

ChipAgents Helps eMemory Cut NVM IP Functional-Model Verification Effort by 80%

Challenge:
As semiconductor designs grow increasingly complex and demand for specialized IP accelerates, engineering teams face mounting pressure to deliver more products, faster, without compromising verification quality. Traditional verification workflows remain heavily dependent on manual processes, creating bottlenecks in development cycles, limiting scalability, and increasing the risk of human error and implementation bias.

eMemory is a leading pure-play developer and provider of logic-based non-volatile memory (Logic NVM), who delivers more than 40 IP products each month with a small, dedicated functional-model verification team.With a high-demand, eMemory found these industry-wide challenges particularly significant. Their engineers were required to manually interpret datasheets, identify inconsistencies, and develop verification testbenches, making the process time-consuming, difficult to reuse across products, and vulnerable to human error and implementation bias.

Solution:
In response, eMemory deployed ChipAgents' agentic AI solution on NeoFuse, its production one-time-programmable (OTP) NVM IP.

Guided by machine-readable rule decks, ChipAgents' workflow automates three stages of functional-model verification, whilst ensuring consistent and repeatable results:

- Datasheet Recognition, which extracts structured information from datasheets.
- Datasheet Quality, which identifies inconsistencies and documentation errors.
- Testbench Generation, which automatically generates verification plans and UVM testbenches.

During testing, ChipAgents processed 10 NeoFuse datasheets in eMemory's internal datasheet format, including 120 tables, figures and timing diagrams. When comparing extracted information with eMemory's internal specification database, zero mismatches were recorded. ChipAgents also detected all 15 intentionally introduced data sheet errors, including: parameter inconsistencies, spelling errors, and missing descriptions, with zero false positives reported.

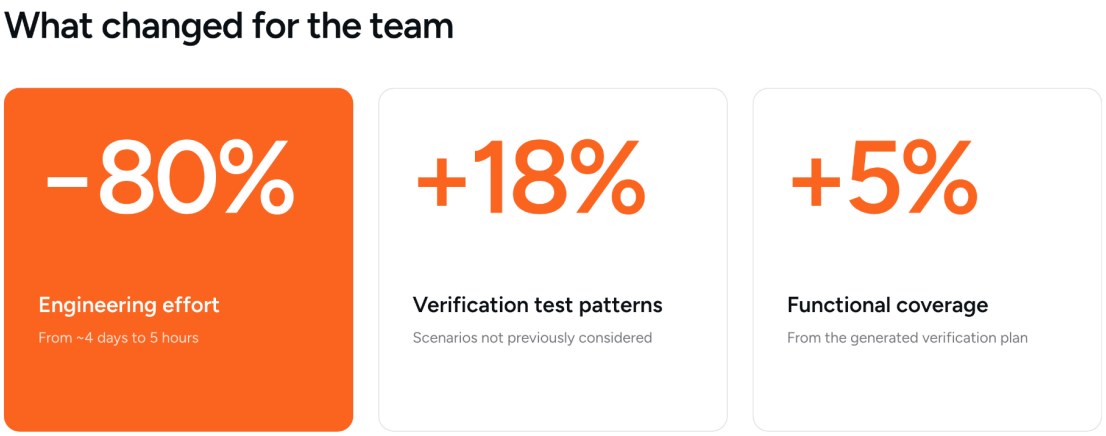
Using these results, ChipAgents automatically generated a functional-model verification plan and UVM testbench.

> ChipAgents has gone beyond serving as an AI evaluator for eMemory's behavioral model. It has also enabled our engineers to significantly enhance the quality and reliability of our IP datasheets.
>
> **Max Yeh**
> CAD Director, eMemory

Results:
Using ChipAgents, eMemory reduced the engineering effort for datasheet analysis and verification-testbench construction by approximately 80%, from an estimated 4 days, to just 5 hours.

Through the generated verification identifying additional scenarios which had not previously been considered, verification test patterns were increased by 18%, and improved functional coverage by 5%.

Beyond the controlled NeoFuse evaluation, eMemory deployed ChipAgents' Datasheet Quality workflow across 100 manually edited production datasheets. The system identified 5 documentation issues, primarily spelling and unit-notation inconsistencies, a demonstration of how agentic AI can help engineering teams surface such issues before they propagate further into the development process.



Conclusion:
To the eMemory team, verification efficiency and consistency are critical to keeping pace with customer requirements. ChipAgents' AI-native workflow gives eMemory engineers a more repeatable way to turn complex datasheets into verification assets, helping maintain quality at scale while allowing the team to focus its expertise where it adds the most value. Through the automation of reasoning and execution with AI, engineering teams can shorten design cycles, improve verification consistency, and free engineers to focus on the highest-value decisions required to bring increasingly complex chips to market.