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ELECTROMAGNETIC PULSE (EMP): APPLICATION SCENARIO AND PROTECTIVE
MEASURES/GUIDELINES FOR SATELLITES IN EARTH ORBITS

Abstract

EMP is an element of Cyber Warfare (CW) having devastating effects for intended targets. EMP can induce irreversible damage to wide range of electrical and electronic equipment. Spacecrafts in Earth orbits are highly vulnerable to EMP. EMP can be generated from a High-altitude nuclear explosion, natural EMP from solar super storm or through High Energy Directed Weapons. Spacecraft electronics and structure need protection against EMP. Spacecraft should meet operational performance requirement after being subjected to the EMP environment. European International Electro-technical Committee (IEC) standard IEC 61000-2-9 defines EMP as 50 KV/m Electric field. In this paper characterization of EMP attacks is done using computer simulations, identify its impact on spacecraft, its mechanical structure and electronics. Guidelines for protection and hardening of spacecraft against EMP are suggested.