

Transient Field Coupling into Aircraft Cables. EMP Stroke

Problem Definition

In this example Susceptibility Hybrid Analysis Type is applied to case when EMP is traveling to the aircraft as a plane wave from front direction.

Model of aircraft is shown in the following figures.



Fig. 1. Realistic aircraft

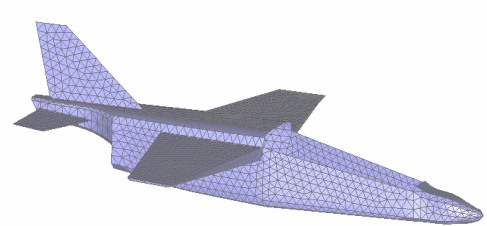


Fig. 2. Simulation model

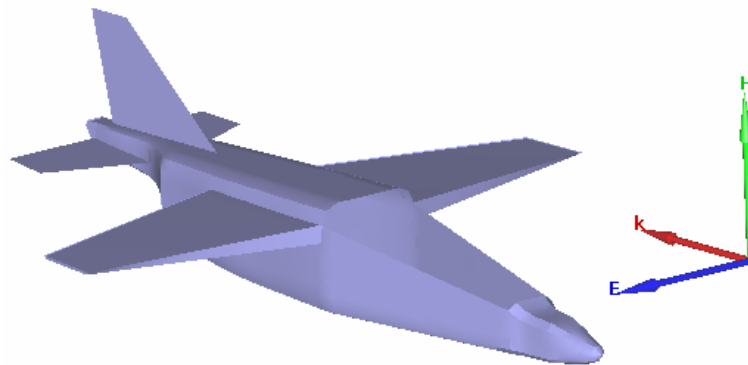


Fig. 3. Aircraft and excited by plane wave

Two types of cables are considered: unshielded twisted pair (UTP) and shielded twisted pair (STP).

Cable routing in aircraft and terminations are represented in the following figures.

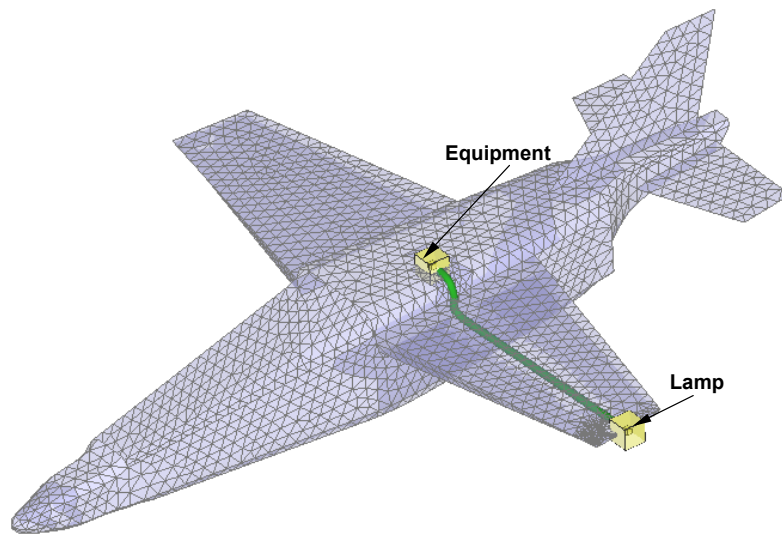


Fig. 4. Cable routing in aircraft

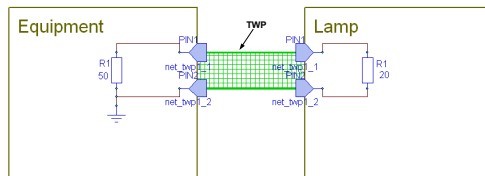


Fig. 5. UTP cable terminations

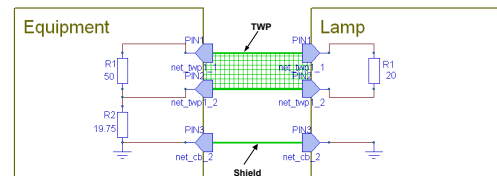


Fig. 6. STP cable terminations

Numerical Results

Comparison of coupled voltage at cables termination is shown in the figures below.

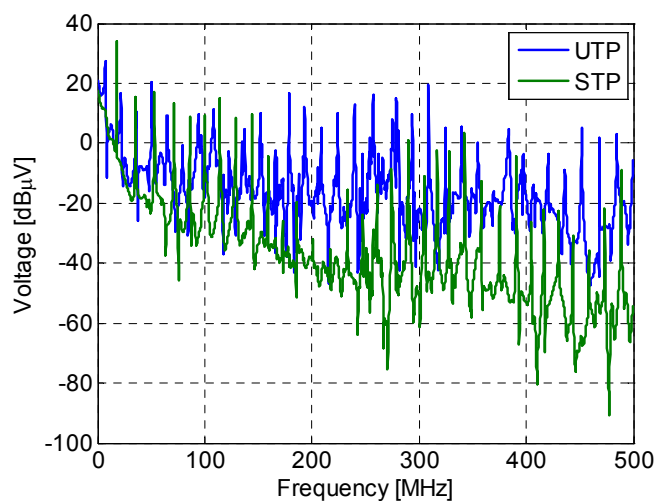


Fig. 7. Spectrum of coupled voltage at equipment termination

Surface current and charge distributions are shown in figures below.

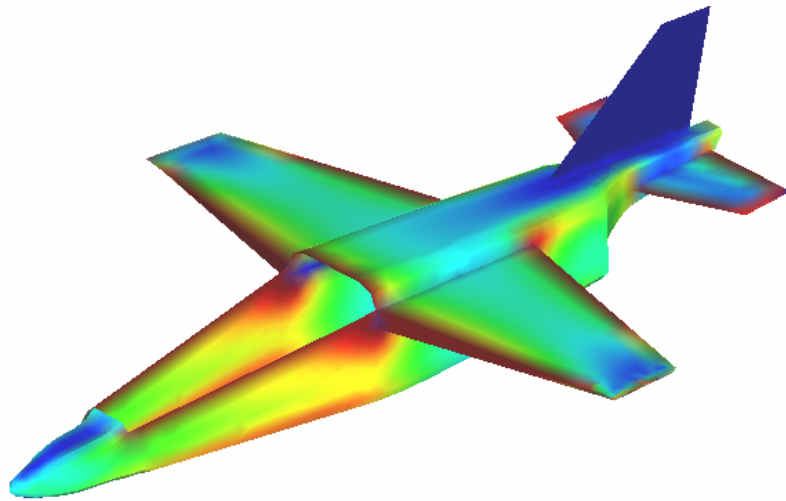


Fig. 8. Current distribution on aircraft

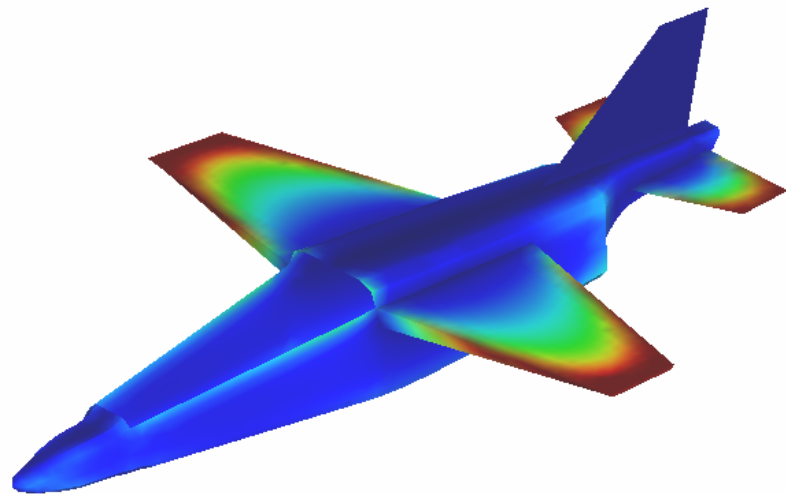


Fig. 9. Current distribution on aircraft