

## PowerPlay Early Power Estimator (EPE) Debug Checklist

Please use the checklist below to assist you to find out the possible causes of EPE mismatch issues.

No.	Checklist for debugging EPE mismatch with silicon measurement	Yes	No
1	Is the discrepancy between EPE and silicon measurement more than 30% as documented in EPE user guide?		
2	Are you using the latest version of EPE?		
3	Did you set the power characterization to Maximum?		
4	Have you cleared all the errors/warnings that reported by EPE?		
5	Have you checked all the power rails voltage on board are matching with EPE?		
6	Did you follow the power up sequence requirement/recommendation as documented in our handbook if there is any?		
7	Have you checked that the high current consumption is not caused by sharing of power rails?		
8	Have you confirmed if the high current consumption is on static current or dynamic current?		
9	Have you confirmed if the temperature value in the EPE is correct? Are you using the temperature sensing diode (TSD) to measure Tj?		
10	Did you run the simulation to get <b>.vcd</b> file with more accurate toggle rate to enter into EPE?		

No.	Checklist for debugging EPE mismatch with PPPA	Yes	No
1	Are you using the latest version of EPE?		
2	Have you checked if the settings (eg: toggle rate, power characterization and temperature) in both EPE and PPPA are same?		
3	Have you cleared all the errors/warnings that reported by EPE?		
4	Did you run the simulation to get <b>.vcd</b> file with more accurate toggle rate to enter into EPE?		

If your answer is “Yes” to the questions, submit a service request to facilitate further investigation.

Please provide the following information when you submit a service request:

- a) Issue description
- b) EPE spreadsheet version
- c) Generated csv file and EPE spreadsheet
- d) How many units/boards have been tested and what is the failure rate
- e) Power tree information
- f) Silicon measurement data
- g) Scope shot of the current/voltage measurement
- h) A simplified design that can exhibit the failure seen
- i) Any other information that you think is relevant to the issue

## FAQs

**1. Why do I need to follow the Power-up Sequence (PUS) requirement/recommendation?**

Violating the PUS may cause high current transient during power-up in certain devices. Please refer to our device handbook for more information.

**2. Why do I need to set the power characterization to Maximum?**

It is recommended to use Maximum power characterization to ensure that your power supply design is sufficient to handle the worst case process variation that affects static power consumption.

**3. How do I measure the static current?**

You should wait for the device to have stable temperature and stop all the clock signals to ensure that there is no toggling activity then only measure the current.

**4. How do I measure the dynamic current?**

- i. Measure the total current when the device is operating
- ii. Measure the static current and make sure the temperature is same as temperature set in total current measurement
- iii. *Total current = static current + dynamic current*

**5. Why do I need to confirm if the temperature value in EPE is correct?**

The junction temperature will impact static current, thus you should make sure that the temperature value in EPE is same as your silicon measurement.

**6. How do I measure the junction temperature (Tj)?**

The accurate way is to use temperature sensing diode (TSD) to measure the Tj. It is advisable to wait for the device stable to have stable temperature then only measure the Tj.

**7. Why do I need to run simulation to get .vcd file?**

The main factor that affects the dynamic current is the toggle rate. Simulation provides toggle rates and static probabilities for all pins and registers in your design, thus in order to get more accurate dynamic power estimation, you should run the simulation to get more accurate toggle rate.