

Appendix C

RF Test Data for 2.4G WIFI (Conducted Measurement)

Product Name: IPTV Receiver

Trade Mark: FORMULER

Test Model: Z ALPHA

Environmental Conditions

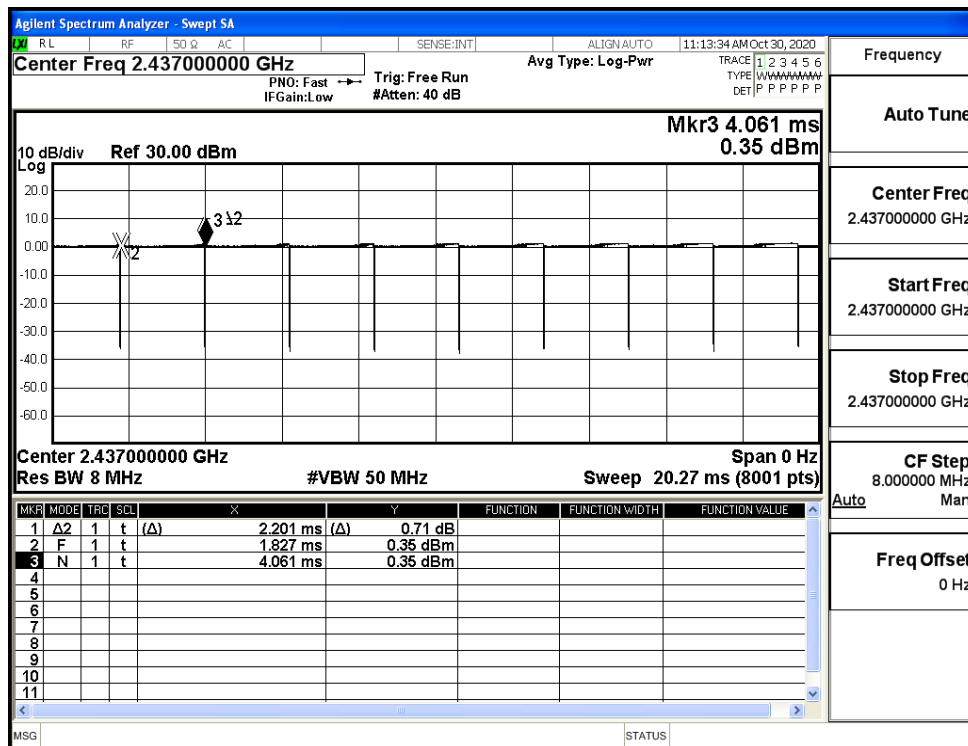
Temperature:	24.6° C
Relative Humidity:	54.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Ken He
Supervised by:	Li Huan

C.1 Duty Cycle

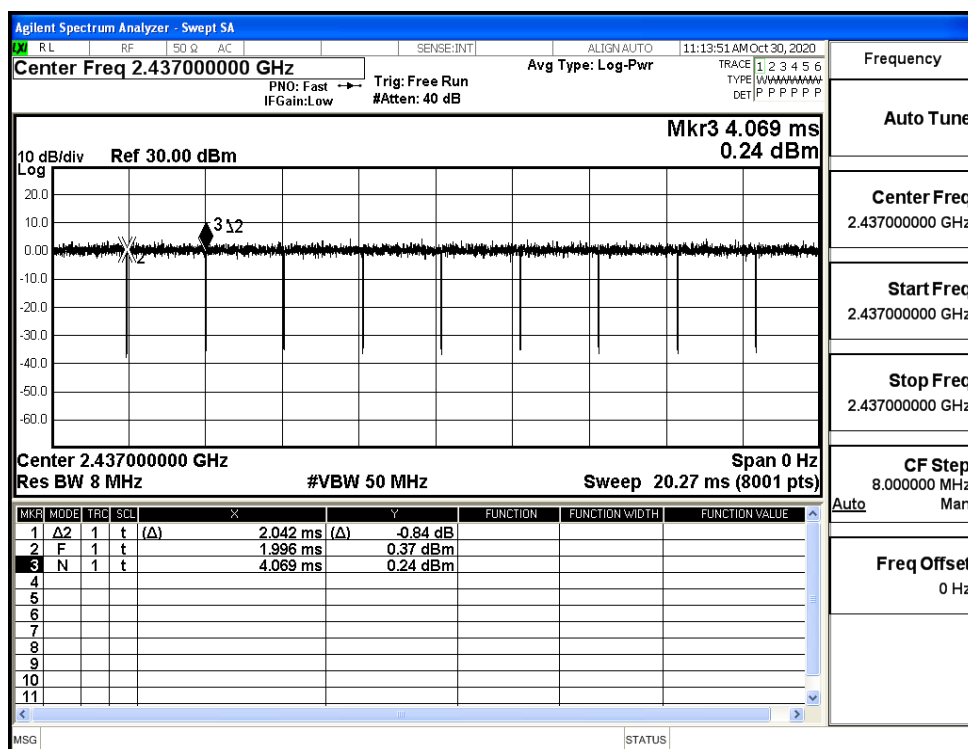
ANT 0

Test Mode	Test Channel	Ant	Duty Cycle[%]	10log(1/x) Factor (dB)	1/B Minimum VBW(KHz)
11B	2437	Ant0	98.53	0.06	0.01
11G	2437	Ant0	98.53	0.06	0.01
11N20SISO	2437	Ant0	98.43	0.07	0.01
11N40SISO	2437	Ant0	96.58	0.15	0.01

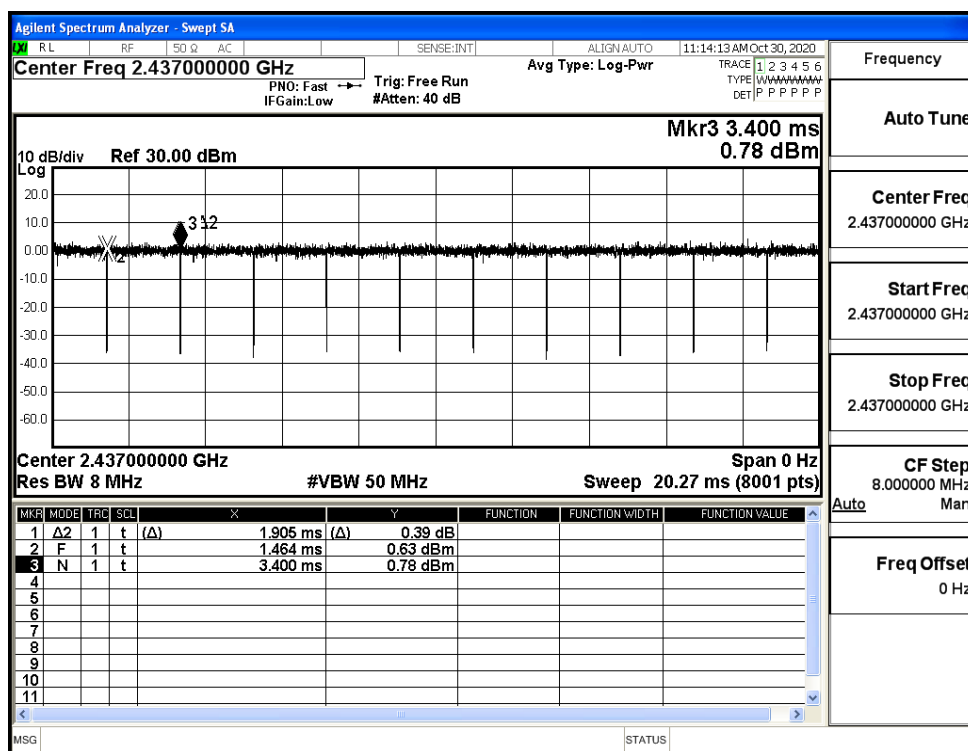
Duty Cycle_11B_2437_Ant0



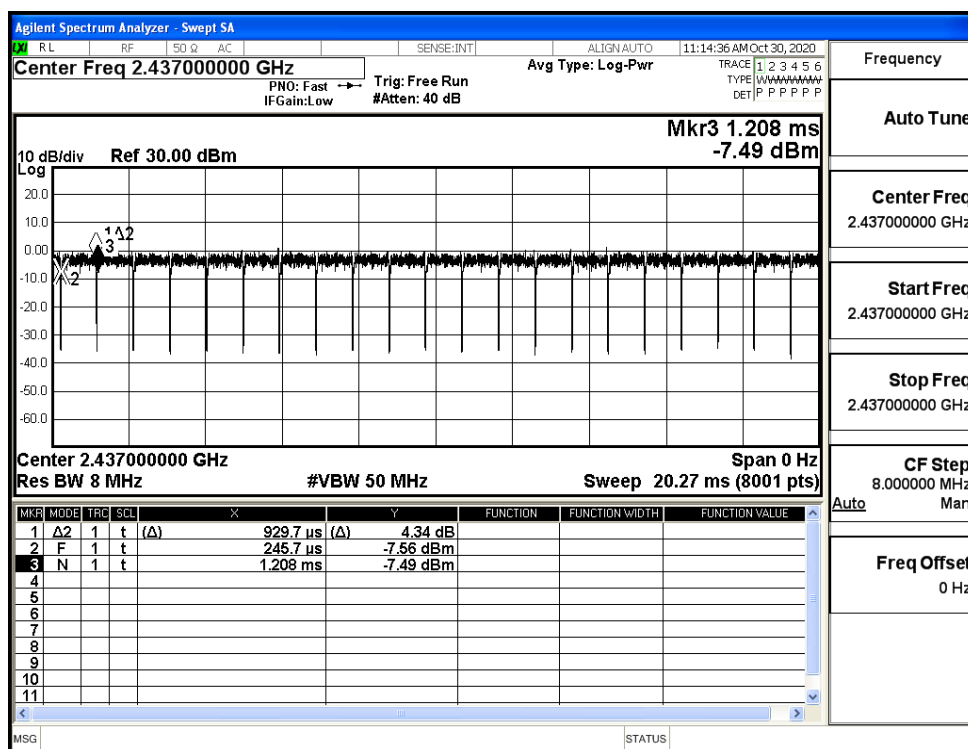
Duty Cycle_11G_2437_Ant0



Duty Cycle_11N20SISO_2437_Ant0



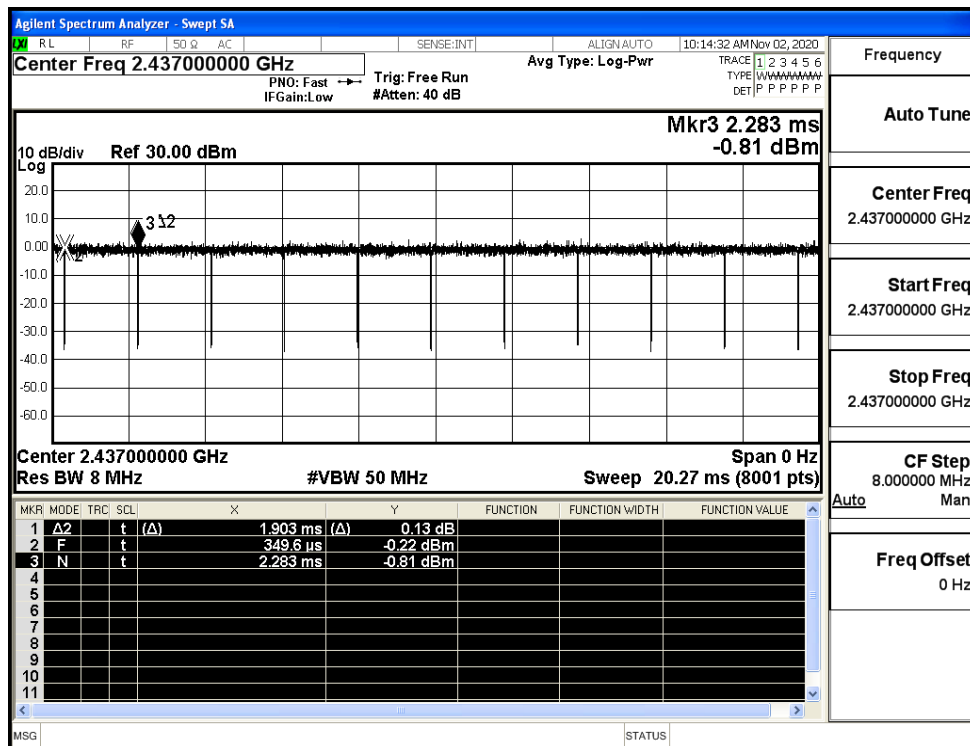
Duty Cycle_11N40SISO_2437_Ant0



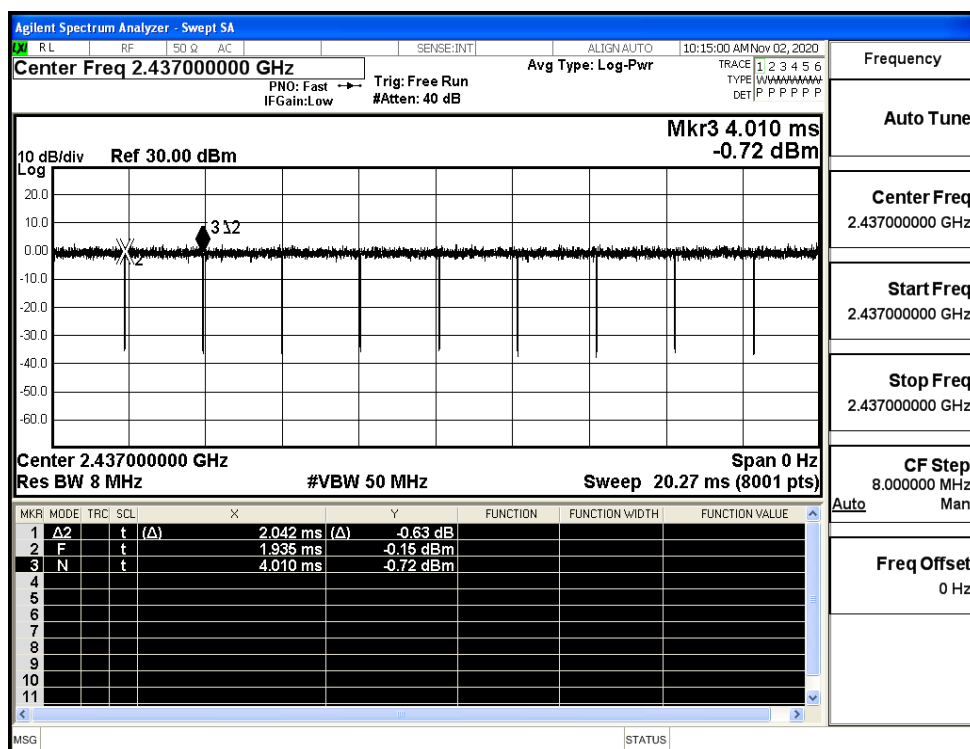
ANT 1

Test Mode	Test Channel	Ant	Duty Cycle[%]	10log(1/x) Factor (dB)	1/B Minimum VBW(KHz)
11B	2437	Ant0	98.43	0.07	0.01
11G	2437	Ant0	98.41	0.07	0.01
11N20SISO	2437	Ant0	98.3	0.07	0.01
11N40SISO	2437	Ant0	96.84	0.14	0.01

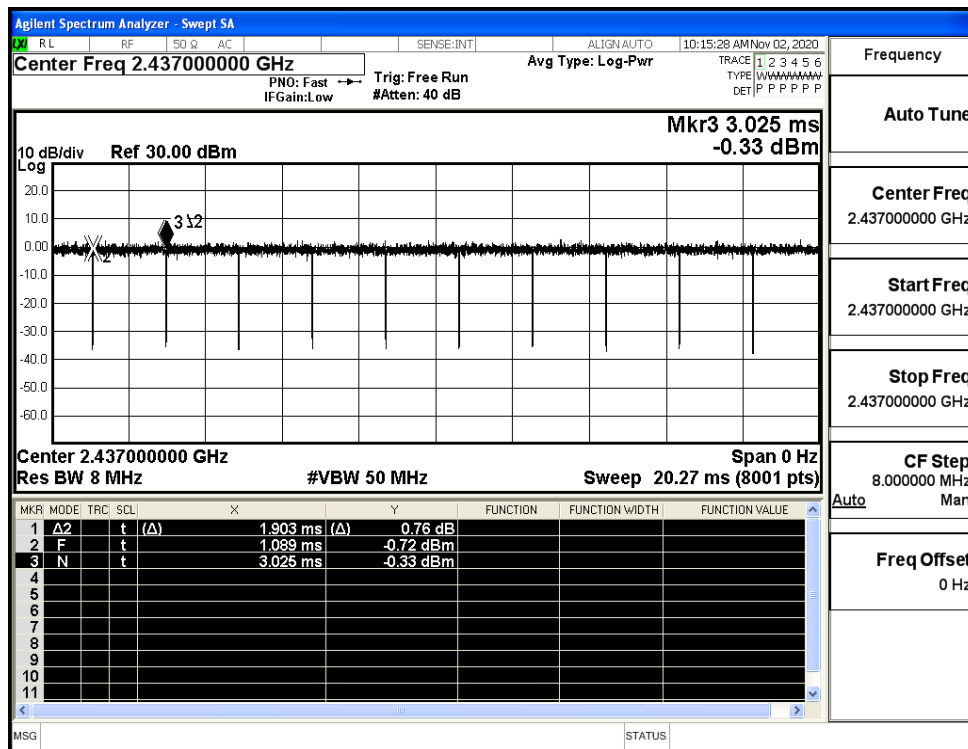
Duty Cycle_11B_2437_Ant1



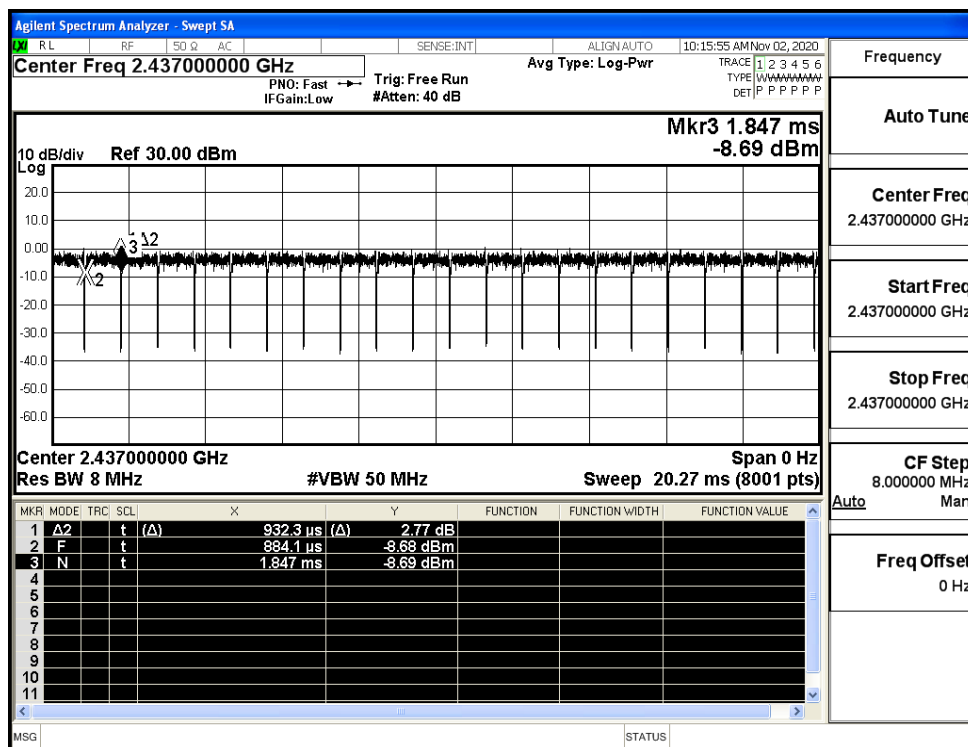
Duty Cycle_11G_2437_Ant1



Duty Cycle_11N20SISO_2437_Ant1



Duty Cycle_11N40SISO_2437_Ant1



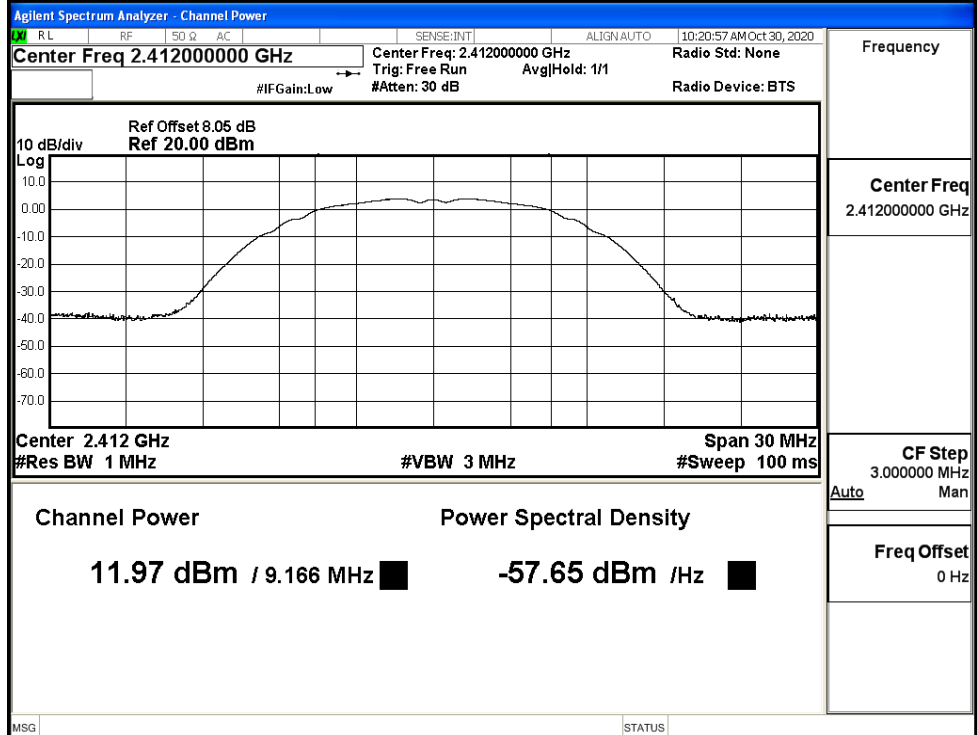
C.2 Maximum Conducted Output Power

ANT 0

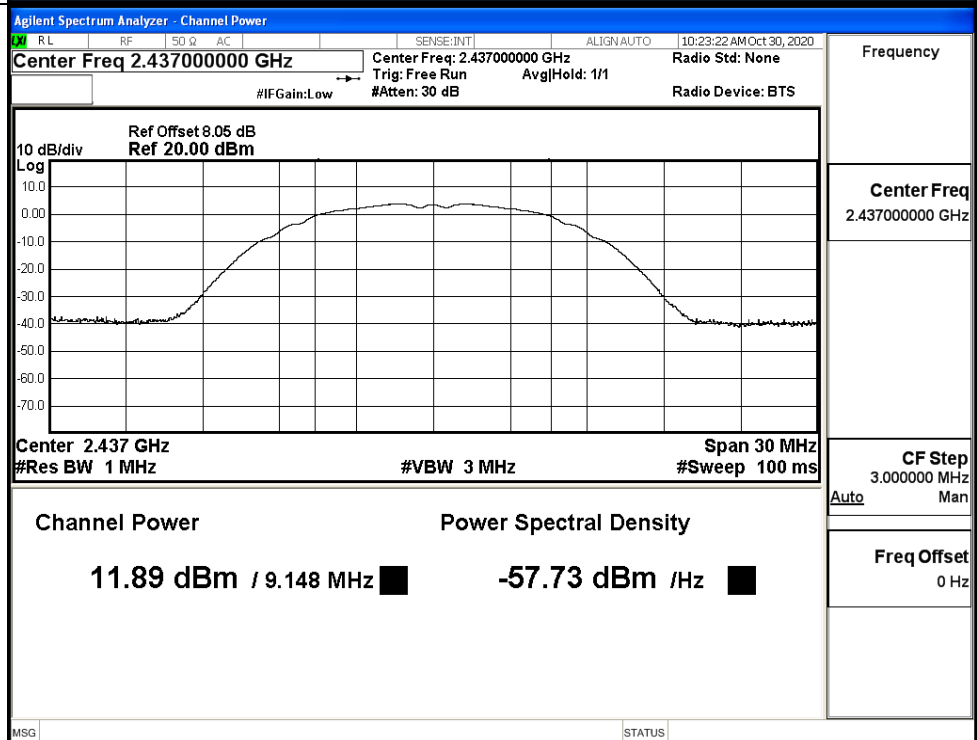
Mode	Channel	AVG Conducted Power (dBm)	Duty Cycle Factor(dB)	Report Conducted Power(dBm)	Limit [dBm]	Verdict
11B	LCH	11.97	0	11.97	30	PASS
	MCH	11.89	0	11.89	30	PASS
	HCH	12.06	0	12.06	30	PASS
11G	LCH	13.13	0	13.13	30	PASS
	MCH	13.08	0	13.08	30	PASS
	HCH	13.23	0	13.23	30	PASS
11N20SISO	LCH	12.75	0	12.75	30	PASS
	MCH	12.7	0	12.7	30	PASS
	HCH	13.25	0	13.25	30	PASS
11N40SISO	LCH	13.48	0.15	13.63	30	PASS
	MCH	13.75	0.15	13.90	30	PASS
	HCH	13.55	0.15	13.70	30	PASS

Test Graphs

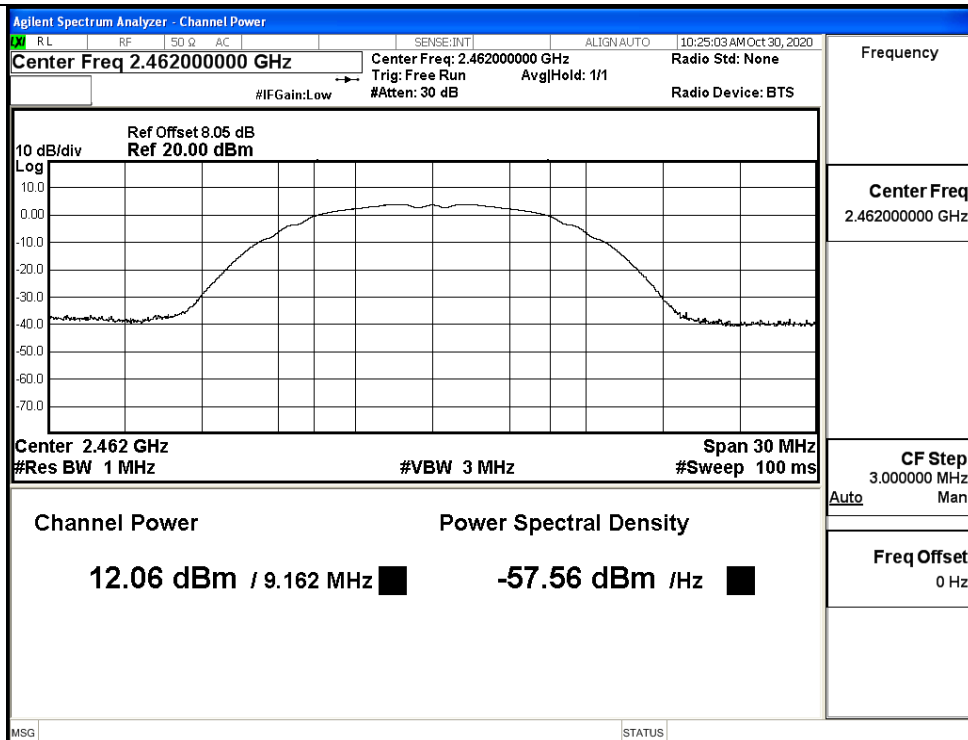
11B/LCH



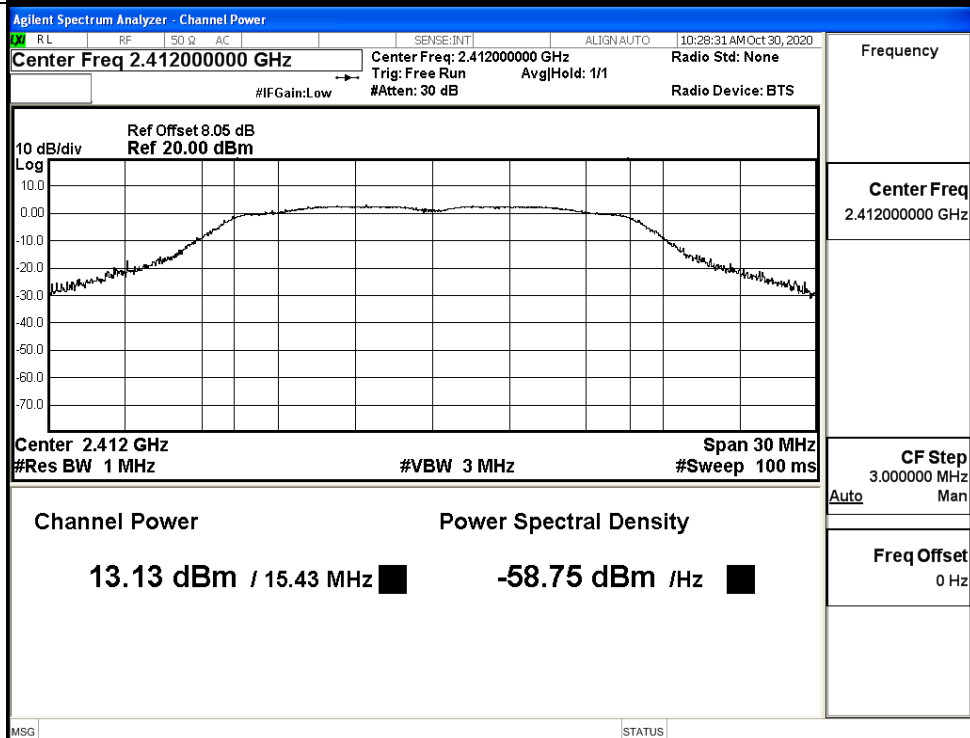
11B/MCH



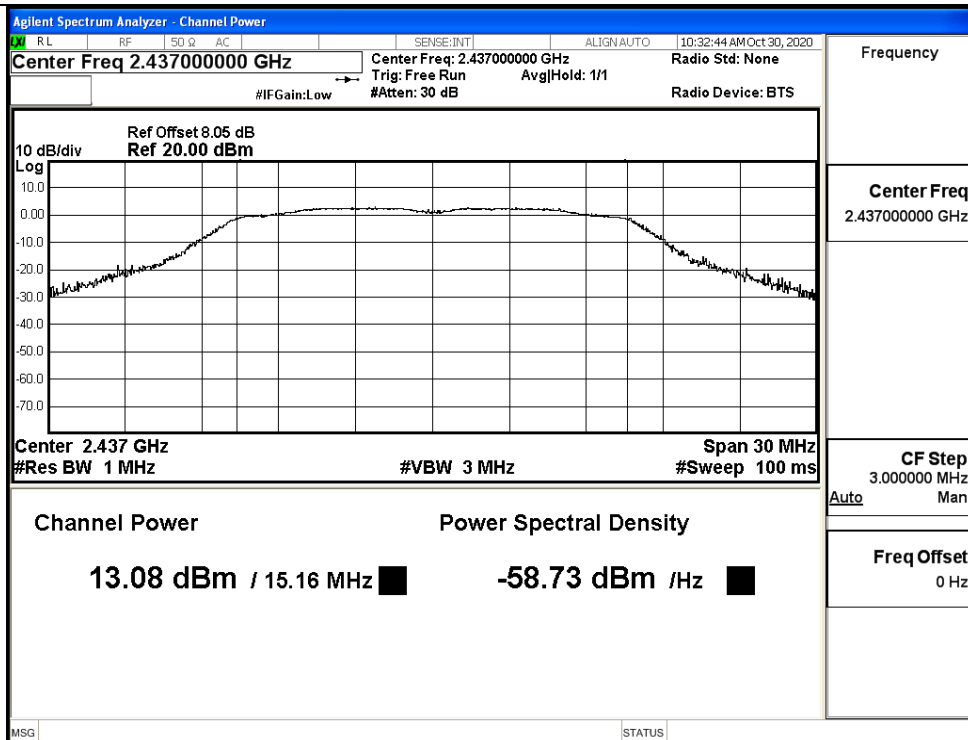
11B/HCH



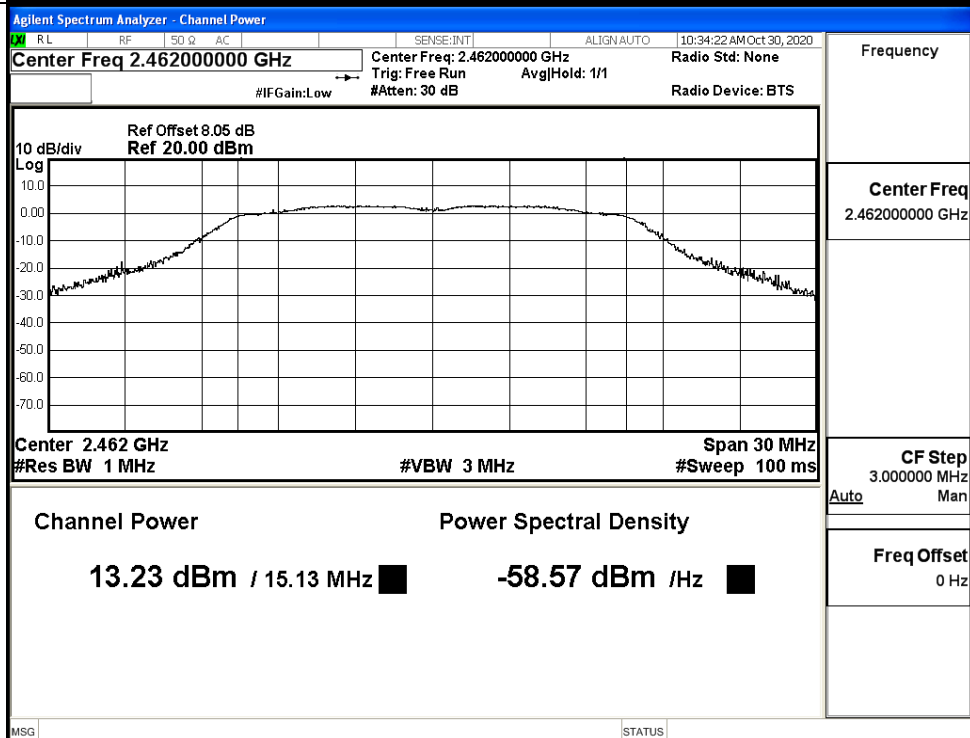
11G/LCH



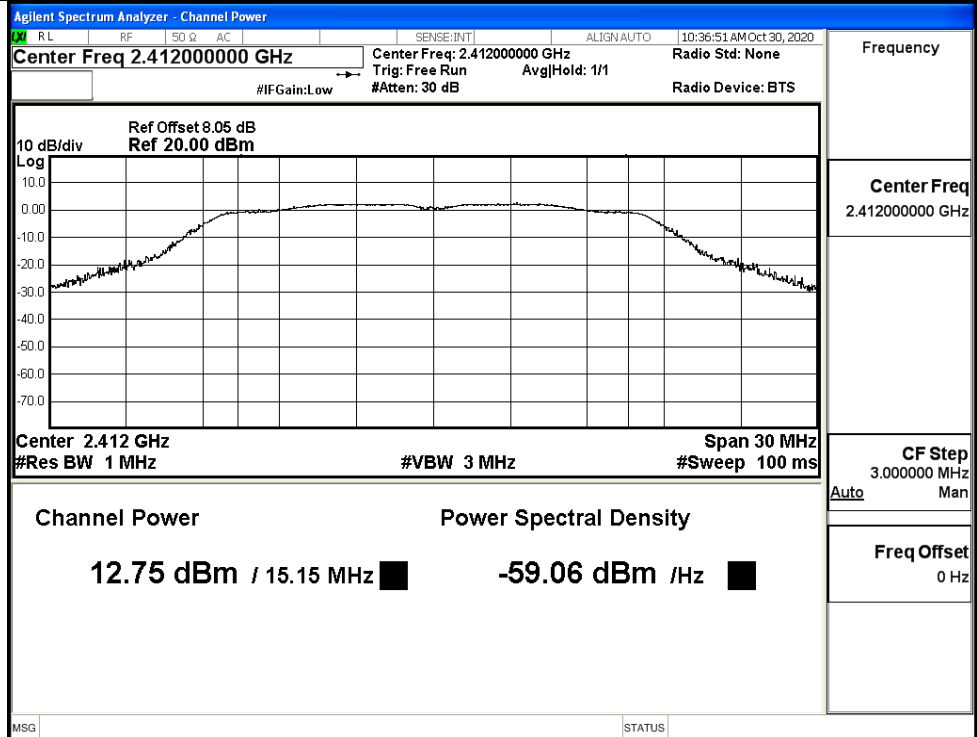
11G/MCH



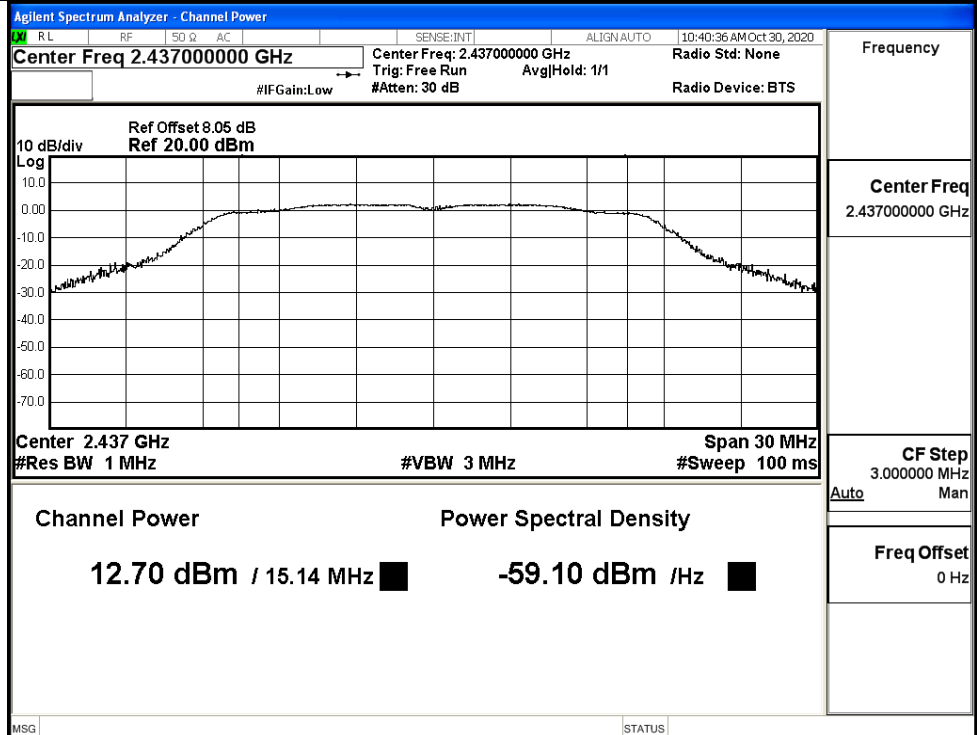
11G/HCH



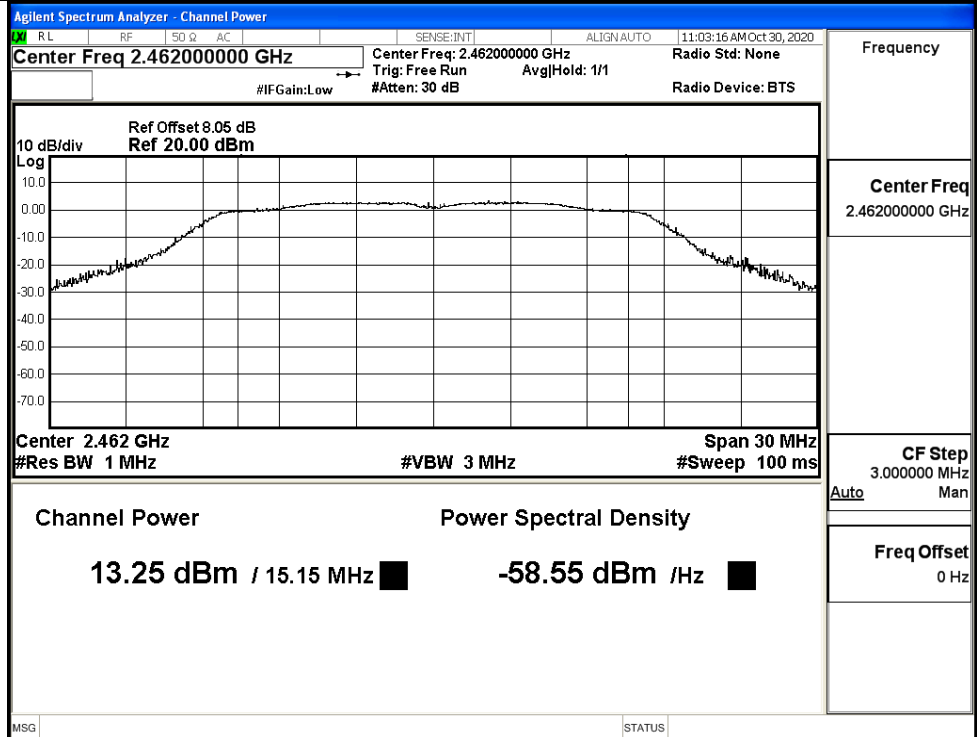
11N20SISO/LCH



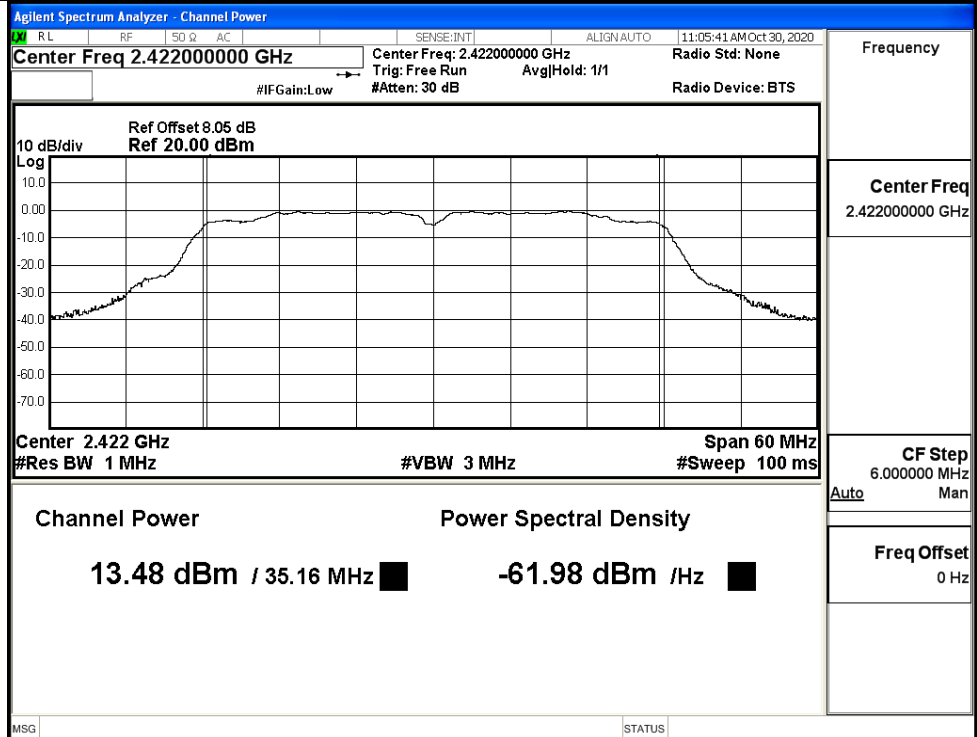
11N20SISO/MCH



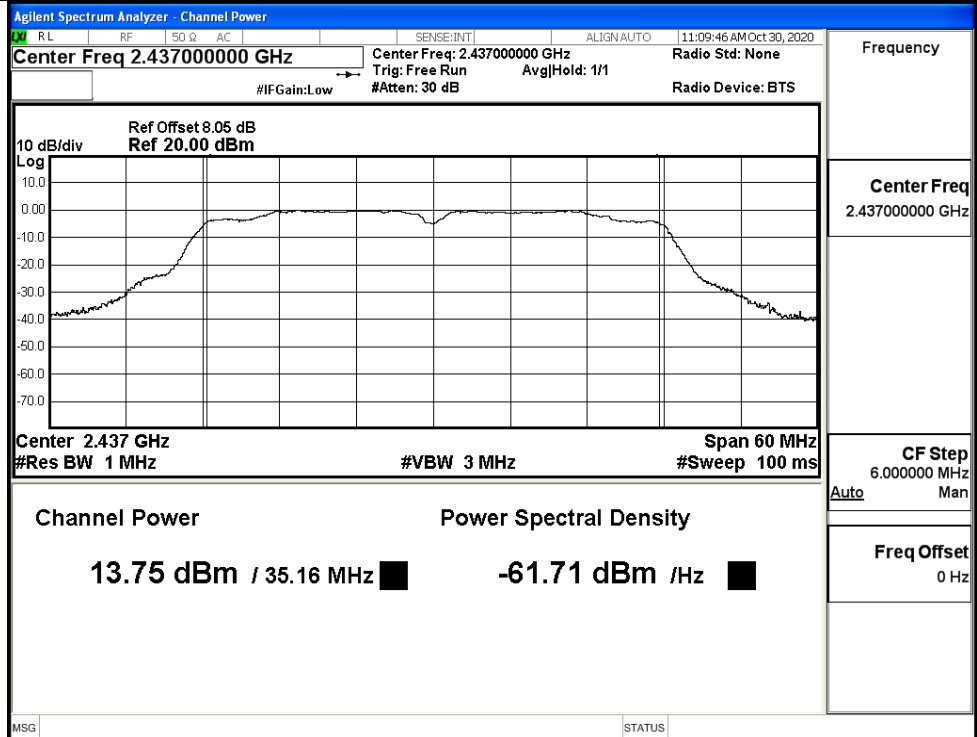
11N20SISO/HCH



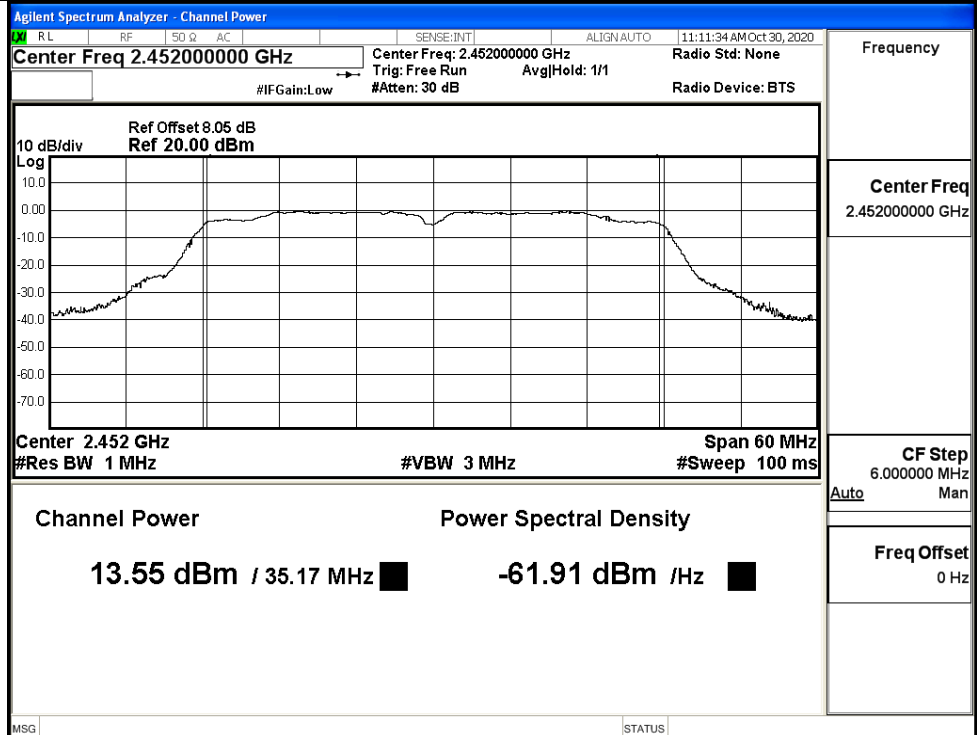
11N40SISO/LCH



11N40SISO/MCH



11N40SISO/HCH

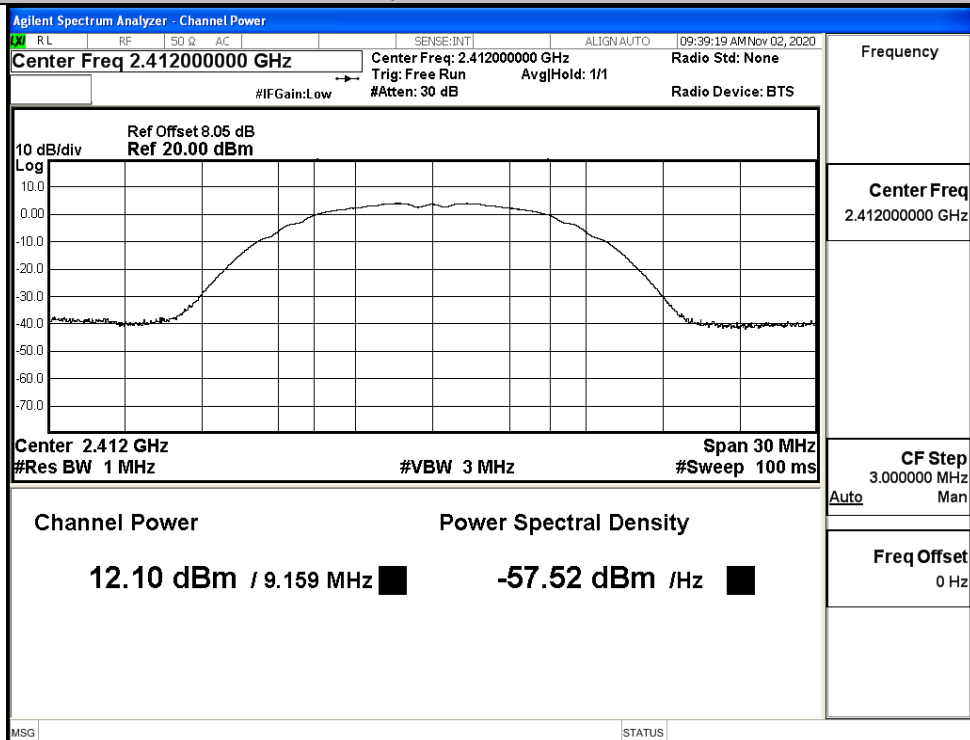


ANT 1

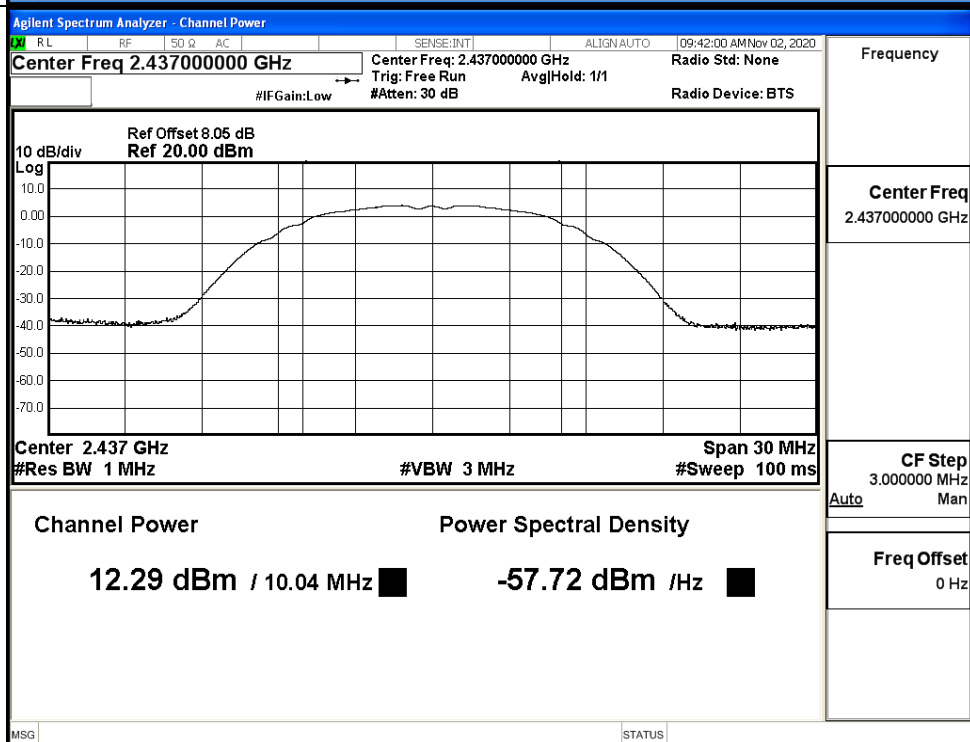
Mode	Channel	AVG Conducted Power (dBm)	Duty Cycle Factor(dB)	Report Conducted Power(dBm)	Limit [dBm]	Verdict
11B	LCH	12.1	0	12.1	30	PASS
	MCH	12.29	0	12.29	30	PASS
	HCH	12.83	0	12.83	30	PASS
11G	LCH	12.23	0	12.23	30	PASS
	MCH	12.66	0	12.66	30	PASS
	HCH	13.24	0	13.24	30	PASS
11N20SISO	LCH	12.4	0	12.4	30	PASS
	MCH	12.33	0	12.33	30	PASS
	HCH	12.7	0	12.7	30	PASS
11N40SISO	LCH	12.62	0.14	12.76	30	PASS
	MCH	12.64	0.14	12.78	30	PASS
	HCH	12.5	0.14	12.64	30	PASS

Test Graphs

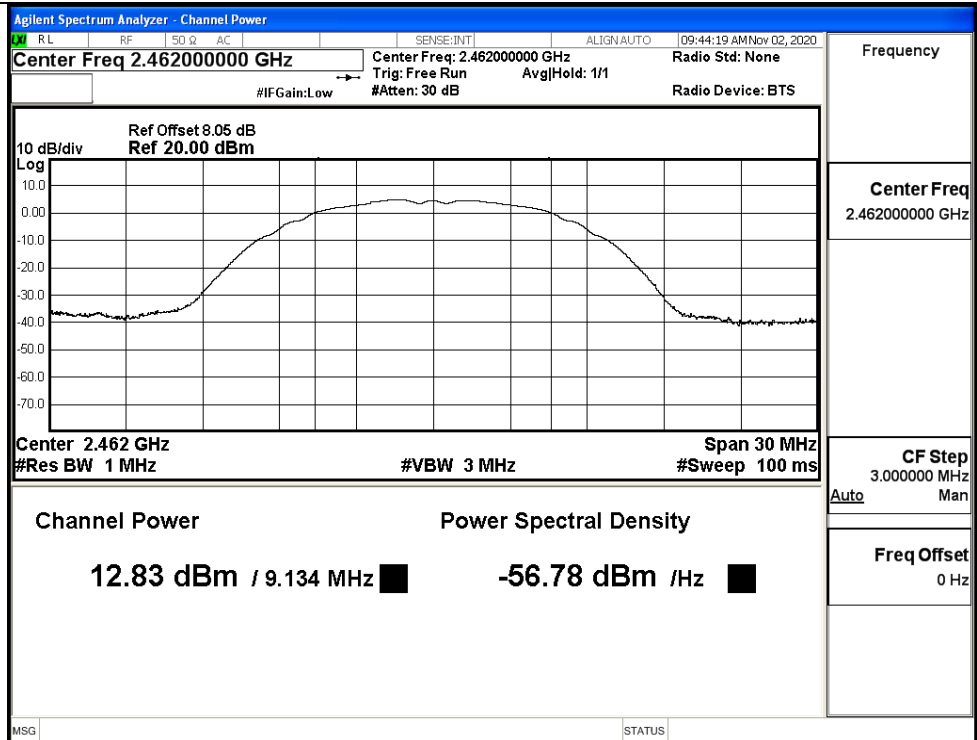
11B/LCH



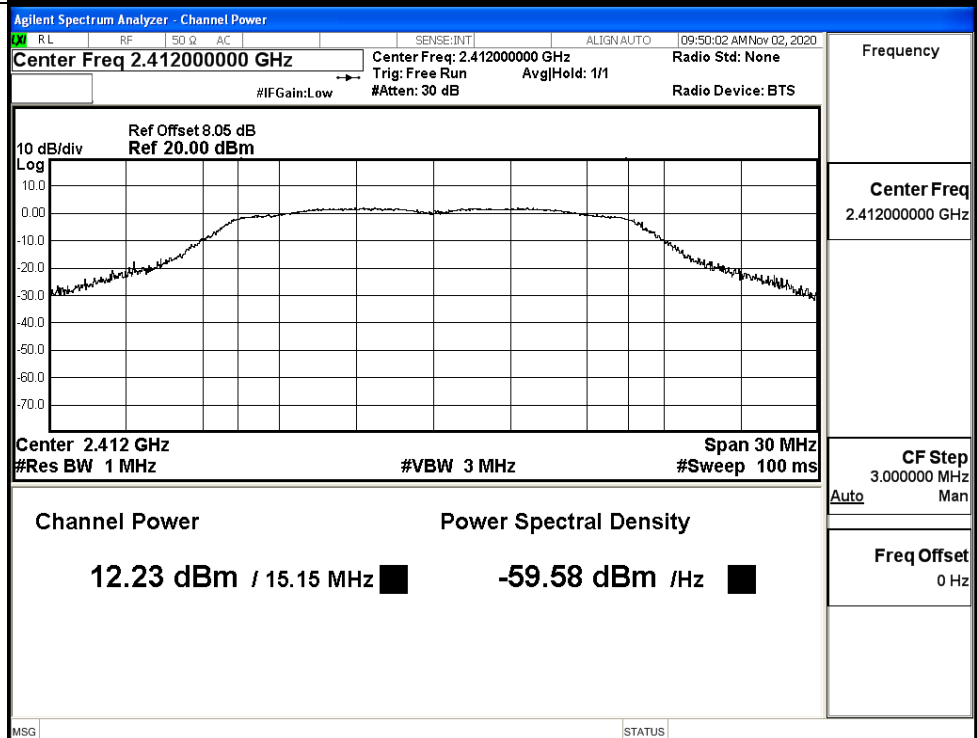
11B/MCH



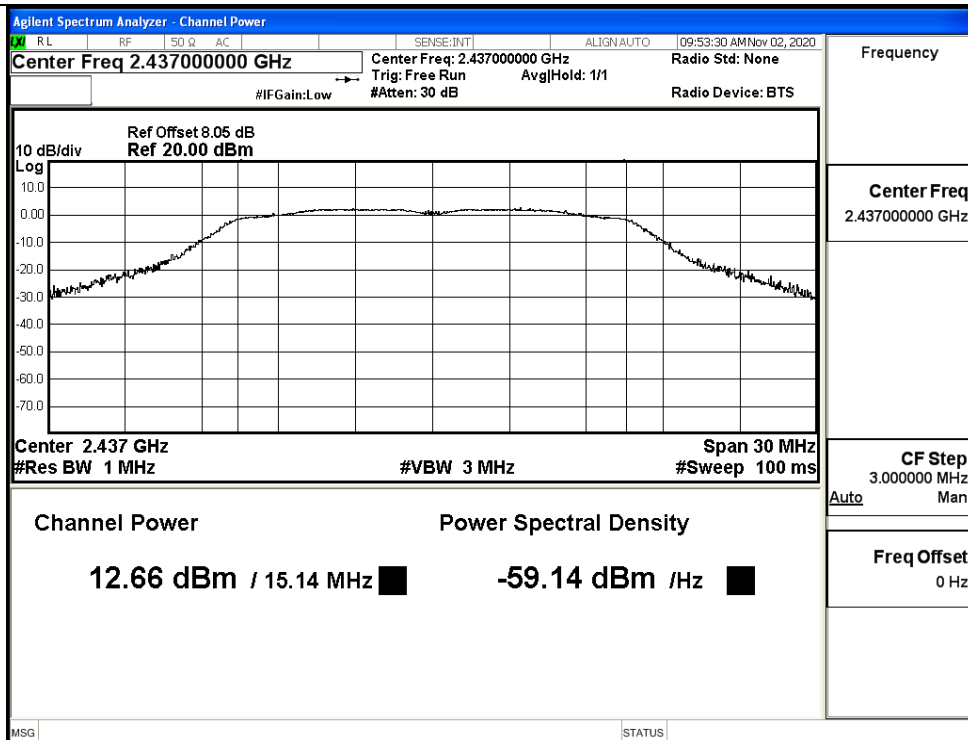
11B/HCH



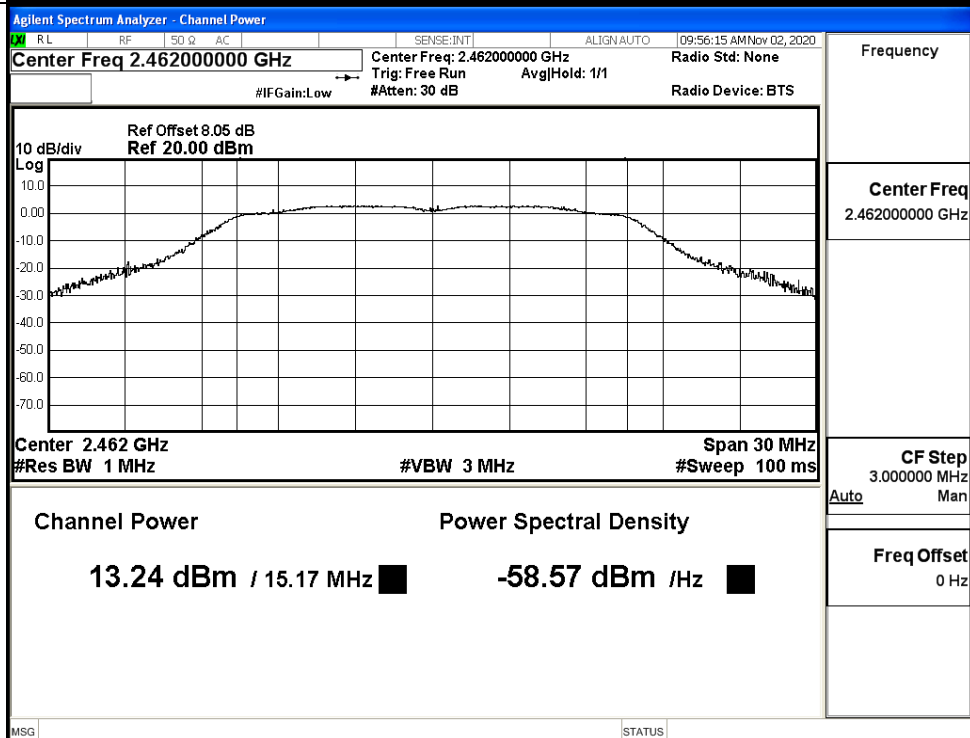
11G/LCH



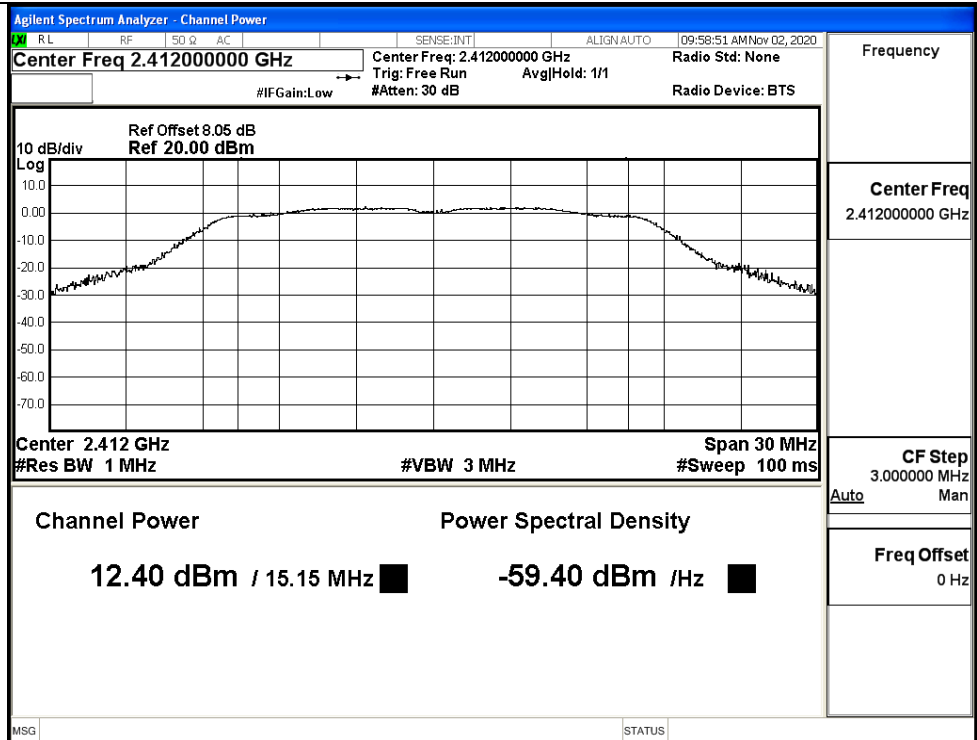
11G/MCH



11G/HCH



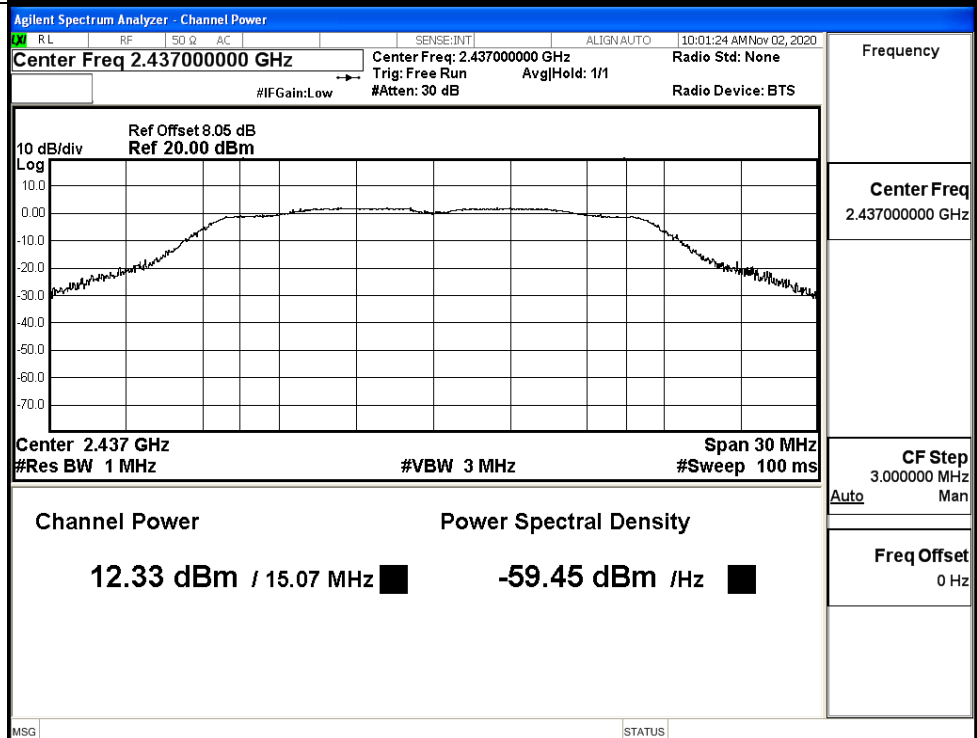
11N20SISO/LCH



Frequency

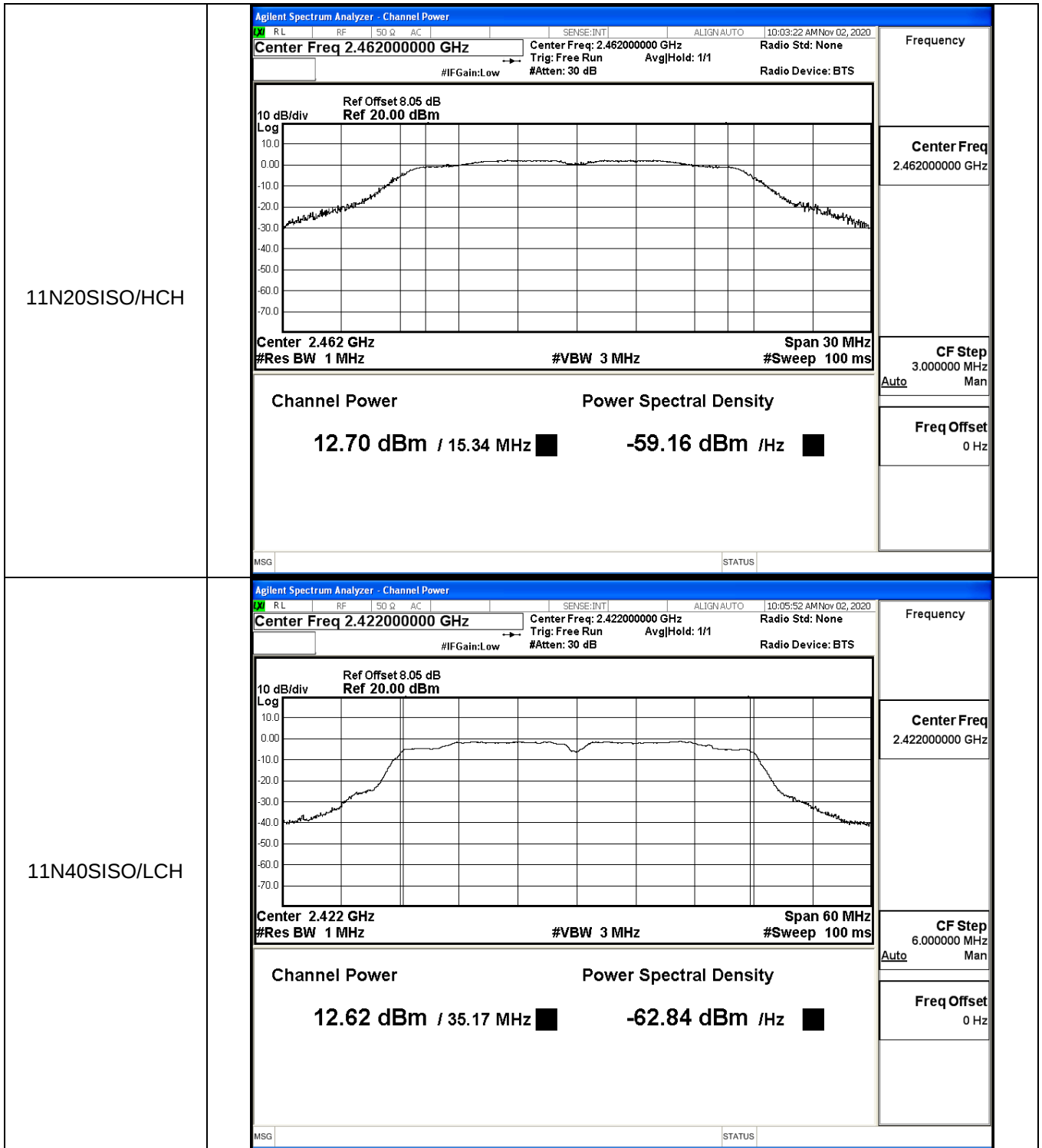
Center Freq
2.412000000 GHzCF Step
3.000000 MHz
Auto ManFreq Offset
0 Hz

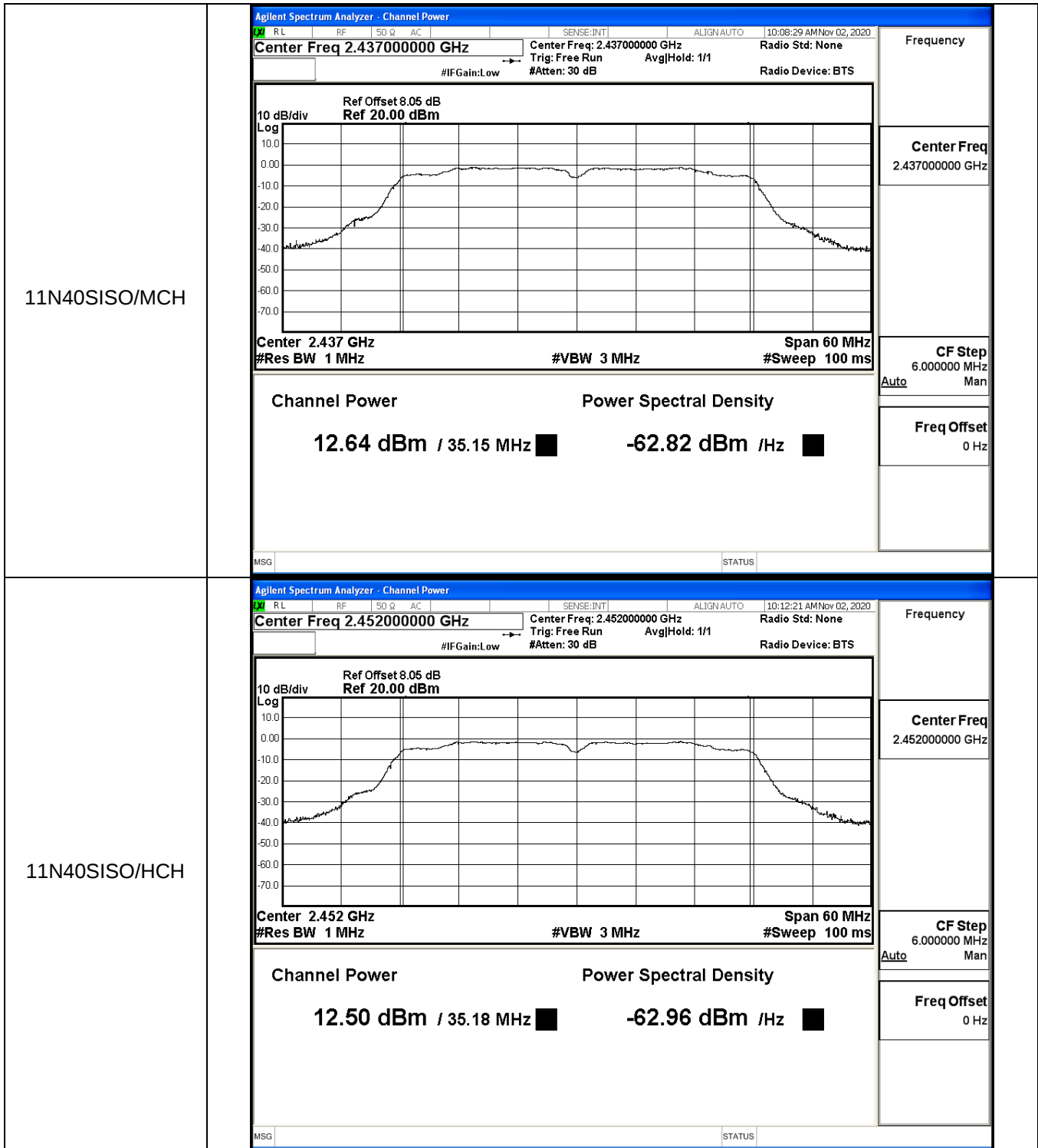
11N20SISO/MCH



Frequency

Center Freq
2.437000000 GHzCF Step
3.000000 MHz
Auto ManFreq Offset
0 Hz





MIMO

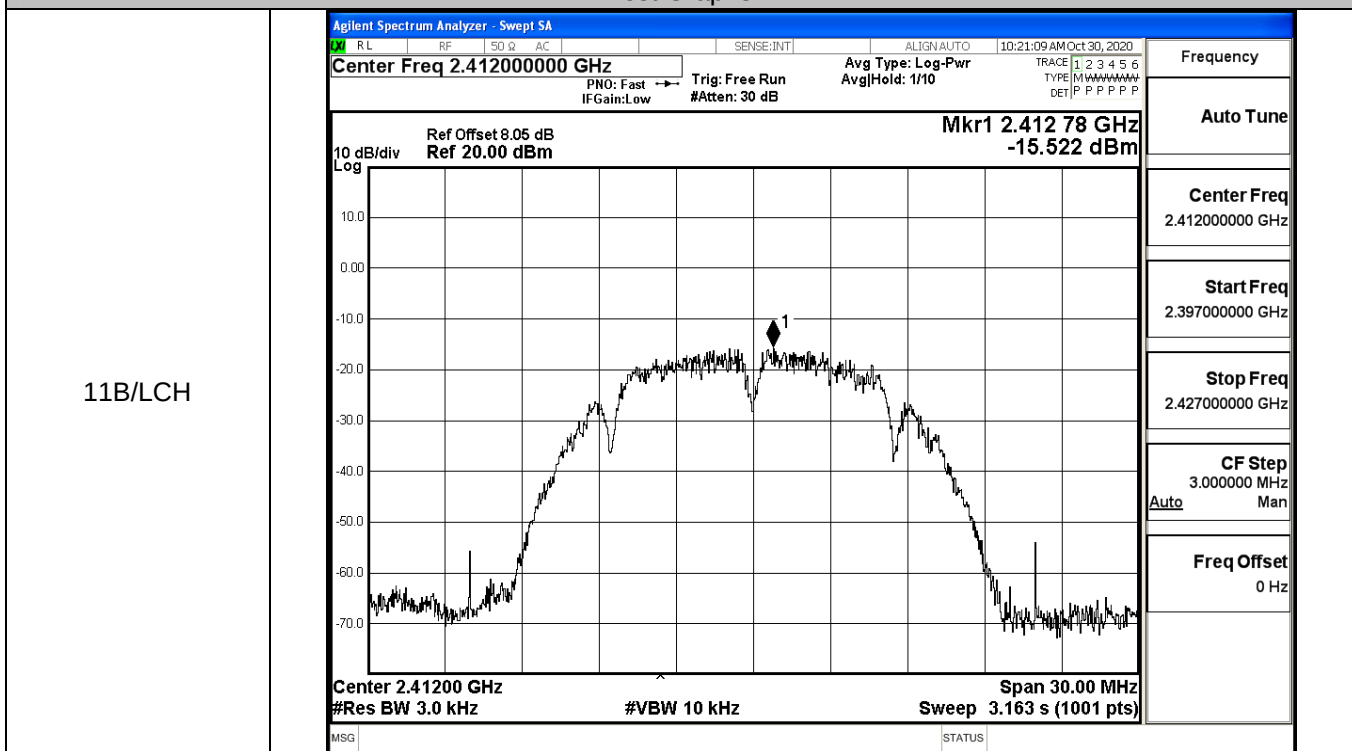
Mode	Channel	ANT 0 [dBm]	ANT 1 [dBm]	MIMO [dBm]	Limit [dBm]	Verdict
11N20	LCH	12.75	12.4	15.59	30	PASS
	MCH	12.7	12.33	15.53	30	PASS
	HCH	13.25	12.7	15.99	30	PASS
11N40	LCH	12.41	10.99	14.77	30	PASS
	MCH	12.57	9.87	14.44	30	PASS
	HCH	12.35	10.90	14.70	30	PASS

C.3 Maximum Power Spectral Density

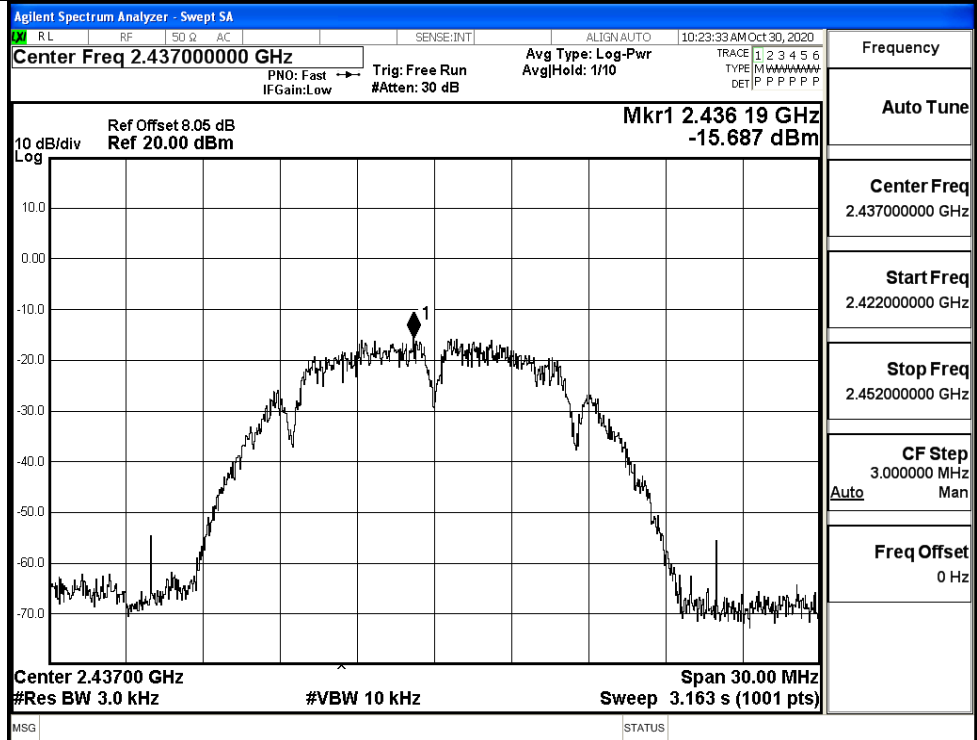
ANT 0

Mode	Channel	Power Density [dBm/3KHz]	Duty Cycle Factor (dB)	RBW Factor (dB)	Report Power Density [dBm/3KHz]	Limit [dBm/3KHz]	Verdict
11B	LCH	-15.522	0	0	-15.52	8	PASS
	MCH	-15.687	0	0	-15.69	8	PASS
	HCH	-15.090	0	0	-15.09	8	PASS
11G	LCH	-20.452	0	0	-20.45	8	PASS
	MCH	-20.780	0	0	-20.78	8	PASS
	HCH	-19.812	0	0	-19.81	8	PASS
11N20 SISO	LCH	-20.959	0	0	-20.96	8	PASS
	MCH	-21.678	0	0	-21.68	8	PASS
	HCH	-20.261	0	0	-20.26	8	PASS
11N40 SISO	LCH	-23.287	0.15	0	-23.14	8	PASS
	MCH	-23.130	0.15	0	-22.98	8	PASS
	HCH	-23.005	0.15	0	-22.86	8	PASS

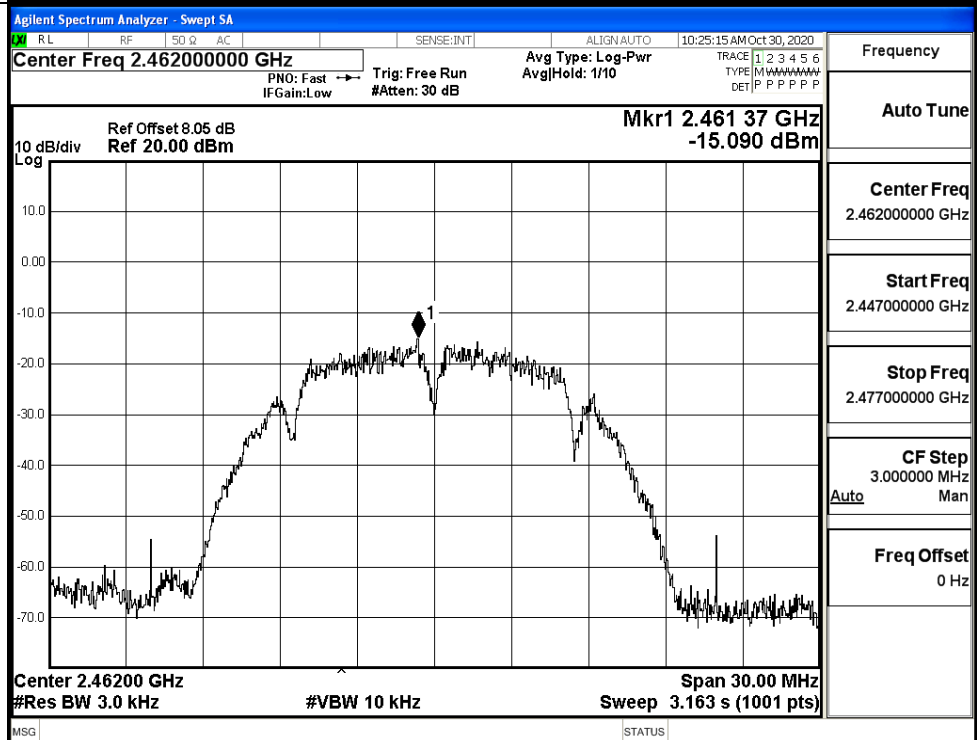
Test Graphs



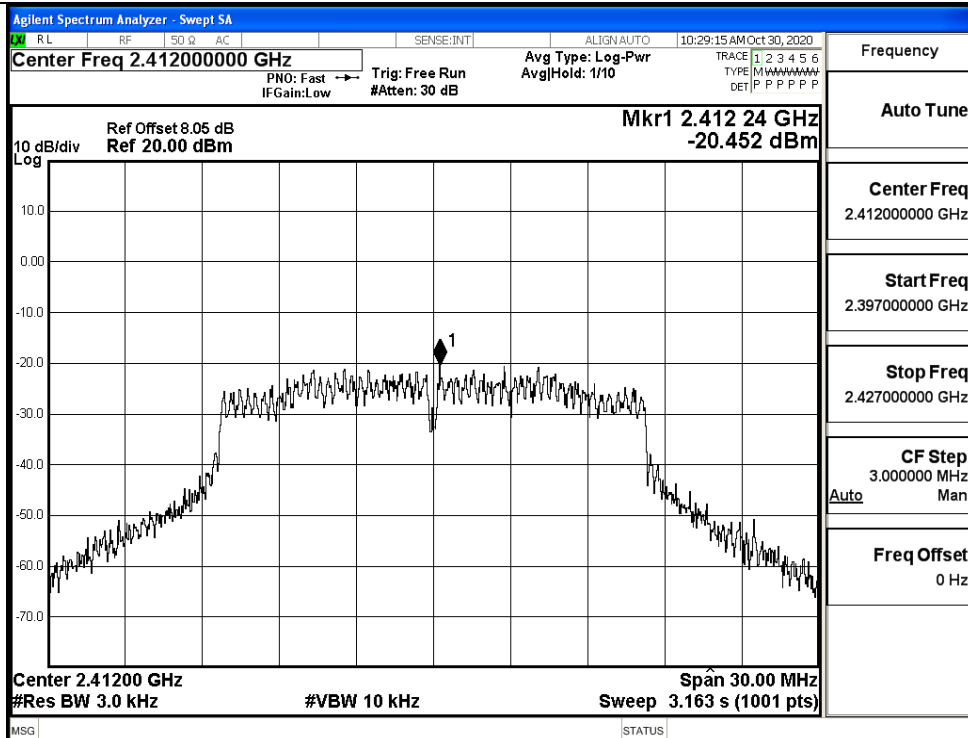
11B/MCH



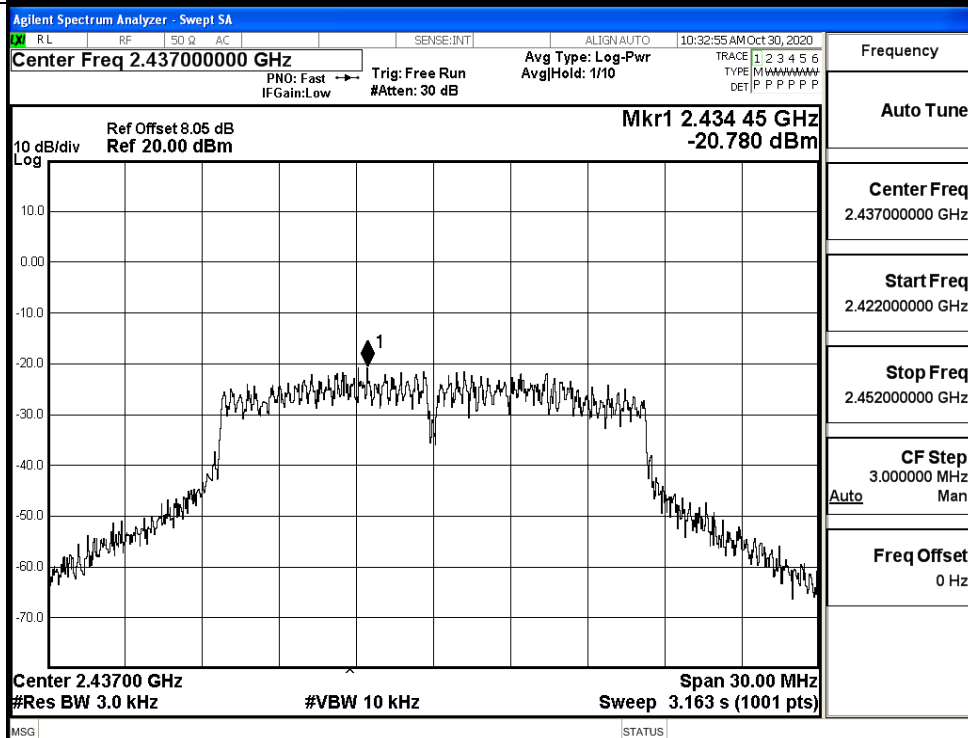
11B/HCH



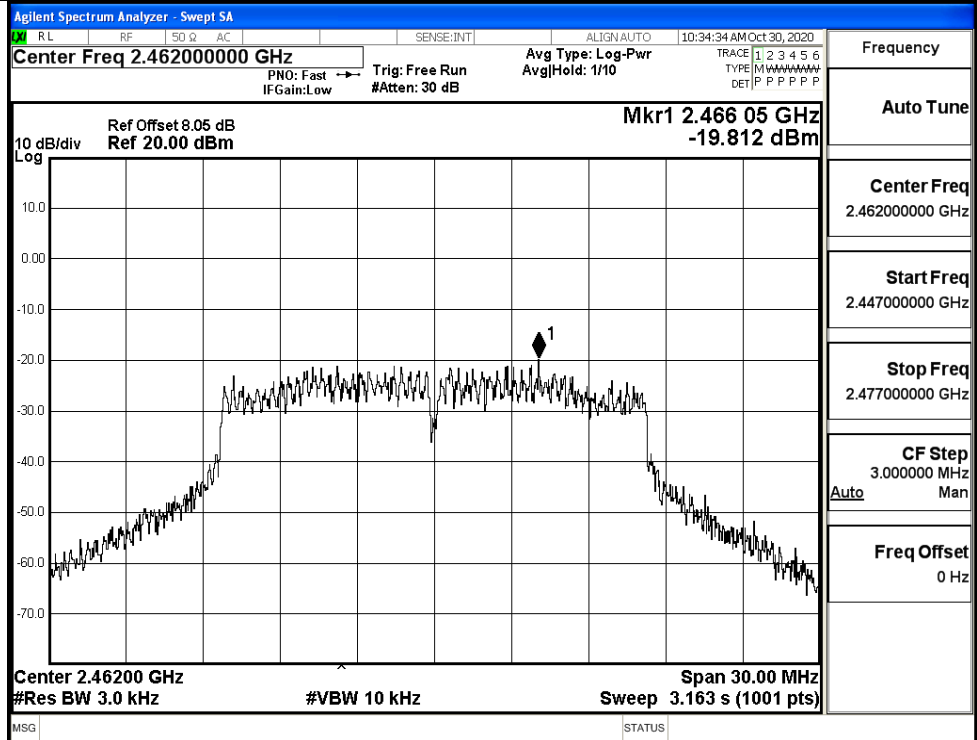
11G/LCH



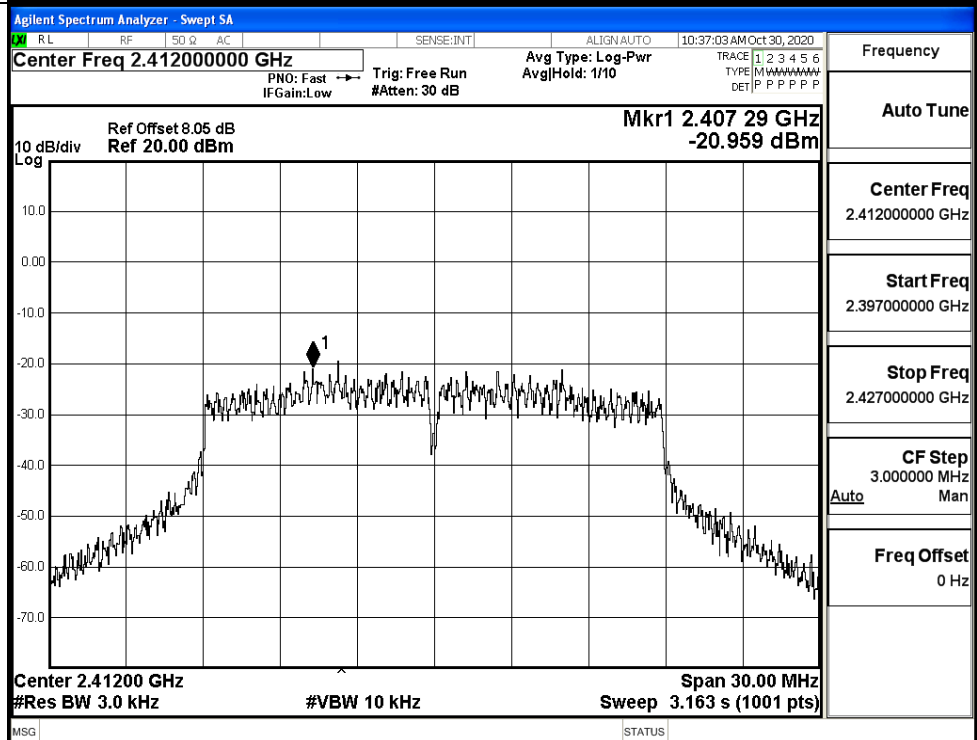
11G/MCH



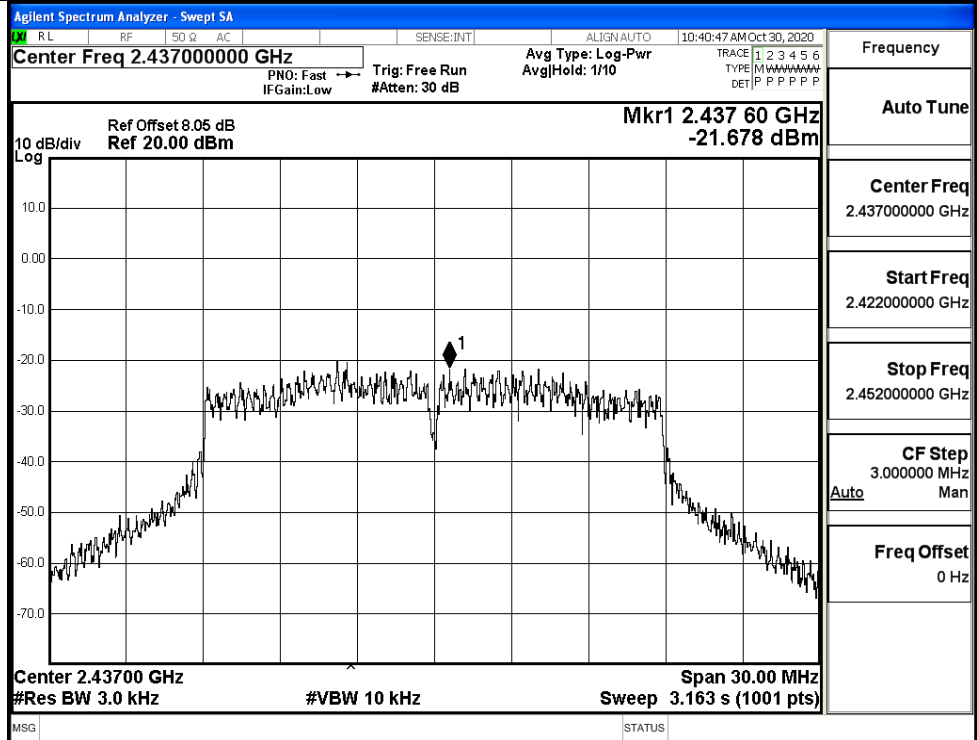
11G/HCH



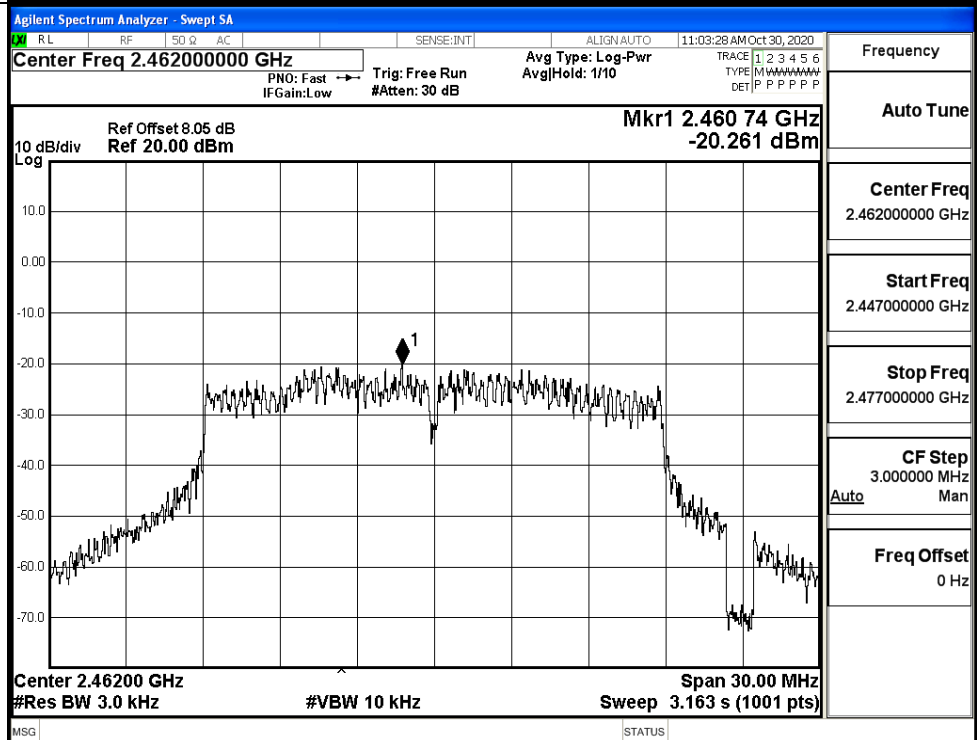
11N20SISO/LCH



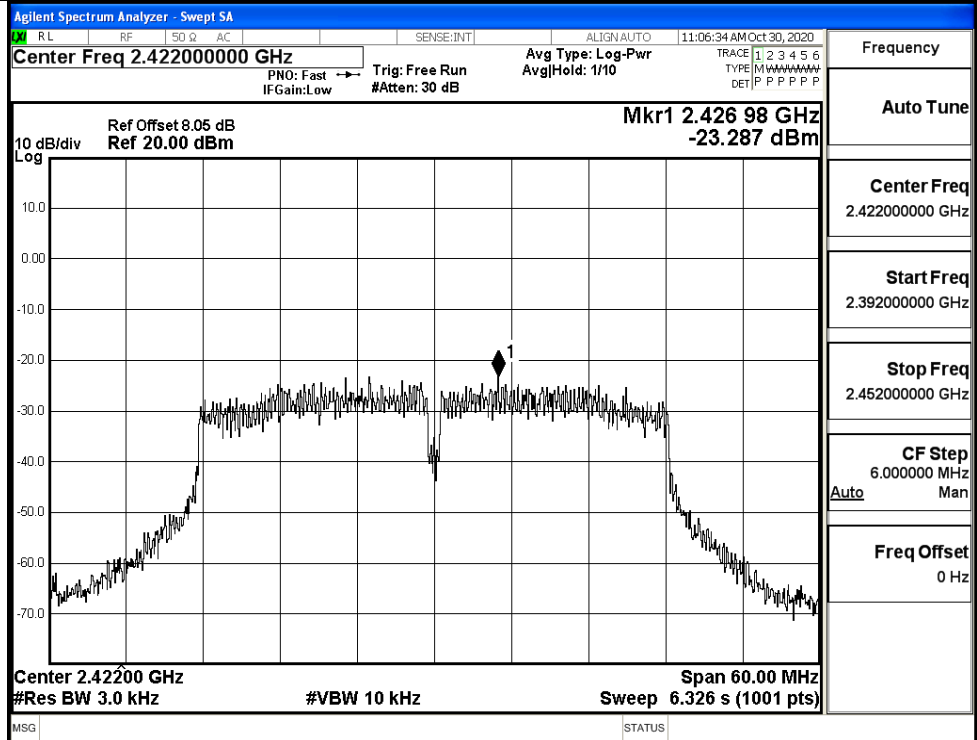
11N20SISO/MCH



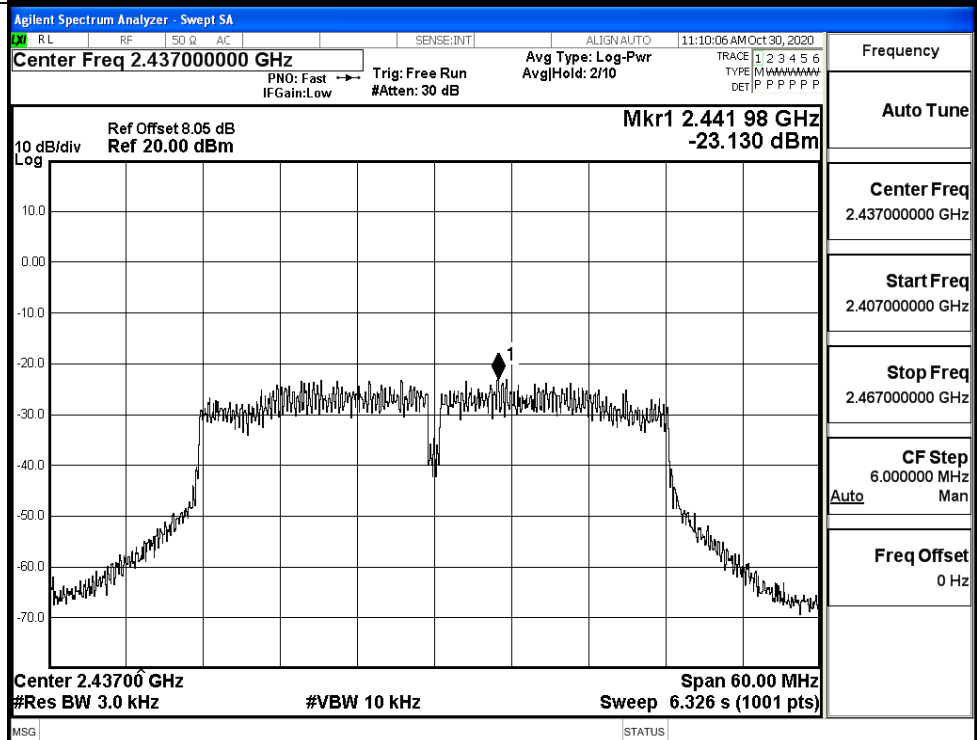
11N20SISO/HCH



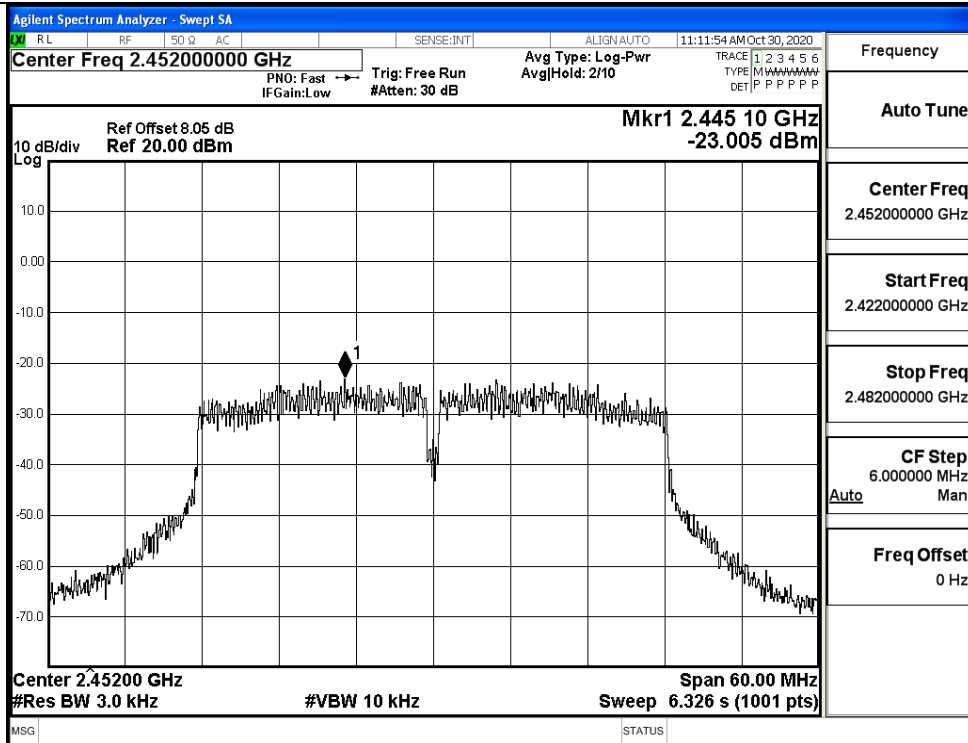
11N40SISO/LCH



11N40SISO/MCH



11N40SISO/HCH

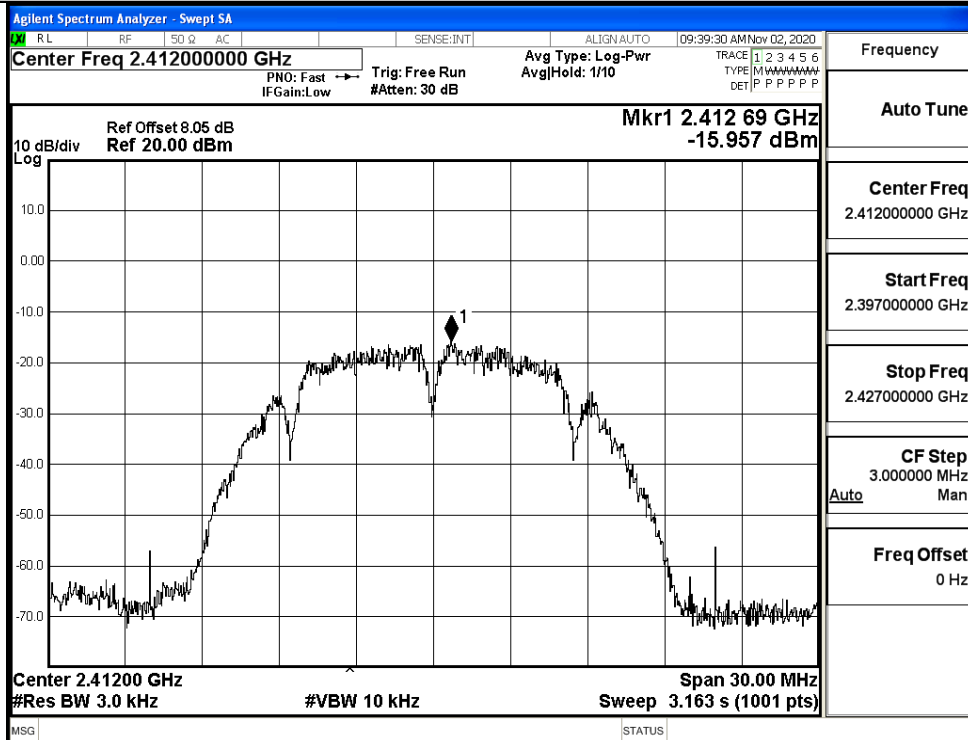


ANT 1

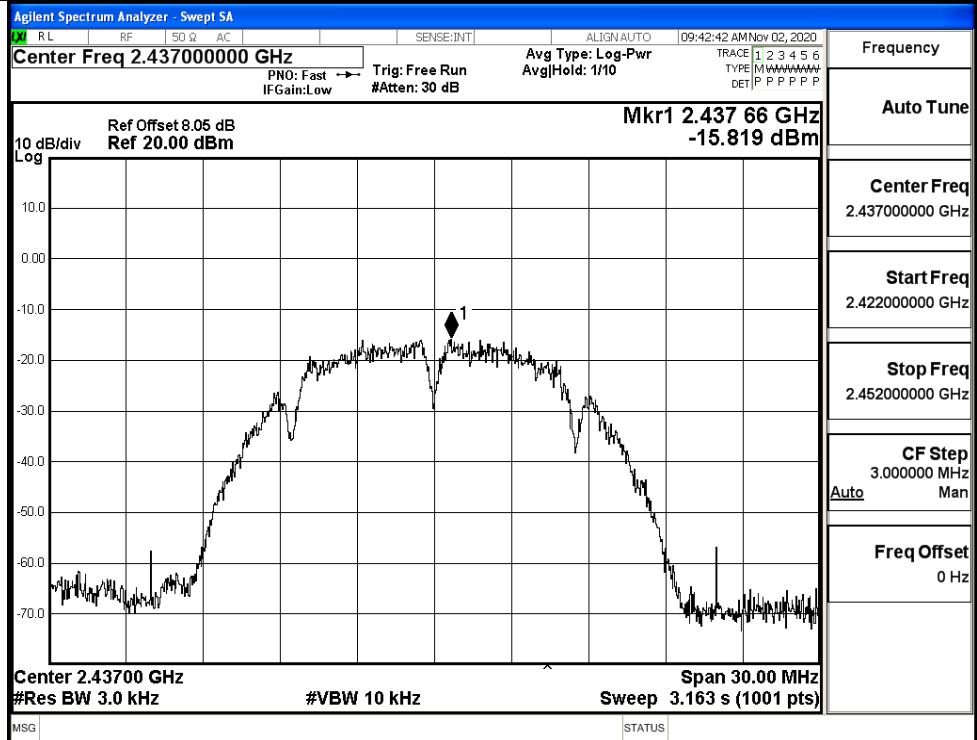
Mode	Channel	Power Density [dBm/3KHz]	Duty Cycle Factor (dB)	RBW Factor (dB)	Report Power Density [dBm/3KHz]	Limit [dBm/3KHz]	Verdict
11B	LCH	-15.957	0	0	-15.96	8	PASS
	MCH	-15.819	0	0	-15.82	8	PASS
	HCH	-14.579	0	0	-14.58	8	PASS
11G	LCH	-20.058	0	0	-20.06	8	PASS
	MCH	-20.671	0	0	-20.67	8	PASS
	HCH	-20.348	0	0	-20.35	8	PASS
11N20 SISO	LCH	-19.881	0	0	-19.88	8	PASS
	MCH	-22.039	0	0	-22.04	8	PASS
	HCH	-20.502	0	0	-20.50	8	PASS
11N40 SISO	LCH	-23.929	0.14	0	-23.79	8	PASS
	MCH	-23.772	0.14	0	-23.63	8	PASS
	HCH	-24.096	0.14	0	-23.96	8	PASS

Test Graphs

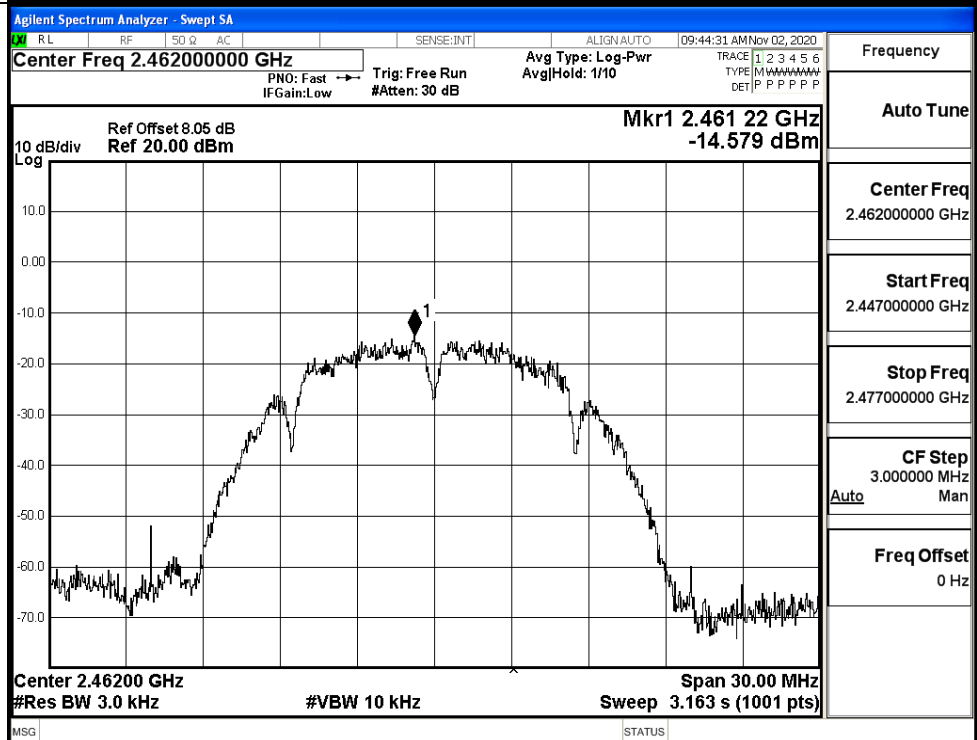
11B/LCH



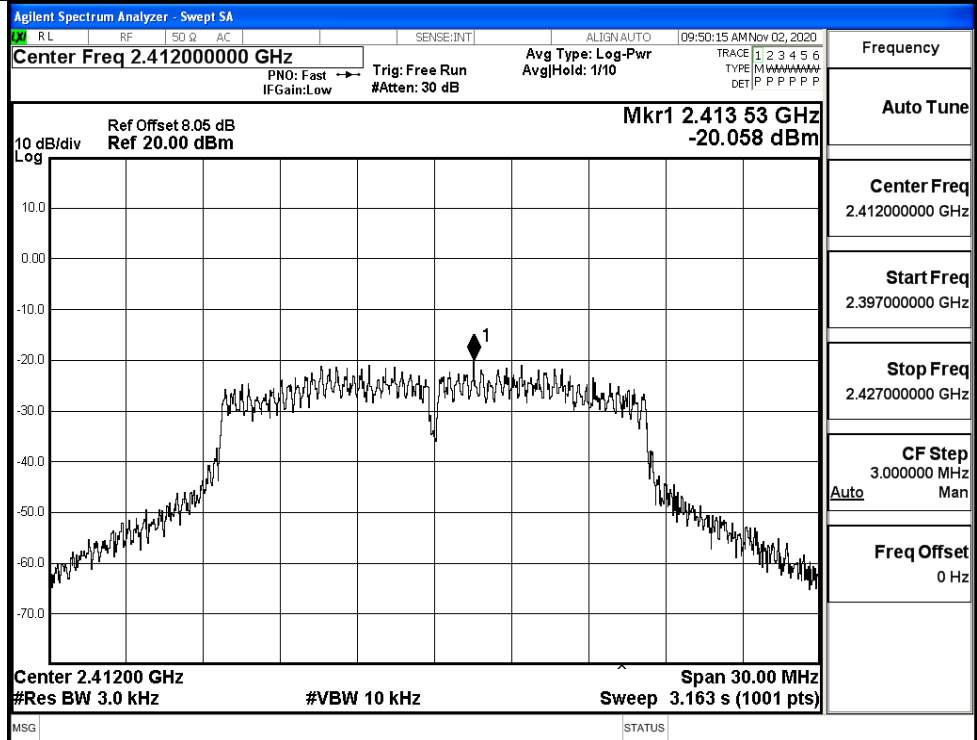
11B/MCH



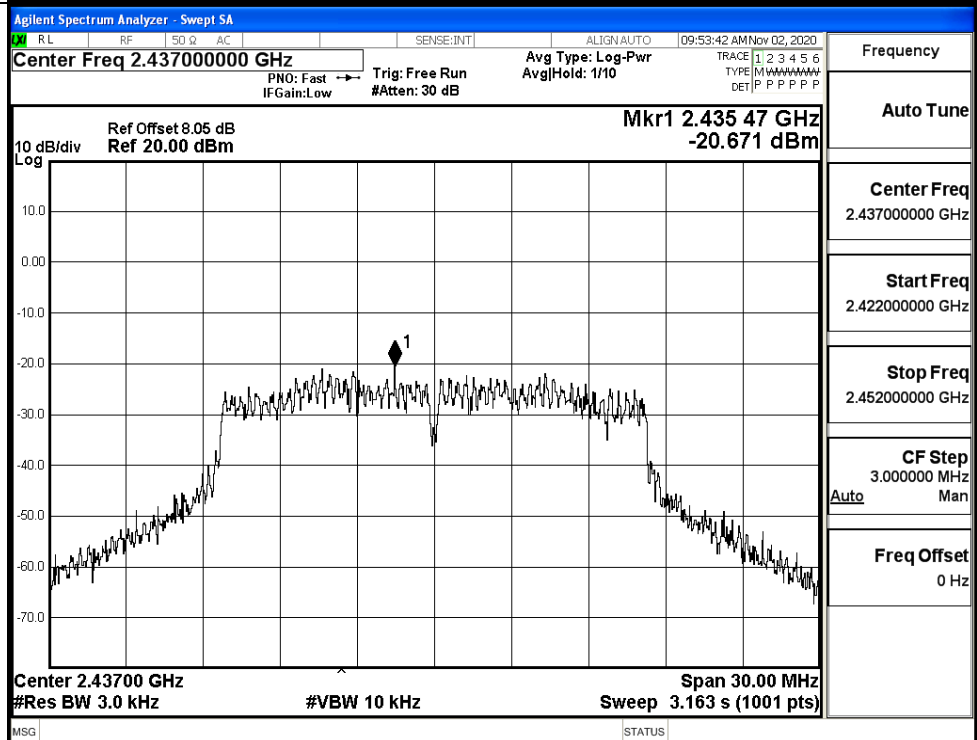
11B/HCH



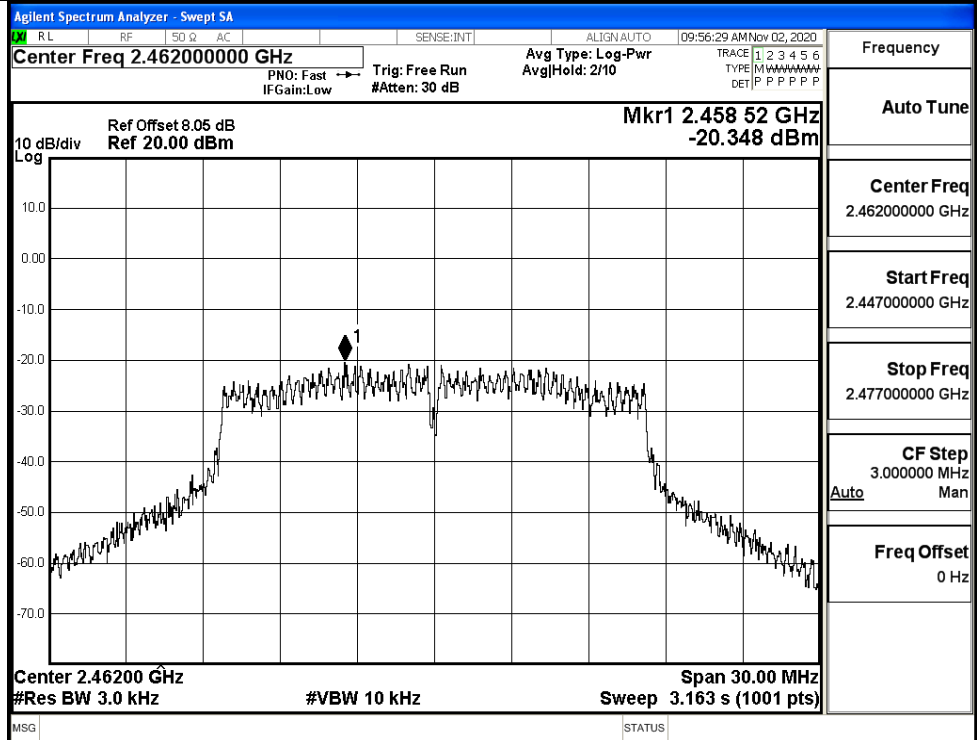
11G/LCH



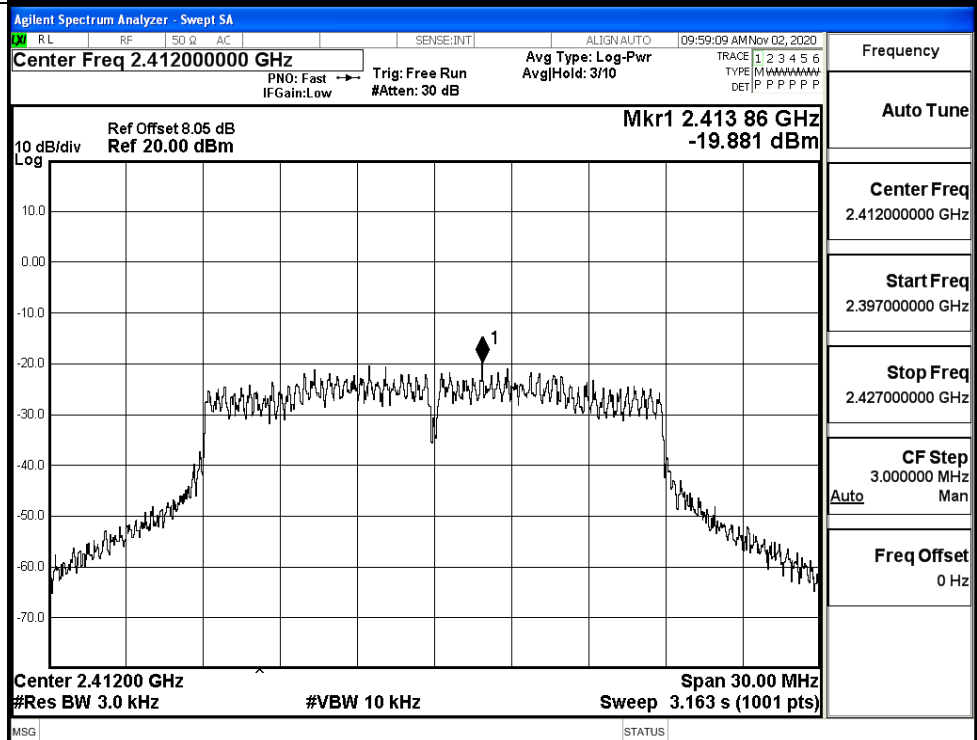
11G/MCH



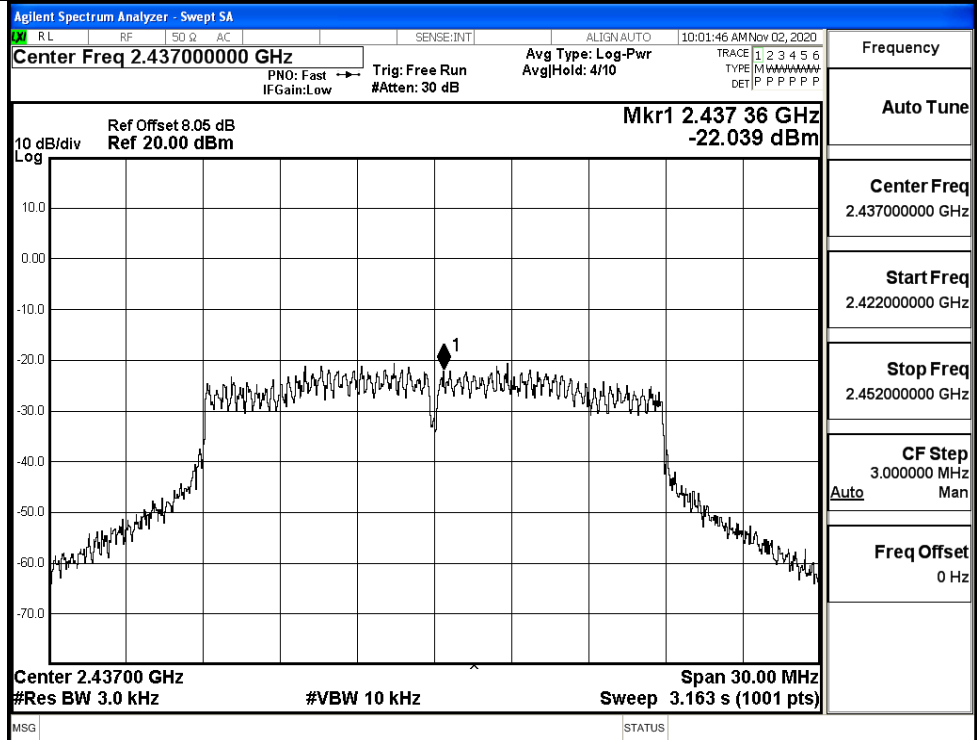
11G/HCH



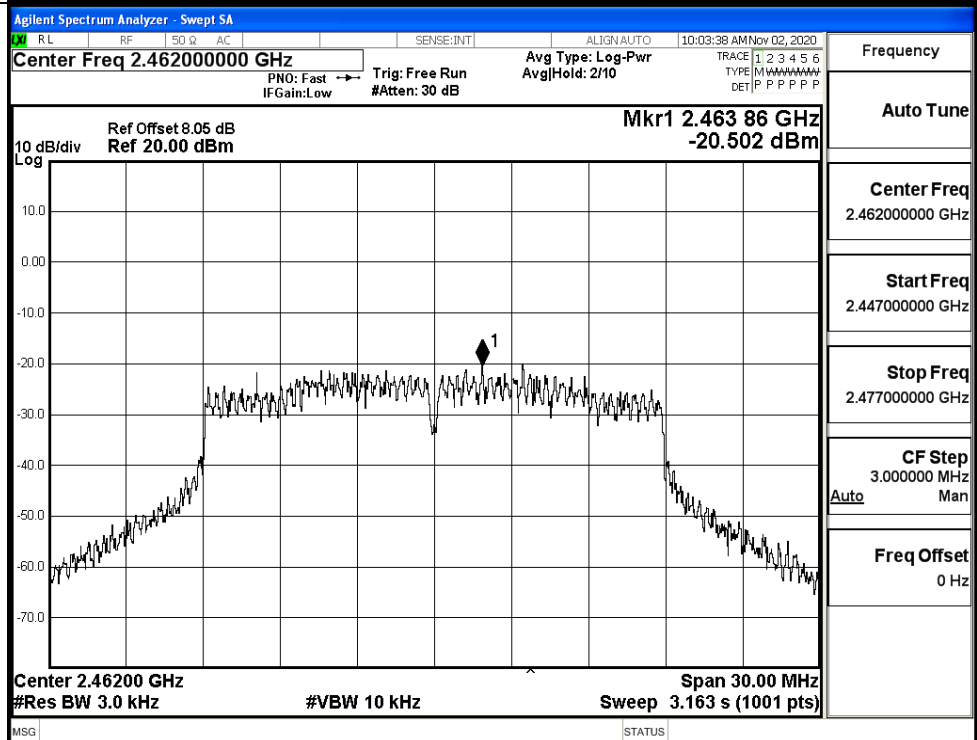
11N20SISO/LCH



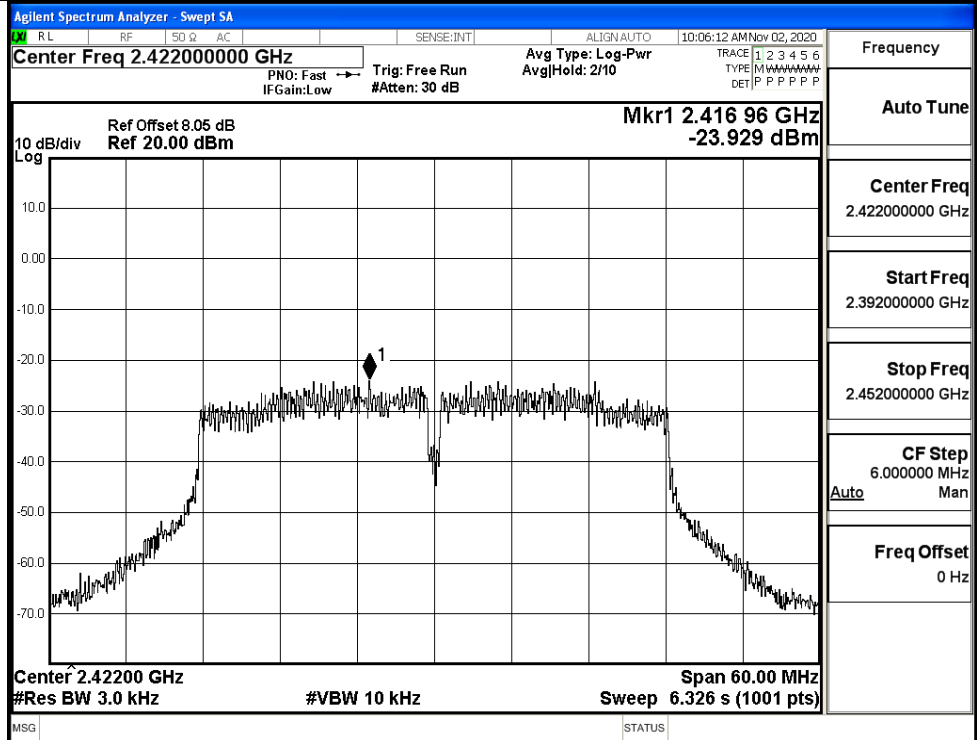
11N20SISO/MCH



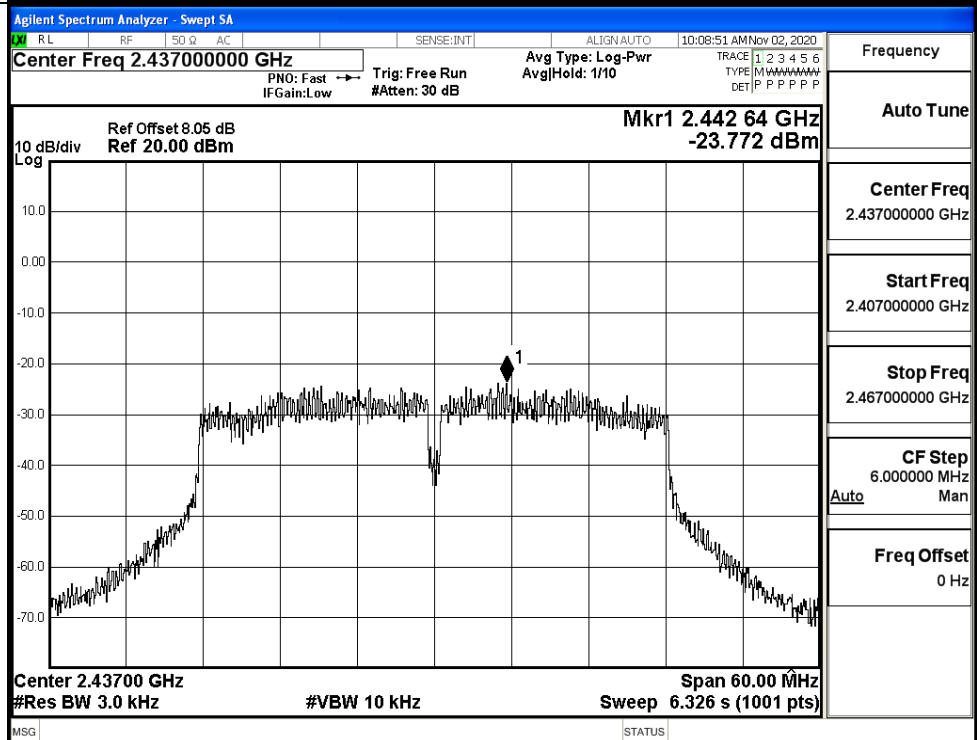
11N20SISO/HCH

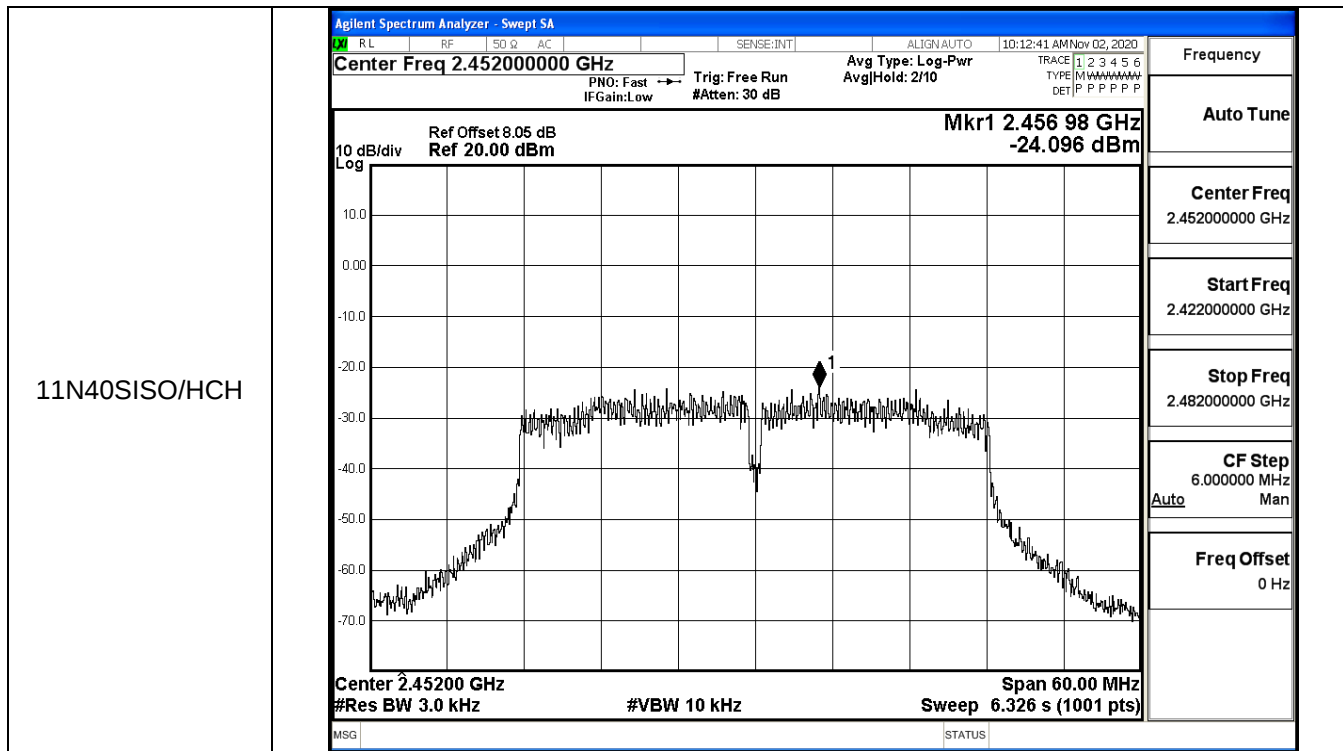


11N40SISO/LCH



11N40SISO/MCH





MIMO

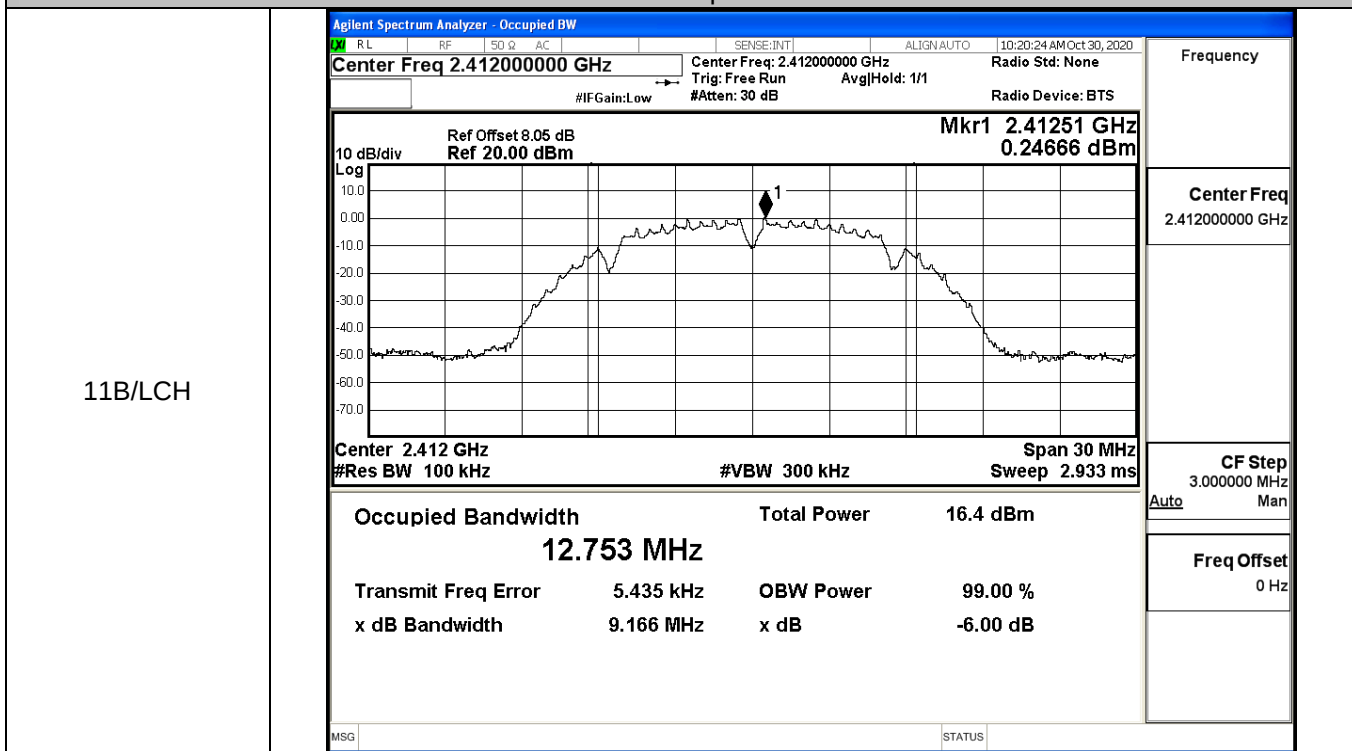
Mode	Channel	ANT 0 [dBm/3KHz]	ANT 1 [dBm/3KHz]	MIMO [dBm/3KHz]	Limit [dBm/3KHz]	Verdict
11N20	LCH	-20.96	-19.88	-17.38	8	PASS
	MCH	-21.68	-22.04	-18.85	8	PASS
	HCH	-20.26	-20.50	-17.37	8	PASS
11N40	LCH	-23.14	-23.79	-20.44	8	PASS
	MCH	-22.98	-23.63	-20.28	8	PASS
	HCH	-22.86	-23.96	-20.36	8	PASS

C.4 6dB Bandwidth

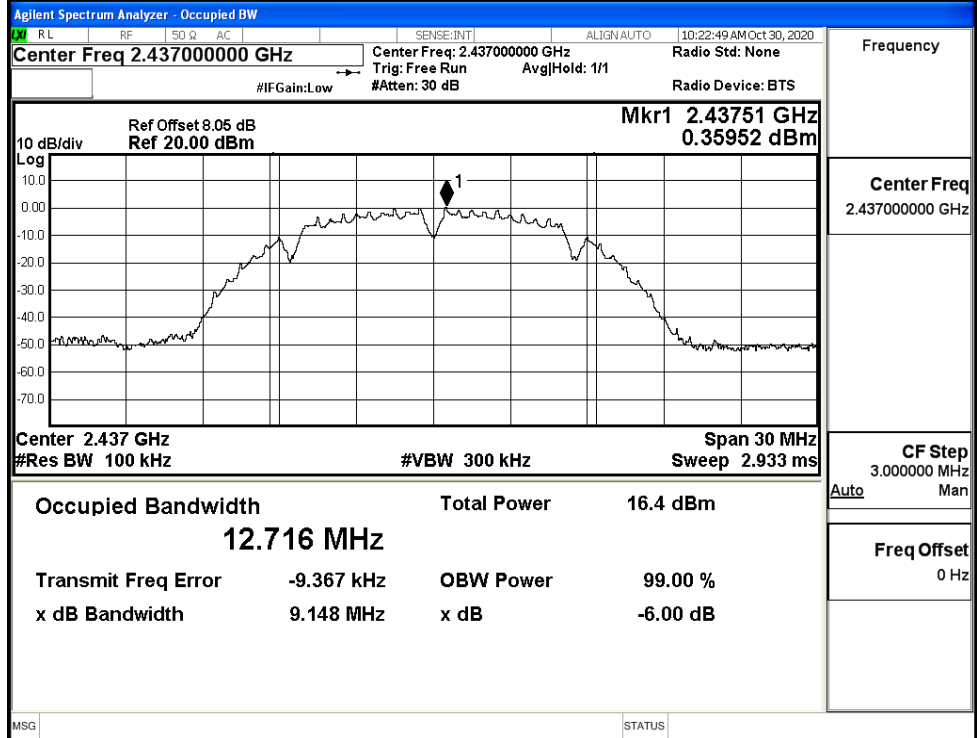
ANT 0

Mode	Channel	6dB Bandwidth [MHz]	Limit [MHz]	Verdict
11B	LCH	9.166	≥ 0.5	PASS
	MCH	9.148	≥ 0.5	PASS
	HCH	9.162	≥ 0.5	PASS
11G	LCH	15.43	≥ 0.5	PASS
	MCH	15.16	≥ 0.5	PASS
	HCH	15.13	≥ 0.5	PASS
11N20SISO	LCH	15.15	≥ 0.5	PASS
	MCH	15.14	≥ 0.5	PASS
	HCH	15.15	≥ 0.5	PASS
11N40SISO	LCH	35.16	≥ 0.5	PASS
	MCH	35.16	≥ 0.5	PASS
	HCH	35.17	≥ 0.5	PASS

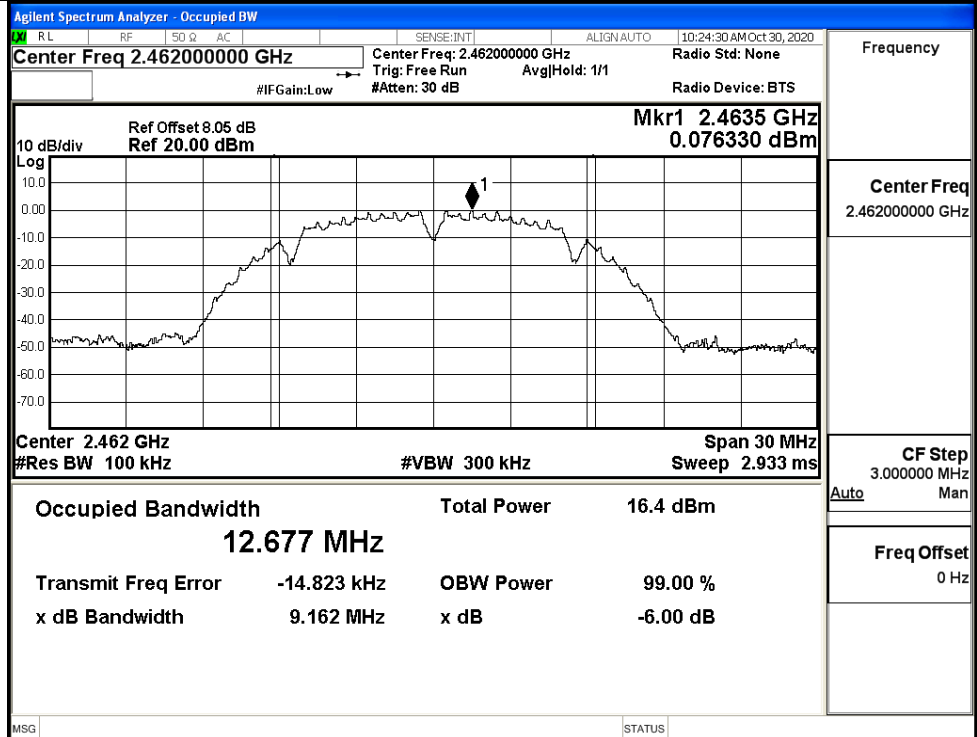
Test Graphs



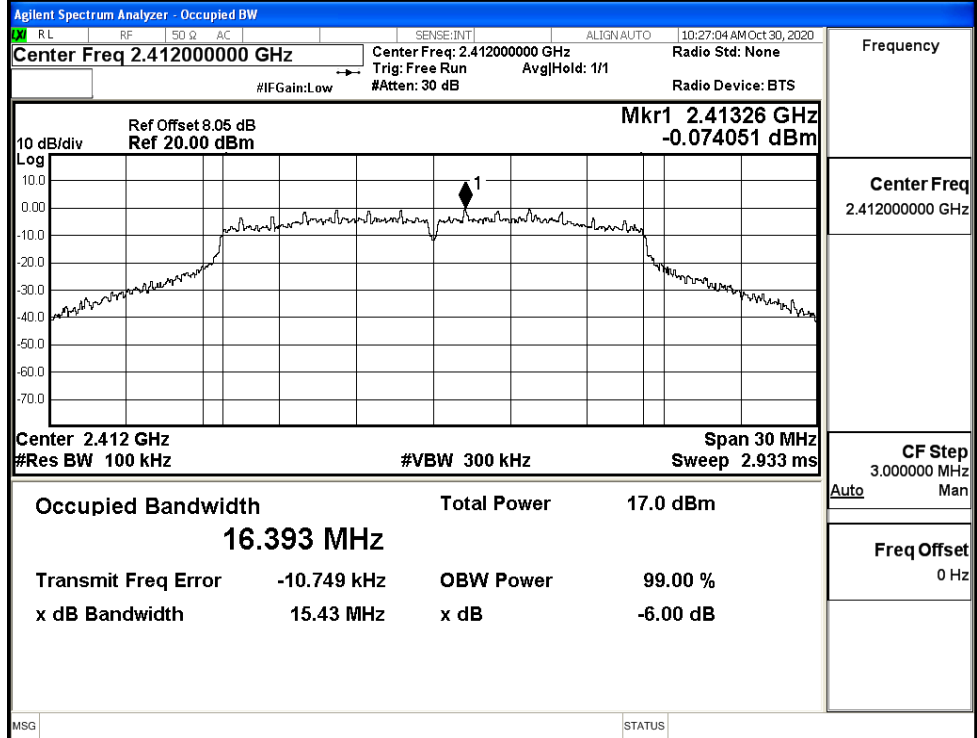
11B/MCH



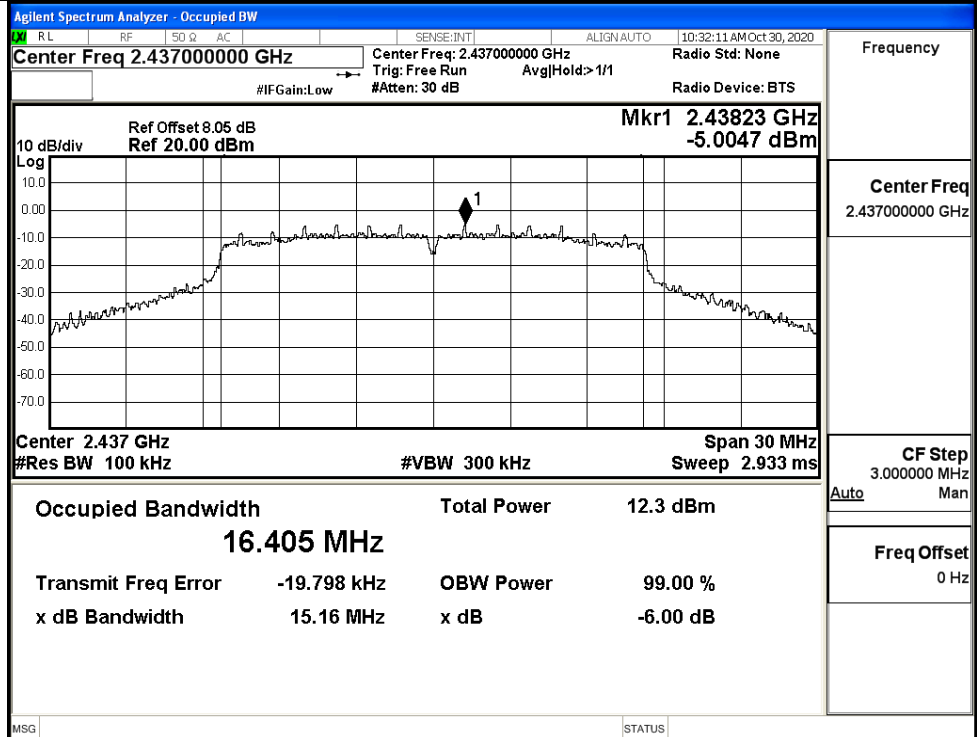
11B/HCH



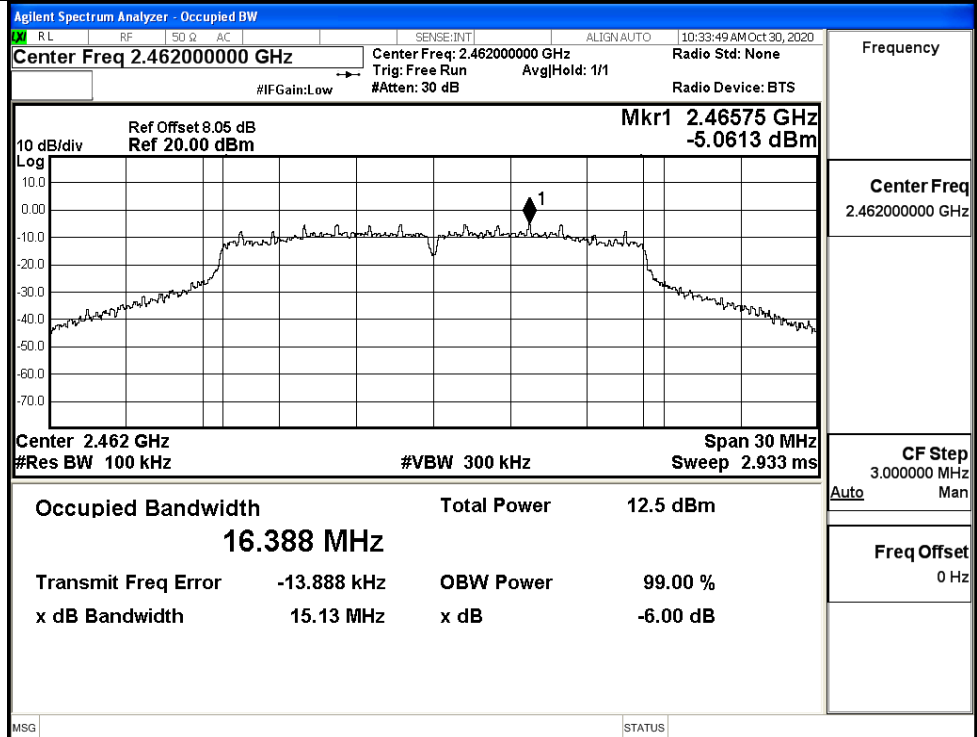
11G/LCH



11G/MCH



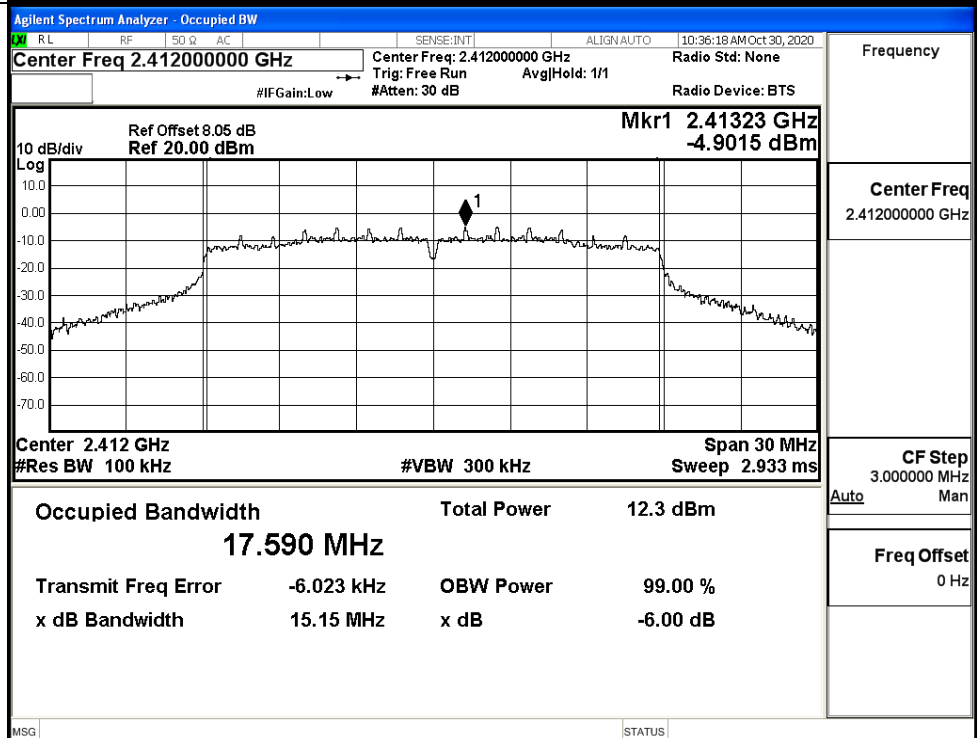
11G/HCH



Frequency

Center Freq
2.46200000 GHzCF Step
3.000000 MHz
Auto ManFreq Offset
0 Hz

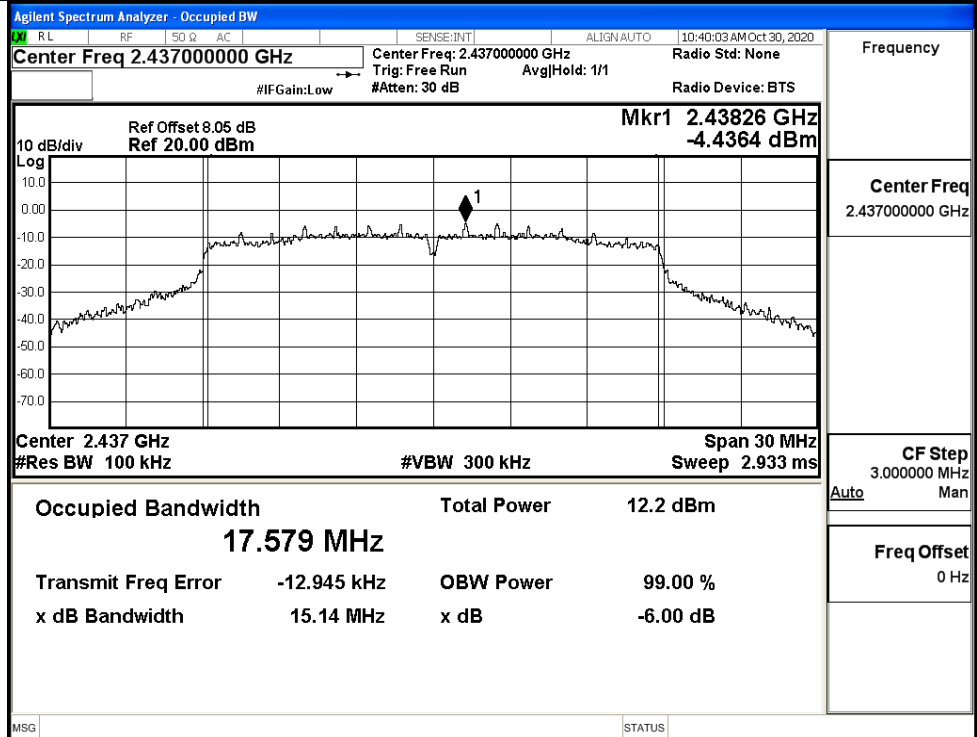
11N20SISO/LCH



Frequency

Center Freq
2.41200000 GHzCF Step
3.000000 MHz
Auto ManFreq Offset
0 Hz

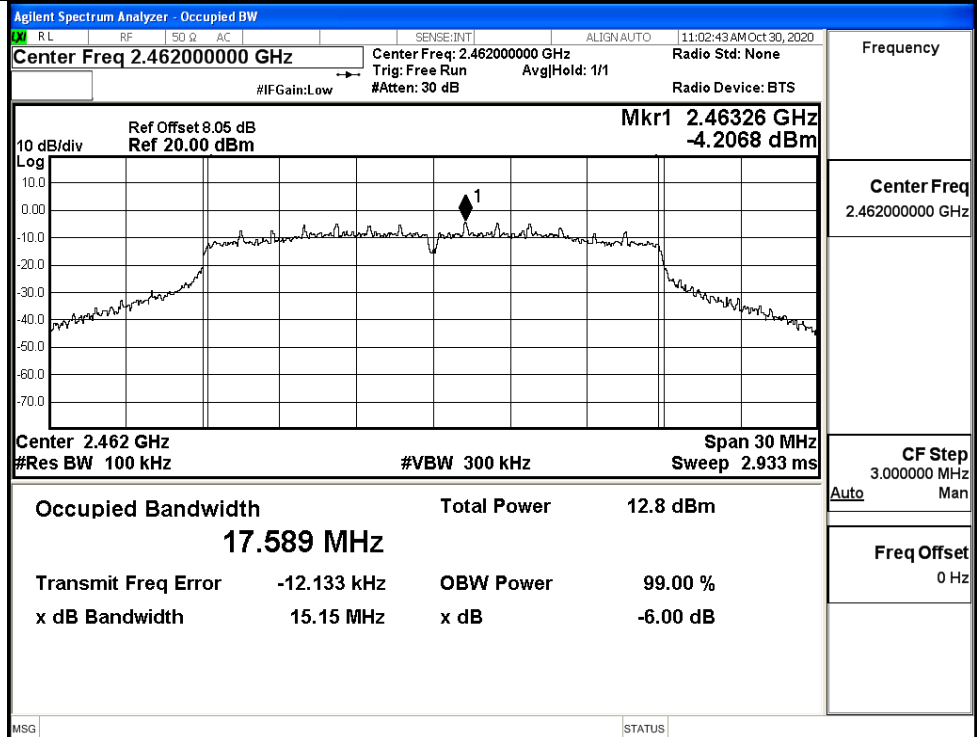
11N20SISO/MCH



Frequency

Center Freq
2.437000000 GHzCF Step
3.000000 MHz
Auto ManFreq Offset
0 Hz

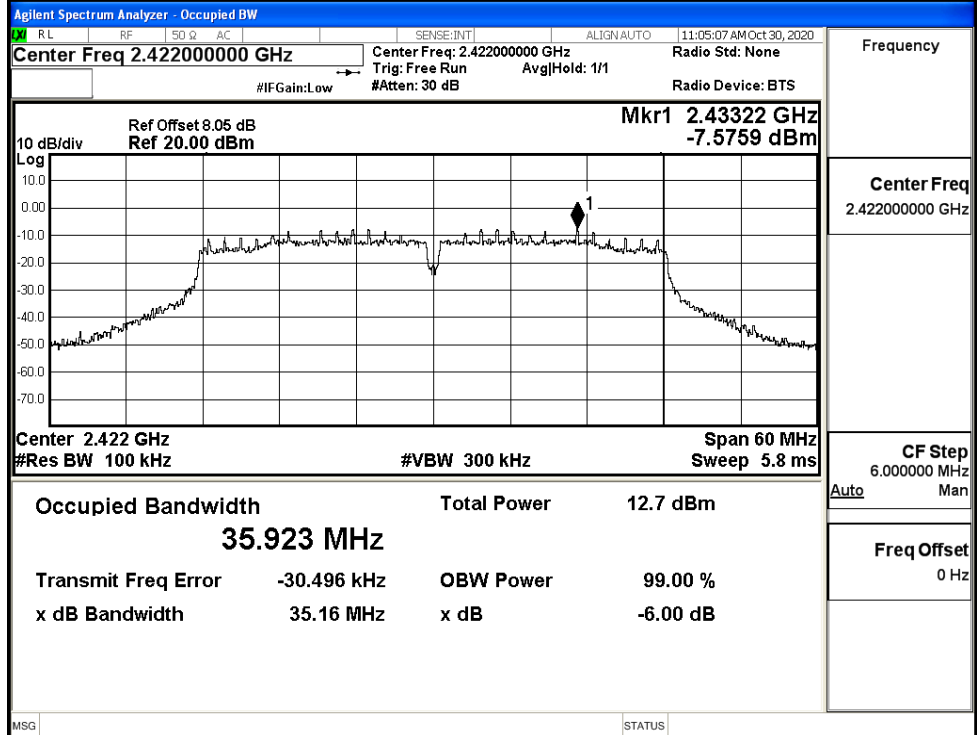
11N20SISO/HCH



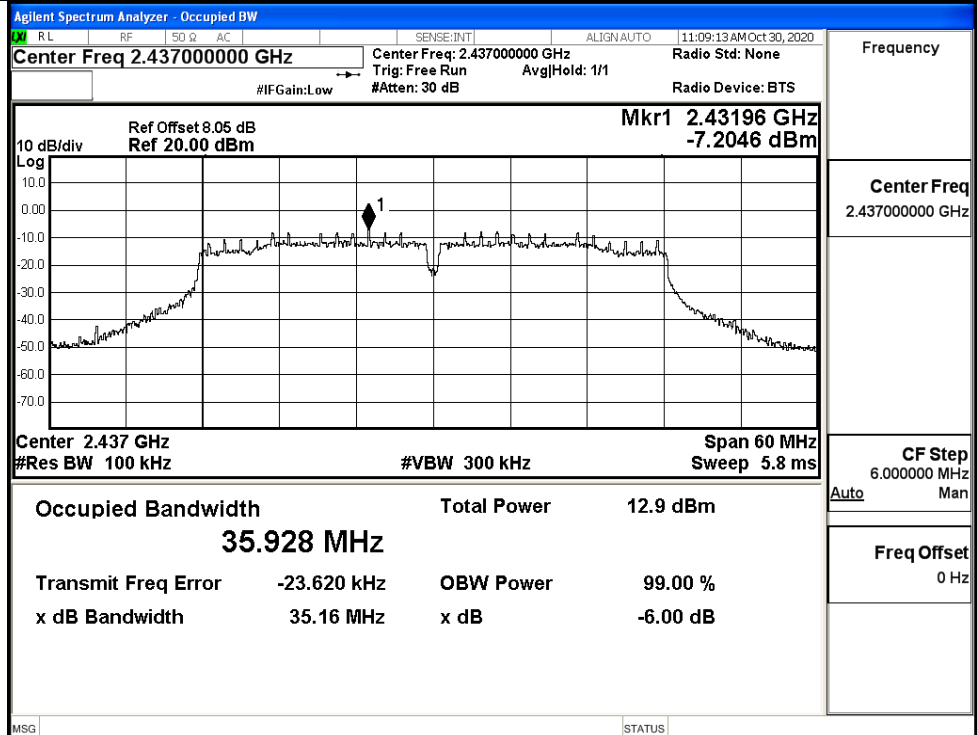
Frequency

Center Freq
2.462000000 GHzCF Step
3.000000 MHz
Auto ManFreq Offset
0 Hz

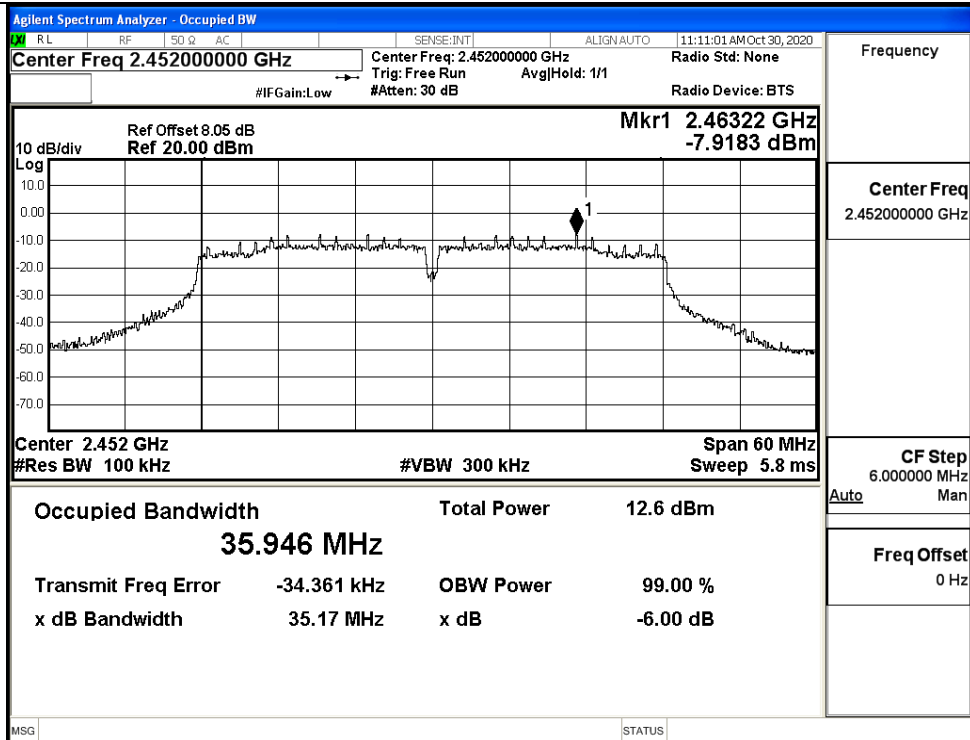
11N40SISO/LCH



11N40SISO/MCH



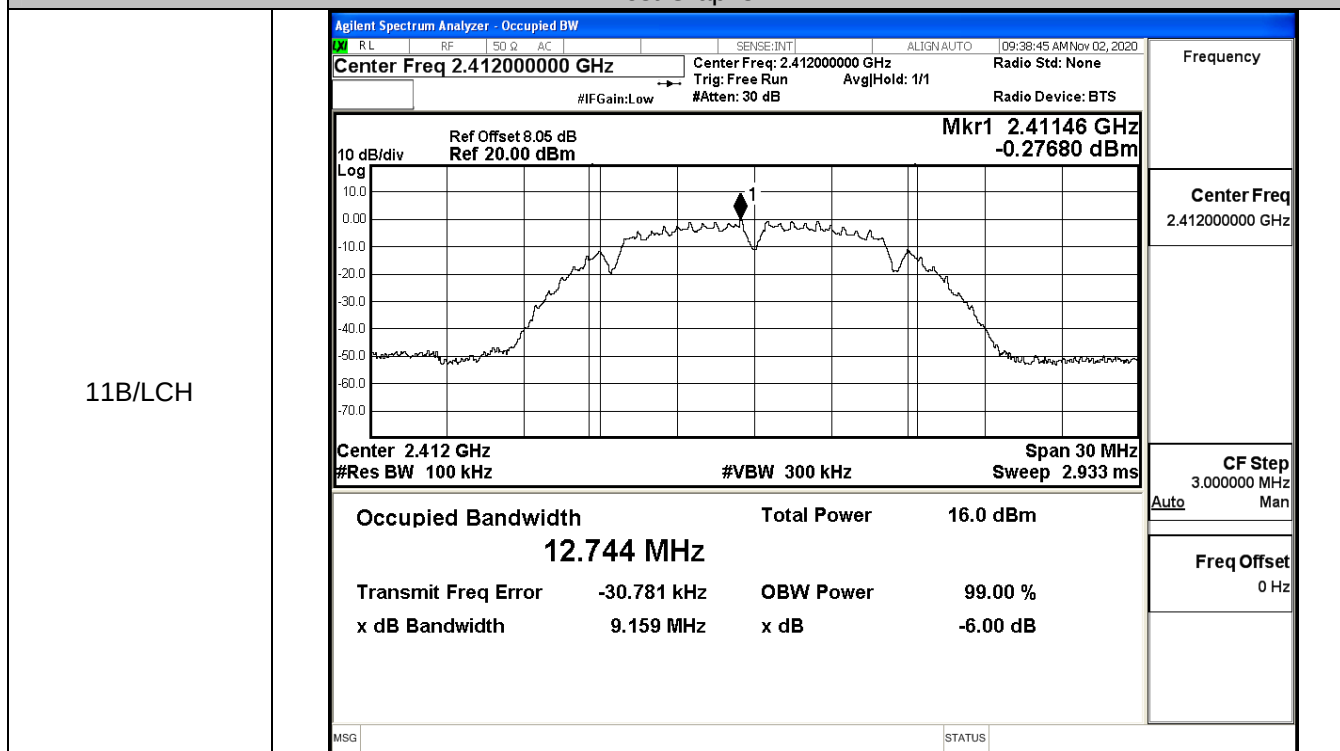
11N40SISO/HCH



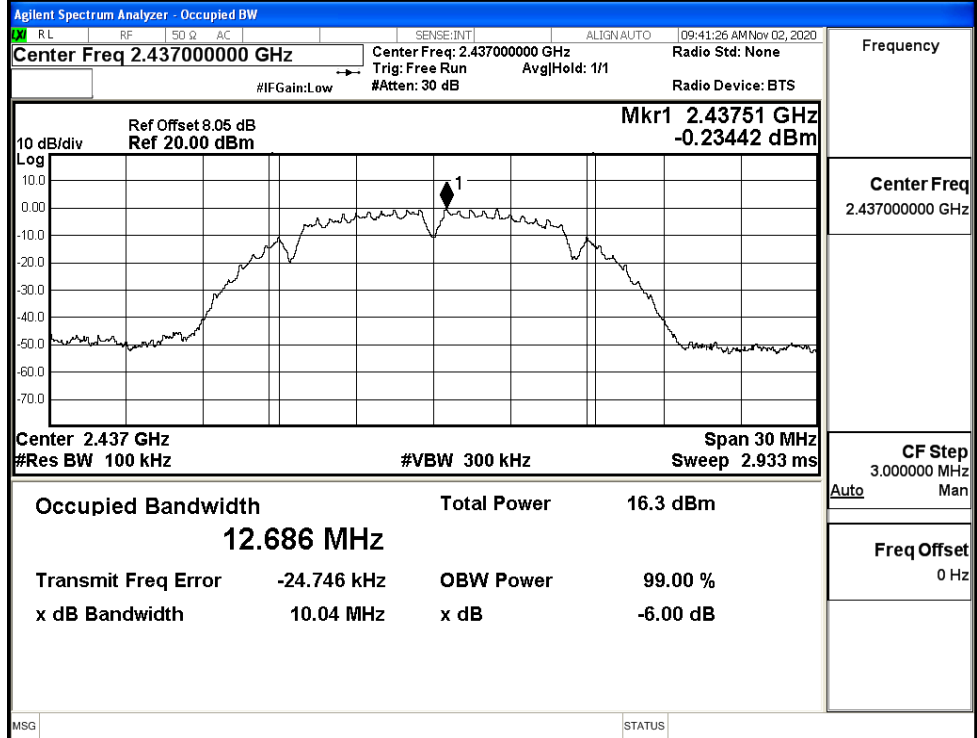
ANT 1

Mode	Channel	6dB Bandwidth [MHz]	Limit [MHz]	Verdict
11B	LCH	9.159	≥ 0.5	PASS
	MCH	10.04	≥ 0.5	PASS
	HCH	9.134	≥ 0.5	PASS
11G	LCH	15.15	≥ 0.5	PASS
	MCH	15.14	≥ 0.5	PASS
	HCH	15.17	≥ 0.5	PASS
11N20SISO	LCH	15.15	≥ 0.5	PASS
	MCH	15.07	≥ 0.5	PASS
	HCH	15.34	≥ 0.5	PASS
11N40SISO	LCH	35.17	≥ 0.5	PASS
	MCH	35.15	≥ 0.5	PASS
	HCH	35.18	≥ 0.5	PASS

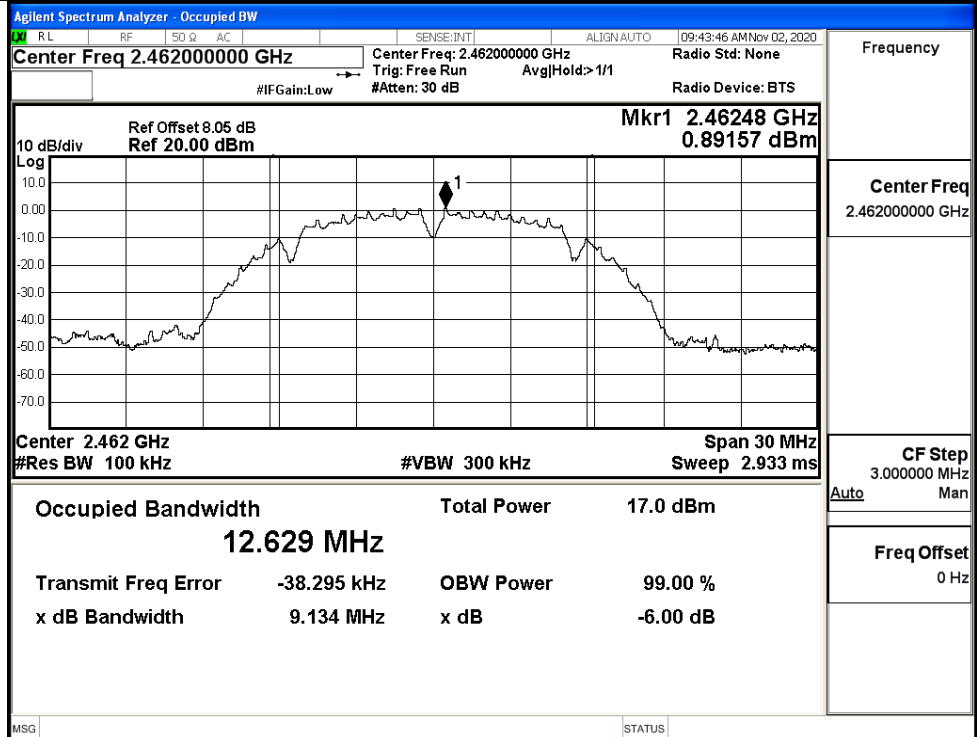
Test Graphs



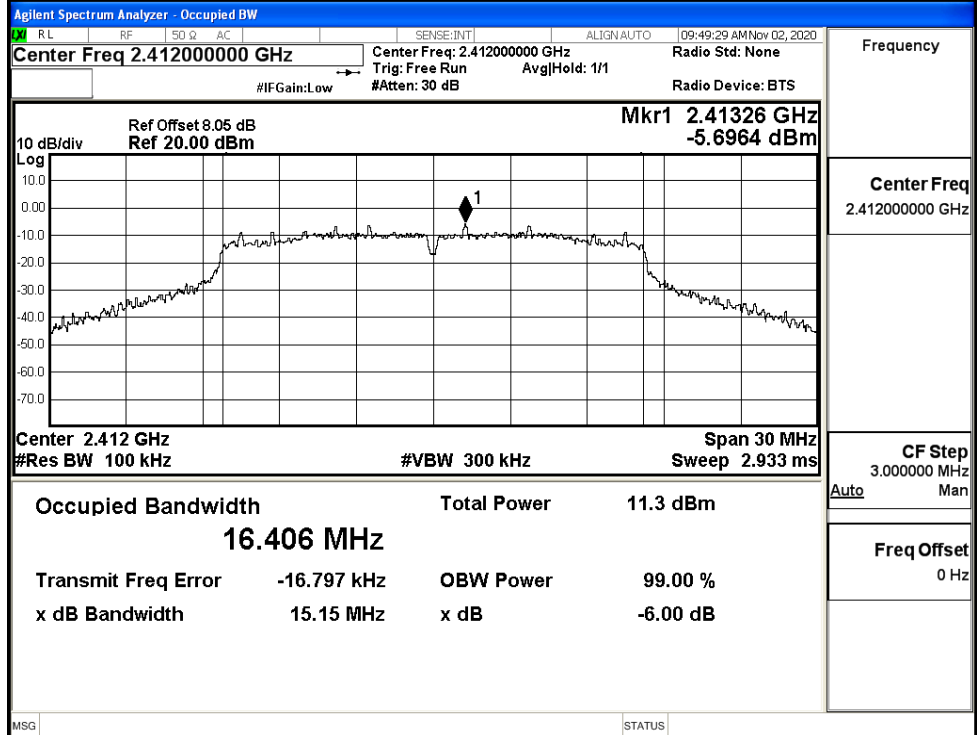
11B/MCH



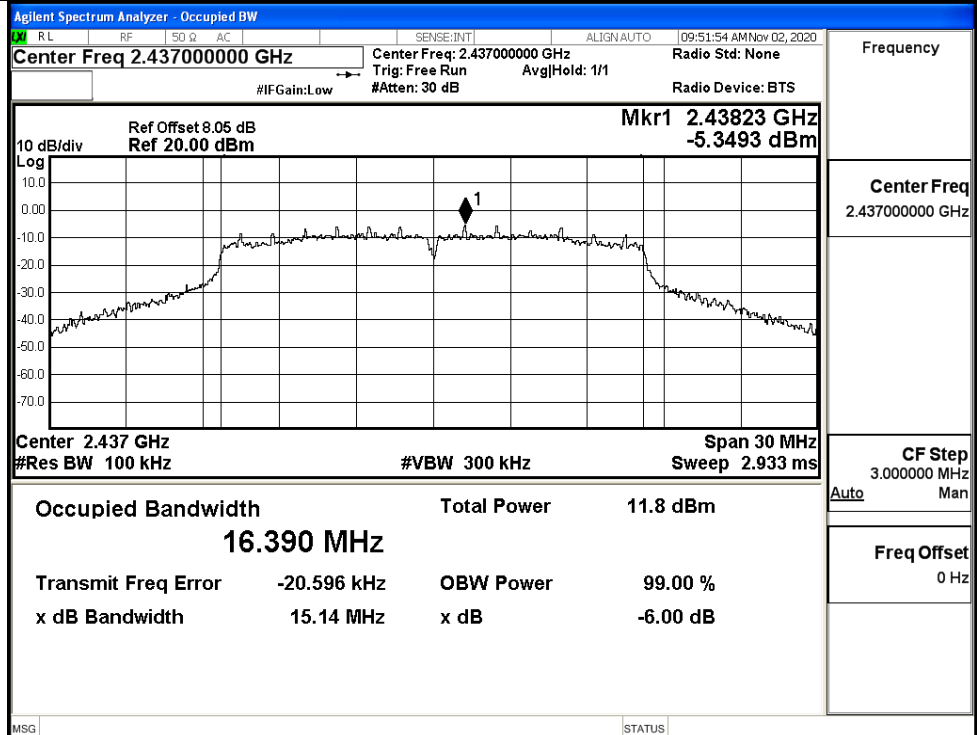
11B/HCH



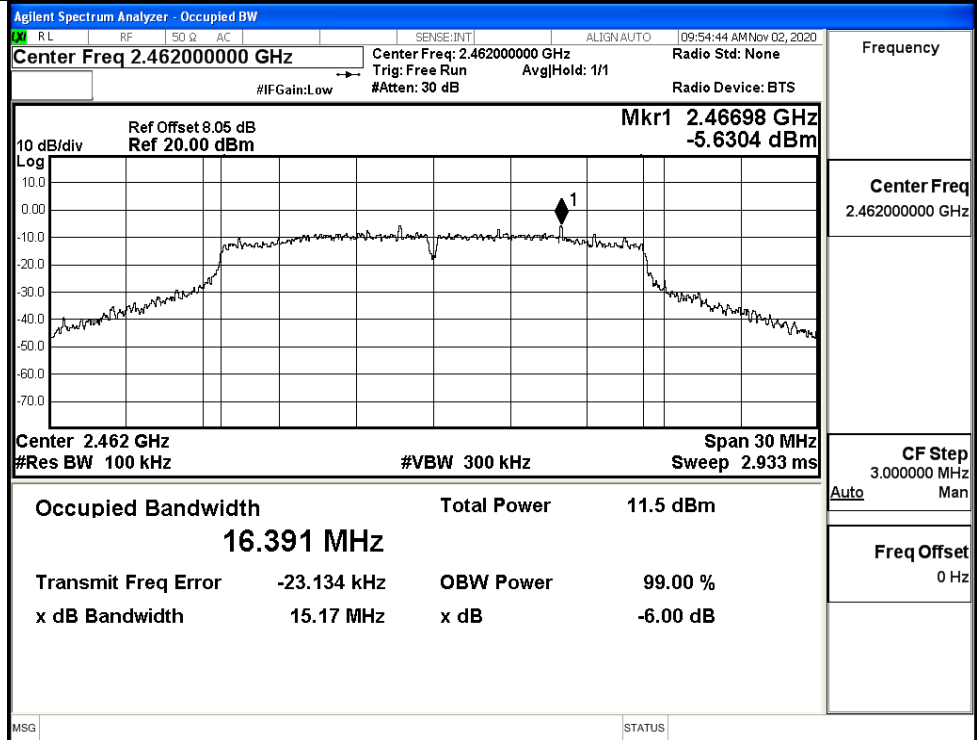
11G/LCH



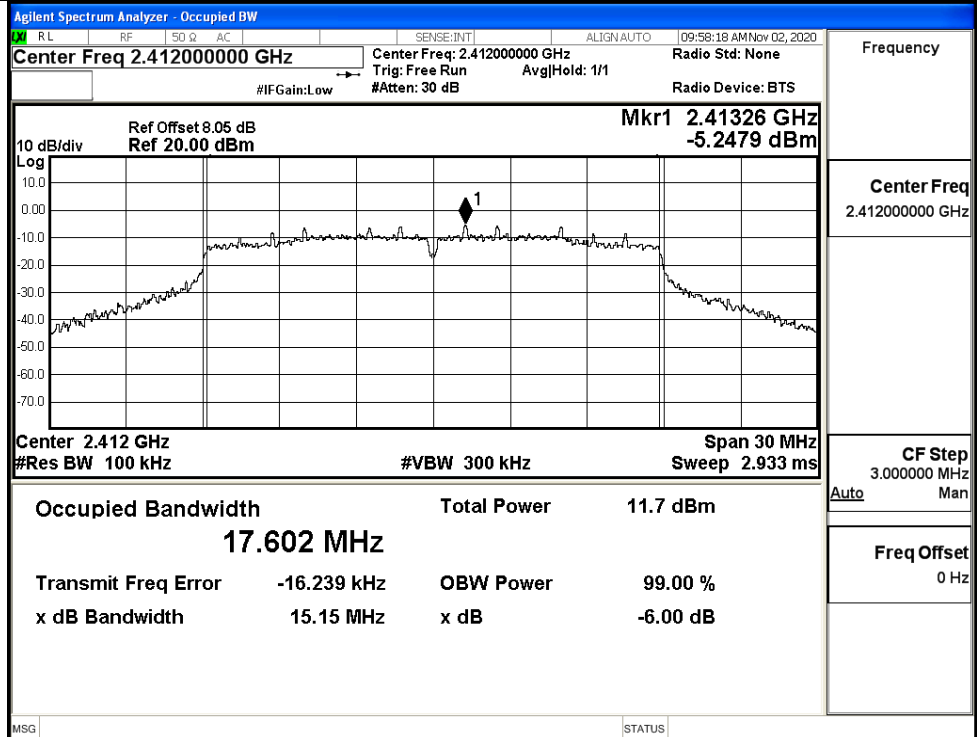
11G/MCH



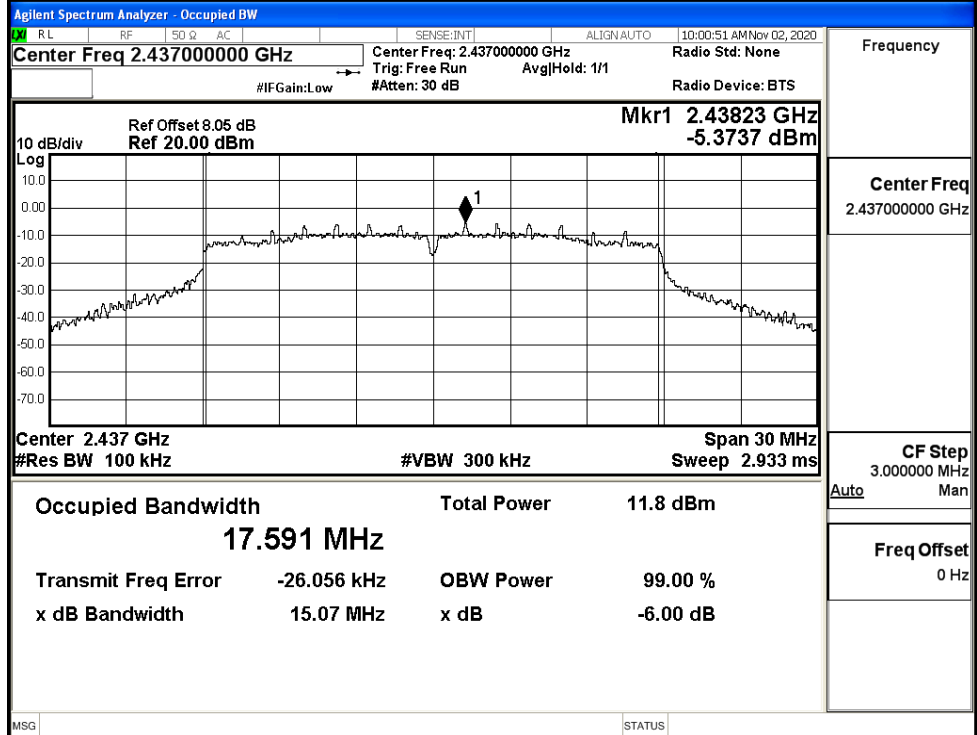
11G/HCH



11N20SISO/LCH



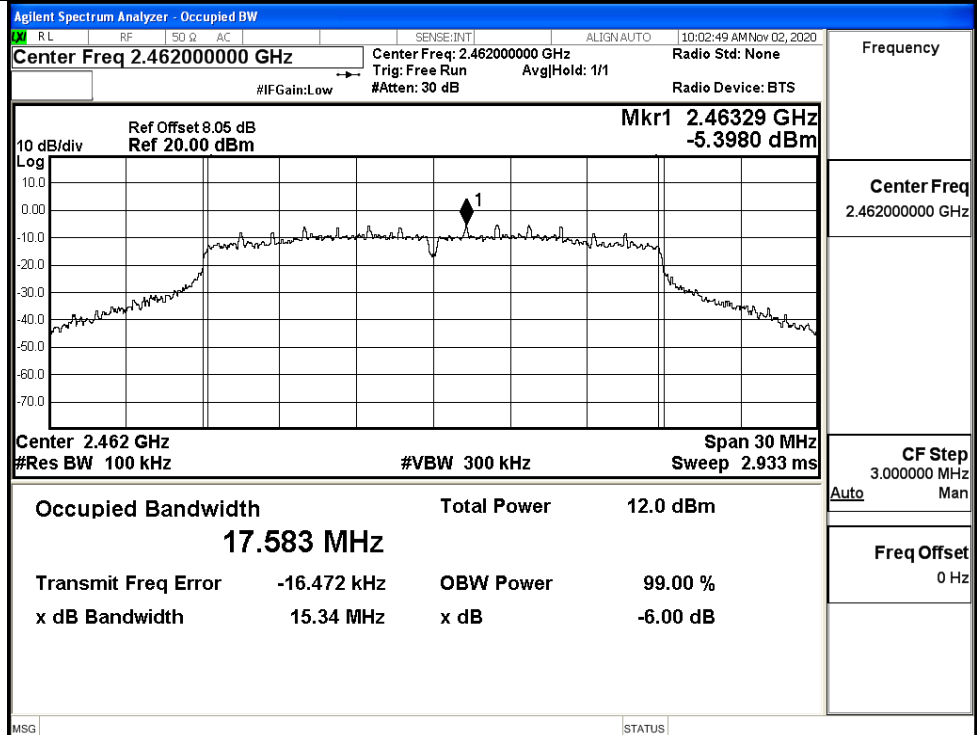
11N20SISO/MCH



Frequency

Center Freq
2.43700000 GHzCF Step
3.000000 MHz
Auto ManFreq Offset
0 Hz

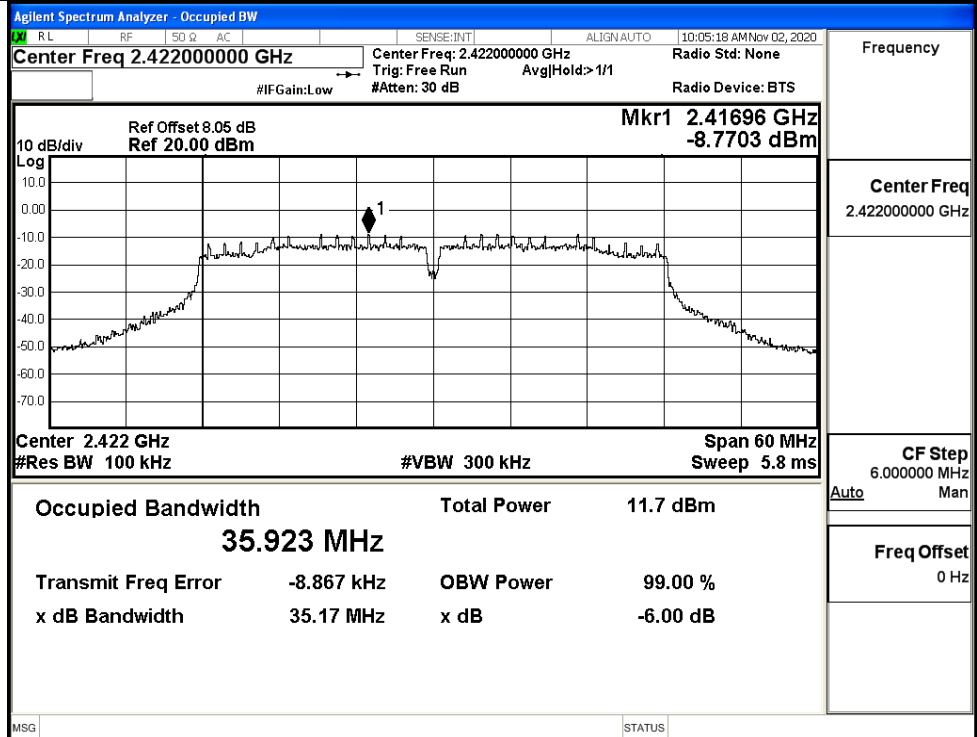
11N20SISO/HCH



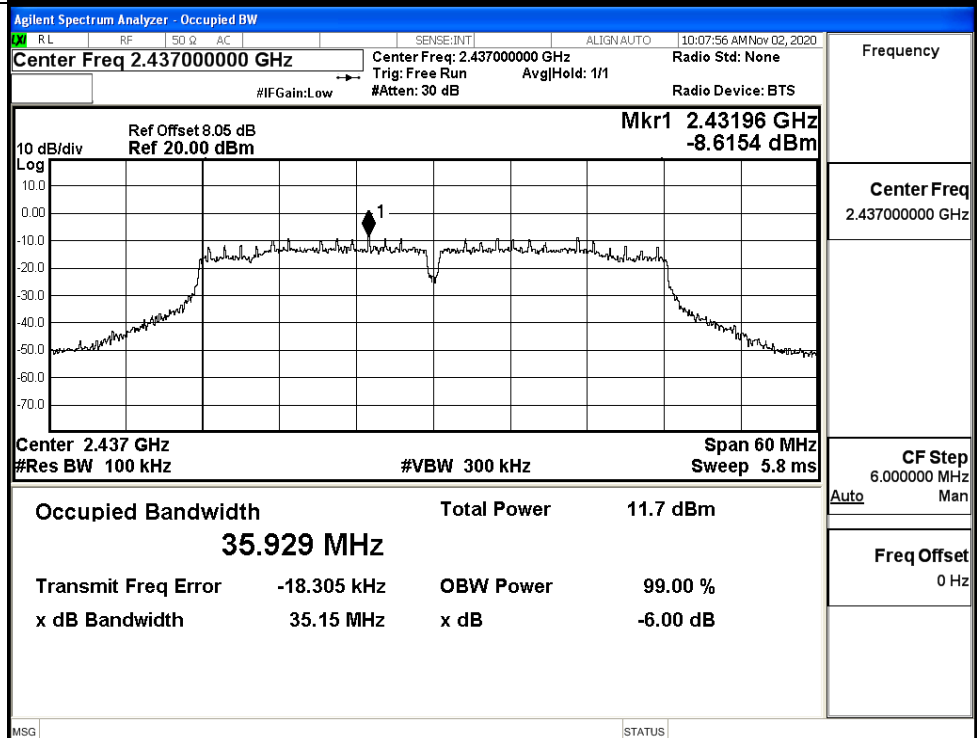
Frequency

Center Freq
2.46200000 GHzCF Step
3.000000 MHz
Auto ManFreq Offset
0 Hz

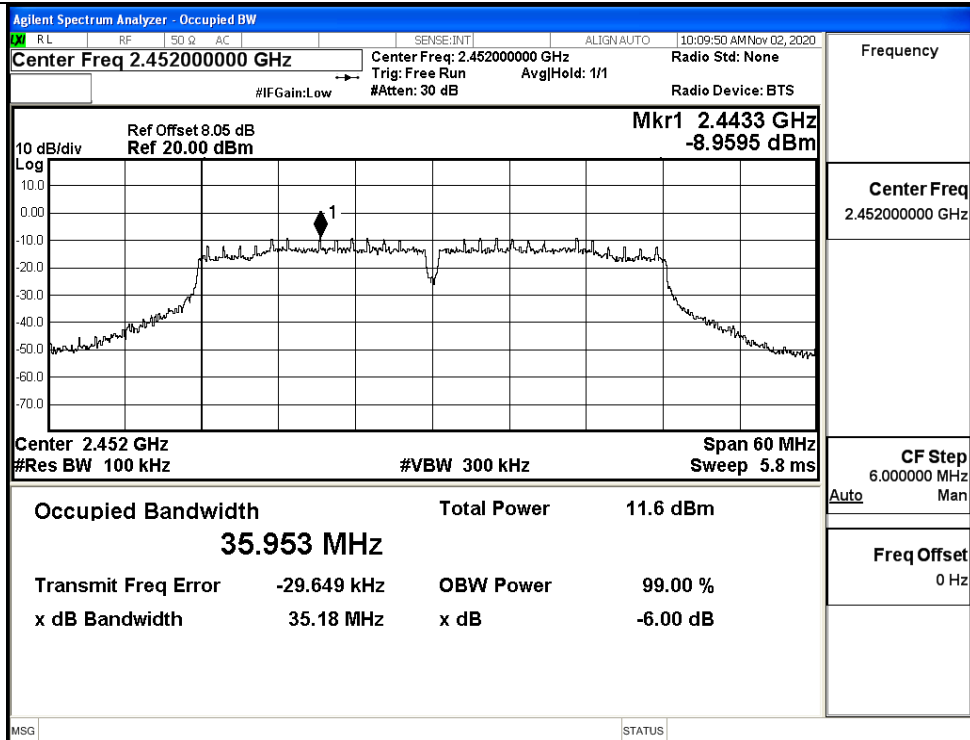
11N40SISO/LCH



11N40SISO/MCH



11N40SISO/HCH



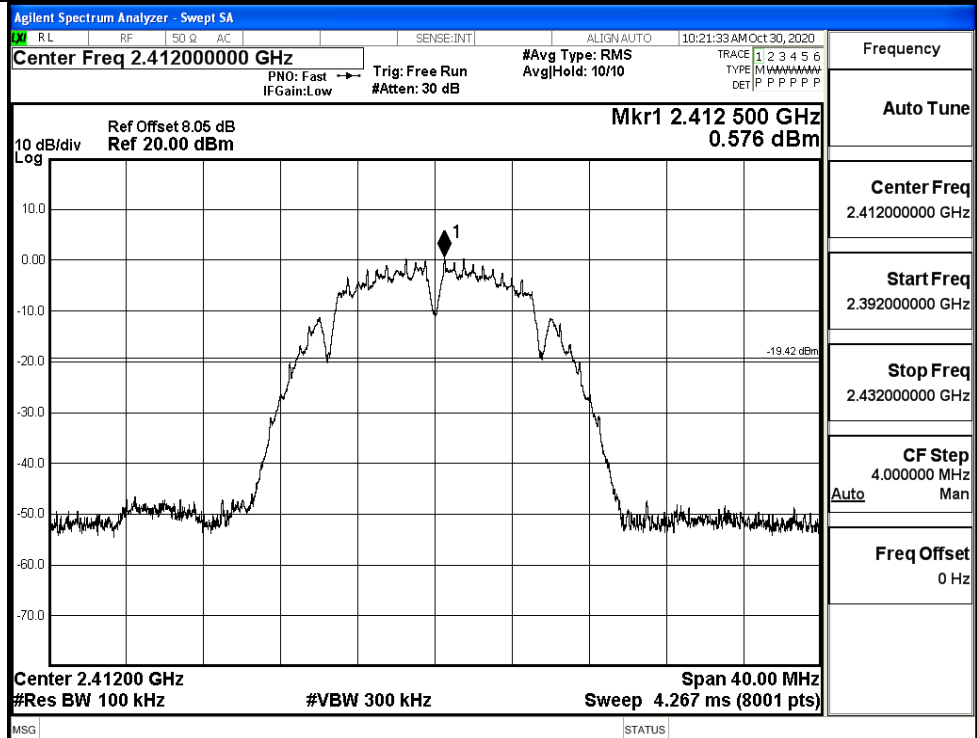
C.5 RF Conducted Spurious Emissions

ANT 0

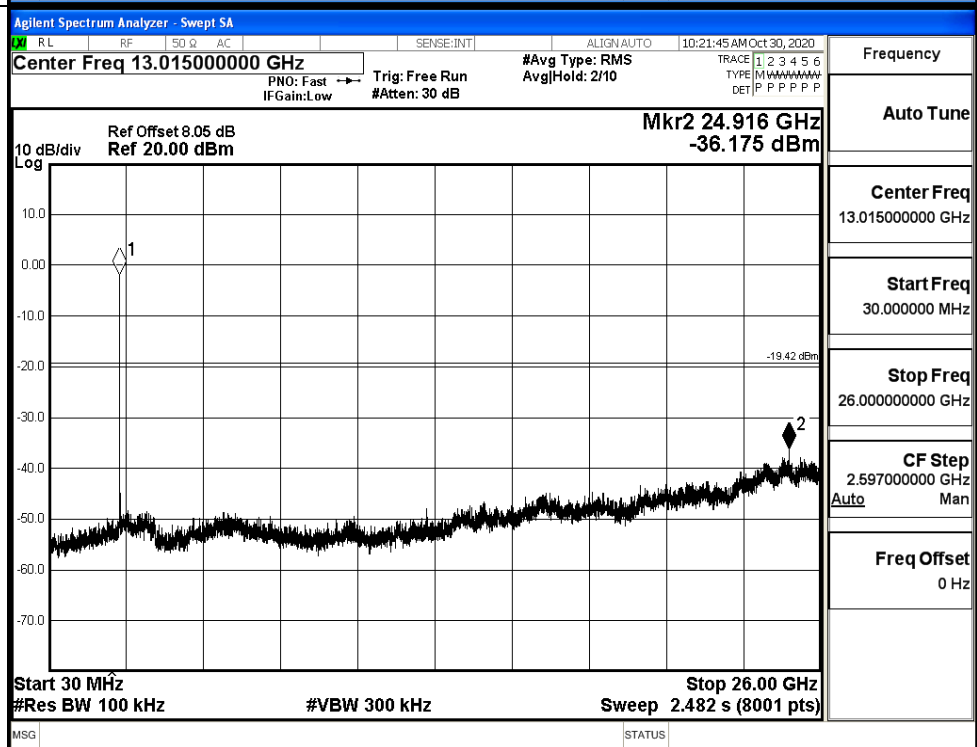
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
11B	LCH	0.576	-36.175	-19.424	PASS
	MCH	0.328	-37.994	-19.672	PASS
	HCH	-0.449	-37.739	-20.449	PASS
11G	LCH	-5.292	-37.112	-25.292	PASS
	MCH	-4.938	-37.989	-24.938	PASS
	HCH	-4.758	-37.549	-24.758	PASS
11N20 SISO	LCH	-5.267	-37.522	-25.267	PASS
	MCH	-5.512	-37.539	-25.512	PASS
	HCH	-4.269	-36.577	-24.269	PASS
11N40 SISO	LCH	-8.003	-37.832	-28.003	PASS
	MCH	-7.794	-37.786	-27.794	PASS
	HCH	-7.762	-37.654	-27.762	PASS

11B LCH Graphs

Pref/11B/LCH

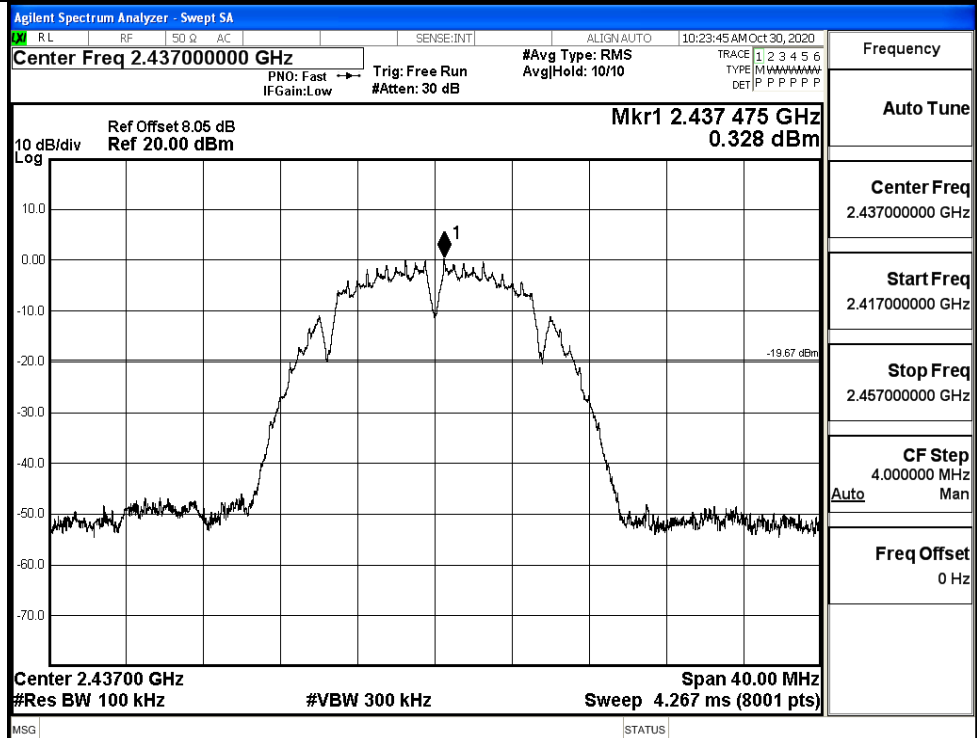


Puw/11B/LCH

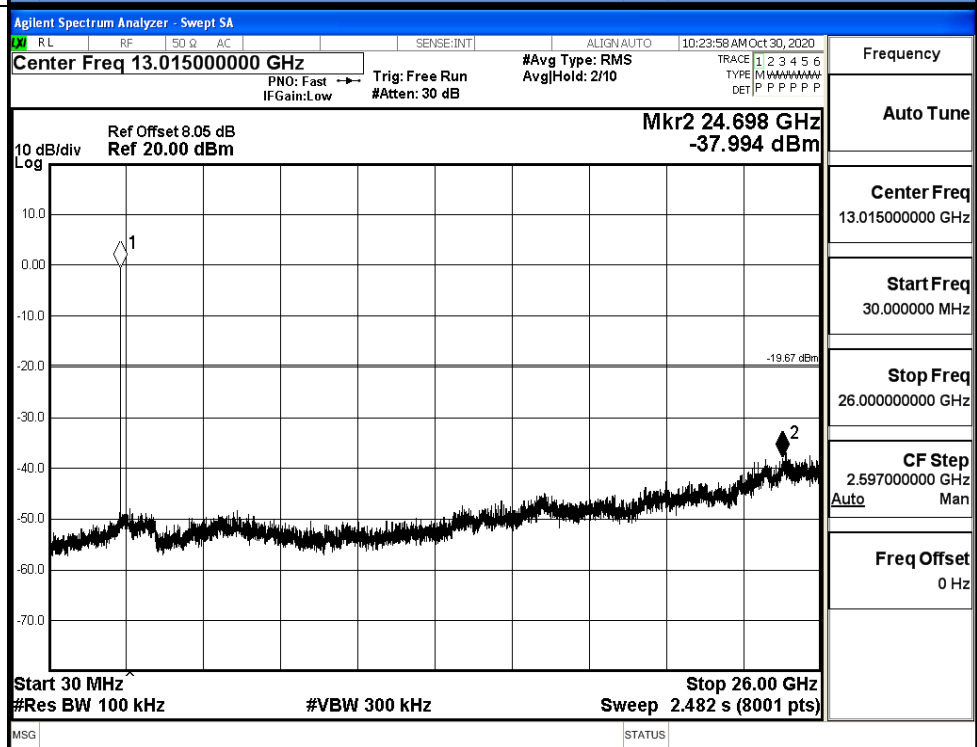


11B MCH Graphs

Pref/11B/MCH

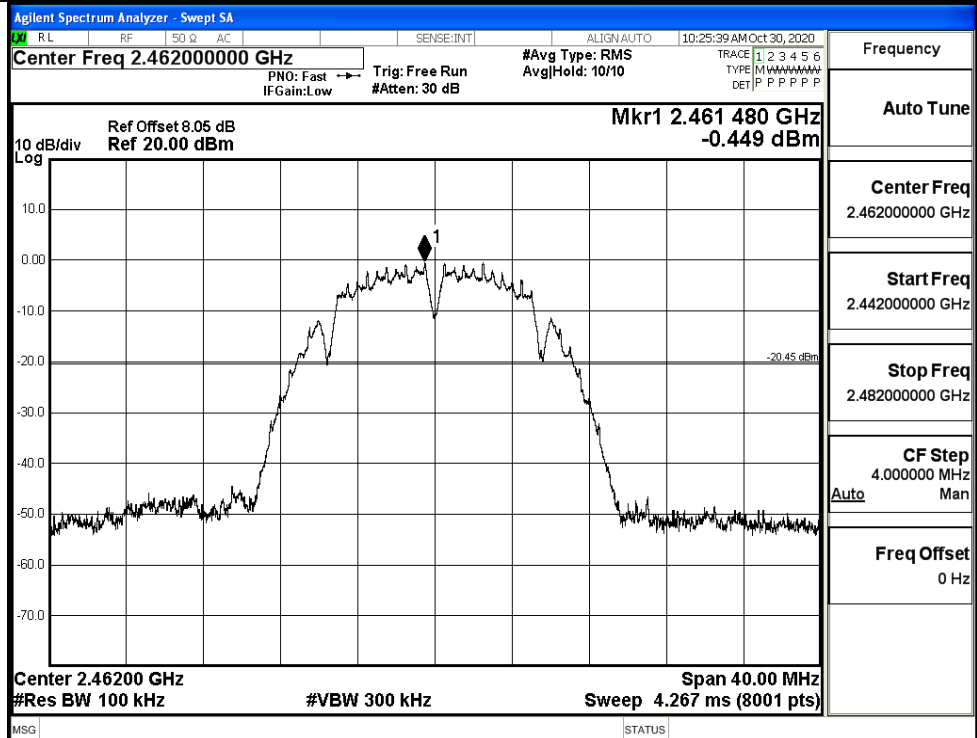


Puw/11B/MCH

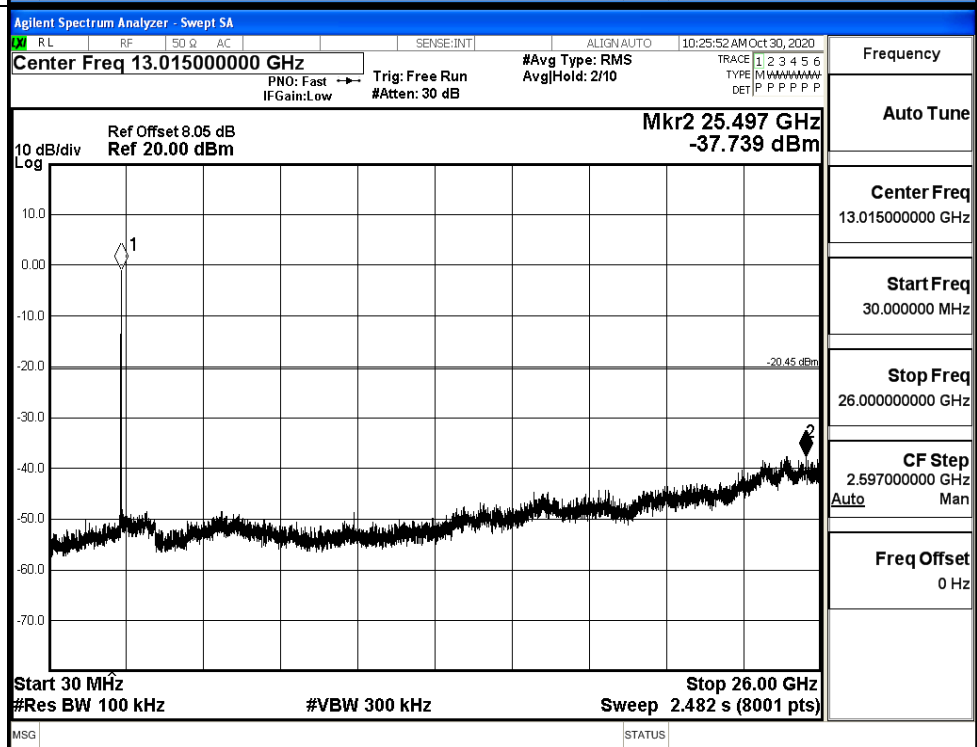


11B HCH Graphs

Pref/11B/HCH

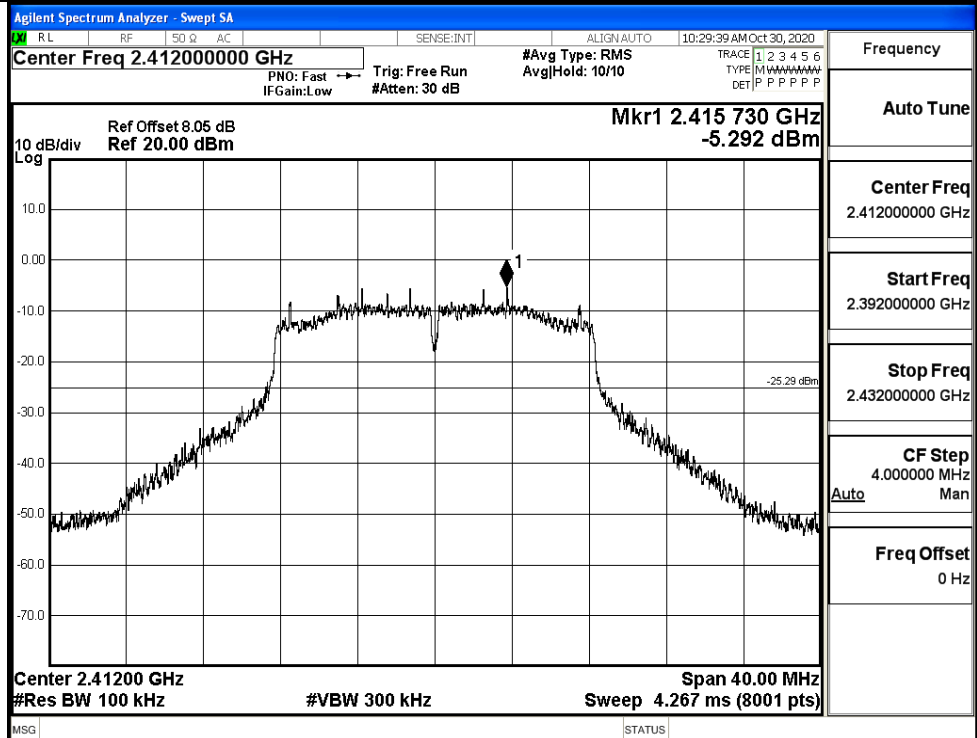


Puw/11B/HCH

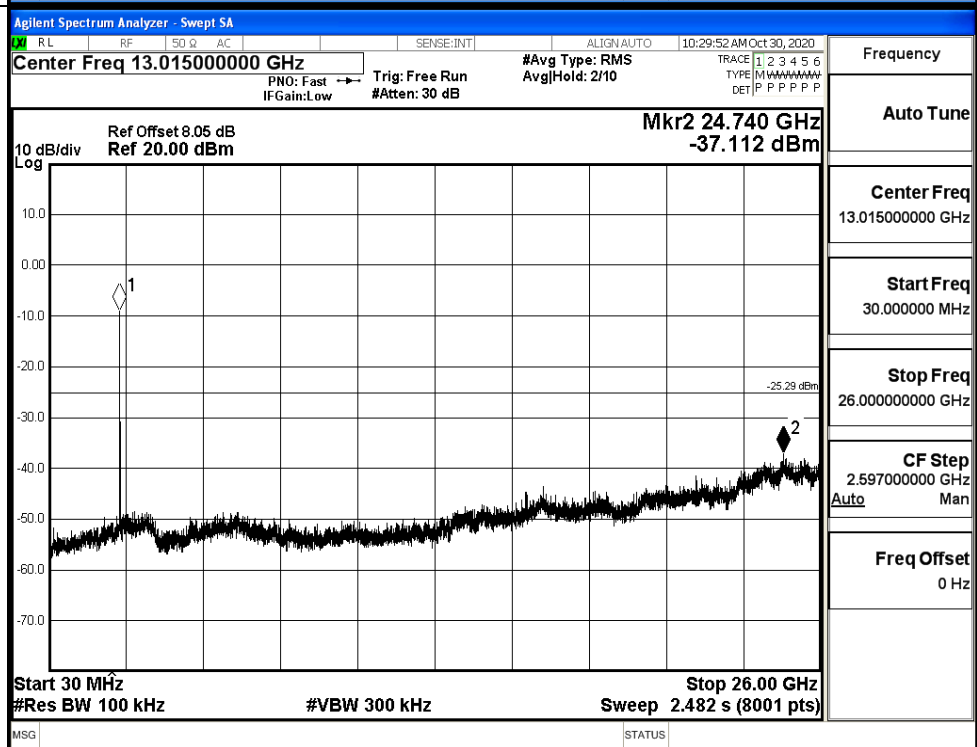


11G_LCH_Graphs

Pref/11G/LCH

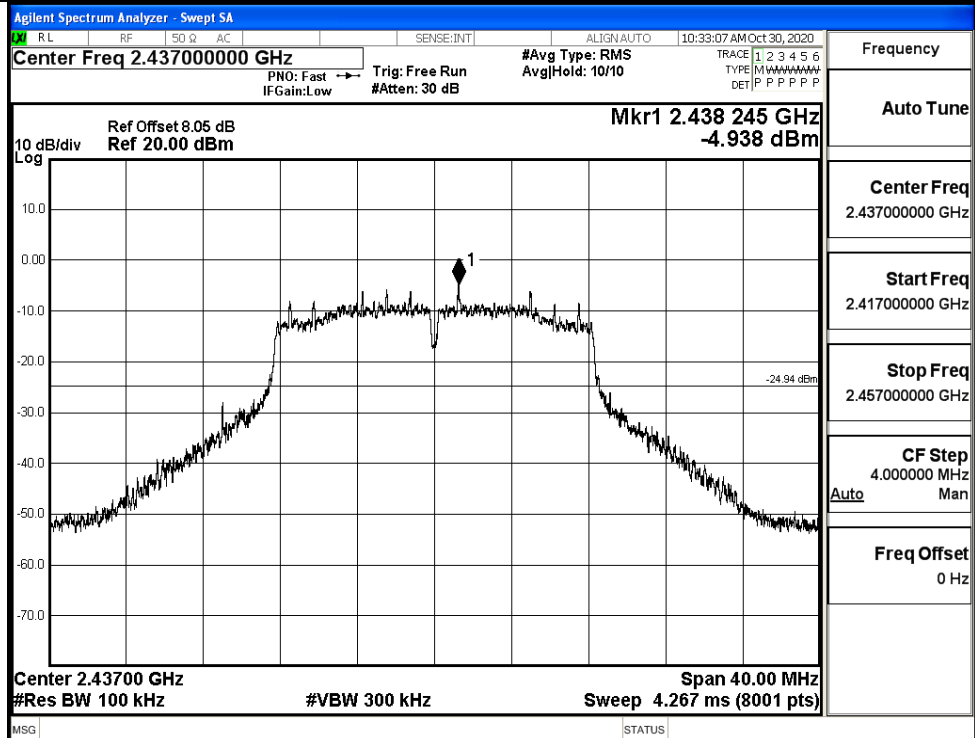


Puw/11G/LCH

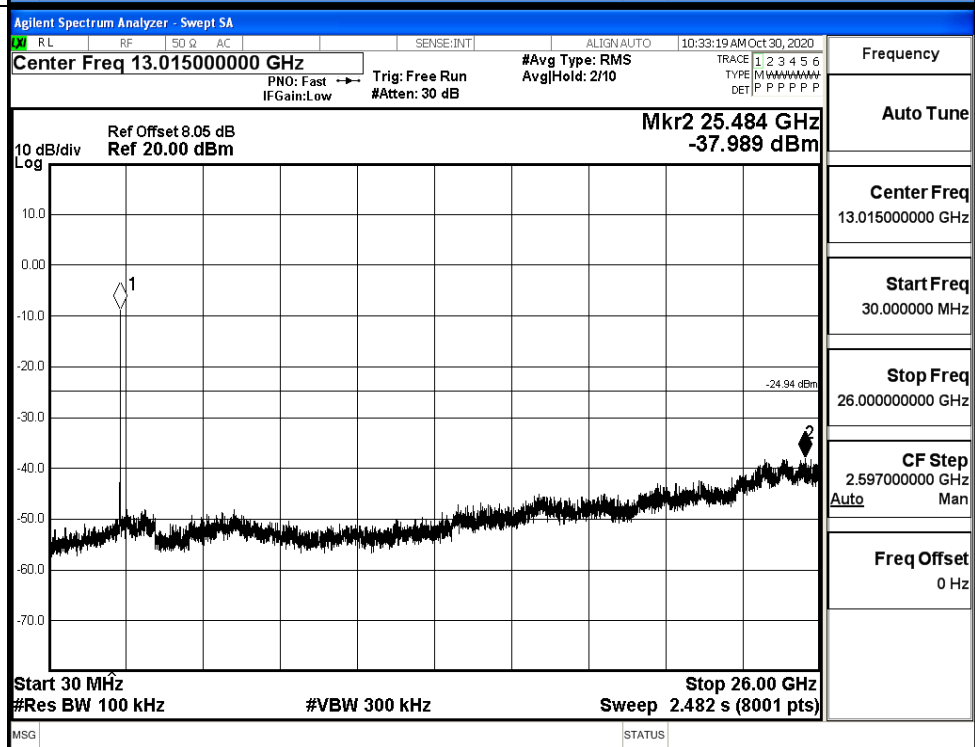


11G MCH Graphs

Pref/11G/MCH

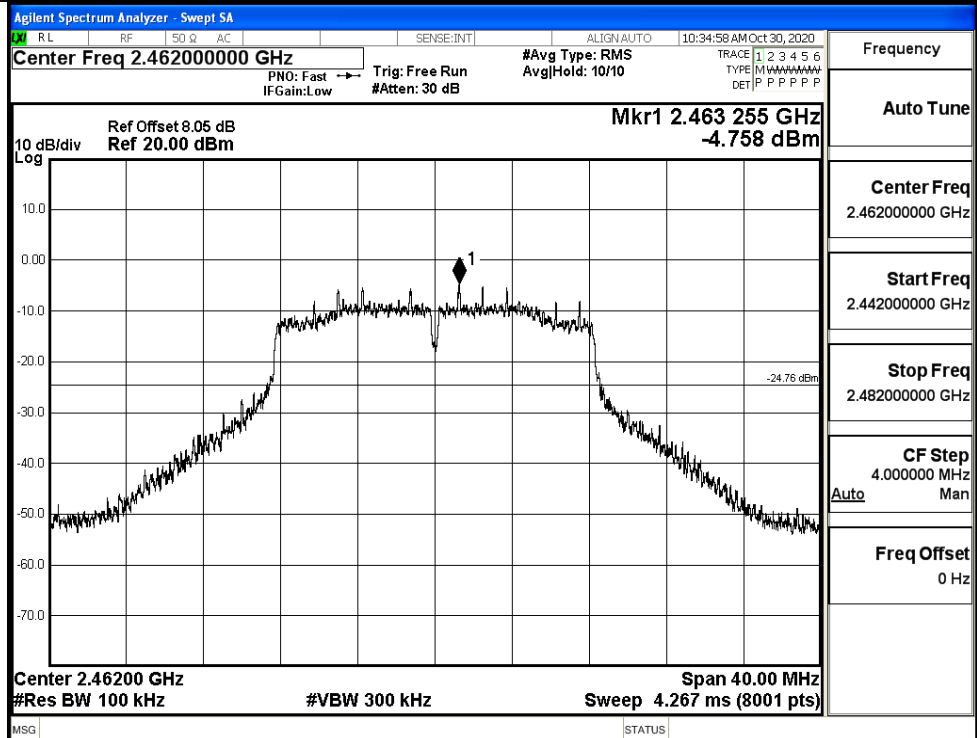


Puw/11G/MCH

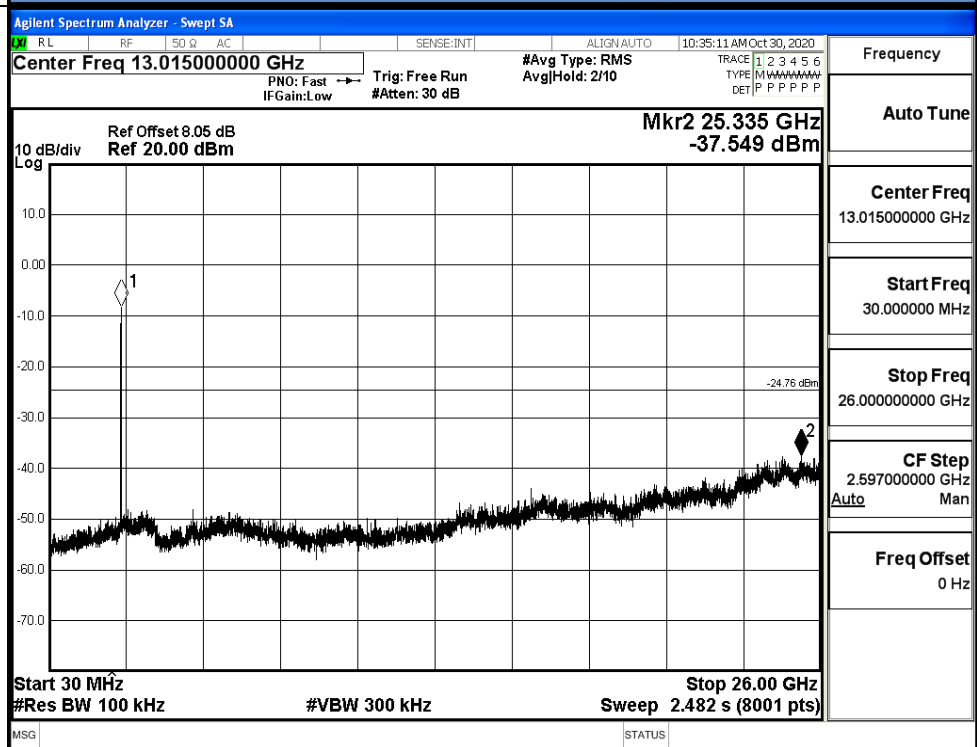


11G HCH Graphs

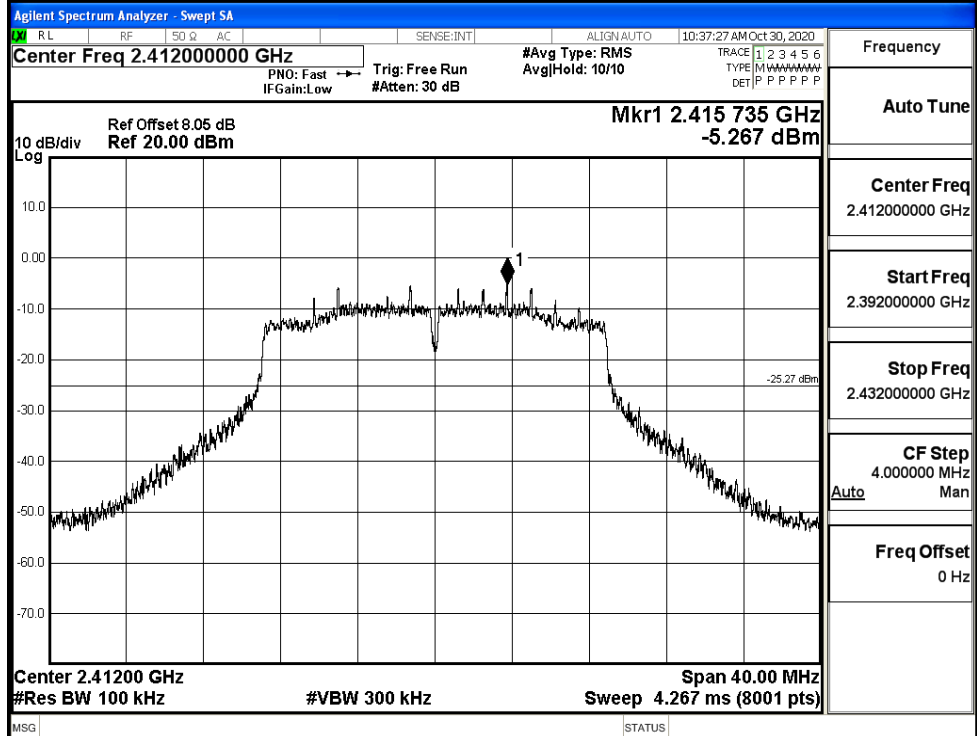
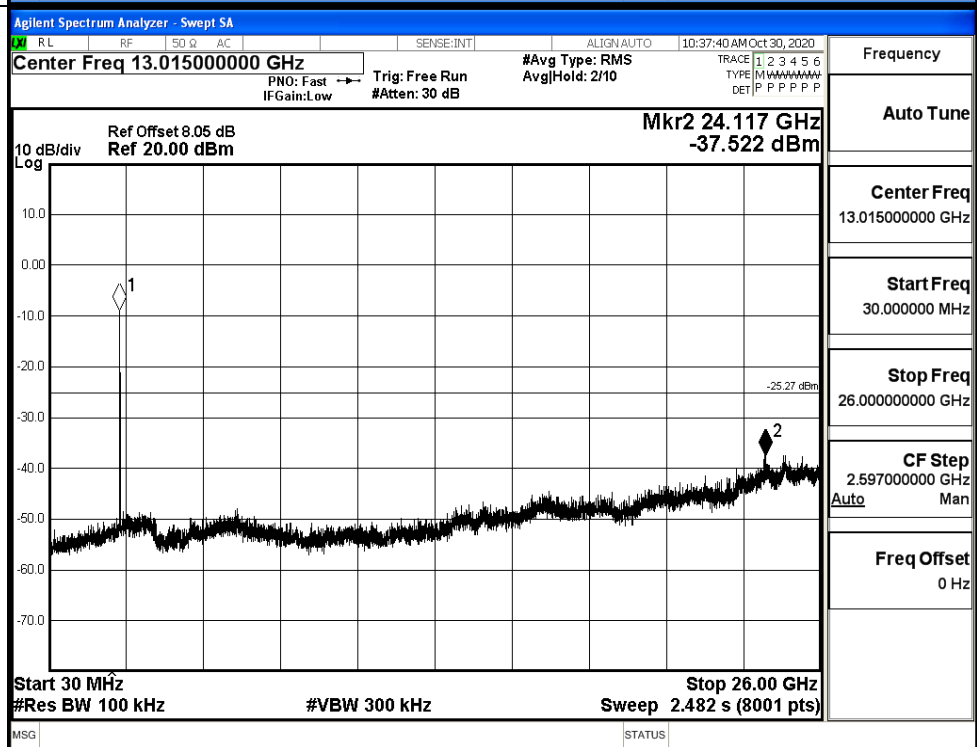
Pref/11G/HCH



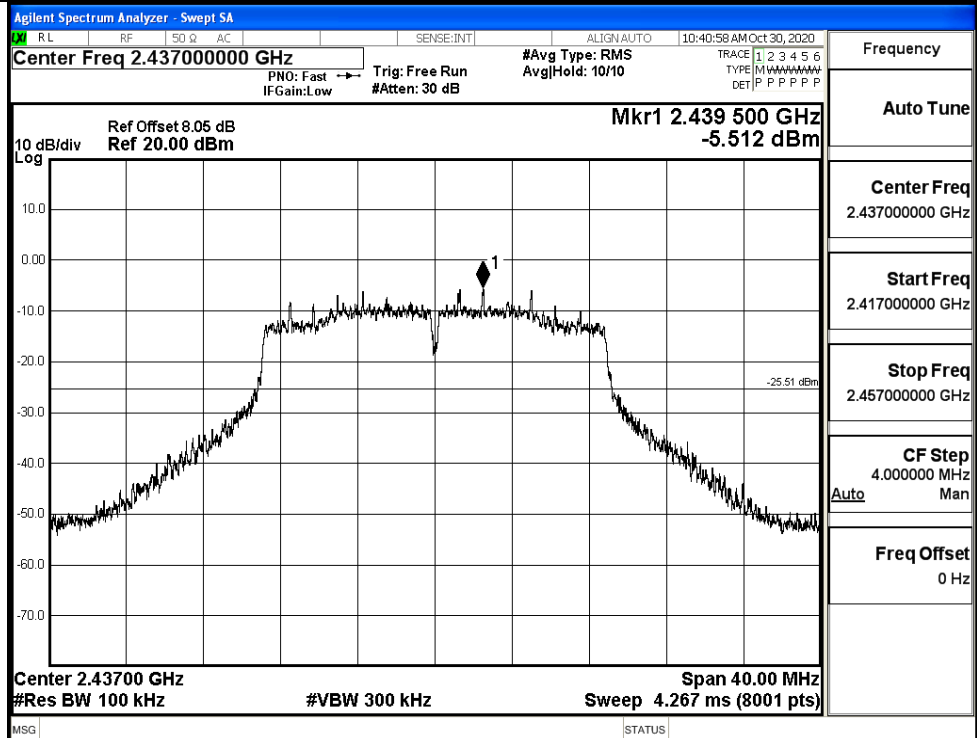
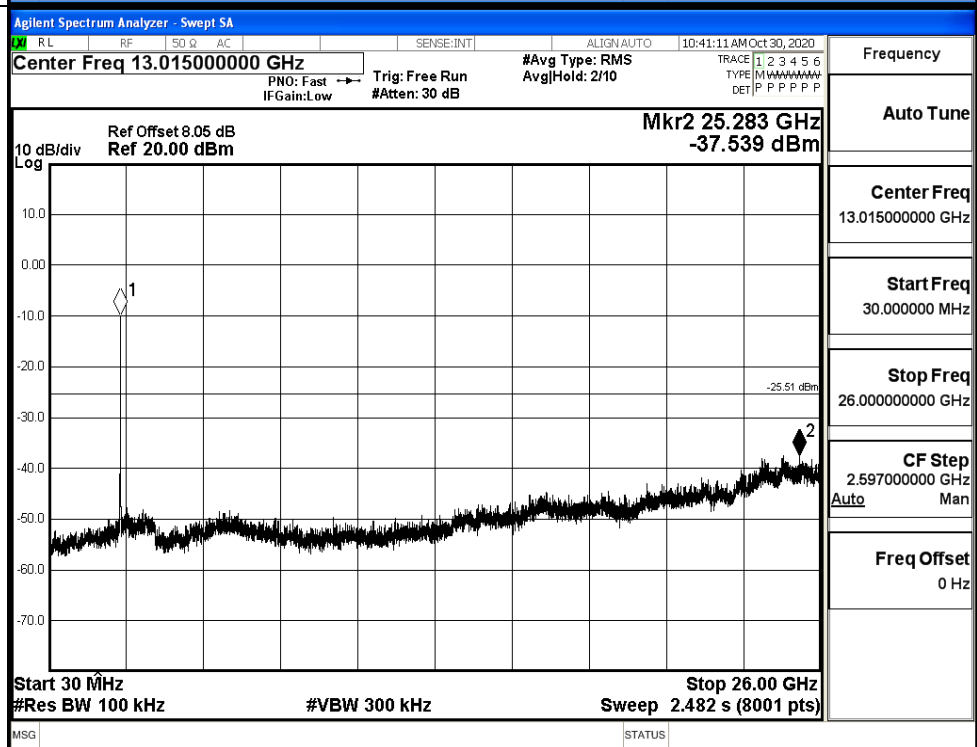
Puw/11G/HCH



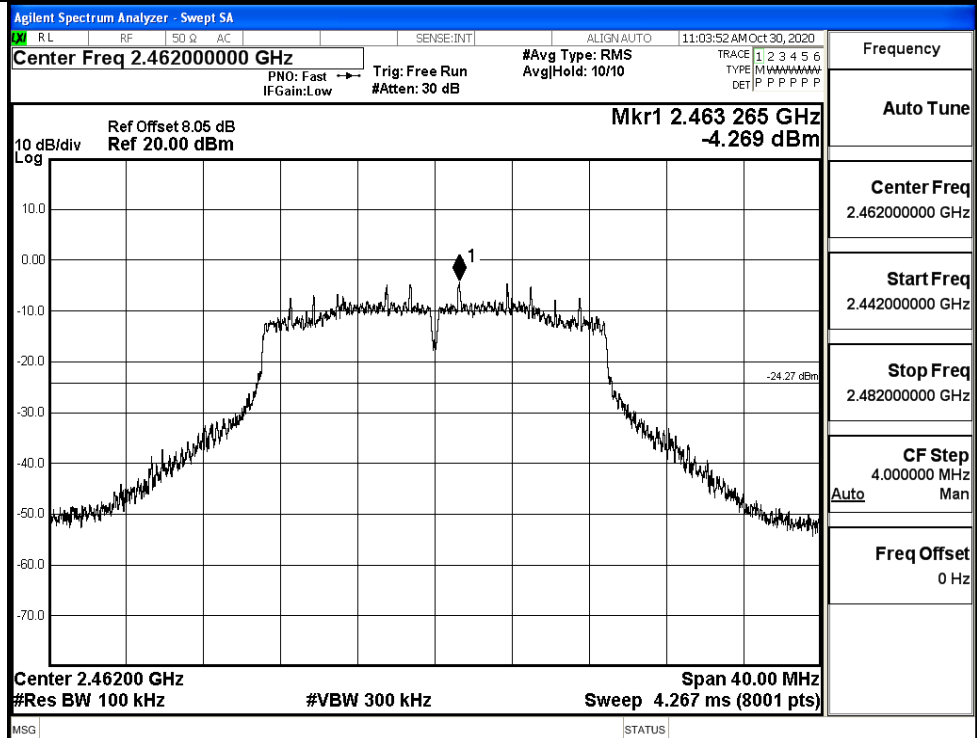
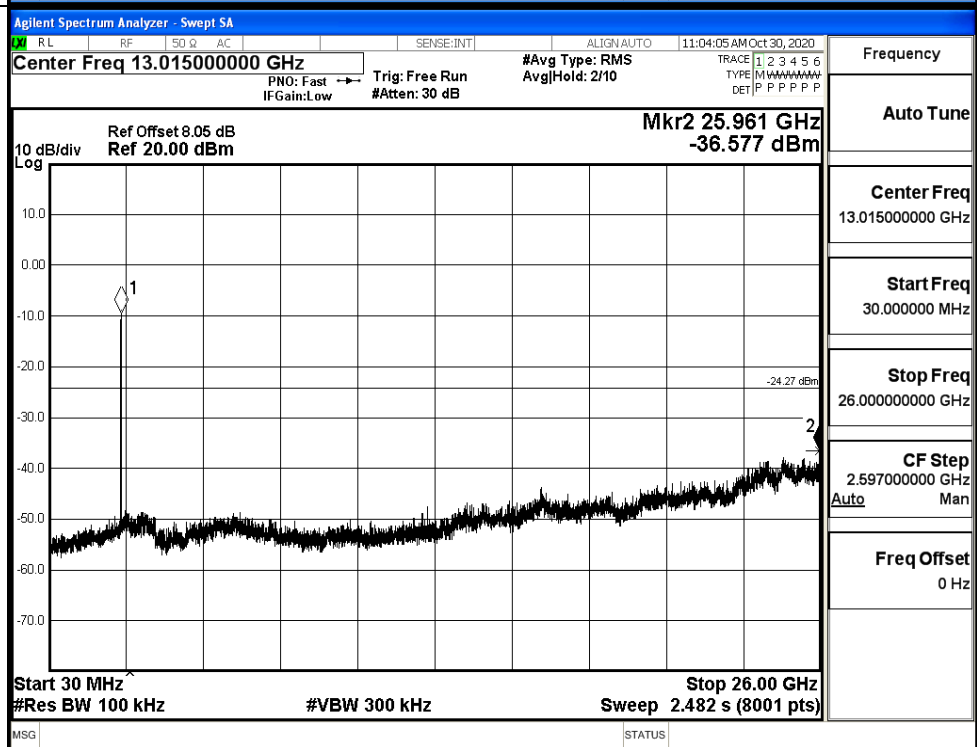
11N20SISO LCH Graphs

Pref/11N20SIS
O/LCHPuW/11N20
SISO/LCH

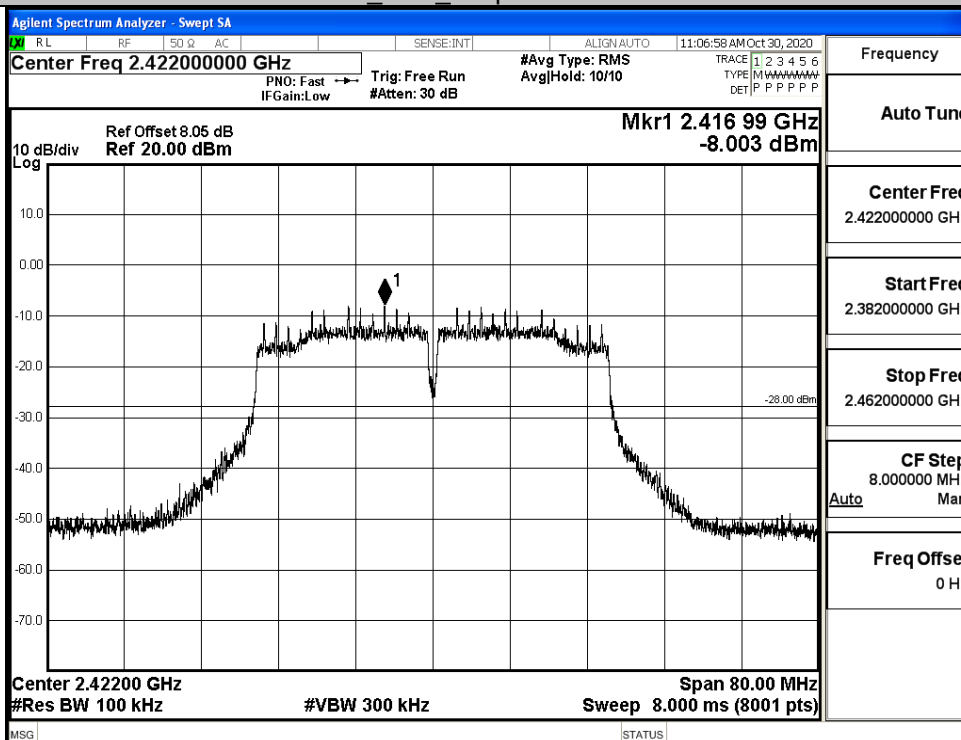
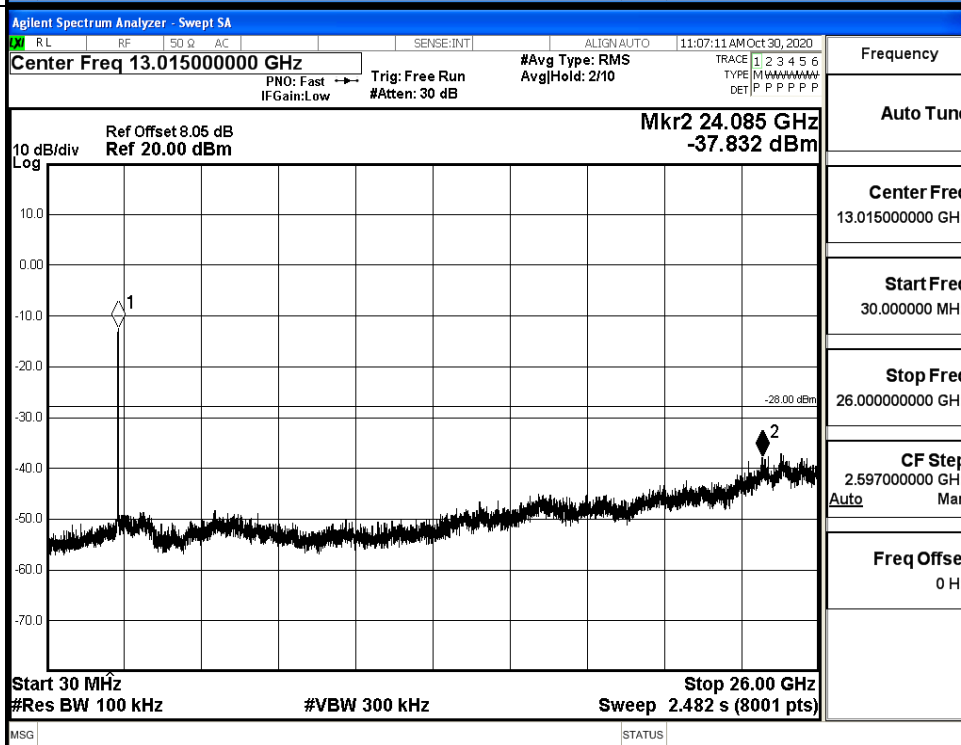
11N20SISO MCH Graphs

Pref/11N20
SISO/MCHPuw/11N20
SISO/MCH

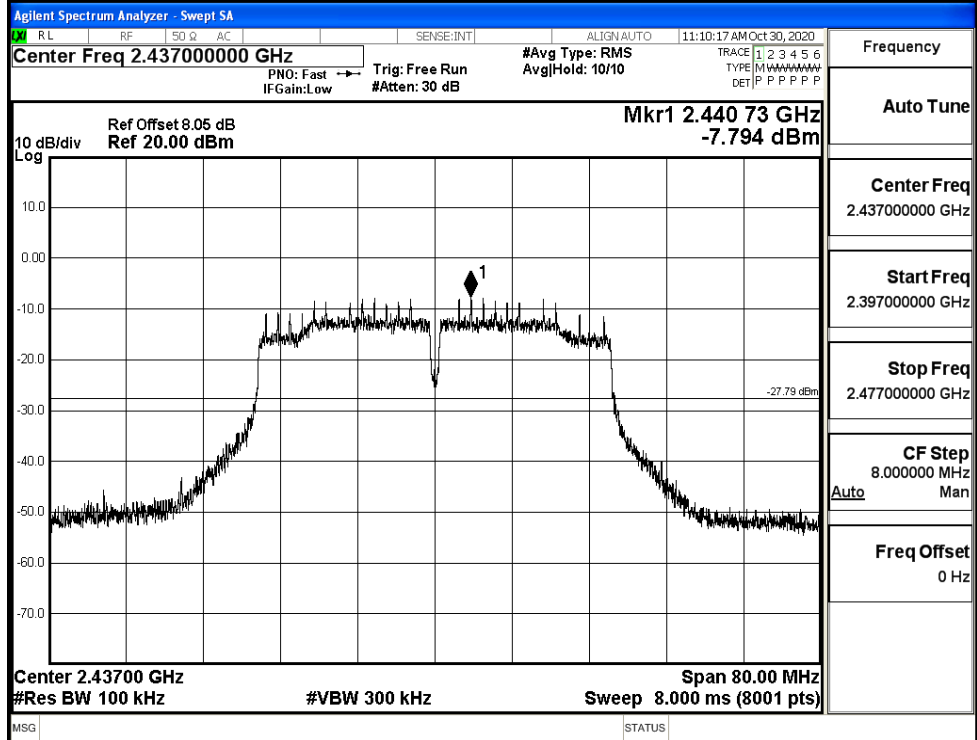
11N20SISO HCH Graphs

Pref/11N20
SISO/HCHPuw/11N20
SISO/HCH

11N40SISO LCH Graphs

Pref/11N40
SISO/LCHPuw/11N40
SISO/LCH

11N40SISO MCH_Graphs

Pref/11N40
SISO/MCHPuw/11N40
SISO/MCH