

Test Procedure for the LV8729VGEVB Evaluation Board

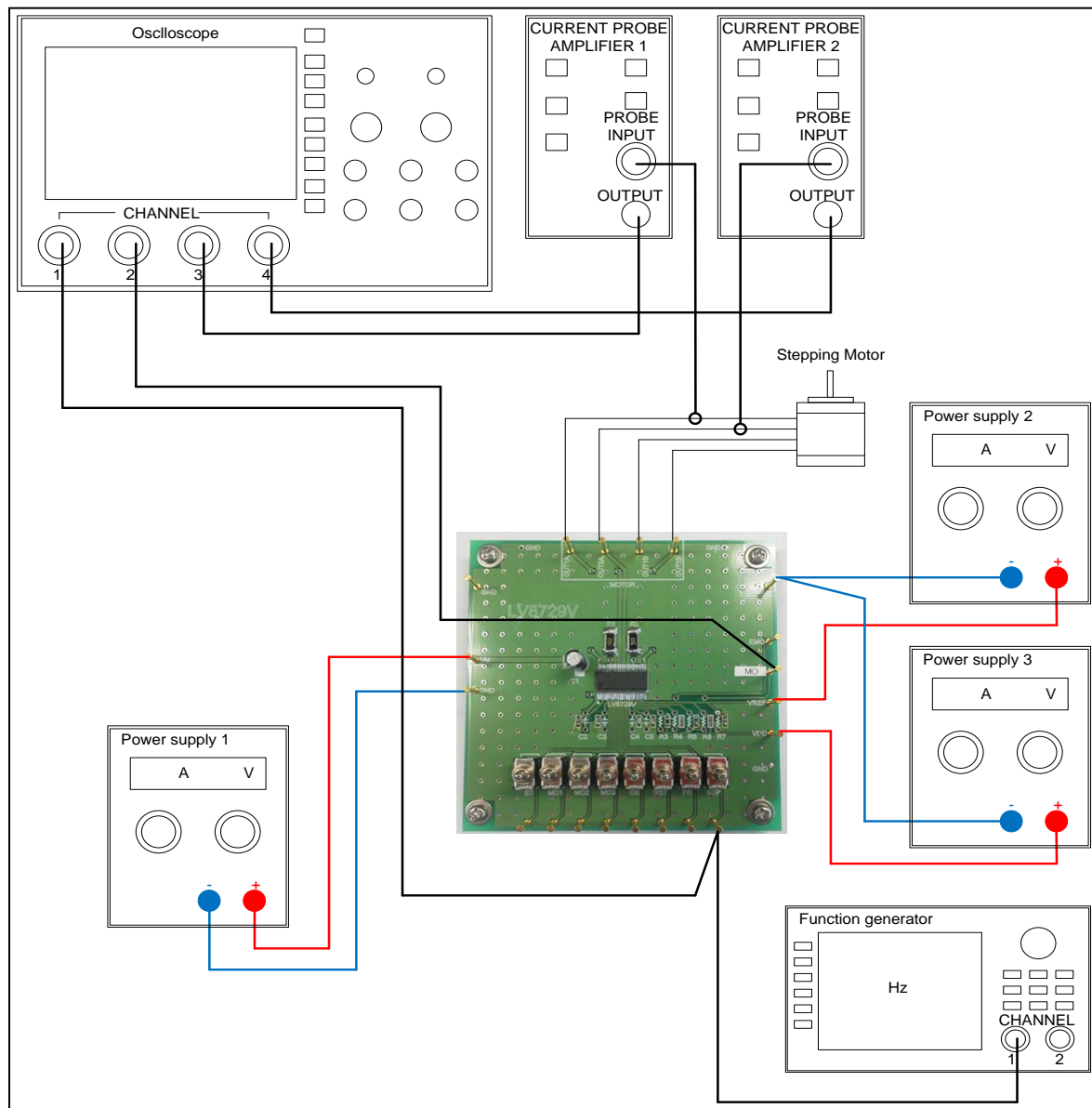


Table1: Required Equipment

Equipment	Efficiency
Power supply1	35V-5A
Power supply2	5V-0.5A
Power supply3	10V-1A
Function generator	200kHz
Oscilloscope	4 channel
Current probe1	-
Current probe2	-
LV8729V 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

- VM (9 to 32V): 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 STEP, and “Open or Low” the other switches.
2. **Power Supply:** Supply DC voltage to VM, VREF and VDD.
3. **Ready for Operation from Standby State:** Turn “High” the ST , OE and RST terminal toggle switch. Channel 1 and 2 are into Full step excitement initial position (100%, -100%) .
4. **Motor Operation:** Input the clock signal into the terminal STEP.
5. **Other Setting:** (See Application Note for detail)
 - i. FR: Motor rotation direction (CW / CCW) setting.
 - ii. MD1 , MD2 , MD3: Excitation mode.

Setting for External Component Value

1. Constant Current (100%)
 At VREF = 1.0V

$$I_{out} = VREF [V] / 5 / RNF [ohm]$$

$$= 1.0 [V] / 5 / 0.47 [ohm]$$

$$= 0.426 [A]$$
2. Chopping Frequency

$$F_{chop} = I_{chop} [uA] / (C_{chop} \times V_t \times 2)$$

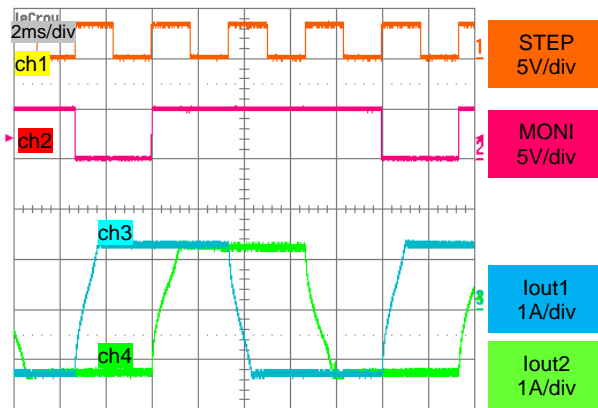
$$= 10 [uA] / (180 [pF] \times 0.5 [V] \times 2)$$

$$= 55 [kHz]$$
3. Check the STEP and MO terminal voltage at scope CH1 and CH2, and the output current waveform at scope CH3 and CH4.

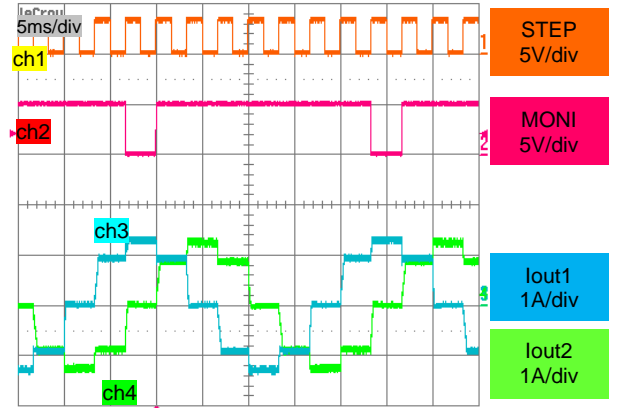
**Table2: Desired Results**

INPUT	OUTPUT
VM=24V VREF=1.5V VDD=5V ST=High OE=High RST=High FR=Low	* Refer to the following waveform

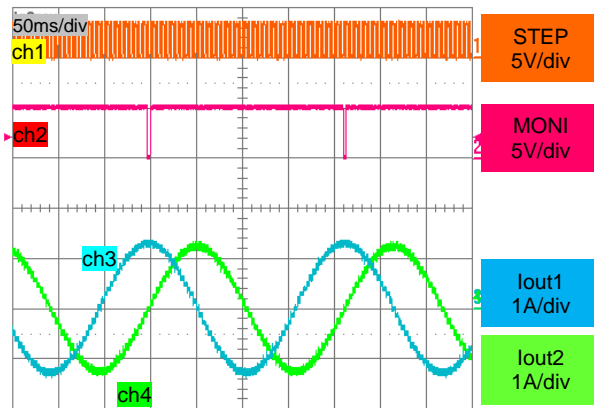
●**Figure 1. Full Step**
 MD1=L, MD2=L, MD3=L
 STEP=300Hz (Duty 50%)



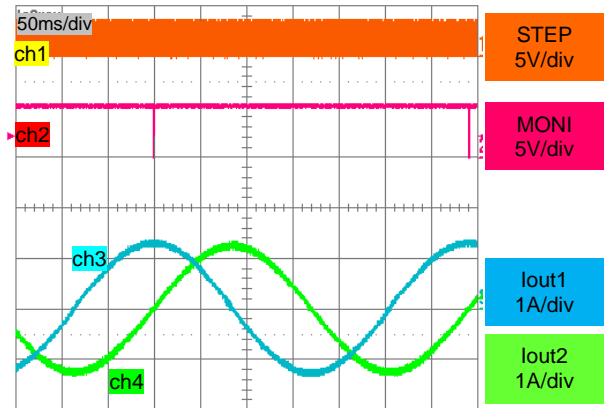
●**Figure 2. Half Step**
 MD1=H, MD2=L, MD3=L
 STEP=300Hz (Duty 50%)



●**Figure 3. 1/16 Step**
 MD1=L, MD2=L, MD3=H
 STEP=300Hz (Duty 50%)



●**Figure 4. 1/128 Step**
 MD1=H, MD2=H, MD3=H
 STEP=1500Hz (Duty 50%)

**Excitation setting method**

Input			Micro step resolution	Excitation mode	Initial position	
MD3	MD2	MD1			1ch current	2ch current
Low	Low	Low	Full Step	2-phase	100%	-100%
Low	Low	High	Half Step	1-2 phase	100%	0%
Low	High	Low	Quarter Step	W1-2 phase	100%	0%
Low	High	High	1/8 Step	2W1-2 phase	100%	0%
High	Low	Low	1/16 Step	4W1-2 phase	100%	0%
High	Low	High	1/32 Step	8W1-2 phase	100%	0%
High	High	Low	1/64 Step	16W1-2 phase	100%	0%
High	High	High	1/128 Step	32W1-2 phase	100%	0%