



Test Procedure for the NCP1653 Evaluation Board

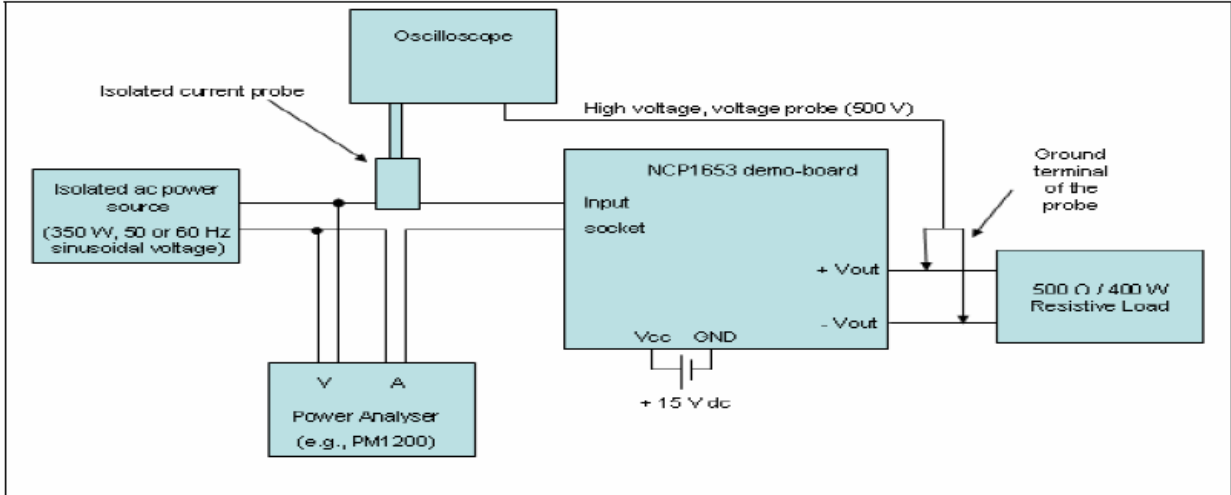
1. Apply a 500 Ω / 400 W resistive load across the output (between the “+V_{OUT}” and “-V_{OUT}” terminals of the board).
2. Adjust a 350 W or more, isolated ac power source so that it outputs a 110 V_{RMS} sinusoidal voltage (50 or 60 Hz).
3. Place a power analyzer able to measure:
 - The power delivered by the power source (“Pin”),
 - The power factor (“PF”) and the Total Harmonic Distortion (“THD”) of the current absorbed from the ac power source.
4. Plug the application to the ac power source.
5. Supply the controller by applying 15 V to the V_{CC} socket (between the “+12 V” and “GND” terminals of the board) and measure:

Parameters	Comments	Limits
V _{OUT}	Voltage measured between “+V _{OUT} ” and “-V _{OUT} ”	365 V < V _{OUT} < 385 V
PF	Power Factor	> 0.990
THD	Total Harmonic Distortion	< 8 %
Efficiency		> 91 %

6. Observe the input current (current drawn from the ac power source) using a current probe and the oscilloscope. The current is nearly sinusoidal.
7. Gradually decrease the power source input voltage until the input current top becomes flat. Measure the plateau (see figure 1). It must be between 4.9 and 5.3 A (over-current limitation). This test must be very short to avoid any excessive heating of the board. Immediately stop the test if the input current exceeds 5.3 A, or if the input voltage is below 75 V_{RMS}).
8. Increase the ac power source voltage to 220 V and measure:

Parameters	Comments	Limits
V _{OUT}	Voltage measured between “+V _{OUT} ” and “-V _{OUT} ”	375 V < V _{OUT} < 395 V
PF	Power Factor	> 0.980
THD	Total Harmonic Distortion	< 12 %
Efficiency		> 93 %

9. Observe the output voltage (i.e., the voltage between the “+V_{OUT}” and “-V_{OUT}” terminals of the board) with an oscilloscope. Unplug the PFC stage from the power source. Set the triggering level at about 200 V, the trigger position being set at 10% of the screen. Program the scope to observe 50 or 100 ms in single acquisition mode.
10. Abruptly apply the power source. Check that the output voltage keeps below 450 V (Over-Voltage Protection) (see figure 2).



The board contains high voltage, hot, live parts. Be very cautious when manipulating or testing it. It is the responsibility of those who utilize the board, to take all the precautions to avoid that themselves or other people are injured by electric hazards or are victim of any other pains caused by the board.

