

Test Procedure for the LV8860VGEVB Evaluation Board

1. For full speed FAN motor drive

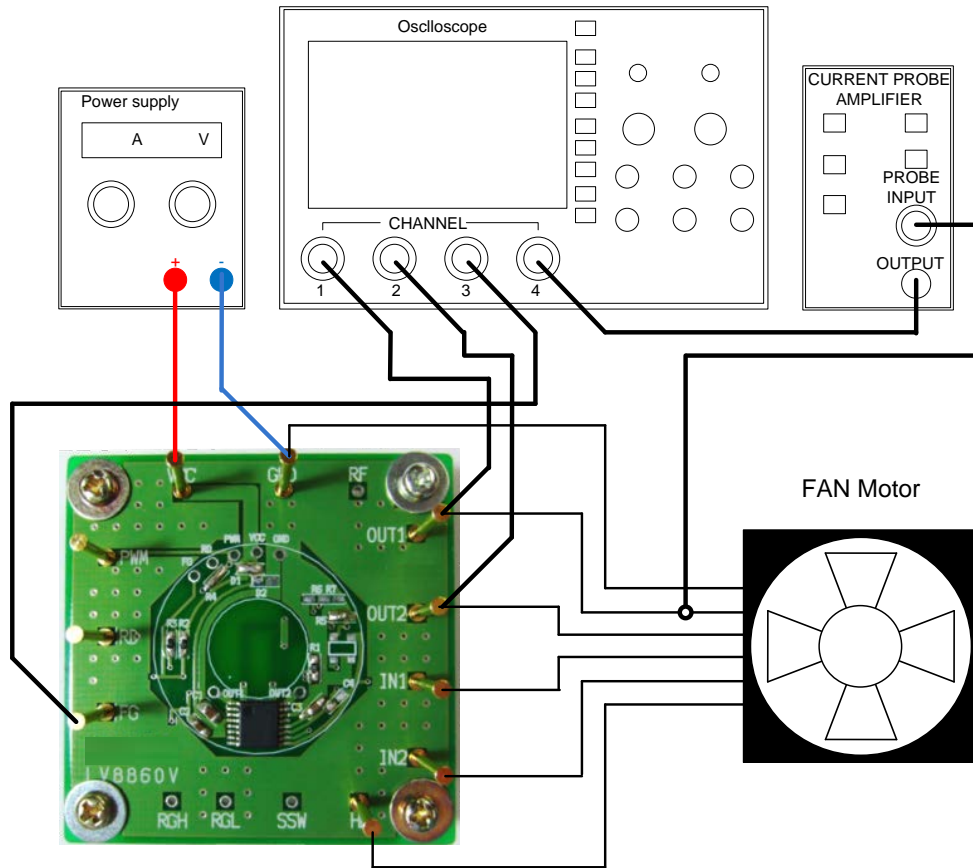


Table1: Required Equipment

Equipment	Efficiency
Power supply	40V-1A
Oscilloscope	4 channel
Current probe	-
LV8860V Evaluation Board	-
FAN Motor	-

**Test Procedure:
Operation check**

1. Connect the test setup as shown above.
2. Supply DC voltage to VCC.
3. Monitor the voltage of OUT1, OUT2 and FG with CH1, CH2 and CH3 and the waveform of output current with CH4 of the oscilloscope.

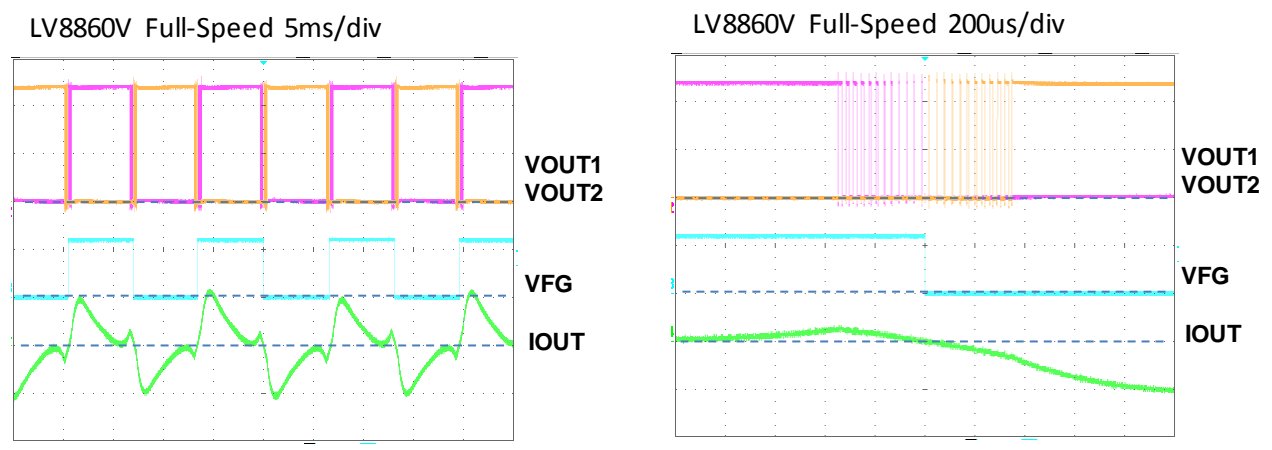
Table2: Desired Results

INPUT	OUTPUT
VCC=7V to 34V	* Refer to the following waveform

(4) If change of output current is not smooth when phase is changed, power efficiency needs to be optimized by connecting R6 or R7 to SSW to adjust the voltage.

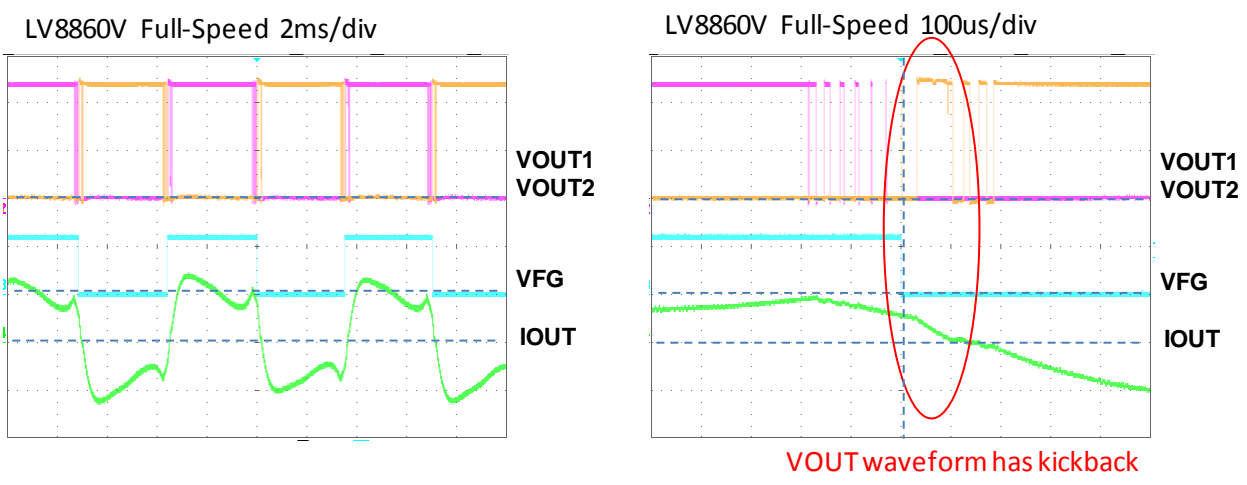
Typical current waveform

A. Waveform without kickback (default VSSW=2V)



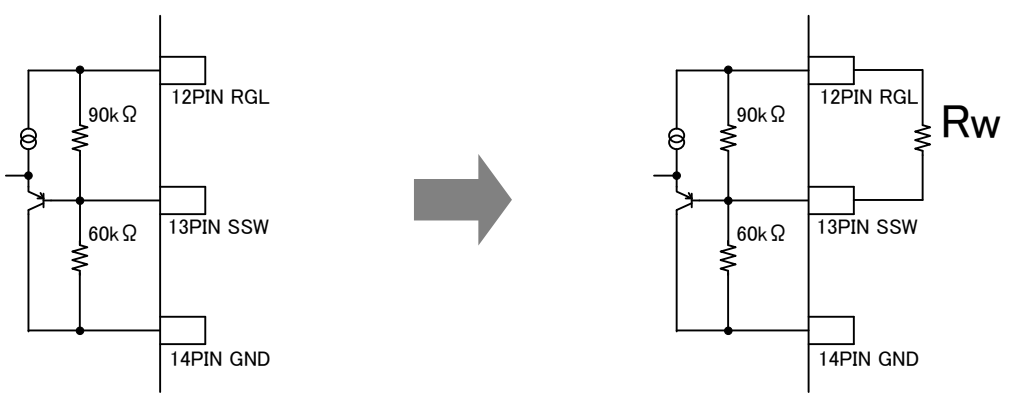
*Since the output current at phase switch is changed smoothly, the efficiency is good. Hence no adjustment of soft switch width is needed.

B. Waveform with kickback (default VSSW=2V)

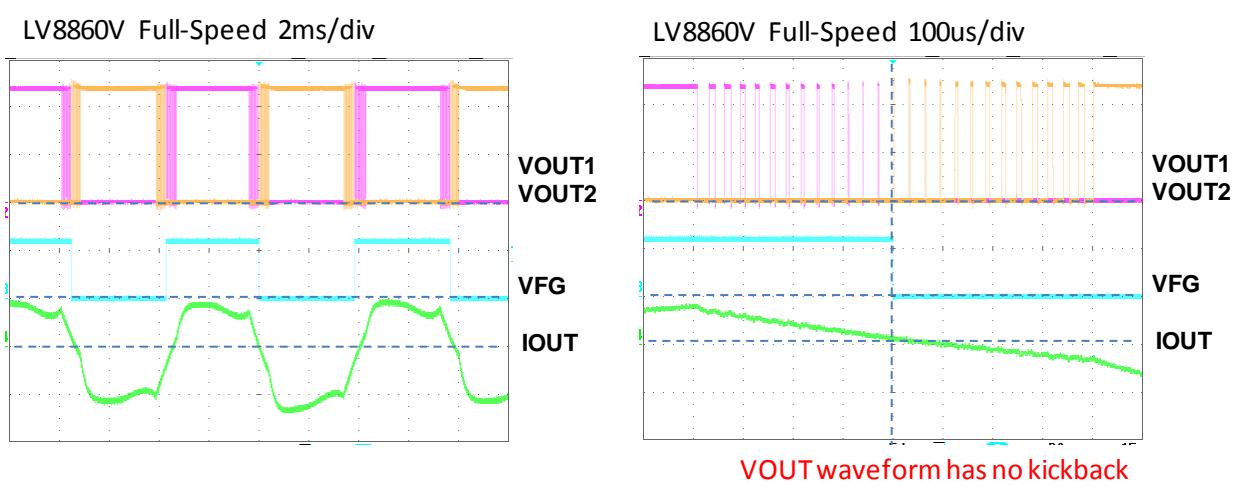


* The direction of output current has not been changed after a phase switch and kickback occurs. Because of the reactive current, brake motion is set which degrades efficiency. And due to rapid current change, silent drive is impaired as well.
 The following method allows smooth current flow at phase switch and improved efficiency and silent drive by widening the width of soft-switch.

- Adjustment method: (See p.17 of the Application Note for the details.)



Waveform without kickback (after adjusting to VSSW=3V)



2. For speed controlled FAN motor drive

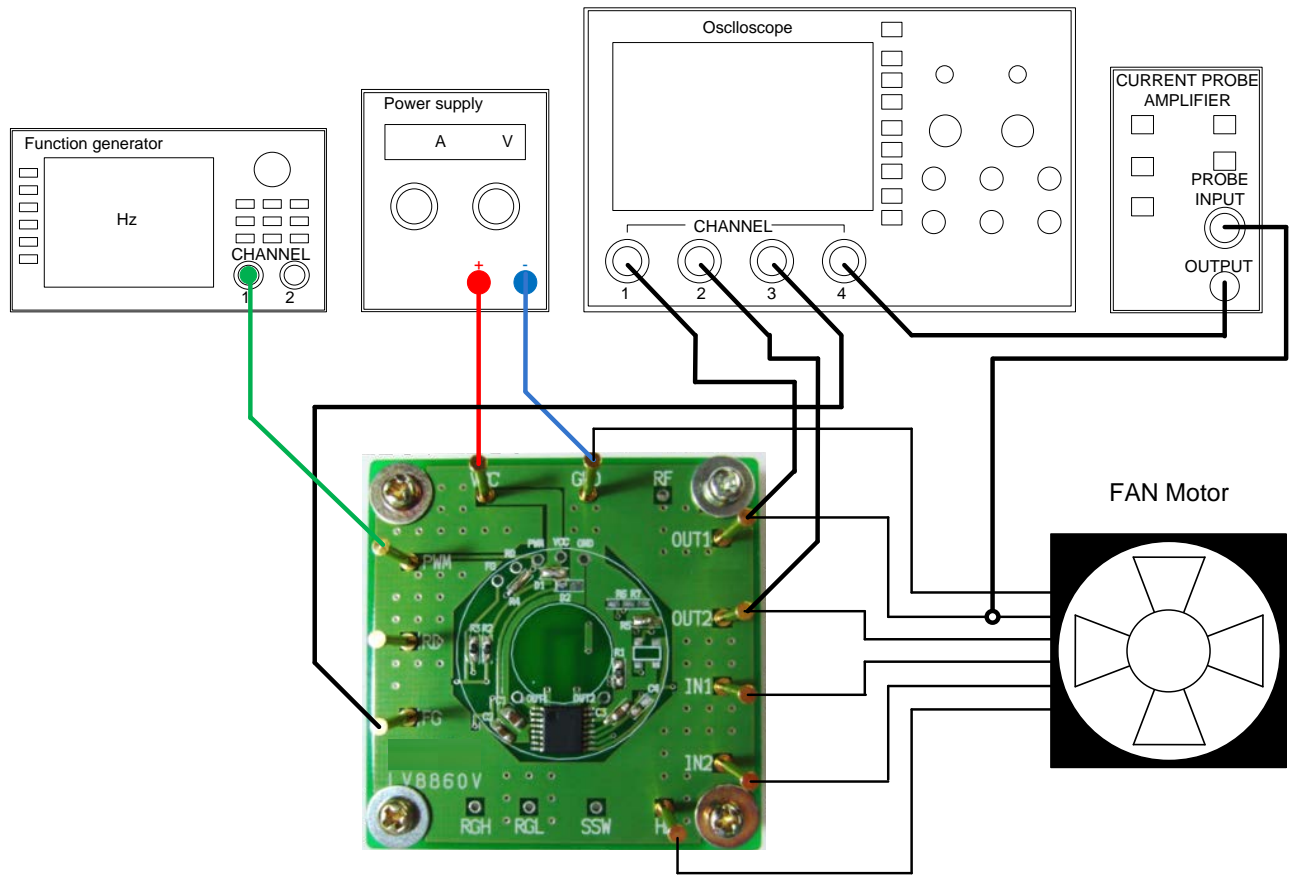


Table3: Required Equipment

Equipment	Efficiency
Power supply	40V-1A
Oscilloscope	4 channel
Current probe	-
LV8860V Evaluation Board	-
Function generator	0 to 5V , 25kHz
DC Motor	-

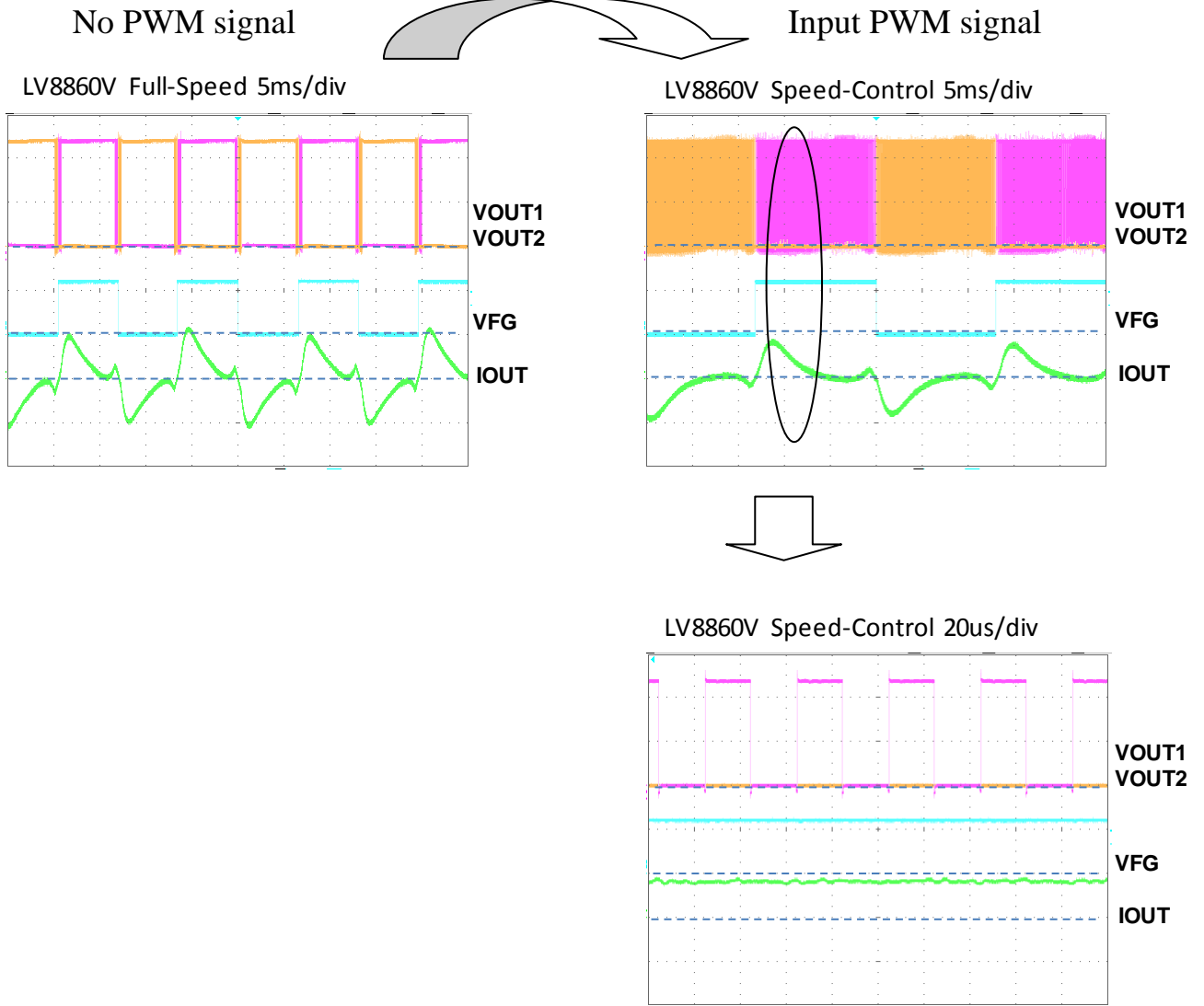
Test Procedure:
PWM speed control function check

1. Connect the test setup as shown above.
2. Supply DC voltage to VCC and input PWM signal to PWM terminal.
 *There is no specific input order.
3. Monitor the voltage of OUT1, OUT2 and FG terminal voltage with CH1, CH2 and CH3, and the output current waveform with CH4 of the oscilloscope.

Table4: Desired Results

INPUT	OUTPUT
VCC=7V to 34V VPWM=0V↔5V/25KHz (Duty50%)	* Refer to the following waveform

Typical current waveform



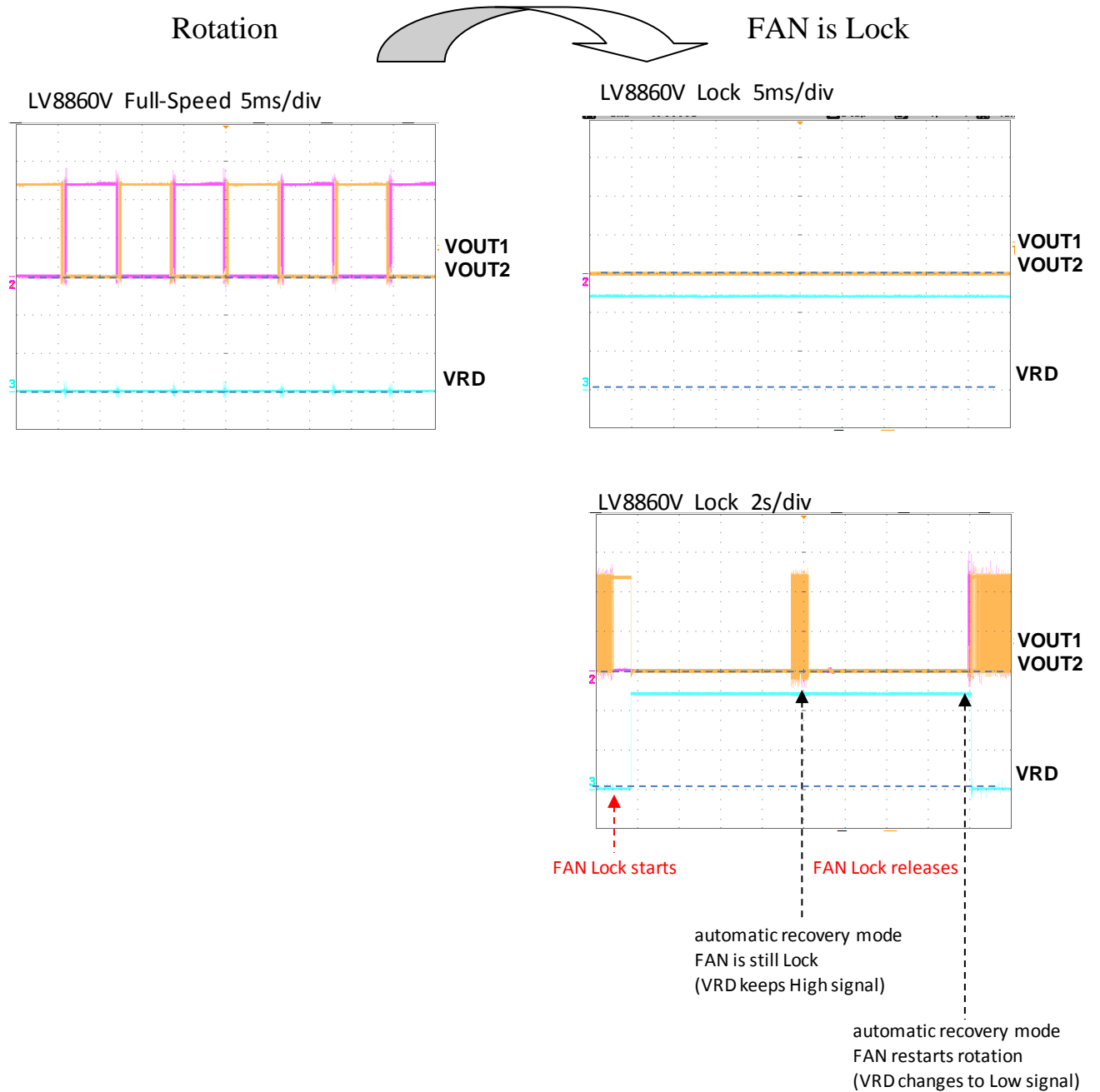
Test Procedure:
Lock protection function check

1. Connect the test board as shown above.
2. Supply DC voltage to VCC.
3. Check the voltage of OUT1, OUT2 and RD terminal with CH1, CH2 and CH3 of the oscilloscope.
4. Stop the rotation of fan.

Table2: Desired Results

INPUT	OUTPUT
VCC=7V to 34V	* Refer to the following waveform

Typical current waveform





Countermeasure: When abnormal waveform is observed.

- Distortion of OUT waveform

Current limiter:

It is presumable that the current limiter is active.

Normal waveform is obtained by adjusting the resistance of Rf.

When Hall input is small:

Due to small Hall amplitude, the width of soft-switch may have affected the entire rotational domains.

Please check the voltage and the Hall signal of SSW terminal to confirm whether they are above the recommendation amplitude value defined in p.18 of the application note.

If they are below the recommendation amplitude value, narrow down the width of soft-switch by adjusting the voltage of SSW terminal to obtain normal waveform.