

Appendix A

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

Product Name: Bluetooth serial port module

Trade Mark: HC

Test Model: HC-02

FCC ID: 2AEJQHC-02

Environmental Conditions

Temperature:	21.3 ° C
Relative Humidity:	50%
ATM Pressure:	100.0 kPa
Test Engineer:	Gary Qian
Supervised by:	Eden Hu

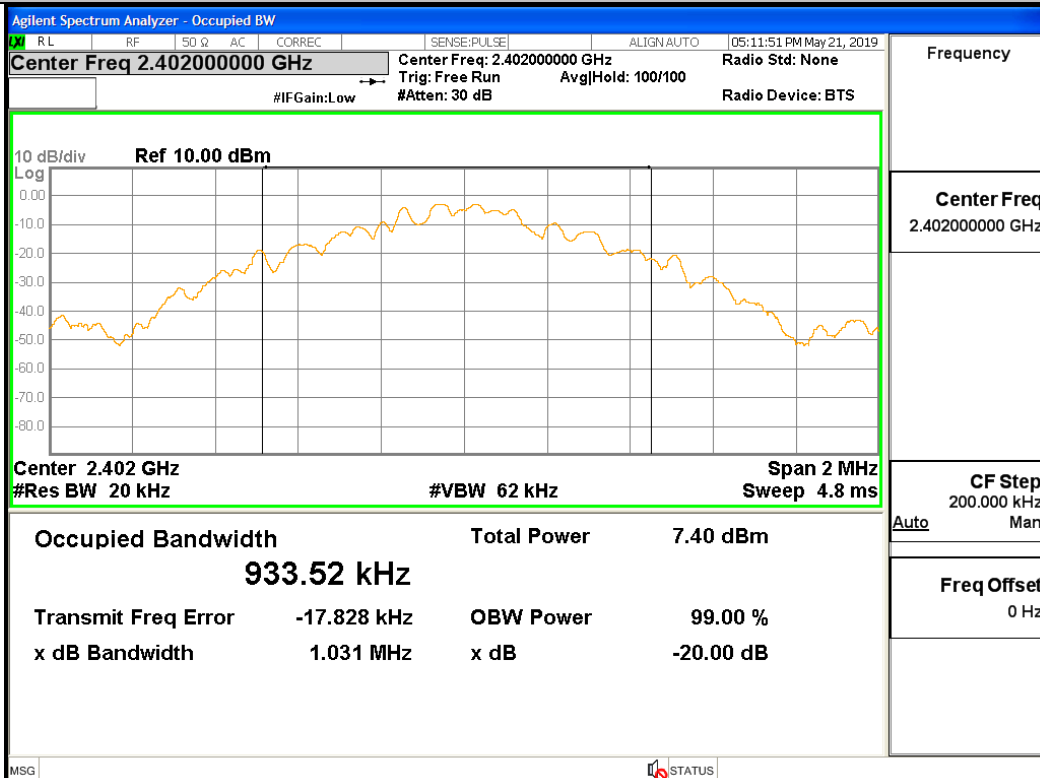
A.1 20 dB Bandwidth

Mode	Channel.	20dB Bandwidth [MHz]	Limit(MHz)	Verdict
GFSK	LCH	1.031	Not Specified	PASS
GFSK	MCH	1.033	Not Specified	PASS
GFSK	HCH	1.032	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.323	Not Specified	PASS
$\pi/4$ DQPSK	MCH	1.319	Not Specified	PASS
$\pi/4$ DQPSK	HCH	1.320	Not Specified	PASS
8DPSK	LCH	1.294	Not Specified	PASS
8DPSK	MCH	1.294	Not Specified	PASS
8DPSK	HCH	1.299	Not Specified	PASS

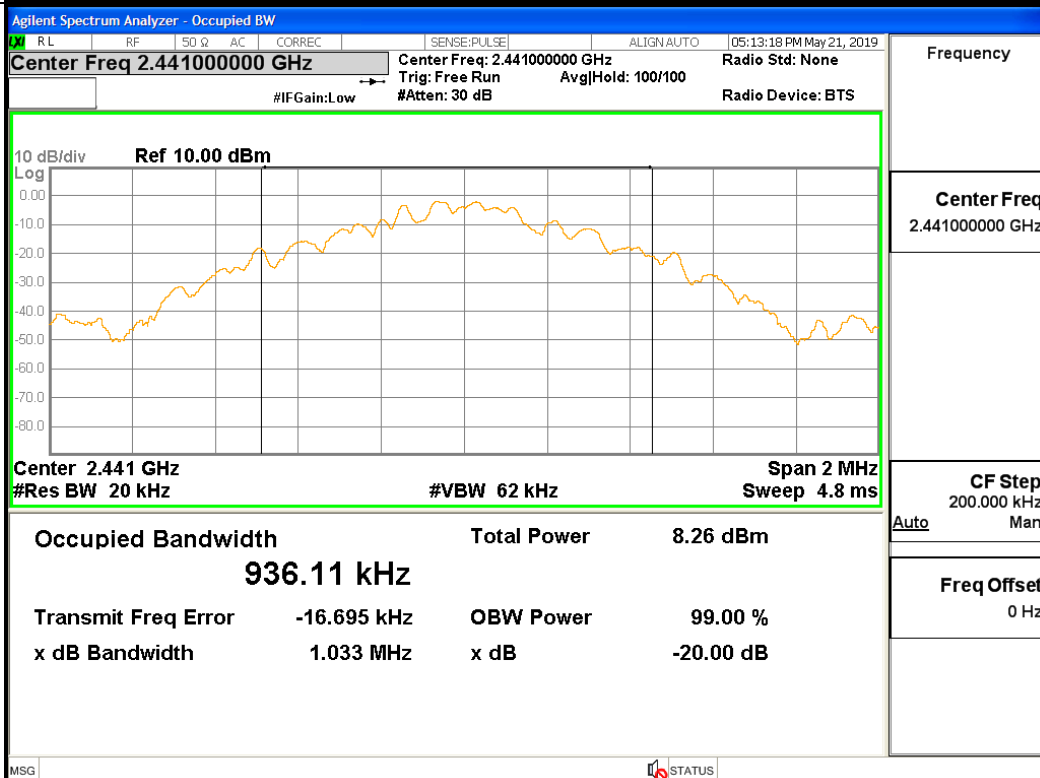
Test Graph

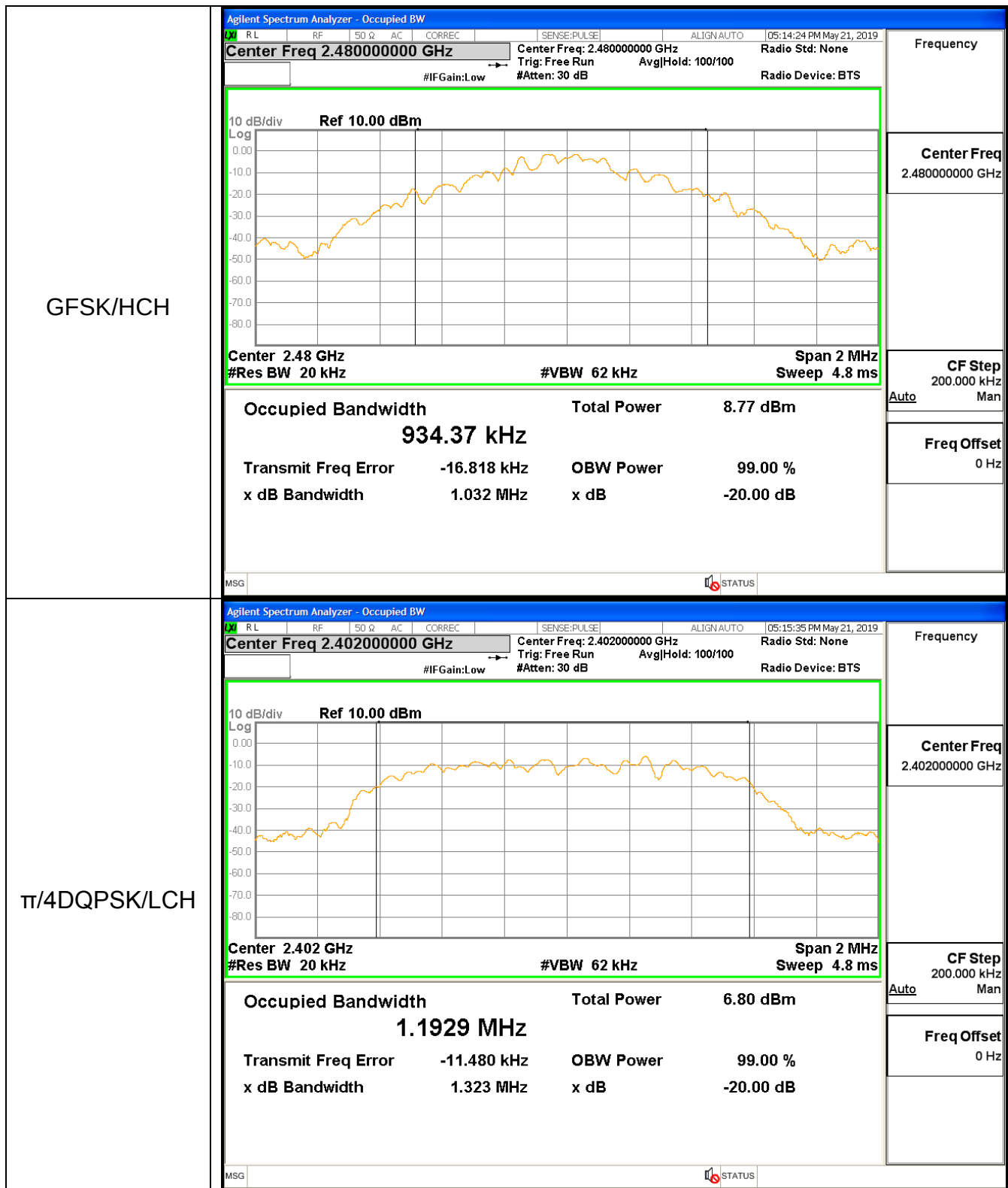
Graphs

GFSK/LCH

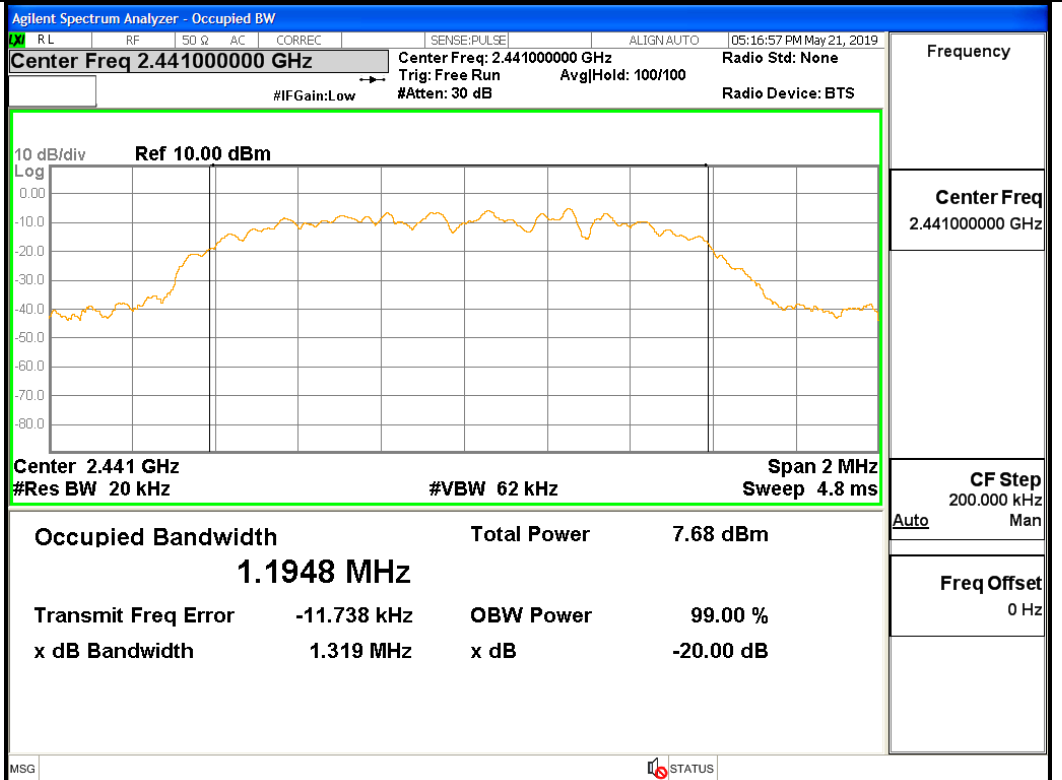


GFSK/MCH

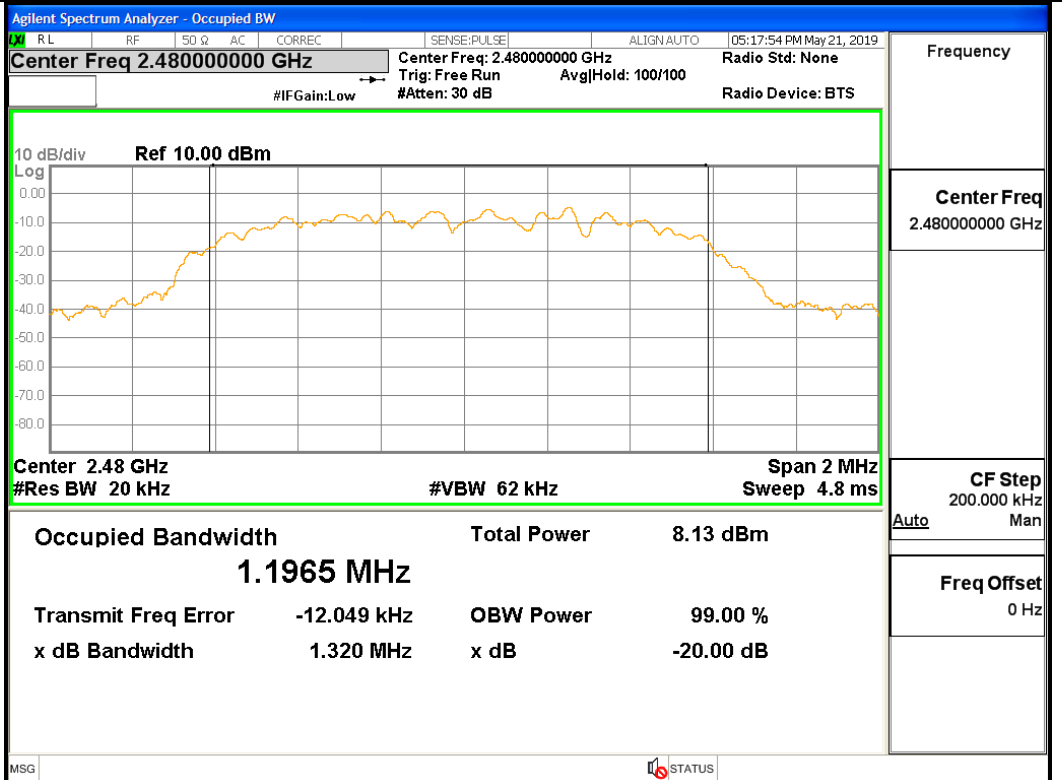


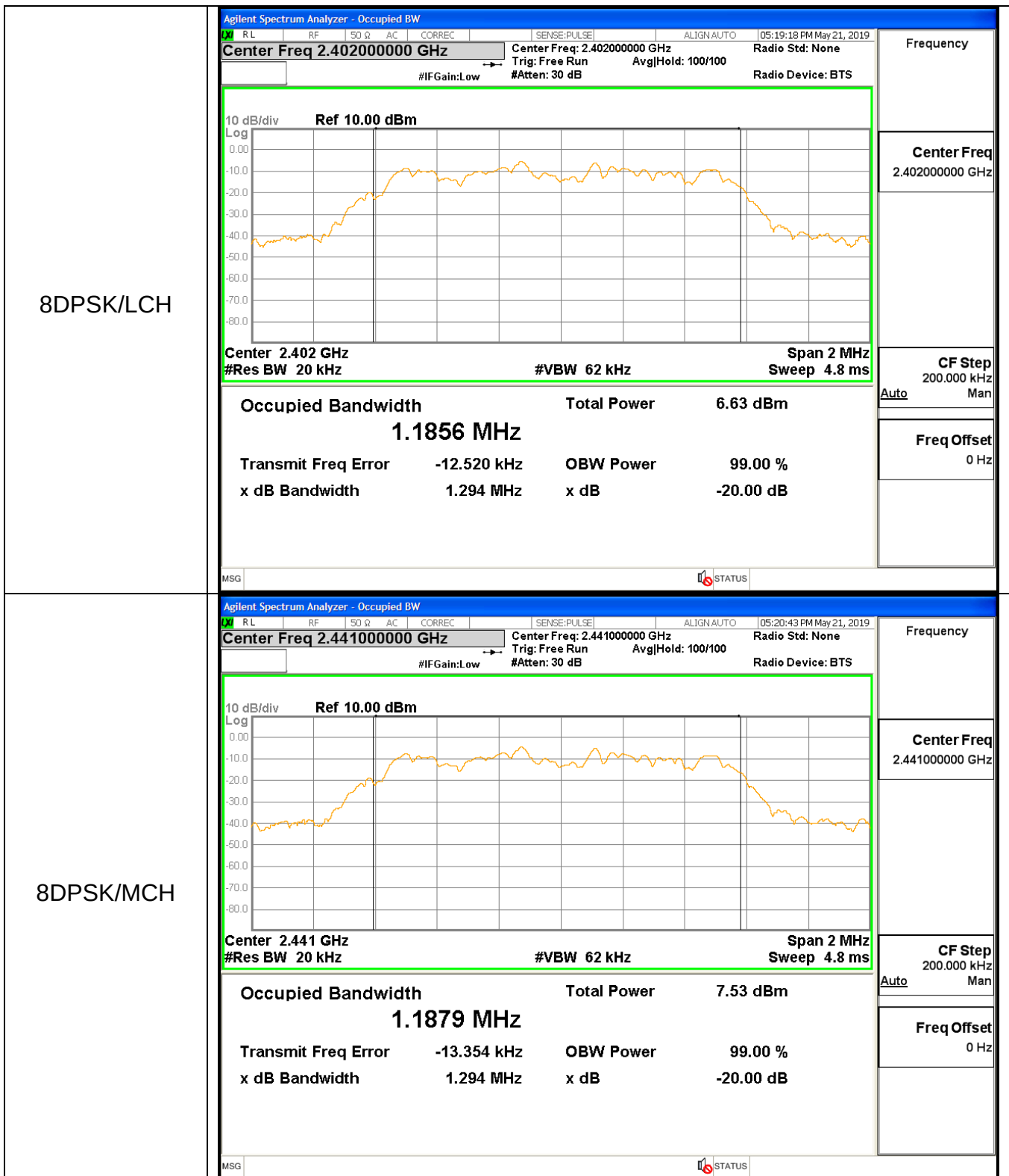


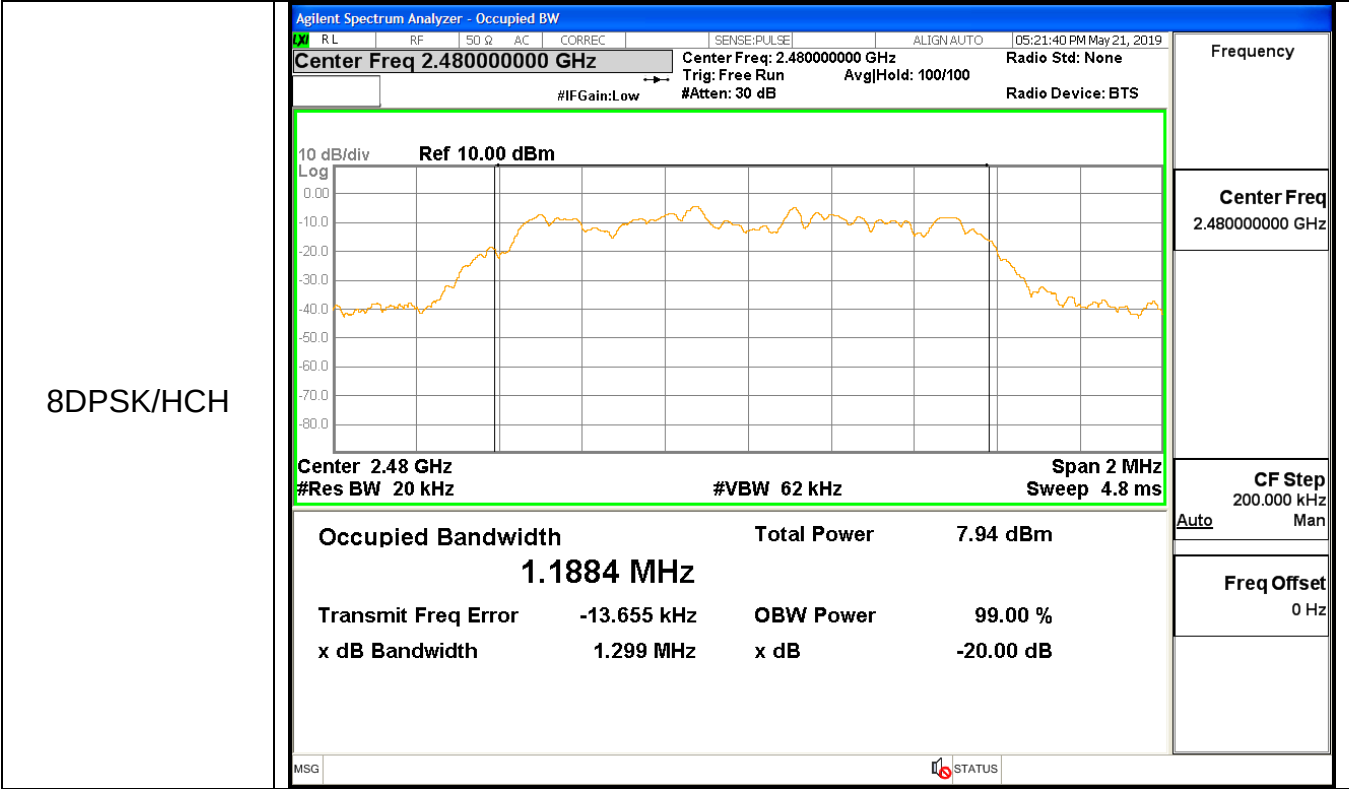
$\pi/4$ DQPSK/MCH



$\pi/4$ DQPSK/HCH



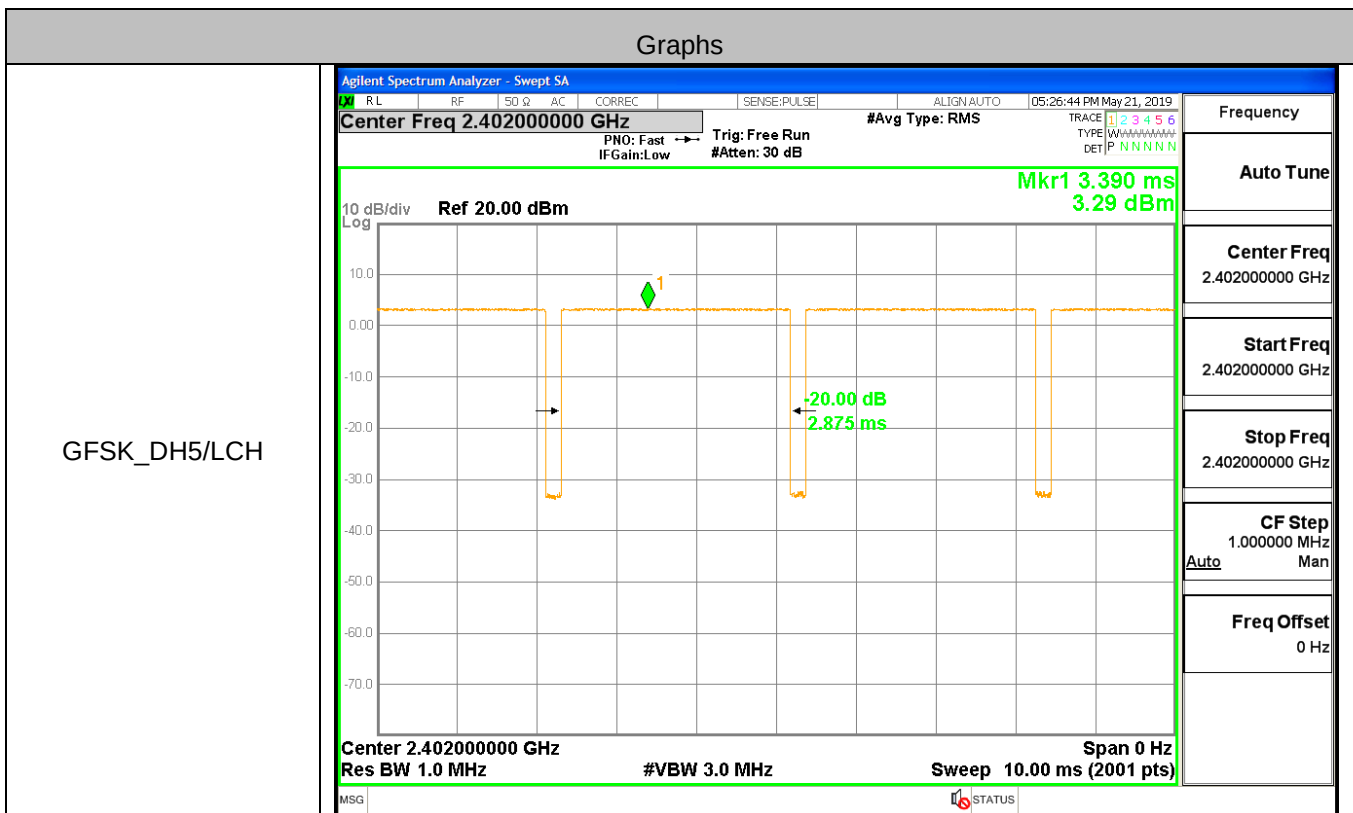




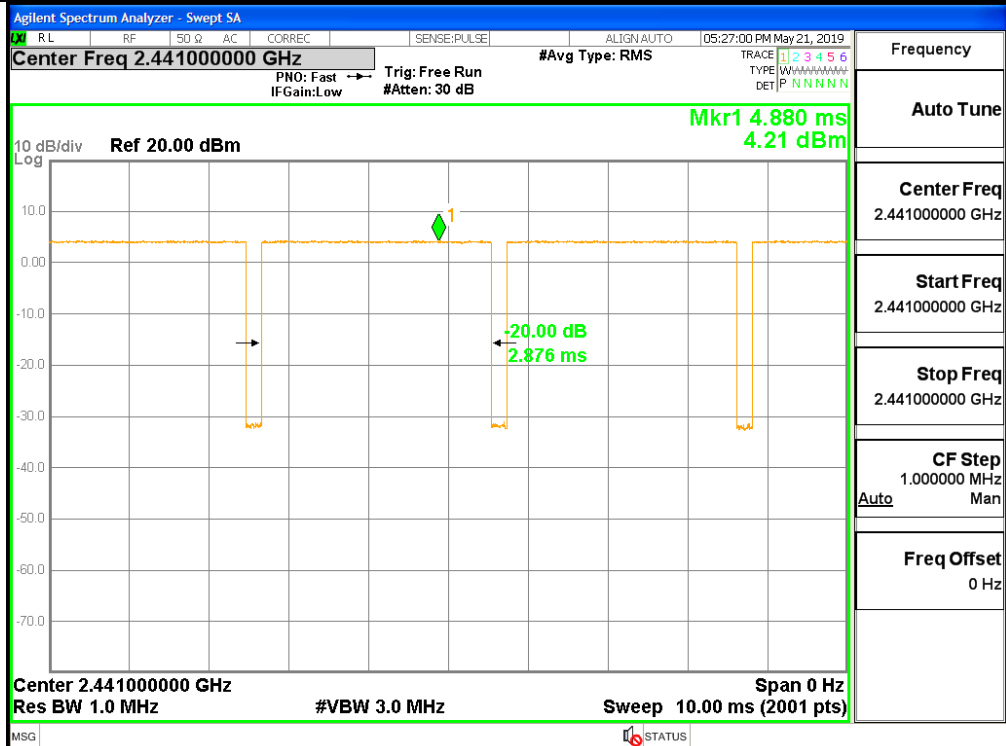
A.2 Dwell Time

Mode	Packet	Channel	Burst Width [s/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	0.002875	106.7	0.306811	0.4	PASS
GFSK	DH5	MCH	0.002876	106.7	0.306817	0.4	PASS
GFSK	DH5	HCH	0.002876	106.7	0.306829	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	0.002890	106.7	0.308374	0.4	PASS
$\pi/4$ DQPSK	2DH5	MCH	0.002890	106.7	0.308387	0.4	PASS
$\pi/4$ DQPSK	2DH5	HCH	0.002887	106.7	0.308062	0.4	PASS
8DPSK	3DH5	LCH	0.002890	106.7	0.308377	0.4	PASS
8DPSK	3DH5	MCH	0.002890	106.7	0.308383	0.4	PASS
8DPSK	3DH5	HCH	0.002894	106.7	0.308768	0.4	PASS

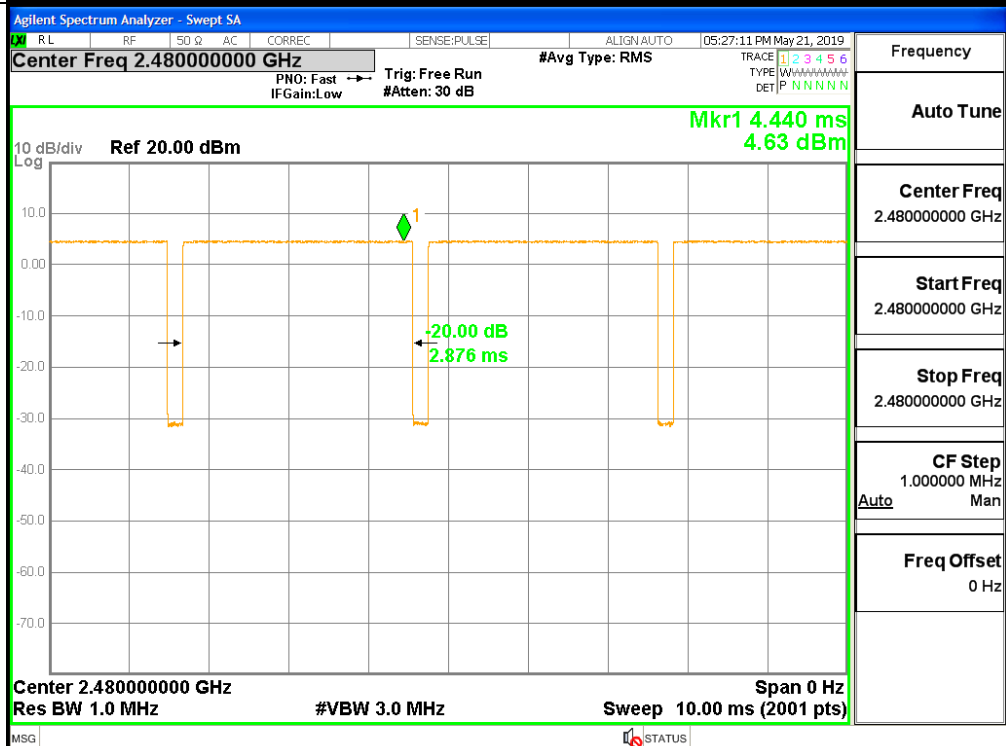
Test Graph

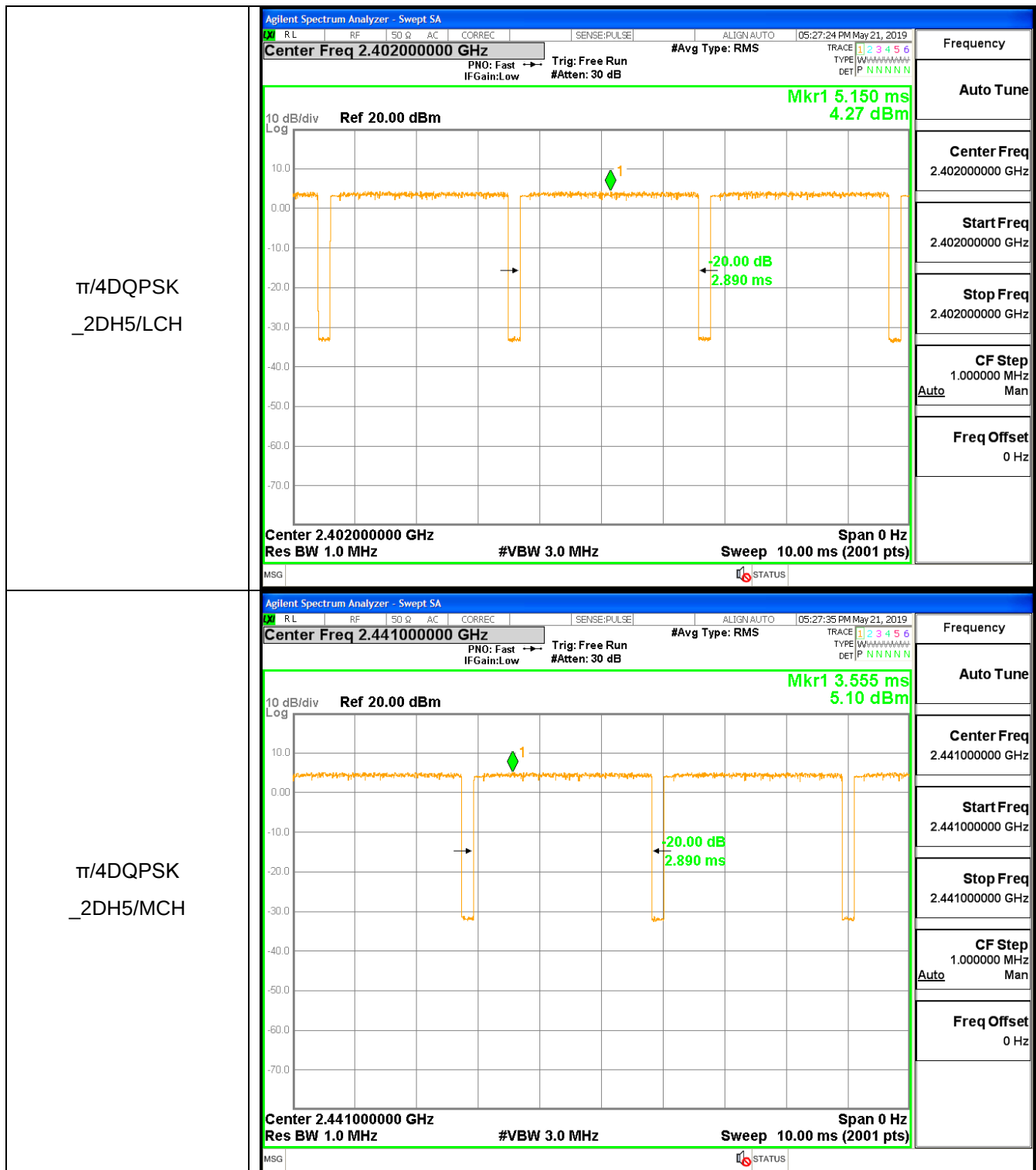


GFSK_DH5/MCH

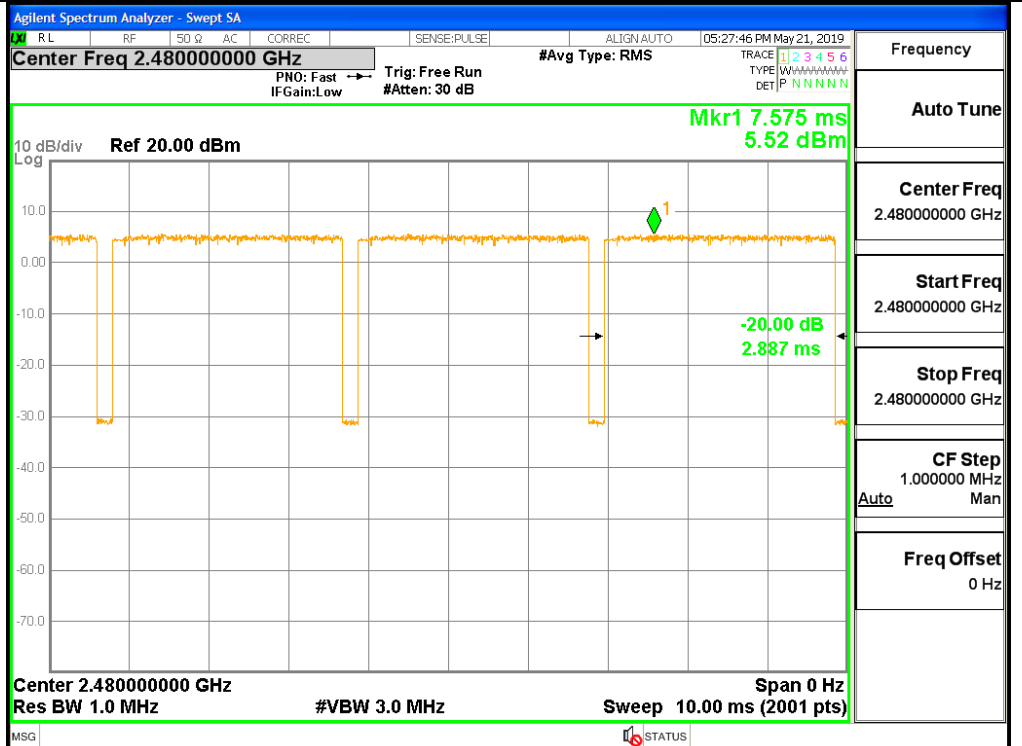


GFSK_DH5/HCH

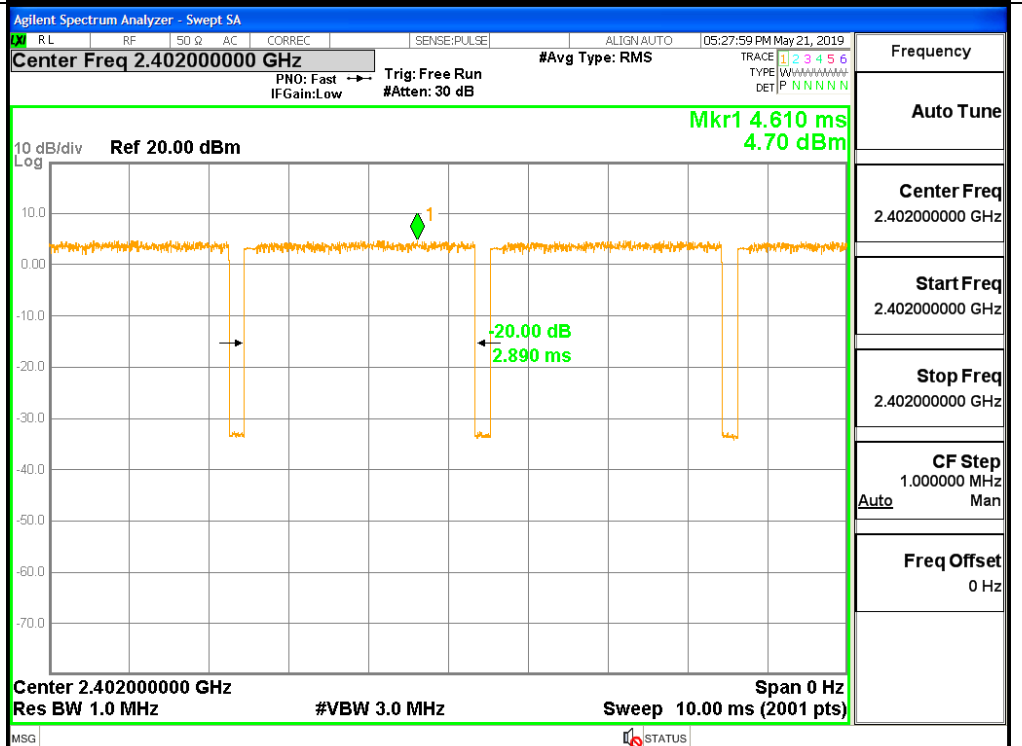


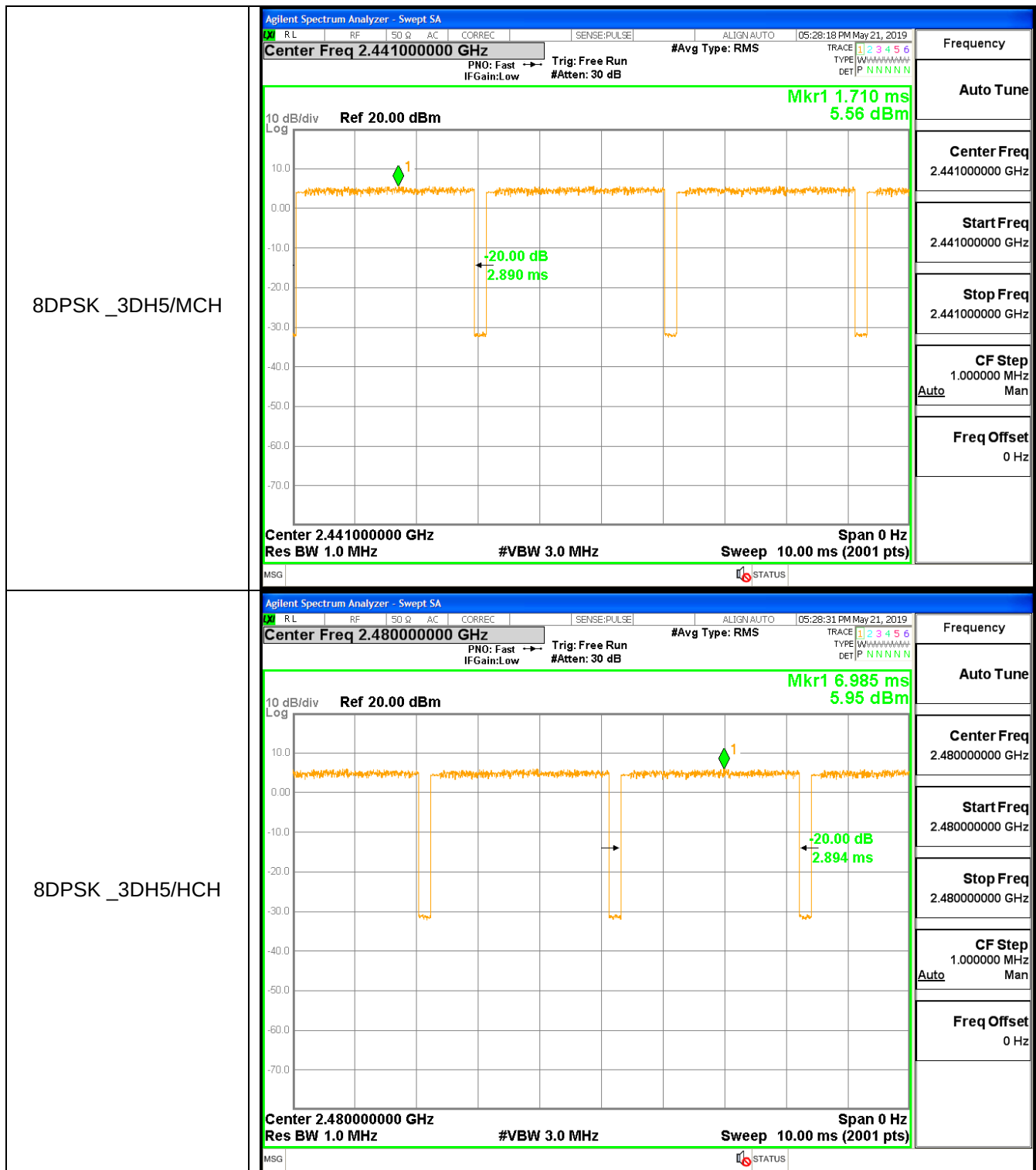


$\pi/4$ DQPSK
_2DH5/HCH



8DPSK_3DH5/LCH

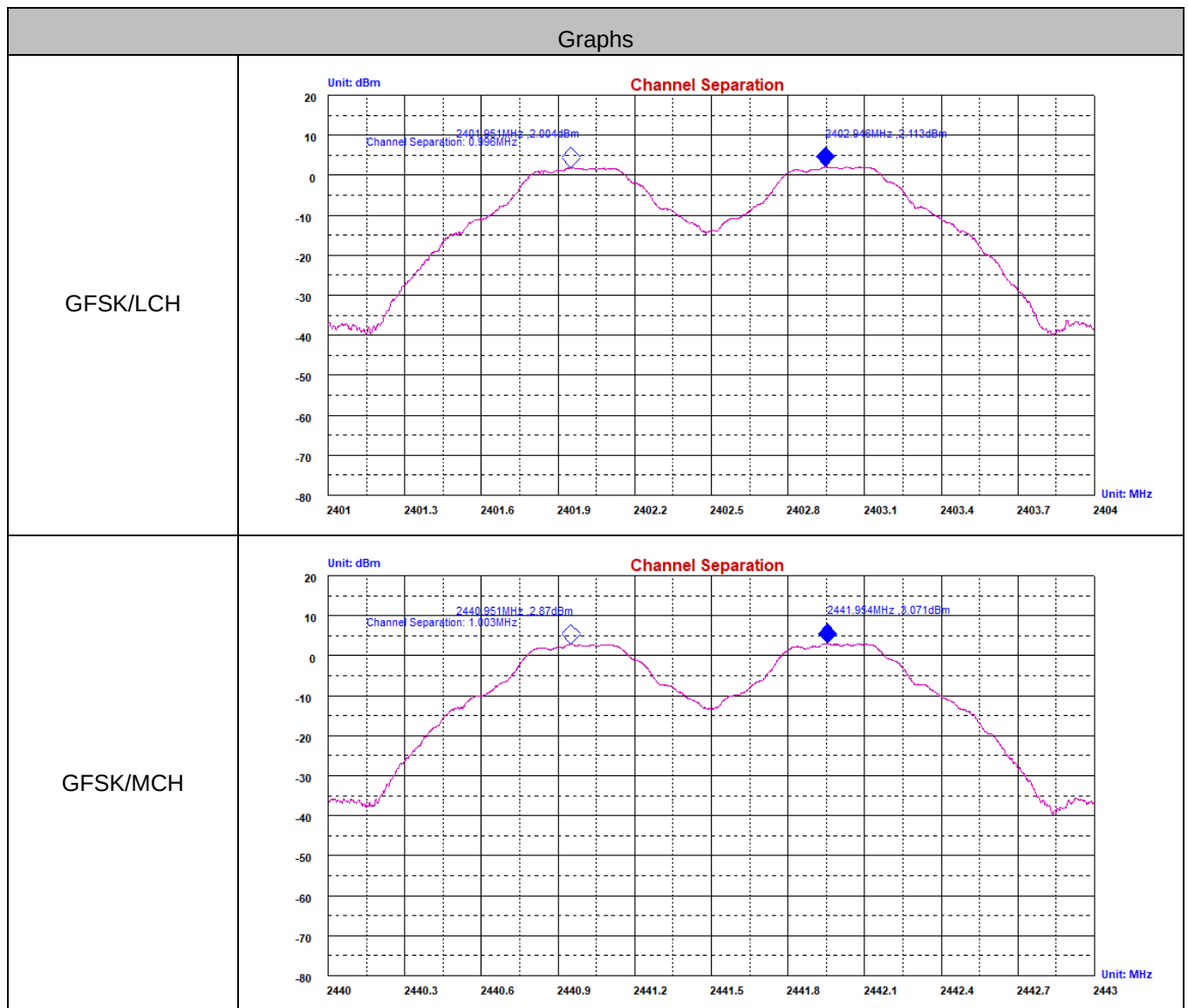




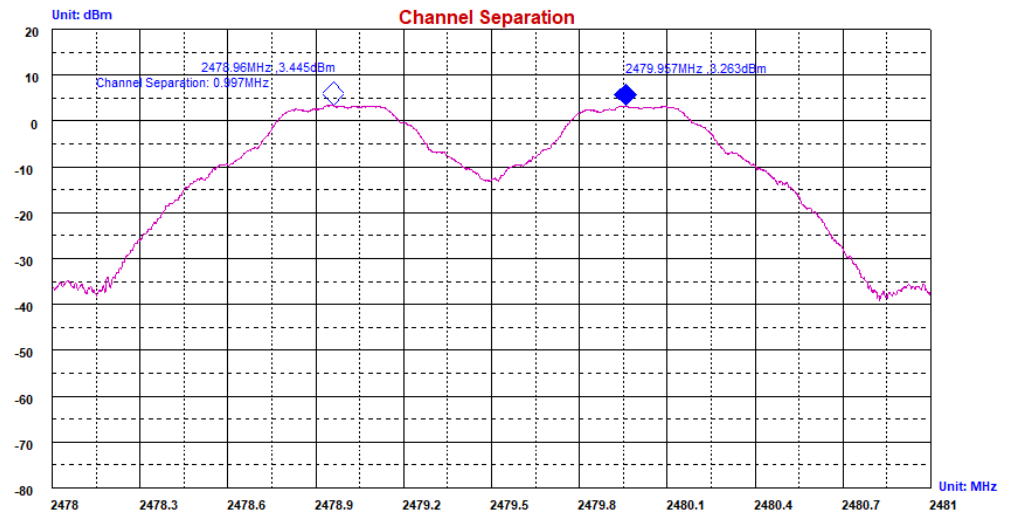
A.3 Carrier Frequency Separation

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.996	0.687	PASS
GFSK	MCH	1.003	0.689	PASS
GFSK	HCH	0.997	0.688	PASS
$\pi/4$ DQPSK	LCH	0.999	0.882	PASS
$\pi/4$ DQPSK	MCH	1.006	0.879	PASS
$\pi/4$ DQPSK	HCH	1.003	0.880	PASS
8DPSK	LCH	1.003	0.863	PASS
8DPSK	MCH	1.003	0.863	PASS
8DPSK	HCH	0.999	0.866	PASS

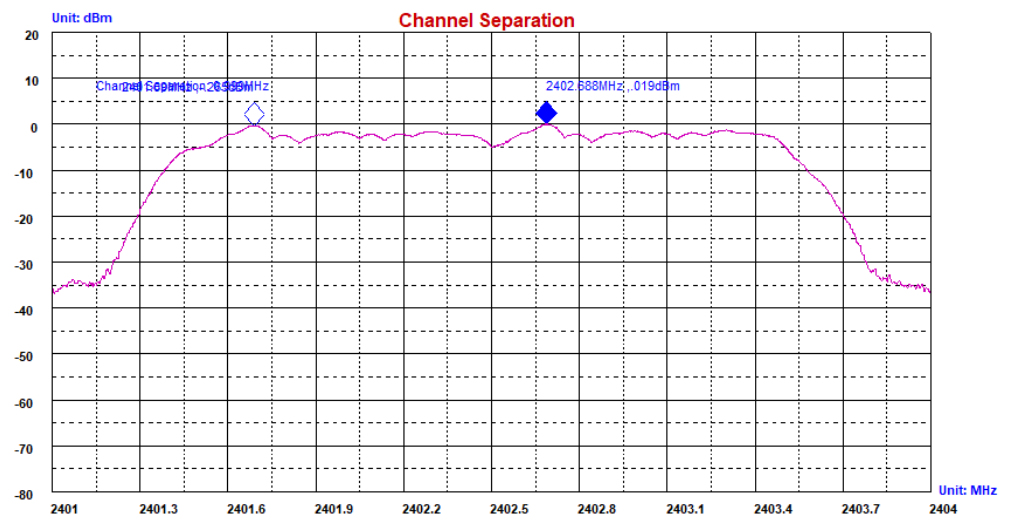
Test Graph



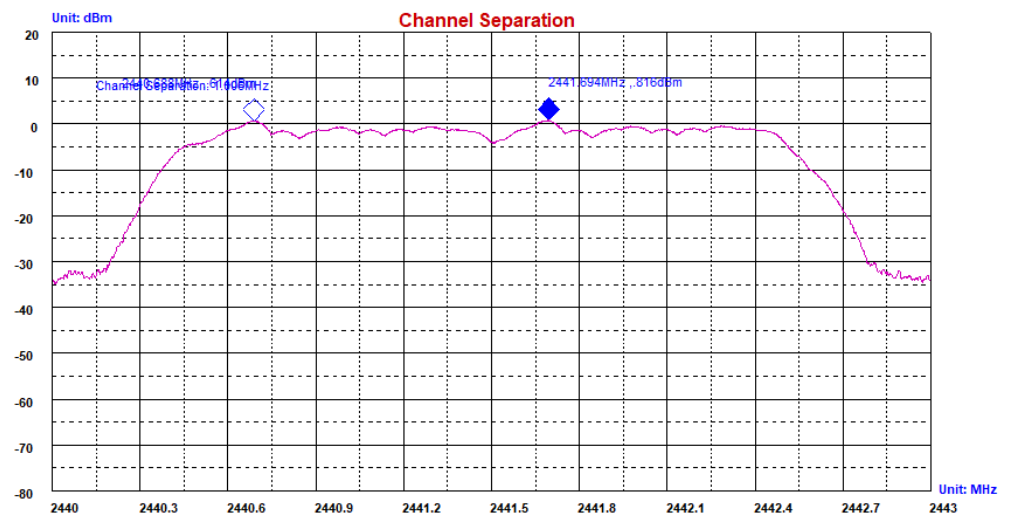
GFSK/HCH

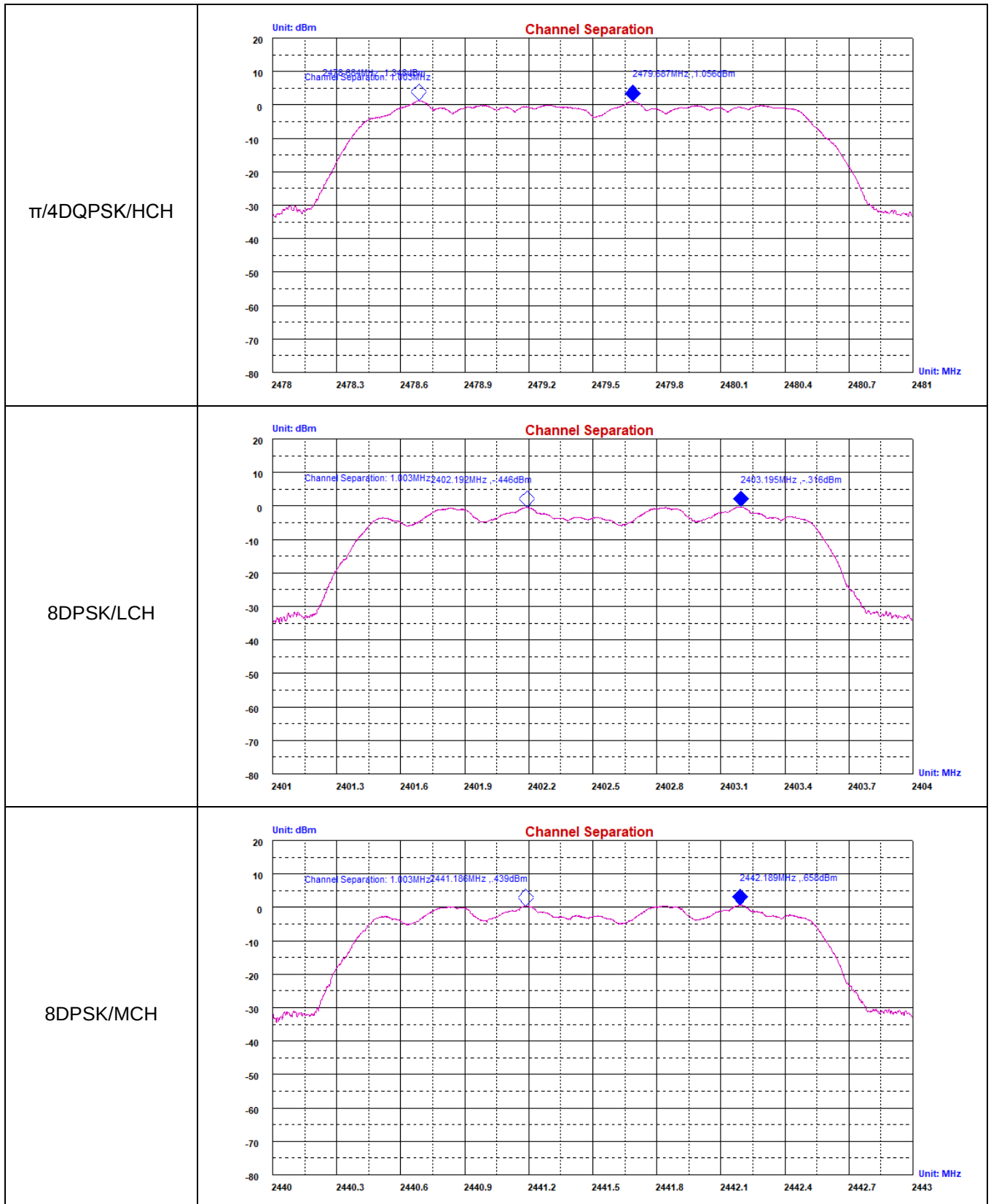


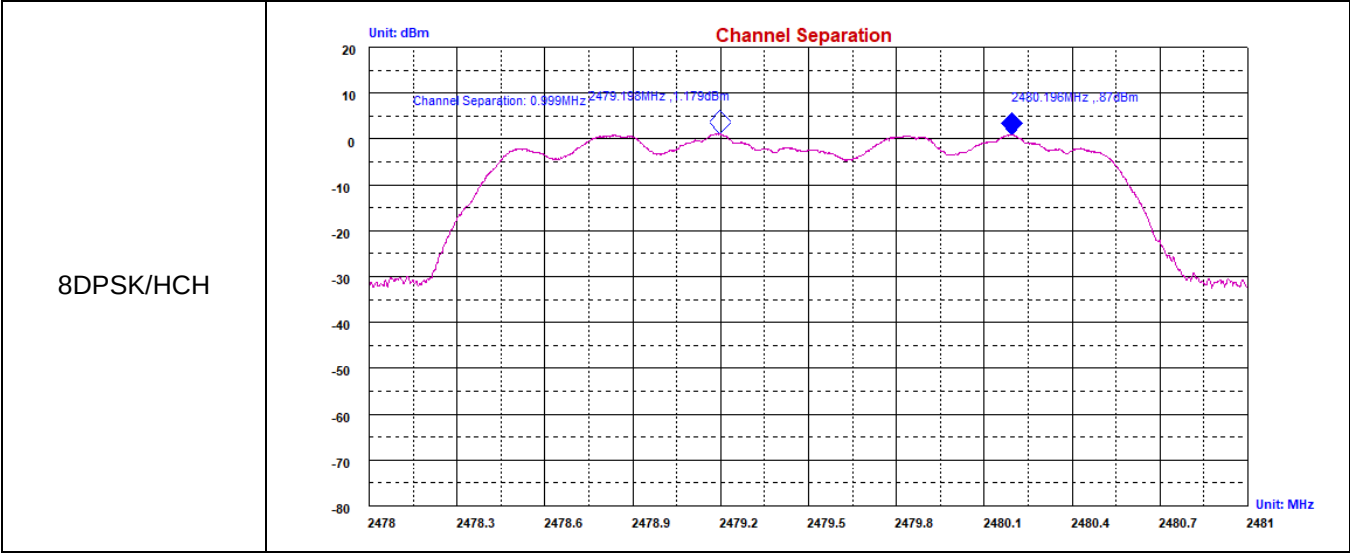
$\pi/4$ DQPSK/LCH



$\pi/4$ DQPSK/MCH



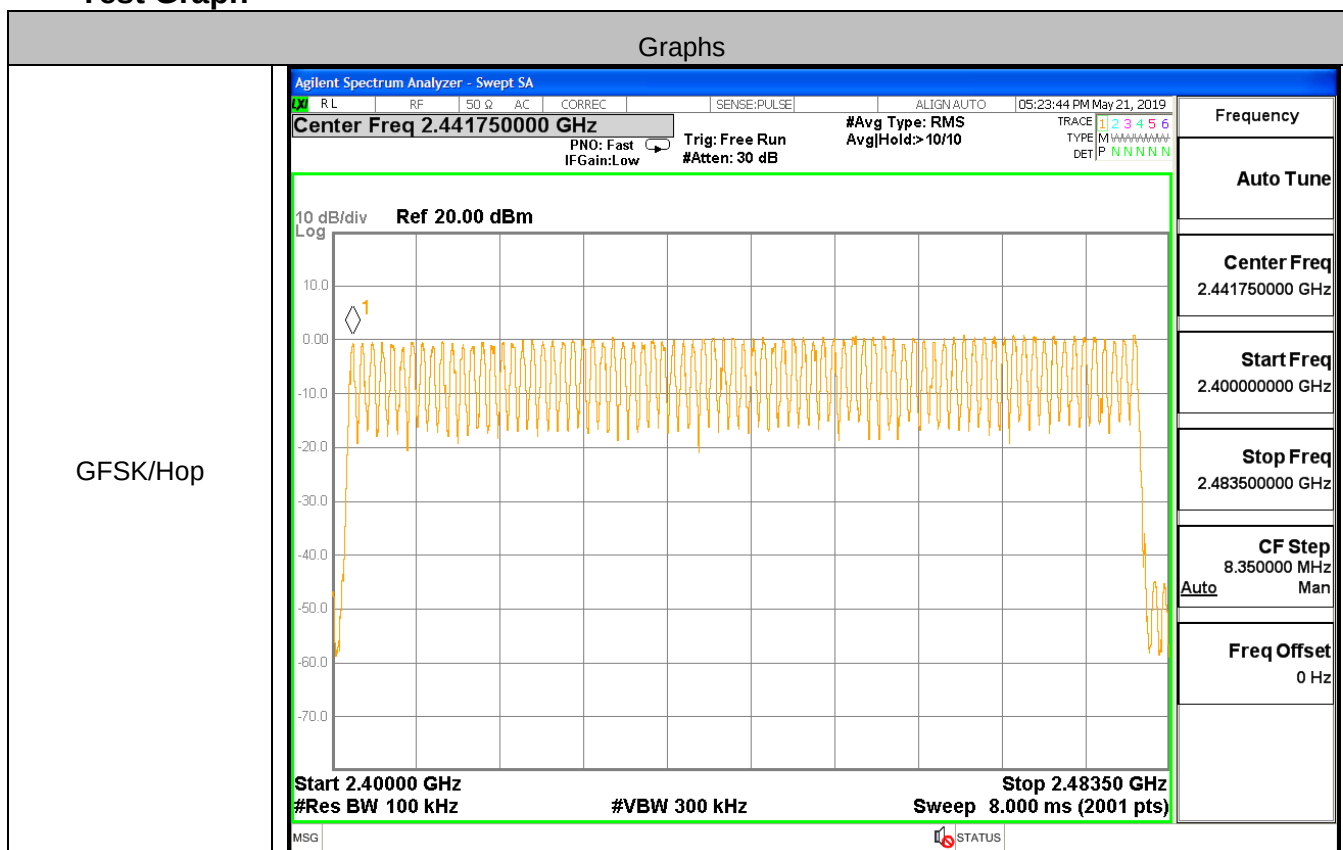


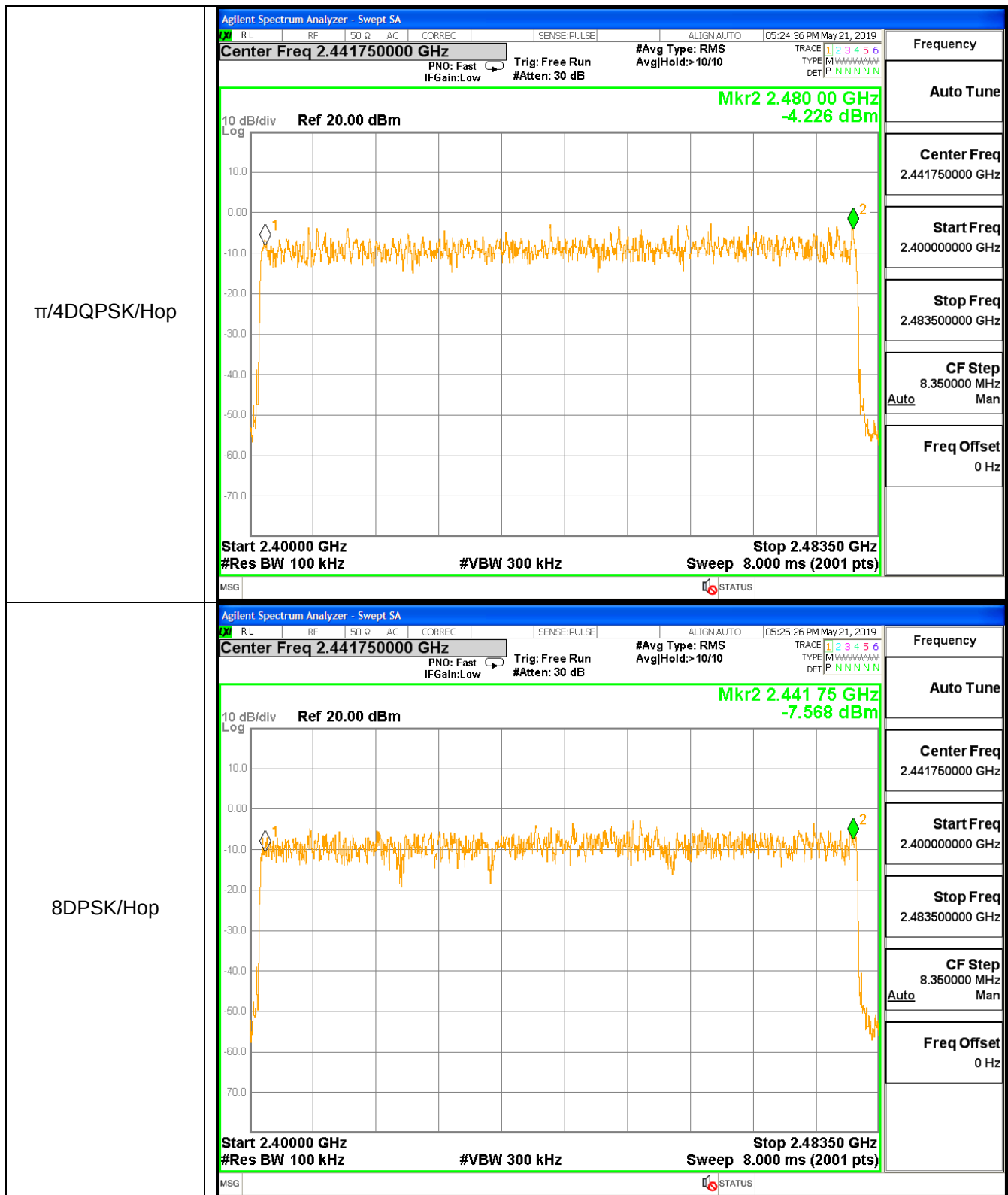


A.4 Hopping Channel Number

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

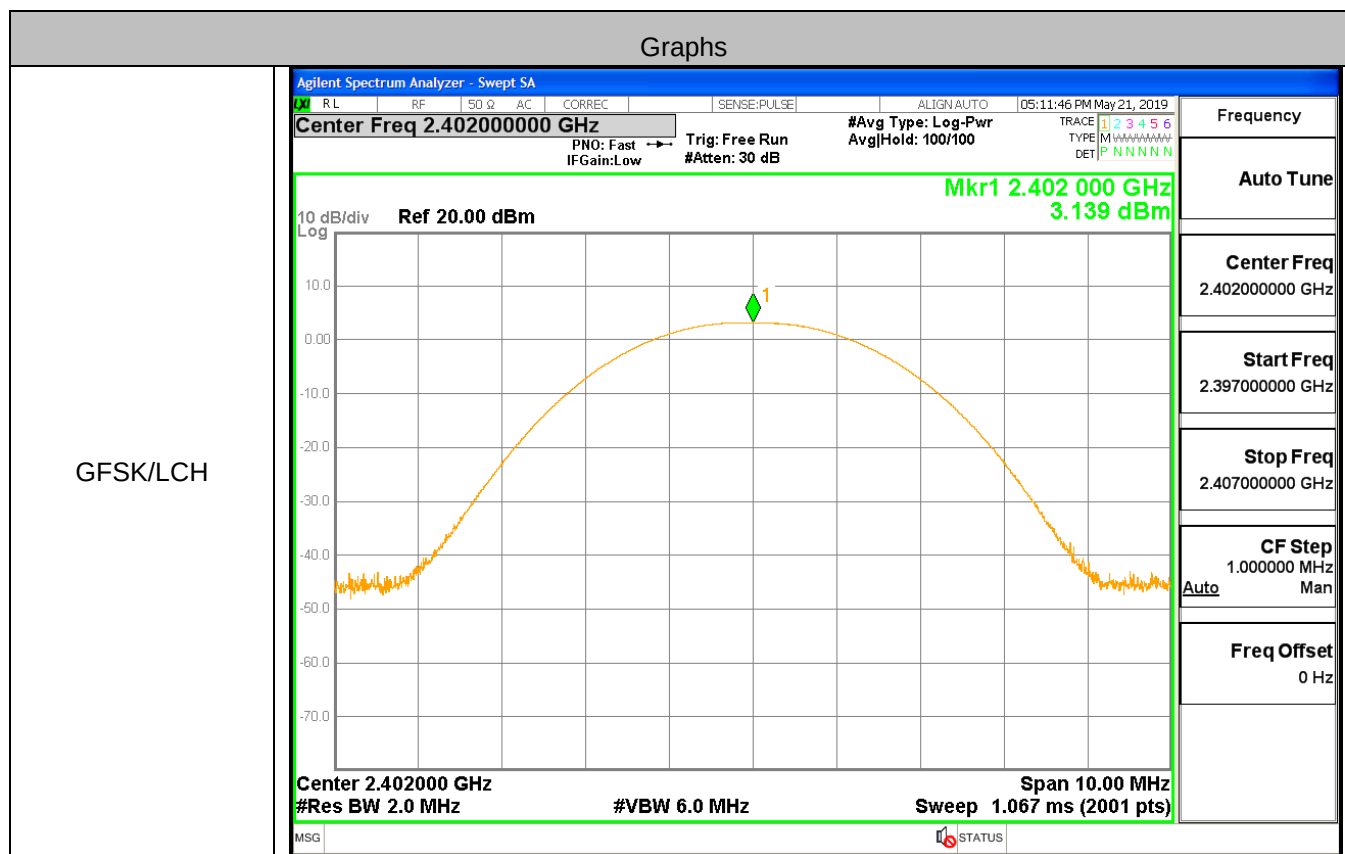




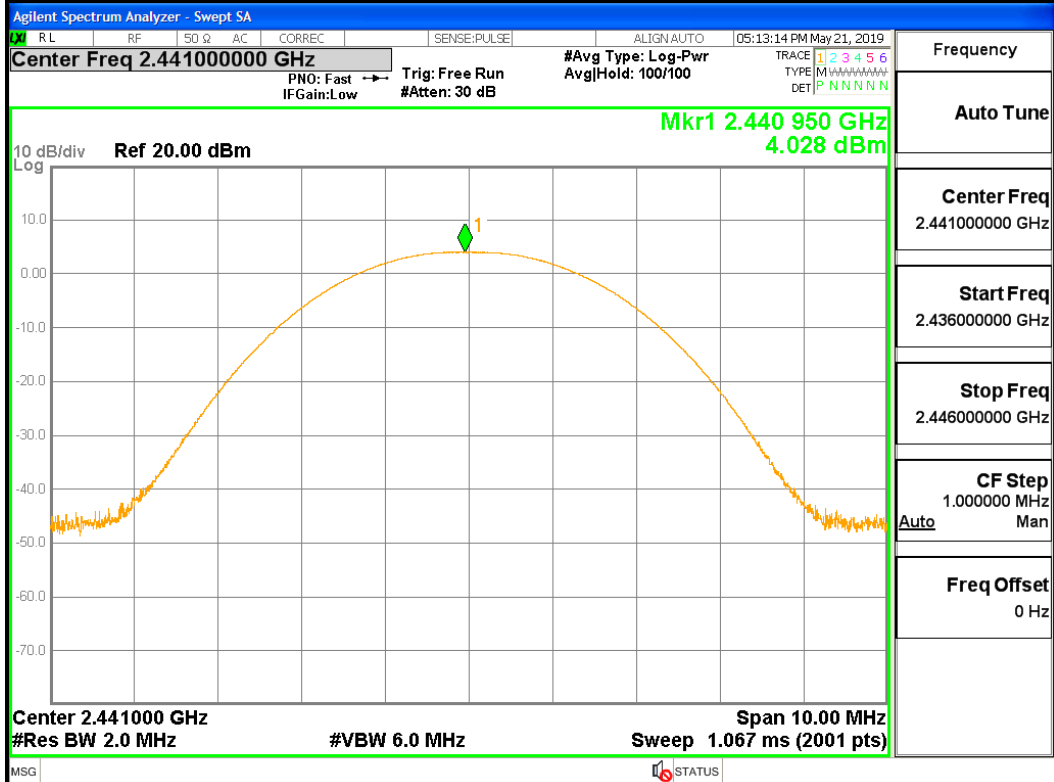
A.5 Conducted Peak Output Power

Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	3.139	21	PASS
GFSK	MCH	4.028	21	PASS
GFSK	HCH	4.462	21	PASS
$\pi/4$ DQPSK	LCH	4.551	21	PASS
$\pi/4$ DQPSK	MCH	5.400	21	PASS
$\pi/4$ DQPSK	HCH	5.765	21	PASS
8DPSK	LCH	4.747	21	PASS
8DPSK	MCH	5.549	21	PASS
8DPSK	HCH	5.910	21	PASS

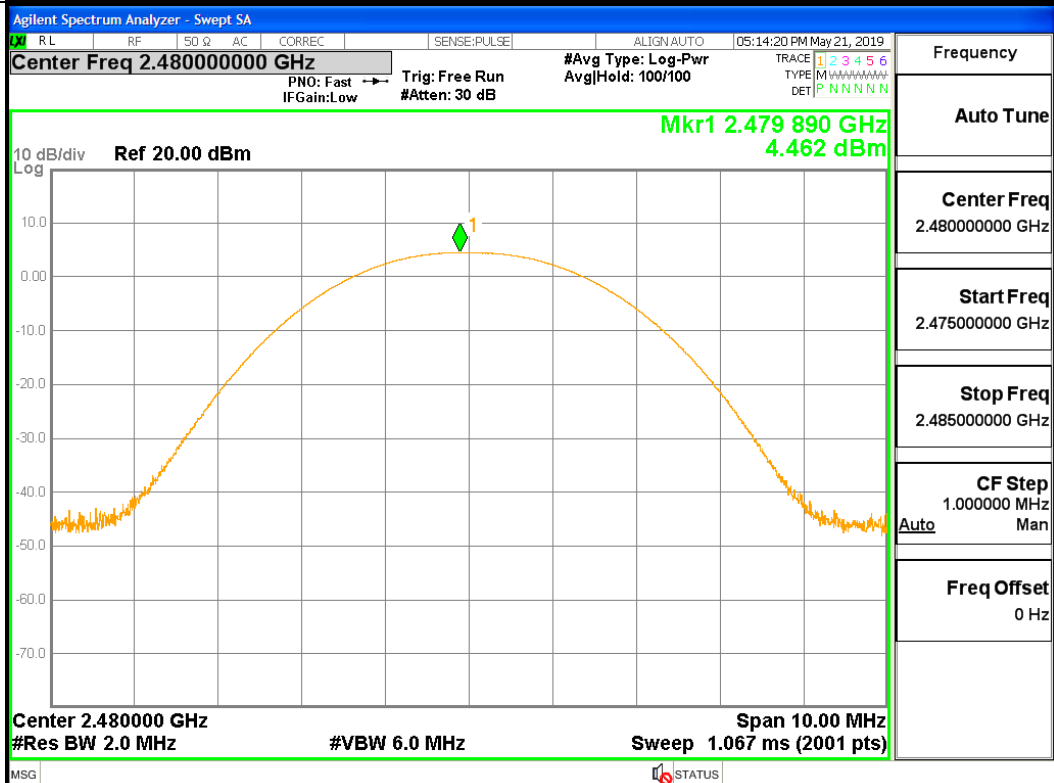
Test Graph

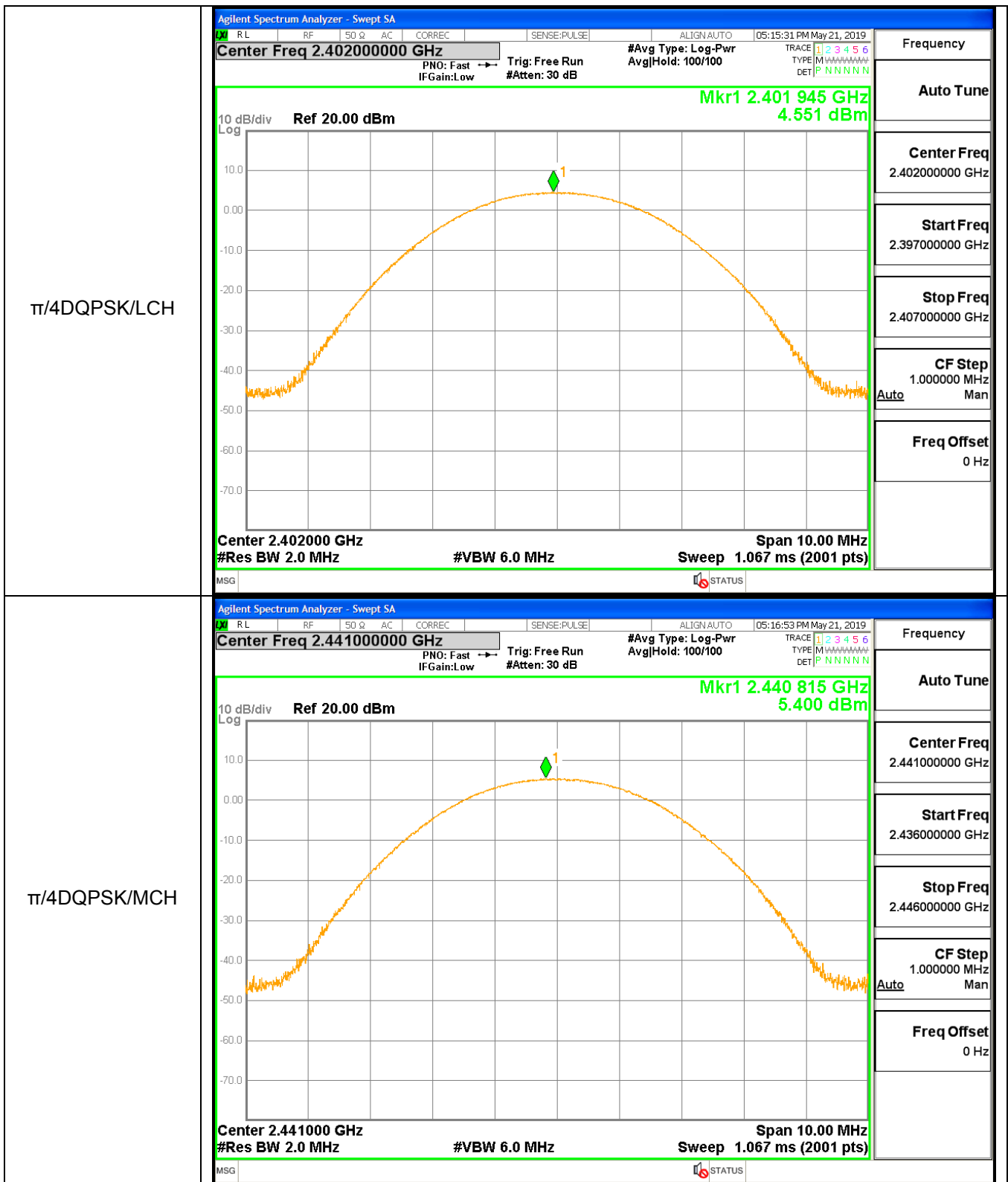


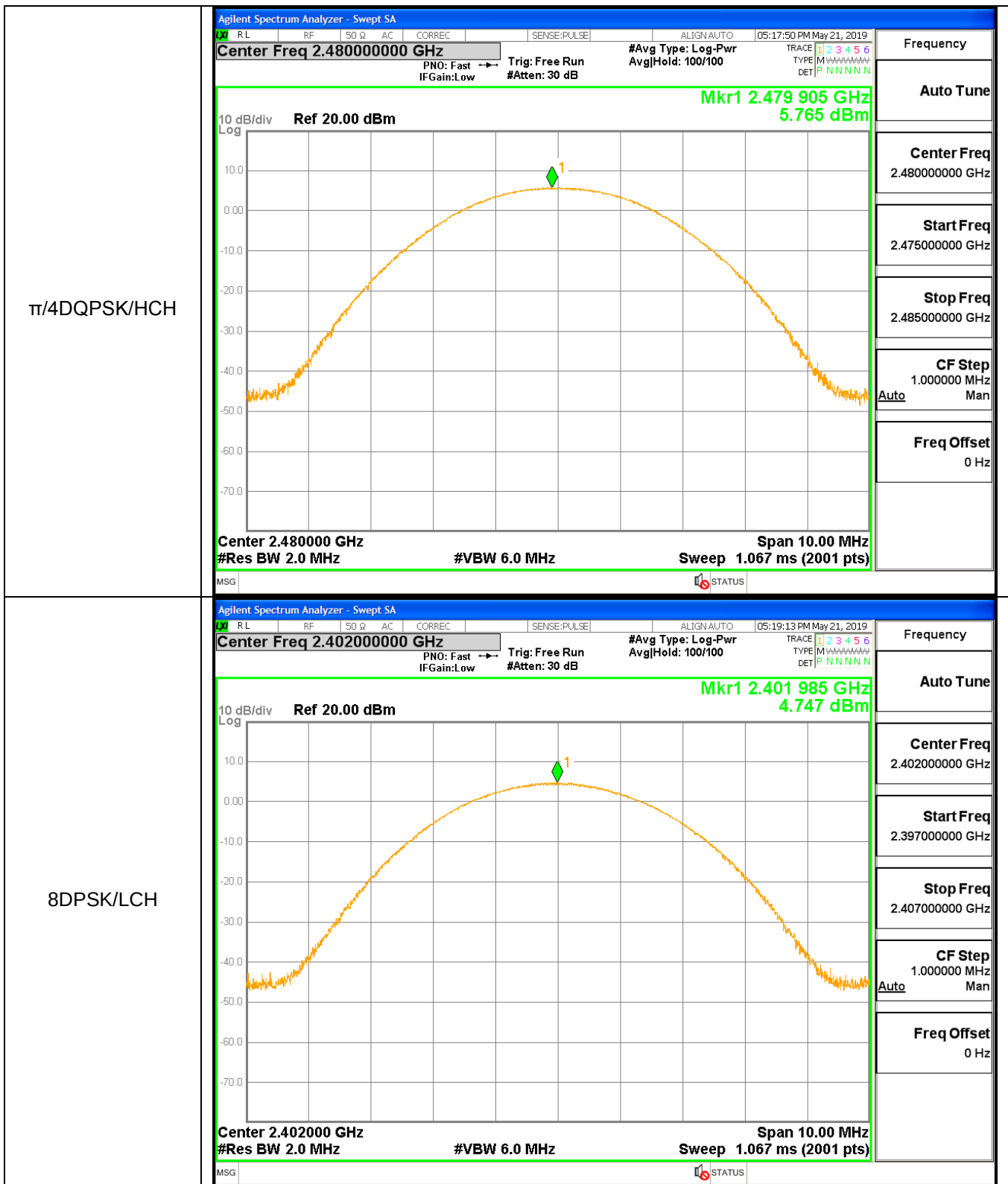
GFSK/MCH



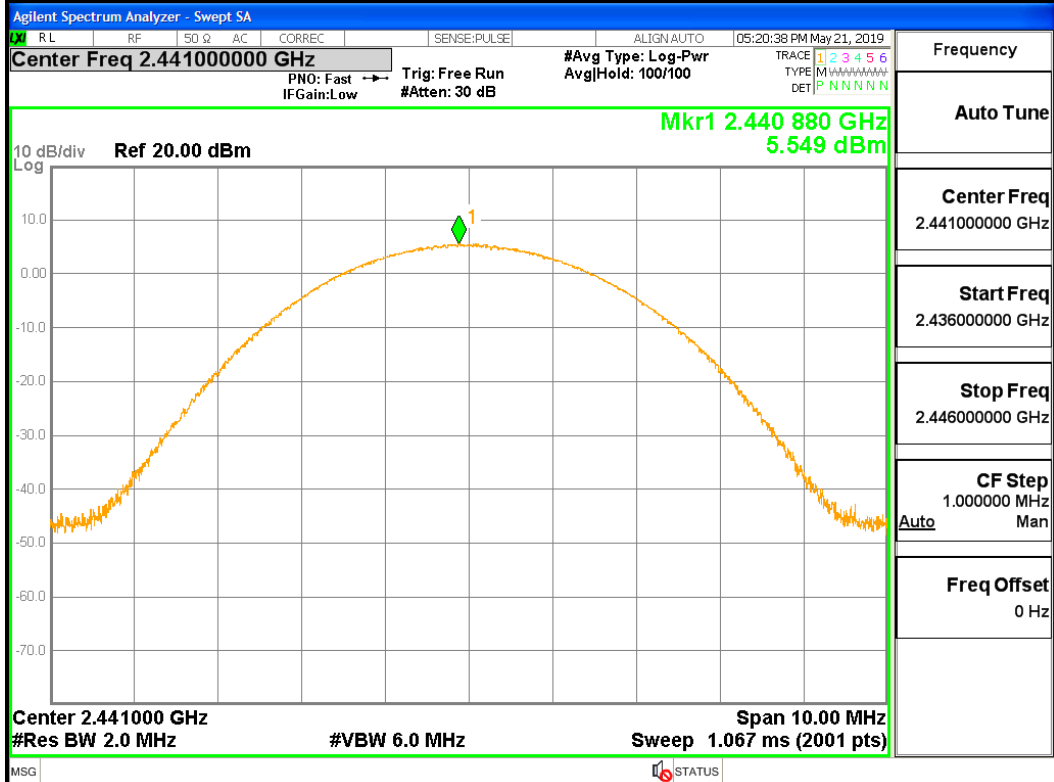
GFSK/HCH



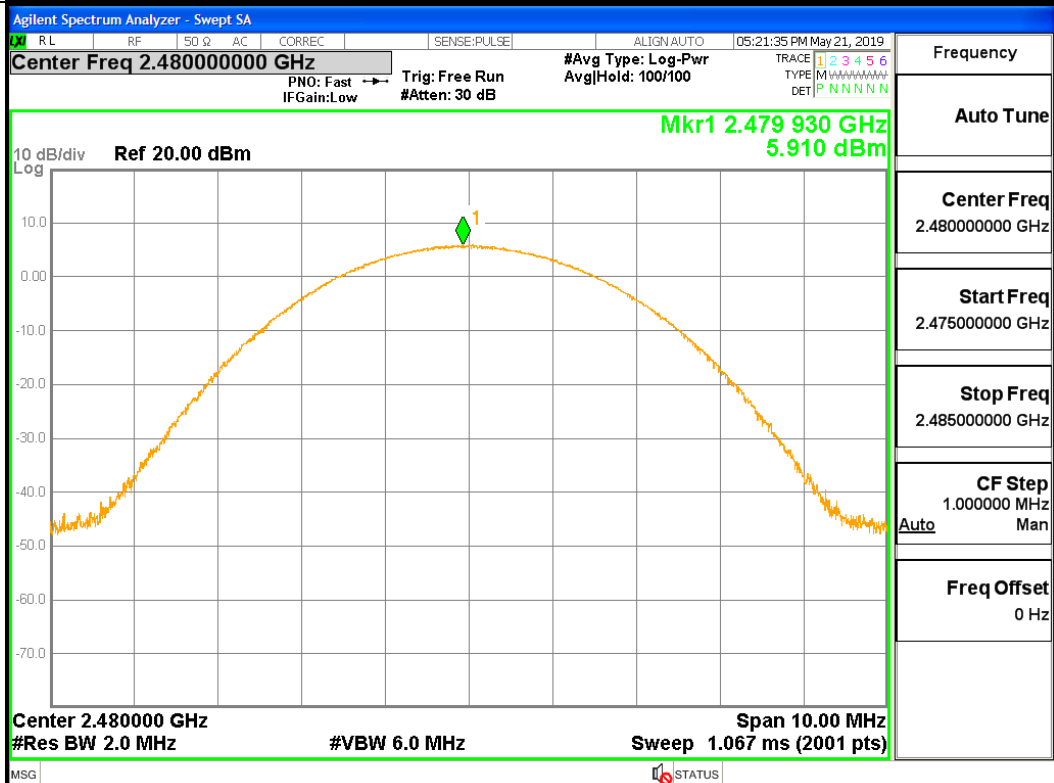




8DPSK/MCH



8DPSK/HCH



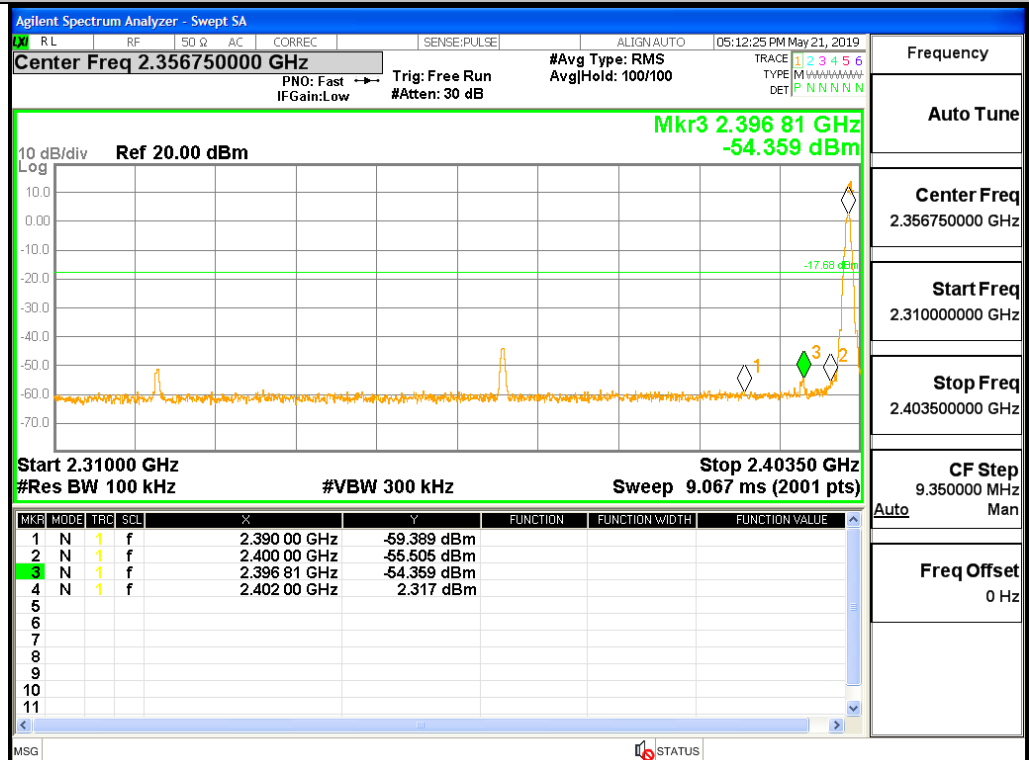
A.6 Band-edge for RF Conducted Emissions

Type	Carrier Frequency(MHz)	Frequency(MHz)	Carrier Frequency Power [dBm]	Bandedge Peak(dBm)	Upper limit(dBm)	Conclusion
1DH5	2402	2396.81	2.317	-54.36	-17.683	Pass
1DH5	2480	2493.37	3.622	-55.95	-16.378	Pass
2DH5	2402	2400.00	-0.167	-54.41	-20.167	Pass
2DH5	2480	2483.50	1.271	-57.95	-18.729	Pass
3DH5	2402	2400.00	-0.050	-53.87	-20.050	Pass
3DH5	2480	2483.50	1.223	-57.39	-18.777	Pass
1DH5-Hopping	2402	2397.96	0.089	-45.74	-19.911	Pass
1DH5-Hopping	2480	2487.04	0.795	-44.52	-19.205	Pass
2DH5-Hopping	2402	2398.08	-3.619	-50.96	-23.619	Pass
2DH5-Hopping	2480	2486.95	-2.690	-48.48	-22.690	Pass
3DH5-Hopping	2402	2399.88	-3.552	-51.27	-23.552	Pass
3DH5-Hopping	2480	2488.18	-2.827	-48.92	-22.827	Pass

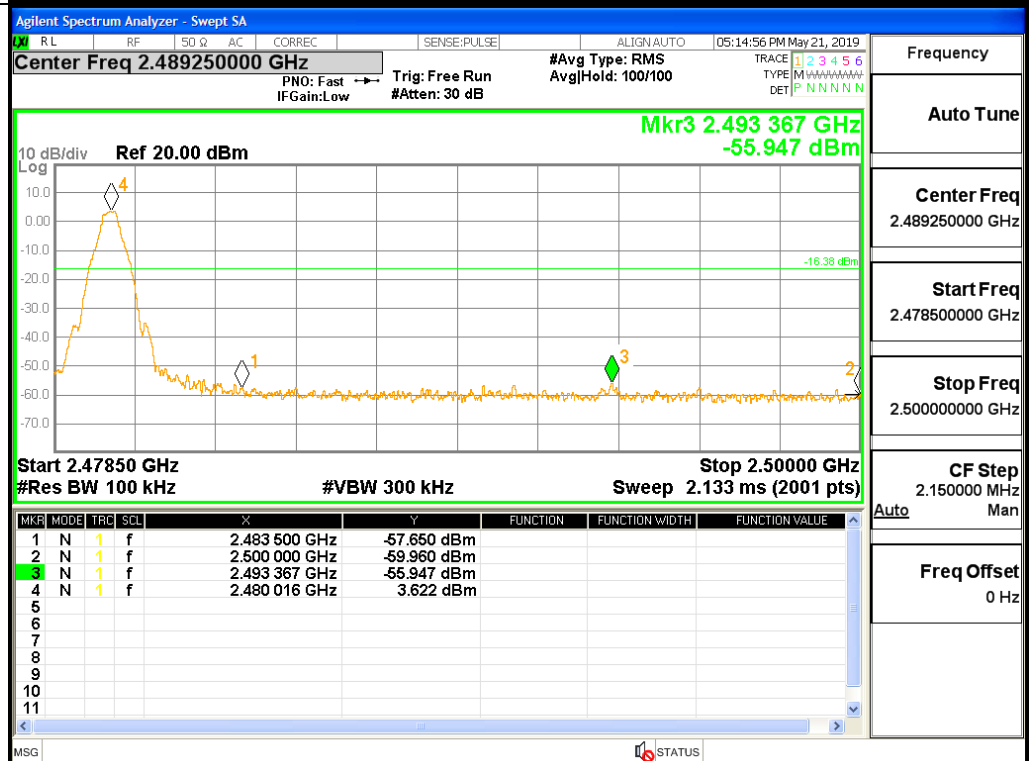
Test Graph

Graphs

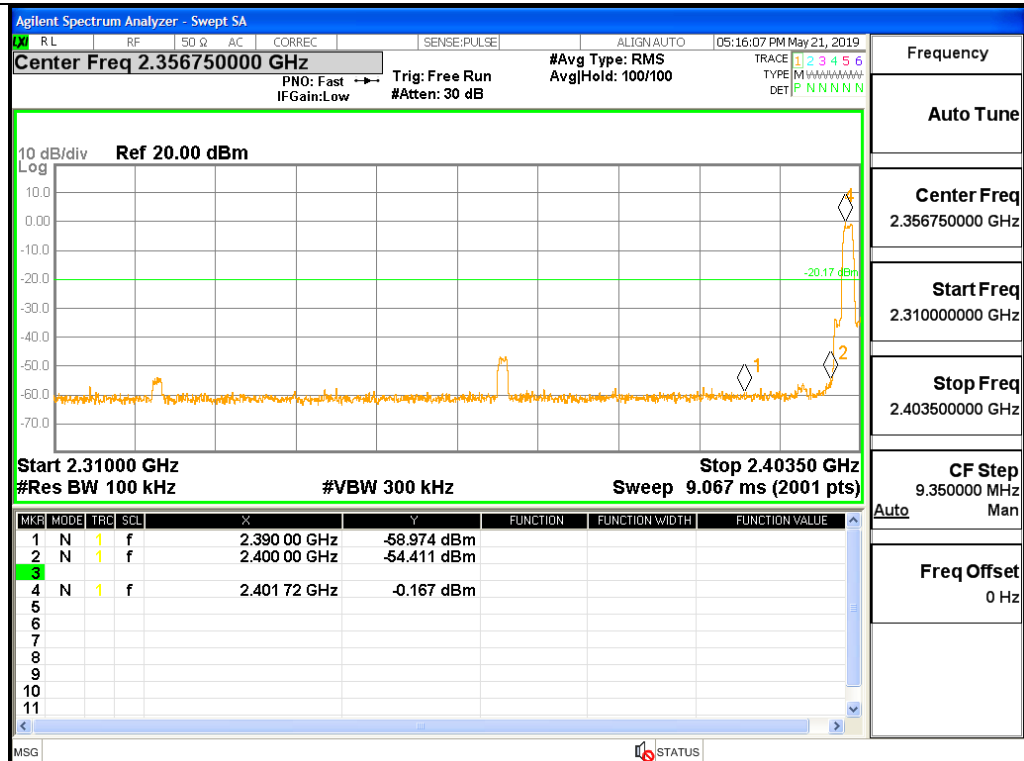
GFSK/LCH/No Hop



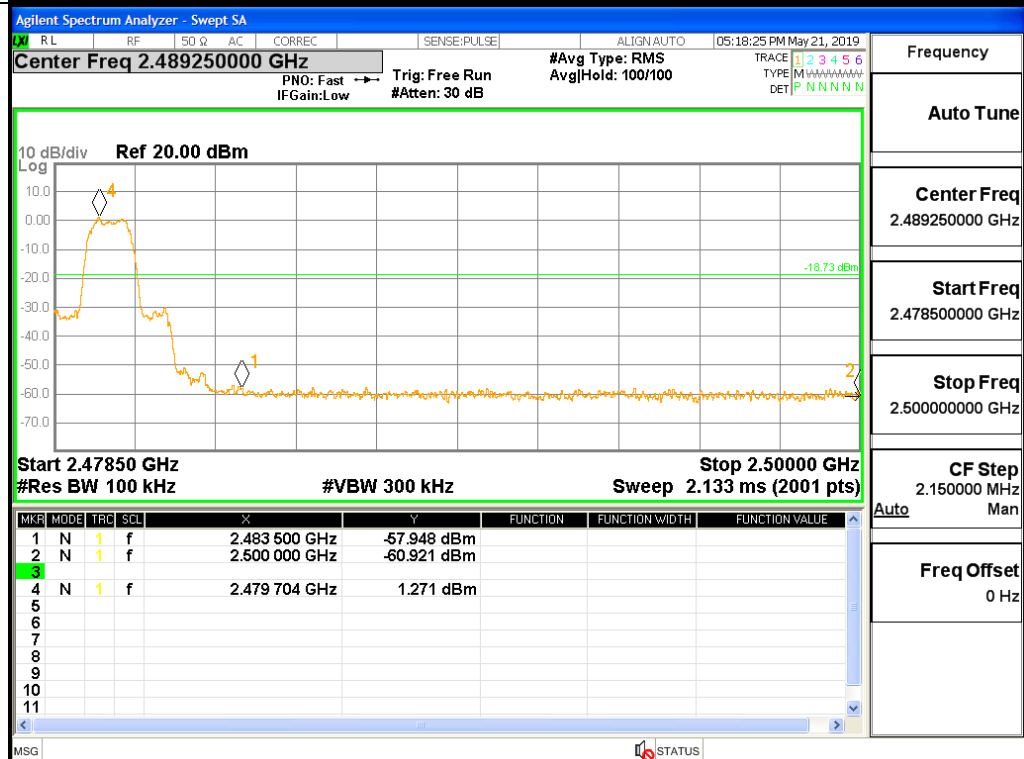
GFSK/HCH/No Hop



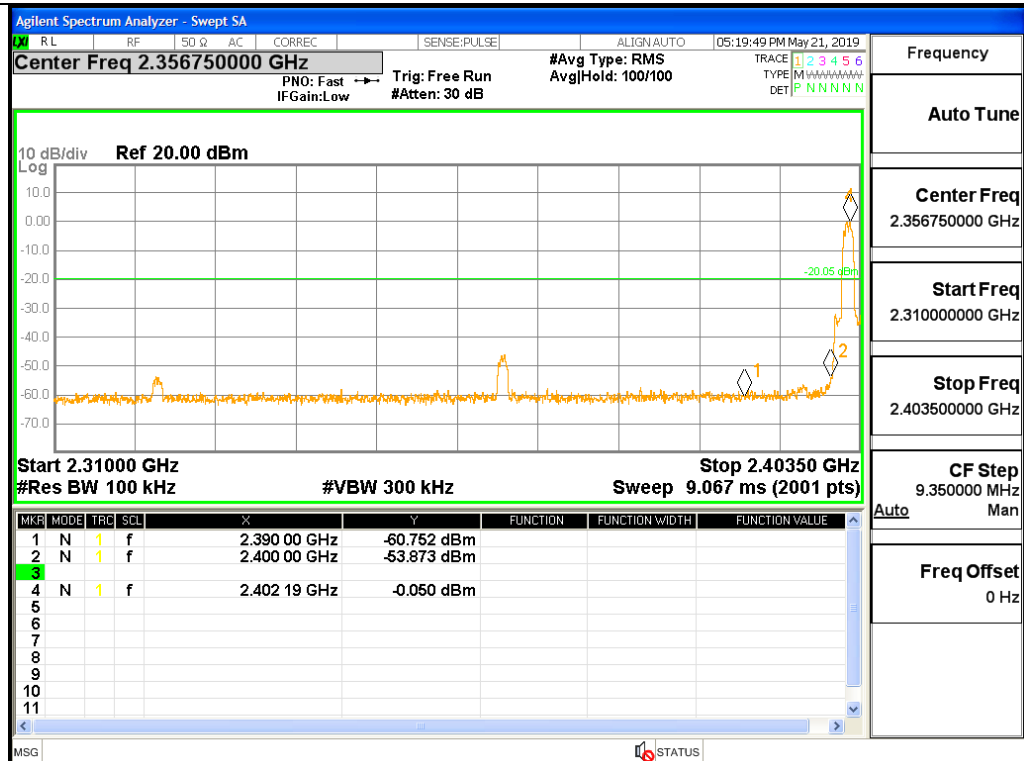
π /4DQPSK/LCH/No
Hop



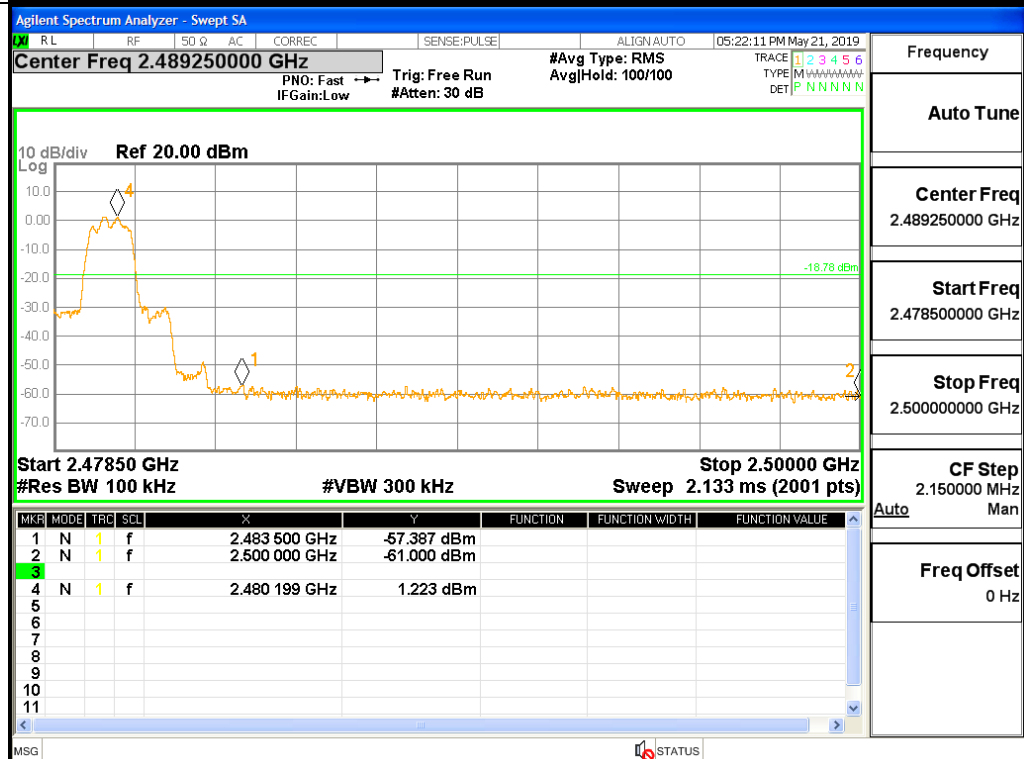
π /4DQPSK/HCH/No
Hop



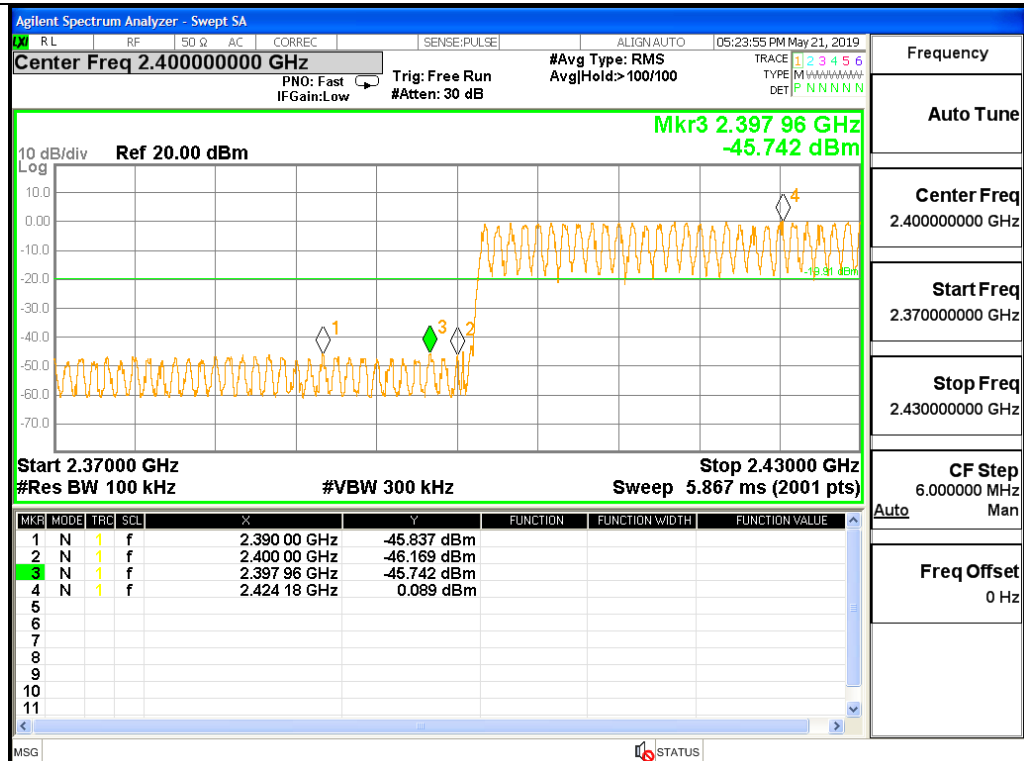
8DPSK/LCH/No Hop



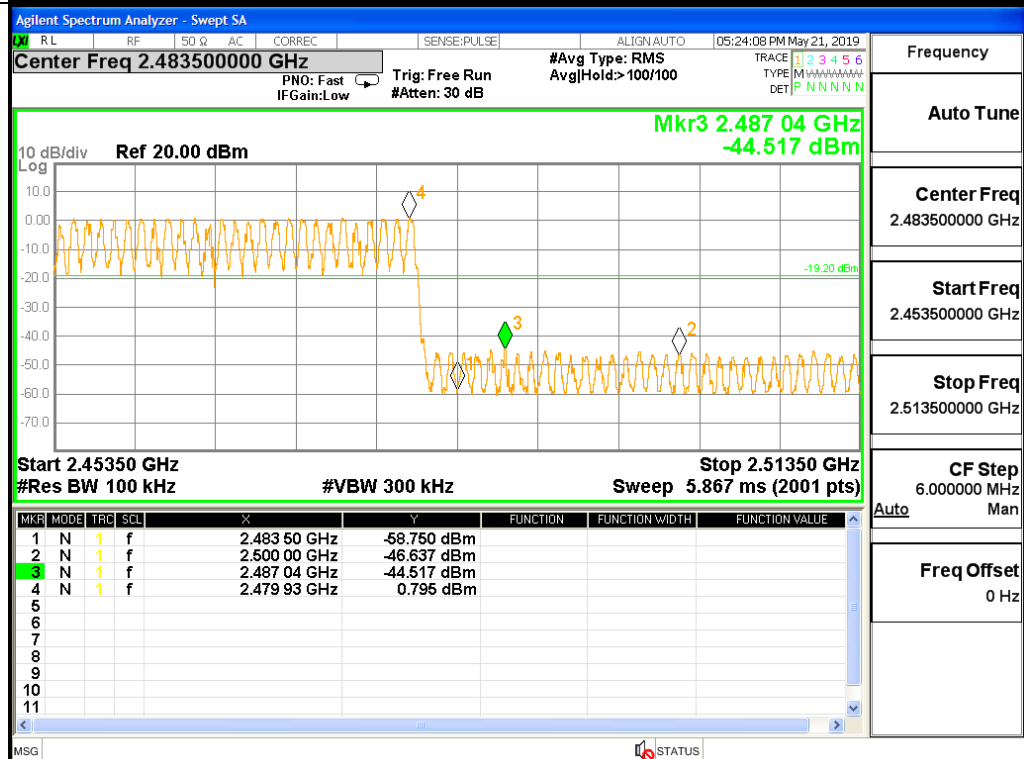
8DPSK/HCH/No Hop



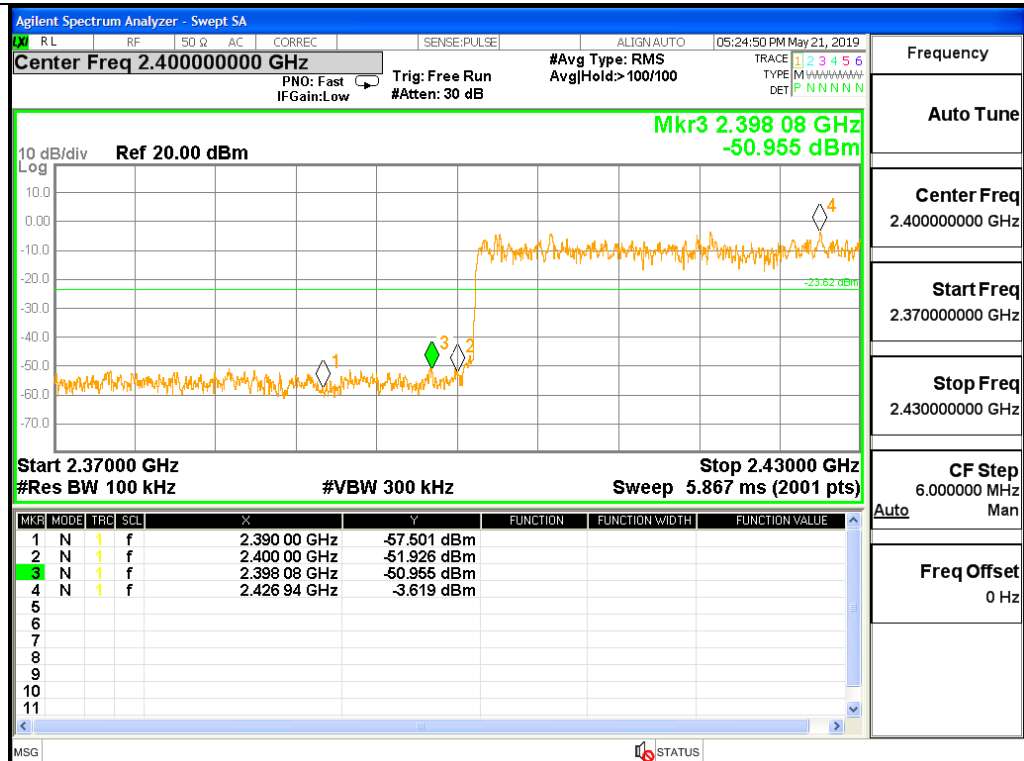
GFSK/LCH/Hop



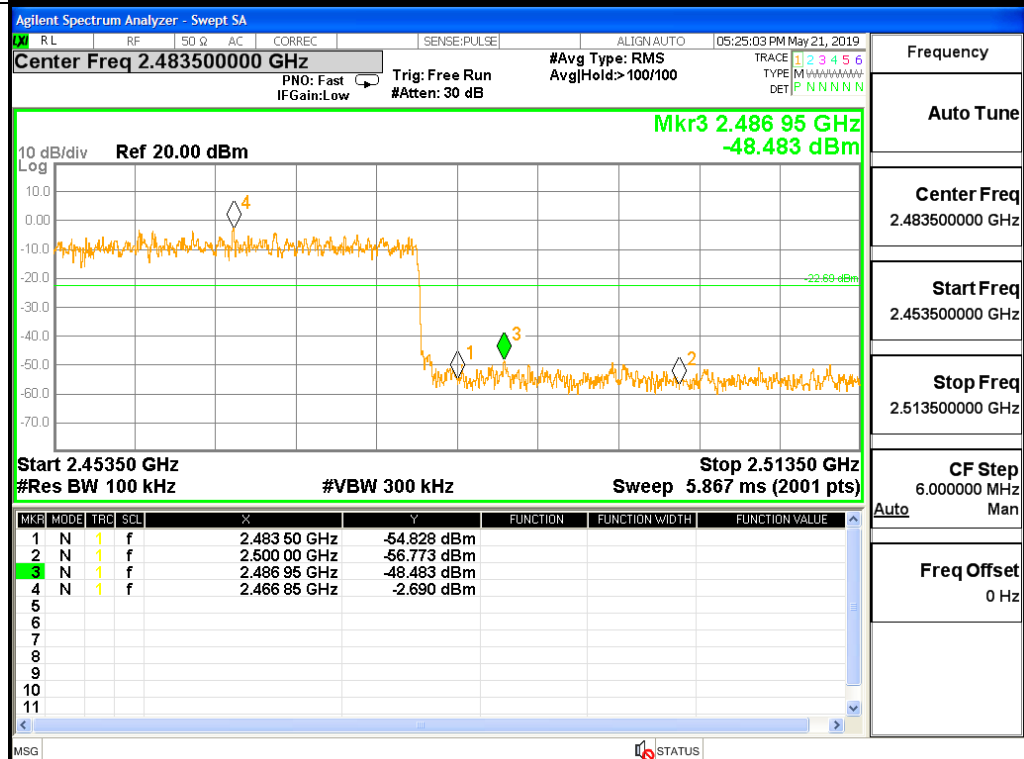
GFSK/HCH/Hop



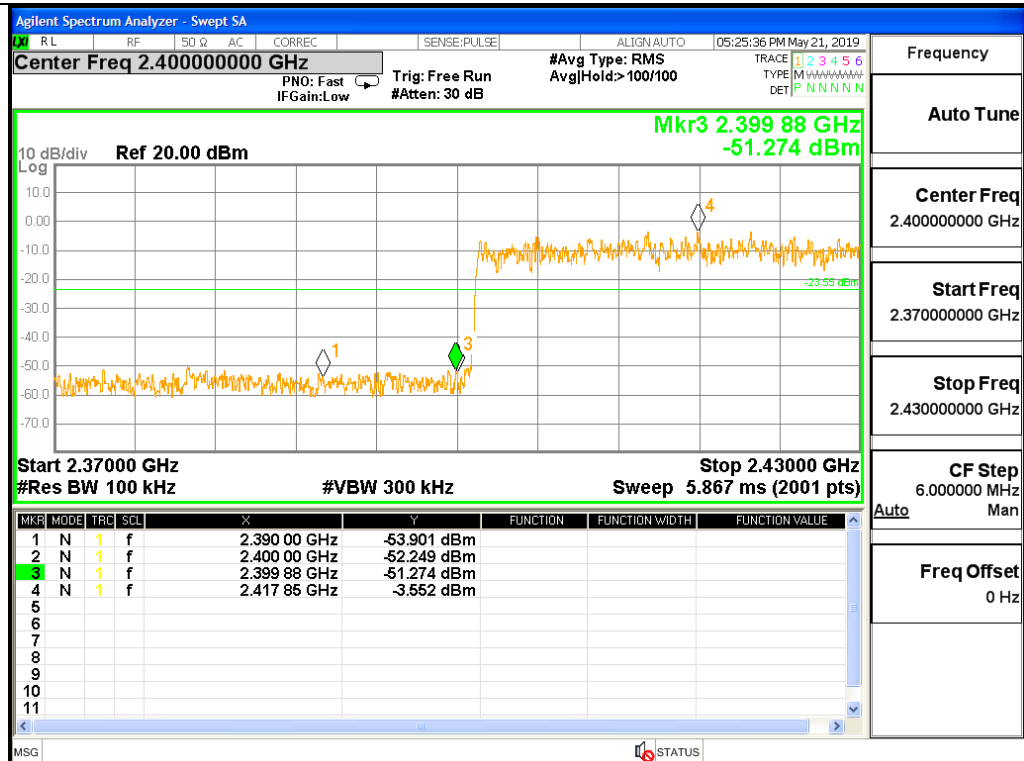
π /4DQPSK/LCH/Hop



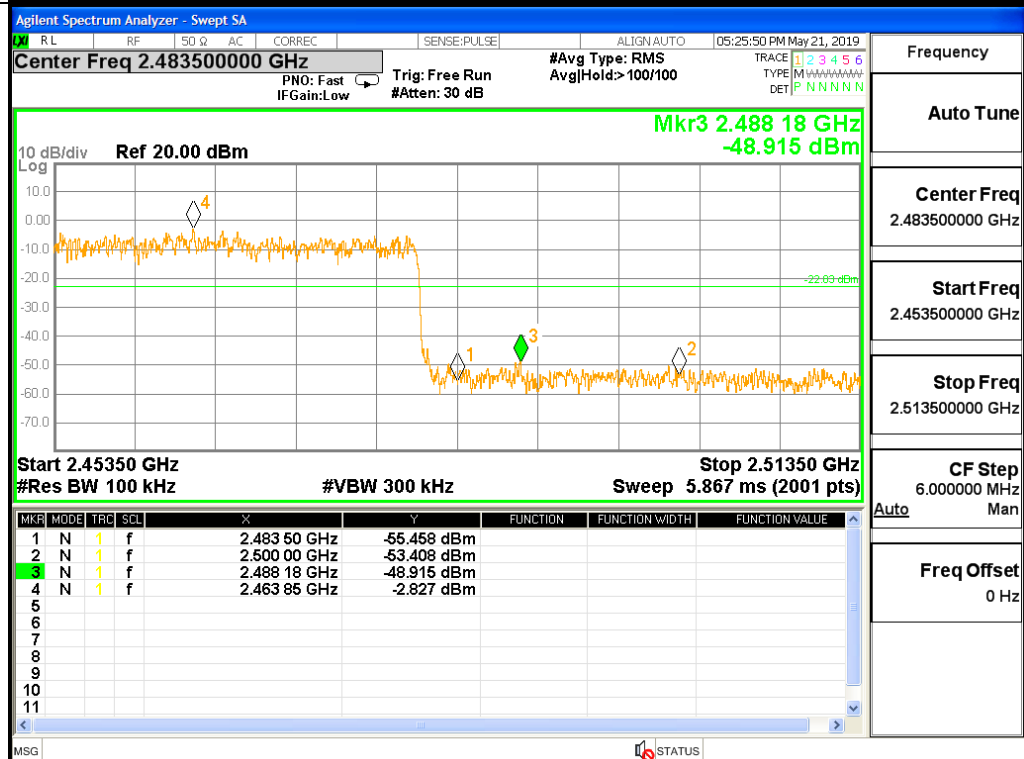
π /4DQPSK/HCH/Hop



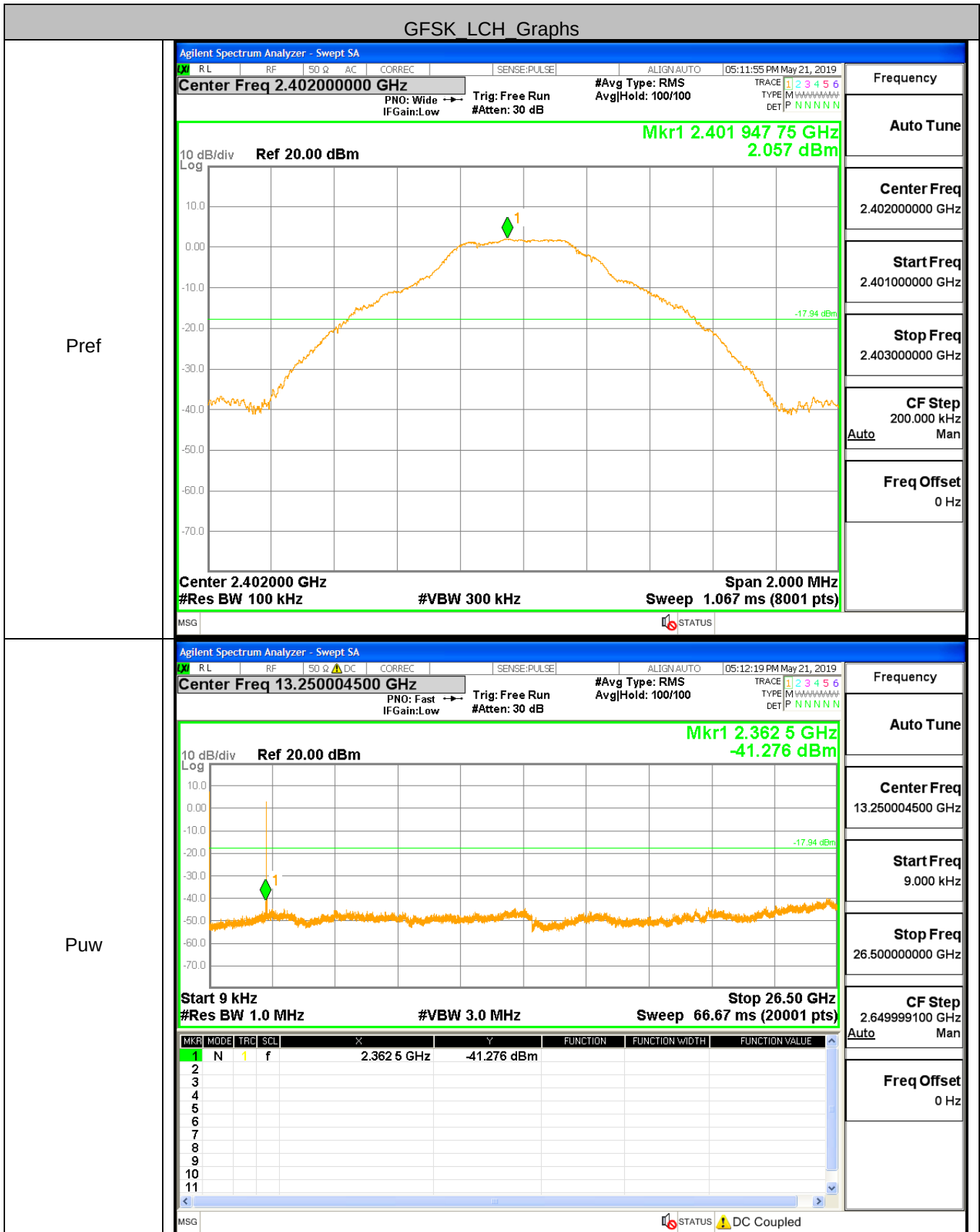
8DPSK/LCH/Hop



8DPSK/HCH/Hop

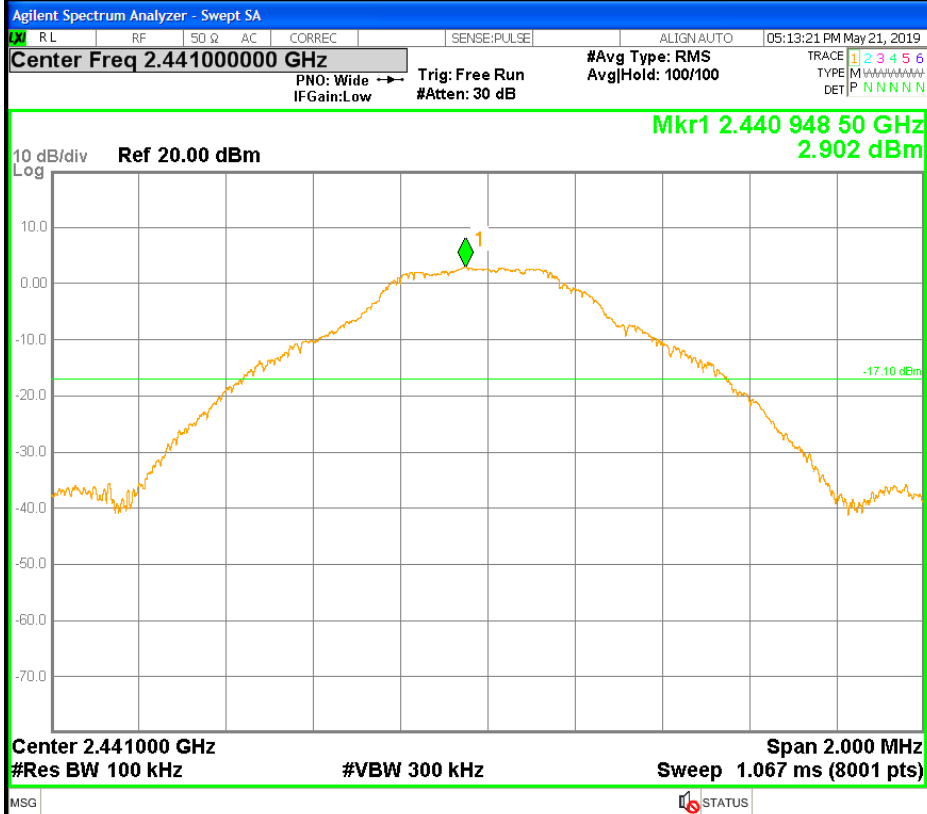


A.7 RF Conducted Spurious Emissions Test Graph



GFSK MCH Graphs

Pref



Frequency

Auto Tune

Center Freq
2.441000000 GHz

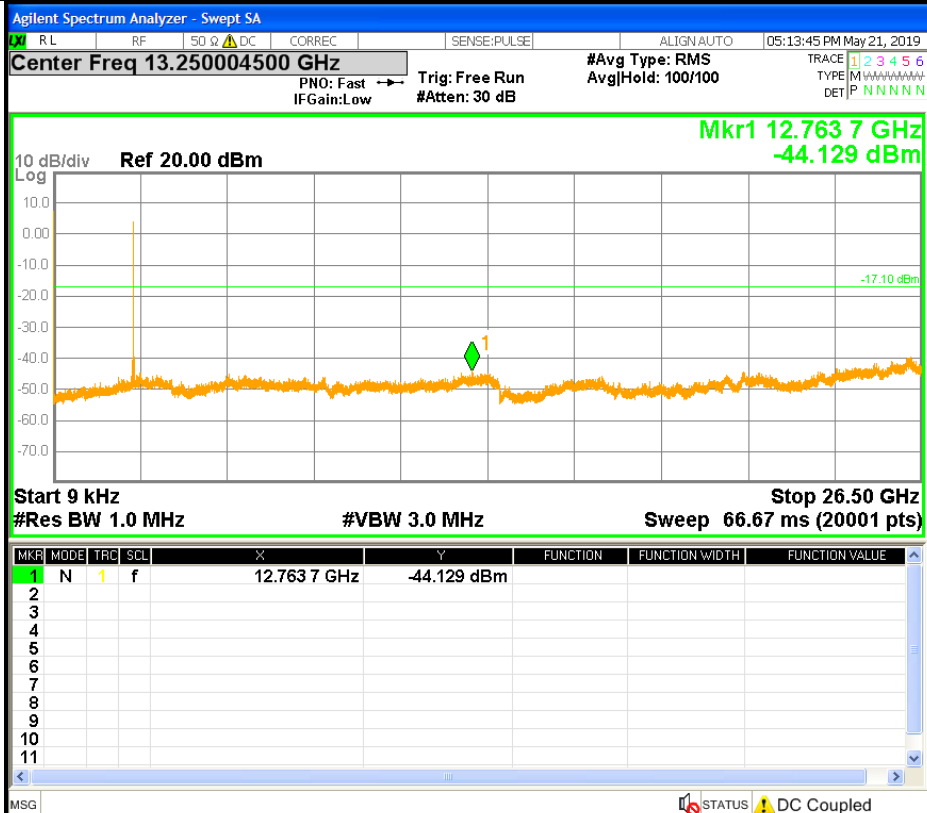
Start Freq
2.440000000 GHz

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

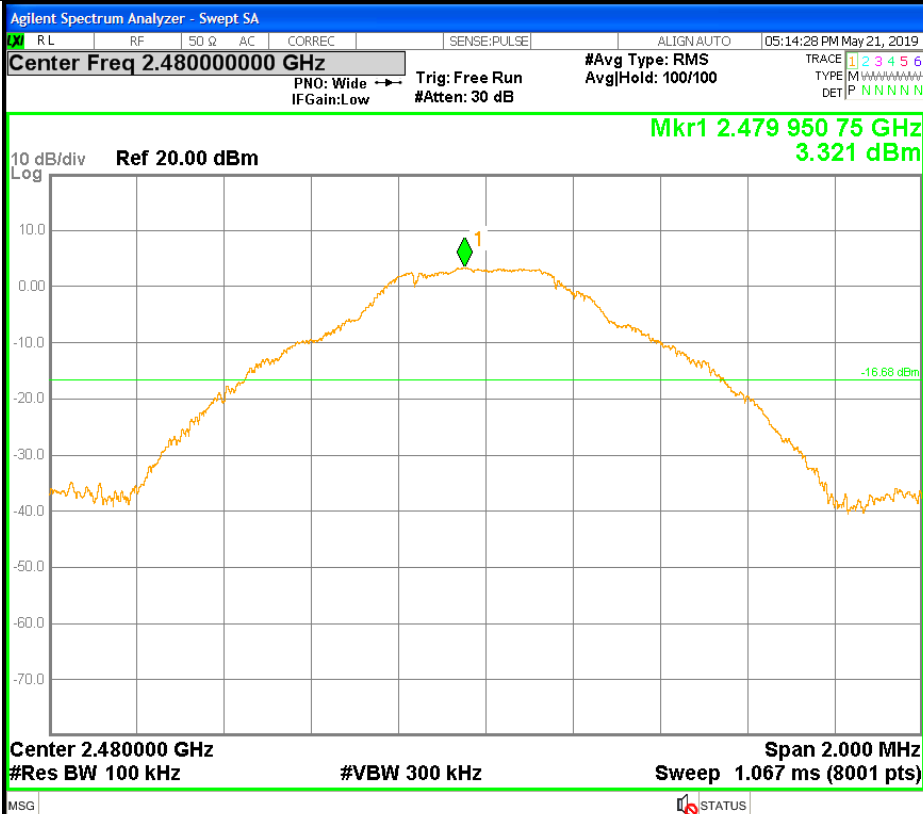
Stop Freq
26.500000000 GHz

CF Step
2.649999100 GHz
Auto Man

Freq Offset
0 Hz

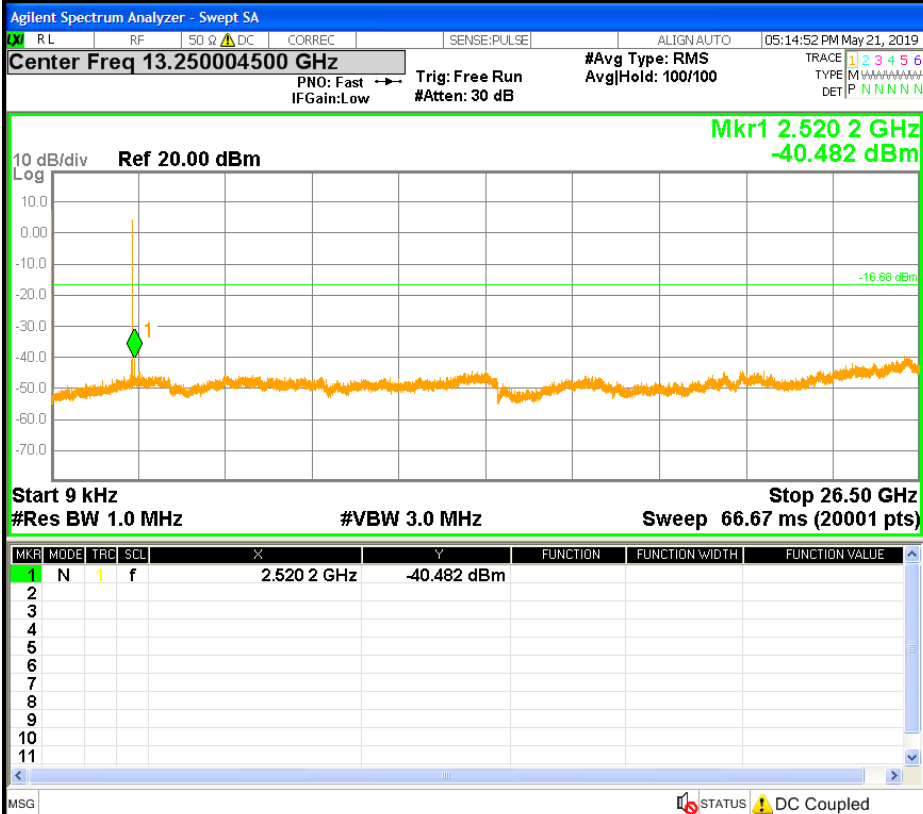
GFSK HCH Graphs

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 Man
Freq Offset 0 Hz

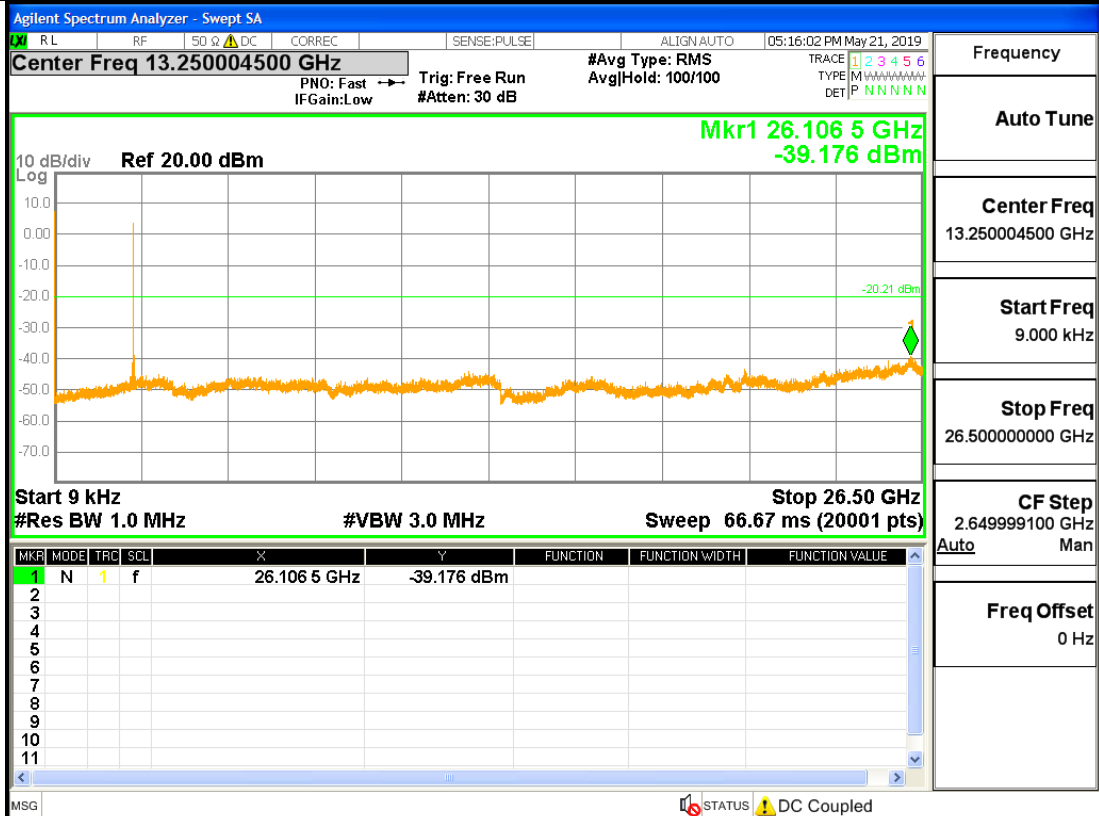
Puw



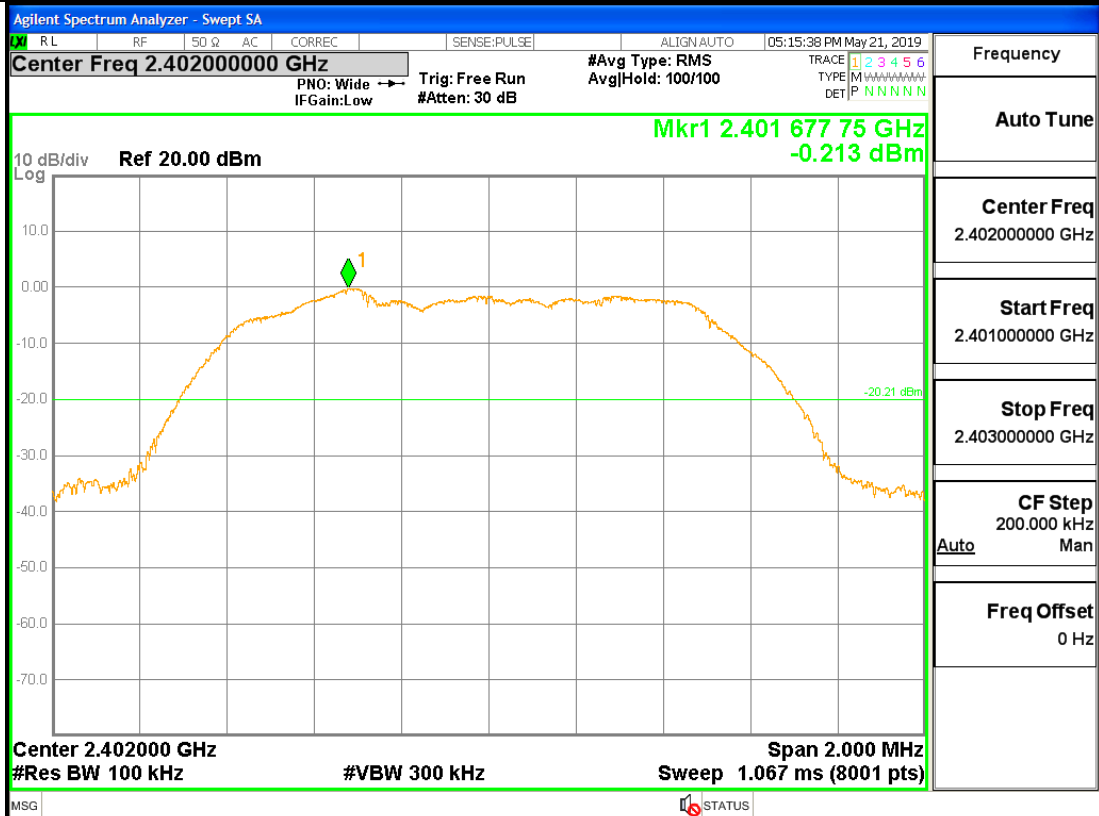
Frequency
Auto Tune
Center Freq 13.250004500 GHz
Start Freq 9.000 kHz
Stop Freq 26.500000000 GHz
CF Step 2.649999100 GHz Auto Man
Freq Offset 0 Hz

π /4DQPSK LCH Graphs

Pref

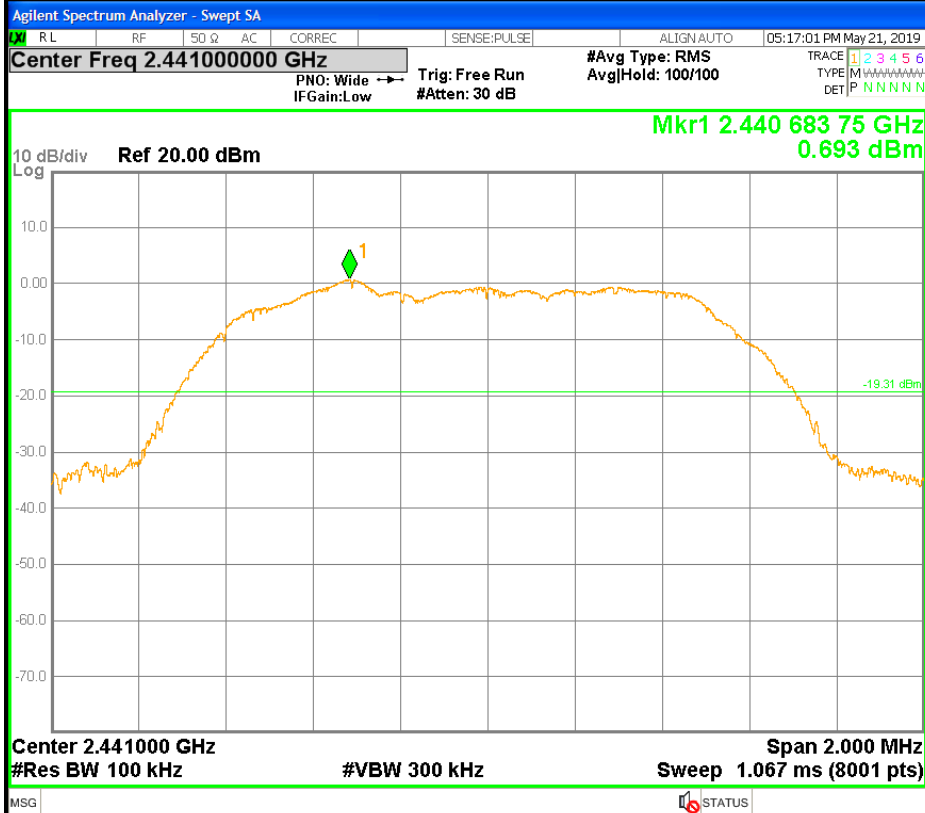


Puw



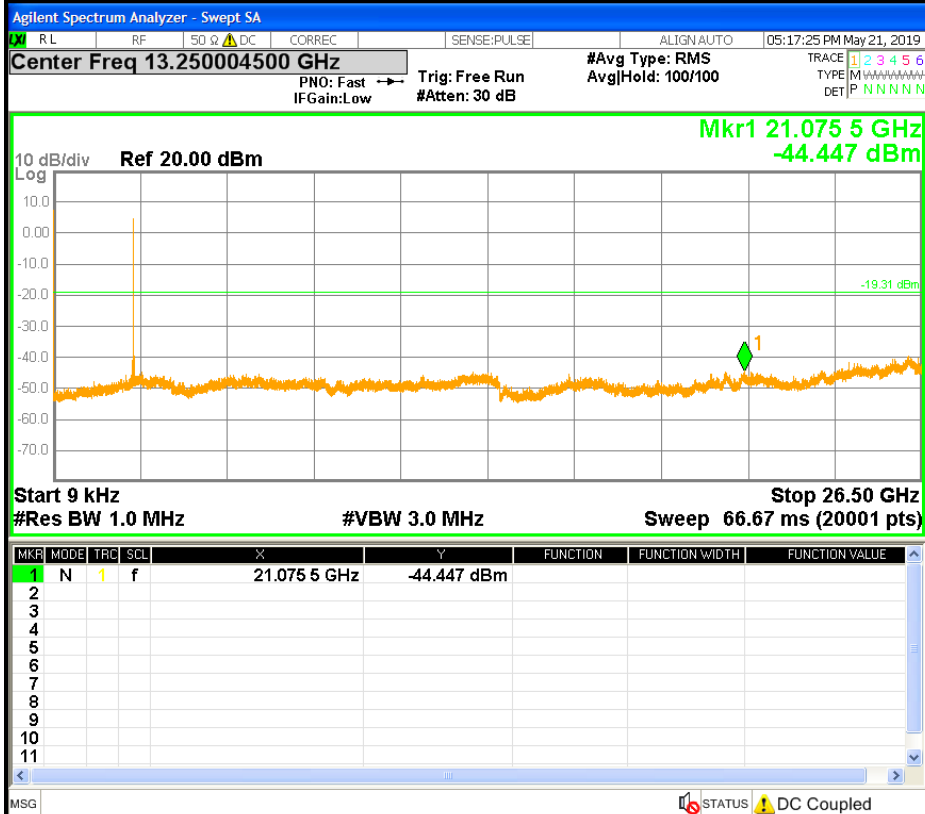
$\pi/4$ DQPSK MCH Graphs

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 Man
Freq Offset 0 Hz

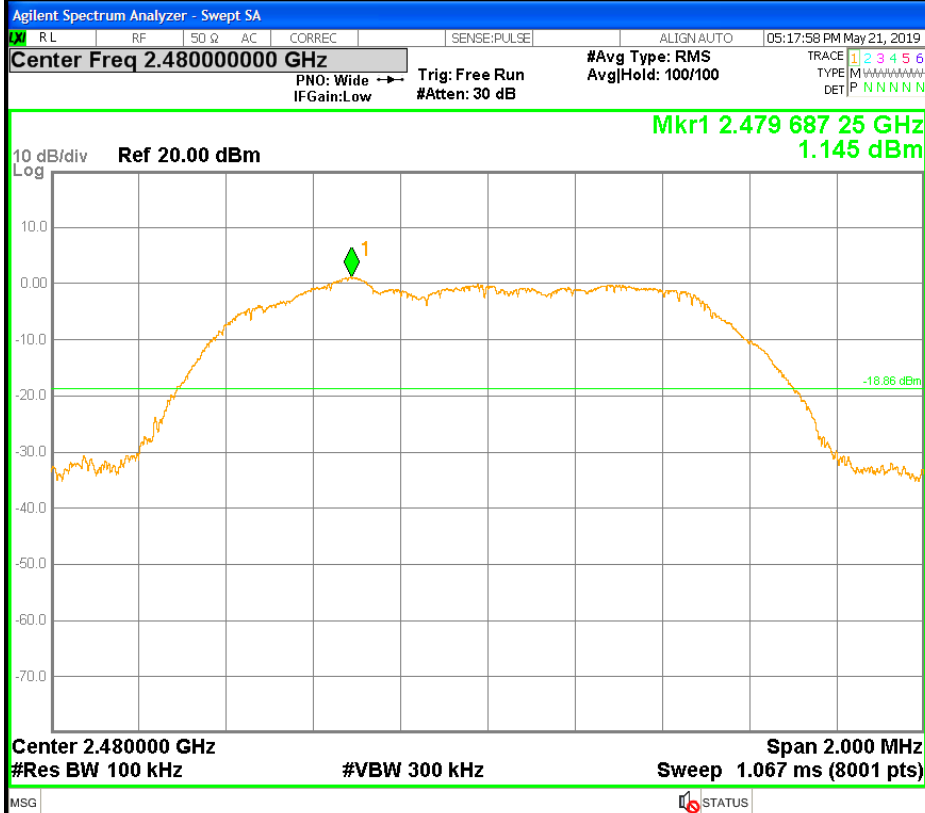
Puw



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

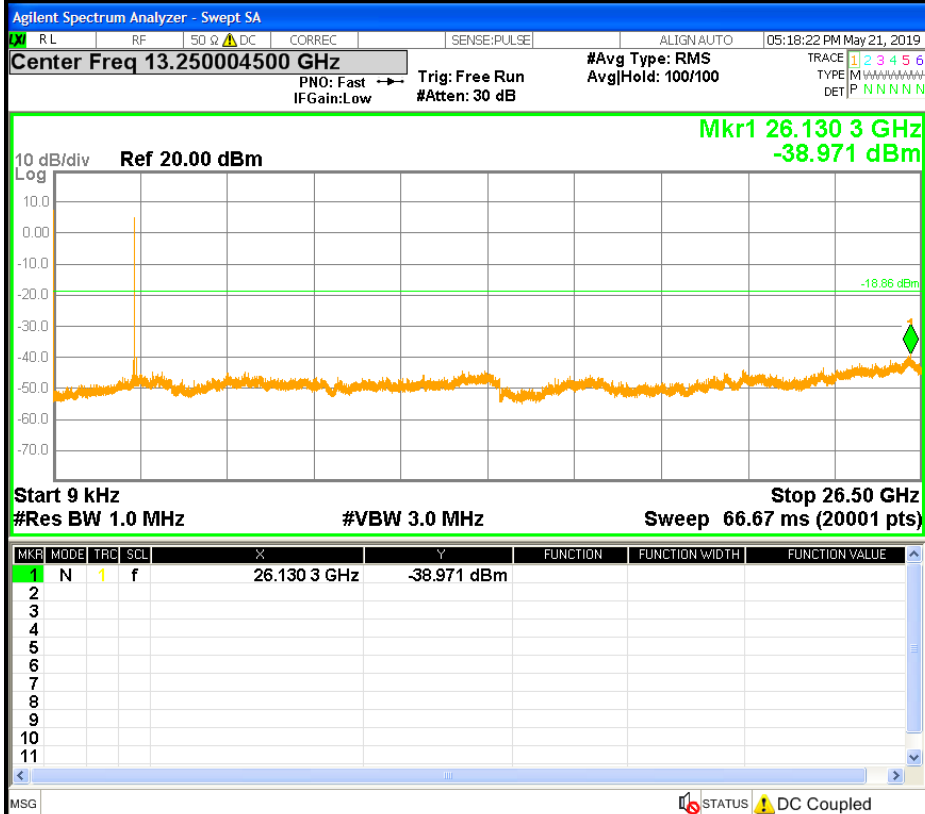
$\pi/4$ DQPSK HCH Graphs

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 Man
Freq Offset 0 Hz

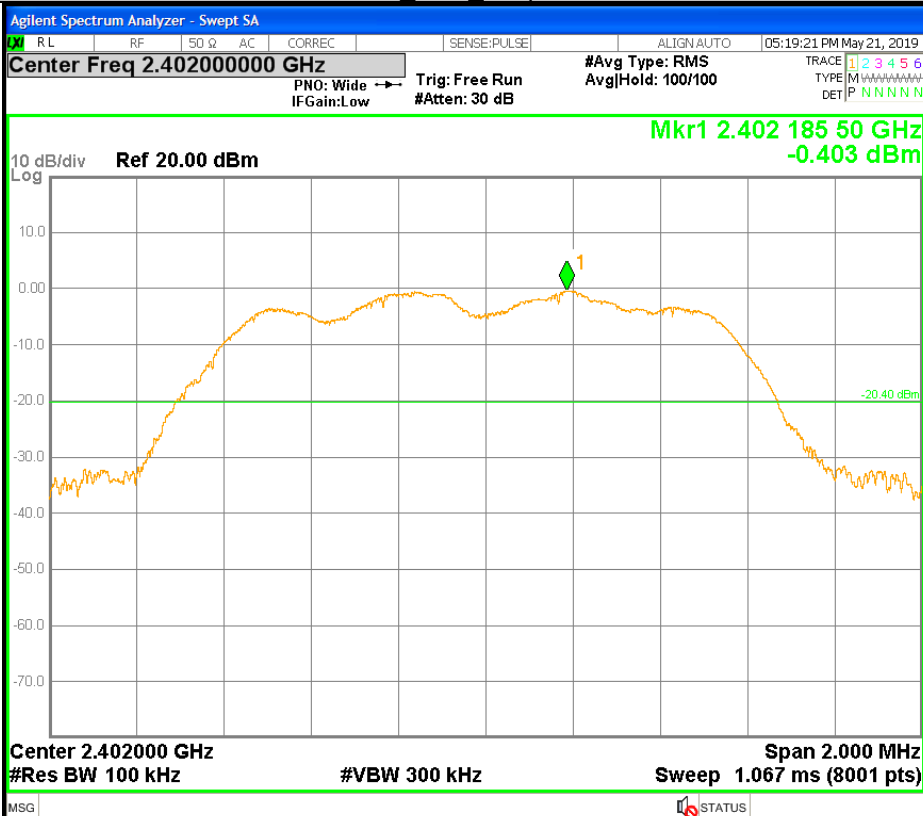
Puw



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

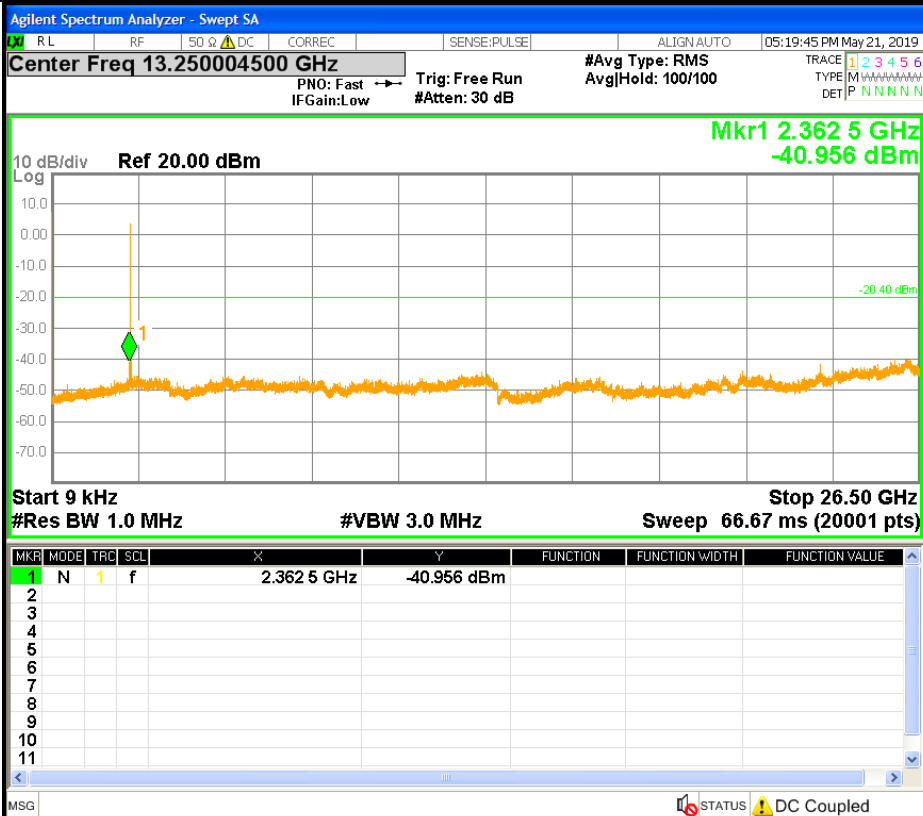
8DPSK LCH Graphs

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 Man
Freq Offset 0 Hz

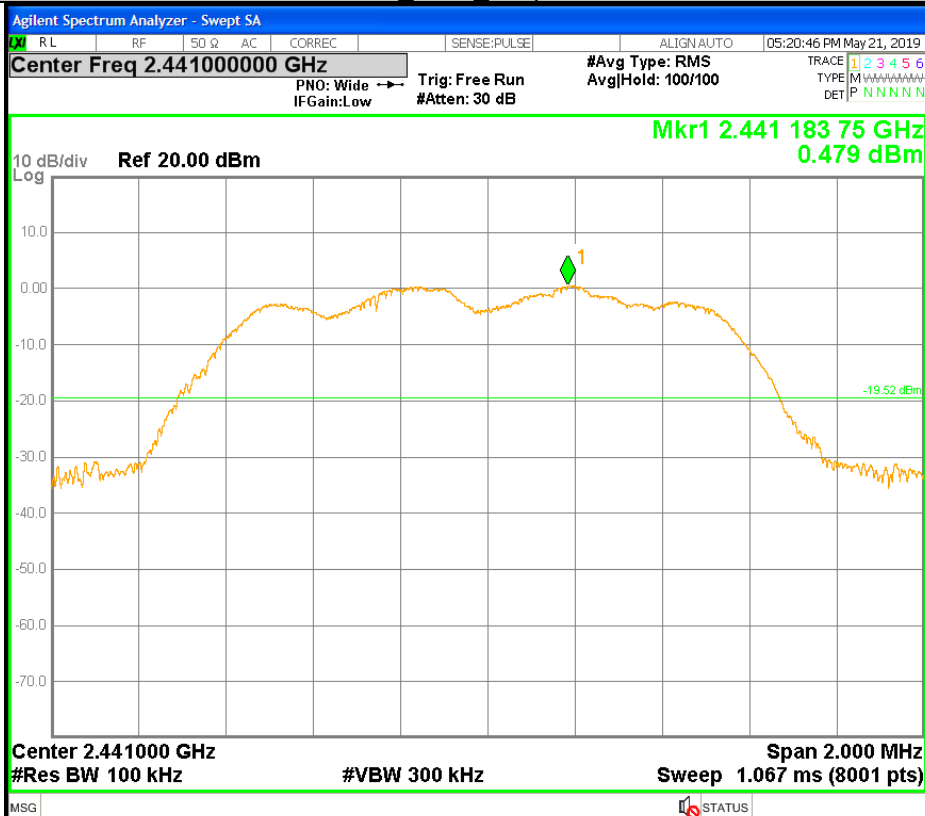
Puw



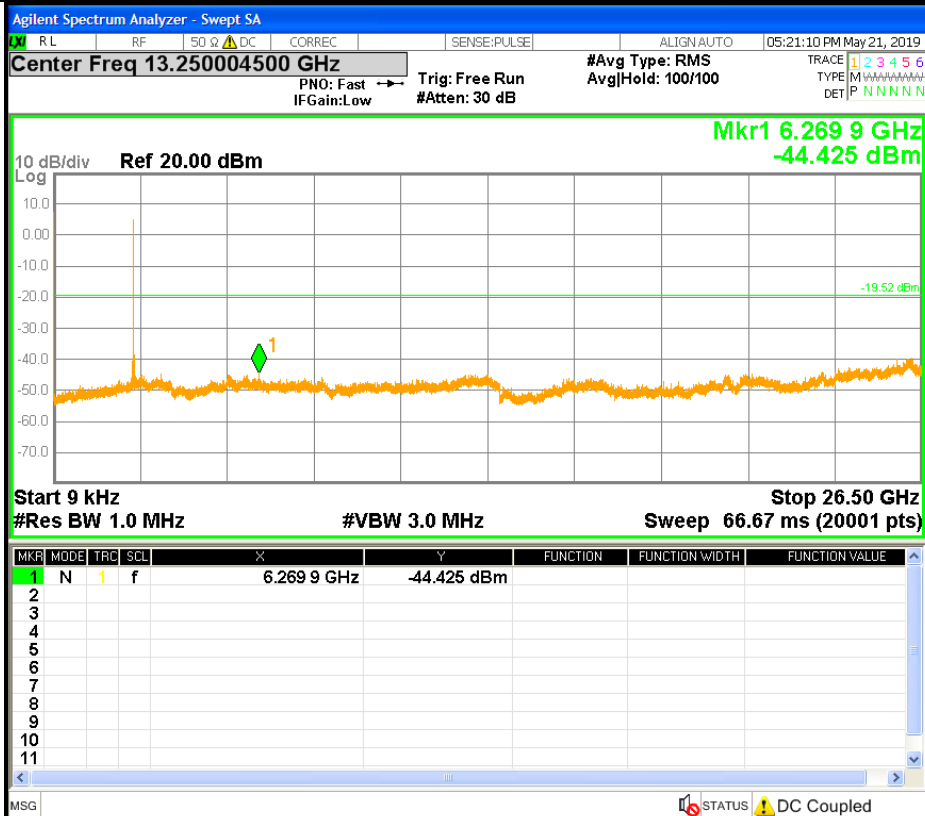
Frequency
Auto Tune
Center Freq 13.250004500 GHz
Start Freq 9.000 kHz
Stop Freq 26.500000000 GHz
CF Step 2.649999100 GHz Auto Man
Freq Offset 0 Hz

8DPSK MCH Graphs

Pref

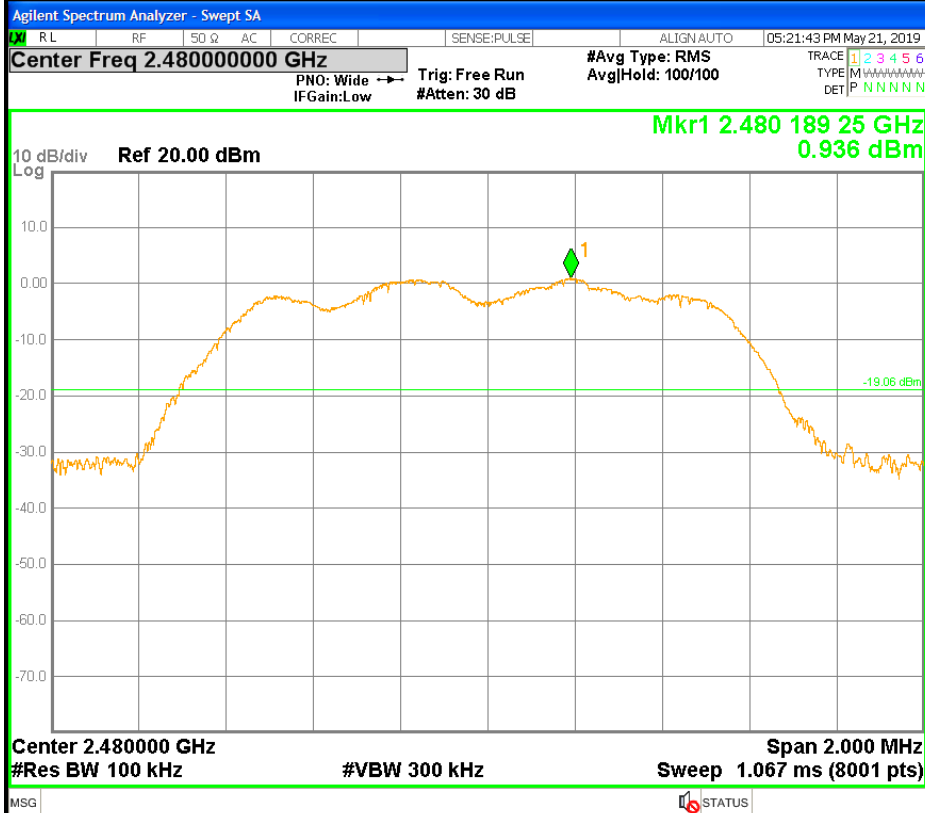


Puw



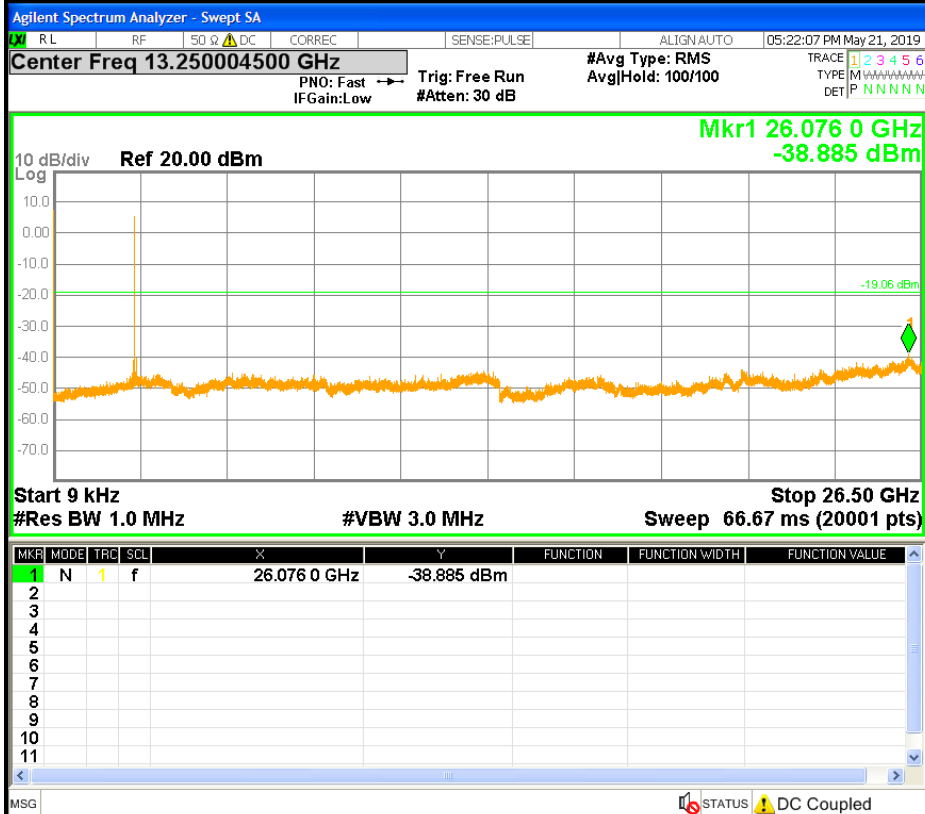
8DPSK HCH Graphs

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 Man
Freq Offset 0 Hz

Puw



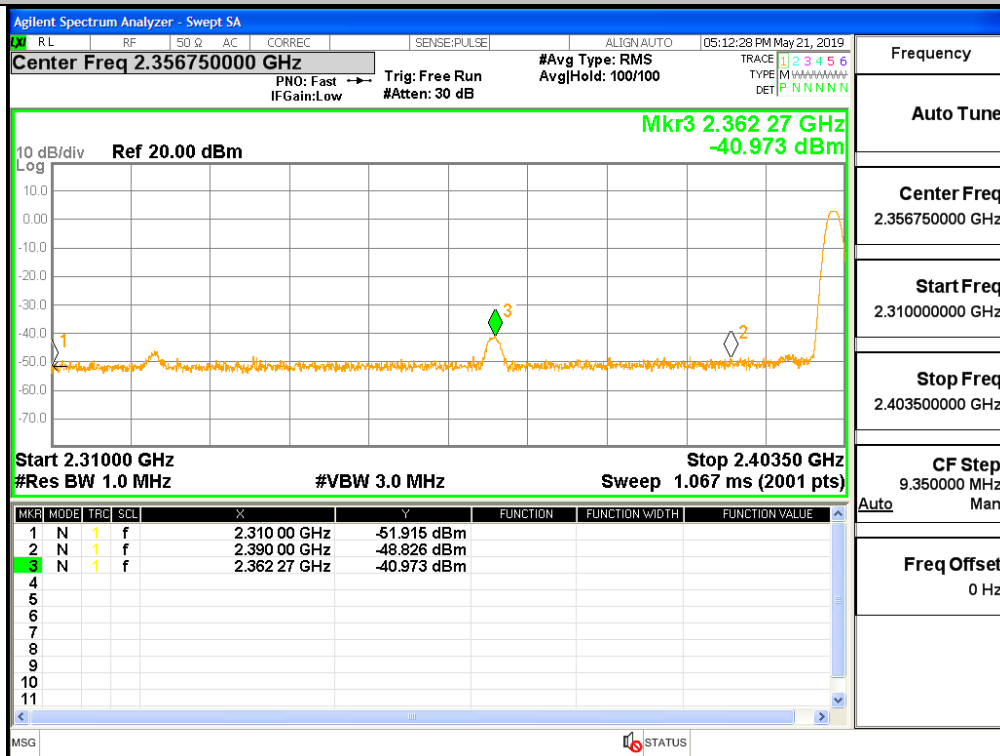
Frequency
Auto Tune
Center Freq 13.250004500 GHz
Start Freq 9.000 kHz
Stop Freq 26.500000000 GHz
CF Step 2.649999100 GHz Auto Man
Freq Offset 0 Hz

A.8 Restrict-band band-edge measurements

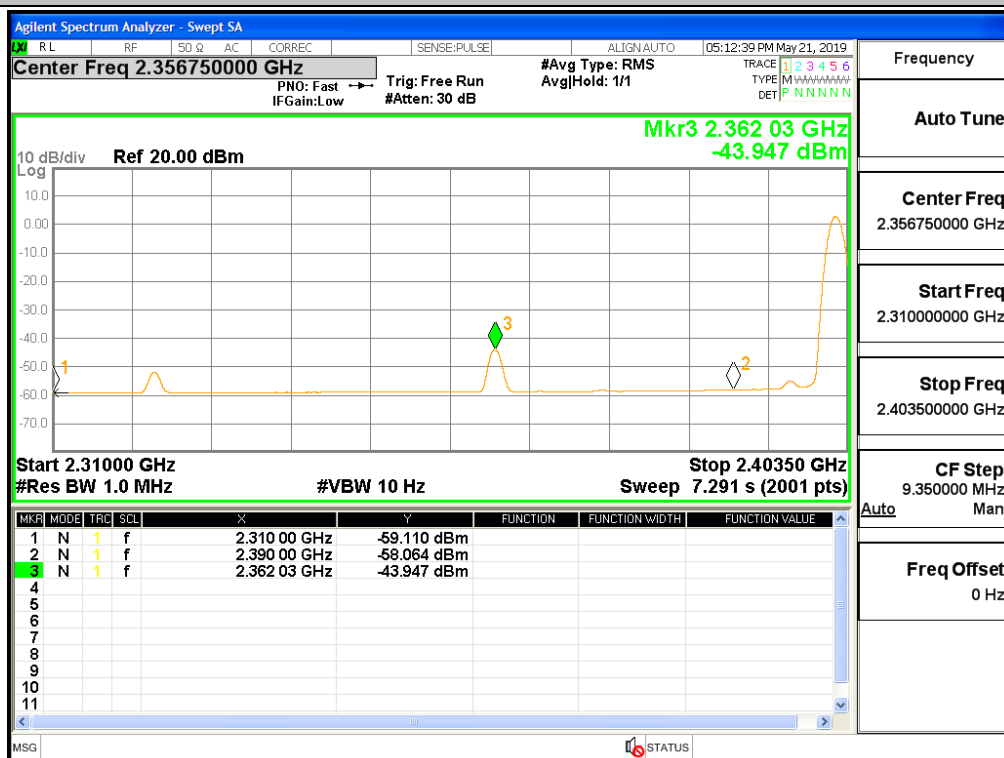
Type	Carrier Frequency (MHz)	Frequency(M Hz)	Gain	Ground Factor	Peak Value(dBm)	E [dBuV/m]	Limit [dBuV/m]	Conclusion
1DH5	2402	2362.3	2.00	0.00	-40.97	56.23	74	Pass
1DH5	2480	2483.5	2.00	0.00	-49.27	47.93	74	Pass
2DH5	2402	2361.8	2.00	0.00	-41.12	56.08	74	Pass
2DH5	2480	2483.5	2.00	0.00	-49.23	47.97	74	Pass
3DH5	2402	2362.1	2.00	0.00	-41.26	55.94	74	Pass
3DH5	2480	2483.5	2.00	0.00	-49.15	48.05	74	Pass

Type	Carrier Frequency (MHz)	Frequency(M Hz)	Gain	Ground Factor	Average Value(dBm)	E [dBuV/m]	Limit [dBuV/m]	Conclusion
1DH5	2402	2362.0	2.00	0.00	-43.95	53.25	54	Pass
1DH5	2480	2483.5	2.00	0.00	-53.90	43.30	54	Pass
2DH5	2402	2362.0	2.00	0.00	-45.31	51.89	54	Pass
2DH5	2480	2483.5	2.00	0.00	-52.55	44.65	54	Pass
3DH5	2402	2362.0	2.00	0.00	-45.31	51.89	54	Pass
3DH5	2480	2483.5	2.00	0.00	-52.38	44.82	54	Pass

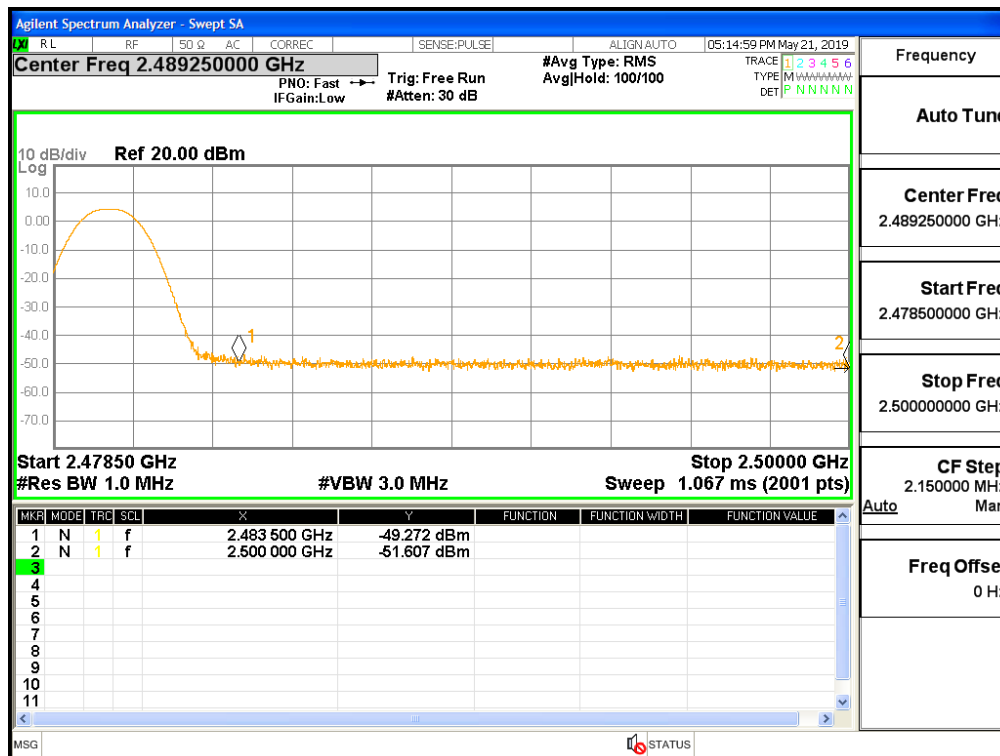
Restrict-band band-edge measurements_2402_PEAK_DH5



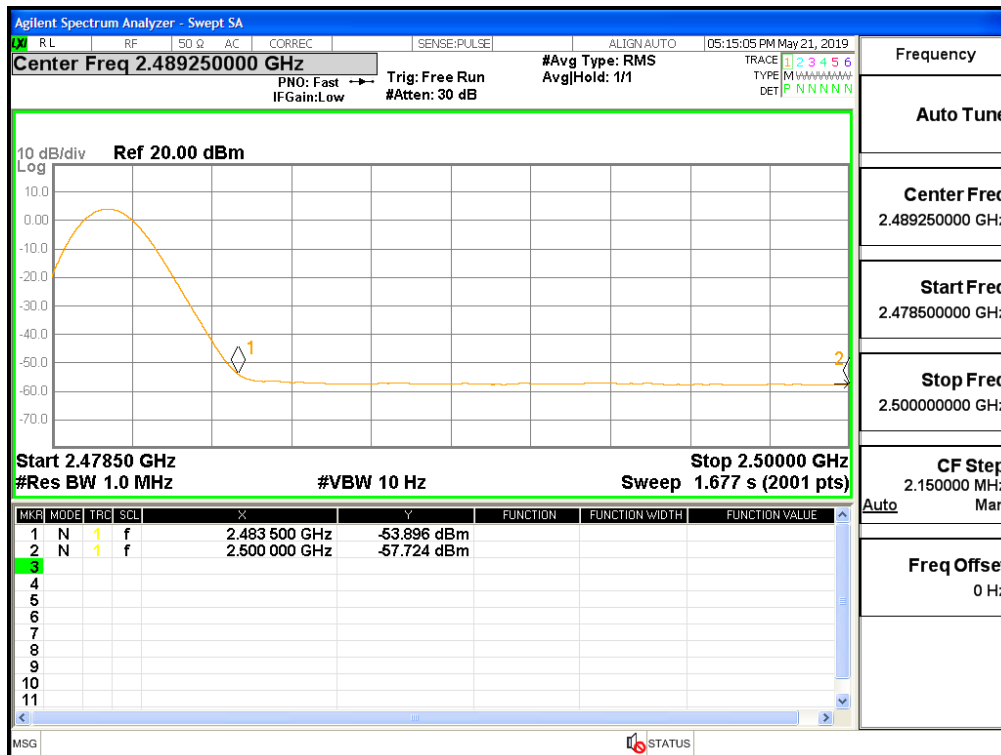
Restrict-band band-edge measurements_2402_AV_DH5



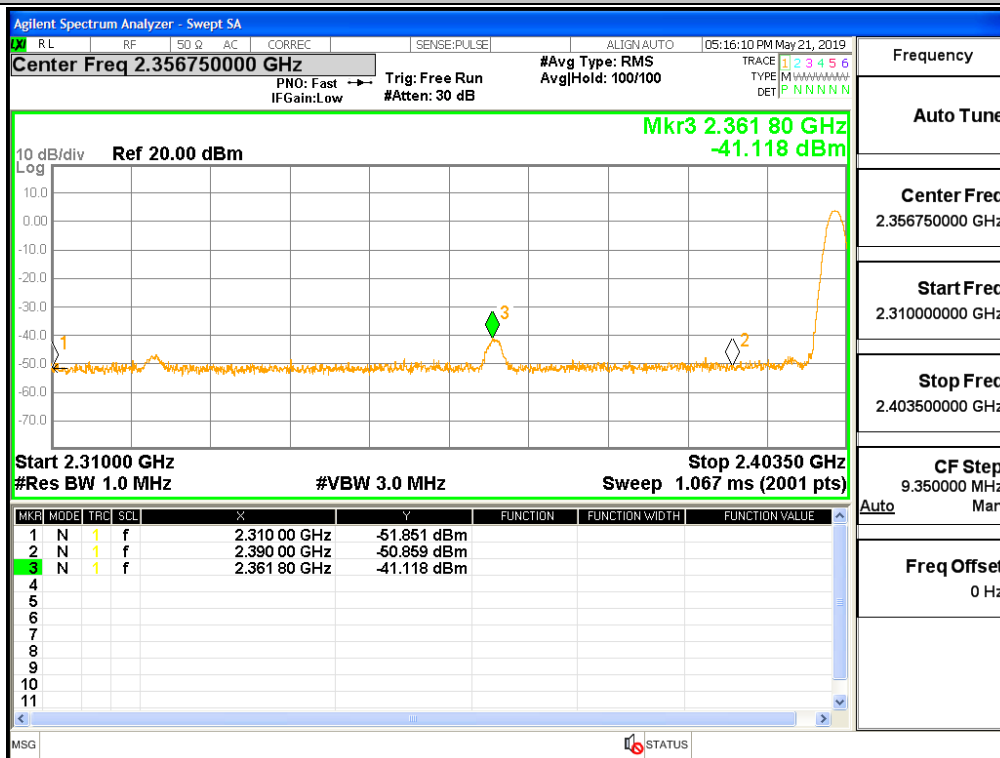
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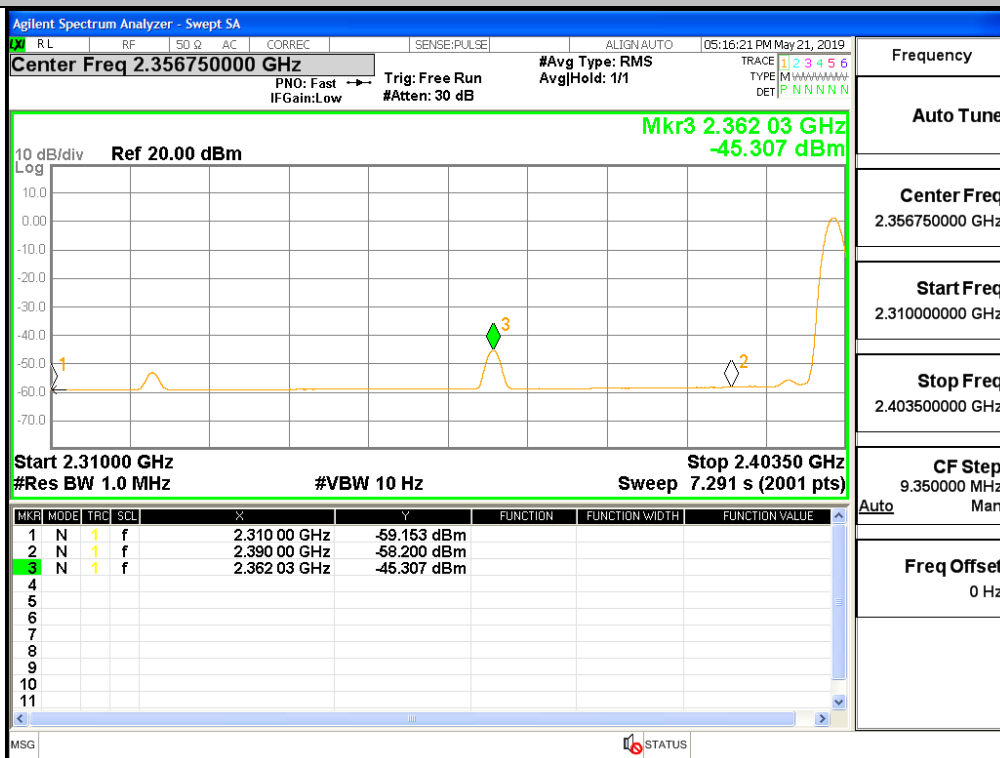
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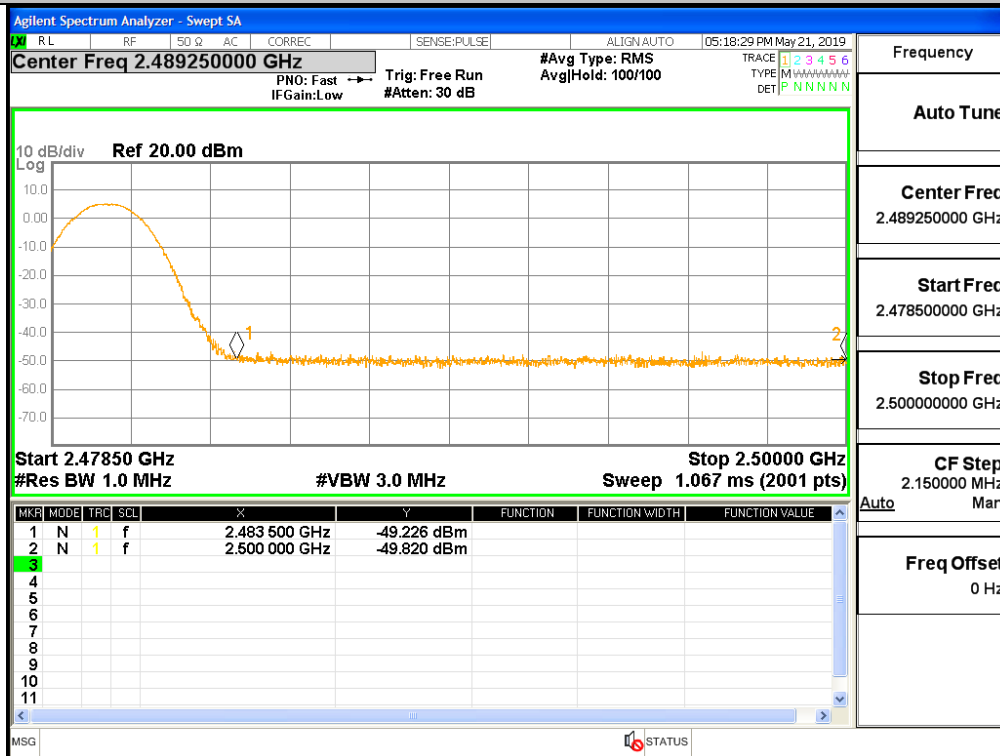
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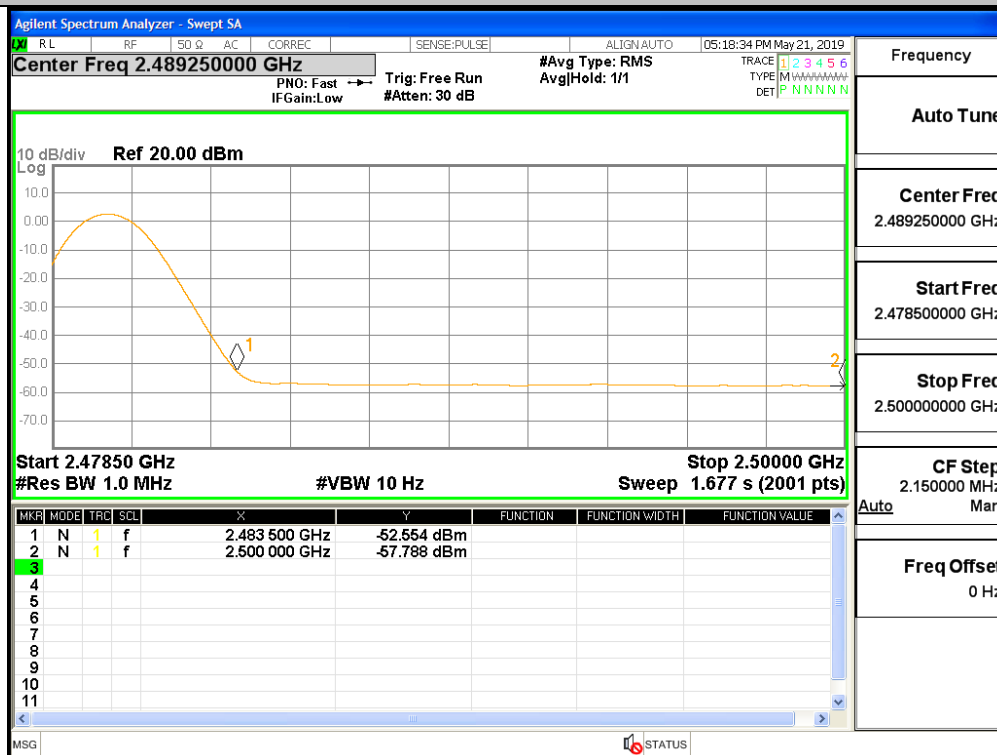
Restrict-band band-edge measurements_2402_AV_2DH5



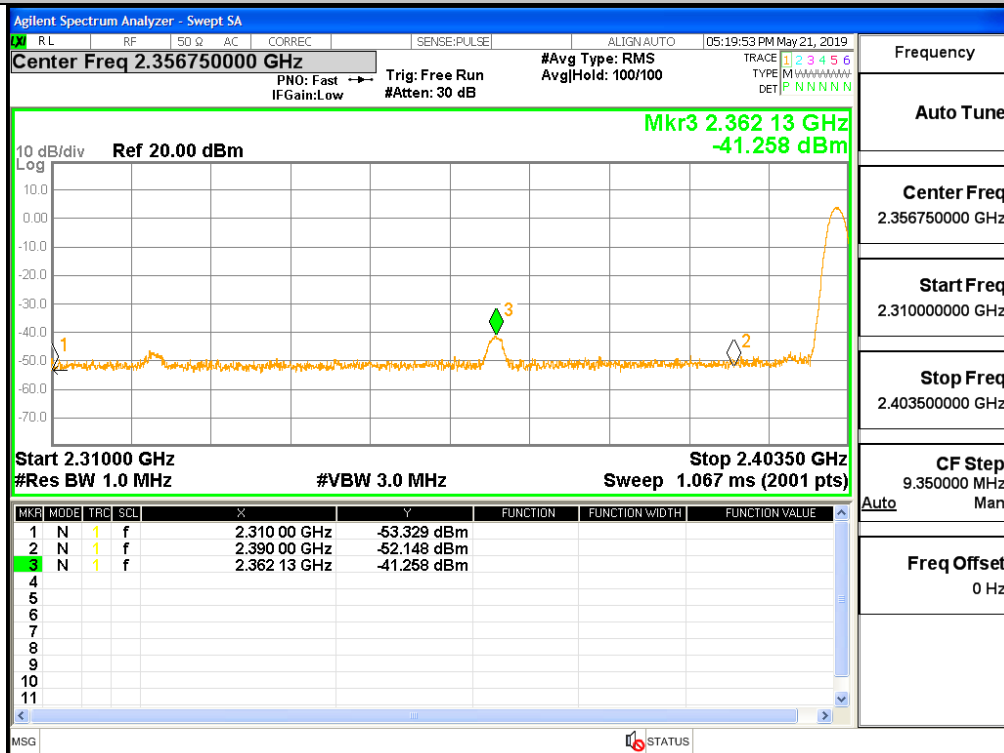
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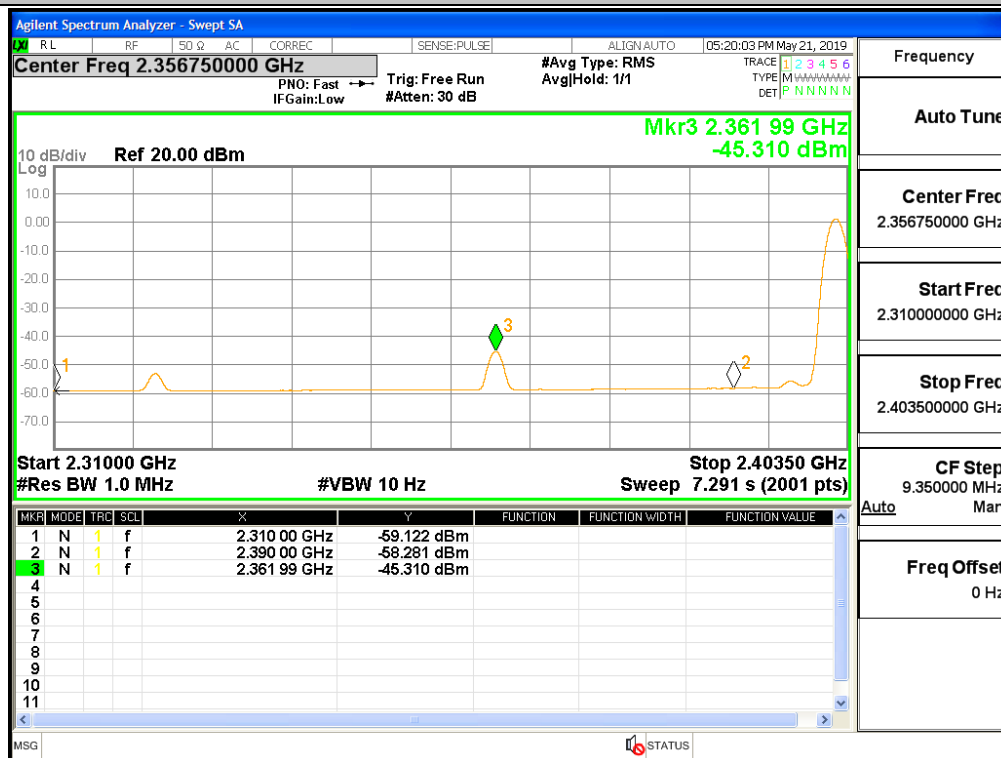
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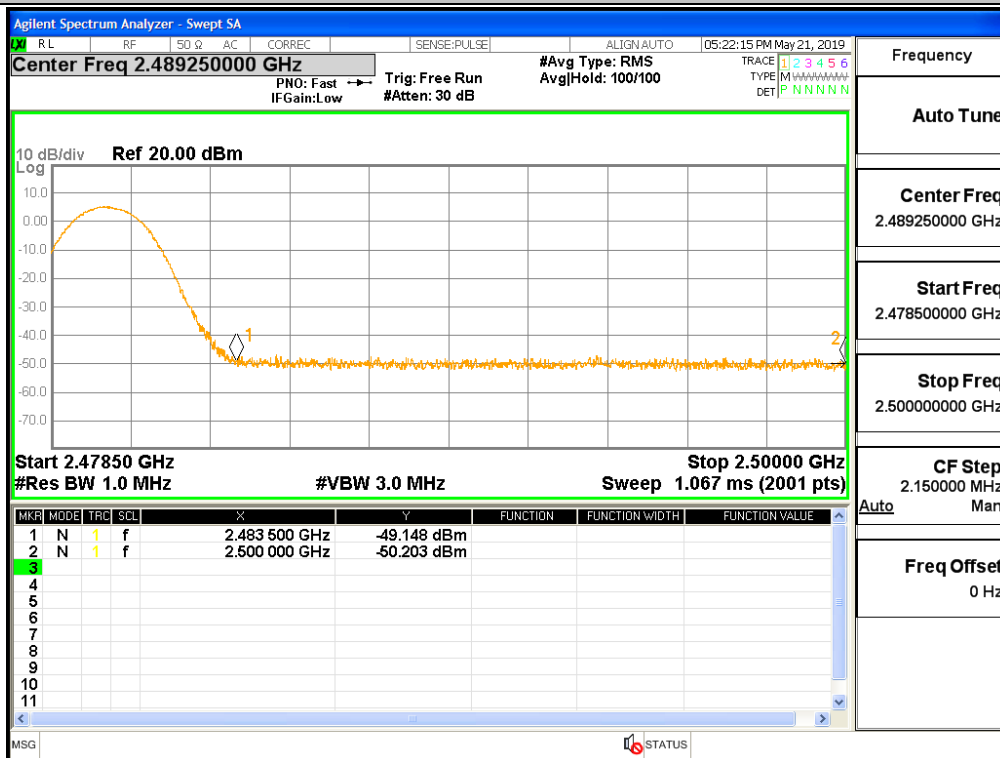
Restrict-band band-edge measurements_2402_PEAK_3DH5



Restrict-band band-edge measurements_2402_AV_3DH5



Restrict-band band-edge measurements_2480_PEAK_3DH5



Restrict-band band-edge measurements_2480_AV_3DH5

