



Overclock3D PSU Certification Programme

Version 1.0

Revision History

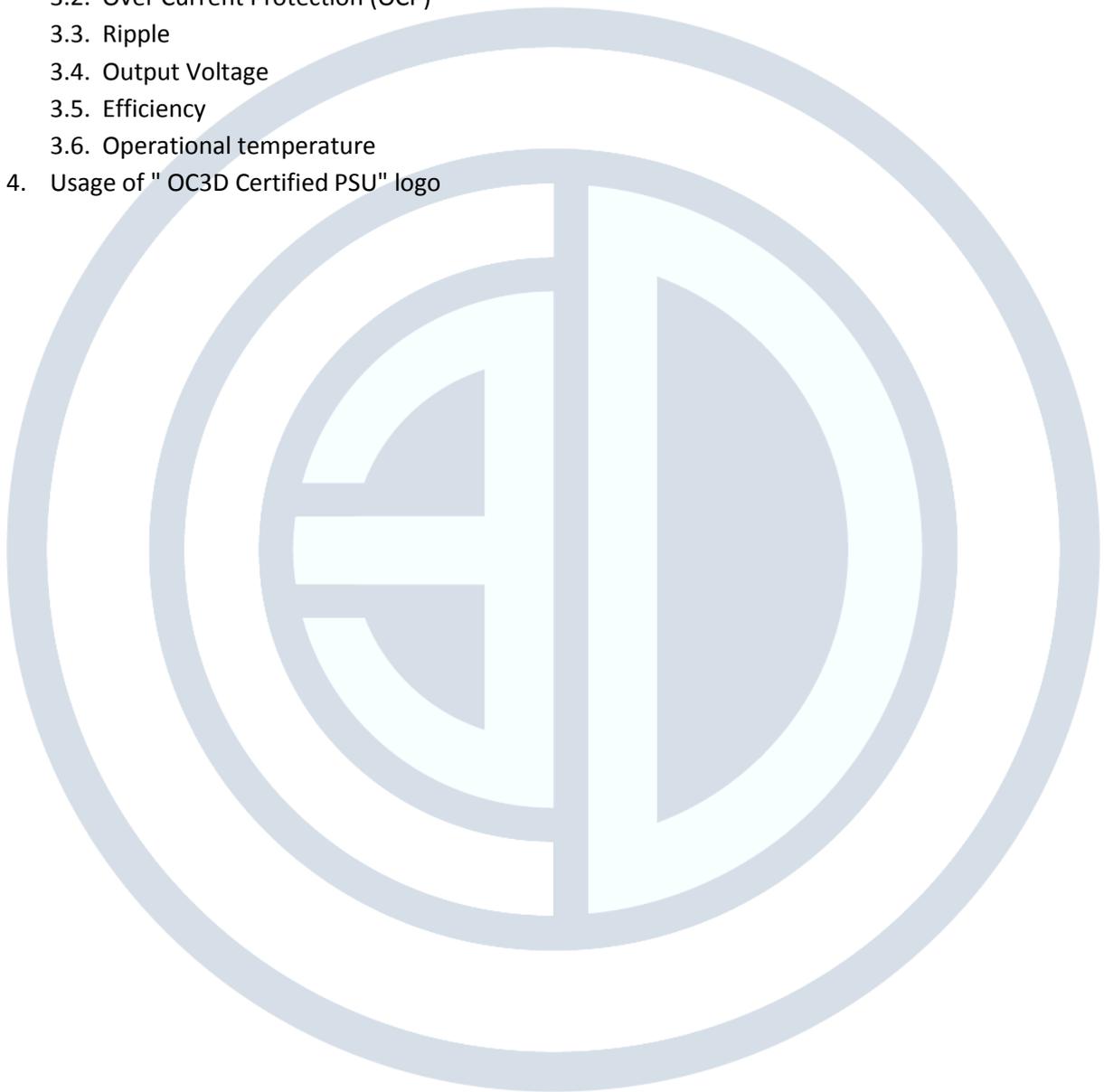
Version 1.0

- Initial version



Contents

1. Summary
2. Testing environment
3. Pass requirements
 - 3.1. Short Circuit Protection (SCP)
 - 3.2. Over Current Protection (OCP)
 - 3.3. Ripple
 - 3.4. Output Voltage
 - 3.5. Efficiency
 - 3.6. Operational temperature
4. Usage of " OC3D Certified PSU" logo



1. Summary

The Overclock3D PSU Certification programme has been designed to provide consumers with an easy way to identify the highest quality ATX power supplies in the marketplace. Whereas ATX specification merely dictates some lax minimum and maximum values for voltage output and ripple and 80PLUS certification only indicates the efficiency of a PSU, the Overclock3D PSU Certification programme encompasses all of the important aspects of PSU testing along with strict pass values.

By submitting your ATX Power Supply to Overclock3D for testing and becoming certified, you will be making a statement to consumers that you aren't simply submitting your product to as many publications as possible in order to receive a string of meaningless award logo's. You have instead sent your PSU to the most knowledgeable independent publication in the UK for proper testing and certification.

Please note that only 'Ready for Retail' samples may be submitted to Overclock3D for testing. We may randomly test off-the-shelf samples of PSU's that achieve our certification at later dates to ensure that the quality of the PSU has been upheld.



2. Testing Environment

- **230v AC, 50hz mains output** maintained by UPS system and variac transformer to ensure constant voltage during testing and across all future product tests.
- **Mains RFI / Surge filtering** provided by Tacima mains conditioner to ensure consistent testing environment regardless of mains source noise.
- **50°C ambient temperature** maintained by custom made midi-tower sized hotbox, with heat sources designed to emulate heat spread from GPU/CPU in genuine PC system.
- **Up to 3600w testing ability.** Ensuring that even the highest output PSU's can be tested and certified by us.
- **Professional ATE equipment** such as SunMoon and Analogic DC Load testers along with Fluke multimeters and thermometers with data logging direct to laptop via USB/RS232.



3. Pass Requirements

3.1. Short Circuit Protection

- PSU load will be set at 100% as per manufacturers load distribution guidelines.
- First short circuit will be emulated across +12v and ground cables on a connector of our choice.
- Second short circuit will be emulated across +5v and ground cables on a connector of our choice
- Third short circuit will be emulated across +3.3v and ground cables on a connector of our choice.

A PASS for this section will be presented to any PSU that successfully shuts down completely in all three tests and remains fully functional for the next stage of the certification.

A FAIL for this section will be presented to any PSU that remains powered on during any one of the short circuit simulations, exhibits a component failure or attempts to self-power-on before the short circuit has been removed.

3.2. Over Current Protection

- PSU load will be set at 100% as per manufacturers load distribution guidelines.
- Load will then be increased in 1A increments across the +3.3v/+5v/+12v rails with each increase being spaced 2 minutes apart to allow for PSU safety shutdown.
- Should PSU power off, it will be immediately powered back on at same load to test power-on over current protection.

A PASS for this section will be presented to any PSU that successfully shuts down before voltages / ripple fall outside of ATX specification. PSU must also remain fully functional for next stage of certification.

A FAIL for this section will be presented to any PSU that exhibits a component failure or falls outside of ATX specifications for voltage / ripple output before powering off.

3.3. Ripple

- PSU will undergo examination at 25%, 50% 75% and 100% load levels as per manufacturers load distribution guidelines.
- Peak-to-peak ripple results will be obtained from each of the main three voltage rails (+3.3v/+5v/+12v) over a timeframe of 2 minutes at each of the load levels. Results will then be compared against the following chart:

Supply [V]	Max. Ripple [Vp-p]	Example Result	Pass / Fail
+3.3v	35mV	35mV	PASS
+5v	35mV	39mV	FAIL
+12v	60mV	120mV	FAIL

A **PASS** for this section will be presented to any PSU that remains within the Max Ripple guidelines across all load levels (25,50,75,100%) on all of the primary rails.

A **FAIL** for this section will be presented to any PSU that exceeds the Max Ripple guidelines at any load level (25,50,75,100%) on any of the primary rails.

3.4. Output Voltage

- PSU load will be set at 25% to emulate an 'Idle' load situation. Voltage readings taken from the +3.3v, +5v, +12v, +5vsb and -12v rails will be compared against our Idle guidelines chart:

Supply [V]	Max. Output	Min. Output	Example Reading	Pass / Fail
+3.3v	+3.39v	+3.27v	+3.27v	PASS
+5v	+5.10v	+4.90v	+5.25v	FAIL
+12v	+12.24v	+11.88v	+12.25v	FAIL
+5vSB	+5.15v	+4.85v	+5.01v	PASS
-12v	-13.2v	-10.8v	+12.00v	PASS

- PSU load will then be increased to 100% as per manufacturers load distribution guidelines. Voltage readings from 10% load will be compared against readings from 100% load and percentage change will be calculated for each rail. All rails must fall within the following tolerances:

Supply [V]	Tolerance [%]	Example Idle (10%)	Example Load (100%)	Pass / Fail
+3.3v	±2%	3.32v	3.24v	PASS
+5v	±2%	5.05v	4.93v	FAIL
+12v	±1%	12.10v	11.90v	PASS
+5vSB	±2%	4.98v	4.70v	FAIL
-12v	±5%	-12.00v	-11.95v	PASS

A **PASS** for this section will be presented to any PSU that falls within the Max/Min output ranges for all rails in the Idle testing, while also not fluctuating more than the Tolerance level states when running at 100% load.

A **FAIL** for this section will be presented to any PSU that is unable to meet the requirements above on any of its rails.

3.5. Efficiency

- PSU will undergo examination at 25%, 50% 75% and 100% load levels as per manufacturers load distribution guidelines.
- Minimum efficiency and power factor (PF) results will be obtained from the PSU over a timeframe of 2 minutes at each of the load levels.

Load Level	Min. Efficiency	Min. PF	Example Result	Pass / Fail
25%	83%	0.9	82% / 0.9PF	FAIL
50%	85%	0.9	85% / 0.9PF	PASS
75%	85%	0.9	86% / 0.89PF	FAIL
100%	83%	0.9	85% / 0.9PF	PASS

A **PASS** for this section will be presented to any PSU that is able to maintain the minimum efficiency and power factor across each of the load levels.

A **FAIL** for this section will be presented to any PSU that is unable to maintain the minimum efficiency or power factor across all of the load levels.

3.6 Operational Temperature

- PSU will undergo examination at 25%, 50% 75% and 100% load levels as per manufacturers load distribution guidelines.
- Ambient temperature will be maintained at 50°C.
- PSU fan intake temperature will be deducted from PSU exhaust temperature in order to calculate Δ (Delta) temperature.

A **PASS** for this section will be presented to any PSU that is able to keep the delta temperature of the exhaust below 20°C

A **FAIL** for this section will be presented to any PSU that is unable to keep the delta temperature of the exhaust below 20°C

4. Usage of " OC3D Certified PSU" logo

A PSU submitted for testing will only be certified by Overclock3D if it passes ALL of the testing stages.

The manufacturer will then be permitted to use the "Overclock3D Certified PSU" logo in any media that relates directly to the submitted PSU model.

Obtaining certification for a single model (e.g ABC 600w) does not allow the logo to be used for different wattage PSU's in the same series or same wattage models in a different series. **It may ONLY be used on media that is advertising the EXACT model that has been tested and certified.**



For further information on submitting a PSU for certification please contact james.napier@overclock3d.net.