

EMP: CONSIDERATIONS FOR SYSTEM DESIGN

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ABSTRACT

An overview of the Electromagnetic Pulse (EMP) environment is presented, including a review of vulnerable systems and a comparison with EMI and lightning. The effects of an EMP on communications and telemetry systems are discussed, stressing the impact on system performance. EMP protection techniques suitable for signal processing applications are reviewed, including cable design, shielding topology, filtering and interface protection. The functional and operational constraints imposed by such techniques are identified. Typical hardness verification requirements are summarized, and the role of analysis and experiment in the hardening process are examined. State-of-the-art analytical tools and simulation facilities/techniques are discussed. As an example, a tactical EMP hardening problem is considered, using the EMP shielding topology approach presented in the paper.