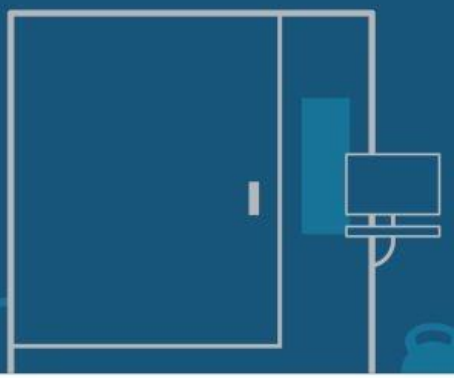
HOW LONG CAN YOUR SSD LAST?

ATP SSD End-of-Life Validation Test:

Ensuring Reliability, Endurance and Retention From 0% to 100% and Beyond EOL

At ATP Electronics, we perform end of life (EOL) testing to determine the effective use of the SSD over a certain period given the factors which influence SSD life span such as NAND flash type, program/erase cycle, workload and temperature.

We go through all the pain, so you have everything to gain.



ATP uses the Gym & Coach System exercise our SSD to perform a series of comprehensive EOL validation test at the drive level. This entails subjecting the SSD to numerous cycles to ascertain or validate the endurance capability and reliability of the drive, so our customer can enjoy the benefits of high performance, extended endurance and superior reliability.

ATP EOL Validation Test Includes:

Program/Erase (P/E) Cycle Check

This test validates if our quality can meet the TBW rating on the datasheet. Sample devices under test are checked under 10%, 75%, 100% and even 120% EOL, which is beyond the rated usable life span of the SSD.

Later Bad Block Check

NAND flash blocks can wear out from use, which can make them unreliable or unusable. This test checks for bad blocks at different stages of the SSD's life span: 10% / 100% / 120% EOL.

P/E Count Distribution (Wear Leveling)

Follows JEDEC's JESD0219 standard for the Enterprise application class. During the P/E aging process, each write should be followed by a read (i.e., W/R=1) and all errors are recorded. Reading solely at SSD's end of life is not acceptable.

Retention Test after 120% EOL P/E cycle

Checks if the SSD can continue to retain data beyond its rated life span.

Results

- All sample SSDs tested completed the 100% EOL Test successfully.
- From 0% to beyond EOL, there were NO...
  - Program errors
  - Erase errors
  - Uncorrectable error correction code (UECC) errors
  - Later bad blocks
- The cumulative TBW for all SSDs demonstrates UBER to be less than 1 Uncorrectable Read Error in 10^{17} bits read on SSD drive level.
- Retention test results would meet:
  - 1 year minimum data retention requirement at the start of the drive's life, in an environment with up to 40°C at 10% PE cycle.
  - 3 months minimum data retention requirement at the end of the drive's life in an environment with up to 40°C.

ATP's EOL Validation Test is just one of the many reliability and endurance tests developed and performed by ATP. We are committed to deliver high-performance and high-endurance NAND flash storage products to ensure the best value for total cost of ownership (TCO).