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

Product Name: WIRELESS EARBUDS

Trade Mark: AT&T

Test Model: BE10

FCC ID: 2AF5N-BE10

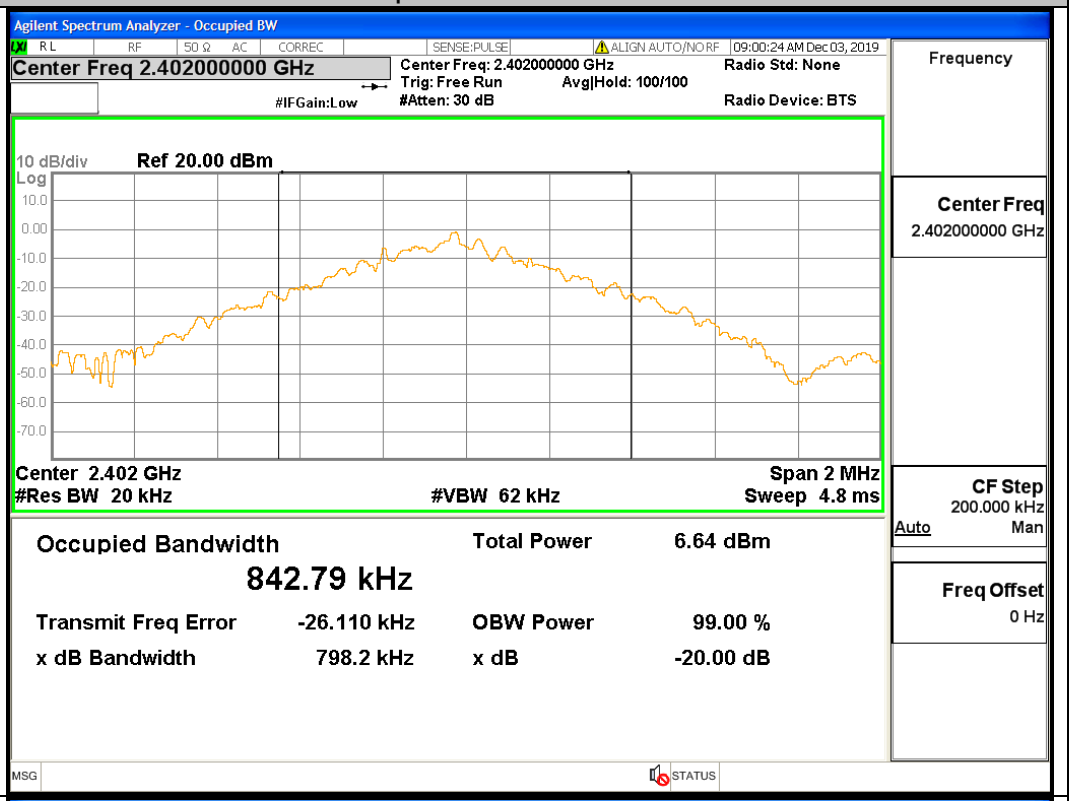
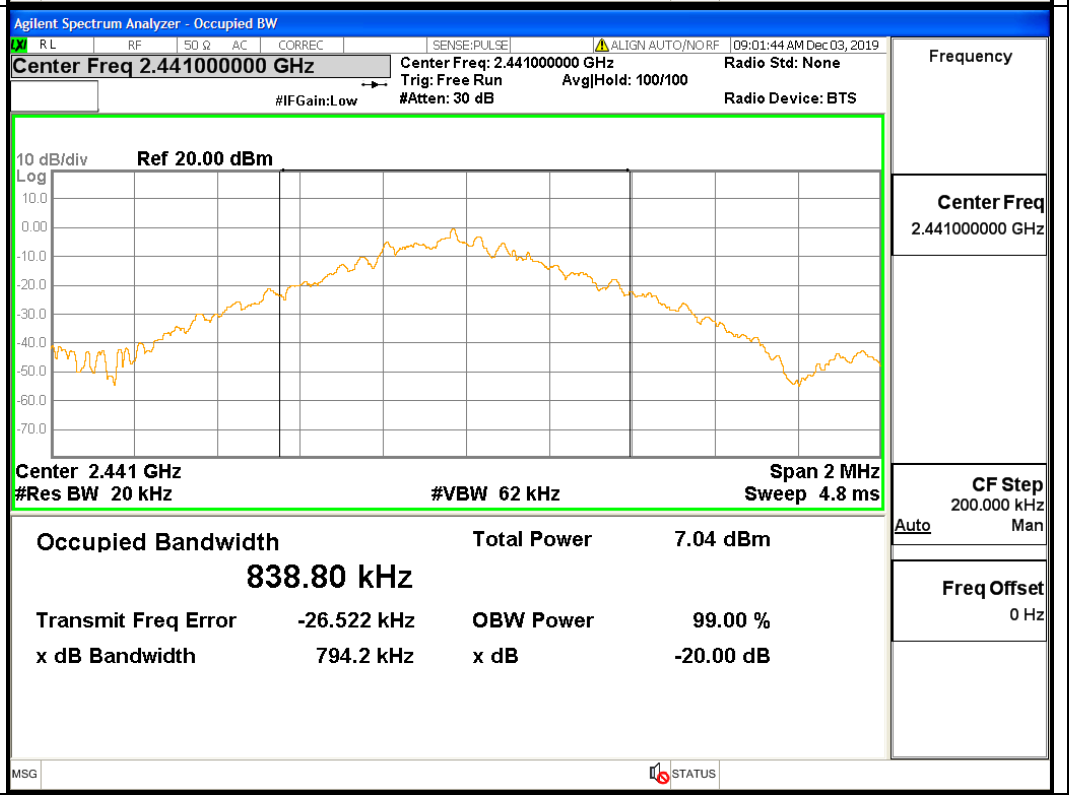
Environmental Conditions

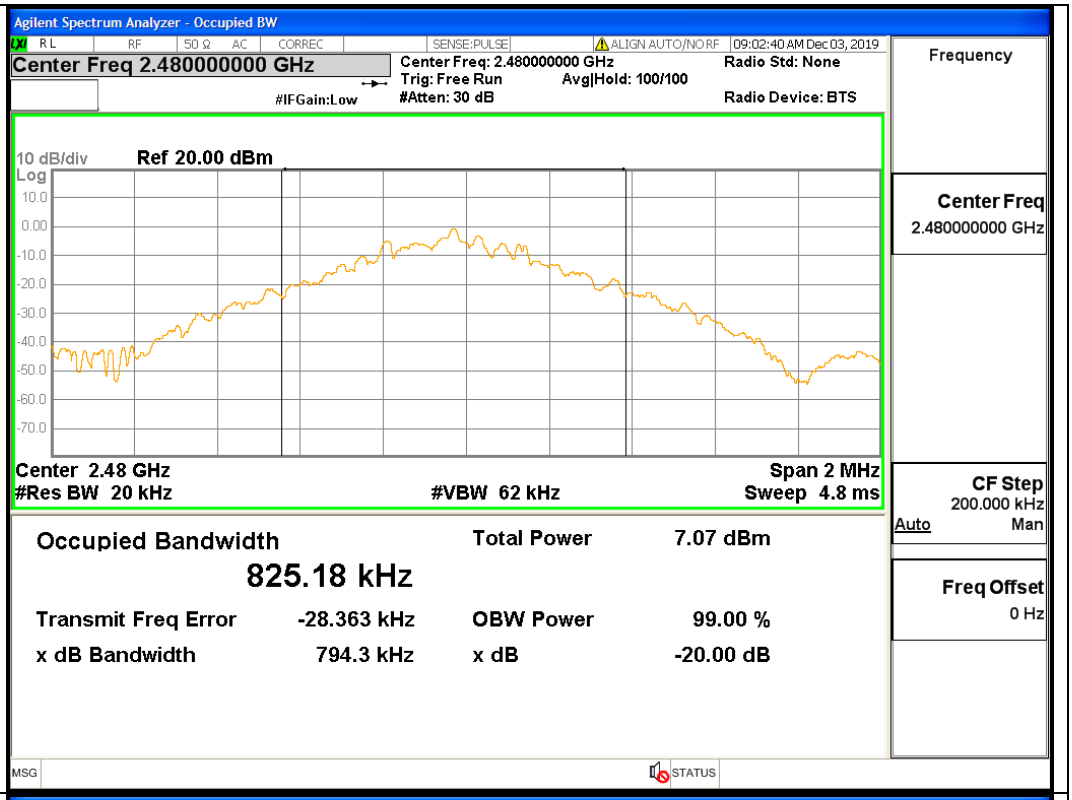
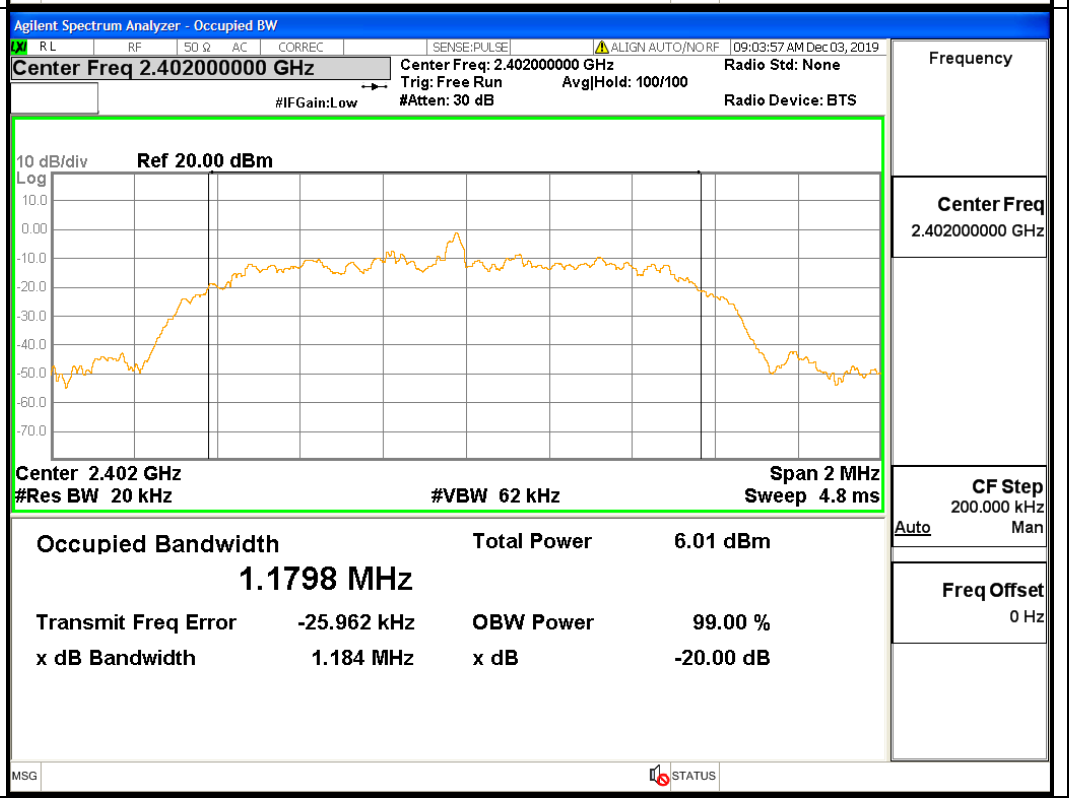
Temperature:	22.7° C
Relative Humidity:	50%
ATM Pressure:	100.0 kPa
Test Engineer:	Gary Qian
Supervised by:	Eden Hu

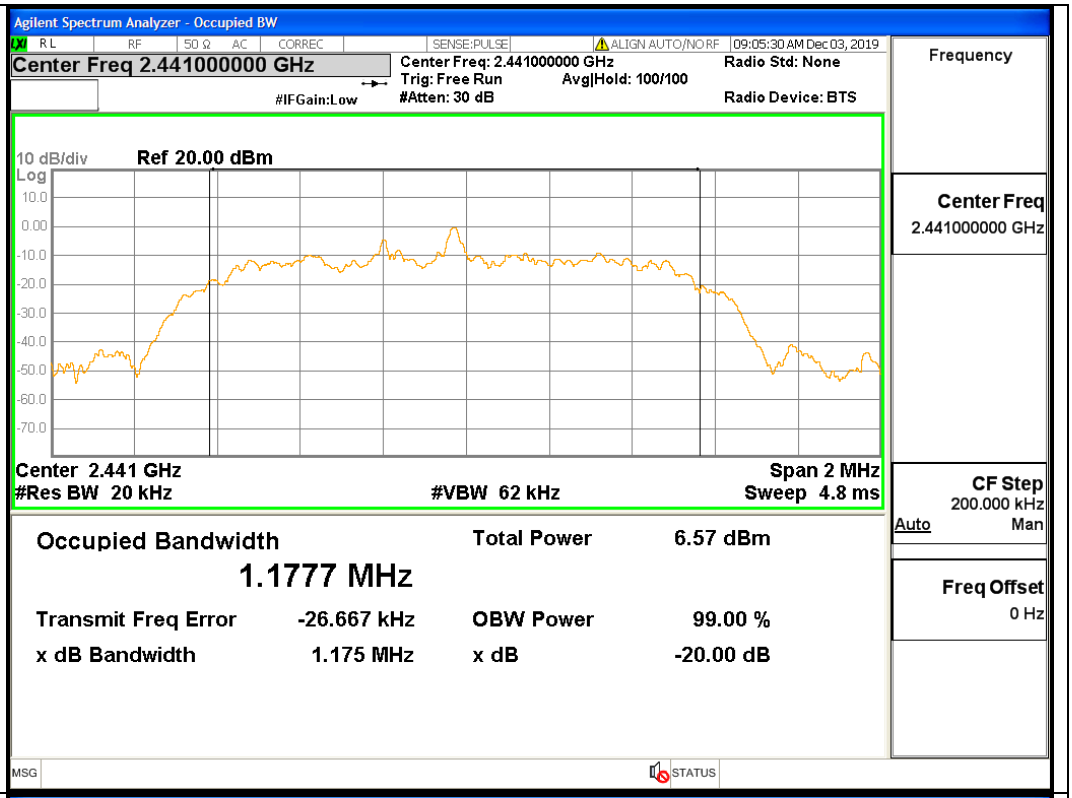
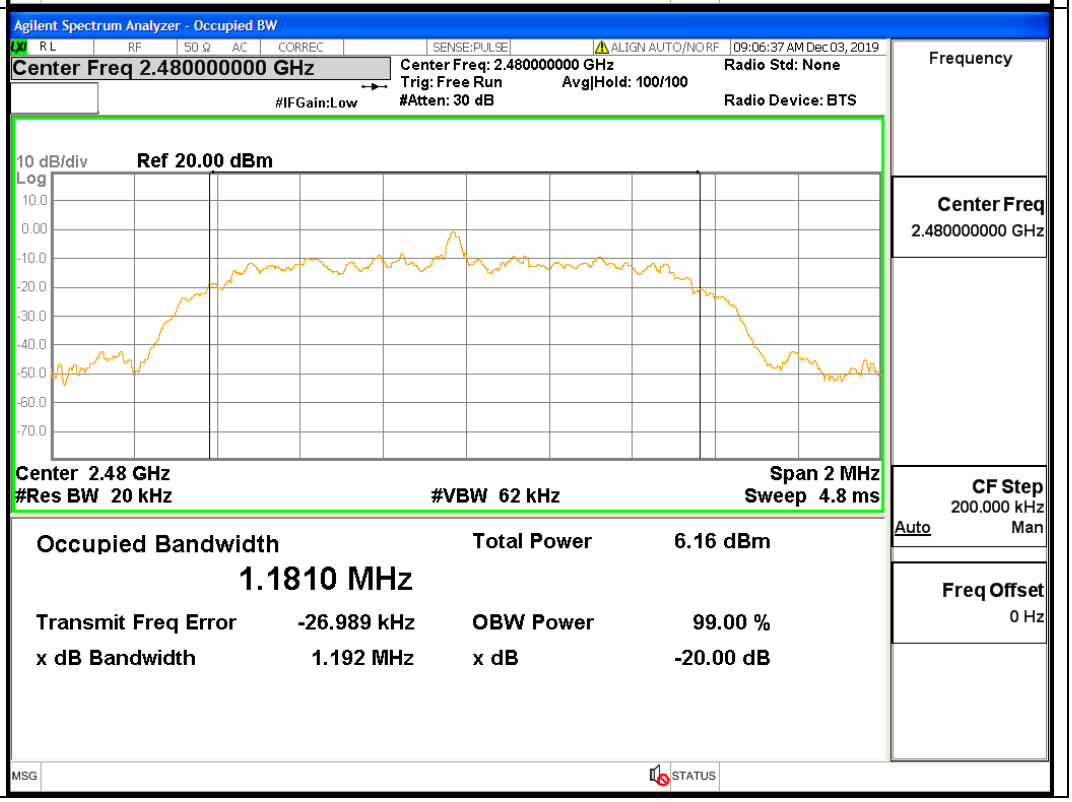
A.1 20 dB Bandwidth

Mode	Channel.	20dB Bandwidth [MHz]	Limit(MHz)	Verdict
GFSK	LCH	0.798	Not Specified	PASS
GFSK	MCH	0.794	Not Specified	PASS
GFSK	HCH	0.794	Not Specified	PASS
π/4DQPSK	LCH	1.184	Not Specified	PASS
π/4DQPSK	MCH	1.175	Not Specified	PASS
π/4DQPSK	HCH	1.192	Not Specified	PASS

Test Graph

Graphs	
GFSK/LCH	
GFSK/MCH	

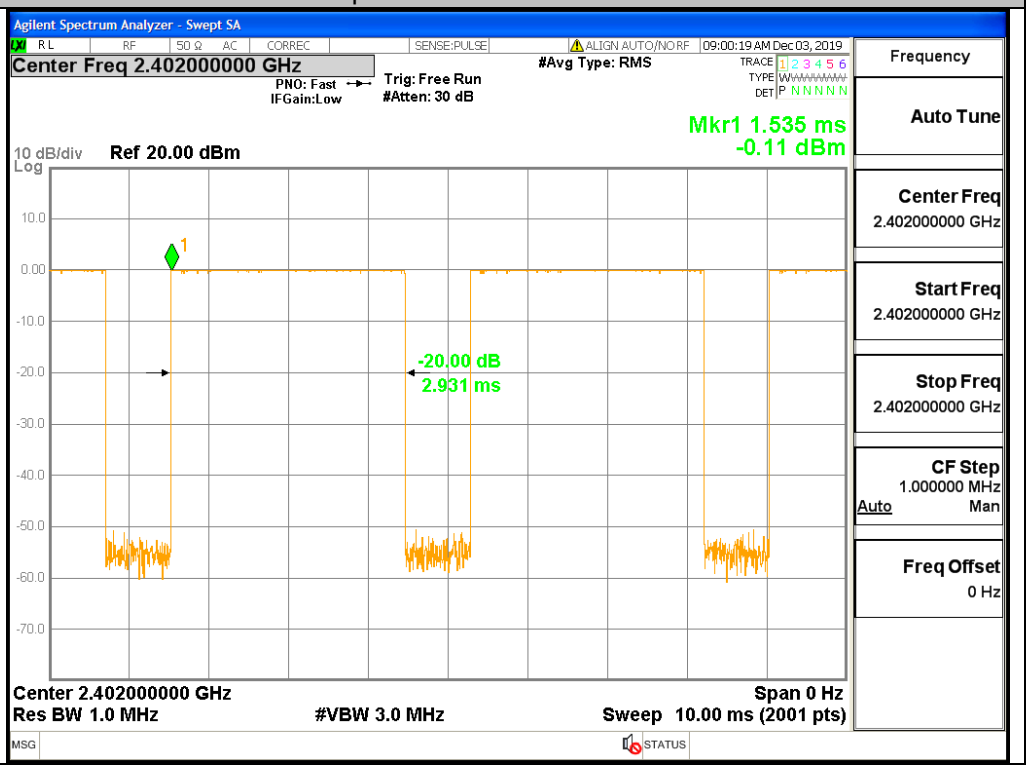
GFSK/HCH	
π/4DQPSK/LCH	

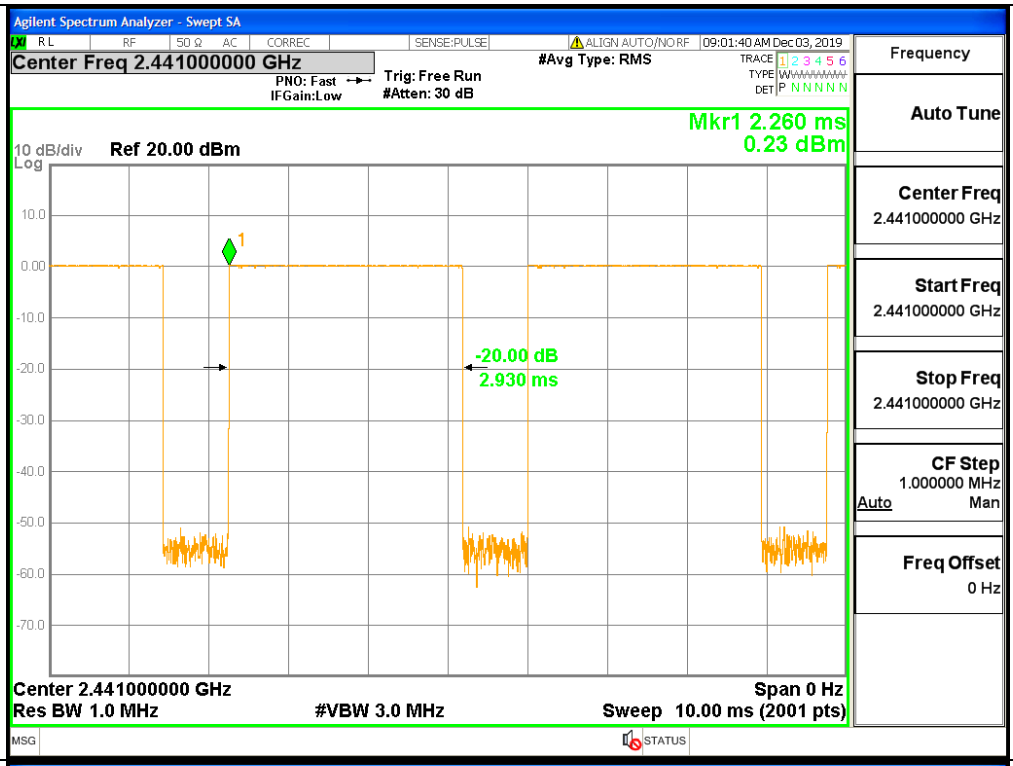
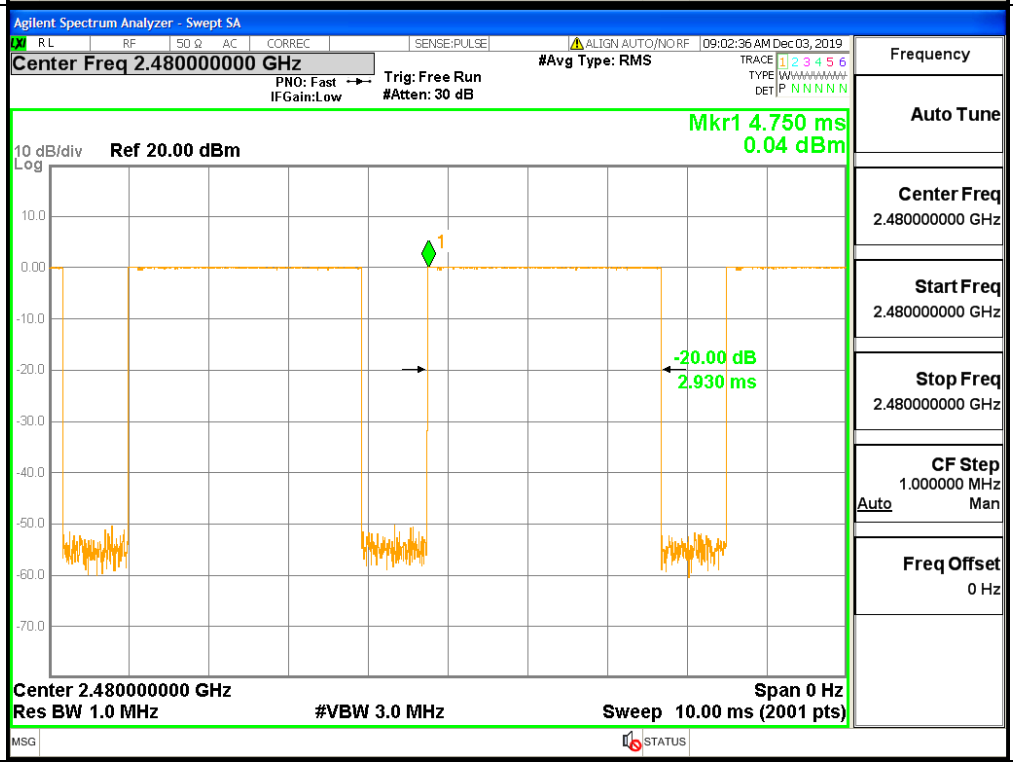
π/4DQPSK/MCH	
π/4DQPSK/HCH	

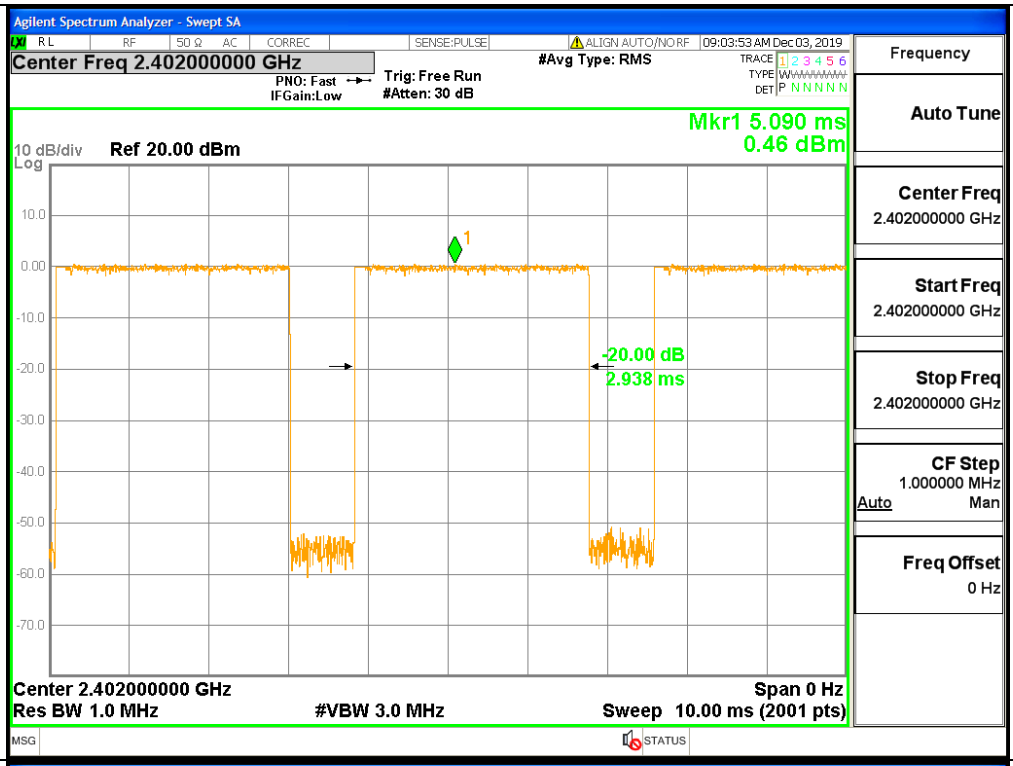
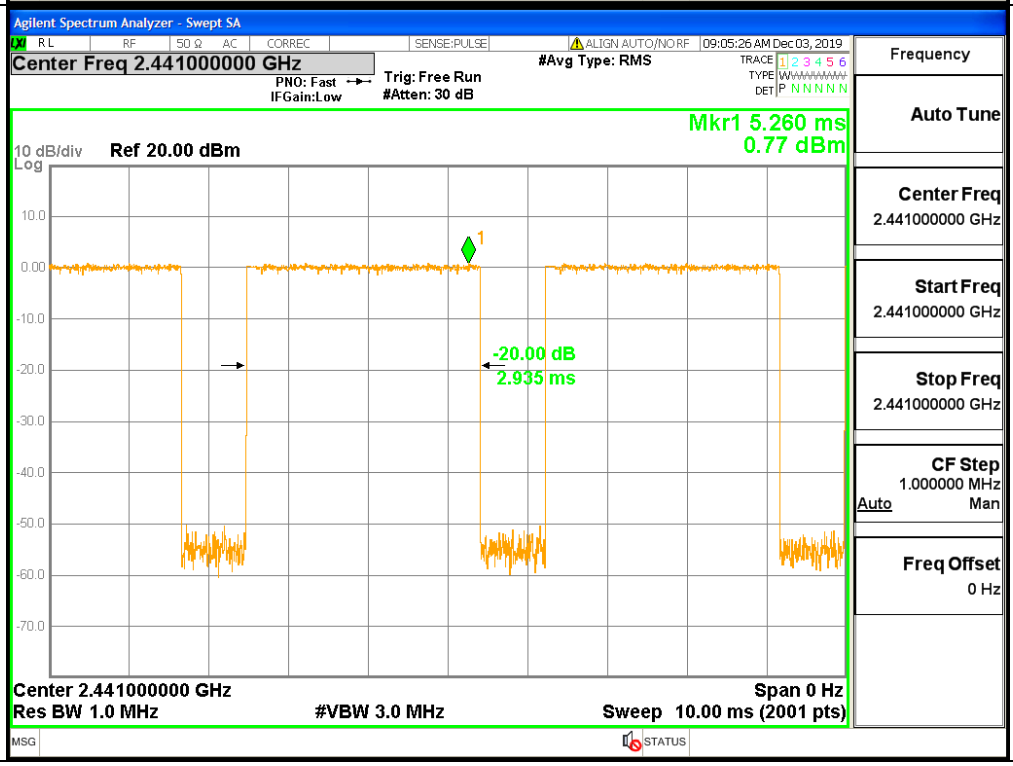
A.2 Dwell Time

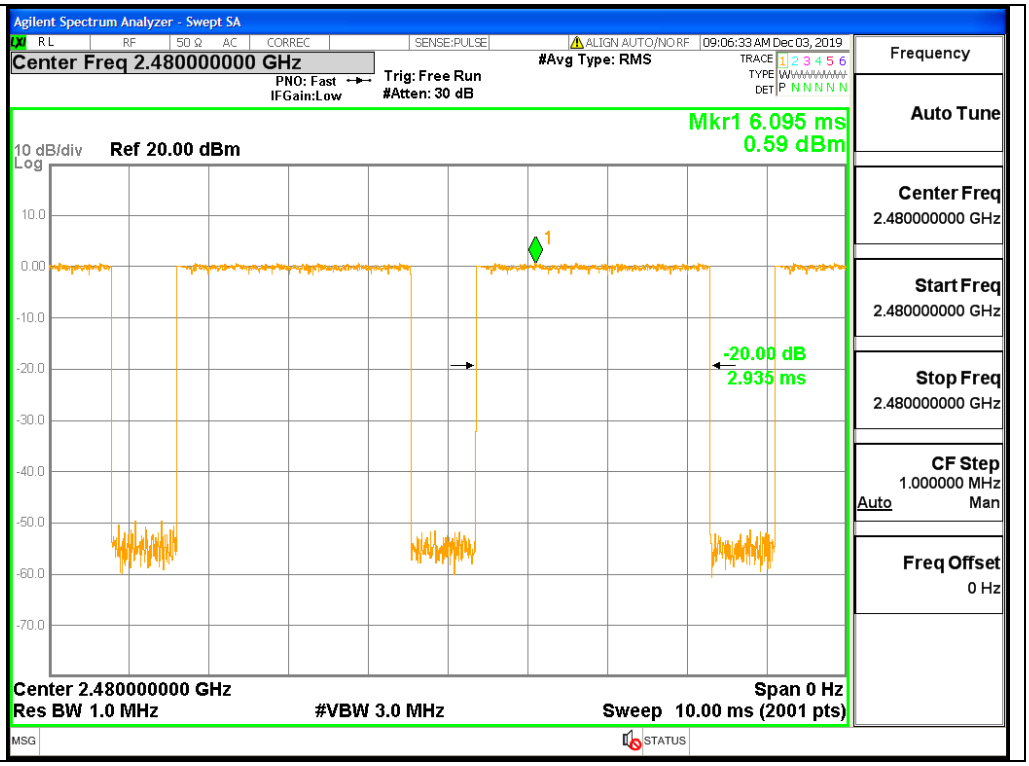
Mode	Packet	Channel	Burst Width [s/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	0.002931	106.7	0.312762	0.4	PASS
GFSK	DH5	MCH	0.00293	106.7	0.312622	0.4	PASS
GFSK	DH5	HCH	0.00293	106.7	0.312616	0.4	PASS
π/4DQPSK	2DH5	LCH	0.002938	106.7	0.313462	0.4	PASS
π/4DQPSK	2DH5	MCH	0.002935	106.7	0.313129	0.4	PASS
π/4DQPSK	2DH5	HCH	0.002935	106.7	0.313141	0.4	PASS

Test Graph

Graphs	
GFSK_DH5/LCH	

GFSK_DH5/MCH	
GFSK_DH5/HCH	

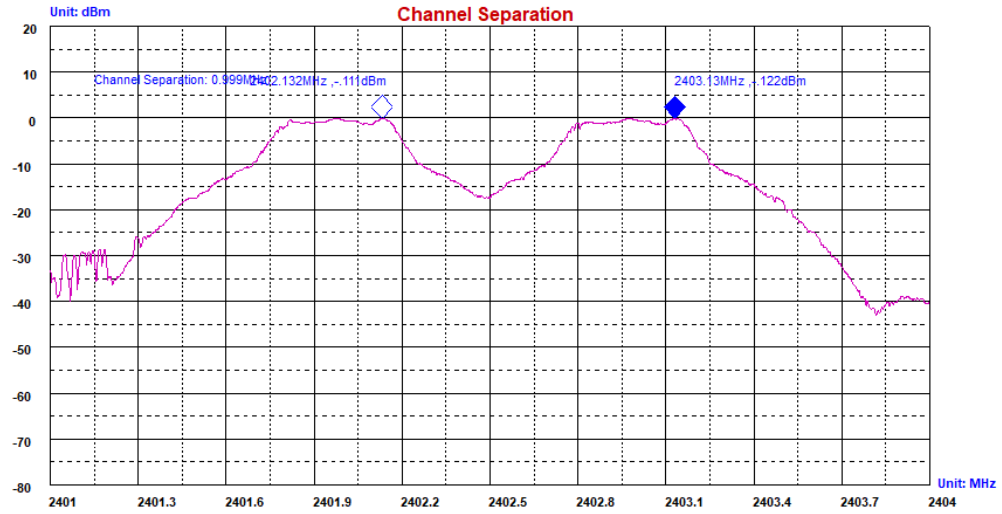
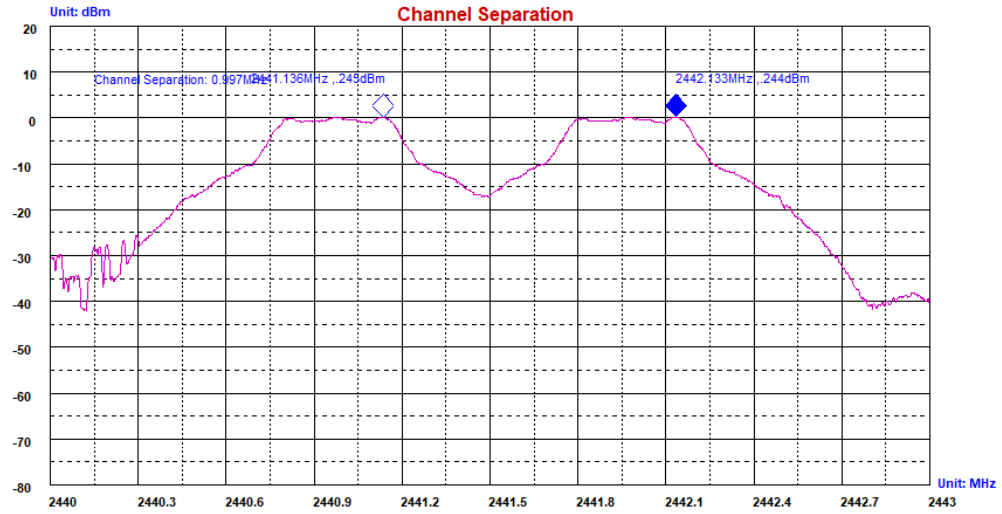
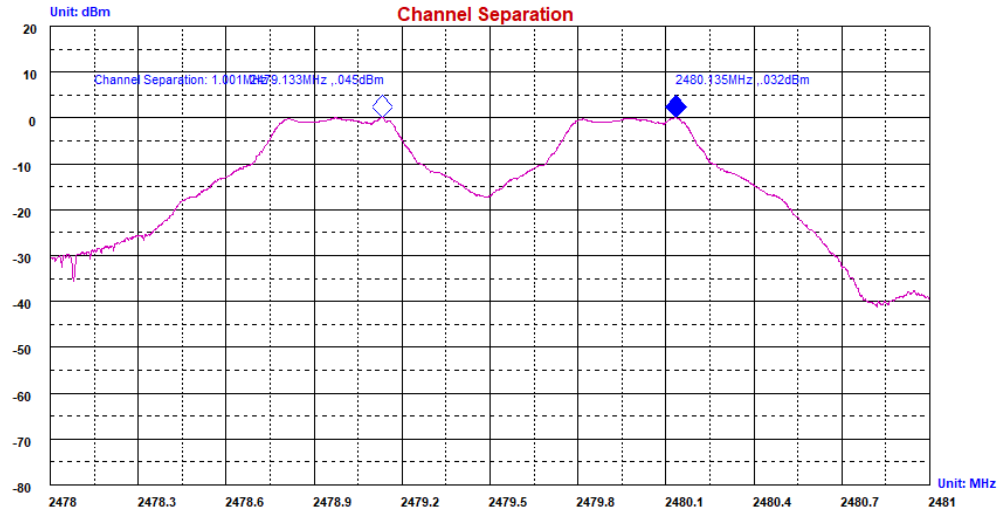
π/4DQPSK _2DH5/LCH	
π/4DQPSK _2DH5/MCH	

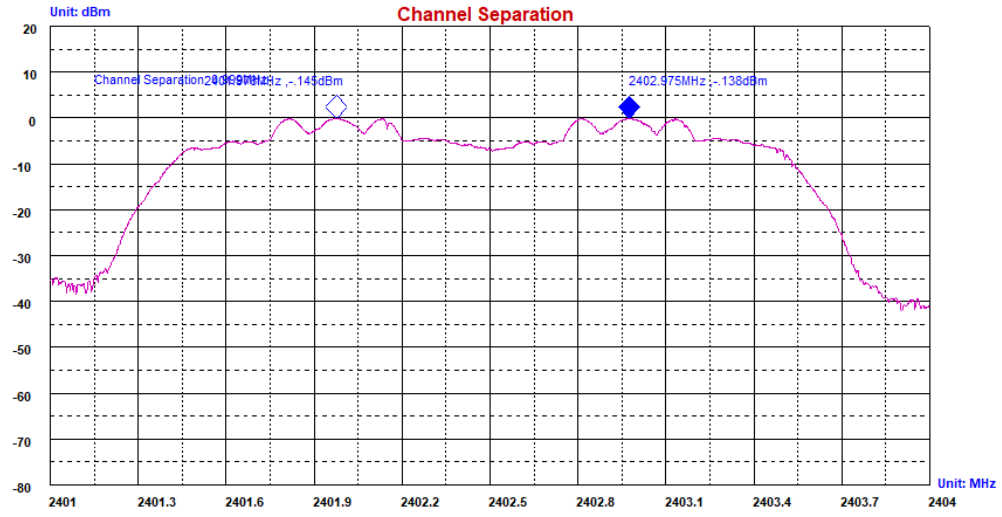
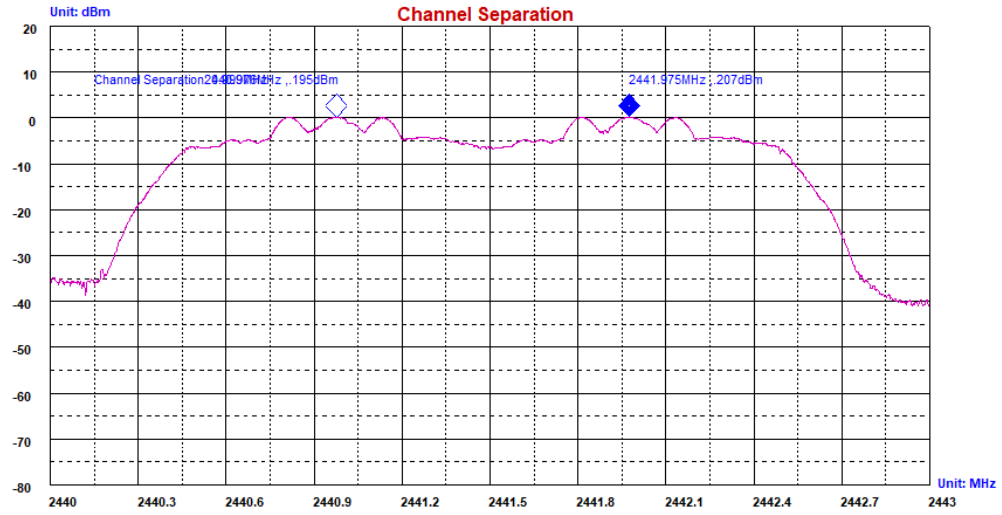
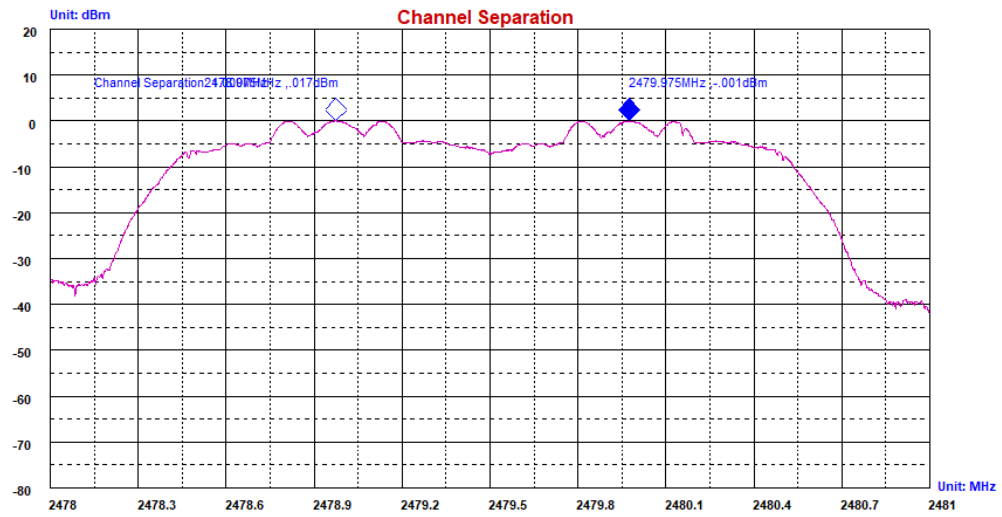
π/4DQPSK _2DH5/HCH	

A.3 Carrier Frequency Separation

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.999	0.532	PASS
GFSK	MCH	0.997	0.529	PASS
GFSK	HCH	1.001	0.529	PASS
π/4DQPSK	LCH	0.999	0.789	PASS
π/4DQPSK	MCH	0.999	0.783	PASS
π/4DQPSK	HCH	1.000	0.795	PASS

Test Graph

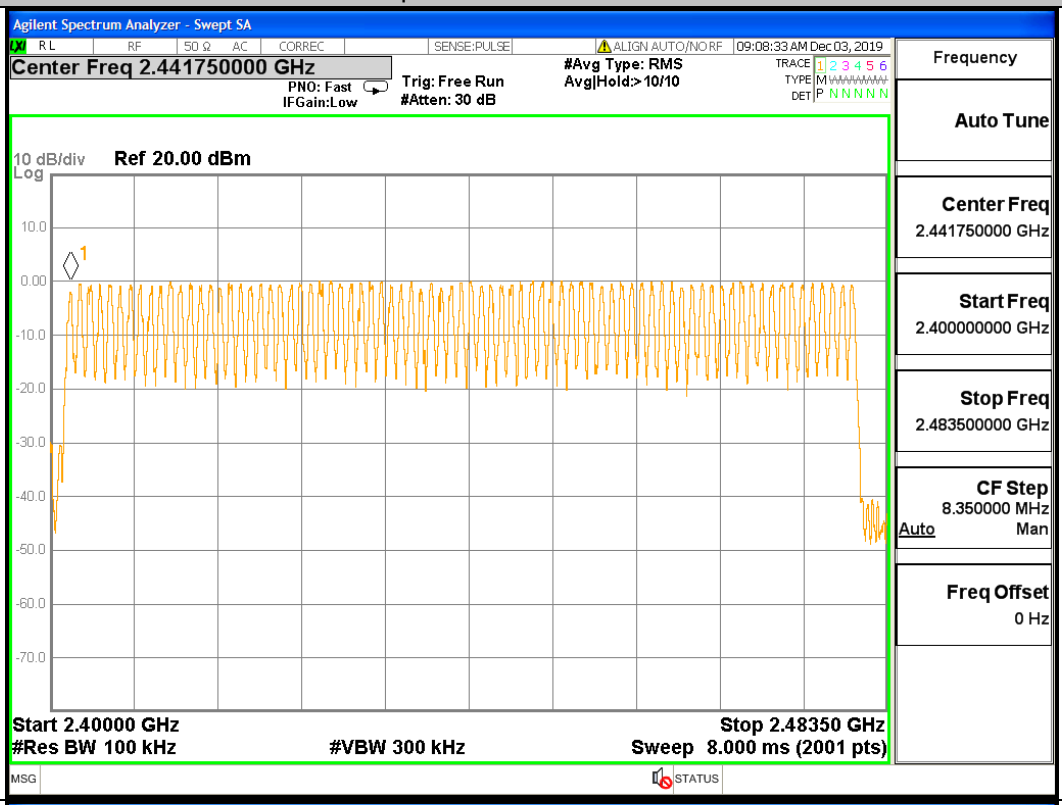
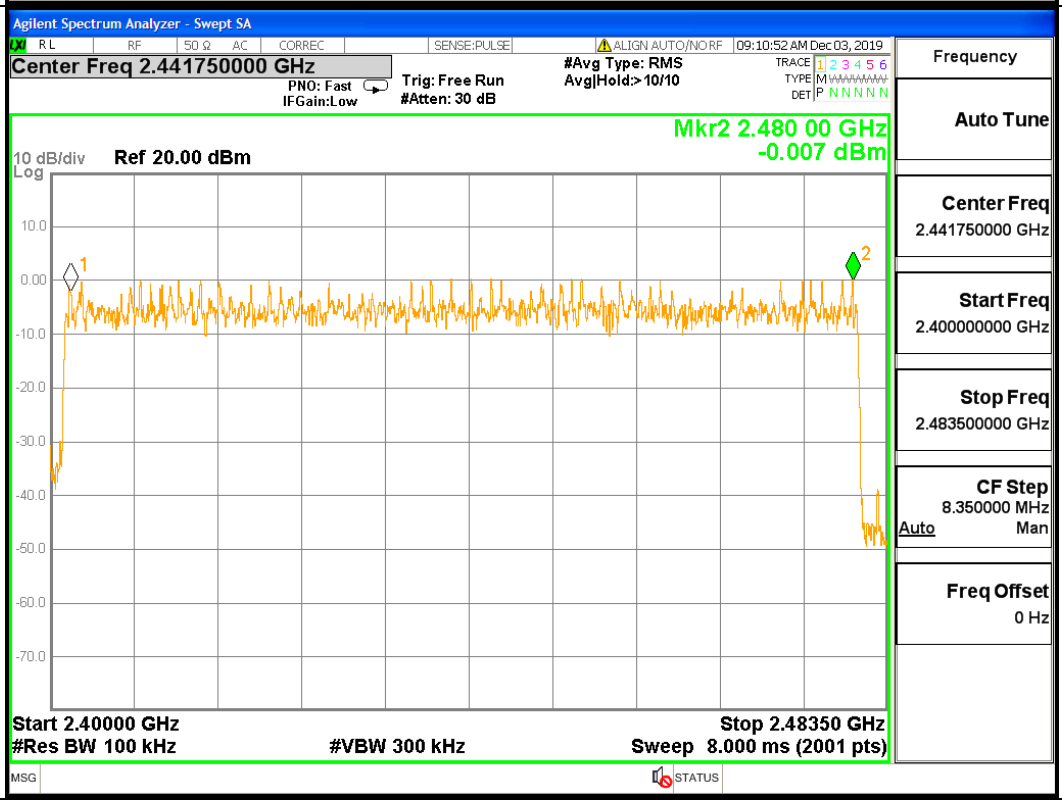
Graphs	
GFSK/LCH	
GFSK/MCH	
GFSK/HCH	

π/4DQPSK/LCH	
π/4DQPSK/MCH	
π/4DQPSK/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

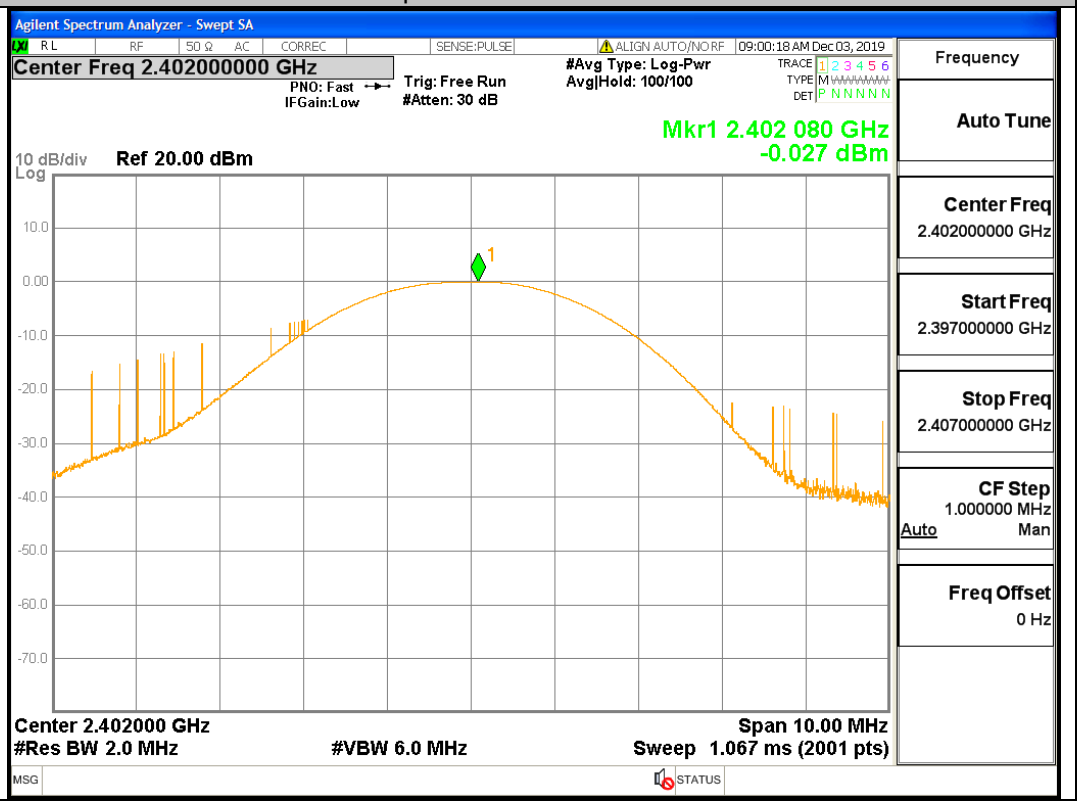
Test Graph

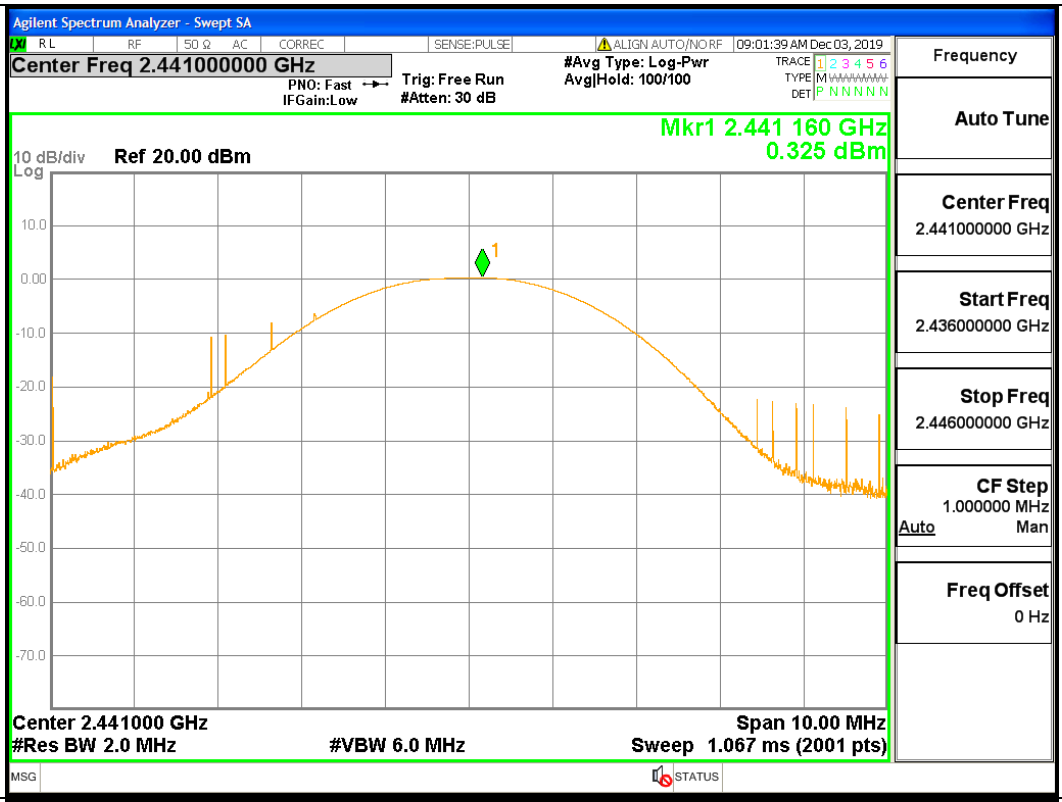
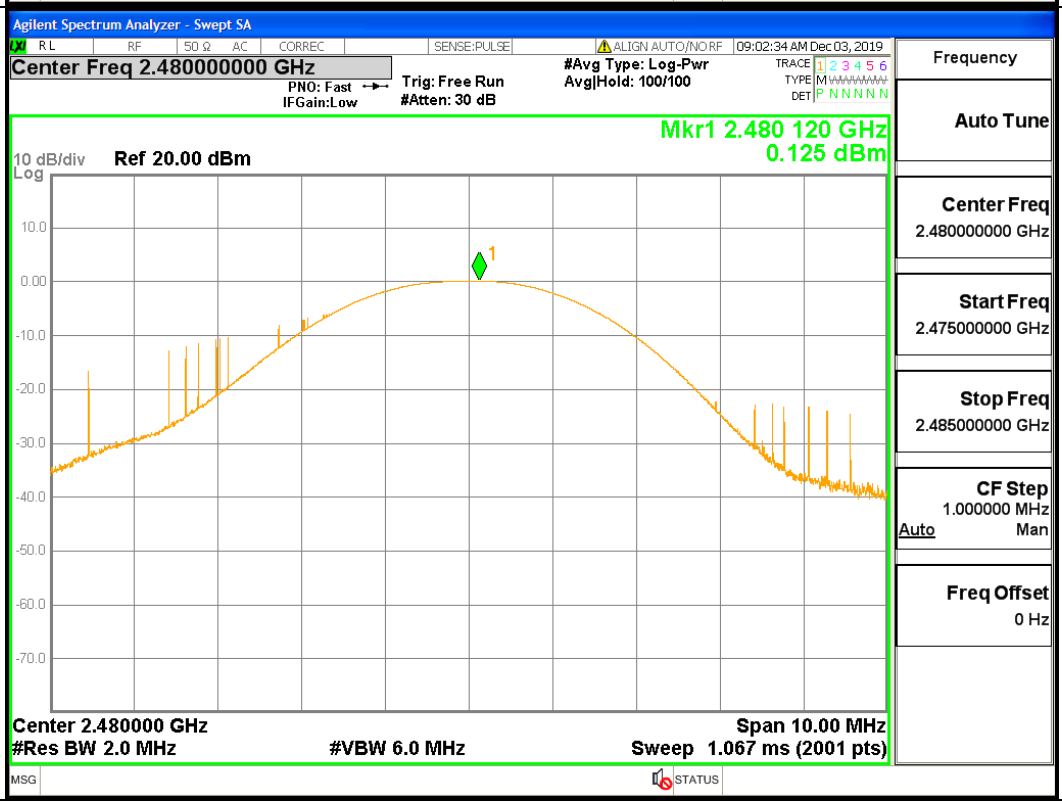
Graphs	
GFSK/Hop	
π/4DQPSK/Hop	

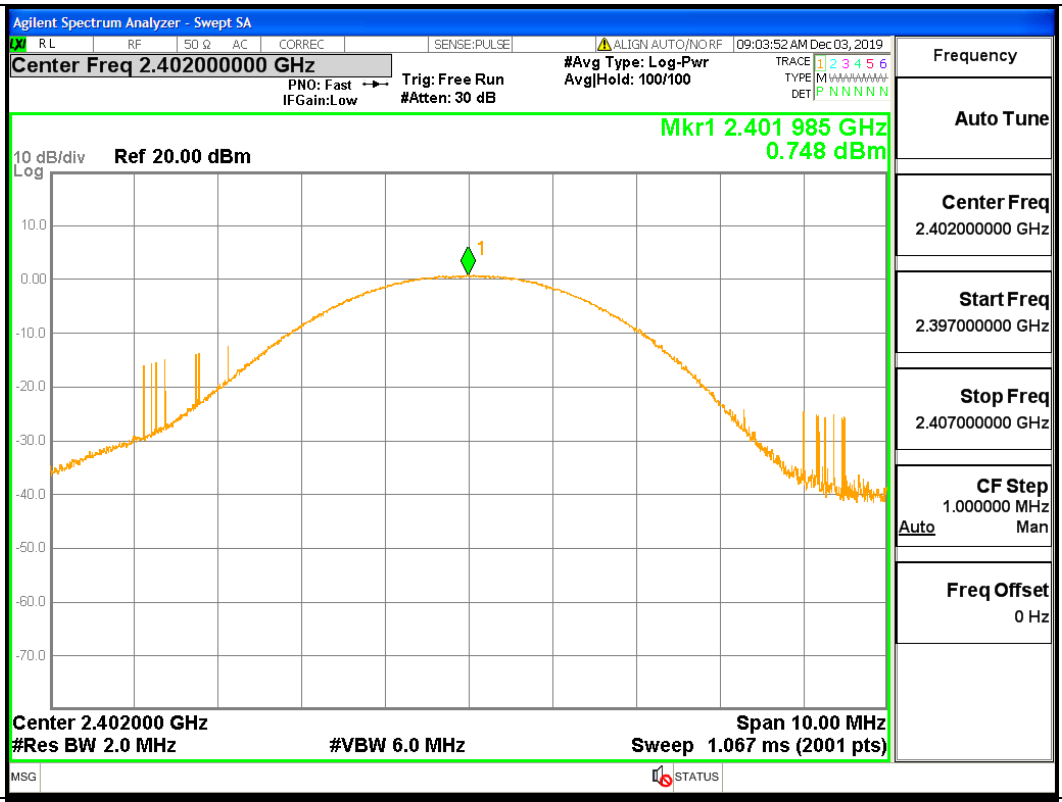
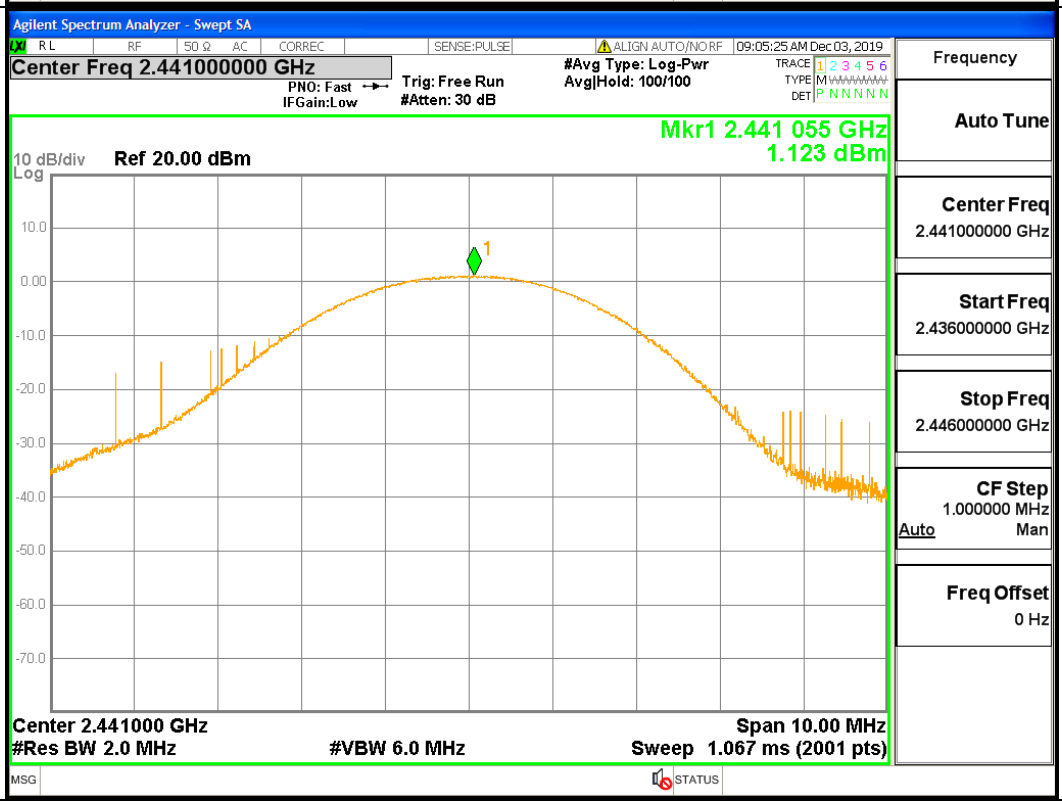
A.5 Conducted Peak Output Power

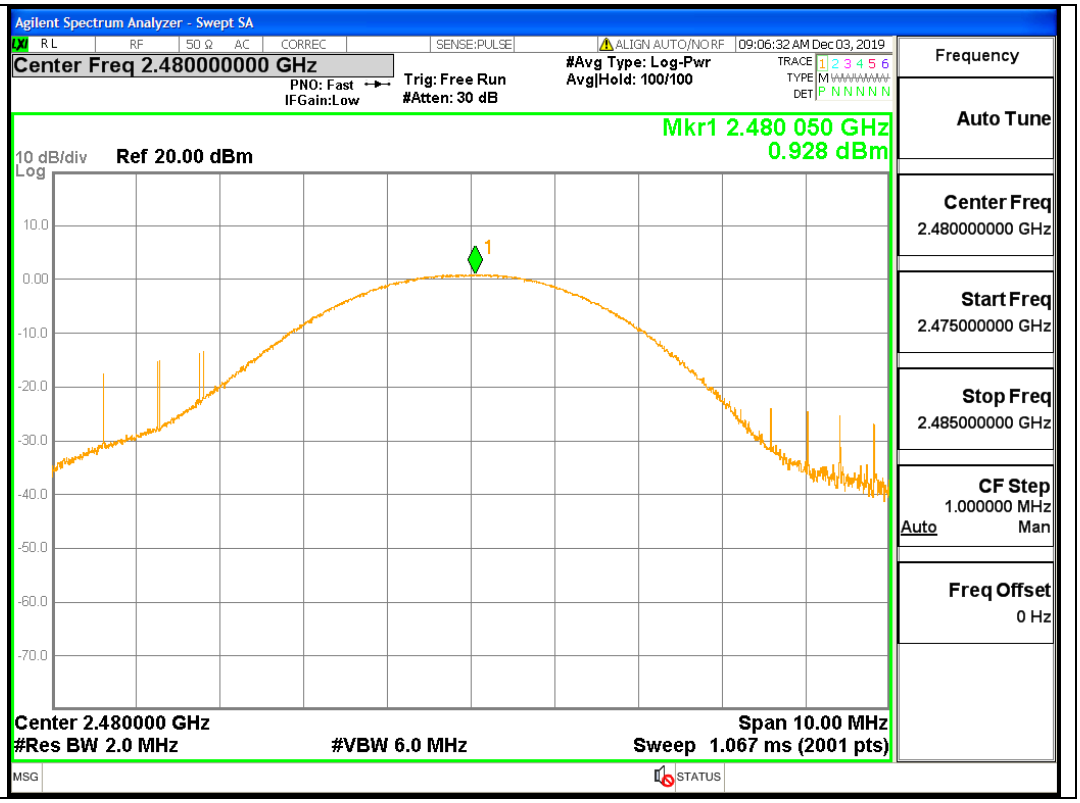
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-0.027	21	PASS
GFSK	MCH	0.325	21	PASS
GFSK	HCH	0.125	21	PASS
π/4DQPSK	LCH	0.748	21	PASS
π/4DQPSK	MCH	1.123	21	PASS
π/4DQPSK	HCH	0.928	21	PASS

Test Graph

Graphs	
GFSK/LCH	

GFSK/MCH	
GFSK/HCH	

π/4DQPSK/LCH	
π/4DQPSK/MCH	

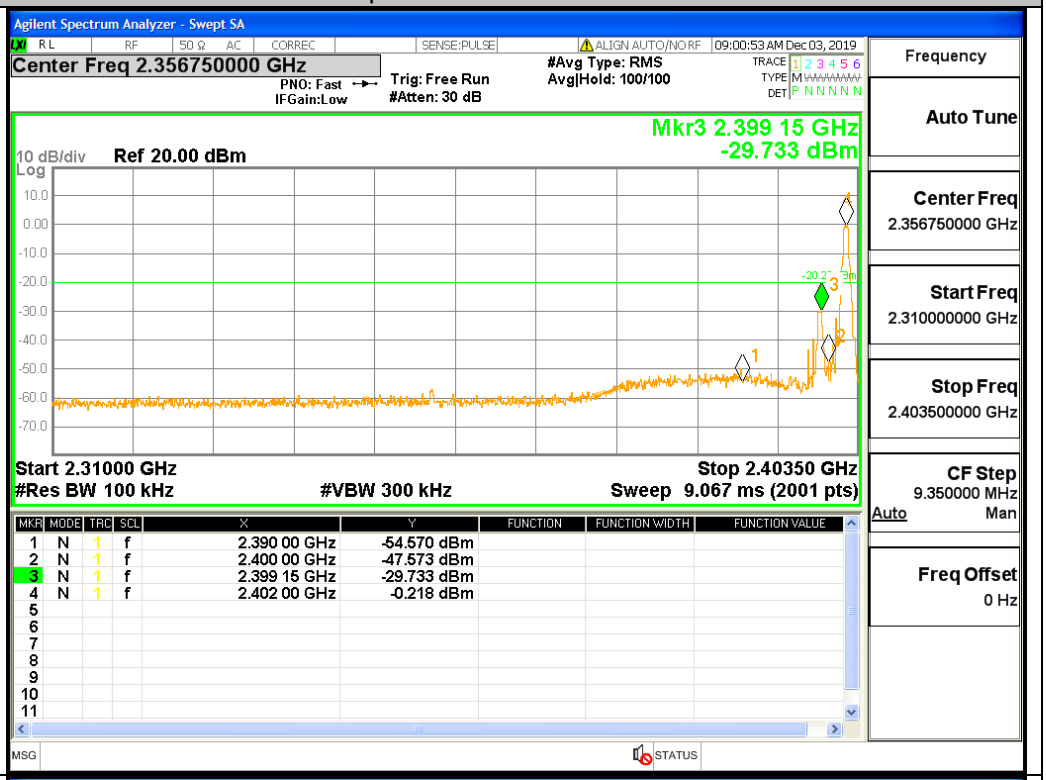
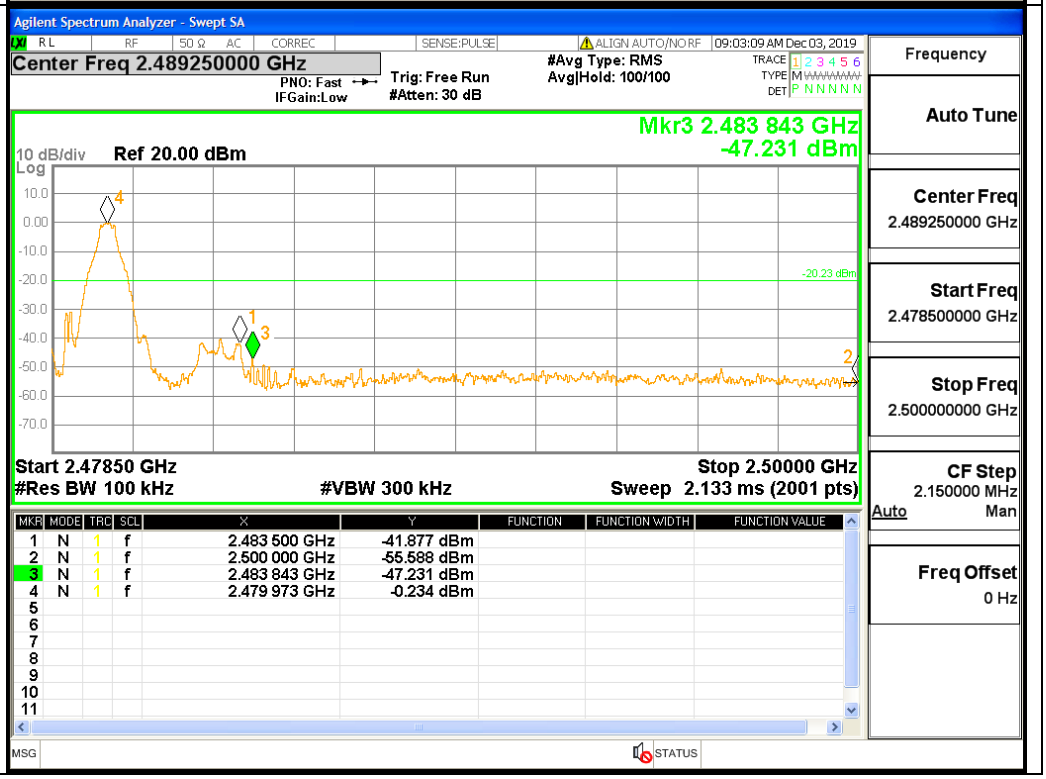
π/4DQPSK/HCH	

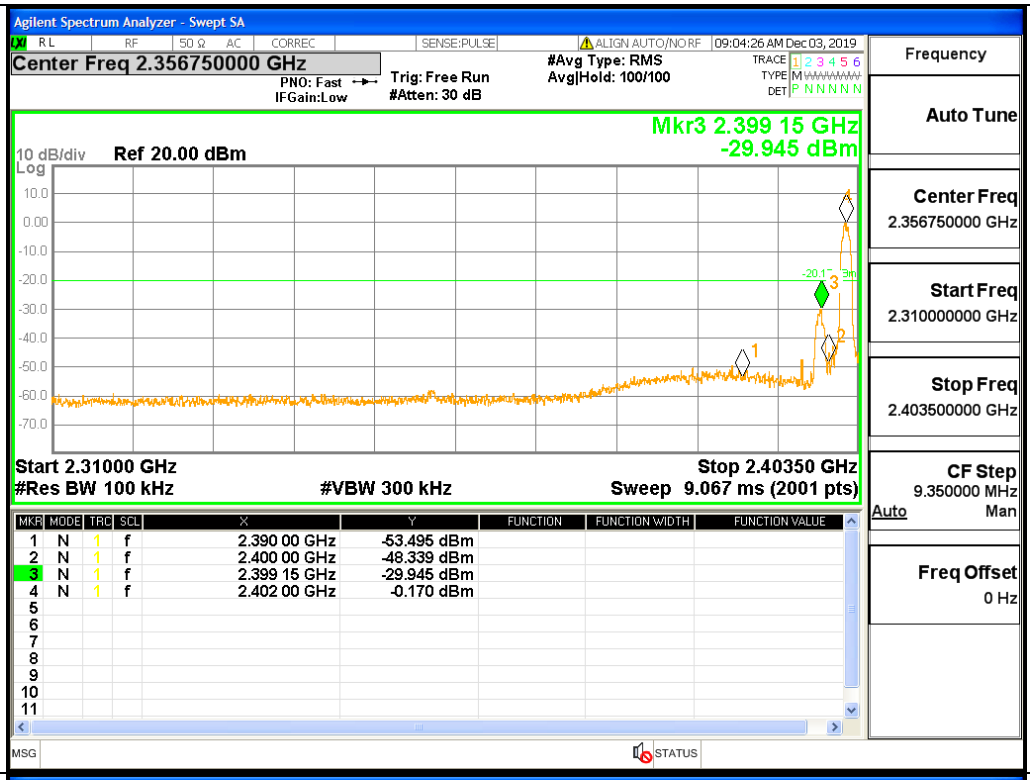
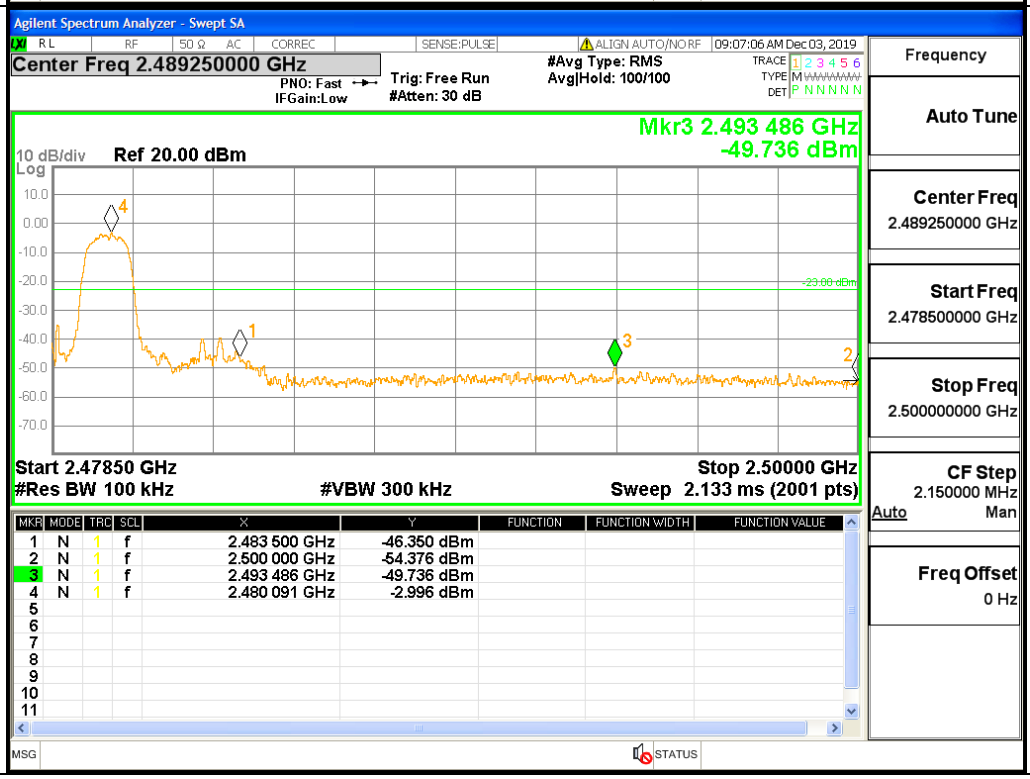
Agilent Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
CORREC
SENSE:PULSE
ALIGN AUTO/NO RF
09:06:32 AM Dec 03, 2019
Center Freq 2.480000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: Log-Pwr
Avg|Hold: 100/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Mkr1 2.480 050 GHz
0.928 dBm
10 dB/div
Log
Ref 20.00 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Center 2.480000 GHz
#Res BW 2.0 MHz
#VBW 6.0 MHz
Span 10.00 MHz
Sweep 1.067 ms (2001 pts)
MSG
STATUS
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

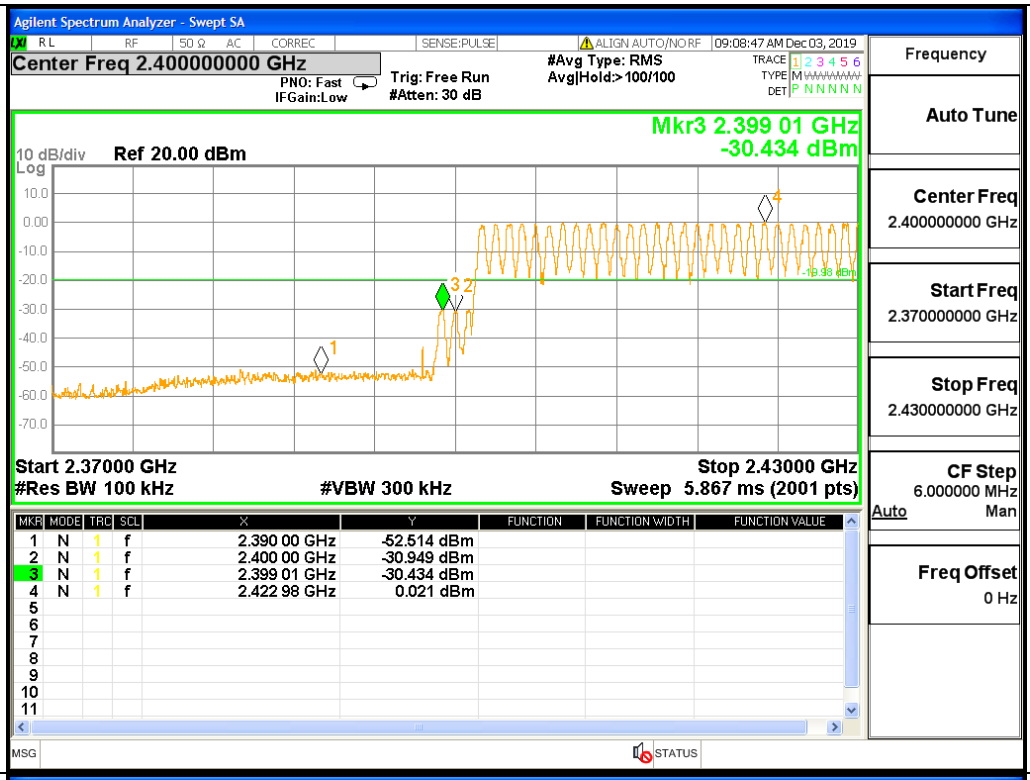
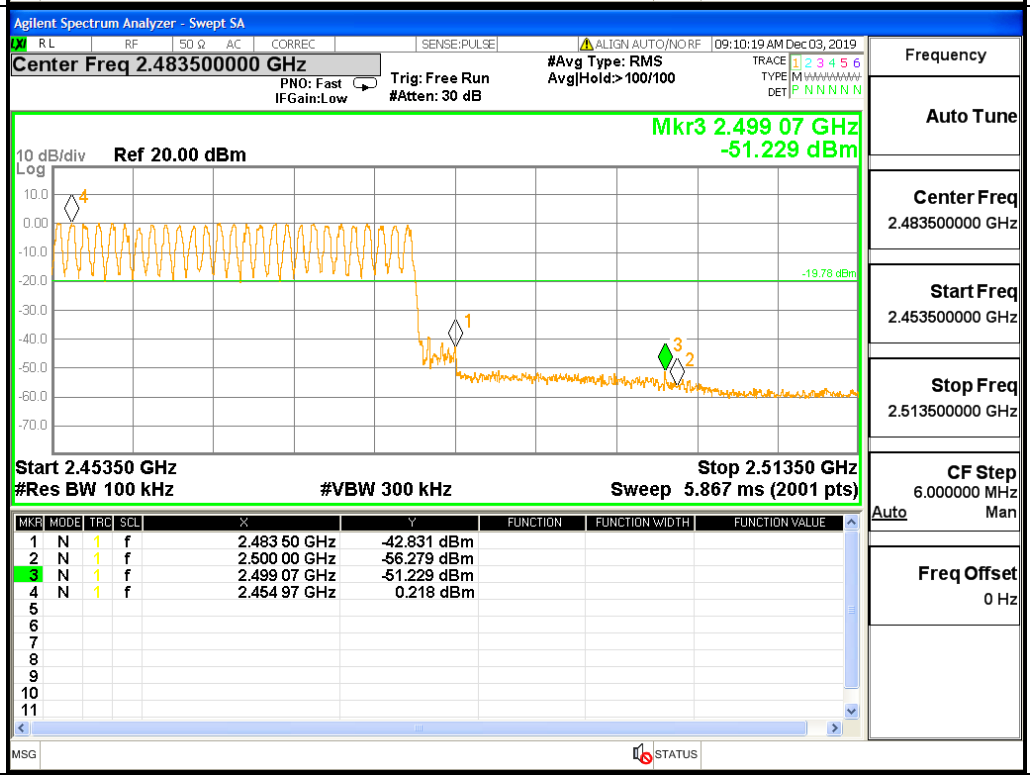
A.6 Band-edge for RF Conducted Emissions

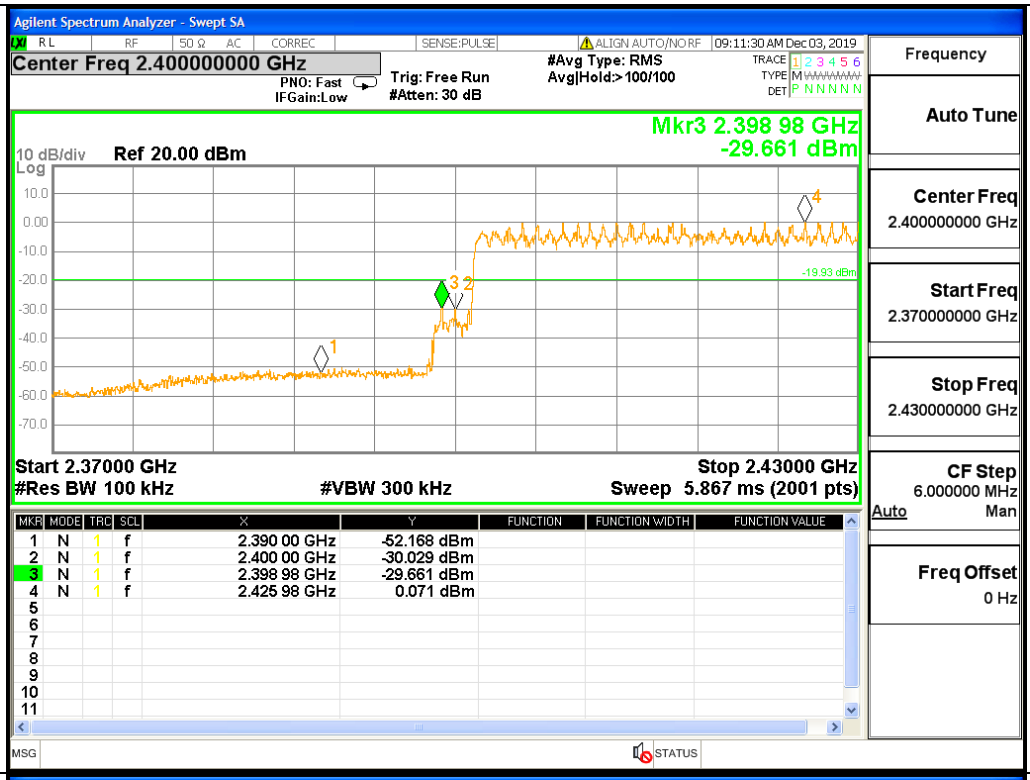
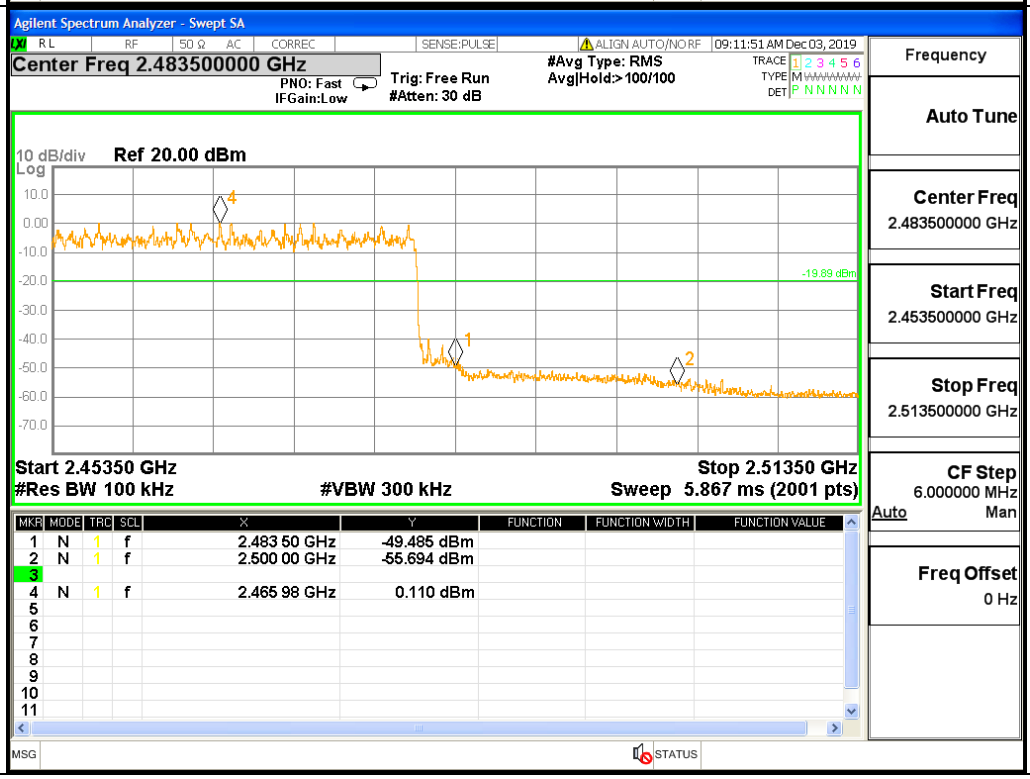
Type	Carrier Frequency(MHz)	Frequency(MHz)	Carrier Frequency Power [dBm]	Bandedge Peak(dBm)	Upper limit(dBm)	Conclusion
1DH5	2402	2399.152	-0.218	-29.733	-20.218	Pass
1DH5	2480	2483.5	-0.234	-41.88	-20.234	Pass
2DH5	2402	2399.152	-0.17	-29.945	-20.17	Pass
2DH5	2480	2483.5	-2.996	-46.35	-22.996	Pass
1DH5-Hopping	2402	2399.01	0.021	-30.434	-19.979	Pass
1DH5-Hopping	2480	2483.5	0.218	-42.83	-19.782	Pass
2DH5-Hopping	2402	2398.98	0.071	-29.661	-19.929	Pass
2DH5-Hopping	2480	2483.5	0.11	-49.48	-19.89	Pass

Test Graph

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

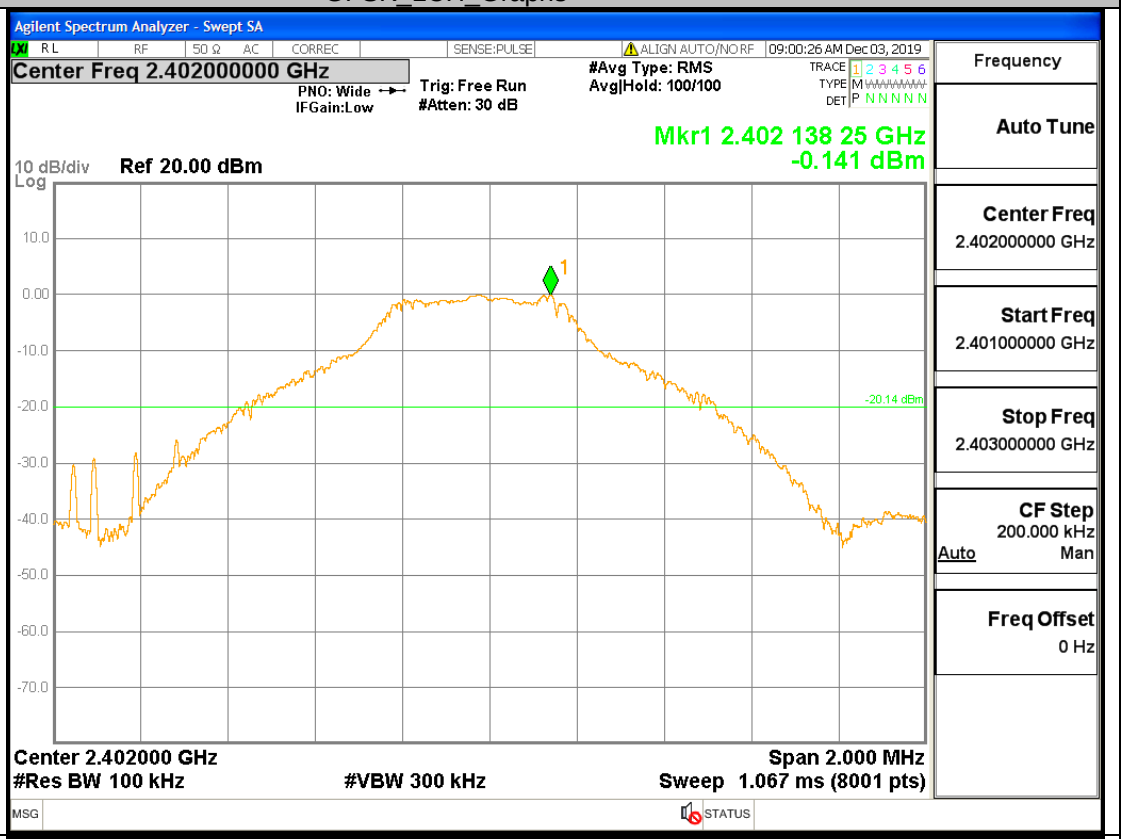
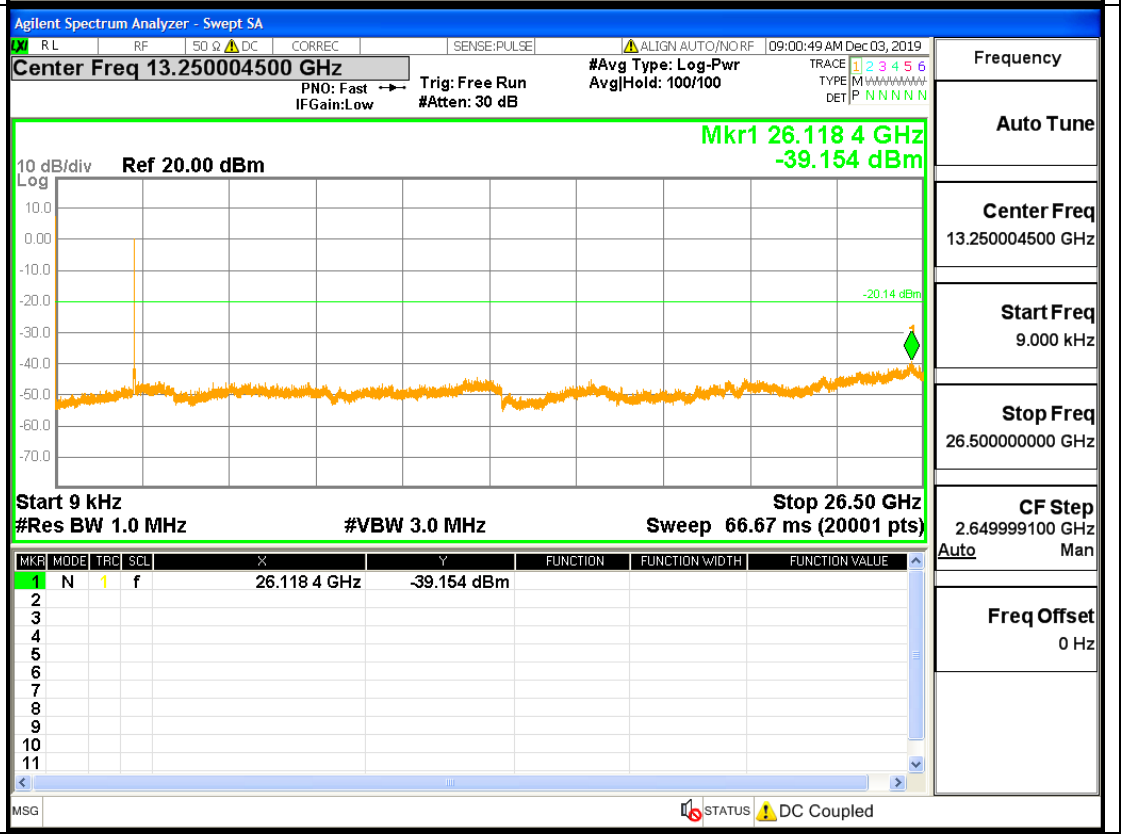
π/4DQPSK/LCH/No Hop	
π/4DQPSK/HCH/No Hop	

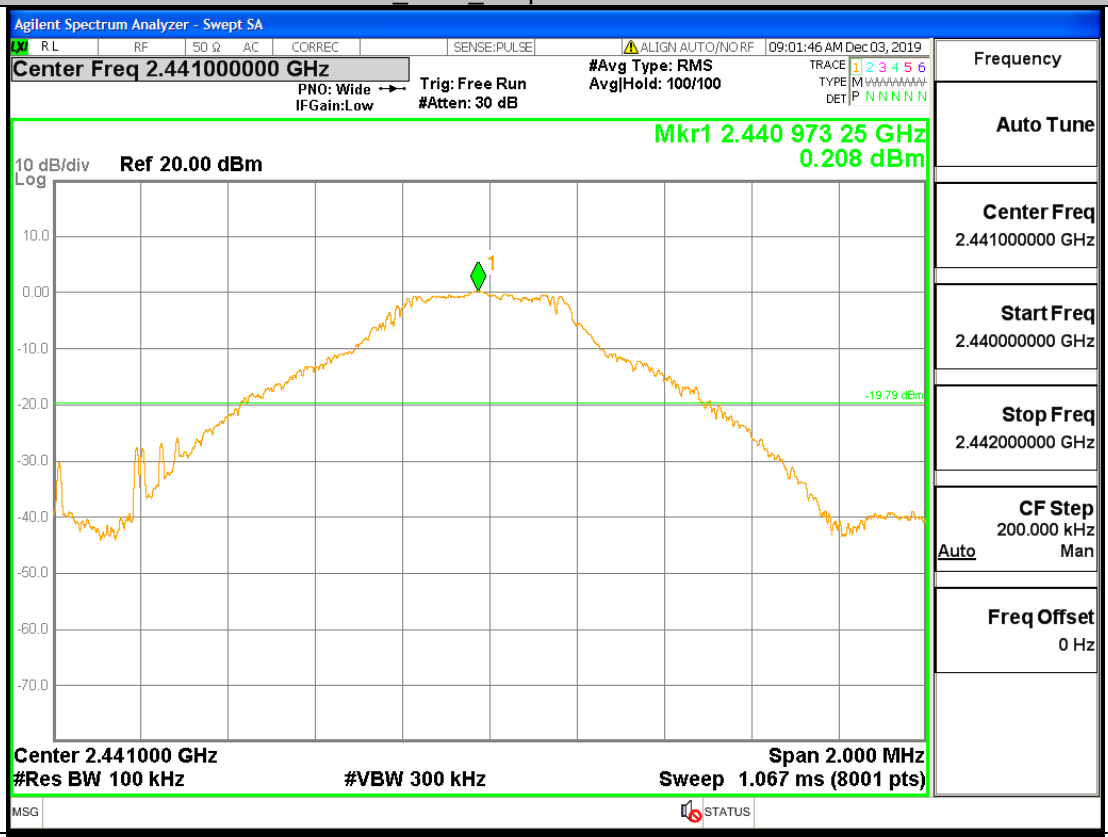
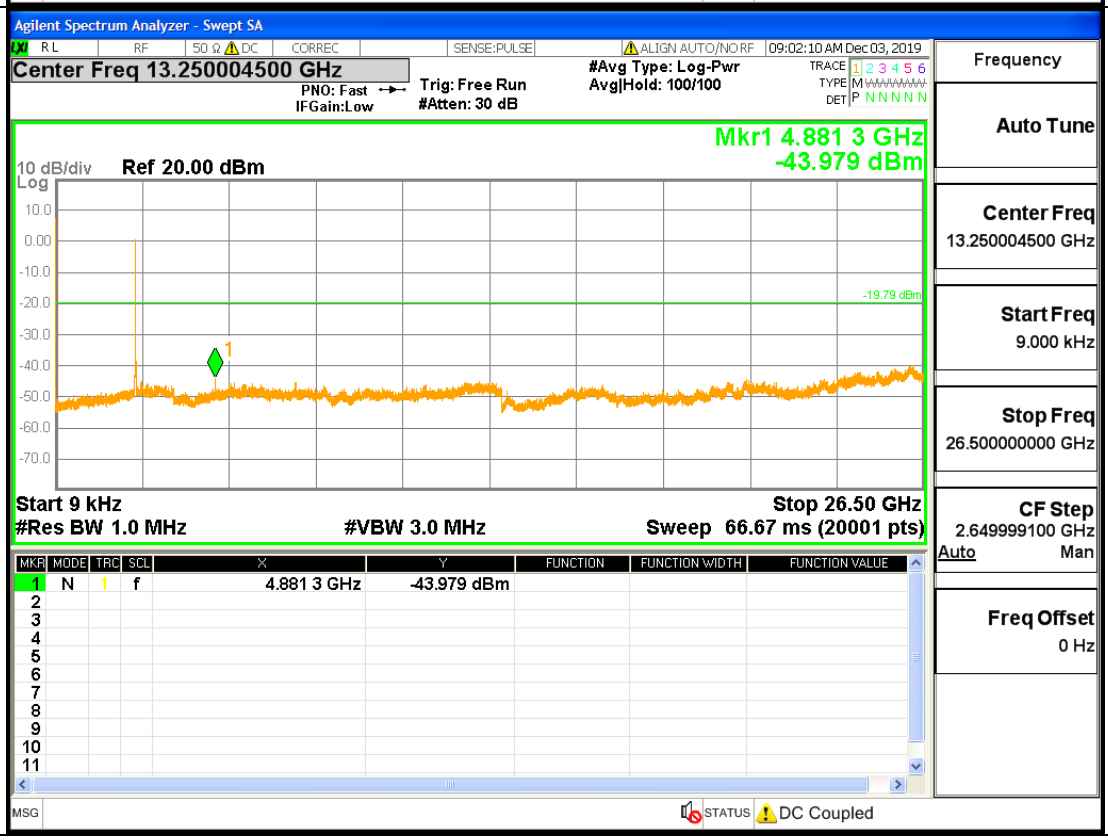
GFSK/LCH/Hop	
GFSK/HCH/Hop	

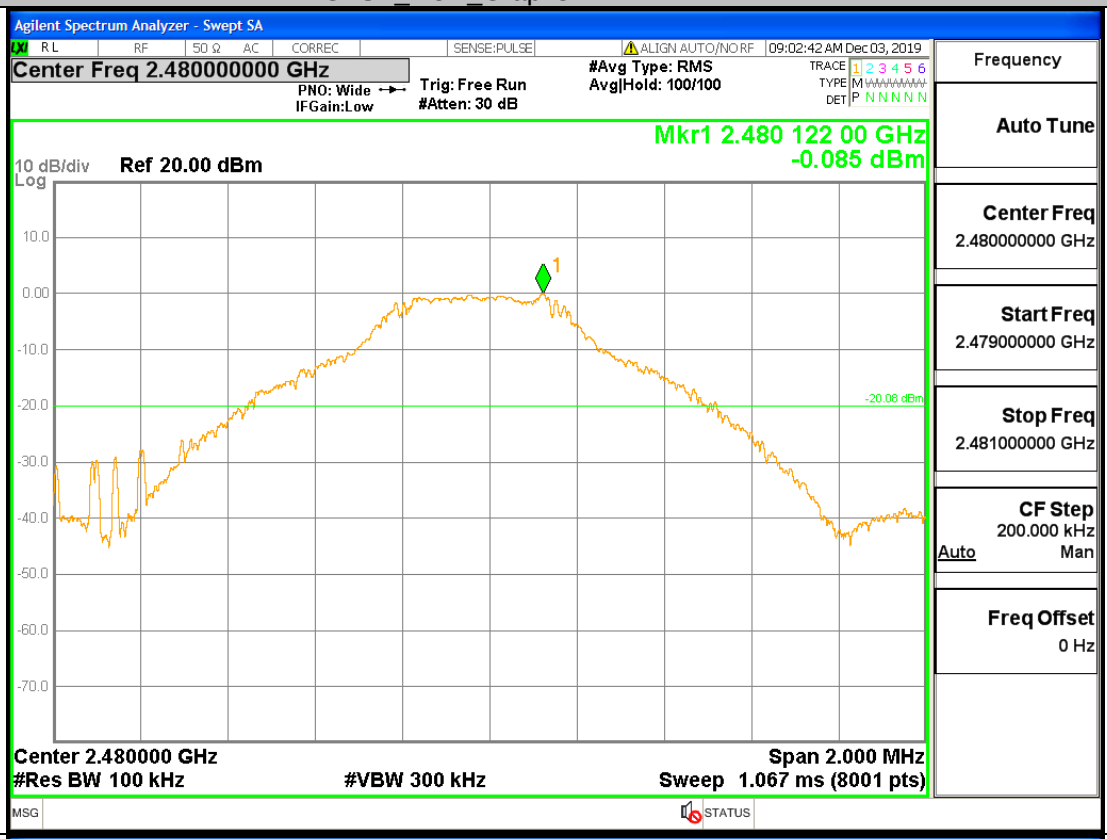
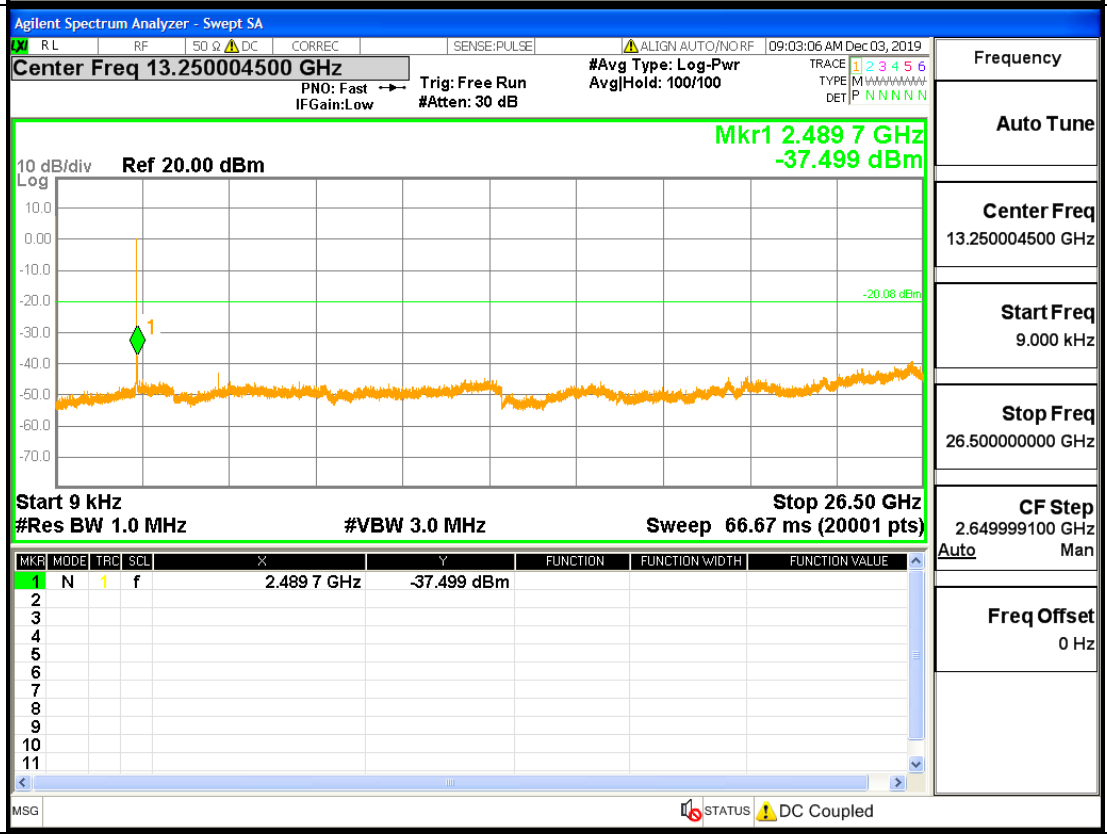
π/4DQPSK/LCH/Hop	
π /4DQPSK/HCH/Hop	

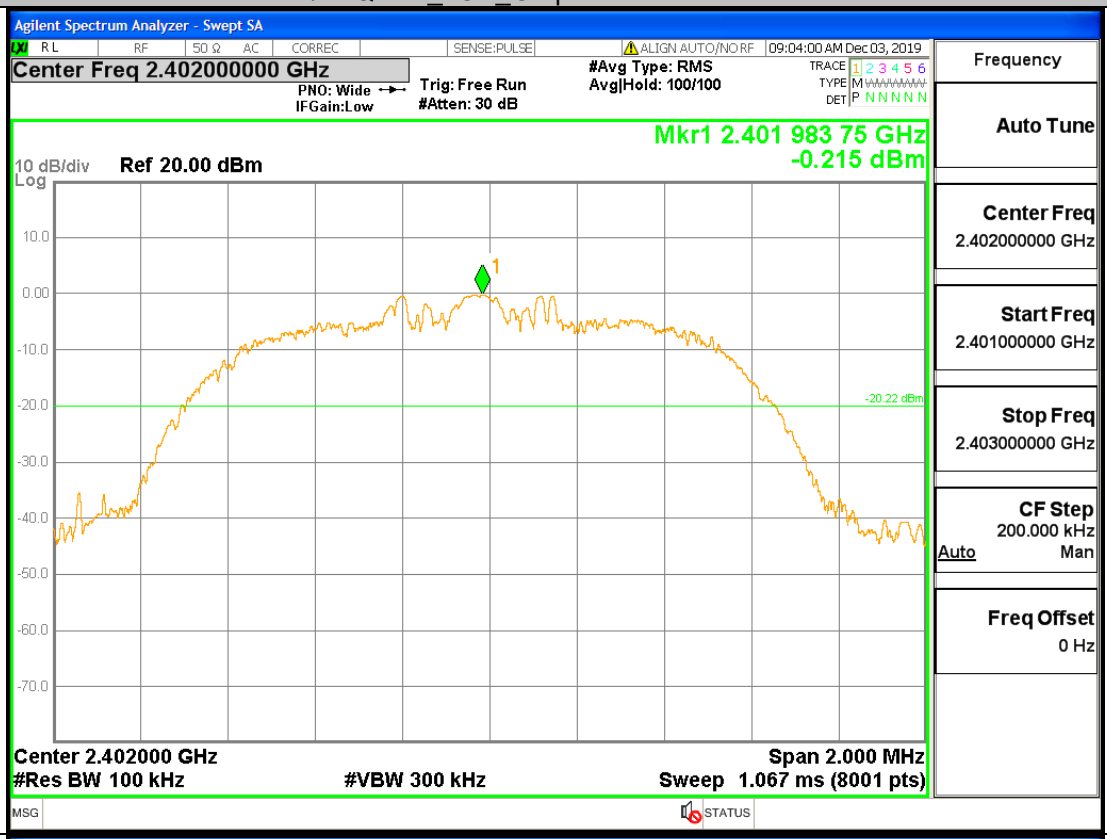
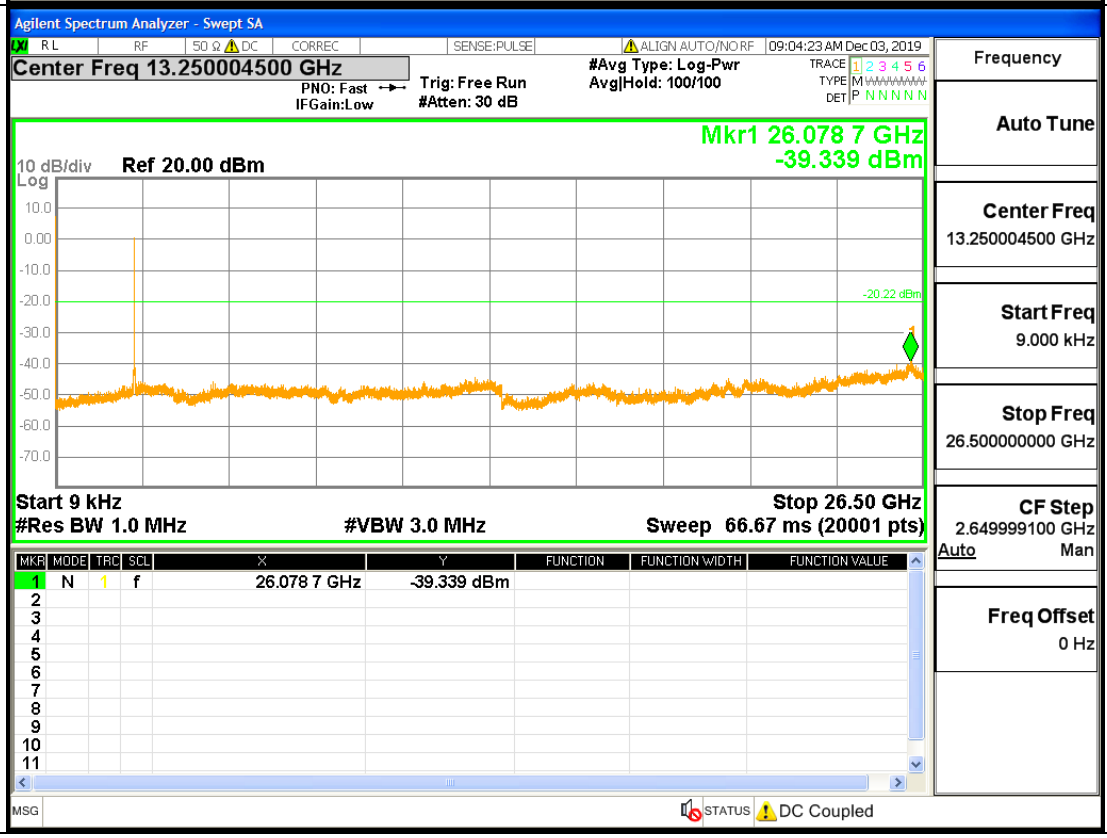
A.7 RF Conducted Spurious Emissions

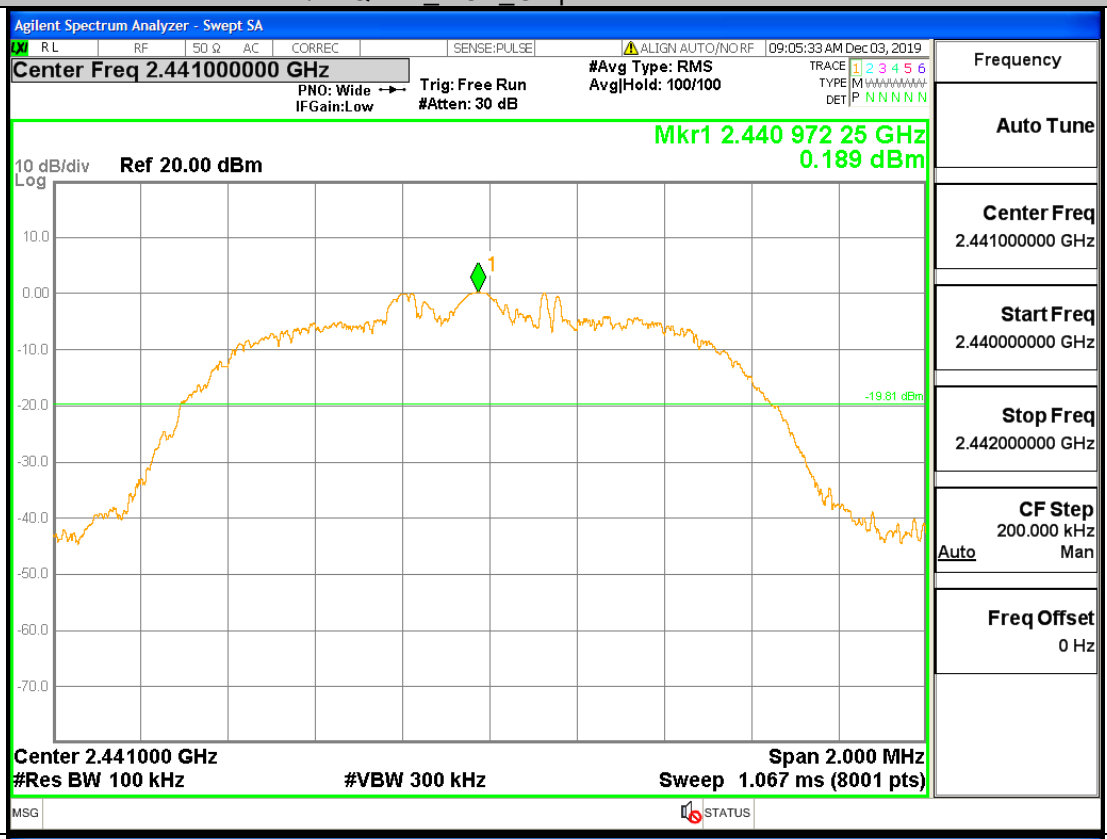
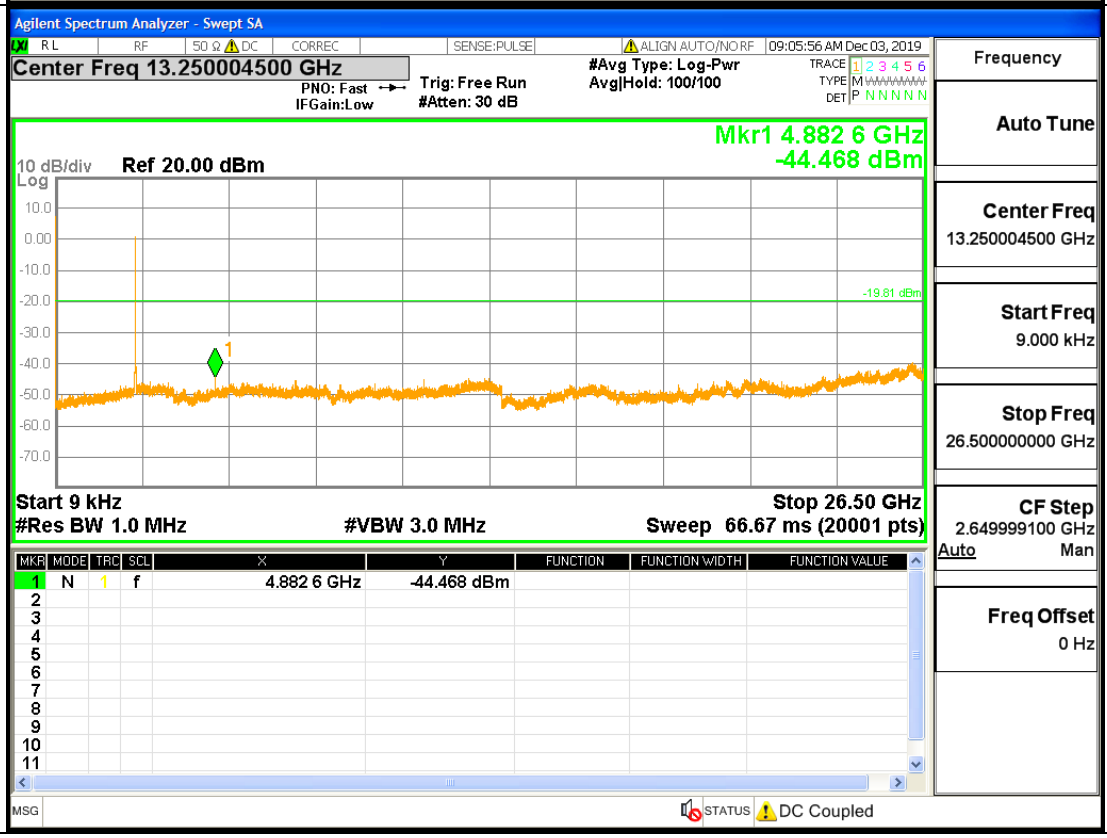
Test Graph

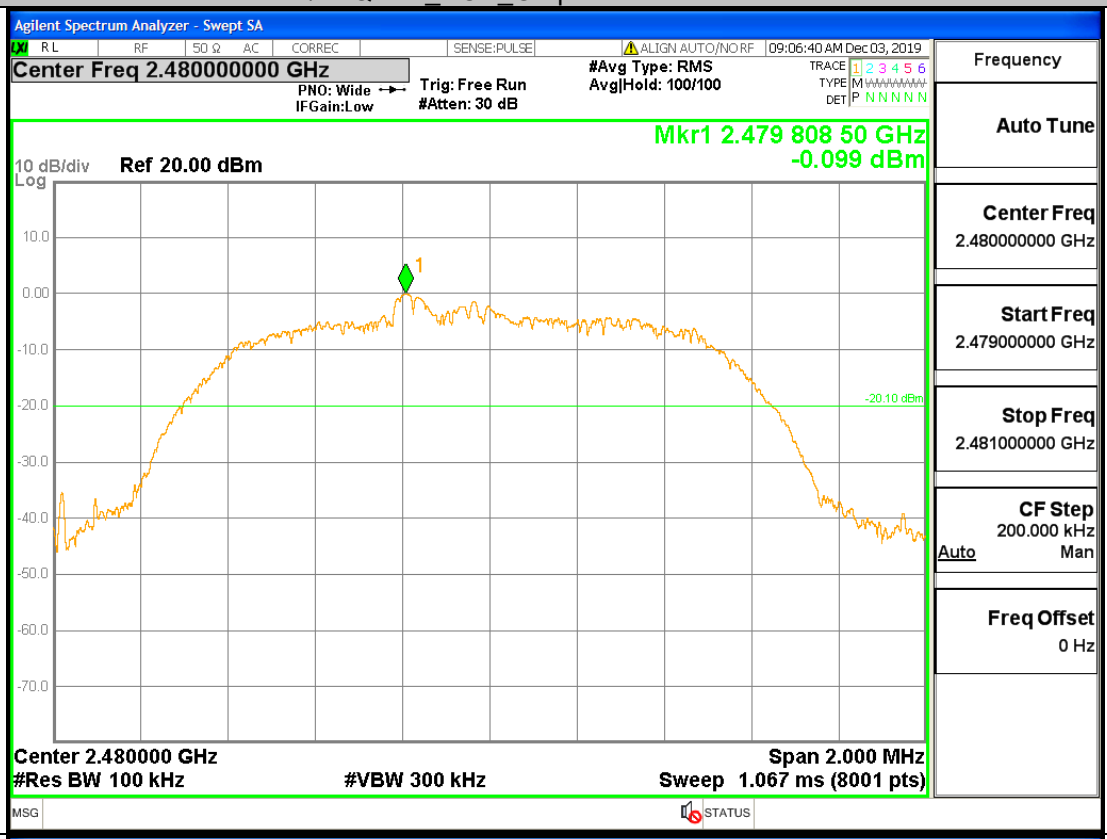
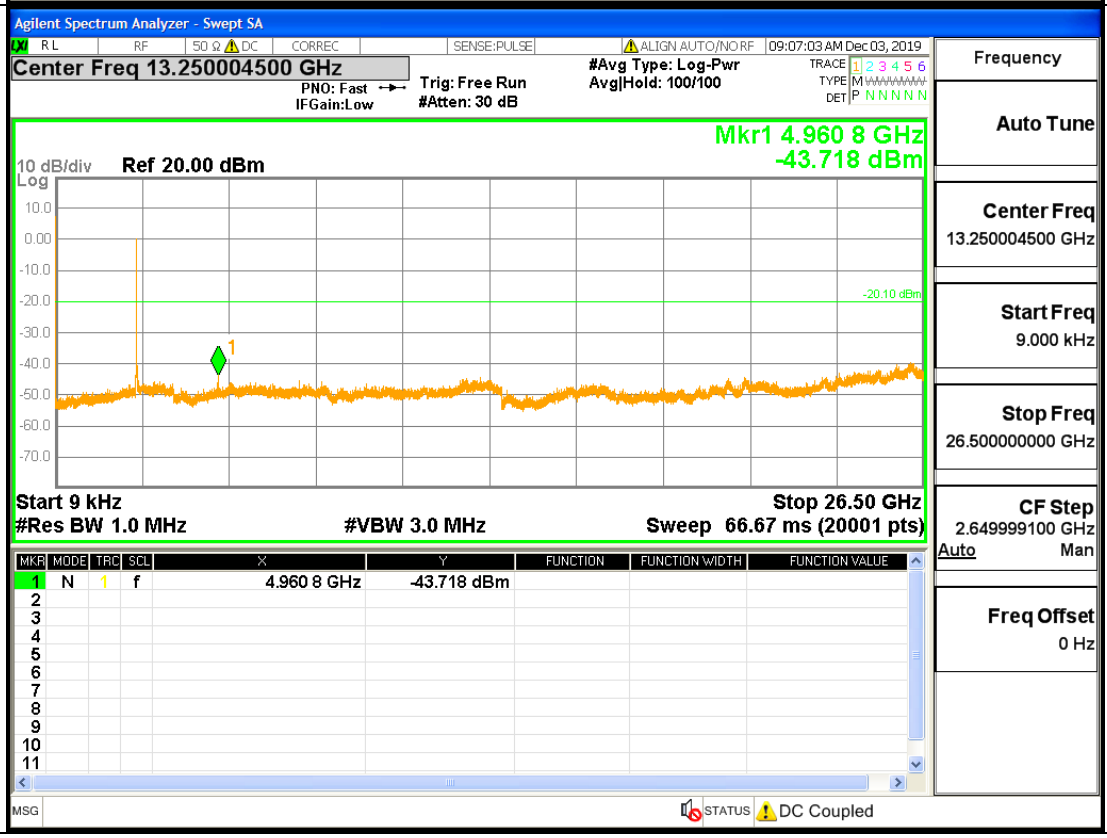
GFSK_LCH_Graphs	
Pref	
Puw	

GFSK_MCH_Graphs	
Pref	
Puw	

GFSK_HCH_Graphs	
Pref	
Puw	

π/4DQPSK_LCH_Graphs	
Pref	
Puw	

π/4DQPSK_MCH_Graphs	
Pref	
Puw	

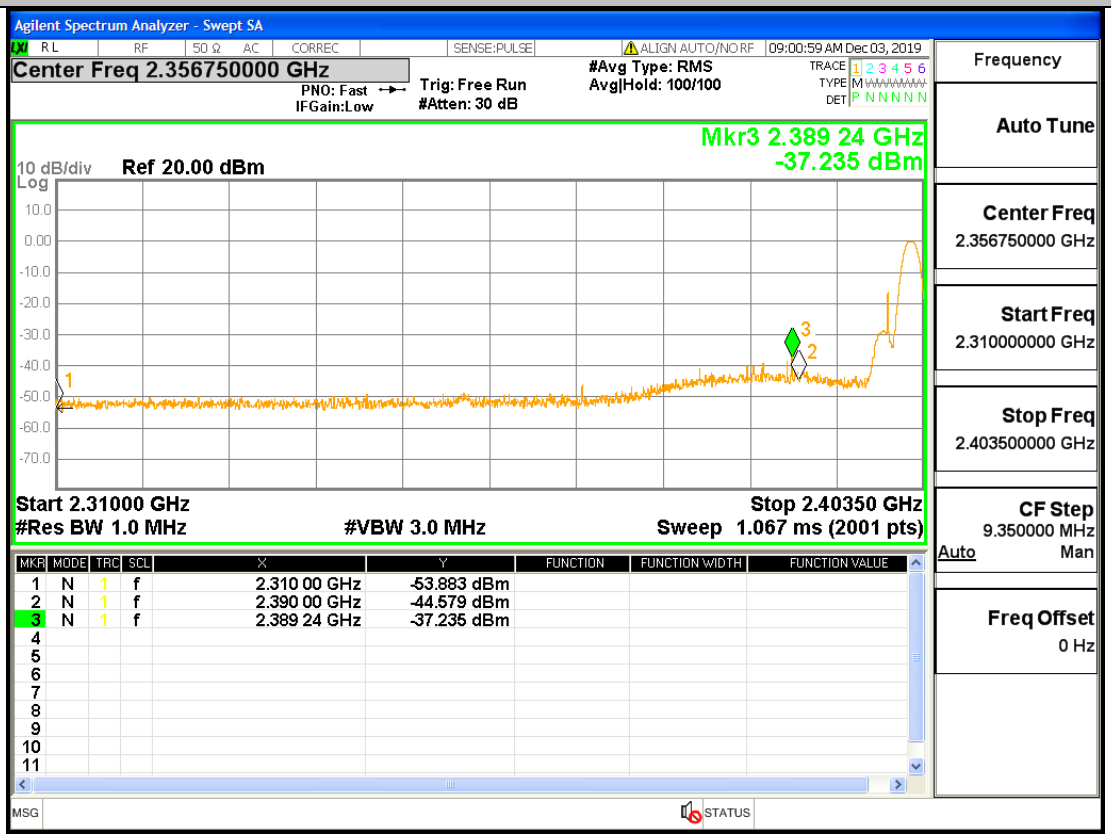
π/4DQPSK_HCH_Graphs	
Pref	
Puw	

A.8 Restrict-band band-edge measurements

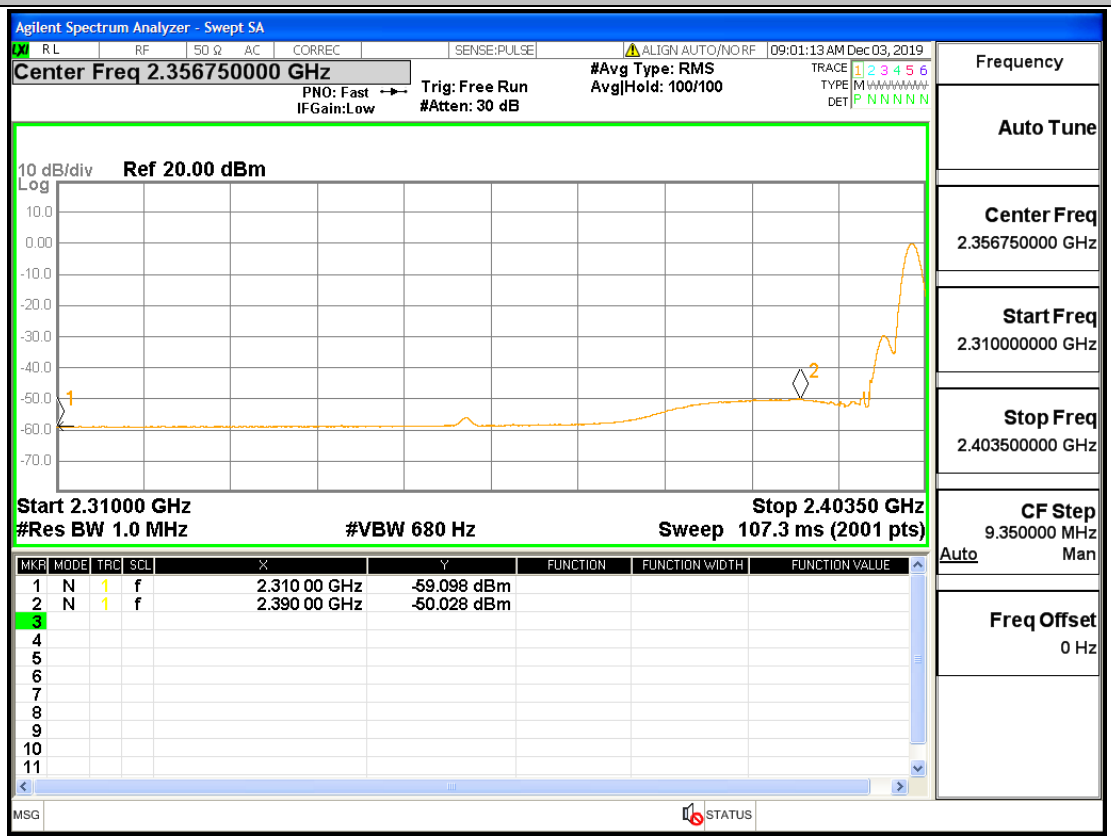
Type	Carrier Frequency (MHz)	Frequency(MHz)	Gain (dBi)	Ground Factor(dB)	Peak Value(dBm)	E [dBuV/m]	Limit [dBuV/m]	Conclusion
1DH5	2402	2389.241	2.00	0.00	-37.235	59.965	74	Pass
1DH5	2480	2483.617	2.00	0.00	-28.449	68.751	74	Pass
2DH5	2402	2390	2.00	0.00	-41.693	55.507	74	Pass
2DH5	2480	2484.886	2.00	0.00	-32.637	64.563	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	2389.241	2.00	0.00	-50.028	47.172	54	Pass
1DH5	2480	2483.617	2.00	0.00	-42.174	55.026	54	Pass
2DH5	2402	2390	2.00	0.00	-50.063	47.137	54	Pass
2DH5	2480	2484.886	2.00	0.00	-44.465	52.735	54	Pass

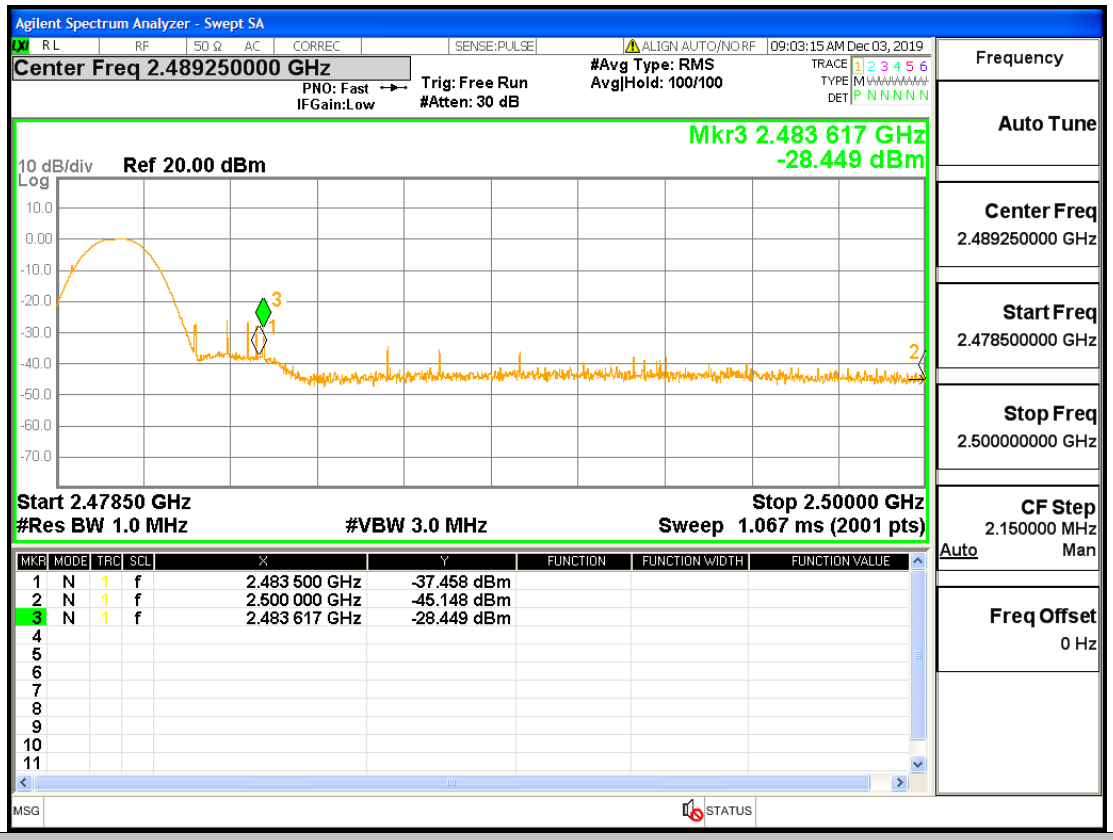
Restrict-band band-edge measurements_2402_PEAK_DH5



Restrict-band band-edge measurements_2402_AV_DH5

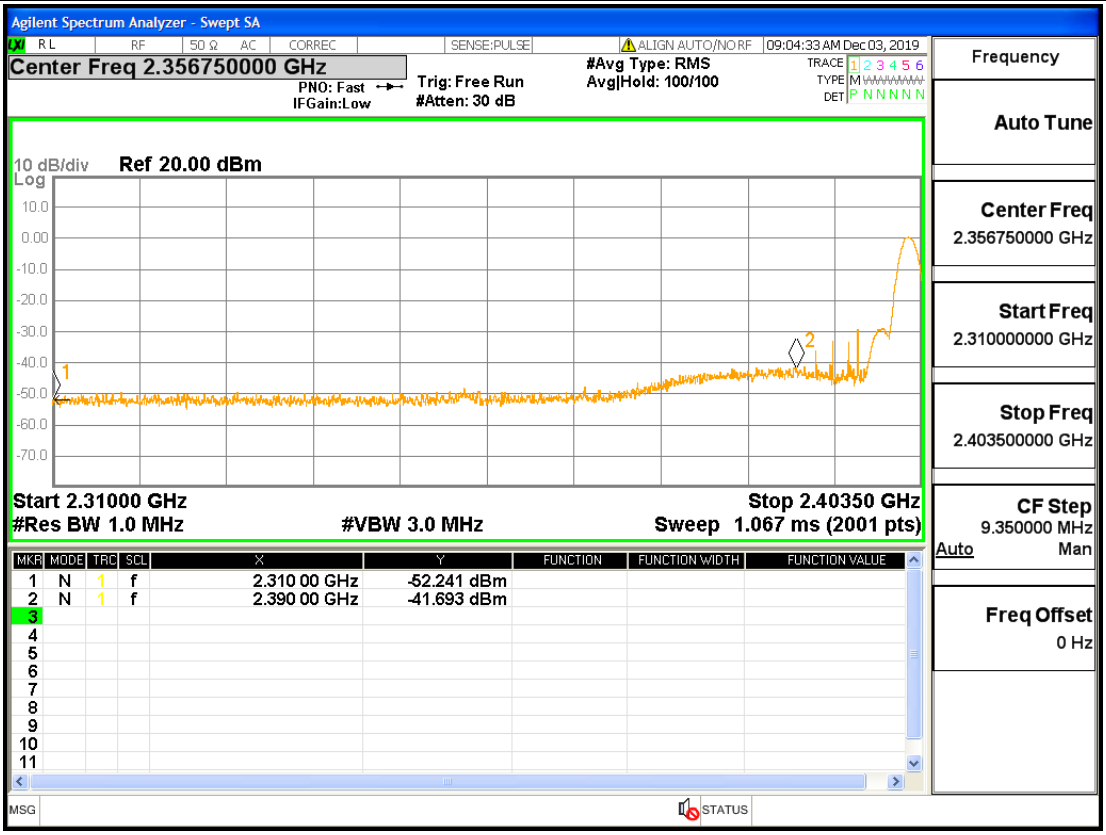


Restrict-band band-edge measurements_2480_PEAK_DH5



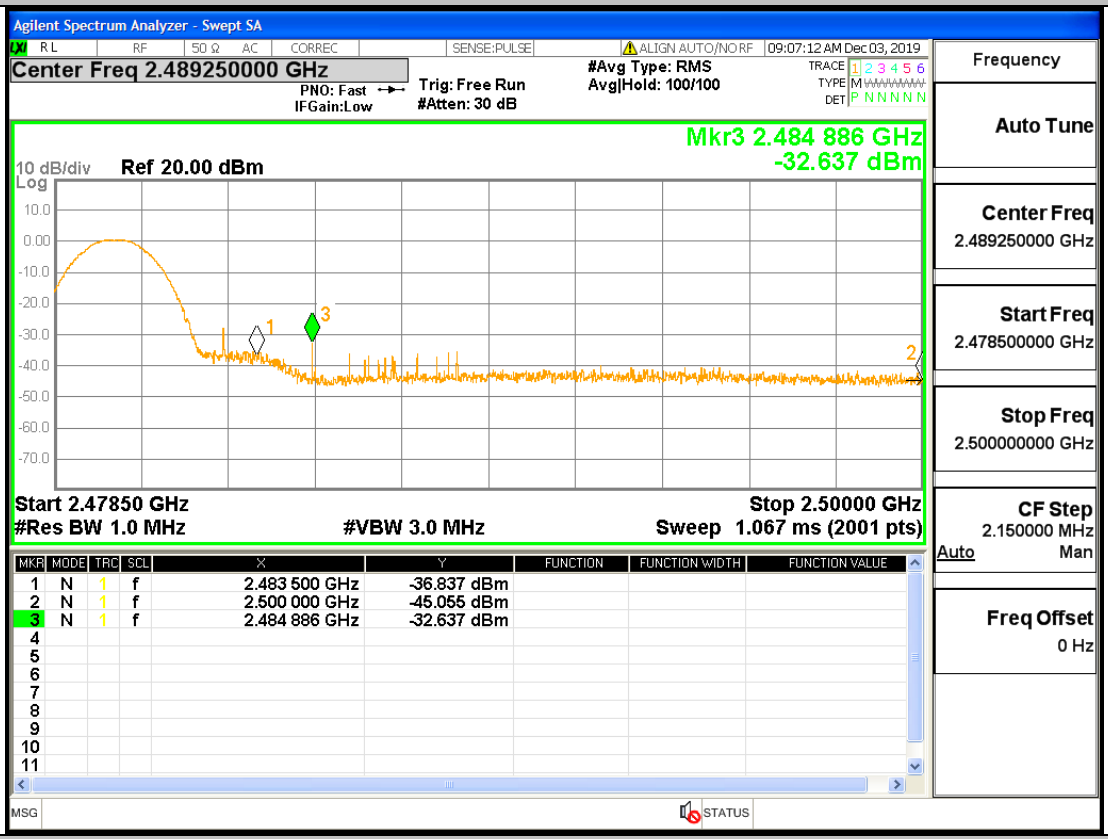
Restrict-band band-edge measurements_2480_AV_DH5

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