

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

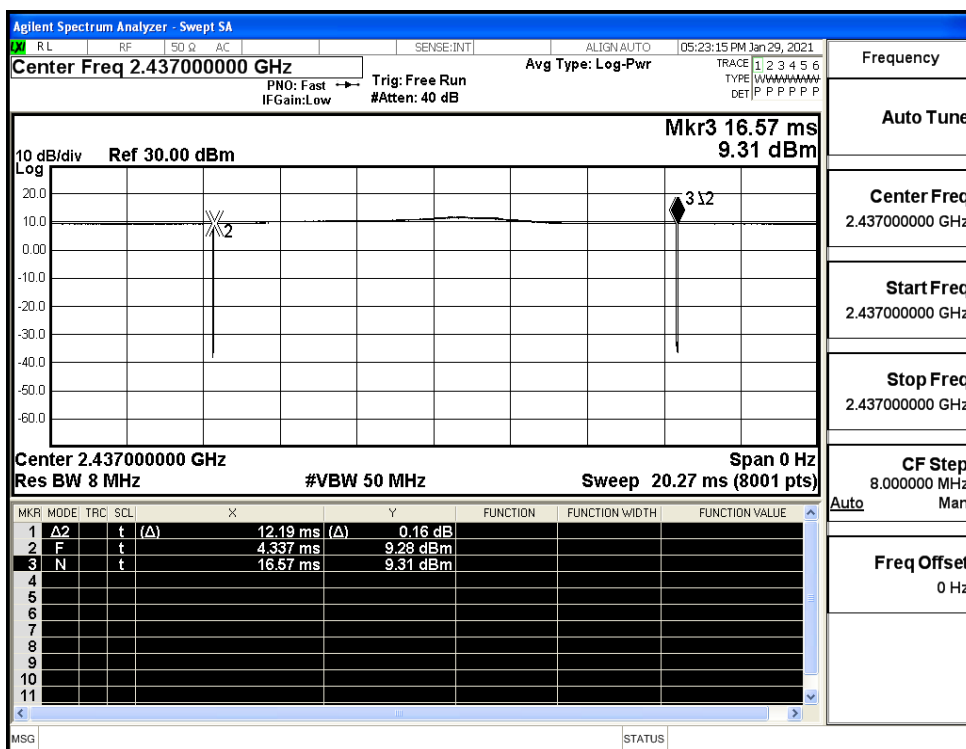
Temperature:	23.7 ° C
Relative Humidity:	52.3%
ATM Pressure:	100.0 kPa
Test Engineer:	Diamond Lu
Supervised by:	Li Huan

A.1 Duty Cycle

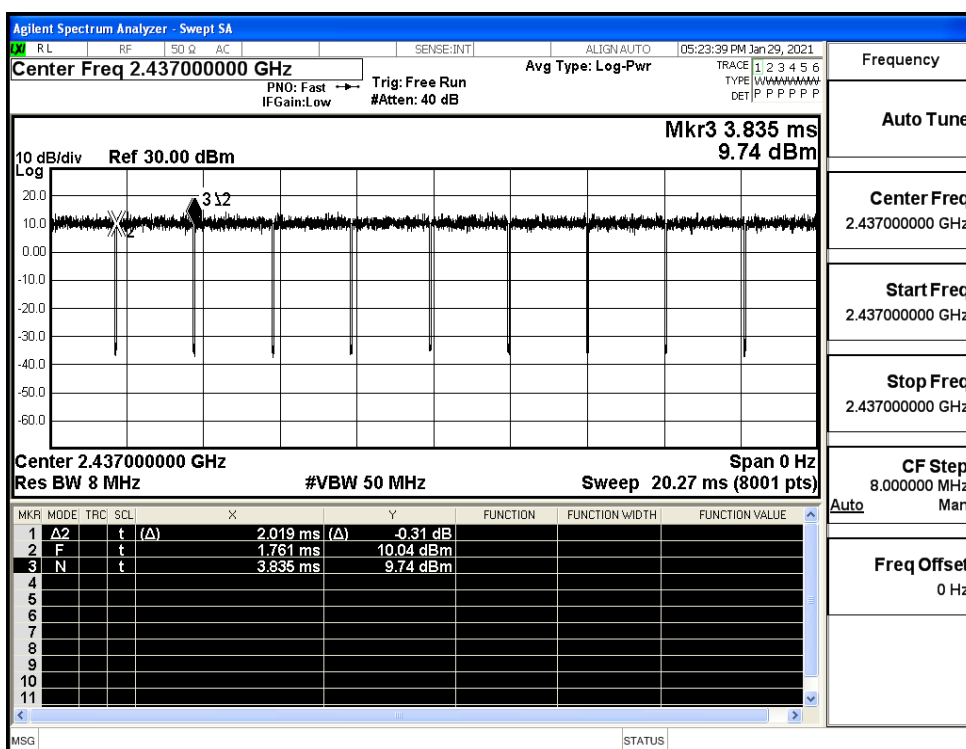
Test Mode	Test Channel	Ant	Duty Cycle[%]	1/T Minimum VBW(KHz)	Verdict
11B	2437	Ant1	99.61	0.08	PASS
11G	2437	Ant1	97.31	0.50	PASS
11N20SISO	2437	Ant1	97.25	0.53	PASS
11N40SISO	2437	Ant1	95.54	1.08	PASS

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

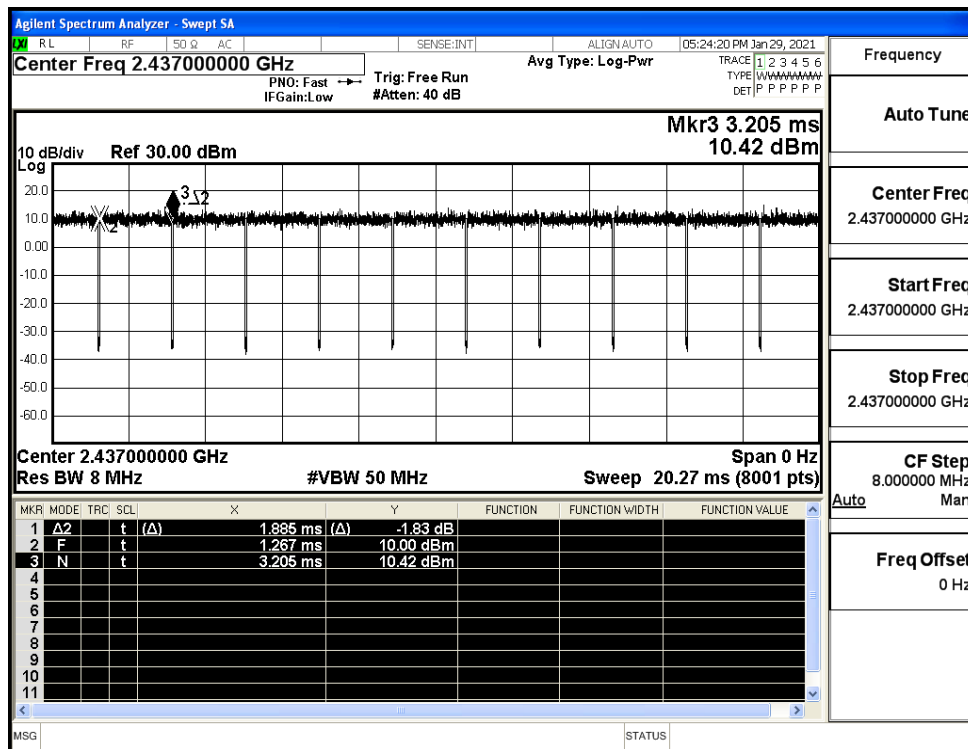
Duty Cycle_11B_2437_Ant1



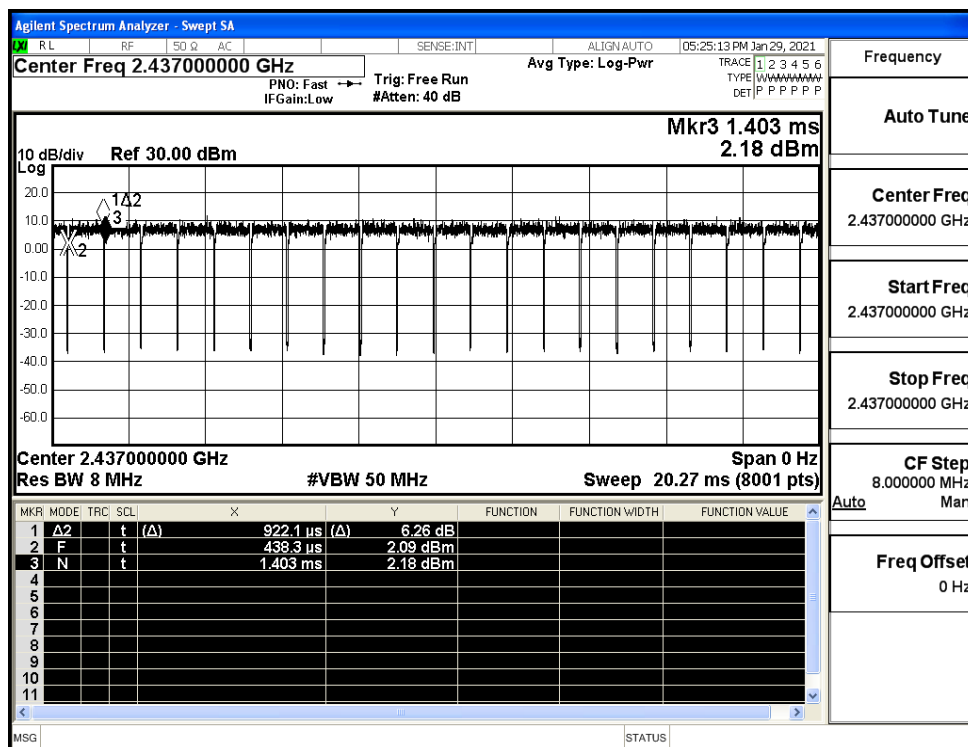
Duty Cycle_11G_2437_Ant1



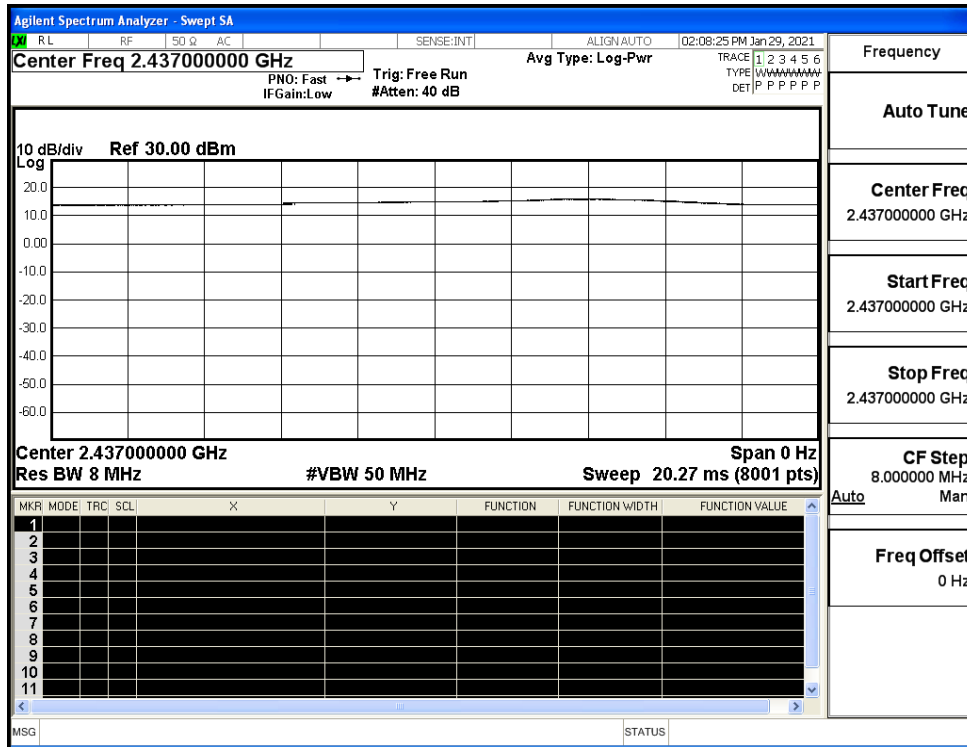
Duty Cycle_11N20SISO_2437_Ant1



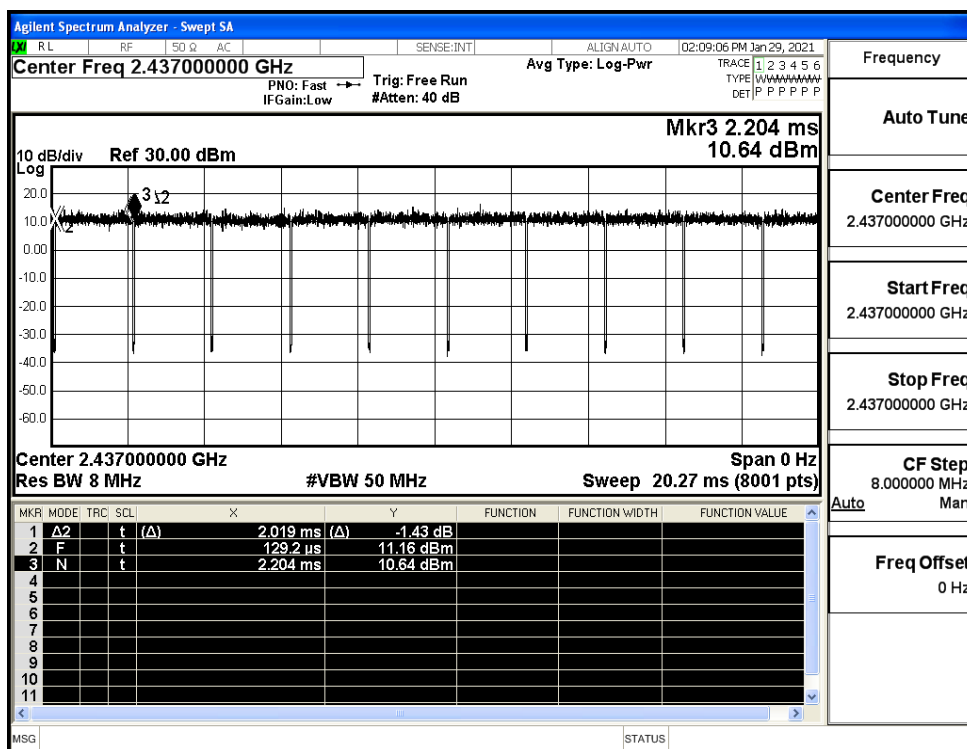
Duty Cycle_11N40SISO_2437_Ant1



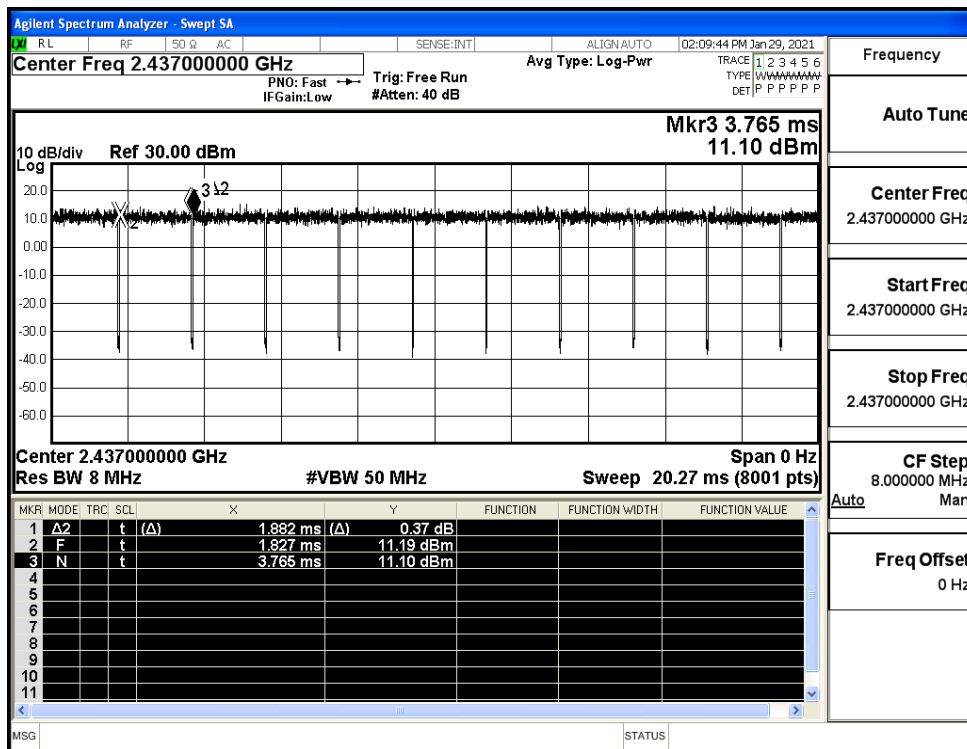
Duty Cycle_11B_2437_Ant2



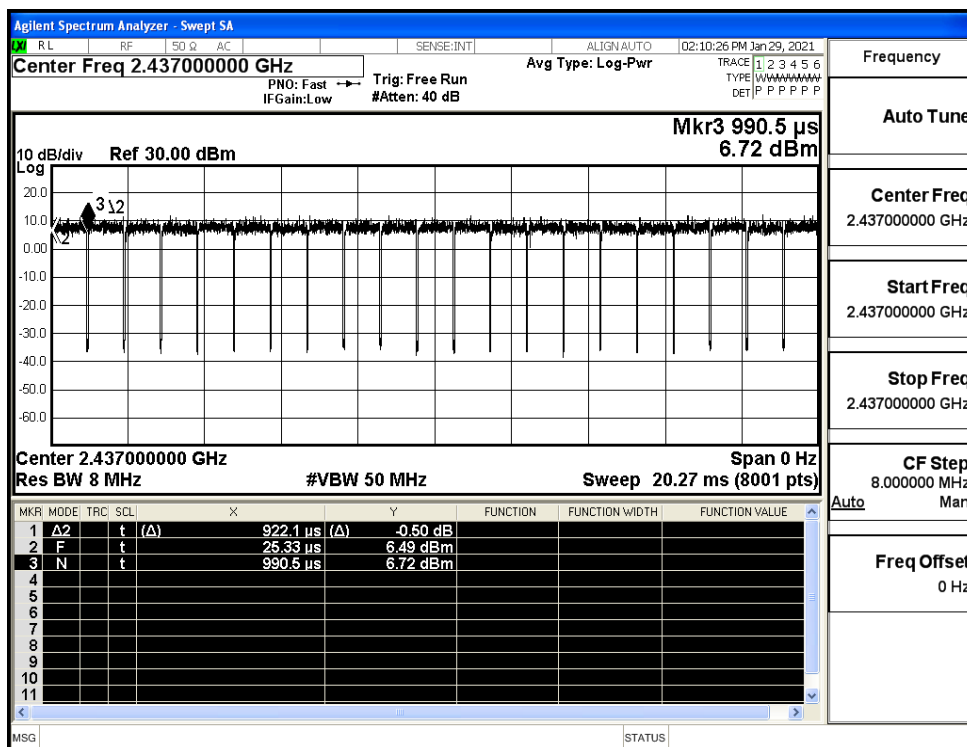
Duty Cycle_11G_2437_Ant2



Duty Cycle_11N20SISO_2437_Ant2



Duty Cycle_11N40SISO_2437_Ant2



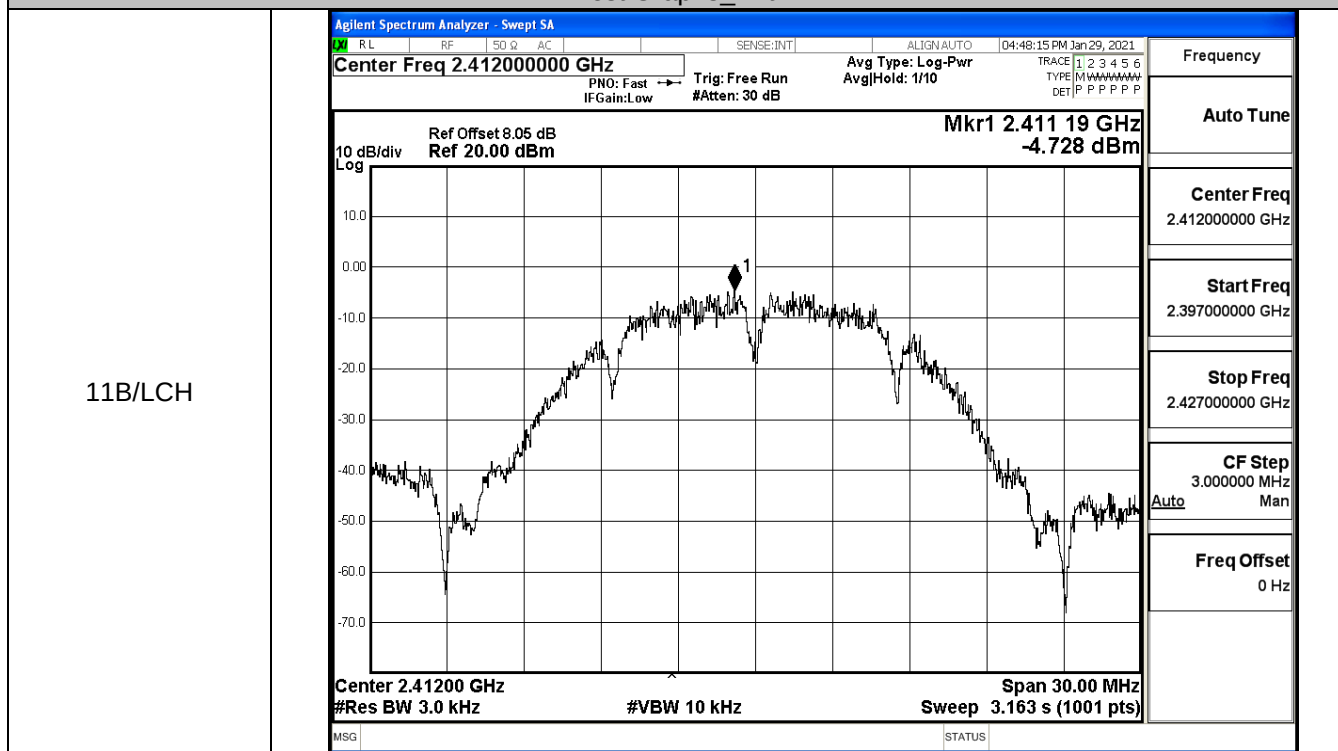
A.2 Maximum Conducted Output Power

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

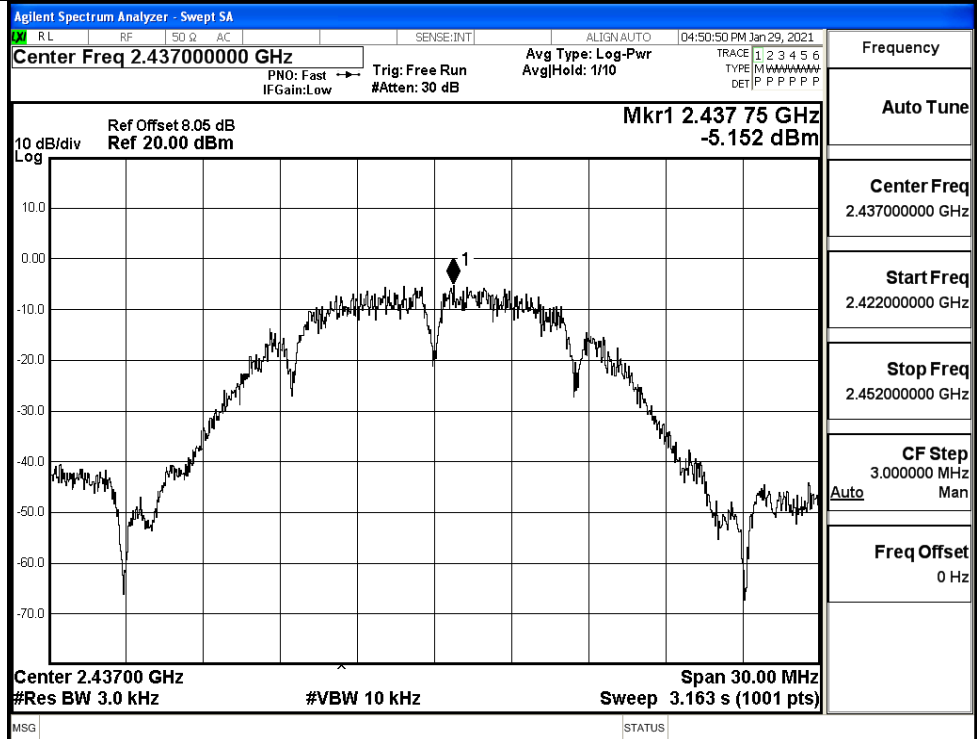
A.3 Maximum Power Spectral Density

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

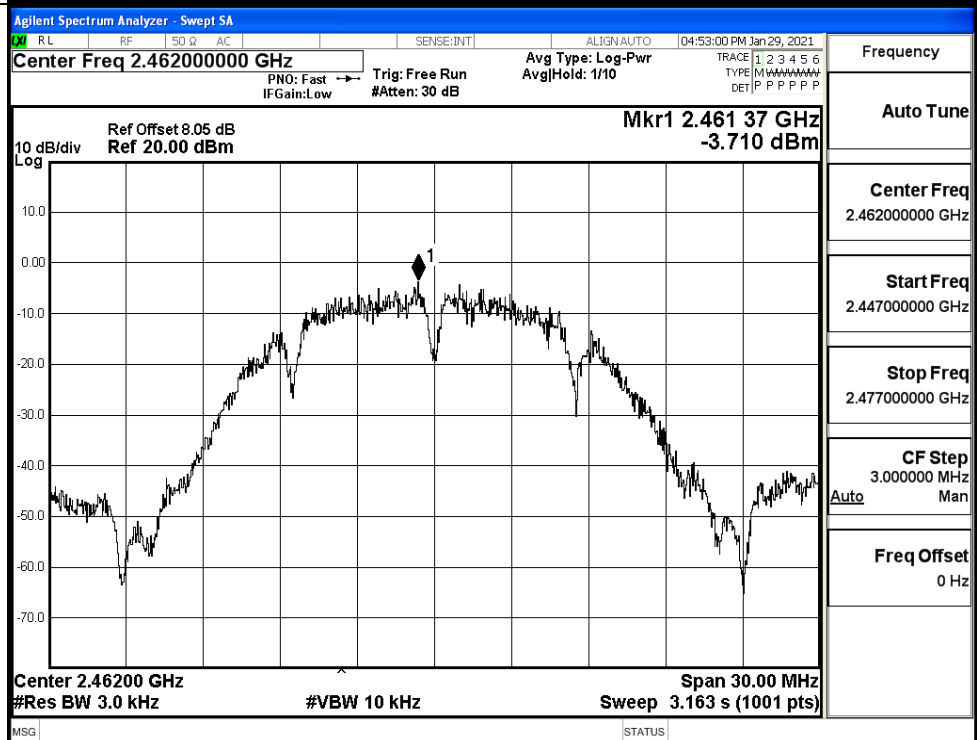
Test Graphs_Ant1



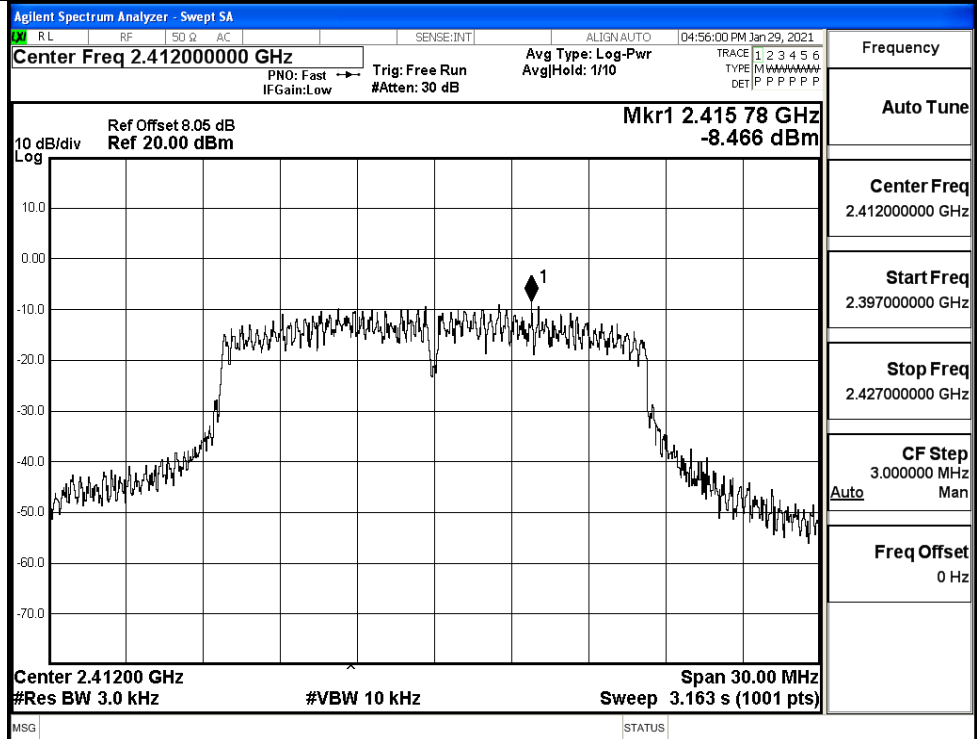
11B/MCH



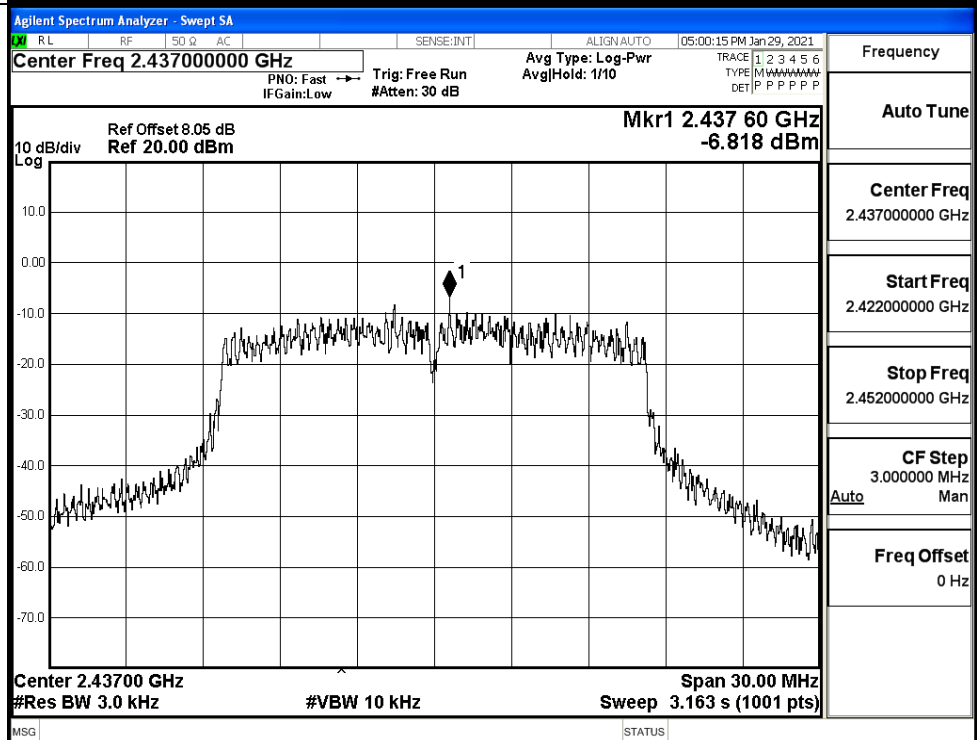
11B/HCH



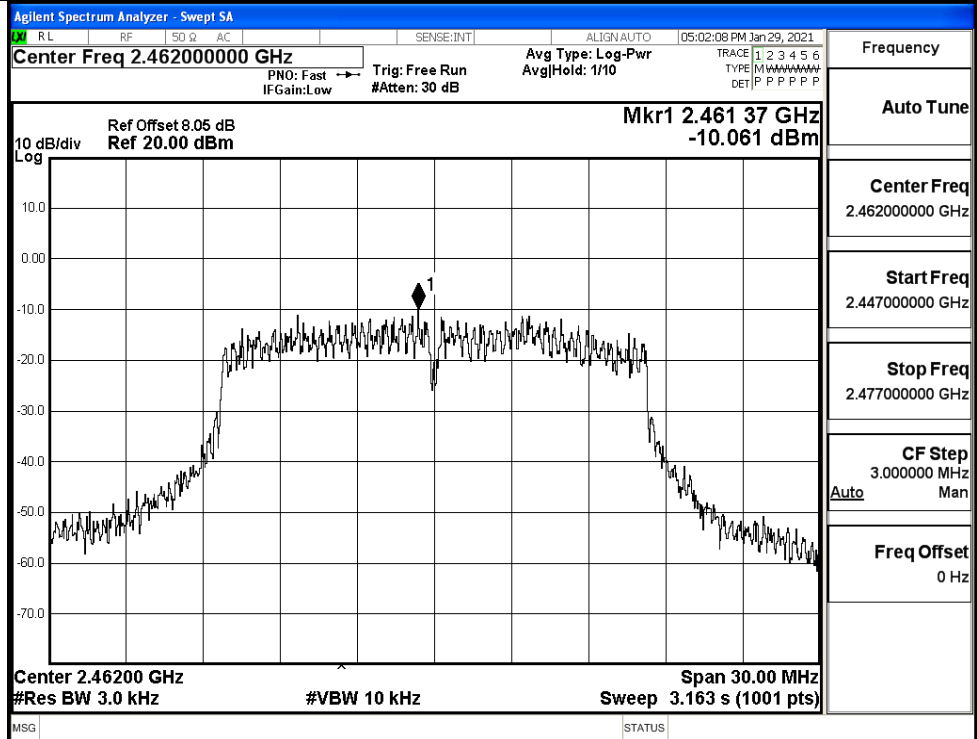
11G/LCH



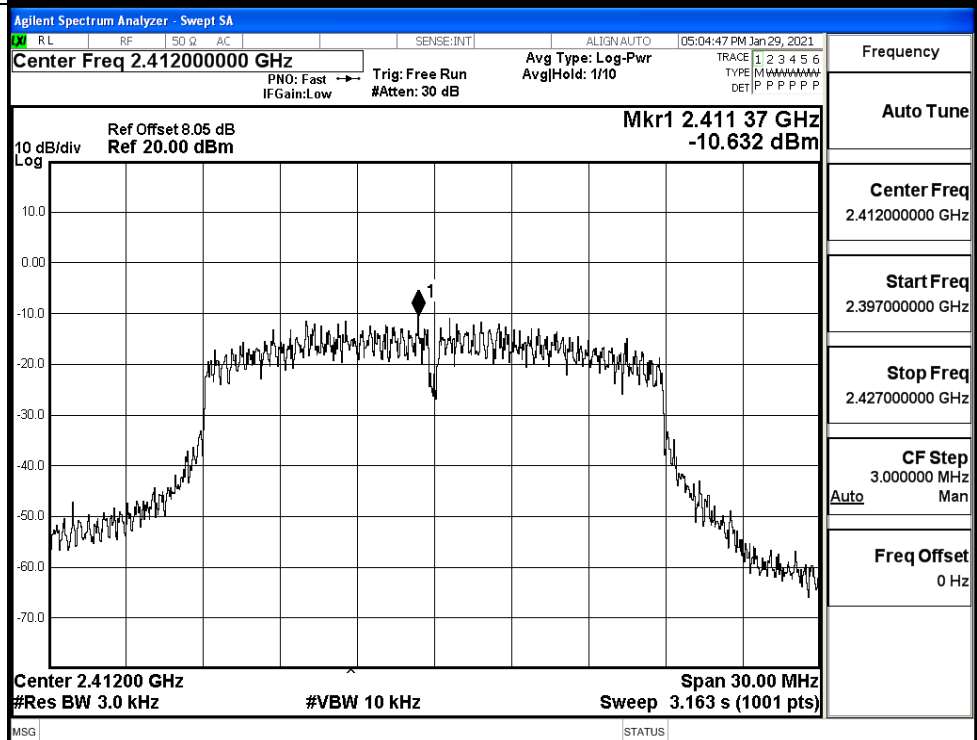
11G/MCH

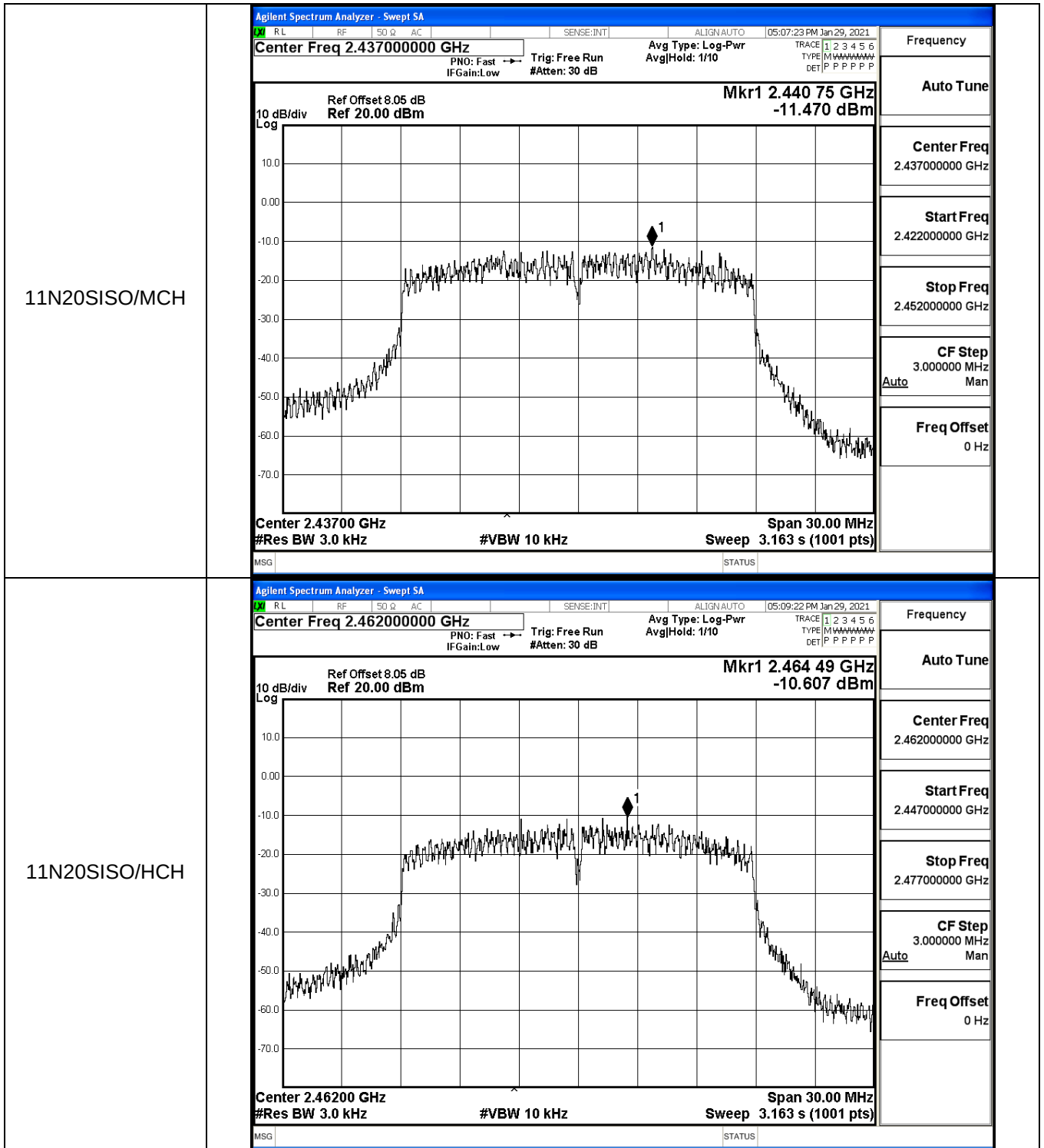


11G/HCH

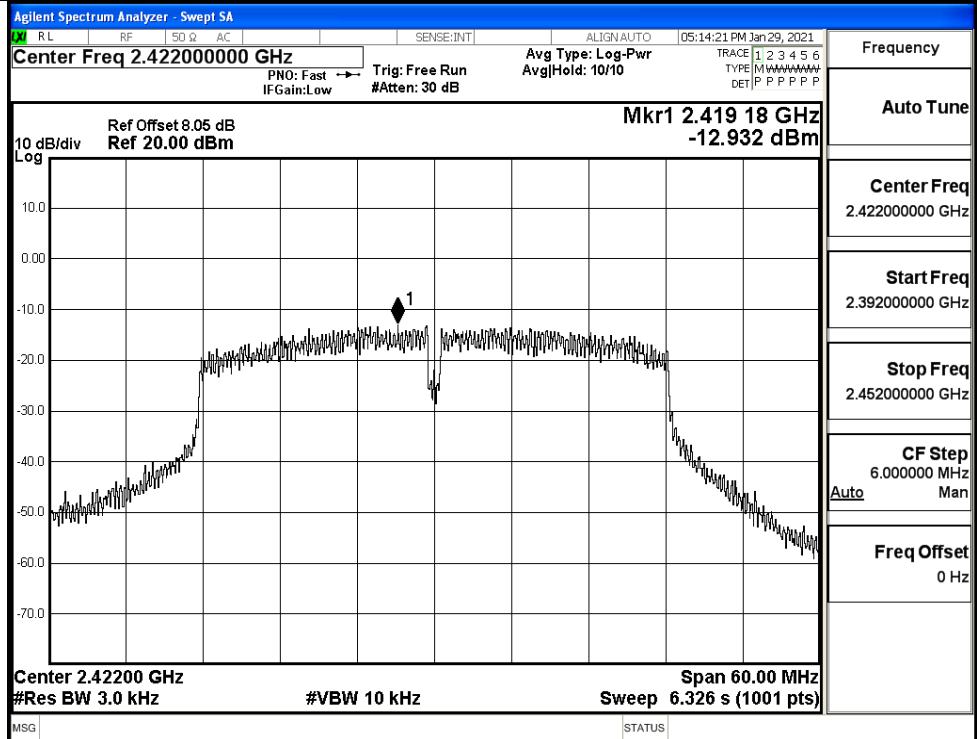


11N20SISO/LCH

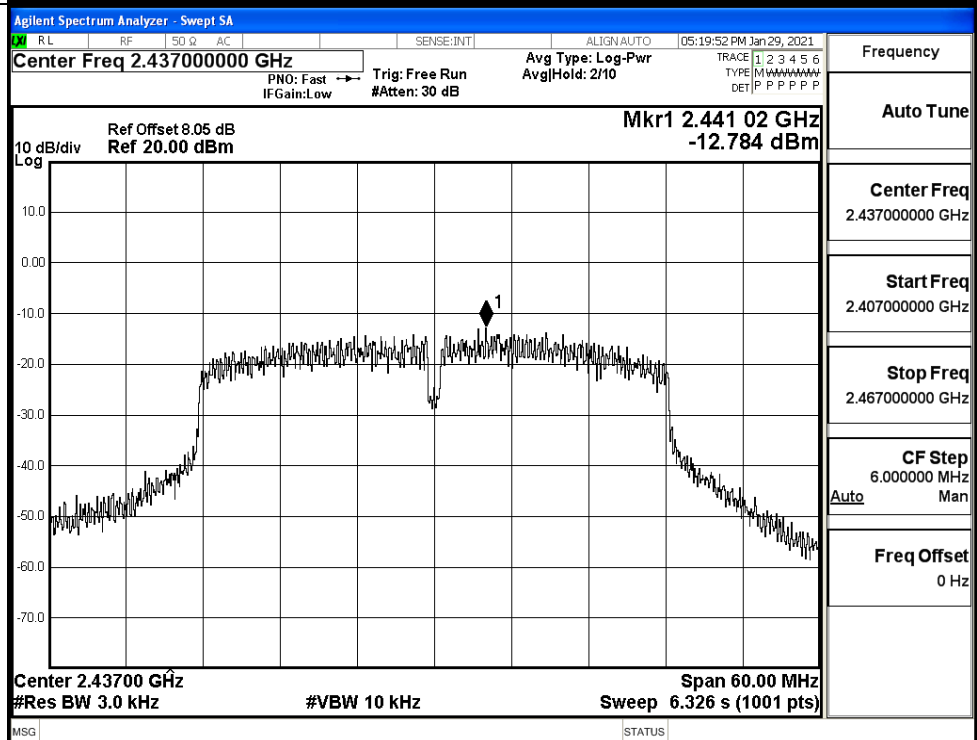


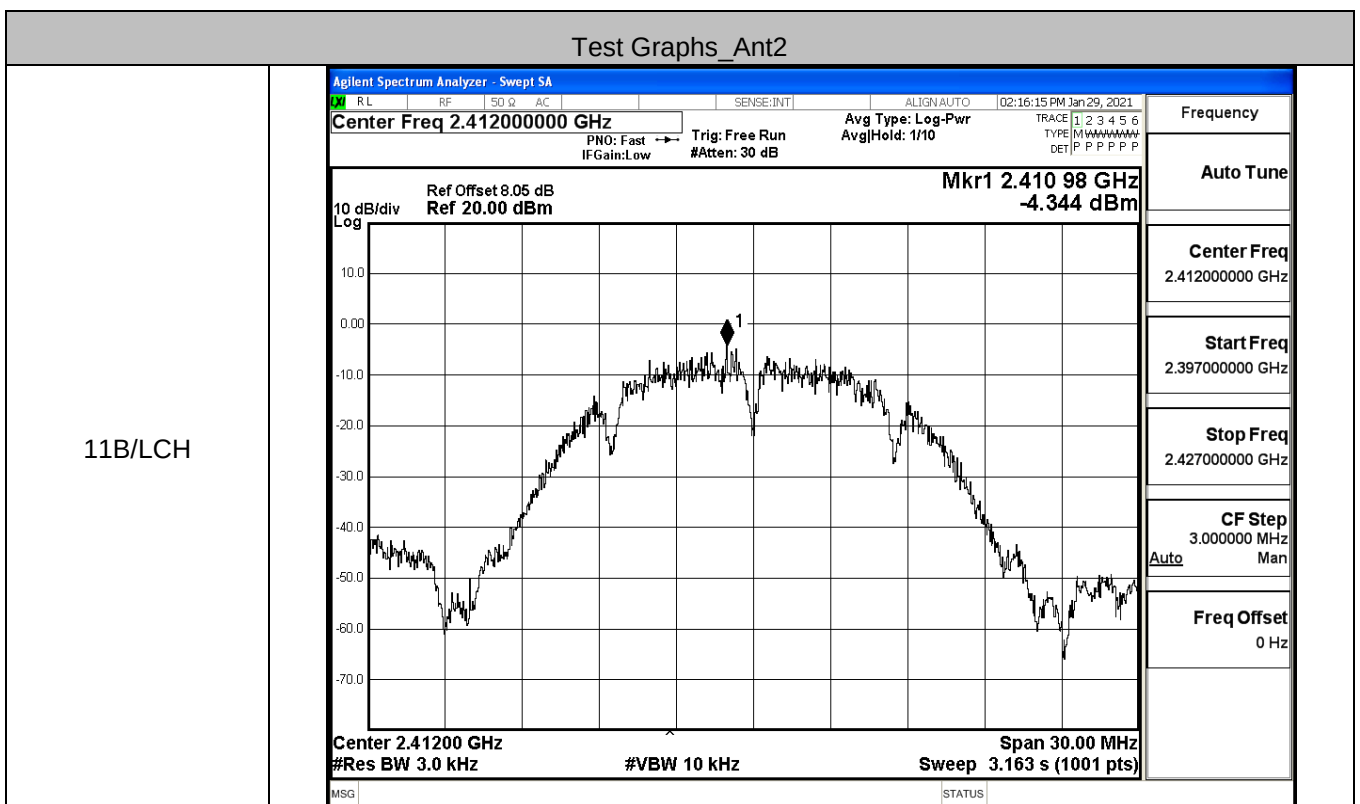
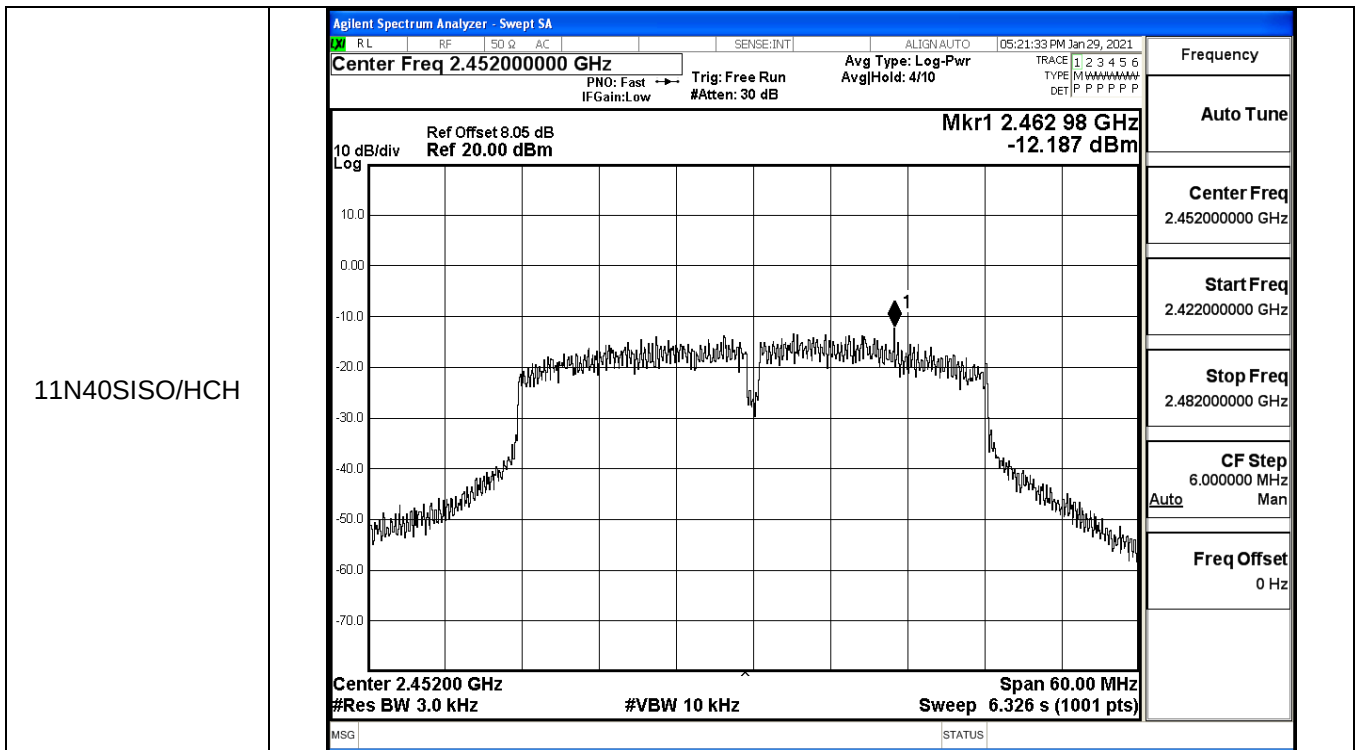


11N40SISO/LCH

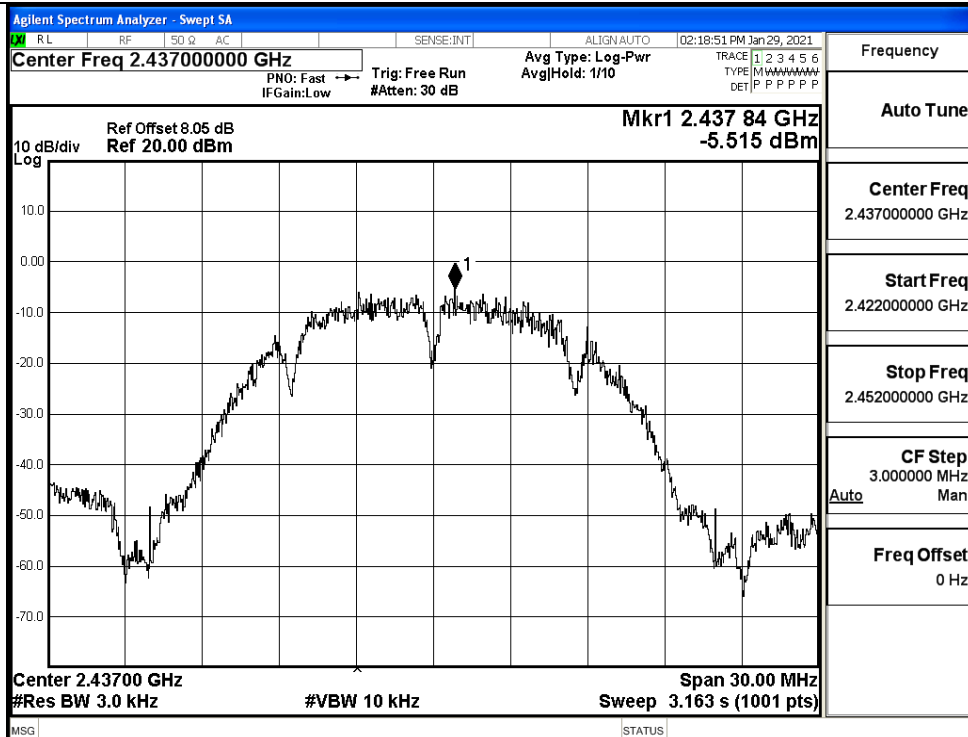


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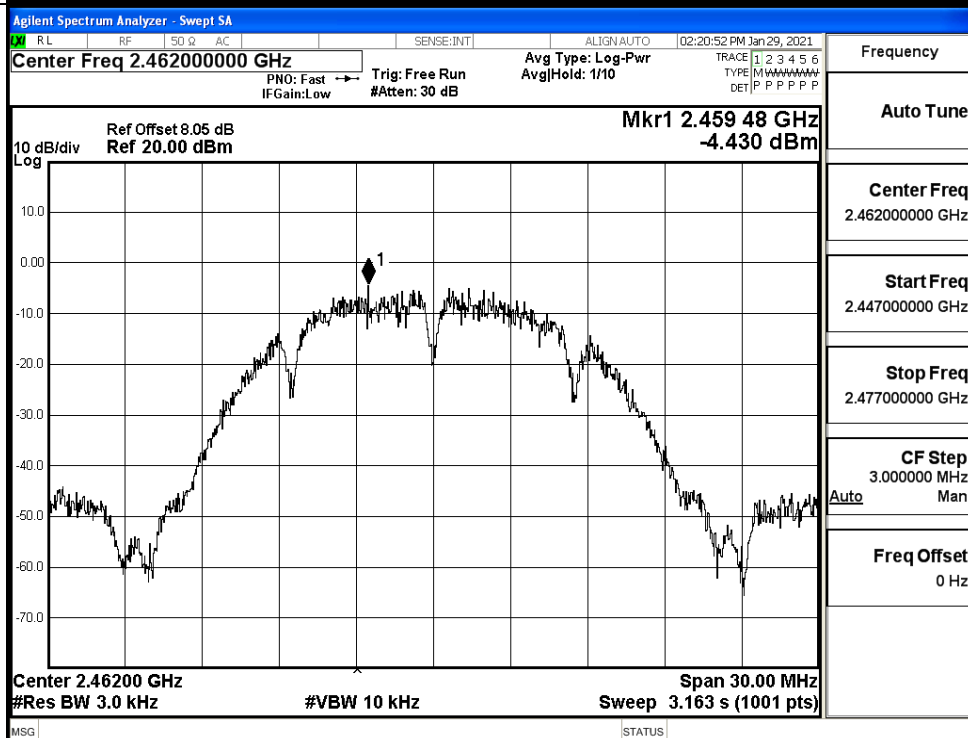


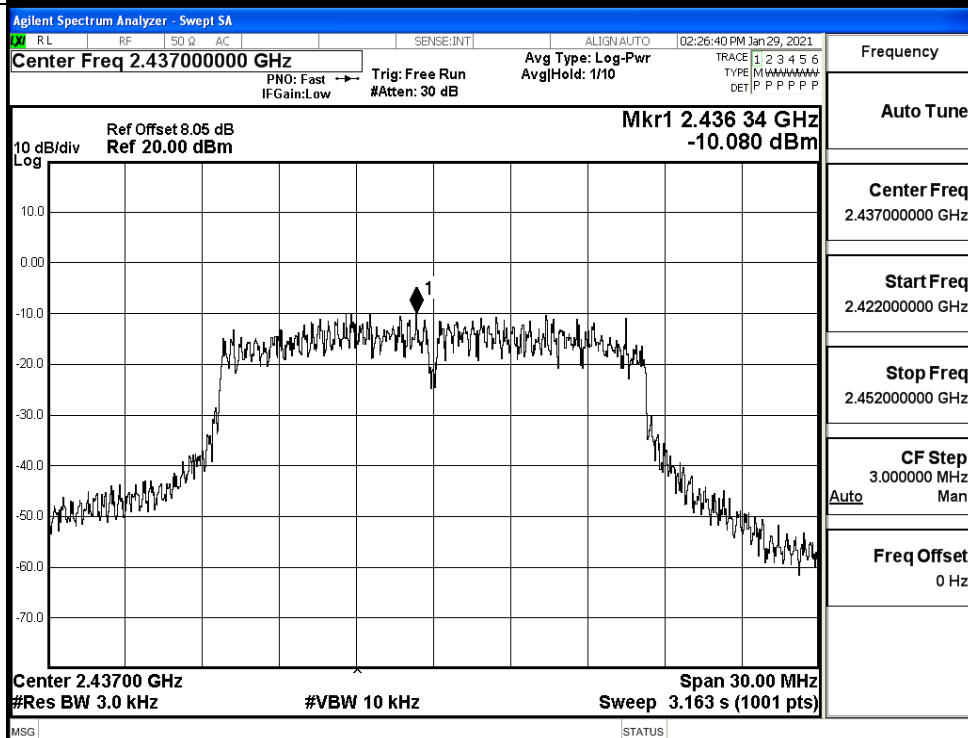
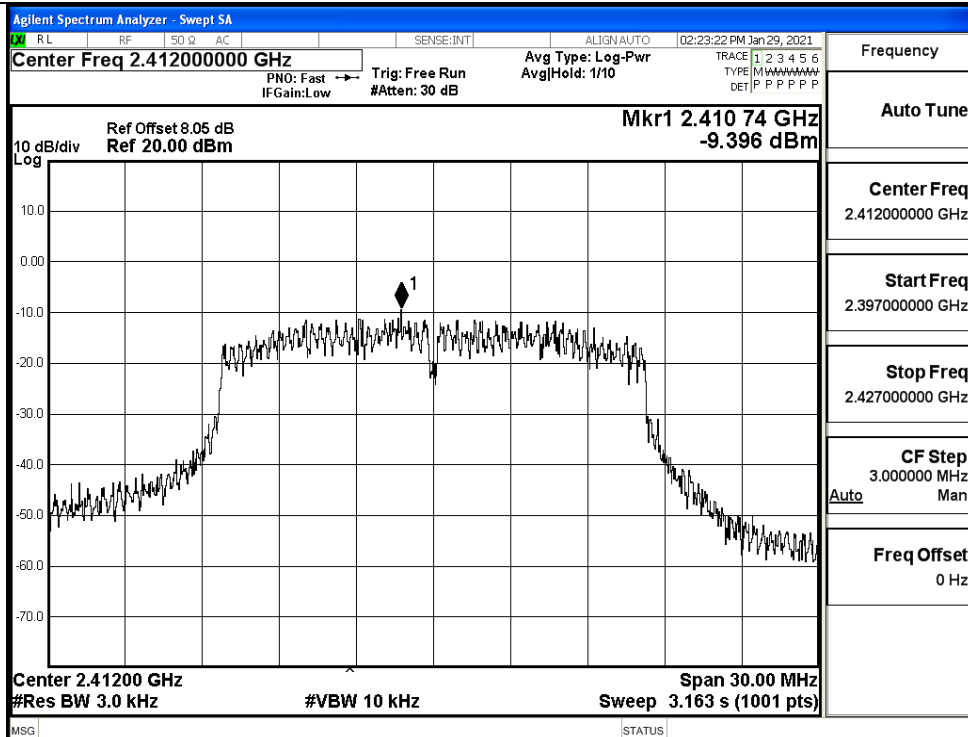


11B/MCH

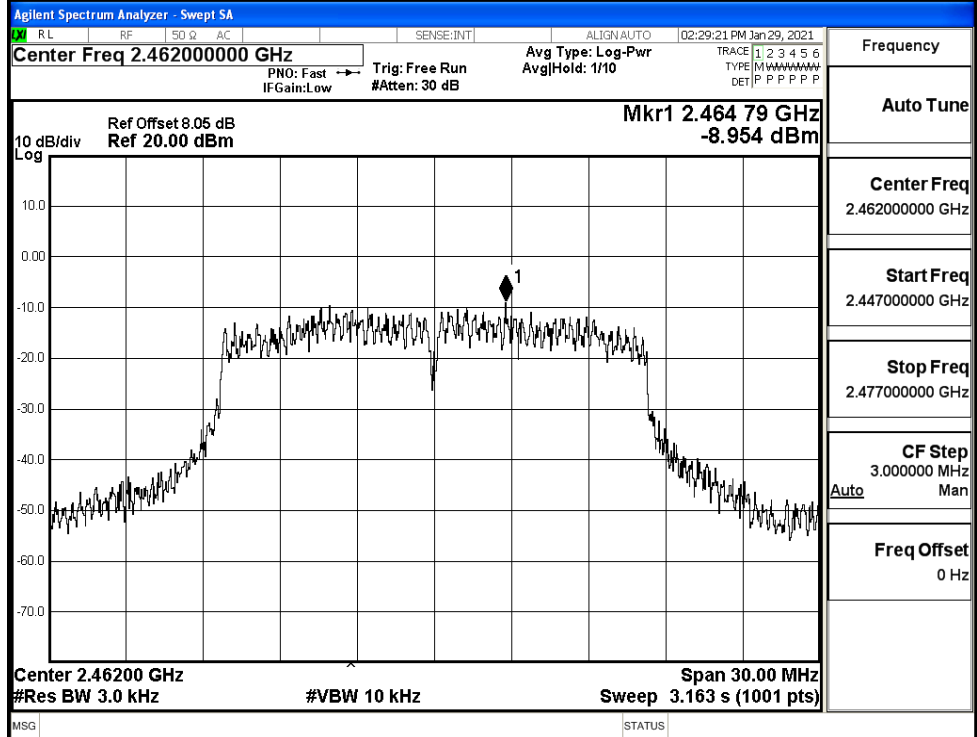


11B/HCH

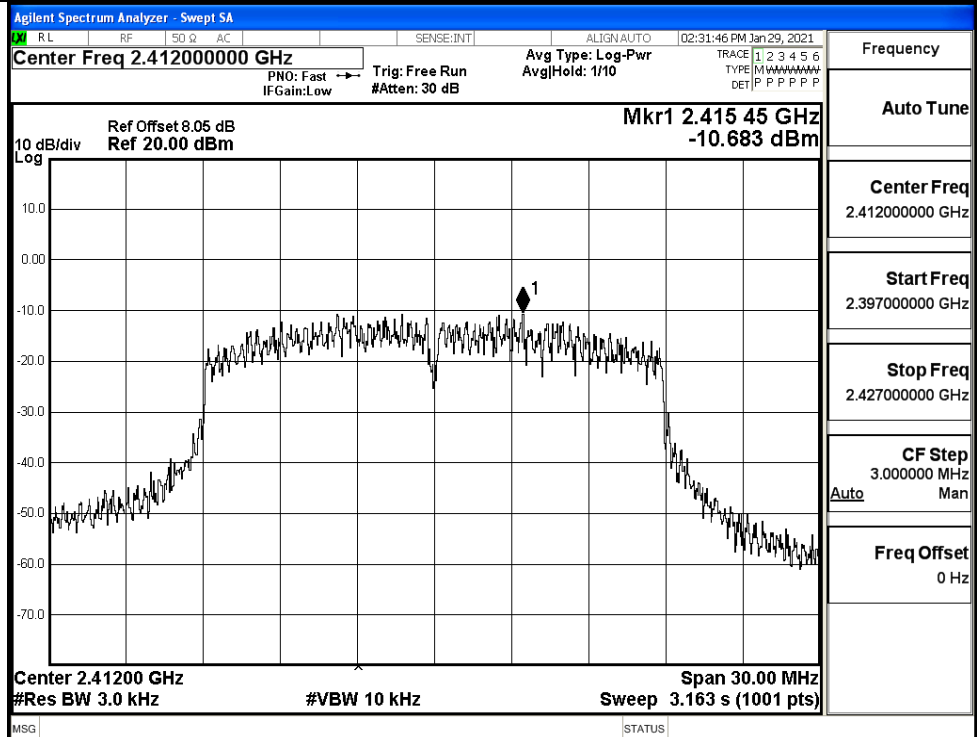


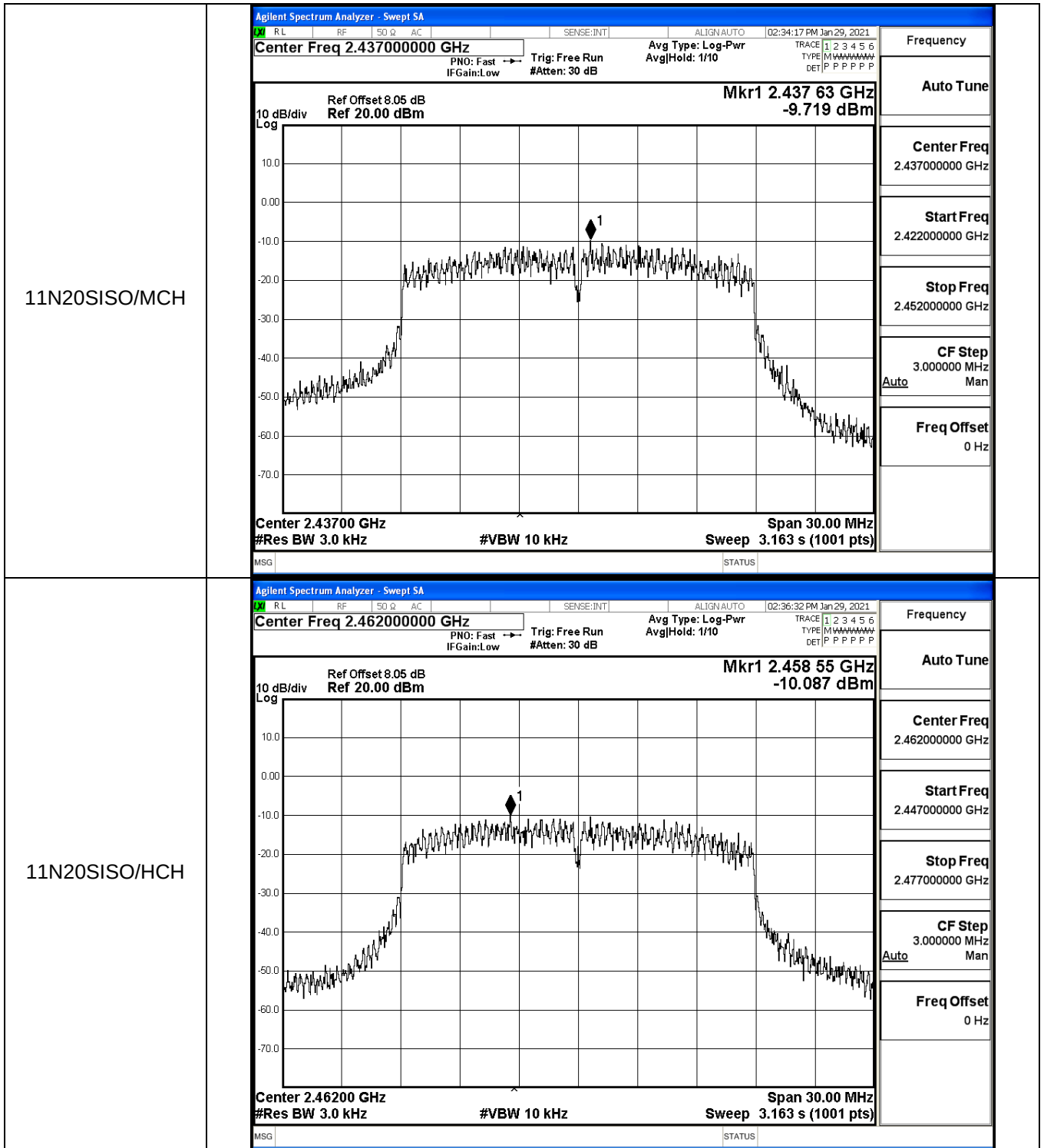


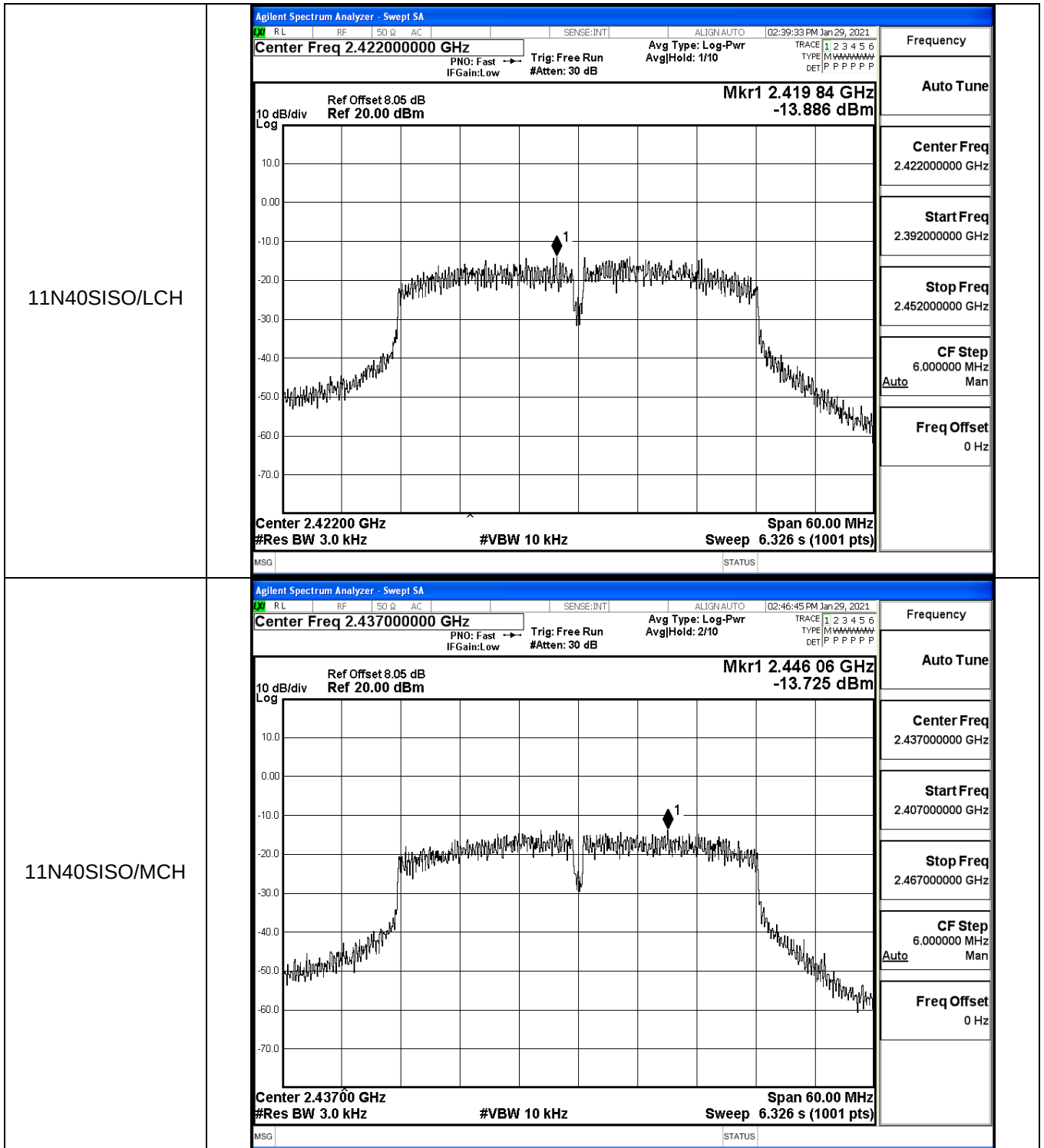
11G/HCH

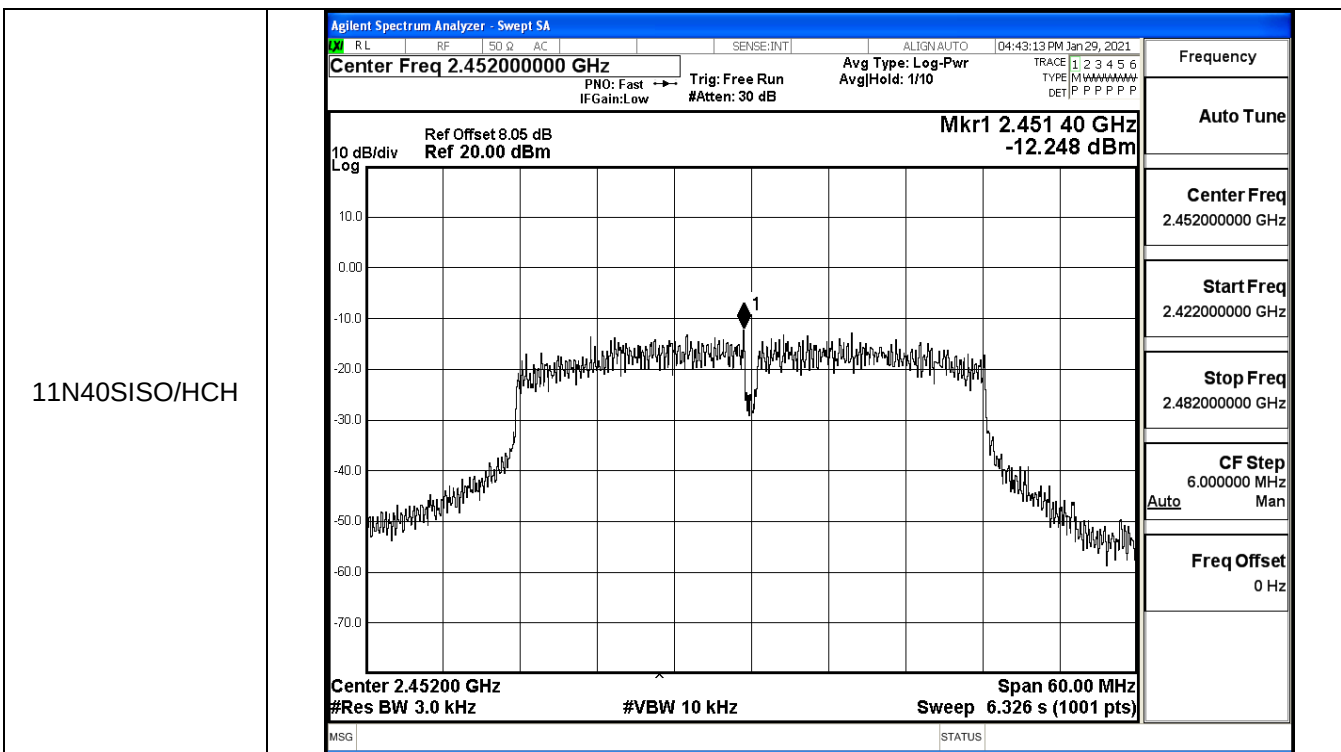


11N20SISO/LCH





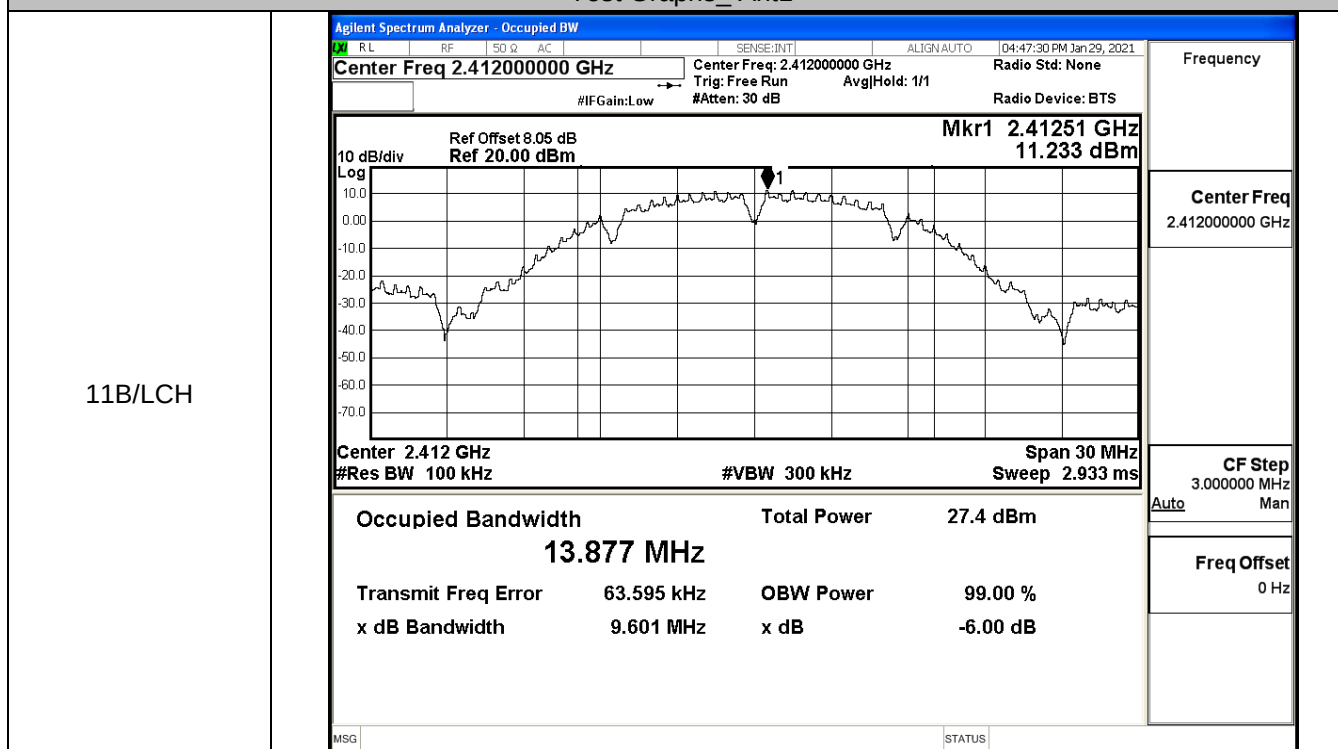




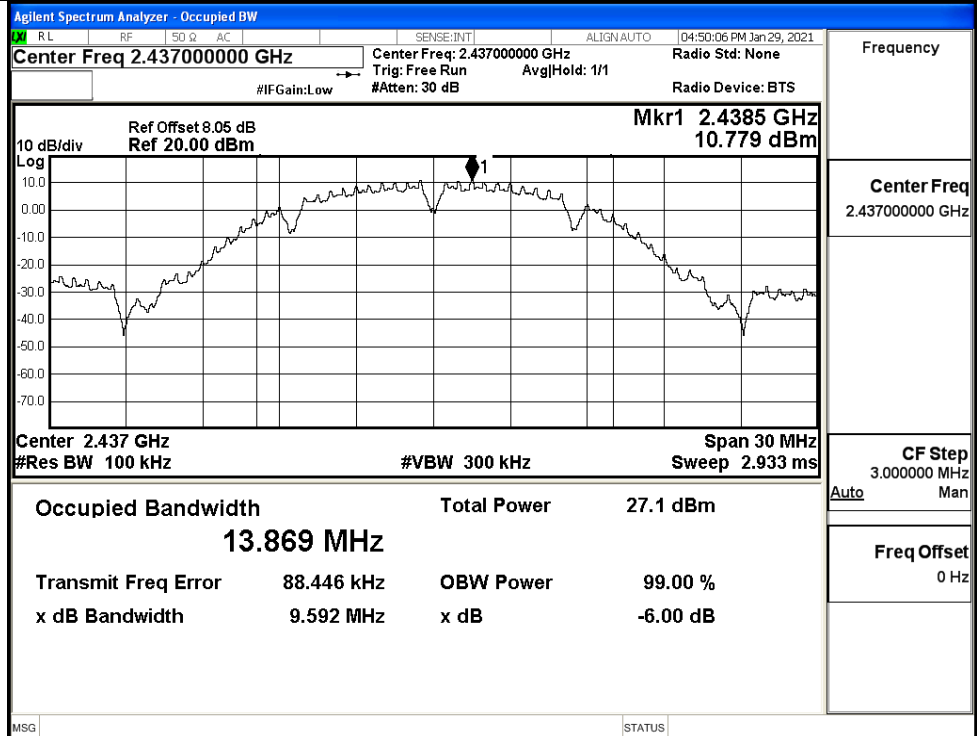
A.4 6dB Bandwidth

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

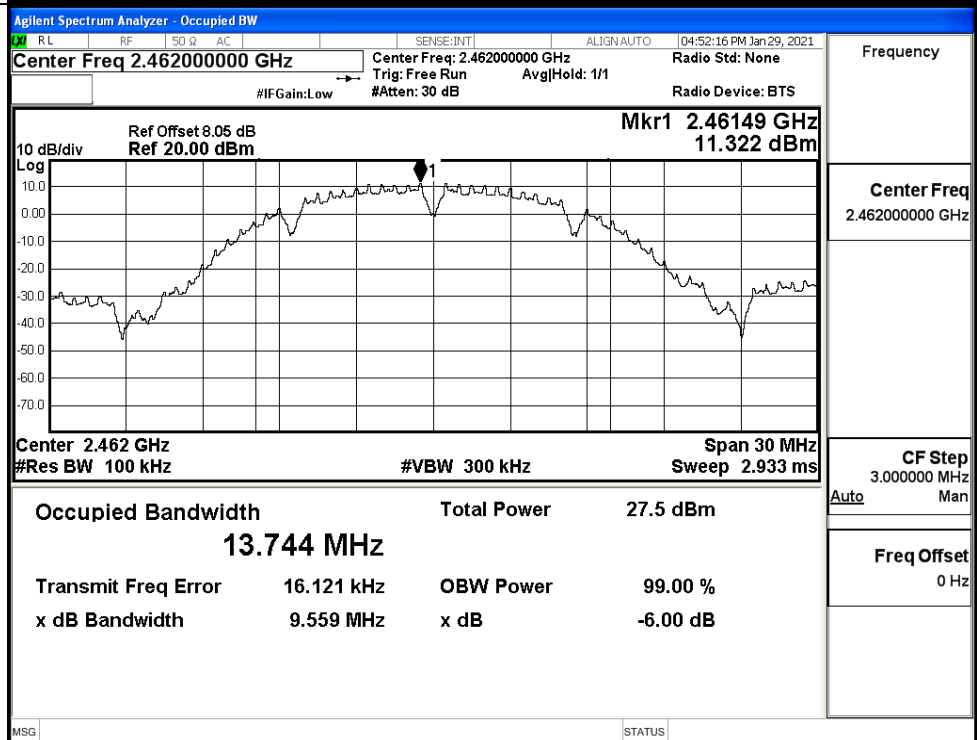
Test Graphs_ Ant1



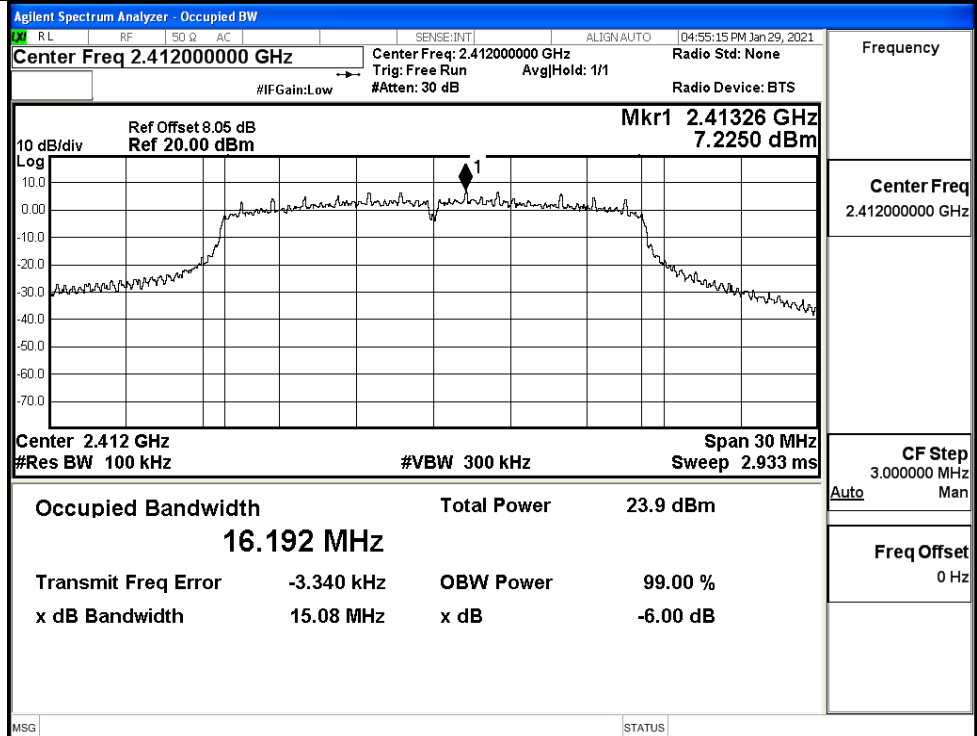
11B/MCH



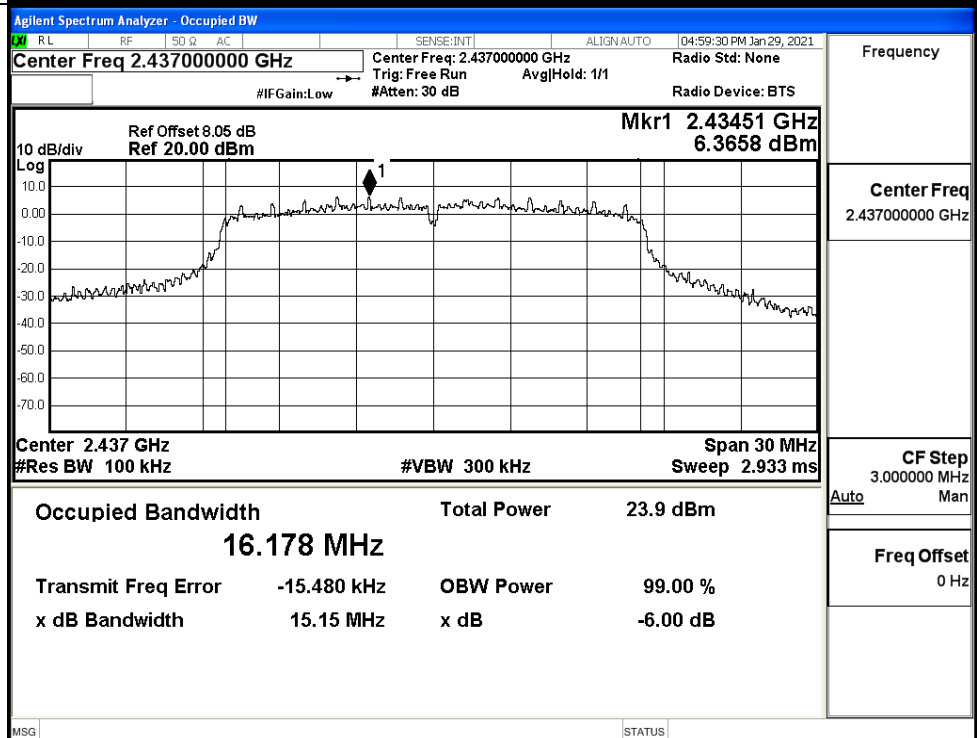
11B/HCH



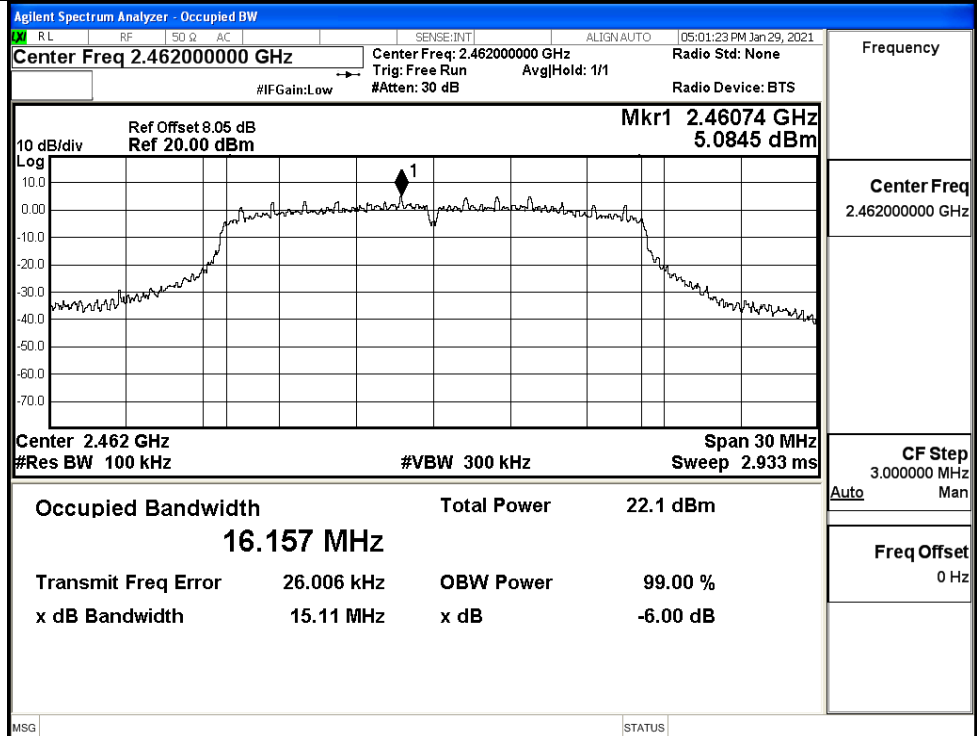
11G/LCH



11G/MCH



11G/HCH



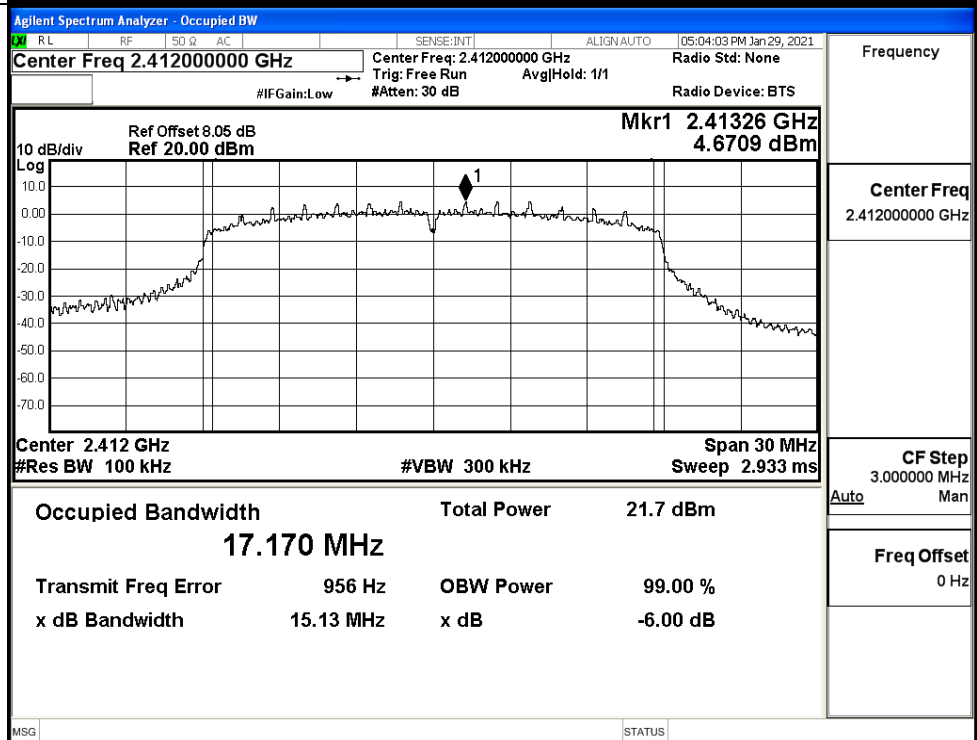
Frequency

Center Freq
2.462000000 GHz

CF Step
3.000000 MHz
Auto Man

Freq Offset
0 Hz

11N20SISO/LCH

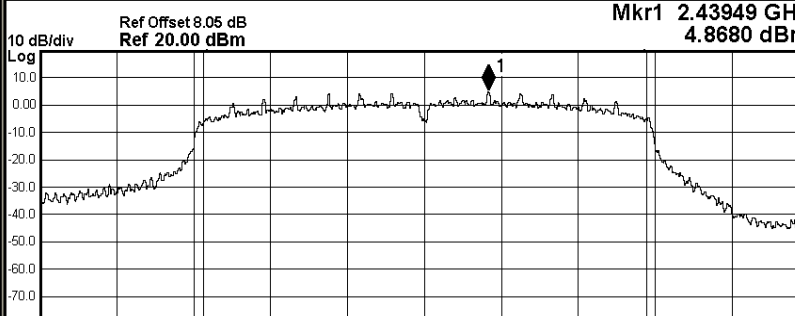
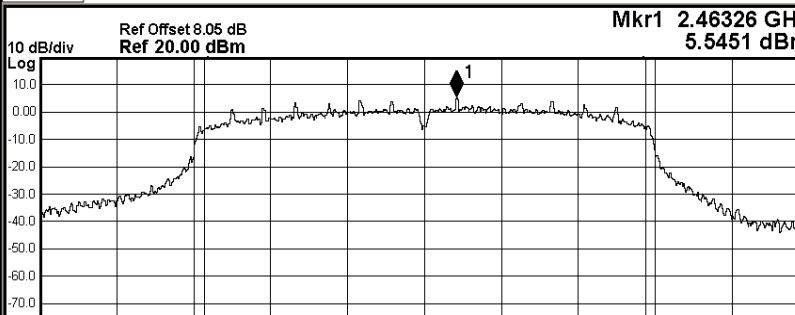


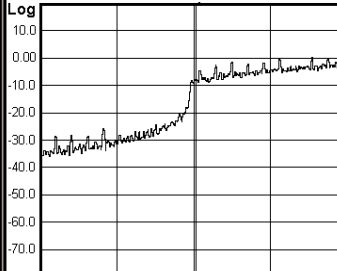
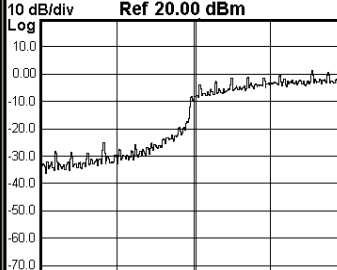
Frequency

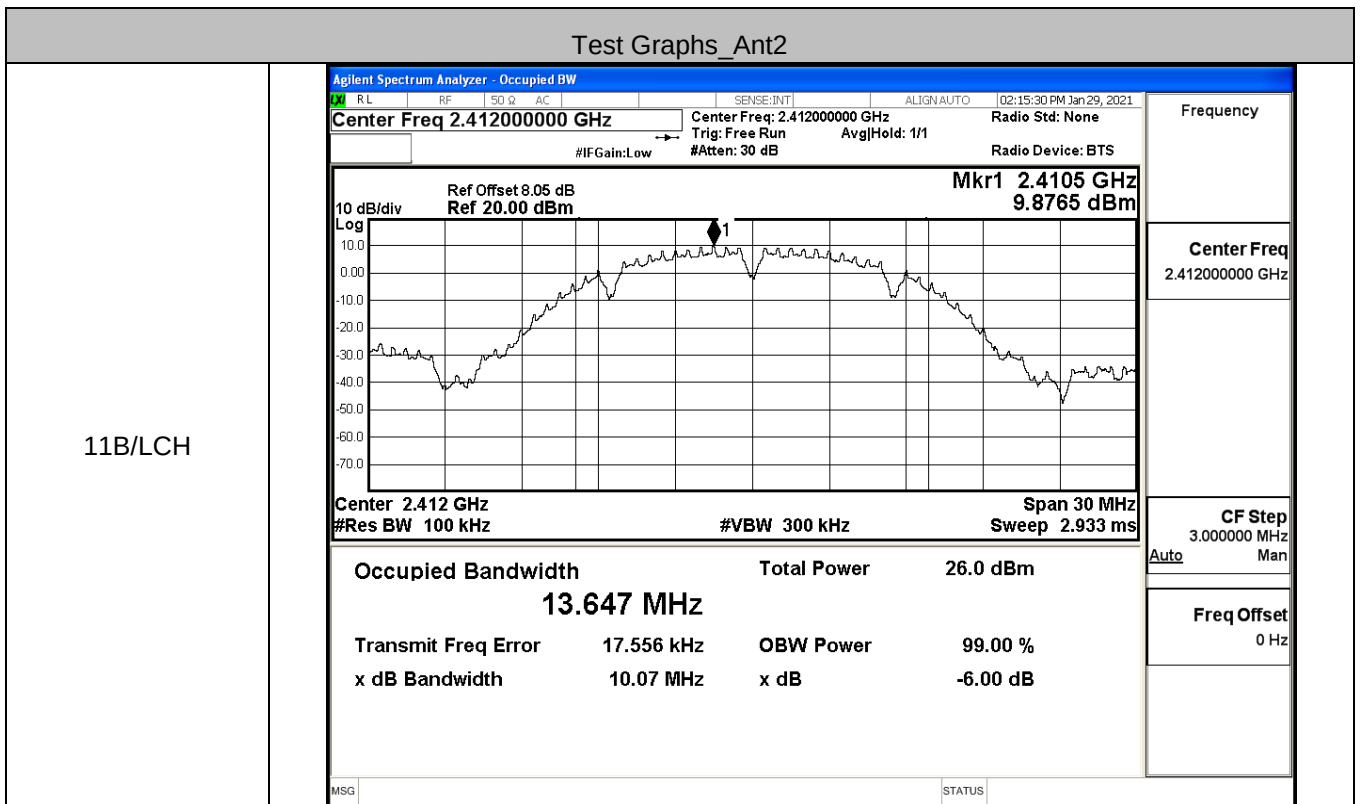
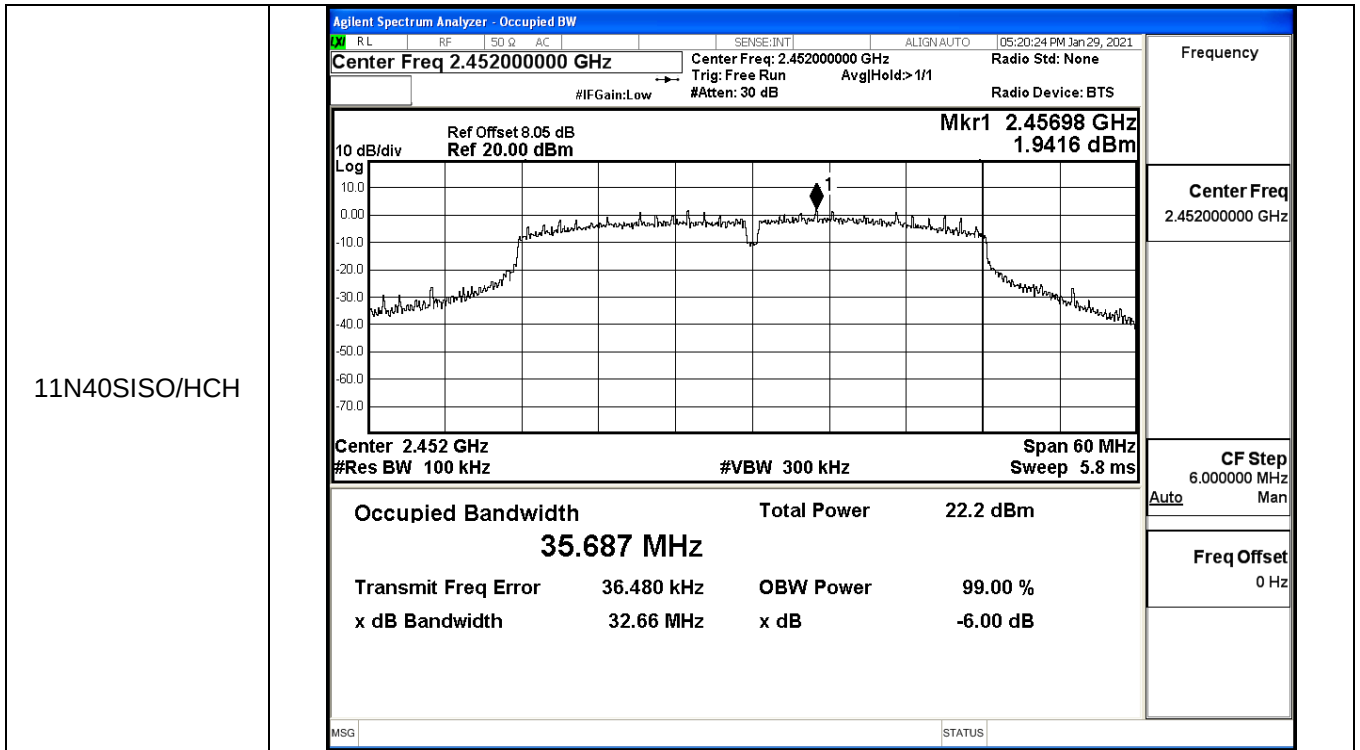
Center Freq
2.412000000 GHz

CF Step
3.000000 MHz
Auto Man

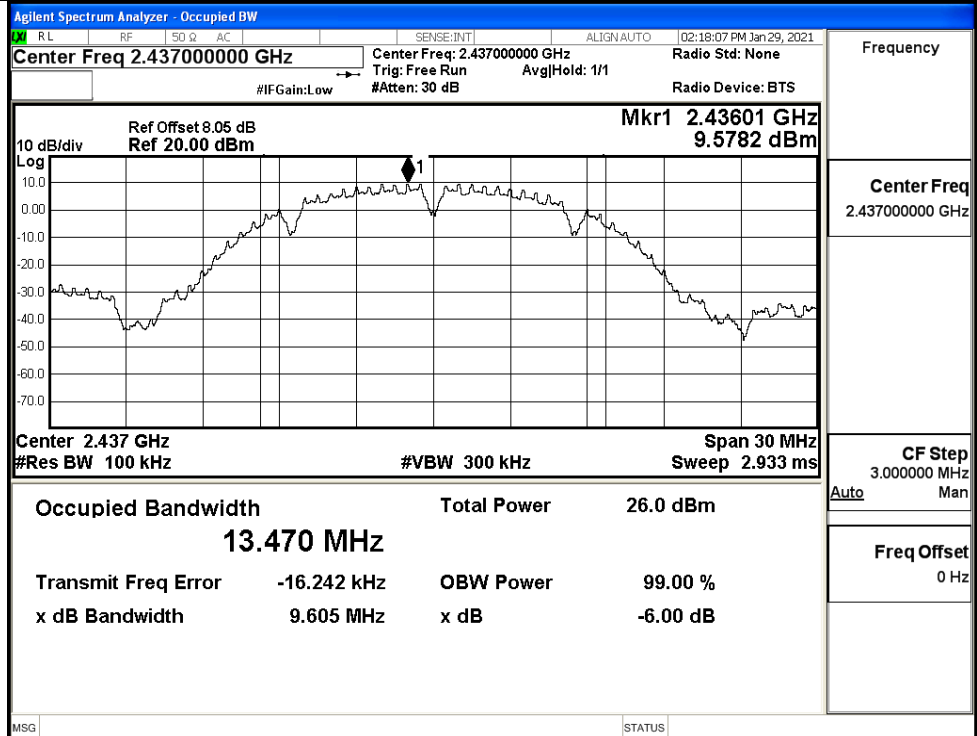
Freq Offset
0 Hz

11N20SISO/MCH	Agilent Spectrum Analyzer - Occupied BW RL RF 50 Ω AC SENSE:INT ALIGN AUTO 05:06:38 PM Jan 29, 2021 Center Freq 2.437000000 GHz Center Freq: 2.437000000 GHz Trig: Free Run Avg Hold: 1/1 Radio Std: None Radio Device: BTS #IFGain:Low #Atten: 30 dB Ref Offset 8.05 dB Ref 20.00 dBm Mkr1 2.43949 GHz 4.8680 dBm  Center 2.437 GHz #Res BW 100 kHz #VBW 300 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 MSG STATUS	Frequency Center Freq 2.437000000 GHz CF Step 3.000000 MHz Auto Man Freq Offset 0 Hz
11N20SISO/HCH	Agilent Spectrum Analyzer - Occupied BW RL RF 50 Ω AC SENSE:INT ALIGN AUTO 05:08:38 PM Jan 29, 2021 Center Freq 2.462000000 GHz Center Freq: 2.462000000 GHz Trig: Free Run Avg Hold: 1/1 Radio Std: None Radio Device: BTS #IFGain:Low #Atten: 30 dB Ref Offset 8.05 dB Ref 20.00 dBm Mkr1 2.46326 GHz 5.5451 dBm  Center 2.462 GHz #Res BW 100 kHz #VBW 300 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 MSG STATUS	Frequency Center Freq 2.462000000 GHz CF Step 3.000000 MHz Auto Man Freq Offset 0 Hz

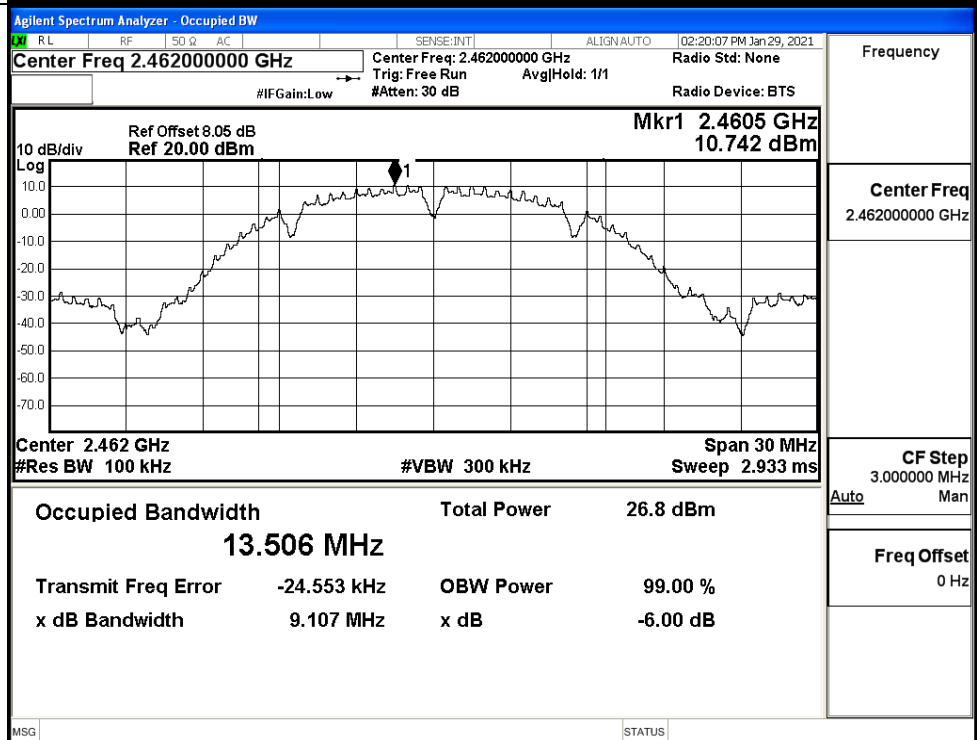
11N40SISO/LCH	Agilent Spectrum Analyzer - Occupied BW	Frequency
	Center Freq 2.42200000 GHz 10 dB/div Log  Center 2.422 GHz #Res BW 100 kHz Span 60 MHz Sweep 5.8 ms Occupied Bandwidth 35.723 MHz Total Power 22.1 dBm Transmit Freq Error 43.875 kHz OBW Power 99.00 % x dB Bandwidth 33.87 MHz x dB -6.00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



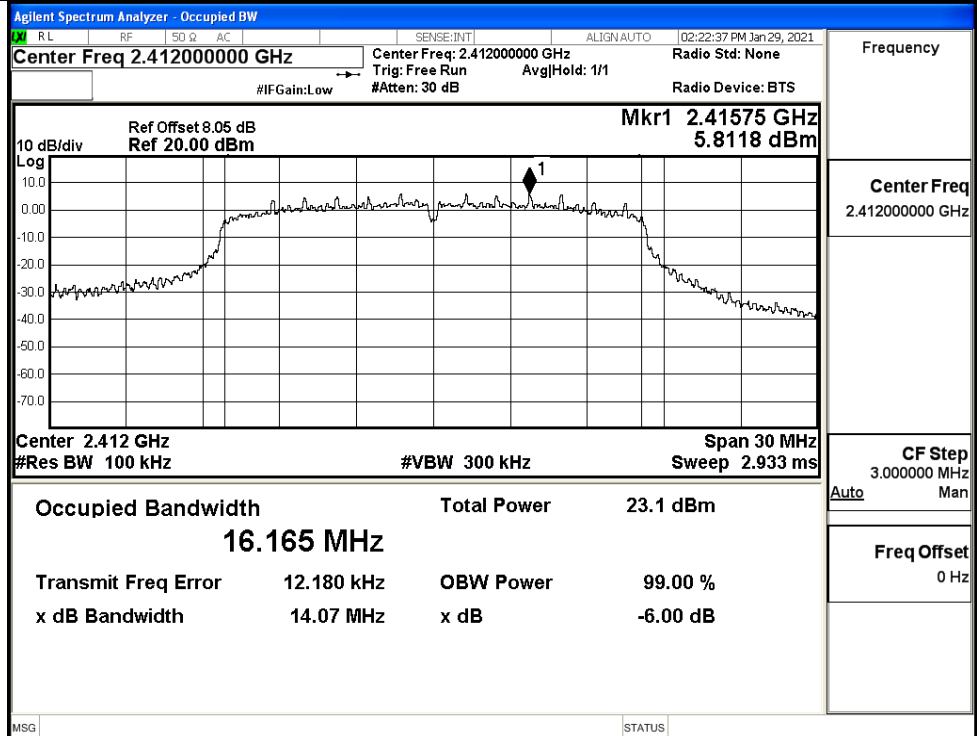
11B/MCH



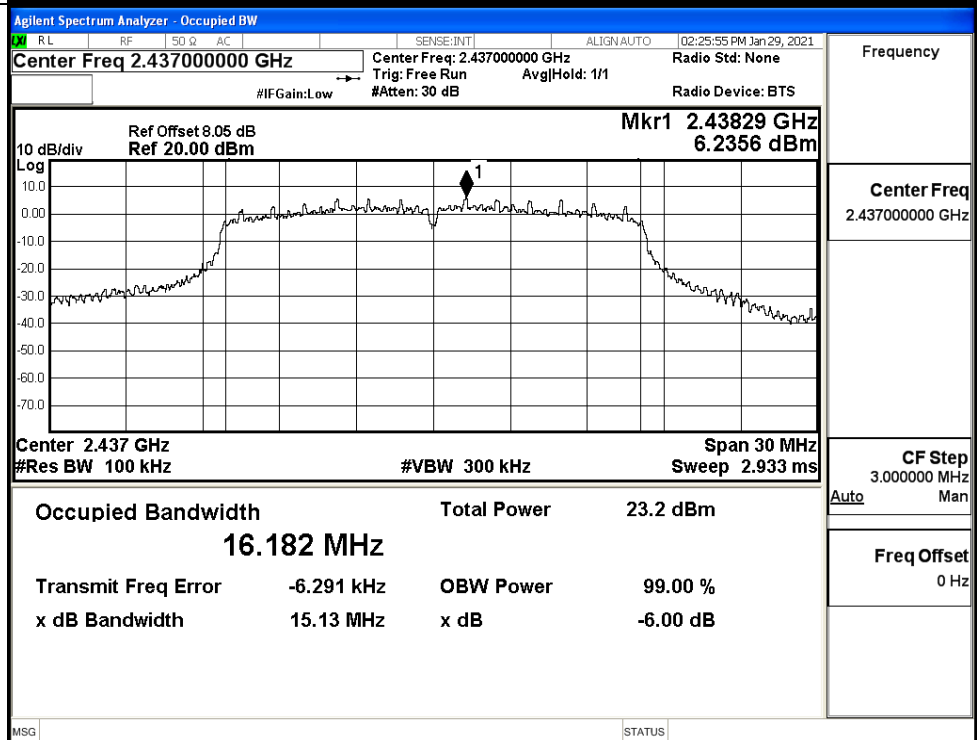
11B/HCH



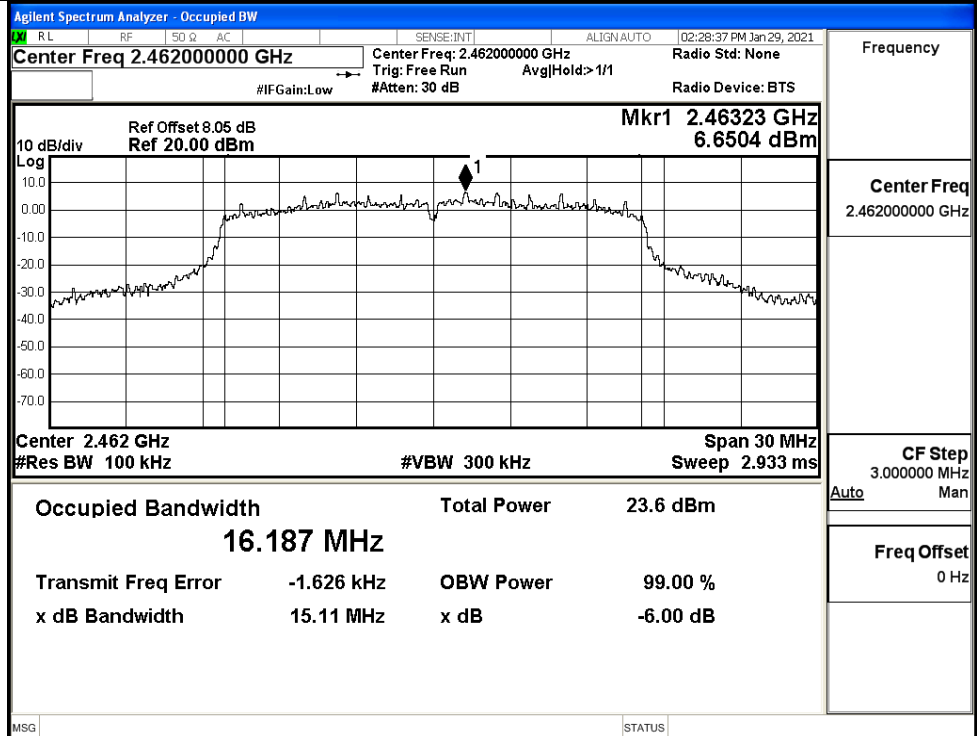
11G/LCH



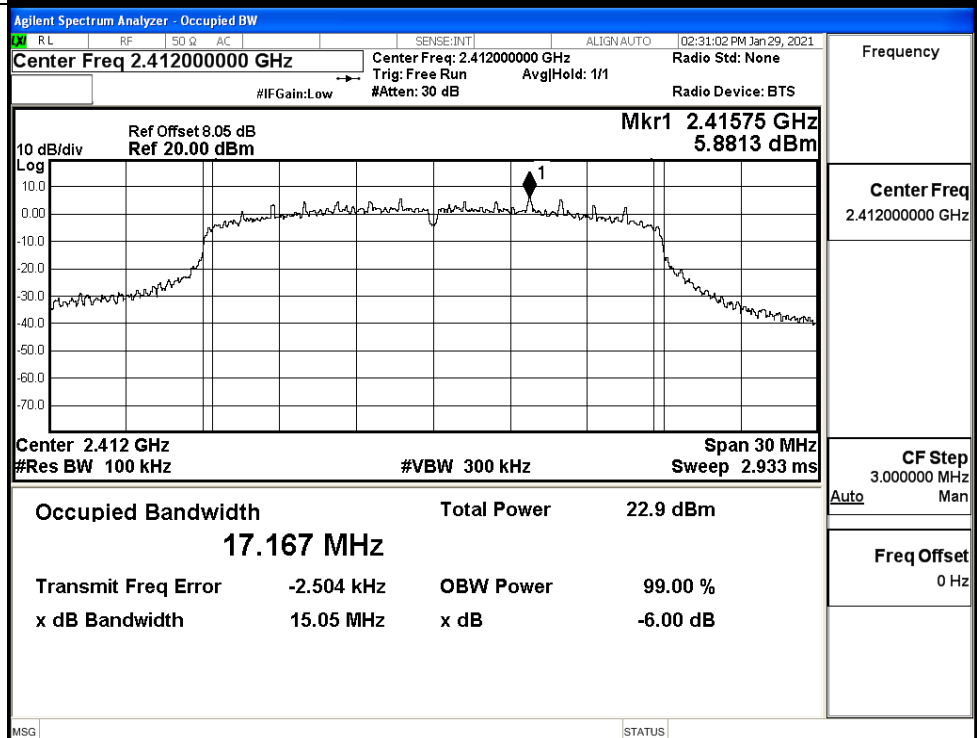
11G/MCH

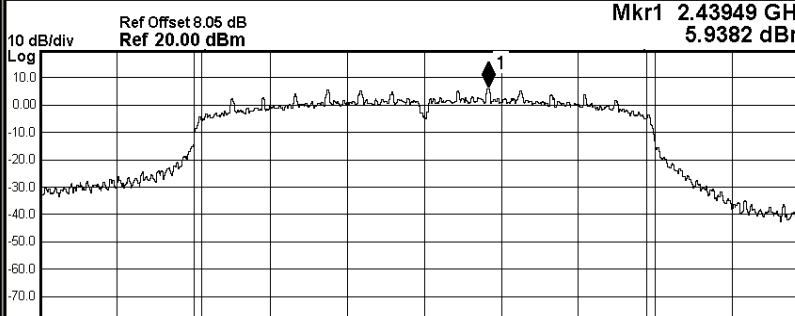
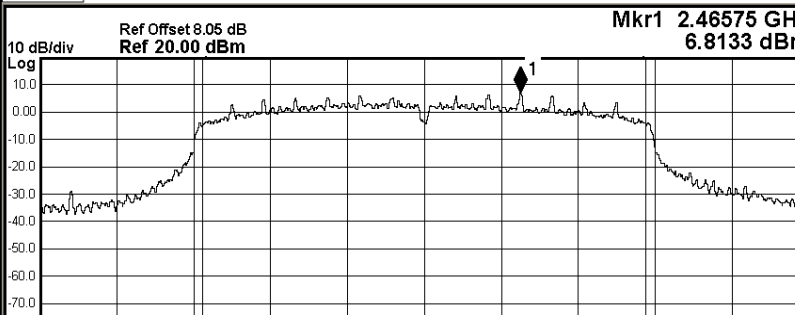


11G/HCH

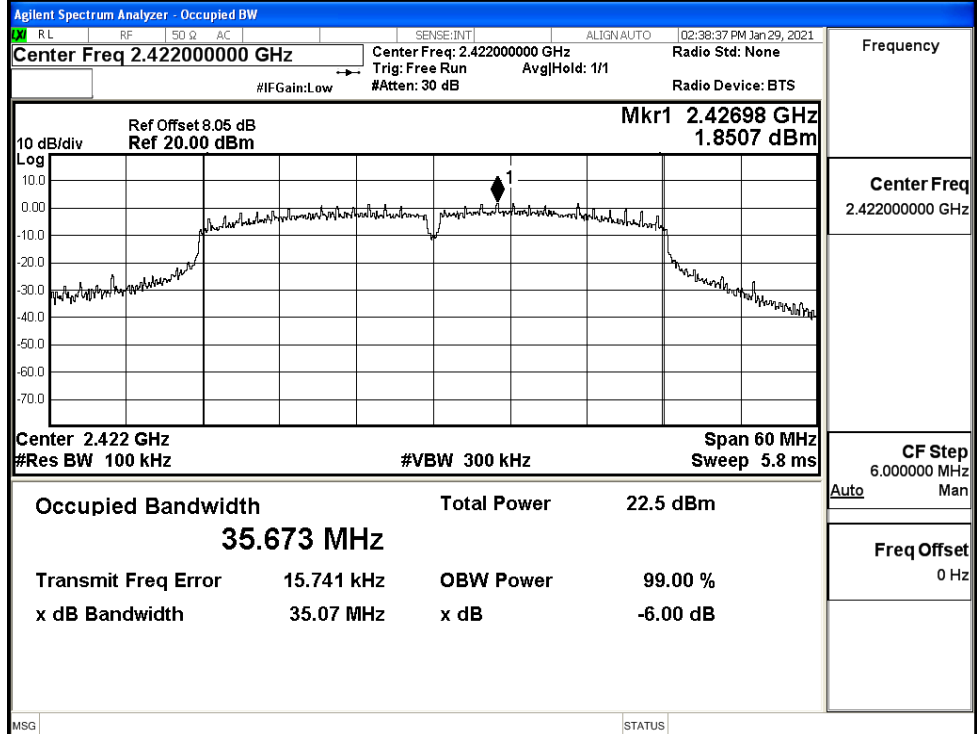


11N20SISO/LCH

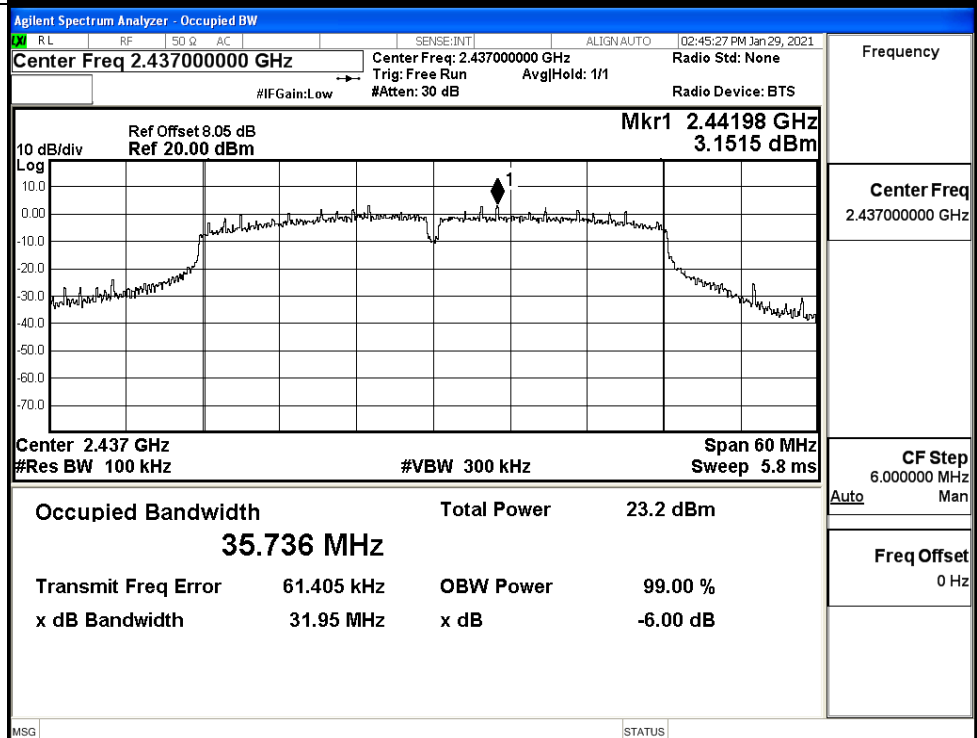


11N20SISO/MCH	Agilent Spectrum Analyzer - Occupied BW RL RF 50 Ω AC SENSE:INT ALIGN AUTO 02:33:33 PM Jan 29, 2021 Center Freq 2.437000000 GHz Center Freq: 2.437000000 GHz Trig: Free Run Avg Hold> 1/1 Radio Std: None #IF Gain: Low #Atten: 30 dB Radio Device: BTS 10 dB/div Ref Offset 8.05 dB Ref 20.00 dBm Mkr1 2.43949 GHz 5.9382 dBm  Center 2.437 GHz #Res BW 100 kHz #VBW 300 kHz Span 30 MHz Sweep 2.933 ms Occupied Bandwidth 17.265 MHz Total Power 22.9 dBm Transmit Freq Error 8.198 kHz OBW Power 99.00 % x dB Bandwidth 15.12 MHz x dB -6.00 dB MSG STATUS	Frequency Center Freq 2.437000000 GHz CF Step 3.000000 MHz Auto Man Freq Offset 0 Hz
11N20SISO/HCH	Agilent Spectrum Analyzer - Occupied BW RL RF 50 Ω AC SENSE:INT ALIGN AUTO 02:35:47 PM Jan 29, 2021 Center Freq 2.462000000 GHz Center Freq: 2.462000000 GHz Trig: Free Run Avg Hold> 1/1 Radio Std: None #IF Gain: Low #Atten: 30 dB Radio Device: BTS 10 dB/div Ref Offset 8.05 dB Ref 20.00 dBm Mkr1 2.46575 GHz 6.8133 dBm  Center 2.462 GHz #Res BW 100 kHz #VBW 300 kHz Span 30 MHz Sweep 2.933 ms Occupied Bandwidth 17.205 MHz Total Power 23.5 dBm Transmit Freq Error 11.085 kHz OBW Power 99.00 % x dB Bandwidth 15.08 MHz x dB -6.00 dB MSG STATUS	Frequency Center Freq 2.462000000 GHz CF Step 3.000000 MHz Auto Man Freq Offset 0 Hz

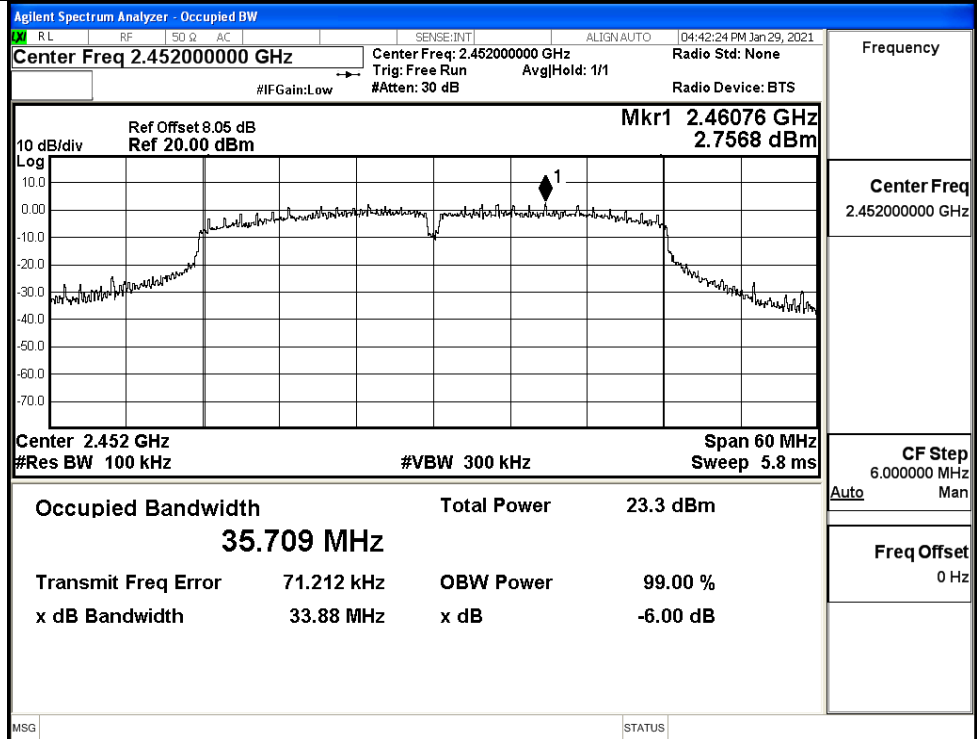
11N40SISO/LCH



11N40SISO/MCH



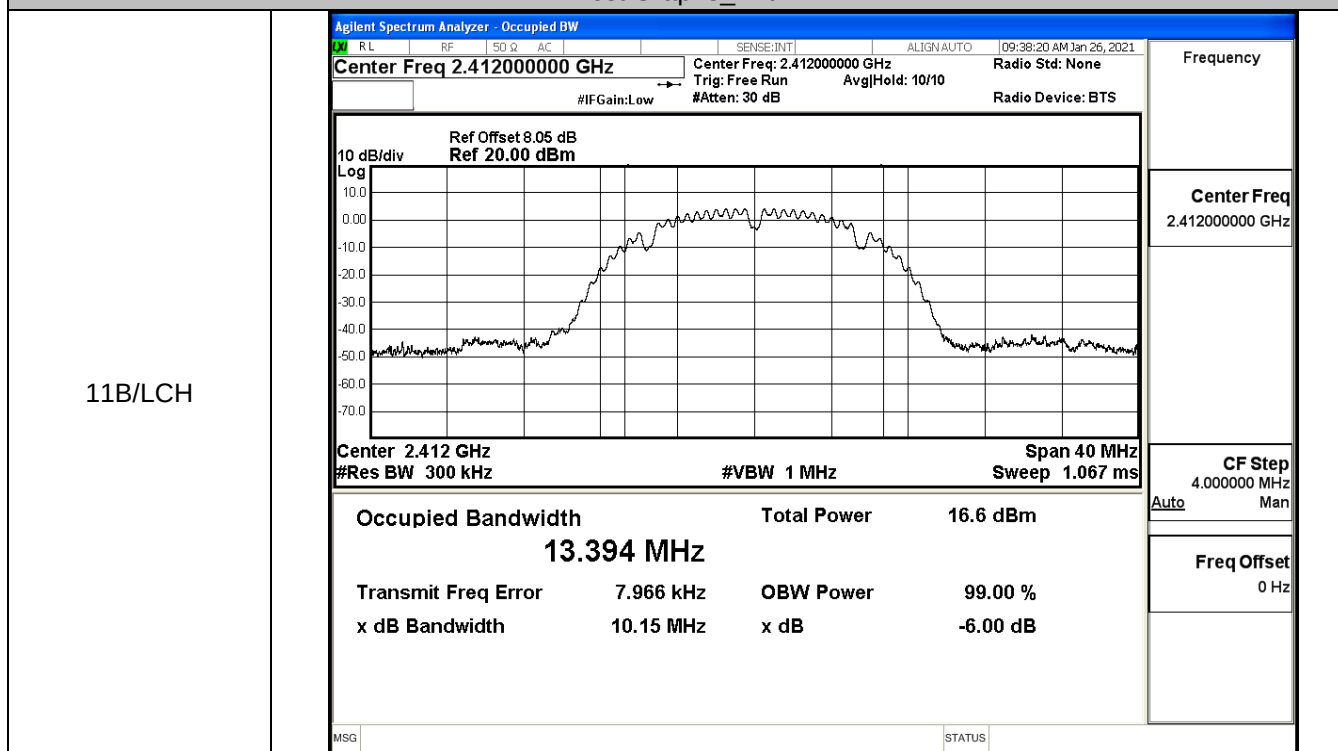
11N40SISO/HCH



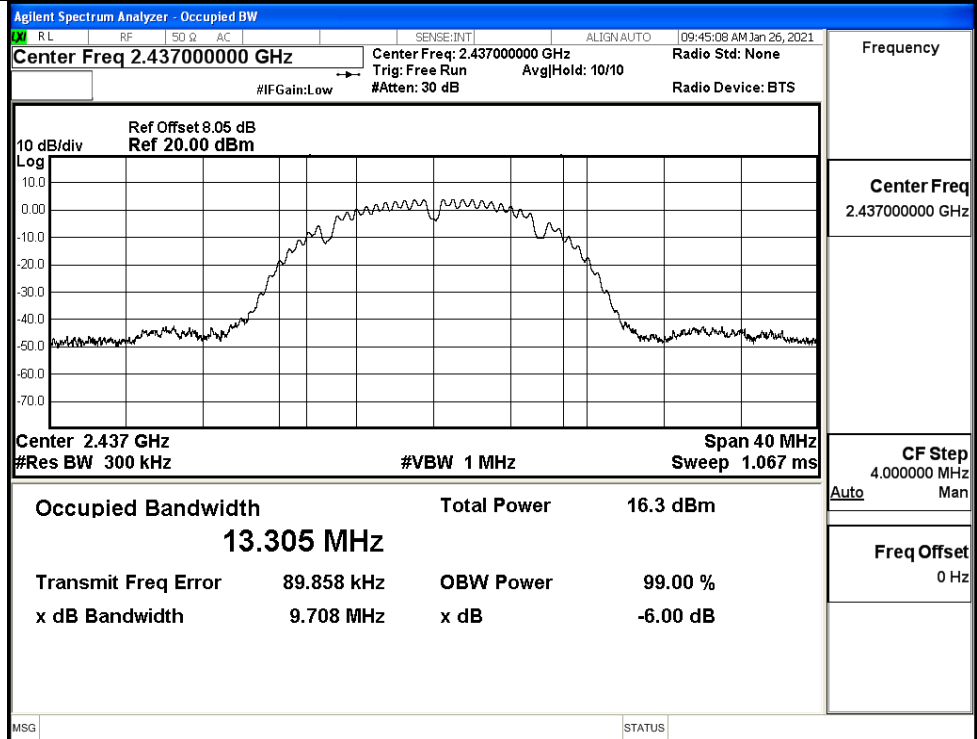
A.5 Occupied Bandwidth

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



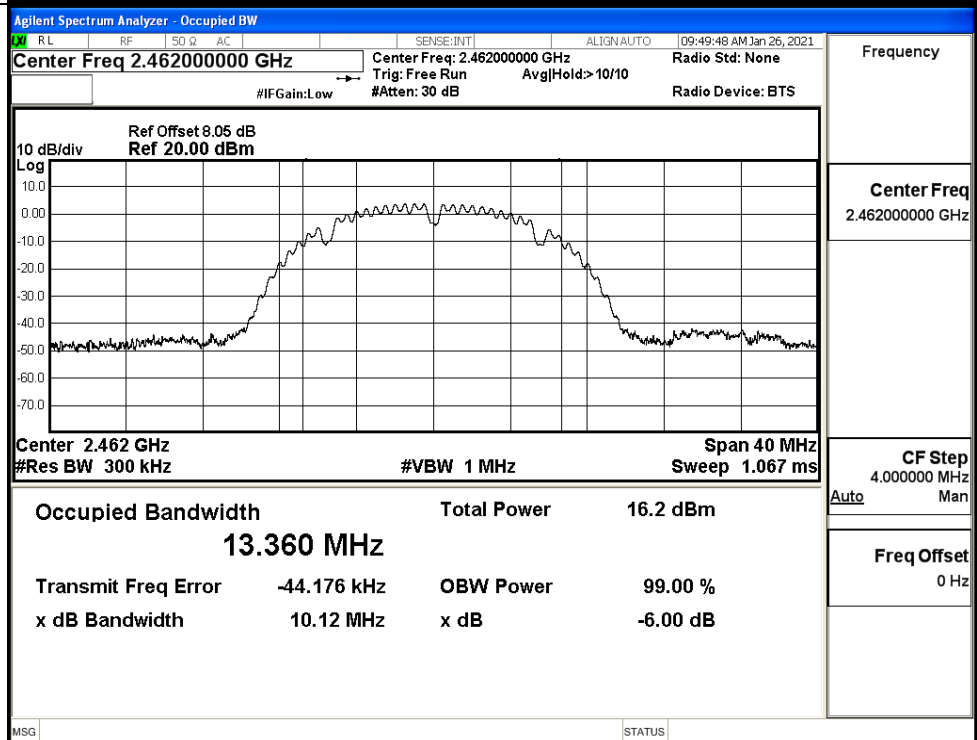
Frequency

Center Freq
2.437000000 GHz

CF Step
4.000000 MHz
Auto Man

Freq Offset
0 Hz

11B/HCH



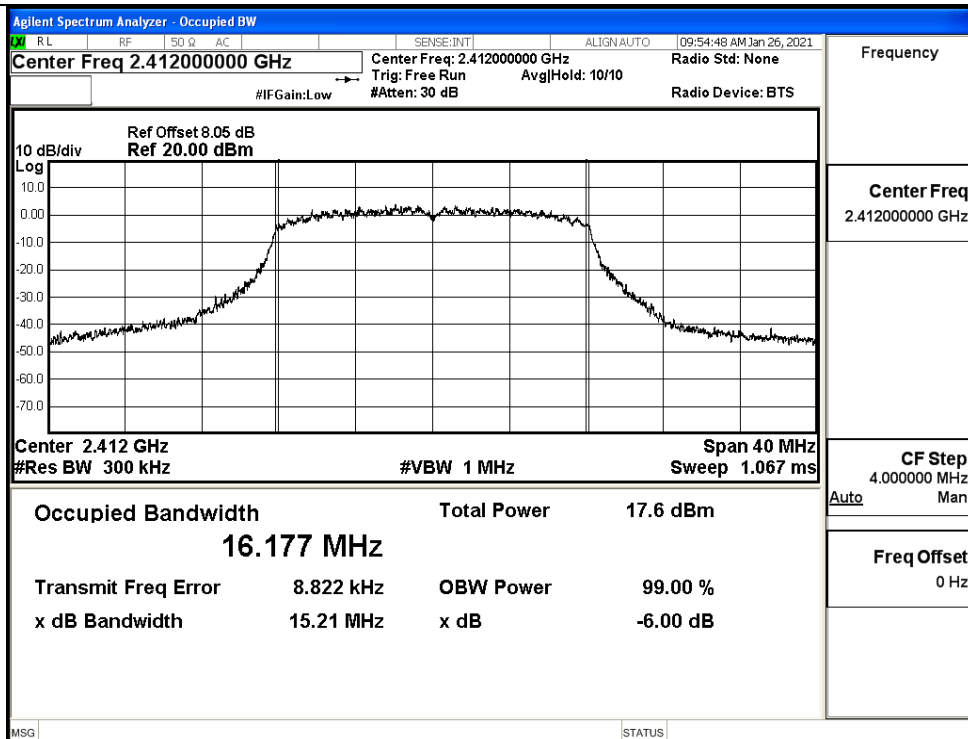
Frequency

Center Freq
2.462000000 GHz

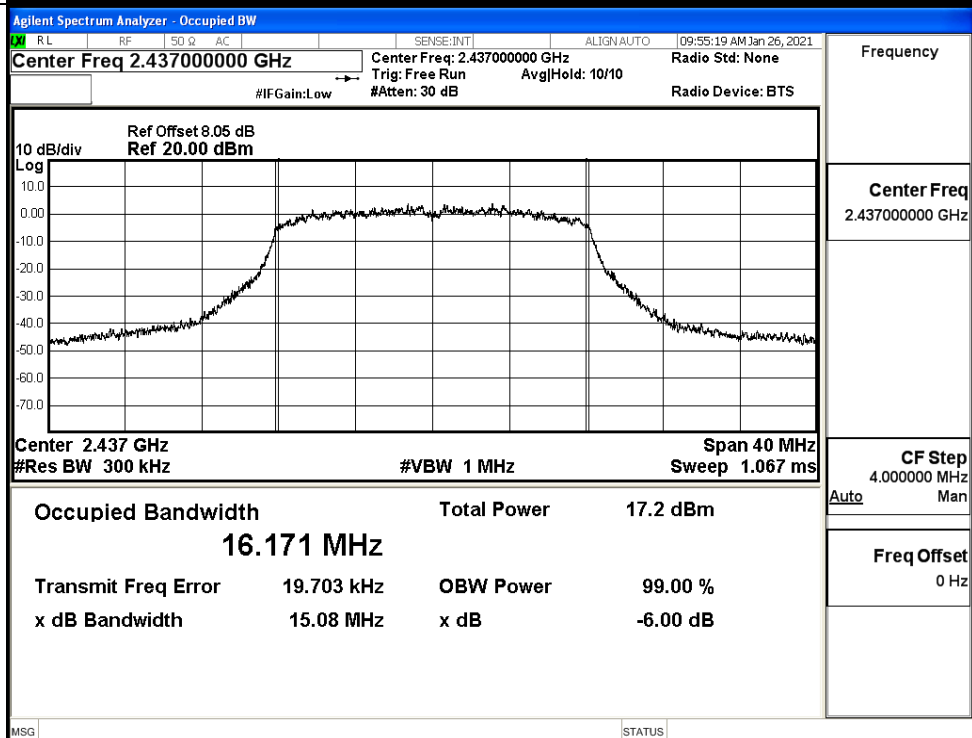
CF Step
4.000000 MHz
Auto Man

Freq Offset
0 Hz

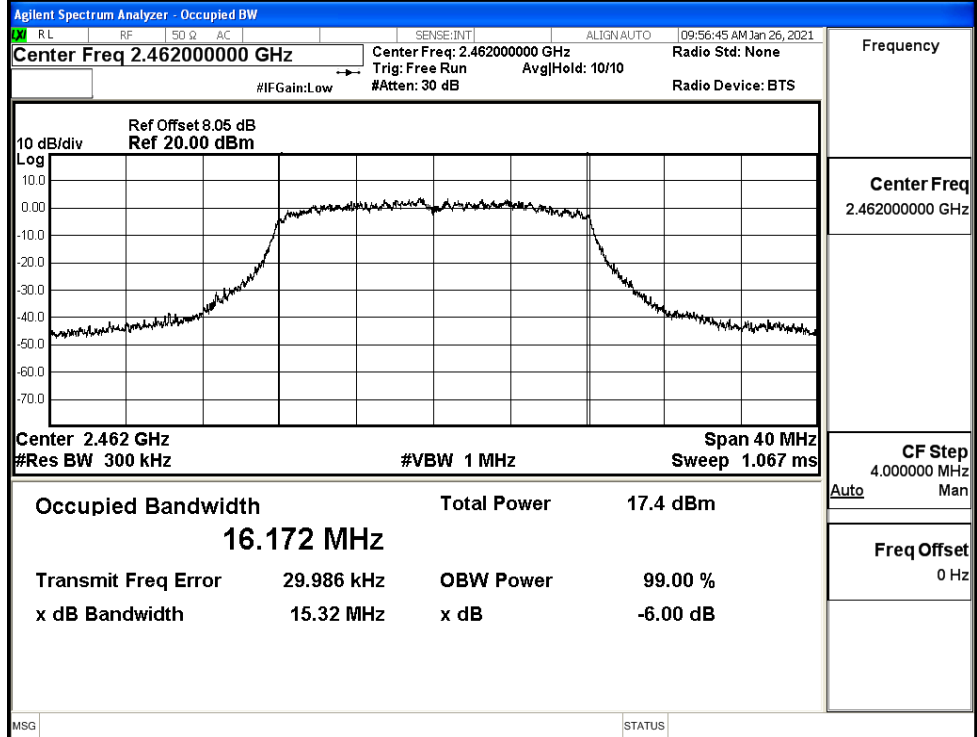
11G/LCH



11G/MCH



11G/HCH



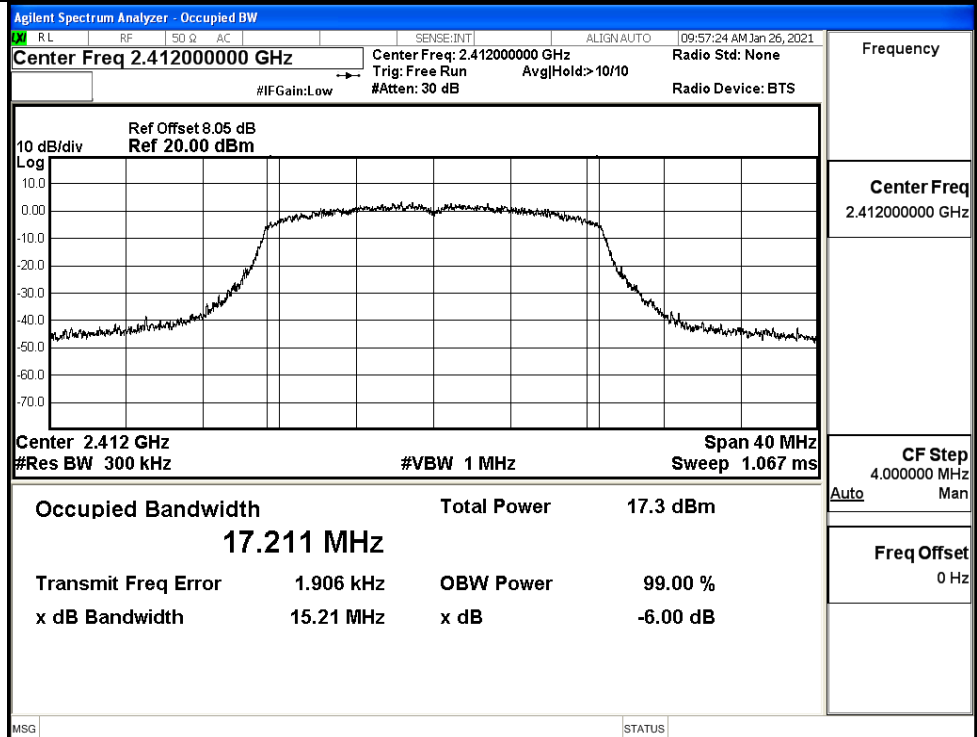
Frequency

Center Freq
2.462000000 GHz

CF Step
4.000000 MHz
Auto Man

Freq Offset
0 Hz

11N20SISO/LCH

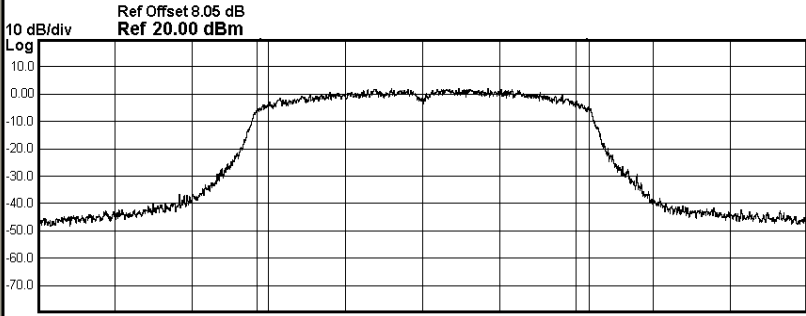
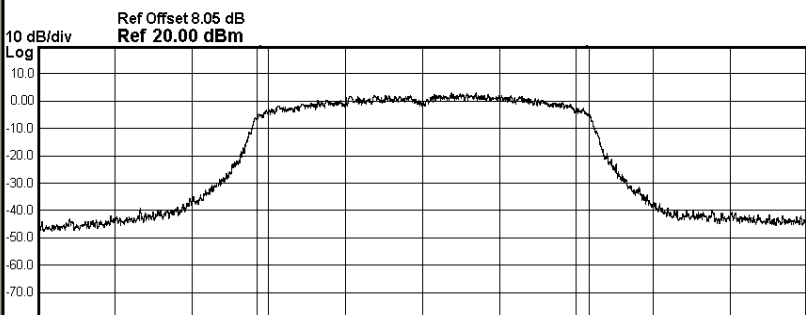


Frequency

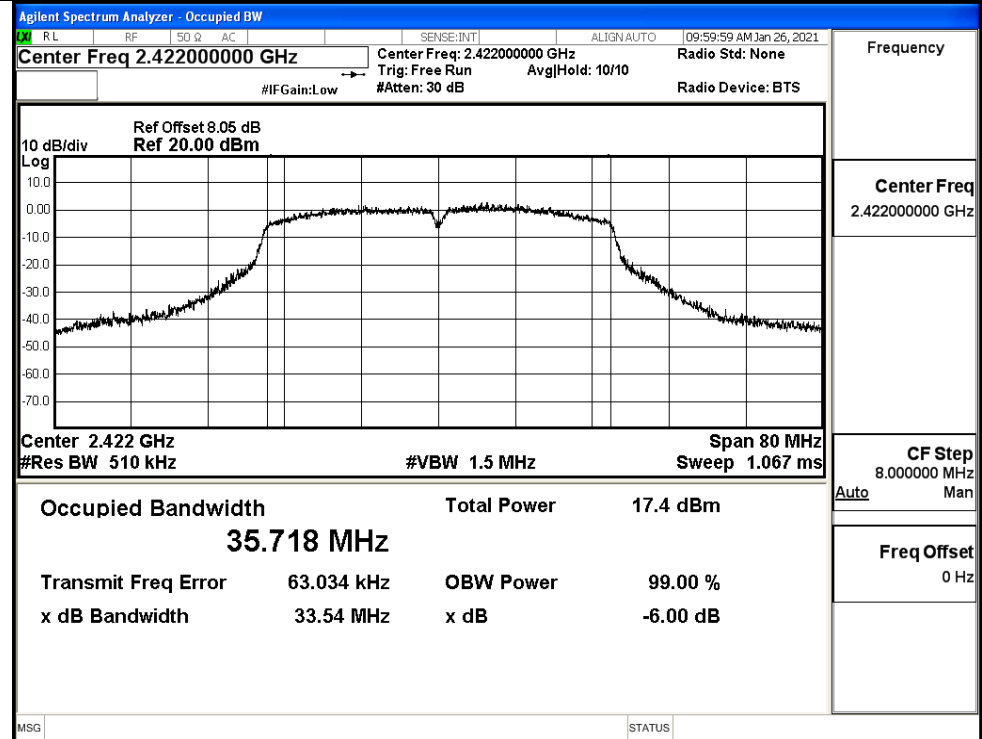
Center Freq
2.412000000 GHz

CF Step
4.000000 MHz
Auto Man

Freq Offset
0 Hz

11N20SISO/MCH	Agilent Spectrum Analyzer - Occupied BW RL RF 50 Ω AC SENSE:INT ALIGN AUTO 09:58:43 AM Jan 26, 2021 Center Freq 2.437000000 GHz Center Freq: 2.437000000 GHz Radio Std: None Trig: Free Run Avg Hold: 10/10 #IFGain:Low #Atten: 30 dB Radio Device: BTS Ref Offset 8.05 dB Ref 20.00 dBm  Center 2.437 GHz Span 40 MHz #Res BW 300 kHz #VBW 1 MHz Sweep 1.067 ms Occupied Bandwidth Total Power 16.8 dBm 17.264 MHz Transmit Freq Error 27.535 kHz OBW Power 99.00 % x dB Bandwidth 16.30 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 09:59:15 AM Jan 26, 2021 Center Freq 2.462000000 GHz Center Freq: 2.462000000 GHz Radio Std: None Trig: Free Run Avg Hold: 10/10 #IFGain:Low #Atten: 30 dB Radio Device: BTS Ref Offset 8.05 dB Ref 20.00 dBm  Center 2.462 GHz Span 40 MHz #Res BW 300 kHz #VBW 1 MHz Sweep 1.067 ms Occupied Bandwidth Total Power 17.3 dBm 17.234 MHz Transmit Freq Error 36.479 kHz OBW Power 99.00 % x dB Bandwidth 15.99 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



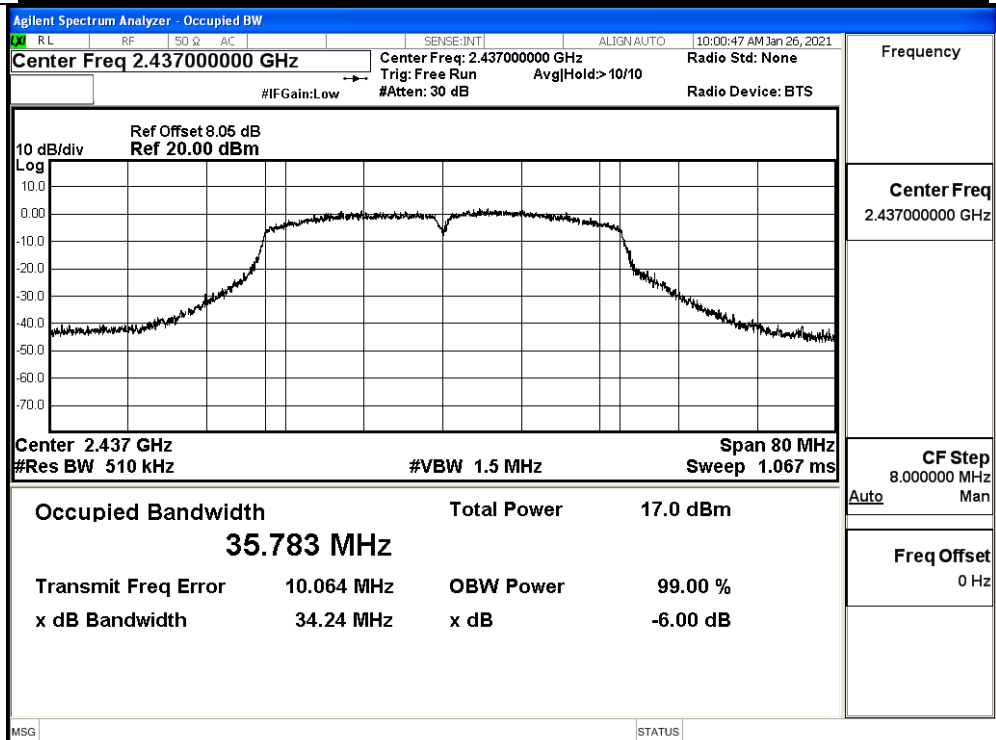
Frequency

Center Freq
2.422000000 GHz

CF Step
8.000000 MHz
Auto Man

Freq Offset
0 Hz

11N40SISO/MCH

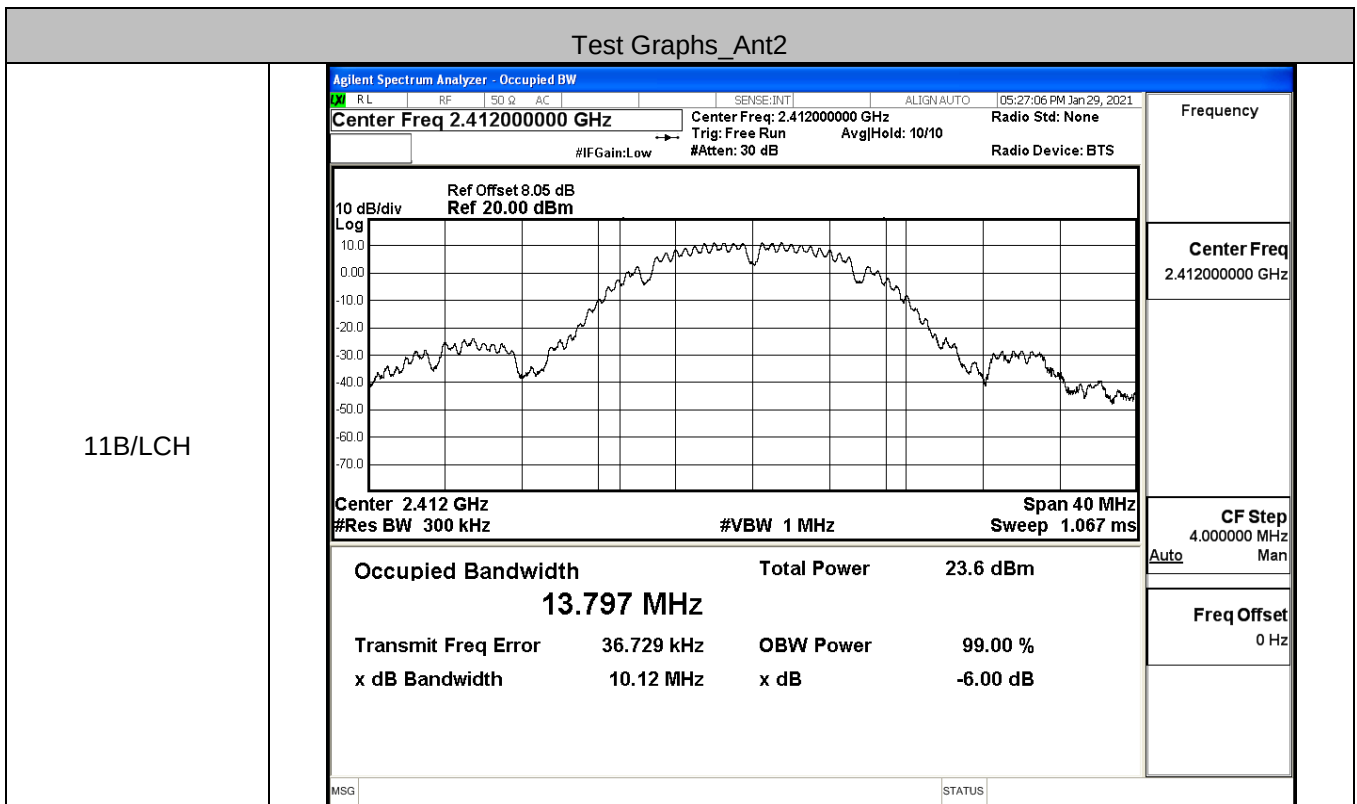
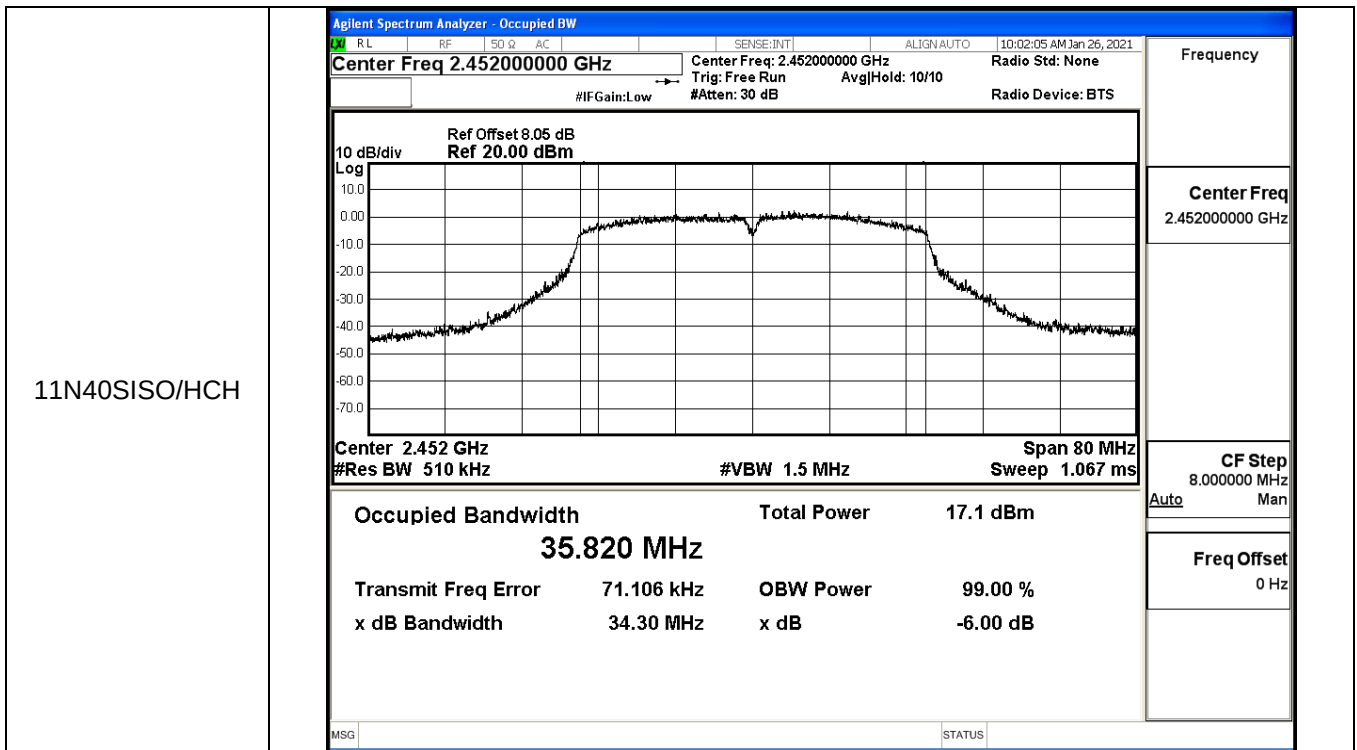


Frequency

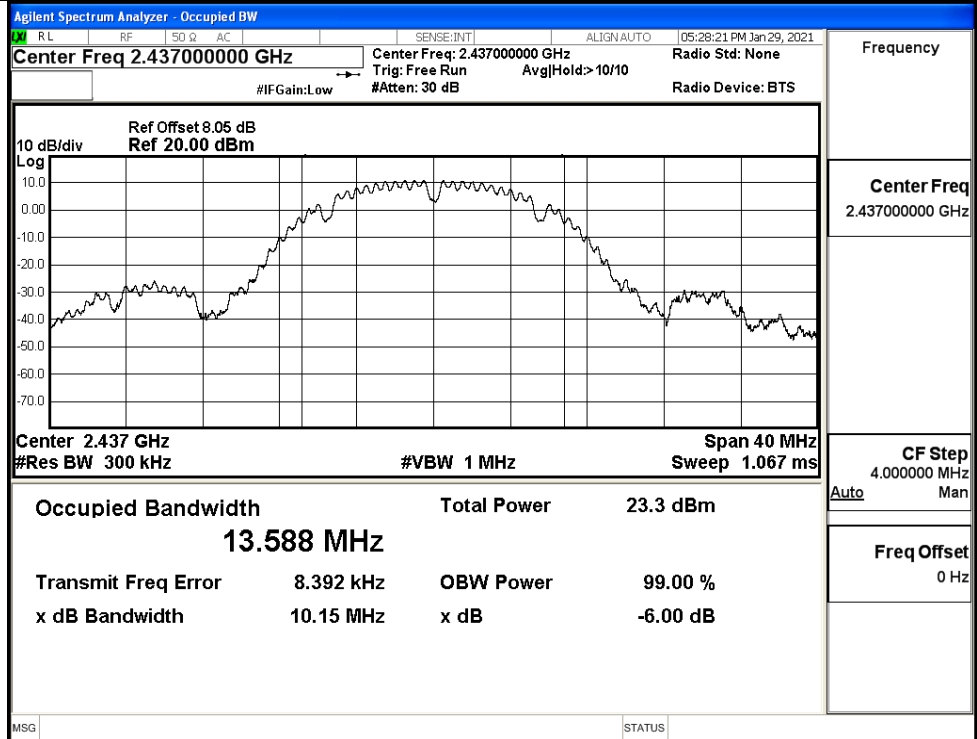
Center Freq
2.437000000 GHz

CF Step
8.000000 MHz
Auto Man

Freq Offset
0 Hz



11B/MCH



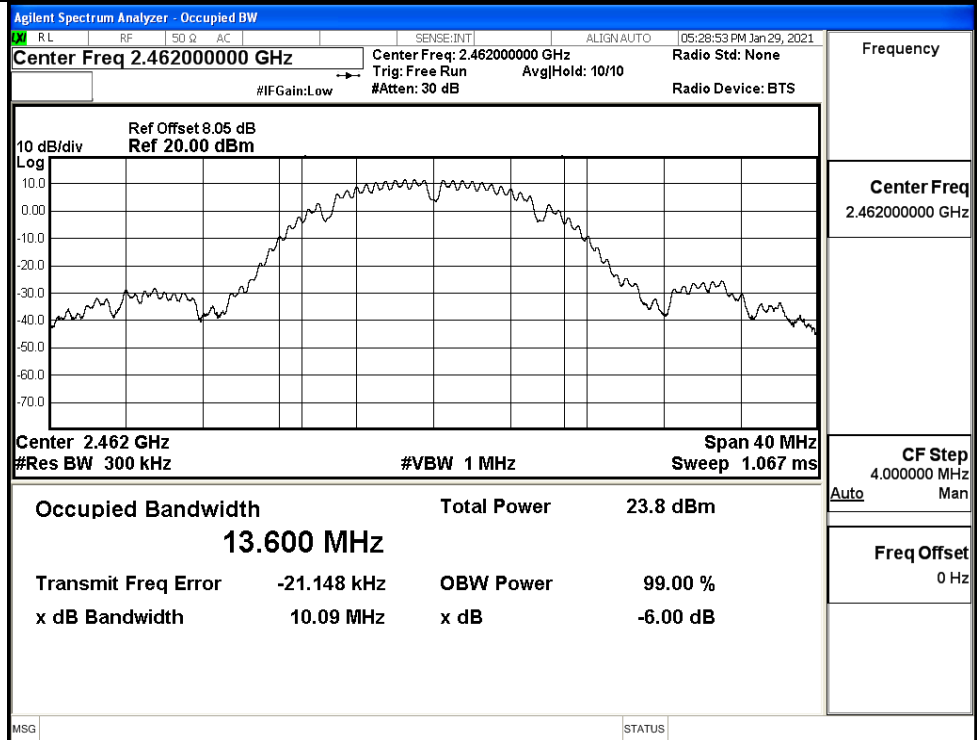
Frequency

Center Freq
2.437000000 GHz

CF Step
4.000000 MHz
Auto Man

Freq Offset
0 Hz

11B/HCH



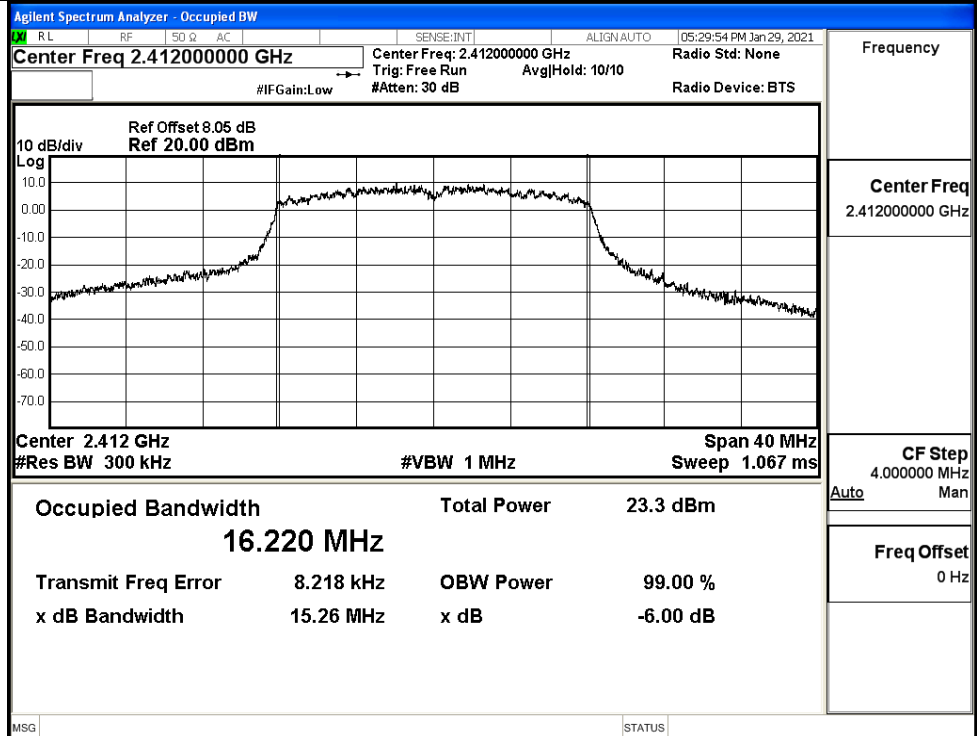
Frequency

Center Freq
2.462000000 GHz

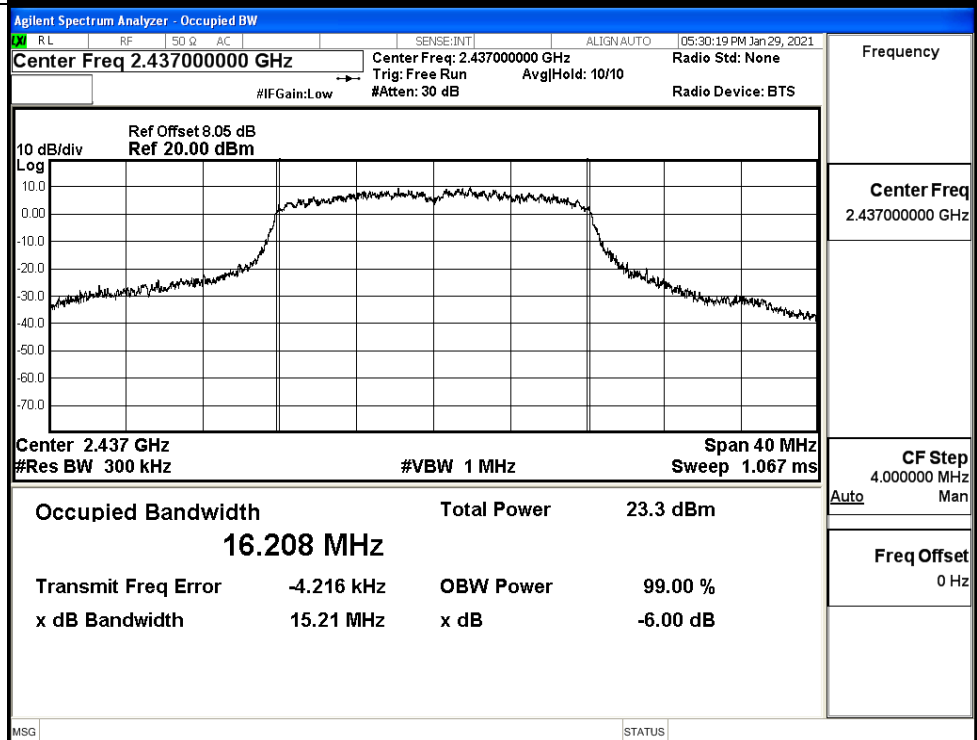
CF Step
4.000000 MHz
Auto Man

Freq Offset
0 Hz

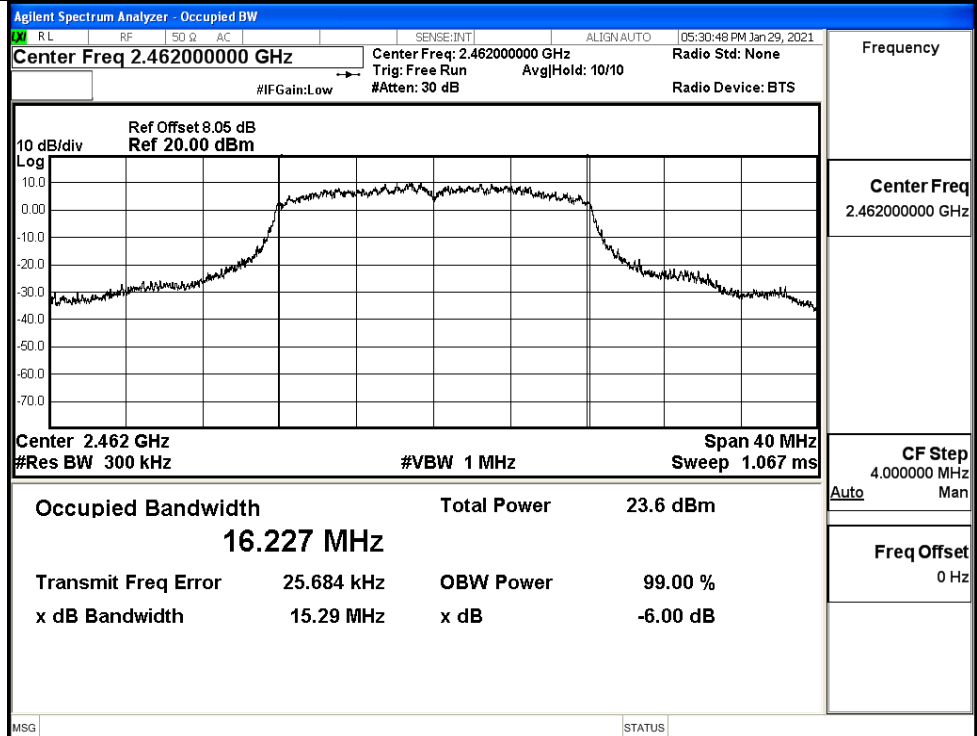
11G/LCH



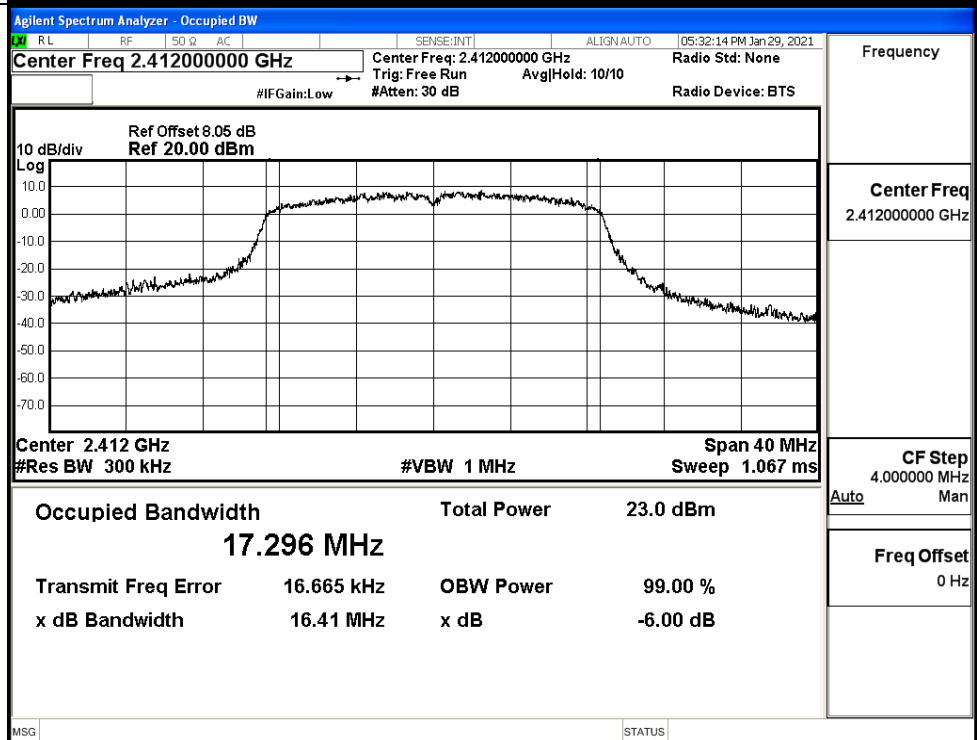
11G/MCH

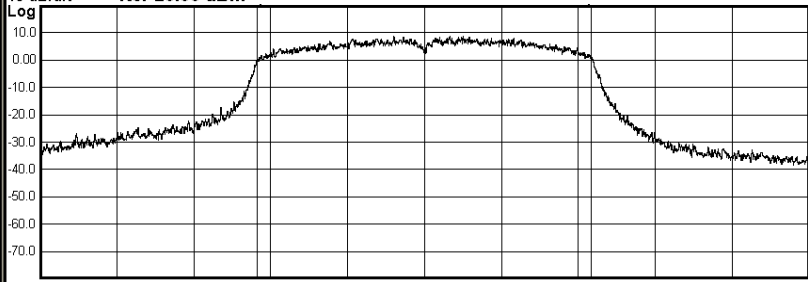
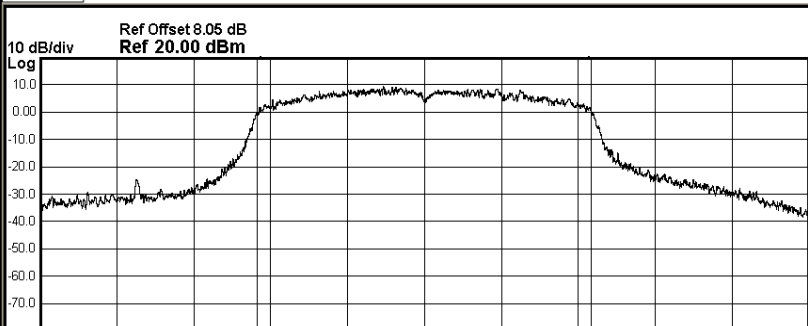


11G/HCH

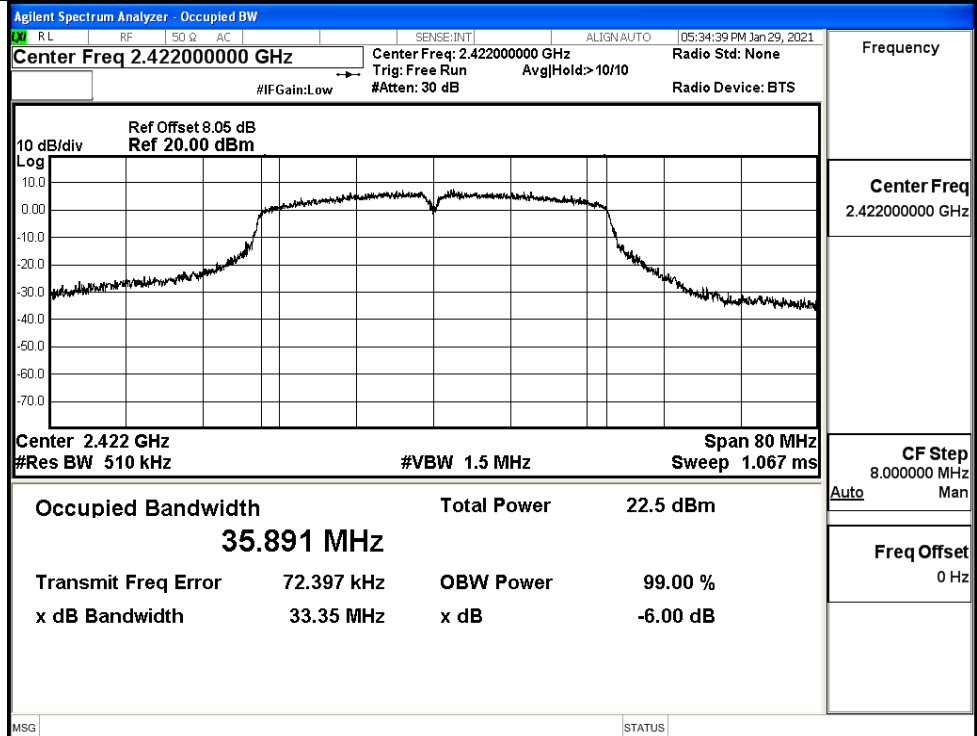


11N20SISO/LCH

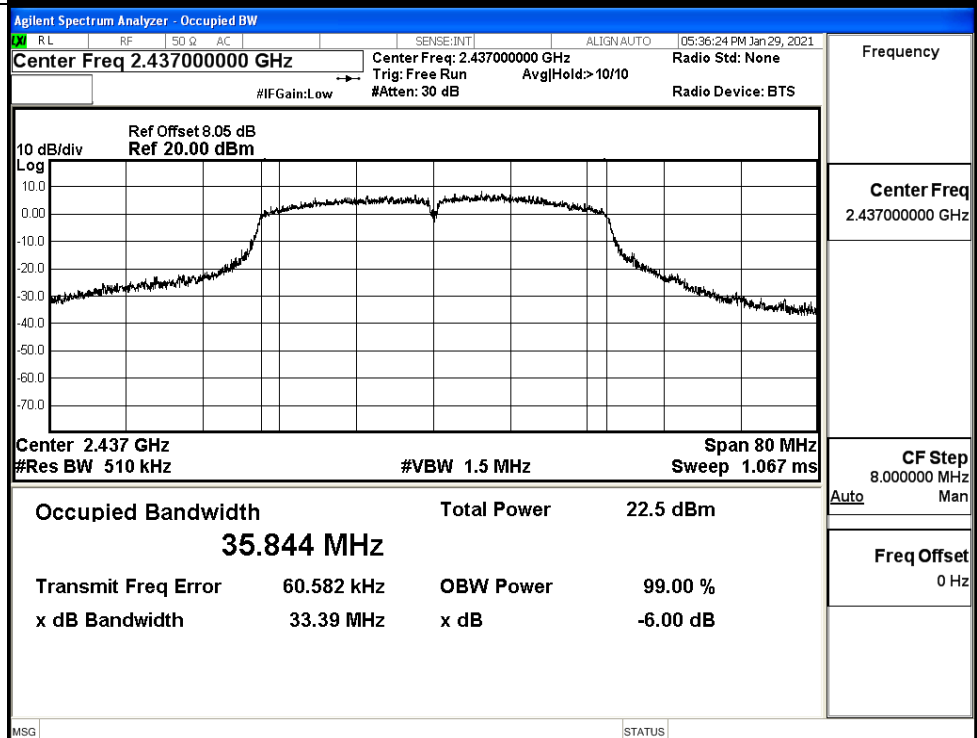


11N20SISO/MCH	Agilent Spectrum Analyzer - Occupied BW RL RF 50 Ω AC SENSE:INT ALIGN AUTO 05:33:10 PM Jan 29, 2021 Center Freq 2.437000000 GHz Center Freq: 2.437000000 GHz Trig: Free Run Avg Hold: >10/10 Radio Std: None #IFGain:Low #Atten: 30 dB Radio Device: BTS 10 dB/div Ref Offset 8.05 dB Ref 20.00 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

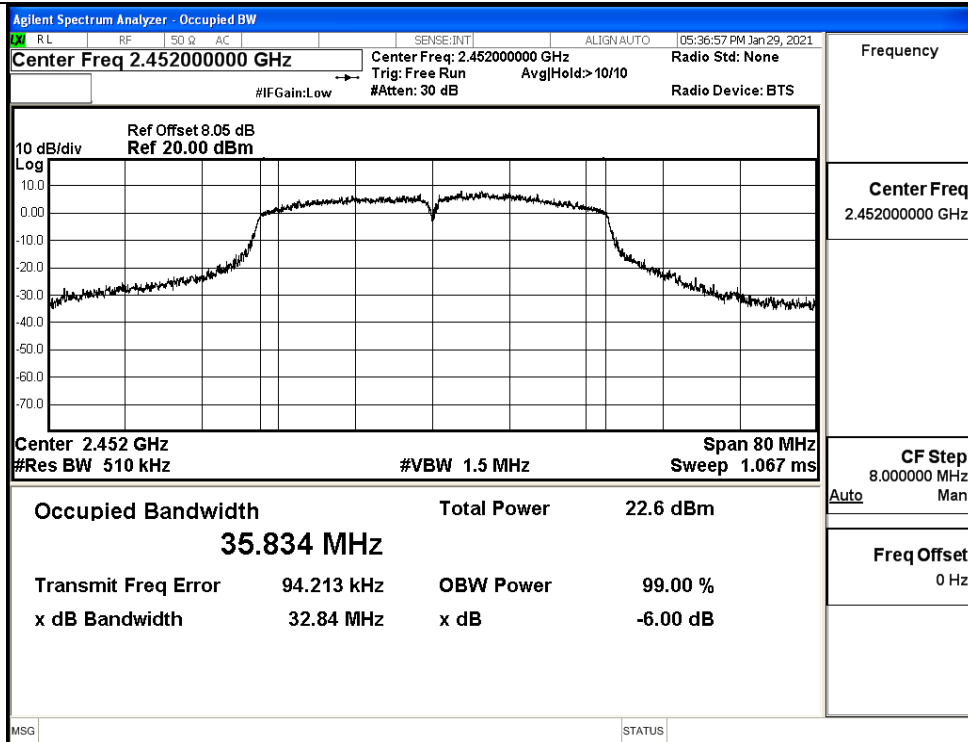
11N40SISO/LCH



11N40SISO/MCH



11N40SISO/HCH



Frequency

Center Freq
2.45200000 GHz

CF Step
8.000000 MHz
Auto Man

Freq Offset
0 Hz

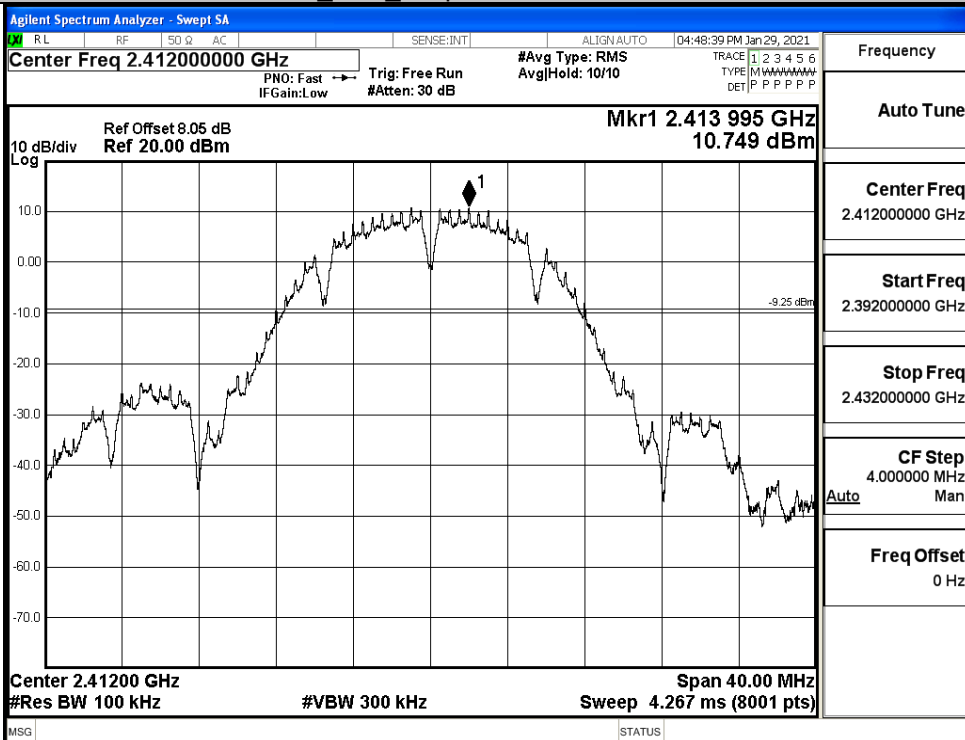
A.6 RF Conducted Spurious Emissions

Ant1

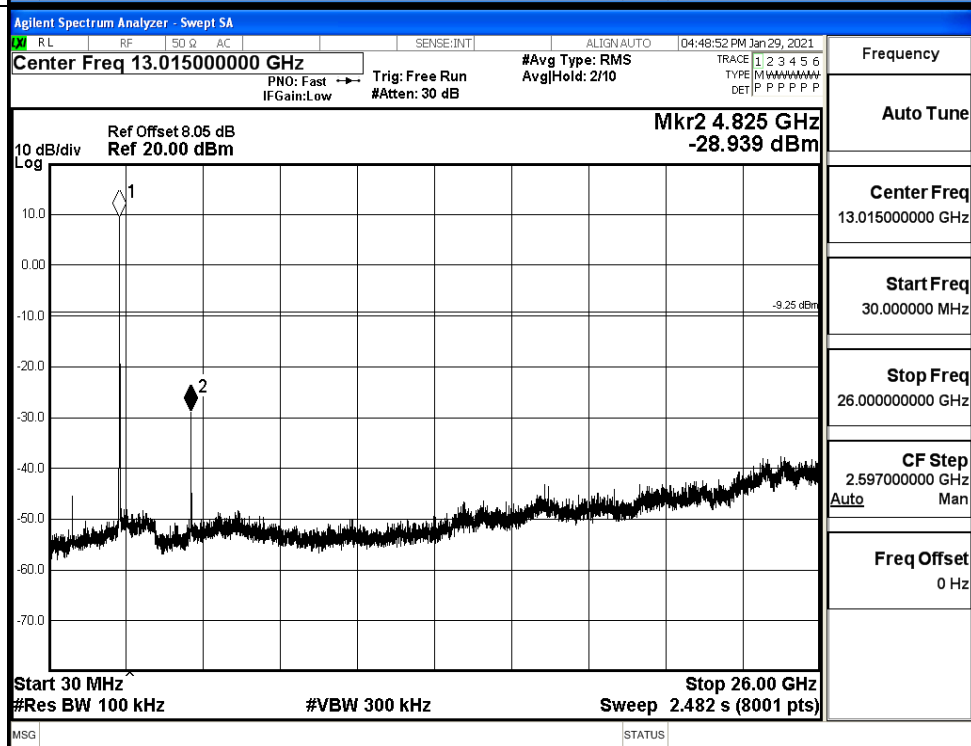
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
11B	LCH	10.749	-28.939	-9.251	PASS
	MCH	10.674	-29.984	-9.326	PASS
	HCH	11.133	-31.745	-8.867	PASS
11G	LCH	6.716	-37.379	-13.284	PASS
	MCH	6.88	-37.991	-13.120	PASS
	HCH	4.321	-37.428	-15.679	PASS
11N20 SISO	LCH	4.118	-37.769	-15.882	PASS
	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

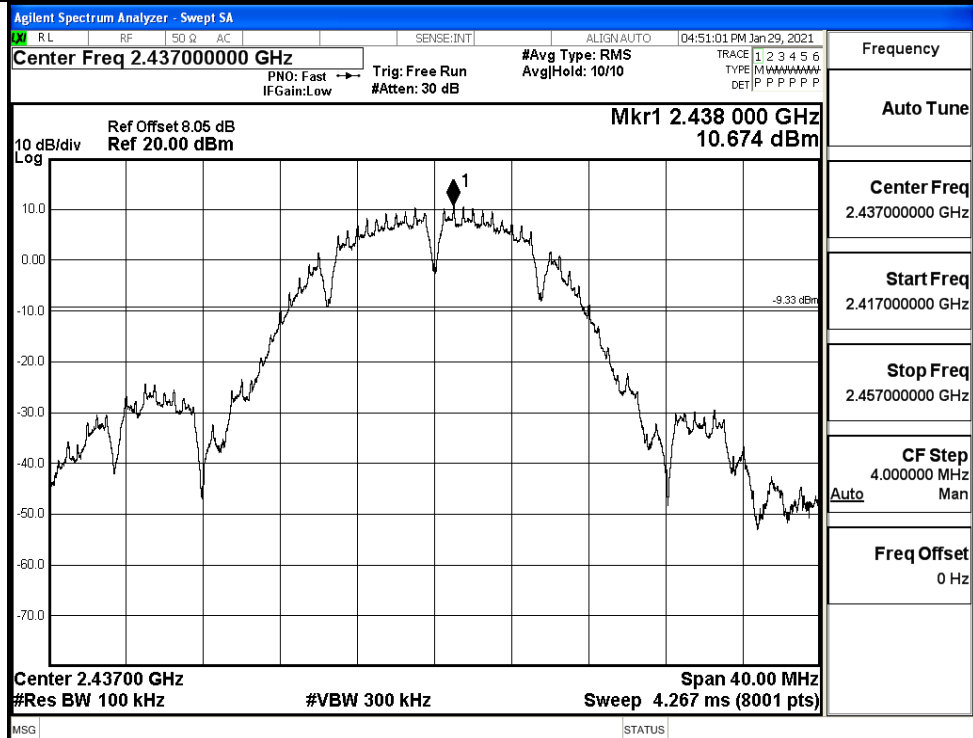


Puw/11B/LCH

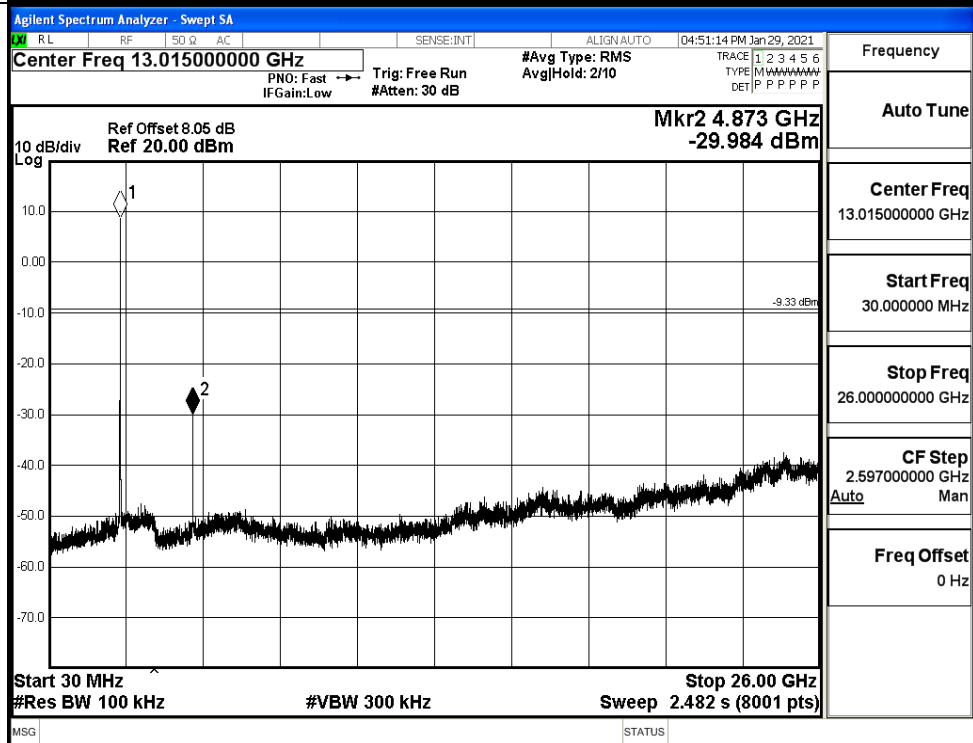


11B MCH Graphs

Pref/11B/MCH

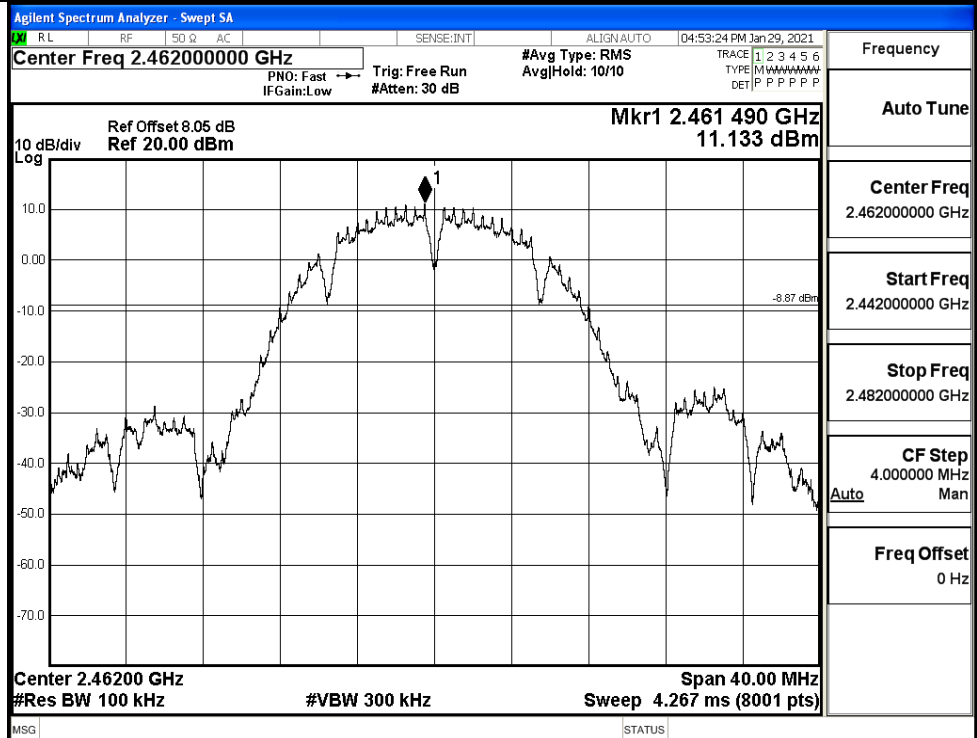


Puw/11B/MCH

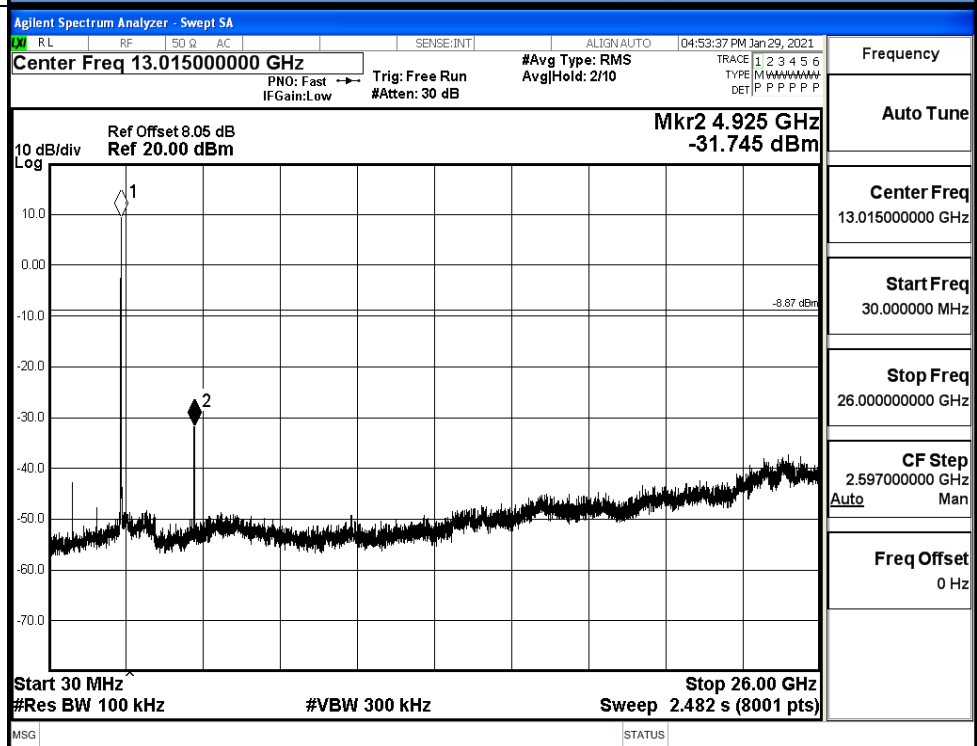


11B HCH Graphs

Pref/11B/HCH

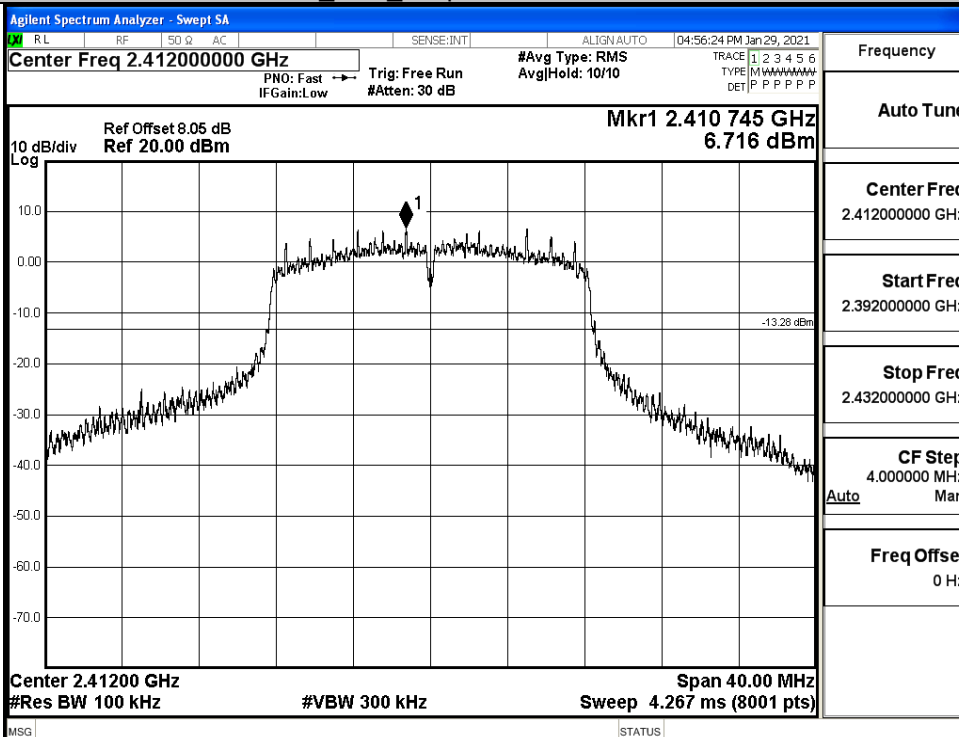


Puw/11B/HCH

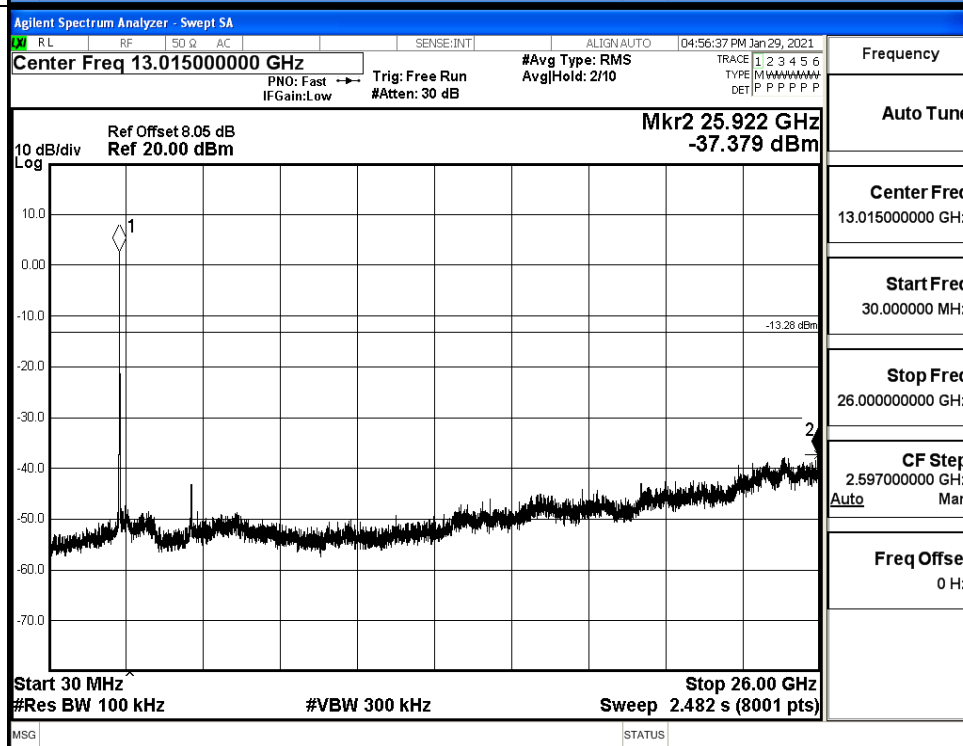


11G LCH Graphs

Pref/11G/LCH

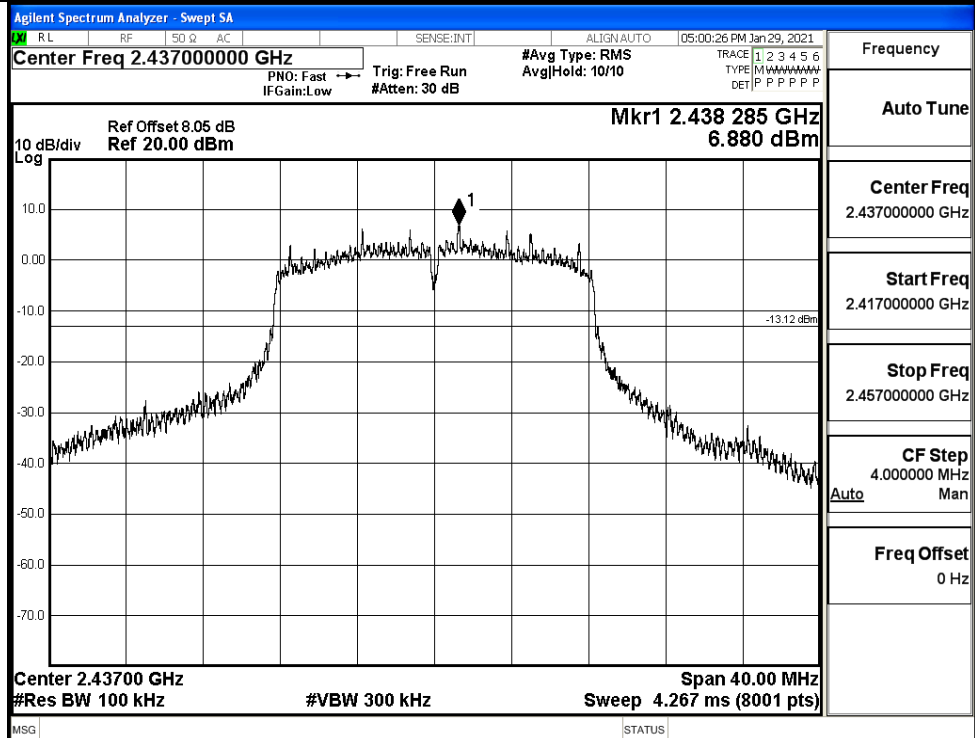


Puw/11G/LCH

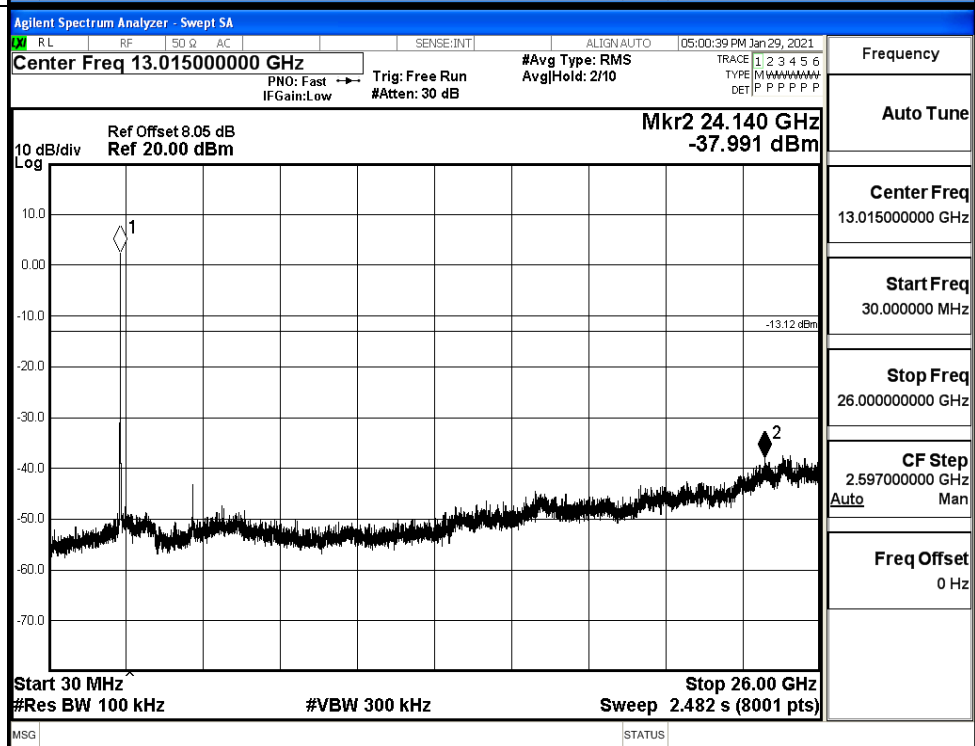


11G MCH Graphs

Pref/11G/MCH

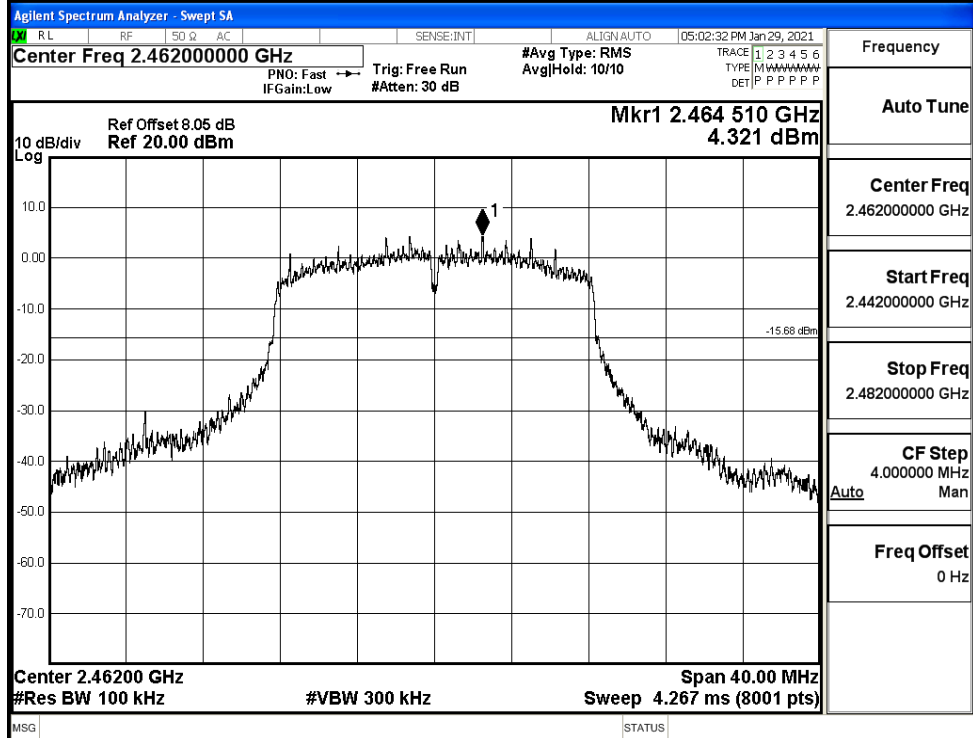


Puw/11G/MCH

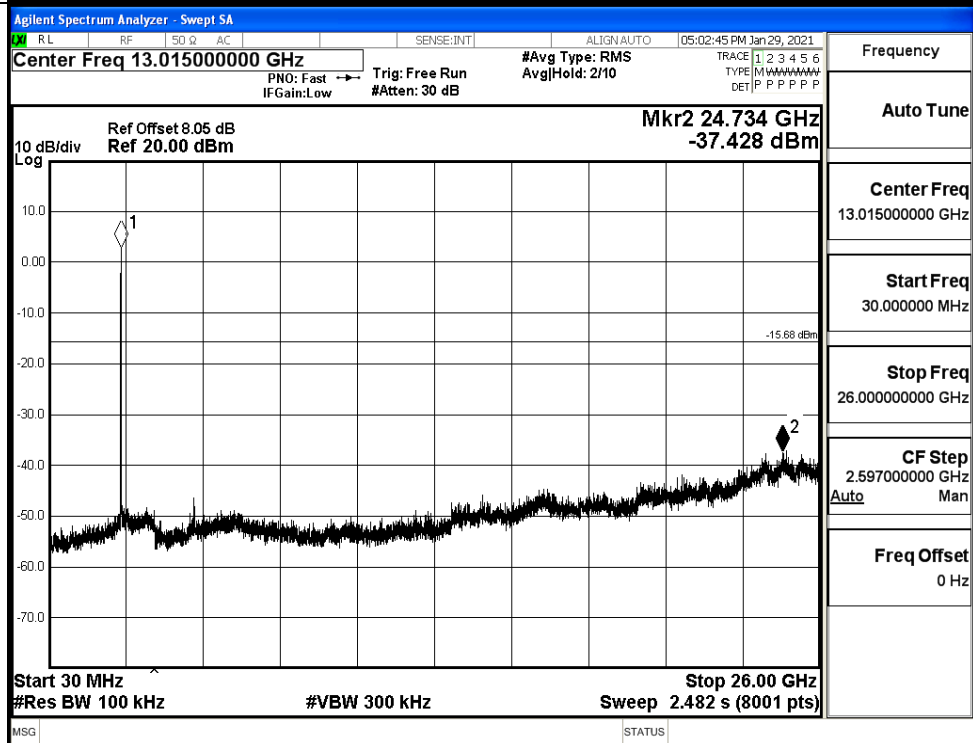


11G HCH Graphs

Pref/11G/HCH

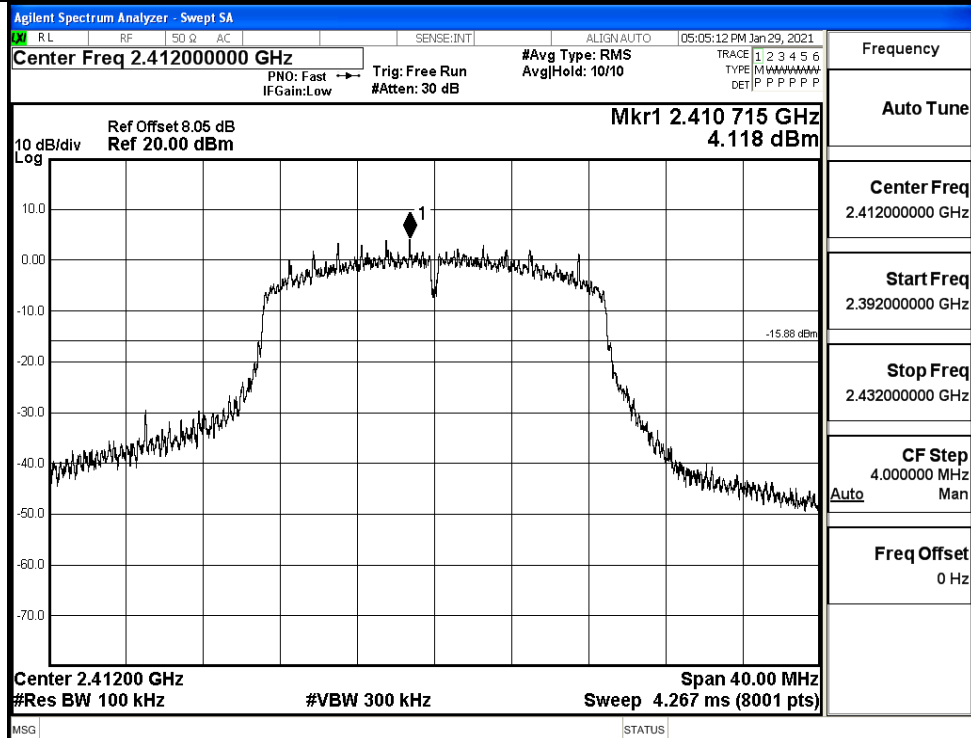


Puw/11G/HCH

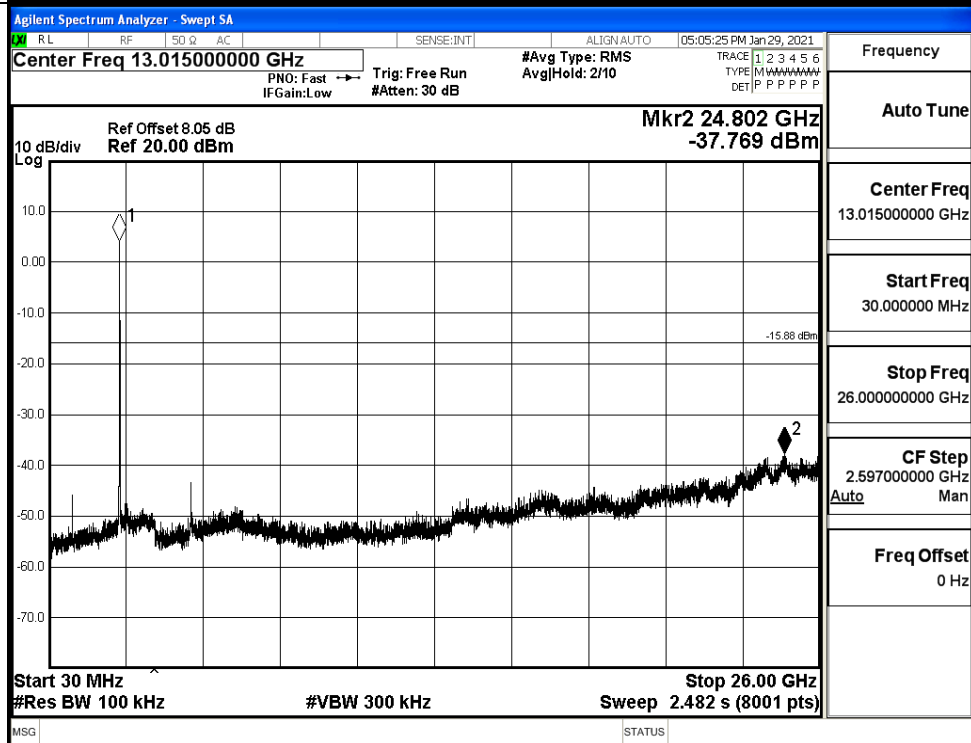


11N20SISO LCH Graphs

Pref/11N20SIS
O/LCH

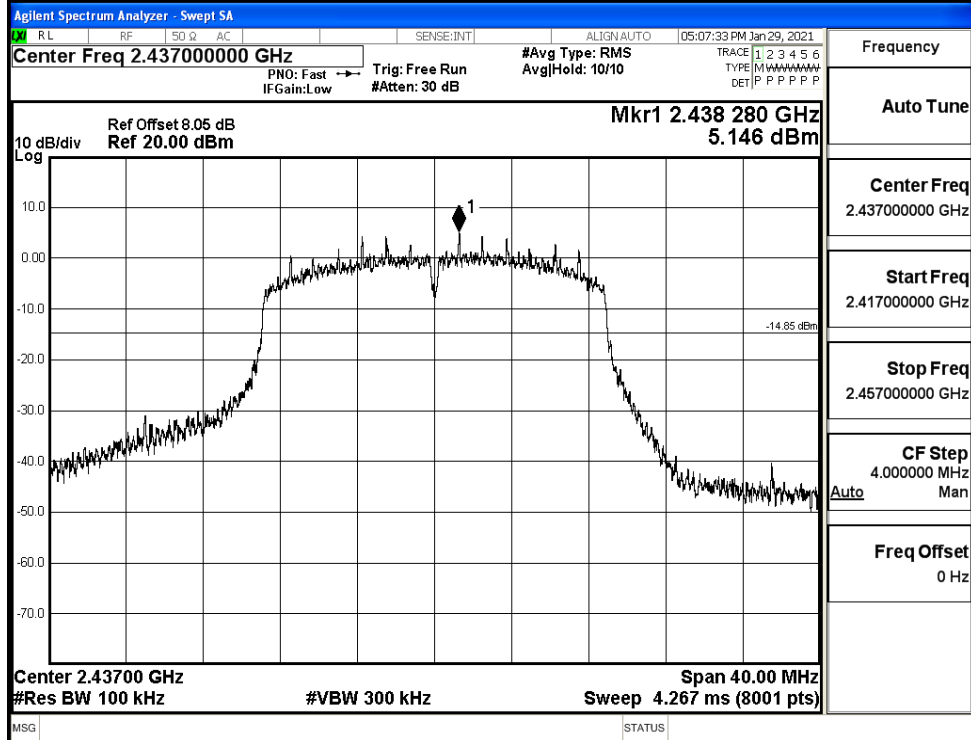


Puw/11N20
SISO/LCH

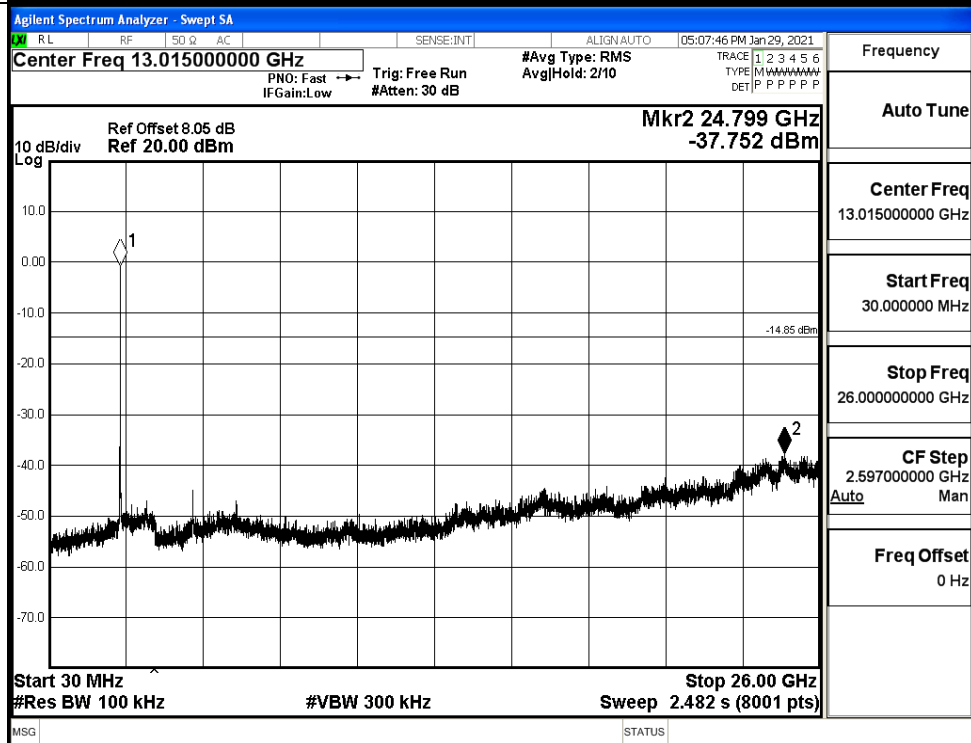


11N20SISO_MCH_Graphs

Pref/11N20
SISO/MCH

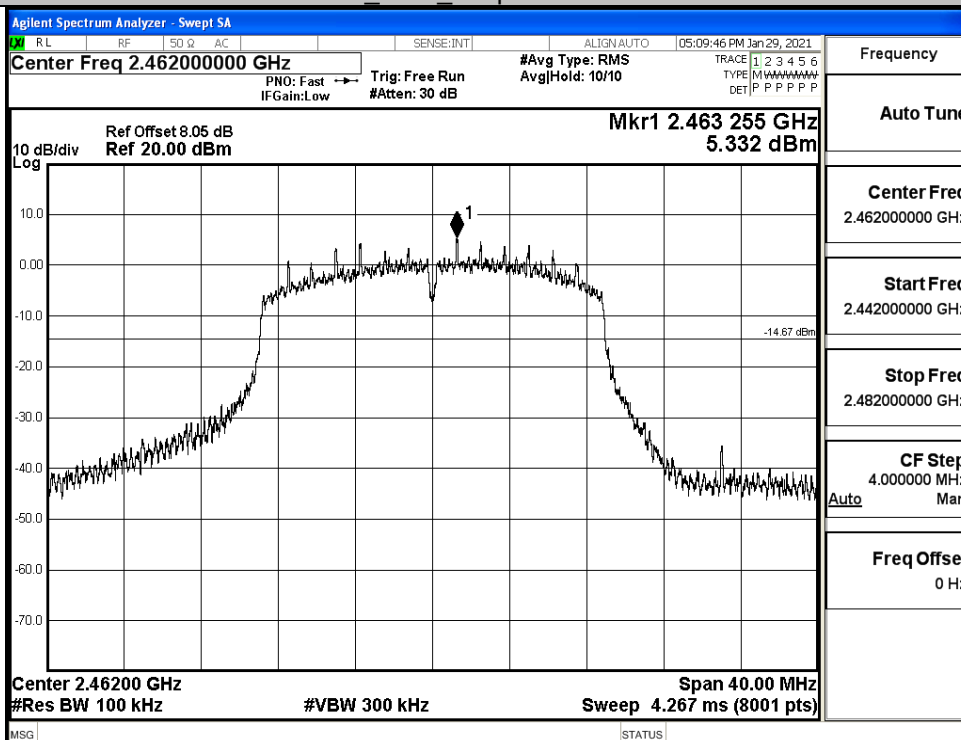


Puw/11N20
SISO/MCH

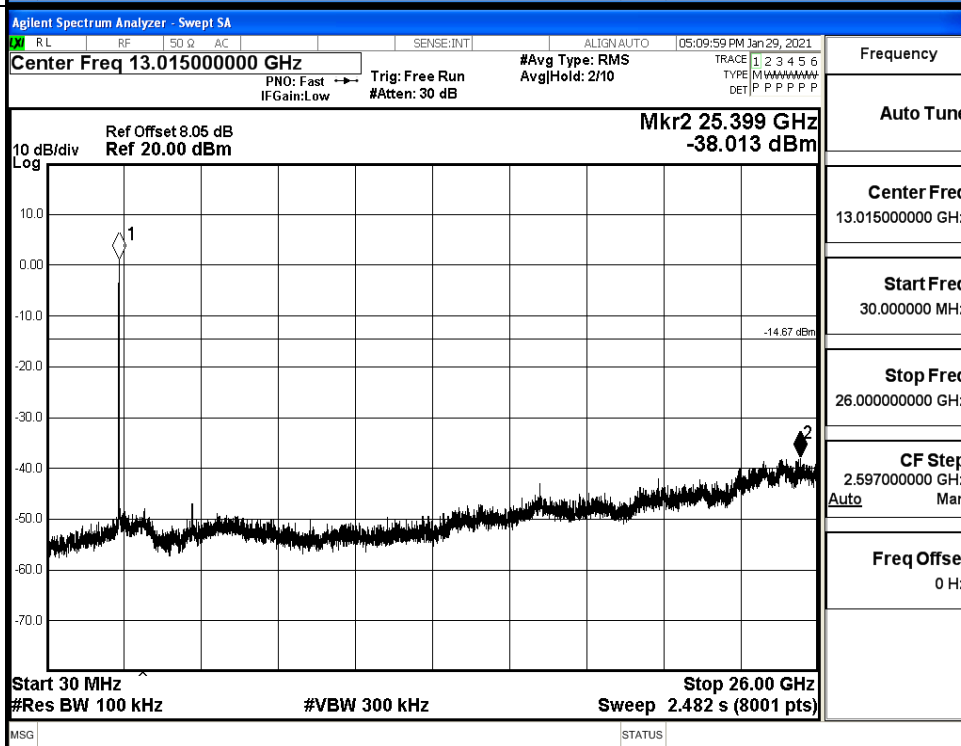


11N20SISO HCH Graphs

Pref/11N20
SISO/HCH

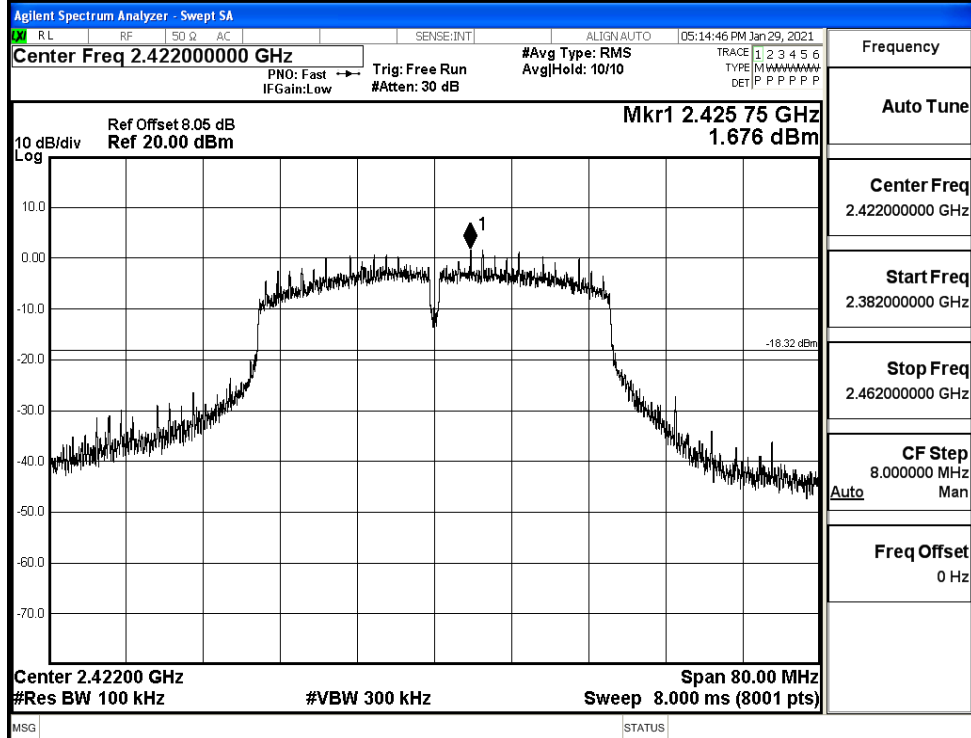


Puw/11N20
SISO/HCH

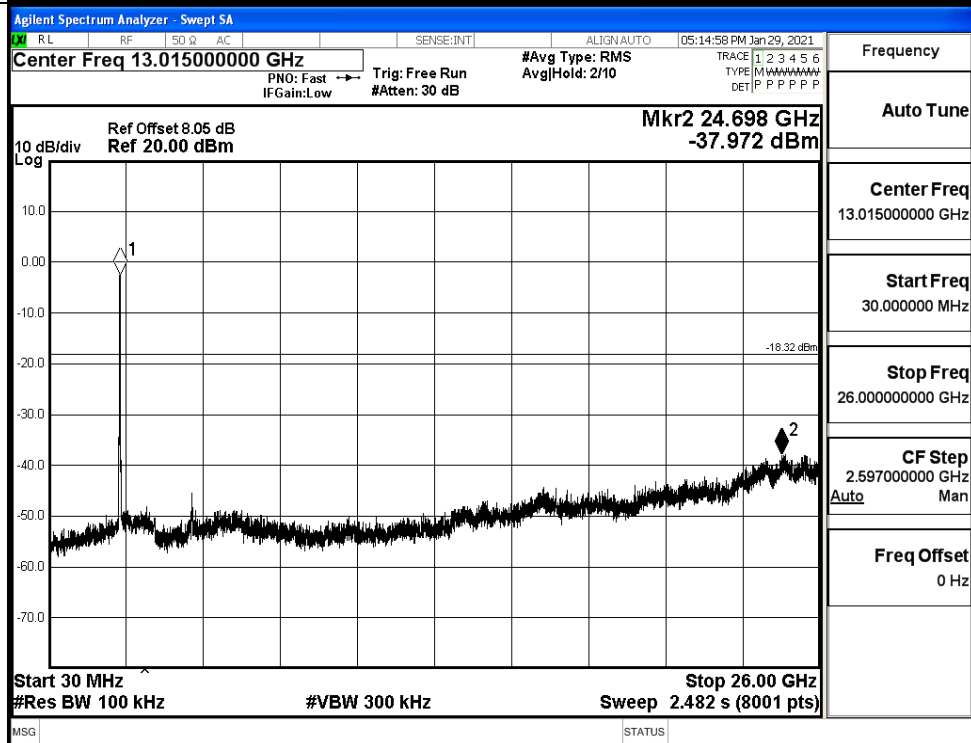


11N40SISO LCH Graphs

Pref/11N40
SISO/LCH

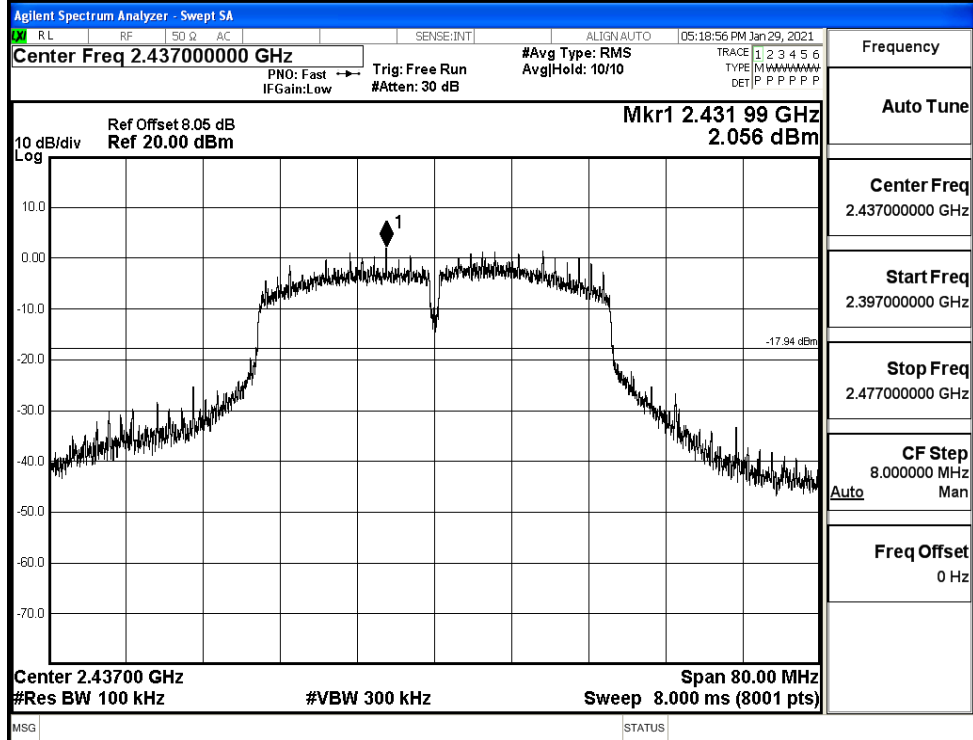


Puw/11N40
SISO/LCH



11N40SISO_MCH_Graphs

Pref/11N40
SISO/MCH



Puw/11N40
SISO/MCH

