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# Signal Integrity Analysis and Noise Source extraction of Integrated Circuits using IBIS Models

 Baba T.<sup>a</sup> [✉](#), Che Mustapha N.A.<sup>a</sup> [✉](#), Hasbullah N.F.<sup>a</sup> [✉](#)
[Save all to author list](#)
<sup>a</sup> International Islamic University Malaysia, Department of Electrical and Computer Engineering, Kuala Lumpur, Malaysia

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**Abstract**

Integrated Circuits (ICs) play a critical role in an electronic system's Electromagnetic Compatibility (EMC). Generally, ICs are the ultimate source of interference-causing signals and noise. Signal Integrity in ICs also poses increasing challenges to PCB designers. Analyzing the Signal Integrity issues at the upfront design level before the prototype board is fabricated is important. Electromagnetic Compatibility (EMC) improves significantly for a board that undergoes Signal Integrity analysis. The use of electronic equipment in the Automotive Industry has been increasing ever since. On an average a smart car contains over 50 ICs. This scenario creates a demand for EMC compliance of ICs used in Automotive Industry. Failure to make the ICs Electromagnetic Compatible could result in fatal accidents. This paper introduces the basic concepts of EMC of IC's. A methodology to perform the Signal Integrity analysis and extract noise sources from the ICs using IBIS models has been presented. Co-simulations are carried out between ANSYS HFSS and Agilent ADS. © 2021 IEEE.

**Author keywords**

Conducted Emissions; Electromagnetic Compatibility (EMC); Electromagnetic Interference (EMI); IBIS model ; Integrated circuits (ICs); Signal Integrity

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