

Appendix A

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

Product Name: Bluetooth Speaker

Trade Mark: 55945

Test Model: 55942, 55943, 55944

Environmental Conditions

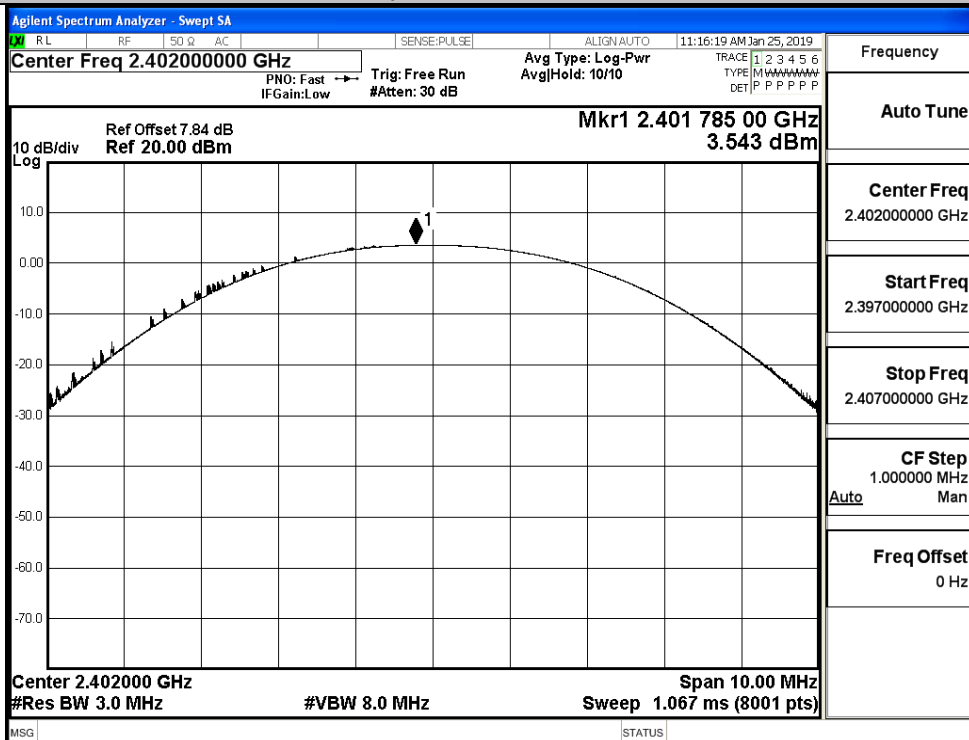
Temperature:	24.4 ° C
Relative Humidity:	53.7%
ATM Pressure:	100.0 kPa
Test Engineer:	Mina.Xu
Supervised by:	Jayden.Zhuo

A.1 Maximum Conducted Peak Output Power

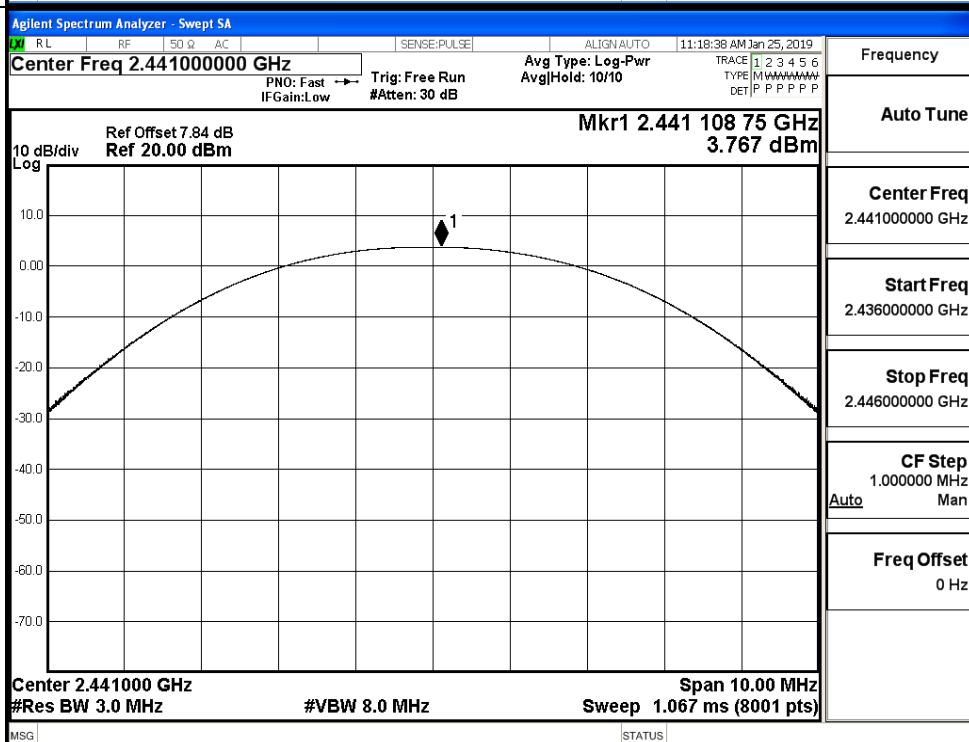
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	3.543	21	PASS
	MCH	3.767	21	PASS
	HCH	3.666	21	PASS
$\pi/4$ DQPSK	LCH	3.109	21	PASS
	MCH	3.017	21	PASS
	HCH	2.758	21	PASS

Test Graphs

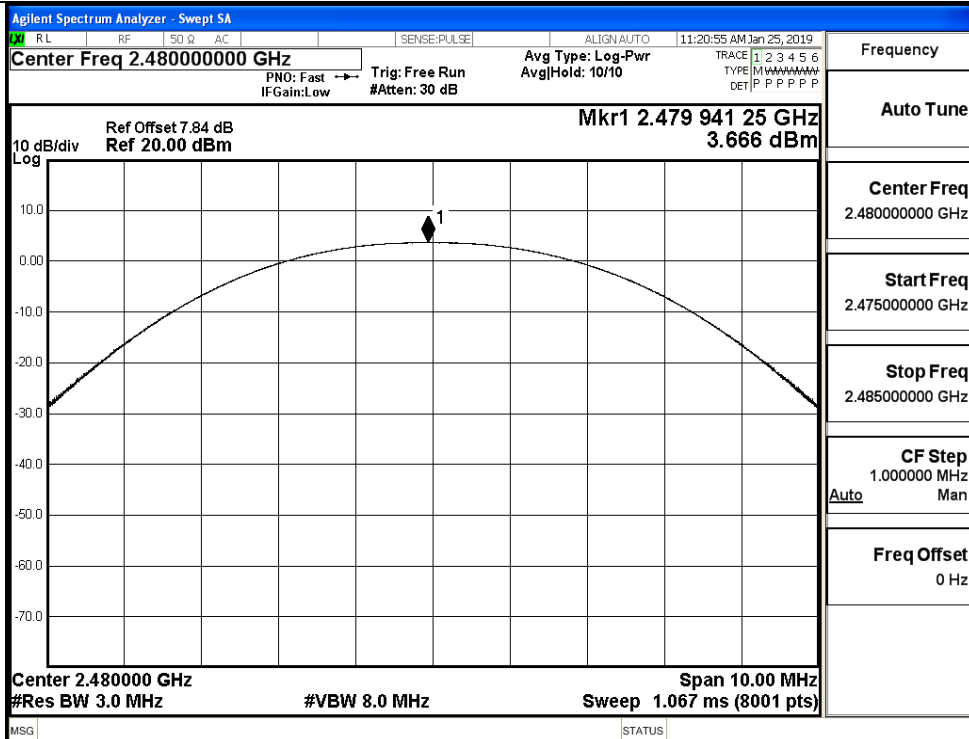
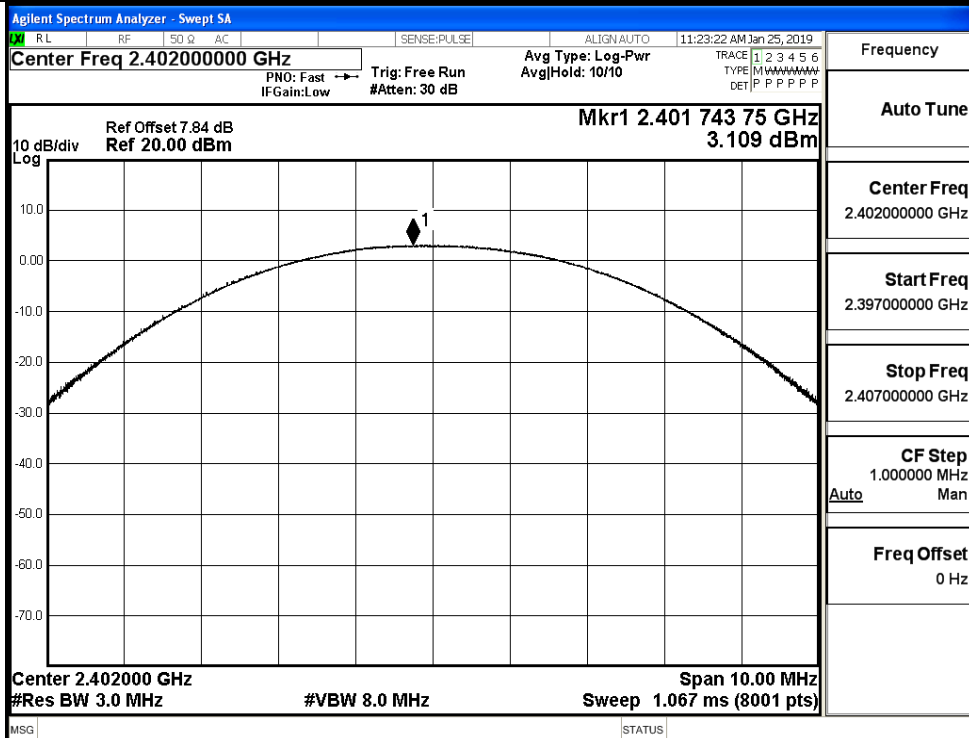
GFSK/LCH

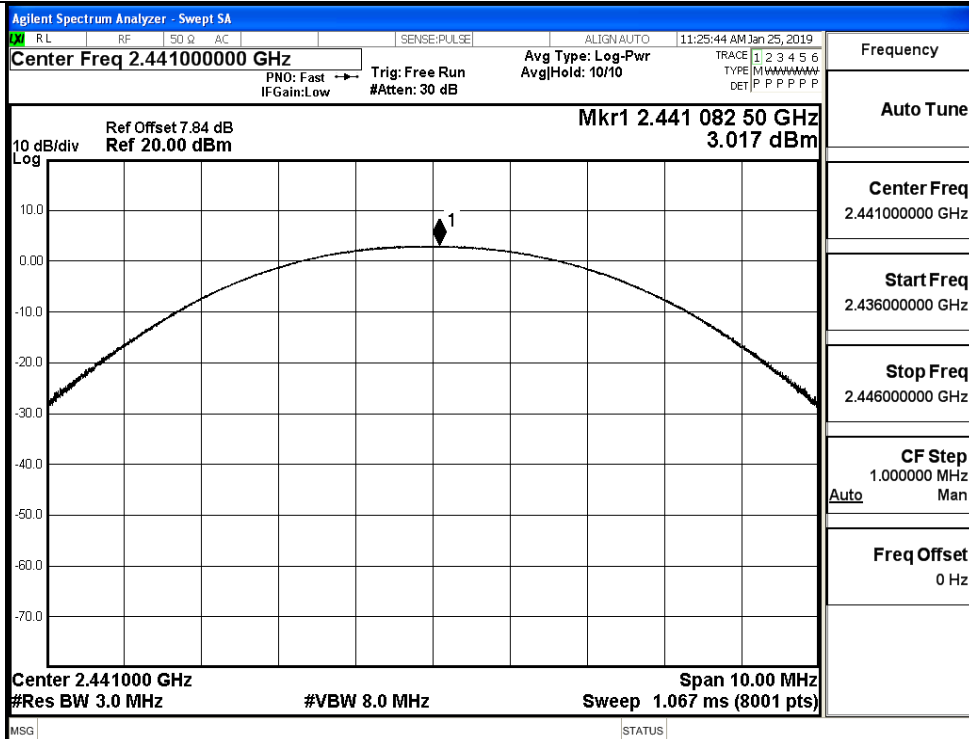
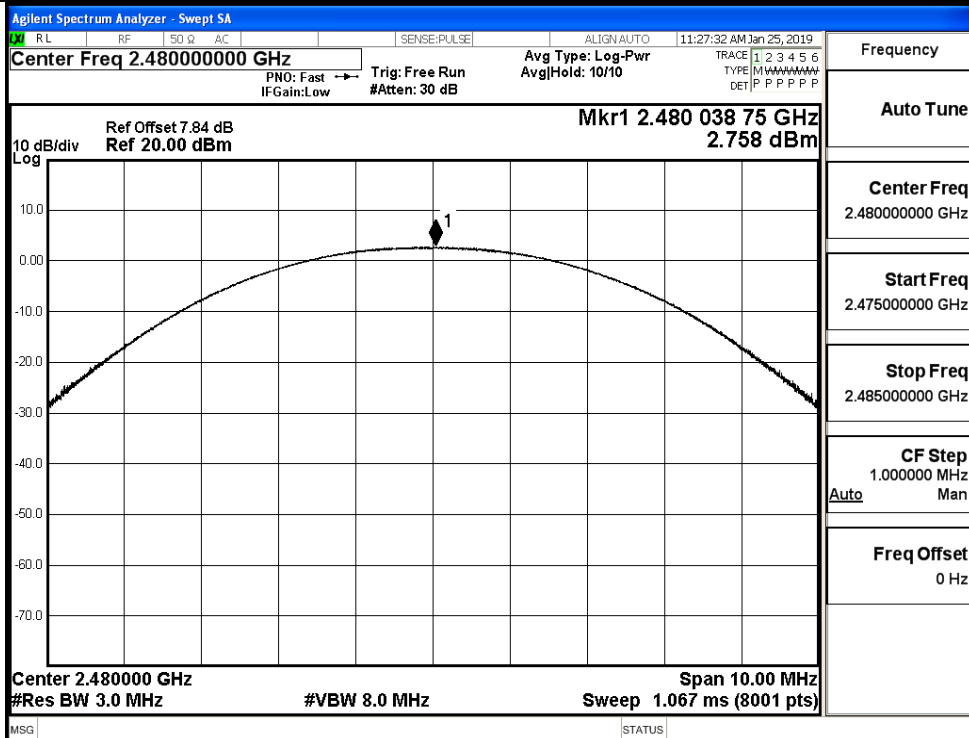


GFSK/MCH



GFSK/HCH

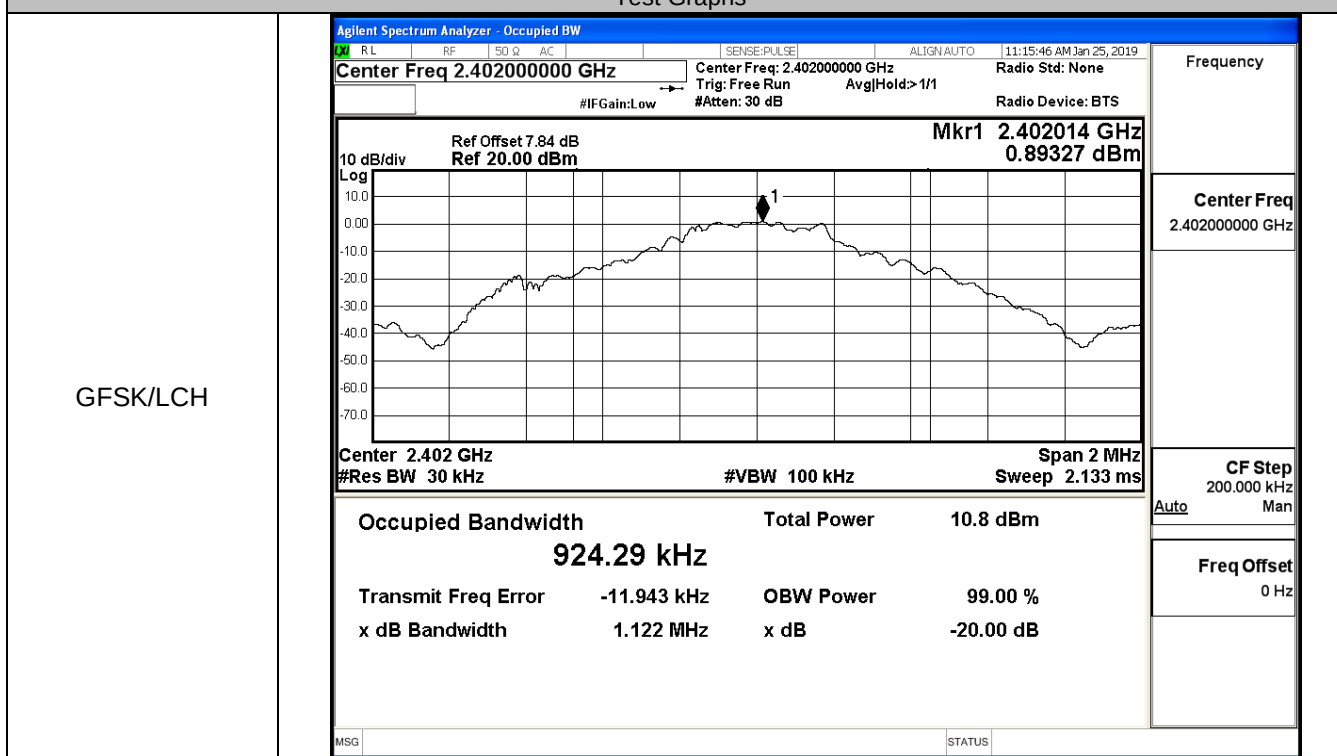
 π /4DQPSK/LCH

$\pi/4$ DQPSK/MCH $\pi/4$ DQPSK/HCH

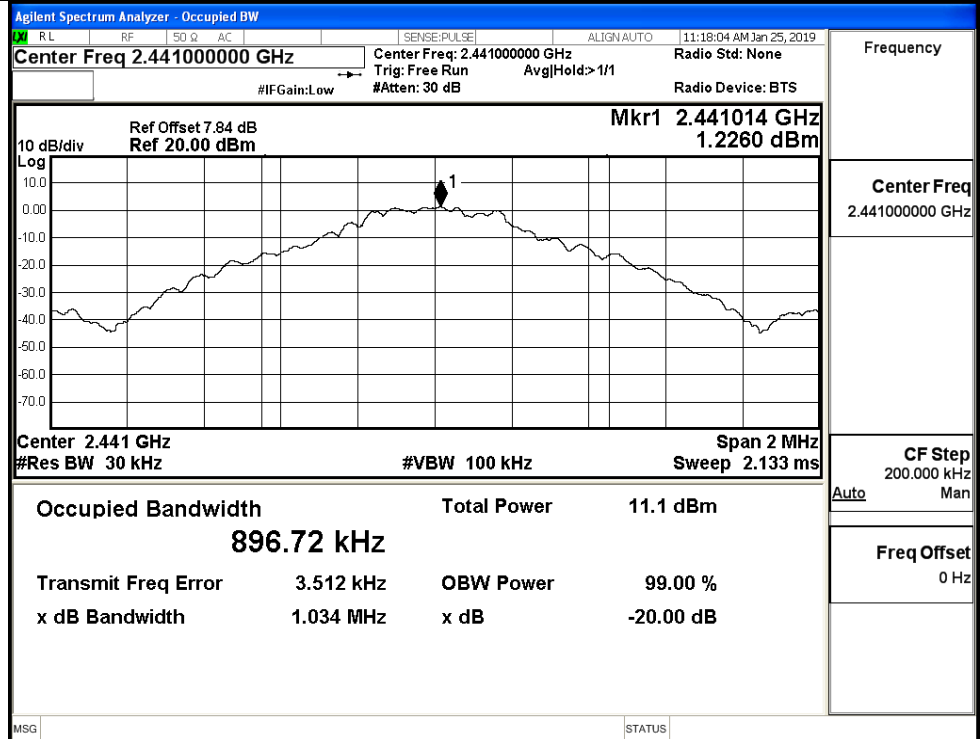
A.2 99% and 20dB Bandwidth

Mode	Channel.	99% Bandwidth [MHz]	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.92429	1.122	Not Specified	PASS
	MCH	0.89672	1.034	Not Specified	PASS
	HCH	0.89538	1.038	Not Specified	PASS
π /4DQPSK	LCH	1.1724	1.290	Not Specified	PASS
	MCH	1.1721	1.292	Not Specified	PASS
	HCH	1.1703	1.289	Not Specified	PASS

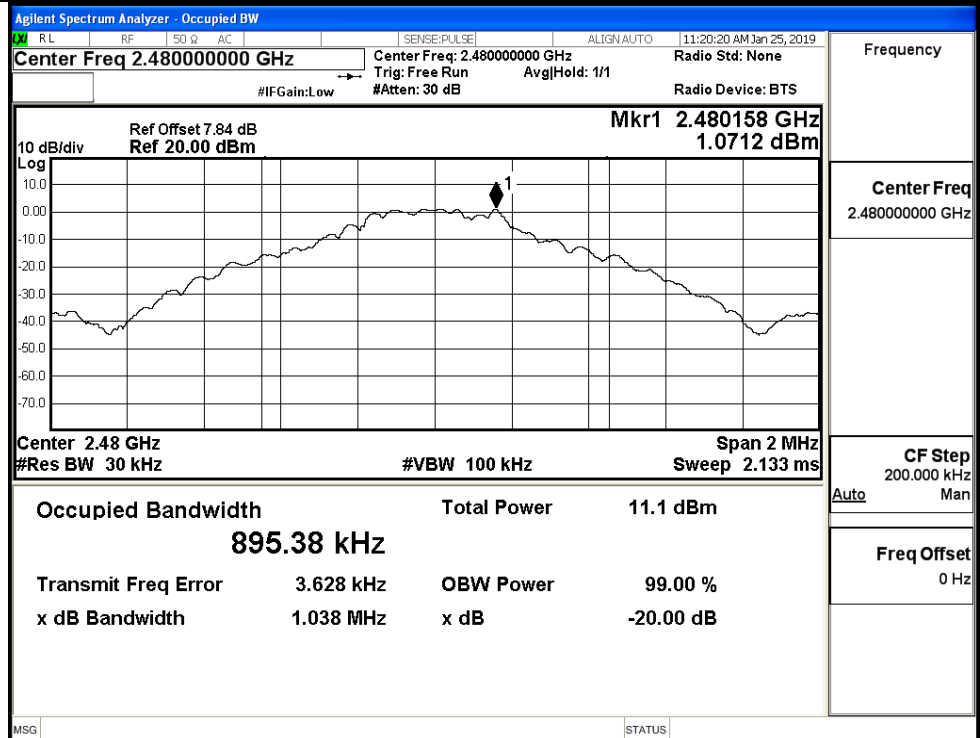
Test Graphs

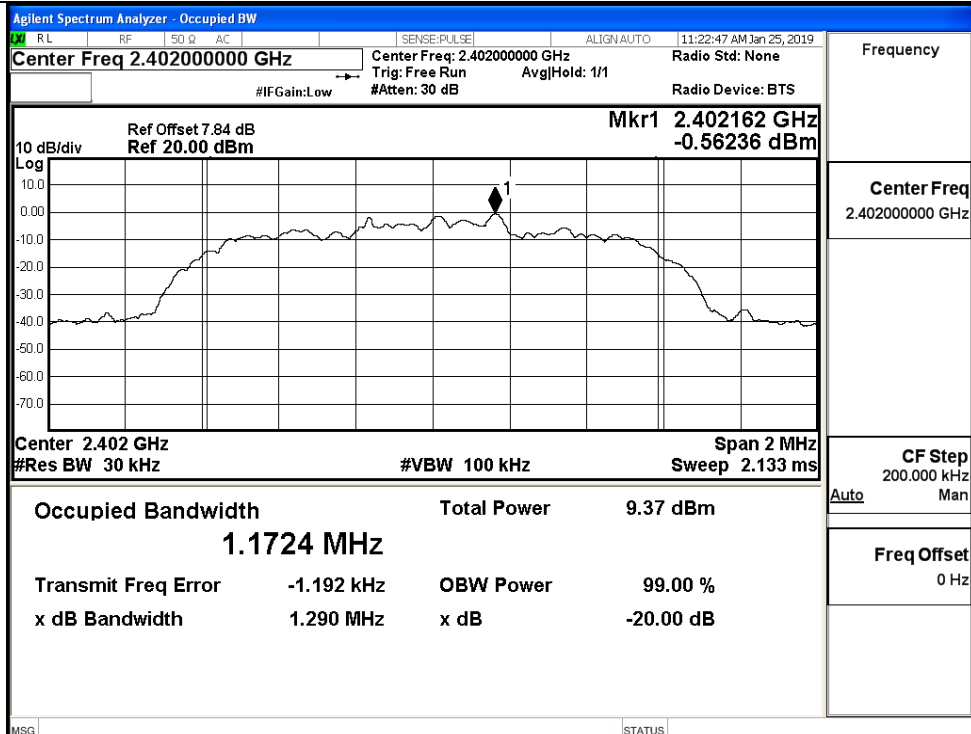
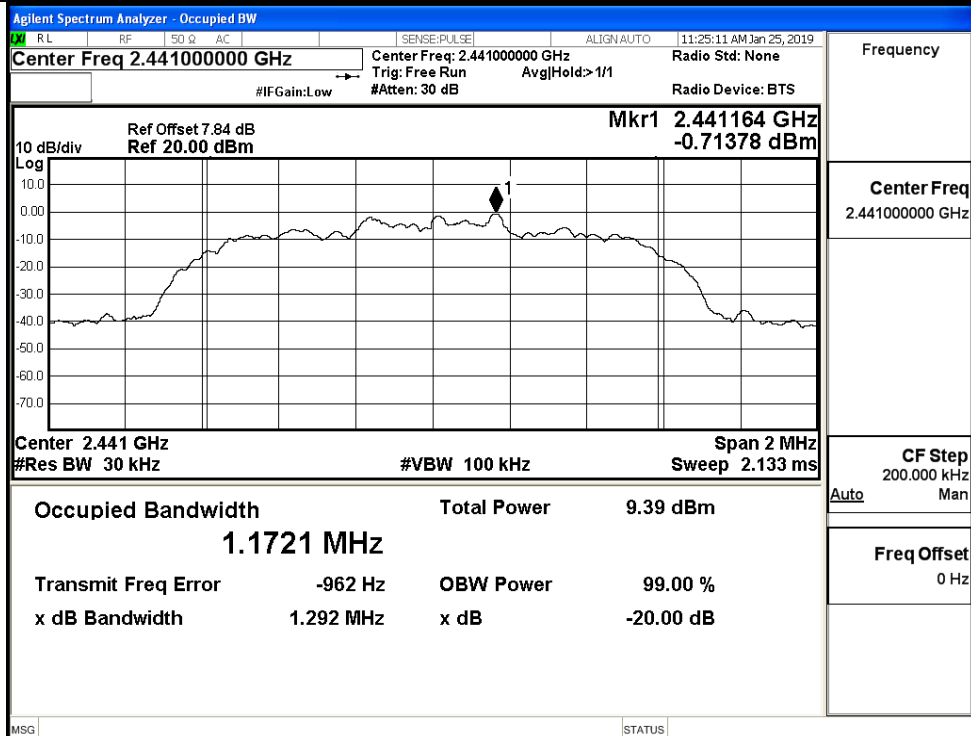


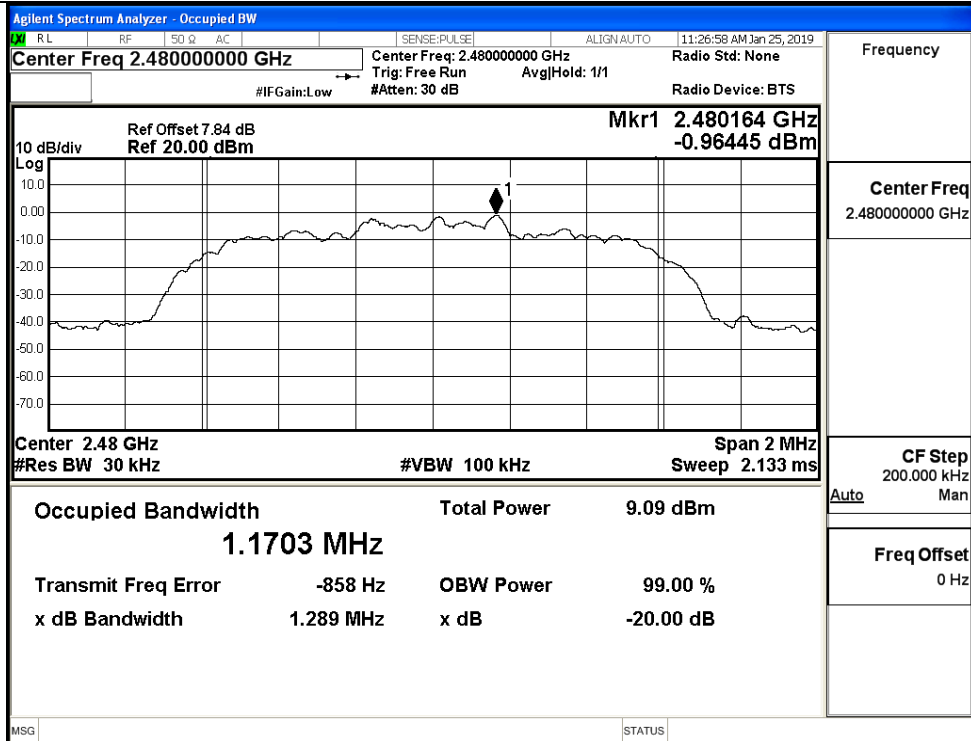
GFSK/MCH



GFSK/HCH



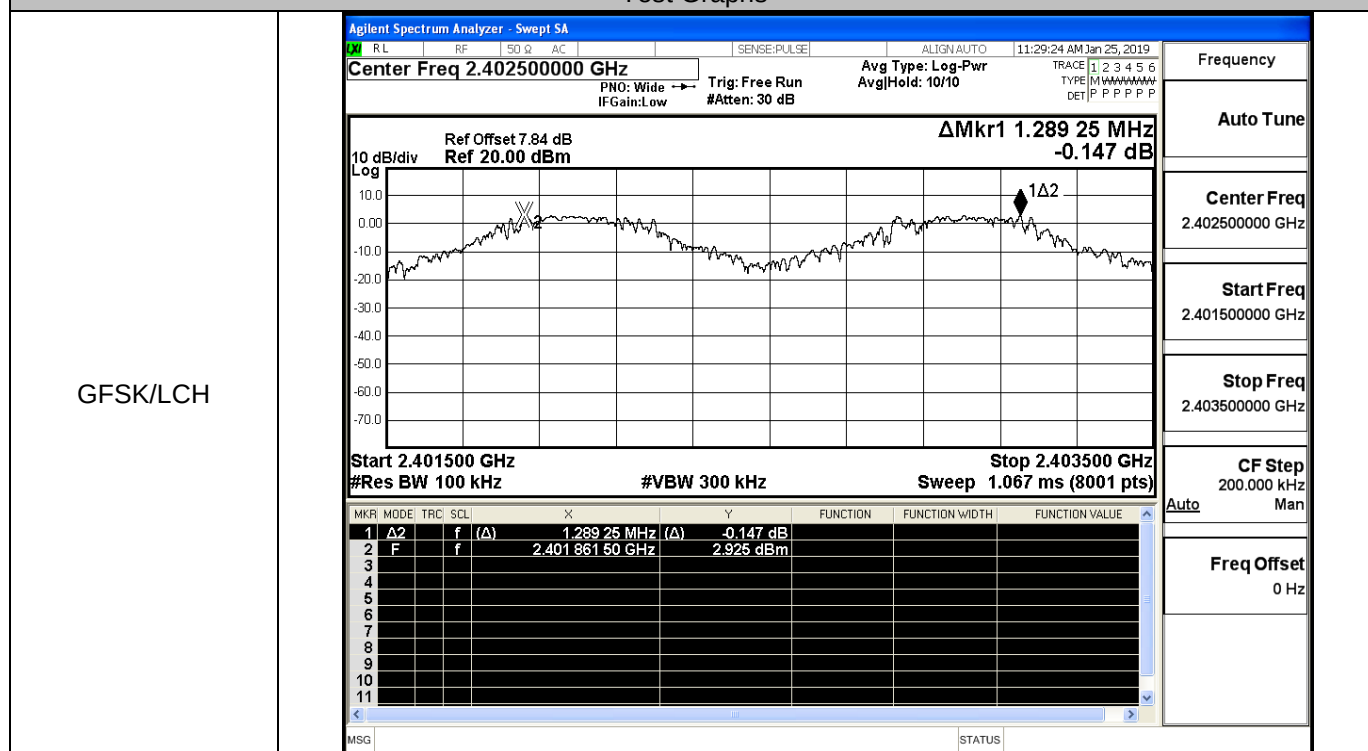
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

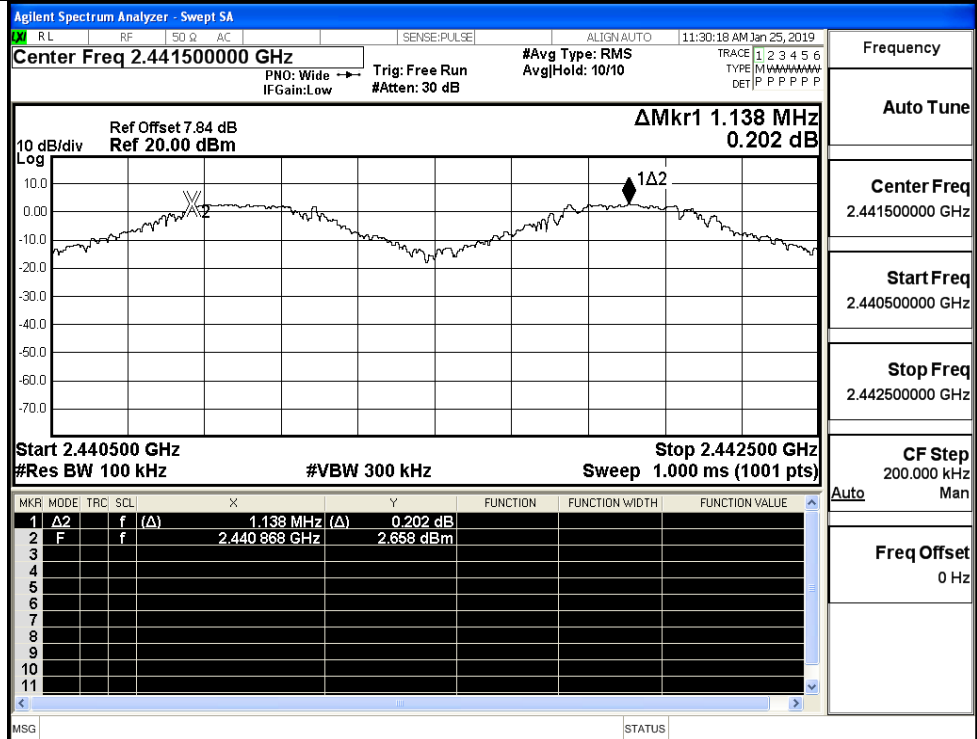
A.3 Carrier Frequency Separation

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.289	0.748	PASS
	MCH	1.138	0.748	PASS
	HCH	0.876	0.748	PASS
π /4DQPSK	LCH	0.882	0.861	PASS
	MCH	1.020	0.861	PASS
	HCH	0.870	0.861	PASS

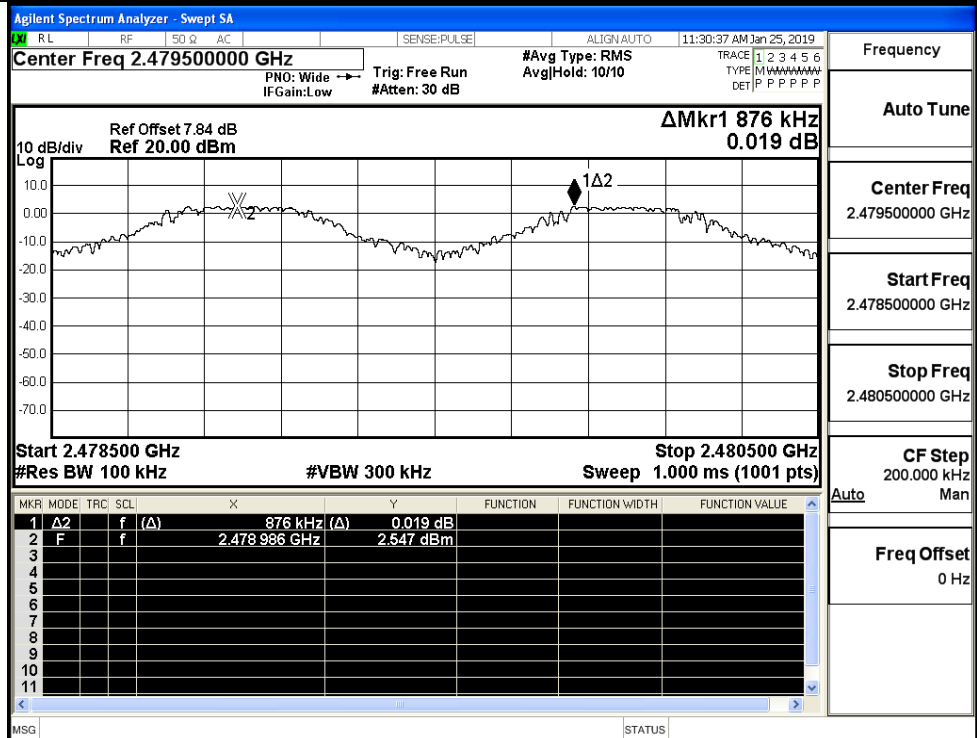
Test Graphs

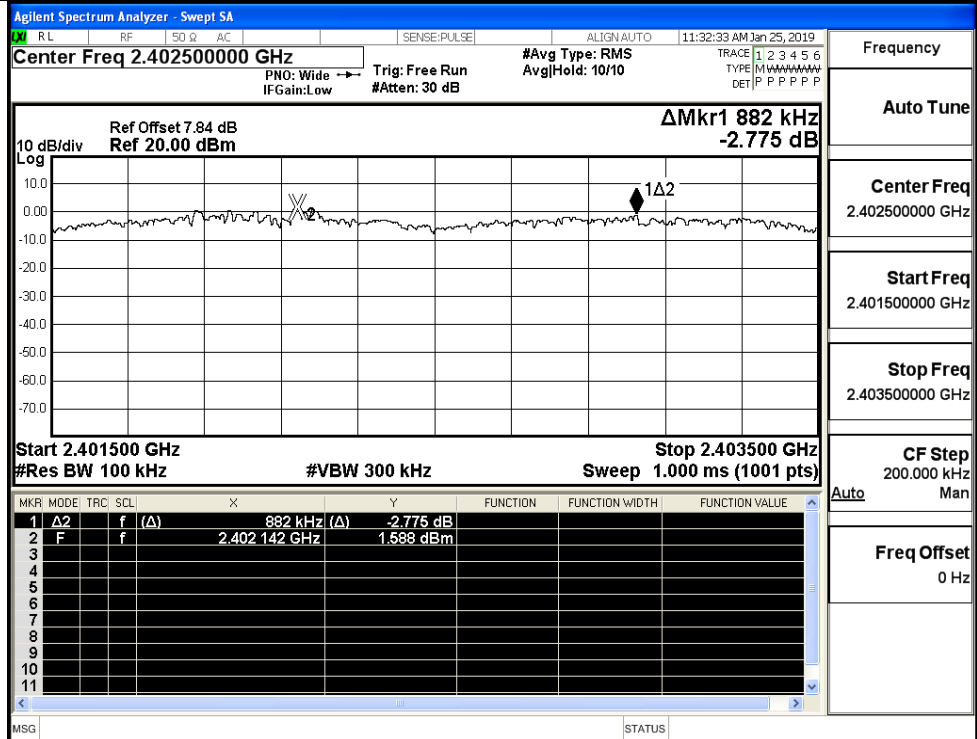
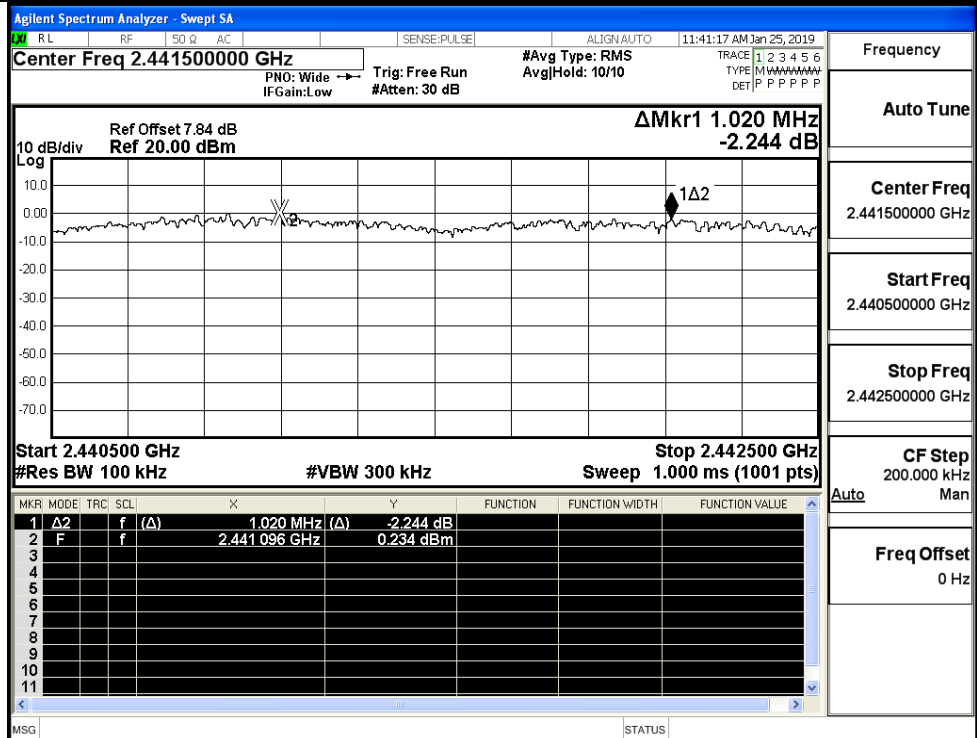


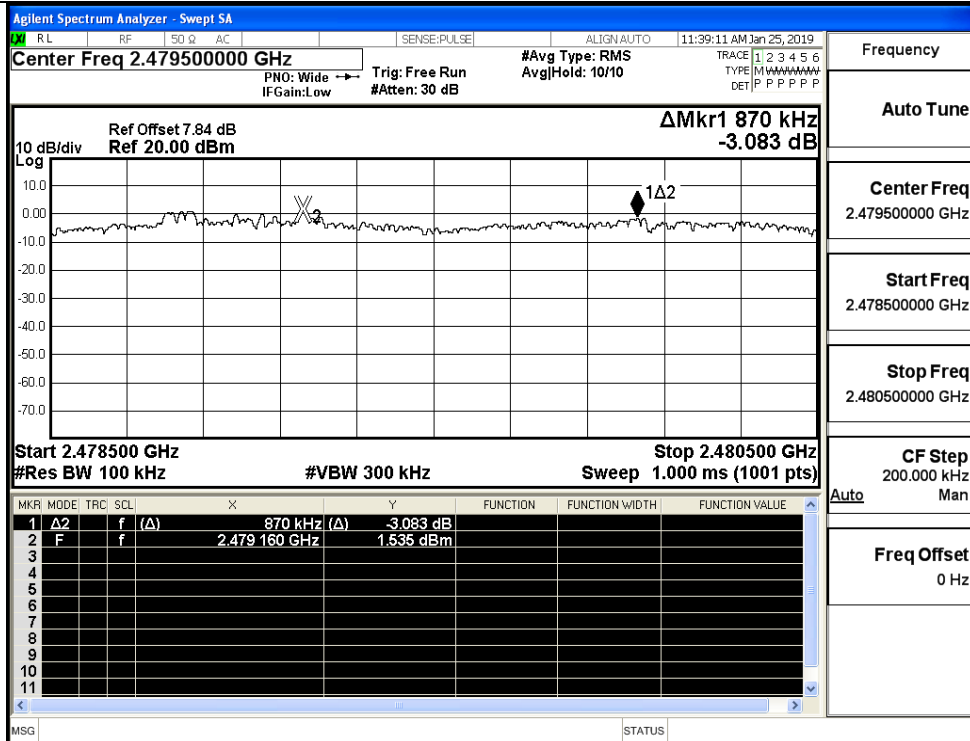
GFSK/MCH



GFSK/HCH



$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

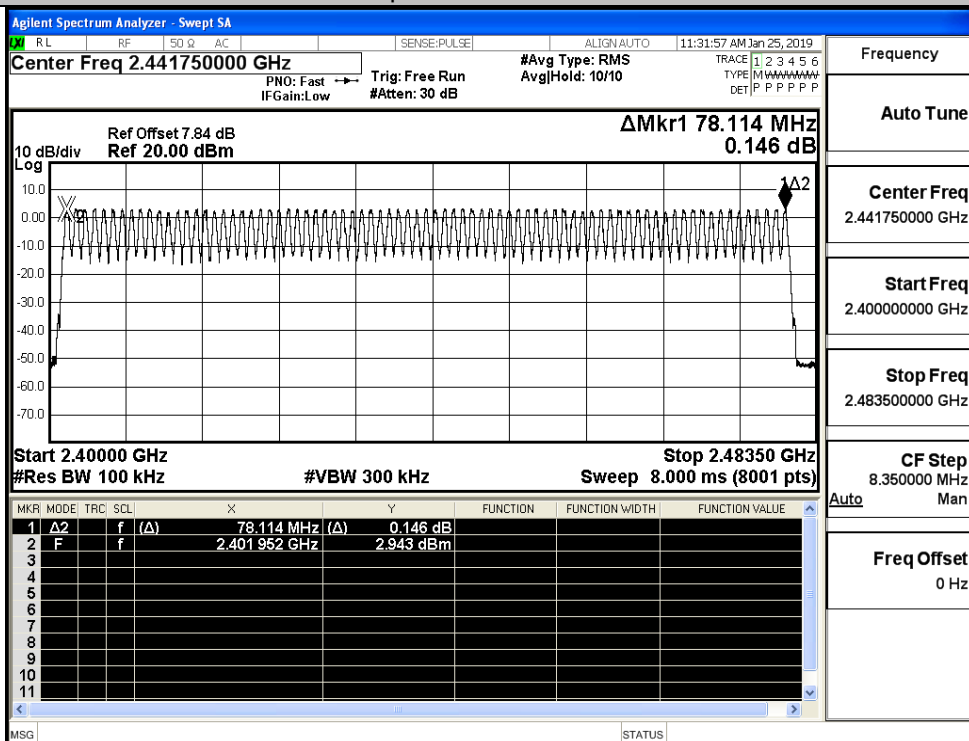
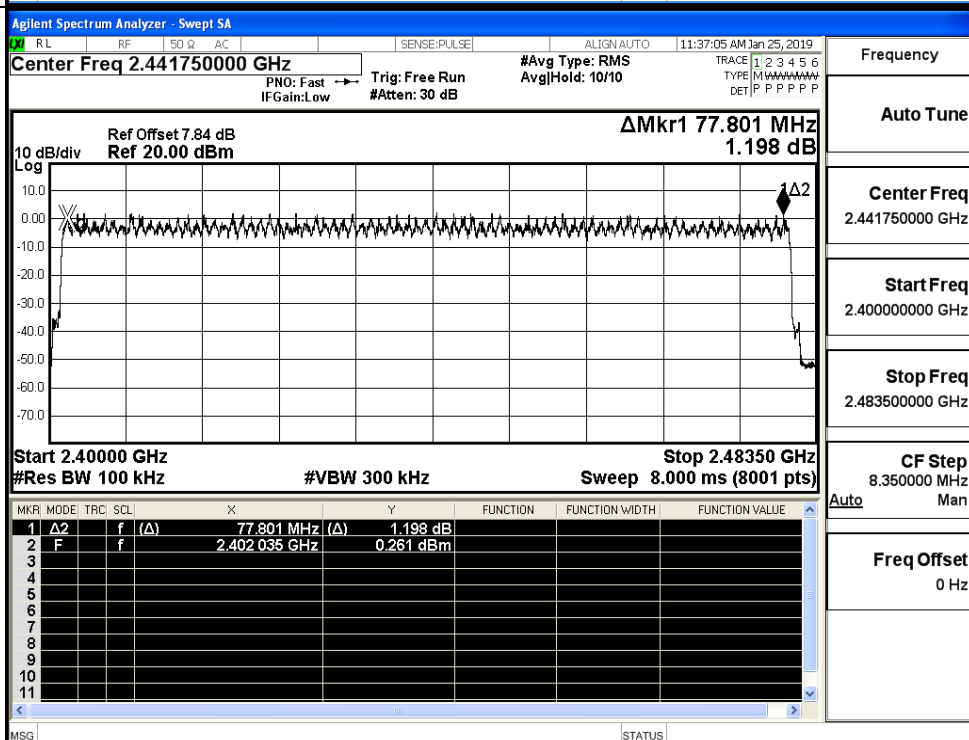
$\pi/4$ DQPSK/HCH

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

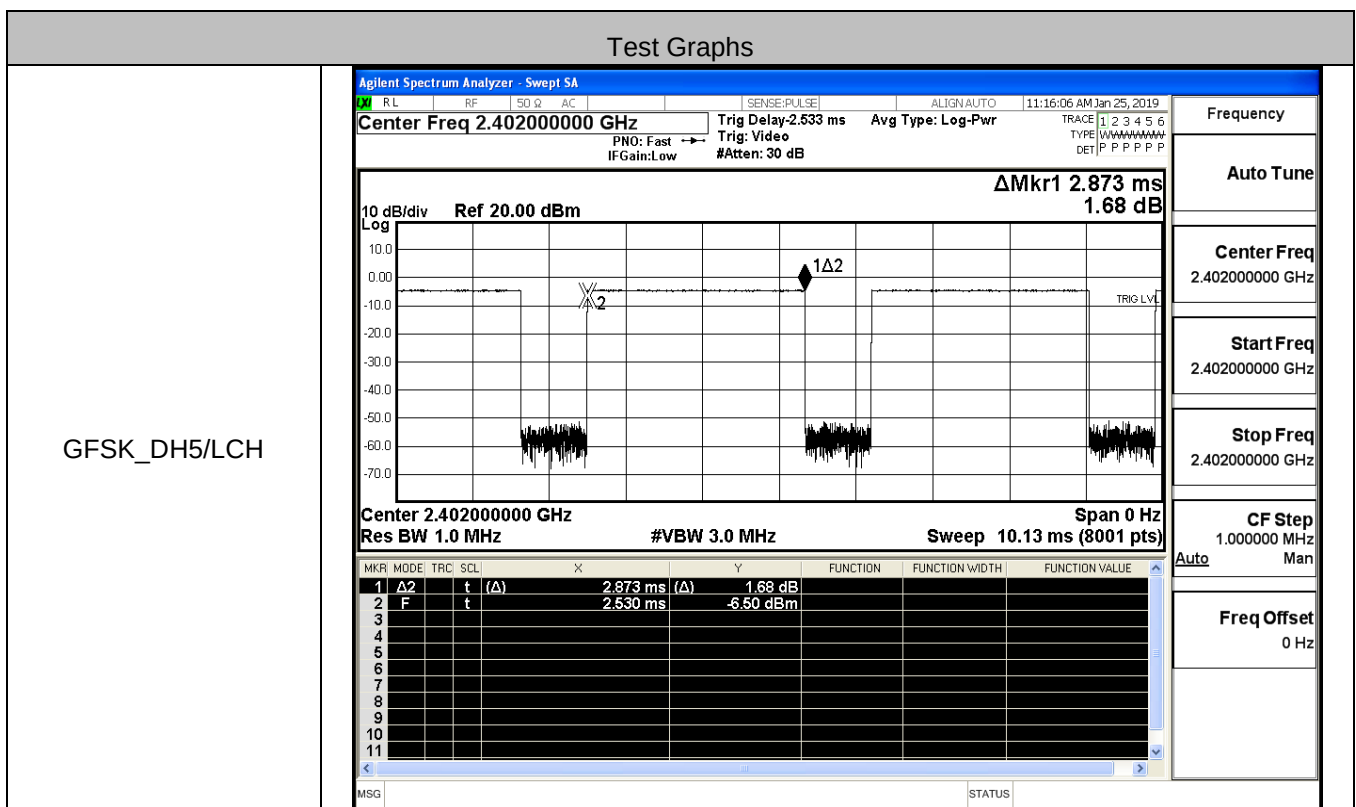
Test Graphs

GFSK/Hop

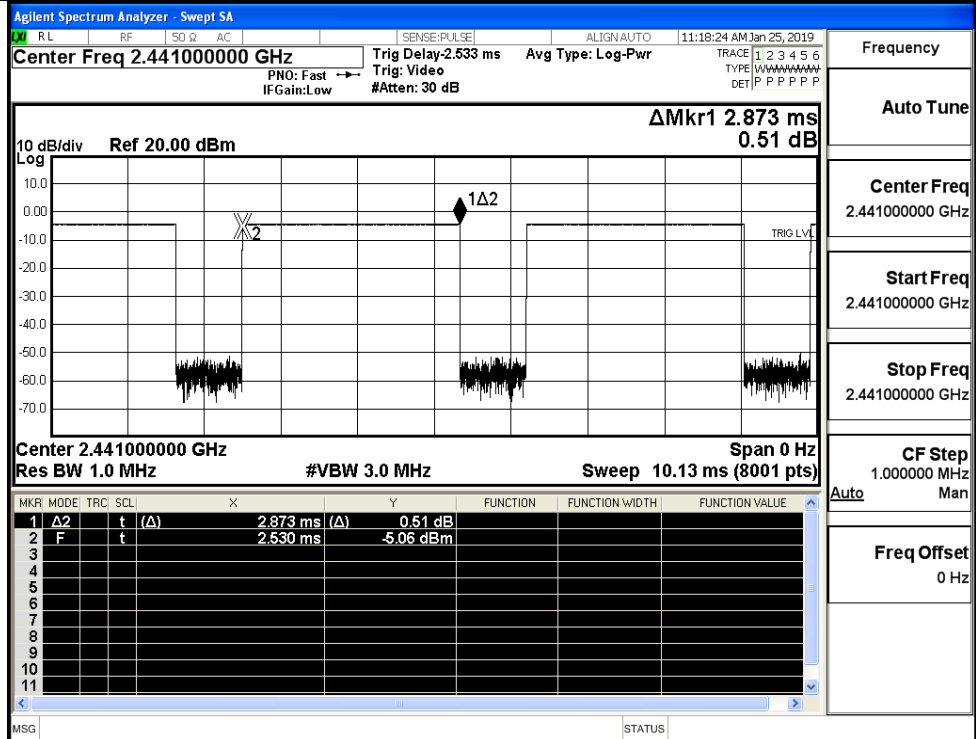
 $\pi/4$ DQPSK/Hop

A.5 Dwell Time

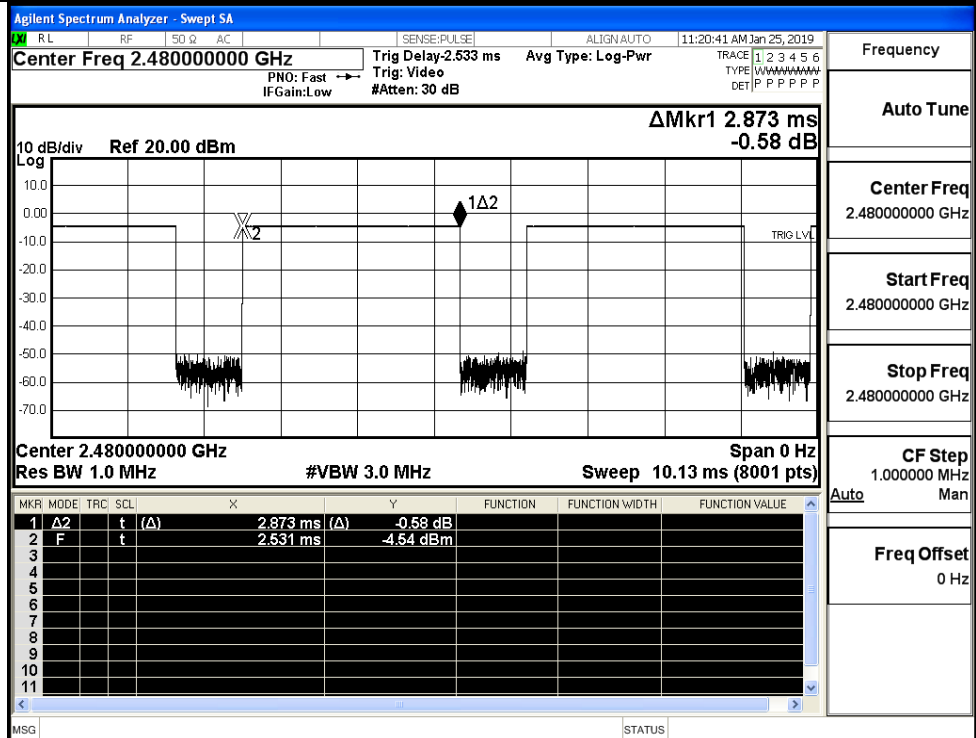
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.87	106.7	0.306	0.4	PASS
	DH5	MCH	2.87	106.7	0.306	0.4	PASS
	DH5	HCH	2.87	106.7	0.306	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.88	106.7	0.307	0.4	PASS
	2DH5	MCH	2.88	106.7	0.307	0.4	PASS
	2DH5	HCH	2.88	106.7	0.307	0.4	PASS



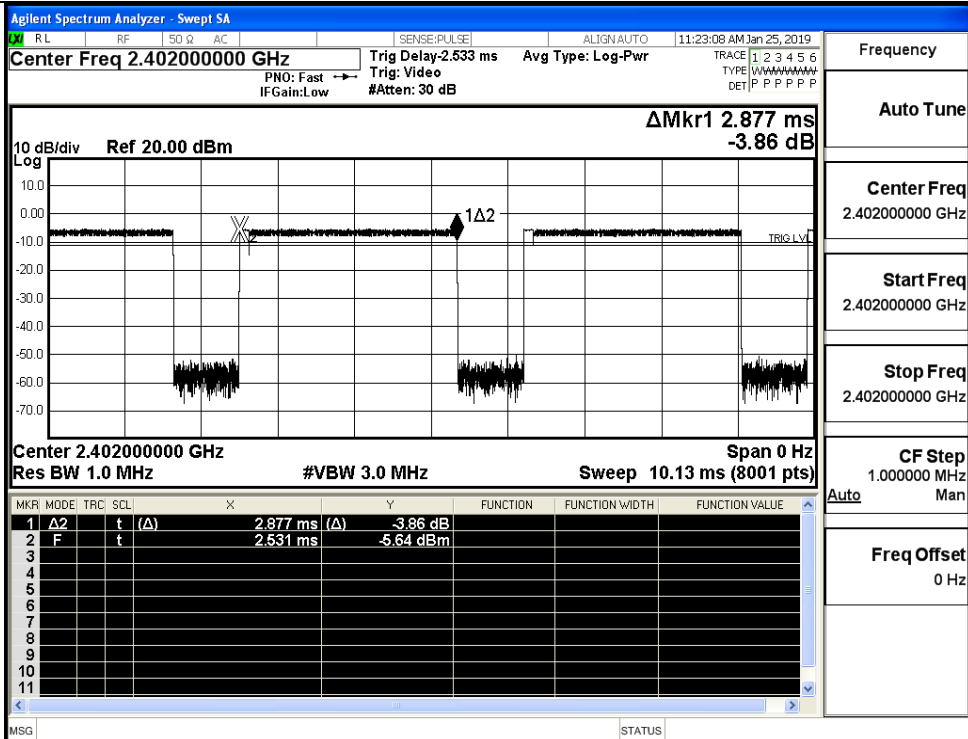
GFSK_DH5/MCH



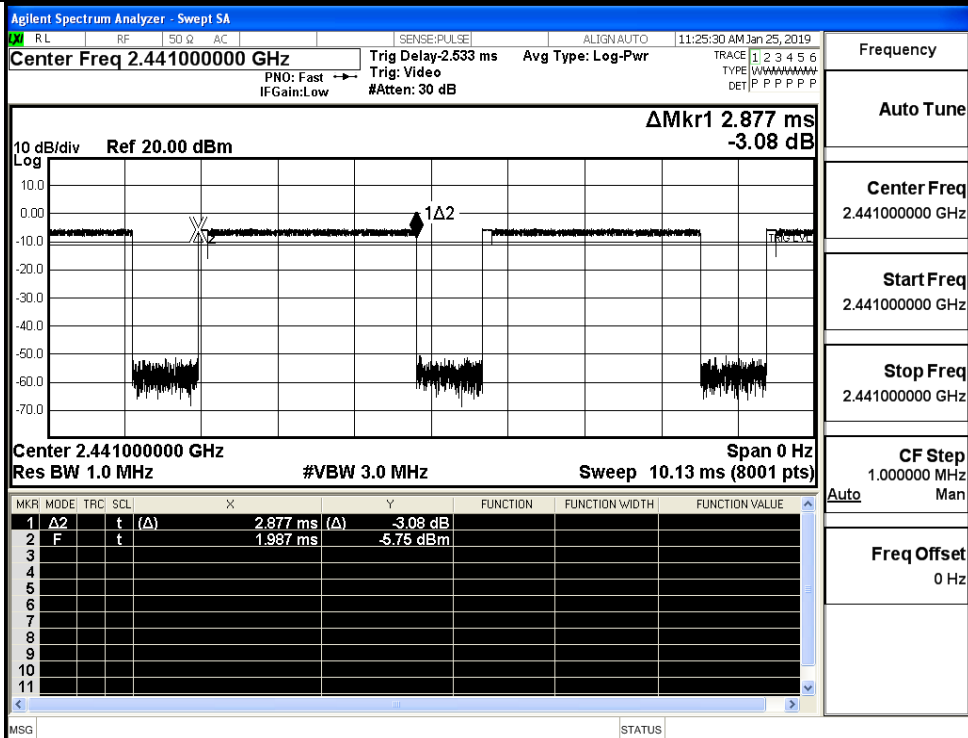
GFSK_DH5/HCH



$\pi/4$ DQPSK
_2DH5/LCH



$\pi/4$ DQPSK
_2DH5/MCH



Agilent Spectrum Analyzer - Swept SA

RL RF 50 Ω AC SENSE PULSE ALIGN AUTO 11:27:18 AM Jan 25, 2019

Center Freq 2.480000000 GHz Trig Delay: 2.533 ms Avg Type: Log-Pwr PNO: Fast IF Gain: Low Trig: Video #Atten: 30 dB TRACE 1 2 3 4 5 6 TYPE W W W W W W W W DET P P P P P P P

10 dB/div Ref 20.00 dBm Δ Mkr1 2.877 ms -2.21 dB

Center 2.480000000 GHz Span 0 Hz
Res BW 1.0 MHz #VBW 3.0 MHz Sweep 10.13 ms (8001 pts)

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	Δ 2	t	(Δ)	2.877 ms	-2.21 dB			
2	F	t		620.7 μ s	-6.19 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								

Auto

Freq Offset 0 Hz

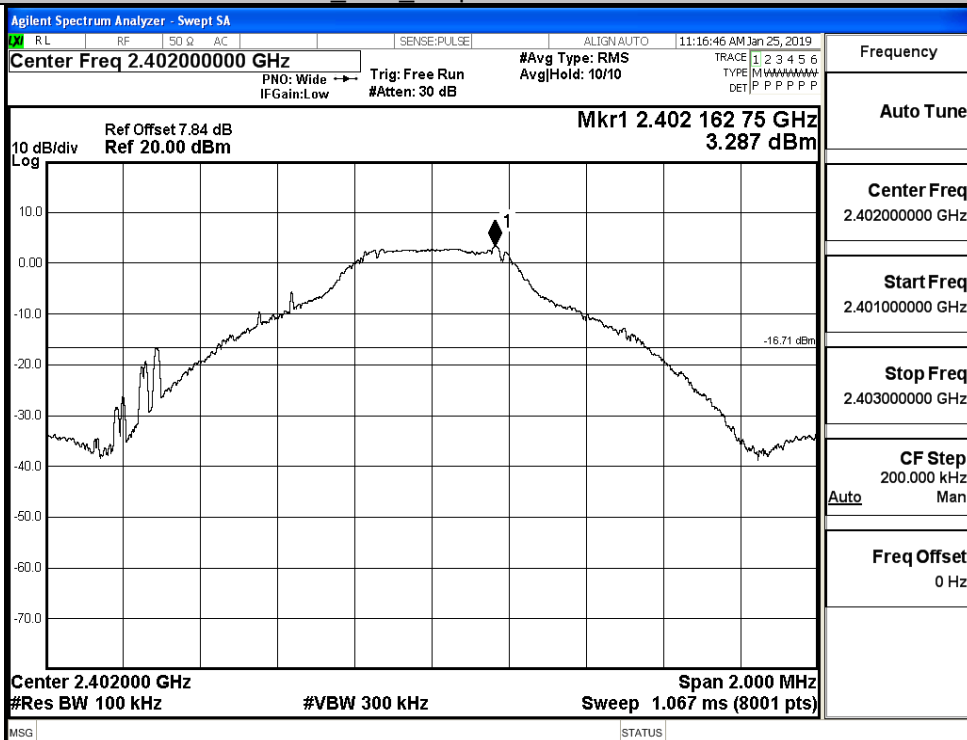
MSG STATUS

A.6 RF Conducted Spurious Emissions

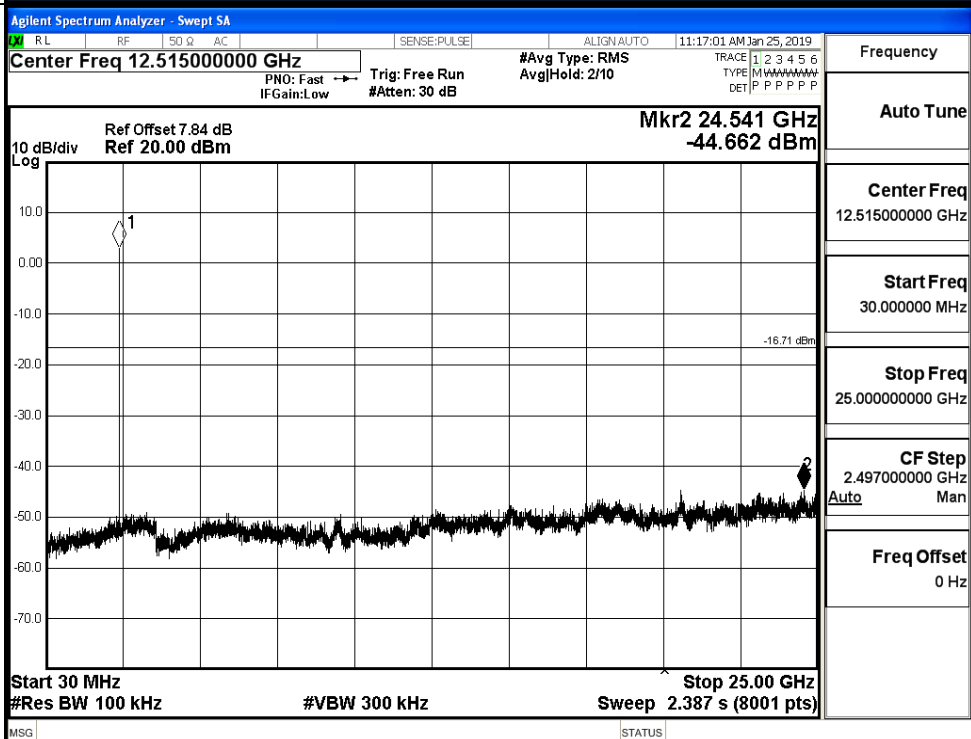
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	3.287	-44.662	-16.713	PASS
	MCH	3.485	-44.745	-16.515	PASS
	HCH	3.298	-45.497	-16.702	PASS
$\pi/4$ DQPSK	LCH	1.918	-44.467	-18.082	PASS
	MCH	2.142	-44.579	-17.858	PASS
	HCH	1.71	-45.020	-18.290	PASS

GFSK LCH Graphs

Pref

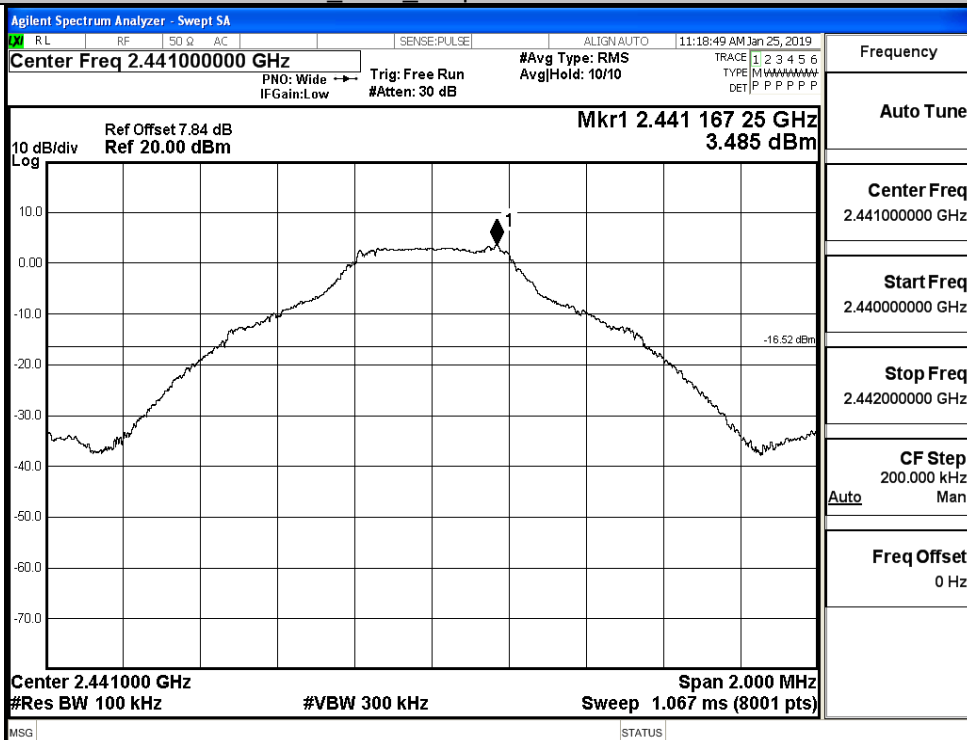


Puw

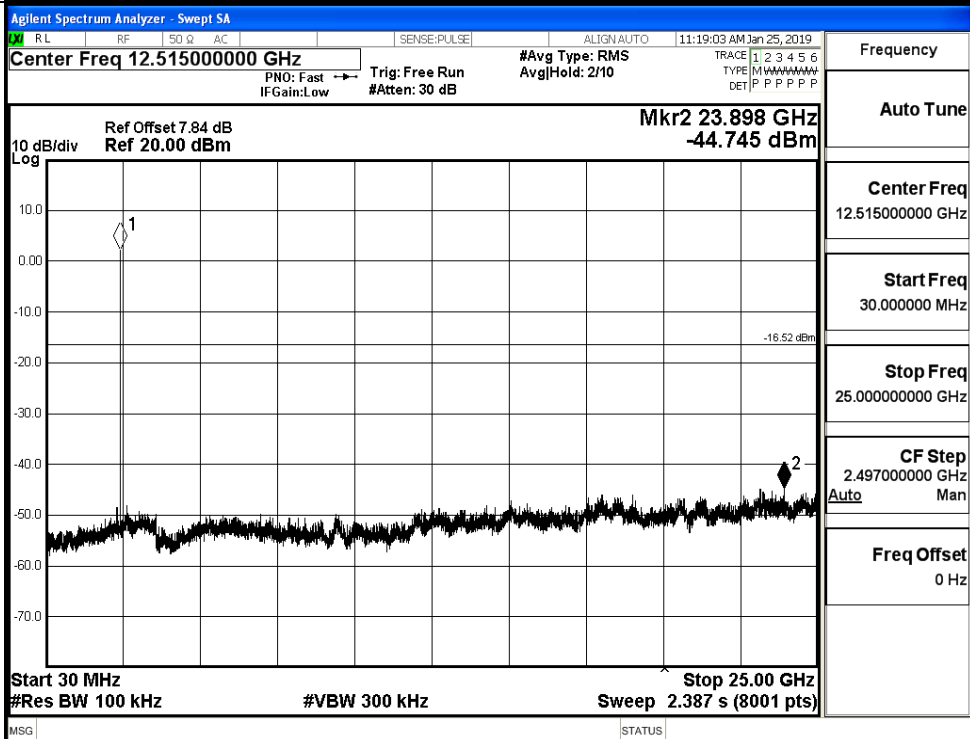


GFSK_MCH_Graphs

Pref

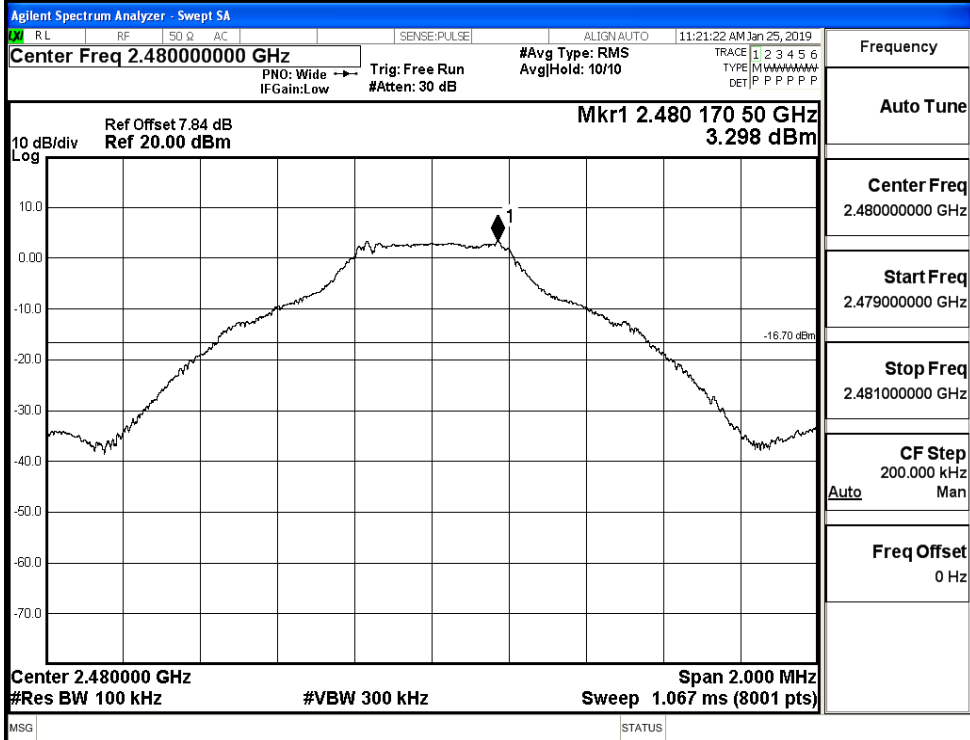


Puw

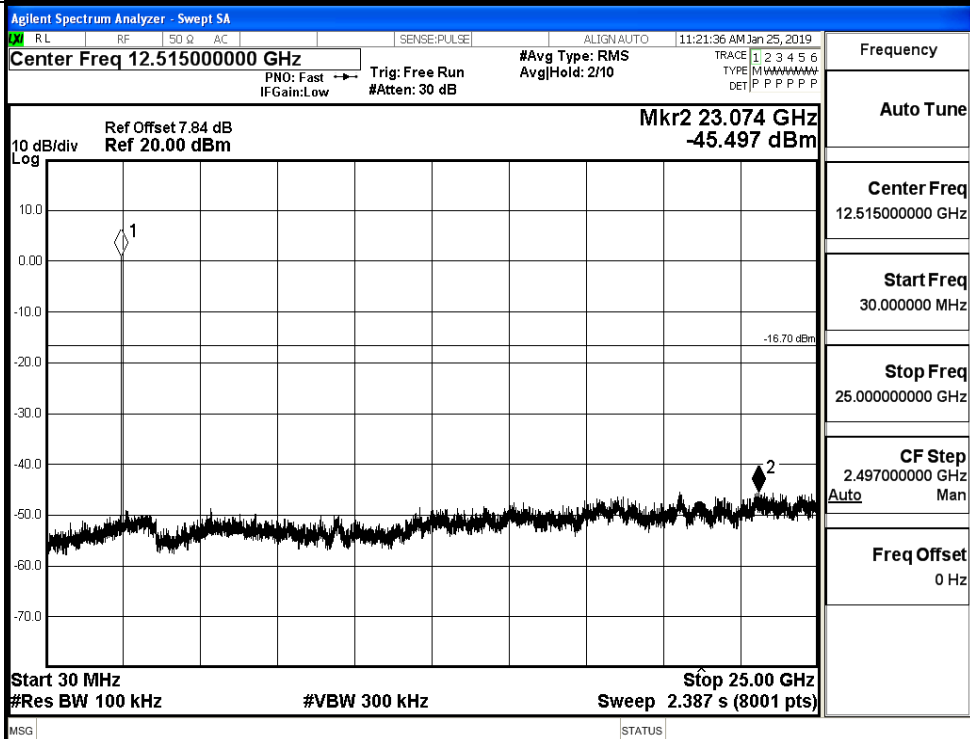


GFSK_HCH_Graphs

Pref

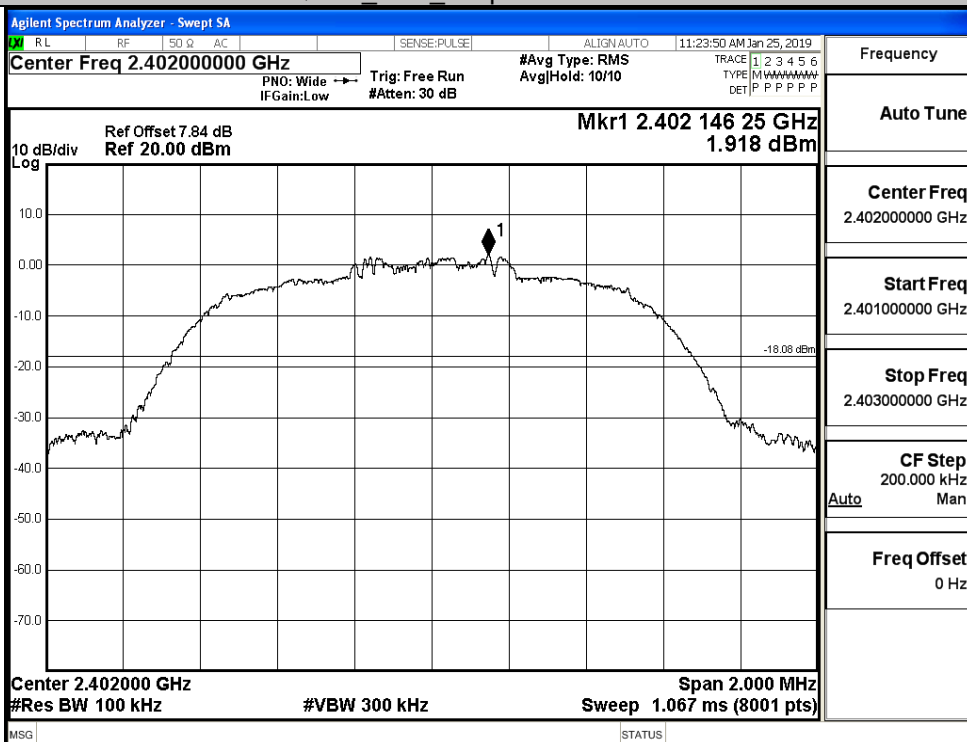


Puw

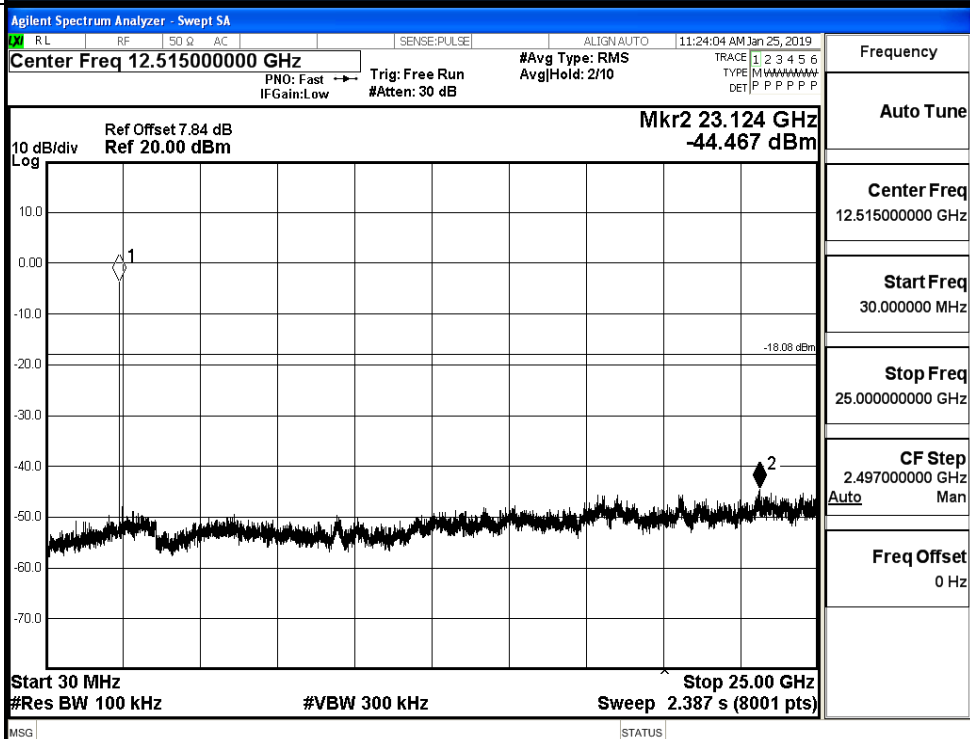


π /4DQPSK LCH_Graphs

Pref

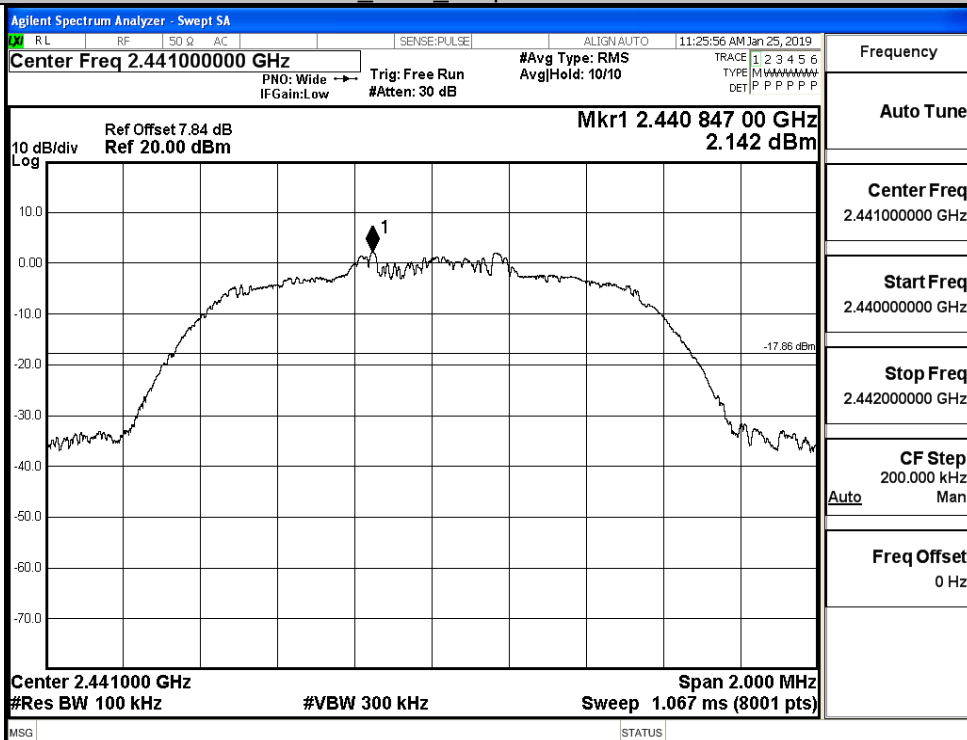


Puw

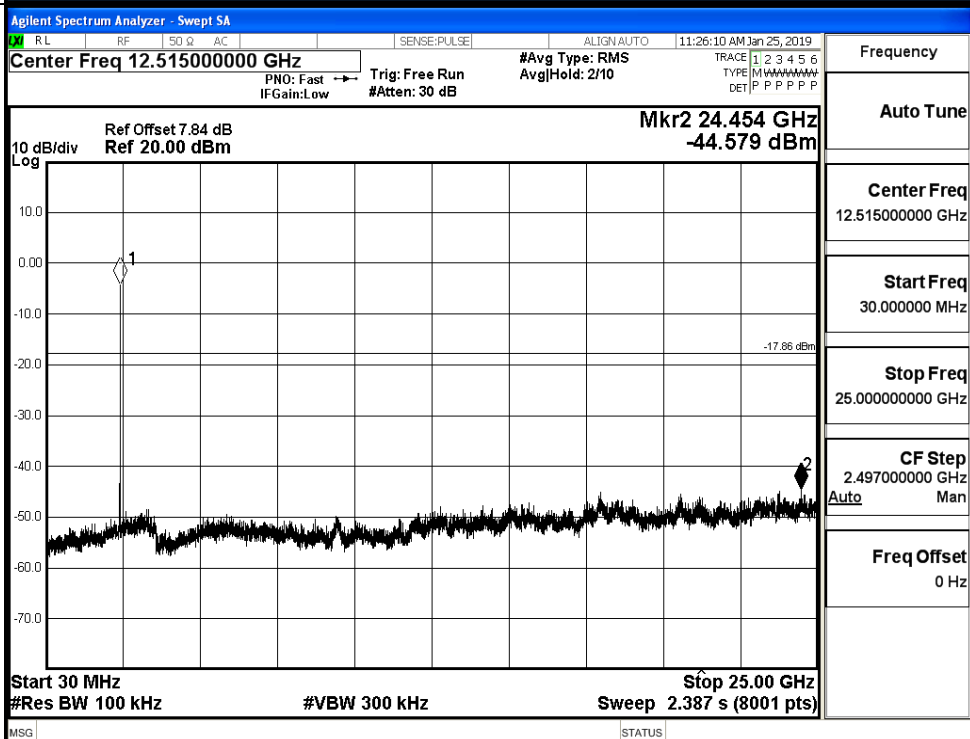


π /4DQPSK_MCH_Graphs

Pref

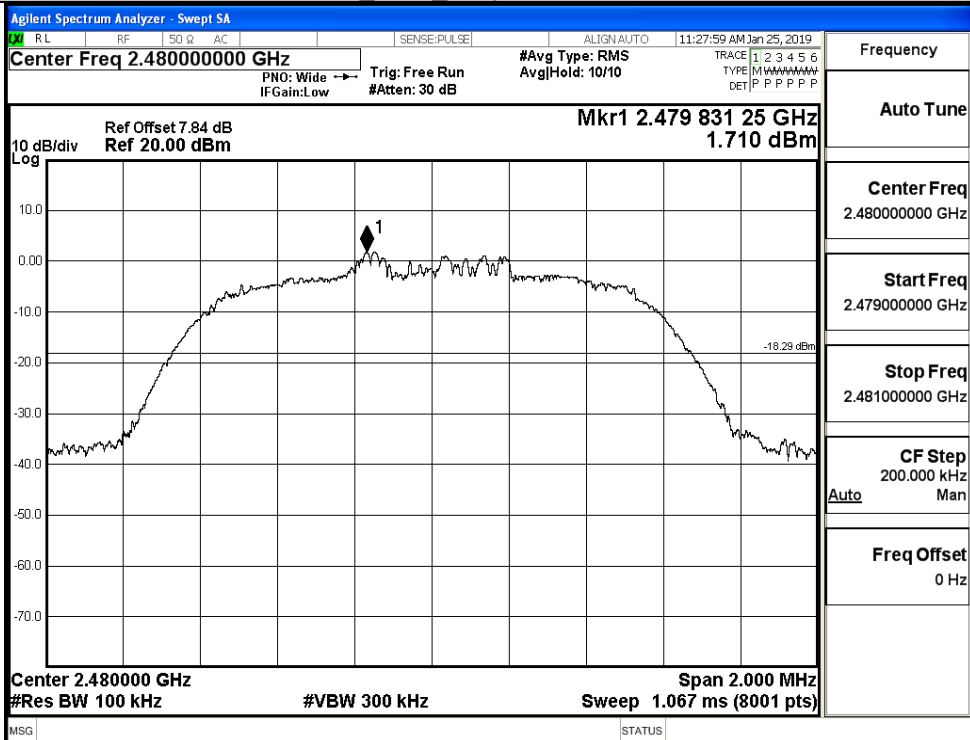


Puw

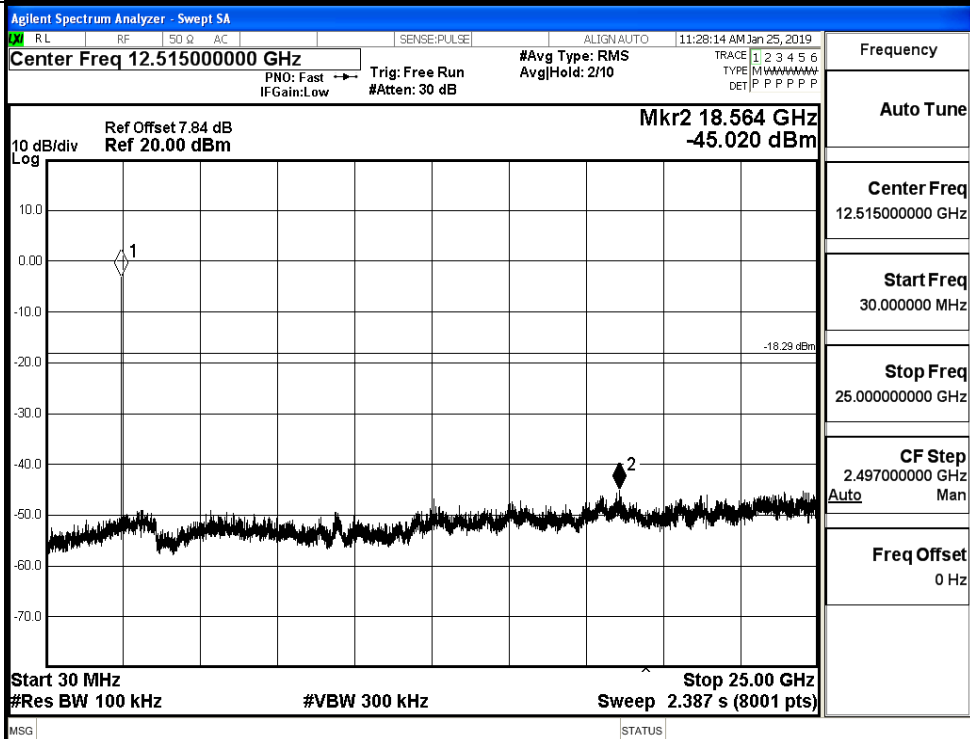


$\pi/4$ DQPSK_HCH_Graphs

Pref



Puw

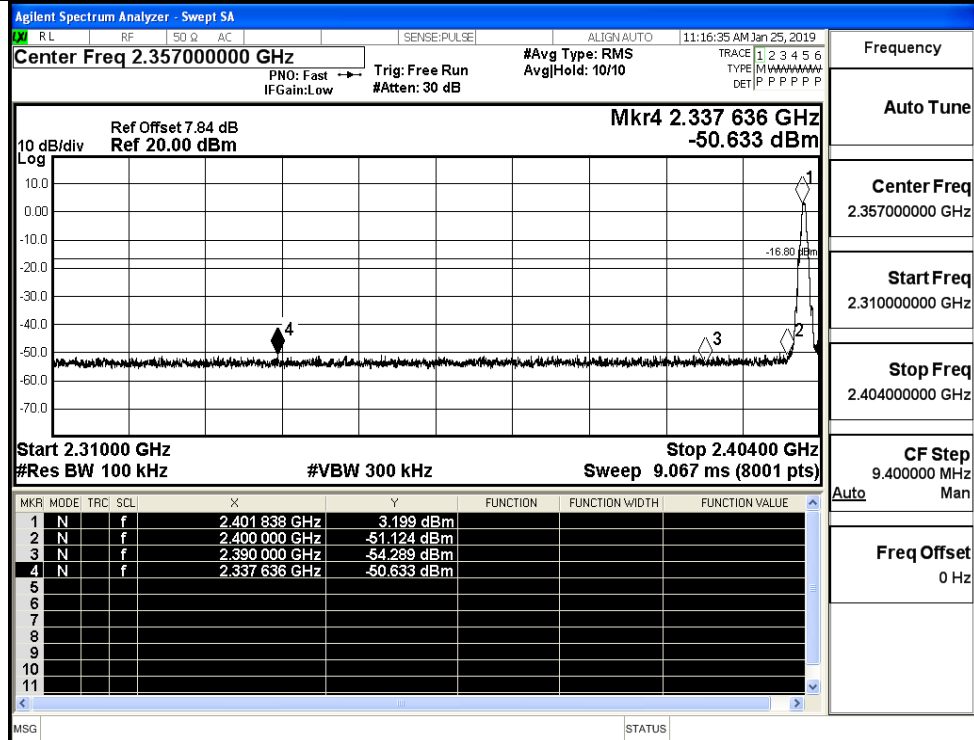


A.7 Band-edge for RF Conducted Emissions

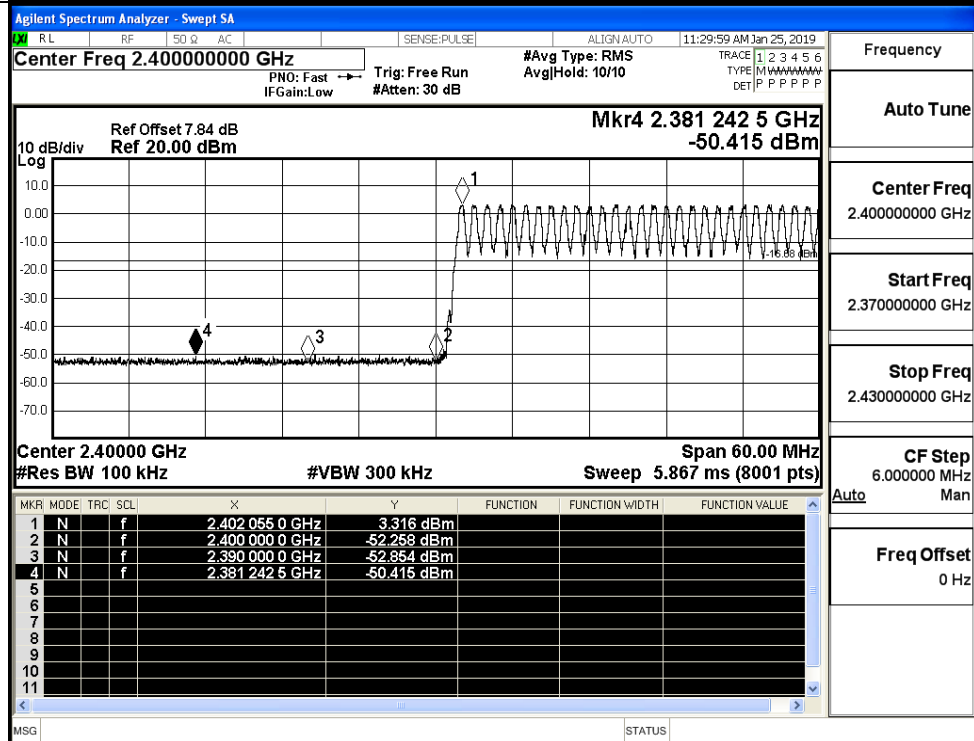
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	3.199	Off	-50.633	-16.8	PASS
			3.316	On	-50.415	-16.68	PASS
	HCH	2480	3.371	Off	-50.251	-16.63	PASS
			3.204	On	-50.017	-16.8	PASS
π /4DQPSK	LCH	2402	1.366	Off	-50.098	-18.63	PASS
			2.004	On	-49.561	-18.00	PASS
	HCH	2480	1.662	Off	-49.663	-18.34	PASS
			1.726	On	-49.416	-18.27	PASS

Test Graphs

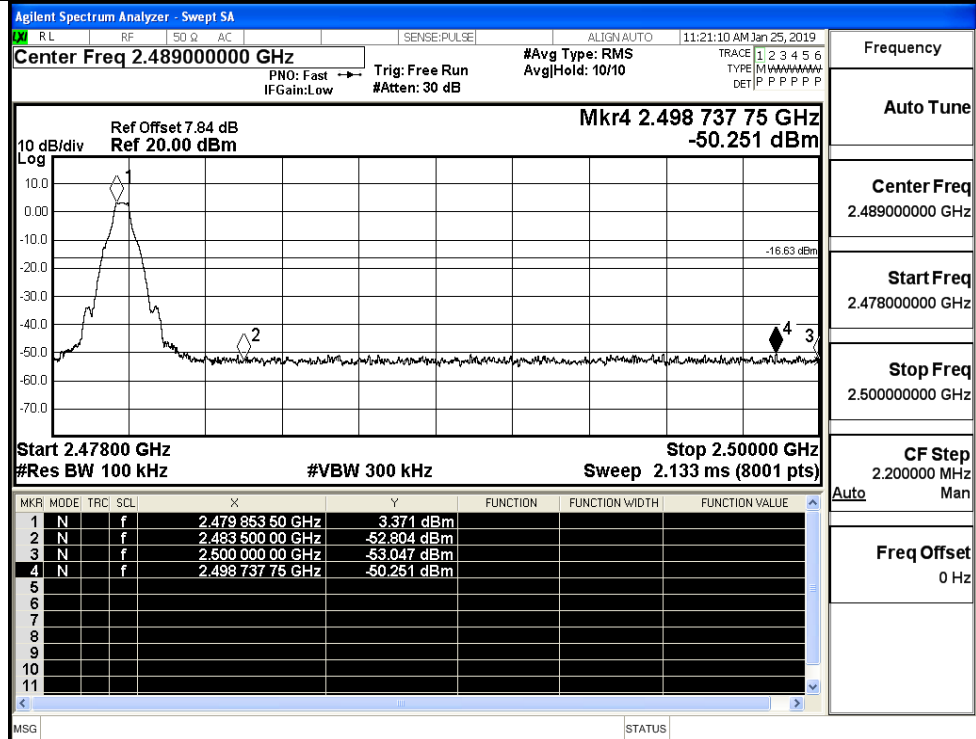
GFSK/LCH/No Hop



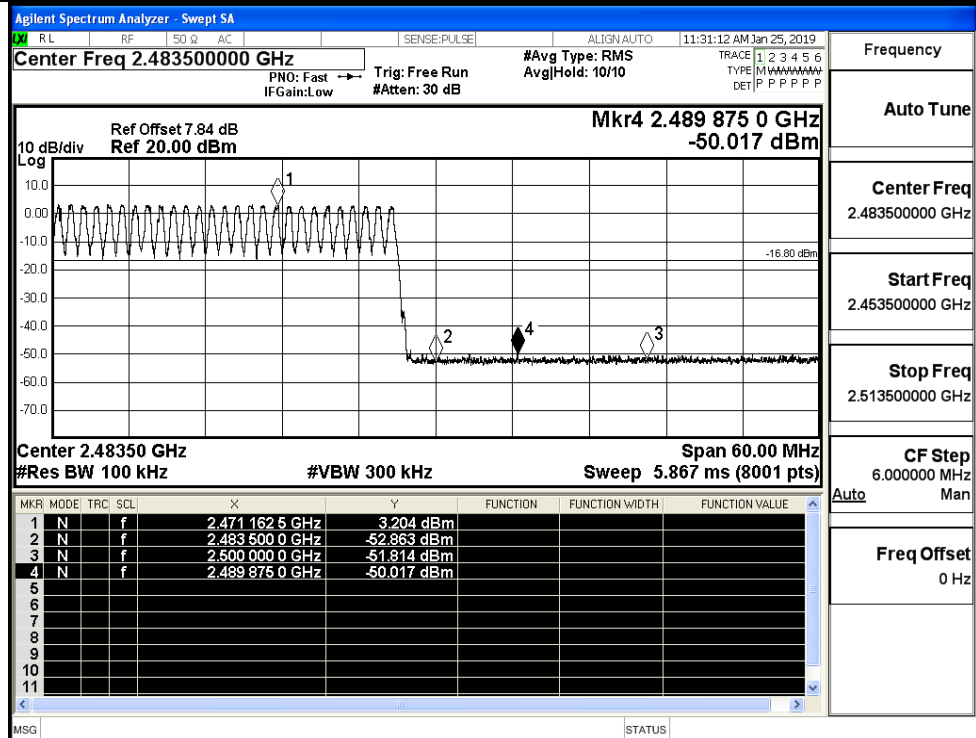
GFSK/LCH/Hop



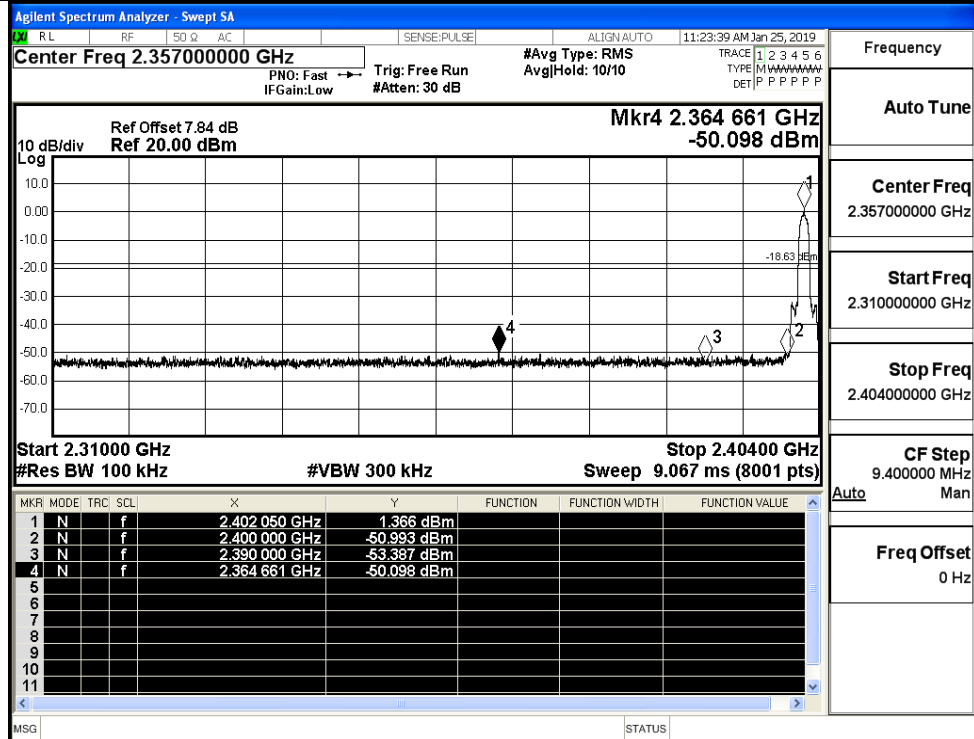
GFSK/HCH/No Hop



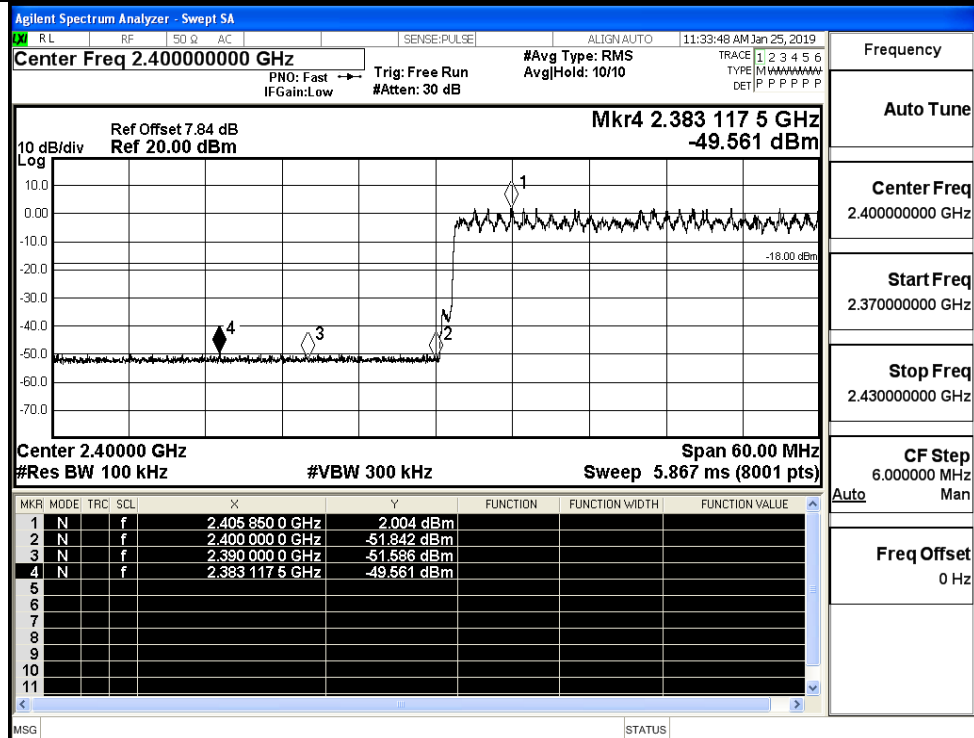
GFSK/HCH/Hop



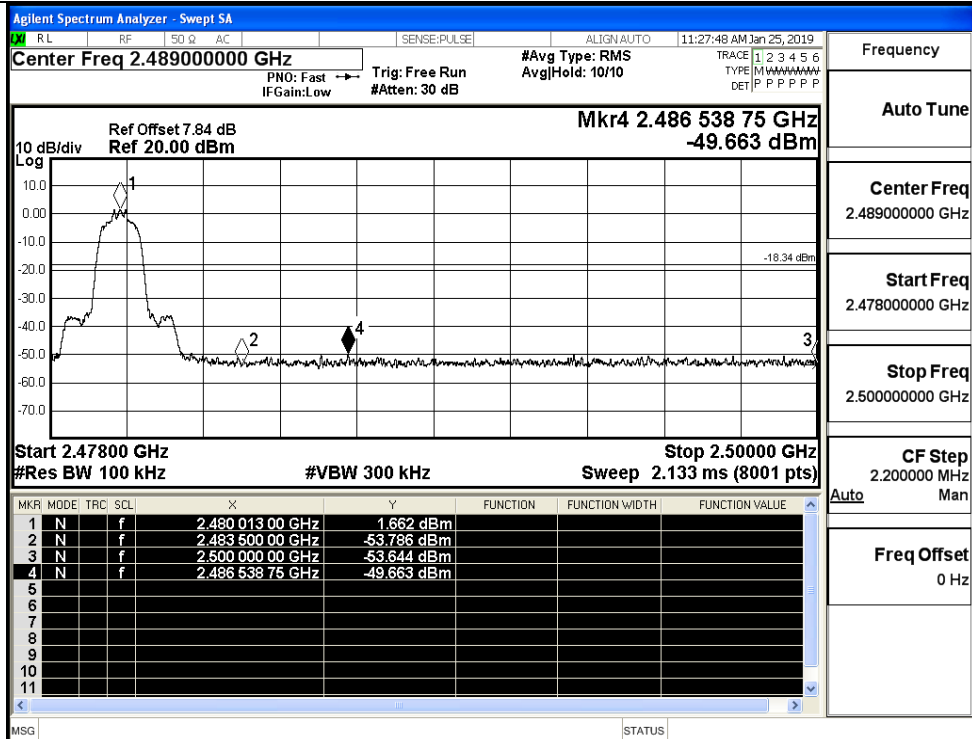
$\pi/4$ DQPSK/LCH/No
Hop



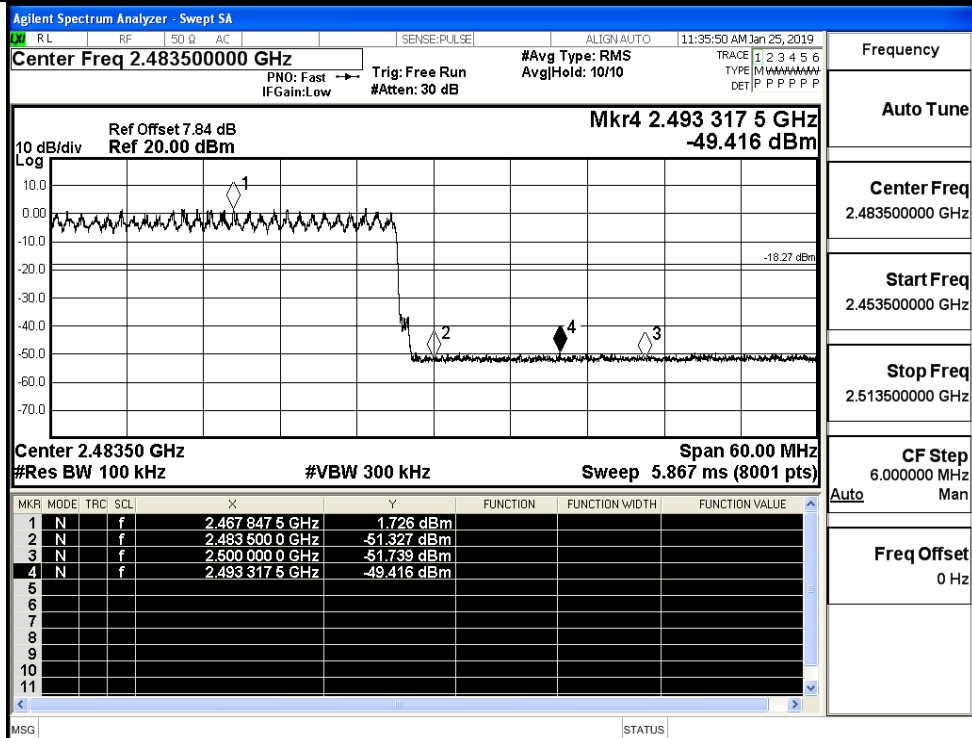
$\pi/4$ DQPSK/LCH/Hop



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



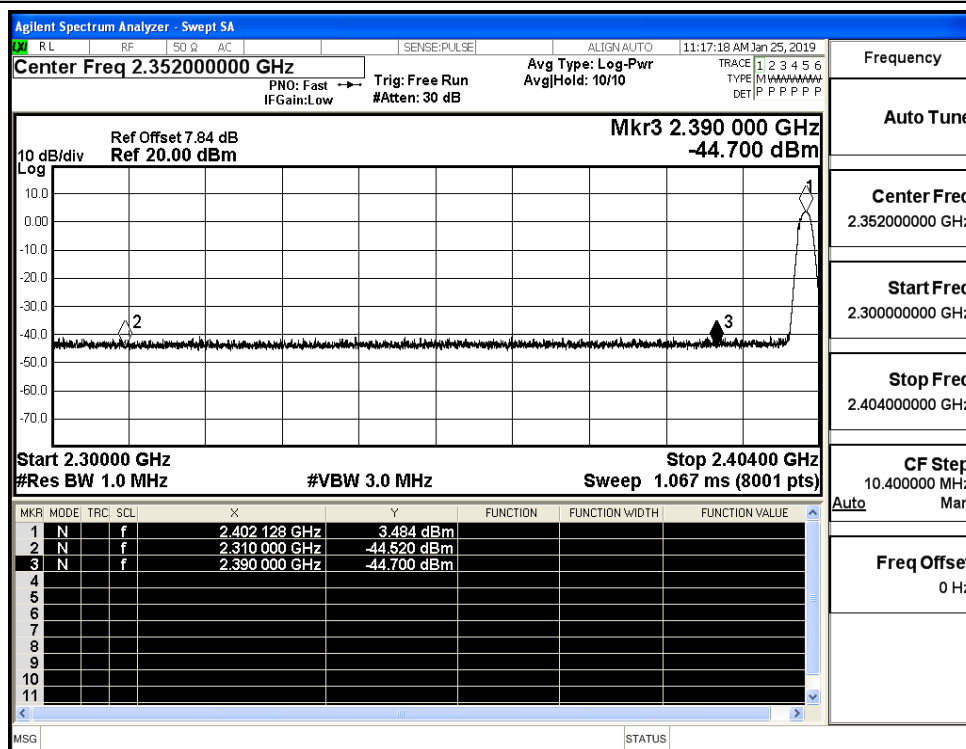
$\pi/4$ DQPSK/HCH/Hop



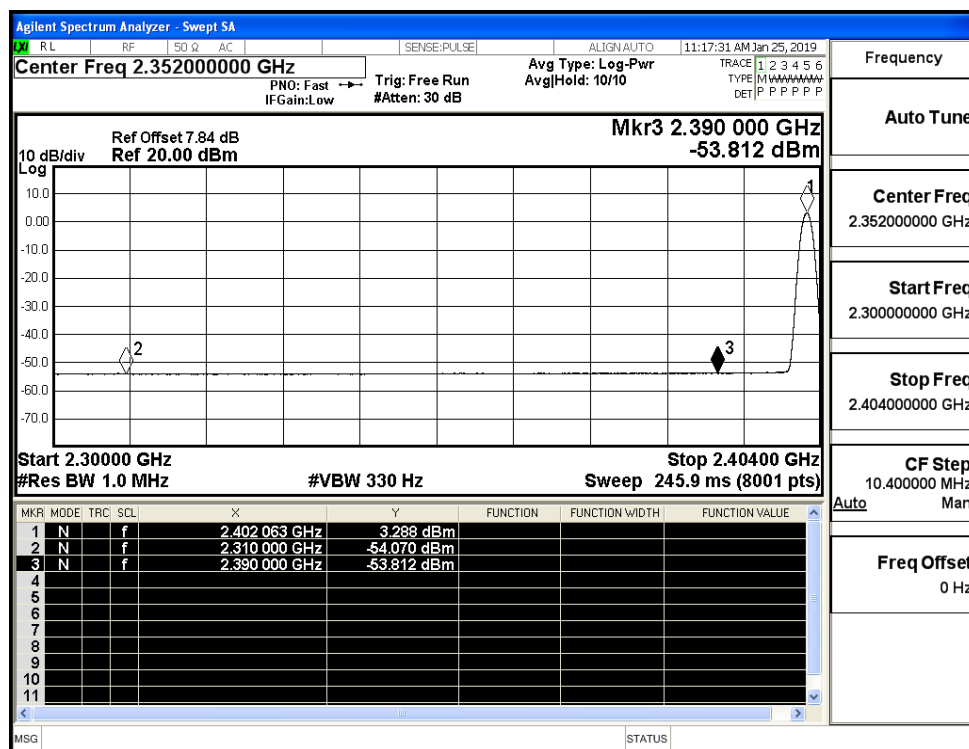
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-44.52	2.0	0	52.74	PEAK	74	PASS
	Off	2310.0	-54.07	2.0	0	43.19	AV	54	PASS
	Off	2390.0	-44.70	2.0	0	52.56	PEAK	74	PASS
	Off	2390.0	-53.81	2.0	0	43.45	AV	54	PASS
	Off	2483.5	-42.77	2.0	0	54.48	PEAK	74	PASS
	Off	2483.5	-53.30	2.0	0	43.96	AV	54	PASS
	Off	2500.0	-42.06	2.0	0	55.20	PEAK	74	PASS
	Off	2500.0	-53.25	2.0	0	44.01	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-43.23	2.0	0	54.02	PEAK	74	PASS
	Off	2310.0	-54.10	2.0	0	43.16	AV	54	PASS
	Off	2390.0	-43.53	2.0	0	53.73	PEAK	74	PASS
	Off	2390.0	-53.69	2.0	0	43.57	AV	54	PASS
	Off	2483.5	-43.69	2.0	0	53.57	PEAK	74	PASS
	Off	2483.5	-53.25	2.0	0	44.01	AV	54	PASS
	Off	2500.0	-43.55	2.0	0	53.71	PEAK	74	PASS
	Off	2500.0	-53.45	2.0	0	43.81	AV	54	PASS

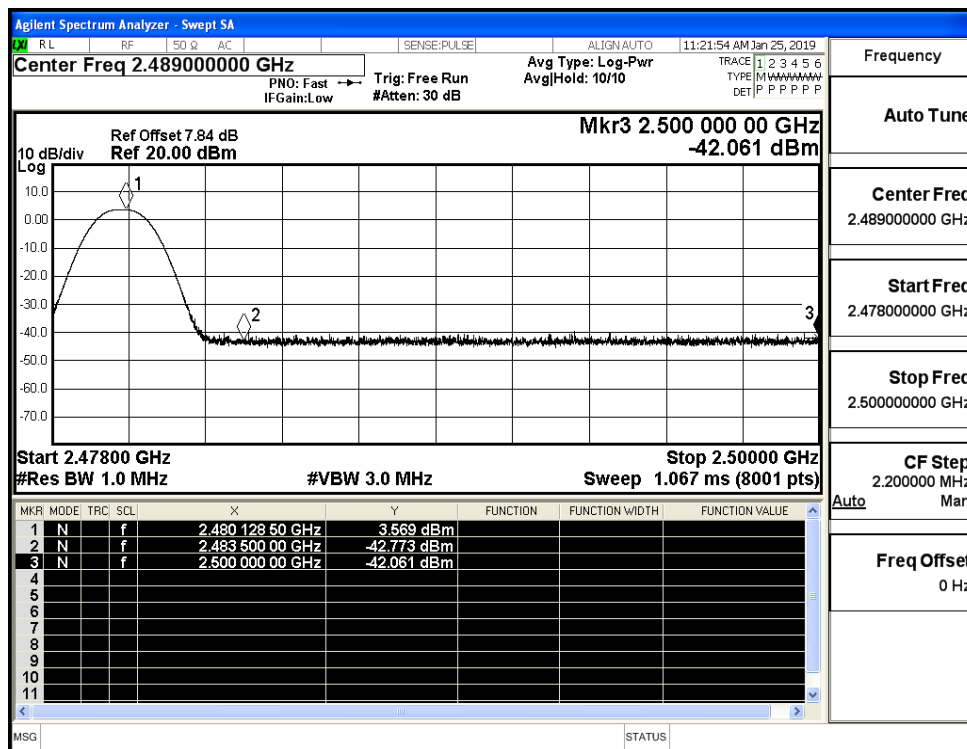
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



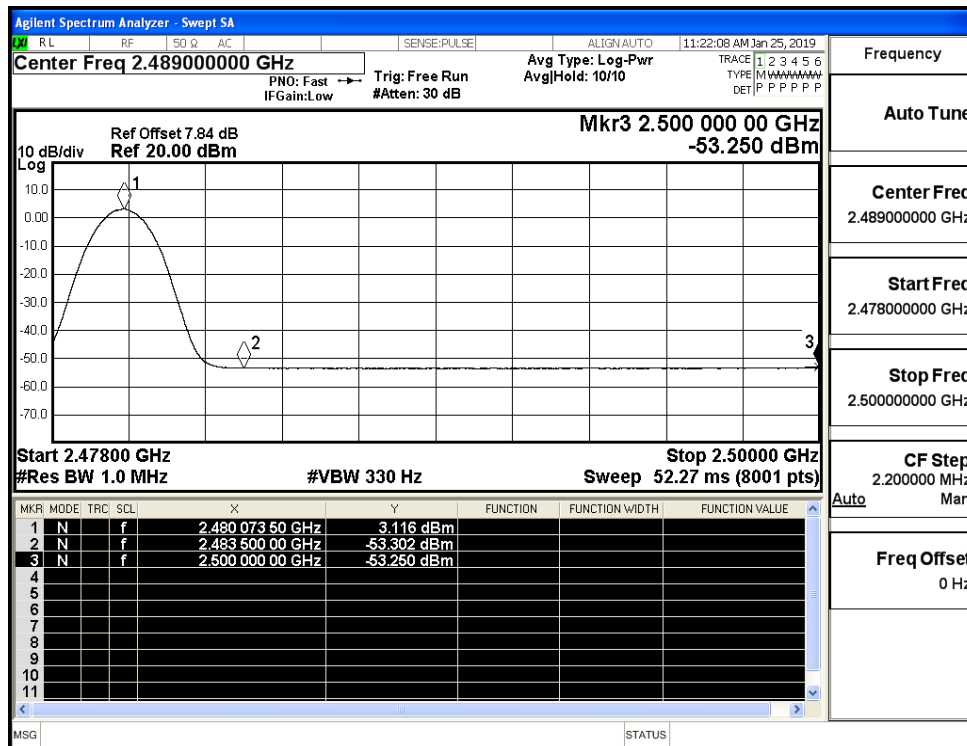
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)

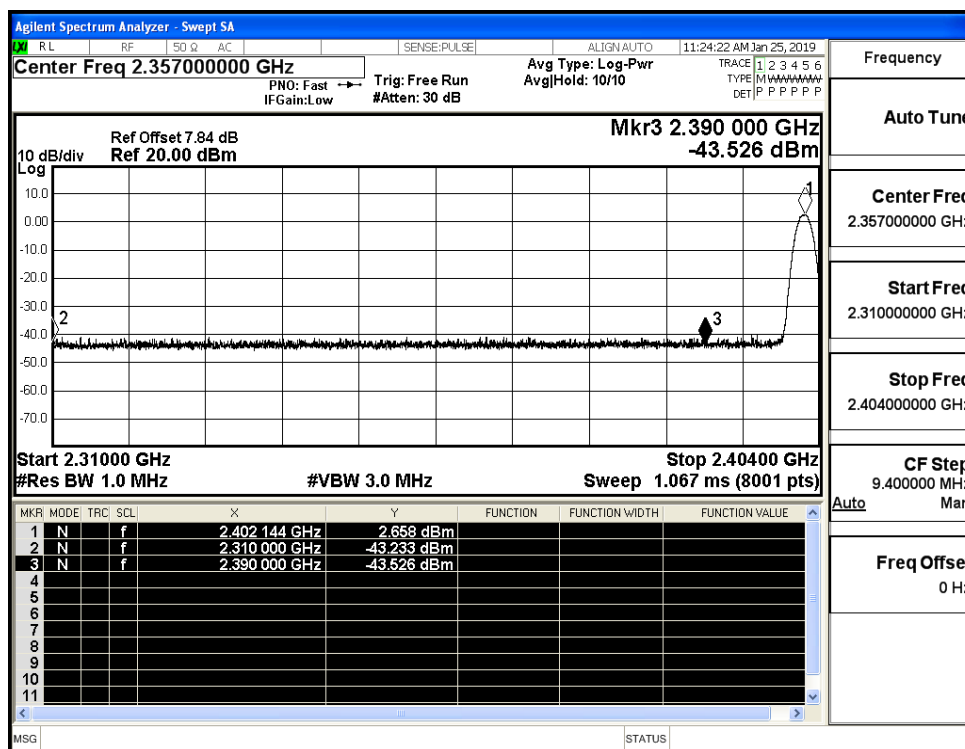
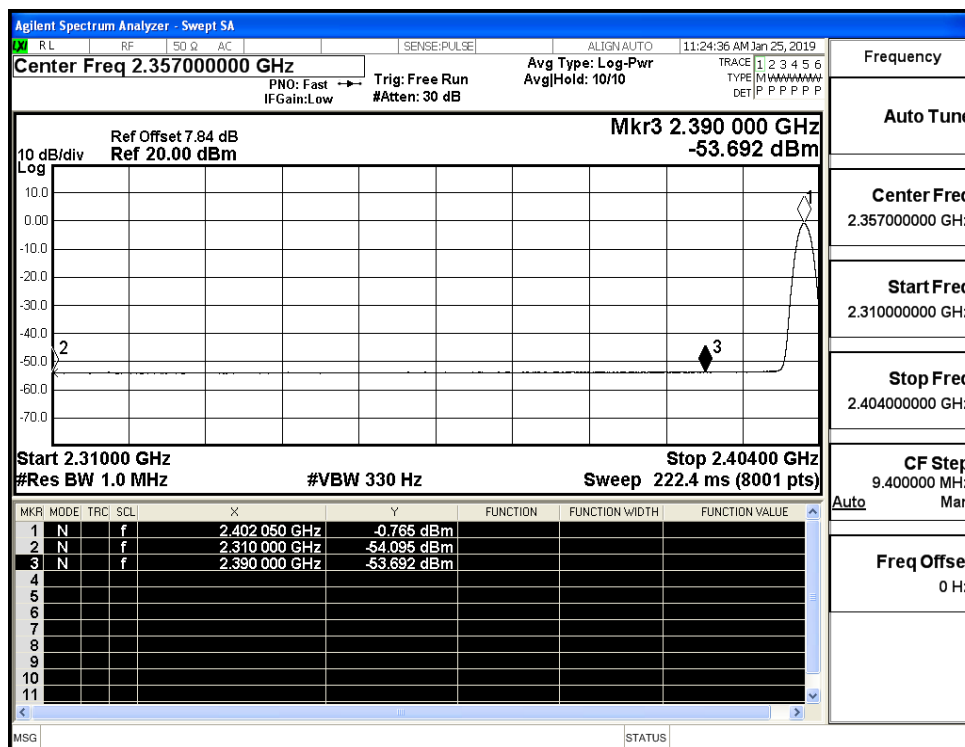


Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)

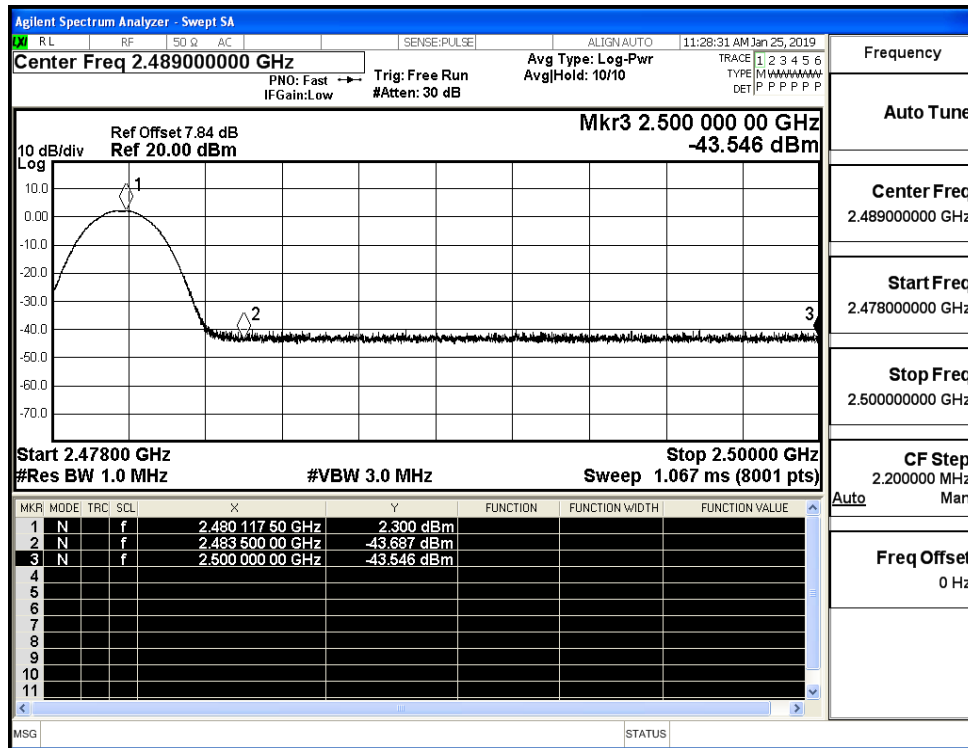


Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)



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)

