

Appendix A

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

Product Name: BLUETOOTH EARPHONE

Trade Mark: N/A

Test Model: TQ1008

Environmental Conditions

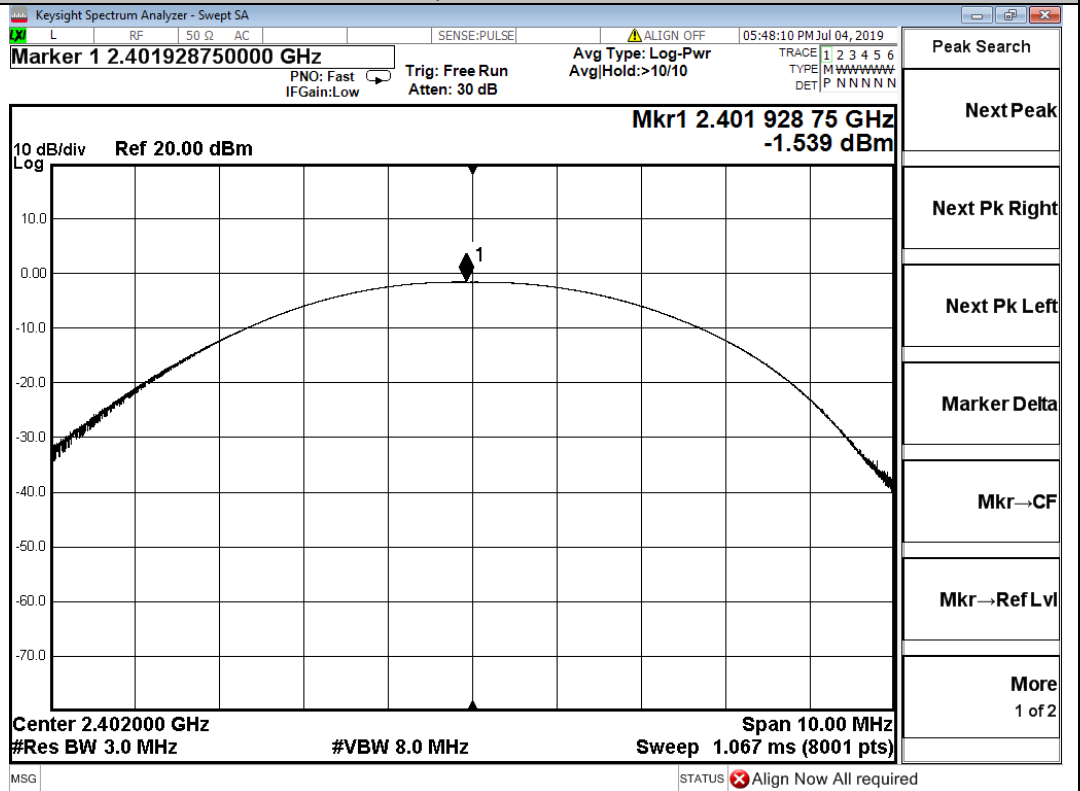
Temperature:	23.2 ° C
Relative Humidity:	58%
ATM Pressure:	100.0 kPa
Test Engineer:	CHUANG WANG
Supervised by:	JAYDEN ZHUO

A.1 Maximum Conducted Peak Output Power

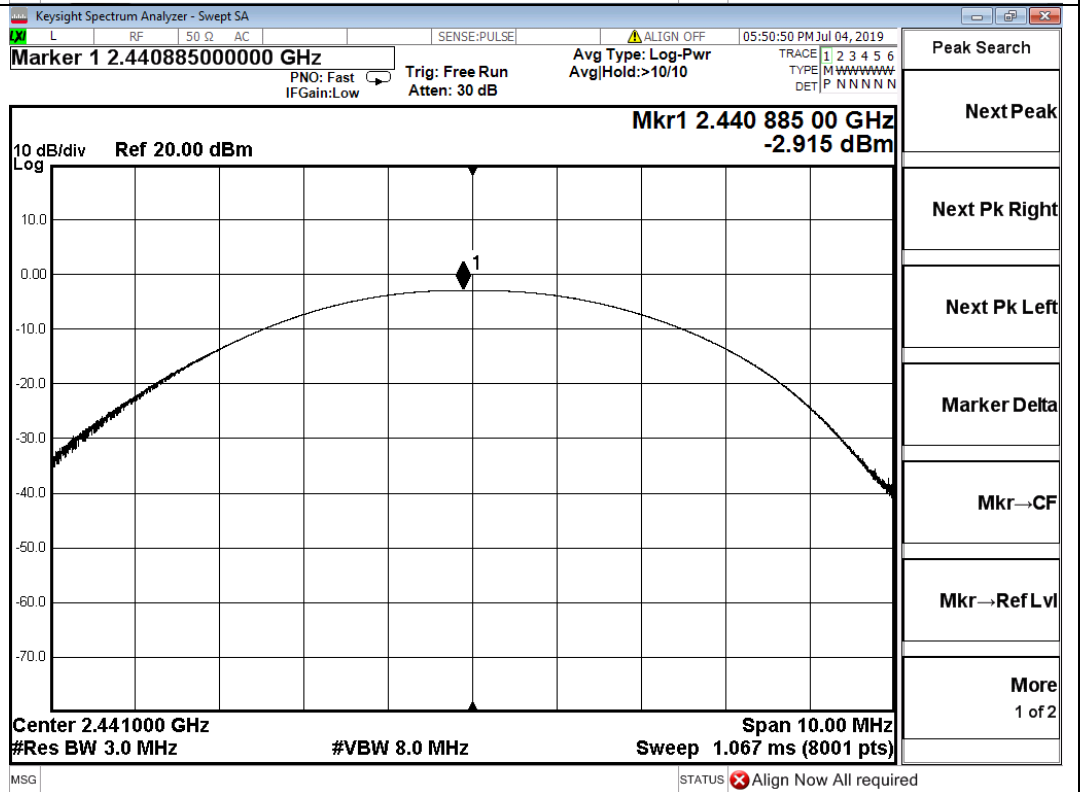
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-1.539	21	PASS
	MCH	-2.915	21	PASS
	HCH	-4.141	21	PASS
π/4DQPSK	LCH	-1.206	21	PASS
	MCH	-2.518	21	PASS
	HCH	-3.706	21	PASS

Test Graphs

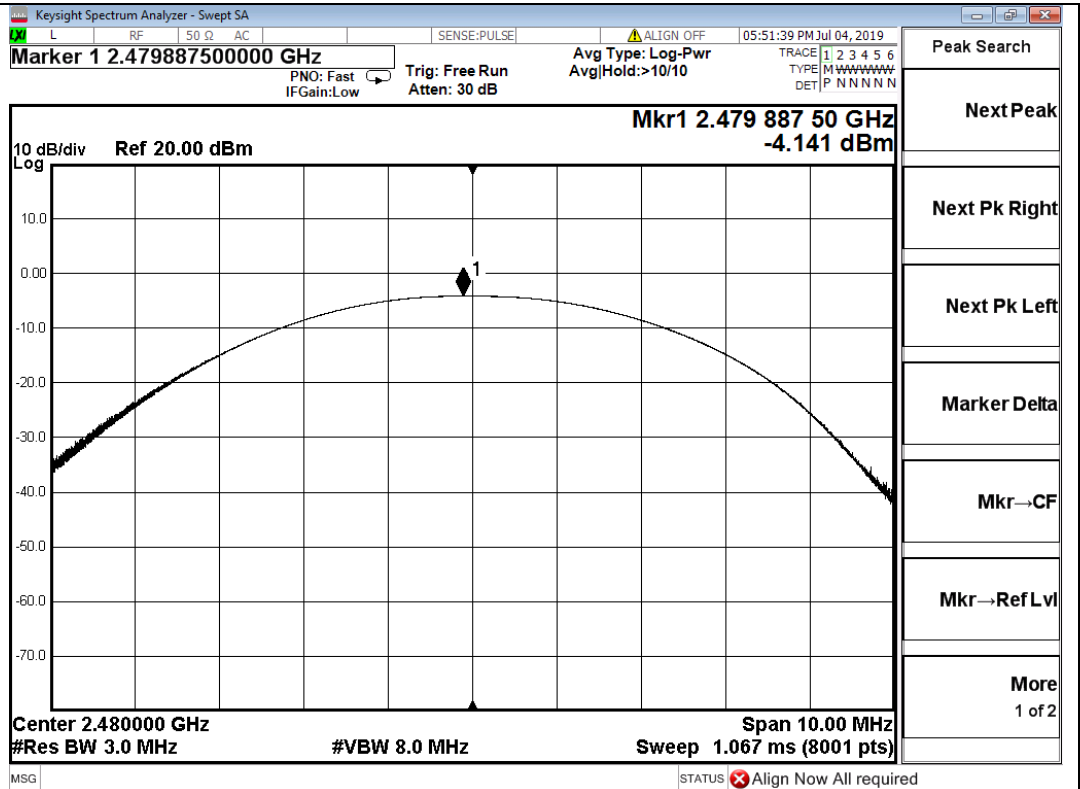
GFSK/LCH



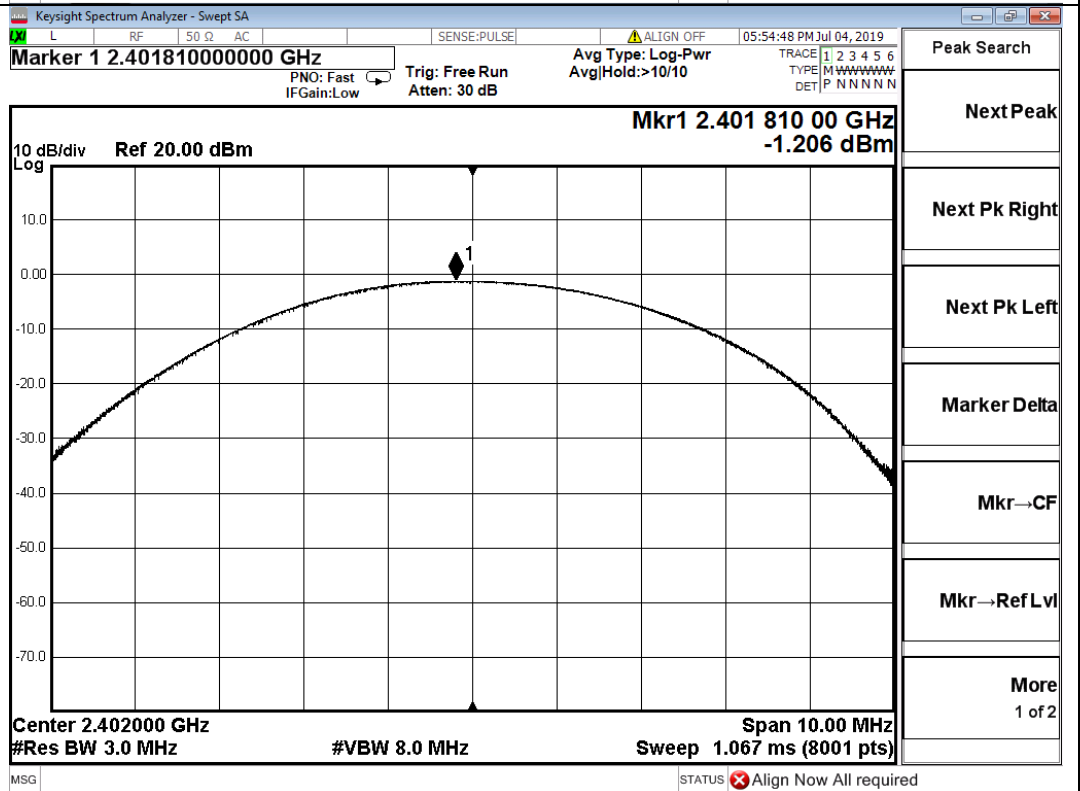
GFSK/MCH



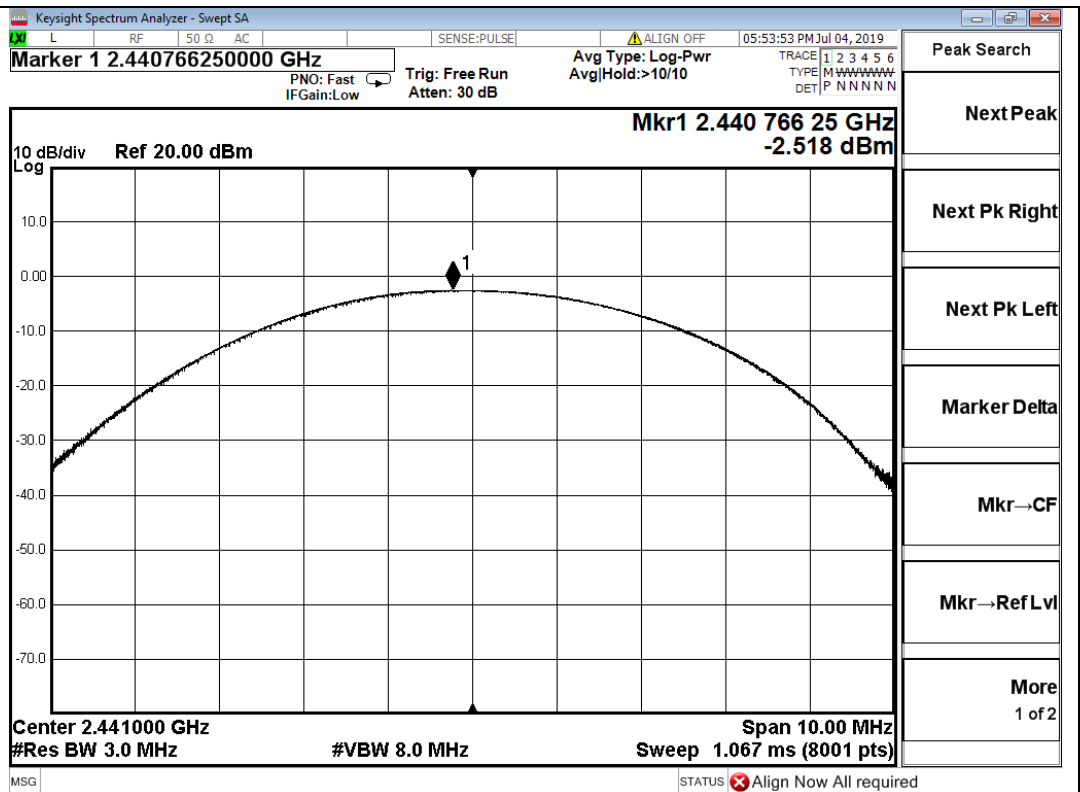
GFSK/HCH



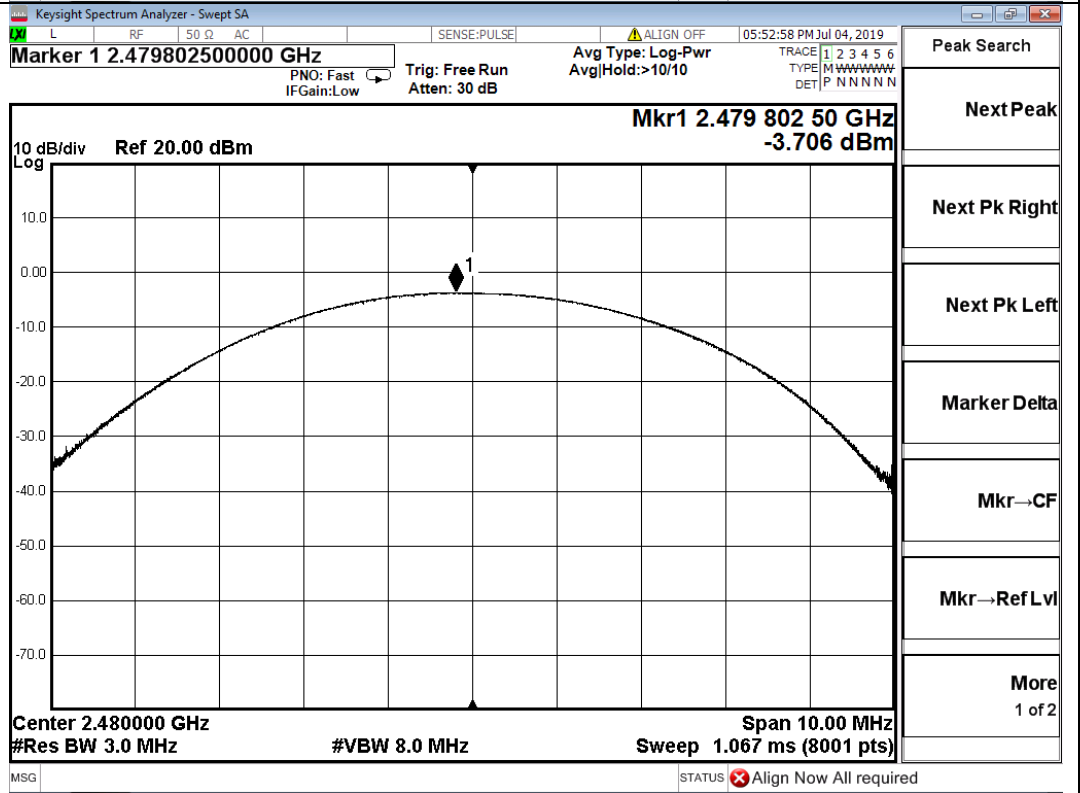
π /4DQPSK/LCH



$\pi/4$ DQPSK/MCH

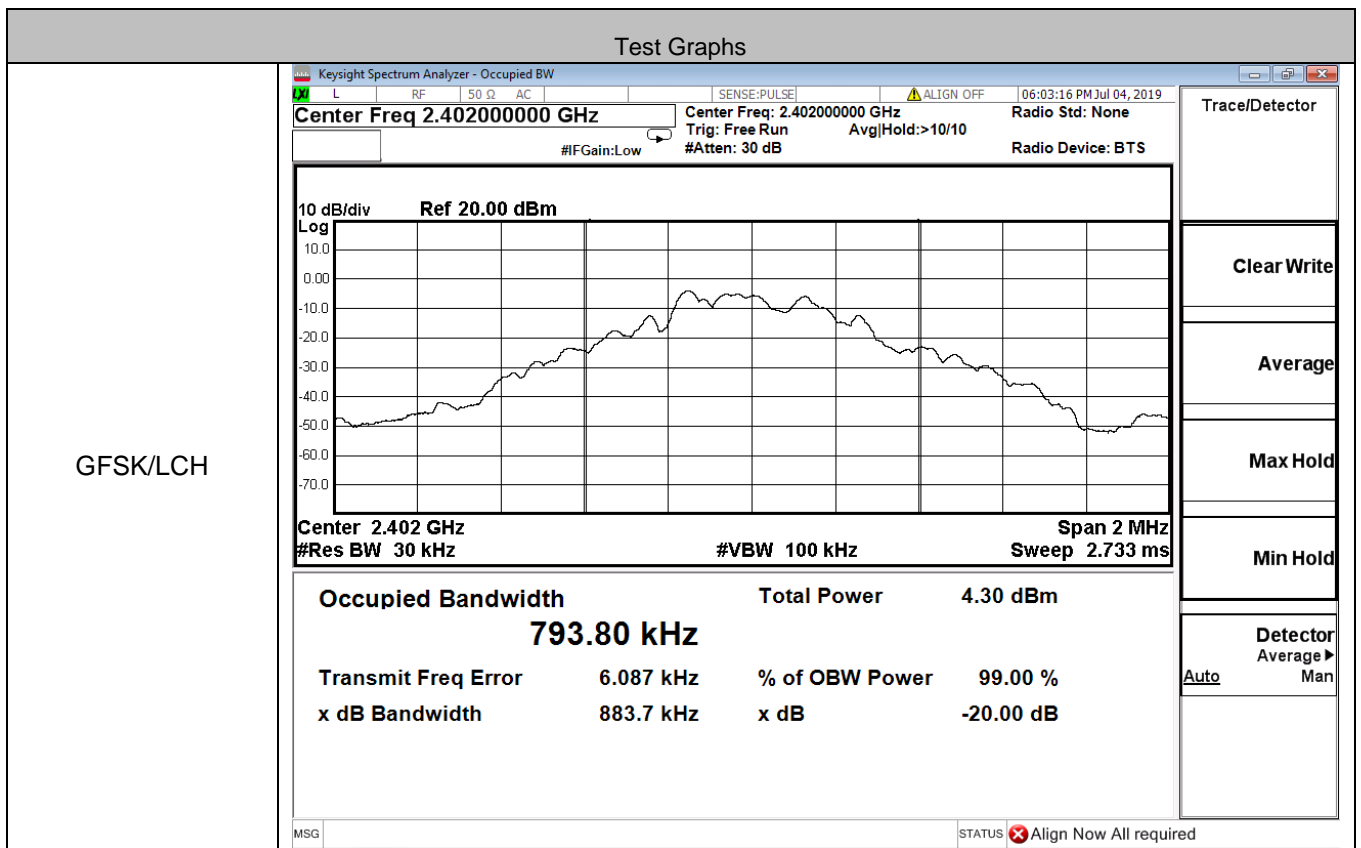


$\pi/4$ DQPSK/HCH

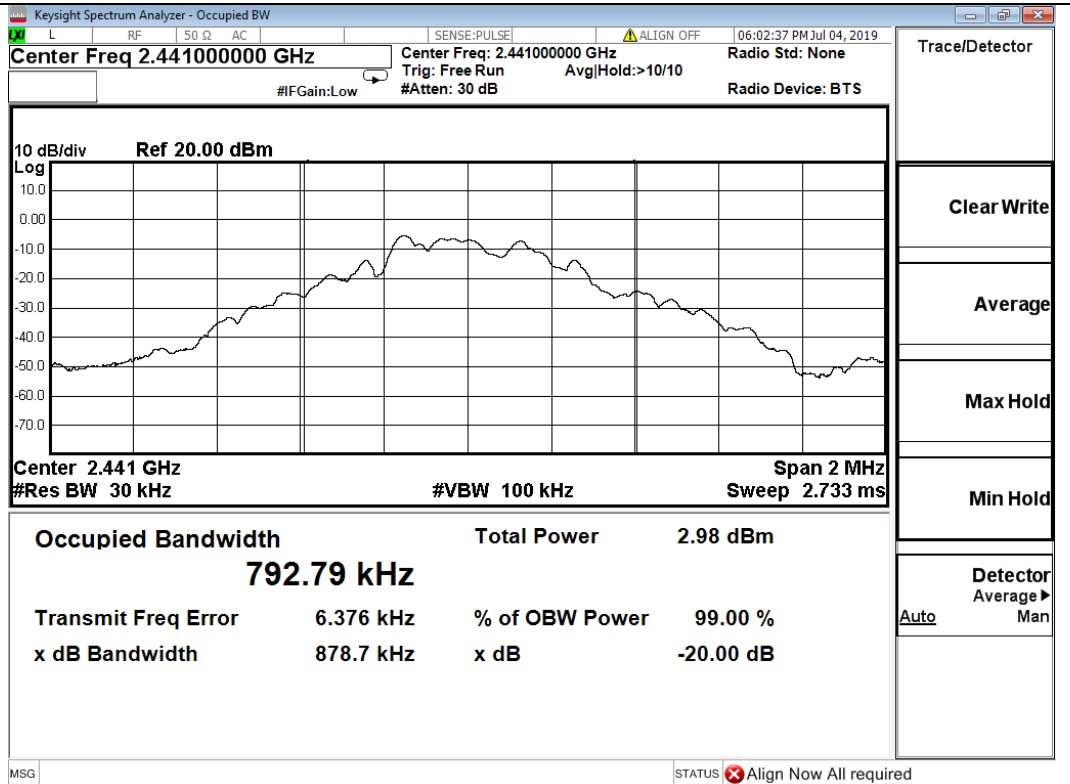


A.2 99% and 20dB Bandwidth

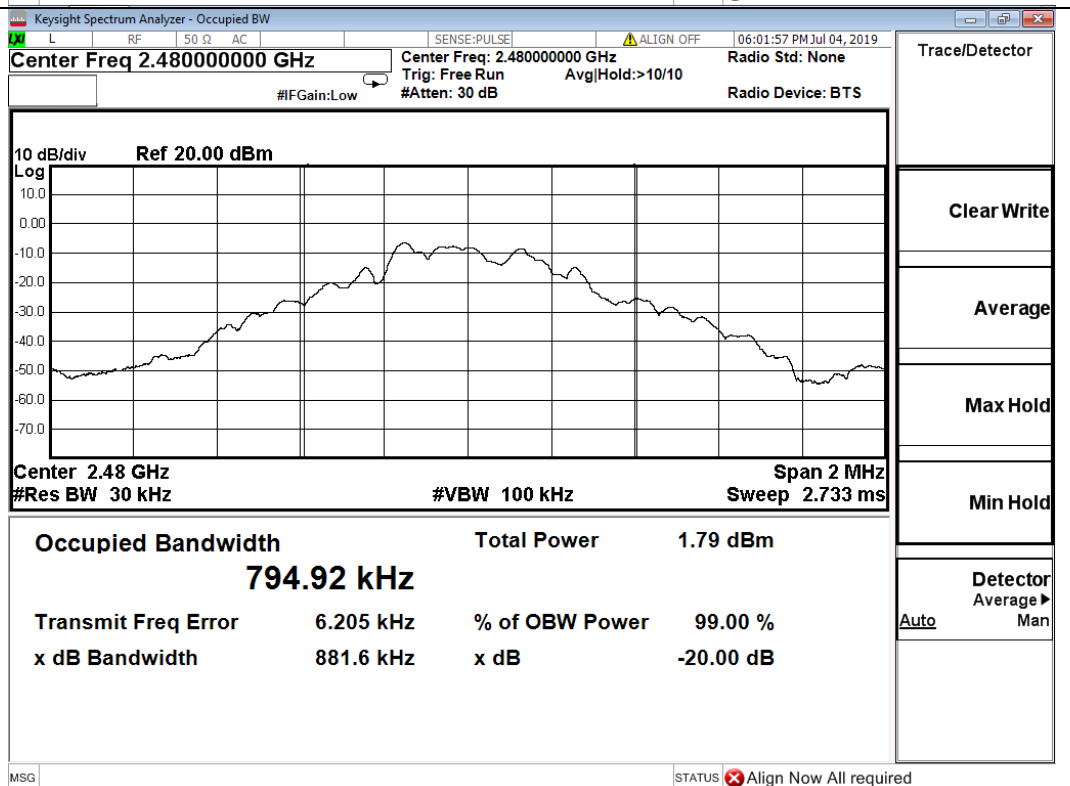
Mode	Channel.	99% Bandwidth [MHz]	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.79380	0.8837	Not Specified	PASS
	MCH	0.79279	0.8787	Not Specified	PASS
	HCH	0.79492	0.8816	Not Specified	PASS
π/4DQPSK	LCH	1.0584	1.113	Not Specified	PASS
	MCH	1.0590	1.113	Not Specified	PASS
	HCH	1.0583	1.112	Not Specified	PASS



GFSK/MCH



GFSK/HCH



$\pi/4$ DQPSK/LCH

Center Freq: 2.40200000 GHz
 #Res BW 30 kHz
 #VBW 100 kHz
 Span 2 MHz
 Sweep 2.733 ms

Occupied Bandwidth	Total Power		4.40 dBm
1.0584 MHz			
Transmit Freq Error	6.309 kHz	% of OBW Power	99.00 %
x dB Bandwidth	1.113 MHz	x dB	-20.00 dB

Trace/Detector

Clear Write

Average

Max Hold

Min Hold

Detector Average
 Auto Man

$\pi/4$ DQPSK/MCH

Center Freq: 2.441000000 GHz
 #Res BW 30 kHz
 #VBW 100 kHz
 Span 2 MHz
 Sweep 2.733 ms

Occupied Bandwidth	Total Power		3.07 dBm
1.0590 MHz			
Transmit Freq Error	6.656 kHz	% of OBW Power	99.00 %
x dB Bandwidth	1.113 MHz	x dB	-20.00 dB

Trace/Detector

Clear Write

Average

Max Hold

Min Hold

Detector Average
 Auto Man

$\pi/4$ DQPSK/HCH

Center Freq 2.48000000 GHz		Center Freq: 2.480000000 GHz		Radio Std: None	
#IFGain: Low		Trig: Free Run		Avg Hold: >10/10	
		#Atten: 30 dB		Radio Device: BTS	
10 dB/div		Ref 20.00 dBm			
Center 2.48 GHz		#Res BW 30 kHz		Span 2 MHz	
		#VBW 100 kHz		Sweep 2.733 ms	
Occupied Bandwidth		Total Power		1.85 dBm	
1.0583 MHz					
Transmit Freq Error	6.752 kHz	% of OBW Power	99.00 %		
x dB Bandwidth	1.112 MHz	x dB	-20.00 dB		

Trace/Detector

Clear Write

Average

Max Hold

Min Hold

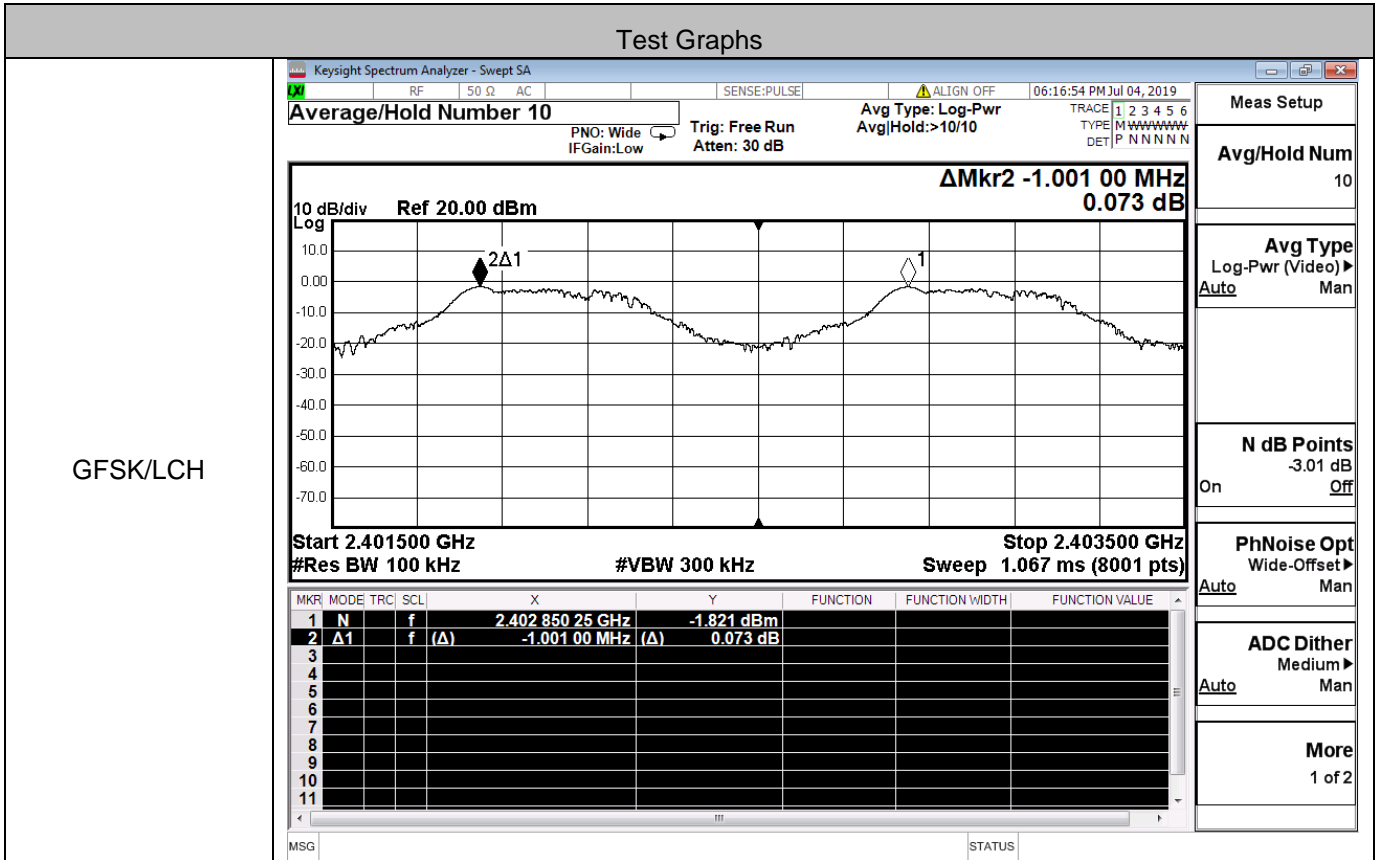
Detector
Average ▶
Auto Man

MSG

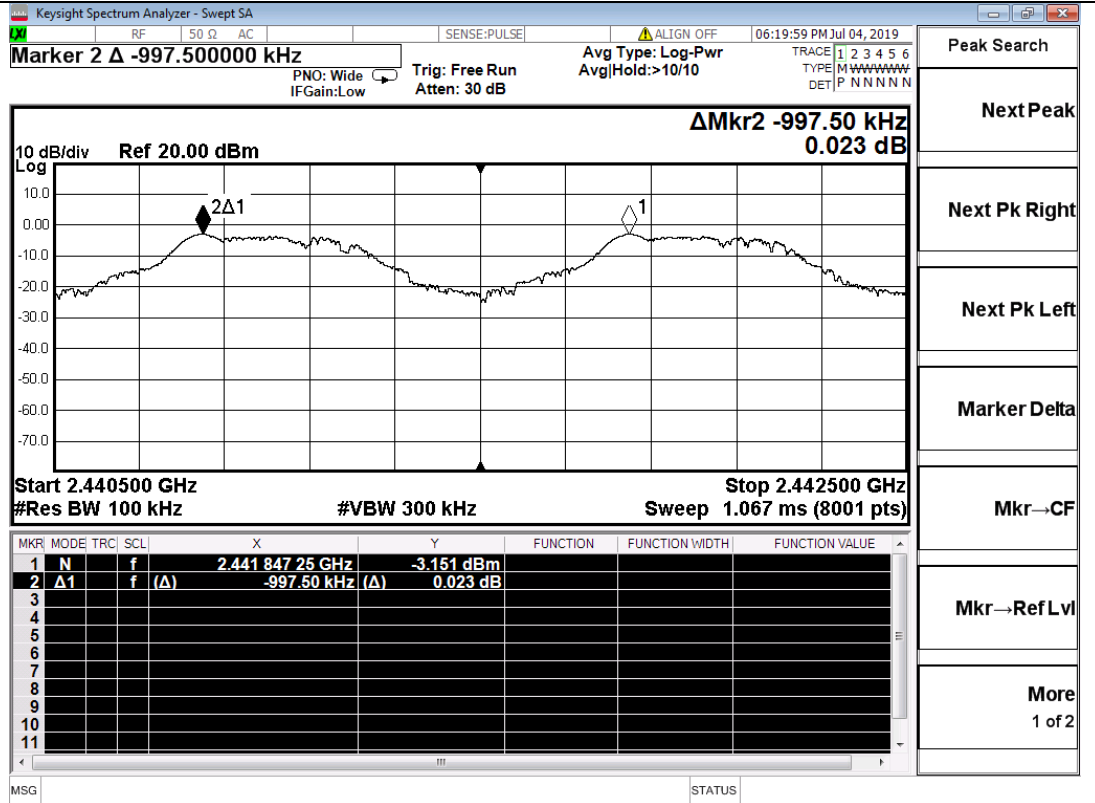
STATUS ✖ Align Now All required

A.3 Carrier Frequency Separation

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz] 2/3*20dB Bandwidth	Verdict
GFSK	LCH	1.001	0.589	PASS
	MCH	0.998	0.586	PASS
	HCH	1.001	0.588	PASS
π/4DQPSK	LCH	0.999	0.742	PASS
	MCH	1.002	0.742	PASS
	HCH	1.002	0.741	PASS

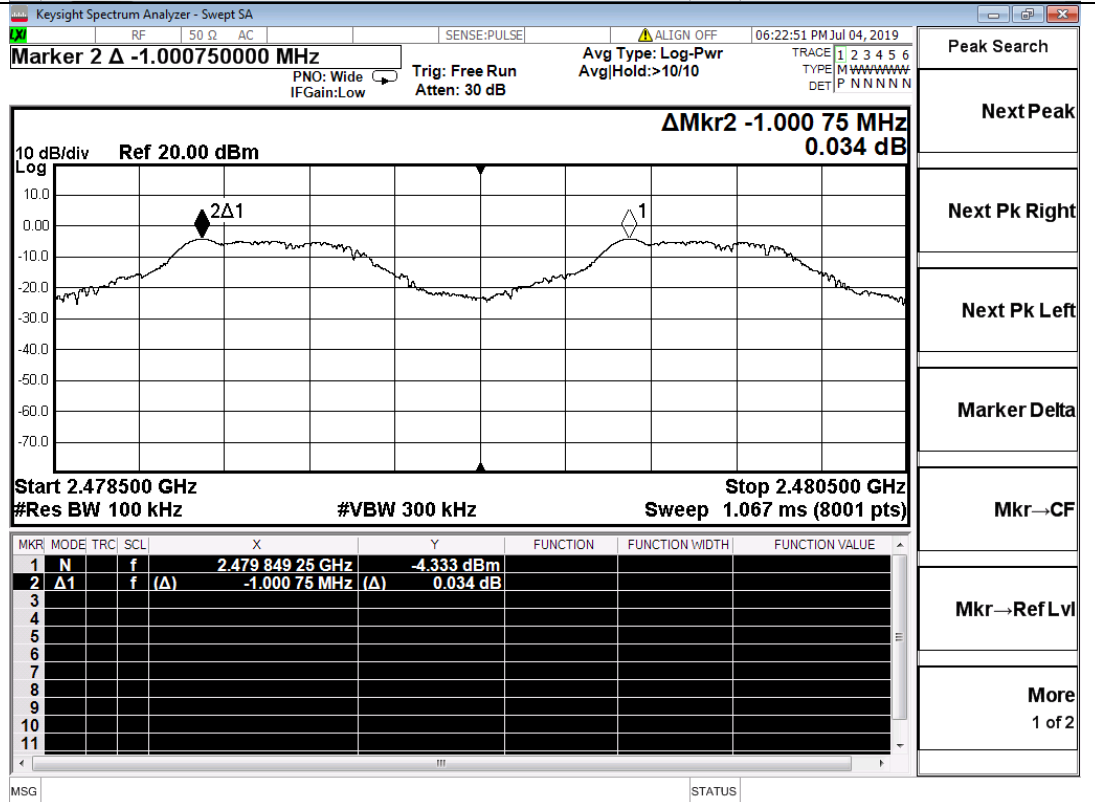


GFSK/MCH



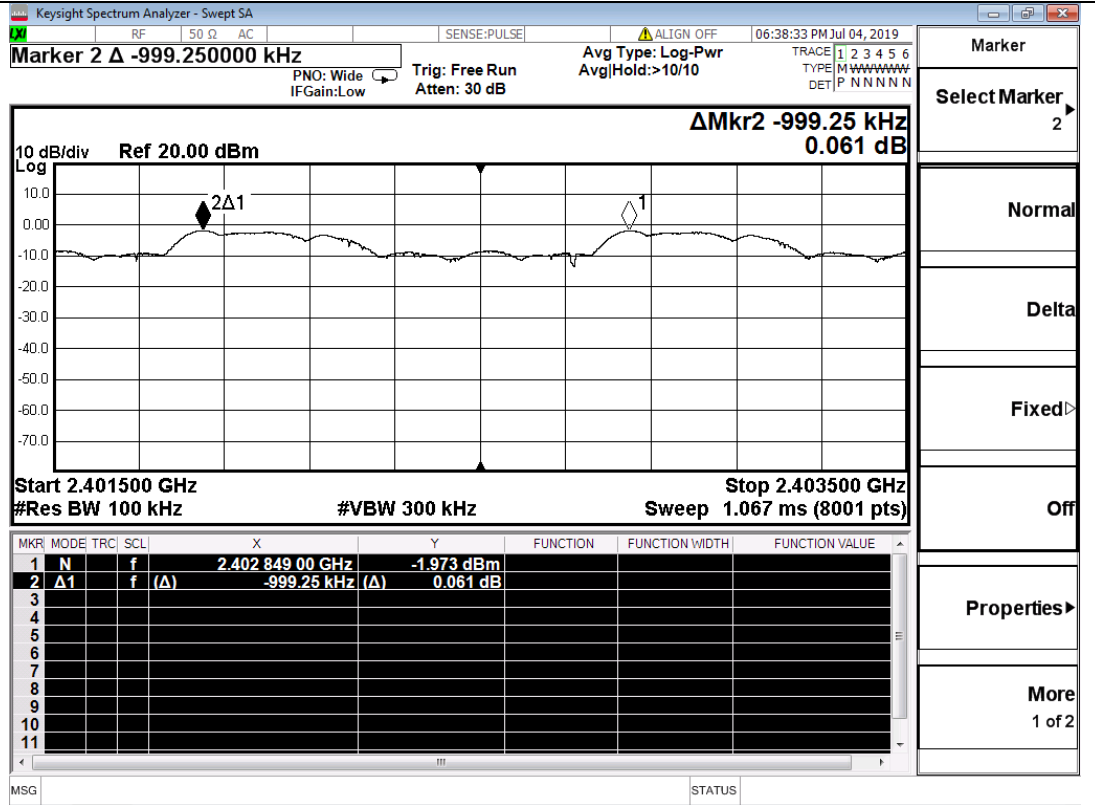
- Peak Search
- Next Peak
- Next Pk Right
- Next Pk Left
- Marker Delta
- Mkr→CF
- Mkr→Ref Lvl
- More
1 of 2

GFSK/HCH

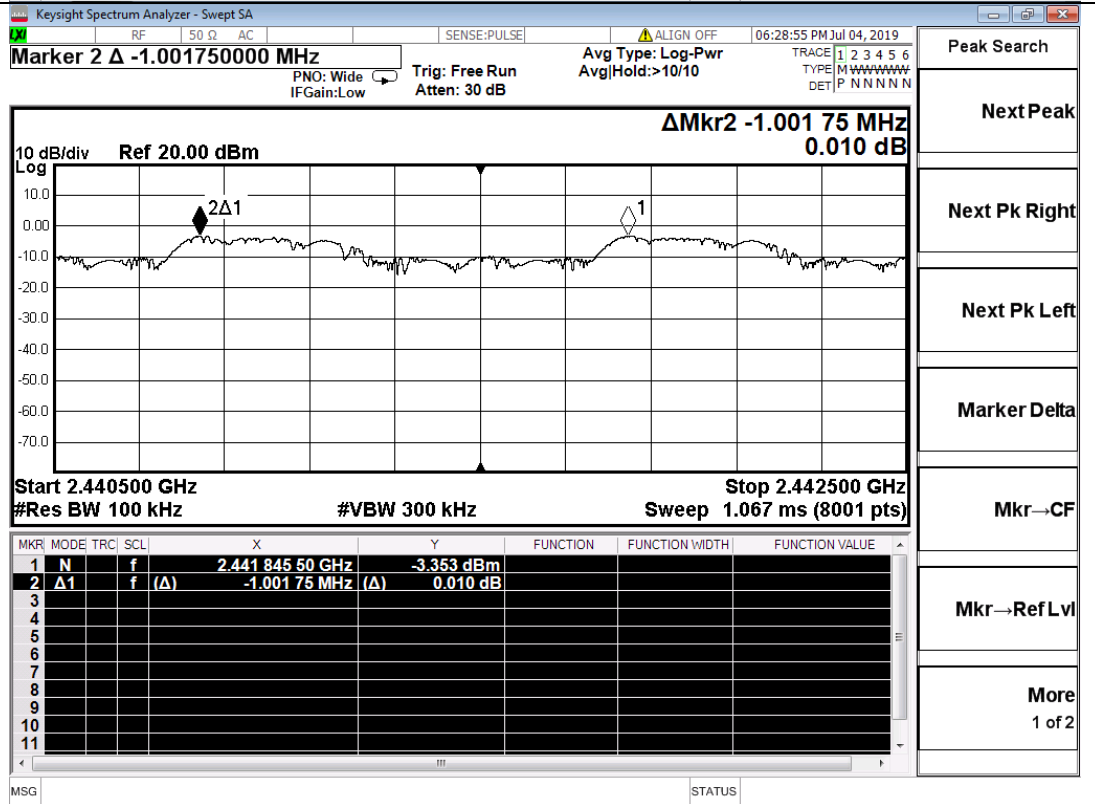


- Peak Search
- Next Peak
- Next Pk Right
- Next Pk Left
- Marker Delta
- Mkr→CF
- Mkr→Ref Lvl
- More
1 of 2

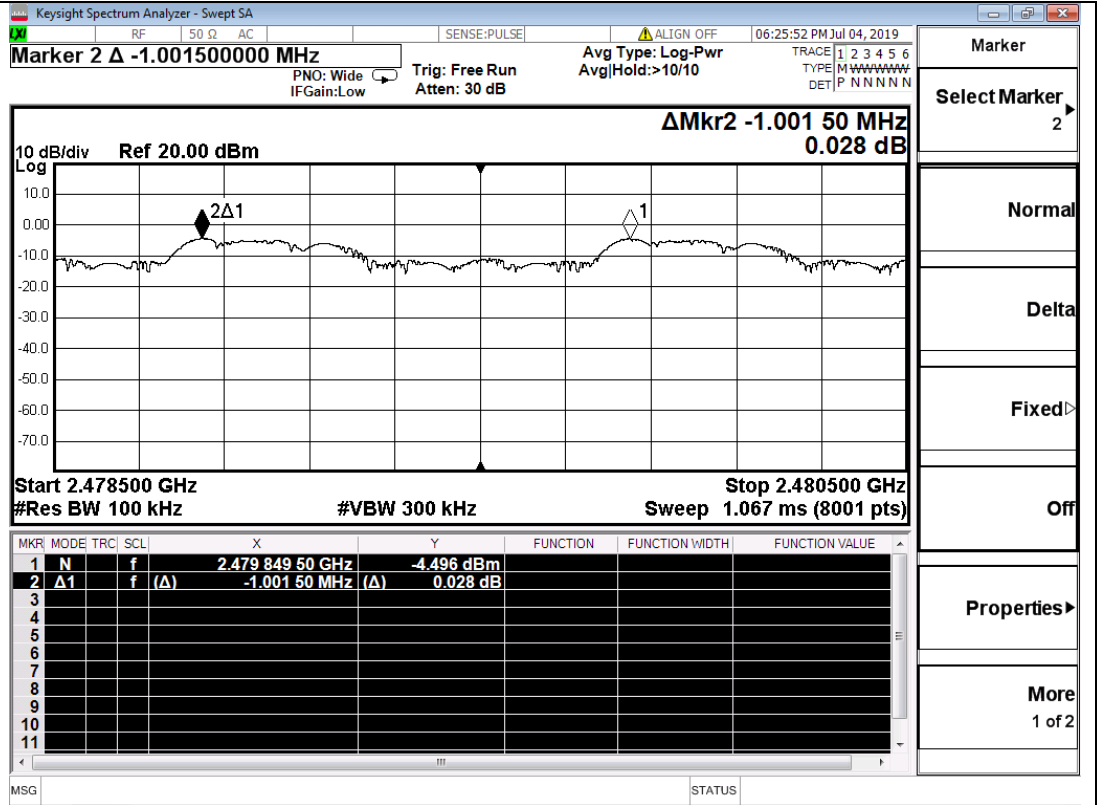
$\pi/4$ DQPSK/LCH



$\pi/4$ DQPSK/MCH

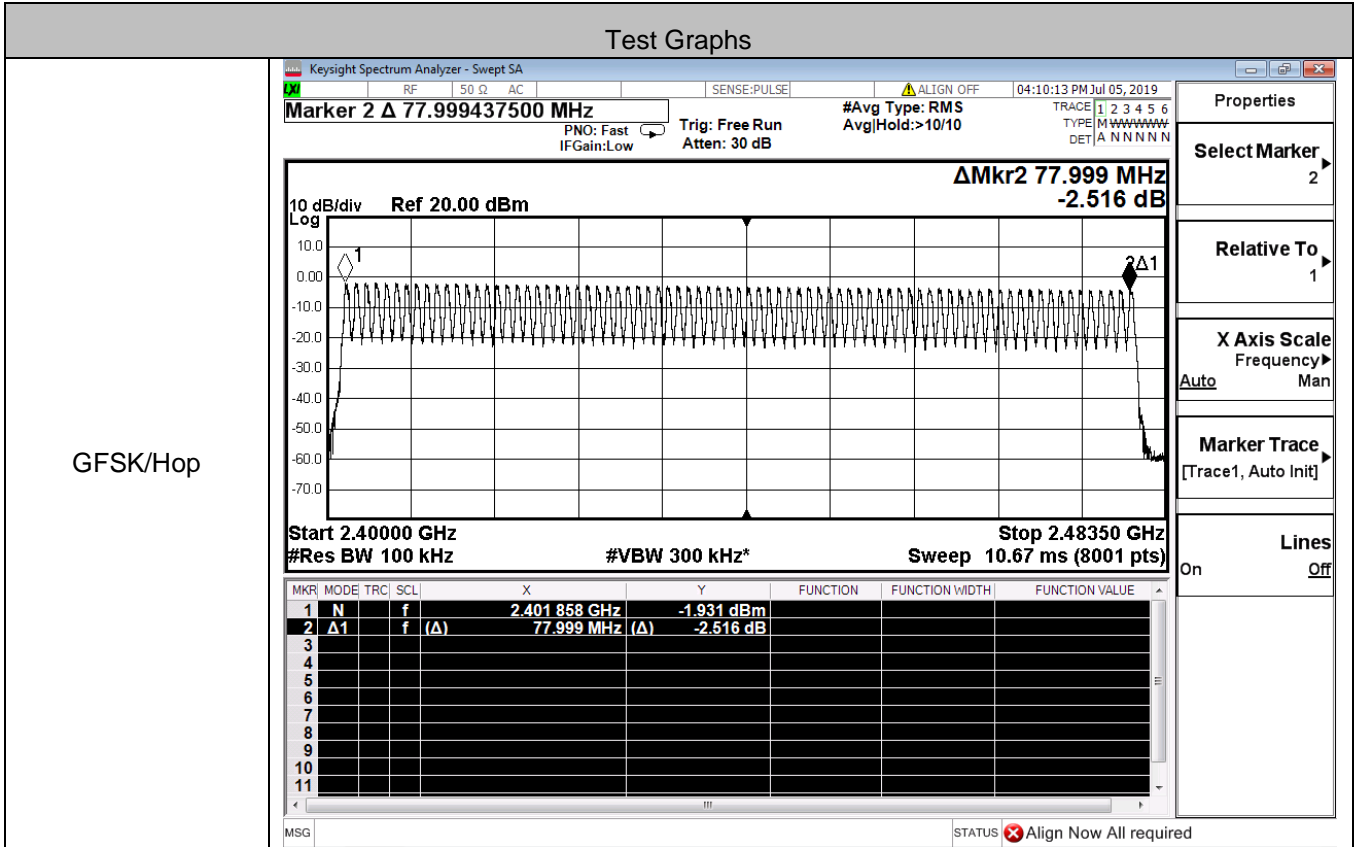


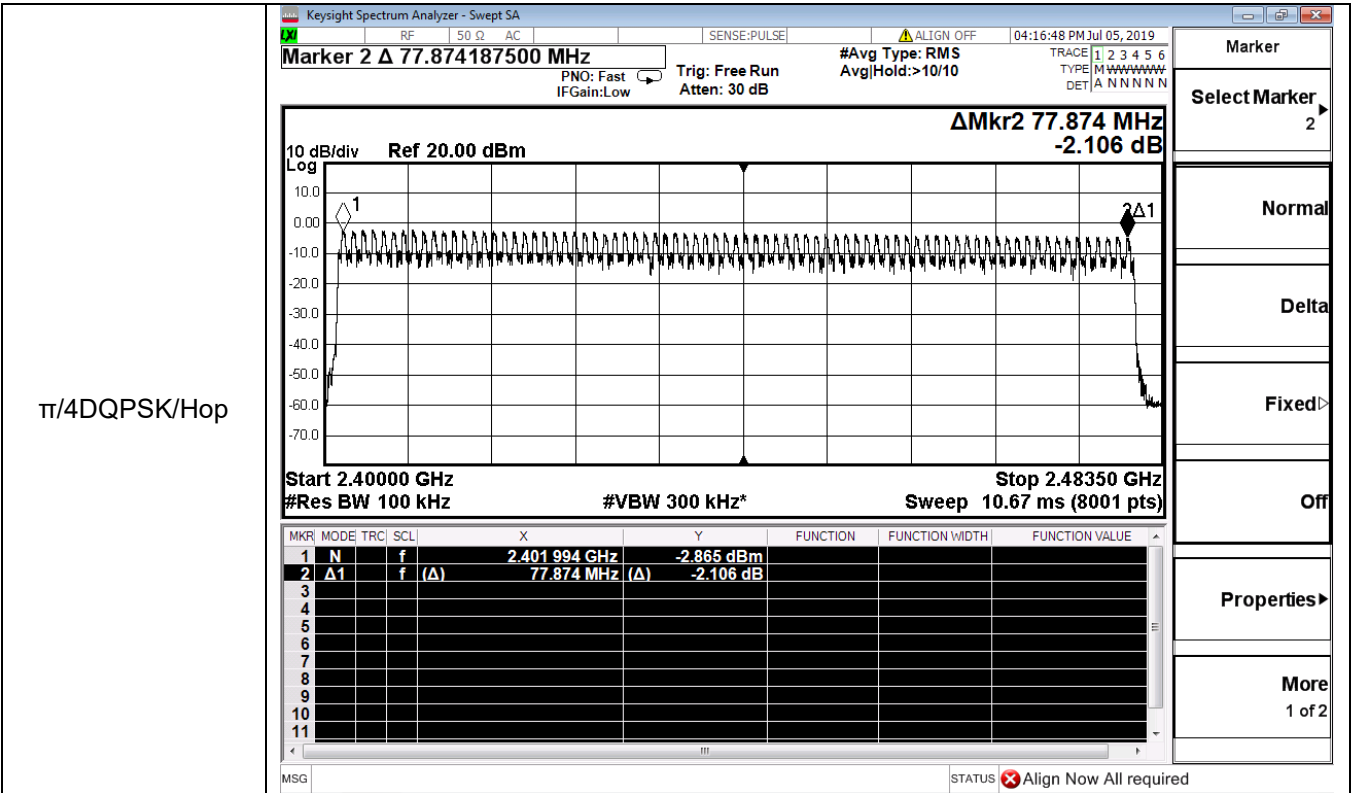
$\pi/4$ DQPSK/HCH



A.4 Hopping Channel Number

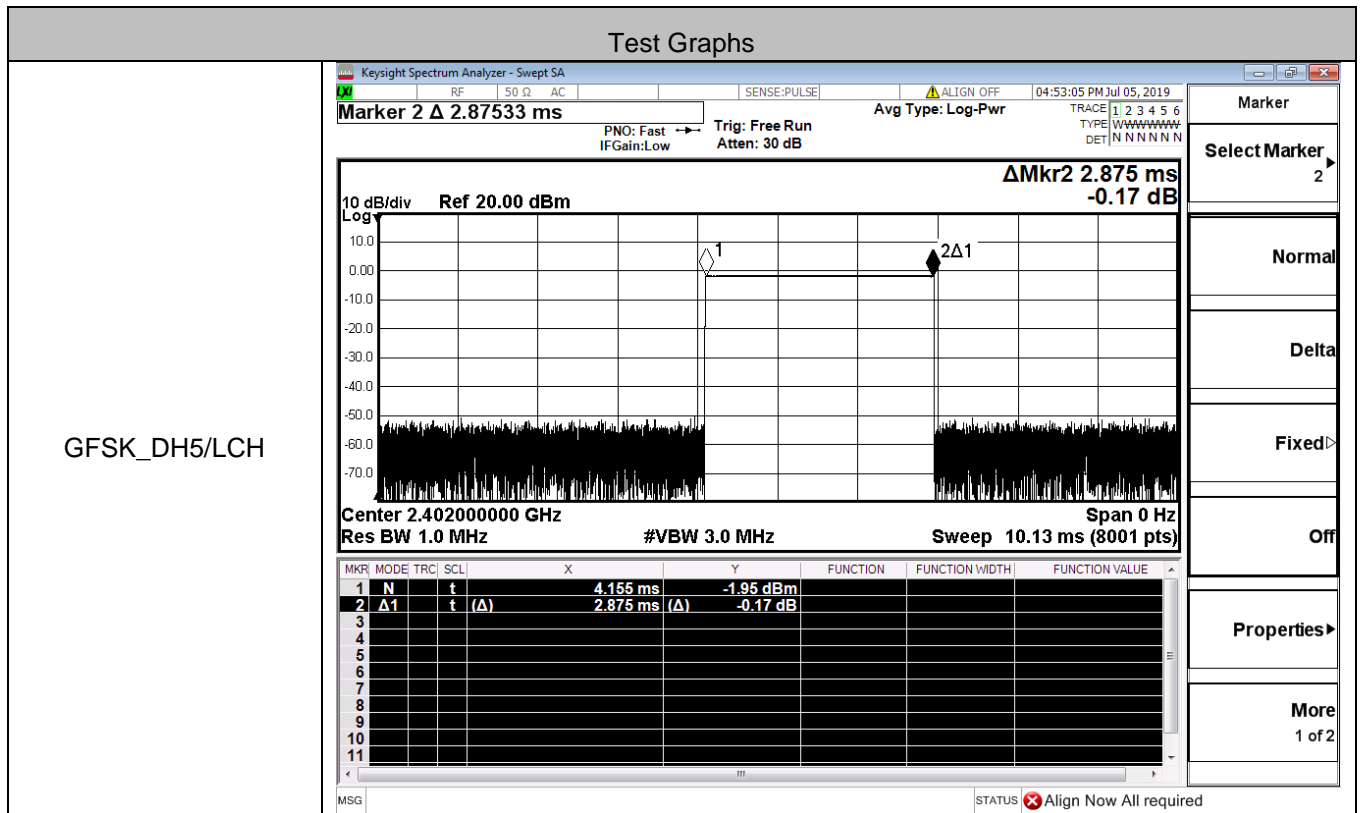
Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	>=15	PASS
$\pi/4$ DQPSK	Hop	79	>=15	PASS



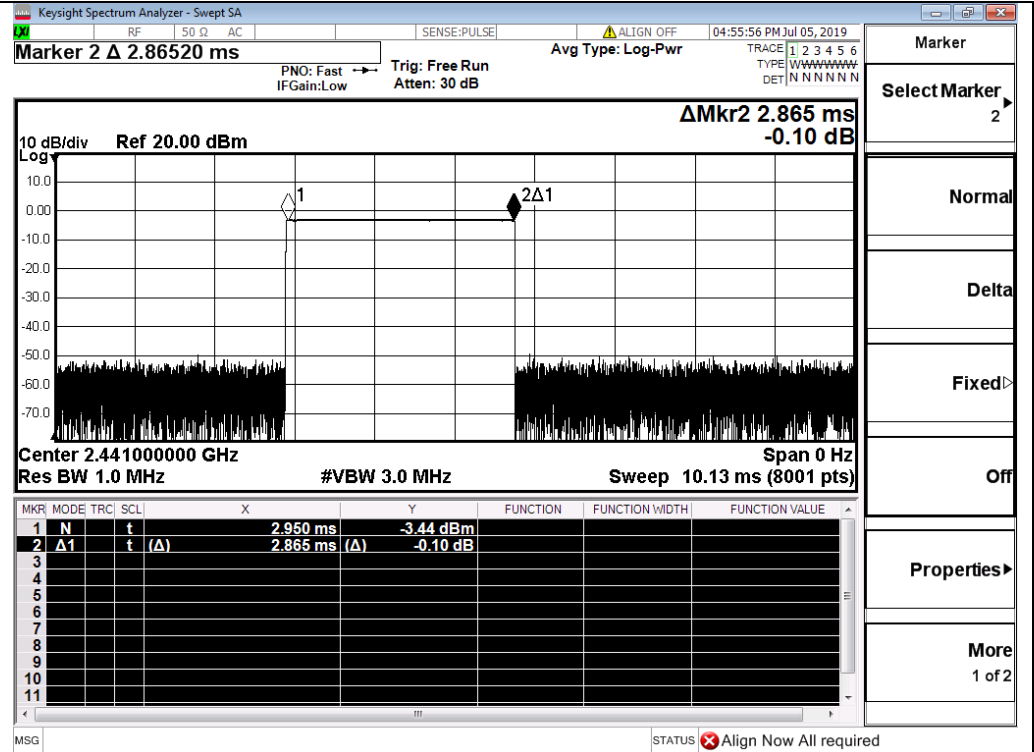


A.5 Dwell Time

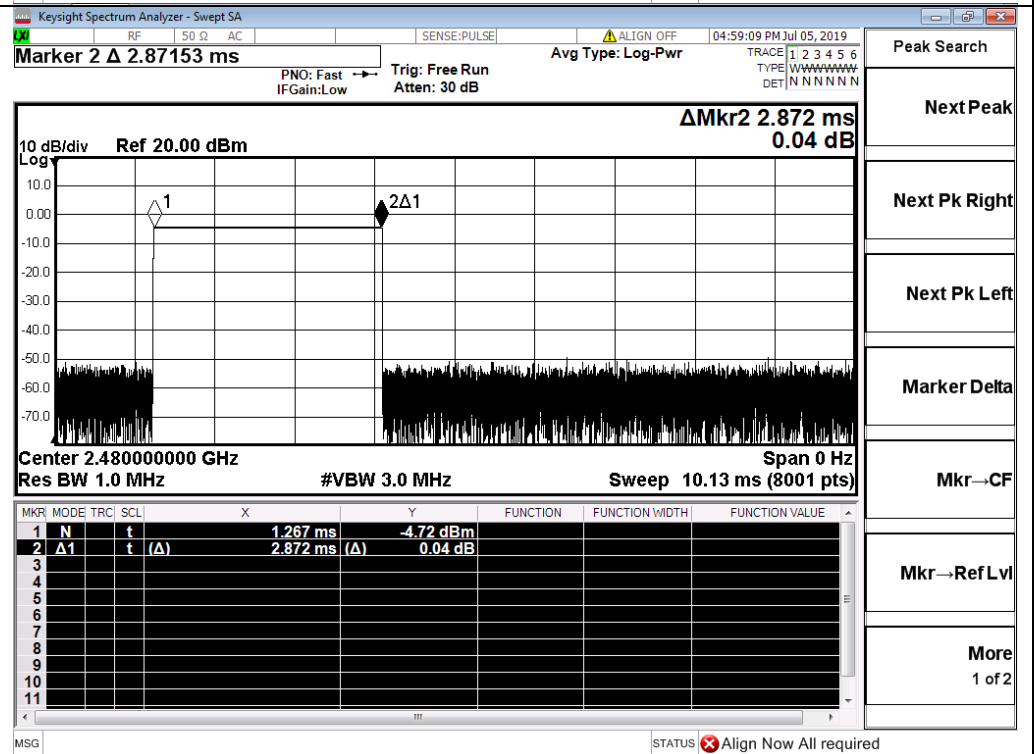
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.88	106.7	0.307	0.4	PASS
	DH5	MCH	2.87	106.7	0.306	0.4	PASS
	DH5	HCH	2.87	106.7	0.306	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.85	106.7	0.304	0.4	PASS
	2DH5	MCH	2.88	106.7	0.307	0.4	PASS
	2DH5	HCH	2.86	106.7	0.305	0.4	PASS



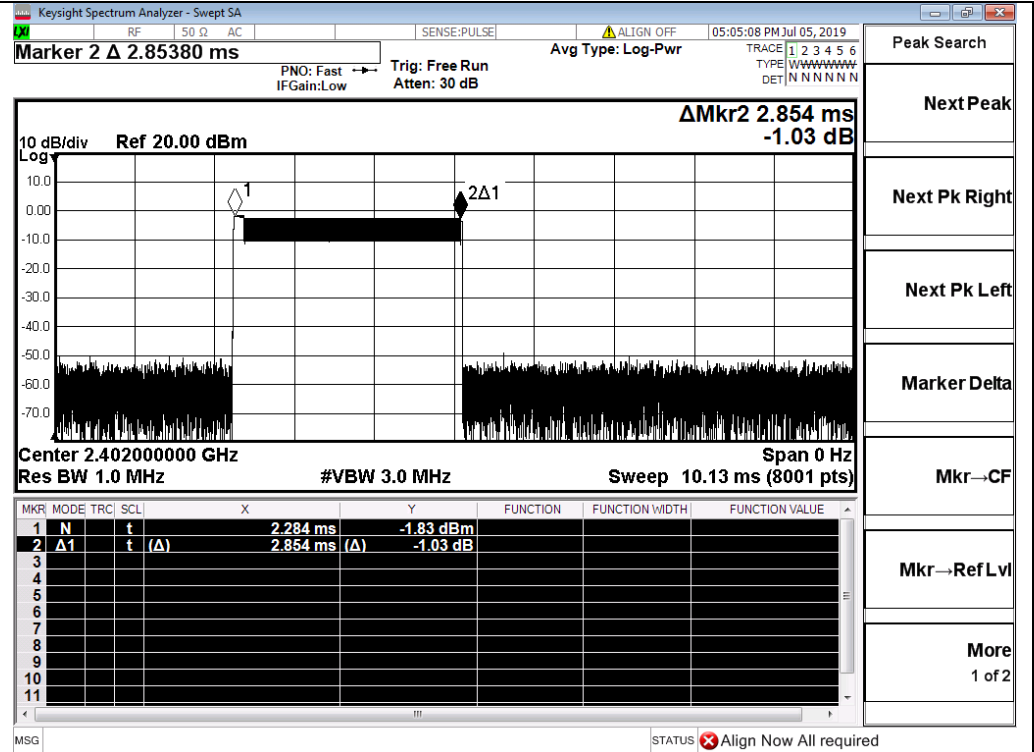
GFSK_DH5/MCH



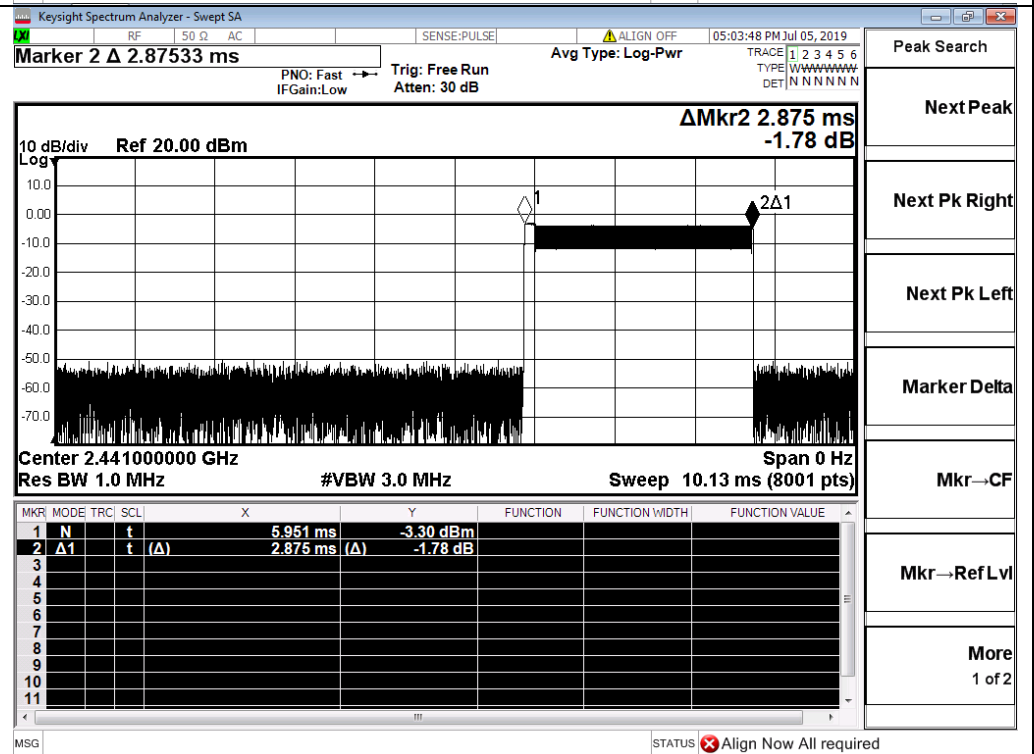
GFSK_DH5/HCH



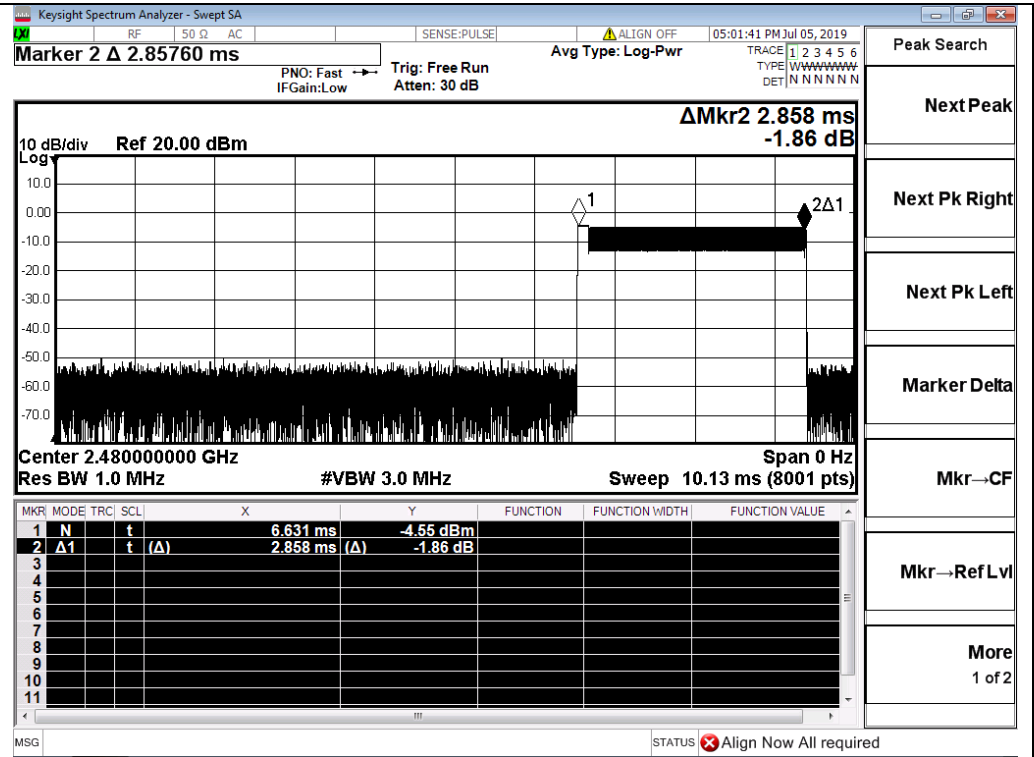
$\pi/4$ DQPSK
_2DH5/LCH



$\pi/4$ DQPSK
_2DH5/MCH



$\pi/4$ DQPSK
_2DH5/HCH

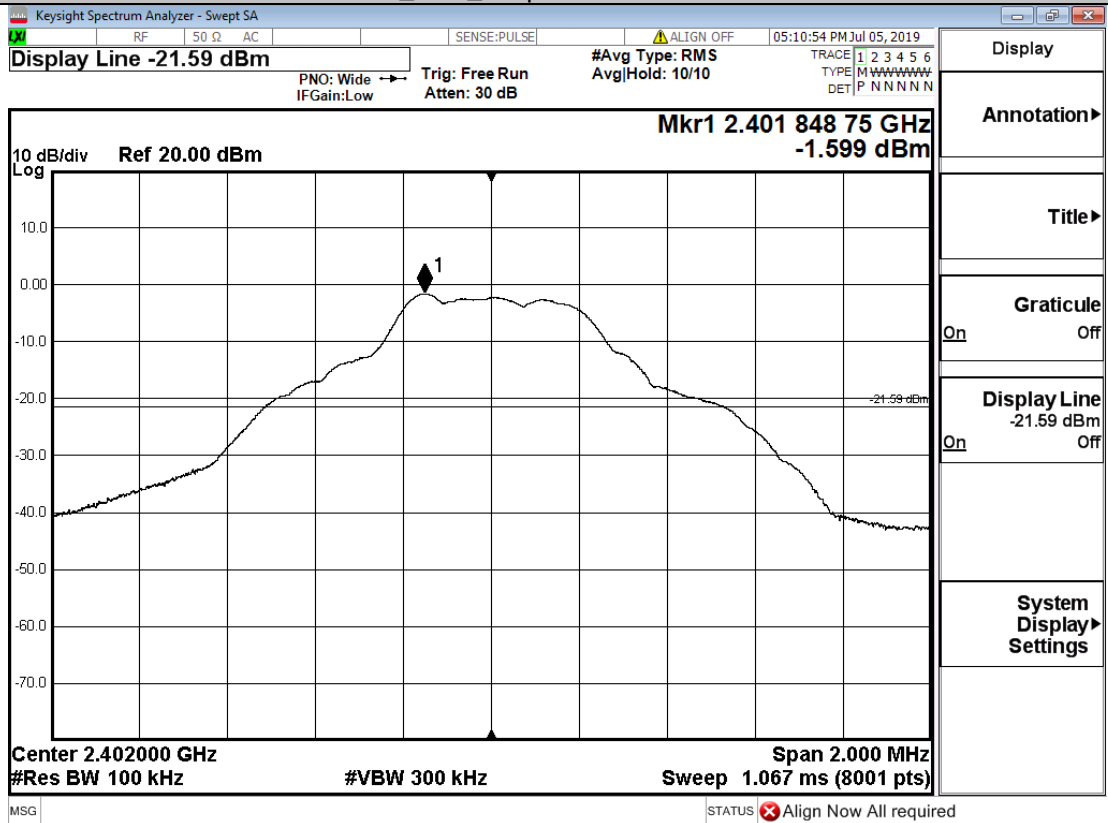


A.6 RF Conducted Spurious Emissions

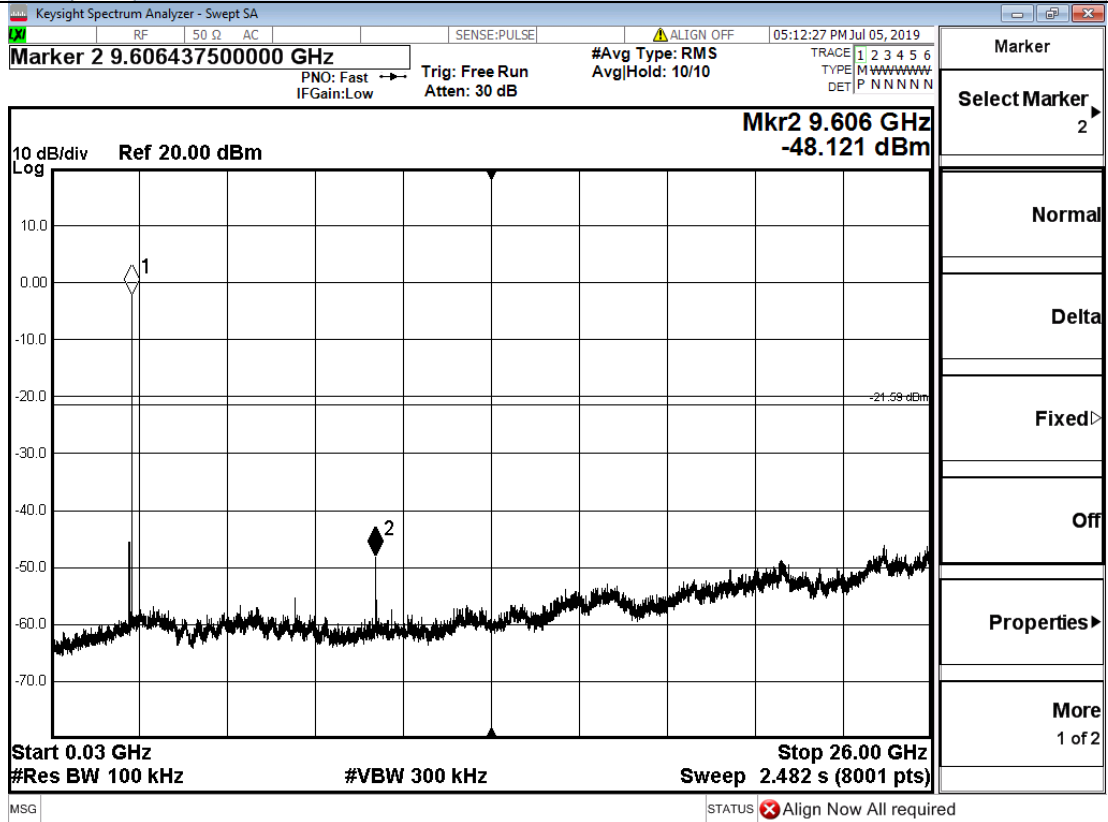
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-1.599	-48.121	-21.60	PASS
	MCH	-3.003	-46.279	-23.00	PASS
	HCH	-4.258	-46.296	-24.26	PASS
$\pi/4$ DQPSK	LCH	-1.788	-46.618	-21.79	PASS
	MCH	-3.126	-45.824	-23.13	PASS
	HCH	-4.431	-46.001	-24.43	PASS

GFSK_LCH_Graphs

Pref

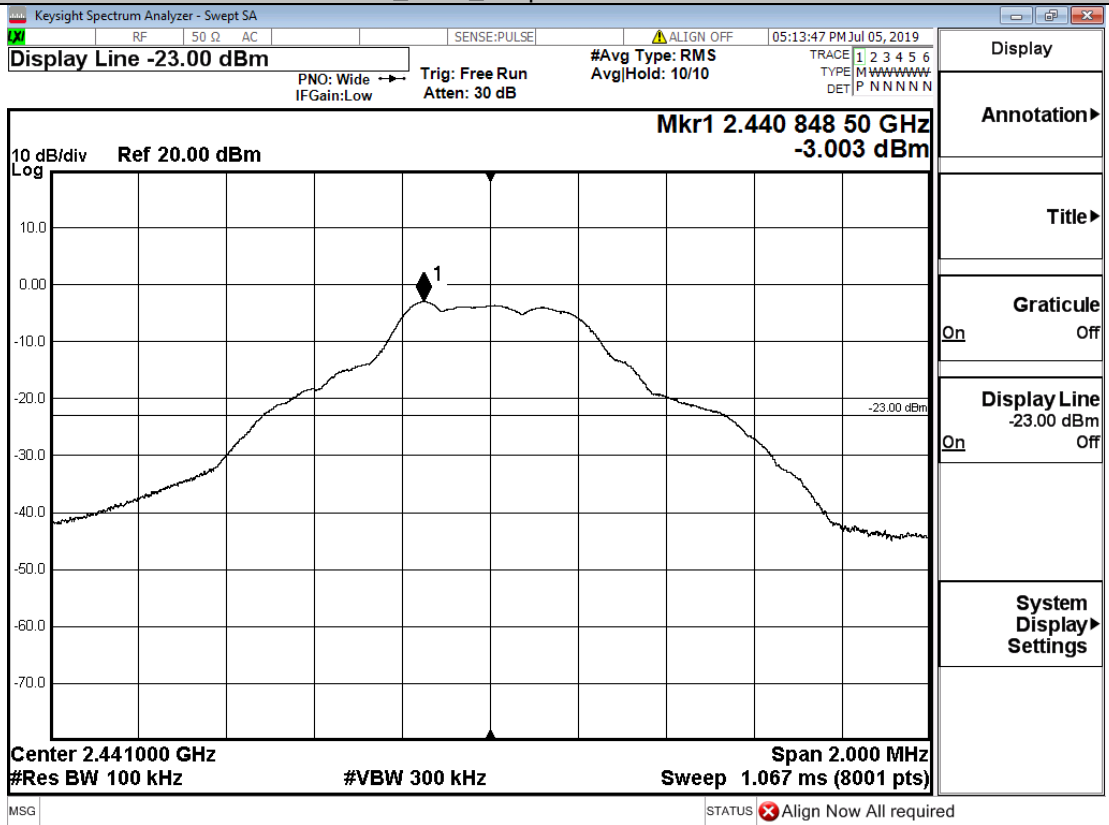


Puw

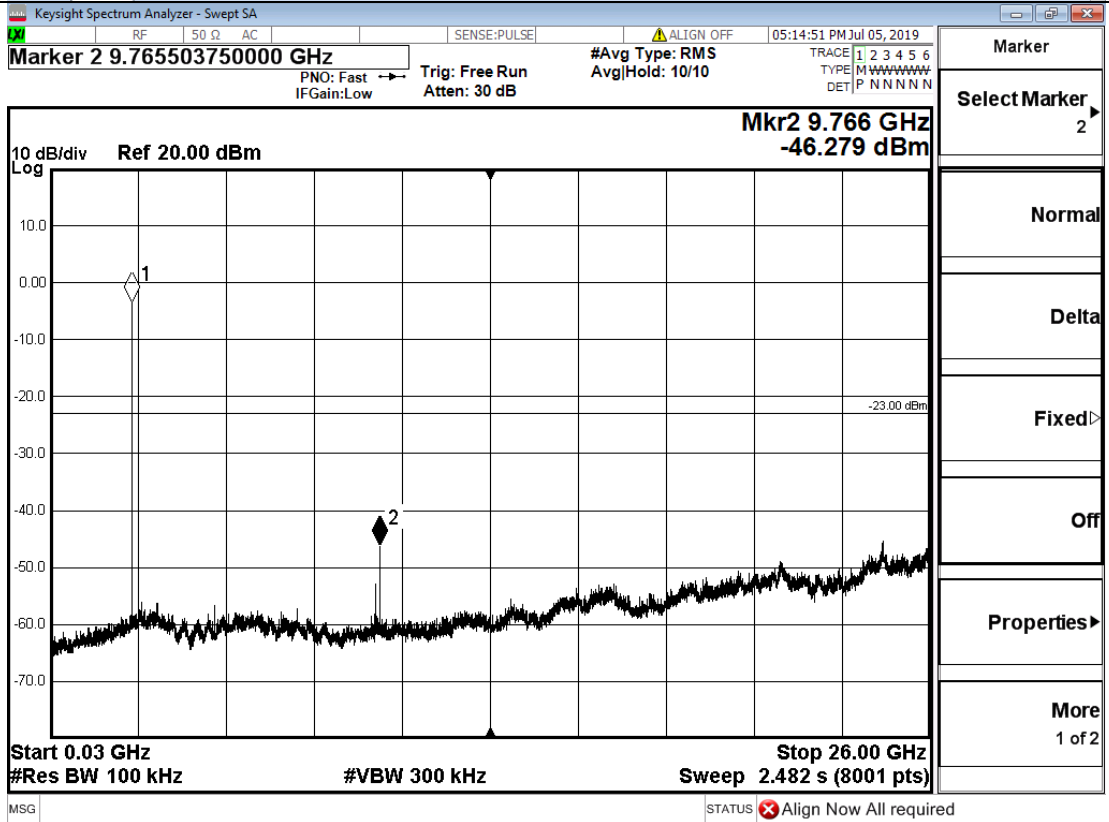


GFSK_MCH_Graphs

Pref

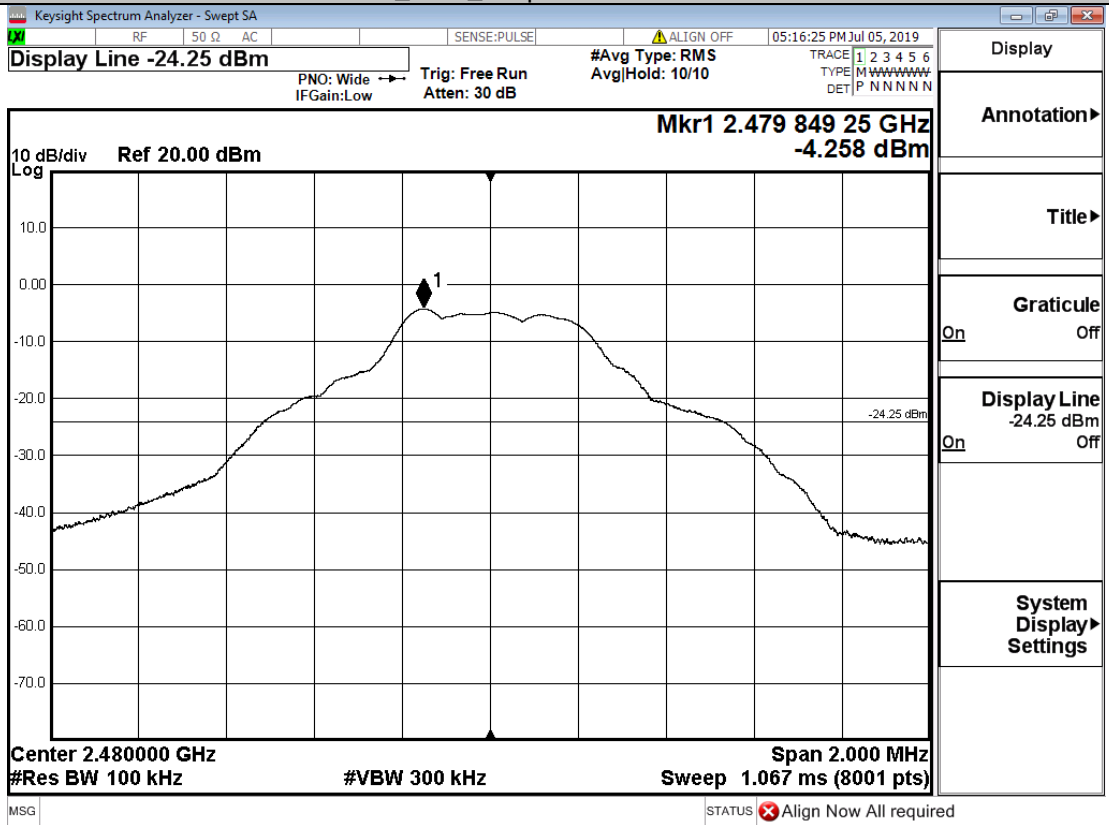


Puw

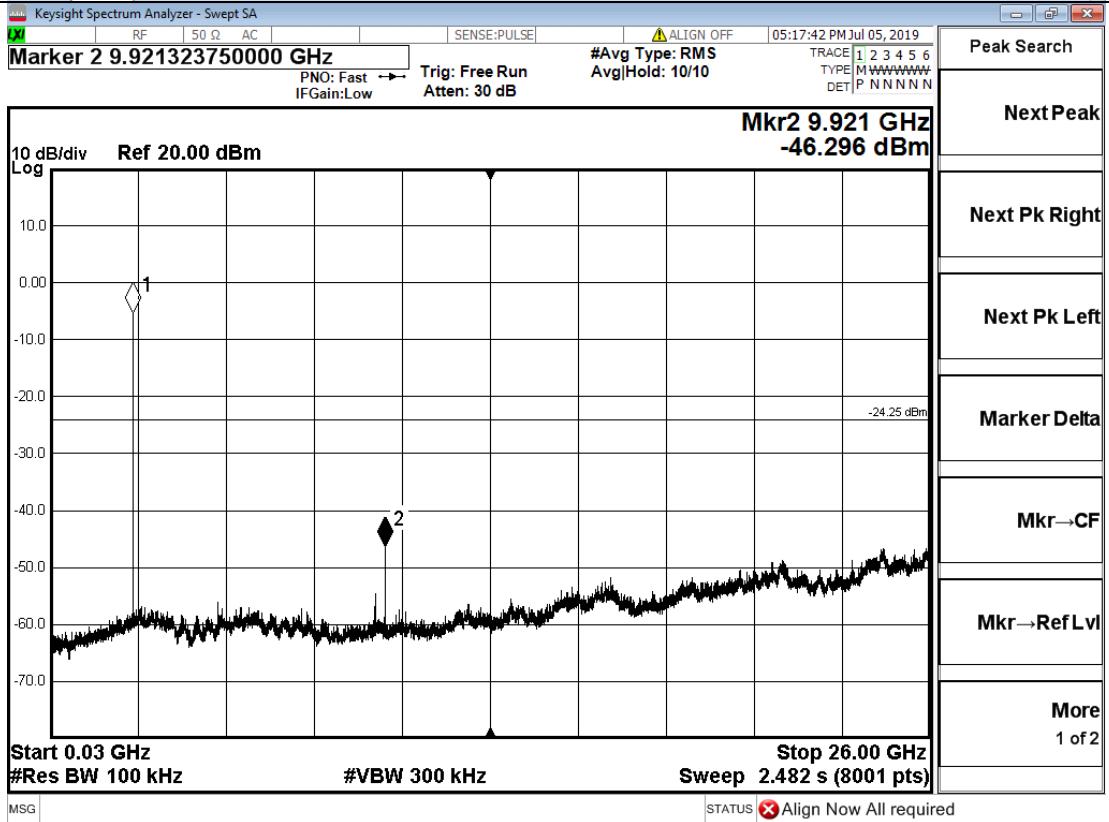


GFSK_HCH_Graphs

Pref

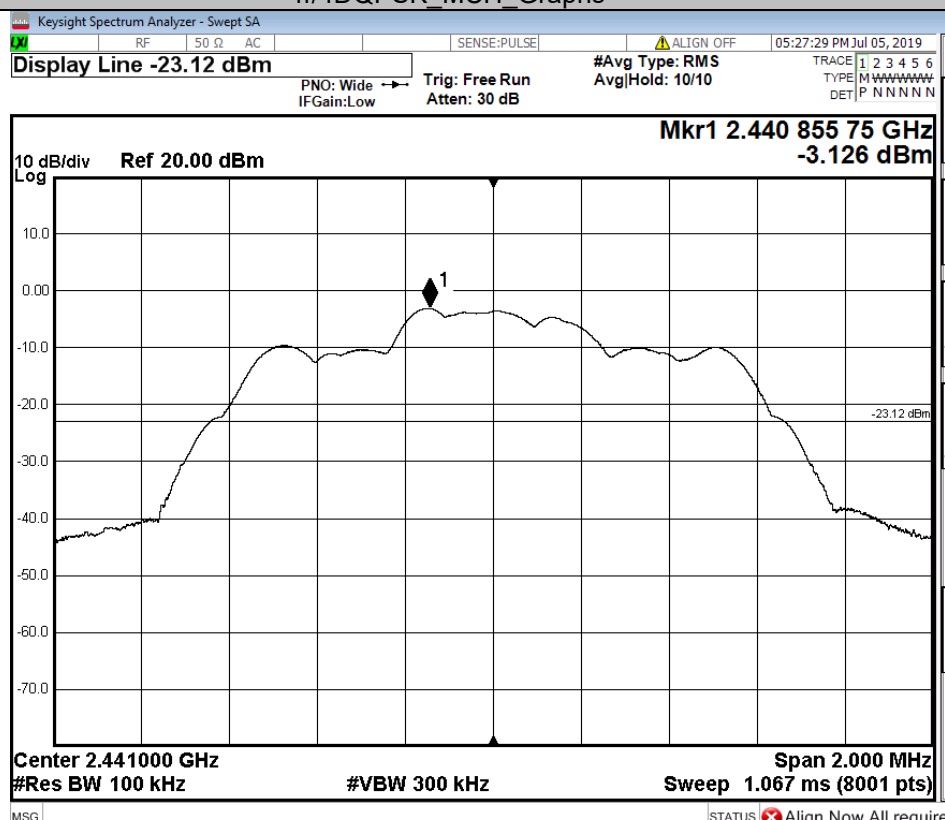


Puw



$\pi/4$ DQPSK_MCH_Graphs

Pref



Display

Annotation ▶

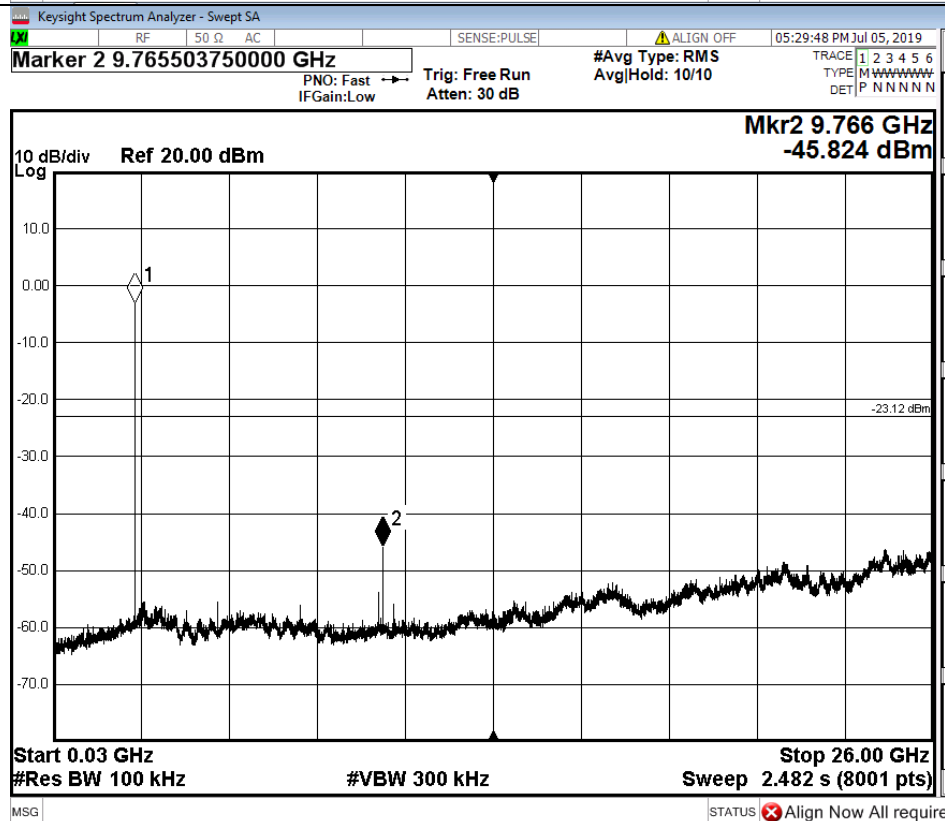
Title ▶

Graticule
 On Off

Display Line
 On Off
 -23.12 dBm

System Display
 Settings

Puw



Peak Search

Next Peak

Next Pk Right

Next Pk Left

Marker Delta

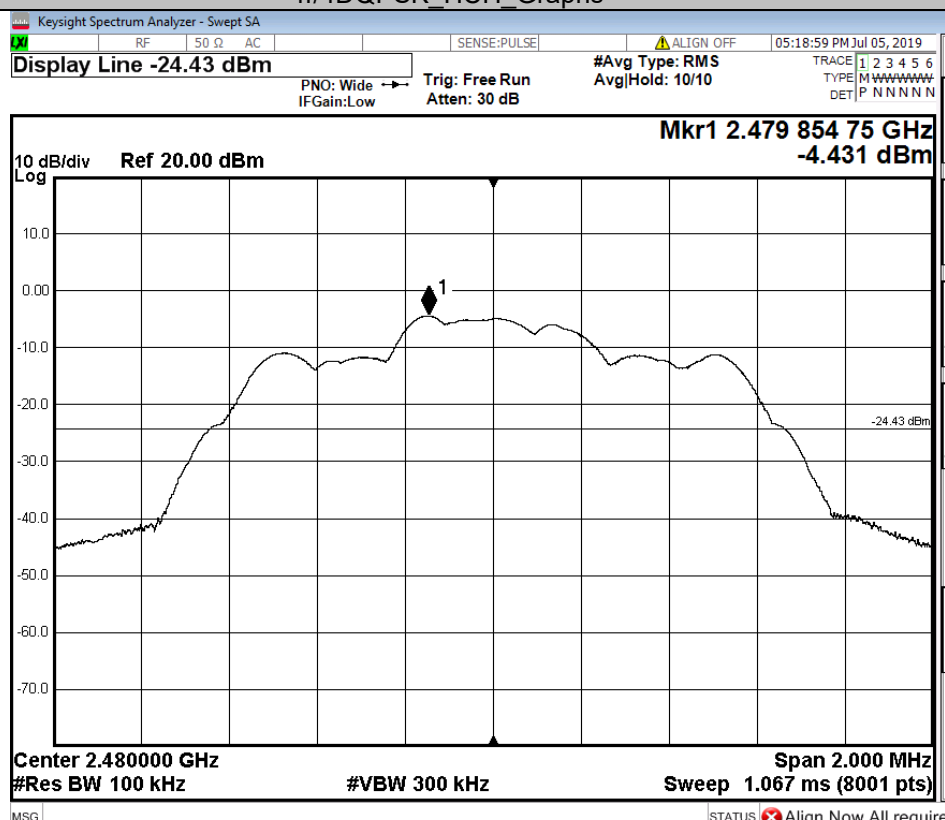
Mkr → CF

Mkr → Ref Lvl

More
 1 of 2

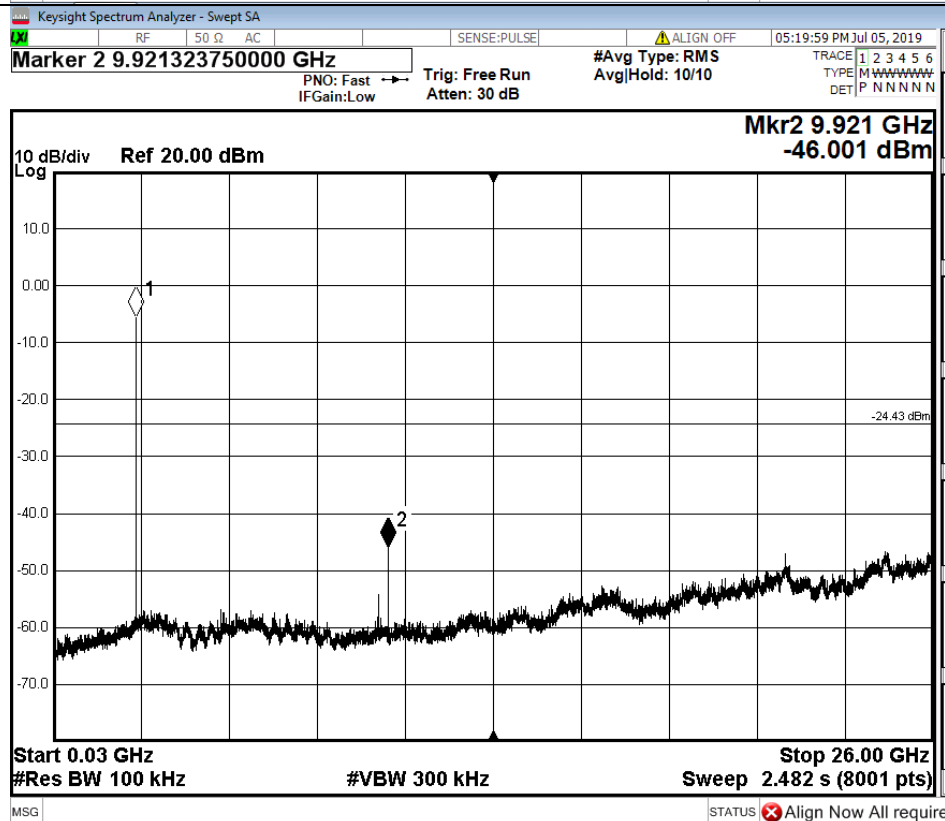
$\pi/4$ DQPSK_HCH_Graphs

Pref



- Display
- Annotation▶
- Title▶
- Graticule
On Off
- Display Line
On Off
-24.43 dBm
- System Display▶
Settings

Puw



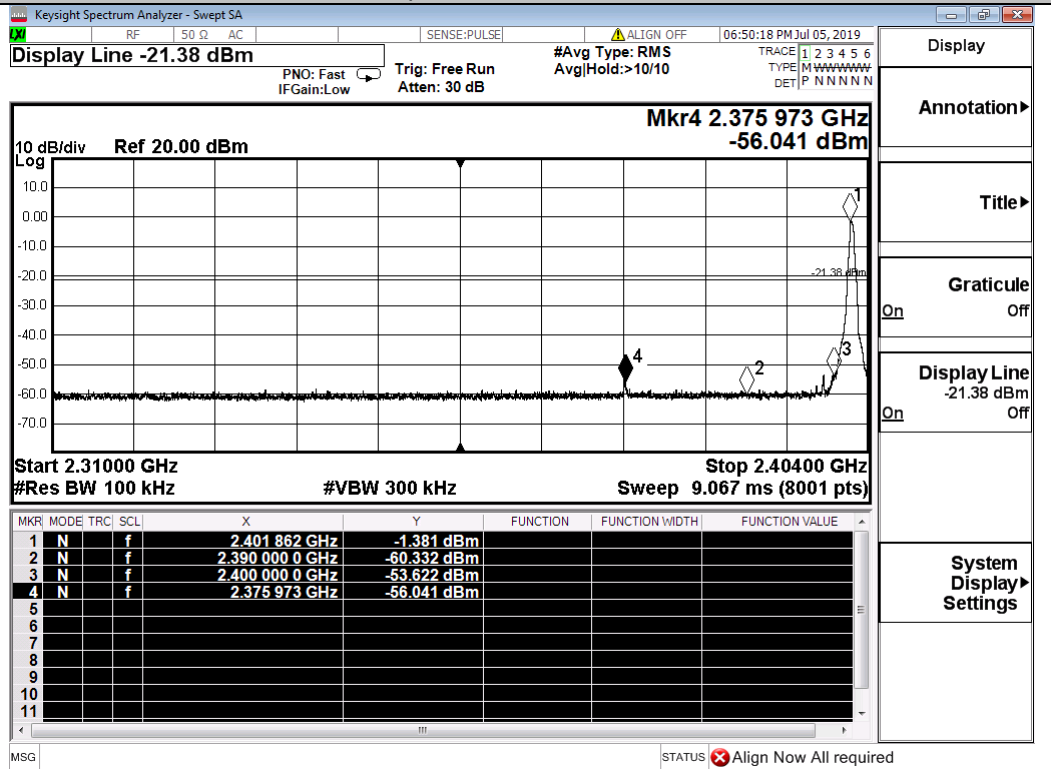
- Peak Search
- Next Peak
- Next Pk Right
- Next Pk Left
- Marker Delta
- Mkr→CF
- Mkr→Ref Lvl
- More
1 of 2

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	-1.381	Off	-53.622	-21.38	PASS
			-1.738	On	-52.757	-21.74	PASS
	HCH	2480	-4.008	Off	-59.444	-24.01	PASS
			-4.403	On	-58.777	-24.40	PASS
$\pi/4$ DQPSK	LCH	2402	-1.503	Off	-55.034	-21.50	PASS
			-1.366	On	-53.876	-21.37	PASS
	HCH	2480	-4.158	Off	-59.791	-24.16	PASS
			-4.512	On	-58.931	-24.51	PASS

Test Graphs

GFSK/LCH/No Hop



Display

Annotation

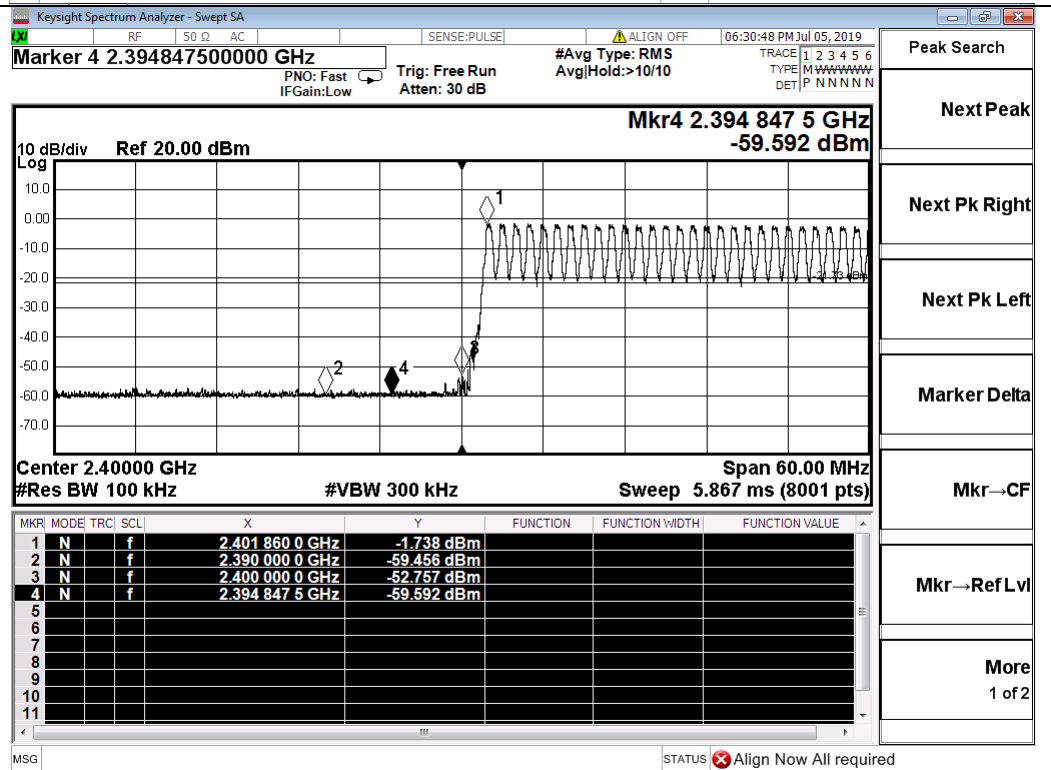
Title

Graticule On Off

Display Line -21.38 dBm On Off

System Display Settings

GFSK/LCH/Hop



Peak Search

Next Peak

Next Pk Right

Next Pk Left

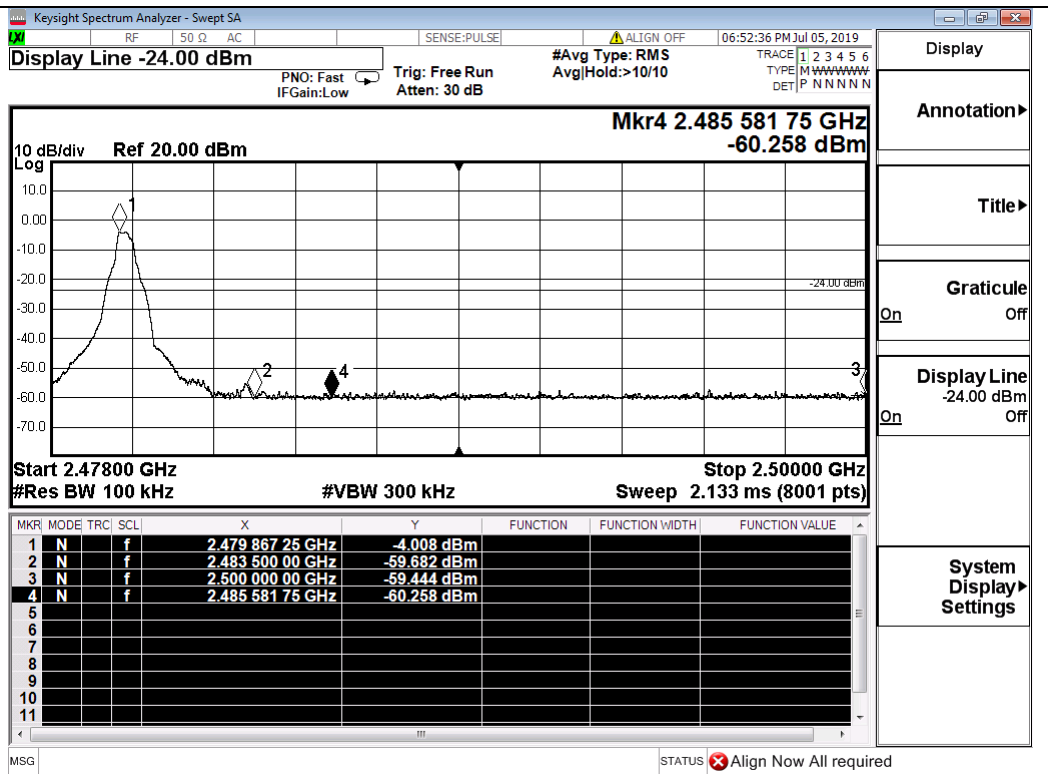
Marker Delta

Mkr→CF

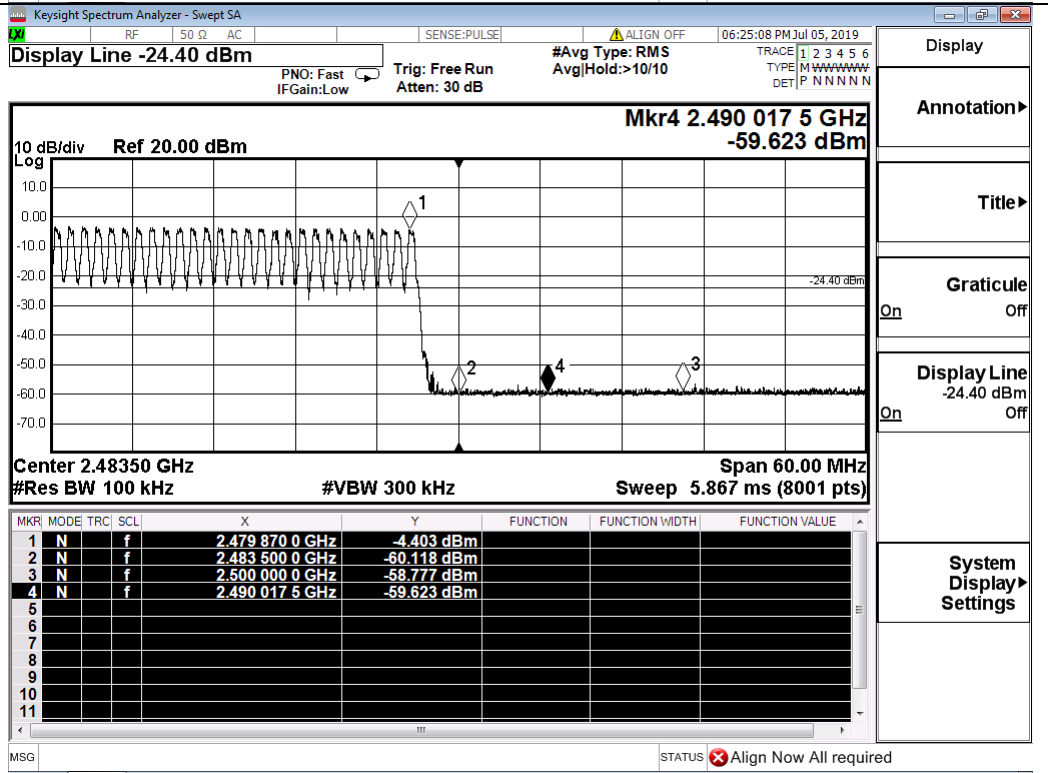
Mkr→Ref Lvl

More 1 of 2

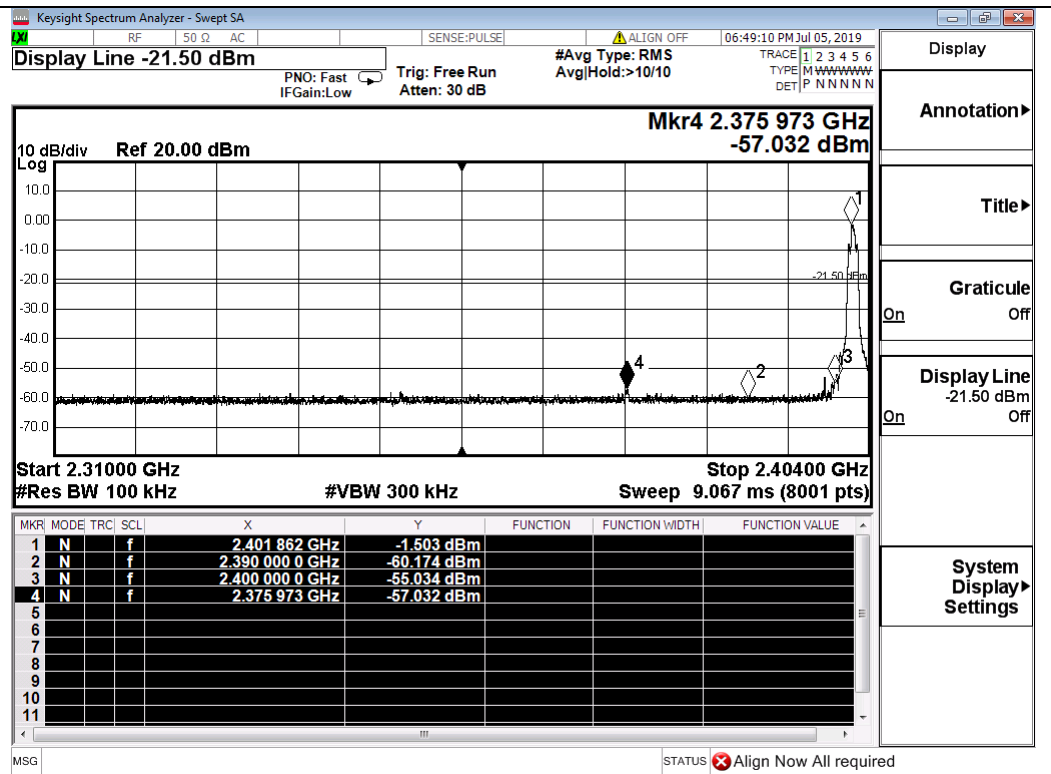
GFSK/HCH/No Hop



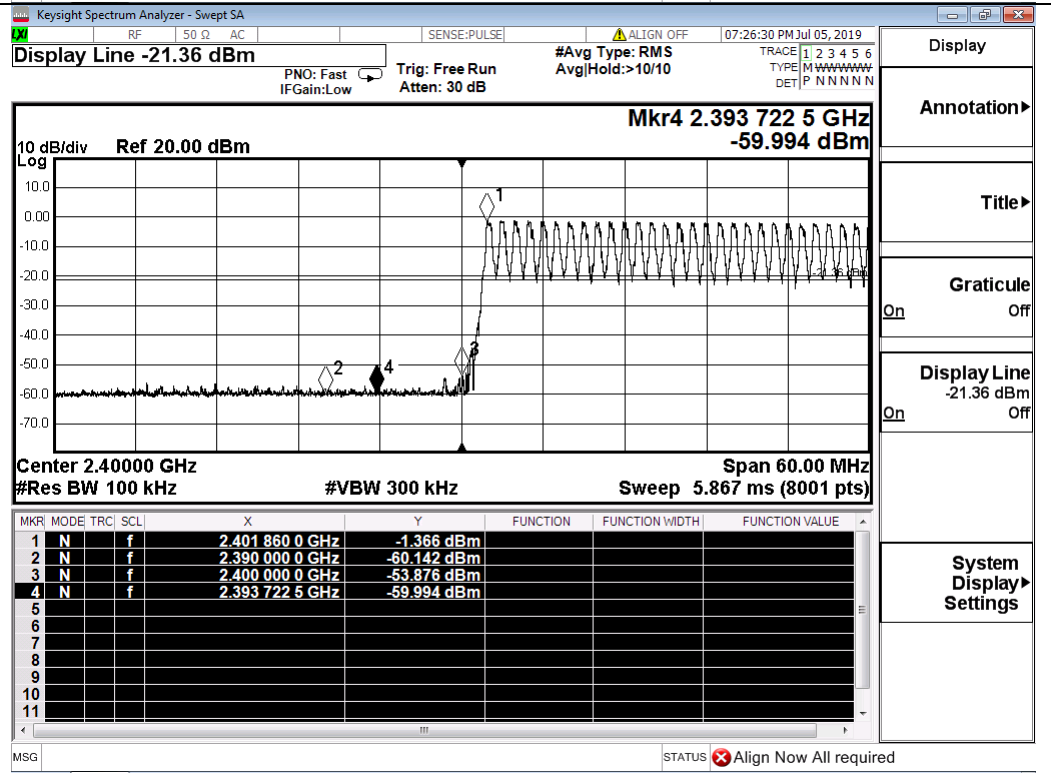
GFSK/HCH/Hop



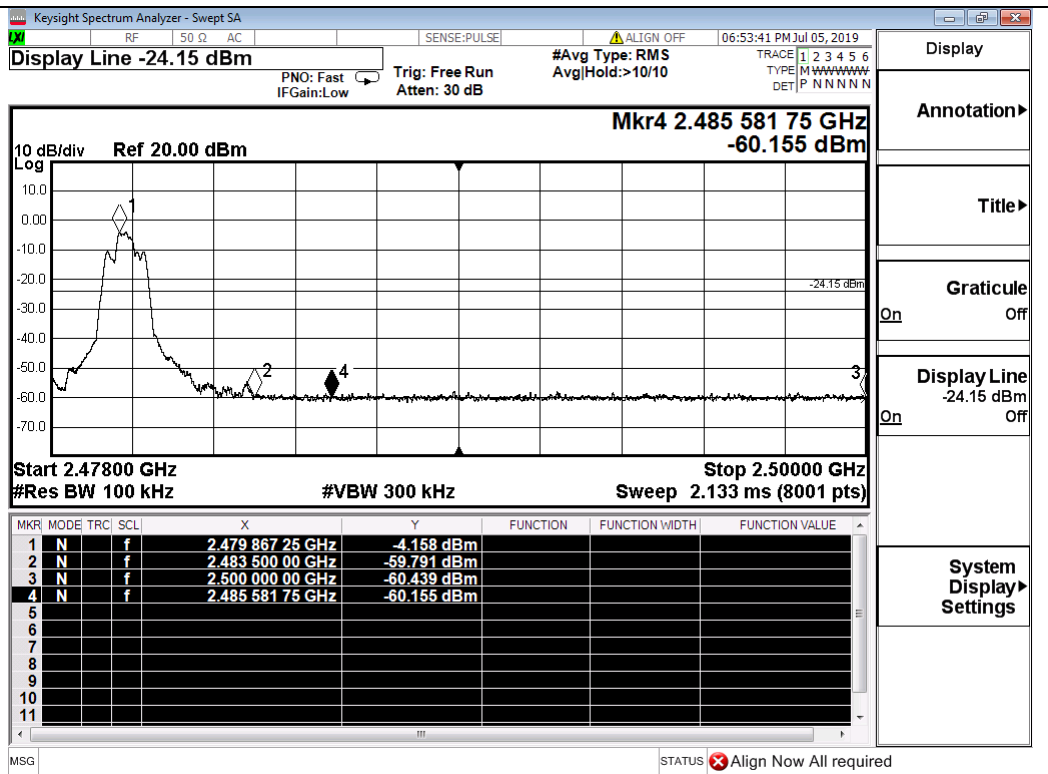
$\pi/4$ DQPSK/LCH/No Hop



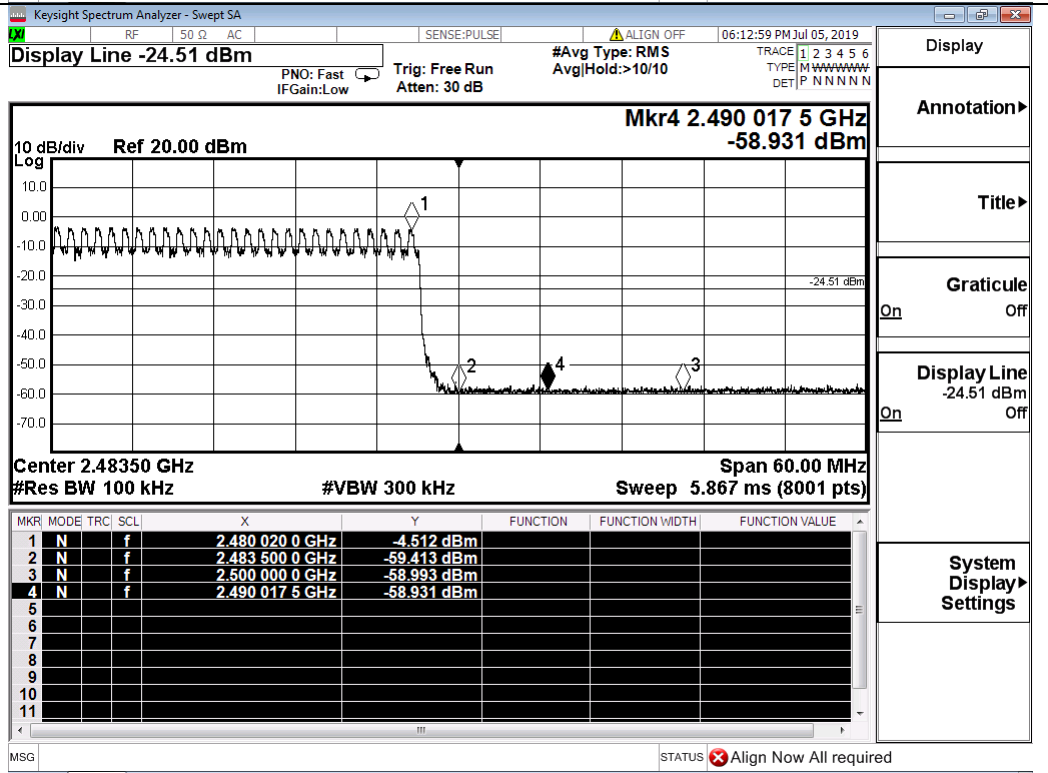
$\pi/4$ DQPSK/LCH/Hop



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



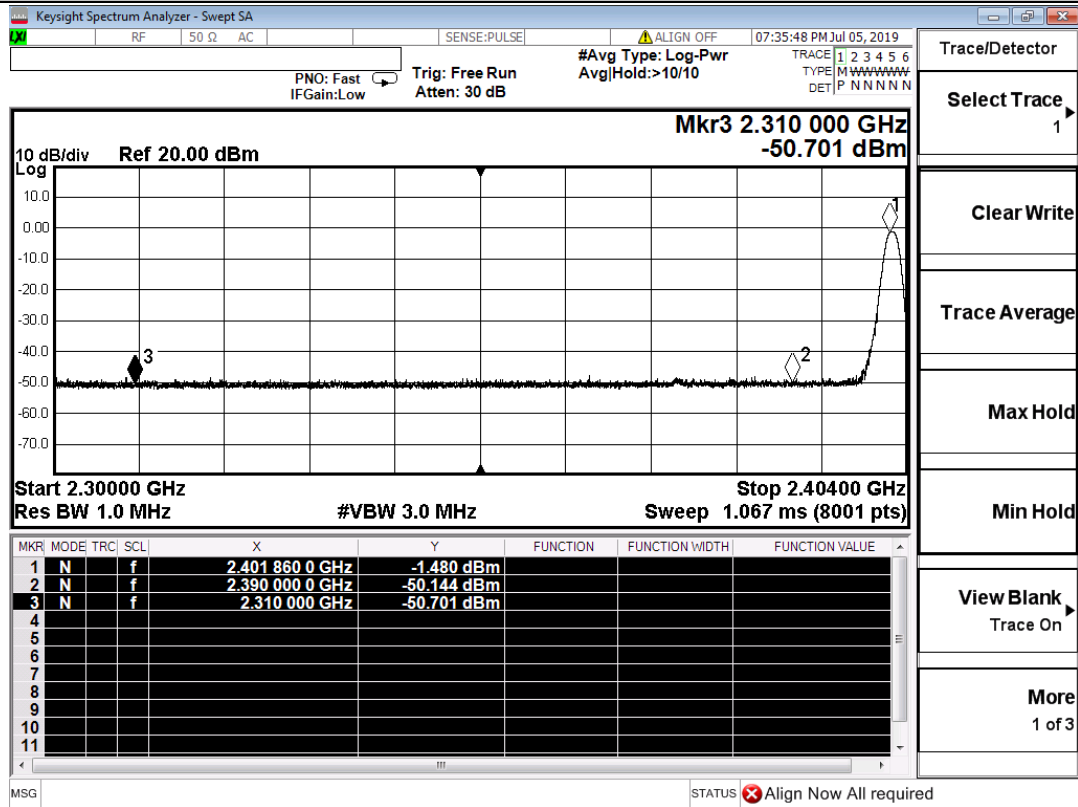
$\pi/4$ DQPSK/HCH/Hop



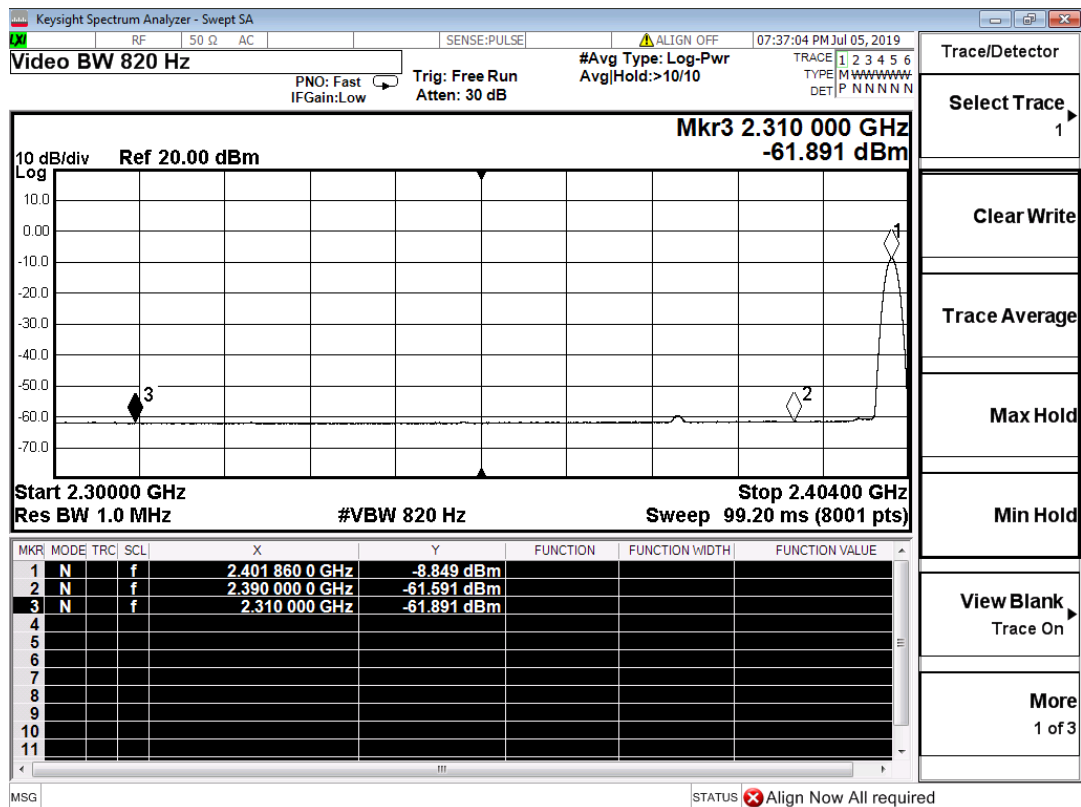
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-50.701	2.000	0	46.53	PEAK	74	PASS
	Off	2310.0	-61.891	2.000	0	35.34	AV	54	PASS
	Off	2390.0	-50.144	2.000	0	47.09	PEAK	74	PASS
	Off	2390.0	-61.591	2.000	0	35.64	AV	54	PASS
	Off	2483.5	-48.261	2.000	0	48.97	PEAK	74	PASS
	Off	2483.5	-60.738	2.000	0	36.49	AV	54	PASS
	Off	2500.0	-50.659	2.000	0	46.57	PEAK	74	PASS
	Off	2500.0	-61.352	2.000	0	35.88	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-50.697	2.000	0	46.53	PEAK	74	PASS
	Off	2310.0	-62.195	2.000	0	35.04	AV	54	PASS
	Off	2390.0	-50.417	2.000	0	46.81	PEAK	74	PASS
	Off	2390.0	-61.709	2.000	0	35.52	AV	54	PASS
	Off	2483.5	-44.360	2.000	0	52.87	PEAK	74	PASS
	Off	2483.5	-61.028	2.000	0	36.20	AV	54	PASS
	Off	2500.0	-49.186	2.000	0	48.04	PEAK	74	PASS
	Off	2500.0	-61.332	2.000	0	35.90	AV	54	PASS

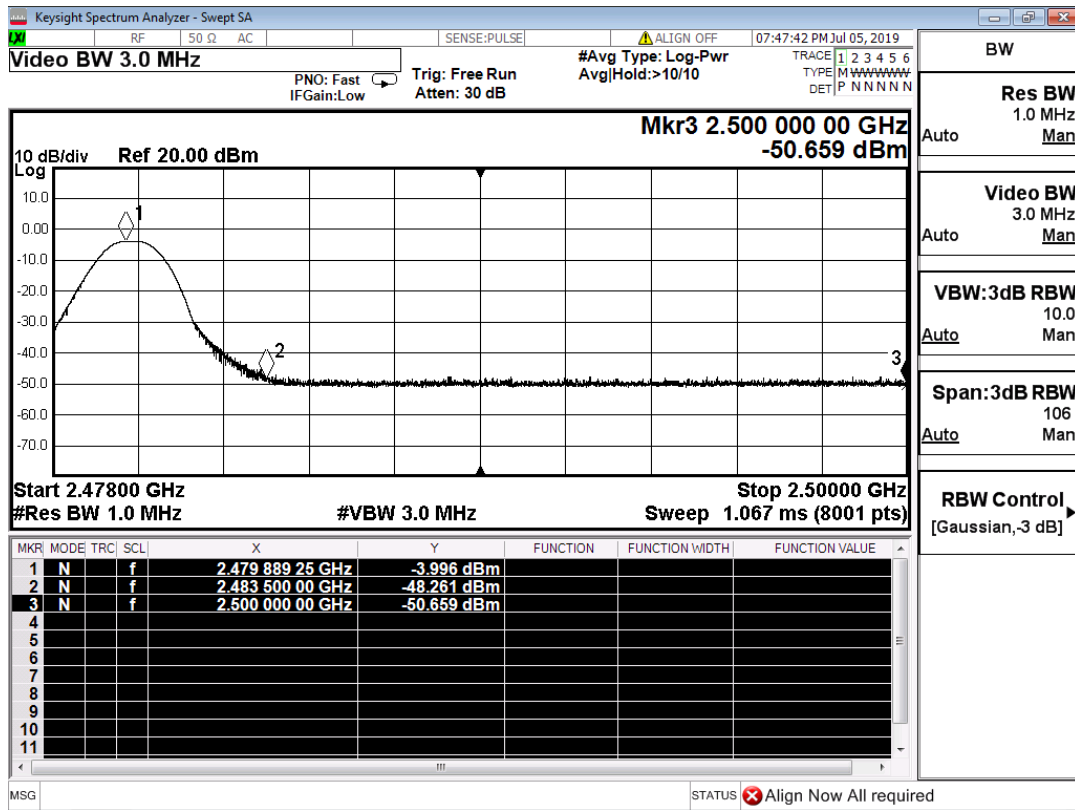
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



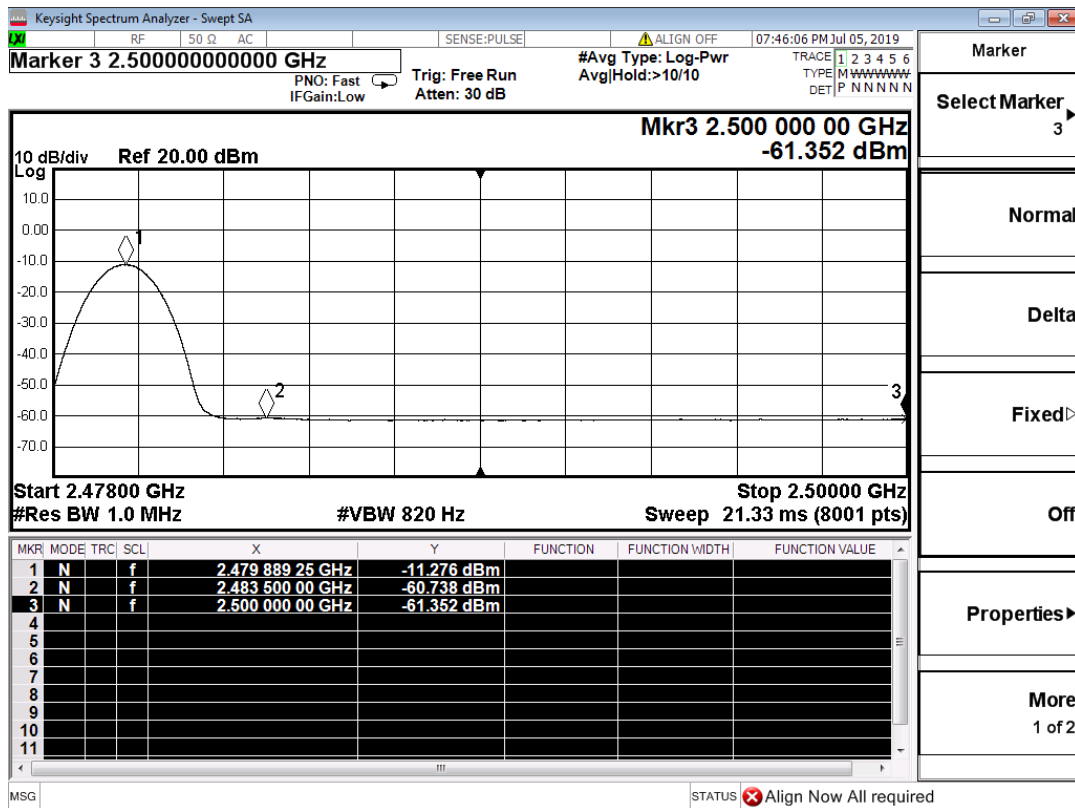
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)



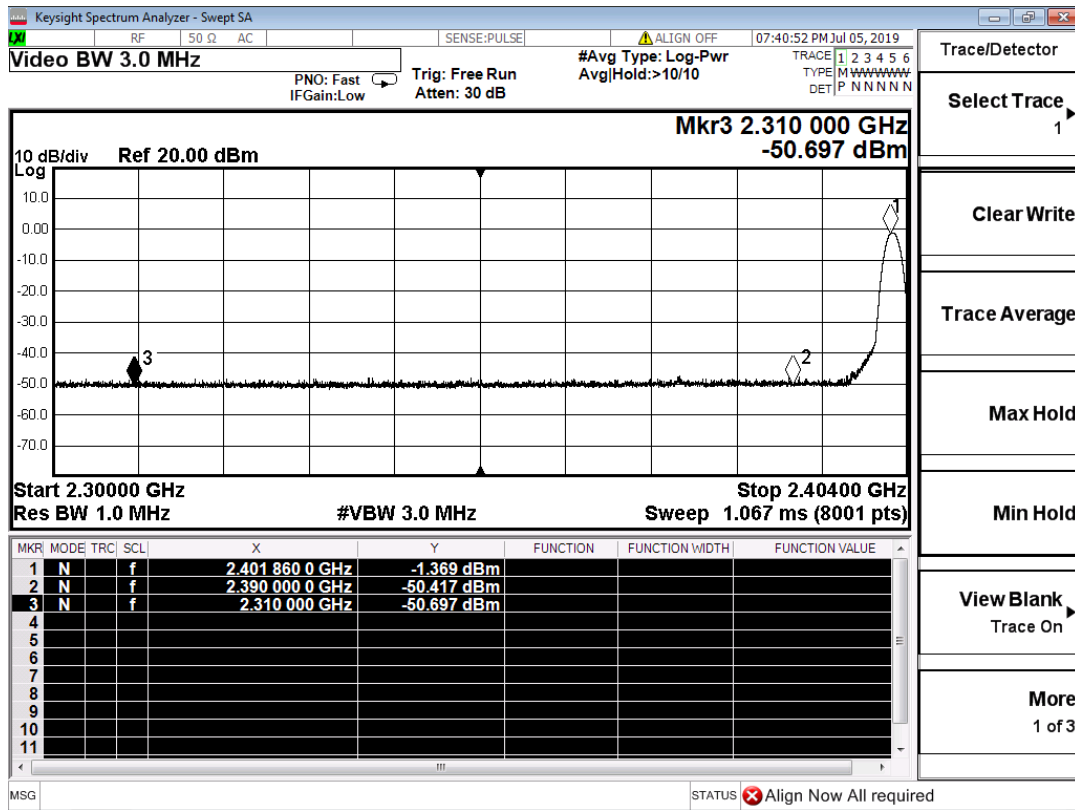
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)



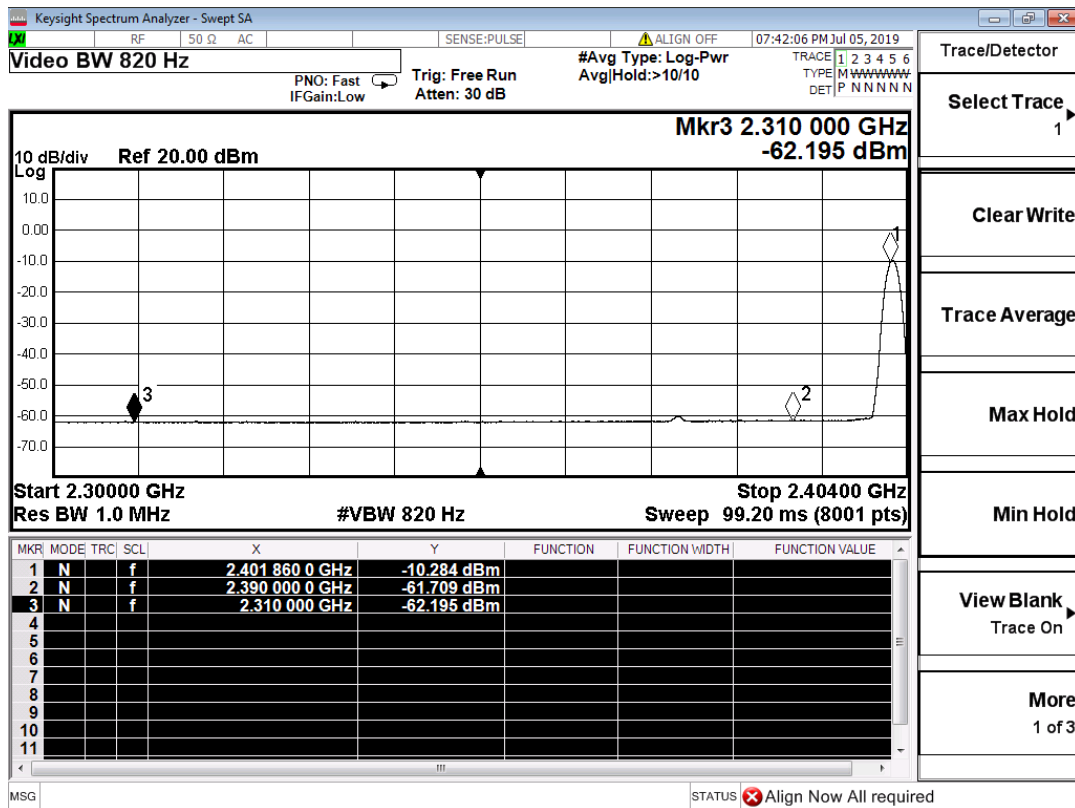
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)



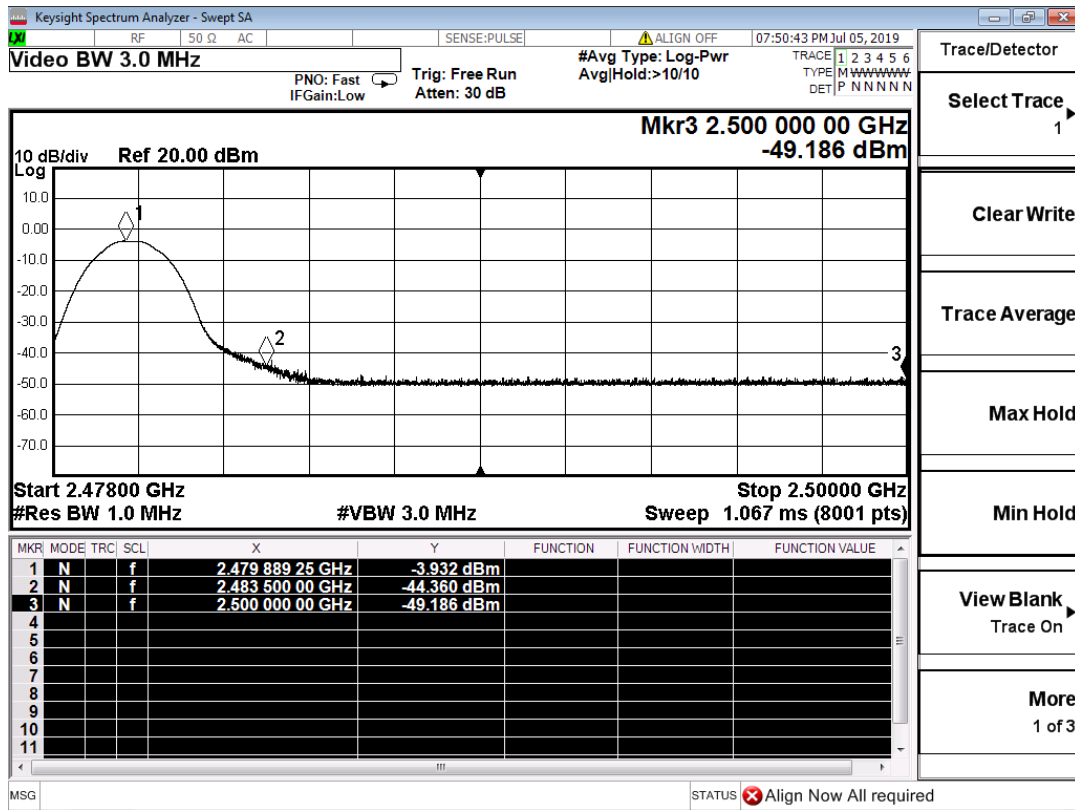
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)



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



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



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

