Appendix A

RF Test Data for BT V3.0 (BDR/EDR) (Conducted Measurement)

Product Name: Buletooh_shutter

Trade Mark: Ubeesize

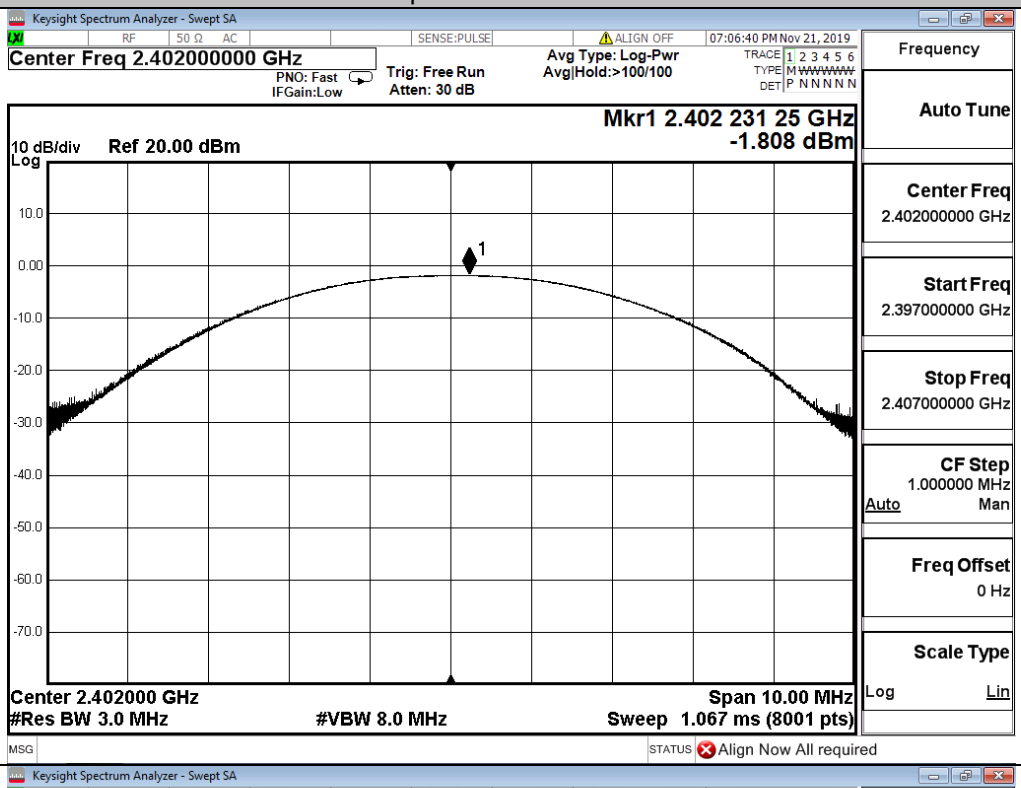
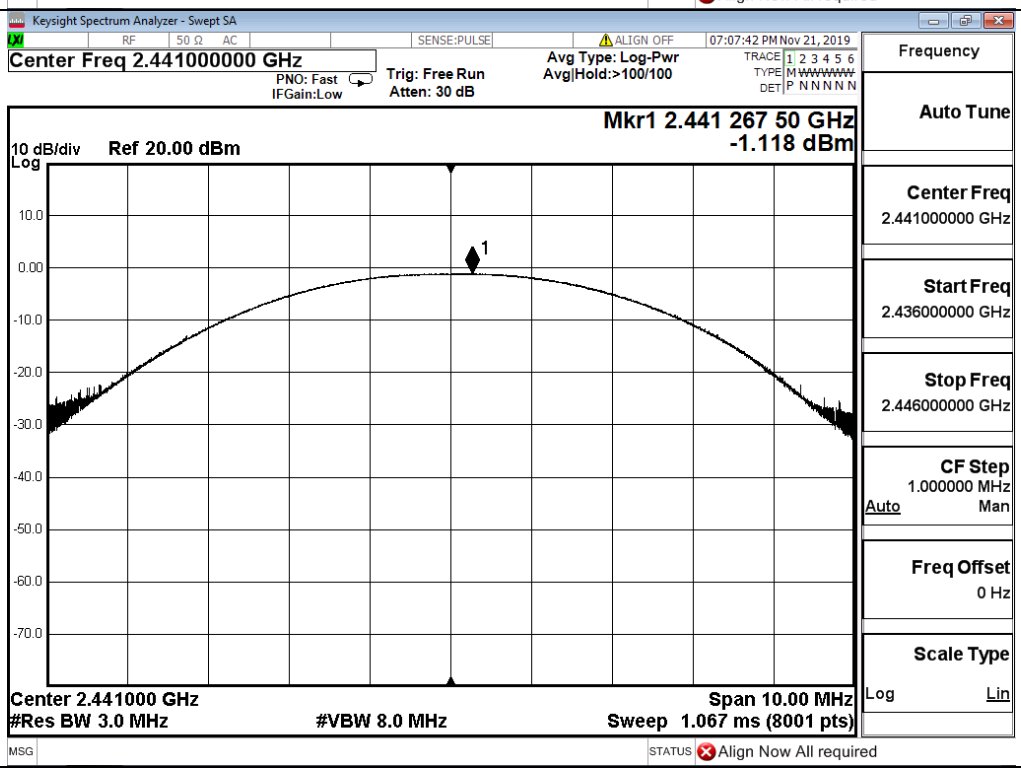
Test Model: TBC001

Environmental Conditions

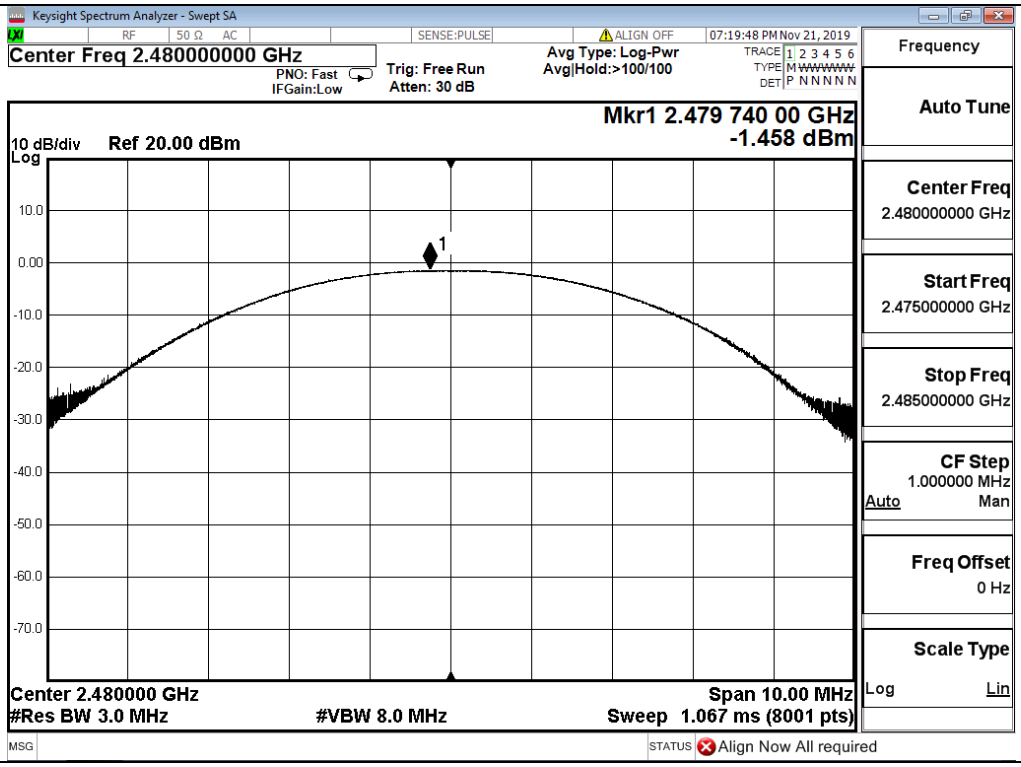
Temperature:	23.5 °C
Relative Humidity:	55%
ATM Pressure:	100.0 kPa
Test Engineer:	Kay Hu
Supervised by:	Jayden.Zhuo

A.1 Maximum Conducted Peak Output Power

Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-1.808	21	PASS
	MCH	-1.118	21	PASS
	HCH	-1.458	21	PASS

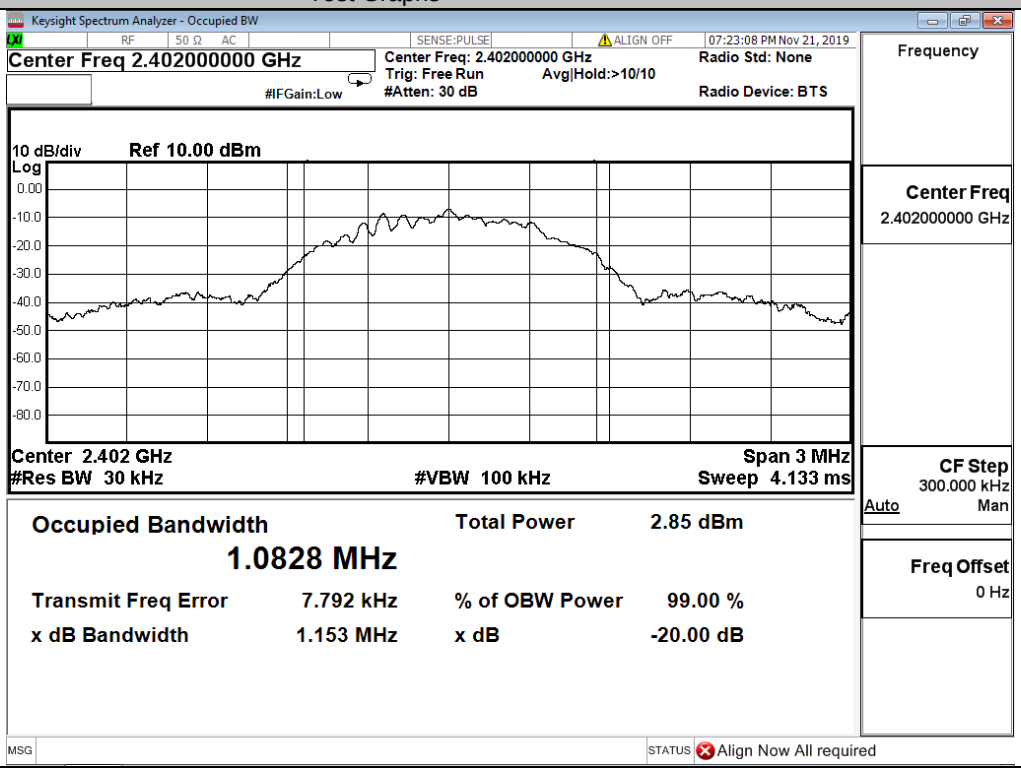
Test Graphs	
GFSK/LCH	
GFSK/MCH	

GFSK/HCH

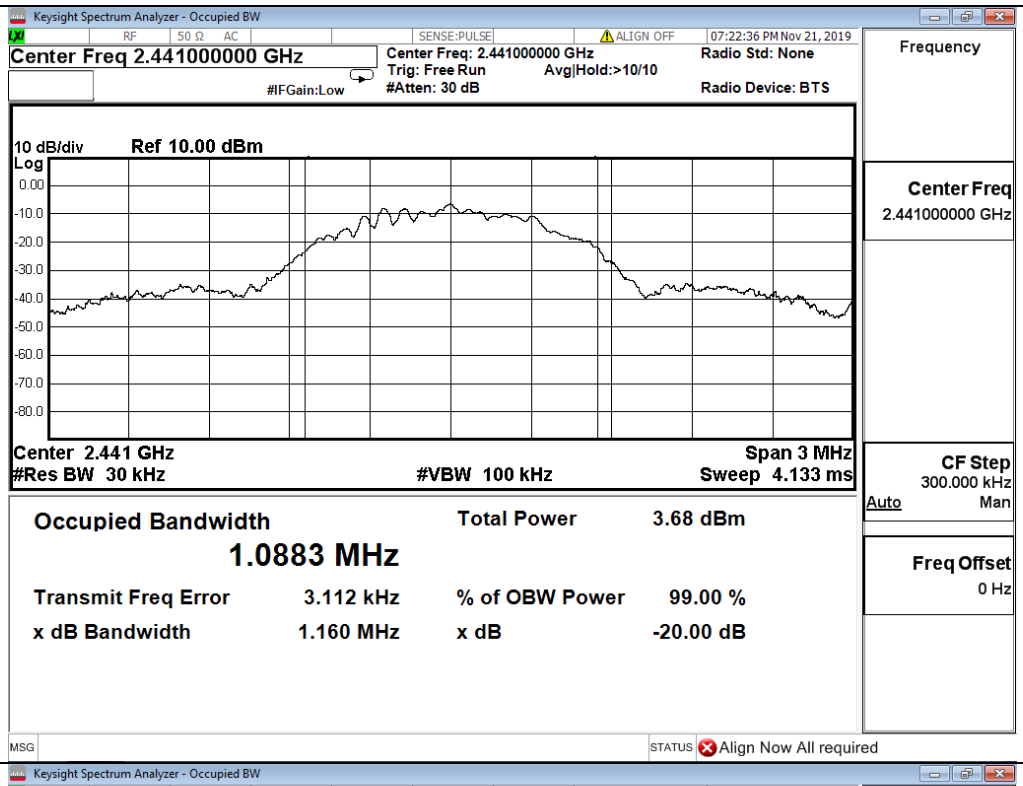

Keysight Spectrum Analyzer - Swept SA
RF 50 Ω AC
SENSE:PULSE
ALIGN OFF
07:19:48 PM Nov 21, 2019
Center Freq 2.480000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
TRACE 1 2 3 4 5 6
TYPE M WWWWWW
DET P N N N N N
Mkr1 2.479 740 00 GHz
-1.458 dBm
10 dB/div Log
Ref 20.00 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
1
Center 2.480000 GHz
#Res BW 3.0 MHz
#VBW 8.0 MHz
Span 10.00 MHz
Sweep 1.067 ms (8001 pts)
Frequency
Auto Tune
Center Freq
2.480000000 GHz
Start Freq
2.475000000 GHz
Stop Freq
2.485000000 GHz
CF Step
1.000000 MHz
Auto Man
Freq Offset
0 Hz
Scale Type
Log Lin
MSG
STATUS Align Now All required

A.2 99% and 20dB Bandwidth

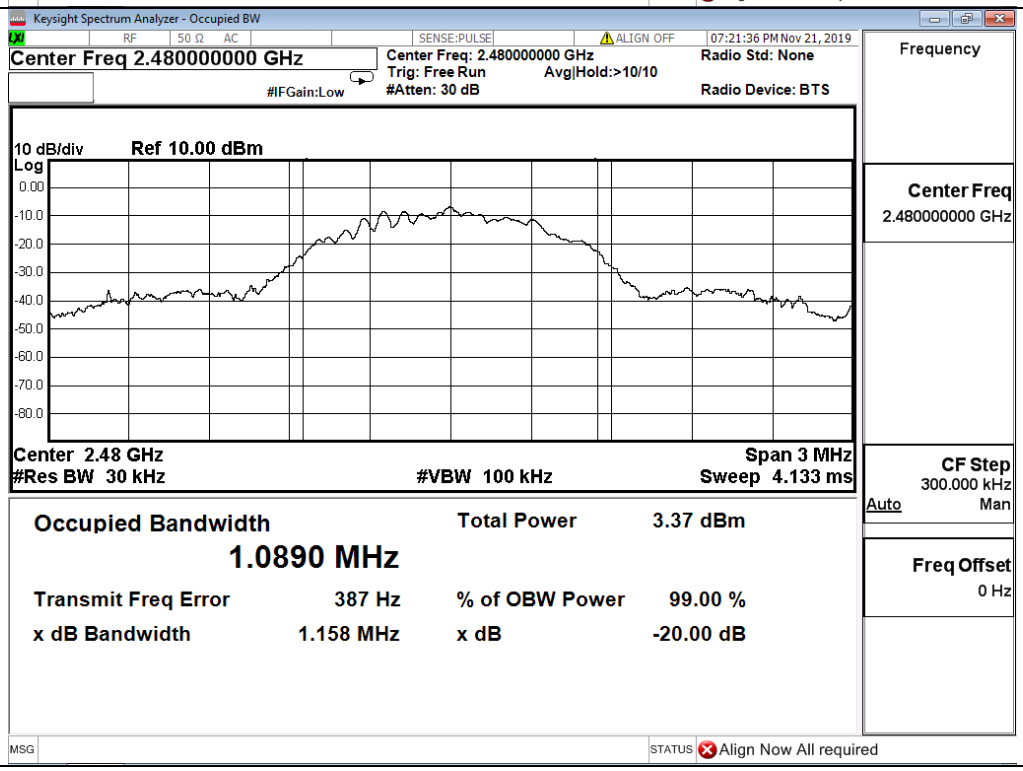
Mode	Channel.	99% Bandwidth [MHz]	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.0828	1.153	Not Specified	PASS
	MCH	1.0883	1.160	Not Specified	PASS
	HCH	1.0890	1.158	Not Specified	PASS

Test Graphs	
GFSK/LCH	

GFSK/MCH

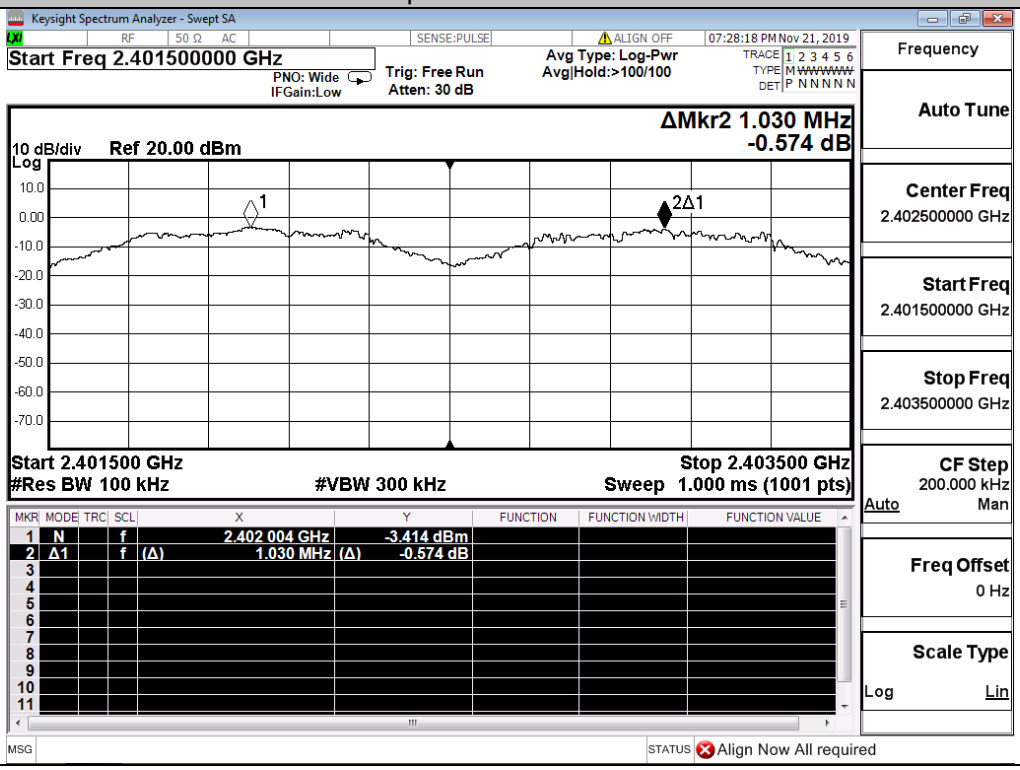


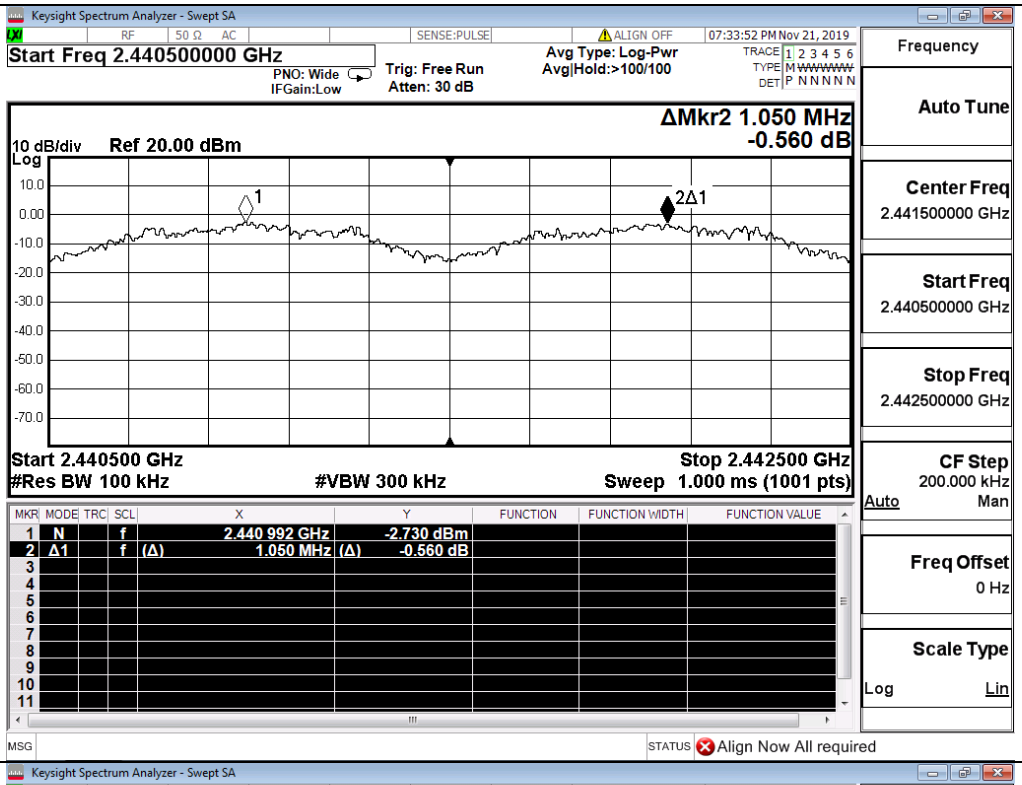
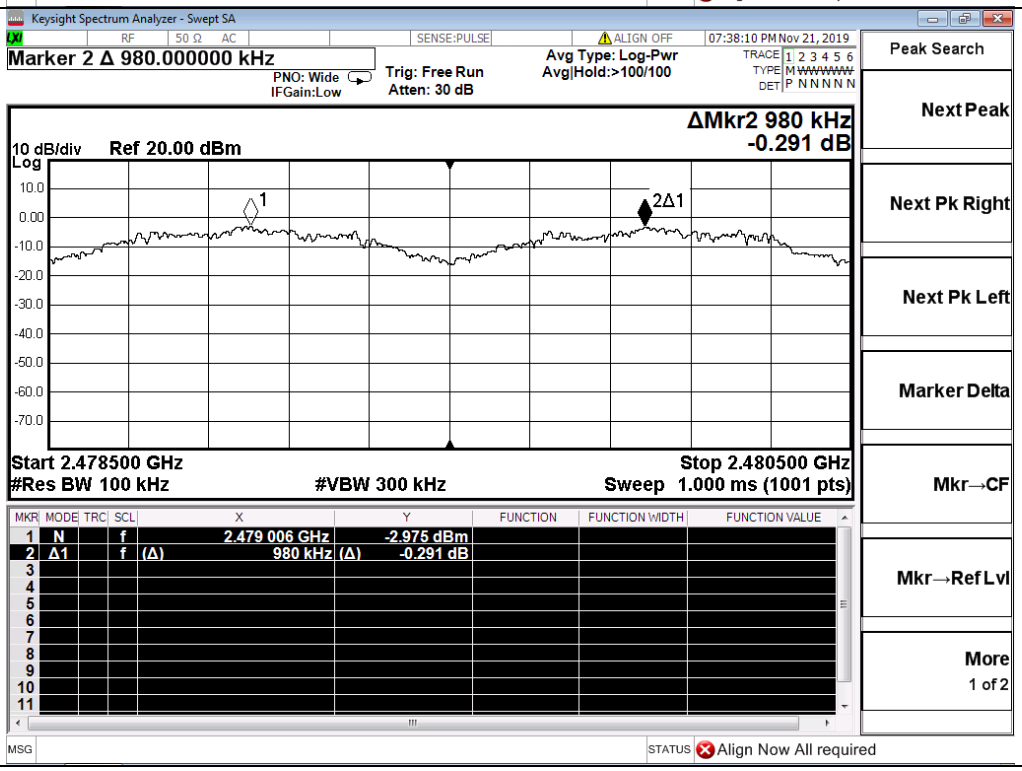
GFSK/HCH



A.3 Carrier Frequency Separation

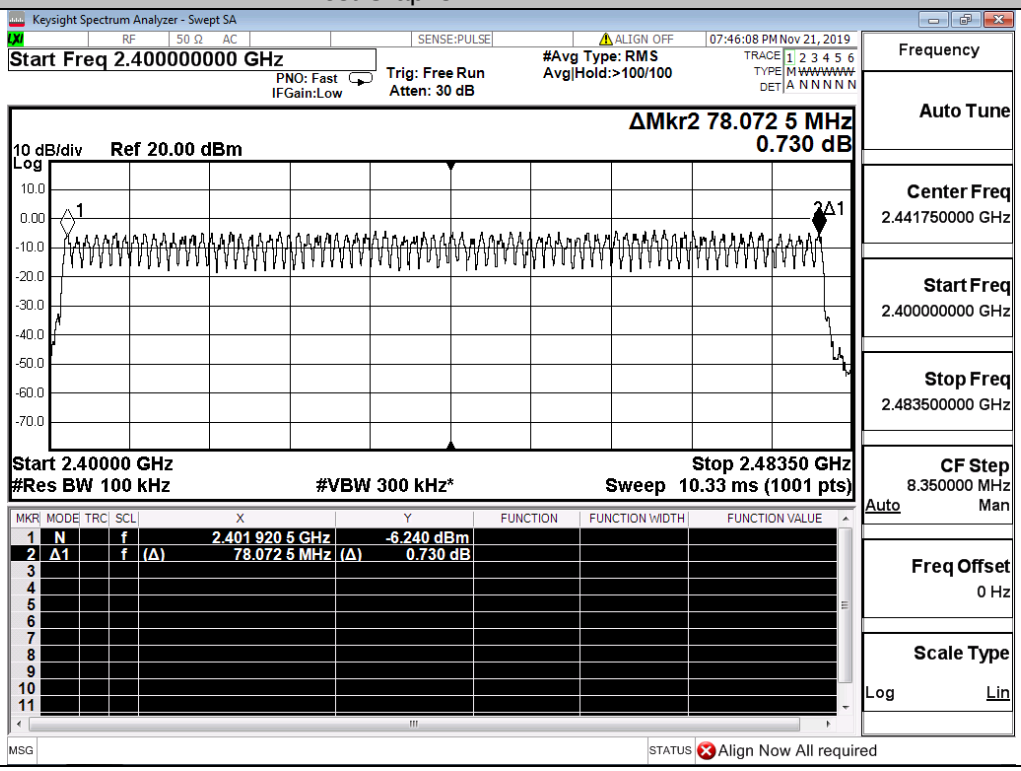
Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.030	0.77	PASS
	MCH	1.050	0.77	PASS
	HCH	0.980	0.77	PASS

Test Graphs	
GFSK/LCH	

GFSK/MCH	
GFSK/HCH	

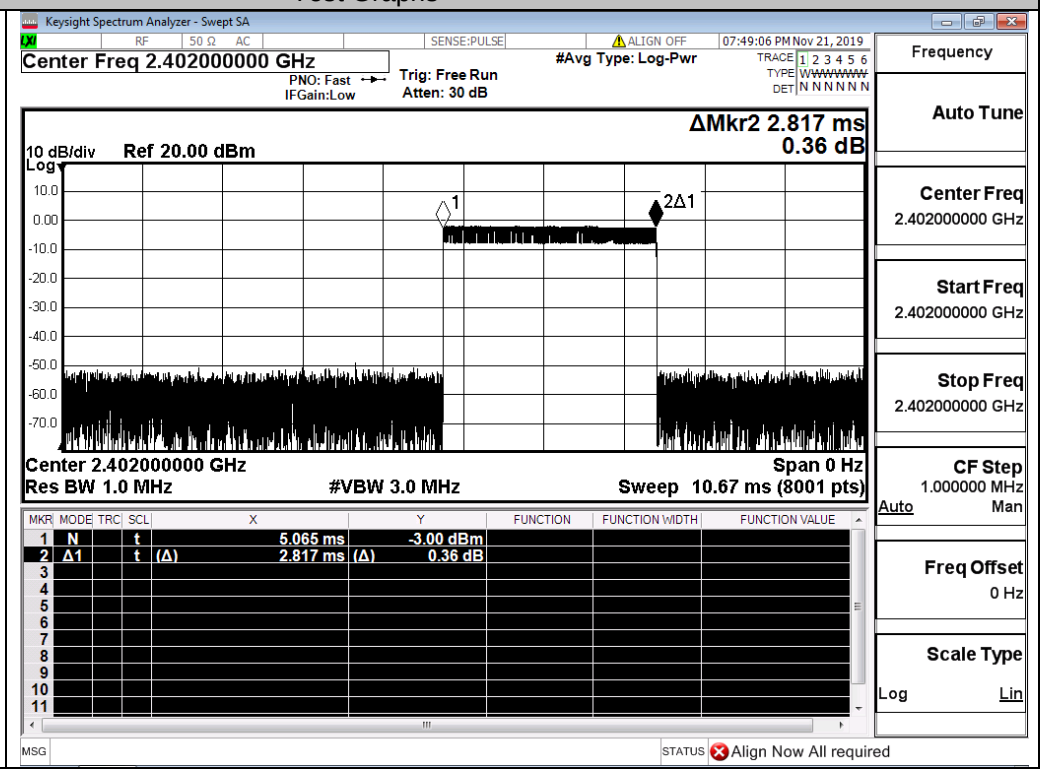
A.4 Hopping Channel Number

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

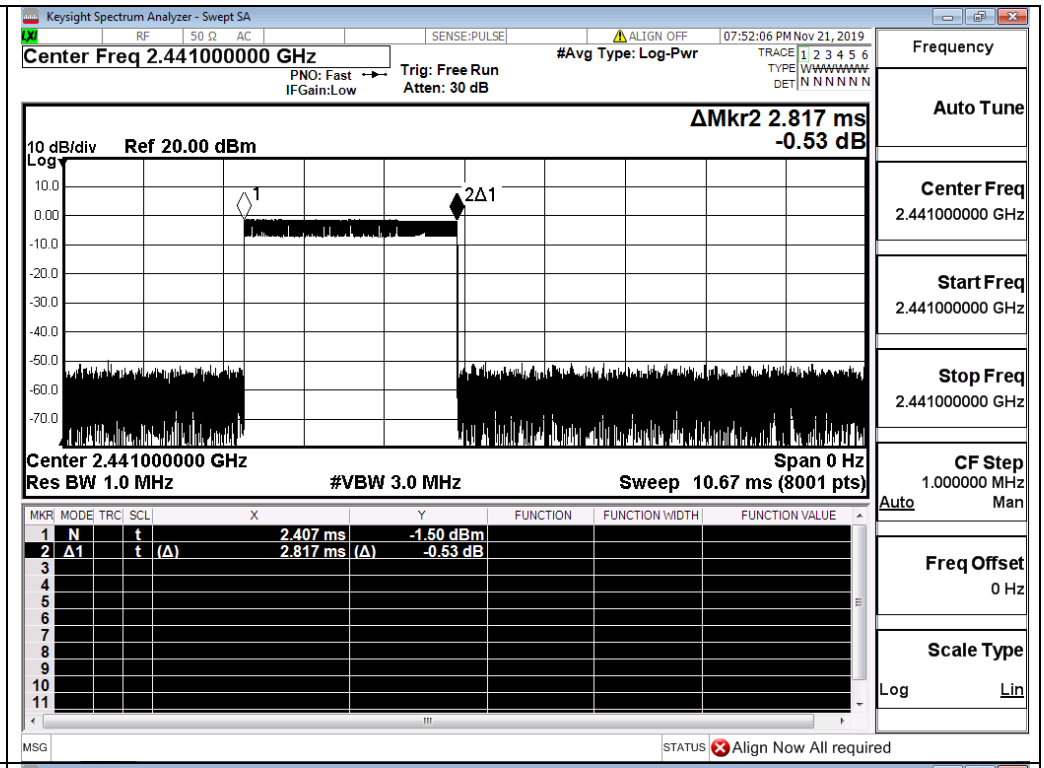
Test Graphs	
GFSK/Hop	

A.5 Dwell Time

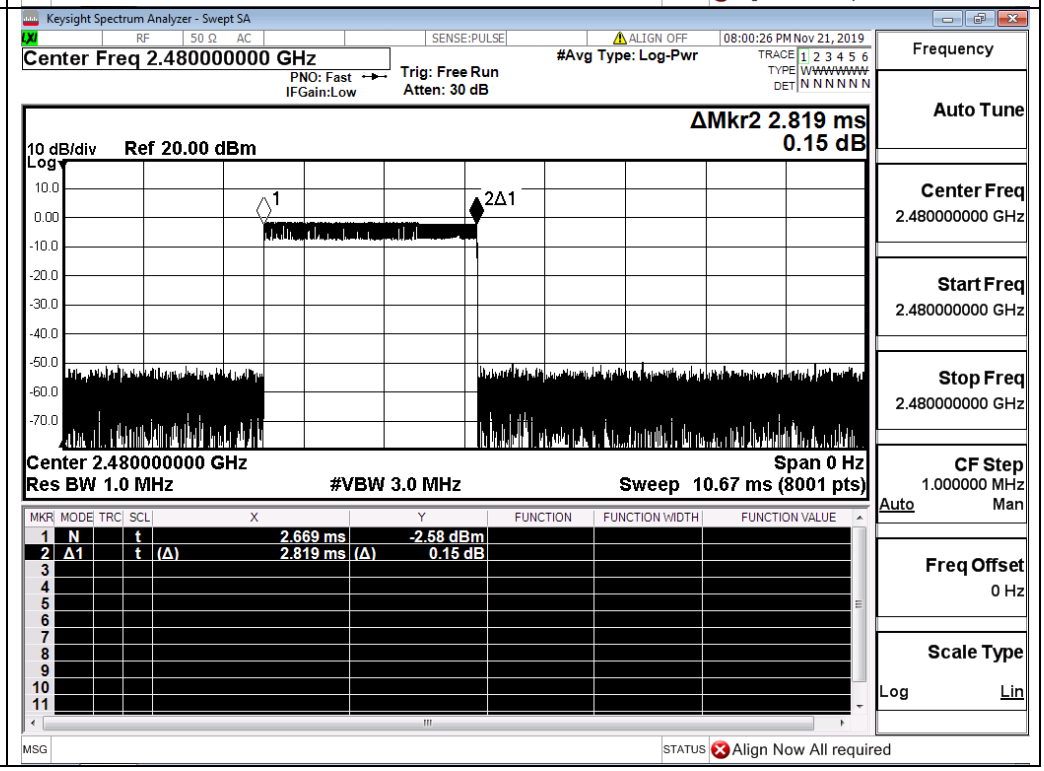
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.817	106.7	0.30	0.4	PASS
	DH5	MCH	2.817	106.7	0.30	0.4	PASS
	DH5	HCH	2.819	106.7	0.30	0.4	PASS

Test Graphs	
GFSK_DH5/LCH	

GFSK_DH5/MCH

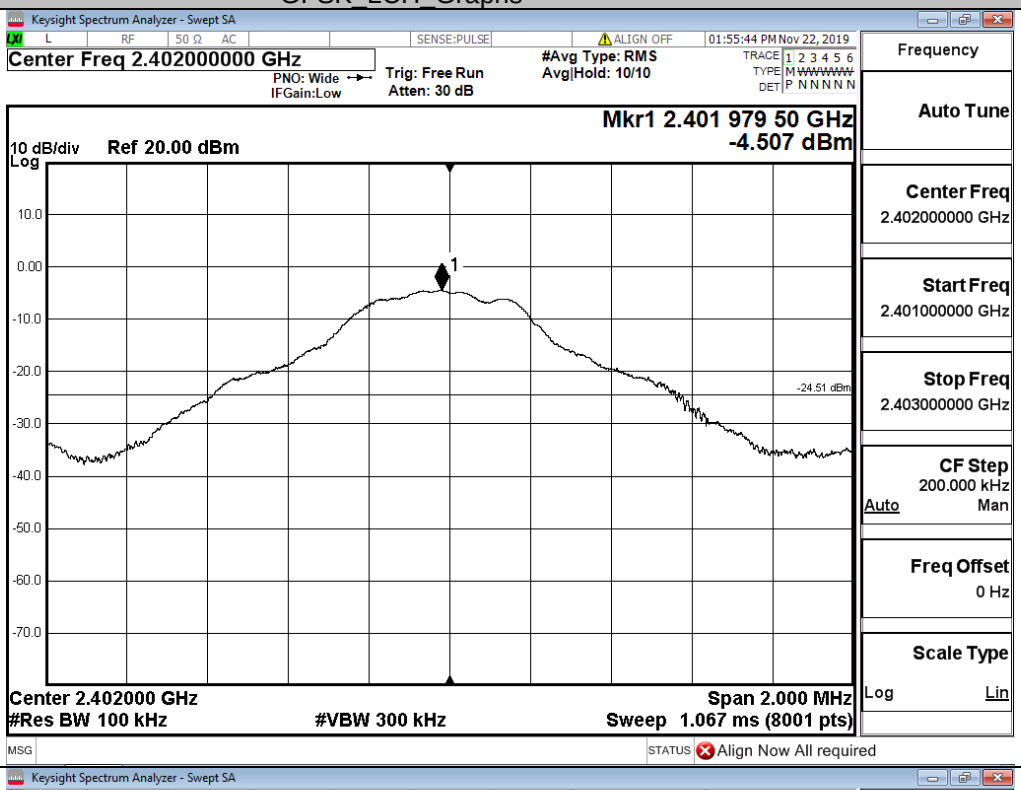
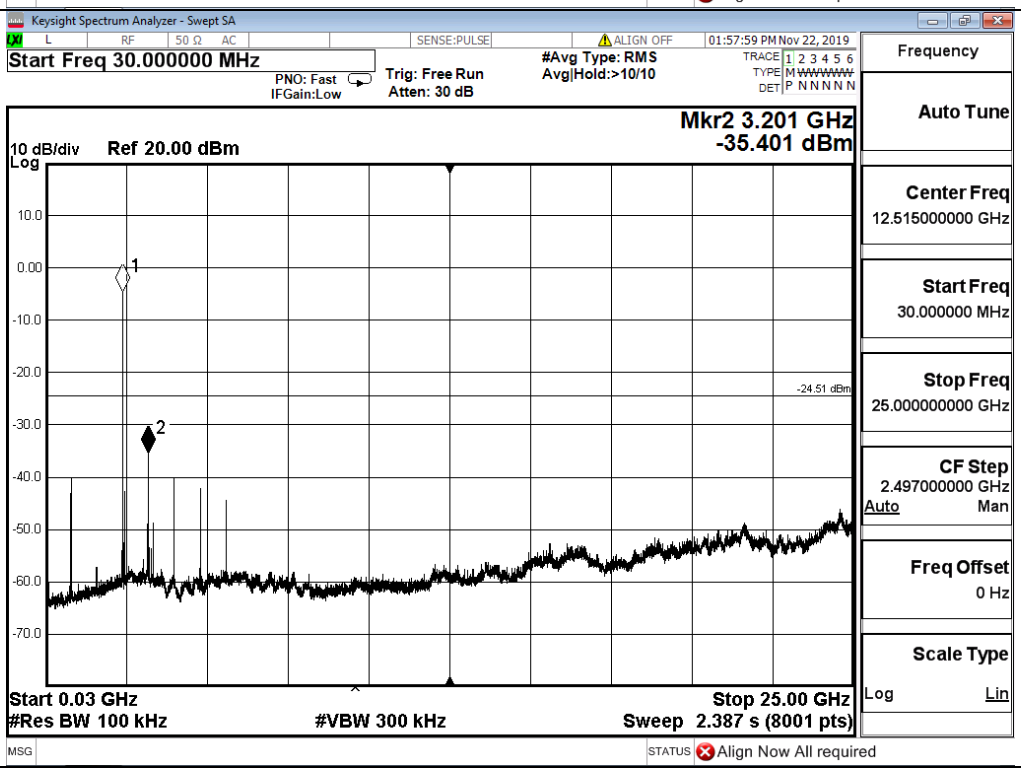


GFSK_DH5/HCH



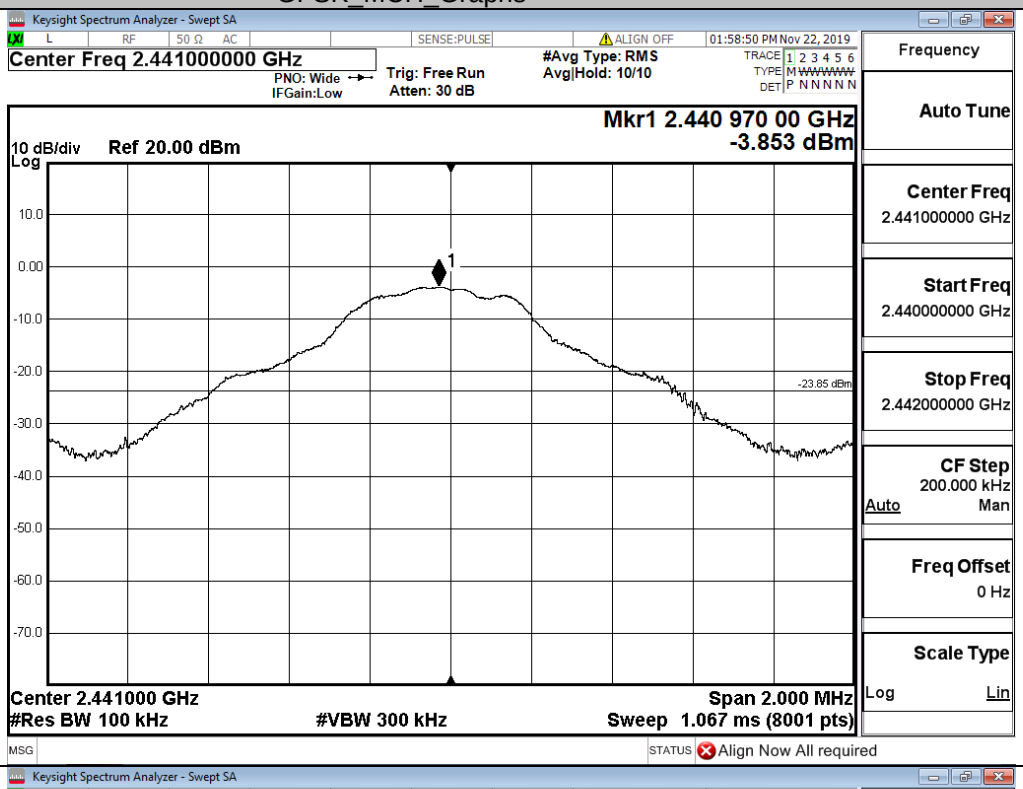
A.6 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-4.507	-35.401	-24.51	PASS
	MCH	-3.853	-35.350	-23.85	PASS
	HCH	-3.933	-36.447	-23.93	PASS

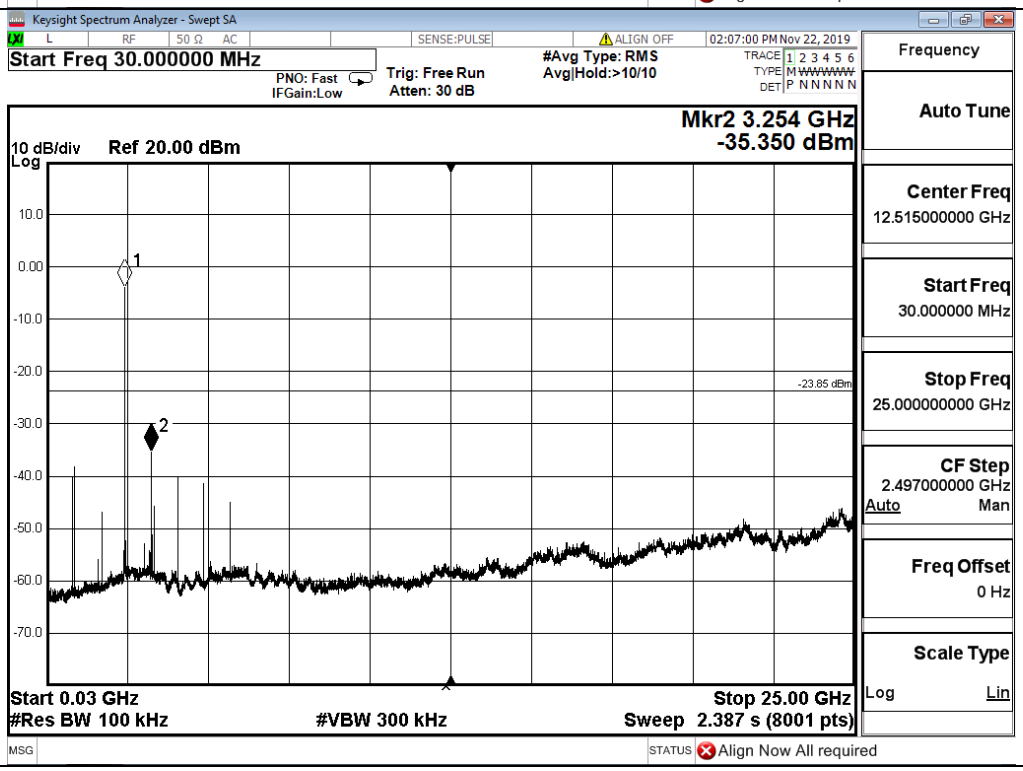
GFSK_LCH_Graphs	
Pref	
Puw	

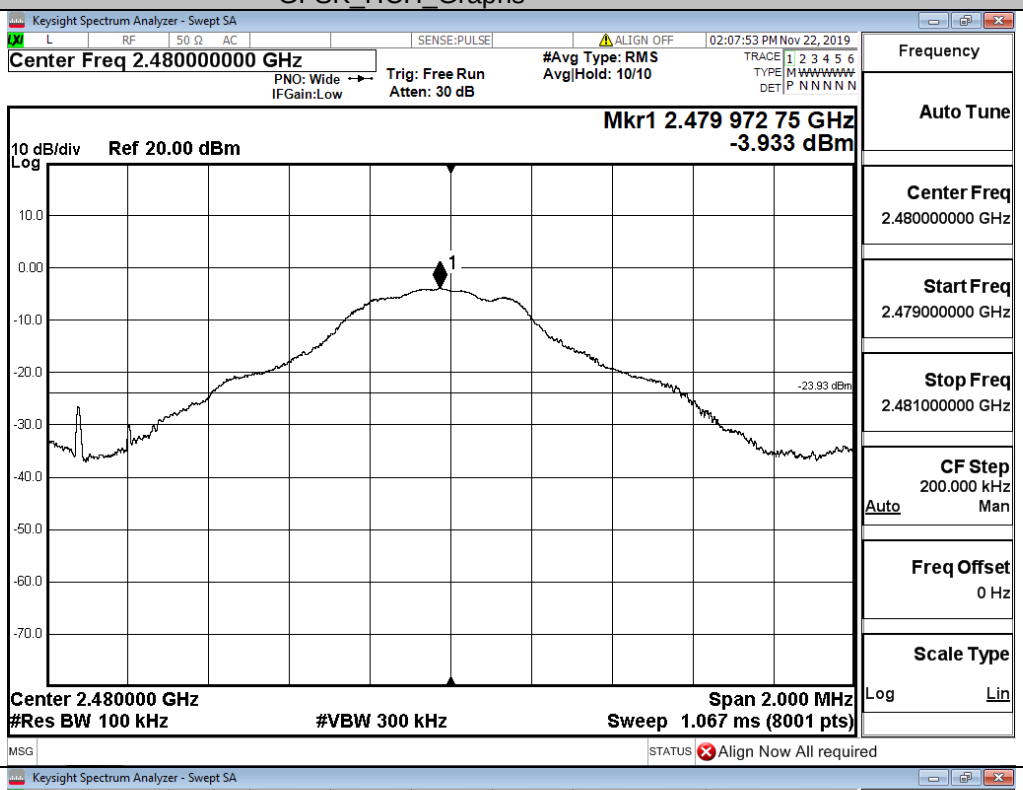
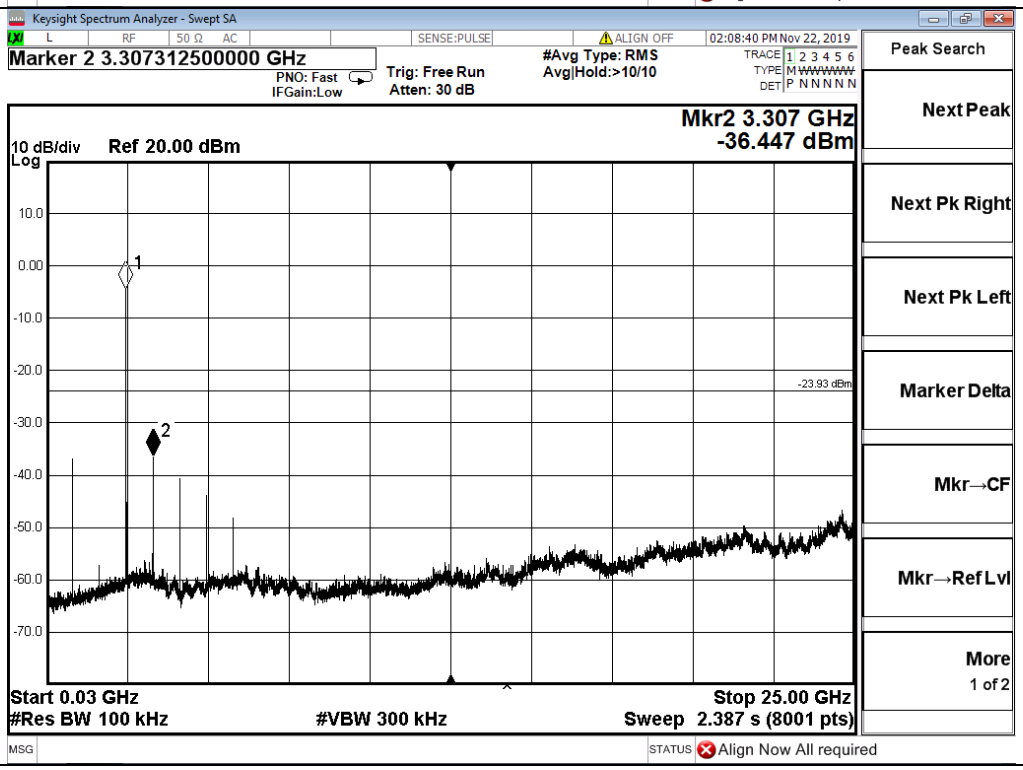
GFSK_MCH_Graphs

Pref



Puw



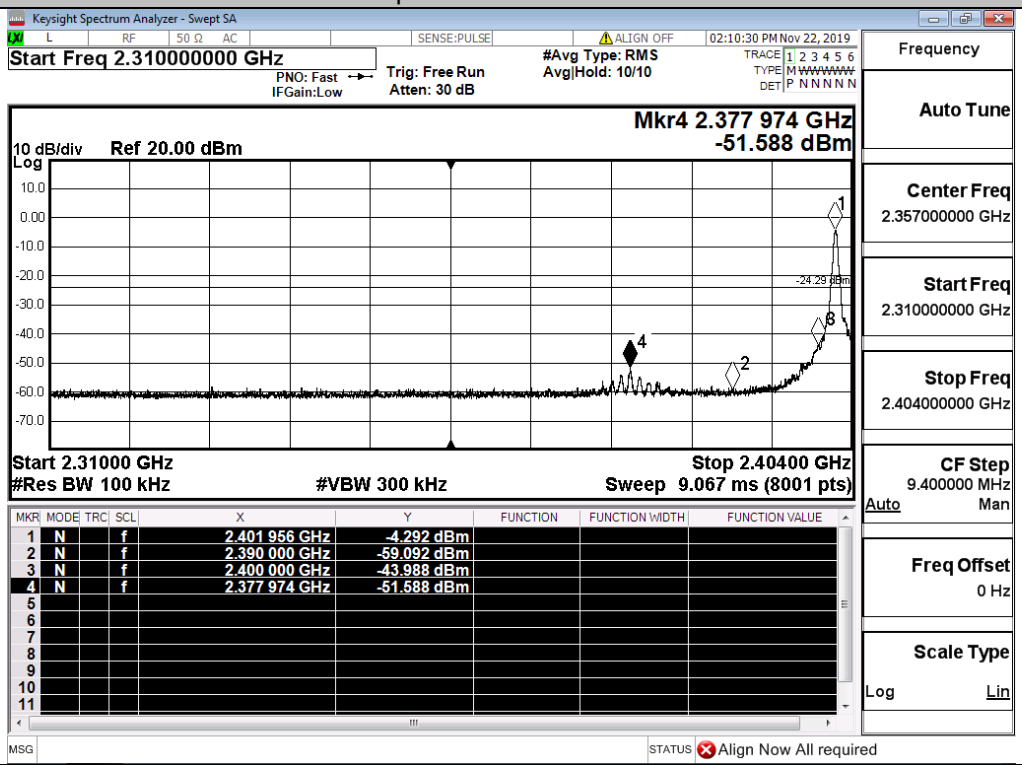
GFSK_HCH_Graphs	
Pref	
Puw	

A.7 Band-edge for RF Conducted Emissions

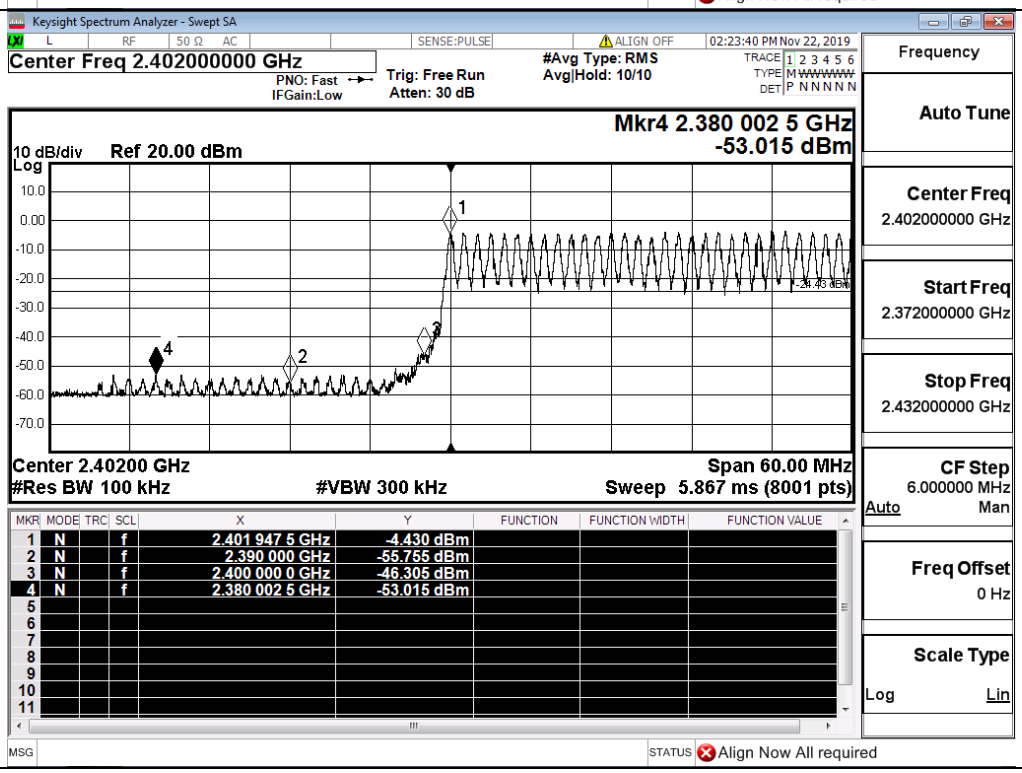
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	-4.292	Off	-51.588	-24.29	PASS
			-4.430	On	-53.015	-24.43	PASS
	HCH	2480	-3.753	Off	-43.749	-23.75	PASS
			-4.149	On	-53.569	-24.15	PASS

Test Graphs

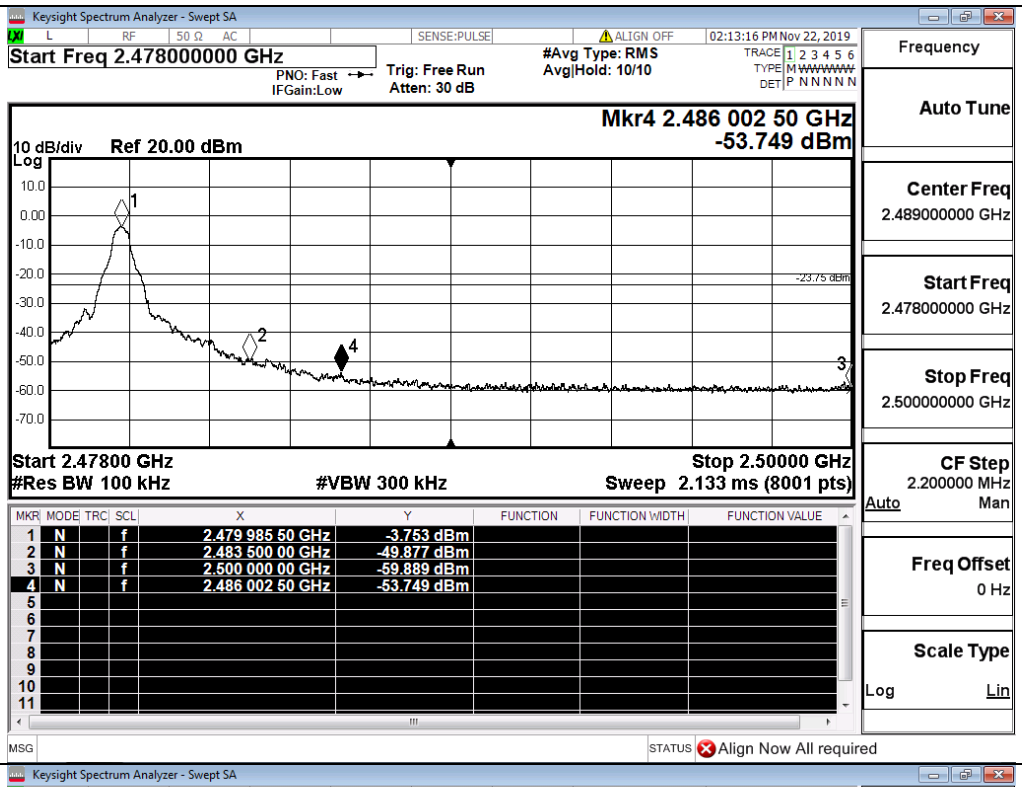
GFSK/LCH/No Hop



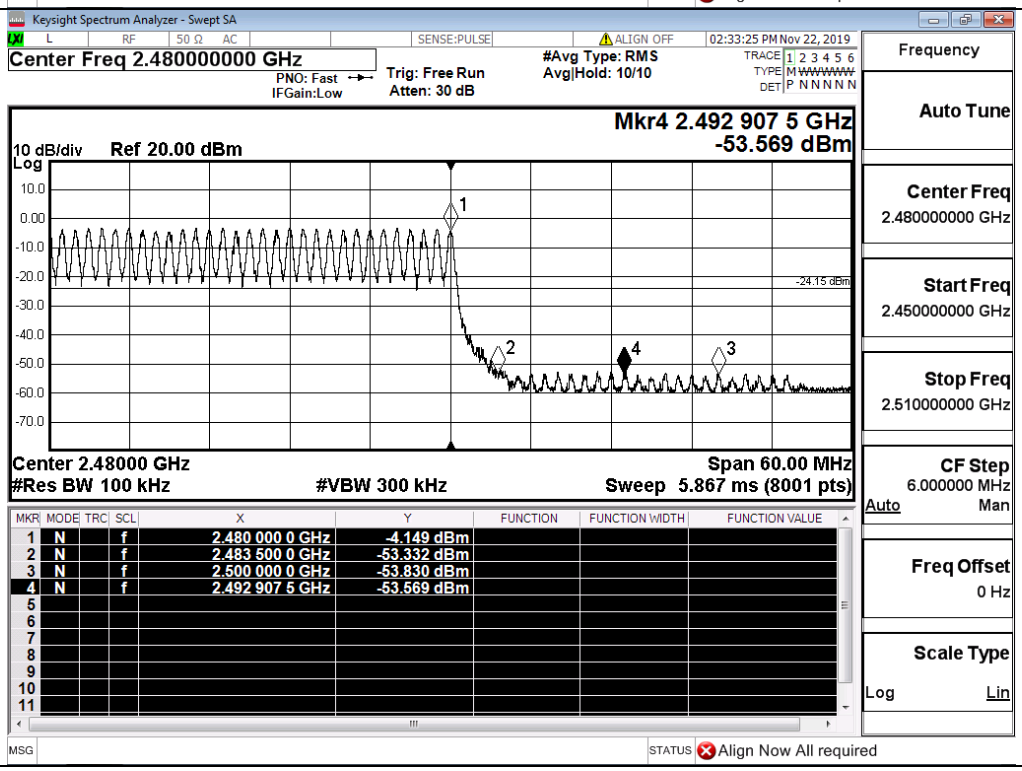
GFSK/LCH/Hop



GFSK/HCH/No Hop



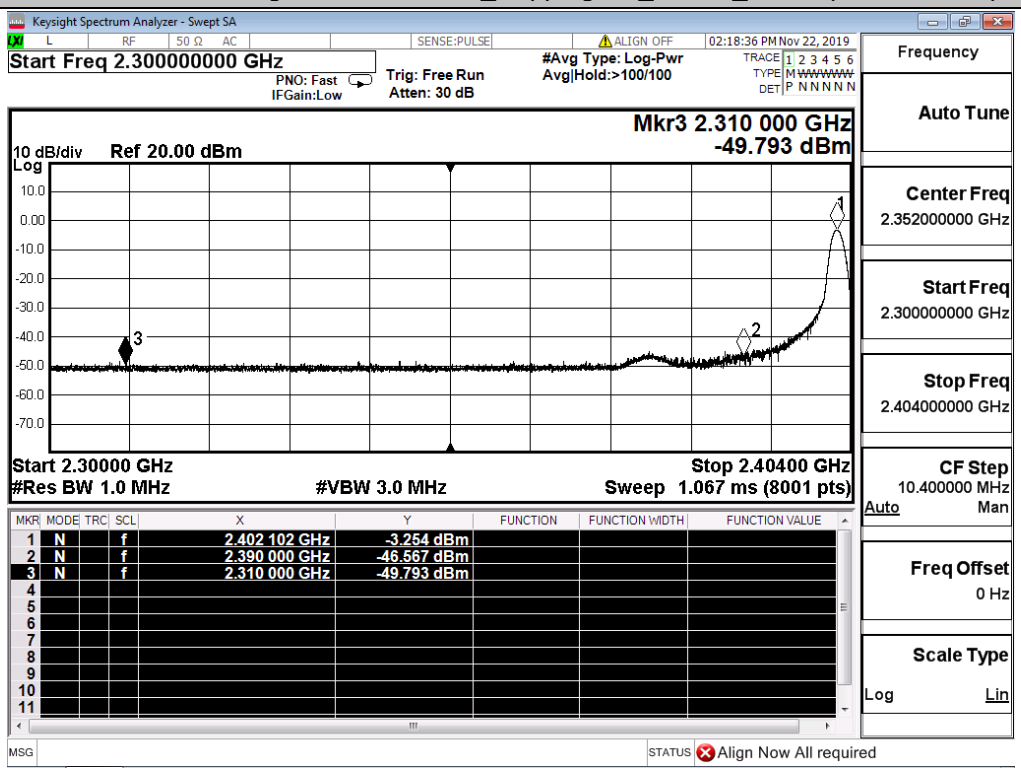
GFSK/HCH/Hop



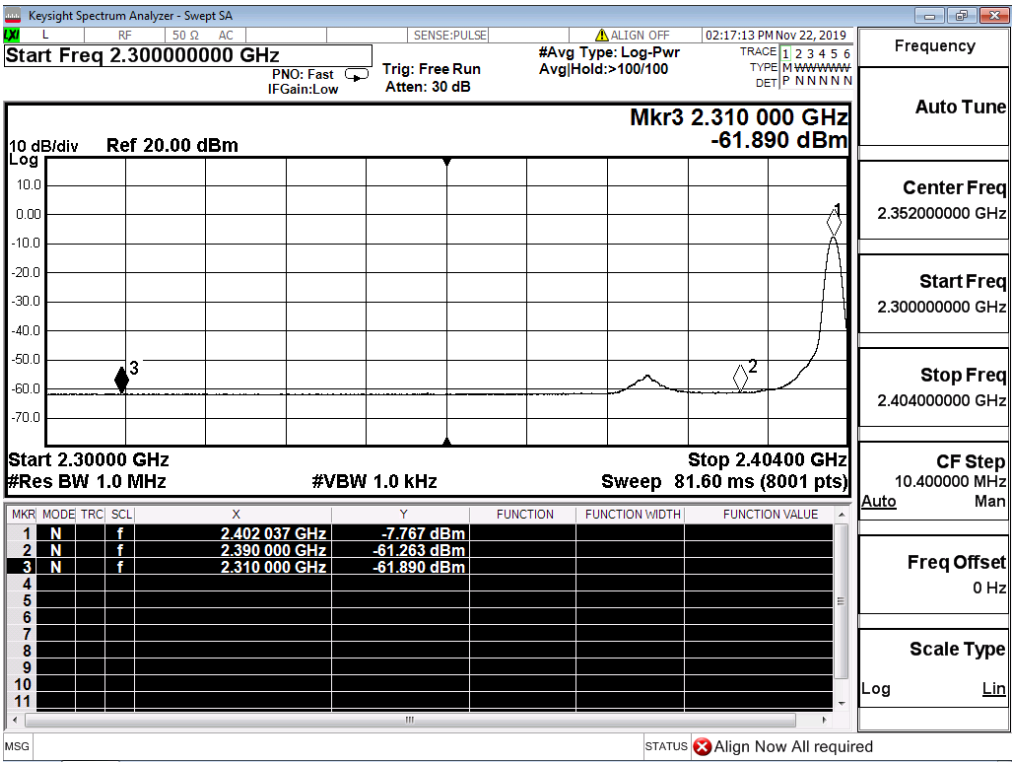
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-49.793	2	0	47.47	PEAK	74	PASS
	Off	2310.0	-61.890	2	0	35.37	AV	54	PASS
	Off	2390.0	-46.567	2	0	50.69	PEAK	74	PASS
	Off	2390.0	-61.263	2	0	36.00	AV	54	PASS
	Off	2483.5	-34.662	2	0	62.60	PEAK	74	PASS
	Off	2483.5	-51.800	2	0	45.46	AV	54	PASS
	Off	2500.0	-47.549	2	0	49.71	PEAK	74	PASS
	Off	2500.0	-60.737	2	0	36.52	AV	54	PASS

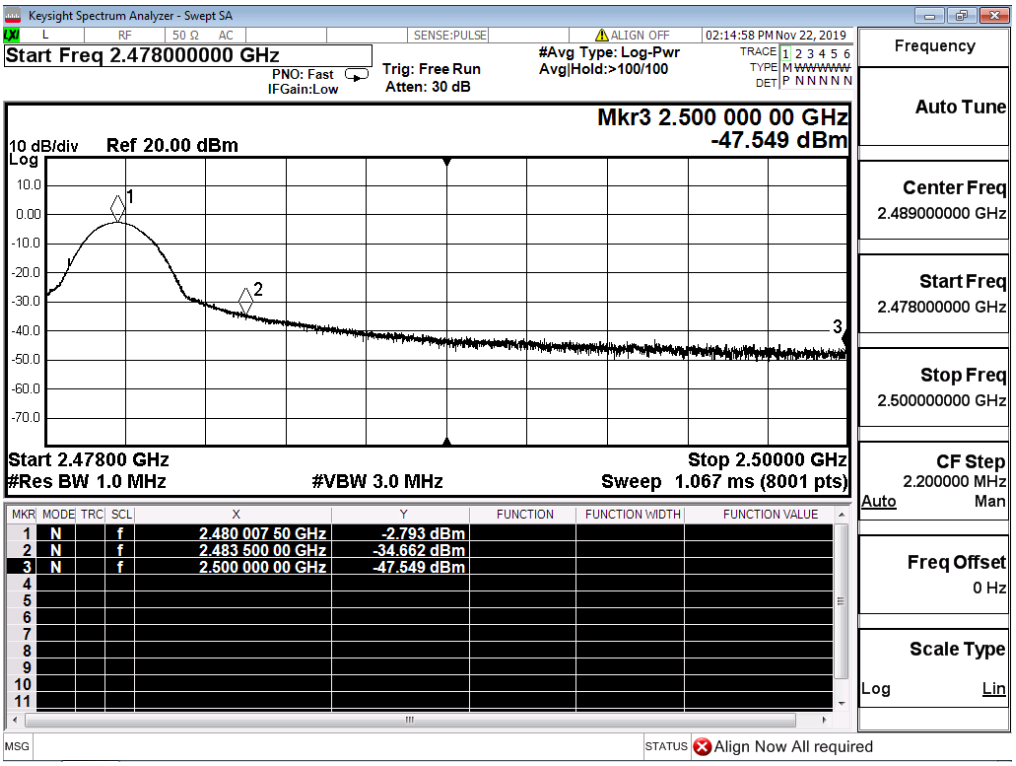
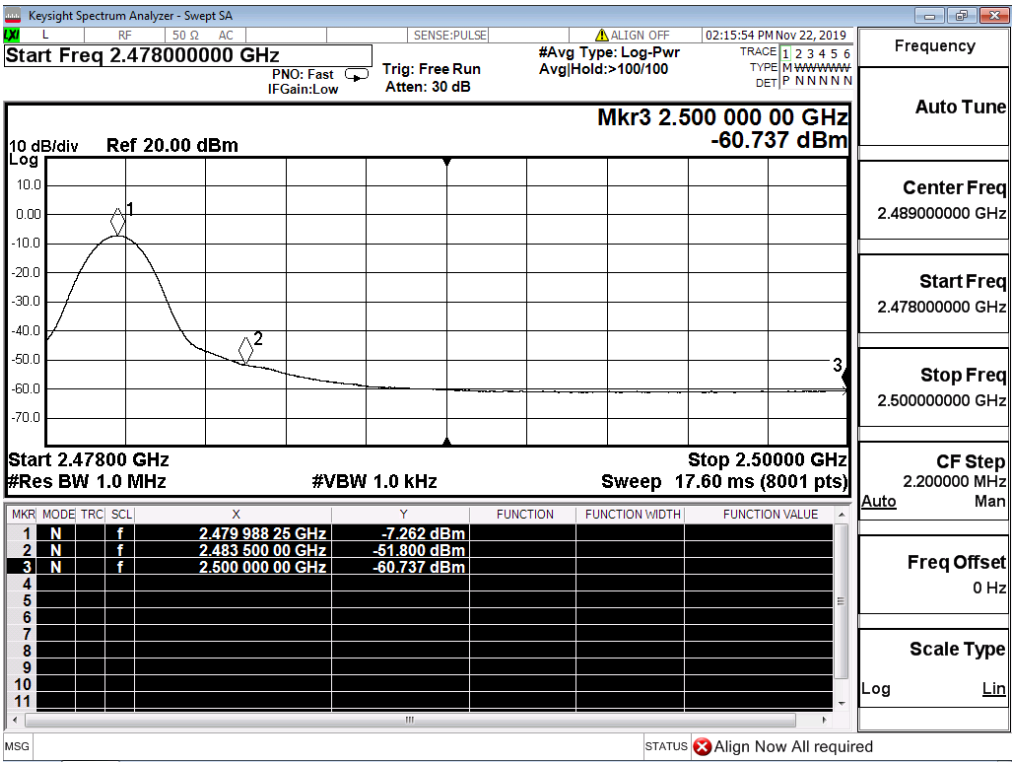
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (Low Channel)



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)