

Industry-Academic Forum on EMC 2020

Academic Participants and Contributions



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Risk Analysis in EMC - A Matter of Margins

EMC analysis of integrated circuits, printed circuit board, equipment or systems is at the crossroads of engineering expertise, characterization and modelling. All these combine to reach an acceptable level of EMC compatibility required for a safe operation. The complexity of interactions prevents from a complete and detailed analysis of possible EMC threats in ever-increasing complexity of today's systems. The conventional approach consists in assessing the immunity of components in the system according to some prescribed electromagnetic / electric stress level, chosen with an adequate margin. This contribution will focus on the concept of risk analysis in EMC, under the classical paradigm of immunity / susceptibility analysis. In this framework, risk assessment supposes the knowledge of the stress level and susceptibility levels of the considered target. Both are analyzed in terms of probability distributions, due to the inherent variability of the coupling path and of the target itself. Focusing on extreme value distributions or distribution tails is required to perform this estimation. We will highlight how some specific statistical methods help finding a description of distribution tails to cope with this issue of assessing EMC margins.

Philippe Besnier received the Ph. D. degree in electronics from the University of Lille in 1993. Following a one-year period at ONERA, Meudon as an assistant scientist in the EMC division, he was with the laboratory of radio-propagation and electronics (LRPE), University of Lille, as a researcher at the Centre National de la Recherche Scientifique (CNRS) from 1994 to 1997. From 1997 to 2002, Philippe Besnier was the director of Centre d'Etudes et de Recherches en Protection Electromagnétique (CERPEM): a non-for-profit organization for research, expertise and training in EMC and related activities, based in Laval, France. He co-founded TEKCEM in 1998 a small business company specialized in turnkey systems for EMC measurements. Back to CNRS in 2002, he has been since then with the Institute of Electronics and Telecommunications of Rennes (IETR). Philippe Besnier was appointed as CNRS senior researcher in 2013. He was co-head of the "antennas and microwave devices" research department of IETR between 2012 and 2016. Since July 2017, he is now a deputy director of IETR. His research activities are mainly dedicated to interference analysis on cable harnesses (including electromagnetic topology), theory and application of reverberation chambers, near-field probing and uncertainty quantification in EMC modeling.

