

Appendix A

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

Product Name: Bluetooth Speaker

Trade Mark: N/A

Test Model: RS13

FCC ID: 2ATOY-RS13

Environmental Conditions

Temperature:	22.8 ° C
Relative Humidity:	50%
ATM Pressure:	100.0 kPa
Test Engineer:	Gary Qian
Supervised by:	Eden Hu

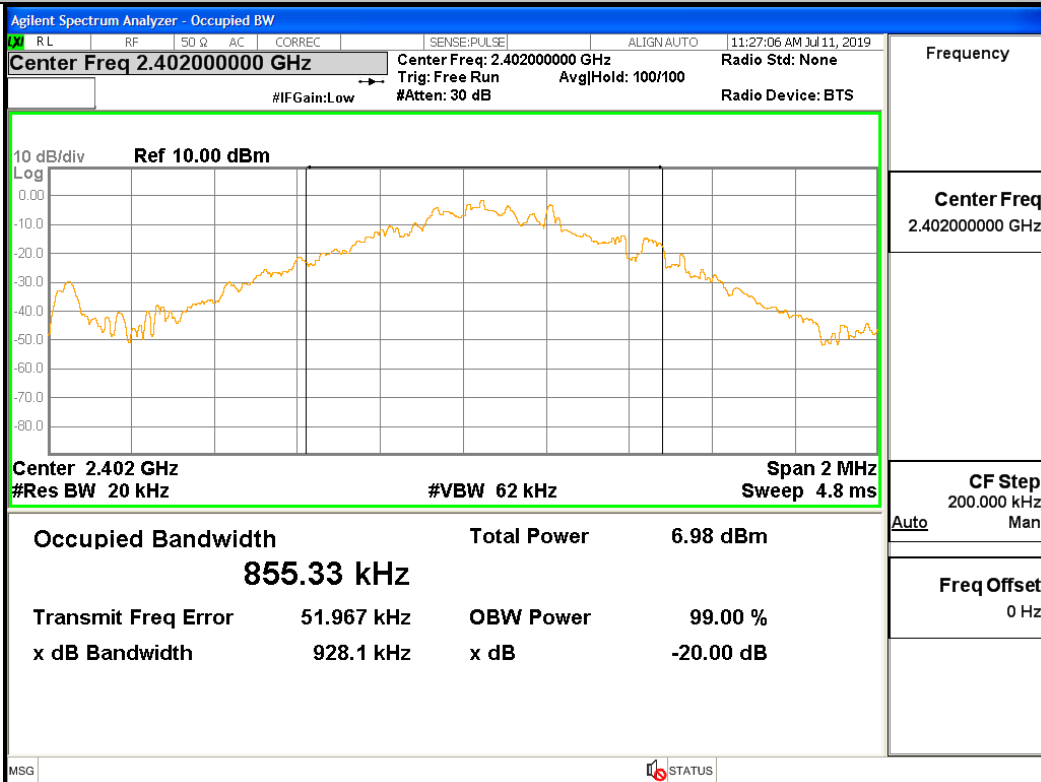
A.1 20 dB Bandwidth

Mode	Channel.	20dB Bandwidth [MHz]	Limit(MHz)	Verdict
GFSK	LCH	0.928	Not Specified	PASS
GFSK	MCH	0.765	Not Specified	PASS
GFSK	HCH	0.771	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.179	Not Specified	PASS
$\pi/4$ DQPSK	MCH	1.177	Not Specified	PASS
$\pi/4$ DQPSK	HCH	1.224	Not Specified	PASS
8DPSK	LCH	1.207	Not Specified	PASS
8DPSK	MCH	1.173	Not Specified	PASS
8DPSK	HCH	1.223	Not Specified	PASS

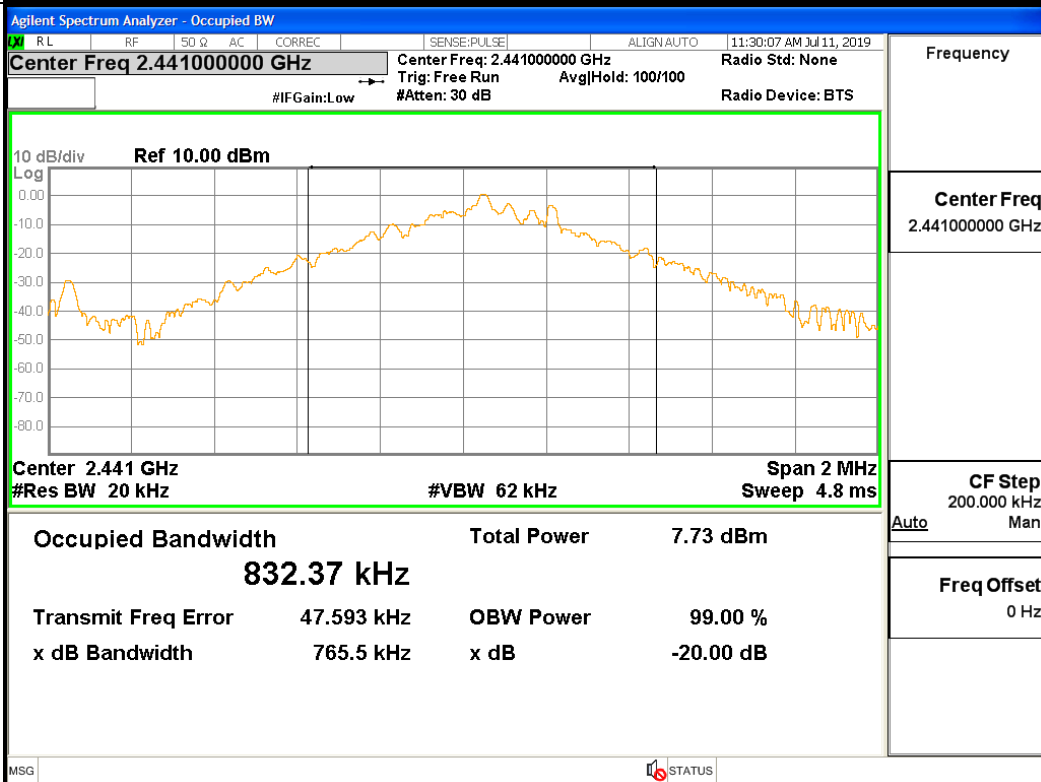
Test Graph

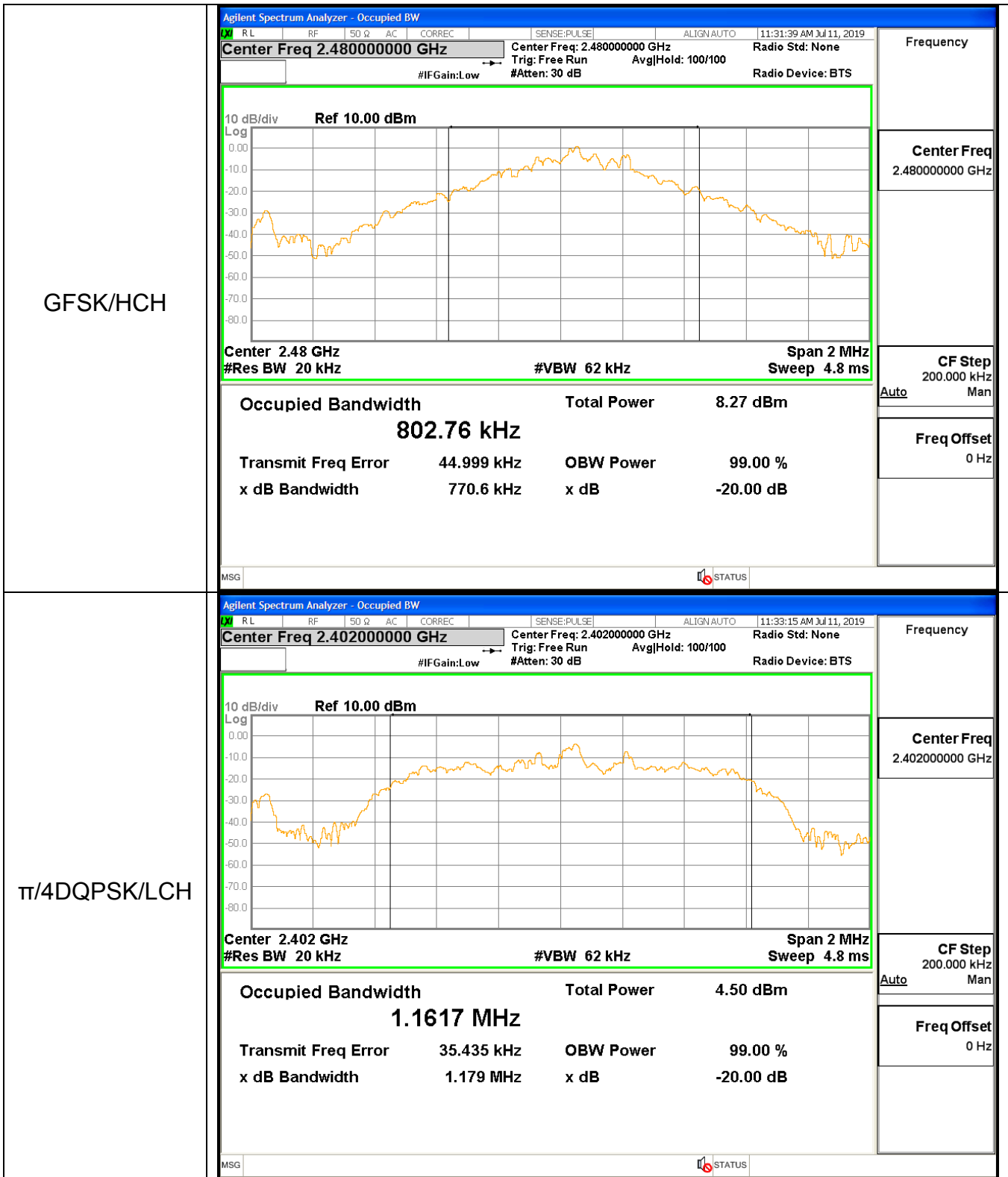
Graphs

GFSK/LCH

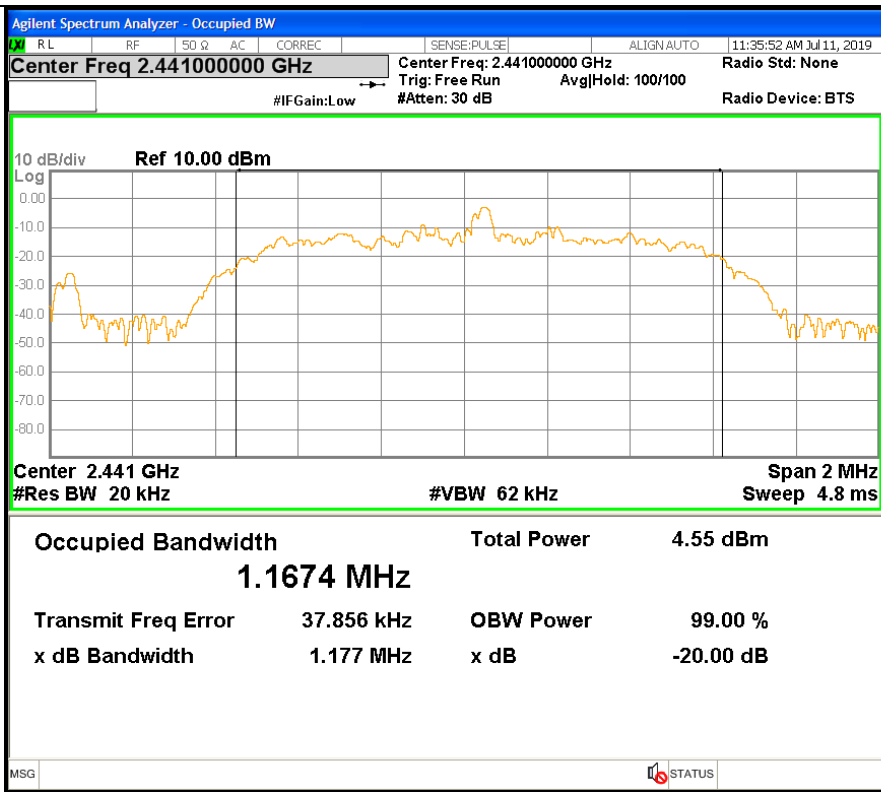


GFSK/MCH



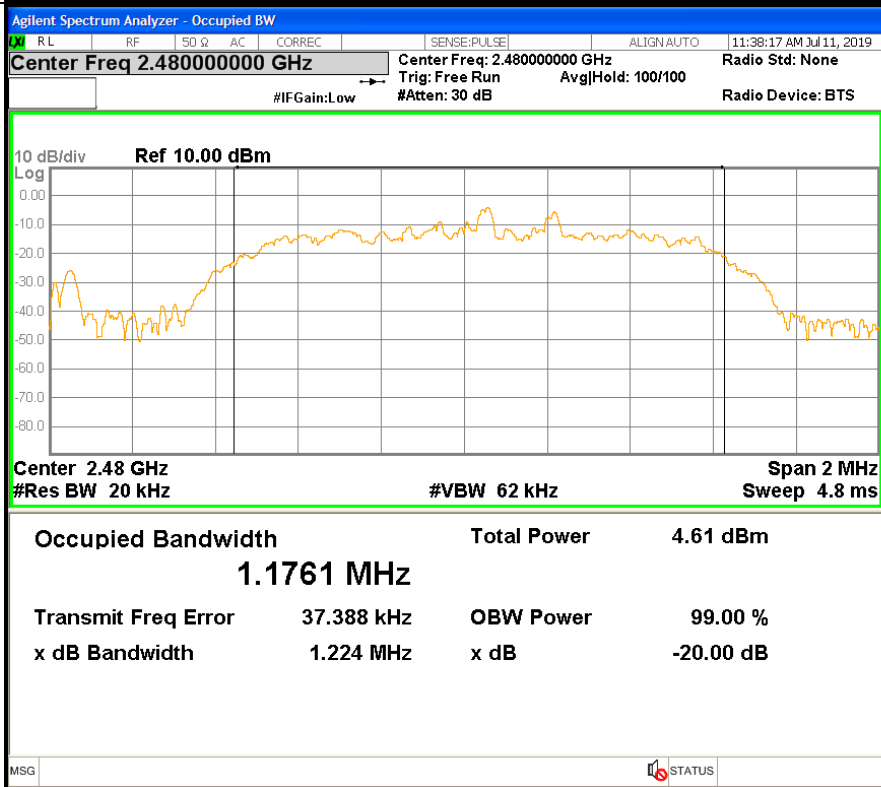


π/4DQPSK/MCH

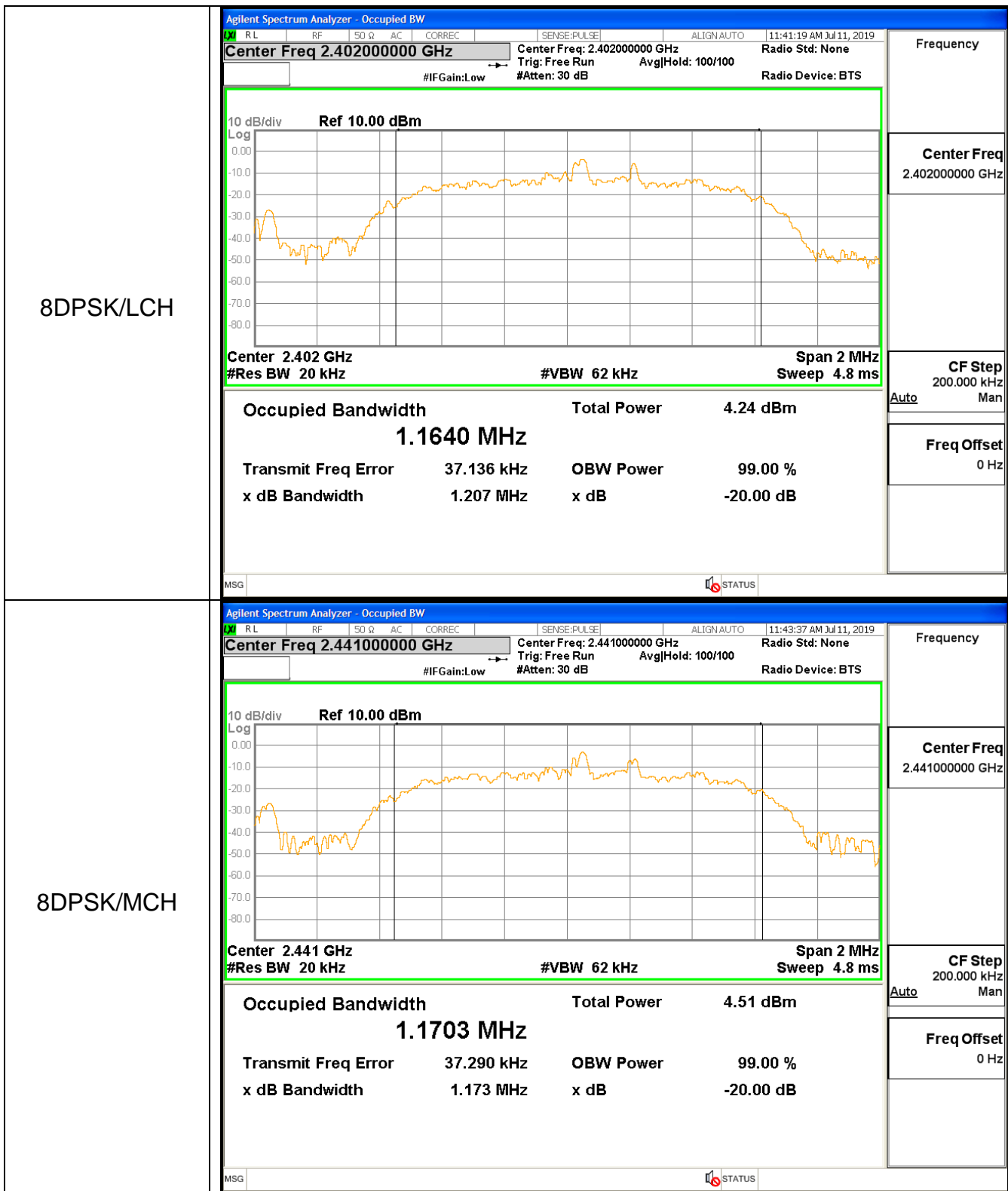


Frequency	2.441000000 GHz
Center Freq	2.441000000 GHz
CF Step	200.000 kHz
Auto	Man
Freq Offset	0 Hz

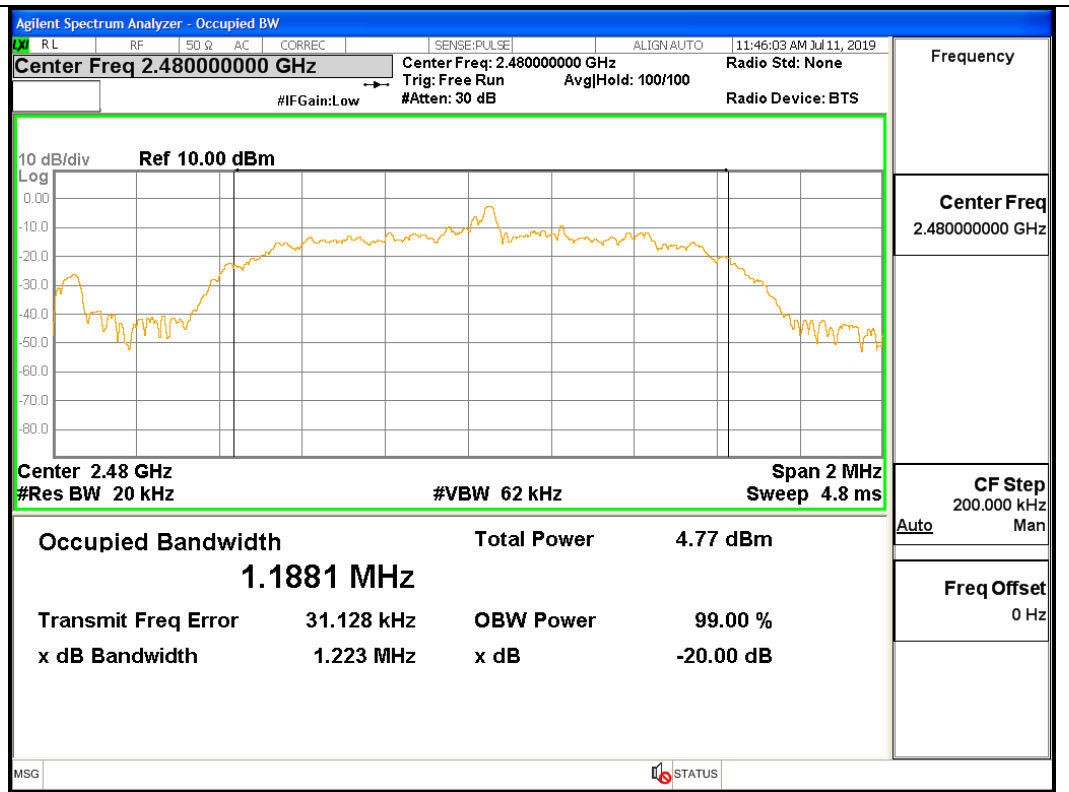
π/4DQPSK/HCH



Frequency	2.480000000 GHz
Center Freq	2.480000000 GHz
CF Step	200.000 kHz
Auto	Man
Freq Offset	0 Hz



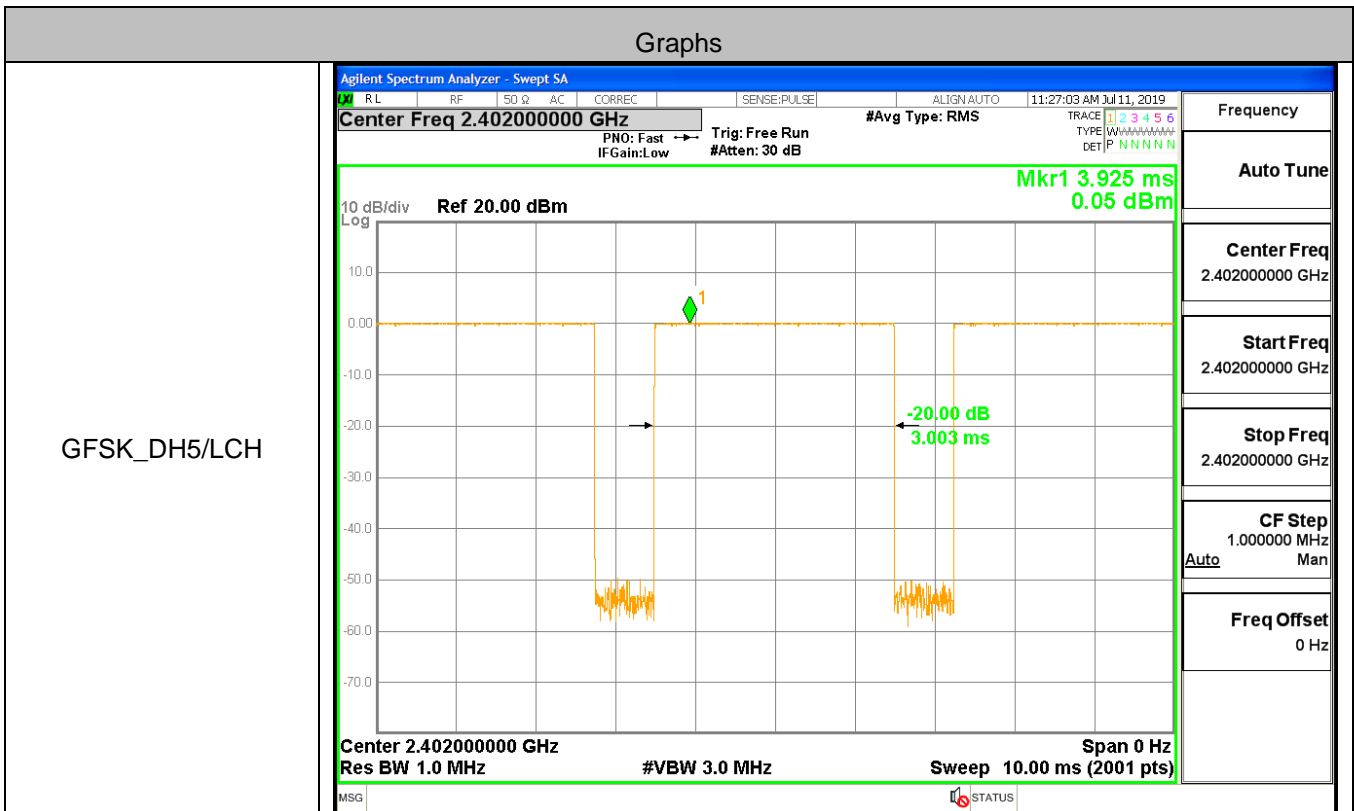
8DPSK/HCH

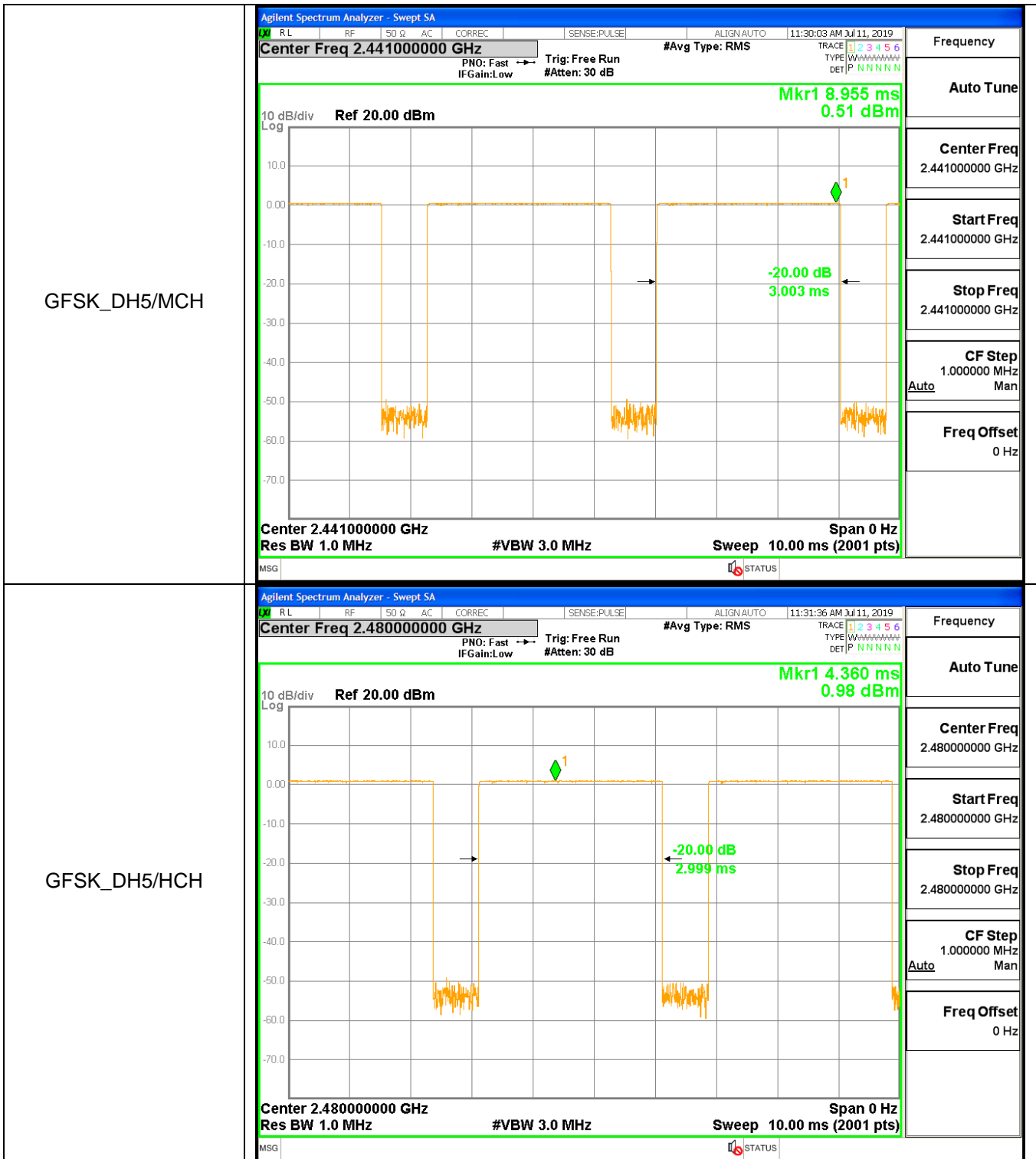


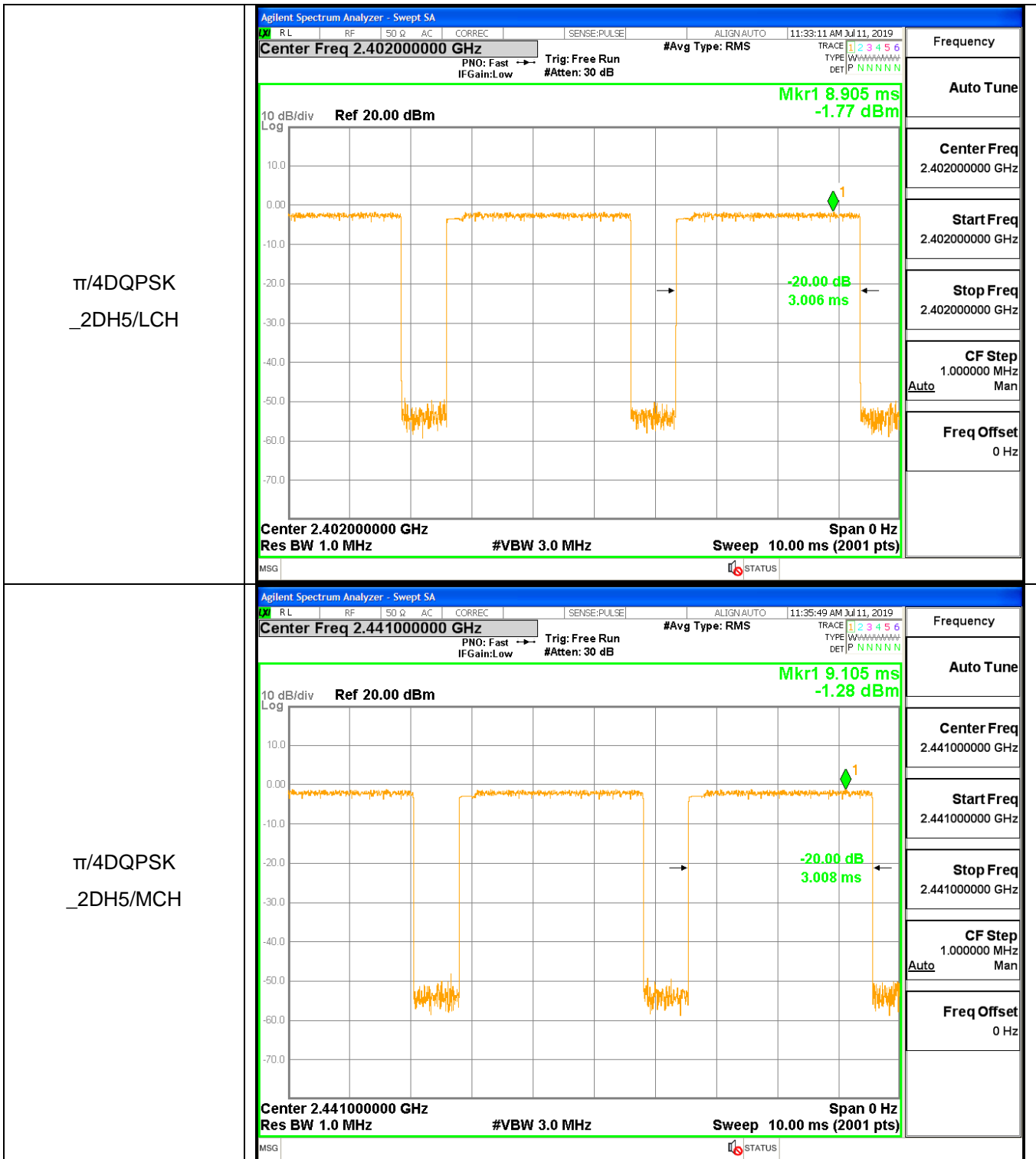
A.2 Dwell Time

Mode	Packet	Channel	Burst Width [s/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	0.003003	106.7	0.320376	0.4	PASS
GFSK	DH5	MCH	0.003003	106.7	0.320399	0.4	PASS
GFSK	DH5	HCH	0.002999	106.7	0.319949	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	0.003006	106.7	0.320690	0.4	PASS
$\pi/4$ DQPSK	2DH5	MCH	0.003008	106.7	0.320996	0.4	PASS
$\pi/4$ DQPSK	2DH5	HCH	0.003012	106.7	0.321414	0.4	PASS
8DPSK	3DH5	LCH	0.003009	106.7	0.321016	0.4	PASS
8DPSK	3DH5	MCH	0.003008	106.7	0.320999	0.4	PASS
8DPSK	3DH5	HCH	0.003005	106.7	0.320641	0.4	PASS

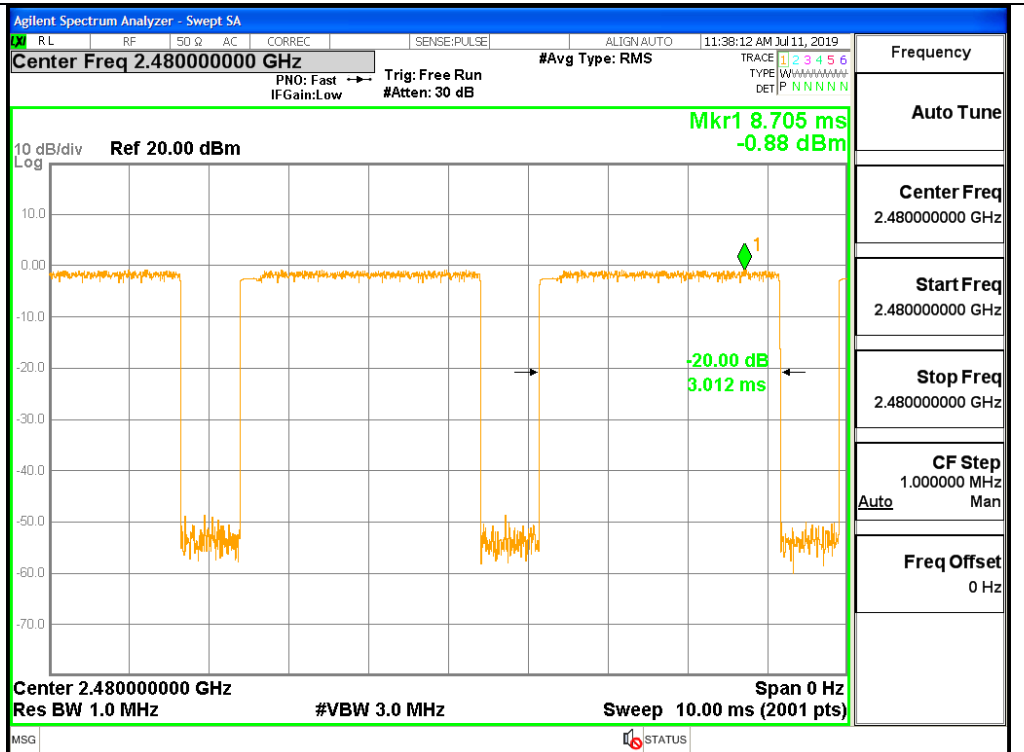
Test Graph



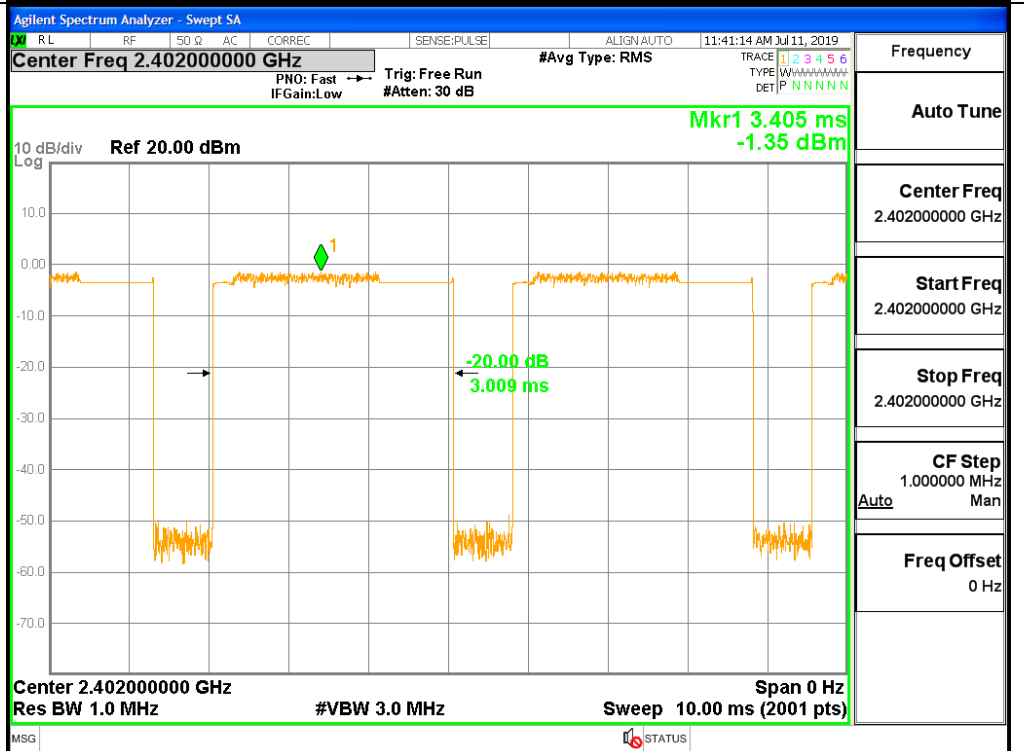


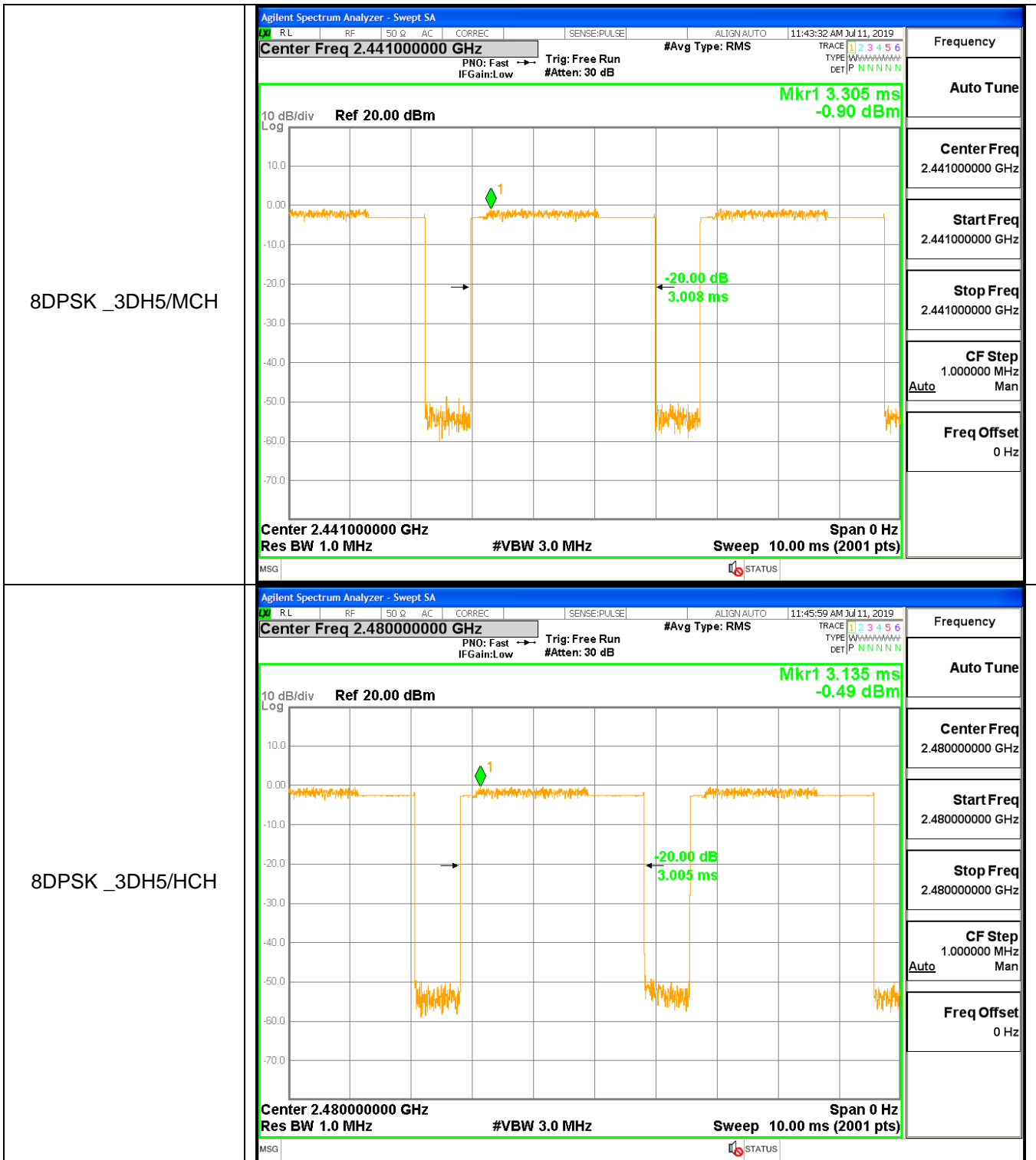


$\pi/4$ DQPSK
_2DH5/HCH



8DPSK _3DH5/LCH

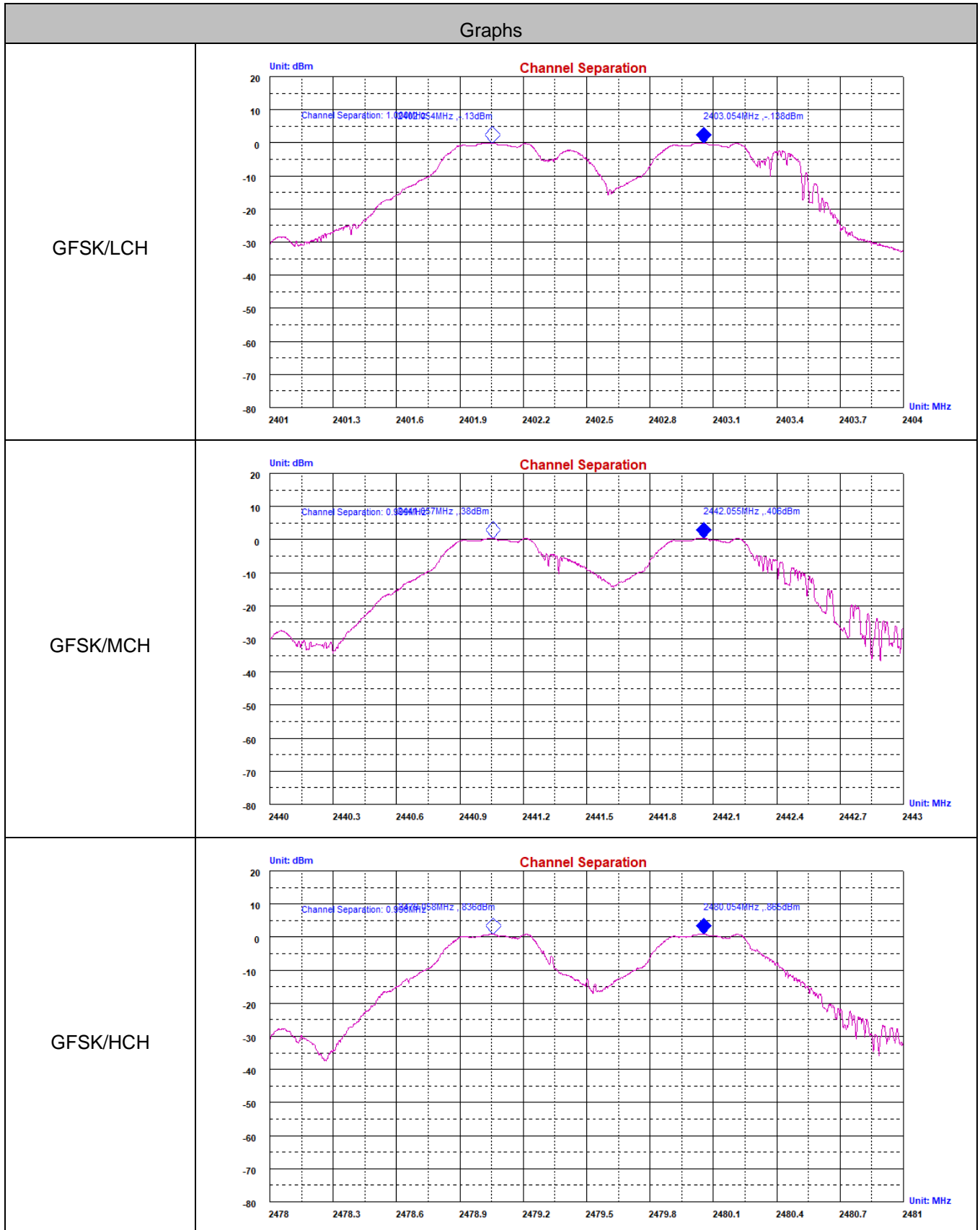


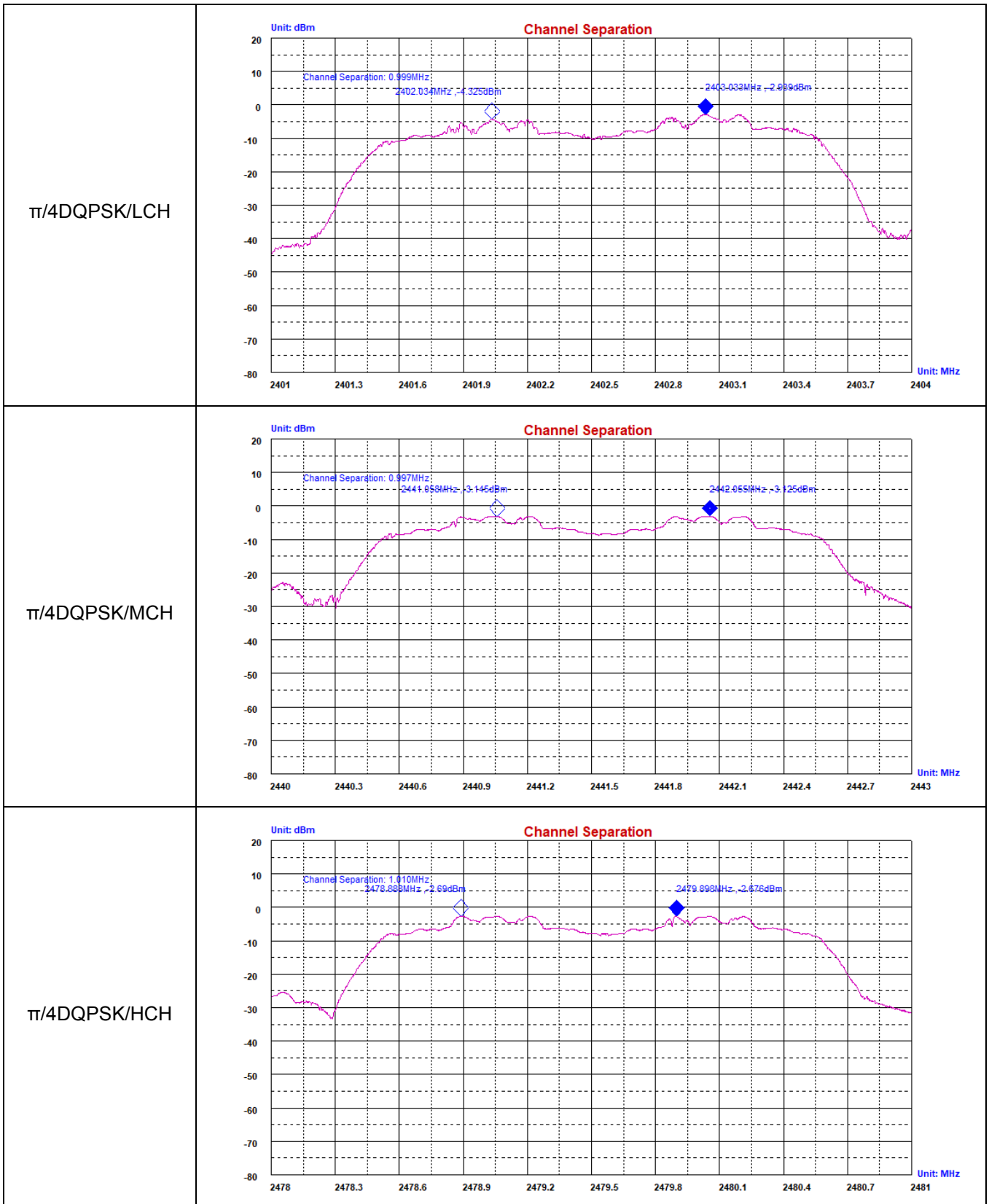


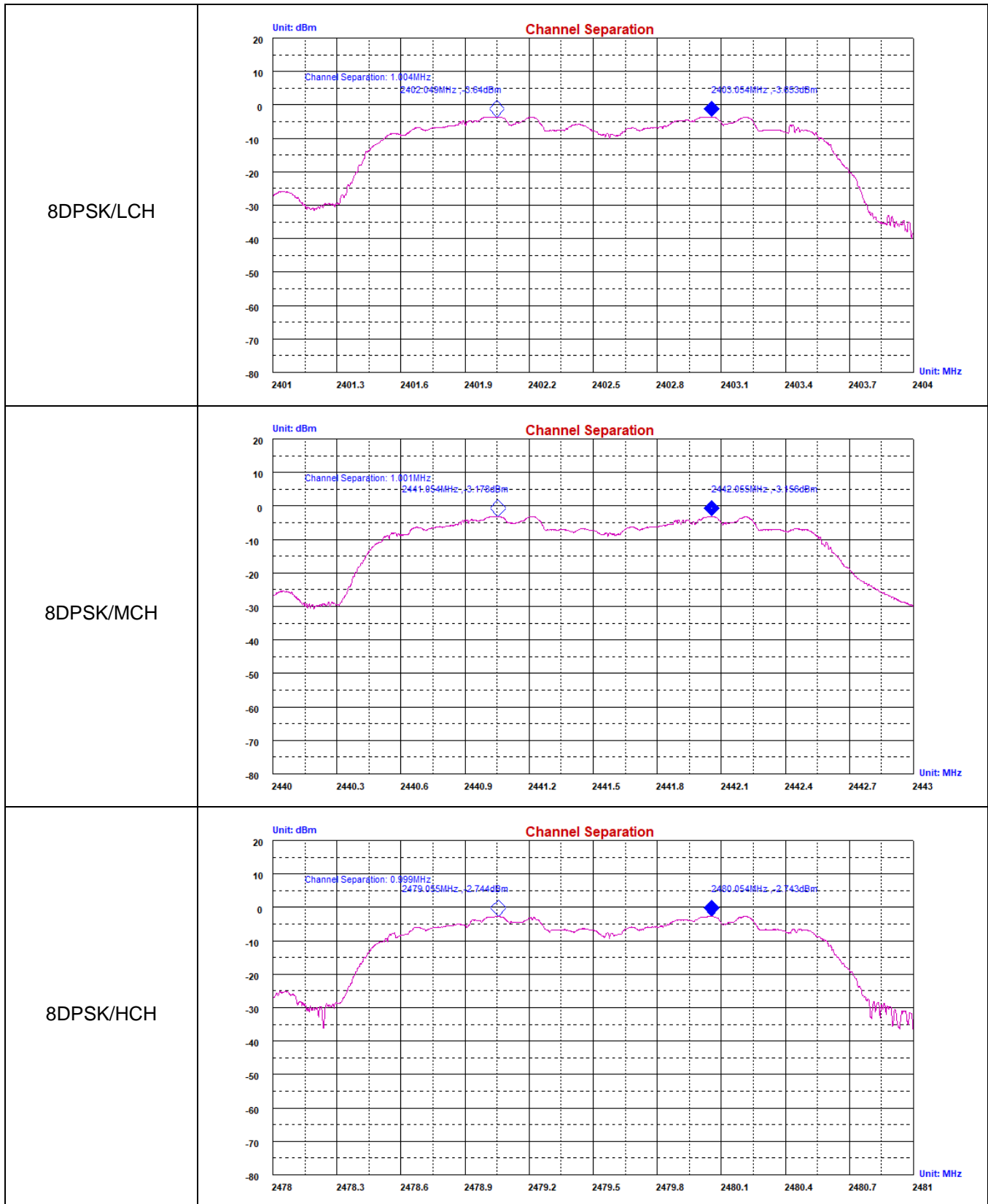
A.3 Carrier Frequency Separation

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.000	0.619	PASS
GFSK	MCH	0.999	0.510	PASS
GFSK	HCH	0.996	0.514	PASS
$\pi/4$ DQPSK	LCH	0.999	0.786	PASS
$\pi/4$ DQPSK	MCH	0.840	0.785	PASS
$\pi/4$ DQPSK	HCH	0.837	0.816	PASS
8DPSK	LCH	1.004	0.805	PASS
8DPSK	MCH	1.001	0.782	PASS
8DPSK	HCH	0.999	0.815	PASS

Test Graph



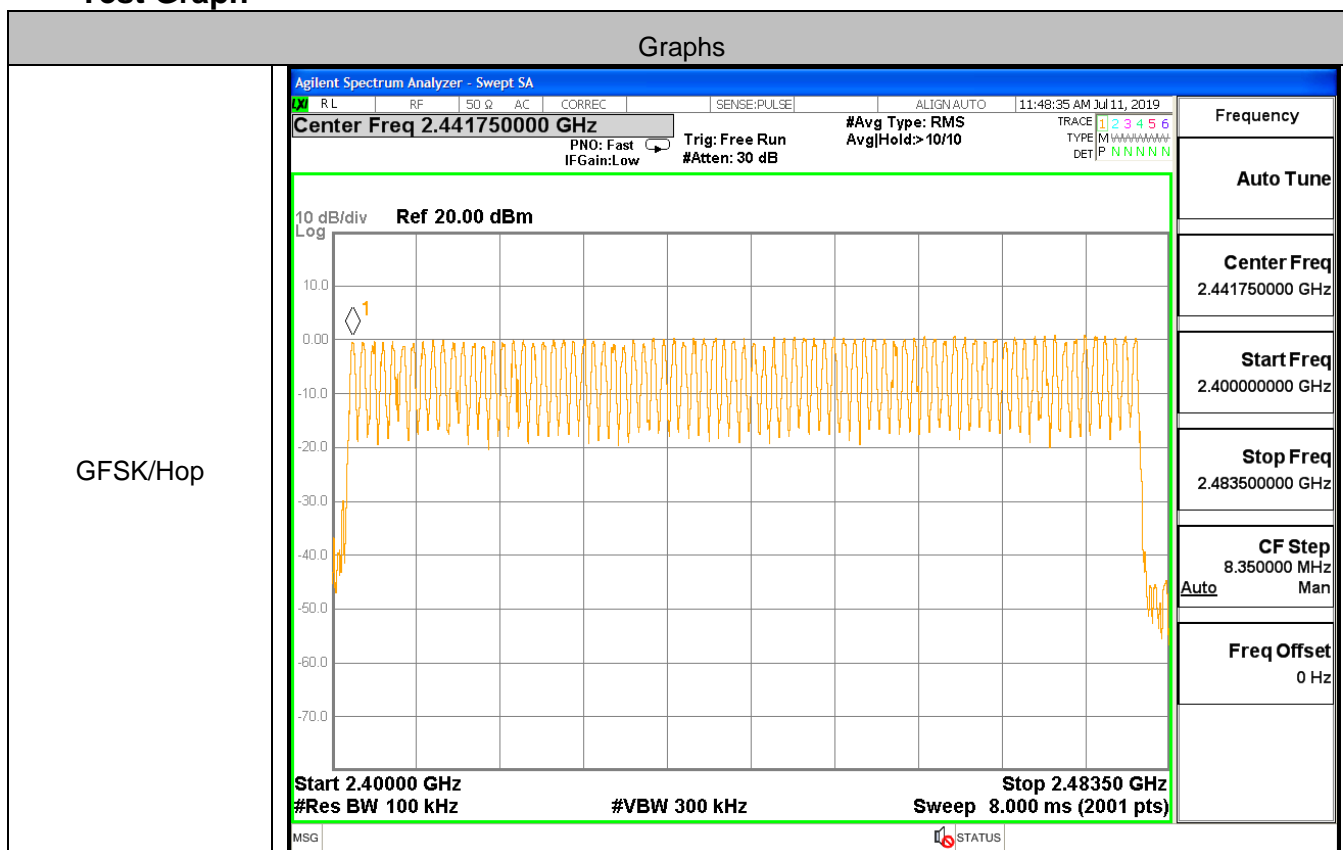


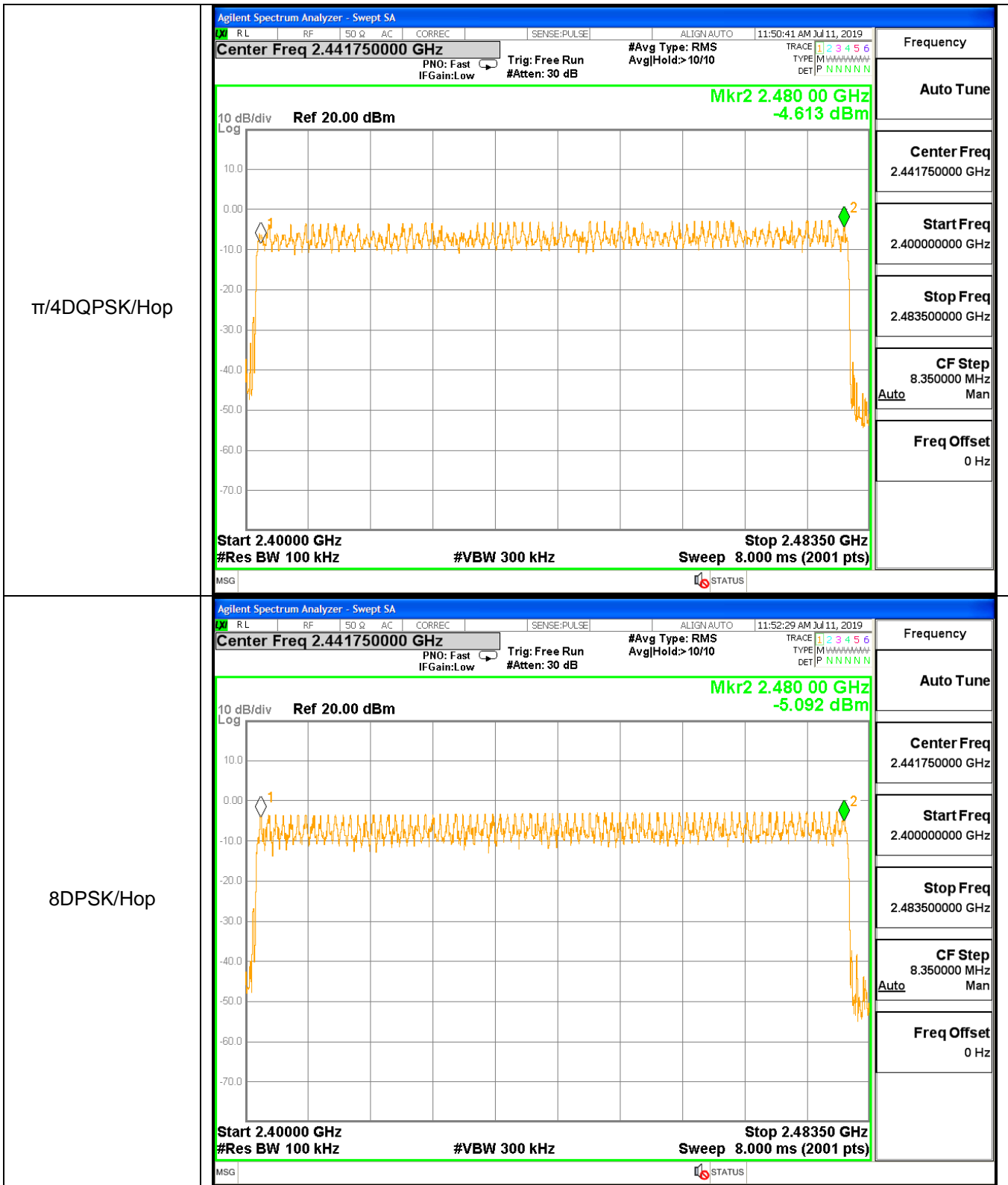


A.4 Hopping Channel Number

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

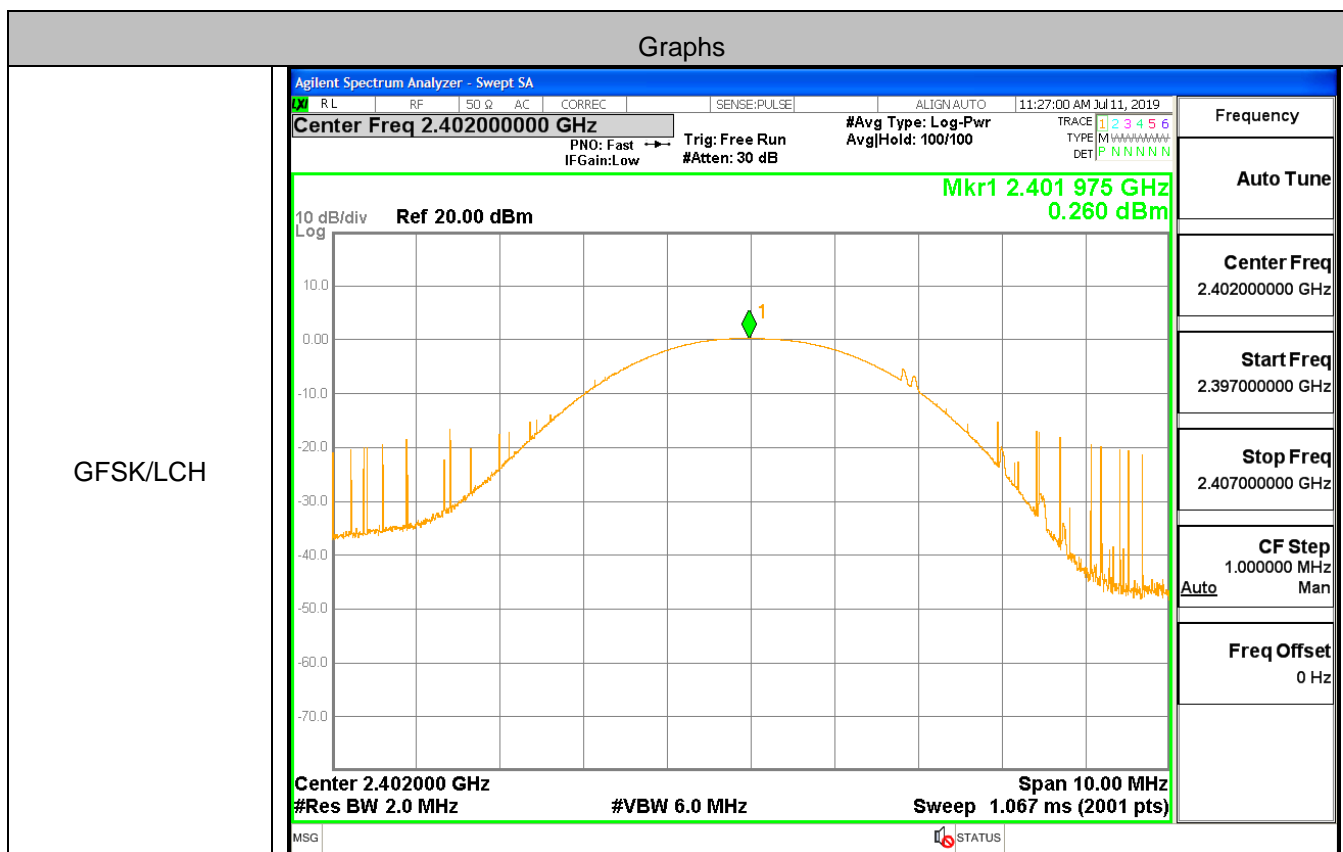




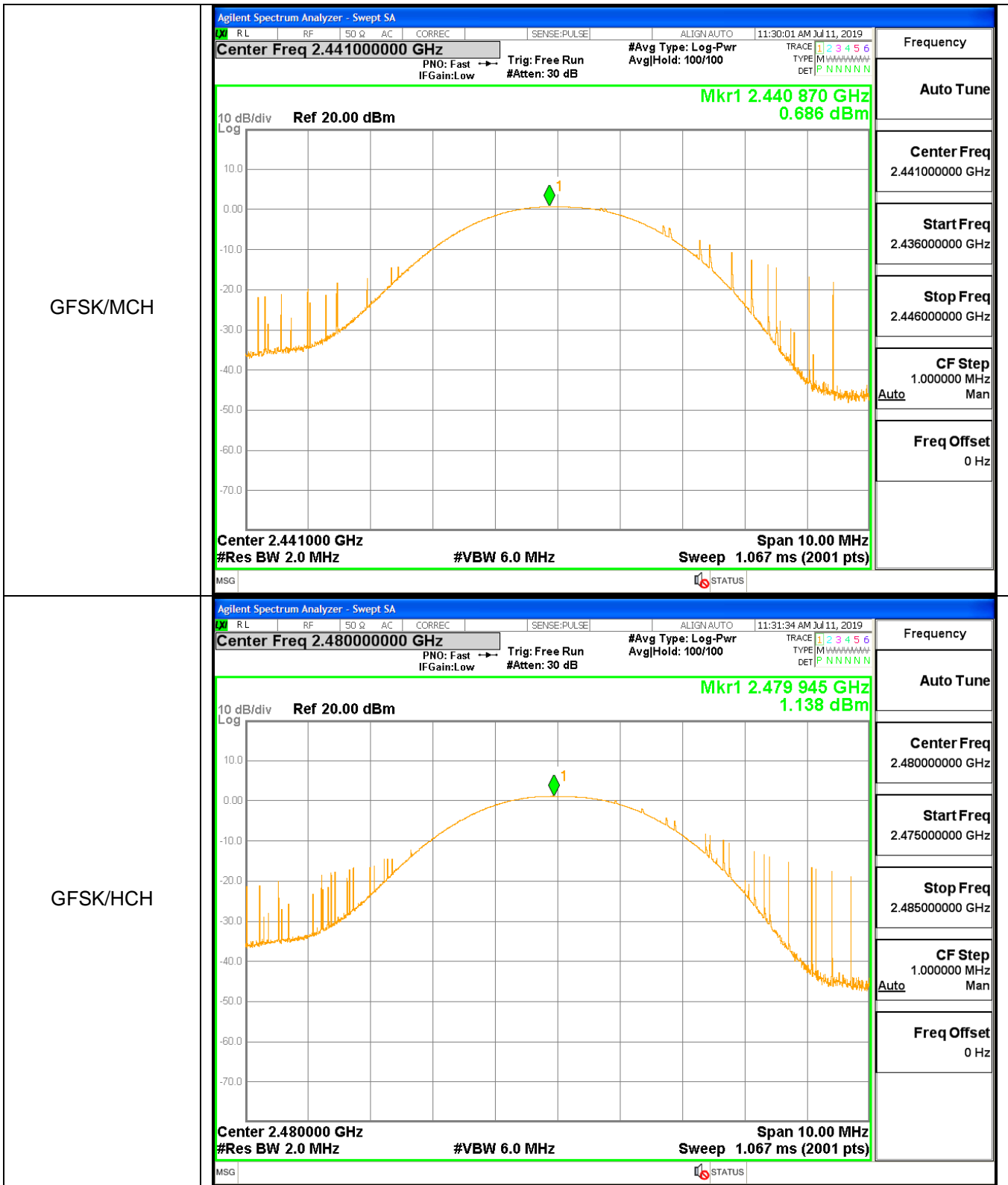
A.5 Conducted Peak Output Power

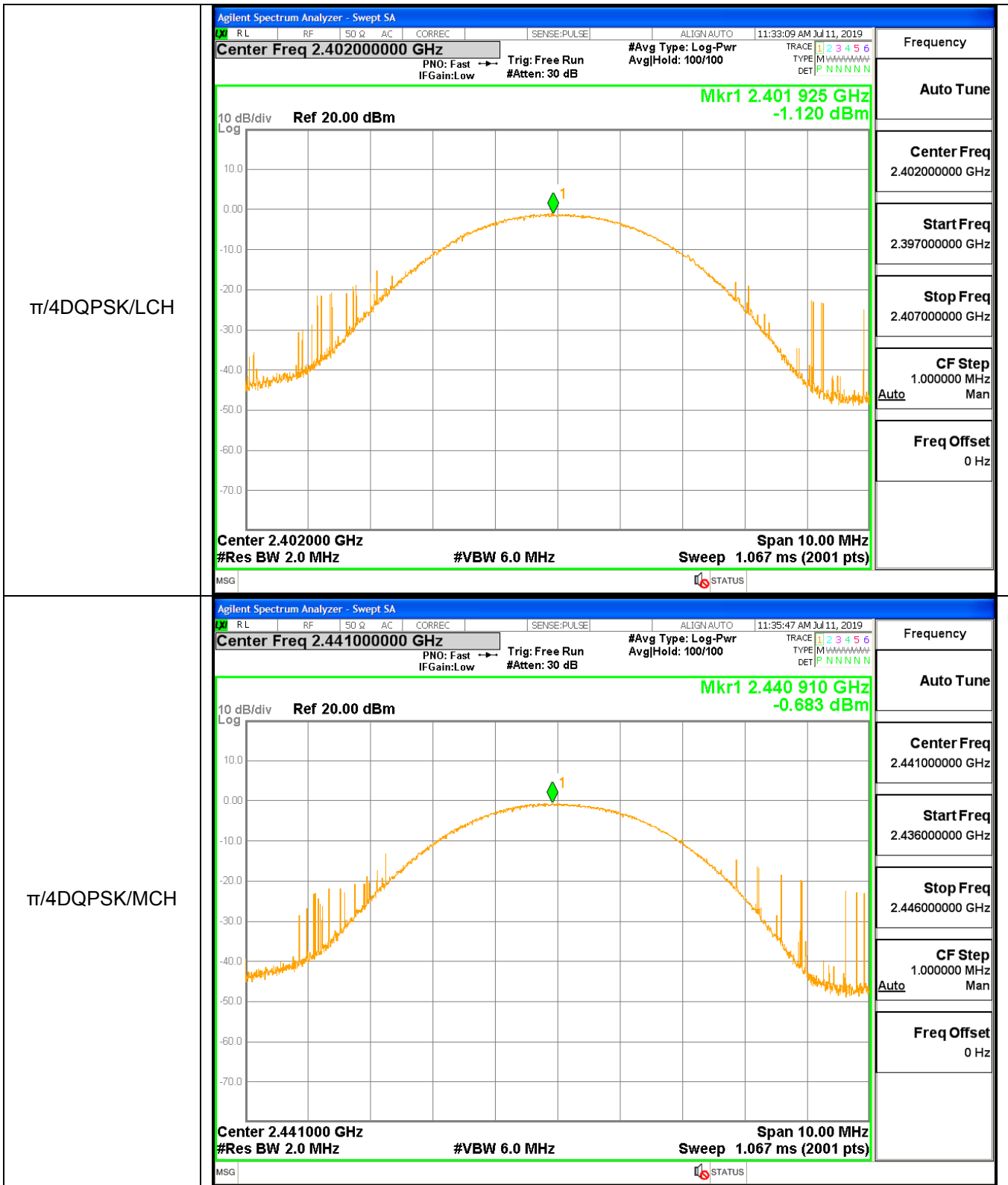
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	0.260	21	PASS
GFSK	MCH	0.686	21	PASS
GFSK	HCH	1.138	21	PASS
$\pi/4$ DQPSK	LCH	-1.120	21	PASS
$\pi/4$ DQPSK	MCH	-0.683	21	PASS
$\pi/4$ DQPSK	HCH	-0.273	21	PASS
8DPSK	LCH	-0.611	21	PASS
8DPSK	MCH	-0.193	21	PASS
8DPSK	HCH	0.217	21	PASS

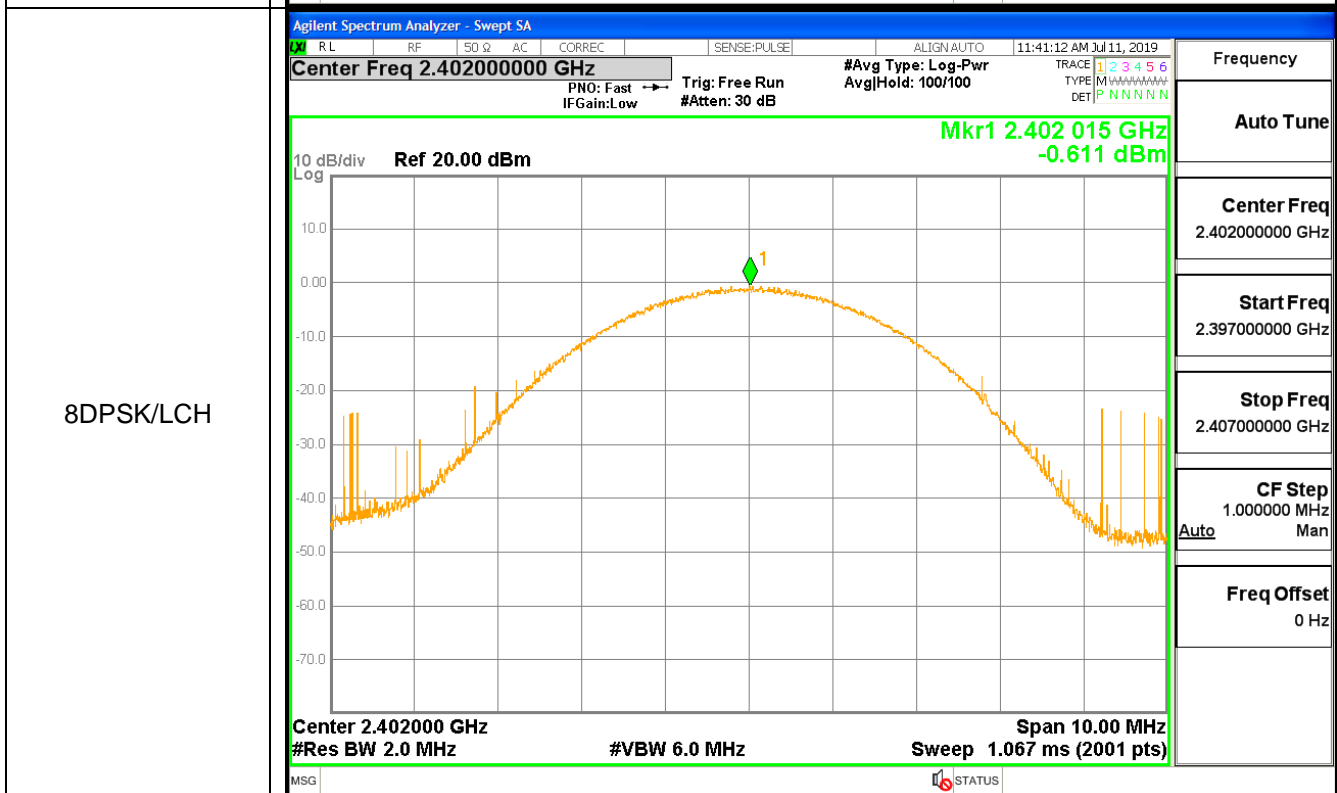
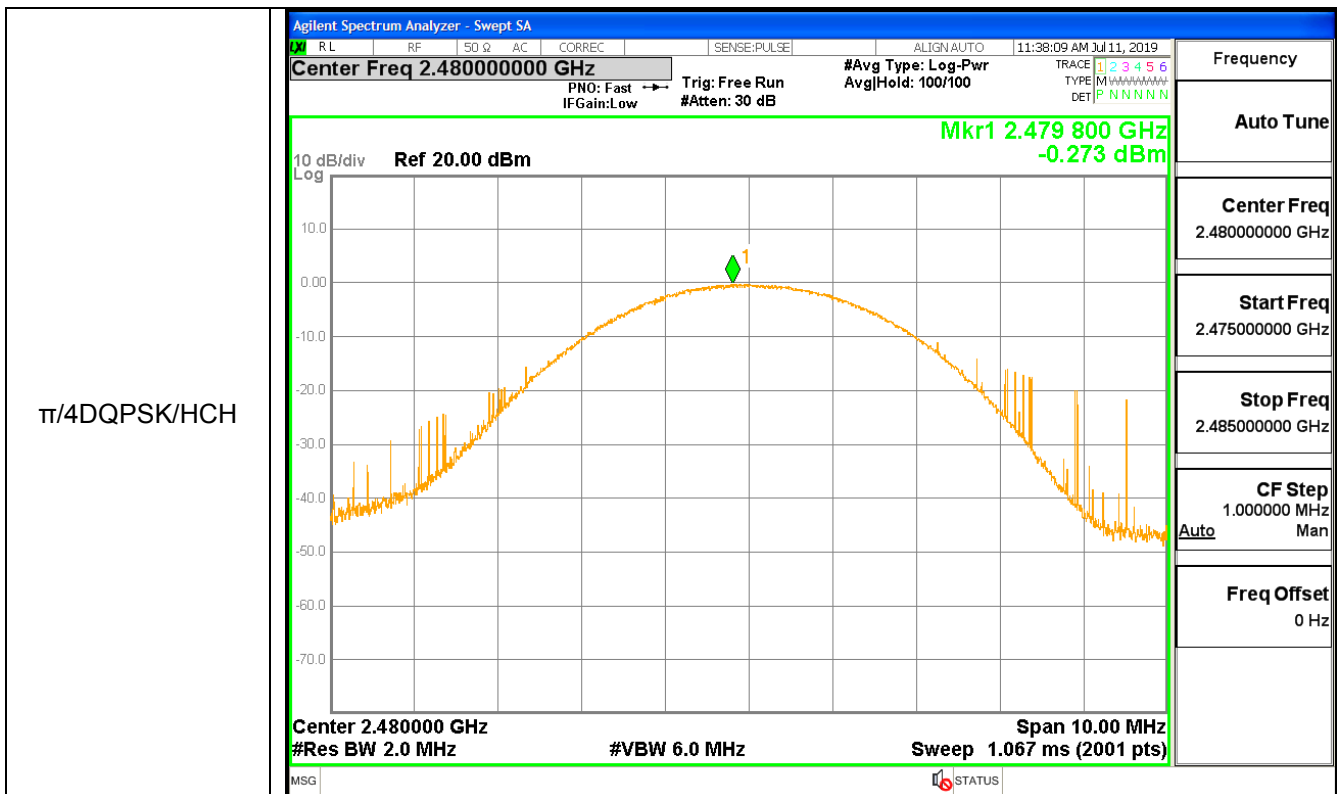
Test Graph

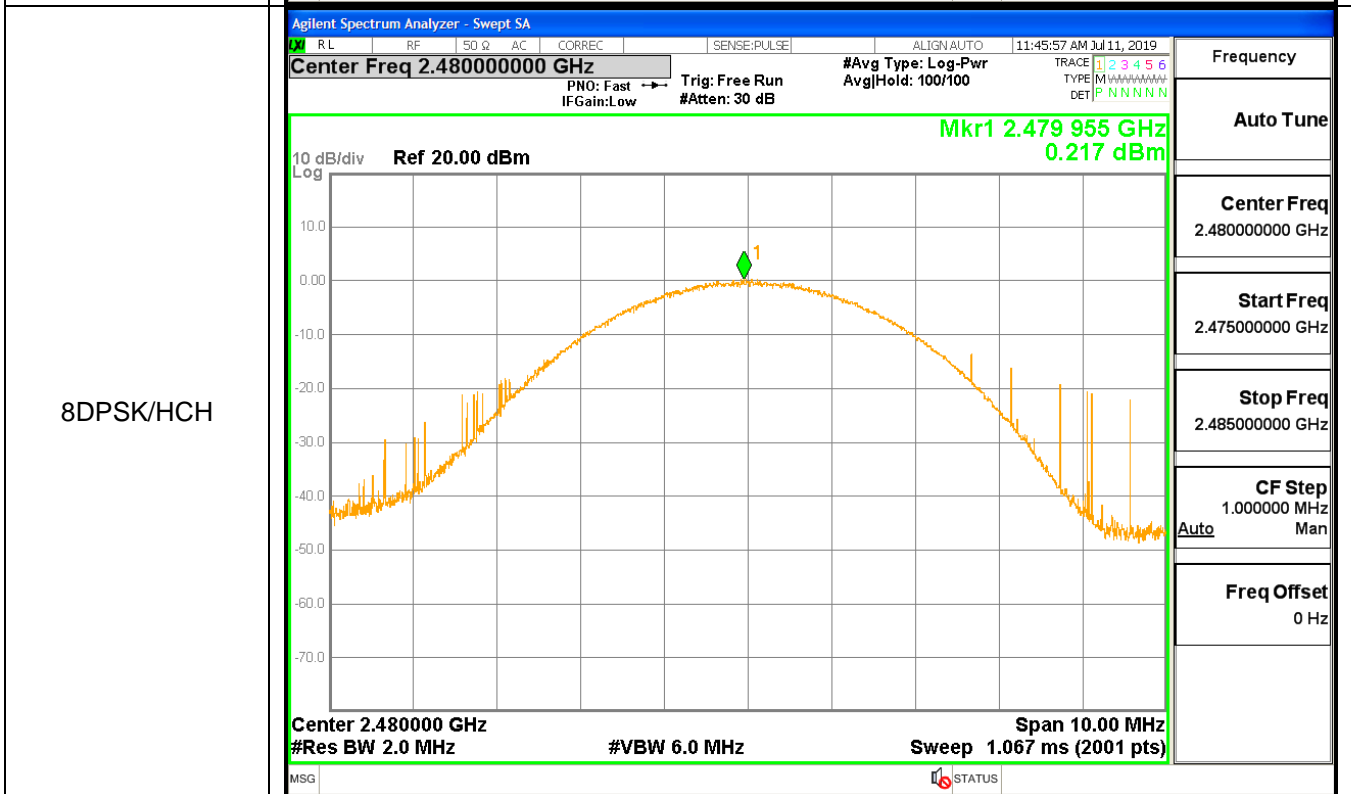
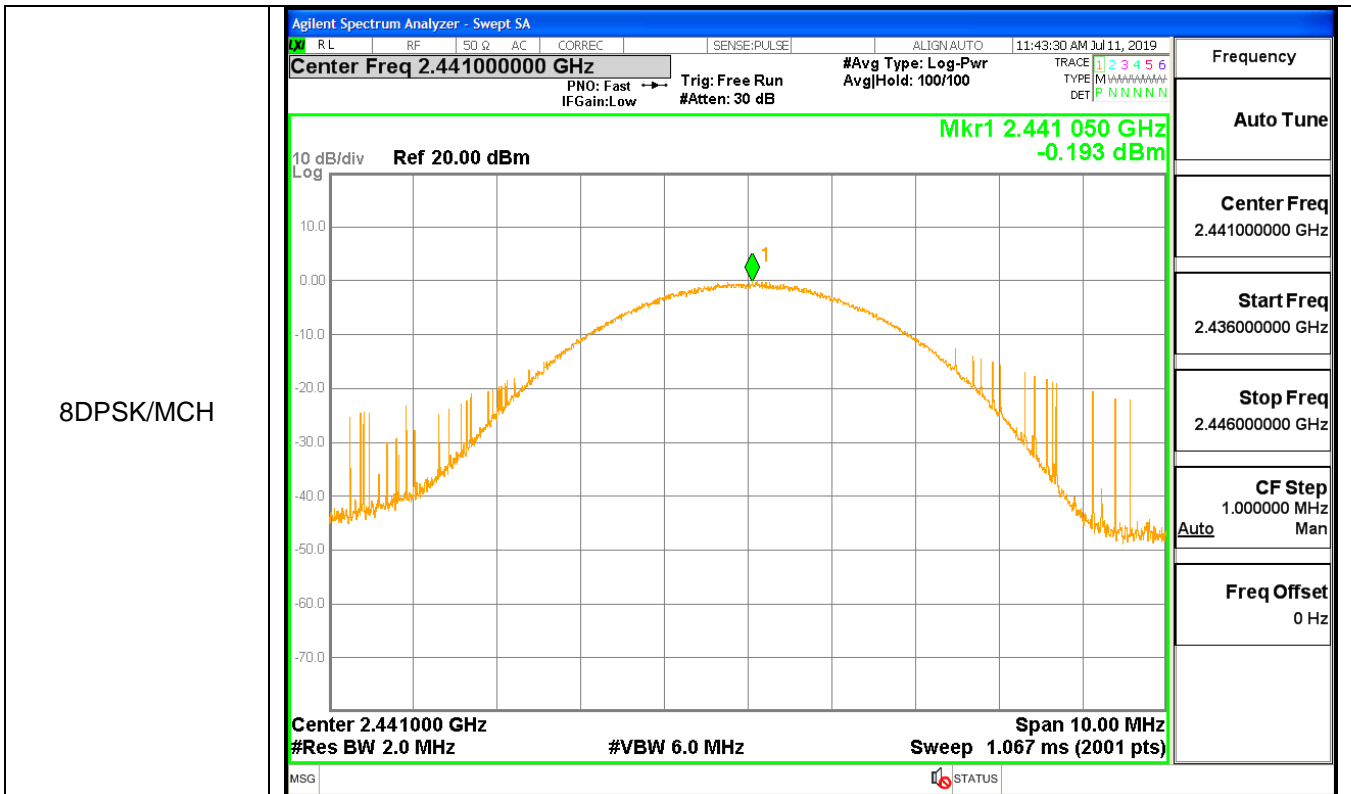


GFSK/LCH







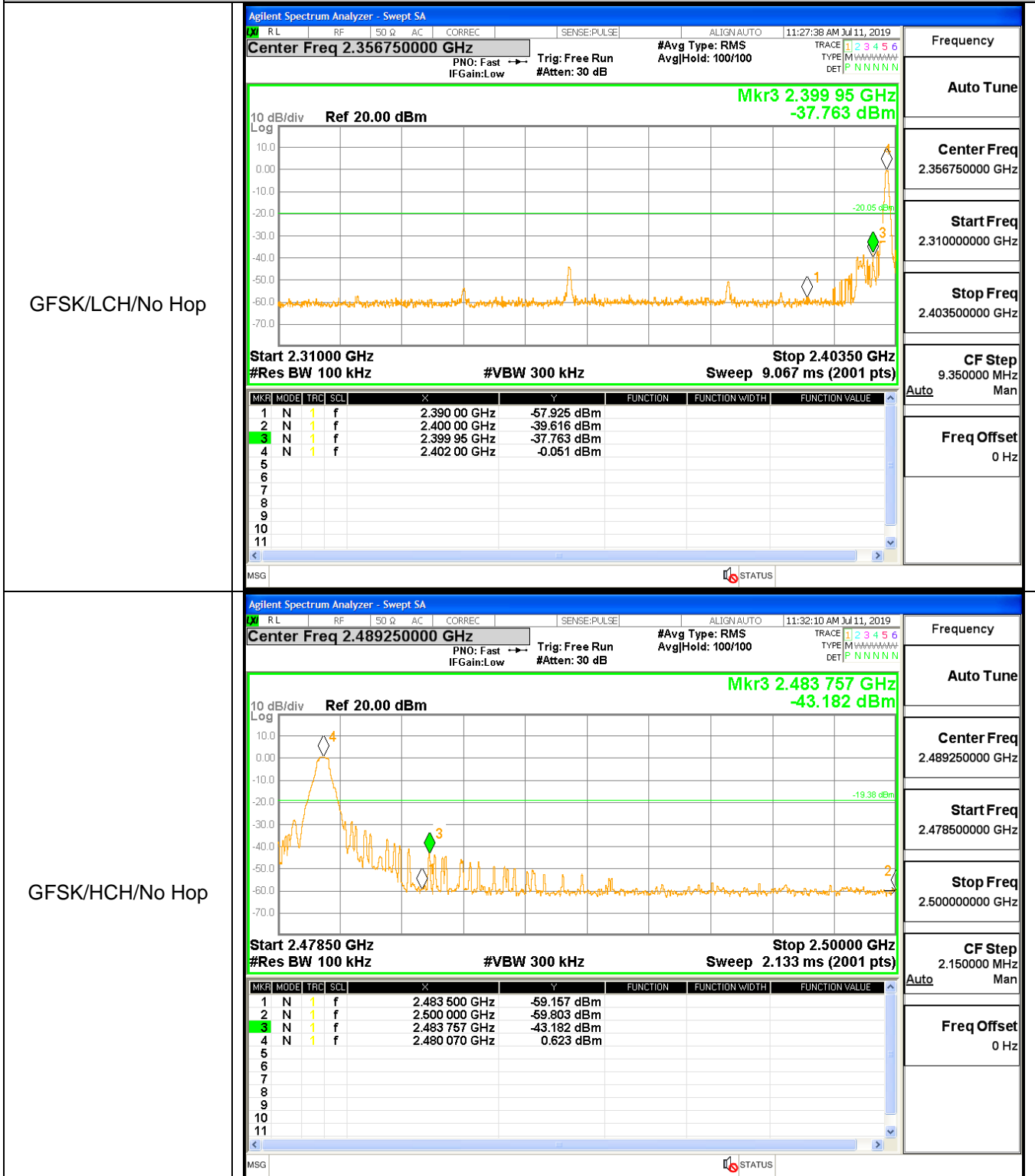


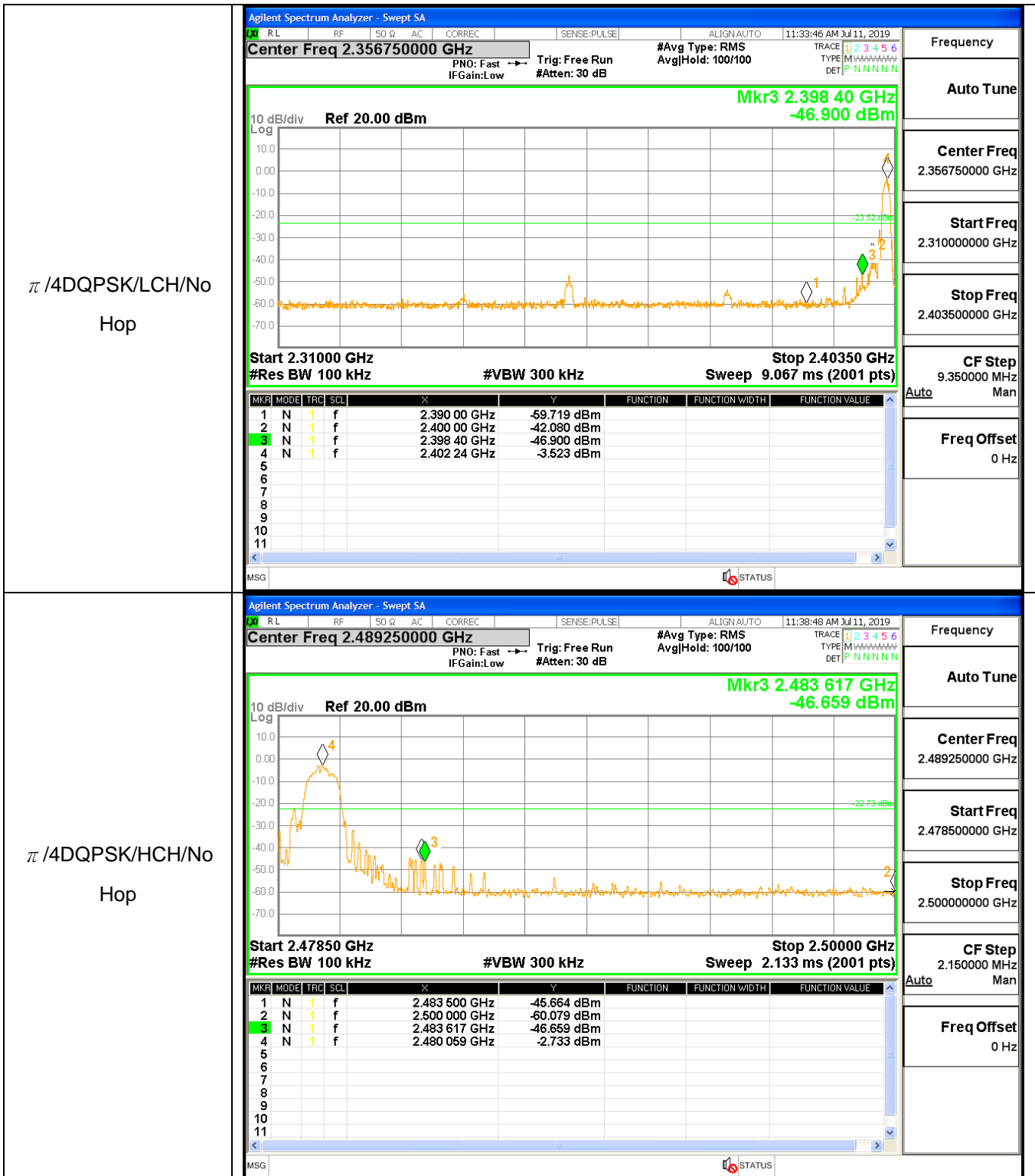
A.6 Band-edge for RF Conducted Emissions

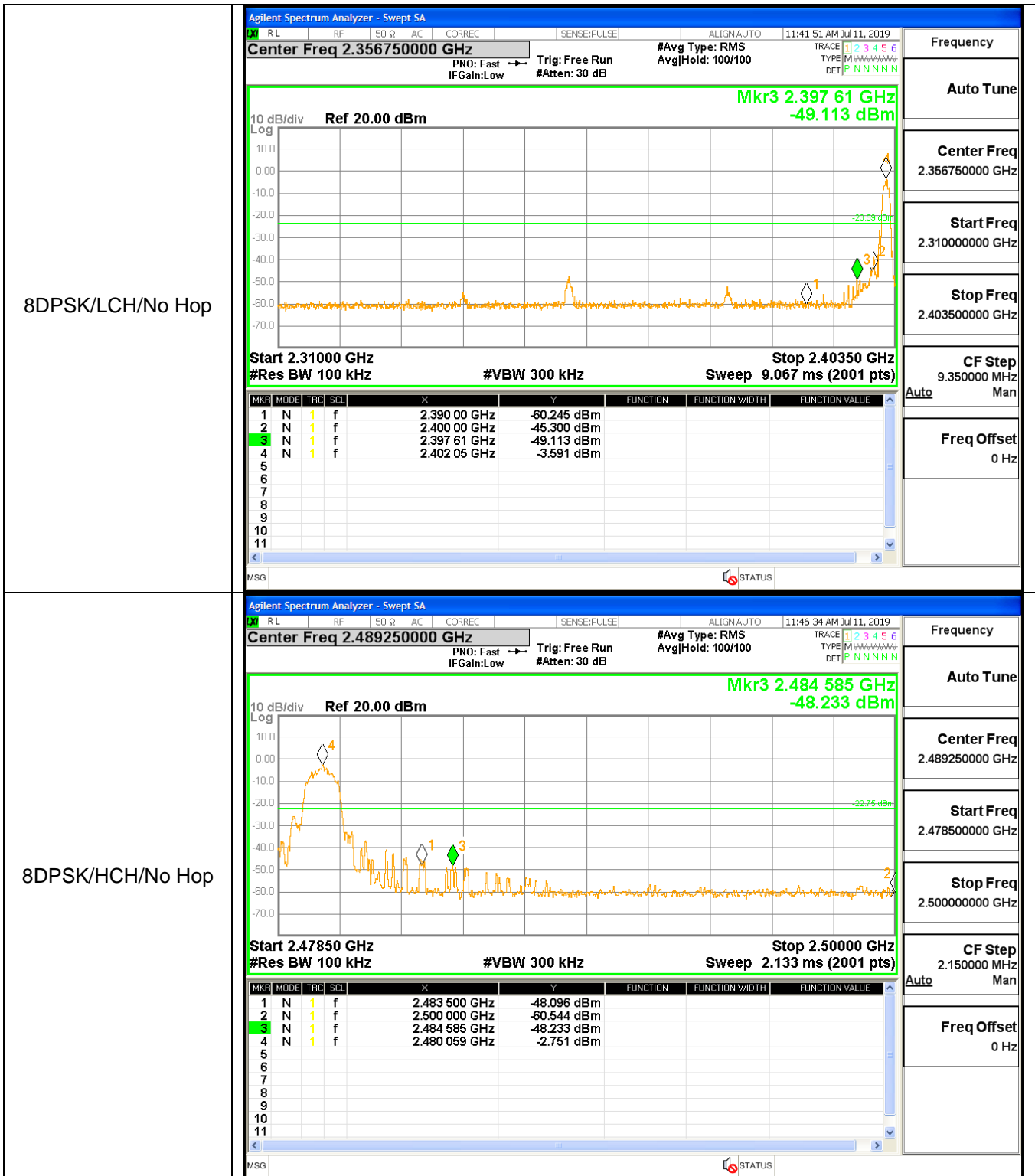
Type	Carrier Frequency(MHz)	Frequency(MHz)	Carrier Frequency Power [dBm]	Bandedge Peak(dBm)	Upper limit(dBm)	Conclusion
1DH5	2402	2399.95	-0.051	-37.76	-20.051	Pass
1DH5	2480	2483.76	0.623	-43.18	-19.377	Pass
2DH5	2402	2400.00	-3.523	-42.08	-23.523	Pass
2DH5	2480	2483.50	-2.733	-45.66	-22.733	Pass
3DH5	2402	2400.00	-3.591	-45.30	-23.591	Pass
3DH5	2480	2483.50	-2.751	-48.10	-22.751	Pass
1DH5-Hopping	2402	2398.05	0.009	-39.12	-19.991	Pass
1DH5-Hopping	2480	2499.07	0.817	-44.50	-19.183	Pass
2DH5-Hopping	2402	2400.00	-3.348	-43.12	-23.348	Pass
2DH5-Hopping	2480	2494.21	-2.679	-47.94	-22.679	Pass
3DH5-Hopping	2402	2400.00	-3.317	-45.46	-23.317	Pass
3DH5-Hopping	2480	2495.08	-2.646	-47.26	-22.646	Pass

Test Graph

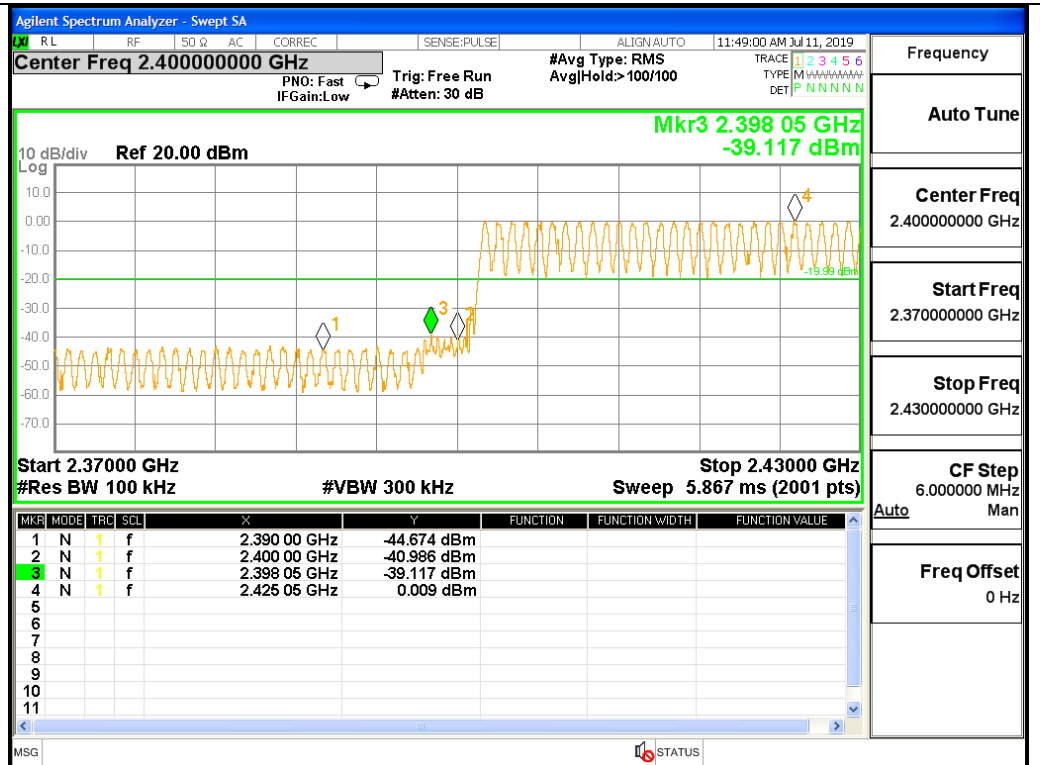
Graphs



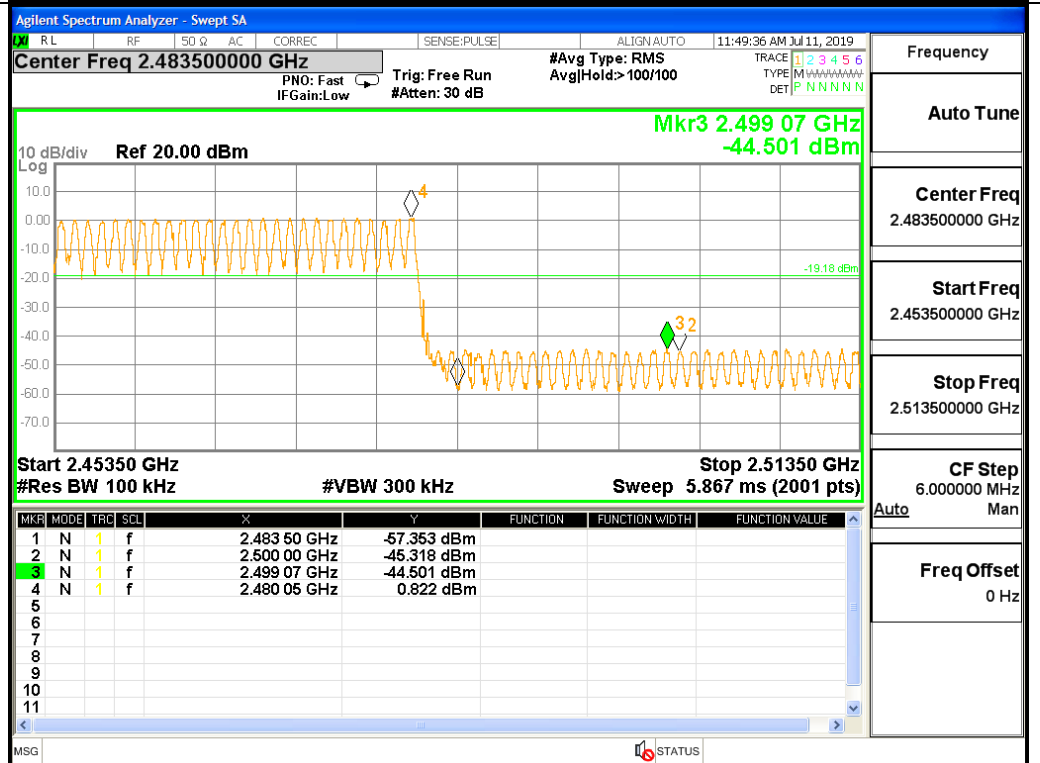




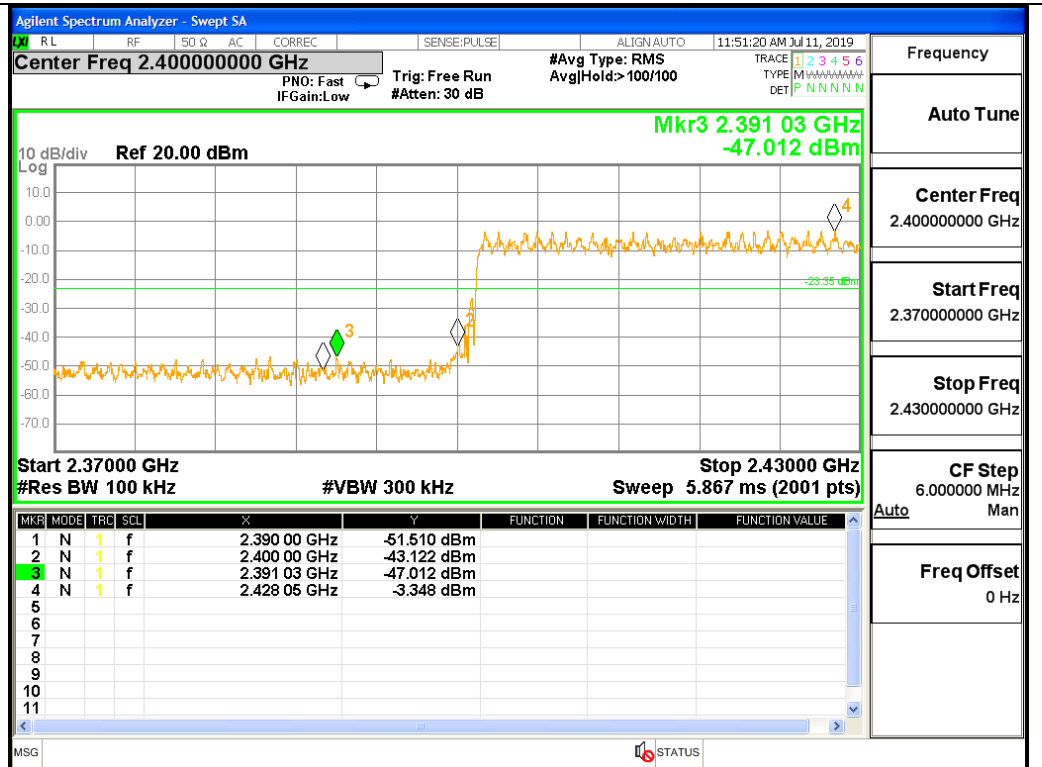
GFSK/LCH/Hop



GFSK/HCH/Hop

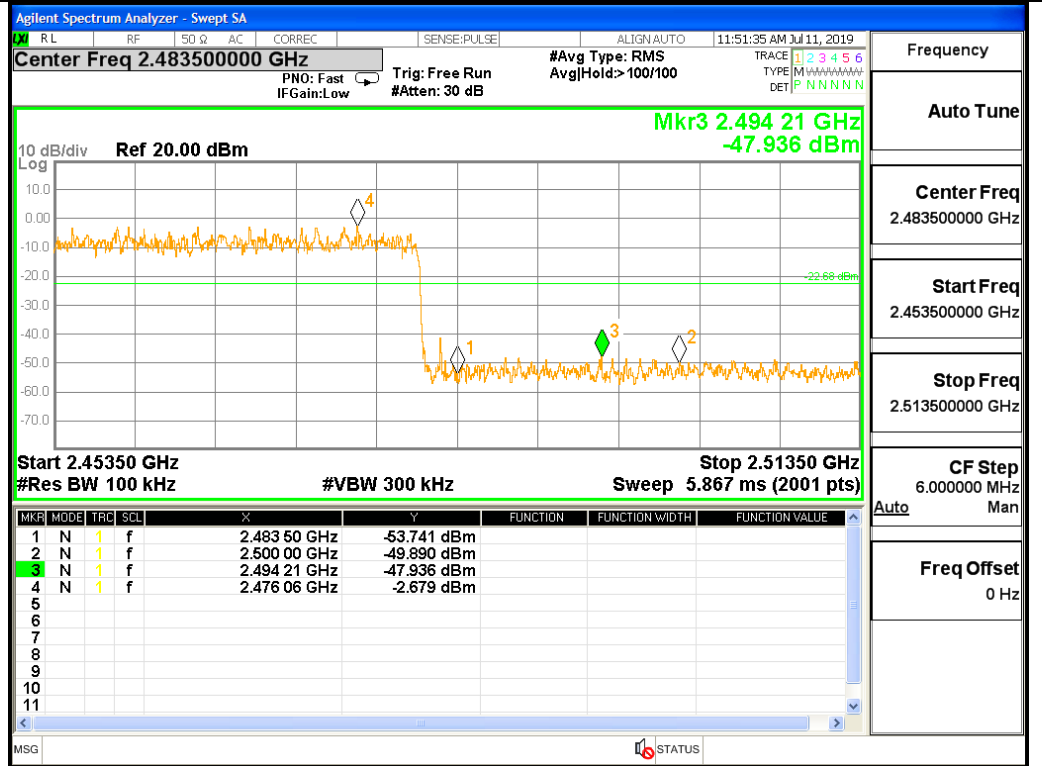


π /4DQPSK/LCH/Hop



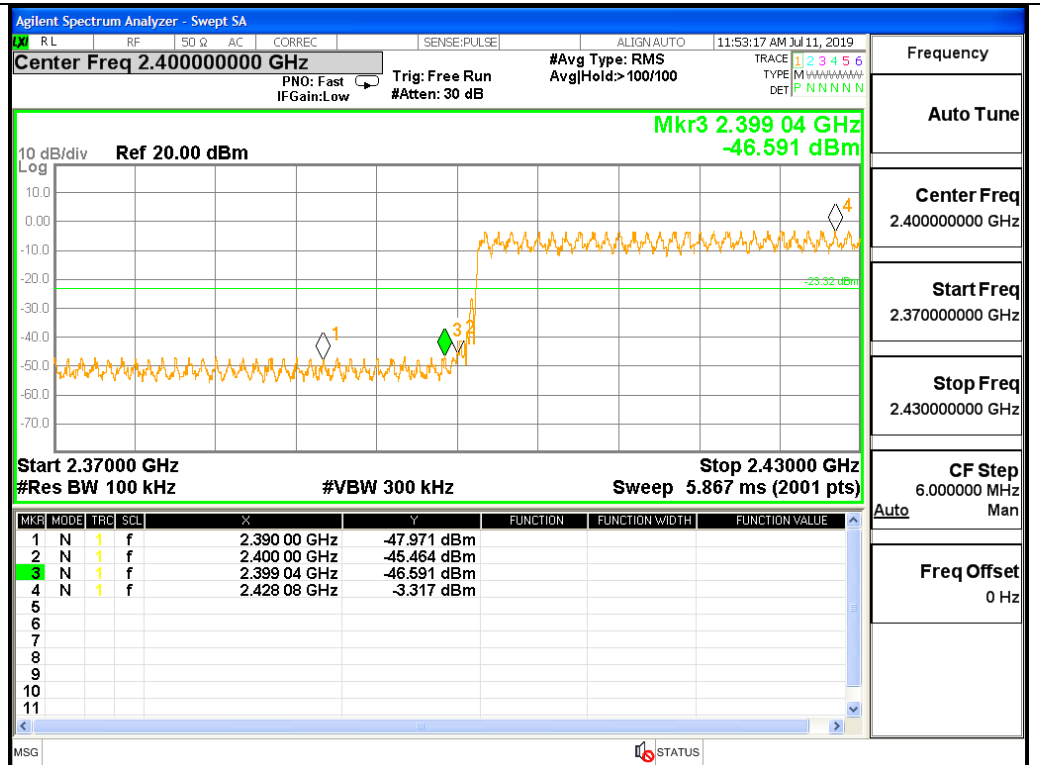
Frequency
Auto Tune
Center Freq 2.40000000 GHz
Start Freq 2.37000000 GHz
Stop Freq 2.43000000 GHz
CF Step 6.000000 MHz
Auto Man
Freq Offset 0 Hz

π /4DQPSK/HCH/Hop

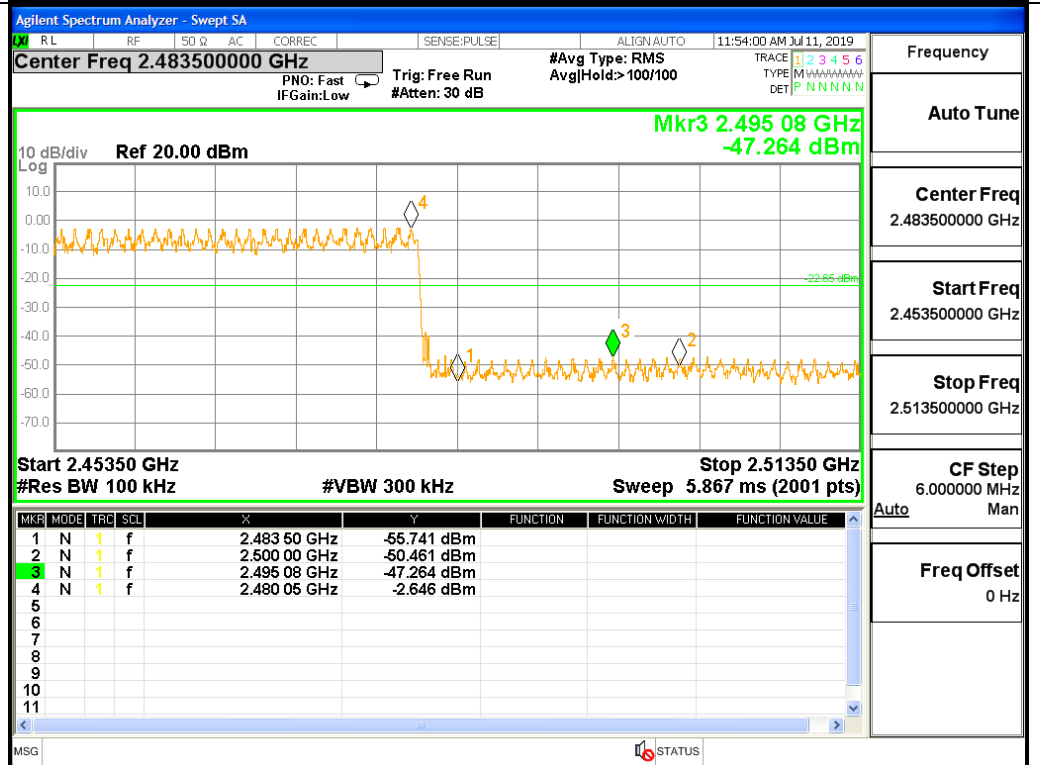


Frequency
Auto Tune
Center Freq 2.48350000 GHz
Start Freq 2.45350000 GHz
Stop Freq 2.51350000 GHz
CF Step 6.000000 MHz
Auto Man
Freq Offset 0 Hz

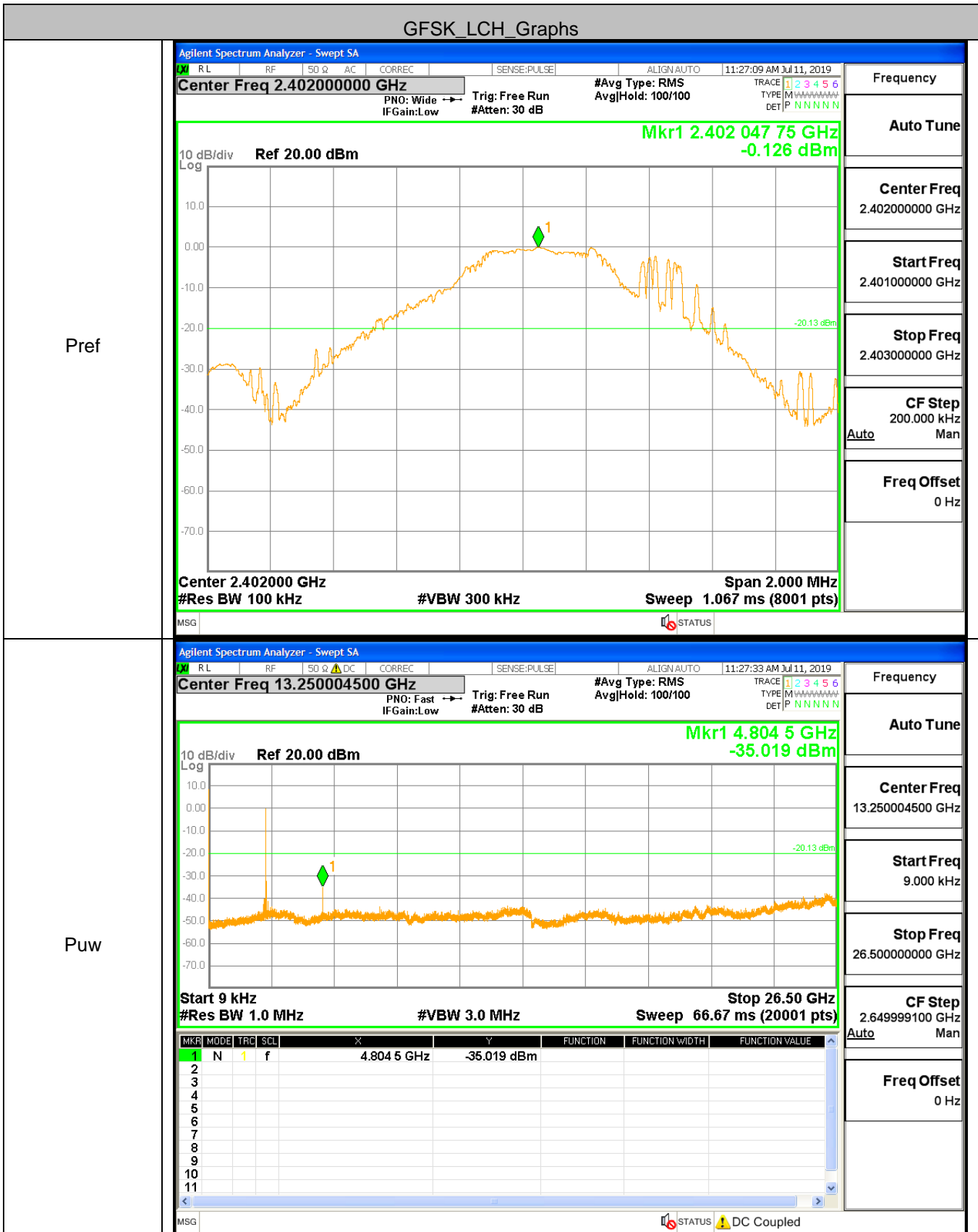
8DPSK/LCH/Hop



8DPSK/HCH/Hop

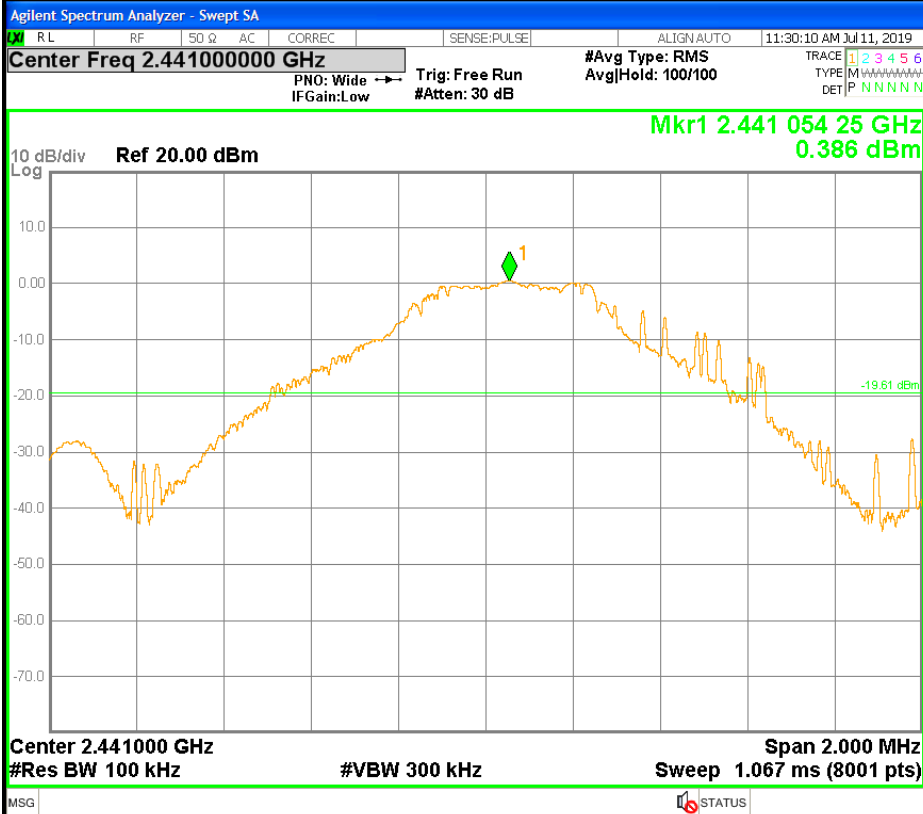


A.7 RF Conducted Spurious Emissions Test Graph



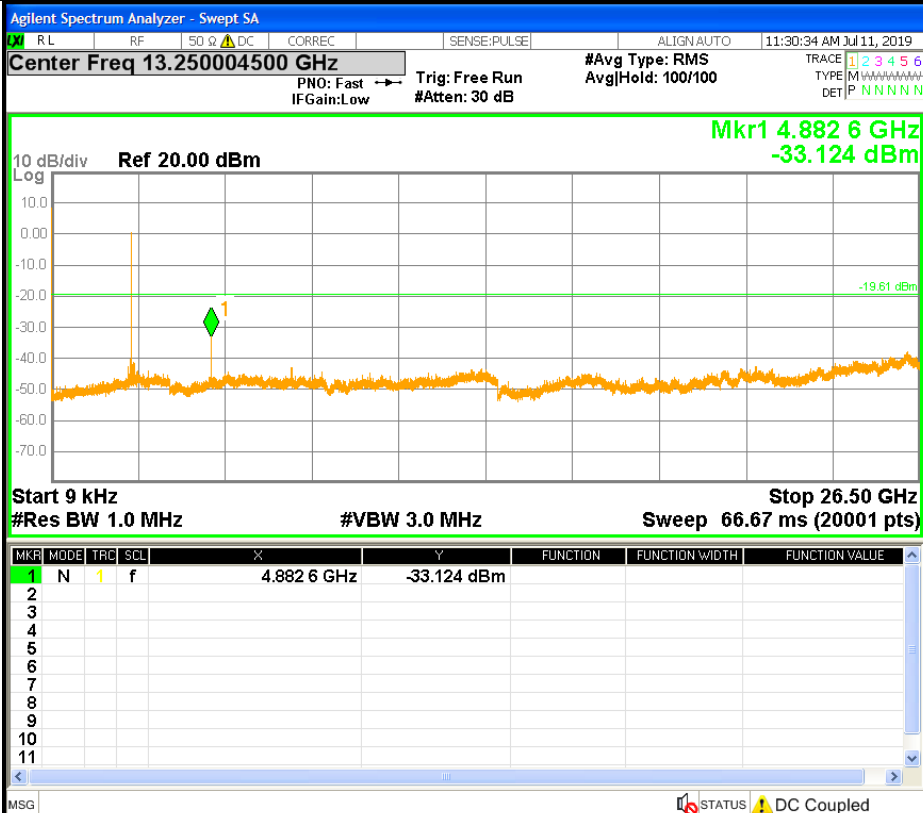
GFSK_MCH_Graphs

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

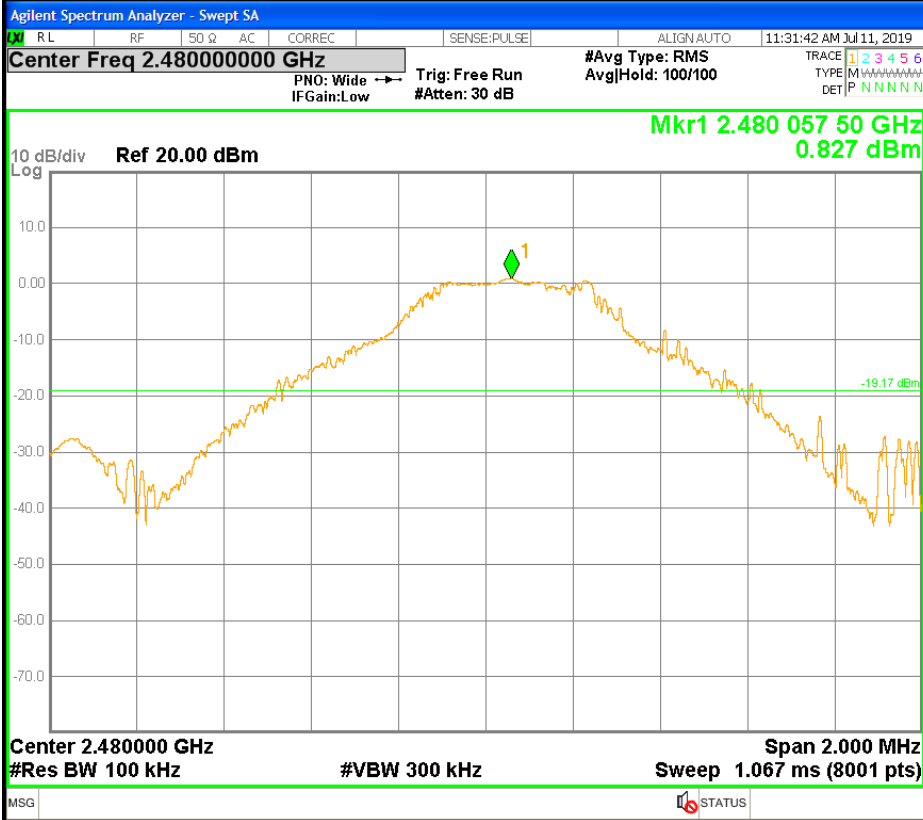
Puw



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

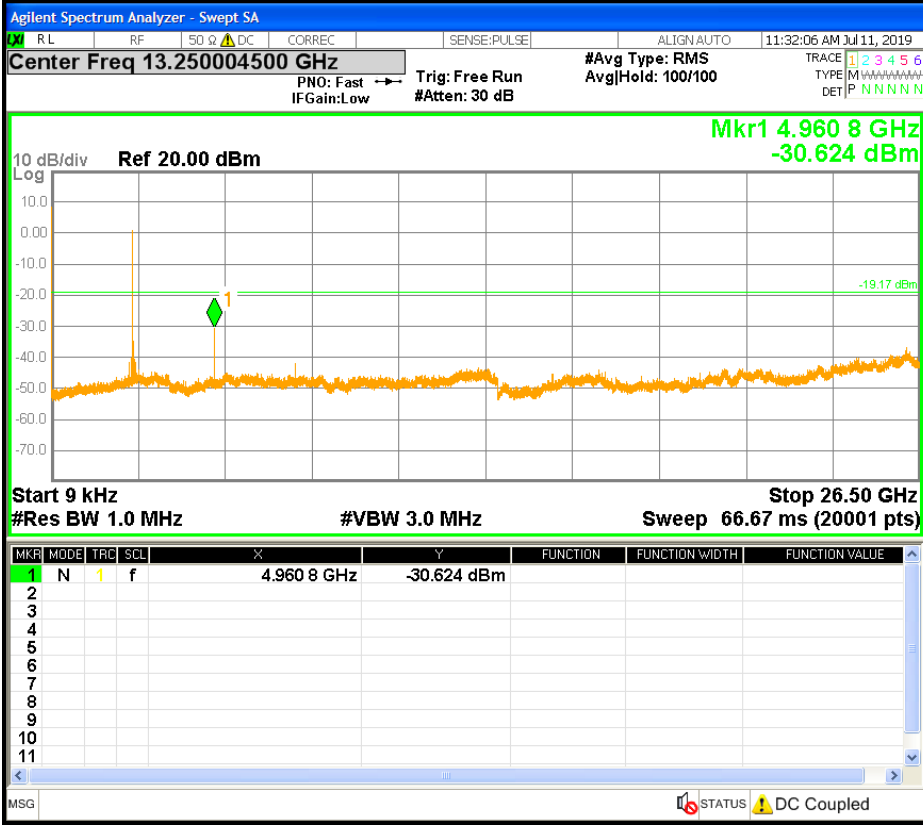
GFSK_HCH_Graphs

Pref



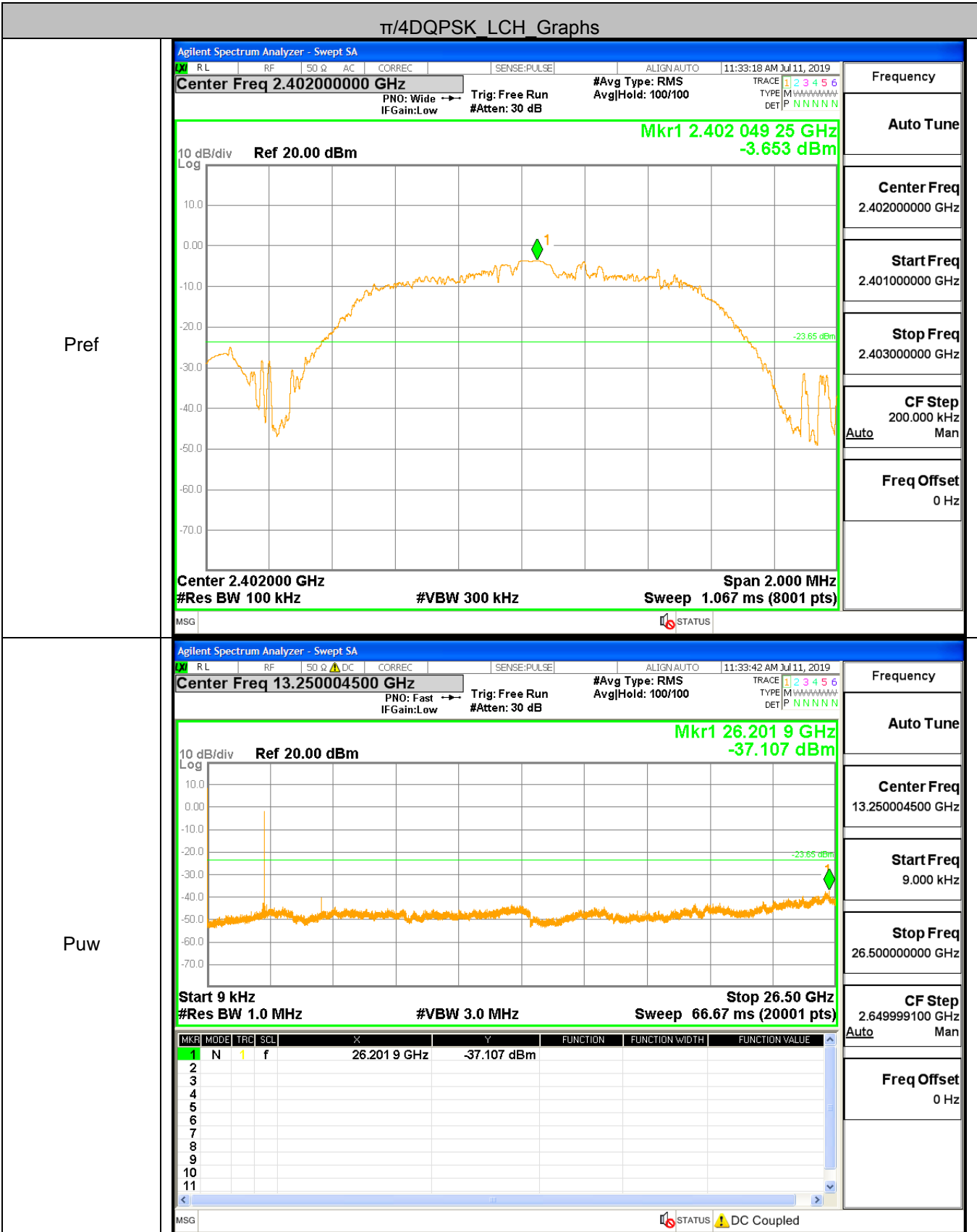
Frequency
Auto Tune
Center Freq 2.480000000 GHz
Start Freq 2.479000000 GHz
Stop Freq 2.481000000 GHz
CF Step 200.000 kHz Auto Man
Freq Offset 0 Hz

Puw



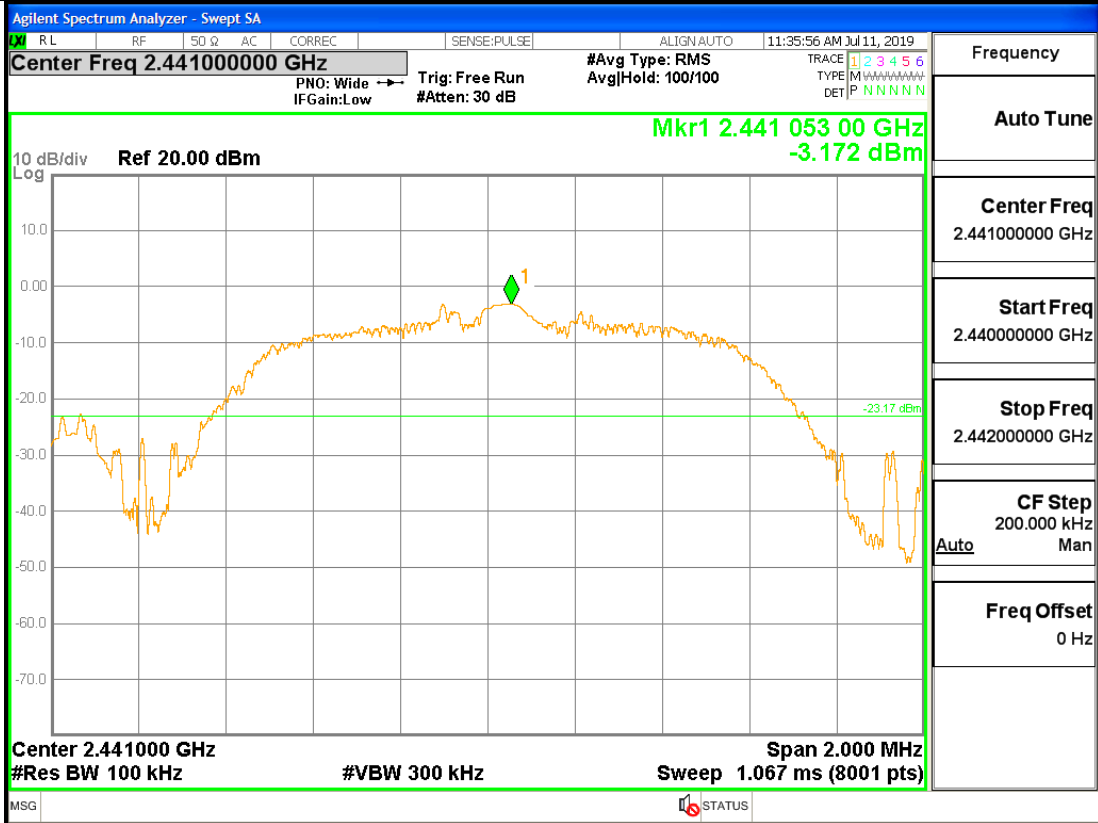
Frequency
Auto Tune
Center Freq 13.250004500 GHz
Start Freq 9.000 kHz
Stop Freq 26.500000000 GHz
CF Step 2.649999100 GHz Auto Man
Freq Offset 0 Hz

$\pi/4$ DQPSK LCH Graphs

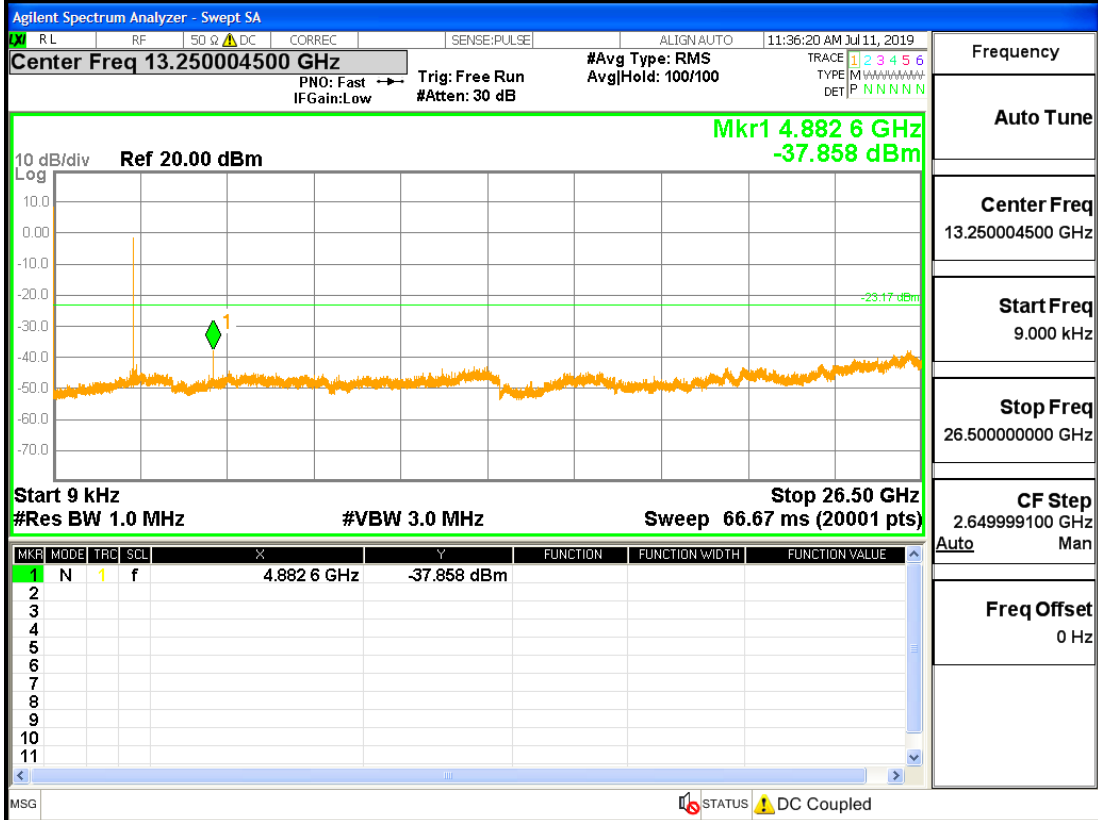


π/4DQPSK MCH Graphs

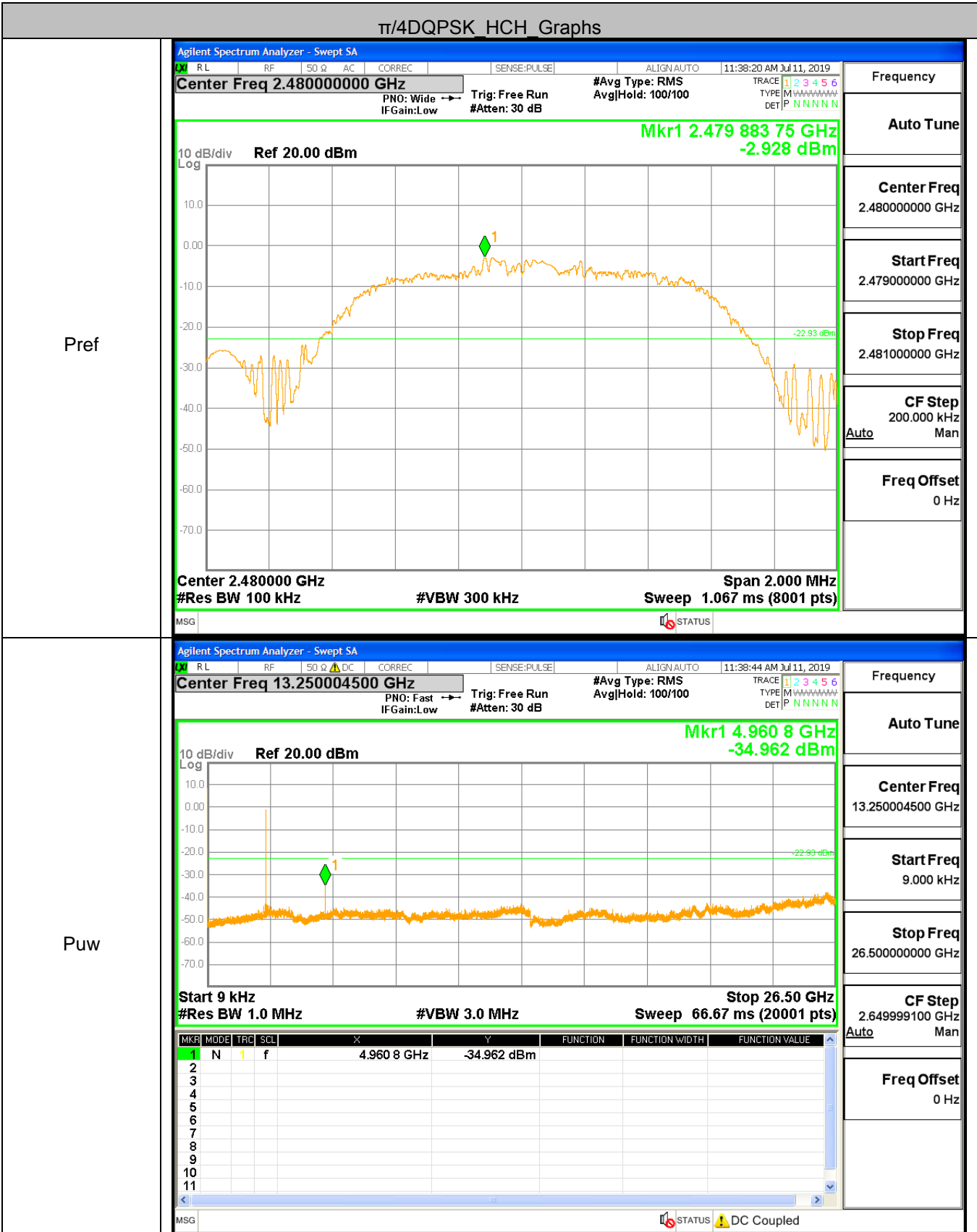
Pref



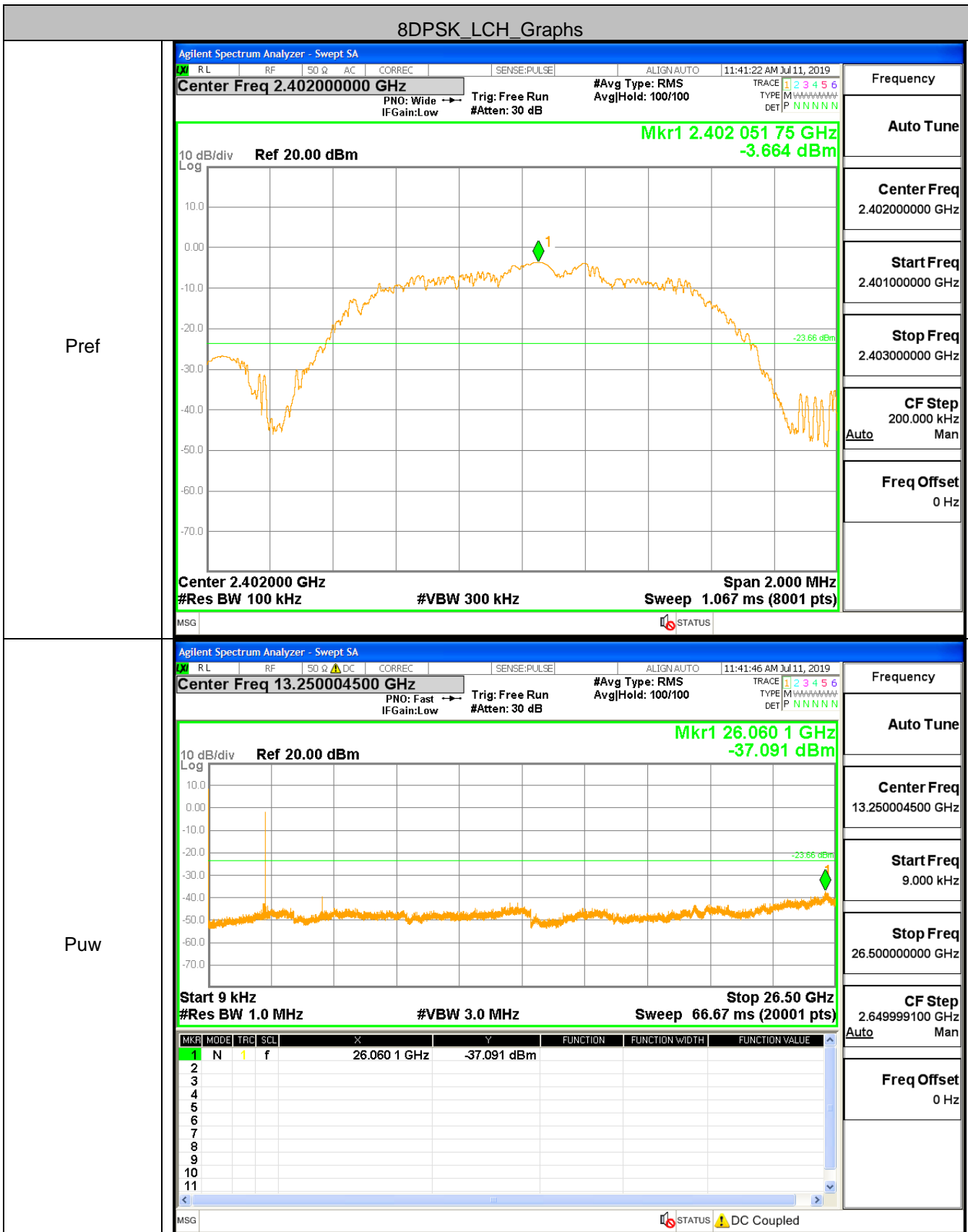
Puw



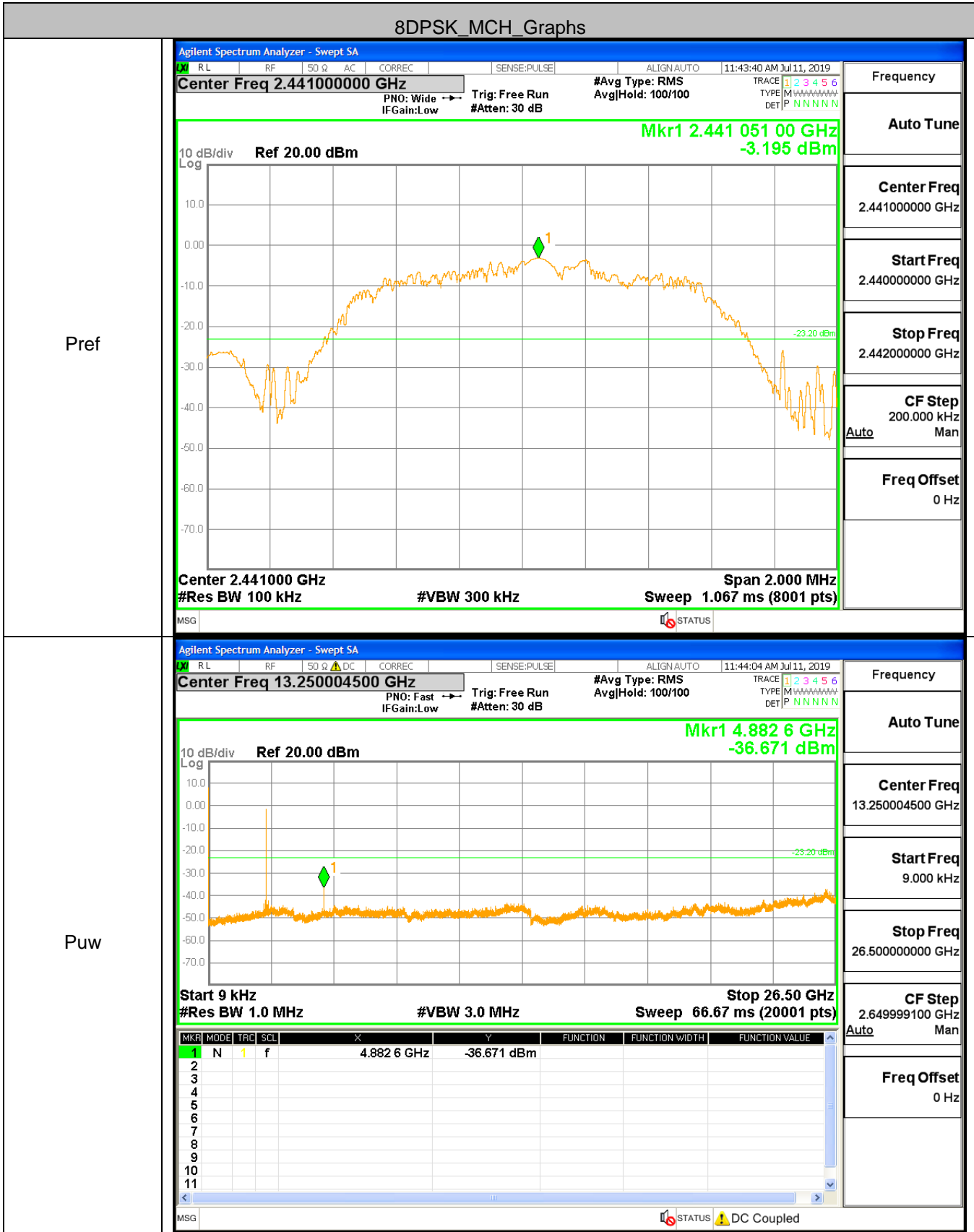
$\pi/4$ DQPSK HCH Graphs



8DPSK_LCH_Graphs

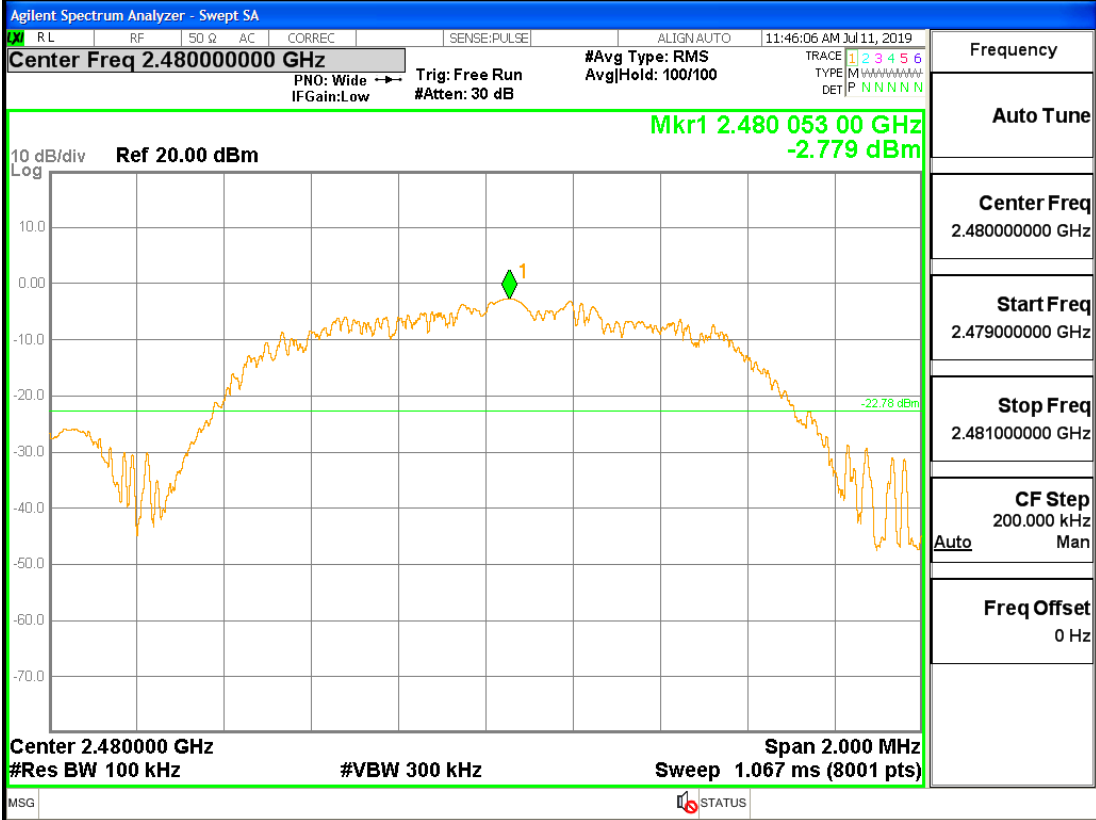


8DPSK_MCH_Graphs

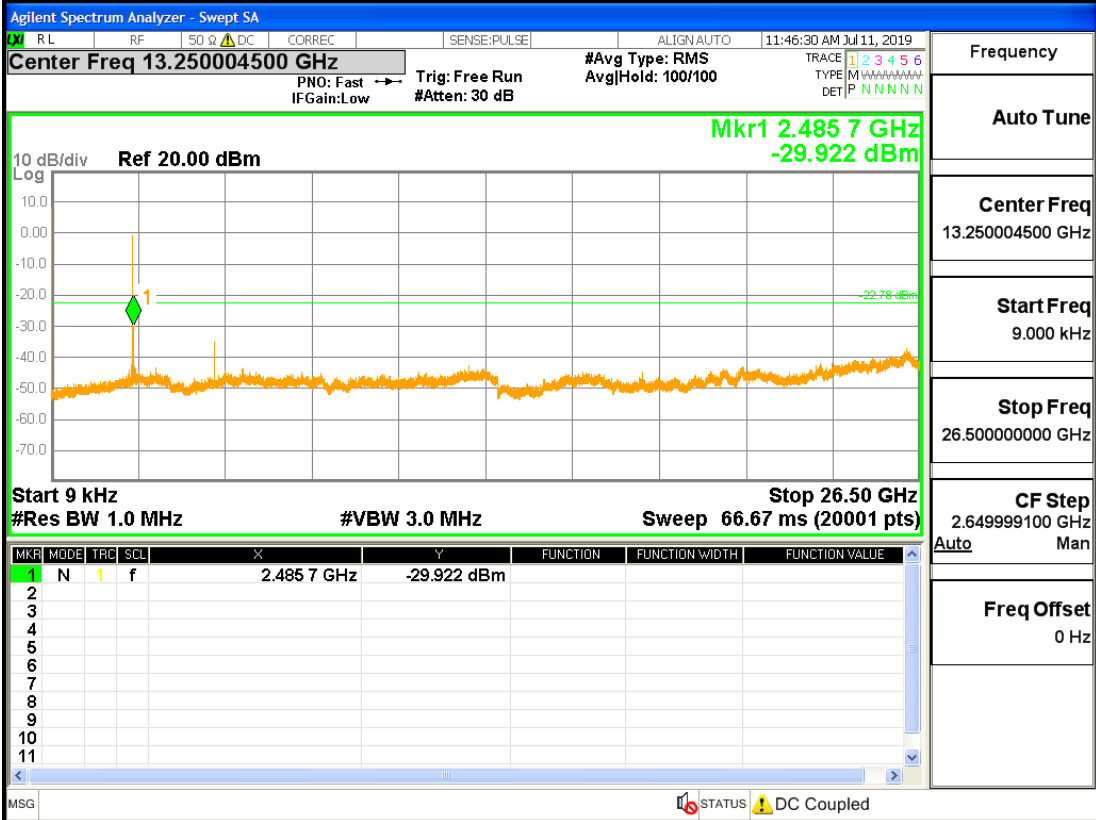


8DPSK_HCH_Graphs

Pref



Puw

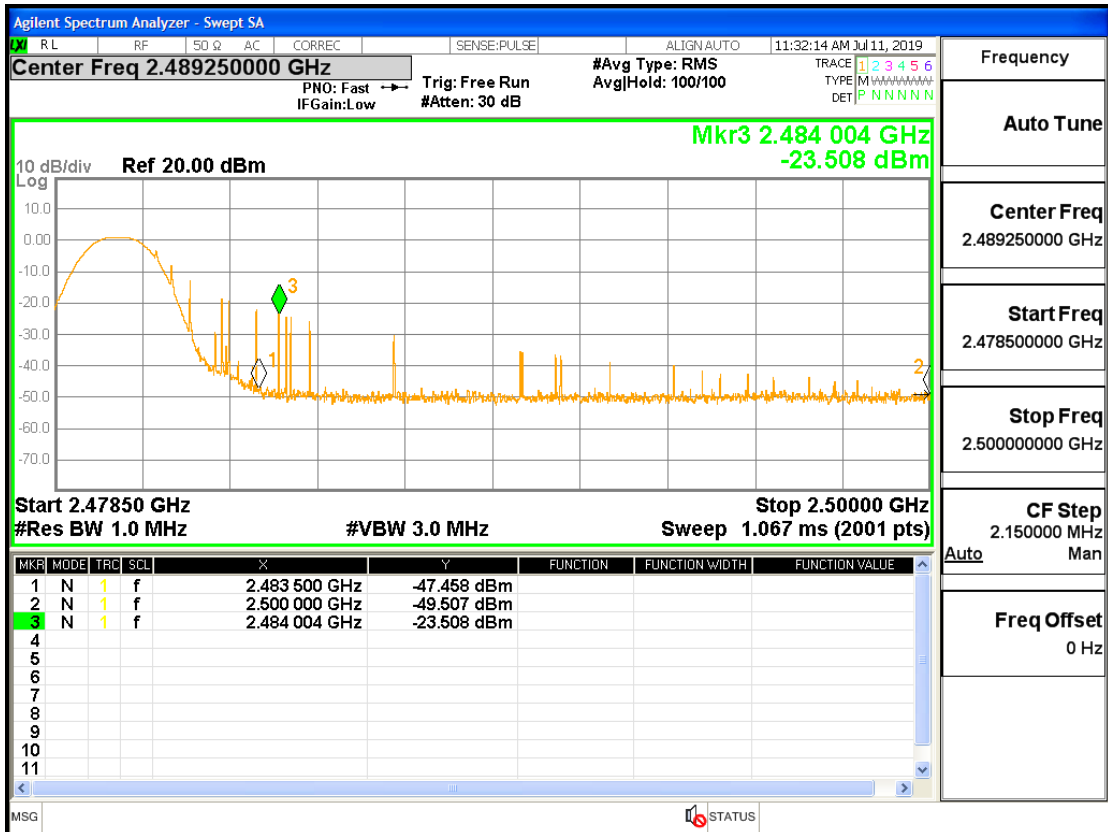


A.8 Restrict-band band-edge measurements

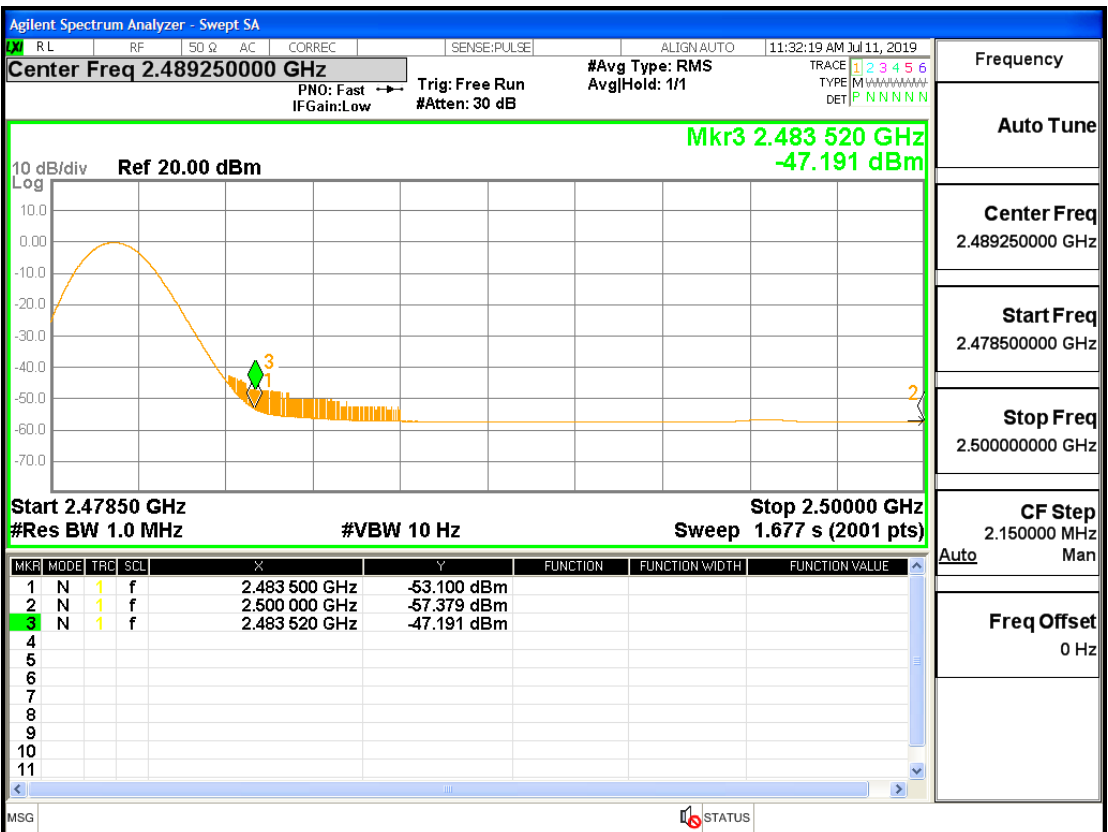
Type	Carrier Frequency (MHz)	Frequency(M Hz)	Gain	Ground Factor	Peak Value(dBm)	E [dBuV/m]	Limit [dBuV/m]	Conclusion
1DH5	2402	2353.95	2.00	0.00	-40.20	57.00	74	Pass
1DH5	2480	2484.00	2.00	0.00	-23.51	73.69	74	Pass
2DH5	2402	2354.27	2.00	0.00	-43.82	53.38	74	Pass
2DH5	2480	2483.75	2.00	0.00	-26.88	70.32	74	Pass
3DH5	2402	2354.32	2.00	0.00	-43.78	53.42	74	Pass
3DH5	2480	2484.33	2.00	0.00	-28.15	69.05	74	Pass

Type	Carrier Frequency (MHz)	Frequency(M Hz)	Gain	Ground Factor	Average Value(dBm)	E [dBuV/m]	Limit [dBuV/m]	Conclusion
1DH5	2402	2354.04	2.00	0.00	-45.42	51.78	54	Pass
1DH5	2480	2483.52	2.00	0.00	-47.19	50.01	54	Pass
2DH5	2402	2354.04	2.00	0.00	-49.94	47.26	54	Pass
2DH5	2480	2483.86	2.00	0.00	-50.32	46.88	54	Pass
3DH5	2402	2354.04	2.00	0.00	-49.67	47.53	54	Pass
3DH5	2480	2483.50	2.00	0.00	-50.00	47.20	54	Pass

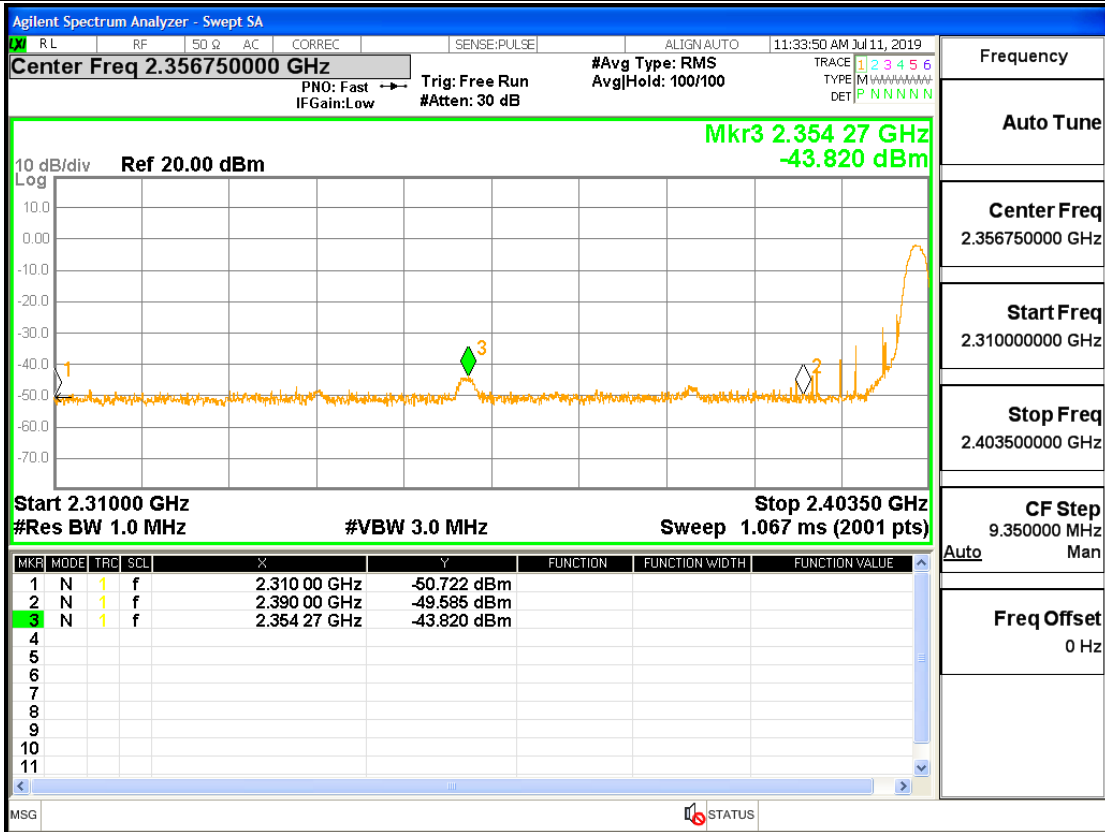
Restrict-band band-edge measurements_2480_PEAK_DH5



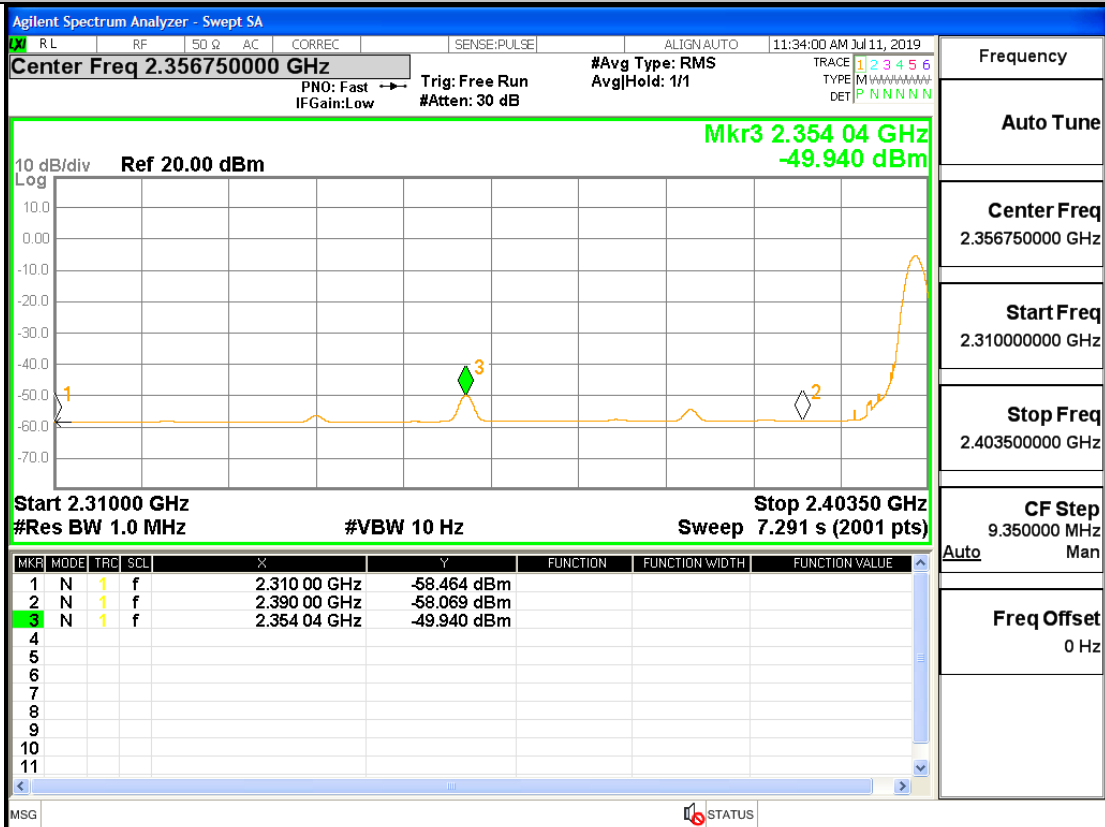
Restrict-band band-edge measurements_2480_AV_DH5



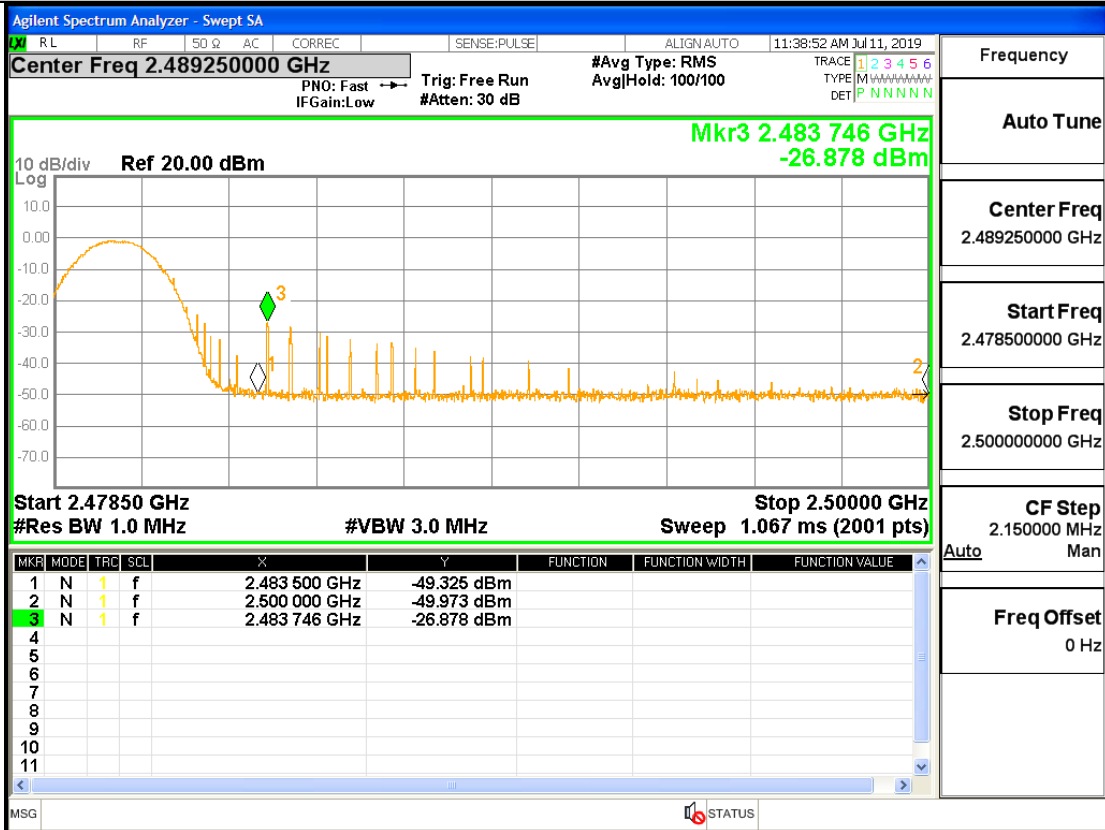
Restrict-band band-edge measurements_2402_PEAK_2DH5



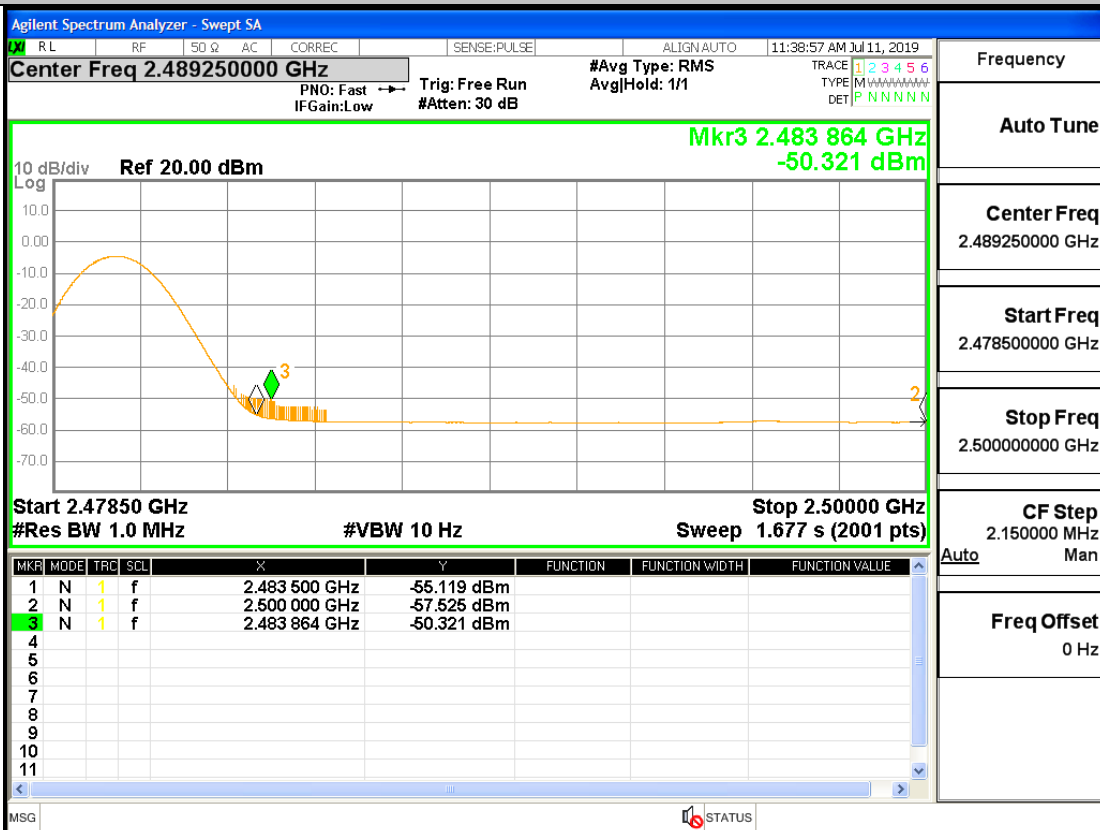
Restrict-band band-edge measurements_2402_AV_2DH5



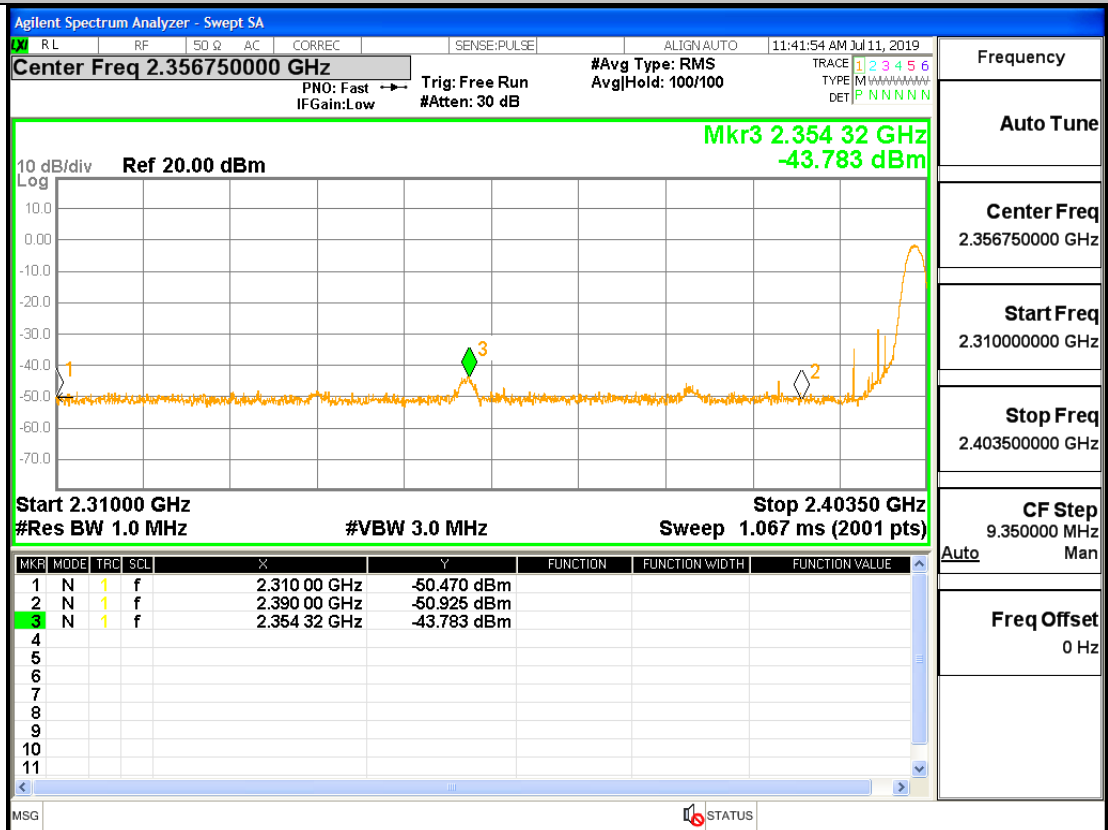
Restrict-band band-edge measurements_2480_PEAK_2DH5



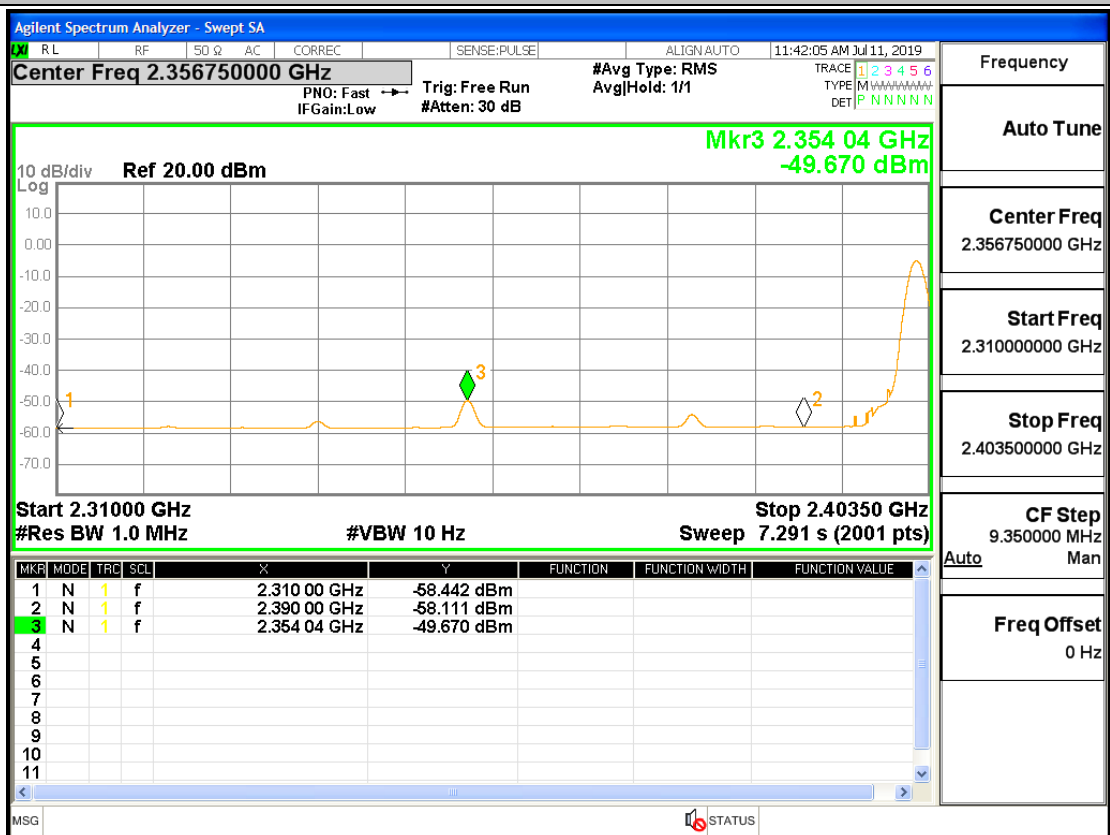
Restrict-band band-edge measurements_2480_AV_2DH5



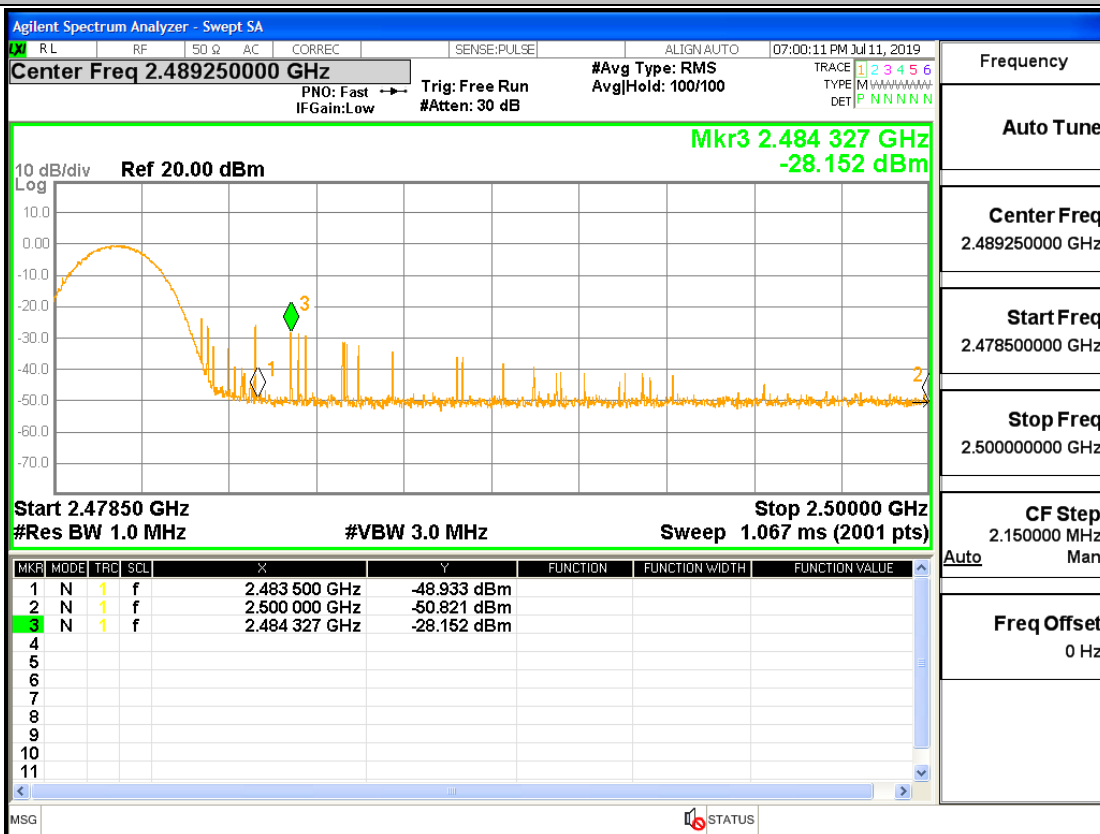
Restrict-band band-edge measurements_2402_PEAK_3DH5



Restrict-band band-edge measurements_2402_AV_3DH5



Restrict-band band-edge measurements_2480_PEAK_3DH5



Restrict-band band-edge measurements_2480_AV_3DH5

