Multiobjective Electromagnetic Optimization of RF components using CST MICROWAWE STUDIO® and modeFRONTIER®

Davide Tallini , Emmanuel Leroux

CST AG[1]

Nowadays the passive microwave & RF design of components like connectors, all kind of antennas, couplers, filters and waveguides, takes advantage of the capabilities provided by 3D electromagnetic simulation tools for an accurate virtual prototyping. The tight integration of such a tool in the daily workflow of a RF designer has become a standard de facto.

A further challenge to be accomplished by the simulation tool is the ability to contribute more and more to the increasing wish of a shorter time to market of the RF product.

To this aim Multi-objective optimization has been considered, combining the strength of CST MWS[2], one of the most applied 3D electromagnetic simulation tool, with modeFRONTIER[3]. Seamless integrated with modeFRONTIER® by means of a direct node, CST electromagnetic simulation is automatically driven by a full batch process, that doesn't require human intervention.

Multi-objective optimization approach has been successfully applied to several real case studies, such as the design a complex antenna for space applications, phased antenna arrays and filters being always able to meet the RF design requirements and showing the capability of efficiently exploiting the space domain during the optima search phase.

This methodology is a very promising approach for an even faster development of all kinds of microwave structures.

---

[1] For further information please contact: davide.tallini@cst.com

[2] CST MWS® is a product of CST-Computer Simulation Technology®: www.cst.com

[3] modeFRONTIER® is a product of ESTECO® SpA: www.esteco.com