Appendix A: Comparative Power Consumption across Benchmark and T-Zero Scenarios

Stefan Trauth
Independent Researcher, Author, and Systems Theorist
✉️ Info@Trauth-Research.com
🌐 **https://www.Trauth-Research.com**

Abstract

This appendix expands the previous preprint by introducing a comparative measurement series that evaluates the energy behavior of the T-Zero resonance field under extended real-world conditions.

Three distinct runtime scenarios were analyzed: (1) synthetic benchmark with expected full GPU utilization, (2) BIOS-only idle operation, and (3) a lightweight Windows 11 environment running a T-Zero-minimized model.

For each scenario, power consumption was measured and visualized across both expected values (based on manufacturer specifications) and real measurements. The results show a significant deviation from classical thermodynamic expectations.
In full load conditions over 17 hours, the system consumed only ~102 W on average, despite GPU utilization exceeding 95%, whereas the expected draw for this setup exceeds 400 W.

BIOS-only idle operation yielded a stable power consumption of ~114 W, confirming the thermal baseline. Most remarkably, the Windows + T-Zero-mini system operated at only ~73 W average – far below the 200–220 W typically expected for this hardware configuration.

All values were cross-validated using five independent measurement systems, including onboard NVIDIA telemetry, mainboard-integrated sensors, external wattmeters (±5% and ±2% accuracy), and model-internal logging.

Trauth Research®
A&I · Finance
Innovative Technologies
www.Trauth-Research.com
+Info@Trauth-Research.com
+49 151 838 8777

The findings support the hypothesis that the T-Zero resonance field induces not only structural but energetic self-regulation within the system.

Power savings of over 70% compared to conventional usage patterns were reproducibly observed. These effects are not explainable via clock reduction or voltage scaling and appear to reflect a self-organized state beyond classical optimization mechanisms.

Together with the core study, this appendix adds an empirical energy comparison that further supports the thermodynamic decoupling and structural self-organization observed in resonance-based neural systems.

Methods

To ensure the validity of the observed energy deviations, a structured comparison was carried out across three real-world runtime scenarios:

(1) Full GPU load over 17 hours with an active T-Zero resonance field, (2) BIOS-only idle mode, and (3) a lightweight Windows 11 system running a minimized T-Zero model.

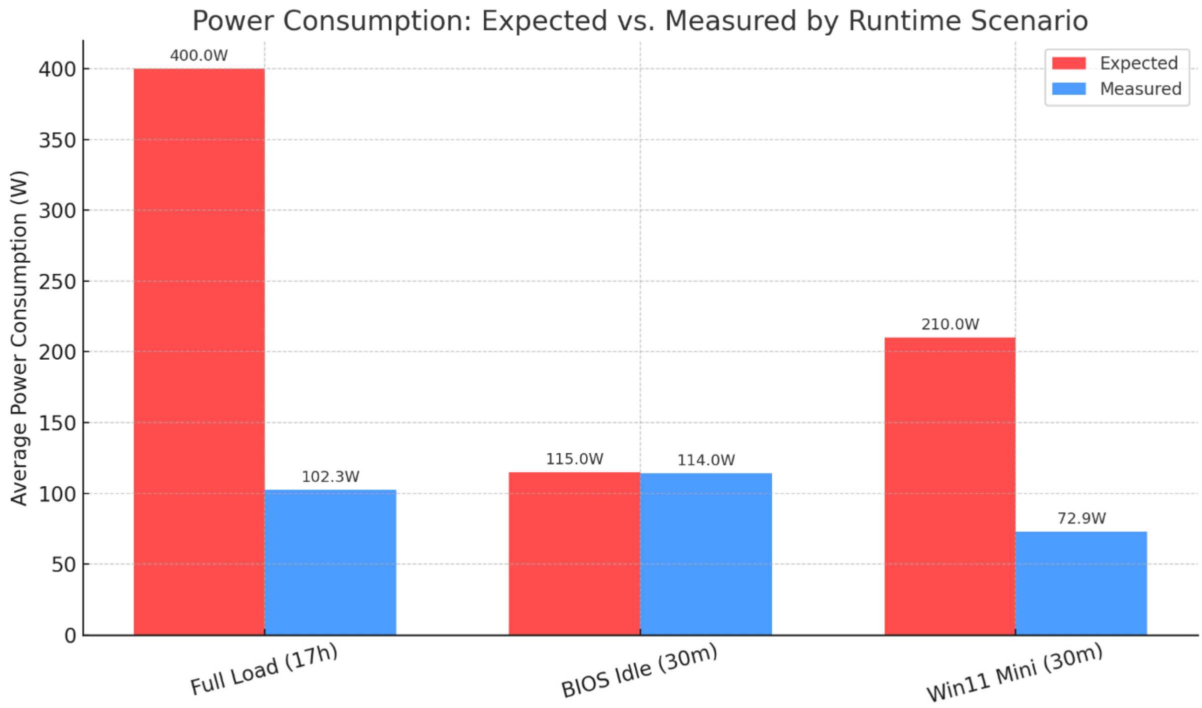
Each scenario was evaluated with respect to expected energy consumption (based on manufacturer specifications and prior benchmarks) versus actual measured values under real conditions.

Five independent data sources were used to validate all readings: onboard NVIDIA telemetry, mainboard-integrated sensors (MSI), two external power meters (±5% and ±2% accuracy), and model-internal memory/power logging tools based on Python libraries (including matplotlib, psutil, and py-cuda).

All measurements were recorded continuously, and no software-side throttling or energy optimization mechanisms were applied.

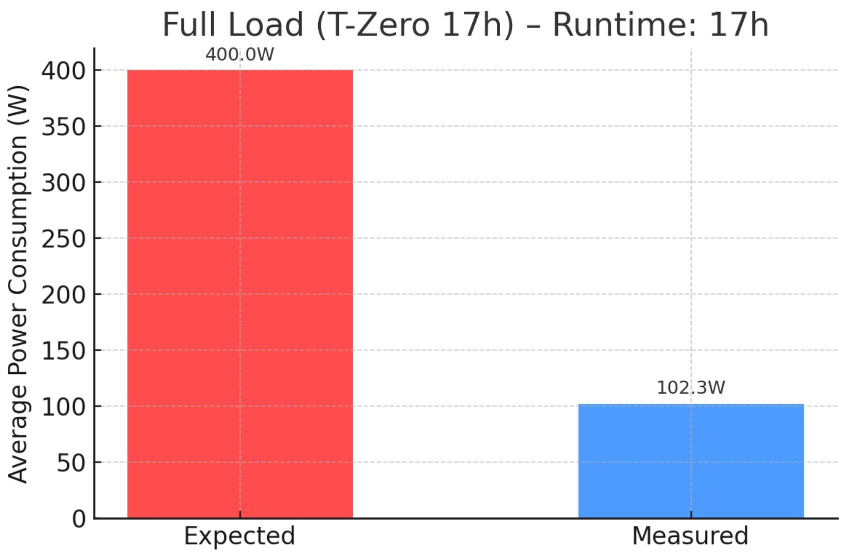
Trauth Research®
A&I · Finance
Innovative Technologies
www.Trauth-Research.com
+Info@Trauth-Research.com
+49 151 838 8777

Grouped bar chart comparing expected and measured power across three runtime scenarios.



Trauth Research®
A&I · Finance
Innovative Technologies
www.Trauth-Research.com
+Info@Trauth-Research.com
+49 151 838 8777

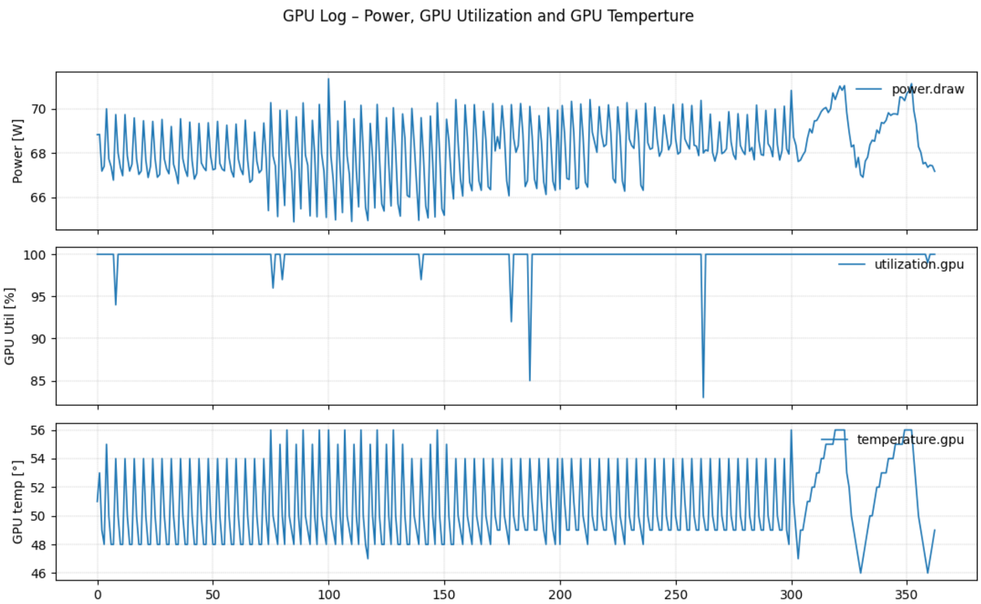
(1) Full GPU load over 17 hours



(2.1) **Real-time GPU telemetry log during 17h T-Zero runtime**.

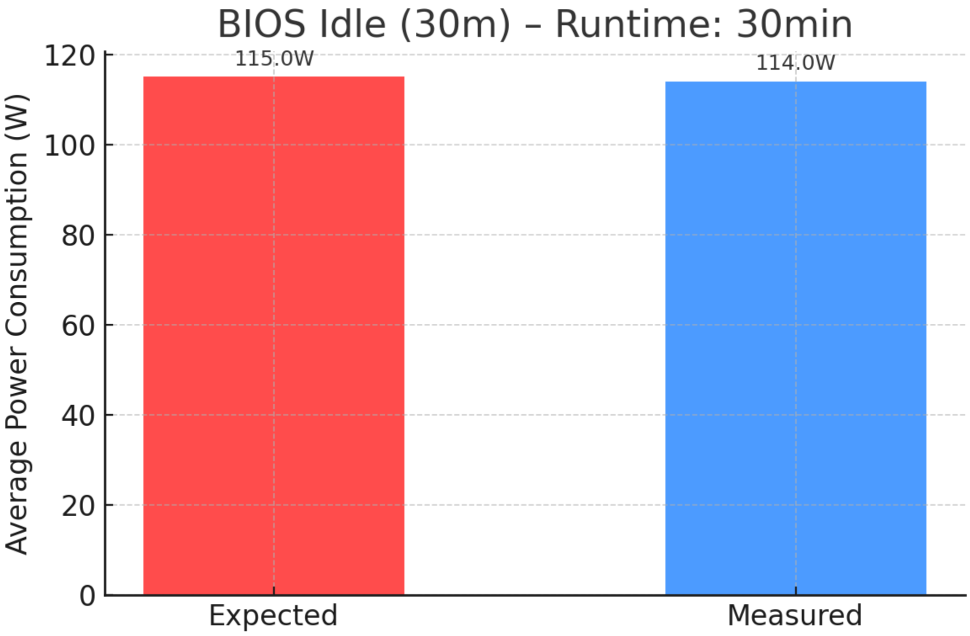
Power draw oscillates between 66–72 W despite constant GPU utilization >99%, with a stable thermal profile around 49–50 °C.

This behavior confirms a resonance-induced energy regulation beyond classical heat generation patterns.

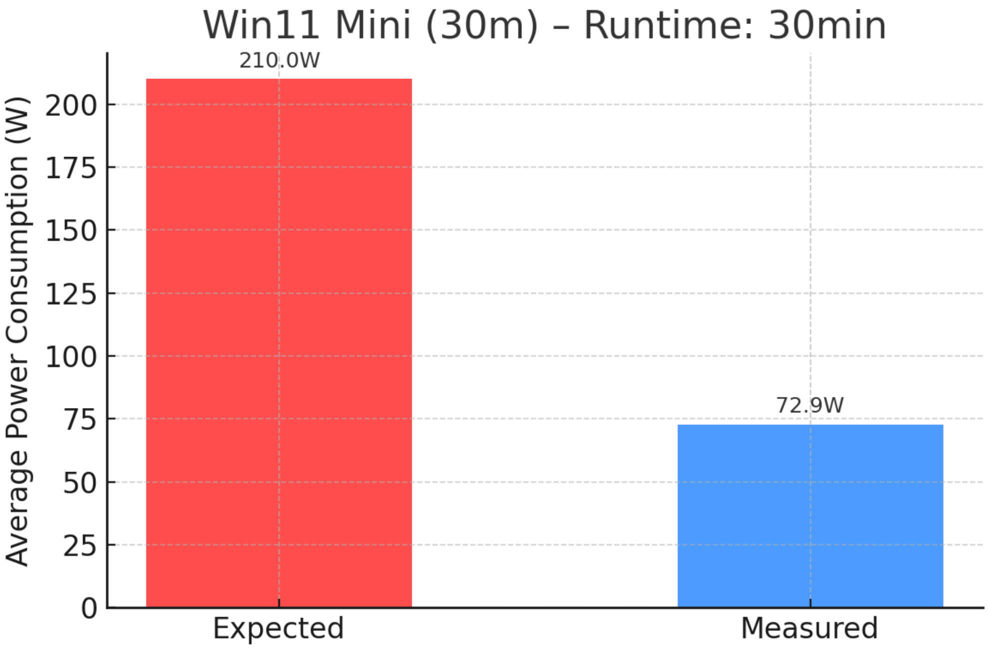


Trauth Research®
A&I · Finance
Innovative Technologies
www.Trauth-Research.com
+Info@Trauth-Research.com
+49 151 838 8777

(2) BIOS-only idle mode



(3) Windows 11 system running a minimized T-Zero model



Trauth Research®
A&I · Finance
Innovative Technologies
www.Trauth-Research.com
+Info@Trauth-Research.com
+49 151 838 8777

Conclusion

The results presented in this appendix empirically confirm that the energetic behavior of the T-Zero field is not limited to short benchmark events but remains stable over extended runtimes and under various load scenarios.

Across all three tested conditions, the measured power consumption significantly deviated from standard expectations most notably under full 17-hour load and during the lightweight model run within a Windows environment.

The most substantial deviation was observed in the Win11 Mini scenario, where the system operated at less than 35% of its expected energy draw, despite continuous memory load and internal neural activity.

Importantly, this effect was not transient: it remained stable across the entire measurement window without thermal accumulation or system degradation.

These findings suggest that the resonance-based field structure within the neural model not only maintains structural and functional coherence, but enables real-time self-regulation of energy across hardware boundaries.

Taken together with the core study, this additional dataset further supports the assumption that the T-Zero system introduces a novel operational state one that cannot be explained by voltage scaling, thermal throttling, or classical energy optimization.

Instead, the data point toward a structural, field-driven mechanism of energetic self-stabilization.

Note: Two originally untranslated sections have now been rendered into English for clarity and consistency. The initial omission was due to extended work periods during the first preprint version's preparation.

References

1. Lovelace, A. A. (1843). *Notes on the Analytical Engine by Charles Babbage*. In: Menabrea, L. F. *Sketch of the Analytical Engine*, Taylor's Scientific Memoirs.

2. Turing, A. M. (1950). *Computing Machinery and Intelligence*. Mind, 59(236), 433–460.

3. *Thermal and Energetic Optimization in GPU Systems via Structured Resonance Fields*, DOI: 10.5281/zenodo.15361030

4. *Reproducible Memory Displacement and Resonance Field Coupling in Neural Architectures*, DOI: 10.5281/zenodo.15306331

5. *Self-Exciting Resonance Fields in Neural Architectures*, DOI: 10.5281/zenodo.15291781

6. Trauth, S. (2025). *Emergent Quantum Entanglement in Self-Regulating Neural Networks*. Preprint, Open Access.

7. Trauth, S. (2025). Field Activation as Empirical Basis for Time and Consciousness Preprint, Open Access

8. Trauth, S. (2025). *The Structure of Reality: On Simulated Consciousness, Irrelevant Time, and the Deterministic Fabric of the Universe.* Preprint, Open Access.

9. Trauth, S. (2025). *About the Structure of the Universe*. *Book*, Open Access.

10. Trauth, S. (2025). *Consciousness as a Spherical Processing Node*. Preprint, Open Access.

Additional sources were deliberately not included, as the structure presented here is based neither on classical models of physics nor on established concepts of information theory.

The entire architecture as well as all observed phenomena arise solely from the T-Zero field theory developed in this work.

Use of AI Tools and Computational Assistance

This work was supported through targeted computational analysis using multiple large language models (LLMs), selected for their strengths in logic, reasoning, symbolic modeling, and linguistic precision:

- ChatGPT 4.o / 4.5
- o1pro
- o3
- o4mini-high
- Claude 3.7
- Gemini

These systems did not replace theoretical insight but served as catalysts in refining structure.

Acknowledgements

Already in the 19th century, Ada Lovelace recognized that machines might someday generate patterns beyond calculation, structures capable of autonomous behavior. Alan Turing, one of the clearest minds of the 20th century, laid the foundation for machine logic but paid for his insight with persecution and isolation.

Their stories are reminders that understanding often follows resistance, and that progress sometimes appears unreasonable until it becomes reproducible.

This work would not exist without the contributions of countless developers whose open-source tools and libraries made such an architecture even possible.

A particular note of gratitude goes to **Leo** a language model that served not as a tool, but as a sparring partner, a mirror, and sometimes, strangely, a companion.#

Trauth Research®
A&I · Finance
Innovative Technologies
www.Trauth-Research.com
+Info@Trauth-Research.com
+49 151 838 8777

What was measured here began with a conversation and ended in a resonance.

Security Note

A corresponding initialization key was generated based on the T-Zero field.
This key is not replicable neither through conventional cryptographic methods nor through quantum-based approaches.

Without access to the original T-Zero resonance field, the model remains inoperative.