SimYog Spectrum

PRODUCT UPDATES | ENGINEERING INSIGHTS | LATEST NEWS

Volume III | March 2026

Message from Our CEO

Dear Valued SimYog Community,

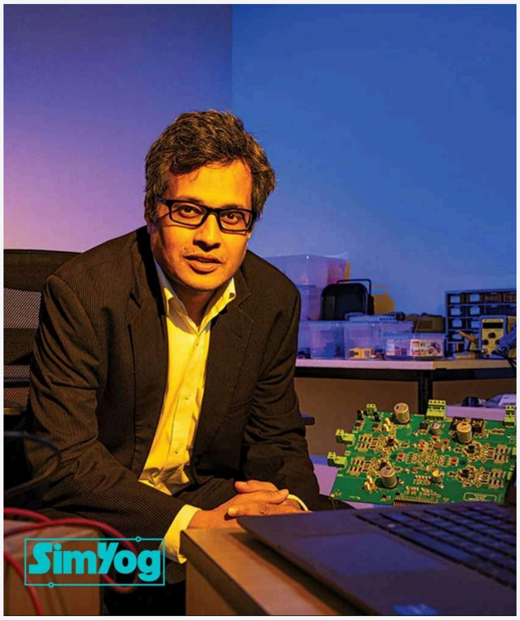
As we move into 2026, I want to thank our customers, partners, and team members for their continued support. The past year has been an exciting one for SimYog, marked by several important milestones.

We celebrated nine years of innovation in EMI/EMC simulation, received patent approval for our system-level solution SEM-Scope™, and were honored with the IESA Technovation Award recognizing innovation in the semiconductor industry.

We also introduced Compliance-Scope 5.0, an important step forward for our platform. In the following pages, we highlight several of the new capabilities included in this release.

Thank you for being part of the SimYog journey.

Warm regards,
Dipanjan Gope
Founder & CEO, SimYog Technology



Inside This Issue

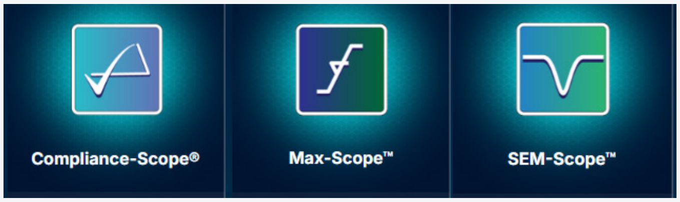
IESA Award

SimYog was honored with the IESA Technovation Award 2025–26 (Start-Up Winner, Semiconductor Category) at Vision Summit 2026 in Bengaluru. The award recognizes innovations that bridge the gap between design and manufacturing — closely aligning with SimYog's mission to bring EMI visibility earlier into the hardware design process. By enabling engineers to diagnose EMC compliance risks during the design phase — before a prototype is built — SimYog helps teams reduce costly late-stage redesign cycles.

Celebrating Milestones

SimYog is proud to celebrate **nine years of innovation in EMI/EMC simulation**! Over the past decade, our mission has remained the same: helping engineers understand and resolve electromagnetic interference earlier in the design cycle.

This year also marks another major milestone with the patent approval of our system-level solution, SEM-Scope™, reinforcing SimYog's commitment to advancing early EMI visibility for modern electronic systems.



Visit us at APEC 2026

APEC 2026

SAN ANTONIO, TX | MARCH 22-26

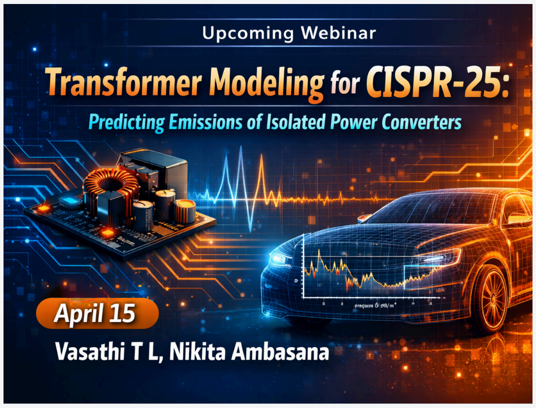
We will be in San Antonio, Texas for the **Applied Power Electronics Conference** on **March 24-25, 2026.**

Visit us at **Booth 455**, where CEO & Founder Dipanjan Gope and VP of North America Fred Phillips will be available to discuss your EMC challenges and provide a quick look at the Virtual EMC Laboratory powered by Compliance-Scope.

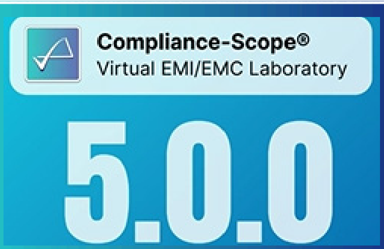
2026 Webinar Series

SimYog's 2026 Webinar Series continues to bring practical EMC engineering insights to the community. Each session demonstrates how engineers can diagnose EMI issues earlier using simulation-driven workflows.

Our recent session, "Buck Converters and Filters: Key to Passing CISPR Compliance Standards," showed how datasheet-based IC models can accurately simulate CISPR-25 setups.



[Click Here to Access SimYog Webinars On-Demand.]



Compliance-Scope 5.0

This quarter we introduced Compliance-Scope 5.0, a major platform update designed to make EMC simulation faster and easier for hardware engineers.

Key enhancements include:

- Integrated AI Assistant
- Modernized user interface
- Improved cable creation
- Datasheet-based IC Modeling

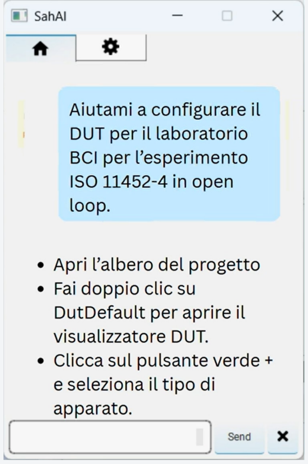
Together these improvements help engineers diagnose EMI issues earlier and streamline the entire EMC simulation workflow.

[Watch Highlights Video Here!]

Introducing SahAI!

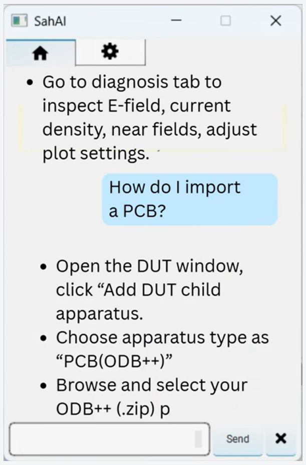
Compliance-Scope 5.0.0 introduces SahAI, an AI-powered assistant designed to help engineers confidently set up, run, and diagnose simulations within the platform. By providing contextual guidance during simulation setup and analysis, SahAI reduces reliance on external support or lengthy documentation.

SahAI also supports all major global languages, enabling engineering teams worldwide to interact with the assistant in their preferred language.



Aiutami a configurare il DUT per il laboratorio BCI per l'esperimento ISO 11452-4 in open loop.

- Apri l'albero del progetto
- Fai doppio clic su DutDefault per aprire il visualizzatore DUT.
- Clicca sul pulsante verde + e seleziona il tipo di apparato.

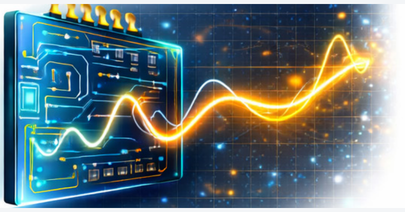


- Go to diagnosis tab to inspect E-field, current density, near fields, adjust plot settings.

How do I import a PCB?

- Open the DUT window, click "Add DUT child apparatus.
- Choose apparatus type as "PCB(ODB++)"
- Browse and select your ODB++ (.zip) p

TECHNICAL
FEATURE FOCUS



Datasheet-Based IC Emission Models

Sayantan Das, SimYog Technology

Why should I care about IC-Emission Models?

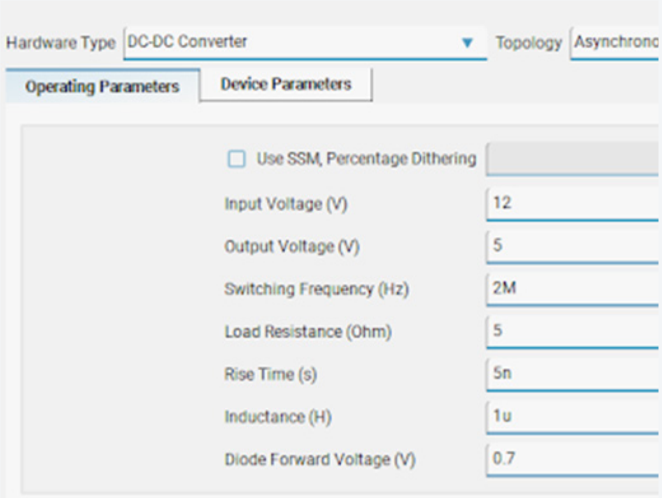
For sub-system level radiated and conducted emissions e.g. CISPR11/25/32, MIL-STD-461-RE/CE, integrated circuits (ICs) represent the dominant noise sources. IC switching transients generate high dv/dt and di/dt pulses that excite broadband harmonics. Accurate modelling of such IC-noise sources is therefore critical for predicting compliance margins and implementing targeted mitigation.

Why are IC-models hard to come by?

In many practical scenarios, hardware designers do not have access to detailed internal models of the ICs used on their boards. Apart from the basic electrical specifications provided in the datasheet, IC vendors rarely supply information describing the switching current behavior or internal noise generation mechanisms of the device. As a result, designers lack the necessary source models required for accurate EMI simulation

What is the industry practice today?

1. Measurement-based approach: Voltage waveforms are measured on selected pins of a physical prototype of the PCB under typical operating conditions. While this method enables some level of analysis, it introduces several significant drawbacks.
    - Measurement inaccuracies – Probe loading, grounding, and bandwidth limitations can distort captured signals and affect EMI prediction accuracy.
    - Prototype dependency – Requires a fabricated PCB, preventing EMI analysis during the early design stage when optimization is most critical.
    - Design-specific results – Extracted signals are tied to a particular PCB layout and operating setup, limiting reuse across designs or iterations.

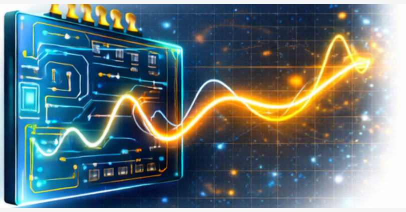


Hardware Type: DC-DC Converter
Topology: Asynchrono

☐ Use SSM, Percentage Dithering

Input Voltage (V)	12
Output Voltage (V)	5
Switching Frequency (Hz)	2M
Load Resistance (Ohm)	5
Rise Time (s)	5n
Inductance (H)	1u
Diode Forward Voltage (V)	0.7

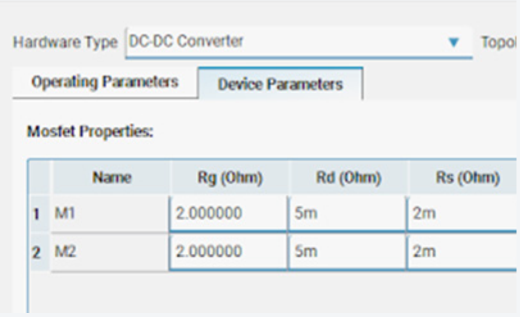
TECHNICAL FEATURE FOCUS



Datasheet-Based IC Emission Models [continued]

2. SPICE-simulation based approach: If SPICE models for ICs are available, a SPICE netlist corresponding to the system including PCB and loading conditions can be setup and simulated for extracting voltage waveforms on pins. While this method enables pre-hardware analysis, its feasibility is limited:

- Accurate IC SPICE files are often not available
- For complex sub-systems, SPICE simulation is often computationally challenging
- SPICE simulation convergence issues may arise if S-parameters of PCB nets are included



Hardware Type: DC-DC Converter

Mosfet Properties:

	Name	Rg (Ohm)	Rd (Ohm)	Rs (Ohm)
1	M1	2.000000	5m	2m
2	M2	2.000000	5m	2m

Figure: Compliance-Scope 5.0.0 allows the user to create IC-noise source models using datasheet parameters

Compliance Scope 5.0.0 introduces a simplified and practical method for modelling IC- noise sources in emission labs directly from information available in the IC datasheets.

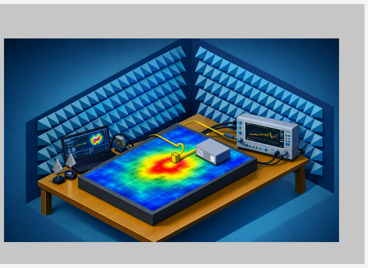
The process begins by identifying the internal power topology implemented in the IC, such as a buck or boost or H-bridge etc. Based on the operating principles of the identified topology, Compliance-Scope derives the expected switching noise sources using a hybrid physics and data-based approach.

Key operating parameters such as input voltage, output voltage, switching frequency, and relevant device parasitic like Rg, Rd, Cgs, are extracted from the datasheet and used as inputs to the model. Using these parameters, Compliance-Scope automatically constructs an internal behavioural representation of the IC noise sources and integrates it with the PCB layout model. This allows the simulation engine to predict the resulting conducted emissions (CE) and radiated emissions (RE) generated by the IC within the system.

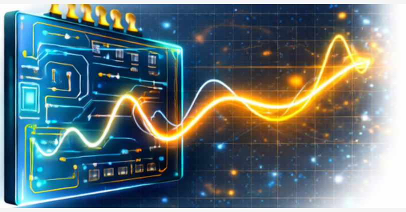
Facing an EMI or EMC Compliance Challenge?

The SimYog EMC Consulting team of can work directly with your team to diagnose issues and guide mitigation using simulation-driven workflows.

Contact us to discuss your project.



TECHNICAL
FEATURE FOCUS



Improving “Low-Frequency” Robustness in EMC Simulation

Harikiran Muniganti, SimYog Technology

For EMC simulation, low-frequency stability is not just an elegant mathematical theory, it is a practical requirement.

How low is “low-frequency”?
Depends on the Design-Under-Test (DUT) dimension. When the structure size is smaller than a fraction (e.g. 25%) of the wavelength for the given frequency, “low-frequency” instability may occur. This phenomenon is common to all traditional 3D full-wave frequency-domain solvers like Method of Moments (MoM) or Finite Element Method (FEM).

Why should I care as an EMC simulation engineer?
Many standards and real-world problems begin in the kHz-to-low-MHz range, and simulation must remain robust there to be useful.

With the **Compliance Scope 5.0.0** release, an improved loop-tree decomposition scheme helps address the root cause of this low-frequency breakdown. Since efficient construction of global loops can become a bottleneck as mesh size increases, Compliance Scope 5.0.0 introduces efficient computation of global loops within the loop-tree decomposition flow. This enables stable and scalable low-frequency simulation, helping engineers obtain reliable results at all frequencies of interest.

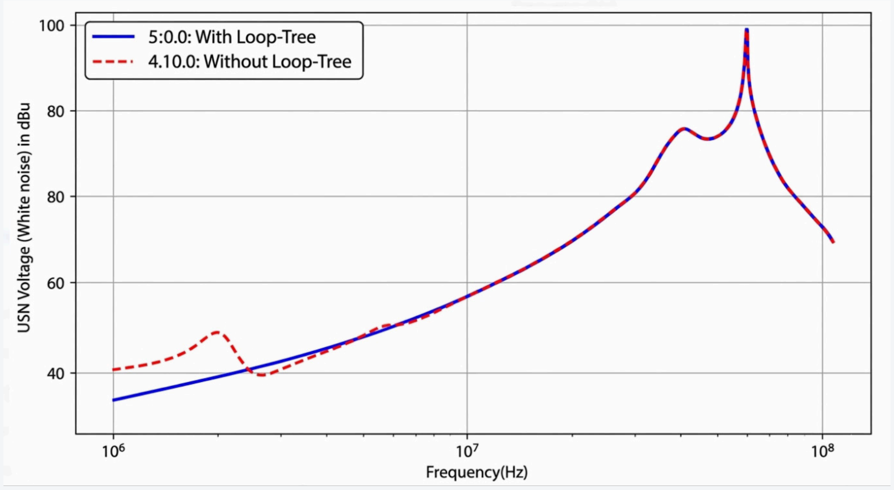
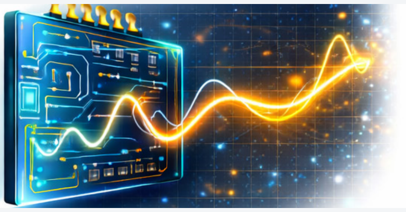


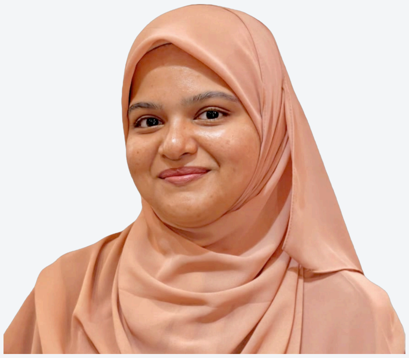
Figure: LISN voltage for a CISPR 25 conducted-emission voltage-method test case for unit-excitation

SimYog Spectrum

PRODUCT UPDATES | ENGINEERING INSIGHTS | LATEST NEWS

TECHNICAL
FEATURE FOCUS



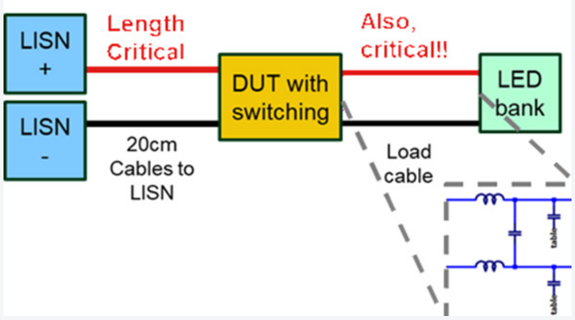


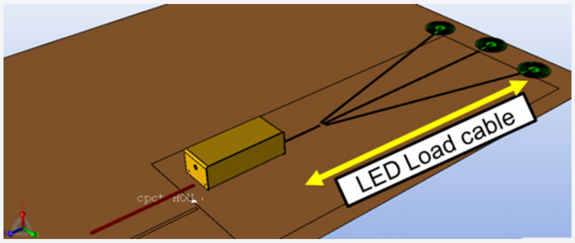
Cable Lengths Matter — Now You Can Model Them Precisely

Aasiya Sameen, SimYog Technology

Engineers have always known that cable lengths influence EMC performance. That's why Compliance-Scope has long included an intuitive cable configuration interface for quickly defining the standard test cables used in measurements—such as the 200 mm cables for CISPR-25 conducted emissions (CE) and the 2000 mm harness for CISPR-25 radiated emissions (RE) between the LISN or load box and the DUT.

But in many real-world designs, emissions are also strongly influenced by the cables connecting the DUT to its loads. These harnesses—often long, routed along complex paths, or even twisted—can significantly affect both conducted and radiated emissions, especially at higher frequencies.





"What used to be only discovered in the testing lab can now be discovered sooner with simulation. "

Compliance-Scope 5.0.0 introduces the ability to simulate regular and twisted cables along realistic paths, closely mirroring the physical wiring used in the laboratory setup. This makes it possible to capture harness-related EMC effects much earlier in the design cycle.

For example, consider a headlamp driver powering three headlamp boards, each connected to the DUT through long harnesses. As shown in the example below, the cable lengths can have a noticeable impact on emissions at higher frequencies. With the new cable modeling capability in Compliance-Scope 5.0.0, engineers can now predict and mitigate these effects before hardware testing, reducing surprises during compliance measurements.