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

Product Name: Shenzhen KingAnda Technology Development Co., Ltd.
Trade Mark: HBQ kinganda

Test Model: Q13s

FCC ID: 2AOZM-Q13S

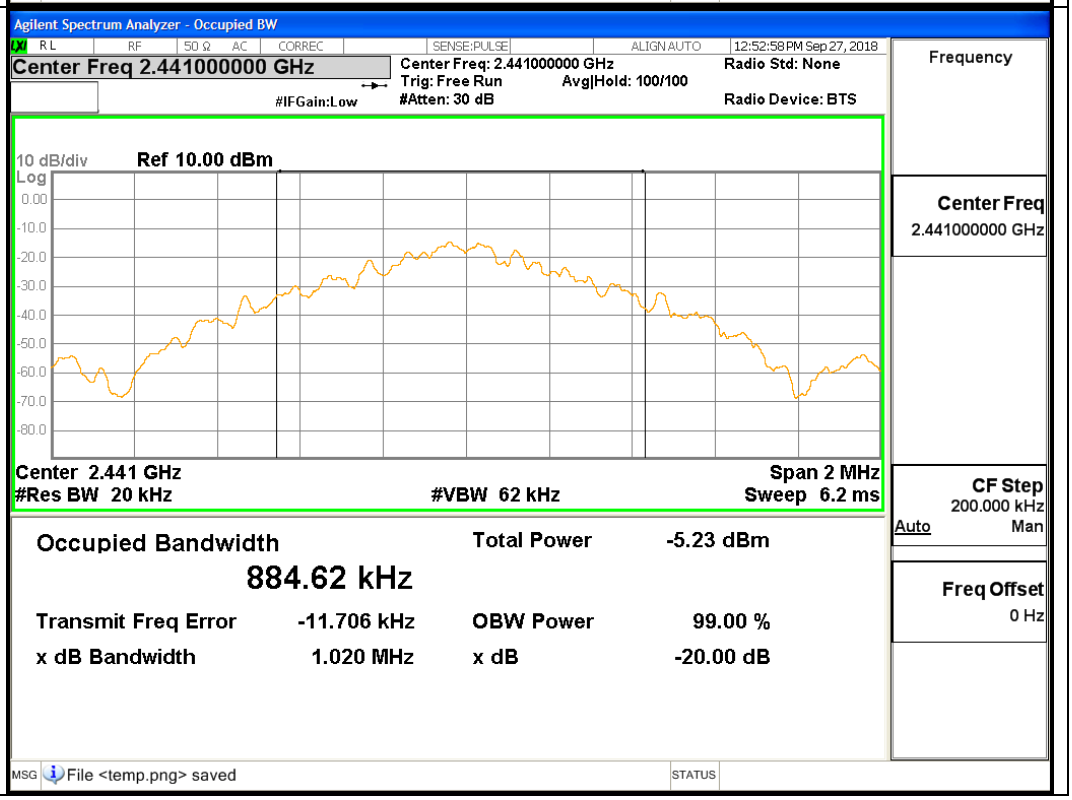
Environmental Conditions

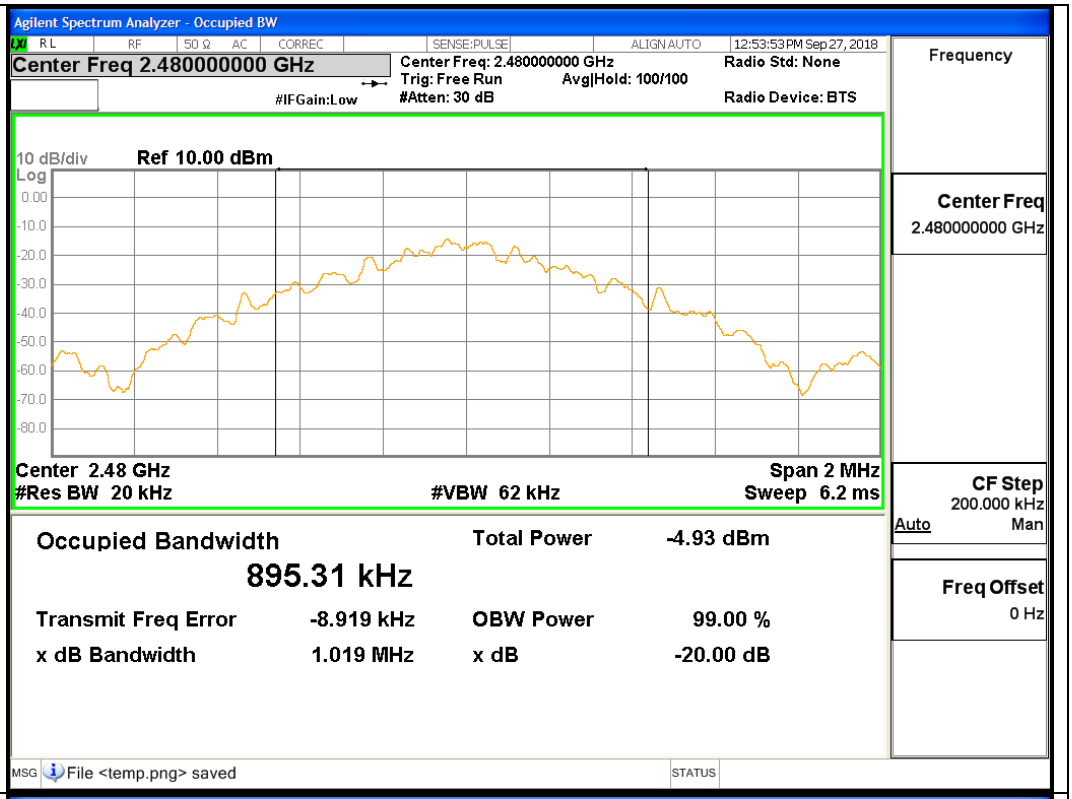
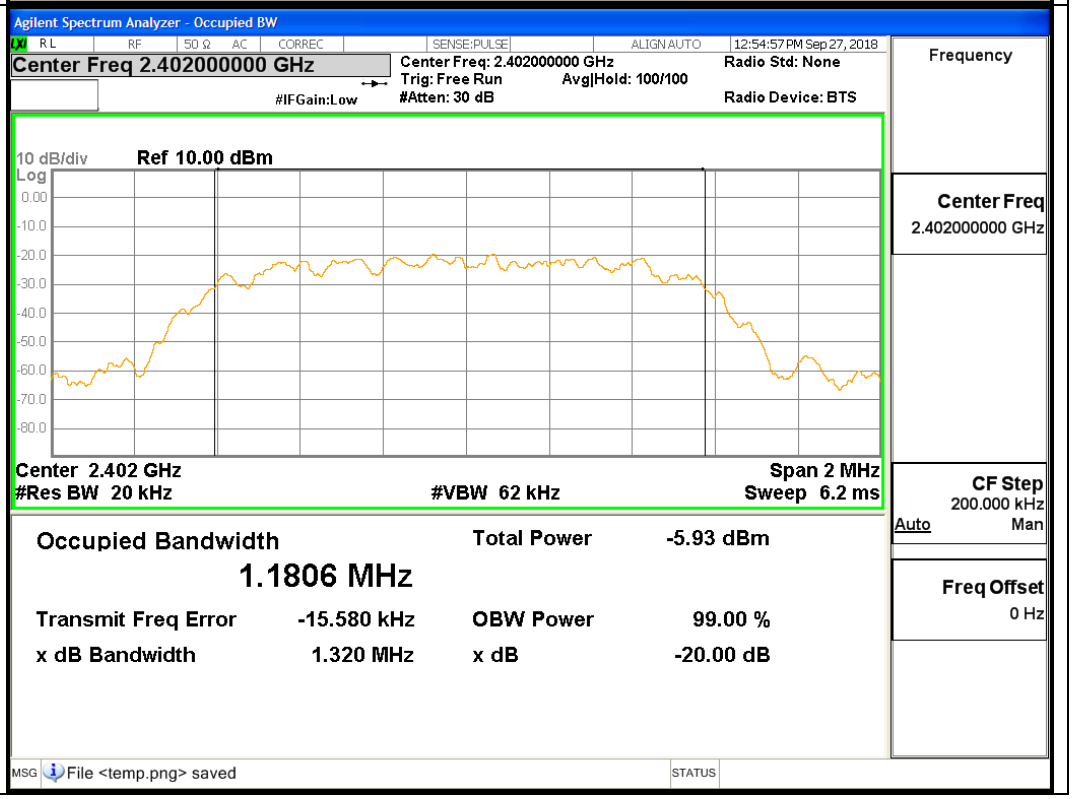
Temperature:	24.2 ° C
Relative Humidity:	55%
ATM Pressure:	100.0 kPa
Test Engineer:	Gary Qian
Supervised by:	Eden Hu

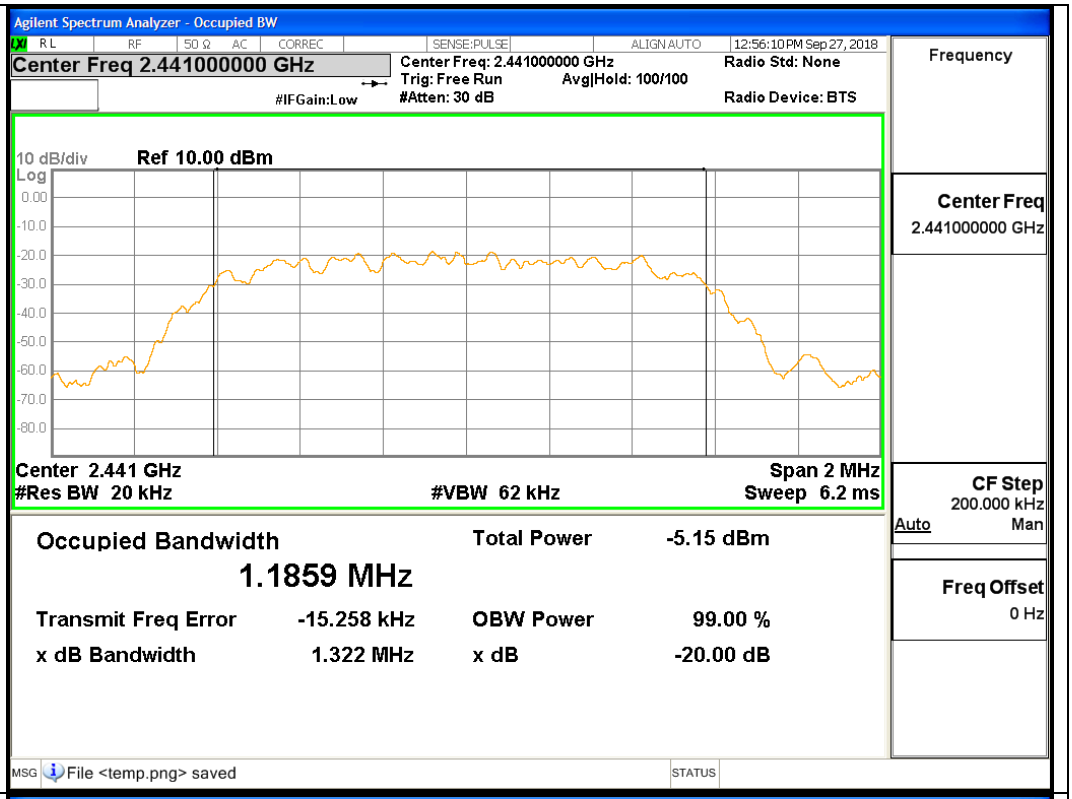
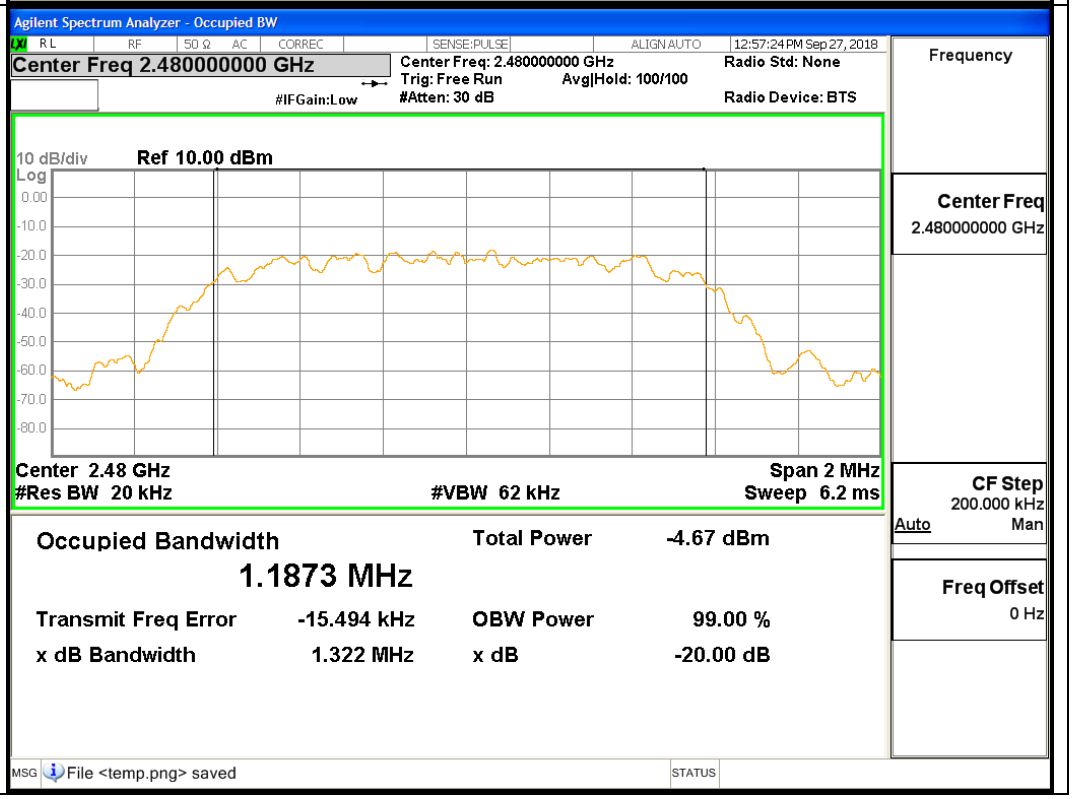
A.1. 20 dB Bandwidth

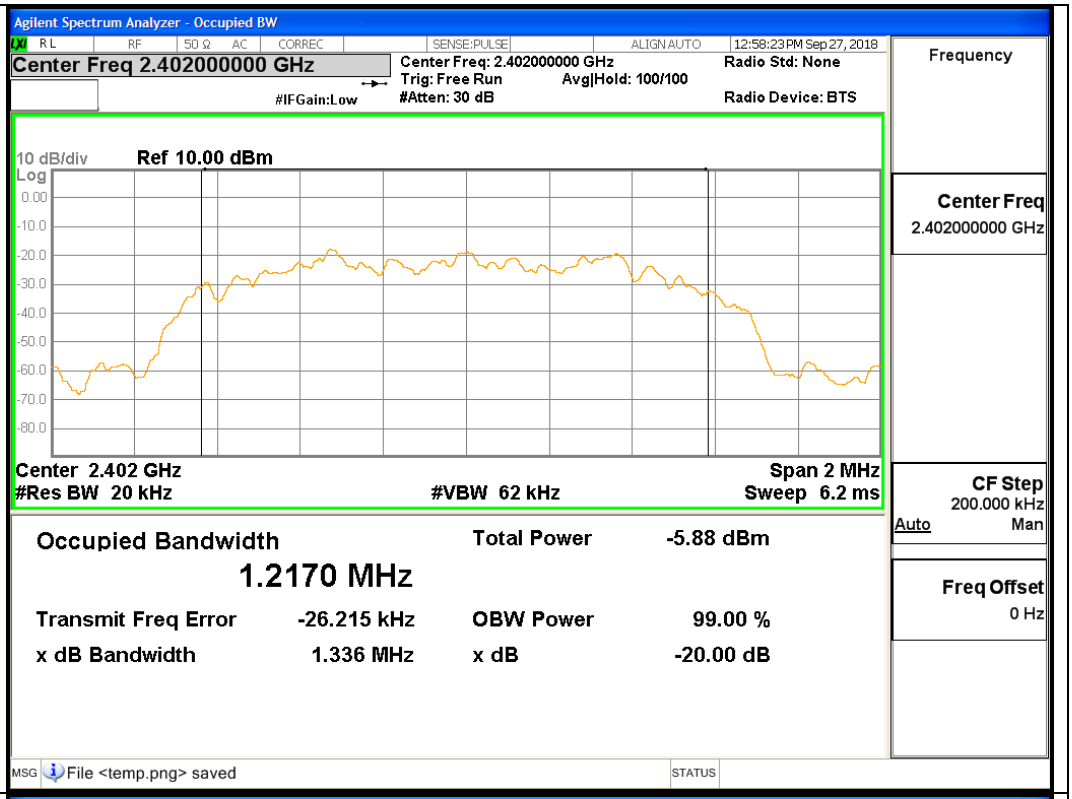
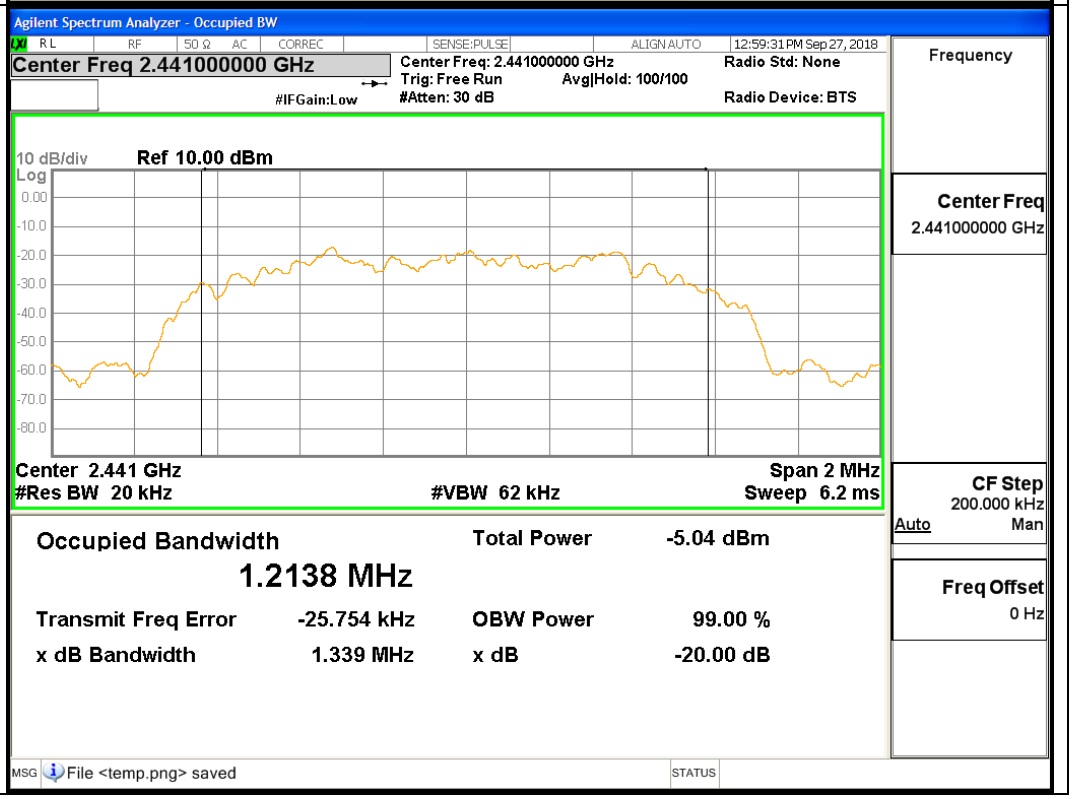
Mode	Channel.	20dB Bandwidth [MHz]	Limit(MHz)	Verdict
GFSK	LCH	1.016	Not Specified	PASS
GFSK	MCH	1.020	Not Specified	PASS
GFSK	HCH	1.019	Not Specified	PASS
π/4DQPSK	LCH	1.320	Not Specified	PASS
π/4DQPSK	MCH	1.322	Not Specified	PASS
π/4DQPSK	HCH	1.322	Not Specified	PASS
8DPSK	LCH	1.336	Not Specified	PASS
8DPSK	MCH	1.339	Not Specified	PASS
8DPSK	HCH	1.335	Not Specified	PASS

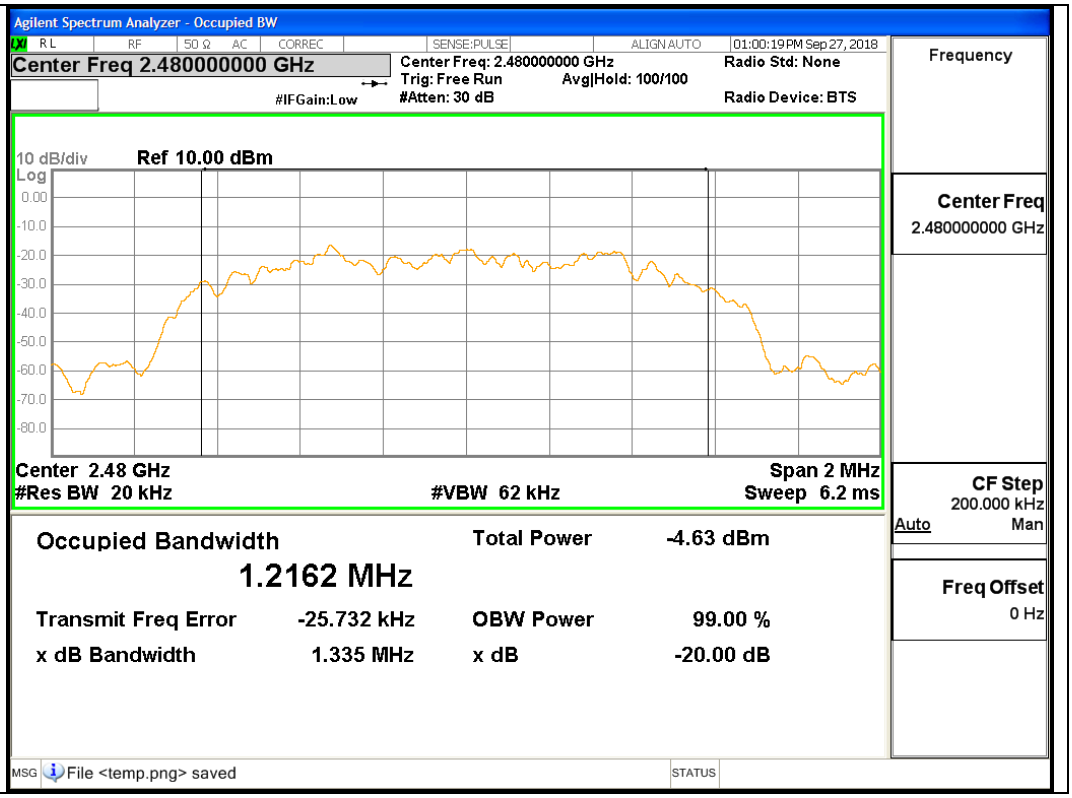
Test Graph

Graphs	
GFSK/LCH	
GFSK/MCH	

GFSK/HCH	
π/4DQPSK/LCH	

π/4DQPSK/MCH	
π/4DQPSK/HCH	

8DPSK/LCH	
8DPSK/MCH	

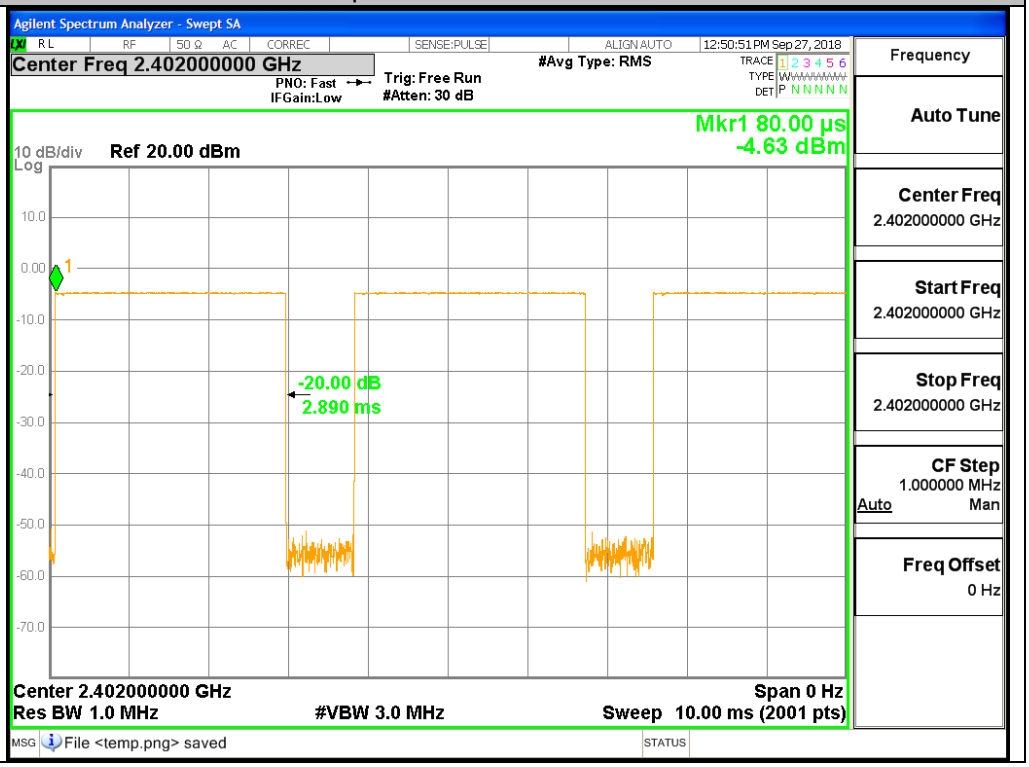
8DPSK/HCH	

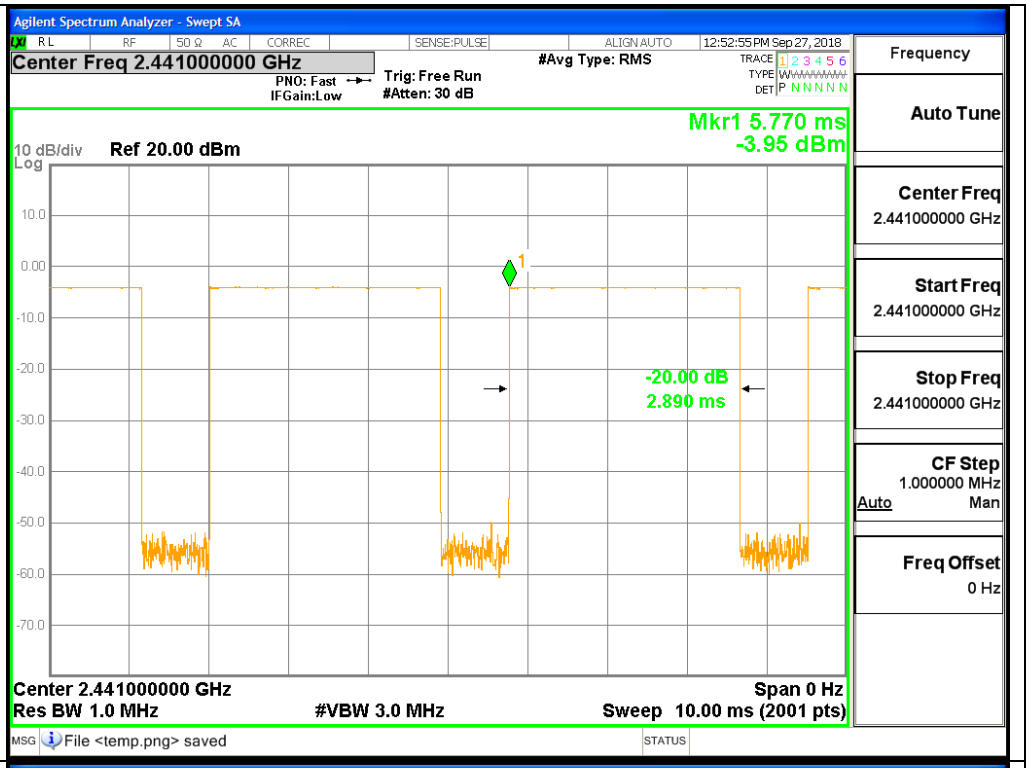
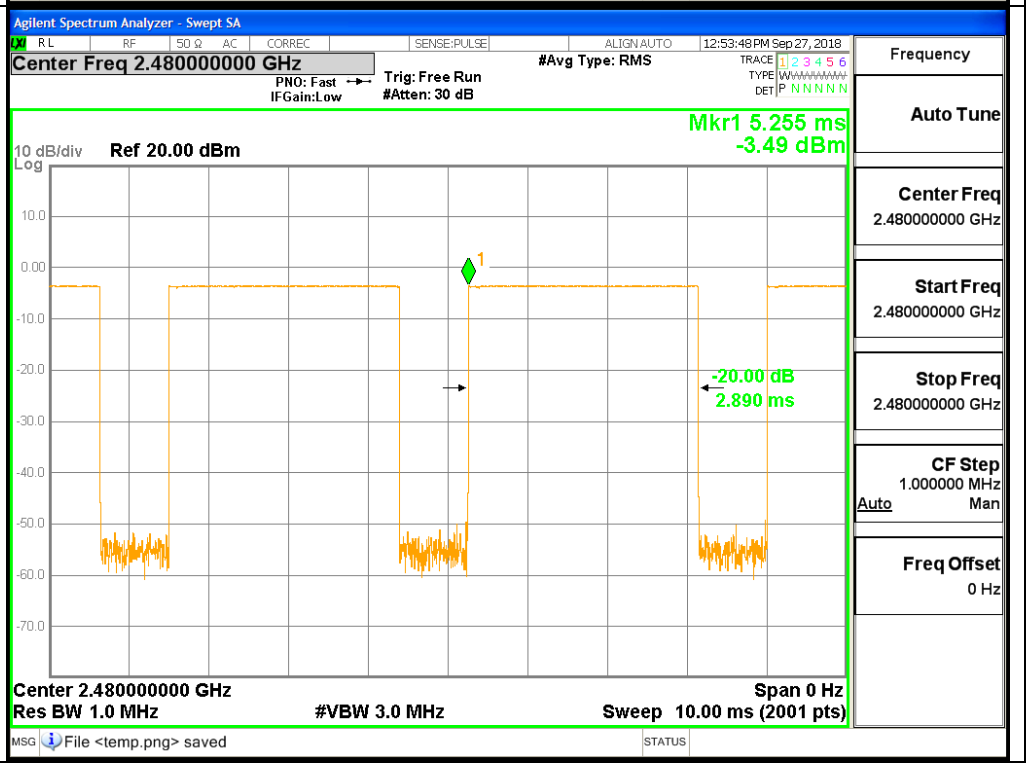
Agilent Spectrum Analyzer - Occupied BW
RL
RF
50 Ω AC
CORREC
SENSE:PULSE
ALIGN AUTO
01:00:19 PM Sep 27, 2018
Center Freq 2.480000000 GHz
Center Freq: 2.480000000 GHz
Trig: Free Run
Avg|Hold: 100/100
#IFGain:Low
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
Frequency
10 dB/div
Log
Ref 10.00 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
Center Freq
2.480000000 GHz
Center 2.48 GHz
#Res BW 20 kHz
#VBW 62 kHz
Span 2 MHz
Sweep 6.2 ms
CF Step
200.000 kHz
Auto
Man
Occupied Bandwidth
1.2162 MHz
Total Power
-4.63 dBm
Transmit Freq Error
-25.732 kHz
OBW Power
99.00 %
x dB Bandwidth
1.335 MHz
x dB
-20.00 dB
Freq Offset
0 Hz
MSG
File <temp.png> saved
STATUS

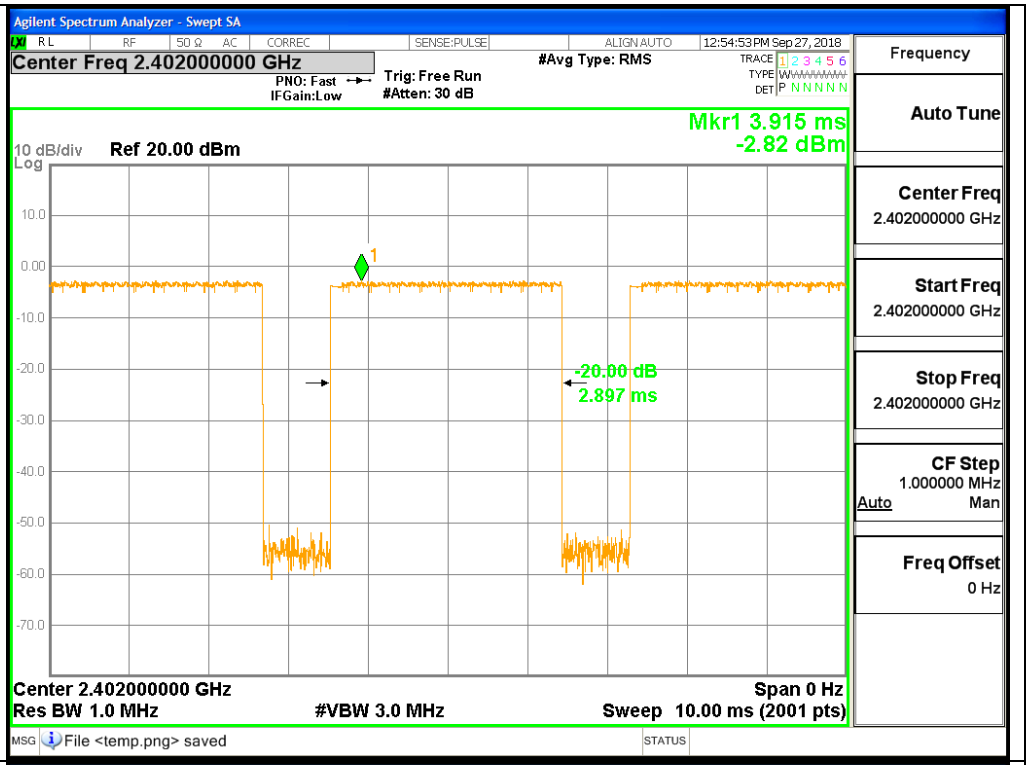
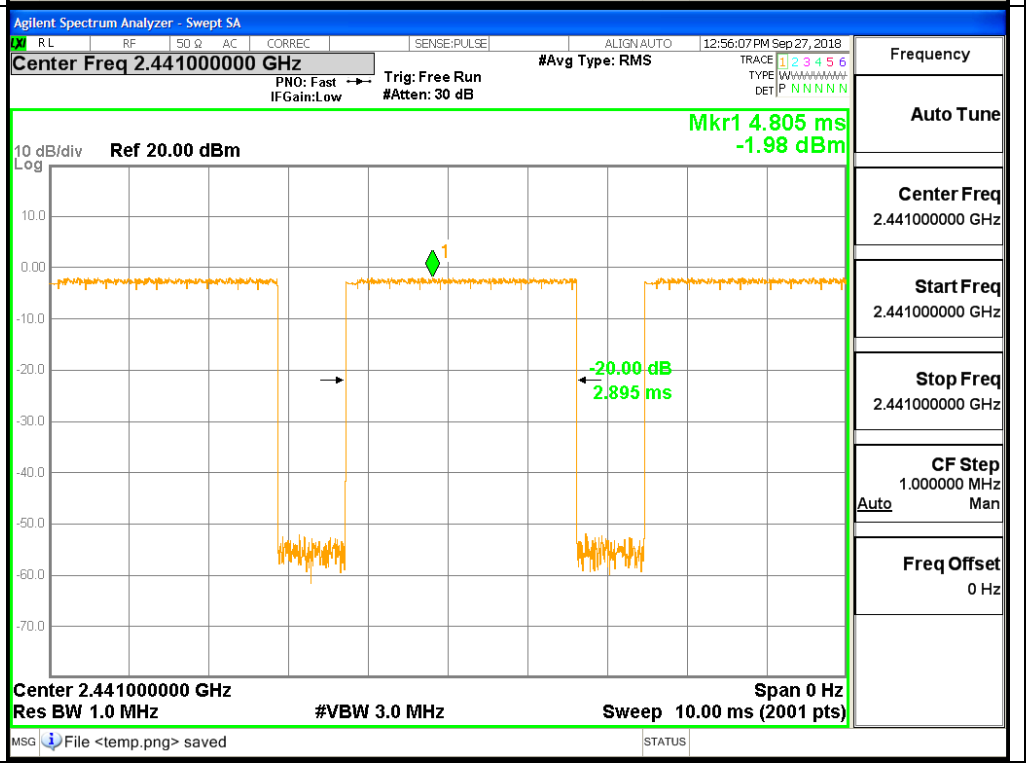
A.2. Dwell Time

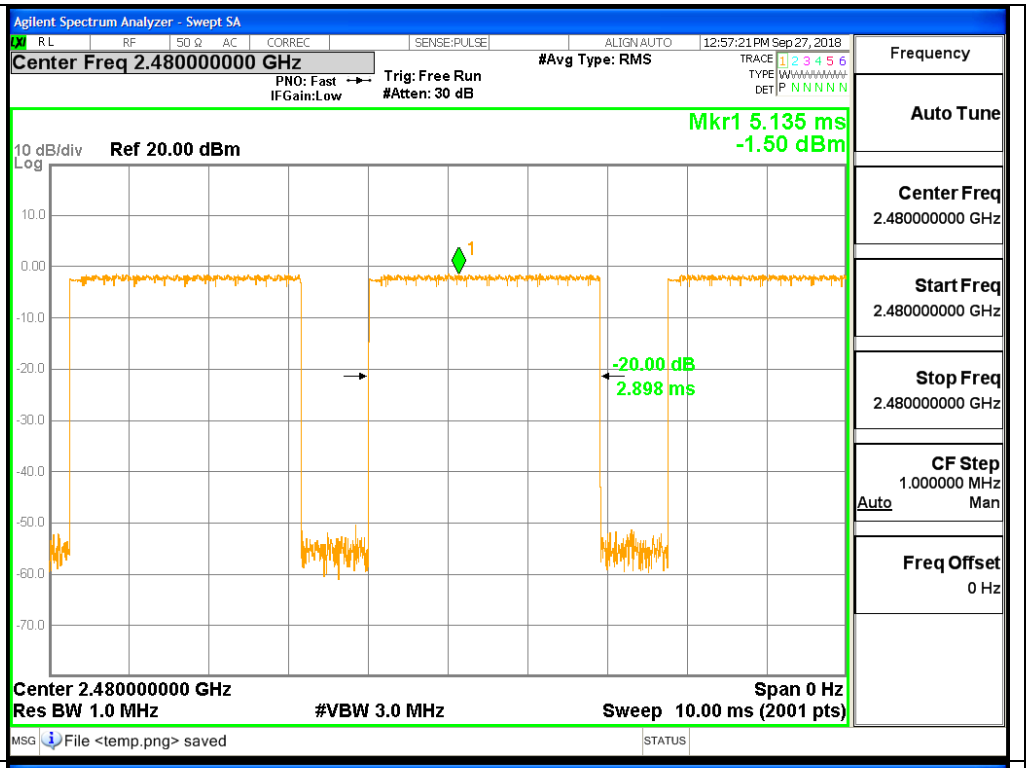
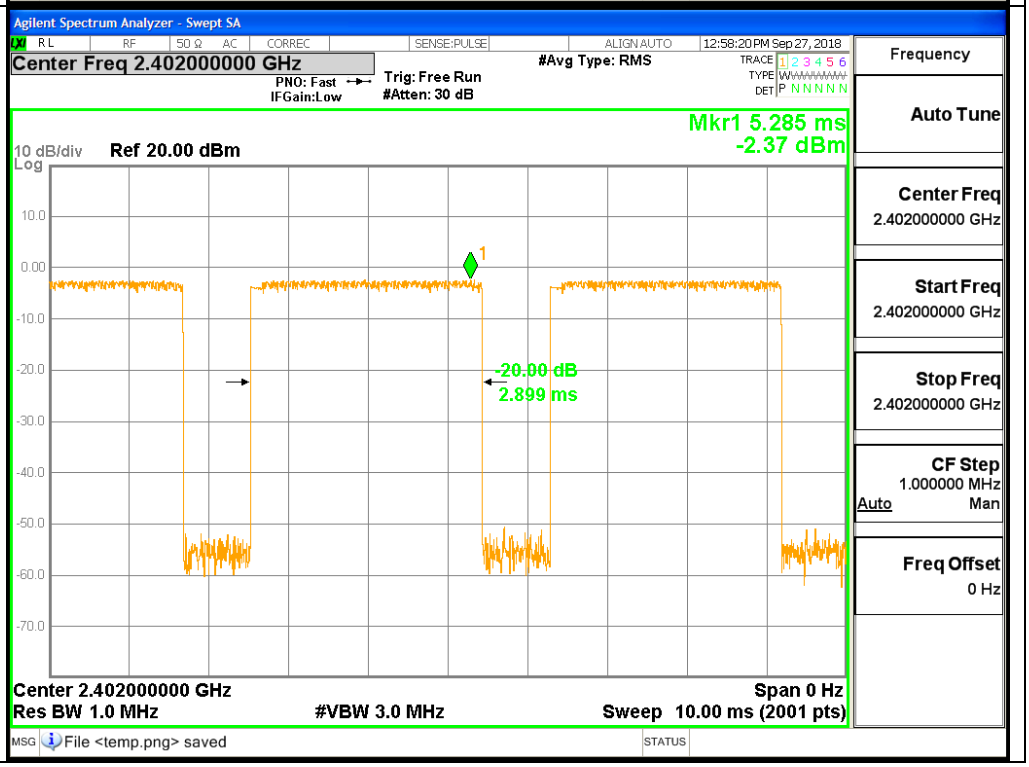
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.890	106.7	0.308	0.4	PASS
GFSK	DH5	MCH	2.890	106.7	0.308	0.4	PASS
GFSK	DH5	HCH	2.890	106.7	0.308	0.4	PASS
π/4DQPSK	2DH5	LCH	2.897	106.7	0.309	0.4	PASS
π/4DQPSK	2DH5	MCH	2.895	106.7	0.309	0.4	PASS
π/4DQPSK	2DH5	HCH	2.898	106.7	0.309	0.4	PASS
8DPSK	3DH5	LCH	2.899	106.7	0.309	0.4	PASS
8DPSK	3DH5	MCH	2.900	106.7	0.309	0.4	PASS
8DPSK	3DH5	HCH	2.898	106.7	0.309	0.4	PASS

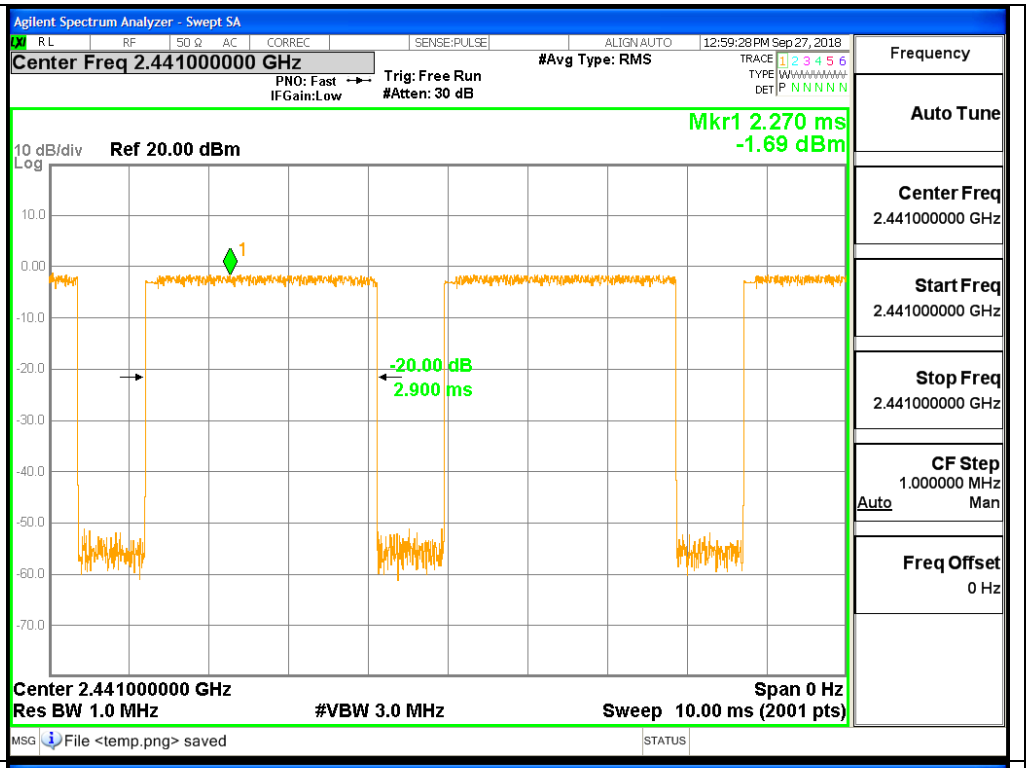
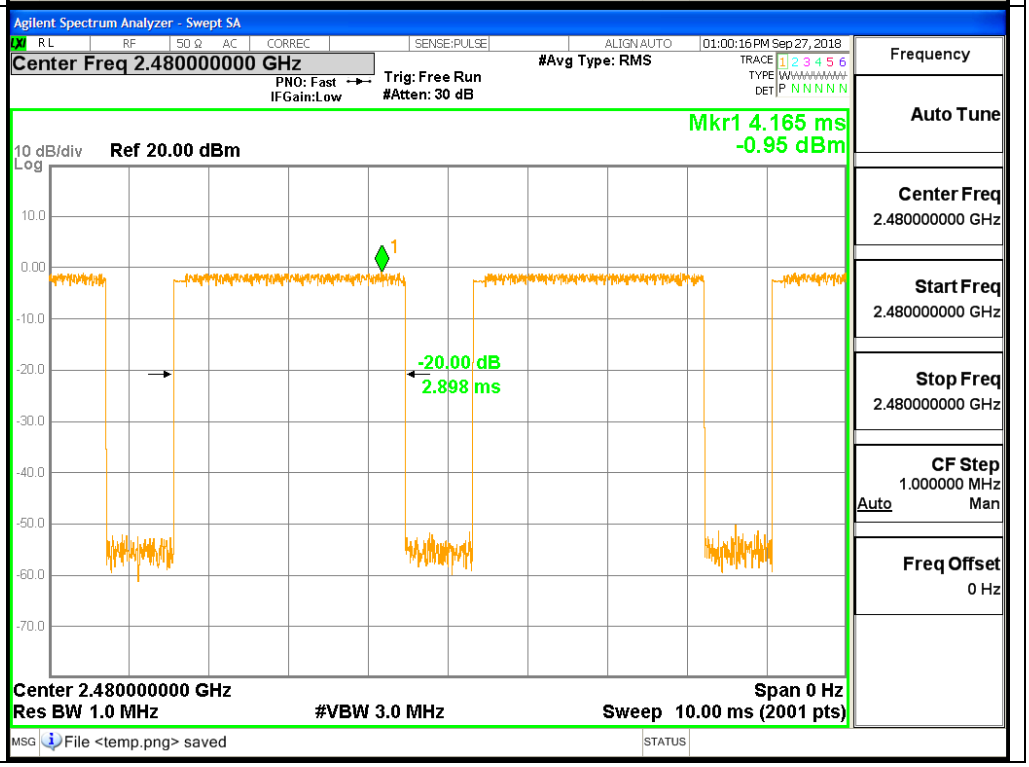
Test Graph

Graphs	
GFSK_DH5/LCH	

GFSK_DH5/MCH	
GFSK_DH5/HCH	

π/4DQPSK _2DH5/LCH	
π/4DQPSK _2DH5/MCH	

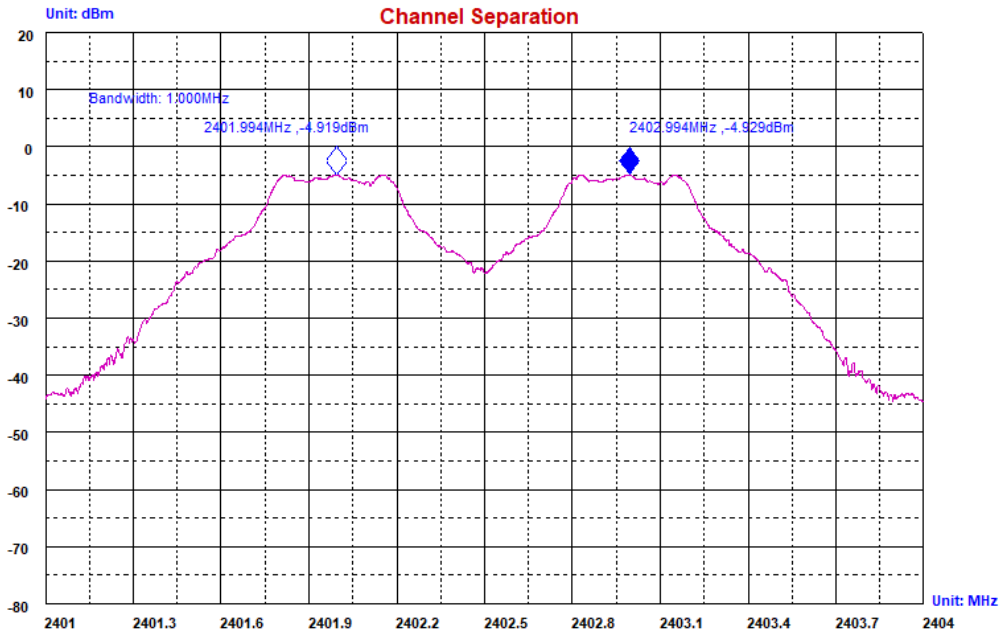
π/4DQPSK _2DH5/HCH	
8DPSK _3DH5/LCH	

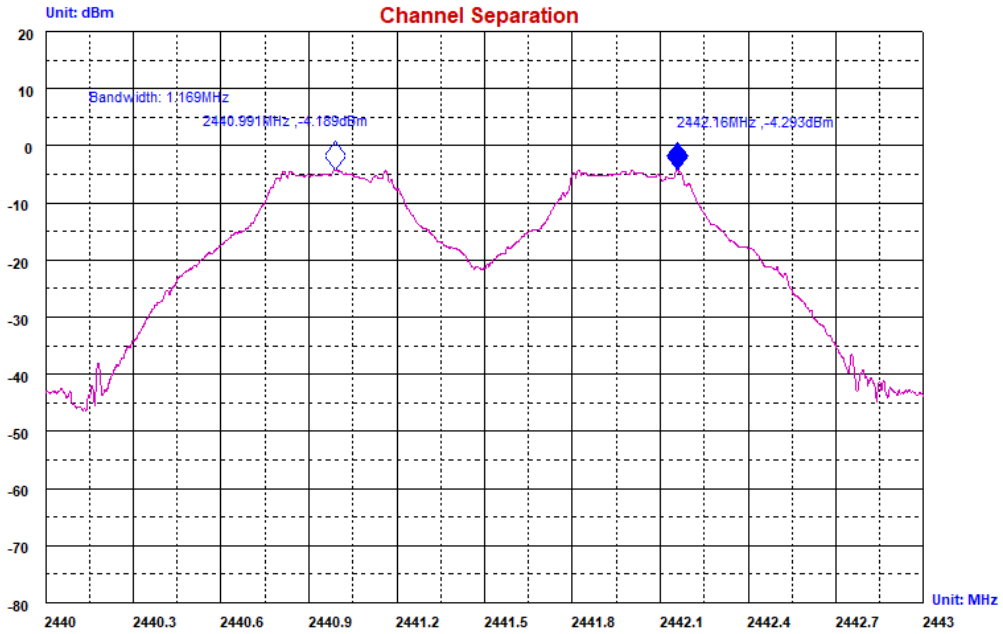
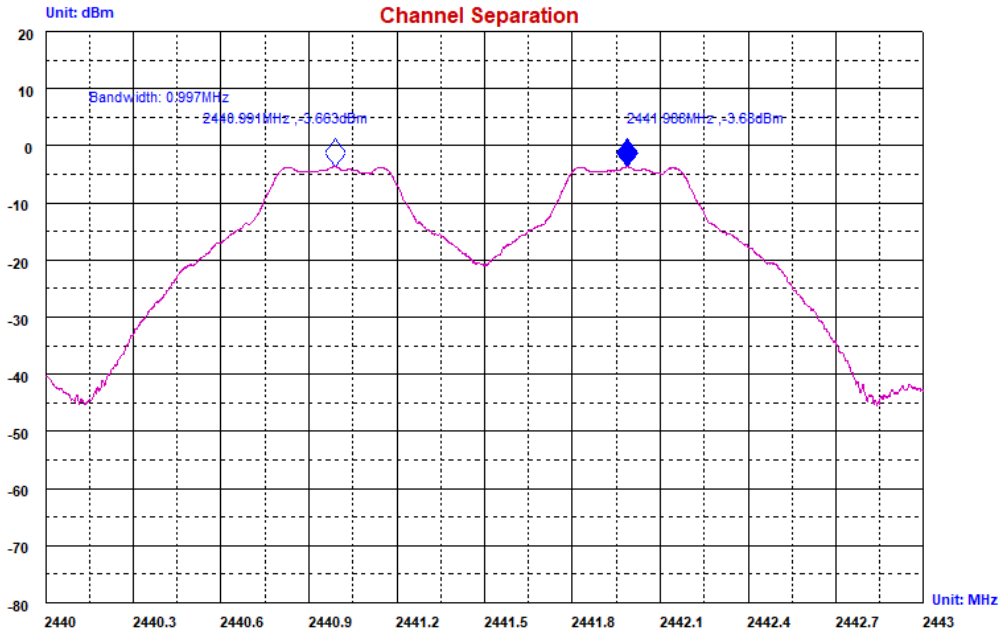
8DPSK _3DH5/MCH	
8DPSK _3DH5/HCH	

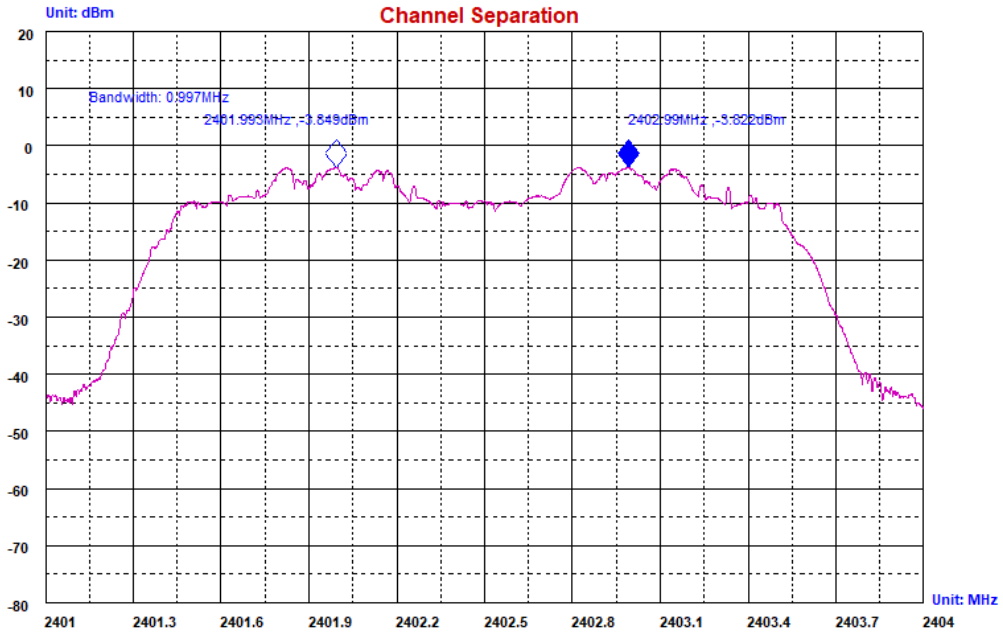
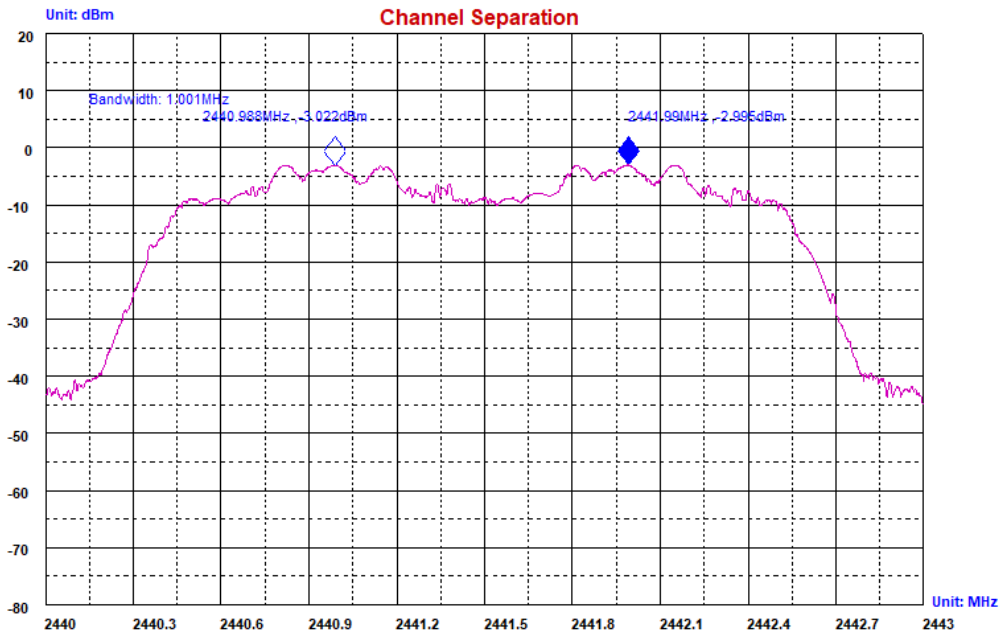
A.3. Carrier Frequency Separation

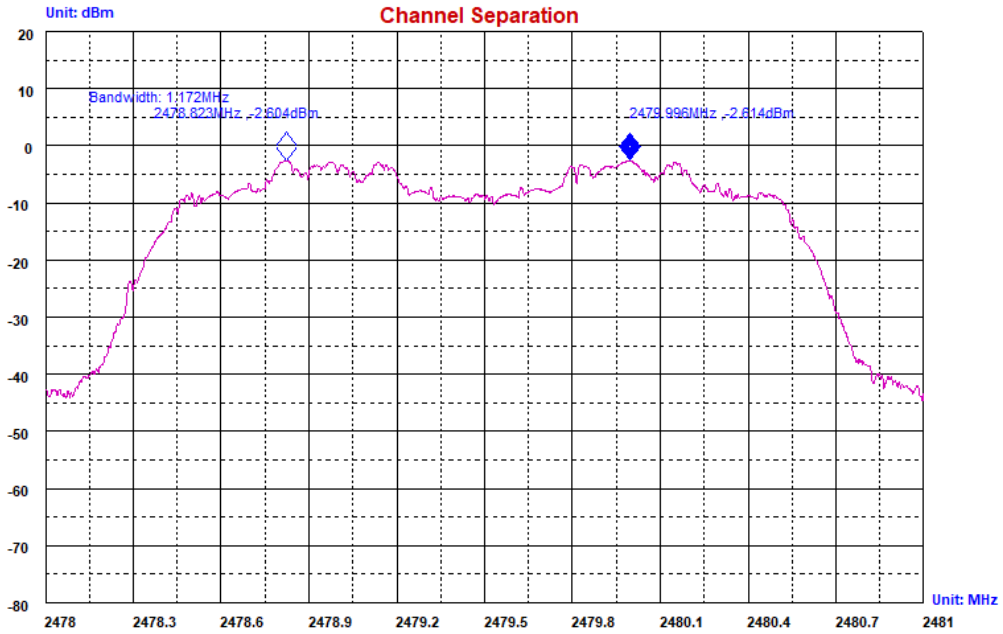
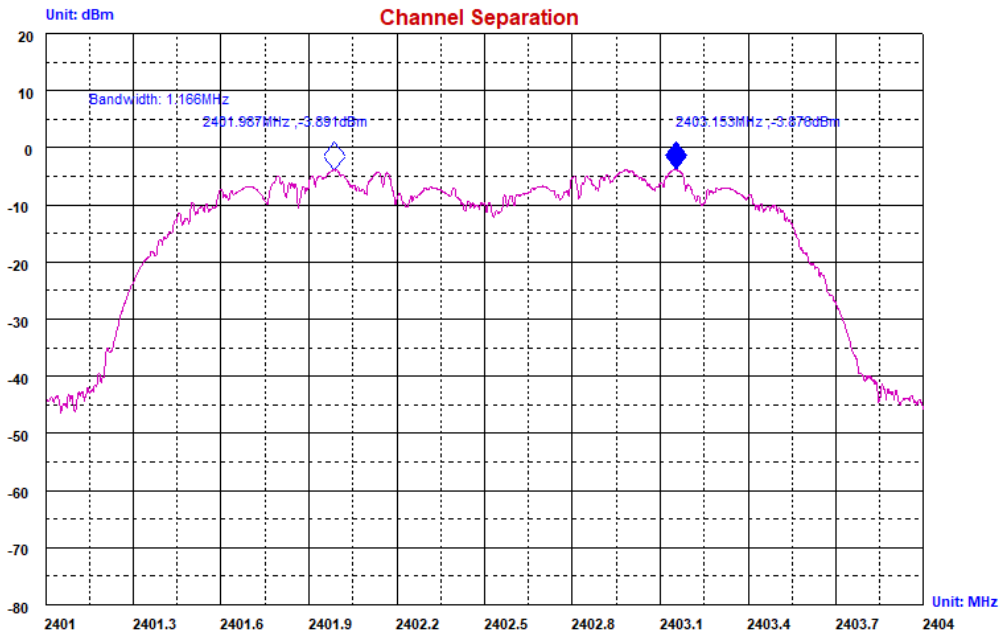
Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.000	0.677	PASS
GFSK	MCH	1.169	0.680	PASS
GFSK	HCH	0.997	0.679	PASS
π/4DQPSK	LCH	0.997	0.880	PASS
π/4DQPSK	MCH	1.001	0.881	PASS
π/4DQPSK	HCH	1.172	0.881	PASS
8DPSK	LCH	1.166	0.891	PASS
8DPSK	MCH	0.996	0.893	PASS
8DPSK	HCH	0.999	0.890	PASS

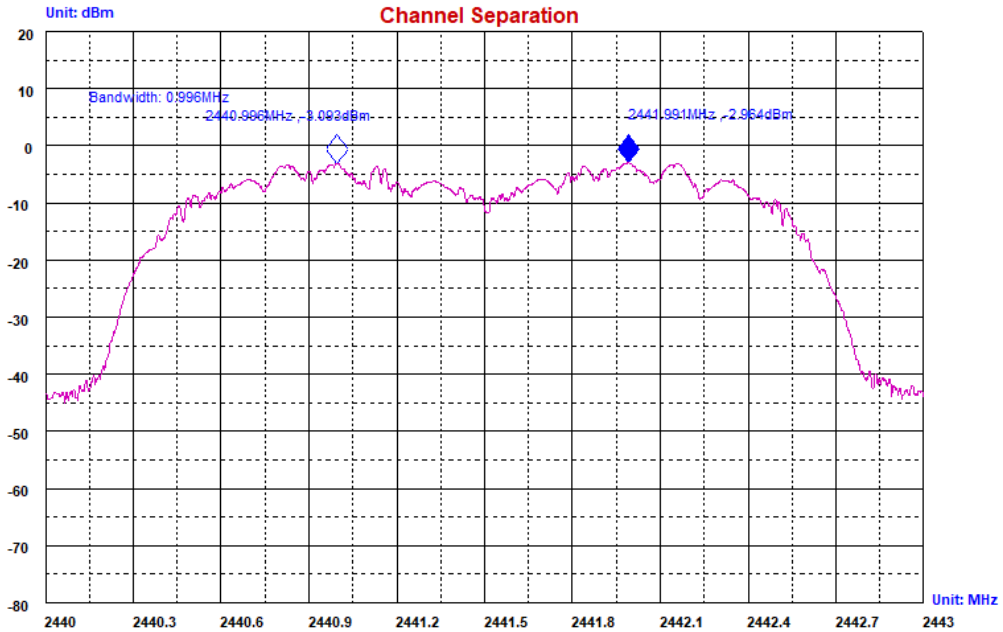
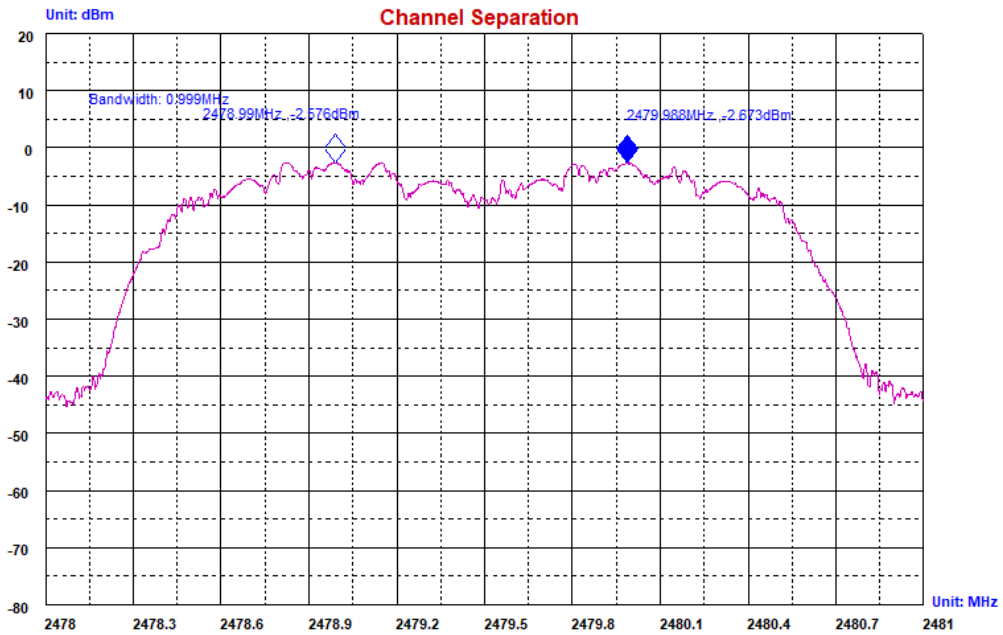
Test Graph

Graphs	
GFSK/LCH	

GFSK/MCH	
GFSK/HCH	

π/4DQPSK/LCH	
π/4DQPSK/MCH	

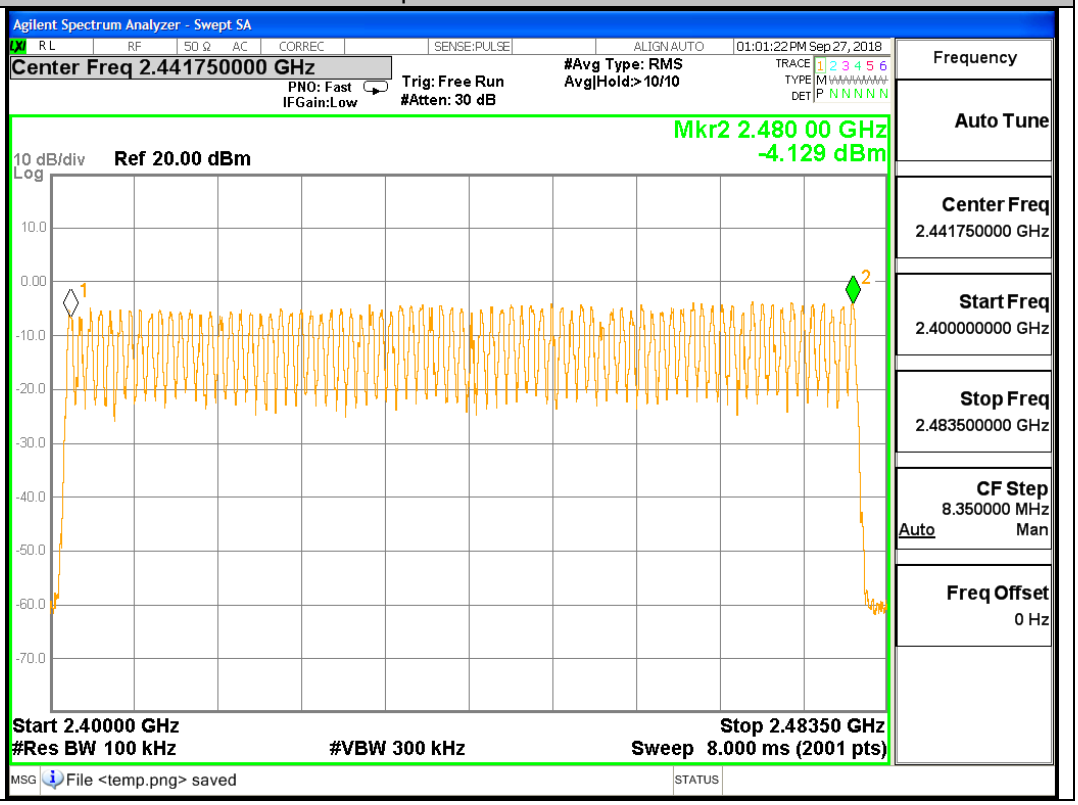
π/4DQPSK/HCH	
8DPSK/LCH	

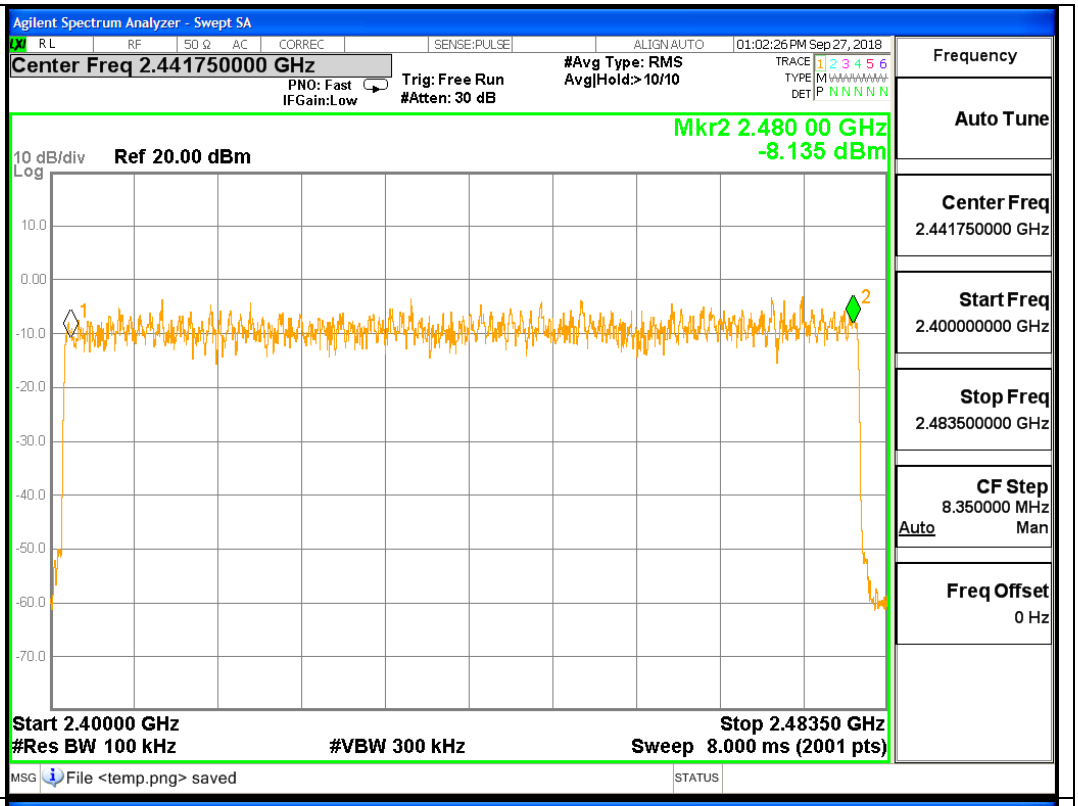
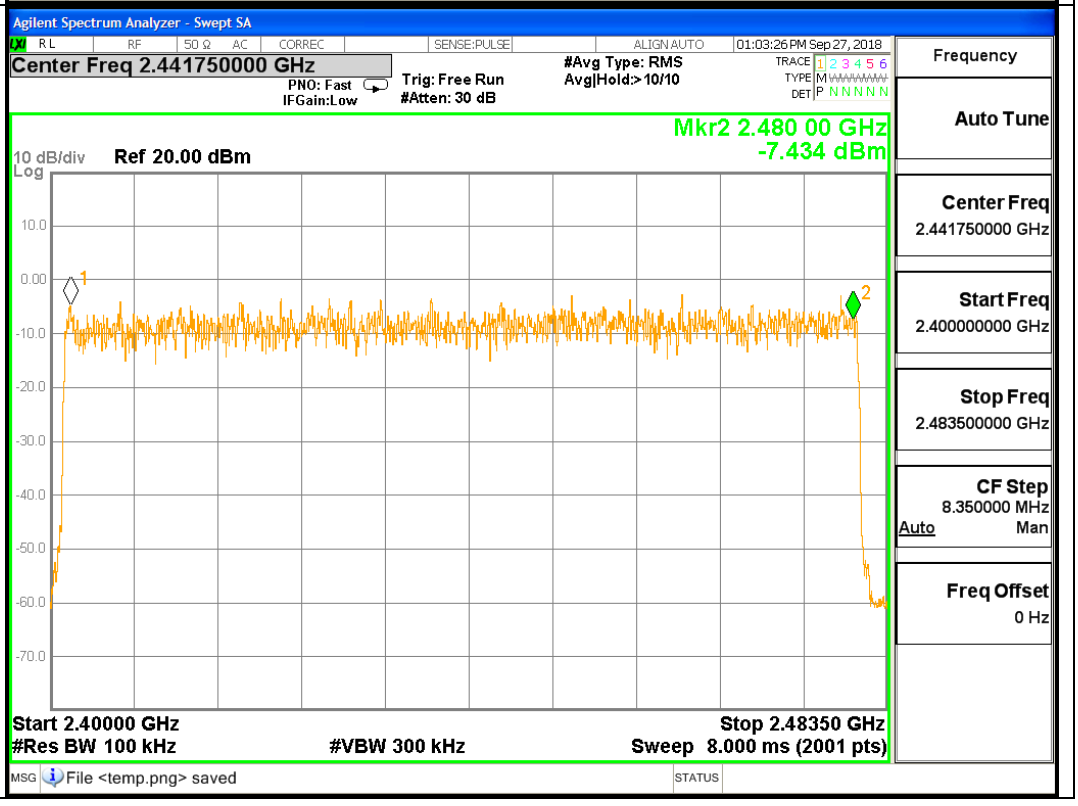
8DPSK/MCH	
8DPSK/HCH	

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 Graph

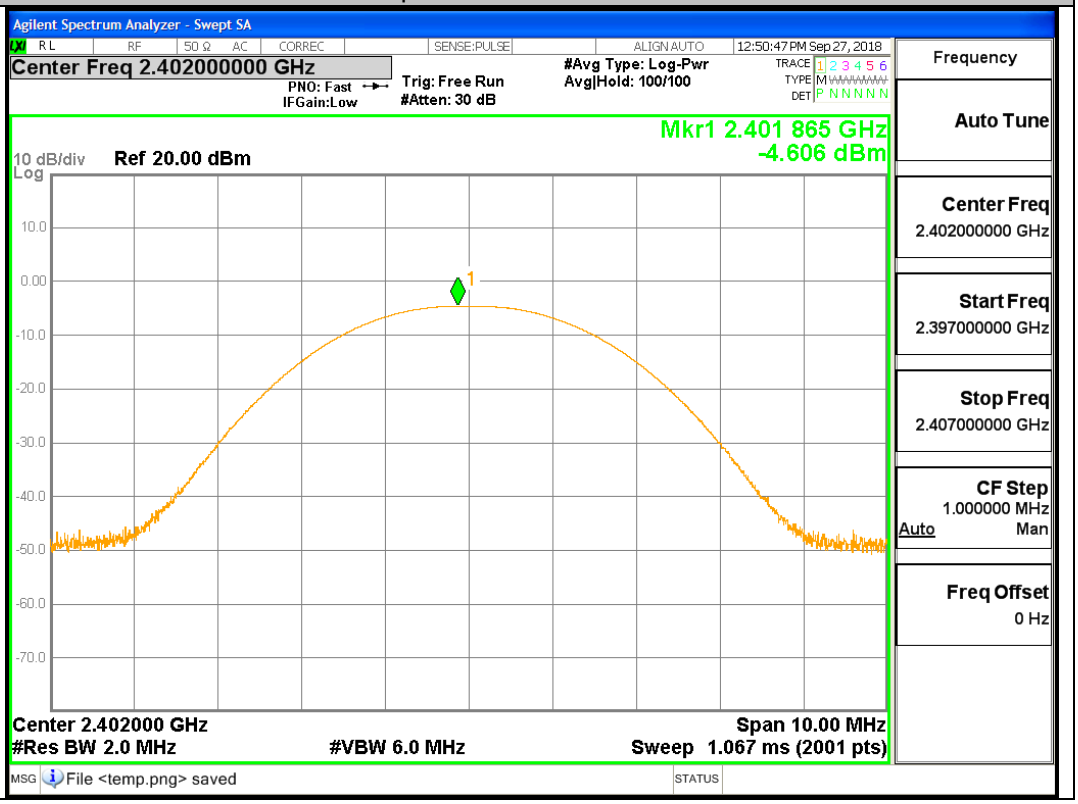
Graphs	
GFSK/Hop	

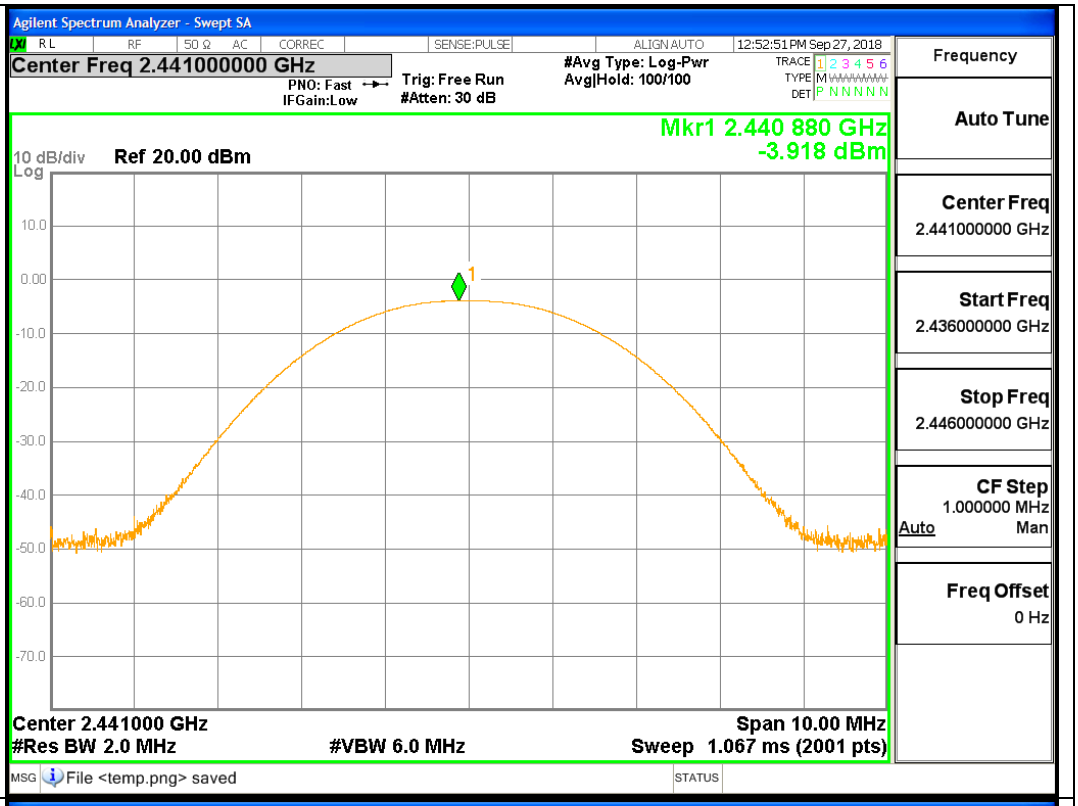
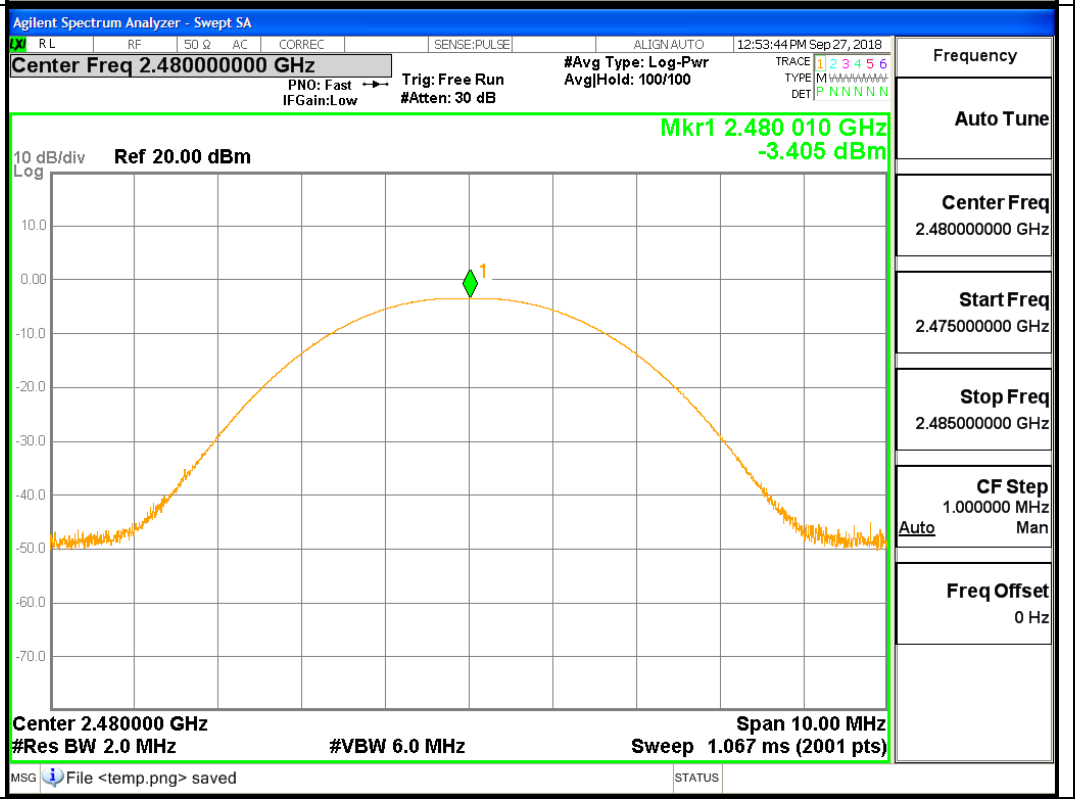
π/4DQPSK/Hop	
8DPSK/Hop	

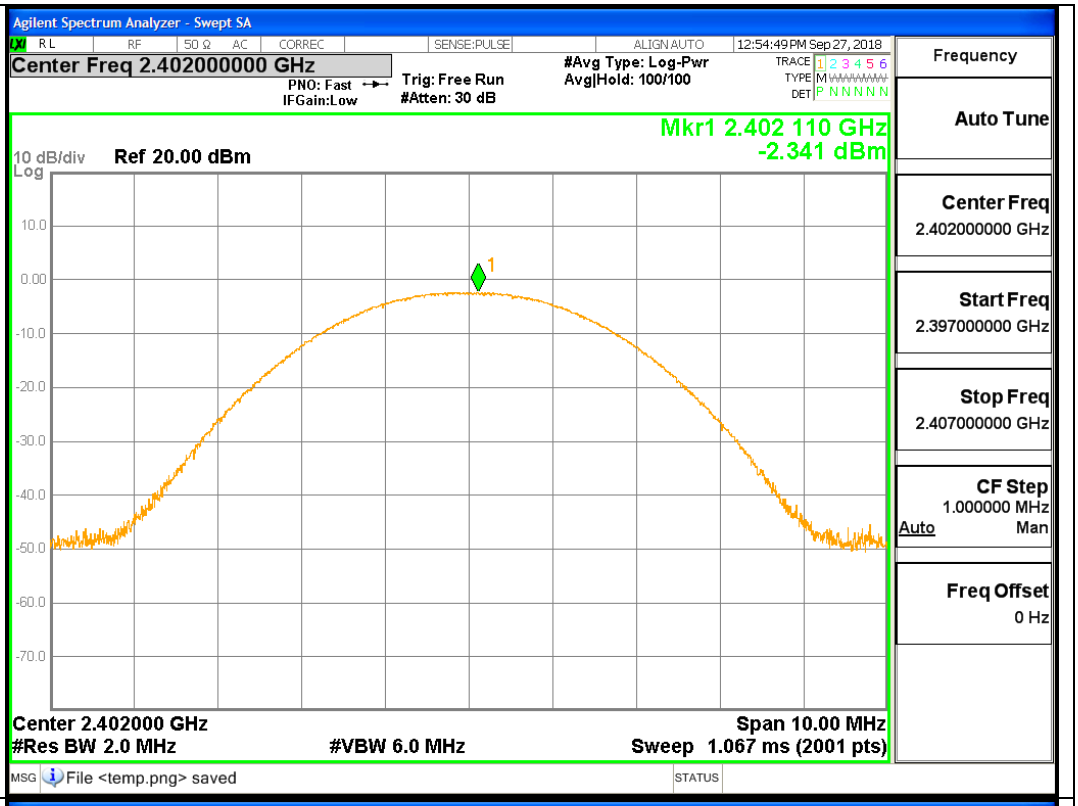
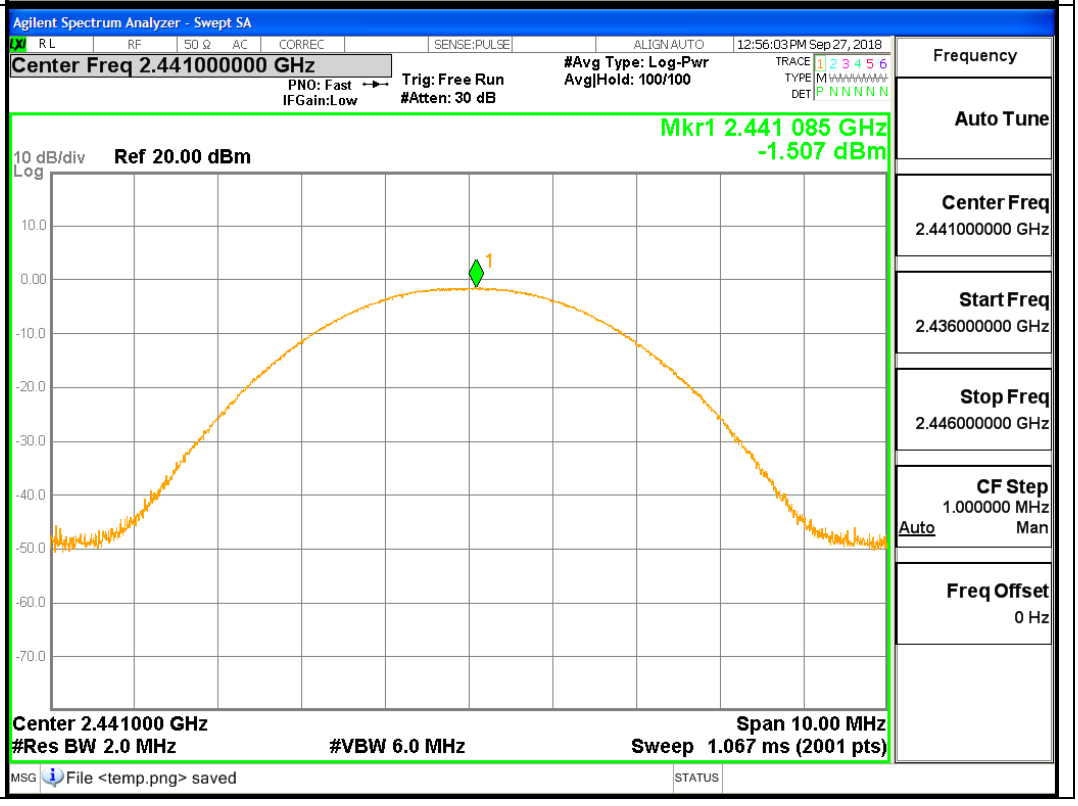
A.5. Conducted Peak Output Power

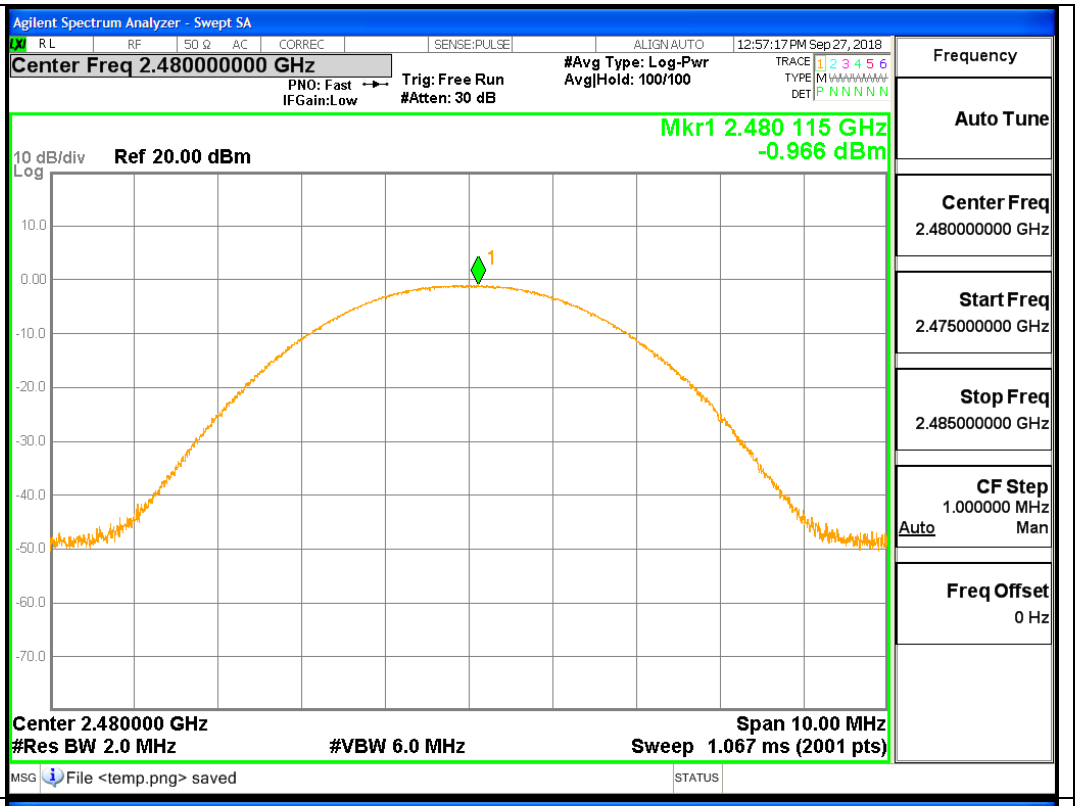
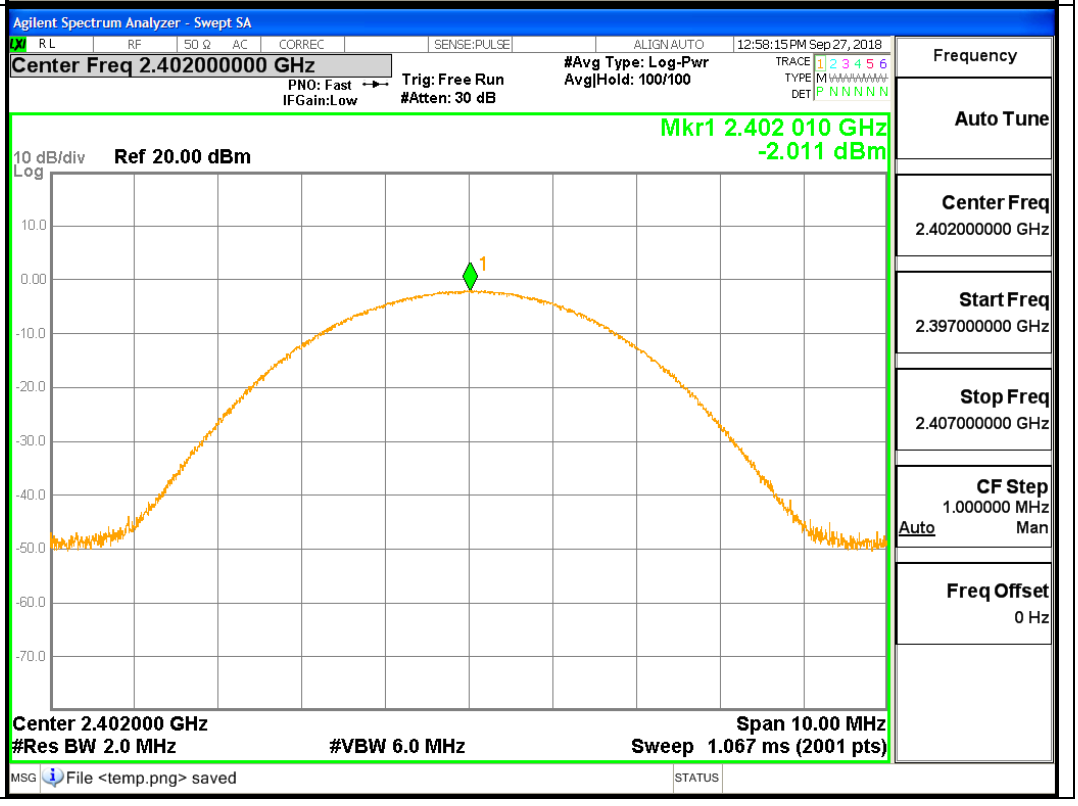
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-4.61	21	PASS
GFSK	MCH	-3.92	21	PASS
GFSK	HCH	-3.41	21	PASS
π/4DQPSK	LCH	-2.34	21	PASS
π/4DQPSK	MCH	-1.51	21	PASS
π/4DQPSK	HCH	-0.97	21	PASS
8DPSK	LCH	-2.01	21	PASS
8DPSK	MCH	-1.08	21	PASS
8DPSK	HCH	-0.63	21	PASS

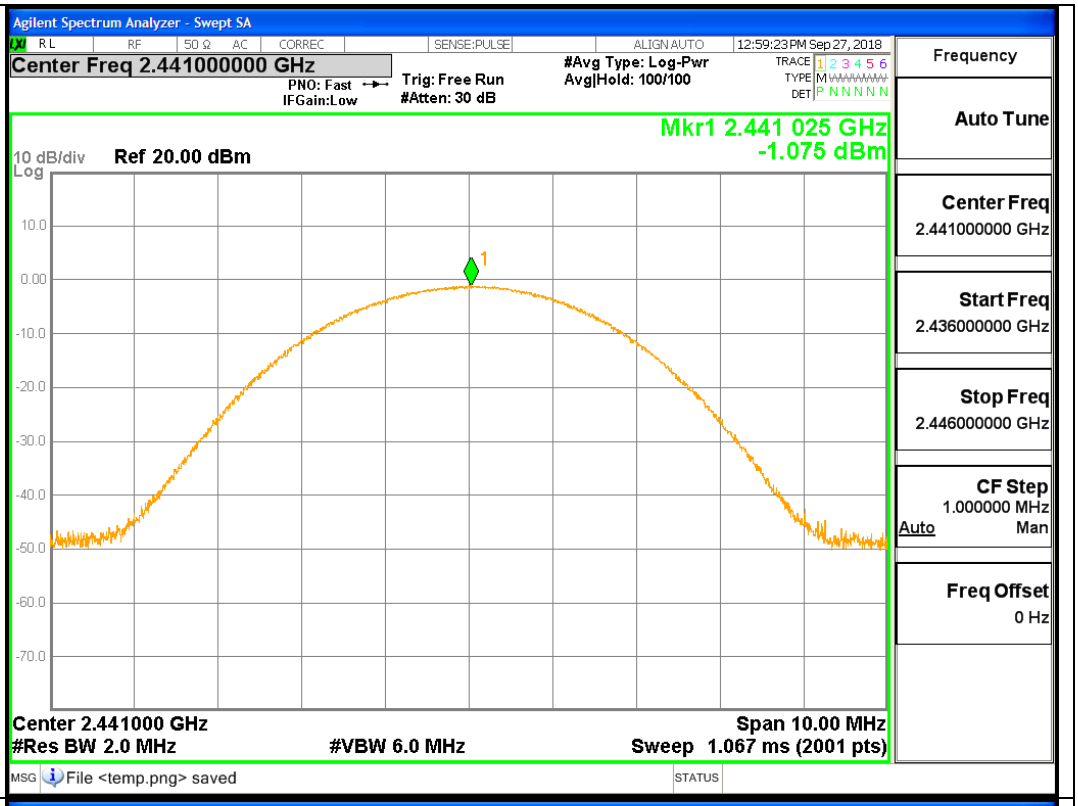
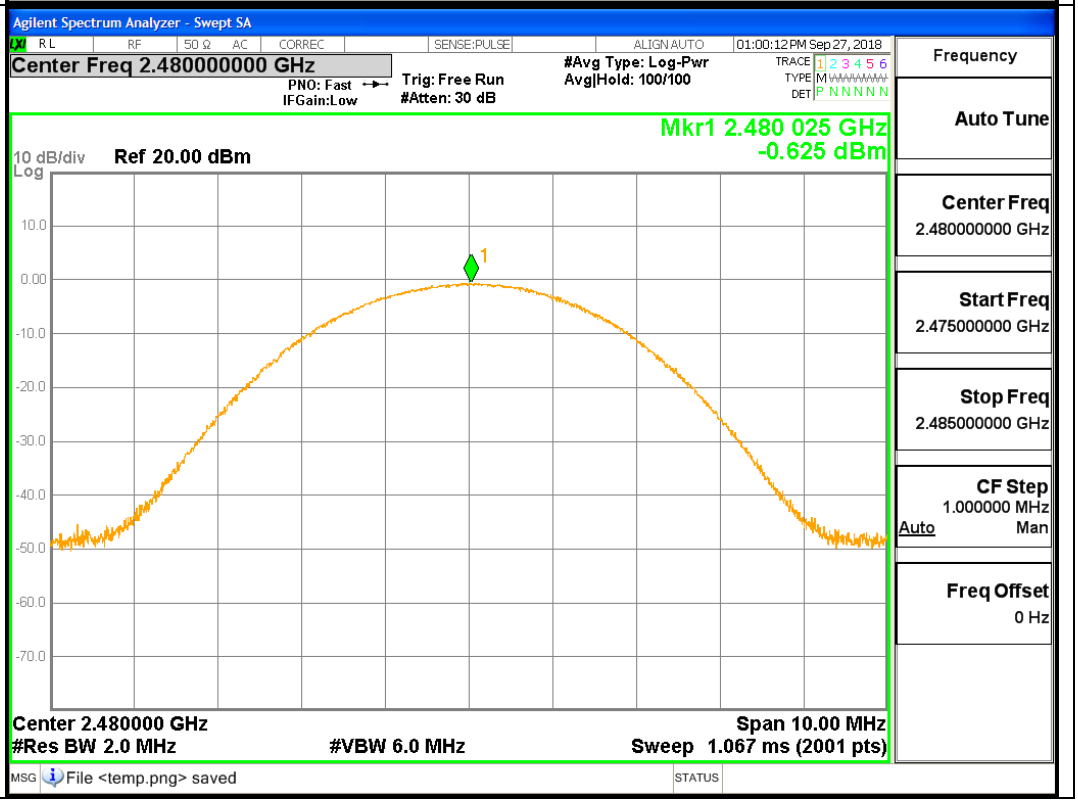
Test Graph

Graphs	
GFSK/LCH	

GFSK/MCH	
GFSK/HCH	

π/4DQPSK/LCH	
π/4DQPSK/MCH	

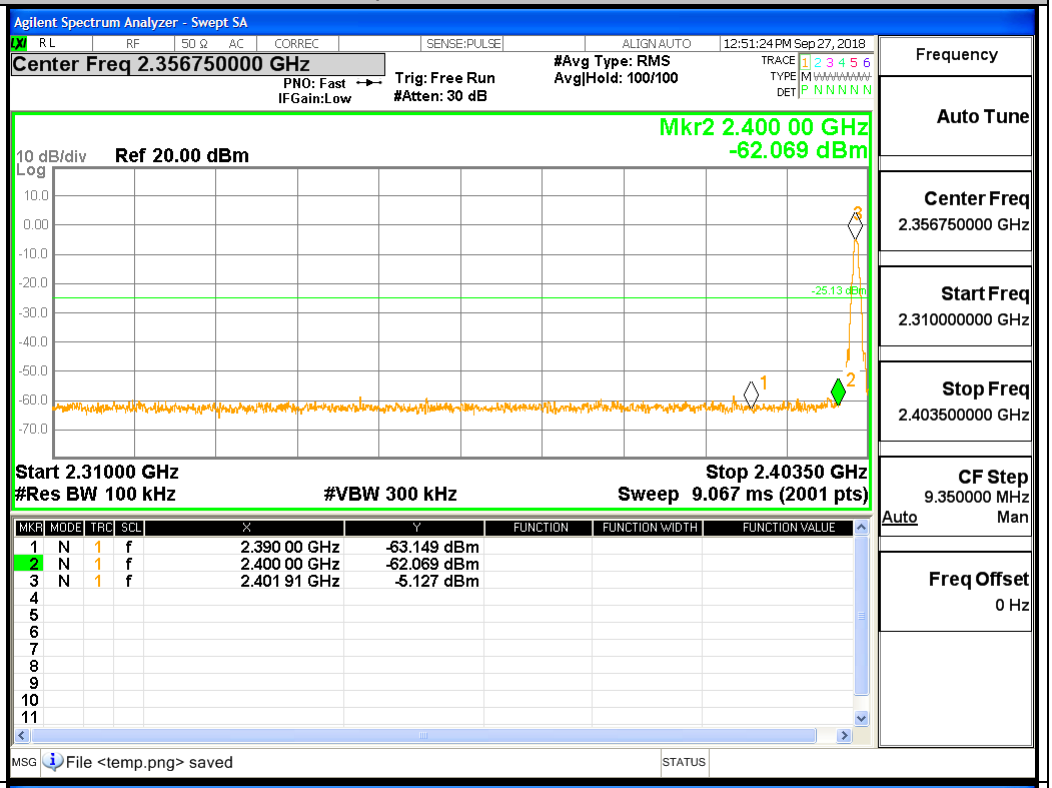
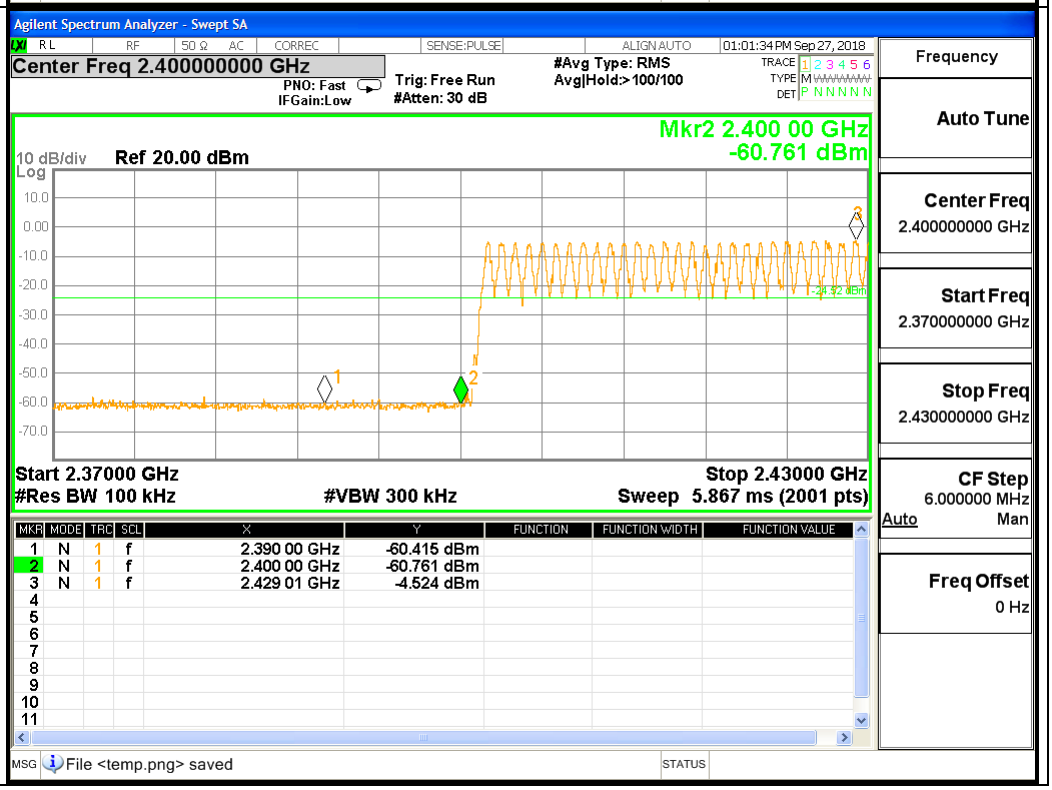
π/4DQPSK/HCH	
8DPSK/LCH	

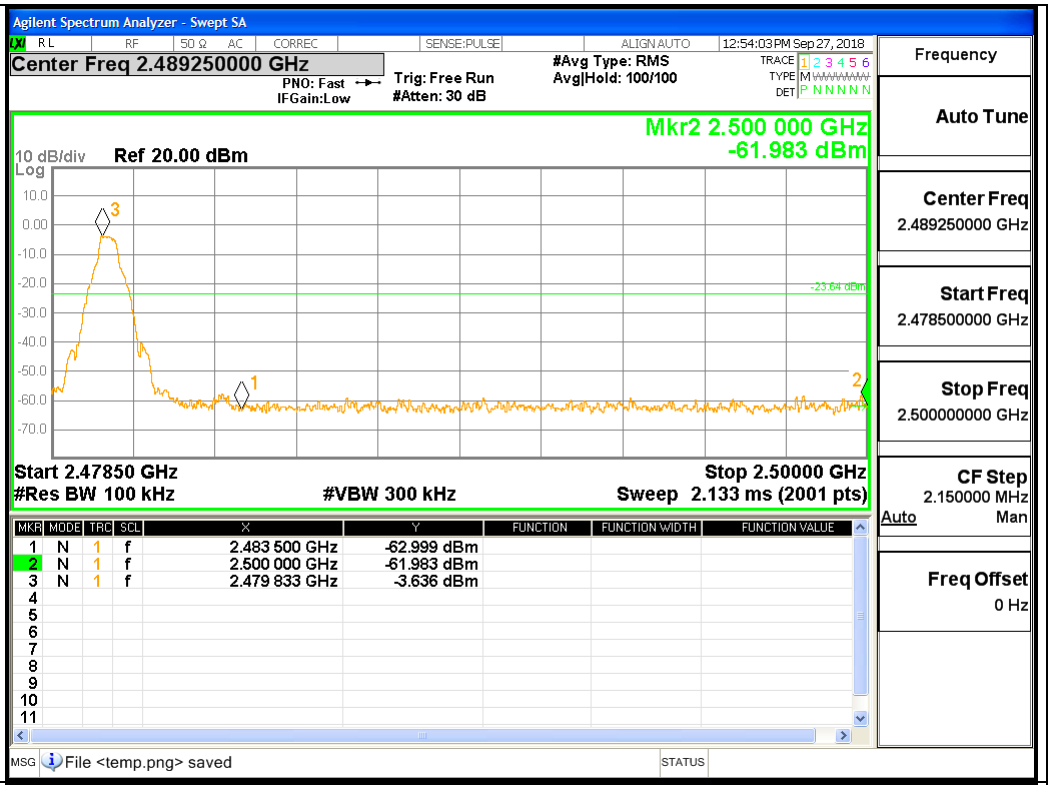
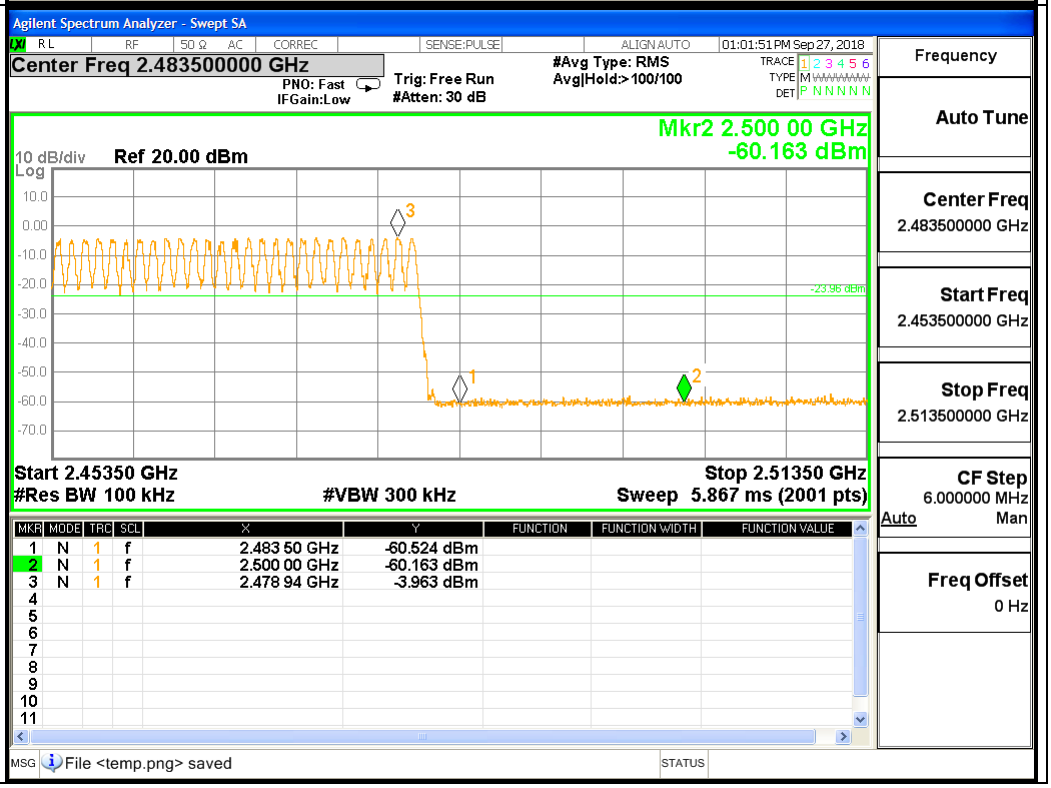
8DPSK/MCH	
8DPSK/HCH	

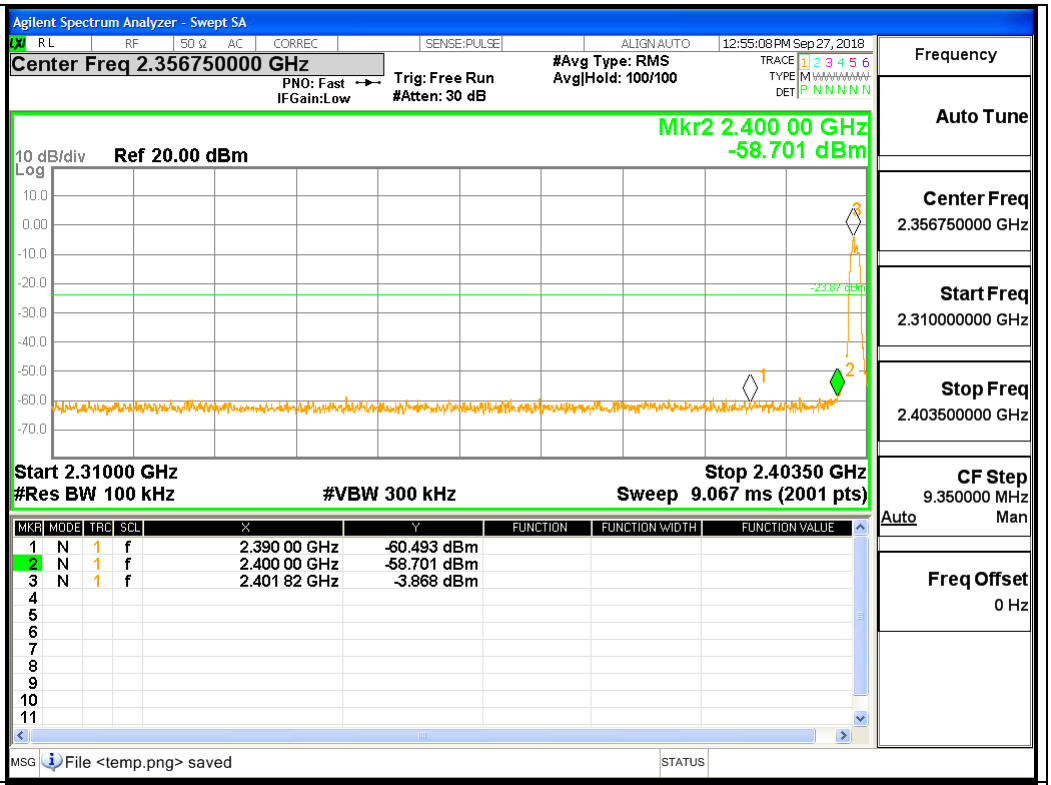
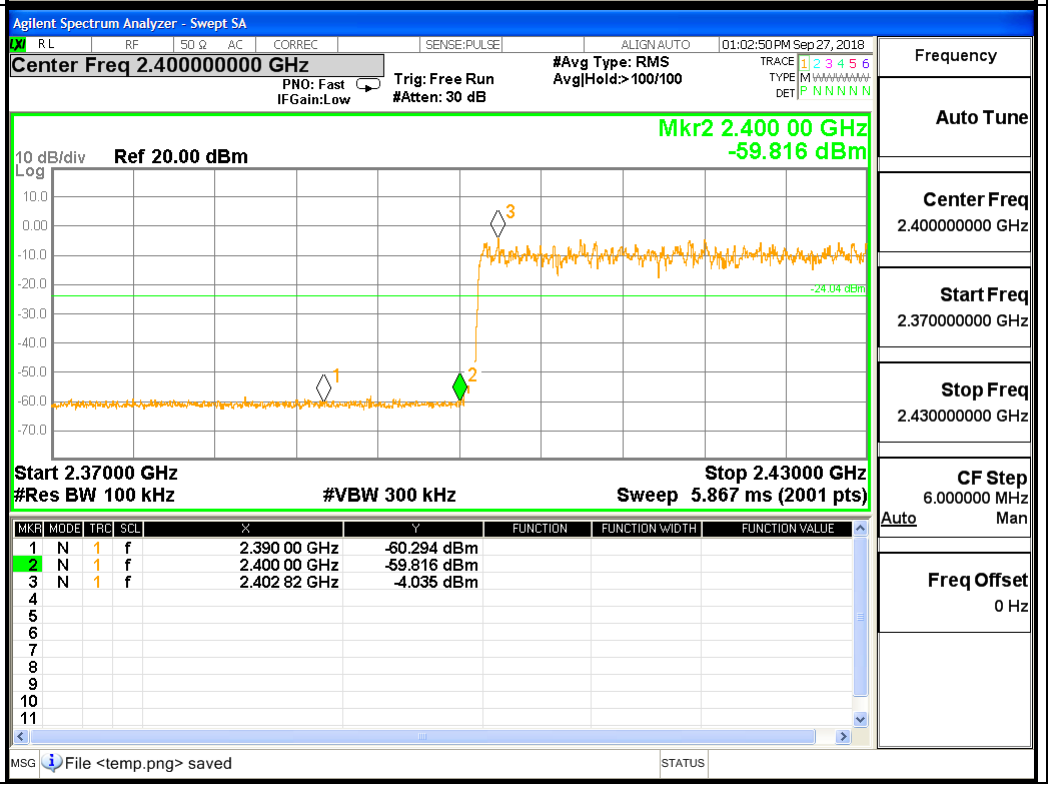
A.6. Band-edge for RF Conducted Emissions

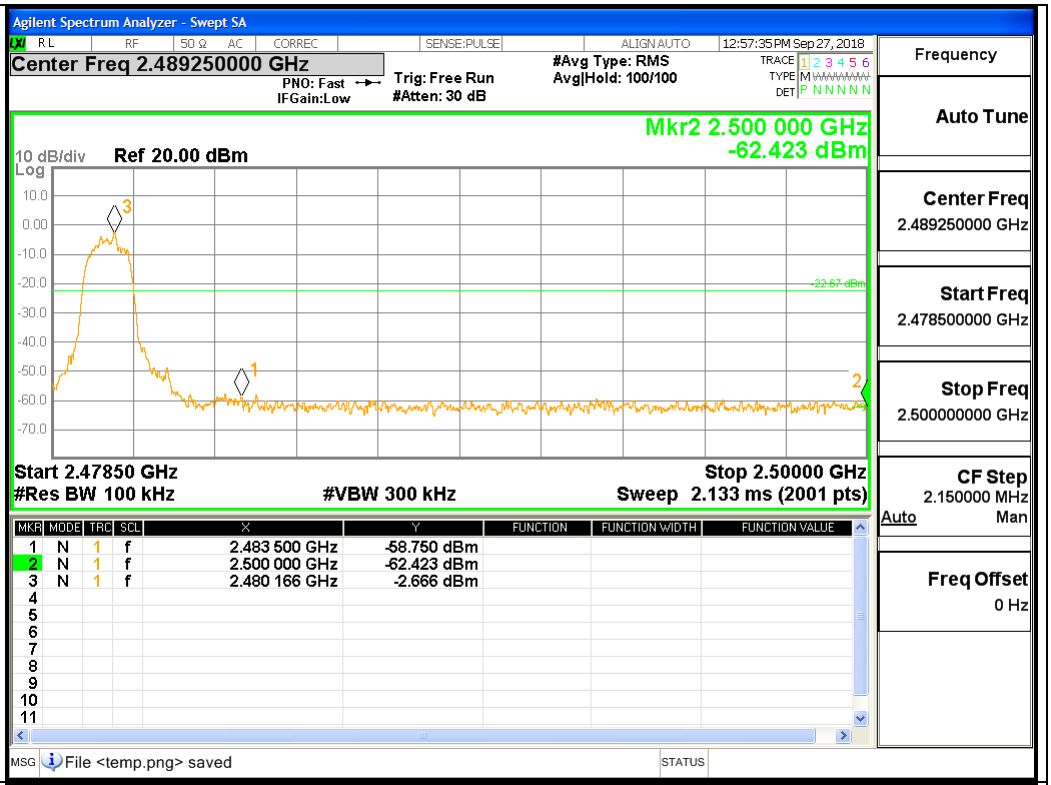
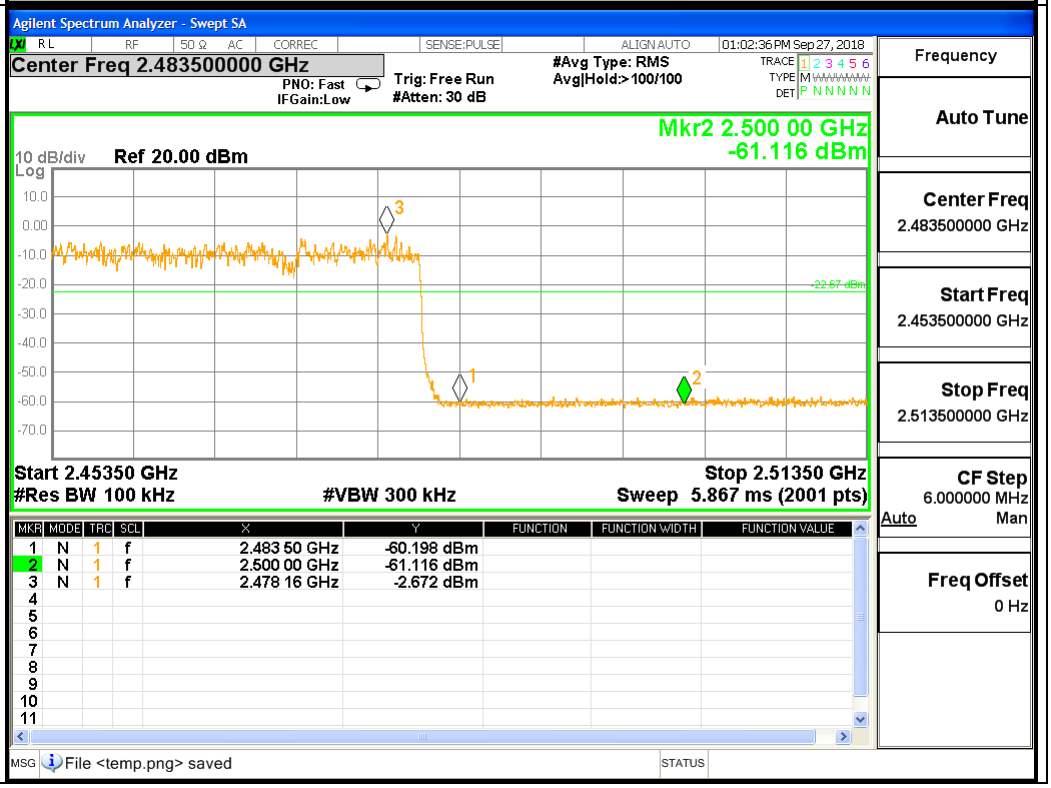
Mode	Frequency(MHz)	Measure Frequency(MHz)	Bandedge Peak(dBm)	Upper limit(dBm)	Verdict
1DH5	2402	2390	-63.15	-25.13	Pass
1DH5	2402	2400	-62.07	-25.13	Pass
1DH5	2480	2483.5	-63.00	-23.64	Pass
1DH5	2480	2500	-61.98	-23.64	Pass
2DH5	2402	2390	-60.49	-23.87	Pass
2DH5	2402	2400	-58.70	-23.87	Pass
2DH5	2480	2483.5	-58.75	-22.67	Pass
2DH5	2480	2500	-62.42	-22.67	Pass
3DH5	2402	2390	-62.01	-24.10	Pass
3DH5	2402	2400	-56.9	-24.10	Pass
3DH5	2480	2483.5	-61.65	-25.34	Pass
3DH5	2480	2500	-63.16	-25.34	Pass
1DH5-Hopping	2402-2480	2390	-60.42	-24.52	Pass
1DH5-Hopping	2402-2480	2400	-60.76	-24.52	Pass
1DH5-Hopping	2402-2480	2483.5	-60.52	-23.96	Pass
1DH5-Hopping	2402-2480	2500	-60.16	-23.96	Pass
2DH5-Hopping	2402-2480	2390	-60.29	-24.04	Pass
2DH5-Hopping	2402-2480	2400	-59.82	-24.04	Pass
2DH5-Hopping	2402-2480	2483.5	-60.41	-22.67	Pass
2DH5-Hopping	2402-2480	2500	-61.12	-22.67	Pass
3DH5-Hopping	2402-2480	2390	-61.73	-23.97	Pass
3DH5-Hopping	2402-2480	2400	-59.57	-23.97	Pass
3DH5-Hopping	2402-2480	2483.5	-60.45	-22.68	Pass
3DH5-Hopping	2402-2480	2500	-60.18	-22.68	Pass

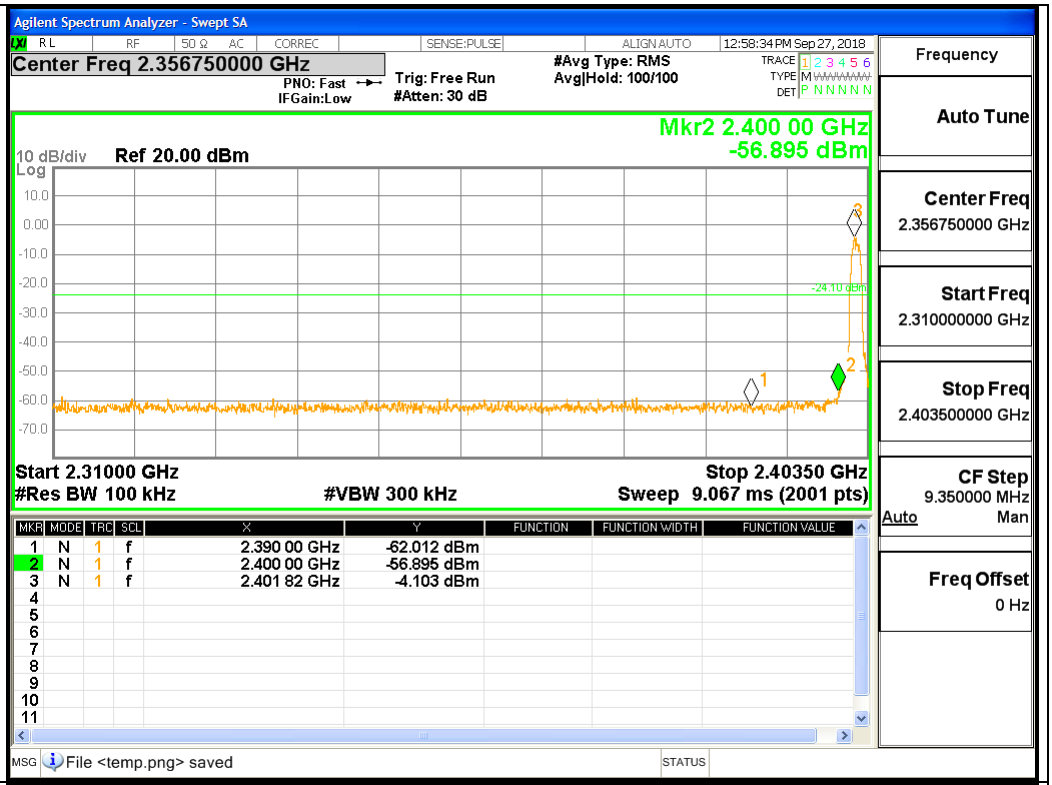
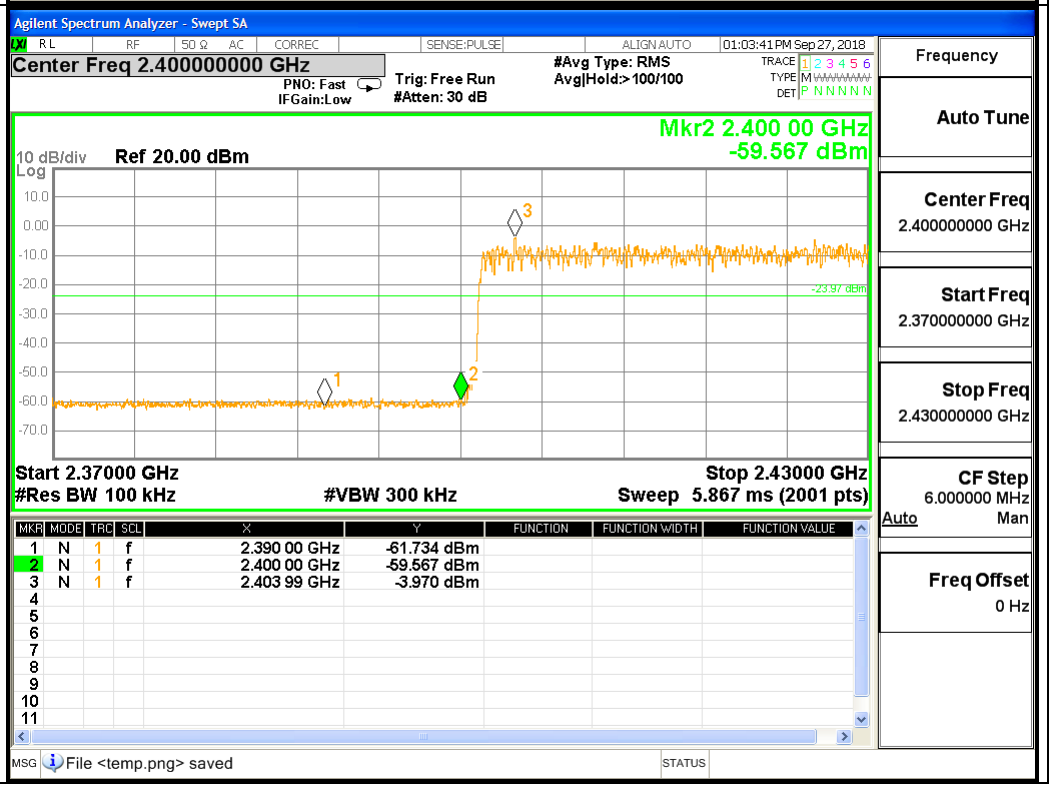
Test Graph

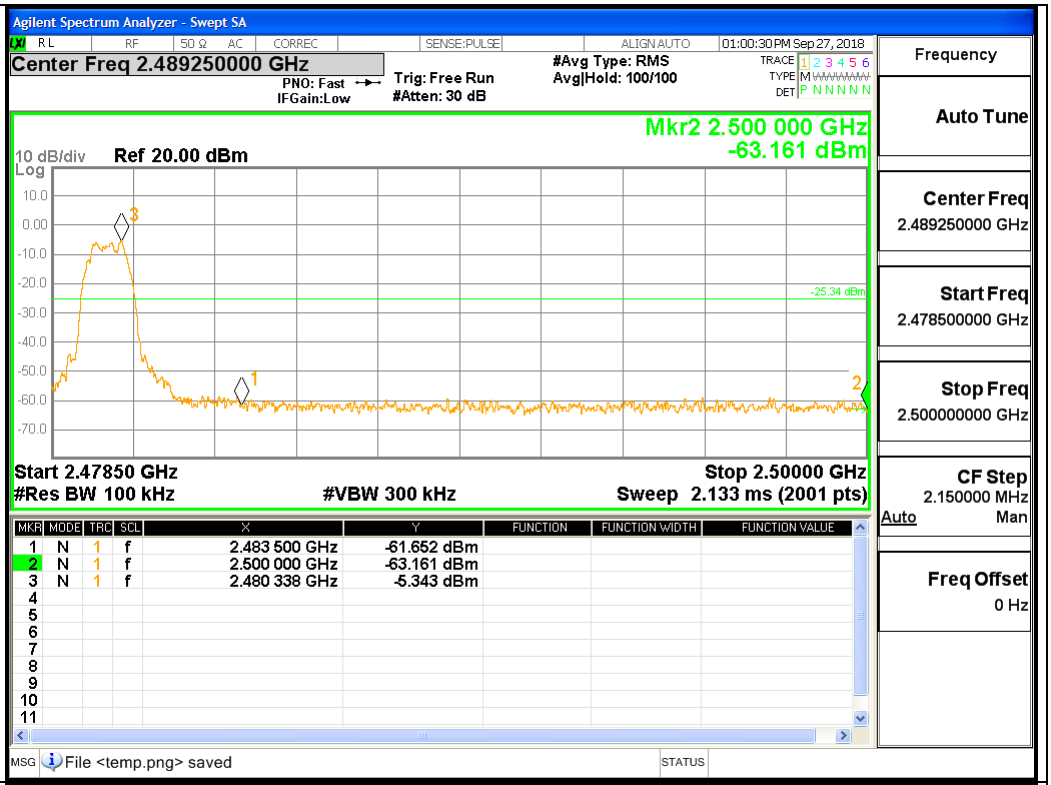
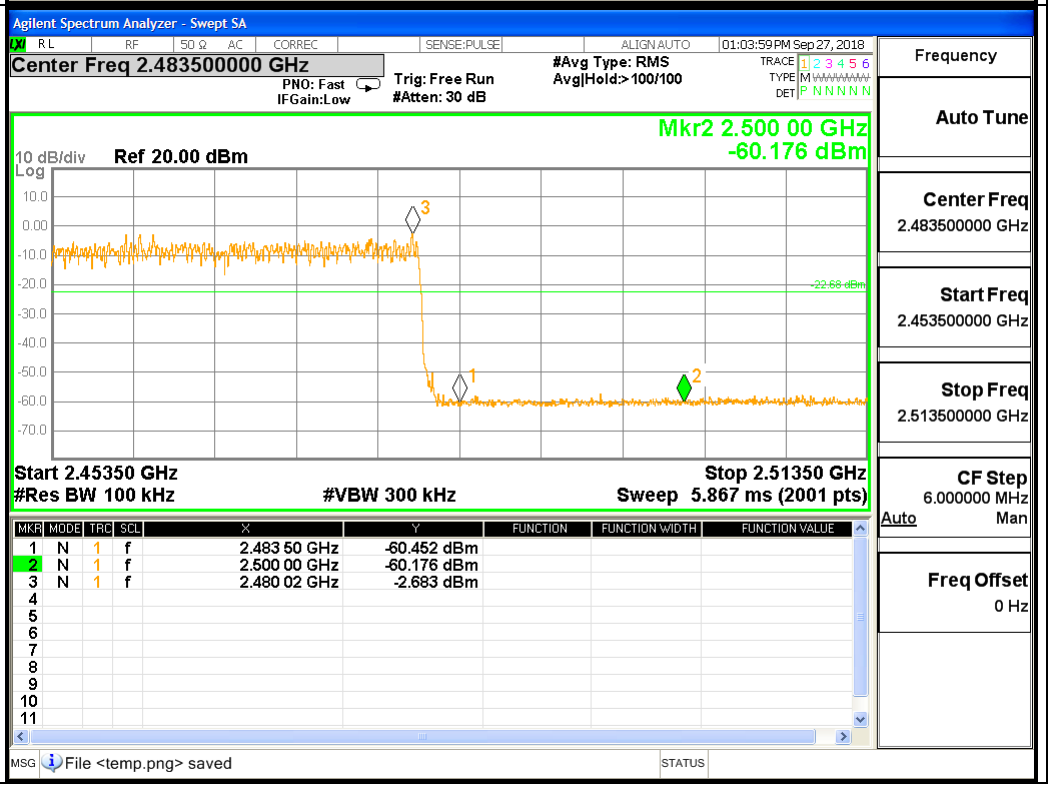
Graphs	
GFSK/LCH/No Hop	
GFSK/LCH/Hop	

GFSK/HCH/No Hop	
GFSK/HCH/Hop	

π/4DQPSK/LCH/No Hop	
π/4DQPSK/LCH/Hop	

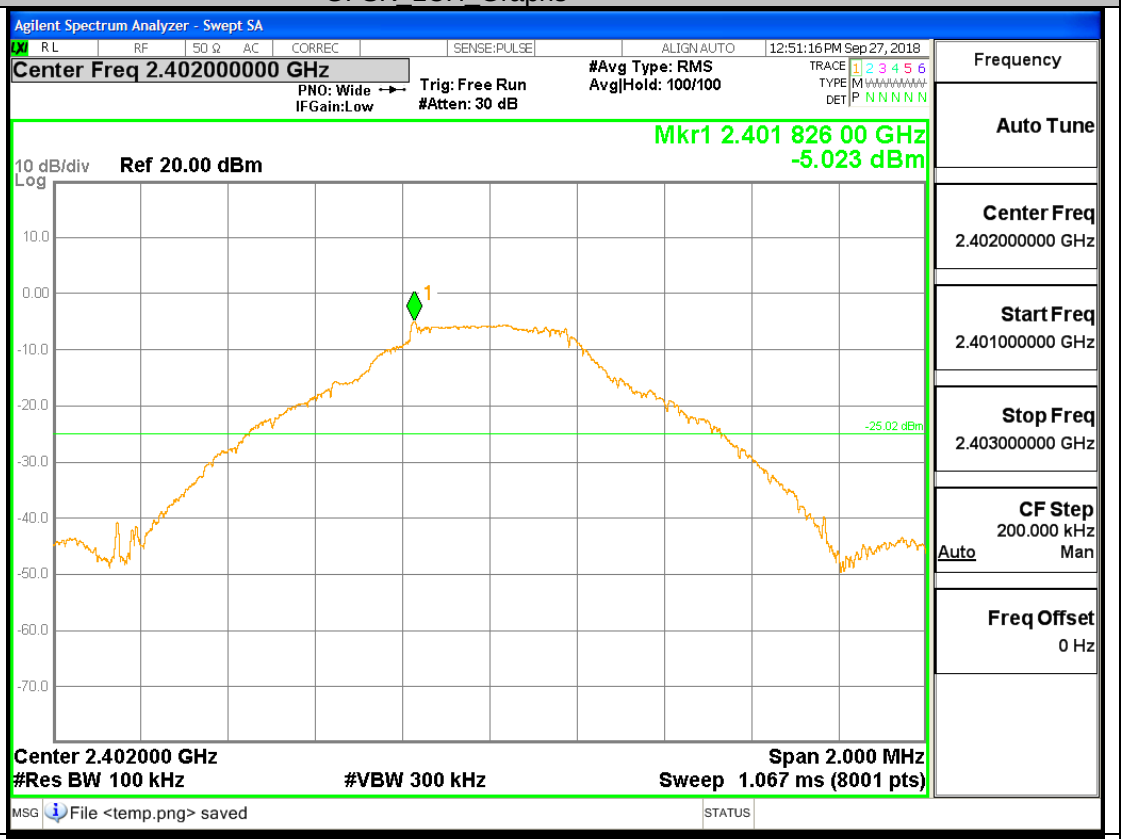
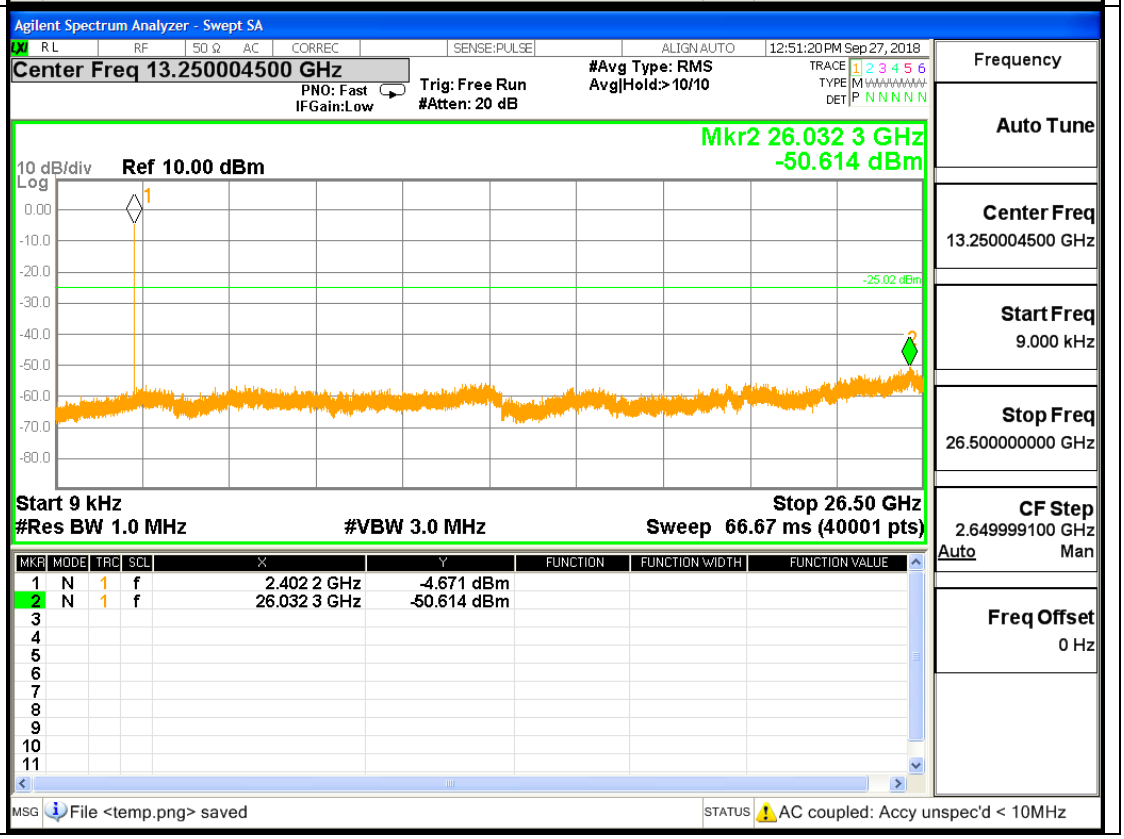
π/4DQPSK/HCH/No Hop	
π/4DQPSK/HCH/Hop	

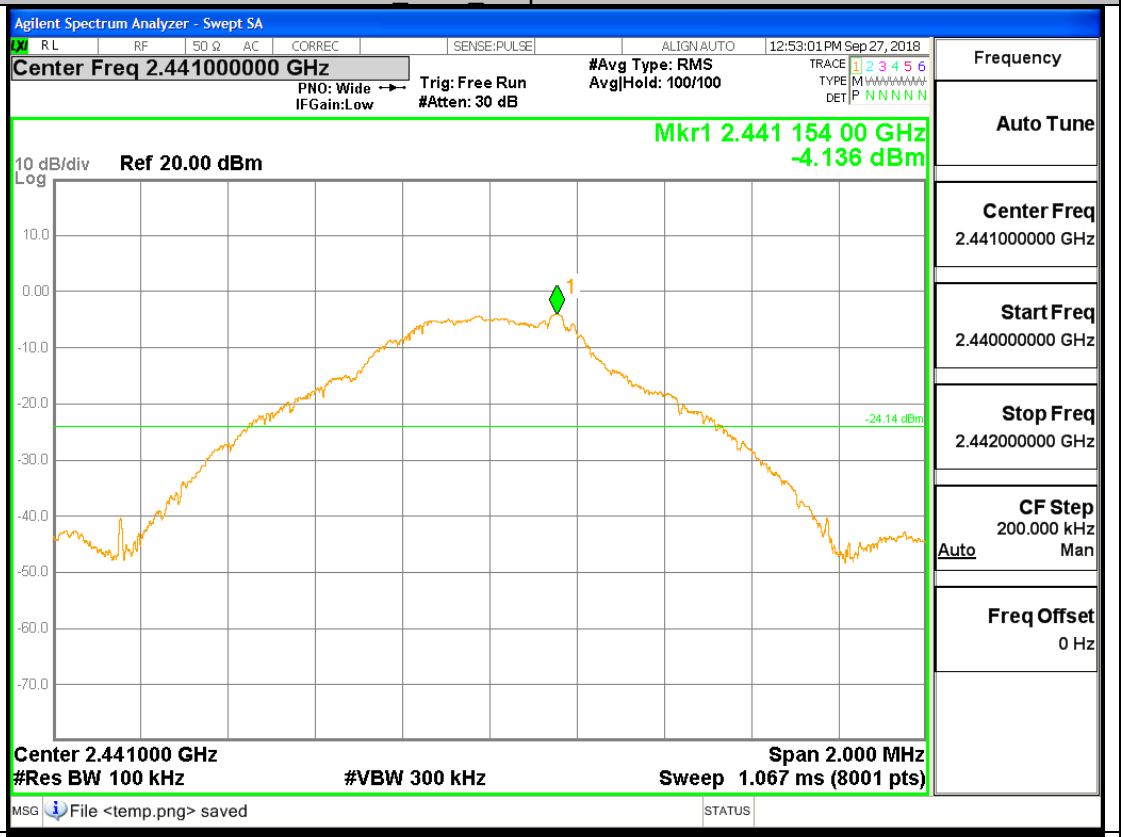
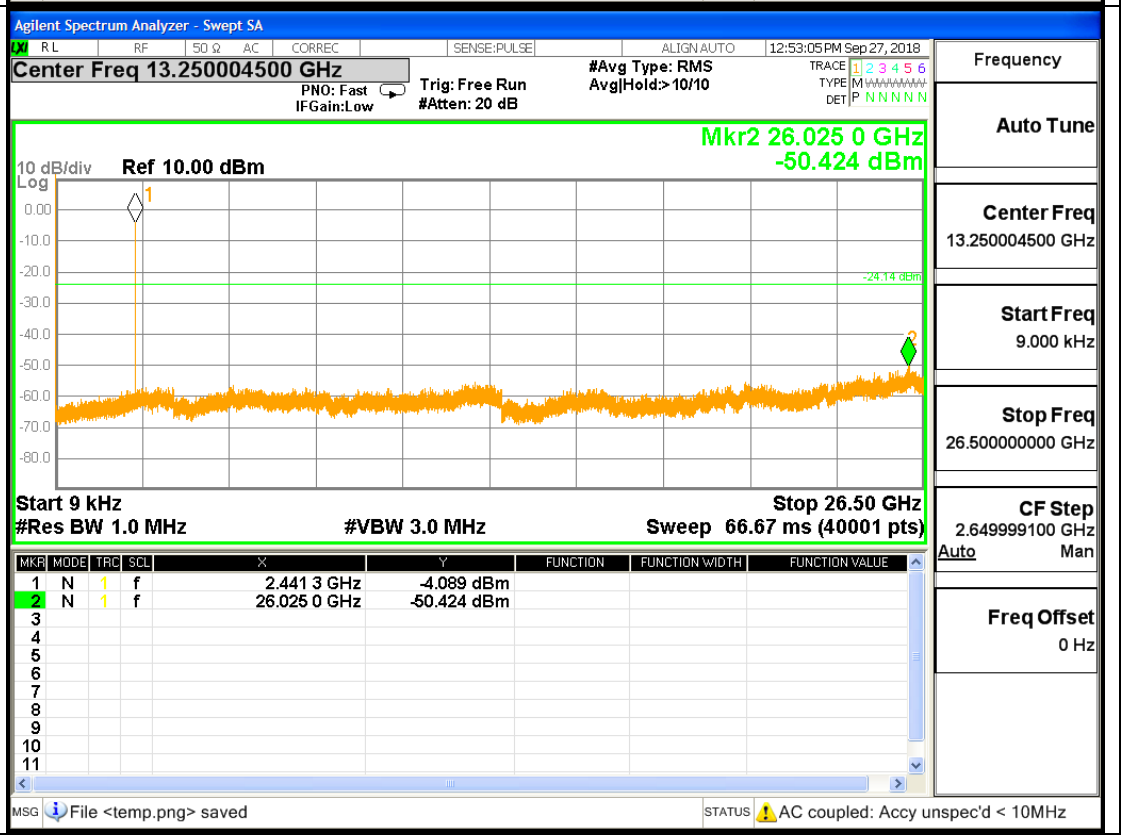
8DPSK/LCH/No Hop	
8DPSK/LCH/Hop	

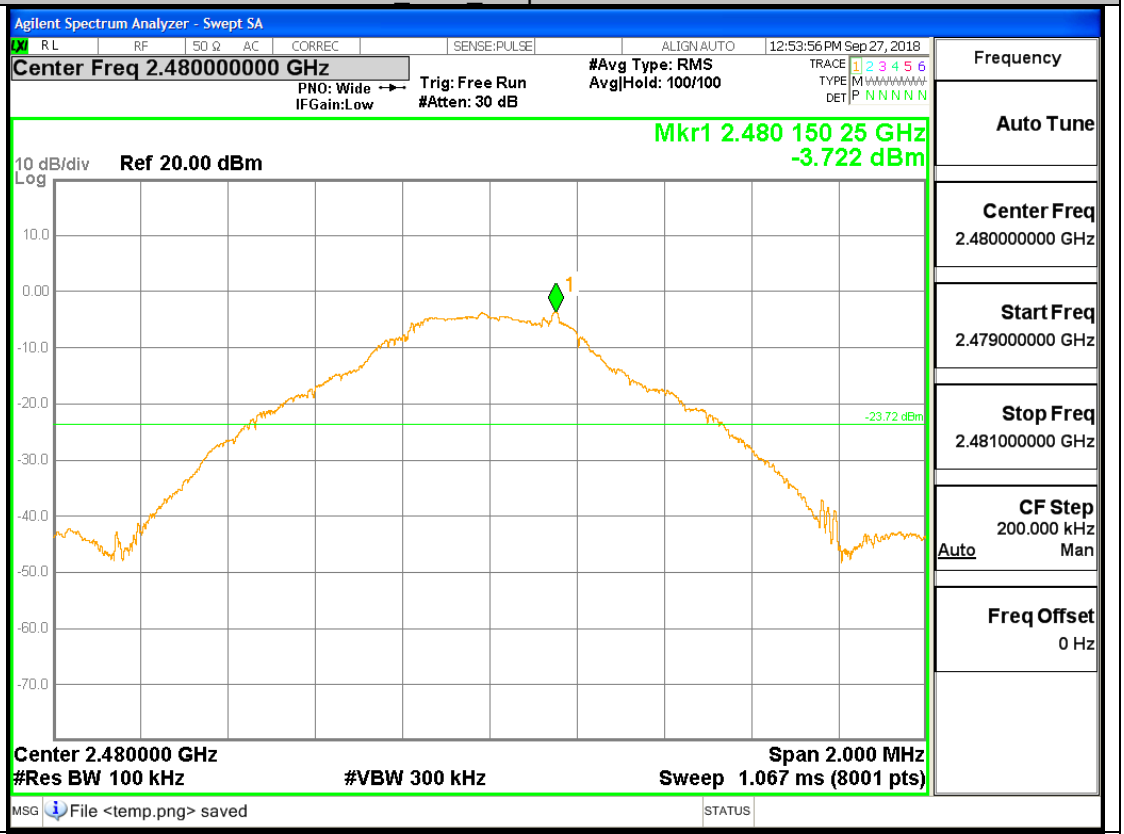
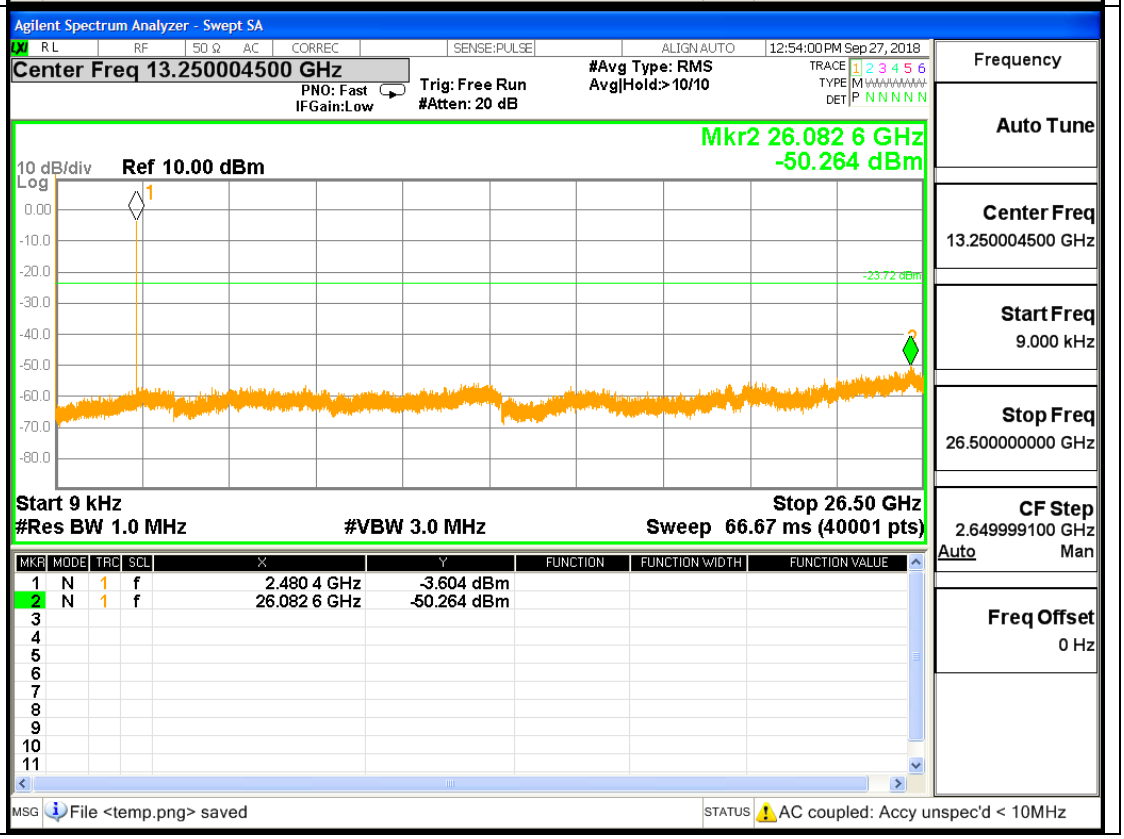
8DPSK/HCH/No Hop	
8DPSK/HCH/Hop	

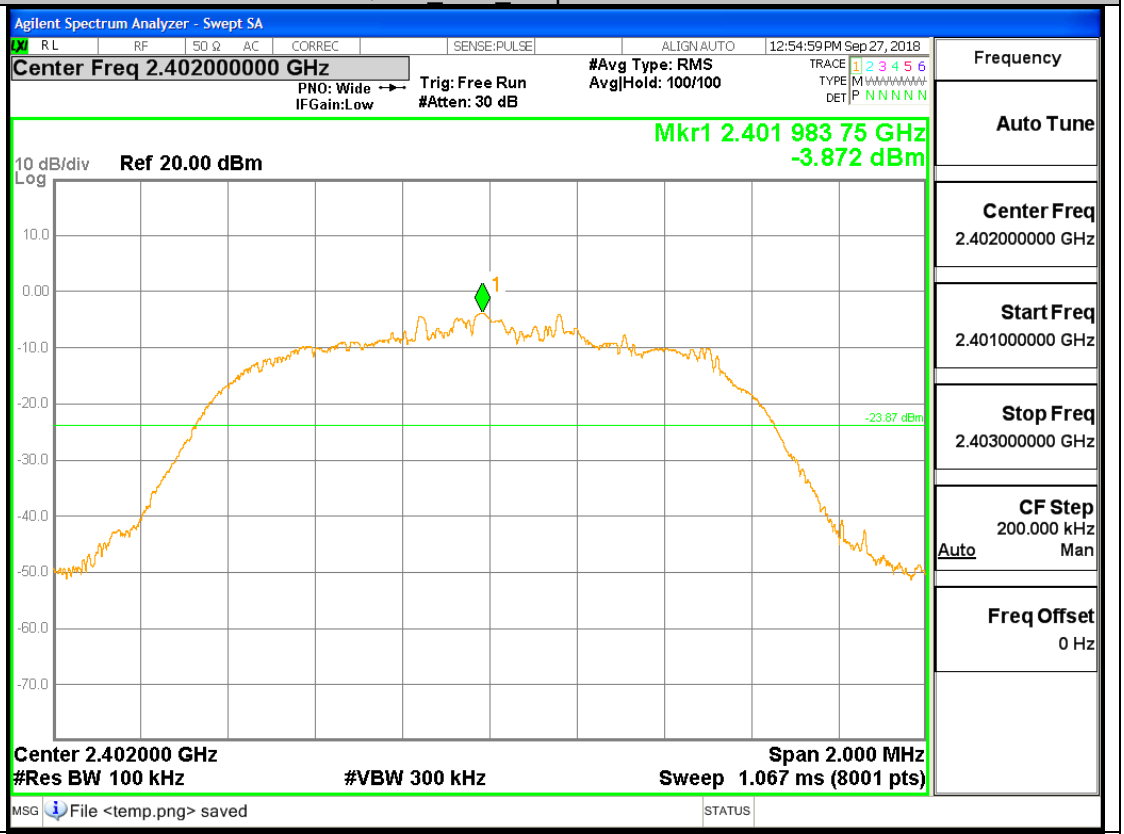
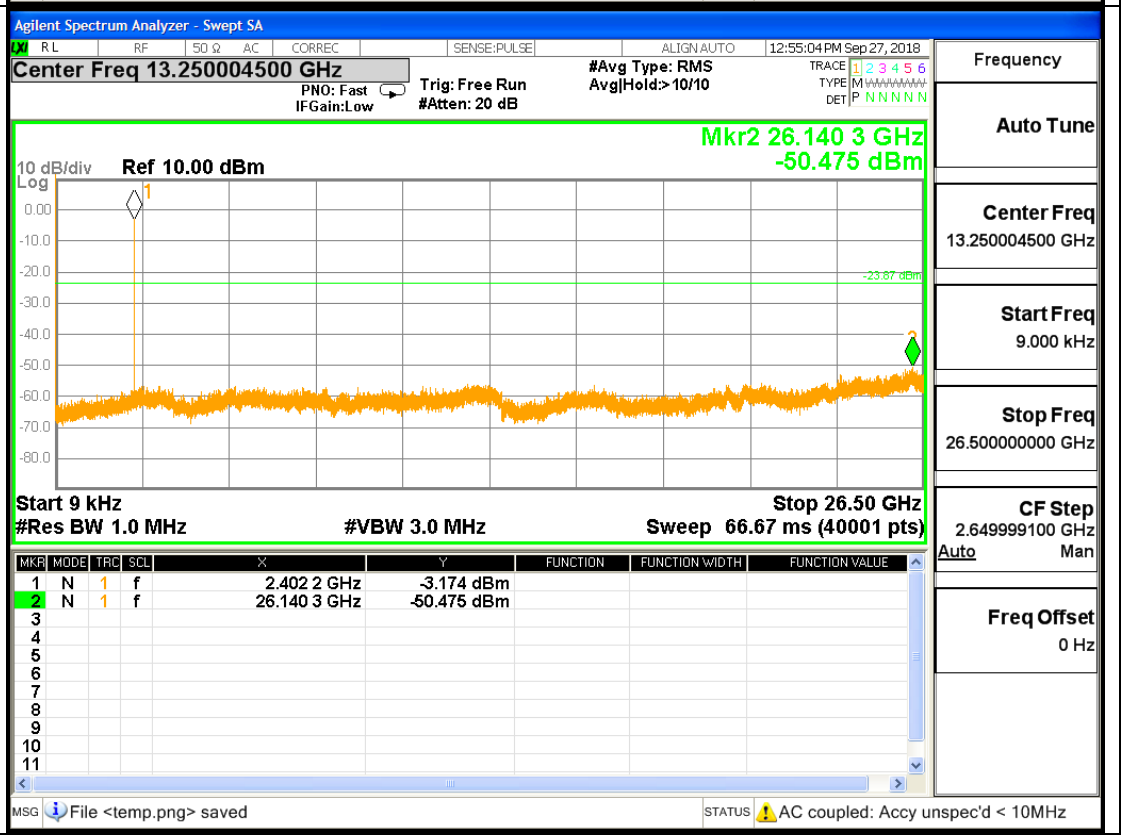
A.7. RF Conducted Spurious Emissions

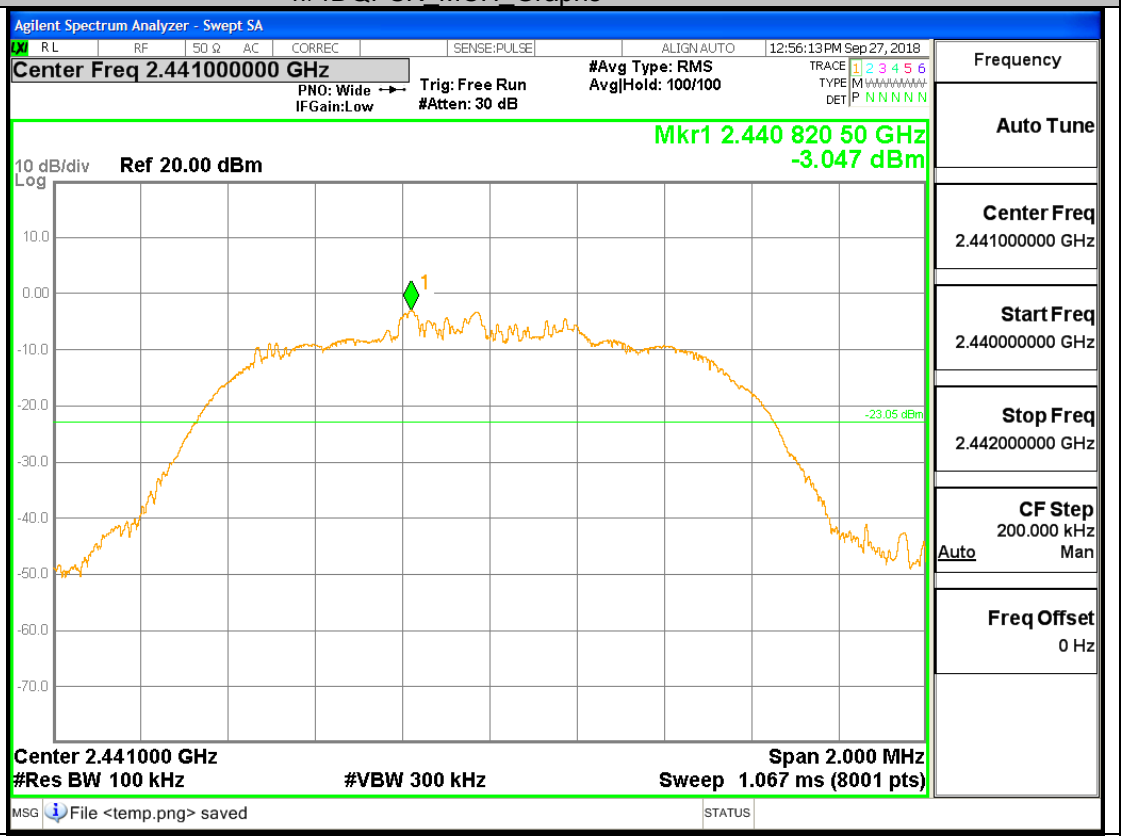
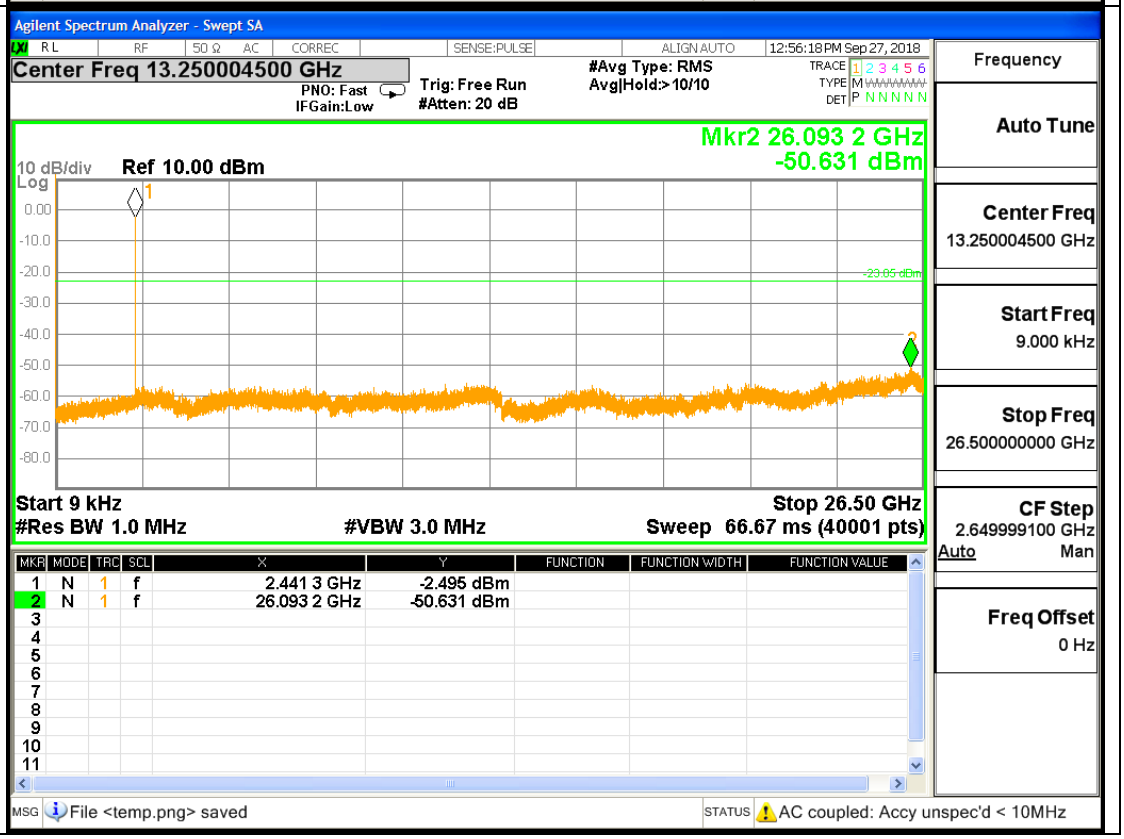
Test Graph

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	

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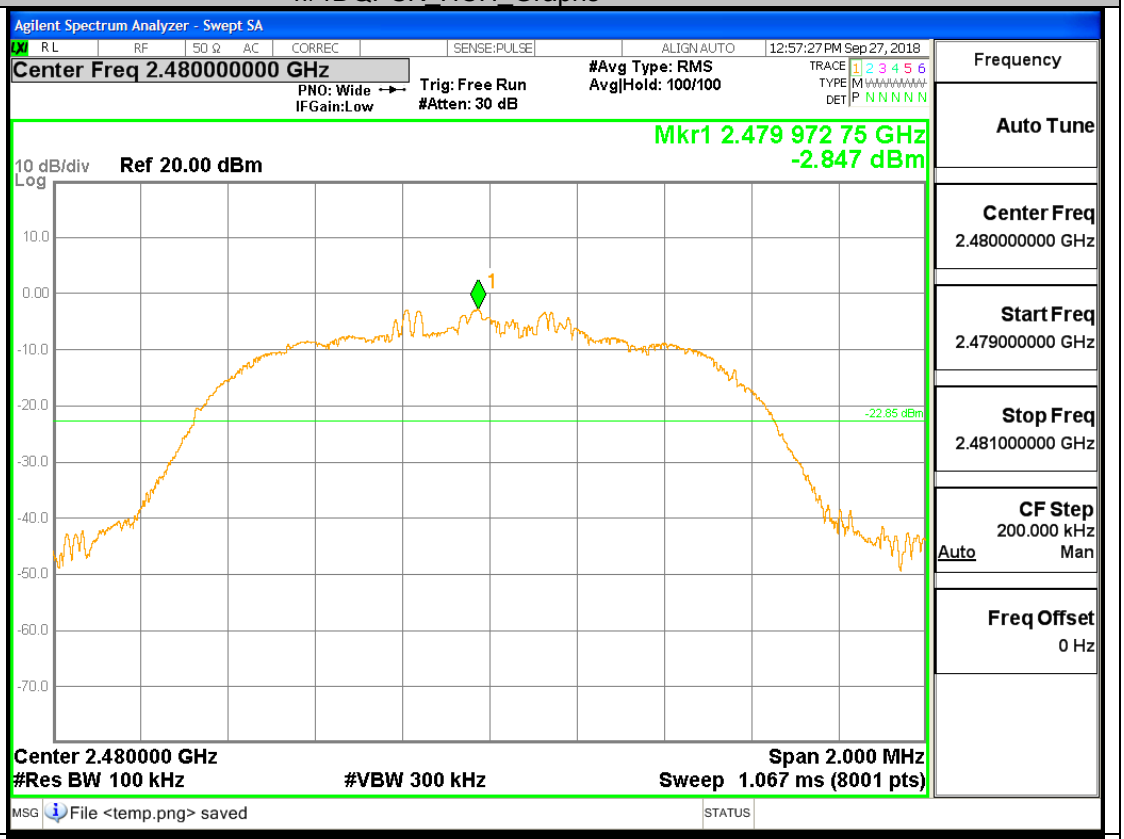
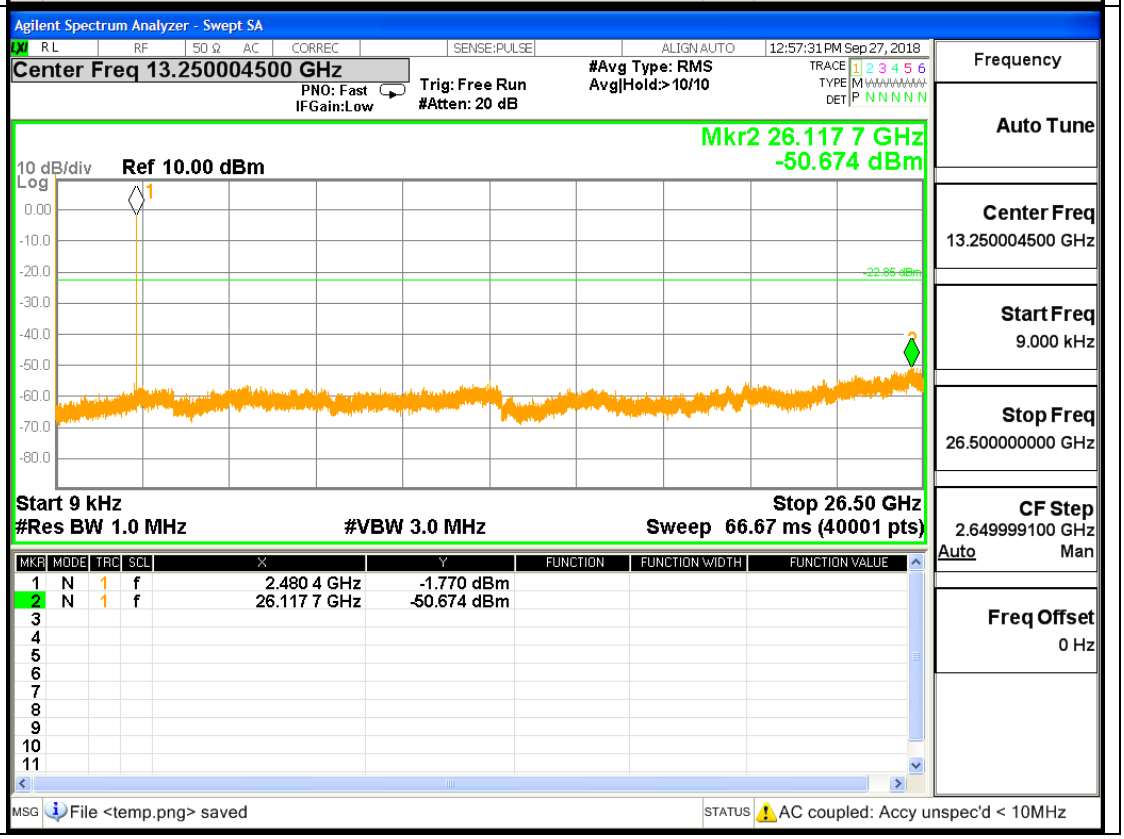
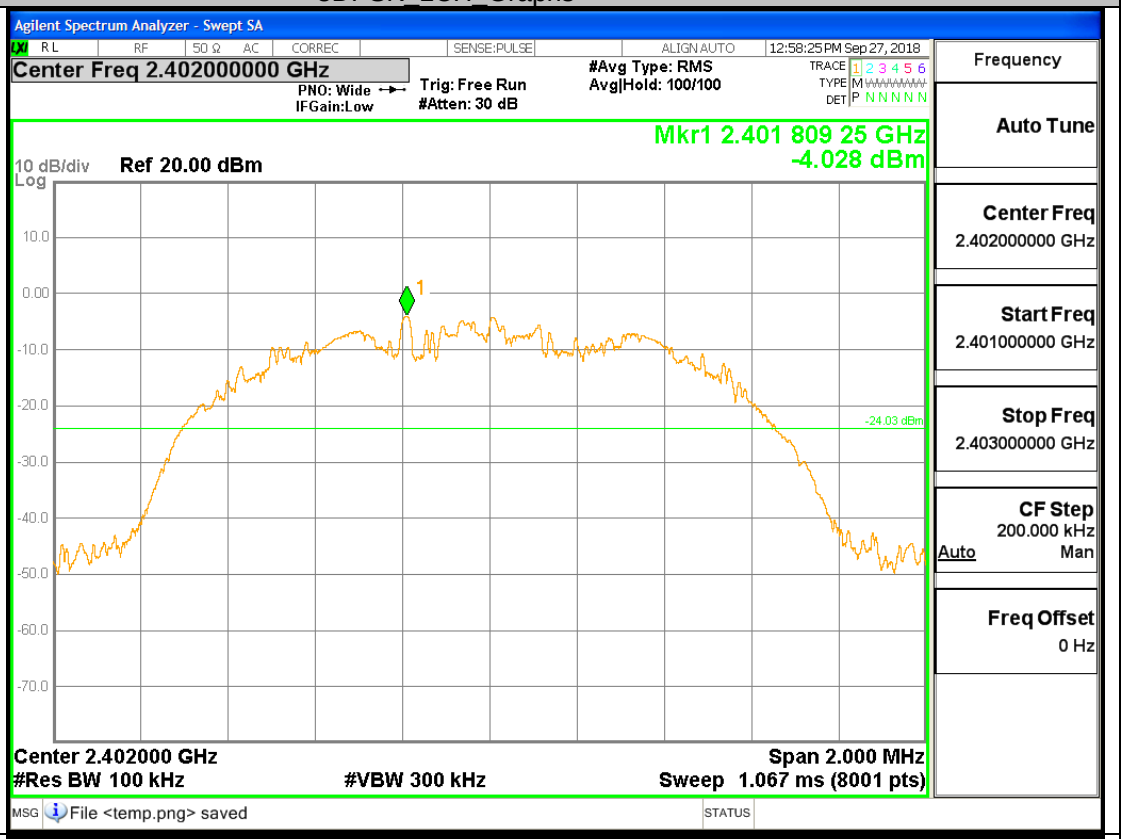
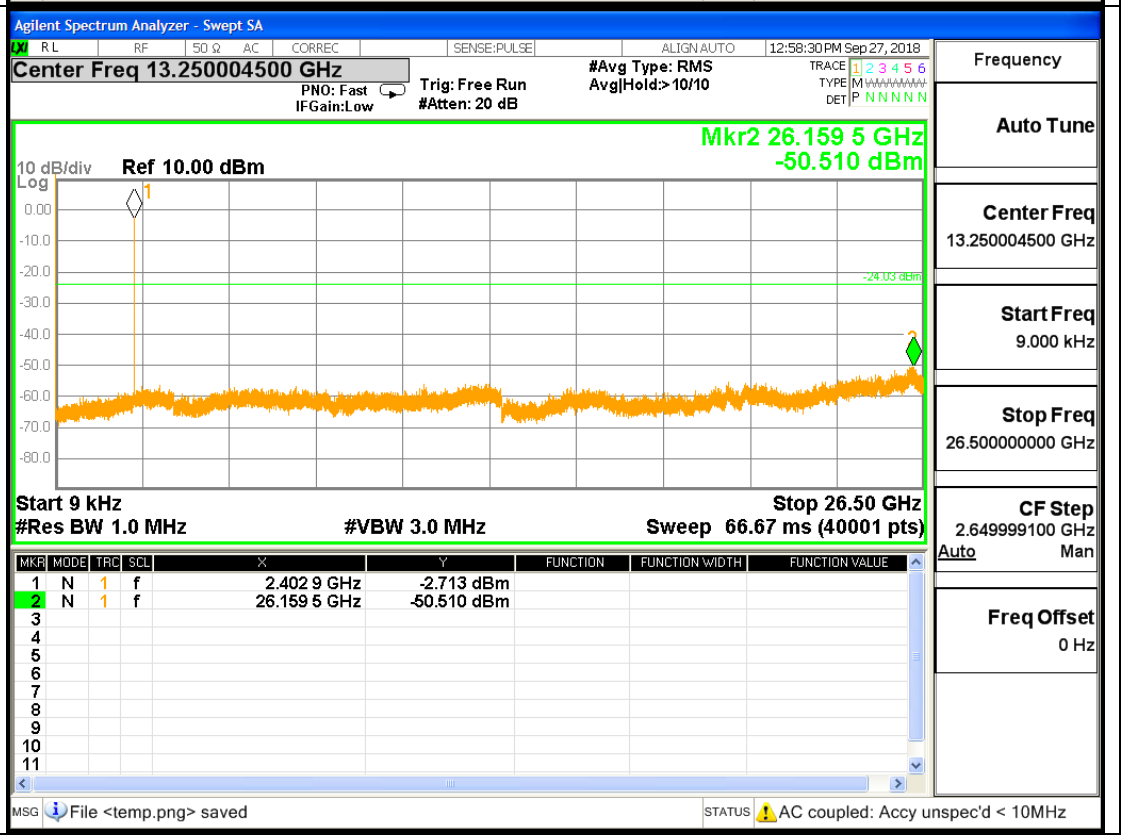
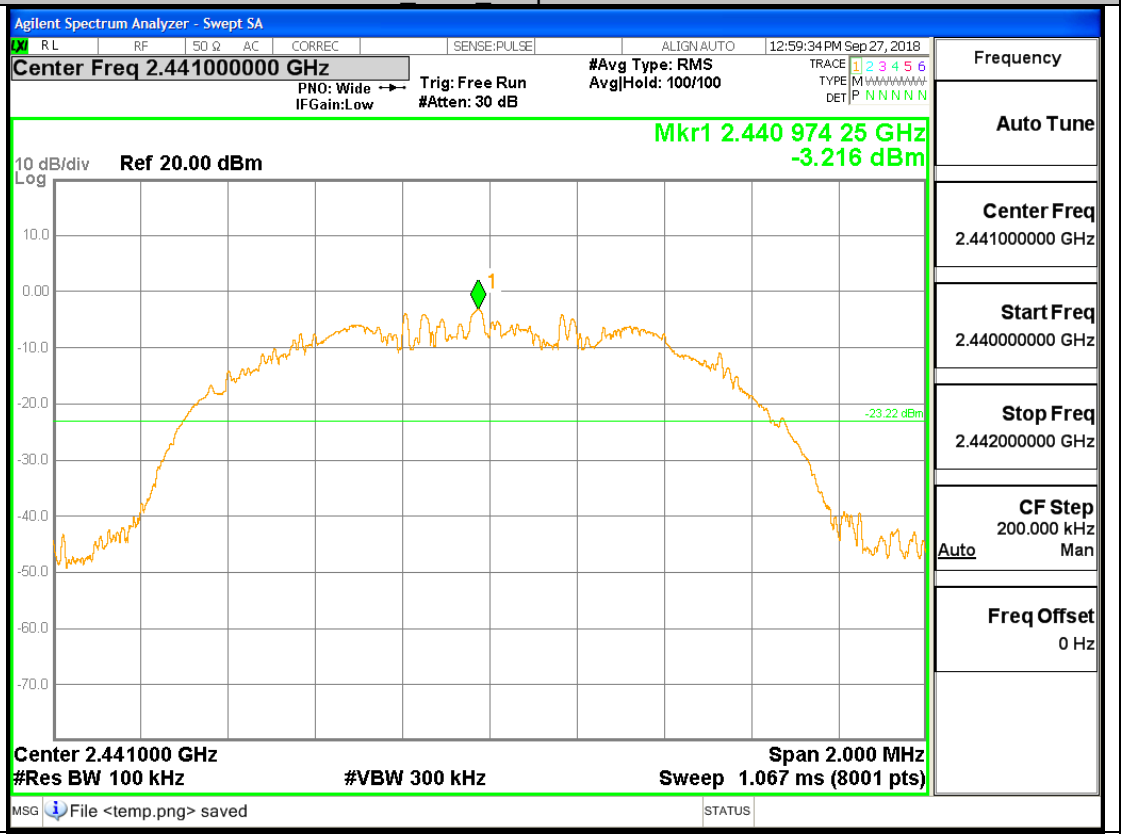
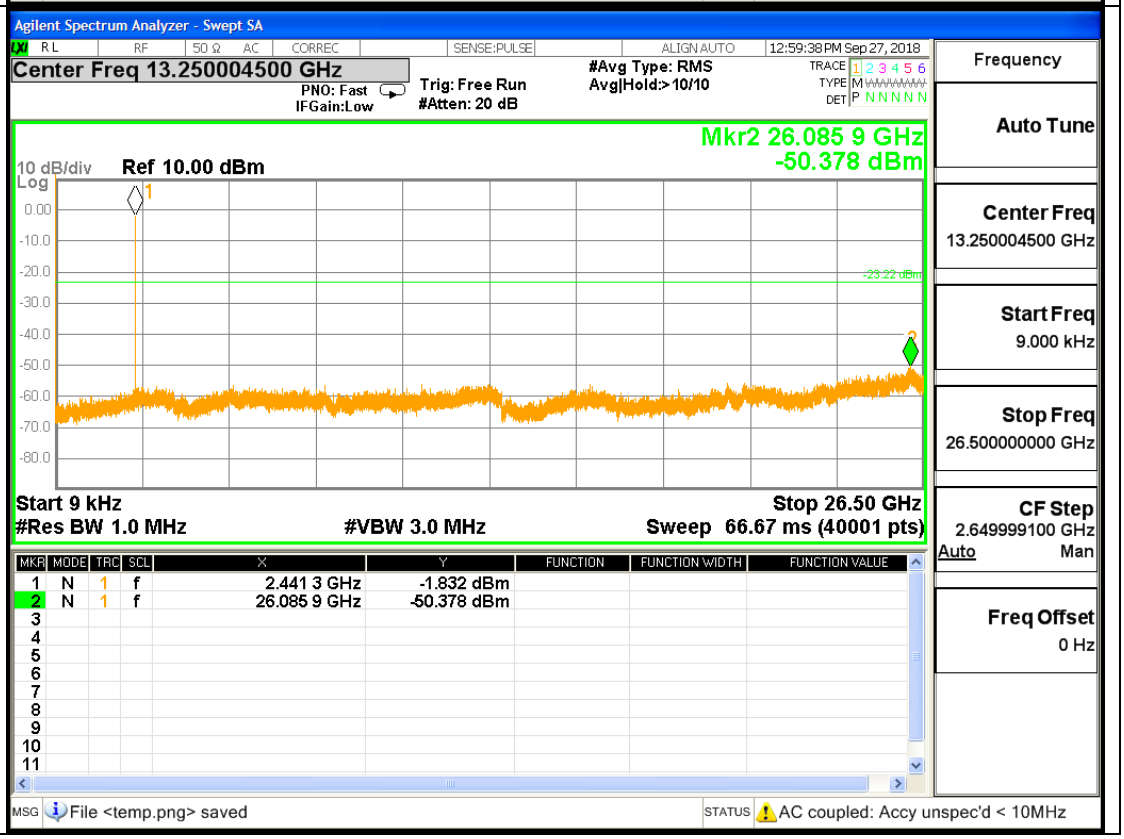
Pref	
Puw	

8DPSK_LCH_Graphs	
Pref	
Puw	

8DPSK_MCH_Graphs	
Pref	
Puw	

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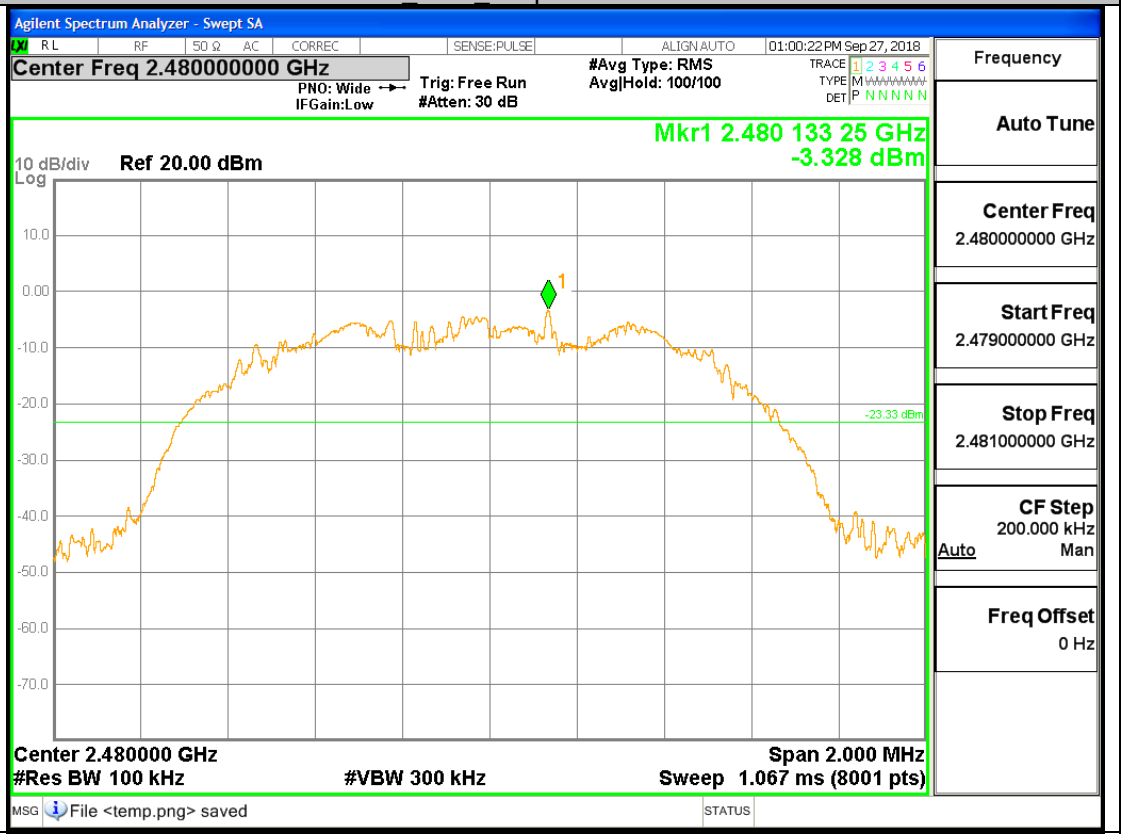
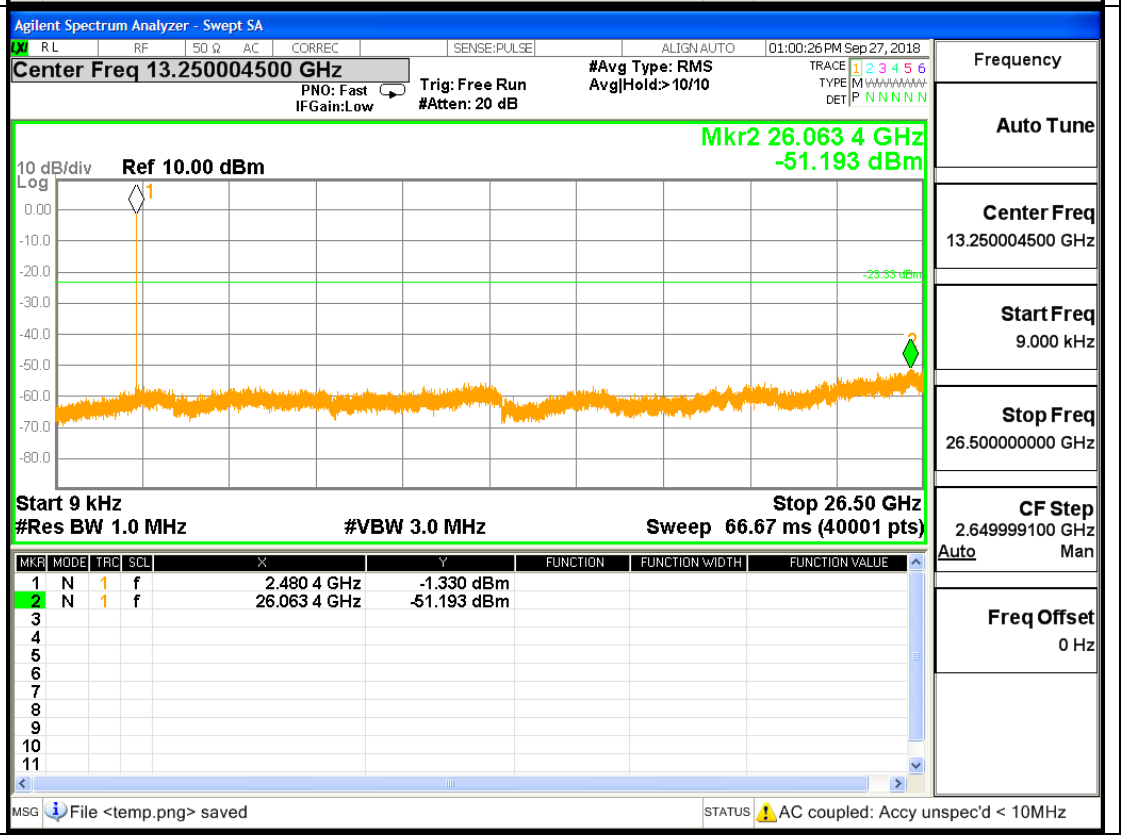
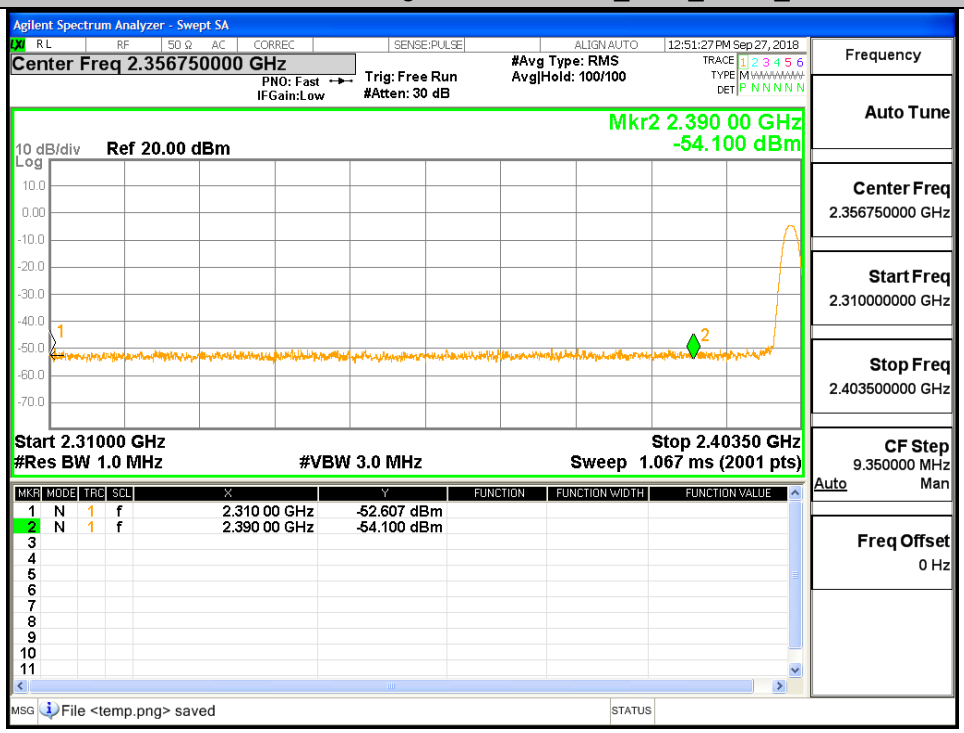
Pref	
Puw	

A.8. Restrict-band band-edge measurements

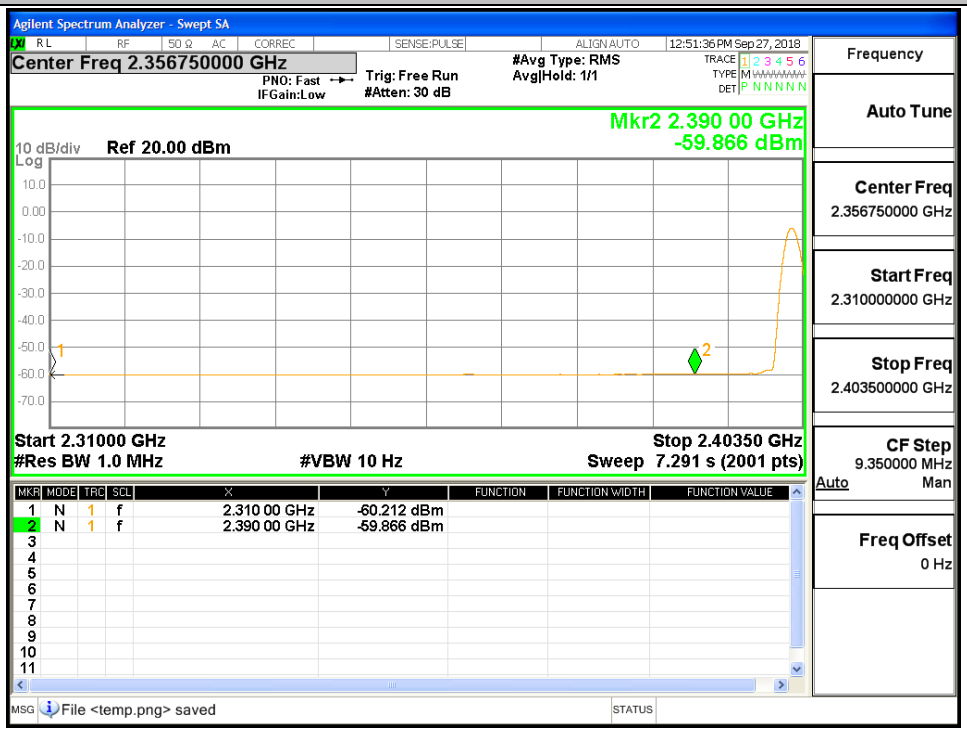
Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdi
GFSK	Off	2310	-52.61	0	0	42.59	PEAK	74	Pass
	Off	2390	-54.10	0	0	41.1	PEAK	74	Pass
	Off	2483.5	-51.16	0	0	44.04	PEAK	74	Pass
	Off	2500	-52.09	0	0	43.11	PEAK	74	Pass
	Off	2310	-60.21	0	0	34.99	AV	54	Pass
	Off	2390	-59.87	0	0	35.33	AV	54	Pass
	Off	2483.5	-57.81	0	0	37.39	AV	54	Pass
	Off	2500	-59.32	0	0	35.88	AV	54	Pass
π/4DQPSK	Off	2310	-52.24	0	0	42.96	PEAK	74	Pass
	Off	2390	-52.79	0	0	42.41	PEAK	74	Pass
	Off	2483.5	-50.82	0	0	44.38	PEAK	74	Pass
	Off	2500	-52.10	0	0	43.1	PEAK	74	Pass
	Off	2310	-60.22	0	0	34.98	AV	54	Pass
	Off	2390	-59.85	0	0	35.35	AV	54	Pass
	Off	2483.5	-57.14	0	0	38.06	AV	54	Pass
	Off	2500	-59.26	0	0	35.94	AV	54	Pass
8DPSK	Off	2310	-52.67	0	0	42.53	PEAK	74	Pass
	Off	2390	-52.67	0	0	42.53	PEAK	74	Pass
	Off	2483.5	-51.68	0	0	43.52	PEAK	74	Pass
	Off	2500	-53.34	0	0	41.86	PEAK	74	Pass
	Off	2310	-60.23	0	0	34.97	AV	54	Pass
	Off	2390	-59.87	0	0	35.33	AV	54	Pass
	Off	2483.5	-57.16	0	0	38.04	AV	54	Pass
	Off	2500	-59.30	0	0	35.9	AV	54	Pass

Test Graph

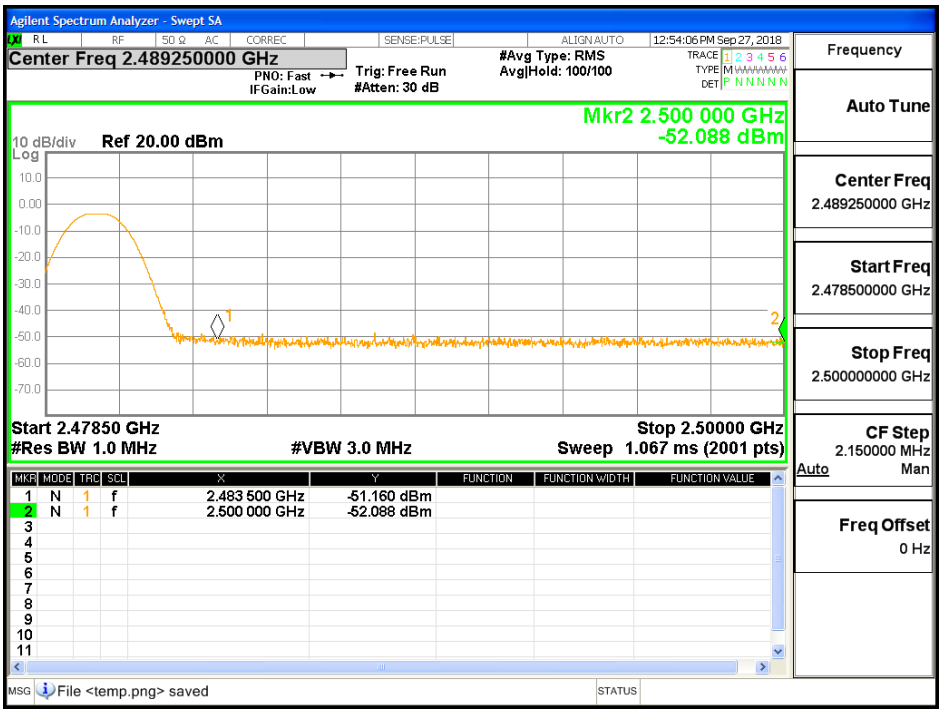
Restrict-band band-edge measurements_2402_PEAK_DH5



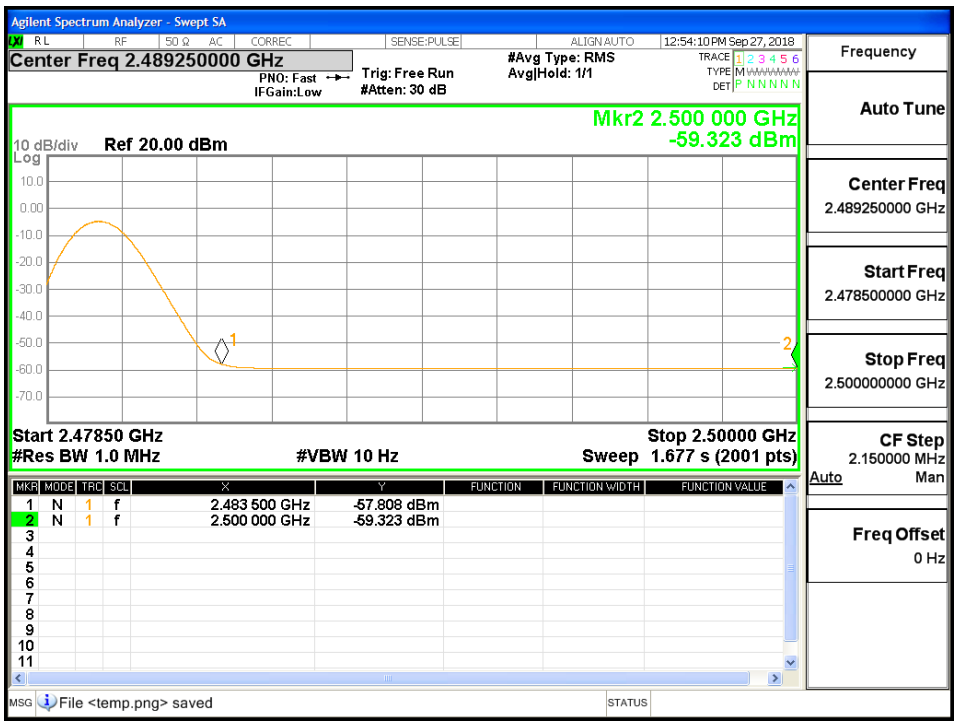
Restrict-band band-edge measurements_2402_AV_DH5



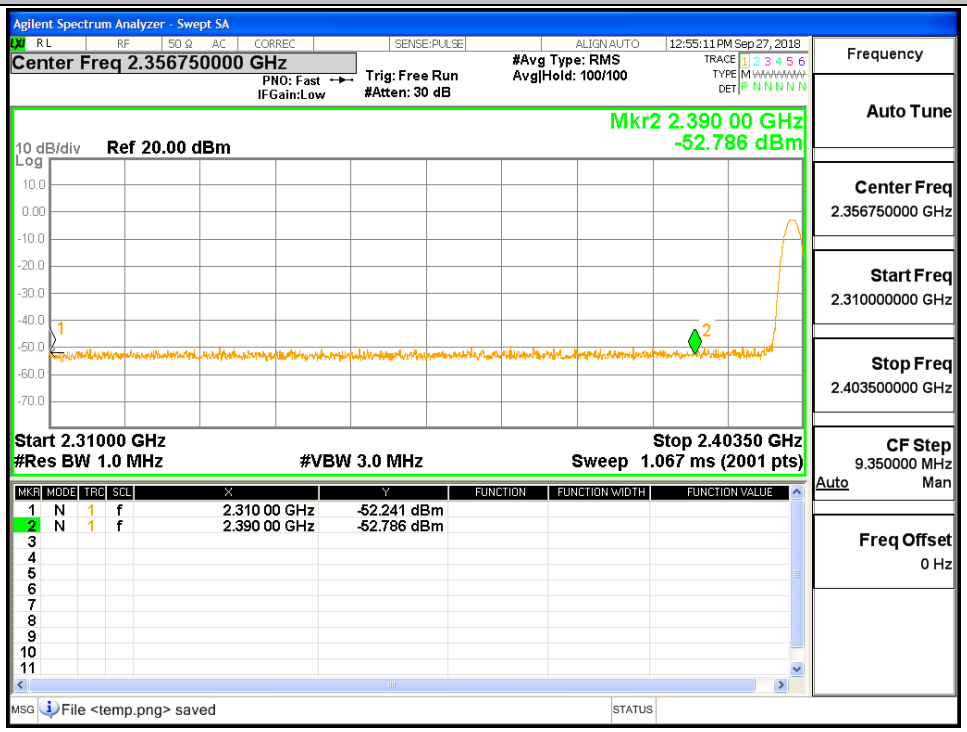
Restrict-band band-edge measurements_2480_PEAK_DH5



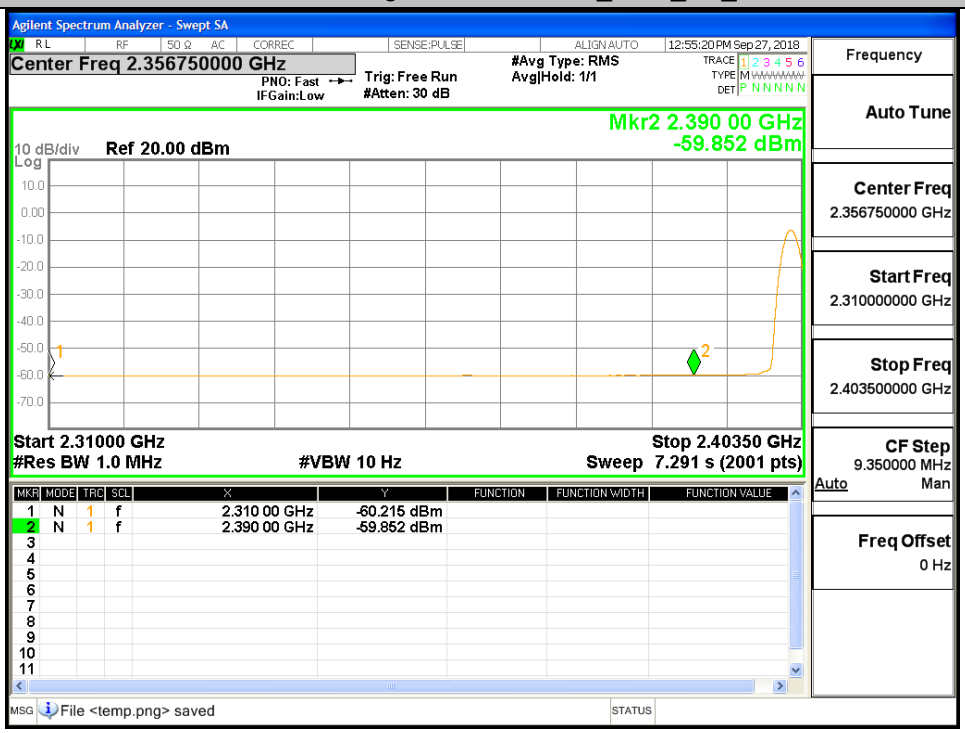
Restrict-band band-edge measurements_2480_AV_DH5



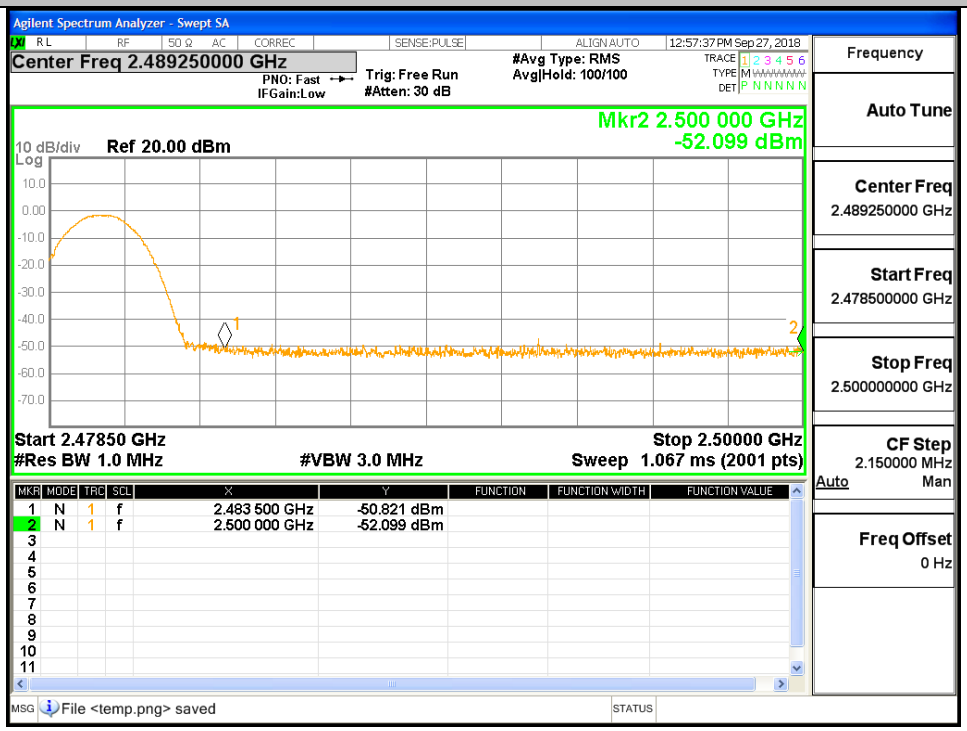
Restrict-band band-edge measurements_2402_PEAK_2DH5



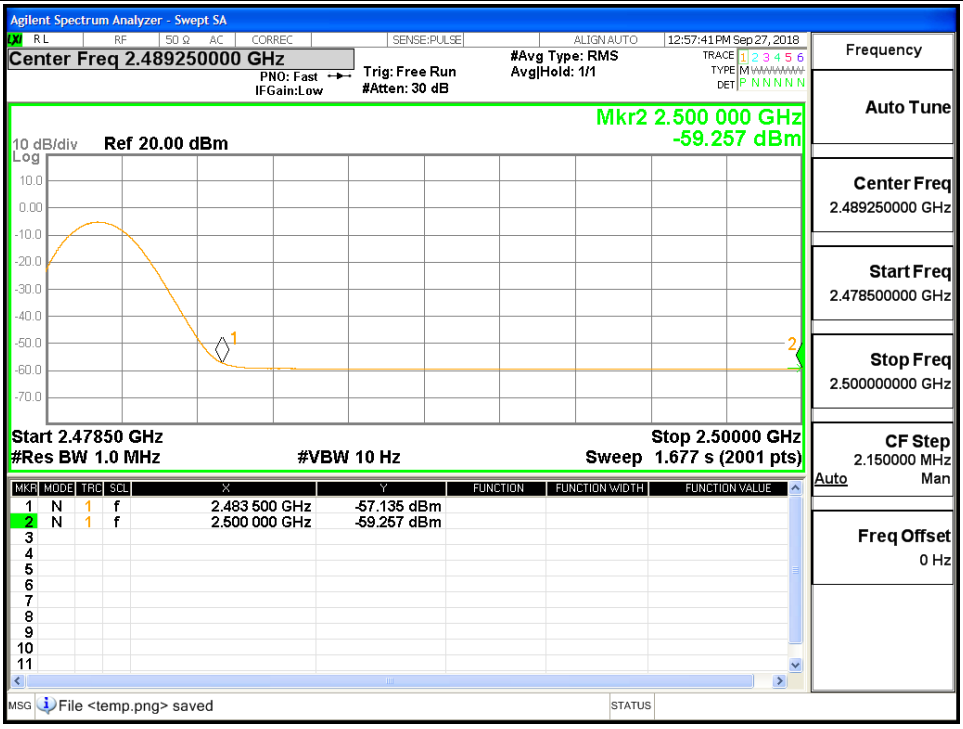
Restrict-band band-edge measurements_2402_AV_2DH5



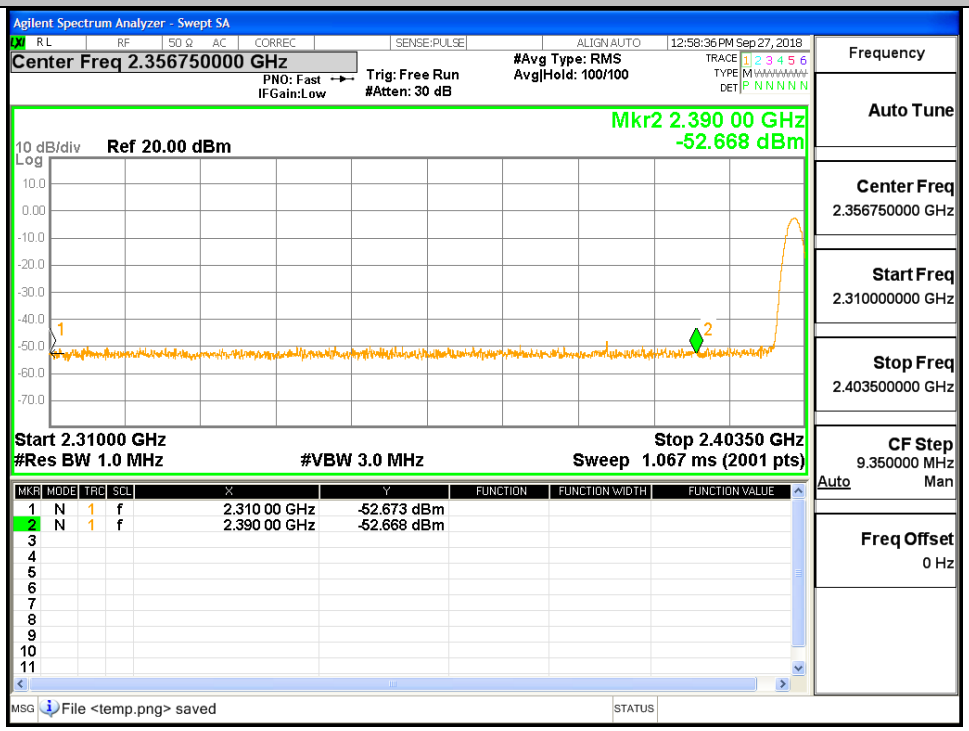
Restrict-band band-edge measurements_2480_PEAK_2DH5



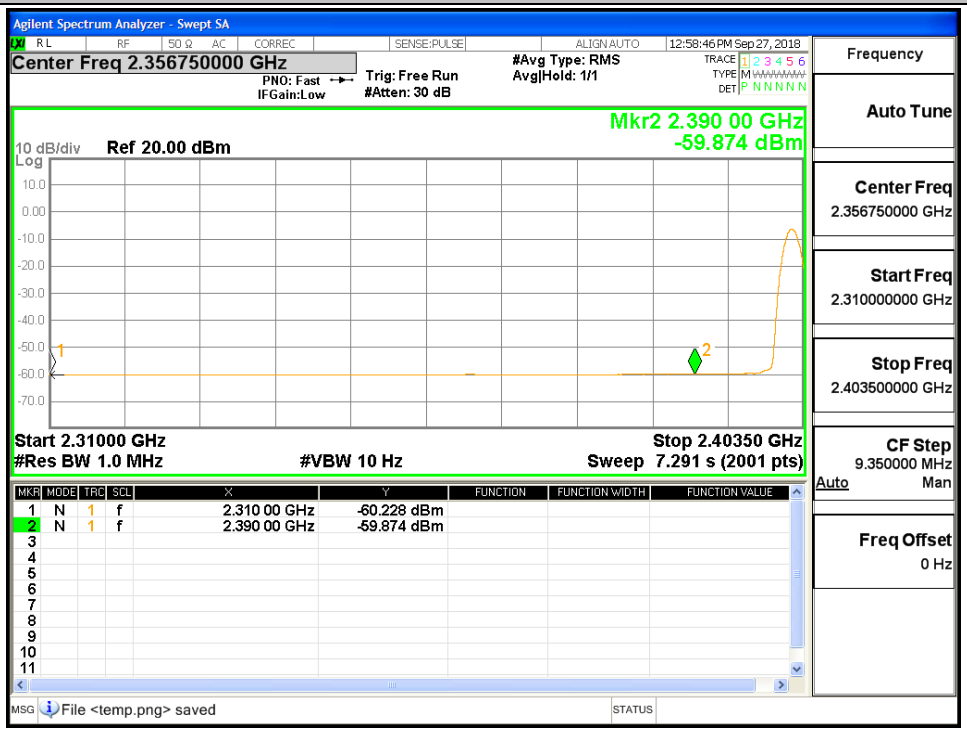
Restrict-band band-edge measurements_2480_AV_2DH5



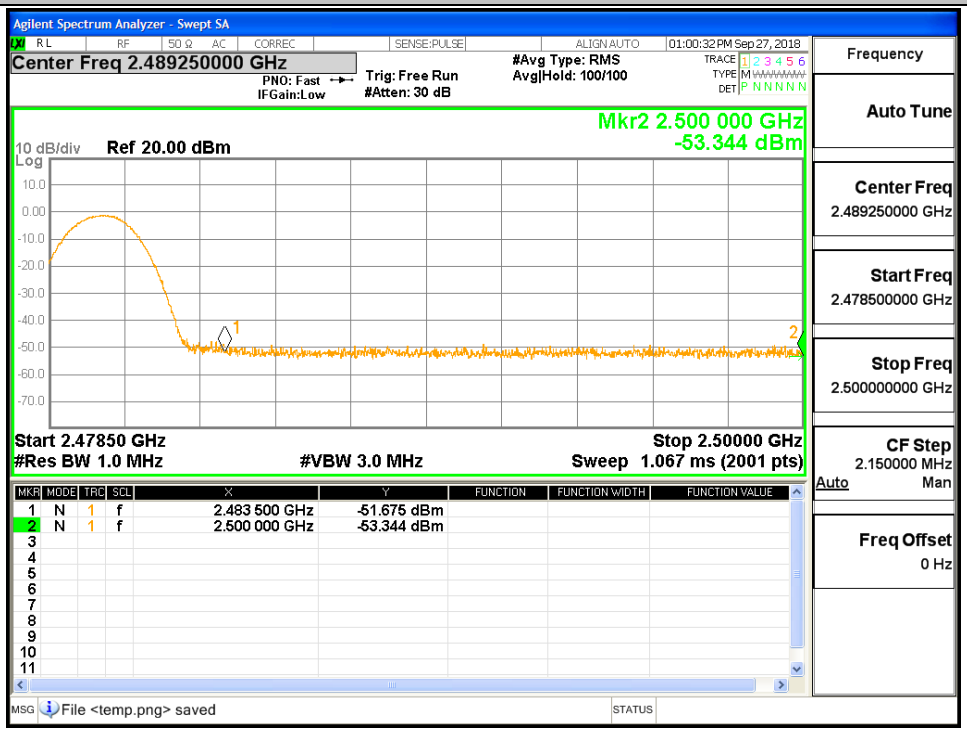
Restrict-band band-edge measurements_2402_PEAK_3DH5



Restrict-band band-edge measurements_2402_AV_3DH5



Restrict-band band-edge measurements_2480_PEAK_3DH5



Restrict-band band-edge measurements_2480_AV_3DH5