

A Double Acceptance Sampling Plan on Truncated Life Tests for Generalized Rayleigh Distribution with Known Shape Parameter

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ABSTRACT

In this research paper, we have developed double acceptance sampling plan when the life test is truncated at a pre-fixed time, assuming that the lifetime of a product follows a generalized Rayleigh distribution with known shape parameter. The zero and one failure schemes are mainly considered where the lot is accepted if no failures are observed from the first sample and it is rejected if two or more failures observed from the first sample. When there is one failure from the first sample, the second sample is drawn and tested for the same duration as the first sample. The minimum sample sizes of the first and second samples are determined for varying true mean life as a multiple of the given life at the specified consumer's confidence level. The operating characteristics values are analysed with varying ratios of the true mean life to the specified life. The minimum such ratios are also obtained to minimize the producer's risk at the specified level. The theoretical developments have been highlighted with numerical example.

Key Words: Generalized Rayleigh distribution; producer's risk; consumer's risk; operating characteristic curve; average sample number; truncated life test.