EMC IC modelling –
Part 2: Models of integrated circuits for EMI behavioural simulation – Conducted emissions modelling (ICEM-CE)
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INTERNATIONAL ELECTROTECHNICAL COMMISSION

EMC IC MODELLING –

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International Standard IEC 62433-2 has been prepared by subcommittee 47A: Integrated circuits, of IEC technical committee 47: Semiconductor devices.

The text of this standard is based on the following documents:

<table>
<thead>
<tr>
<th>FDIS</th>
<th>Report on voting</th>
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<tbody>
<tr>
<td>47A/794/FDIS</td>
<td>47A/799/RVD</td>
</tr>
</tbody>
</table>

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all the parts in the IEC 62433 series, under the general title EMC IC modelling, can be found on the IEC website.
The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

A bilingual version of this publication may be issued at a later date.
Part 2: Models of integrated circuits for EMI behavioural simulation – Conducted emissions modelling (ICEM-CE)

1 Scope

This part of IEC 62433 specifies macro-models for ICs to simulate conducted electromagnetic emissions on a printed circuit board. The model is commonly called Integrated Circuit Emission Model - Conducted Emission (ICEM-CE).

The ICEM-CE model can also be used for modelling an IC-die, a functional block and an Intellectual Property block (IP).

The ICEM-CE model can be used to model both digital and analogue ICs.

Basically, conducted emissions have two origins:

• conducted emissions through power supply terminals and ground reference structures;
• conducted emissions through input/output (I/O) terminals.

The ICEM-CE model addresses those two types of origins in a single approach.

This standard defines structures and components of the macro-model for EMI simulation taking into account the IC's internal activities.

This standard gives general data, which can be implemented in different formats or languages such as IBIS, IMIC, SPICE, VHDL-AMS and Verilog. SPICE is however chosen as default simulation environment to cover all the conducted emissions.

This standard also specifies requirements for information that shall be incorporated in each ICEM-CE model or component part of the model for model circulation, but description syntax is not within the scope of this standard.

2 Normative references

The following referenced documents are indispensable for the application of this document.

For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 61967 (all parts), Integrated Circuits – Measurement of electromagnetic emissions, 150 kHz to 1 GHz
IEC 61967-4, Integrated circuits – Measurement of electromagnetic emissions, 150 kHz to 1 GHz – Part 4: Measurement of conducted emissions – 1 Ω/150 Ω direct coupling method

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.