

Best Practices for Testing LuxOS

1 Optimal Testing Conditions

To ensure accurate and reliable results when testing LuxOS, the following conditions should be met:



Ambient Temperature: Maintain a testing environment between 55-75°F (13-24°C) to ensure stable miner performance.



Machine Variety: Use at least **10 machines per hashrate variant** to capture consistent performance metrics and help to eliminate outliers.



Hardware Consistency: Ensure that all machines used in testing have **identical hardware conditions** (e.g., cooling setup, and board quality)



Fair Comparison: Run **LuxOS and competitor firmware under identical conditions**, including temperature, ventilation, and physical positioning in the rack.



- **Power Measurement:**

- For **S19 series**, always measure power consumption from the wall using a wattmeter. The PSU on these models does not report exact power usage to the firmware.
- For **S21 series**, power consumption can be read directly from the firmware, as its PSU provides accurate reporting.



- **Autotuner:** When testing with Autotuner, ensure that sufficient time is allocated for tuning, typically 20–40 minutes depending on the miner model. Before proceeding with any performance evaluation, confirm that tuning has completed successfully by checking for the "Tuned" flag. Additionally, keep in mind that each profile must be tuned separately, as results may vary based on the configuration. Skipping these steps can lead to inaccurate test results and misinterpretation of Autotuner's efficiency improvements.

2 Deploying LuxOS

To install LuxOS on your machines, follow this process:

Quick Deployment Guide (From LuxOS Deployment Guide)



1. Download the LuxOS Commander

- [Download Link](#)
- [Deployment Video](#)
- [Miner Optimization Video](#)
- [Compatibility Guide](#)



2. Access Devices via IP

- Open **LuxOS Commander**.
- Select "**Configure Networks**" (top right corner).
- Input your **IP range** or **individual IP addresses** of miners.
- Press "**Add**" → "**Save Changes**" → "**Scan Network**".



3. Select the Miners for Installation

- From the dashboard, choose the miners to install LuxOS.
- If another third-party firmware is installed, it can be uninstalled via **Commander**.



3. Install LuxOS

- Click "**Install LuxOS**".
- Optionally, configure features like **Autotuner** and **Advanced Thermal Management (ATM)** before installation.
- Installation takes a few minutes. Default parallel installations: **10 miners at a time**.

3 Testing Methodologies

A. Testing for Highest Efficiency



1. Record Baseline Power Usage:

- Measure power from the wall for **S19 series**.
- Measure via firmware for **S21 series**.



2. Optimize Efficiency:

- Start at **-6 power step** (max efficiency).
- Test additional profiles around this level to identify the most efficient option.



3. Compare with Competitor Firmware:

- Ensure tests are done at similar power consumption and frequency.



4. Here is a table of our testing results for your reference of where to get started.

- Keep in mind we offer you 24 different steps to choose from. We are just highlighting -6 step to +2 as our “safe zone”. You can feel free to test outside of that if you desire. Just remember to keep your dangerous board temps at default and ATM on if you are going to push for a heavy overclock

Nameplate Performance

Miner Model	Hashrate (TH/s)	Power (W)	Efficiency (J/TH)
S21 Pro	234	3510	15.0

Luxor Firmware Profile Performance Testing

Step	Profile (Mhz)	Power (W)	Hashrate (TH/s)	Efficiency (J/TH)	Efficiency Gain (%)
-6	446MHz	2254	177.0	12.7	17.80%
-5	471MHz	2387	187.8	12.7	17.99%
-4	496MHz	2525	199.8	12.6	18.67%
-3	521MHz	2697	210.9	12.8	17.30%
-2	546MHz	2835	218.6	13.0	15.66%
-1	571MHz	3042	230.4	13.2	13.60%
0	default	3293	239.0	13.8	8.85%
1	621MHz	3421	249.9	13.7	9.58%
2	646MHz	3613	260.1	13.9	7.99%

B. Testing for Highest Hashrate Increase



1. Choose Testing Power Step:

- Start at **+2** overclock for a balance of **maximum hashrate and safety**.
- You can push past +2 but this can be dangerous for the hardware and recommend being very cautious.



2. Disable ATM (Advanced Thermal Management):

- Turn off ATM or competitor’s equivalent to prevent automated adjustments.



3. Ensure Frequency Consistency:

- Keep frequency the same for LuxOS and competitor firmware to get accurate comparisons.

C. Testing for Maximum Uptime



1. Enable ATM:

- Set ATM to the **maximum profile** intended for sustained operation.
- Ensures the firmware maintains the optimal balance of power and temperature for long-term stability.



2. Monitor Performance Over Extended Periods:

- Track uptime over **at least 7 days**.
- Measure instances of crashes, reboot cycles, and hashboard failures.

4 Final Notes

- **Collect consistent data** and compare across multiple machines for reliable results.
- **Document environmental conditions** during testing to account for variances.
- Keep the **developer fee** in mind when testing. Luxor is open to discussing adjustments to the dev fee to ensure client satisfaction. Feel free to reach out to our team to explore options and factor this into your testing process.

Beyond LuxOS – The Luxor Advantage:

- LuxOS is just one piece of Luxor’s broader ecosystem designed to maximize miner profitability and efficiency:
- **0% Pool Fees:** Luxor offers a 0% pool fee structure, ensuring miners keep more of their earnings compared to traditional pools.
- **ASIC Brokerage Discounts:** Our in-house brokerage provides **exclusive discounts** for buying and selling ASICs, giving miners the best pricing and liquidity options.
- **Hashrate Forward Contracts:** Miners can **sell their hashrate forward** to receive upfront capital, securing guaranteed revenue streams and reducing financial uncertainty.
- **SOC 2 Type 2 Certification:** LuxOS is the **only U.S.-based, SOC 2 Type 2 certified Bitcoin ASIC operating system**, ensuring the highest standards of security, reliability, and compliance.

By integrating LuxOS into your operations, you’re not just getting better firmware—you’re tapping into a comprehensive mining ecosystem designed for **profitability, security, and long-term growth**.