Institute of Environmental Sciences and Technology

IEST-RP-PR003.1

Product Reliability Division
Recommended Practice 003.1

HALT and HASS

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1 SCOPE

1.1 Scope

This Recommended Practice (RP) defines and describes HALT (Highly Accelerated Life Testing) and HASS (Highly Accelerated Stress Screening). This RP contains information on the philosophy behind the testing, generic examples of tests, the differences between standard testing equipment and equipment used for highly accelerated testing, fixturing considerations, alternative approaches, additional environments, and lessons learned, along with other useful information. This style of testing takes a Qualitative approach (looking for the quality of the design and workmanship) rather than a Quantitative approach (being able to use the results to calculate length of life in service). This RP is not meant to take the place of a test specification but to be used in conjunction with a test specification or as general guidance.

2 REFERENCES

The cited editions of the following documents are incorporated into this RP to the extent specified herein. Users are encouraged to investigate the possibility of applying the most recent editions of the references.

MIL-STD-810: Test Method Standard for Environmental Engineering Considerations and Laboratory Tests

Military Standards

Standardization Document Order Desk
700 Robbins Avenue
Bldg #4, Section D
Philadelphia, PA 19111, USA
http://dodssp.daps.dla.mil/

3 TERMS AND DEFINITIONS

acceleration
The rate of change of velocity with respect to time. For vibration testing, acceleration is usually expressed in gravitational units (*g*) but may also be expressed as m/sec^2.

accelerometer
A sensor for converting acceleration into an electrical signal; a transducer featuring instantaneous output proportional to the instantaneous acceleration input.

bathtub curve
A plot of product failures versus time, which has three sections: The first shows decreasing "infant mortality" (early failures); the second, constant random failures; and the third, increasing wear-out failures.

dwell
The length of time during which a test article is subjected to an environment (e.g., thermal or vibration).

electrodynamic (ED) shaker
A type of shaker that uses electrical energy to create dynamic motion. In physics, the technology used is referred to as the "voice coil principle."

environmental stress screening (ESS)
The application of forcing function to a product for the purpose of characterizing the environmental performance of the product.

Failure Modes and Effects Analysis (FMEA)
A methodology conducted during product development to identify and classify potential reliability problems, and to define a course of action to mitigate failures according to priority.

fixture
An intermediate structure used to attach a test unit to a test platform such as a vibration table.