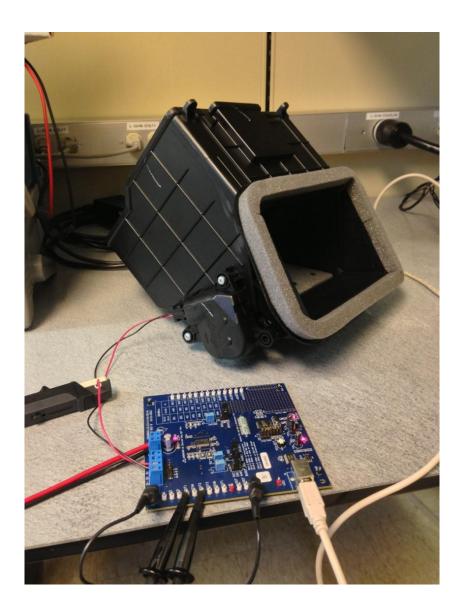
# <sup>11/17/2014</sup> **TIDA-00144 Test Report**

TEXAS INSTRUMENTS

The DRV8802EVM was utilized for this test report, which includes the following:

- A. Brushed DC Motor Parameters
- B. Configuration
- C. Forward Startup Waveforms
- D. Reverse Startup Waveforms
- E. Forward Running Waveforms
- F. Reverse Running Waveforms
- G. Forward Stall Waveforms
- H. Reverse Stall Waveforms
- I. Thermal Image



#### A. Brushed DC Motor Parameters

The following measurements were taken at steady state using the brushed DC motor installed in the HVAC damper motor assembly.

Motor Terminals	Resistance	Inductance (@1KHz)
A+ (Red Wire) to A- (Black Wire)	56.3Ω	77.64mH

#### **B.** Configuration

A VM voltage of 12V was used with VREF configured to 2.5V to set a 1.25A full-scale (100%) chopping current.

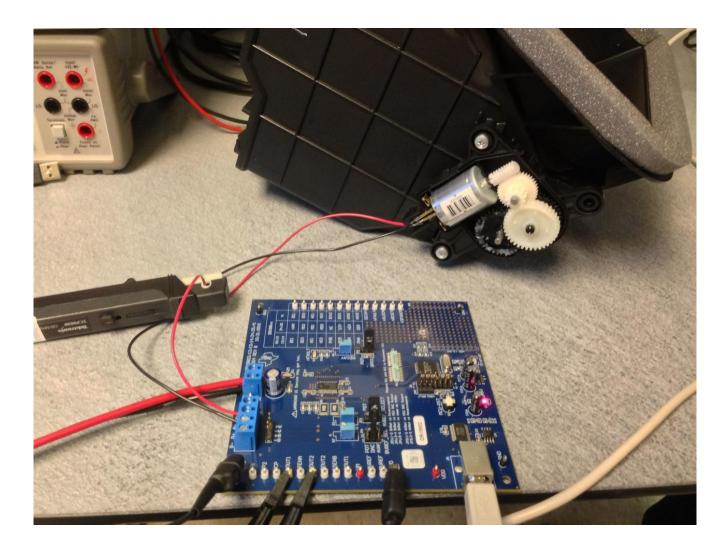
The driver was configured in slow decay mode with the bridge A current set to 100%. The forward direction in this test report refers to a positive voltage on AOUT1 with the red wire of the brushed DC motor connected to AOUT1 on the DRV8802EVM. The reverse direction in this test report refers to a positive voltage on AOUT2 with the black wire of the brushed DC motor connected to AOUT2 on the DRV8802EVM.

The DRV8802EVM GUI was configured as shown below.

CPG004 DRV88xx EVM						
File   Settings   Disconnect     CPG004 RC - DRV88xx   Version 1.1 - February 9, 2011     DRV8802-12-13-14_24-25_40_41-43_42   Version 1.1 - February 9, 2011						
DRV8802-12-13-14	DRV8824-25	DRV8840	DRV8841-43	DRV8842		
Control Signals Control Signals ENABLE A AIO PHASE A AIO ENABLE B BIO PHASE B BIO NRESET NRESET C nSLEEP Decay	Current Control - VREF_A VREF_A (DACO) 0 VREF_B (DAC1) 0 PWM Control 0 ENABLE A	VREFB VREF= 2.5V VREF= 0V %DC: 100%	2.5V 2.5V 2.5V	Stepper Demo    1000 Pulses Per Second   1000 (PPS)   Direction: CW/CCW*   Start Steps Update Speed		
	0 ENABLE B	%DC: 0%	255			
Connected COM1 9600,n,8,1						

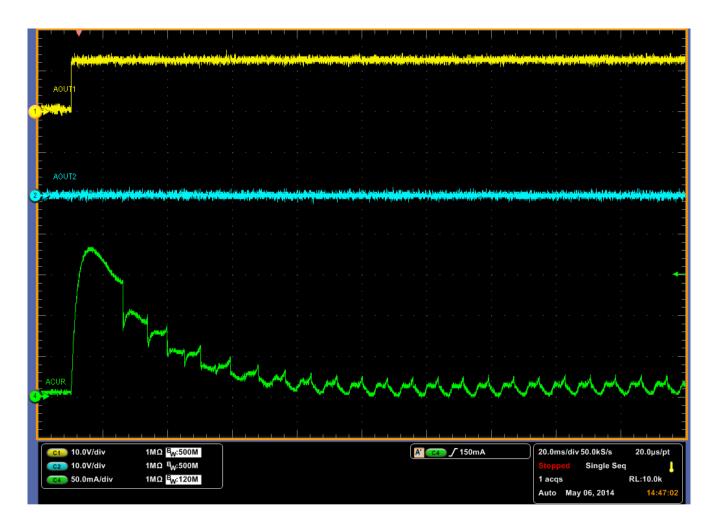
# <sup>11/17/2014</sup> **TIDA-00144 Test Report**

The following picture illustrates the test setup.



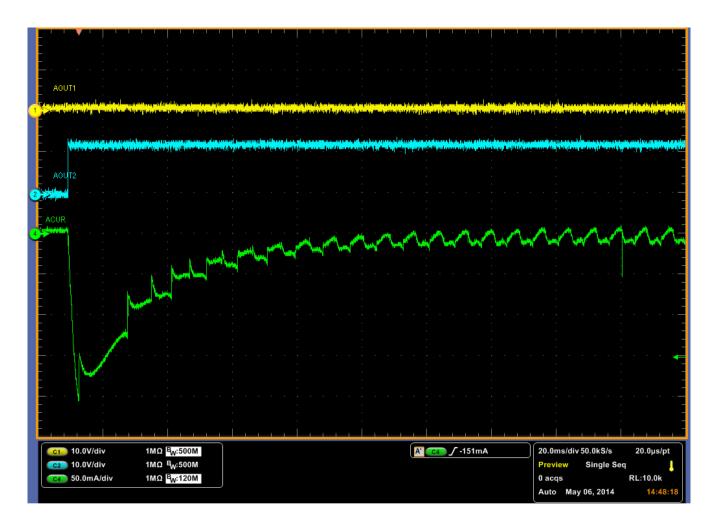
## C. Forward Startup Waveforms

The following waveforms illustrate AOUT1 voltage, AOUT2 voltage, and bridge A current during startup of the brushed DC motor in the forward direction.



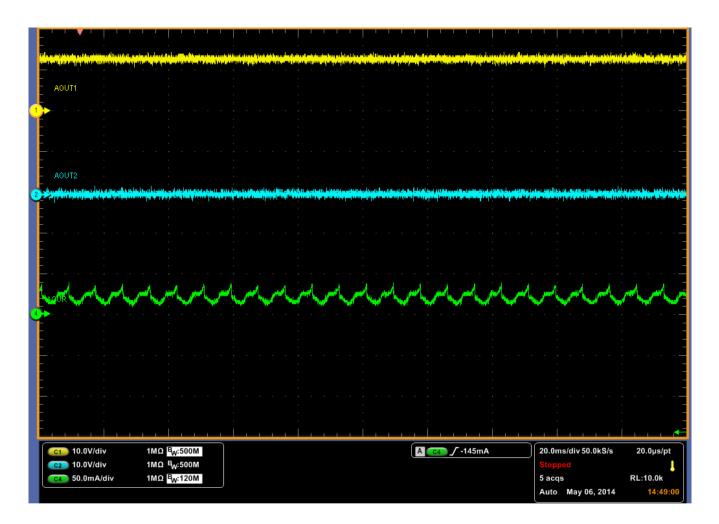
## D. Reverse Startup Waveforms

The following waveforms illustrate AOUT1 voltage, AOUT2 voltage, and bridge A current during startup of the brushed DC motor in the reverse direction.



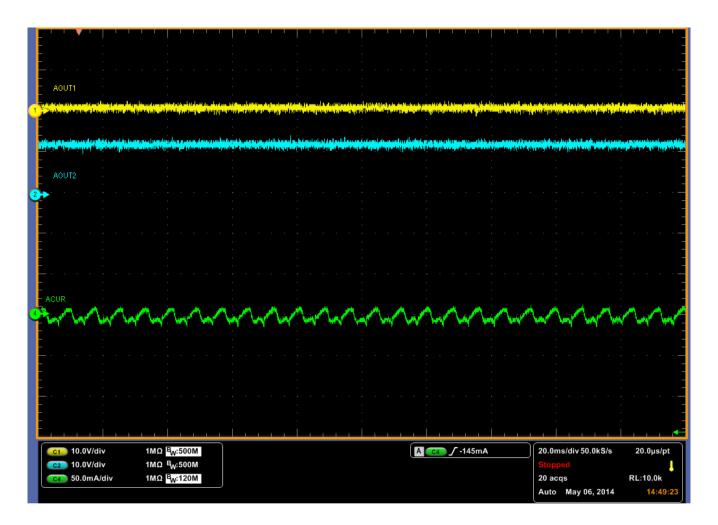
#### E. Forward Running Waveforms

The following waveforms illustrate AOUT1 voltage, AOUT2 voltage, and bridge A current while the brushed DC motor was running in the forward direction.



#### F. Reverse Running Waveforms

The following waveforms illustrate AOUT1 voltage, AOUT2 voltage, and bridge A current while the brushed DC motor was running in the reverse direction.



# <sup>11/17/2014</sup> **TIDA-00144 Test Report**

## G. Forward Stall Waveforms

The following waveforms illustrate AOUT1 voltage, AOUT2 voltage, and bridge A current during the stall condition of the brushed DC motor in the forward direction.

AOUT1		
an a		
ւրդնումնեն էլ չվ են վնում յ ննու յ վիրութ նուղ էլ էլ ին էլ էլ էլ Հ	Addrewnedd da gweredd gweredd gwere prochw <sup>ar</sup>	· · · · · · · · · · · · · · · · · · ·
C1   10.0V/div   1MQ   B <sub>W</sub> :500M     C2   10.0V/div   1MQ   B <sub>W</sub> :500M     C4   50.0mA/div   1MQ   B <sub>W</sub> :120M	A 64 / 96.0mA	∫   500ms/div 20.0kS/s   50.0µs/pt     Stopped   ↓     1 acqs   RL:100k     Auto   May 06, 2014   14:50:40

# H. Reverse Stall Waveforms

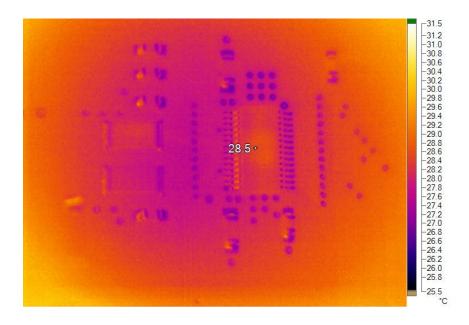
The following waveforms illustrate AOUT1 voltage, AOUT2 voltage, and bridge A current during the stall condition of the brushed DC motor in the reverse direction.

AOUT1		
a faith an an ann an an an ann an ann an ann an a		
AOUT2		A far an A Mary y Jonin and y and an A Mary and Mary and A Mary and
	Kina internativa alia tani ada da inda dia kini ki Kina Manazaran Manazara wana yapa sa mangan tani ana manazara yana yana yana yana yana yana yana y	
G1   10.0V/div   1MΩ   B <sub>W</sub> :500M     G2   10.0V/div   1MΩ   B <sub>W</sub> :500M     G4   50.0mA/div   1MΩ   B <sub>W</sub> :120M		500ms/div 20.0kS/s 50.0µs/pt Stoppad I 1 acqs RL:100k Auto May 06, 2014 14:51:19



# I. Thermal Image

The following is a thermal image of the DRV8802EVM captured with the brushed DC motor in the stall condition. The maximum case temperature measurement was 28.5°C.



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