

Model based design of an avionics power line communications physical layer

Transmitting data over the aircraft power distribution network using Power Line Communications (PLC) technology provides an interesting solution for providing significant aircraft wiring weight, volume and complexity savings. A PLC protocol dedicated for real-time, safety-critical applications has been developed. The physical layer of the protocol is based on the international IEEE 1901 standard. An overview of the advanced digital signal processing techniques required to provide robust communications over the harsh power line communications channel is provided. In order to cope with the complexity in the realization of the physical layer, a process using model based design based on concepts from DO-254 and DO-331 is proposed. This process is used for the hardware-based design and verification of the PLC protocol.

Author: Stephen Dominiak (stephen.dominiak@hslu.ch)