

Electromagnetic Compatibility & Interference

EMC/EMI Issues for Wireless Communications

The recent explosive use of wireless communications for personal and commercial activities is causing significant electromagnetic interference (EMI) and compatibility (EMC) issues. This is particularly true in the design of automobile and aircraft systems, where wireless sensors are increasingly used for control and information gathering. ESL faculty and researchers are evaluating Radio Frequency (RF) interference on digital systems, communication networks, sensors, and mixed analog/digital RF technologies, through both analysis and experiments. A related important topic of ESL research involves the protection of electronic systems from disruption due to wide-bandwidth sources.

Analysis Tools Produce Vital Breakthroughs

This research has led to the development of rigorous analysis tools that can interface with other design packages such as SPICE to allow integrated EMI/EMC prediction in the design phase. In particular, analysis is possible for systems that combine RF analog and digital circuits with cabling in complex enclosures. A significant portion of the funding for this work is through an Air Force Office of Scientific Research MURI program in collaboration with the University of Illinois-Chicago. This research is supporting automotive, computer, and government organizations in enhancing their design processes to minimize EMI/EMC problems.

