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

Product Name: Bluetooth mechanical keyboard

Trade Mark: N/A

Test Model: keychron K4

FCC ID: 2ASF4-K4

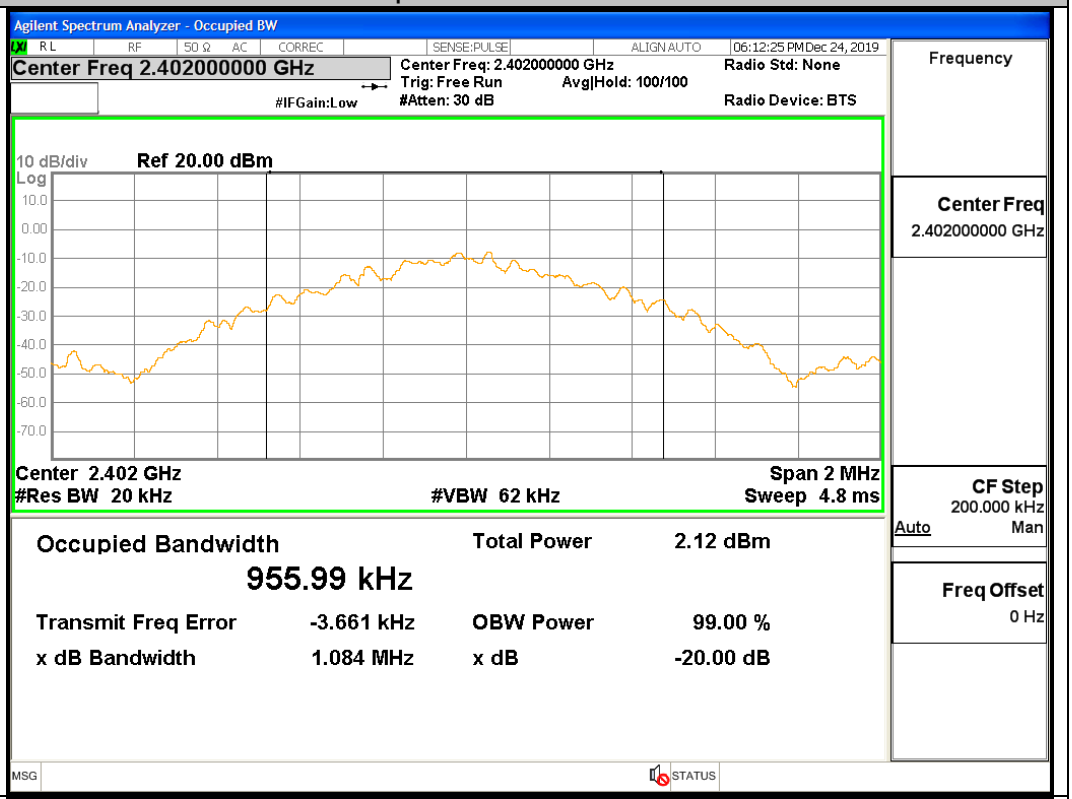
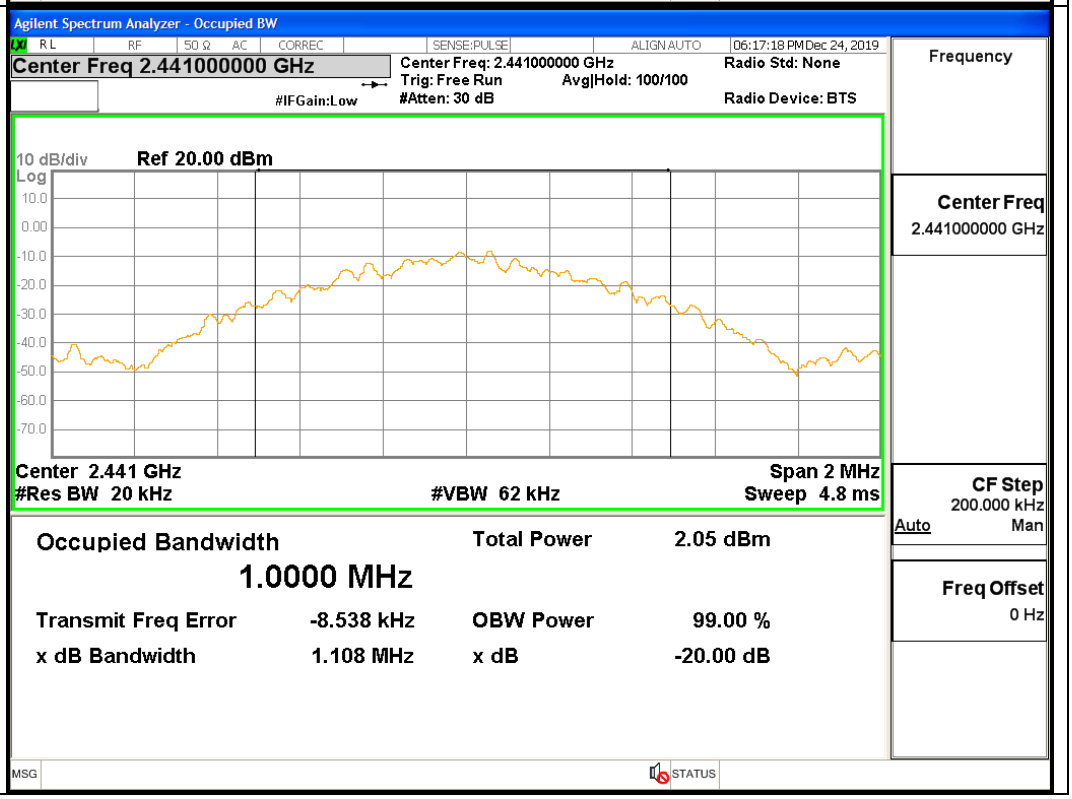
Environmental Conditions

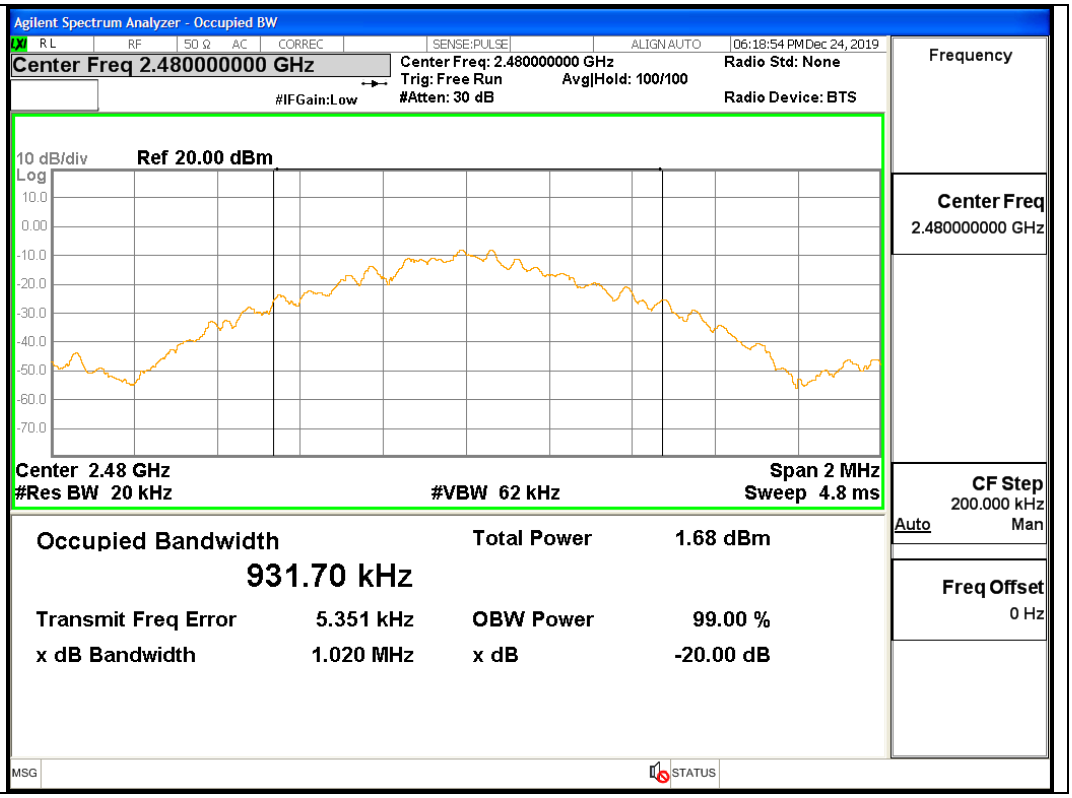
Temperature:	22.8° C
Relative Humidity:	50%
ATM Pressure:	100.0 kPa
Test Engineer:	Gary Qian
Supervised by:	Eden Hu

A.1 20 dB Bandwidth

Mode	Channel.	20dB Bandwidth [MHz]	Limit(MHz)	Verdict
GFSK	LCH	1.084	Not Specified	PASS
GFSK	MCH	1.108	Not Specified	PASS
GFSK	HCH	1.020	Not Specified	PASS

Test Graph

Graphs	
GFSK/LCH	
GFSK/MCH	

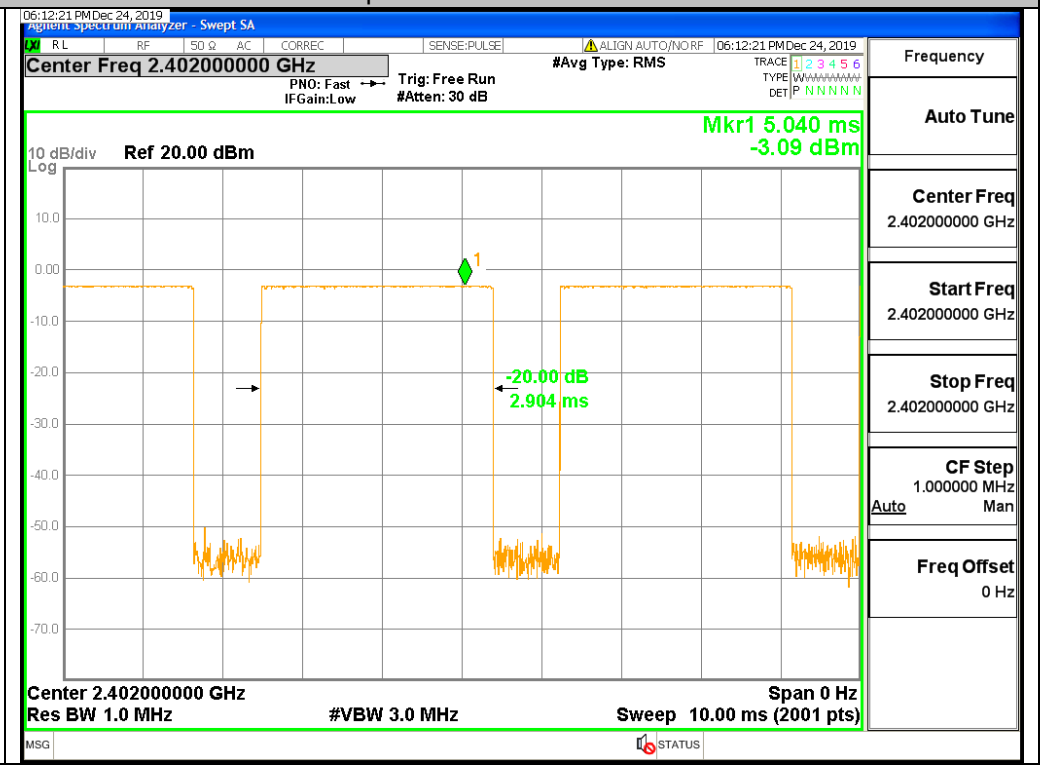
GFSK/HCH	

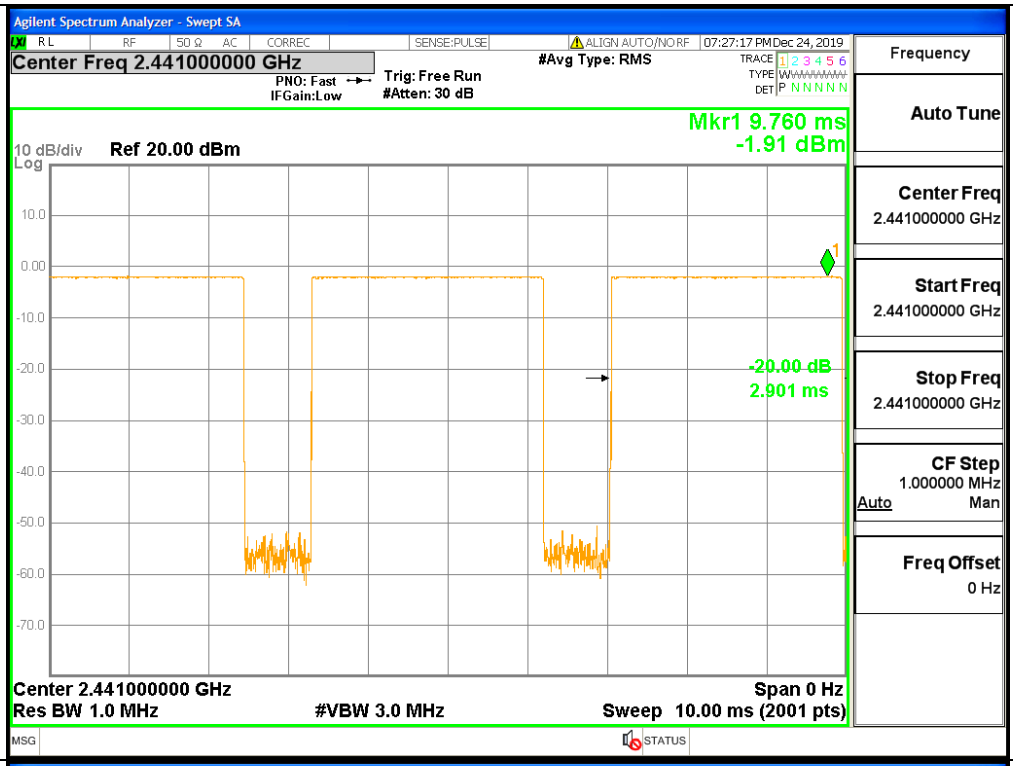
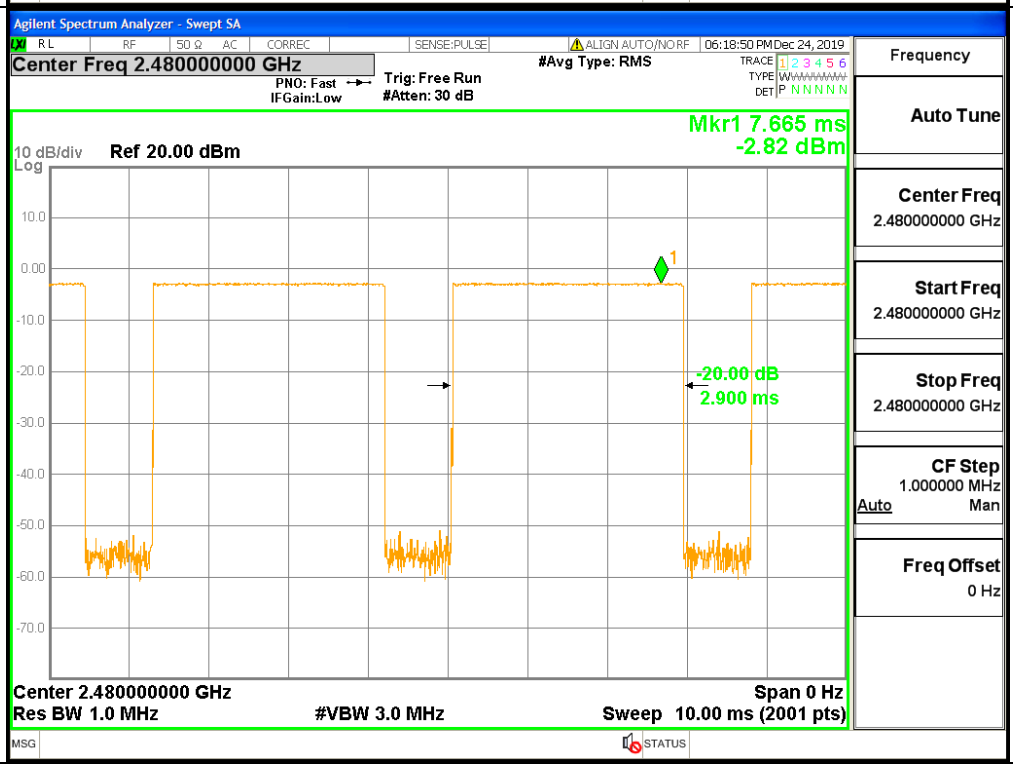
Agilent Spectrum Analyzer - Occupied BW
RL
RF
50 Ω AC
CORREC
SENSE:PULSE
ALIGN AUTO
06:18:54 PM Dec 24, 2019
Center Freq 2.480000000 GHz
Center Freq: 2.480000000 GHz
Trig: Free Run
Avg|Hold: 100/100
#IFGain:Low
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
Frequency
10 dB/div
Log
Ref 20.00 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Center Freq
2.480000000 GHz
Center 2.48 GHz
#Res BW 20 kHz
#VBW 62 kHz
Span 2 MHz
Sweep 4.8 ms
CF Step
200.000 kHz
Auto
Man
Occupied Bandwidth
931.70 kHz
Total Power
1.68 dBm
Transmit Freq Error
5.351 kHz
OBW Power
99.00 %
x dB Bandwidth
1.020 MHz
x dB
-20.00 dB
Freq Offset
0 Hz
MSG
STATUS

A.2 Dwell Time

Mode	Packet	Channel	Burst Width [s/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	0.002904	106.7	0.309871	0.4	PASS
GFSK	DH5	MCH	0.002901	106.7	0.309498	0.4	PASS
GFSK	DH5	HCH	0.002900	106.7	0.309393	0.4	PASS

Test Graph

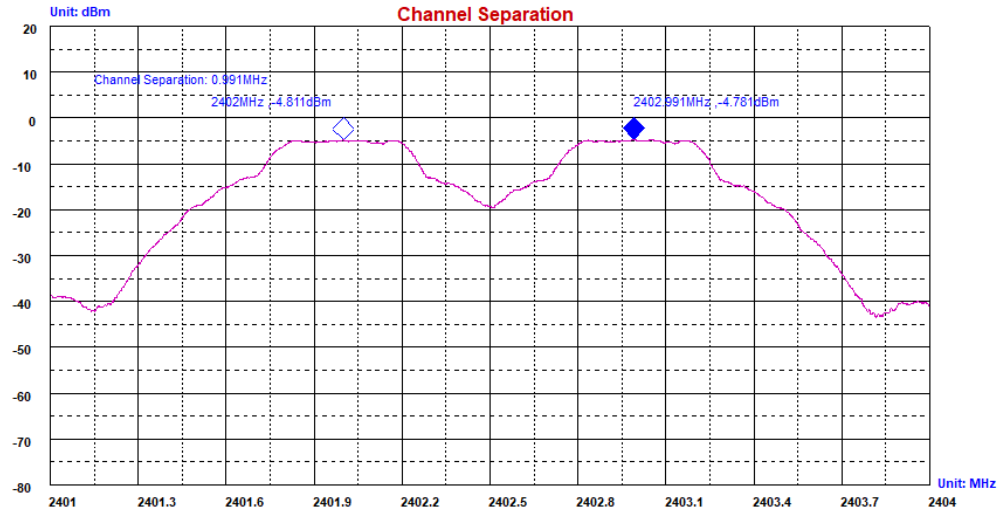
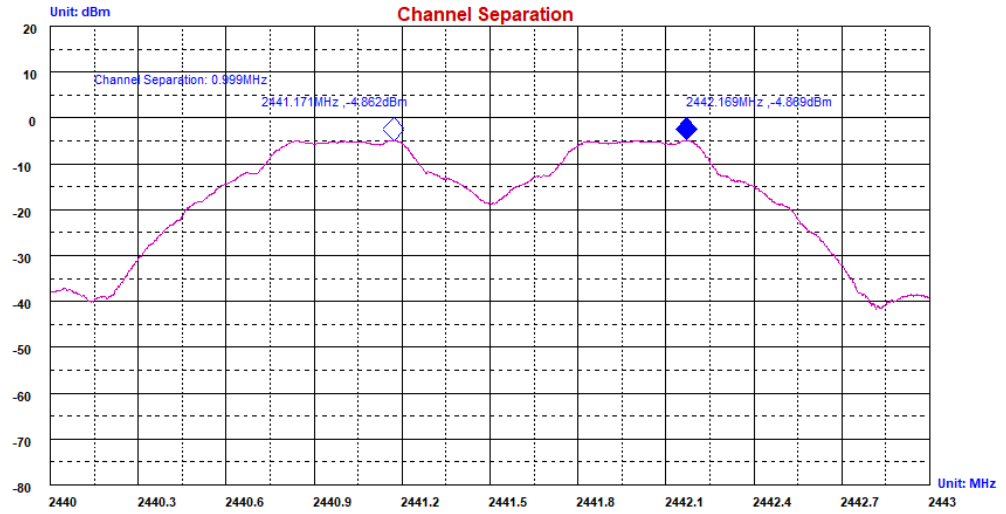
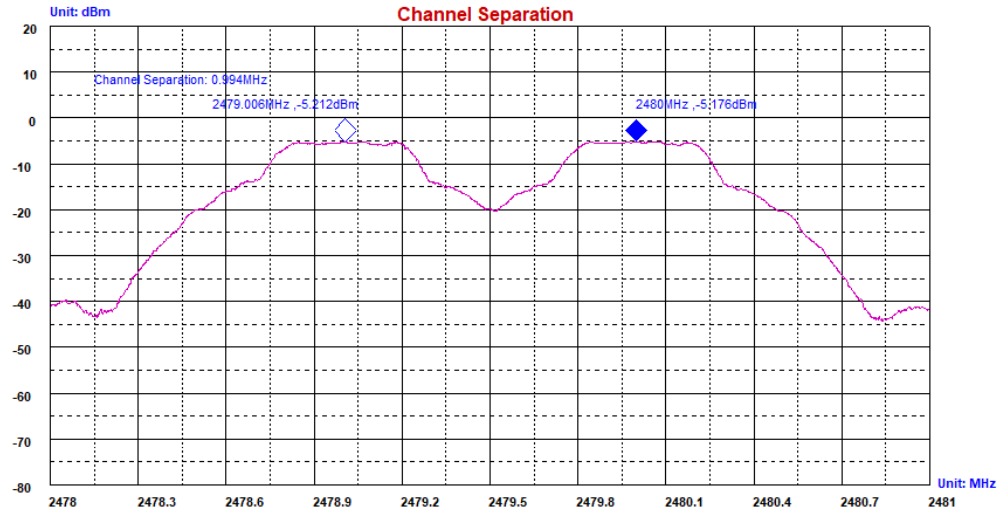
Graphs	
GFSK_DH5/LCH	

GFSK_DH5/MCH	
GFSK_DH5/HCH	

A.3 Carrier Frequency Separation

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.991	0.72	PASS
GFSK	MCH	0.999	0.74	PASS
GFSK	HCH	0.994	0.68	PASS

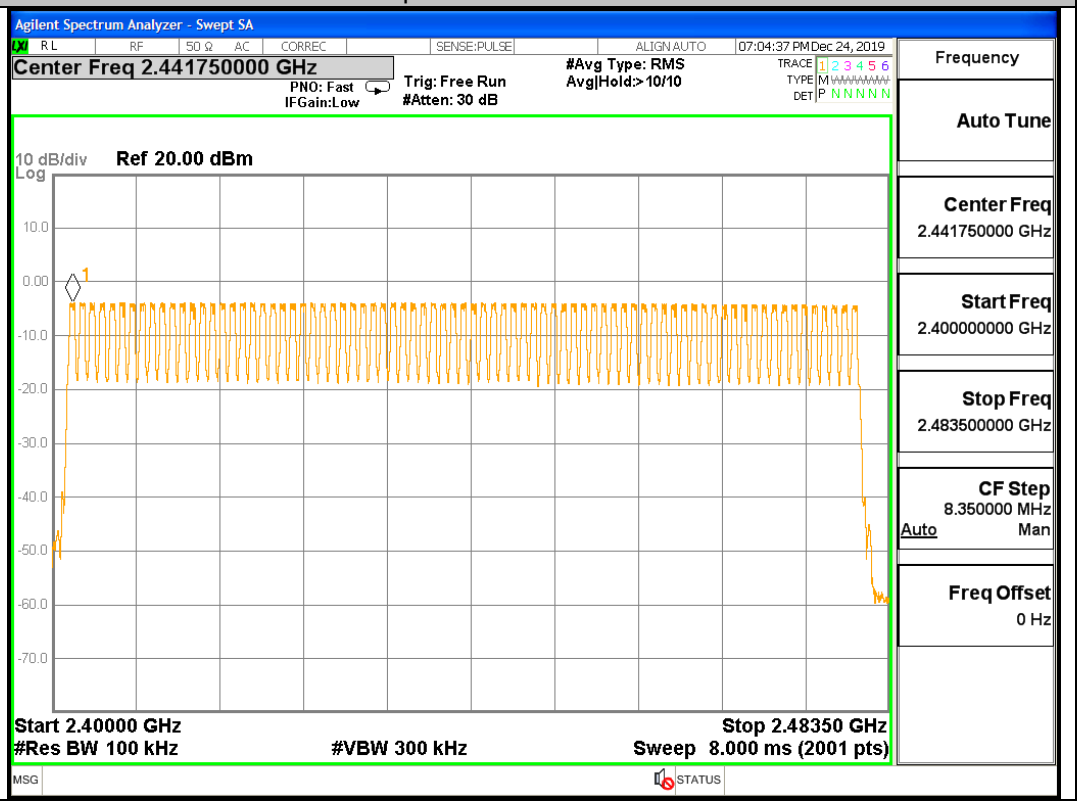
Test Graph

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

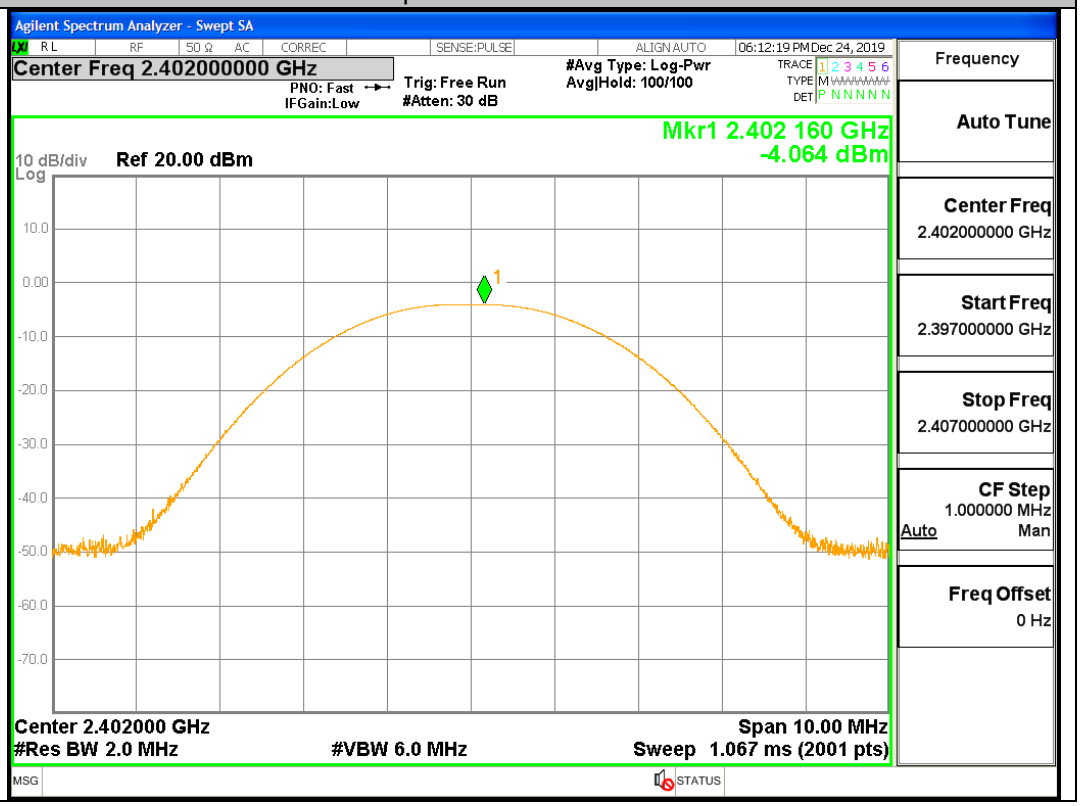
Test Graph

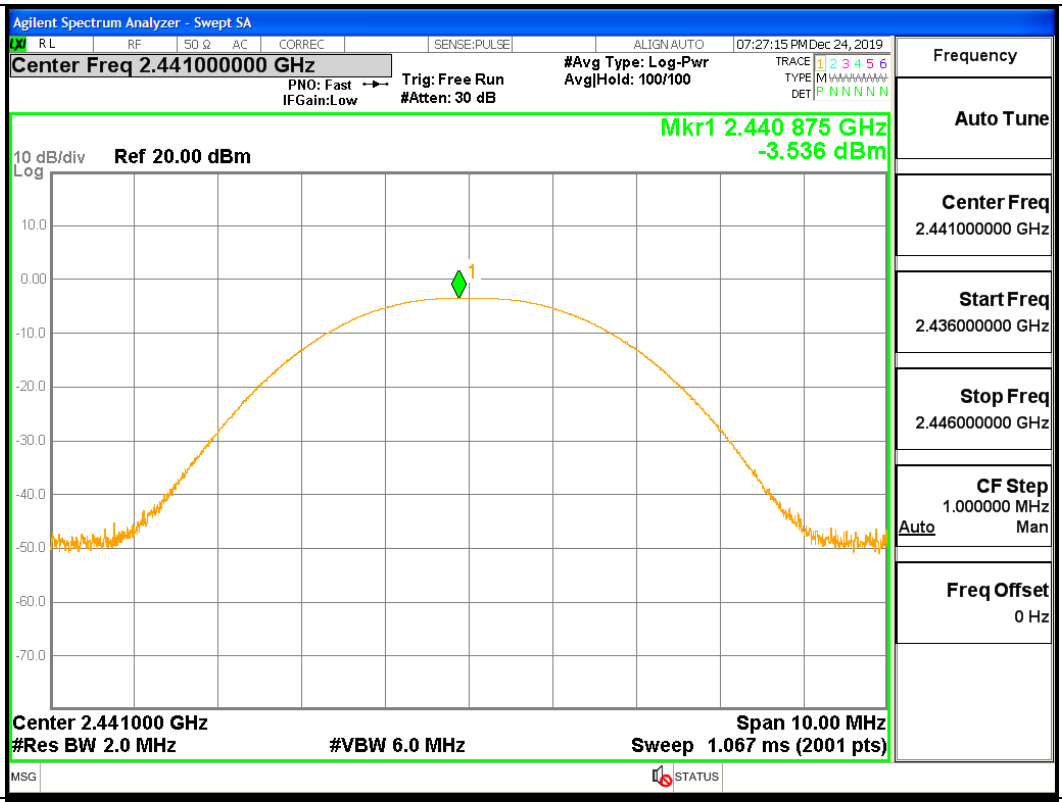
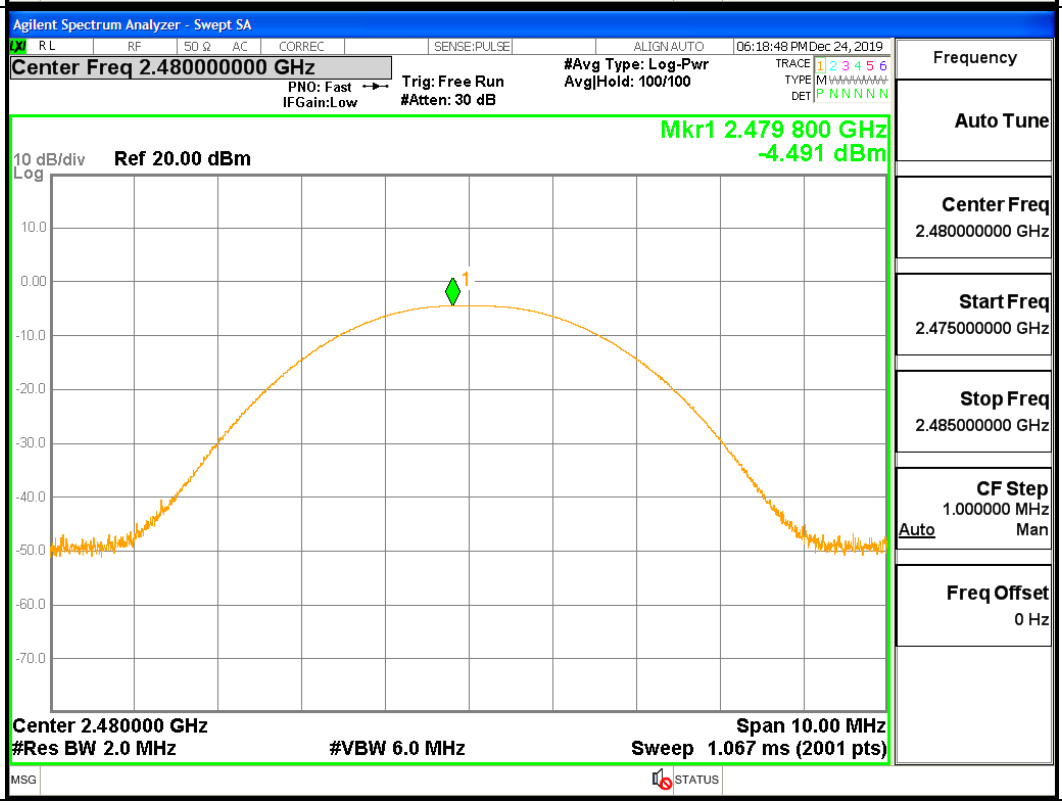
Graphs	
GFSK/Hop	

A.5 Conducted Peak Output Power

Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-4.064	21	PASS
GFSK	MCH	-3.536	21	PASS
GFSK	HCH	-4.491	21	PASS

Test Graph

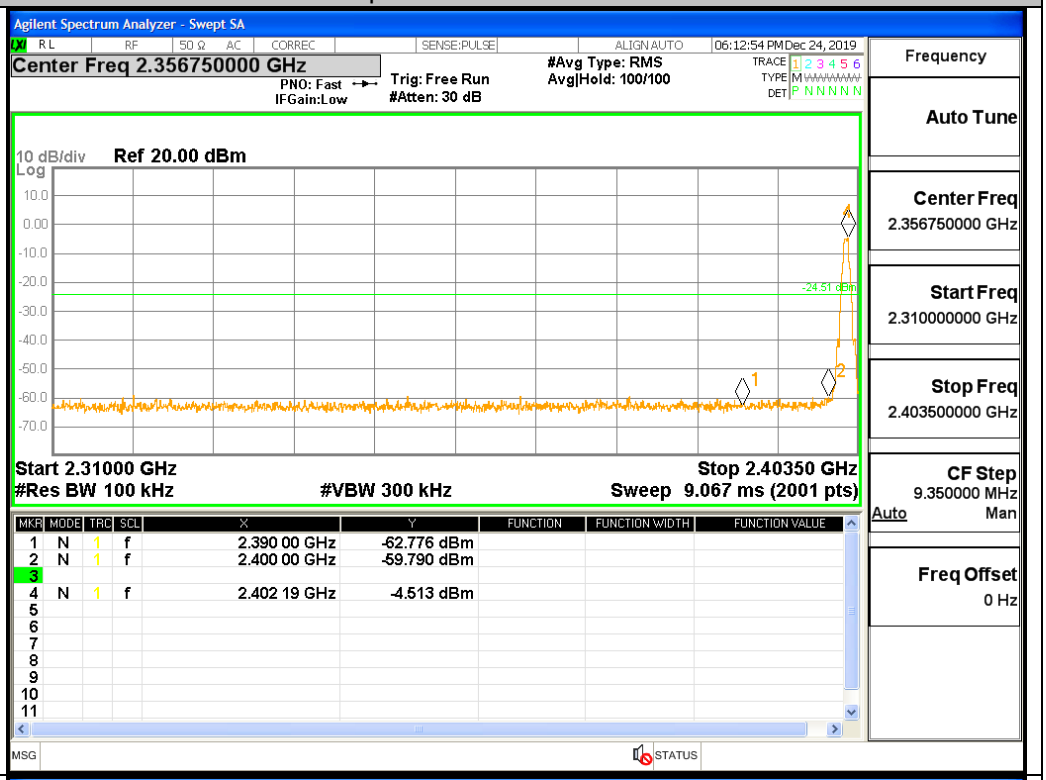
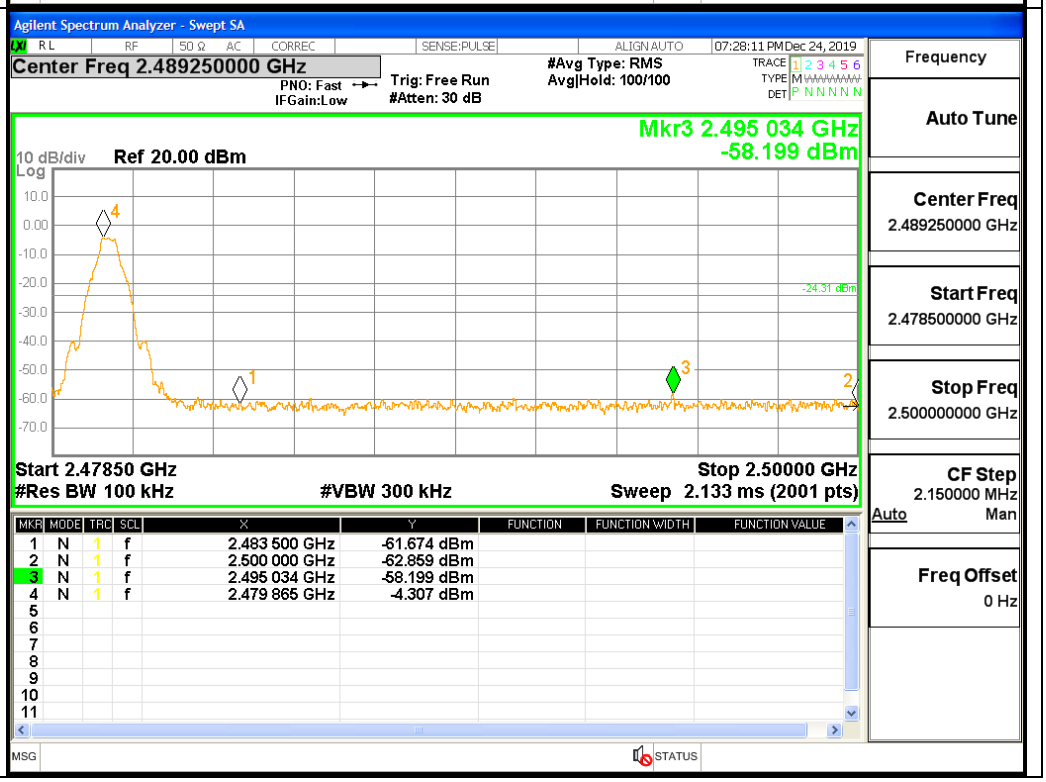
Graphs	
GFSK/LCH	

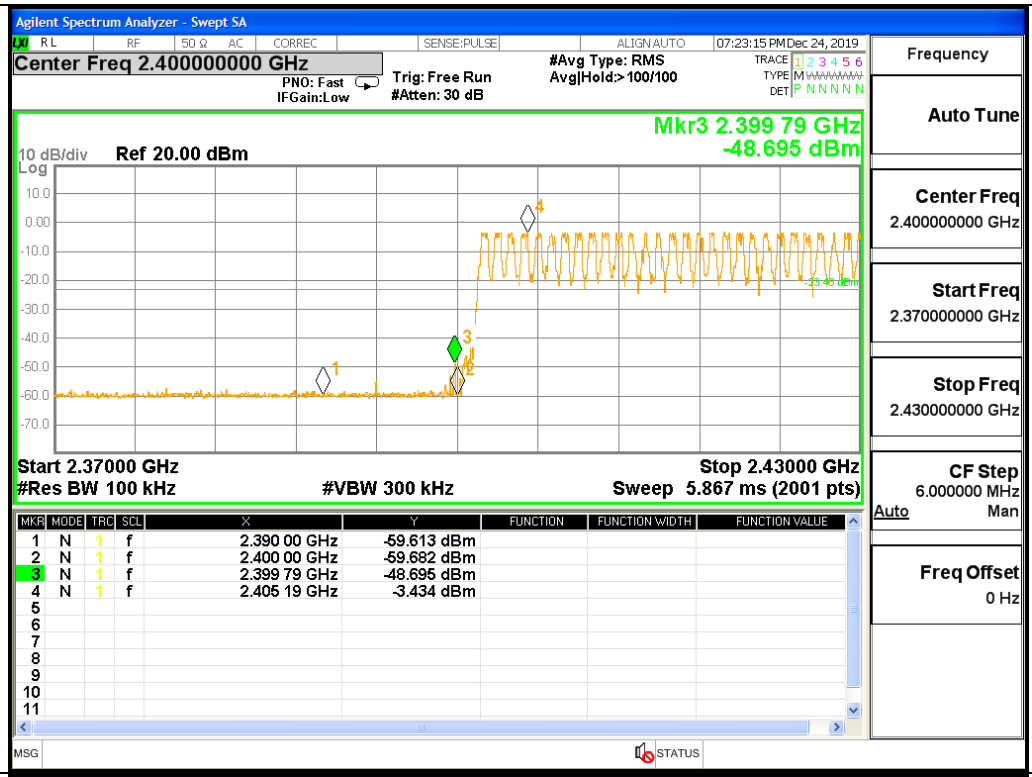
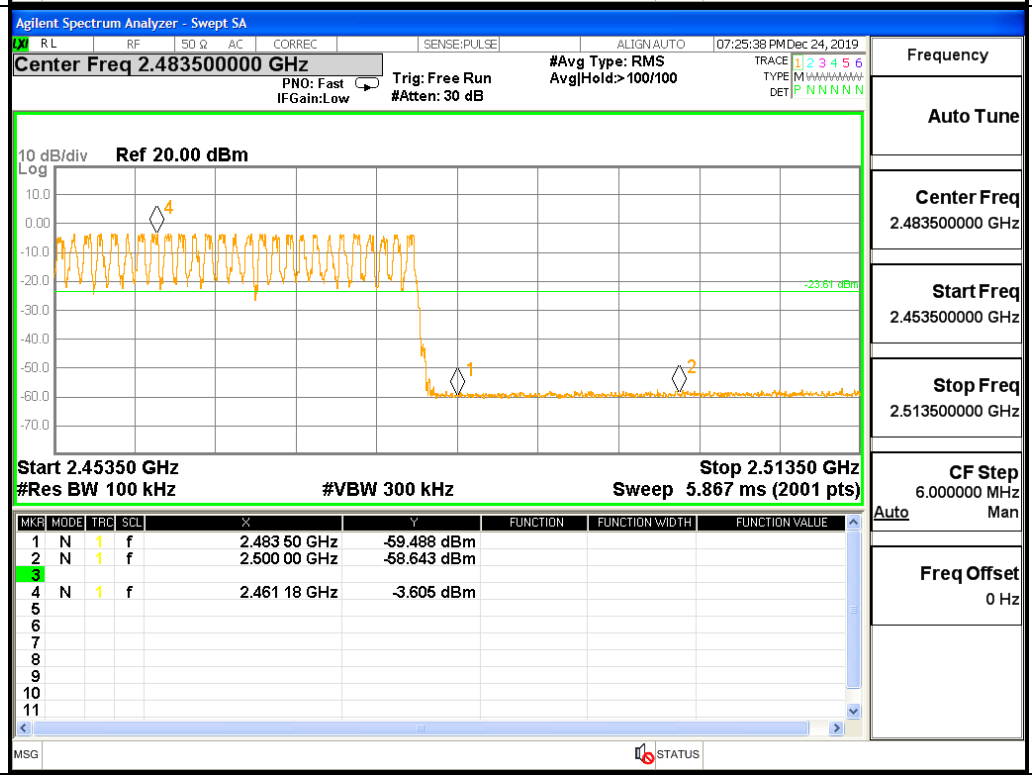
GFSK/MCH	
GFSK/HCH	

A.6 Band-edge for RF Conducted Emissions

Type	Carrier Frequency(MHz)	Frequency(MHz)	Carrier Frequency Power [dBm]	Bandedge Peak(dBm)	Upper limit(dBm)	Conclusion
1DH5	2402	2400	-4.513	-59.79	-24.513	Pass
1DH5	2480	2495.034	-4.307	-58.199	-24.307	Pass
1DH5-Hopping	2402	2399.79	-3.434	-48.695	-23.434	Pass
1DH5-Hopping	2480	2500	-3.605	-58.643	-23.605	Pass

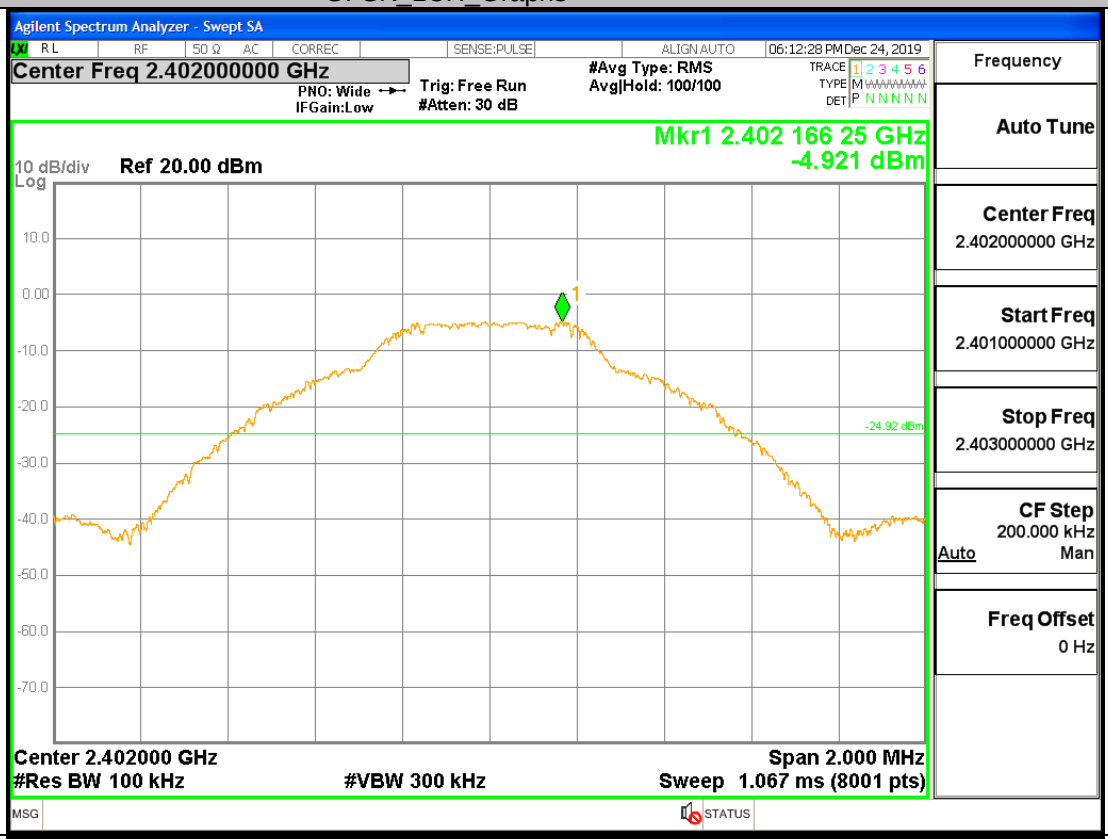
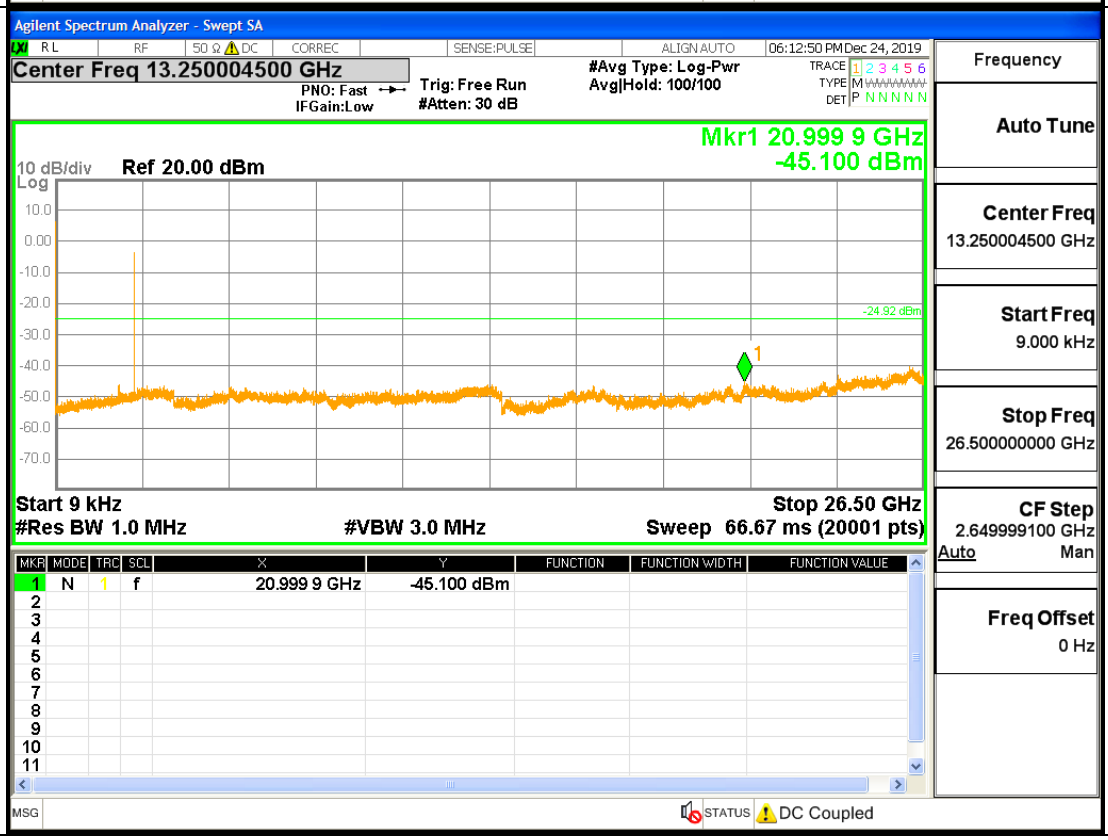
Test Graph

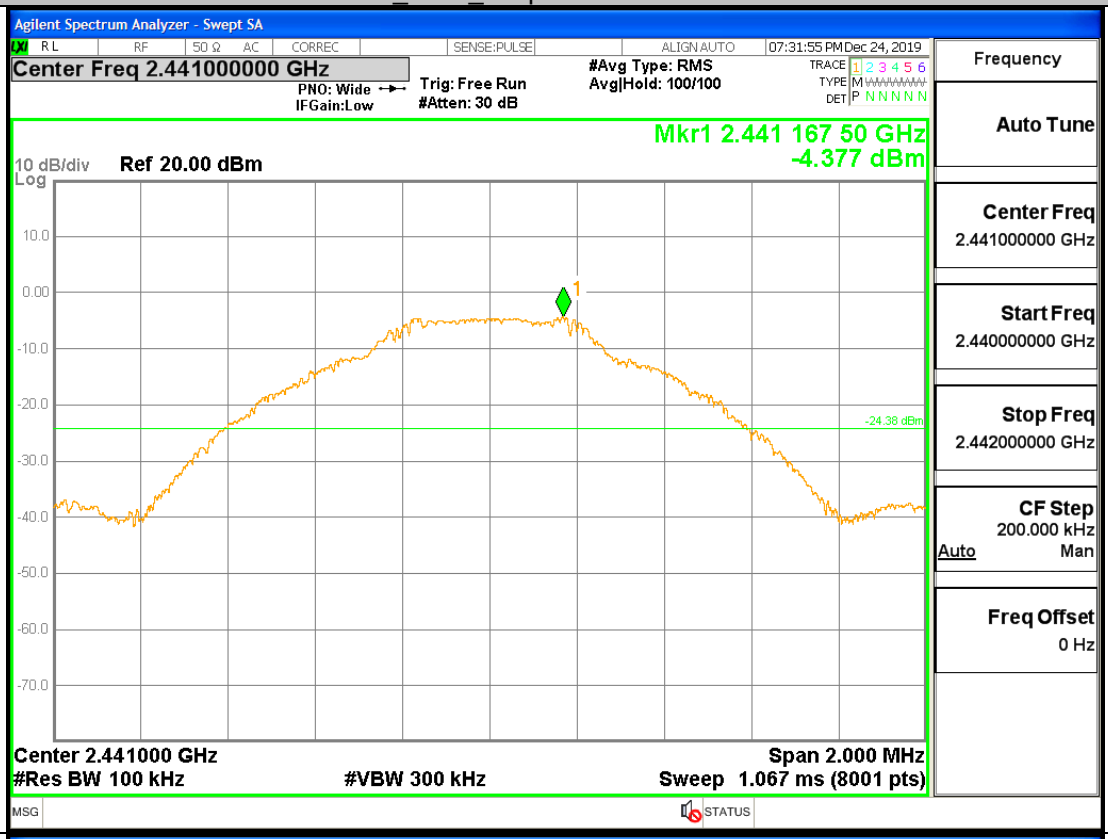
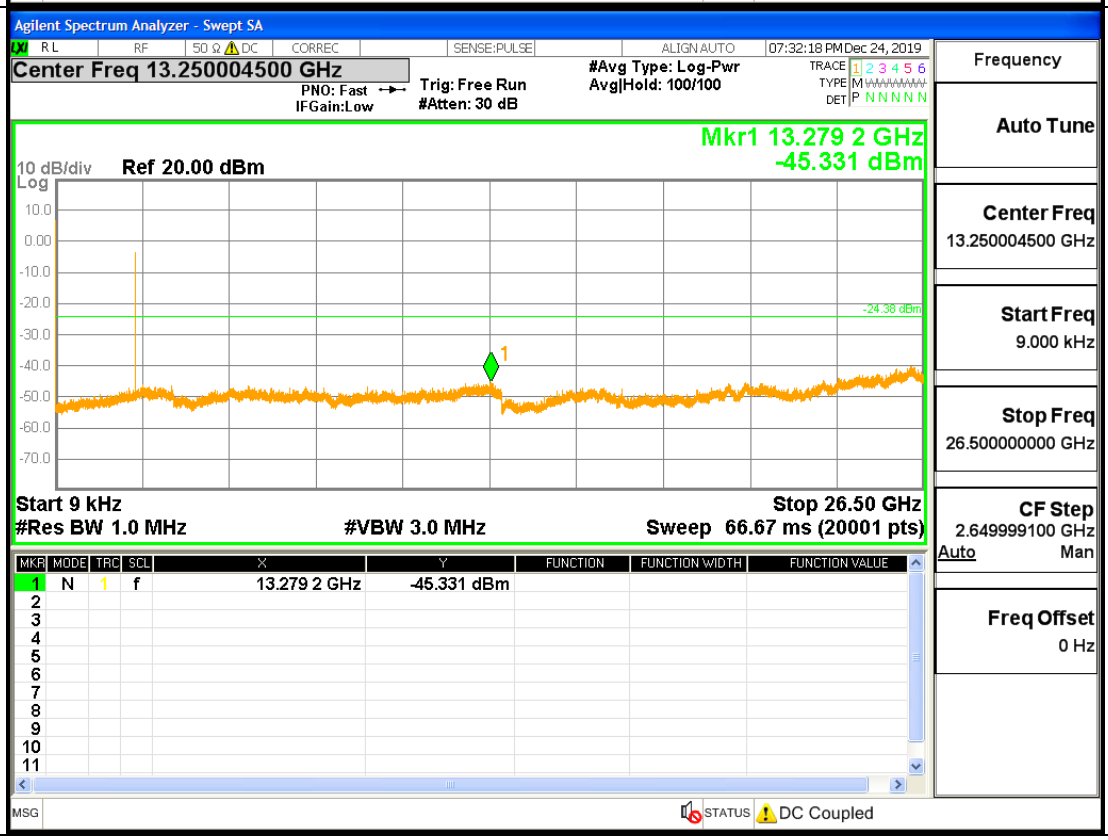
Graphs	
GFSK/LCH/No Hop	
GFSK/HCH/No Hop	

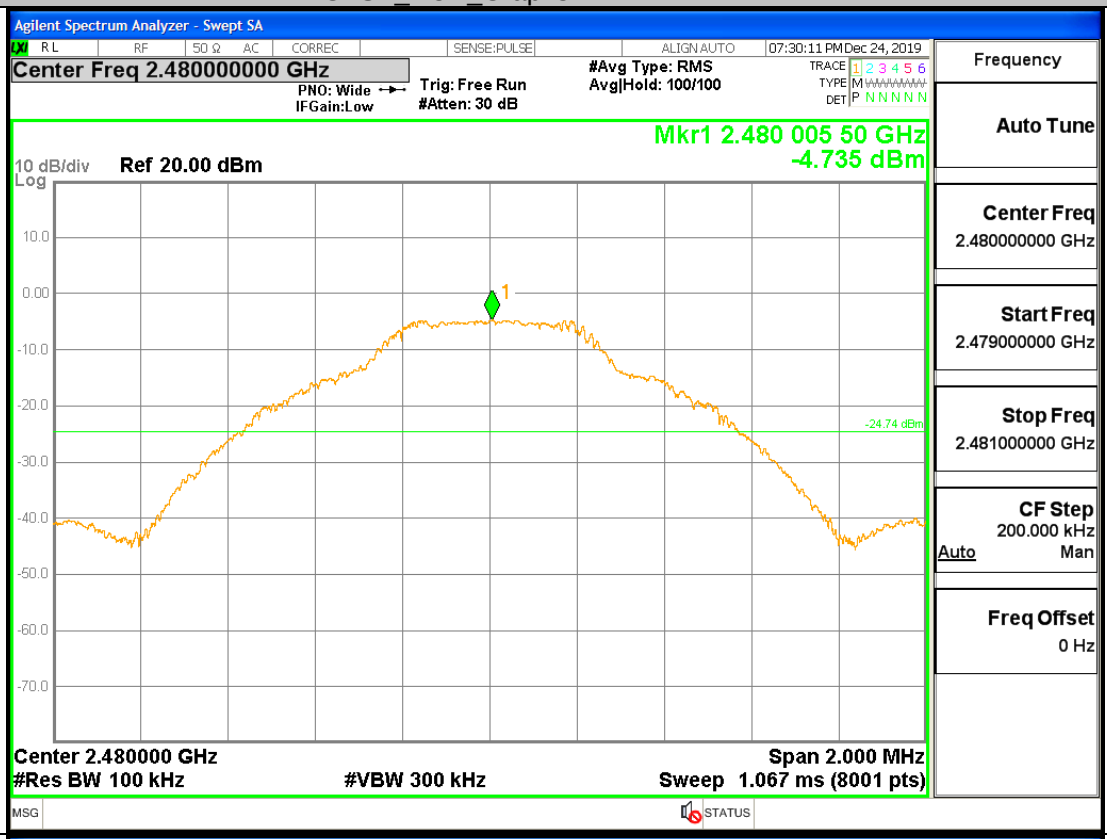
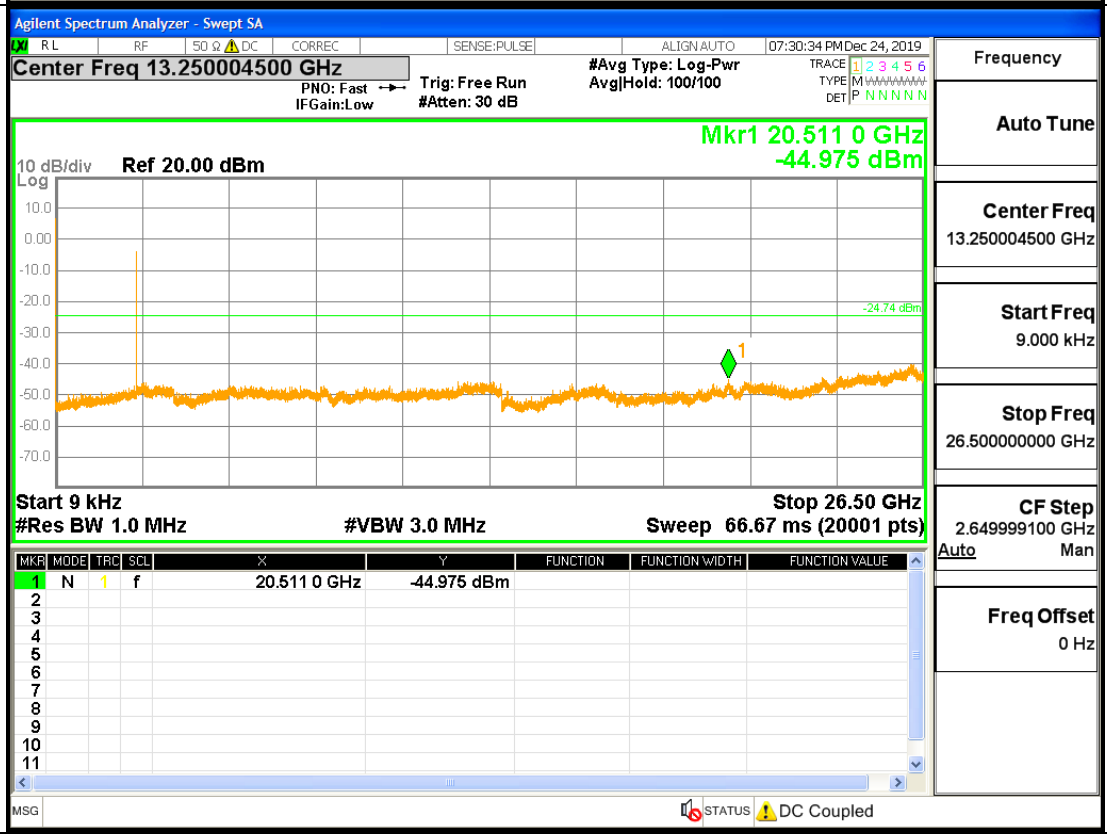
GFSK/LCH/Hop	
GFSK/HCH/Hop	

A.7 RF Conducted Spurious Emissions

Test Graph

GFSK_LCH_Graphs	
Pref	
Puw	

GFSK_MCH_Graphs	
Pref	
Puw	

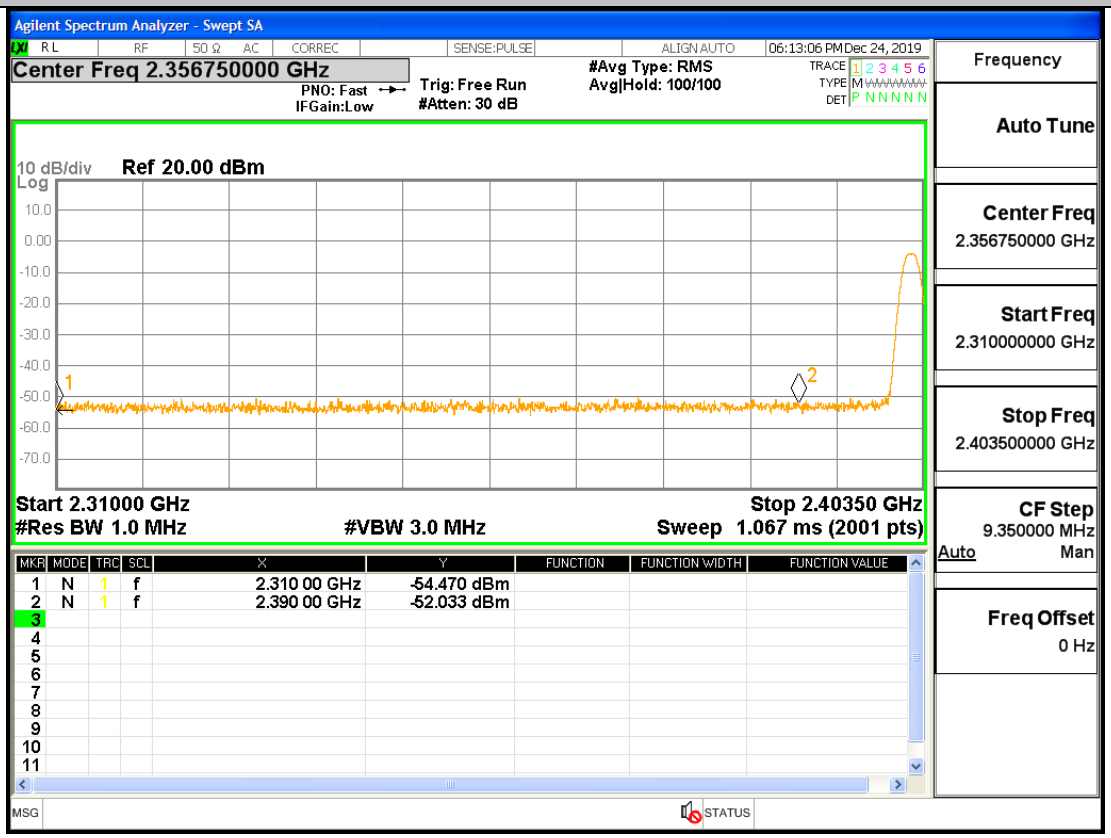
GFSK_HCH_Graphs	
Pref	
Puw	

A.8 Restrict-band band-edge measurements

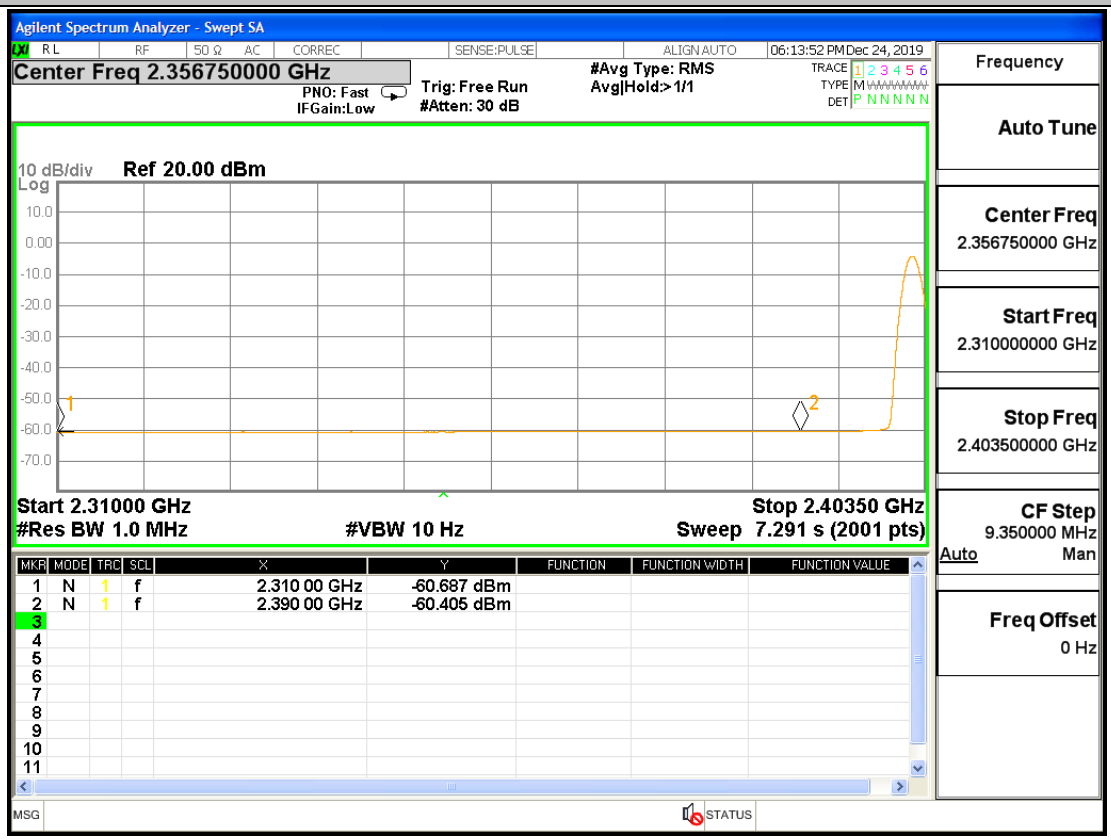
Type	Carrier Frequency (MHz)	Frequency (MHz)	Gain (dBi)	Ground Factor(dB)	Peak Value(dBm)	E [dBuV/m]	Limit [dBuV/m]	Conclusion
1DH5	2402	2390	2.00	0.00	-52.033	45.167	74	Pass
1DH5	2480	2496.453	2.00	0.00	-48.460	48.74	74	Pass

Type	Carrier Frequency (MHz)	Frequency (MHz)	Gain (dBi)	Ground Factor(dB)	Average Value(dBm)	E [dBuV/m]	Limit [dBuV/m	Conclusion
1DH5	2402	2390	2.00	0.00	-60.405	36.795	54	Pass
1DH5	2480	2496.453	2.00	0.00	-58.272	38.928	54	Pass

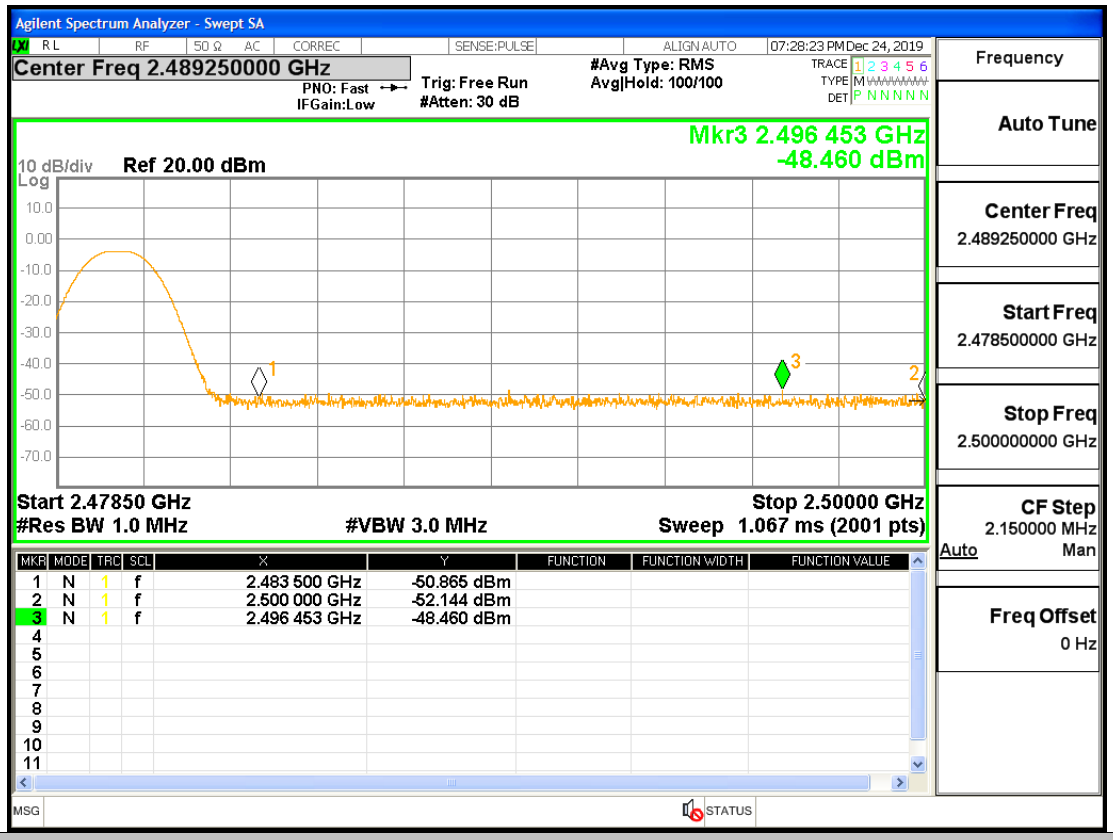
Restrict-band band-edge measurements_2402_PEAK_DH5



Restrict-band band-edge measurements_2402_AV_DH5



Restrict-band band-edge measurements_2480_PEAK_DH5



Restrict-band band-edge measurements_2480_AV_DH5