Signal processing methods for time domain EMI measurements

In this paper, we discuss the advantages of broadband time-domain measurement techniques applied to electromagnetic interference (EMI) problems. The digital signal processing of EMI measurements allows to emulate in real-time the various modes of conventional analogous equipment, e.g., peak-, average-, RMS- and quasi-peak-detector mode. It is also possible to introduce new concepts of analysis, e.g., phase spectra, short-time spectra, statistical evaluation and FFT-based time-frequency analysis methods. Since time-domain techniques allow to process the amplitude and phase information of the whole signal spectrum in parallel, the measurement time may be reduced by at least one order of magnitude. The signal processing algorithms and the measurement results obtained with the time-domain electromagnetic interference (TDEMI) measurement system are discussed.

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