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Model QA with Electrical Test Data
Application Note
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This application note describes how to run a QA on models with electrical test data in Model Quality Assurance (MQA). Note: This document was originally released for MQA V2010.2.0.1 in May 2011.
Introduction

MQA can realize comprehensive QA on various models, including the model with electrical test (ET) data. In this document, ET data with capacitance is used as the example to show the steps required to run the QA. For more information go to www.agilent.com/find/eesof or contact your local Agilent office. The complete list is available at: www.agilent.com/find/contactus.

Steps

The user can follow the following steps, one by one, to complete a full QA process for models with ET data.

Create New Project

Choose Project --> Create and Run Project from the main menu. In the popup window click New to create a new project (Figure 1).

![Figure 1. Project list window](image1)

The Project Wizard window will pop up. The user must then type in the name of the new project (necessary) and its description (optional), as shown in Figure 2. Click Next.

![Figure 2. Project Wizard, step 1 of 3](image2)

Load Model

In the window shown in Figure 3, choose QA as the action type, Analog as the application type
and NMOS as the model type. Then, click Add.

![Figure 3. Project Wizard, step 2 of 3](image)

Click **Browser** to choose the model library or model card. The resulting window is shown in Figure 4.

![Figure 4. Set model](image)

After loading the model, the user can give it a shorter file name. To do this, right click on the model name and select **Rename**, as shown in Figure 5. The new name needs to follow the unified format, for example, “*cln40gp.nch.TT*”. Here dot “.” is a keyword to separate the filename, model name and corner name.
**Load ET Data**

The user must enable the *Use ET* checkbox to load the ET data (Figure 6). For the format of the ET data used in this example, refer to the ET Data Format section at the end of the application note.

![Figure 6. Load ET data](image)

**Load Rule**

The load rule is a benchmark rule based on the netlist “cdrainn.sp.” as shown in Figure 7. Select rule and click the **OK** button.

![Figure 7. Project Wizard, step 3 of 3](image)

**Run**

Select the project just created and click the *Run* button. The project list window is shown in Figure 8.
Figure 8. Project list

**Export to Report**

After QA is done, right click on the project node and select *Export to Report* (as shown in Figure 9) to pop up the Report Wizard window.

Figure 9. Export to Report

From here the user can customize the report format as shown in Figure 10.
Sample Result

A sample report result is shown in Figure 11.

ET Data Format

Below is an example of MQA compatible ET file syntax. It contains several parts as follows:

* Define Target Value here
  [block target=Vth polarity=N]

* List all variables here
  site_LVT=string
  W=double
**Define Coordinates for ET Data**

[data X=L Y=site_LVT]

* X-Axis value and index of Y values are indicated here

\[
\begin{array}{cccccc}
L=0.8e-6,0.9e-6,1.0e-6,1.1e-6,1.2e-6,1.3e-6,1.4e-6;site_LVT=site1,site2,site3,site4,site5;W=1.0e-6;T=25
\end{array}
\]

*This 7*5 matrix below shows that

*L value is from 0.800~1.430 with 5 sites and the Vth varies from 0.5 to 0.54:

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