MODELING FOR THE IMPLEMENTATION OF FEIGNED PROTOTYPE FOR THE CHARACTERIZATION OF COMMUNICATIONS AMONG NETS OF WIDE BAND PLC AND WI-MAX

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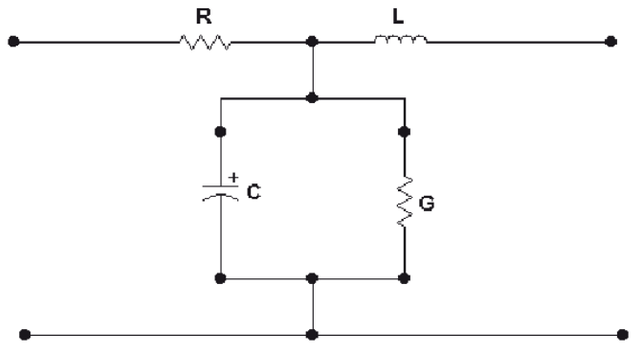
This paper presents the development of a model to be simulated in MatLab tool, which allows the characterization of a hybrid model of communication between the PLC and WiMax technologies. This model facilitates the development, implementation and deployment of technologies that contribute to a total connectivity and the mobility of users in the communication of information, as given the existence of various types and formats of information coupled with the major problems is the very nature of the information has overwhelmed the capacity of conventional media generally based on coaxial cables, optical fiber and copper twisted wire, so that new technologies with extensive capabilities for data transmission are essential to avoid saturation of services. Example of this is the communications cord, also known as Power Line Communications (PLC) and WiMax. This article explains the design of a prototype simulator that facilitates the convergence of these two technologies are very important in recent years PLC and Wi-Max, the design is programmed into the simulation tool Simulink of Matlab. The first step was the development of part of the modeling blocks for the overall design, which corresponds to the electrical and mathematical modeling of the prototype (Figure 1).

The proposed design shows the possibility of convergence between PLC and Wi-Max in at least two different but complementary ways: convergence and service convergence technologies. The convergence of services refers to the confluence, within the infrastructure provided by the CFE (Commission Federal de Electricidad), mainly based on fiber optics that cover much of the Mexican territory, and power lines high, medium and low tension and that according to national legislation to allow the parastatal to be carrier of carriers, without the possibility of distributing to end users, so that lease their services to various telecommunications service providers, who will become triple play service providers and even quadruple-play, and who, until recently, was seen as independent and equipped, each as different telecoms operators, ie, telephone service, the pay-TV and supply of Internet services that were provided by different suppliers, may now be available to customers on a single telecom provider. technological convergence of the integration, within a telecommunications device, the two technologies initially identified with specific services, first PLC as a technology that uses the power of low and medium voltage up to and on the other WiMax , which uses radio spectrum to transmit signals. The idea is that technologies of computers, television, telephone and data networks are combined to provide multimedia devices capable of identifying and processing signals associated with different telecommunications services. PLC module lets you use power grids to provide advanced telecommunications services. There PLC applications using narrow-band frequencies on the order of kHz for use in monitoring and control, but also can reach transmission rates of several Mbps with frequencies in the range of 1.6 to 30 MHz (Cañete, 2002). In this part of the article is a review of the configurations of power distribution networks used in different parts of the world. Then analyzing the transfer function for different sections in low-voltage isolated radiation is considered due to the PLC technology and the effect of electromagnetic interference with radio-frequency communications, especially in some specific bandwidths. It also proposes a model of PLC channel that collects some of its main features, and finally, the article closes with conclusions. According to a number of previous studies is that although there are various schemes for the generation and transmission of energy in European countries, as well as Asians, and even the Americans, was based on a generalized model, ideal the behavior of a power line while following the general electrical model. electrical model A characterization of the channel electric transmission line has four parameters that affect its ability to fulfill its role as part of a power system (Figure 2): resistance, inductance, capacitance and conductance.

These parameters are crucial for determining the properties of the PLC channel used to carry telecommunications signals. The EMC uses PLC frequencies between 9 kHz and 30 MHz at high frequency cables leakage arising in the form of electromagnetic radiation, antennas behave as low-efficiency (Zimmermann and Dostert, 2002). This form of radiation causes interference with radio communications frequencies mainly between 1 and 20 MHz bands and assigned to AM radio. There is thus a crucial problem for electromagnetic compatibility (EMC) with such communications. The degree of interference depends on the transmission power, distance and configuration of the cables. More precisely, the fraction of radiated power is determined by the symmetry of the network, and this symmetry is defined in terms of the impedance between conductors: if a pair of conductors impedance between conductor and earth is of equal magnitude, the network is symmetrical. In turn, that this symmetry between the two drivers are required to carry the same current (I). Connect the neutral and ground attack can be a good alternative to achieve a high symmetry in the line. In order to assess the true impact of PLC interference with radio communications are necessary to make measurements with systems that are operational. This is work that has already begun to do in some countries.



RESULTS

Important considerations:

1. The attenuation is variant with time and frequency.
2. There is dependence of the channel with respect to location, network topology and load type. 3. High interference by the noise produced by the type of loads connected. 4. Various forms of impulse noise. 5. EMC measurements that limit transmission power.

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