

Appendix A

RF Test Data for BT V5.0 (BDR/EDR) (Conducted Measurement)

Product Name: Bluetooth speaker & Bluetooth Boombox

Trade Mark: N/A

Test Model: H10SW

Environmental Conditions

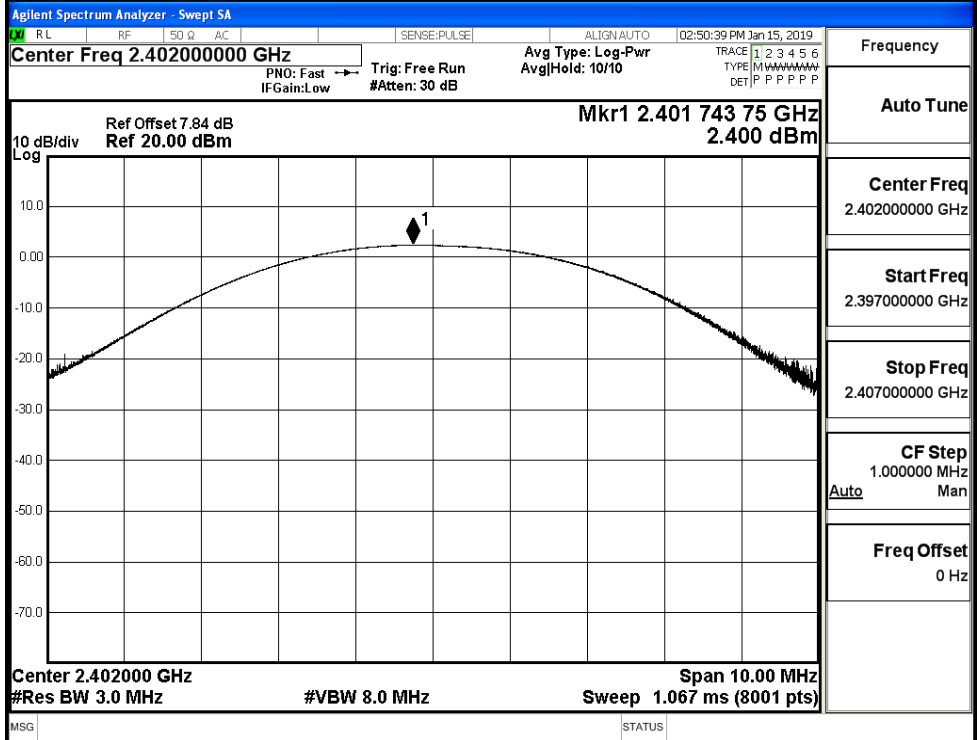
Temperature:	24.3 ° C
Relative Humidity:	52.7%
ATM Pressure:	100.0 kPa
Test Engineer:	JERRY.Zeng
Supervised by:	Jayden.Zhuo

A.1 Maximum Conducted Peak Output Power

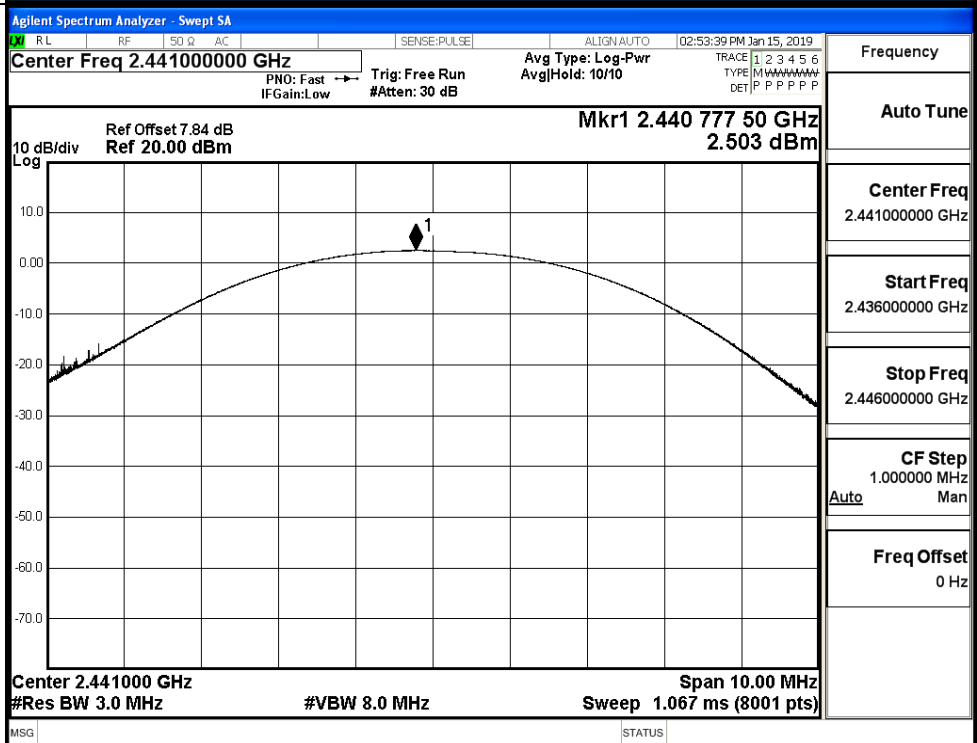
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2.400	21	PASS
	MCH	2.503	21	PASS
	HCH	2.692	21	PASS
π/4DQPSK	LCH	2.981	21	PASS
	MCH	3.077	21	PASS
	HCH	3.243	21	PASS

Test Graphs

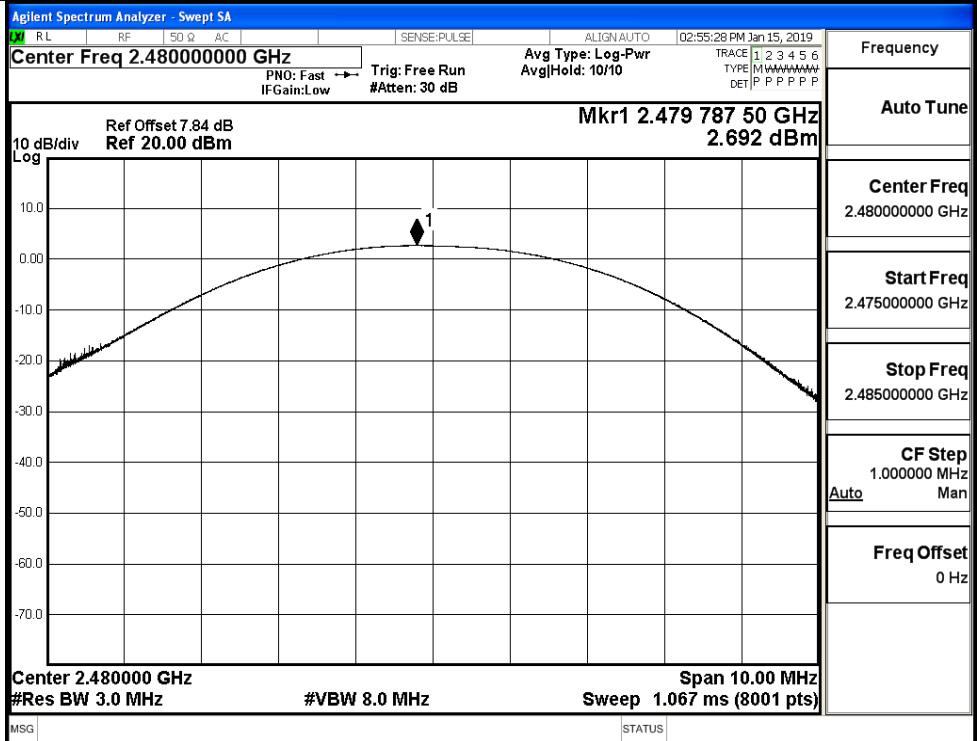
GFSK/LCH



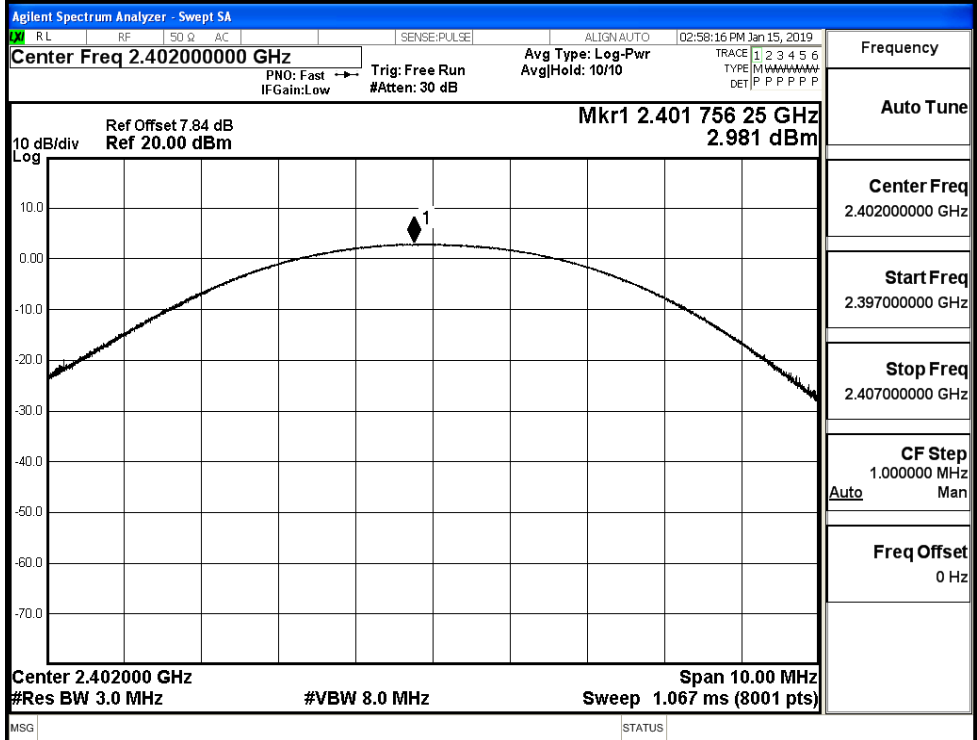
GFSK/MCH



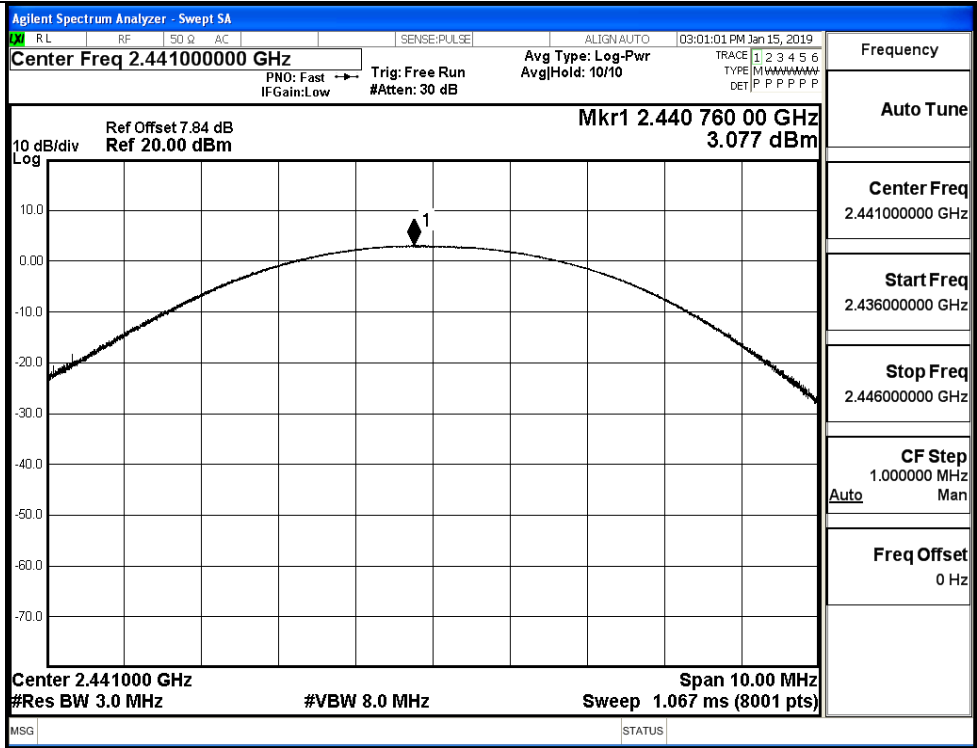
GFSK/HCH



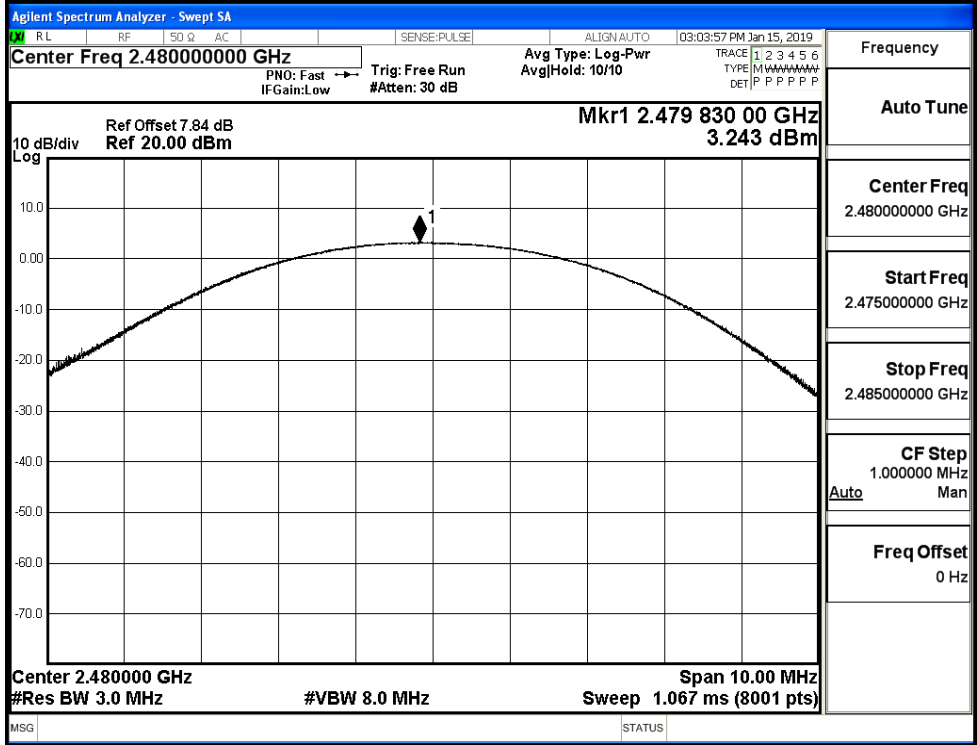
$\pi/4$ DQPSK/LCH



π /4DQPSK/MCH

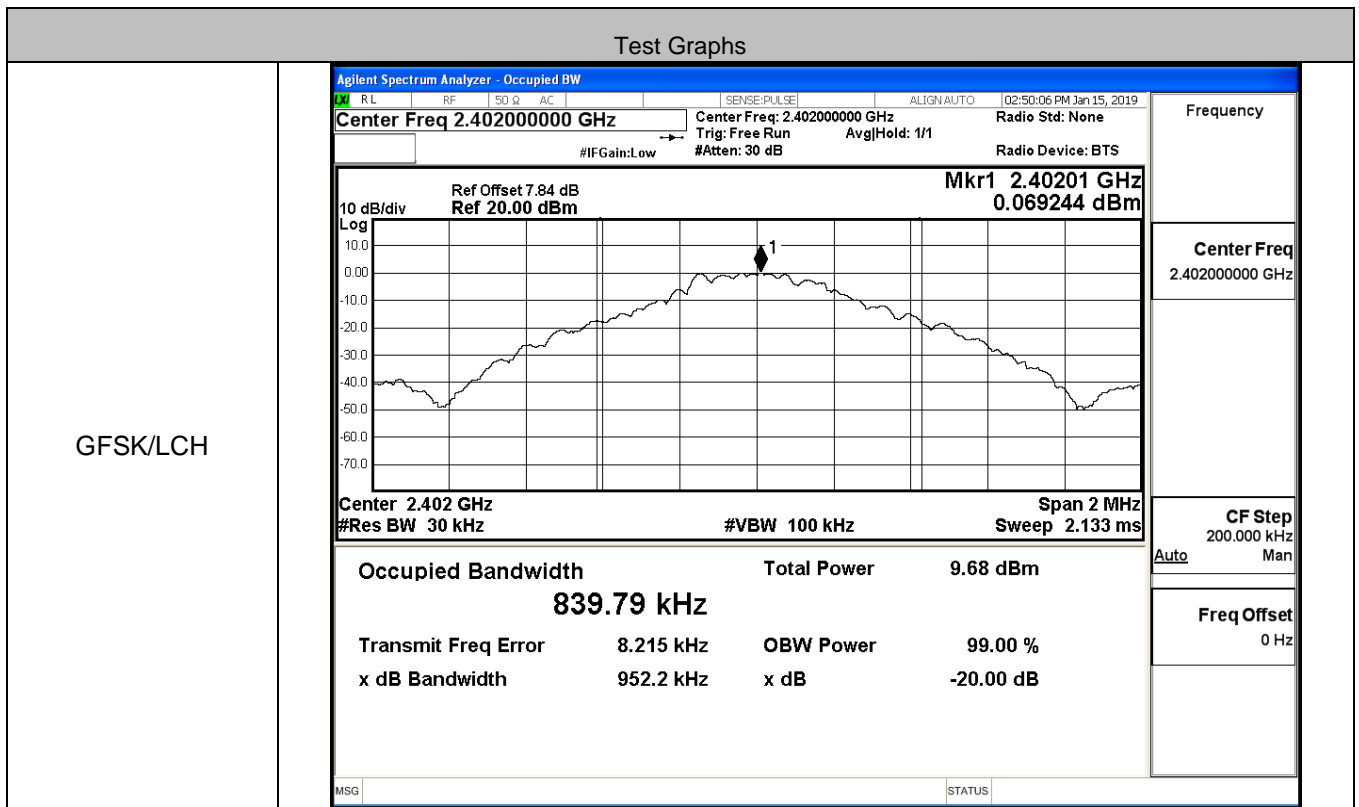


π /4DQPSK/HCH

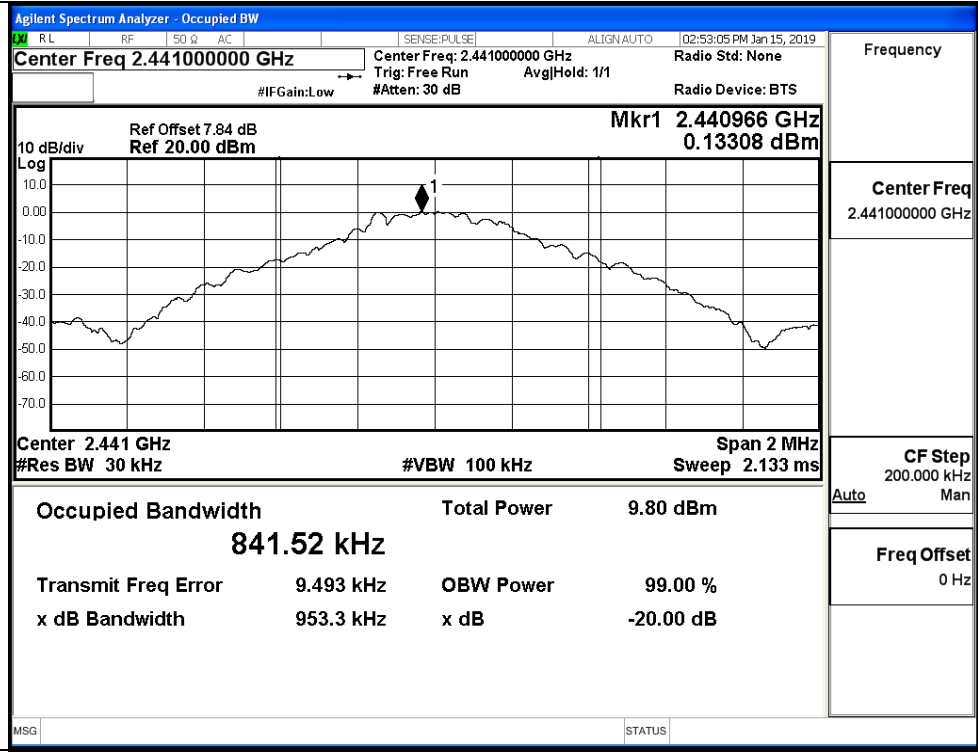


A.2 99% and 20dB Bandwidth

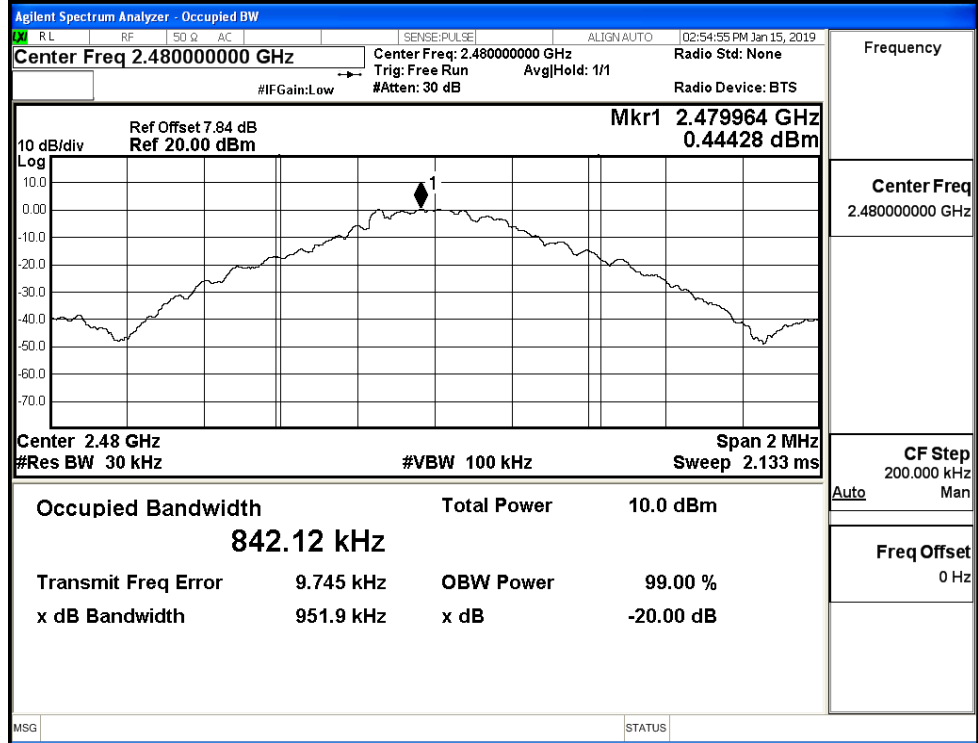
Mode	Channel.	99% Bandwidth [MHz]	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.83979	0.9522	Not Specified	PASS
	MCH	0.84152	0.9533	Not Specified	PASS
	HCH	0.84212	0.9519	Not Specified	PASS
π/4DQPSK	LCH	1.1752	1.312	Not Specified	PASS
	MCH	1.1788	1.315	Not Specified	PASS
	HCH	1.1763	1.313	Not Specified	PASS



GFSK/MCH

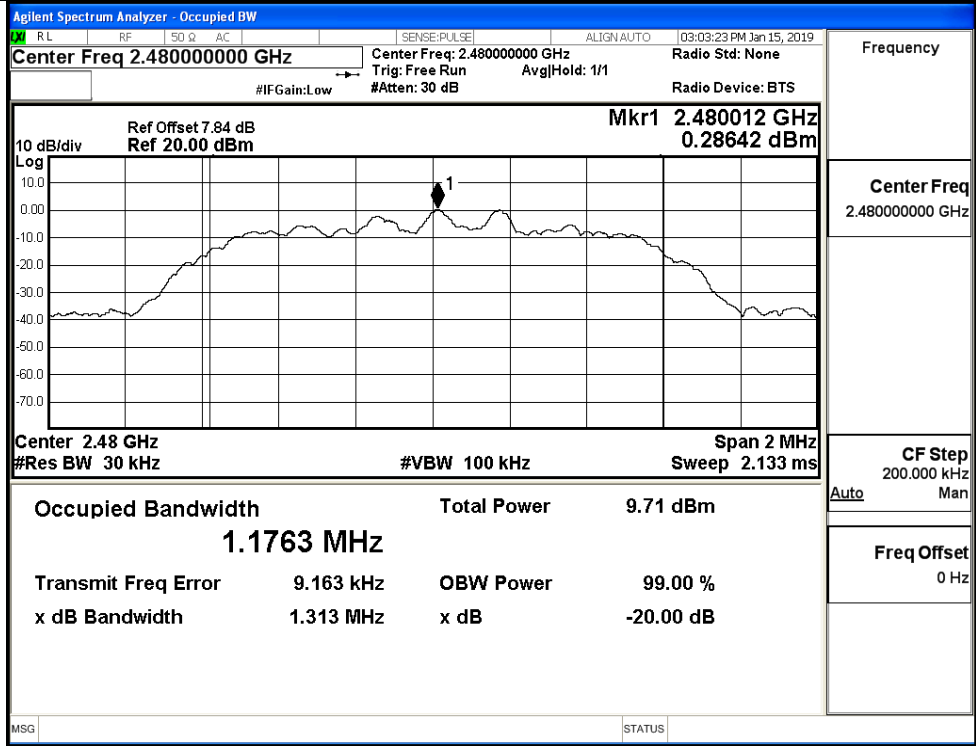


GFSK/HCH



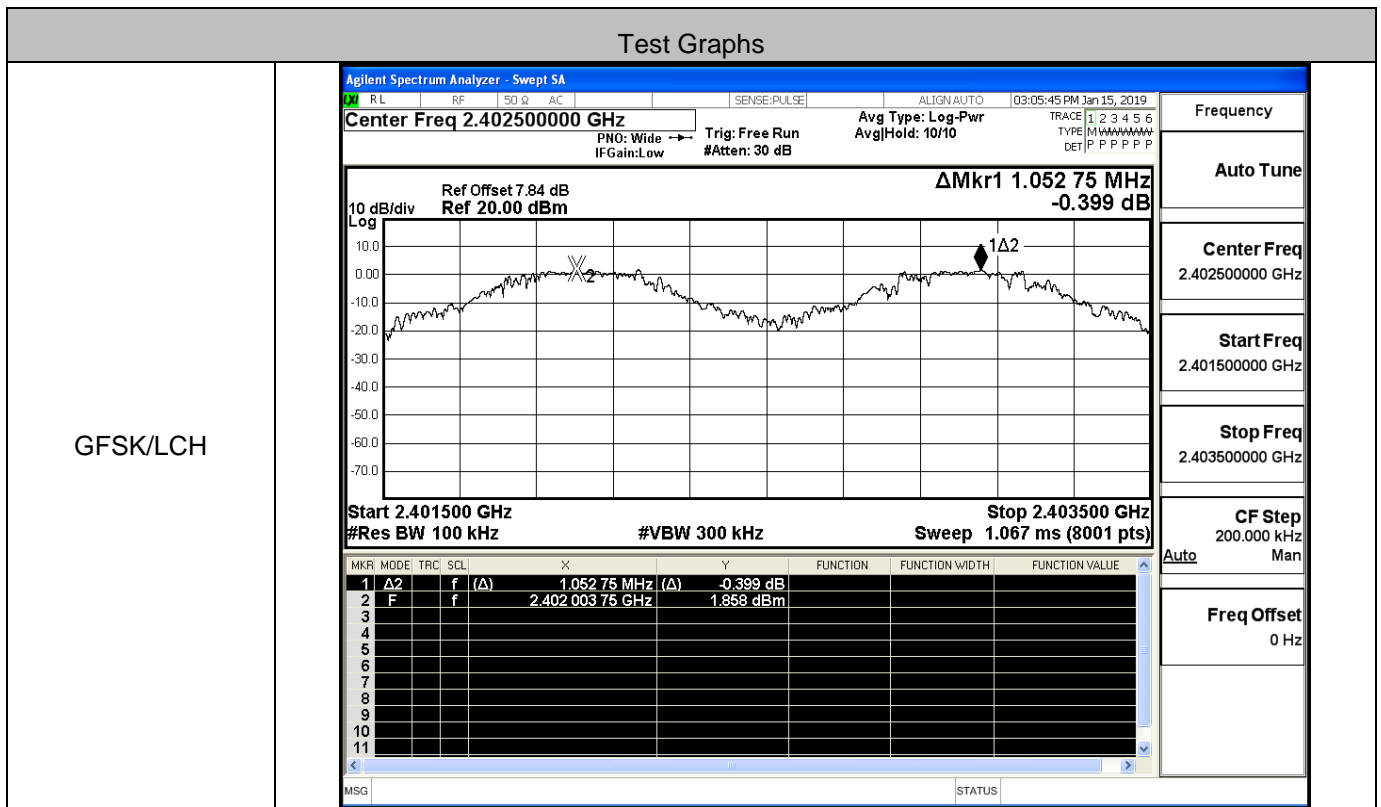
<p style="text-align: center;">π/4DQPSK/LCH</p>	<p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.40200000 GHz</p> <p>Mkr1 2.402012 GHz -0.052629 dBm</p> <p>Center 2.402 GHz Span 2 MHz</p> <p>Occupied Bandwidth 1.1752 MHz Total Power 9.31 dBm</p> <p>Transmit Freq Error 8.280 kHz OBW Power 99.00 %</p> <p>x dB Bandwidth 1.312 MHz x dB -20.00 dB</p>	<p>Frequency</p> <p>Center Freq 2.40200000 GHz</p> <p>CF Step 200.000 kHz</p> <p>Freq Offset 0 Hz</p>
<p style="text-align: center;">π/4DQPSK/MCH</p>	<p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.44100000 GHz</p> <p>Mkr1 2.44101 GHz 0.063331 dBm</p> <p>Center 2.441 GHz Span 2 MHz</p> <p>Occupied Bandwidth 1.1788 MHz Total Power 9.36 dBm</p> <p>Transmit Freq Error 9.319 kHz OBW Power 99.00 %</p> <p>x dB Bandwidth 1.315 MHz x dB -20.00 dB</p>	<p>Frequency</p> <p>Center Freq 2.44100000 GHz</p> <p>CF Step 200.000 kHz</p> <p>Freq Offset 0 Hz</p>

$\pi/4$ DQPSK/HCH

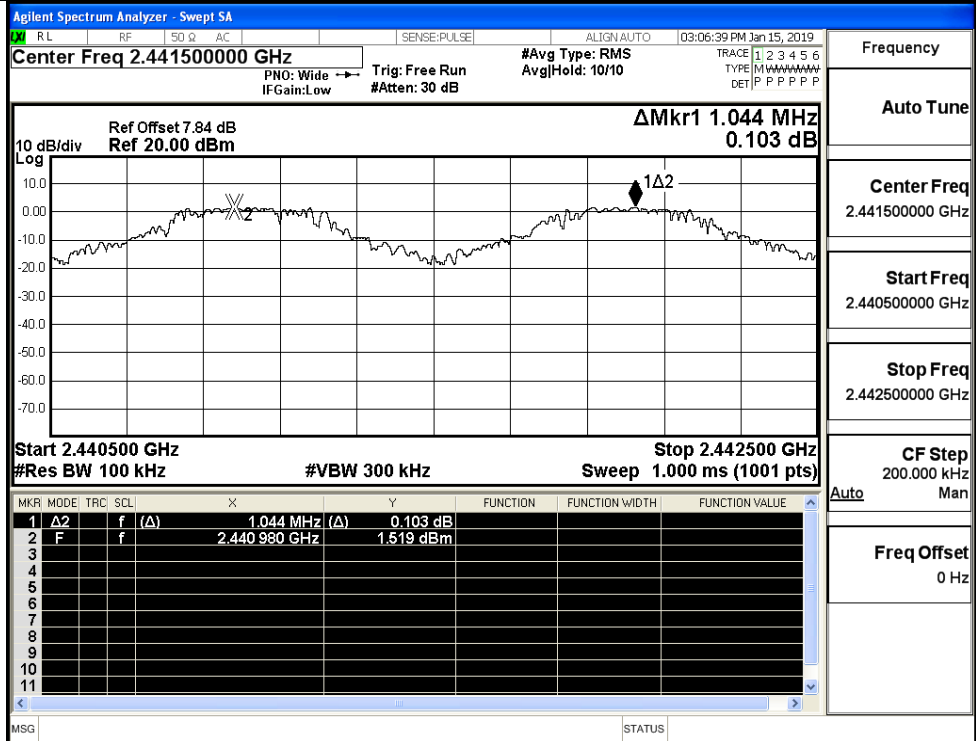


A.3 Carrier Frequency Separation

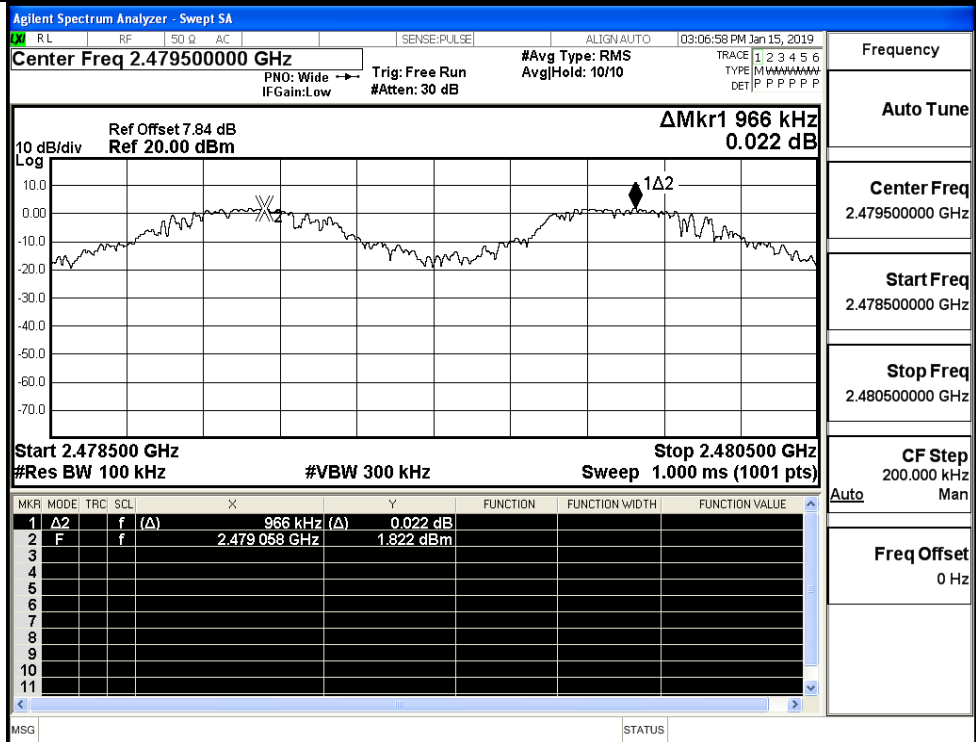
Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.053	0.636	PASS
	MCH	1.044	0.636	PASS
	HCH	0.966	0.636	PASS
π /4DQPSK	LCH	0.956	0.877	PASS
	MCH	1.208	0.877	PASS
	HCH	0.886	0.877	PASS



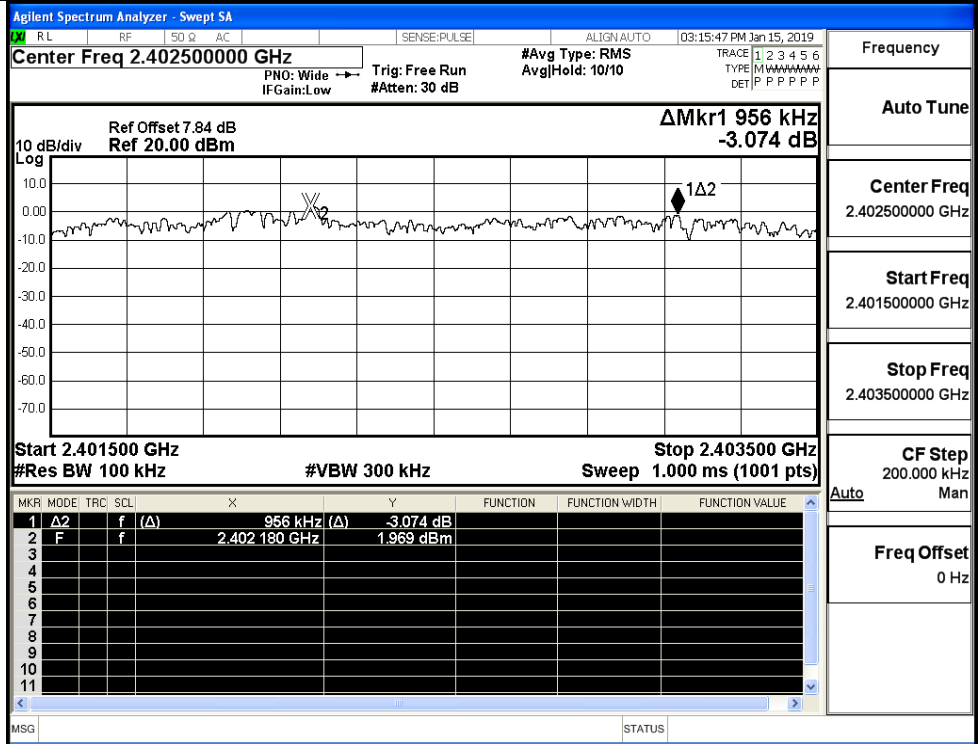
GFSK/MCH



GFSK/HCH

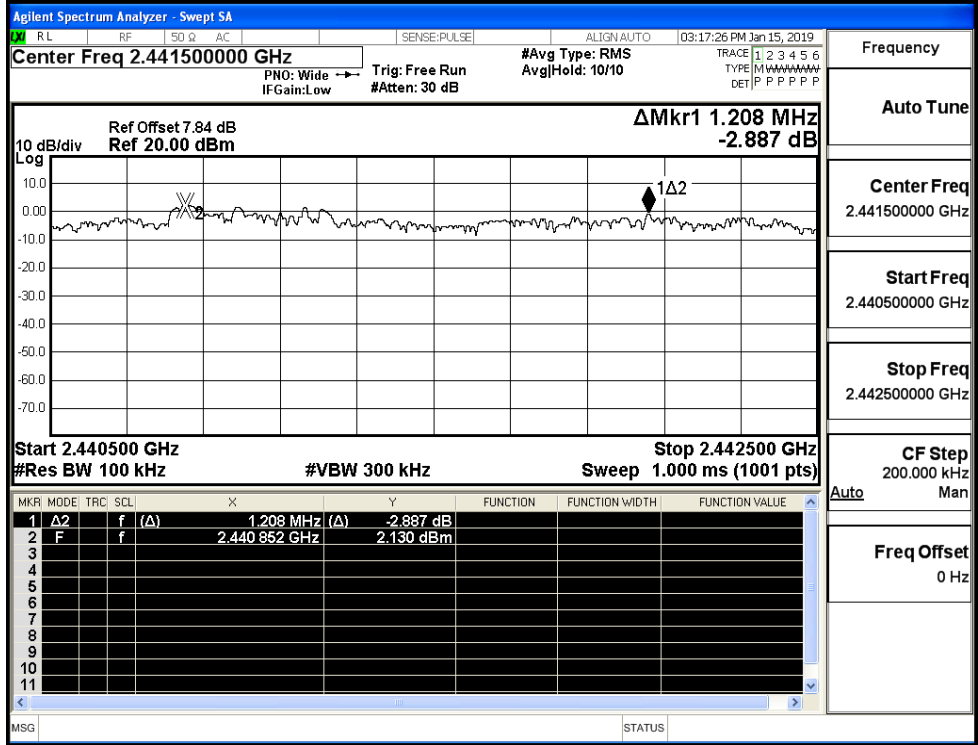


$\pi/4$ DQPSK/LCH



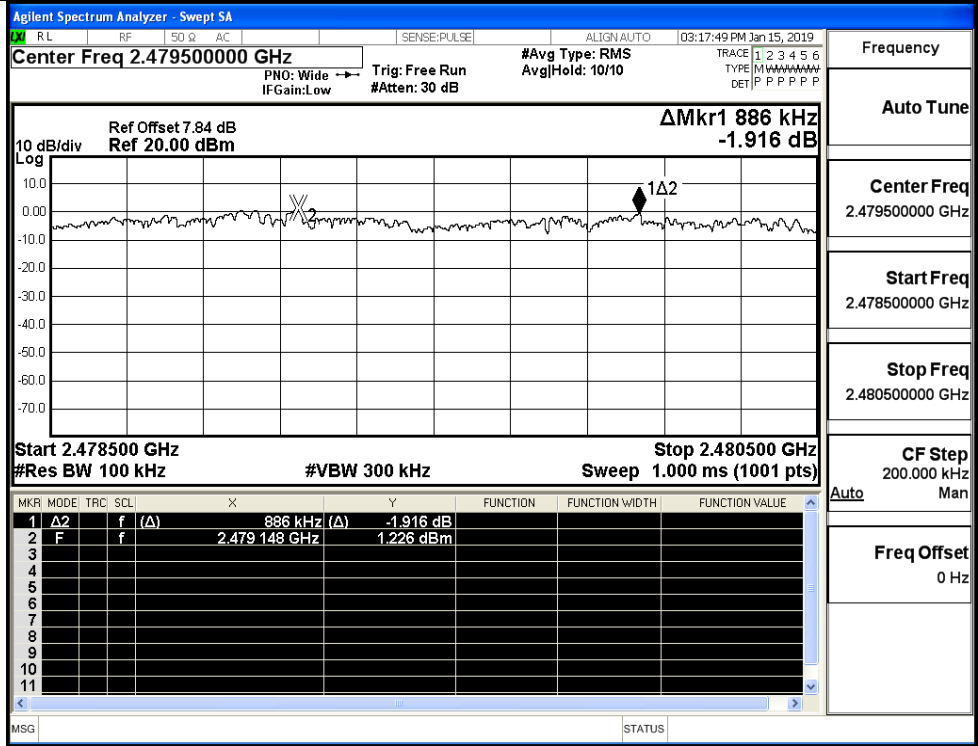
Frequency
Auto Tune
Center Freq 2.402500000 GHz
Start Freq 2.401500000 GHz
Stop Freq 2.403500000 GHz
CF Step 200.000 kHz Auto
Freq Offset 0 Hz

$\pi/4$ DQPSK/MCH



Frequency
Auto Tune
Center Freq 2.441500000 GHz
Start Freq 2.440500000 GHz
Stop Freq 2.442500000 GHz
CF Step 200.000 kHz Auto
Freq Offset 0 Hz

$\pi/4$ DQPSK/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

Test Graphs

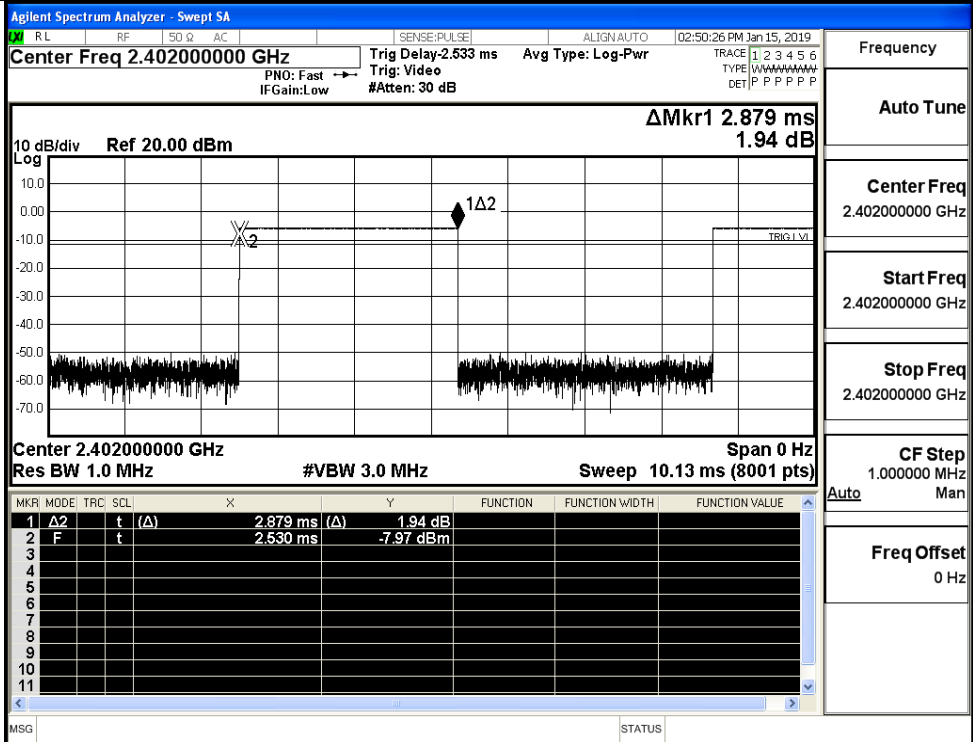
GFSK/Hop	<p>Agilent Spectrum Analyzer - Swept SA Center Freq 2.441750000 GHz Ref Offset 7.84 dB Ref 20.00 dBm ΔMkr1 78.052 MHz 0.001 dB Start 2.40000 GHz #Res BW 100 kHz #VBW 300 kHz Stop 2.48350 GHz Sweep 8.000 ms (8001 pts)</p> <table border="1"> <thead> <tr> <th>MKR</th> <th>MODE</th> <th>TRC</th> <th>SCL</th> <th>X</th> <th>Y</th> <th>FUNCTION</th> <th>FUNCTION WIDTH</th> <th>FUNCTION VALUE</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Δ2</td> <td>f</td> <td>(Δ)</td> <td>78.052 MHz (Δ)</td> <td>0.001 dB</td> <td></td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>F</td> <td>f</td> <td></td> <td>2.402067 GHz</td> <td>1.864 dBm</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	Δ2	f	(Δ)	78.052 MHz (Δ)	0.001 dB				2	F	f		2.402067 GHz	1.864 dBm				Frequency Auto Tune Center Freq 2.441750000 GHz Start Freq 2.400000000 GHz Stop Freq 2.483500000 GHz CF Step 8.350000 MHz Freq Offset 0 Hz
	MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE																				
1	Δ2	f	(Δ)	78.052 MHz (Δ)	0.001 dB																								
2	F	f		2.402067 GHz	1.864 dBm																								
$\pi/4$ DQPSK/Hop	<p>Agilent Spectrum Analyzer - Swept SA Center Freq 2.441750000 GHz Ref Offset 7.84 dB Ref 20.00 dBm ΔMkr1 77.686 MHz -2.830 dB Start 2.40000 GHz #Res BW 100 kHz #VBW 300 kHz Stop 2.48350 GHz Sweep 8.000 ms (8001 pts)</p> <table border="1"> <thead> <tr> <th>MKR</th> <th>MODE</th> <th>TRC</th> <th>SCL</th> <th>X</th> <th>Y</th> <th>FUNCTION</th> <th>FUNCTION WIDTH</th> <th>FUNCTION VALUE</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Δ2</td> <td>f</td> <td>(Δ)</td> <td>77.686 MHz (Δ)</td> <td>-2.830 dB</td> <td></td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>F</td> <td>f</td> <td></td> <td>2.402181 GHz</td> <td>2.032 dBm</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	Δ2	f	(Δ)	77.686 MHz (Δ)	-2.830 dB				2	F	f		2.402181 GHz	2.032 dBm				Frequency Auto Tune Center Freq 2.441750000 GHz Start Freq 2.400000000 GHz Stop Freq 2.483500000 GHz CF Step 8.350000 MHz Freq Offset 0 Hz
	MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE																				
1	Δ2	f	(Δ)	77.686 MHz (Δ)	-2.830 dB																								
2	F	f		2.402181 GHz	2.032 dBm																								

A.5 Dwell Time

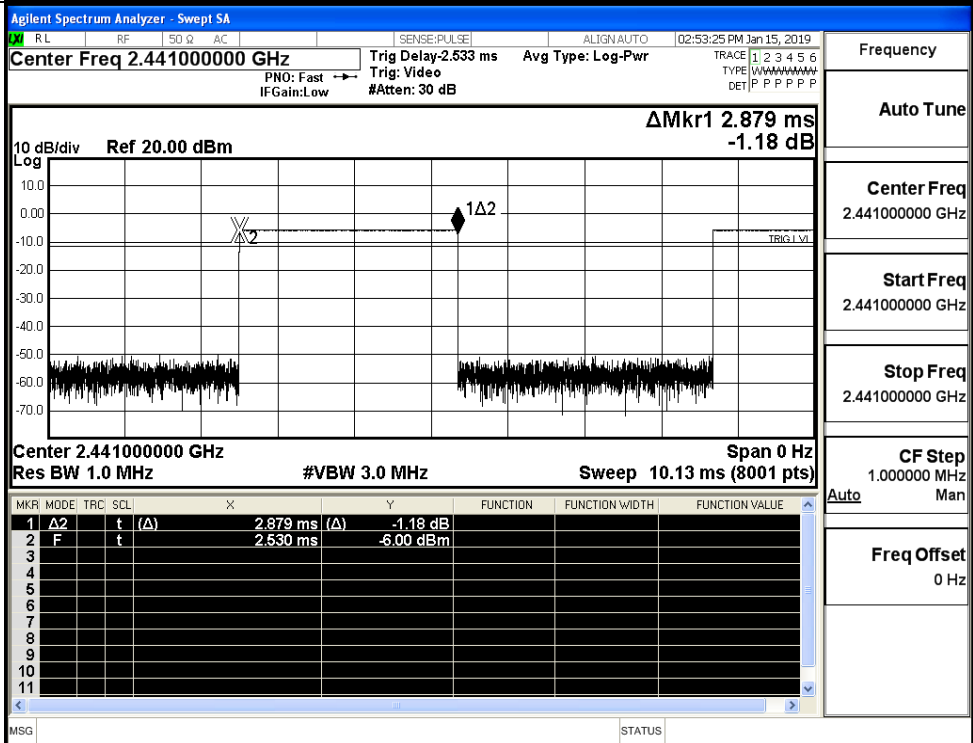
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.88	106.7	0.307	0.4	PASS
	DH5	MCH	2.88	106.7	0.307	0.4	PASS
	DH5	HCH	2.88	106.7	0.307	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.88	106.7	0.307	0.4	PASS
	2DH5	MCH	2.89	106.7	0.308	0.4	PASS
	2DH5	HCH	2.88	106.7	0.307	0.4	PASS

Test Graphs

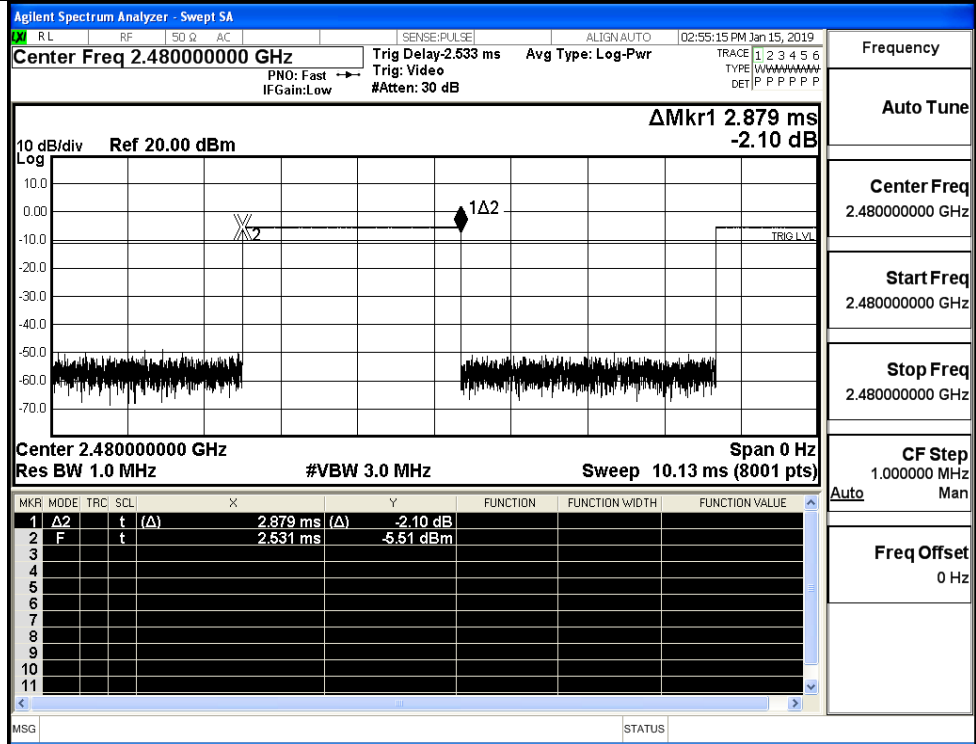
GFSK_DH5/LCH



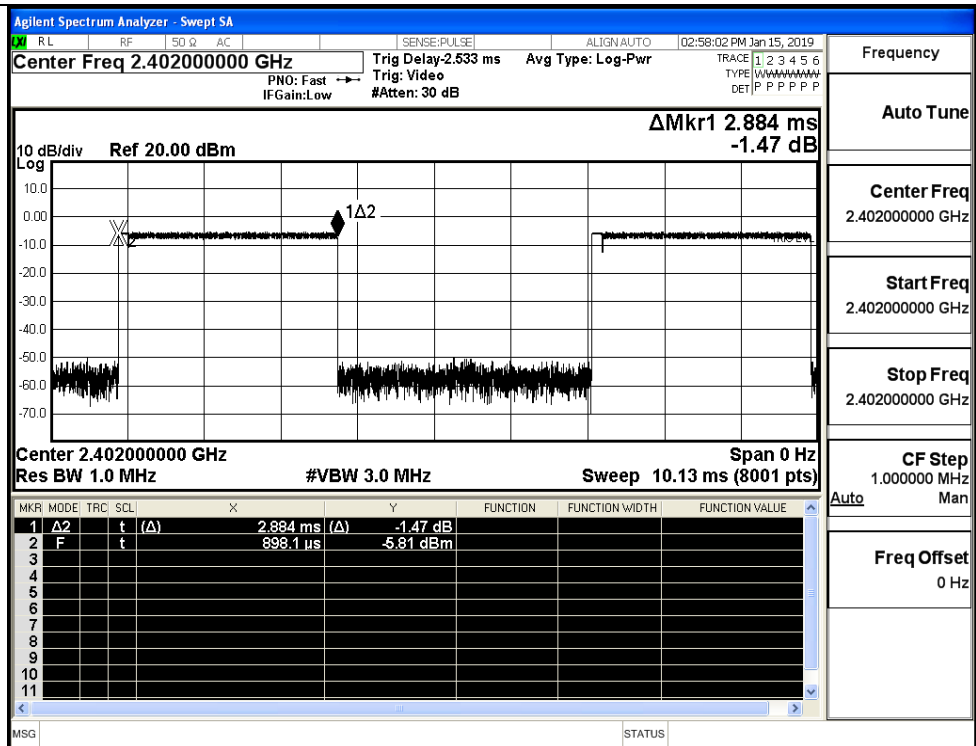
GFSK_DH5/MCH



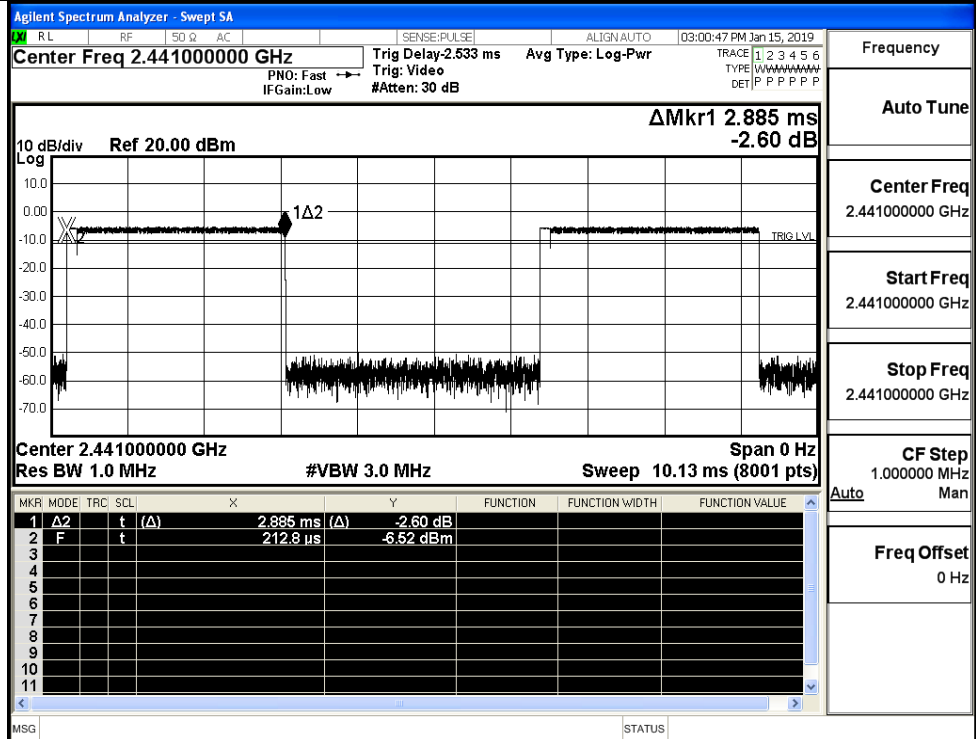
GFSK_DH5/HCH



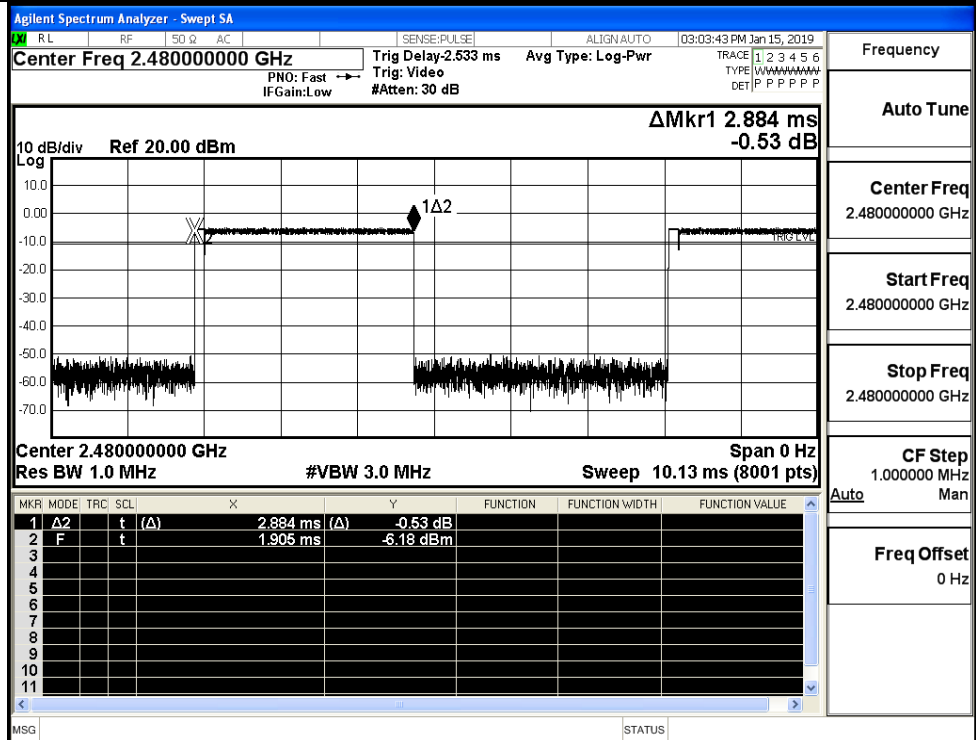
π/4DQPSK
_2DH5/LCH



$\pi/4$ DQPSK
_2DH5/MCH



$\pi/4$ DQPSK
_2DH5/HCH

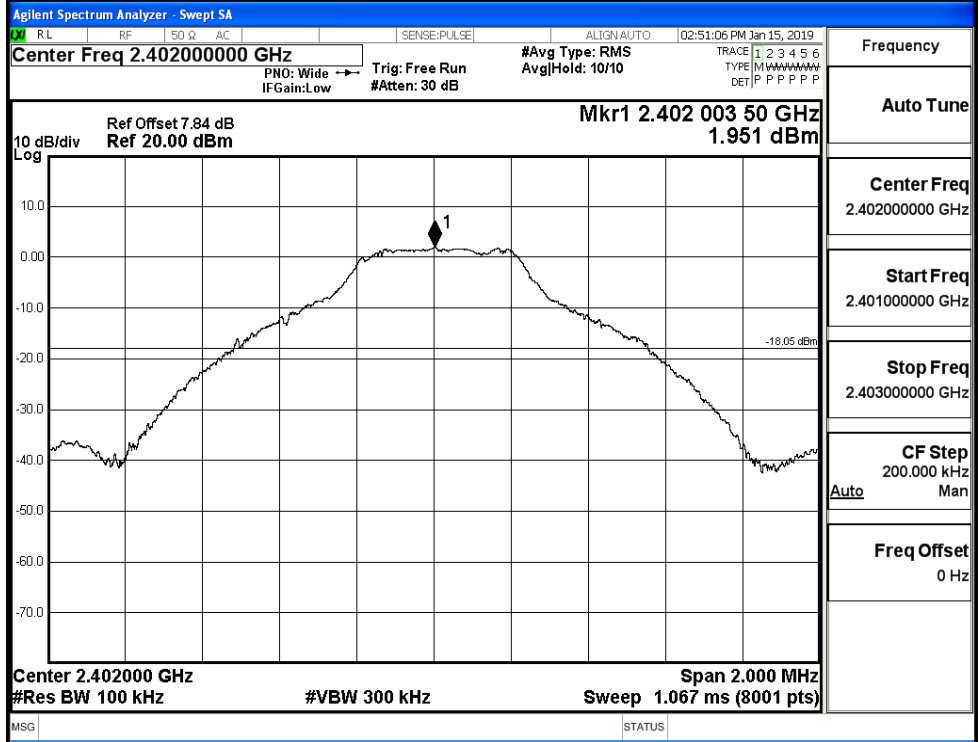


A.6 RF Conducted Spurious Emissions

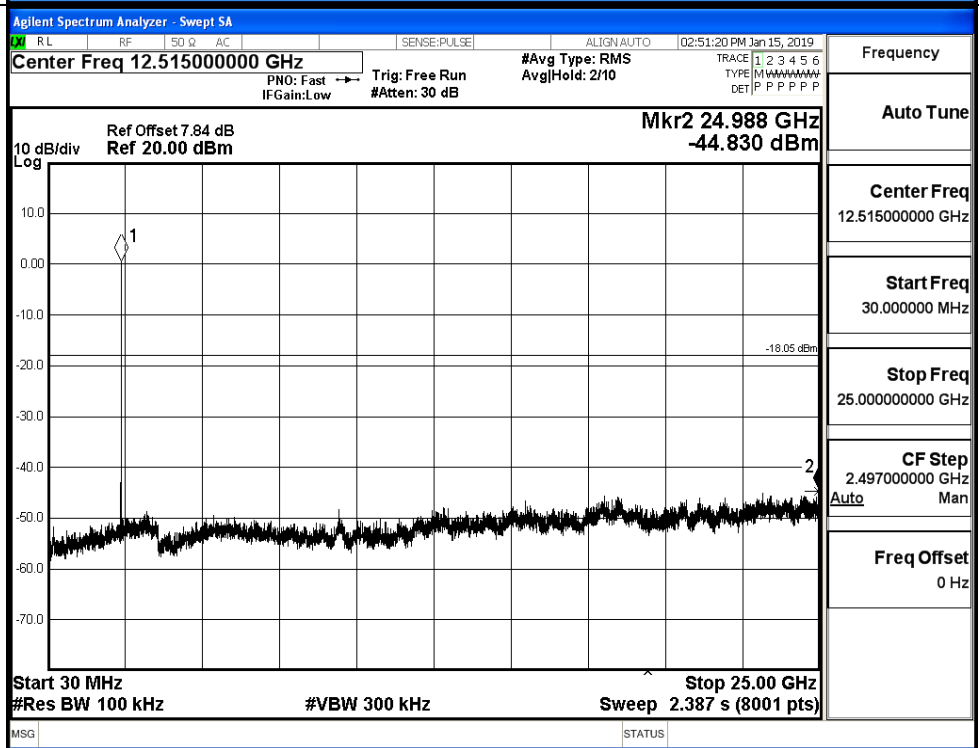
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	1.951	-44.830	-18.049	PASS
	MCH	1.882	-44.100	-18.118	PASS
	HCH	2.254	-44.560	-17.746	PASS
$\pi/4$ DQPSK	LCH	1.985	-44.294	-18.015	PASS
	MCH	1.462	-44.311	-18.538	PASS
	HCH	2.401	-44.880	-17.599	PASS

GFSK_LCH_Graphs

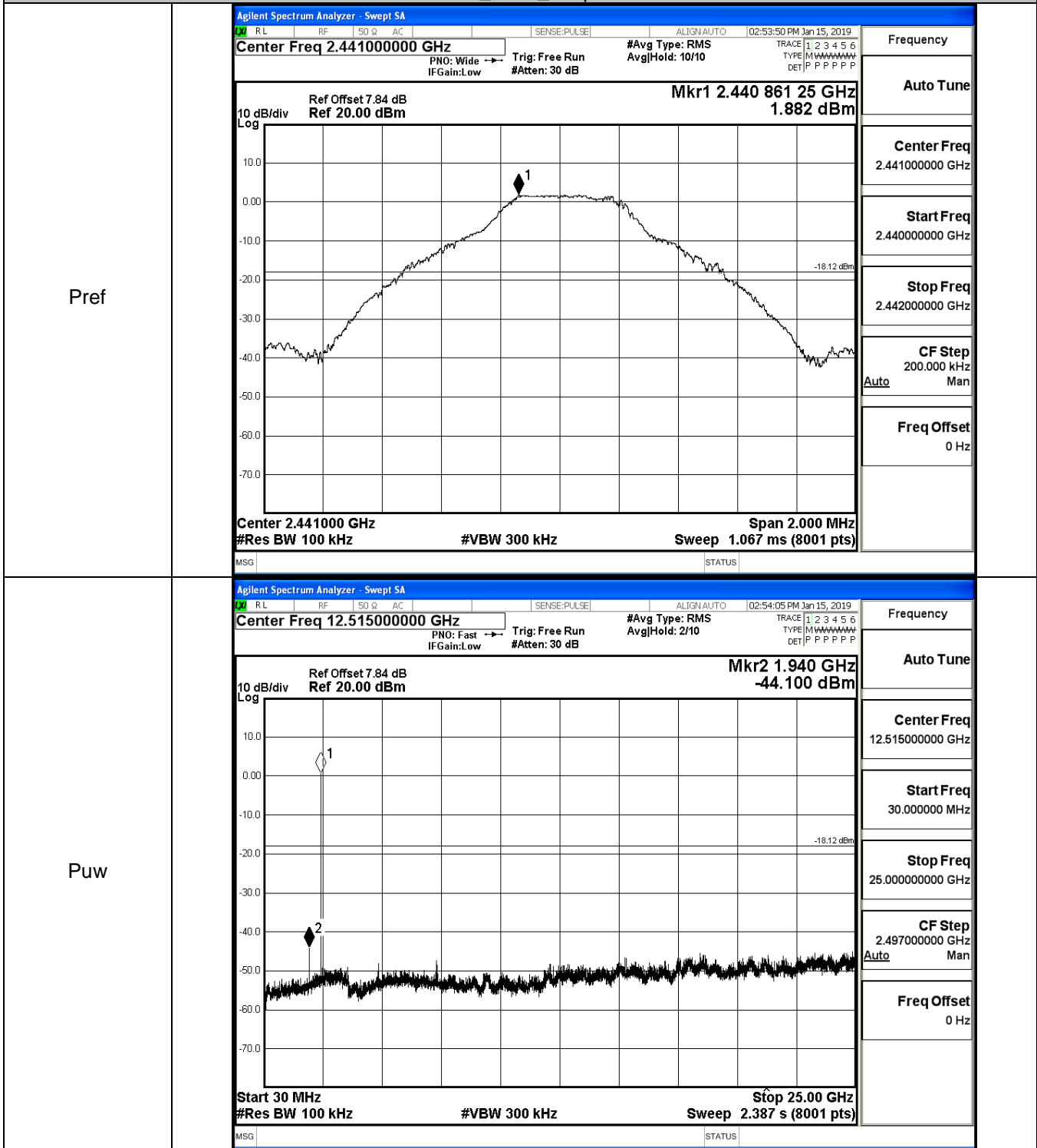
Pref



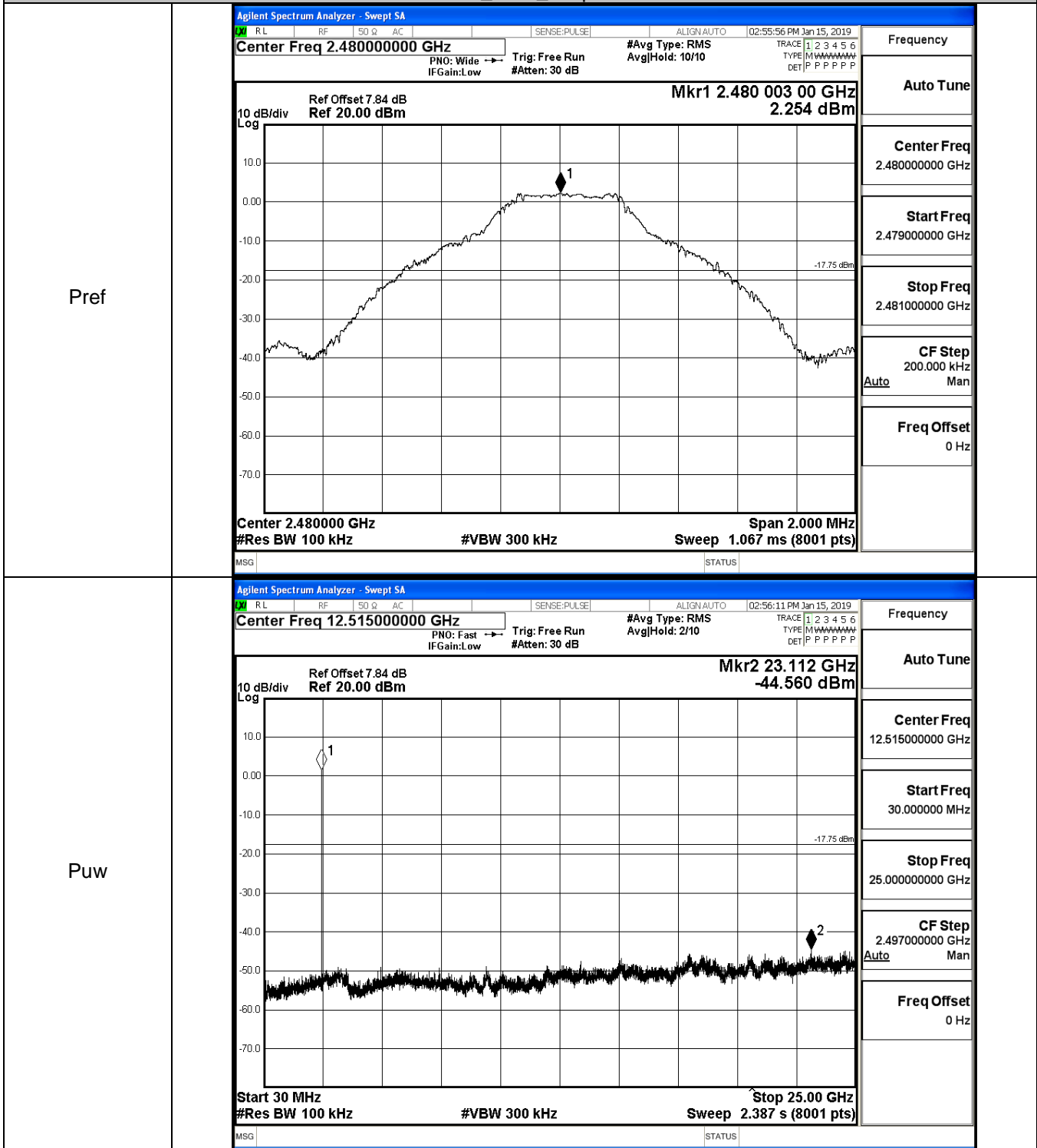
Puw



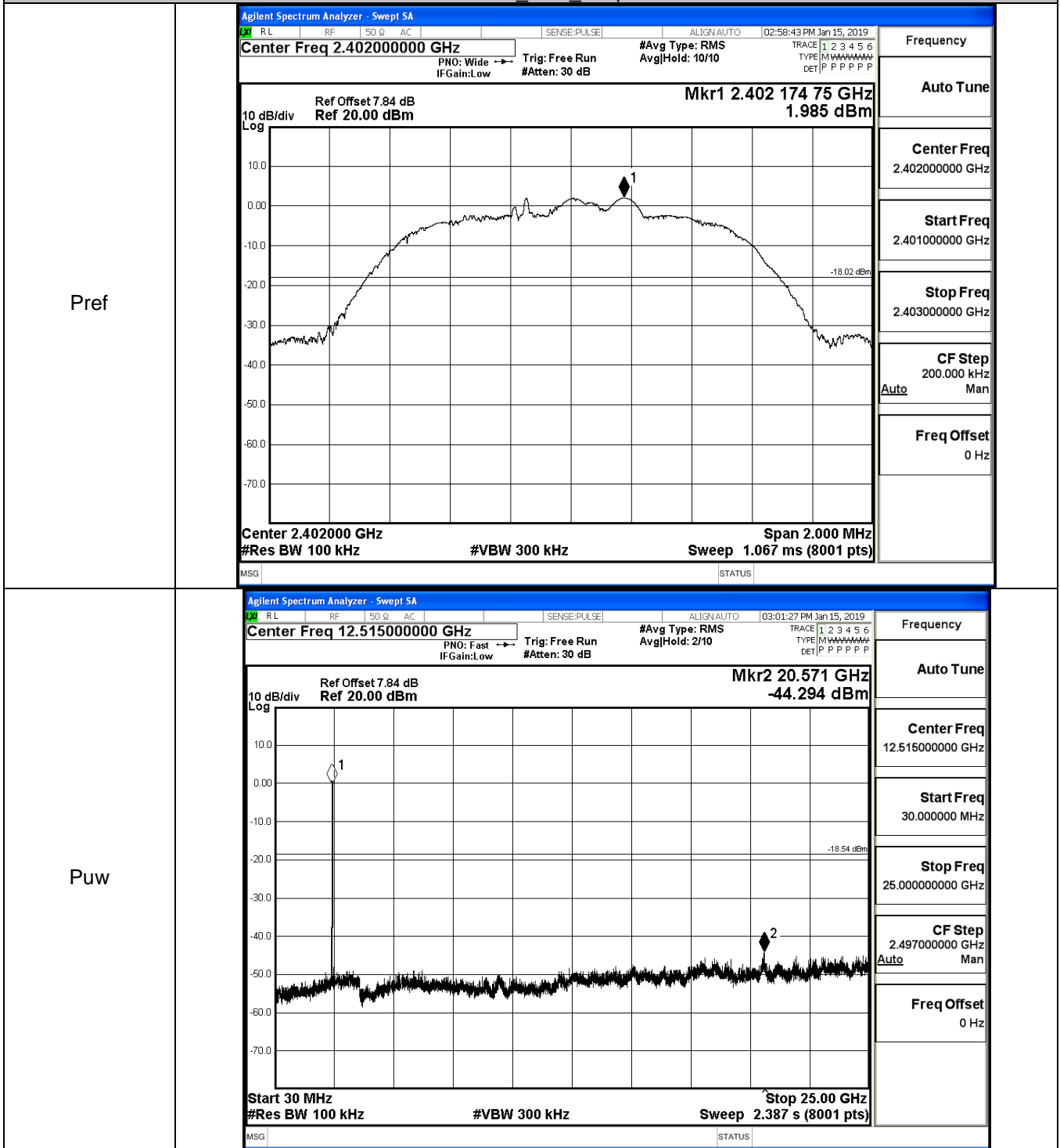
GFSK_MCH_Graphs



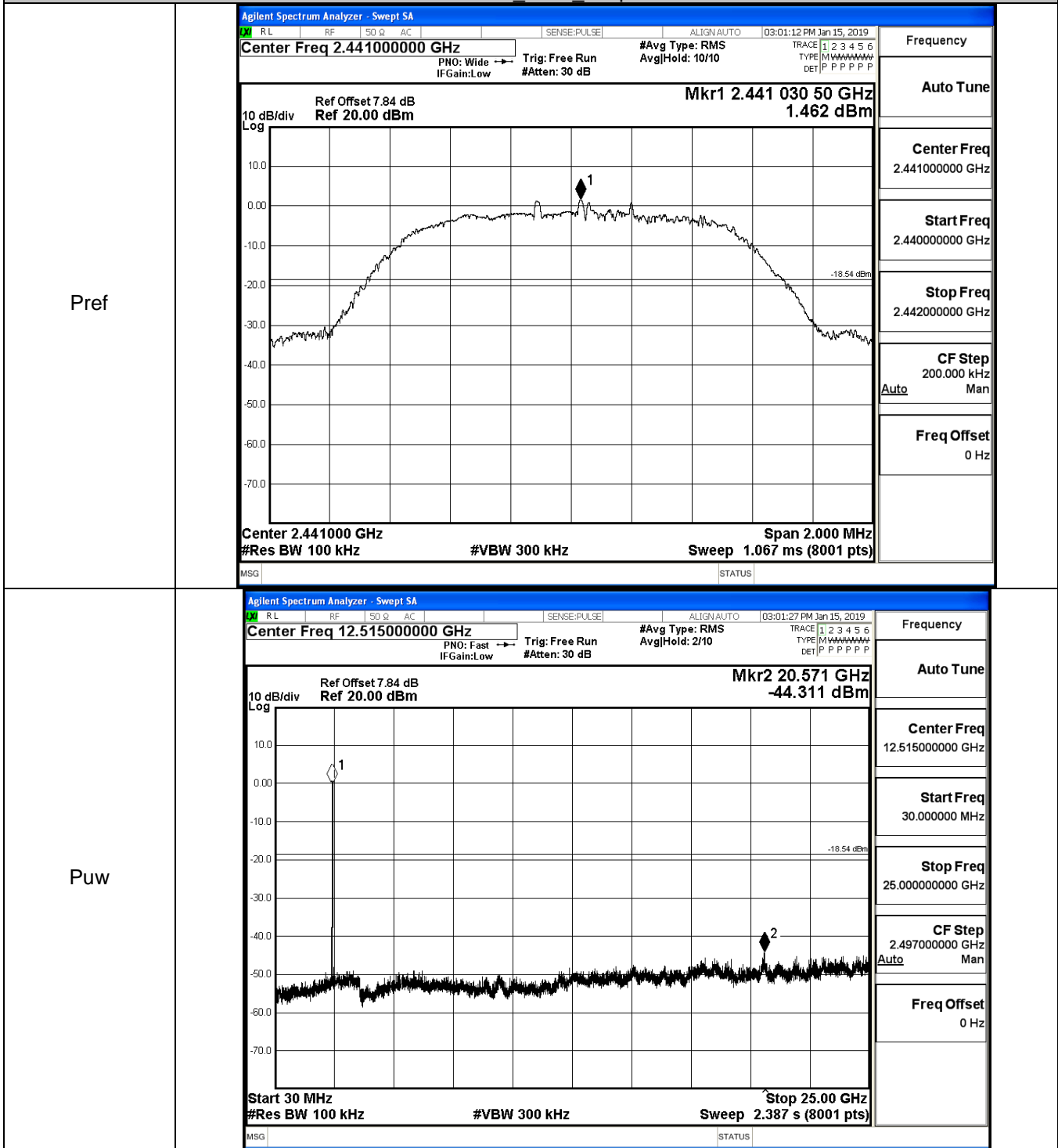
GFSK_HCH_Graphs



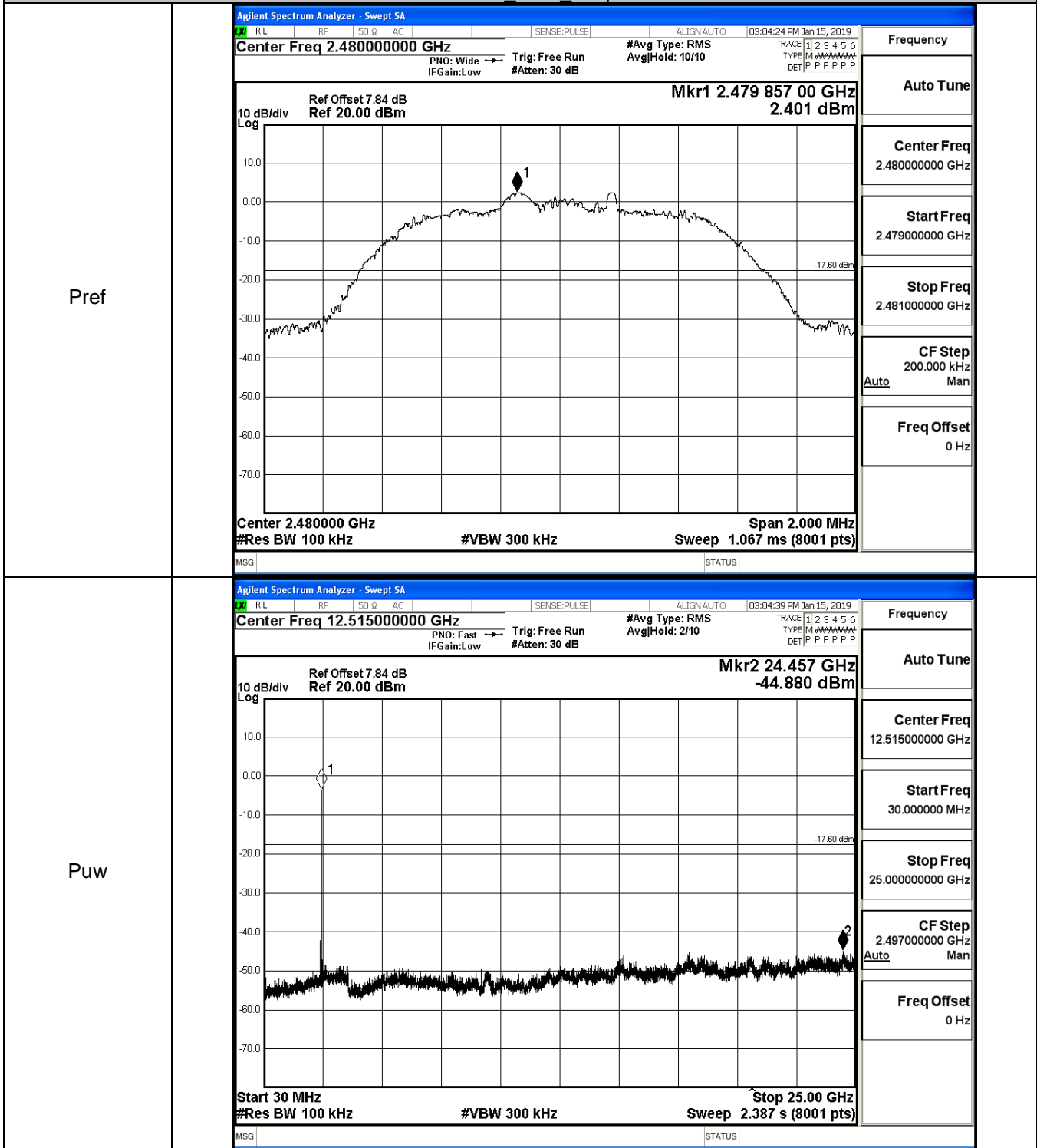
$\pi/4$ DQPSK LCH_Graphs



$\pi/4$ DQPSK MCH Graphs



$\pi/4$ DQPSK_HCH_Graphs

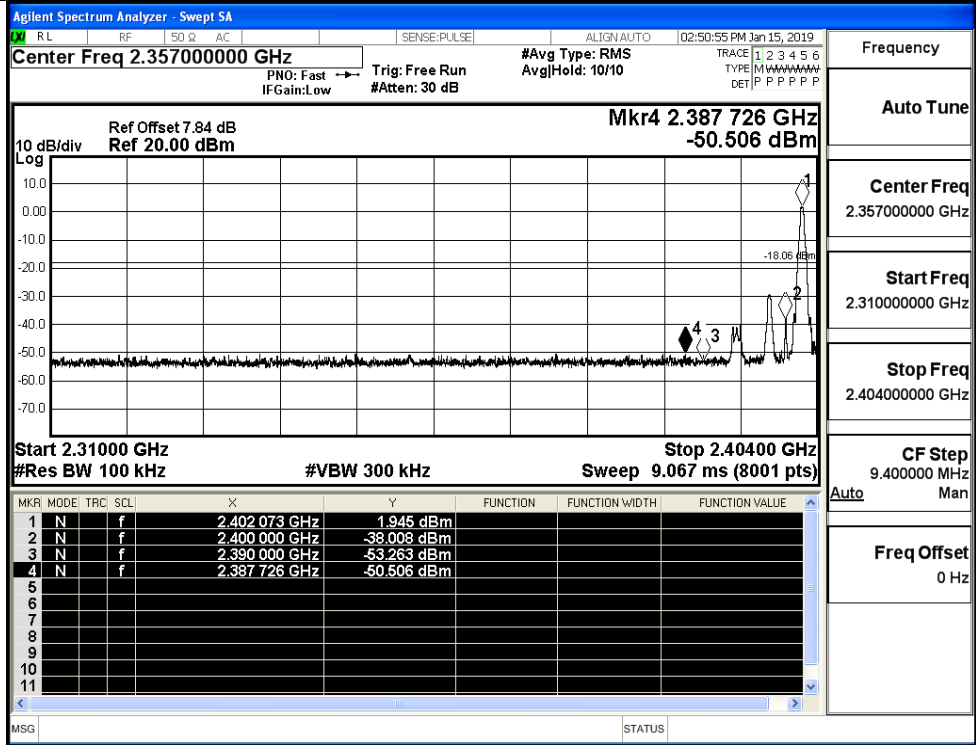


A.7 Band-edge for RF Conducted Emissions

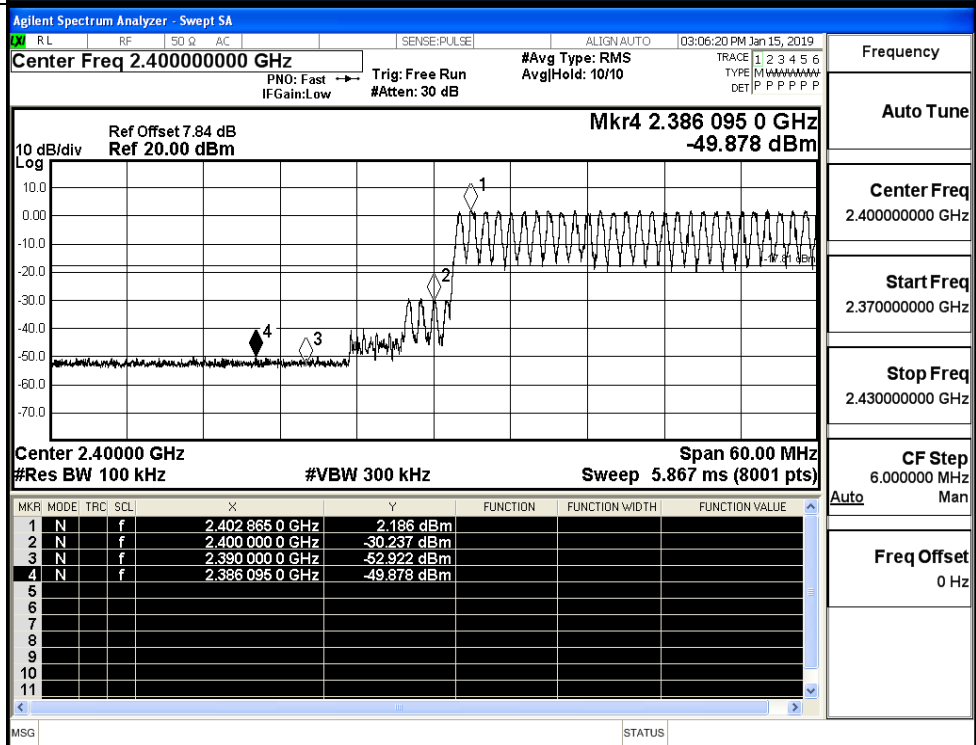
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	1.945	Off	-50.506	-18.06	PASS
			2.186	On	-49.878	-17.81	PASS
	HCH	2480	2.604	Off	-39.907	-17.4	PASS
			2.320	On	-41.202	-17.68	PASS
$\pi/4$ DQPSK	LCH	2402	2.187	Off	-49.659	-17.81	PASS
			2.151	On	-49.811	-17.85	PASS
	HCH	2480	2.243	Off	-40.116	-17.76	PASS
			2.318	On	-40.690	-17.68	PASS

Test Graphs

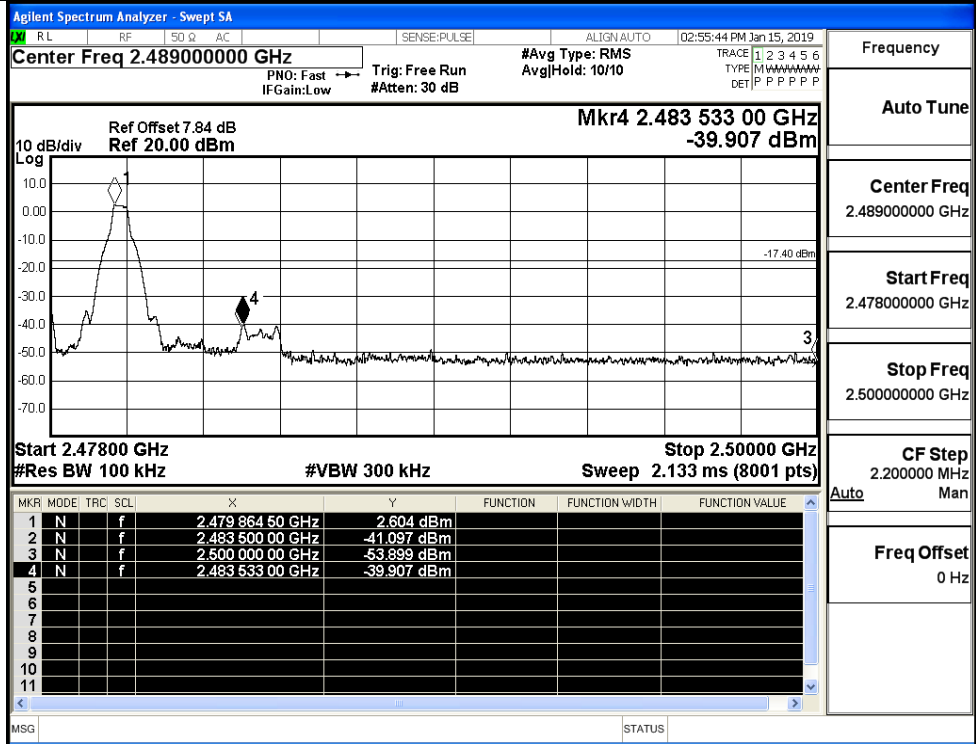
GFSK/LCH/No Hop



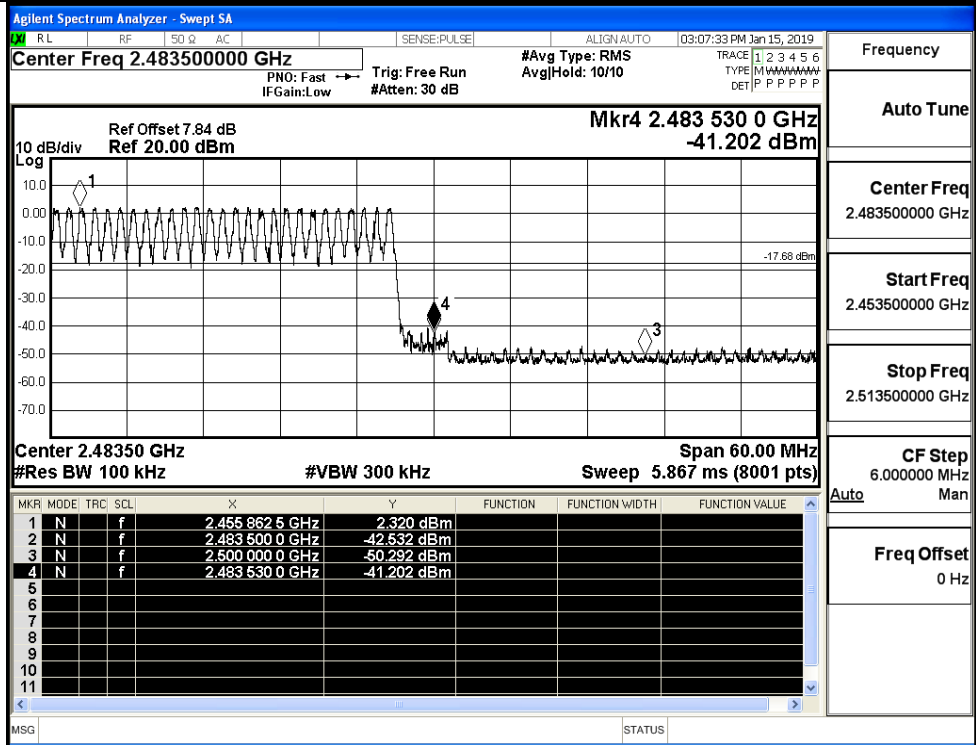
GFSK/LCH/Hop



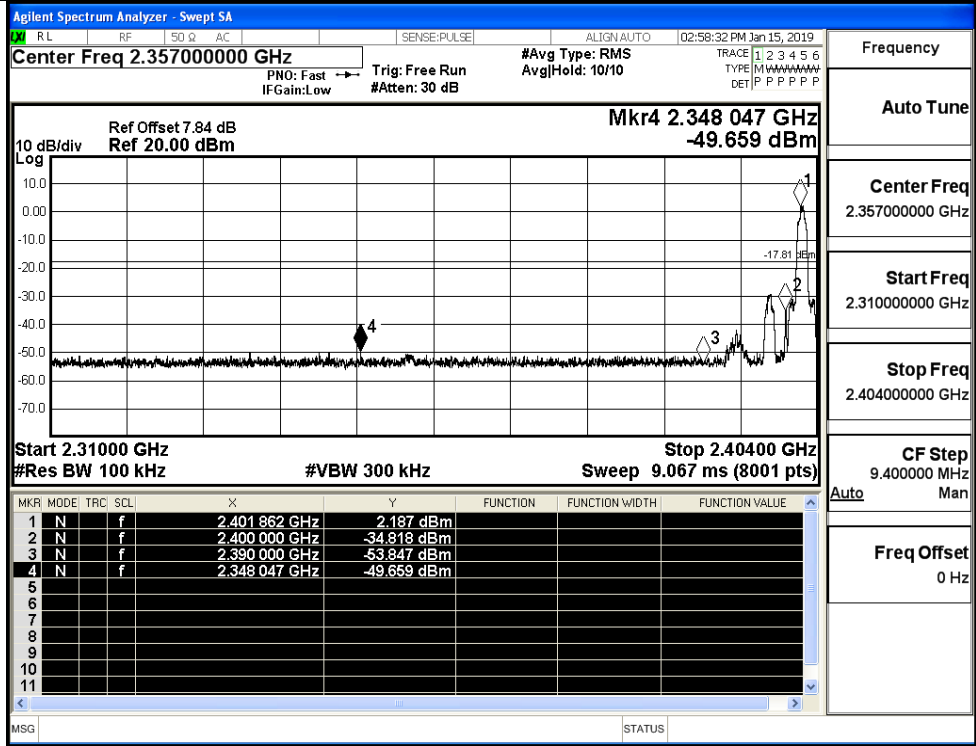
GFSK/HCH/No Hop



GFSK/HCH/Hop

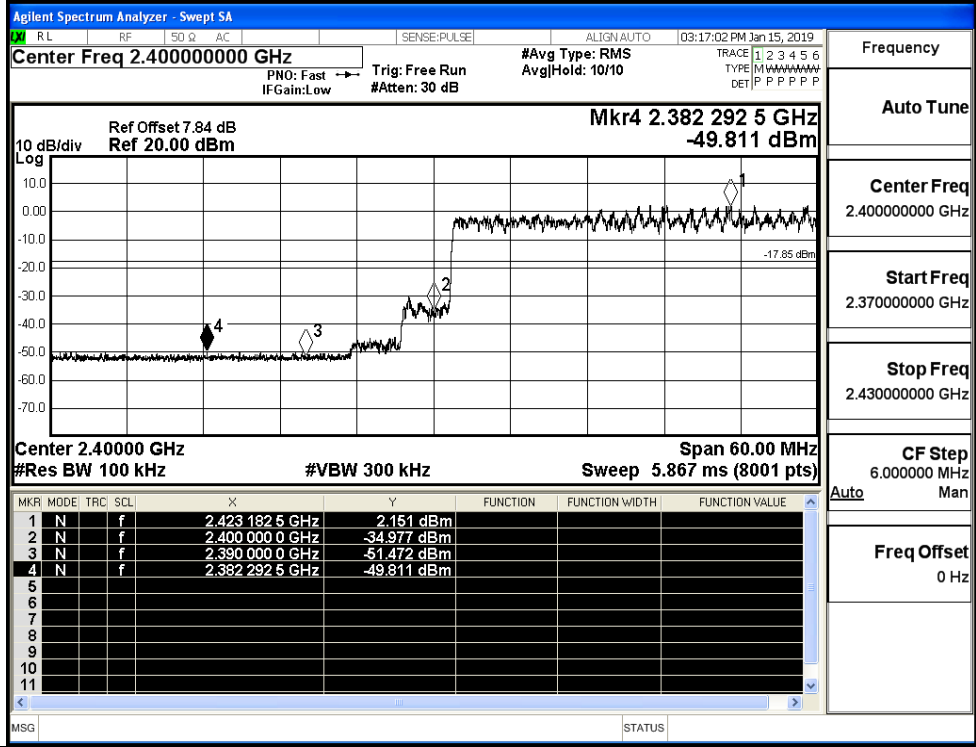


$\pi/4$ DQPSK/LCH/No
Hop



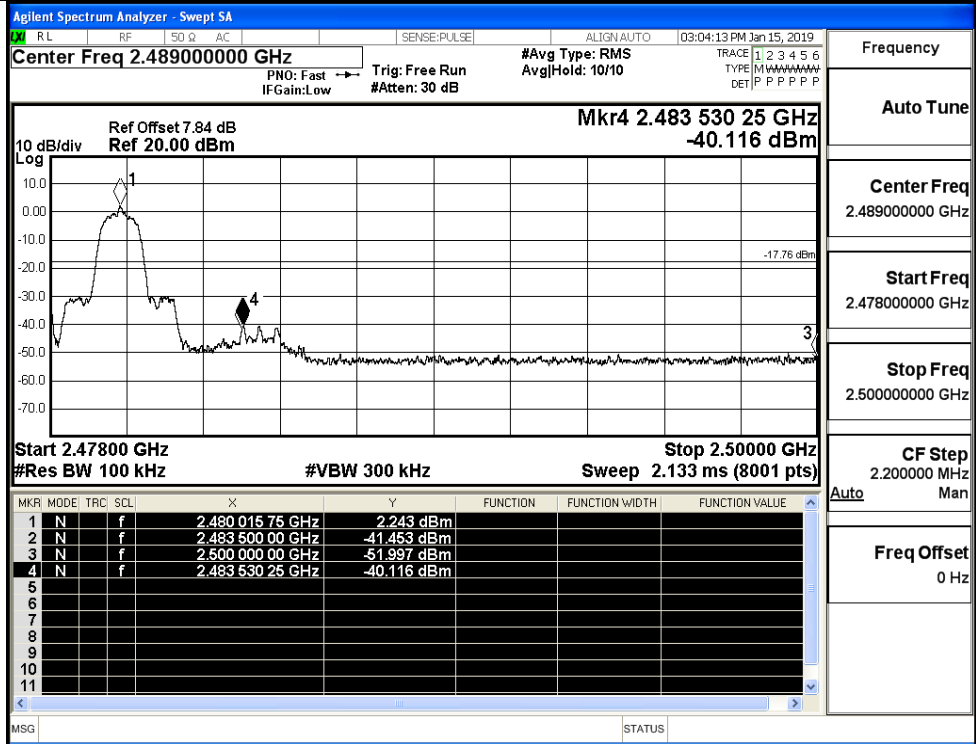
Frequency	
Auto Tune	
Center Freq	2.357000000 GHz
Start Freq	2.310000000 GHz
Stop Freq	2.404000000 GHz
CF Step	9.400000 MHz
Auto	Man
Freq Offset	0 Hz

$\pi/4$ DQPSK/LCH/Hop

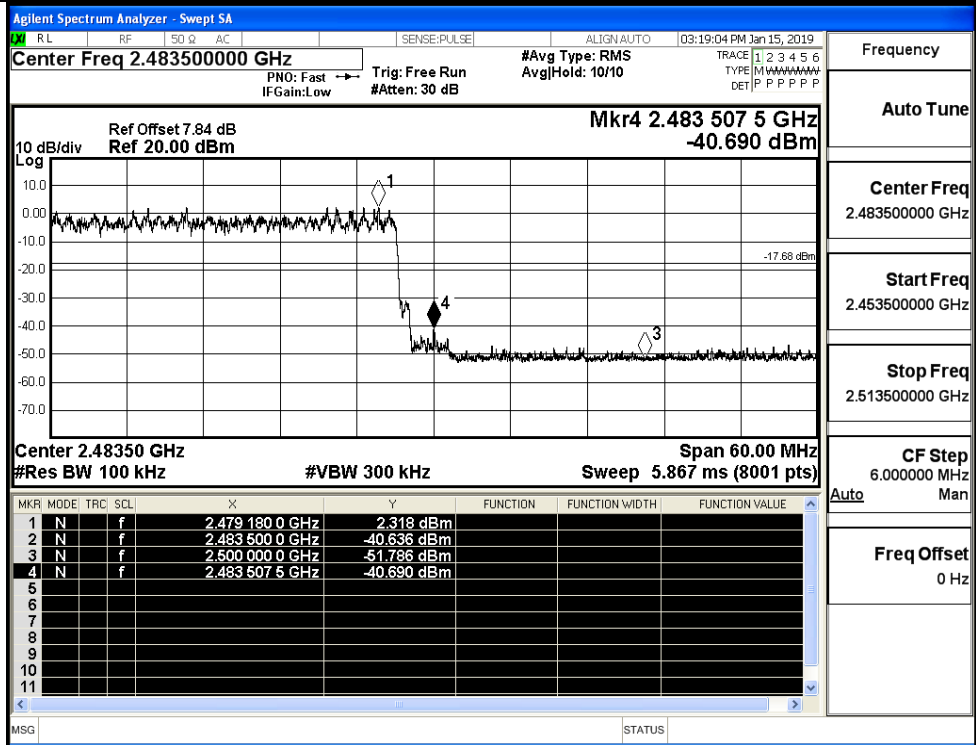


Frequency	
Auto Tune	
Center Freq	2.400000000 GHz
Start Freq	2.370000000 GHz
Stop Freq	2.430000000 GHz
CF Step	6.000000 MHz
Auto	Man
Freq Offset	0 Hz

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



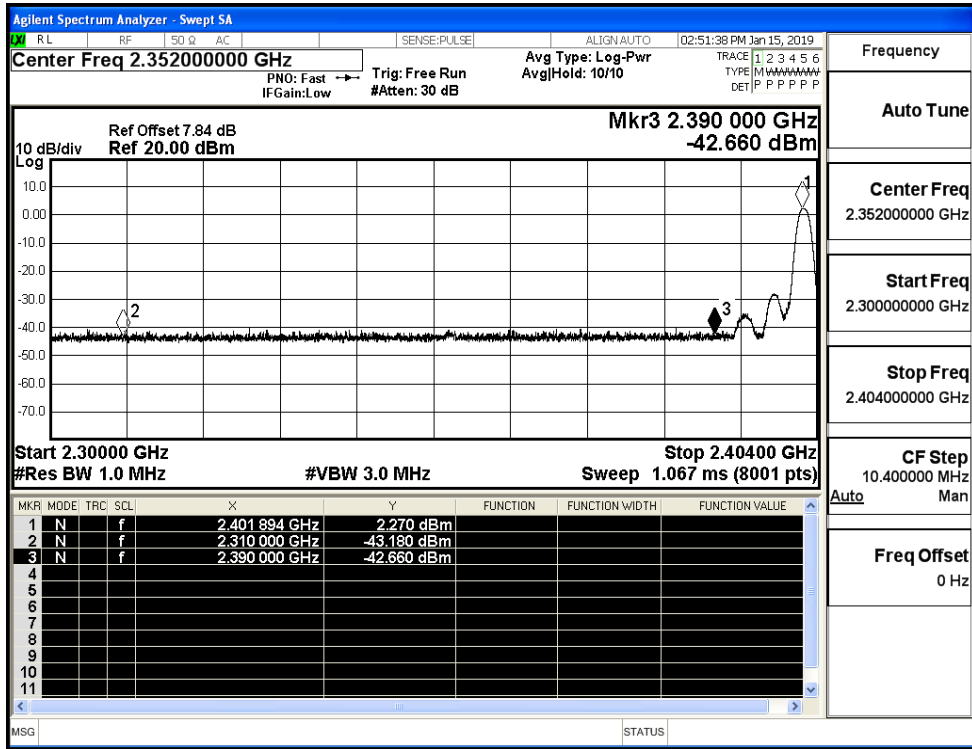
$\pi/4$ DQPSK/HCH/Hop



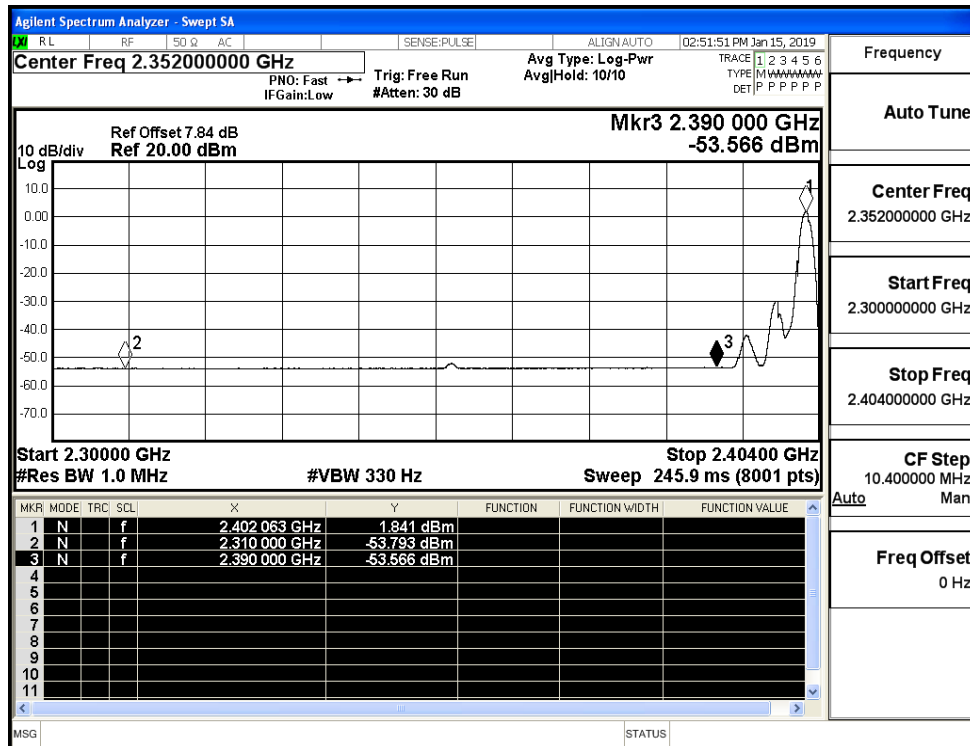
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-43.18	2.0	0	54.08	PEAK	74	PASS
	Off	2310.0	-53.79	2.0	0	43.46	AV	54	PASS
	Off	2390.0	-42.66	2.0	0	54.60	PEAK	74	PASS
	Off	2390.0	-53.57	2.0	0	43.69	AV	54	PASS
	Off	2483.5	-35.83	2.0	0	61.43	PEAK	74	PASS
	Off	2483.5	-44.35	2.0	0	52.91	AV	54	PASS
	Off	2500.0	-43.32	2.0	0	53.93	PEAK	74	PASS
	Off	2500.0	-53.22	2.0	0	44.04	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-44.11	2.0	0	53.14	PEAK	74	PASS
	Off	2310.0	-53.91	2.0	0	43.35	AV	54	PASS
	Off	2390.0	-42.23	2.0	0	55.03	PEAK	74	PASS
	Off	2390.0	-53.60	2.0	0	43.66	AV	54	PASS
	Off	2483.5	-36.43	2.0	0	60.83	PEAK	74	PASS
	Off	2483.5	-46.28	2.0	0	50.97	AV	54	PASS
	Off	2500.0	-43.36	2.0	0	53.90	PEAK	74	PASS
	Off	2500.0	-53.31	2.0	0	43.95	AV	54	PASS

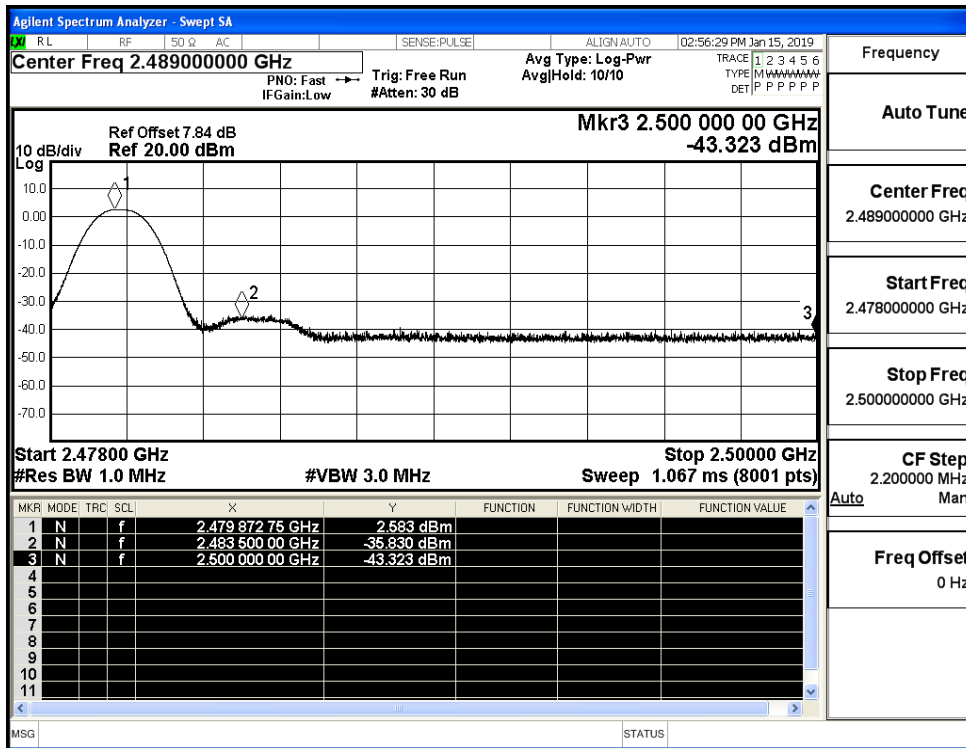
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



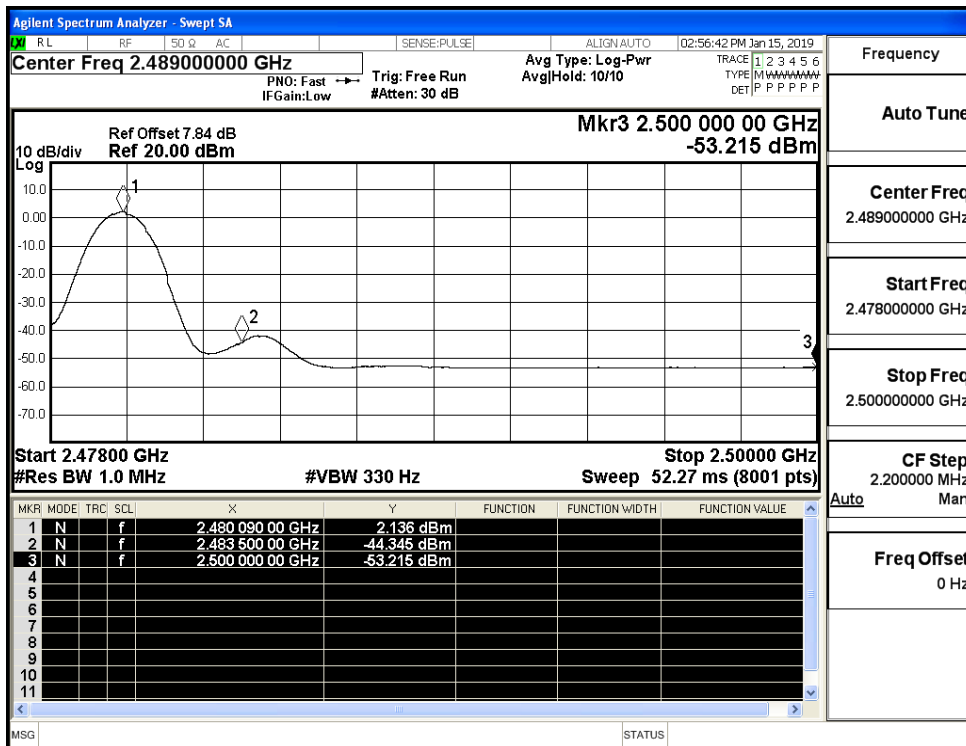
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)



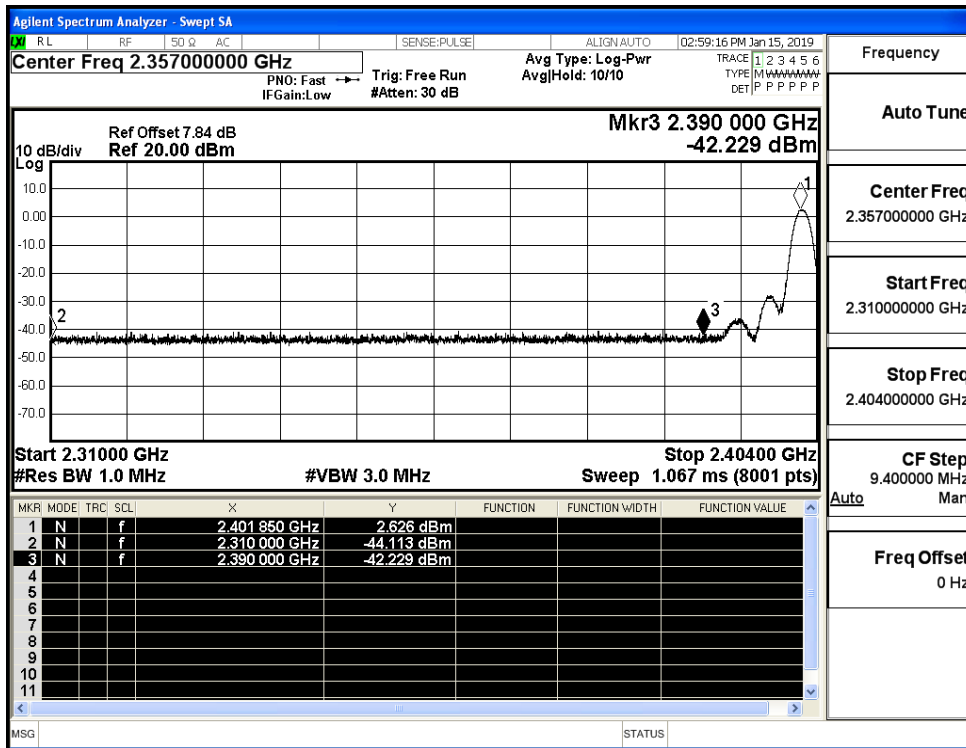
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)



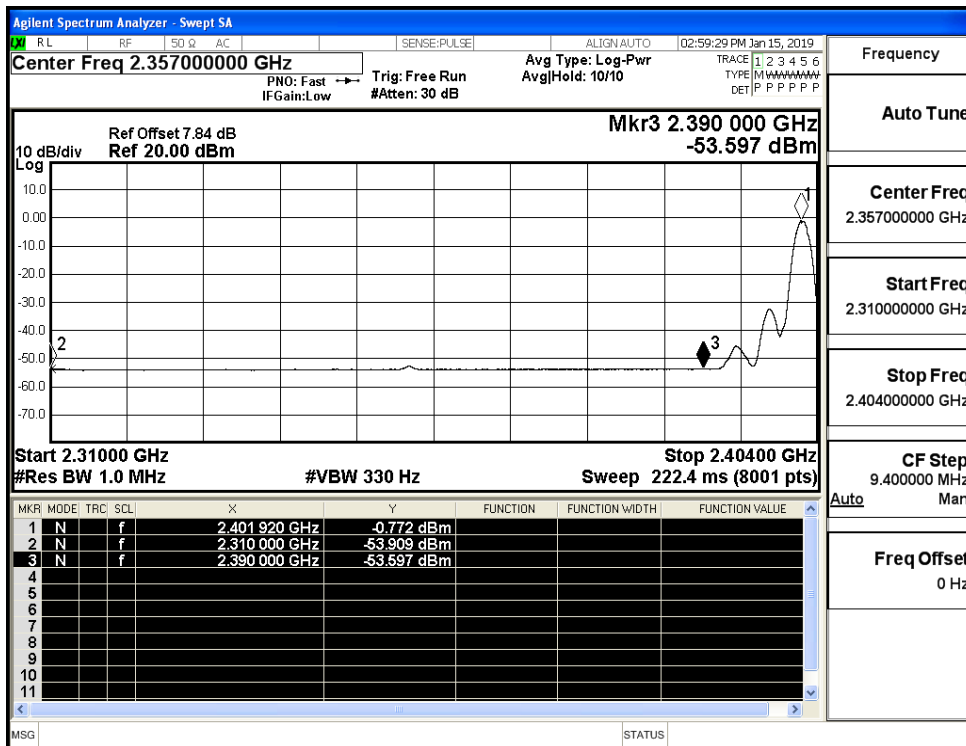
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)



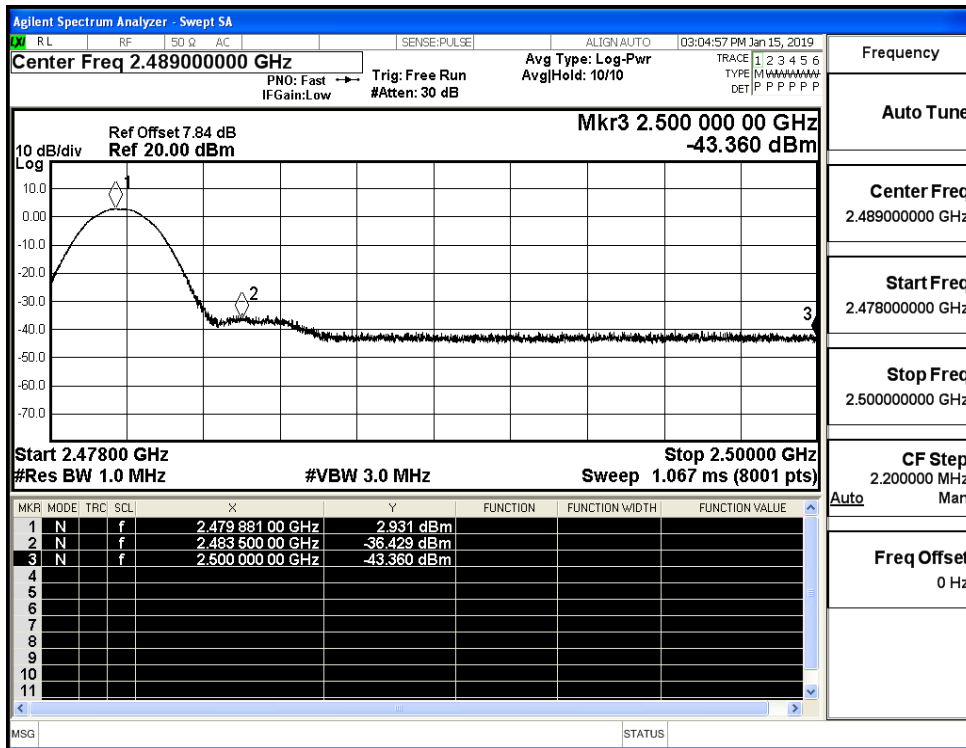
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)



Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (Low Channel)



Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (High Channel)



Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (High Channel)

