



About CMC Models in Open Source Simulators

MOS-AK, University of California, Berkeley, CA
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Didier Céli

- Open source simulators like GNUCAP, QUCS, QUCSstudio, NGSPICE, XYCE... are fantastic tools...
- Especially for Universities and students who want to learn SPICE and to make simulations for free
- Up to now, I used (and my Ph.D. students) QUCS because it was the only open source simulator where HICUM models (both Level 2 and Level 0) were implemented
 - Version 0.0.18
- Unfortunately, in the new version 0.0.19 HICUM models were removed, and other CMC models. Why?
- The reason: CMC licenses not GPL compatible. Why?
- Is it possible to solve this issue and how? knowing that a simulator without advanced models (CMC) is more or less useless...

QUCS 0.0.18 vs. QUCS 0.0.19

- All CMC models are removed (BSIM, HICUM)

verilog-a devices **QUCS 0.0.18**

This screenshot shows the component library for QUCS 0.0.18. It contains a grid of components including HICUM L2 v..., FBH HBT, Modular Op..., HICUM L2 v..., Logarithmic ..., npn HICUM ..., pnp HICUM ..., Potentiometer, MESFET, EPFL-EKV ..., EPFL-EKV ..., bsim3v34n..., bsim3v34p..., bsim4v30n..., bsim4v30p..., npn HICUM ..., pnp HICUM ..., npn HICUM ..., pnp HICUM ..., pnp HICUM ..., HICUM L2 v..., HICUM L2 v..., HICUM L2 V..., Photodiode, Phototransis..., NIGBT, and Voltage Con... The 'HICUM L2 v...' component in the top row and the 'bsim3v34n...' component in the third row are highlighted with red boxes.

verilog-a devices **QUCS 0.0.19**

This screenshot shows the component library for QUCS 0.0.19. It contains a grid of components including Modular Op..., Logarithmic ..., Potentiometer, MESFET, EPFL-EKV ..., EPFL-EKV ..., Photodiode, Phototransis..., NIGBT, and Voltage Con... The 'HICUM L2 v...' and 'bsim3v34n...' components are missing from this version.

Example of HICUM license (CMC)

The terms under which the HICUM/L2 software is provided are as follows:

Software is distributed as is, completely without warranty or service support.

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■ Why CMC licenses are not GPL?

Clause 1: It establishes a non-commercial clause, which is incompatible with GPL. If the code is included in a media which is sold (by the cost of the media or shipping cost) it is impossible to discern if the distributor is charging for your source or not. This is incompatible with GPL.

Clause 2: It essentially requests to keep the copyright notice, which is fine. However the request for documentation (shall? must?) creates a practical problem which makes it incompatible with GPL.

Clause 3: First, which government? Second, it imposes further restrictions that are incompatible with GPL

Clause 4: This seems fine, enforces the copyright retention, but the documentation part looks like Clause 2 again (?)

The Free Software Foundation (FSF) has a nice commented page on the widely used licenses and the compatibility to GPL: <https://www.gnu.org/licenses/license-list.en.html>

The FSF suggestion is to adopt an existing license instead of creating new ones. Proliferation of licenses is bad because it creates a complex scenario where each license has to be carefully checked for compatibility with other existing licenses.

The HICUM license (similar to CMC license for that matter) looks like the "original BSD" also known as "**4-clause BSD**". This license **is not** compatible with GPL.

<https://www.gnu.org/licenses/license-list.en.html#OriginalBSD>

http://directory.fsf.org/wiki/License:BSD_4Clause

To solve the compatibility issues of the above license the "modified BSD" also known as "**3-clause BSD**" was created. The modified license **is** compatible with GPL.

<https://www.gnu.org/licenses/license-list.en.html#ModifiedBSD>

http://directory.fsf.org/wiki/License:BSD_3Clause

Solutions?

- From these comments, is it possible to make CMC licenses GPL compatible?