

Appendix A

RF Test Data (Conducted Measurement)

Product Name: Hand-held Barcode Scanner

Trade Mark: Newland

Test Model: NLS-HR20 (USB)

Environmental Conditions

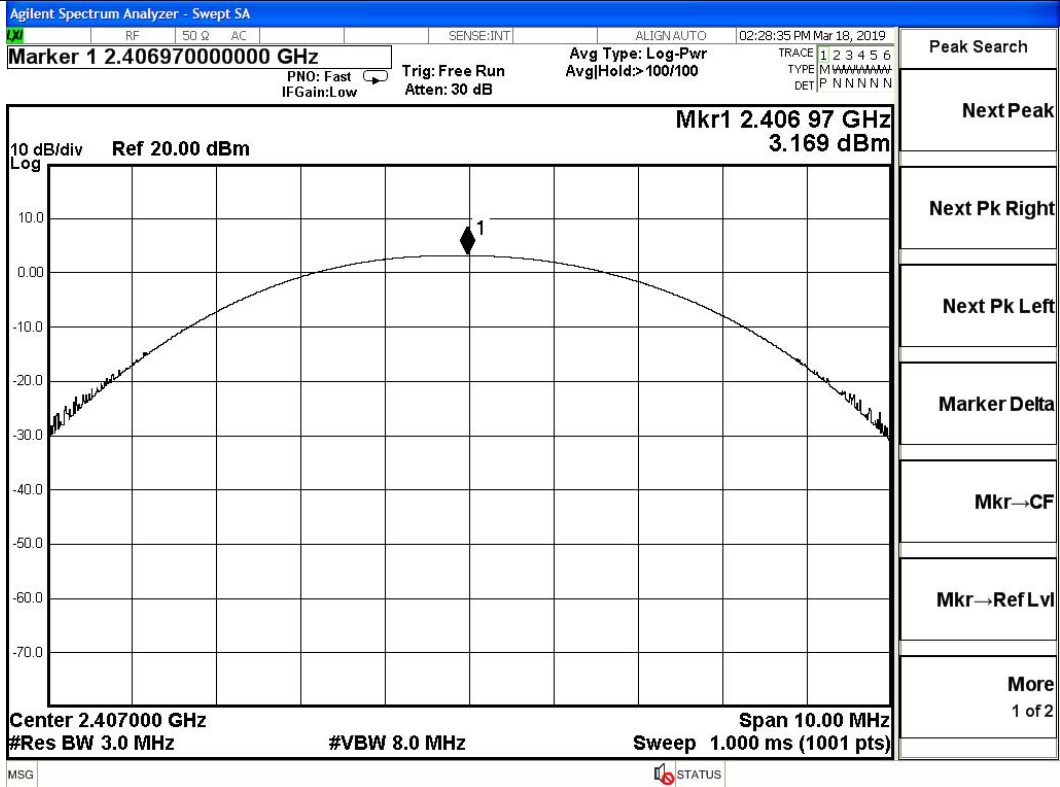
Temperature:	21.9 °C
Relative Humidity:	53.1%
ATM Pressure:	100.0 kPa
Test Engineer:	David Luo
Supervised by:	Tom Liu

A.1 Maximum Conducted Peak Output Power

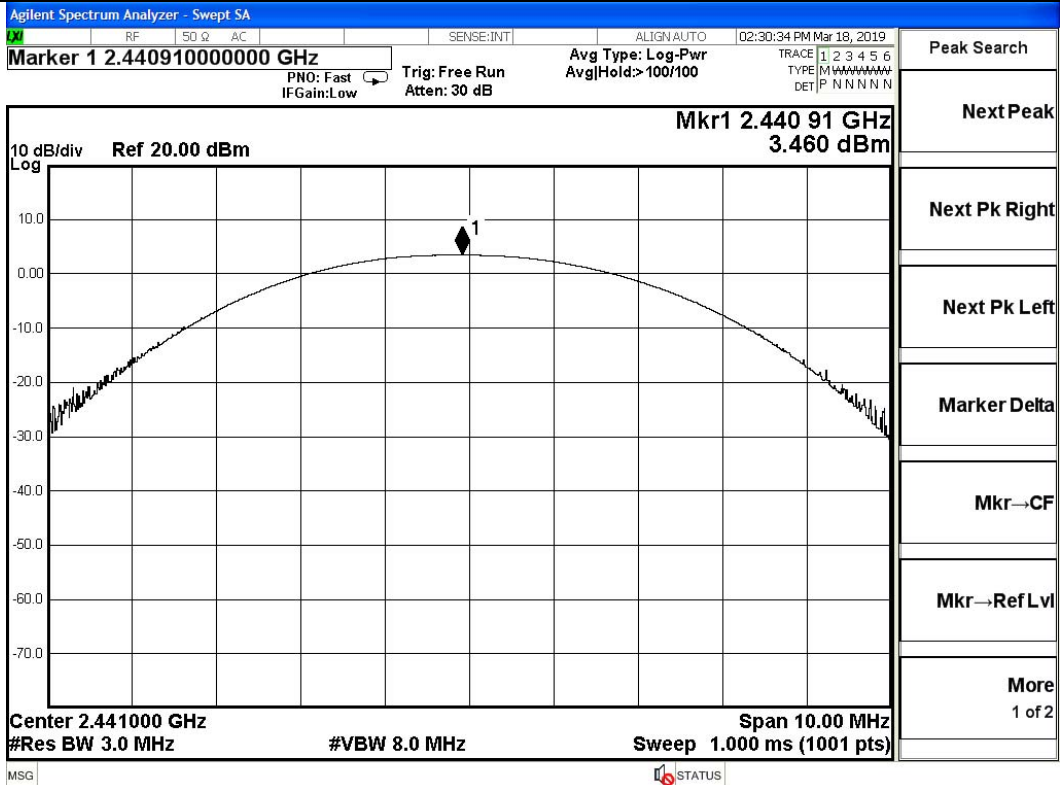
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	3.169	30	PASS
	MCH	3.460	30	PASS
	HCH	3.167	30	PASS

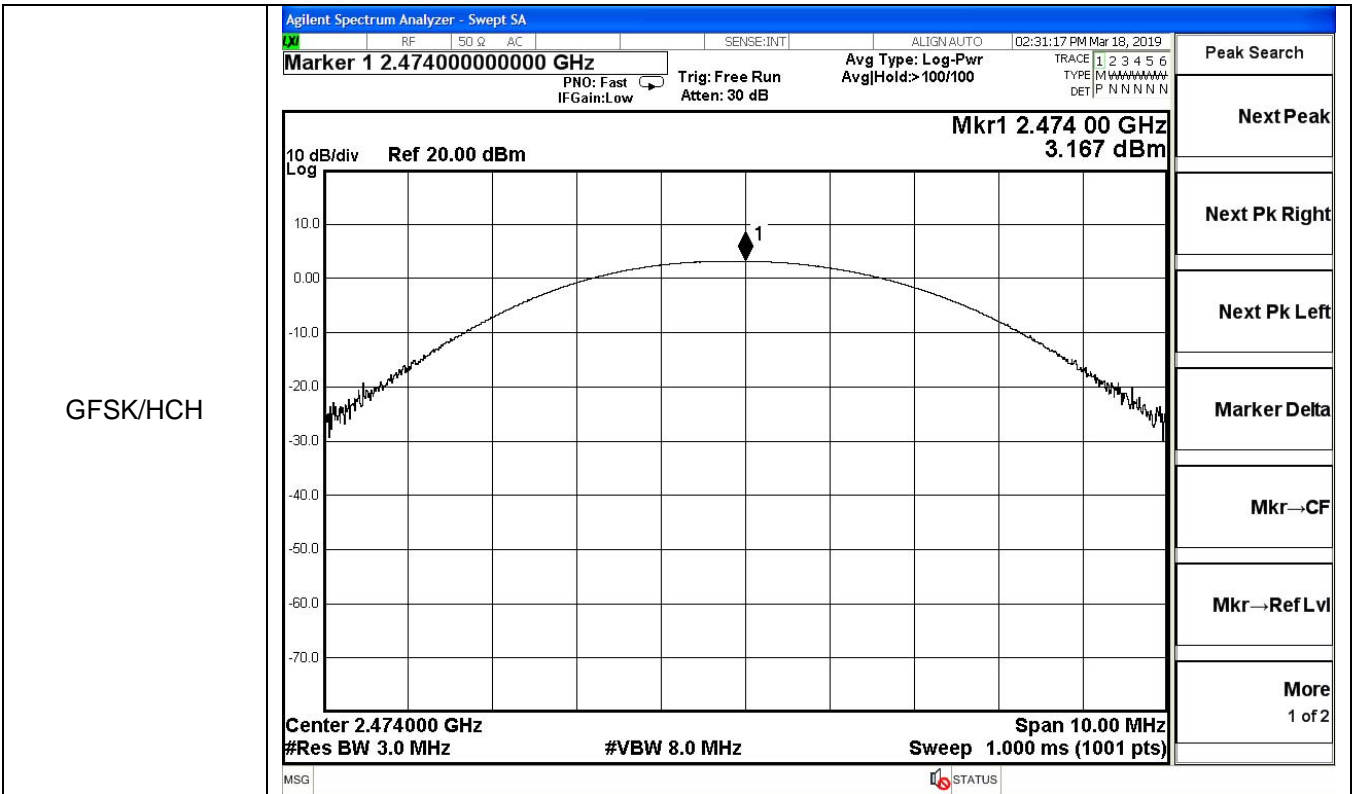
Test Graphs

GFSK/LCH



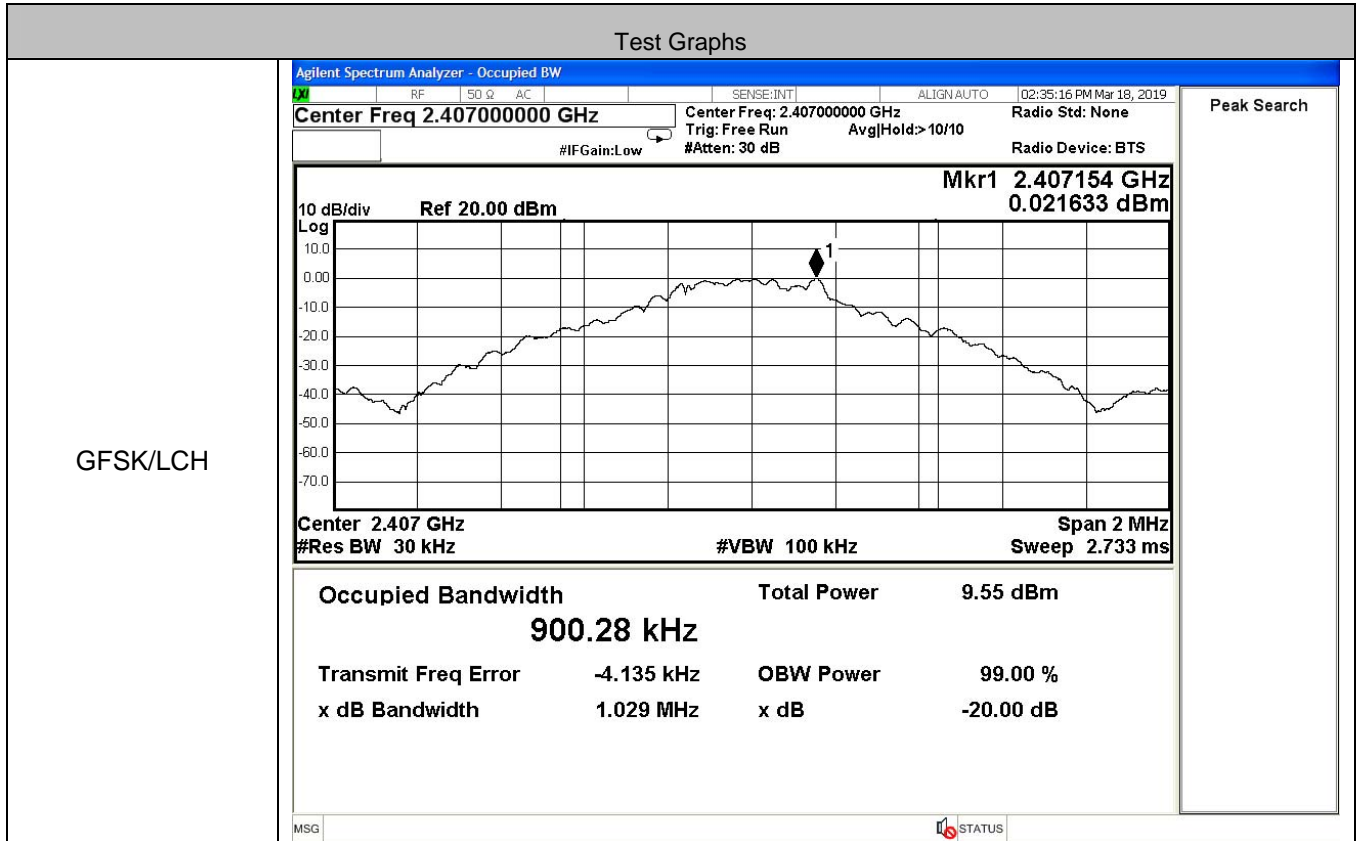
GFSK/MCH



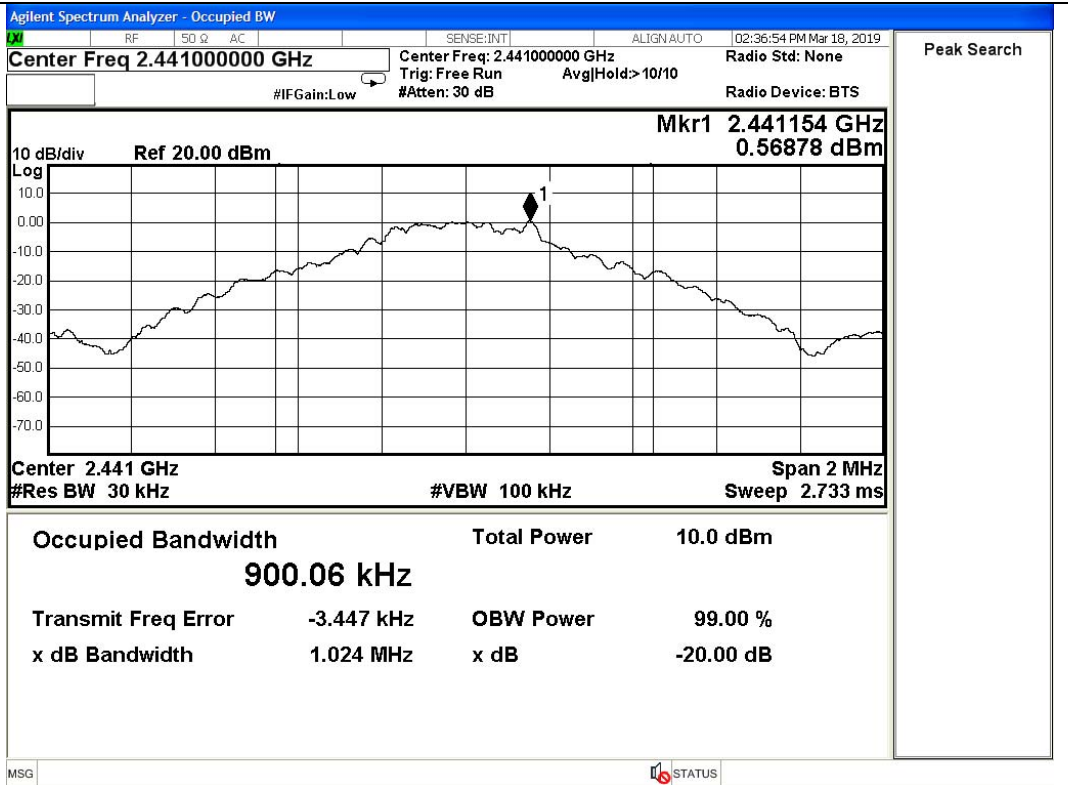


A.2 99% and 20dB Bandwidth

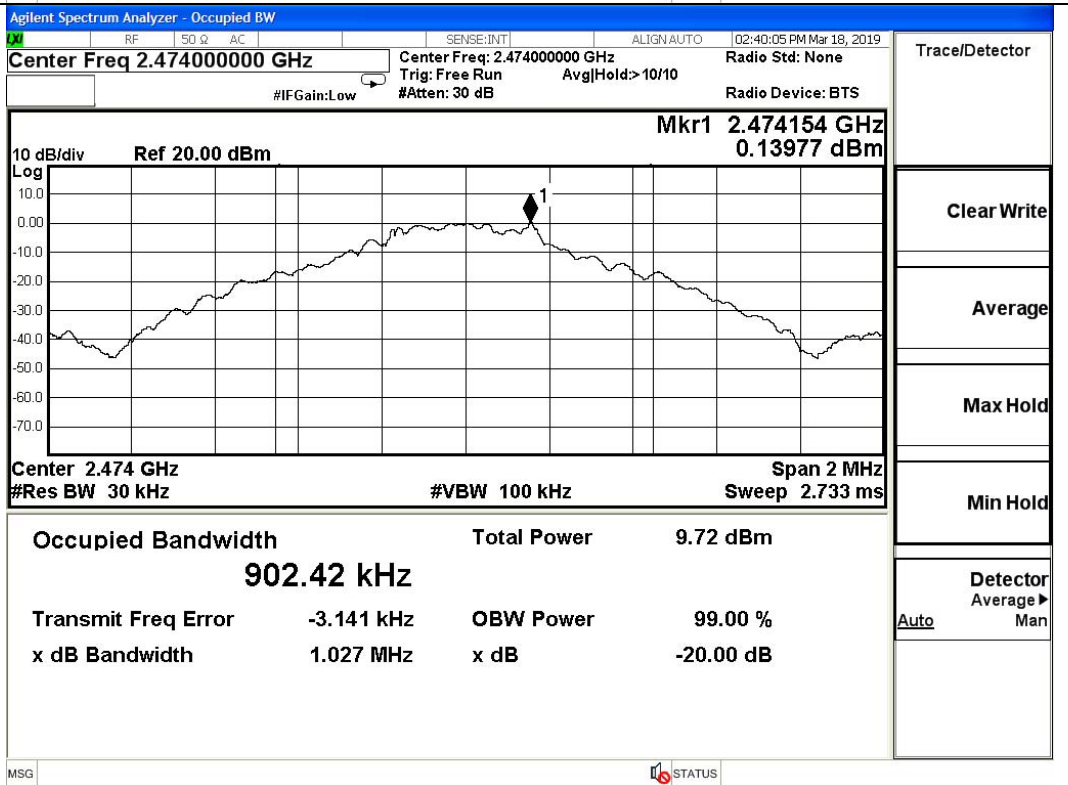
Mode	Channel	20dB Bandwidth [MHz]	99% Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.029	0.90028	Not Specified	PASS
	MCH	1.024	0.90006	Not Specified	PASS
	HCH	1.027	0.90242	Not Specified	PASS



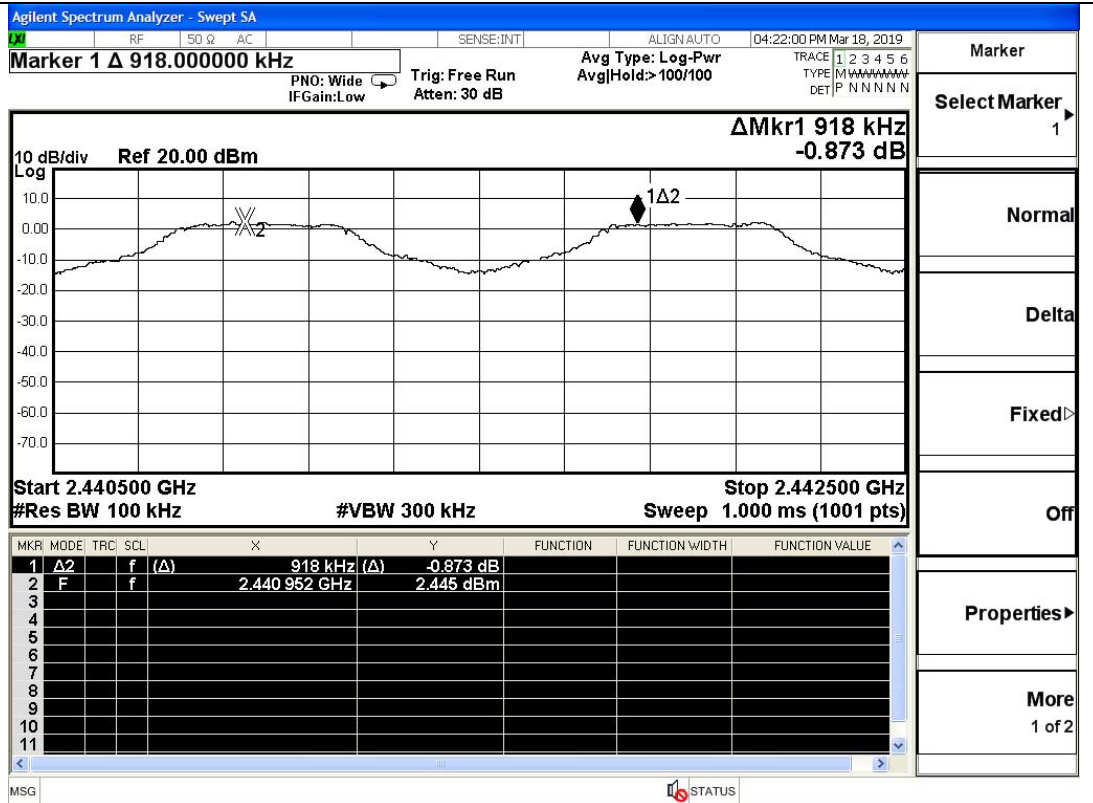
GFSK/MCH



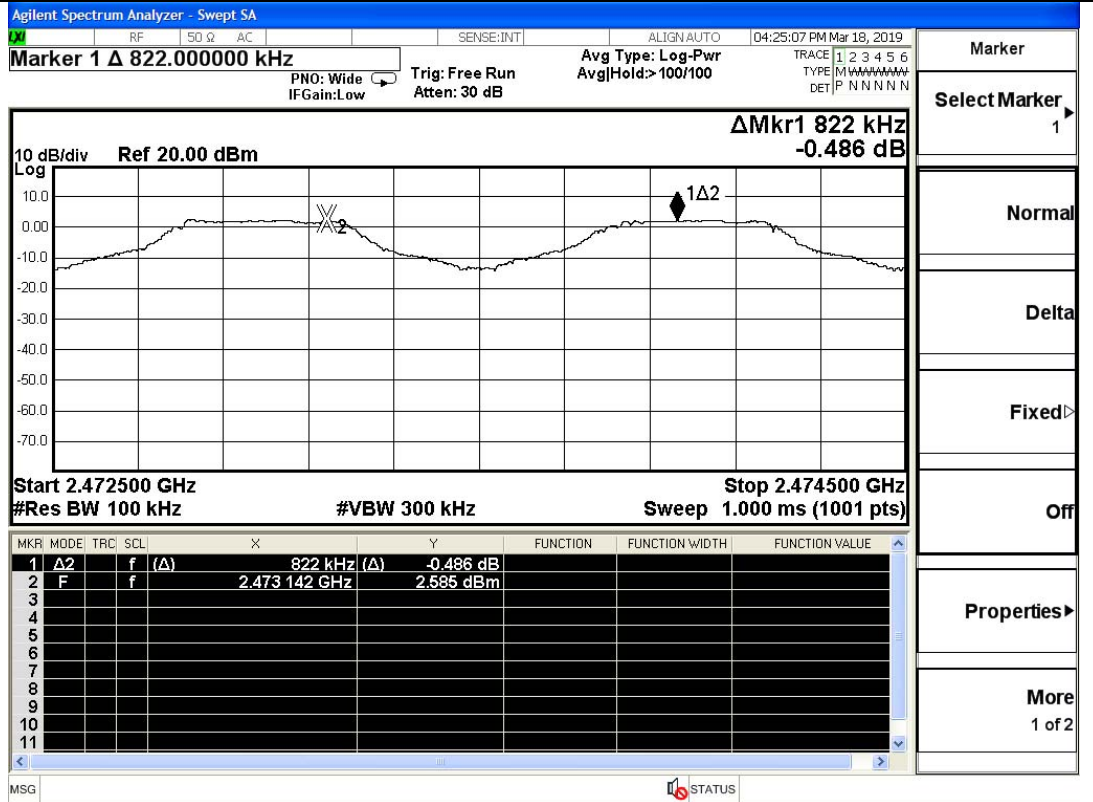
GFSK/HCH



Hopping/MCH

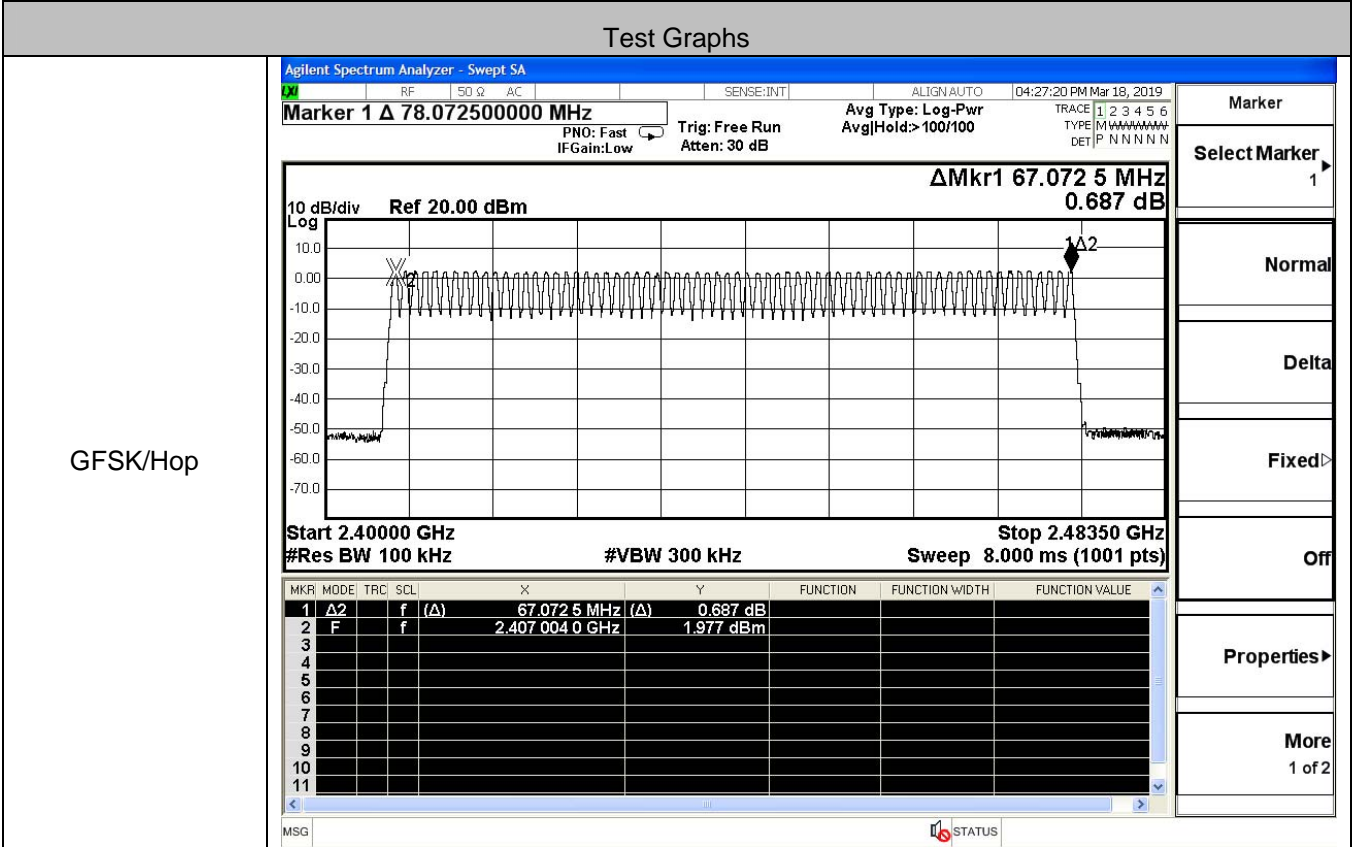


Hopping/HCH



A.4 Hopping Channel Number

Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	68	>=15	PASS



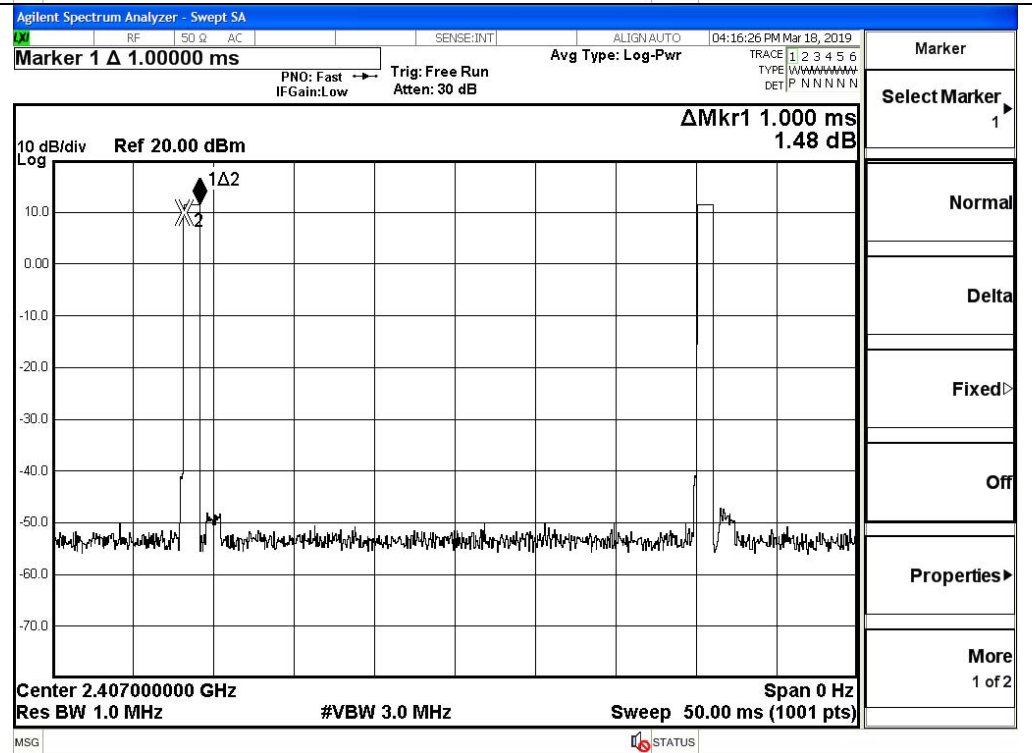
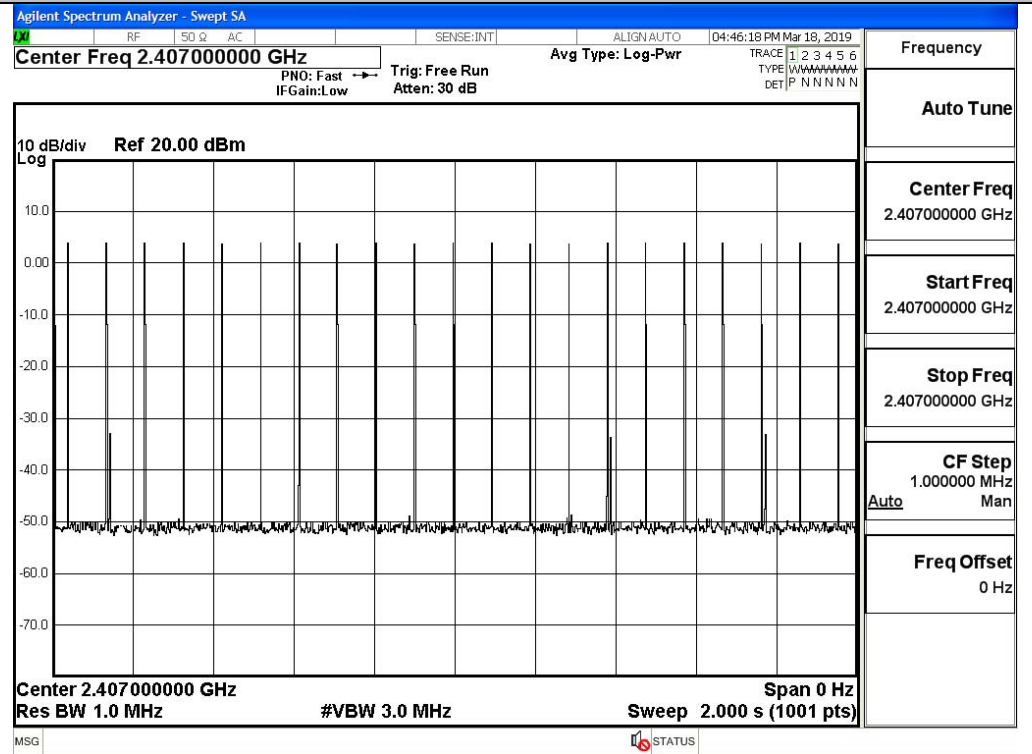
A.5 Dwell Time

Mode	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	LCH	1.0000	68	0.2856	0.4	PASS
	MCH	1.0000	68	0.2856	0.4	PASS
	HCH	1.0000	68	0.2856	0.4	PASS

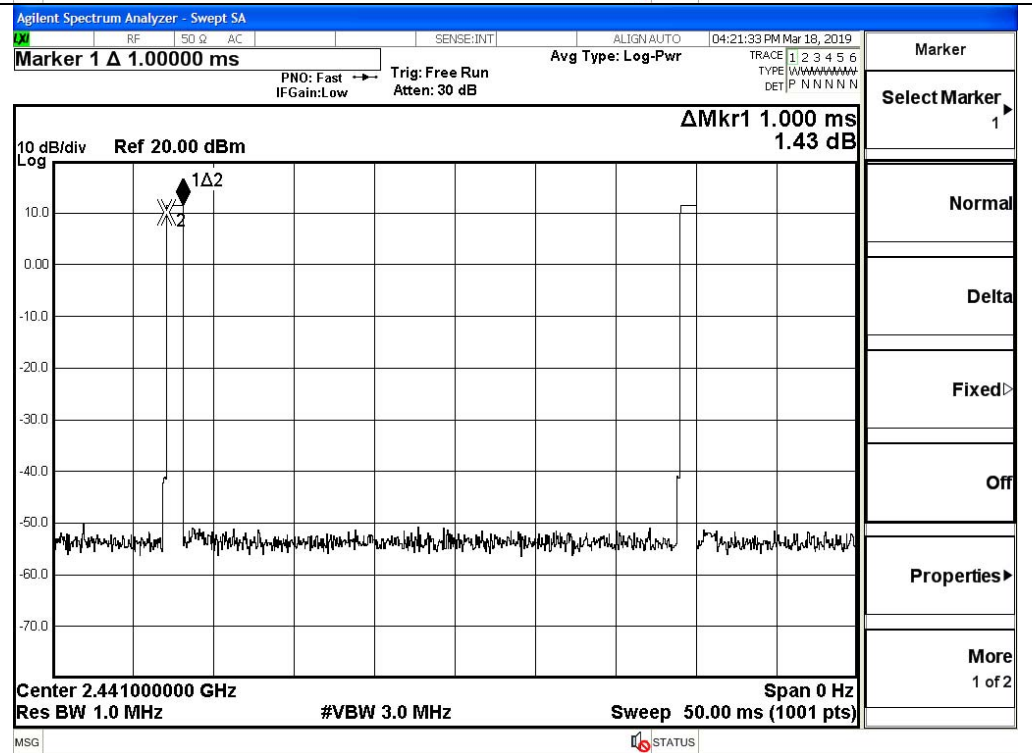
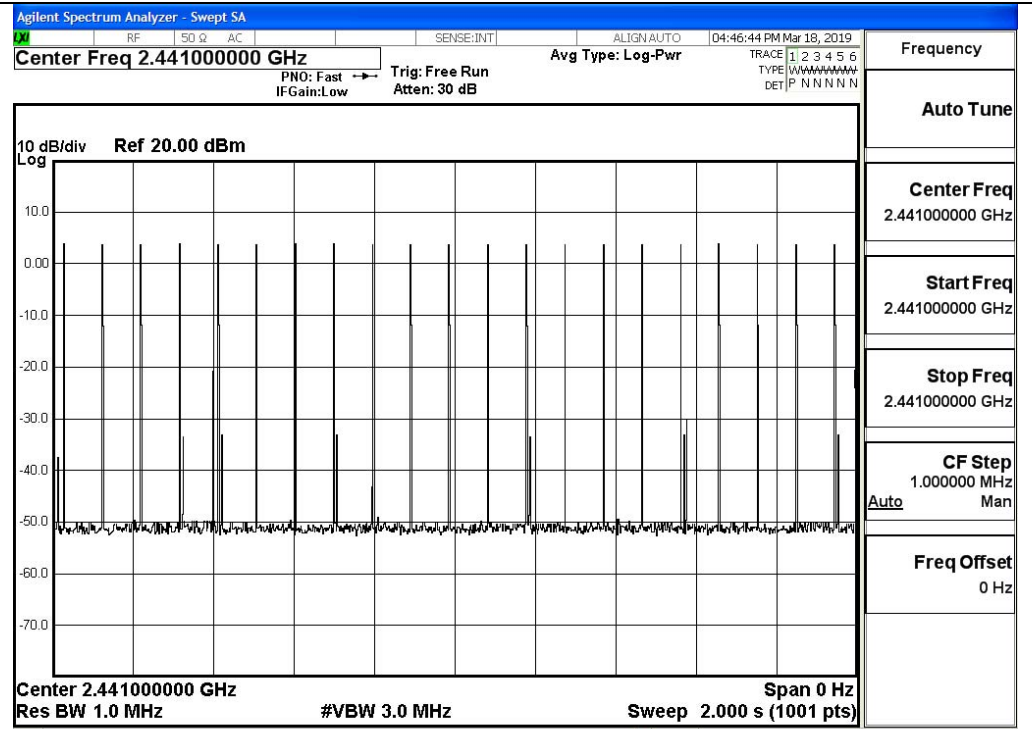
Dwell Time= Burst Width* Burst number

Test Graphs

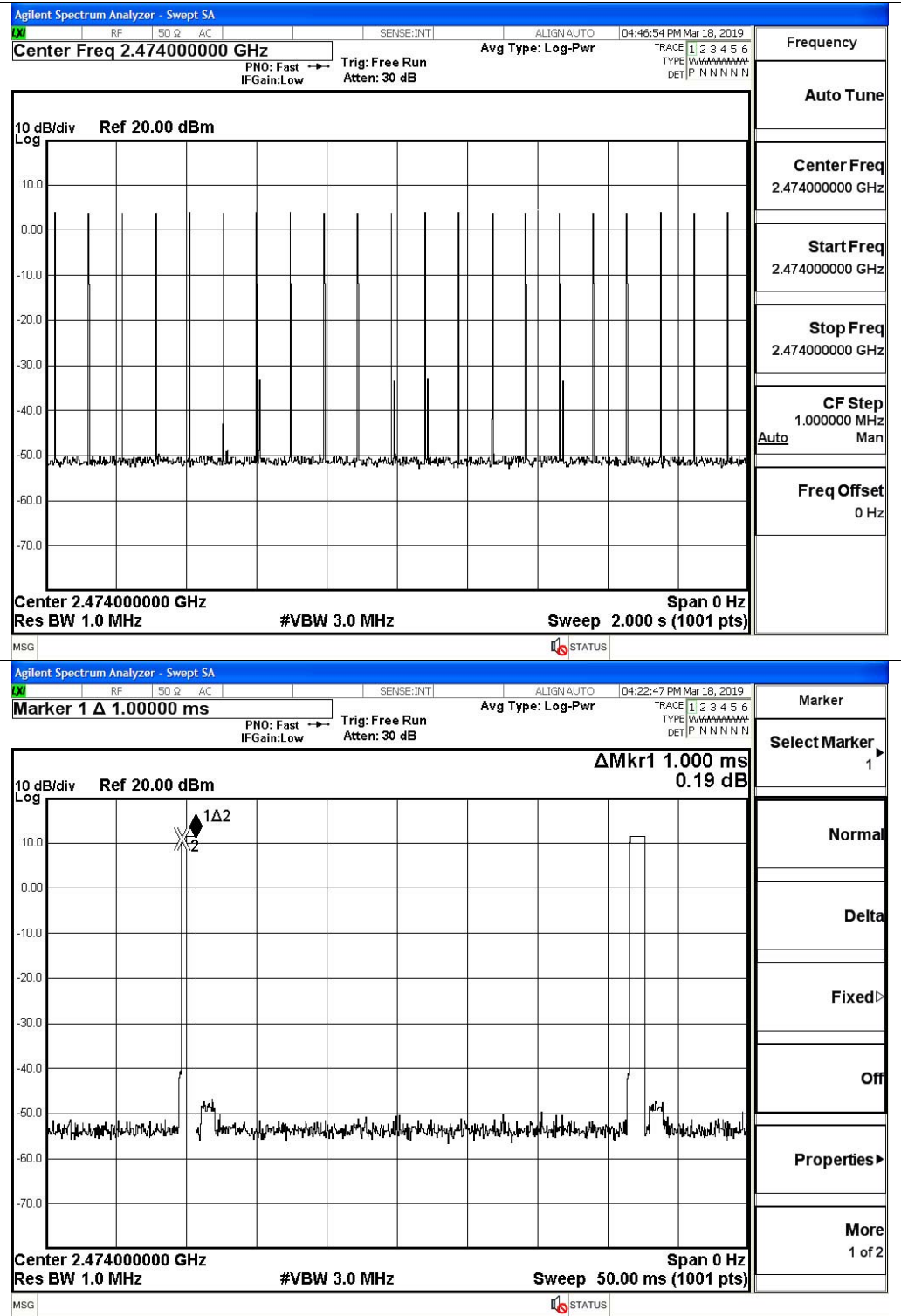
GFSK / LCH



GFSK / MCH



GFSK / HCH



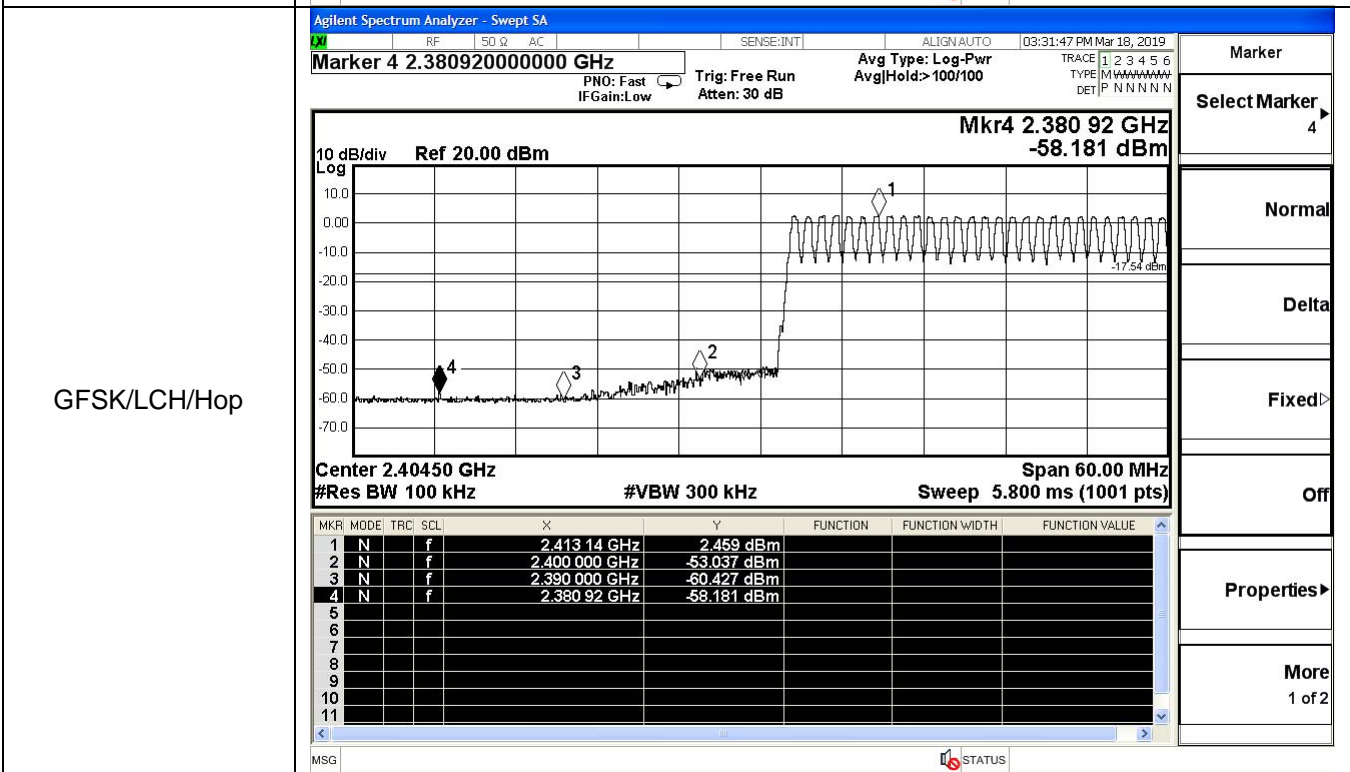
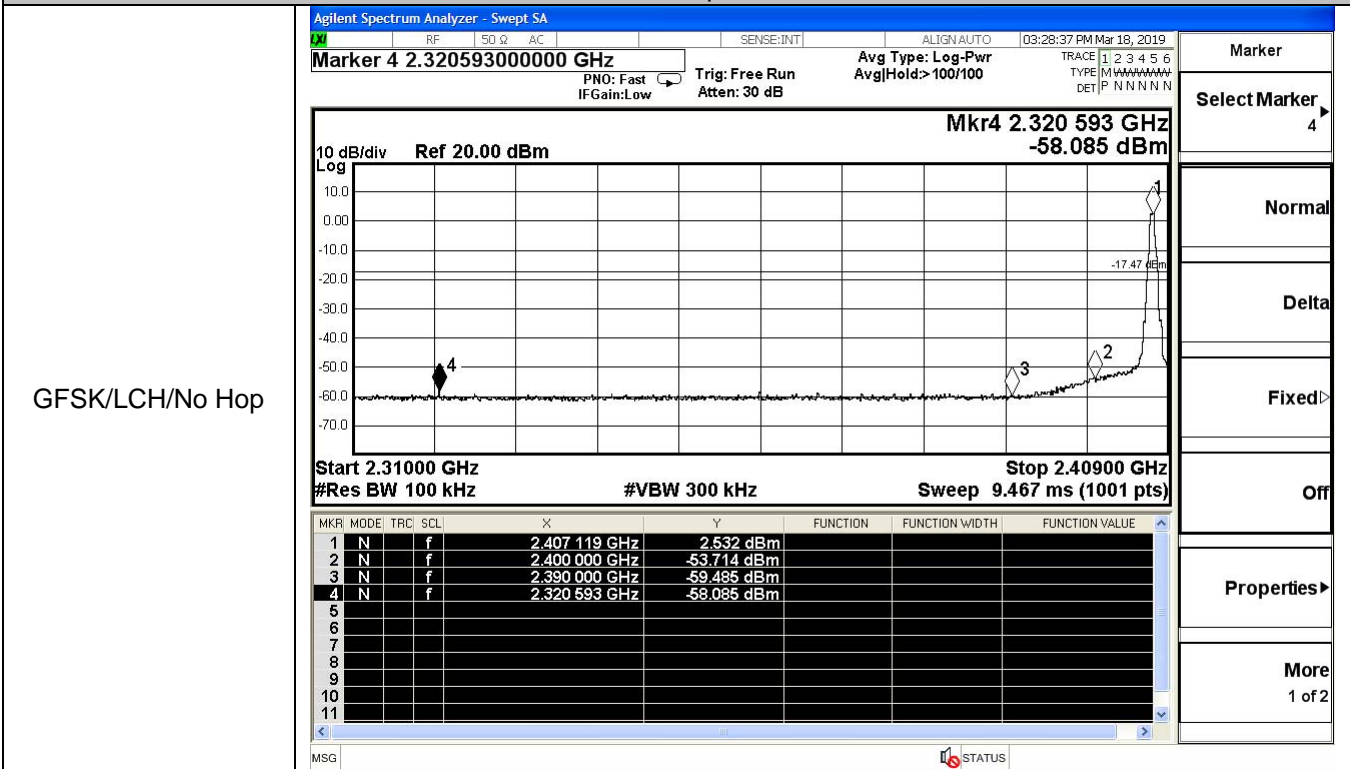
A.6 RF Conducted Spurious Emissions

Mode	Channel	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-54.733	-17.50	PASS
	MCH	-50.186	-17.38	PASS
	HCH	-51.847	-17.25	PASS

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	2407	2.532	Off	-53.714	-17.47	PASS
			2.459	On	-53.037	-17.54	PASS
	HCH	2474	2.839	Off	-47.873	-17.16	PASS
			2.831	On	-52.793	-17.17	PASS

Test Graphs



Agilent Spectrum Analyzer - Swept SA

Marker 4 2.47678800000 GHz

PNO: Fast IFGain:Low Trig: Free Run Atten: 30 dB Avg Type: Log-Pwr AvgHold:>100/100

03:20:21 PM Mar 18, 2019

10 dB/div Ref 20.00 dBm

Mkr4 2.476 788 GHz
-47.873 dBm

Normal

Delta

Fixed

Off

Marker

Select Marker 4

Properties

More 1 of 2

Start 2.47200 GHz Stop 2.50000 GHz
#Res BW 100 kHz #VBW 300 kHz Sweep 2.733 ms (1001 pts)

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	f		2.474 156 GHz	2.839 dBm			
2	N	f		2.483 500 GHz	-54.370 dBm			
3	N	f		2.500 000 GHz	-59.814 dBm			
4	N	f		2.476 788 GHz	-47.873 dBm			

STATUS

Agilent Spectrum Analyzer - Swept SA

Marker 4 2.49268800000 GHz

PNO: Fast IFGain:Low Trig: Free Run Atten: 30 dB Avg Type: Log-Pwr AvgHold:>100/100

03:23:33 PM Mar 18, 2019

10 dB/div Ref 20.00 dBm

Mkr4 2.492 69 GHz
-57.142 dBm

Normal

Delta

Fixed

Off

Marker

Select Marker 4

Properties

More 1 of 2

Center 2.49175 GHz Span 60.00 MHz
#Res BW 100 kHz #VBW 300 kHz Sweep 5.800 ms (1001 pts)

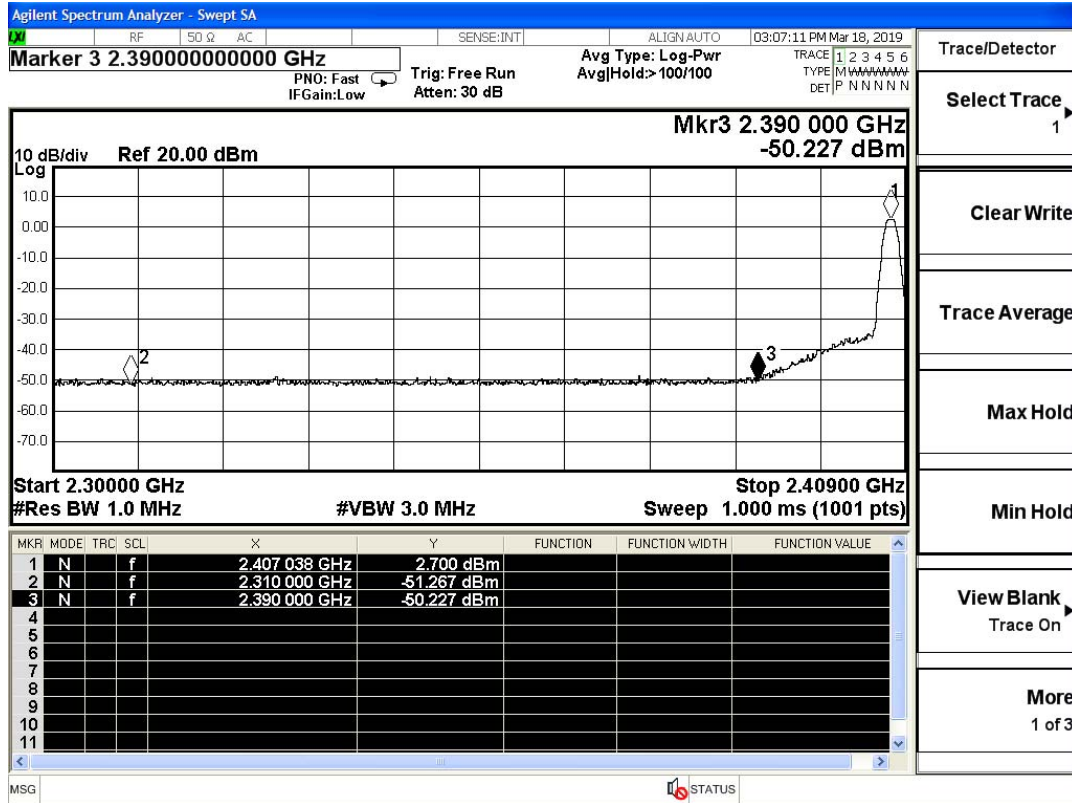
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	f		2.473 83 GHz	2.831 dBm			
2	N	f		2.483 500 GHz	-52.793 dBm			
3	N	f		2.500 000 GHz	-59.811 dBm			
4	N	f		2.492 69 GHz	-57.142 dBm			

STATUS

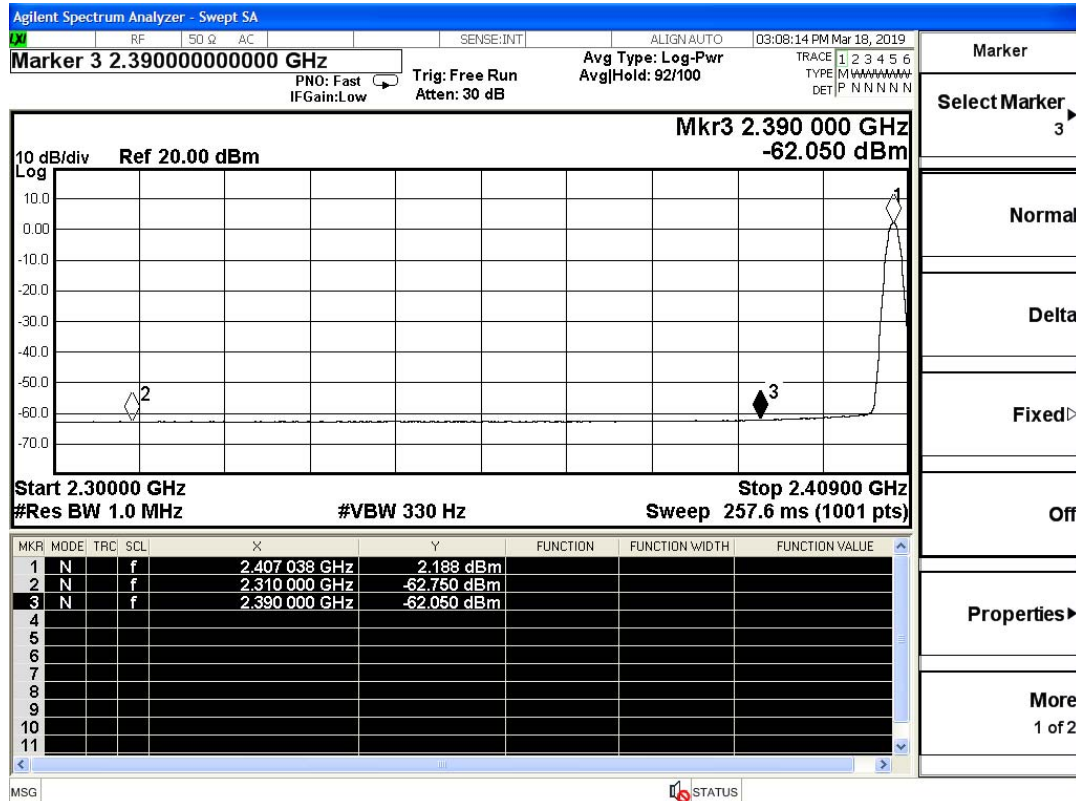
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-51.267	2.00	0	45.963	PEAK	74	PASS
	Off	2310.0	-62.750	2.00	0	34.480	AV	54	PASS
	Off	2390.0	-50.227	2.00	0	47.003	PEAK	74	PASS
	Off	2390.0	-62.050	2.00	0	35.180	AV	54	PASS
	Off	2483.5	-54.675	2.00	0	42.555	PEAK	74	PASS
	Off	2483.5	-61.570	2.00	0	35.660	AV	54	PASS
	Off	2500.0	-53.608	2.00	0	43.622	PEAK	74	PASS
	Off	2500.0	-62.275	2.00	0	34.955	AV	54	PASS

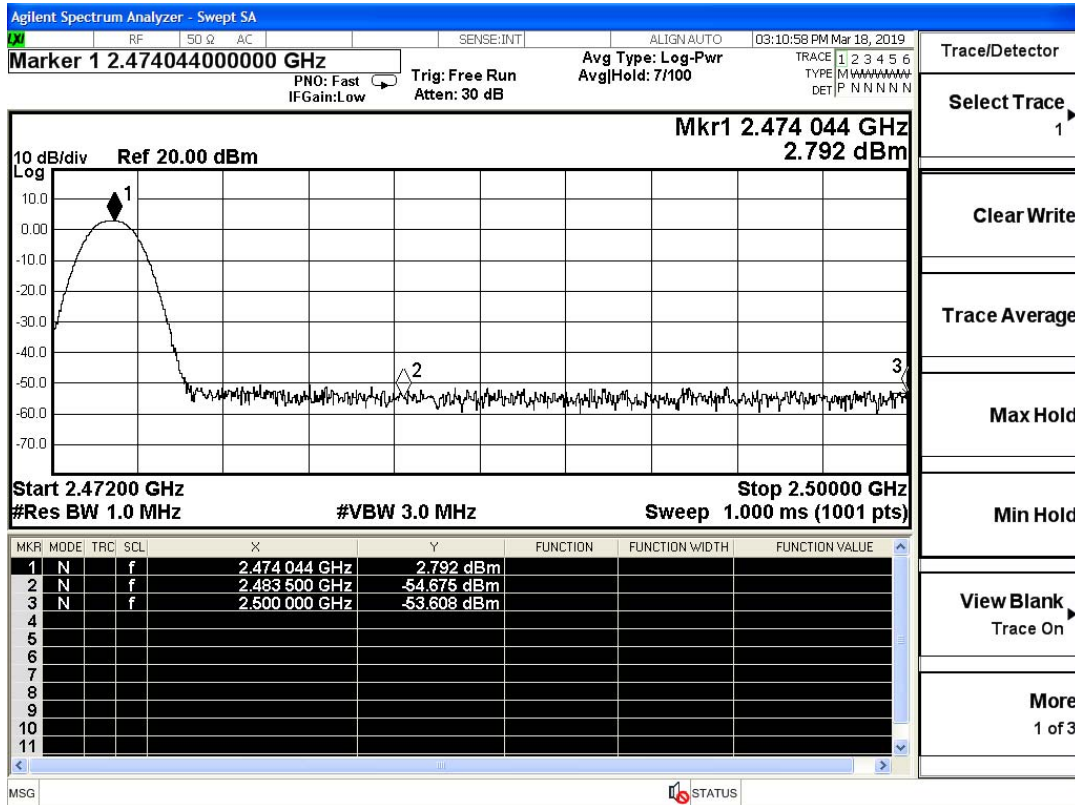
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



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)

