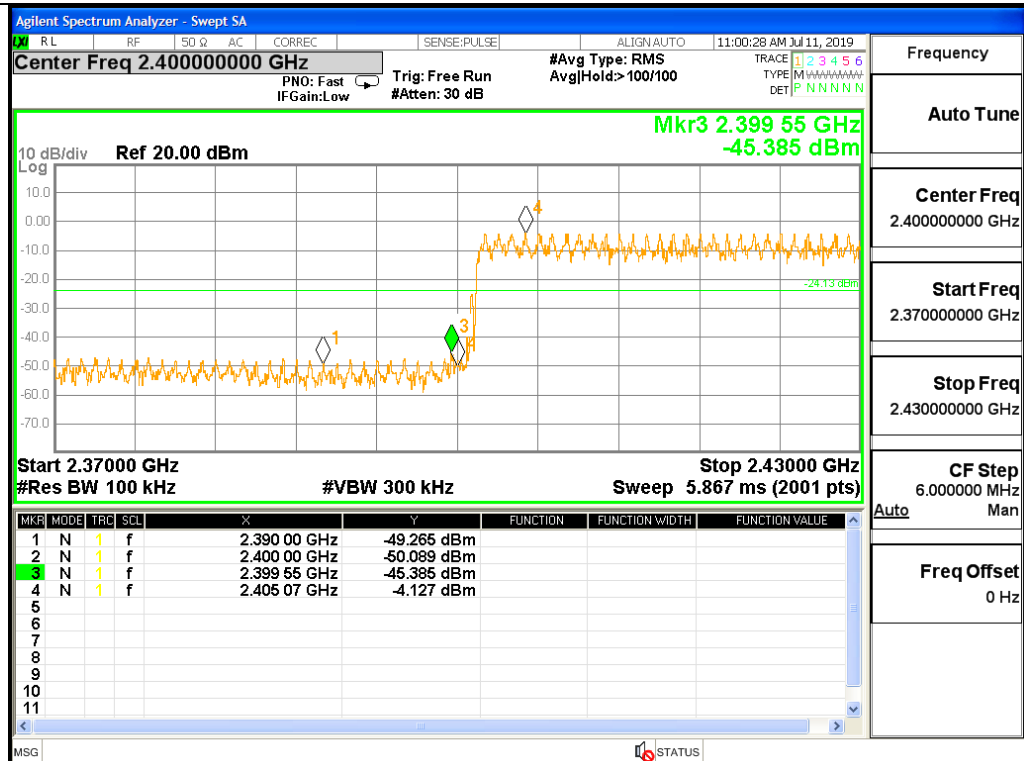
π /4DQPSK/LCH/Hop



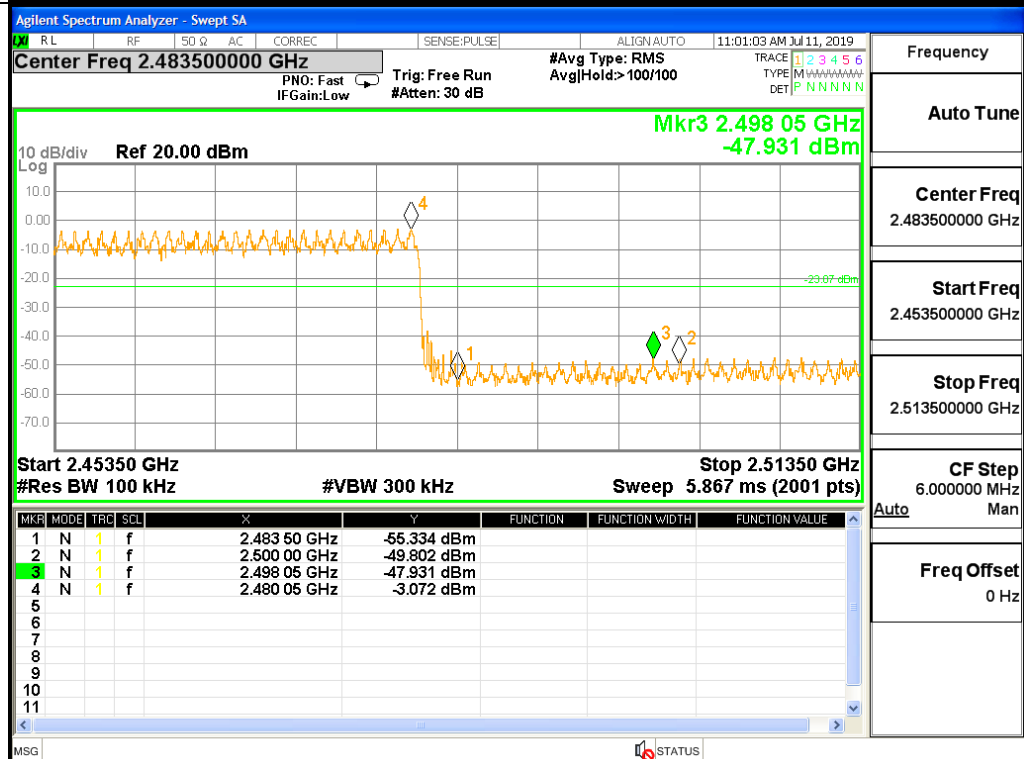
π /4DQPSK/HCH/Hop



8DPSK/LCH/Hop

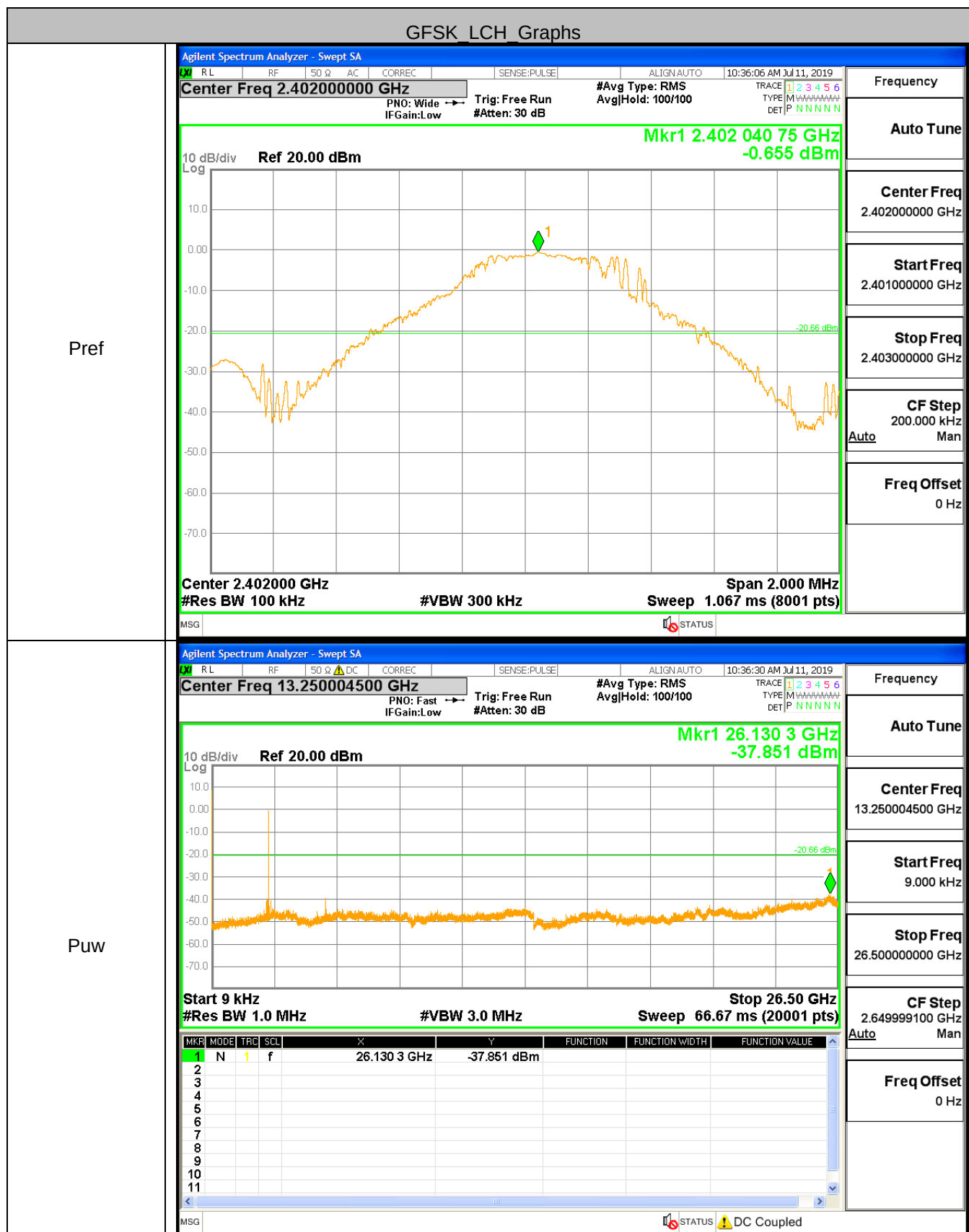


8DPSK/HCH/Hop



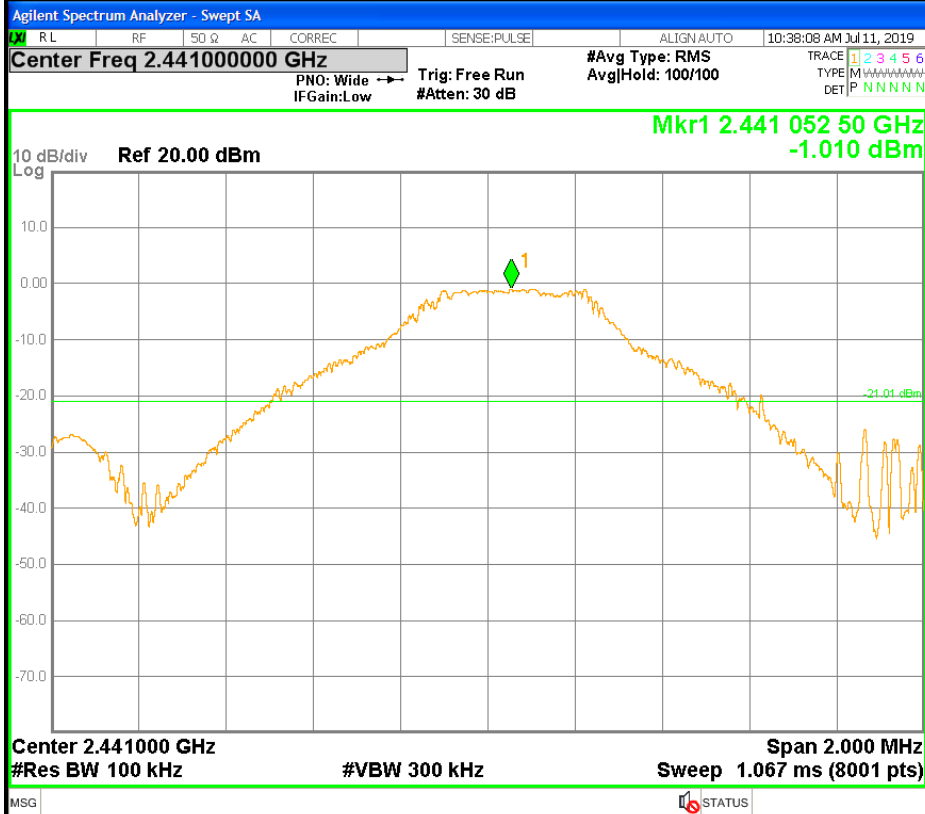
A.7 RF Conducted Spurious Emissions

Test Graph



GFSK MCH Graphs

Pref



Frequency

Auto Tune

Center Freq
2.441000000 GHz

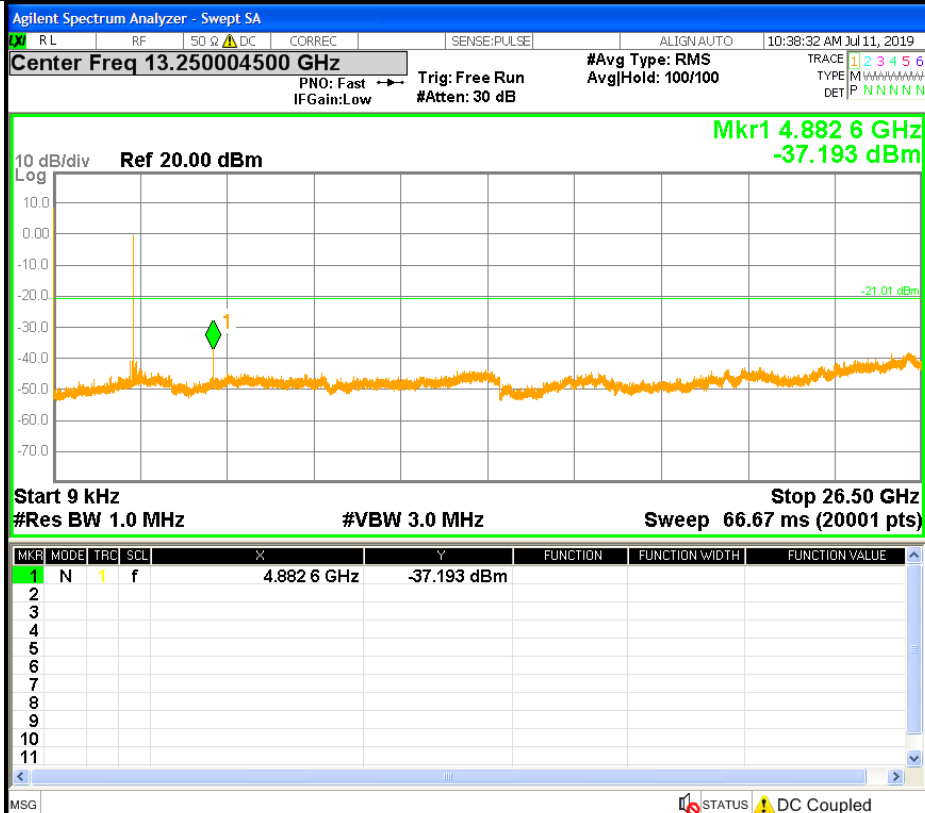
Start Freq
2.440000000 GHz

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

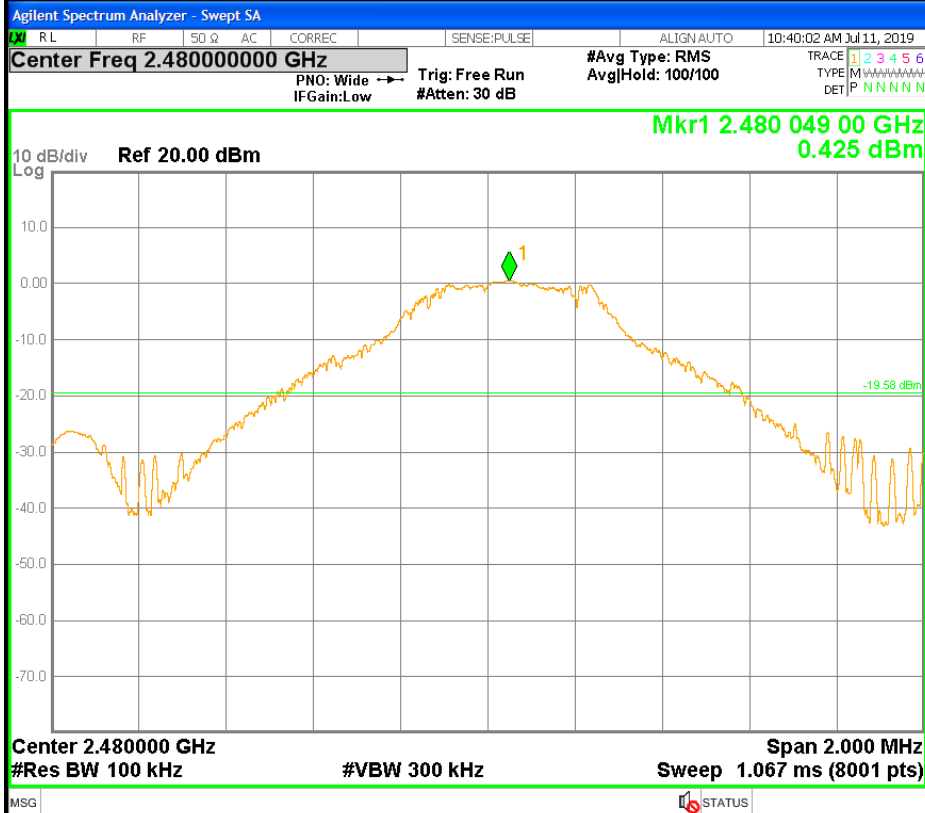
Stop Freq
26.500000000 GHz

CF Step
2.649999100 GHz
Auto Man

Freq Offset
0 Hz

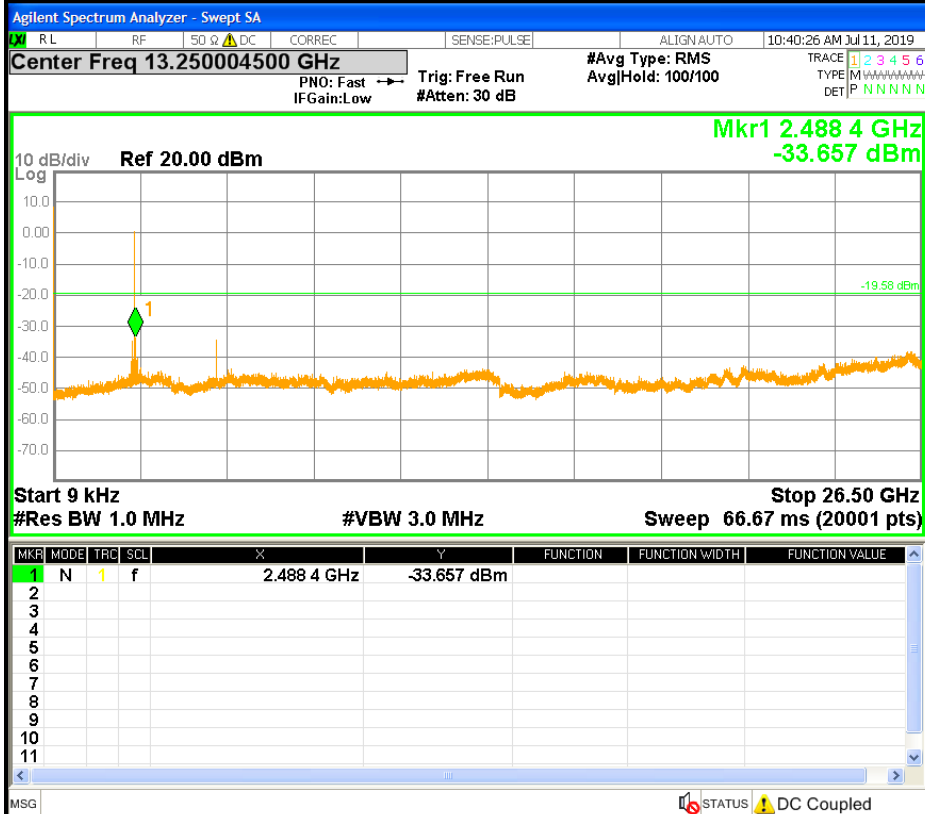
GFSK HCH Graphs

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 Man
Freq Offset 0 Hz

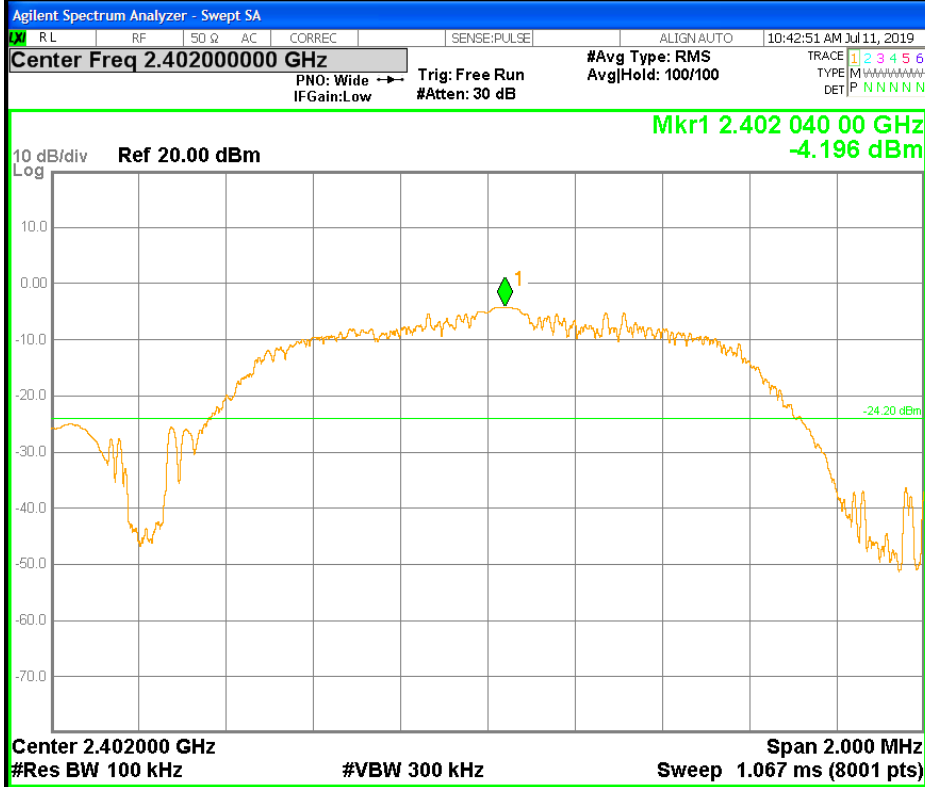
Puw



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

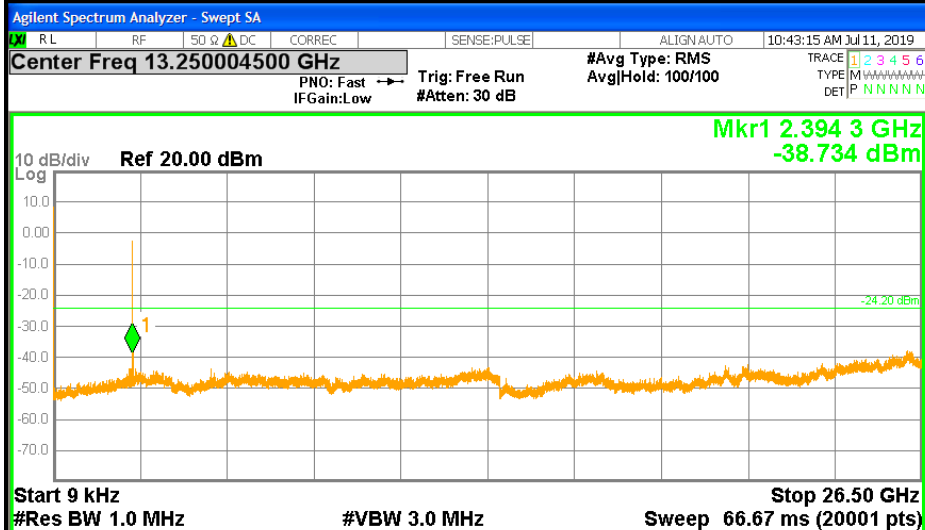
$\pi/4$ DQPSK LCH Graphs

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

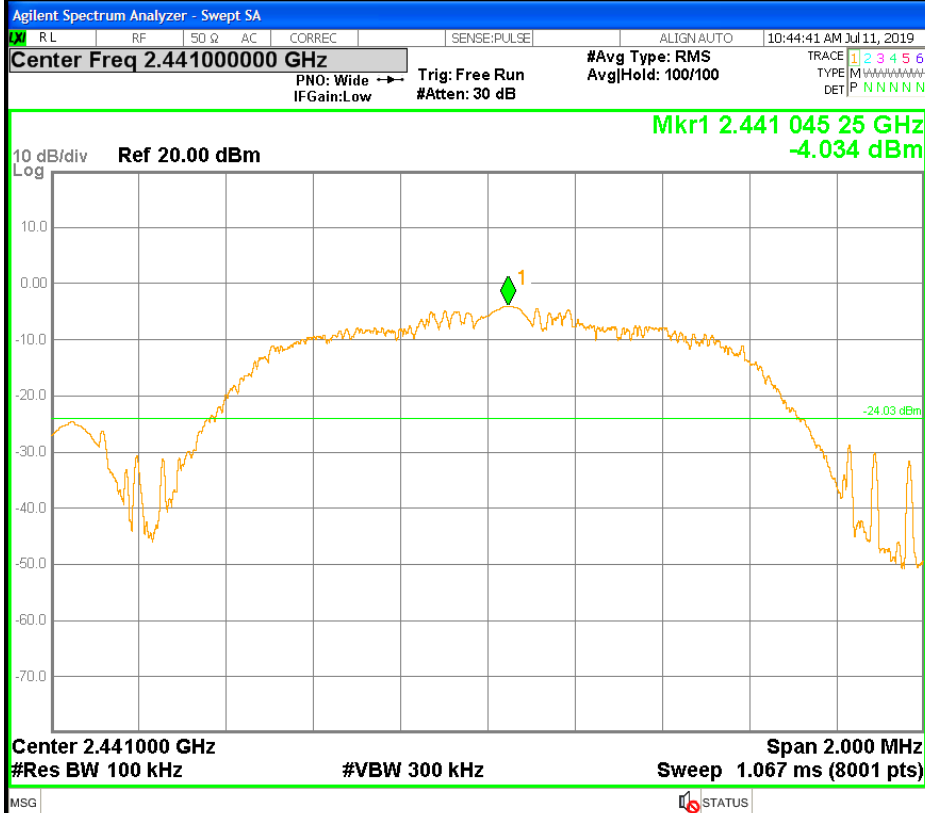


Frequency
Auto Tune
Center Freq 13.250004500 GHz
Start Freq 9.000 kHz
Stop Freq 26.500000000 GHz
CF Step 2.649999100 GHz Auto
Freq Offset 0 Hz

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.394 3 GHz	-38.734 dBm			
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								

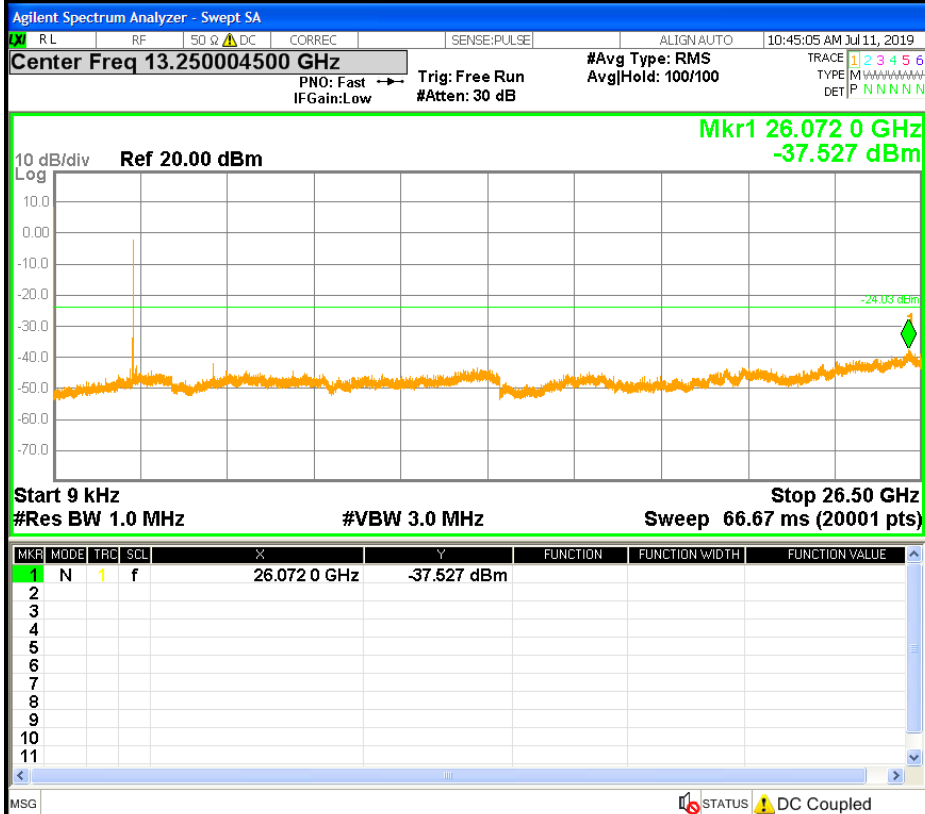
$\pi/4$ DQPSK MCH Graphs

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 Man
Freq Offset 0 Hz

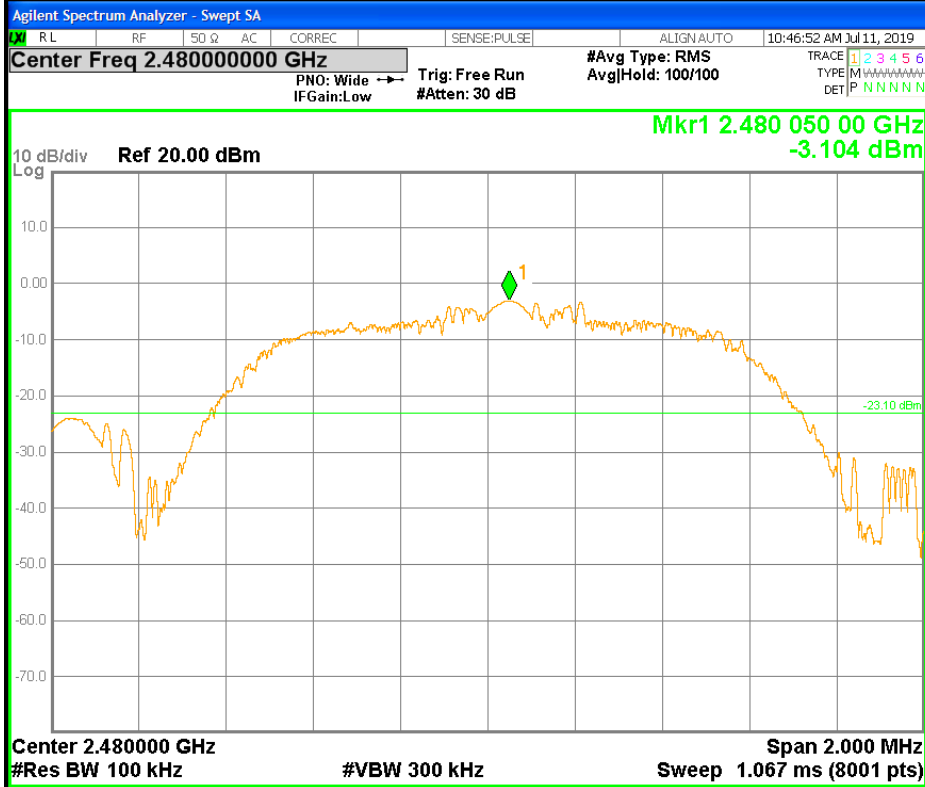
Puw



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

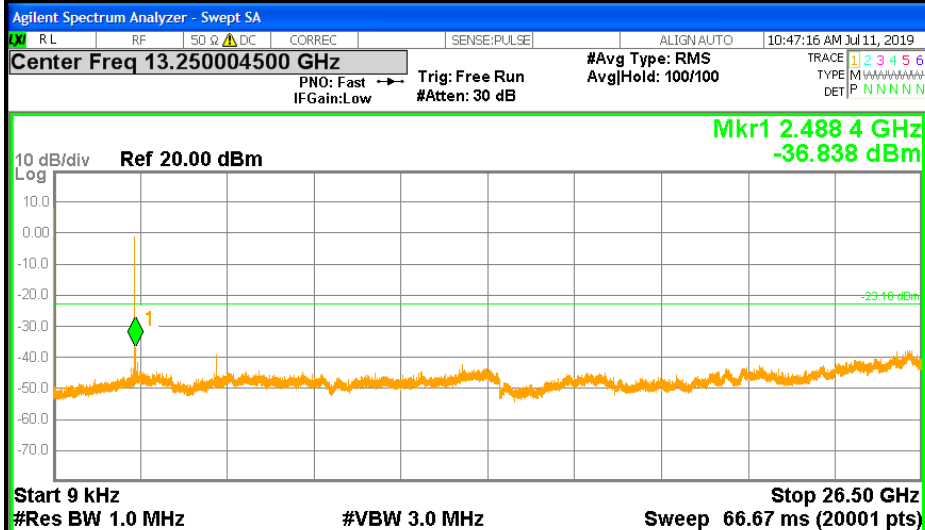
$\pi/4$ DQPSK HCH Graphs

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

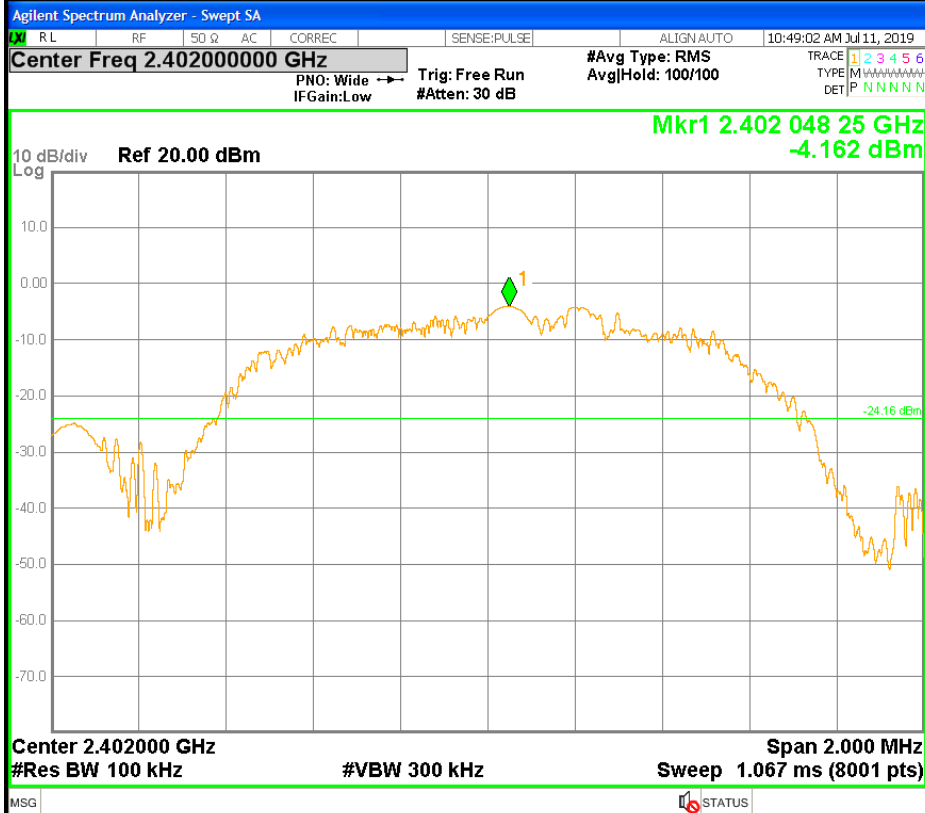


Frequency
Auto Tune
Center Freq 13.250004500 GHz
Start Freq 9.000 kHz
Stop Freq 26.500000000 GHz
CF Step 2.649999100 GHz Auto
Freq Offset 0 Hz

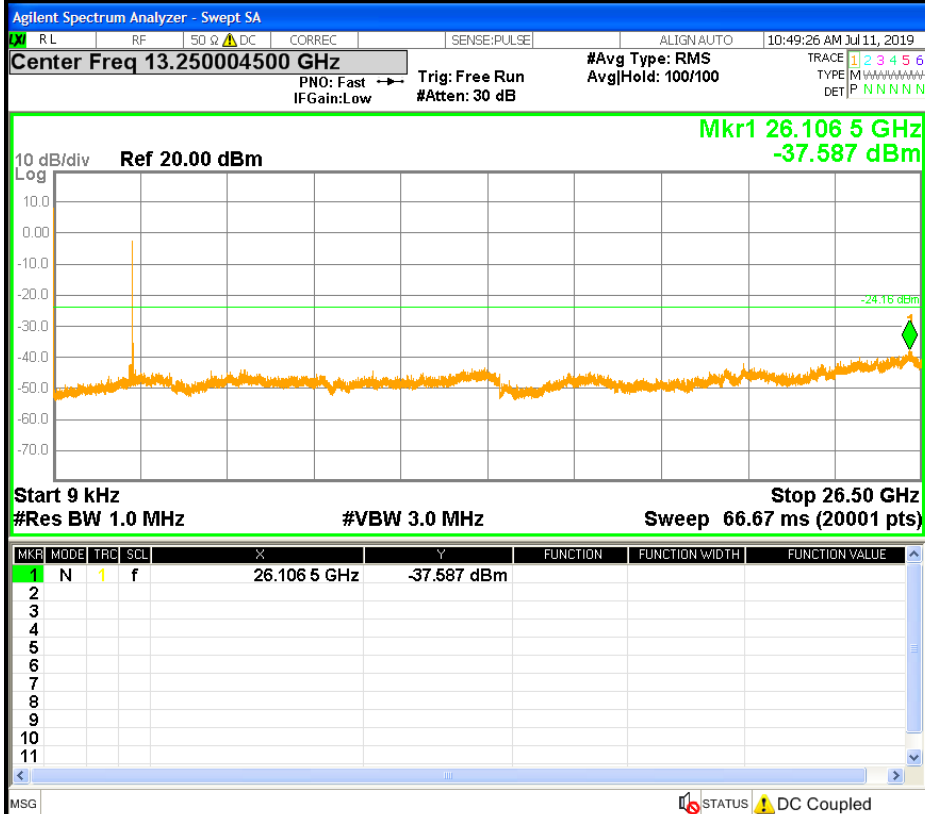
MR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.488 4 GHz	-36.838 dBm			
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								

8DPSK LCH Graphs

Pref

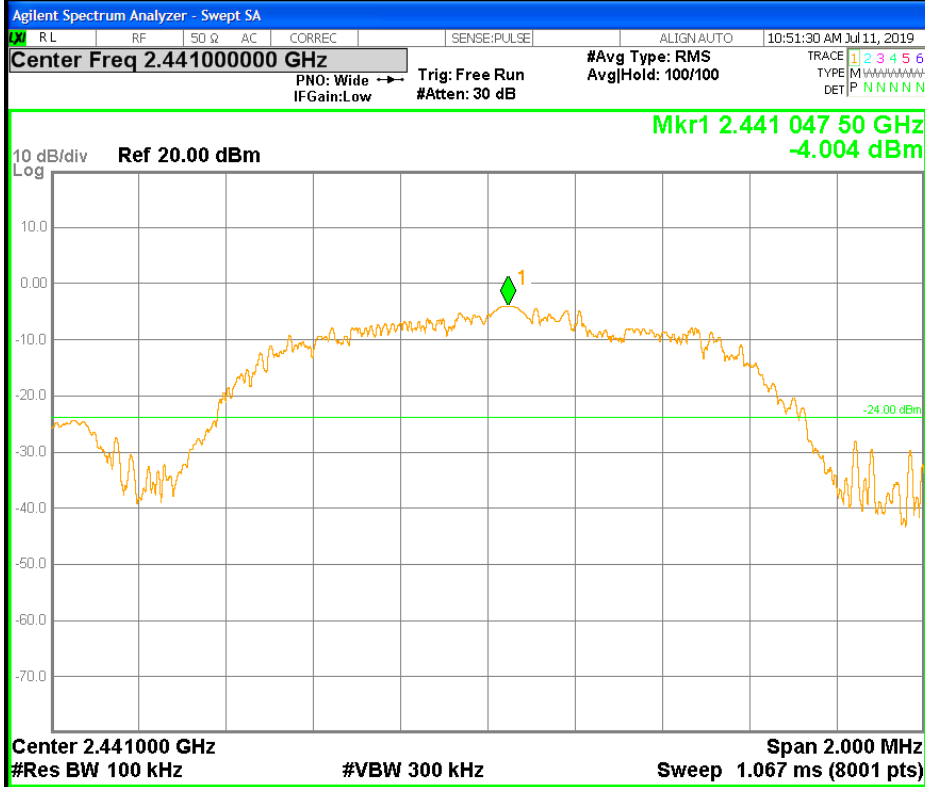


Puw



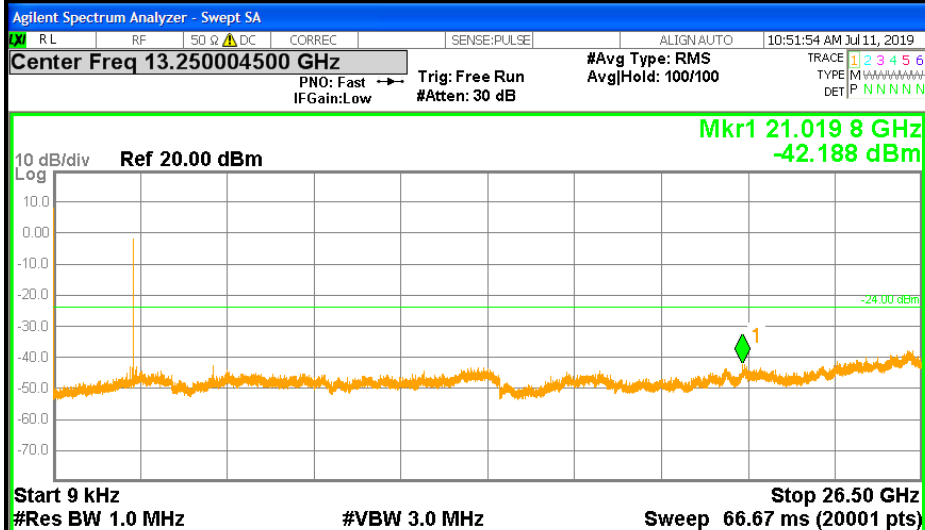
8DPSK MCH Graphs

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

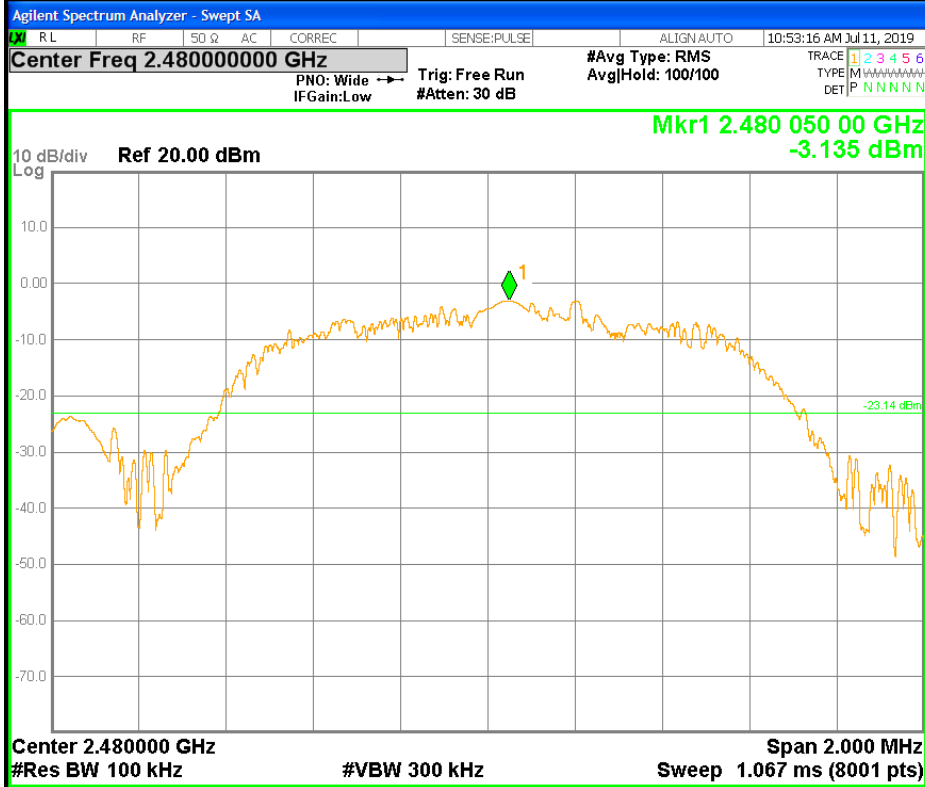


Frequency
Auto Tune
Center Freq 13.250004500 GHz
Start Freq 9.000 kHz
Stop Freq 26.500000000 GHz
CF Step 2.649999100 GHz Auto
Freq Offset 0 Hz

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	21.019 8 GHz	-42.188 dBm			
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								

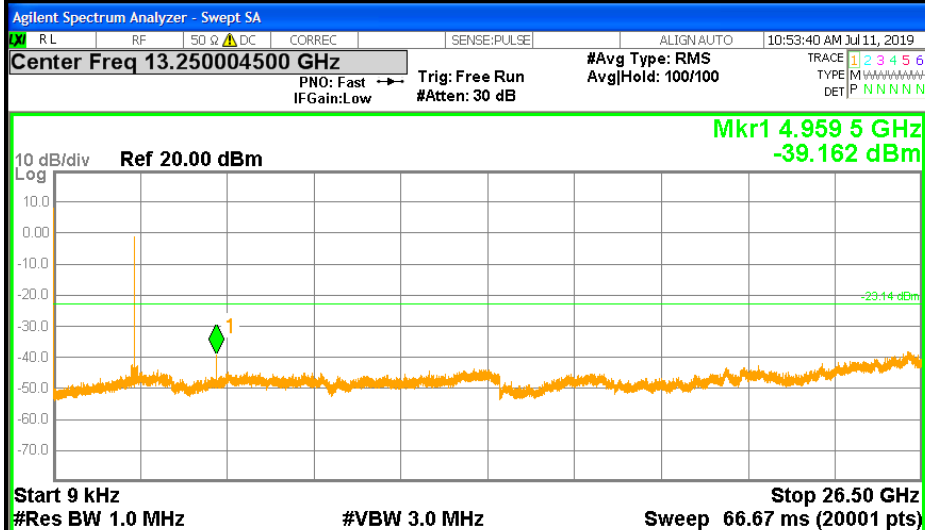
8DPSK HCH Graphs

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

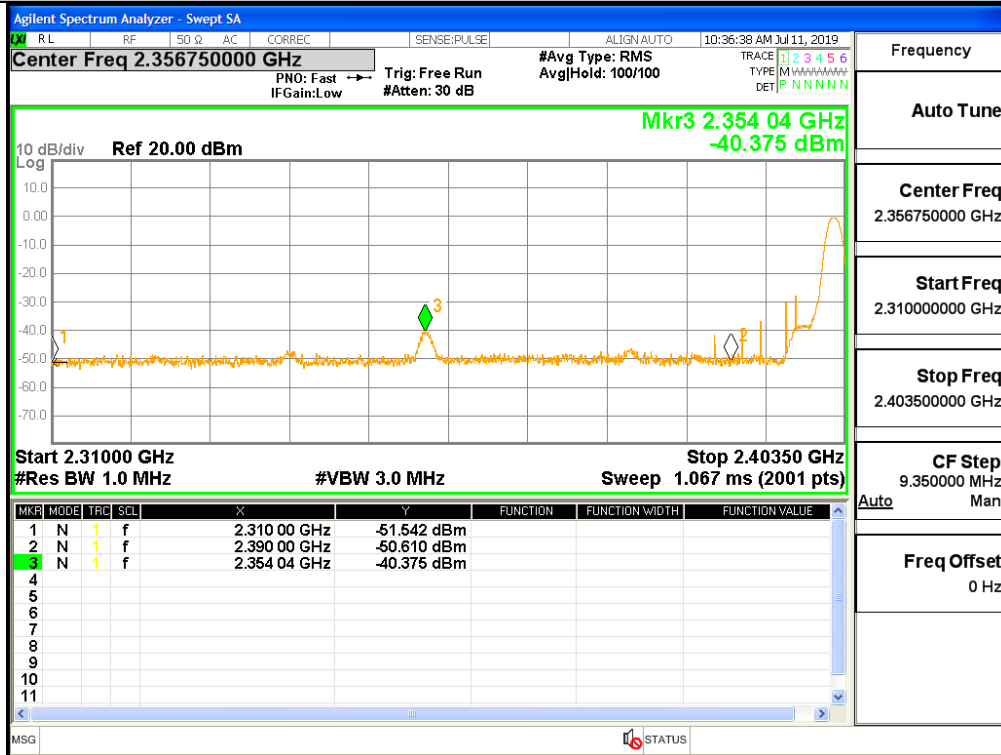
MR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	4.959 5 GHz	-39.162 dBm			
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								

A.8 Restrict-band band-edge measurements

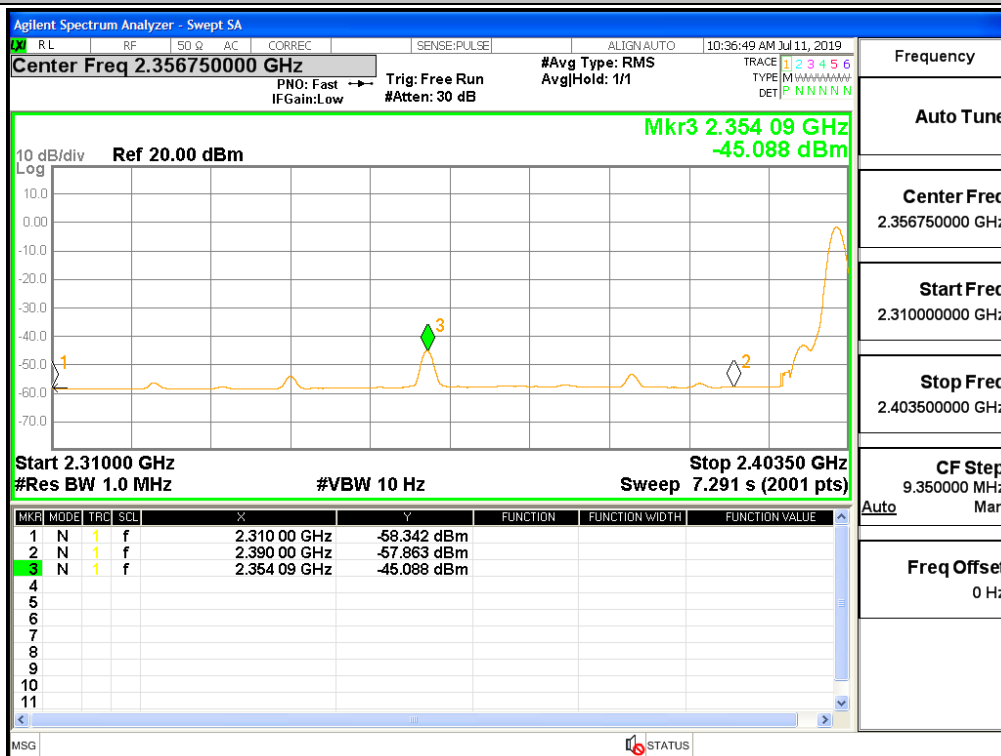
Type	Carrier Frequency (MHz)	Frequency(M Hz)	Gain	Ground Factor	Peak Value(dBm)	E [dBuV/m]	Limit [dBuV/m]	Conclusion
1DH5	2402	2354.04	2.00	0.00	-40.38	56.83	74	Pass
1DH5	2480	2484.19	2.00	0.00	-25.10	72.10	74	Pass
2DH5	2402	2354.41	2.00	0.00	-42.39	54.81	74	Pass
2DH5	2480	2489.12	2.00	0.00	-38.26	58.94	74	Pass
3DH5	2402	2354.32	2.00	0.00	-42.93	54.27	74	Pass
3DH5	2480	2483.55	2.00	0.00	-26.89	70.31	74	Pass

Type	Carrier Frequency (MHz)	Frequency(M Hz)	Gain	Ground Factor	Average Value(dBm)	E [dBuV/m]	Limit [dBuV/m]	Conclusion
1DH5	2402	2354.09	2.00	0.00	-45.09	52.11	54	Pass
1DH5	2480	2483.52	2.00	0.00	-47.37	49.83	54	Pass
2DH5	2402	2354.09	2.00	0.00	-49.29	47.92	54	Pass
2DH5	2480	2483.50	2.00	0.00	-55.34	41.86	54	Pass
3DH5	2402	2354.04	2.00	0.00	-48.93	48.27	54	Pass
3DH5	2480	2483.50	2.00	0.00	-55.58	41.62	54	Pass

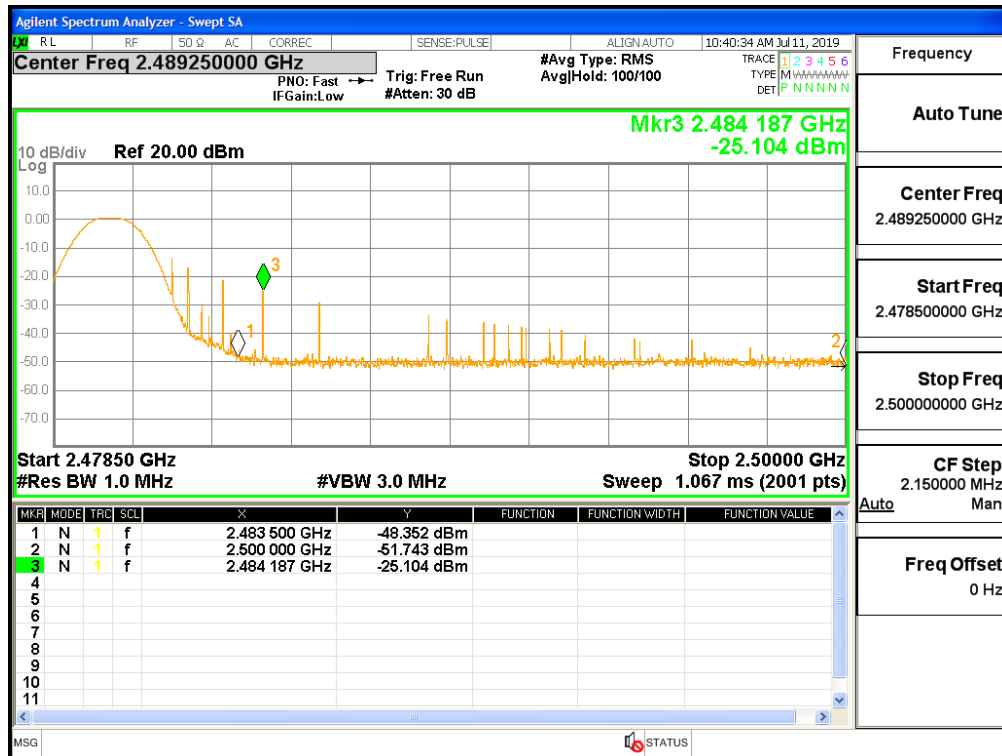
Restrict-band band-edge measurements_2402_PEAK_DH5



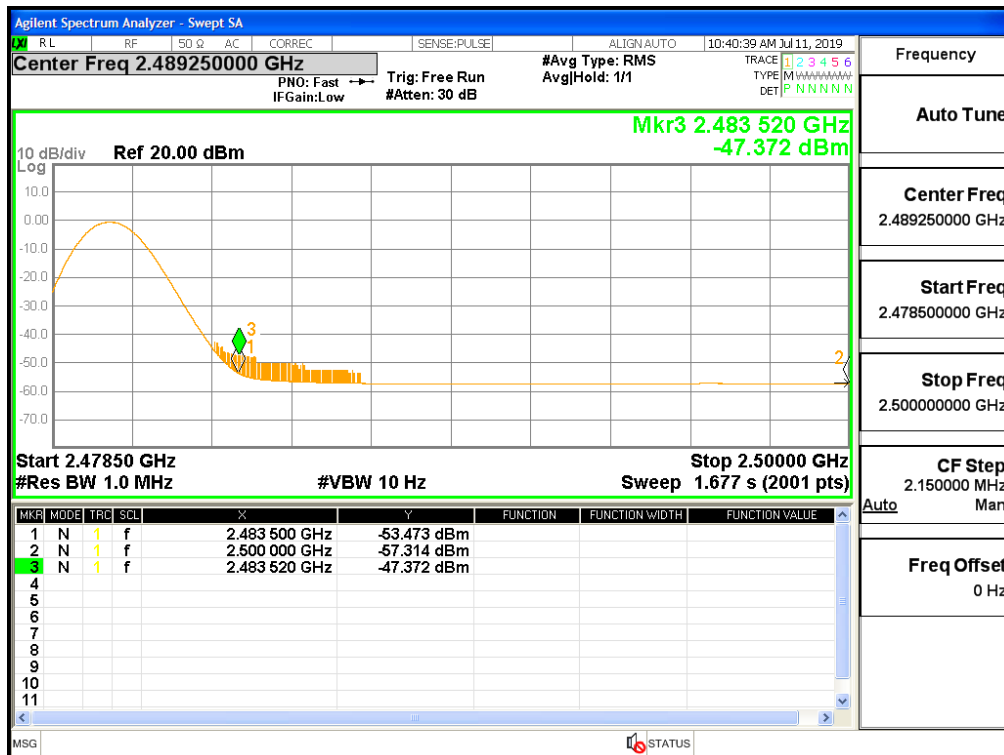
Restrict-band band-edge measurements_2402_AV_DH5



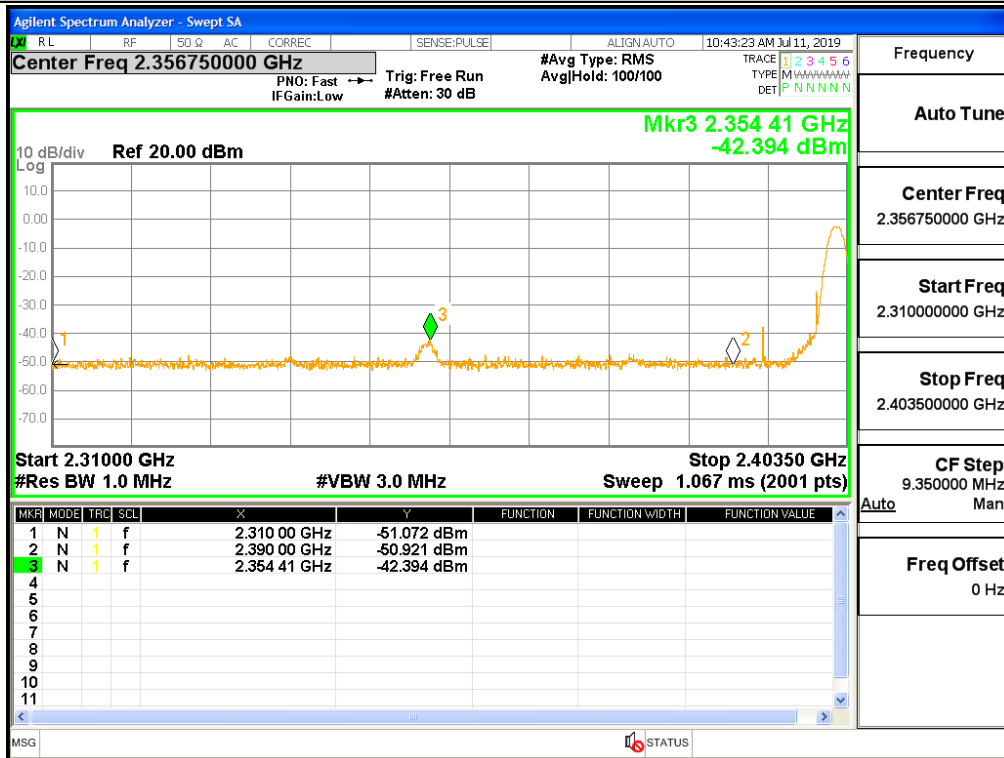
Restrict-band band-edge measurements_2480_PEAK_DH5



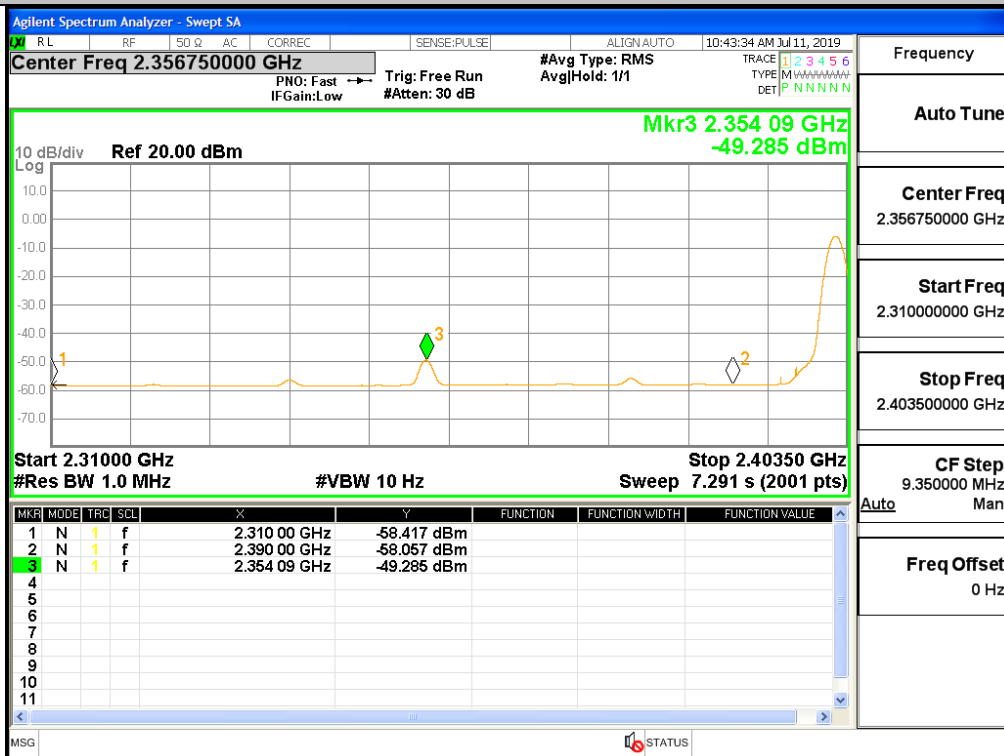
Restrict-band band-edge measurements_2480_AV_DH5



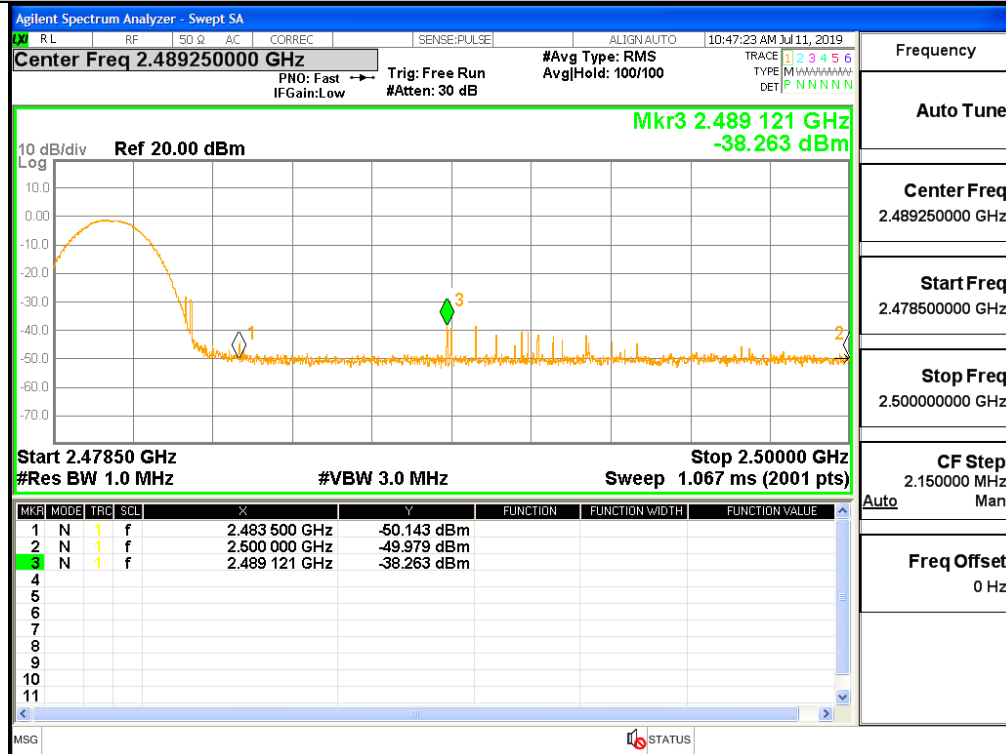
Restrict-band band-edge measurements_2402_PEAK_2DH5



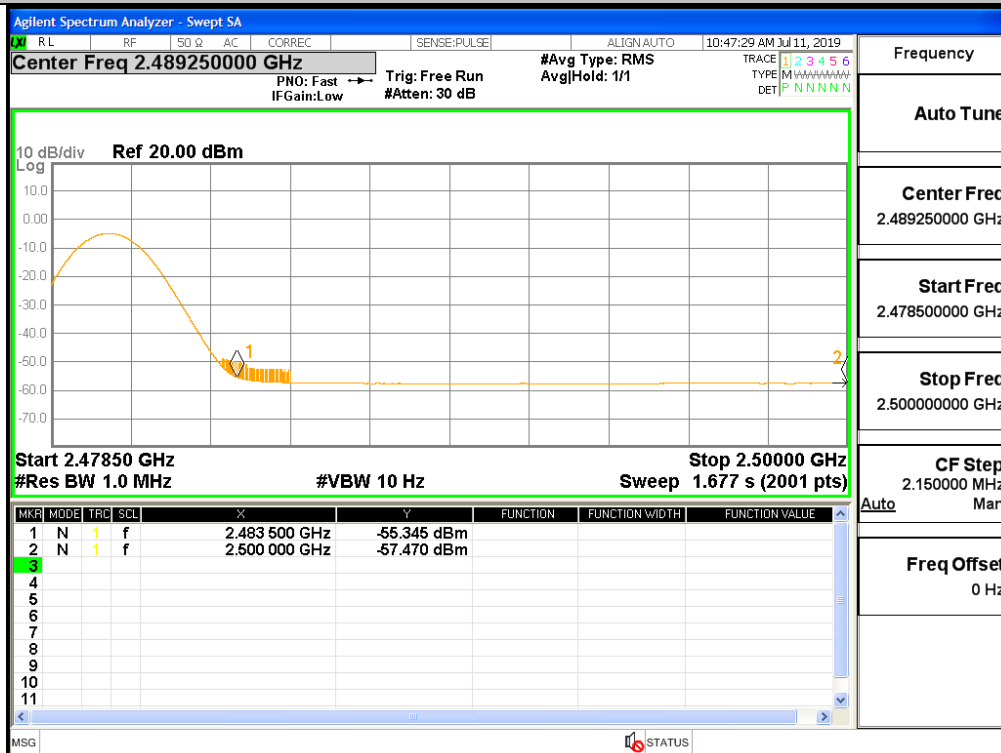
Restrict-band band-edge measurements_2402_AV_2DH5



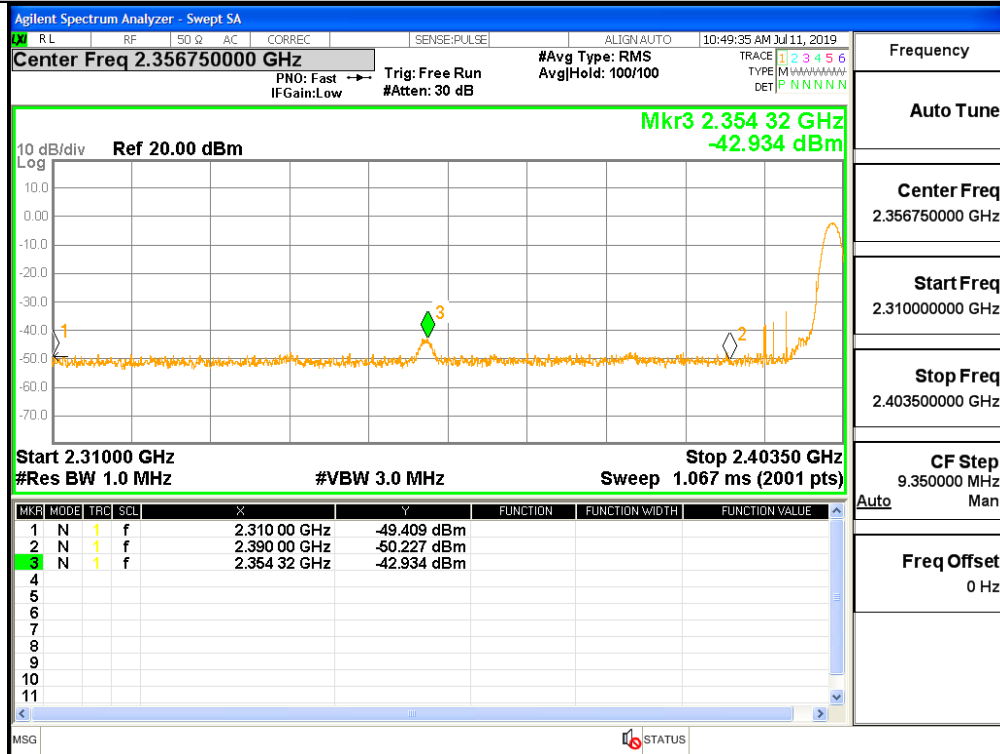
Restrict-band band-edge measurements_2480_PEAK_2DH5



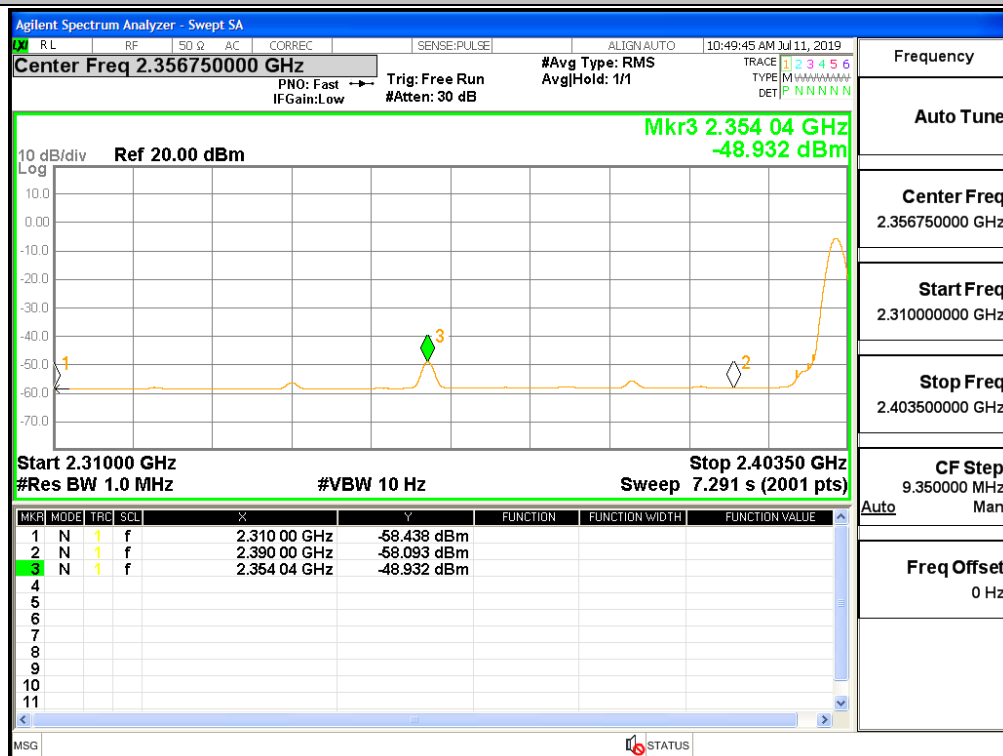
Restrict-band band-edge measurements_2480_AV_2DH5



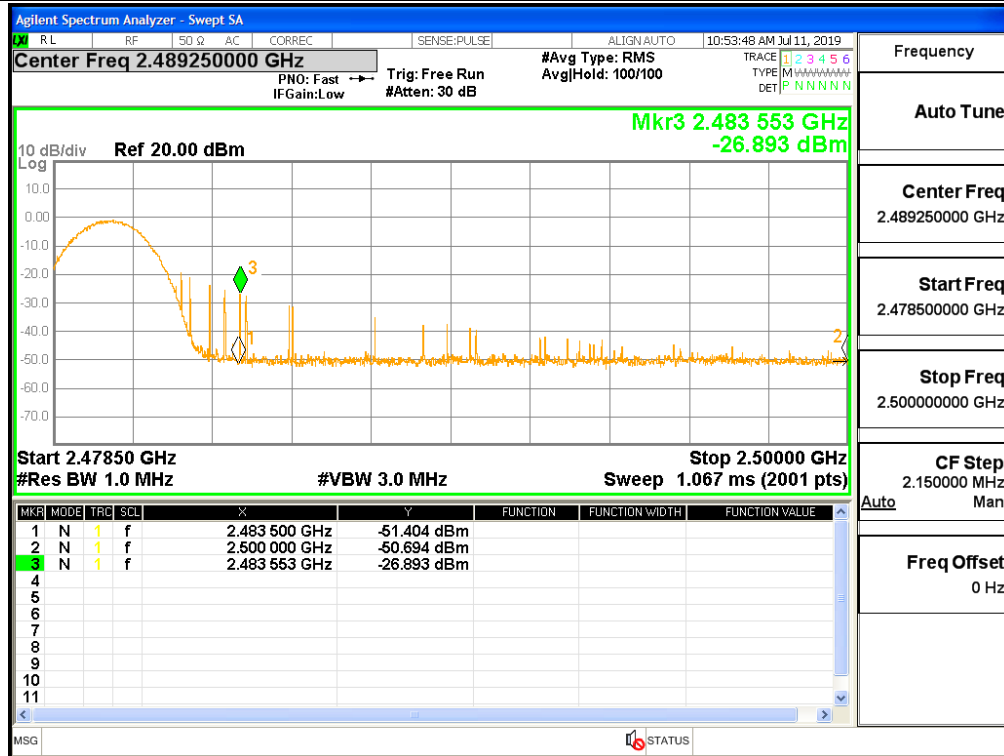
Restrict-band band-edge measurements_2402_PEAK_3DH5



Restrict-band band-edge measurements_2402_AV_3DH5



Restrict-band band-edge measurements_2480_PEAK_3DH5



Restrict-band band-edge measurements_2480_AV_3DH5

