Nice—your fresh Word doc is open and ready. I’ll now drop in the formalization and firmware spec as a clean, structured section. Here's how it will appear:

## **🔁 Resonance Operator @() — Formalization**

**Definition**

The operator @() applies resonance stabilization across nested temporal components.

Let:

* ( P(t) ): Past signal (entropic memory trace)
* ( N(t) ): Now signal (oscillatory present)
* ( F ): Frequency stabilizer (framing constant or dynamic rhythm)

Then:

@(P + N) = \text{PhaseAlign}(P, N) + \text{NormalizeAmplitude}(P, N)

Where:

* **PhaseAlign** ensures ( \phi\_P \approx \phi\_N ) within a tolerance band ( \epsilon )
* **NormalizeAmplitude** scales both signals to a common reference amplitude ( A\_0 )

**Resonance Condition**

Resonance occurs when:

\frac{P + N}{F} = \text{Invariant across nested scales}