

Appendix A

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

Product Name: Bluetooth earphone

Trade Mark: Monster

Test Model: 1672031

FCC ID: 2ATOB-1672031

Environmental Conditions

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

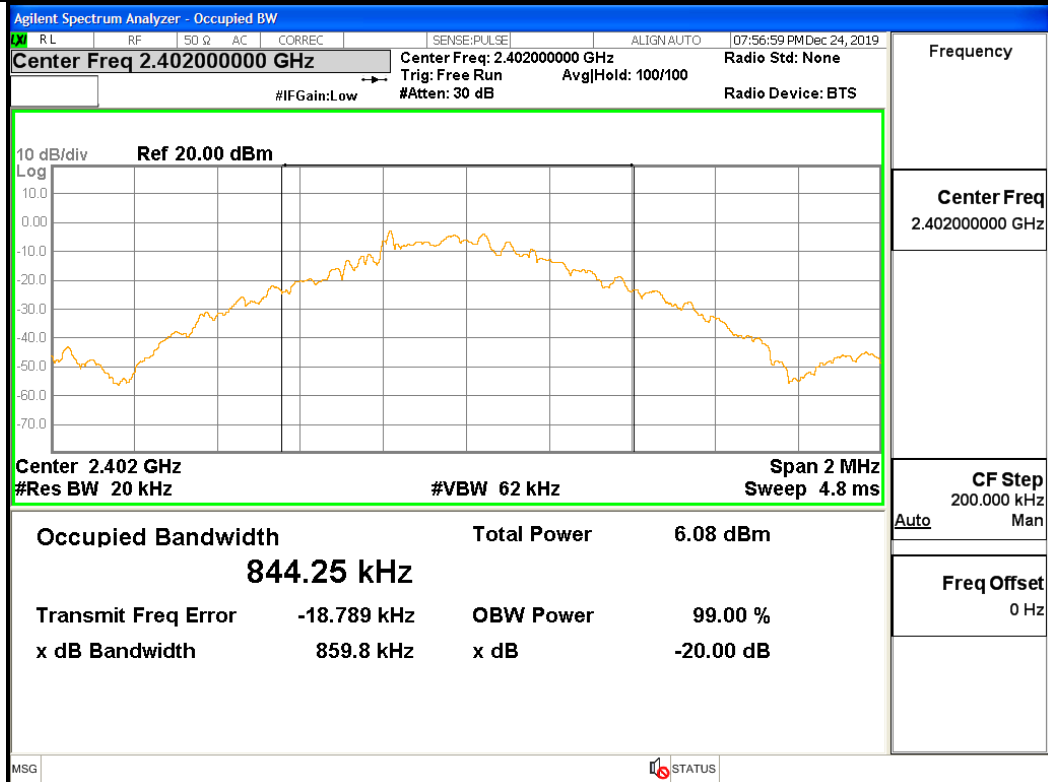
A.1 20 dB Bandwidth

Mode	Channel.	20dB Bandwidth [MHz]	Limit(MHz)	Verdict
GFSK	LCH	0.860	Not Specified	PASS
GFSK	MCH	0.944	Not Specified	PASS
GFSK	HCH	0.936	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.204	Not Specified	PASS
$\pi/4$ DQPSK	MCH	1.263	Not Specified	PASS
$\pi/4$ DQPSK	HCH	1.205	Not Specified	PASS
8DPSK	LCH	1.251	Not Specified	PASS
8DPSK	MCH	1.230	Not Specified	PASS
8DPSK	HCH	1.245	Not Specified	PASS

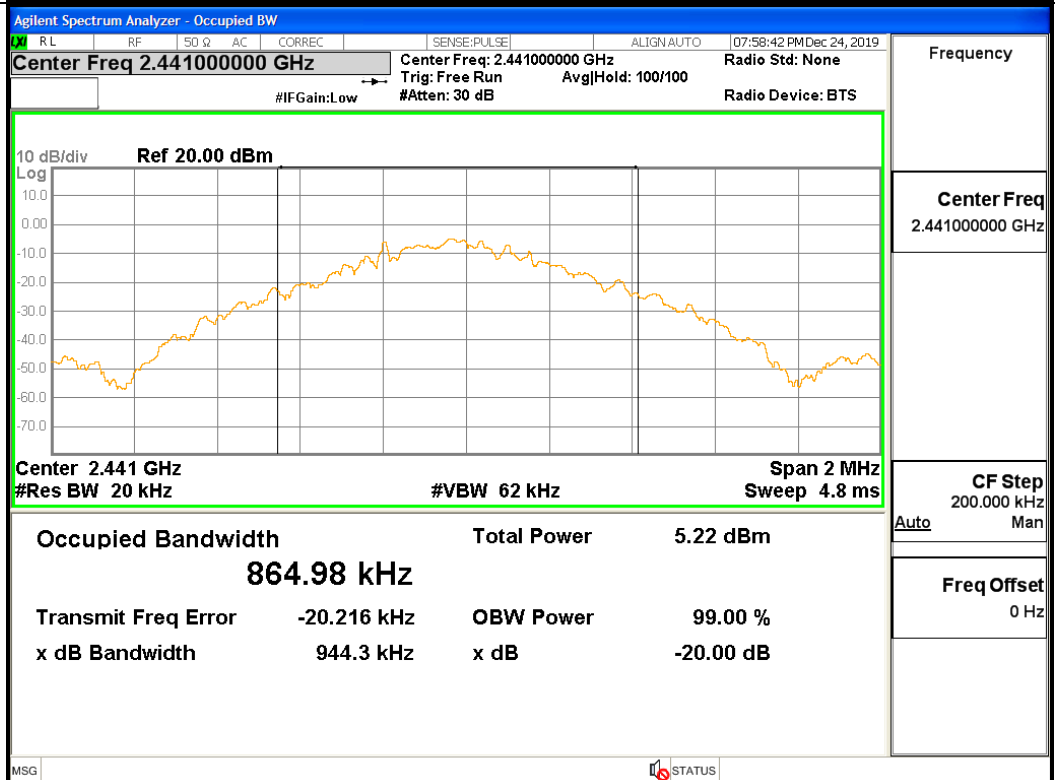
Test Graph

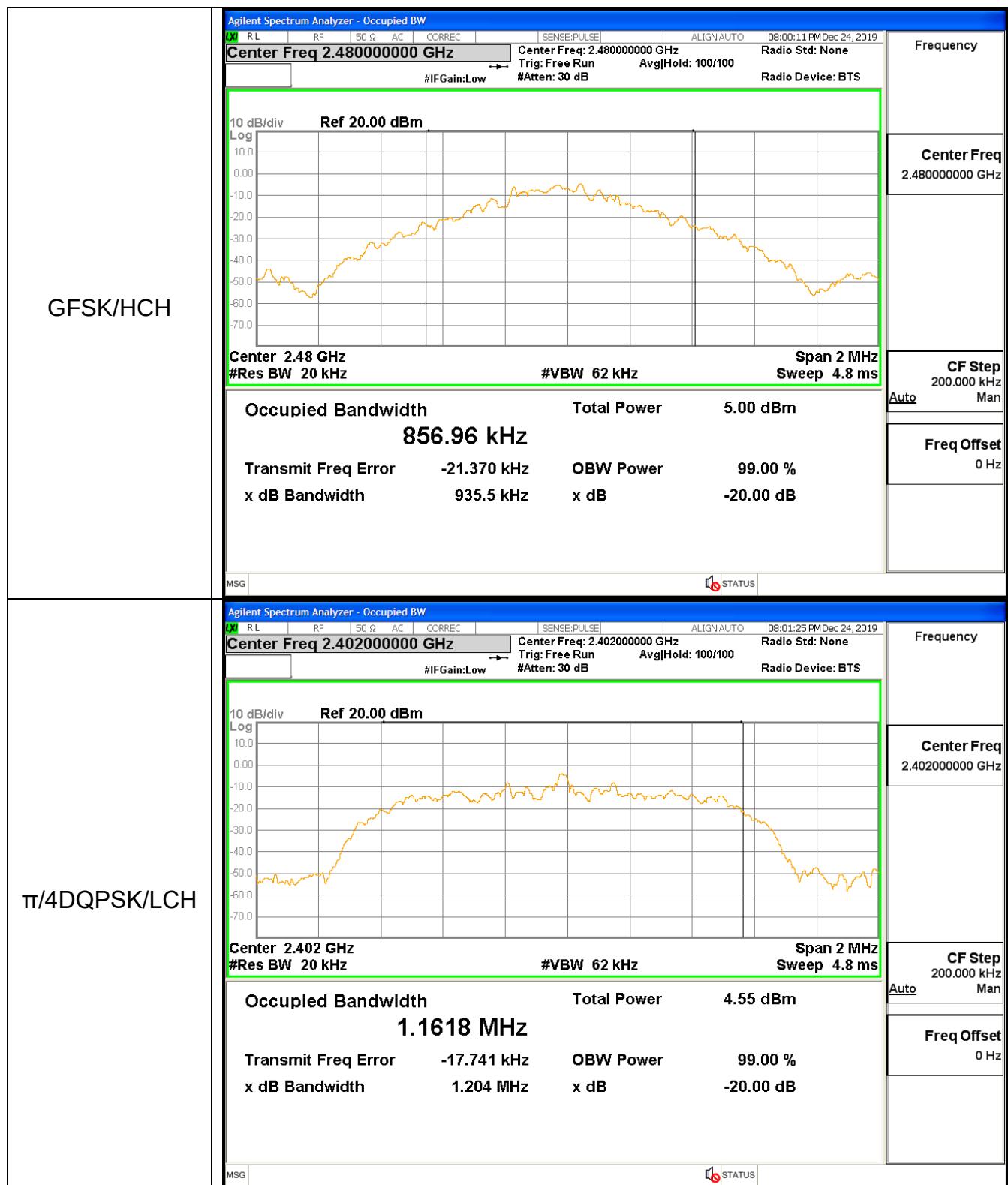
Graphs

GFSK/LCH

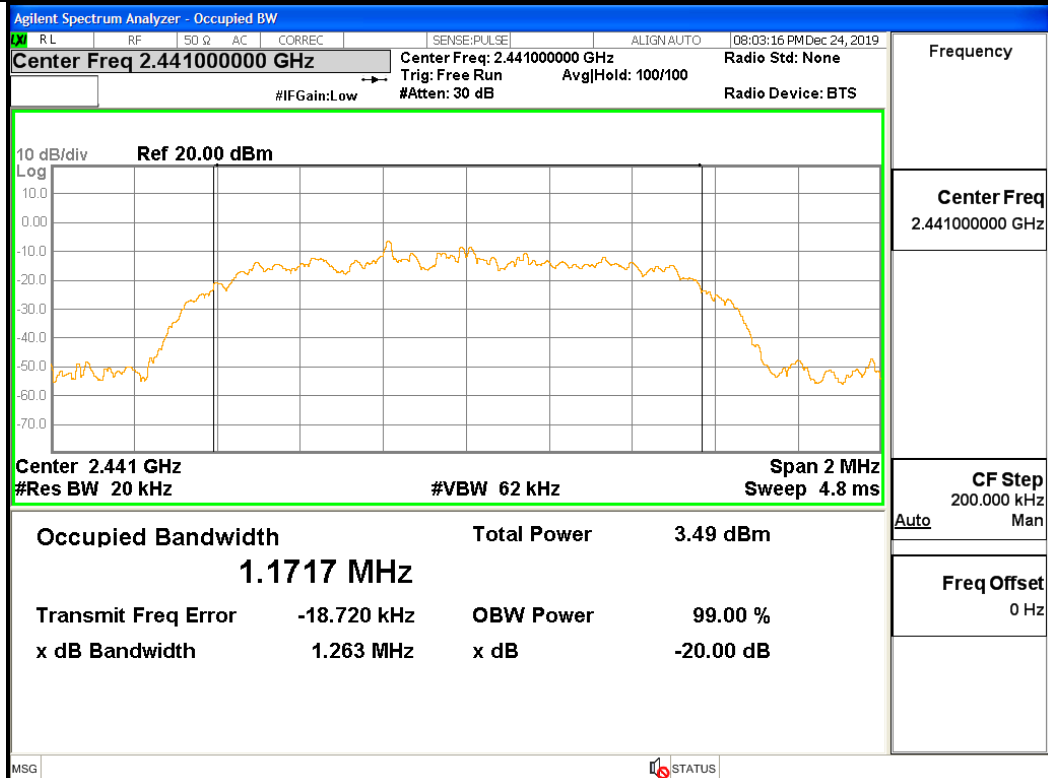


GFSK/MCH

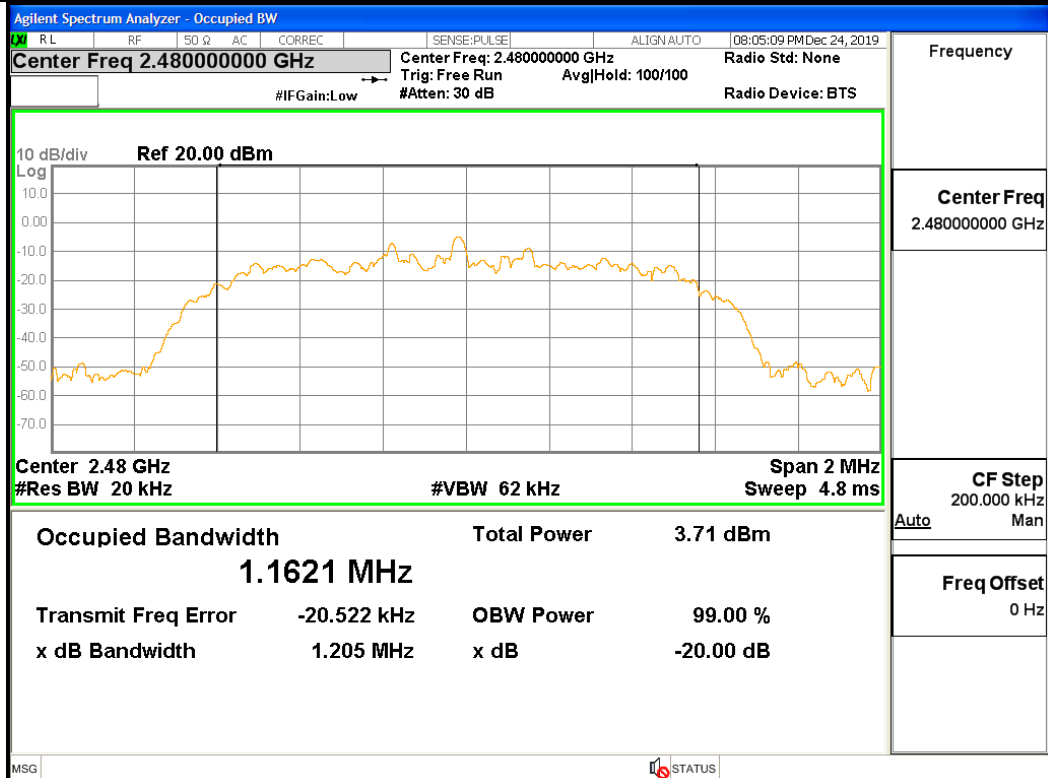




$\pi/4$ DQPSK/MCH

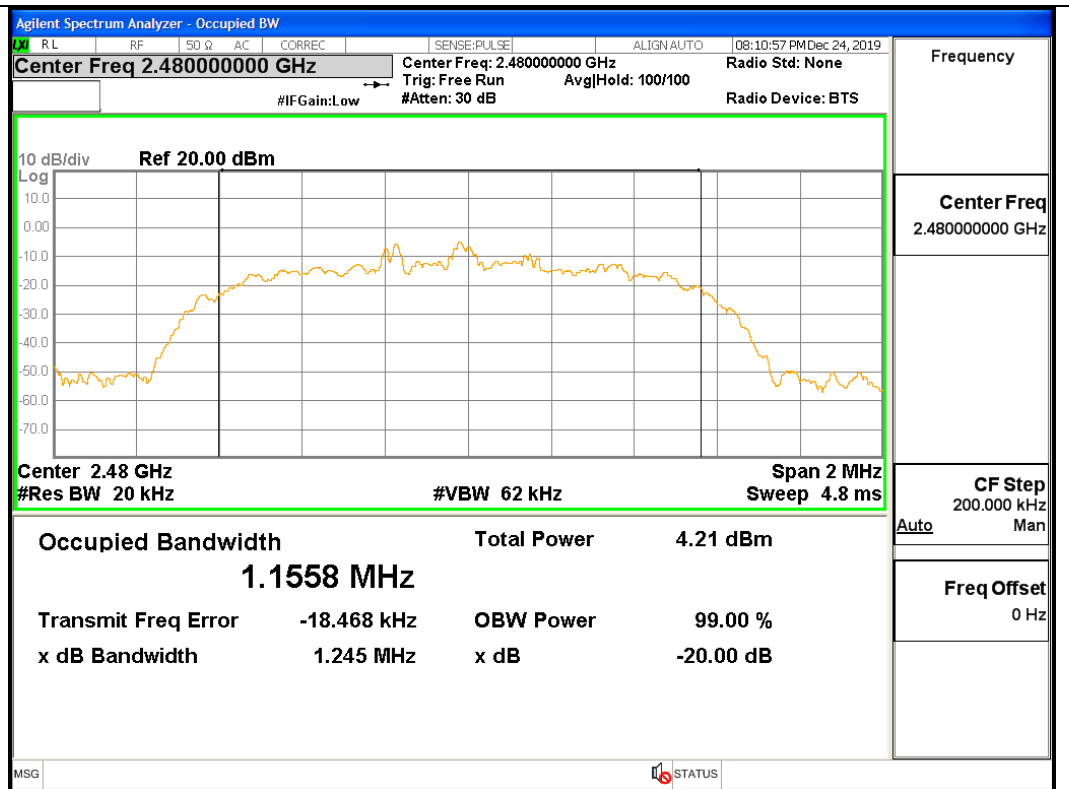


$\pi/4$ DQPSK/HCH





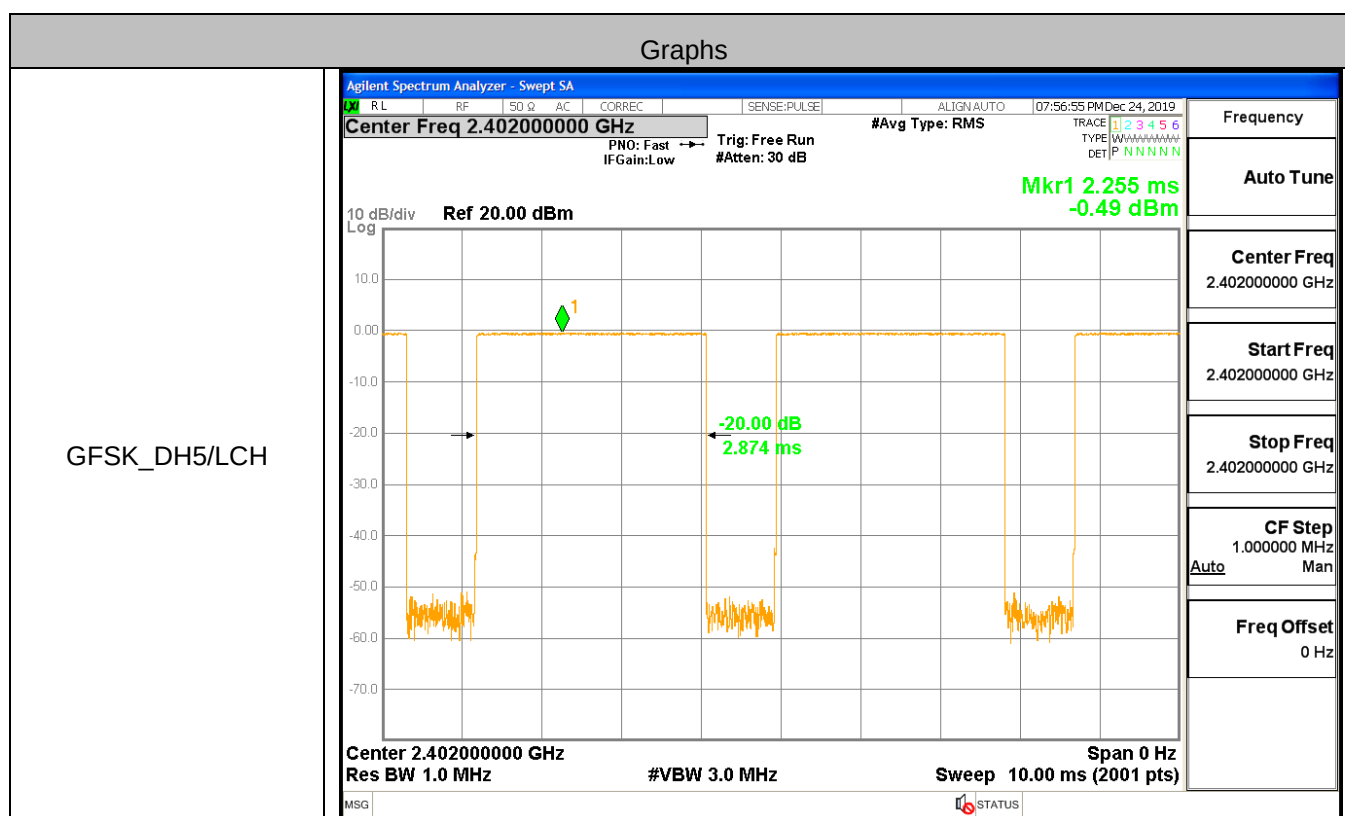
8DPSK/HCH

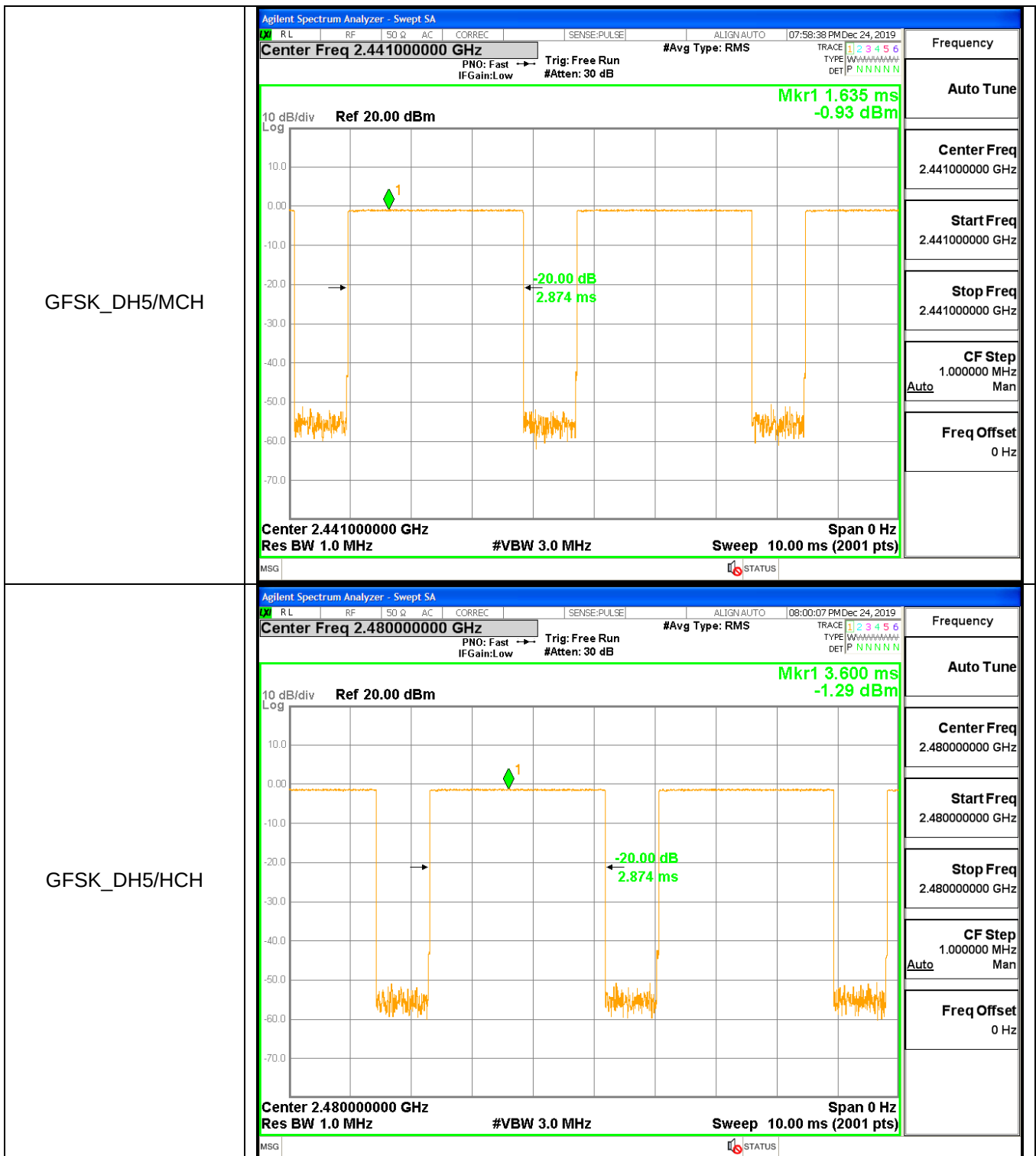


A.2 Dwell Time

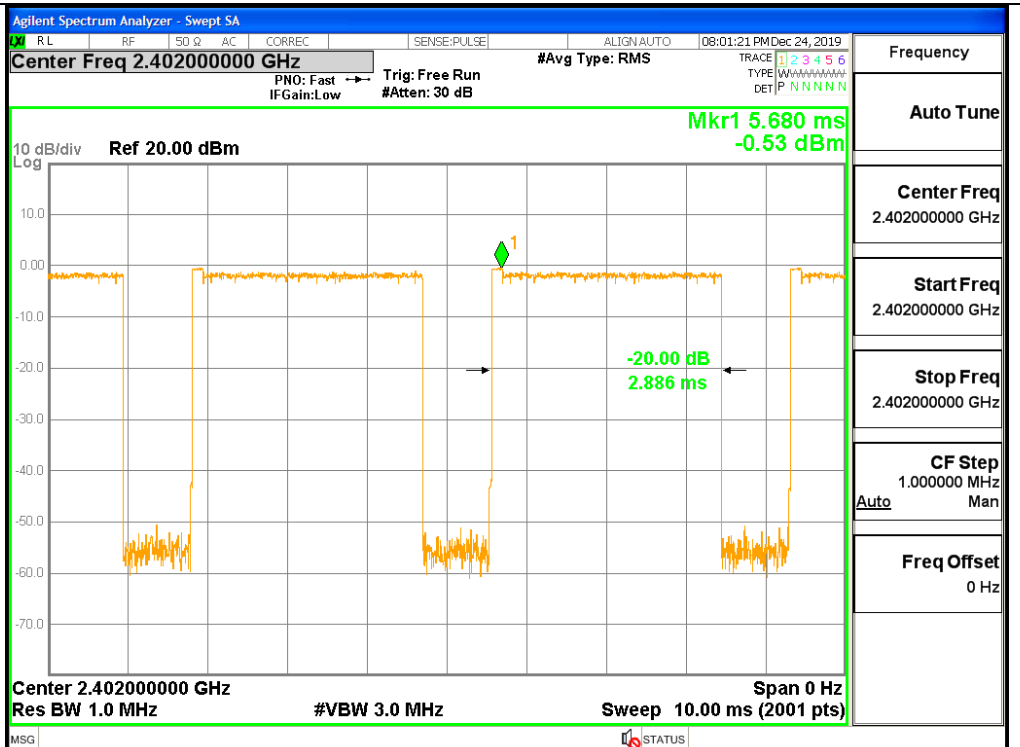
Mode	Packet	Channel	Burst Width [s/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	0.002874	106.7	0.306677	0.4	PASS
GFSK	DH5	MCH	0.002874	106.7	0.30666	0.4	PASS
GFSK	DH5	HCH	0.002874	106.7	0.30664	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	0.002886	106.7	0.307889	0.4	PASS
$\pi/4$ DQPSK	2DH5	MCH	0.002885	106.7	0.307823	0.4	PASS
$\pi/4$ DQPSK	2DH5	HCH	0.002885	106.7	0.307846	0.4	PASS
8DPSK	3DH5	LCH	0.002889	106.7	0.308215	0.4	PASS
8DPSK	3DH5	MCH	0.002884	106.7	0.307724	0.4	PASS
8DPSK	3DH5	HCH	0.002889	106.7	0.308209	0.4	PASS

Test Graph





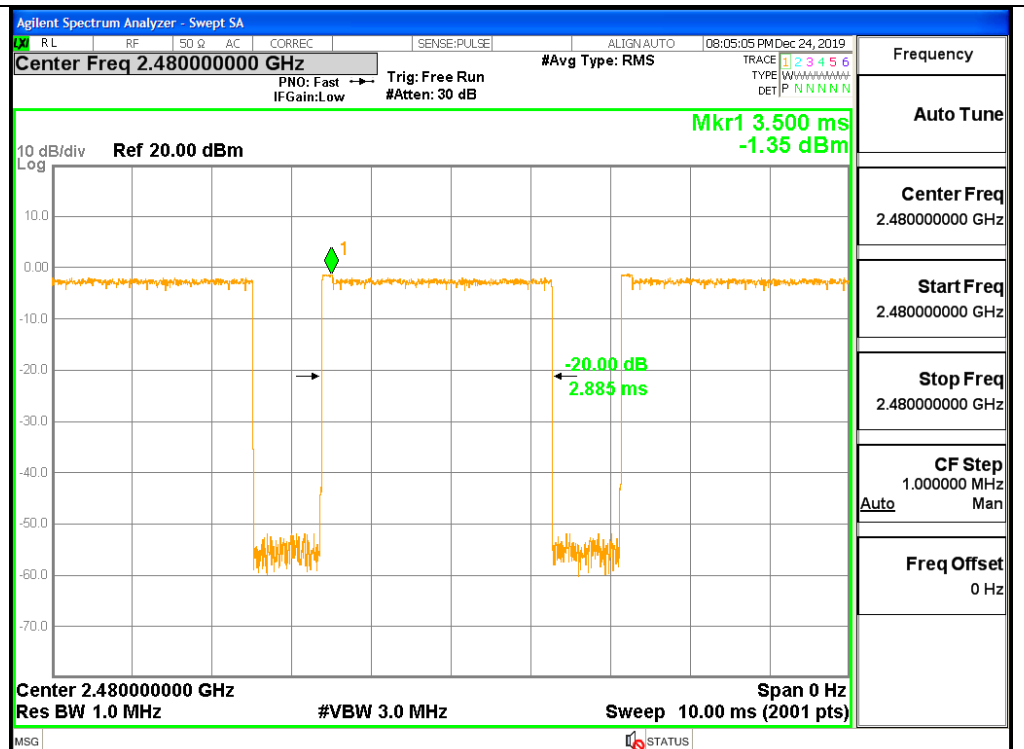
$\pi/4$ DQPSK
_2DH5/LCH



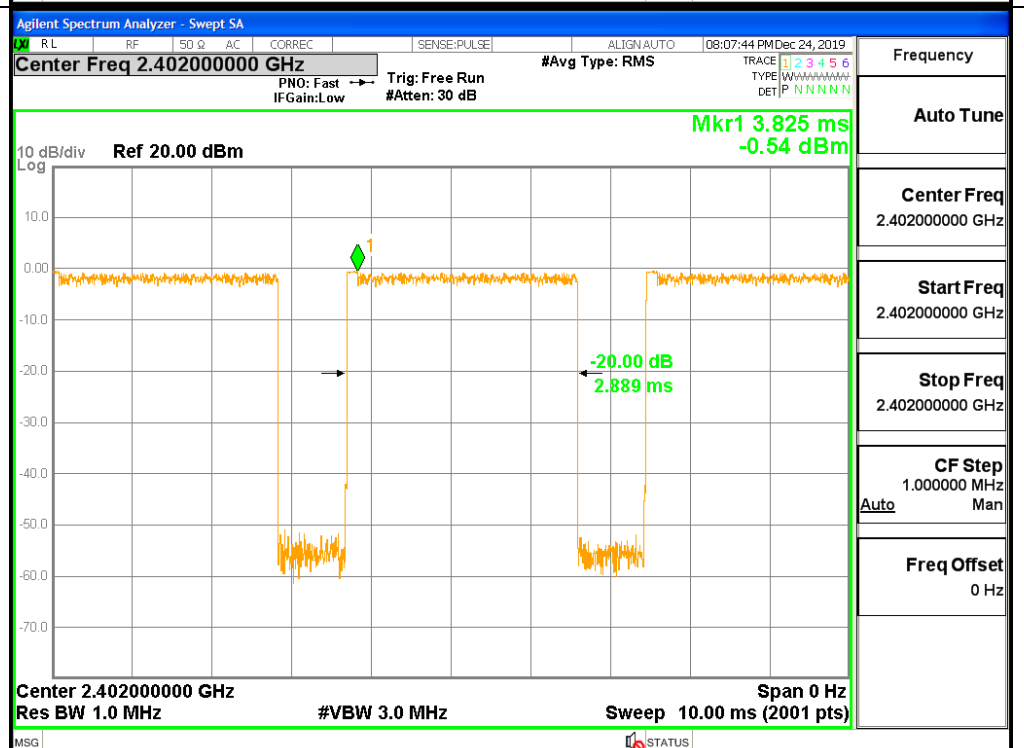
$\pi/4$ DQPSK
_2DH5/MCH

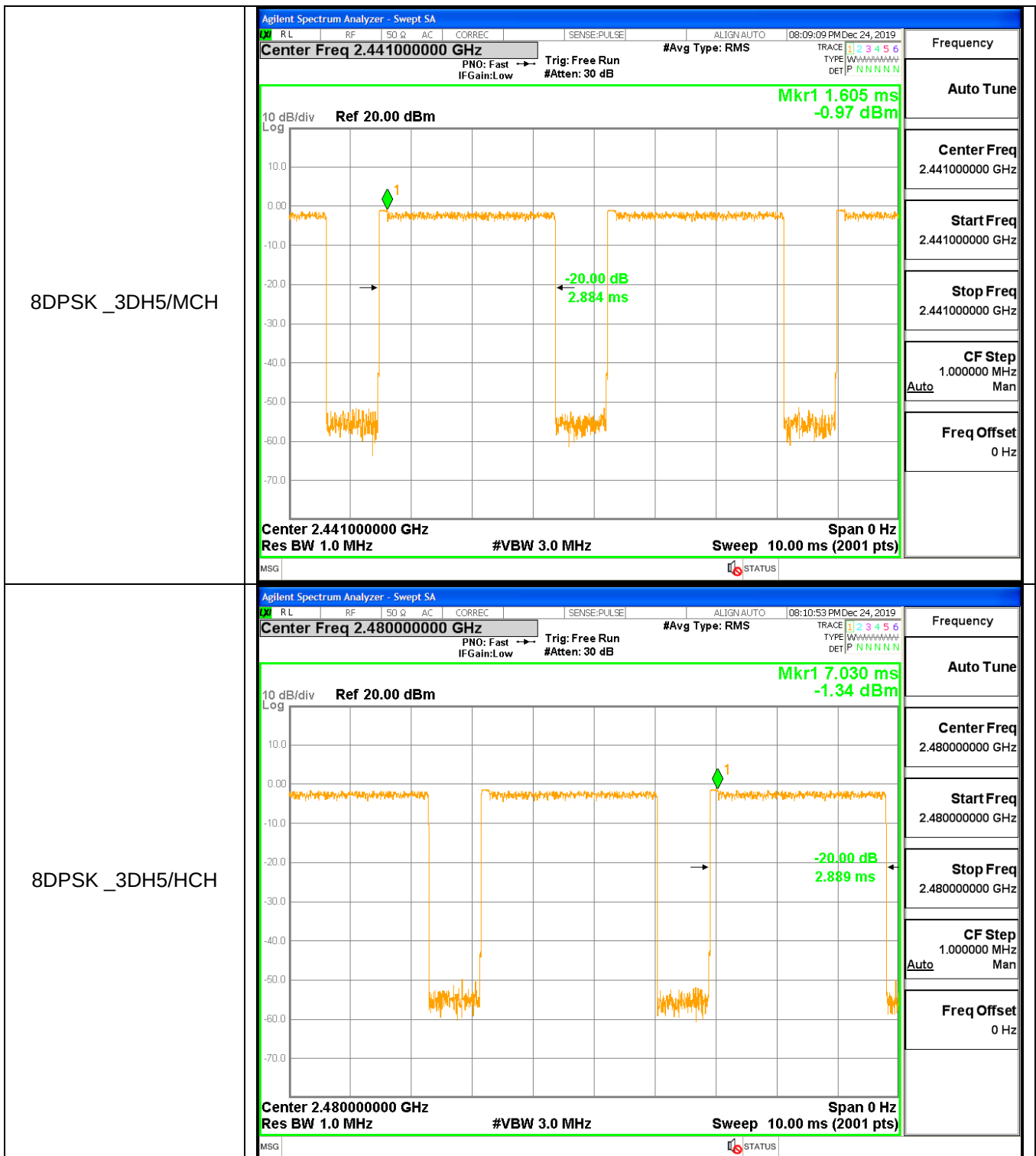


$\pi/4$ DQPSK
_2DH5/HCH



8DPSK_3DH5/LCH

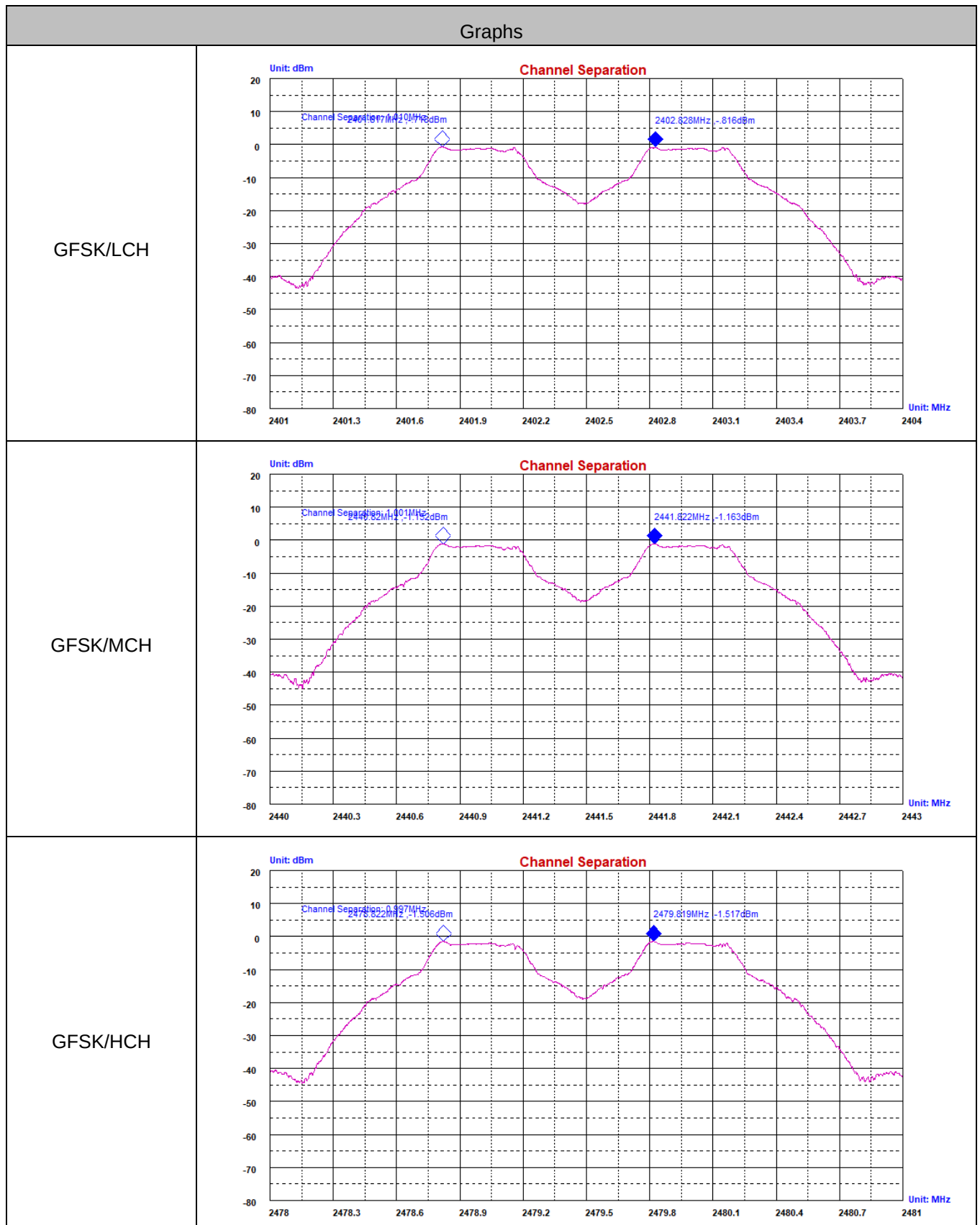


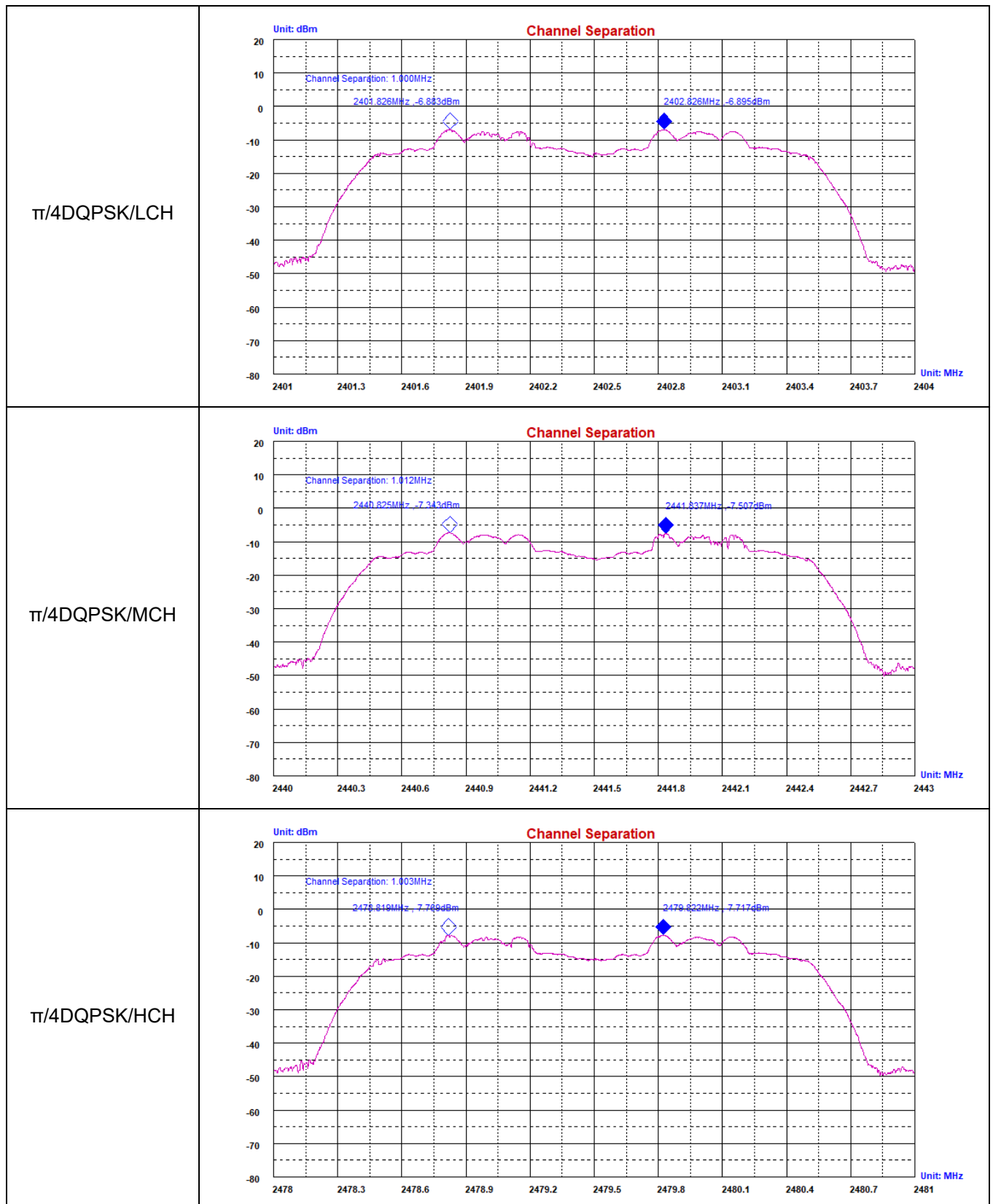


A.3 Carrier Frequency Separation

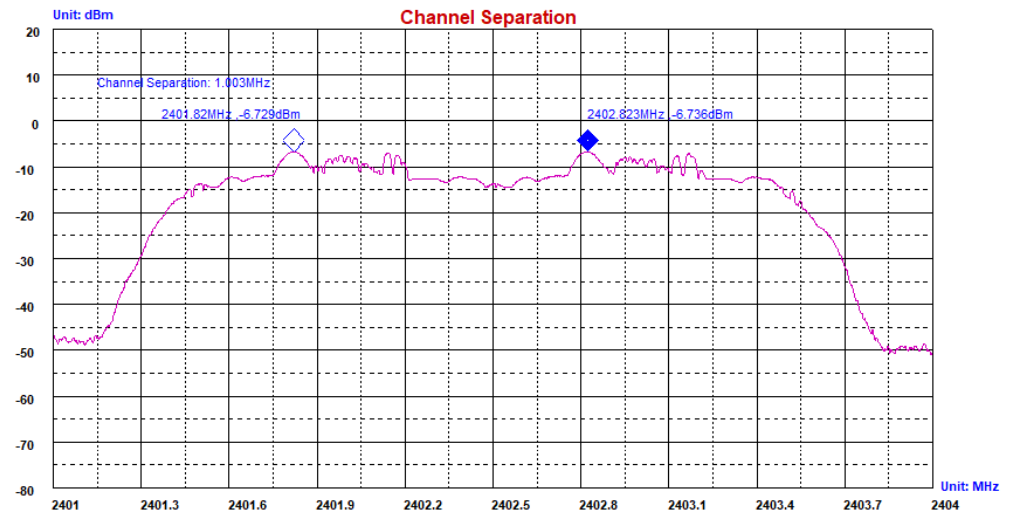
Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.010	0.573	PASS
GFSK	MCH	1.001	0.629	PASS
GFSK	HCH	0.997	0.624	PASS
$\pi/4$ DQPSK	LCH	1.000	0.803	PASS
$\pi/4$ DQPSK	MCH	1.012	0.842	PASS
$\pi/4$ DQPSK	HCH	1.003	0.803	PASS
8DPSK	LCH	1.003	0.834	PASS
8DPSK	MCH	1.001	0.820	PASS
8DPSK	HCH	0.997	0.830	PASS

Test Graph

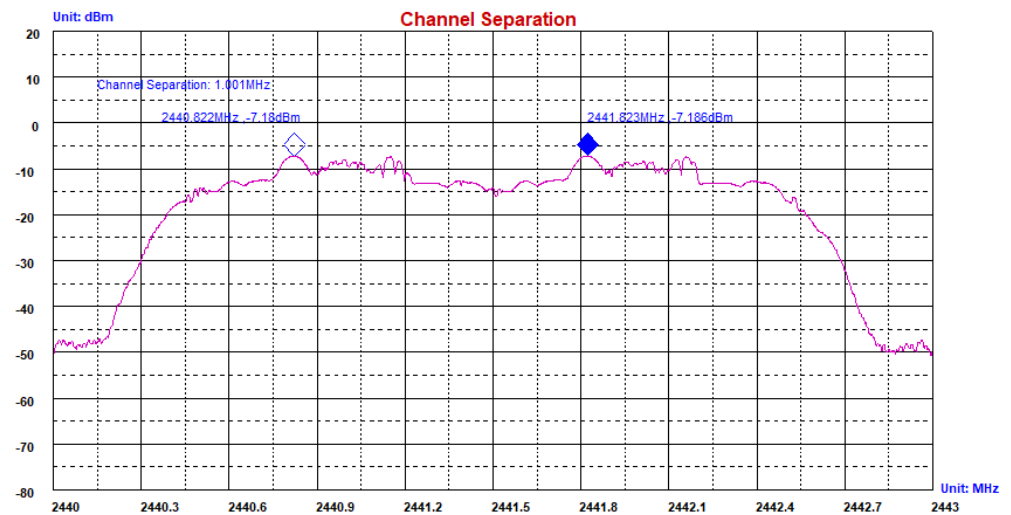




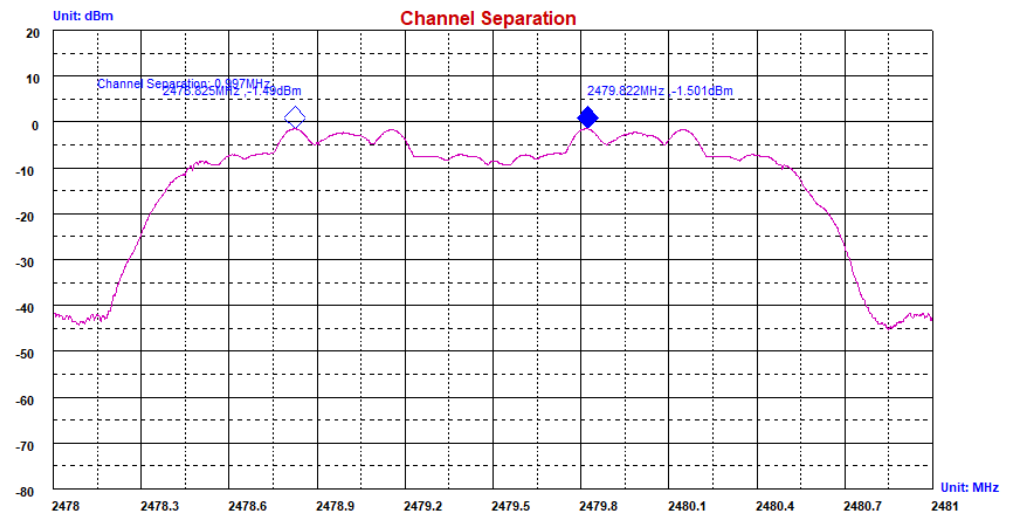
8DPSK/LCH



8DPSK/MCH



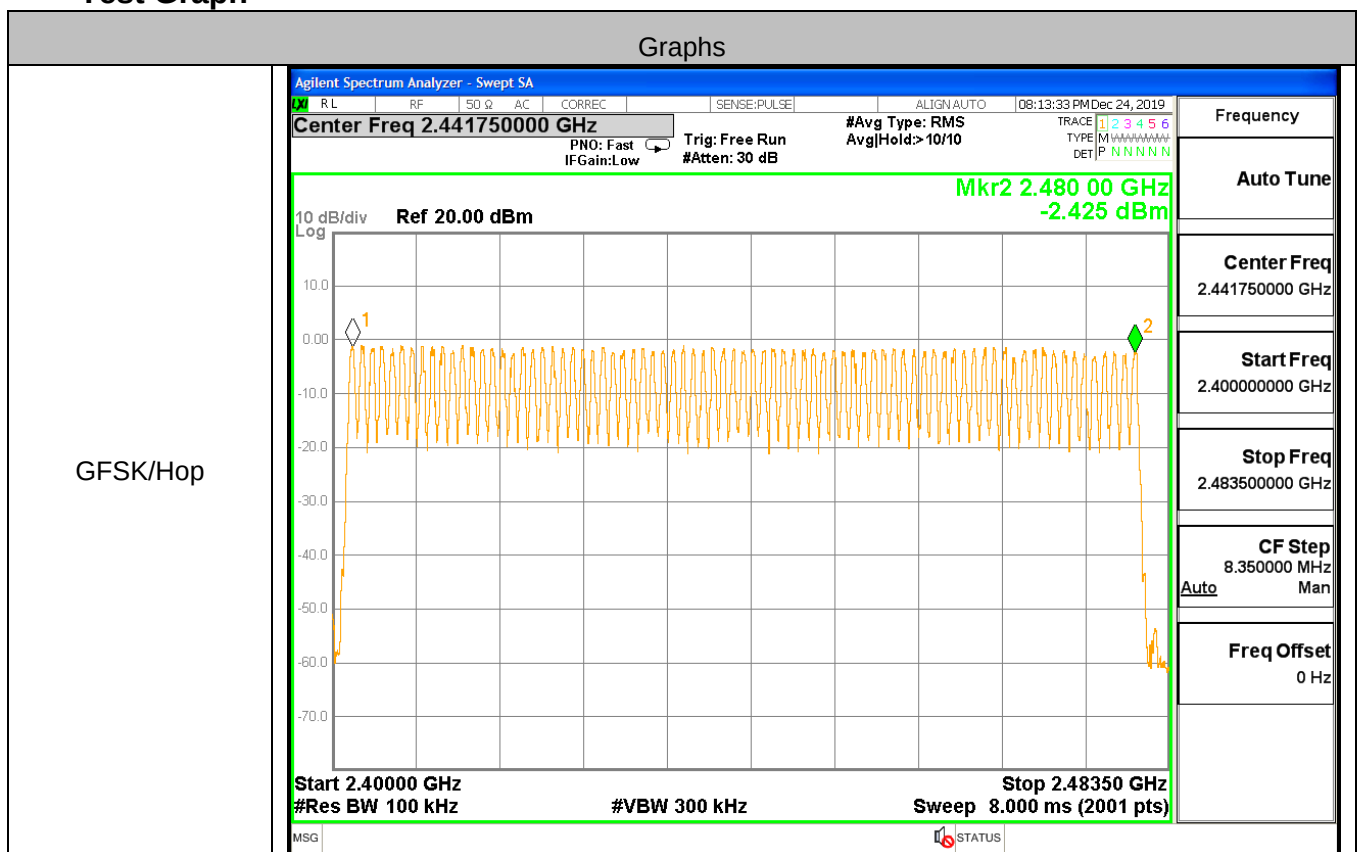
8DPSK/HCH

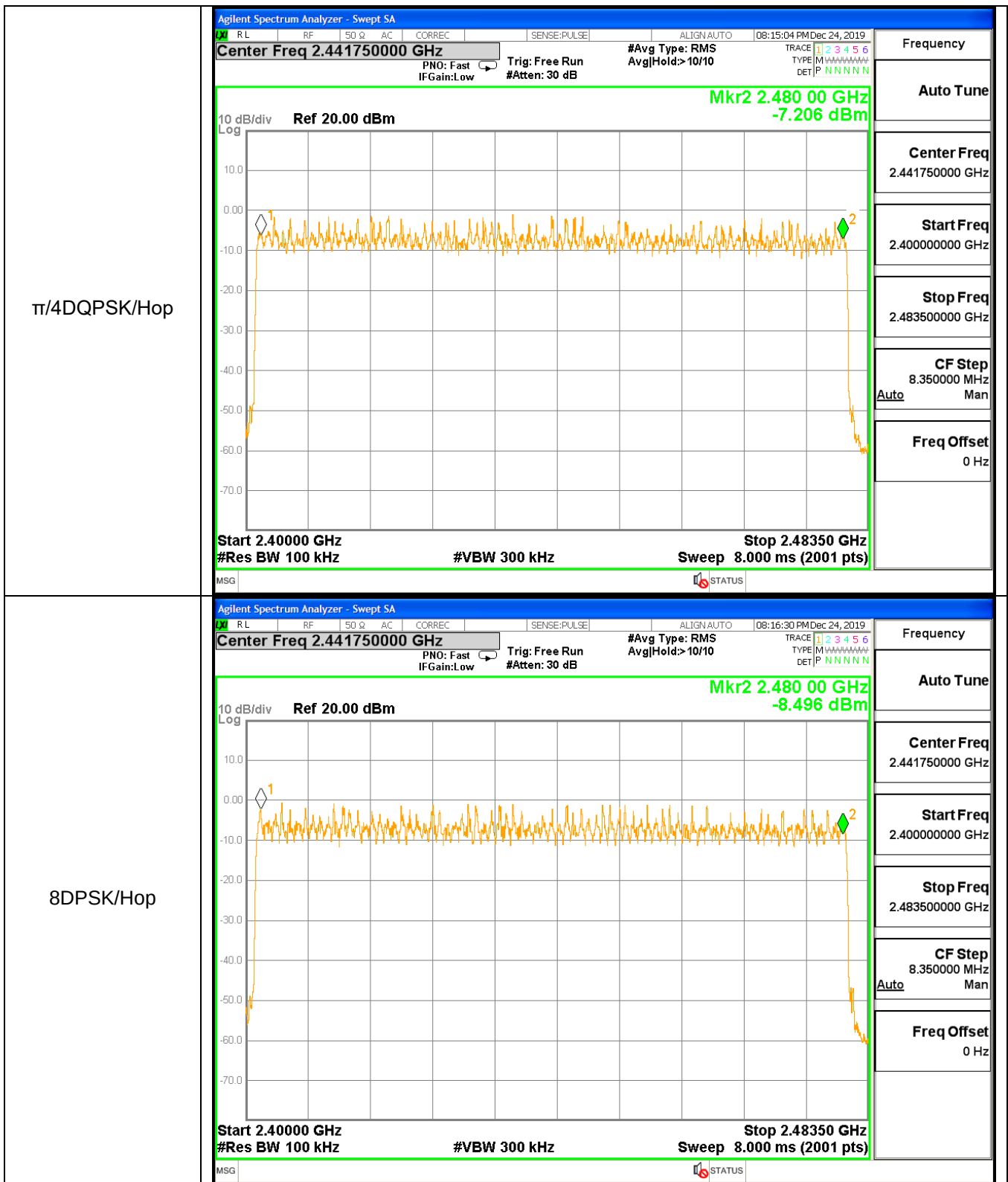


A.4 Hopping Channel Number

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

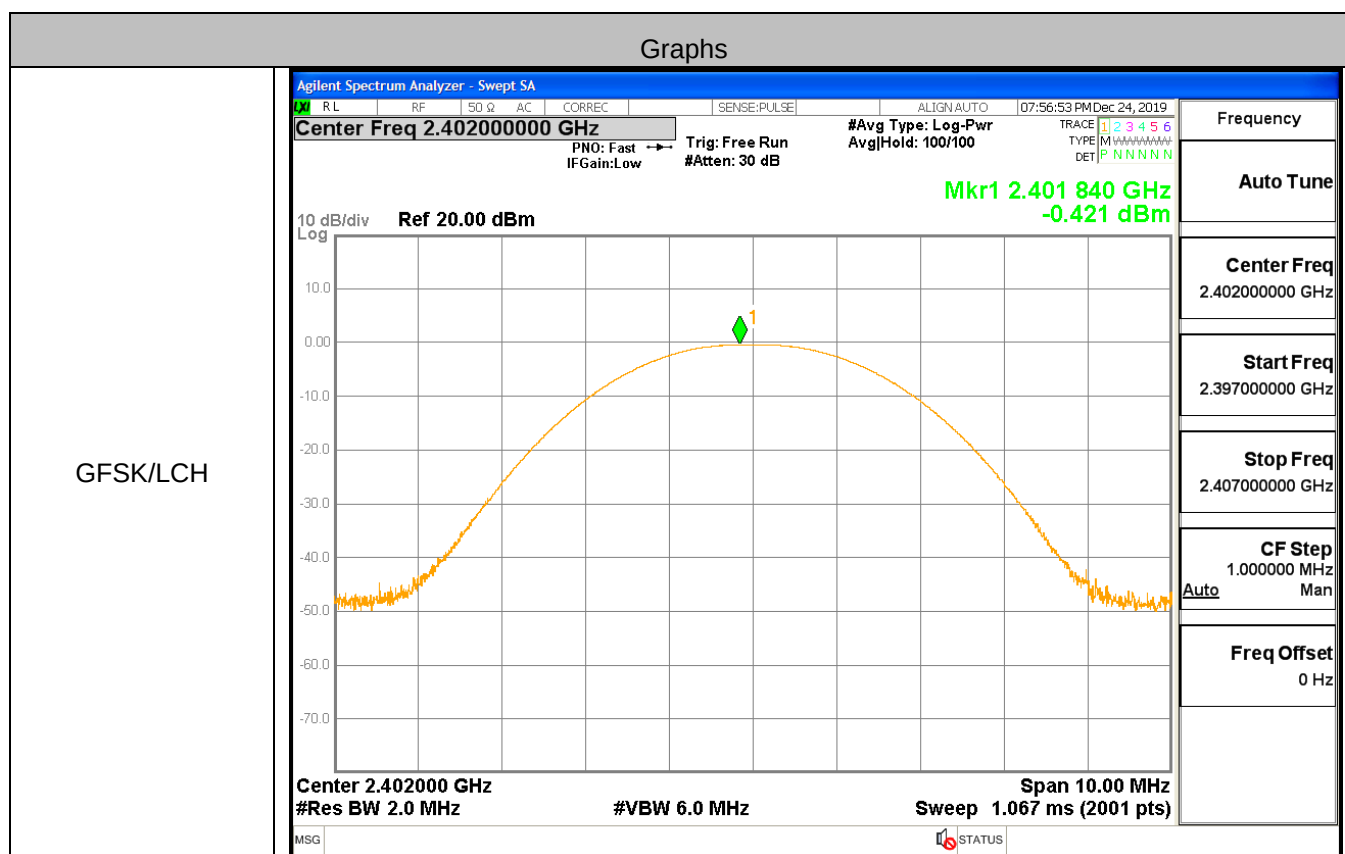




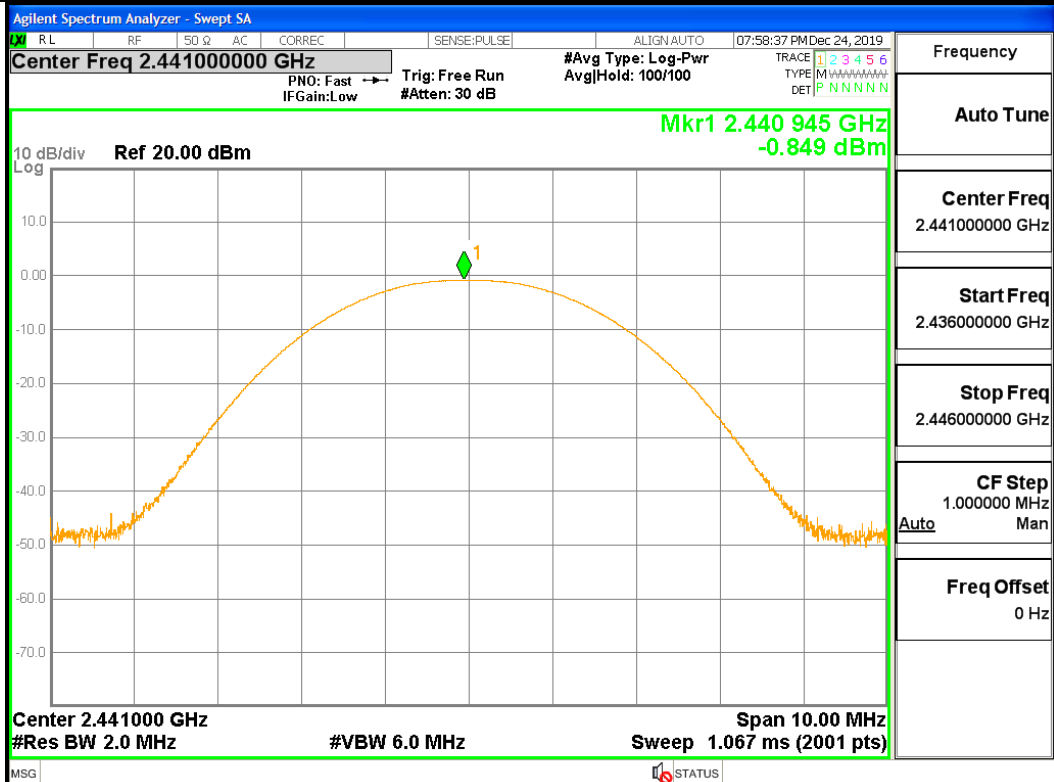
A.5 Conducted Peak Output Power

Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-0.421	21	PASS
GFSK	MCH	-0.849	21	PASS
GFSK	HCH	-1.220	21	PASS
$\pi/4$ DQPSK	LCH	-0.458	21	PASS
$\pi/4$ DQPSK	MCH	-0.953	21	PASS
$\pi/4$ DQPSK	HCH	-1.254	21	PASS
8DPSK	LCH	-0.386	21	PASS
8DPSK	MCH	-0.889	21	PASS
8DPSK	HCH	-1.223	21	PASS

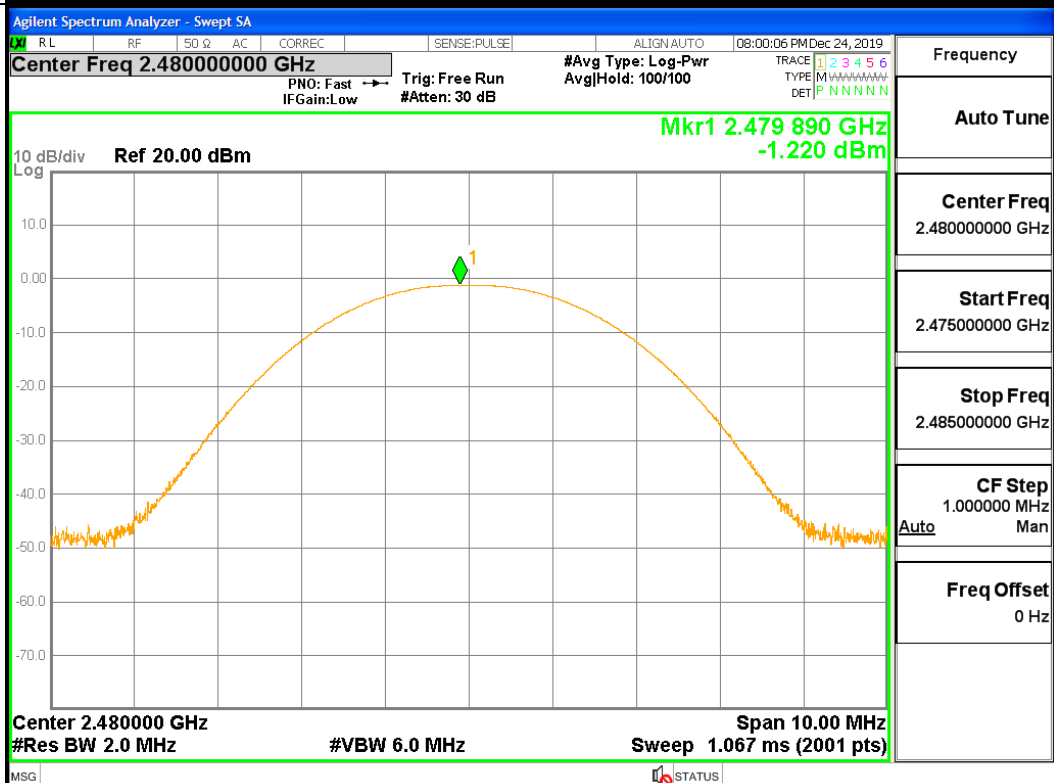
Test Graph

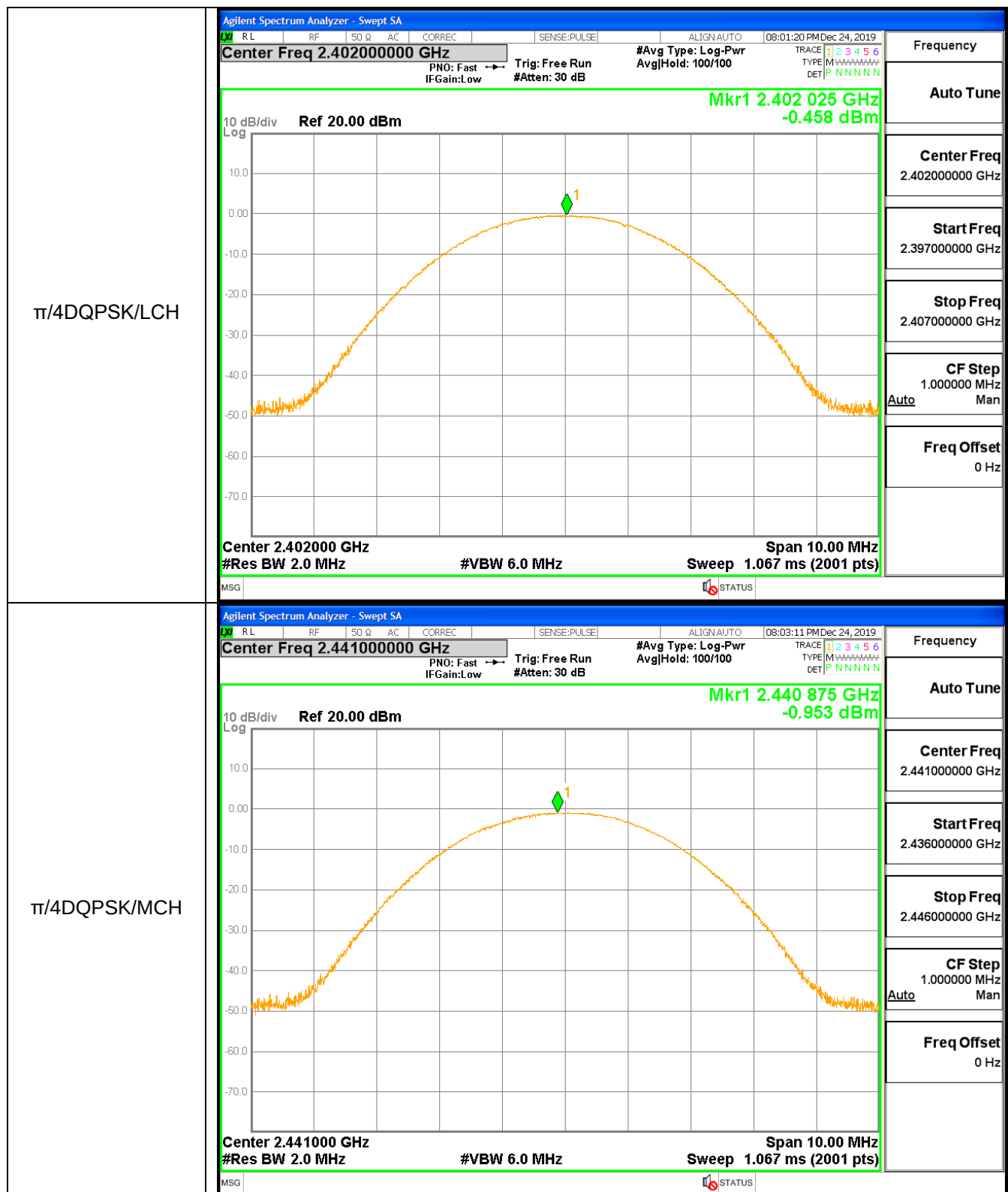


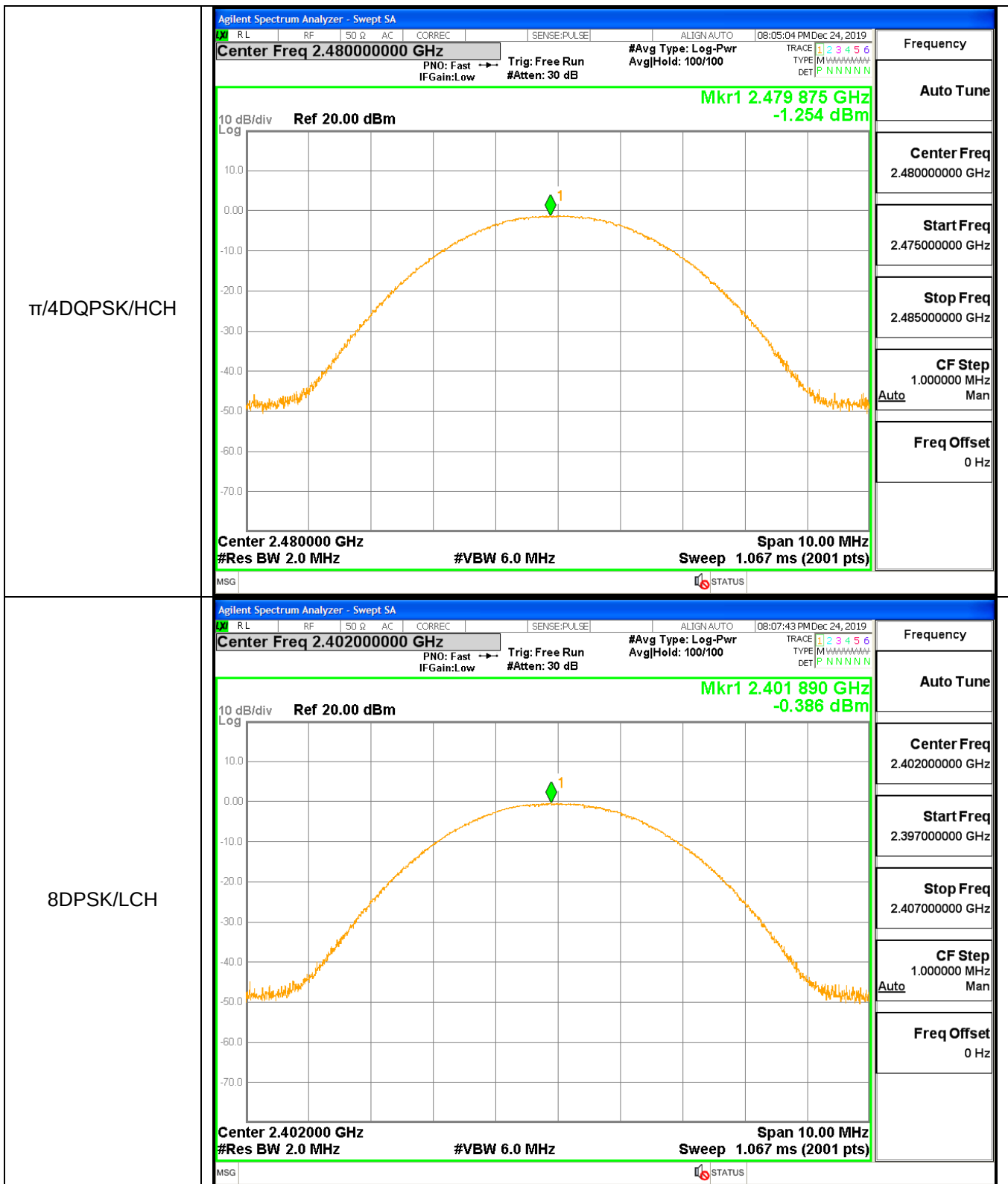
GFSK/MCH

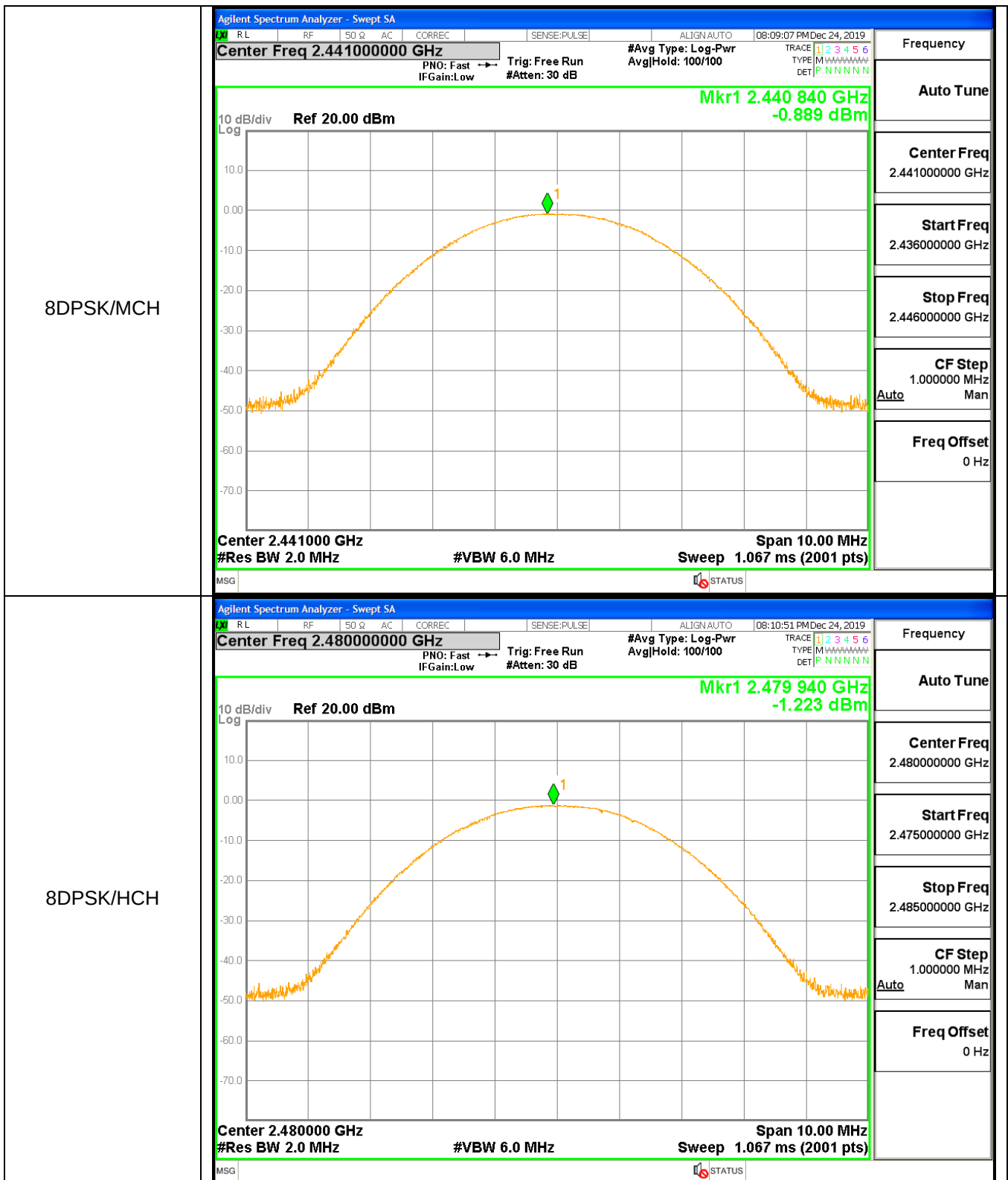


GFSK/HCH









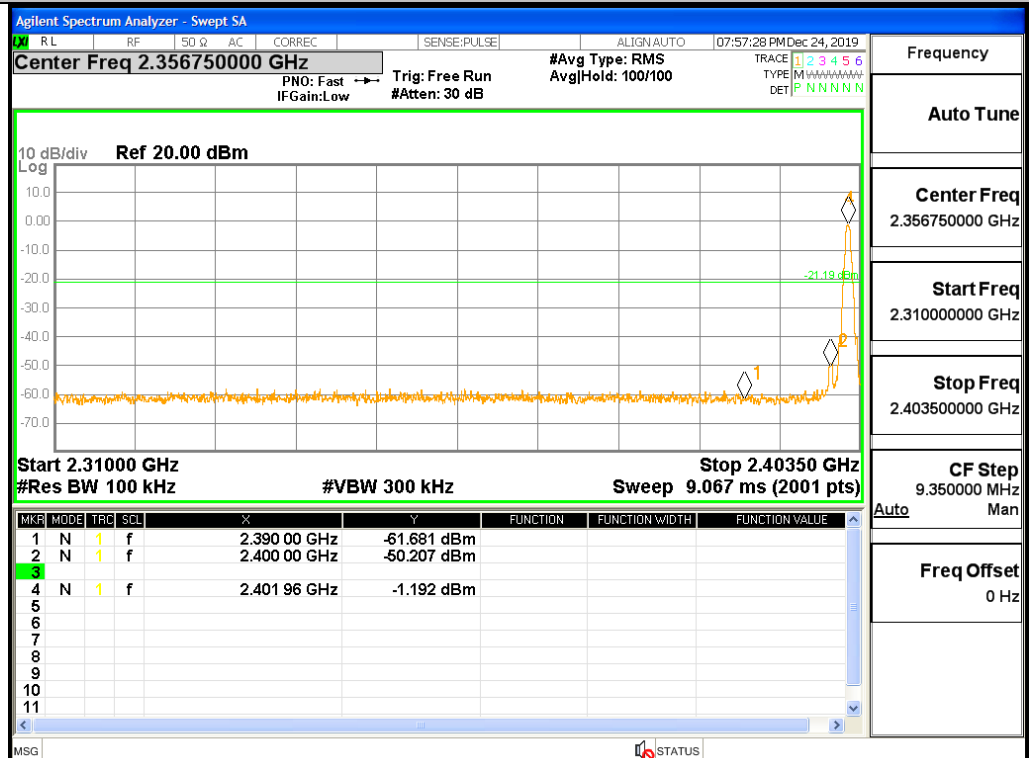
A.6 Band-edge for RF Conducted Emissions

Type	Carrier Frequency(MHz)	Frequency(MHz)	Carrier Frequency Power [dBm]	Bandedge Peak(dBm)	Upper limit(dBm)	Conclusion
1DH5	2402	2400	-1.192	-50.21	-21.192	Pass
1DH5	2480	2500	-1.586	-61.69	-21.586	Pass
2DH5	2402	2400	-1.000	-54.37	-21.000	Pass
2DH5	2480	2500	-5.057	-61.95	-25.057	Pass
3DH5	2402	2400	-1.245	-56.36	-21.245	Pass
3DH5	2480	2483.5	-1.545	-61.79	-21.545	Pass
1DH5-Hopping	2402	2399.94	-0.713	-50.069	-20.713	Pass
1DH5-Hopping	2480	2483.5	-1.277	-59.54	-21.277	Pass
2DH5-Hopping	2402	2400	-1.007	-56.72	-21.007	Pass
2DH5-Hopping	2480	2483.5	-1.442	-59.16	-21.442	Pass
3DH5-Hopping	2402	2400	-0.739	-58.04	-20.739	Pass
3DH5-Hopping	2480	2483.5	-1.339	-59.93	-21.339	Pass

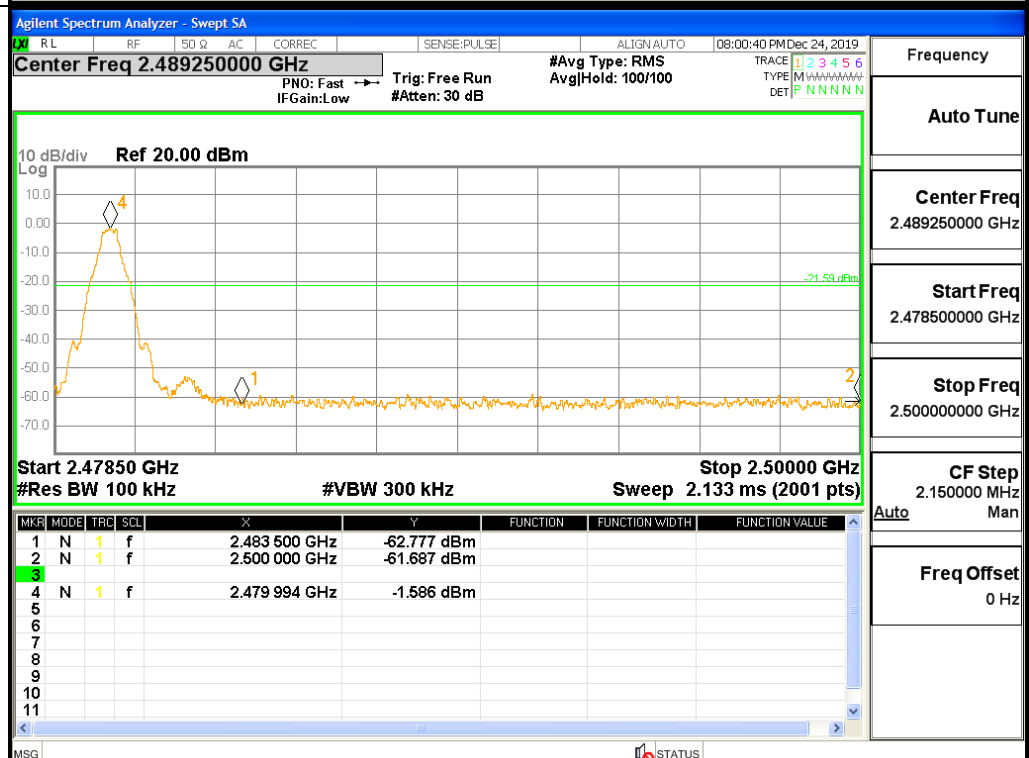
Test Graph

Graphs

GFSK/LCH/No Hop



GFSK/HCH/No Hop



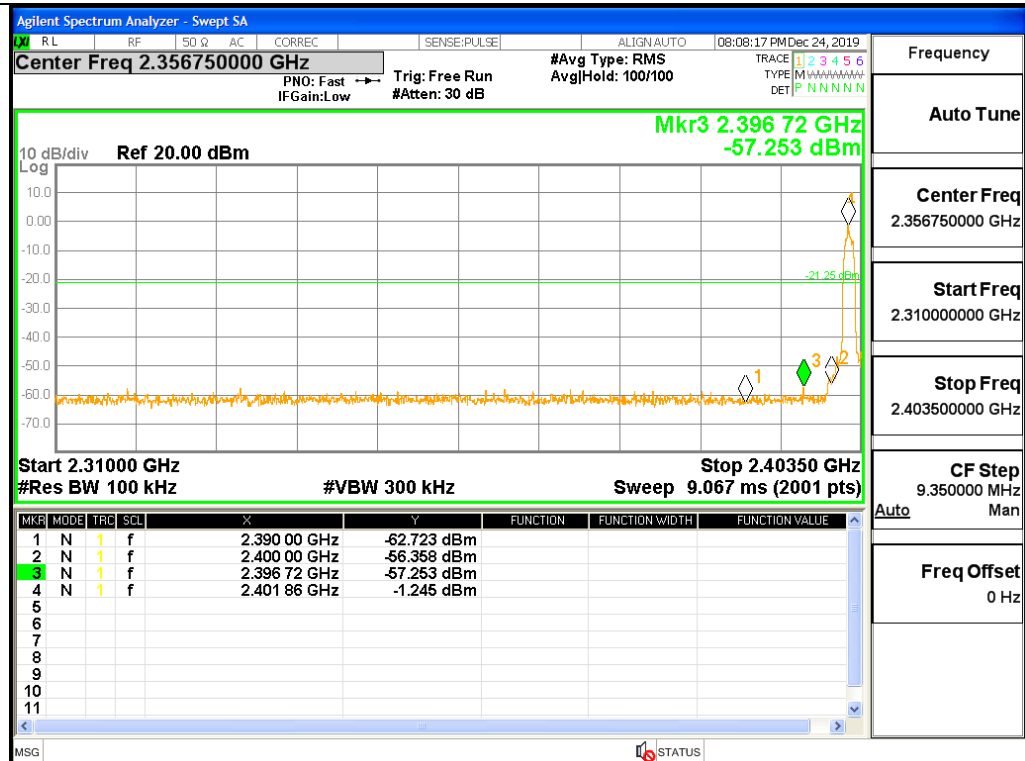
$\pi/4$ DQPSK/LCH/No
Hop

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.390 00 GHz	-62.684 dBm			
2	N	1	f	2.400 00 GHz	-54.373 dBm			
3	N	1	f	2.401 82 GHz	-1.000 dBm			

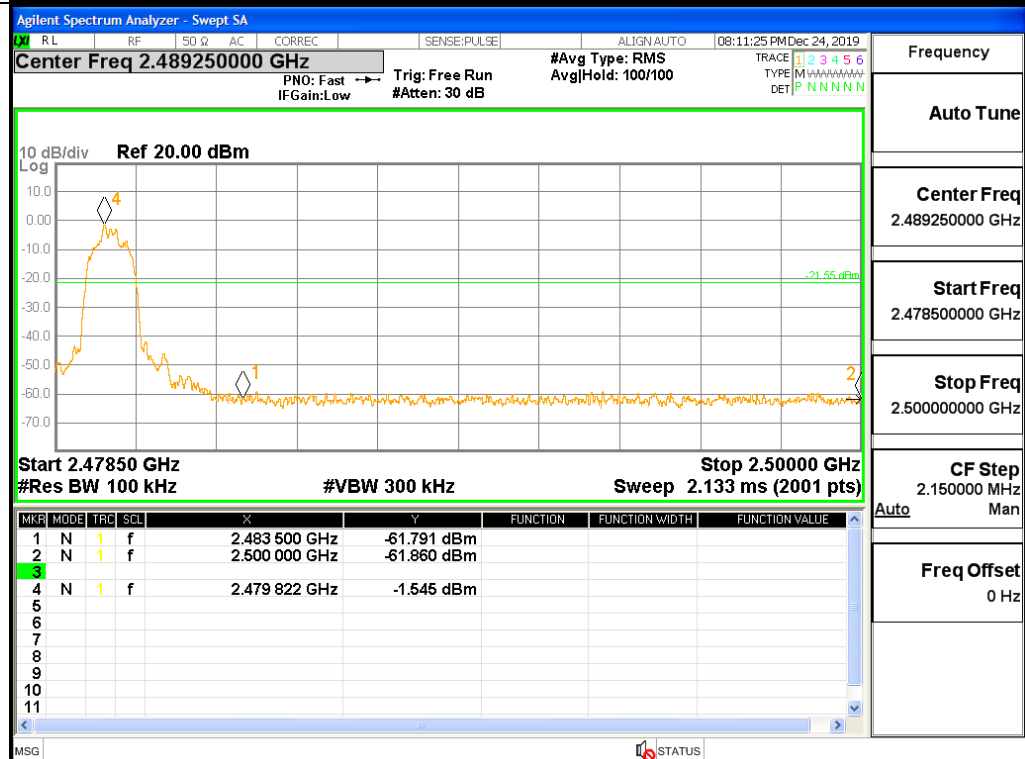
$\pi/4$ DQPSK/HCH/No
Hop

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.483 500 GHz	-62.887 dBm			
2	N	1	f	2.500 000 GHz	-61.951 dBm			
3	N	1	f	2.479 994 GHz	-5.057 dBm			

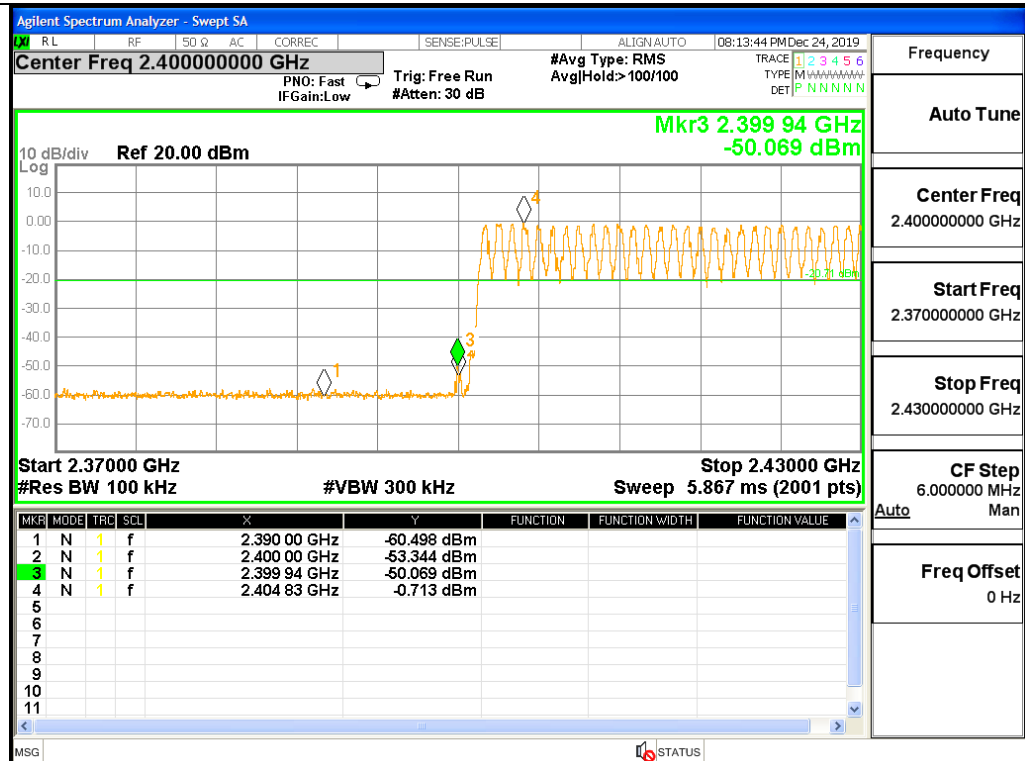
8DPSK/LCH/No Hop



8DPSK/HCH/No Hop



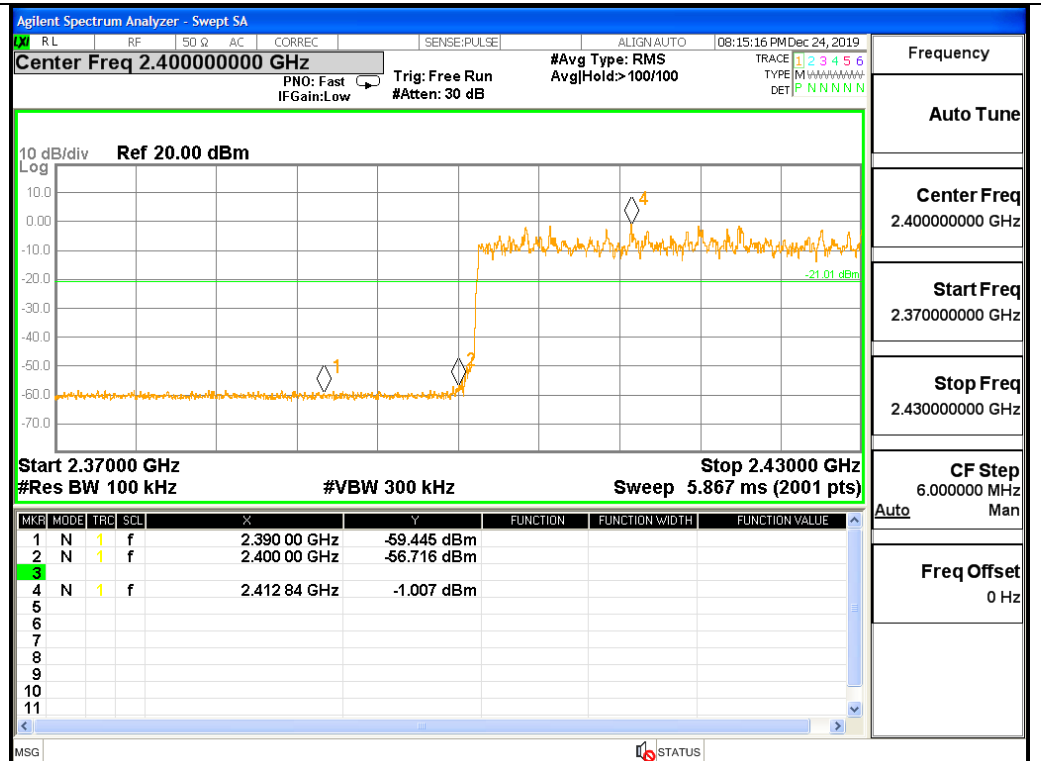
GFSK/LCH/Hop



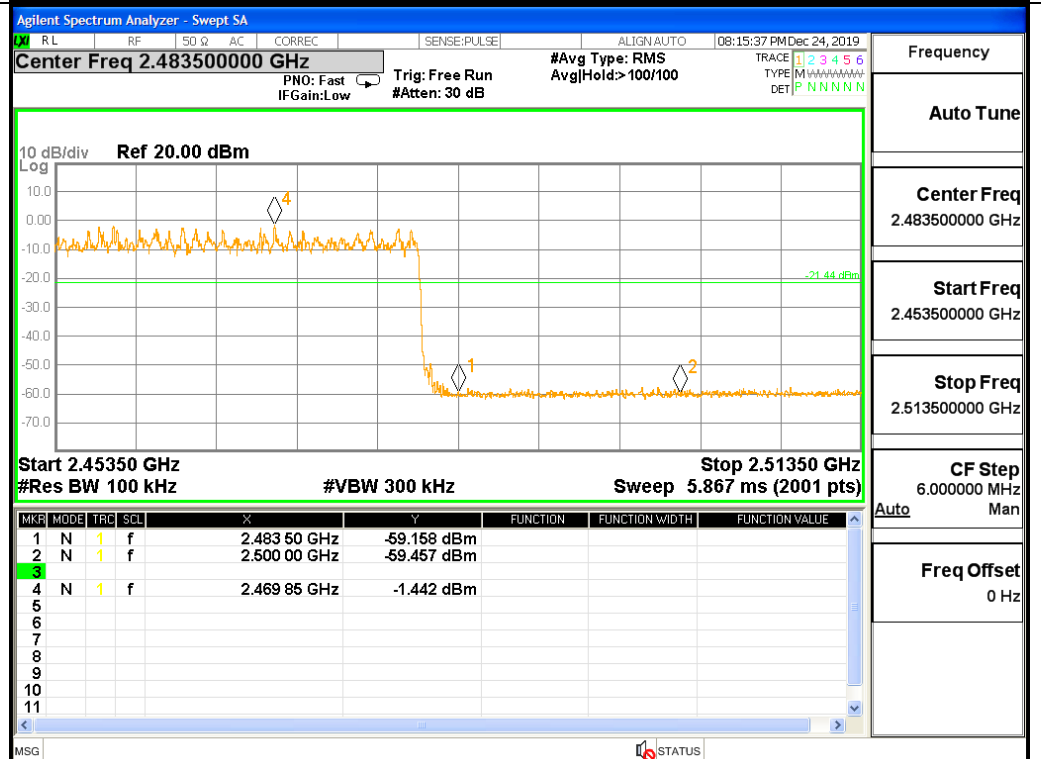
GFSK/HCH/Hop



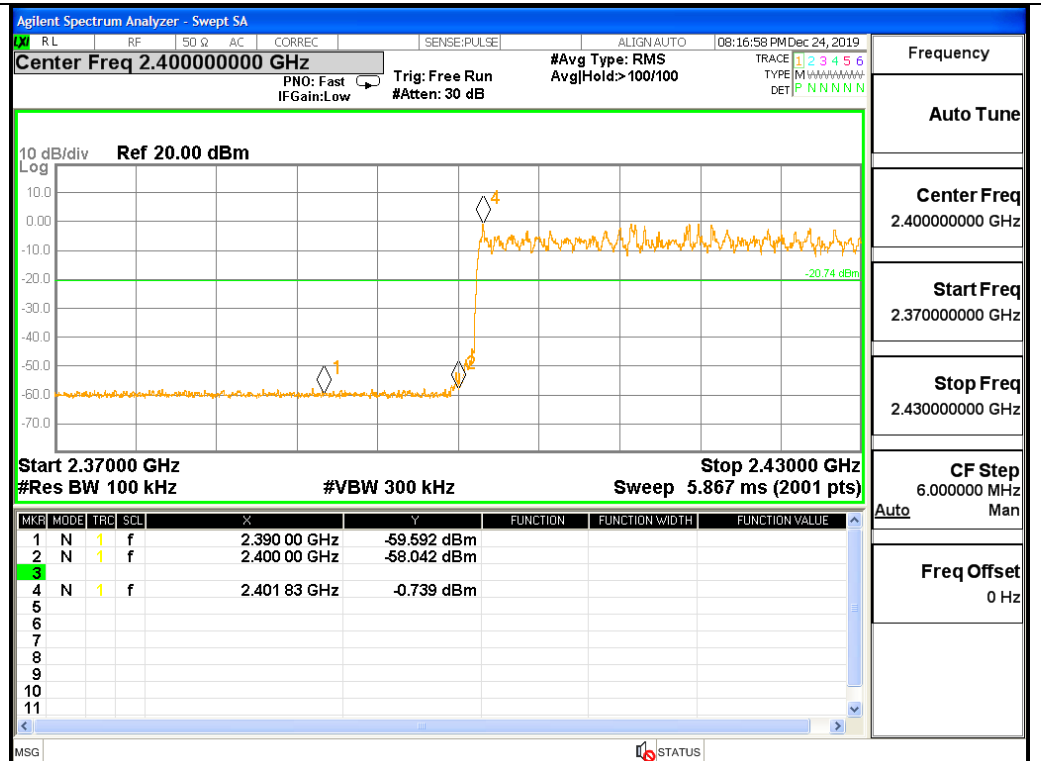
$\pi/4$ DQPSK/LCH/Hop



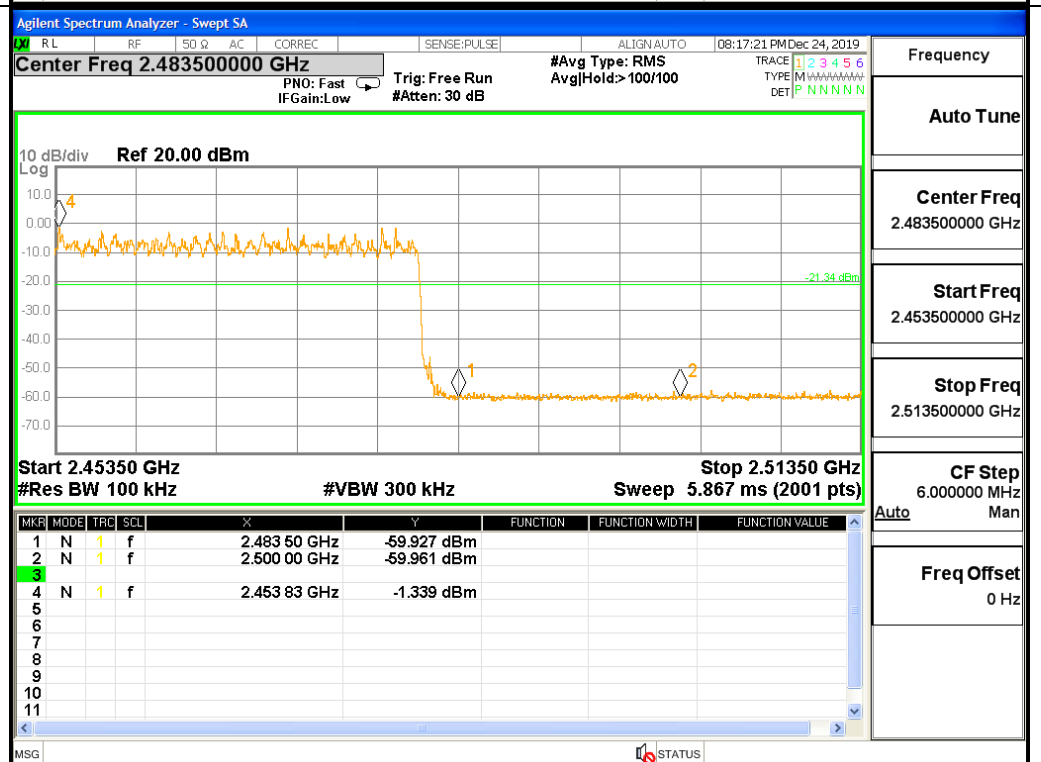
$\pi/4$ DQPSK/HCH/Hop



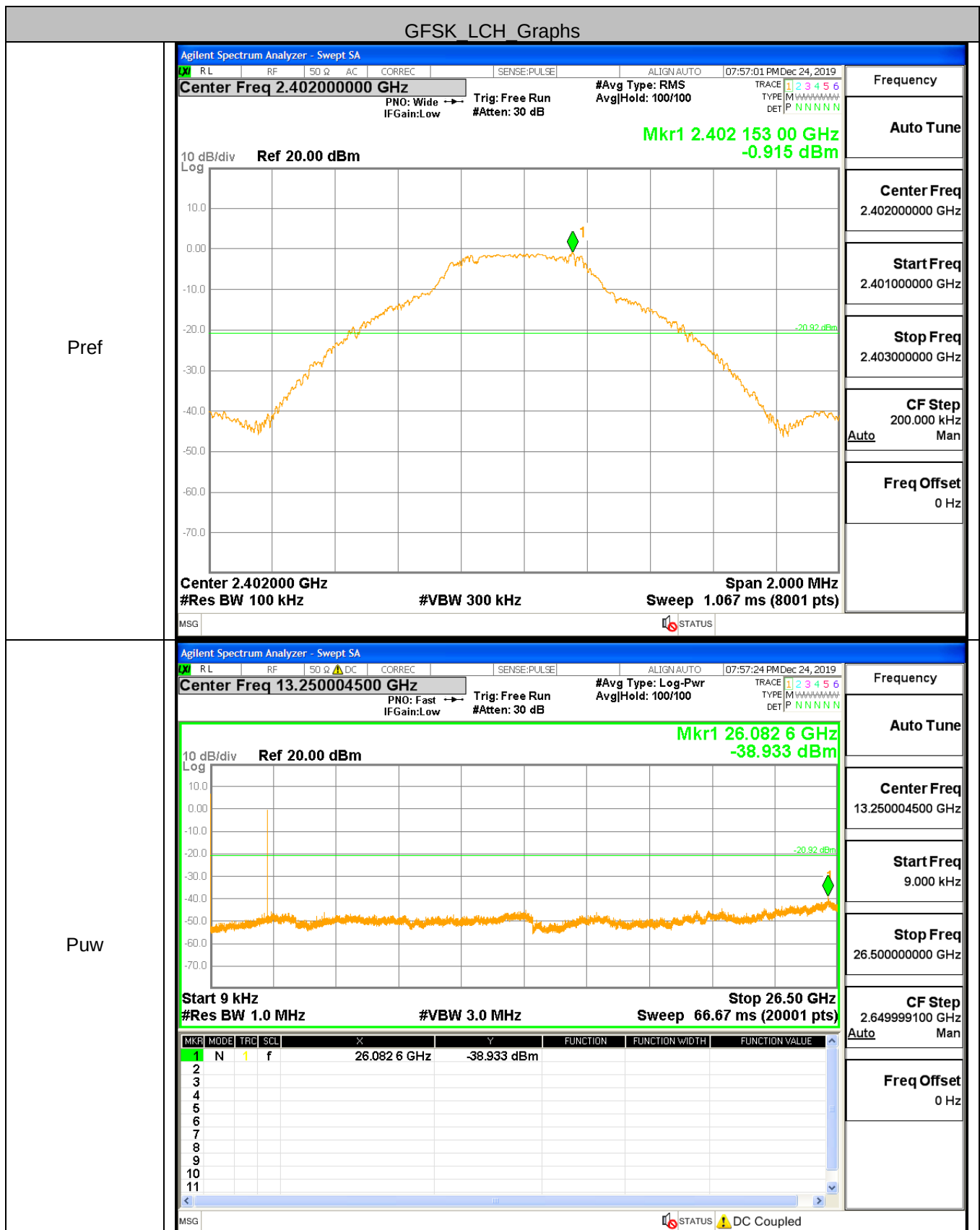
8DPSK/LCH/Hop



8DPSK/HCH/Hop

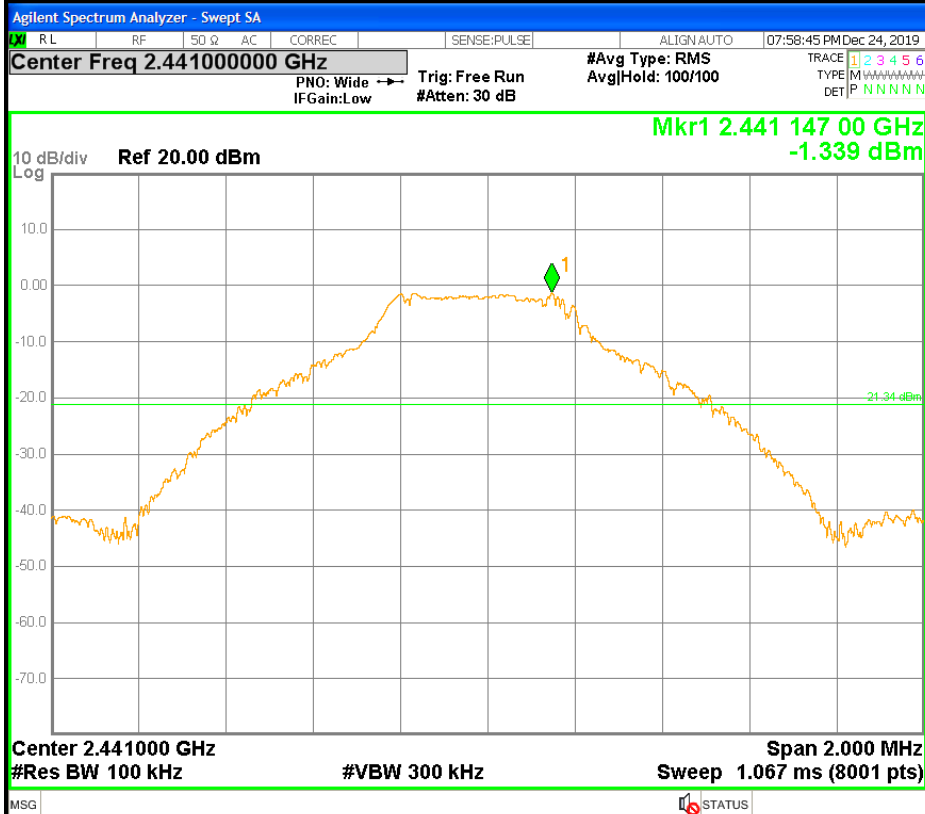


A.7 RF Conducted Spurious Emissions Test Graph



GFSK MCH Graphs

Pref



Frequency

Auto Tune

Center Freq
2.441000000 GHz

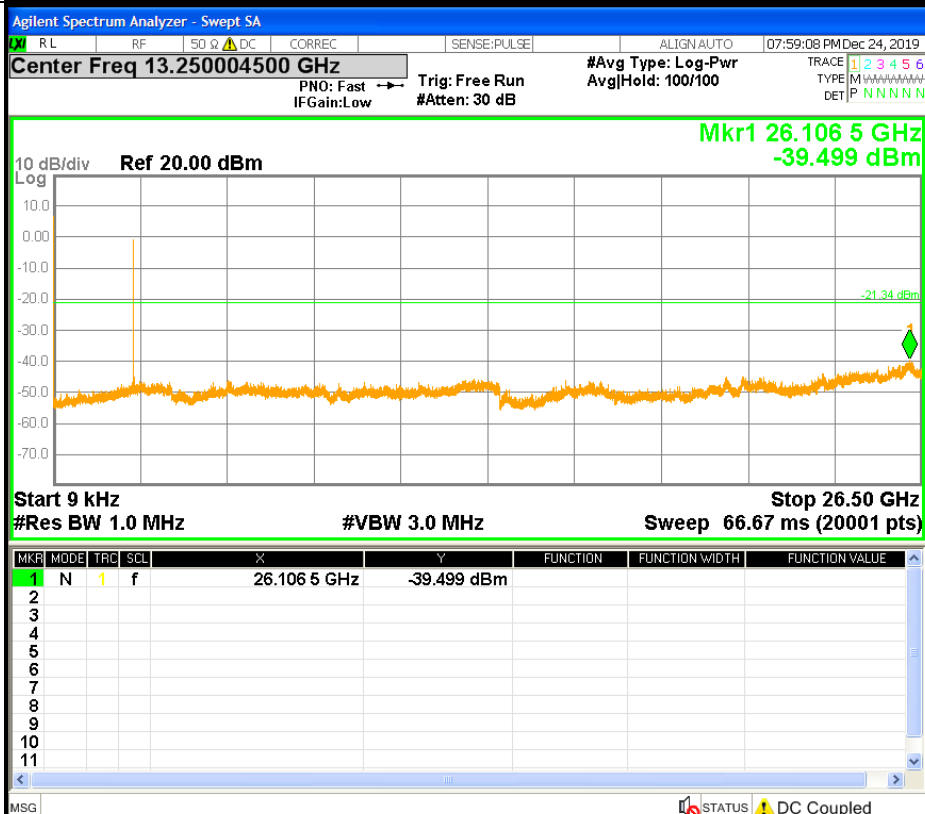
Start Freq
2.440000000 GHz

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

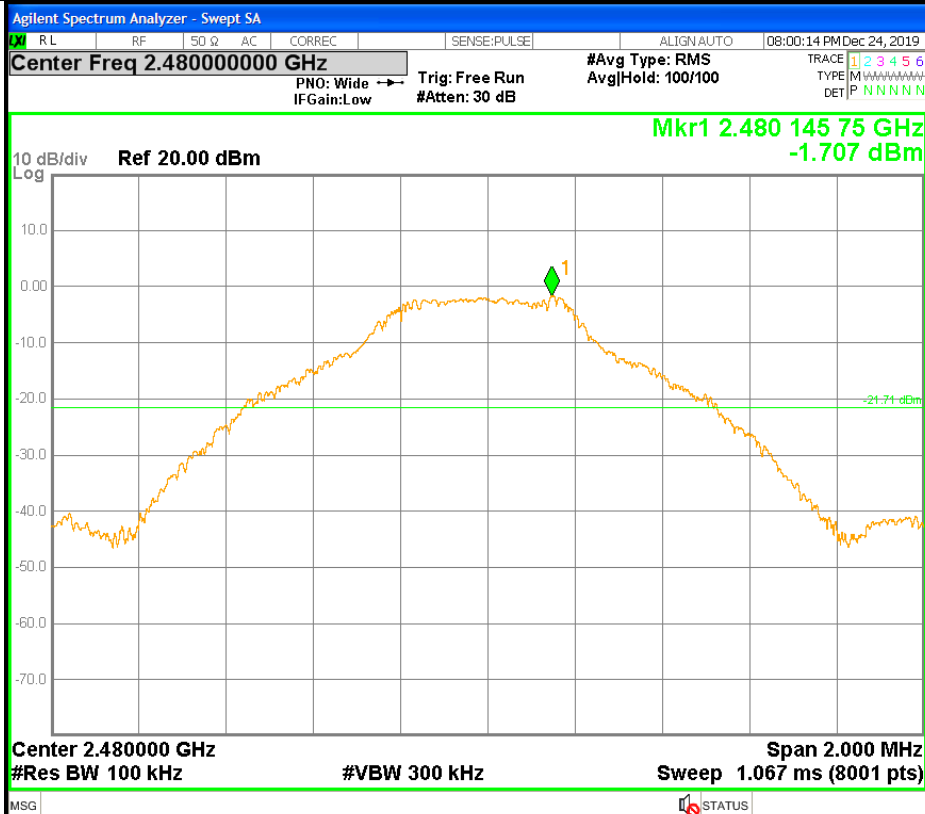
Stop Freq
26.500000000 GHz

CF Step
2.649999100 GHz
Auto Man

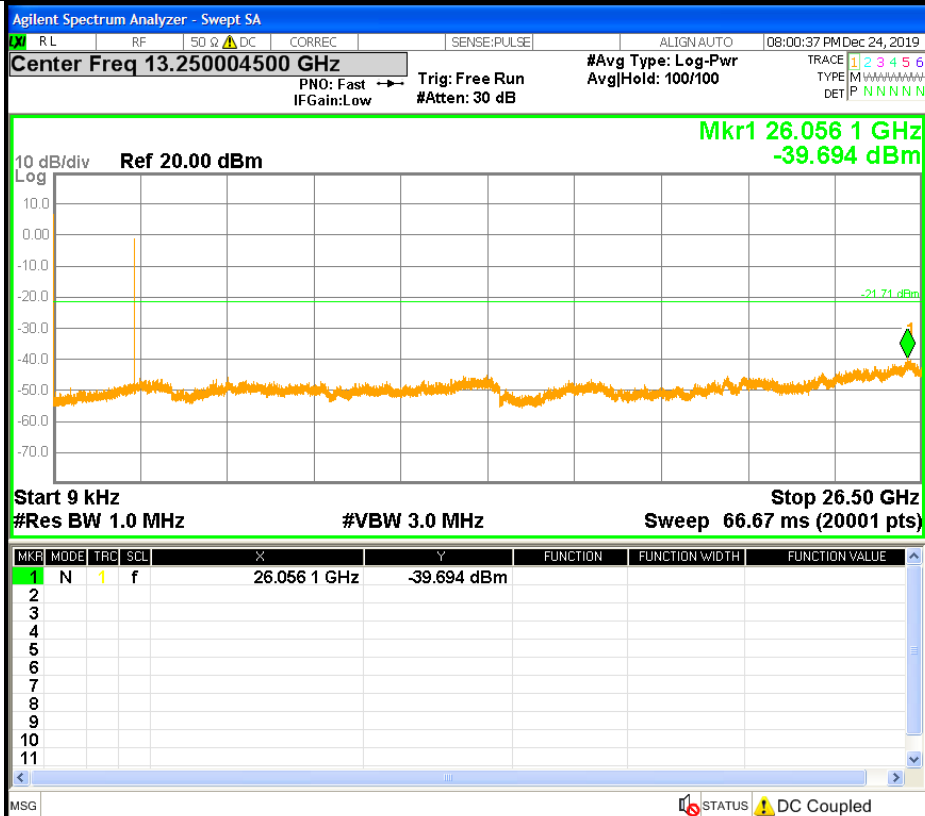
Freq Offset
0 Hz

GFSK HCH Graphs

Pref

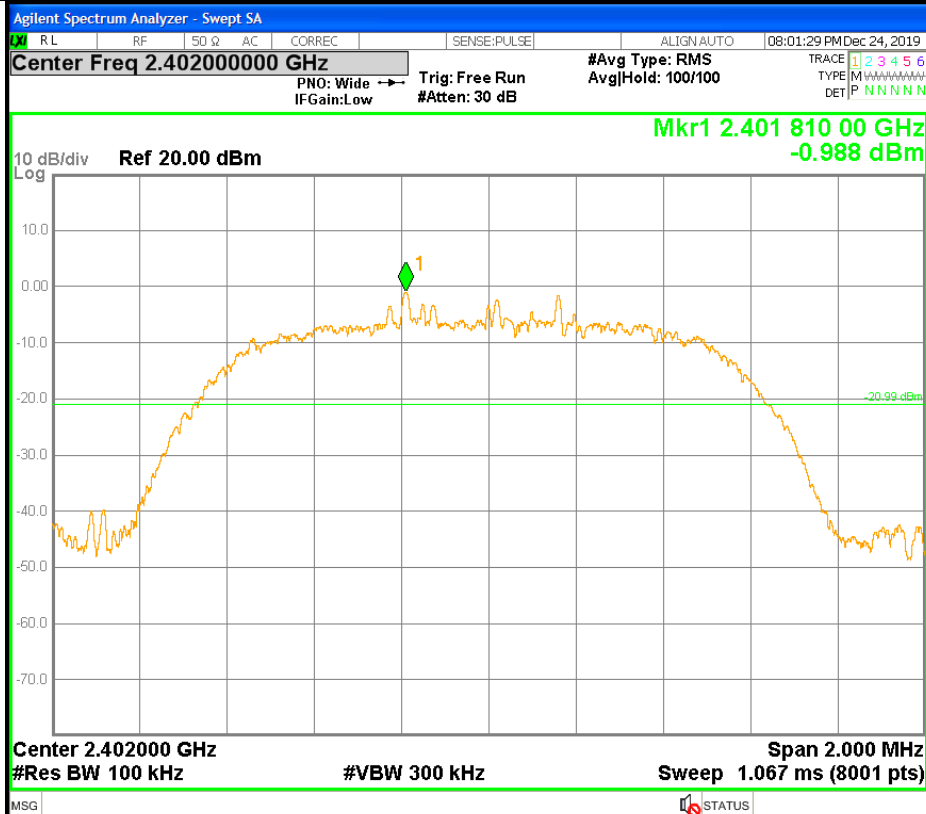


Puw

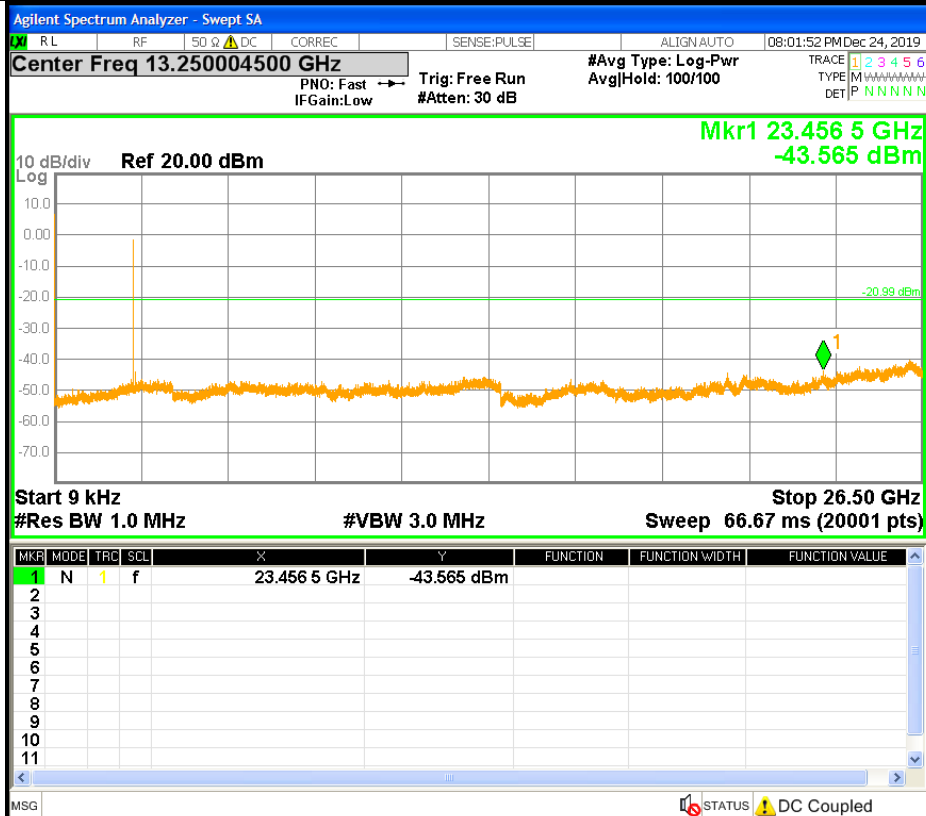


$\pi/4$ DQPSK LCH Graphs

Pref

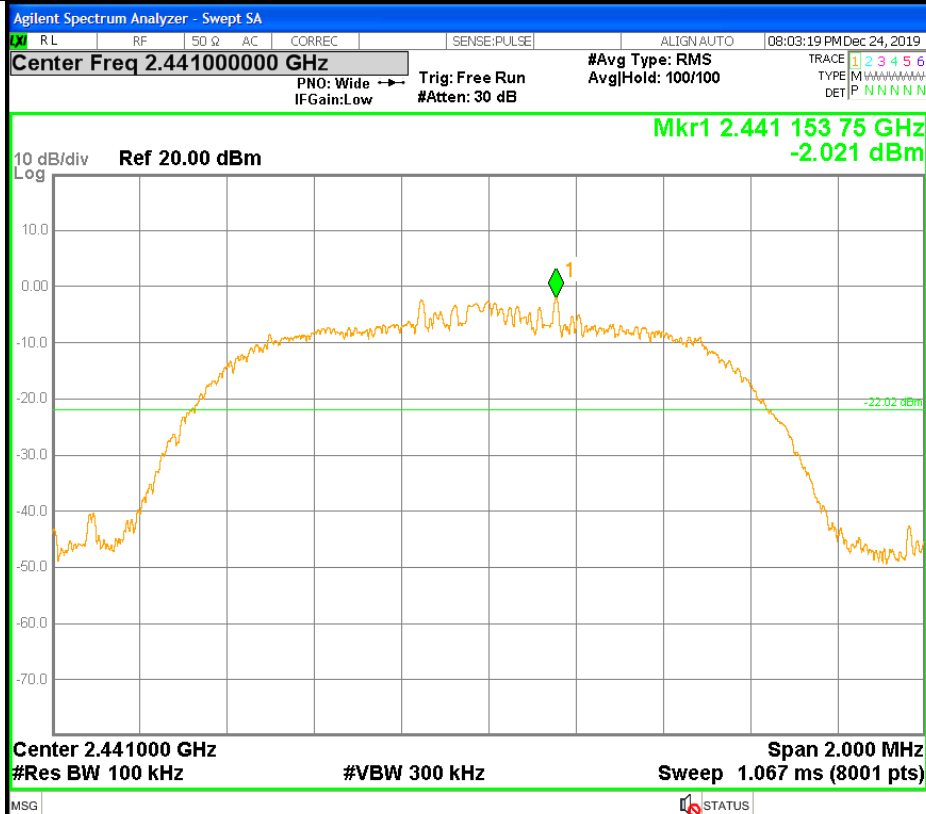


Puw



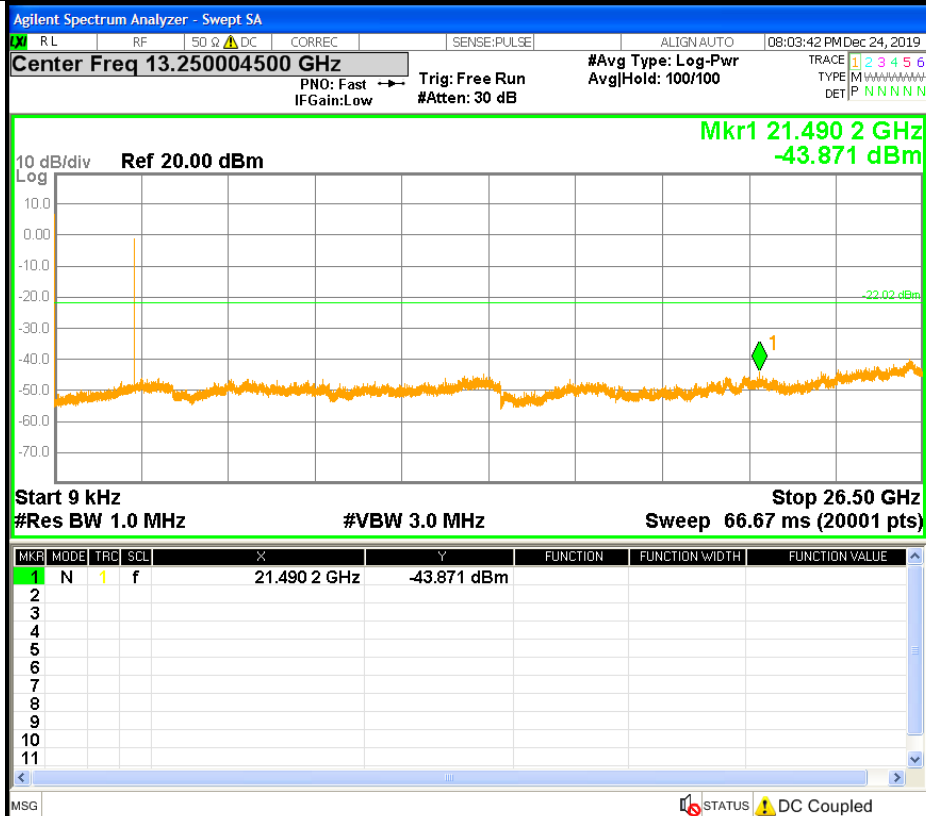
$\pi/4$ DQPSK MCH Graphs

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 Man
Freq Offset 0 Hz

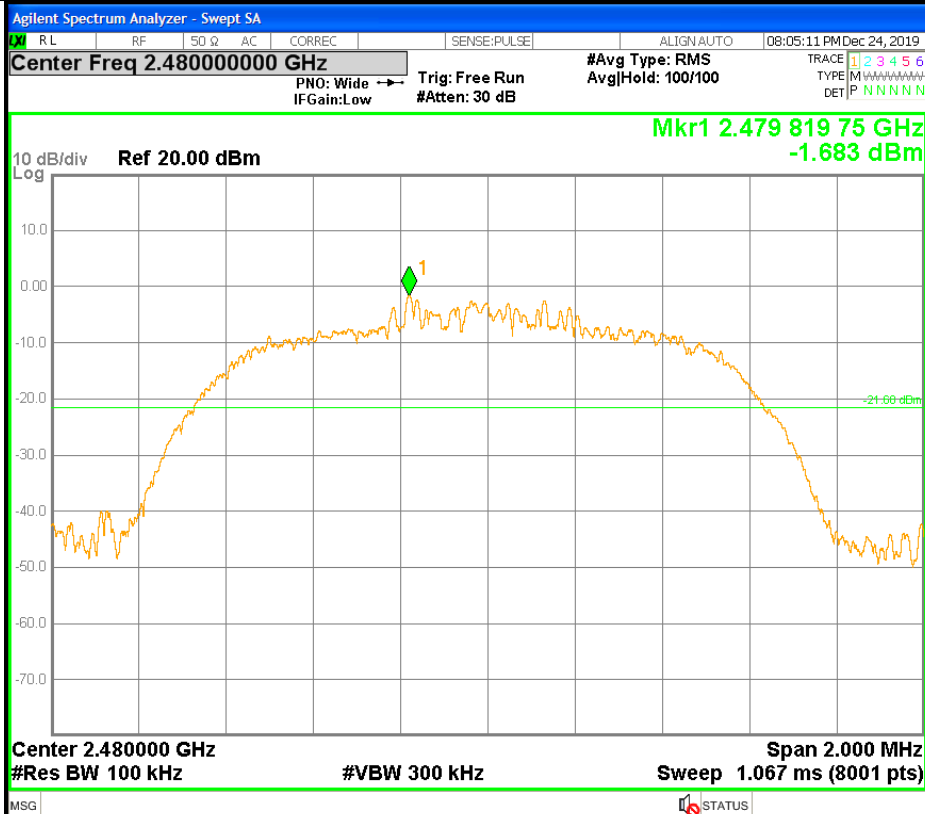
Puw



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

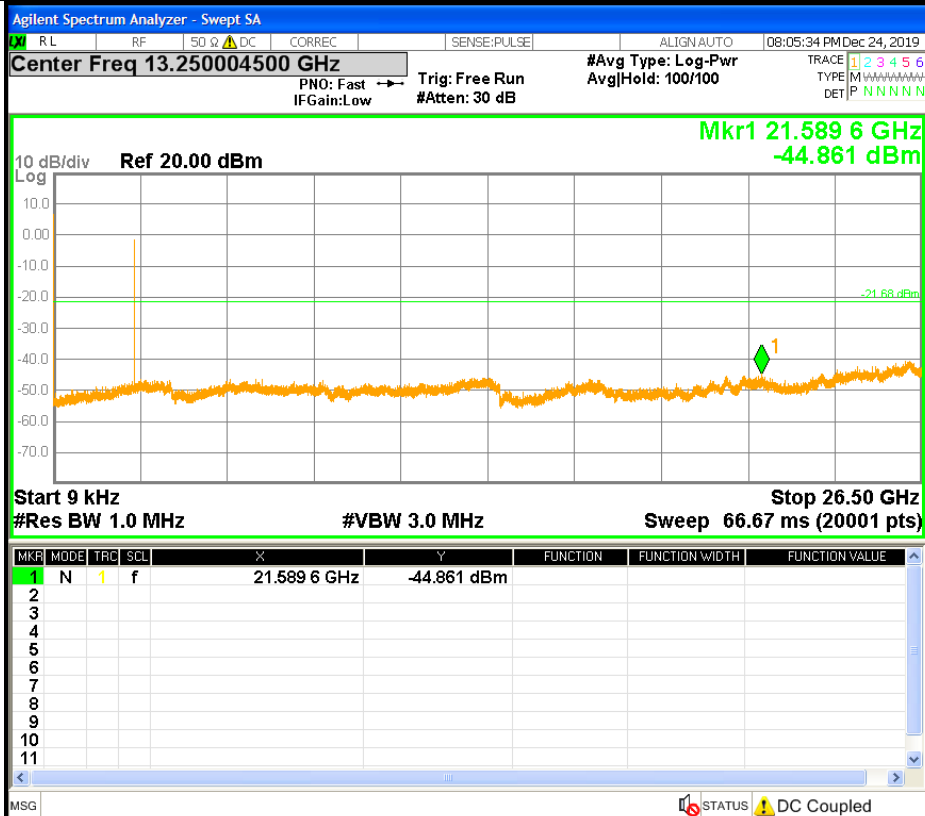
$\pi/4$ DQPSK HCH Graphs

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

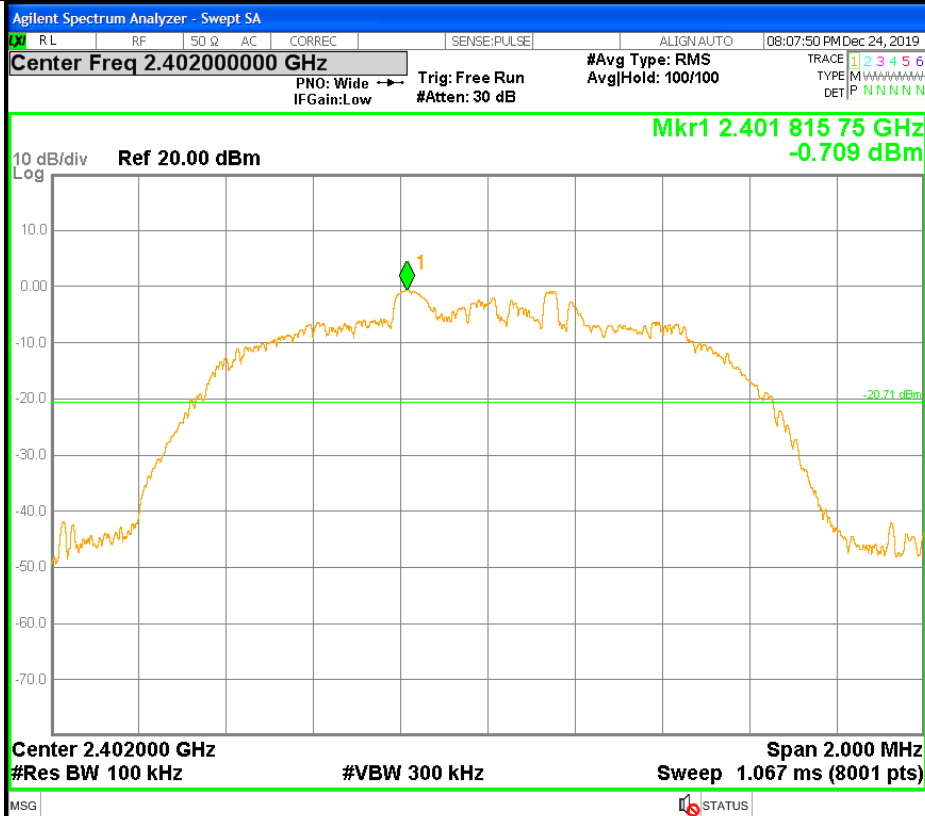
Puw



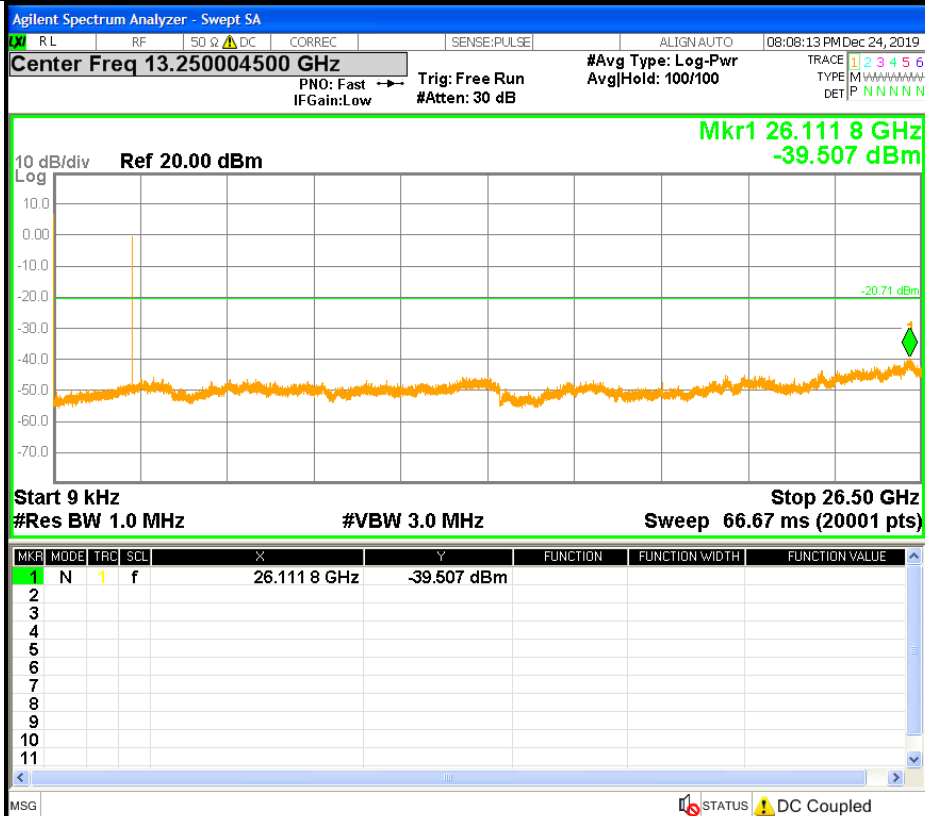
Frequency
Auto Tune
Center Freq 13.250004500 GHz
Start Freq 9.000 kHz
Stop Freq 26.500000000 GHz
CF Step 2.649999100 GHz Auto Man
Freq Offset 0 Hz

8DPSK LCH Graphs

Pref

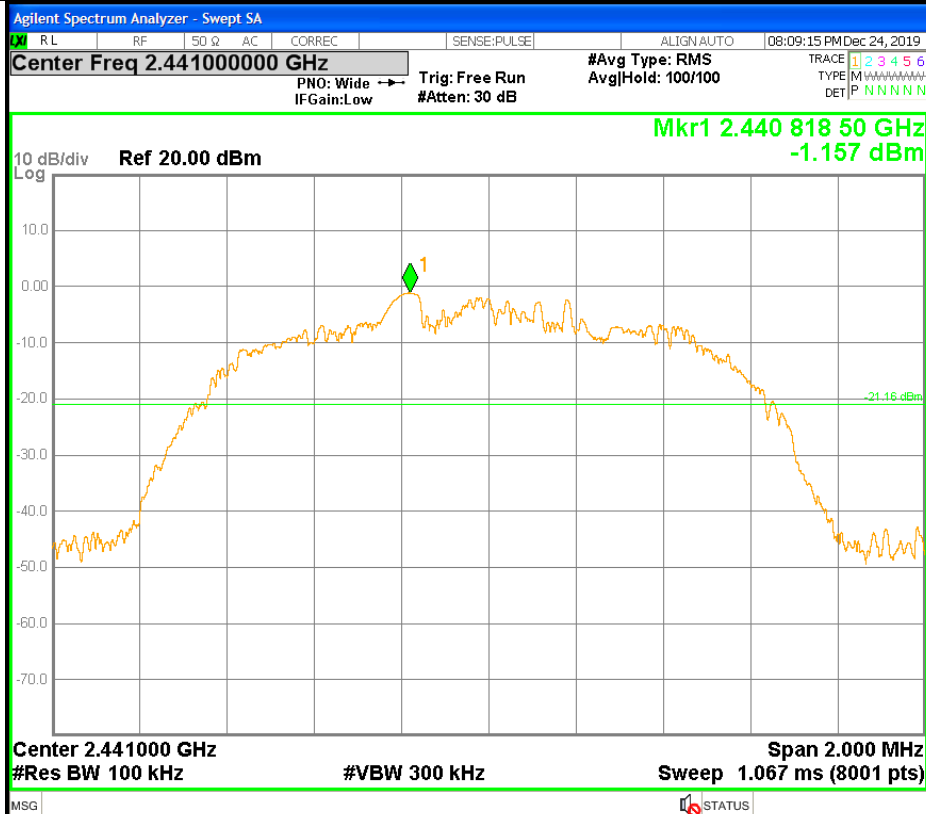


Puw

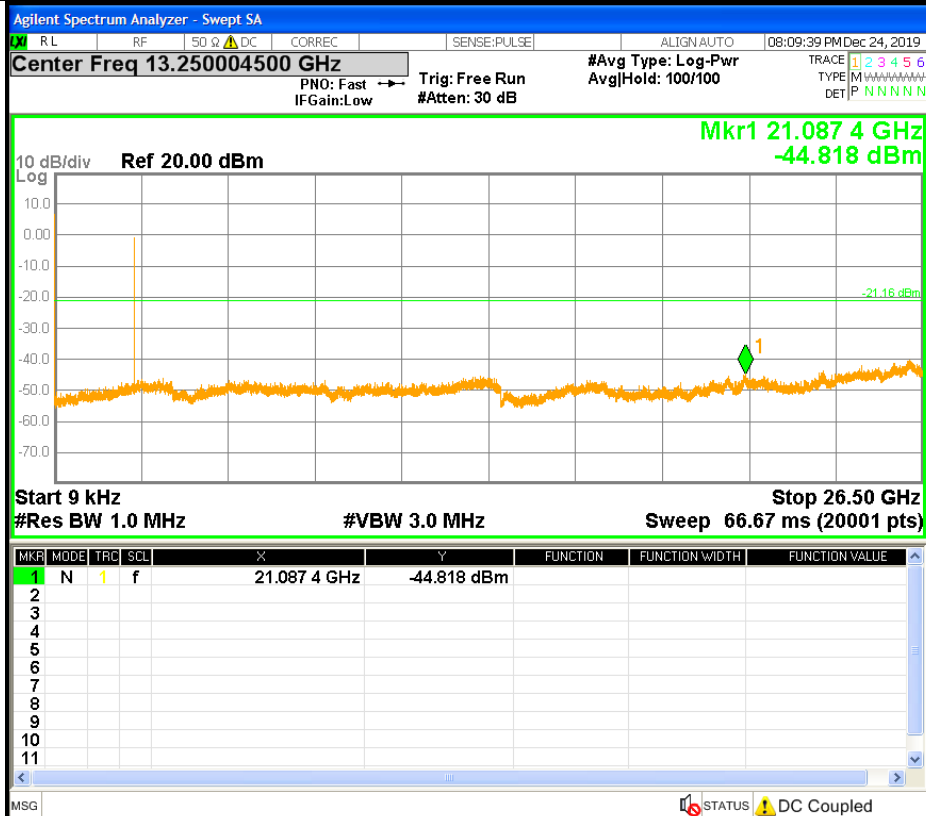


8DPSK MCH Graphs

Pref

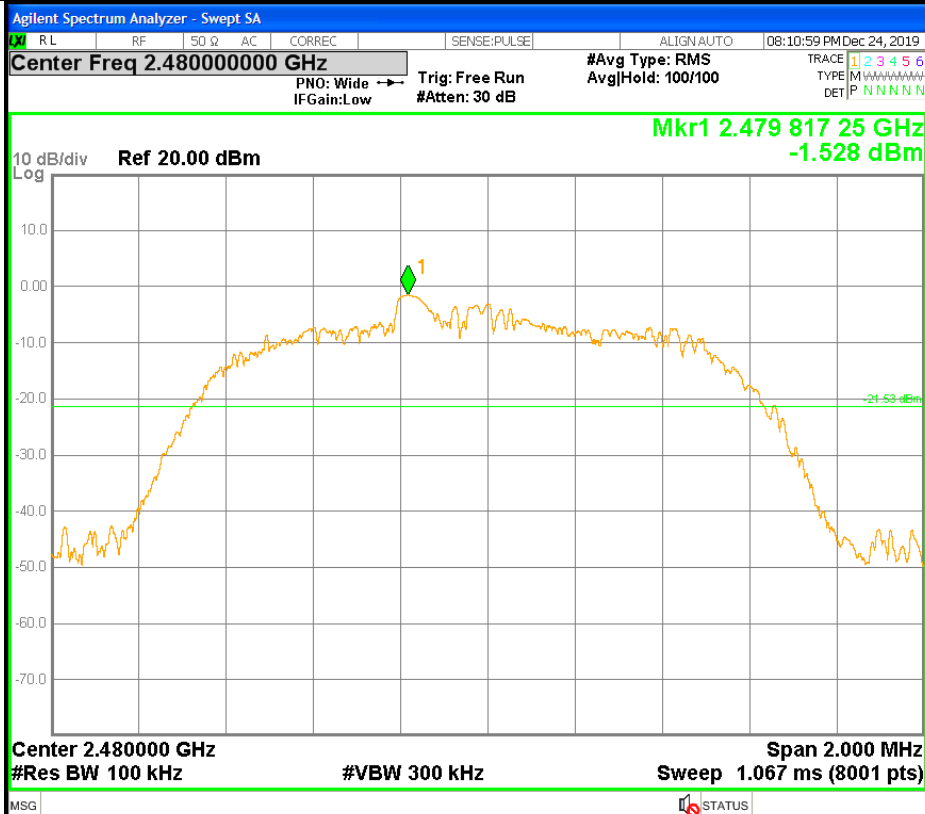


Puw

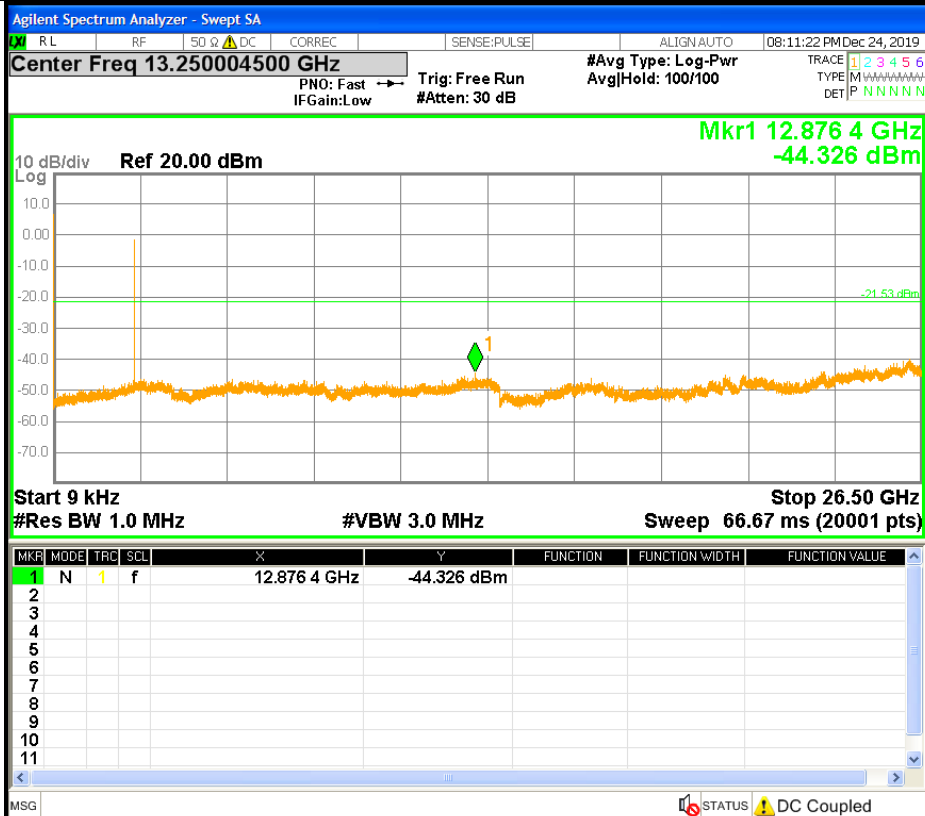


8DPSK HCH Graphs

Pref



Puw

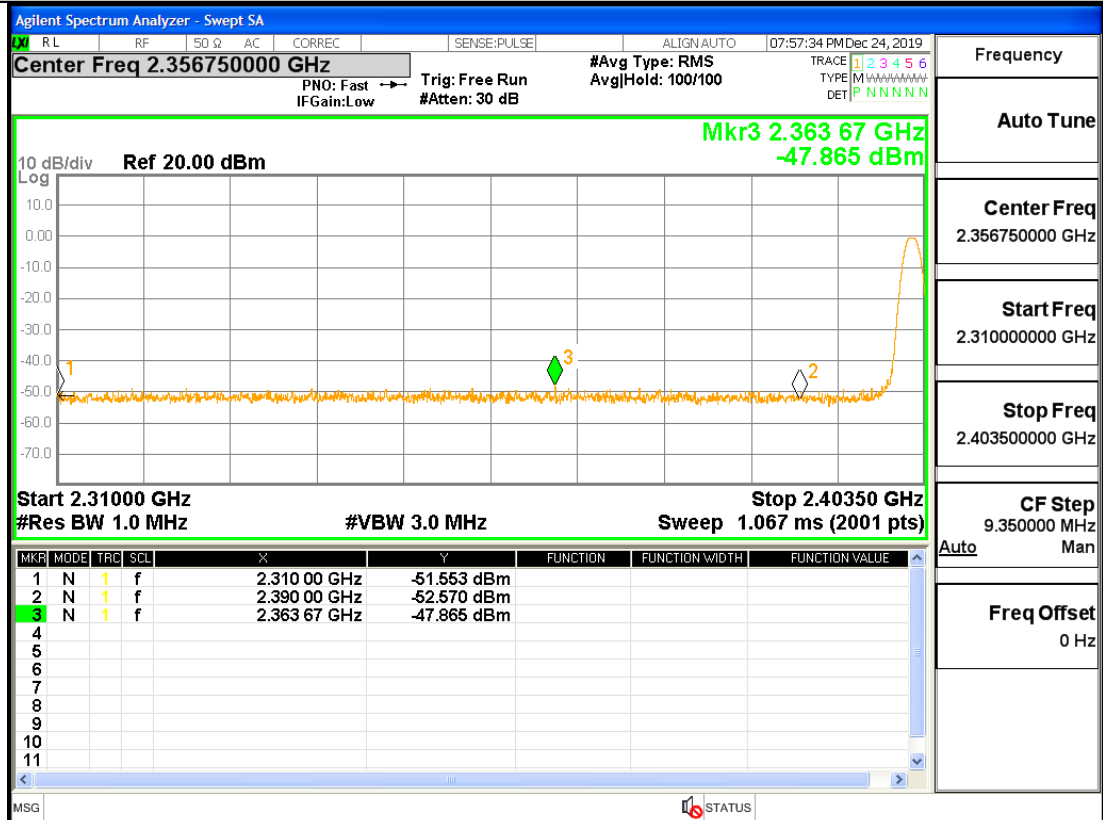


A.8 Restrict-band band-edge measurements

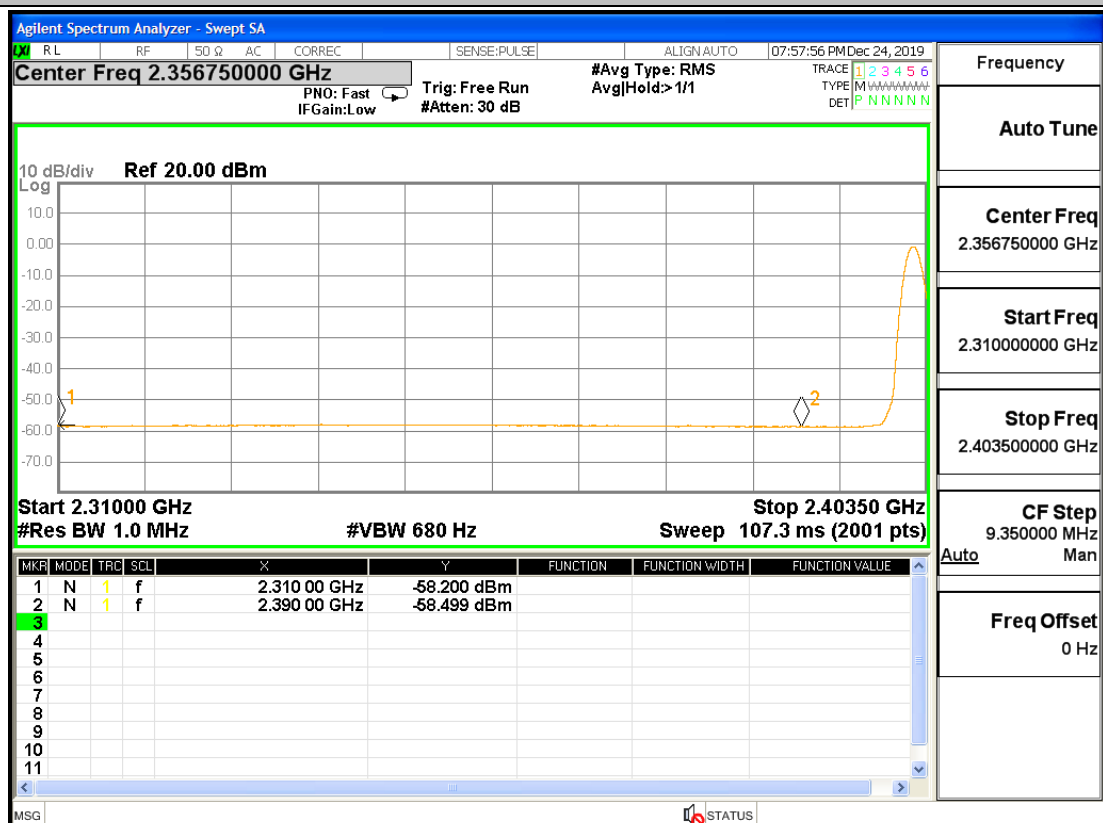
Type	Carrier Frequency (MHz)	Frequency(MHz)	Gain	Ground Factor	Peak Value(dBm)	E [dBuV/m]	Limit [dBuV/m]	Conclusion
1DH5	2402	2363.669	2.5	0.00	-47.865	49.835	74	Pass
1DH5	2480	2495.399	2.5	0.00	-47.791	49.909	74	Pass
2DH5	2402	2362.5	2.5	0.00	-48.12	49.58	74	Pass
2DH5	2480	2483.5	2.5	0.00	-50.317	47.383	74	Pass
3DH5	2402	2310	2.5	0.00	-51.59	46.11	74	Pass
3DH5	2480	2483.5	2.5	0.00	-51.539	46.161	74	Pass

Type	Carrier Frequency (MHz)	Frequency(MHz)	Gain	Ground Factor	Average Value(dBm)	E [dBuV/m]	Limit [dBuV/m]	Conclusion
1DH5	2402	2363.669	2.5	0.00	-58.2	39.5	54	Pass
1DH5	2480	2495.399	2.5	0.00	-55.98	41.72	54	Pass
2DH5	2402	2362.5	2.5	0.00	-58.726	38.974	54	Pass
2DH5	2480	2483.5	2.5	0.00	-55.939	41.761	54	Pass
3DH5	2402	2310	2.5	0.00	-58.84	38.86	54	Pass
3DH5	2480	2483.5	2.5	0.00	-55.957	41.743	54	Pass

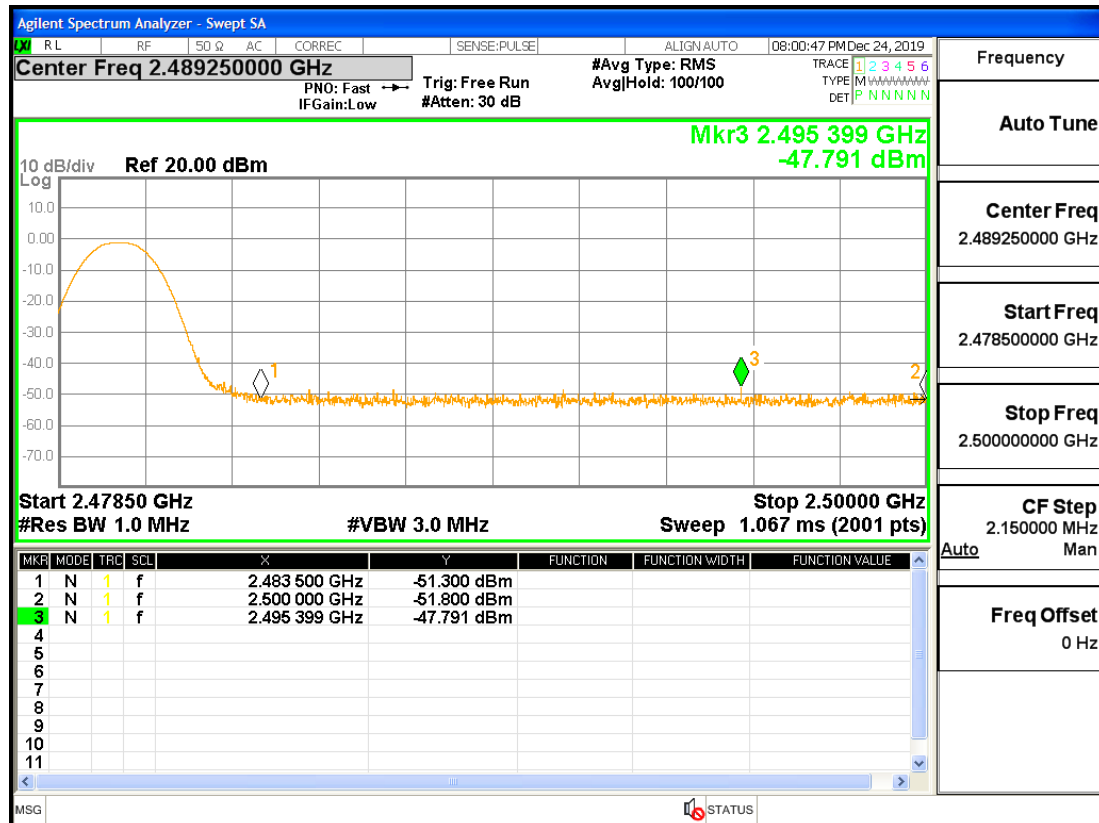
Restrict-band band-edge measurements_2402_PEAK_DH5



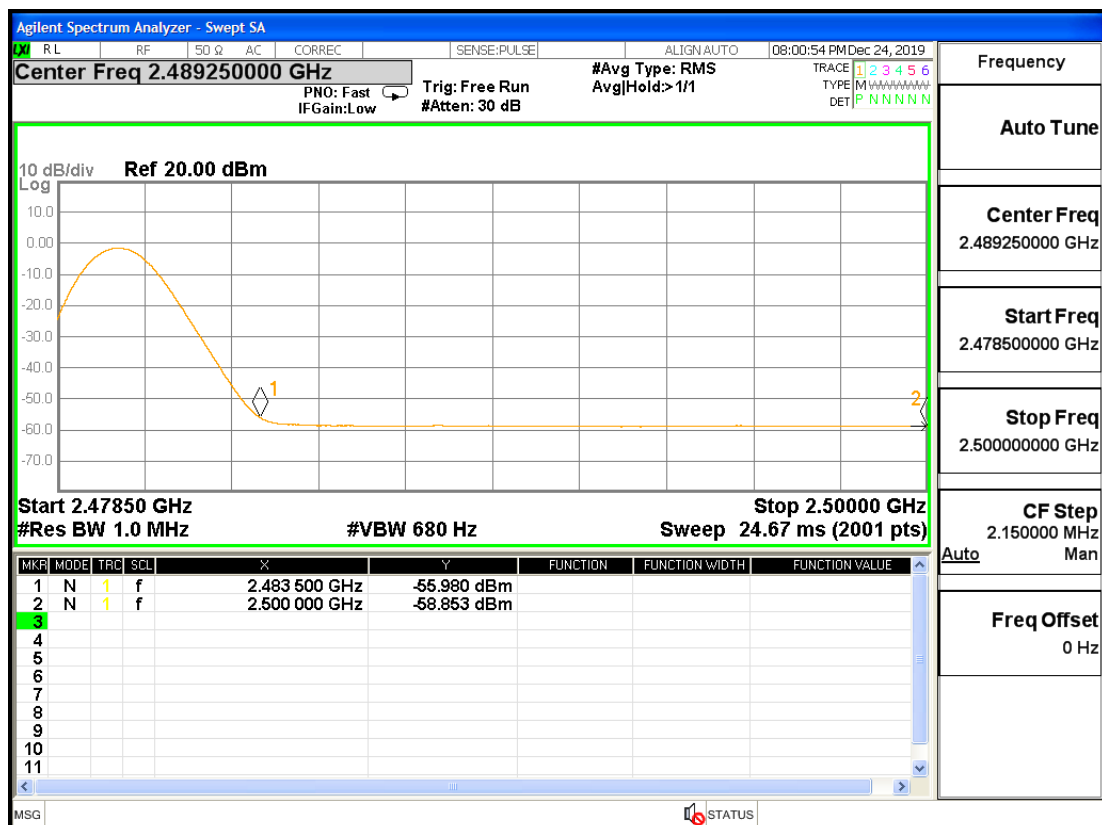
Restrict-band band-edge measurements_2402_AV_DH5



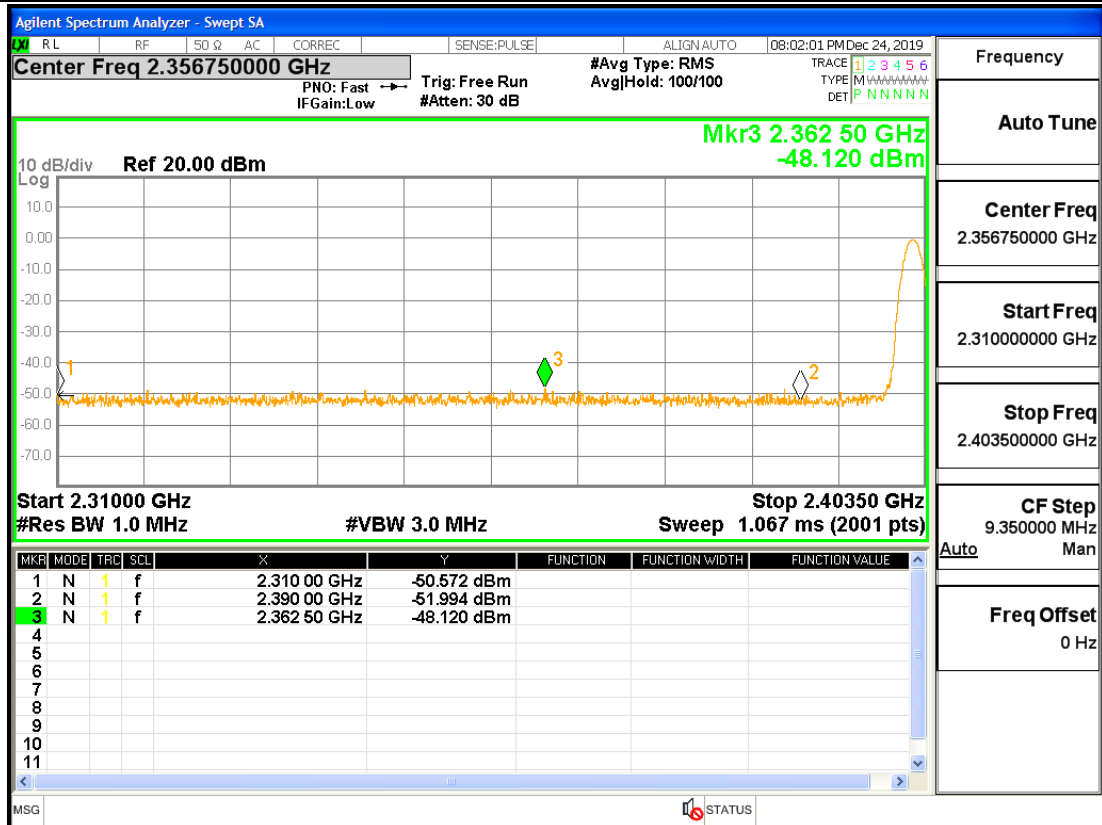
Restrict-band band-edge measurements_2480_PEAK_DH5



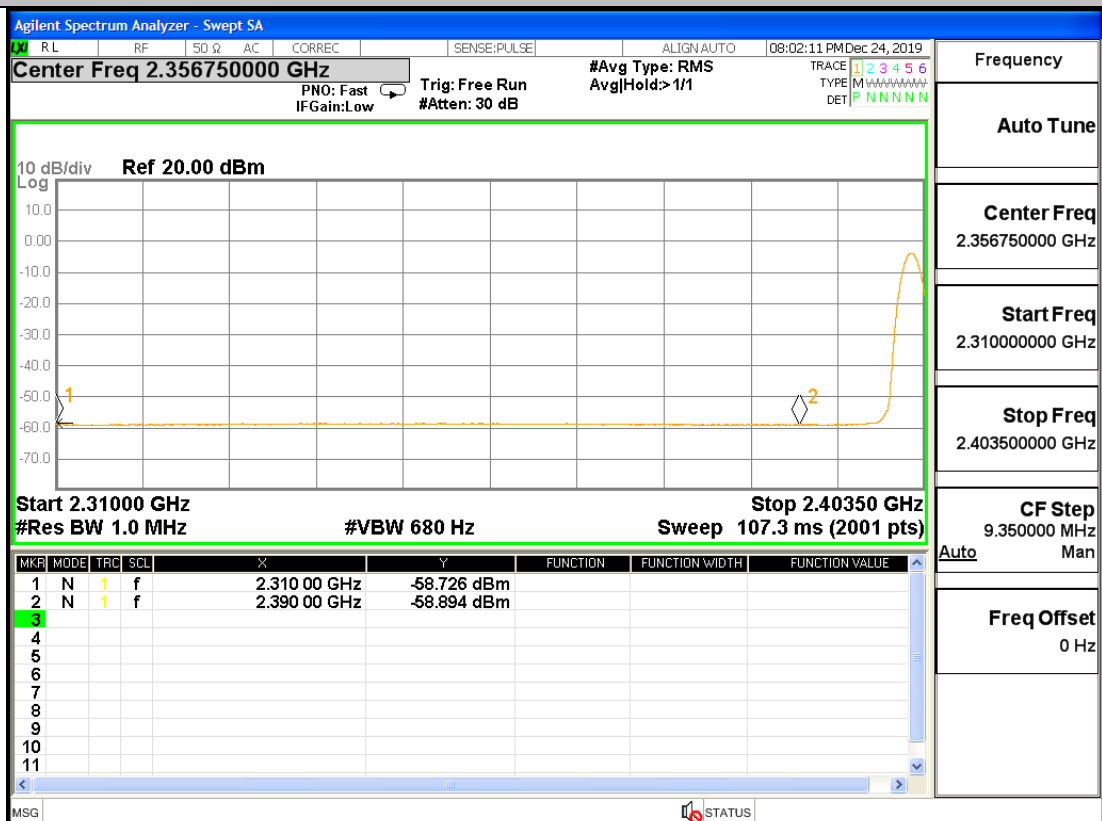
Restrict-band band-edge measurements_2480_AV_DH5



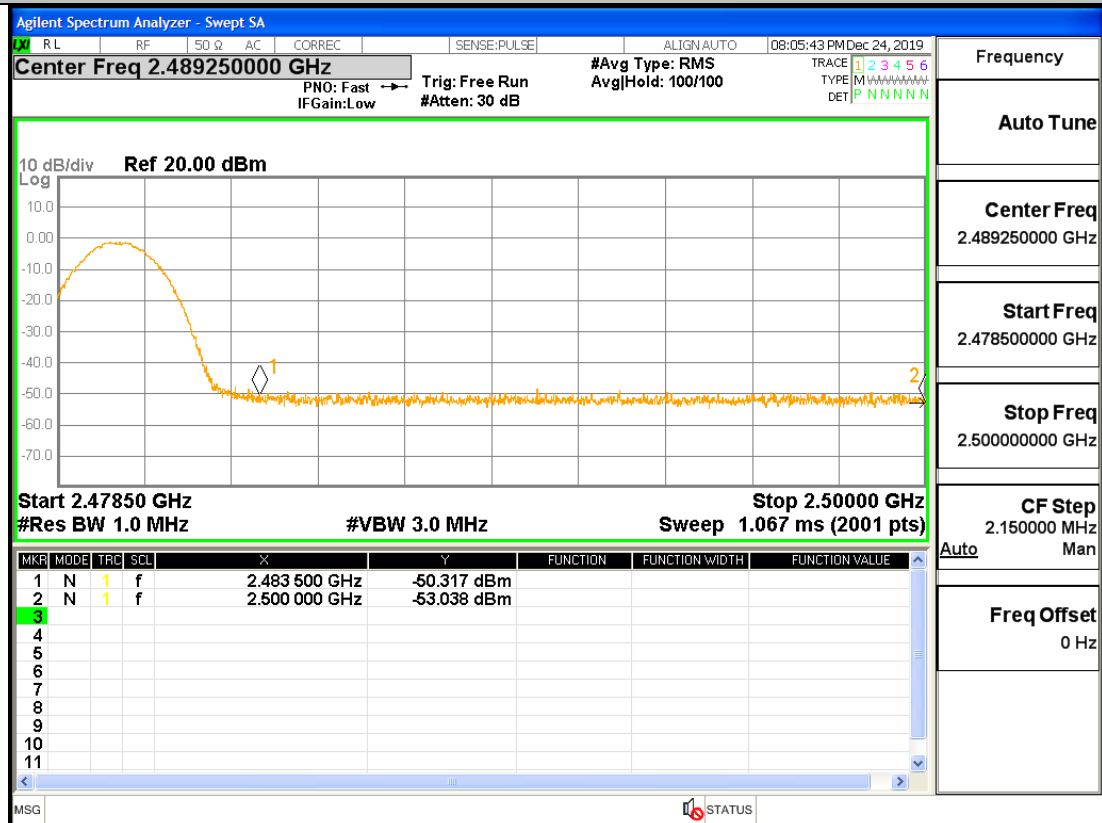
Restrict-band band-edge measurements_2402_PEAK_2DH5



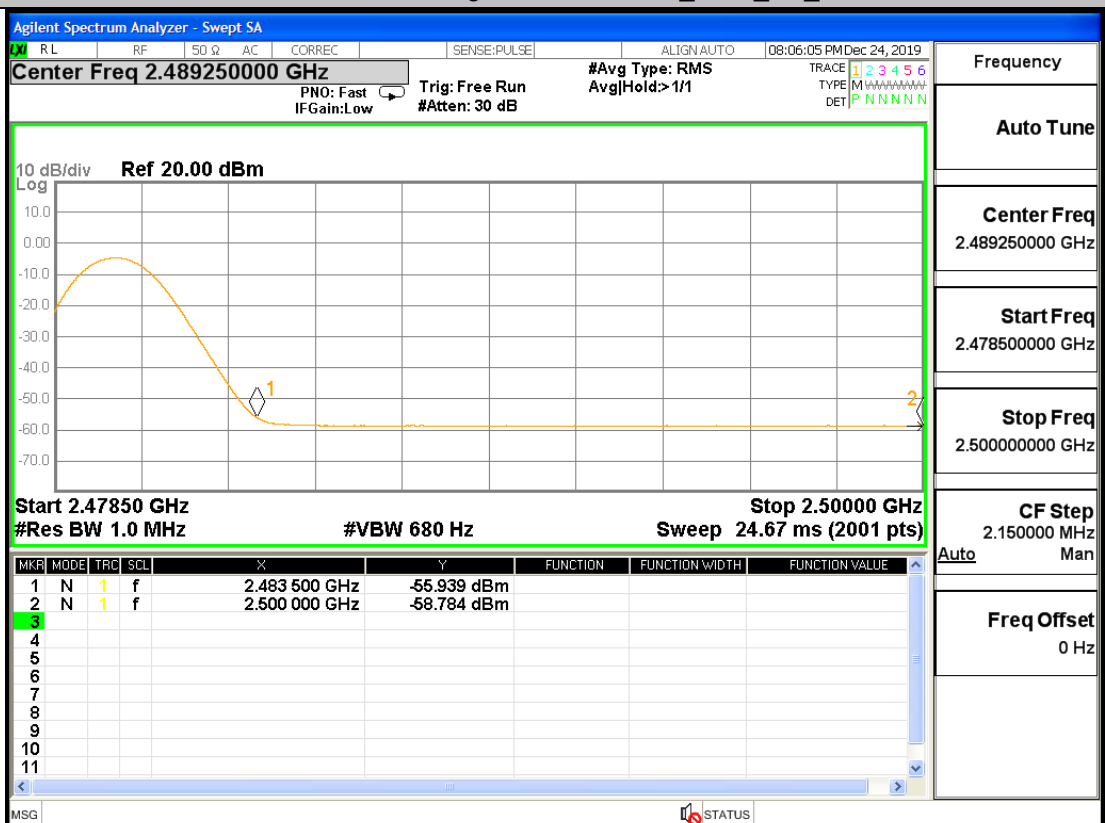
Restrict-band band-edge measurements_2402_AV_2DH5



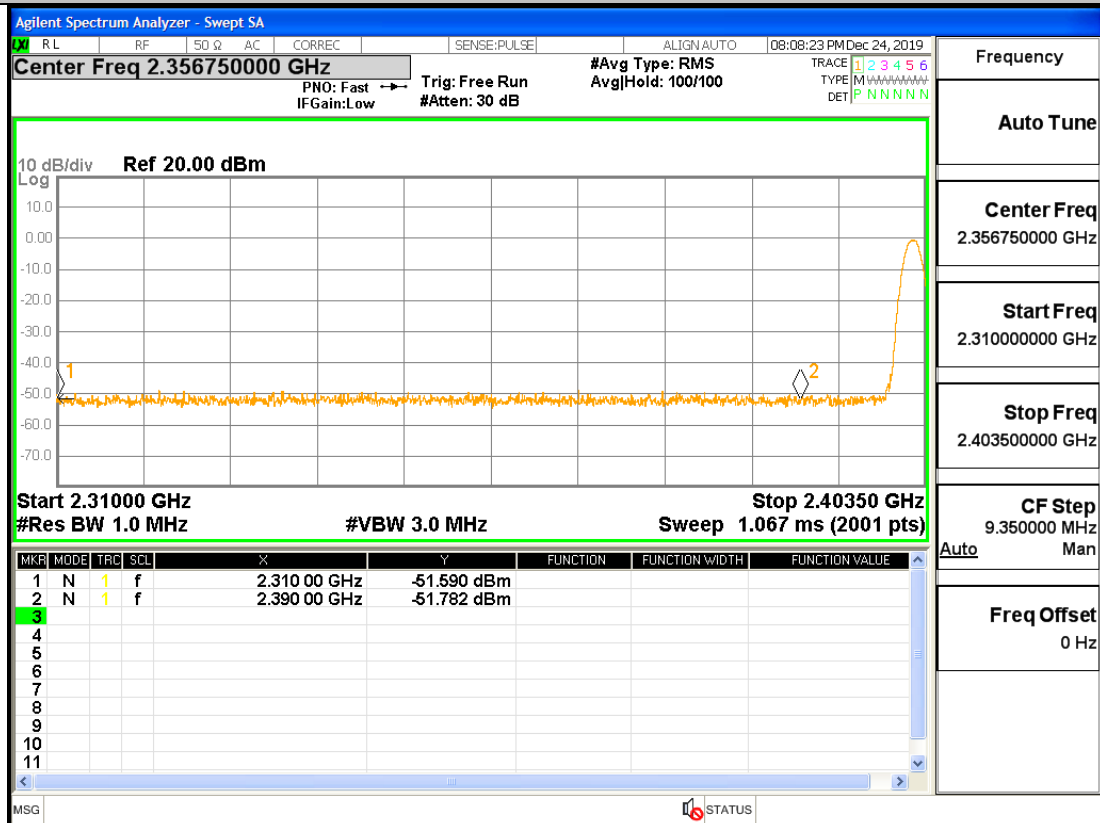
Restrict-band band-edge measurements_2480_PEAK_2DH5



Restrict-band band-edge measurements_2480_AV_2DH5



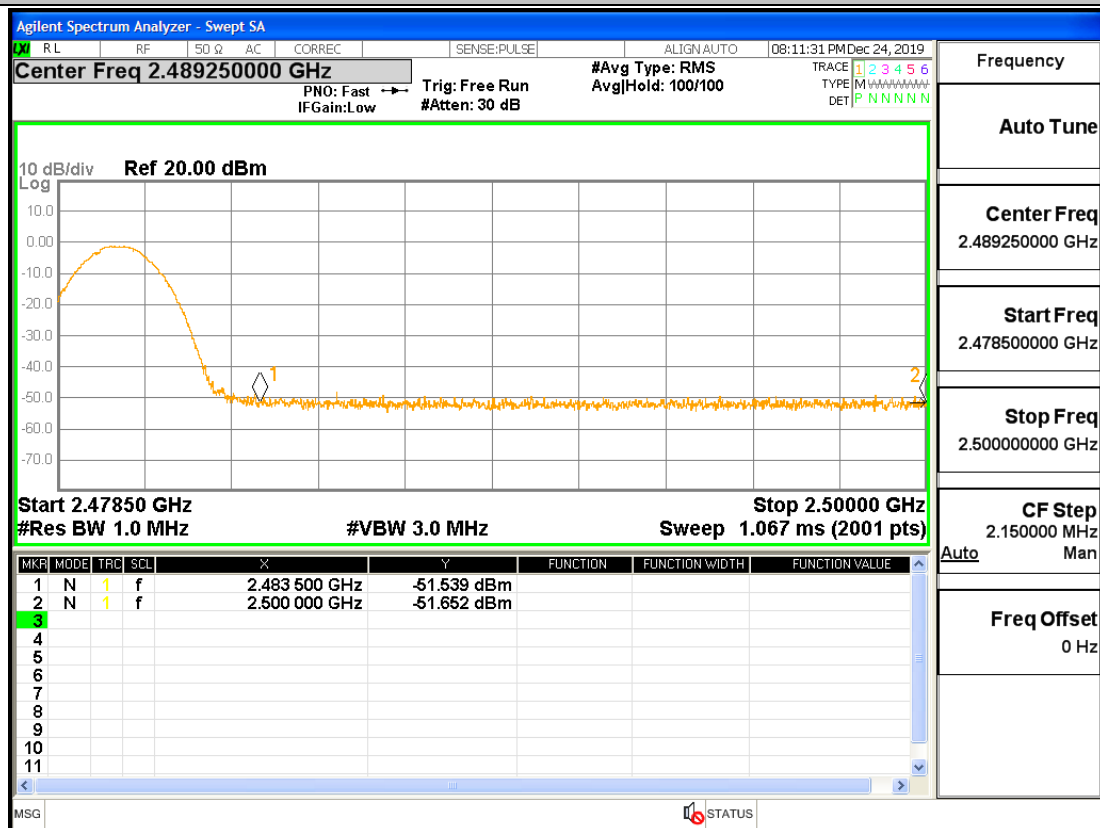
Restrict-band band-edge measurements_2402_PEAK_3DH5



Restrict-band band-edge measurements_2402_AV_3DH5



Restrict-band band-edge measurements_2480_PEAK_3DH5



Restrict-band band-edge measurements_2480_AV_3DH5

