EMC

Component
École Nationale Supérieure d'Électrotechnique d'Électronique

In brief

- **Ametys Code:** N9EE23B
- **Open to exchange students:** Yes

Presentation

Objectives

This course addresses the problem of conducted electromagnetic emissions produced by power converters, one of the frequent causes of EMC non-compliance.

Description

· Presentation of the EMC context;

· Definition of the concept of conducted emissions and experimental illustration;

· Presentation of standard measurement techniques for conducted emissions (e.g., EN55022, CISPR25);

· Identification of sources and modes of propagation of conducted noise produced by a power converter (application to typical switching power supply structures such as buck and flyback converters);

· Presentation of a simplified electrical model for simulating the conducted emissions of a power converter;

· Description of the main EMC filter structures (common mode and differential mode), typical filter components, and their sizing;

· Presentation and illustration of several rules for low-emission design of switching power supplies.

EMC (Electromagnetic Compatibility) application project: Filtering of conducted emissions produced by a flyback AC-DC converter. The objective of this design office is to size the EMC filter at the input of a flyback switching power supply in order to make the product compatible with the EN55022 standard. The study will be based on simulation (IC-EMC and WinSPICE/LTSPICE software) and passive component libraries. The simulation results for filter attenuation will be compared with experimental measurement results.