Appendix A

RF Test Data for BT V4.2 (BDR/EDR) (Conducted Measurement)

Product Name: Bluetooth Headset Bracelet

Trade Mark: BYS

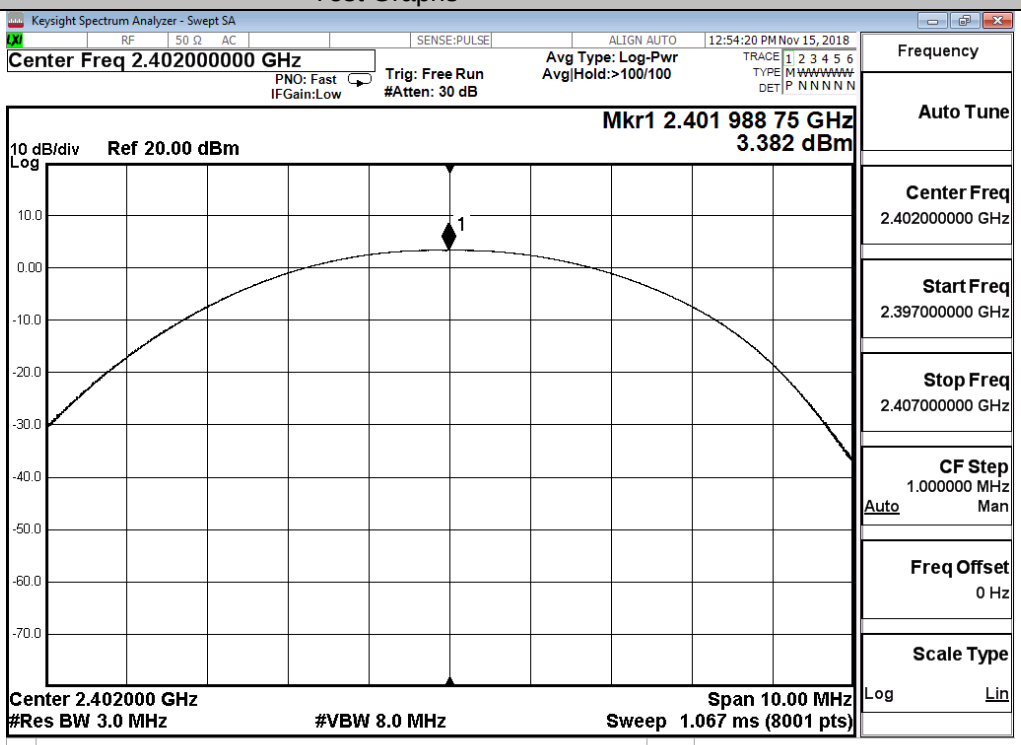
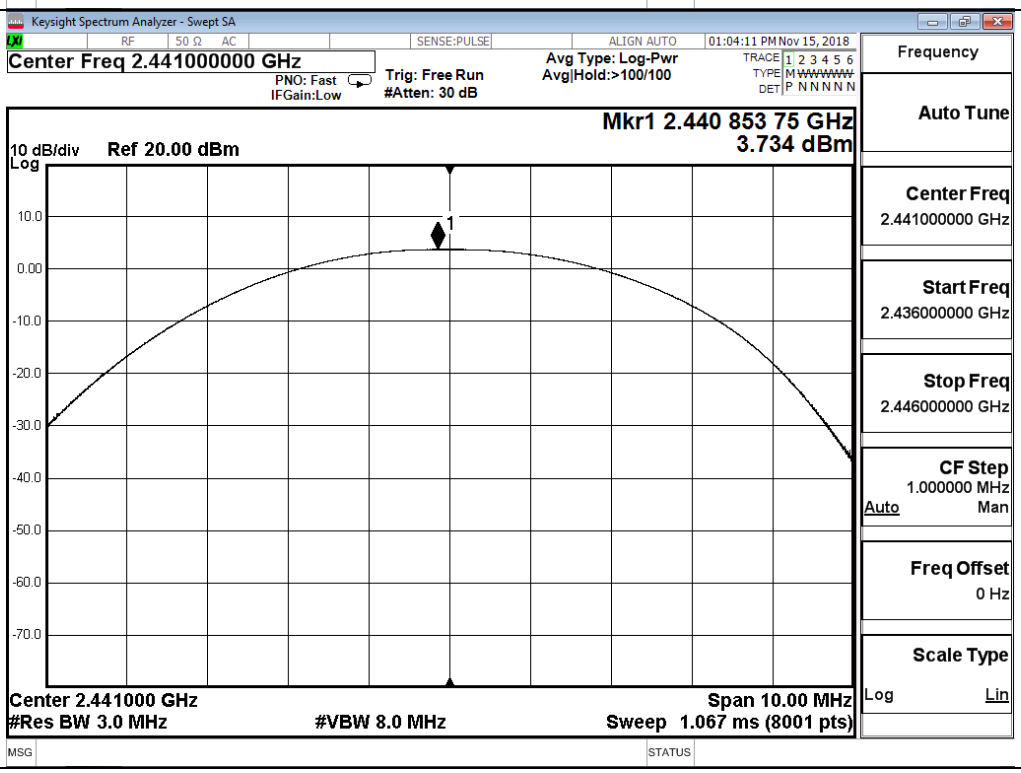
Test Model: BY51

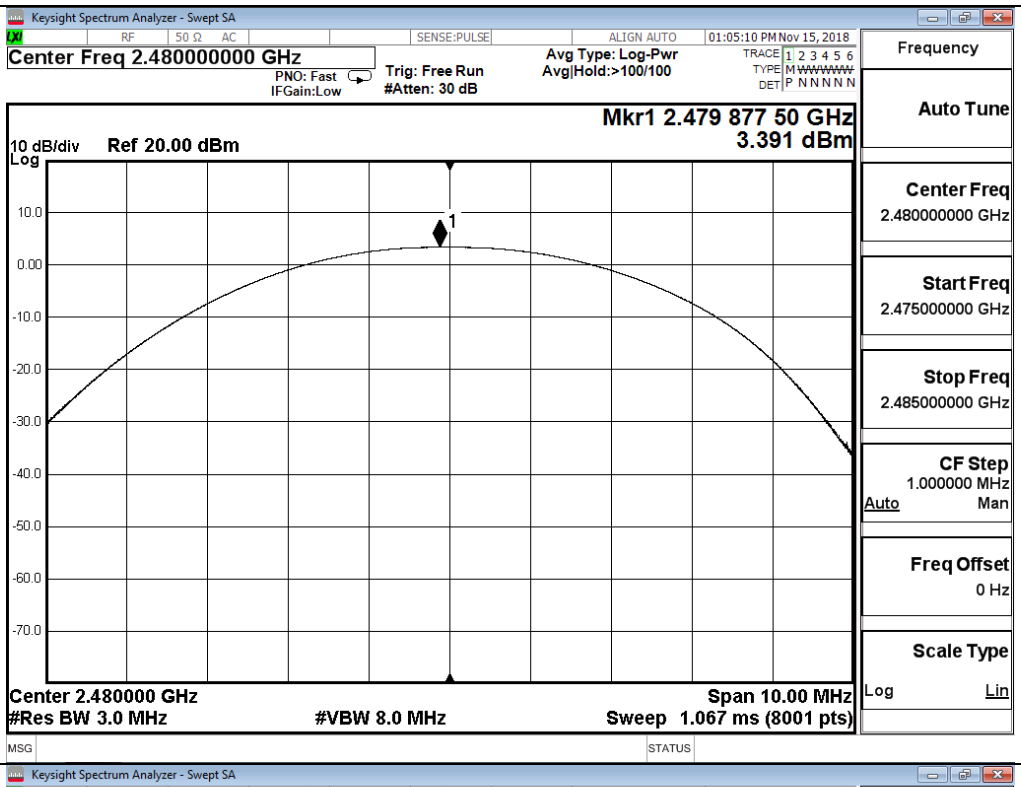
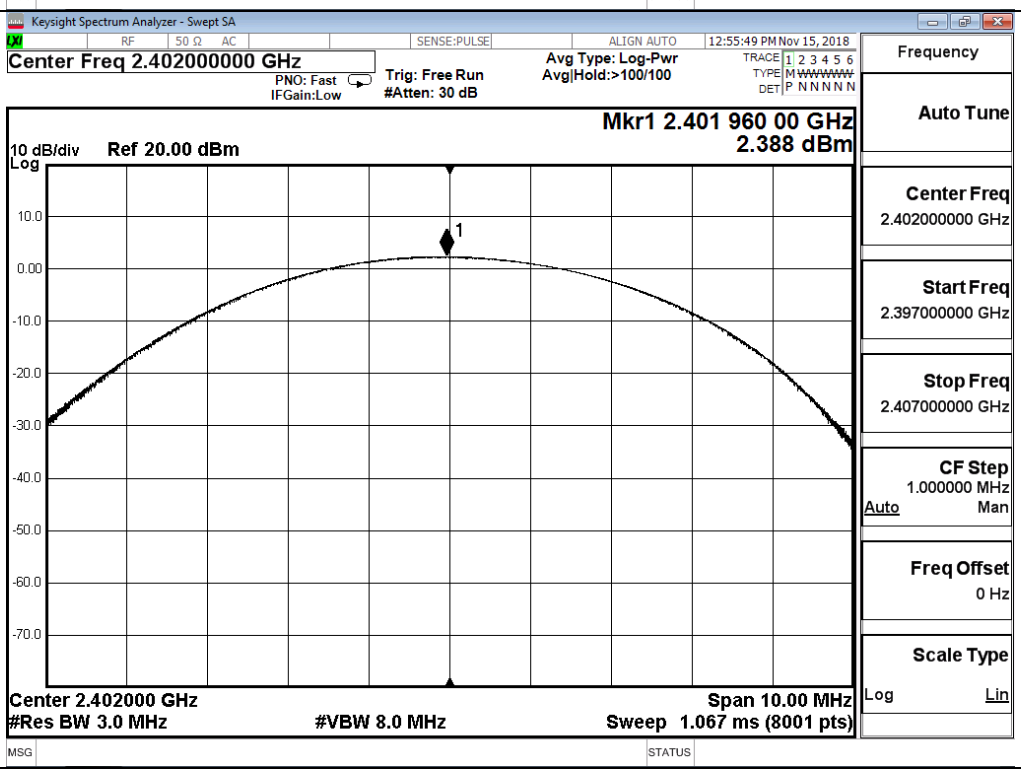
Environmental Conditions

Temperature:	23.9 ° C
Relative Humidity:	54%
ATM Pressure:	100.0 kPa
Test Engineer:	Tom.Liu
Supervised by:	Jayden.Zhuo

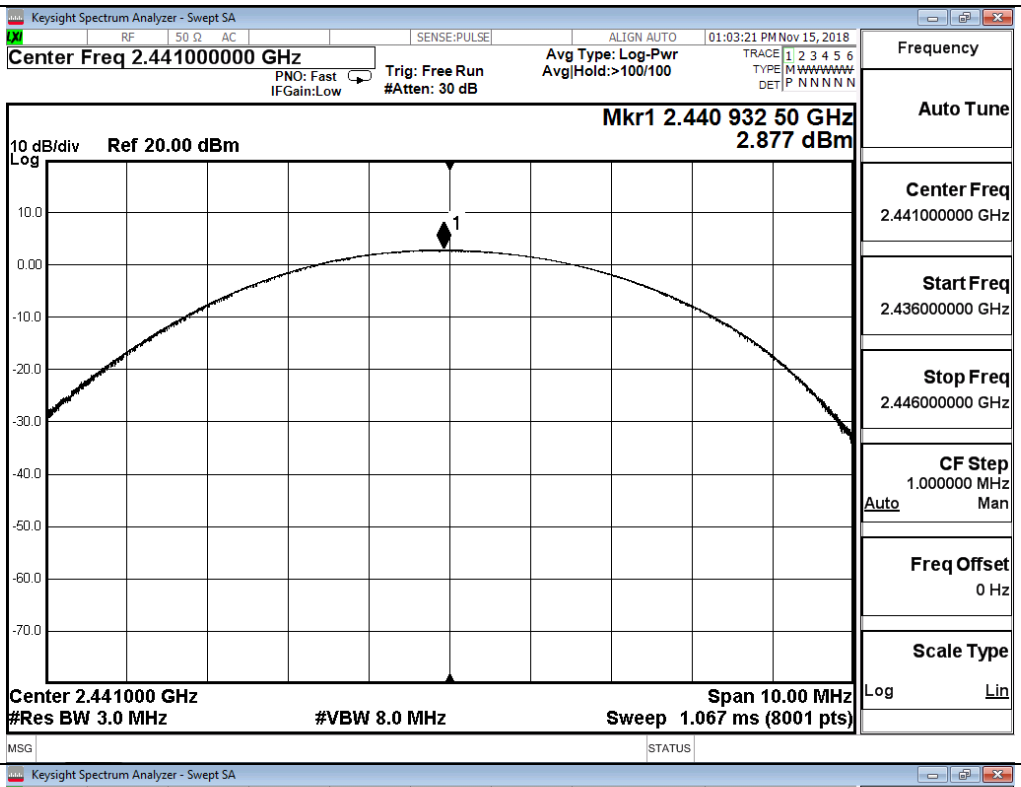
A.1 Maximum Conducted Peak Output Power

Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	3.382	21	PASS
	MCH	3.734	21	PASS
	HCH	3.391	21	PASS
π/4DQPSK	LCH	2.388	21	PASS
	MCH	2.877	21	PASS
	HCH	2.541	21	PASS
8DPSK	LCH	2.654	21	PASS
	MCH	3.103	21	PASS
	HCH	2.780	21	PASS

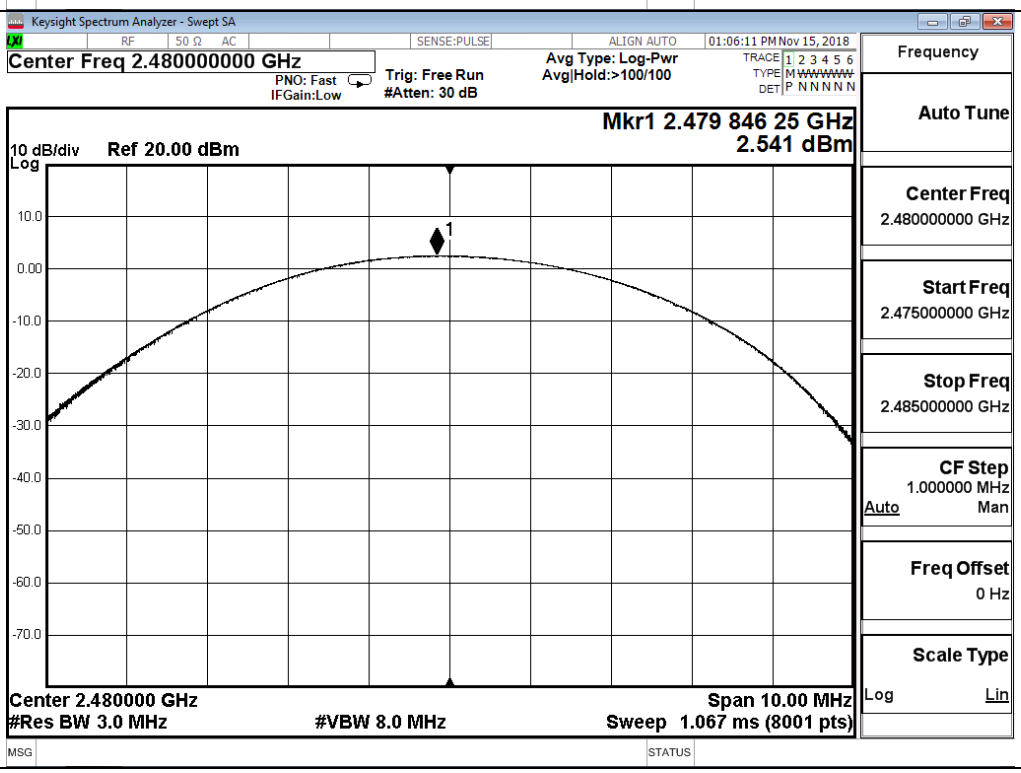
Test Graphs	
GFSK/LCH	
GFSK/MCH	

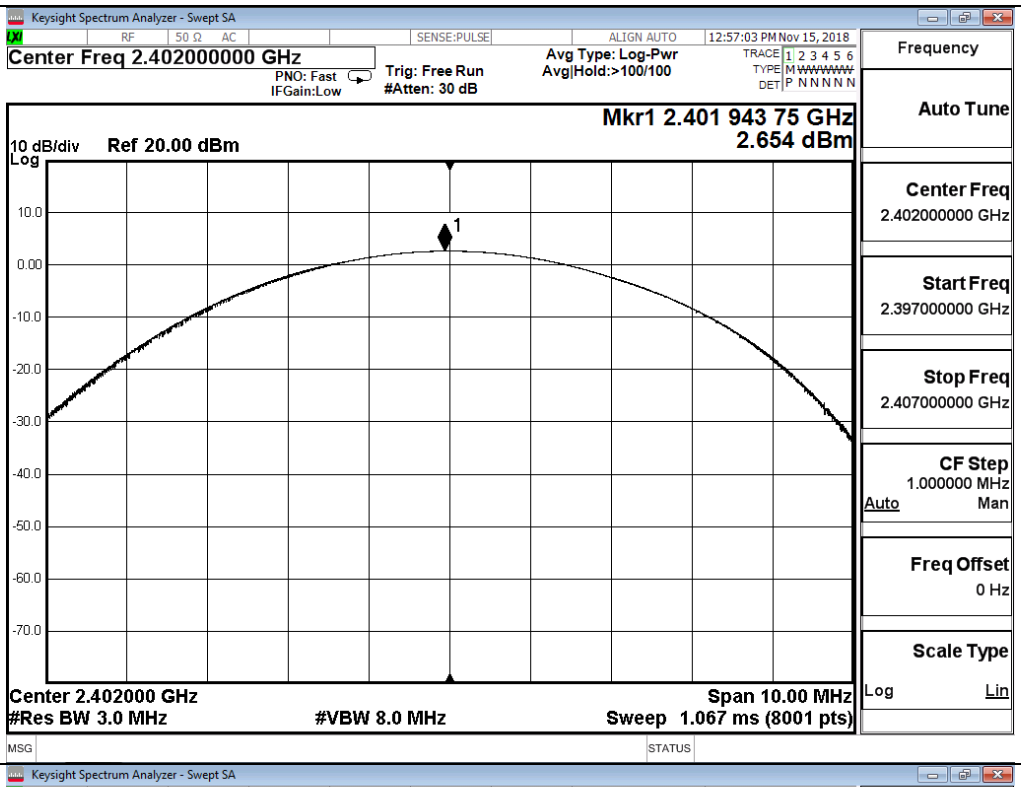
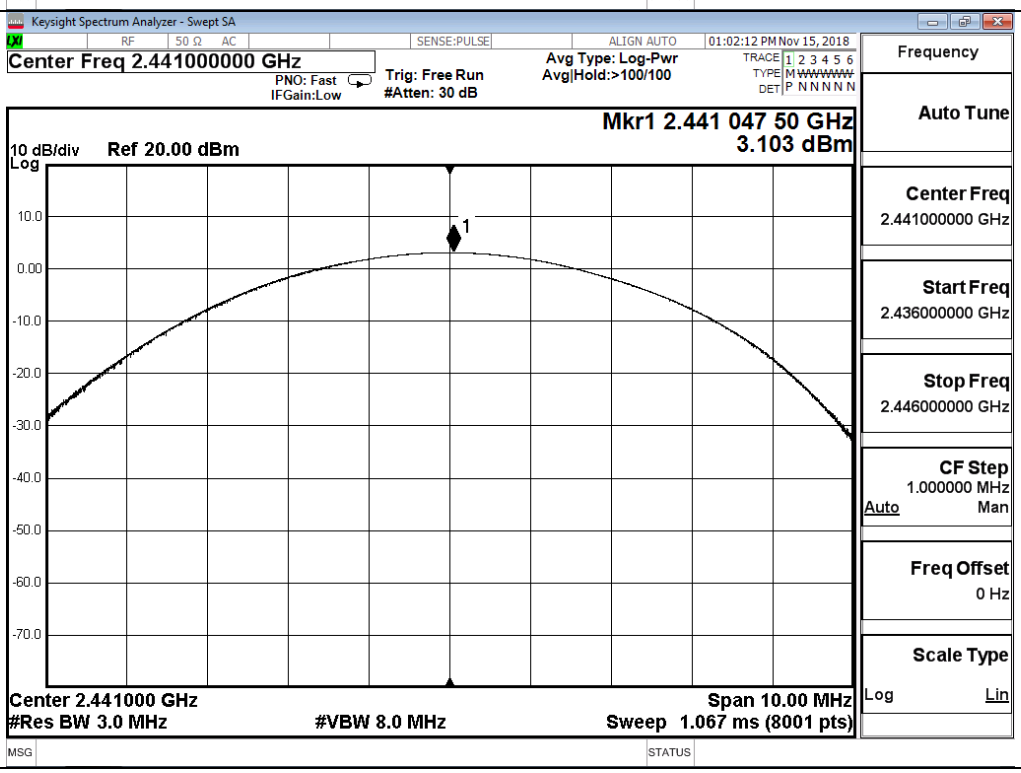
GFSK/HCH	
π/4DQPSK/LCH	

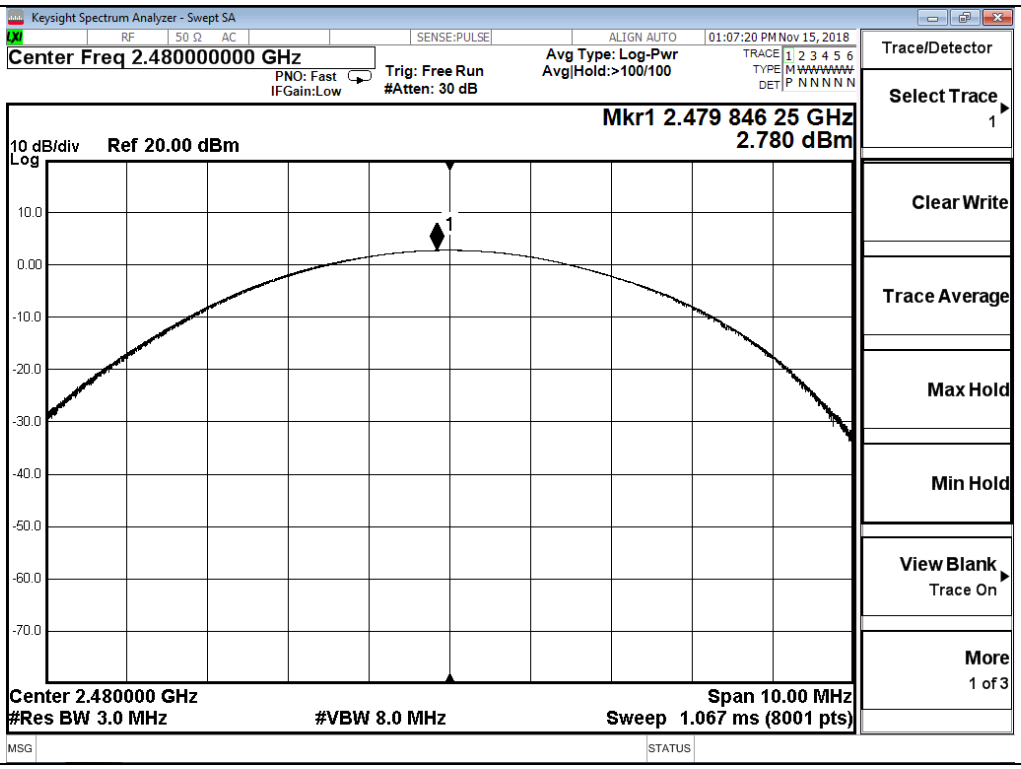
π/4DQPSK/MCH



π/4DQPSK/HCH



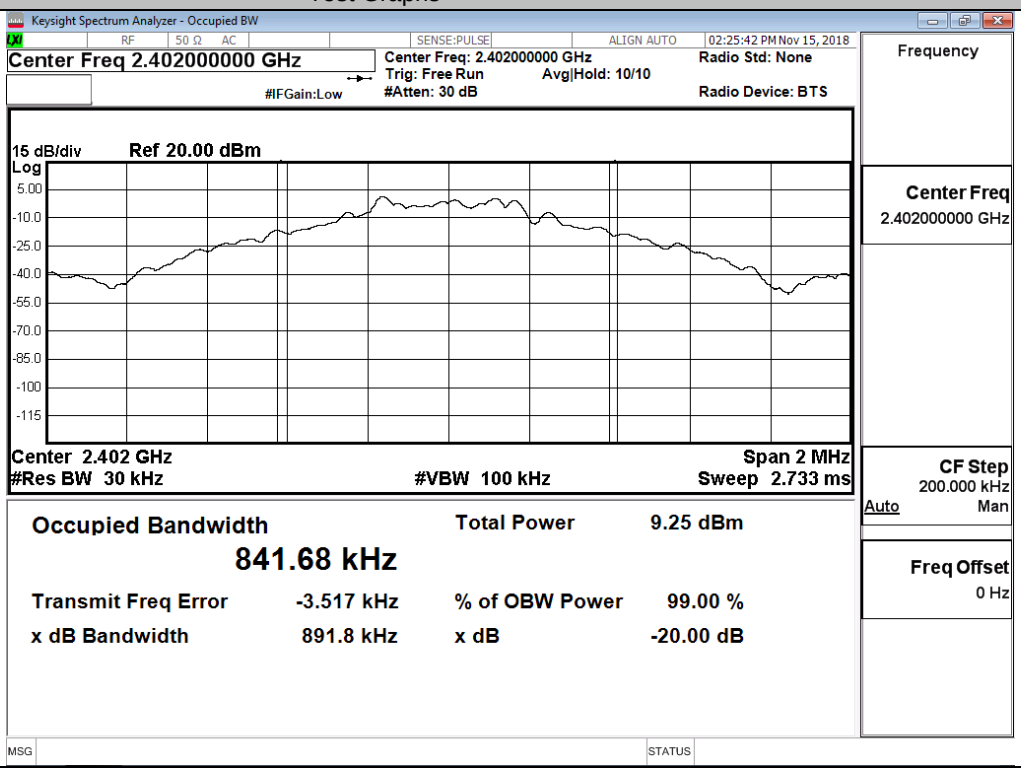
8DPSK/LCH	
8DPSK/MCH	

8DPSK/HCH	

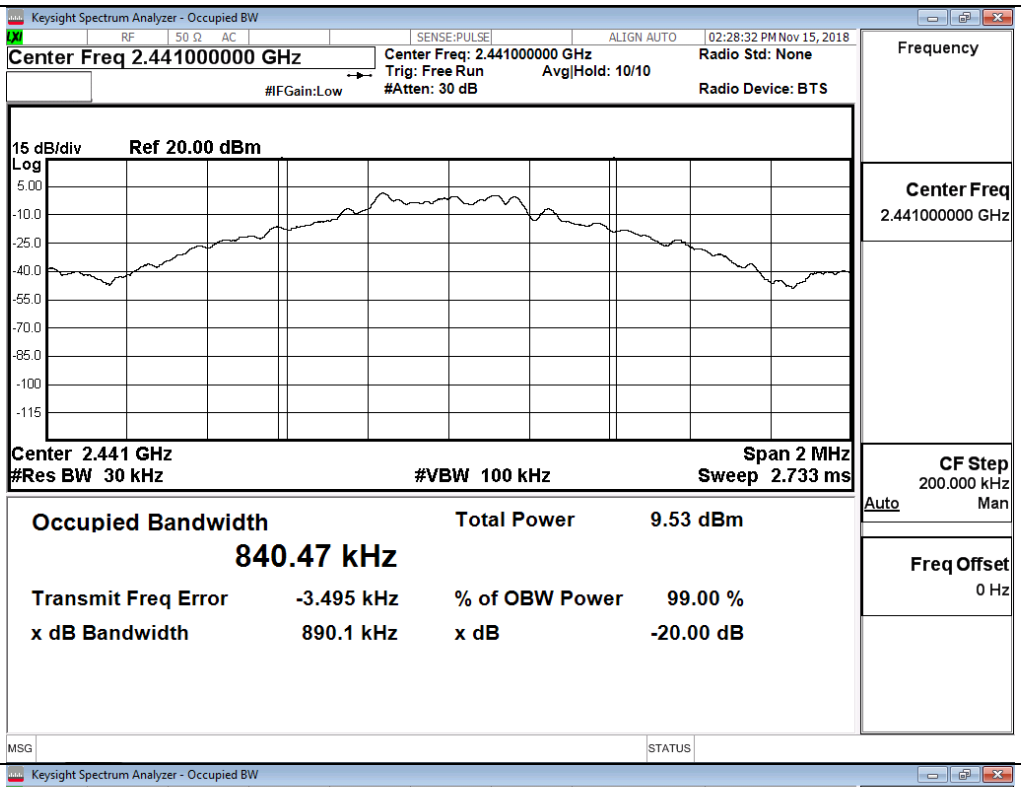
Keysight Spectrum Analyzer - Swept SA
RF 50 Ω AC
SENSE:PULSE
ALIGN AUTO
01:07:20 PM Nov 15, 2018
Center Freq 2.480000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
TRACE 1 2 3 4 5 6
TYPE M WWWWWW
DET P N N N N N
Mkr1 2.479 846 25 GHz
2.780 dBm
10 dB/div Ref 20.00 dBm
Log
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Center 2.480000 GHz
#Res BW 3.0 MHz
#VBW 8.0 MHz
Span 10.00 MHz
Sweep 1.067 ms (8001 pts)
Trace/Detector
Select Trace 1
Clear Write
Trace Average
Max Hold
Min Hold
View Blank Trace On
More 1 of 3
MSG
STATUS

A.2 99% and 20dB Bandwidth

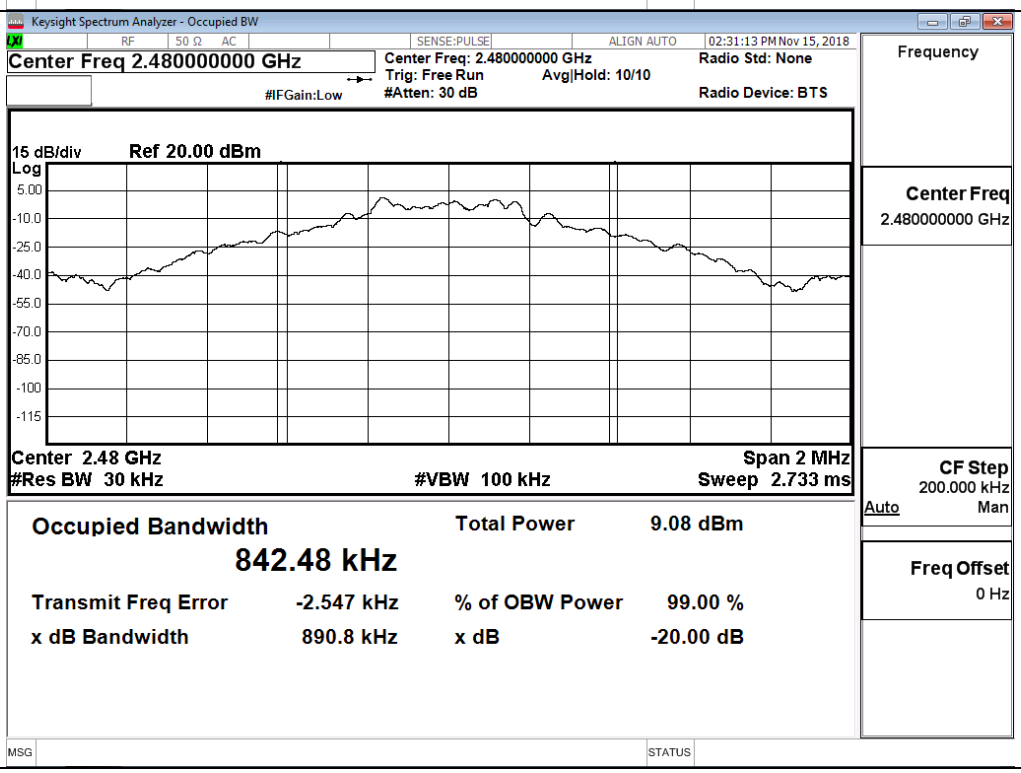
Mode	Channel.	99% Bandwidth [MHz]	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.84168	0.8918	Not Specified	PASS
	MCH	0.84047	0.8901	Not Specified	PASS
	HCH	0.84248	0.8908	Not Specified	PASS
π/4DQPSK	LCH	1.1665	1.287	Not Specified	PASS
	MCH	1.1758	1.287	Not Specified	PASS
	HCH	1.1786	1.288	Not Specified	PASS
8DPSK	LCH	1.1269	1.277	Not Specified	PASS
	MCH	1.1292	1.278	Not Specified	PASS
	HCH	1.1305	1.279	Not Specified	PASS

Test Graphs	
GFSK/LCH	

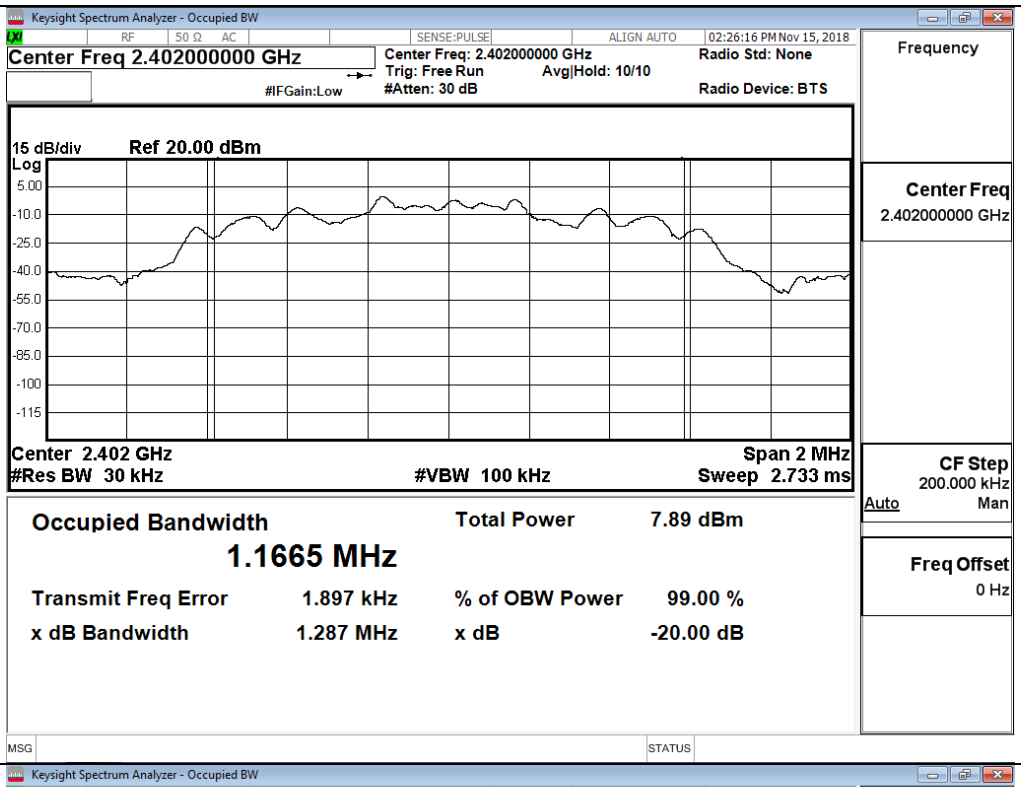
GFSK/MCH



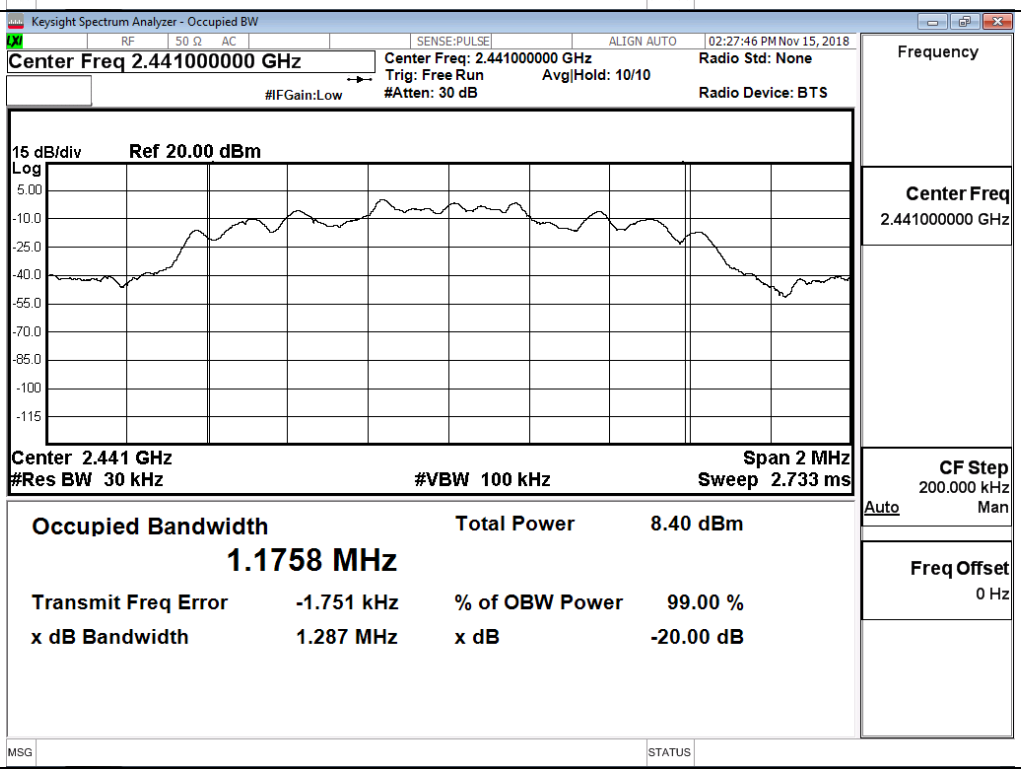
GFSK/HCH



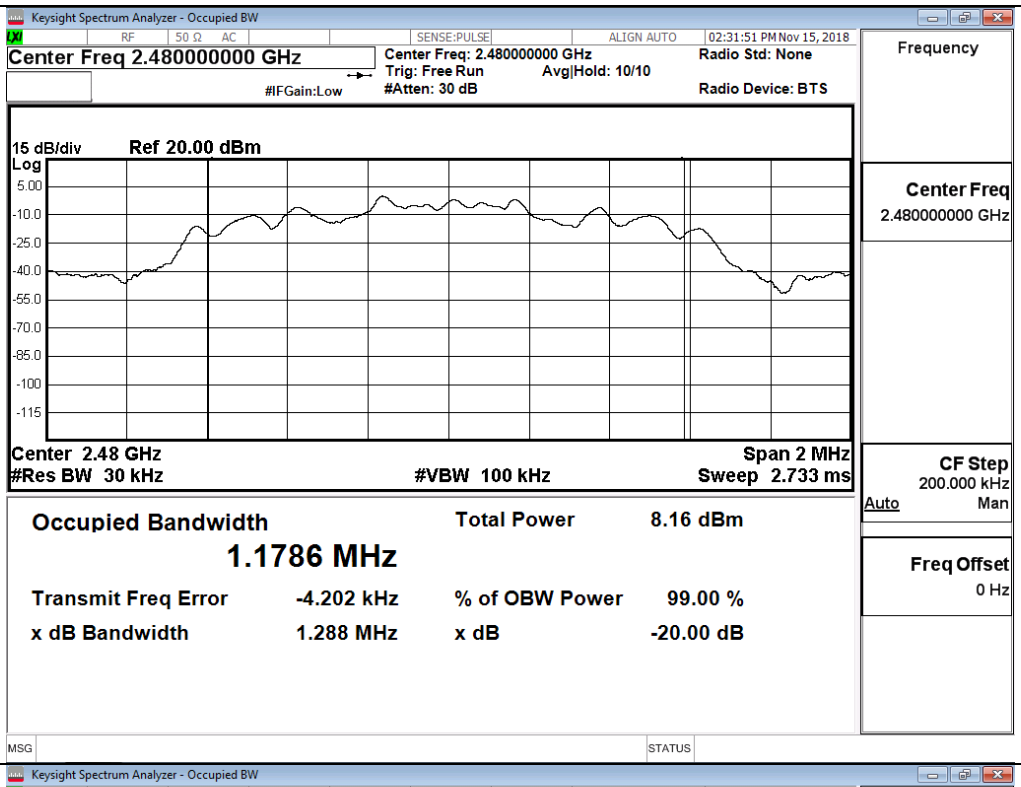
π/4DQPSK/LCH



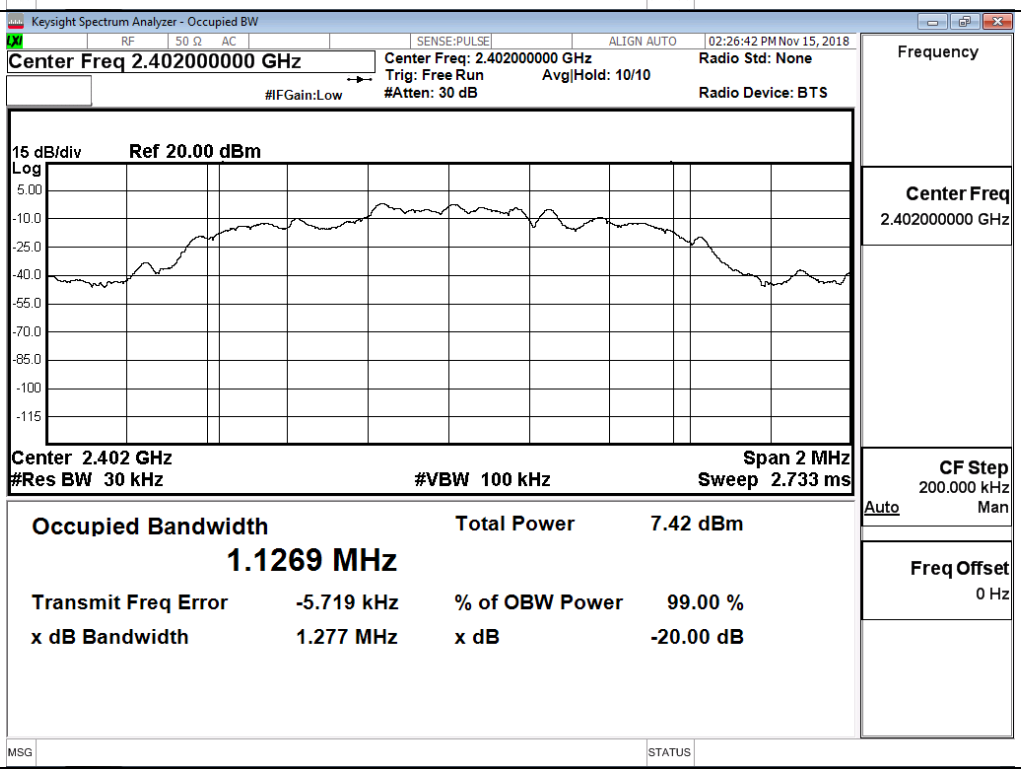
π/4DQPSK/MCH



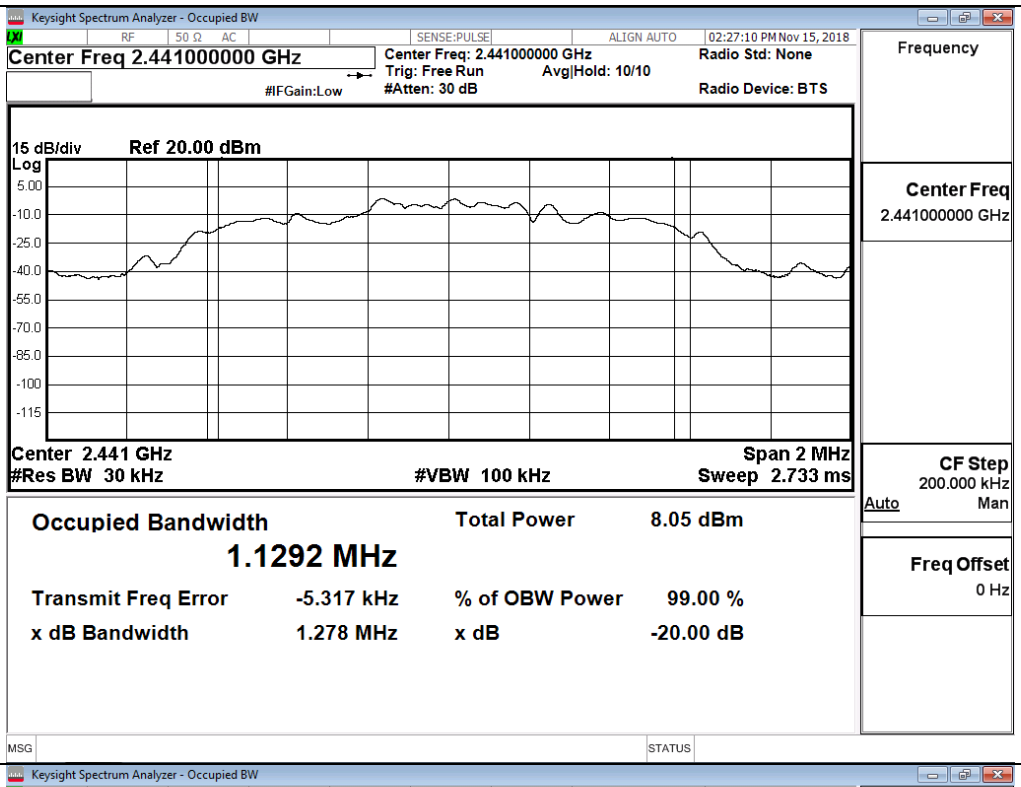
π/4DQPSK/HCH



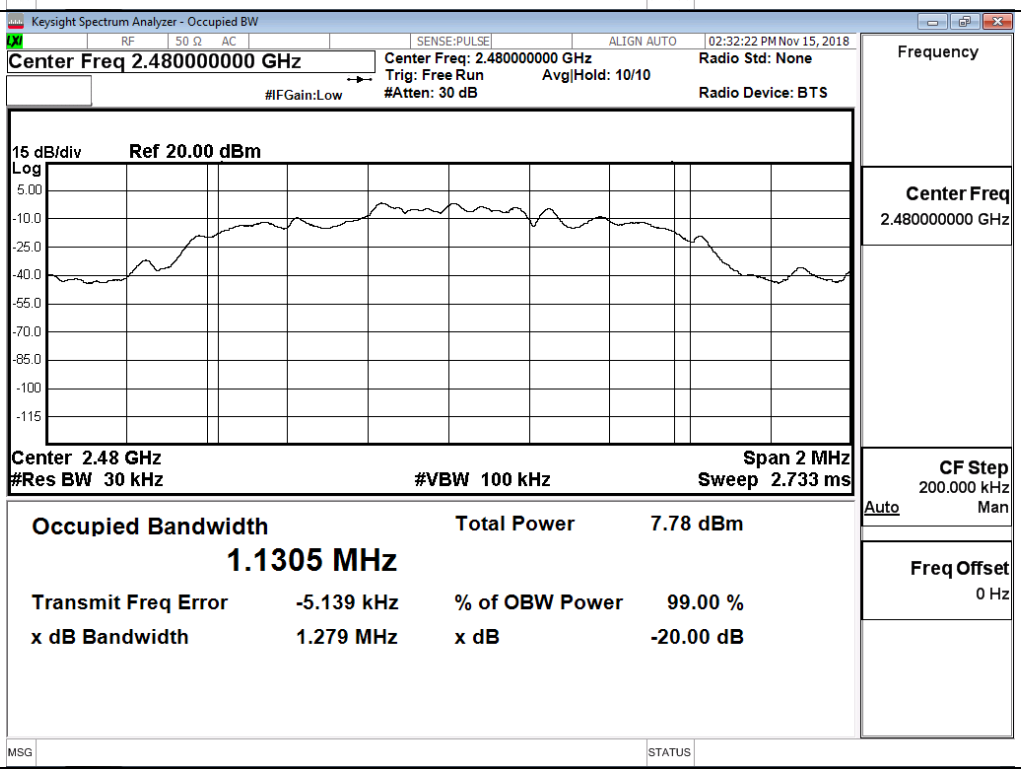
8DPSK/LCH



8DPSK/MCH

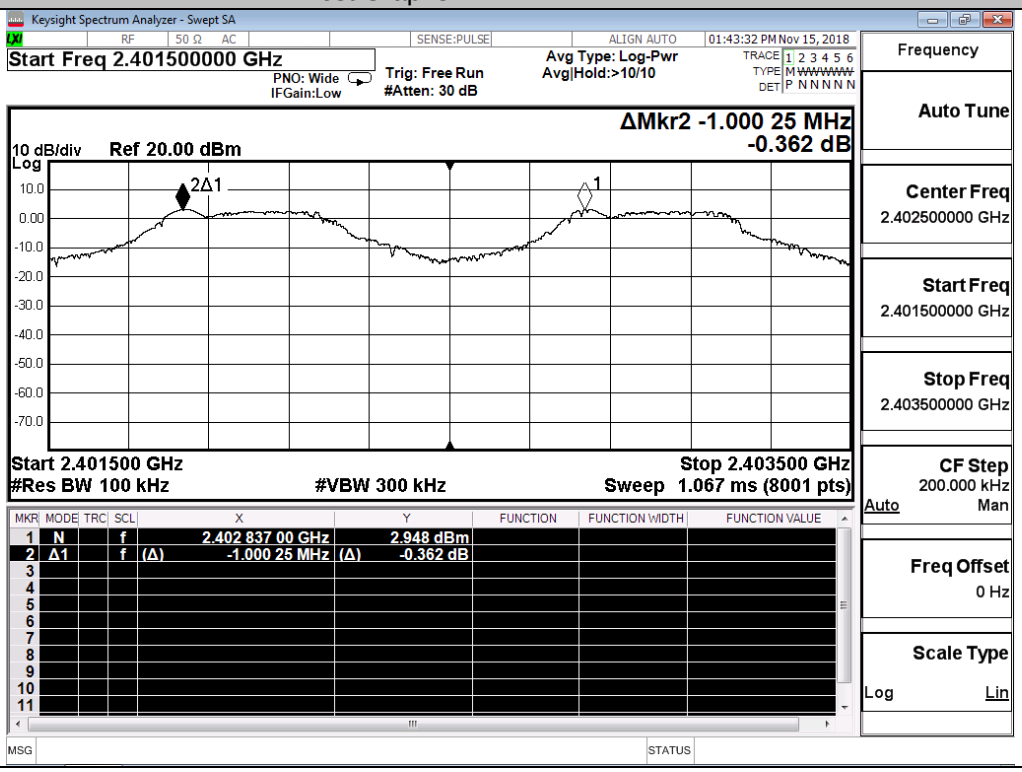


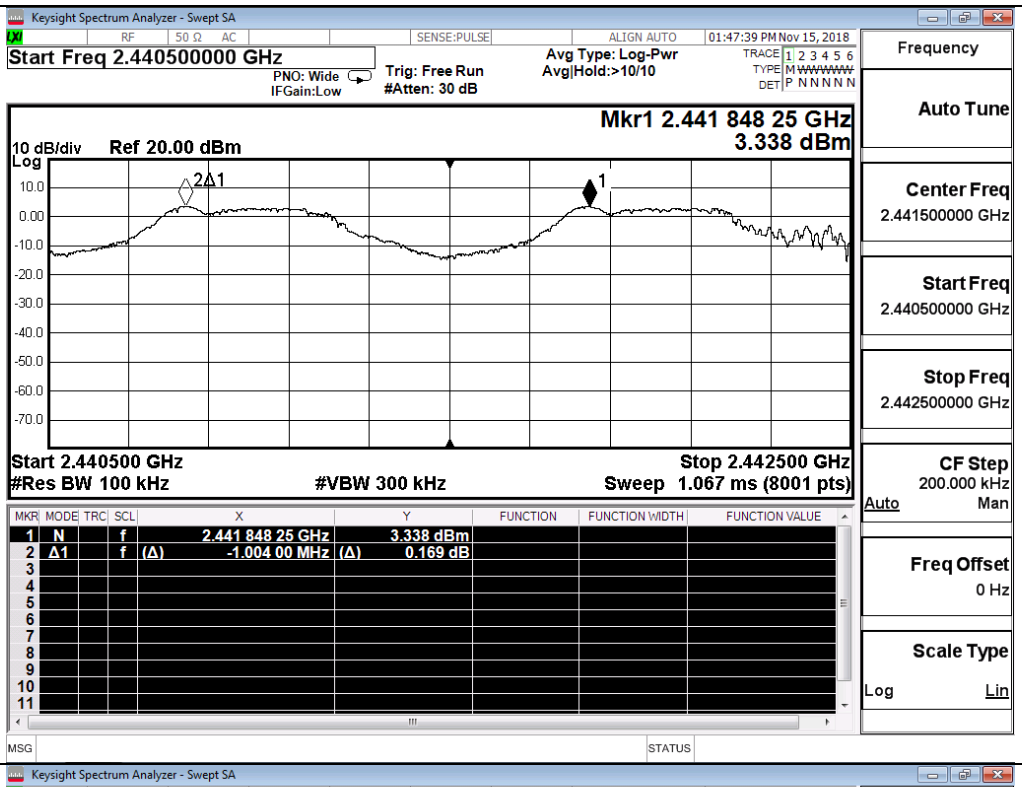
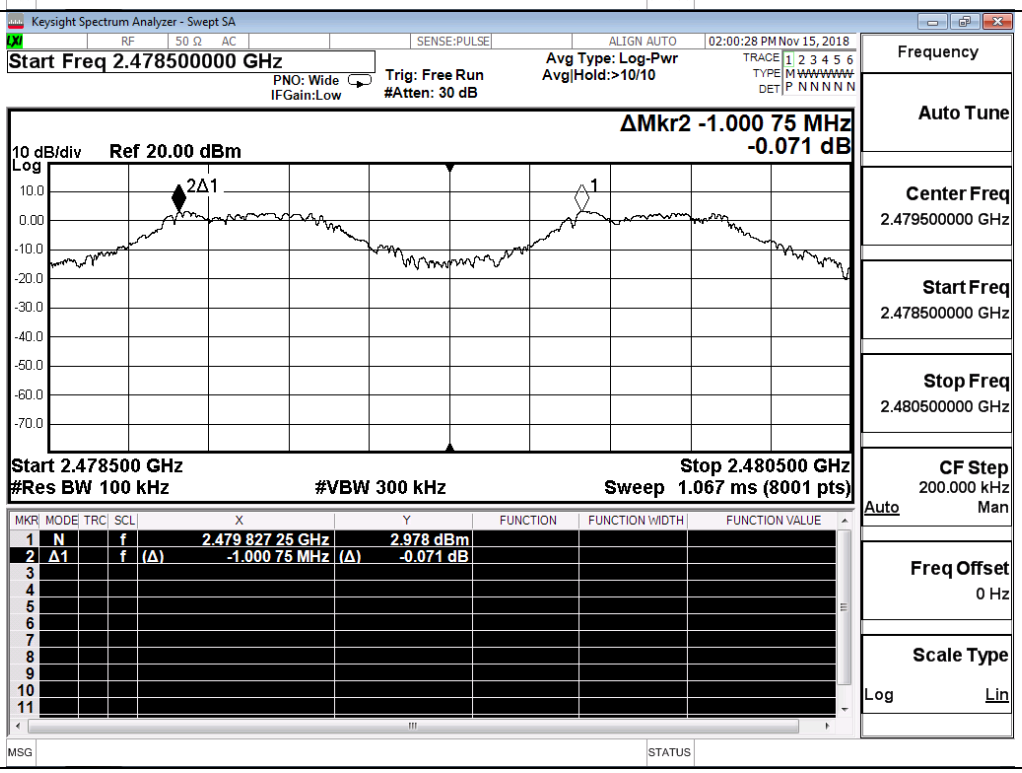
8DPSK/HCH



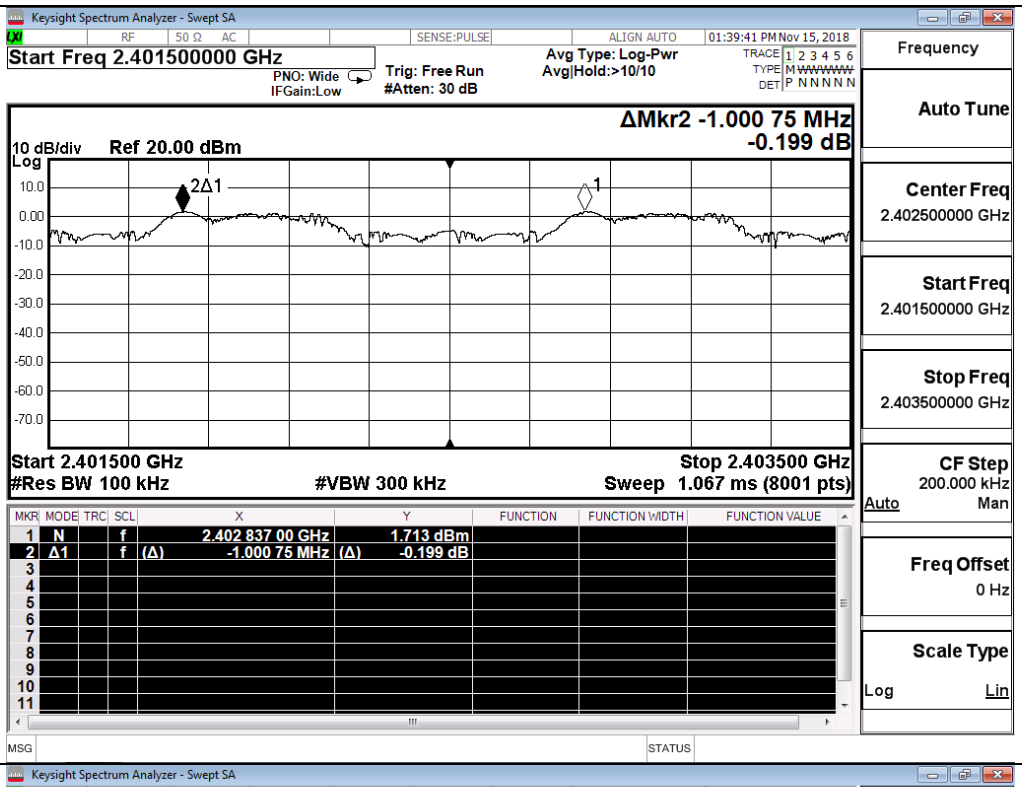
A.3 Carrier Frequency Separation

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.000	0.5945	PASS
	MCH	1.004	0.5934	PASS
	HCH	1.001	0.5939	PASS
π/4DQPSK	LCH	1.001	0.858	PASS
	MCH	1.001	0.858	PASS
	HCH	1.001	0.859	PASS
8DPSK	LCH	1.001	0.851	PASS
	MCH	1.000	0.852	PASS
	HCH	1.001	0.853	PASS

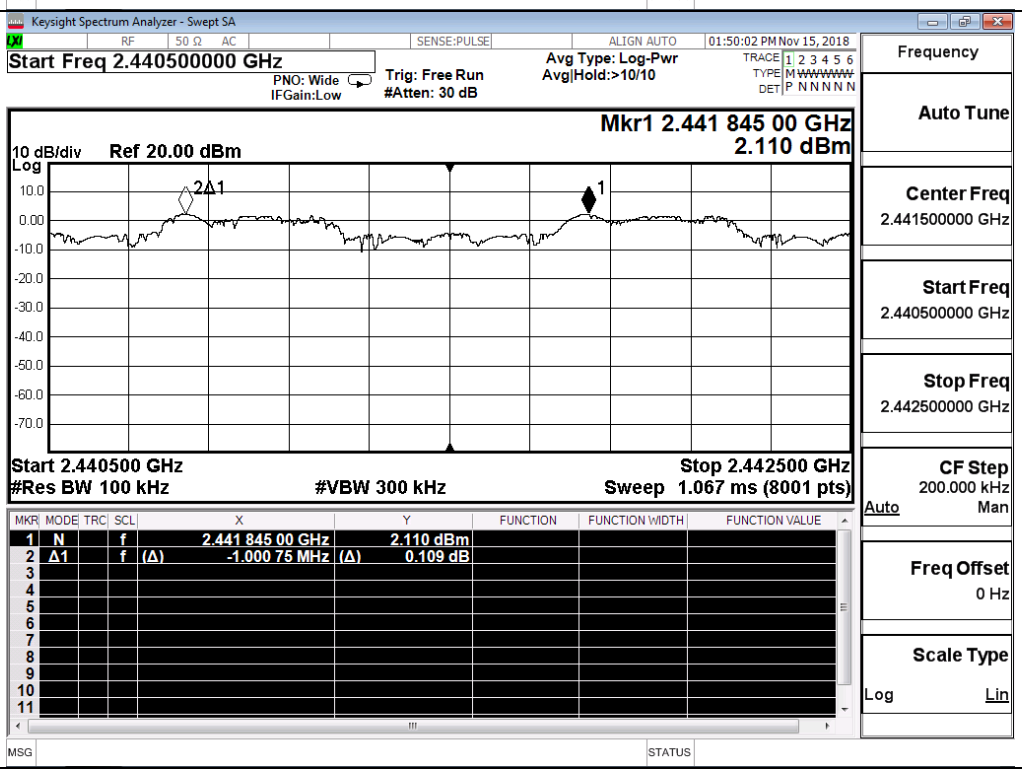
Test Graphs	
GFSK/LCH	

GFSK/MCH	
GFSK/HCH	

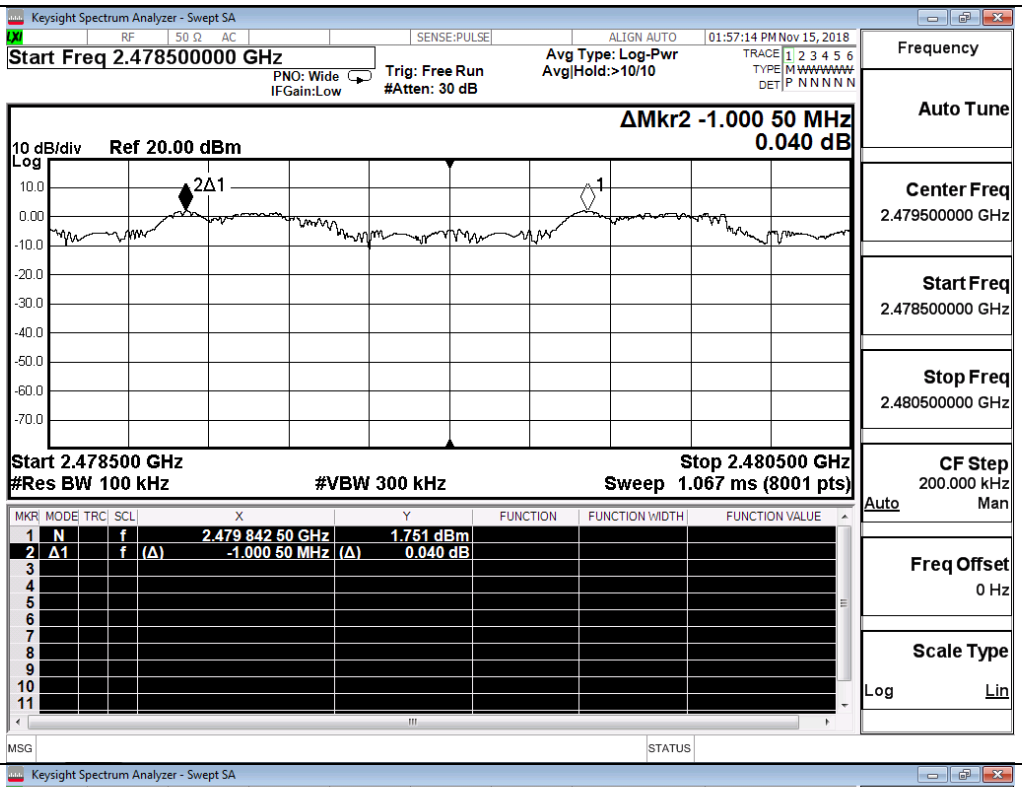
π/4DQPSK/LCH



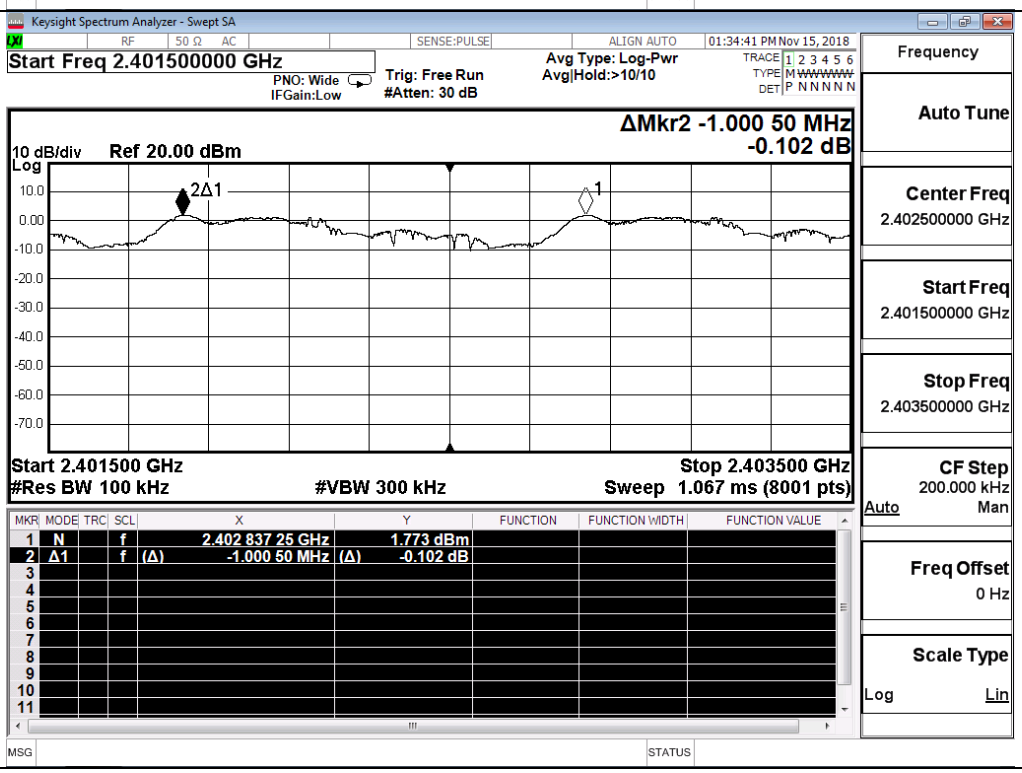
π/4DQPSK/MCH

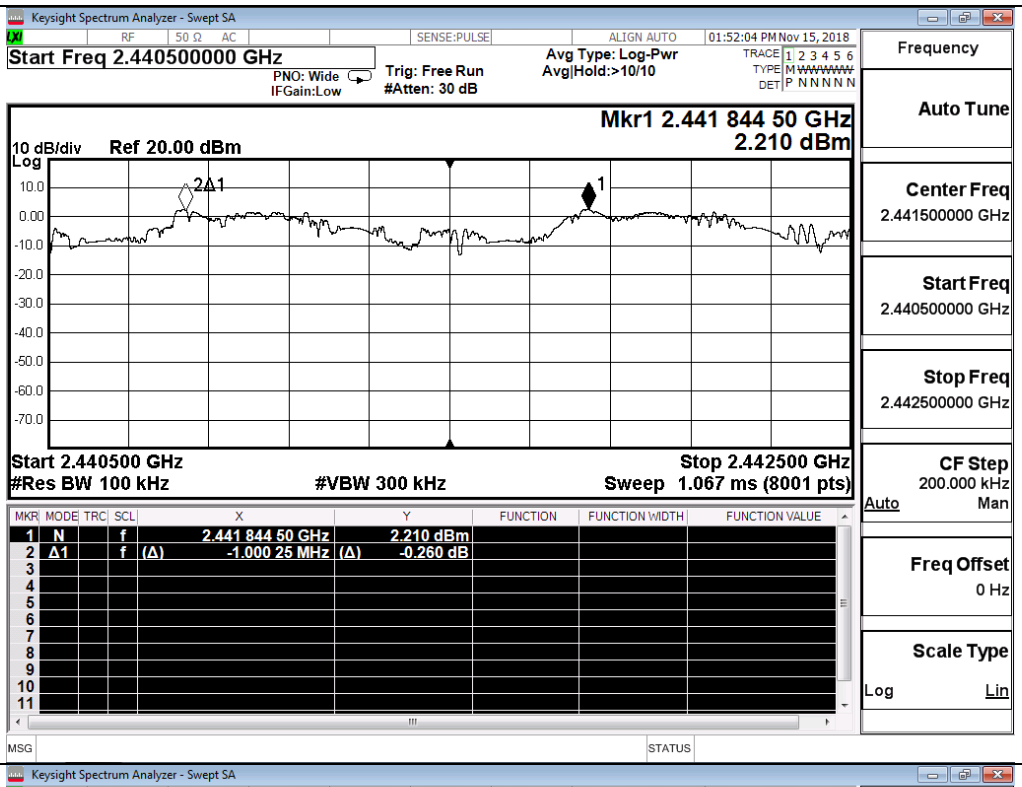
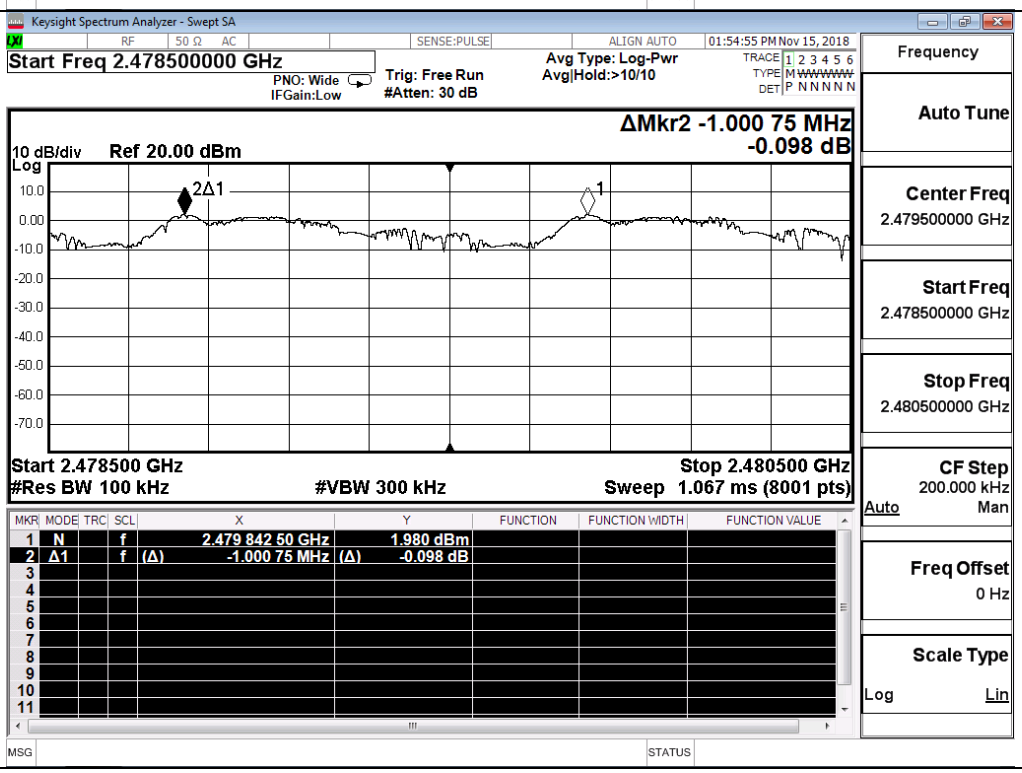


π/4DQPSK/HCH



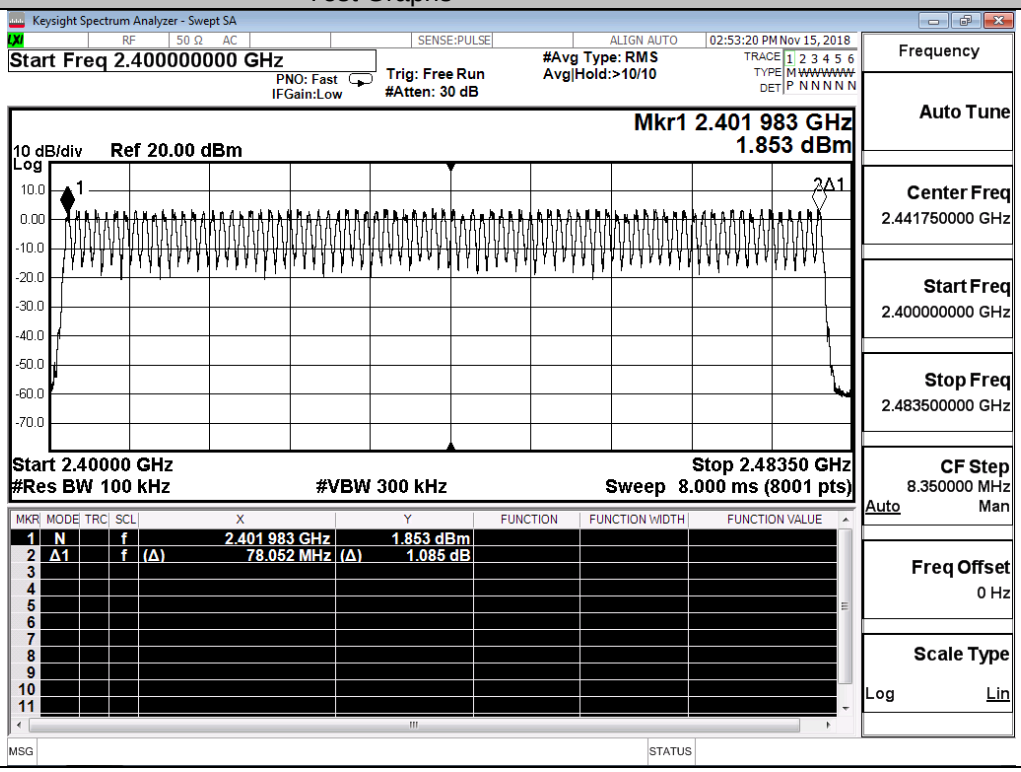
8DPSK/LCH



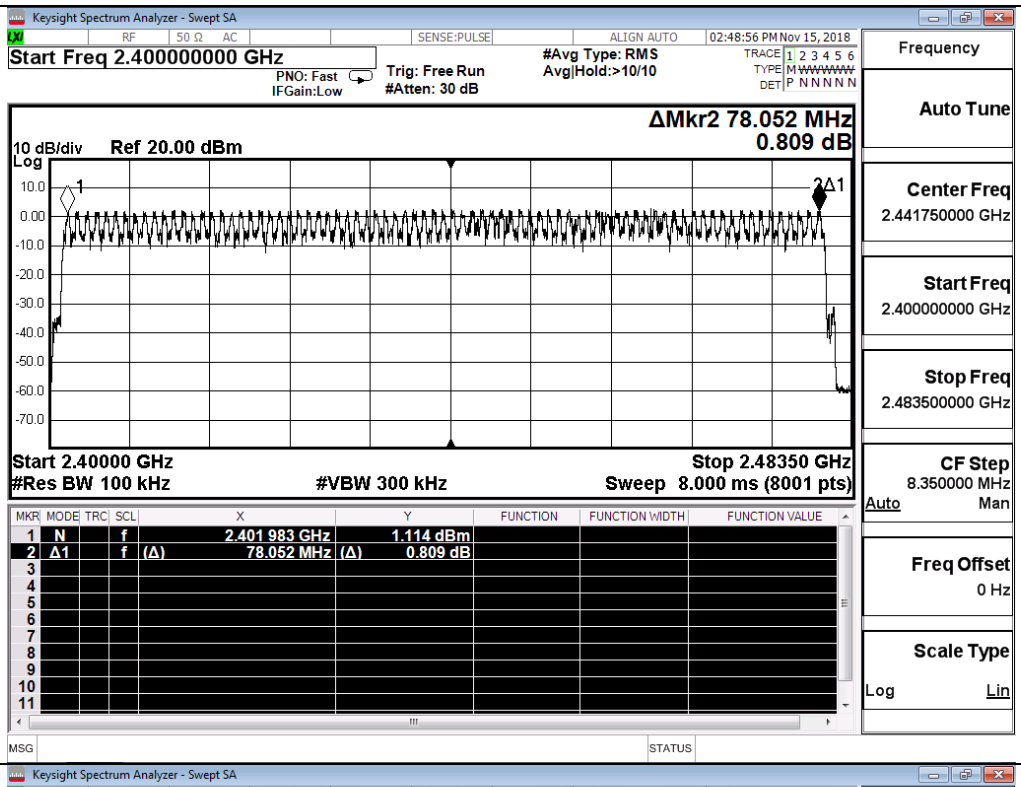
8DPSK/MCH	
8DPSK/HCH	

A.4 Hopping Channel Number

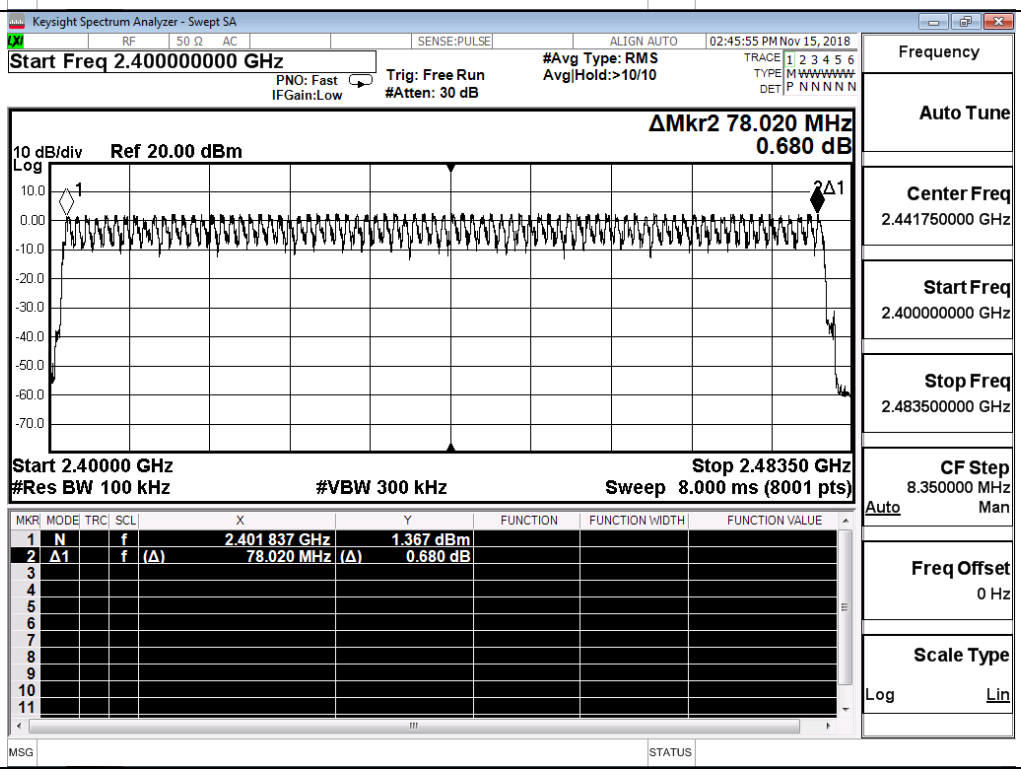
Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	>=15	PASS
π/4DQPSK	Hop	79	>=15	PASS
8DPSK	Hop	79	>=15	PASS

Test Graphs	
GFSK/Hop	

π/4DQPSK/Hop

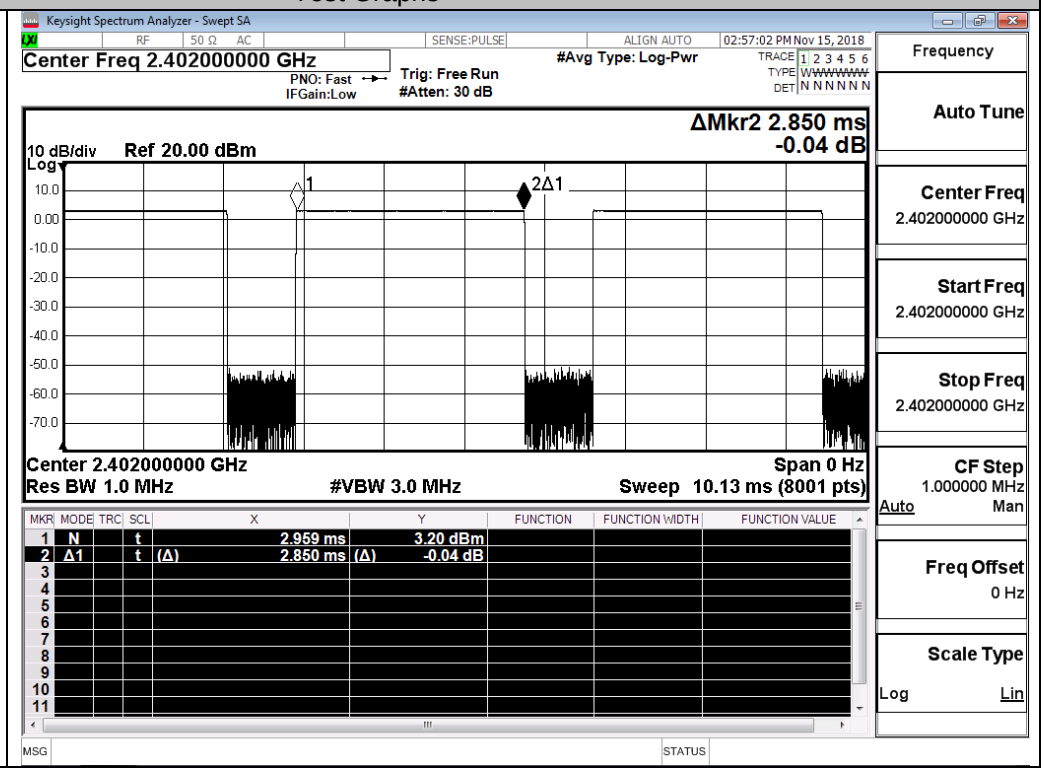


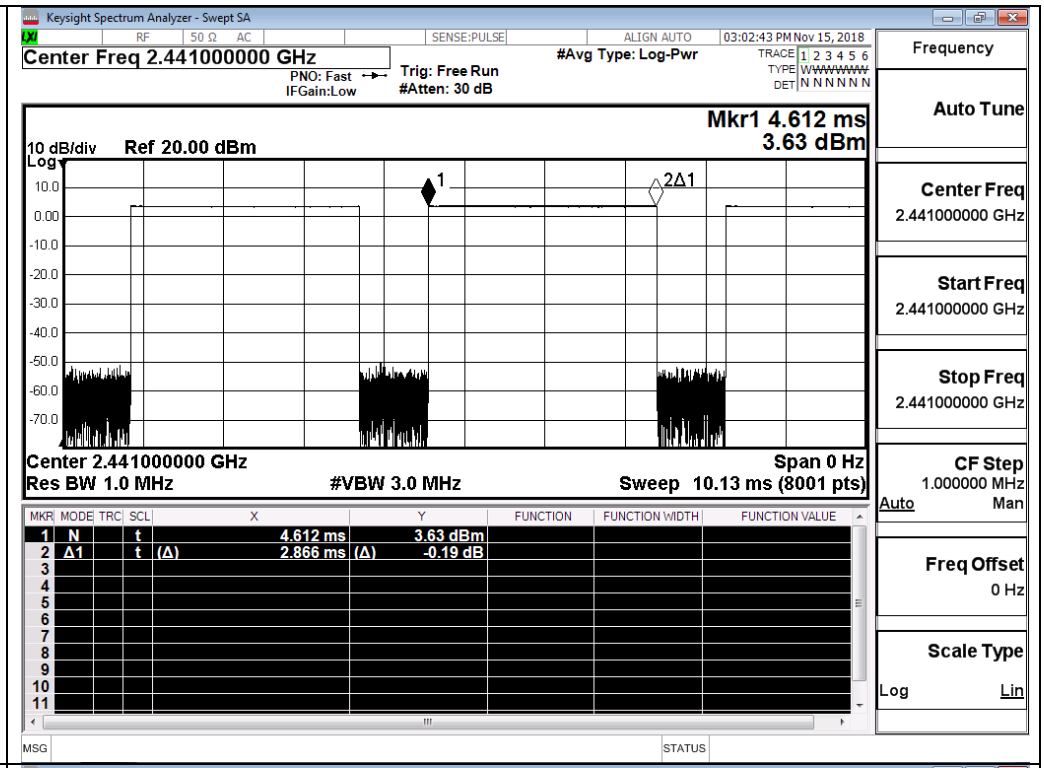
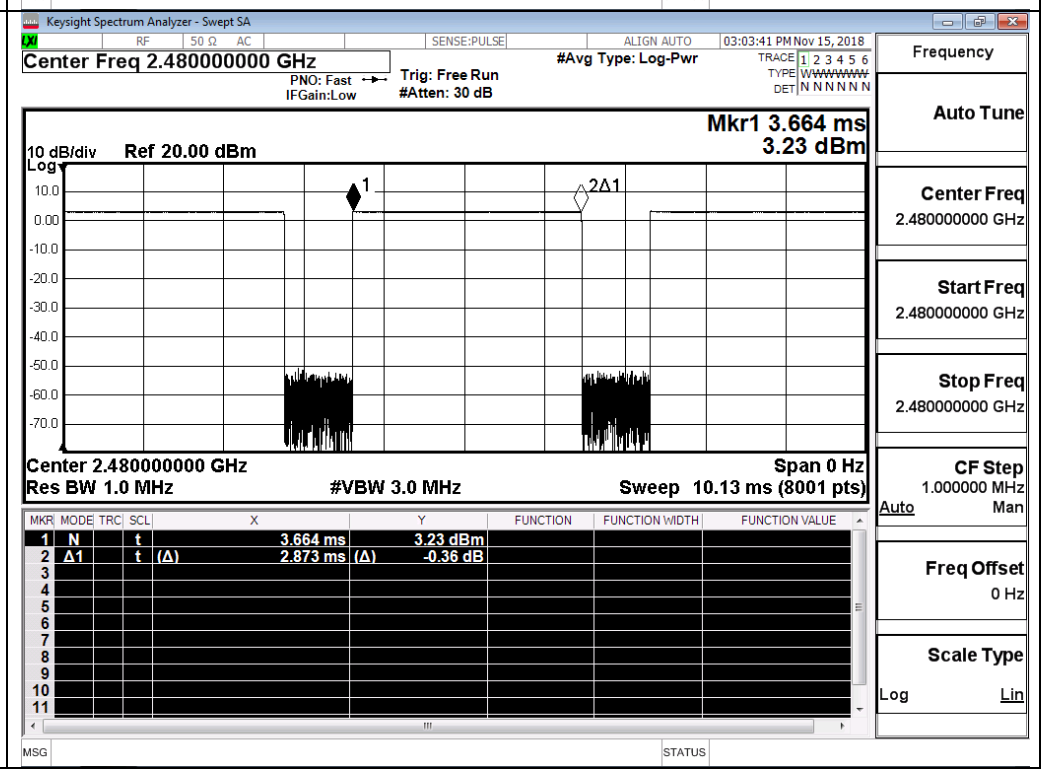
8DPSK/Hop



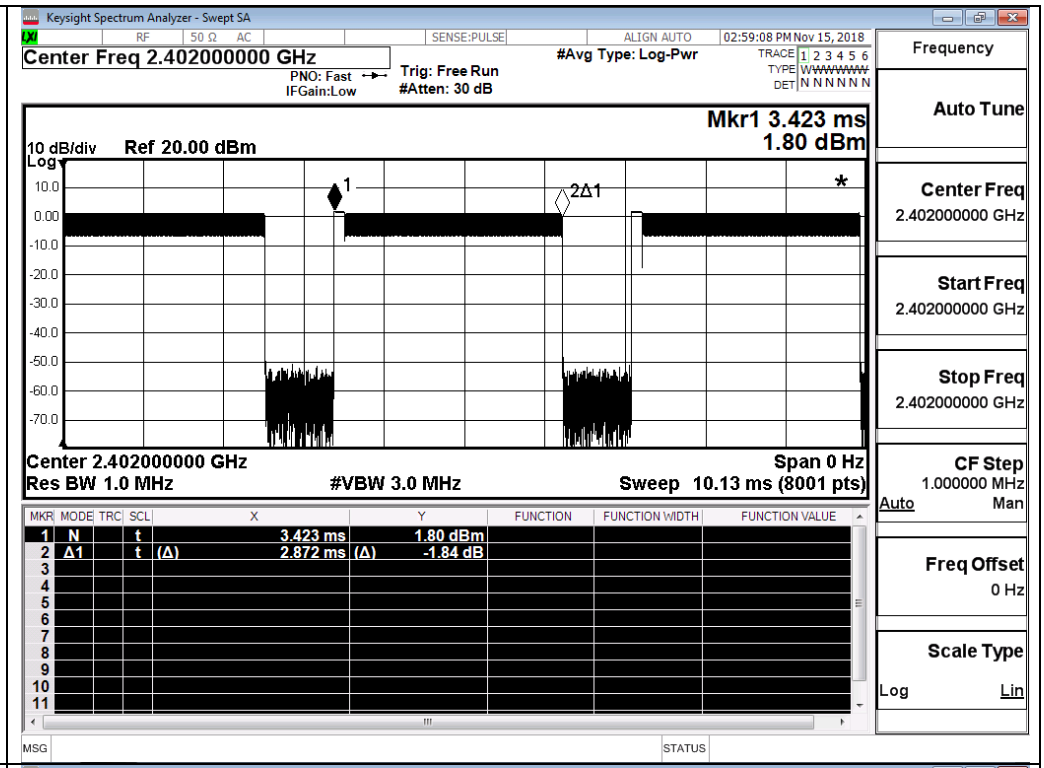
A.5 Dwell Time

Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.850	106.7	0.304	0.4	PASS
	DH5	MCH	2.866	106.7	0.306	0.4	PASS
	DH5	HCH	2.873	106.7	0.306	0.4	PASS
π/4DQPSK	2DH5	LCH	2.872	106.7	0.306	0.4	PASS
	2DH5	MCH	2.874	106.7	0.307	0.4	PASS
	2DH5	HCH	2.877	106.7	0.307	0.4	PASS
8DPSK	3DH5	LCH	2.850	106.7	0.304	0.4	PASS
	3DH5	MCH	2.869	106.7	0.306	0.4	PASS
	3DH5	HCH	2.850	106.7	0.304	0.4	PASS

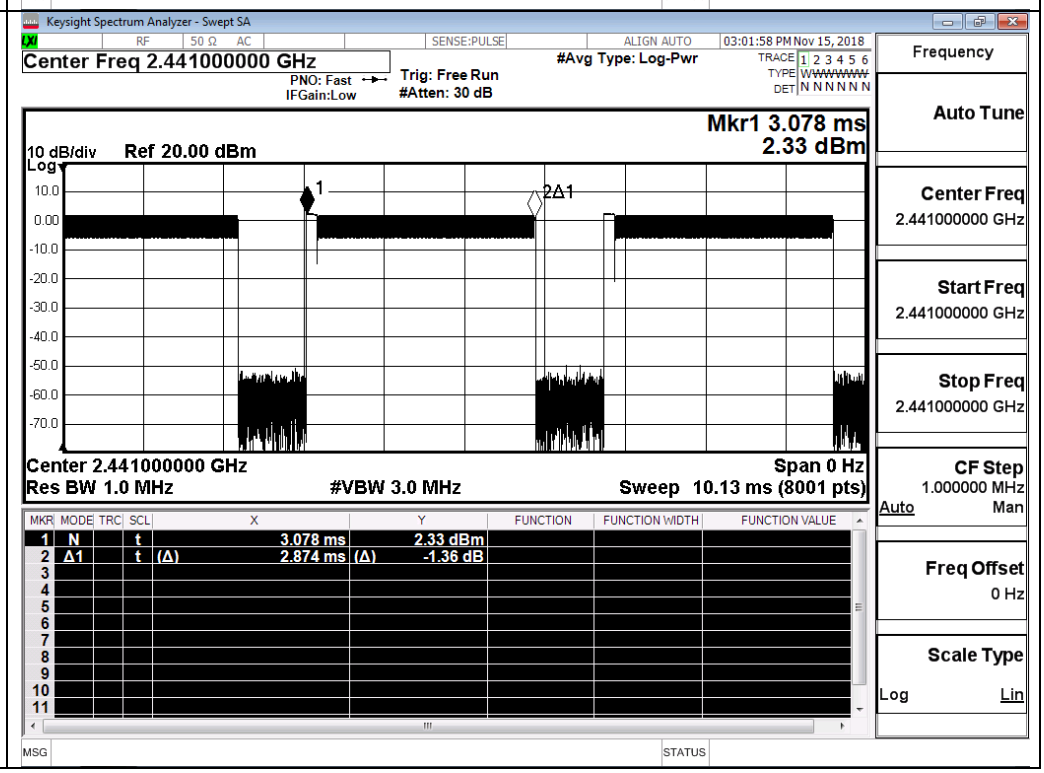
Test Graphs	
GFSK_DH5/LCH	

GFSK_DH5/MCH	
GFSK_DH5/HCH	

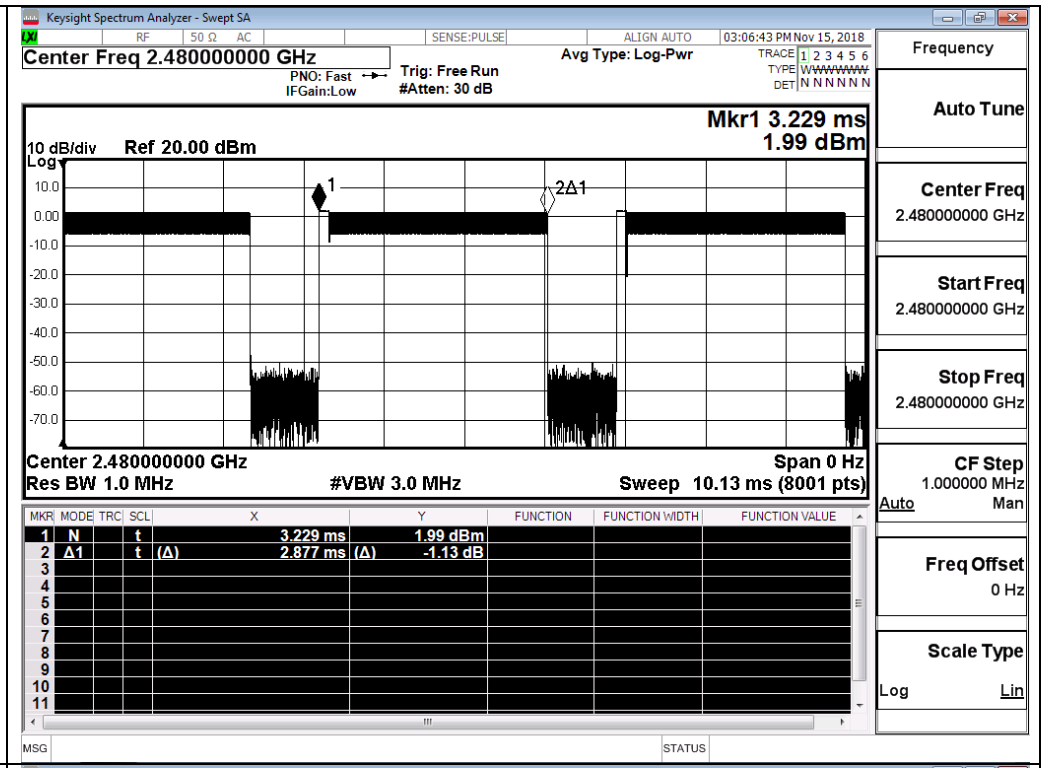
π/4DQPSK
_2DH5/LCH



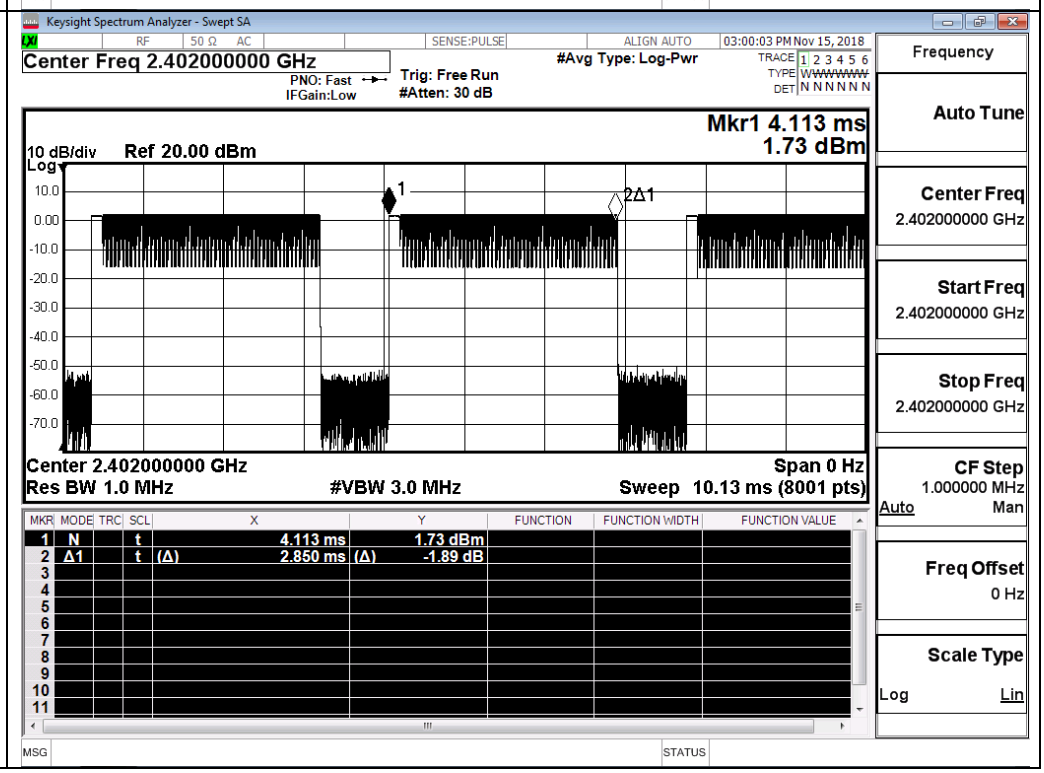
π/4DQPSK
_2DH5/MCH

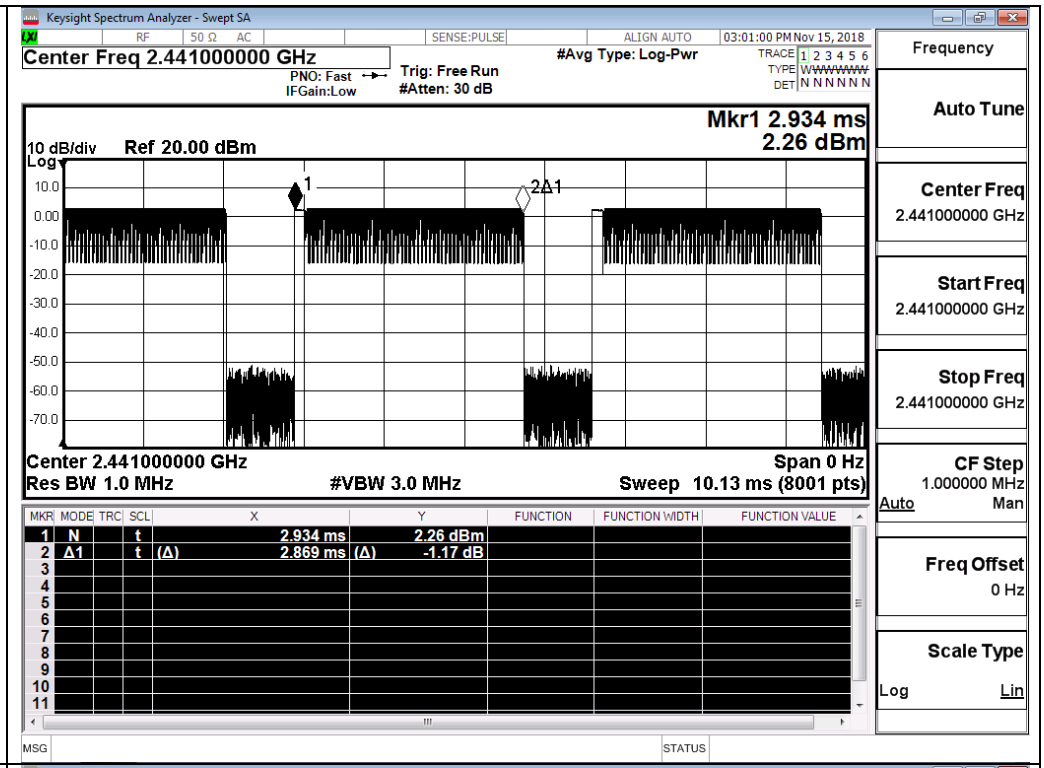
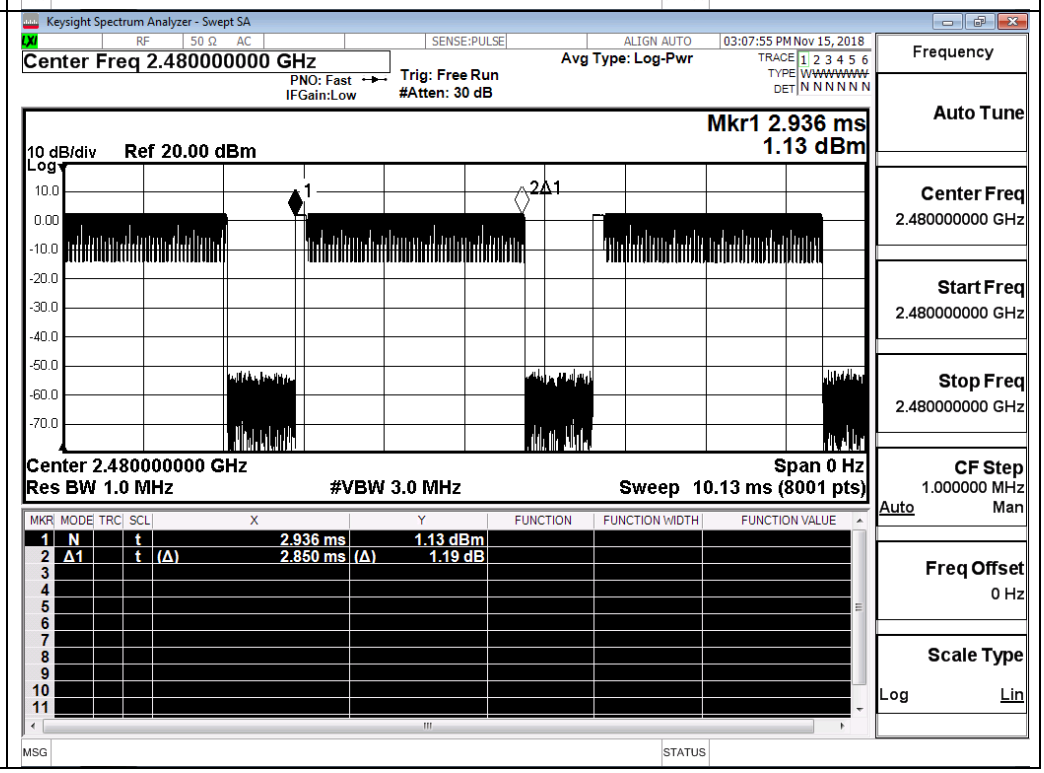


π/4DQPSK _2DH5/HCH



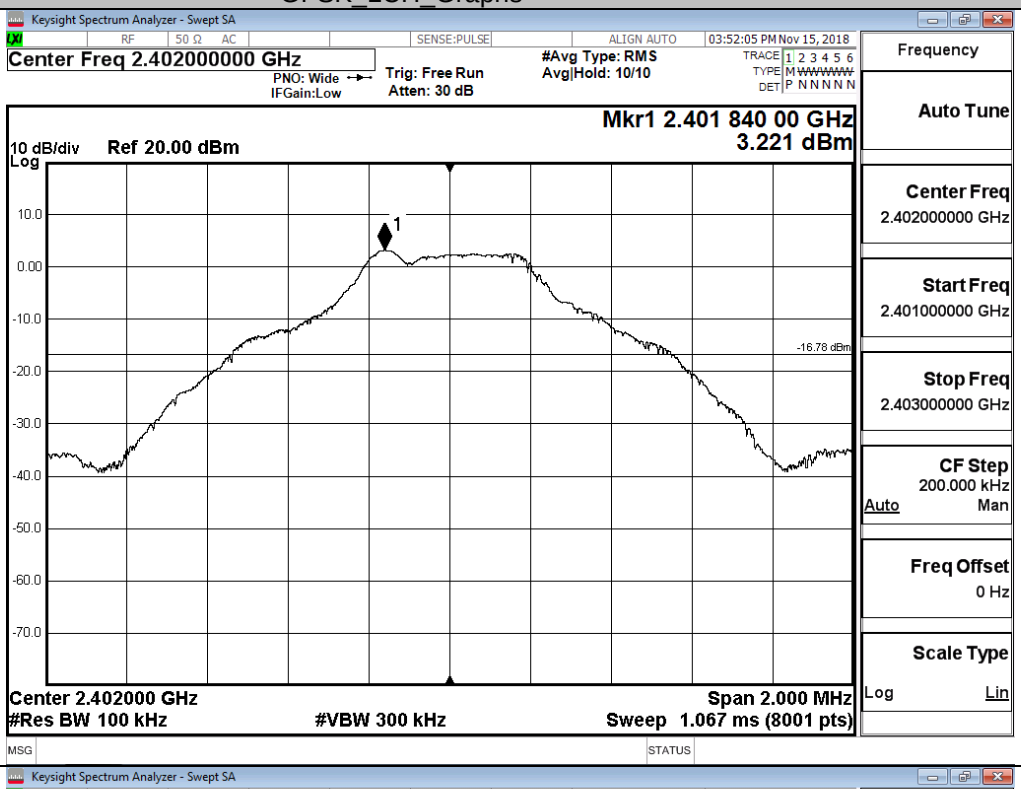
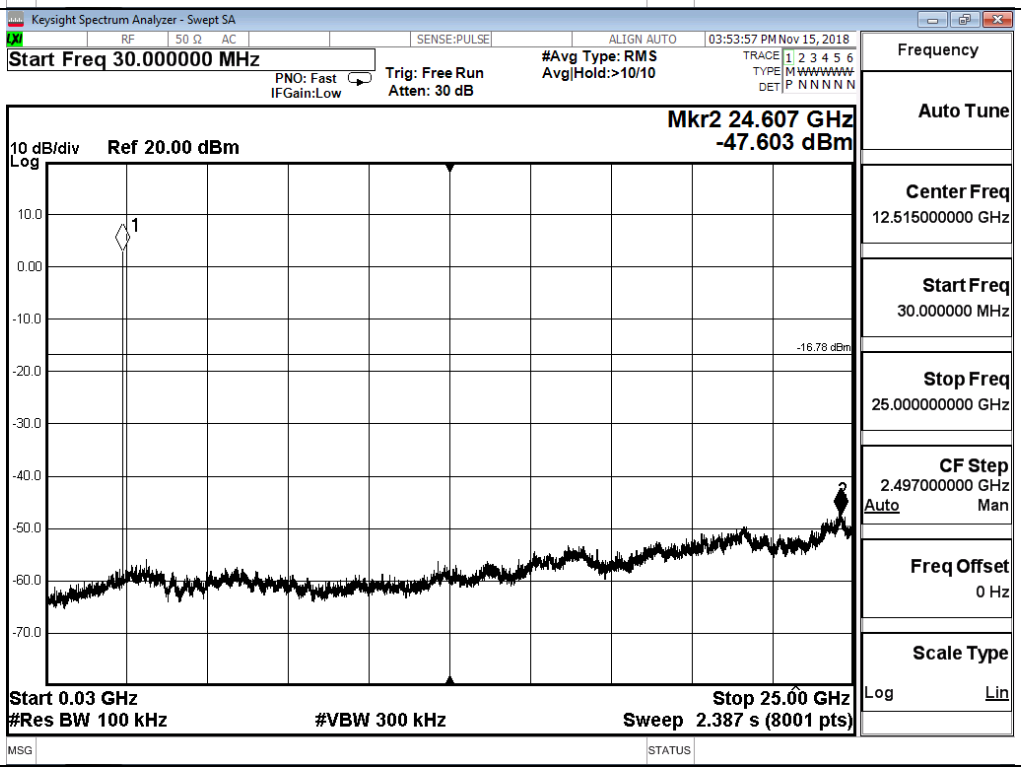
8DPSK _3DH5/LCH

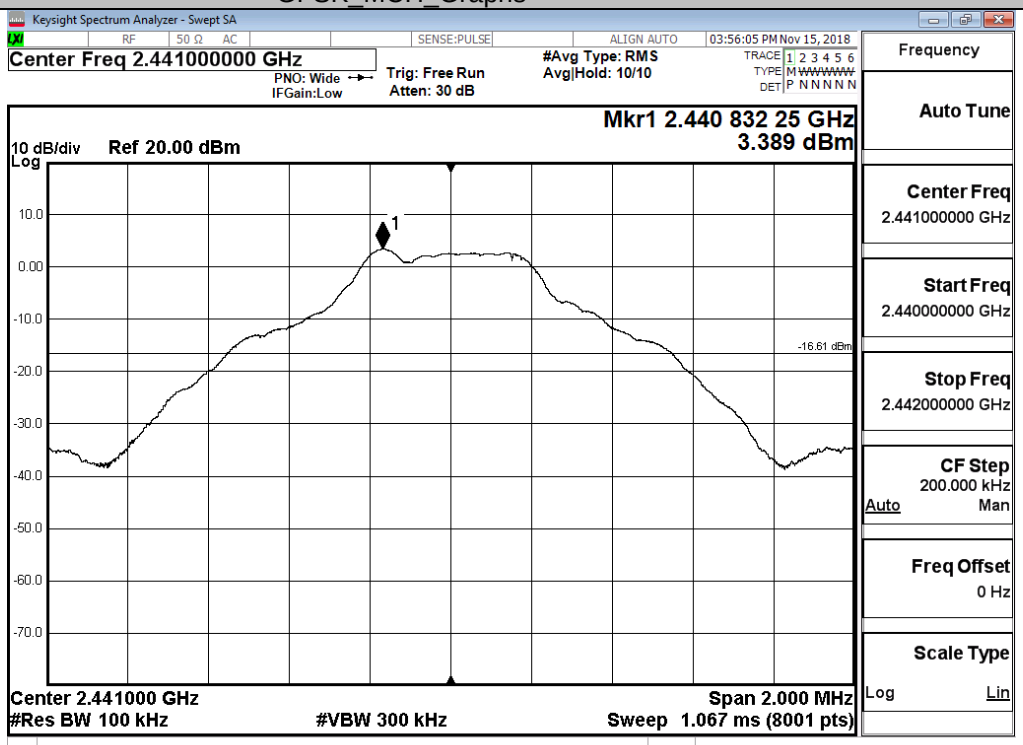
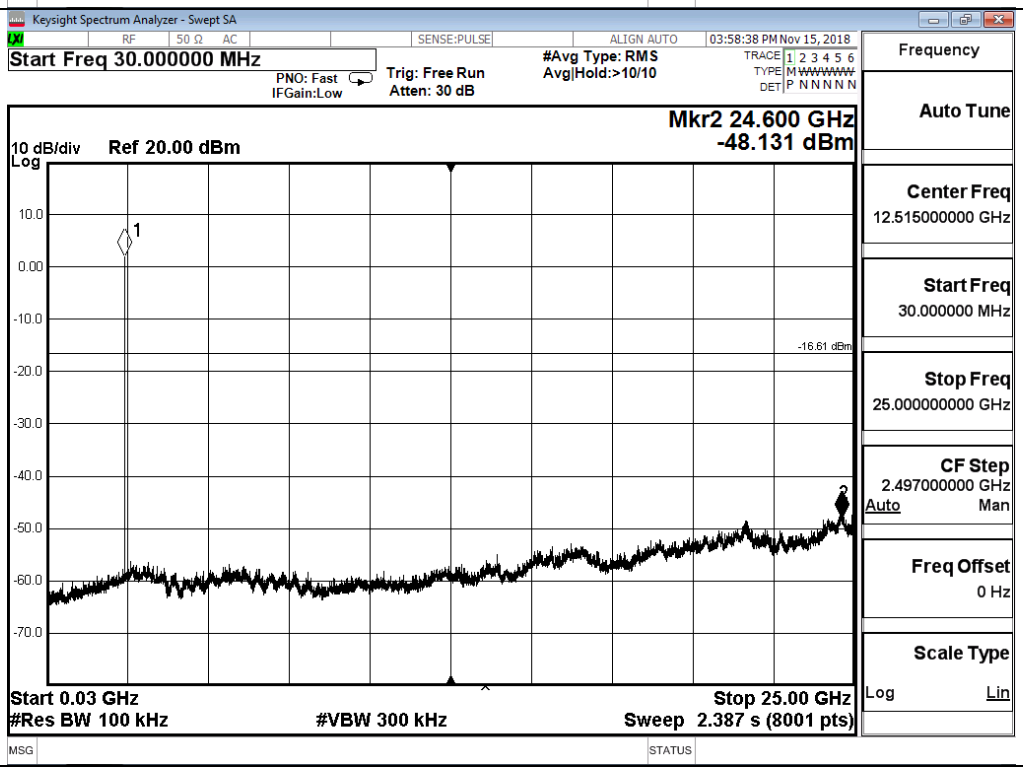


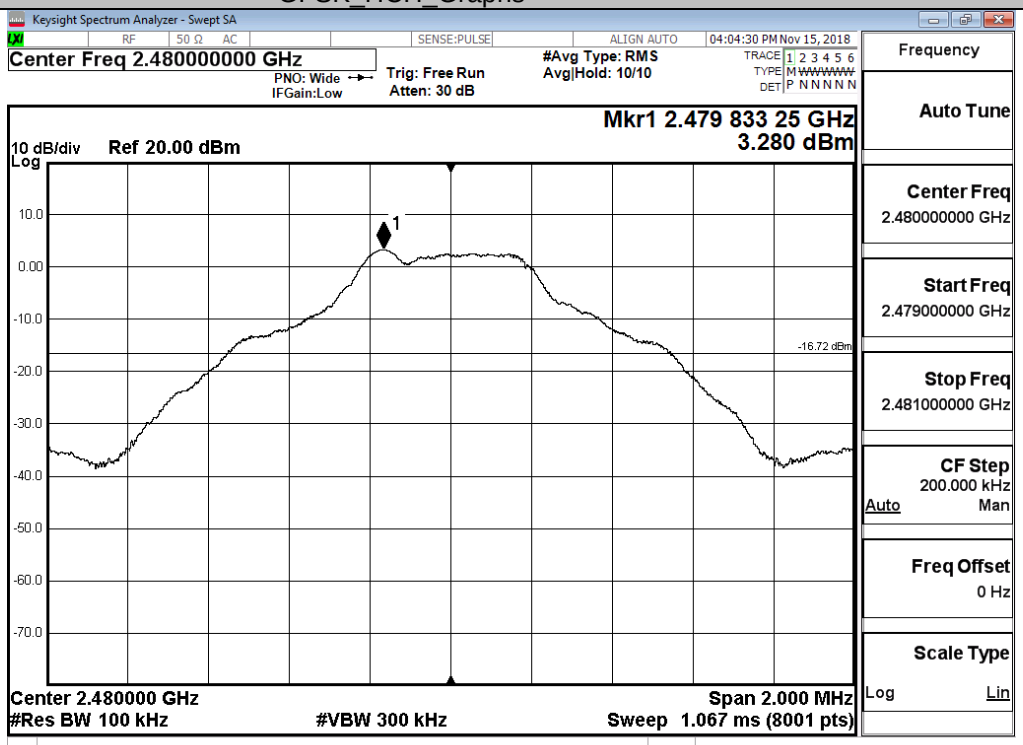
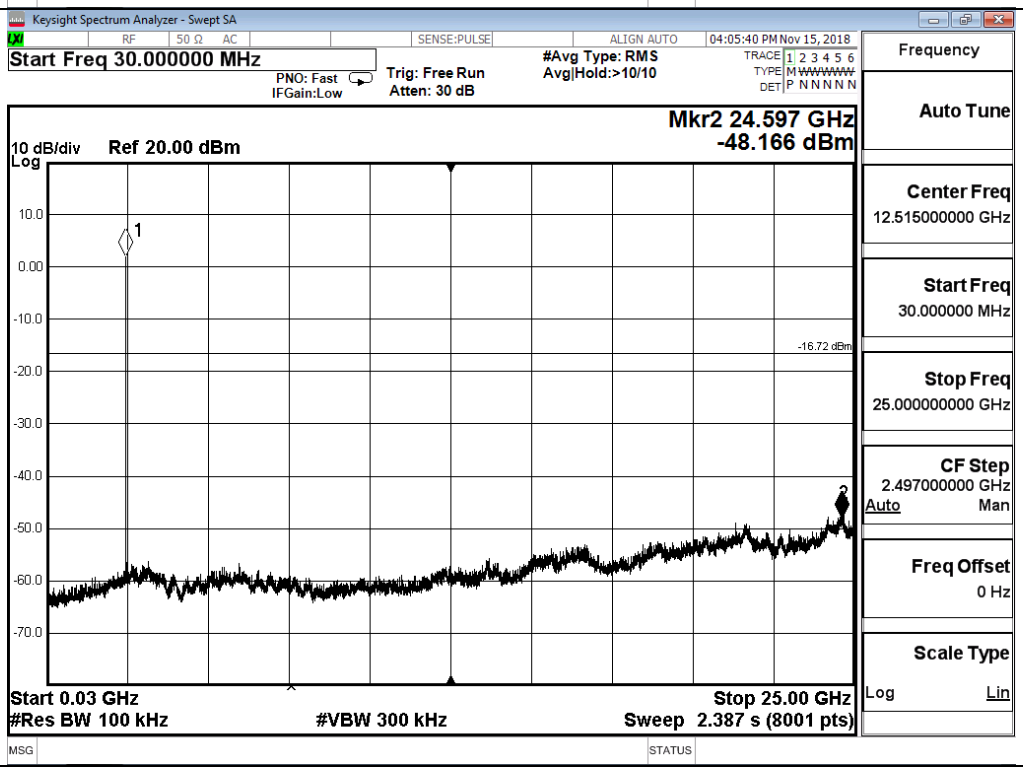
8DPSK _3DH5/MCH	
8DPSK _3DH5/HCH	

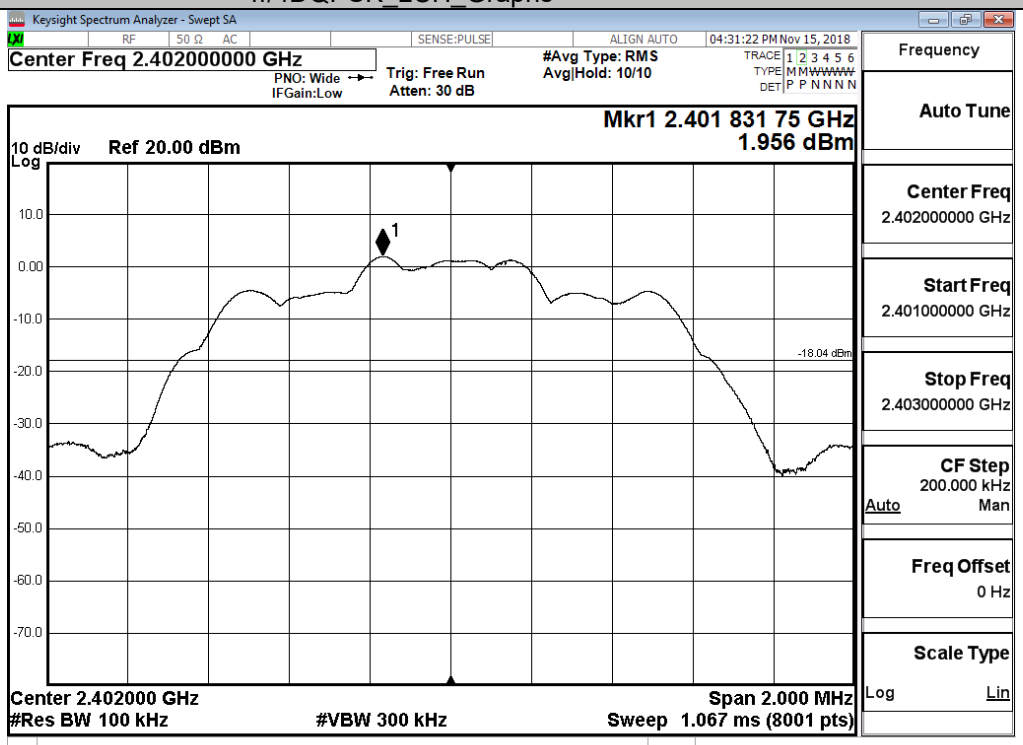
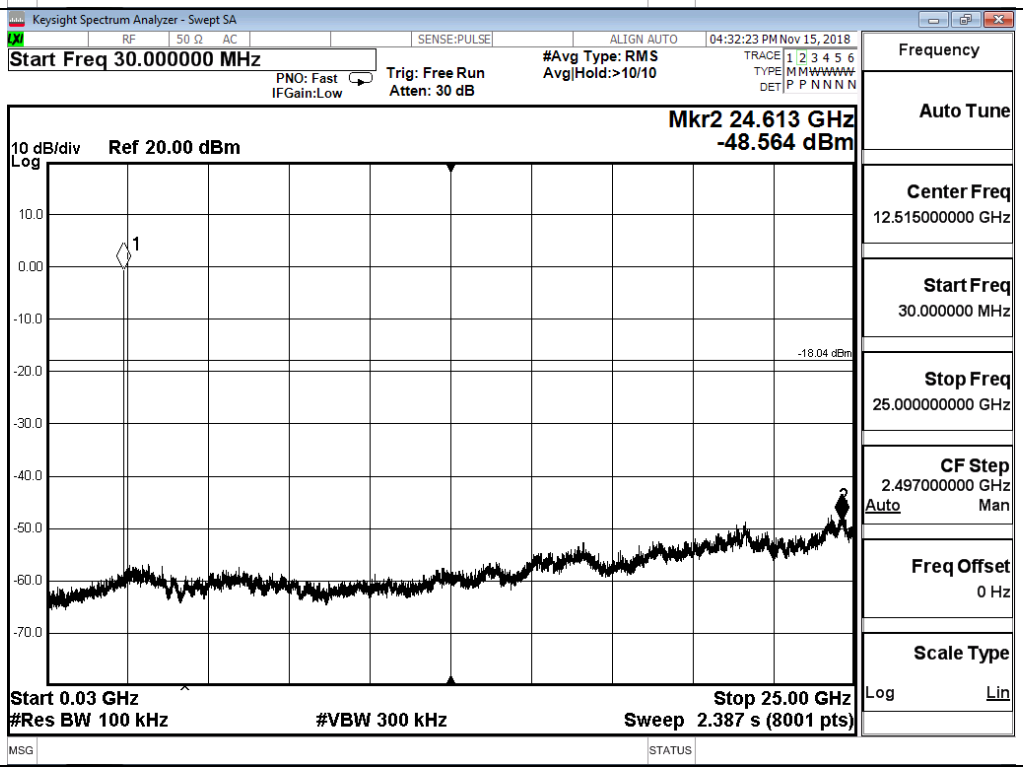
A.6 RF Conducted Spurious Emissions

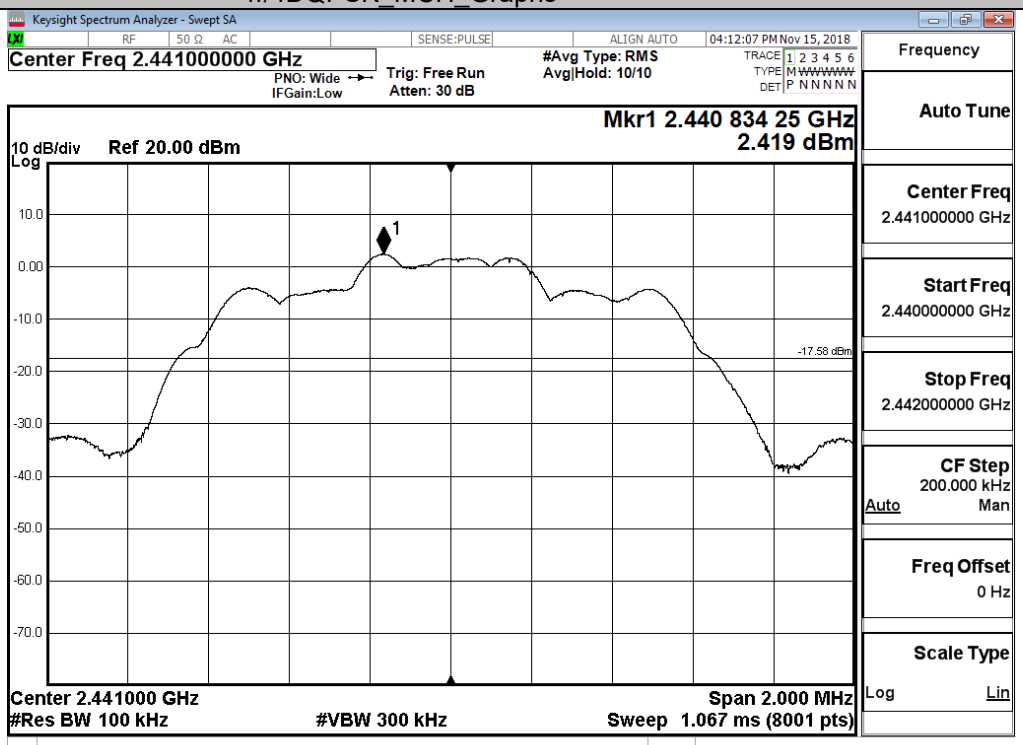
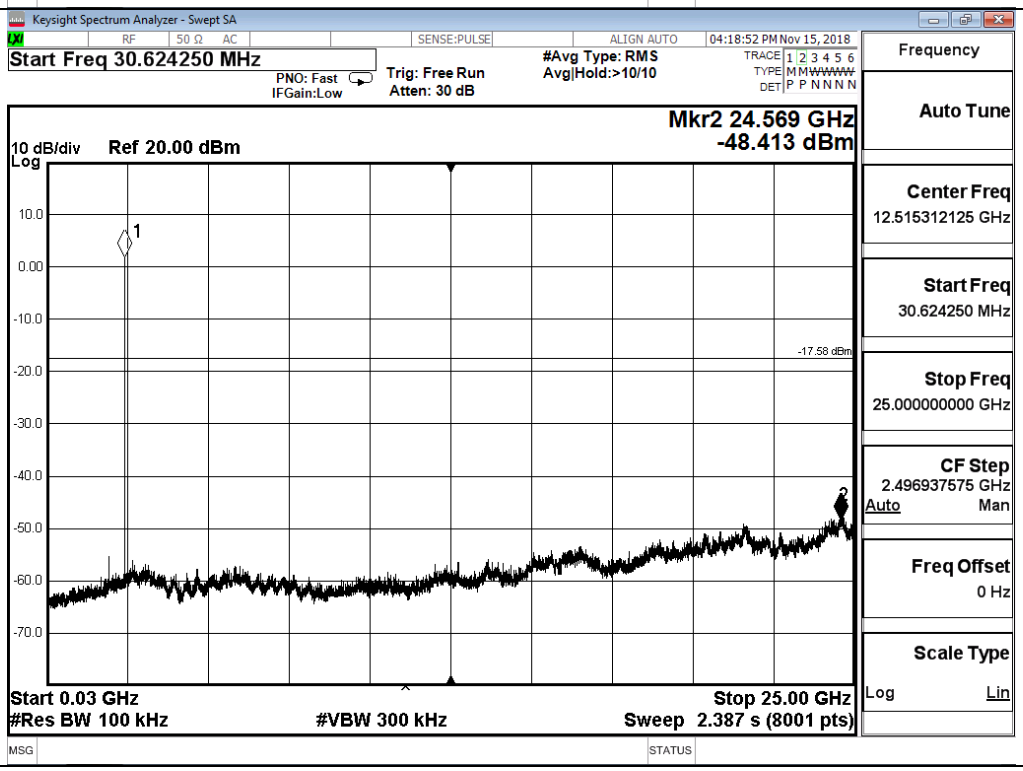
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	3.221	-47.603	-16.78	PASS
	MCH	3.389	-48.131	-16.61	PASS
	HCH	3.280	-48.166	-16.72	PASS
π/4DQPSK	LCH	1.956	-48.564	-18.04	PASS
	MCH	2.419	-48.413	-17.58	PASS
	HCH	2.046	-49.405	-17.95	PASS
8DPSK	LCH	1.981	-48.063	-18.02	PASS
	MCH	2.416	-47.918	-17.58	PASS
	HCH	1.770	-49.053	-18.23	PASS

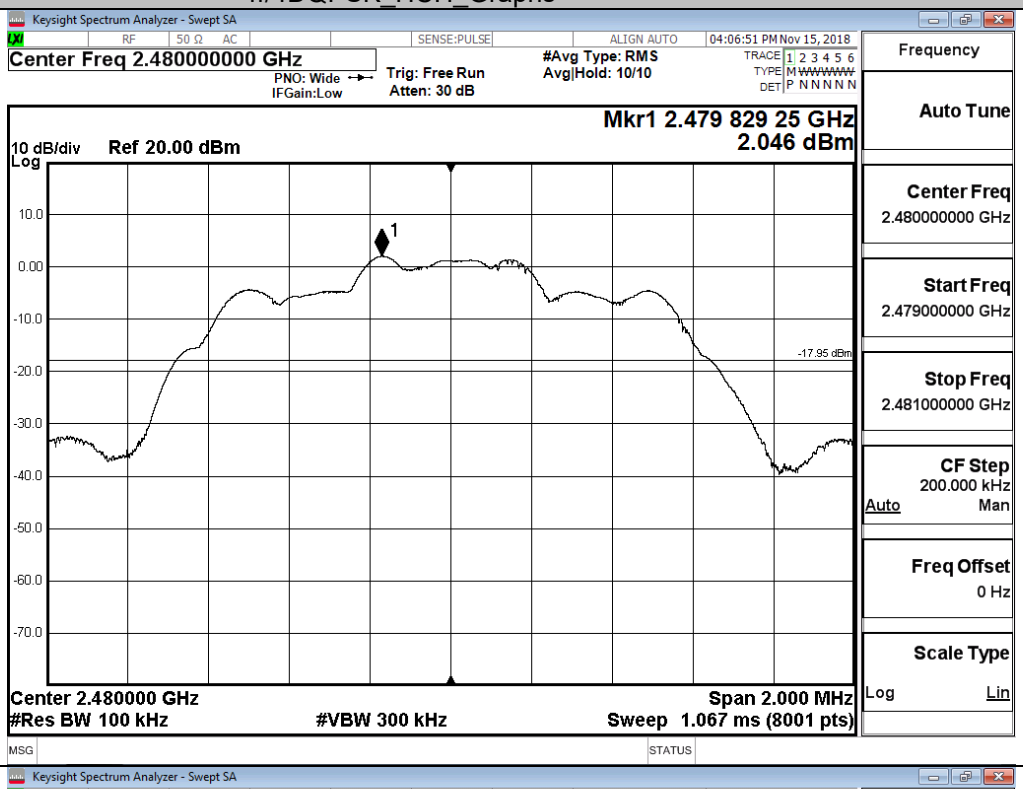
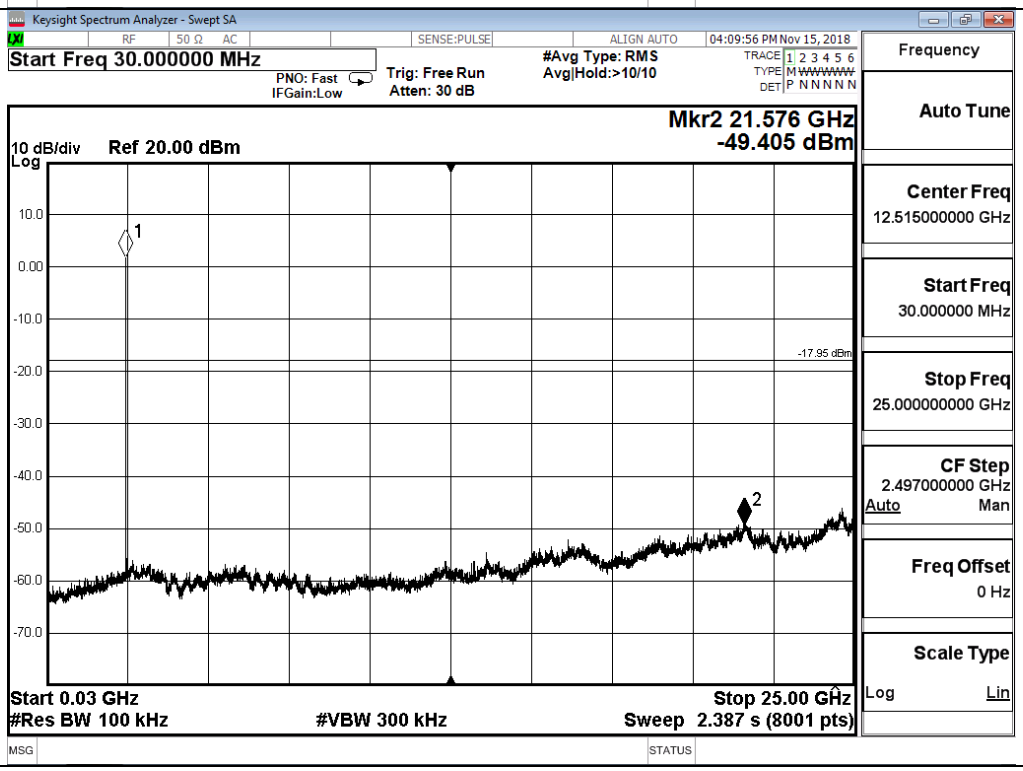
GFSK_LCH_Graphs	
Pref	
Puw	

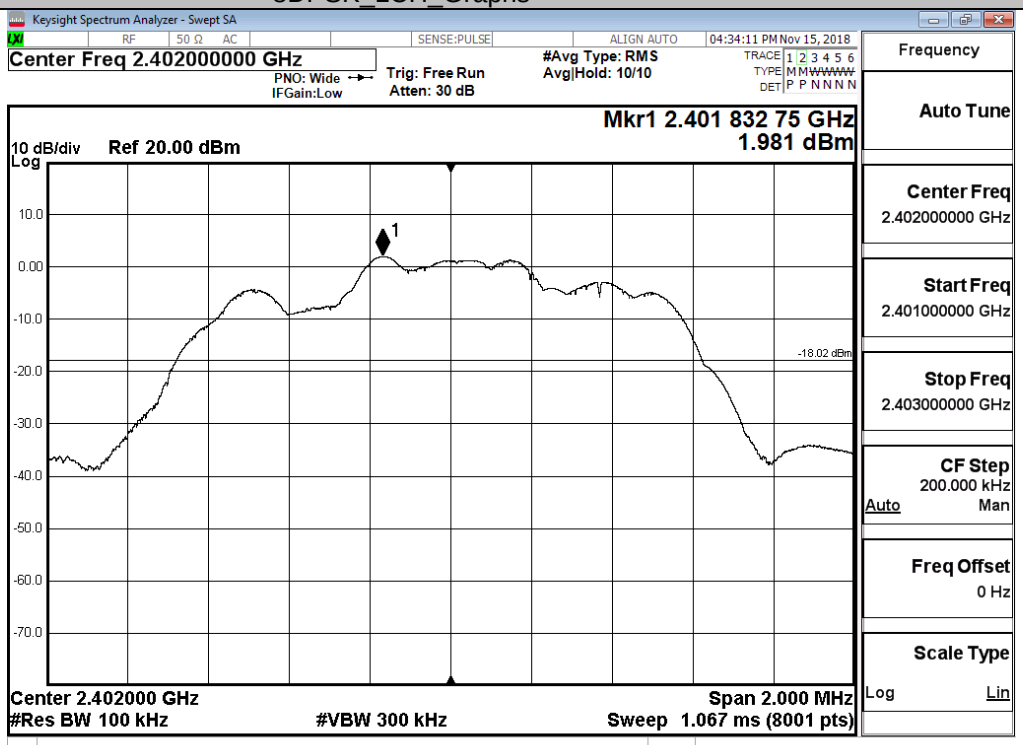
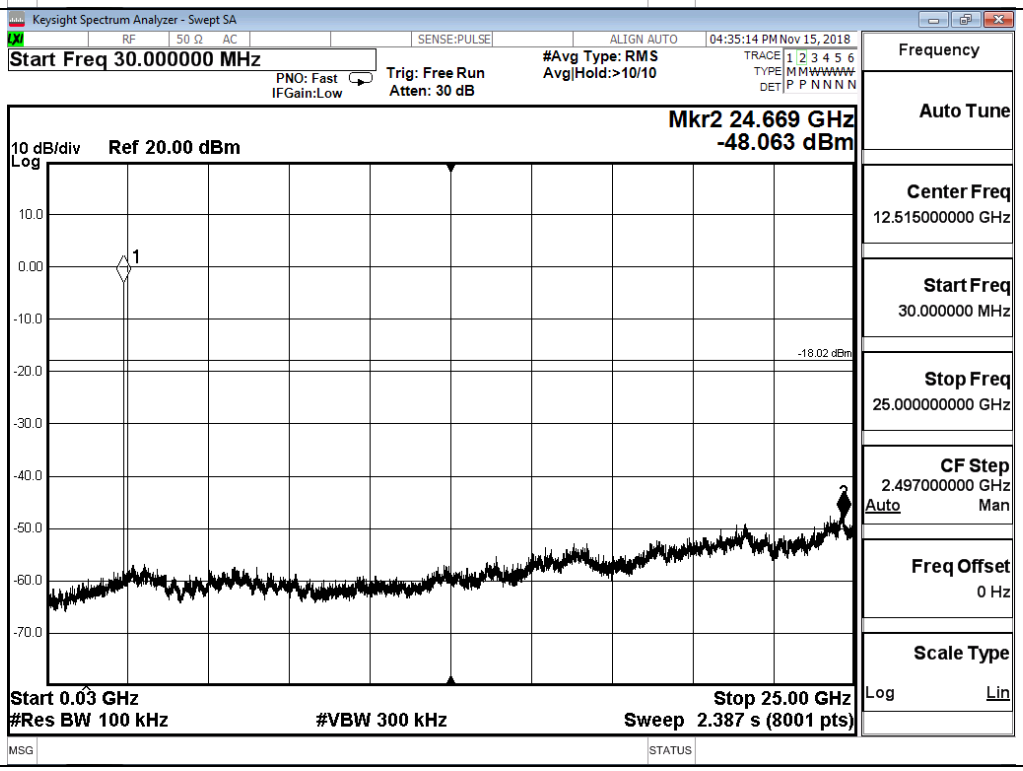
GFSK_MCH_Graphs	
Pref	
Puw	

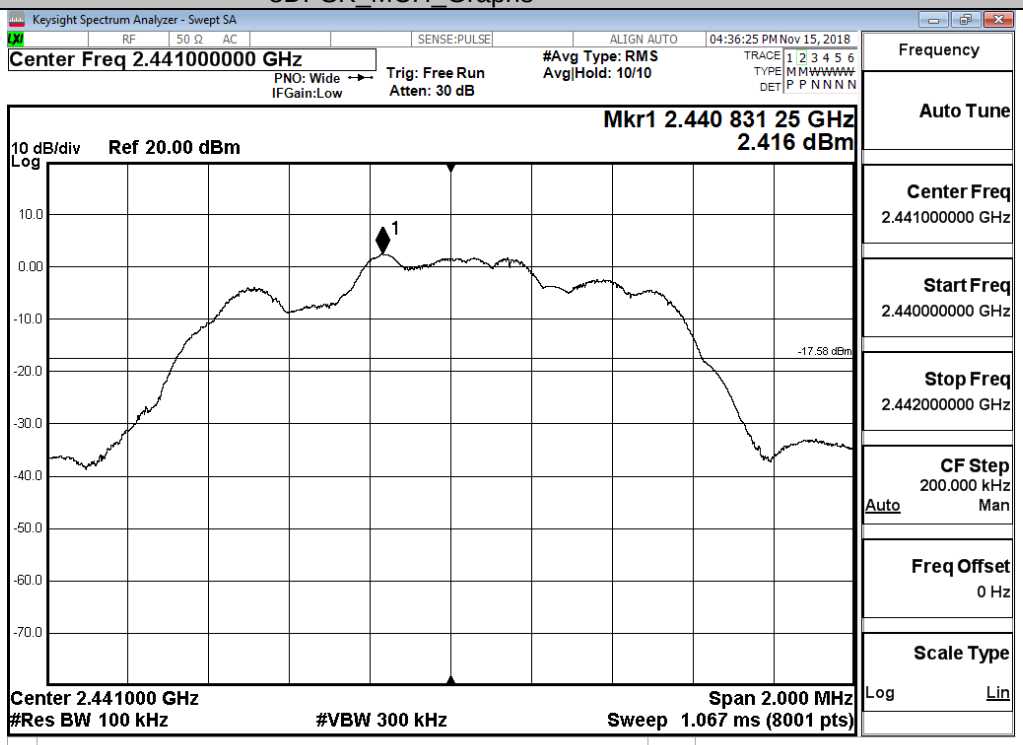
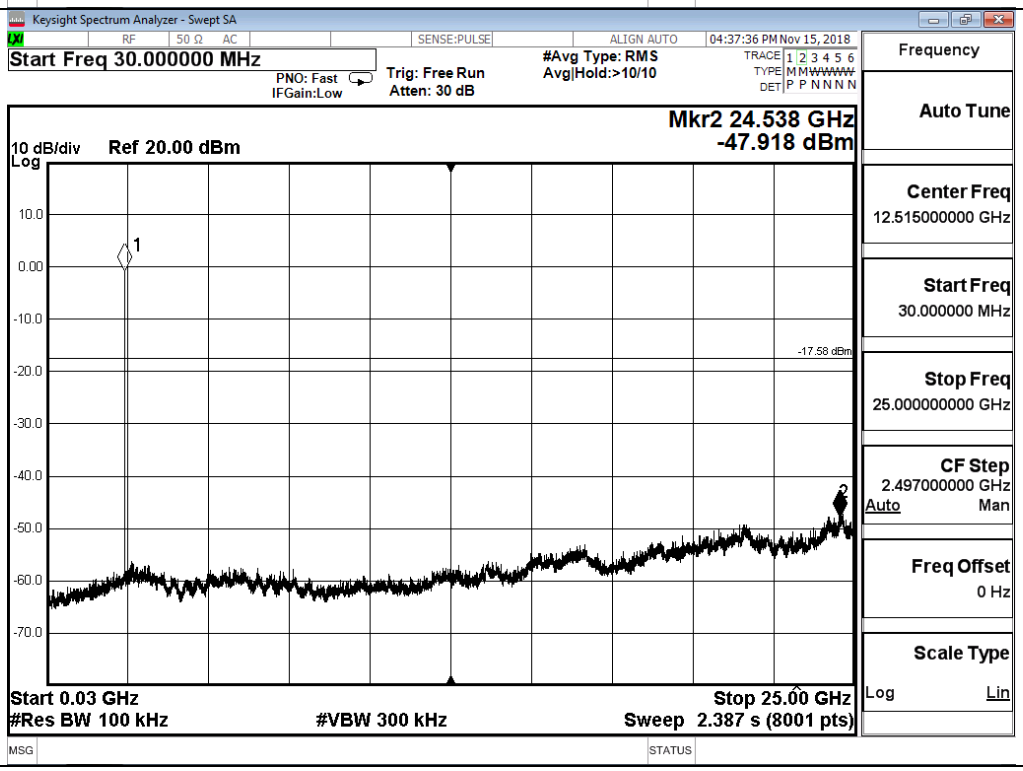
GFSK_HCH_Graphs	
Pref	
Puw	

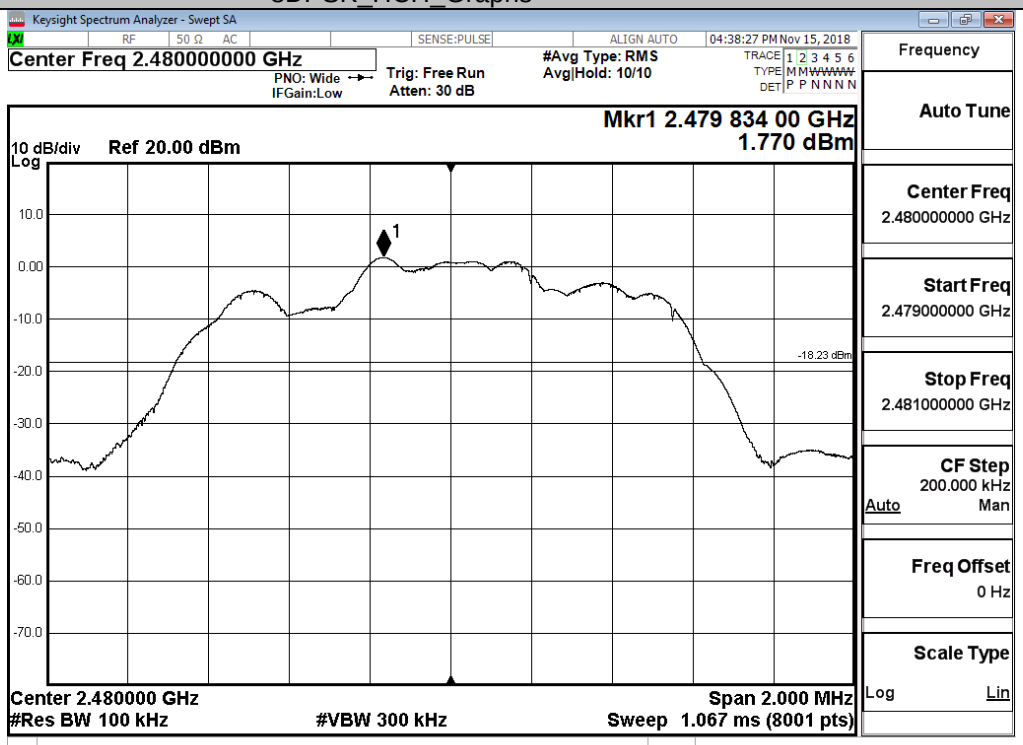
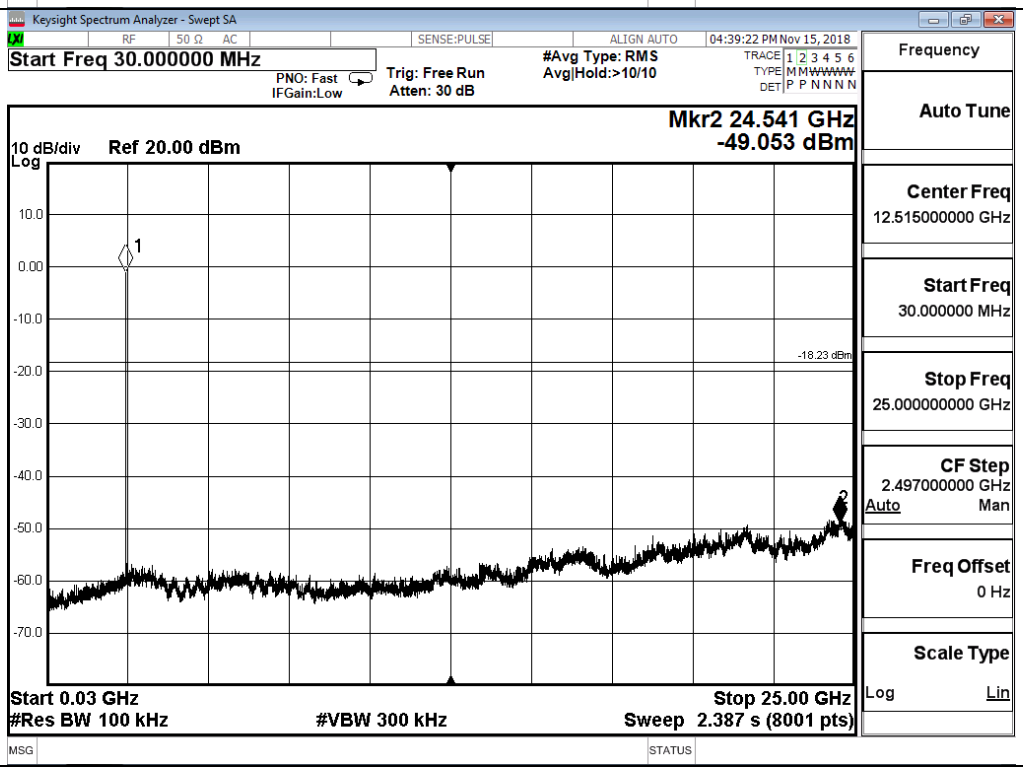
π/4DQPSK_LCH_Graphs	
Pref	
Puw	

π/4DQPSK_MCH_Graphs	
Pref	
Puw	

π/4DQPSK_HCH_Graphs	
Pref	
Puw	

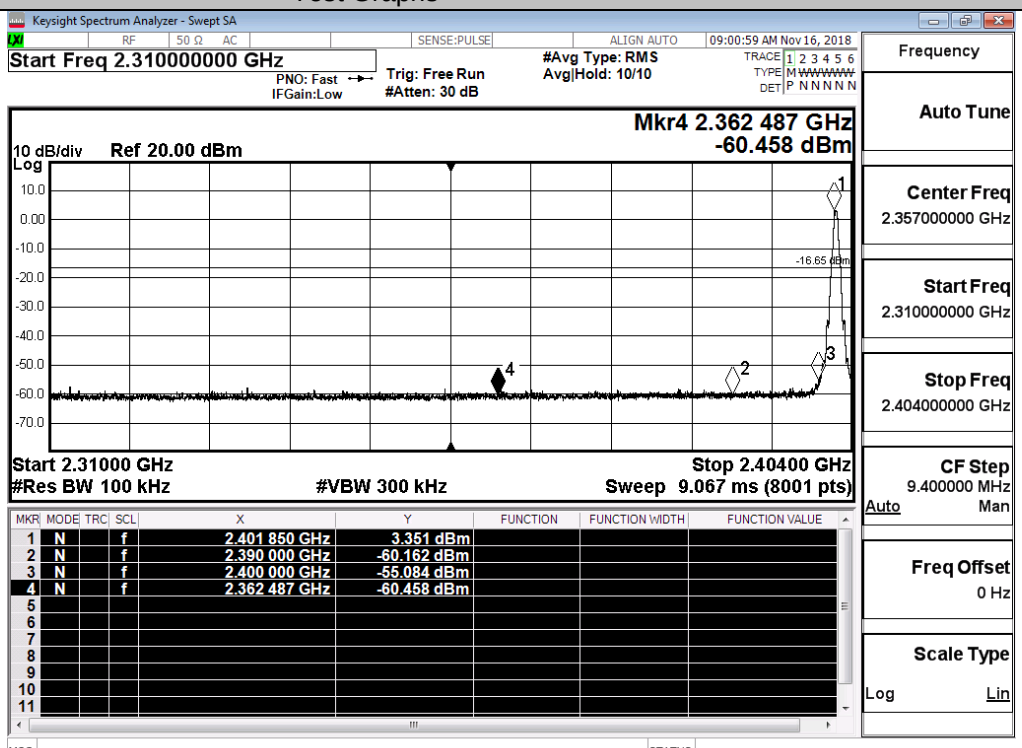
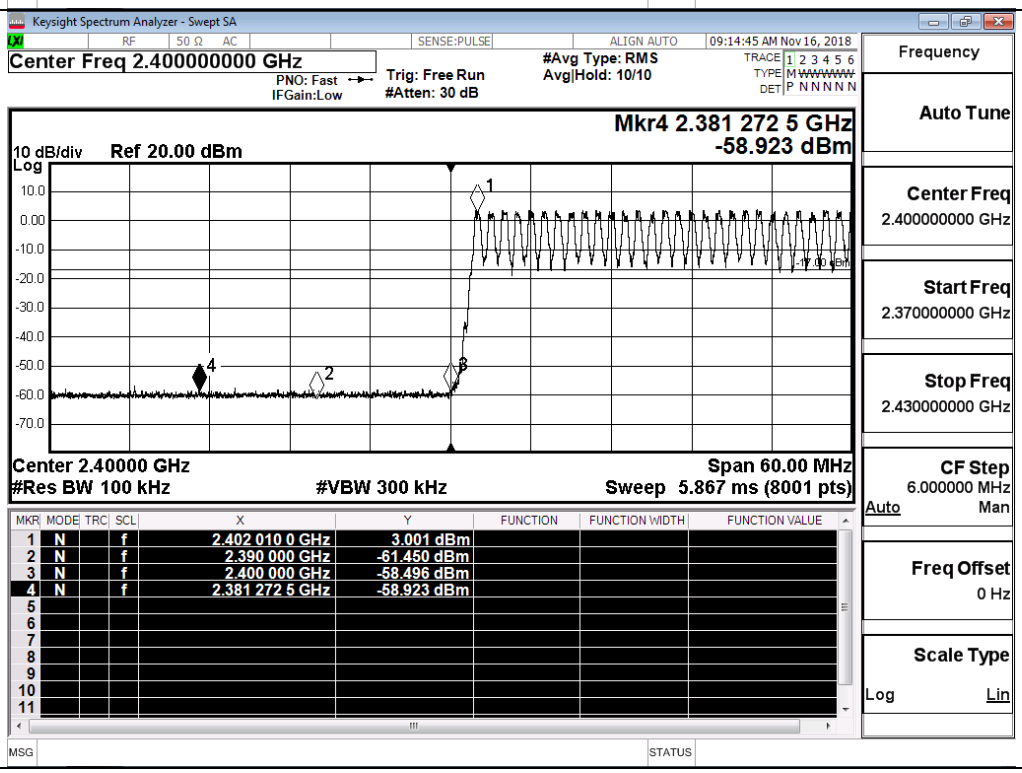
8DPSK_LCH_Graphs	
Pref	
Puw	

8DPSK_MCH_Graphs	
Pref	
Puw	

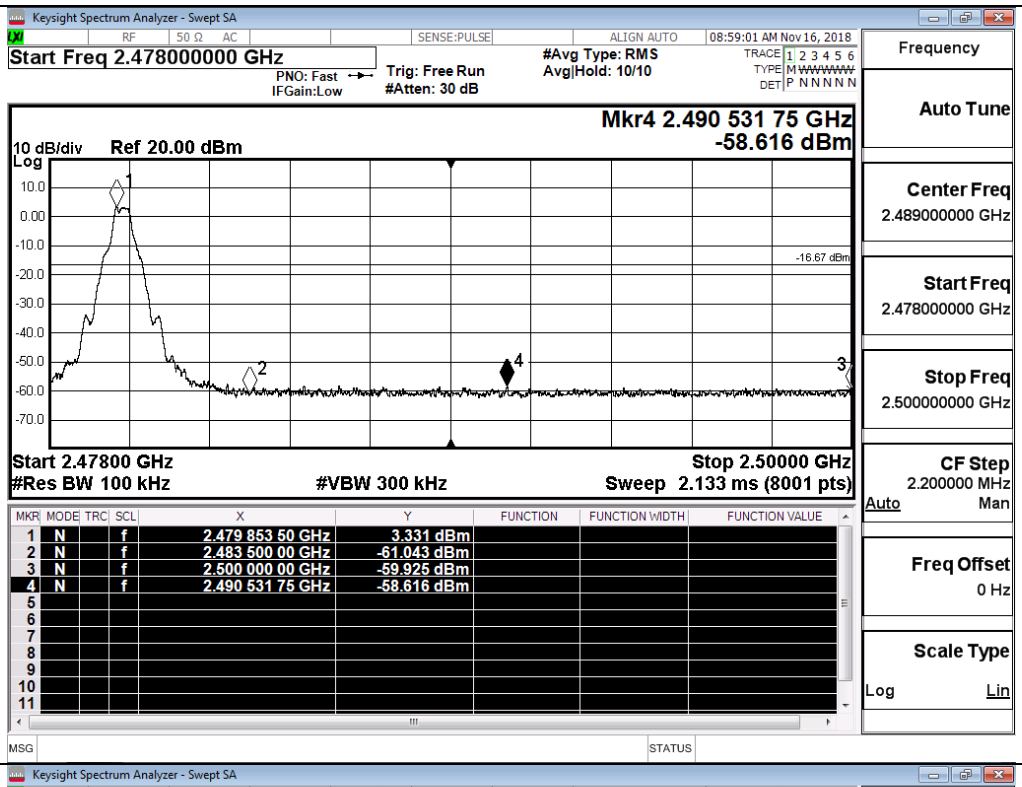
8DPSK_HCH_Graphs	
Pref	
Puw	

A.7 Band-edge for RF Conducted Emissions

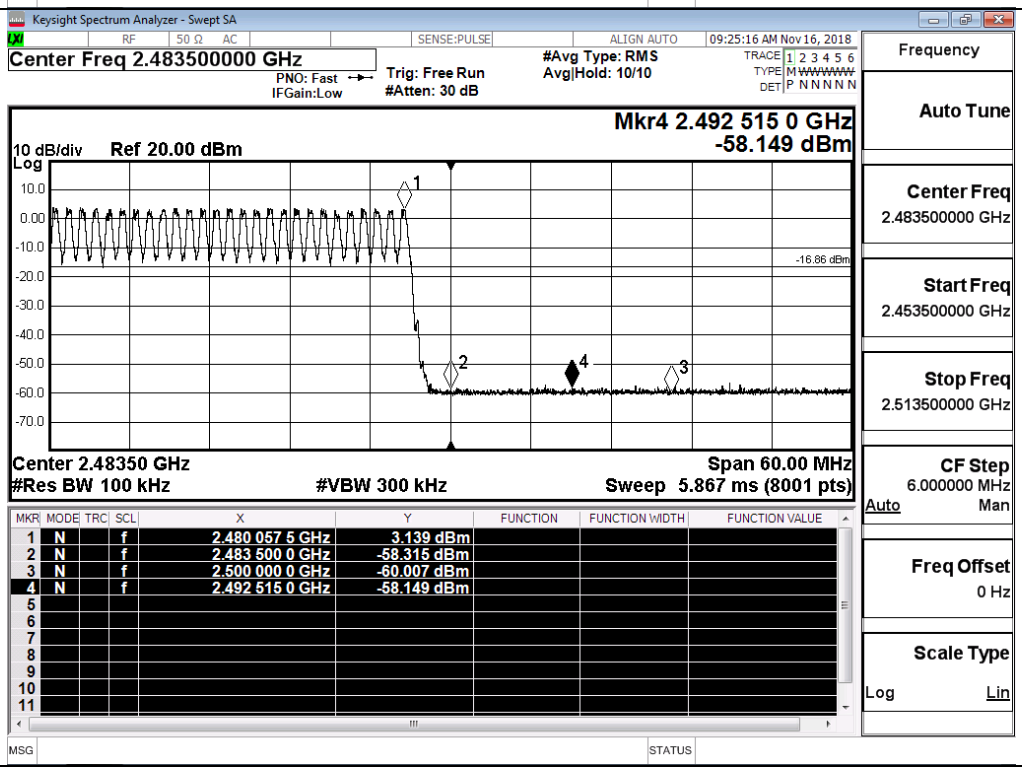
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	3.351	Off	-60.458	-16.65	PASS
			3.001	On	-58.923	-17.00	PASS
	HCH	2480	3.331	Off	-58.616	-16.67	PASS
			3.139	On	-58.149	-16.86	PASS
π/4DQPSK	LCH	2402	1.877	Off	-58.187	-18.12	PASS
			1.426	On	-60.282	-18.57	PASS
	HCH	2480	2.131	Off	-57.584	-17.87	PASS
			1.208	On	-59.030	-18.88	PASS
8DPSK	LCH	2402	1.788	Off	-60.077	-18.21	PASS
			1.025	On	-59.393	-18.98	PASS
	HCH	2480	2.102	Off	-57.231	-17.90	PASS
			1.345	On	-60.074	-18.66	PASS

Test Graphs	
GFSK/LCH/No Hop	
GFSK/LCH/Hop	

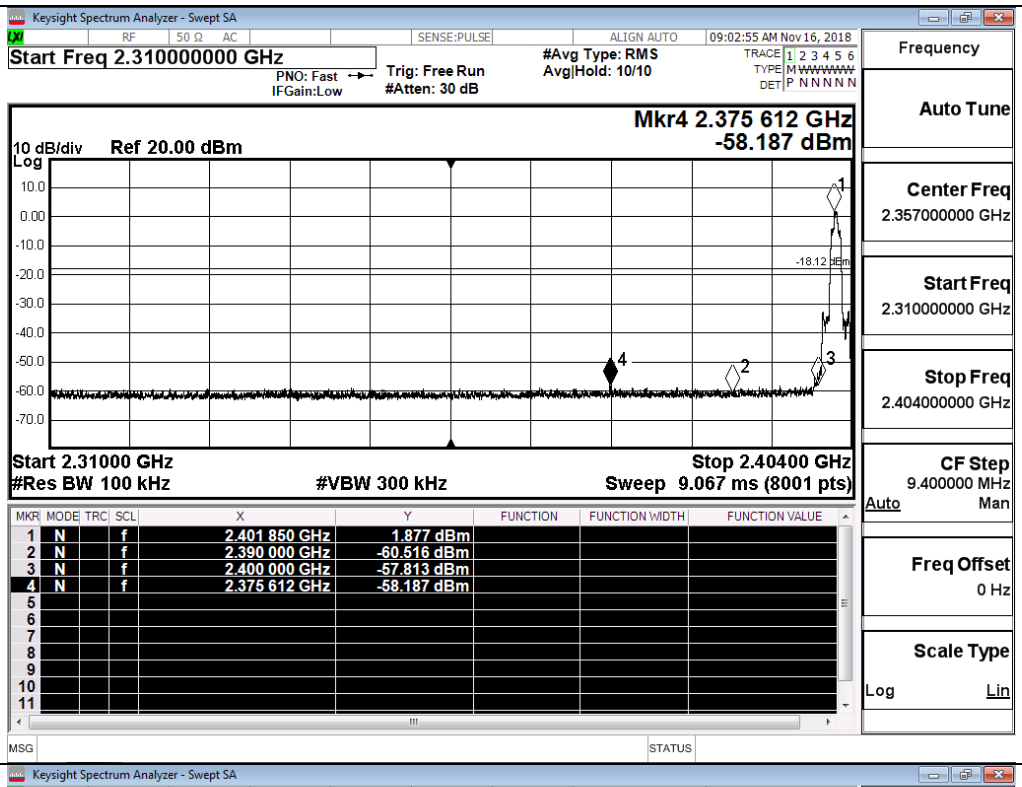
GFSK/HCH/No Hop



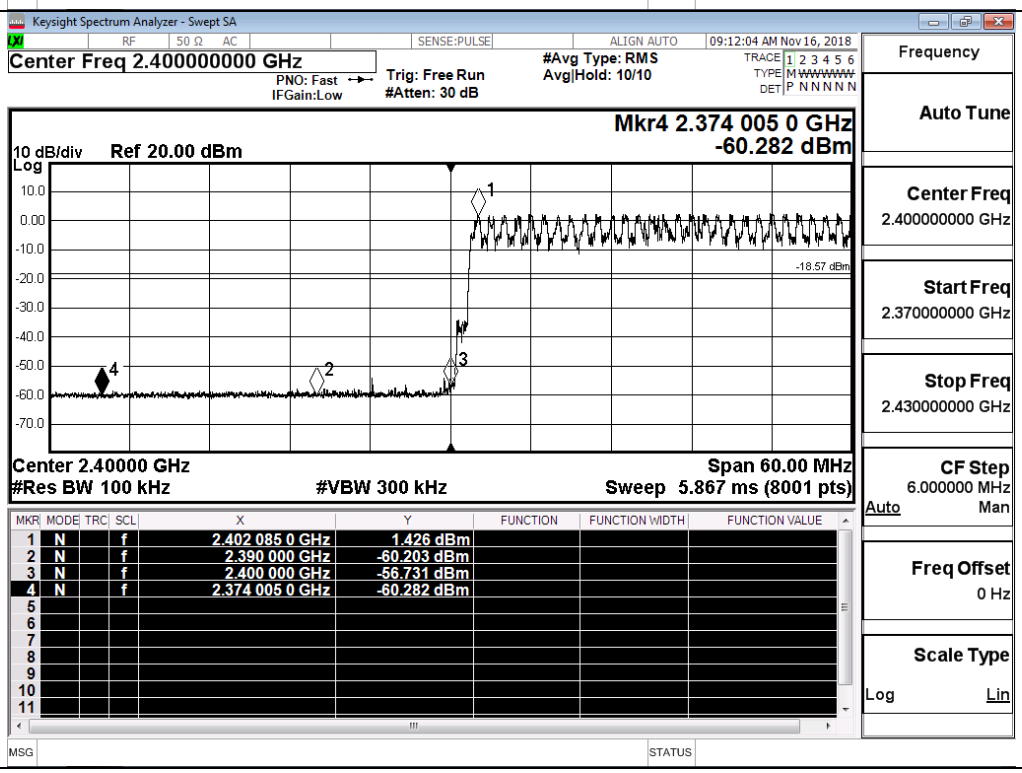
GFSK/HCH/Hop



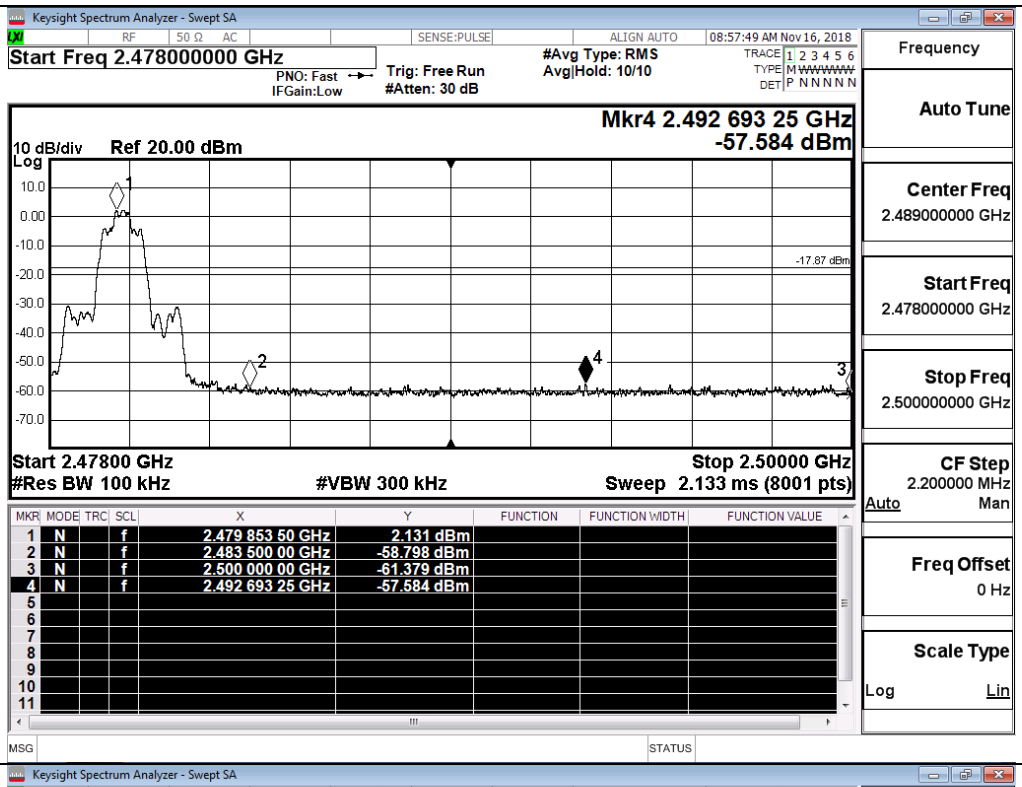
π/4DQPSK/LCH/No Hop



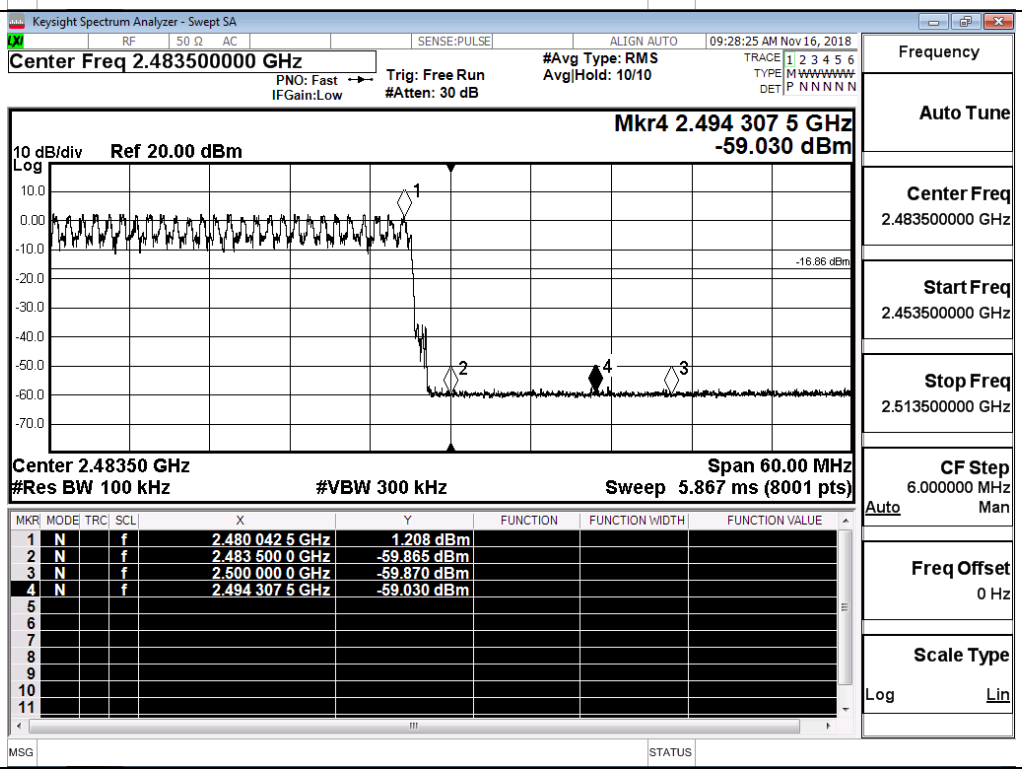
π/4DQPSK/LCH/Hop



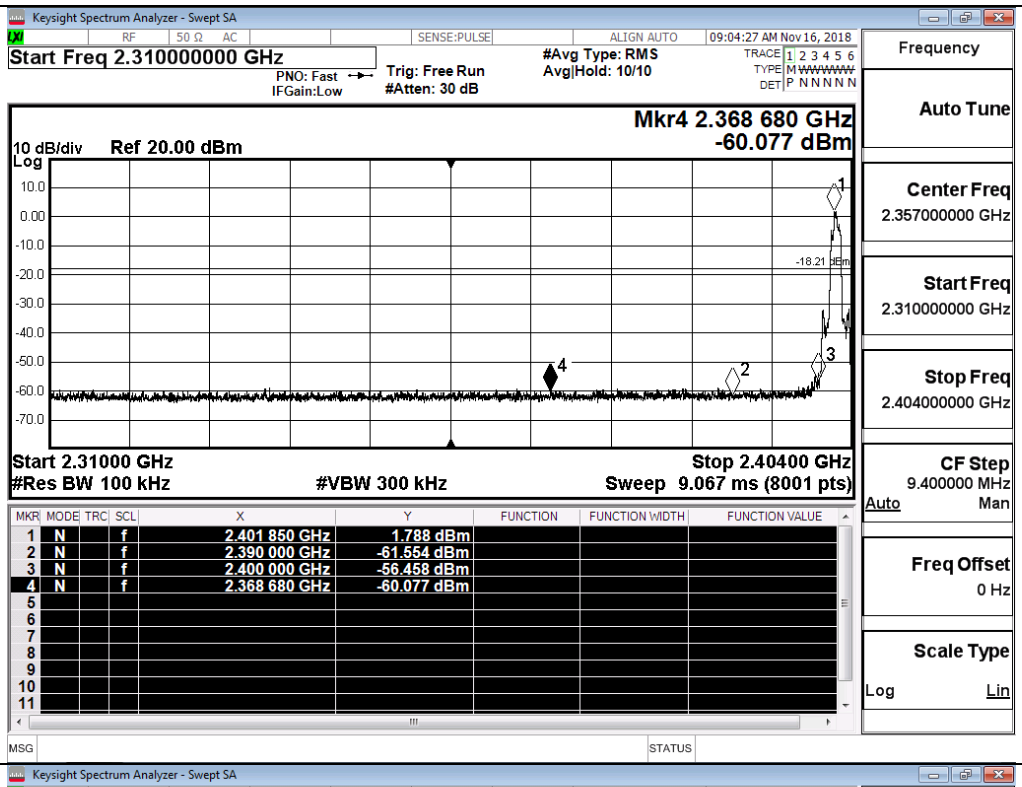
π/4DQPSK/HCH/No Hop



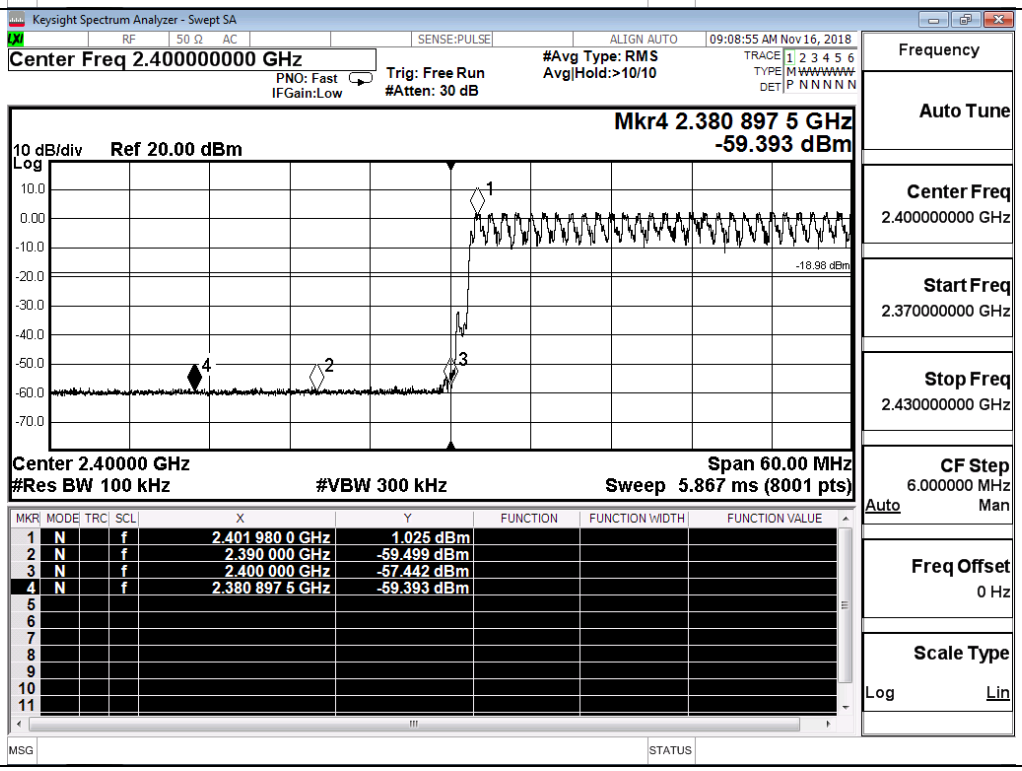
π/4DQPSK/HCH/Hop



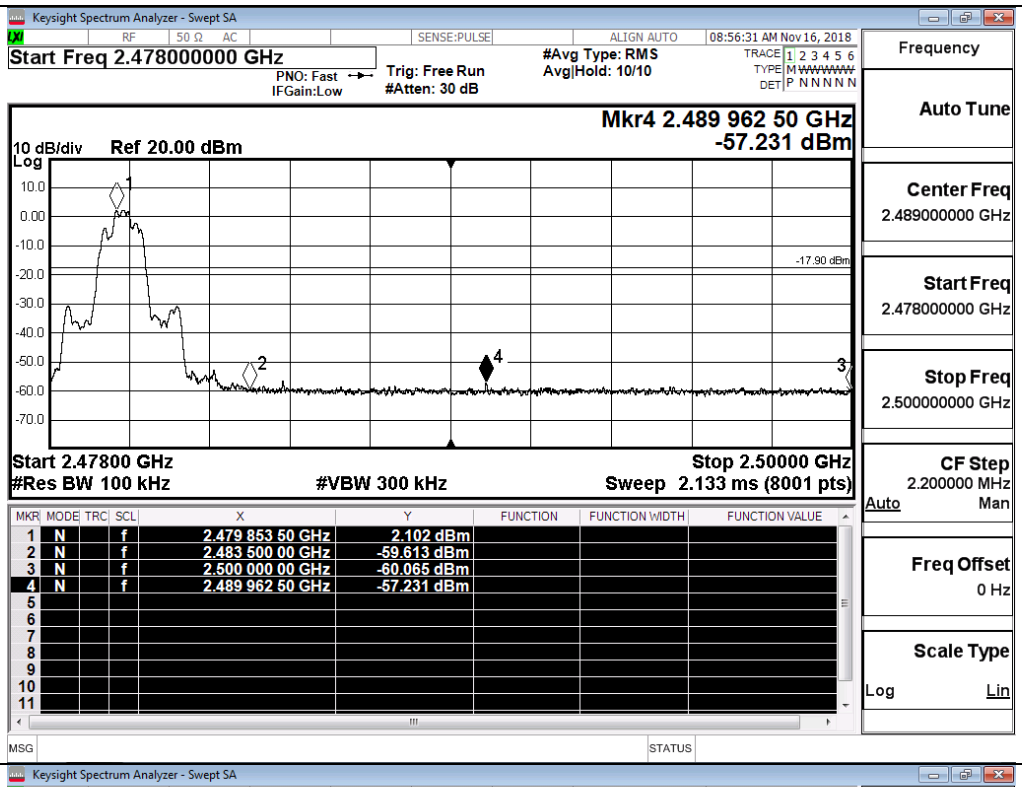
8DPSK/LCH/No Hop



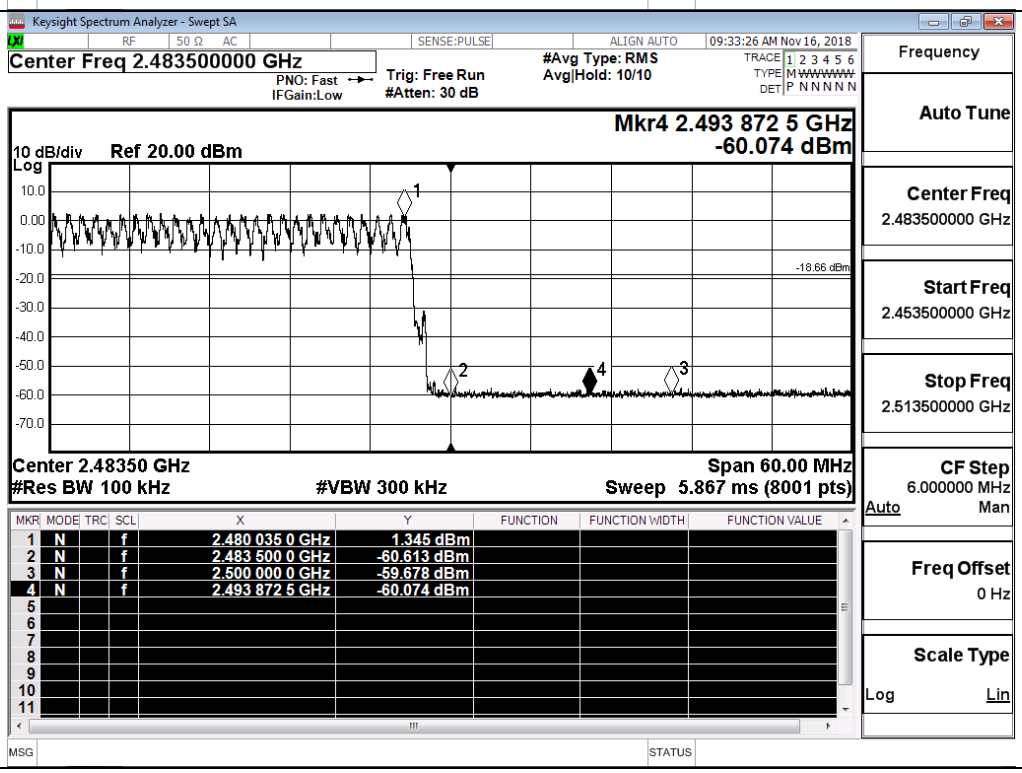
8DPSK/LCH/Hop



8DPSK/HCH/No Hop



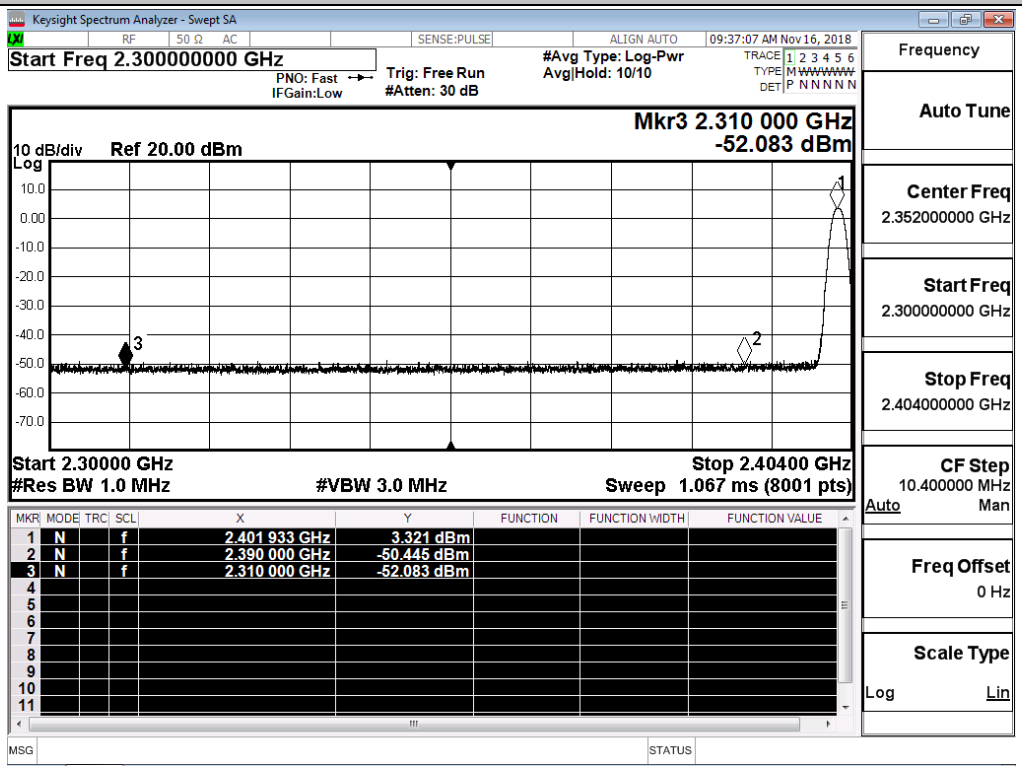
8DPSK/HCH/Hop



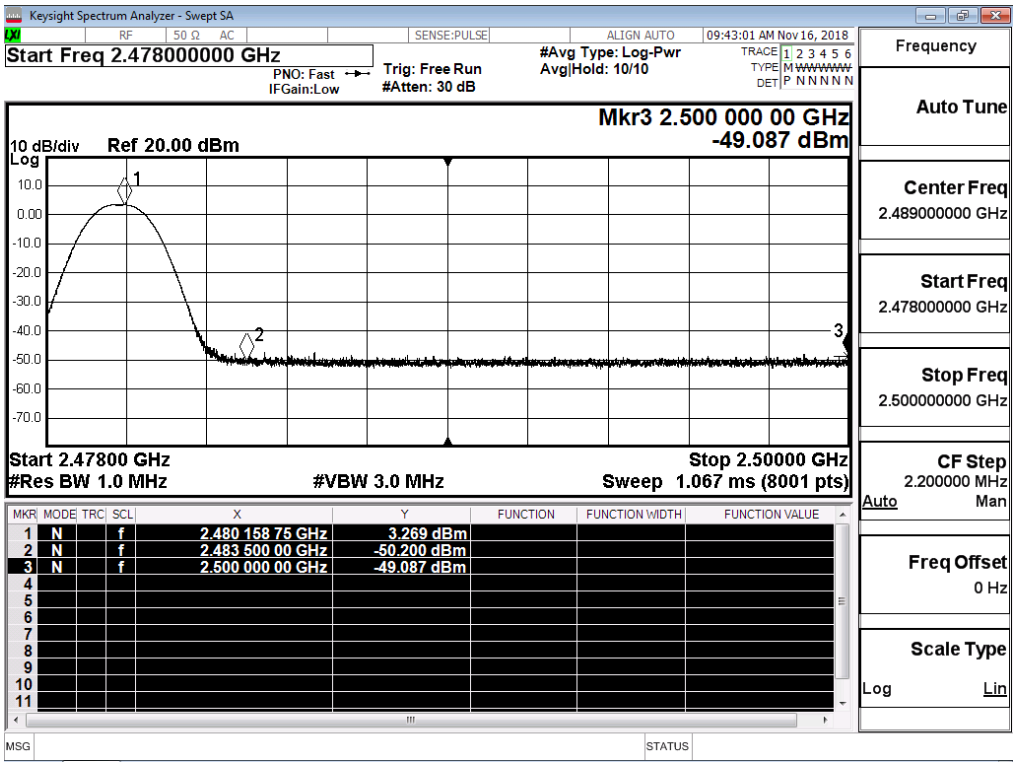
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-52.083	2.0	0	45.18	PEAK	74	PASS
	Off	2390.0	-50.445	2.0	0	46.82	PEAK	74	PASS
	Off	2483.5	-50.200	2.0	0	47.06	PEAK	74	PASS
	Off	2500.0	-49.087	2.0	0	48.17	PEAK	74	PASS
π/4DQPSK	Off	2310.0	-51.314	2.0	0	45.95	PEAK	74	PASS
	Off	2390.0	-51.584	2.0	0	45.68	PEAK	74	PASS
	Off	2483.5	-50.786	2.0	0	46.47	PEAK	74	PASS
	Off	2500.0	-50.335	2.0	0	46.93	PEAK	74	PASS
8DPSK	Off	2310.0	-50.834	2.0	0	46.43	PEAK	74	PASS
	Off	2390.0	-50.778	2.0	0	46.48	PEAK	74	PASS
	Off	2483.5	-48.074	2.0	0	49.19	PEAK	74	PASS
	Off	2500.0	-50.558	2.0	0	46.70	PEAK	74	PASS

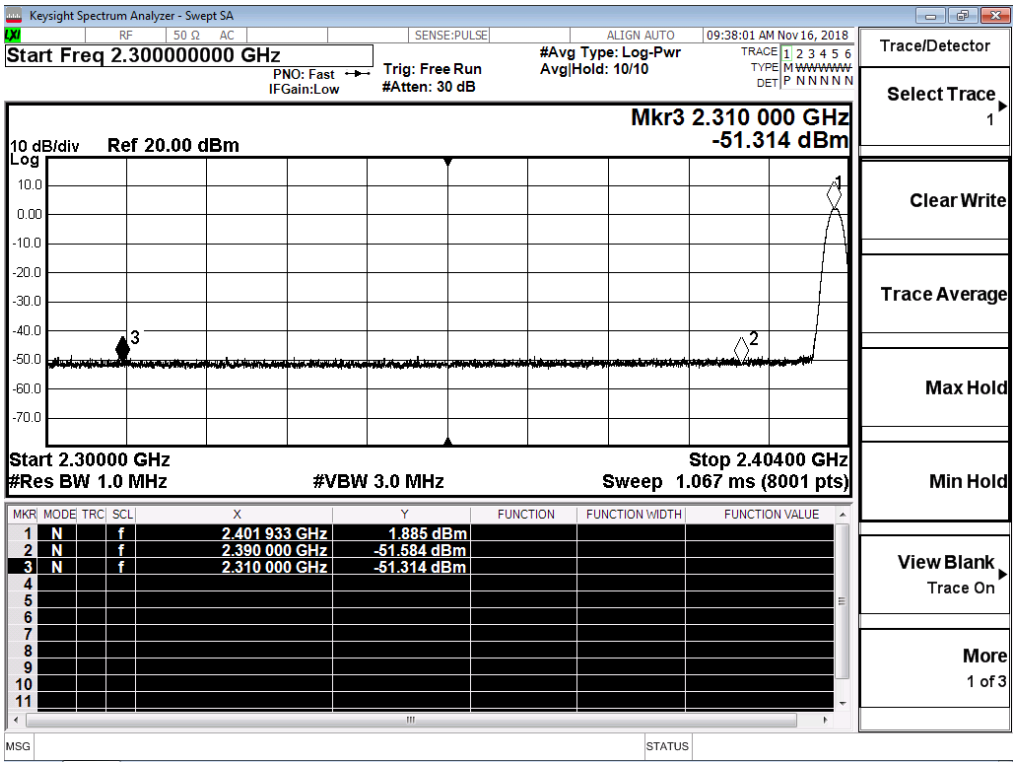
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (Low Channel)



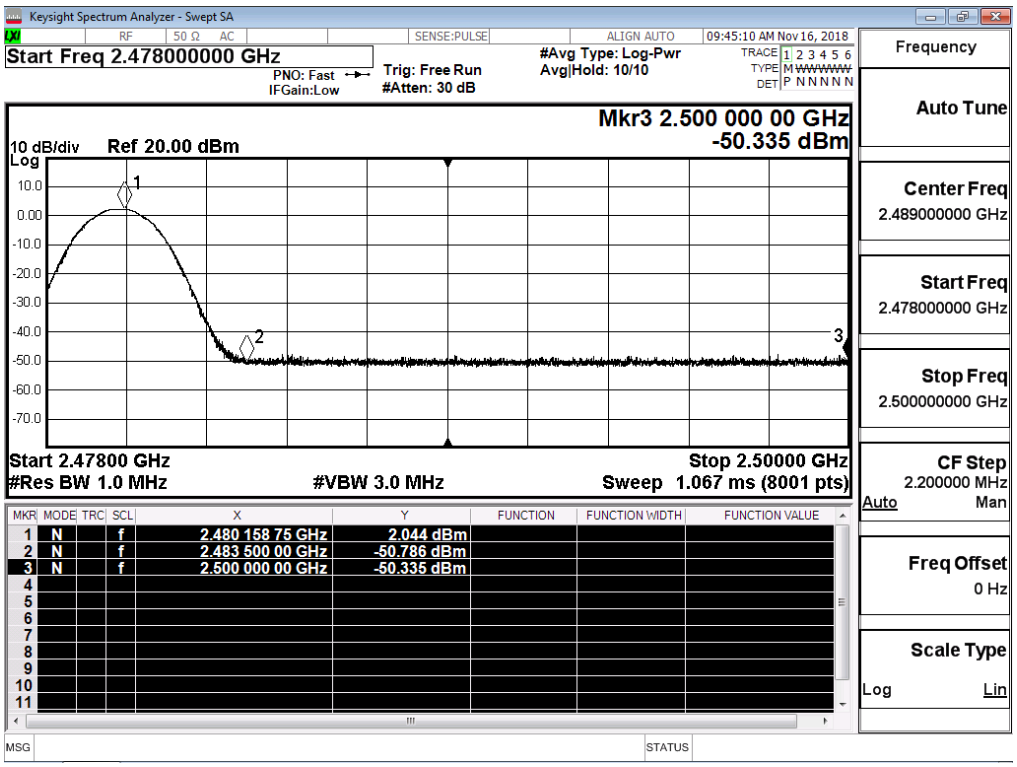
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (High Channel)



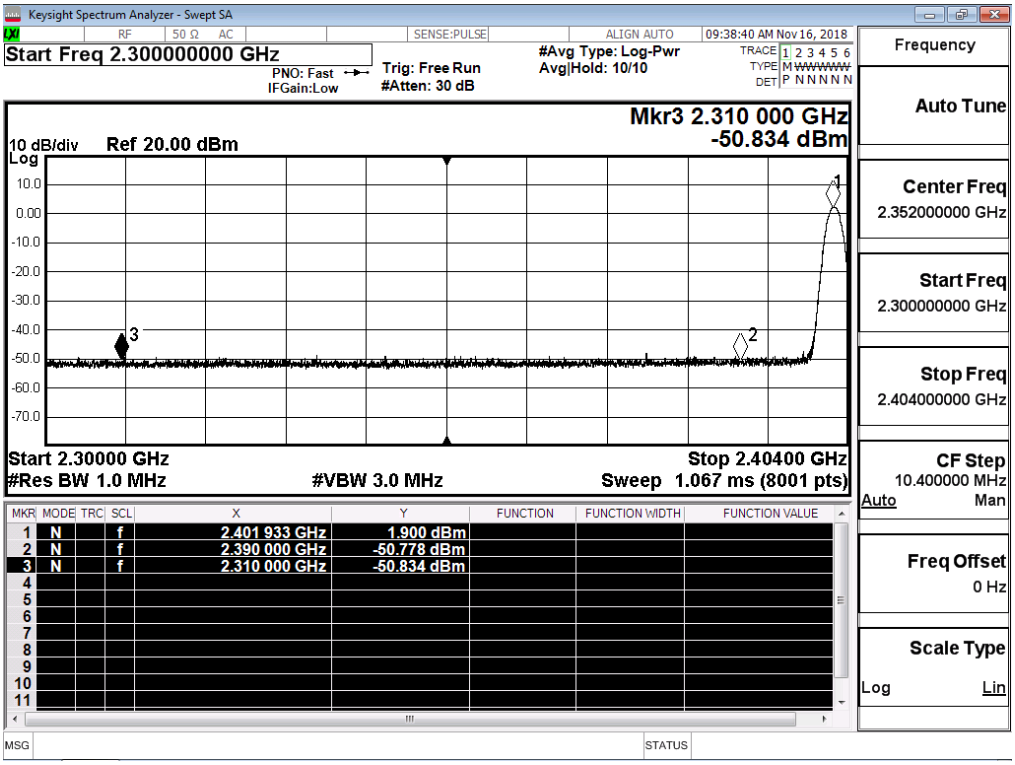
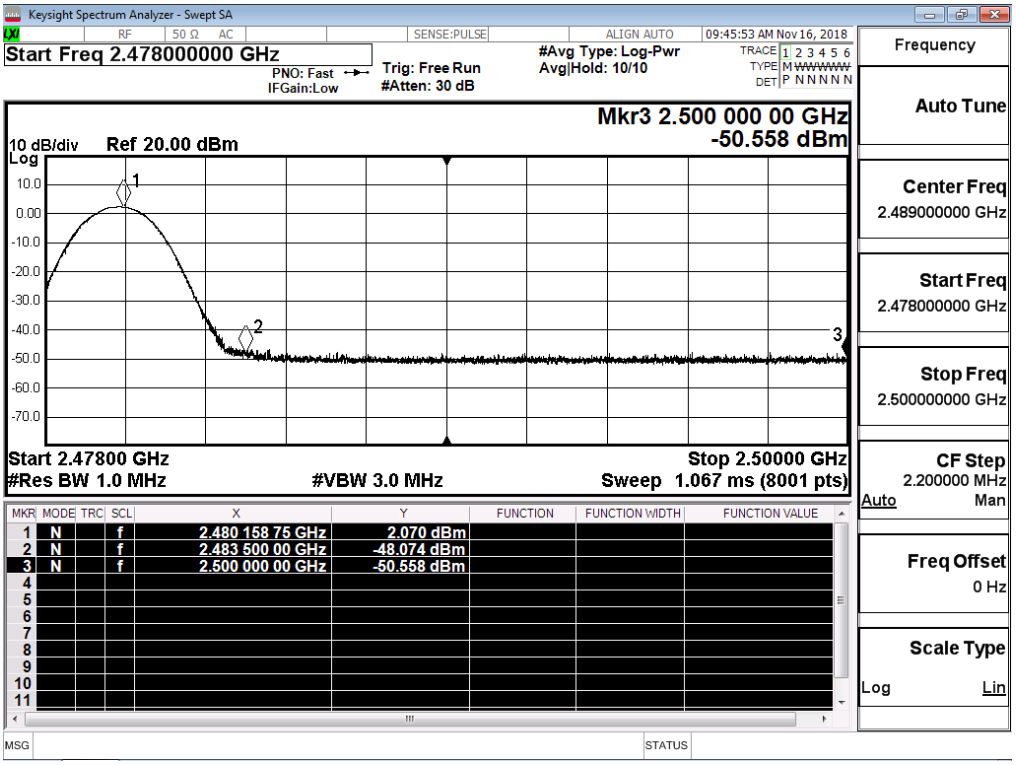
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (Low Channel)



Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (High Channel)



Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (High Channel)