Appendix A

RF Test Data (Conducted Measurement)

Product Name: 2.4 GHz Wireless Paddles

Trade Mark: N/A

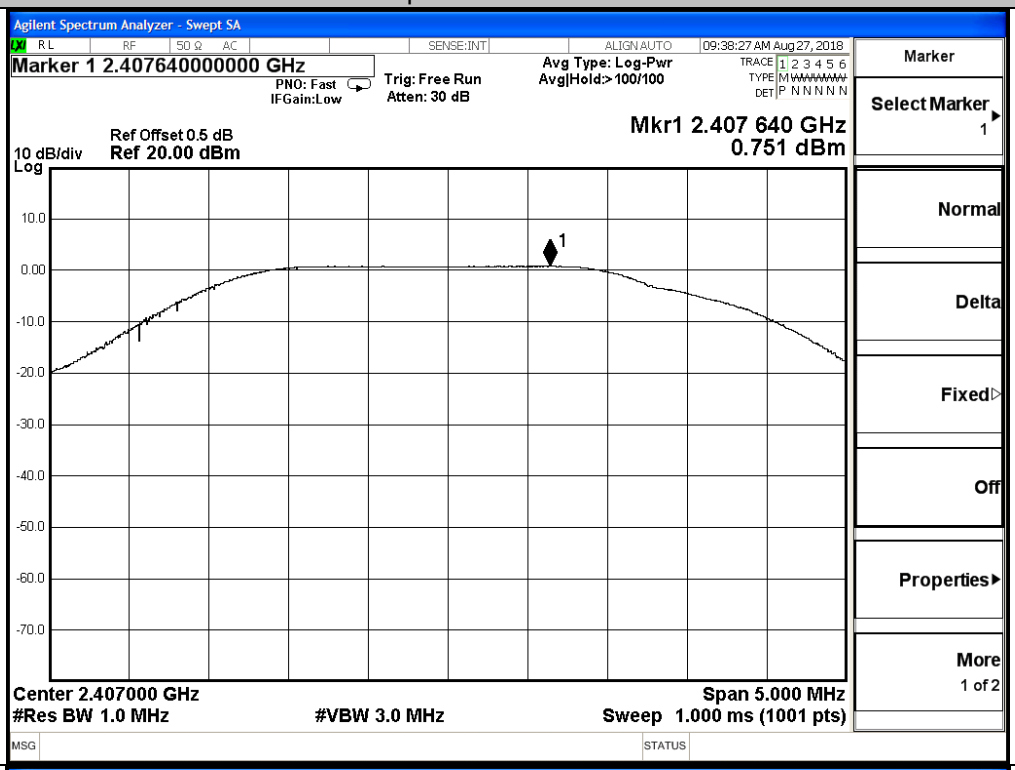
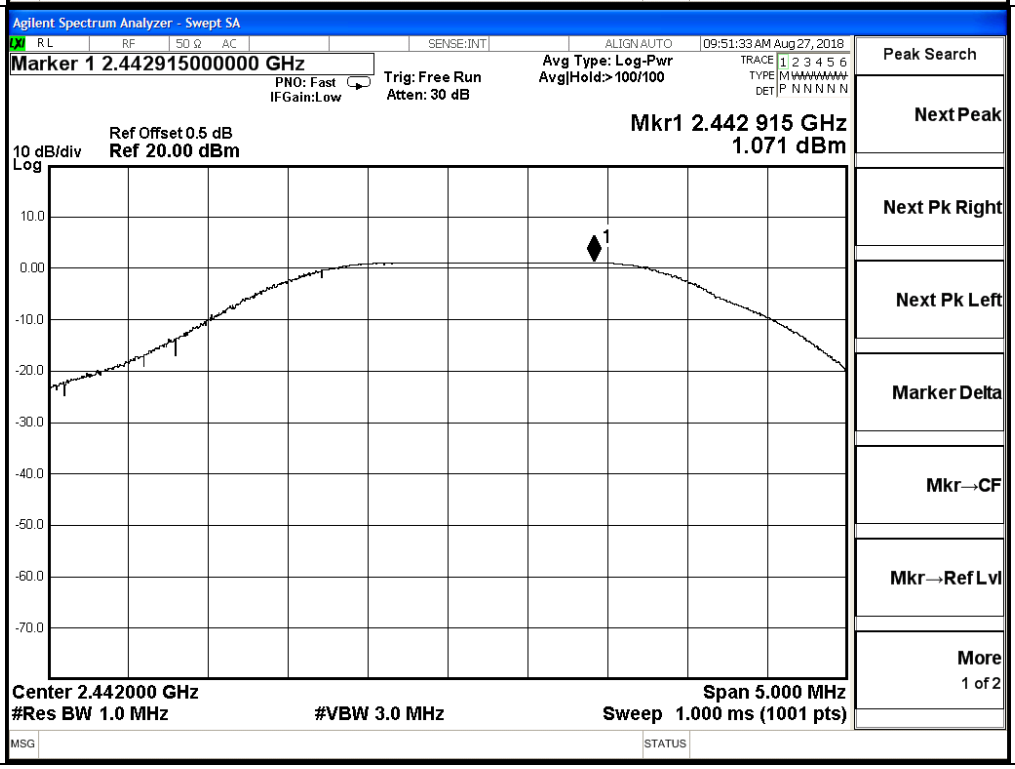
Test Model: ARC300

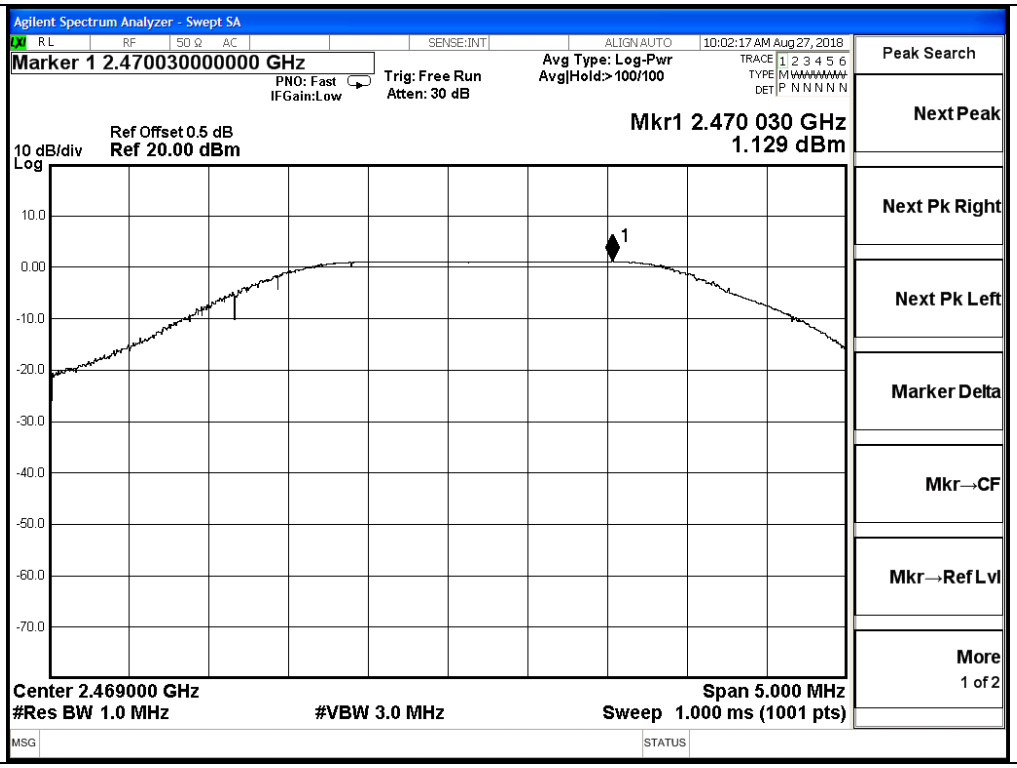
Environmental Conditions

Temperature:	22.6 °C
Relative Humidity:	53.6%
ATM Pressure:	100.0 kPa
Test Engineer:	Wilson Hong
Supervised by:	Jayden.Zhuo

A.1 Maximum Conducted Peak Output Power

Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	0.751	30	PASS
	MCH	1.071	30	PASS
	HCH	1.129	30	PASS

Test Graphs	
GFSK/LCH	
GFSK/MCH	

GFSK/HCH	

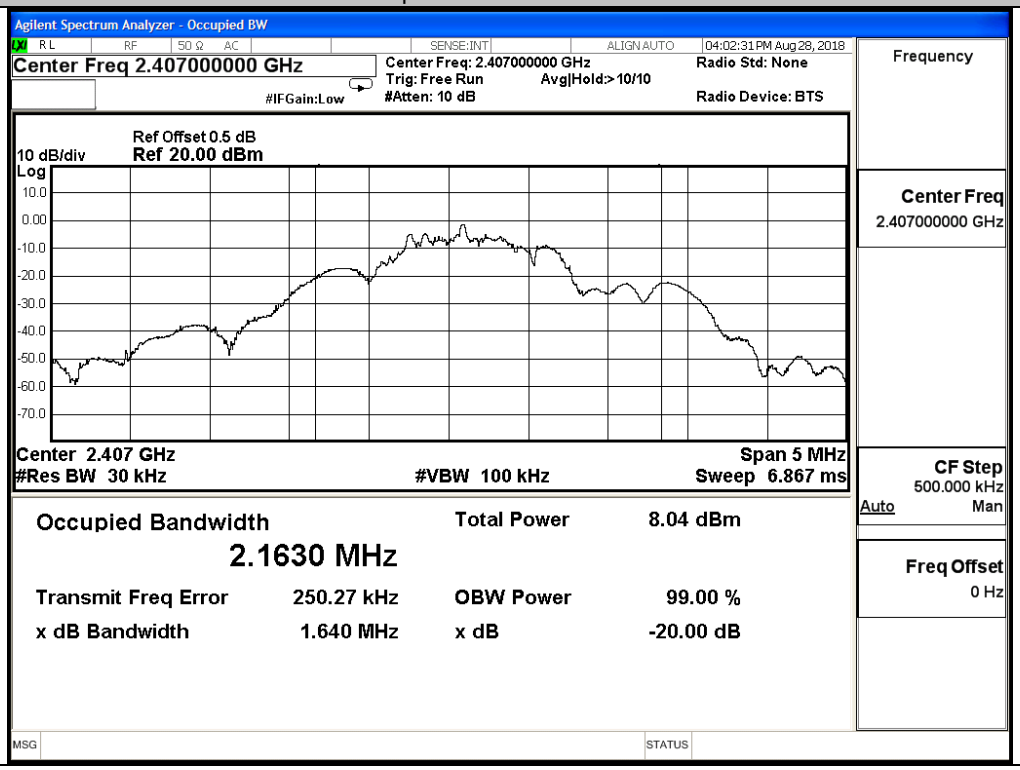
Agilent Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
10:02:17 AM Aug 27, 2018
Marker 1 2.470030000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 0.5 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 2.470 030 GHz
1.129 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
1
Center 2.469000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Span 5.000 MHz
Sweep 1.000 ms (1001 pts)
MSG
STATUS
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

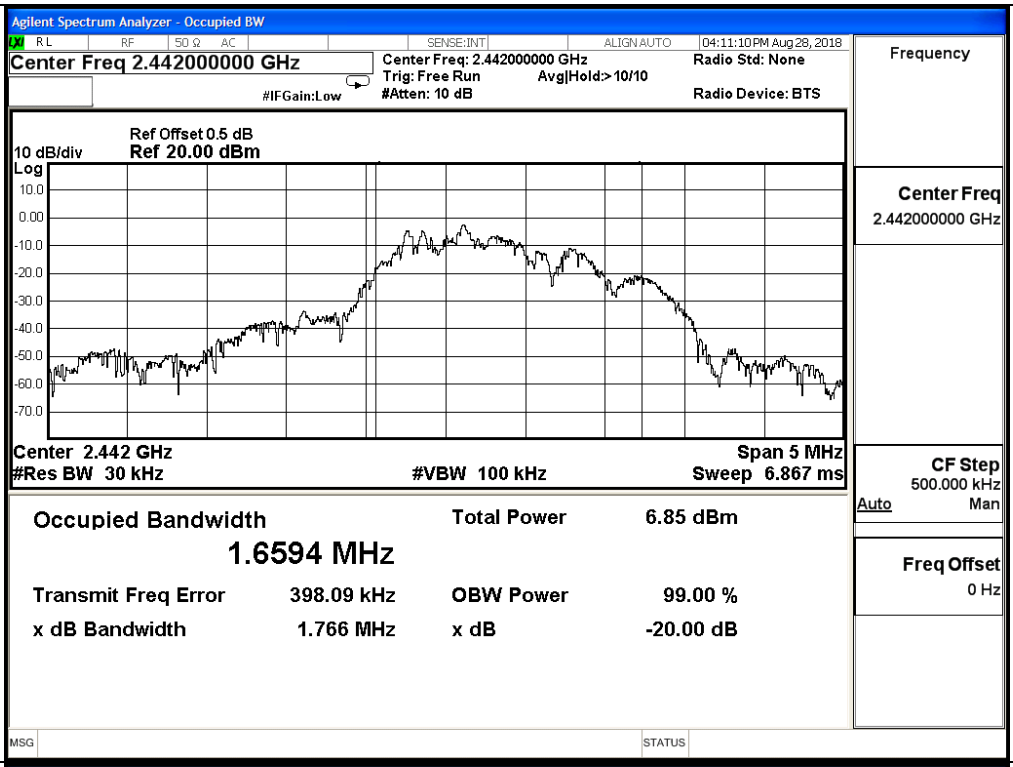
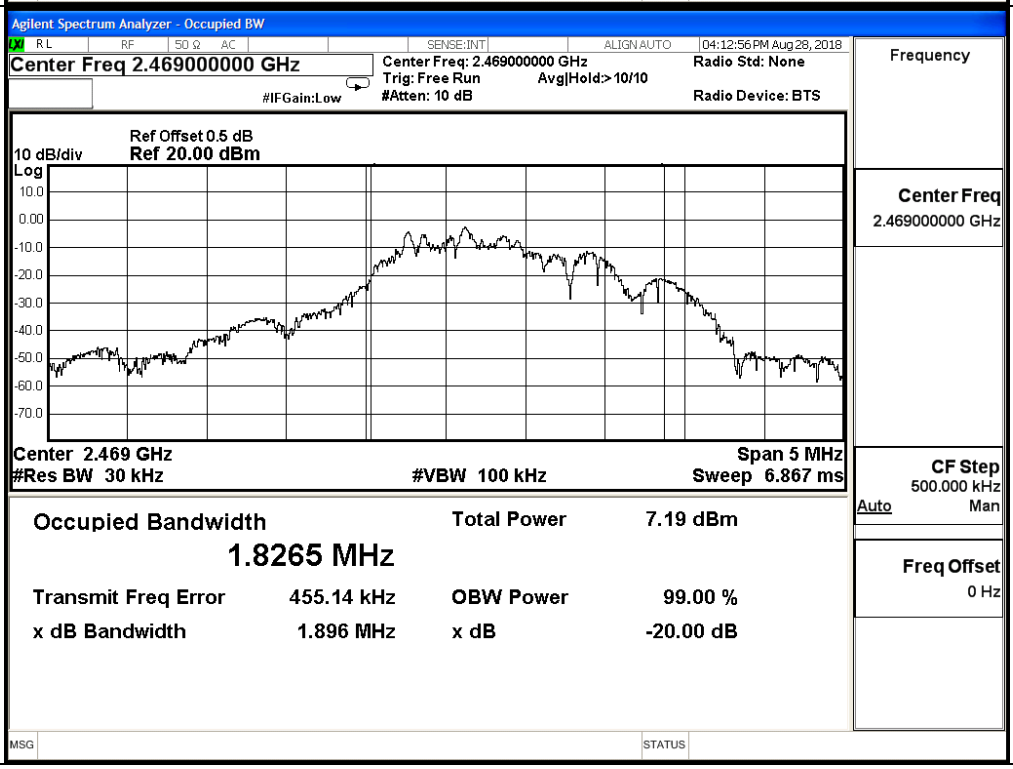
A.2 99% and 20dB Bandwidth

Mode	Channel.	20dB Bandwidth [MHz]	99% Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.640	2.1630	Not Specified	PASS
	MCH	1.766	1.6594	Not Specified	PASS
	HCH	1.896	1.8265	Not Specified	PASS

Test Graphs

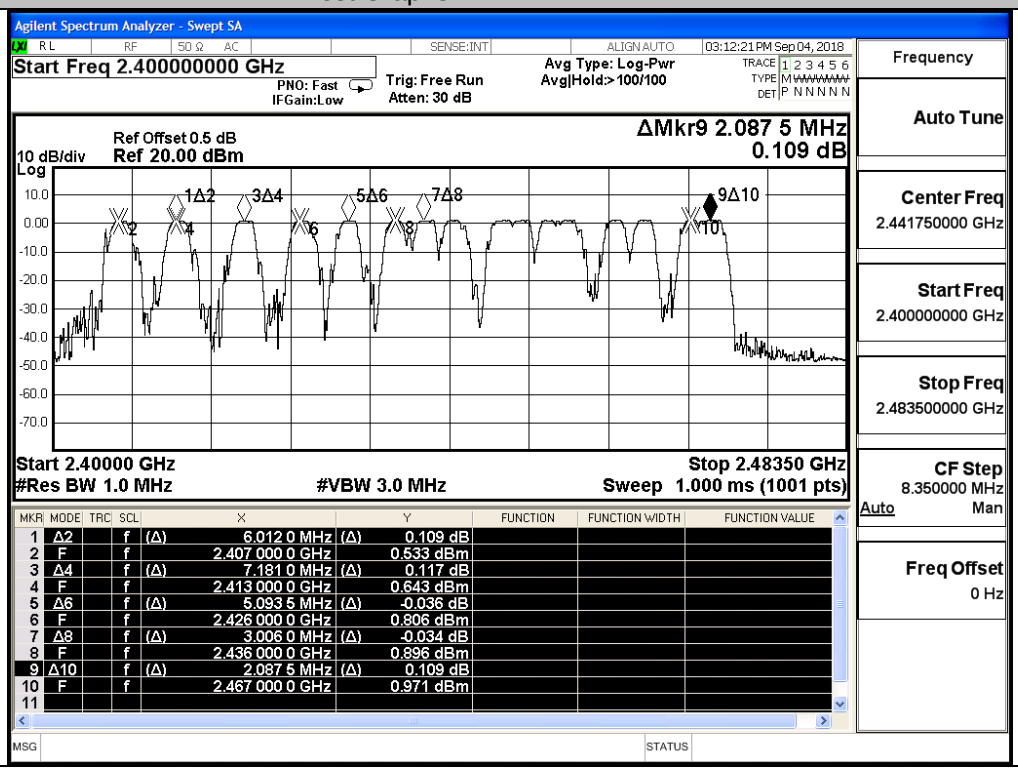
GFSK/LCH



GFSK/MCH	
GFSK/HCH	

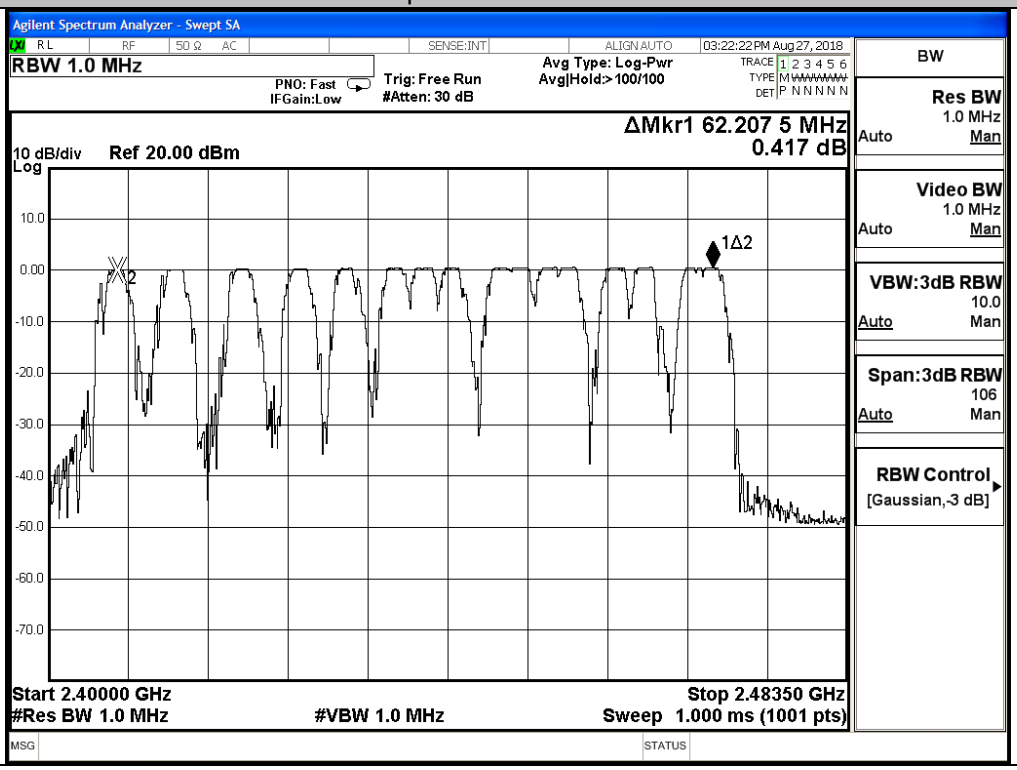
A.3 Carrier Frequency Separation

Mode	Channel Bandwidth [MHz]	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	7	7.181	1.896	PASS
	6	6.012	1.896	PASS
	5	5.094	1.896	PASS
	3	3.006	1.896	PASS
	2	2.088	1.896	PASS

Test Graphs	
Hopping	

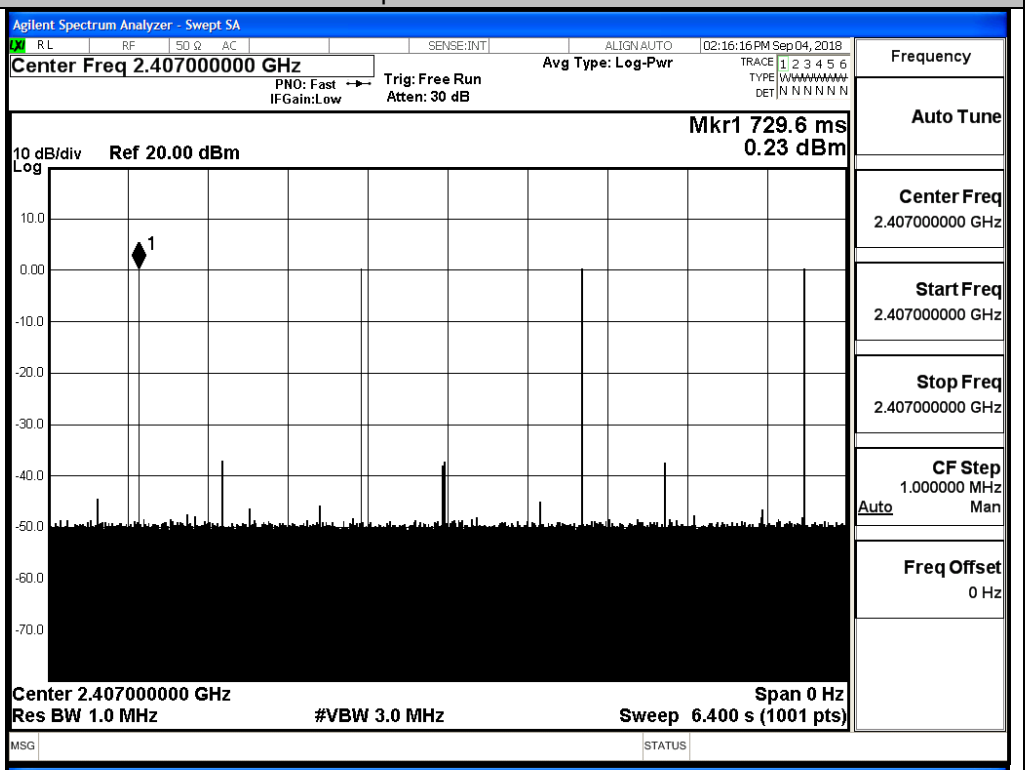
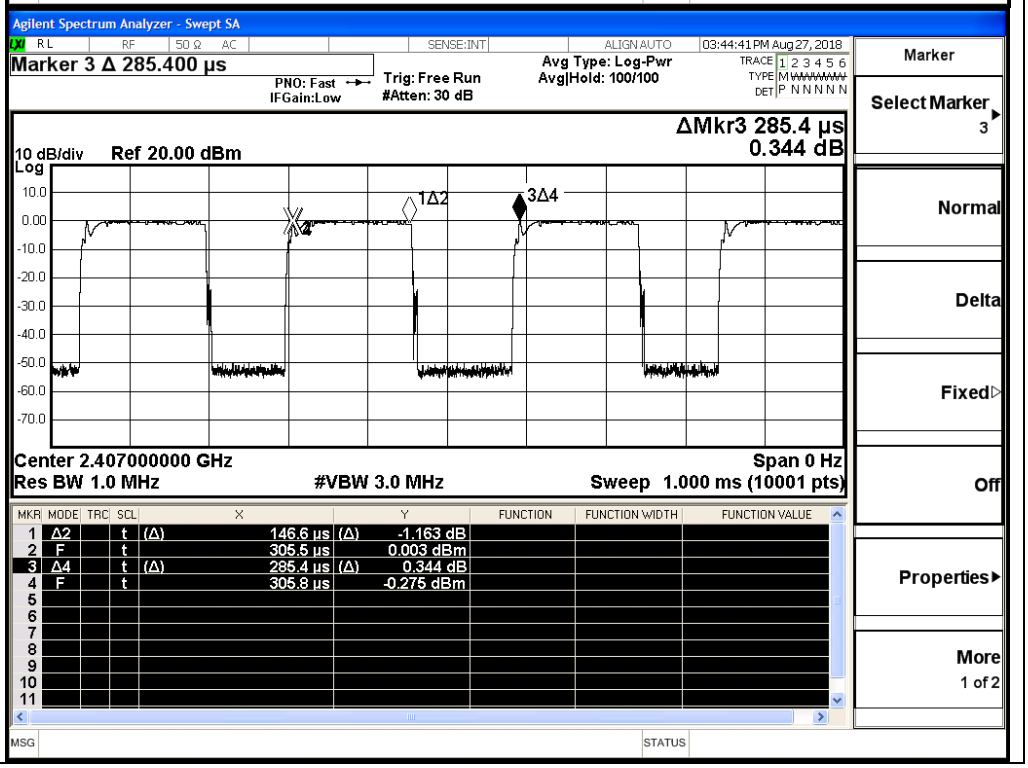
A.4 Hopping Channel Number

Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	16	>=15	PASS

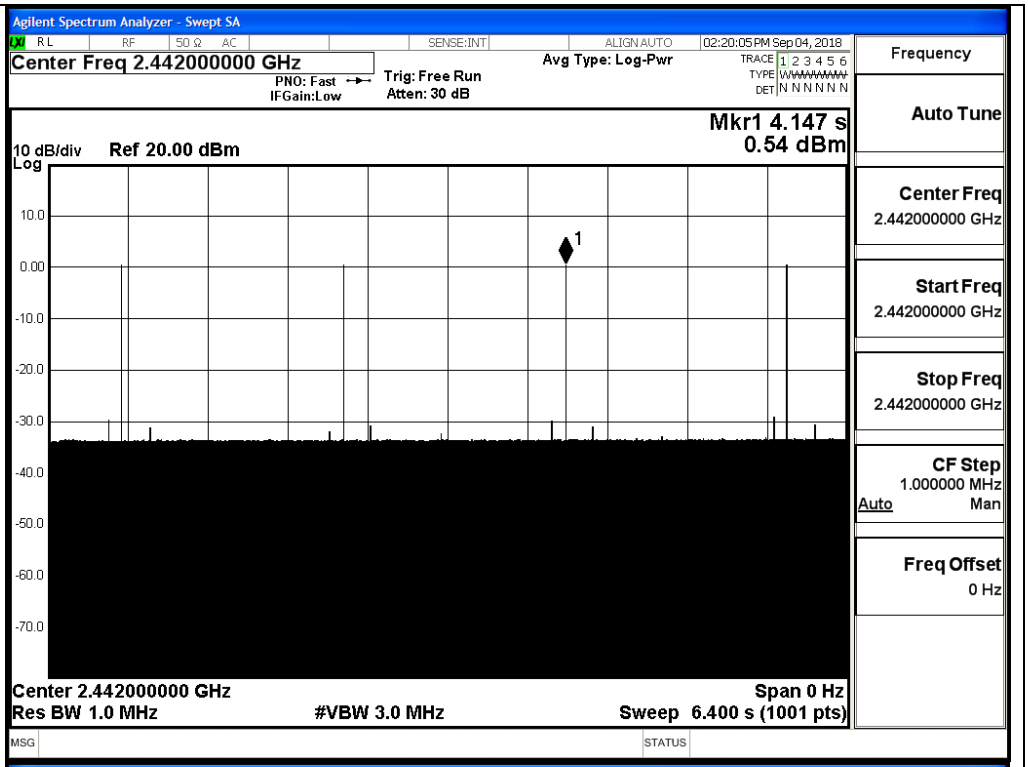
Test Graphs	
GFSK/Hop	

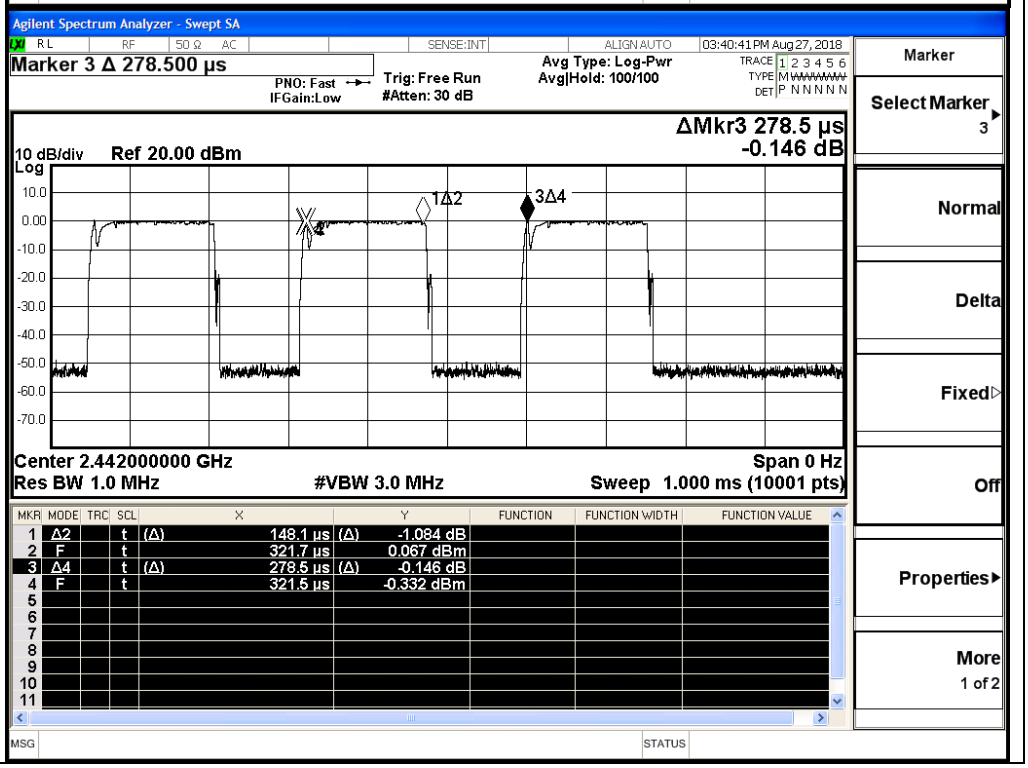
A.5 Dwell Time

Mode	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	LCH	0.146	4	0.001	0.4	PASS
	MCH	0.148	4	0.001	0.4	PASS
	HCH	0.148	4	0.001	0.4	PASS

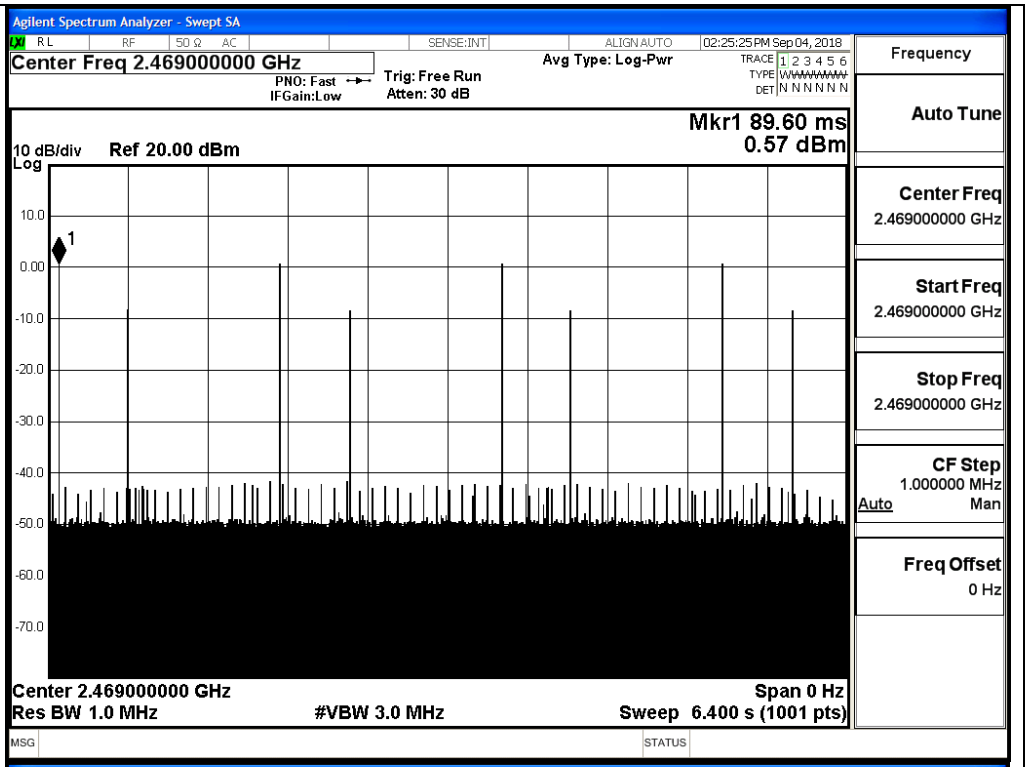
Test Graphs	
GFSK /LCH	 

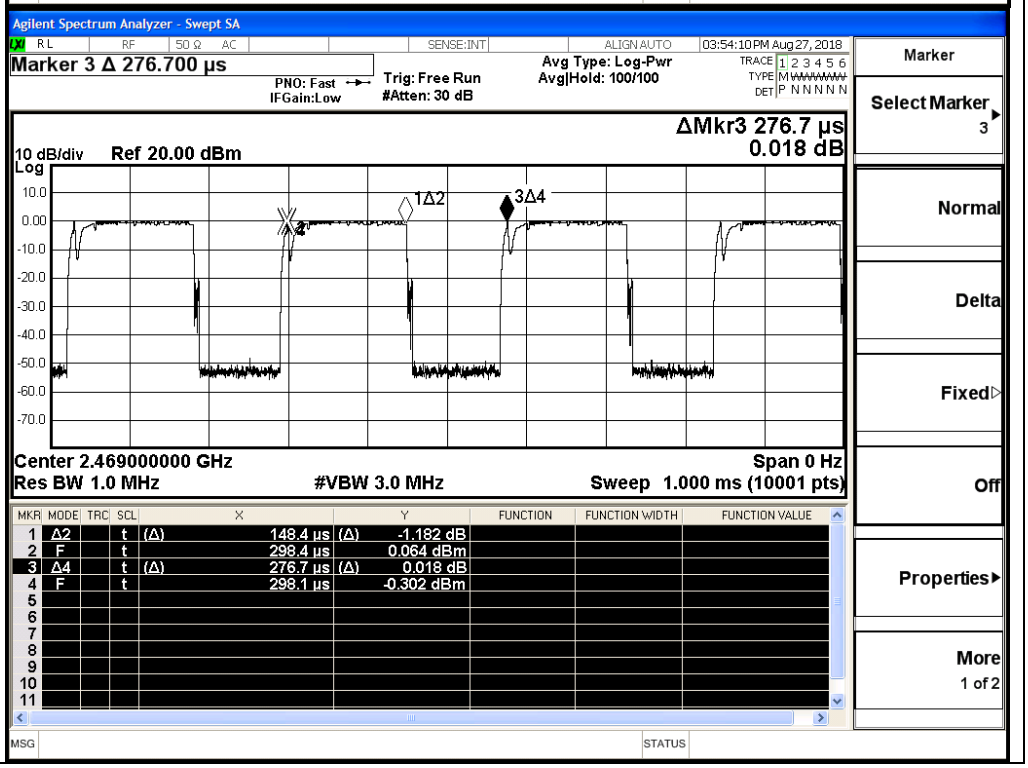
GFSK /MCH


Agilent Spectrum Analyzer - Swept SA
Center Freq 2.442000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
02:20:05 PM Sep 04, 2018
Mkr1 4.147 s
0.54 dBm
10 dB/div
Log
Ref 20.00 dBm
Center 2.442000000 GHz
Res BW 1.0 MHz
#VBW 3.0 MHz
Span 0 Hz
Sweep 6.400 s (1001 pts)
Frequency
Auto Tune
Center Freq
2.442000000 GHz
Start Freq
2.442000000 GHz
Stop Freq
2.442000000 GHz
CF Step
1.000000 MHz
Auto
Man
Freq Offset
0 Hz


Agilent Spectrum Analyzer - Swept SA
Marker 3 Δ 278.500 µs
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 100/100
03:40:41 PM Aug 27, 2018
ΔMkr3 278.5 µs
-0.146 dB
10 dB/div
Log
Ref 20.00 dBm
Center 2.442000000 GHz
Res BW 1.0 MHz
#VBW 3.0 MHz
Span 0 Hz
Sweep 1.000 ms (10001 pts)
1 Δ2 148.1 µs -1.084 dB
2 F 321.7 µs 0.067 dBm
3 Δ4 278.5 µs -0.146 dB
4 F 321.5 µs -0.332 dBm
Marker
Select Marker
3
Normal
Delta
Fixed
Off
Properties
More
1 of 2

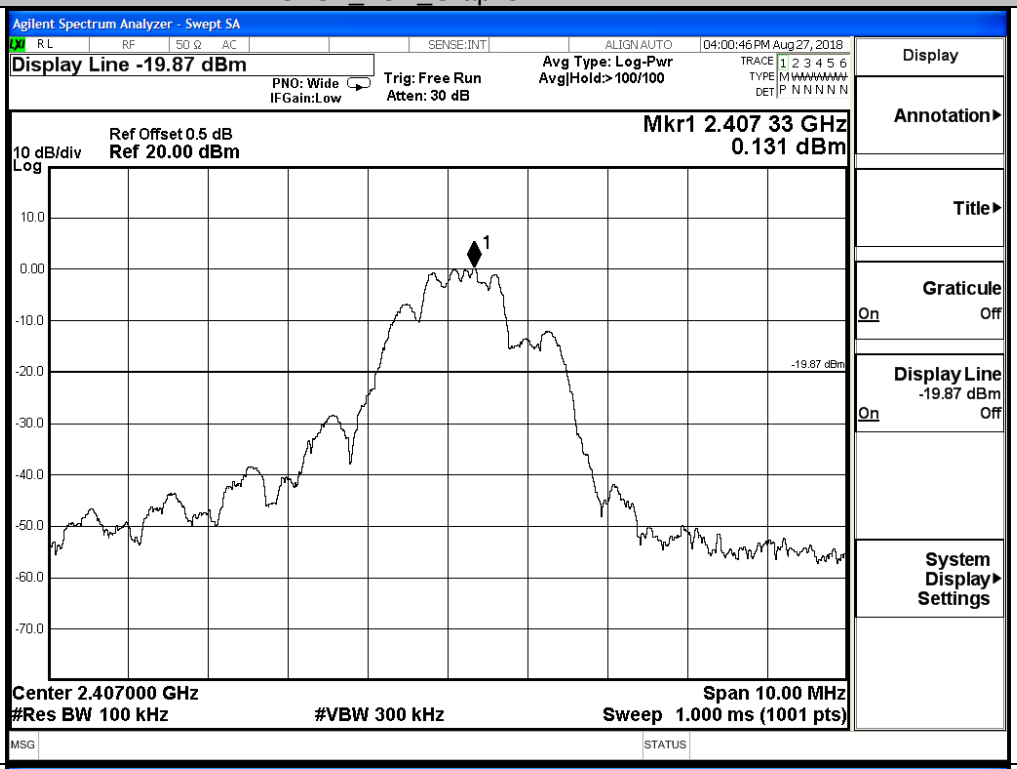
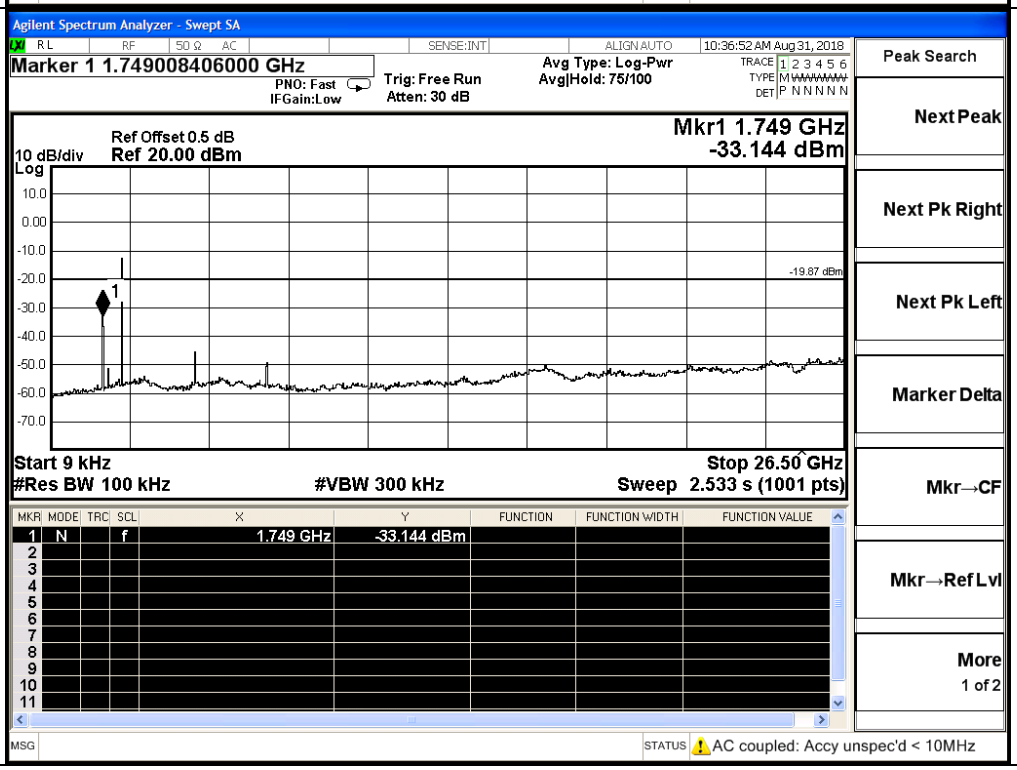
GFSK /HCH

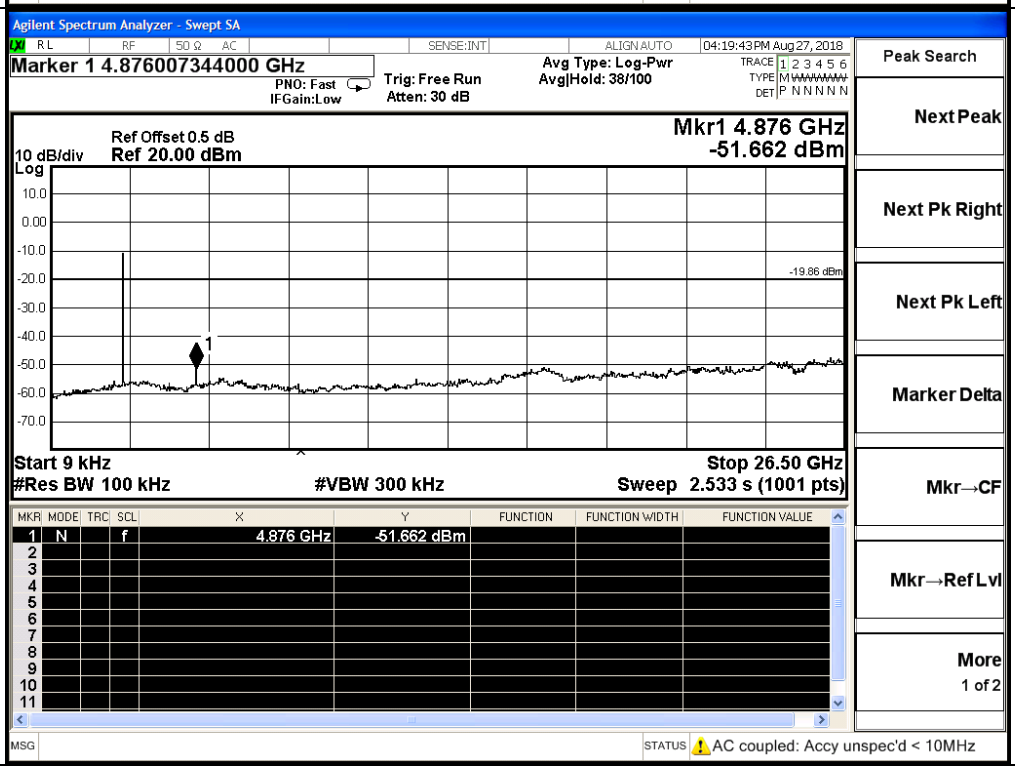

Agilent Spectrum Analyzer - Swept SA
Center Freq 2.469000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
02:25:25 PM Sep 04, 2018
Mkr1 89.60 ms
0.57 dBm
10 dB/div
Log
Ref 20.00 dBm
Center 2.469000000 GHz
Res BW 1.0 MHz
#VBW 3.0 MHz
Span 0 Hz
Sweep 6.400 s (1001 pts)
Frequency
Auto Tune
Center Freq
2.469000000 GHz
Start Freq
2.469000000 GHz
Stop Freq
2.469000000 GHz
CF Step
1.000000 MHz
Auto
Man
Freq Offset
0 Hz
MSG
STATUS

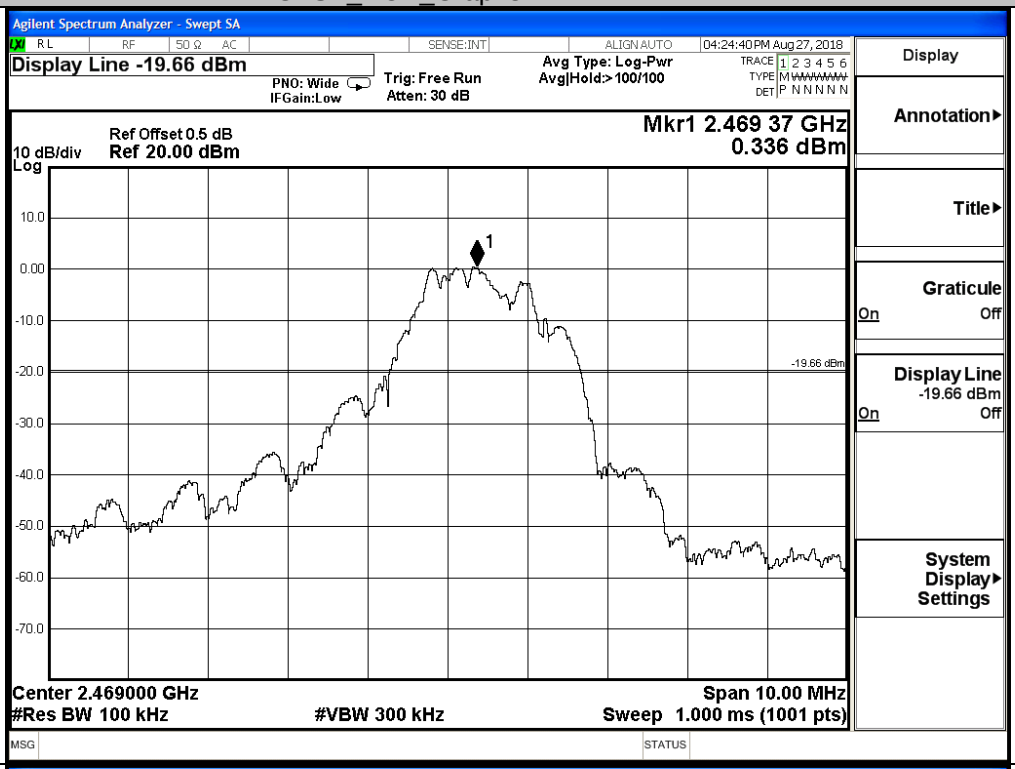
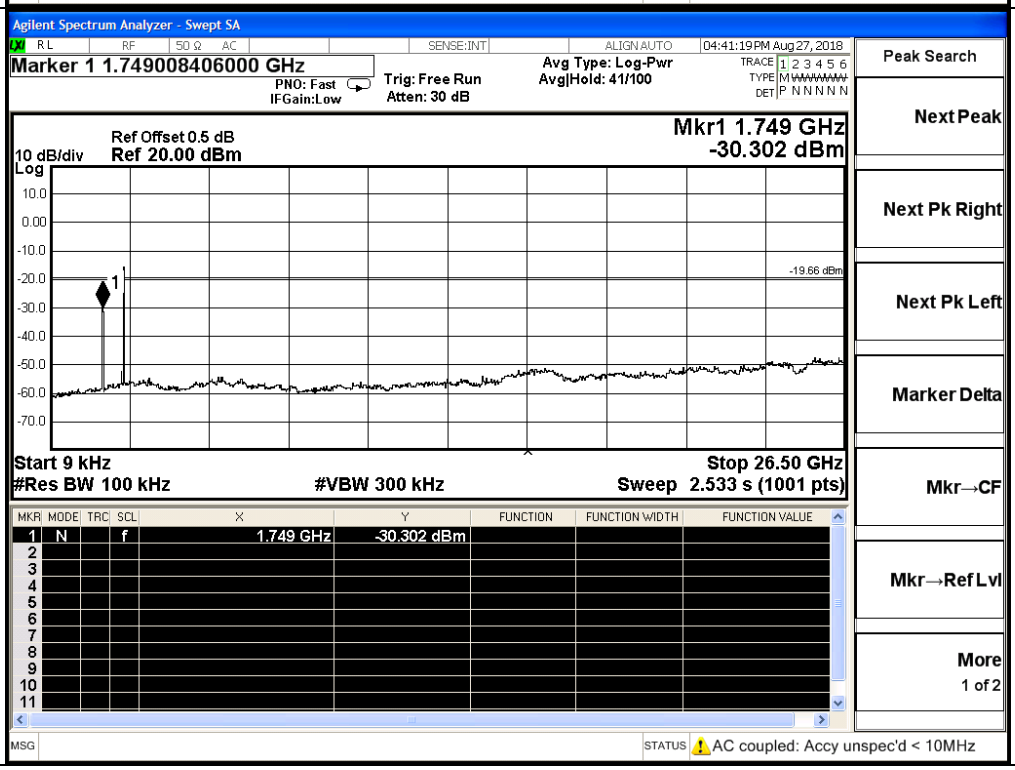

Agilent Spectrum Analyzer - Swept SA
Marker 3 Δ 276.700 µs
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 100/100
03:54:10 PM Aug 27, 2018
ΔMkr3 276.7 µs
0.018 dB
10 dB/div
Log
Ref 20.00 dBm
1Δ2
3Δ4
Center 2.469000000 GHz
Res BW 1.0 MHz
#VBW 3.0 MHz
Span 0 Hz
Sweep 1.000 ms (10001 pts)
1 Δ2 t (Δ) 148.4 µs (Δ) -1.182 dB
2 F t 298.4 µs 0.064 dBm
3 Δ4 t (Δ) 276.7 µs (Δ) 0.018 dB
4 F t 298.1 µs -0.302 dBm
Marker
Select Marker
3
Normal
Delta
Fixed
Off
Properties
More
1 of 2
MSG
STATUS

A.6 RF Conducted Spurious Emissions

Mode	Channel	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-33.144	-19.87	PASS
	MCH	-51.662	-19.86	PASS
	HCH	-30.302	-19.66	PASS

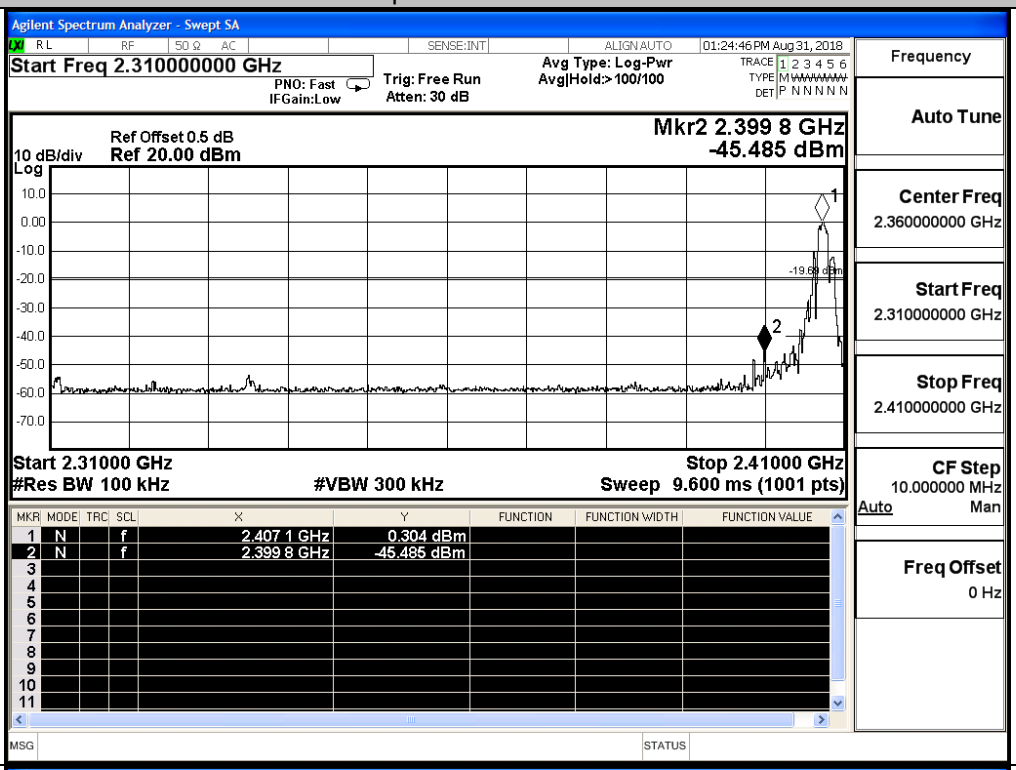
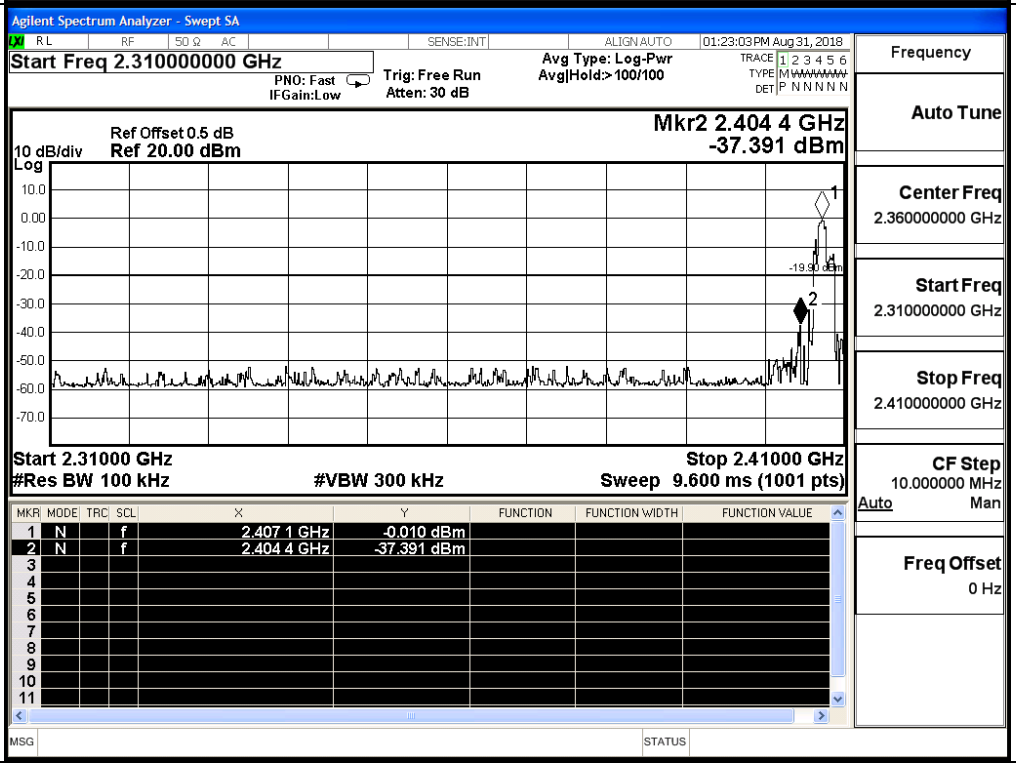
GFSK_LCH_Graphs		
Pref		
Puw		

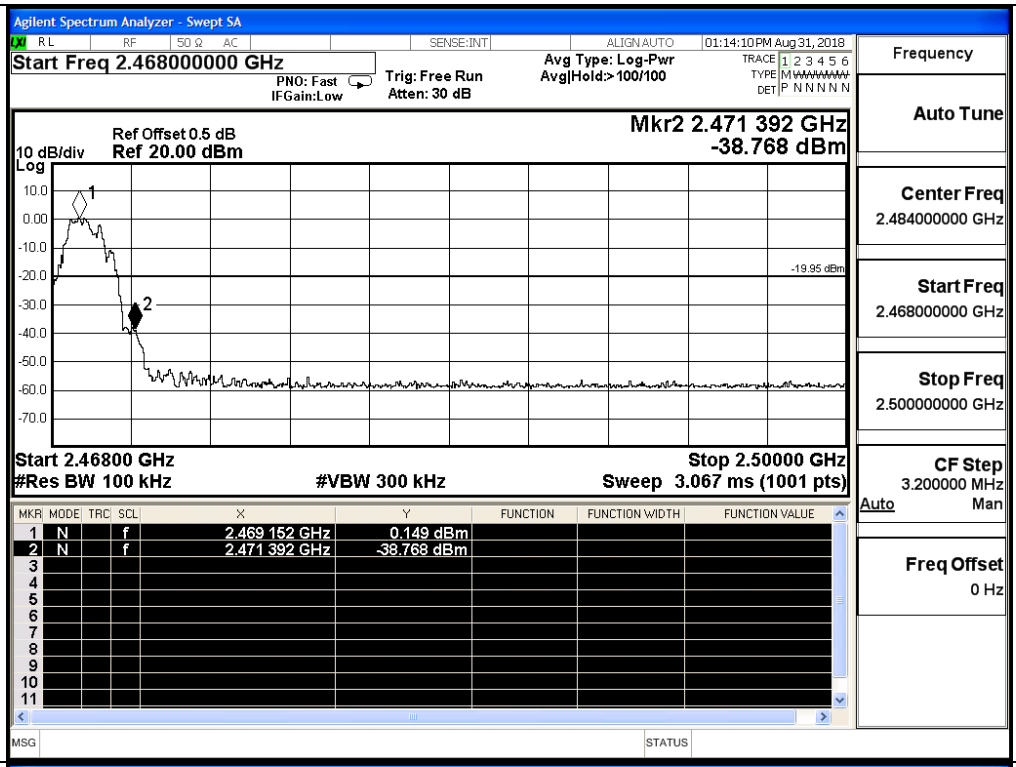
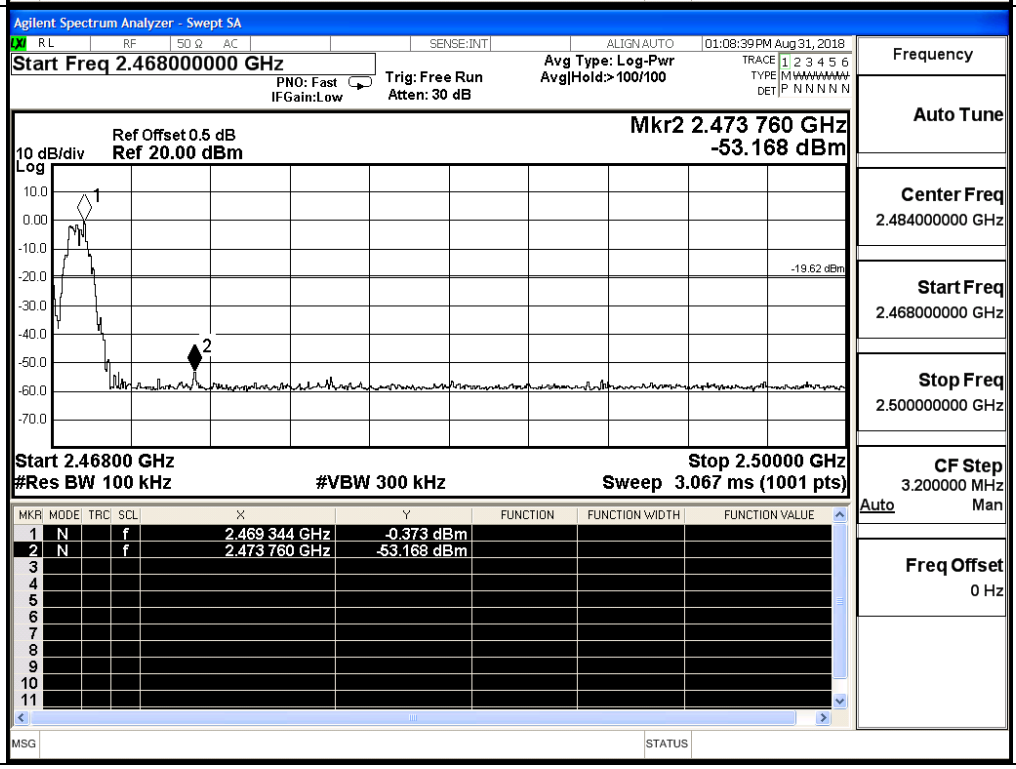
GFSK_MCH_Graphs	
Pref	
Puw	

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	0.304	Off	-45.485	-19.87	PASS
			-0.010	On	-37.391	-20.24	PASS
	HCH	2469	0.149	Off	-38.768	-19.25	PASS
			-0.373	On	-53.168	-23.17	PASS

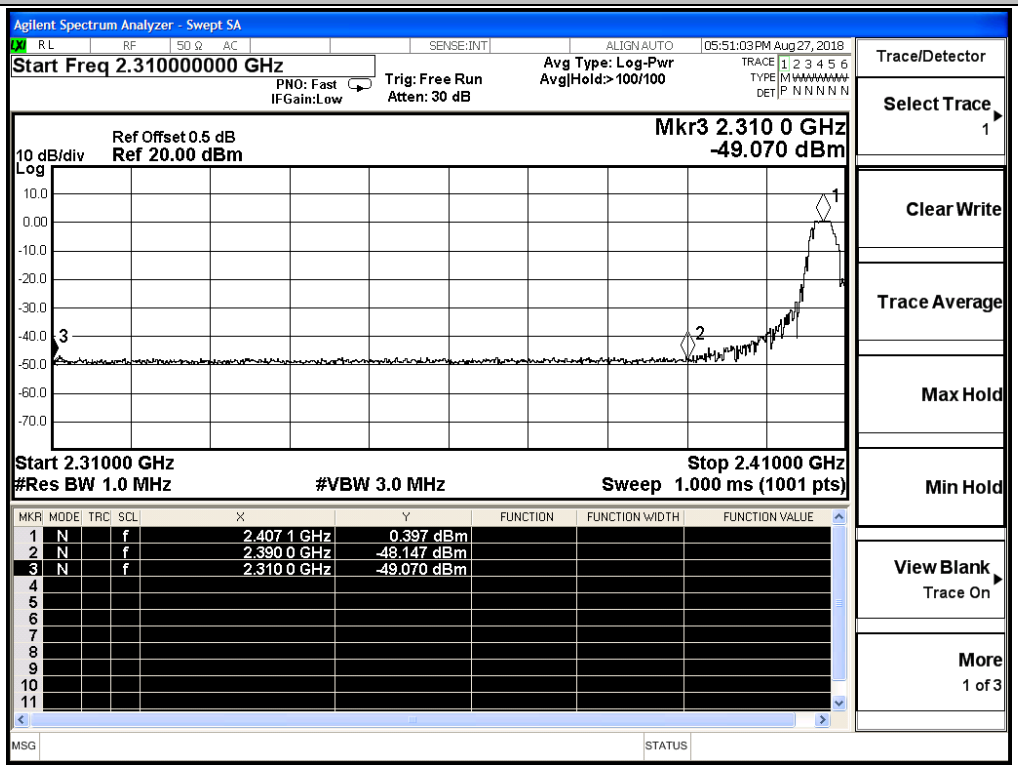
Test Graphs	
GFSK/LCH/No Hop	
GFSK/LCH/Hop	

GFSK/HCH/No Hop	
GFSK/HCH/Hop	

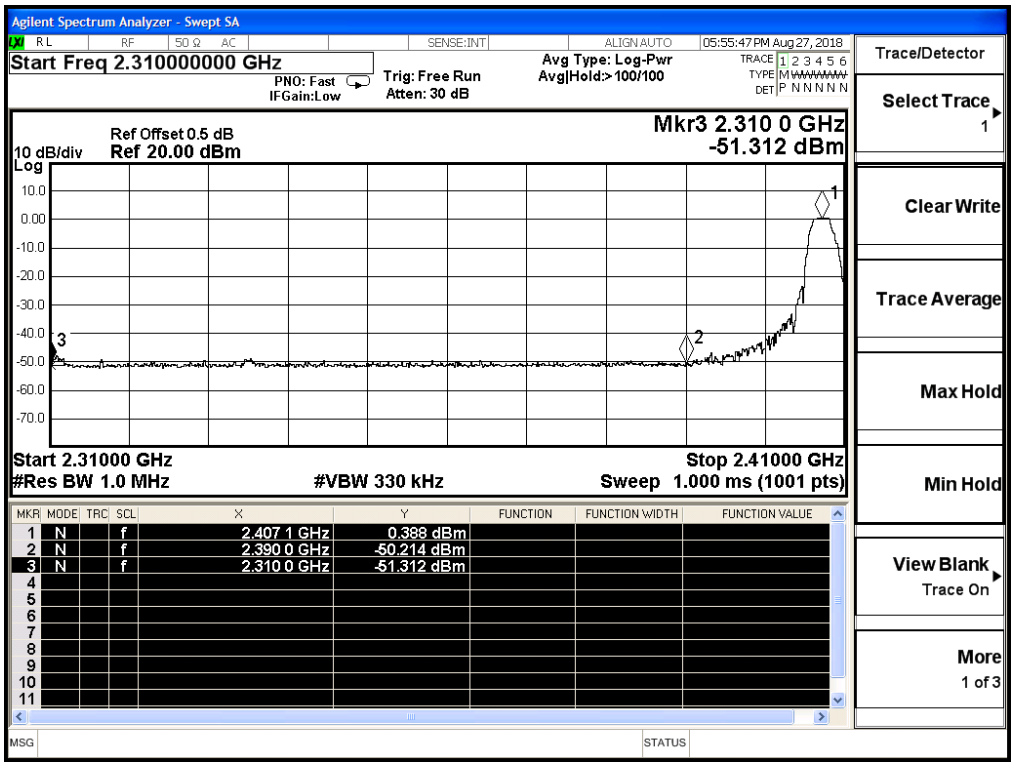
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-49.070	2.0	0	48.19	PEAK	74	PASS
	Off	2310.0	-51.312	2.0	0	45.95	AV	54	PASS
	Off	2390.0	-48.147	2.0	0	49.11	PEAK	74	PASS
	Off	2390.0	-50.214	2.0	0	47.05	AV	54	PASS
	Off	2483.5	-47.851	2.0	0	49.41	PEAK	74	PASS
	Off	2483.5	-51.380	2.0	0	45.88	AV	54	PASS
	Off	2500.0	-48.697	2.0	0	48.56	PEAK	74	PASS
	Off	2500.0	-50.617	2.0	0	46.64	AV	54	PASS

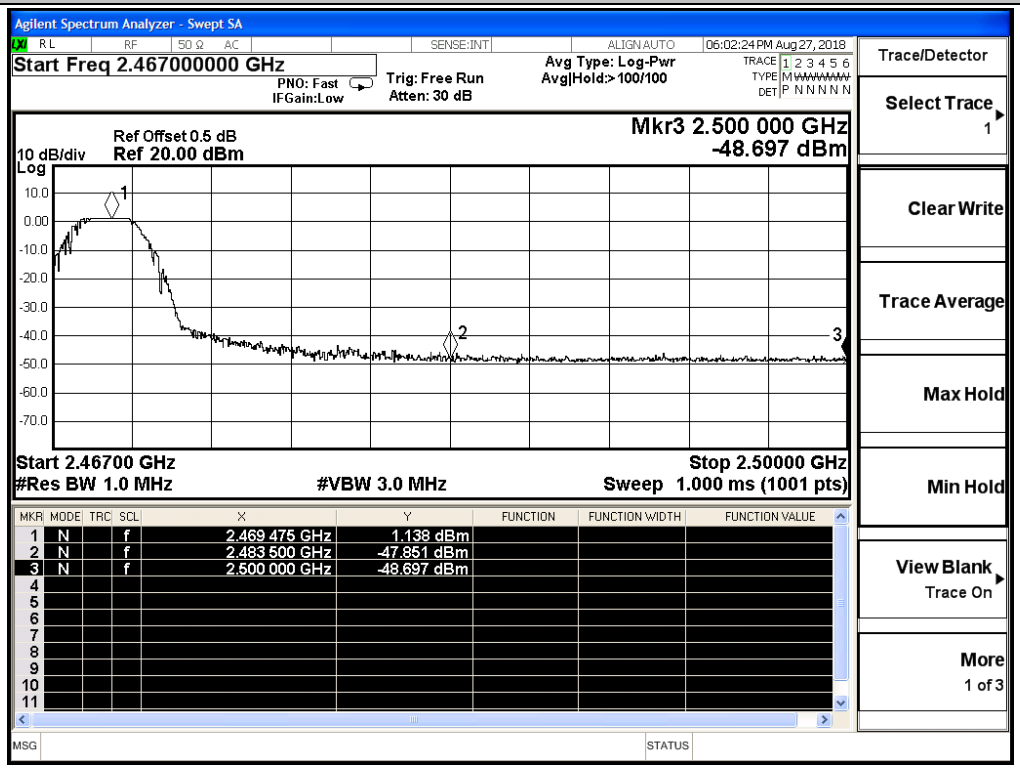
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (Low Channel)



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)