Test Procedure for the NCP1612GEVB Evaluation Board

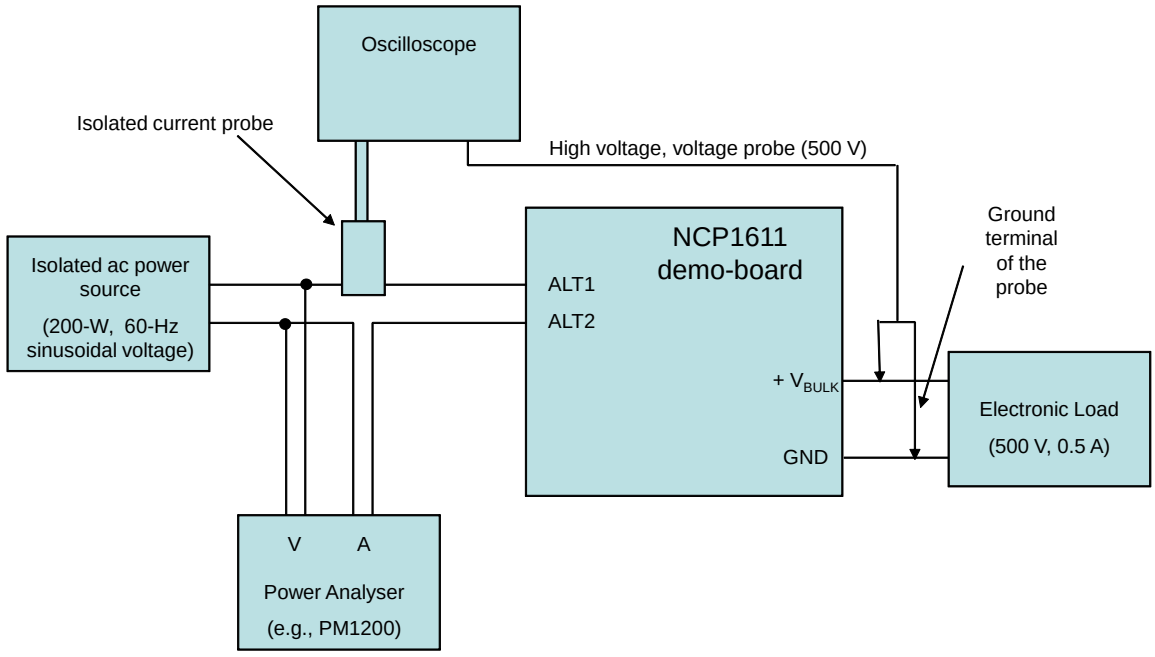

Figure 1 – Set-up for board testing

1. Equipments for measurement.

The board testing set-up is shown in Figure 1:

- Apply an electronic load across the output (between the V_{BULK}" and "GND" terminals of the board). This equipment will adjust the current $\boldsymbol{I_{LOAD}}$ that loads the demo-board.
- Place a power analyzer able to measure the power factor ("PF") and the Total Harmonic Distortion ("THD") of the current absorbed from the ac power source.
- Apply a 200-W or more, 60-Hz, isolated ac power source between the "ALT1" and "ALT2" inputs of the demo-board. This source will adjust the sinusoidal input voltage, $\boldsymbol{V_{in}}$, that is applied to the demo-board. The rms value of $\boldsymbol{V_{in}}$ must stay below 265 V.

2. Measurements

- **V_{BULK}, PF and THD measurements:**

Parameters	Comments	Limits
$V_{in,rms}$=115 V, I_{LOAD}=0.1 A		
V_{BULK}	Voltage measured between "V_{BULK}" and "GND"	380 V < V_{BULK} < 400 V
PF	Power Factor	> 0.950
THD	Total Harmonic Distortion	< 15 %
$V_{in,rms}$=115 V, I_{LOAD}=0.4 A		
V_{BULK}	Voltage measured between "V_{BULK}" and "GND"	380 V < V_{BULK} < 400 V
PF	Power Factor	> 0.990
THD	Total Harmonic Distortion	< 15 %
$V_{in,rms}$=230 V, I_{LOAD}=0.4 A		
V_{BULK}	Voltage measured between "V_{BULK}" and "GND"	380 V < V_{BULK} < 400 V
PF	Power Factor	> 0.950
THD	Total Harmonic Distortion	< 20 %

- **Brown-out levels:**

An external 12-V V_{CC} is applied. The load current being 0.1 A, set the input voltage to 82 Vrms and decrease the input voltage with 1-V steps of 1 s or more. The demo-board must still operate at 75 Vrms and turn off before reaching 70 Vrms.
The input voltage is increased from 70 Vrms with 1-V steps of 1 s or more, the PFC stage must stay off at 75 Vrms and recover operation at a voltage lower than 82 Vrms.

- **Skip**.

Observe the MOSFET drain-source voltage at 230 V / 50 Hz, 0.04-A load. There must be skip periods of time the duration of which must be between 2 and 7 ms (see Figure 2).

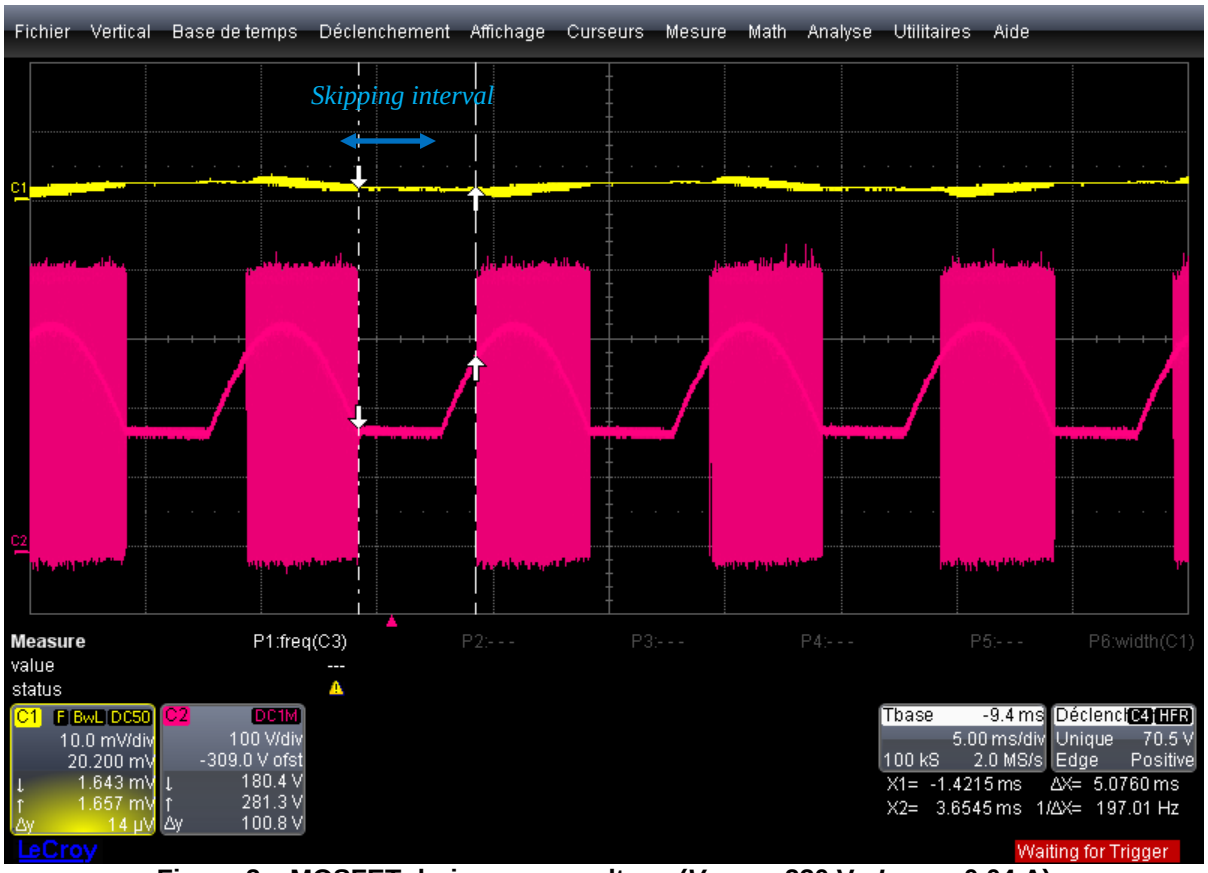

Figure 2 – MOSFET drain-source voltage ($V_{in,rms}$ = 230 V, I_{LOAD} = 0.04 A)