Test Report
For PMP9457
04/11/2014

Overview

The design comes with 75x86mm boards. This design is a power board which has a synchronous buck regulator, LM46002 to generate 3.3V. The input voltage range is 4.5V to 45V suitable for 24V industrial supply.

Power Specification

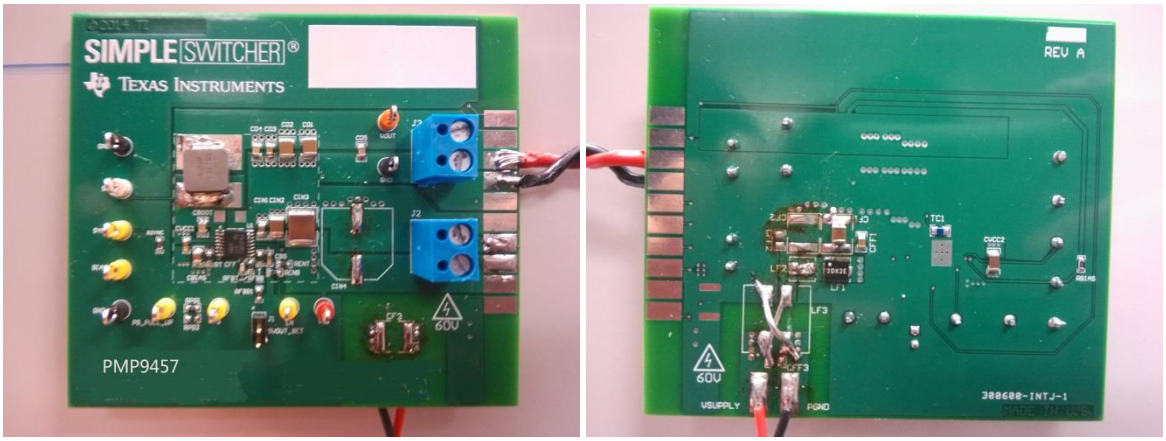
Vin range: 4.5V~45V

Nominal : Vin = 24V

Outputs : 3.3V@2A

Fsw : 500kHz

Board Photos



Power Board Front Power Board Back

Figure 1

Size: 76x86mm

Efficiency

The efficiency is measured separately for Vin= 4.5V, 25V, 45V.

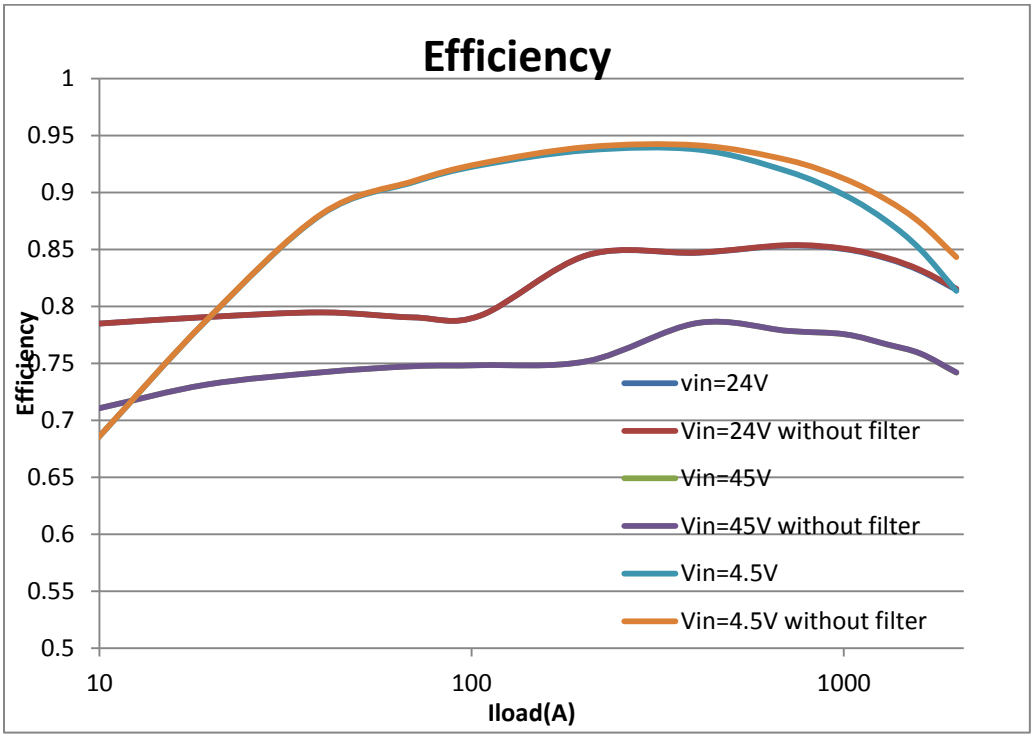


Figure 2

Start Up

Test condition: The input voltage was set at 24V, and the output is set at full load.
Ch1 - Vin, Ch3 -Vout

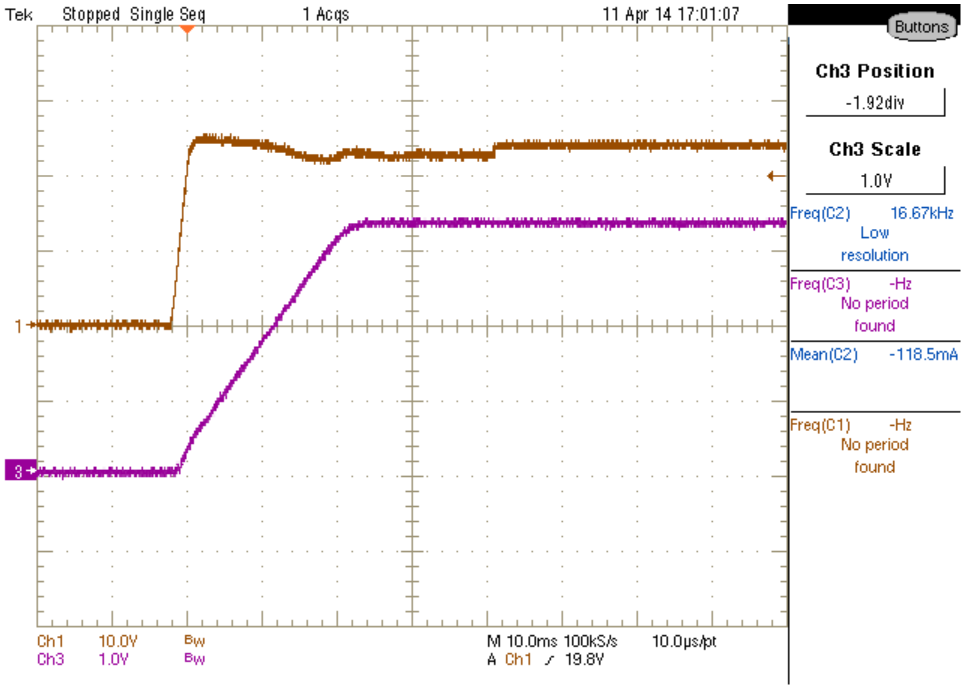


Figure 3

Switch Node Waveform

Test condition: The input voltage was set at 4.5V (Figure 4), 24V (Figure 5), and 45V (Figure 6), the output is set at full load.

Ch1 – Vsw (switch node voltage).

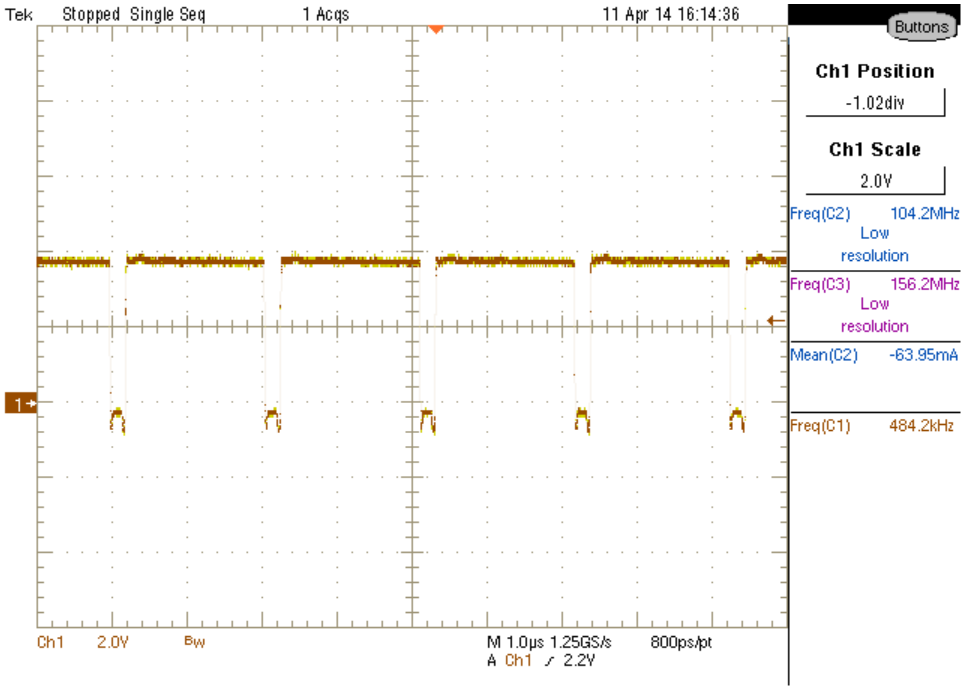


Figure 4 Vin=4.5V

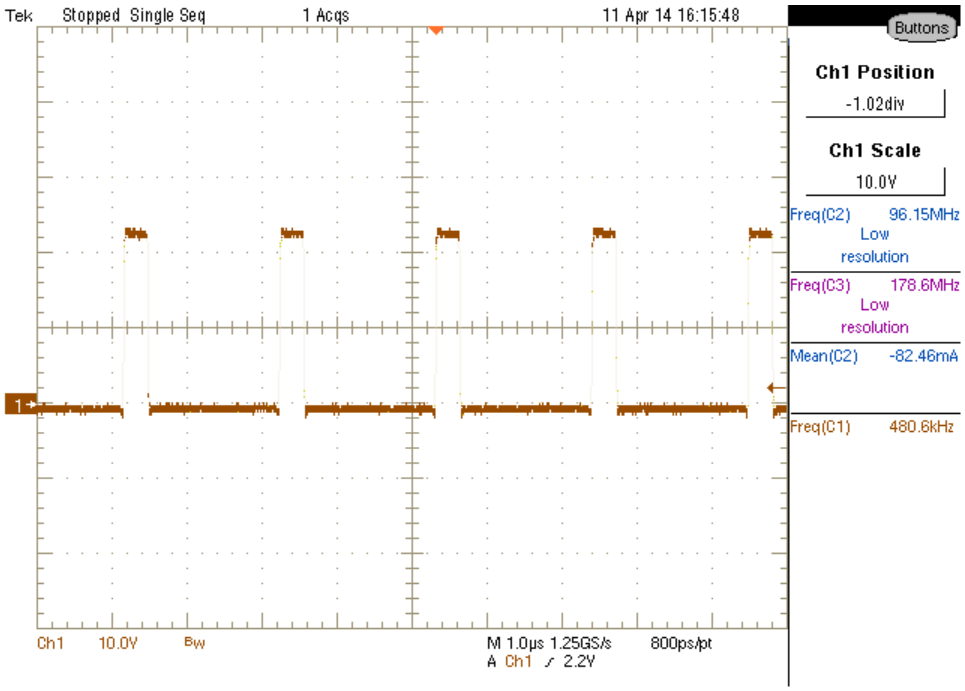


Figure 5, Vin=24V

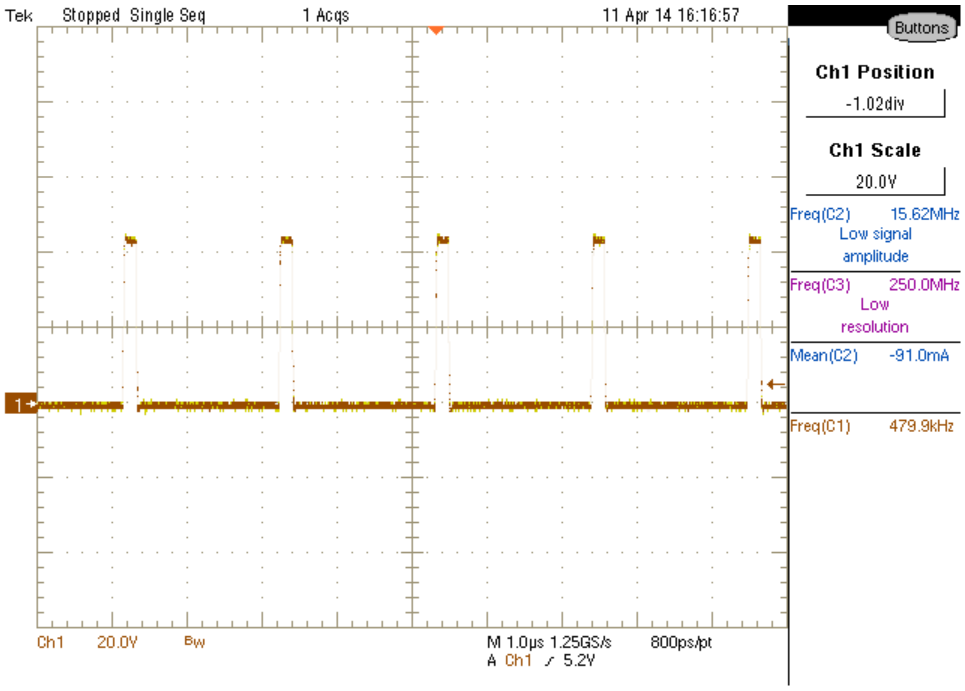


Figure 6, Vin=45V

Load transients

Test condition: Vin = 24V, Iout from 0A to 2A

Ch3- Vout (AC coupled) Ch4- Iout

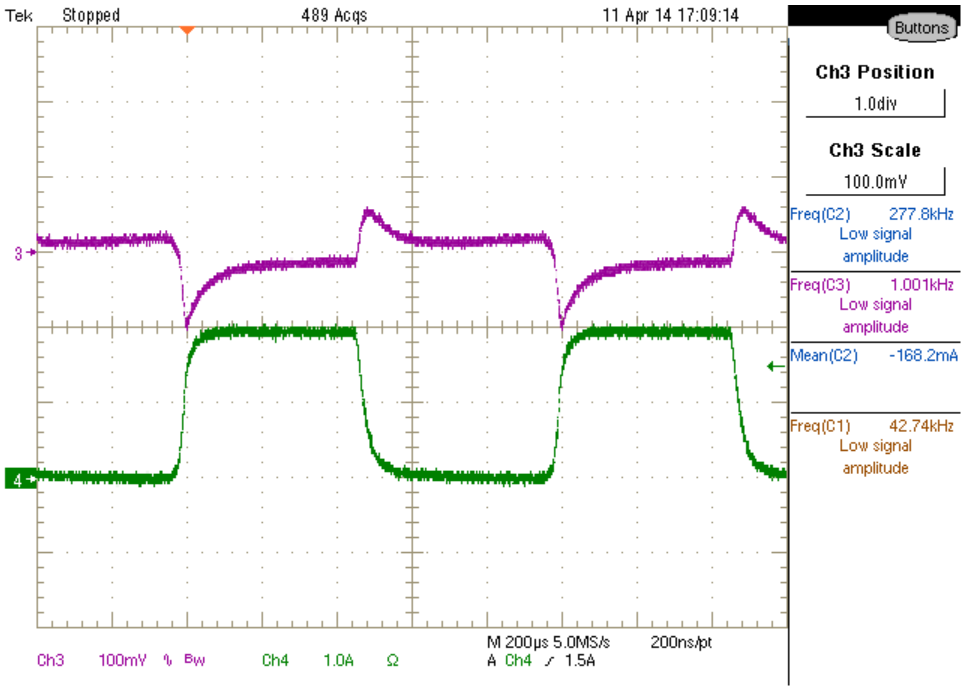


Figure 7

Output Voltage Ripples

Test condition: The input voltage is set at 24V, and the output is set at full load.
Ch3 - Vout (AC coupled)

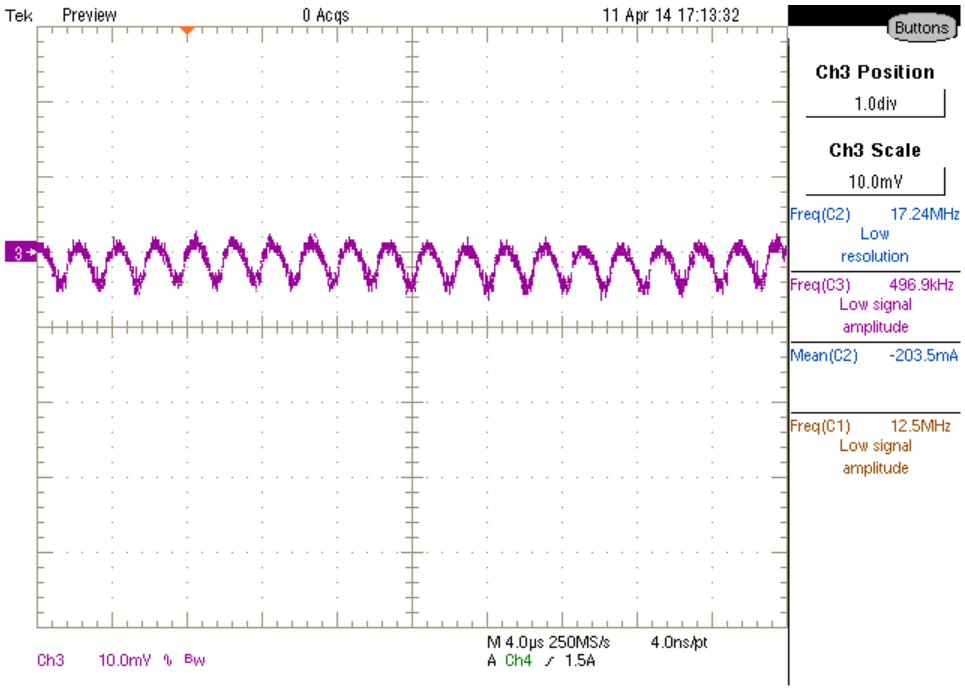


Figure 8

Conducted Emissions

The conducted emissions is tested followed the of CISPR 22 standards. The frequency band examined spans from 150 kHz~30MHz.

The test results are shown in Figure 9. The yellow trace is the test result using peak detector measurement. The limit lines shown in red are the Class B limits of average detector measurement for conducted disturbances specified in the CISPR 22. It can be seen that the peak noise is below the average limit (so it will be also below peak limit), so the power supply operates quietly and can pass class B.

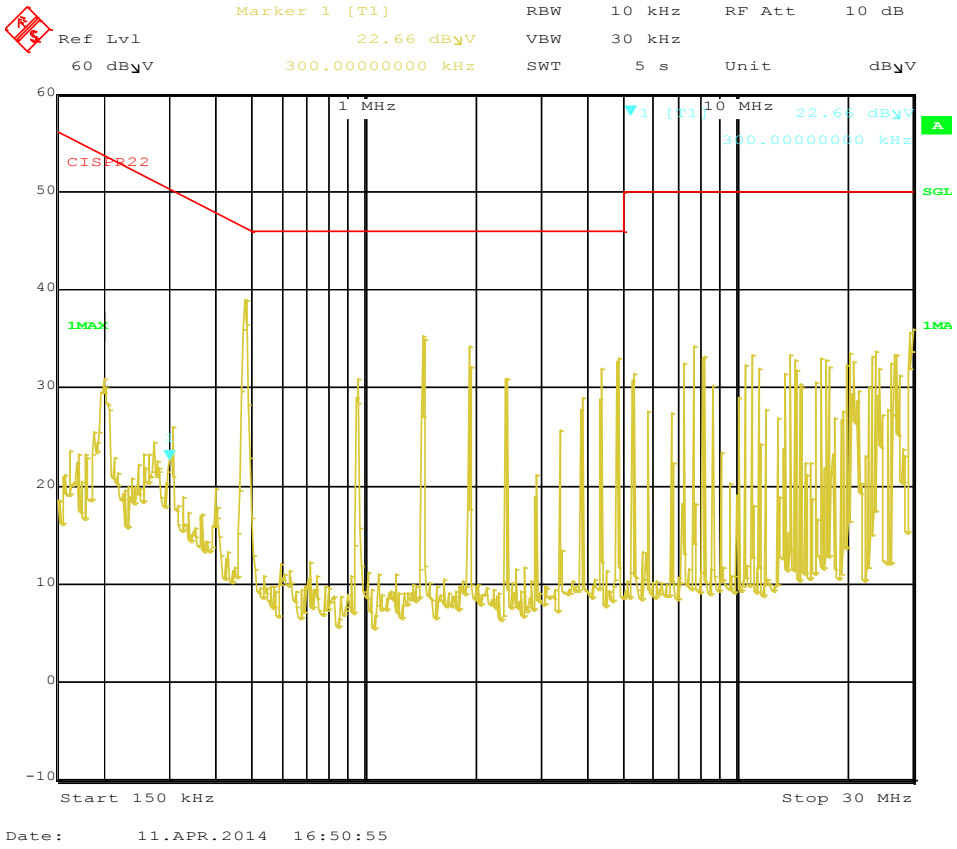


Figure 9

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