



NEVO+ Series 400Hz Operation

Application Note

Overview

The purpose of this document is to inform customers of the performance characteristics of the NEVO+ series power supplies when used at 400Hz input voltage frequency.

The NEVO+600 and NEVO+1200 power supply characteristics are measured under various line and load conditions for both 50Hz and 400Hz.

Efficiency, Power Factor and input current waveforms will be measured over the load range for input voltages of $85V_{RMS}$, $120V_{RMS}$ and $220V_{RMS}$.

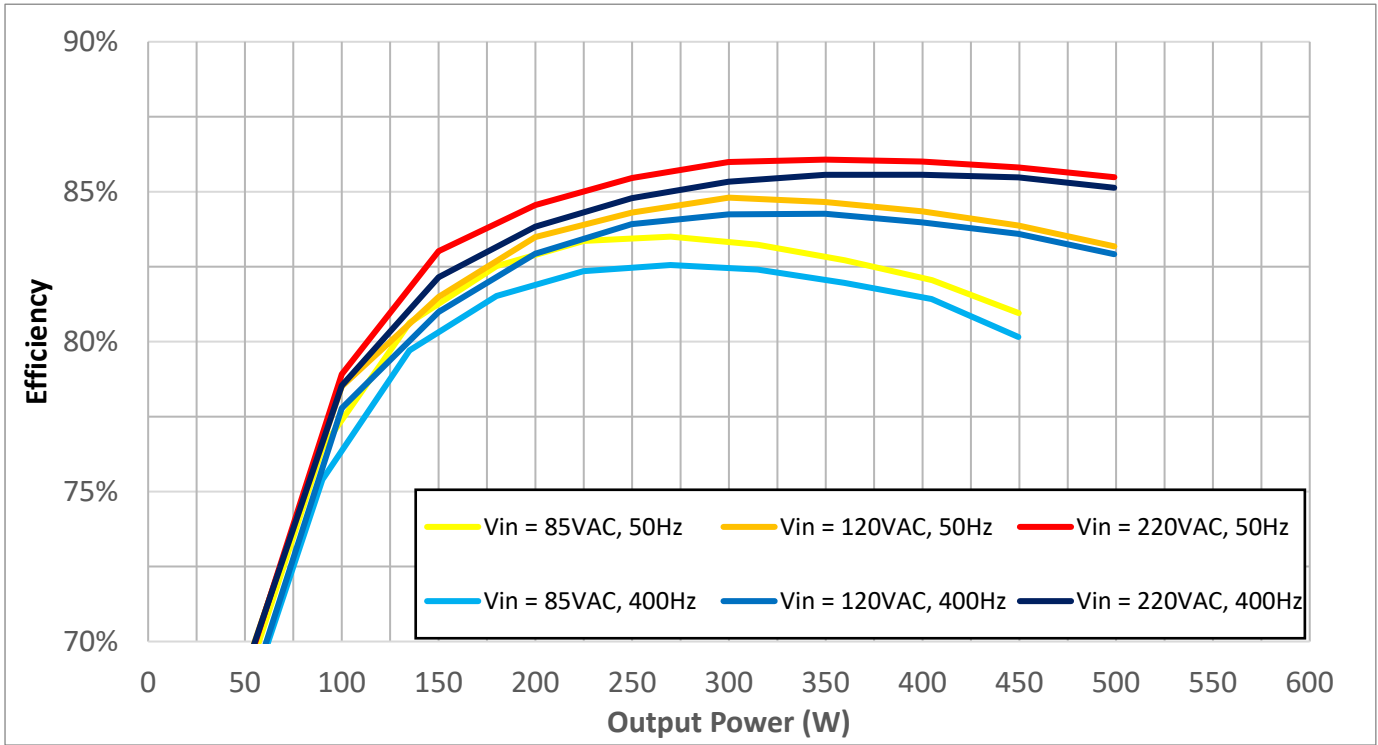
Efficiency

The plots below compare typical efficiencies and power loss for 50Hz and 400Hz input voltages. The plots cover the NEVO+600 and NEVO+1200 series power supplies configured for their maximum output power configurations and derated output power configurations. They include the full load range for $85V_{RMS}$, $120V_{RMS}$ and $220V_{RMS}$. All modules are adjusted to nominal voltages and are equally loaded.

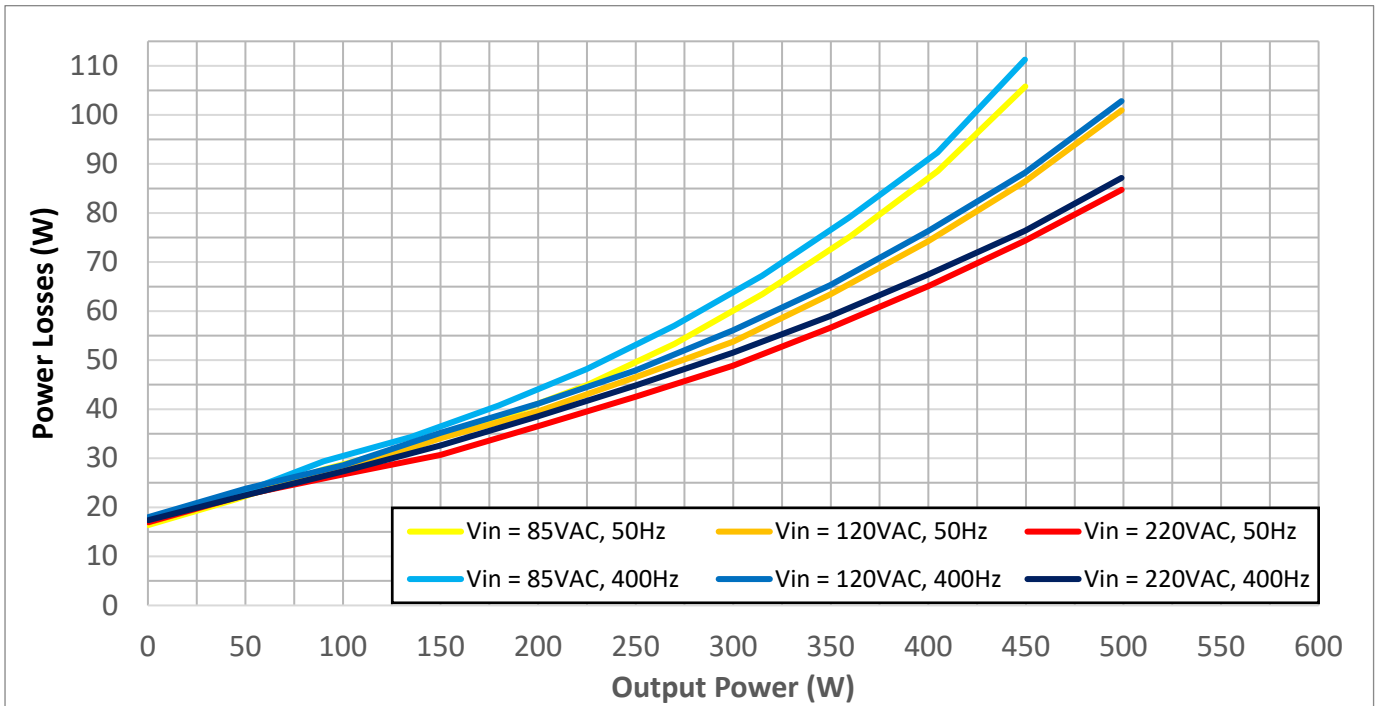
The list below shows the different configurations tested.

1. NEVO+600-1111 (Maximum power 500W)
2. NEVO+600-2222 (Maximum power 600W)
3. NEVO+1200-11111111 (Maximum power 1000W)
4. NEVO+1200-22222222 (Maximum power 1200W)

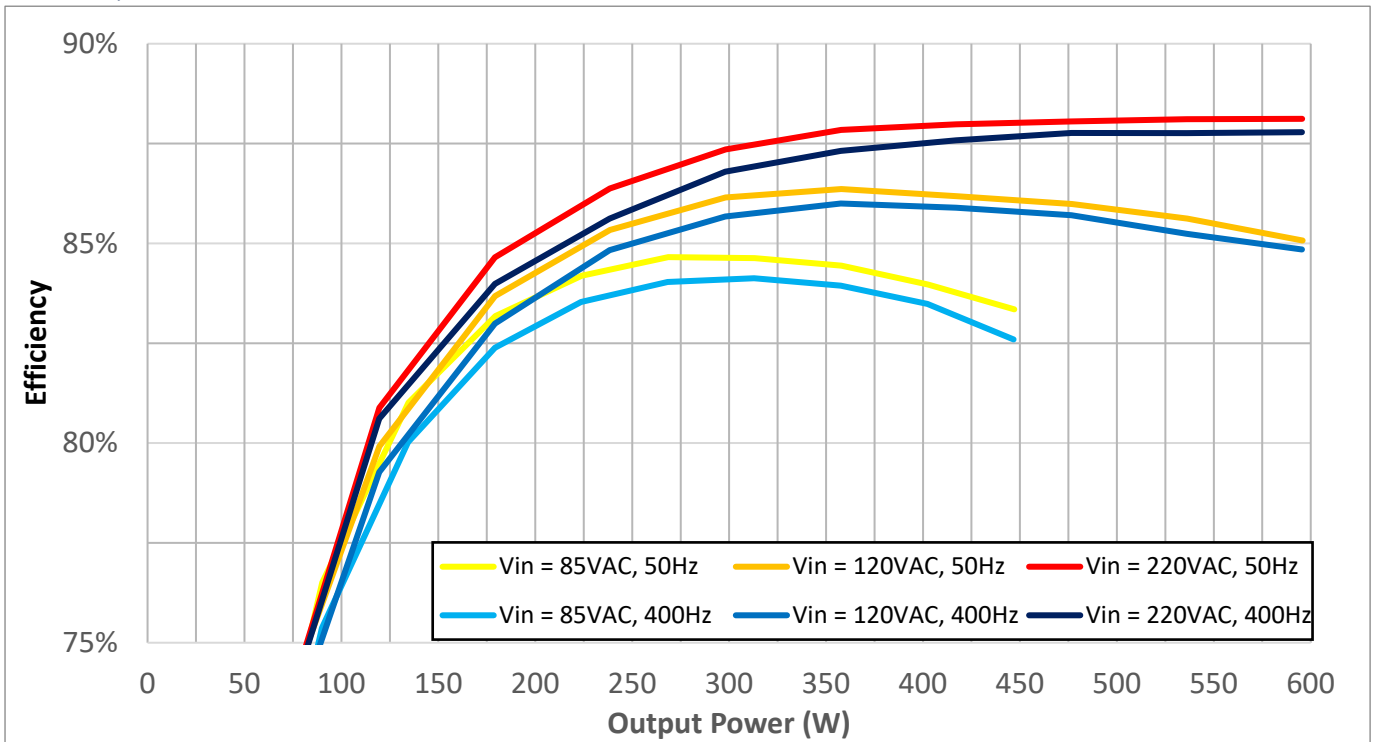
Efficiency



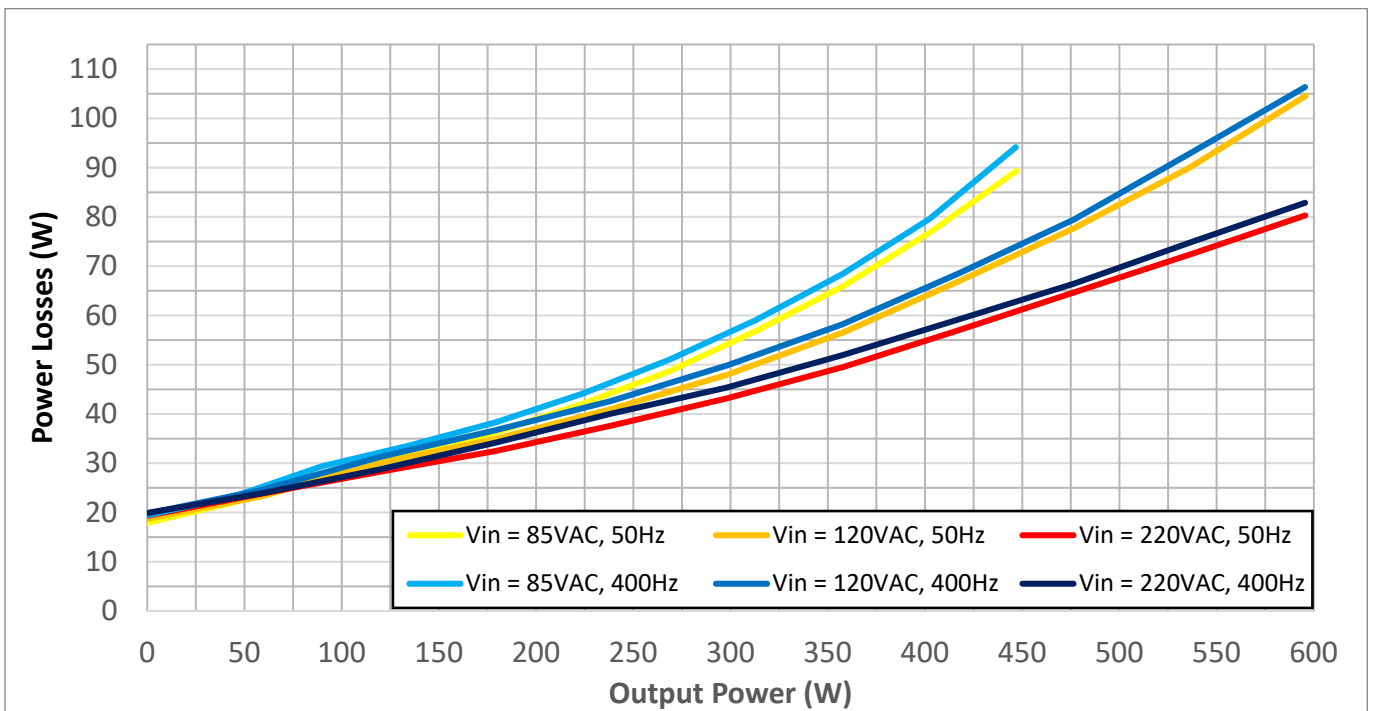
Power Loss



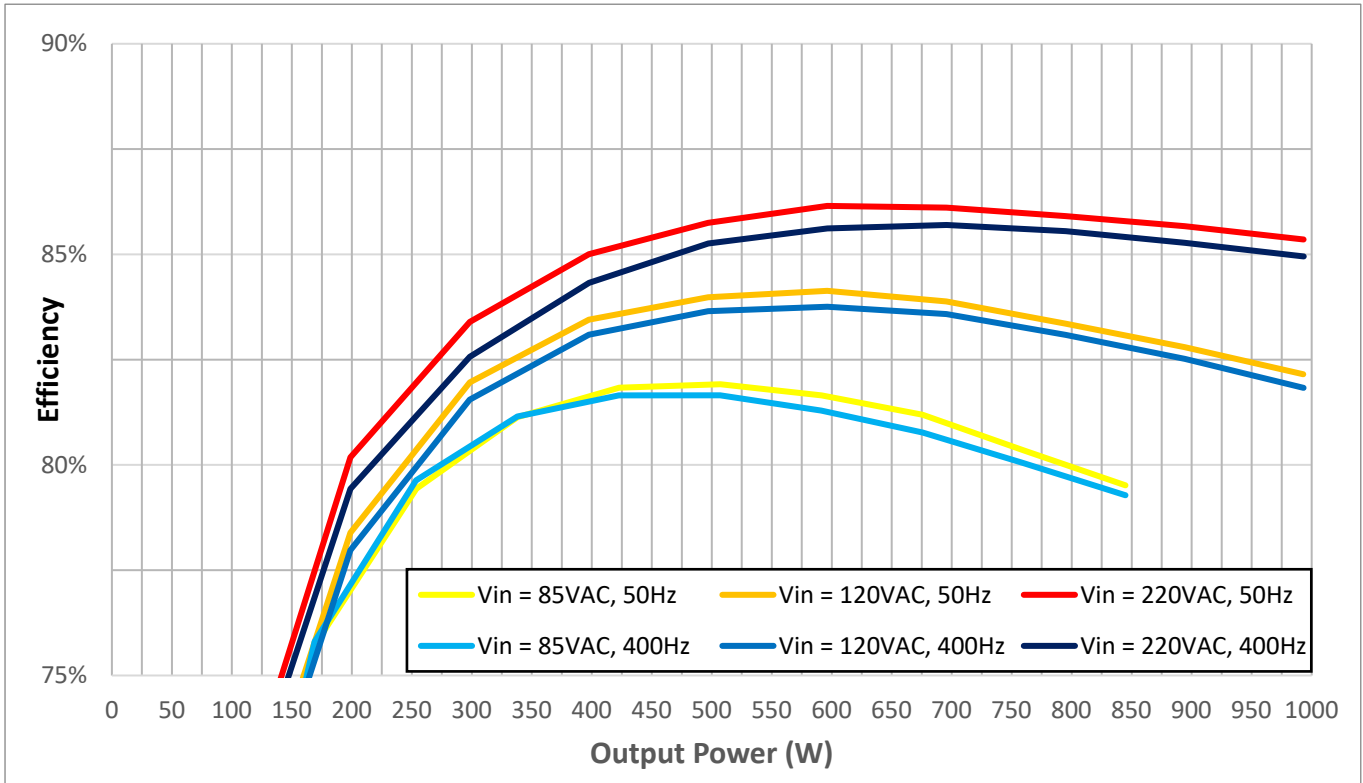
Efficiency



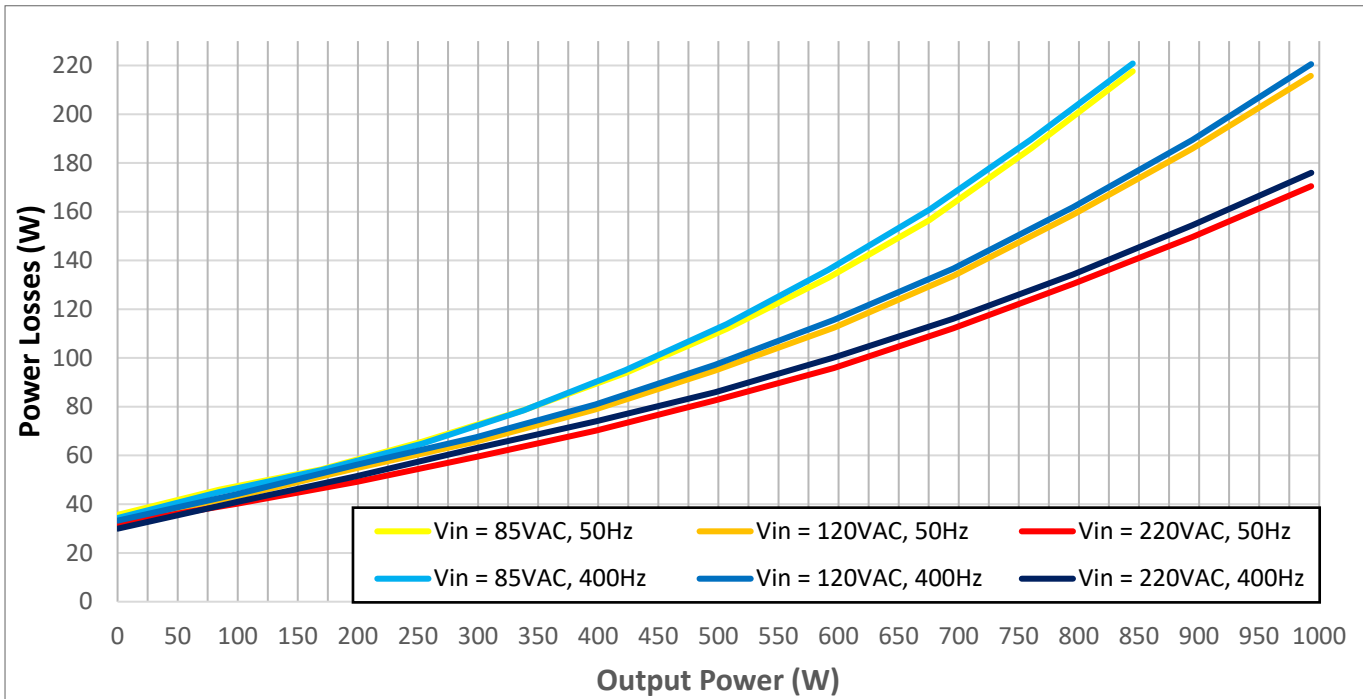
Power Loss



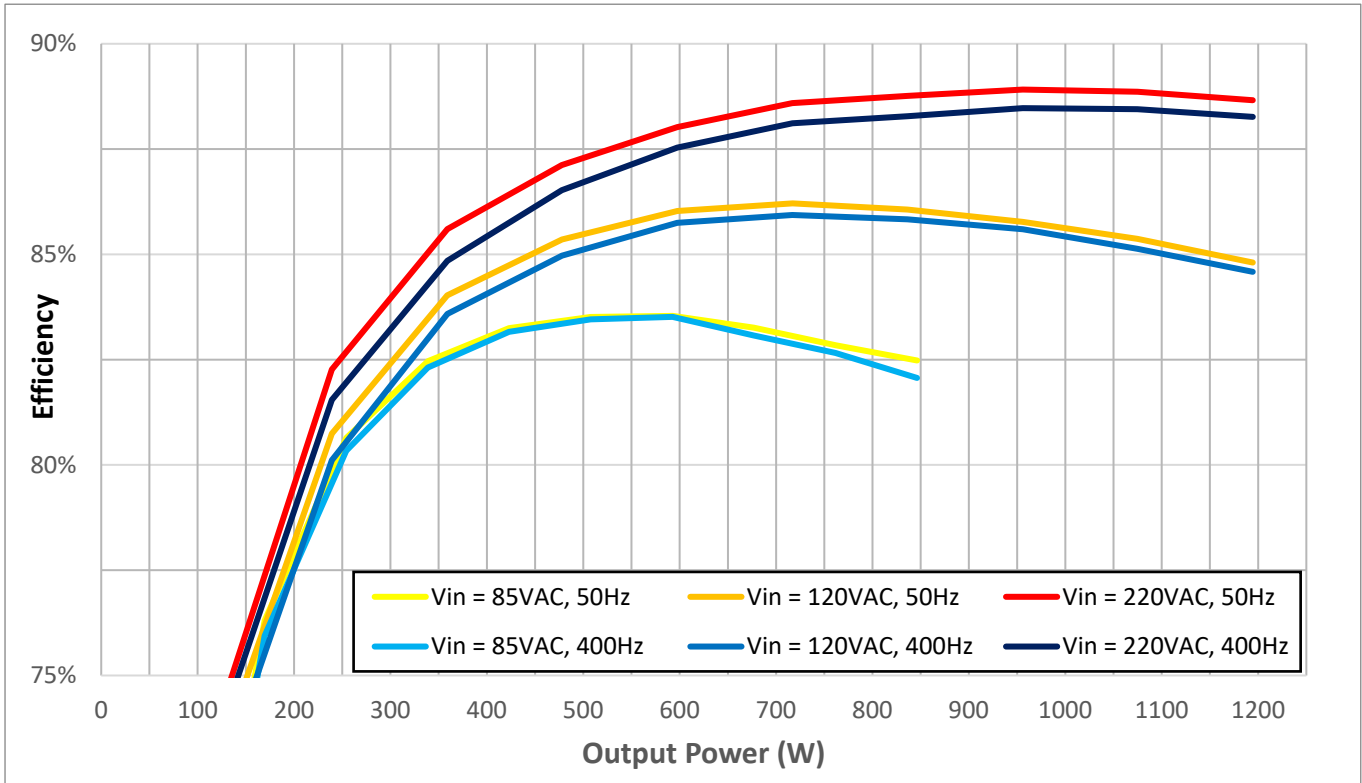
Efficiency



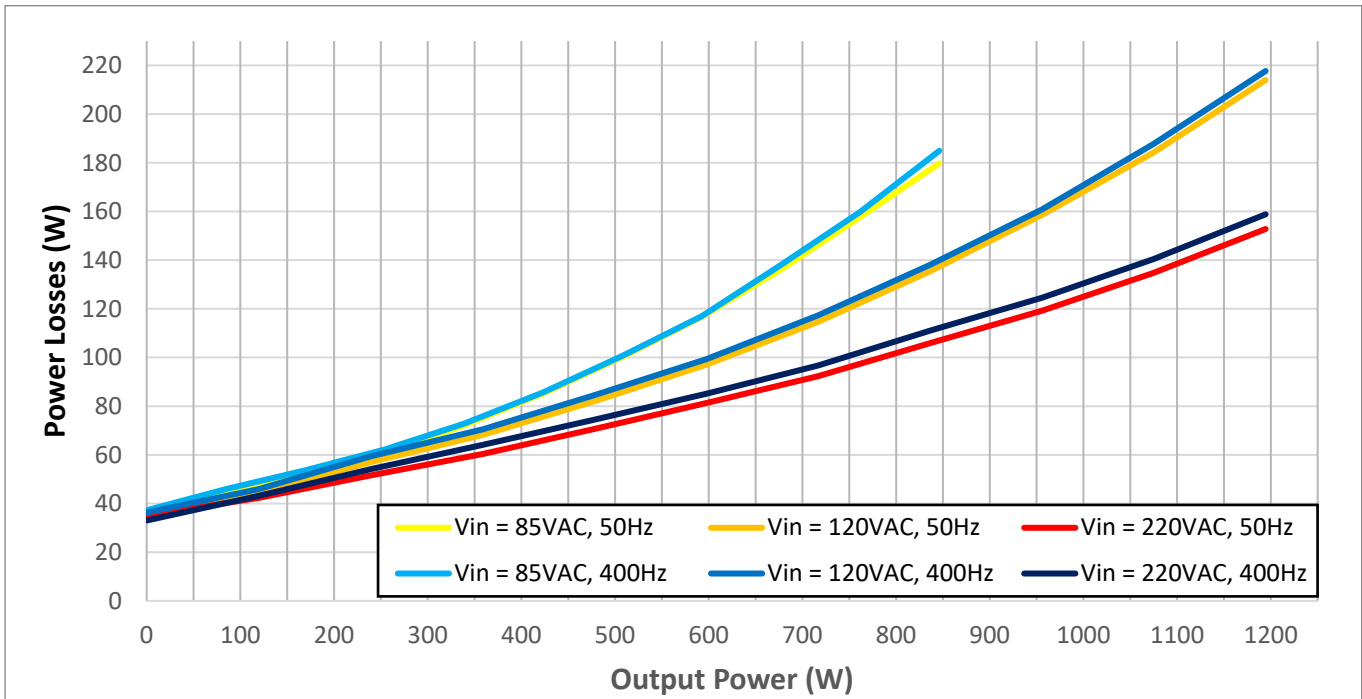
Power Loss



Efficiency



Power Loss



Power Factor

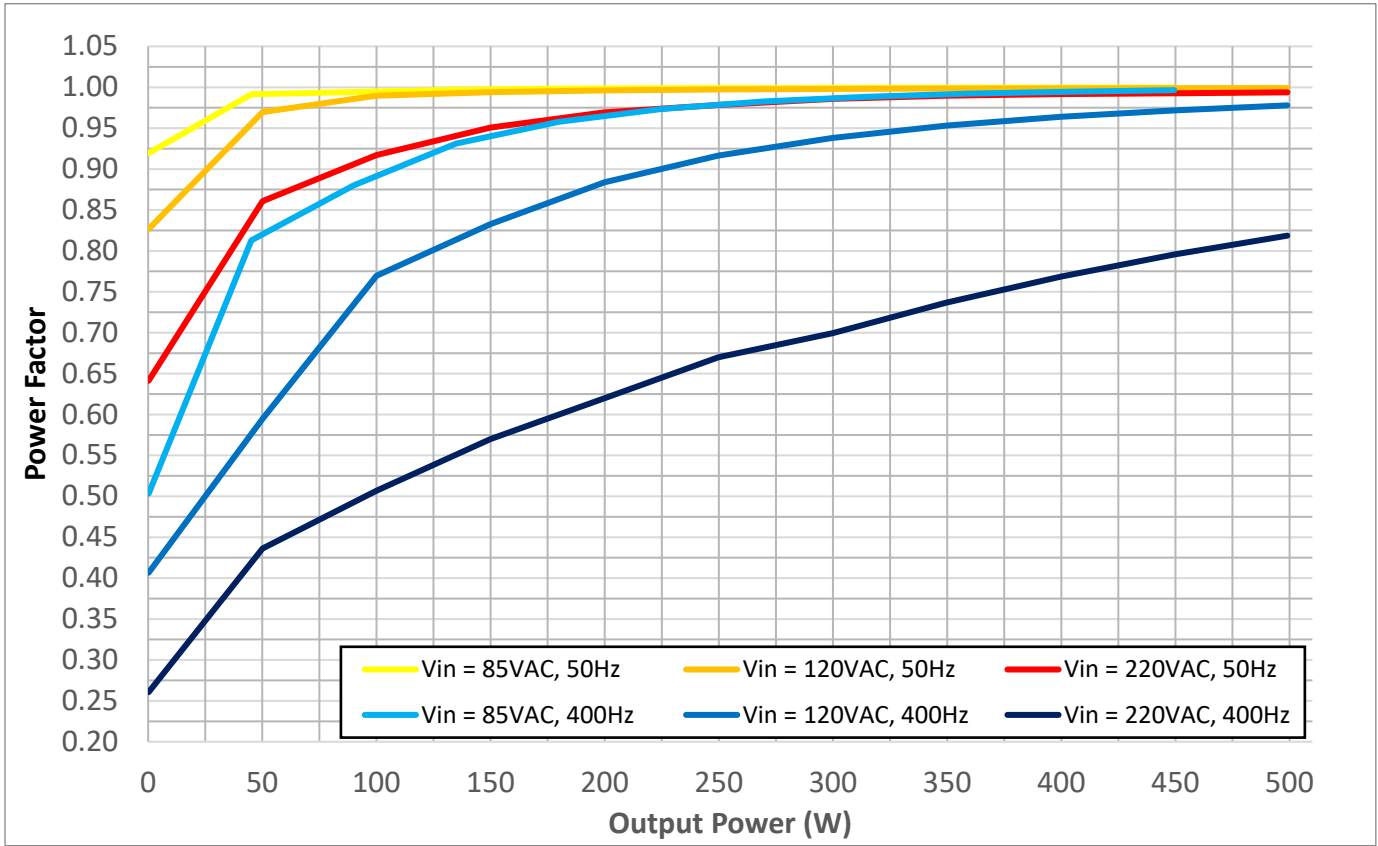
The plots below compare typical power factors for 50Hz and 400Hz input voltage frequencies. The plots cover the NEVO+600 and NEVO+1200 series power supplies configured for their maximum output power configurations and derated output power configurations. They include the full load range for 85V_{RMS}, 120V_{RMS} and 220V_{RMS}. All modules are adjusted to nominal voltages and are equally loaded.

The list below shows the different configurations tested.

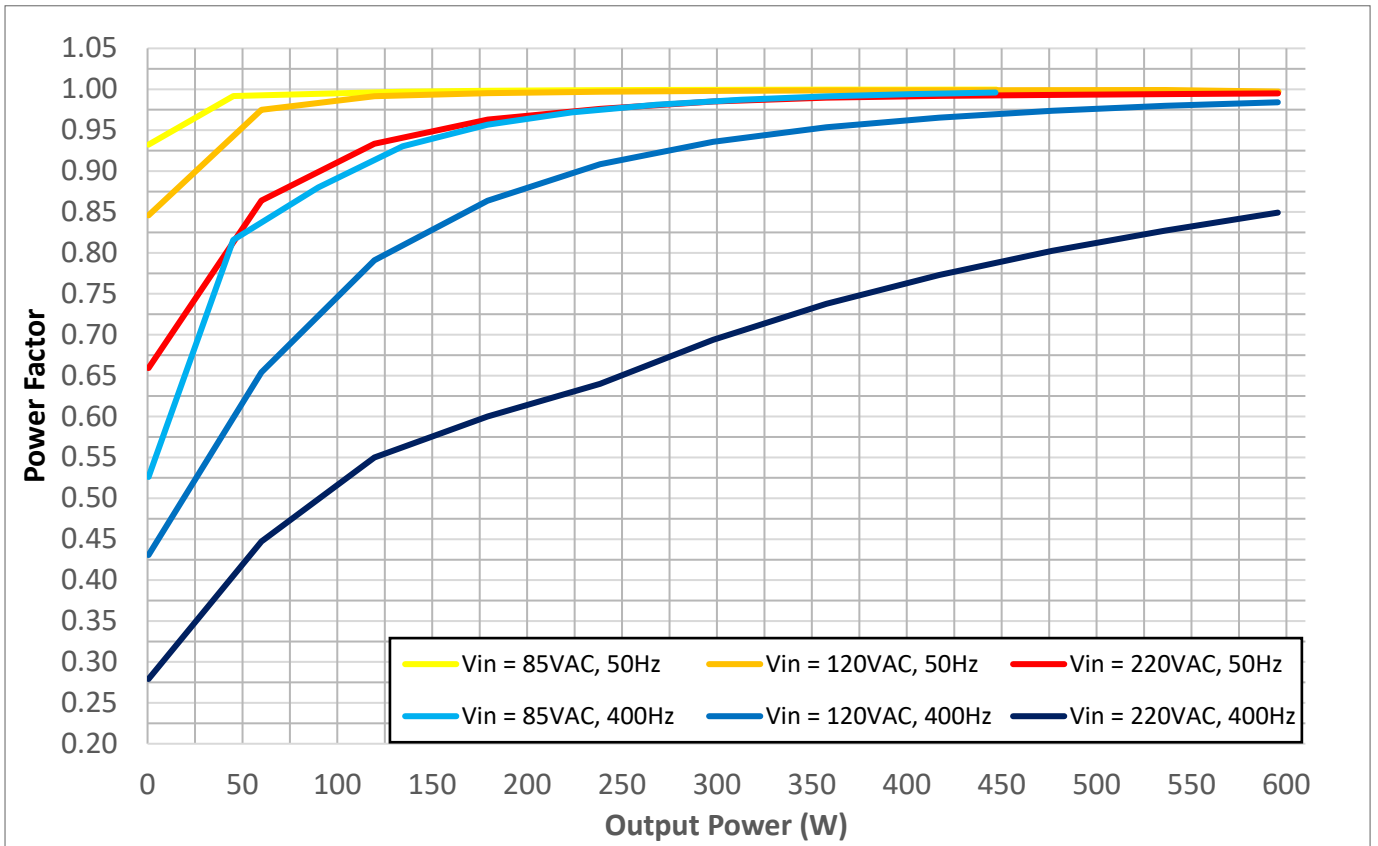
1. NEVO+600-1111 (Maximum power 500W)
2. NEVO+600-2222 (Maximum power 600W)
3. NEVO+1200-11111111 (Maximum power 1000W)
4. NEVO+1200-22222222 (Maximum power 1200W)

The input voltage and current waveforms were also measured and compared.

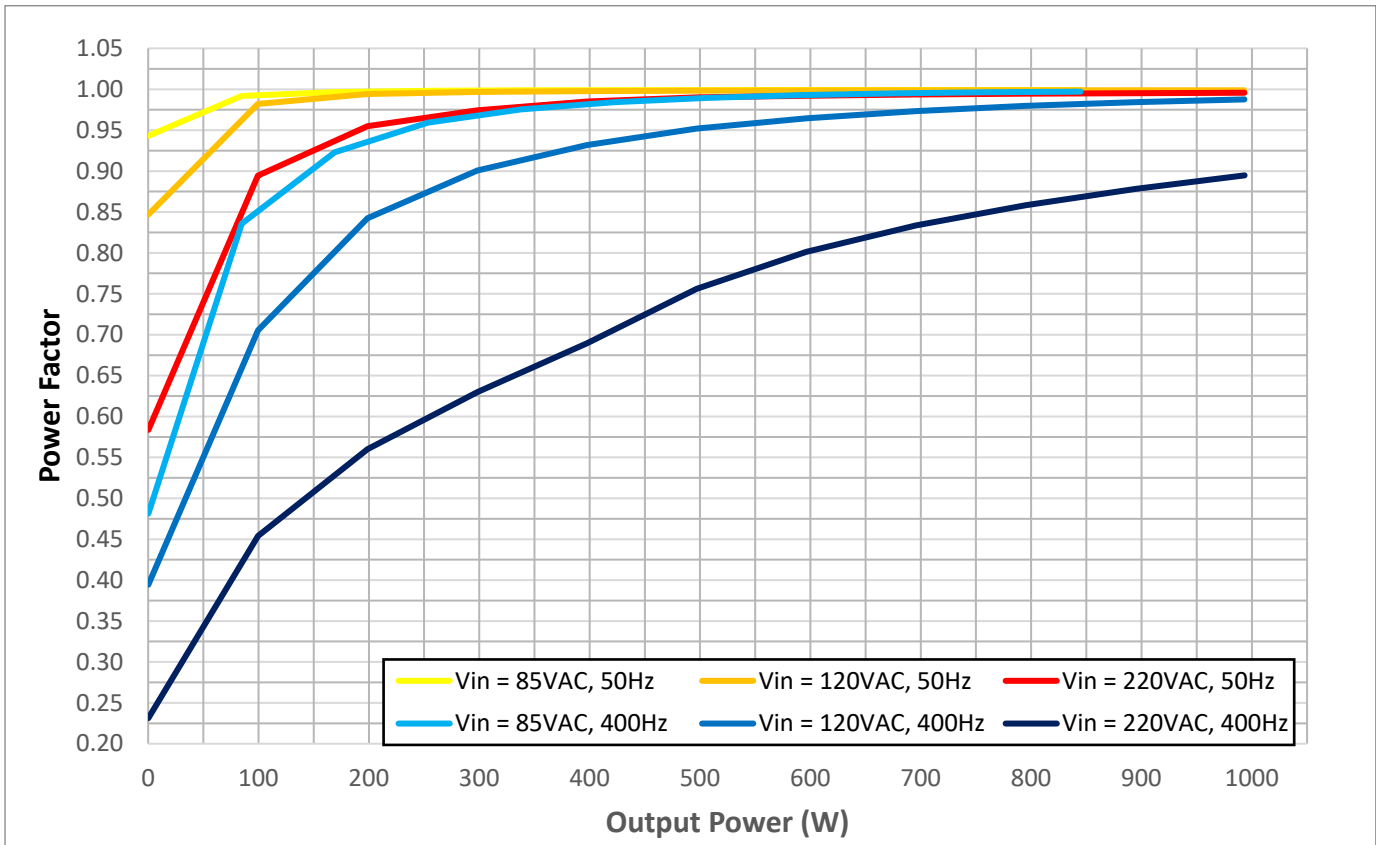
NEVO+600-1111 Power Factor



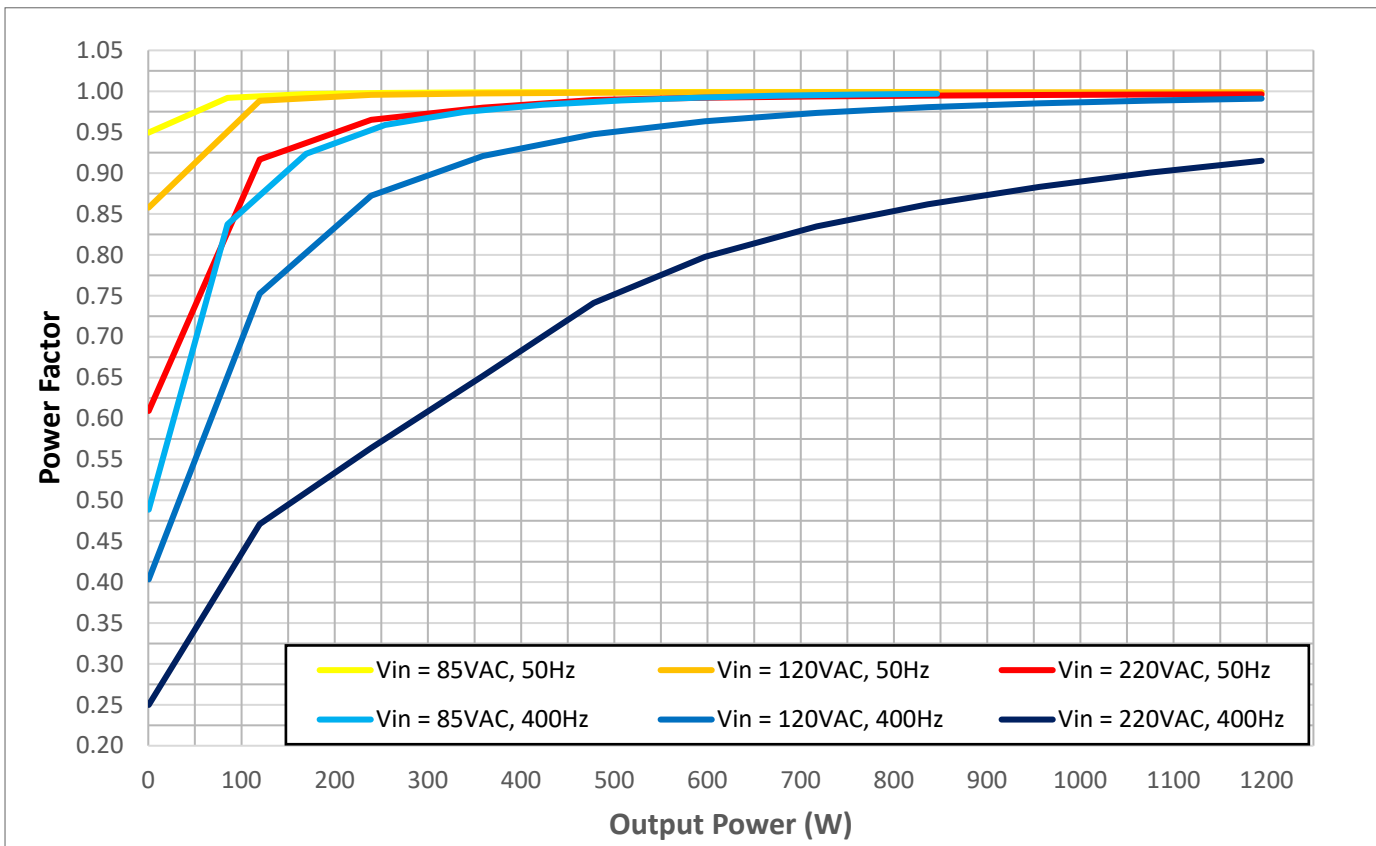
NEVO+600-2222 Power Factor



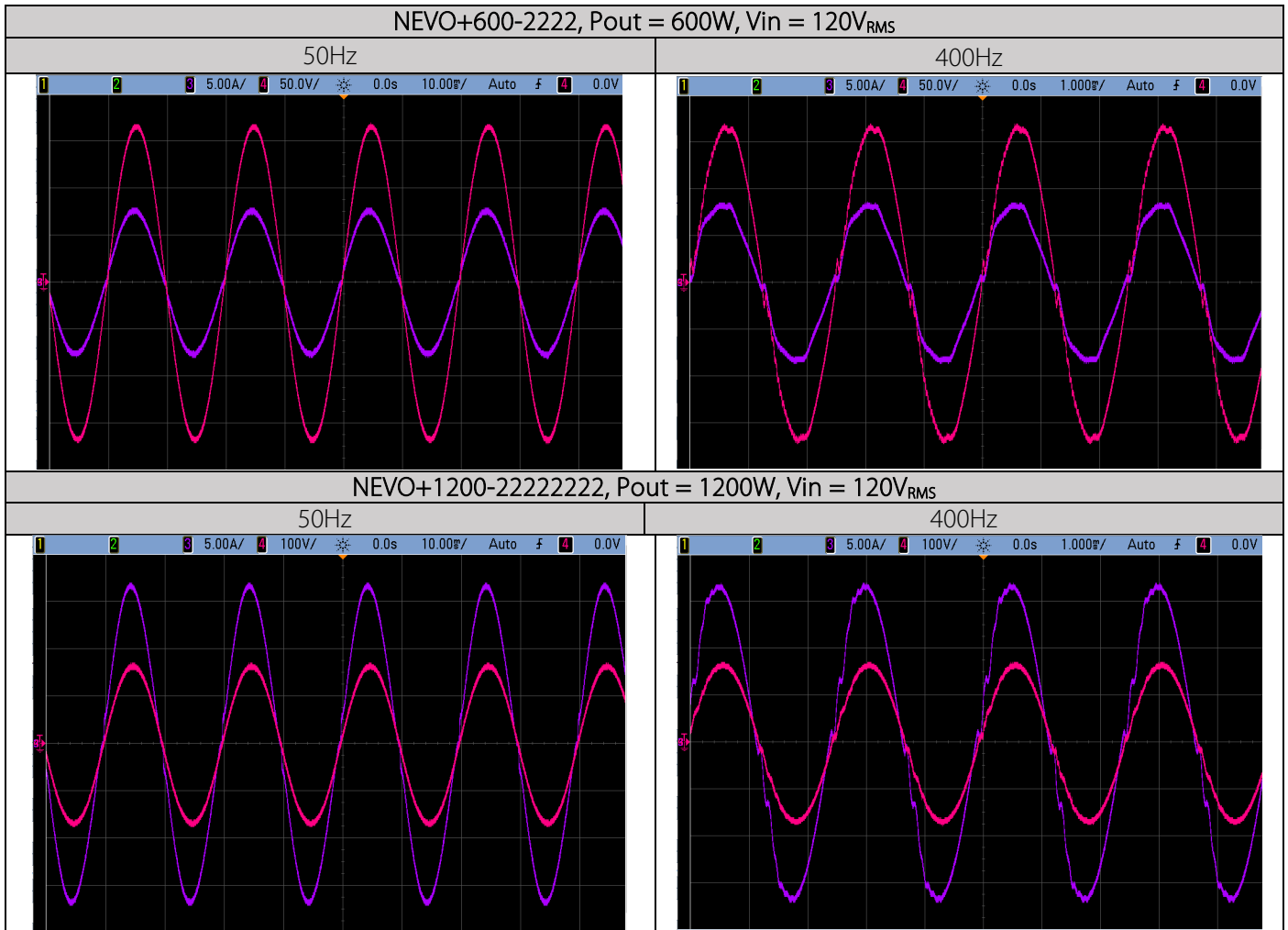
NEVO+1200-11111111 Power Factor

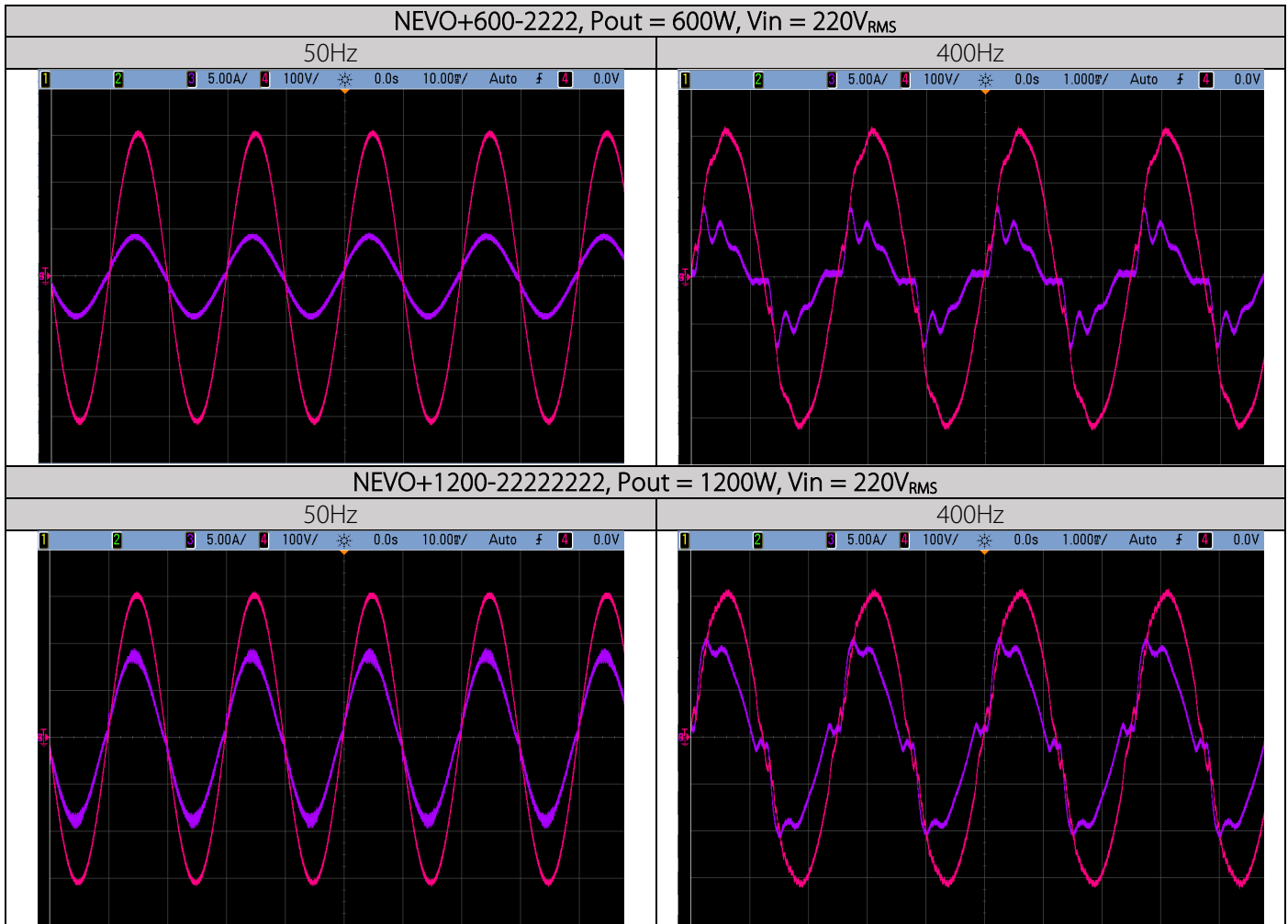


NEVO+1200-22222222 Power Factor



Waveforms





Other considerations

- Customer should be aware that input to earth leakage currents will increase in proportion to the input voltage frequency.

Conclusions

1. The NEVO+ Series power supplies show a small decrease in efficiency when operated at 400Hz input voltage frequency. An additional 10% power derating is recommended.
2. The power factor can be severely reduced at 400Hz input voltage especially at high input voltages and low loads. The data provided in this document should be examined carefully when specifying the NEVO+ series in 400Hz systems.