

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

**Product Name: Bluetooth Earphones**

**Trade Mark: Altec Lansing**

**Test Model: MZX857**

**FCC ID: 2AL9B-MZX857**

**Environmental Conditions**

Temperature:	23.1 ° C
Relative Humidity:	50%
ATM Pressure:	100.0 kPa
Test Engineer:	Gary Qian
Supervised by:	Eden Hu

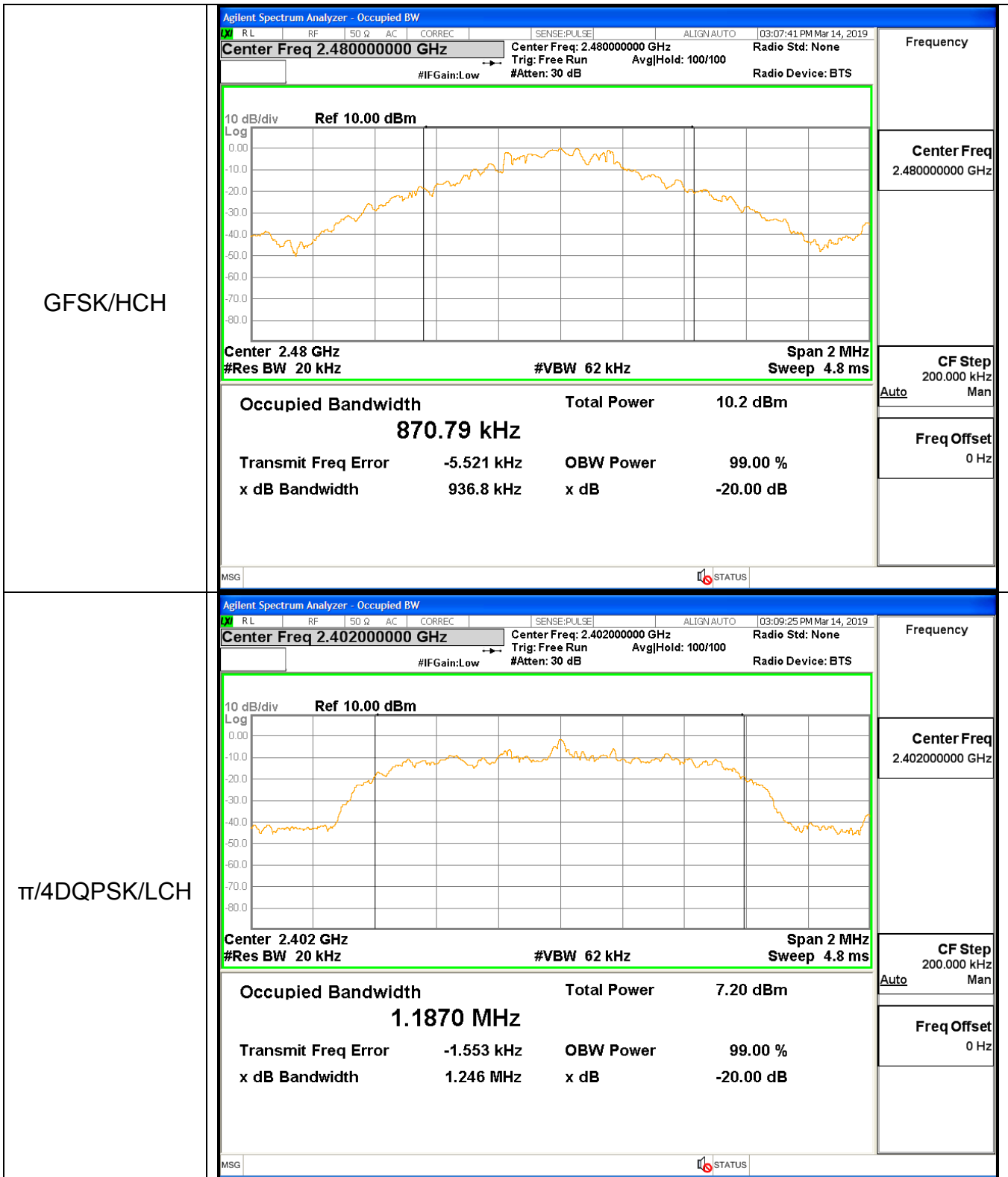
**A.1 20 dB Bandwidth**

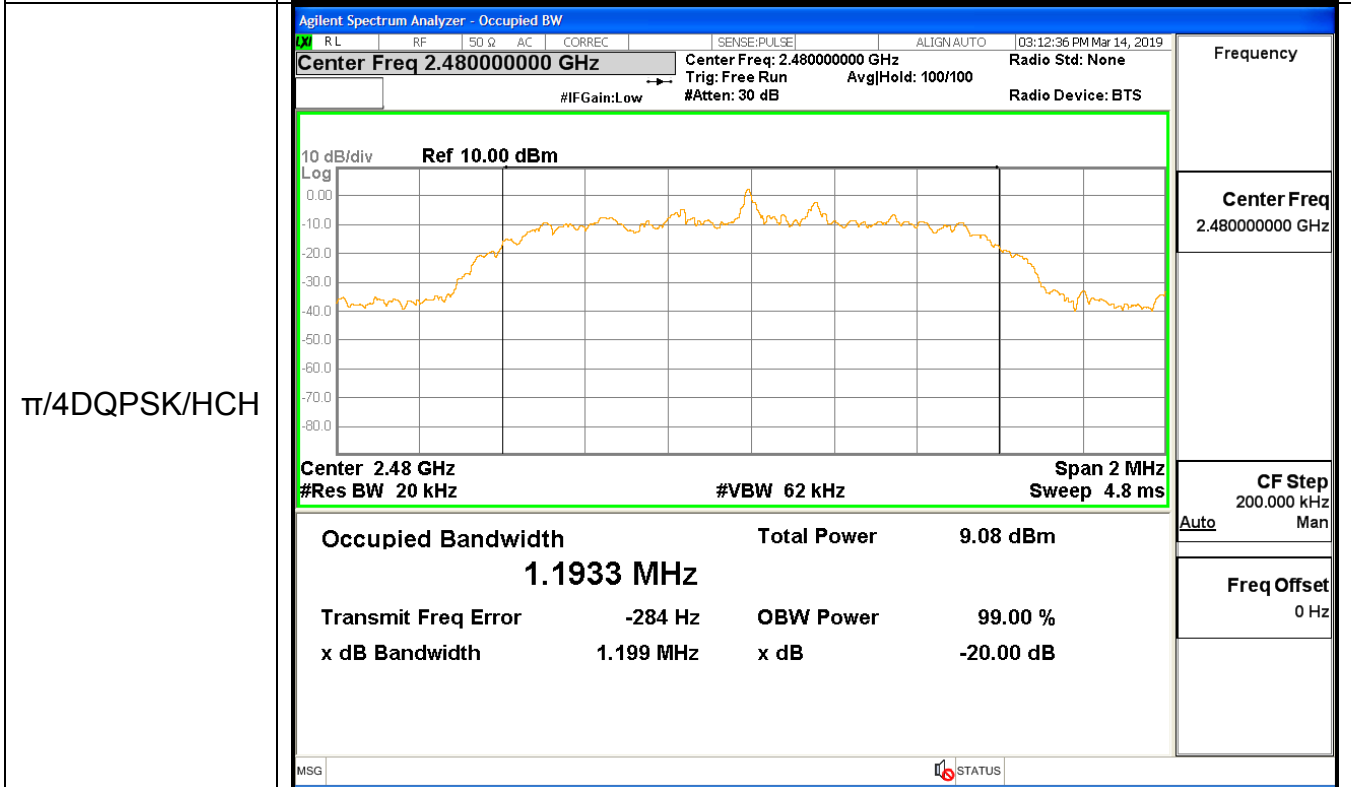
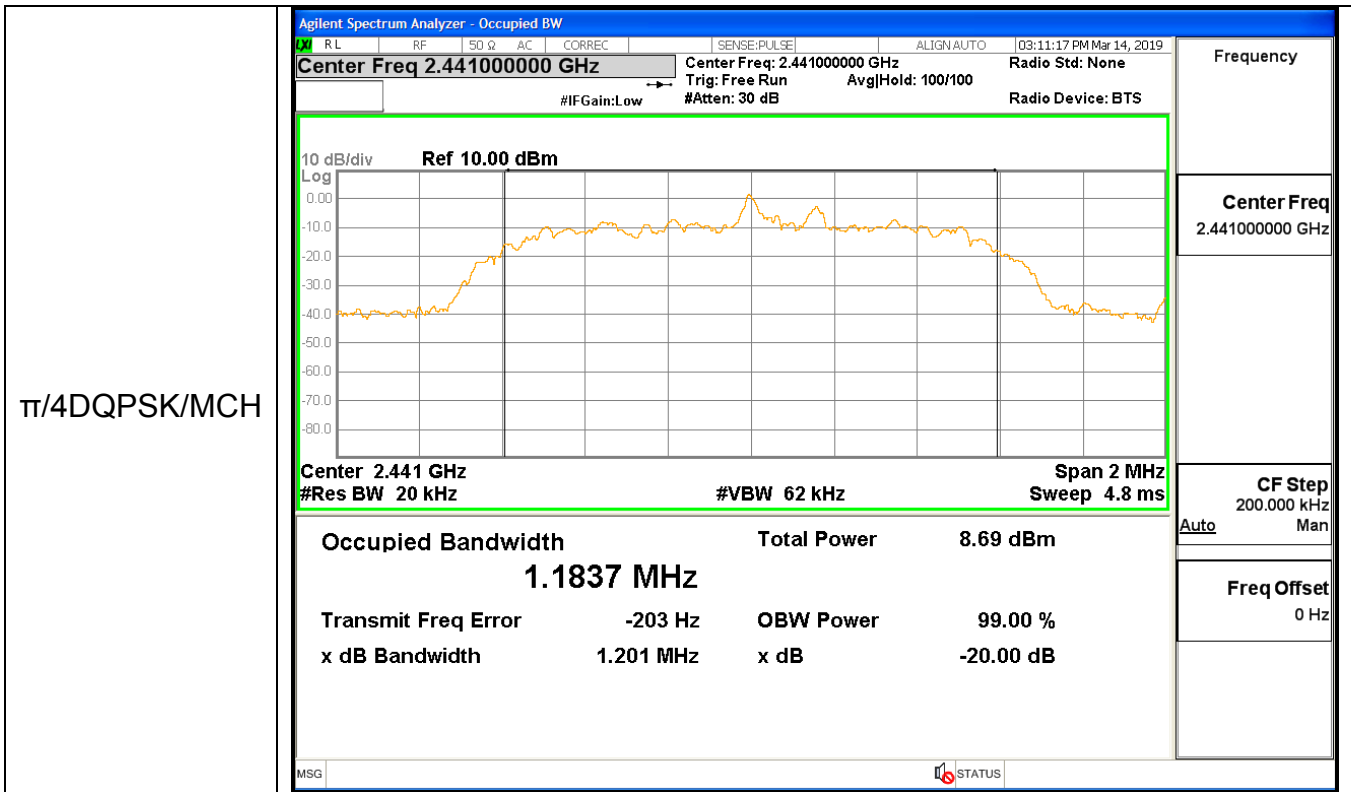
Mode	Channel.	20dB Bandwidth [MHz]	Limit(MHz)	Verdict
GFSK	LCH	0.793	Not Specified	PASS
GFSK	MCH	0.847	Not Specified	PASS
GFSK	HCH	0.937	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.246	Not Specified	PASS
$\pi/4$ DQPSK	MCH	1.201	Not Specified	PASS
$\pi/4$ DQPSK	HCH	1.199	Not Specified	PASS
8DPSK	LCH	1.263	Not Specified	PASS
8DPSK	MCH	1.239	Not Specified	PASS
8DPSK	HCH	1.241	Not Specified	PASS

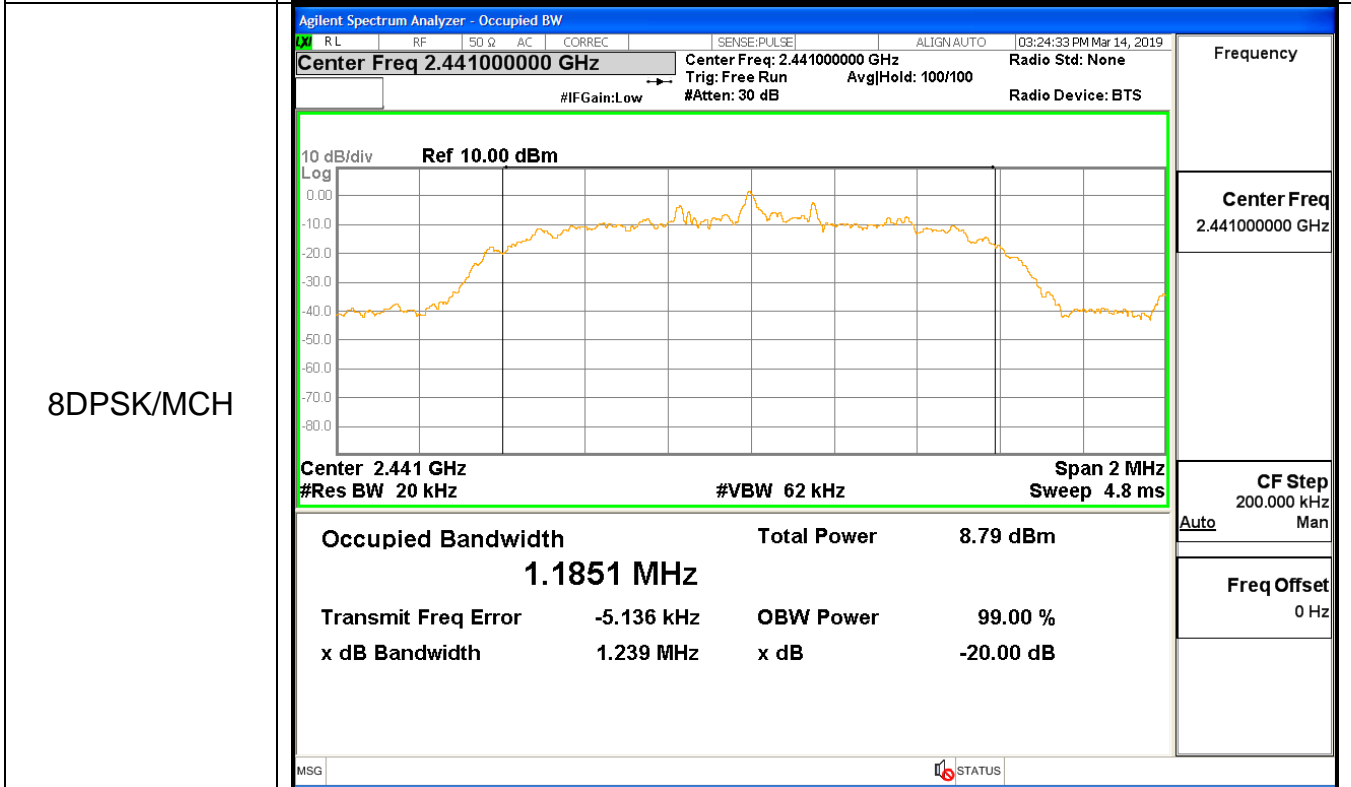
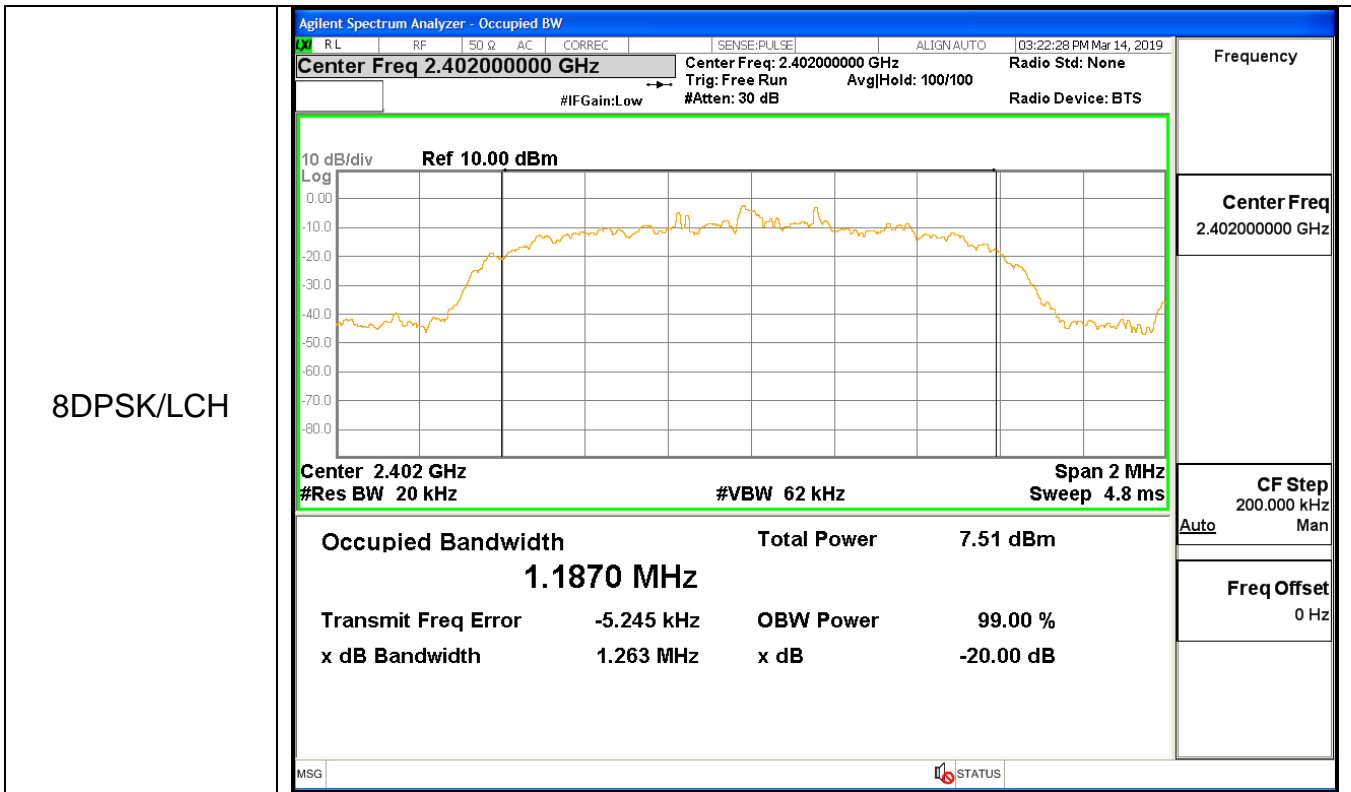
Test Graph

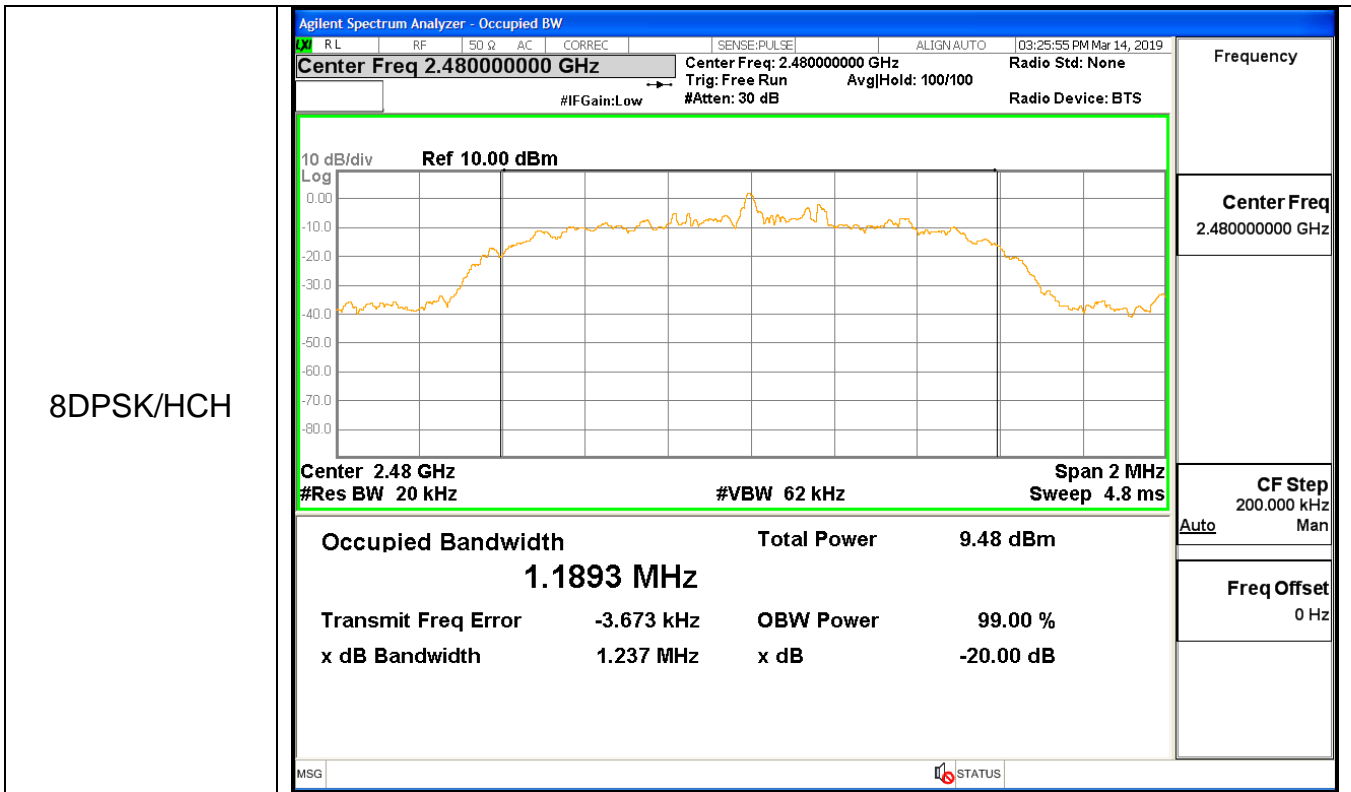
Graphs

GFSK/LCH	Agilent Spectrum Analyzer - Occupied BW Center Freq <b>2.40200000 GHz</b> Center Freq: 2.40200000 GHz    Radio Std: None Trig: Free Run    Avg Hold: 100/100    Radio Device: BTS #IFGain:Low    #Atten: 30 dB			Frequency																	
				Center Freq 2.40200000 GHz																	
Center 2.402 GHz    Span 2 MHz #Res BW 20 kHz    #VBW 62 kHz    Sweep 4.8 ms			CF Step 200.000 kHz Auto Man																		
<table border="0"> <tr> <td>Occupied Bandwidth</td> <td>Total Power</td> <td>8.60 dBm</td> </tr> <tr> <td><b>884.65 kHz</b></td> <td></td> <td></td> </tr> <tr> <td>Transmit Freq Error</td> <td>OBW Power</td> <td>99.00 %</td> </tr> <tr> <td>-4.265 kHz</td> <td></td> <td></td> </tr> <tr> <td>x dB Bandwidth</td> <td>x dB</td> <td>-20.00 dB</td> </tr> <tr> <td>793.3 kHz</td> <td></td> <td></td> </tr> </table>			Occupied Bandwidth	Total Power	8.60 dBm	<b>884.65 kHz</b>			Transmit Freq Error	OBW Power	99.00 %	-4.265 kHz			x dB Bandwidth	x dB	-20.00 dB	793.3 kHz			Freq Offset 0 Hz
Occupied Bandwidth	Total Power	8.60 dBm																			
<b>884.65 kHz</b>																					
Transmit Freq Error	OBW Power	99.00 %																			
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x dB Bandwidth	x dB	-20.00 dB																			
793.3 kHz																					
MSG    STATUS																					
GFSK/MCH	Agilent Spectrum Analyzer - Occupied BW Center Freq <b>2.44100000 GHz</b> Center Freq: 2.44100000 GHz    Radio Std: None Trig: Free Run    Avg Hold: 100/100    Radio Device: BTS #IFGain:Low    #Atten: 30 dB			Frequency																	
				Center Freq 2.44100000 GHz																	
Center 2.441 GHz    Span 2 MHz #Res BW 20 kHz    #VBW 62 kHz    Sweep 4.8 ms			CF Step 200.000 kHz Auto Man																		
<table border="0"> <tr> <td>Occupied Bandwidth</td> <td>Total Power</td> <td>9.84 dBm</td> </tr> <tr> <td><b>863.32 kHz</b></td> <td></td> <td></td> </tr> <tr> <td>Transmit Freq Error</td> <td>OBW Power</td> <td>99.00 %</td> </tr> <tr> <td>-3.361 kHz</td> <td></td> <td></td> </tr> <tr> <td>x dB Bandwidth</td> <td>x dB</td> <td>-20.00 dB</td> </tr> <tr> <td>846.9 kHz</td> <td></td> <td></td> </tr> </table>			Occupied Bandwidth	Total Power	9.84 dBm	<b>863.32 kHz</b>			Transmit Freq Error	OBW Power	99.00 %	-3.361 kHz			x dB Bandwidth	x dB	-20.00 dB	846.9 kHz			Freq Offset 0 Hz
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-3.361 kHz																					
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846.9 kHz																					
MSG    STATUS																					





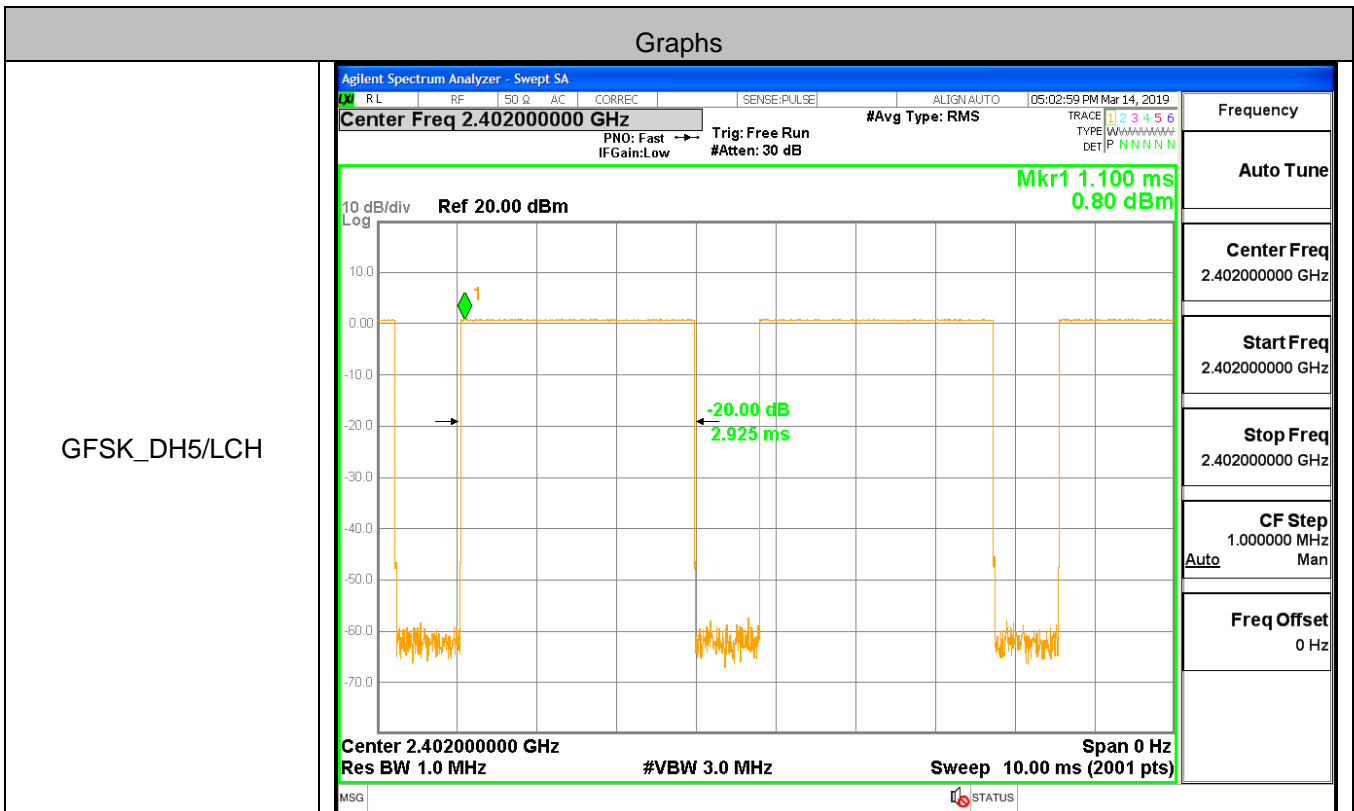


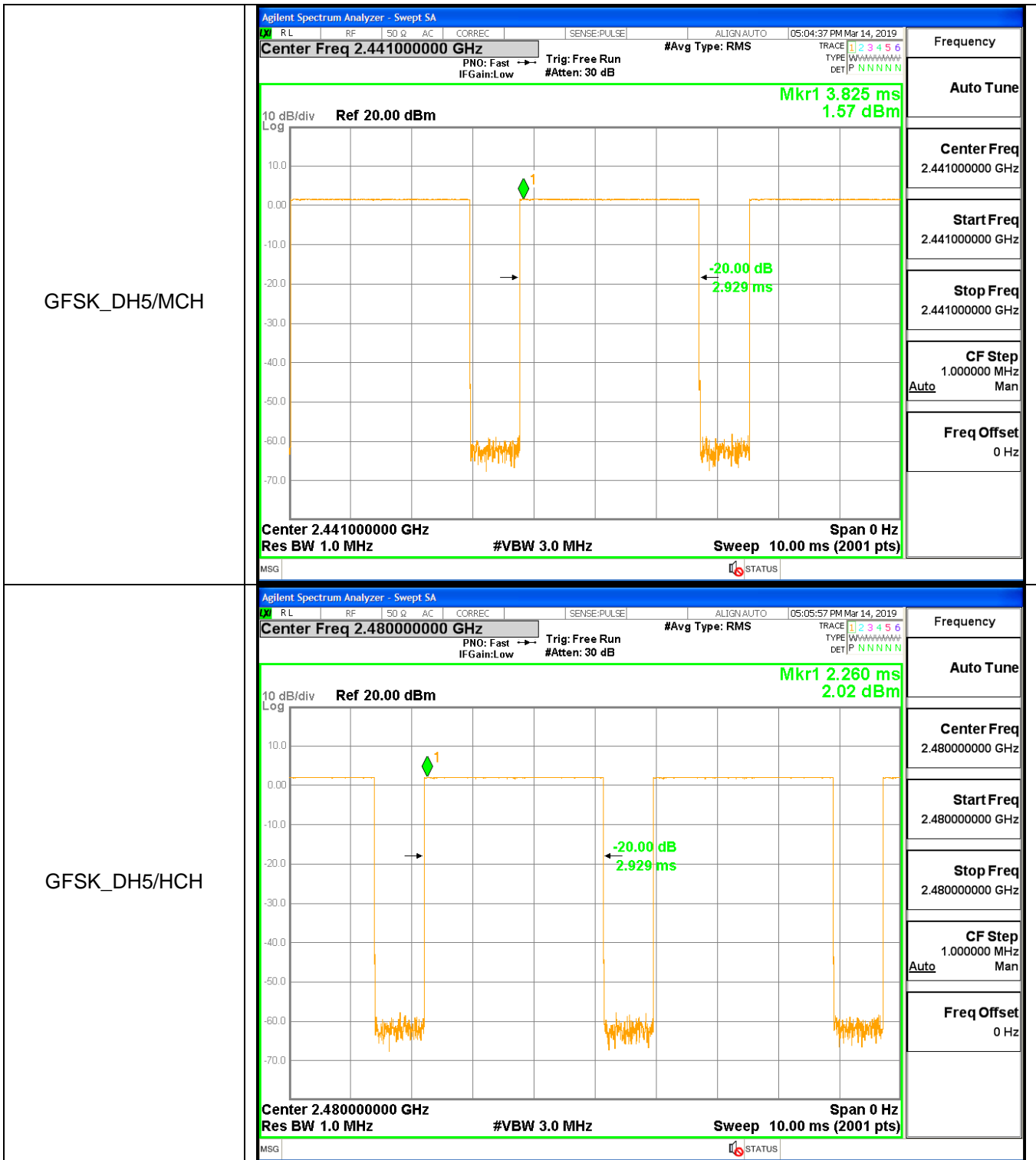


### A.2 Dwell Time

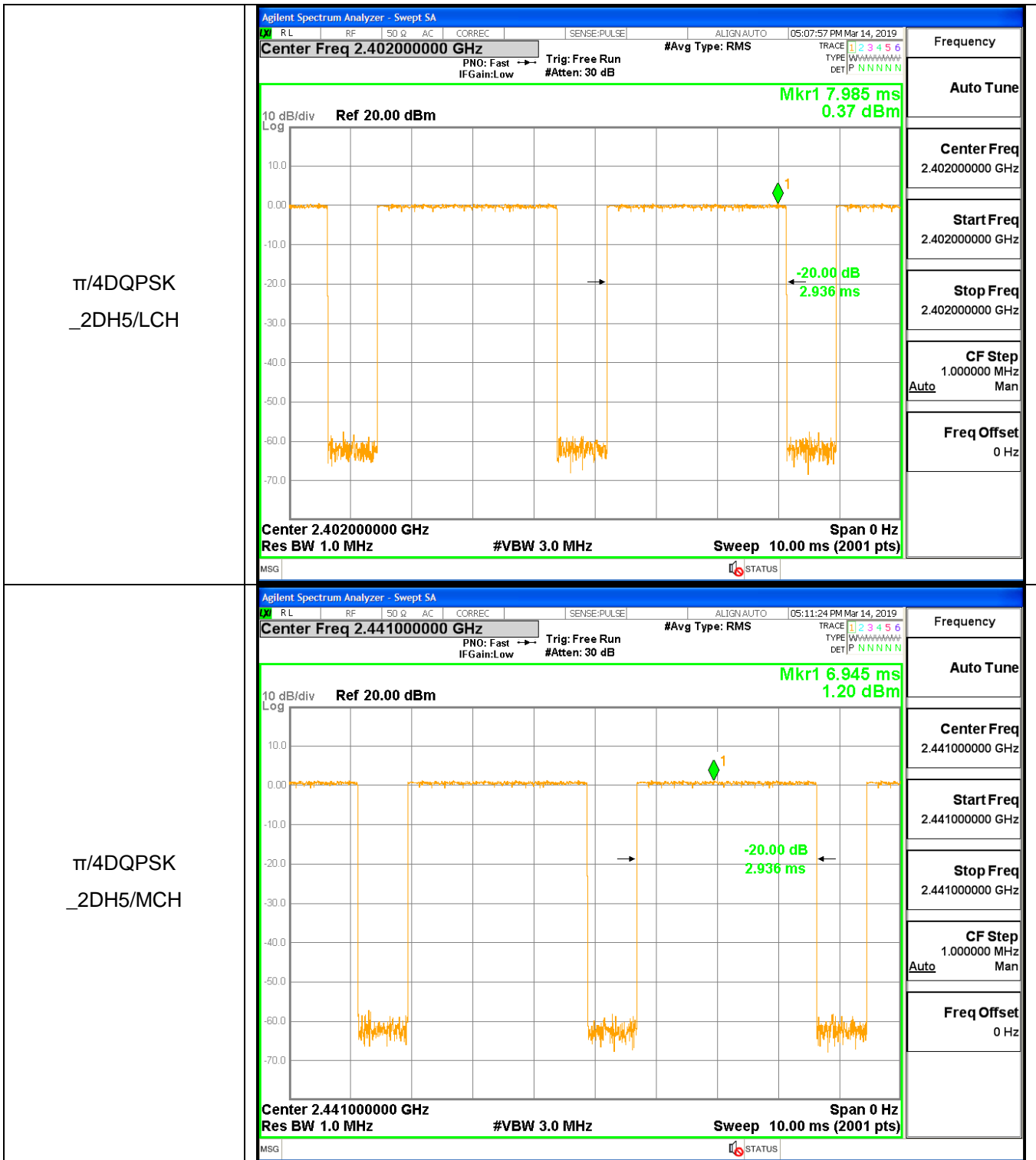
Mode	Packet	Channel	Burst Width [s/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	0.002925	106.7	0.312112	0.4	PASS
GFSK	DH5	MCH	0.002929	106.7	0.312483	0.4	PASS
GFSK	DH5	HCH	0.002929	106.7	0.31249	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	0.002936	106.7	0.313253	0.4	PASS
$\pi/4$ DQPSK	2DH5	MCH	0.002936	106.7	0.313237	0.4	PASS
$\pi/4$ DQPSK	2DH5	HCH	0.002936	106.7	0.313303	0.4	PASS
8DPSK	3DH5	LCH	0.002938	106.7	0.313441	0.4	PASS
8DPSK	3DH5	MCH	0.002935	106.7	0.313167	0.4	PASS
8DPSK	3DH5	HCH	0.002936	106.7	0.313324	0.4	PASS

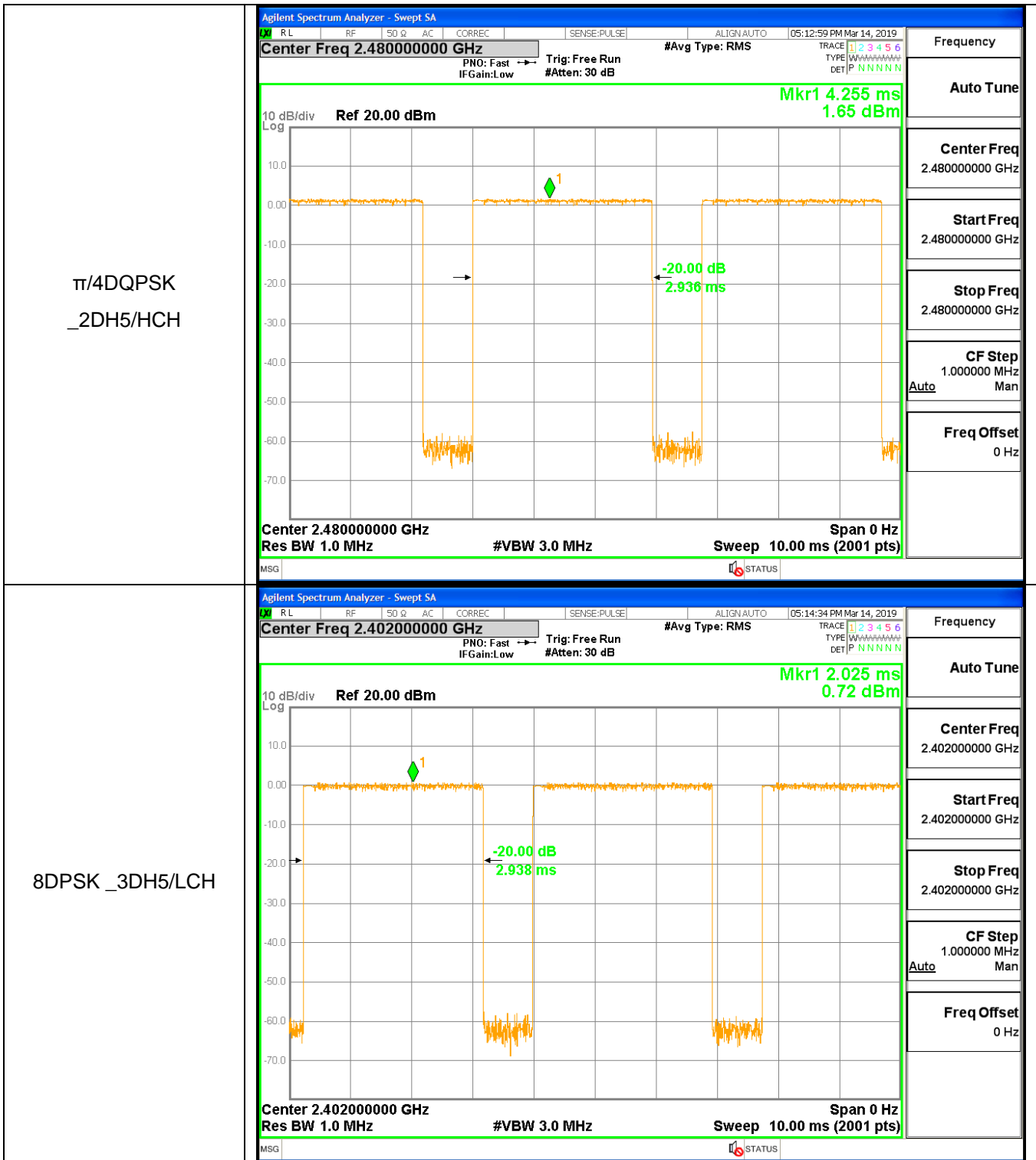
### Test Graph

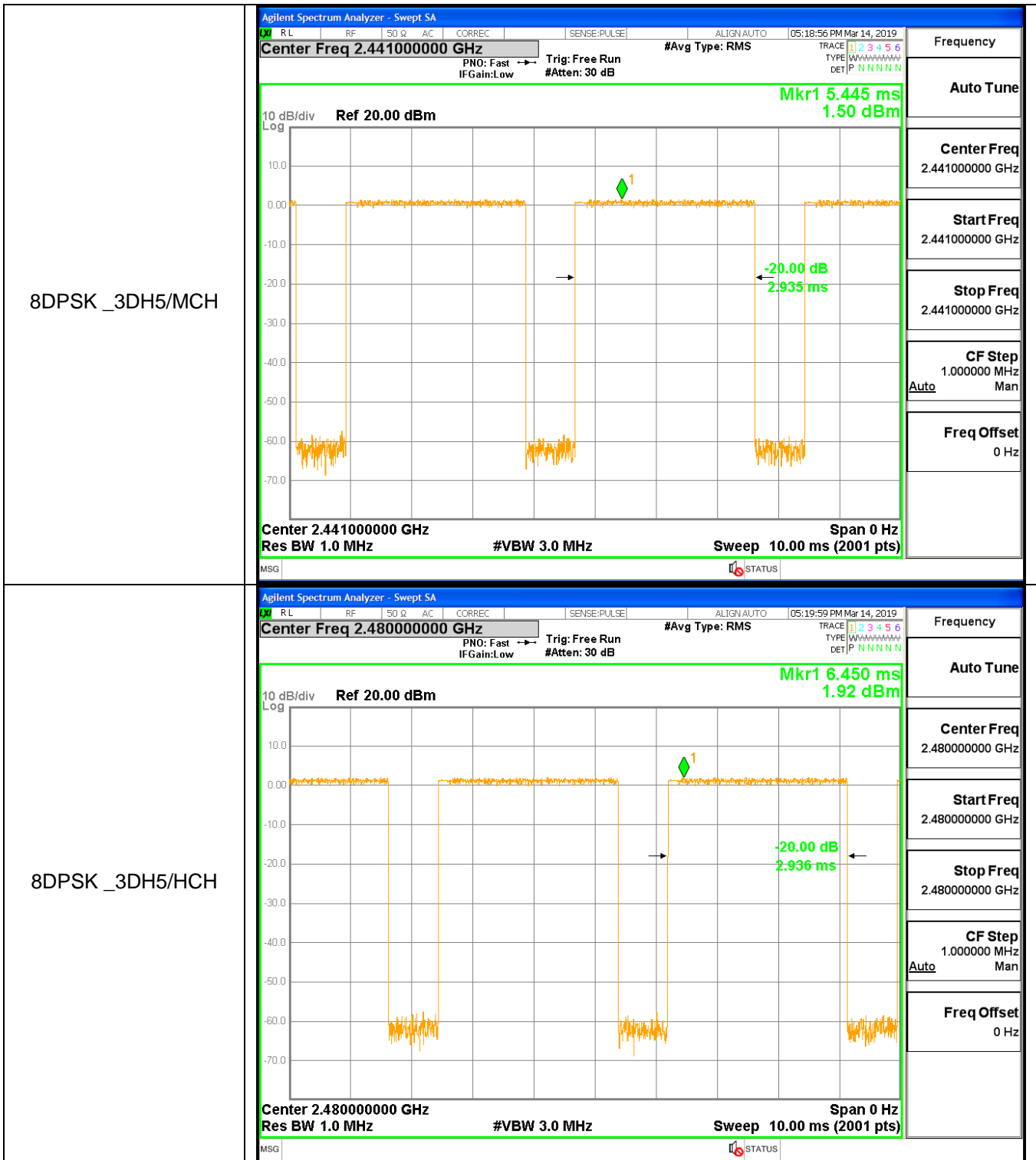








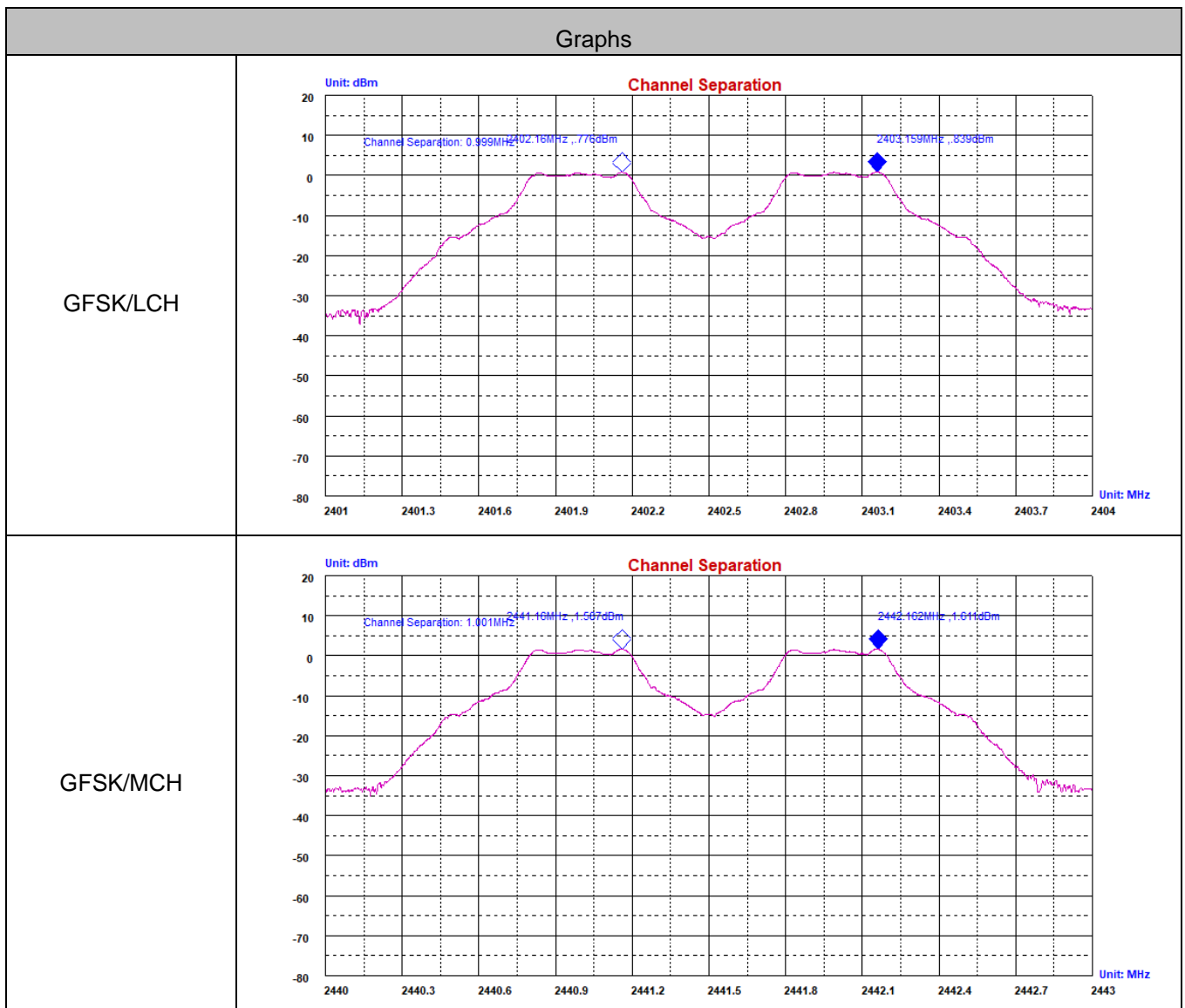


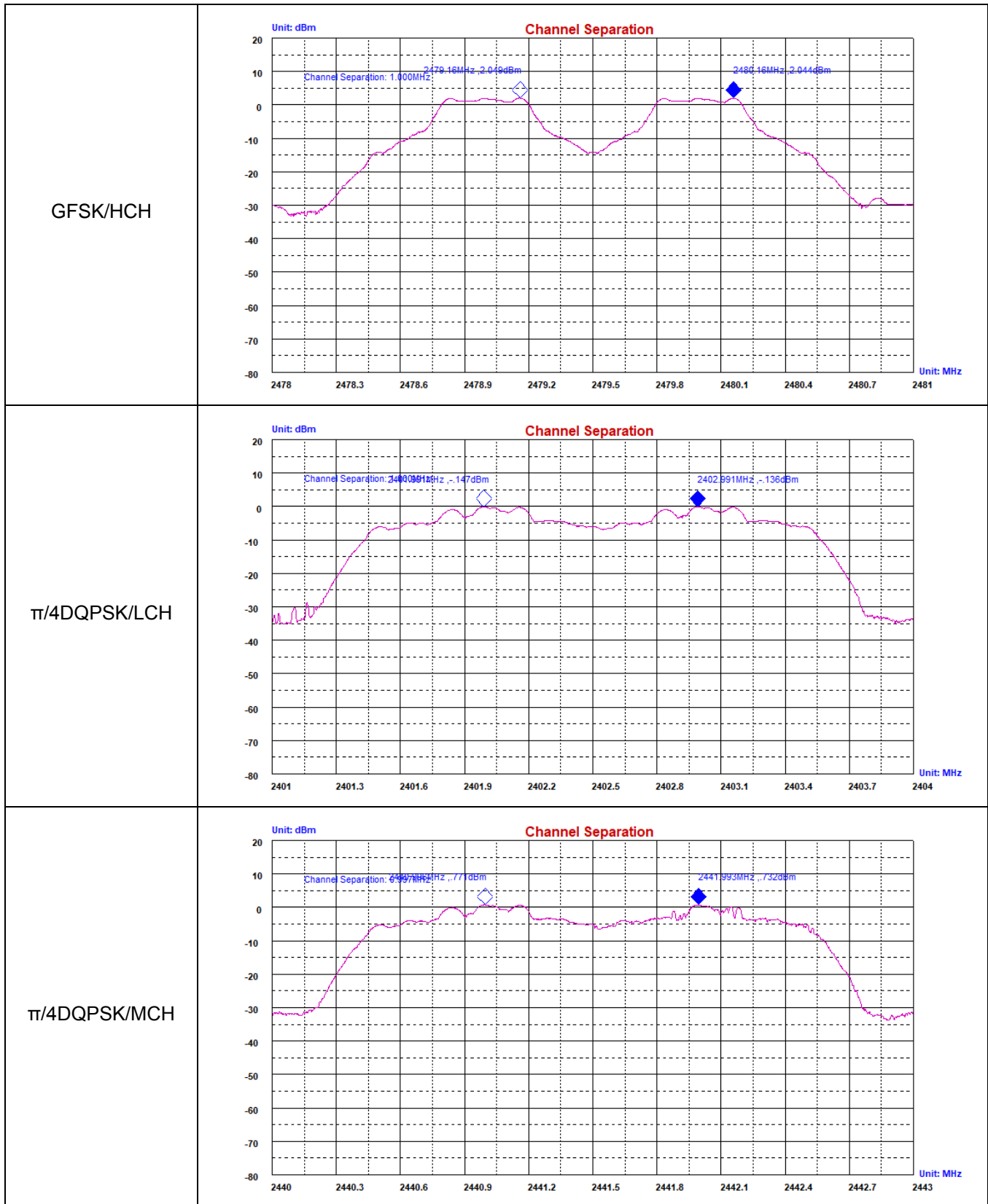


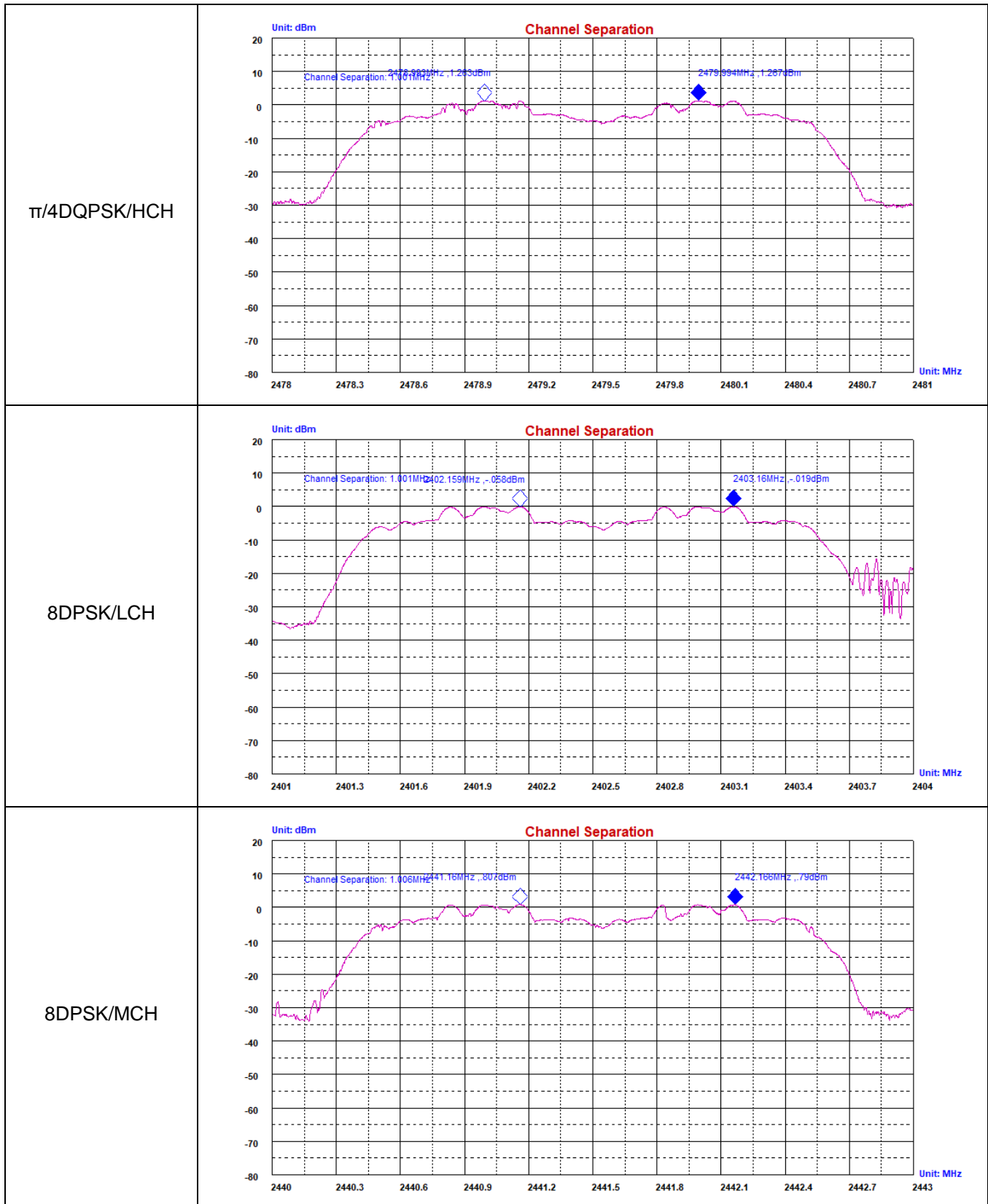
### A.3 Carrier Frequency Separation

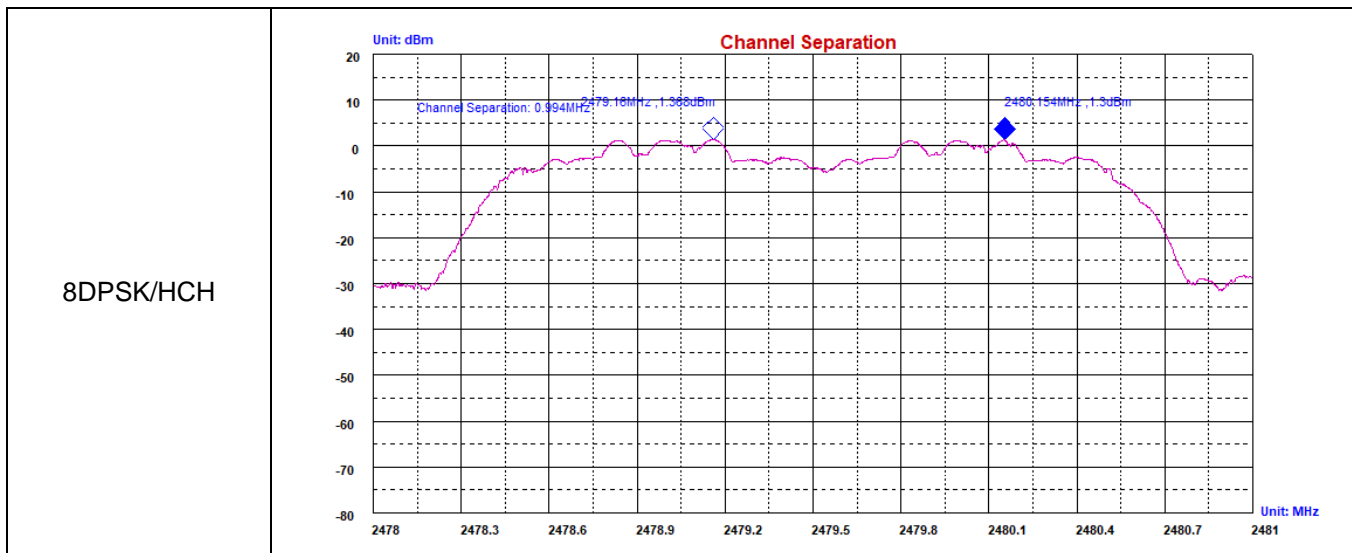
Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.999	0.529	PASS
GFSK	MCH	1.001	0.565	PASS
GFSK	HCH	1.000	0.625	PASS
$\pi/4$ DQPSK	LCH	1.000	0.831	PASS
$\pi/4$ DQPSK	MCH	0.997	0.801	PASS
$\pi/4$ DQPSK	HCH	1.001	0.799	PASS
8DPSK	LCH	1.001	0.842	PASS
8DPSK	MCH	1.006	0.826	PASS
8DPSK	HCH	0.994	0.827	PASS

### Test Graph





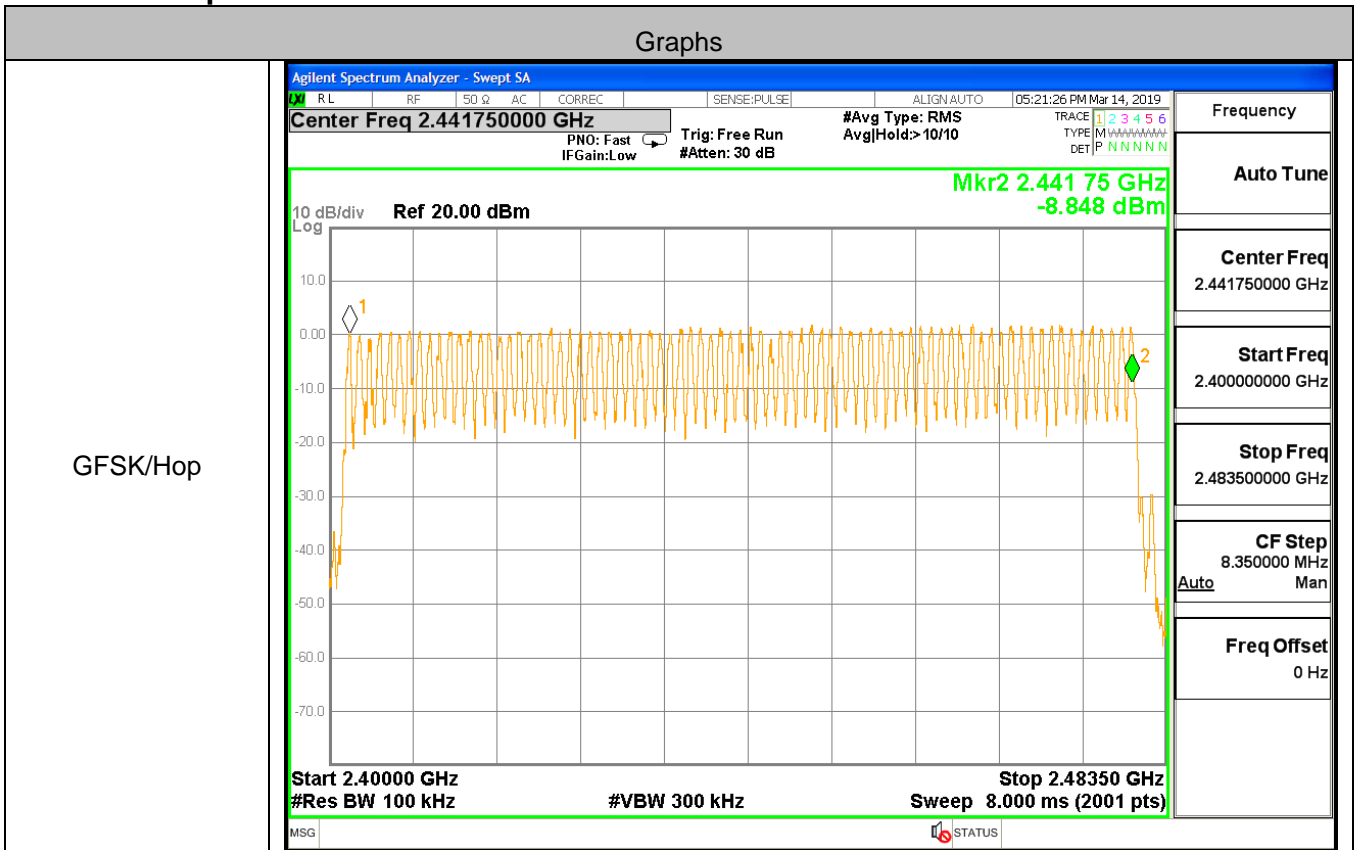




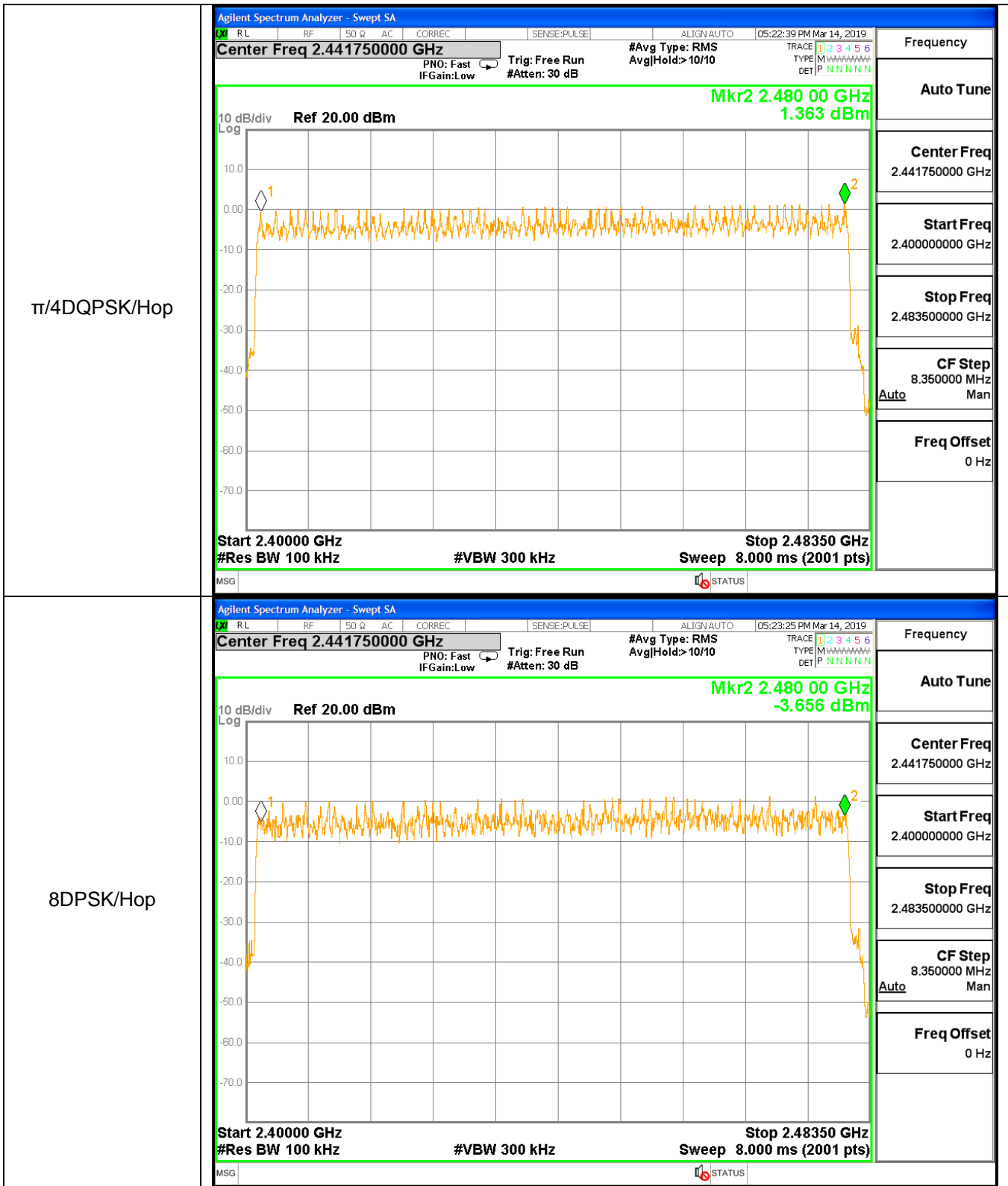
### A.4 Hopping Channel Number

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



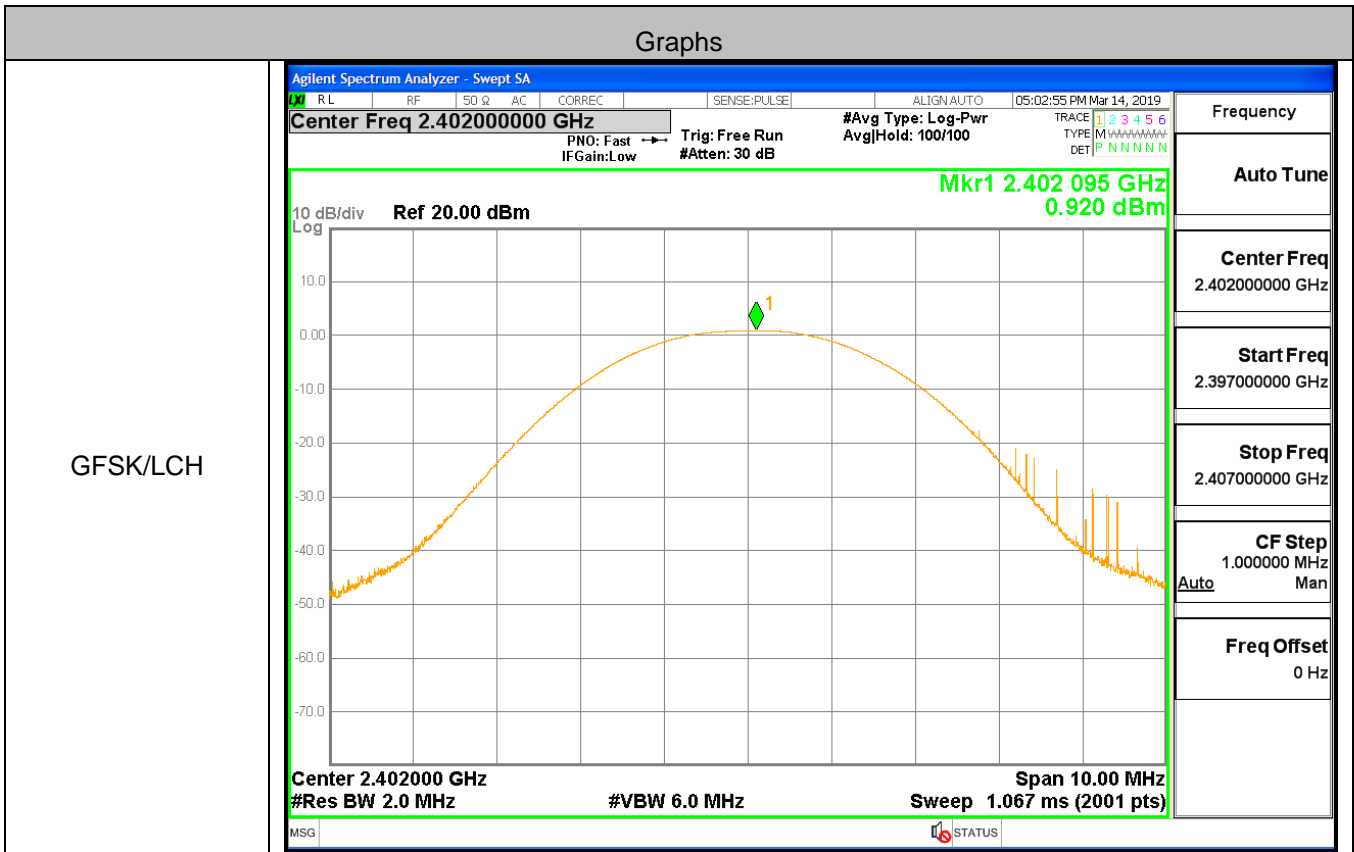


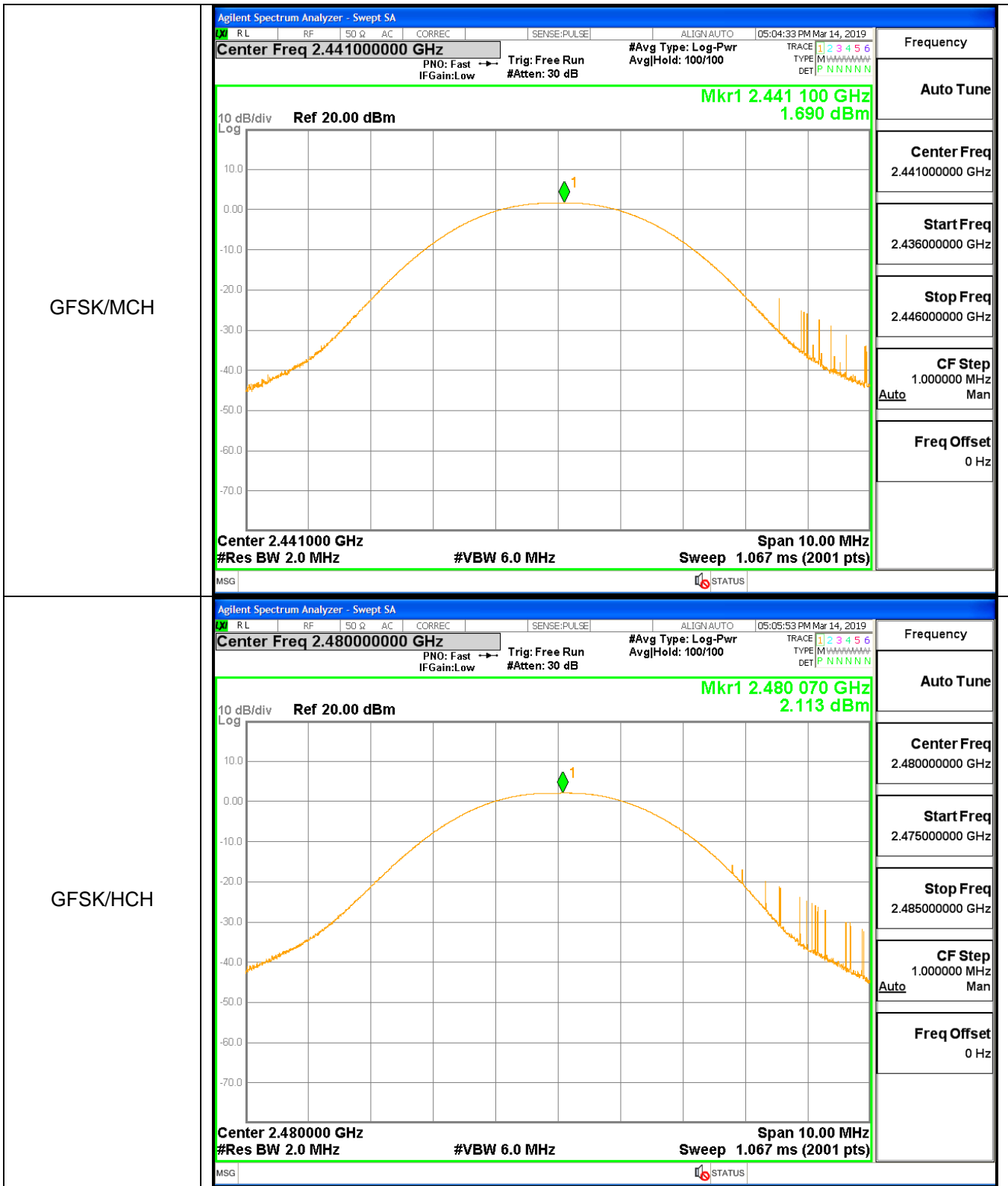


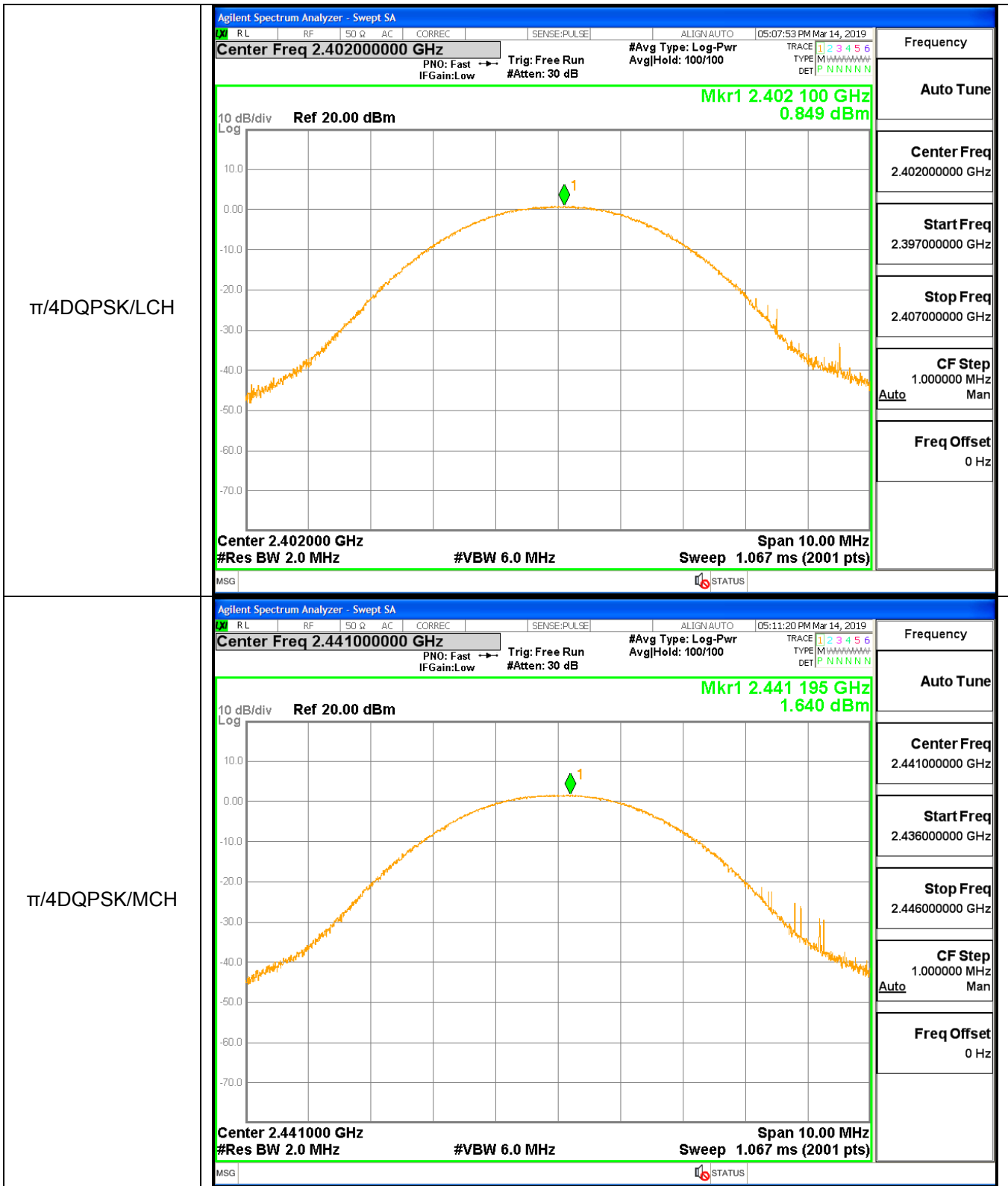
### A.5 Conducted Peak Output Power

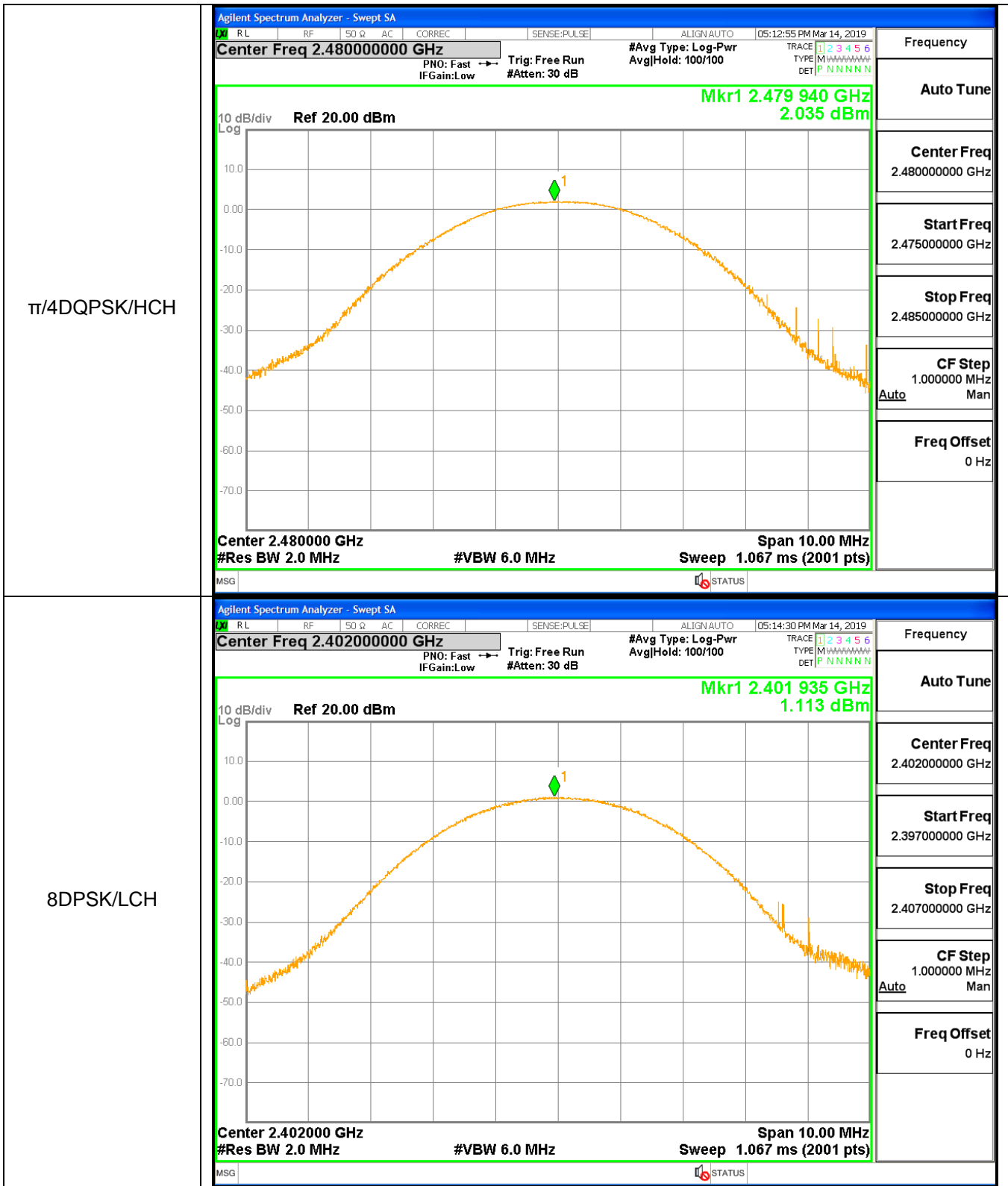
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	0.920	21	PASS
GFSK	MCH	1.690	21	PASS
GFSK	HCH	2.113	21	PASS
$\pi/4$ DQPSK	LCH	0.849	21	PASS
$\pi/4$ DQPSK	MCH	1.640	21	PASS
$\pi/4$ DQPSK	HCH	2.035	21	PASS
8DPSK	LCH	1.113	21	PASS
8DPSK	MCH	1.817	21	PASS
8DPSK	HCH	2.193	21	PASS

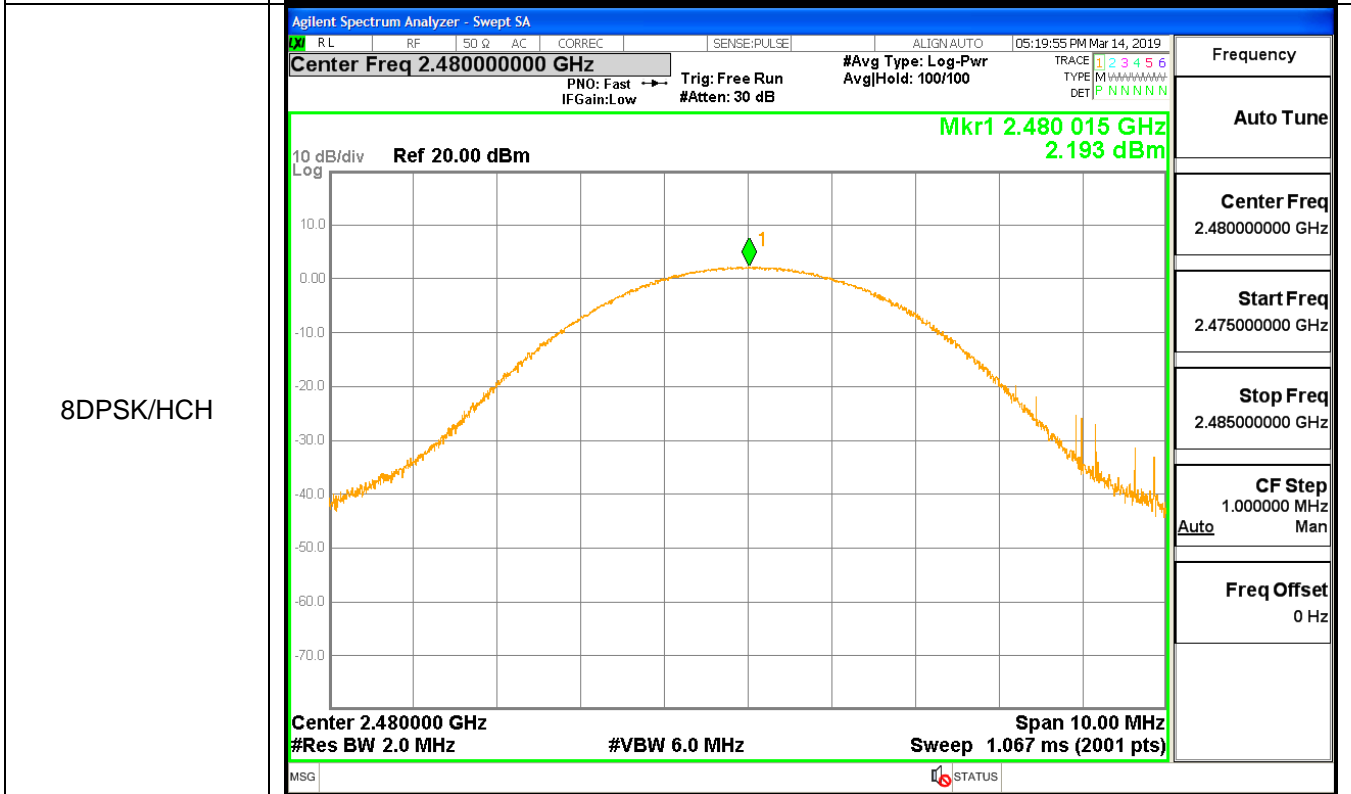
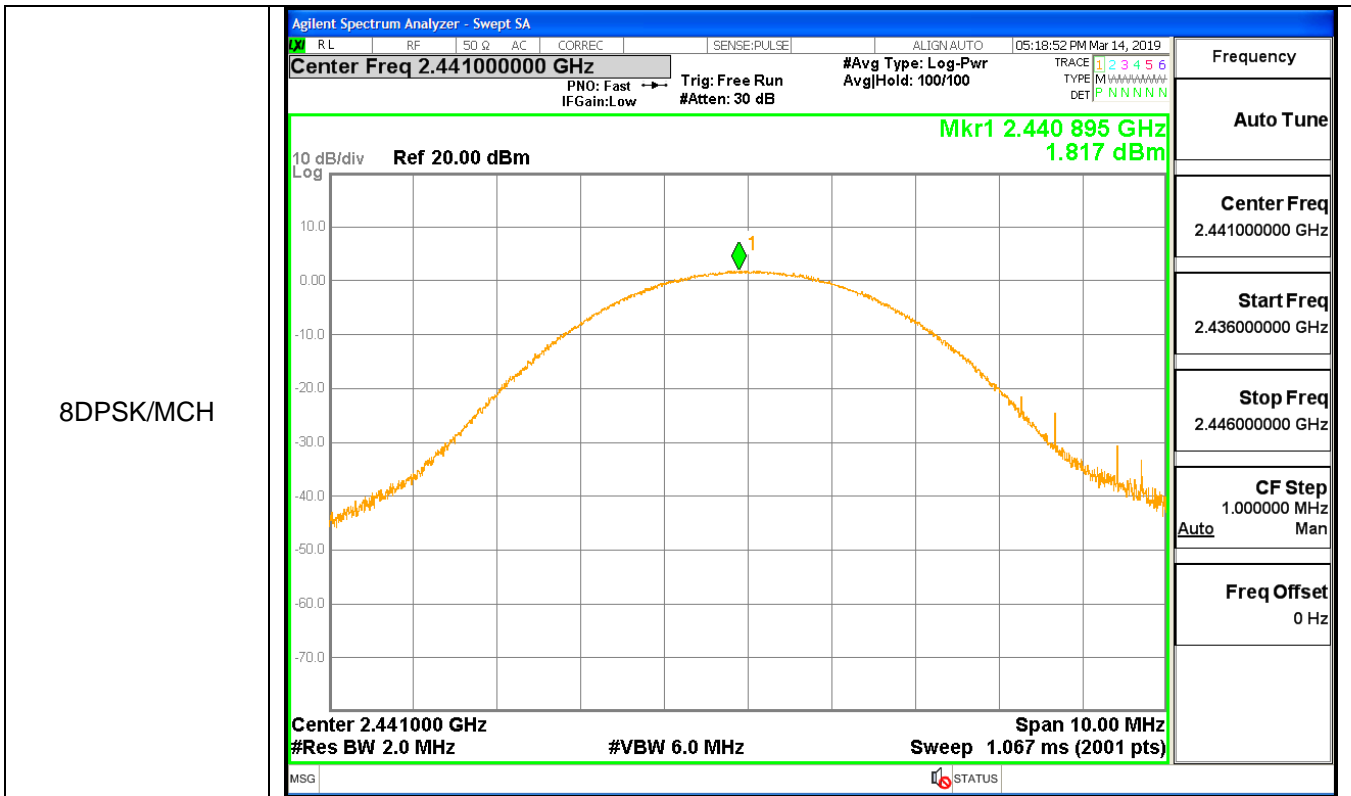
### Test Graph









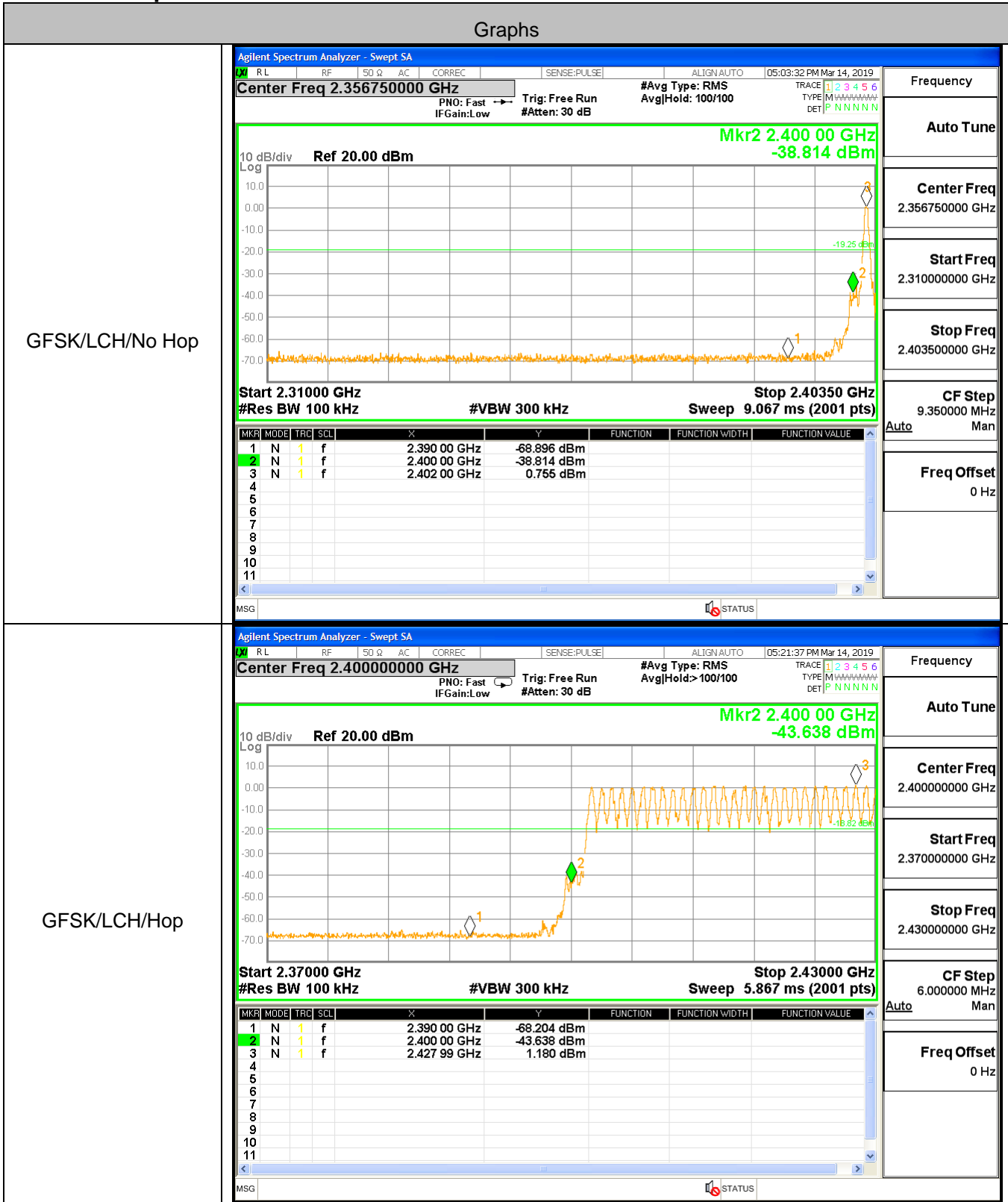


**A.6 Band-edge for RF Conducted Emissions**

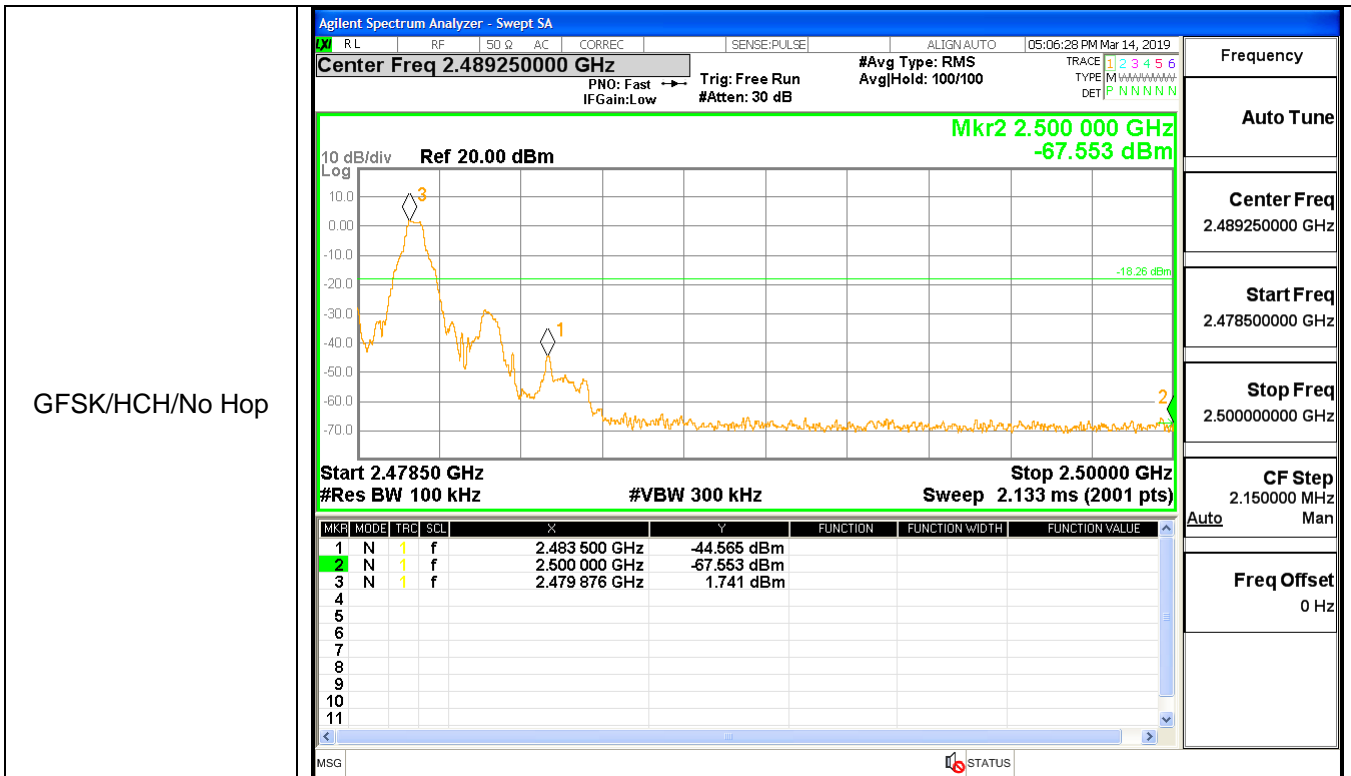
Type	Carrier Frequency(MHz)	Frequency(MHz)	Carrier Frequency Power [dBm]	Bandedge Peak(dBm)	Upper limit(dBm)	Conclusion
1DH5	2402	2390	0.75	-68.90	-19.25	Pass
1DH5	2402	2400	0.75	-38.81	-19.25	Pass
1DH5-Hopping	2402	2390	1.18	-68.20	-18.82	Pass
1DH5-Hopping	2402	2400	1.18	-43.64	-18.82	Pass
1DH5	2480	2483.5	1.74	-44.56	-18.26	Pass
1DH5	2480	2500	1.74	-67.55	-18.26	Pass
1DH5-Hopping	2480	2483.5	2.00	-46.88	-18.00	Pass
1DH5-Hopping	2480	2500	2.00	-65.45	-18.00	Pass
2DH5	2402	2390	-0.13	-67.92	-20.13	Pass
2DH5	2402	2400	-0.13	-41.87	-20.13	Pass
2DH5-Hopping	2402	2390	1.06	-48.11	-18.94	Pass
2DH5-Hopping	2402	2400	1.06	-67.64	-18.94	Pass
2DH5	2480	2483.5	1.04	-48.27	-18.96	Pass
2DH5	2480	2500	1.04	-68.10	-18.96	Pass
2DH5-Hopping	2480	2483.5	0.04	-68.51	-19.96	Pass
2DH5-Hopping	2480	2500	0.04	-40.94	-19.96	Pass
3DH5	2402	2390	-0.05	-68.73	-20.05	Pass
3DH5	2402	2400	-0.05	-34.56	-20.05	Pass
3DH5-Hopping	2402	2390	0.10	-66.94	-19.90	Pass
3DH5-Hopping	2402	2400	0.10	-36.06	-19.90	Pass
3DH5	2480	2483.5	1.16	-45.89	-18.84	Pass
3DH5	2480	2500	1.16	-69.92	-18.84	Pass
3DH5-Hopping	2480	2483.5	1.10	-55.84	-18.90	Pass
3DH5-Hopping	2480	2500	1.10	-66.84	-18.90	Pass

### Test Graph

#### Graphs

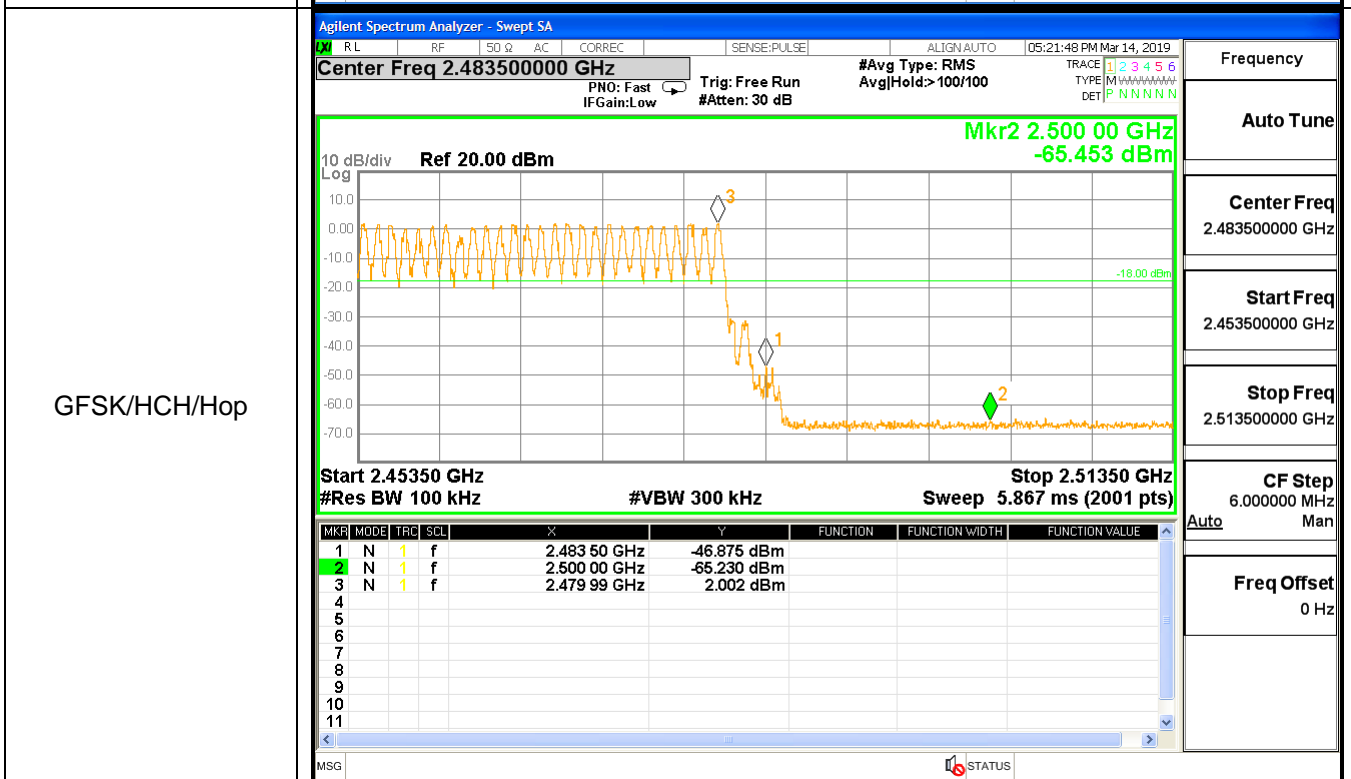






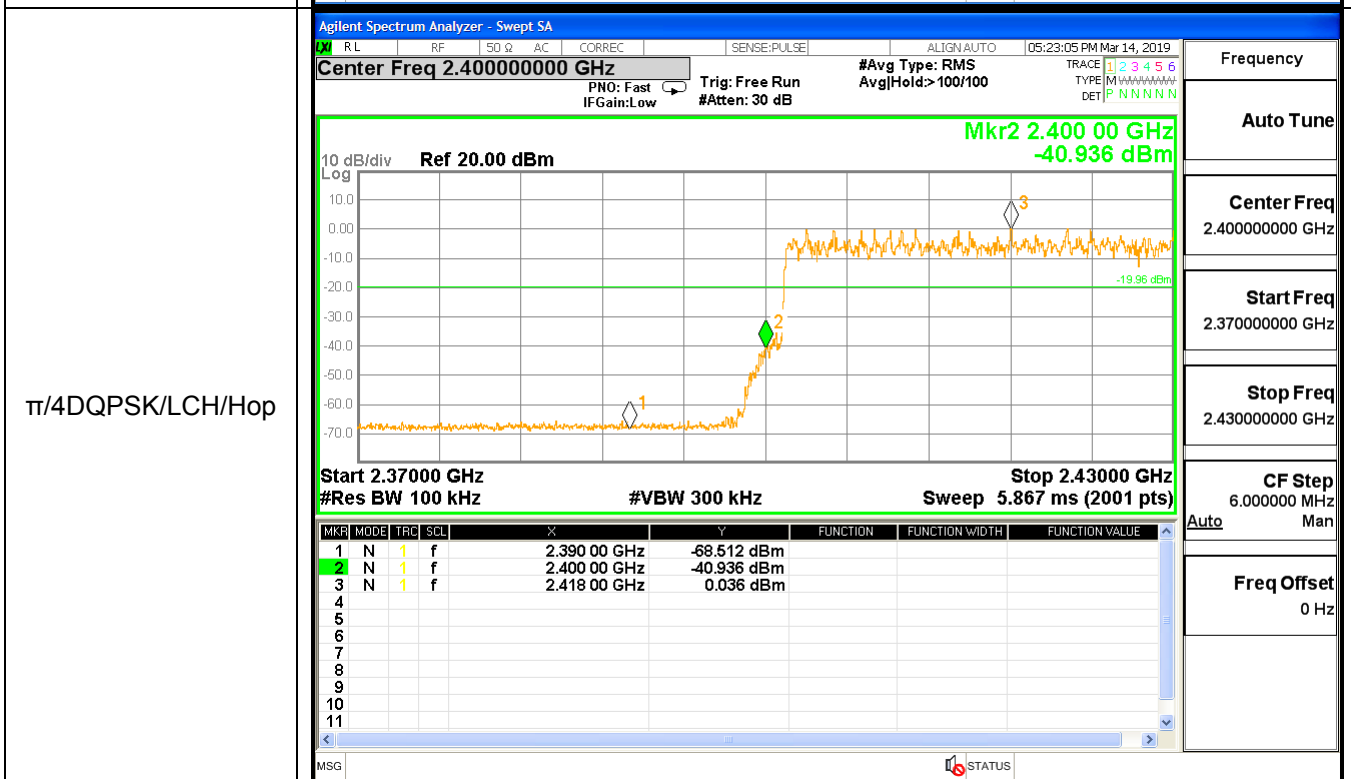
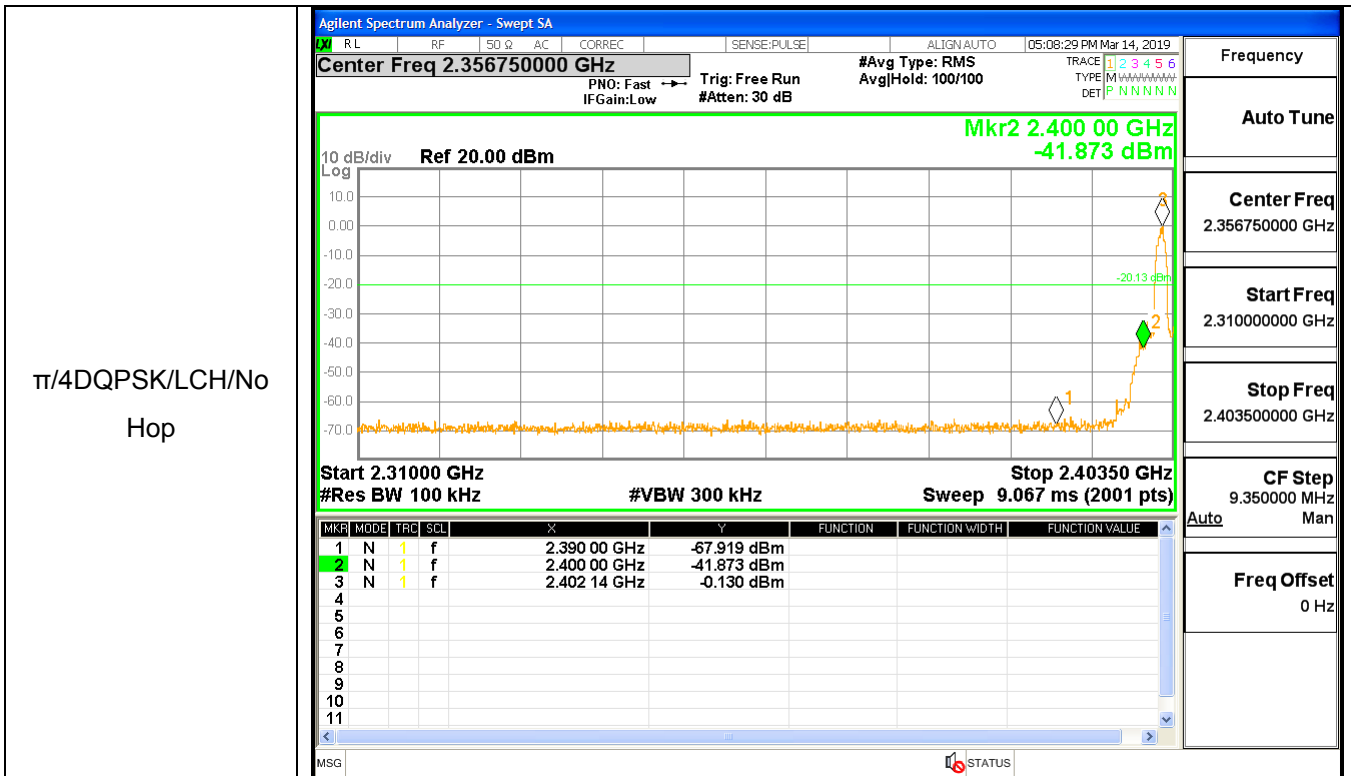
GFSK/HCH/No Hop

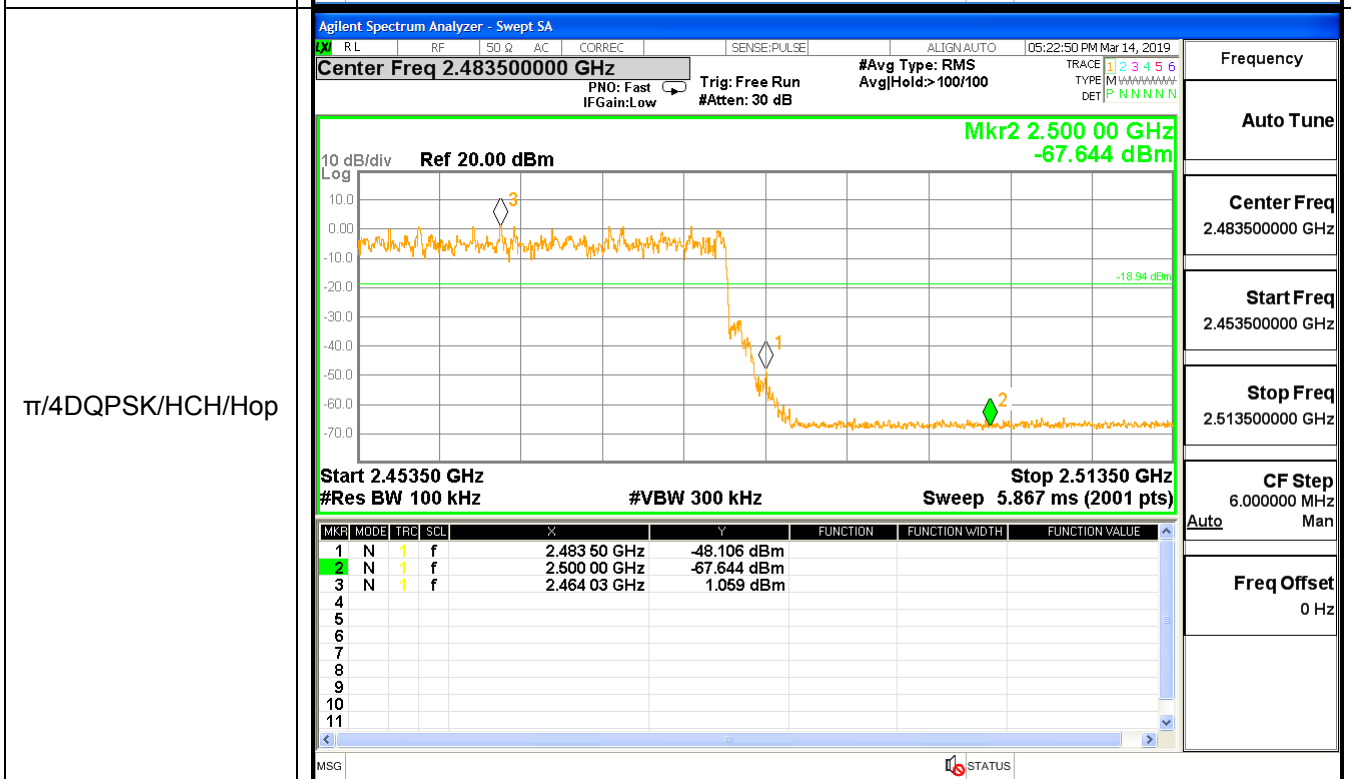
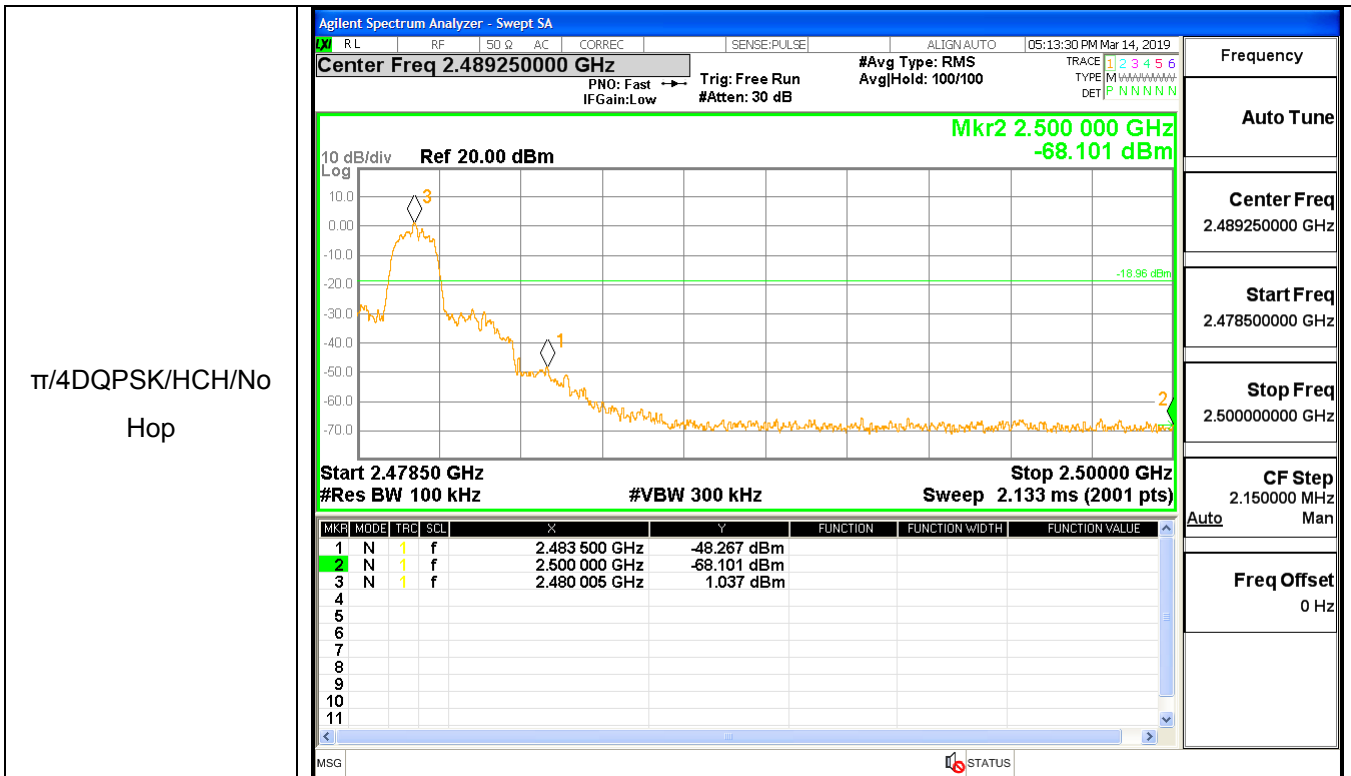
Frequency
Auto Tune
Center Freq 2.489250000 GHz
Start Freq 2.478500000 GHz
Stop Freq 2.500000000 GHz
CF Step 2.150000 MHz Auto Man
Freq Offset 0 Hz

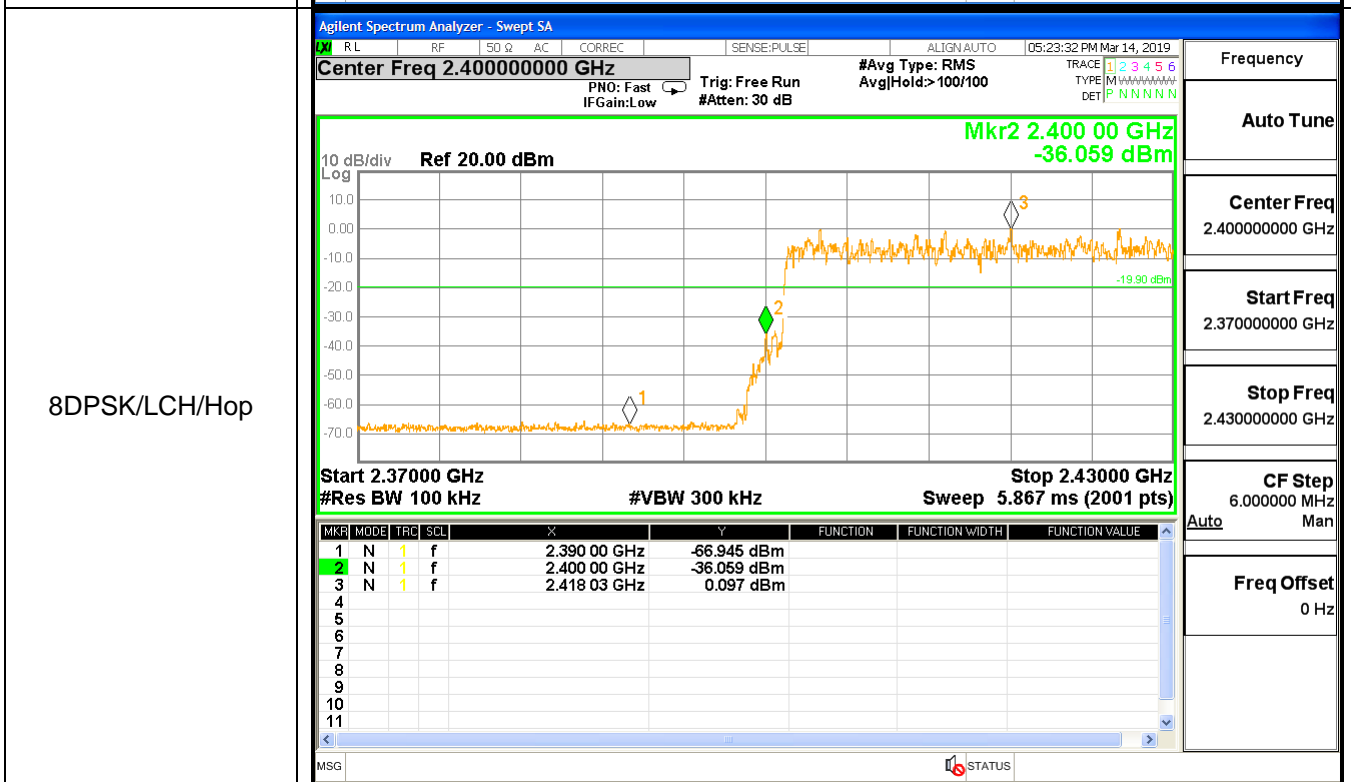
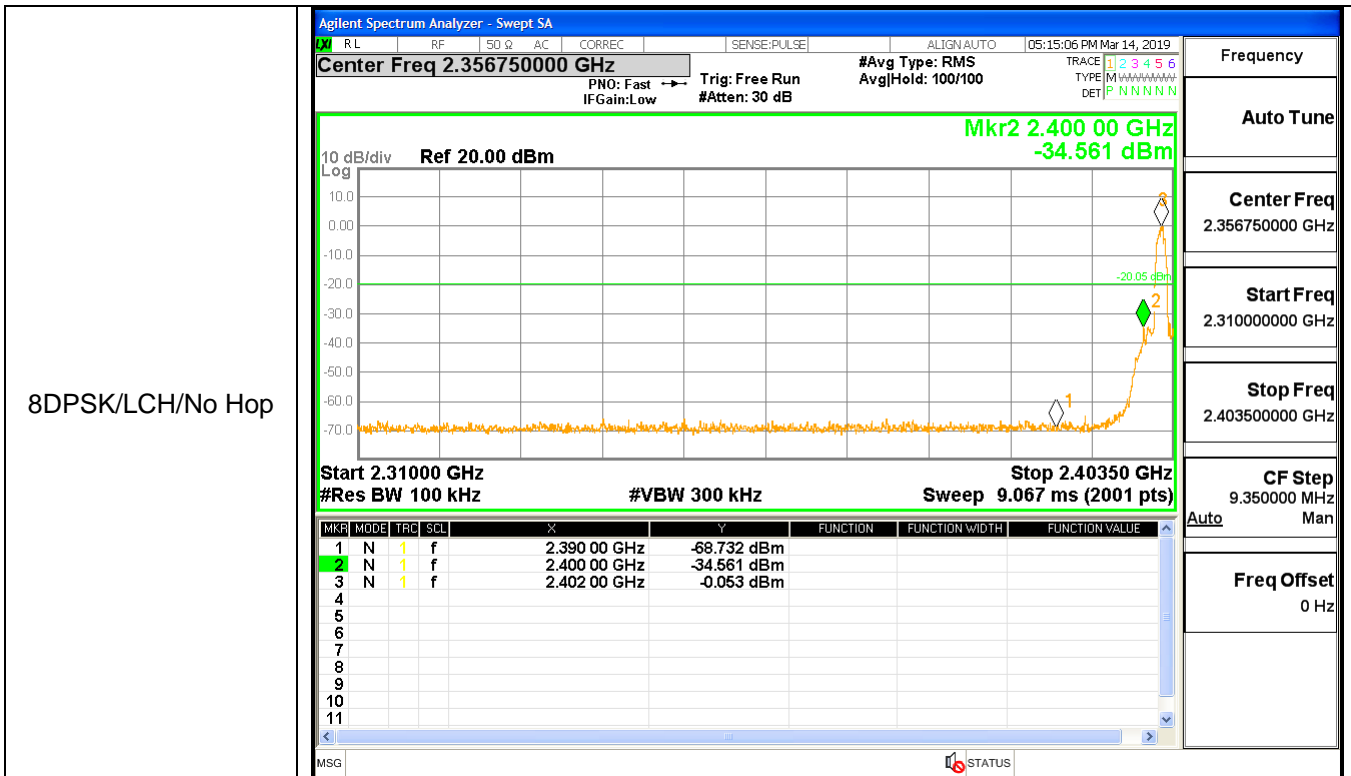


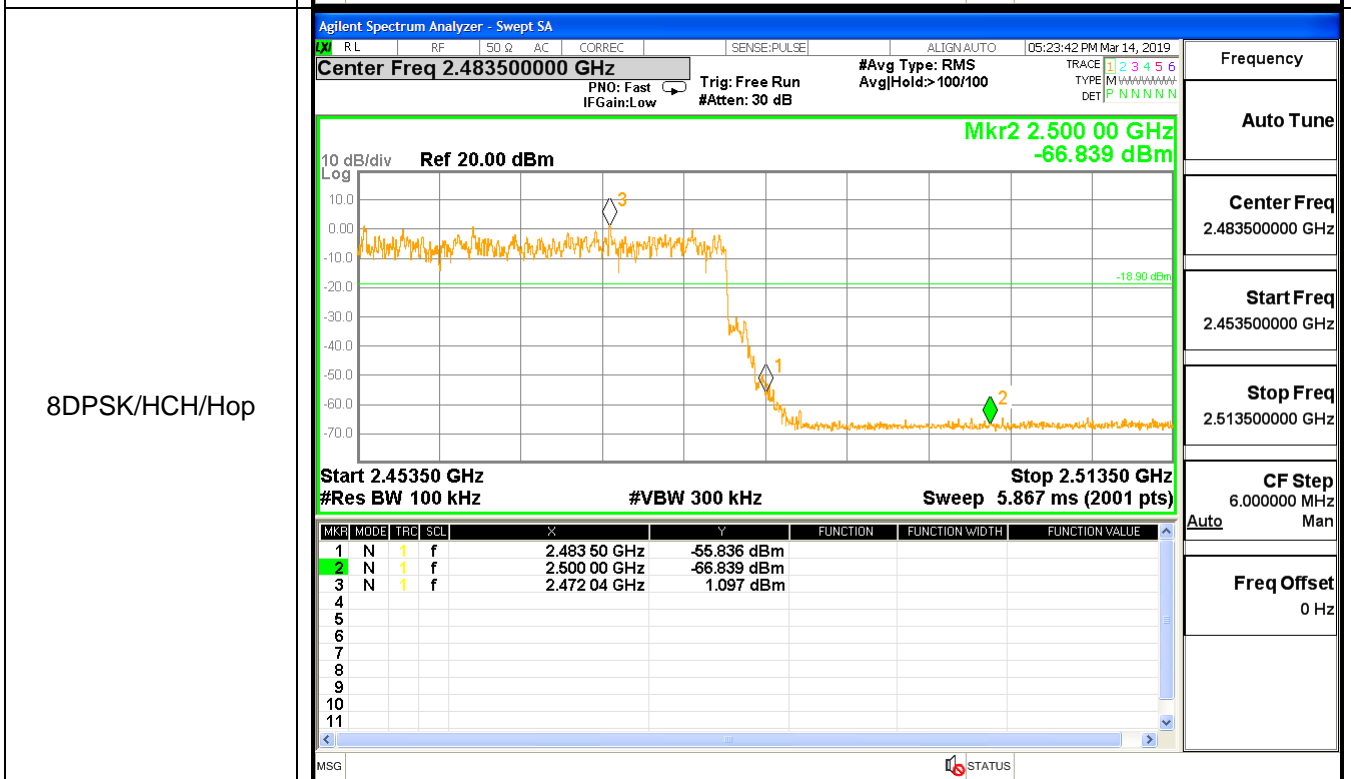
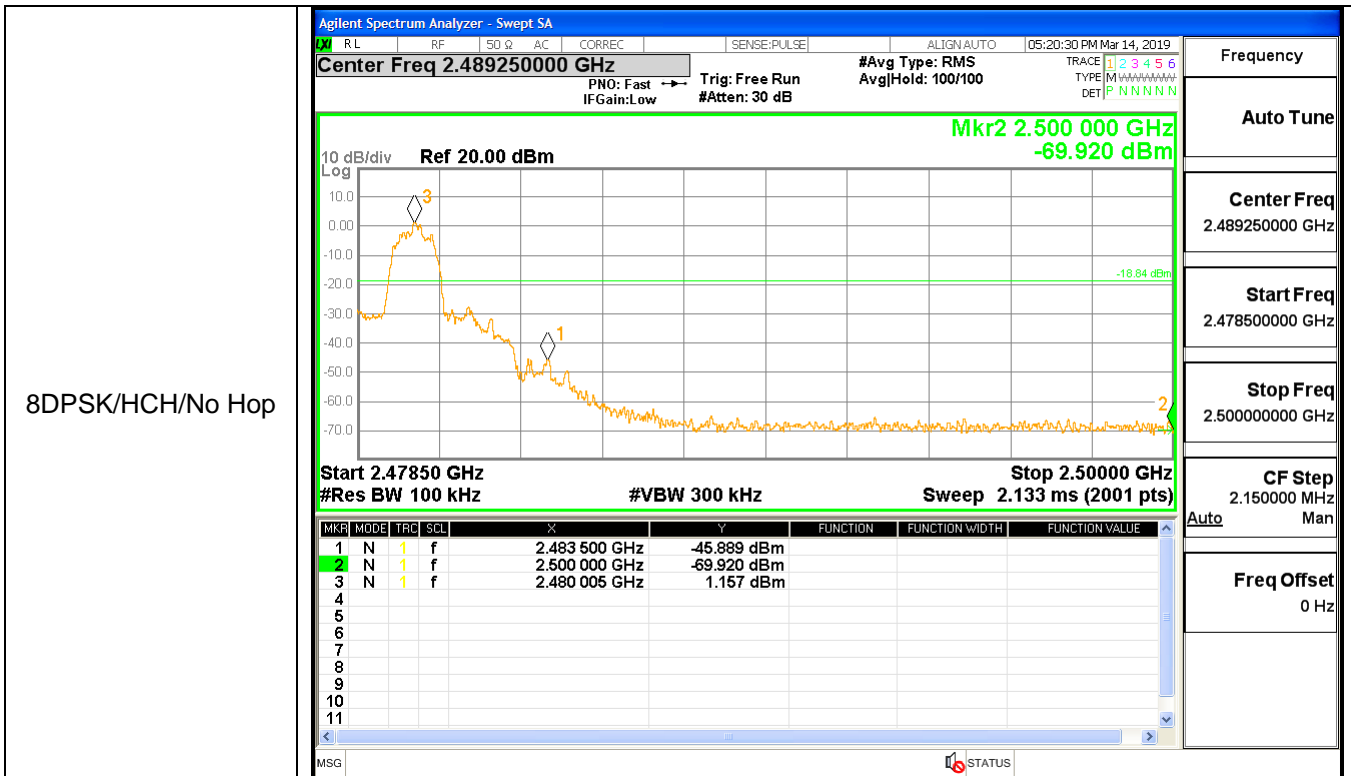
GFSK/HCH/Hop

Frequency
Auto Tune
Center Freq 2.483500000 GHz
Start Freq 2.453500000 GHz
Stop Freq 2.513500000 GHz
CF Step 6.000000 MHz Auto Man
Freq Offset 0 Hz

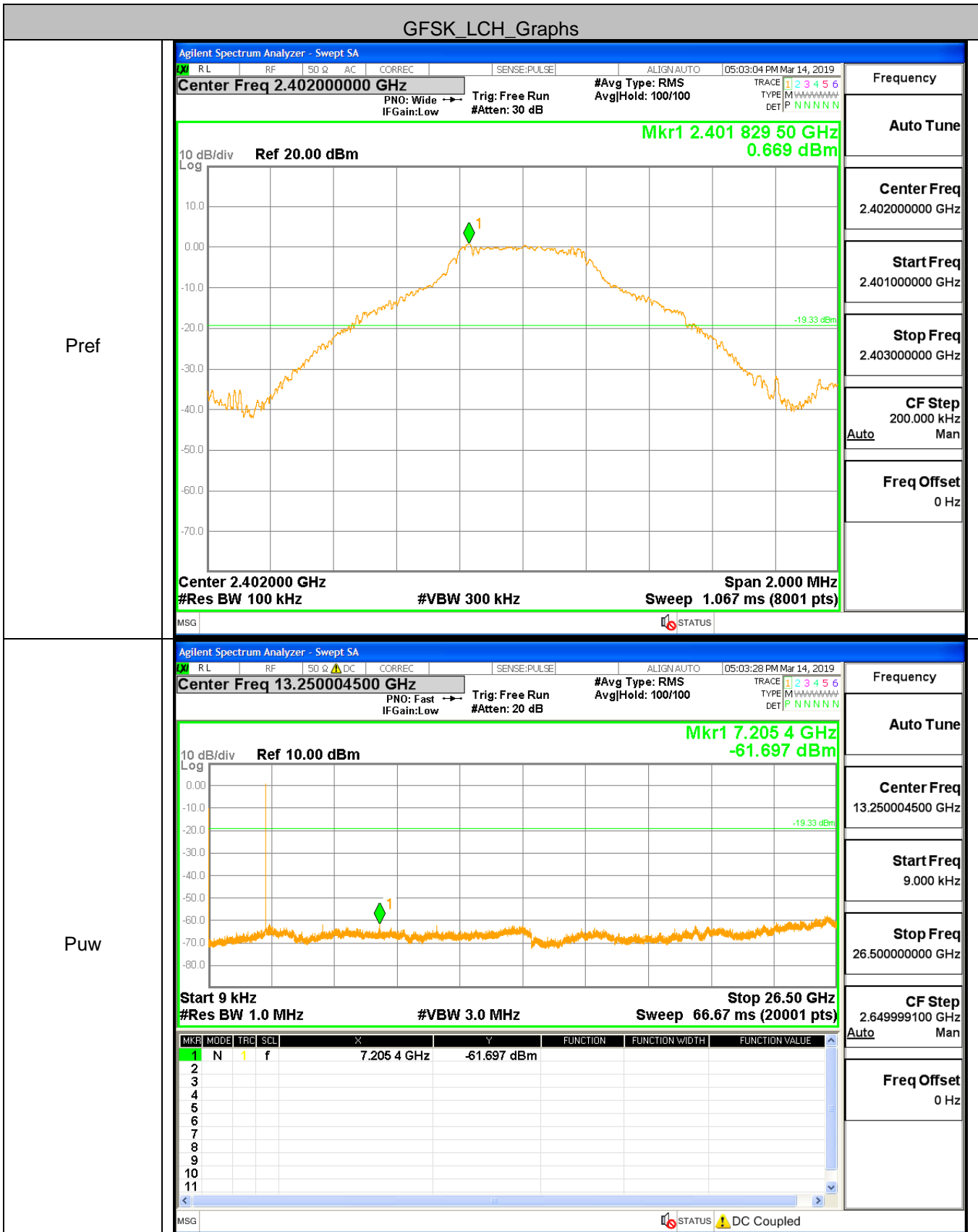


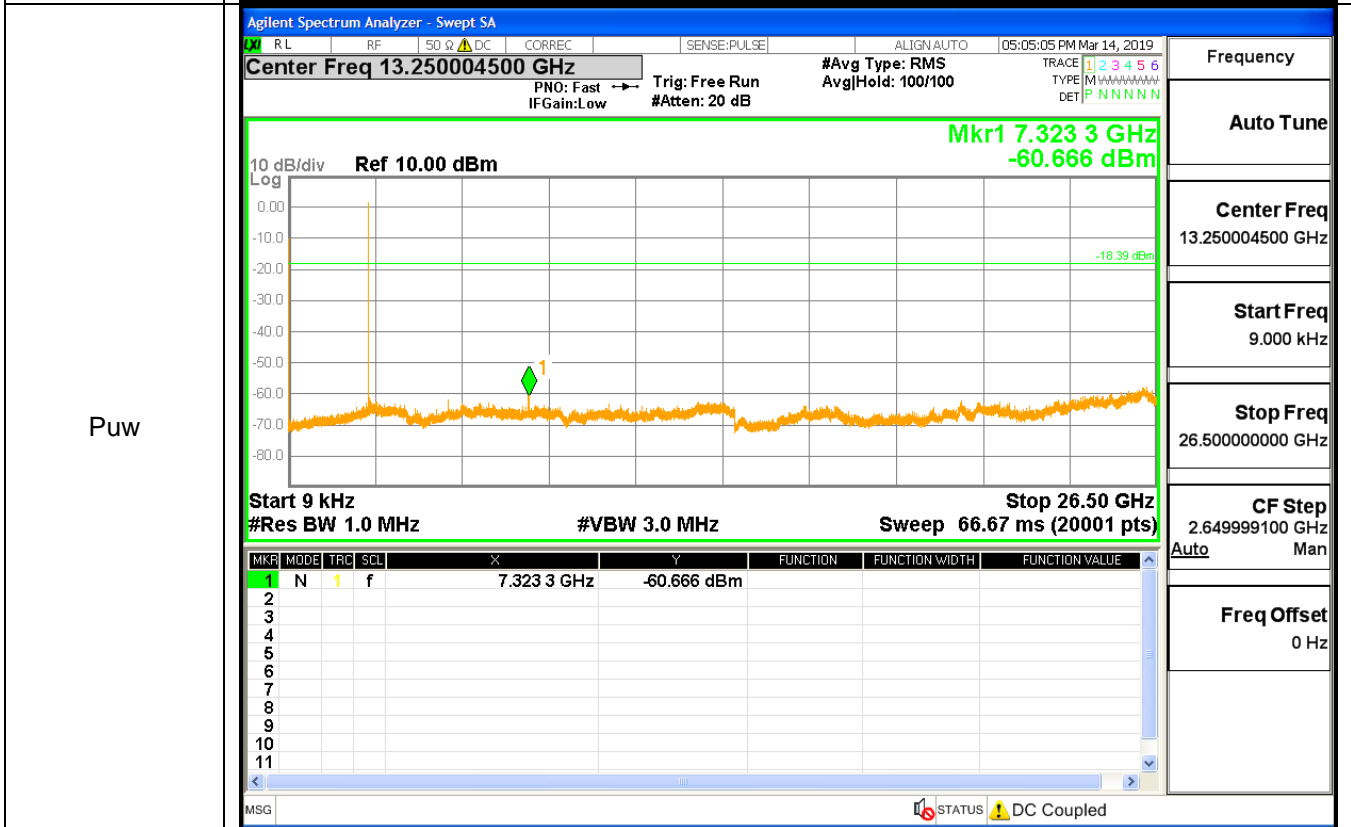
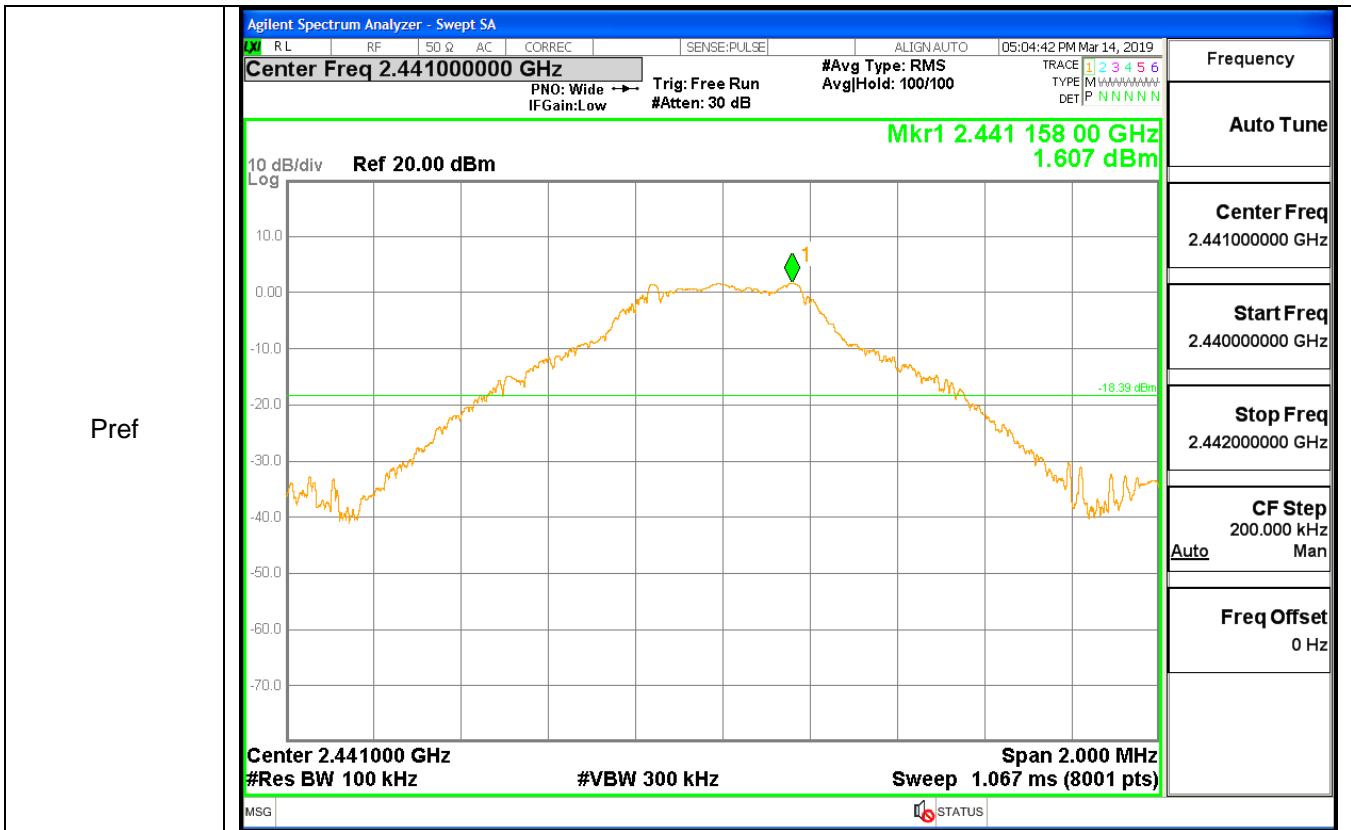




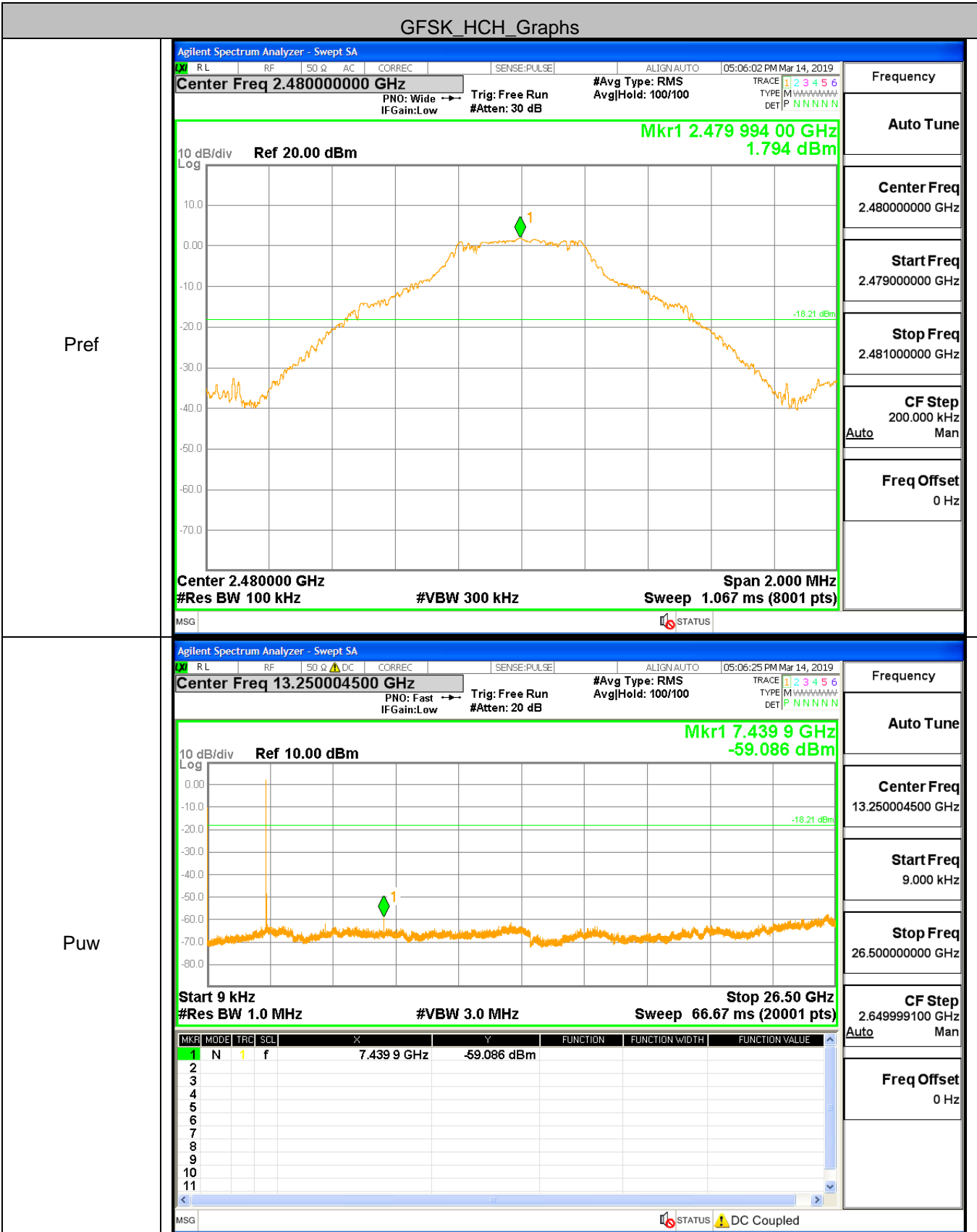


### A.7 RF Conducted Spurious Emissions Test Graph



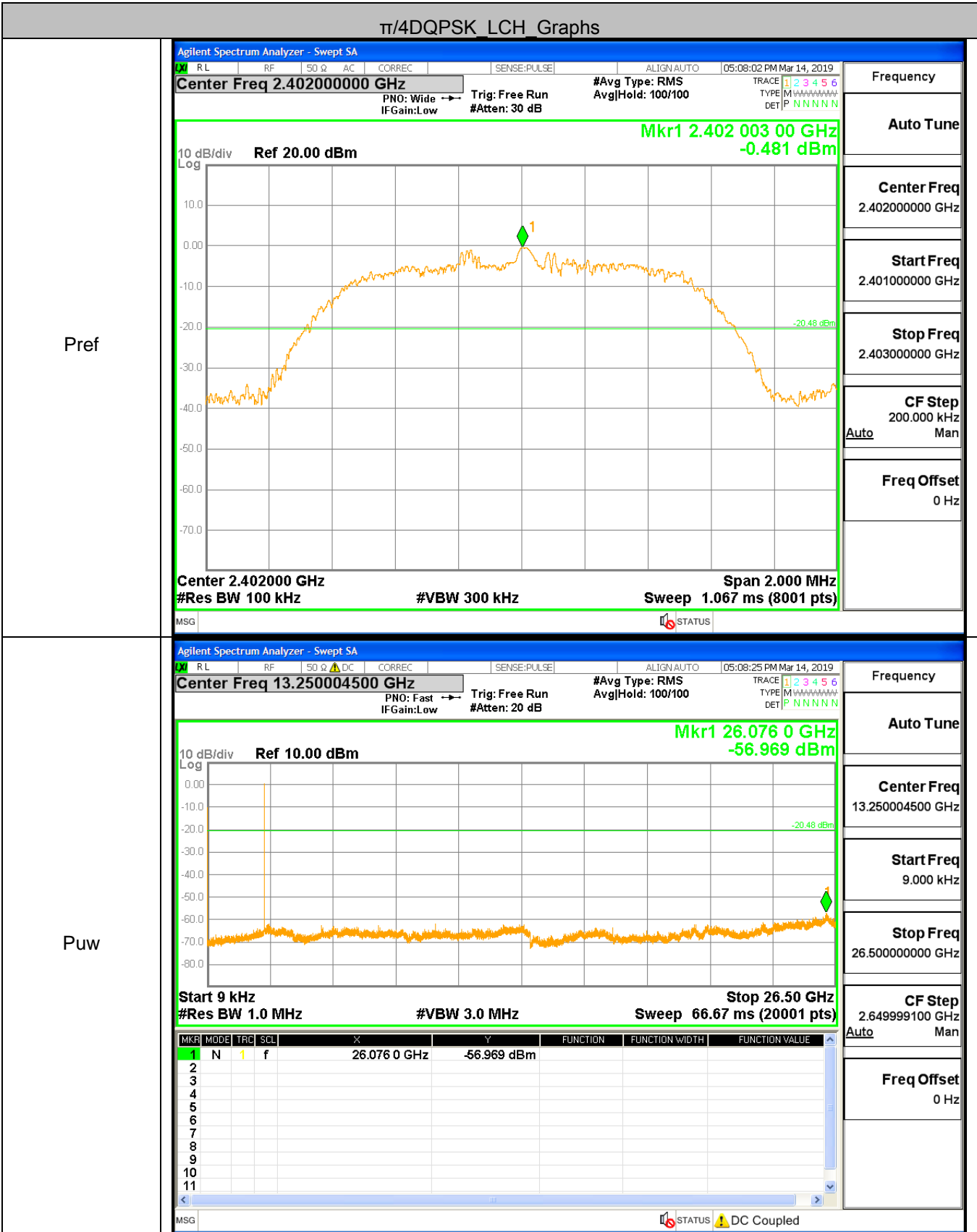


GFSK\_HCH\_Graphs

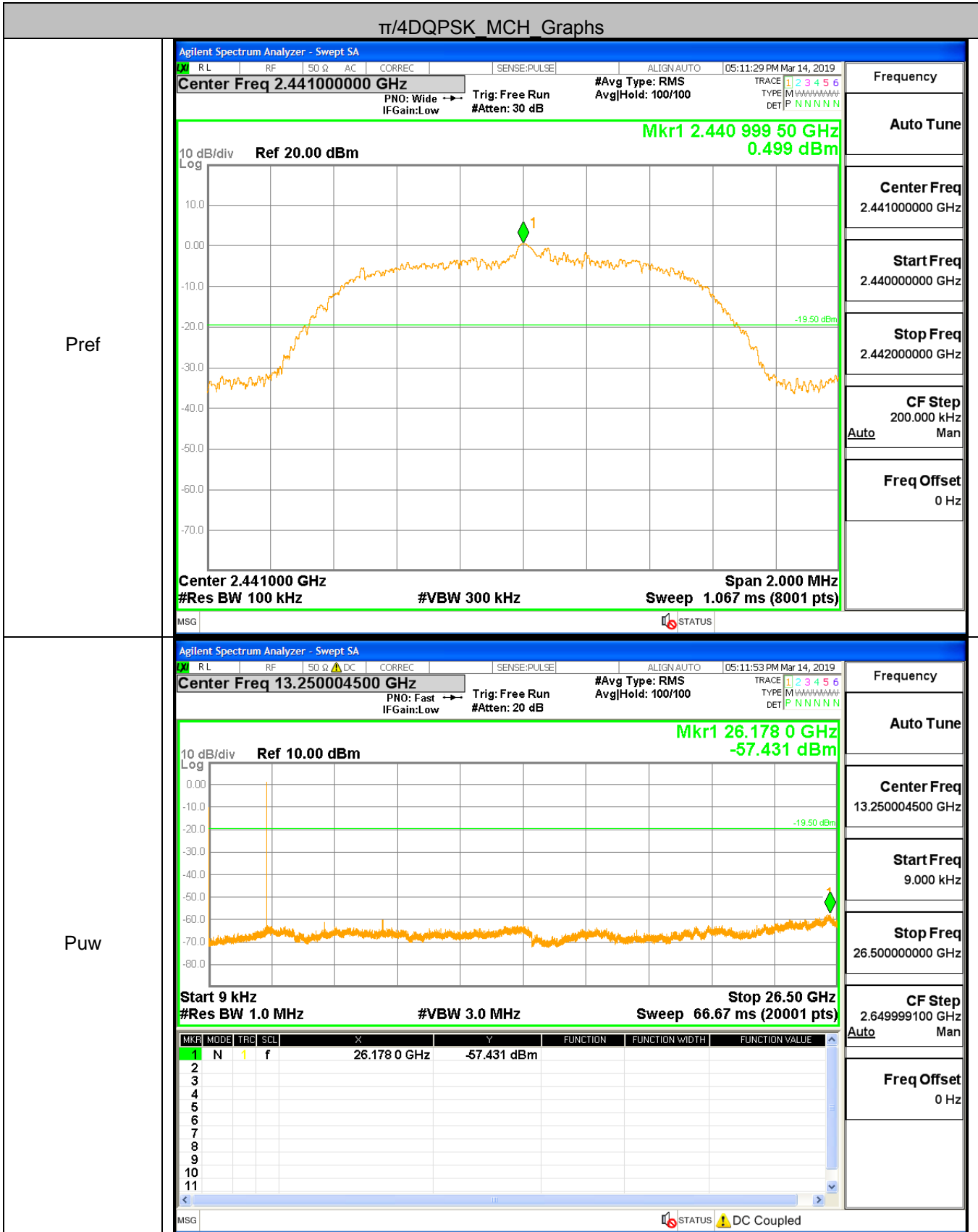




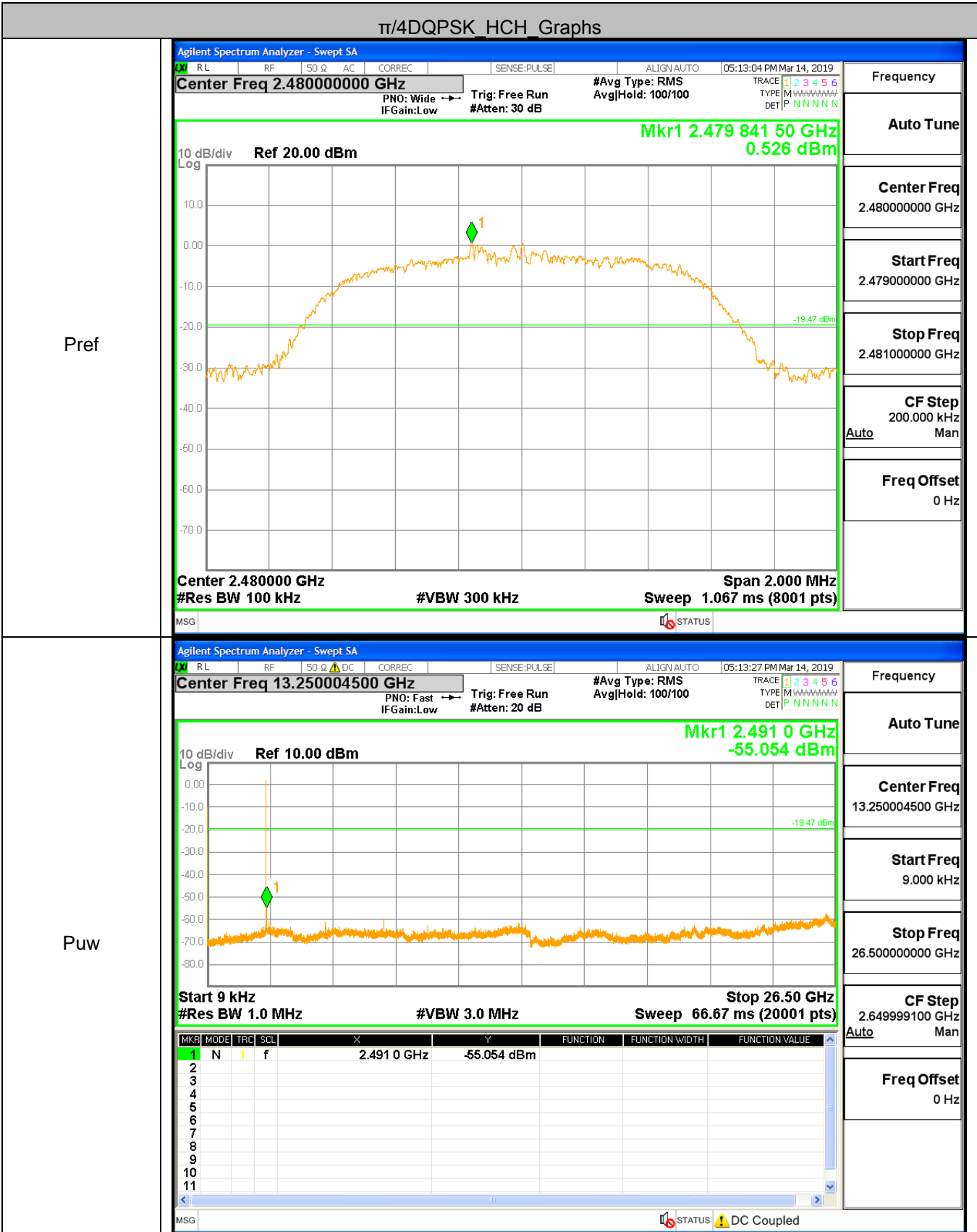
$\pi/4$ DQPSK LCH Graphs



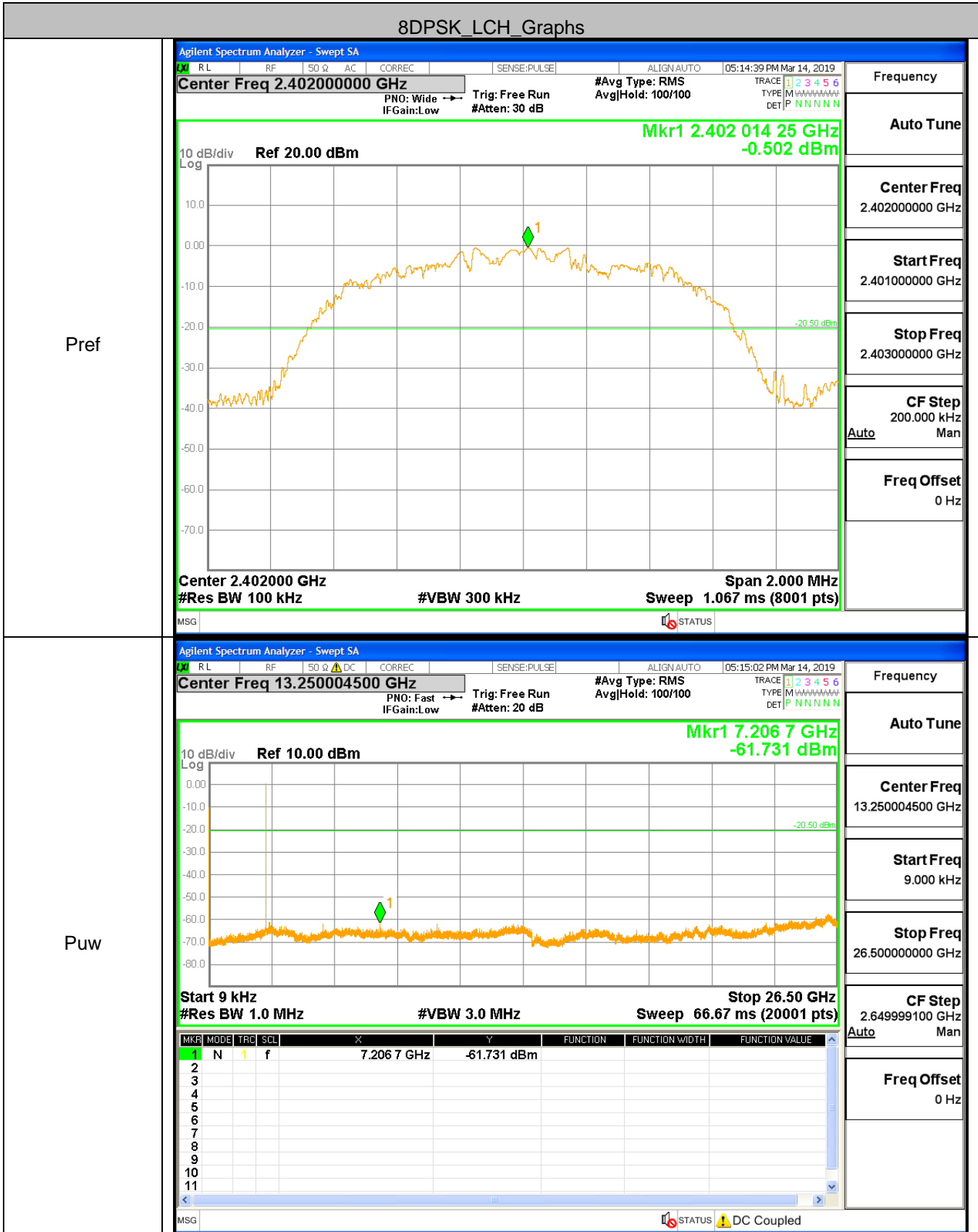
$\pi/4$ DQPSK MCH Graphs



$\pi/4$ DQPSK HCH Graphs



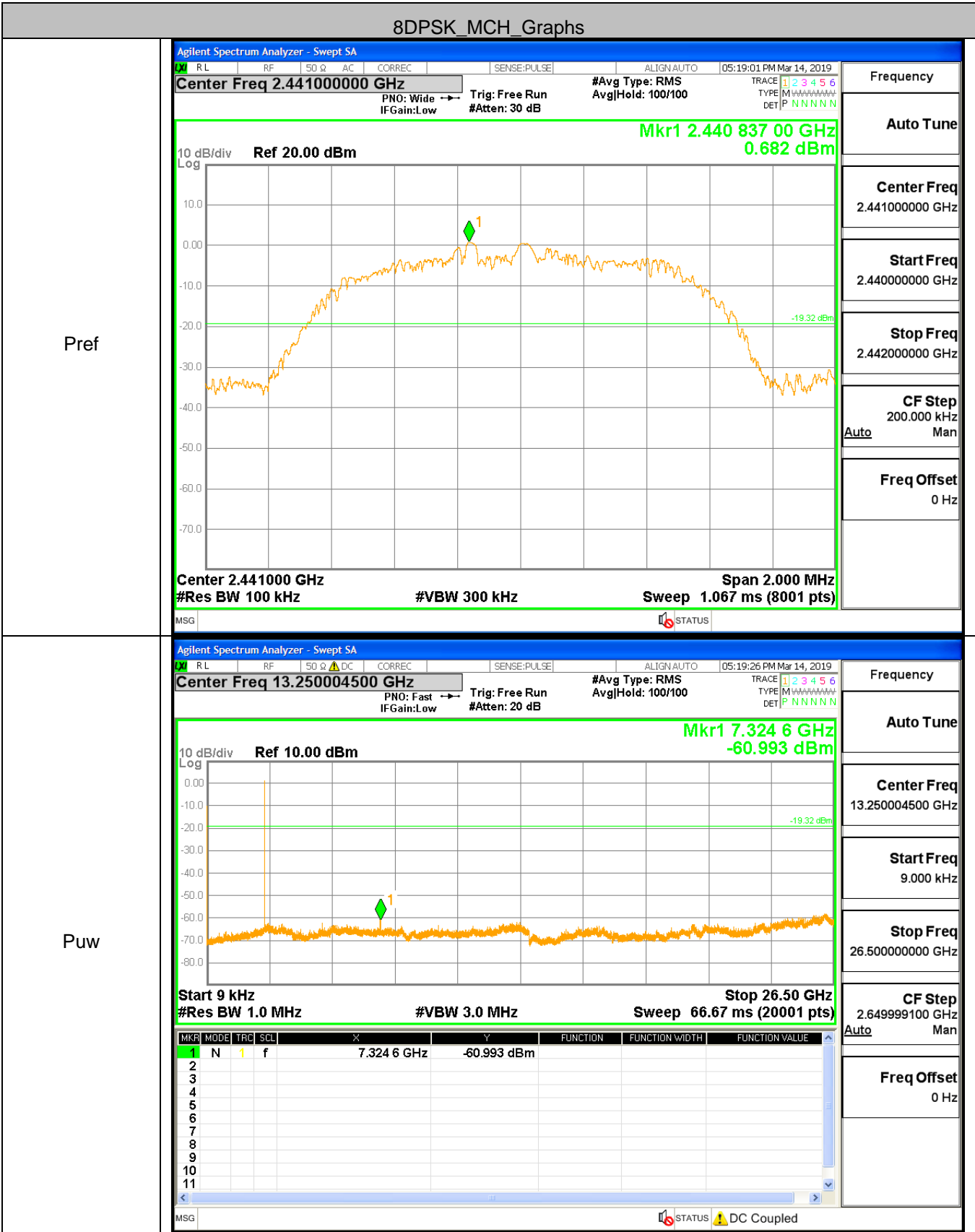
8DPSK\_LCH\_Graphs



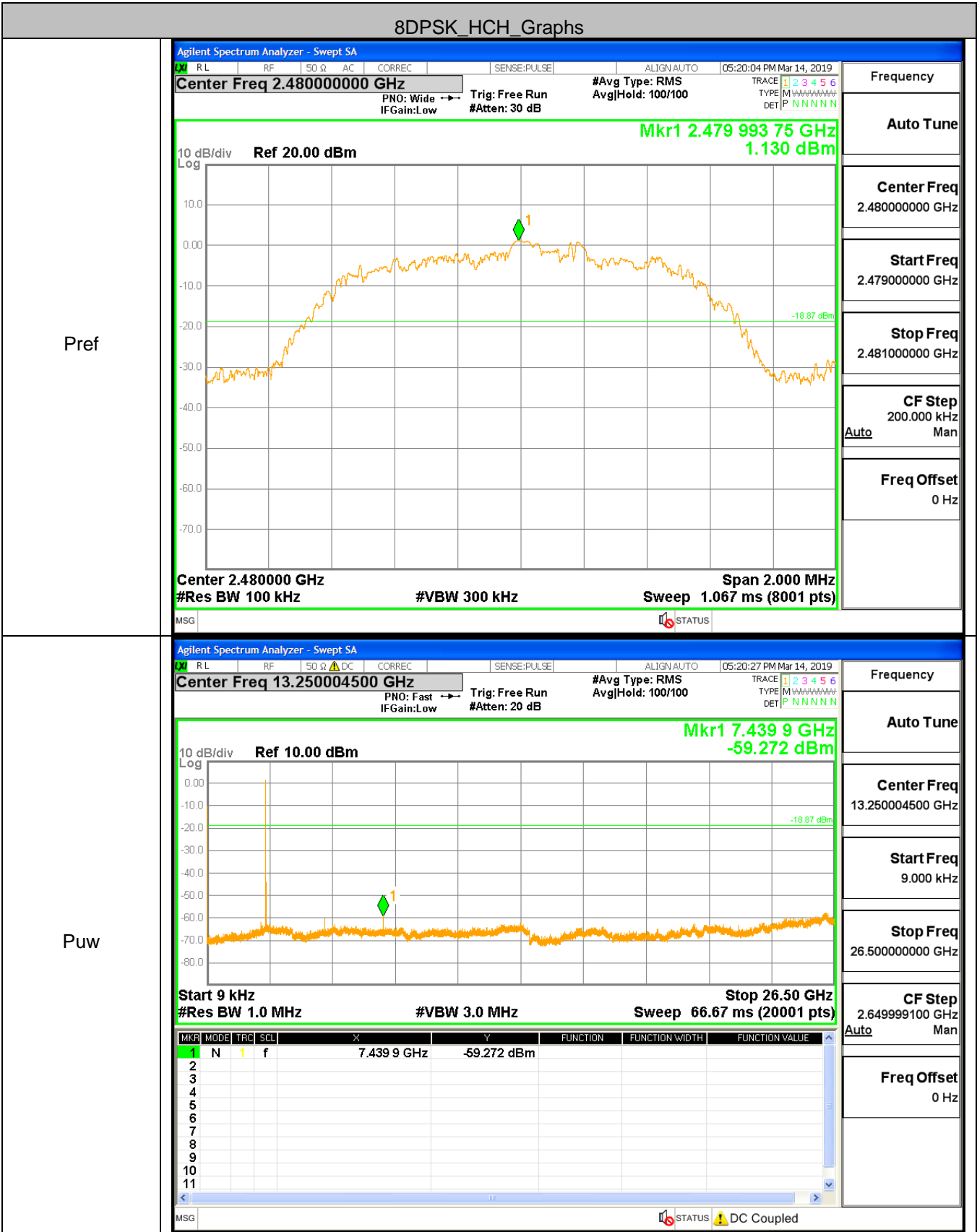
Pref

Puw

8DPSK\_MCH\_Graphs



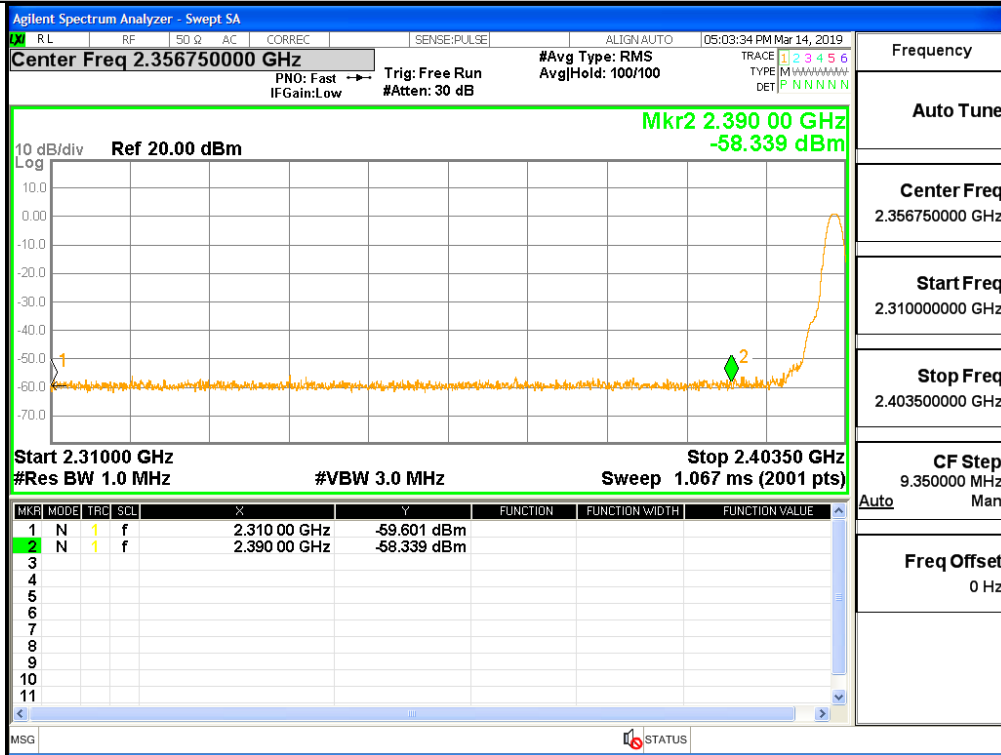
8DPSK\_HCH\_Graphs



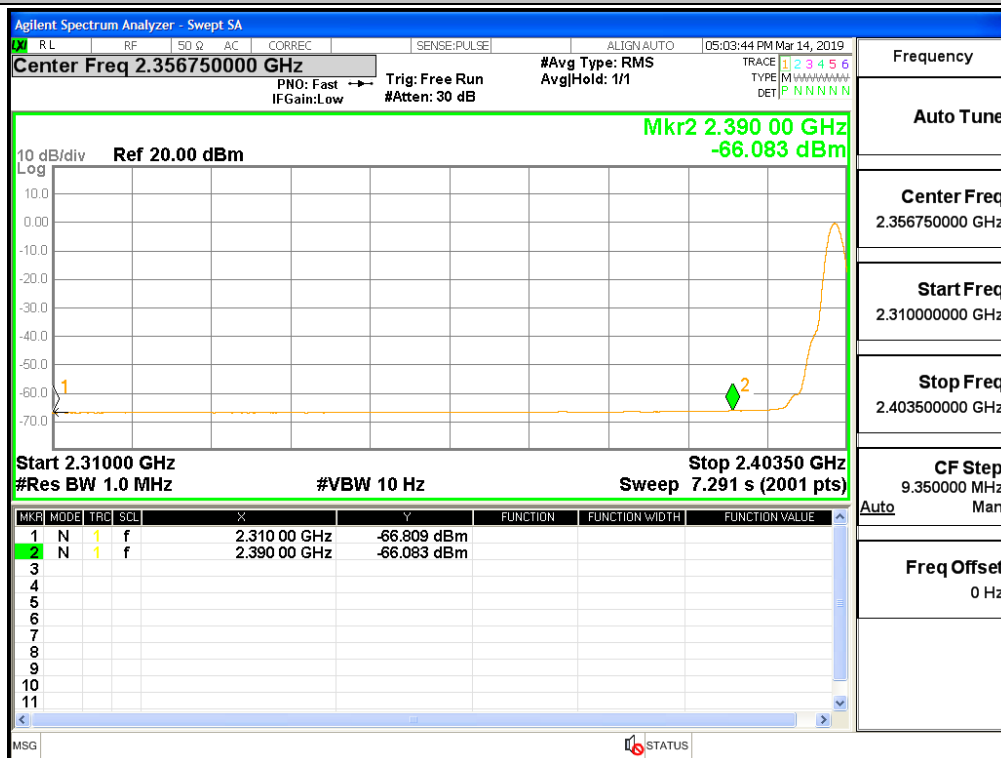
**A.8 Restrict-band band-edge measurements**

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	-59.60	37.6	74	-66.81	30.39	54	Pass
1DH5	2402	2390	2.00	0.00	-58.34	38.86	74	-66.08	31.12	54	Pass
1DH5	2480	2483.5	2.00	0.00	-41.97	55.23	74	-45.97	51.23	54	Pass
1DH5	2480	2500	2.00	0.00	-58.78	38.42	74	-65.8	31.40	54	Pass
2DH5	2402	2310	2.00	0.00	-58.13	39.07	74	-66.82	30.38	54	Pass
2DH5	2402	2390	2.00	0.00	-59.39	37.81	74	-66.26	30.94	54	Pass
2DH5	2480	2483.5	2.00	0.00	-41.48	55.72	74	-46.7	50.50	54	Pass
2DH5	2480	2500	2.00	0.00	-59.39	37.81	74	-65.81	31.39	54	Pass
3DH5	2402	2310	2.00	0.00	-58.36	38.84	74	-66.81	30.39	54	Pass
3DH5	2402	2390	2.00	0.00	-59.89	37.31	74	-66.23	30.97	54	Pass
3DH5	2480	2483.5	2.00	0.00	-40.11	57.09	74	-46.65	50.55	54	Pass
3DH5	2480	2500	2.00	0.00	-59.24	37.96	74	-65.83	31.37	54	Pass

Restrict-band band-edge measurements\_2402\_PEAK\_DH5

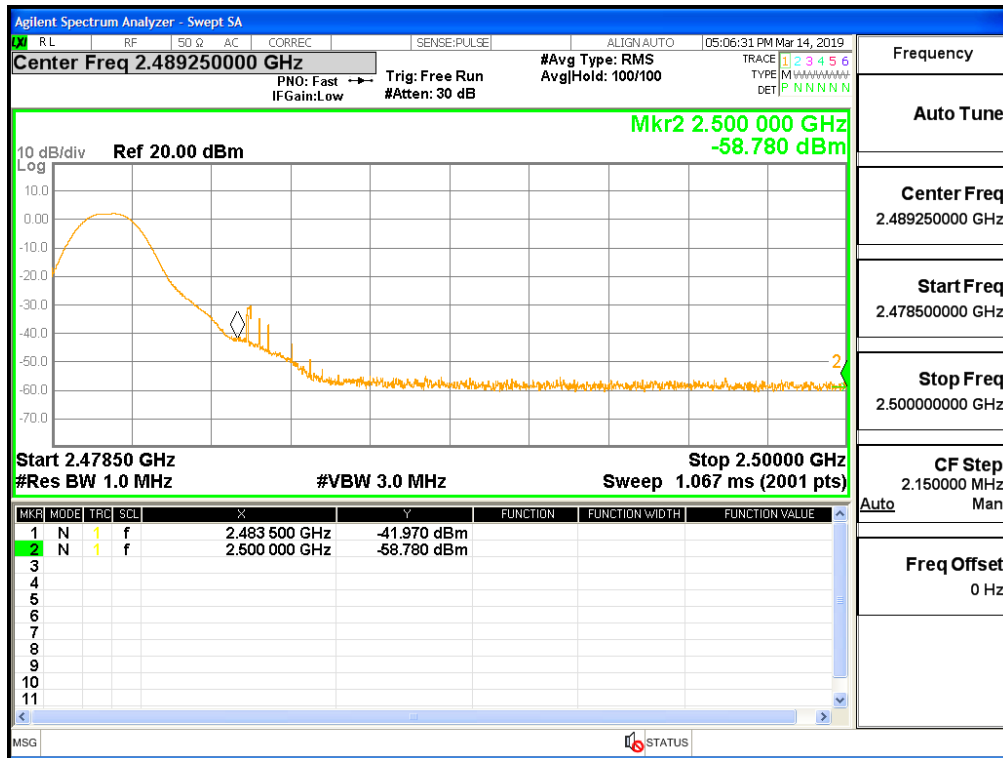


Restrict-band band-edge measurements\_2402\_AV\_DH5

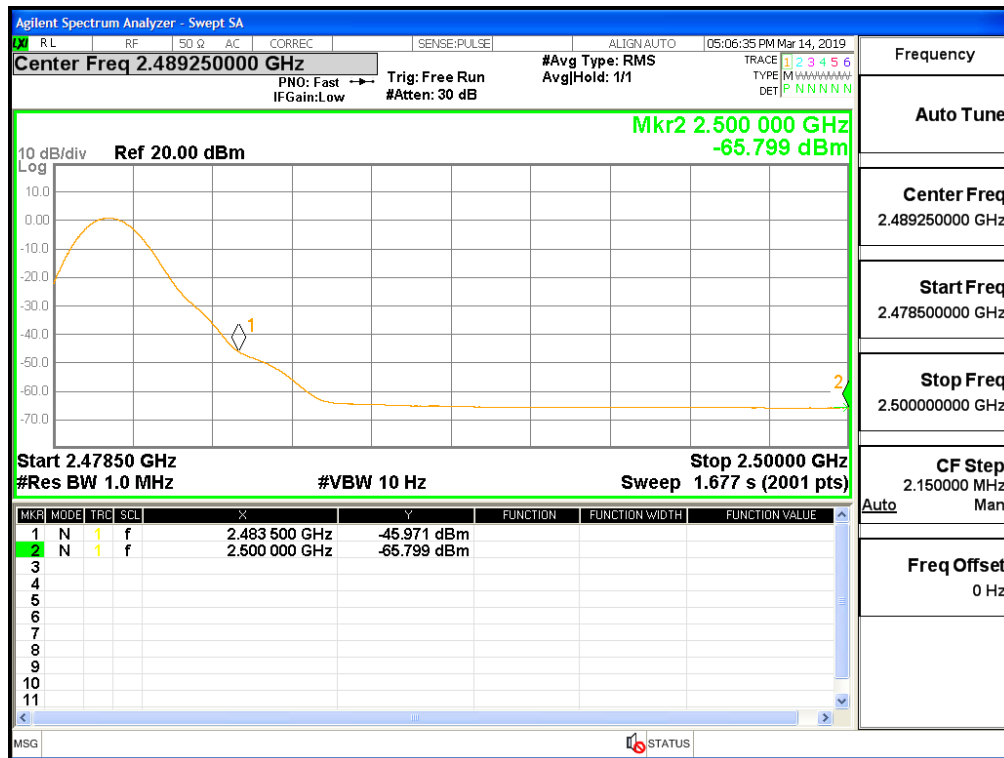




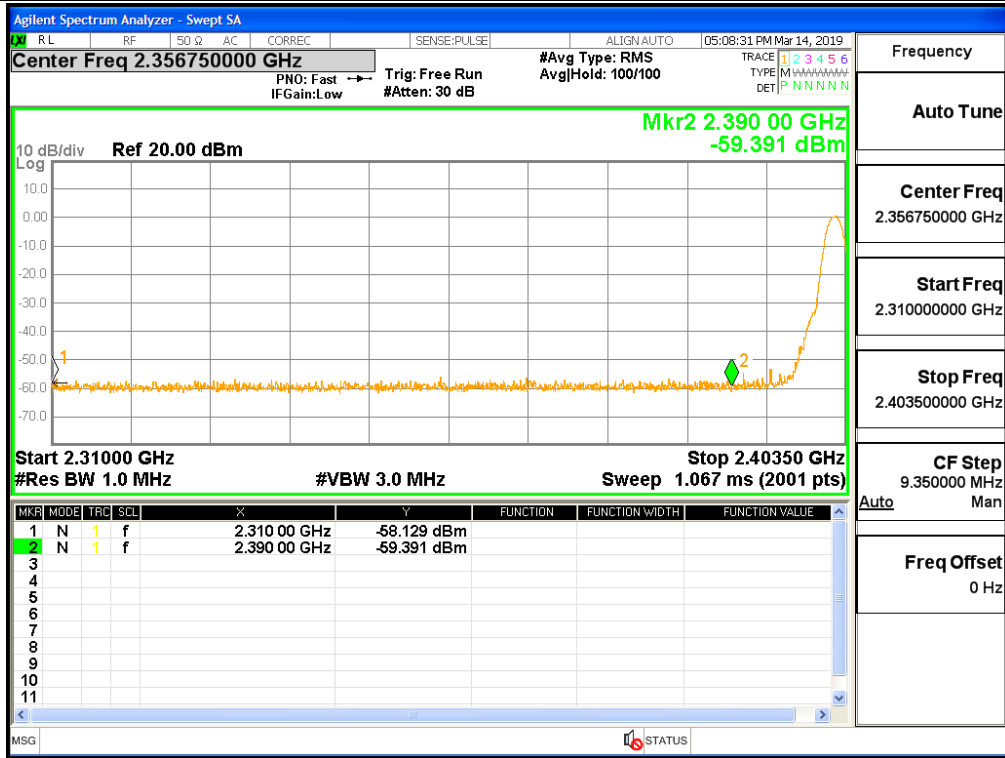
Restrict-band band-edge measurements\_2480\_PEAK\_DH5



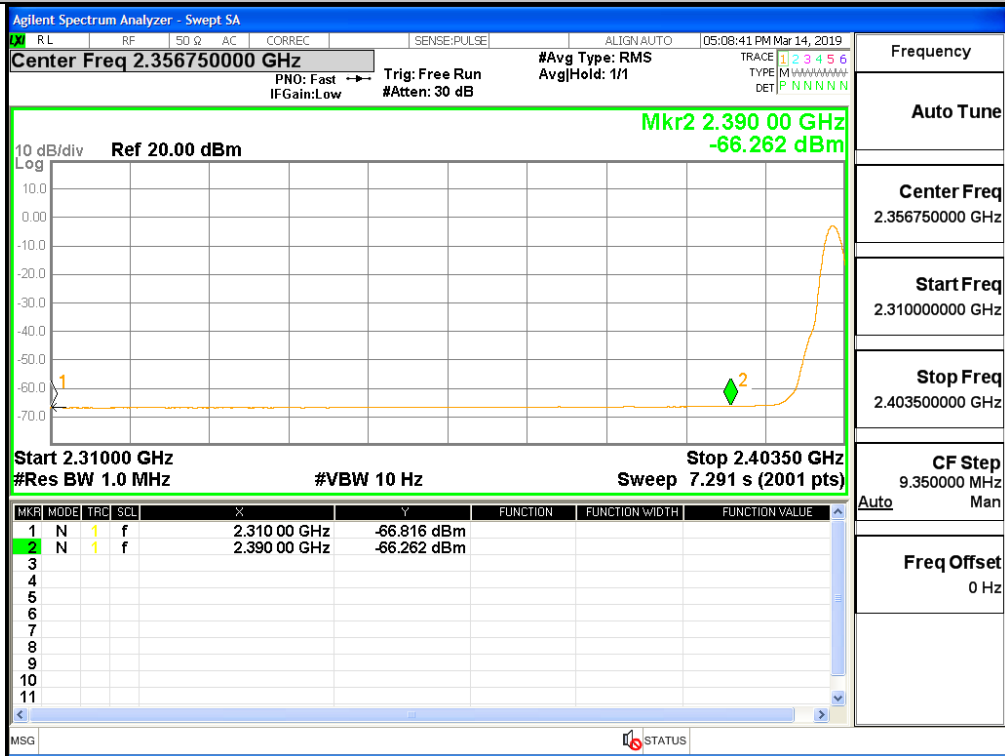
Restrict-band band-edge measurements\_2480\_AV\_DH5



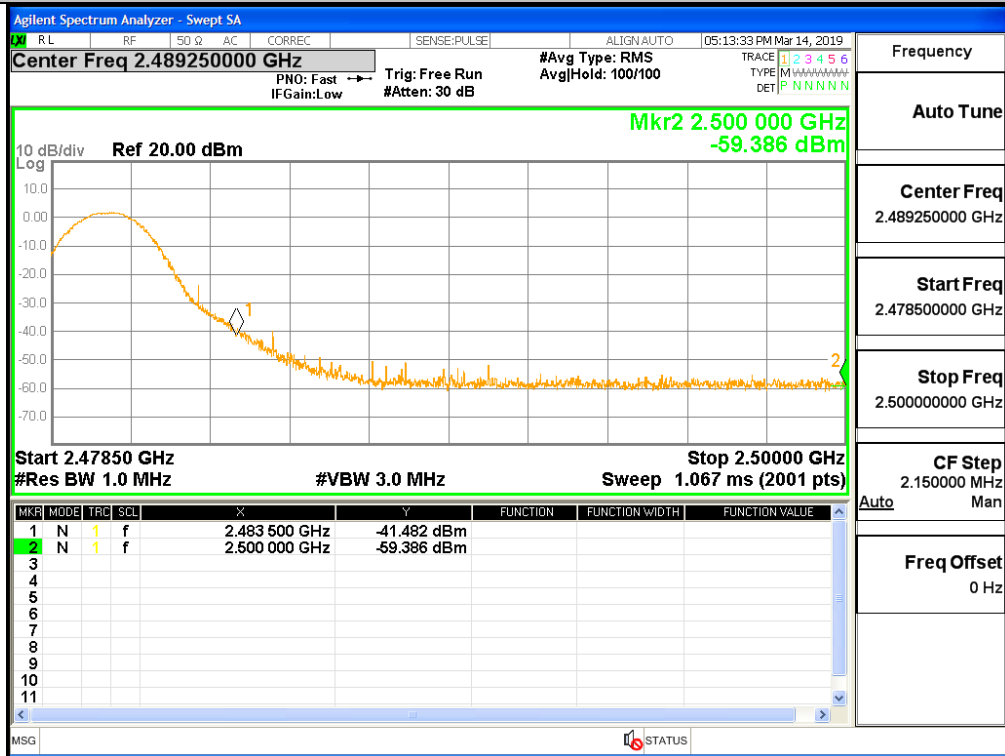
Restrict-band band-edge measurements\_2402\_PEAK\_2DH5



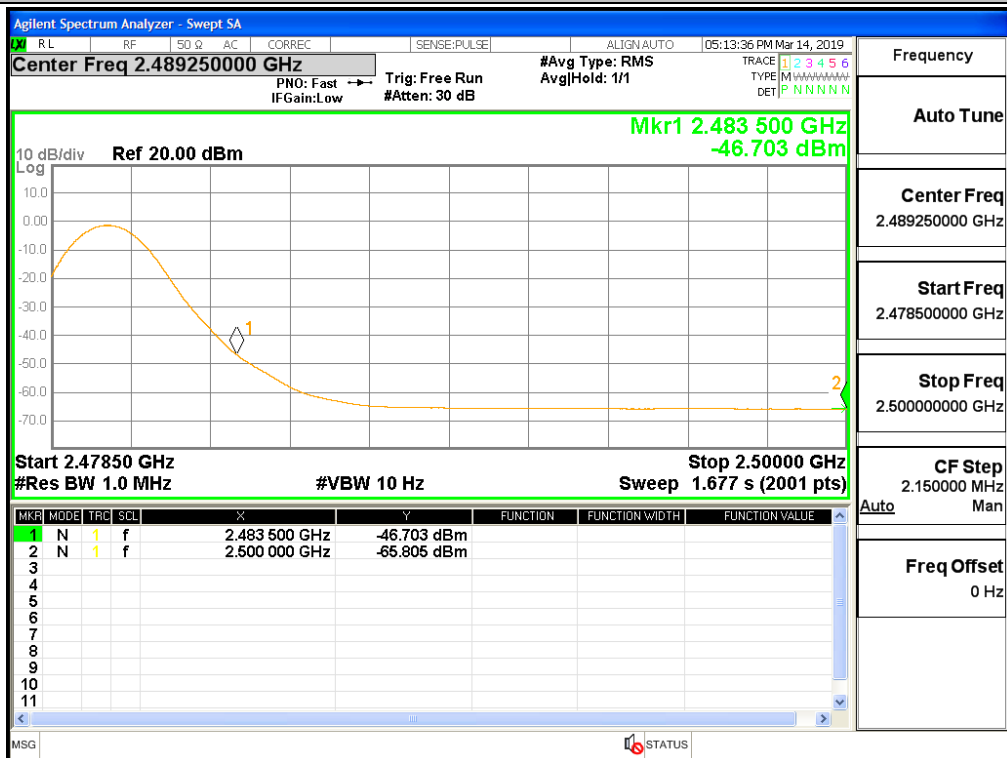
Restrict-band band-edge measurements\_2402\_AV\_2DH5



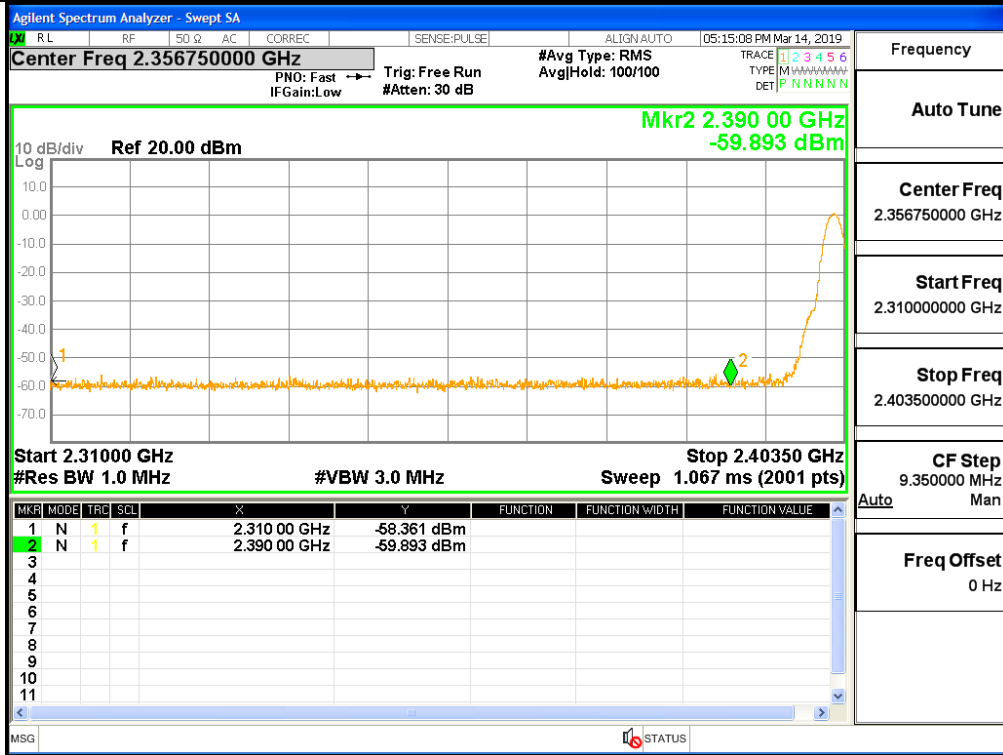
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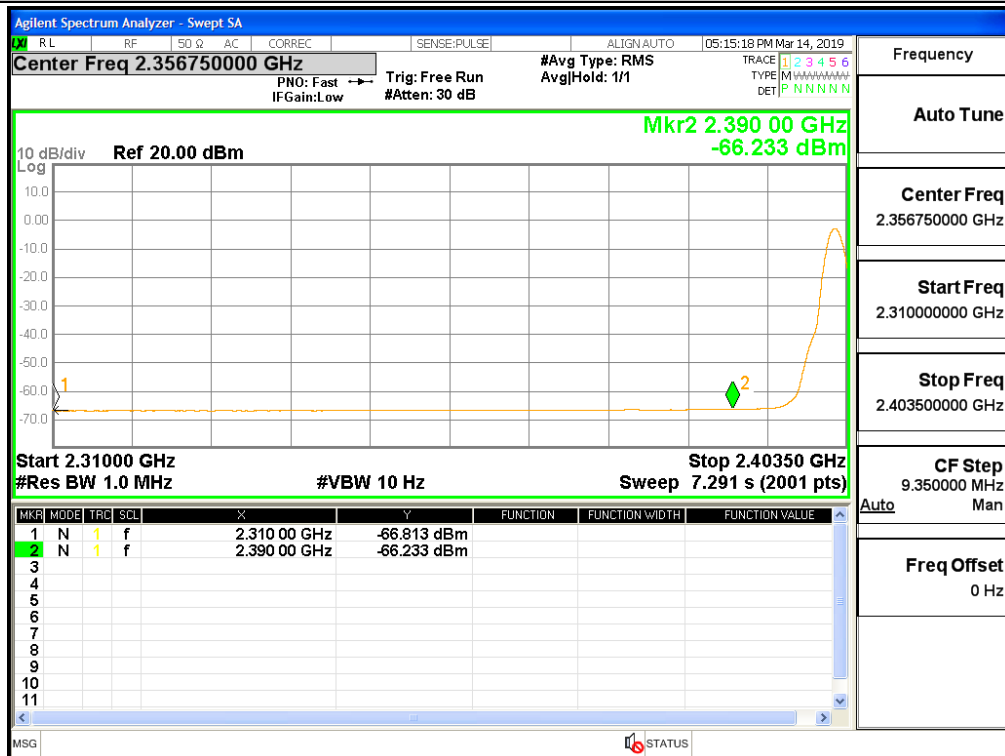
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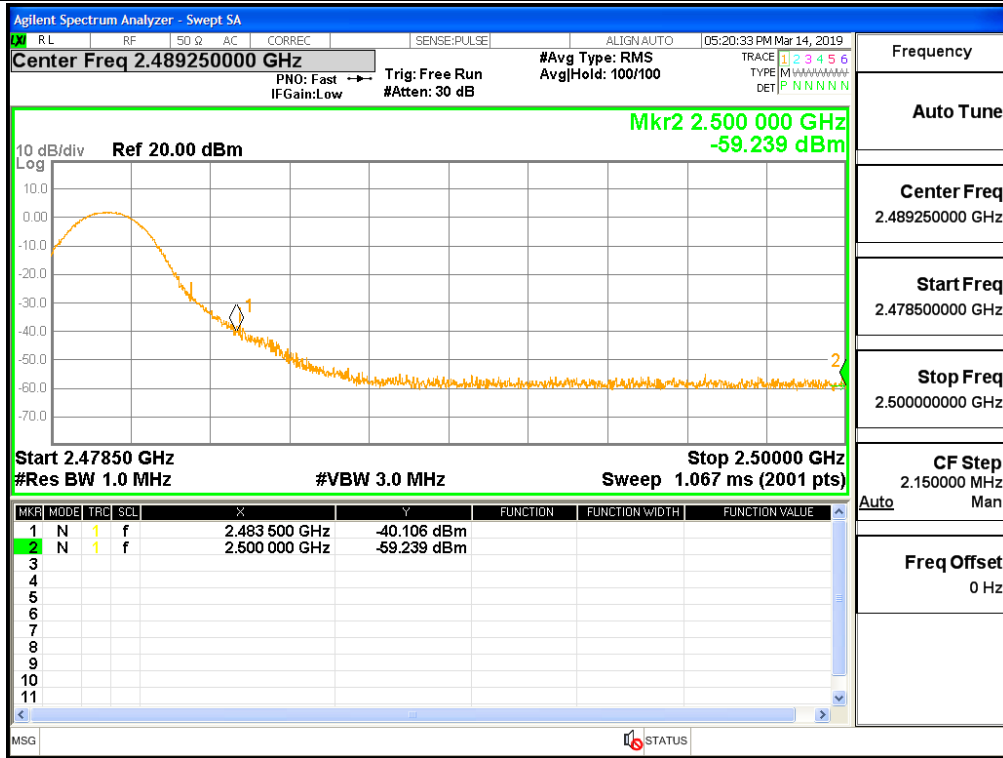
Restrict-band band-edge measurements\_2402\_PEAK\_3DH5



Restrict-band band-edge measurements\_2402\_AV\_3DH5



Restrict-band band-edge measurements\_2480\_PEAK\_3DH5



Restrict-band band-edge measurements\_2480\_AV\_3DH5

