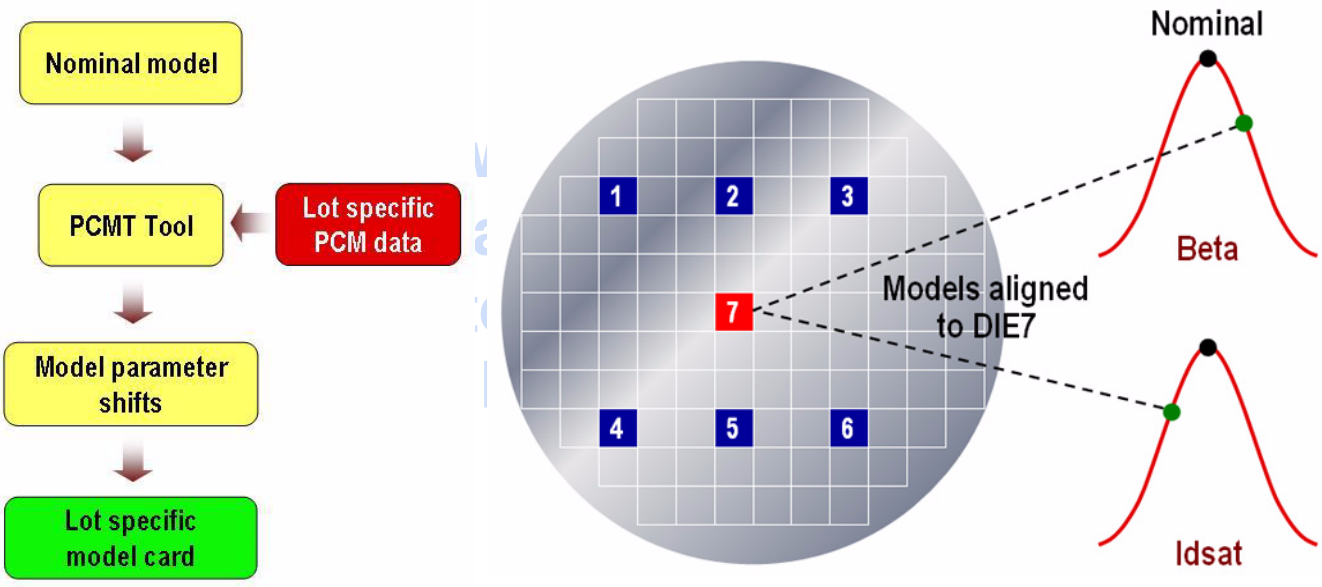
PCM Model Tool User Manual

1. Introduction

The PCM Model Tool (PCMT) is a web-based interface that allows for the generation of a model set extracted based on measured Process Control Monitoring (PCM) silicon data. The PCMT model is in effect a single statistical model run corresponding to a specific wafer(s), or lot of wafers. The PCMT engine will use the nominal model distributed with the Jazz design kit and will adjust it through a modified Backward Propagation of Variances (BPV) infrastructure to match specific PCM data sets. Within PCMT, all PCM data that has visibility into the models is accounted for. The PCMT tool allows the designer to correlate wafer measurements to Spectre® simulations, serving as a tool for design optimization and cycle time reduction. An illustration of the PCMT flow and model parameter extraction example for NPN Beta are shown below.



2. Requesting a PCMT Model

PCMT models may be requested through the Jazz eBizz website. For website access details please contact your Jazz account manager or log in to https://online.jazzsemi.com.

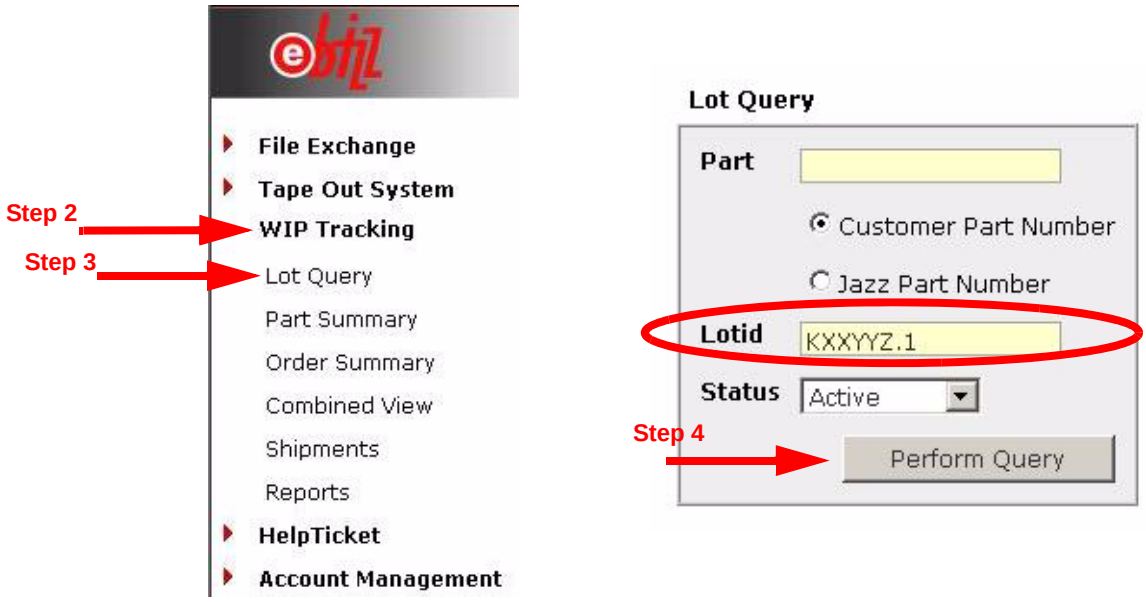
Model Request Procedure:

1 - Log in to the eBizz website at https://online.jazzsemi.com.

2 - Click on the "**WIP Tracking**" menu option, as shown below.

3 - Click on the "**Lot Query**" link.

4 - Enter the Lotid or part number of the lot you wish to identify and click on the "**Perform Query**" button.



5 - Locate the desired lot and click on the blue Lotid hyperlink to access the details page.

6 - The Lotid details page will appear as shown below. Click on the "**Generate PCM Based Model**" button in the lower section of the screen. (If the button is not available, please make sure that this lot has already completed PCM and that it is currently supported by PCMT. For further assistance please contact pcmt@jazzsemi.com).

KXXYYZ.1 Contents

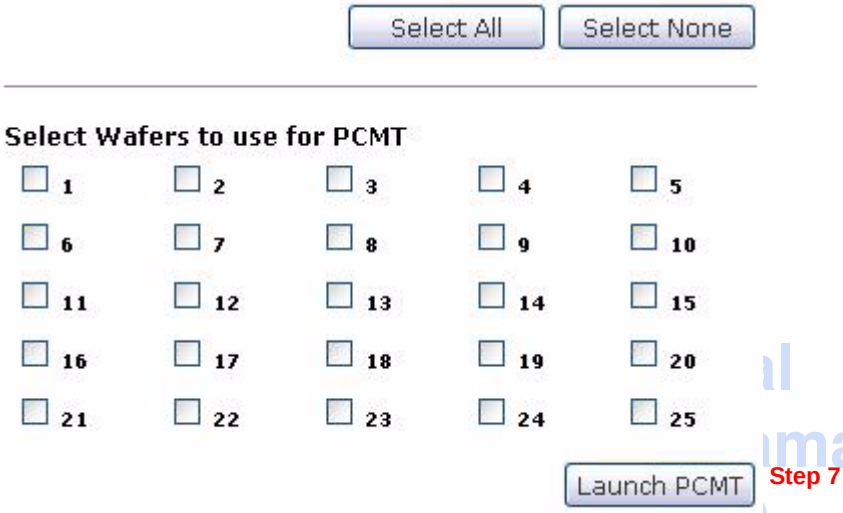
KXXYYZ.1 Details	
Lot State	Shipped
Jazz Part Number	A0XYZ-X18
Customer Part Number	SUPERIC
Customer Lot Number	KXXYYZ.1
Process	SBC18HX
Fab Only	Yes
Quantity	25
Complete Date	01/25/2005
Ship Date	01/29/2005

Probe/PCM Data
Map Summary
Map Data

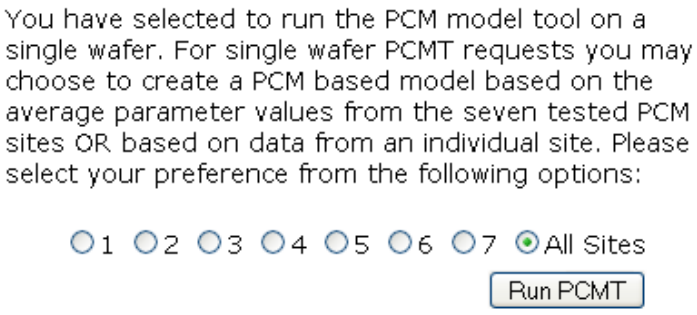
Step 6

Generate PCM Based Model

7 - The PCMT wafer selection page will appear listing the wafers that are available for PCMT. Please select the wafer(s) that PCMT will use for model computation and click on the "**Launch PCMT**" button. Please keep in mind that PCMT establishes mean values for the PCM parameters of the selected wafer sample set. These mean values are then used to physically align the models through the BPV statistical infrastructure. As the sample size increases, process variations become averaged out, ultimately approaching the NOM case in the limit. Thus, selecting smaller wafer numbers provides a more direct snapshot of the process variation..



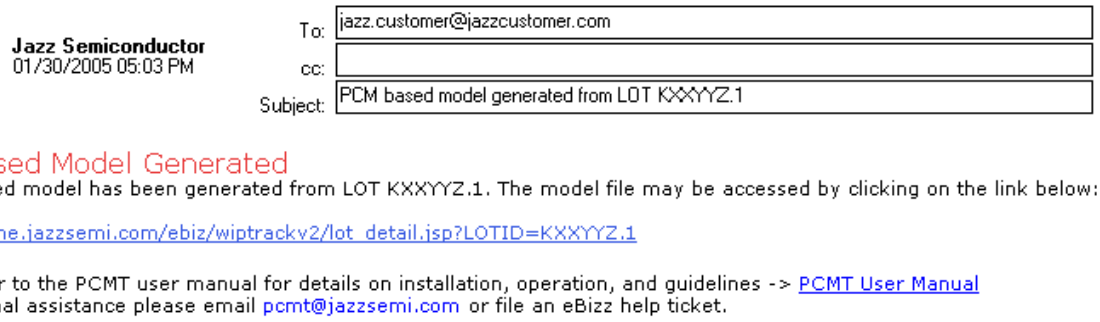
8 - If the user selects a single wafer for the PCMT run, the web tool will allow the selection of a single PCM site from the seven tested locations and generate site-specific PCMT model. The user may also select to generate the model based on the average of all sites, as shown below.



9 - The eBizz website will launch the PCMT engine in the background. Once the job is completed, eBizz will E-mail the requestor download details for the model file (please refer to the **Installation** section for additional details). An average PCMT job will take about 1-2 hours. In the event of a problem, the Jazz PCMT team will be notified and will contact the requestor directly.

3. Installation

eBizz will send the requestor an E-mail containing the PCMT download details as shown below.



Jazz Semiconductor
01/30/2005 05:03 PM

To: jazz.customer@jazzcustomer.com
cc:
Subject: PCM based model generated from LOT KXXYYZ.1

PCM Based Model Generated

A PCM based model has been generated from LOT KXXYYZ.1. The model file may be accessed by clicking on the link below:

https://online.jazzsemi.com/ebiz/wiptrackv2/lot_detail.jsp?LOTID=KXXYYZ.1

Please refer to the PCMT user manual for details on installation, operation, and guidelines -> PCMT User Manual
For additional assistance please email pcmt@jazzsemi.com or file an eBizz help ticket.

Please follow the included hyperlink and download the model file to your design environment work area. The model file will be delivered as a packaged *.tar file. To unpack the file you may use the common *tar xvf file.tar* command. Please note that in many environments the end user will not have “write” privileges to the model directory, please contact your system administrator or design automation team for assistance. Please untar the model file under the **$RDS_CDSLIBS/$RDS_CDS_TECH**/models directory. This location will allow the Jazz design kit to easily locate the model set and list it under the **Active Libraries** pull-down menu. For users who cannot or do not wish to install the PCMT model within the design kit Jazz offers a SKILL command that can add additional directories to the model library list even if installed outside of the kit. To execute please type the following command in the Cadence CIW after loading the required design kit:

jazzModelAddDir("/full/path/to/PCMT_Models")

In this example the path to the models is /full/patch/to/PCMT_Models. The PCMT web tool .tar file should be expanded in this directory location. Please note that the directory provided must contain at least one directory named for the PCMT run (generally a lot number) and inside of it the spectre simulator directory. For example: /full/path/to/PCMT_models/KXXYYZ.1/spectre

4. Simulating with the PCMT Model

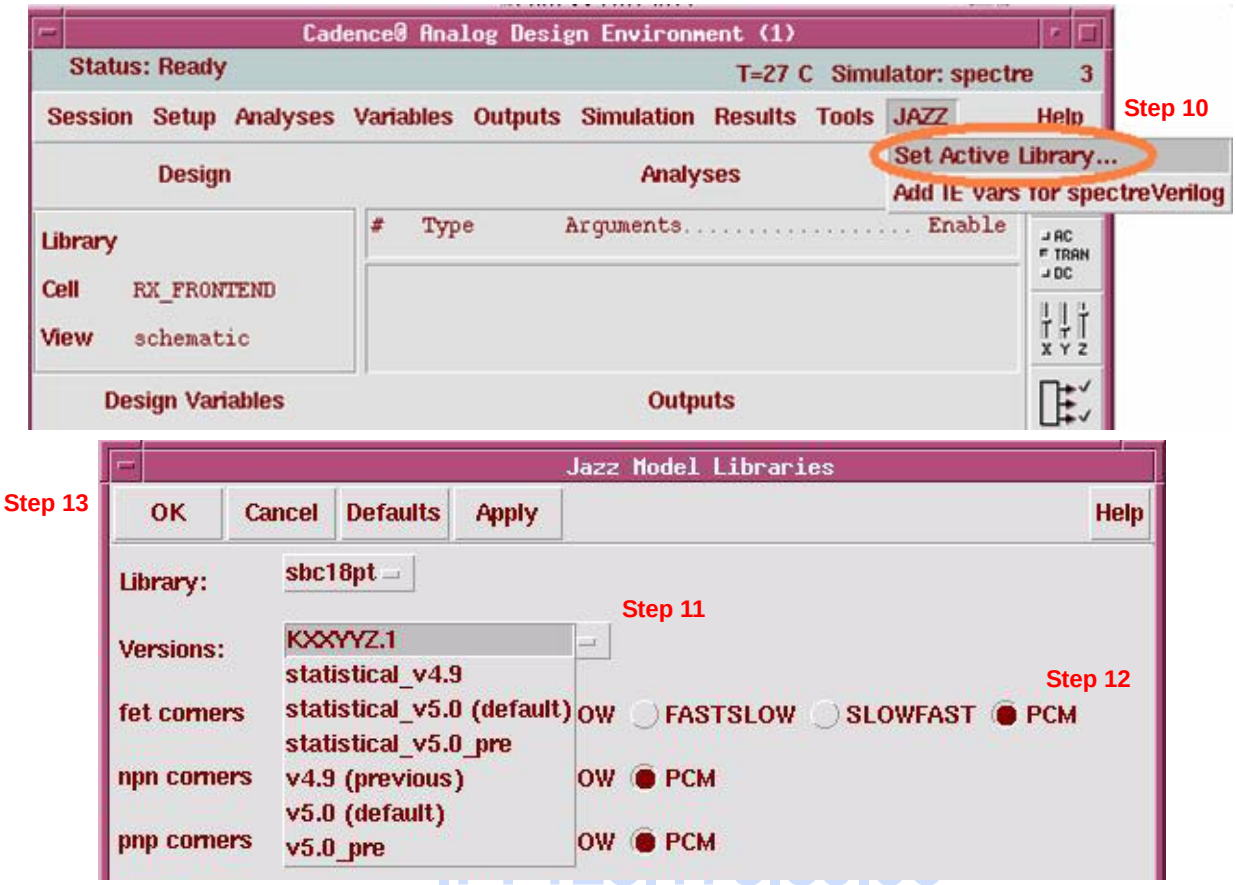
To use the PCMT, launch your design simulation environment and

10 - Click on the **JAZZ -> Set Active Library** menu option as shown below.

11 - In the **Jazz Model LIbraries** window select the PCMT model from the **Versions** pull-down menu. In the example below, the PCMT model is called KXXYYZ.1.

12 - Click on the **PCM** device corner radio buttons to enable PCM model simulation.

13 - Click on the **OK** button. The PCMT model is now selected and will be used for circuit simulation



5. Change History

Revision, Date	Changes
1), 08/31/05	Initial Issue of Document
2), 08/26/06	Documented how to add PCMT model install directories outside of Jazz design kit
3), 10/15/07	Added instructions on how to generate a site specific PCMT model Updated installation instructions Added Change History section to document Updated PCMT tool flow illustration