SIEMENS Calibre® RealTime Integration to Cadence® Virtuoso® Quick Reference

Software Version 2021.2

Initial Setup and Invocation

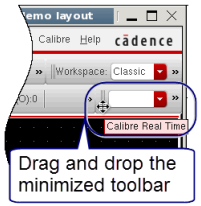
Calibre® RealTime integrates Calibre® nmDRC™ with the Cadence Virtuoso layout editor. The 64-bit OpenAccess versions 6.15, 6.16, 6.17, 12.1, 12.2, and 12.3 are supported; see the manual for details. Follow these steps to start Cadence Virtuoso with the RealTime integration:

1. Define environment variables as described in "Environment Setup for Cadence Virtuoso with Calibre RealTime" in the *Calibre RealTime User's Manual*.

2. Start Cadence Virtuoso with:

```
virtuoso -64 &
```

3. Drag and drop the Calibre RealTime toolbar, as shown.



The final view is similar to that shown in the next column.

The new **Calibre > RealTime DRC** menu item and integrated toolbar are loaded automatically in the Cadence Virtuoso window.

Running Calibre nmDRC

Loading a Rule File

Click the button or select **Calibre > RealTime DRC > Options** to specify and load a rule file. (See next page.)

Selecting Checks

The check recipe determines which checks are executed. See "Check Selection" on the next page.

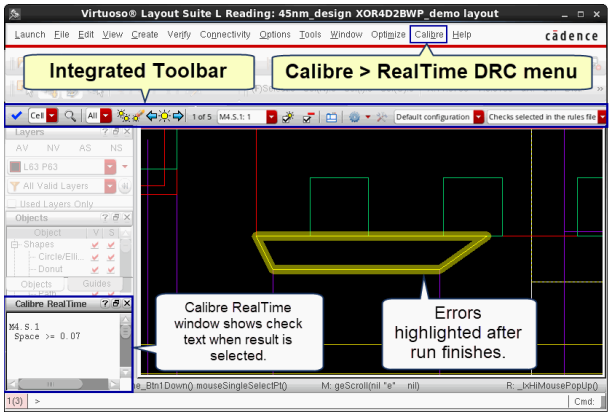
Running Calibre nmDRC

Select your run type in the dropdown menu; see "Run Type" on the next page. Then, start a run by clicking in the integrated toolbar. Flat Calibre nmDRC runs on the visible geometries (plus a halo).

The run is controlled by the settings in the Run Configuration. If the Run Mode is "Serial," a DRC run is executed for each configuration selected in the "Configuration Run Control" dialog box.

Session Window

The Cadence Virtuoso session window appears as shown below when integrated with Calibre RealTime.



Terms and Definitions

Run Type — Select your run type in the dropdown menu.

- **Window** — Runs Calibre nmDRC on geometries visible in the design window.
- **Cell** — Runs on the current cell.
- **Area** — Runs on an area you specify in the window.
- **Past Area** — Runs on a past specified area. The most recently selected area is saved as Area 1.

Run Configuration — The set of options and input files for a run. You can define multiple run configurations with different options and switch between them. You can run with one configuration (single mode) or run multiple configurations in sequence (serial mode).

Check Recipe — A set of rules for selecting the checks to execute for a Calibre nmDRC run. See "Calibre RealTime Options Dialog Box", "Check Selection", and "Edit Recipe Dialog Box" on the next page.

Halo — A halo expands the area around a region selected for a DRC check so that surrounding geometries are included, improving the accuracy of error reporting. The default halo size of 1 user unit is usually appropriate for 45 nm technology. Halos are used for all Calibre RealTime DRC runs.

Integrated Toolbar

Run Controls

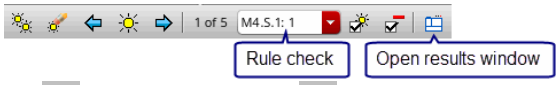
— Run flat DRC with the selected run type.

Window — Select your run type.

— Zoom to window of the most recent DRC run.

All — Check all hierarchy levels or only the displayed levels.

Highlight Controls



— Highlight all — Clear highlights

1 of 5 — Highlight previous, current, or next result, and result <n> of <total> results.

Rule check — Indicates the rule check which produced the displayed error when using the highlight previous, current, and next buttons.

— Highlight all results in the rule check.

— Remove the current check from check recipe.

— Open the Calibre RealTime Results window.

Option Controls

— Select highlight and run options:

- **Zoom to Highlights**
- **Clear Existing Highlights**
- **Include Check Definition in Tool Tip** — You must re-run DRC for a change to take effect.

— Open Calibre RealTime Options dialog box.

— Open Customization GUI (requires runset)

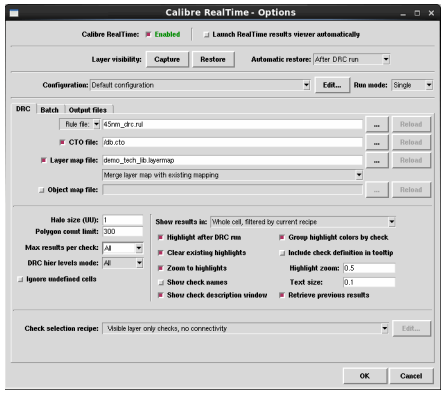
Run Configuration — Select the run configuration. See Terms and Definitions.

Check recipe — Select check recipe for DRC run.

Calibre RealTime Options Dialog Box

Specifies the rule file, optional layer map, halo size, check selection recipe for the run, and other options.

Open with the  button.



See Terms and Definitions for further explanations.

- **Layer map file** — Specify if *<tech_lib>.layermap* does not exist in the technology library.
- **CTO file** — (Optional) Specify a Check Text Override file to specify result highlight colors by rule check.
- **Show results in** — Select which results to view: whole cell with previous results (all checks or current recipe) or results from the current window/recipe only.
- **Edit** — Open the Edit Recipe dialog box.

Batch Tab — Controls for starting a batch Calibre run if the geometry count is too large.

Output File Tab — Options to save a summary file and the DRC results as a results database (RDB).

Check Selection

All checks present in the rule file except those excluded by preprocessor directives are loaded into the Calibre RealTime server. Check recipes control the checks that are executed. DRC [Un]Select statements are only obeyed when the built-in recipe “Checks selected in the rule file” is used.

See these sections in the *Calibre RealTime User’s Manual* for further details:

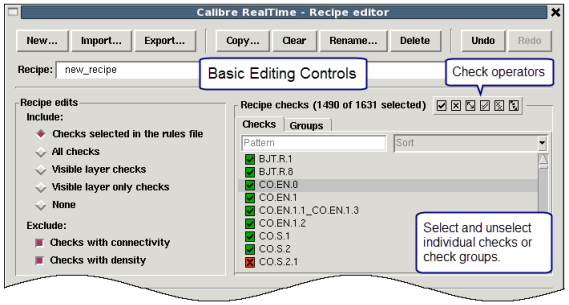
“Differences Between Calibre nmDRC and Calibre RealTime Custom”

“Density Checks in Calibre RealTime Custom”

Edit Recipe Dialog Box

The Edit Recipe dialog box allows you to configure custom check recipes.

Click the **Edit** button in the Calibre Options dialog box ( button) to open the Edit Recipe dialog box.



Several standard recipes are included with the tool, but these cannot be edited.

Do one of the following to open a recipe for editing:

- Click **New** to open a new recipe.
- Select a user recipe in the Recipe dropdown box.
- Click **Import** to open an existing custom recipe.
- Select a standard recipe and click **Copy**.

Dialog box fields

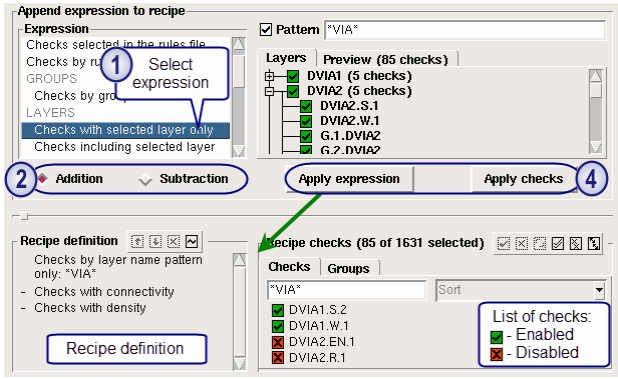
- **Recipe** — Select the active check selection recipe.
- **Include** — Specify checks to include:
  - Checks selected in the rules file — Checks that are selected by DRC [Un]Select statements.
  - All checks — As described.
  - Visible layer checks — Include checks that use visible layers and possibly other layers.
  - Visible layer only checks — Include checks that use only visible layers.
  - None — Unselect all checks.
- **Exclude** — Specify checks to exclude:
  - Checks with connectivity.
  - Checks with density.
- **Advanced** — Toggle between advanced and basic editing controls.

Recipes are automatically saved to the configuration file. You can click **Export** to save a recipe to a file with a *.rcp* file extension; this file can be imported by another user.

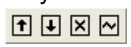
Advanced Check Recipe Controls

The advanced check recipe controls allow you to individually select and unselect checks for the recipe.

Open the advanced controls by clicking the **Advanced** button in the Edit Recipe Dialog Box. Follow the numbered steps in the following figure to add an expression to the check recipe.



- **Addition** — Include checks in the recipe.
- **Subtraction** — Exclude checks from the recipe.
- **Apply expression** — Add or subtract the expression to the recipe definition.
- **Apply checks** — (not recommended) Resolve the expression into a list of checks then add or subtract the checks from the recipe definition.

Repeat steps 1-4 to add more expressions to the recipe. You can modify the recipe definition using the toolbar operators,  , if desired.

The Advanced controls are useful when you need to exclude a specific check. This may happen if a particular check gives false errors when run on a limited area.

Keyboard Shortcuts (Hotkeys)

Keyboard shortcuts are not defined by default. See “Keyboard Shortcuts in Calibre RealTime for Cadence Virtuoso” in the *Calibre RealTime User’s Manual* for information on defining keyboard shortcuts.

Also see the file *mgc_bindkeys.skl* in the directory *$CALIBRE_HOME/shared/pkgs/icv/tools/queryskl* .

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