Test Procedure for the NCP3133AGEVB Evaluation Board

Equipment needed: Power supply variable from +3.3V to +5V, ~2A capability; oscilloscope, minimum of 2 channels and 100 MHz bandwidth for each channel; electronic load, capability with less than 1 V input; NCP3133AGEVB Evaluation Board, documentation (schematic, BOM, data sheet, etc.).

Procedure:

1. Visually inspect printed circuit board (PCB) assembly to verify that there are no broken or unintentional missing components, obvious shorts or any other anomalies.

2. Set power supply to any voltage between 3.3V and 5V and connect it to the JP1 2-pin terminal blocks, observing the polarity (ground is marked "PGND" and "VIN" Positive). Leave the output unconnected to the electronic load.

3. Install jumpers on J14, J10 by default (VOUT voltage selector) and J6 (PS - Operation Mode. Jumper in - Automatic CCM/DCM, no jumper – FCCM).

4. Apply power to the EVB. Make sure that no excessive current is being drawn from the power supply.

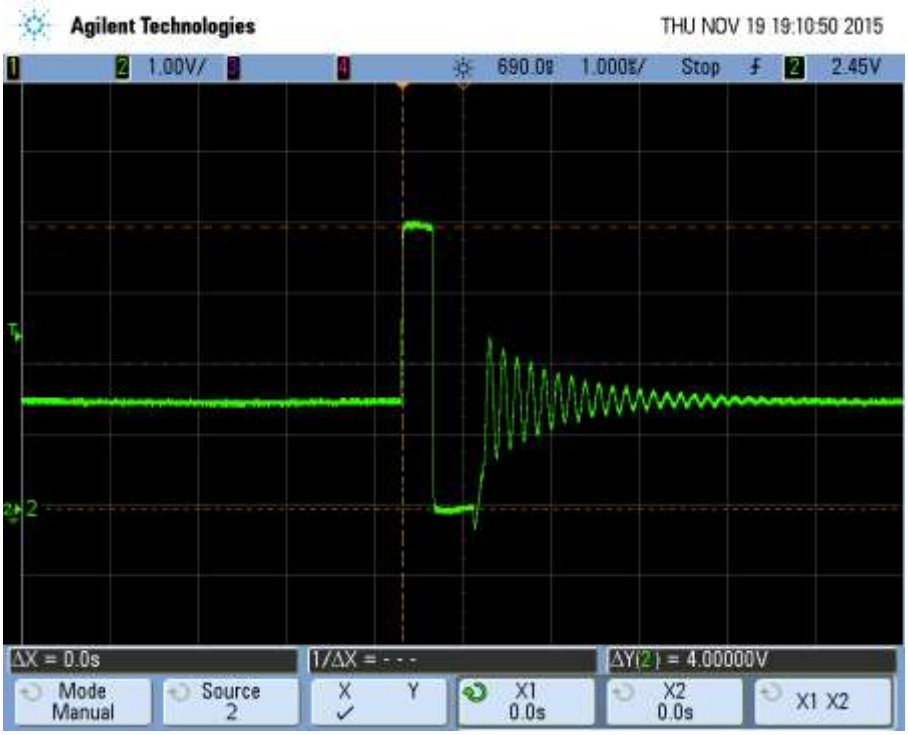
5. At this point, board will ramp the output voltage to the value set by VOUT voltage selector jumpers (J7, J9, J10, J11, J12 and J13) one jumper at the time. When all listed above jumpers is off VOUT will set to 0.6V automatically.
Note – in case if VOUT set to 3.3V make sure the INPUT voltage mast be 4V or greater.

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6. Making sure that the electronic load's output is disabled connect the electronic load to the EVB's output terminal block JP3 and set the load's mode of operation to Constant Current mode. Set the input voltage to ~4 V and set the input power's current limit to at least 2A. Set the current on the electronic load to 3A. Turn on the output of the electronic load. The load should be drawing 3A from the EVB. The output voltage of the EVB should not vary more than 3 mV. Verify the ability of the EVB to source at least 3 A in every VID setting.

7. With the oscilloscope, verify that the switching node (test point SW, TP6) changes from discontinuous conduction mode (DCM) to continuous conduction mode (CCM) when the load is turned on and off. Example waveforms are as follows:

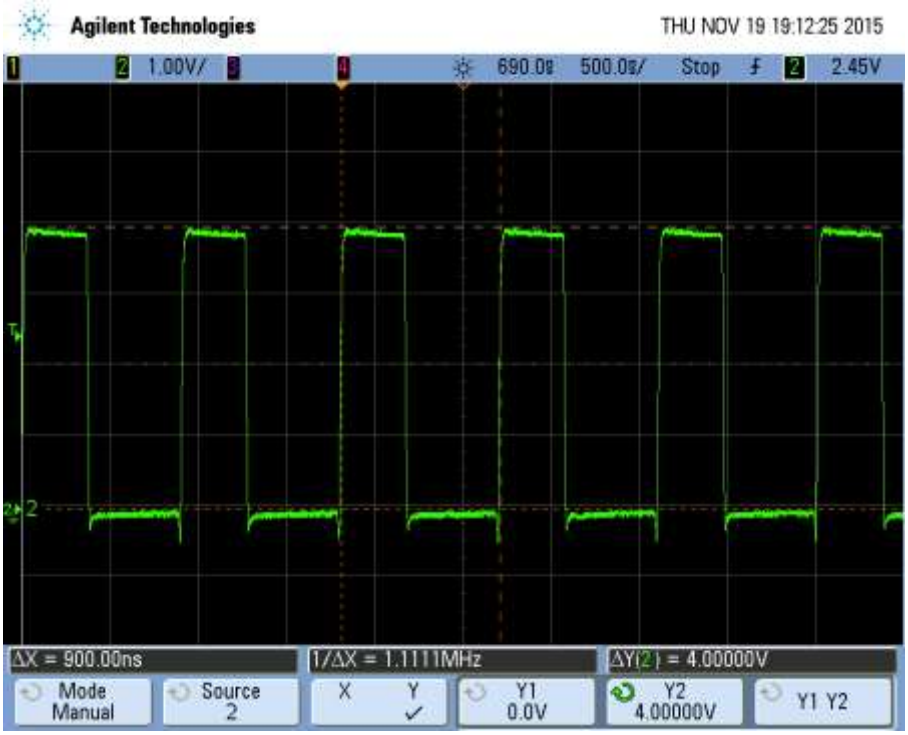
DCM operation, output current = 0 A



Channel 4 = SWN test point (TP6)

8. continued, verification of DCM and CCM operation of the EVB.

CCM operation, output current = 3 A



Channel 1 = SWN test point (TP6)

At this time also verify that the switching frequency in CCM is ~1.1 MHz, as in the above picture. This is the default setting for switching frequency.

9. Check the over-current protection (OCP) by either shorting the output of the EVB or increasing the load current setting of the electronic load until the EVB shuts off, signaled by the power good LED (D1) turning off. This current should be a minimum of 4.2-5 A.

This concludes the test of the NCP3133AGEVB. Please turn off all power before disconnecting power supplies and electronic load.