

Appendix A

RF Test Data for 2.4G WIFI (Conducted Measurement)

Product Name: KE2 Edge Manager Cell

Trade Mark: KE2, KE2 Connect, KE2 Therm

Test Model: KE2EM-Cell

Environmental Conditions

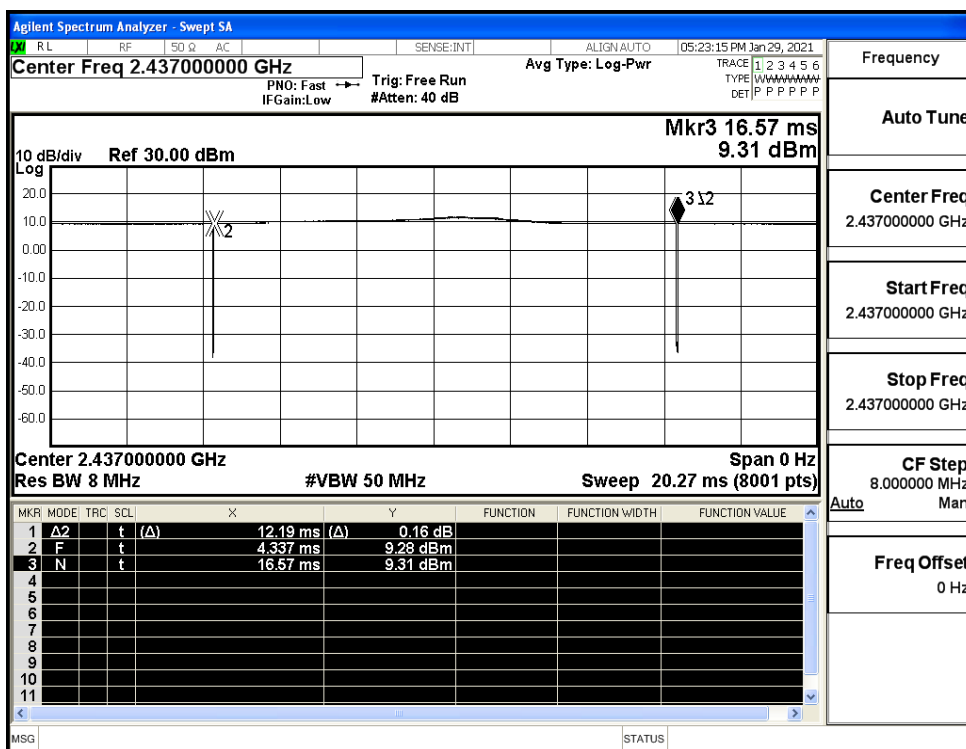
Temperature:	23.7 ° C
Relative Humidity:	52.3%
ATM Pressure:	100.0 kPa
Test Engineer:	Diamond Lu
Supervised by:	Li Huan

A.1 Duty Cycle

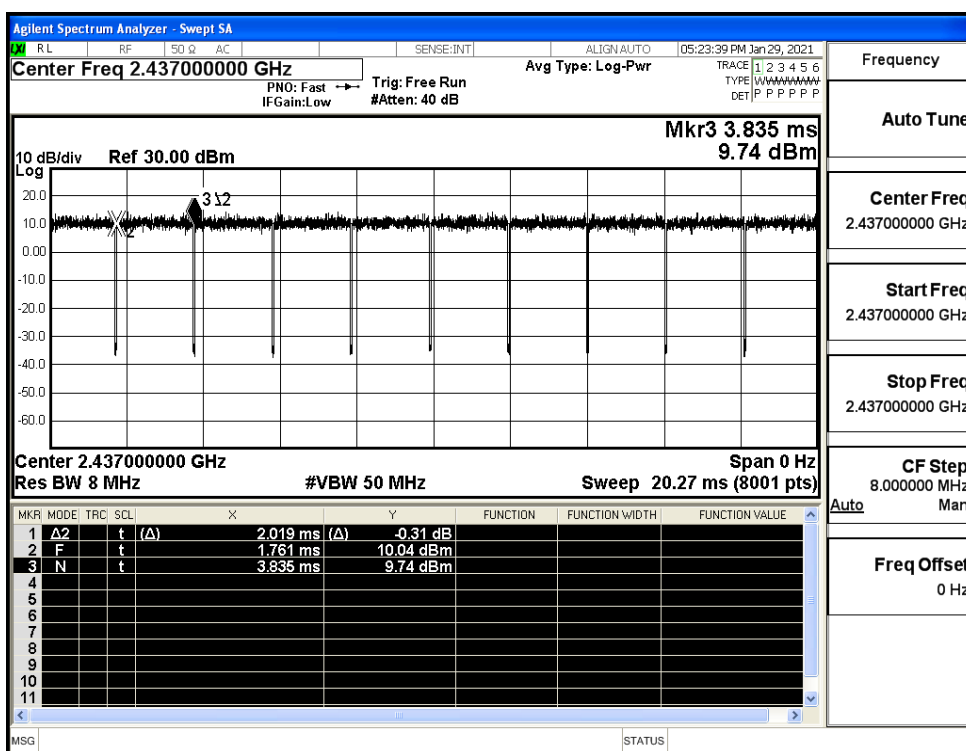
Test Mode	Test Channel	Ant	Duty Cycle[%]	1/T Minimum VBW(KHz)	Verdict
11B	2437	Ant1	99.61	0.08	PASS
11G	2437	Ant1	97.31	0.50	PASS
11N20SISO	2437	Ant1	97.25	0.53	PASS
11N40SISO	2437	Ant1	95.54	1.08	PASS

Test Mode	Test Channel	Ant	Duty Cycle[%]	1/T Minimum VBW(KHz)	Verdict
11B	2437	Ant2	100	0.01	PASS
11G	2437	Ant2	97.31	0.50	PASS
11N20SISO	2437	Ant2	97.12	0.53	PASS
11N40SISO	2437	Ant2	95.54	1.08	PASS

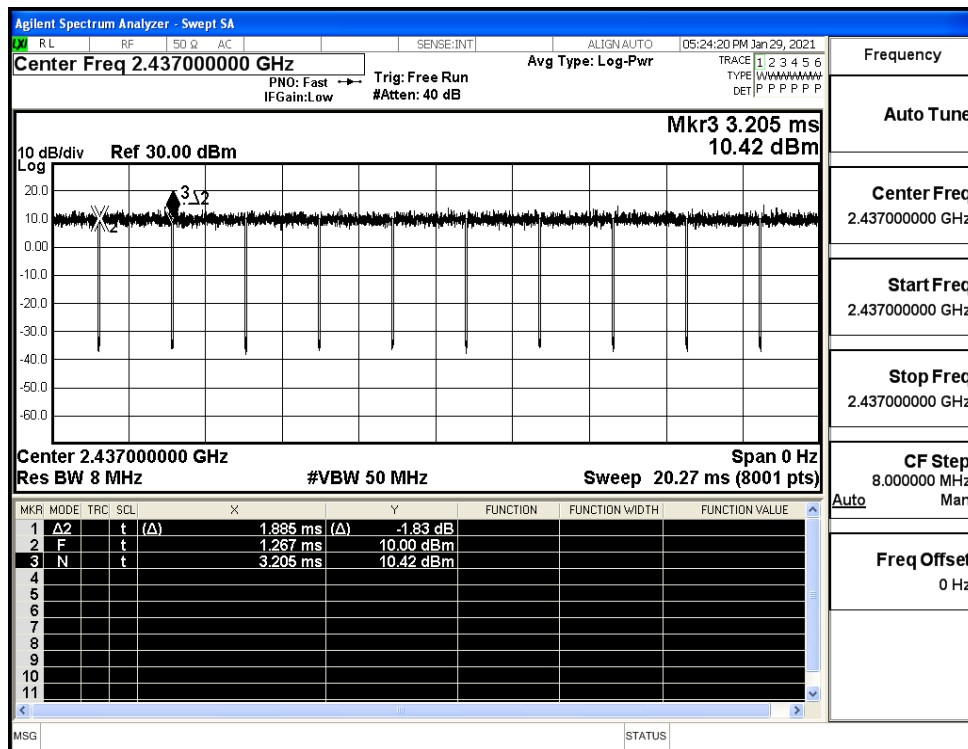
Duty Cycle_11B_2437_Ant1



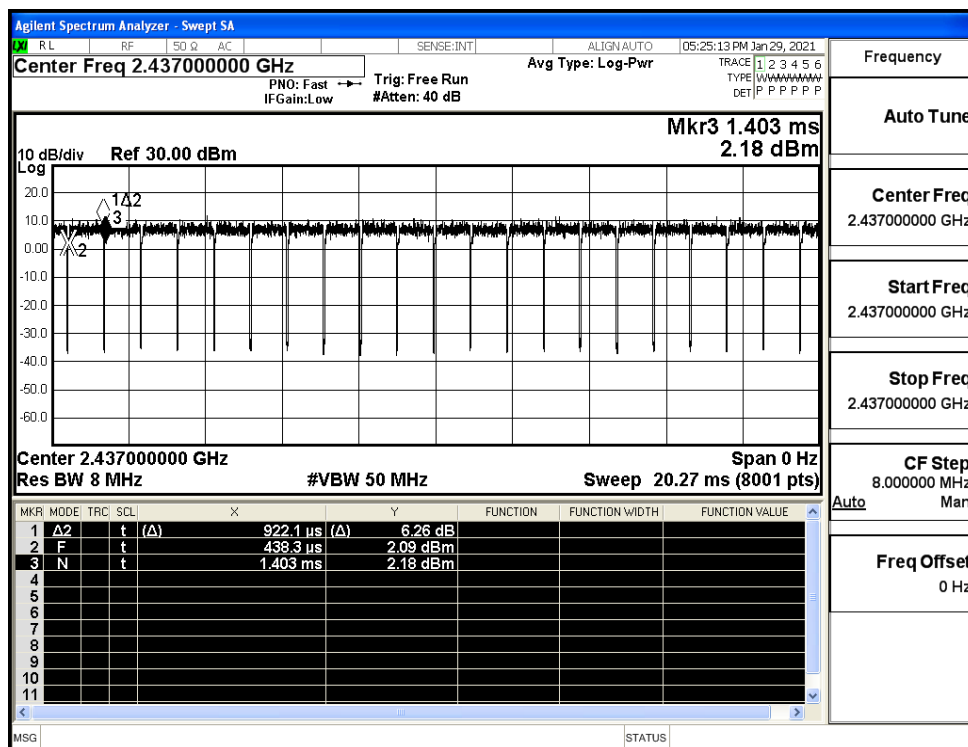
Duty Cycle_11G_2437_Ant1



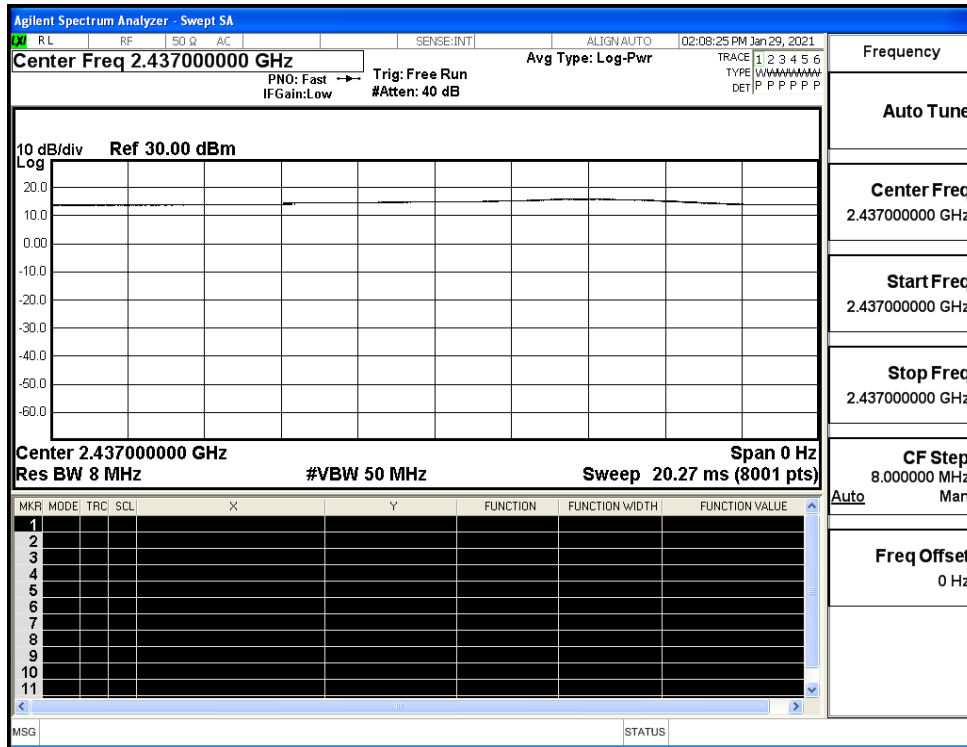
Duty Cycle_11N20SISO_2437_Ant1



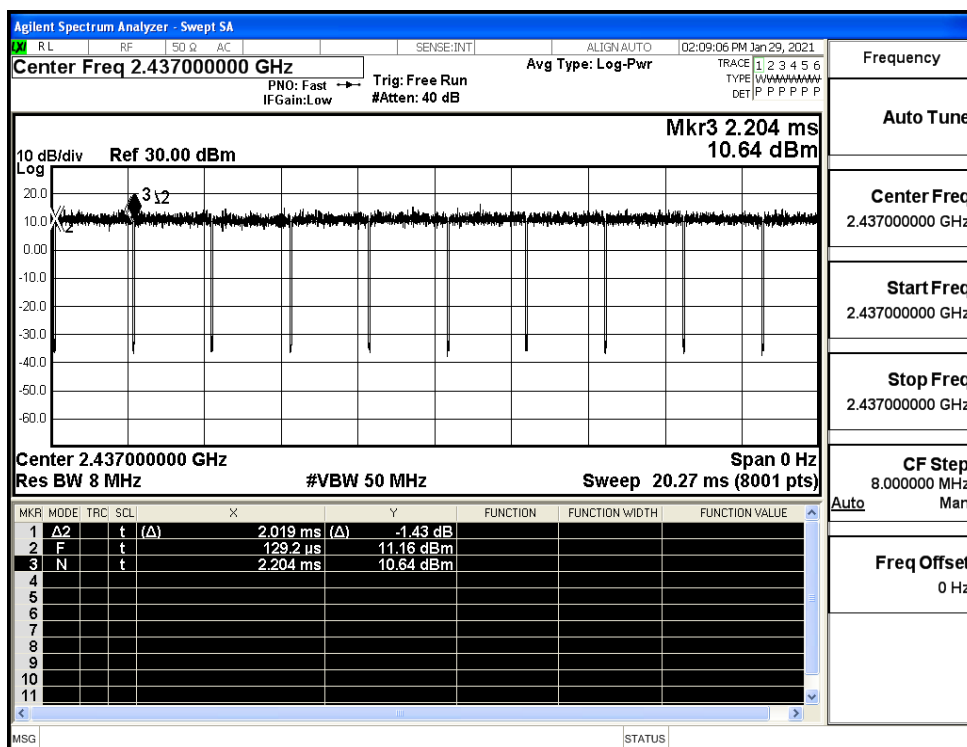
Duty Cycle_11N40SISO_2437_Ant1



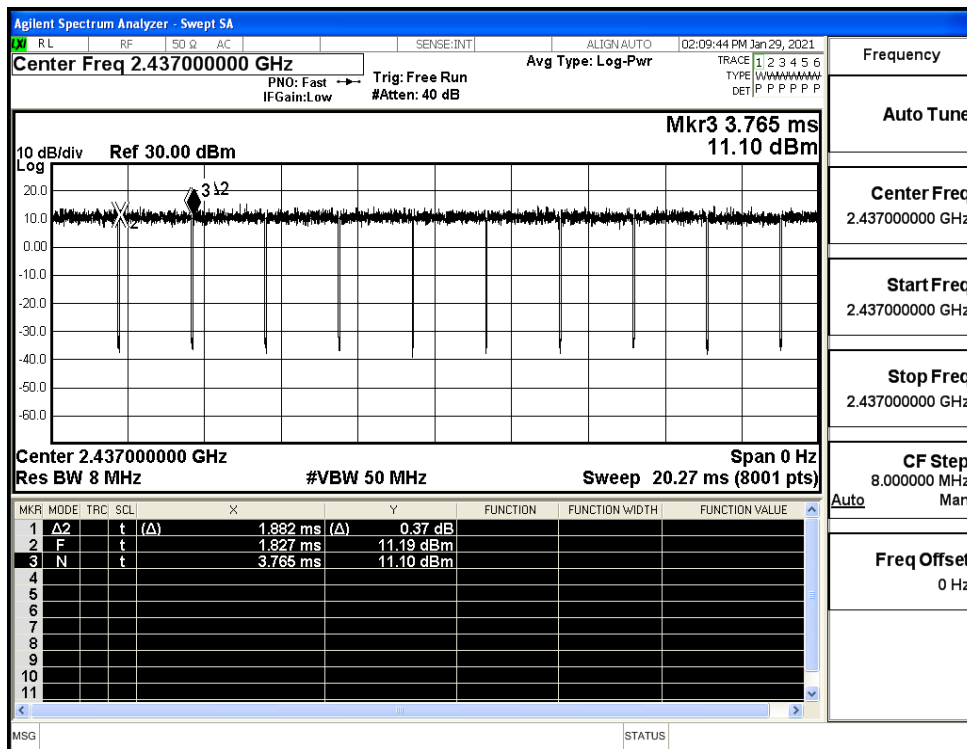
Duty Cycle_11B_2437_Ant2



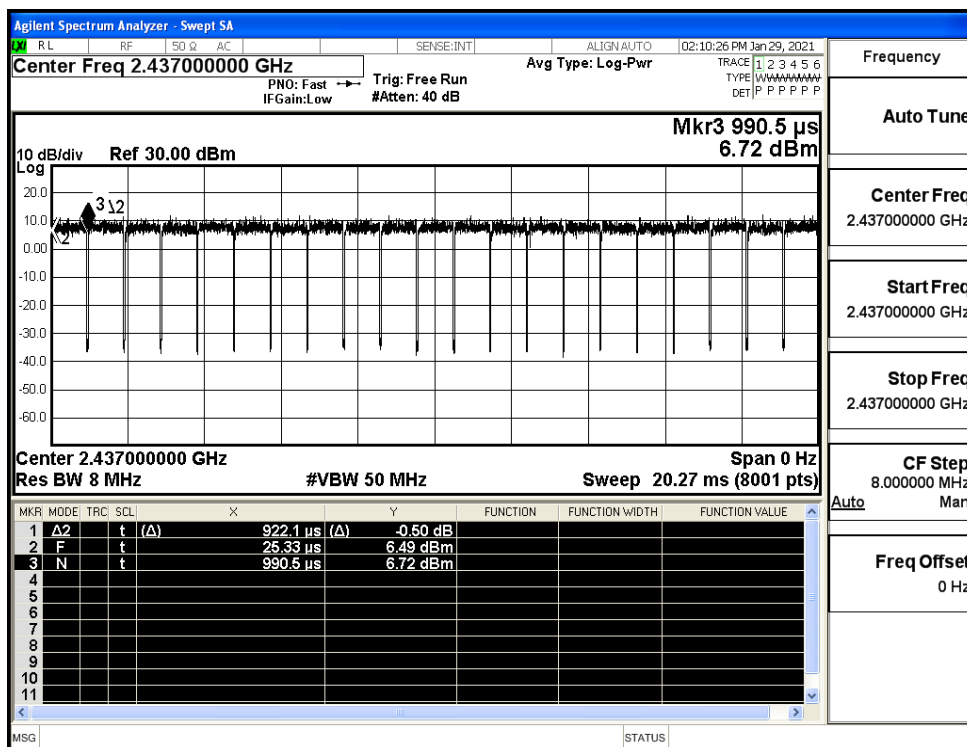
Duty Cycle_11G_2437_Ant2



Duty Cycle_11N20SISO_2437_Ant2



Duty Cycle_11N40SISO_2437_Ant2



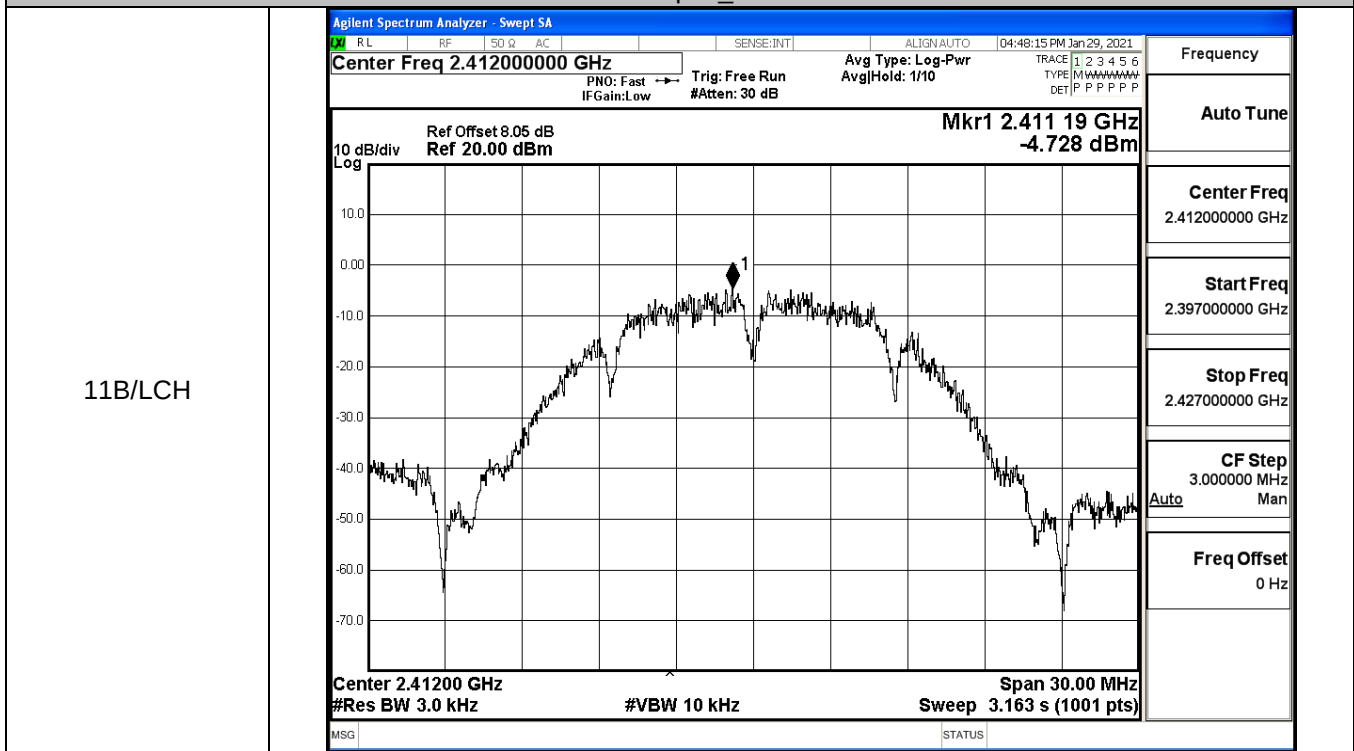
A.2 Maximum Conducted Output Power

Mode	Channel	Meas.Level [dBm]			Limit [dBm]	Verdict
		Ant_1	Ant_2	Sum		
11B	LCH	17.11	16.97	/	30	PASS
	MCH	17.79	17.53	/	30	PASS
	HCH	17.94	17.52	/	30	PASS
11G	LCH	19.02	18.94	/	30	PASS
	MCH	18.86	18.68	/	30	PASS
	HCH	18.05	18.79	/	30	PASS
11N20SISO	LCH	18.62	18.64	21.64	30	PASS
	MCH	18.51	18.45	21.49	30	PASS
	HCH	18.64	18.56	21.61	30	PASS
11N40SISO	LCH	18.36	19.29	21.86	30	PASS
	MCH	18.74	18.64	21.70	30	PASS
	HCH	19.46	19.53	22.51	30	PASS

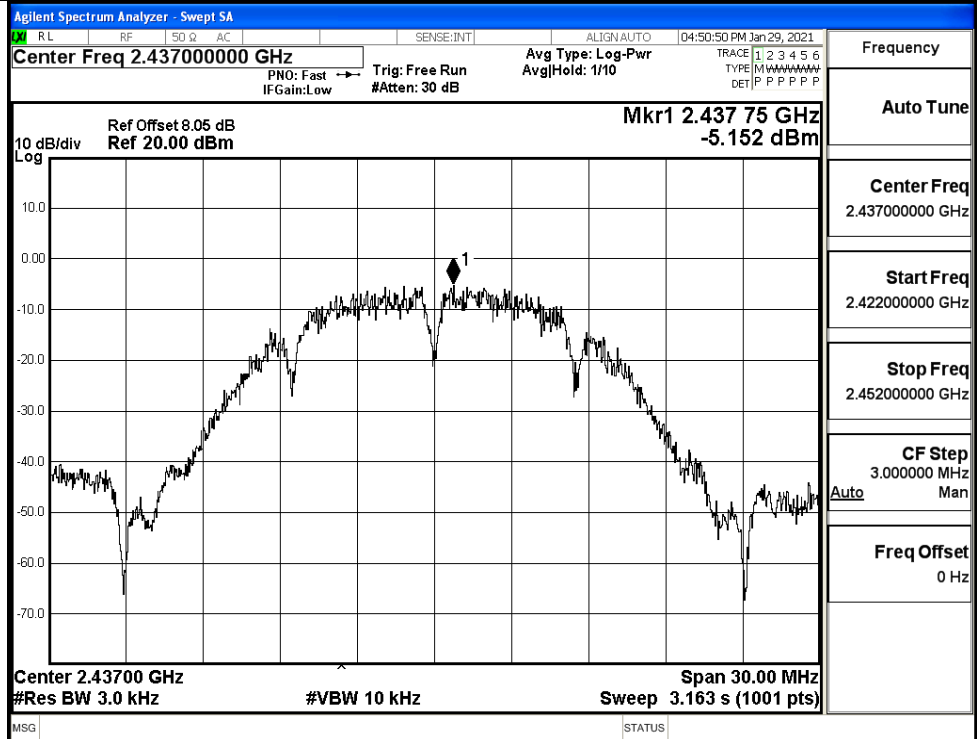
A.3 Maximum Power Spectral Density

Mode	Channel	Meas.Level [dBm/3KHz]			Limit [dBm/3KHz]	Verdict
		Ant_1	Ant_2	Sum		
11B	LCH	-4.728	-4.344	/	8	PASS
	MCH	-5.152	-5.515	/	8	PASS
	HCH	-3.710	-4.430	/	8	PASS
11G	LCH	-8.466	-9.396	/	8	PASS
	MCH	-6.818	-10.080	/	8	PASS
	HCH	-10.061	-8.954	/	8	PASS
11N20SISO	LCH	-10.632	-10.683	-7.647	8	PASS
	MCH	-11.470	-9.719	-7.497	8	PASS
	HCH	-10.607	-10.087	-7.329	8	PASS
11N40SISO	LCH	-12.932	-13.886	-10.373	8	PASS
	MCH	-12.784	-13.725	-10.219	8	PASS
	HCH	-12.187	-12.248	-9.207	8	PASS

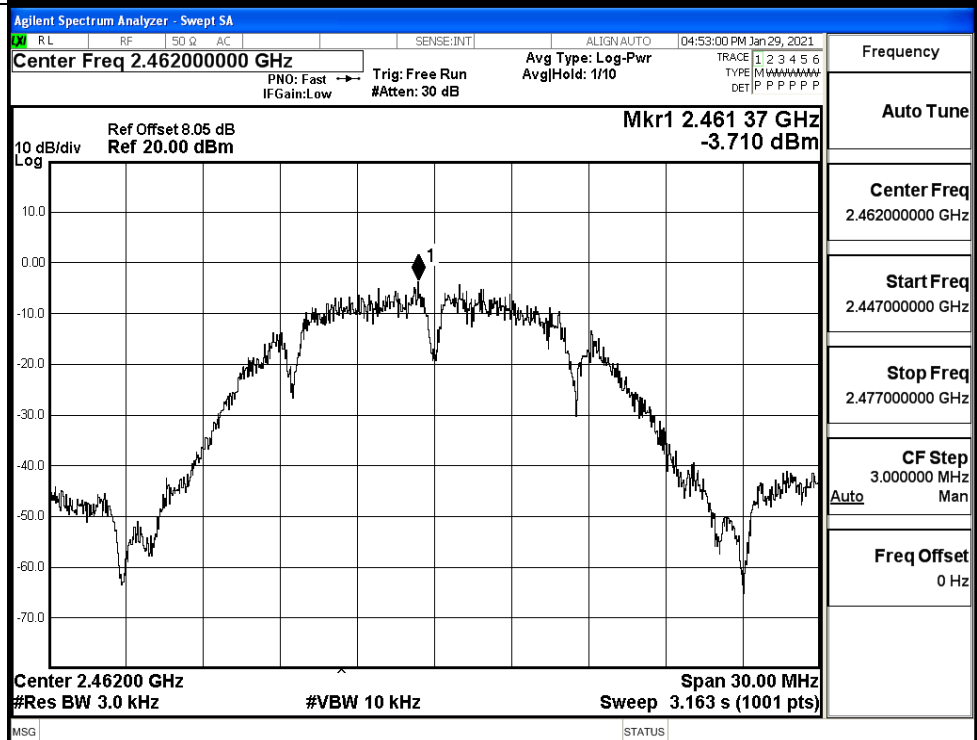
Test Graphs_Ant1



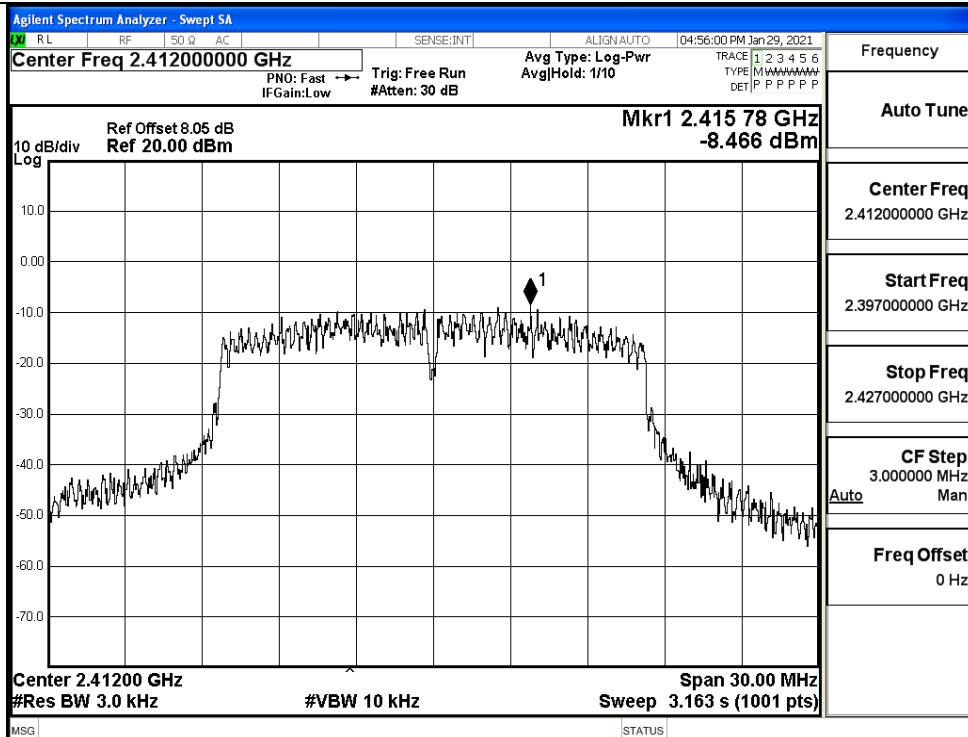
11B/MCH



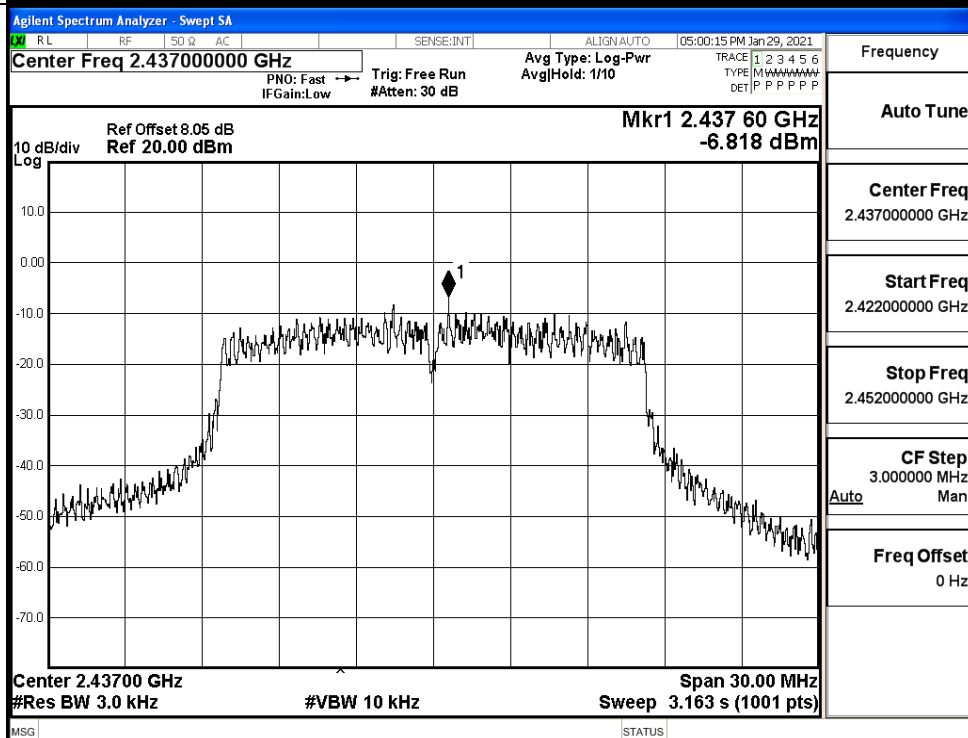
11B/HCH



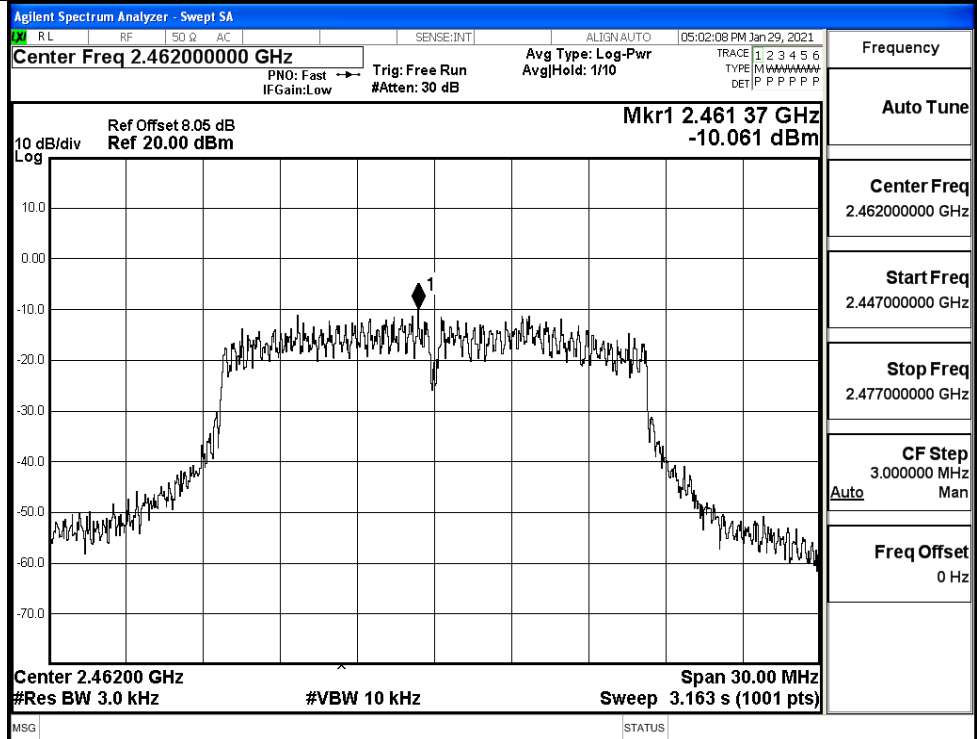
11G/LCH



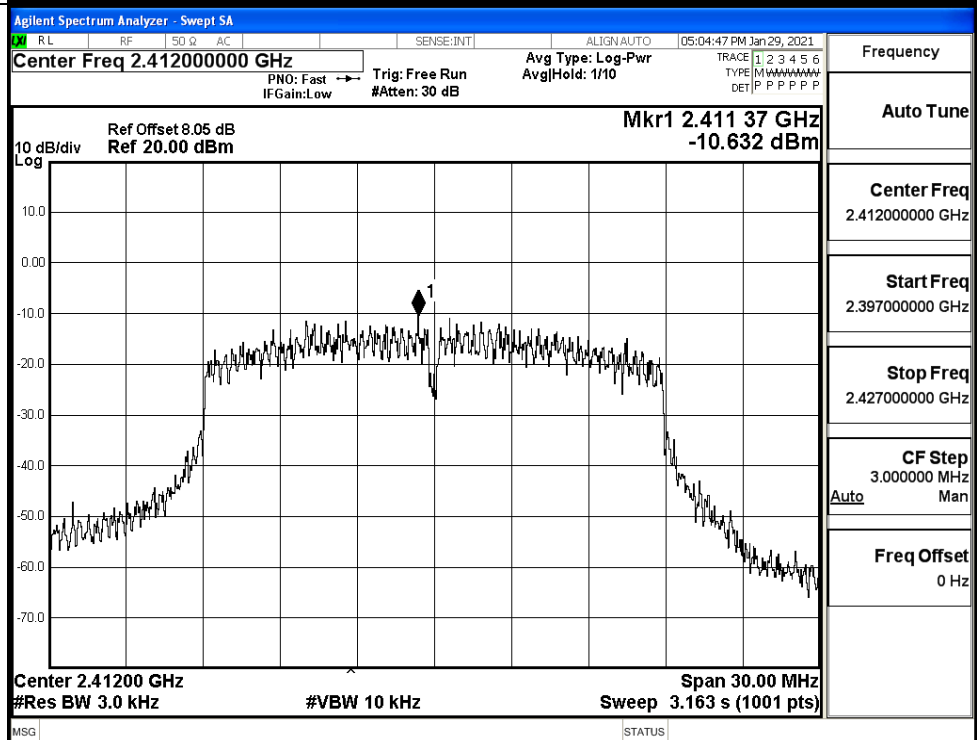
11G/MCH

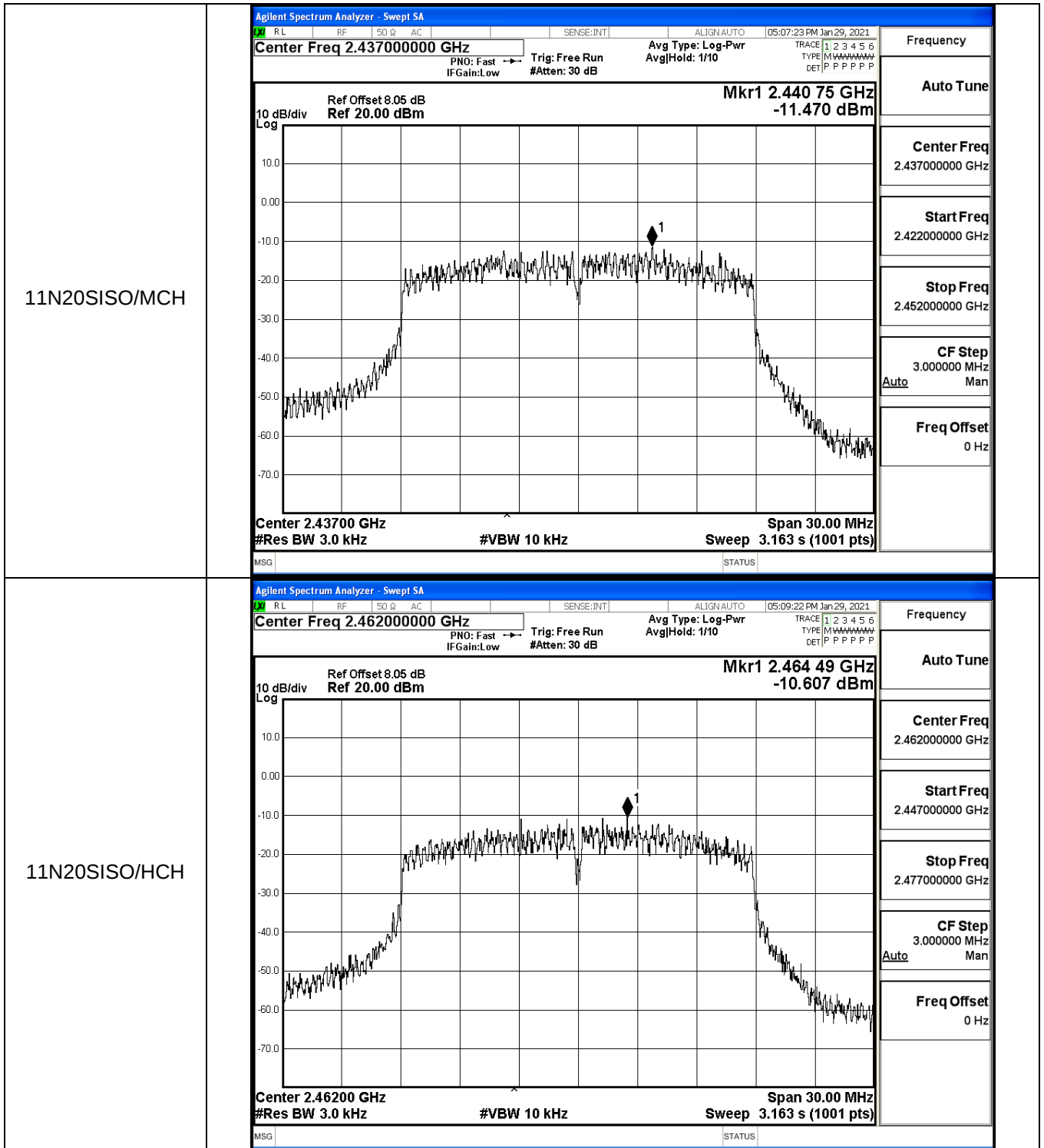


11G/HCH

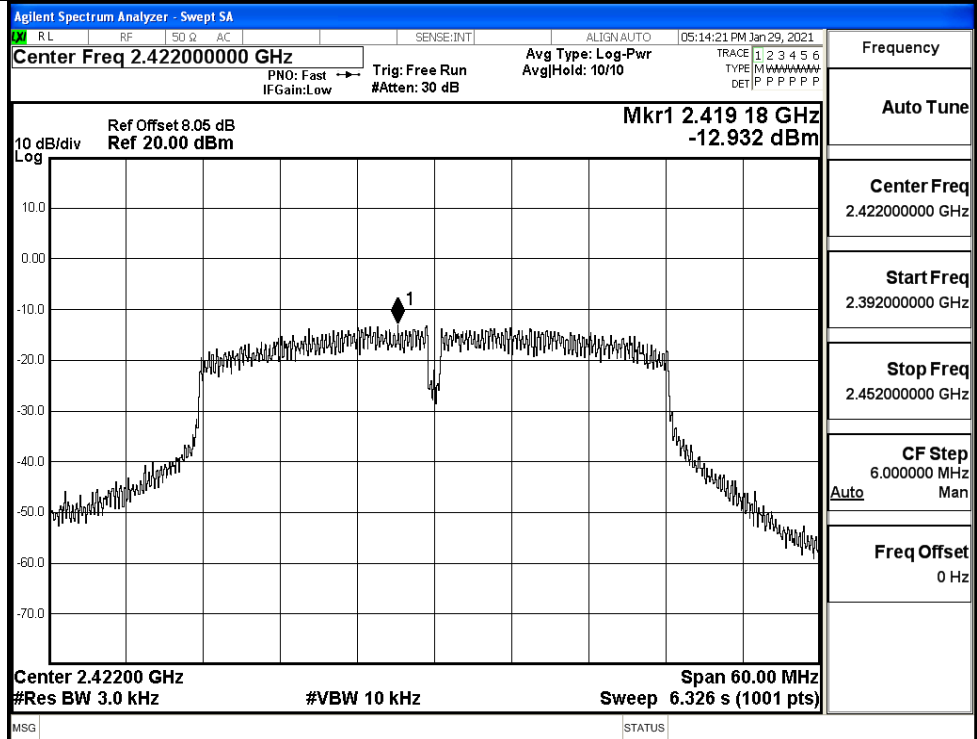


11N20SISO/LCH

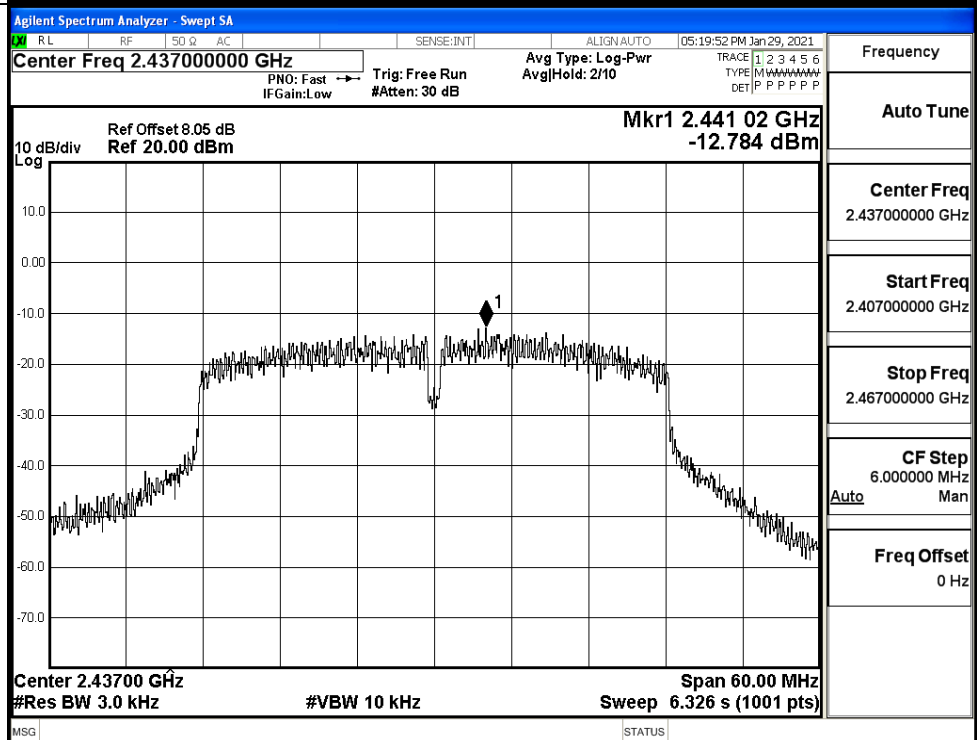


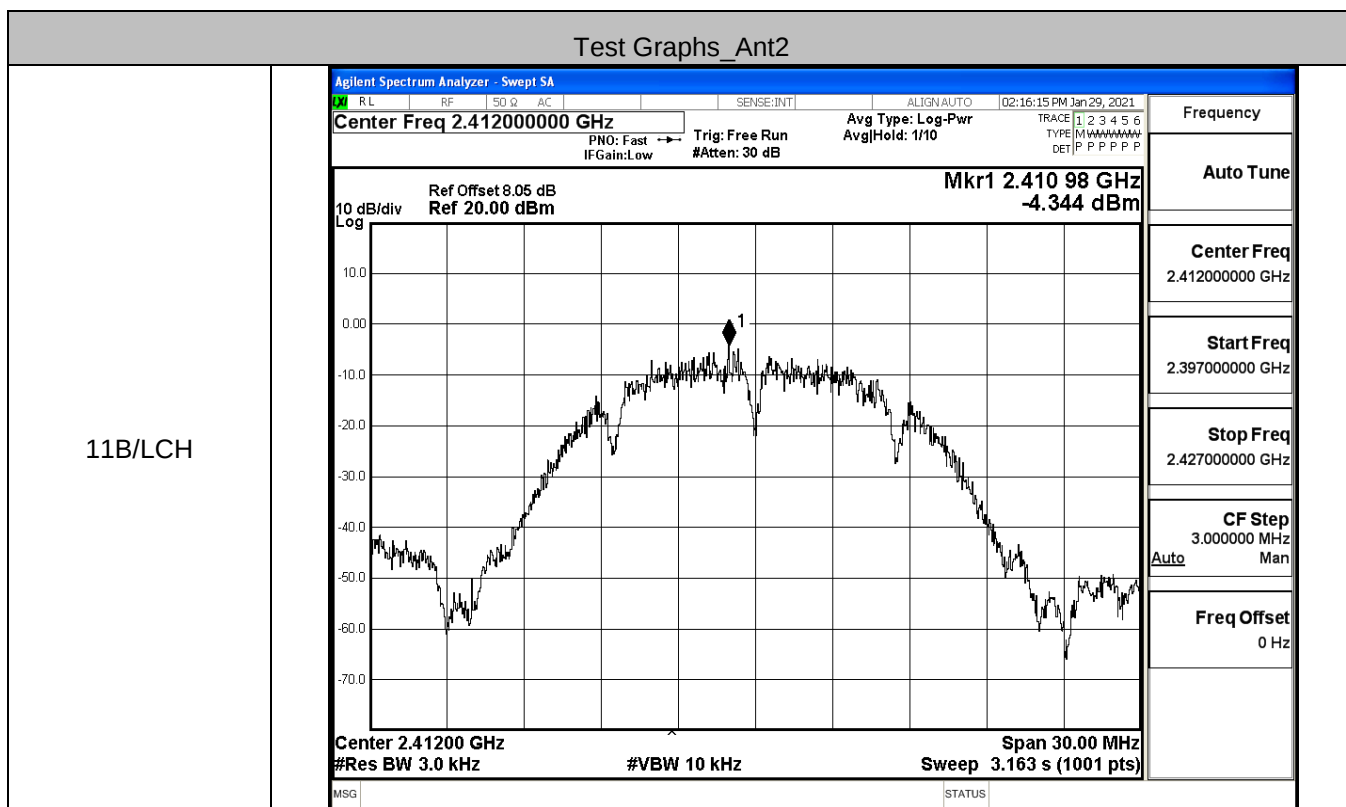
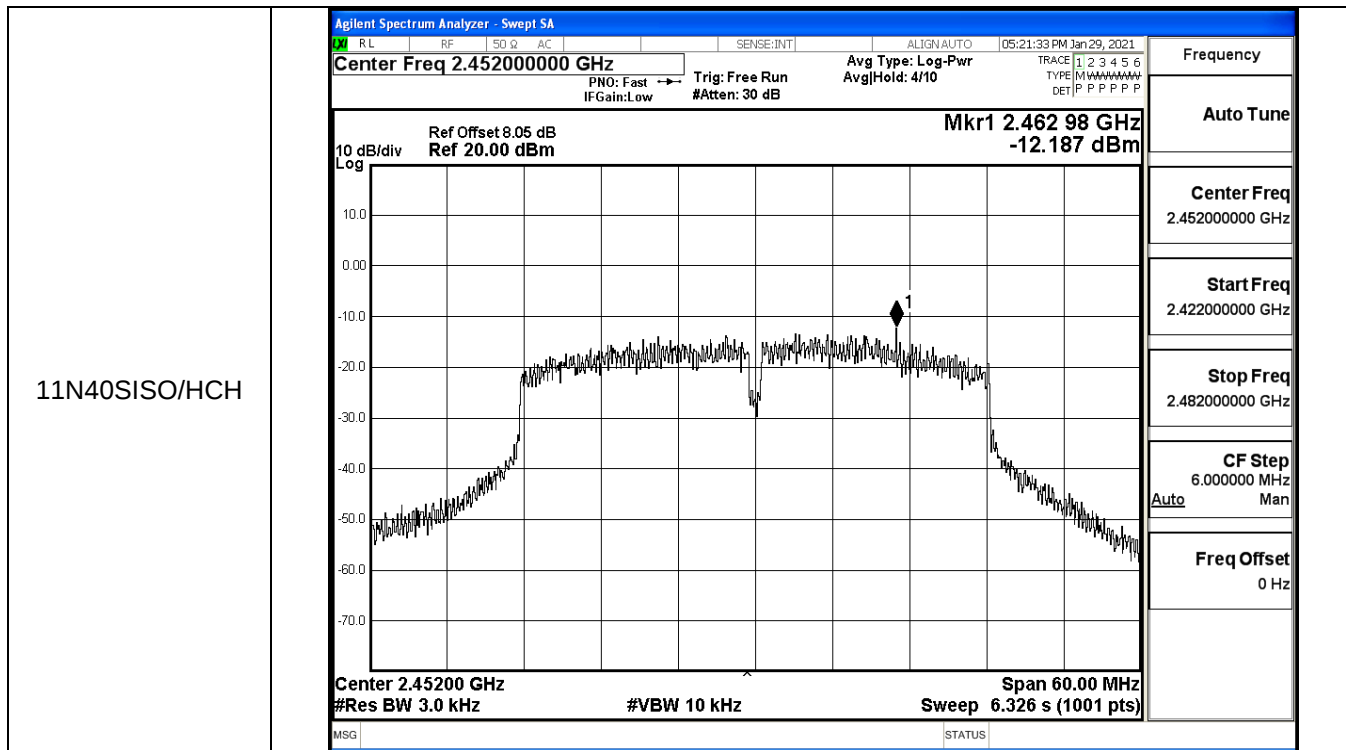


11N40SISO/LCH

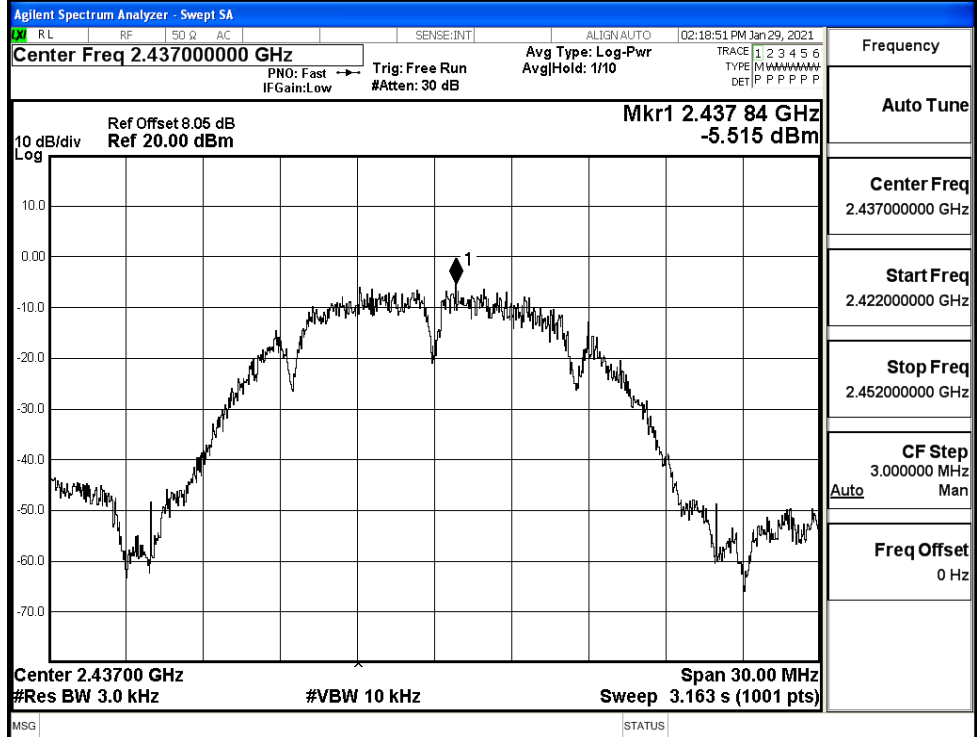


11N40SISO/MCH

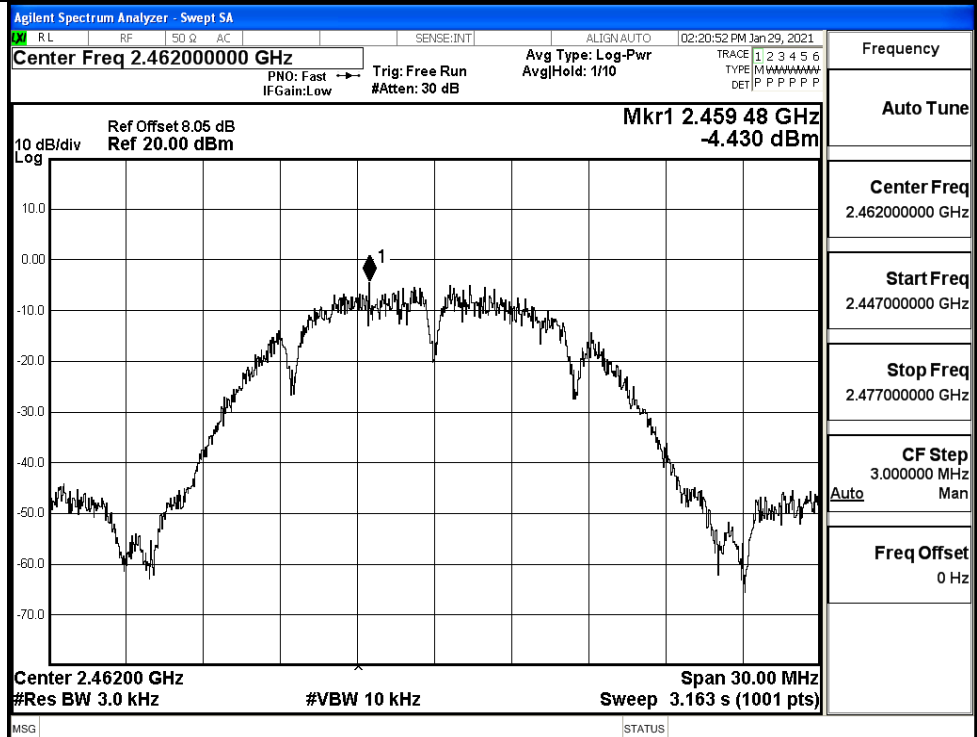




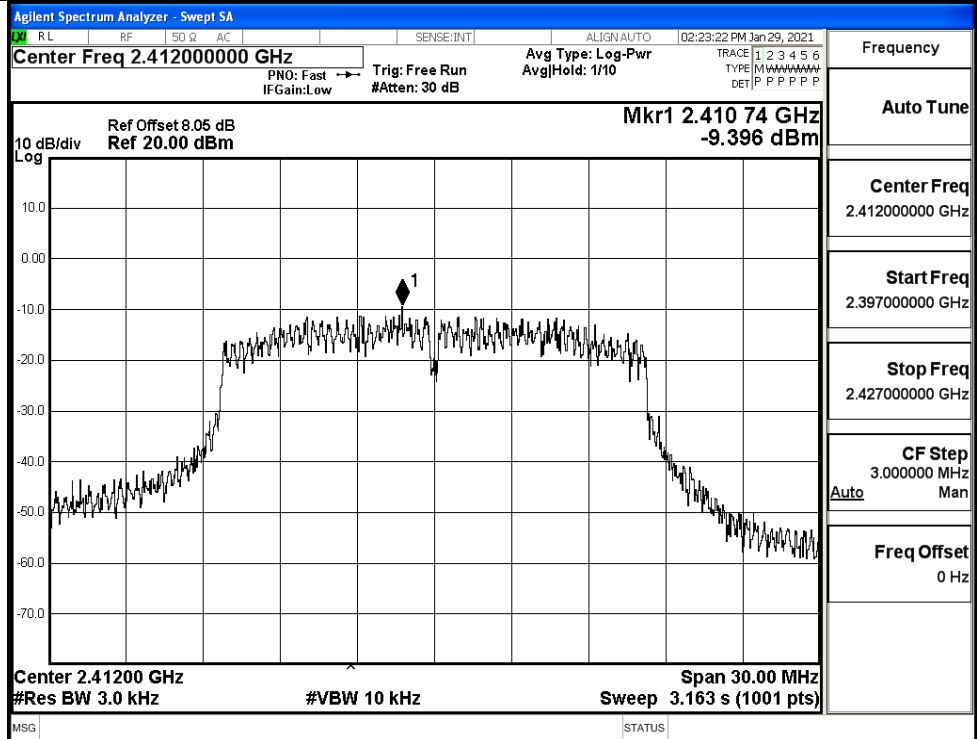
11B/MCH



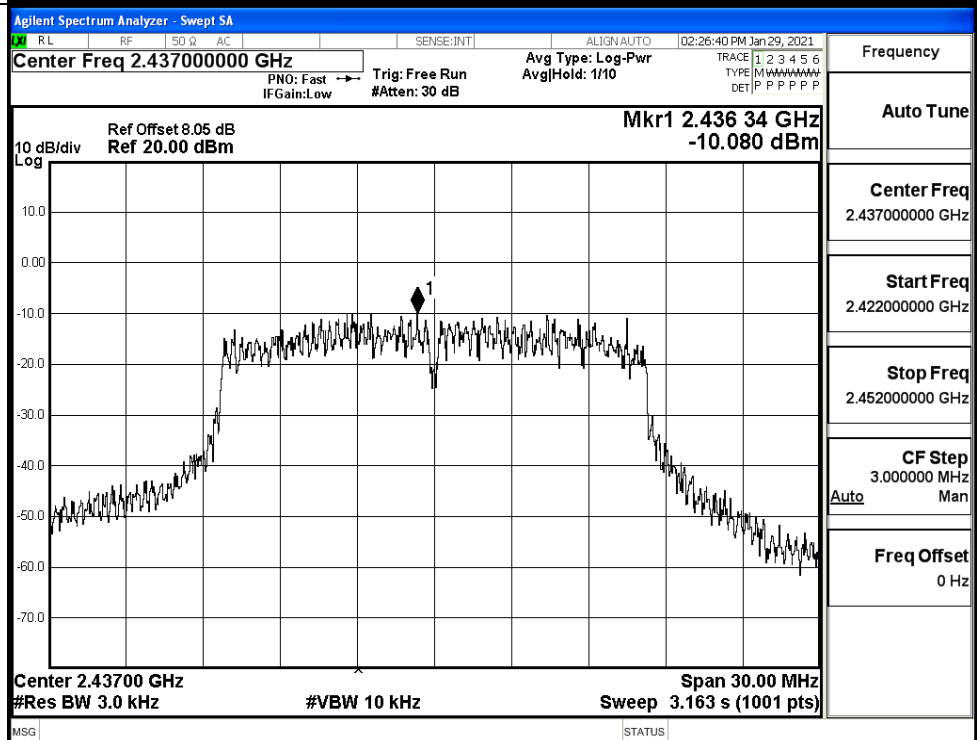
11B/HCH



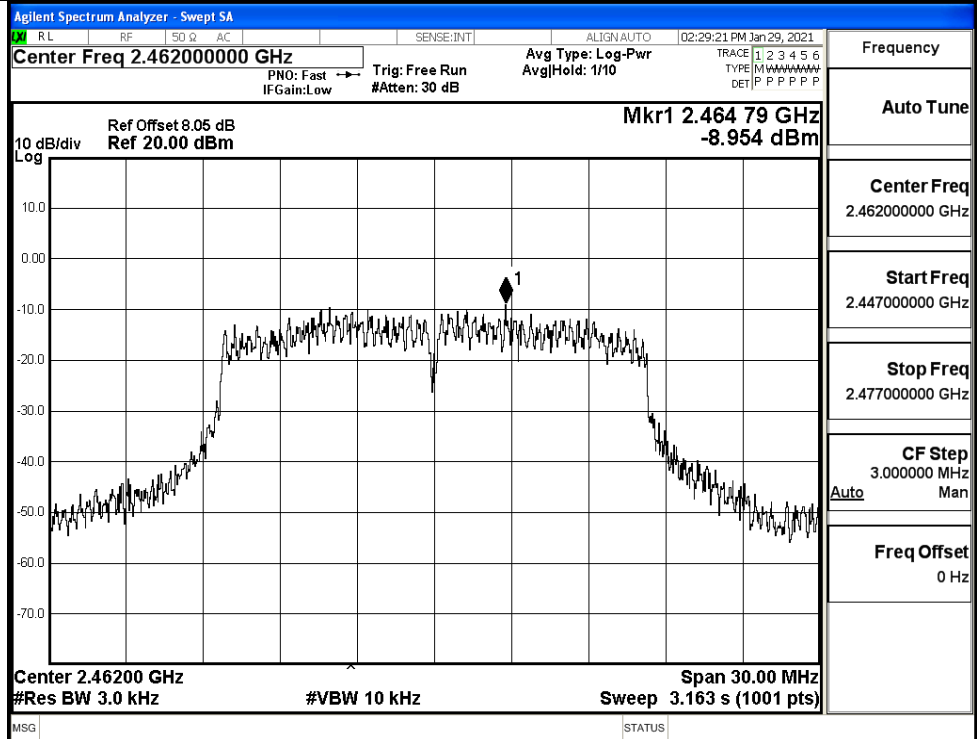
11G/LCH



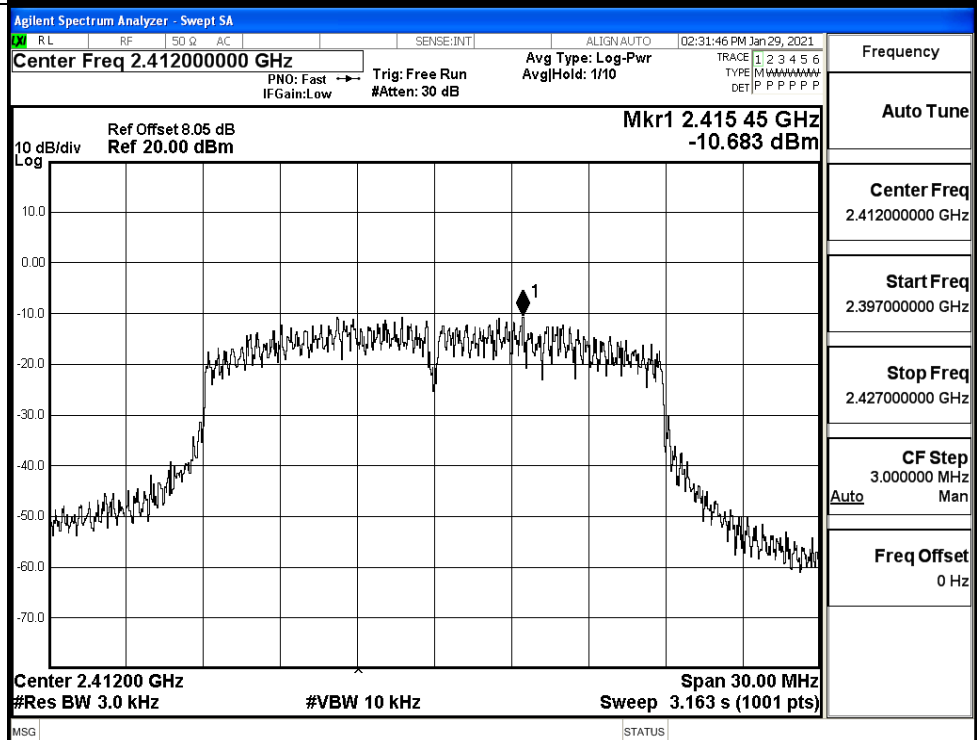
11G/MCH

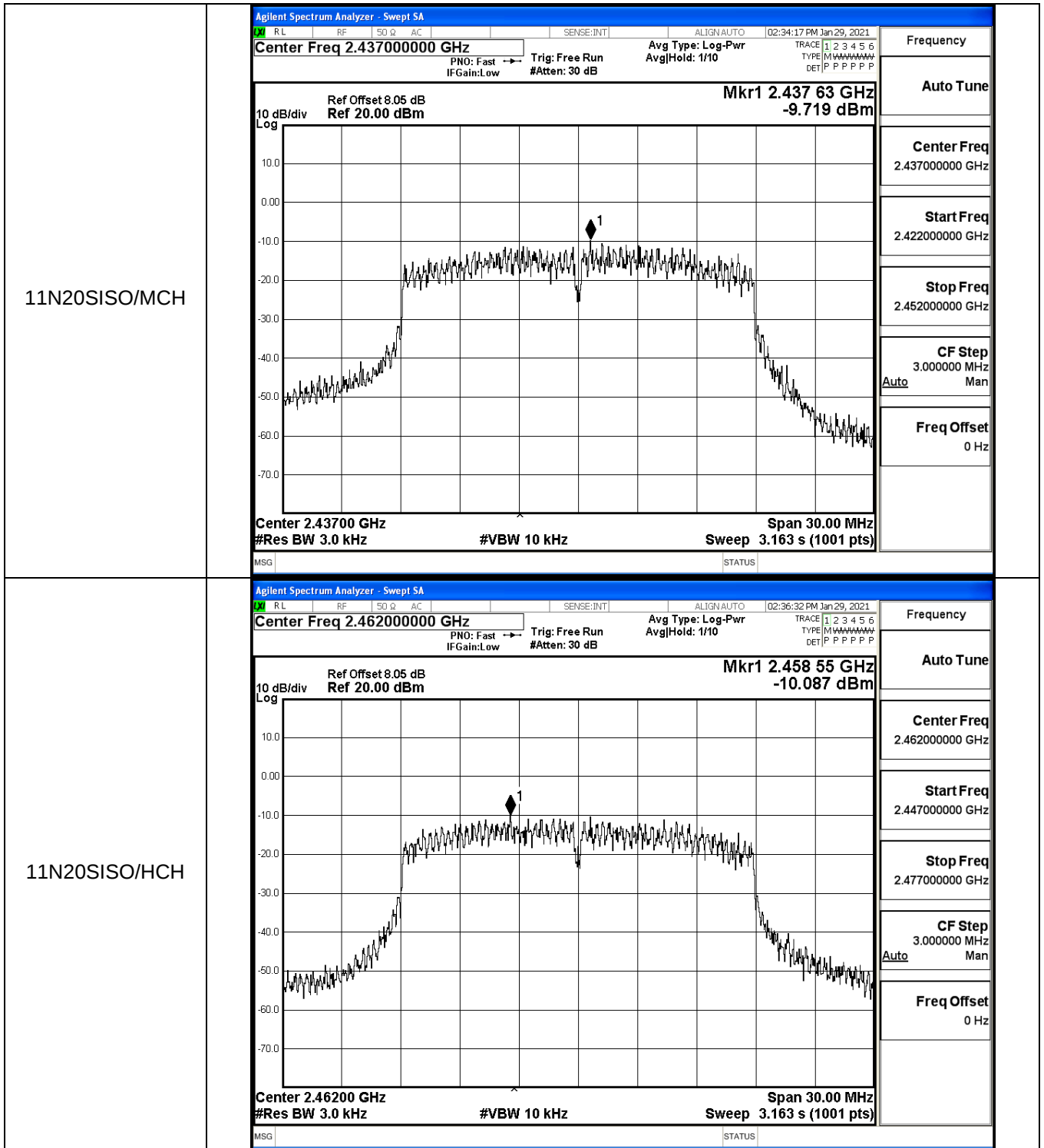


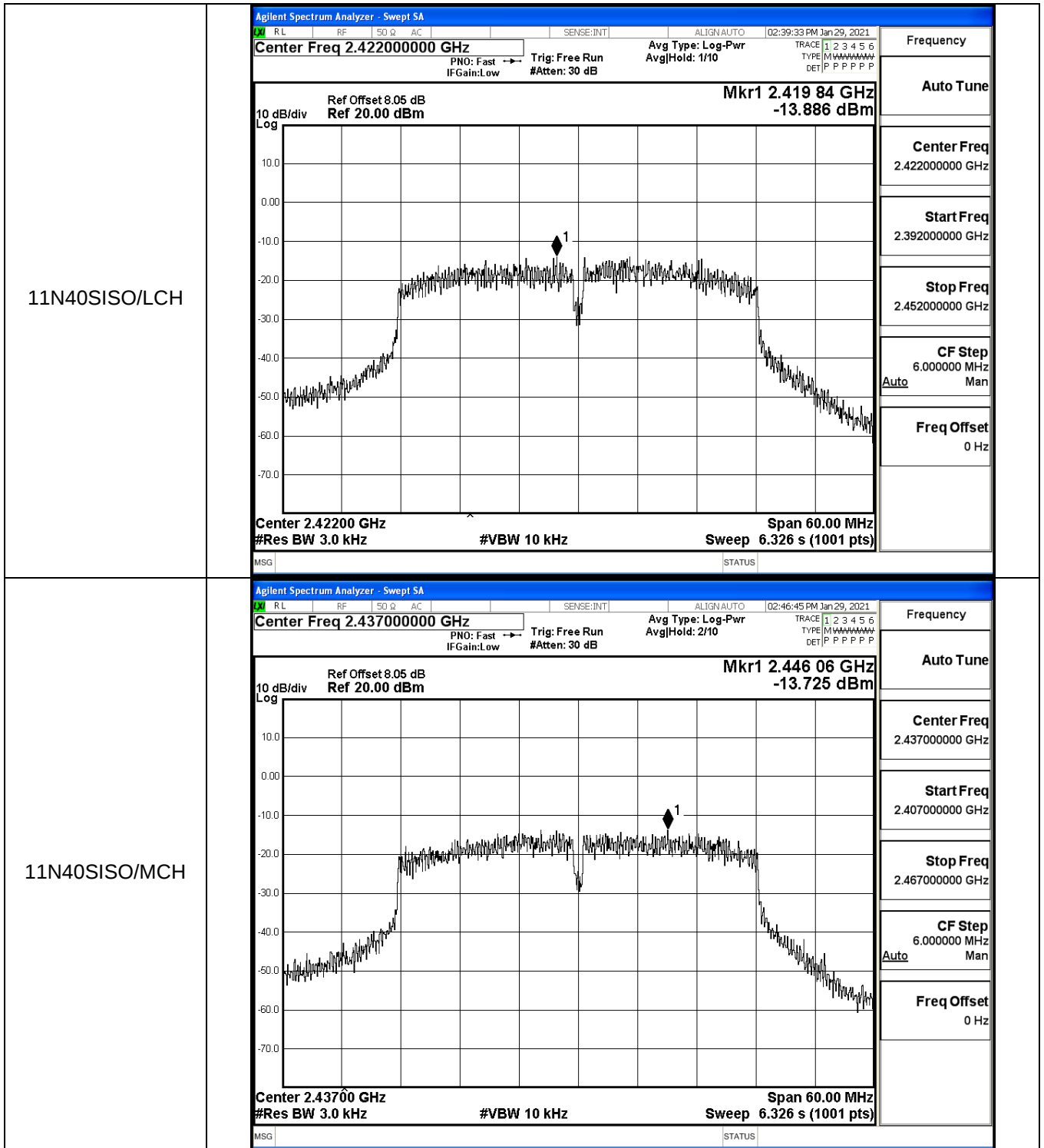
11G/HCH



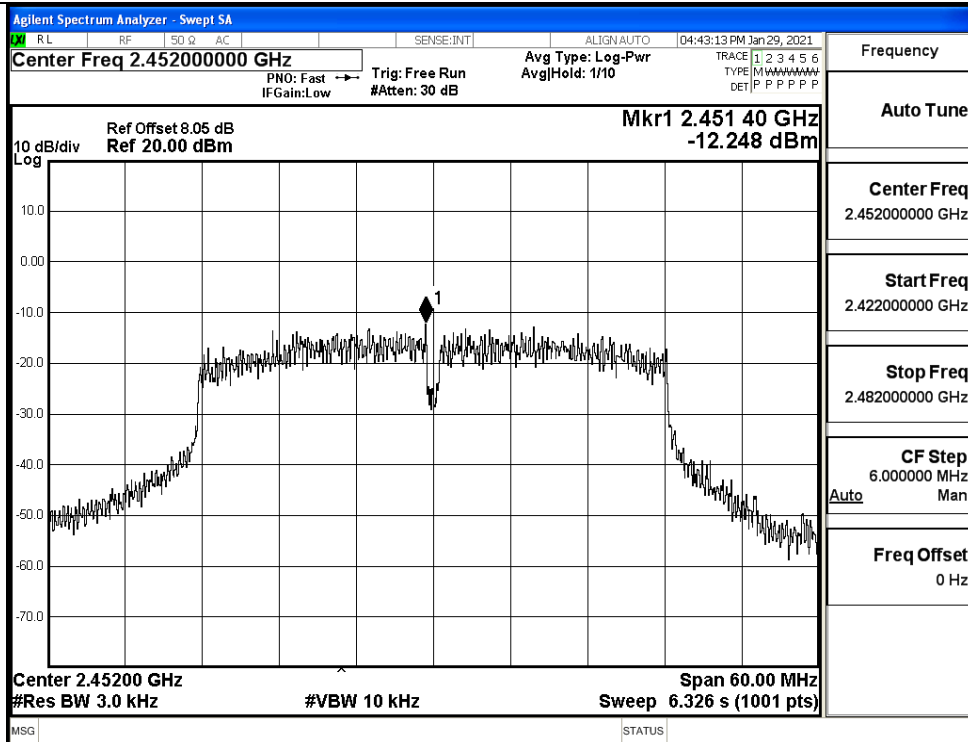
11N20SISO/LCH







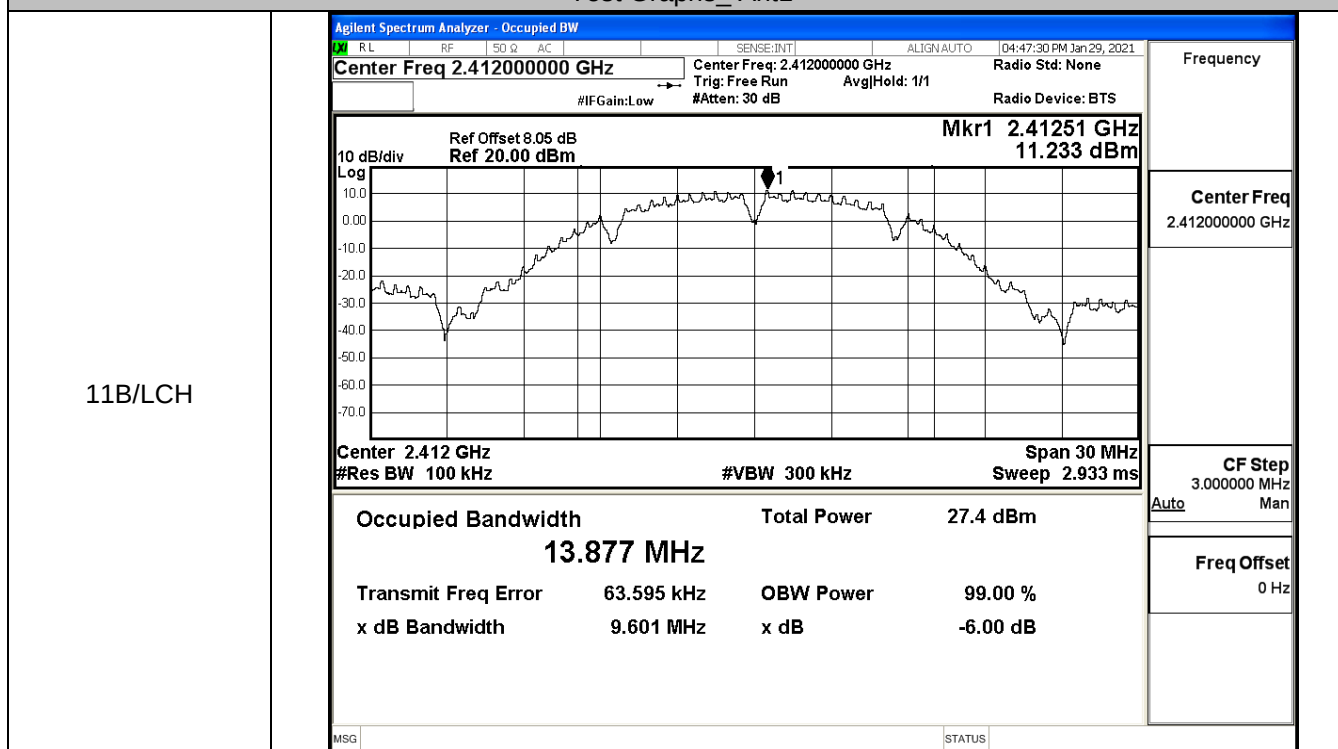
11N40SISO/HCH



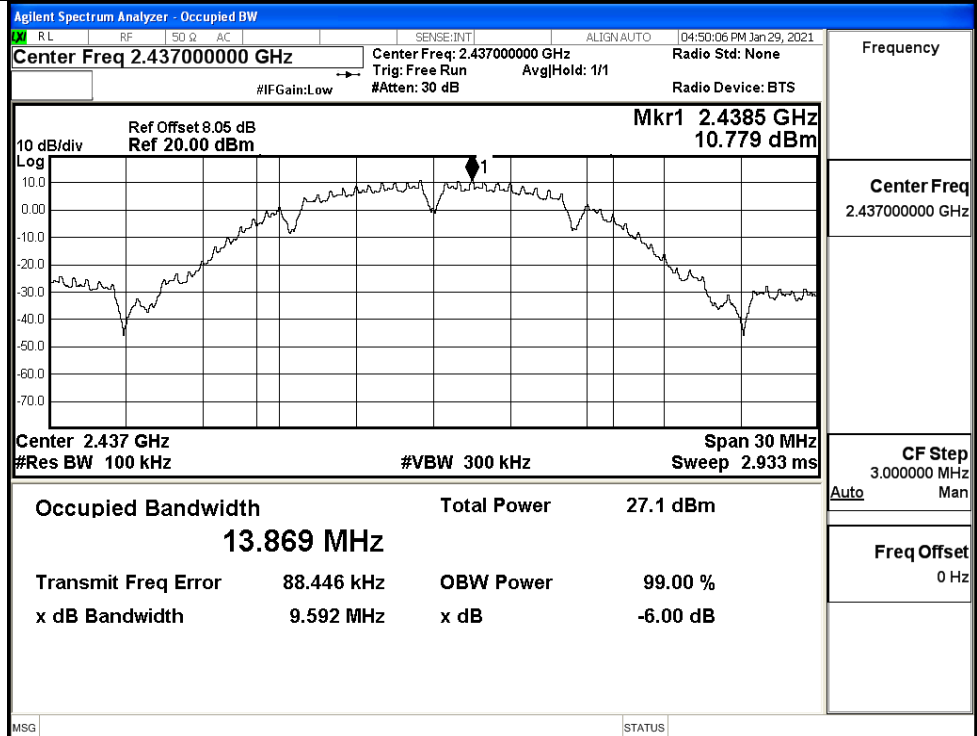
A.4 6dB Bandwidth

Mode	Channel	6dB Bandwidth [MHz]		Limit [MHz]	Verdict
		Ant_1	Ant_2		
11B	LCH	9.601	10.07	≥ 0.5	PASS
	MCH	9.592	9.605	≥ 0.5	PASS
	HCH	9.559	9.107	≥ 0.5	PASS
11G	LCH	15.08	14.07	≥ 0.5	PASS
	MCH	15.15	15.13	≥ 0.5	PASS
	HCH	15.11	15.11	≥ 0.5	PASS
11N20SISO	LCH	15.13	15.05	≥ 0.5	PASS
	MCH	15.13	15.12	≥ 0.5	PASS
	HCH	15.10	15.08	≥ 0.5	PASS
11N40SISO	LCH	33.87	35.07	≥ 0.5	PASS
	MCH	35.05	31.95	≥ 0.5	PASS
	HCH	32.66	33.88	≥ 0.5	PASS

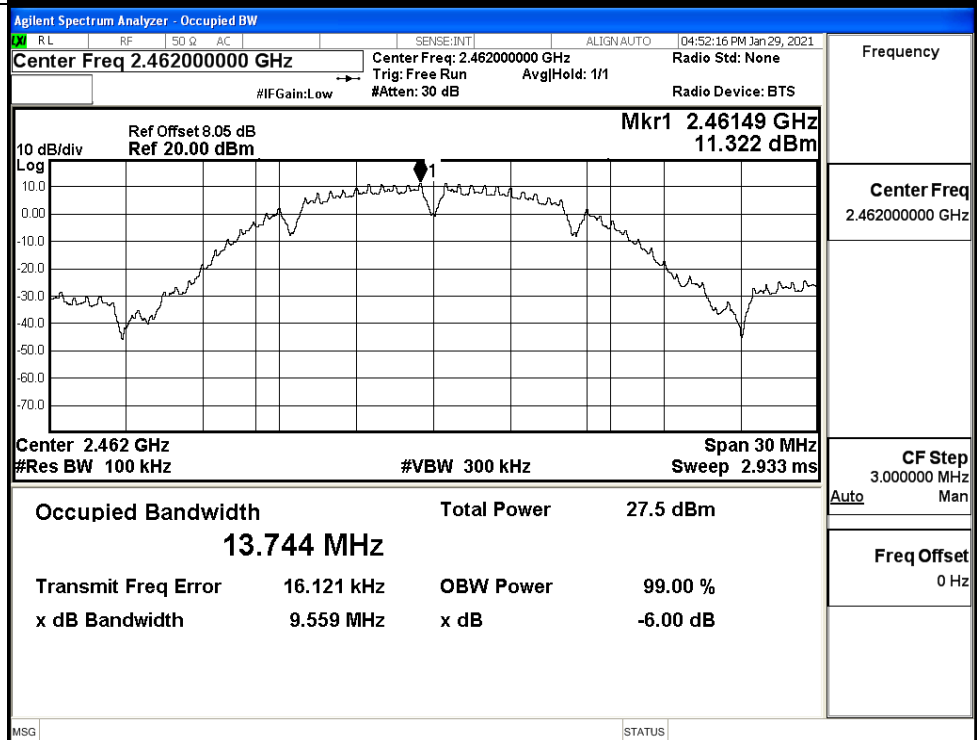
Test Graphs_ Ant1



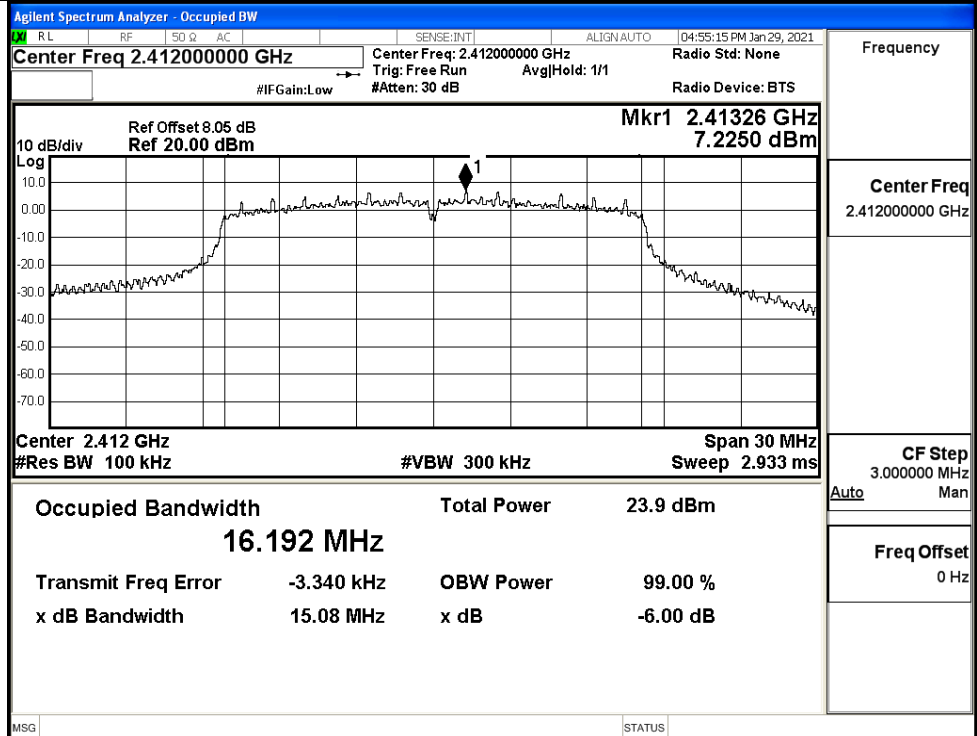
11B/MCH



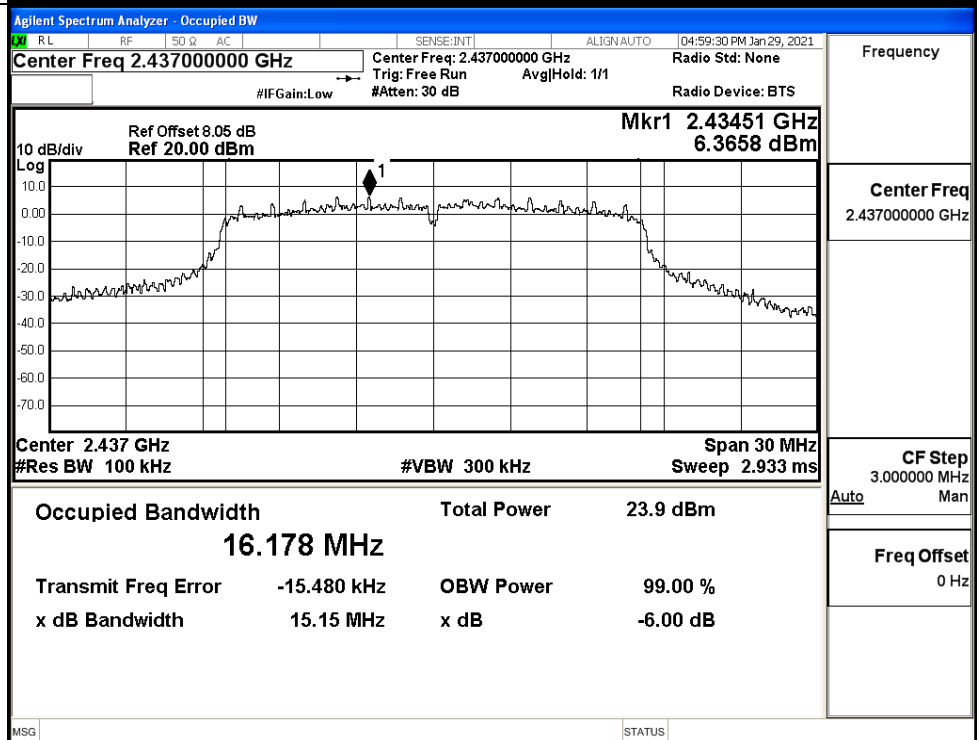
11B/HCH



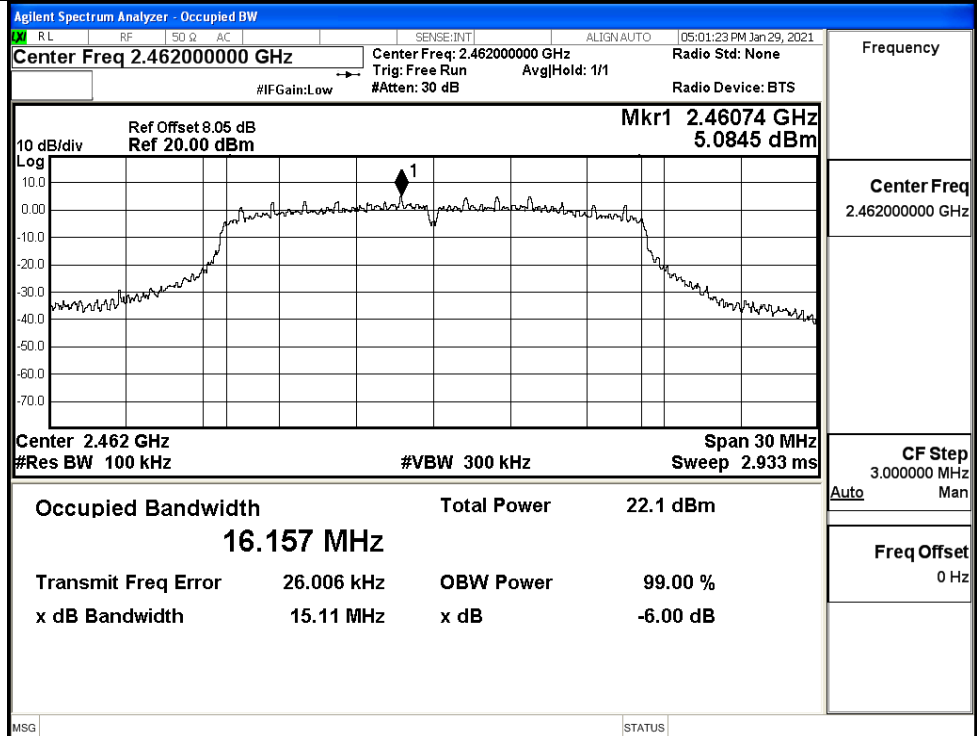
11G/LCH



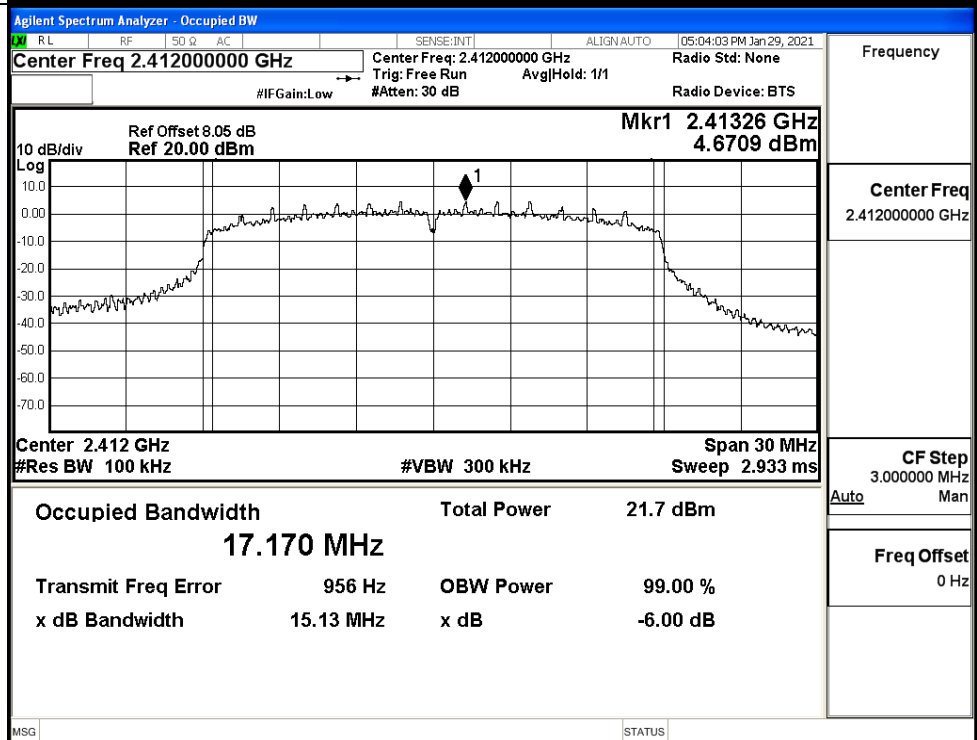
11G/MCH



11G/HCH



11N20SISO/LCH



Agilent Spectrum Analyzer - Occupied BW

Center Freq 2.437000000 GHz

Ref Offset 8.05 dB
Ref 20.00 dBm

10 dB/div
Log

Center 2.437 GHz
#Res BW 100 kHz

Span 30 MHz
Sweep 2.933 ms

Occupied Bandwidth

17.224 MHz

Total Power

21.8 dBm

Transmit Freq Error

31.683 kHz

OBW Power

99.00 %

x dB Bandwidth

15.13 MHz

x dB

-6.00 dB

Frequency

Center Freq

2.437000000 GHz

CF Step

3.000000 MHz

Freq Offset

0 Hz

11N20SISO/MCH

Agilent Spectrum Analyzer - Occupied BW

Center Freq 2.462000000 GHz

Ref Offset 8.05 dB
Ref 20.00 dBm

10 dB/div
Log

Center 2.462 GHz
#Res BW 100 kHz

Span 30 MHz
Sweep 2.933 ms

Occupied Bandwidth

17.213 MHz

Total Power

21.8 dBm

Transmit Freq Error

20.772 kHz

OBW Power

99.00 %

x dB Bandwidth

15.10 MHz

x dB

-6.00 dB

Frequency

Center Freq

2.462000000 GHz

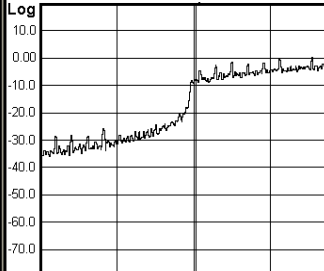
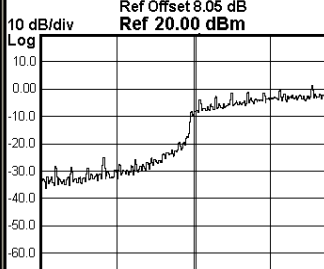
CF Step

3.000000 MHz

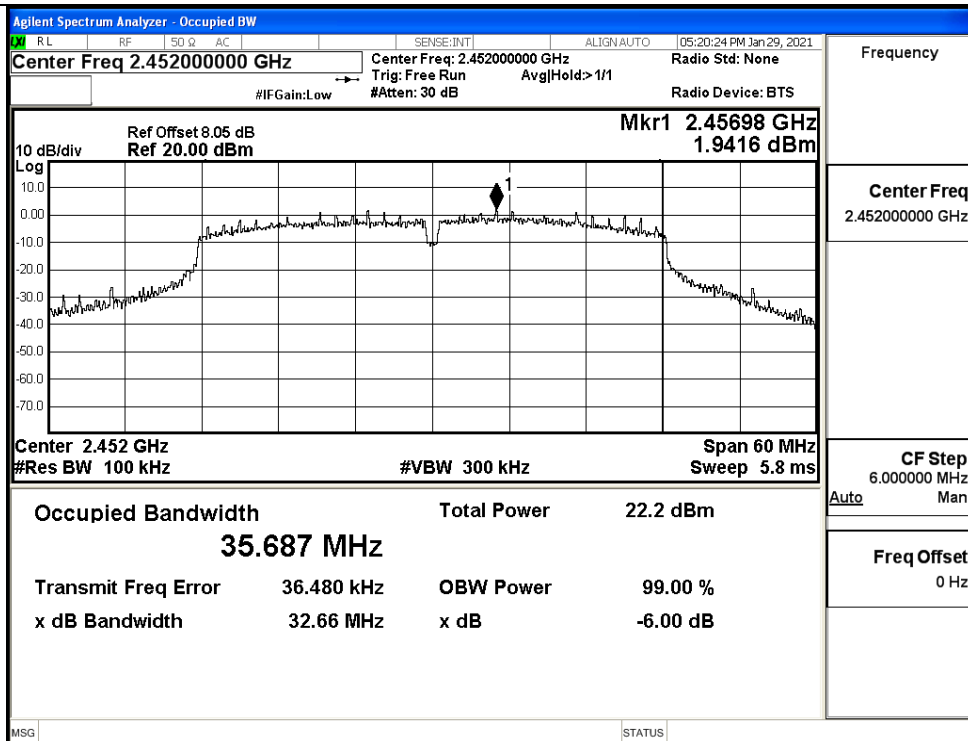
Freq Offset

0 Hz

11N20SISO/HCH

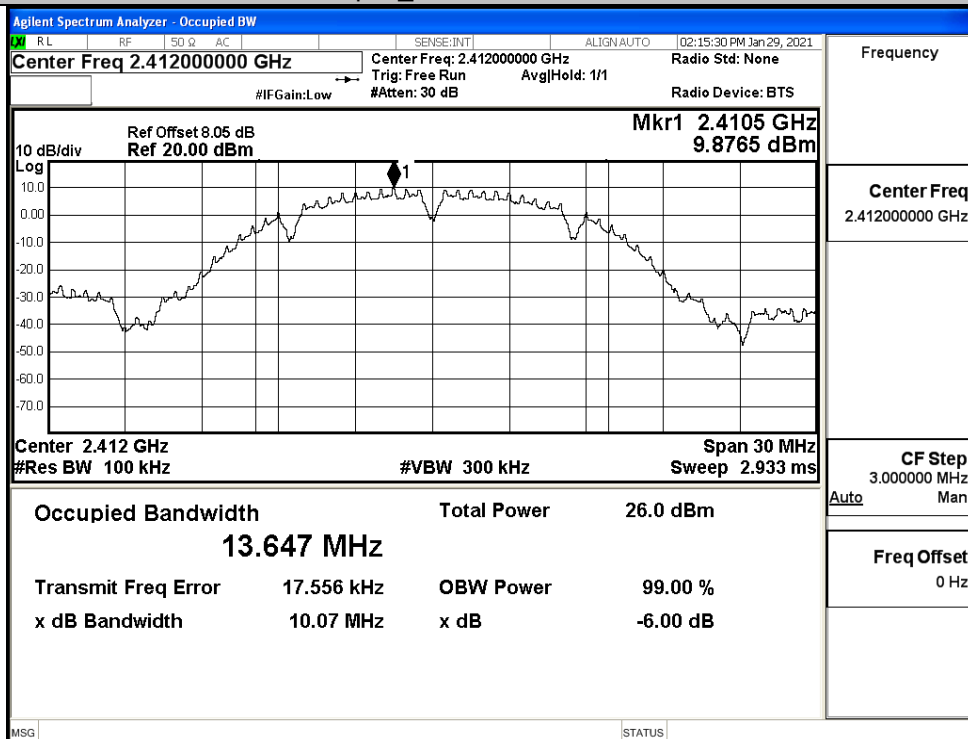
11N40SISO/LCH	Agilent Spectrum Analyzer - Occupied BW	Frequency
	Center Freq 2.42200000 GHz 10 dB/div Log  Center 2.422 GHz #Res BW 100 kHz Span 60 MHz Sweep 5.8 ms Occupied Bandwidth 35.723 MHz Total Power 22.1 dBm Transmit Freq Error 43.875 kHz OBW Power 99.00 % x dB Bandwidth 33.87 MHz x dB -6.00 dB MSG STATUS	Frequency 2.42200000 GHz
		Center Freq 2.42200000 GHz
		CF Step 6.000000 MHz Auto Man
		Freq Offset 0 Hz
11N40SISO/MCH	Agilent Spectrum Analyzer - Occupied BW	Frequency
	Center Freq 2.43700000 GHz 10 dB/div Log  Center 2.437 GHz #Res BW 100 kHz Span 60 MHz Sweep 5.8 ms Occupied Bandwidth 35.639 MHz Total Power 22.6 dBm Transmit Freq Error 52.633 kHz OBW Power 99.00 % x dB Bandwidth 35.05 MHz x dB -6.00 dB MSG STATUS	Frequency 2.43700000 GHz
		Center Freq 2.43700000 GHz
		CF Step 6.000000 MHz Auto Man
		Freq Offset 0 Hz

11N40SISO/HCH

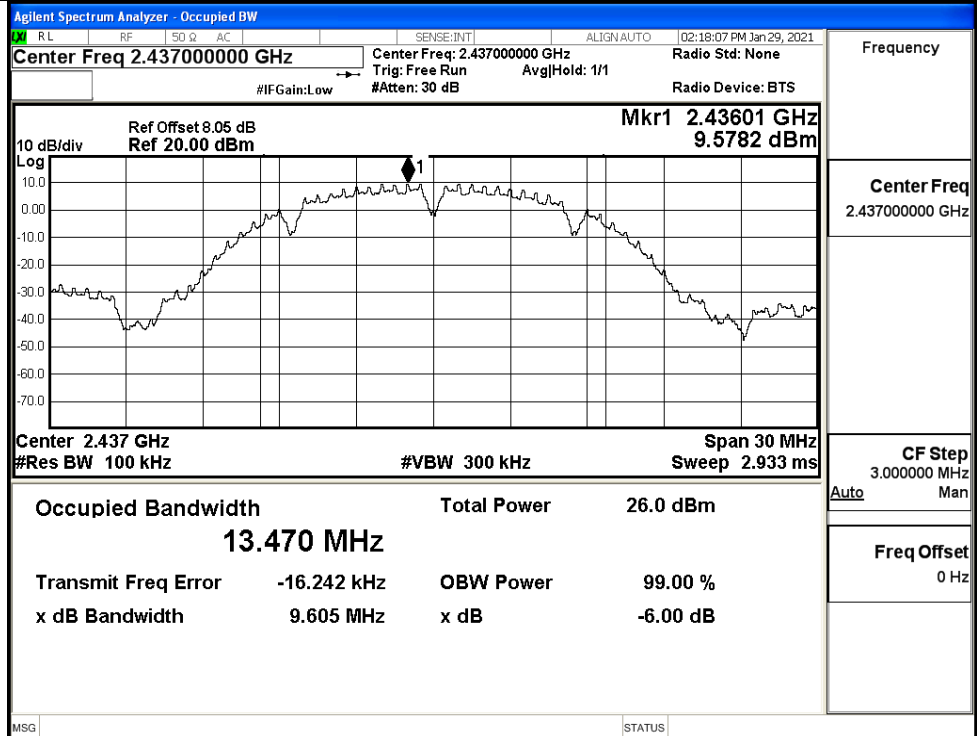


Test Graphs_Ant2

11B/LCH



11B/MCH



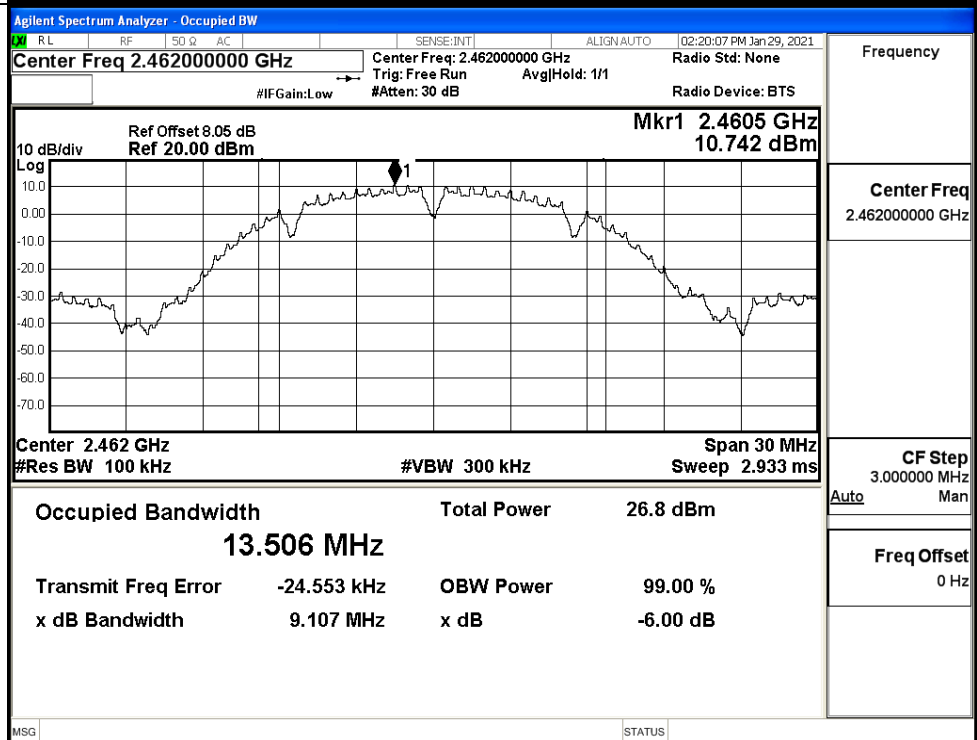
Frequency

Center Freq
2.437000000 GHz

CF Step
3.000000 MHz
Auto Man

Freq Offset
0 Hz

11B/HCH



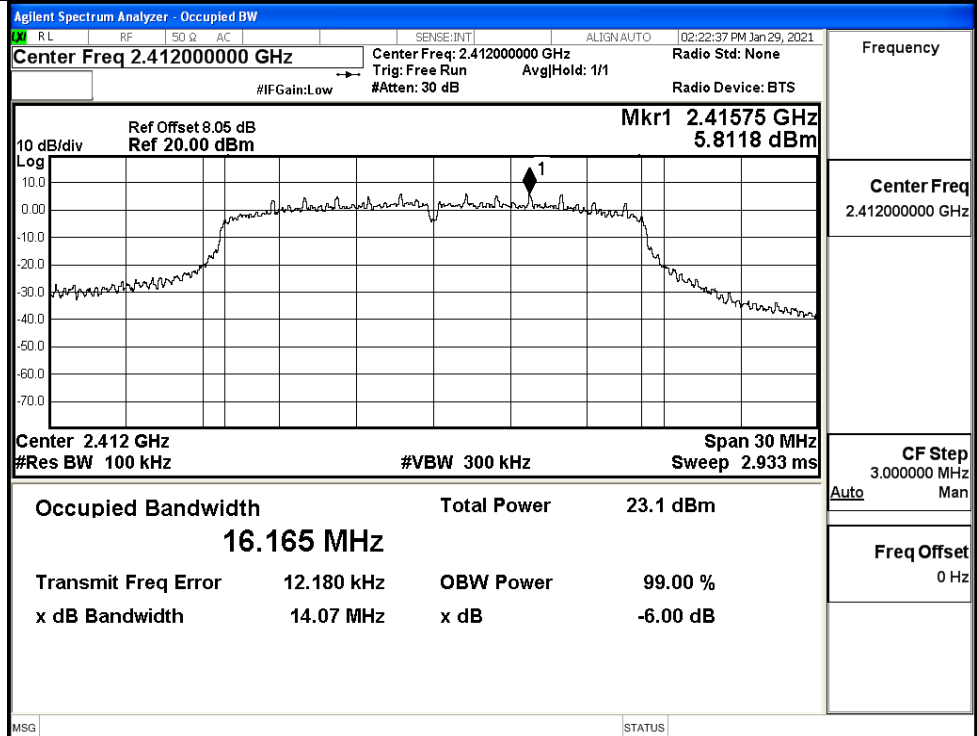
Frequency

Center Freq
2.462000000 GHz

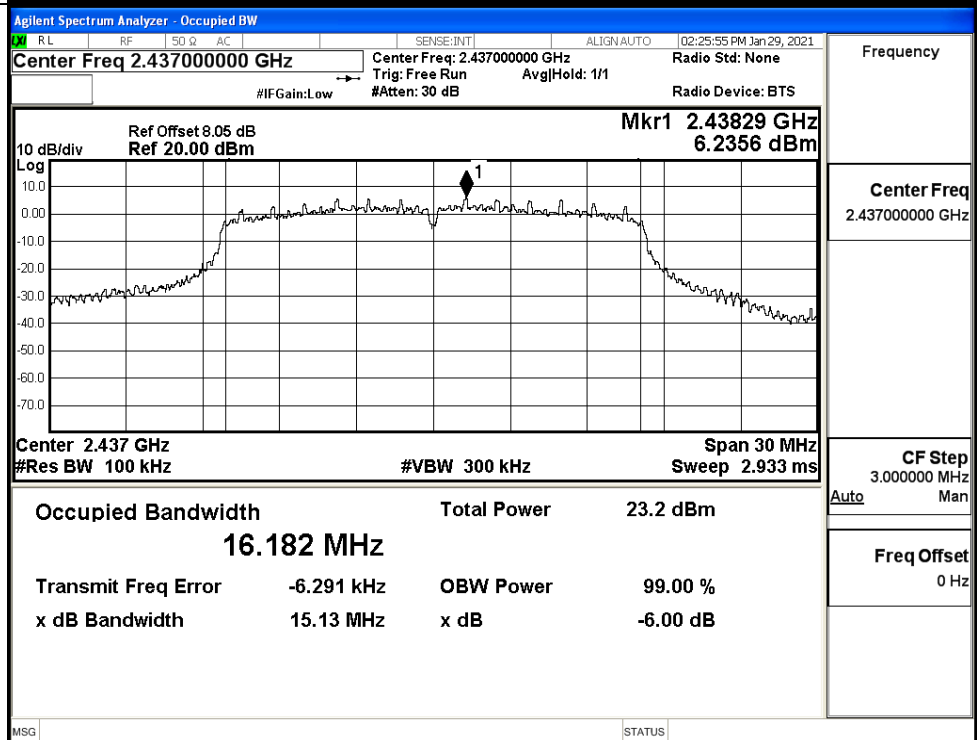
CF Step
3.000000 MHz
Auto Man

Freq Offset
0 Hz

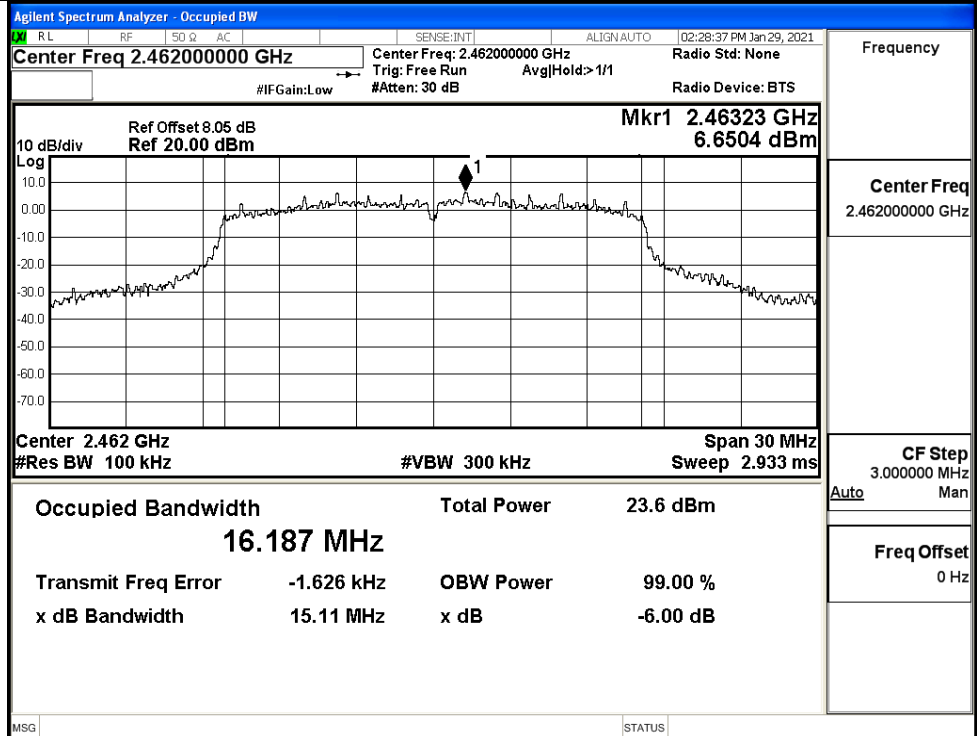
11G/LCH



11G/MCH



11G/HCH



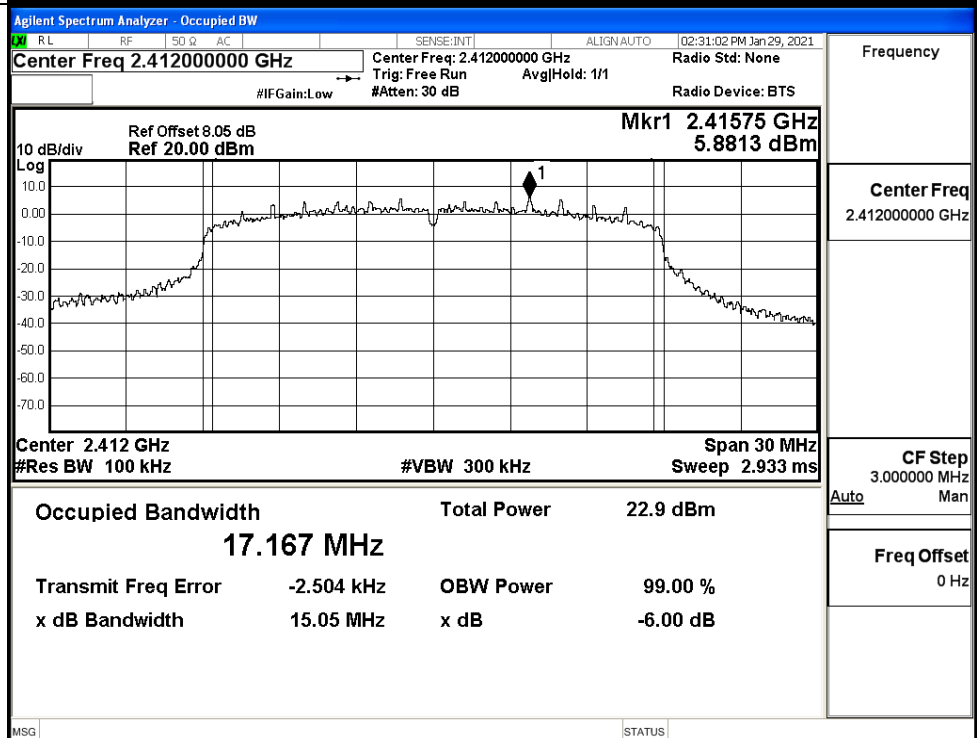
Frequency

Center Freq
2.46200000 GHz

CF Step
3.000000 MHz
Auto Man

Freq Offset
0 Hz

11N20SISO/LCH



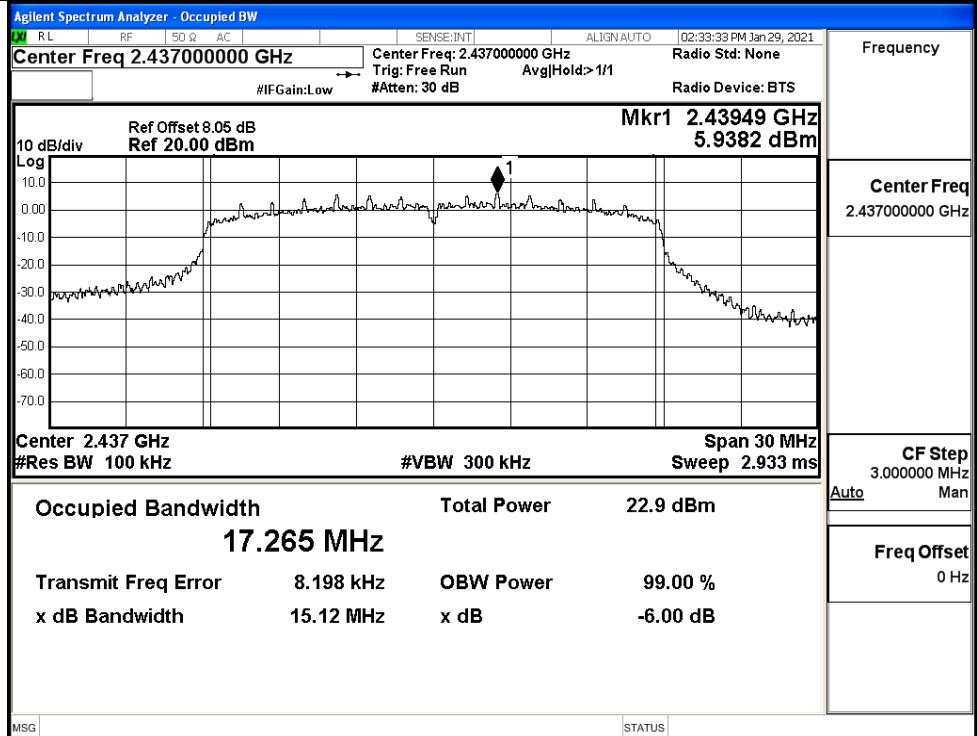
Frequency

Center Freq
2.41200000 GHz

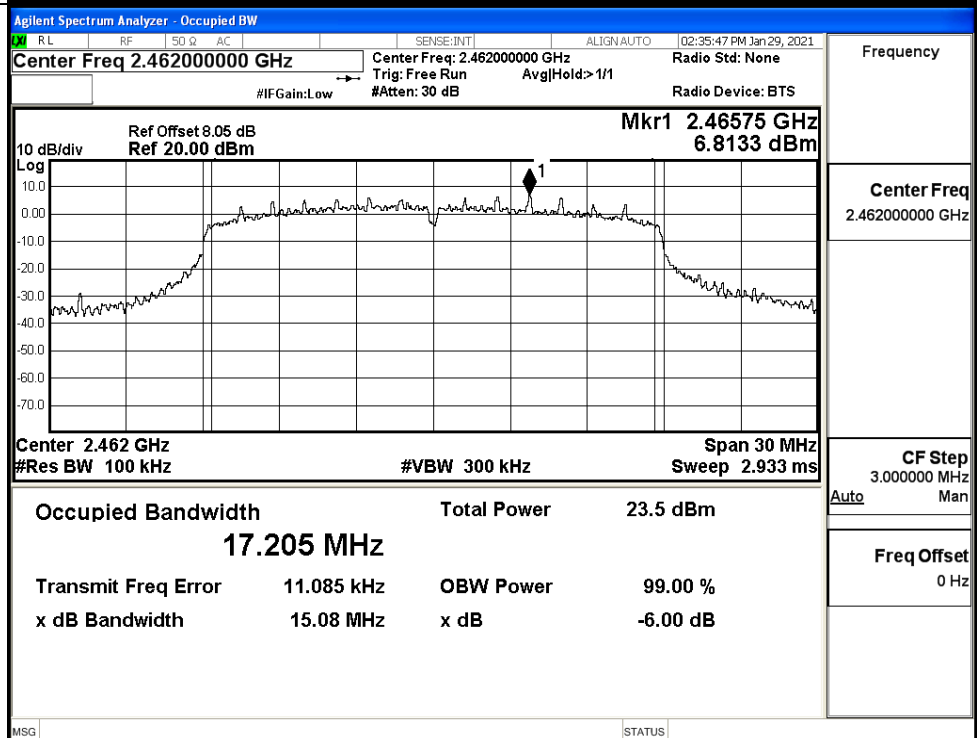
CF Step
3.000000 MHz
Auto Man

Freq Offset
0 Hz

11N20SISO/MCH



11N20SISO/HCH



11N40SISO/LCH

Agilent Spectrum Analyzer - Occupied BW

RL

RF

50 Ω

AC

SENSE:INT

ALIGN:AUTO

02:38:37 PM Jan 29, 2021

Center Freq 2.422000000 GHz

Center Freq: 2.422000000 GHz

Trig: Free Run

Avg/Hold: 1/1

Radio Std: None

#IF Gain: Low

#Atten: 30 dB

Radio Device: BTS

Ref Offset 8.05 dB

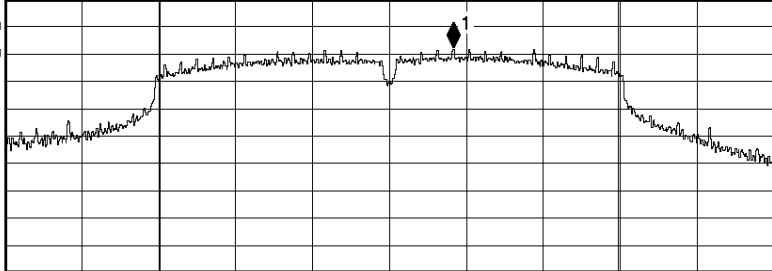
Ref 20.00 dBm

Mkr1 2.42698 GHz

1.8507 dBm

10 dB/div

Log



Center 2.422 GHz

#Res BW 100 kHz

#VBW 300 kHz

Span 60 MHz

Sweep 5.8 ms

Occupied Bandwidth

Total Power 22.5 dBm

35.673 MHz

Transmit Freq Error 15.741 kHz

OBW Power 99.00 %

x dB Bandwidth 35.07 MHz

x dB -6.00 dB

MSG

STATUS

Frequency

Center Freq
2.422000000 GHz

CF Step
6.000000 MHz

Auto Man

Freq Offset
0 Hz

11N40SISO/MCH

Agilent Spectrum Analyzer - Occupied BW

RL

RF

50 Ω

AC

SENSE:INT

ALIGN:AUTO

02:45:27 PM Jan 29, 2021

Center Freq 2.437000000 GHz

Center Freq: 2.437000000 GHz

Trig: Free Run

Avg/Hold: 1/1

Radio Std: None

#IF Gain: Low

#Atten: 30 dB

Radio Device: BTS

Ref Offset 8.05 dB

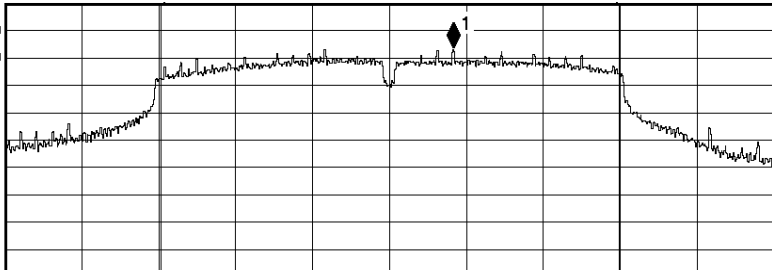
Ref 20.00 dBm

Mkr1 2.44198 GHz

3.1515 dBm

10 dB/div

Log



Center 2.437 GHz

#Res BW 100 kHz

#VBW 300 kHz

Span 60 MHz

Sweep 5.8 ms

Occupied Bandwidth

Total Power 23.2 dBm

35.736 MHz

Transmit Freq Error 61.405 kHz

OBW Power 99.00 %

x dB Bandwidth 31.95 MHz

x dB -6.00 dB

MSG

STATUS

Frequency

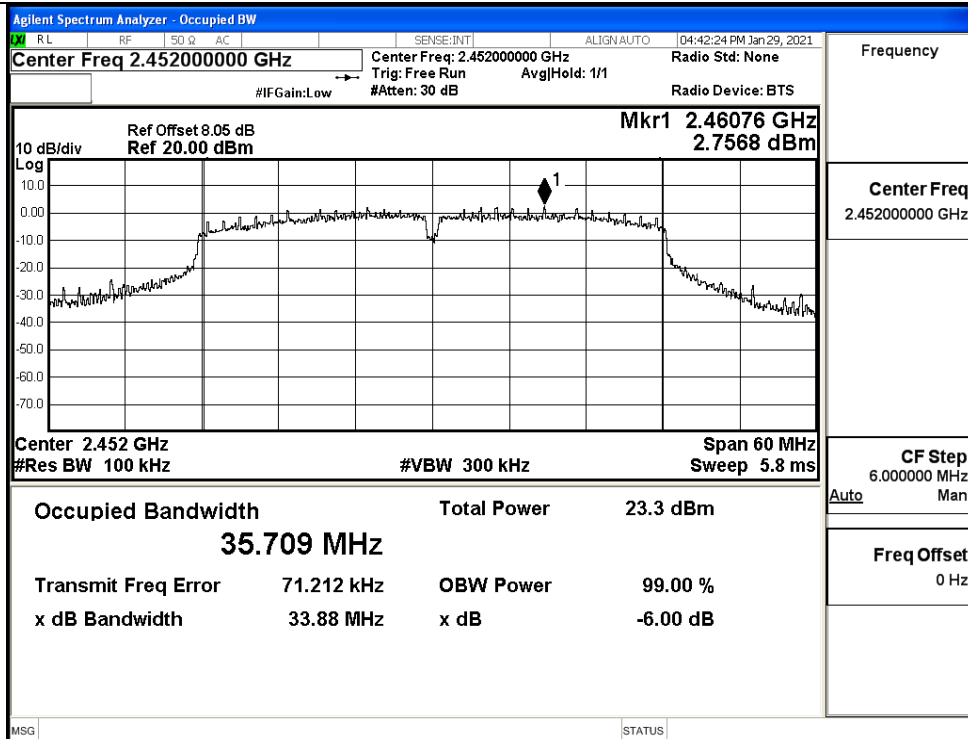
Center Freq
2.437000000 GHz

CF Step
6.000000 MHz

Auto Man

Freq Offset
0 Hz

11N40SISO/HCH



Frequency

Center Freq
2.45200000 GHz

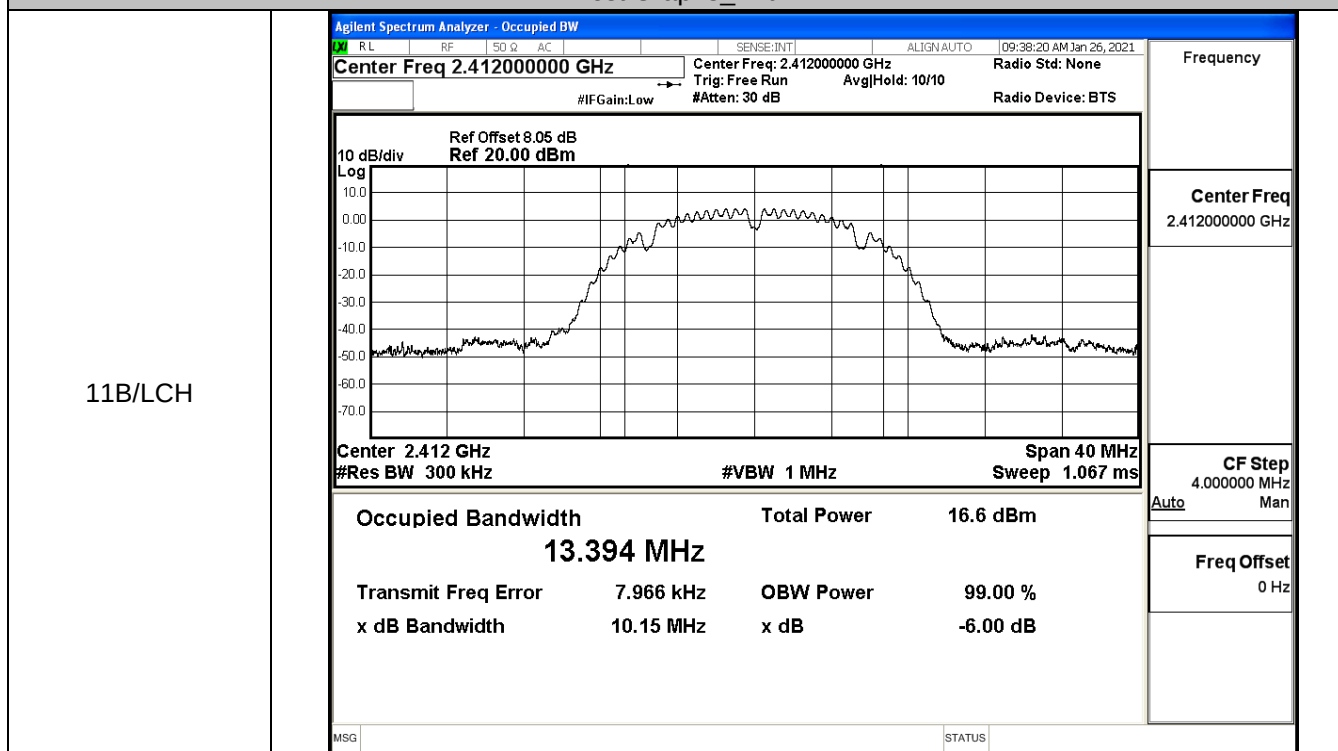
CF Step
6.000000 MHz
Auto Man

Freq Offset
0 Hz

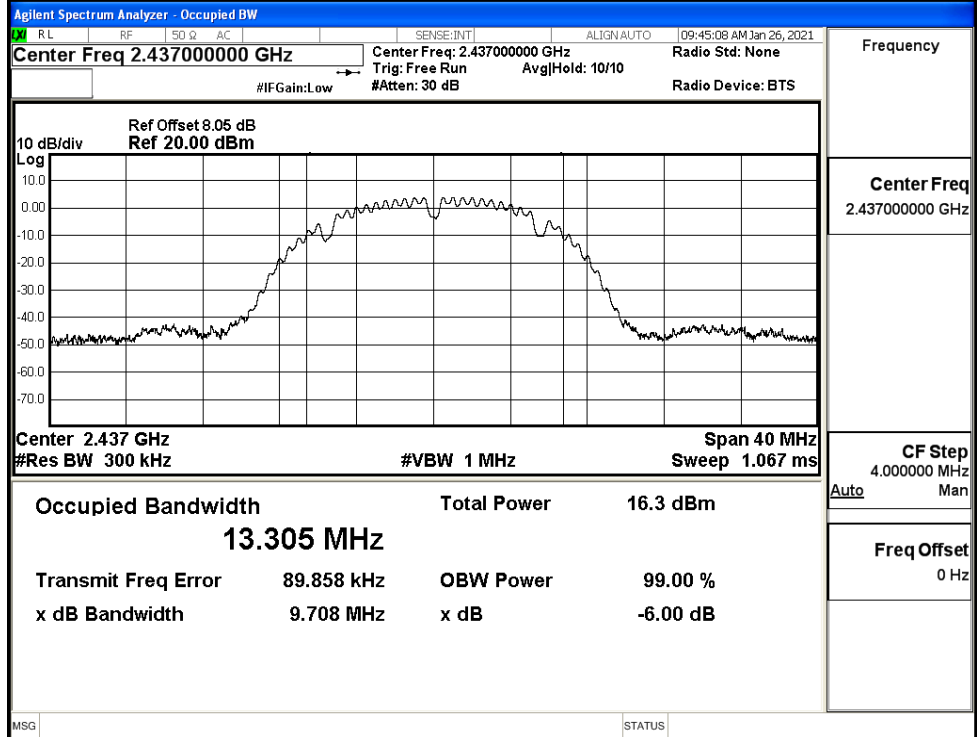
A.5 Occupied Bandwidth

Mode	Channel	Occupied Bandwidth [MHz]		Limit [MHz]	Verdict
		Ant_1	Ant_2		
11B	LCH	13.394	13.797	≥ 0.5	PASS
	MCH	13.305	13.588	≥ 0.5	PASS
	HCH	13.360	13.600	≥ 0.5	PASS
11G	LCH	16.177	16.220	≥ 0.5	PASS
	MCH	16.171	16.208	≥ 0.5	PASS
	HCH	16.172	16.227	≥ 0.5	PASS
11N20SISO	LCH	17.211	17.296	≥ 0.5	PASS
	MCH	17.264	17.304	≥ 0.5	PASS
	HCH	17.234	17.233	≥ 0.5	PASS
11N40SISO	LCH	35.718	35.891	≥ 0.5	PASS
	MCH	35.783	35.844	≥ 0.5	PASS
	HCH	35.820	35.834	≥ 0.5	PASS

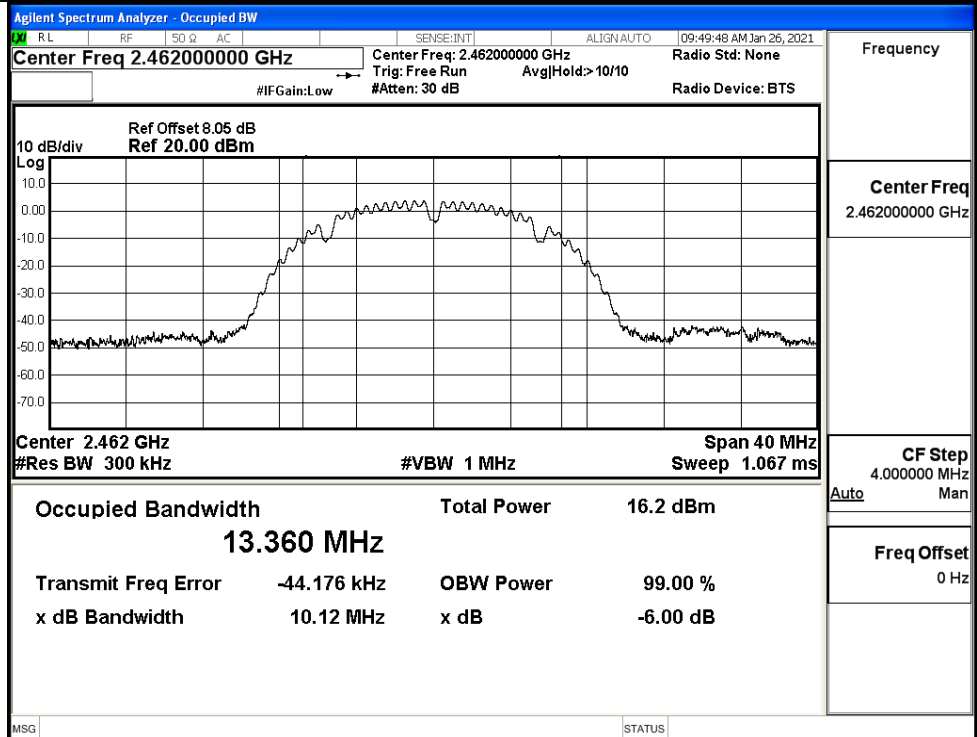
Test Graphs_Ant1



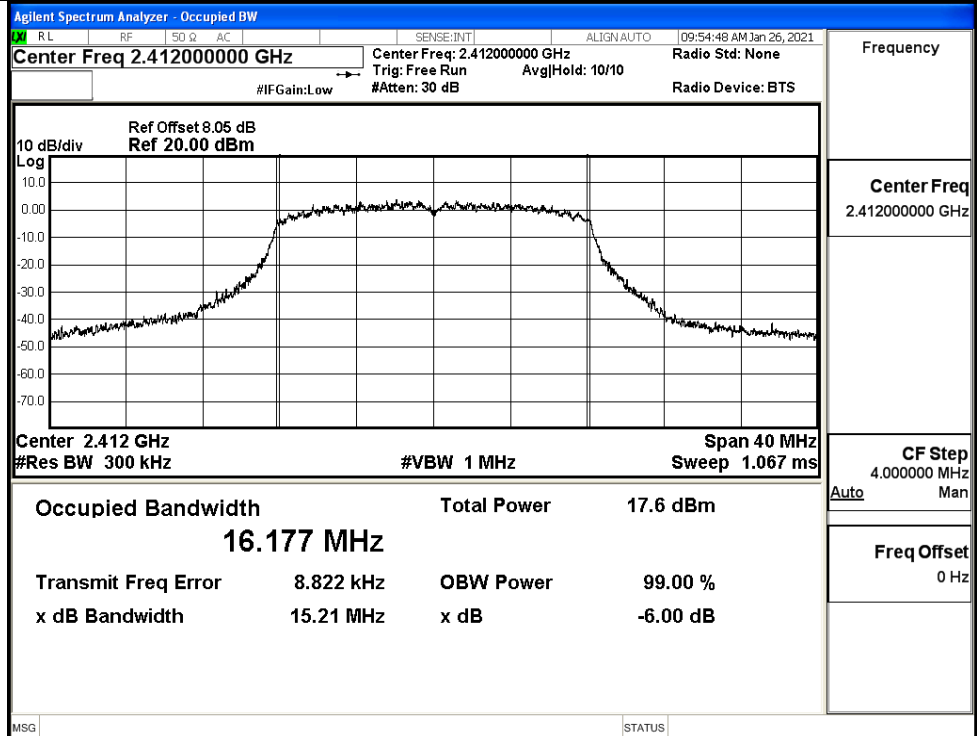
11B/MCH



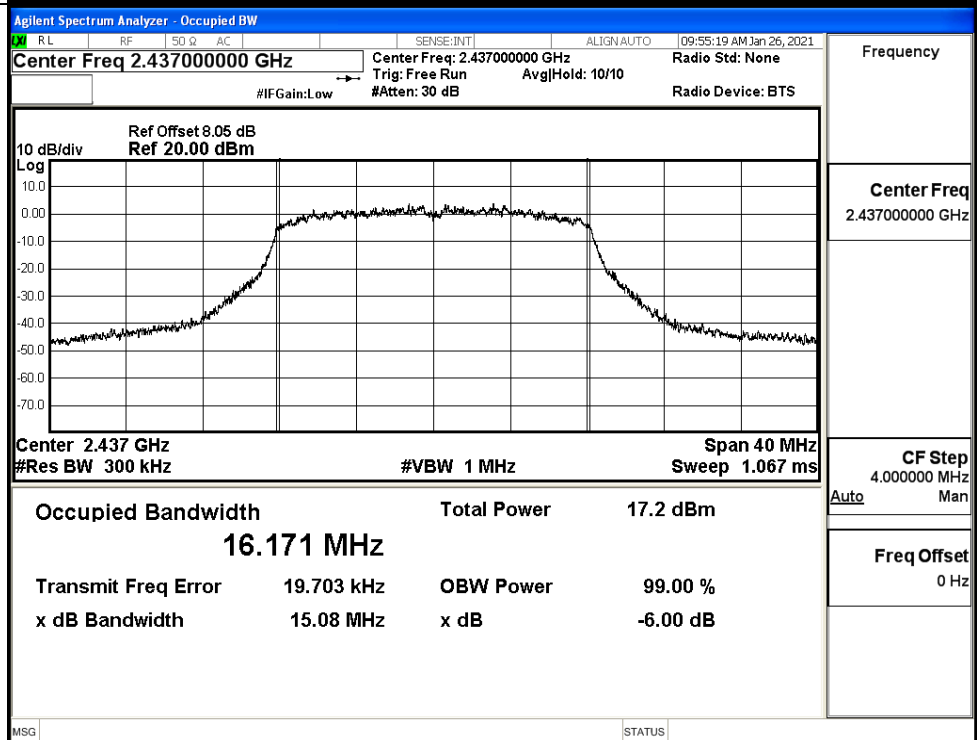
11B/HCH



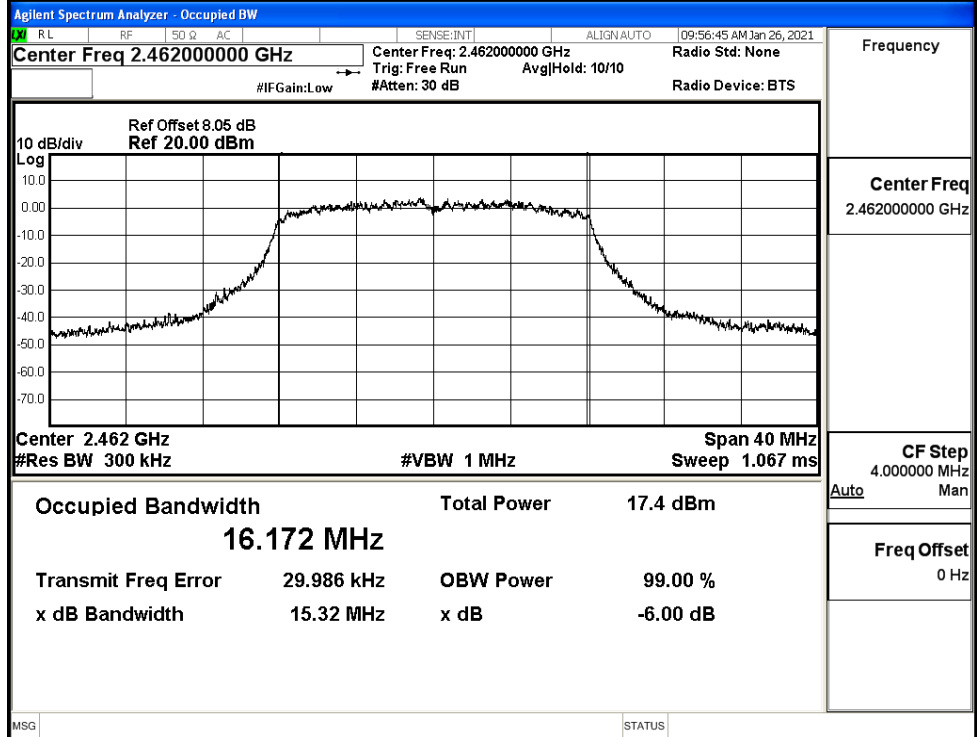
11G/LCH



11G/MCH



11G/HCH



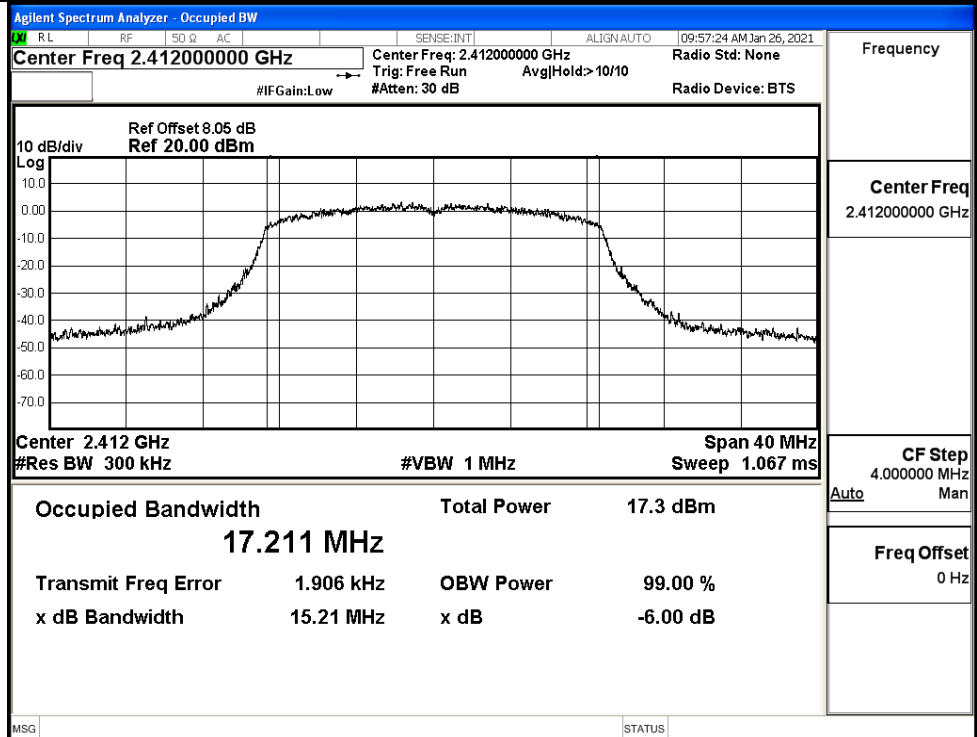
Frequency

Center Freq
2.462000000 GHz

CF Step
4.000000 MHz
Auto Man

Freq Offset
0 Hz

11N20SISO/LCH



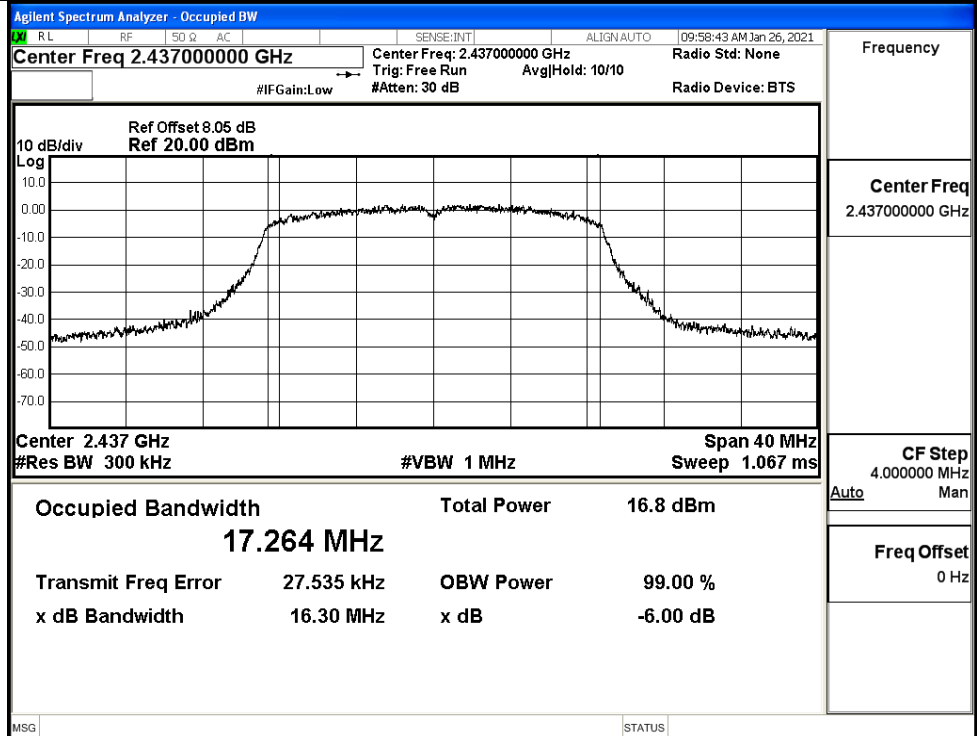
Frequency

Center Freq
2.412000000 GHz

CF Step
4.000000 MHz
Auto Man

Freq Offset
0 Hz

11N20SISO/MCH



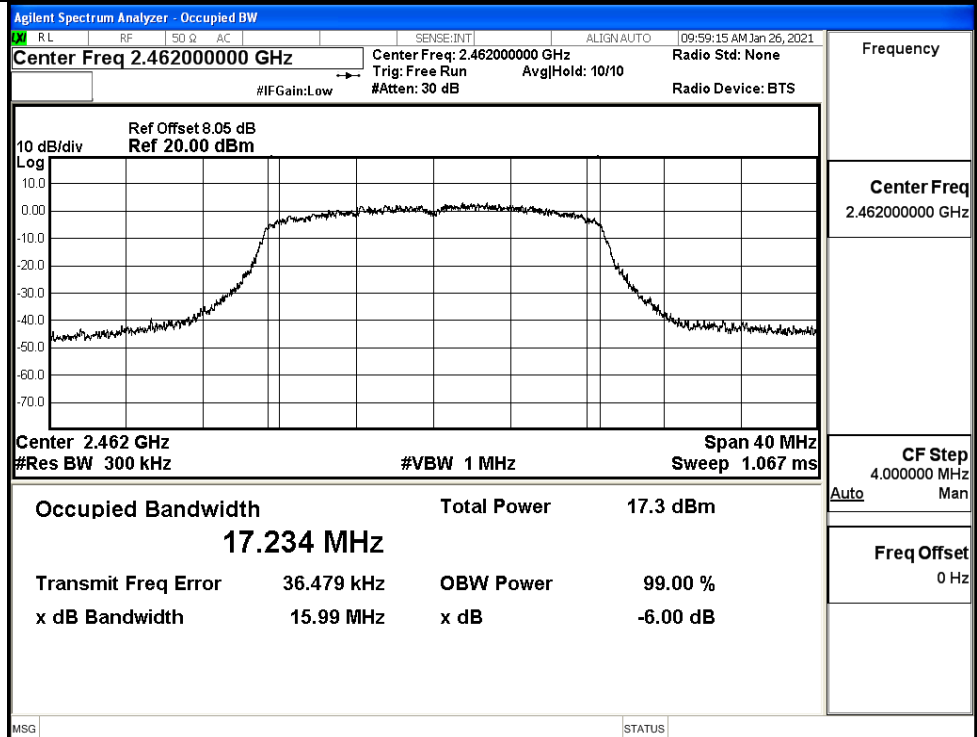
Frequency

Center Freq
2.437000000 GHz

CF Step
4.000000 MHz
Auto Man

Freq Offset
0 Hz

11N20SISO/HCH



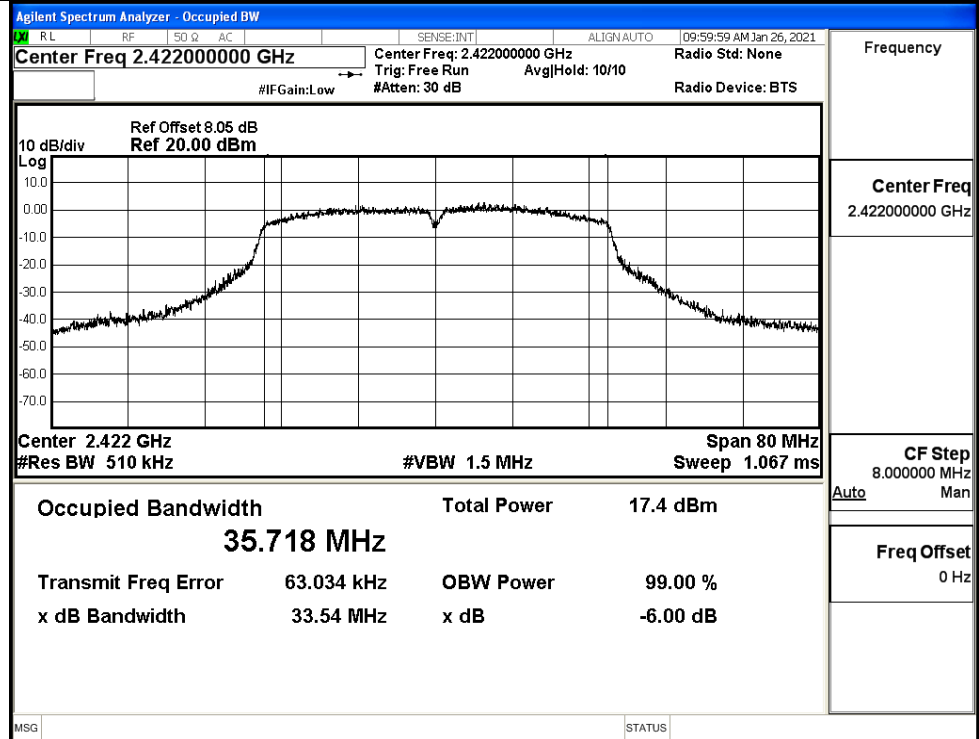
Frequency

Center Freq
2.462000000 GHz

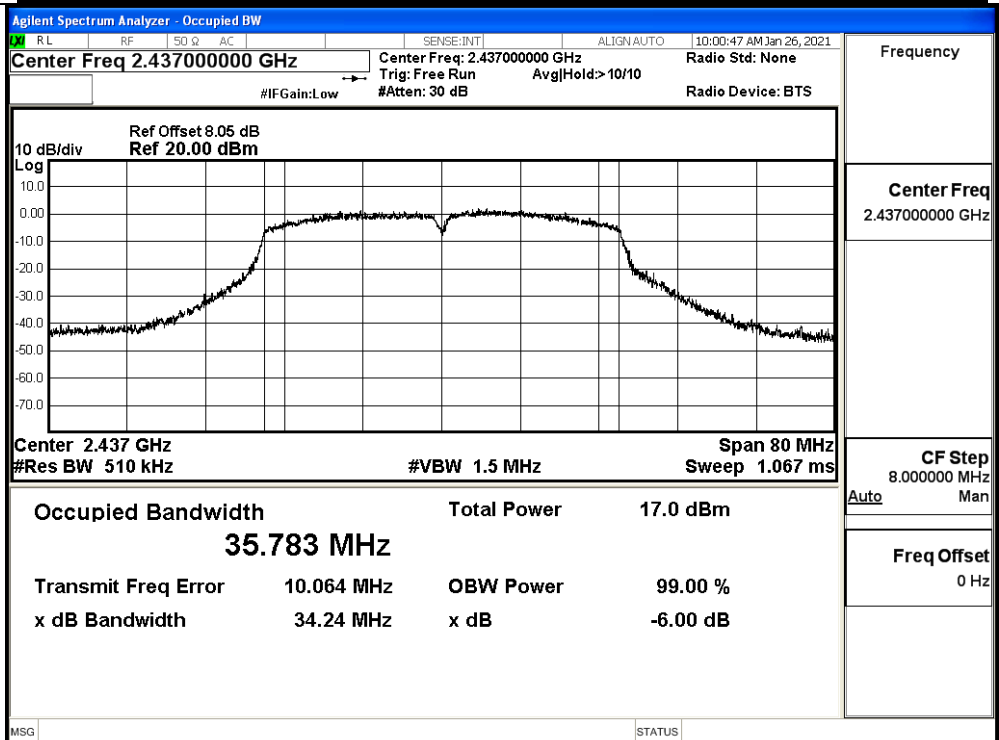
CF Step
4.000000 MHz
Auto Man

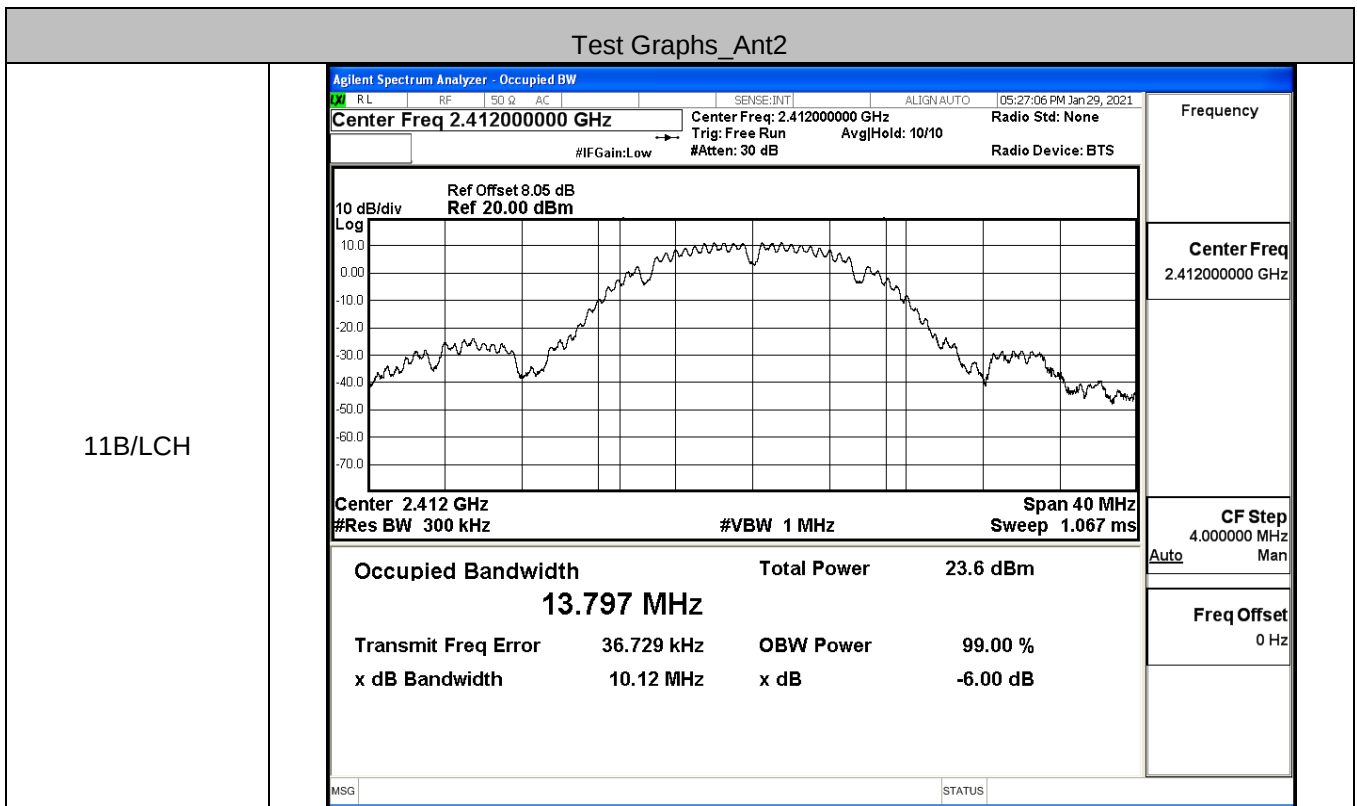
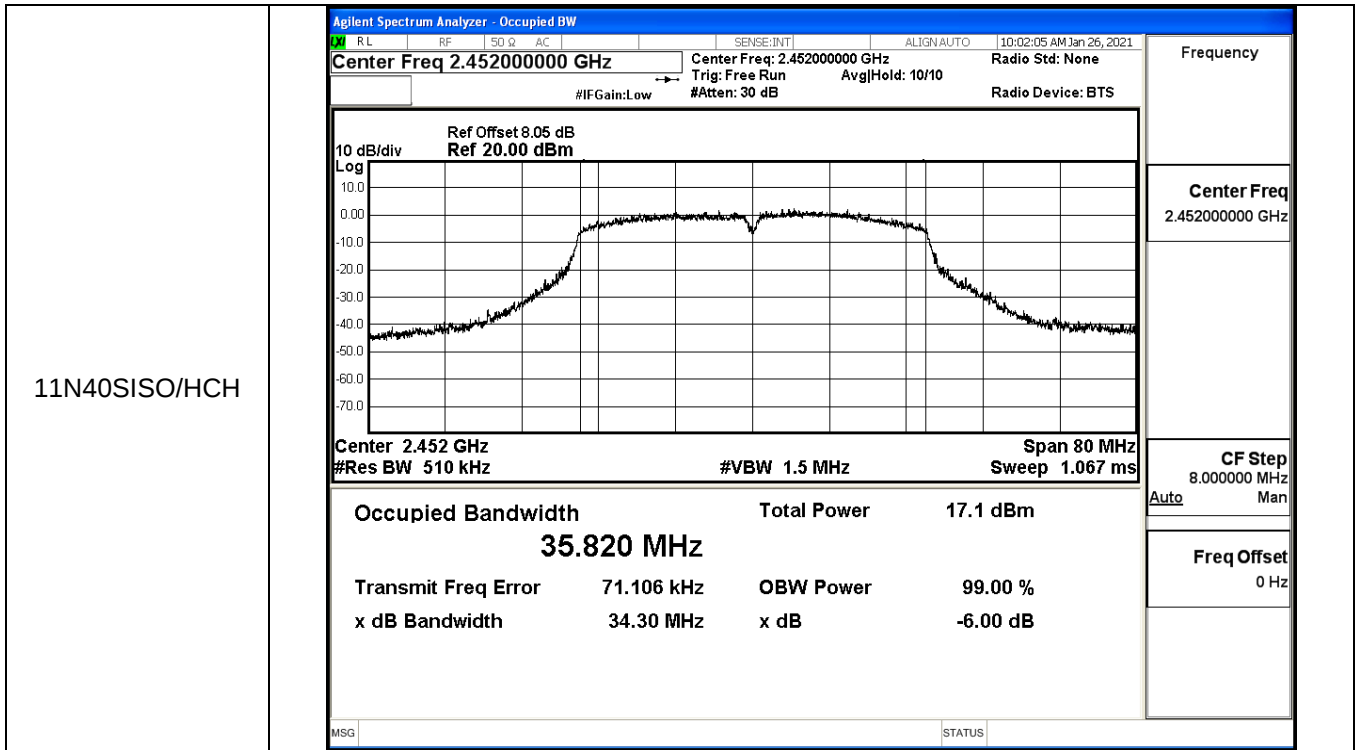
Freq Offset
0 Hz

11N40SISO/LCH

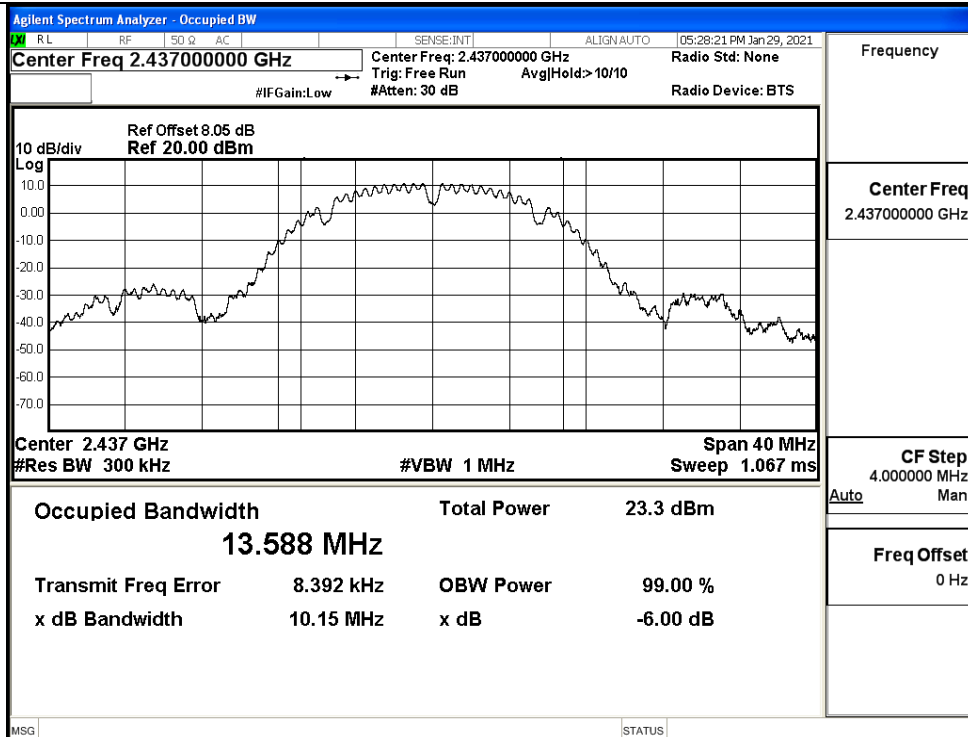


11N40SISO/MCH

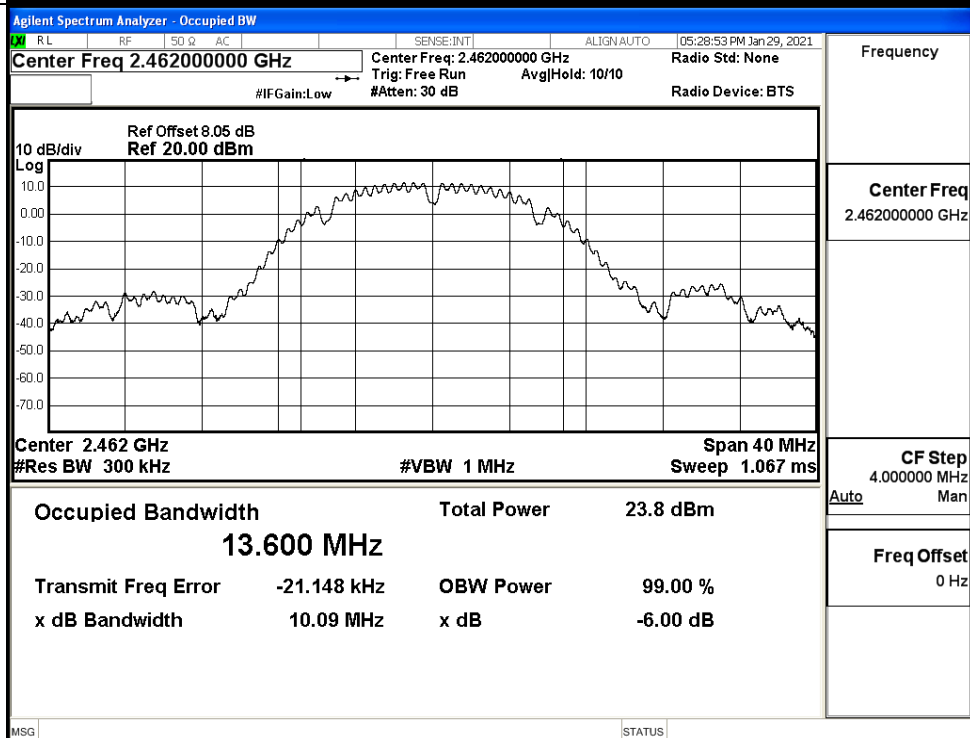




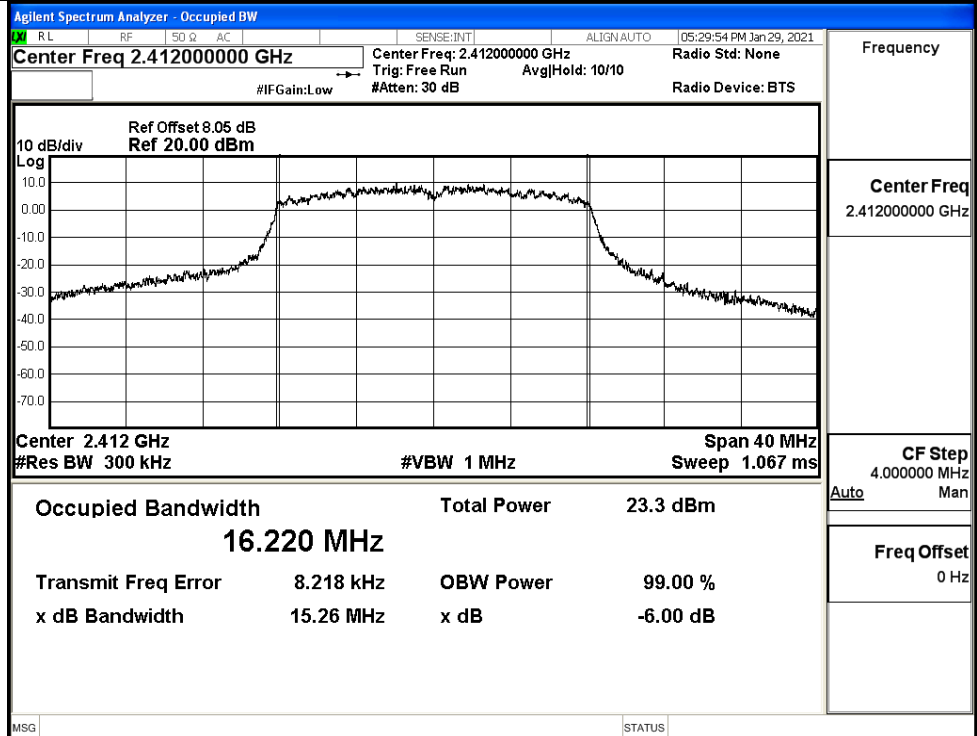
11B/MCH



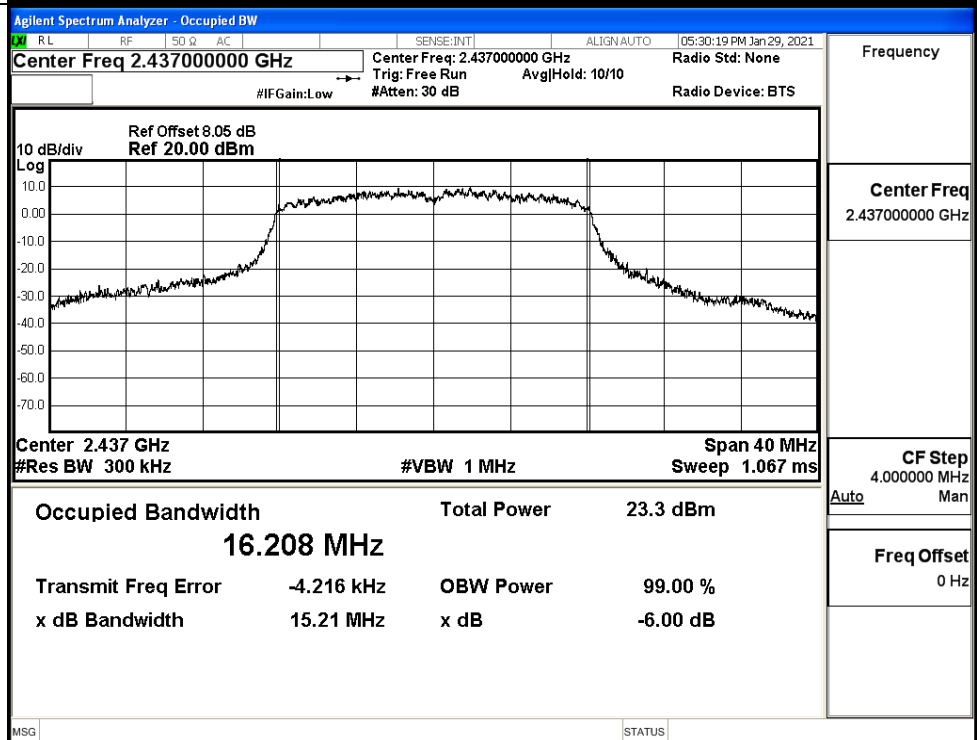
11B/HCH



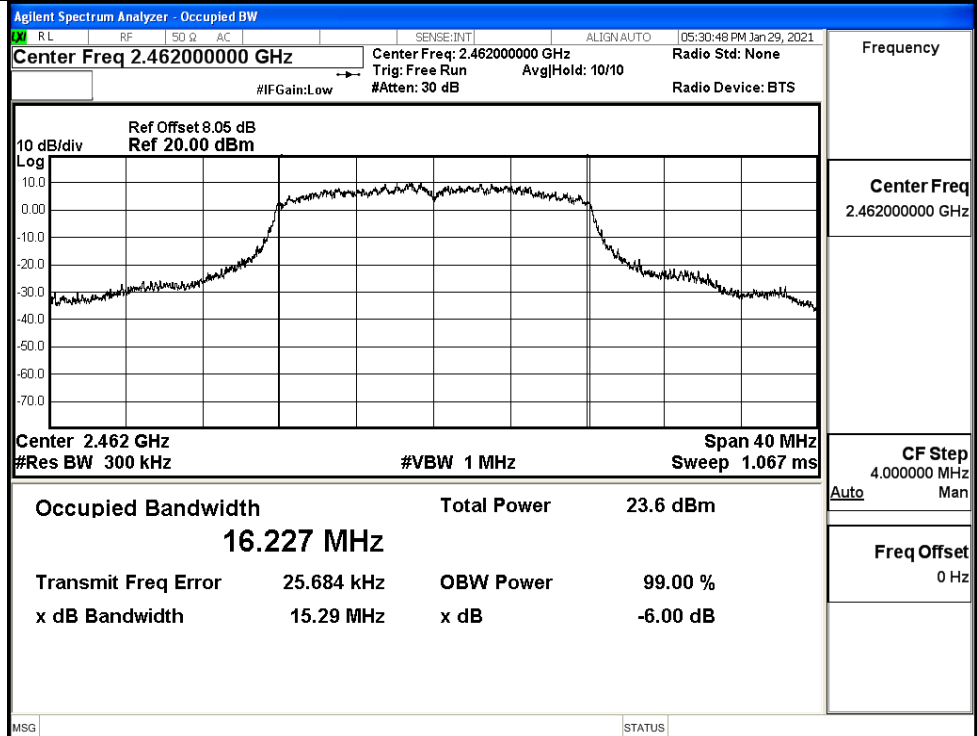
11G/LCH



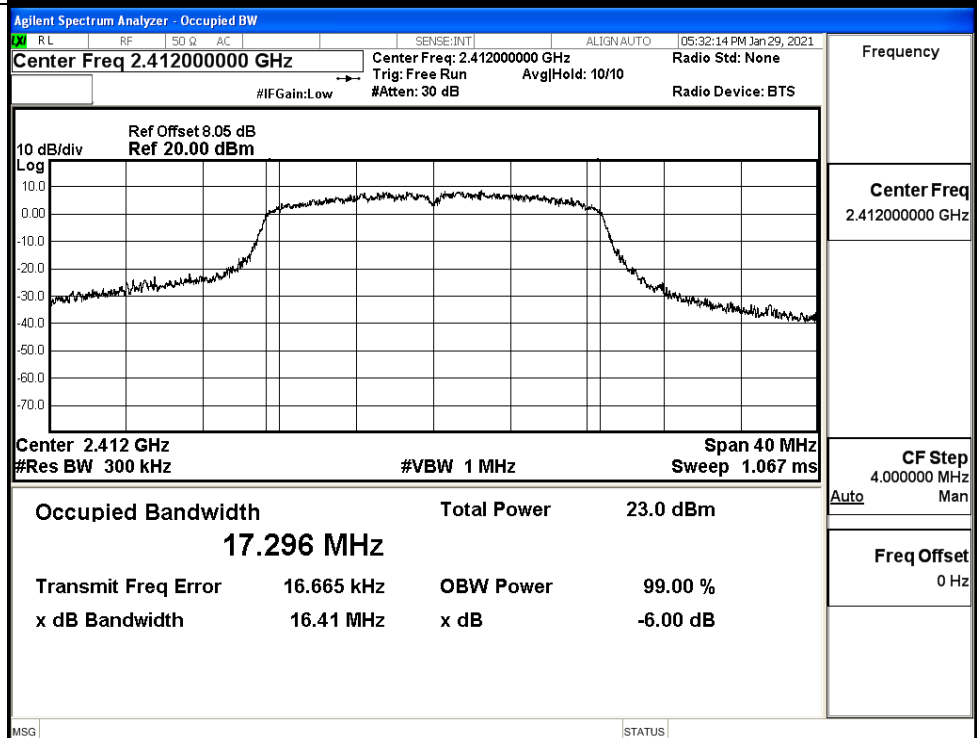
11G/MCH

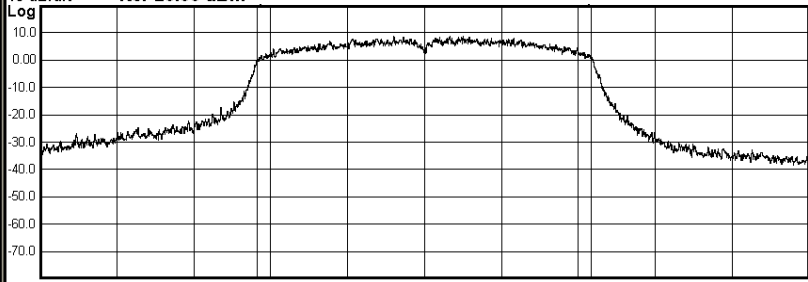
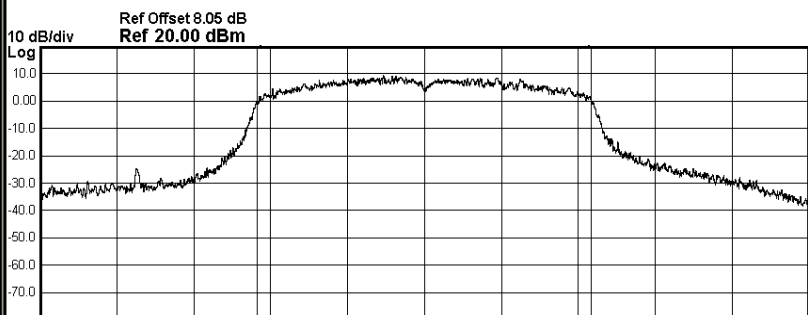


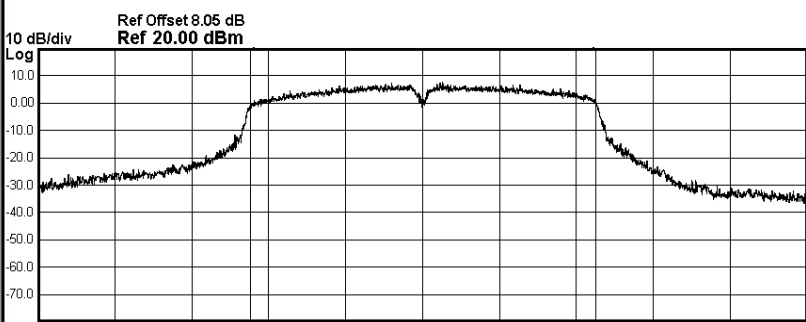
11G/HCH



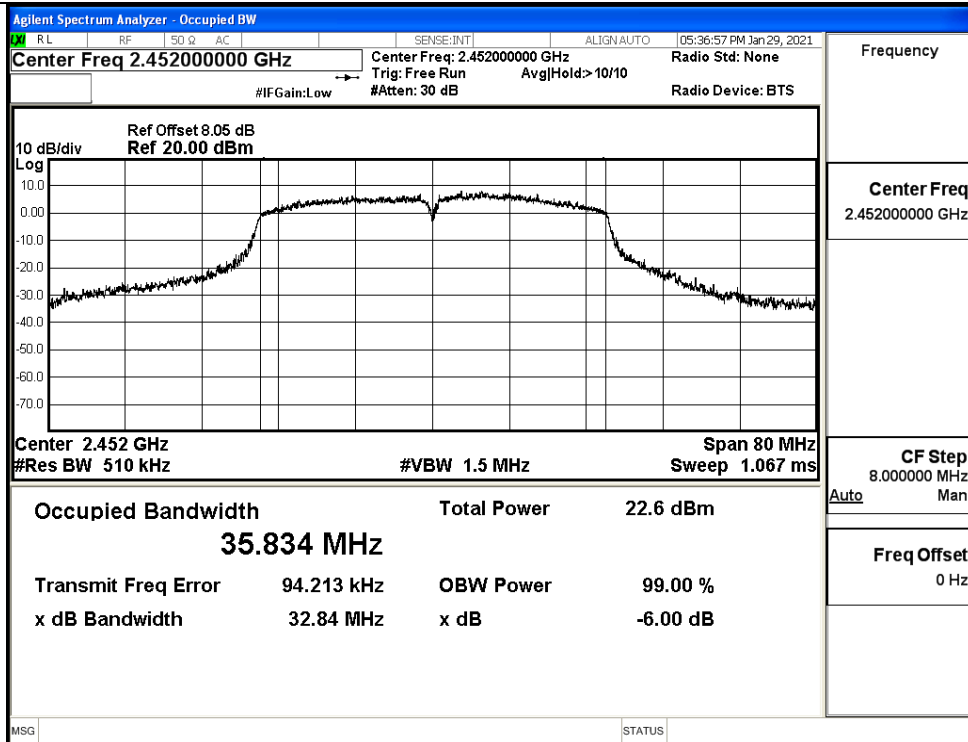
11N20SISO/LCH



11N20SISO/MCH	Agilent Spectrum Analyzer - Occupied BW RL RF 50 Ω AC SENSE:INT ALIGN:Auto 05:33:10 PM Jan 29, 2021 Center Freq 2.437000000 GHz Center Freq: 2.437000000 GHz Trig: Free Run Avg Hold: >10/10 Radio Std: None #IFGain:Low #Atten: 30 dB Radio Device: BTS 10 dB/div Ref Offset 8.05 dB Ref 20.00 dBm  Center 2.437 GHz #Res BW 300 kHz #VBW 1 MHz Span 40 MHz Sweep 1.067 ms Occupied Bandwidth 17.304 MHz Total Power 23.0 dBm Transmit Freq Error 18.981 kHz OBW Power 99.00 % x dB Bandwidth 16.02 MHz x dB -6.00 dB MSG STATUS	Frequency Center Freq 2.437000000 GHz CF Step 4.000000 MHz Auto Man Freq Offset 0 Hz
11N20SISO/HCH	Agilent Spectrum Analyzer - Occupied BW RL RF 50 Ω AC SENSE:INT ALIGN:Auto 05:33:55 PM Jan 29, 2021 Center Freq 2.462000000 GHz Center Freq: 2.462000000 GHz Trig: Free Run Avg Hold: 10/10 Radio Std: None #IFGain:Low #Atten: 30 dB Radio Device: BTS 10 dB/div Ref Offset 8.05 dB Ref 20.00 dBm  Center 2.462 GHz #Res BW 300 kHz #VBW 1 MHz Span 40 MHz Sweep 1.067 ms Occupied Bandwidth 17.233 MHz Total Power 23.4 dBm Transmit Freq Error 16.747 kHz OBW Power 99.00 % x dB Bandwidth 15.89 MHz x dB -6.00 dB MSG STATUS	Frequency Center Freq 2.462000000 GHz CF Step 4.000000 MHz Auto Man Freq Offset 0 Hz

11N40SISO/LCH	Agilent Spectrum Analyzer - Occupied BW RL RF 50 Ω AC SENSE:INT ALIGN AUTO 05:34:39 PM Jan 29, 2021 Center Freq 2.422000000 GHz Center Freq: 2.422000000 GHz Radio Std: None Trig: Free Run Avg Hold> 10/10 #IFGain:Low #Atten: 30 dB Radio Device: BTS  10 dB/div Ref Offset 8.05 dB Ref 20.00 dBm Center 2.422 GHz Span 80 MHz #Res BW 510 kHz #VBW 1.5 MHz Sweep 1.067 ms Occupied Bandwidth Total Power 22.5 dBm 35.891 MHz Transmit Freq Error 72.397 kHz OBW Power 99.00 % x dB Bandwidth 33.35 MHz x dB -6.00 dB MSG STATUS Frequency Center Freq 2.422000000 GHz CF Step 8.000000 MHz Auto Man Freq Offset 0 Hz
---------------	--

11N40SISO/HCH



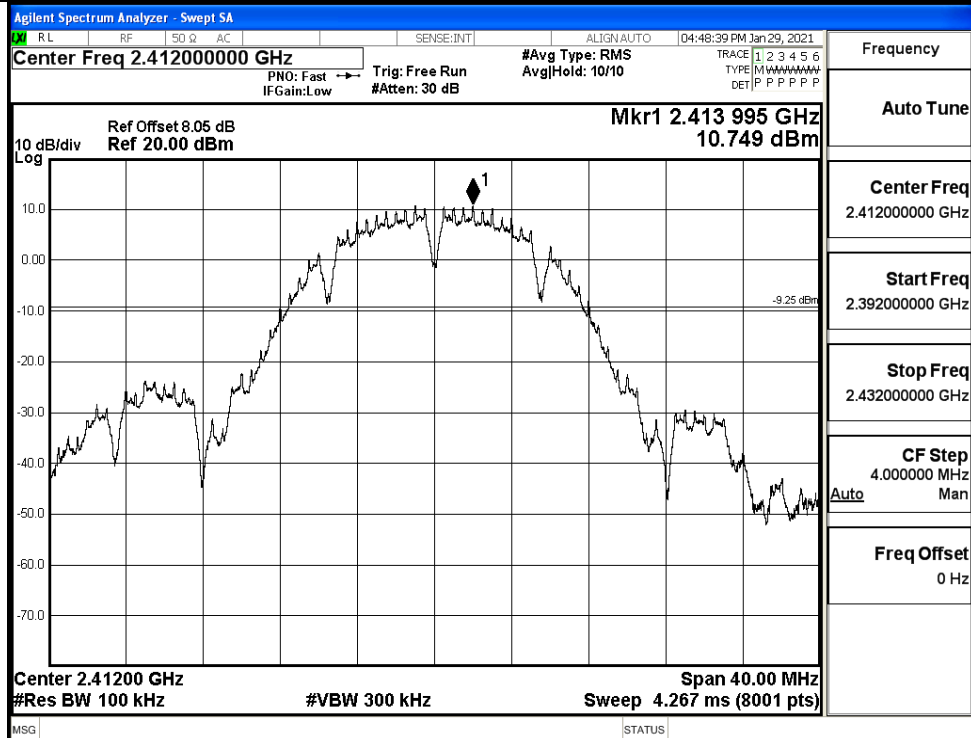
A.6 RF Conducted Spurious Emissions

Ant1

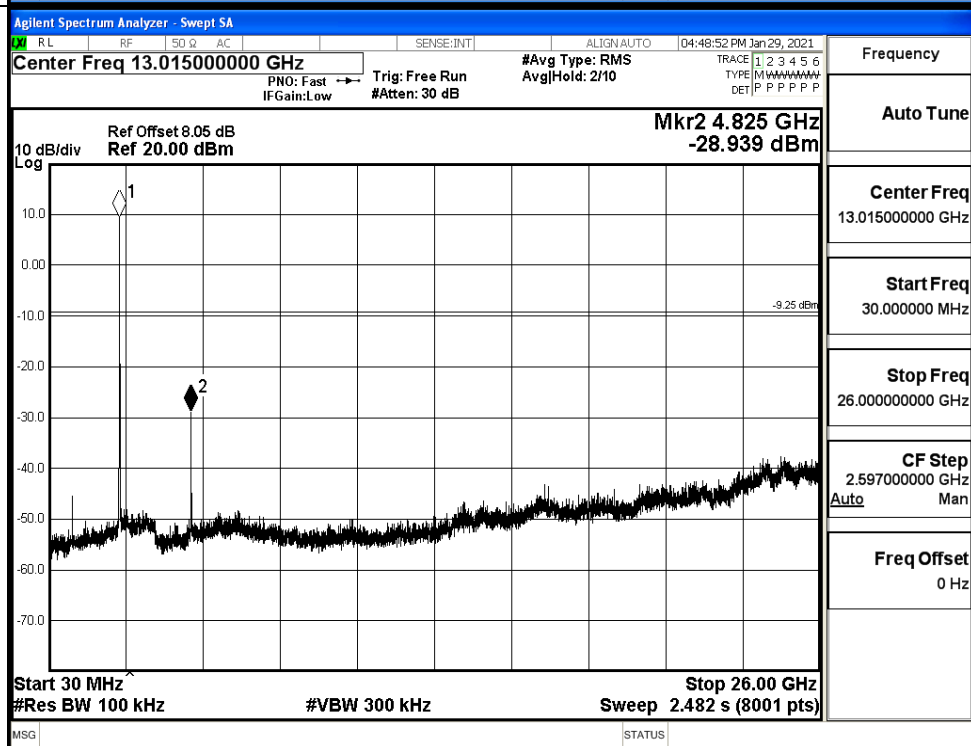
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
11B	LCH	10.749	-28.939	-9.251	PASS
	MCH	10.674	-29.984	-9.326	PASS
	HCH	11.133	-31.745	-8.867	PASS
11G	LCH	6.716	-37.379	-13.284	PASS
	MCH	6.88	-37.991	-13.120	PASS
	HCH	4.321	-37.428	-15.679	PASS
11N20 SISO	LCH	4.118	-37.769	-15.882	PASS
	MCH	5.146	-37.752	-14.854	PASS
	HCH	5.332	-38.013	-14.668	PASS
11N40 SISO	LCH	1.676	-37.972	-18.324	PASS
	MCH	2.056	-37.884	-17.944	PASS
	HCH	1.913	-37.811	-18.087	PASS

11B LCH Graphs

Pref/11B/LCH

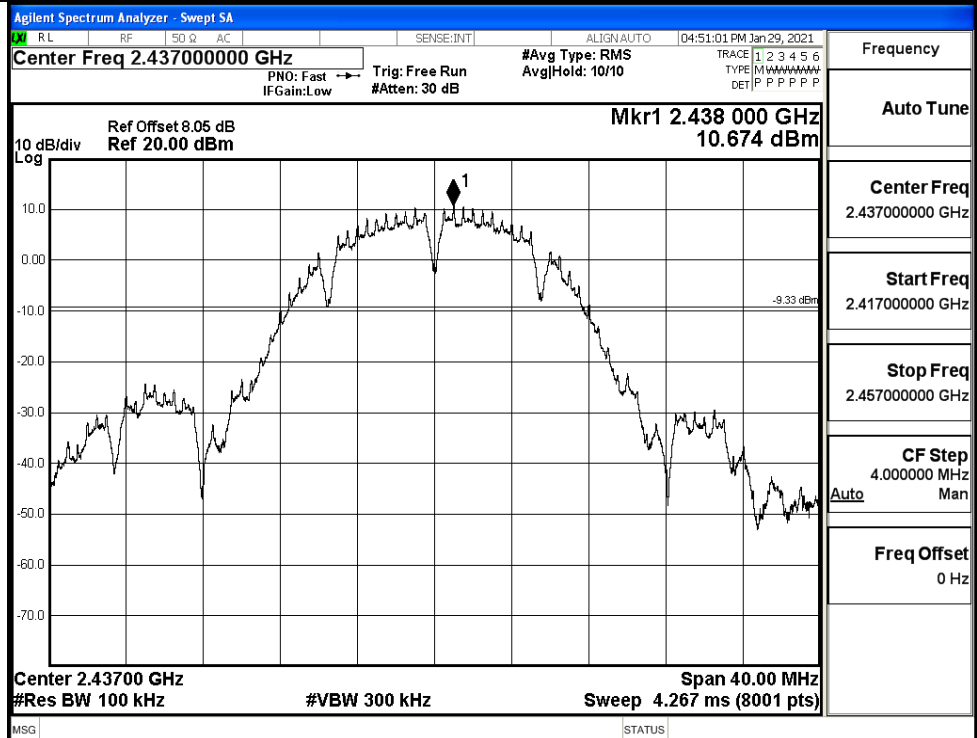


Puw/11B/LCH

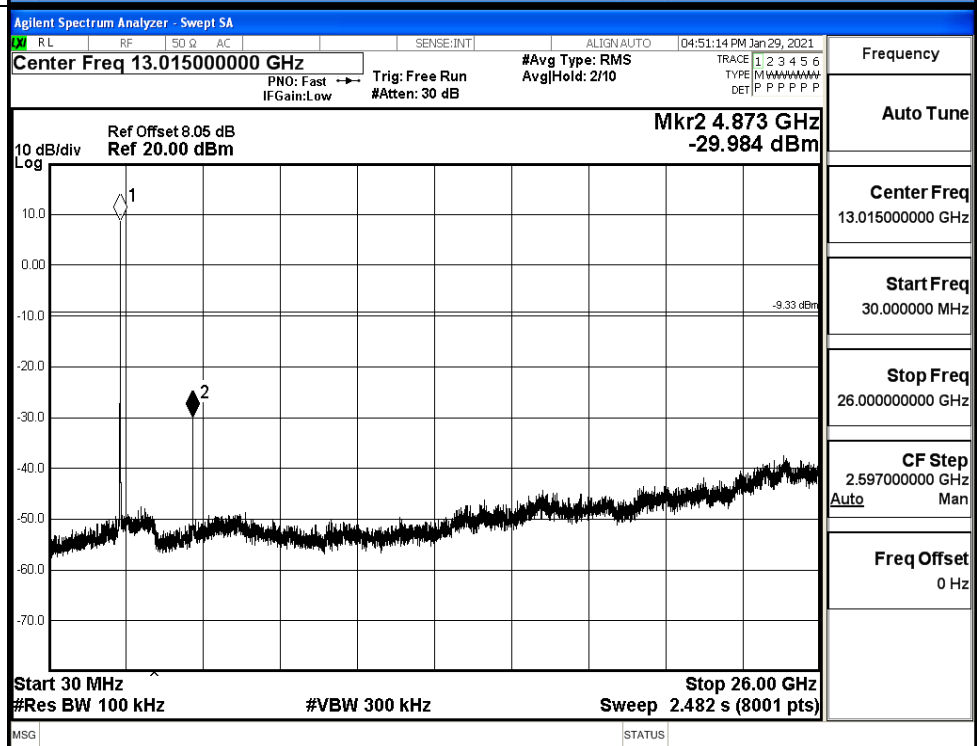


11B MCH Graphs

Pref/11B/MCH

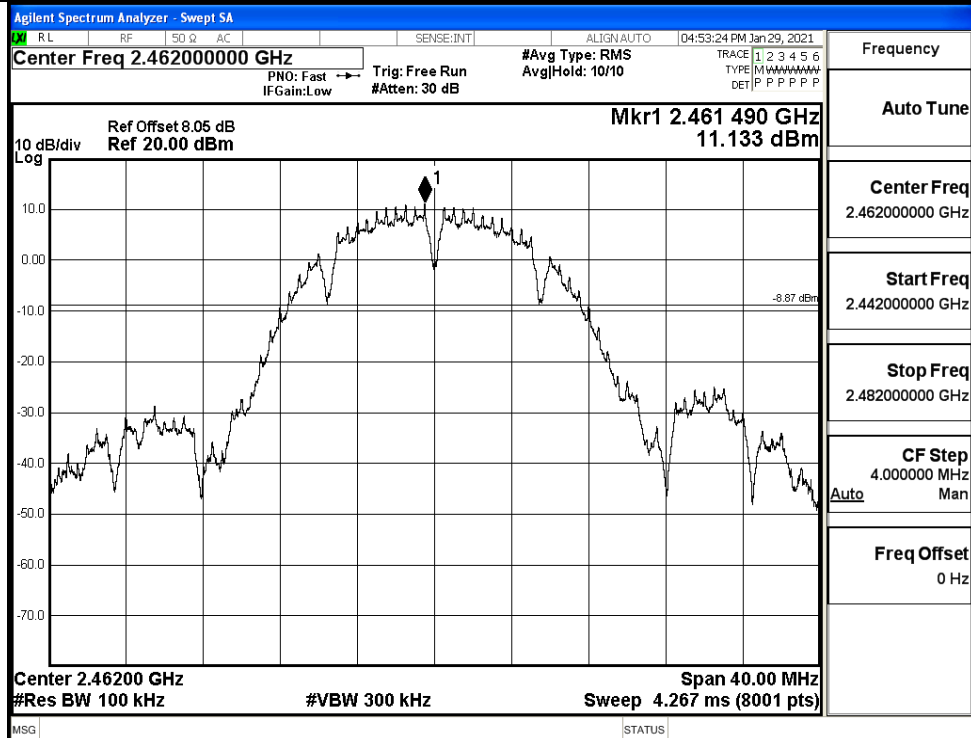


Puw/11B/MCH

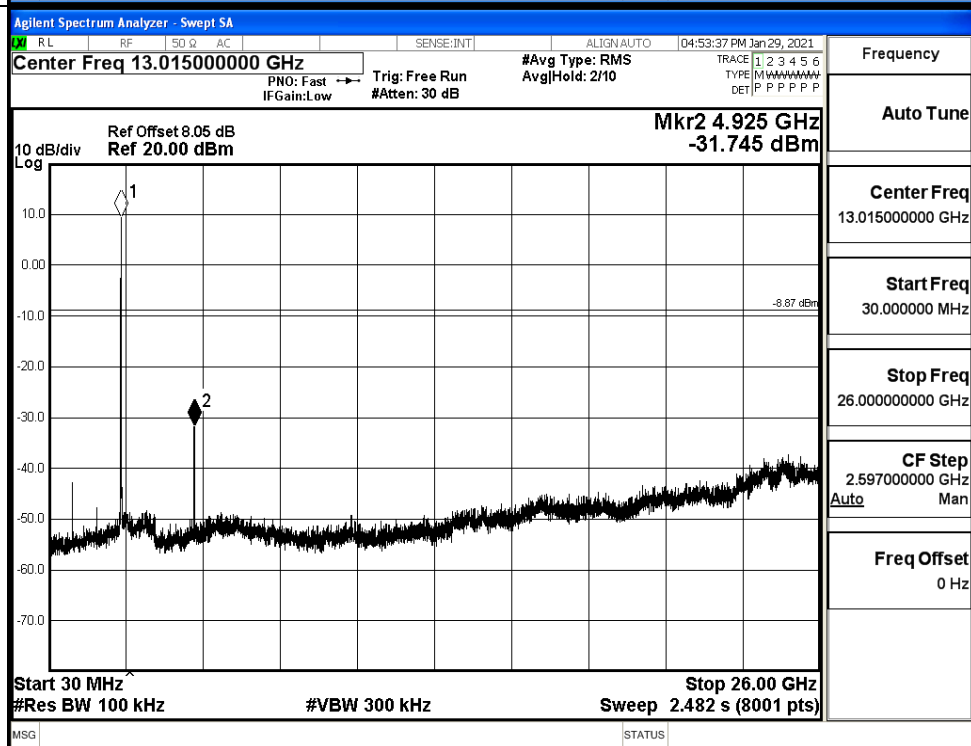


11B HCH Graphs

Pref/11B/HCH

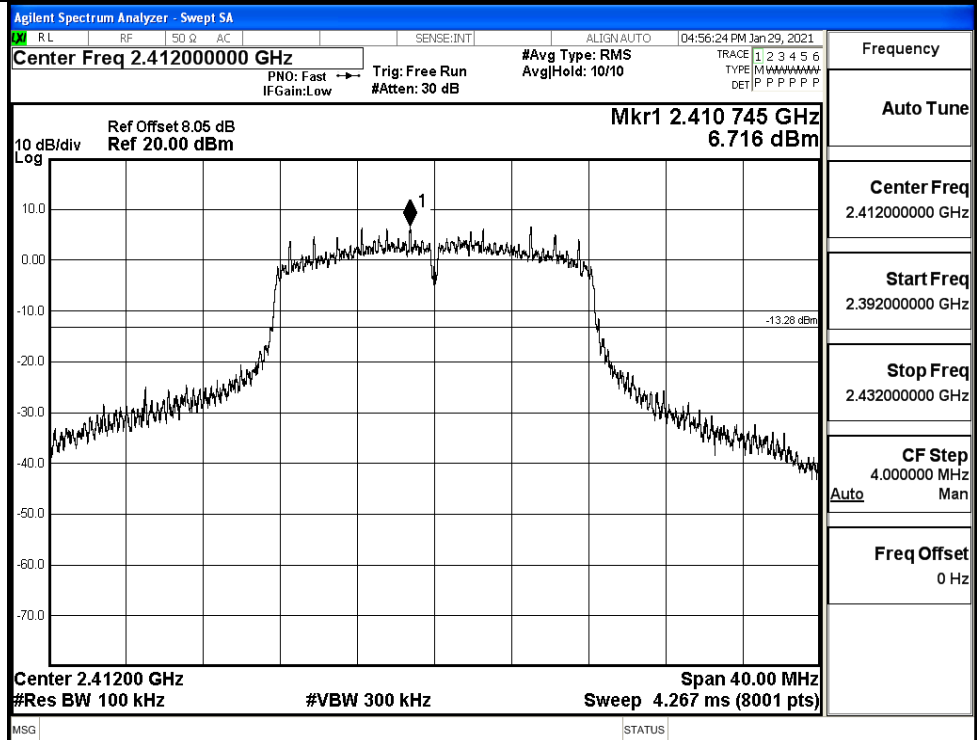


Puw/11B/HCH

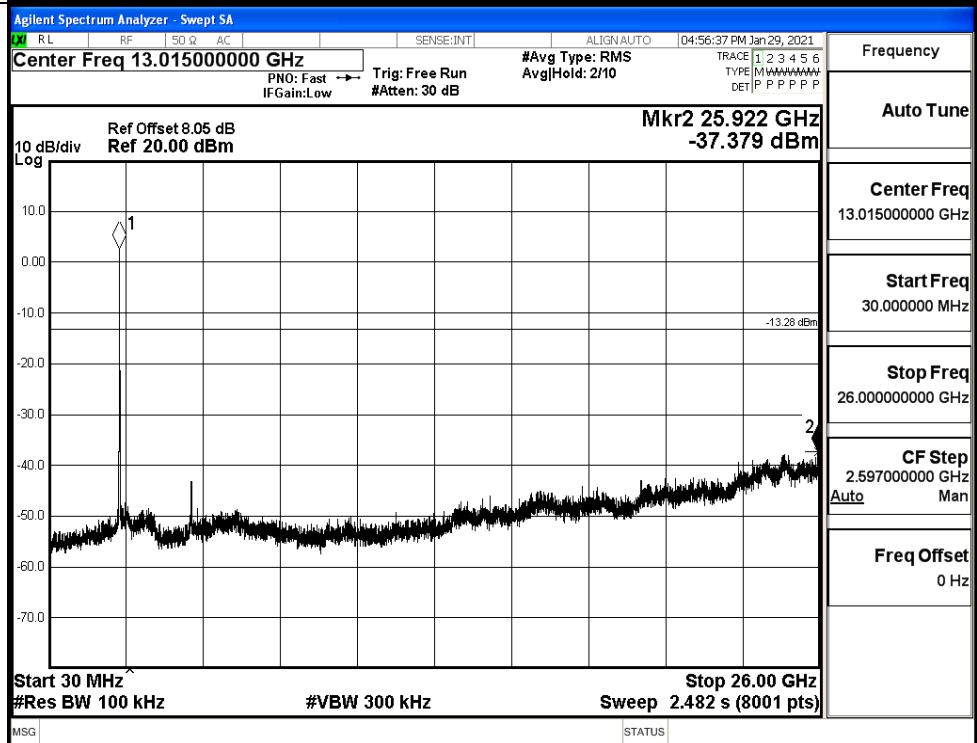


11G LCH Graphs

Pref/11G/LCH

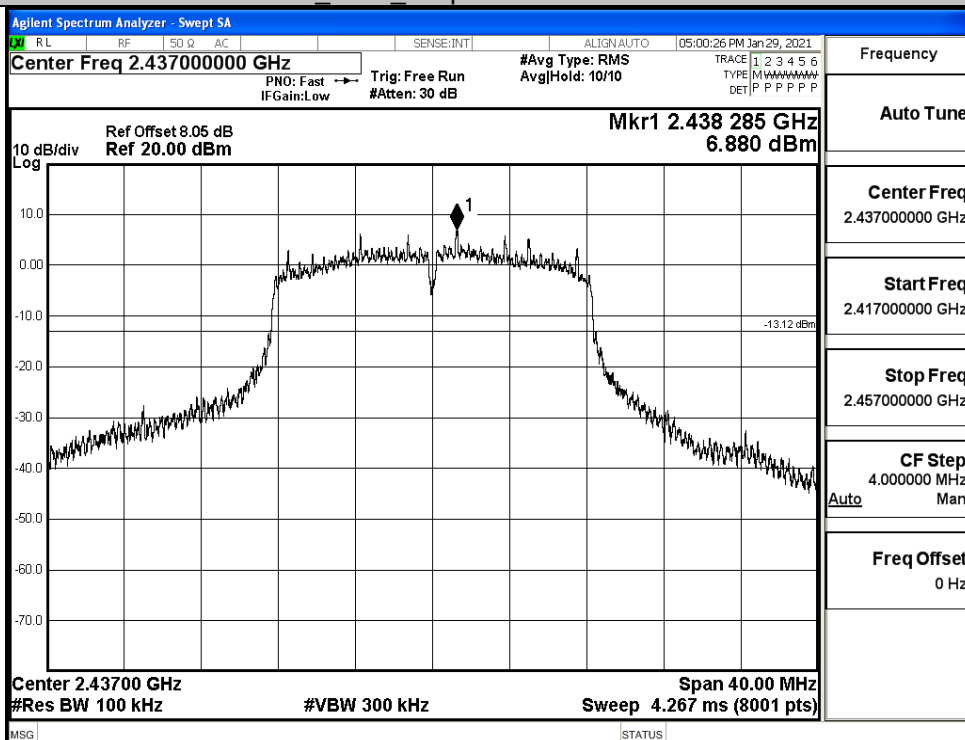


Puw/11G/LCH

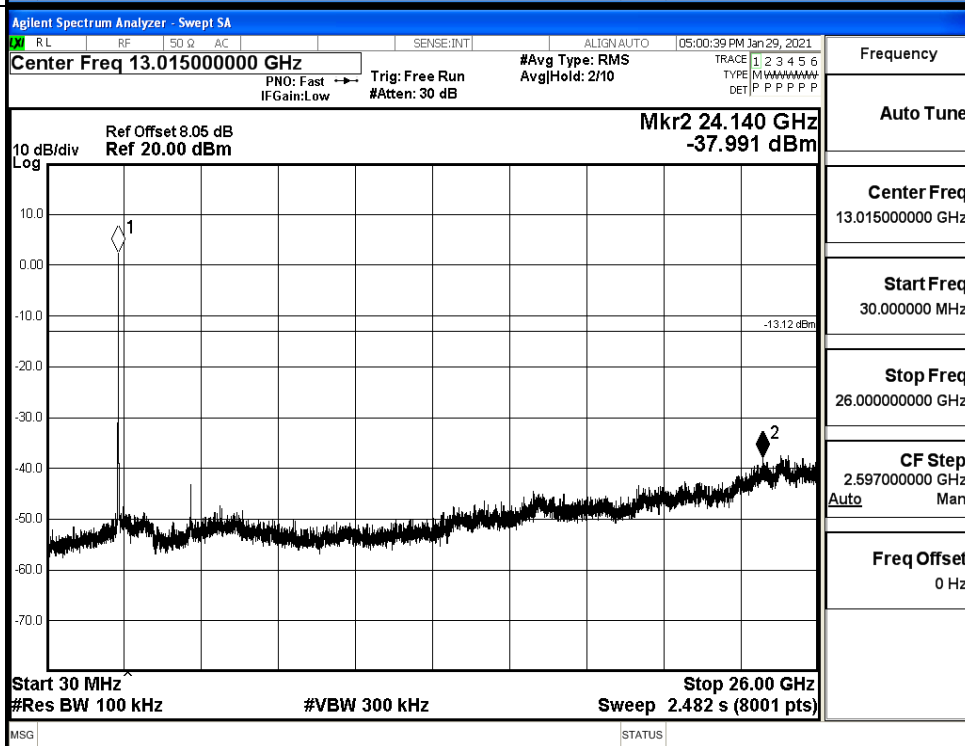


11G MCH Graphs

Pref/11G/MCH

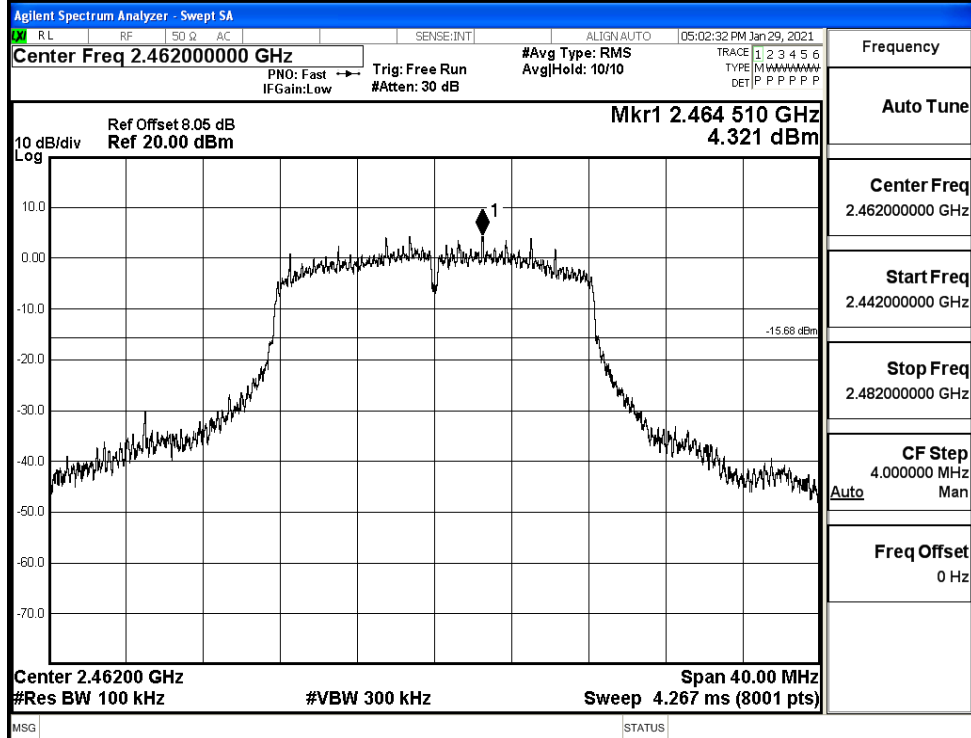


Puw/11G/MCH

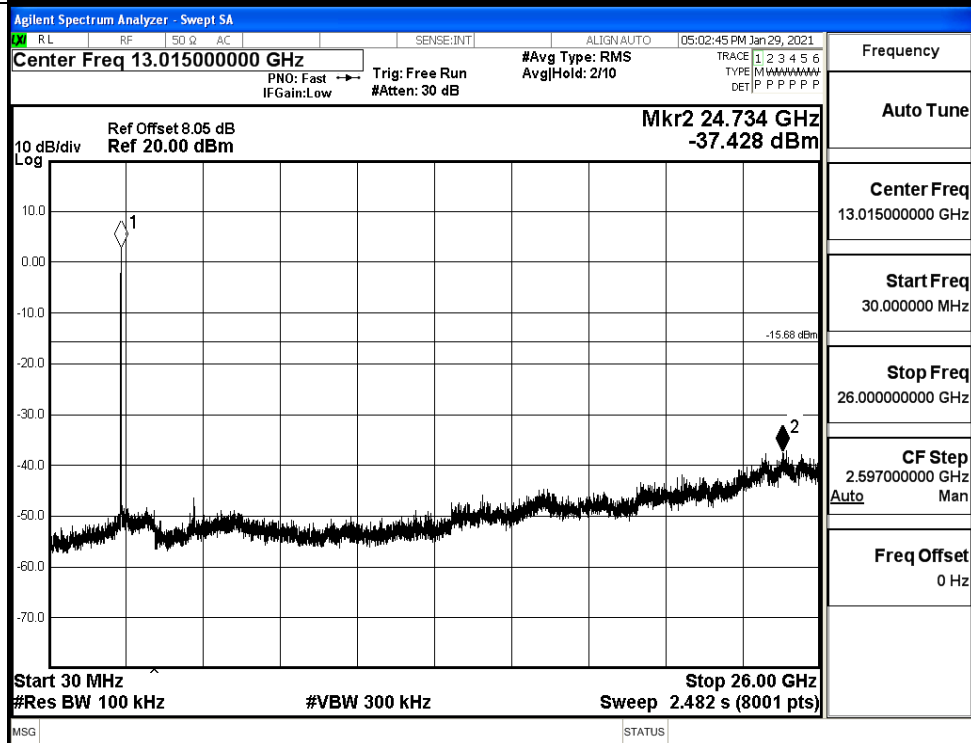


11G HCH Graphs

Pref/11G/HCH

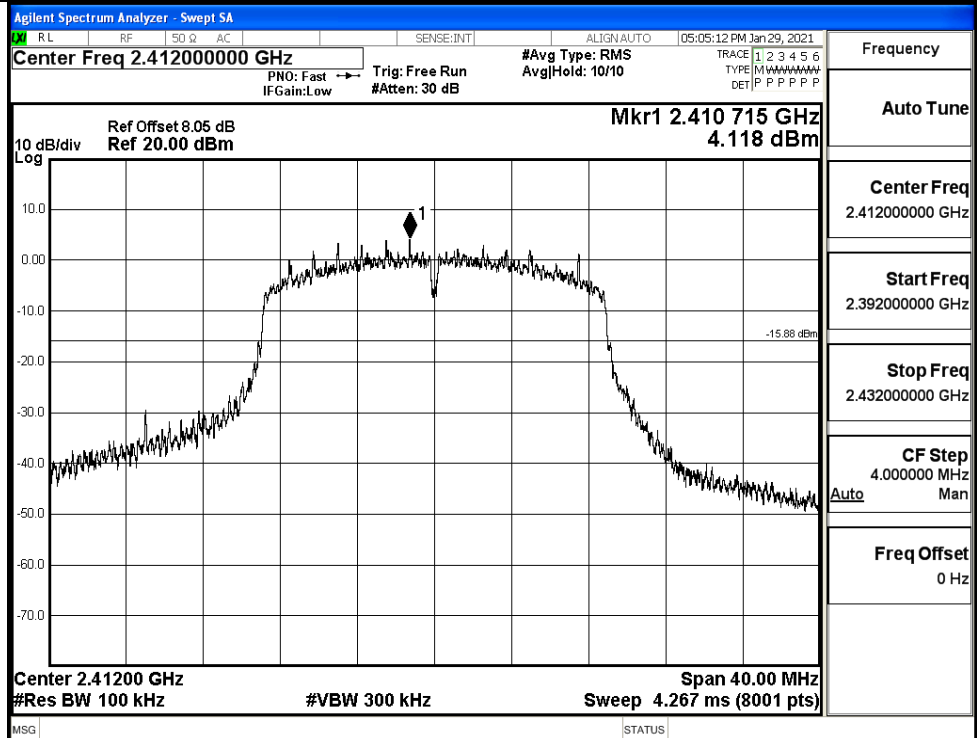


Puw/11G/HCH

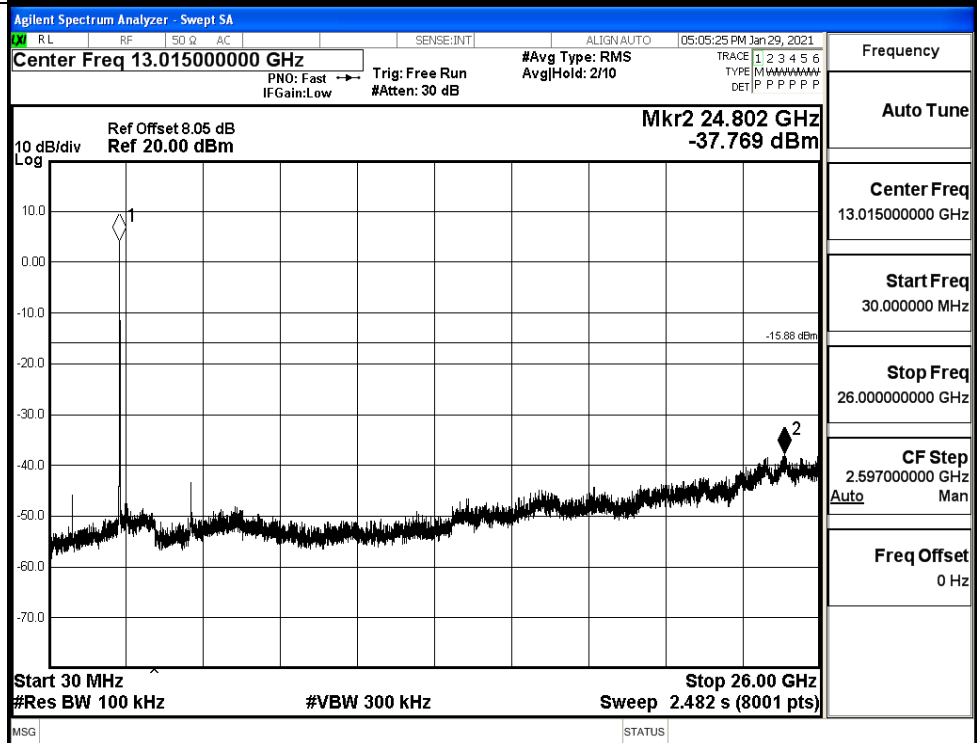


11N20SISO LCH Graphs

Pref/11N20SIS
O/LCH

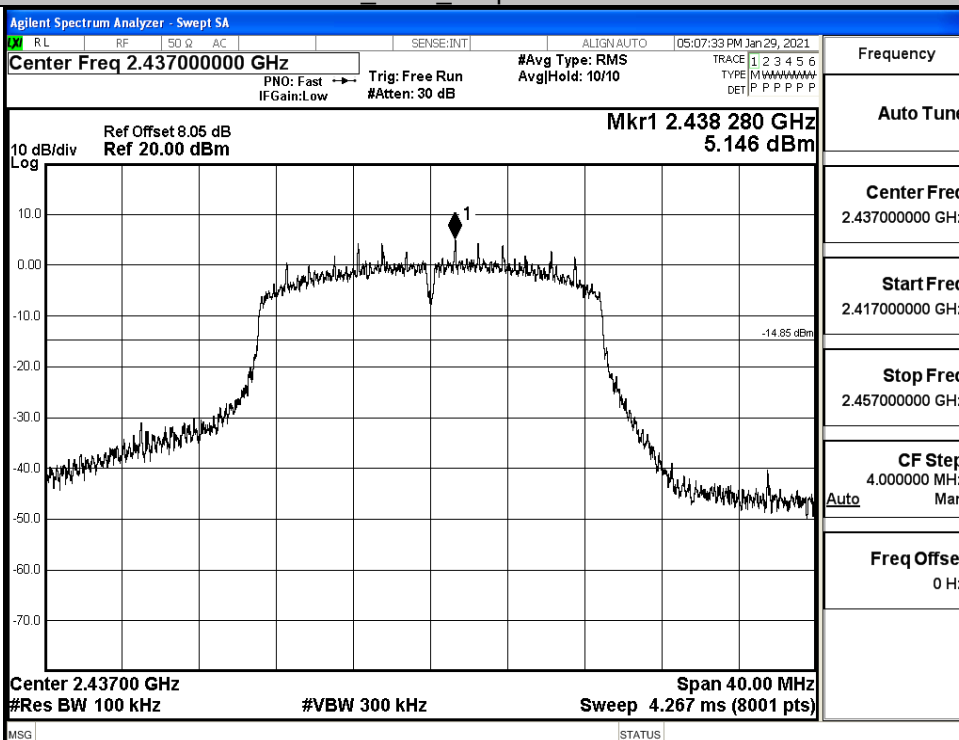


Puw/11N20
SISO/LCH

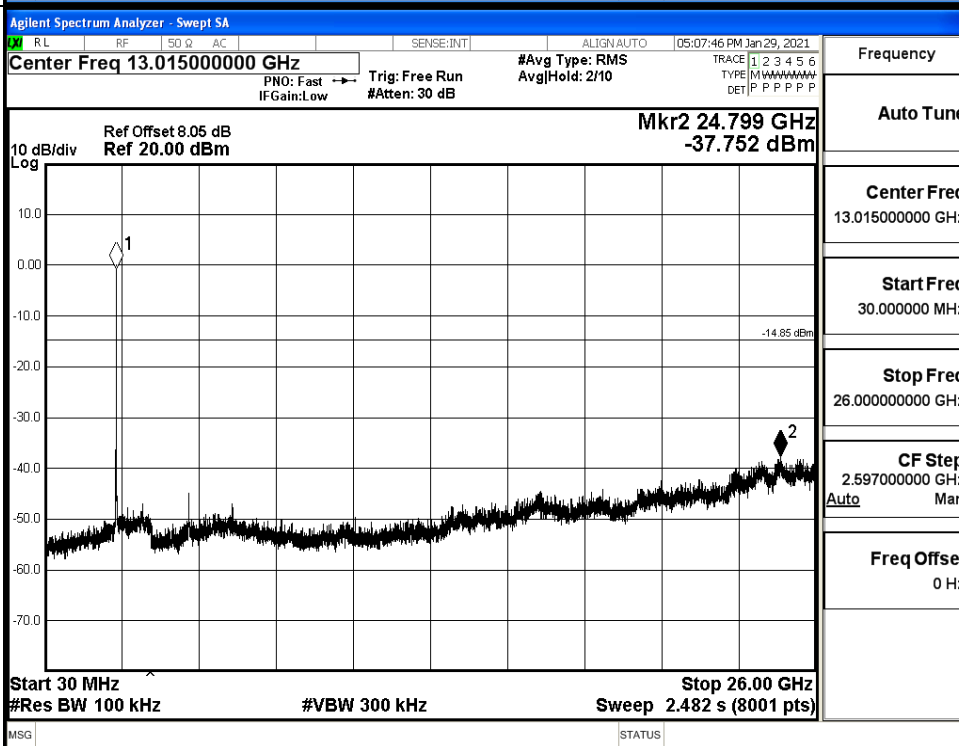


11N20SISO_MCH_Graphs

Pref/11N20
SISO/MCH

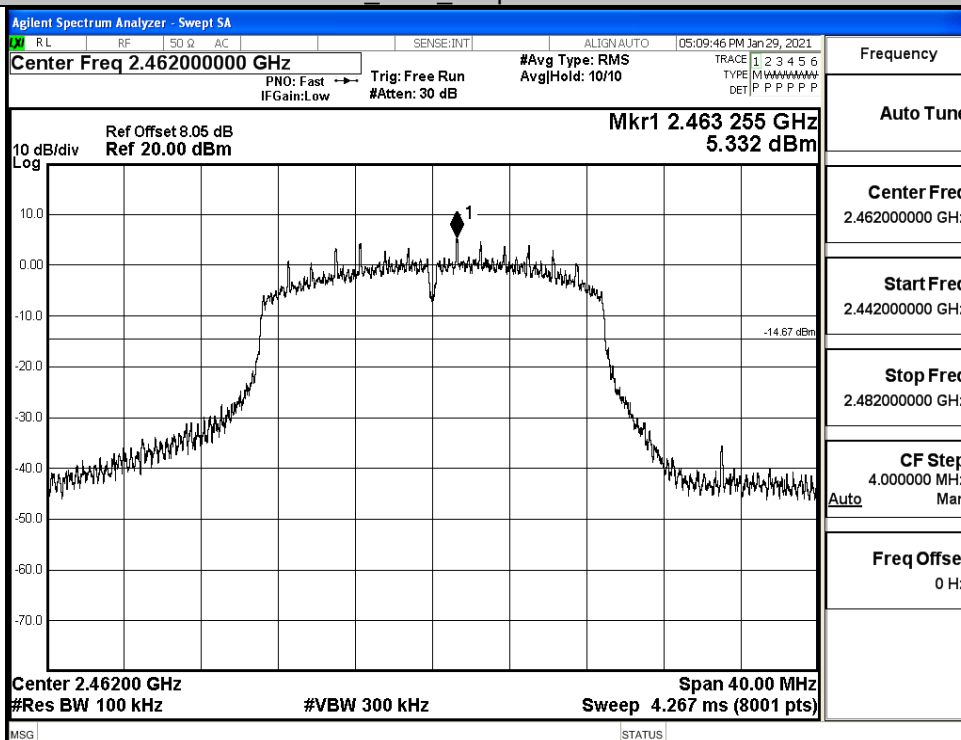


Puw/11N20
SISO/MCH

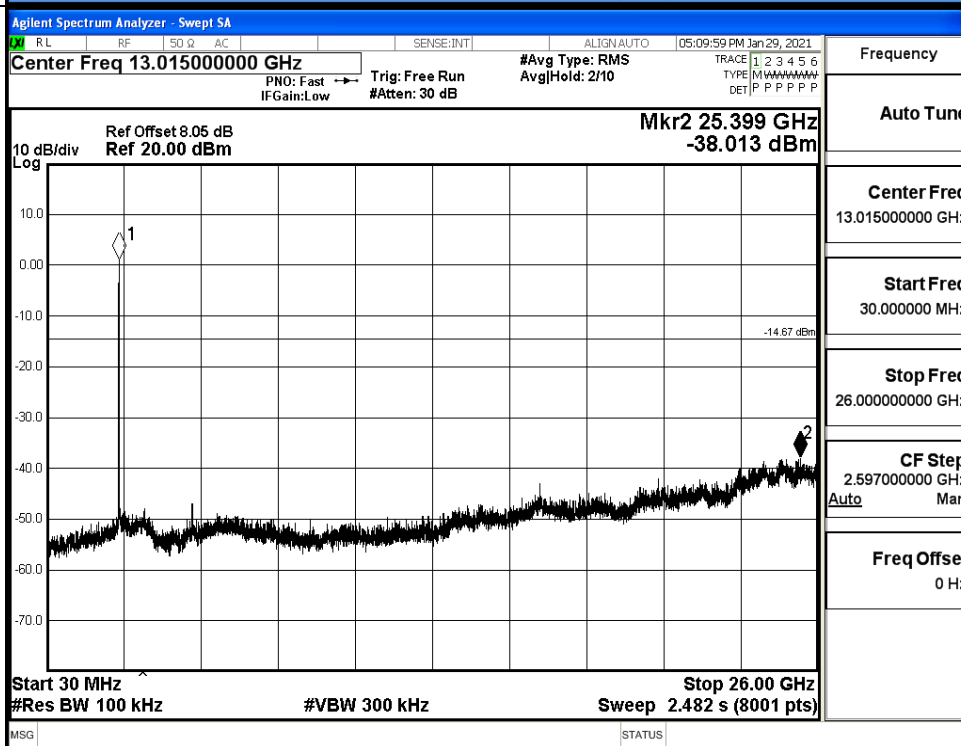


11N20SISO HCH Graphs

Pref/11N20
SISO/HCH

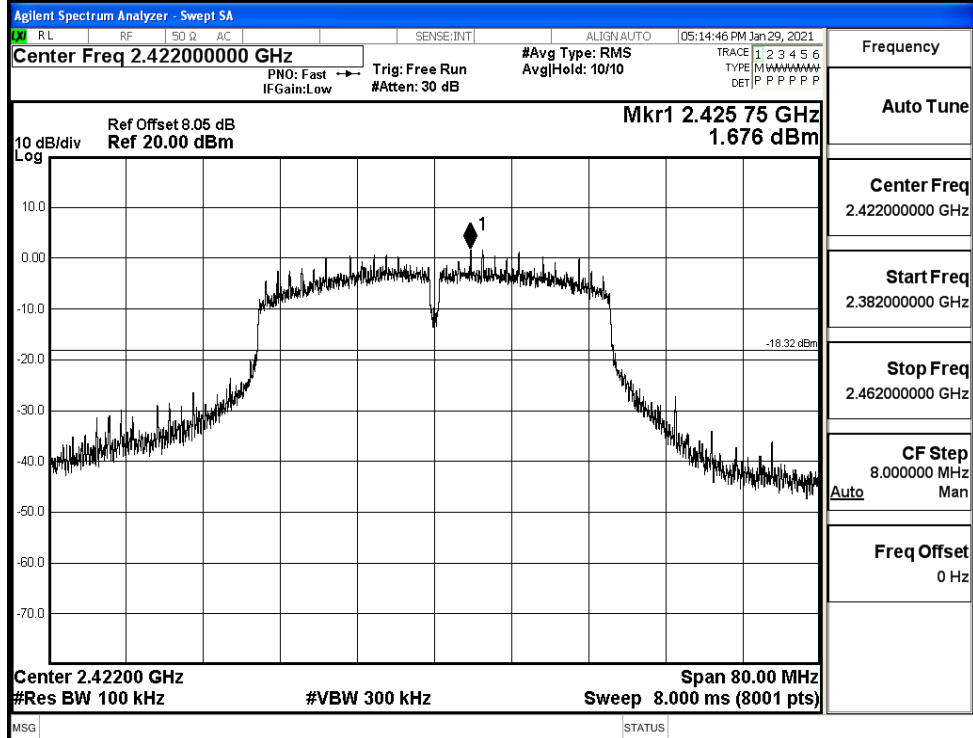


Puw/11N20
SISO/HCH

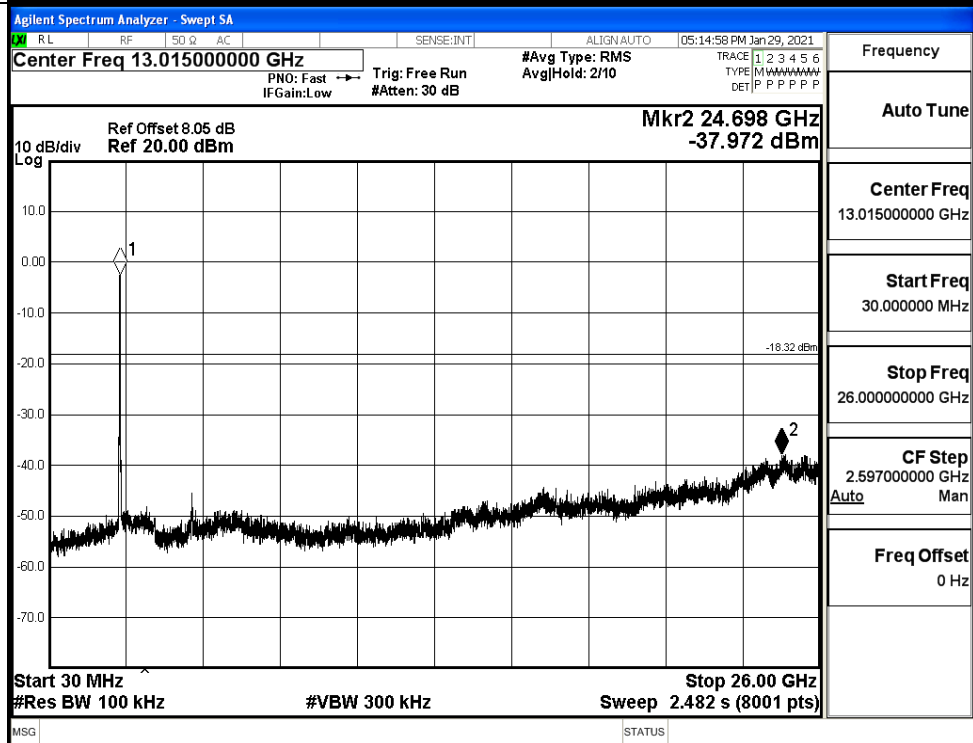


11N40SISO LCH Graphs

Pref/11N40
SISO/LCH

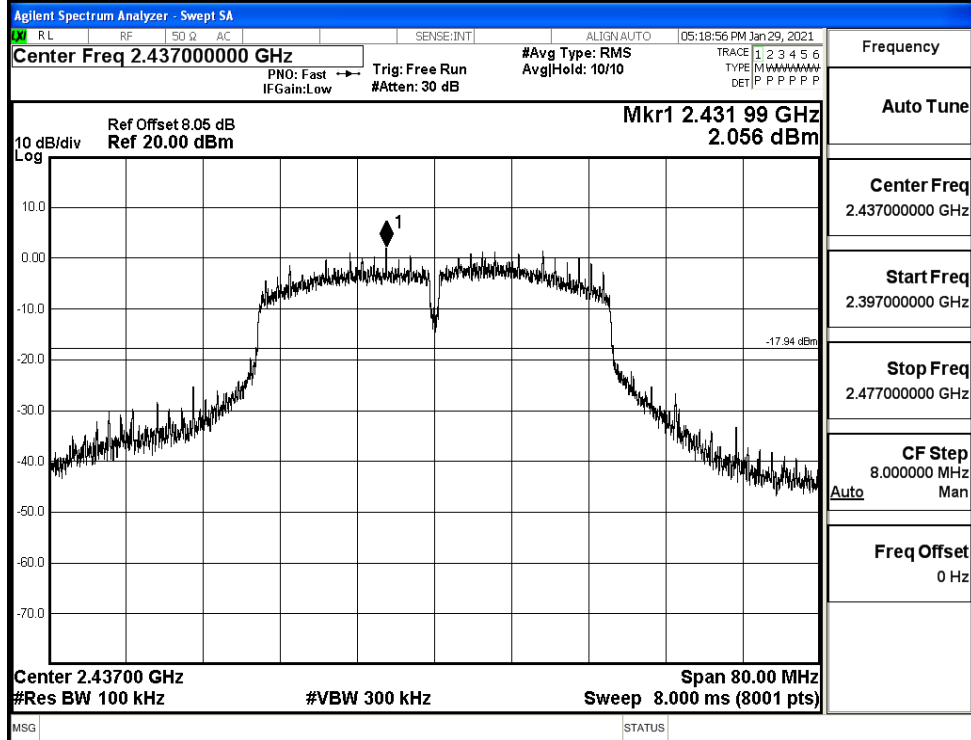


Puw/11N40
SISO/LCH



11N40SISO_MCH_Graphs

Pref/11N40
SISO/MCH



Puw/11N40
SISO/MCH

