

Wireless Communications for Power Substations: RF Characterization and Modeling

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Abstrak

This book consists of the identification, characterization, and modeling of electromagnetic interferences in substations for the deployment of wireless sensor networks. The authors present in chapter 3 the measurement setup to record sequences of impulsive noise samples in the ISM band of interest. The setup can measure substation impulsive noise, in wide band, with enough samples per time window and enough precision to allow a statistical study of the noise. During the measurement campaign, the authors recorded around 120 noise sequences in different substations and for four ranges of equipment voltage, which are 25 kV, 230 kV, 315 kV and 735 kV. A characterization process is proposed, by which physical characteristics of partial discharge can be measured in terms of first- and second-order statistics. From the measurement campaign, the authors infer the characteristics of substation impulsive noise as a function of the substation equipment voltage, and can provide representative parameters for the four voltage ranges and for several existing impulsive noise models.