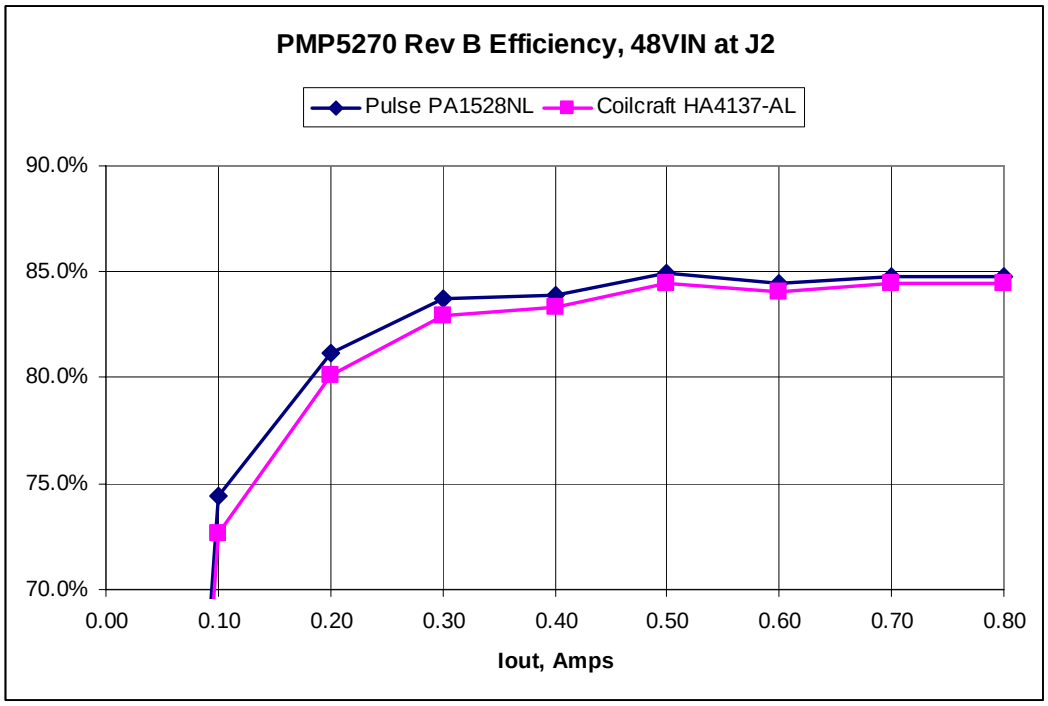
Efficiency

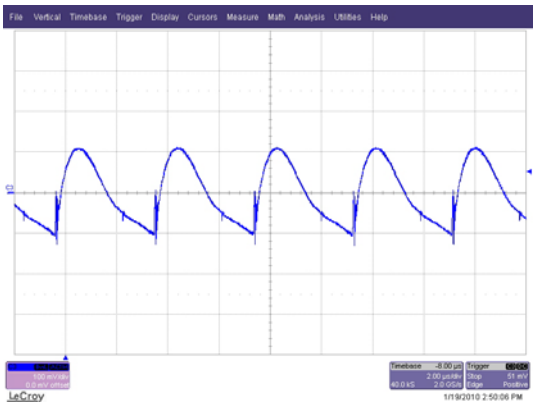
The efficiency of the converter is shown below:



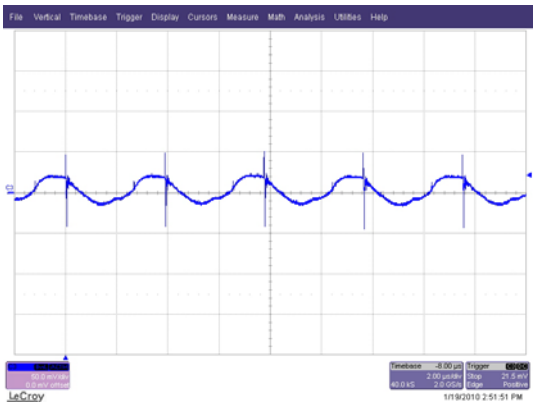
Ripple and Noise

Ripple measurements taken with a 48V input and maximum load on all outputs. The test data is taken with the Pulse PA1528NL transformer. The Coilcraft HA4137-AL transformer test data is virtually identical.

15V ripple across C13, 100mV/div:

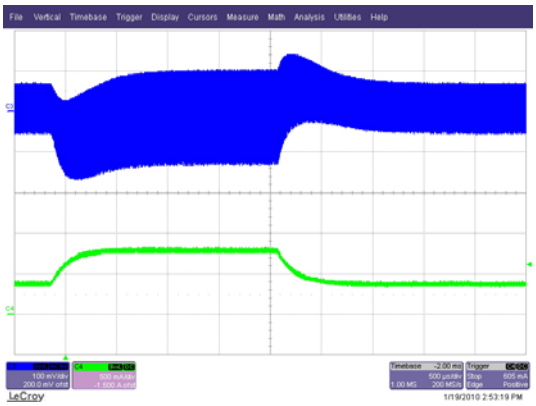


Input ripple across C9, 50mV/div:



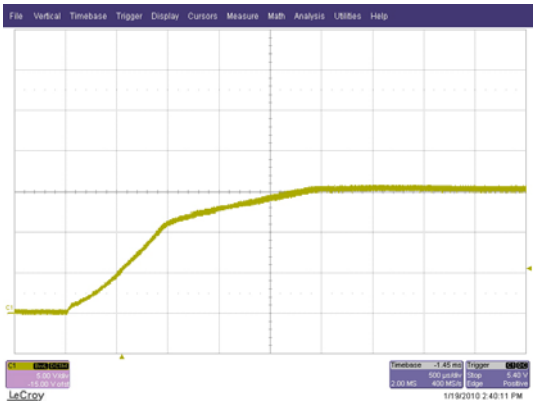
Dynamic Loading

15V load step:

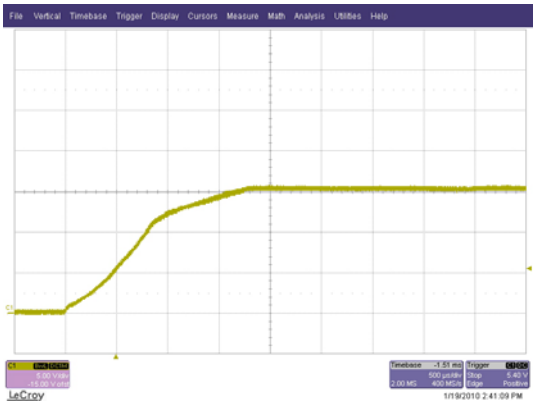


Turn On Response

Turn-on response: 48Vin, max load:

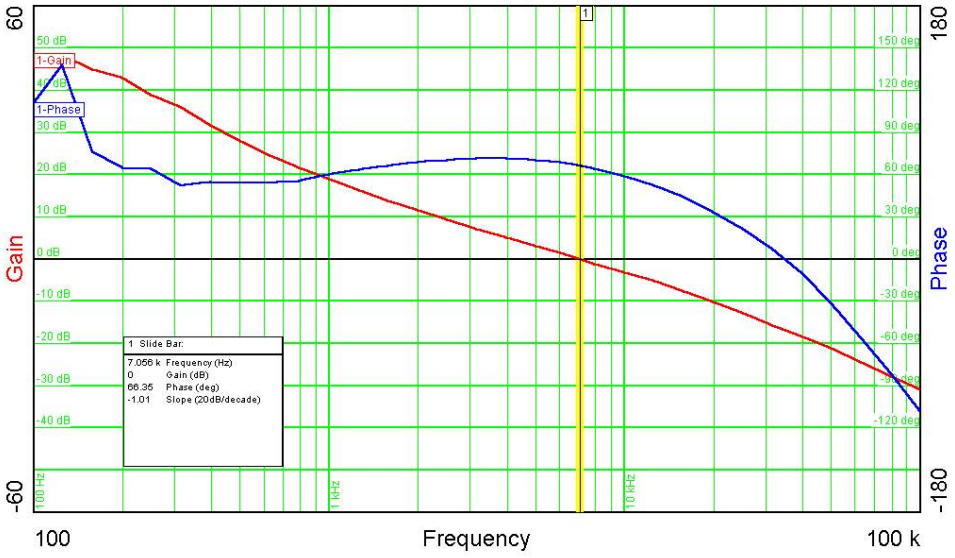


Turn-on response: 48Vin, 0A load:

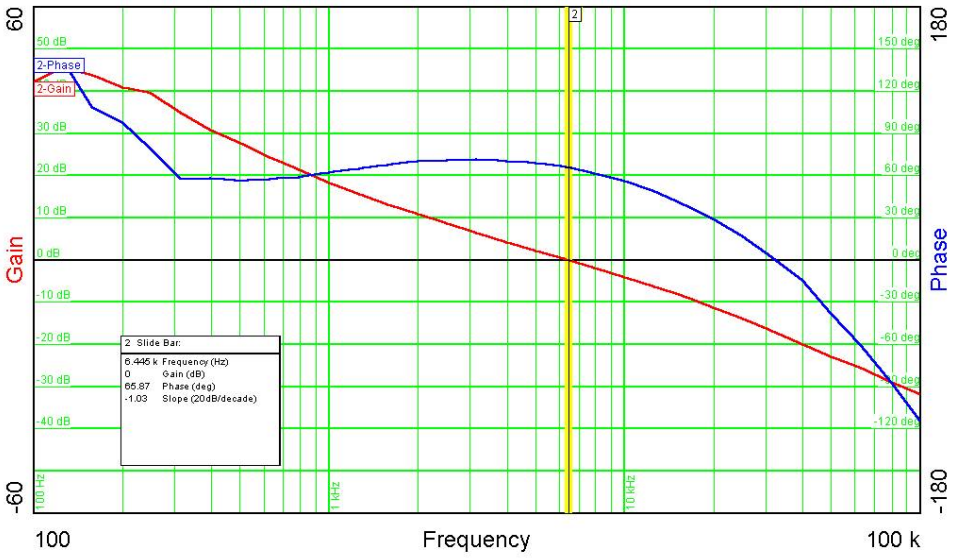


Stability Analysis (Loop Gain)

The figure below is the loop gain of the converter with a 48V input and a maximum load using the Pulse PA1528NL transformer. In order to measure the loop, R12 was changed to 49.9 Ohm and the test signal was injected across the R12. The Bandwidth is 7 KHz, the Phase Margin is 66 degrees, and the Gain Margin is 17 dB.



The figure below is the loop gain of the converter with a 48V input and a maximum load using the Coilcraft HA4137-AL transformer. In order to measure the loop, R12 was changed to 49.9 Ohm and the test signal was injected across the R12. The Bandwidth is 6.4 KHz, the Phase Margin is 65 degrees, and the Gain Margin is 17 dB.



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