



# **Intel® Desktop Reference Chassis & Power Supply Program**

## **Guidelines for the submission and testing of 3rd party desktop chassis and power supplies**



**Revision 1.0**

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## Revision History

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Revision	Description	Date
1.0	Initial Release	December 21, 2001

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The information provided in this document is intended as the reference guide to submitting products pertinent only to the chassis and power supply vendor testing process. The information contained in this document is subject to change at any time without notice. Changes in testing procedure and methodology may change at any time without notice.

**Regulatory Notice: The Intel® Reference Chassis and Power Supply Program does not perform ANY testing to determine compliance with or to meet international regulatory requirements. It is the manufacturer’s responsibility to assure the product complies with all national and local regulatory requirements within the country sold. Contact your National Certification Body (NCB) or a third party certifier, like Underwriters Laboratories (UL) <http://www.ul.com> , for further guidance.**

## **Forward**

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This document was created to give desktop chassis and power supplies vendors the necessary information to submit their products for testing. A testing procedure overview and frequently asked questions are included. This document and program it describes is intended for submitting only desktop style chassis and power supplies. No other platforms will be tested in conjunction with this program.

The testing performed will serve the purpose of supplying feedback to the product vendor as well as creating a tested chassis and tested power supply list for posting on an Intel website.

## **Background**

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In 1995 Intel's Reseller Product Group (RPG) began a program to test third party chassis and power supplies. The intent was to provide a tested list for resellers to use as a reference to integrate Intel mainboards and processors. These lists were initially posted on a password protected website for Intel resellers.

Today, the tested chassis and power supply lists are some of the most visited web pages on the [program.intel.com](http://program.intel.com) website. In addition, we are removing the password requirement and making this information available worldwide. We expect the popularity of this program to continue to grow as the program expands.

# 1. Introduction

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Due to the success of the Intel<sup>®</sup> Reseller Products Group's (RPG) Reference Chassis Program, we have restructured the program to accommodate industry demand. The new expanded program provides additional benefits to customers and participants including web posting of chassis and power supply lists on Intel's program.intel.com public web site. The primary goal of this program is to provide integration guidance to the worldwide integrator channel. This program is tailored to the indirect channel and therefore may not be applicable to Original Equipment Manufacture's (OEMs) or others.

In order to provide equitable and fair treatment for all participants, Intel has engaged Northwest Environmental Test Lab\* (NW ETL), a private third party test lab, to provide testing services. NW ETL will charge a fee to each participant for testing services. Each participant must negotiate test fees with NW ETL. Using a private test laboratory provides all participants the opportunity to receive testing services in a timely manner and reserve the opportunity to be listed on the program.intel.com web site. To participate in this process a signed Confidential Non-Disclosure Agreement must be completed, if your company does not have one already in place. See section 7 for contact information to obtain the Confidential Non-Disclosure Agreement. The intent of this document is to provide program participants the information necessary to submit their products for testing. Upon successful completion, the product will be included on Intel's tested chassis and power supply lists.

Chassis that are submitted **must** be submitted with the power supply intended for sale with the chassis. If a power supply is not submitted, the chassis will **not qualify for listing on the Intel web site**. To qualify for listing on the Intel web site the chassis and power supply combination must successfully perform to the applicable design guidelines per Intel's determination. If either solution fails to comply with the appropriate requirements, as defined by Intel, neither solution will qualify for web posting. Intel reserves the right to modify the test criteria, methodology, and performance levels in so much as they are less restrictive than the published and applicable design guidelines. Intel also reserves the right to deny listing a program participant listing on the Intel web site for any or no reason, at Intel's discretion.

## 2. Test Overview

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Chassis will be tested for compliance to the applicable ATX and/or micro-ATX design guides (most recent revision). This includes, but is not limited to, mechanical keep-out zones, thermal specifications, power supply testing, and included accessories. Each power supply will be tested for compliance to the applicable ATX12V and/or SFX12V power supply design guides (most recent revision). Intel reserves the right to determine which criteria will be selected for testing and what specific test methodology is used to determine compliance for a particular processor/mainboard combination for each tested list. Test criteria will typically not exceed the requirements of the applicable published design guide. All design guides are publicly available at [www.formfactors.org](http://www.formfactors.org).

### Chassis:

**Mechanical requirements<sup>1</sup>:** Determines whether the chassis complies with the applicable keep-out zones. This includes alignment of the back panel I/O and mainboard mounting hole locations.

**Thermal requirements:** Determines whether the chassis complies with the applicable component thermal specifications. These specifications are typically available on the component manufacturers data sheet.

**Included accessories:** Determines whether the chassis is equipped with the necessary hardware for the successful integration of the applicable processor and/or mainboard assembly (e.g. screws, mounting studs, or I/O plates etc.).

### Power Supplies:

**Electrical requirements:** Determines whether the power supply complies with the requirements specified in the ATX12V and/or SFX12V design guidelines (most recent revision) as applicable.

**Mechanical requirements:** Determines whether the power supply complies with the mechanical dimensions etc of the applicable design guideline.

**Thermal requirements:** Determines whether the power supply complies with the applicable design guides thermal requirements such as: component thermal specifications, airflow etc. Power supply thermal testing will usually be performed as part of the system evaluation. Power supply component temperatures are typically *not* tested.

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1. Chassis that violate a keep-out zone may still support the applicable processor and/or mainboard. Intel reserves the right to determine whether keep out zone violations are acceptable for the intent of the tested list.

### **3. Chassis**

#### **Mechanical Test Process:**

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The following process will be used to evaluate mechanical compliance:

- 1) Mounting Hole placement is measured to determine compliance to the applicable design guideline (including tolerances).
- 2) Chassis keep out zones are measured to determine compliance to the applicable design guideline. This includes installing necessary peripherals to test for intrusion into any of these keep out zones.
- 3) Cables will be installed to verify that routing and installation is possible and that defined clearances are maintained.

## 4. Chassis

### Thermal Requirements and Test Process:

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Chassis will be tested to determine that they provide adequate cooling to keep critical system components within the manufacturers temperature specifications. The cooling of the Intel® Boxed processor and/or mainboard will be the primary focus of these tests. The following process will be used to determine thermal compliance:

- 1) The chassis and power supply combination will be configured with the appropriate Intel® processor and/or mainboard.
- 2) A set of peripherals will be installed in the system to reflect a “richly configured performance” solution per the current market conditions. A peripheral set would typically include:
  - a. Highest performing graphics card supported
  - b. Highest performing hard drive available
  - c. Highest performing DVD/CD-ROM/CD-RW available
  - d. Highest performing audio add-in card solution
  - e. Highest performing LAN card available
  - f. Highest performing modem (DSL, Cable, or other)
  - g. Highest performing add-in cards available (TV tuner, CNR, per Intel discretion)
  - h. All memory banks populated with the maximum density available
  - i. 3.5” floppy disk drive
- 3) The system will be configured with the most recent release of the Microsoft\* Windows\* operating system.
- 4) The system will be loaded with thermal stress software as appropriate. Thermal stress software typically exercises a specific component or set of components in a thermally worst-case configuration.
- 5) The system will be placed in a thermal chamber at 35°C room temperature. The operating system will be booted and the thermal stress software activated to cycle through a continuous loop. The thermal performance of each component will be measured until the system reaches thermal equilibrium. Once thermal equilibrium is reached, the measured values for each component of concern shall be recorded and the test concluded.
- 6) Measured component temperatures shall be compared to the manufacturer’s component specification and a pass/fail determination will be made.

## **5. Chassis**

### **Included Accessories:**

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- 1) The following process will be used to determine compliance: The processor and/or mainboard of choice shall be installed with the provided hardware such as:
  - a. Mainboard mounting screws
  - b. Pem studs (if needed)
  - c. Rear add in card slot plates

If the processor and/or mainboard are unable to be installed with the provided hardware, testing shall halt until the participant provides the appropriate hardware.

## 6. Power Supply Testing

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Intel will conduct all power supply testing. The following process will be used to determine compliance:

1. The power supply will be connected to a power supply ATE test system.
2. The power supply will be cycled through a suite of automated tests that are based upon the appropriate design guide. During testing the ATE system will dynamically load and measure the values to the appropriate design guide.
3. When testing is complete, the ATE system will generate a report that indicates a pass/fail for each specific functional test.

## 7. Sending in Samples

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**Chassis Vendor:** All participants may submit as many different ATX, micro-ATX or Flex ATX chassis as the participant wishes, however, additional test fees may apply. Intel will send an e-mail announcement of the test specifications and schedule. A power supply *must* be submitted with each chassis sample or the chassis will not be tested. Intel requests that each participant also send a chassis and power supply sample to RPG so that power supply testing may take place. If a second sample is not provided to Intel, listing of the product may be delayed.

**Important Note:** When samples are shipped to Intel, or NW ETL, the participant should ensure that the *correct model number* for each product is correctly identified. The model numbers provided should correlate with model numbers available through the indirect distribution channel. In the case where multiple product SKUs (Stock Keeping Units) are available with different model numbers, it is the responsibility of the participant to have all model numbers tested and/or clearly differentiated.

### **Where to send your samples:**

#### **Northwest Environmental Test Lab**

Send your chassis and power supply sample to:

Attention: Will Brokaw, Desktop Testing  
Northwest Environmental Test Lab  
5289 NE Elam Young Parkway  
Suite G-950  
Hillsboro, OR  
97124-6431  
Voice: 503.844.4100  
Fax: 503.844.3800  
Toll free: 877.385.2269

#### **Intel RPG**

Location to send your chassis and power supply sample and to obtain a Confidential Non-Disclosure Agreement:

Attention: Rick West  
Intel Corporation  
Reseller Products Group (RPG)  
1900 Prairie City Road  
Folsom, CA  
Mailstop: FM7-230  
Voice: 916.369.2771  
Fax: 916.356.7847  
Email: rick.w.west@intel.com

## 8. Frequently Asked Questions

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- 1) Why has Intel started this new testing program?
  - a. To provide equitable and fair treatment for all participants and to respond in a timely manner to industry needs. The large number of requests for testing combined with constrained resources creates a need for support from an outside laboratory.
- 2) If I test the chassis and/or power supply myself and it performs well, can I send my own report to Intel so that my products can be added to the tested chassis list?
  - a. No. Intel must test the unit in our lab (or a lab contracted by Intel) to ensure a consistent methodology is followed. This is the only way to be included on the tested chassis and/or power supply list.
- 3) How many people will be able to see the tested chassis and power supply list?
  - a. The tested lists are posted on a public website, therefore, anyone with web access can see your product on these lists. The lists are targeted for the worldwide integrator channel.
- 4) How many samples do I need to send in?
  - a. You need to send one complete sample to Intel RPG and one complete sample to Northwest Environmental Test Lab. You may send as many different samples as you wish.
- 5) What additional items should I send with my samples?
  - a. You *must* send or have:
    - Power supply with each chassis.
    - Filled out submittal form; one in for each sample and follow all of the instructions on the form.
    - CNDA in place in Intel (see FAQ #16).A sample received without the above three items will not be tested.

- 6) What if I just want a power supply tested and added to the tested list?
  - a. If you are a power supply vendor you may send the power supply to:  
**Intel RPG**  
Attention: Rick West, power supply testing  
Intel Corporation  
Reseller Products Group (RPG)  
1900 Prairie City Road  
Folsom, CA  
Mailstop: FM7-230  
Voice: 916.369.2771  
Fax: 916.356.7847  
Email: rick.w.west@intel.com

Intel will only test ATX12V, SFX12V and PS3-12V power supplies. Any other power supply type will not be tested. There is no fee for power supply testing. You must fill out the submittal form located in Section 9 for each sample.

- 7) How should I decide which chassis and/or power supply to send in?
  - a. It is recommended that you send in the chassis-power supply combination that is your strongest selling product. You can send in as many different samples as you would like, but there may be a fee associated with each chassis tested.
- 8) Where do I send my chassis and power supplies?
  - a. See section 7.
- 9) How much will it cost to have my chassis tested?
  - a. The fee will depend on whether your sample is tested by Intel or NW ETL. Contact NW-ETL for the latest fee schedule.
- 10) How much will it cost to have my power supply tested?
  - a. The power supply testing has no fee associated with it. It is the responsibility of the participant to pay for all shipping charges, including the return of any samples. Intel will only test ATX12V, SFX12V and PS3-12V power supplies. Any other power supply type will not be tested.
- 11) Who should I contact if I have any questions?
  - a. See section 7.
- 12) When should I send in my samples?
  - a. Intel will send an e-mail announcement of stating the testing specification and schedule.
- 13) Does my chassis and power supply have to pass together?
  - a. Yes, the chassis and power supply must pass together for the system to pass and be added to the tested list website.
- 14) If my chassis or power supply does not pass what should I do?
  - a. If you receive a report stating that your chassis did not pass, you may submit another for testing, including another power supply. If your chassis passes testing, but the power supply fails electrical testing, you need only to provide another power supply for testing.
- 15) What types of chassis should I send in?
  - a. This testing is only for ATX, micro-ATX, flex-ATX. All other types will not be tested. You will be notified by e-mail when to send in your samples.

16) Where do I get a Confidential Non-Disclosure Agreement?

a. You may contact:

Rick West

Intel Corporation

Reseller Products Group (RPG)

1900 Prairie City Road

Folsom, CA

Mailstop: FM7-230

Voice: 916.369.2771

Fax: 916.356.7847

Email: rick.w.west@intel.com

You will be mailed 3 copies that only an officer or a director of the company must sign. You must then return two signed copies to the address above.

17) Can I have my samples returned to me after testing?

a. Yes. Intel and NW-ETL will return the products if the following two items are received:

- Your own shipping company account number
- A written request stating what you would like to have returned and an address of where to send the products.

Intel and NW-ETL will not pay shipping charges for products. Intel and NW-ETL are not responsible for any damage that may take place during shipping.

## 9. Submittal Form

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**---COMPLETE THIS PAGE, PRINT IT AND SUBMIT WITH EACH SAMPLE---**

### Northwest Environmental Test Lab - Hillsboro Campus

Voice 503.844.4100

Fax 503.844.3800

Toll free 877.385.2269

### CHECK LIST

### PLEASE INCLUDE THIS LIST WITH SHIPMENT HARDWARE REQUIREMENTS:

Chassis integrated in **test ready** configuration

All plastic covers in place for air flow/temperature accuracy

All fans installed in **test ready** locations

Power supply and its fan installed in **test ready** configuration

Include all peripherals **mounting hardware** (CD-ROM, HDU, FDU)

**Remember: CPU's, CD-ROM, HDU's, FDU, motherboard and memory will all be furnished by the lab for the testing session.**

### INFORMATION REQUIREMENTS:

Company name \_\_\_\_\_

Company Website URL \_\_\_\_\_

Contact e-mail address \_\_\_\_\_

Contact Name \_\_\_\_\_

Company address \_\_\_\_\_

Chassis type: (desktop/full tower/mid tower, etc.) \_\_\_\_\_

Chassis dimensions: Height \_\_\_\_\_ "Width \_\_\_\_\_ "Depth \_\_\_\_\_ "

Chassis model number: \_\_\_\_\_

Power supply **wattage** & model number \_\_\_\_\_

Chassis feature list: (# of internal/external p-bays, etc.)

\_\_\_\_\_  
\_\_\_\_\_

### Fans:

**Model Number Quantity Location (p-bay,p/s,bd.bay)**

### Follow-up testing requests:

\_\_Reconfigure fans/cables/HDU locations and retest

\_\_No further testing

A **Purchase Order Number** must accompany this list for lab scheduling to take place and ensure timely report and web posting.

A confirmation of scheduled lab test time will be sent upon receipt of the PO number to our office.

Shipping and handling charges for the return of the chassis are **not** included in the fee structure.

Please supply your shipper **account information** for equipment returns.

There is a logistical advantage of having the chassis remain in our inventory to facilitate future testing, questions, and modifications.