Test Procedure for the LV8741VGEVB Evaluation Board

For Stepper Motor Control

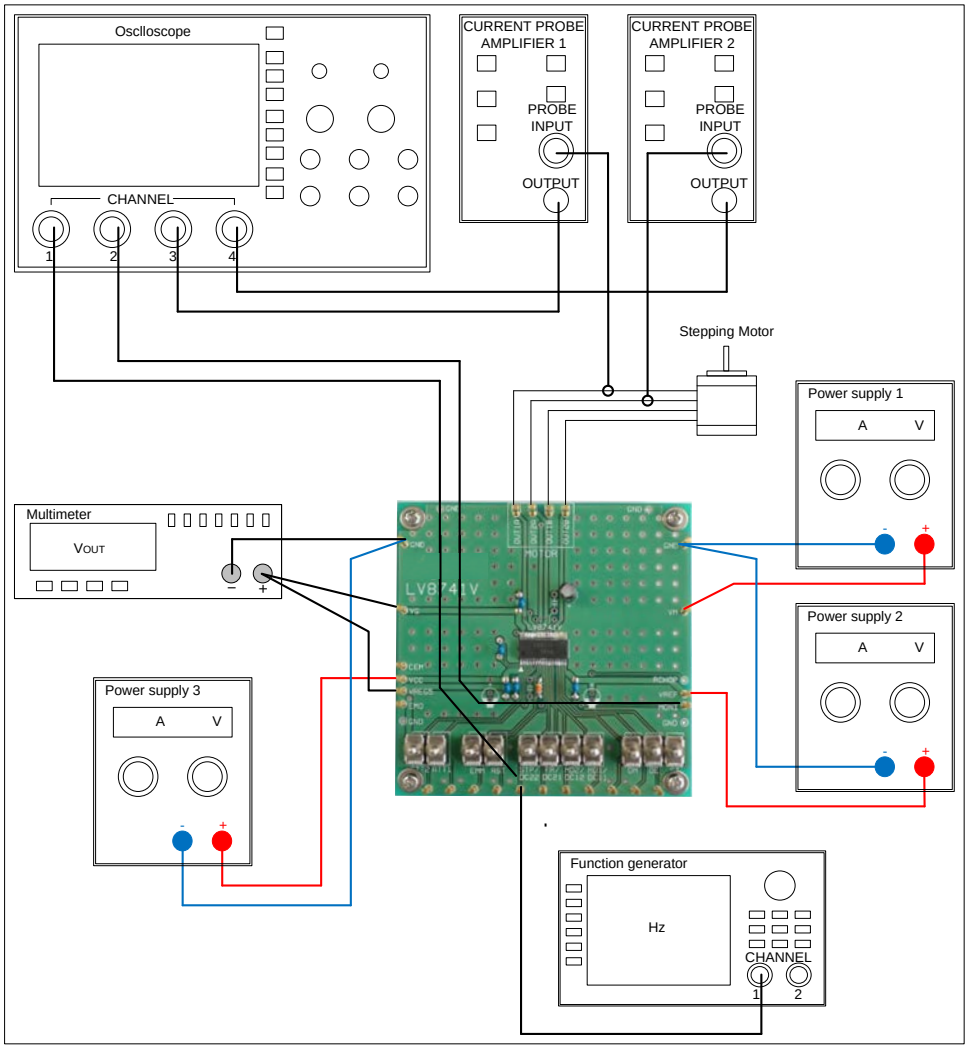


Table1: Required Equipment

Equipment	Efficiency
Power supply1	35V-5A
Power supply2	5V-0.5A
Power supply3	10V-1A
Function generator	200kHz
Multimeter	-
Oscilloscope	4 channel
Current probe1	-
Current probe2	-
LV8741V Evaluation Board	-
Stepper Motor	35V-3A

Test Procedure:

1. Connect the test setup as shown above.
2. Set it according to the following specifications.

Supply Voltage

- VCC (2.7 to 5.5V): Logic Supply for LSI
- VM (9 to 35V): Power Supply for LSI
- VREF (0 to 3V): Const. Current Control for Reference Voltage

Toggle Switch State

- Upper Side: High (VDD)
- Middle: Open, enable to external logic input
- Lower Side: Low (GND)

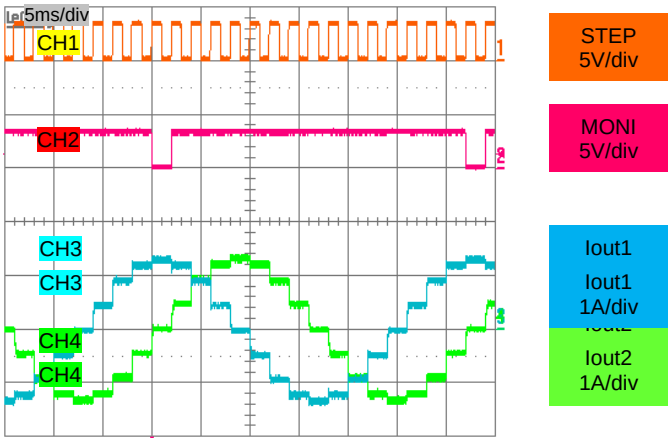
Operations Guide

1. **Initial Condition Setting:** Set "Open" the toggle switch STP/D22, and "Open or Low" the other switches.
2. **Motor Connection:** Connect the Motors between OUT1A and OUT1B, between OUT2A and OUT2B.
3. **Power Supply:** Supply DC voltage to VCC, VM, and VREF.
4. **Ready for Operation from Standby State:** Turn "High" the ST terminal toggle switch. After some time passes, turn "High" the OE terminal toggle switch. Channel 1 and 2 are into full-step initial position (100%, -100%).
5. **Motor Operation:** Turn "High" the RST terminal toggle switch. Input the clock signal into the terminal STP/DC22.
6. **Other Setting:** (See Application Note for detail)
   i. ATT1, ATT2: Motor current attenuation.
   ii. EMM: Short circuit protection mode change.
   iii. RST: Initial Mode.
   iv. FR/DC21: Motor rotation direction (CW/CCW) setting.
   v. MD1/DC11, MD2/DC12: Excitation mode.
   vi. OE: Output Enable.

3. Check VREG5 and VG terminal voltage at multimeter.
4. Check the STEP/DC22 and MONI terminal voltage at scope CH1 and CH2, and the output current waveform at scope CH3 and CH4.

Table2: Desired Results

INPUT	OUTPUT
VCC=5V, VM=24V, VREF=0.53V ST=H,DM=L ATT1=ATT2=L, FR/DC21=L MD1/DC11=MD2/DC12=H STP/DC22=500Hz(Duty50%)	VREG5=4.5V to 5.5V VG=28V to 29.8V


5ms/div
CH1
CH2
CH3
CH3
CH4
CH4
STEP
5V/div
MONI
5V/div
Iout1
Iout1
1A/div
Iout2
1A/div

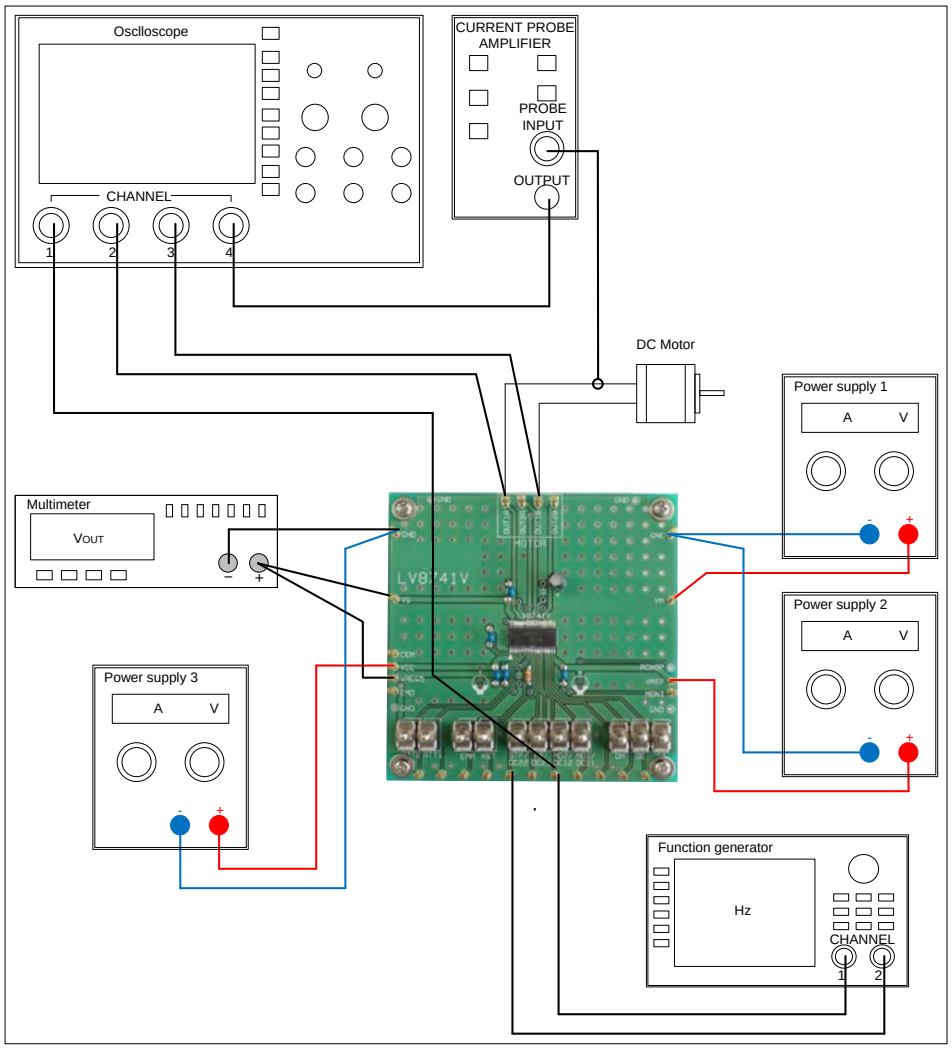


Table3: Required Equipment

Equipment	Efficiency
Power supply1	35V-5A
Power supply2	5V-0.5A
Power supply3	10V-1A
Function generator	200kHz
Multimeter	-
Oscilloscope	4 channel
Current probe	-
LV8741V Evaluation Board	-
DC Motor	35V-3A

Test Procedure:

1. Connect the test setup as shown above.
2. Set it according to the following specifications.

Supply Voltage

- VM (9 to 35V): Power Supply for LSI
- VREF (0 to 3V): Const. Current Control for Reference Voltage
- VDD (2 to 5V): Logic "High" voltage for toggle switch

Toggle Switch State

- Upper Side: High (VDD)
- Middle: Open, enable to external logic input
- Lower Side: Low (GND)

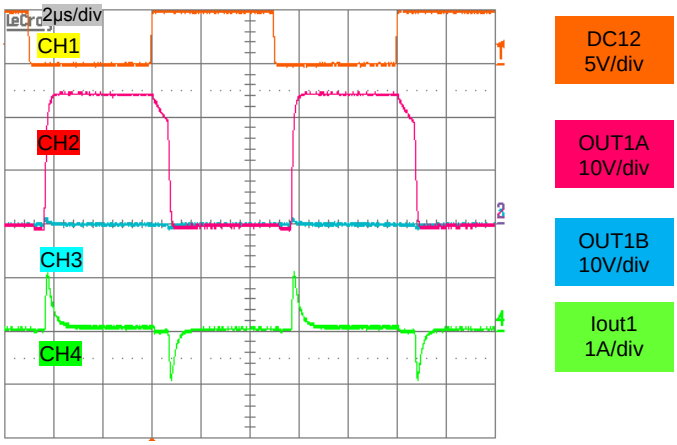
Operations Guide

1. **Initial Condition Setting:** Set "Open" the toggle switch DM, and "Open or Low" the other switches.
2. **Motor Connection:** Connect the Motor(s) between OUT1A and OUT1B, between OUT2A and OUT2B.
3. **Power Supply:** Supply DC voltage to VM, VREF and VDD.
4. **Ready for Operation from Standby State:** Turn "High" the ST and DM terminal toggle switch.
5. **Motor Operation:** Set MD1/DC11, MD2/DC12, FR/DC21, and STEP/DC22 terminals according to the purpose.
6. **Other Setting:** (See Application Note for detail)
   i. ATT1, ATT2: Motor current attenuation.
   ii. EMM: Short circuit protection mode change.
   iii. RST: Not performed.
   iv. OE: Output enable.

3. Check VREG5 and VG terminal voltage at multimeter.
4. Check the MD2/DC12, OUT1A, and OUT1B terminal voltage at scope CH1, CH2, and CH3, and the output current waveform at scope CH4.
5. Switch to channel 2(STEP/DC22, OUT2A, OUT2B) as well as channel 1(MD2/DC12, OUT1A, OUT1B) and measure it.

Table4: Desired Results

INPUT	OUTPUT
VCC=5V, VM=24V, VREF=0.9V ST=H,DM=H ATT1=ATT2=L, FR/DC21=STP/DC22=L MD1/DC11=H MD2/DC12=100kHz(Duty50%)	VREG5=4.5V to 5.5V VG=28V to 29.8V


2µs/div
CH1
CH2
CH3
CH4
DC12
5V/div
OUT1A
10V/div
OUT1B
10V/div
Iout1
1A/div