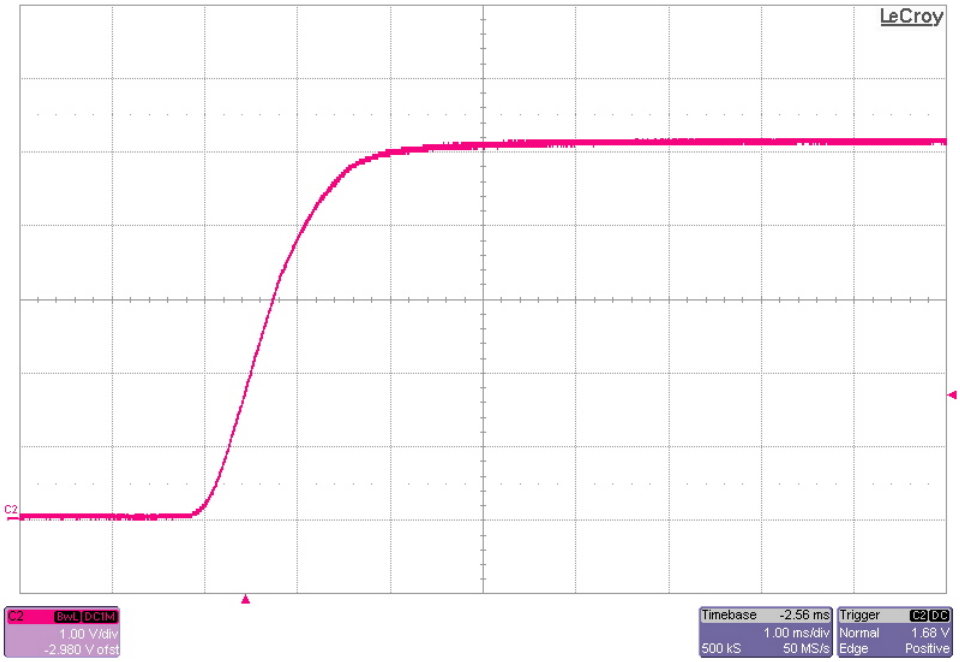
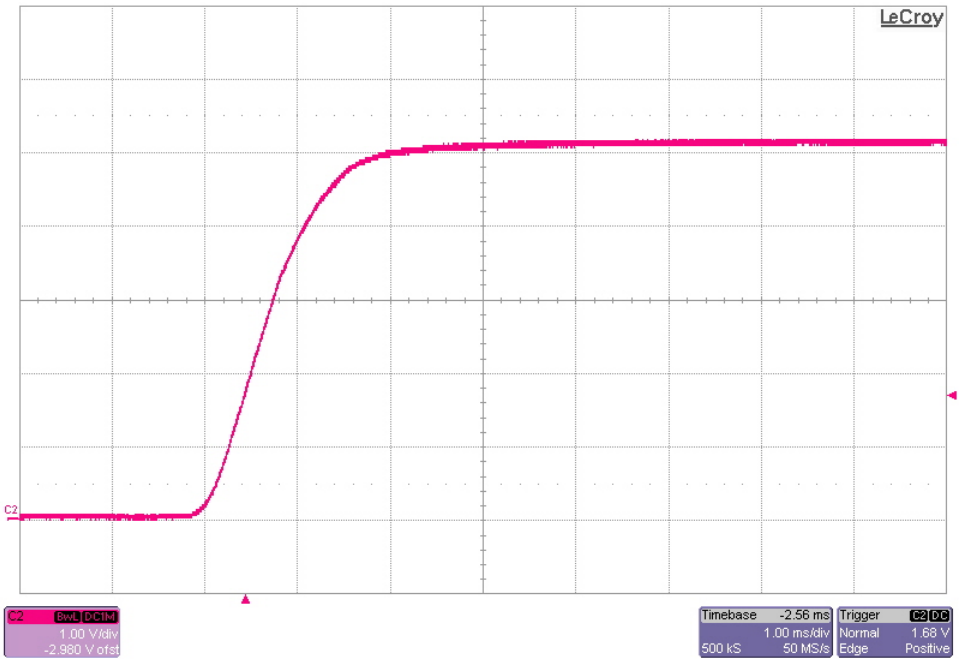
1 Startup

The photo below shows the output voltage startup waveform after the application of 12V in. The 5V output was loaded to 0A. (1V/DIV, 1mS/DIV)

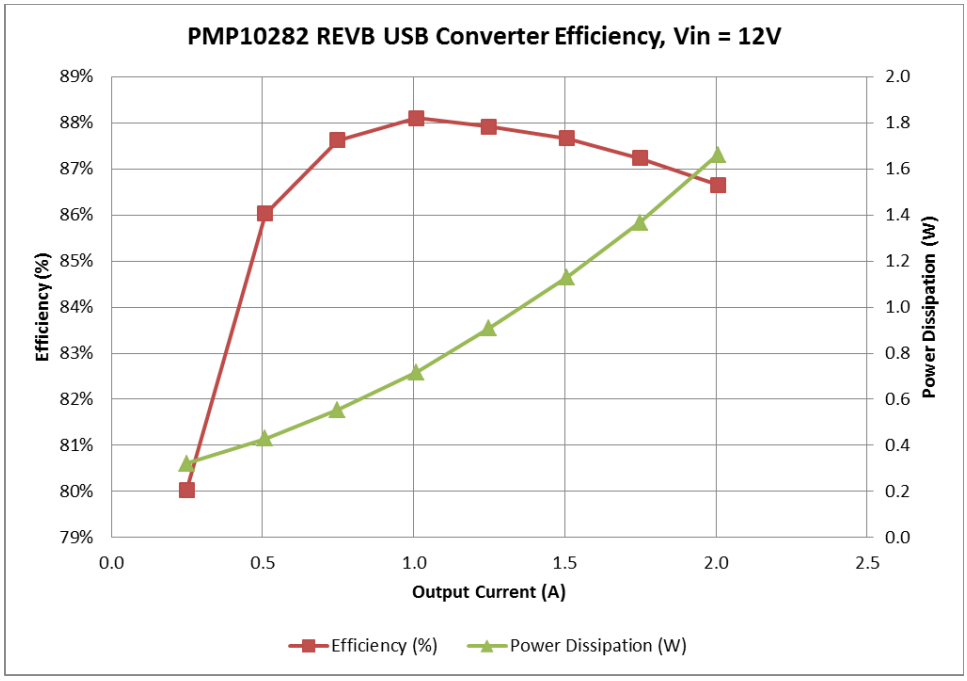


The photo below shows the output voltage startup waveform after the application of 12V in. The 5V output was loaded to 2A. (1V/DIV, 1mS/DIV)

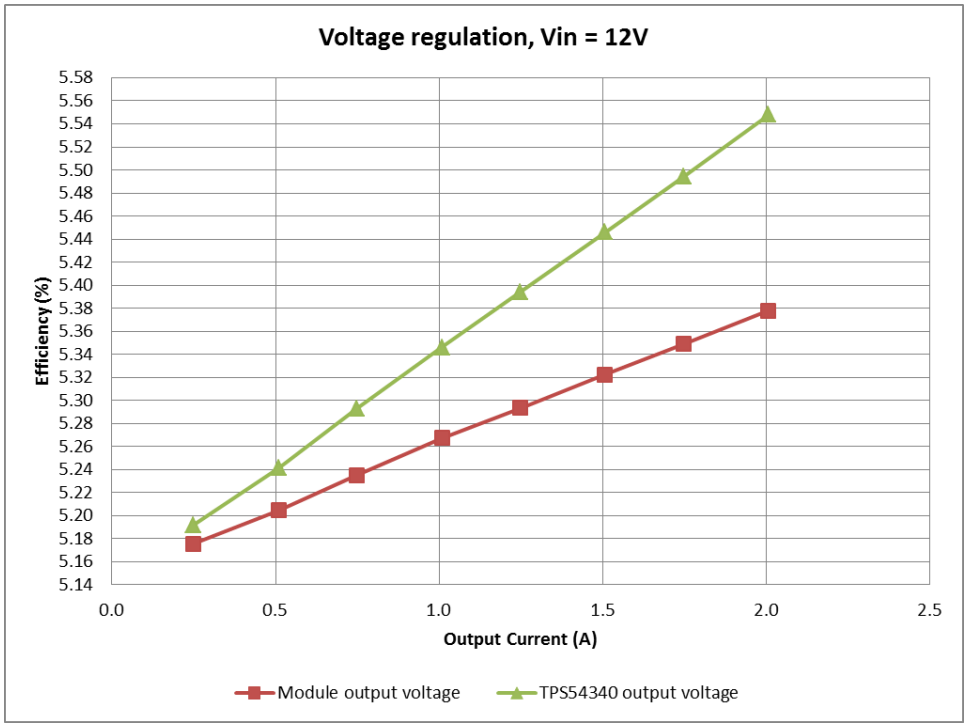


2 Efficiency

The USB converter board's efficiency and power losses are shown below.

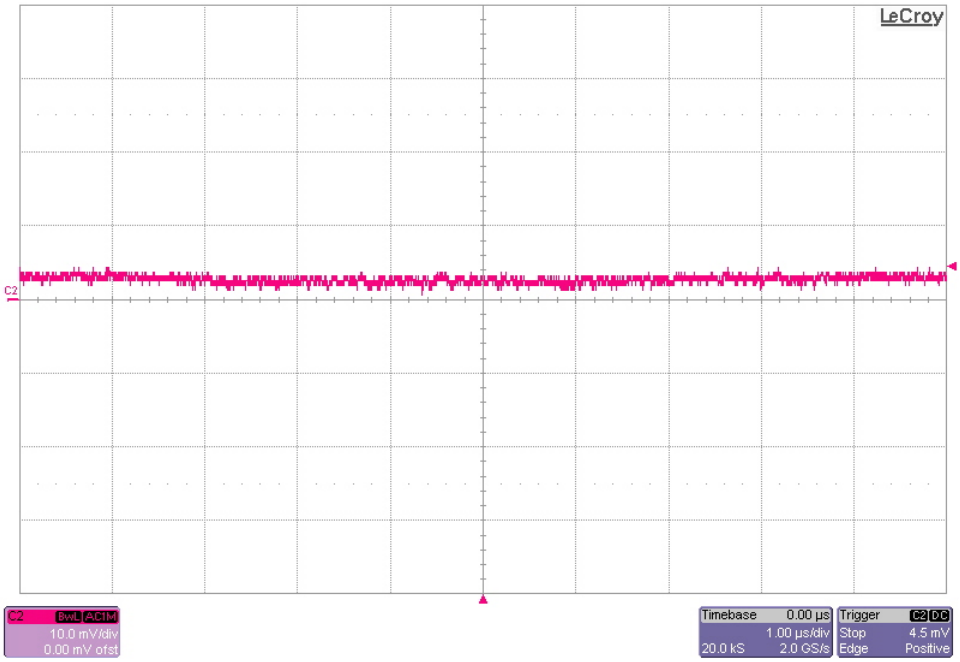


The voltage regulation at the TPS54340 output and the USB connector output are shown below.



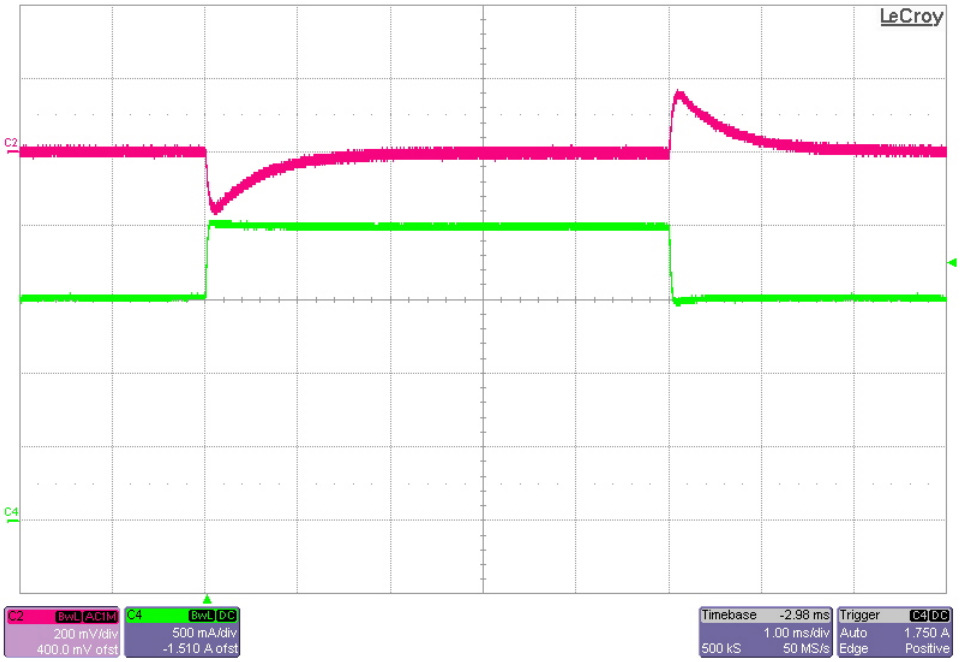
3 Output Ripple Voltage

The 5V output ripple voltage (AC coupled) is shown in the figure below. The image was taken with the output loaded to 2A and the input voltage set to 12V. (10mV/DIV, 1uS/DIV)

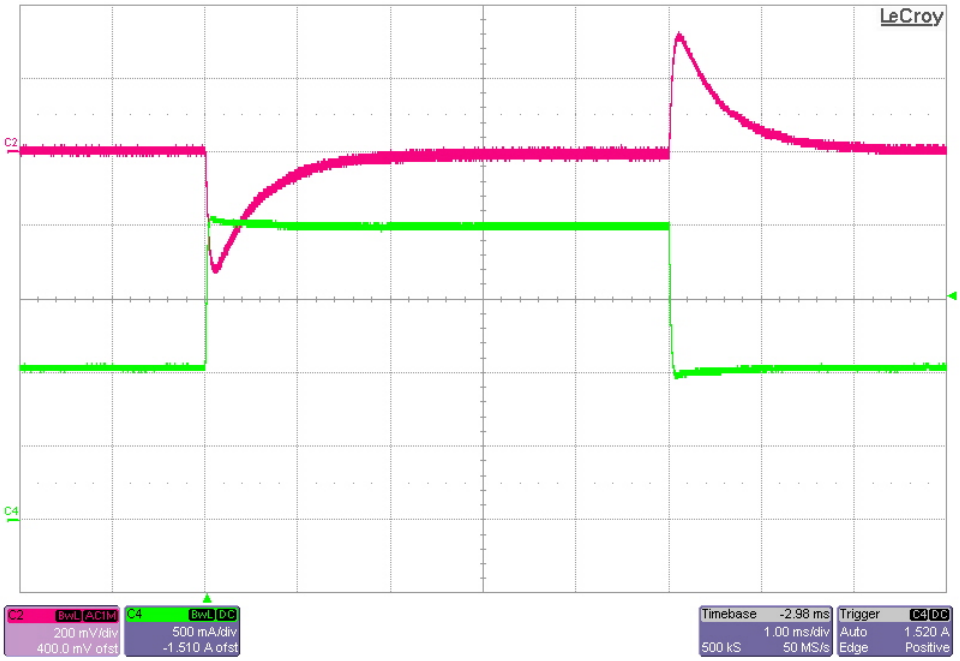


4 Load Transients

The photo below shows the 5V output voltage (ac coupled) when the load current is stepped between 1.5A and 2A. Vin = 12V. (200mV/DIV, 500mA/DIV, 1mS/DIV)

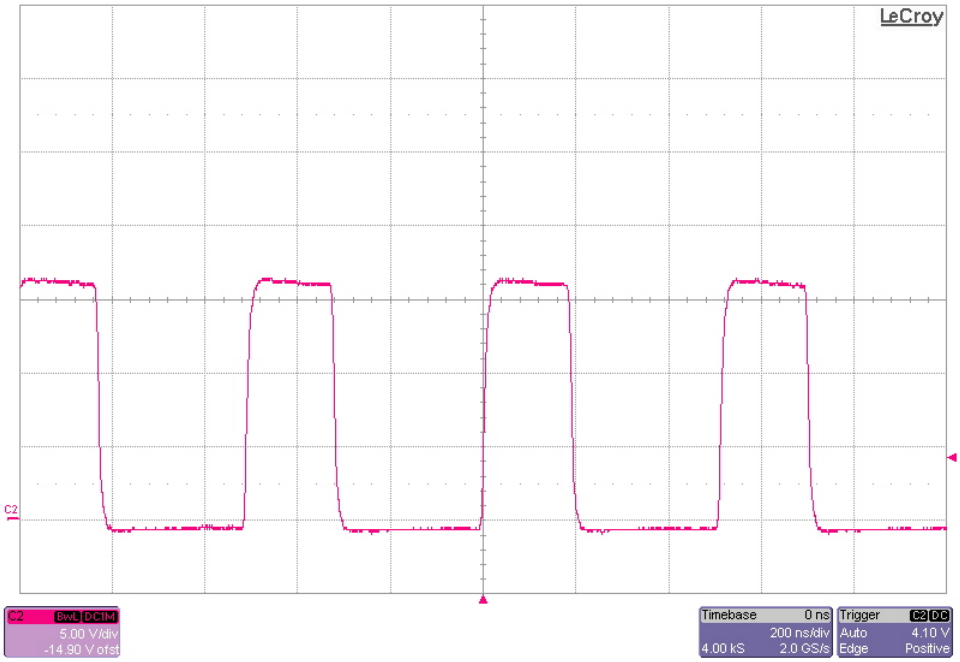


The photo below shows the 5V output voltage (ac coupled) when the load current is stepped between 1A and 2A. Vin = 12V. (200mV/DIV, 500mA/DIV, 1mS/DIV)

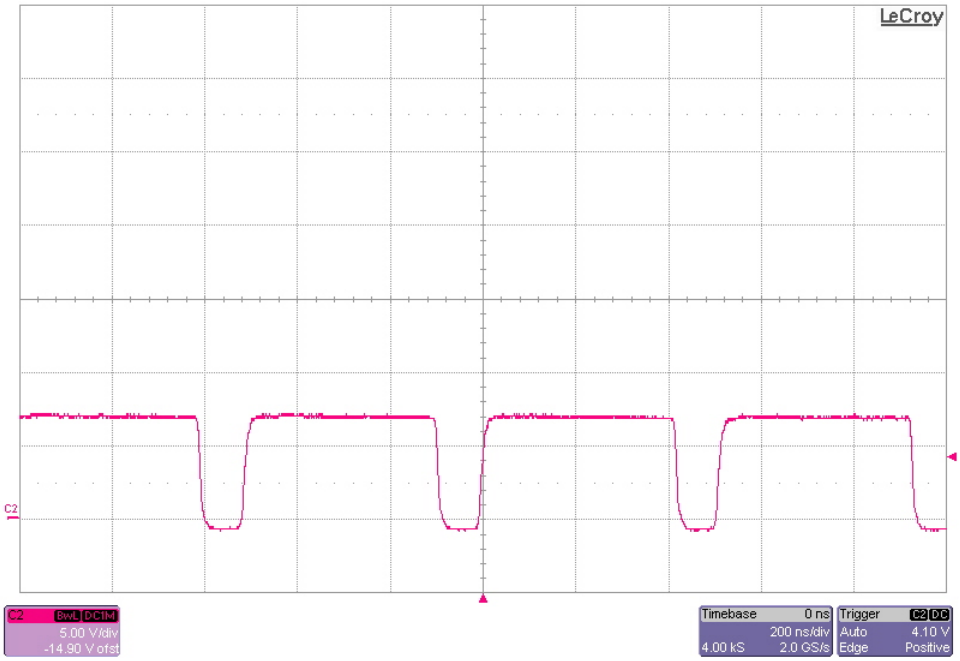


5 Switch Node Waveforms

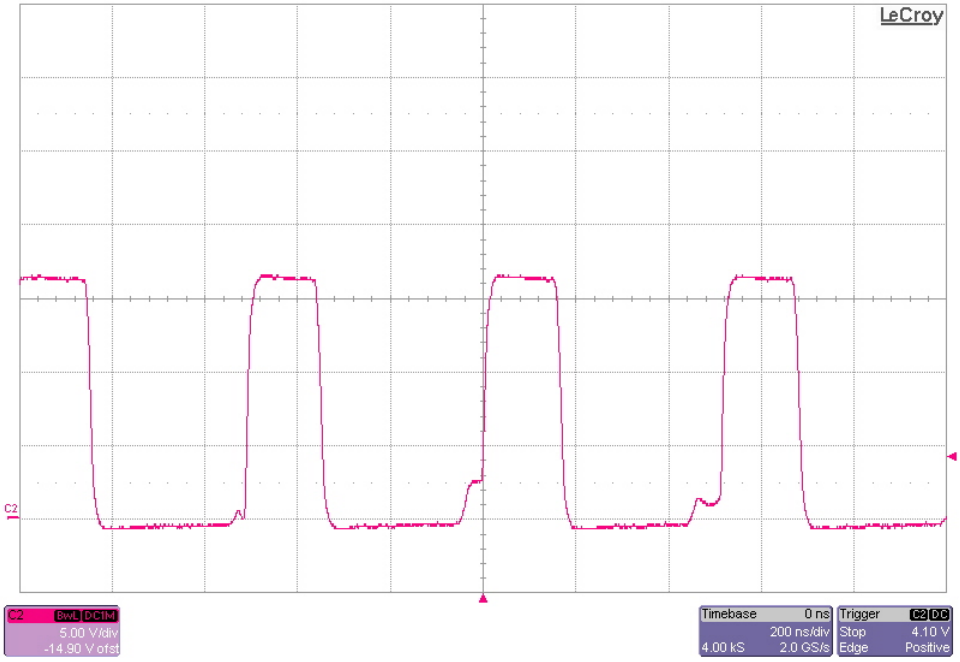
The photo below shows the FET switching voltage (TP3) for an input voltage of 16V and a 2A load. (5V/DIV, 200nS/DIV)



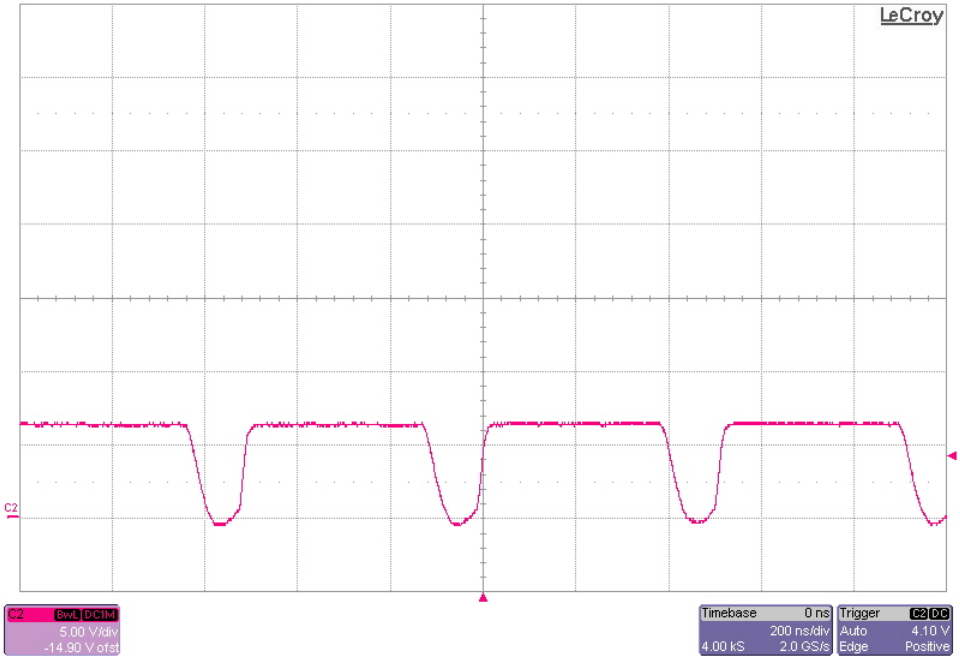
The photo below shows the FET switching voltage (TP3) for an input voltage of 7.25V and a 2A load. (5V/DIV, 200nS/DIV)



The photo below shows the FET switching voltage (TP3) for an input voltage of 16V and a 0.33A load. The converter has just transitioned to DCM at this load. (5V/DIV, 200nS/DIV)



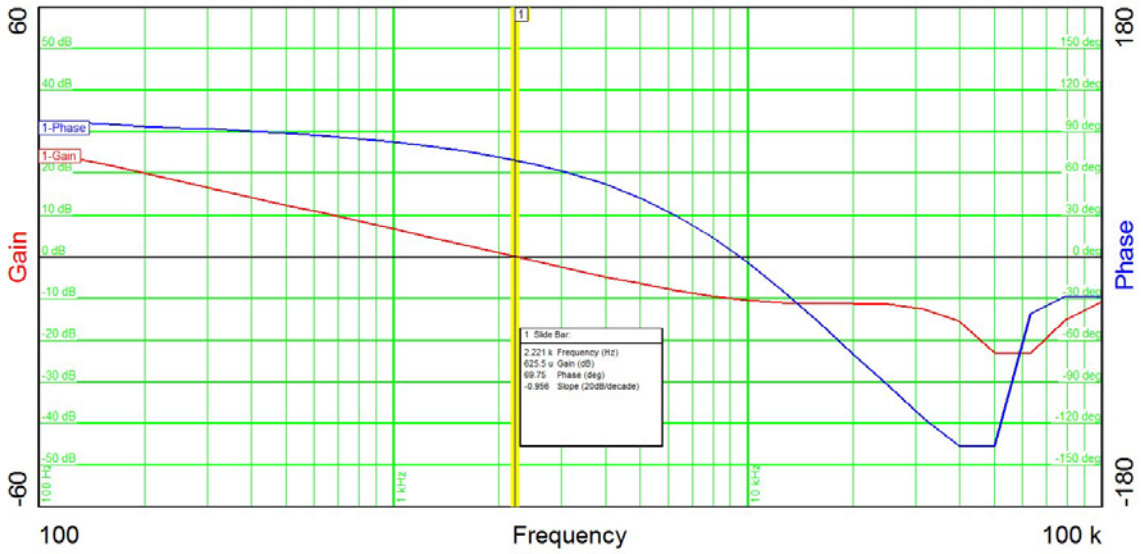
The photo below shows the FET switching voltage (TP3) for an input voltage of 6.4V and a 0.05A load. The converter has just transitioned to DCM at this load. (5V/DIV, 200nS/DIV)



6 Loop Gain

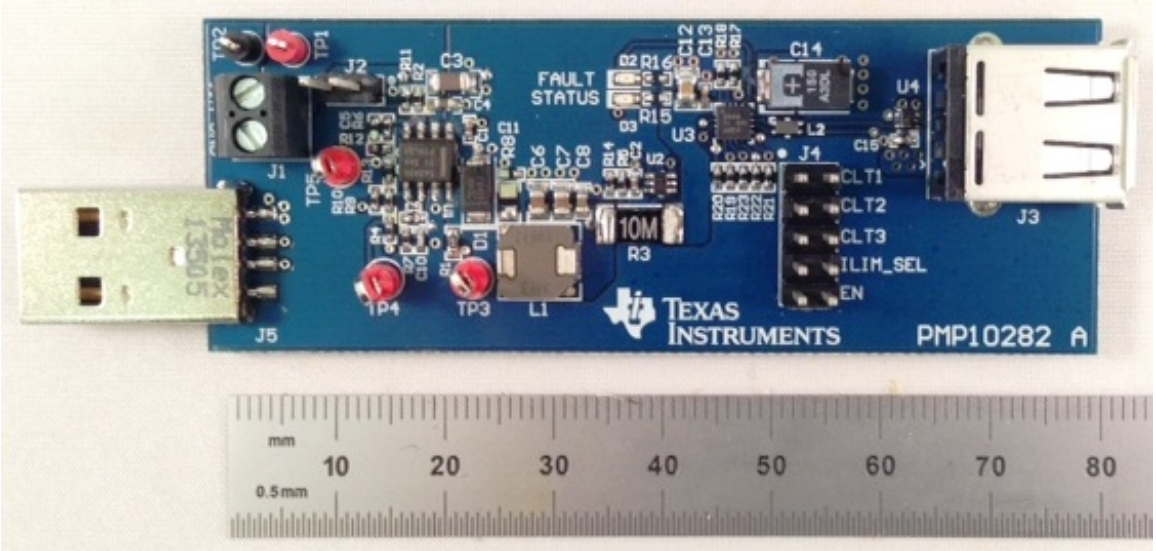
The plot below shows the loop gain at 2A.

Loop Gain (Vin = 12V) BW: 2.22KHz PM: 70 degrees



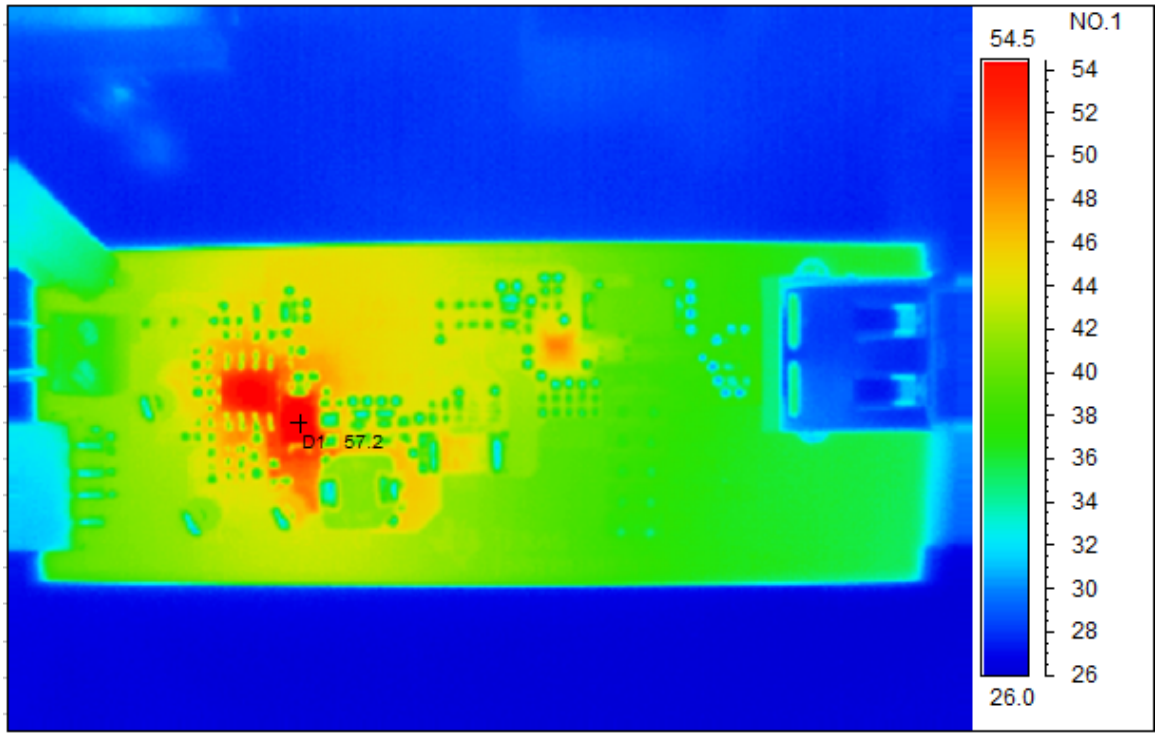
7 Photo

The photo below shows the PMP10282 REVB assy built on the REVA PCB.



8 Thermal Image

A thermal image is shown below operating at 12V input and 5V@2A output (room temp, no airflow).



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