

HPEM Effects on a Generic Missile with Position Sensitive Infrared Detector

B. Chevalier⁽¹⁾, F. Sonnemann⁽²⁾, A. Kaiser⁽³⁾

(1) Centre d'études de Gramat, 46500 Gramat, FRANCE

(2) Diehl-BGT-Defence GmbH & Co.KG, 90552 Röthenbach a d Pegnitz,

(3) Wehrwissenschaftliches Institut für Schutztechnologien WIS, 29633 Munster

Modern manned or unmanned air vehicles are steadily equipped with different kinds of warning and detection sensors. A blinding or destruction of those sensors or sensor electronics leads in many cases to a mission abort or mission failure. In order to investigate the effects of electromagnetic irradiation (EMI) on modern sensor technology, the generic missile mock-up GENE4 has been equipped with a position sensitive infrared (IR) detector (PSD) and an analogue signal processing electronic, called GENE4.

GENE4 represents a guided missile system with modern IR sensor technology, which allows the detection of an IR target. The special electronic design of GENE4 allows the observation of all relevant information signals via optical links. This enables the detection of induced distortion signals and potential destruction effects, when the system is irradiated by electromagnetic fields.

The goal of the study is to determine the susceptibility behavior of IR sensor technology in missile like systems, the analysis of the coupling effects, and the determination of electric field threshold values for system upset.

The penetration of the EM wave inside the system has been evaluated using calculations. Different experiments have also been conducted in mode stirring as well as in anechoic chambers; the behavior of the system has been analyzed for different kinds of threats: pulsed HPM and amplitude modulated CW fields.