Advanced Design System 2011.01

Feburary 2011
PDK Layout Verification

Acknowledgments

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PDK Layout Verification Tool

The PDK Layout Verification Tool is an application that verifies PDK Layout components in the PDKs upgraded to ADS 2011 compatible format. This tool considers the ADS 2009U1 as the standard and compares the layout details of the component in ADS 2009U1 and ADS 2011.
The tool compares the following layout details:

- All shapes in all layers
  - Corresponding layer names
  - Corresponding layer purposes (assumes the layer purpose as drawing for the shapes drawn in ADS 2009U1)
  - Corresponding GDS II numbers
  - Coordinates of different shapes (radius and center in case of circle and arc)

- All pins
  - Corresponding pin location
  - Corresponding pin layers
  - Corresponding pin directions

The purpose of this tool is to allow users to easily verify their migrated PDKs and investigate for differences or errors (if any).

Pre-Requisites for Windows Operating System

Before start comparing the two PDKs you need to check for the Pre-requisites for Windows Operating System. Following are the pre-requisites:

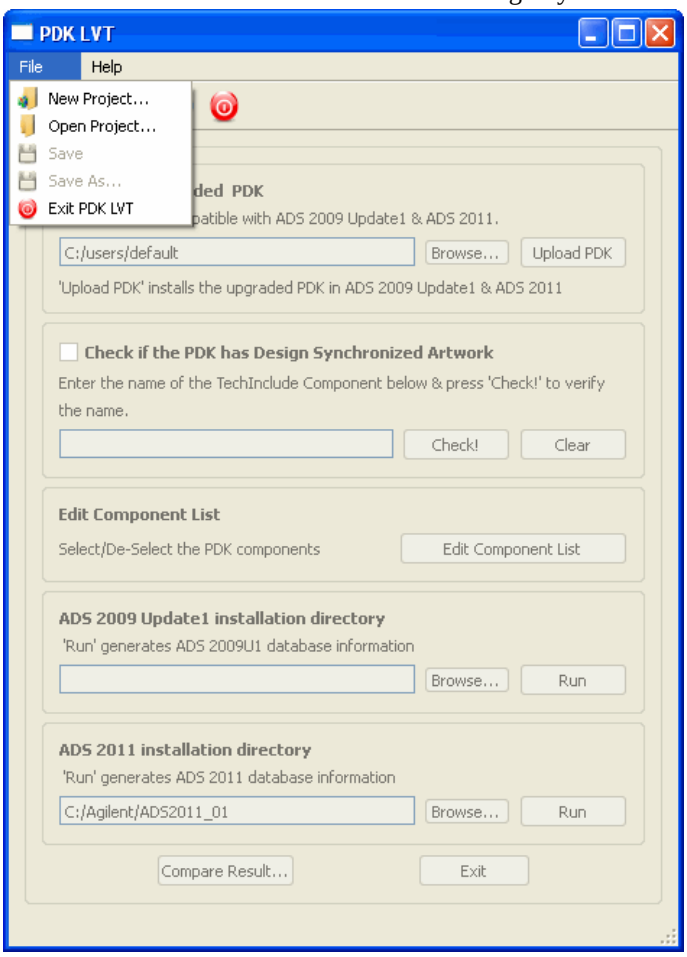
- Locally install ADS2009U1 and ADS2011_01.
- Install PDK Layout Verification AddOn or Plugin (version 350.501) for 2009U1.
- Install WinMerge at the following location *C:\ProgramFiles\WinMerge*. This is the default location of the Winmerge installation.

  Note
  Winmerge is a freeware easily available for download.
- The kit must contain both ATF and AEL files.

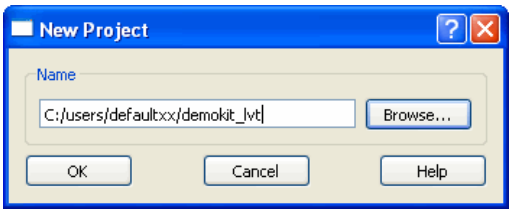
Verifying ADS2009U1 and ADS2011_01 PDKs

Following are the steps to open the PDK Layout Verification Tool and compare ADS2009U1 and ADS2011_01 PDKs:

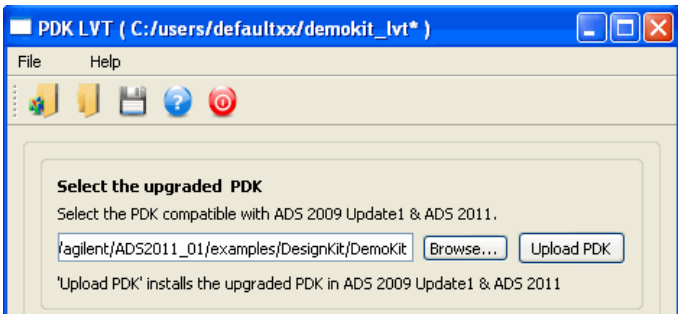
1. Click **Start > All Programs > Advanced Design System 2011.01 > ADS Tools->PDK Layout Verification Tool** to open the PDK Layout Verification Tool.
2. Click **File > New Project...** from the PDK Layout Verification Tool.

2. 

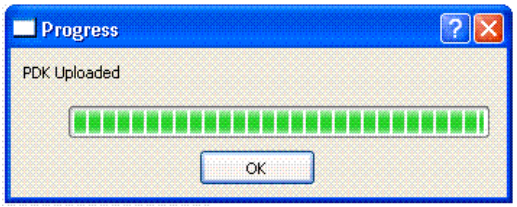
3. Type Project Name and click **OK**.



4. Click **Browse...** to select the PDK. The selected PDK should be compatible with both ADS 2009U1 and ADS 2011_01.

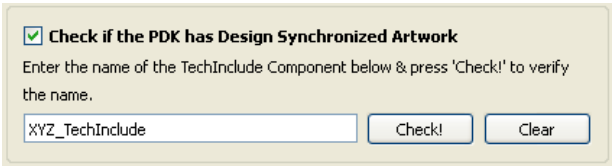


5. Click **Upload PDK** to upload the Selected PDK.
Uploading the PDK would automatically install the PDK and set the technology of the upraged PDK in both ADS 2009U1 and ADS2011_01. A confirmation message appears once the PDK is successfully uploaded.

5. 

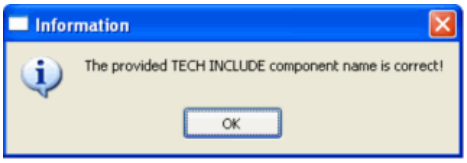
Note
Ignore Step 6 to Step 8 if the uploaded PDK does not include a Design Synchronized Artwork.

6. Select **Check If the PDK has Design Synchronised Artwork**.
7. Type the TechInclude component name.

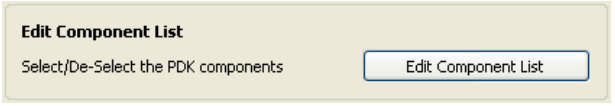


Note
The TechInclude component name must be same as provided in the create_item of the TechInclude component.

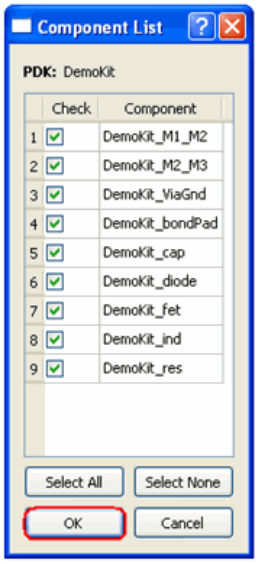
8. Click **Check!** to verify the name of the TechInclude component.
If the name is correct and the component is present in the kit then a confirmation message is displayed.



9. Click **Edit Component List** to Select or De-select the PDK components.

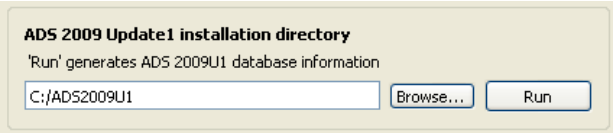


10. Select the component from the component list as shown below.

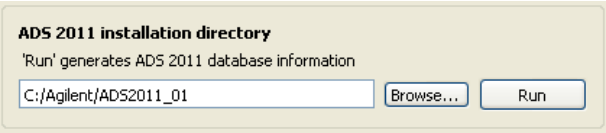


Layout verification tool executes only for the selected componets. By default all the components are selected. Click **Select All** or **Select None** to select or de-select all the components in a single click.

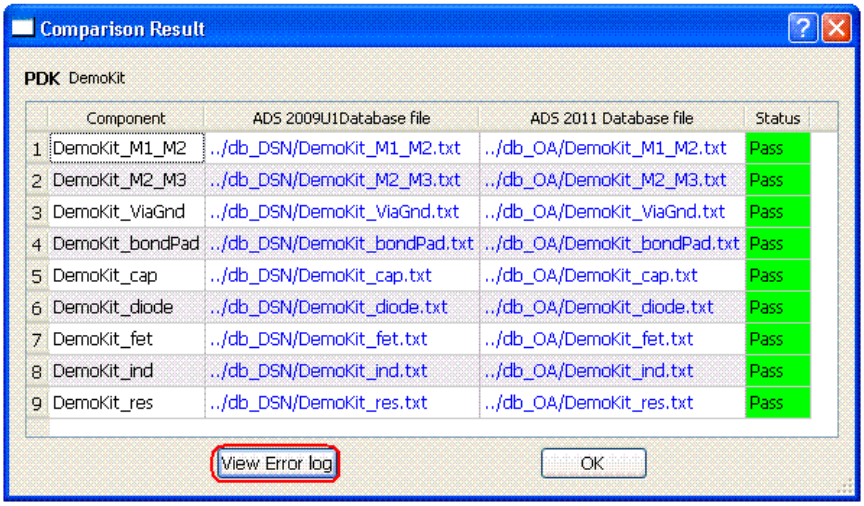
11. Click **OK** to finalize the component you need to verify.
12. Click **Run** to generate the ADS2009U1 database information.

12. 

    All the generated information is saved in a *.txt* format. A confirmation dialog box appears once the required database is generated and automatically exits ADS2009U1.
13. Click **Run** to generate the ADS2011_01 database information.



    All the generated information is saved in a *.txt* format. A confirmation dialog box appears once the required database is generated and automatically exits ADS2011_01.
14. Click **Compare Result** to view the details of the layout comparison for the two ADS versions. Following window shows the details and the result.



15. Click **View Error log** to view the errors encountered during the verification process.

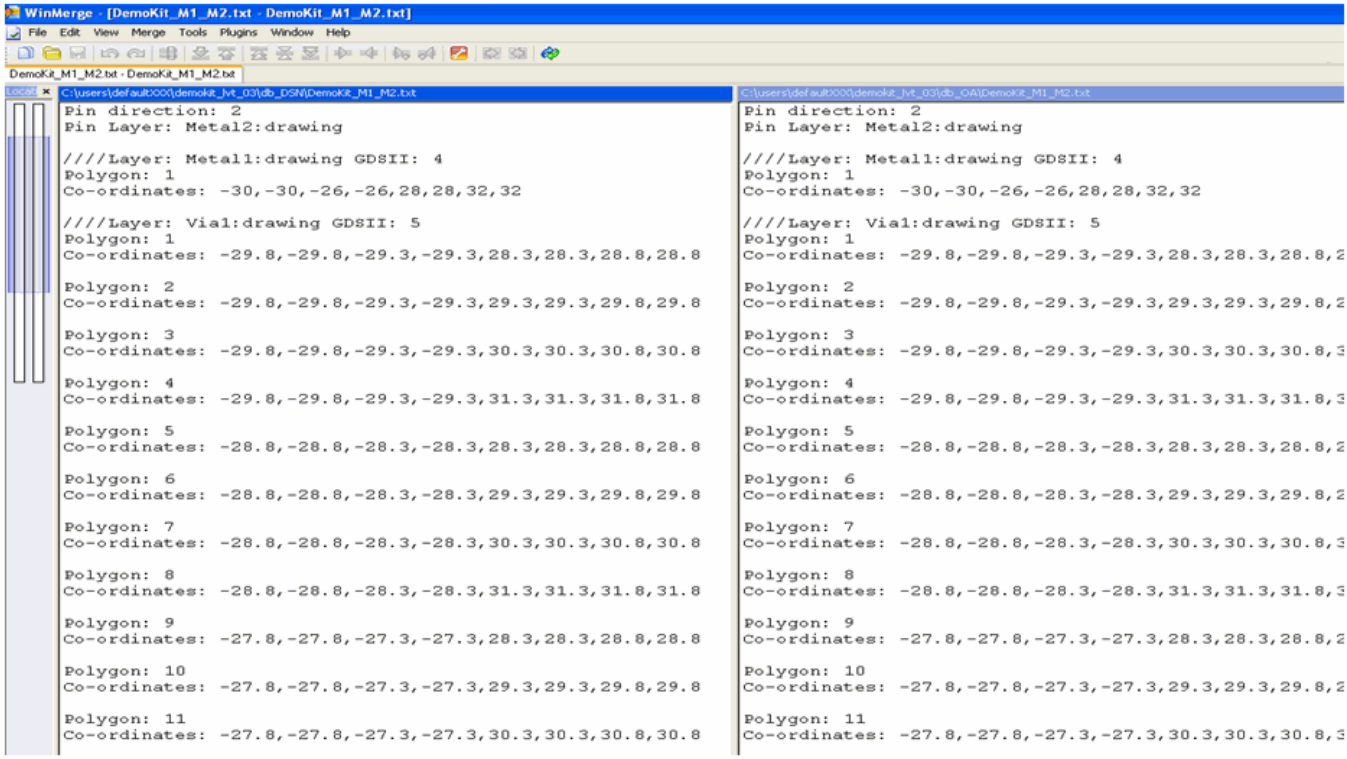
Troubleshooting PDK Layout Verification Results

Question: What kind of results are expected in the final results window?
Solution: Three kind of results are expected. Following are the results:

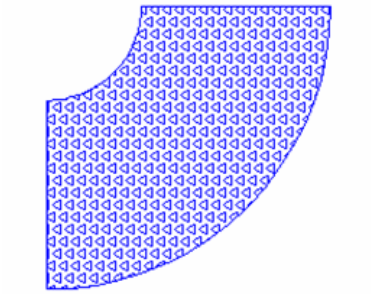
- Pass: Specifies that the component has no mismatches in the layout. You can safely assume that the component layout is exactly the same in both ADS 2009U1 and ADS 2011.
- Mismatch: Specifies that there are one or more than one mismatches in the component layout in ADS 2009U1 and ADS2011.

  Note
  Mismatch does not necessarily mean that there is an error in ADS 2011. It might be an issue with ADS 2009U1 or with the PDK. So, we need to investigate the reason of mismatch before arriving to a conclusion.
- N.A: Specifies that the component could not be either placed in ADS 2009U1 or ADS 2011. Further investigation is required to reach to a conclusion.

Question: How do I get into the details of the comparison?
Solution: Click on the *Status* column of the component in the Comparison Result window. For example, if the result is Pass then click on Pass to open the *Winmerge* window:



Question: Can I ignore any kind of a mismatch?
Solution: PDK LVT rounds off the coordinate value to second decimal place. So you might sometimes see the rounding off mismatched in the second decimal place. You can safely ignore such mismatches.
At times ADS 2009U1 returns fewer number of coordinates (than actually present) for a polygon. Ignore such mismatches
For example, Polygon shown in the below snapshot should have atleast 8 coordinates (4 points).



But in ADS 2009U1 the number of coordinates returned are 4 (2 points)See the figure below: