

Appendix A

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

Product Name: B86

Trade Mark: Haoda

Test Model: ZN-803

FCC ID: 2AR8U-ZN803

Environmental Conditions

Temperature:	22.5 ° C
Relative Humidity:	50%
ATM Pressure:	100.0 kPa
Test Engineer:	Gary Qian
Supervised by:	Eden Hu

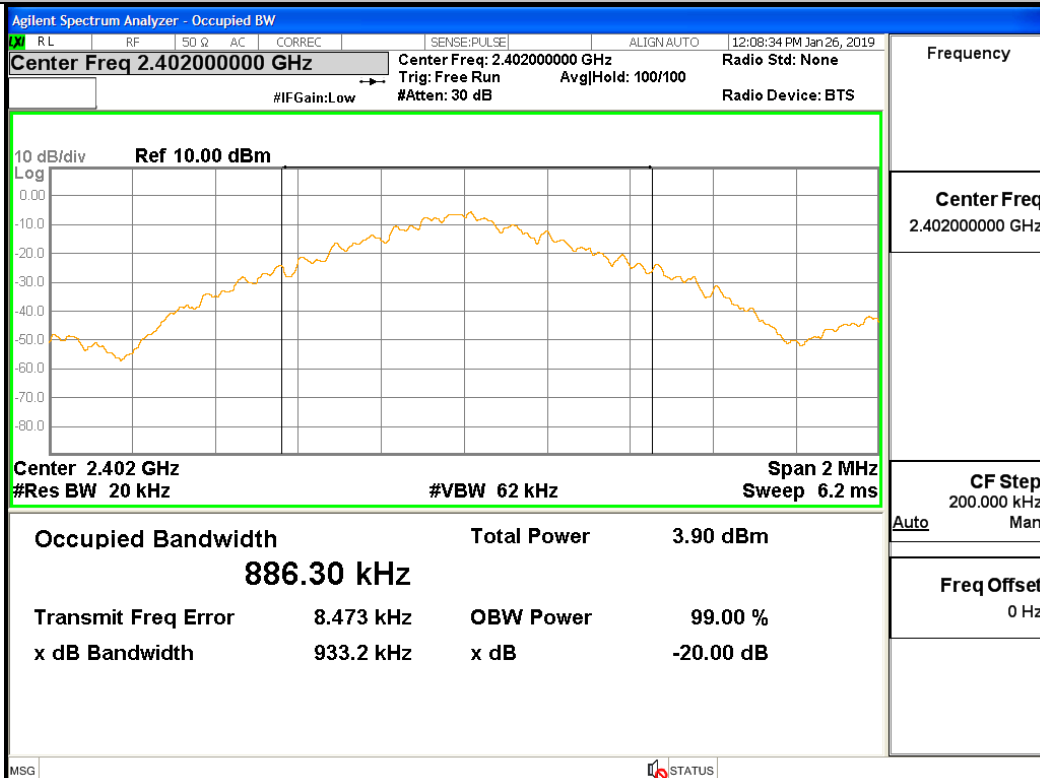
A.1 20 dB Bandwidth

Mode	Channel.	20dB Bandwidth [MHz]	Limit(MHz)	Verdict
GFSK	LCH	0.933	Not Specified	PASS
GFSK	MCH	0.941	Not Specified	PASS
GFSK	HCH	0.931	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.341	Not Specified	PASS
$\pi/4$ DQPSK	MCH	1.336	Not Specified	PASS
$\pi/4$ DQPSK	HCH	1.339	Not Specified	PASS
8DPSK	LCH	1.334	Not Specified	PASS
8DPSK	MCH	1.340	Not Specified	PASS
8DPSK	HCH	1.350	Not Specified	PASS

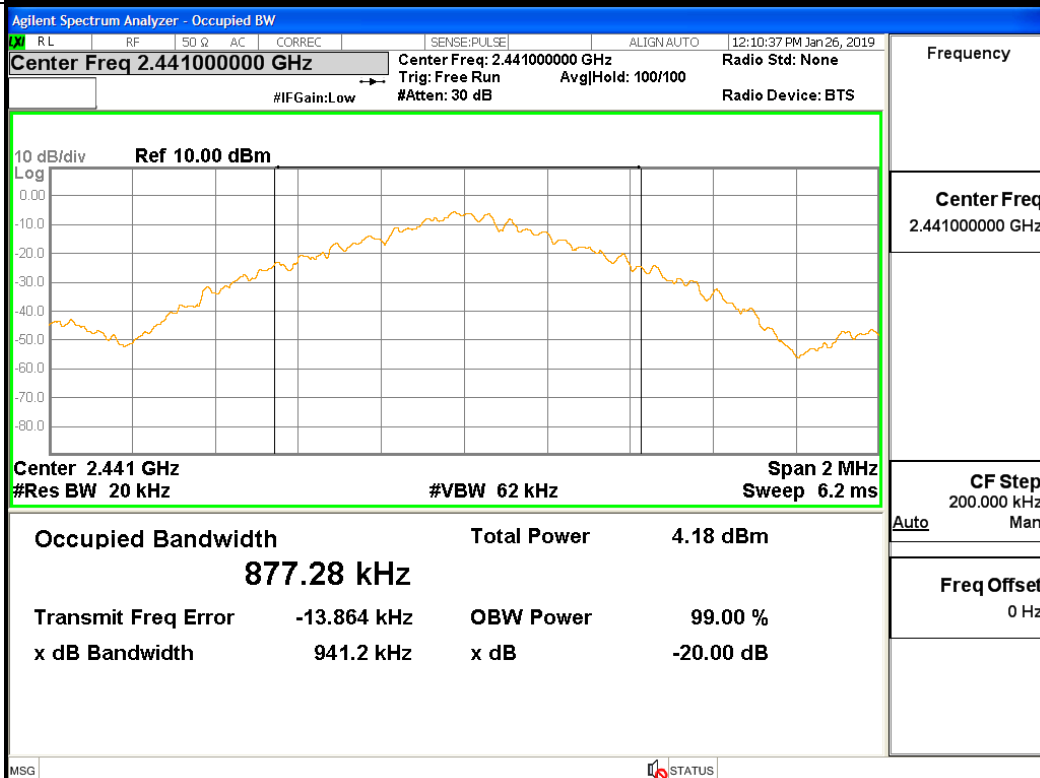
Test Graph

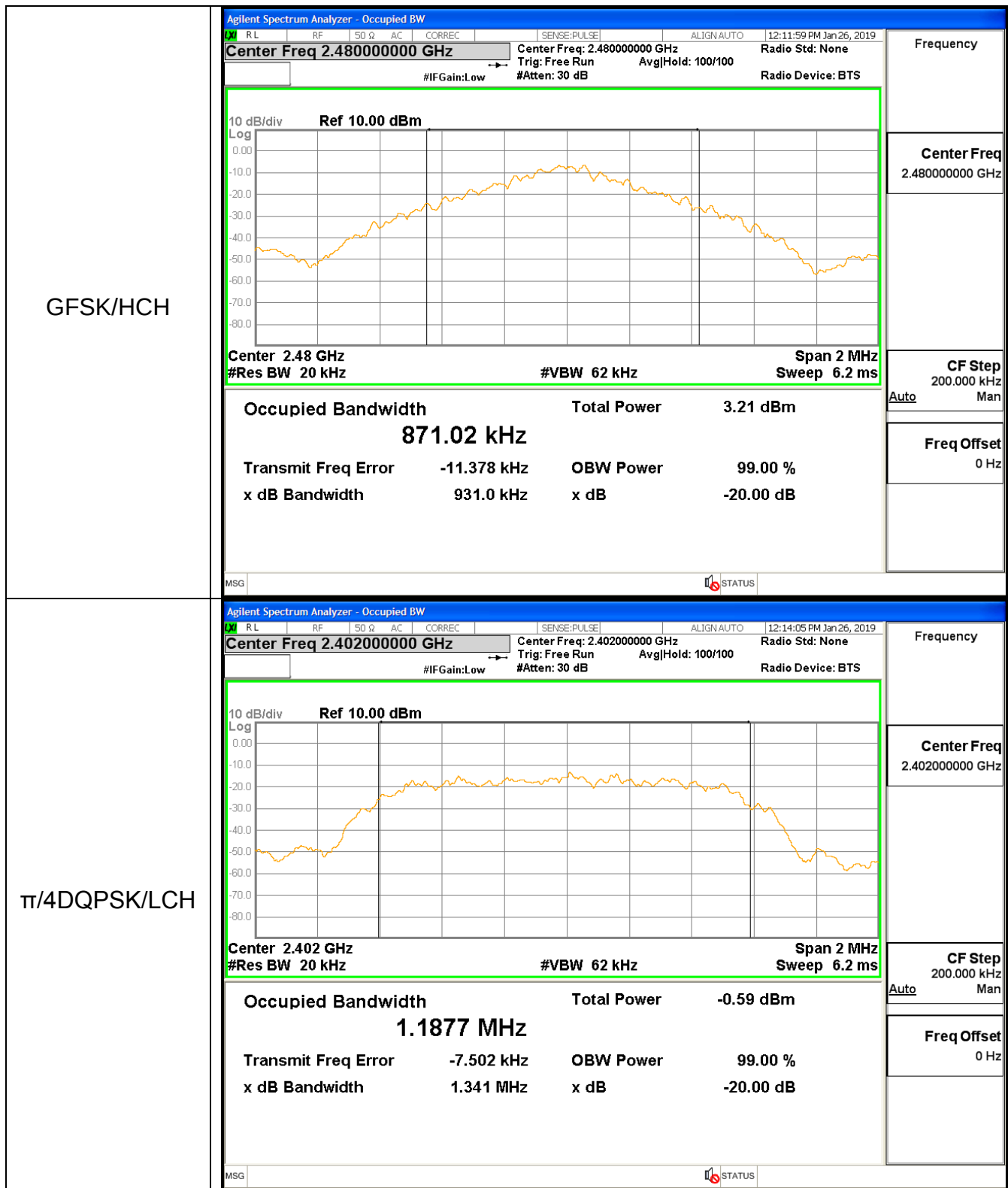
Graphs

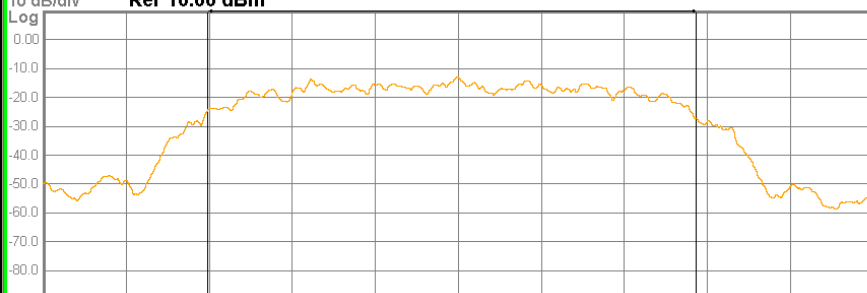
GFSK/LCH

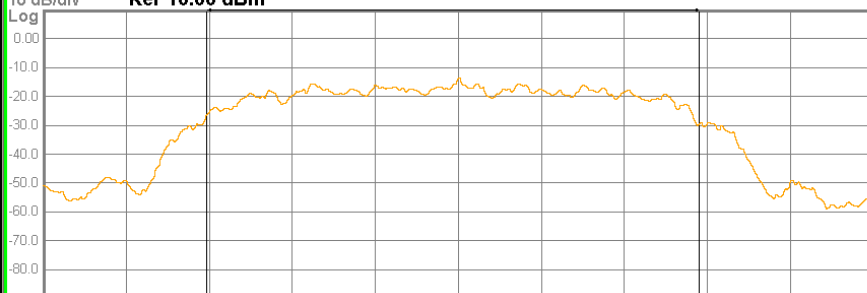


GFSK/MCH





π /4DQPSK/MCH	Agilent Spectrum Analyzer - Occupied BW										Frequency	
	RLRF50 Ω ACCORREC				SENSE:PULSE		ALIGN:AUTO		12:16:24 PM Jan 26, 2019		Center Freq 2.441000000 GHz	
	Center Freq 2.441000000 GHz				Center Freq: 2.441000000 GHz		Radio Std: None		Radio Device: BTS			
	#IFGain:Low				#Atten: 30 dB		AvgHold: 100/100					
												
	Center 2.441 GHz				#VBW 62 kHz				Span 2 MHz			
	#Res BW 20 kHz								Sweep 6.2 ms			
	Occupied Bandwidth				Total Power				0.16 dBm			
	1.1762 MHz											
	Transmit Freq Error				-14.803 kHz				OBW Power			
									99.00 %			
	x dB Bandwidth				1.336 MHz				x dB			
									-20.00 dB			
	MSG										STATUS	

π /4DQPSK/HCH	Agilent Spectrum Analyzer - Occupied BW										Frequency	
	RLRF50 Ω ACCORREC				SENSE:PULSE		ALIGN:AUTO		12:18:24 PM Jan 26, 2019		Center Freq 2.480000000 GHz	
	Center Freq 2.480000000 GHz				Center Freq: 2.480000000 GHz		Radio Std: None		Radio Device: BTS			
	#IFGain:Low				#Atten: 30 dB		AvgHold: 100/100					
												
	Center 2.48 GHz				#VBW 62 kHz				Span 2 MHz			
	#Res BW 20 kHz								Sweep 6.2 ms			
	Occupied Bandwidth				Total Power				-1.06 dBm			
	1.1826 MHz											
	Transmit Freq Error				-11.247 kHz				OBW Power			
									99.00 %			
	x dB Bandwidth				1.339 MHz				x dB			
									-20.00 dB			
	MSG										STATUS	

Center Freq 2.480000000 GHz

Center Freq: 2.480000000 GHz

Radio Std: None

#IFGain:Low

Trig: Free Run

AvgHold: 100/100

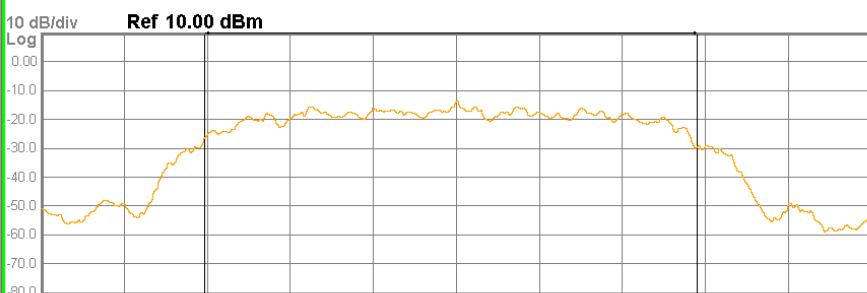
Radio Device: BTS

#Atten: 30 dB

10 dB/div

Ref 10.00 dBm

Log



Center 2.48 GHz

#Res BW 20 kHz

#VBW 62 kHz

Span 2 MHz

Sweep 6.2 ms

Occupied Bandwidth

1.1826 MHz

Total Power

-1.06 dBm

Transmit Freq Error

-11.247 kHz

OBW Power

99.00 %

x dB Bandwidth

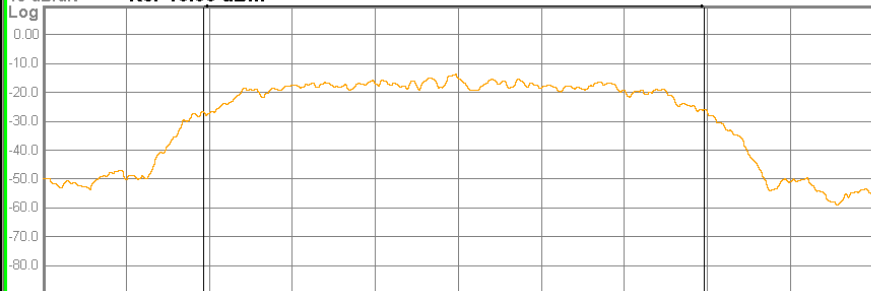
1.339 MHz

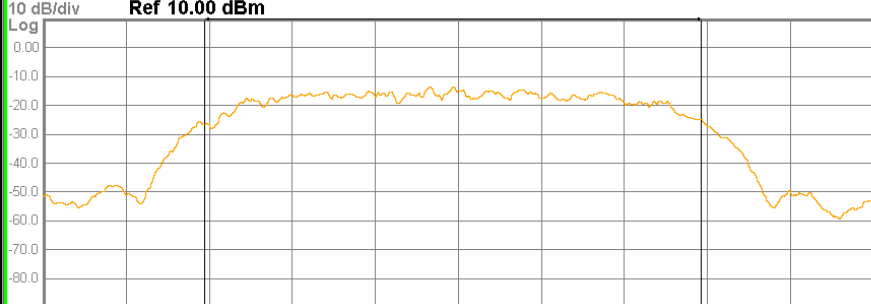
x dB

-20.00 dB

MSG

STATUS

8DPSK/LCH	Agilent Spectrum Analyzer - Occupied BW				12:20:45 PM Jan 26, 2019		Frequency
	Center Freq 2.40200000 GHz		Center Freq: 2.40200000 GHz		Radio Std: None		Center Freq 2.40200000 GHz
	#IFGain:Low		#Atten: 30 dB		Avg Hold: 100/100		Radio Device: BTS
							
	Center 2.402 GHz		#Res BW 20 kHz		#VBW 62 kHz		Span 2 MHz Sweep 6.2 ms
Occupied Bandwidth				Total Power		-0.54 dBm	
1.2033 MHz							
Transmit Freq Error		-10.819 kHz		OBW Power		99.00 %	
x dB Bandwidth		1.334 MHz		x dB		-20.00 dB	
MSG				STATUS			

8DPSK/MCH	Agilent Spectrum Analyzer - Occupied BW				12:22:27 PM Jan 26, 2019		Frequency
	Center Freq 2.441000000 GHz		Center Freq: 2.441000000 GHz		Radio Std: None		Center Freq 2.441000000 GHz
	#IFGain:Low		#Atten: 30 dB		Avg Hold: 100/100		Radio Device: BTS
							
	Center 2.441 GHz		#Res BW 20 kHz		#VBW 62 kHz		Span 2 MHz Sweep 6.2 ms
Occupied Bandwidth				Total Power		0.31 dBm	
1.1947 MHz							
Transmit Freq Error		-12.315 kHz		OBW Power		99.00 %	
x dB Bandwidth		1.340 MHz		x dB		-20.00 dB	
MSG				STATUS			

Center Freq 2.441000000 GHz

Center Freq: 2.441000000 GHz

Radio Std: None

#IFGain:Low

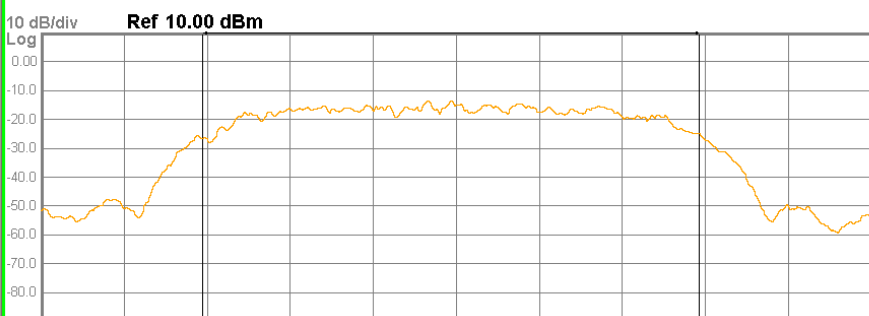
#Atten: 30 dB

AvgHold: 100/100

Radio Device: BTS

10 dB/div

Ref 10.00 dBm



Center 2.441 GHz

#Res BW 20 kHz

#VBW 62 kHz

Span 2 MHz

Sweep 6.2 ms

Occupied Bandwidth

1.1947 MHz

Total Power

0.31 dBm

Transmit Freq Error

-12.315 kHz

OBW Power

99.00 %

x dB Bandwidth

1.340 MHz

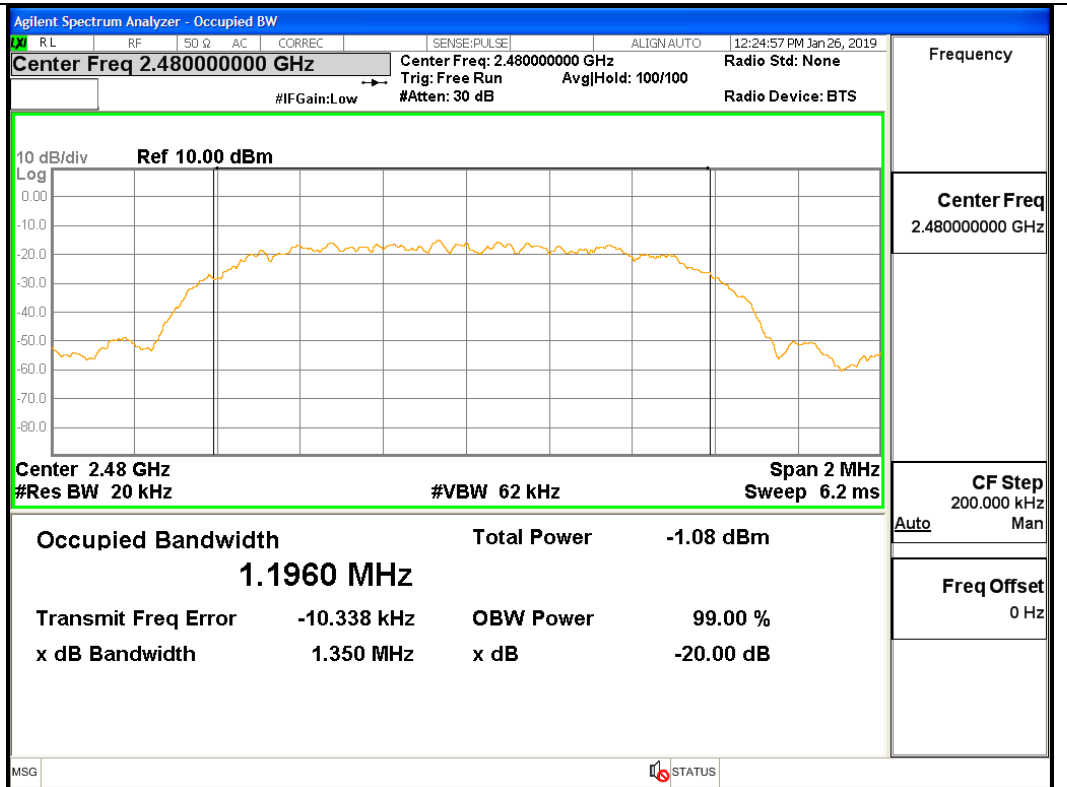
x dB

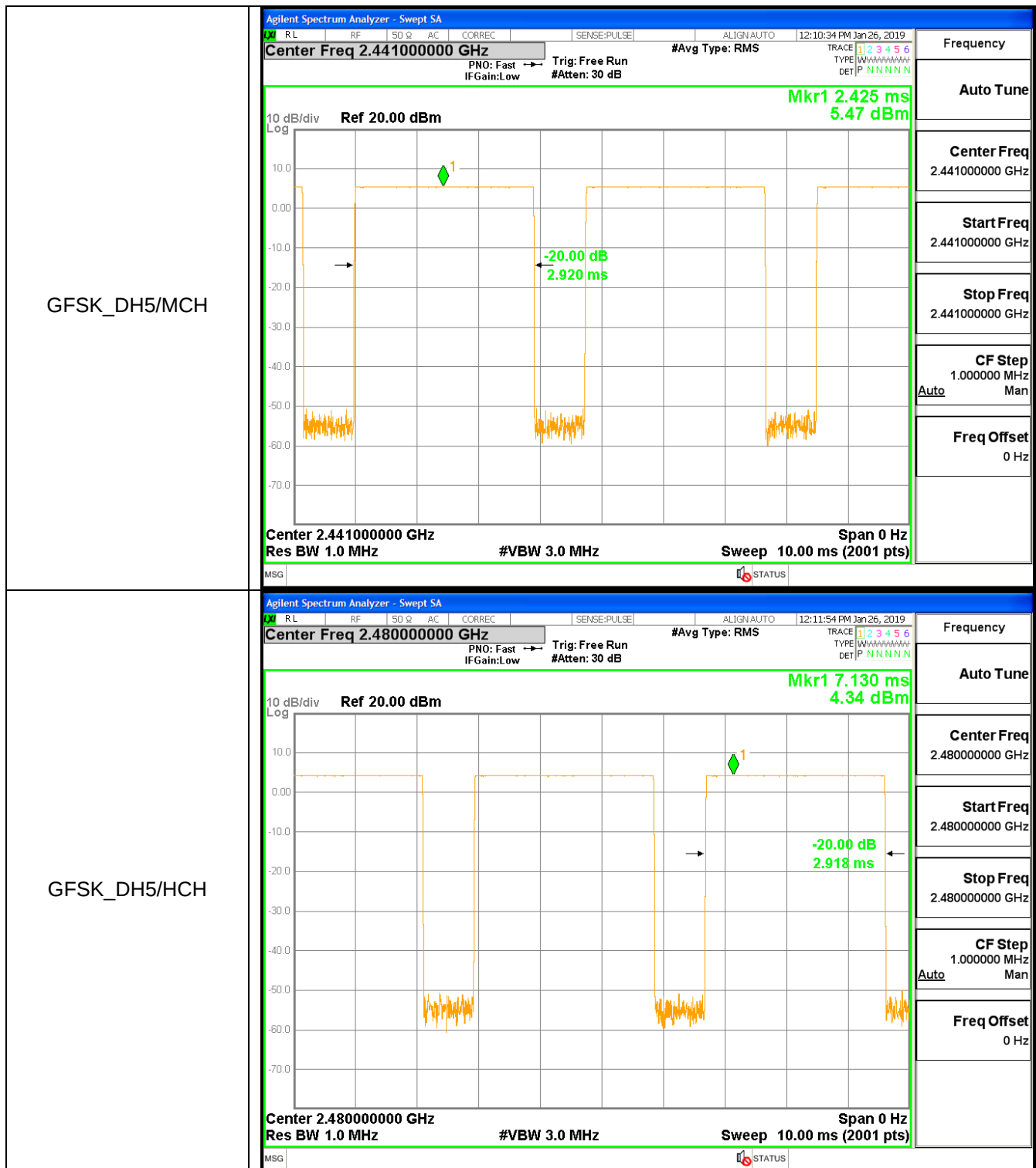
-20.00 dB

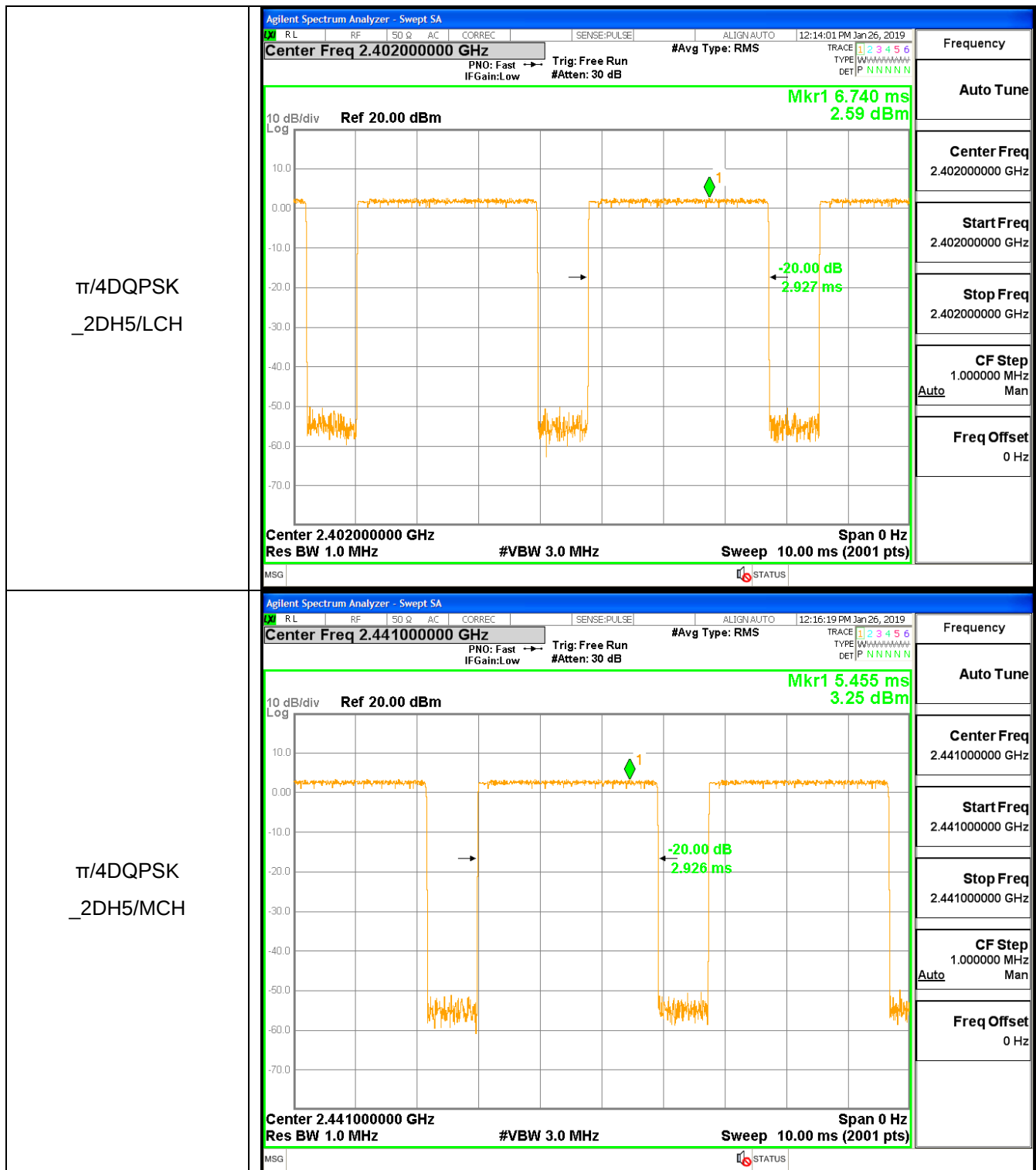
MSG

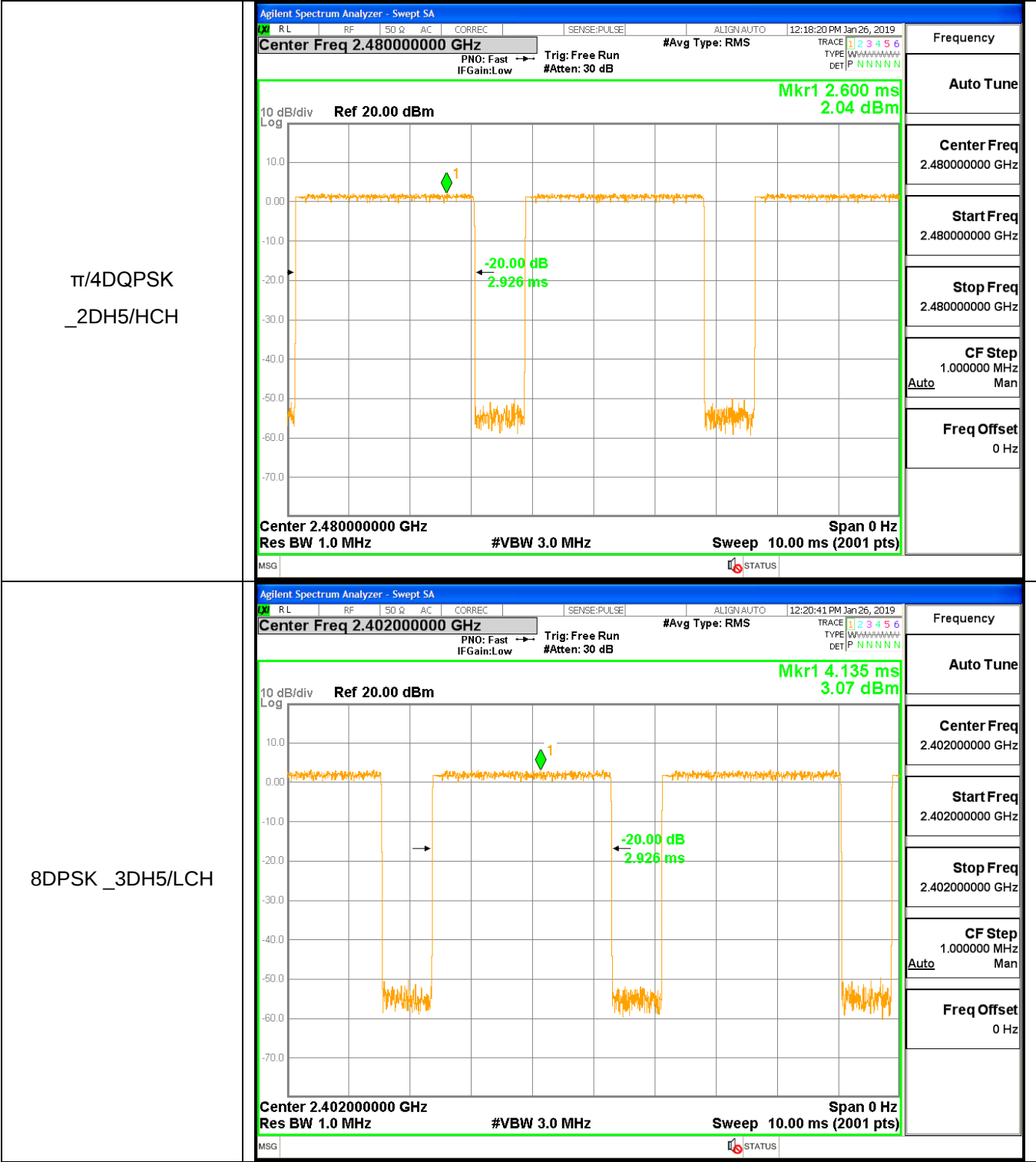
STATUS

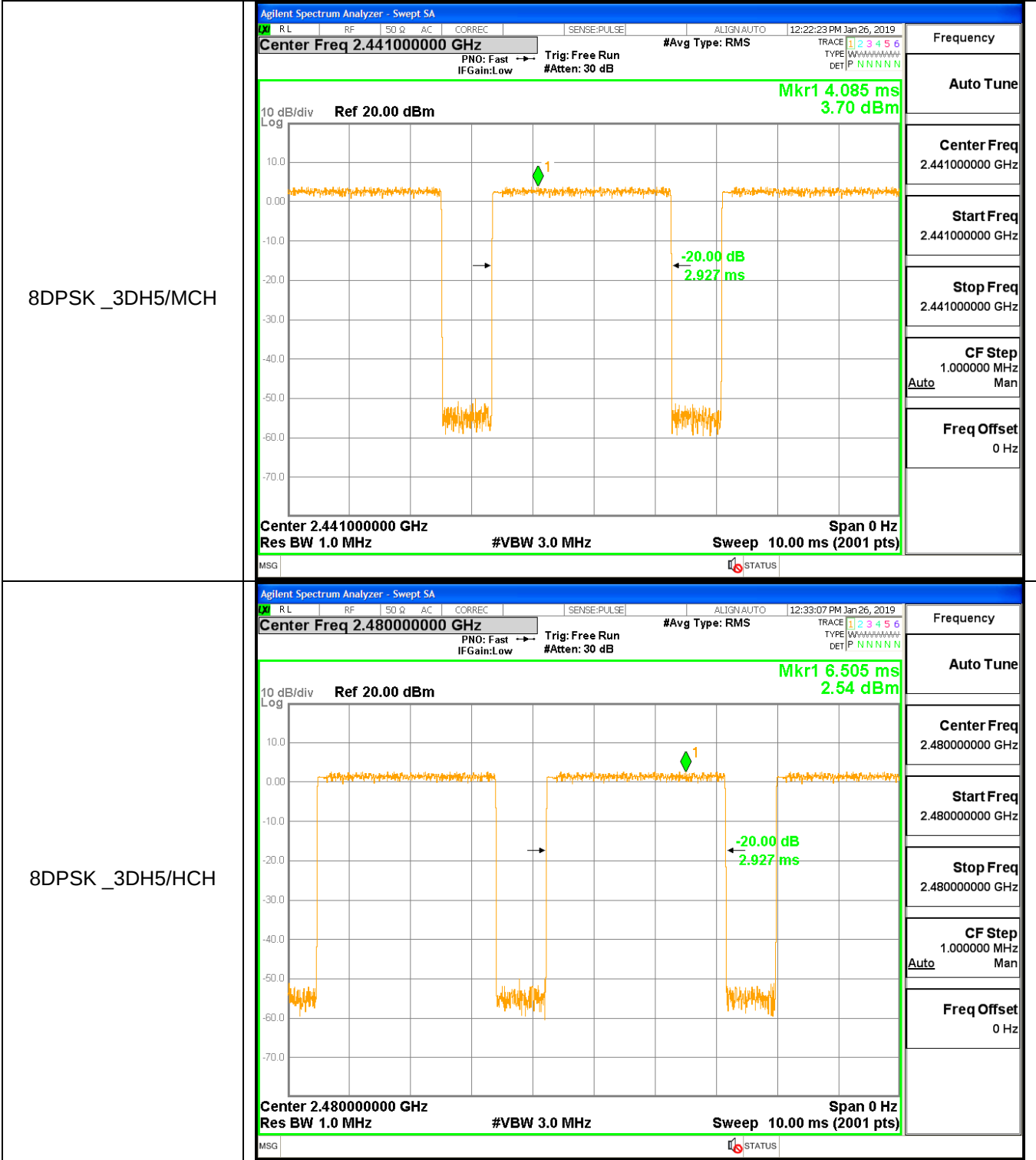
8DPSK/HCH









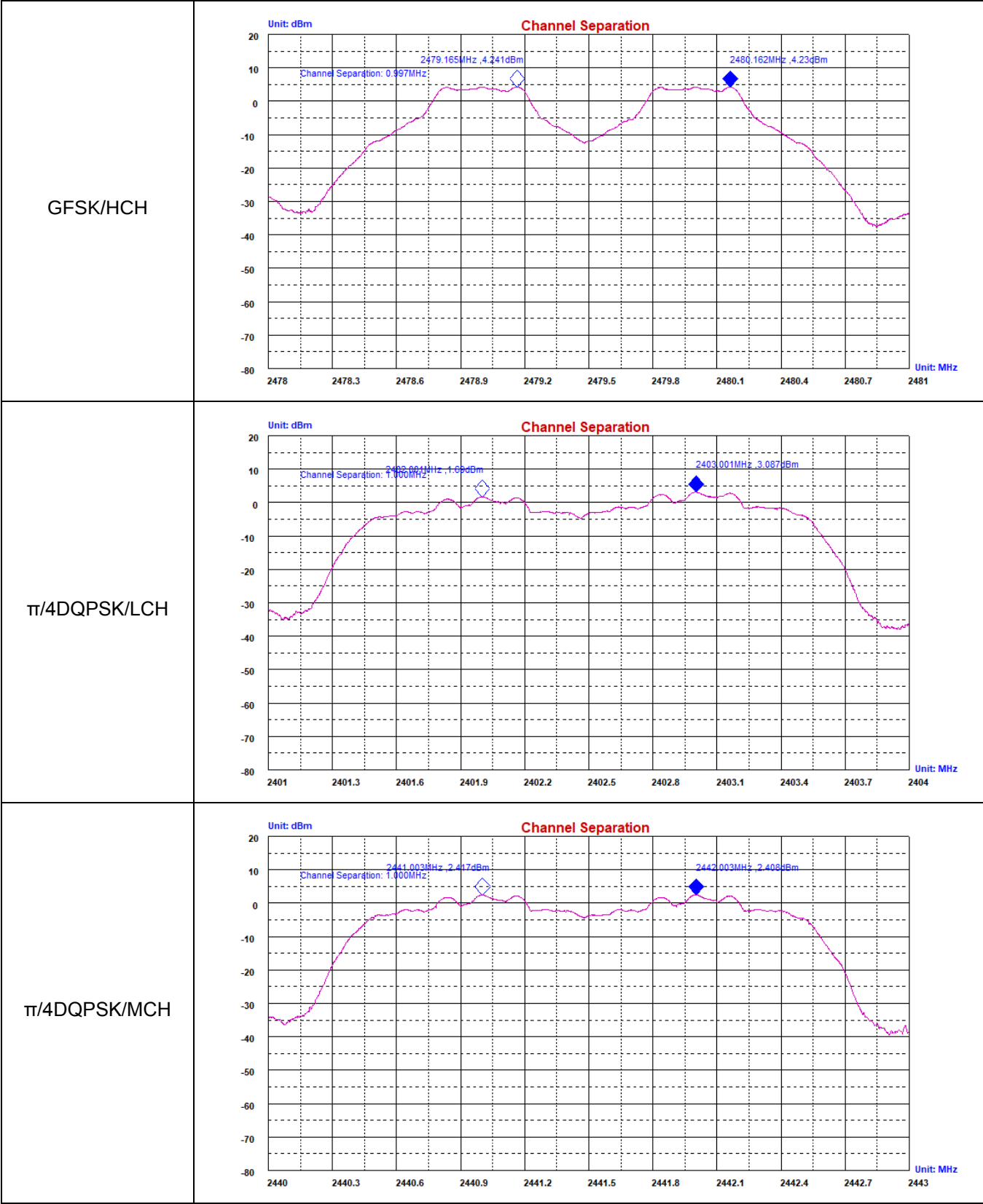


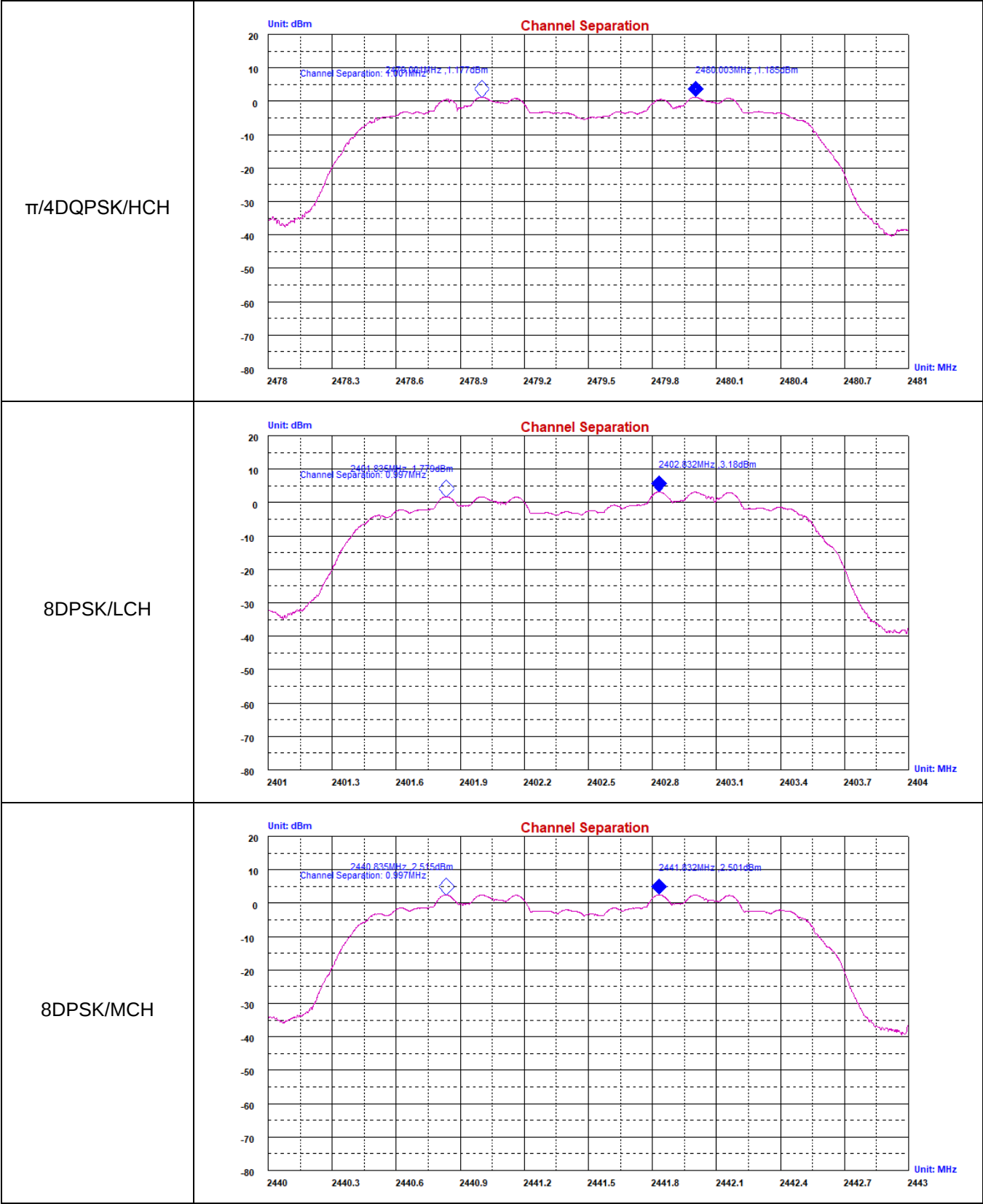
A.3 Carrier Frequency Separation

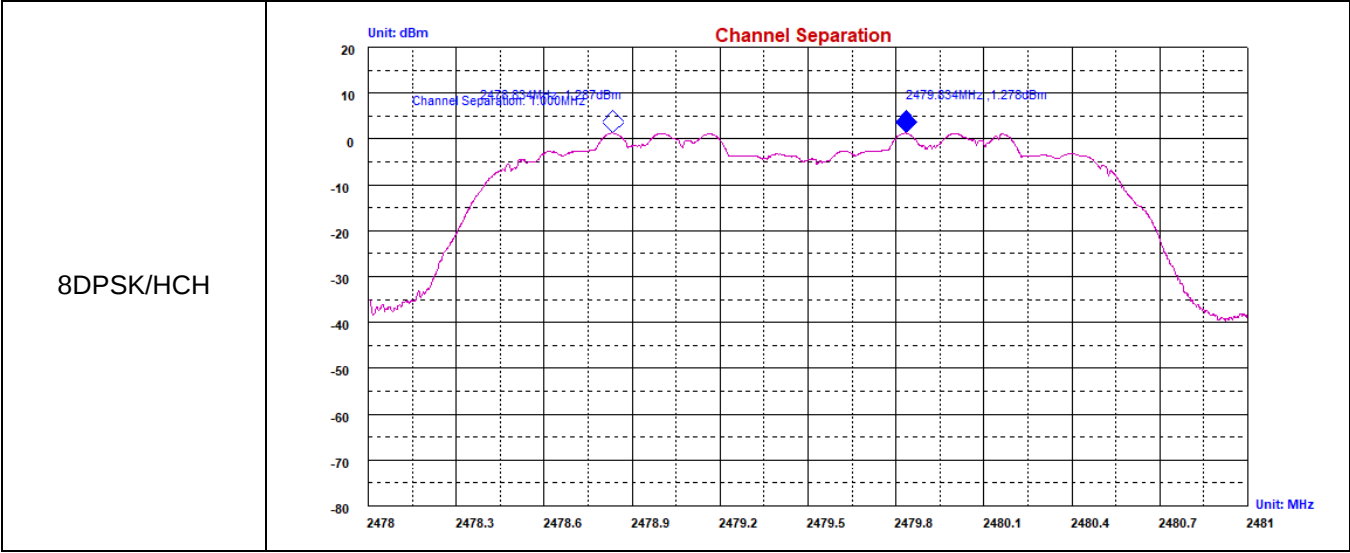
Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.000	0.622	PASS
GFSK	MCH	0.999	0.627	PASS
GFSK	HCH	0.997	0.621	PASS
$\pi/4$ DQPSK	LCH	1.000	0.894	PASS
$\pi/4$ DQPSK	MCH	1.000	0.890	PASS
$\pi/4$ DQPSK	HCH	1.001	0.893	PASS
8DPSK	LCH	0.997	0.889	PASS
8DPSK	MCH	0.997	0.893	PASS
8DPSK	HCH	1.000	0.901	PASS

Test Graph





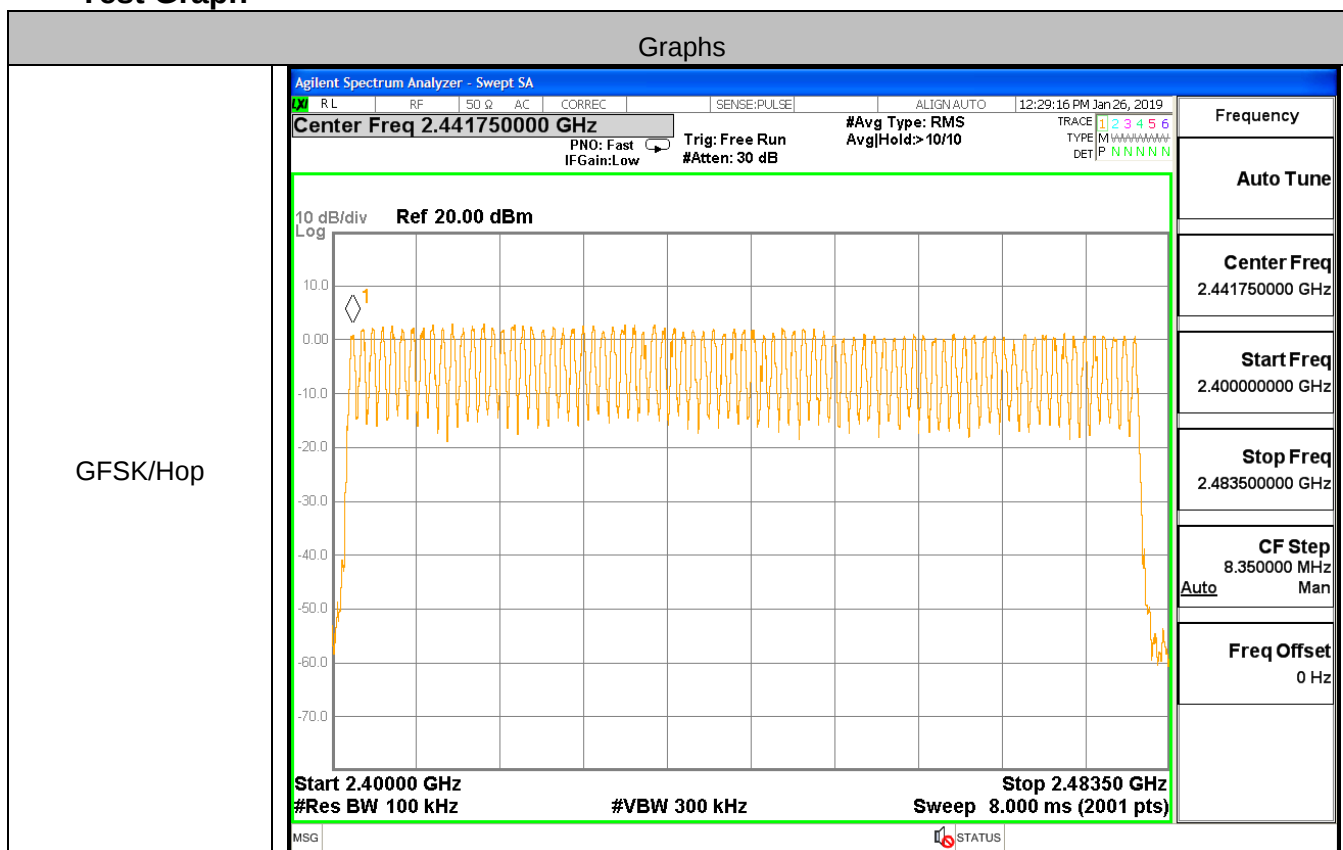


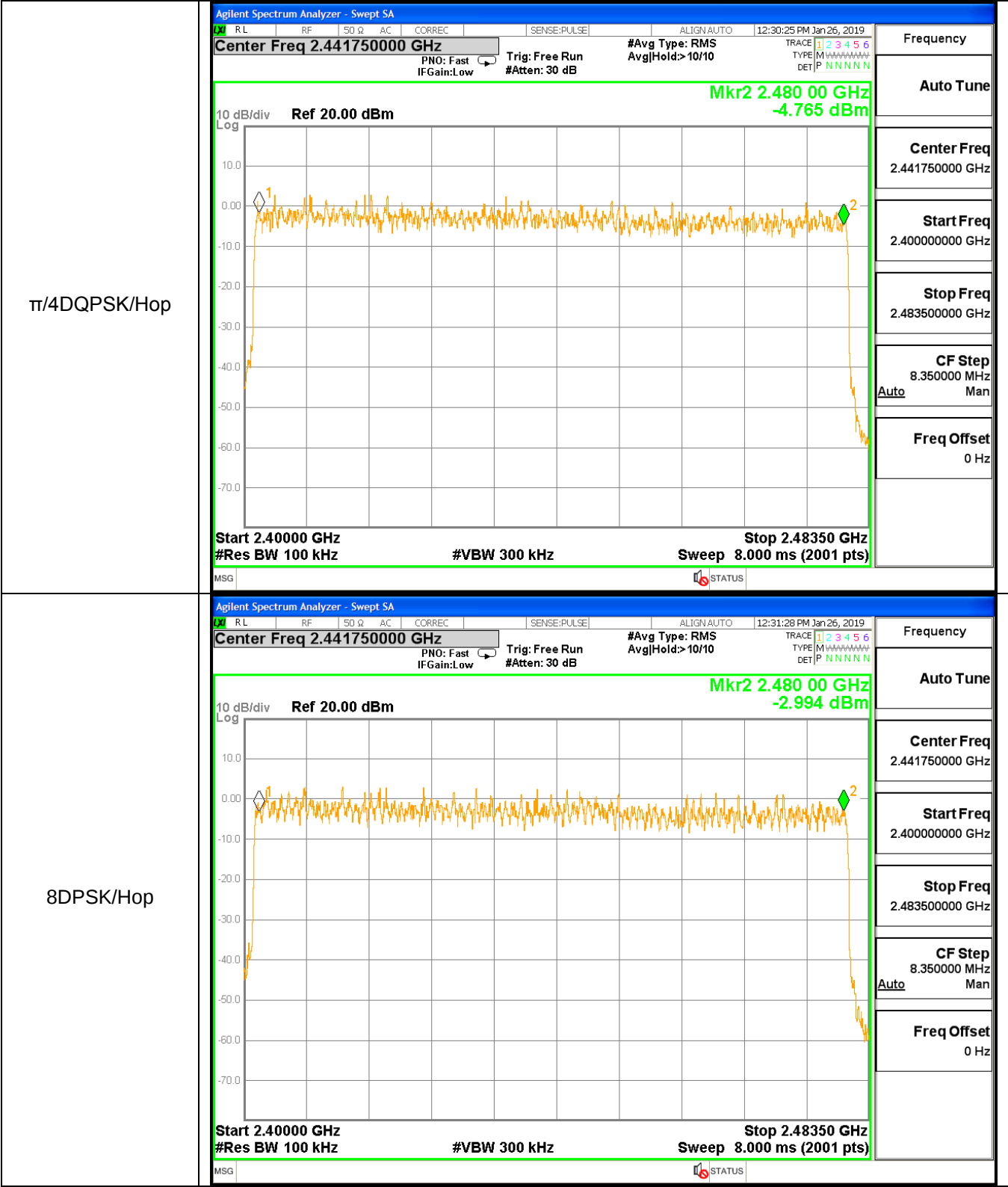


A.4 Hopping Channel Number

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

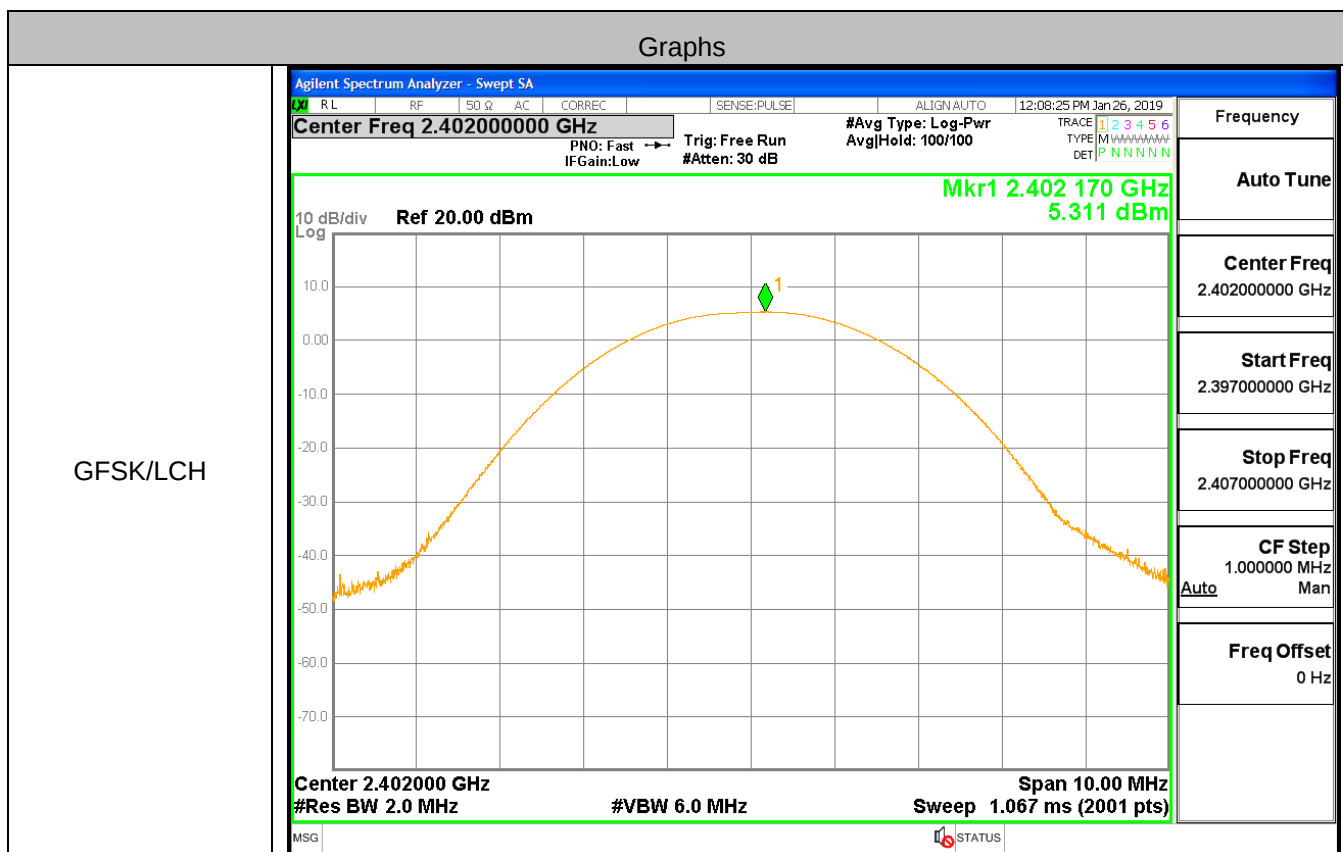


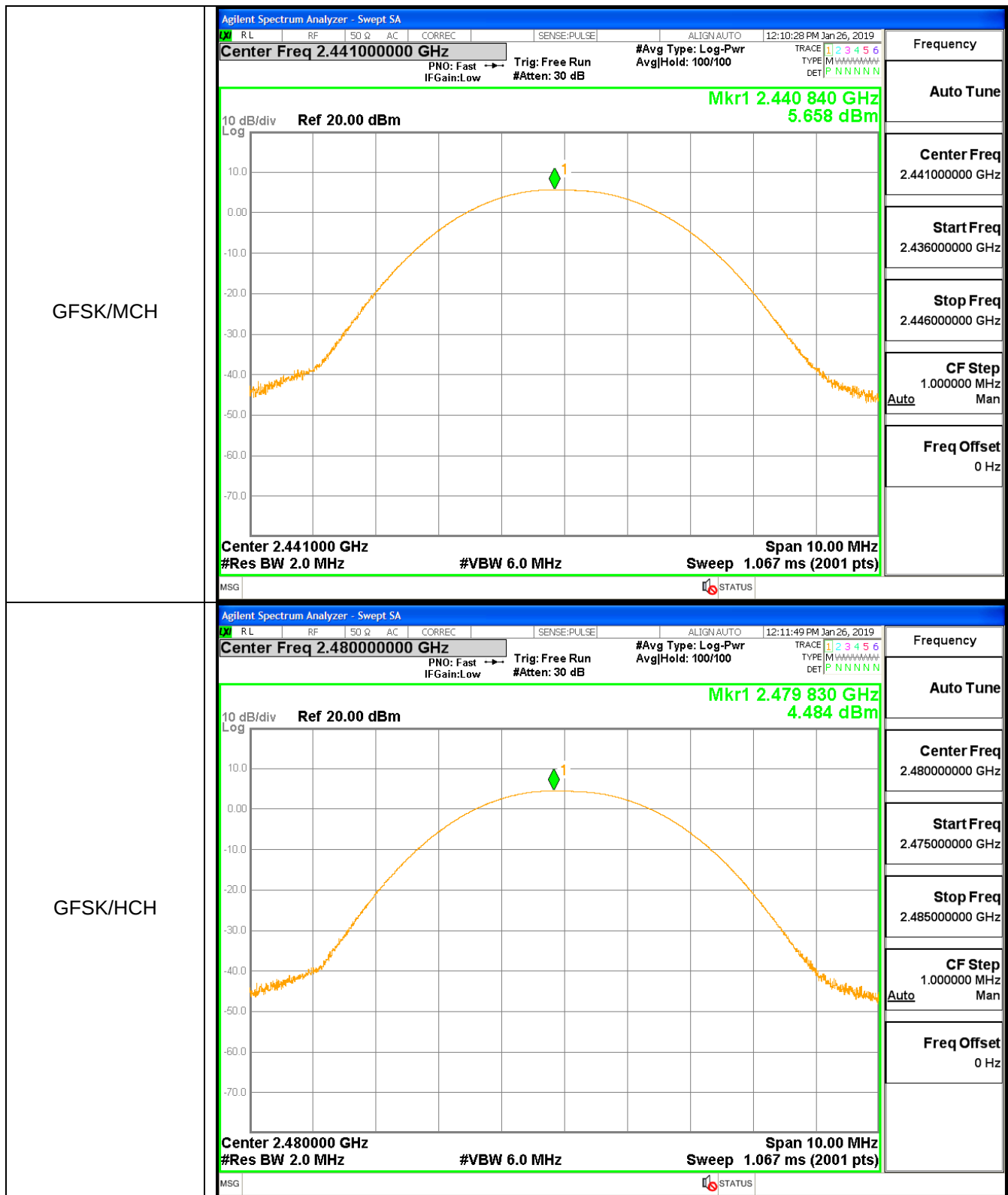


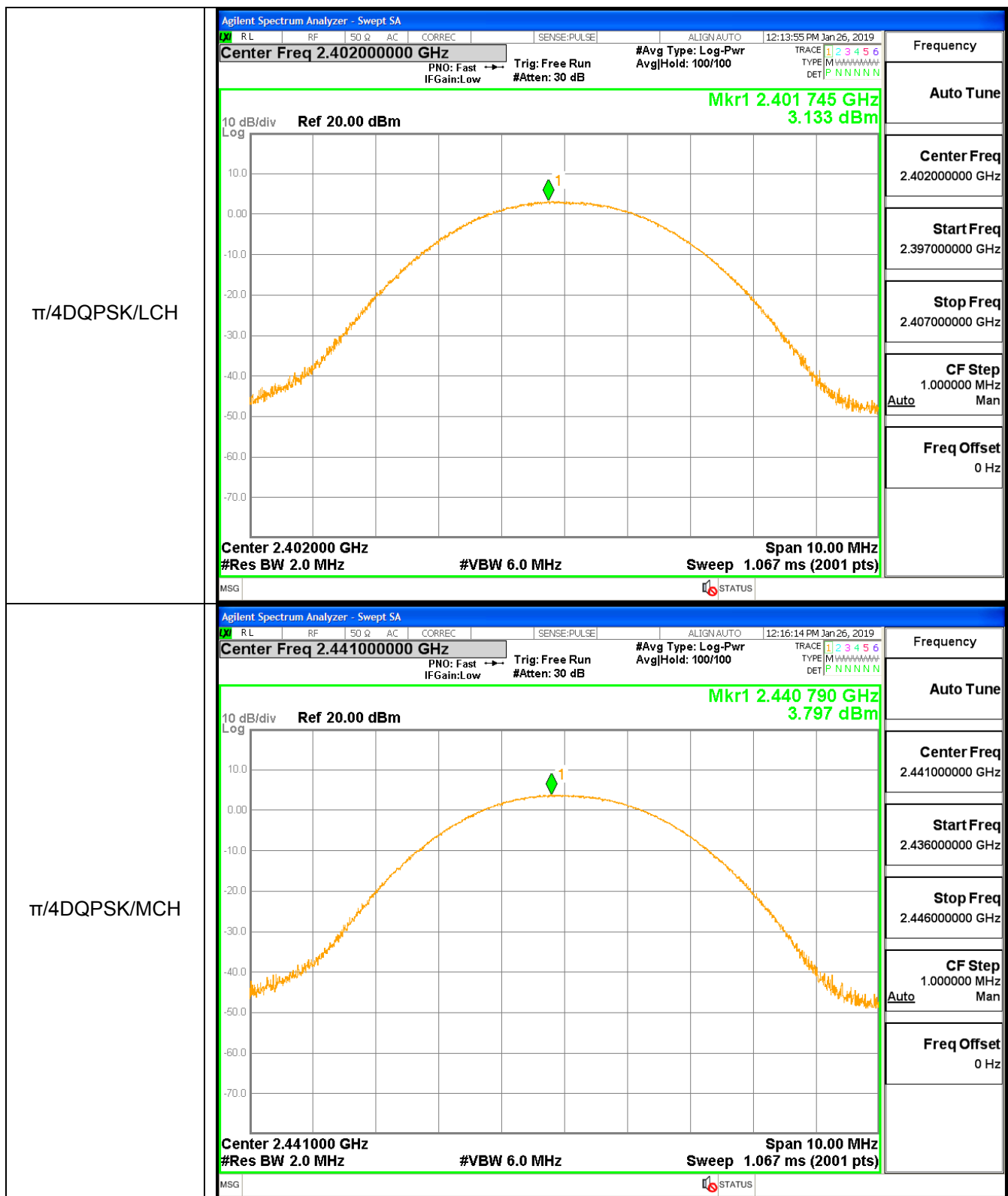
A.5 Conducted Peak Output Power

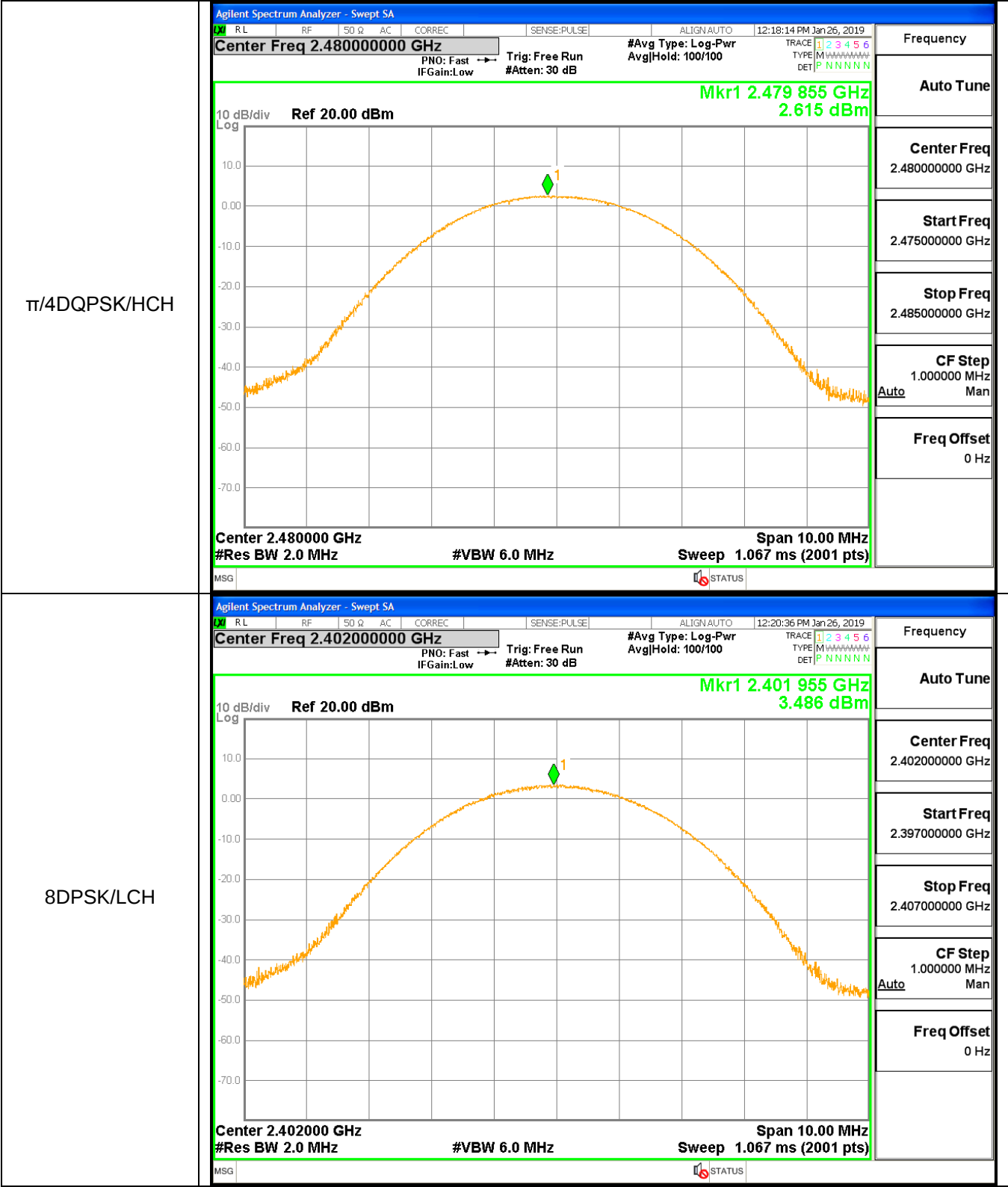
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	5.311	21	PASS
GFSK	MCH	5.658	21	PASS
GFSK	HCH	4.484	21	PASS
$\pi/4$ DQPSK	LCH	3.133	21	PASS
$\pi/4$ DQPSK	MCH	3.797	21	PASS
$\pi/4$ DQPSK	HCH	2.615	21	PASS
8DPSK	LCH	3.486	21	PASS
8DPSK	MCH	4.154	21	PASS
8DPSK	HCH	2.987	21	PASS

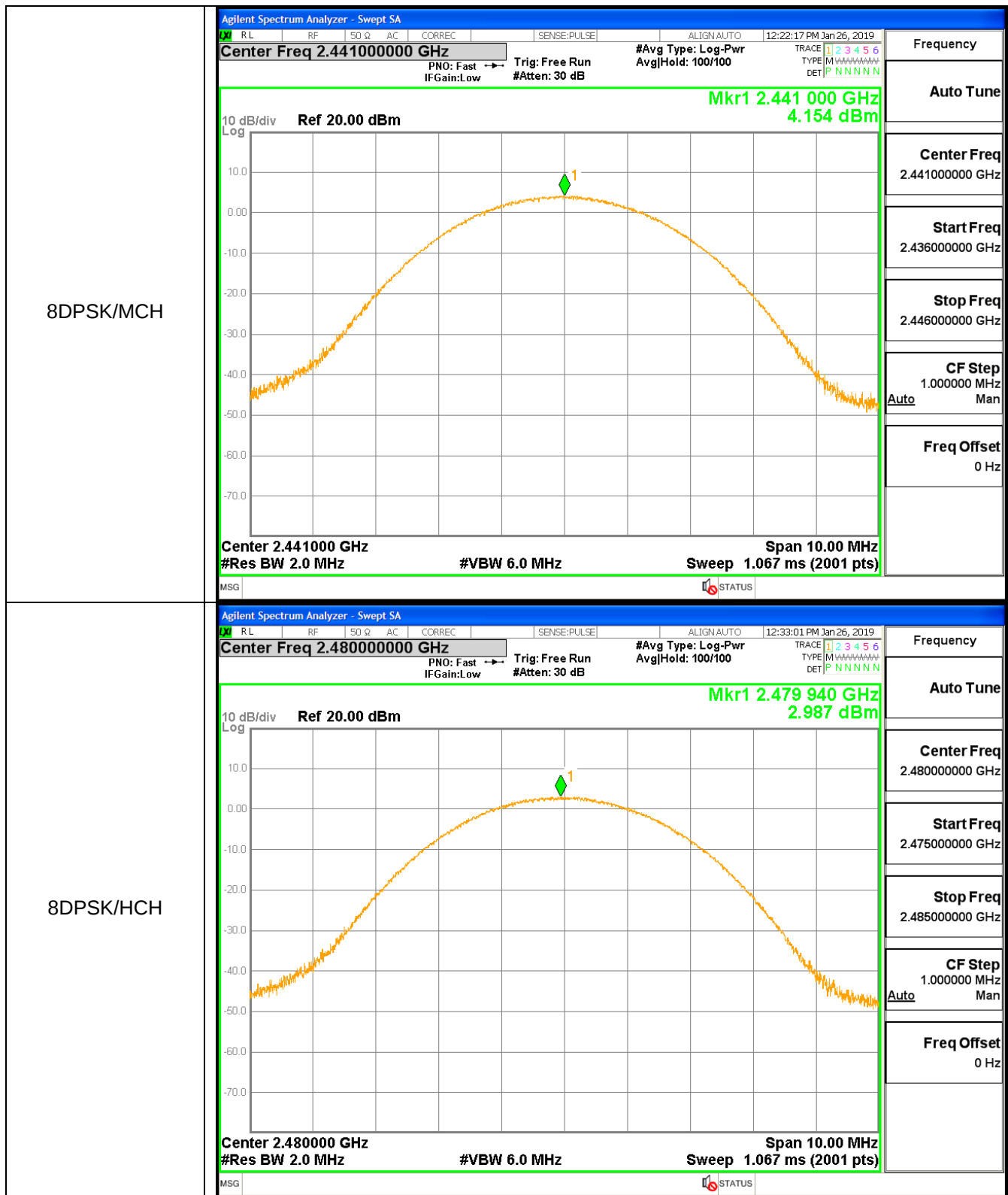
Test Graph











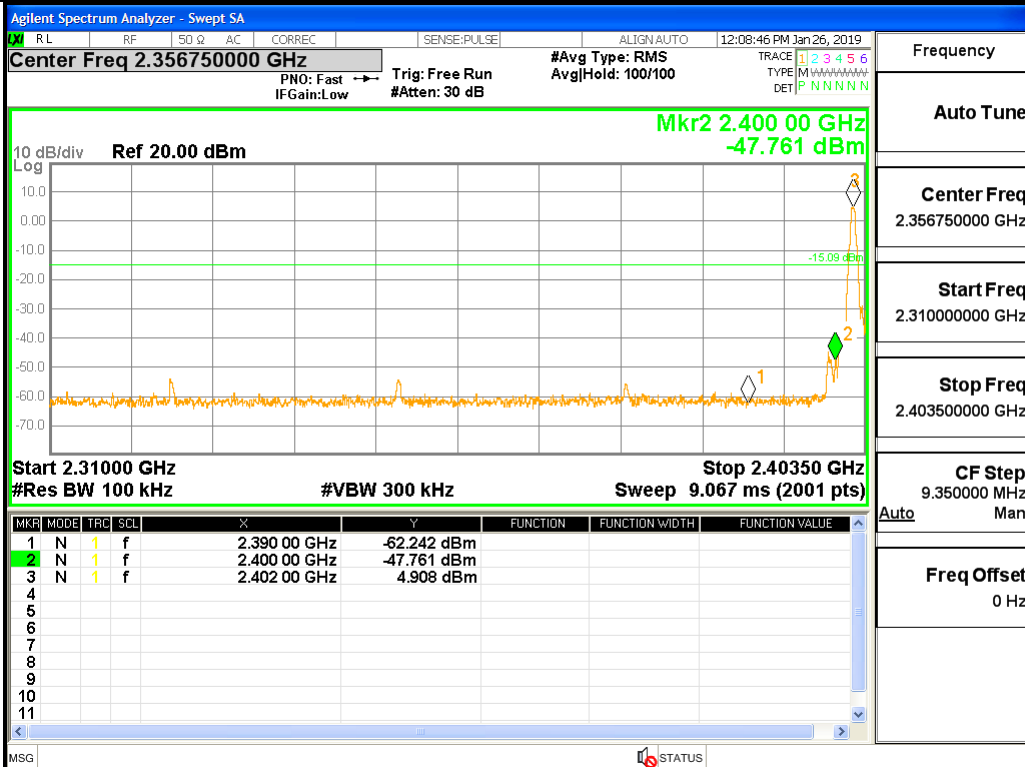
A.6 Band-edge for RF Conducted Emissions

Type	Carrier Frequency(MHz)	Frequency(MHz)	Carrier Frequency Power [dBm]	Bandedge Peak(dBm)	Upper limit(dBm)	Conclusion
1DH5	2402	2390	4.908	-62.24	-15.092	Pass
1DH5	2402	2400	4.908	-47.76	-15.092	Pass
1DH5-Hopping	2402	2390	2.666	-57.41	-17.334	Pass
1DH5-Hopping	2402	2400	2.666	-57.36	-17.334	Pass
1DH5	2480	2483.5	4.082	-59.99	-15.918	Pass
1DH5	2480	2500	4.082	-58.36	-15.918	Pass
1DH5-Hopping	2480	2483.5	1.309	-60.07	-18.691	Pass
1DH5-Hopping	2480	2500	1.309	-55.68	-18.691	Pass
2DH5	2402	2390	1.761	-61.83	-18.239	Pass
2DH5	2402	2400	1.761	-37.04	-18.239	Pass
2DH5-Hopping	2480	2483.5	0.98	-59.07	-19.02	Pass
2DH5-Hopping	2480	2500	0.98	-58.7	-19.02	Pass
2DH5	2480	2483.5	0.574	-59.03	-19.426	Pass
2DH5	2480	2500	0.574	-62.07	-19.426	Pass
2DH5-Hopping	2402	2390	2.662	-58.91	-17.338	Pass
2DH5-Hopping	2402	2400	2.662	-45.75	-17.338	Pass
3DH5	2402	2390	0.193	-61.32	-19.807	Pass
3DH5	2402	2400	0.193	-42.35	-19.807	Pass
3DH5-Hopping	2402	2390	2.752	-59.09	-17.248	Pass
3DH5-Hopping	2402	2400	2.752	-44	-17.248	Pass
3DH5	2480	2483.5	1.069	-58.66	-18.931	Pass
3DH5	2480	2500	1.069	-60.96	-18.931	Pass
3DH5-Hopping	2480	2483.5	1.275	-60.24	-18.725	Pass
3DH5-Hopping	2480	2500	1.275	-59.48	-18.725	Pass

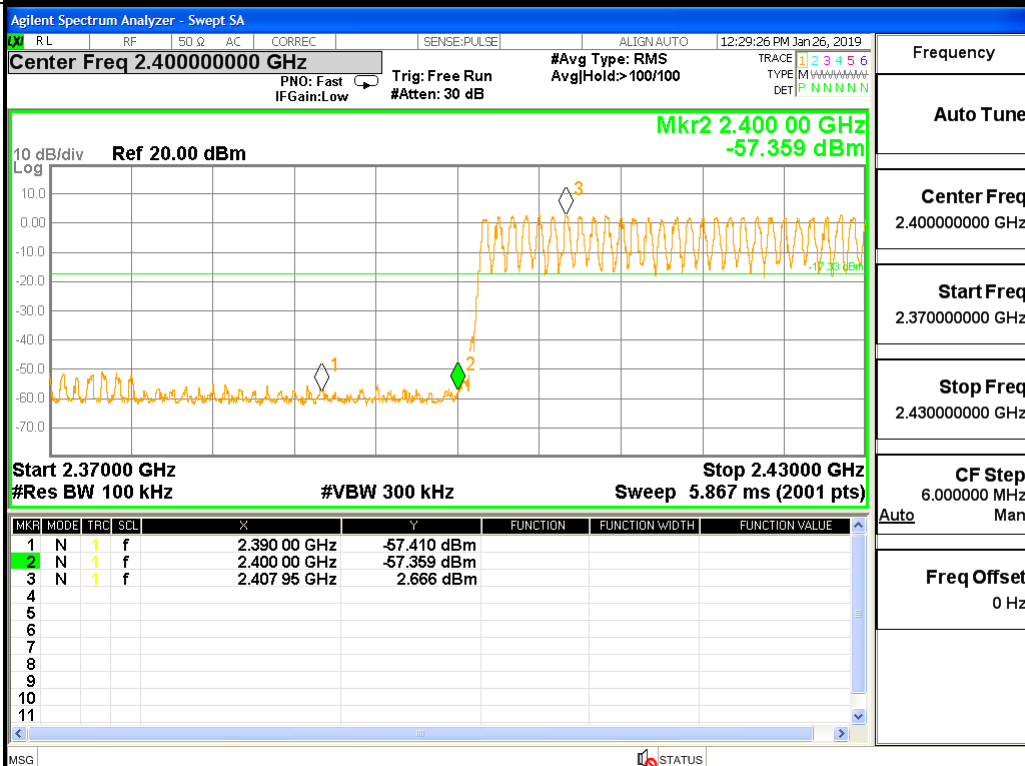
Test Graph

Graphs

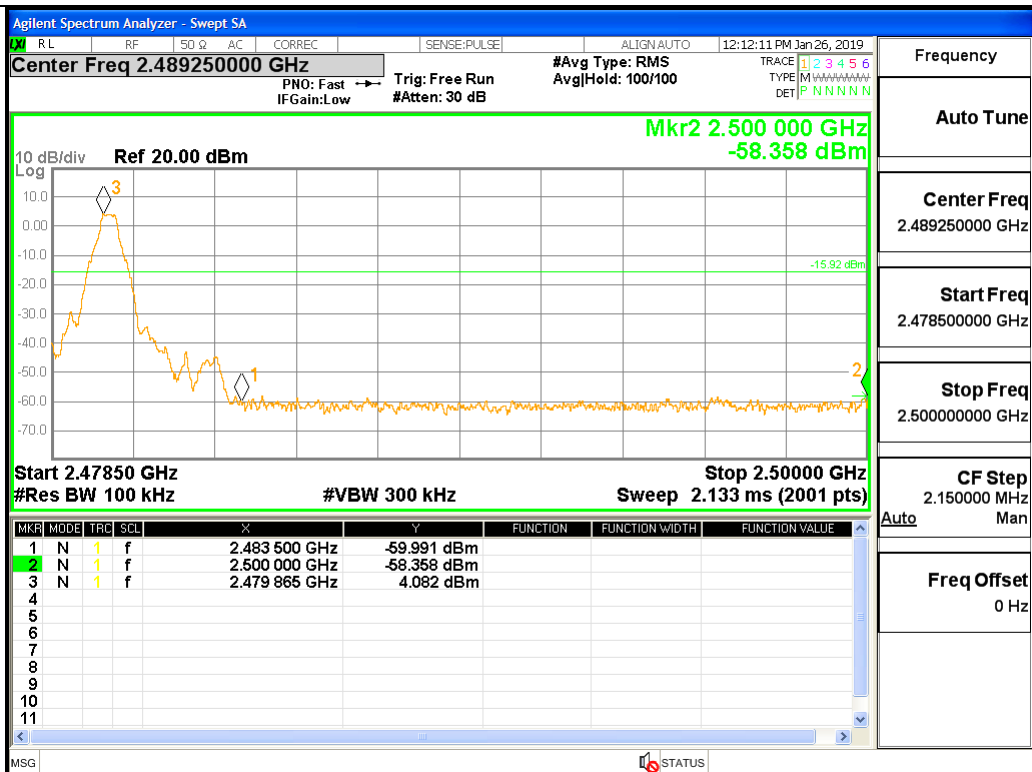
GFSK/LCH/No Hop



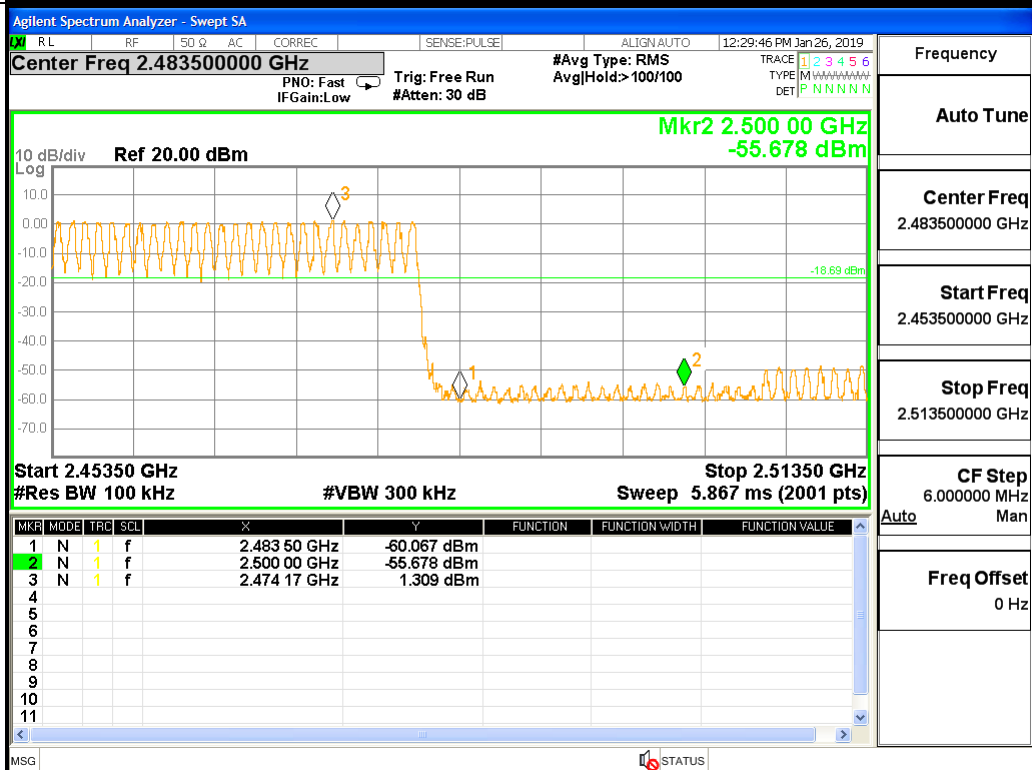
GFSK/LCH/Hop



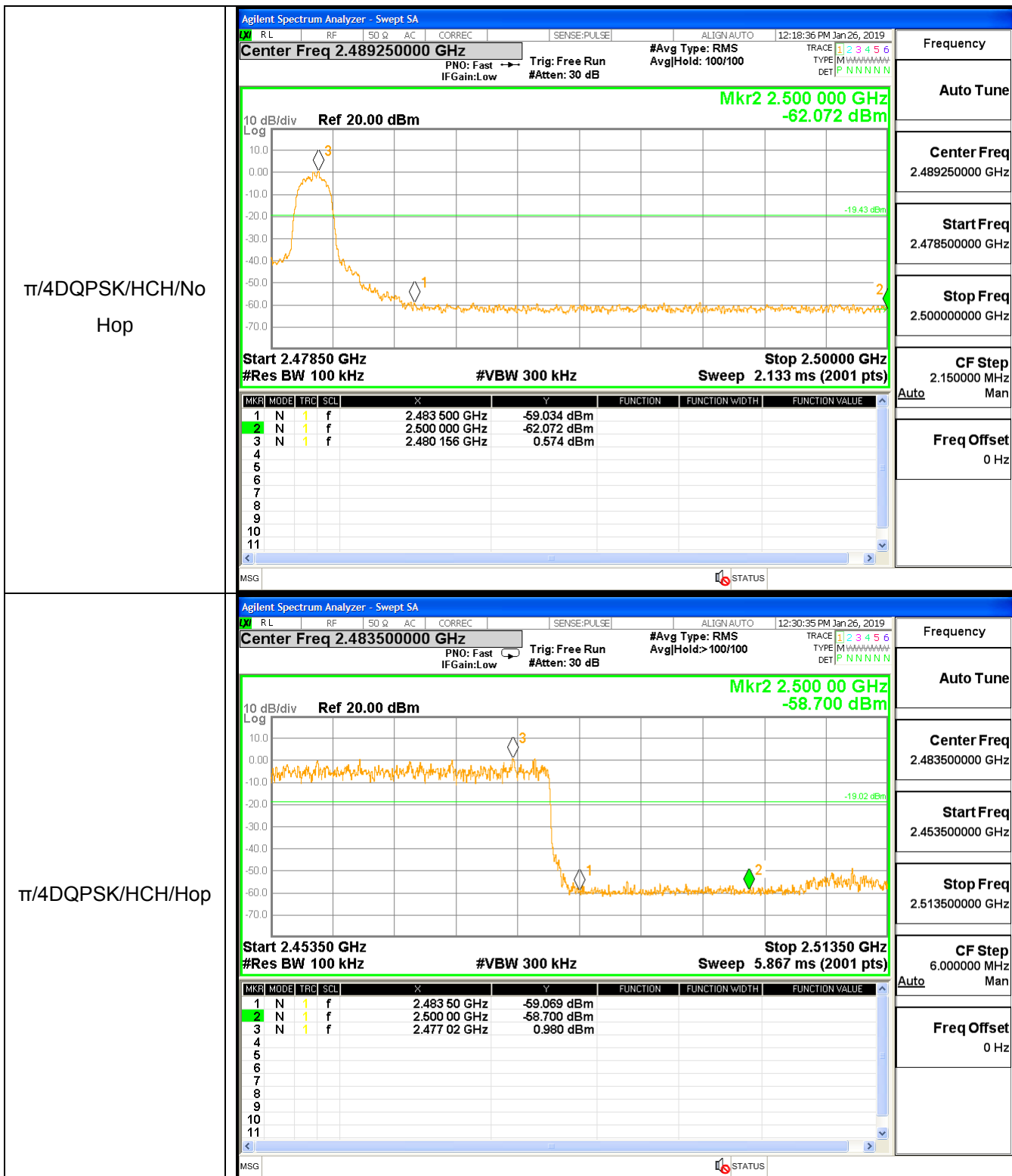
GFSK/HCH/No Hop

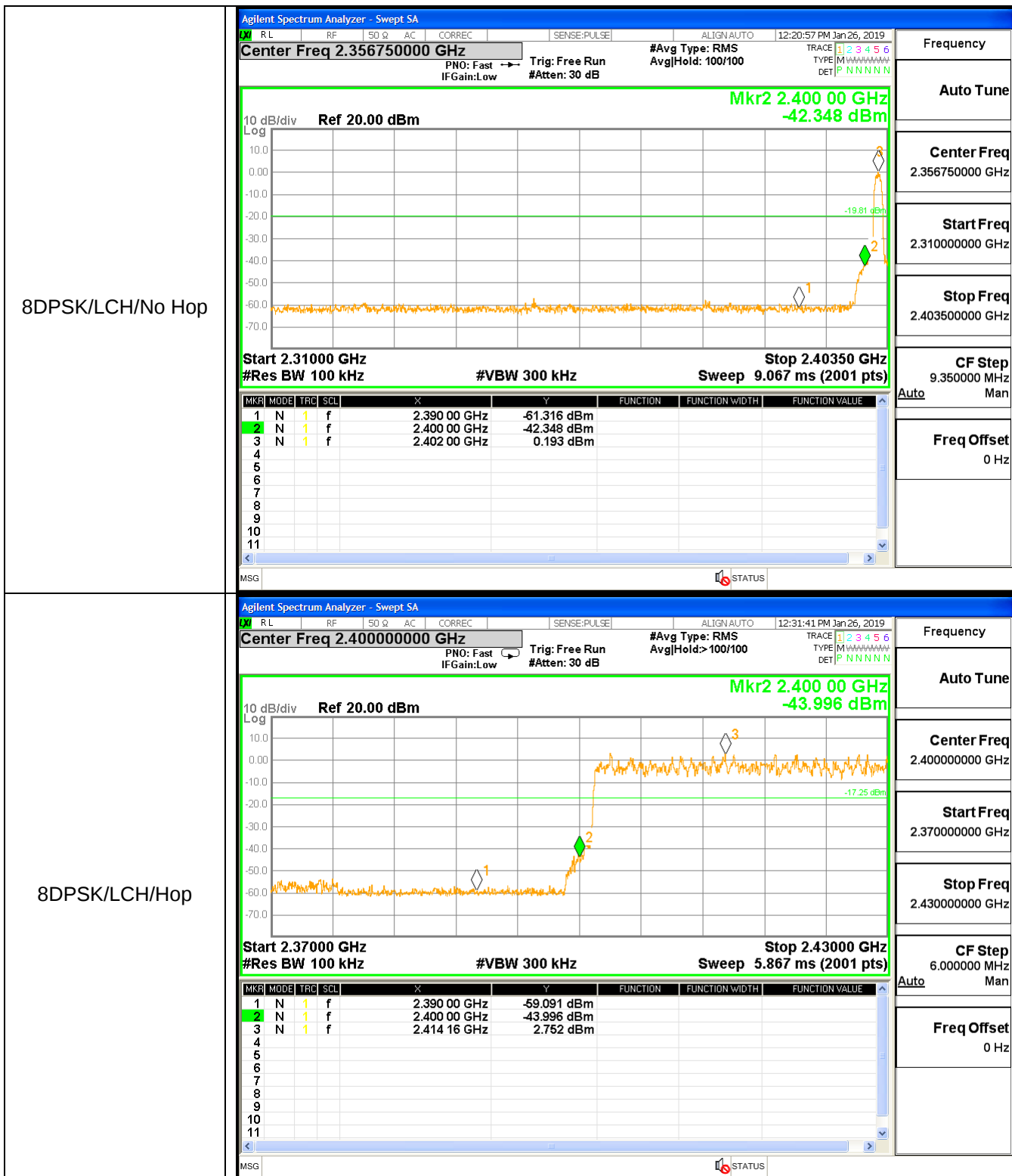


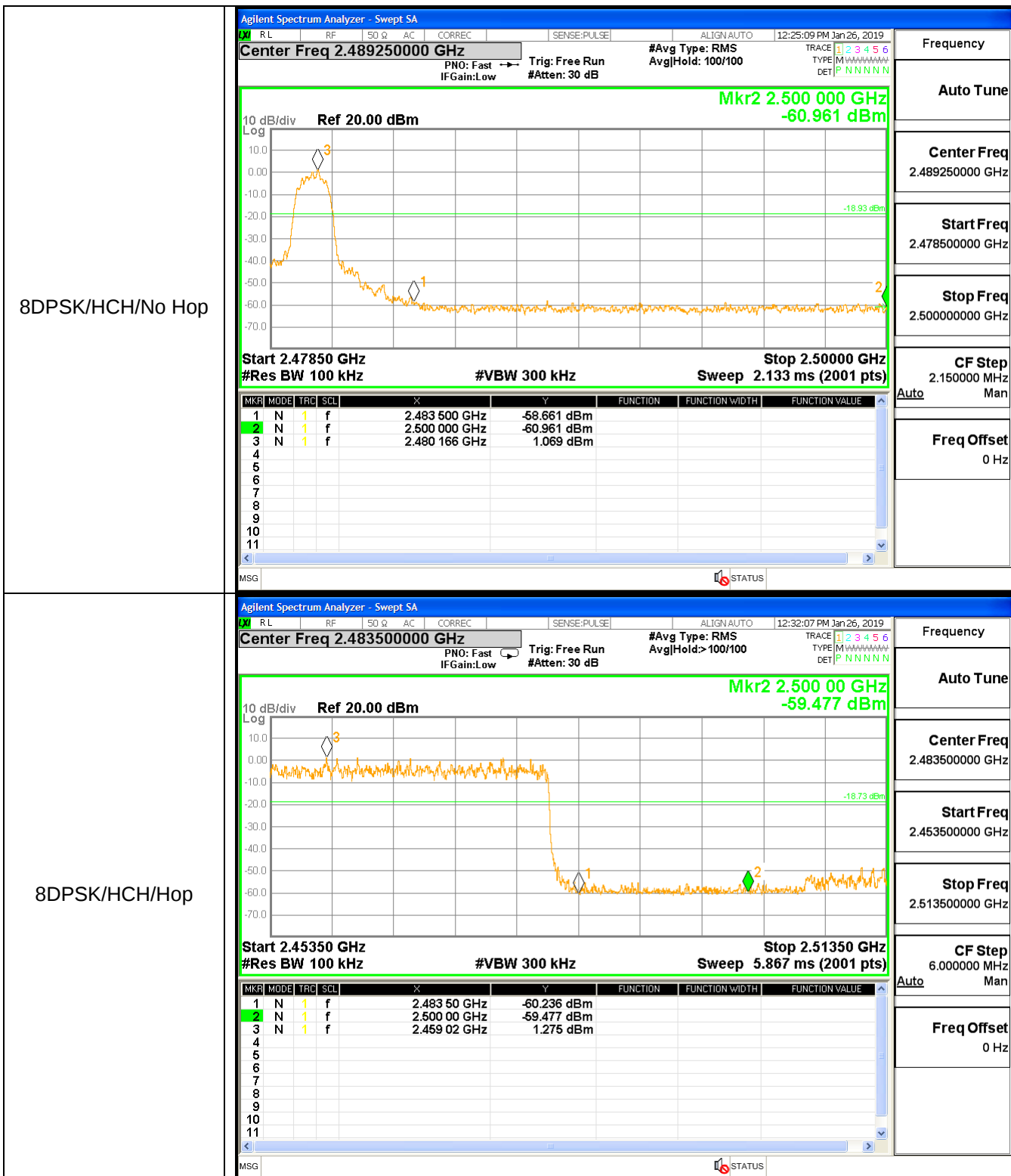
GFSK/HCH/Hop



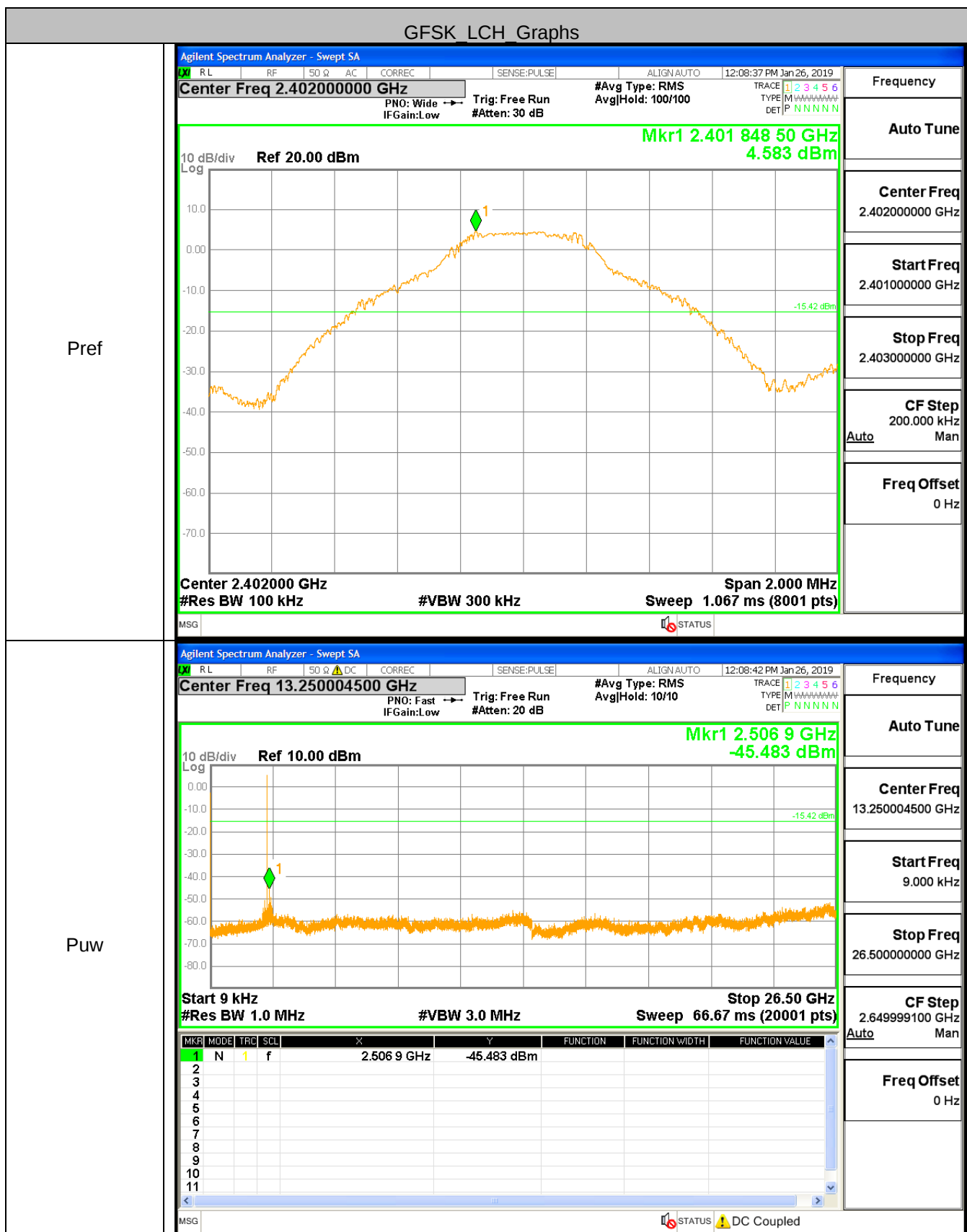


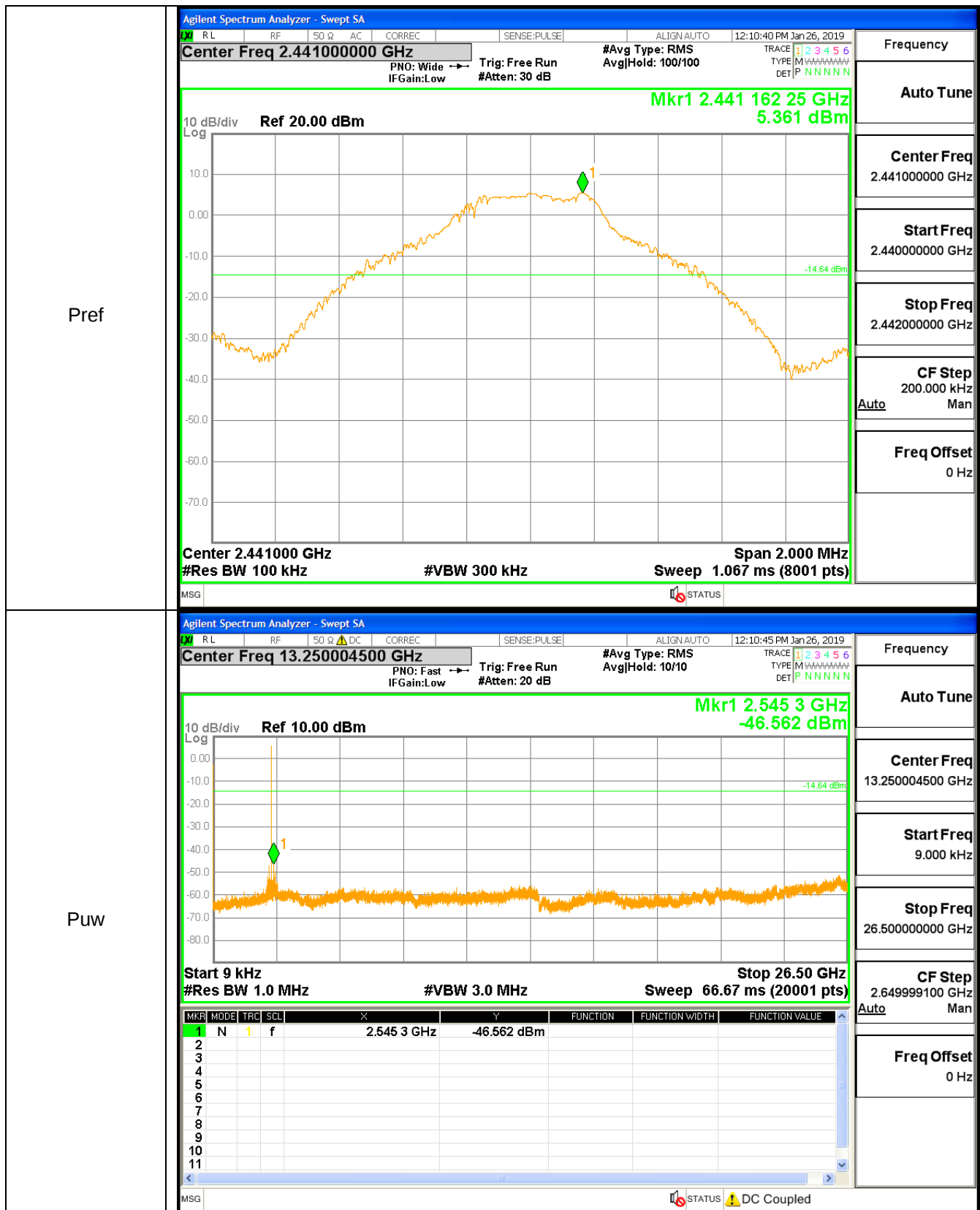






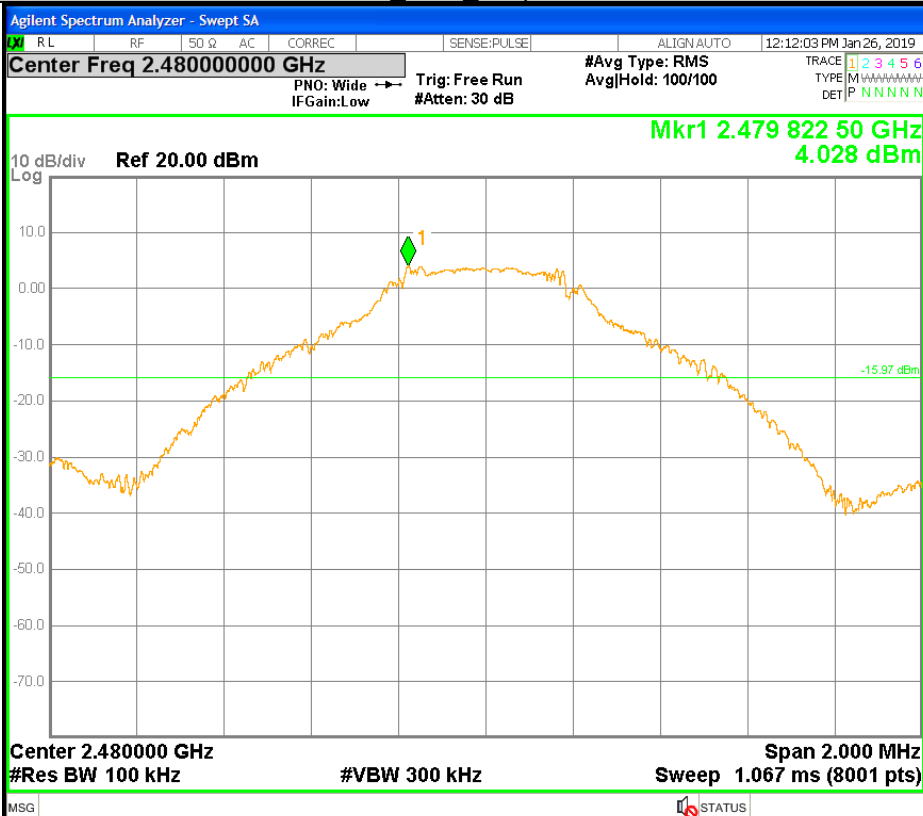
A.7 RF Conducted Spurious Emissions Test Graph



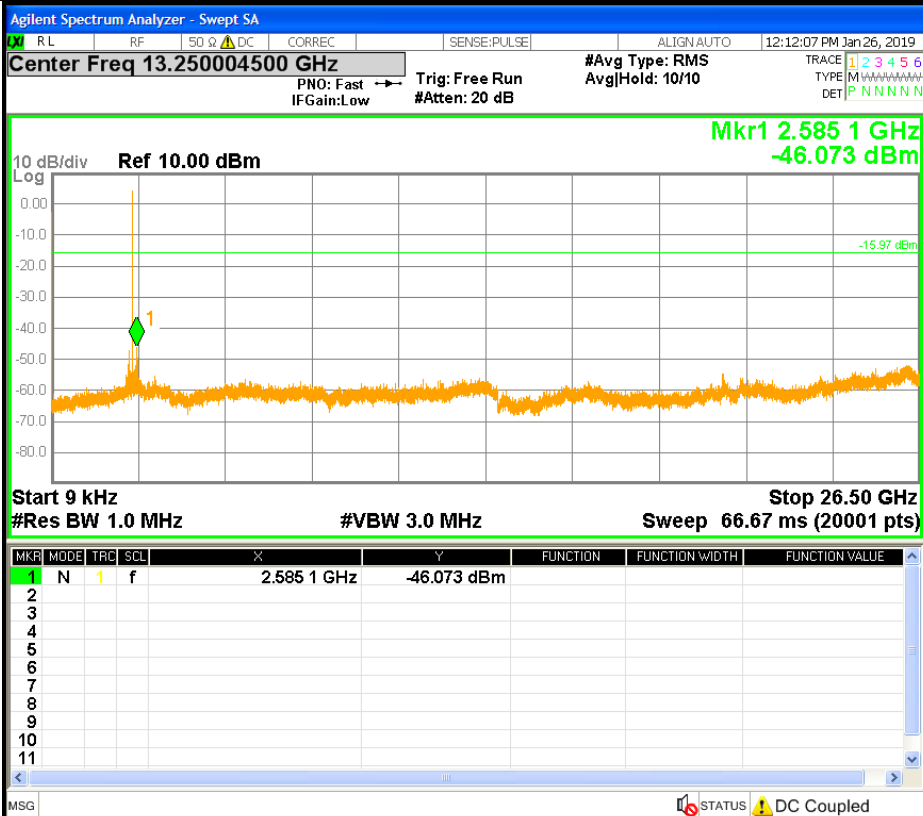


GFSK HCH Graphs

Pref

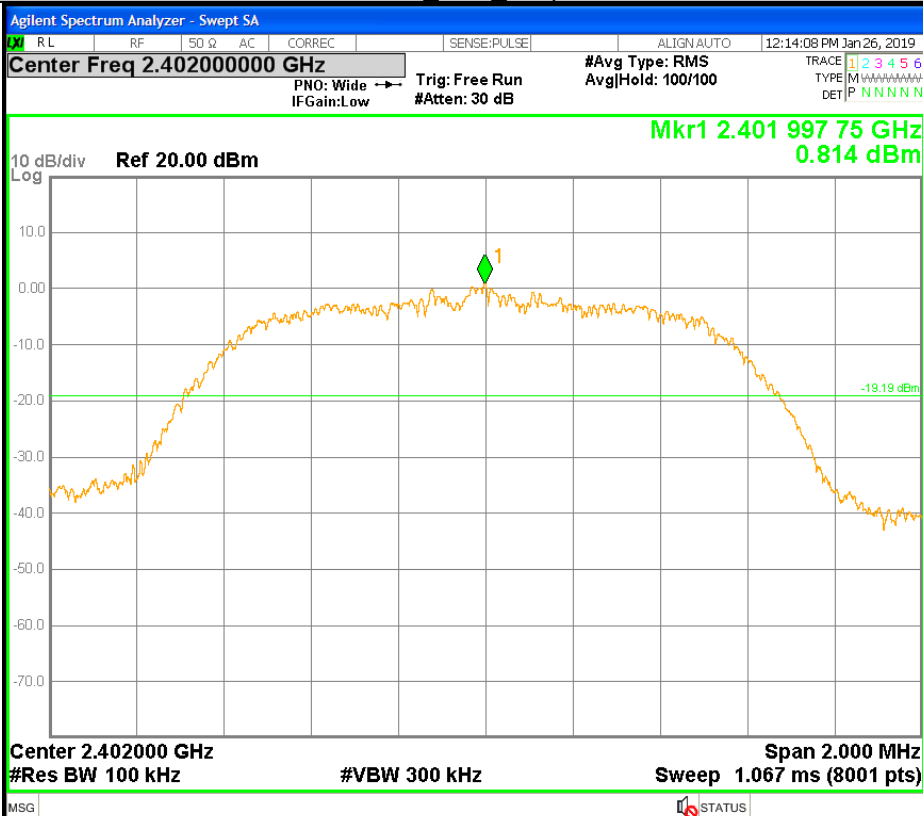


Puw

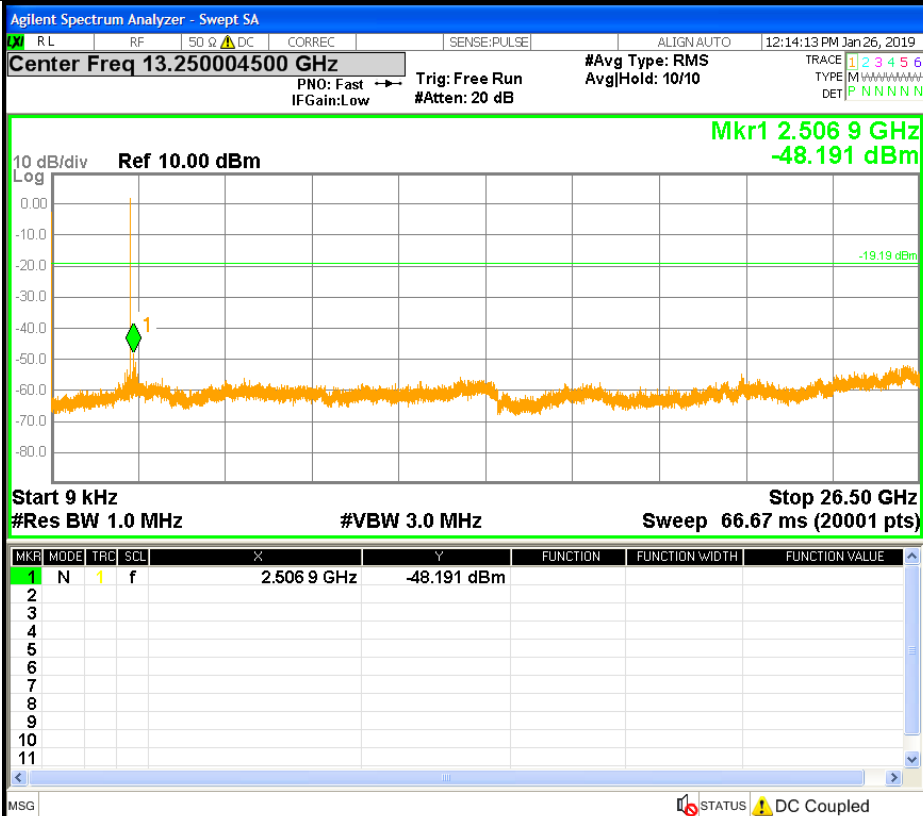


$\pi/4$ DQPSK LCH Graphs

Pref

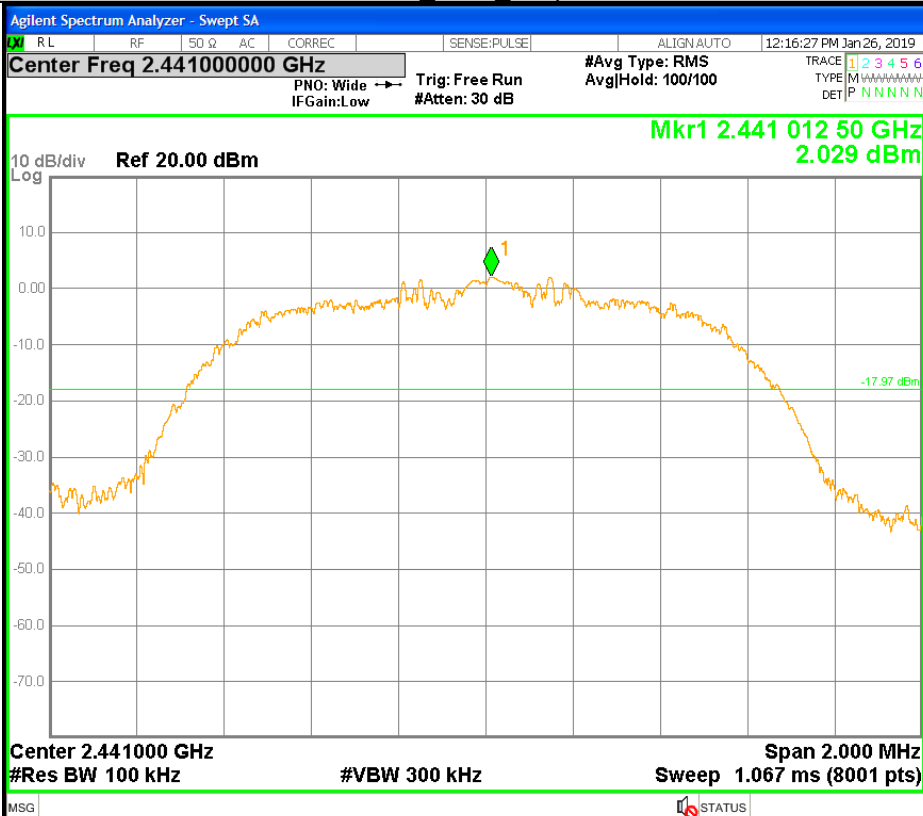


Puw

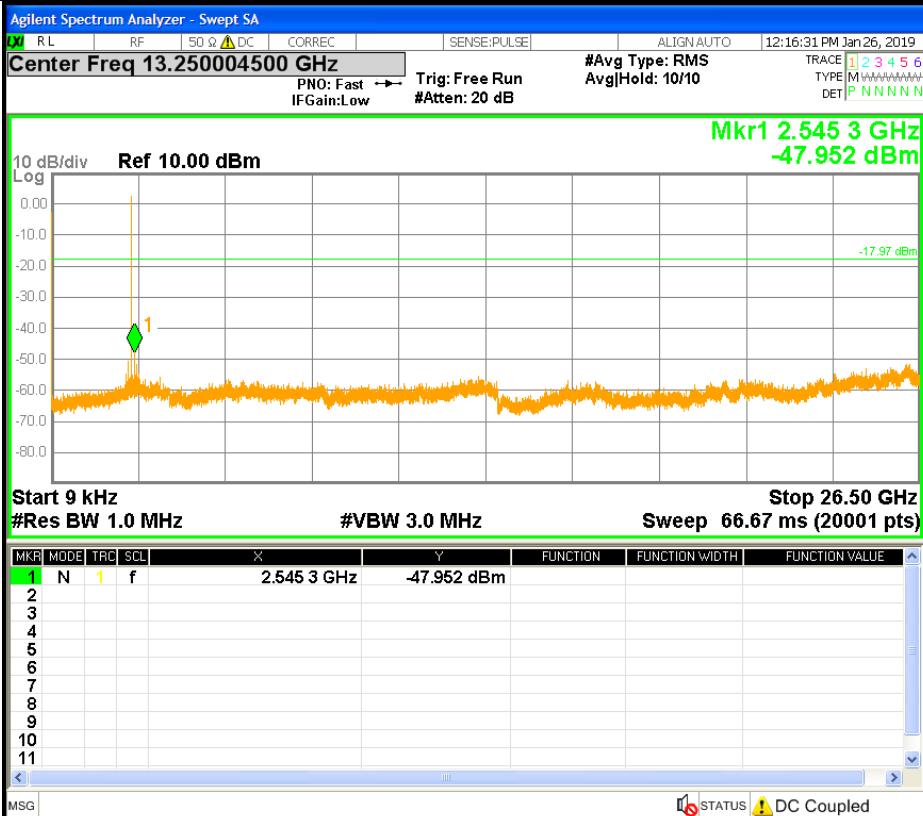


$\pi/4$ DQPSK MCH Graphs

Pref

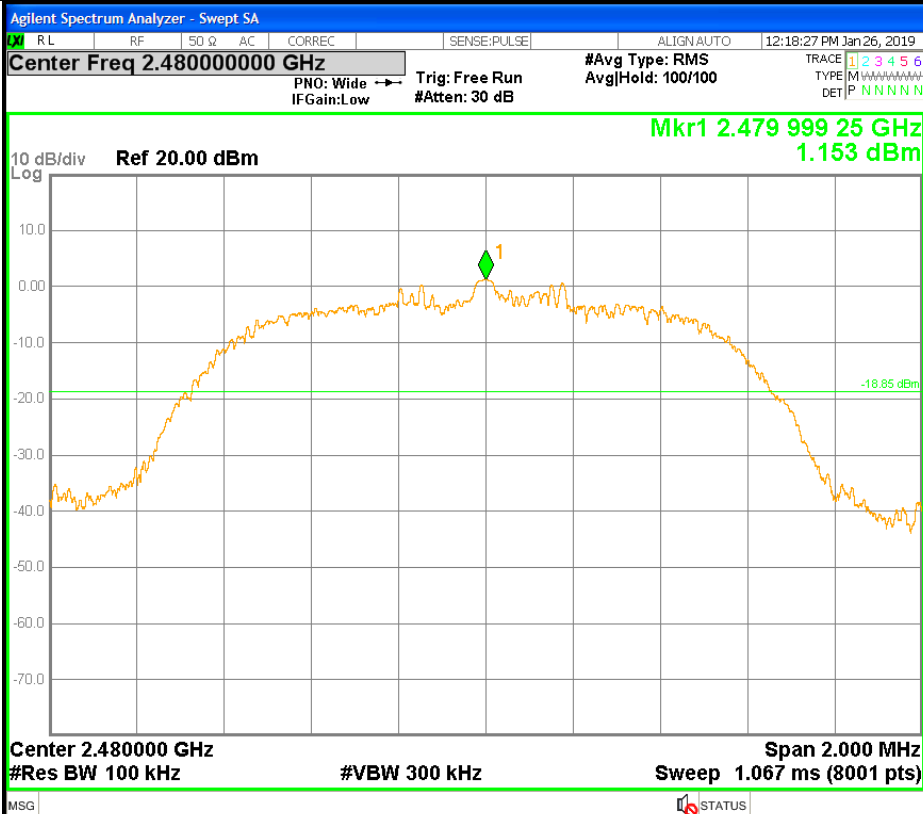


Puw

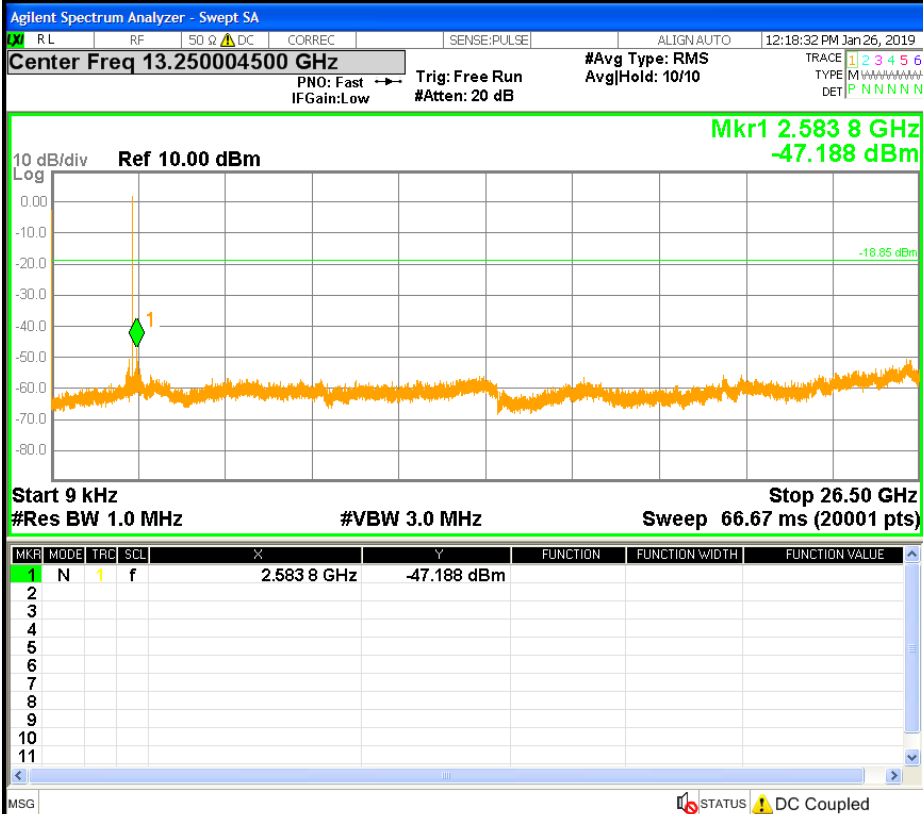


$\pi/4$ DQPSK HCH Graphs

Pref

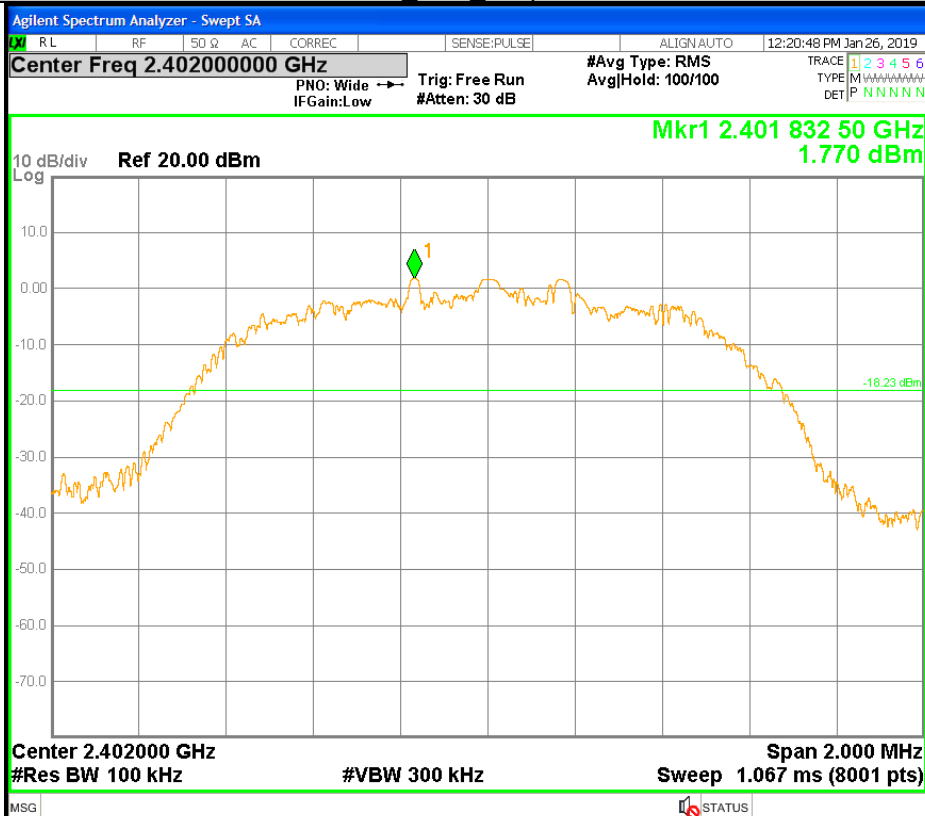


Puw

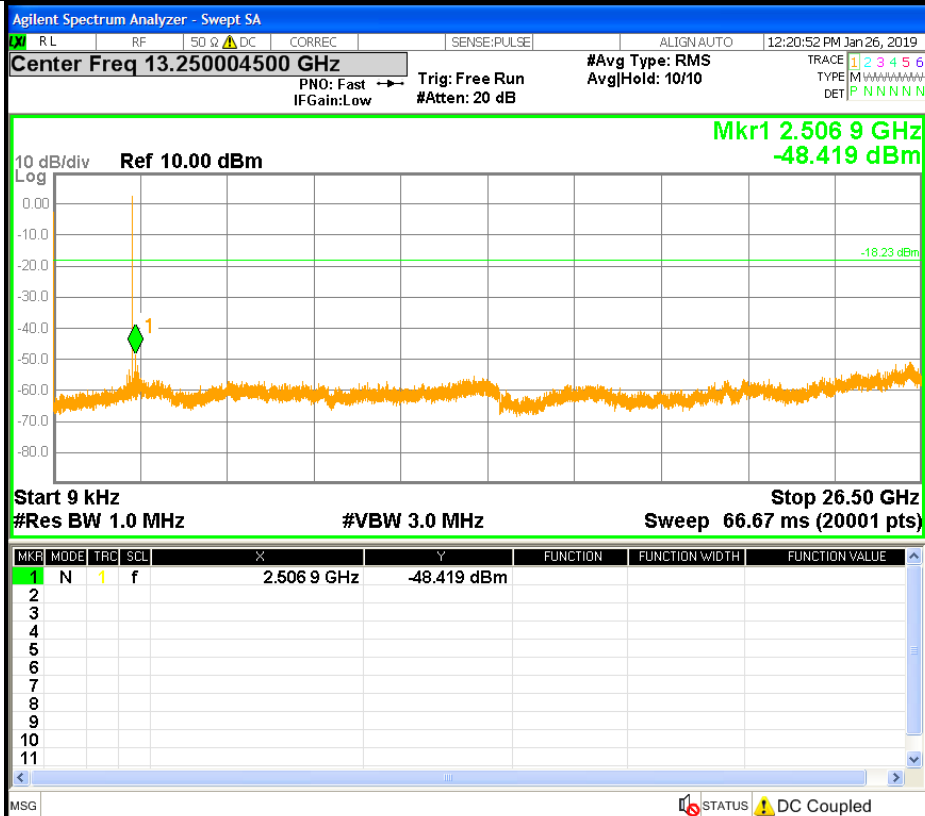


8DPSK LCH Graphs

Pref

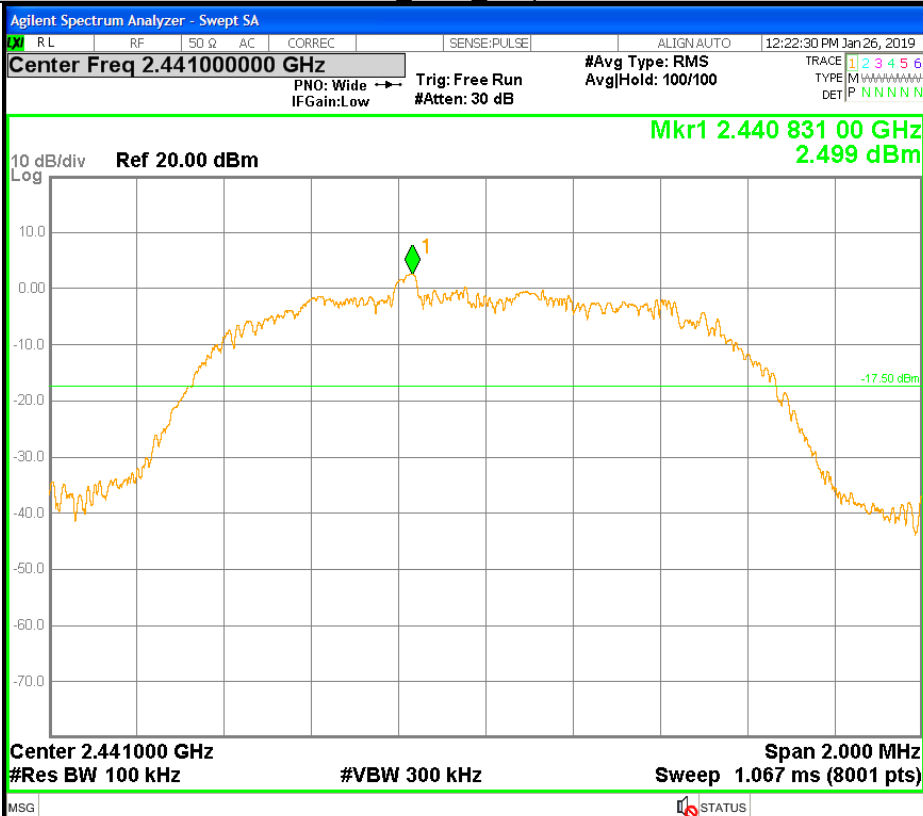


Puw

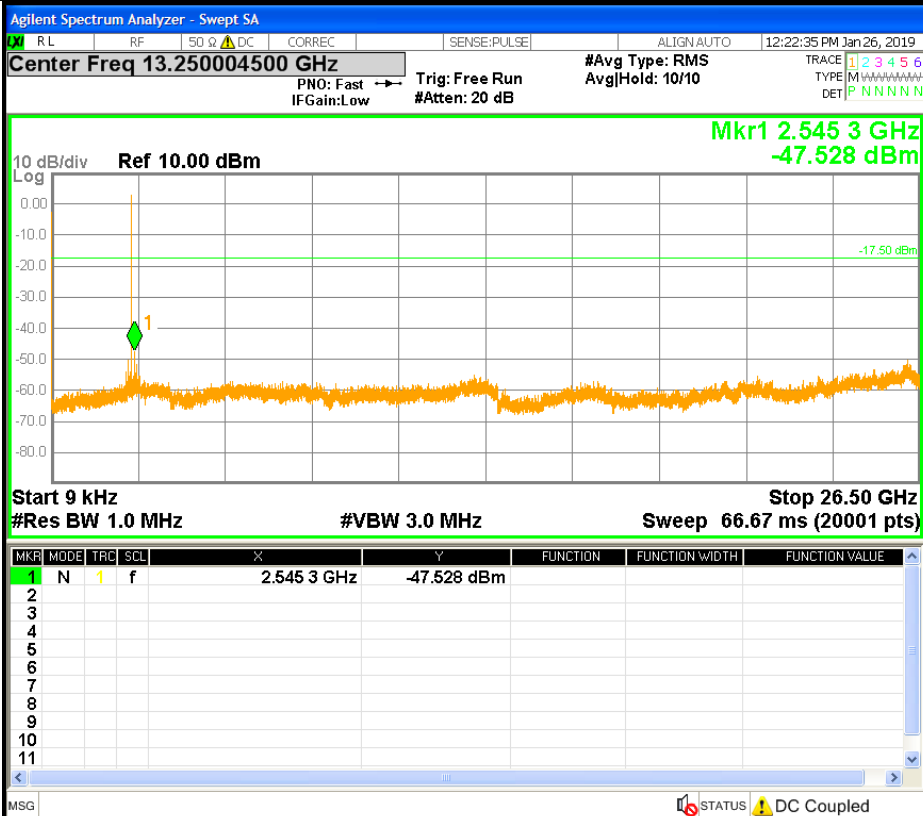


8DPSK MCH Graphs

Pref

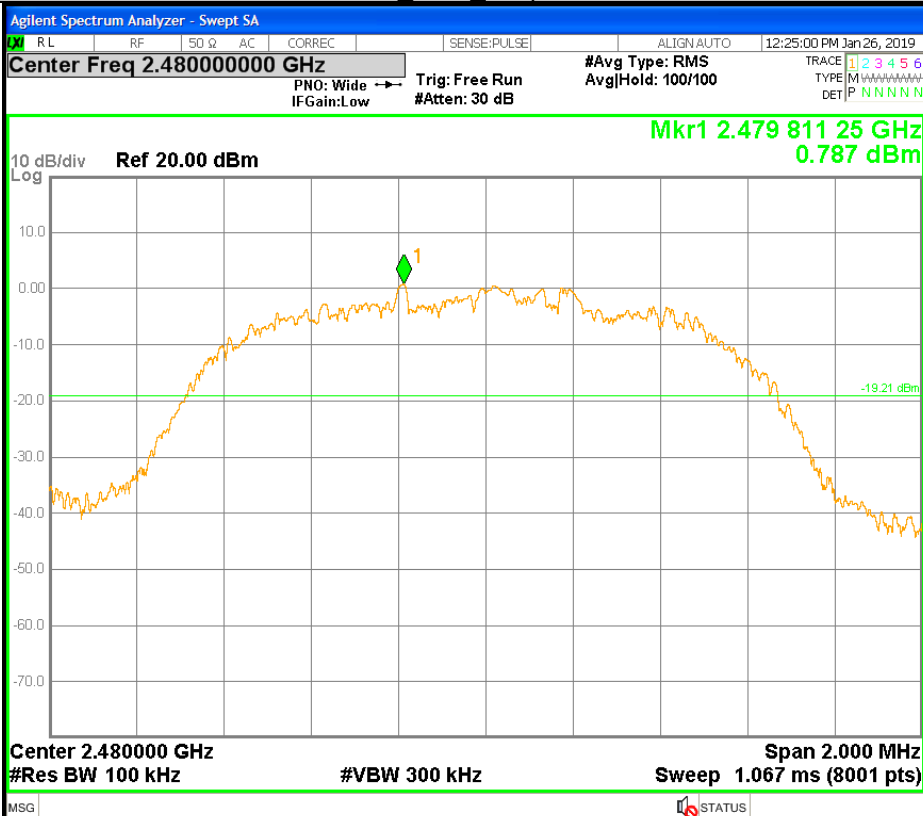


Puw

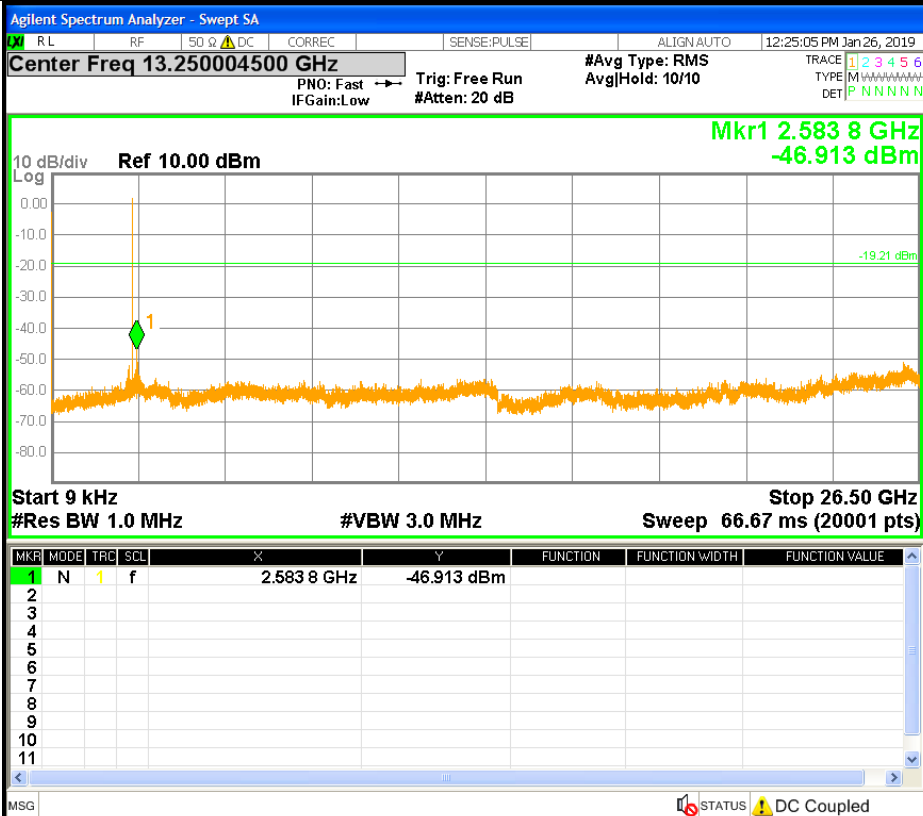


8DPSK HCH Graphs

Pref



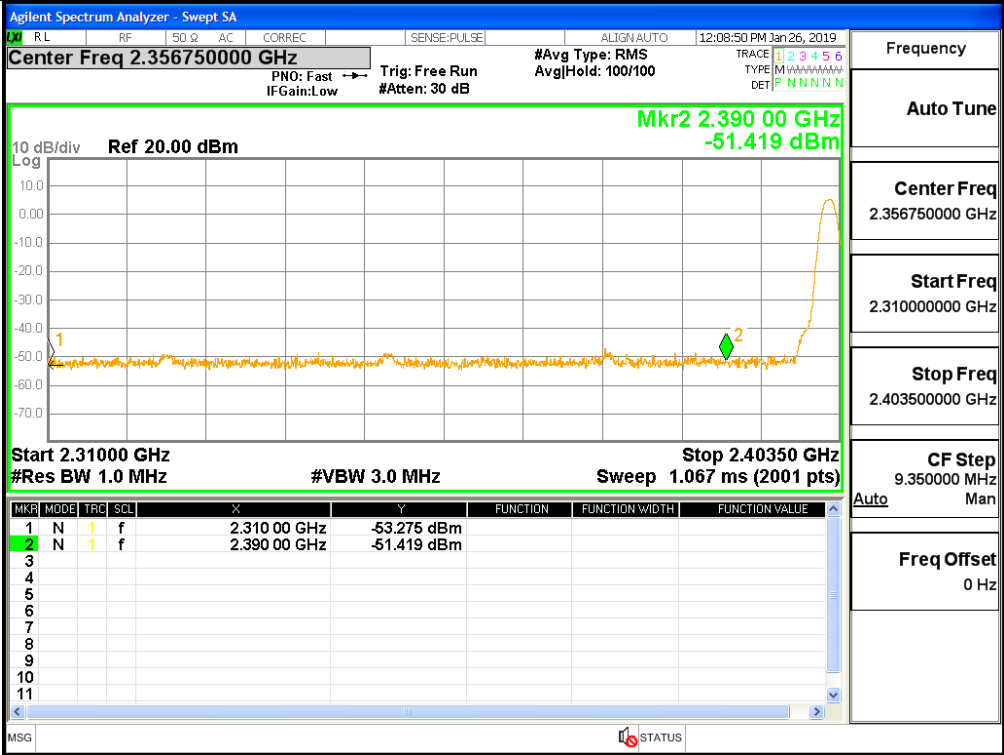
Puw



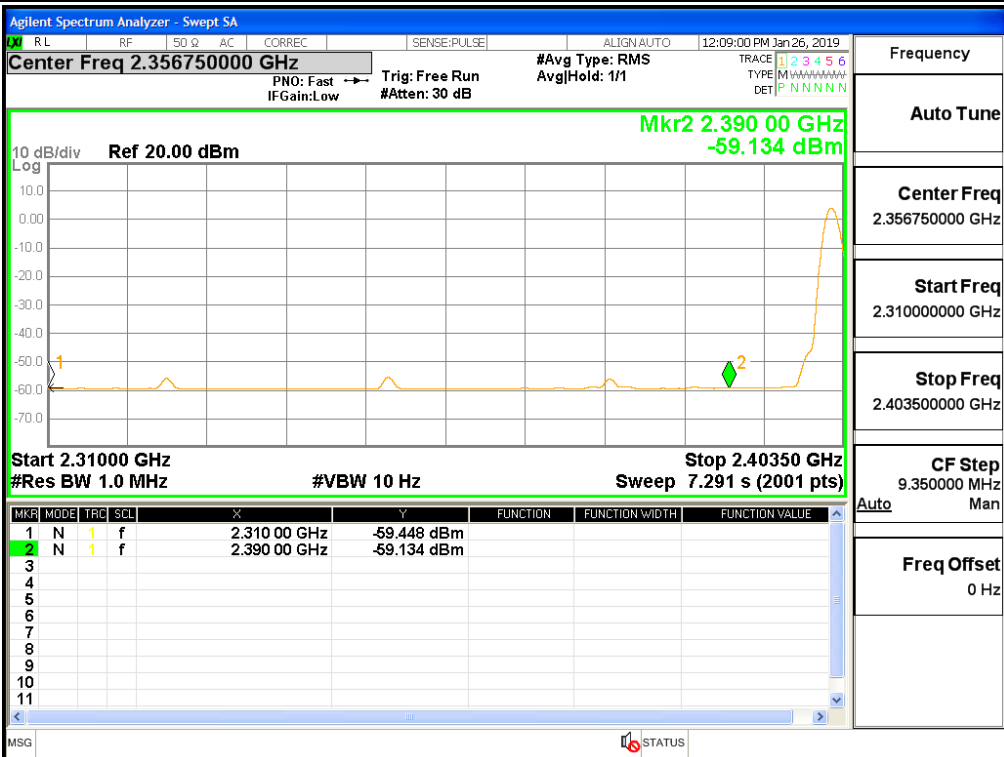
A.8 Restrict-band band-edge measurements

Type	Carrier Frequency (MHz)	Frequency(MHz)	Gain	Ground Factor	Peak Value(dBm)	E [dBuV/m]	Limit [dBuV/m]	Average Value(dBm)	E [dBuV/m]	Limit [dBuV/m]	Conclusion
1DH5	2402	2310	2.00	0.00	-53.28	43.92	74	-59.45	37.75	54	Pass
1DH5	2402	2390	2.00	0.00	-51.42	45.78	74	-59.13	38.07	54	Pass
1DH5	2480	2483.5	2.00	0.00	-45.51	51.69	74	-51.2	46	54	Pass
1DH5	2480	2500	2.00	0.00	-51.38	45.82	74	-58.71	38.49	54	Pass
2DH5	2402	2310	2.00	0.00	-52.34	44.86	74	-59.53	37.67	54	Pass
2DH5	2402	2390	2.00	0.00	-52.32	44.88	74	-59.25	37.95	54	Pass
2DH5	2480	2483.5	2.00	0.00	-49.29	47.91	74	-54.98	42.22	54	Pass
2DH5	2480	2500	2.00	0.00	-52.44	44.76	74	-58.73	38.47	54	Pass
3DH5	2402	2310	2.00	0.00	-51.42	45.78	74	-59.53	37.67	54	Pass
3DH5	2402	2390	2.00	0.00	-51.7	45.5	74	-59.27	37.93	54	Pass
3DH5	2480	2483.5	2.00	0.00	-48.43	48.77	74	-54.9	42.3	54	Pass
3DH5	2480	2500	2.00	0.00	-52.14	45.06	74	-58.76	38.44	54	Pass

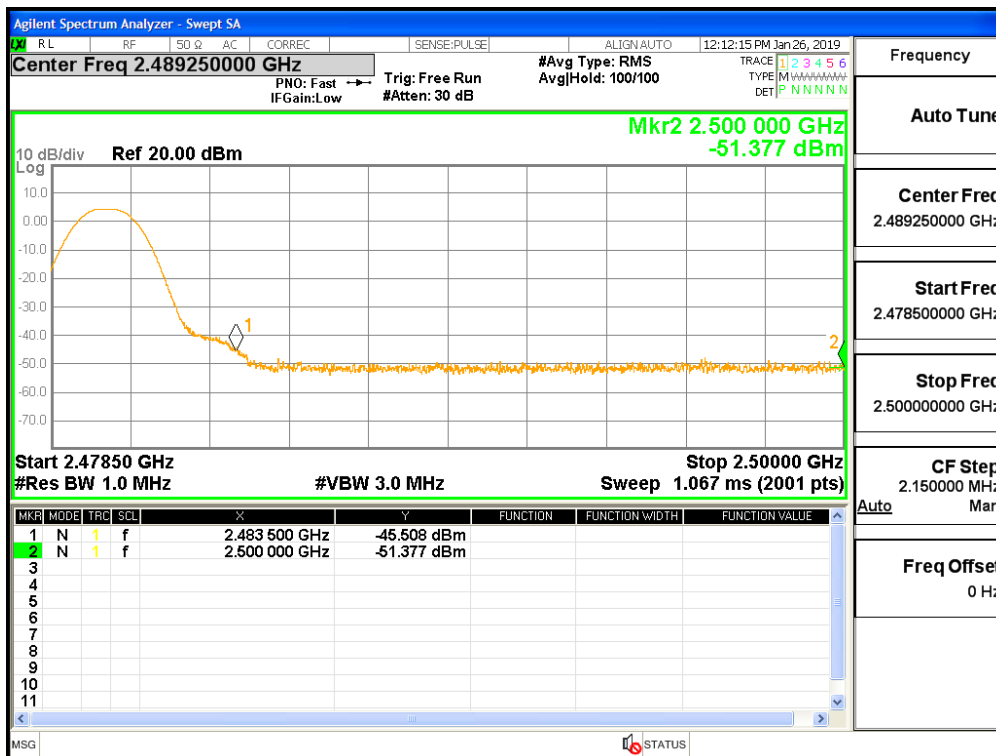
Restrict-band band-edge measurements_2402_PEAK_DH5



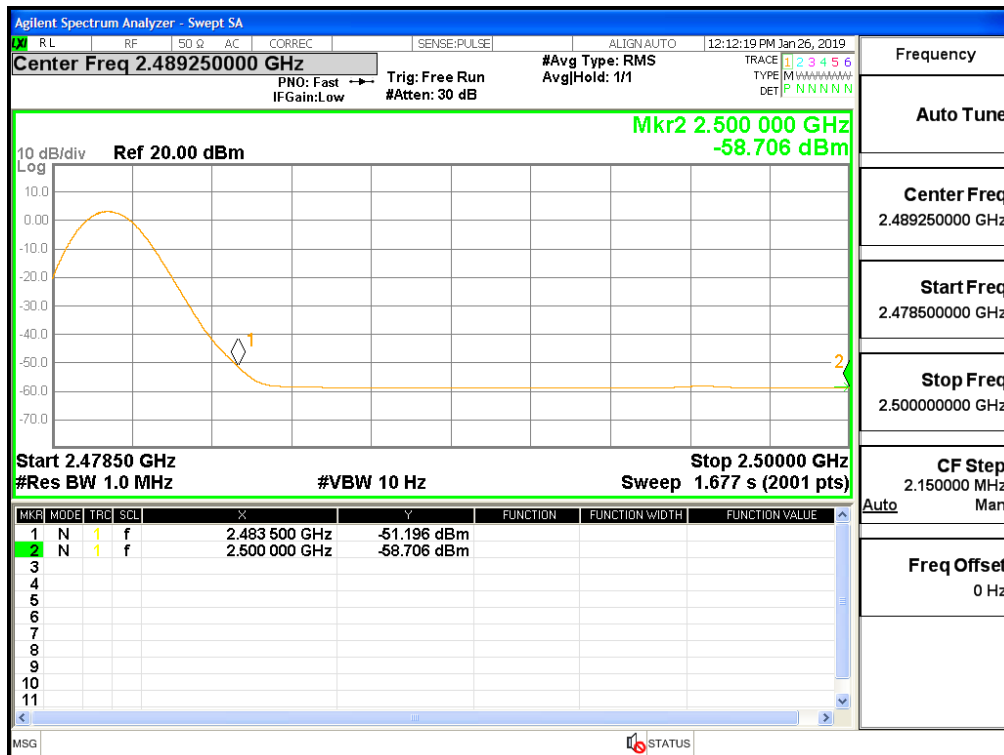
Restrict-band band-edge measurements_2402_AV_DH5



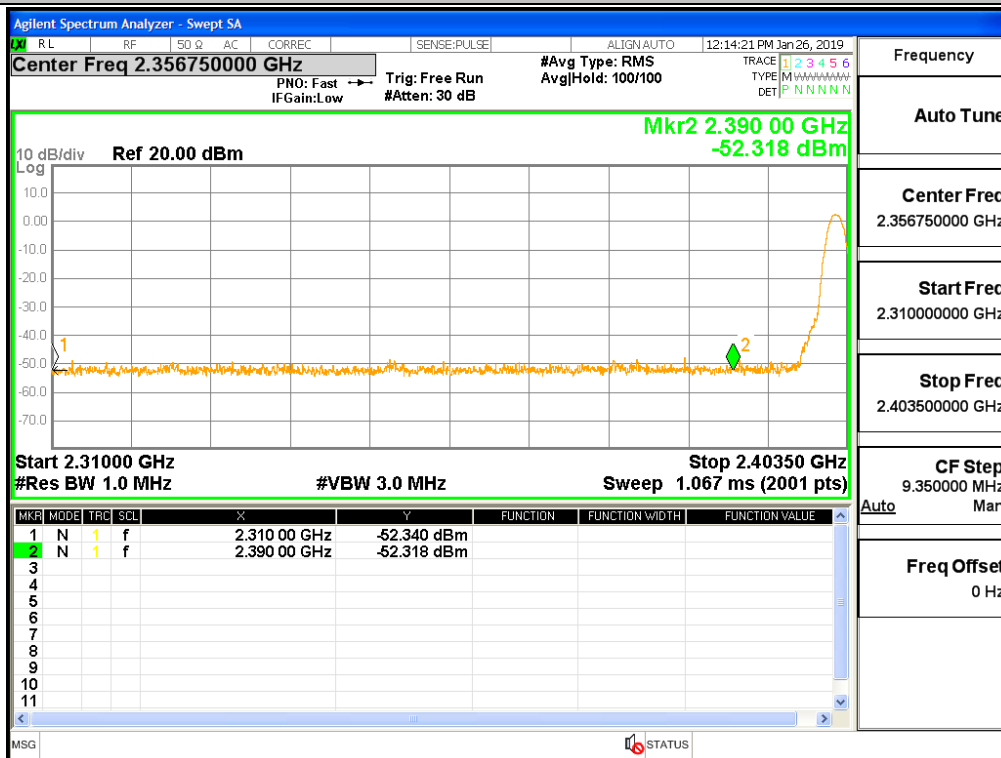
Restrict-band band-edge measurements_2480_PEAK_DH5



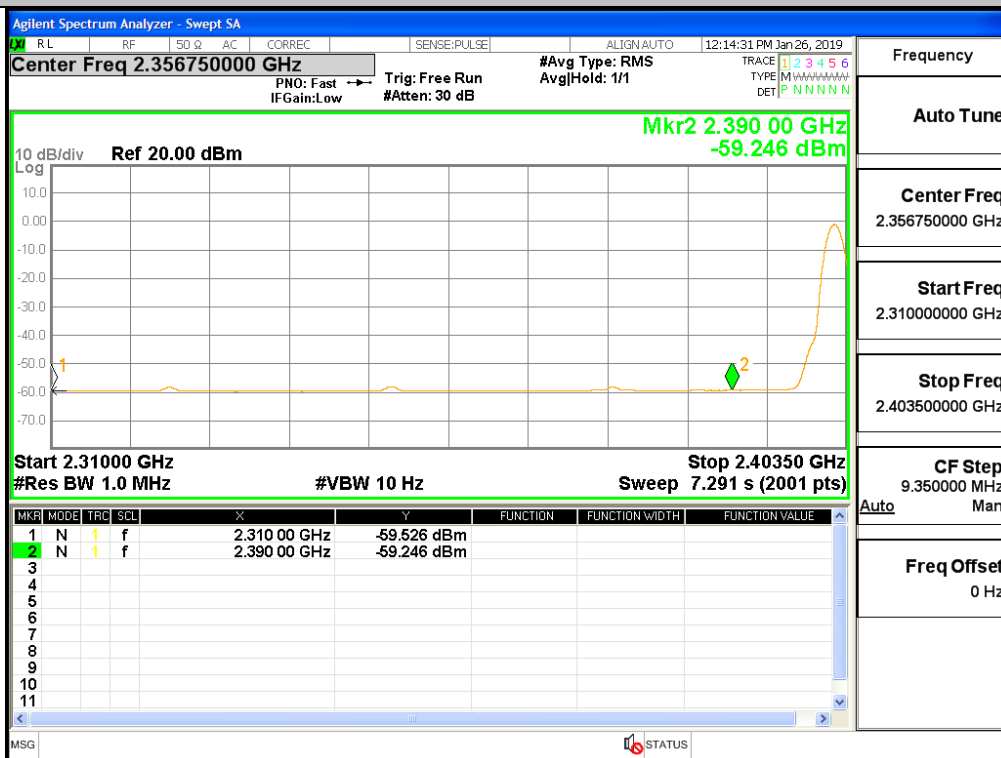
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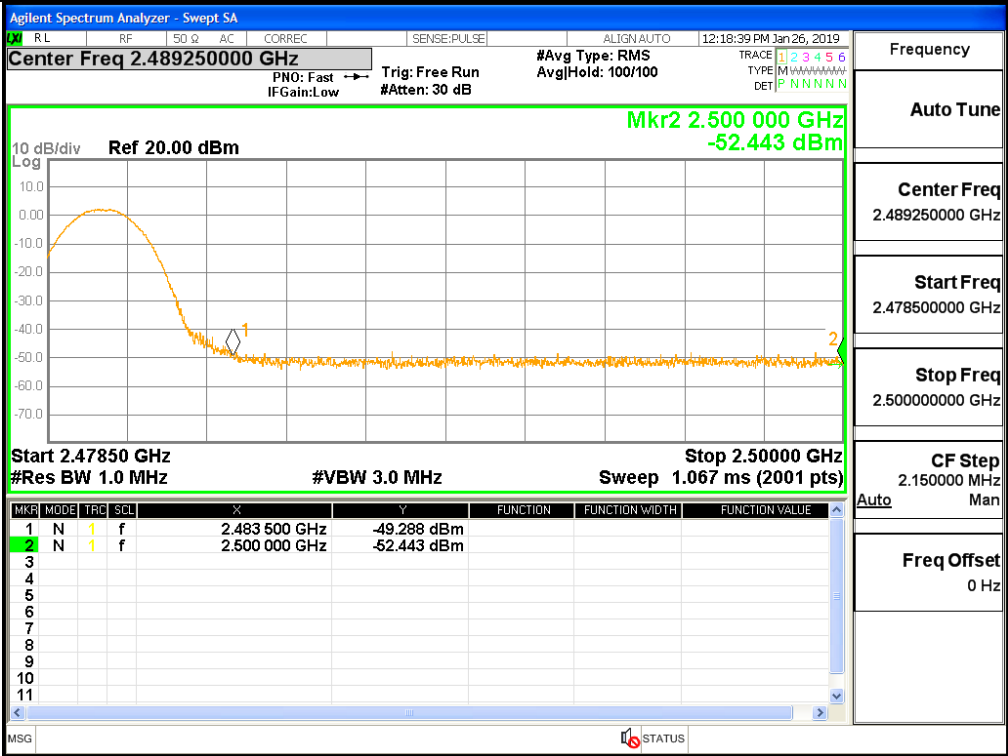
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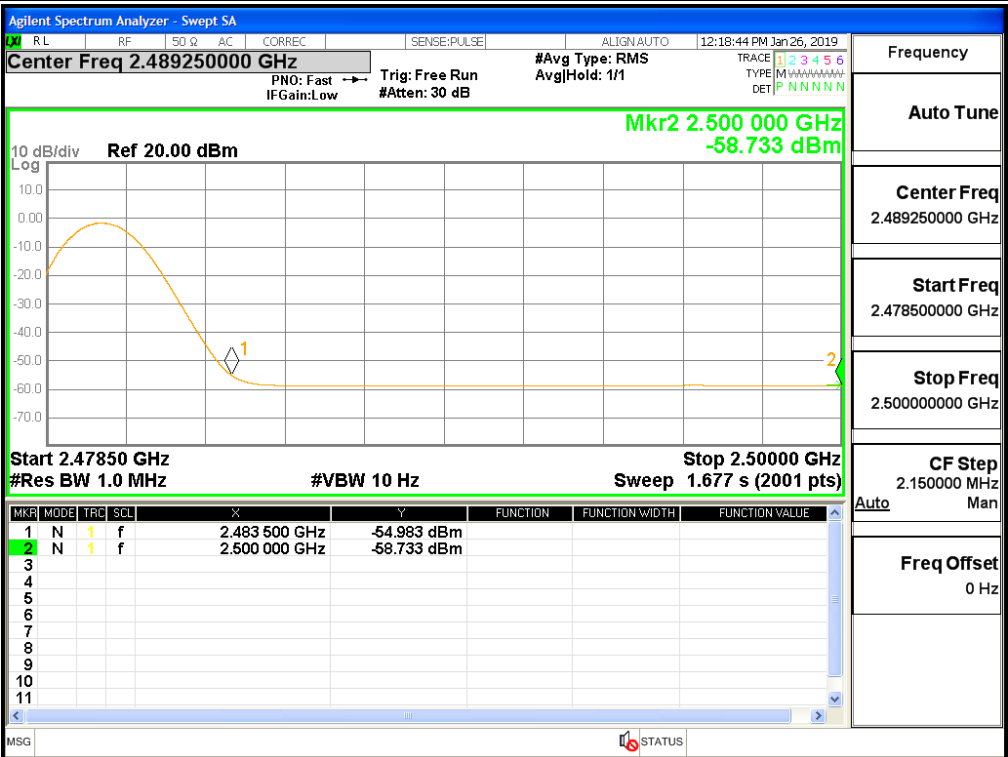
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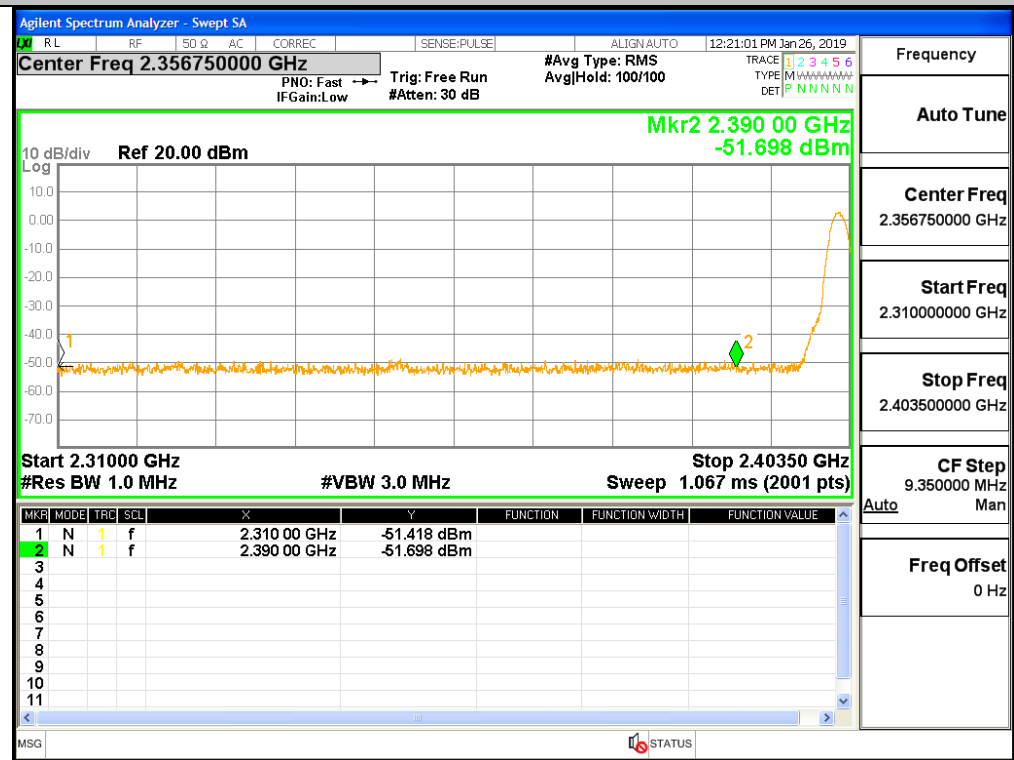
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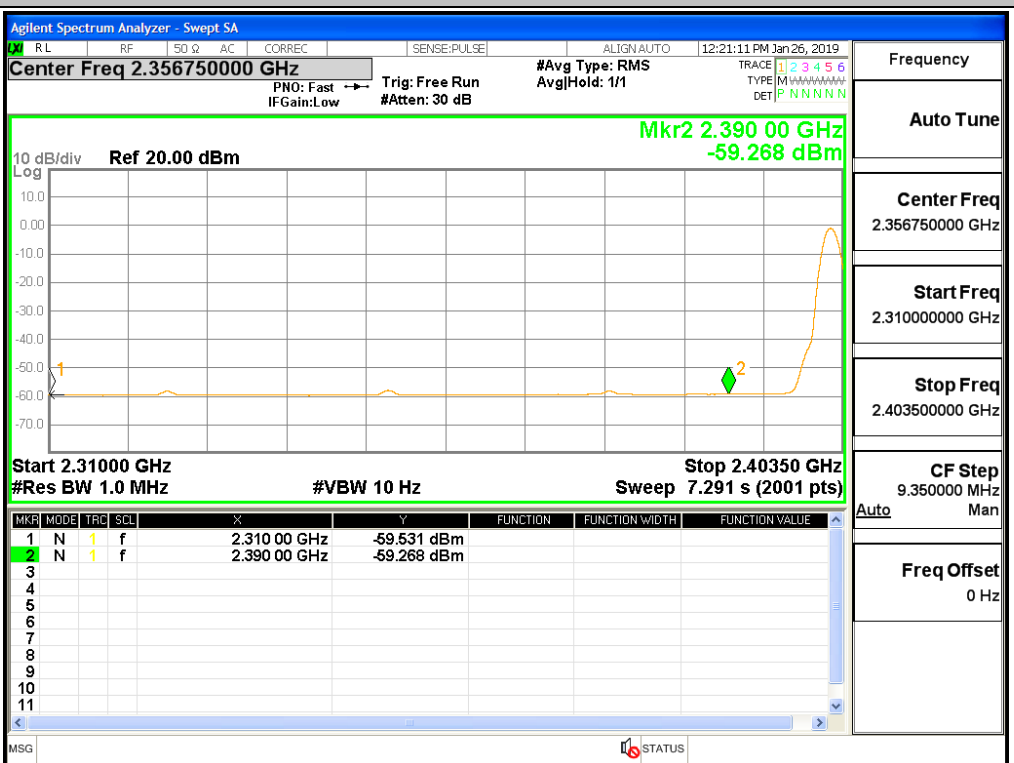
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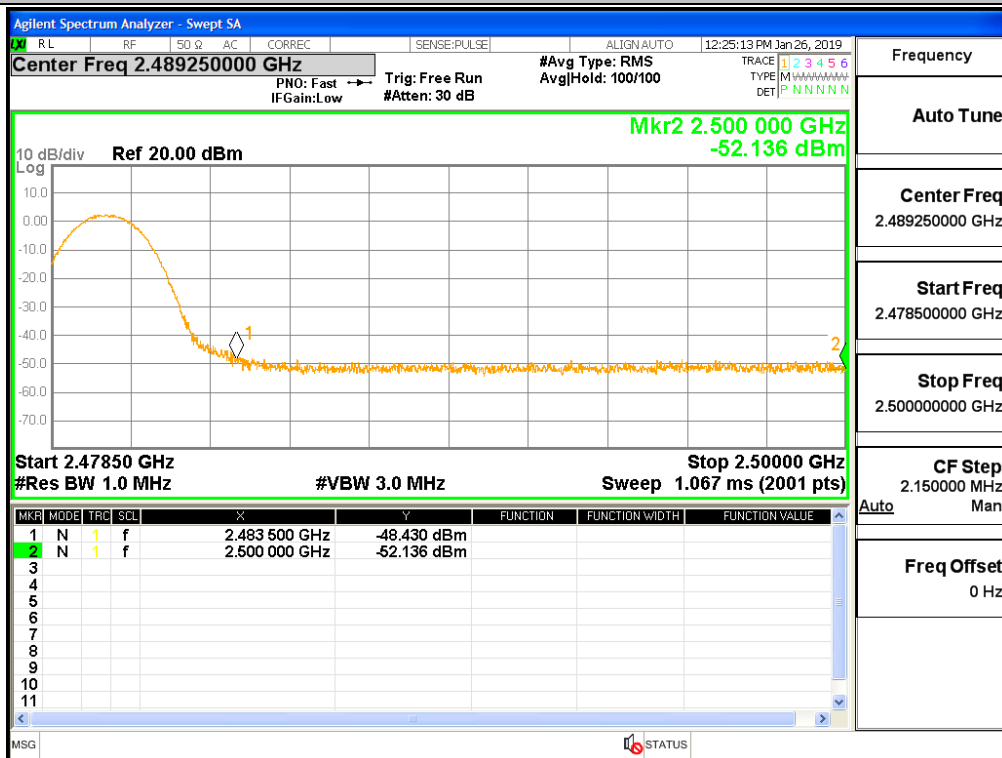
Restrict-band band-edge measurements_2402_PEAK_3DH5



Restrict-band band-edge measurements_2402_AV_3DH5



Restrict-band band-edge measurements_2480_PEAK_3DH5



Restrict-band band-edge measurements_2480_AV_3DH5

