

SIMULATING THE DAMAGE POTENTIAL OF AIRBLAST SHOCK LOADS BY ABBREVIATED SHOCK PULSES

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Shock survivability testing and validation procedures have always been important topics of discussion for the developers and users of mobile tactical systems. The intensity of these discussions is likely to increase in the near future due to recent advances in hardened shelter technology and more rigid enforcement of system survivability requirements.

The critical issues for systems designer are 1) converting broad system level requirements (e.g. survive a specified overpressure airblast) into design criteria for subsystems and components; 2) developing procedures for validating subsystem survivability short of full scale field tests. The basic tool available for approaching this problem is the shock response spectrum (SRS) methodology as required by Mil Standard 810-D.

Damage Criteria may be defined by the acceleration and the number of effective cycles over the frequency bandwidth imposed upon equipment. Unfortunately, practical test simulation often constrains true simulation of the multi-axis wave-form time histories to single-axis testing and restrictions on external input loading. In some cases, criteria for equivalent damage using simpler testing methods can be developed and utilized for enhancing equipment hardness, for determining vulnerability, for qualification tests, and for production environmental testing.