Test Procedure for the NCV8851-1GEVB Evaluation Board

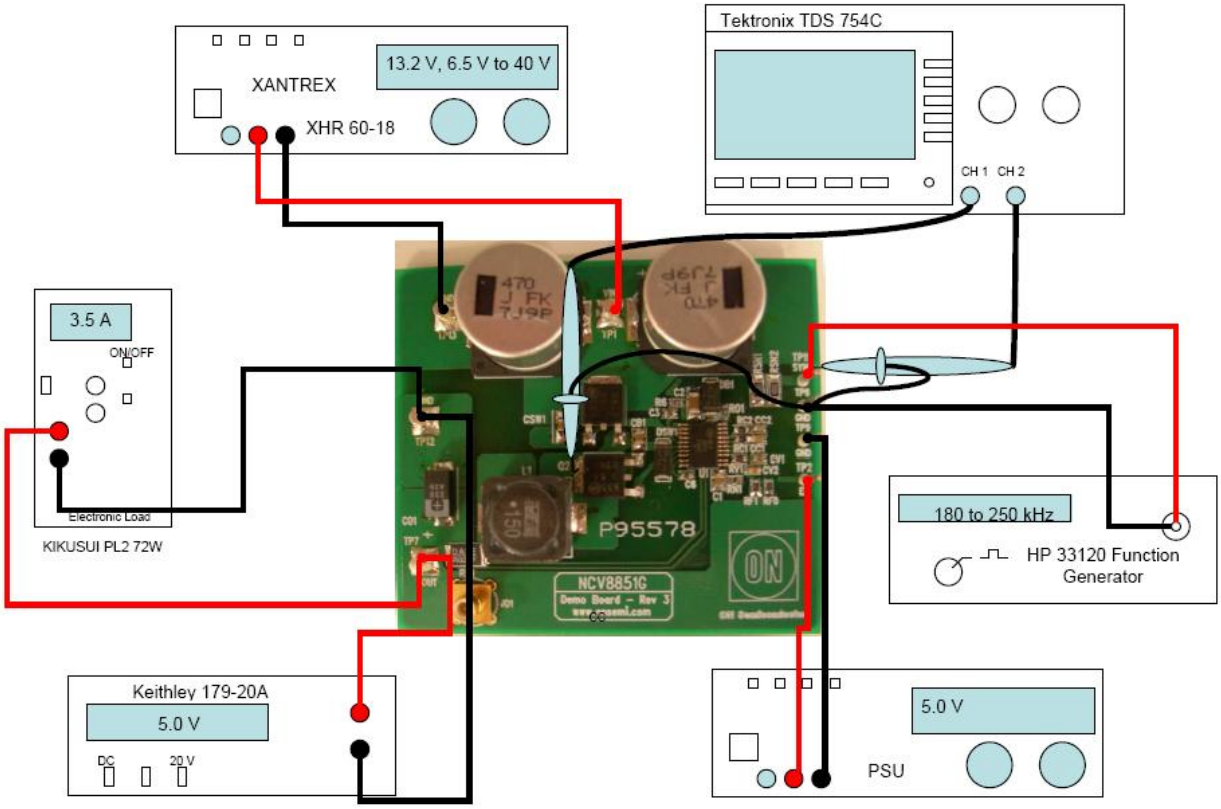

Figure 1: Test Setup

Equipment:

Required Equipment	
Equipment	Basic Specifications
Tektronix TDS 754C	Dual Channel Oscilloscope
Keithley 179-20A	DC Voltmeter 0.04% + 1 digit
HP 33120A Function Generator	180 – 250 kHz pulse at 50% duty cycle
XANTREX XHR 60-18 Dc Power Supply	6.5 to 40 V @ 4A
Dc Power Supply	5.0 V, low current
KIKUSUI PL2 72 W Electronic Load	3.5 A load at 5.0 V input
NCV8851 Demo Board	Automotive Synchronous Buck Controller

Table 1: Showing equipment needed to perform test procedures

Pin Descriptions:

Connections	Description
VIN	Supply input (6.5 V to 40 V)
GND	Ground reference
VOUT	Output voltage (5.0 V)
SYNC	Synchronization input
EN	Enable input (5.0 V)

Test Procedure:

Normal Operation

1. Connect the test setup as shown in Figure 1, but with the function generator disconnected. Monitor switch node (SWN, tab of Q2/right side of L1) continuously for stability (no jitter).
2. Set the power supply (VIN) to 13.2 V.
3. Set the enable input (EN) to 5.0 V.
4. Without load attached, look at SWN – the part should be switching as seen below:

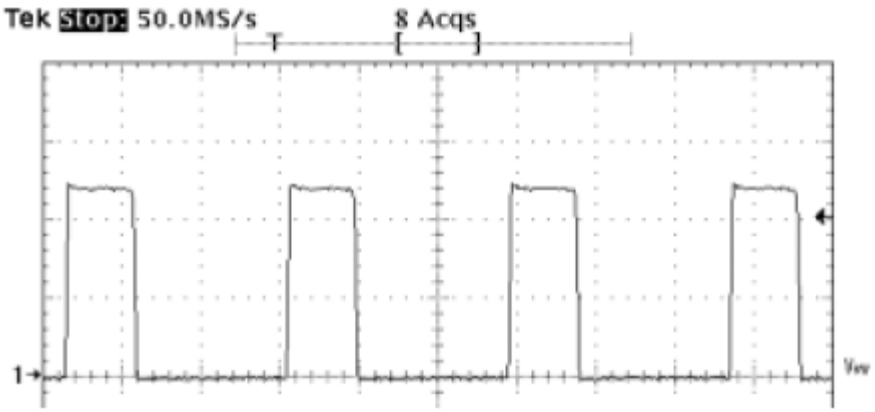

Figure 2: Switchnode in steady-state operation

5. Set IOUT to 100 mA.
6. Verify that the output voltage (VOUT) is within +/- 4% of nominal 5.0 V.
7. Measure the switching frequency via channel 1 (170.0 kHz +/- 10%).
8. Measure the switching frequency via channel 1 (170.0 kHz +/- 10%). Verify that VOUT does not change more than approximately 0.02% (typical line regulation).
9. Set VIN to 13.2 V and vary IOUT from 100 mA to 3.5 A. Verify that VOUT does not change more than approximately 0.04 % (typical load regulation).

Sleep mode

1. While switching, bring EN low (0 V).
2. Ensure part shuts down (stops switching, VOUT cap discharges).
3. Bring EN high (5.0 V).
4. Check that part starts back up (starts switching, VOUT rises).

Sync function

1. Set the function generator 20 to 30 kHz higher than the switching frequency measured in step 7 of Normal Operation.
2. Disable the generator's output and connect it to SYNC and GND (see Figure 1).
3. While observing the oscilloscope's waveforms (CH1 and CH2), enable the function generator and verify that CH1 tracks CH2 (there is a delay, but they should have the same frequency).
4. Bring function generator frequency up to 250 kHz and check that SWN tracks frequency.