

ODEF v. 1.0 User's Manual

EMI (ElectroMagnetic Interference) filters are present in most electrical and electronic appliances to ensure compliance with electromagnetic compatibility standards, in particular with those related to conducted emissions. The recent trend is to design EMI filters that implement the maximum power density, especially for applications in which compactness and low weight are the primary constraints (e.g., airplanes, electric vehicles, etc.)

ODEF (Optimized Design of EMI Filters) is a very useful application for EMI engineers or researchers to perform a filter design oriented to optimal power density. It is an interactive software application running in Matlab® environment that has been developed by CNR-ISSIA, in collaboration with UNIPA-DEIM, Italy. Given noise measurements and some parameters that define the system configuration, the application automatically selects EMI filter components, circuit configuration and number of stages leading to the minimum overall filter volume/weight. Moreover, ODEF allows to compare the optimal EMI filter designs to the suboptimal results, so as to leave the final decision to the designer.

ODEF is freeware for non-commercial use and it can be downloaded from www.issia.cnr.it/wp/?page_id=8070.

This work is based on two scientific papers:

- [1] G. Ala, G. C. Giaconia, G. Giglia, M. C. Di Piazza, M. Luna, G. Vitale, P. Zanchetta, "Computer Aided Optimal Design of High Power Density EMI Filters", IEEE 16th International Conf. on Environment and Electrical Engineering (EEEIC 2016), 7-10 June 2016, Florence, Italy.
- [2] M. C. Di Piazza, M. Luna, G. Vitale, G. Ala, G. C. Giaconia, G. Giglia, P. Zanchetta, "ODEF: an Interactive Tool for Optimized Design of EMI Filters", IEEE 42nd Annual Conference of Industrial Electronics Society (IECON 2016), 24-27 October 2016, Florence, Italy.

Hence, if you use ODEF for your research, please cite our papers.

Special thanks to Jan Simon of Matlab Central File Exchange for DataHash.m file.

Stay tuned for updates and for a proper user manual.

Thank you.

The authors