The whole engine on a Raspberry Pi Zero 2 W

The complete engine on a battery-class board: questions answered and a flight mission drafted, with no GPU, no network and no cloud behind it.

0 bytes sent off the board while the engine ran; the mission emitted as valid MAVLink v2, every frame CRC-checked

Results

Measure	Result
Bytes sent off the board during the run	0
Mission emitted as MAVLink v2, every frame CRC-checked	VALID MAVLink v2
Estimated power while answering continuously	1.27 W (estimated)
Estimated power, engine resident and idle	0.60 W (estimated)
Estimated power, board idle, engine stopped	0.60 W (estimated)
Memory the engine holds, with the whole Anima resident	207 MB
Memory the board has	416 MB
Knowledge resident on the board	651 MB
Answer latency once warm	36 ms
Plain English to drafted mission	286 ms
Attacks, labels or training shown to the engine	0
GPU	none
Python, model server or container on the board	none

How it was measured

Measure: watts drawn, resident memory, and bytes sent off-board during a complete instruction-to-mission run

Conditions

Board	Raspberry Pi Zero 2 W Rev 1.0
Operating system	Debian GNU/Linux 12 (bookworm)
Kernel	6.12.93+rpt-rpi-v8
Architecture	aarch64
Cores	4
Memory installed	416 MB
GPU or accelerator	none

The pass mark, fixed before the run

> Set before the run: zero off-board bytes AND the mission emitted as valid MAVLink v2. Verdict: PASS.

Limits of this result

Every figure here was produced on a physical Raspberry Pi Zero 2 W, not a simulation and not a cloud stand-in. The engine was cross-compiled to aarch64 and linked on the board. It holds 651 MB of knowledge on a board with 416 MB of memory, answers in 36 ms, and turns a typed English instruction into a drone mission in the genuine MAVLink v2 protocol without a GPU, a model server, a container or a line of Python anywhere on it. During every phase in which the engine was running, zero bytes left the board. The only external connections seen in the whole run came from the Raspberry Pi OS desktop while the engine was stopped, which is a reason to ship these headless. POWER IS ESTIMATED: the board carries no power sensor, so watts are modelled from CPU against published meter measurements for this board. The run was driven over SSH, which the telemetry excludes by port; a clean-room capture would drive it from the board itself.

Where it is recorded

Showcase run captured 2026-09-21, showcases.senuaai.com/defence-edge/. The data behind this sheet is published beside it at senuaai.com/evidence/datasheets/.