

## Appendix A

### RF Test Data (Conducted Measurement)

Product Name: Hand-held Barcode Scanner

Trade Mark: Newland

Test Model: NLS-HR20

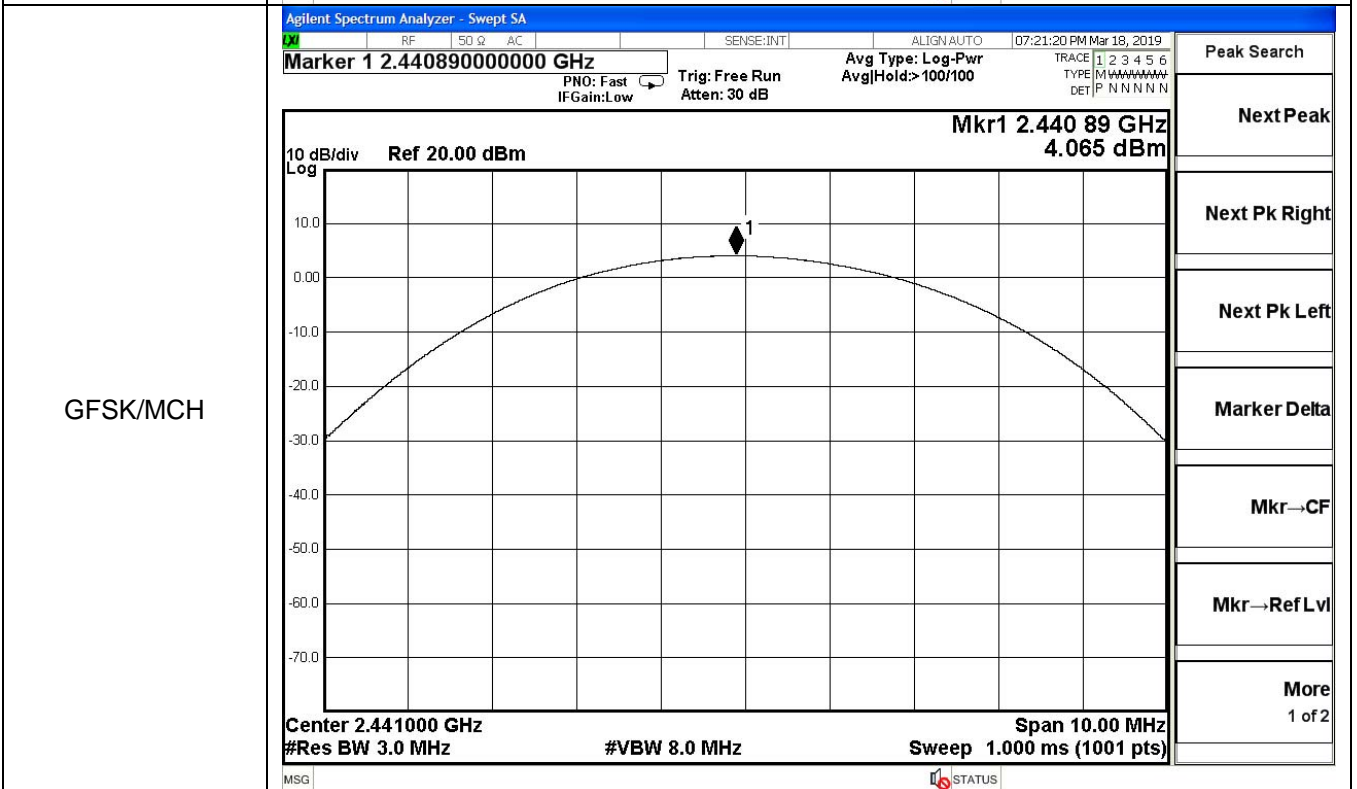
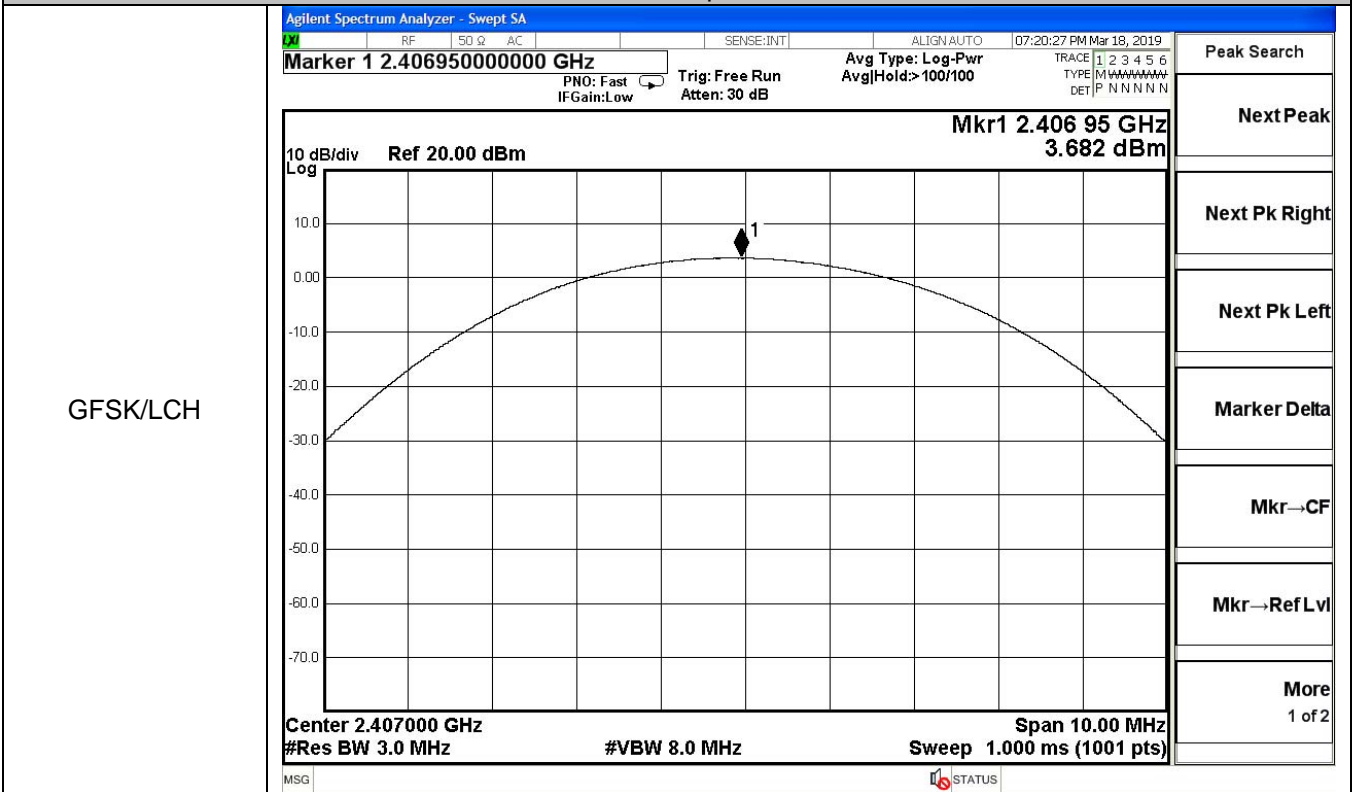
#### Environmental Conditions

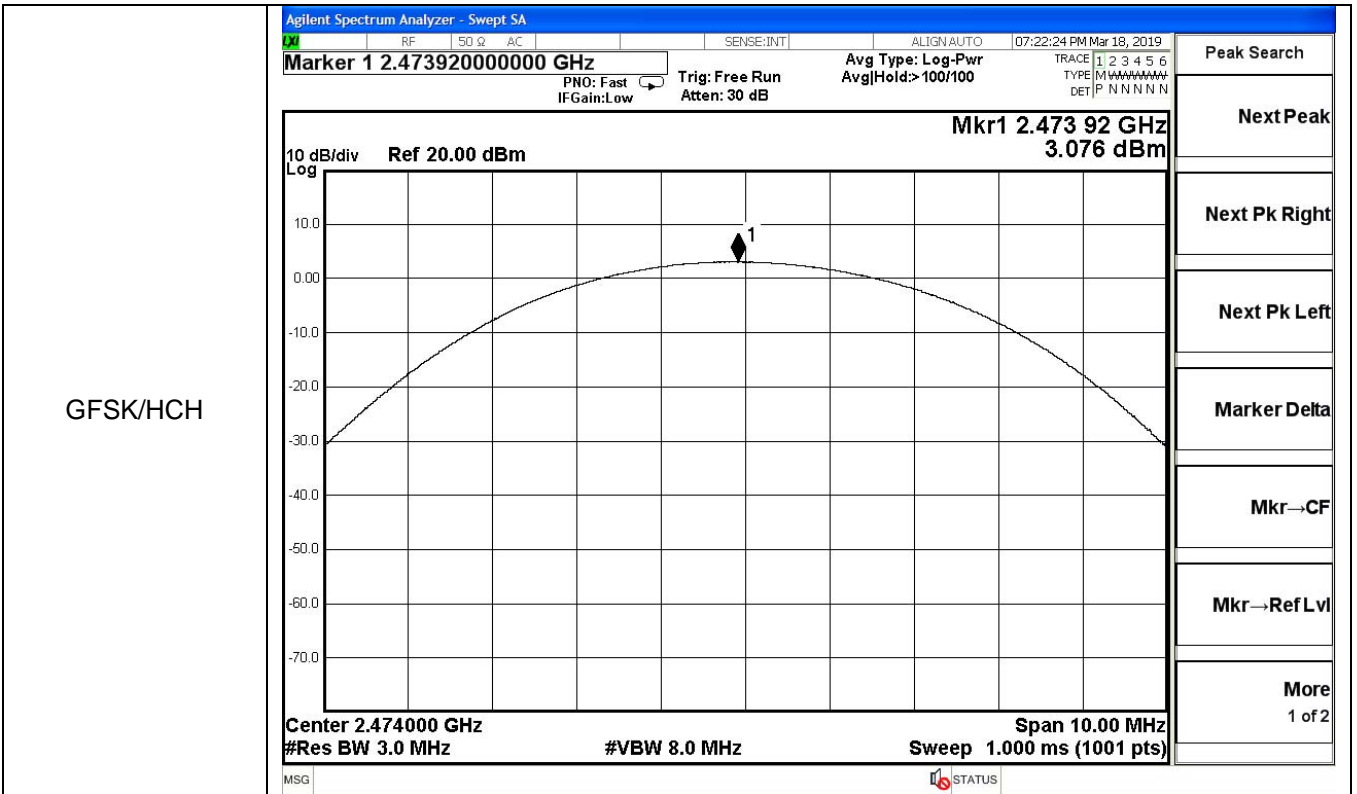
Temperature:	21.9 °C
Relative Humidity:	53.1%
ATM Pressure:	100.0 kPa
Test Engineer:	David Luo
Supervised by:	Tom Liu

#### A.1 Maximum Conducted Peak Output Power

Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	3.682	30	PASS
	MCH	4.065	30	PASS
	HCH	3.076	30	PASS

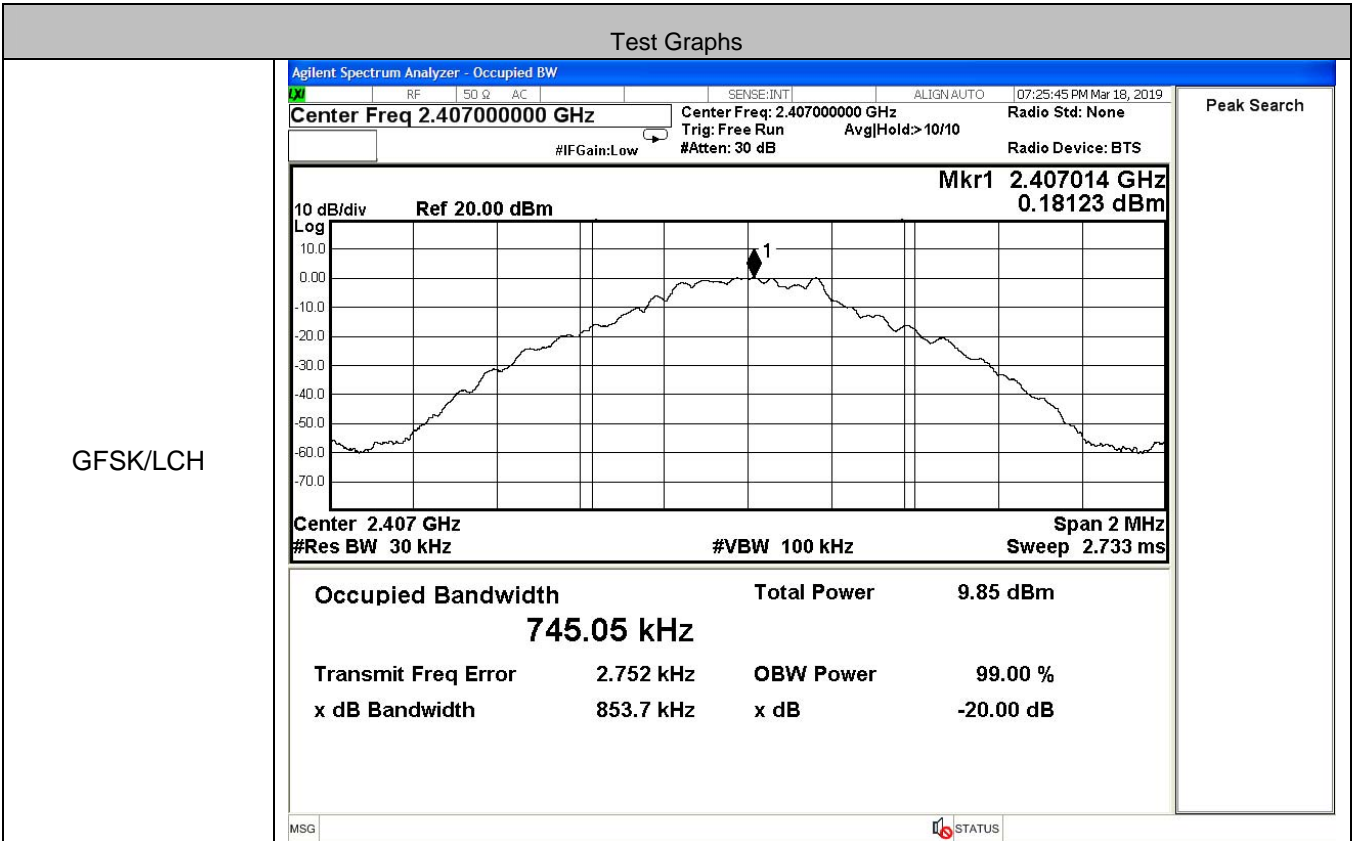
Test Graphs



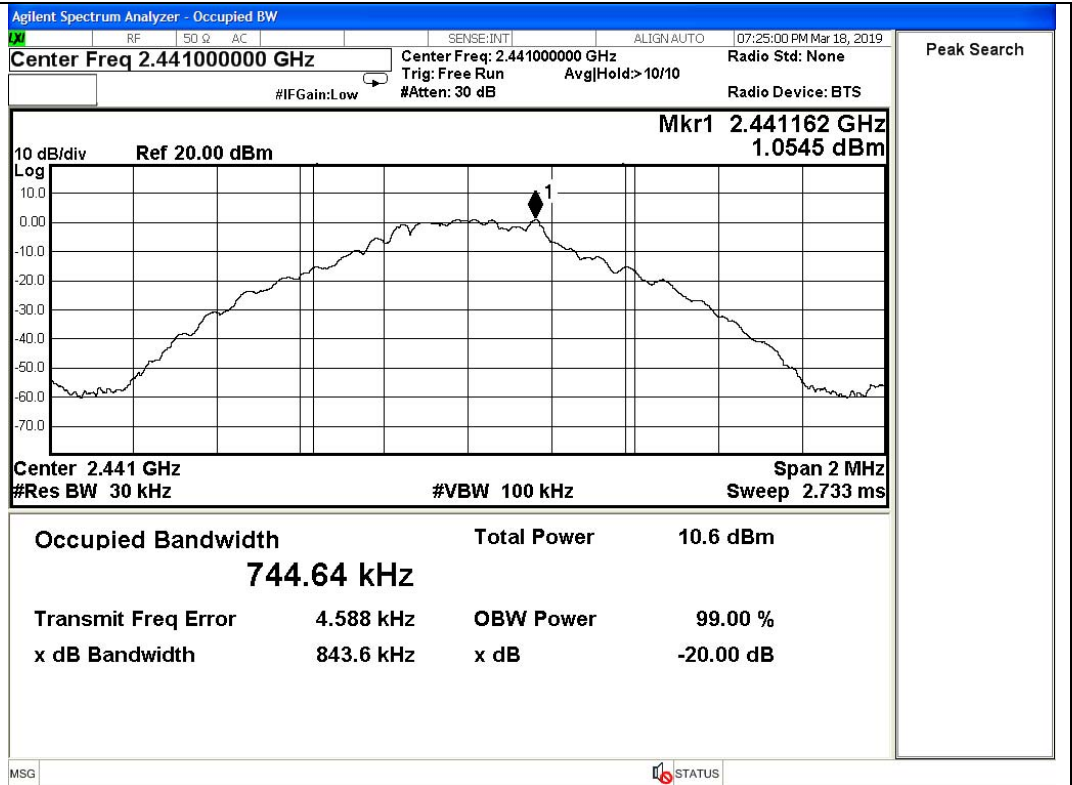


**A.2 99% and 20dB Bandwidth**

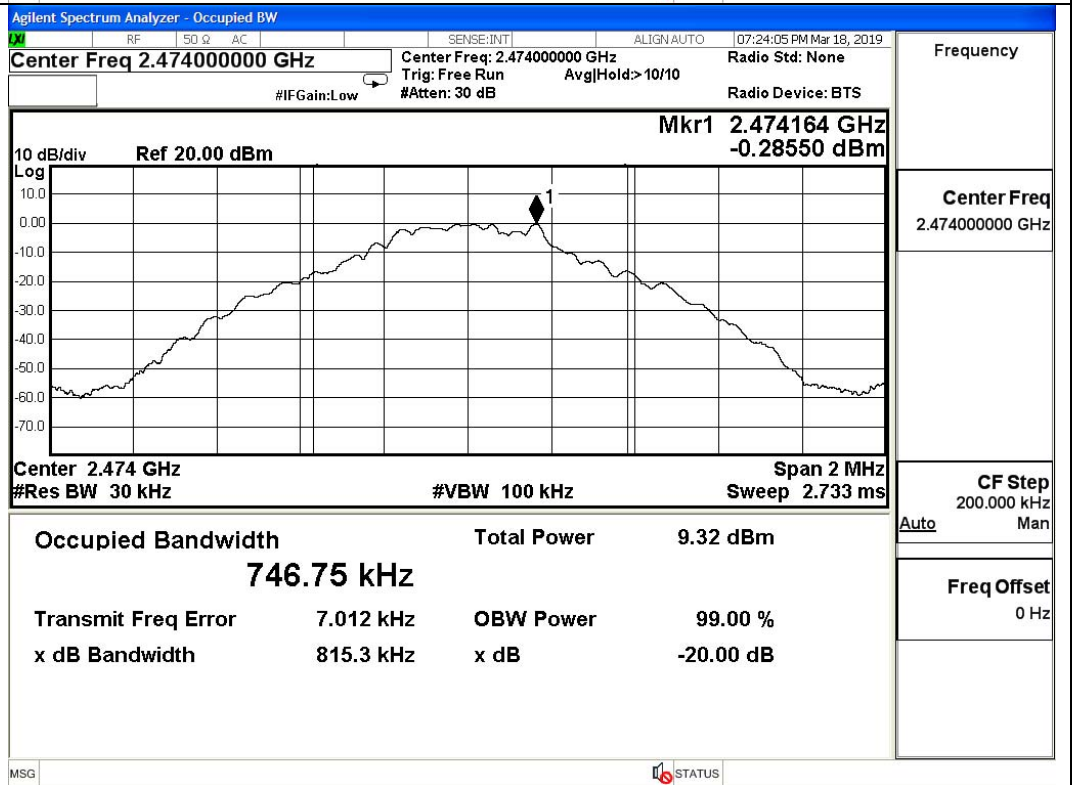
Mode	Channel.	20dB Bandwidth [MHz]	99% Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.8537	0.74505	Not Specified	PASS
	MCH	0.8436	0.74464	Not Specified	PASS
	HCH	0.8153	0.74675	Not Specified	PASS



GFSK/MCH

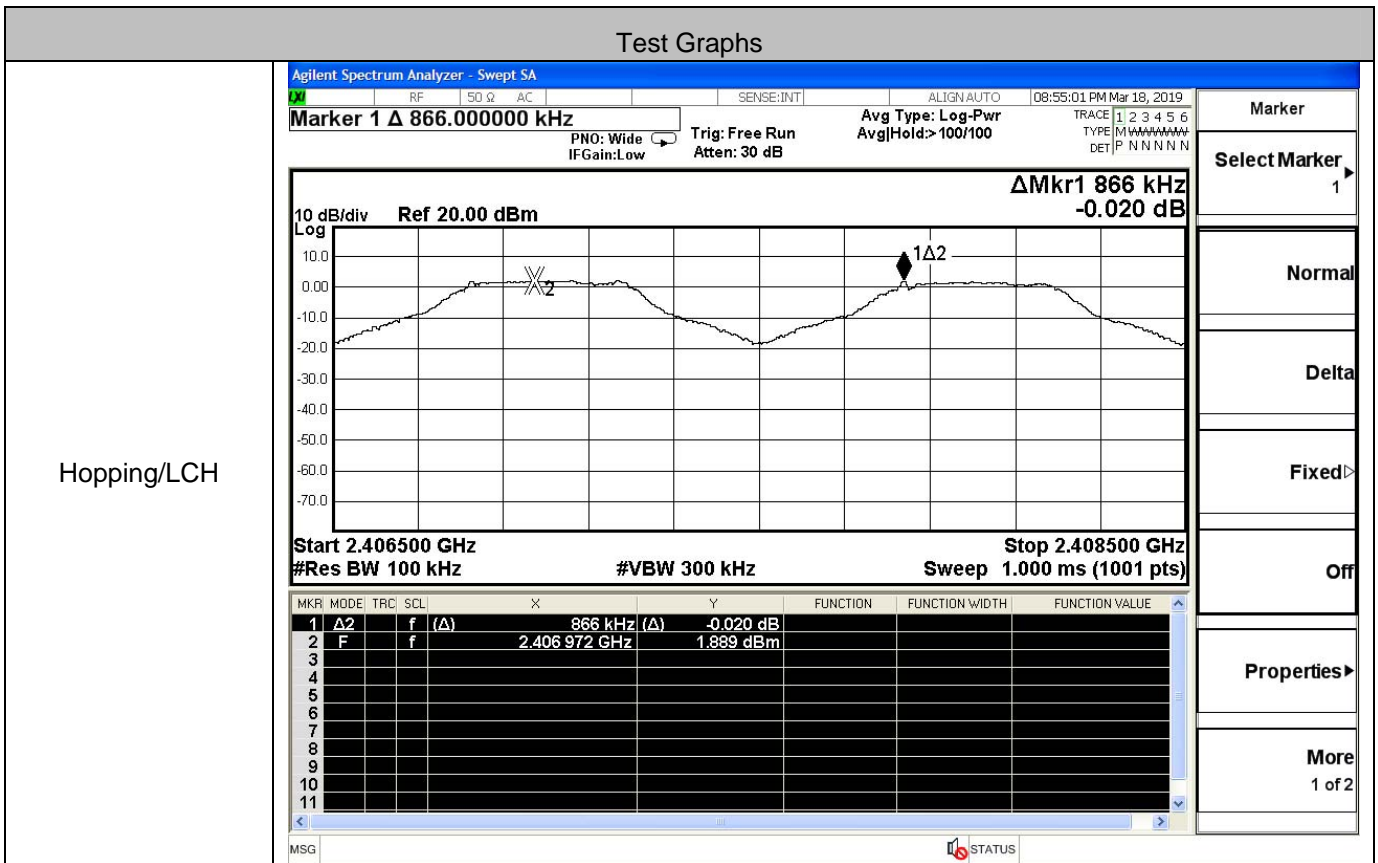


GFSK/HCH

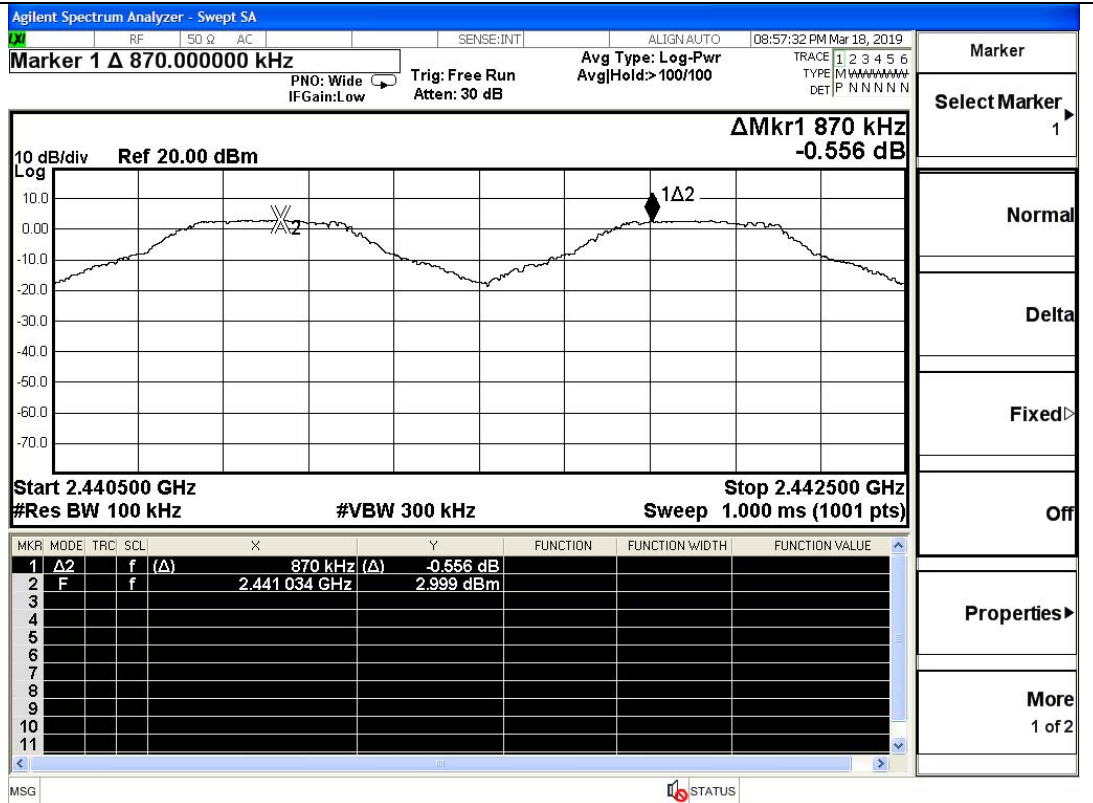


### A.3 Carrier Frequency Separation

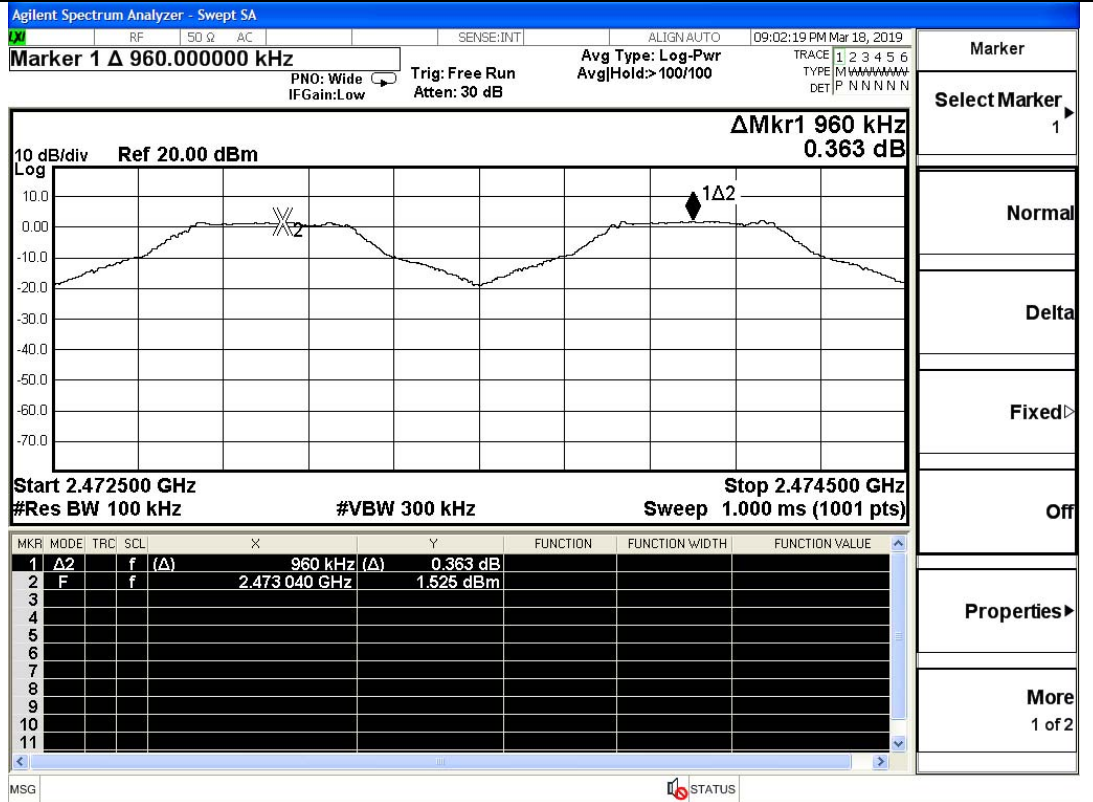
Mode	Channel	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1	0.8537	PASS
	MCH	1	0.8436	PASS
	HCH	1	0.8153	PASS



Hopping/MCH

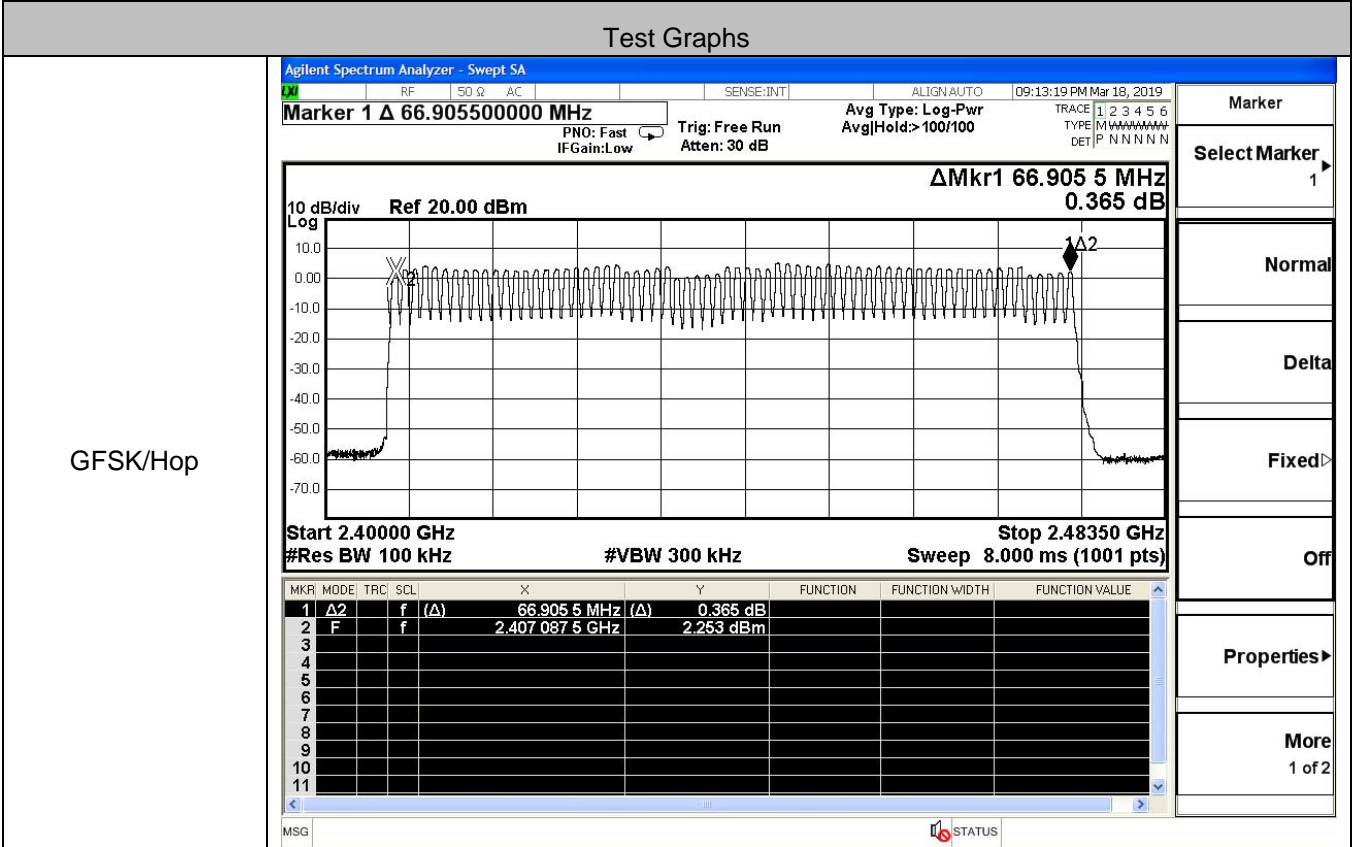


Hopping/HCH



### A.4 Hopping Channel Number

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





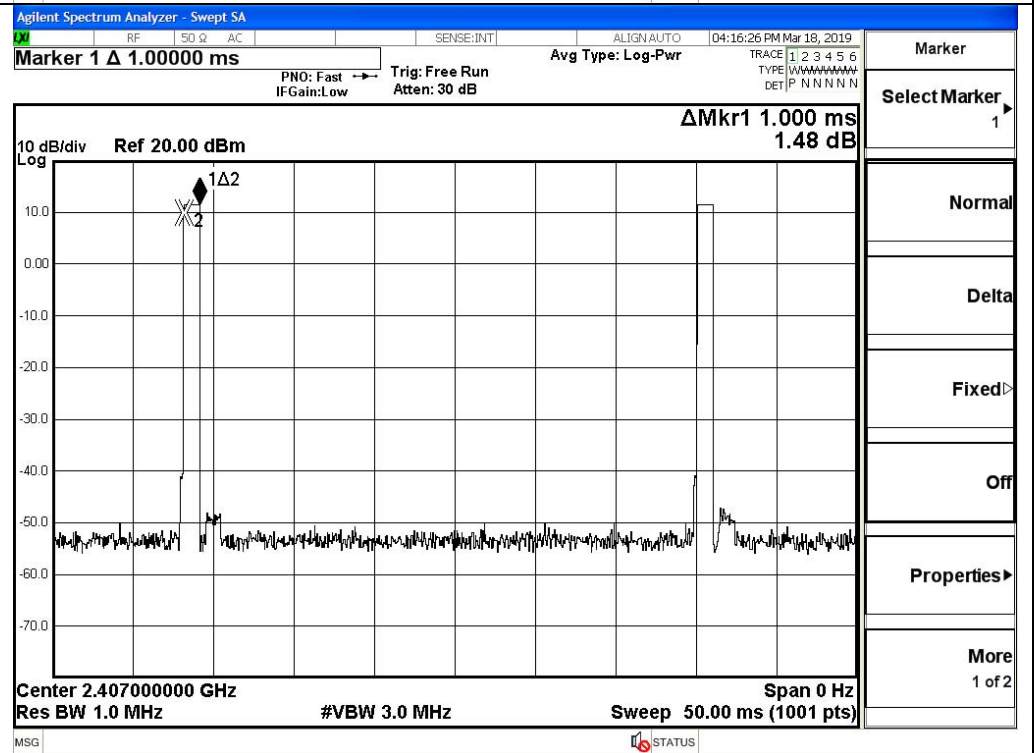
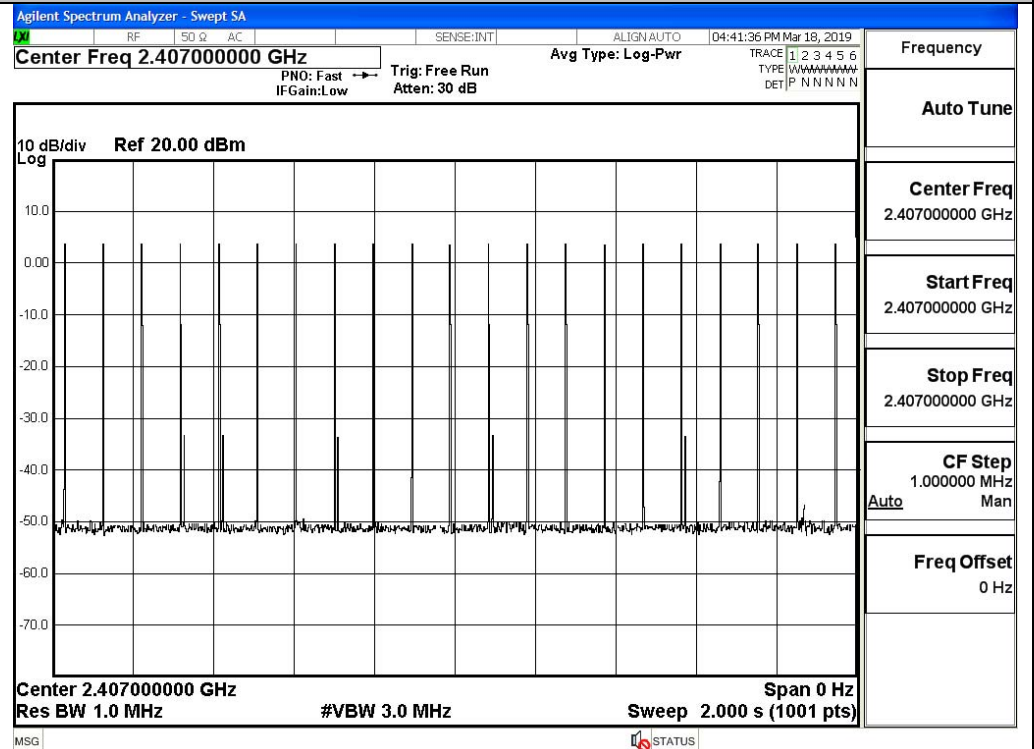
**A.5 Dwell Time**

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

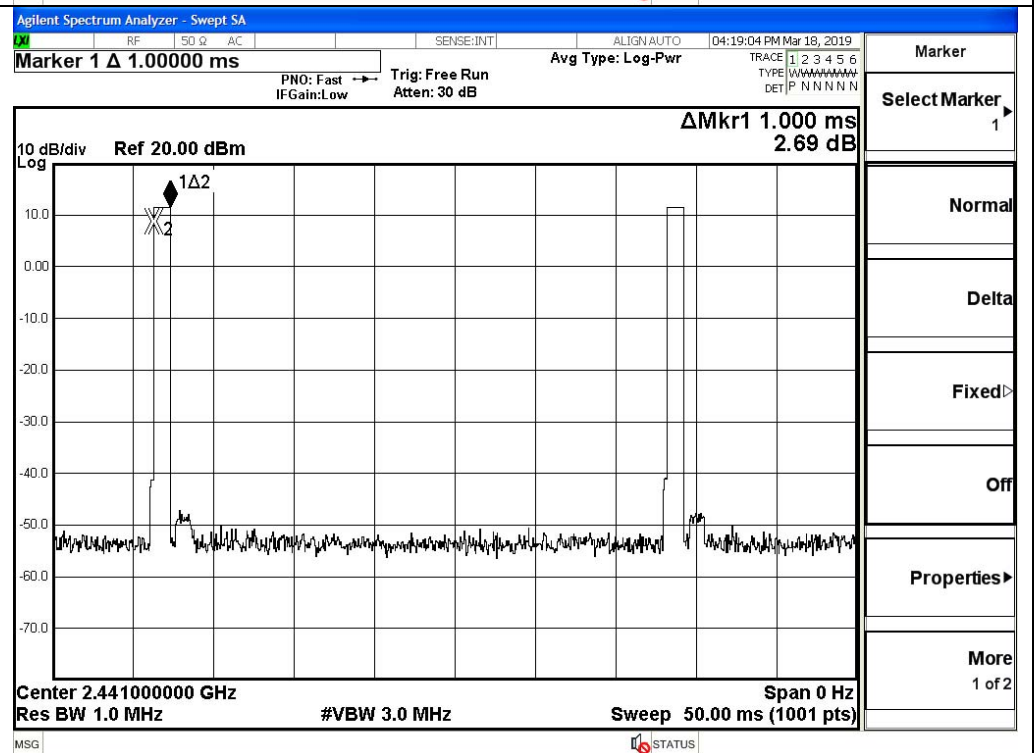
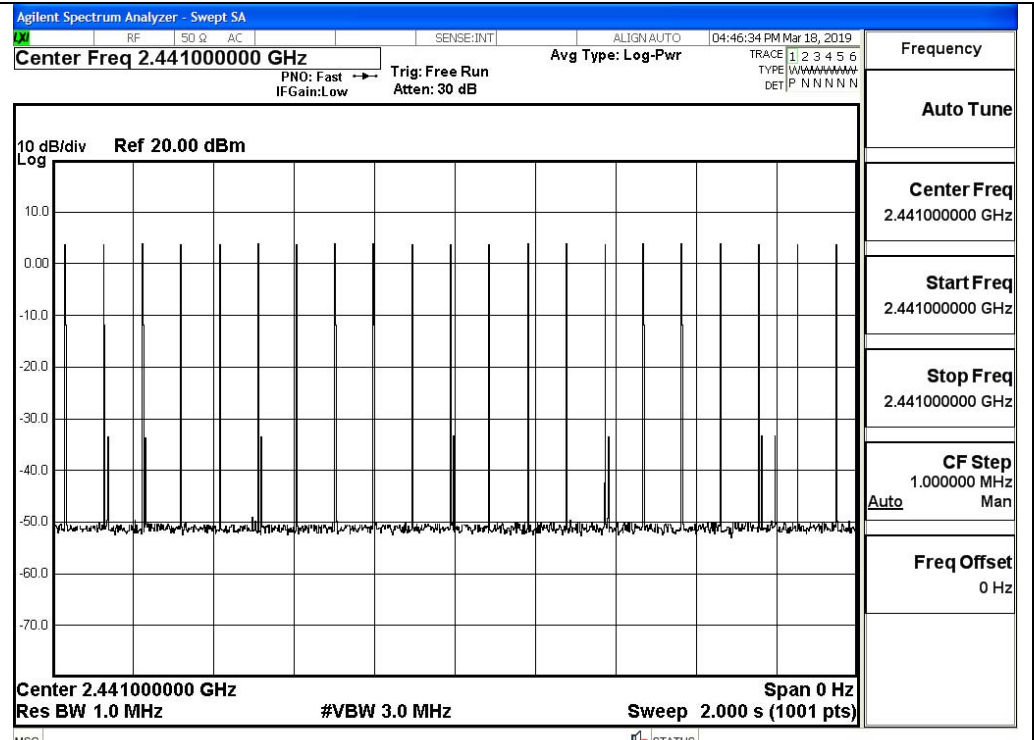
**Dwell Time= Burst Width\* Burst number**

Test Graphs

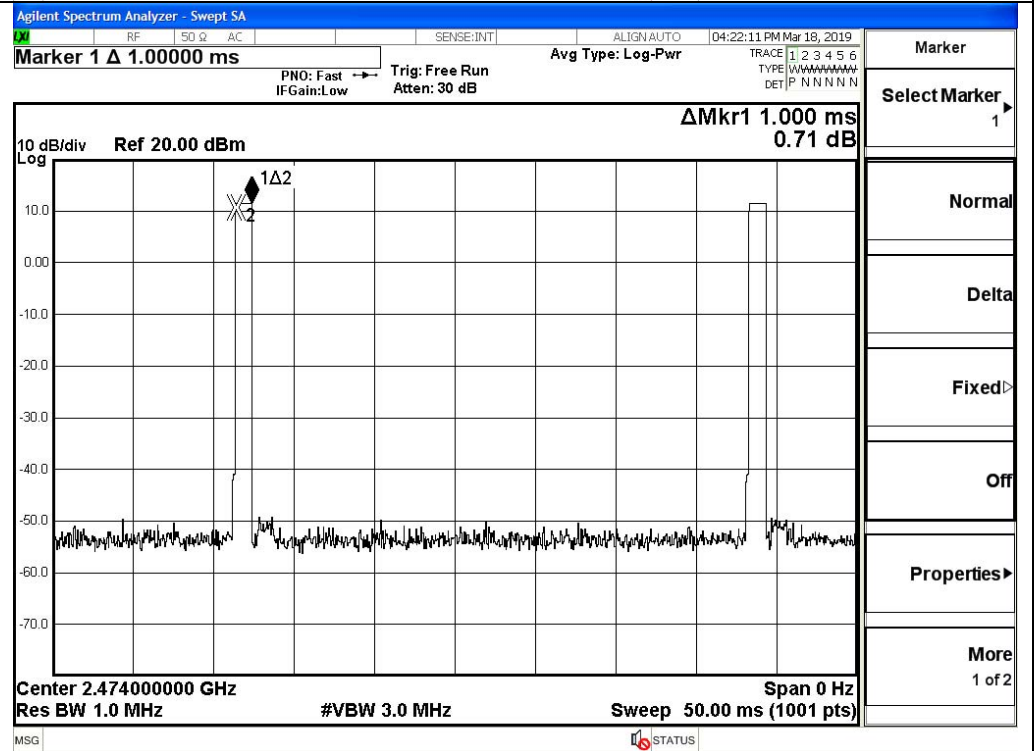
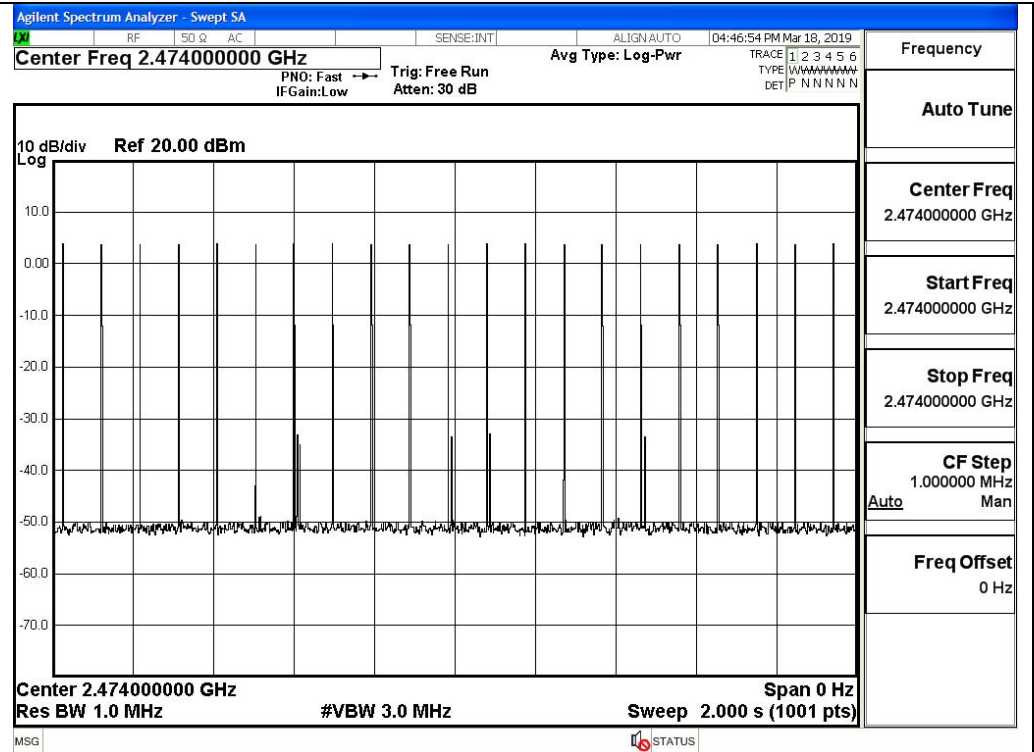
GFSK / LCH



GFSK / MCH



GFSK / HCH

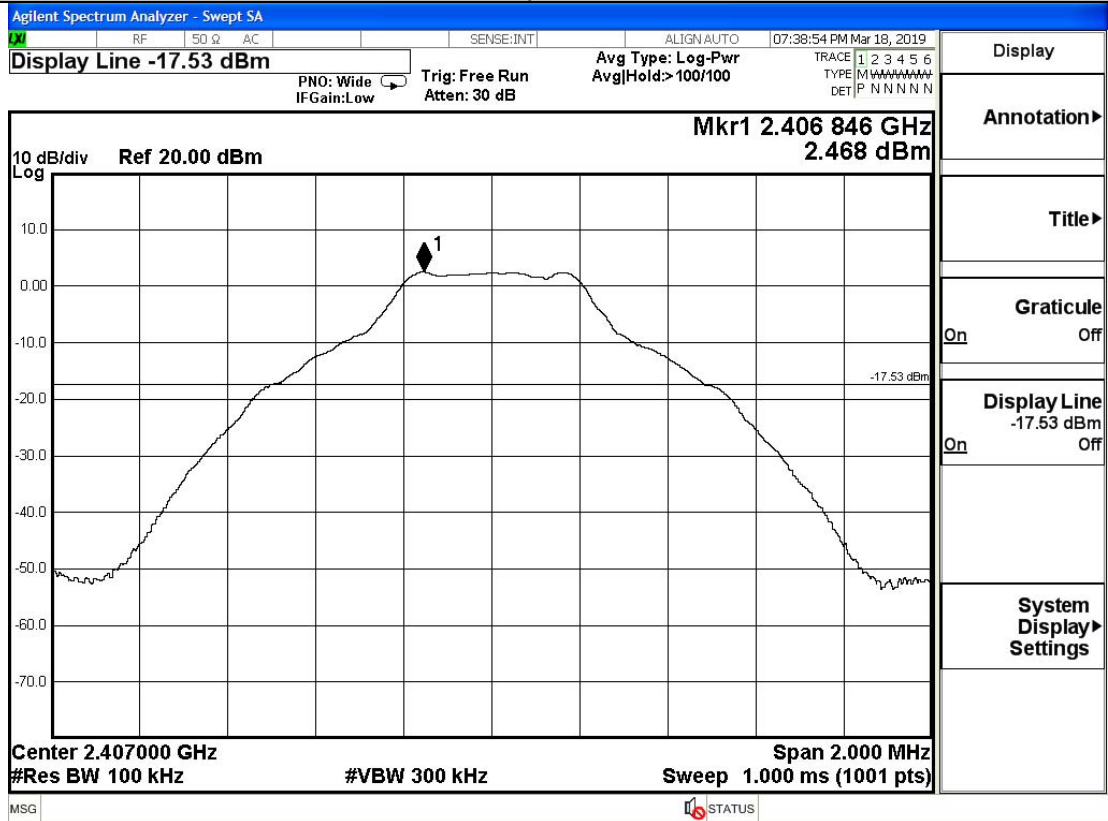


### A.6 RF Conducted Spurious Emissions

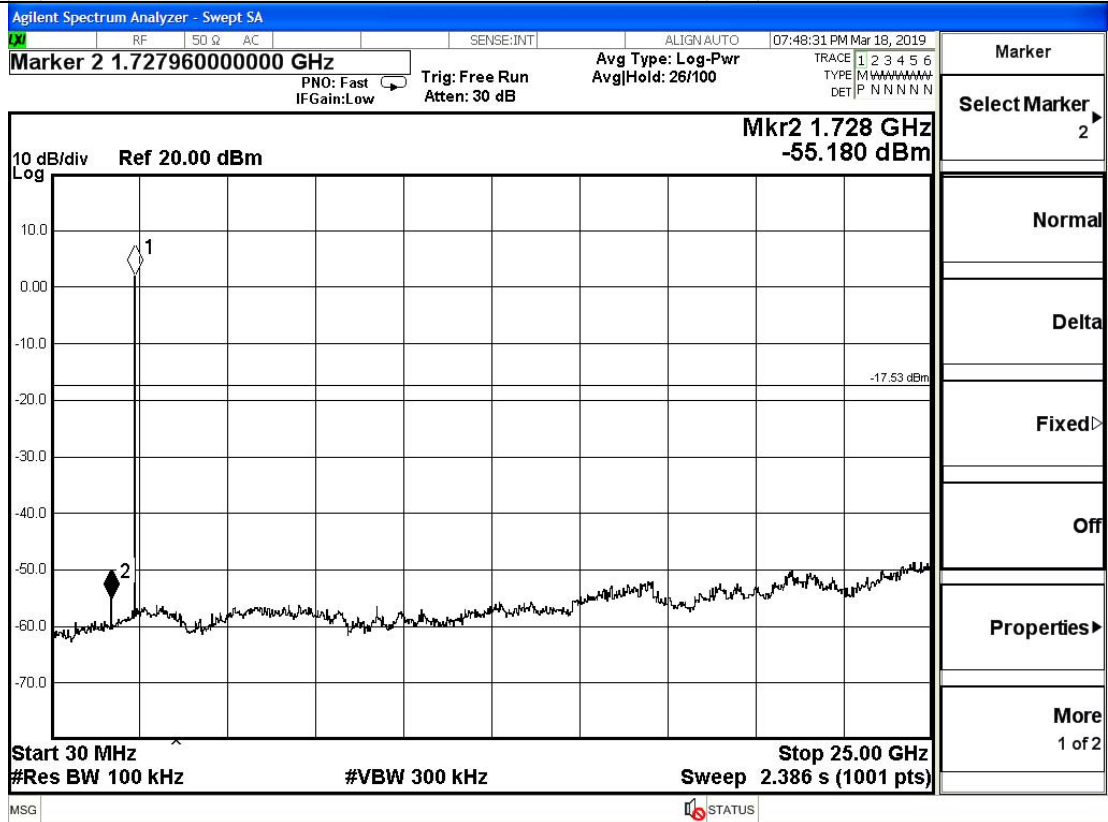
Mode	Channel	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-55.180	-17.53	PASS
	MCH	-49.889	-16.59	PASS
	HCH	-45.090	-17.89	PASS

GFSK\_LCH\_Graphs

Pref

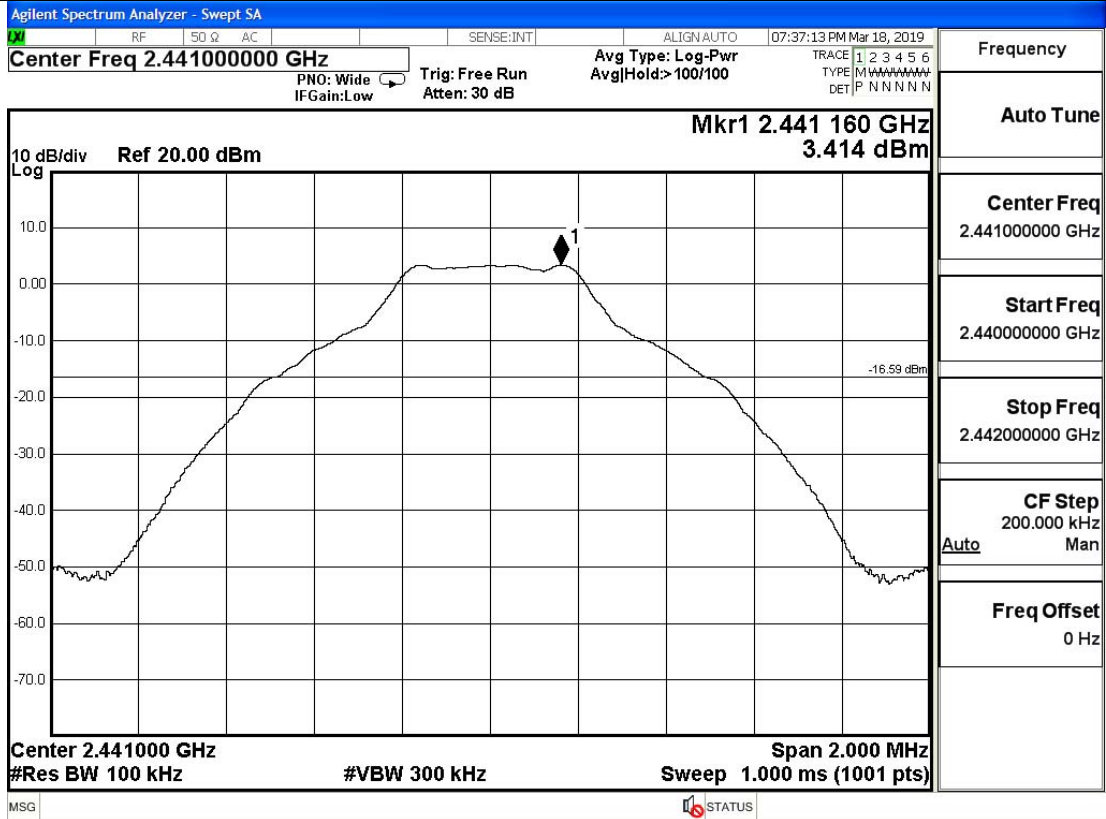


Puw



GFSK\_MCH\_Graphs

Pref

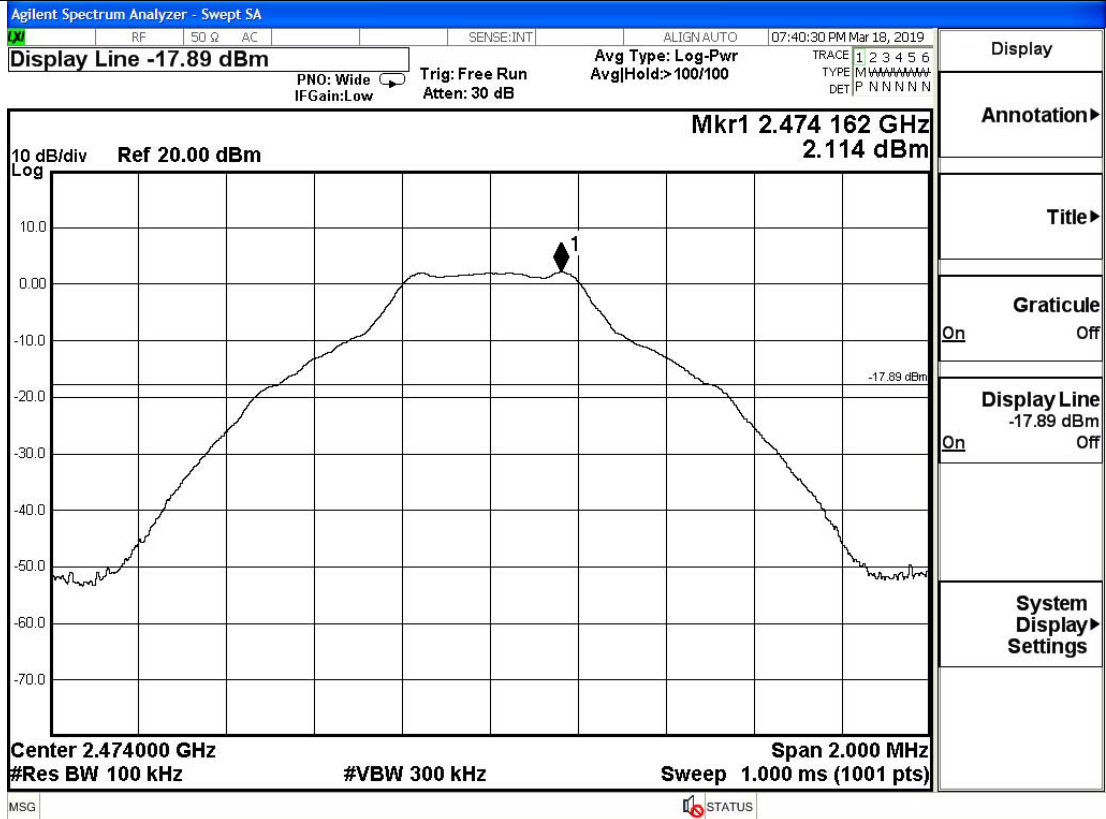


Puw



GFSK\_HCH\_Graphs

Pref



Puw



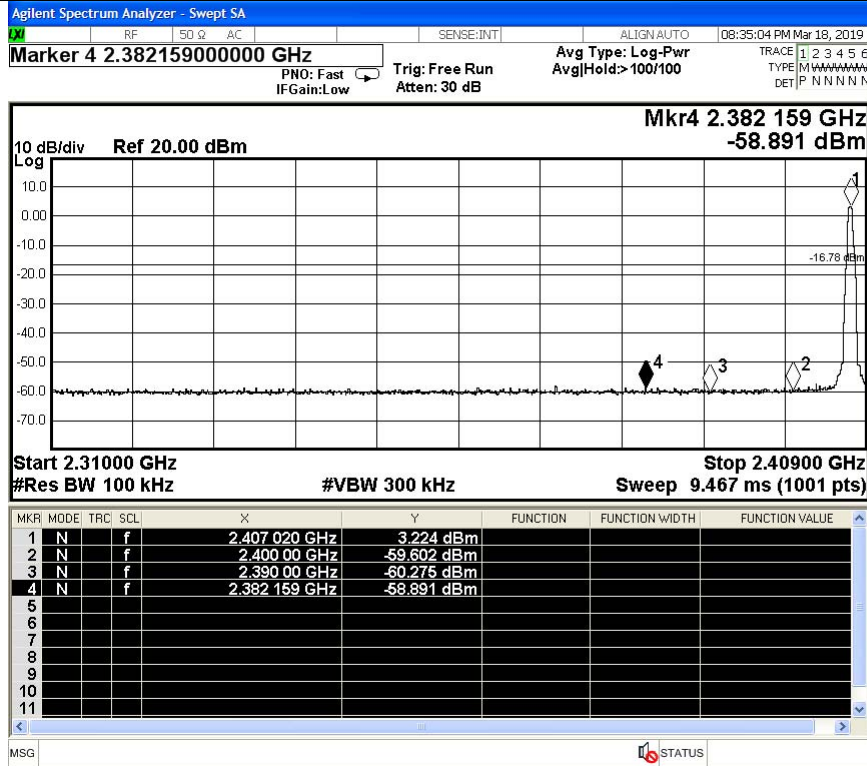


**A.7 Band-edge for RF Conducted Emissions**

Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2407	3.224	Off	-58.891	-16.78	PASS
			4.375	On	-58.587	-15.63	PASS
	HCH	2474	2.762	Off	-57.878	-17.24	PASS
			3.944	On	-57.693	-16.06	PASS

Test Graphs

GFSK/LCH/No Hop



Marker

Select Marker 4

Normal

Delta

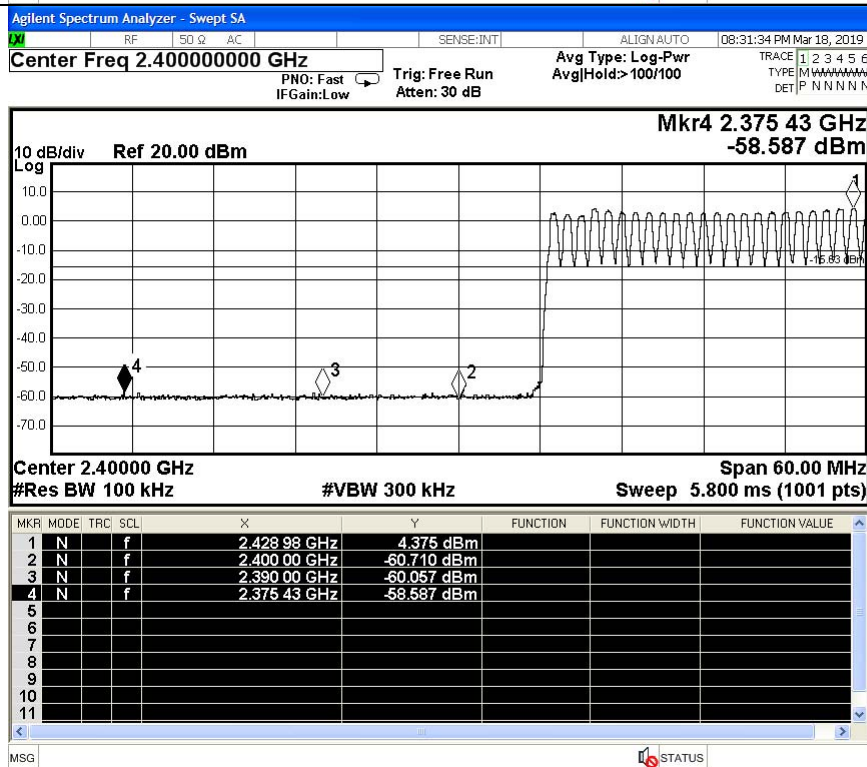
Fixed

Off

Properties

More 1 of 2

GFSK/LCH/Hop



Frequency

Auto Tune

Center Freq 2.40000000 GHz

Start Freq 2.37000000 GHz

Stop Freq 2.43000000 GHz

CF Step 6.000000 MHz

Auto Man

Freq Offset 0 Hz

GFSK/HCH/No Hop

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	f		2.474 016 GHz	2.762 dBm			
2	N	f		2.483 50 GHz	-59.607 dBm			
3	N	f		2.500 00 GHz	-59.830 dBm			
4	N	f		2.485 428 GHz	-57.878 dBm			

Marker

Select Marker 4

Normal

Delta

Fixed

Off

Properties

More 1 of 2

GFSK/HCH/Hop

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	f		2.455 00 GHz	3.944 dBm			
2	N	f		2.483 50 GHz	-60.085 dBm			
3	N	f		2.500 00 GHz	-60.178 dBm			
4	N	f		2.505 70 GHz	-57.693 dBm			

Frequency

Auto Tune

Center Freq 2.483500005 GHz

Start Freq 2.453500005 GHz

Stop Freq 2.513500005 GHz

CF Step 6.000000 MHz

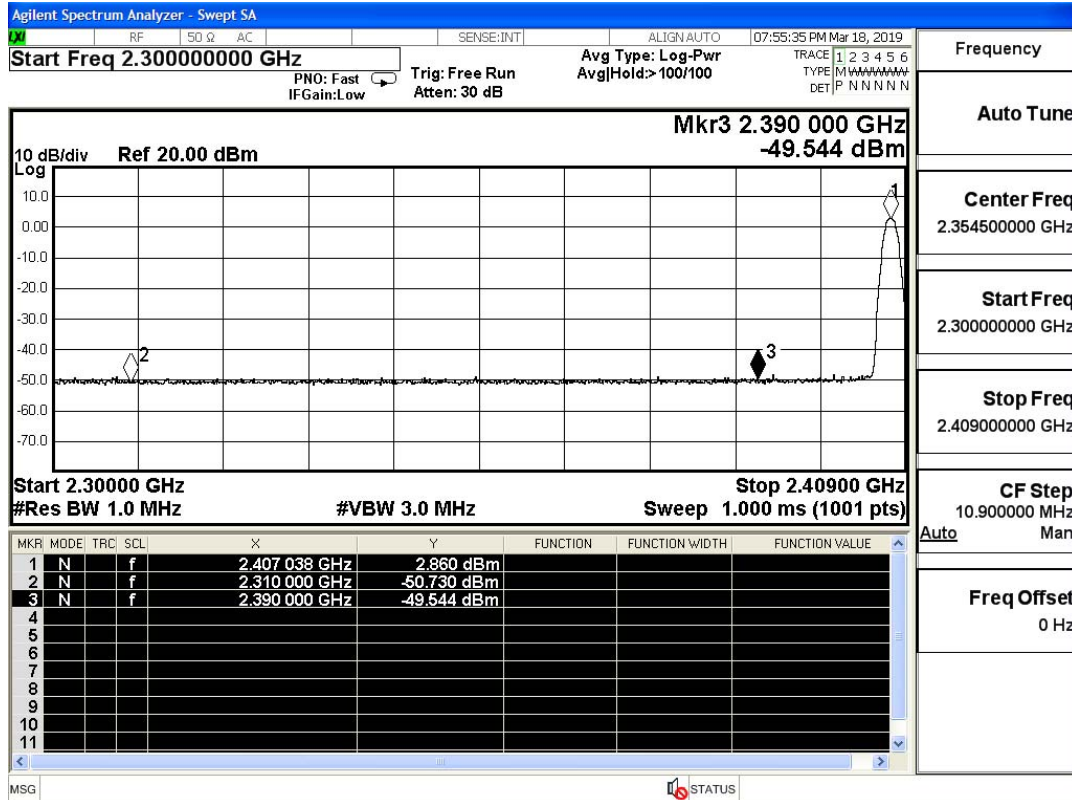
Auto Man

Freq Offset 0 Hz

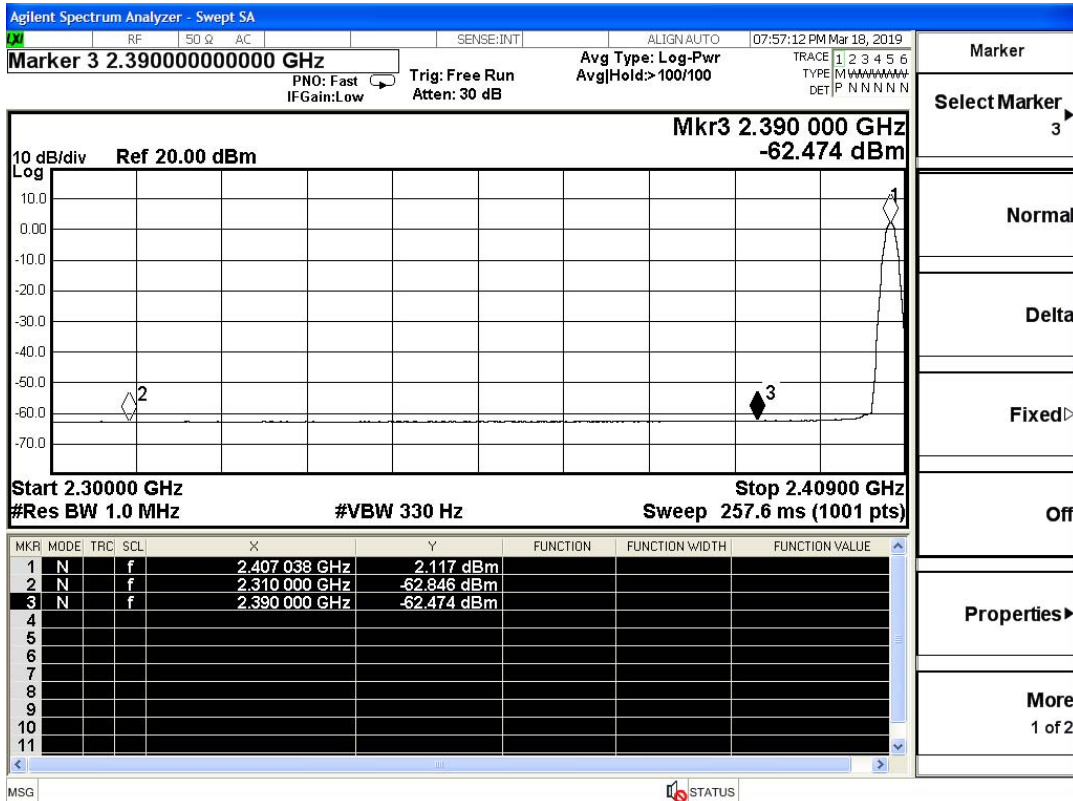
### A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-50.730	2.00	0	46.500	PEAK	74	PASS
	Off	2310.0	-62.846	2.00	0	34.384	AV	54	PASS
	Off	2390.0	-49.544	2.00	0	47.686	PEAK	74	PASS
	Off	2390.0	-62.474	2.00	0	34.756	AV	54	PASS
	Off	2483.5	-50.124	2.00	0	47.106	PEAK	74	PASS
	Off	2483.5	-62.042	2.00	0	35.188	AV	54	PASS
	Off	2500.0	-50.375	2.00	0	46.855	PEAK	74	PASS
	Off	2500.0	-62.442	2.00	0	34.788	AV	54	PASS

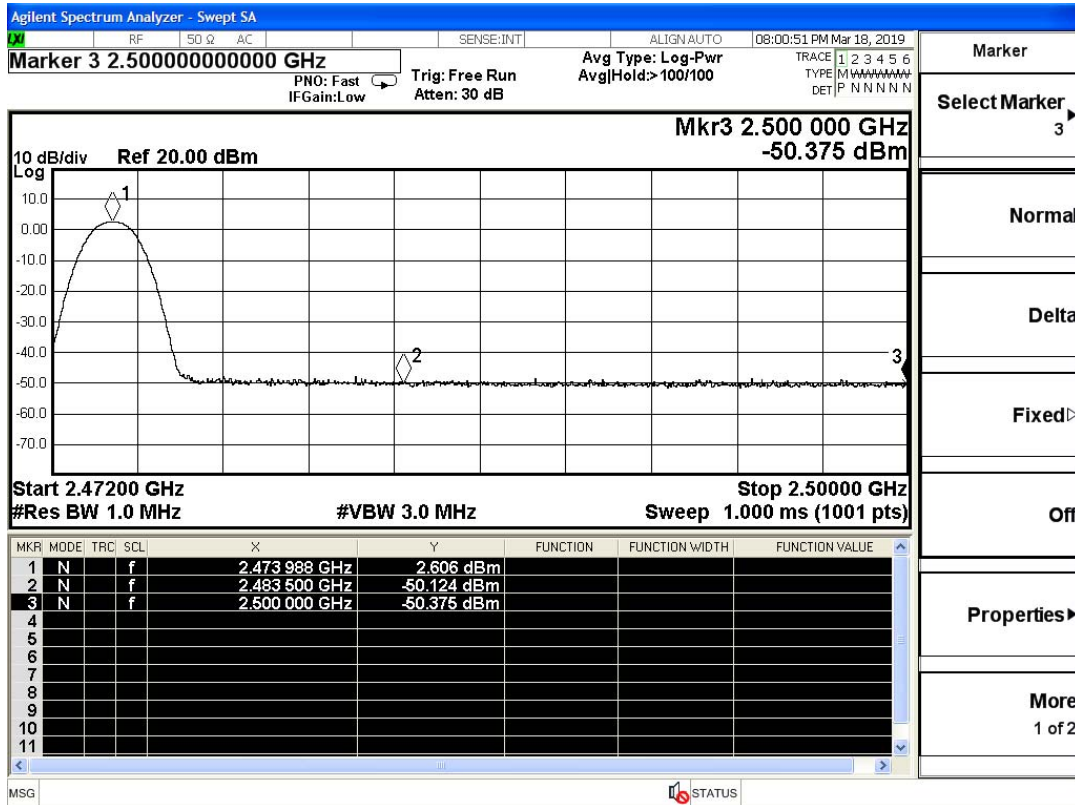
Restrict-band band-edge measurements\_Hopping Off\_GFSK\_PEAK (Low Channel)



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)

