

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

Product Name: Mobile phone

Trade Mark: SAGI

Test Model: E5501

FCC ID: 2AUES-SAGIE5501

Environmental Conditions

Temperature:	23.8° C
Relative Humidity:	50%
ATM Pressure:	100.0 kPa
Test Engineer:	Gary Qian
Supervised by:	Eden Hu

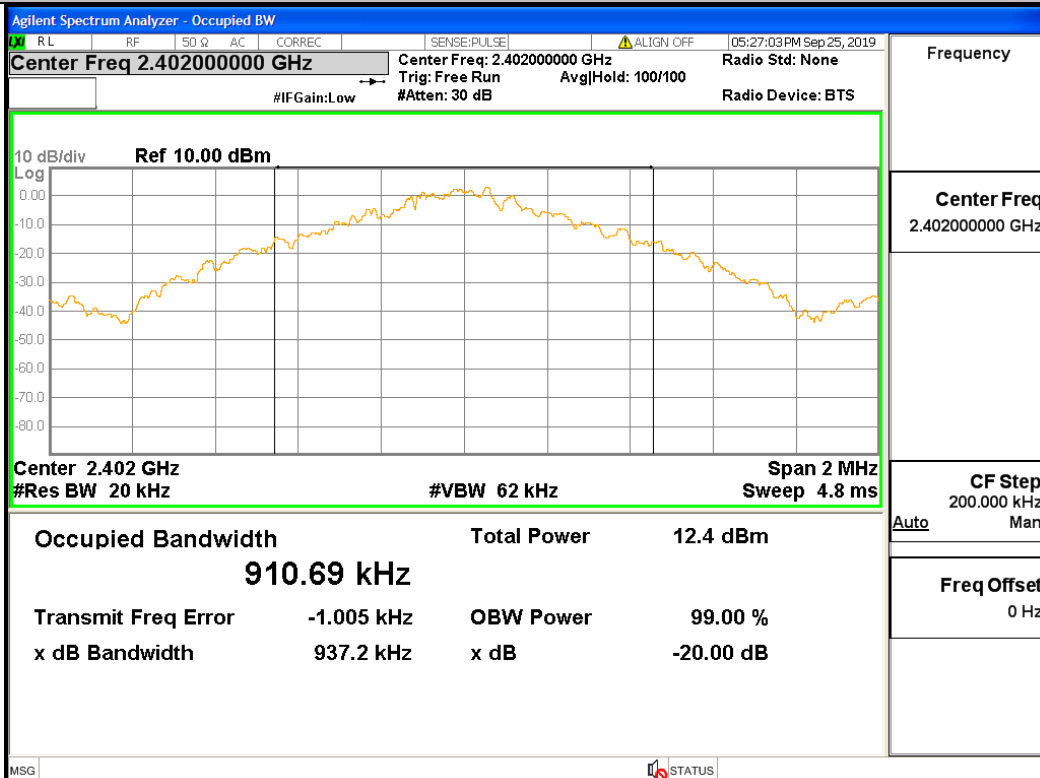
A.1 20 dB Bandwidth

Mode	Channel.	20dB Bandwidth [MHz]	Limit(MHz)	Verdict
GFSK	LCH	0.937	Not Specified	PASS
GFSK	MCH	0.942	Not Specified	PASS
GFSK	HCH	0.945	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.260	Not Specified	PASS
$\pi/4$ DQPSK	MCH	1.324	Not Specified	PASS
$\pi/4$ DQPSK	HCH	1.317	Not Specified	PASS
8DPSK	LCH	1.271	Not Specified	PASS
8DPSK	MCH	1.271	Not Specified	PASS
8DPSK	HCH	1.274	Not Specified	PASS

Test Graph

Graphs

GFSK/LCH



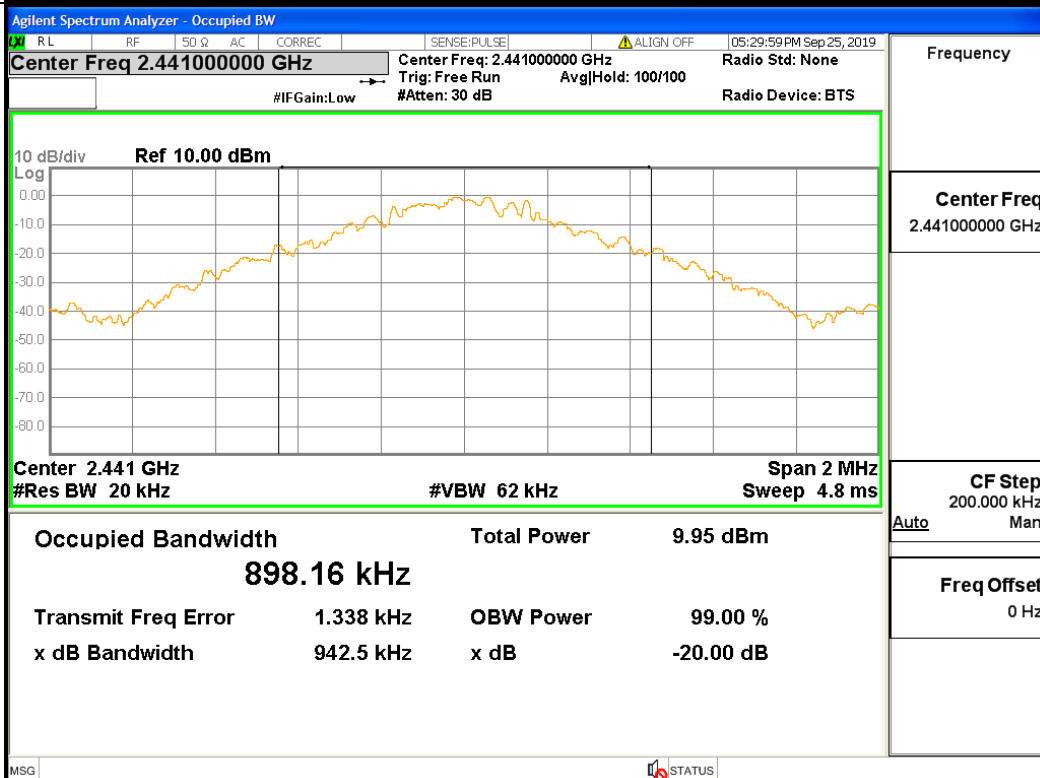
Frequency

Center Freq
2.402000000 GHz

CF Step
200.000 kHz
Auto Man

Freq Offset
0 Hz

GFSK/MCH

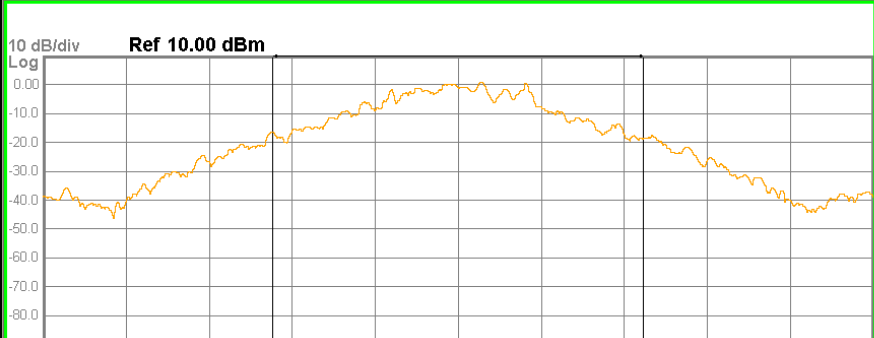
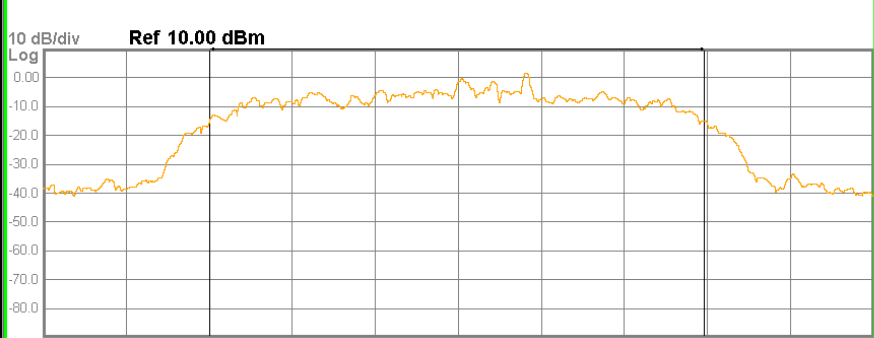


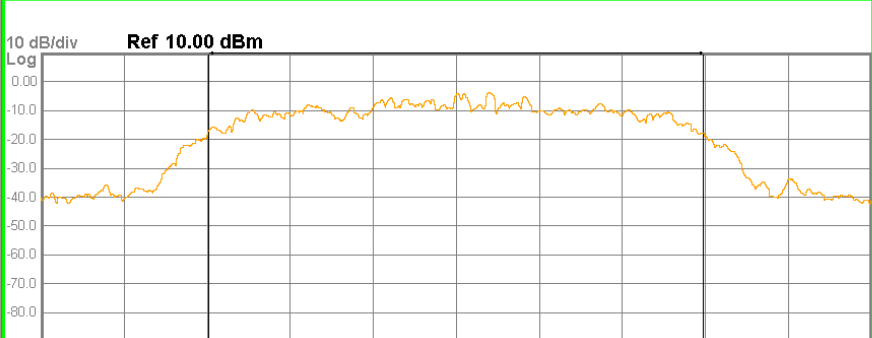
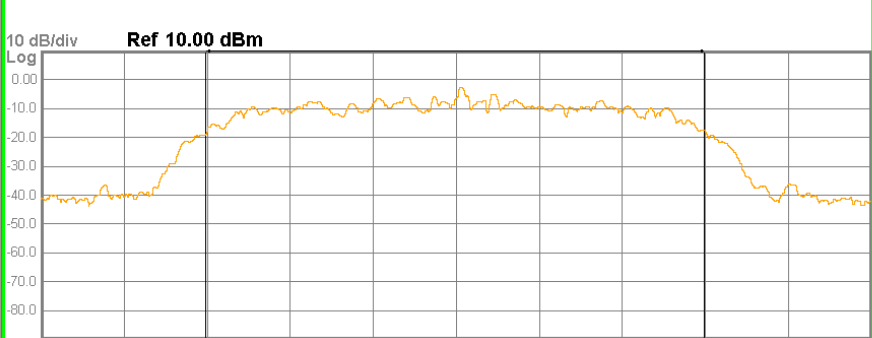
Frequency

Center Freq
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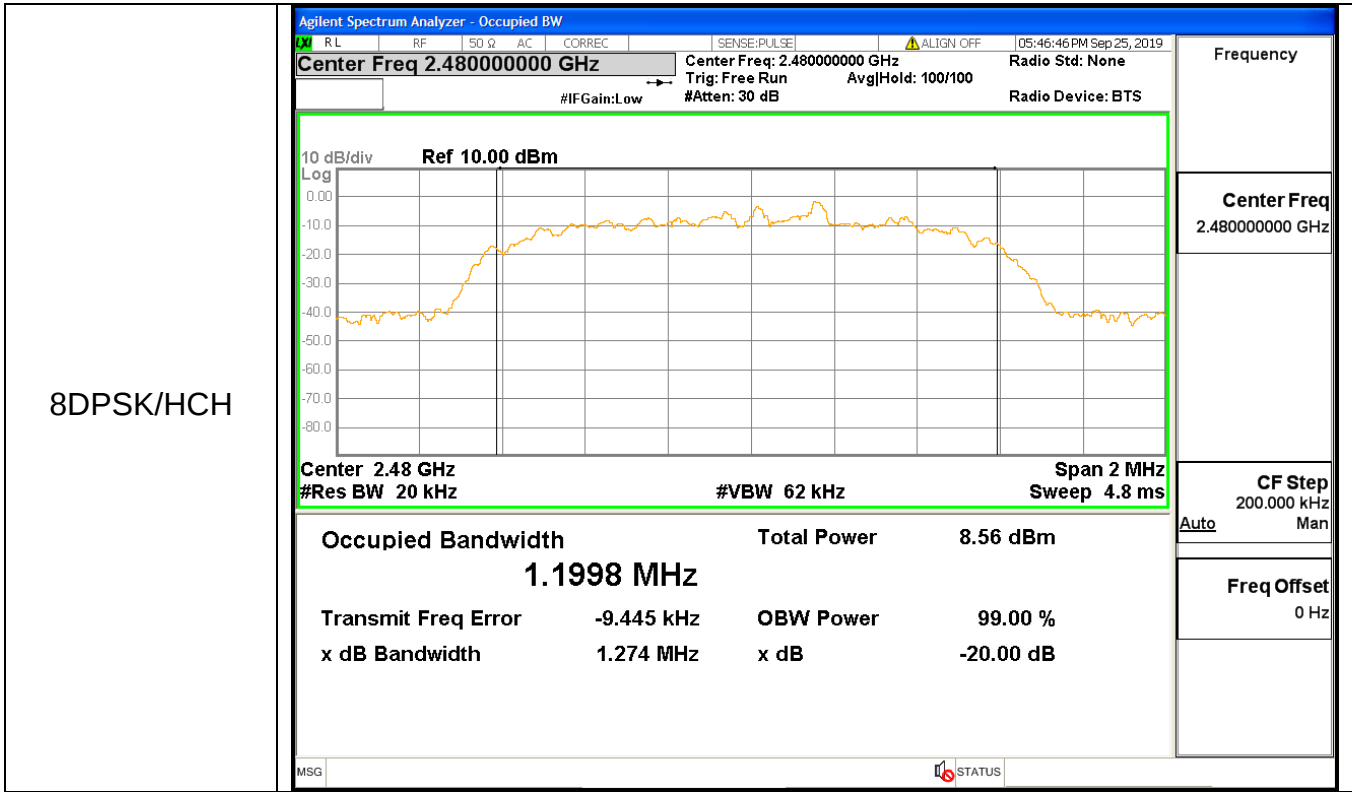
CF Step
200.000 kHz
Auto Man

Freq Offset
0 Hz

GFSK/HCH	Agilent Spectrum Analyzer - Occupied BW RL RF 50 Ω AC CORREC SENSE:PULSE ALIGN OFF 05:32:34 PM Sep 25, 2019 Center Freq 2.480000000 GHz Center Freq: 2.480000000 GHz Radio Std: None #IFGain:Low #Atten: 30 dB AvgHold: 100/100 Radio Device: BTS  10 dB/div Ref 10.00 dBm Center 2.48 GHz Span 2 MHz #Res BW 20 kHz #VBW 62 kHz Sweep 4.8 ms Occupied Bandwidth 888.61 kHz Total Power 11.0 dBm Transmit Freq Error 464 Hz OBW Power 99.00 % x dB Bandwidth 945.3 kHz x dB -20.00 dB MSG STATUS Frequency Center Freq 2.480000000 GHz CF Step 200.000 kHz Auto Man Freq Offset 0 Hz
π /4DQPSK/LCH	Agilent Spectrum Analyzer - Occupied BW RL RF 50 Ω AC CORREC SENSE:PULSE ALIGN OFF 05:35:22 PM Sep 25, 2019 Center Freq 2.402000000 GHz Center Freq: 2.402000000 GHz Radio Std: None #IFGain:Low #Atten: 30 dB AvgHold: 100/100 Radio Device: BTS  10 dB/div Ref 10.00 dBm Center 2.402 GHz Span 2 MHz #Res BW 20 kHz #VBW 62 kHz Sweep 4.8 ms Occupied Bandwidth 1.1846 MHz Total Power 11.0 dBm Transmit Freq Error -1.776 kHz OBW Power 99.00 % x dB Bandwidth 1.260 MHz x dB -20.00 dB MSG STATUS Frequency Center Freq 2.402000000 GHz CF Step 200.000 kHz Auto Man Freq Offset 0 Hz

$\pi/4$DQPSK/MCH	Agilent Spectrum Analyzer - Occupied BW RL RF 50 Ω AC CORREC SENSE:PULSE ALIGN OFF 05:37:10 PM Sep 25, 2019 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 Span 2 MHz #Res BW 20 kHz #VBW 62 kHz Sweep 4.8 ms Occupied Bandwidth 1.1890 MHz Total Power 8.06 dBm Transmit Freq Error -1.166 kHz OBW Power 99.00 % x dB Bandwidth 1.324 MHz x dB -20.00 dB MSG STATUS	Frequency Center Freq 2.441000000 GHz CF Step 200.000 kHz Auto Man Freq Offset 0 Hz
$\pi/4$DQPSK/HCH	Agilent Spectrum Analyzer - Occupied BW RL RF 50 Ω AC CORREC SENSE:PULSE ALIGN OFF 05:38:53 PM Sep 25, 2019 Center Freq 2.480000000 GHz Center Freq: 2.480000000 GHz Radio Std: None #IFGain:Low #Atten: 30 dB AvgHold: 100/100 Radio Device: BTS  10 dB/div Ref 10.00 dBm Center 2.48 GHz Span 2 MHz #Res BW 20 kHz #VBW 62 kHz Sweep 4.8 ms Occupied Bandwidth 1.1964 MHz Total Power 8.13 dBm Transmit Freq Error -1.651 kHz OBW Power 99.00 % x dB Bandwidth 1.317 MHz x dB -20.00 dB MSG STATUS	Frequency Center Freq 2.480000000 GHz CF Step 200.000 kHz Auto Man Freq Offset 0 Hz

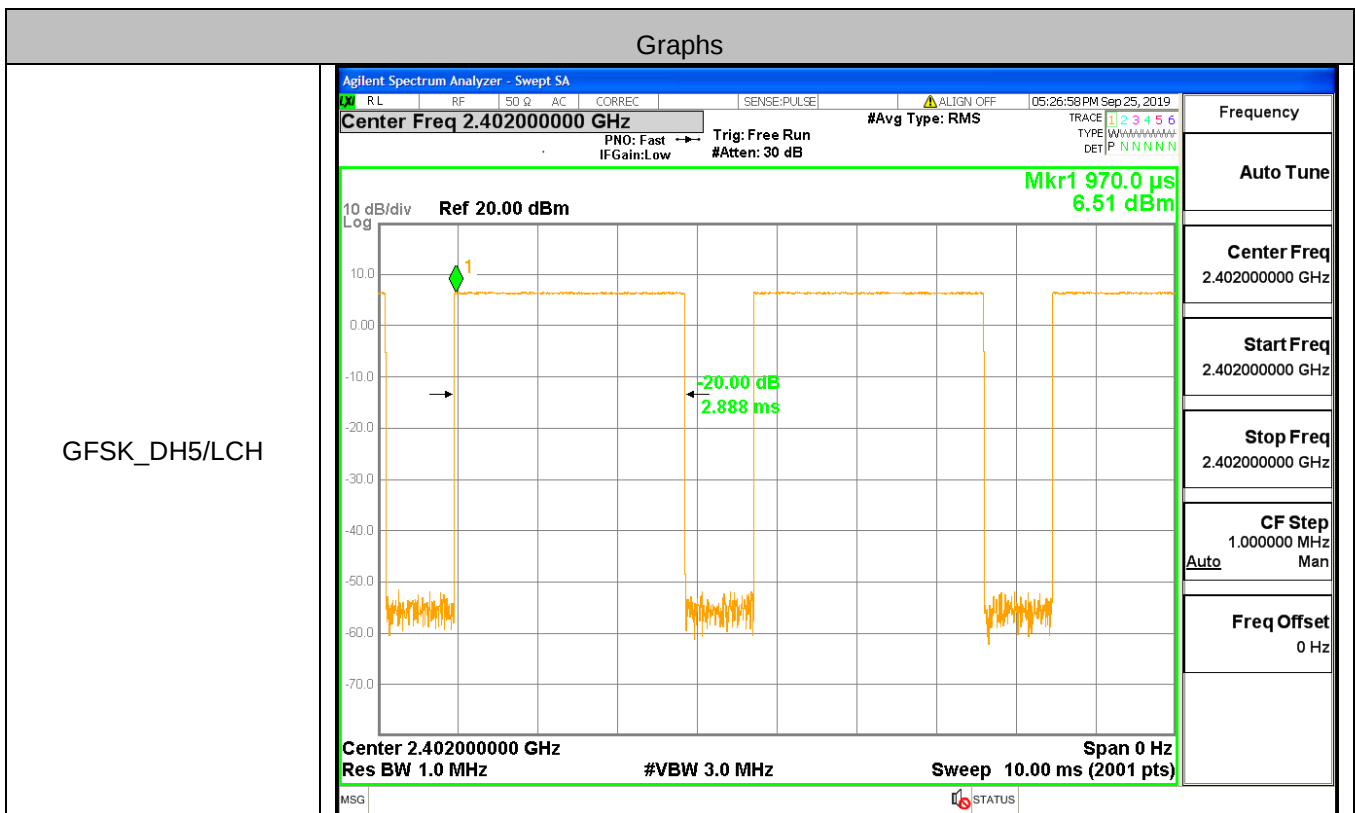


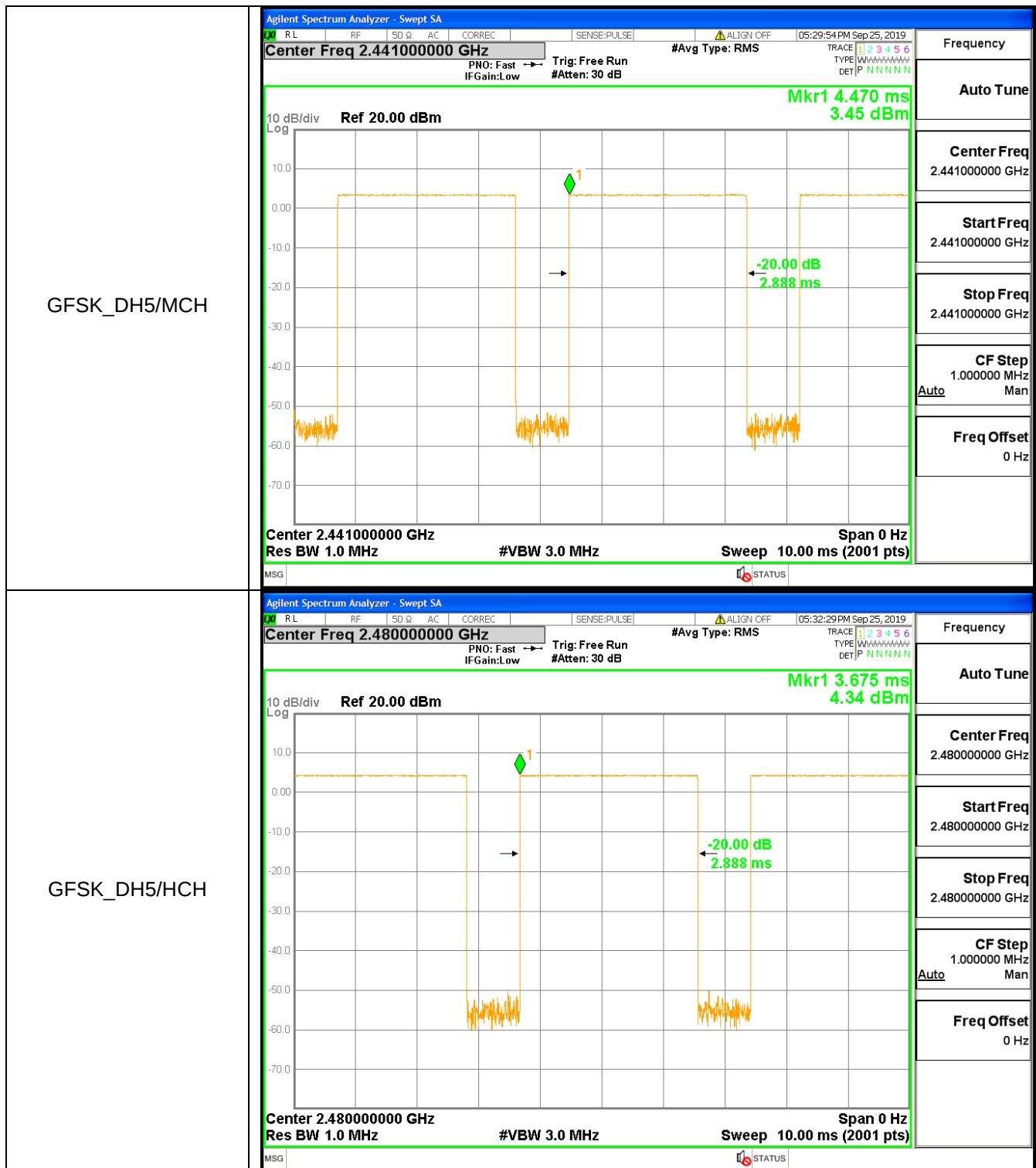


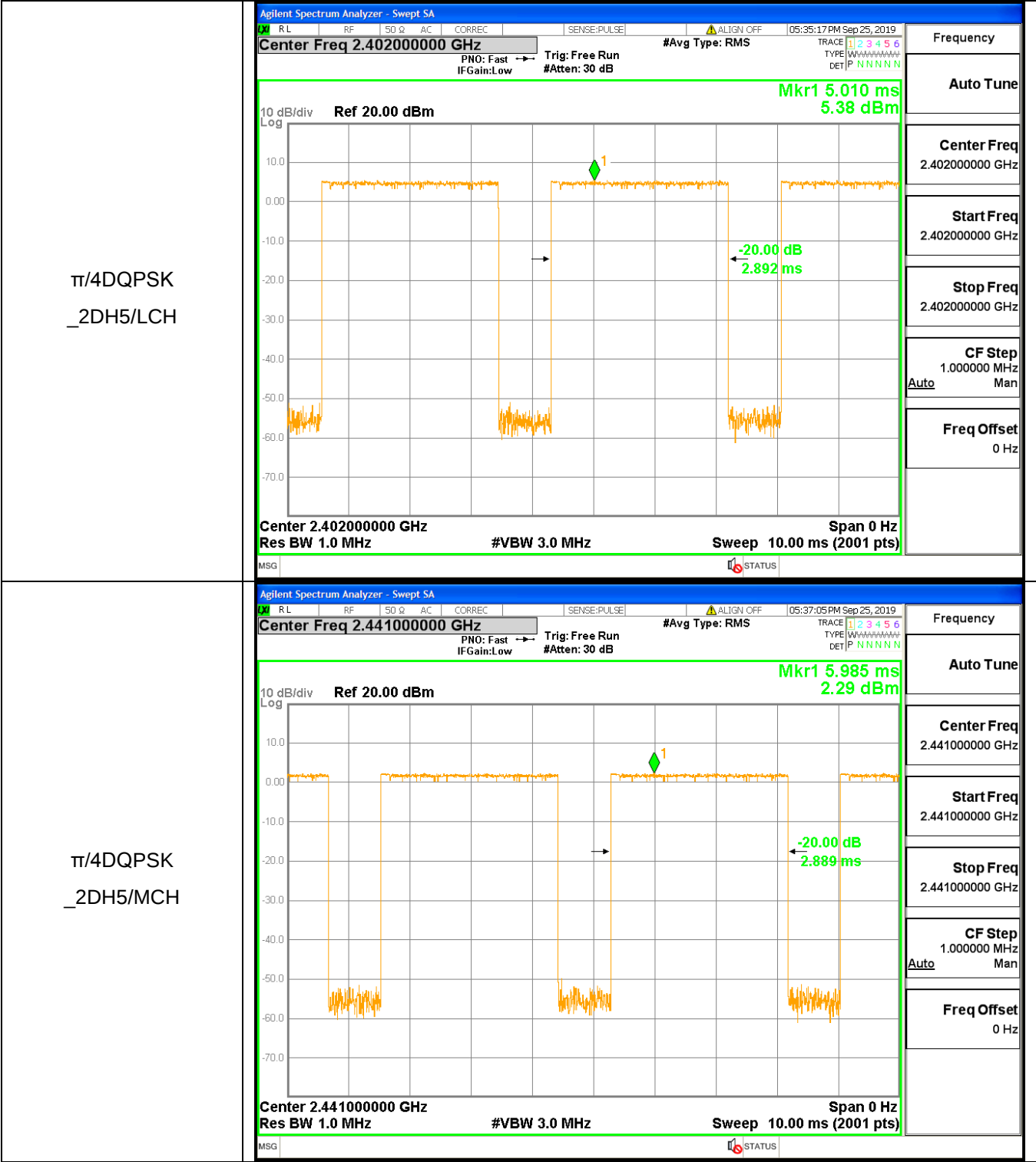
A.2 Dwell Time

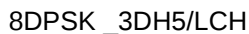
Mode	Packet	Channel	Burst Width [s/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	0.002888	106.7	0.308108	0.4	PASS
GFSK	DH5	MCH	0.002888	106.7	0.308195	0.4	PASS
GFSK	DH5	HCH	0.002888	106.7	0.308177	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	0.002892	106.7	0.308569	0.4	PASS
$\pi/4$ DQPSK	2DH5	MCH	0.002889	106.7	0.308213	0.4	PASS
$\pi/4$ DQPSK	2DH5	HCH	0.002889	106.7	0.308232	0.4	PASS
8DPSK	3DH5	LCH	0.002893	106.7	0.308703	0.4	PASS
8DPSK	3DH5	MCH	0.002892	106.7	0.308596	0.4	PASS
8DPSK	3DH5	HCH	0.002889	106.7	0.308252	0.4	PASS

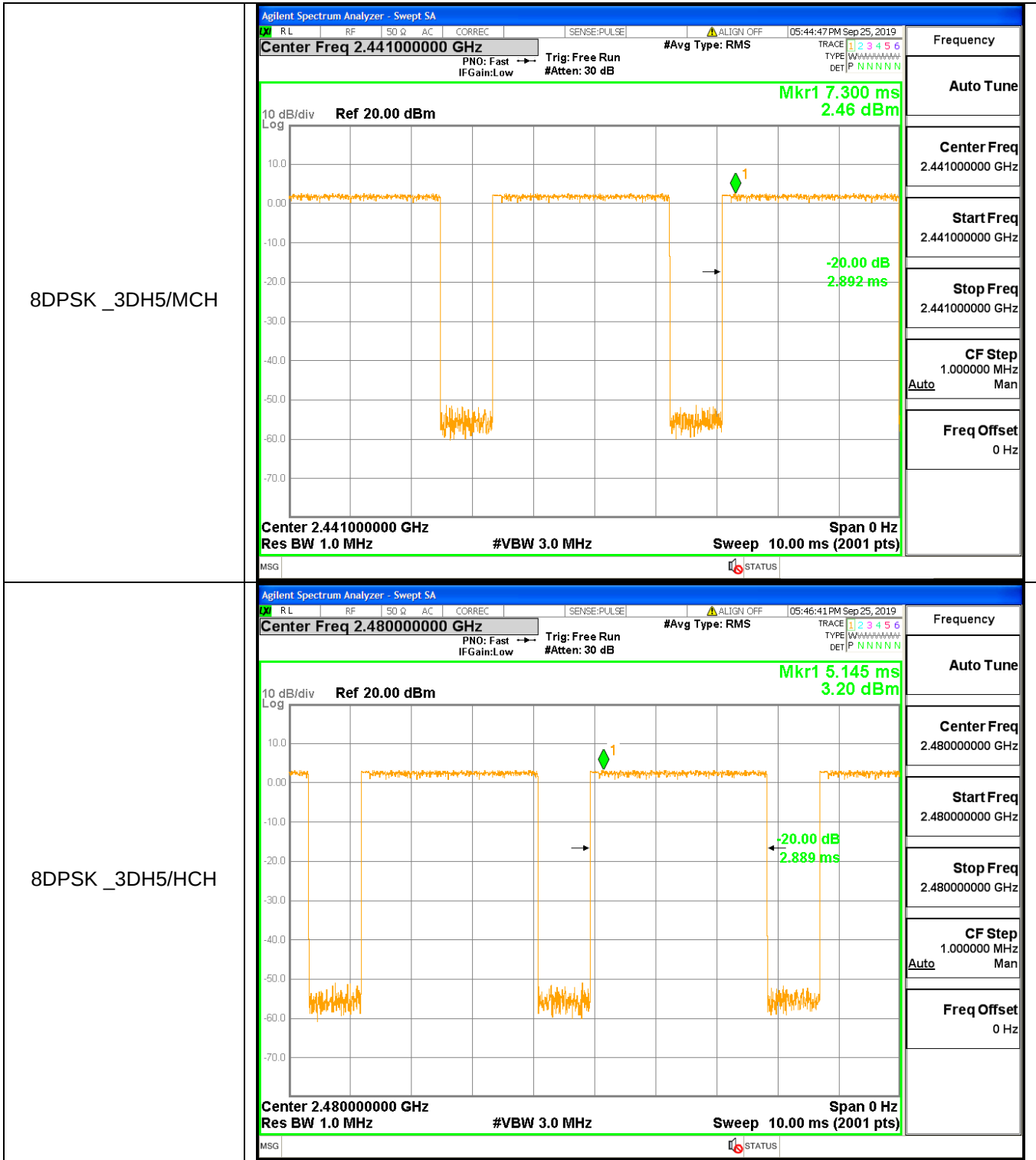
Test Graph







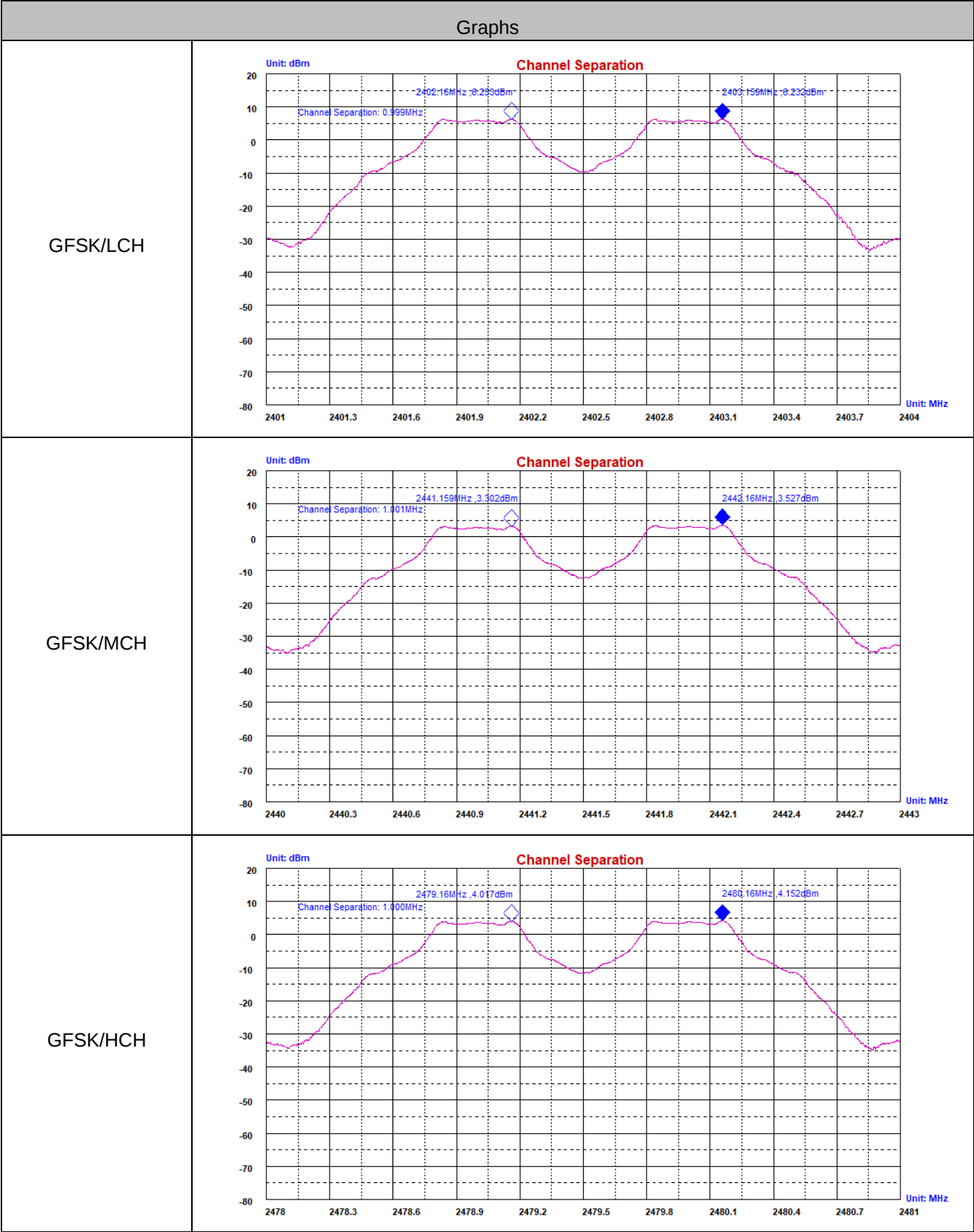


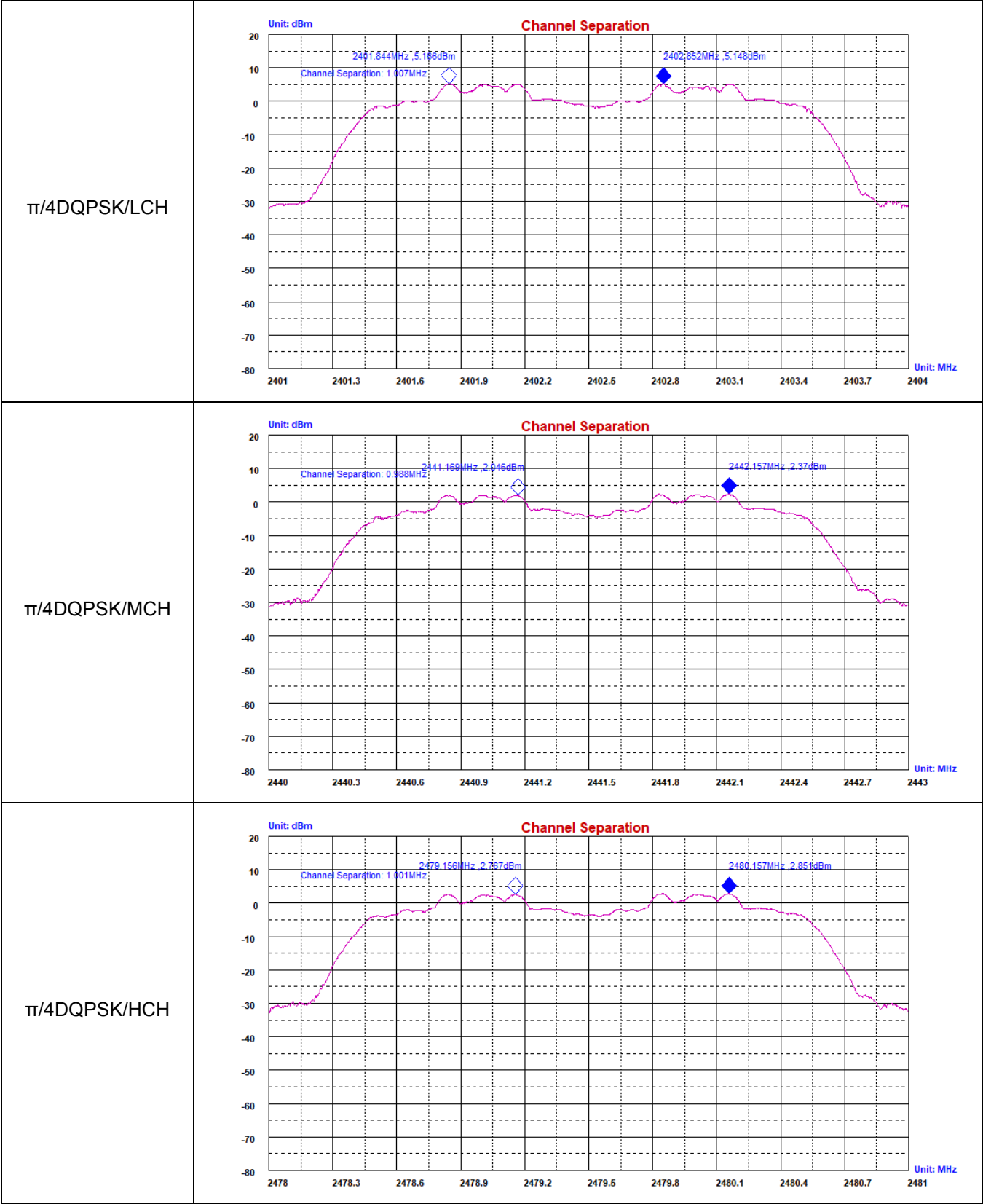


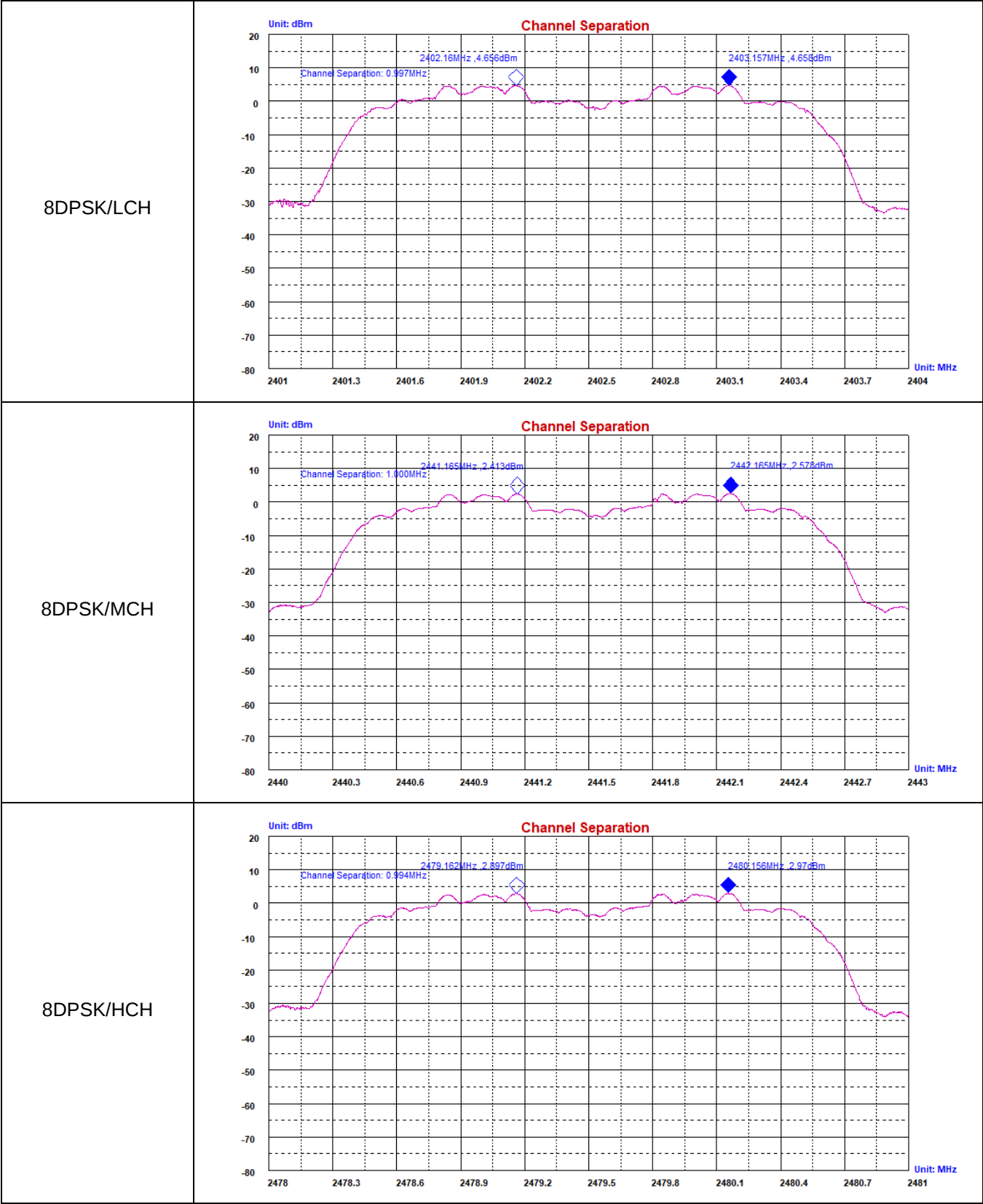
A.3 Carrier Frequency Separation

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.999	0.625	PASS
GFSK	MCH	1.001	0.628	PASS
GFSK	HCH	1.000	0.630	PASS
$\pi/4$ DQPSK	LCH	1.007	0.840	PASS
$\pi/4$ DQPSK	MCH	0.988	0.883	PASS
$\pi/4$ DQPSK	HCH	1.001	0.878	PASS
8DPSK	LCH	0.997	0.847	PASS
8DPSK	MCH	1.000	0.847	PASS
8DPSK	HCH	0.994	0.849	PASS

Test Graph



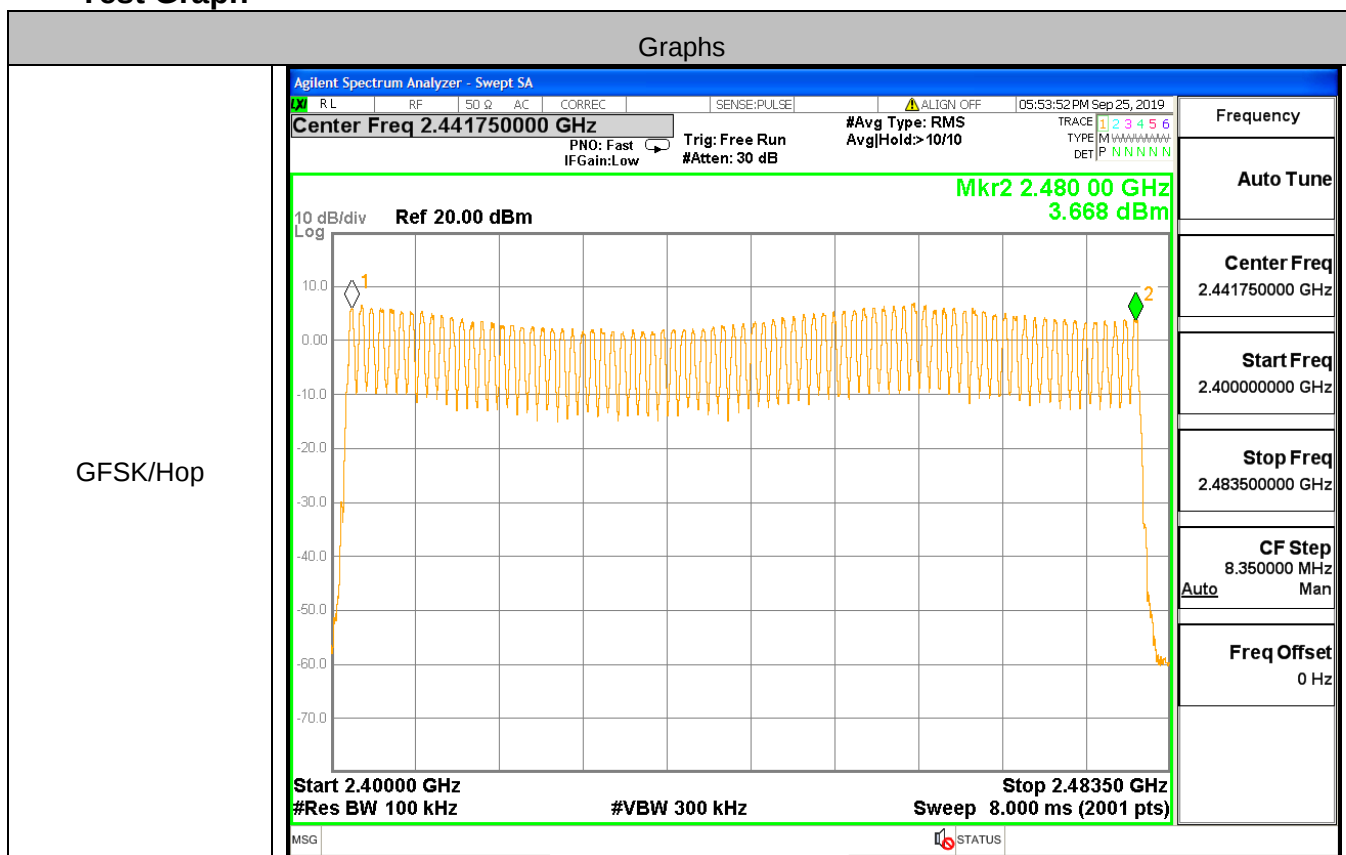


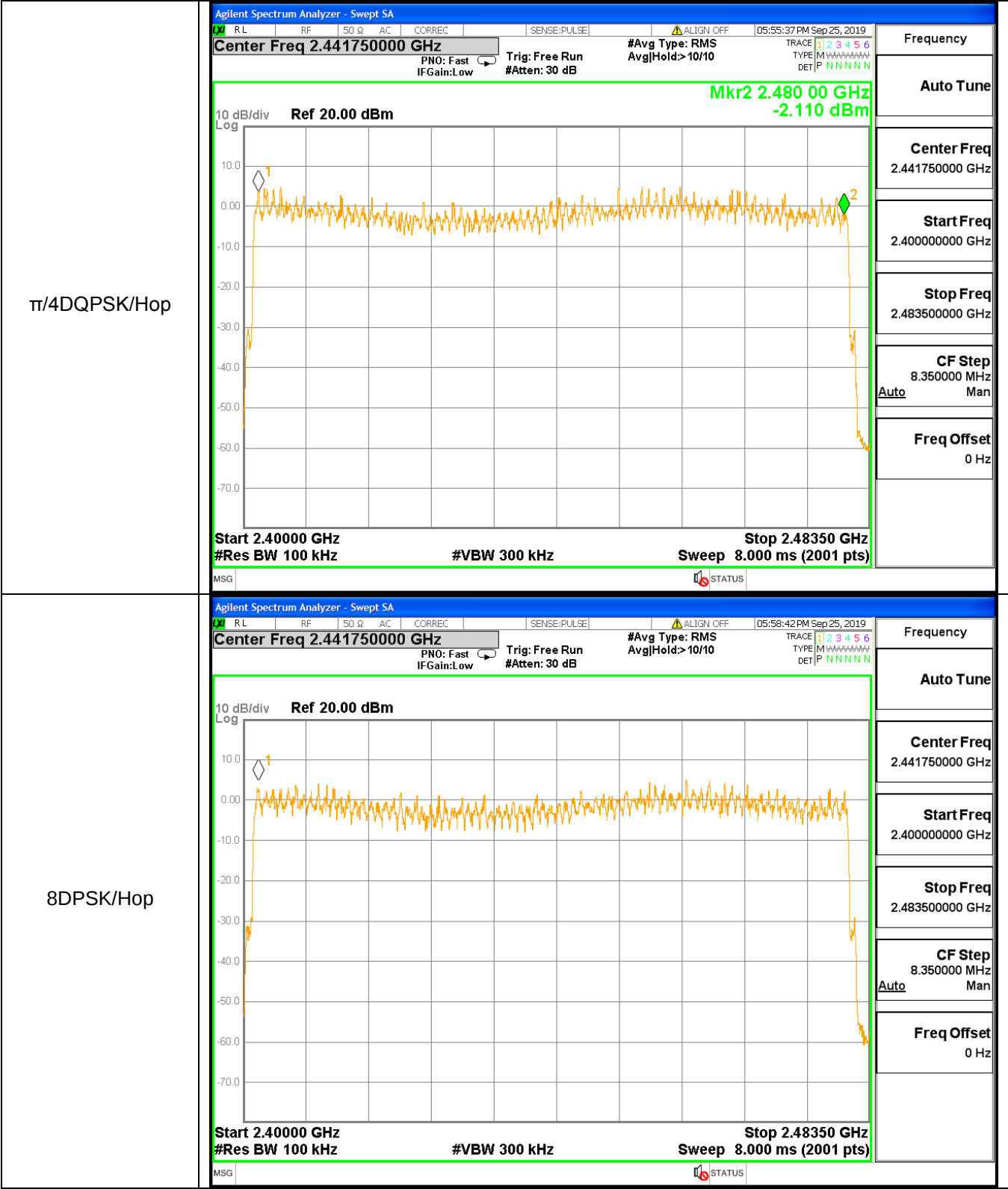


A.4 Hopping Channel Number

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

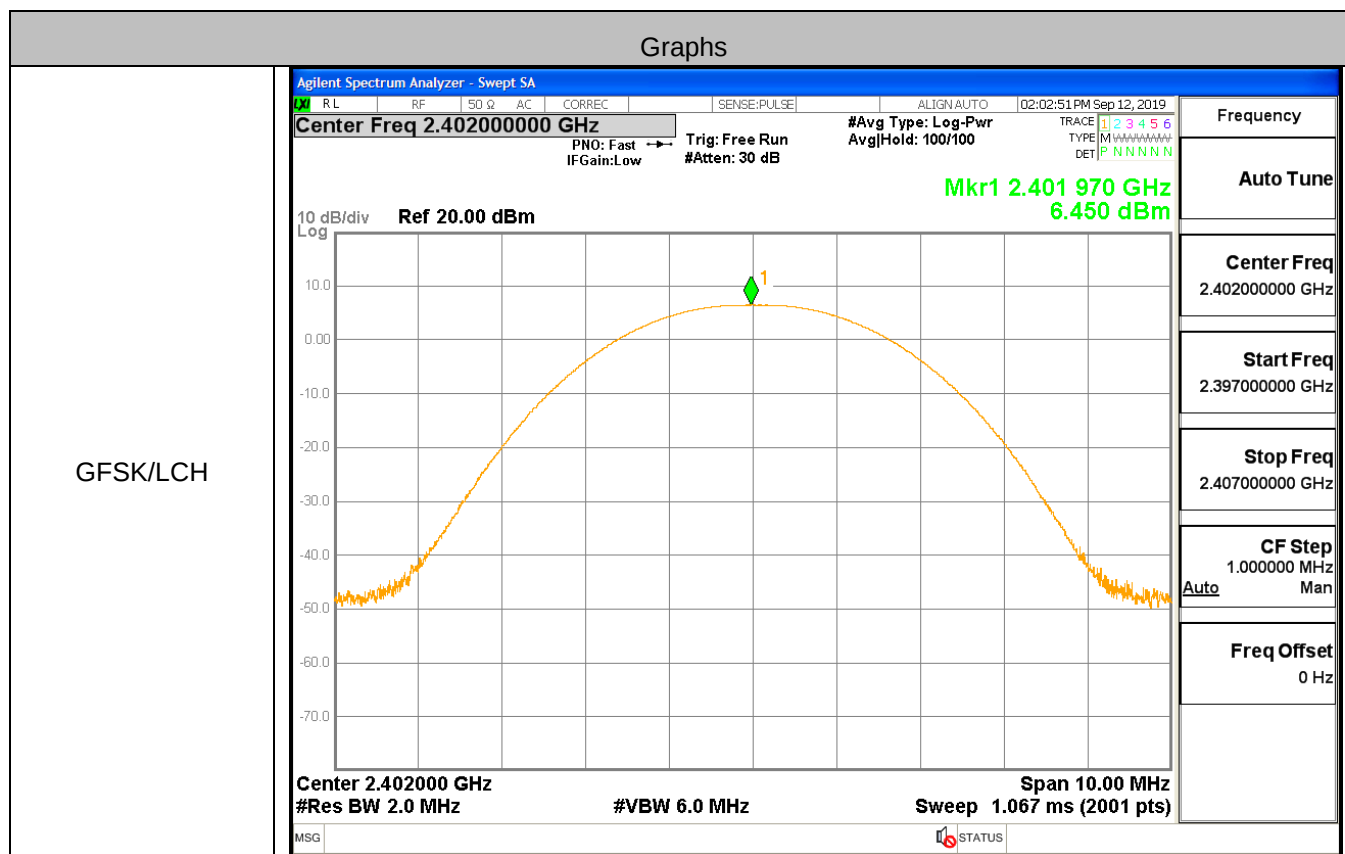




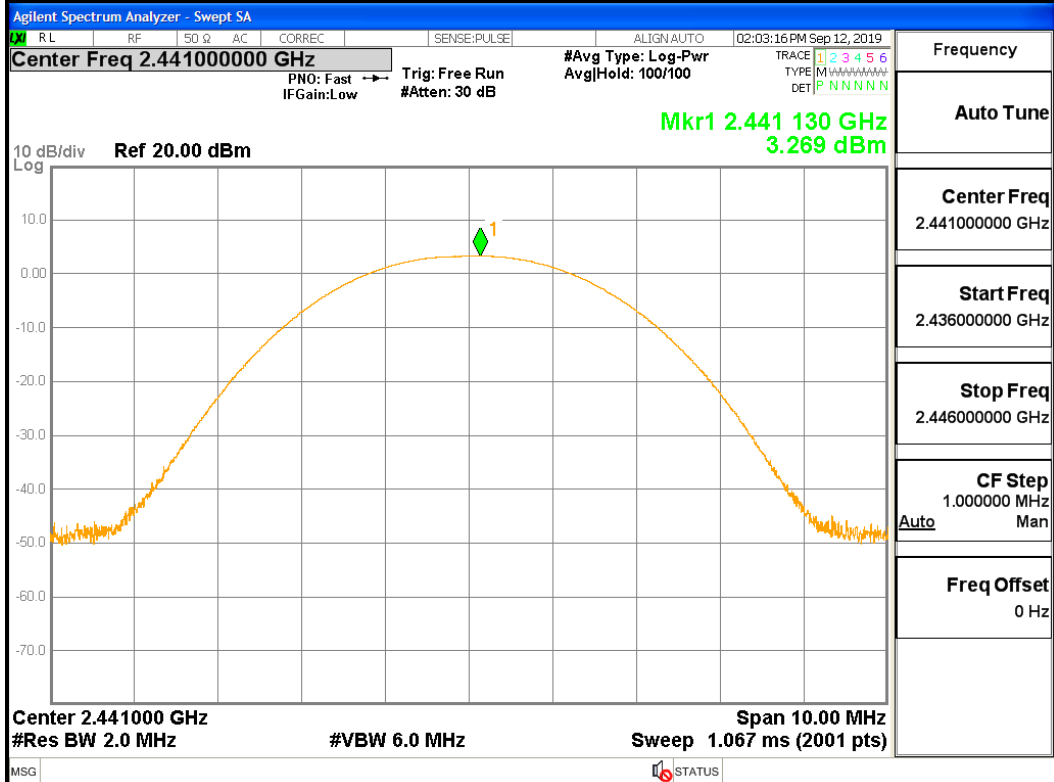
A.5 Conducted Peak Output Power

Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	6.450	21	PASS
GFSK	MCH	3.269	21	PASS
GFSK	HCH	3.797	21	PASS
$\pi/4$ DQPSK	LCH	5.693	21	PASS
$\pi/4$ DQPSK	MCH	2.633	21	PASS
$\pi/4$ DQPSK	HCH	3.031	21	PASS
8DPSK	LCH	5.794	21	PASS
8DPSK	MCH	2.786	21	PASS
8DPSK	HCH	3.188	21	PASS

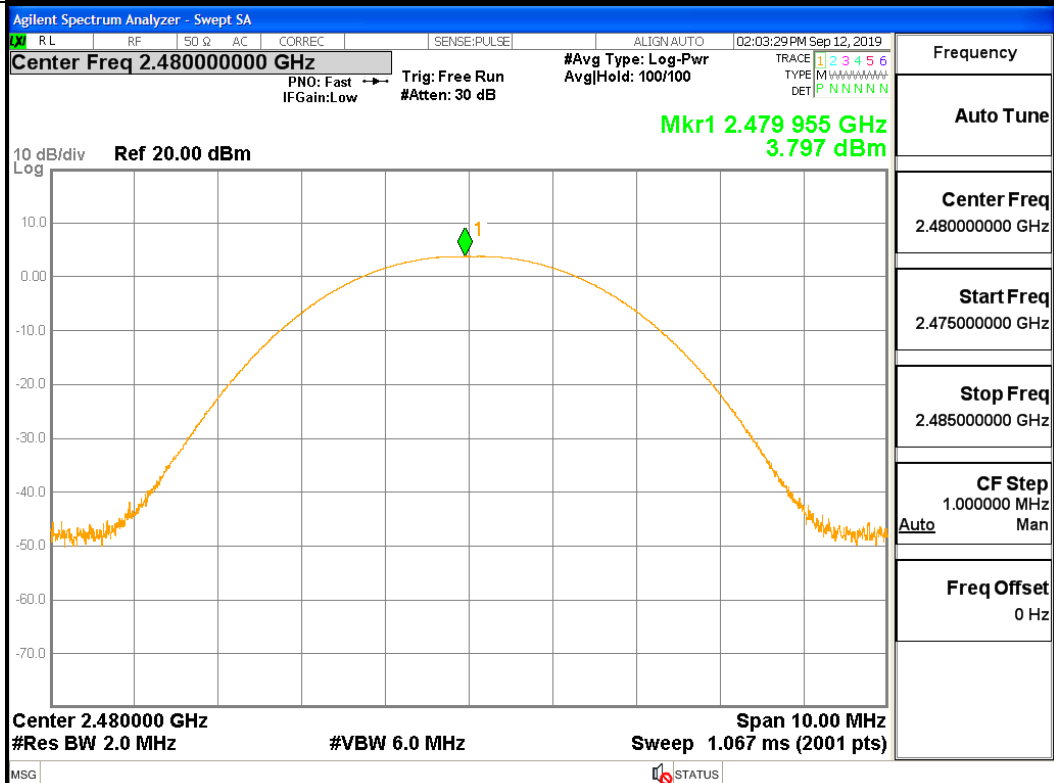
Test Graph

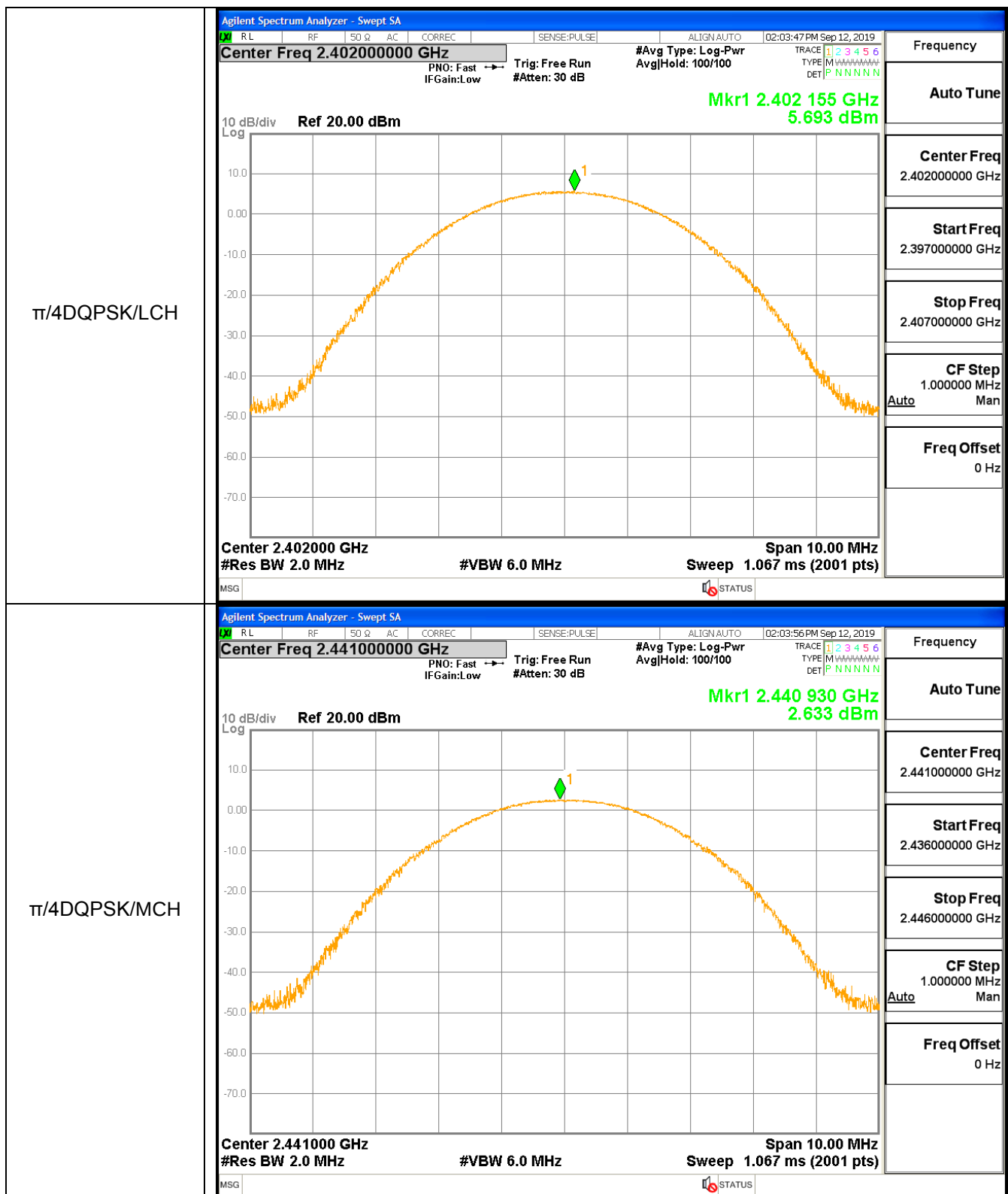


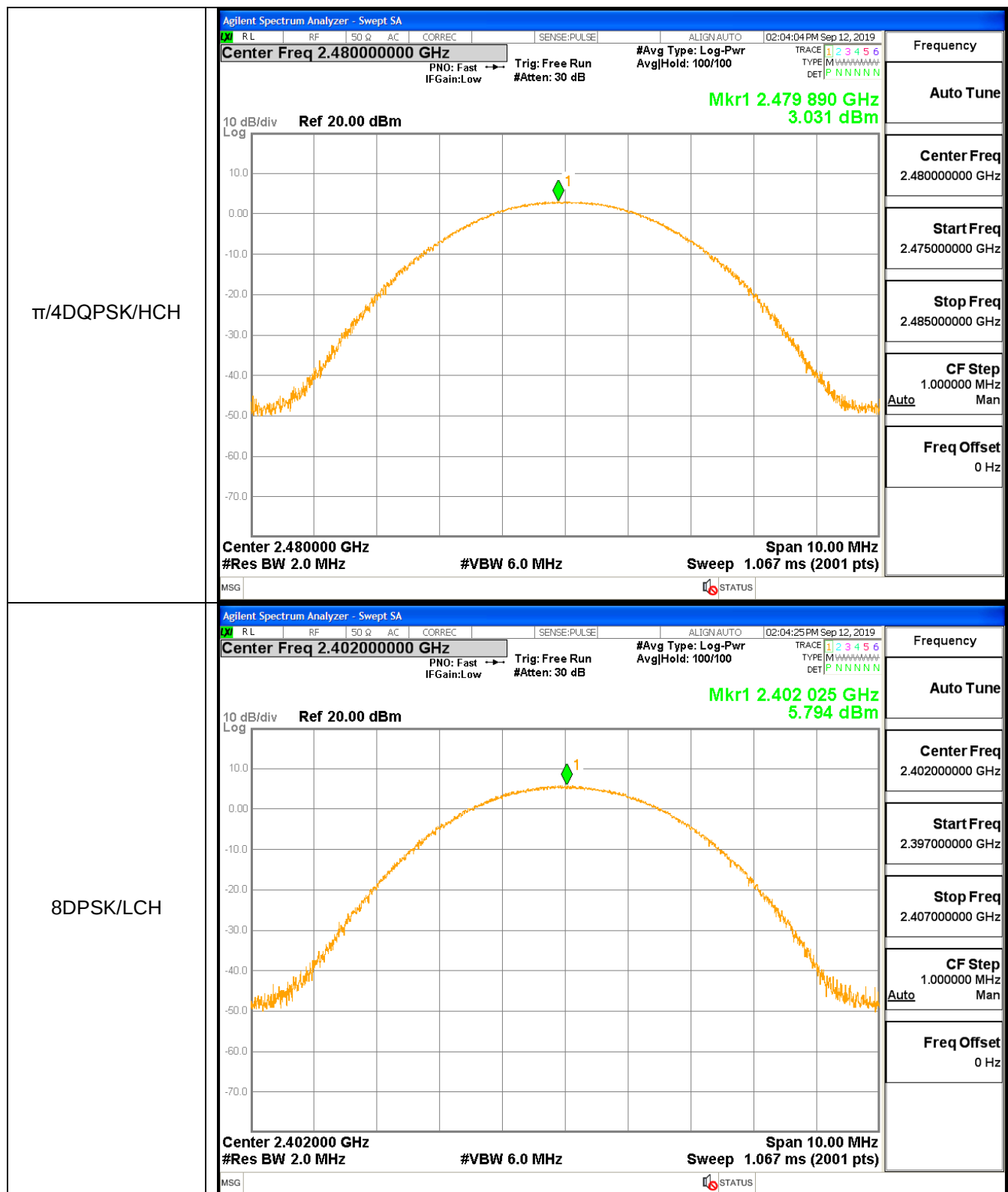
GFSK/MCH

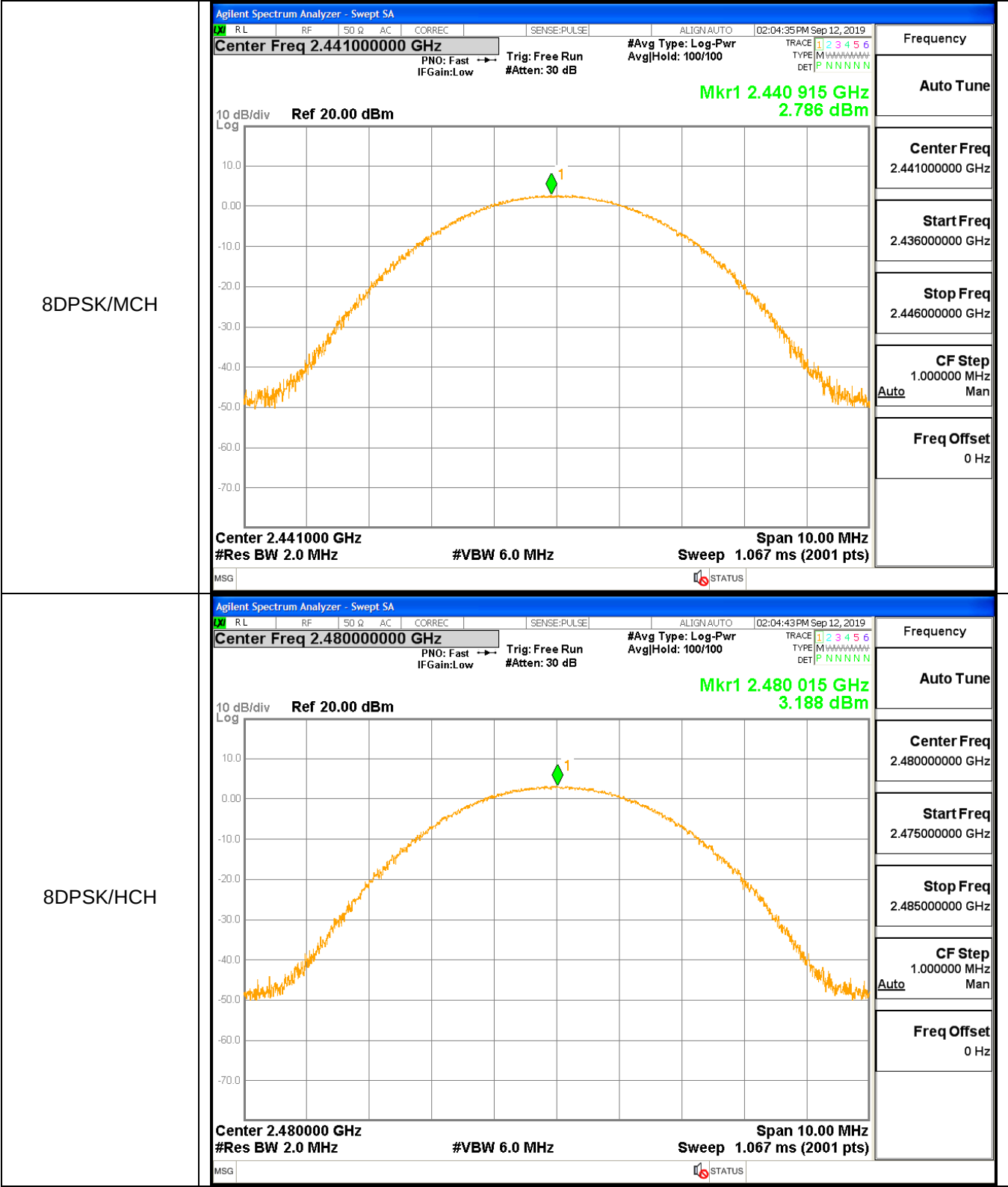


GFSK/HCH









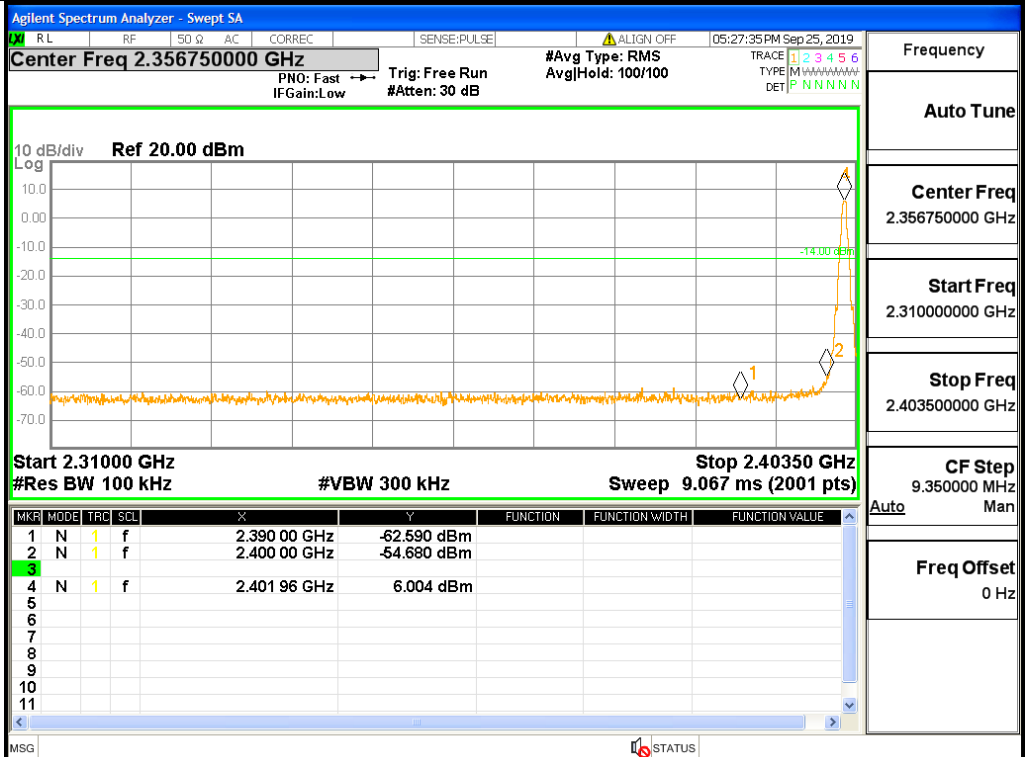
A.6 Band-edge for RF Conducted Emissions

Type	Carrier Frequency(MHz)	Frequency(MHz)	Carrier Frequency Power [dBm]	Bandedge Peak(dBm)	Upper limit(dBm)	Conclusion
1DH5	2402	2400	6.004	-54.68	-13.996	Pass
1DH5	2480	2483.5	3.947	-62.71	-16.053	Pass
2DH5	2402	2400	2.489	-53.45	-17.511	Pass
2DH5	2480	2488.433	2.379	-58.855	-17.621	Pass
3DH5	2402	2400	4.138	-53.37	-15.862	Pass
3DH5	2480	2483.5	2.481	-60.72	-17.519	Pass
1DH5-Hopping	2402	2400	5.964	-53.92	-14.036	Pass
1DH5-Hopping	2480	2400	6.11	-53.94	-13.89	Pass
2DH5-Hopping	2402	2483.5	6.465	-60.3	-13.535	Pass
2DH5-Hopping	2480	2400	4.119	-56.03	-15.881	Pass
3DH5-Hopping	2402	2500	5.145	-60.45	-14.855	Pass
3DH5-Hopping	2480	2400	4.318	-55.75	-15.682	Pass

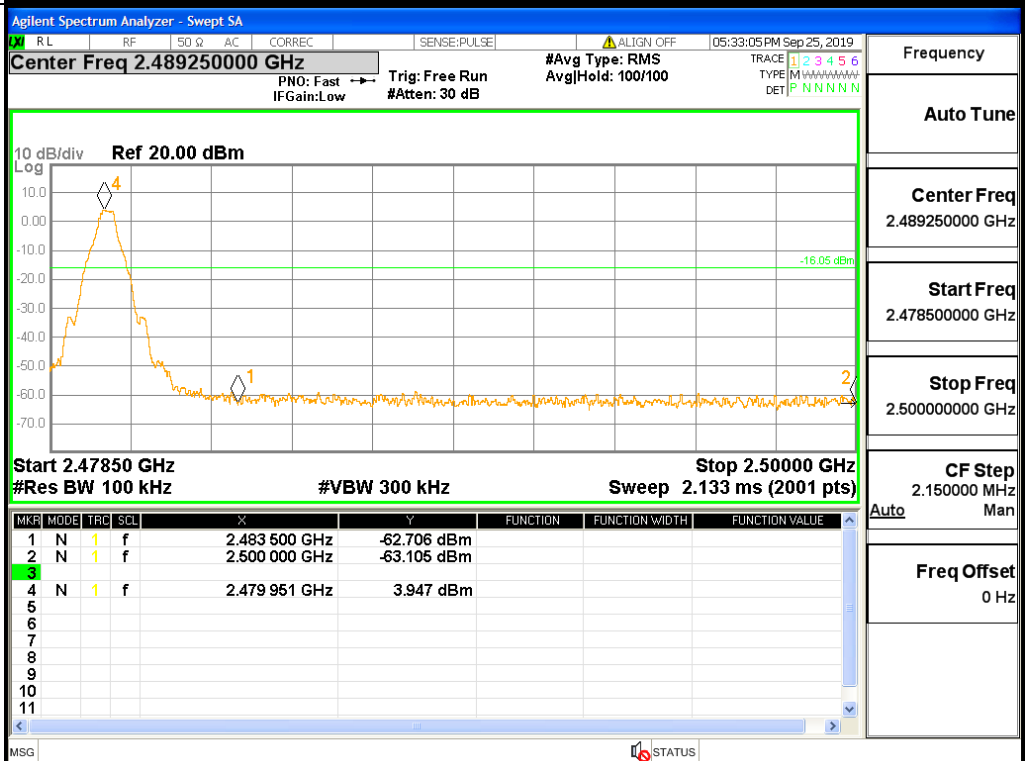
Test Graph

Graphs

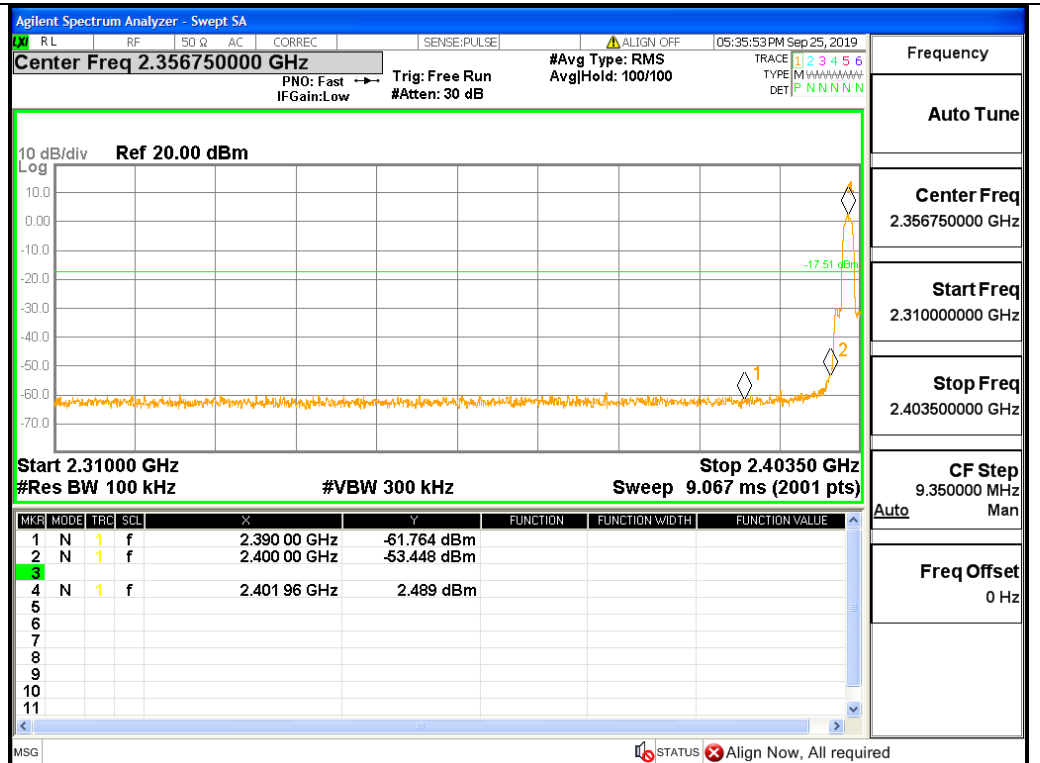
GFSK/LCH/No Hop



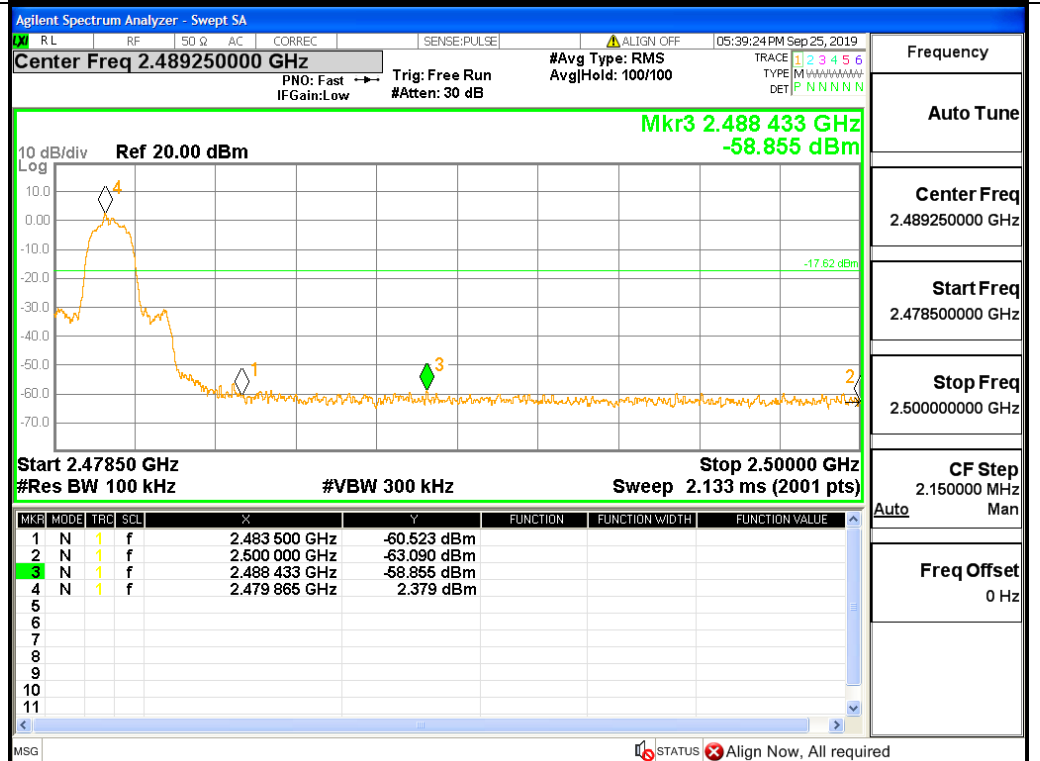
GFSK/HCH/No Hop



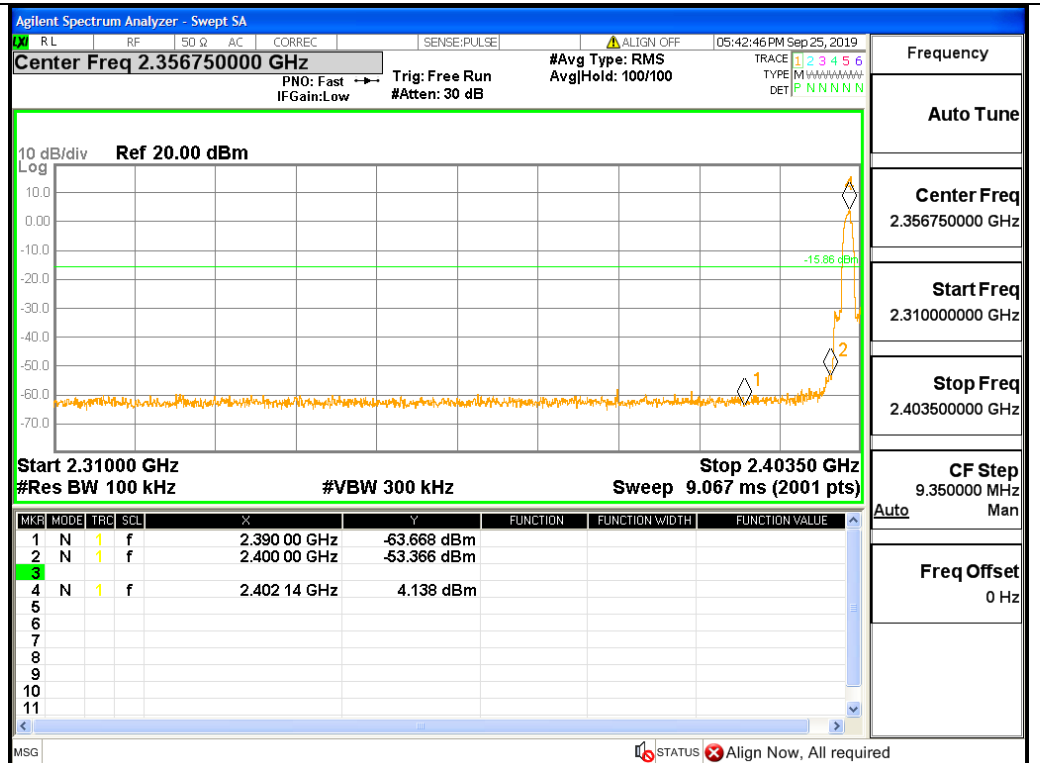
π /4DQPSK/LCH/No
Hop



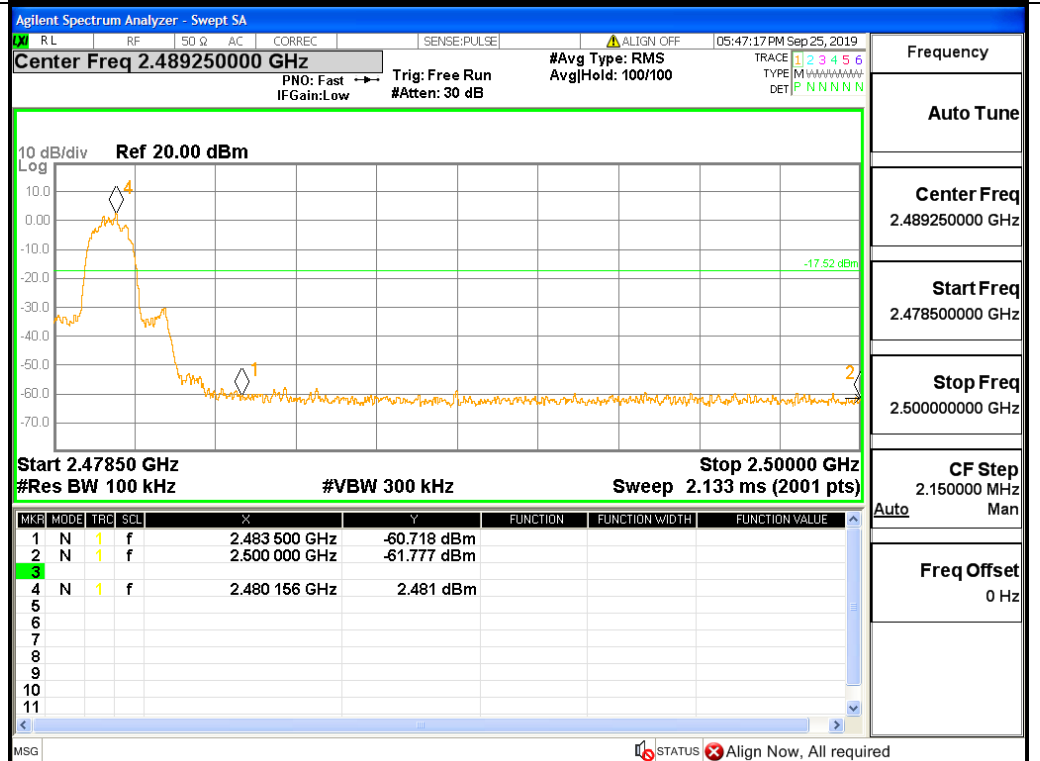
π /4DQPSK/HCH/No
Hop



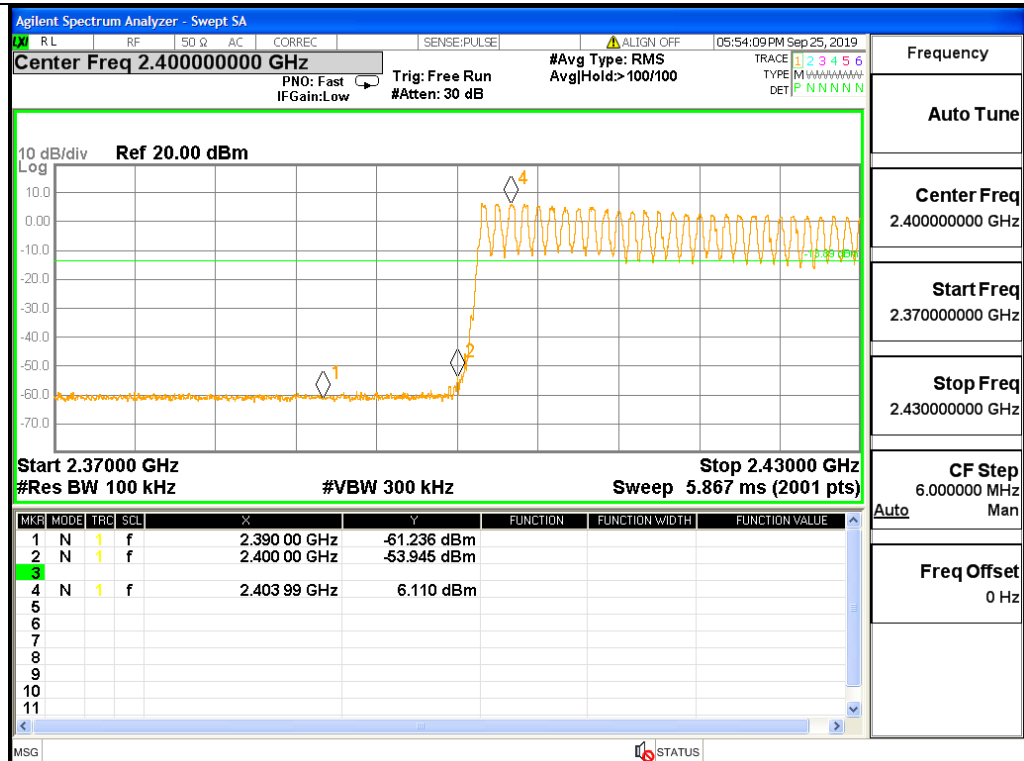
8DPSK/LCH/No Hop



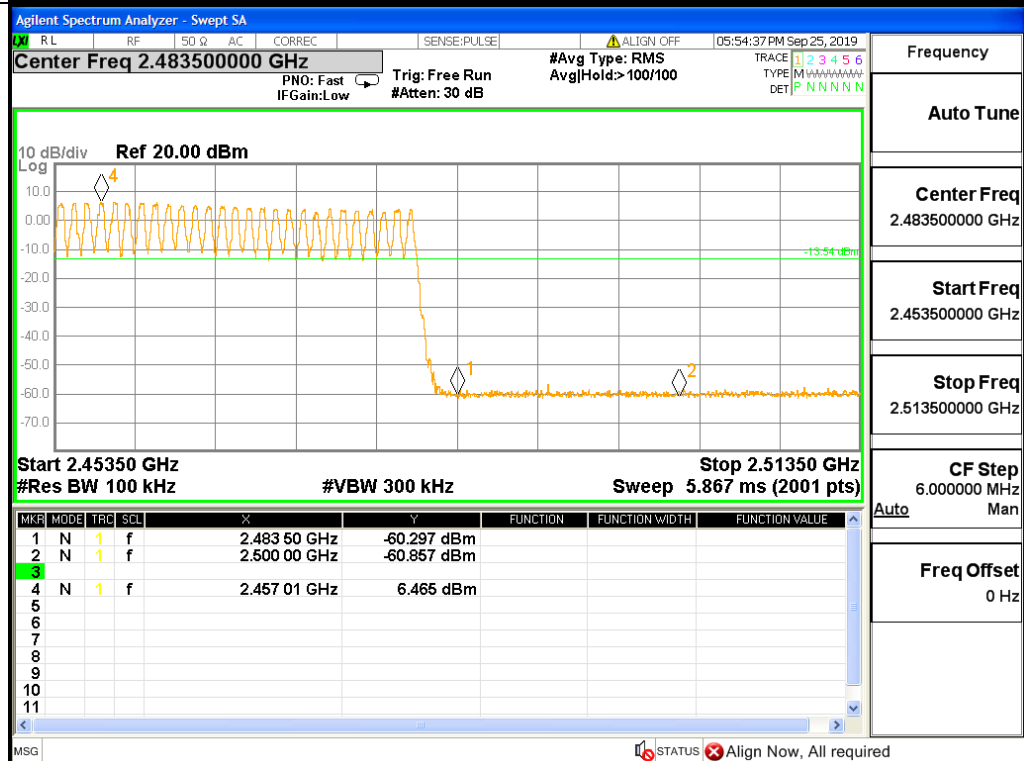
8DPSK/HCH/No Hop



GFSK/LCH/Hop

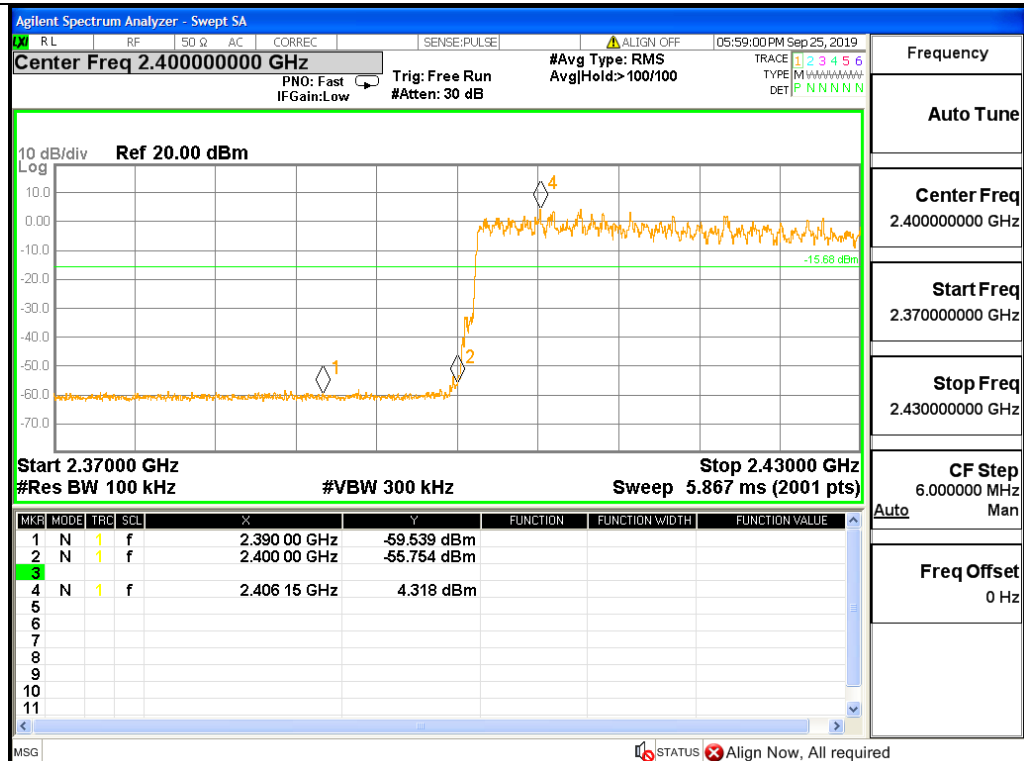


GFSK/HCH/Hop

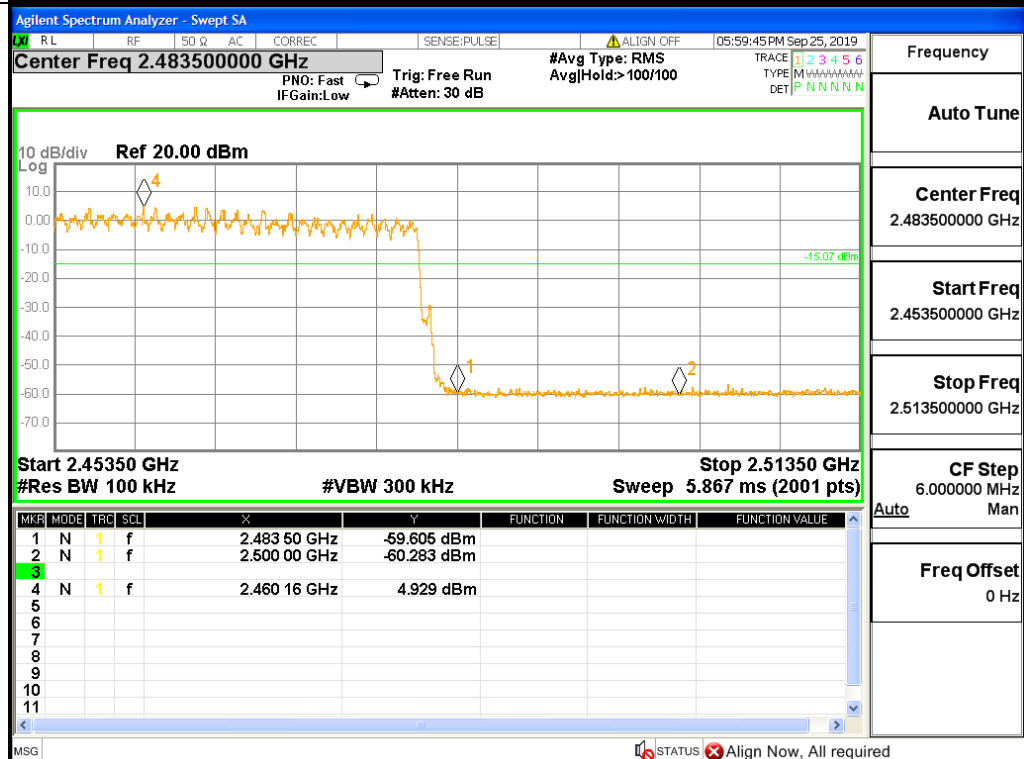




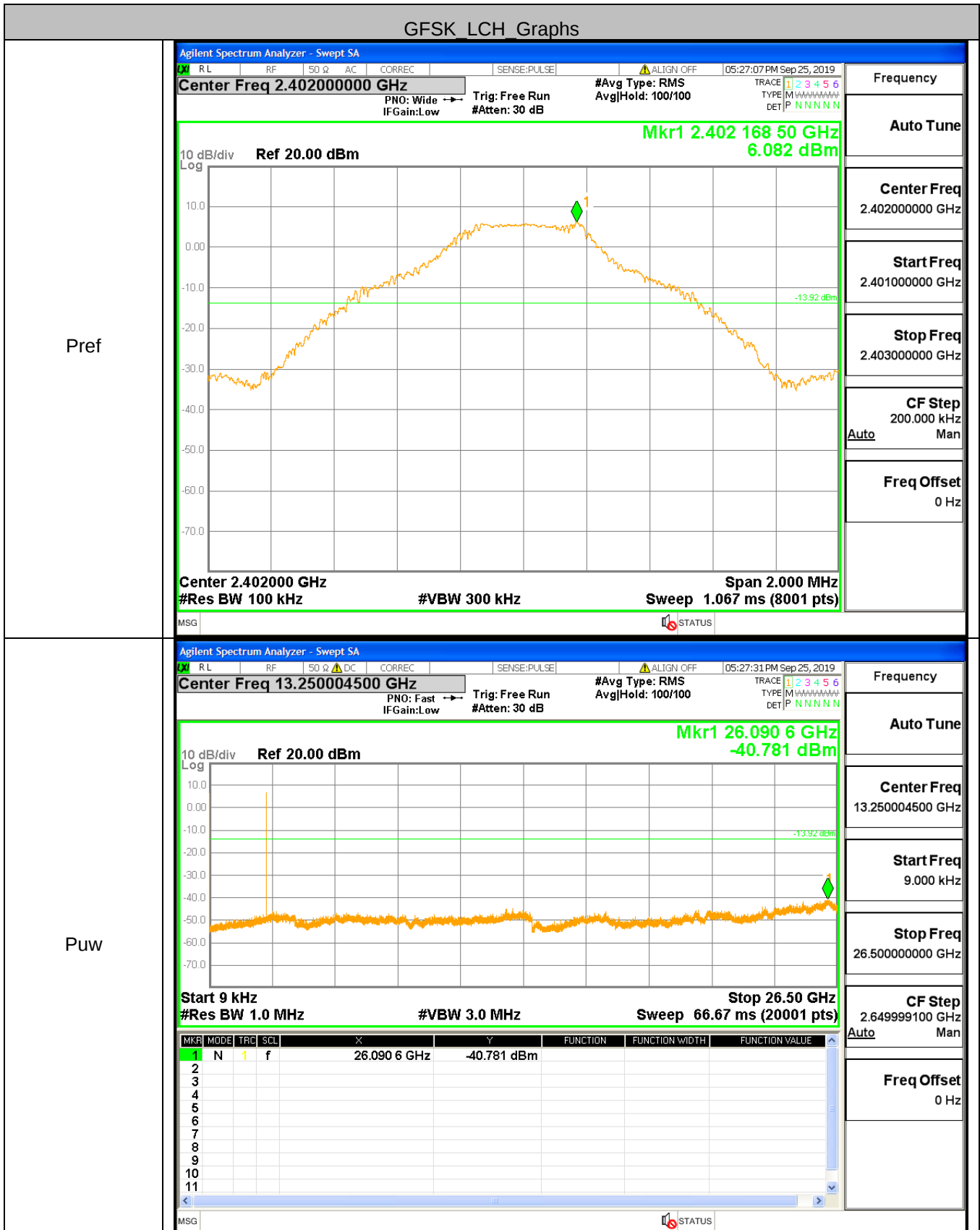
8DPSK/LCH/Hop



8DPSK/HCH/Hop

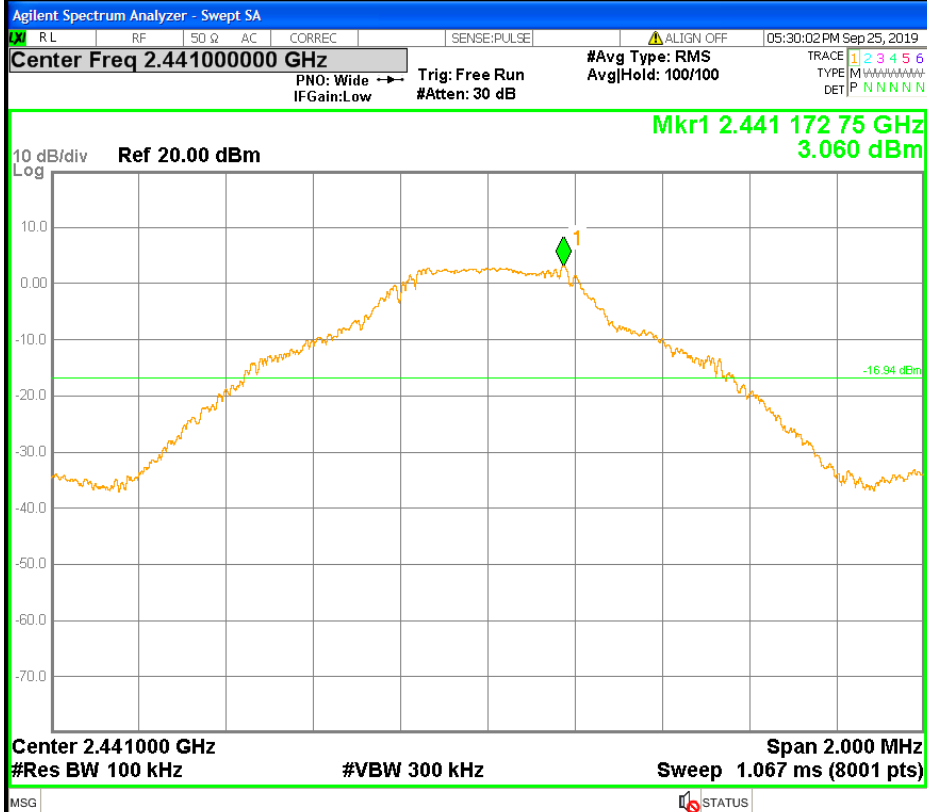


A.7 RF Conducted Spurious Emissions Test Graph



GFSK MCH Graphs

Pref



Frequency

Auto Tune

Center Freq
2.441000000 GHz

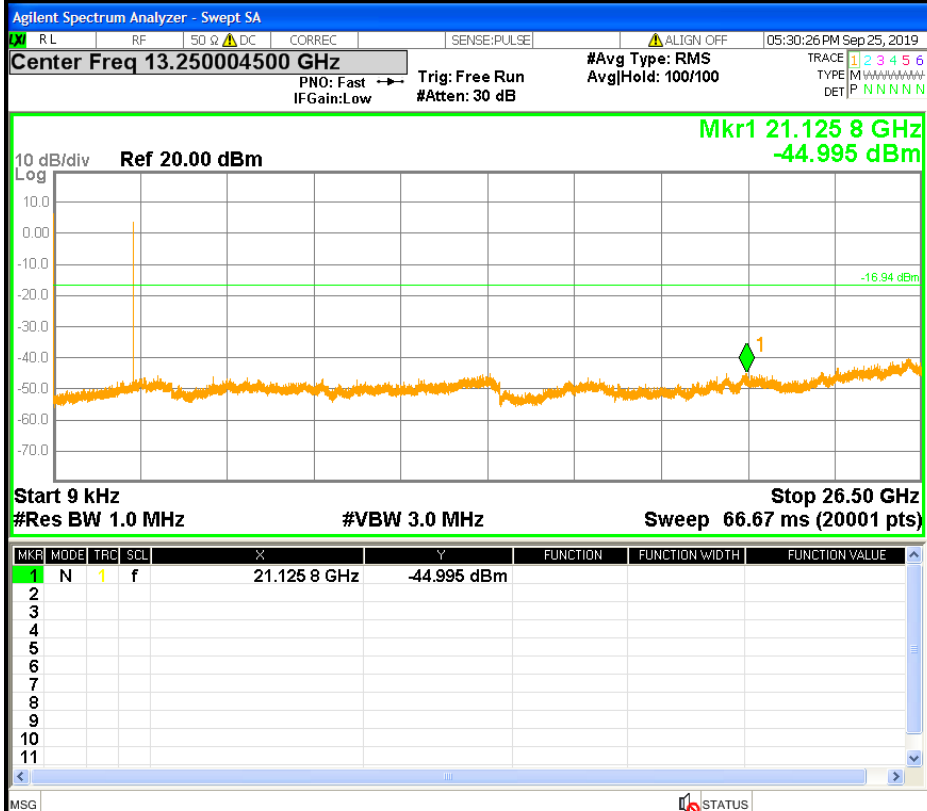
Start Freq
2.440000000 GHz

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

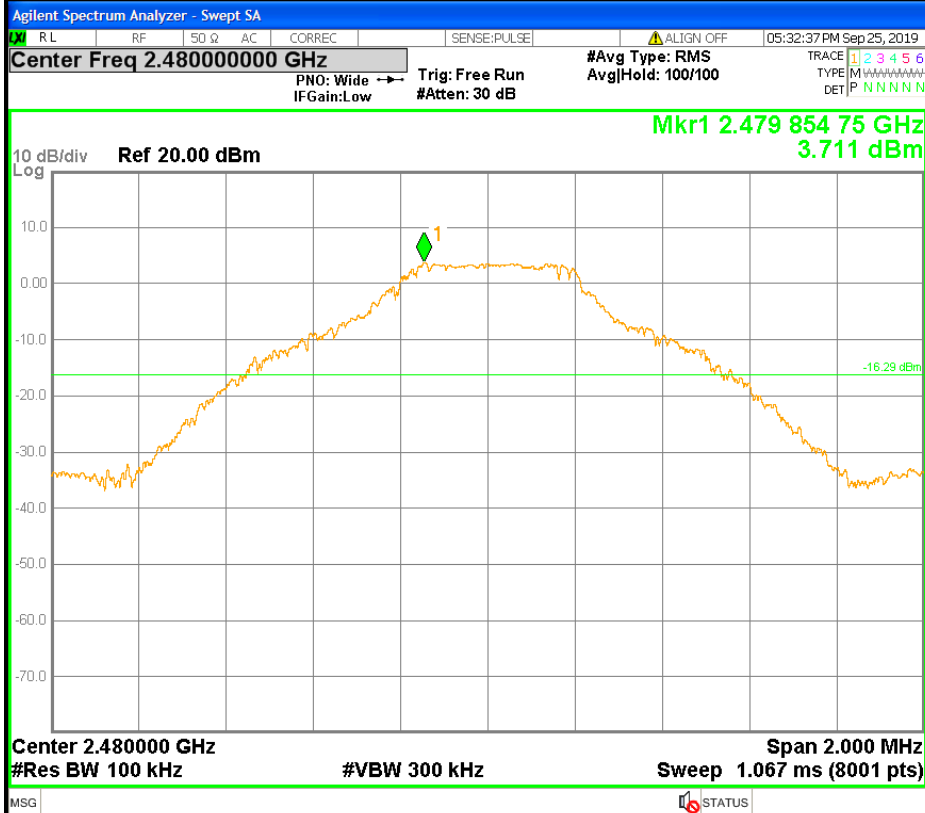
Stop Freq
26.500000000 GHz

CF Step
2.649999100 GHz
Auto Man

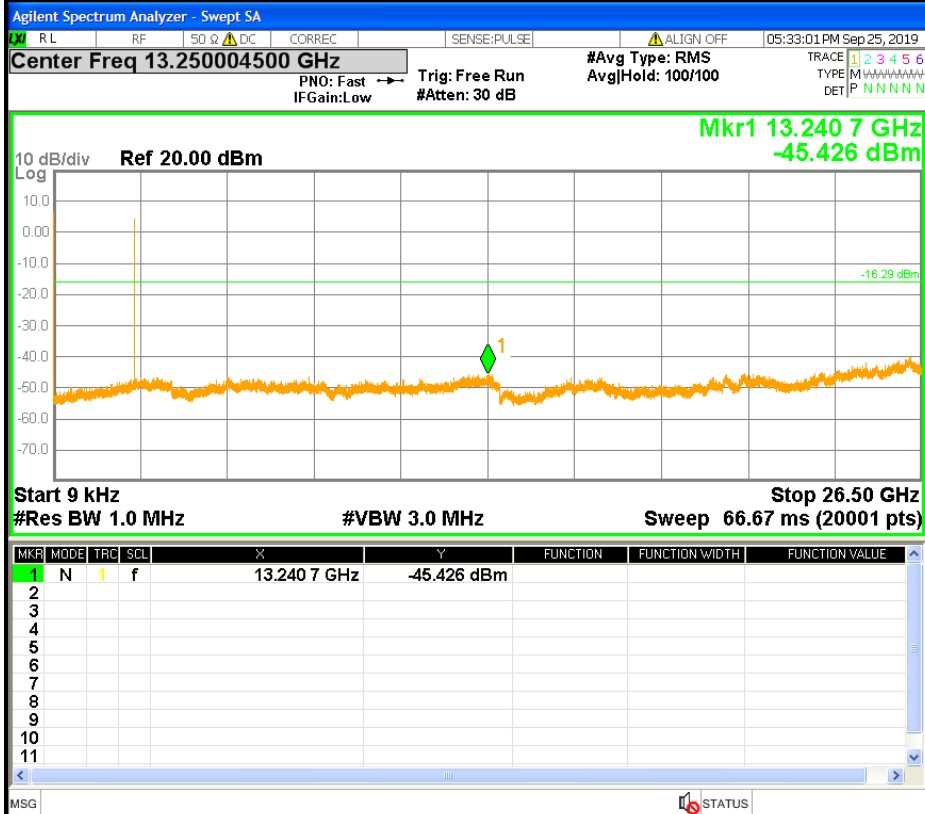
Freq Offset
0 Hz

GFSK HCH Graphs

Pref

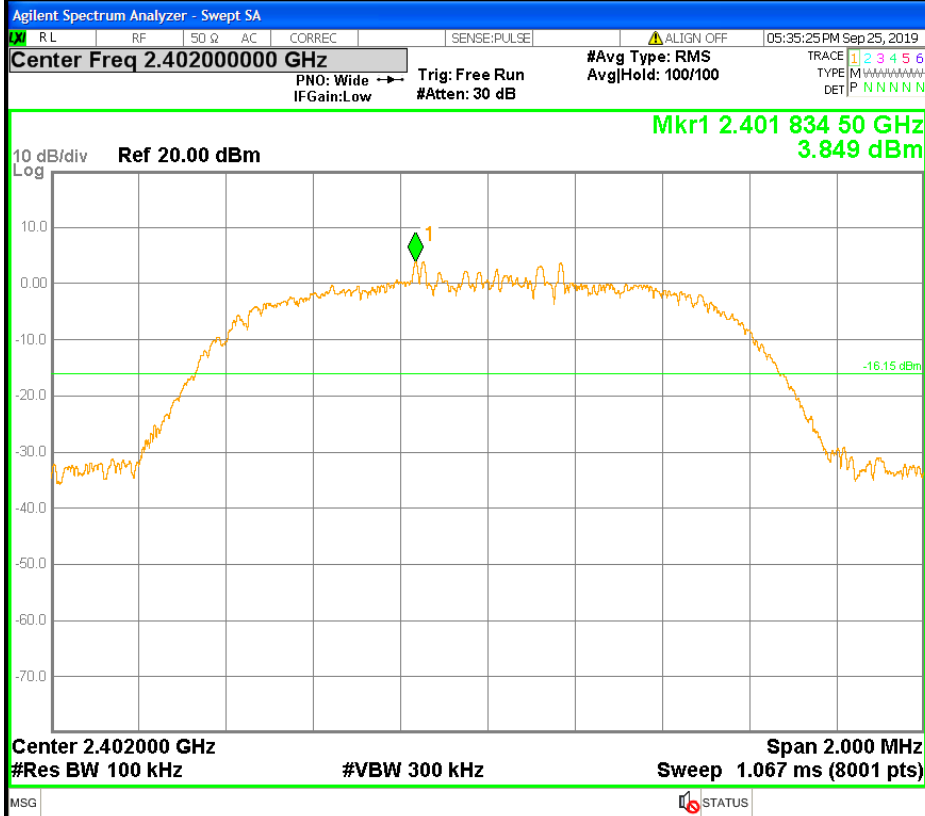


Puw

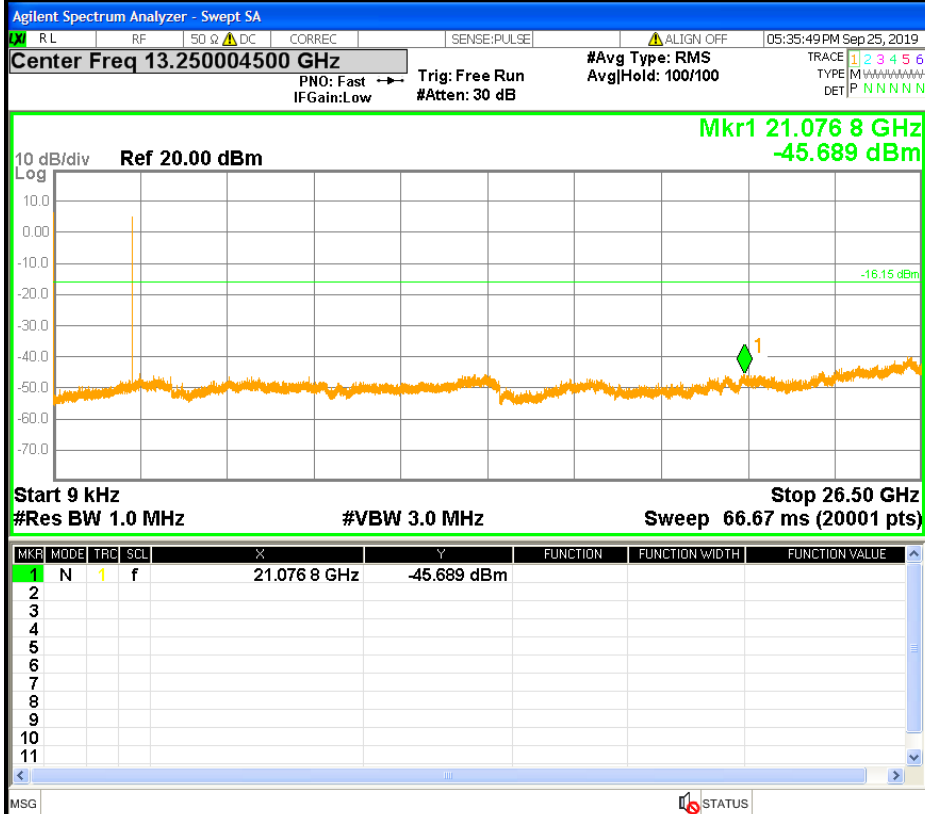


$\pi/4$ DQPSK LCH Graphs

Pref

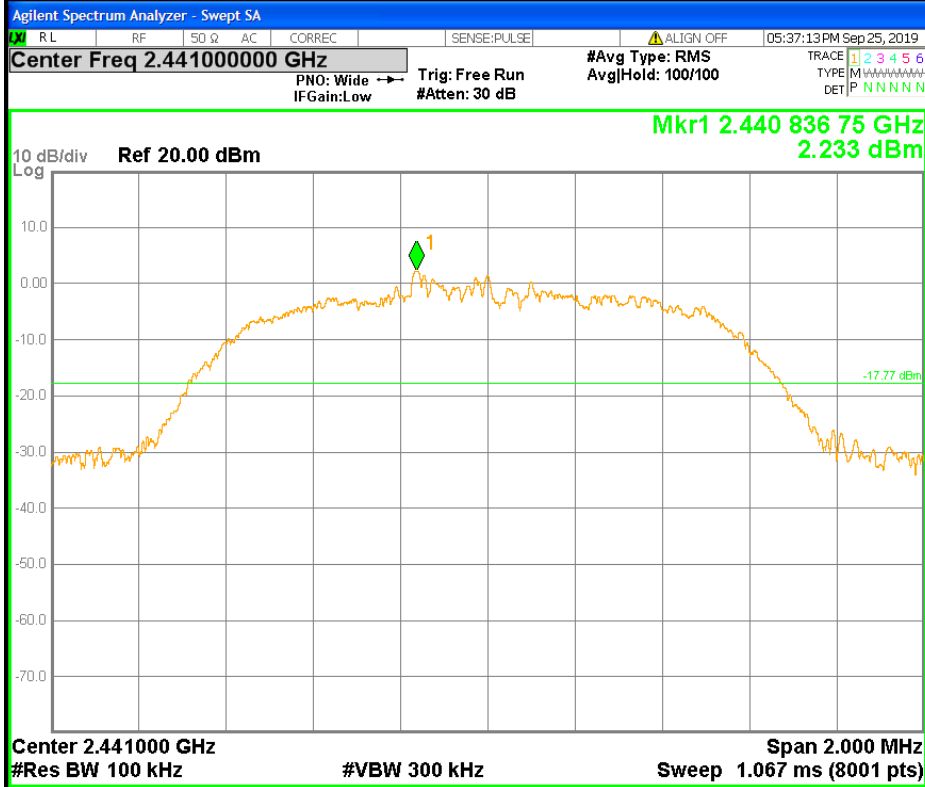


Puw



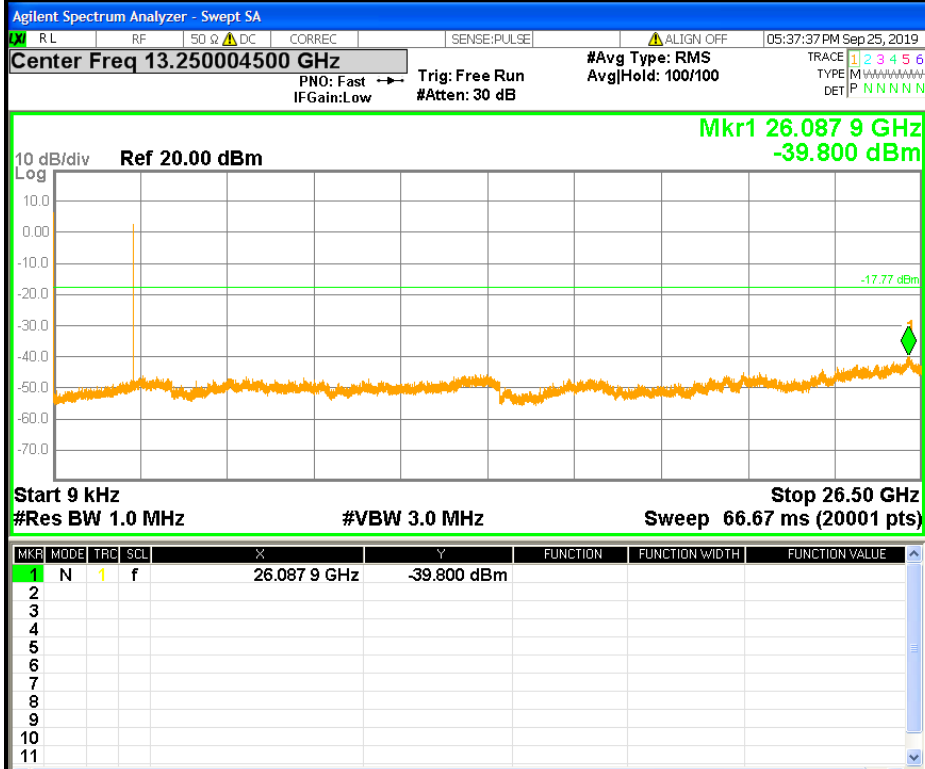
$\pi/4$ DQPSK MCH Graphs

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

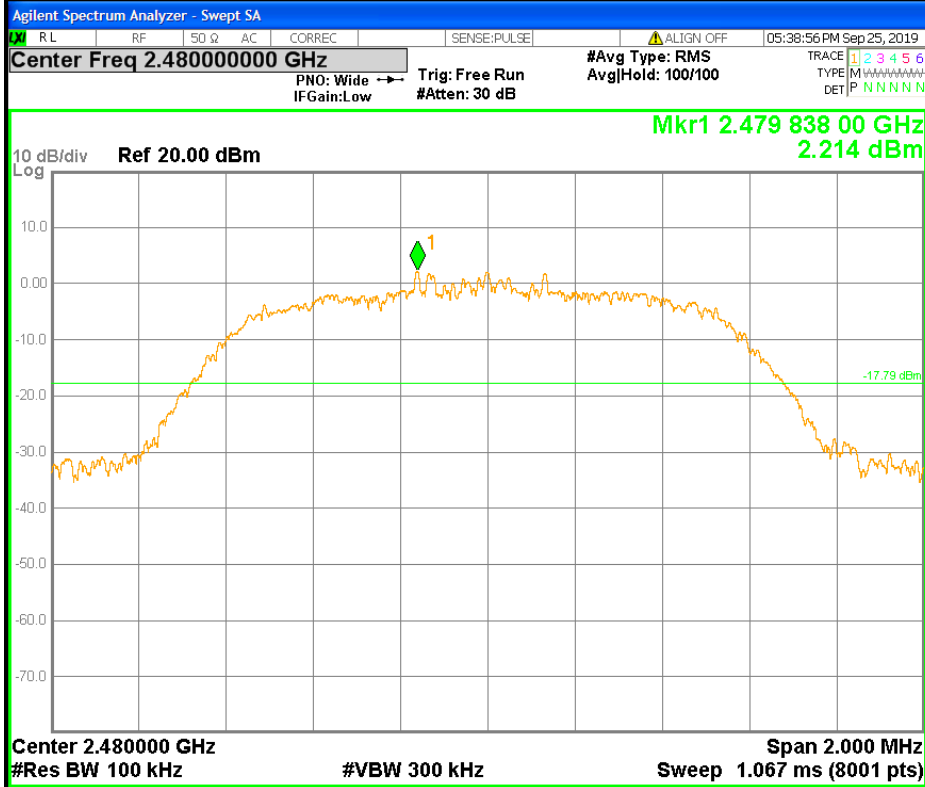
Puw



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

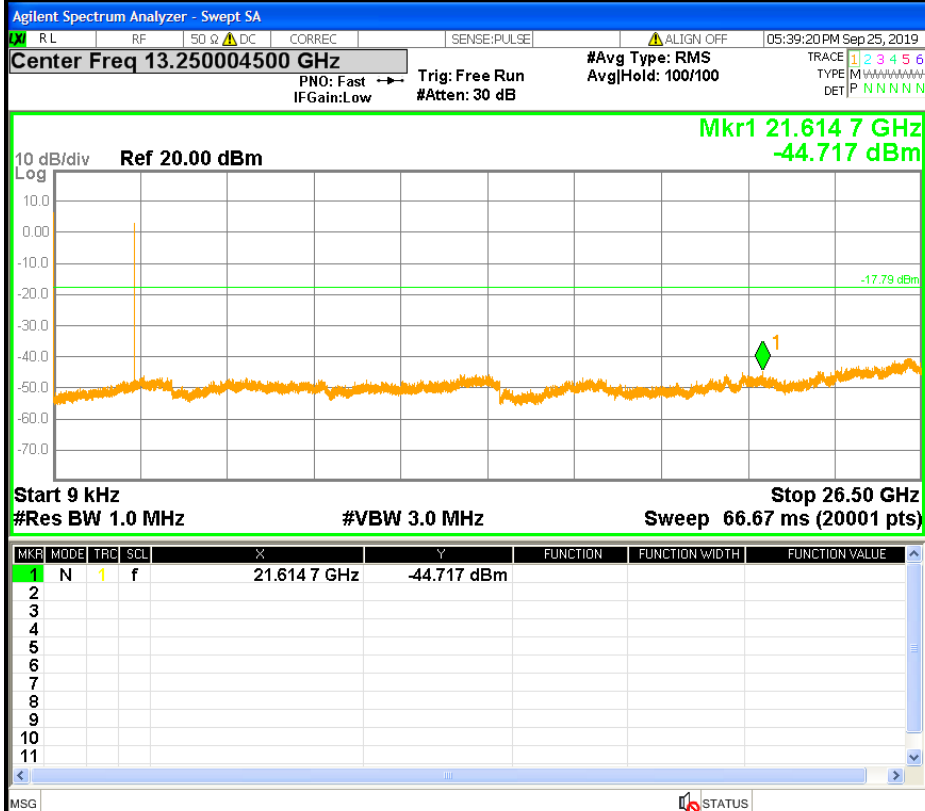
$\pi/4$ DQPSK HCH Graphs

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
Freq Offset 0 Hz

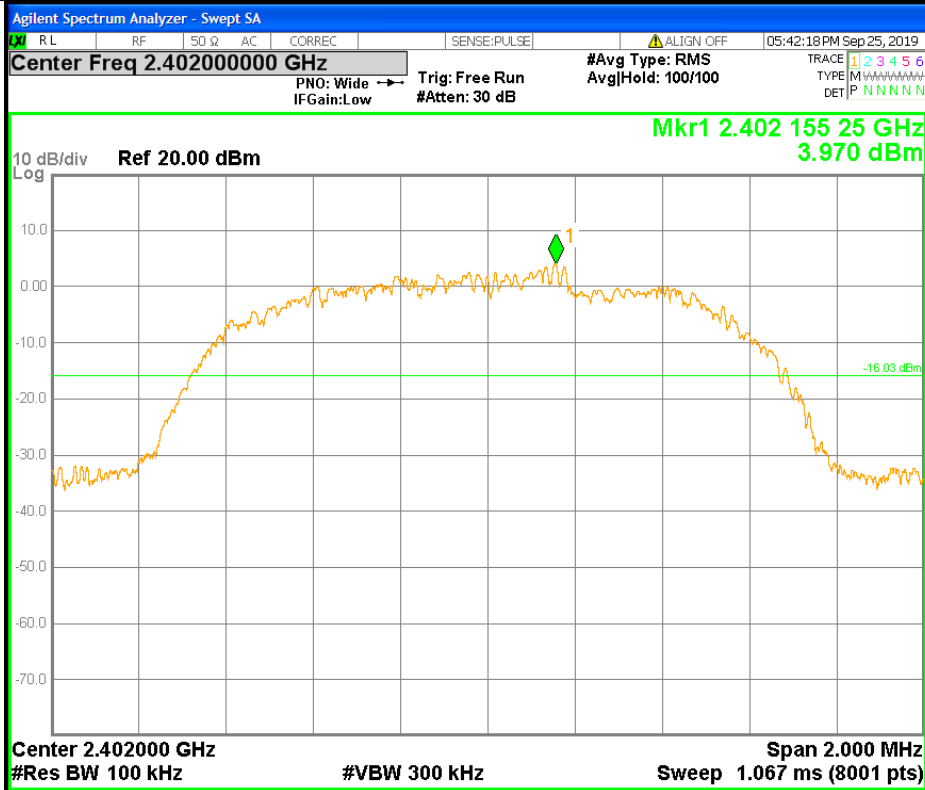
Puw



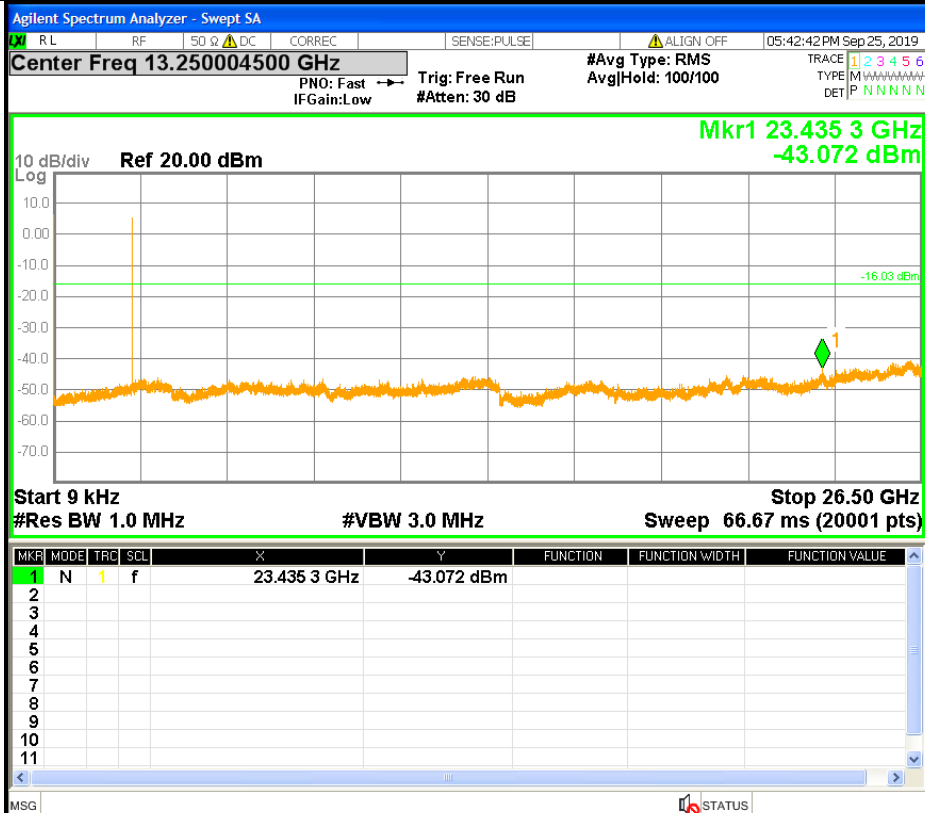
Frequency
Auto Tune
Center Freq 13.250004500 GHz
Start Freq 9.000 kHz
Stop Freq 26.500000000 GHz
CF Step 2.649999100 GHz Auto
Freq Offset 0 Hz

8DPSK LCH Graphs

Pref

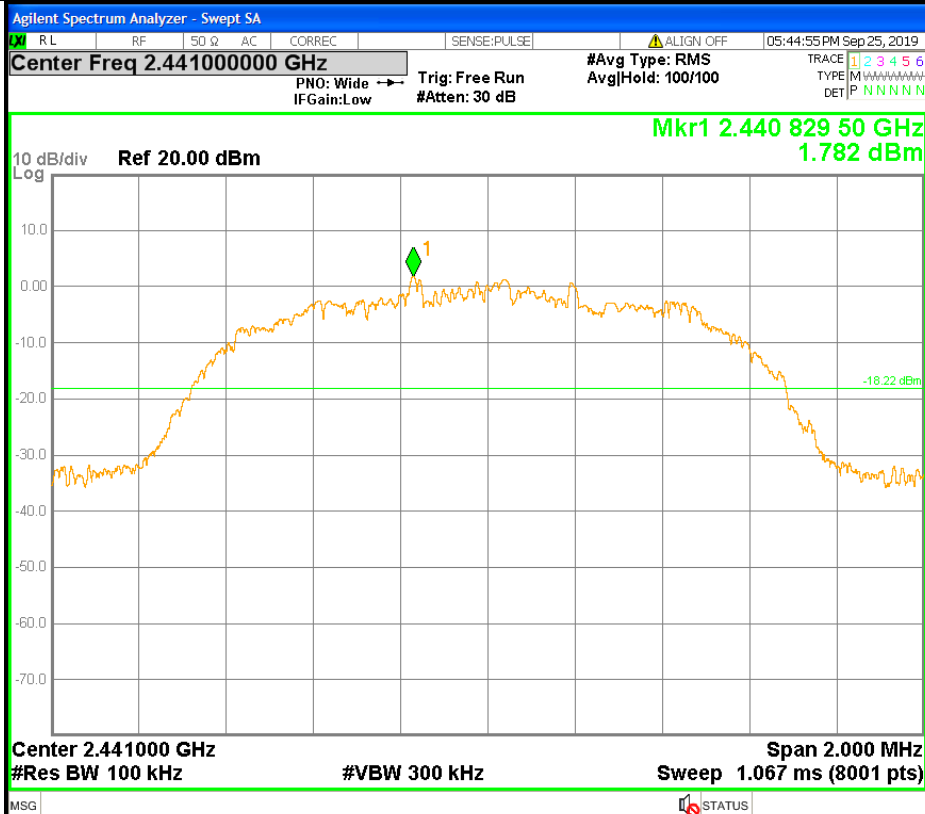


Puw

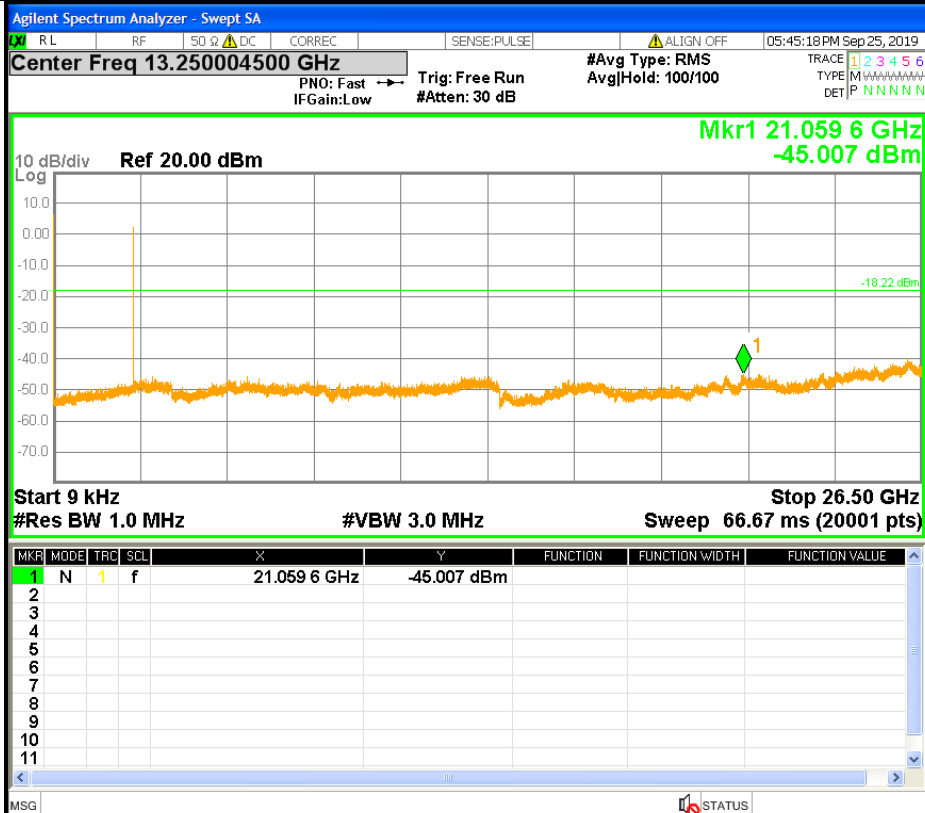


8DPSK MCH Graphs

Pref

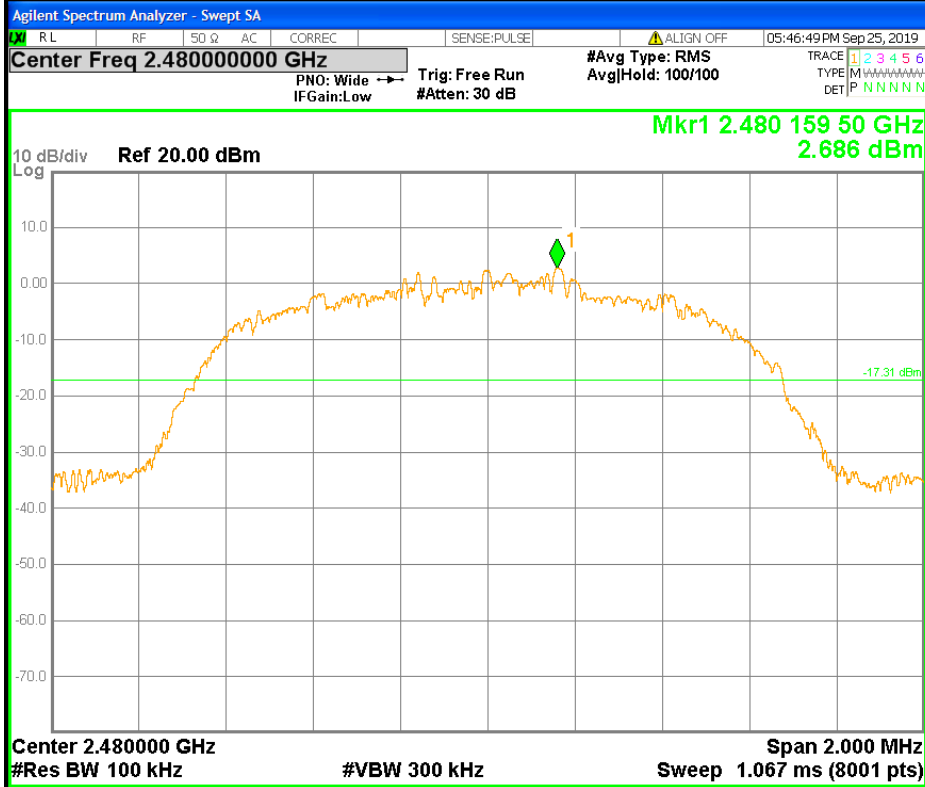


Puw



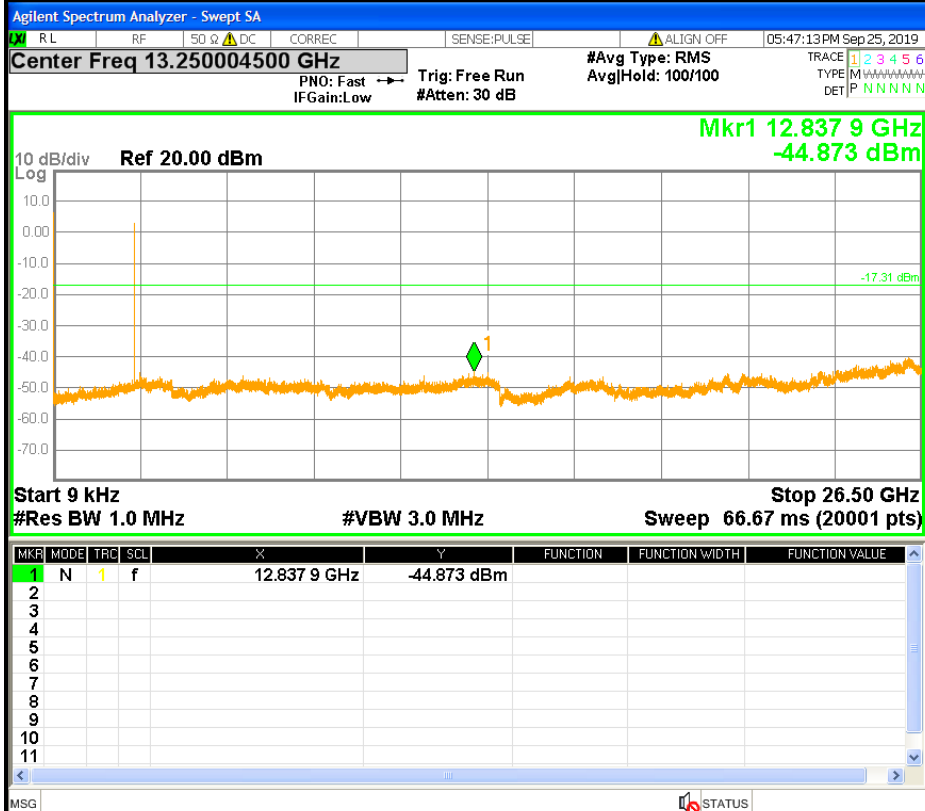
8DPSK HCH Graphs

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



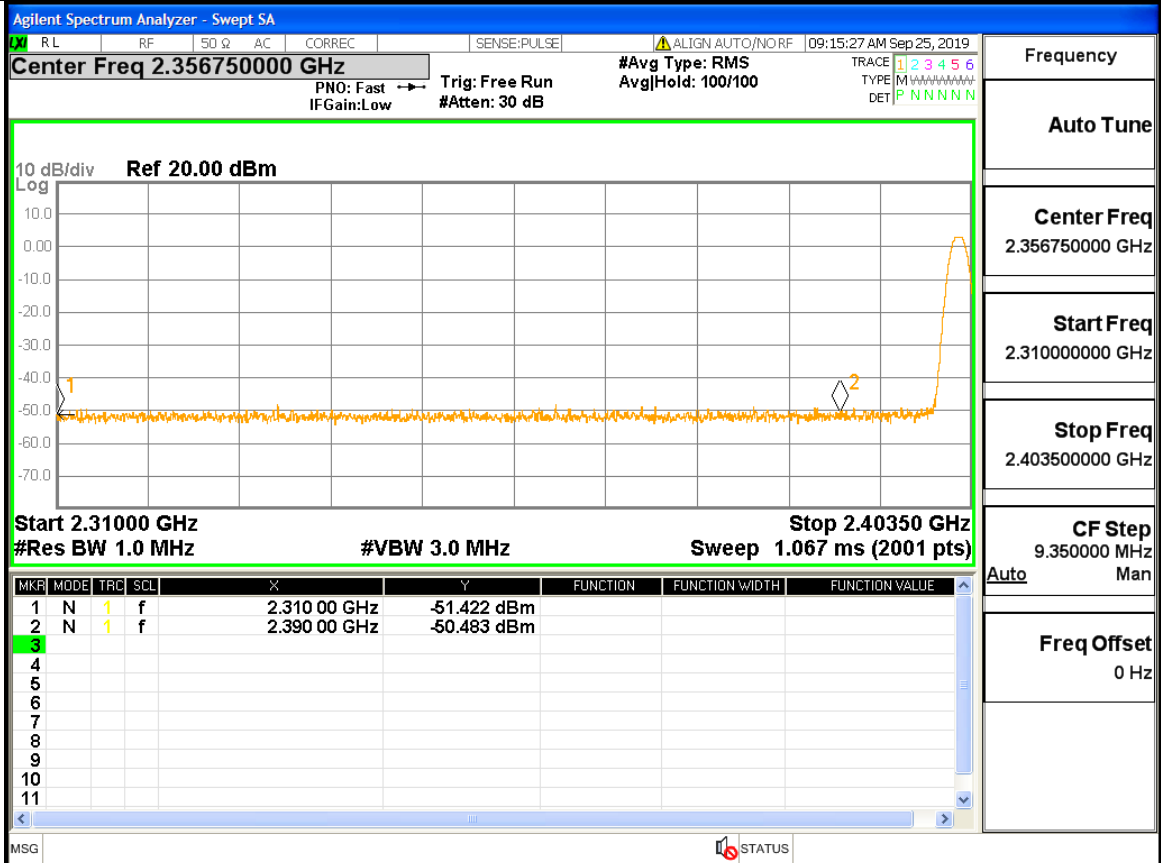
Frequency
Auto Tune
Center Freq 13.250004500 GHz
Start Freq 9.000 kHz
Stop Freq 26.500000000 GHz
CF Step 2.649999100 GHz Auto Man
Freq Offset 0 Hz

A.8 Restrict-band band-edge measurements

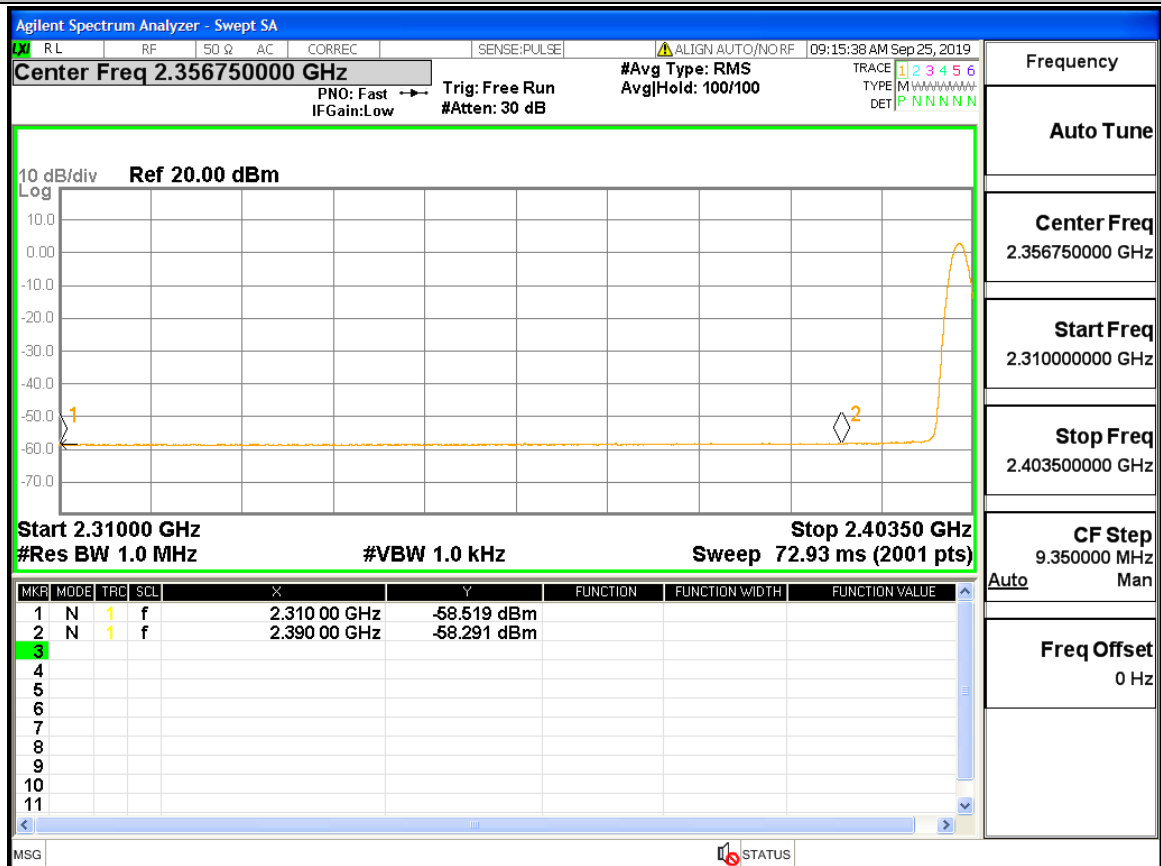
Type	Carrier Frequency (MHz)	Frequency(M Hz)	Gain	Ground Factor	Peak Value(dBm)	E [dBuV/m]	Limit [dBuV/m]	Conclusion
1DH5	2402	2390	2.00	0.00	-50.48	46.72	74	Pass
1DH5	2480	2496.313	2.00	0.00	-47.32	49.88	74	Pass
2DH5	2402	2390	2.00	0.00	-52.47	44.73	74	Pass
2DH5	2480	2483.5	2.00	0.00	-49.75	47.45	74	Pass
3DH5	2402	2390	2.00	0.00	-51.74	45.46	74	Pass
3DH5	2480	2483.5	2.00	0.00	-50.8	46.4	74	Pass

Type	Carrier Frequency (MHz)	Frequency(M Hz)	Gain	Ground Factor	Average Value(dBm)	E [dBuV/m]	Limit [dBuV/m]	Conclusion
1DH5	2402	2390	2.00	0.00	-58.29	38.91	54	Pass
1DH5	2480	2496.313	2.00	0.00	-53.79	43.41	54	Pass
2DH5	2402	2390	2.00	0.00	-58.02	39.18	54	Pass
2DH5	2480	2483.5	2.00	0.00	-53.15	44.05	54	Pass
3DH5	2402	2390	2.00	0.00	-58.18	39.02	54	Pass
3DH5	2480	2483.5	2.00	0.00	-55.93	41.27	54	Pass

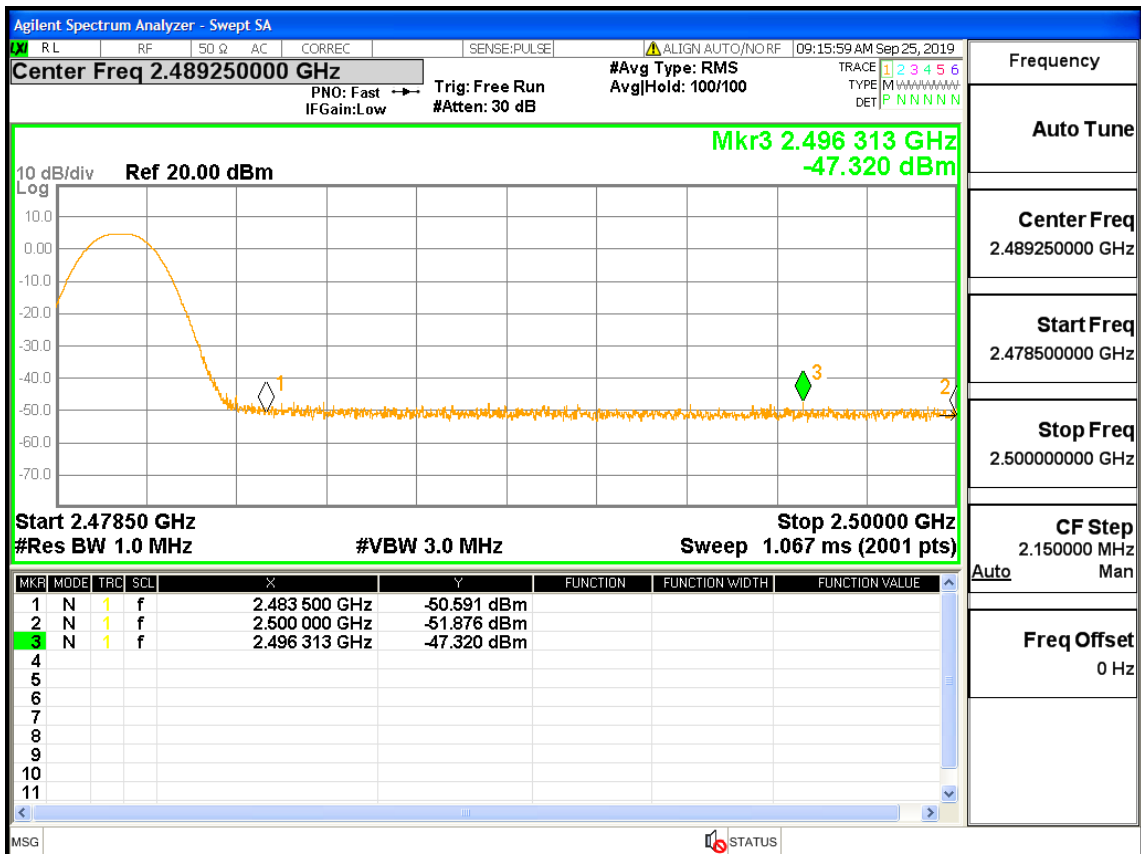
Restrict-band band-edge measurements_2402_PEAK_DH5



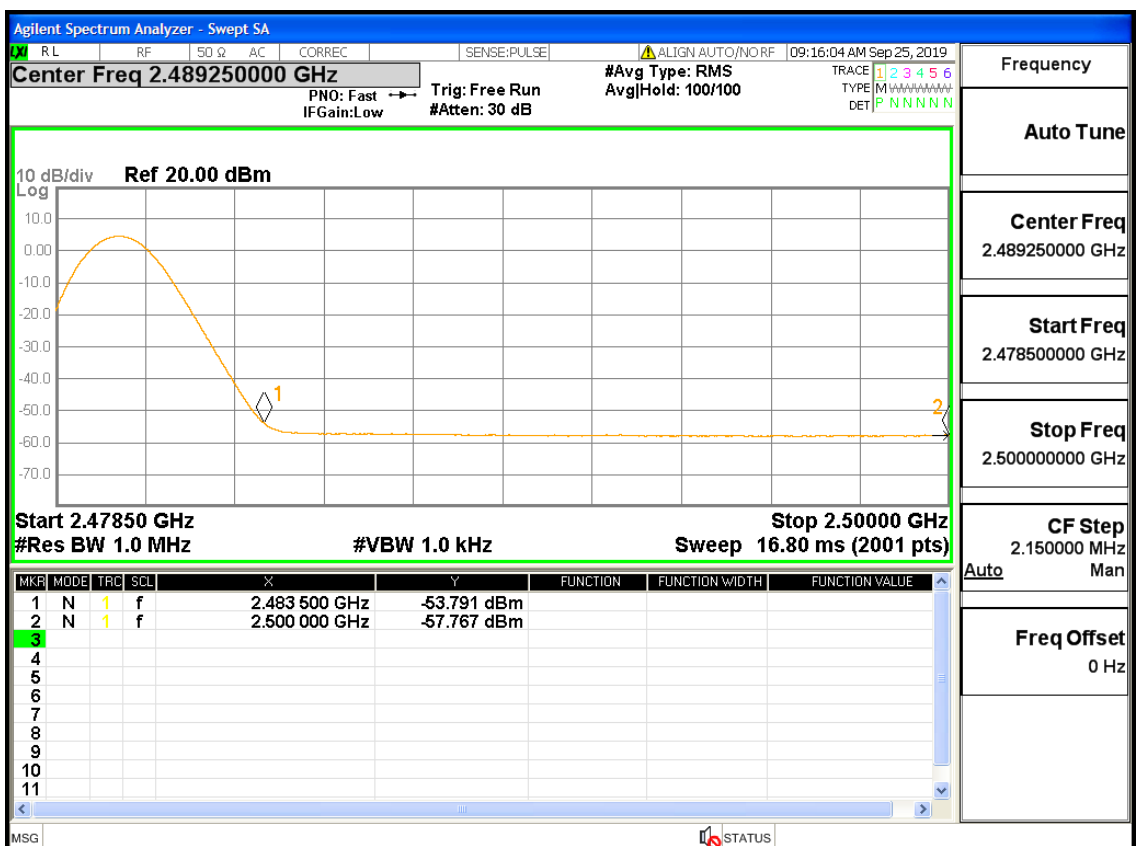
Restrict-band band-edge measurements_2402_AV_DH5



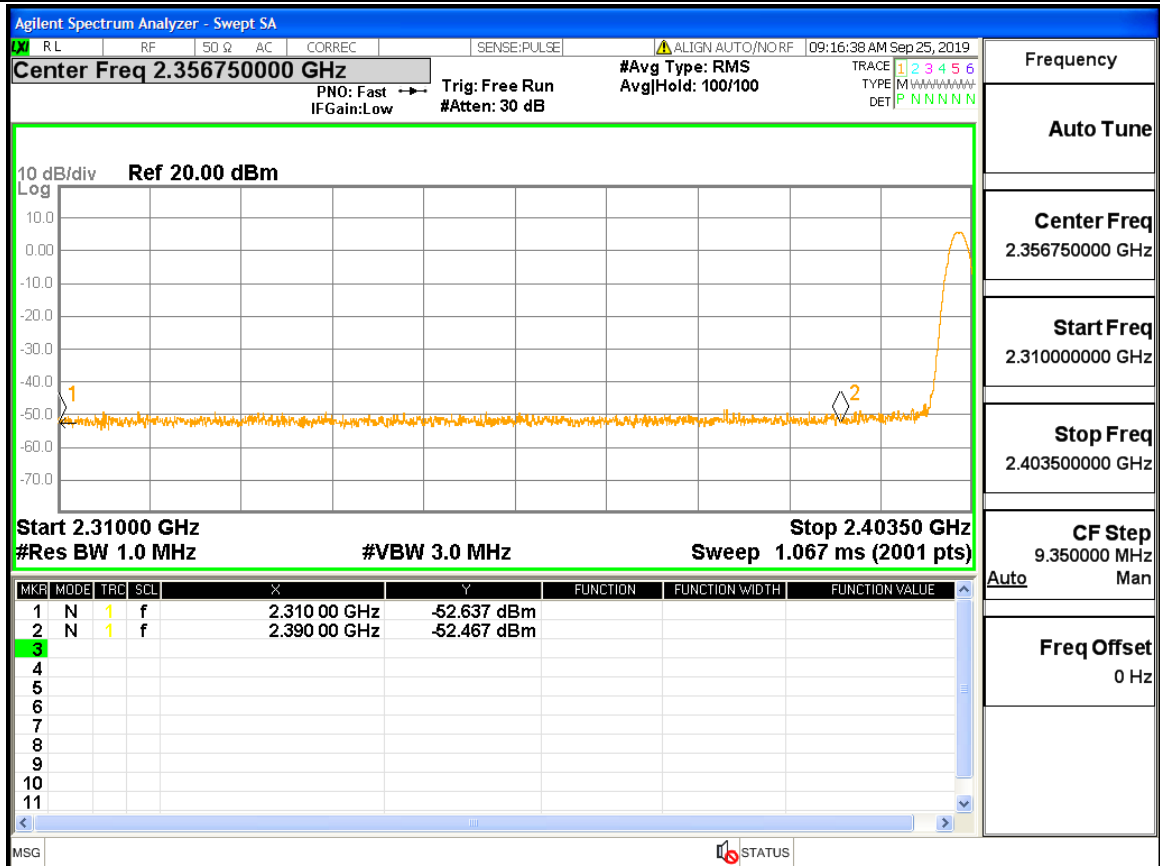
Restrict-band band-edge measurements_2480_PEAK_DH5



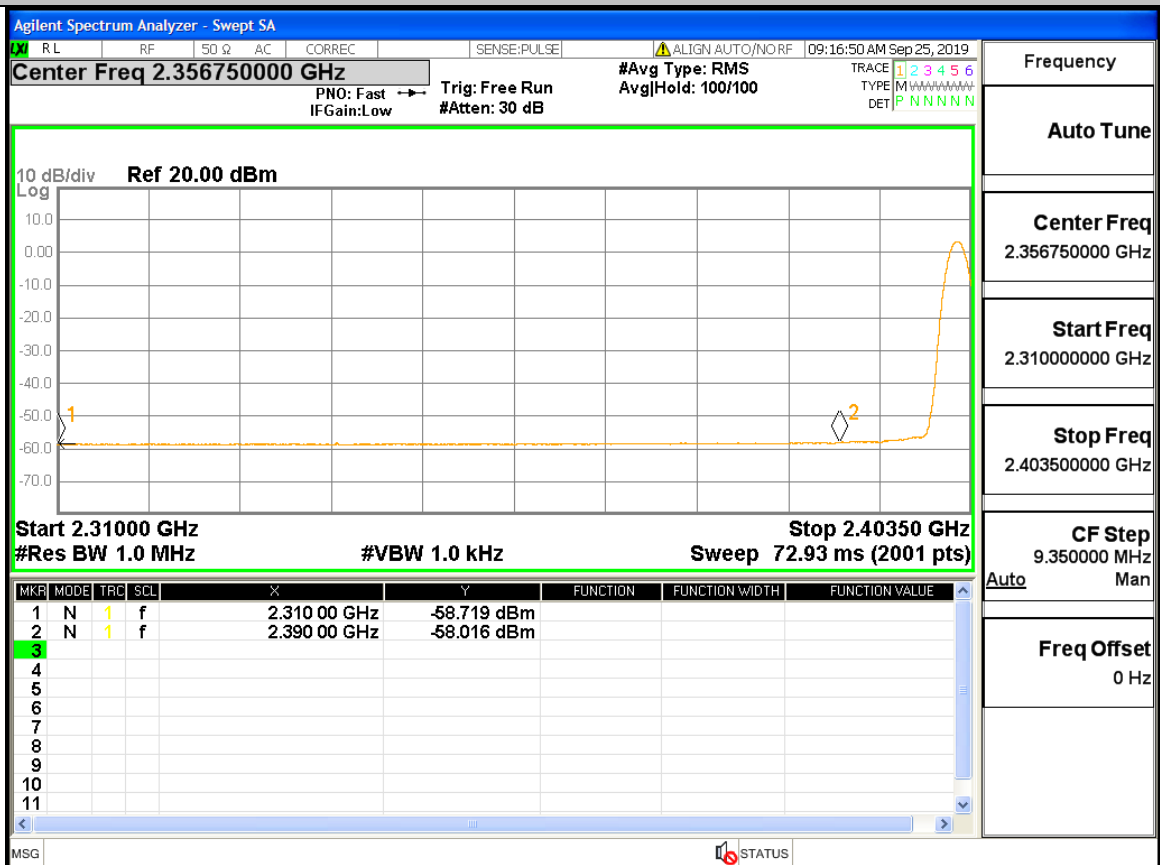
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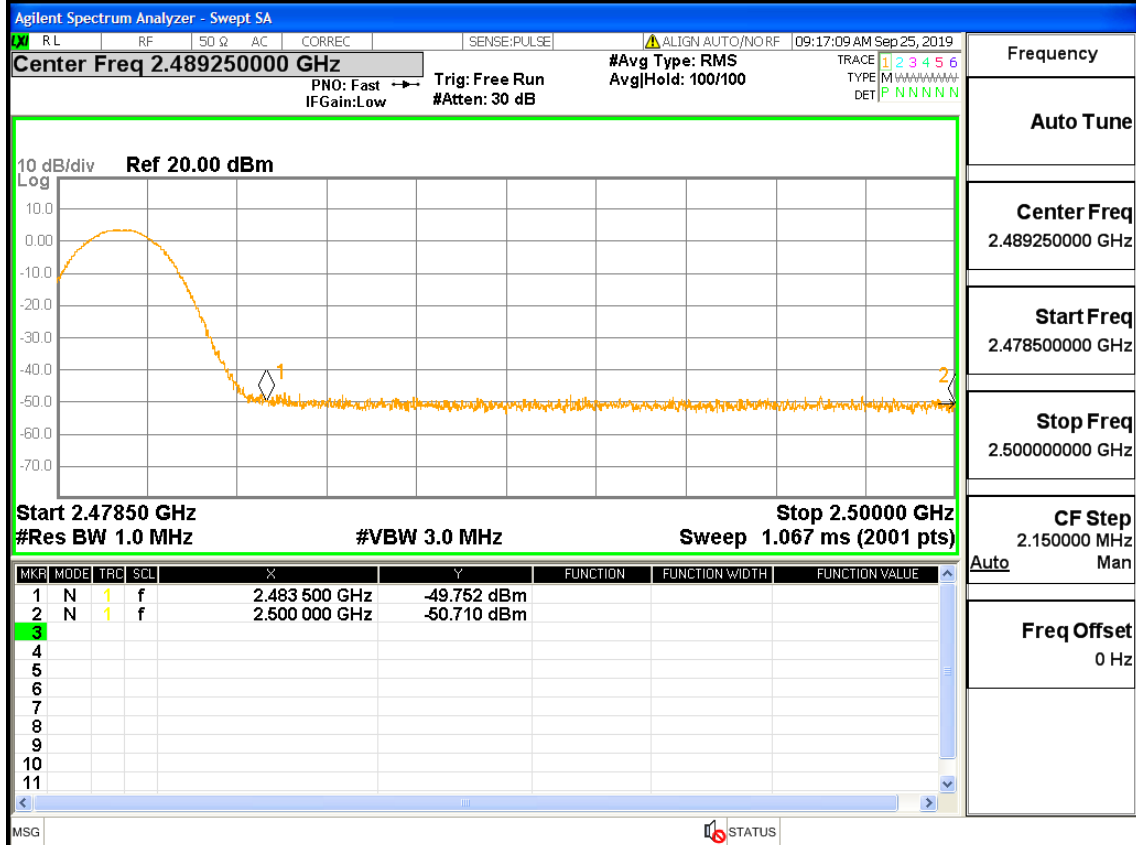
Restrict-band band-edge measurements_2402_PEAK_2DH5



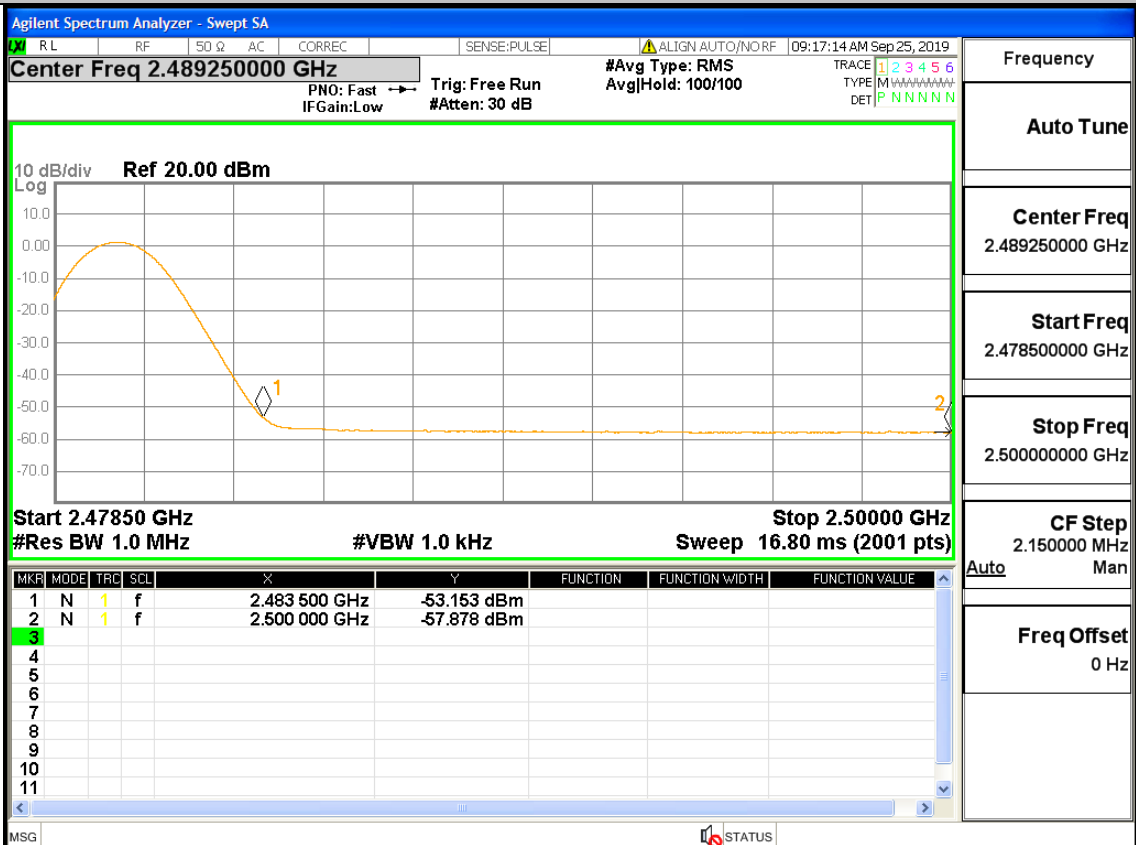
Restrict-band band-edge measurements_2402_AV_2DH5



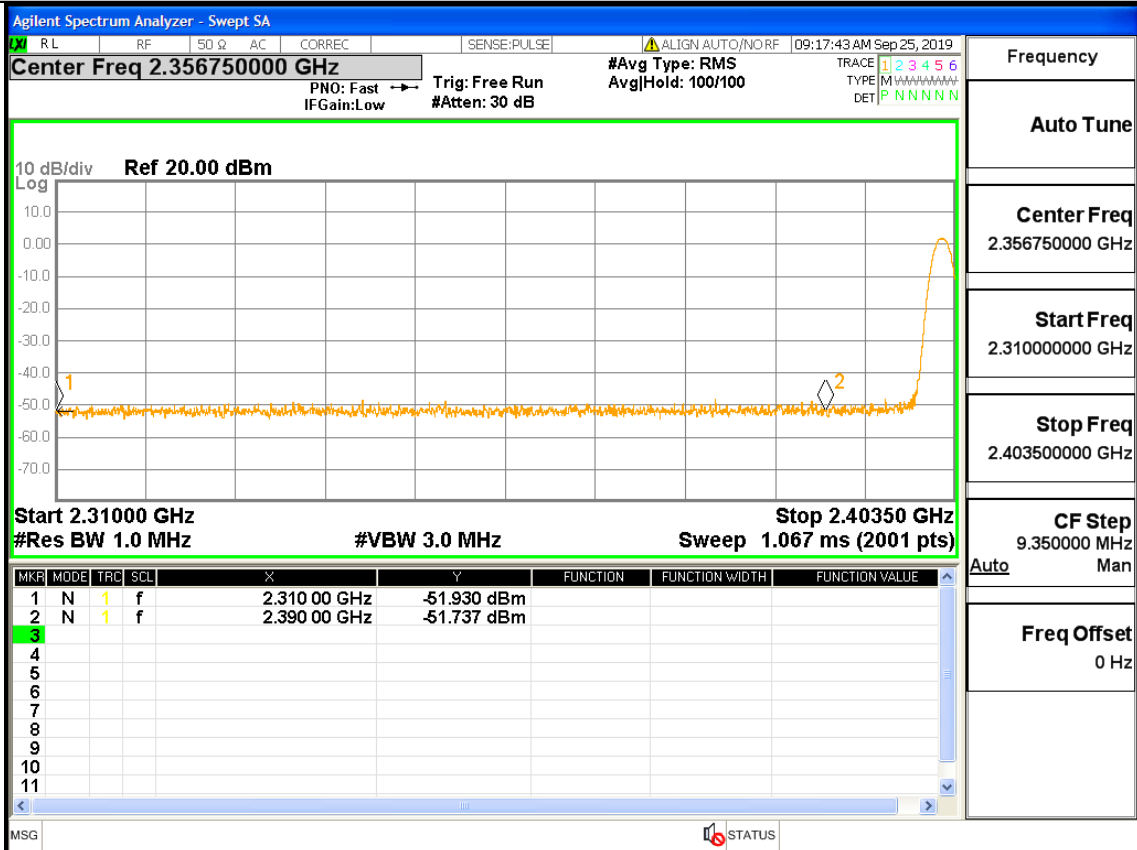
Restrict-band band-edge measurements_2480_PEAK_2DH5



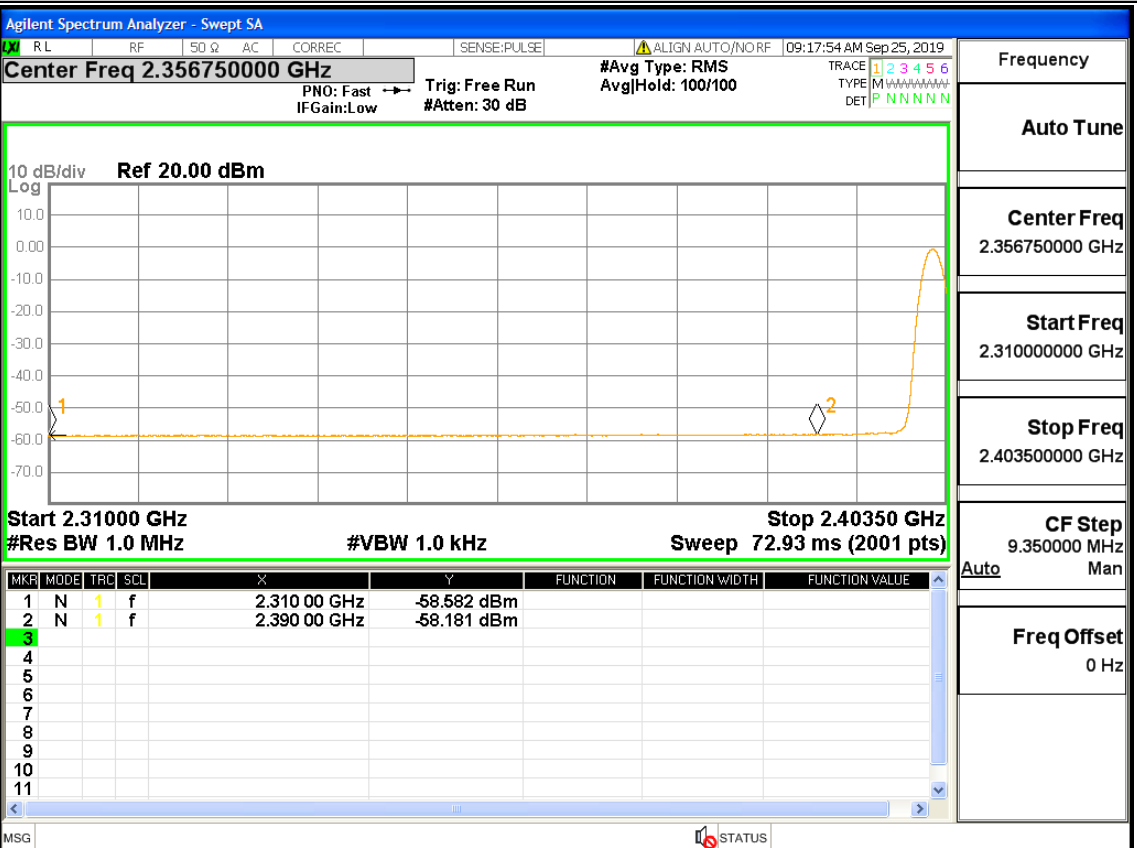
Restrict-band band-edge measurements_2480_AV_2DH5



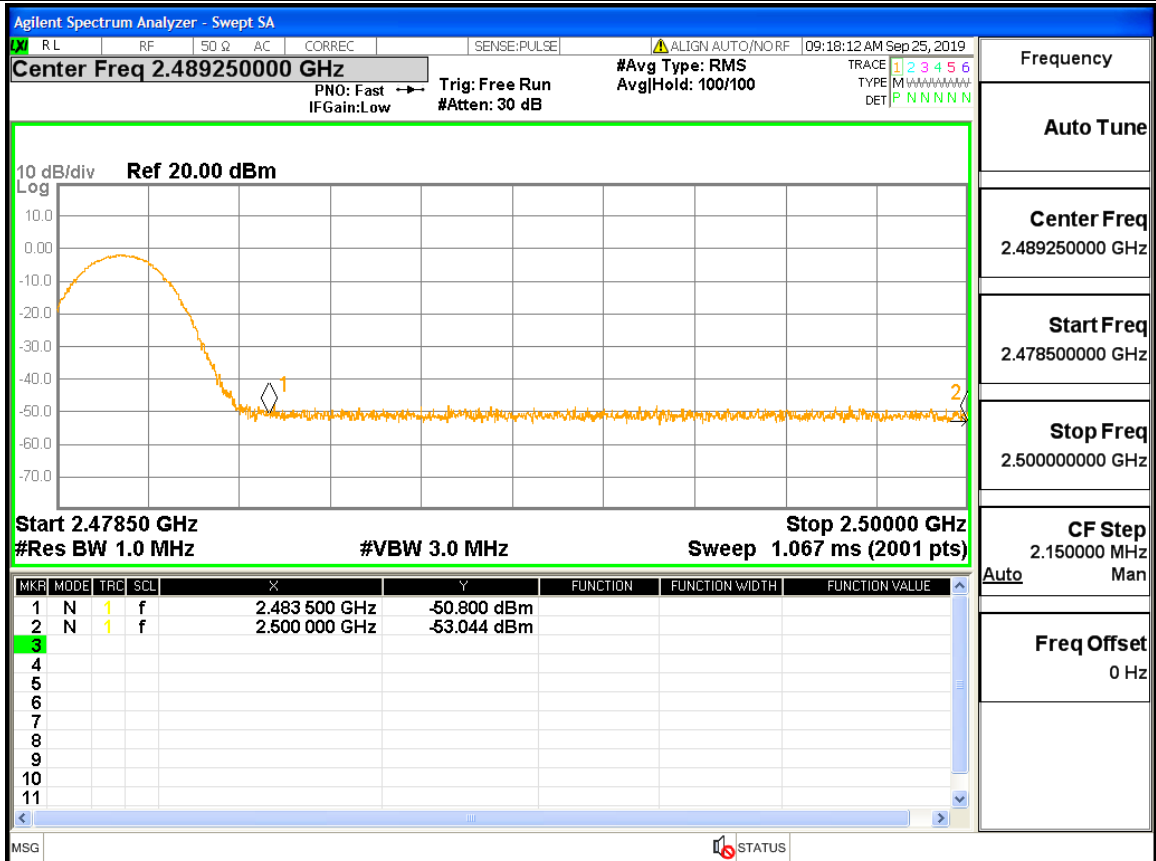
Restrict-band band-edge measurements_2402_PEAK_3DH5



Restrict-band band-edge measurements_2402_AV_3DH5



Restrict-band band-edge measurements_2480_PEAK_3DH5



Restrict-band band-edge measurements_2480_AV_3DH5

