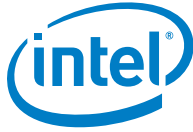


Intel[®] Xeon[®] Processor E5-2600 v3 Family

Application Power Guidelines

October 2014



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Copies of documents which have an order number and are referenced in this document may be obtained by calling 1-800-548-4725 or visit www.intel.com/design/literature.htm.

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All products, computer systems, dates and figures specified are preliminary based on current expectations, and are subject to change without notice.

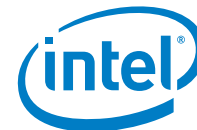
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Revision History

Date	Revision	Description
October 2014	001	Initial release.

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1 Introduction

This document provides power numbers for the Intel® Xeon® processor while running real life applications. This document is complementary to the specifications published in the product datasheet.

The Application Power Guidelines should be used for reference only. The power data provided in this document are not design points or specifications and should not be used as such.

Additional information about Application Power Guidelines is provided in the [Table 1](#) Related Documents. Refer to the documents in [Table 2](#) for supplemental information.

1.1 Related Documents

Table 1. Related Documents

Document	Document No./Location
<i>Embedded Application Power Guidelines</i>	http://www.intel.com/content/dam/www/public/us/en/documents/white-papers/embedded-appl-power-guideline-paper.pdf

1.2 Reference Documents

Table 2. Reference Documents

Document	Document No./Location
<i>Intel® Xeon® Processor E5/E7 v3 Product Family External Design Specification (EDS), Volume One: Architecture</i>	507851
<i>Intel® Xeon® Processor E5/E7 v3 Product Family External Design Specification (EDS), Volume Two: Registers</i>	507849
<i>Intel® Xeon® Processor E5-1600, E5-2600, and E5-4600 v3 Product Families External Design Specification (EDS), Volume Three: Electrical</i>	507850
<i>Grantley Platform – Design Guide</i>	506549
<i>Intel® Xeon® Processor E5-1600 and E5-2600 v3 Product Families Thermal/Mechanical Specification and Design Guide</i>	534920

Note: Contact your local Intel representative for the most recent revision of these documents.



1.3 Terminology

Table 3. Terminology

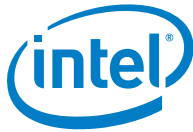
Term	Description
APG	Application Power Guidelines
NDA	Non-Disclosure Agreement
SKU	Stock Keeping Unit
TDP	Thermal Design Power

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2 *Application Power Guidelines*

The Application Power Guidelines (APG) data listed in this document are intended to reflect the typical use conditions. Factors such as temperature, platform configuration, and other variables can influence power usage. Specific information about the platforms and test configurations is provided in this document to enable a repeatable power measurement.



2.1 Intel® Xeon® Processor E5-2658 v3 Application Power Guidelines

Figure 1 indicates the Application Power Guidelines for various embedded applications for the Intel® Xeon® processor E5-2658 v3 with a 105W TDP specification.

Figure 1. Intel® Xeon® Processor E5-2658 v3 Application Power Guidelines

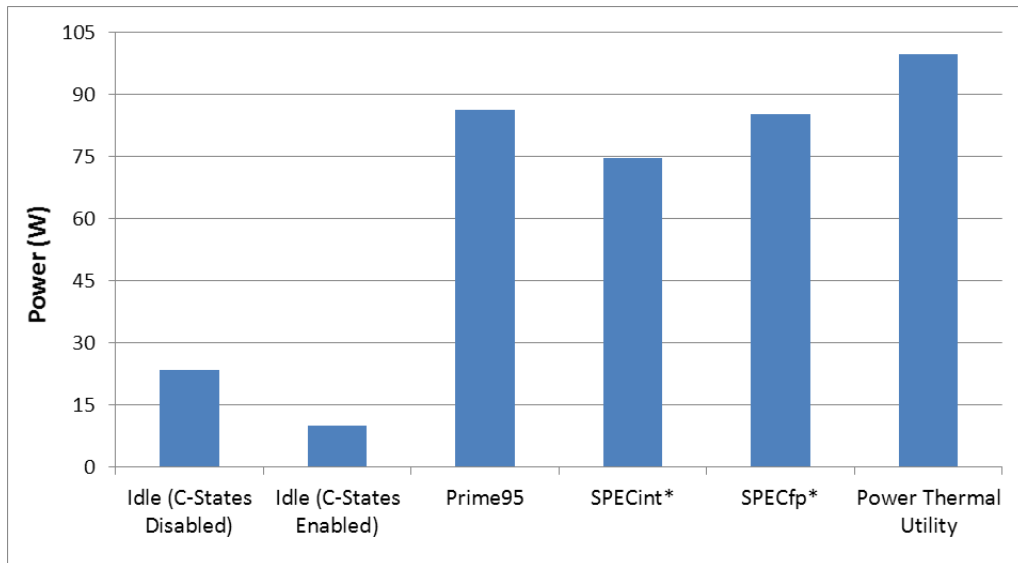


Table 4. Intel® Xeon® Processor E5-2658 v3 Application Power Guidelines

Application/Benchmark	Processor Power (W)	Junction Temperature (°C)
Idle (C-States Disabled)	23	50
Idle (C-States Enabled)	10	
Prime95	86	
SPECint* 400	75	
SPECfp* 416	85	
Power Thermal Utility	100	

NOTES:

- Software and workloads used in performance tests may have been optimized for performance only on Intel microprocessors. Performance tests, such as SYSmark* and MobileMark*, are measured using specific computer systems, components, software, operations, and functions. Any change to any of those factors may cause the results to vary. You should consult other information and performance tests to assist you in fully evaluating your contemplated purchases, including the performance of that product when combined with other products. For more information go to <http://www.intel.com/performance>.
- Test Configuration: The results presented are from a single sample. The data was not post-processed to account for part-to-part variation. Intel internal testing as of August 2014.
- Platform: Intel® Xeon® E5-2658 v3 Processor with Intel® C610 series chipset.
- BIOS Revision: GRNDCRB1.86B.0037.R00.1407221133.
- Memory: 4 x 8GB 1Rx4 PC4-2133N-RCP-05.
- Operating System: Linux* Mint* 17 (kernel 3.13.0-24-generic).
- Additional Configuration details are listed in [Section 3 Configuration and Disclaimer](#).



2.2 Intel® Xeon® Processor E5-2648L v3 Application Power Guidelines

Figure 2 indicates the Application Power Guidelines for various embedded applications for the Intel® Xeon® processor E5-2648L v3 with a 75W TDP specification.

Figure 2. Intel® Xeon® Processor E5-2648L v3 Application Power Guidelines

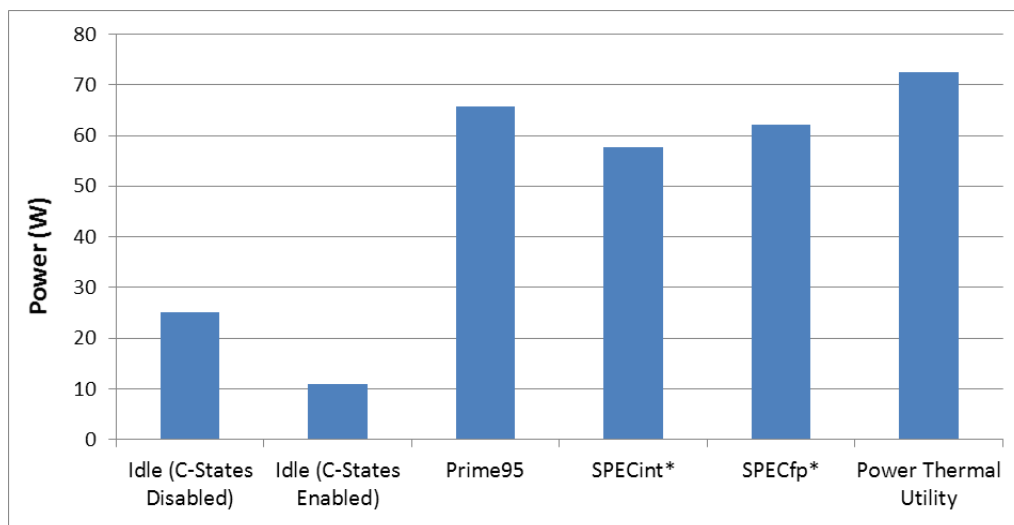
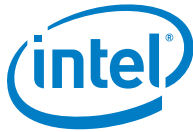


Table 5. Intel® Xeon® Processor E5-2648L v3 Application Power Guidelines

Application/Benchmark	Processor Power (W)	Junction Temperature (°C)
Idle (C-States Disabled)	25	50
Idle (C-States Enabled)	11	
Prime95	66	
SPECint* 400	58	
SPECfp* 416	62	
Power Thermal Utility	72	

NOTES:

1. Software and workloads used in performance tests may have been optimized for performance only on Intel microprocessors. Performance tests, such as SYSmark* and MobileMark*, are measured using specific computer systems, components, software, operations, and functions. Any change to any of those factors may cause the results to vary. You should consult other information and performance tests to assist you in fully evaluating your contemplated purchases, including the performance of that product when combined with other products. For more information go to <http://www.intel.com/performance>.
2. Test Configuration: The results presented are from a single sample. The data was not post-processed to account for part-to-part variation. Intel internal testing as of August 2014.
3. Platform: Intel® Xeon® E5-2658 v3 Processor with Intel® C610 series chipset.
4. BIOS Revision: GRNDCRB1.86B.0037.R00.1407221133.
5. Memory: 4 x 8GB 1Rx4 PC4-2133N-RCP-05.
6. Operating System: Linux* Mint* 17 (kernel 3.13.0-24-generic).
7. Additional Configuration details are listed in [Section 3 Configuration and Disclaimer](#).



2.3 Intel® Xeon® Processor E5-2628L v3 Application Power Guidelines

Figure 3 indicates the Application Power Guidelines for various embedded applications for the Intel® Xeon® processor E5-2628L v3 with a 75W TDP specification.

Figure 3. Intel® Xeon® Processor E5-2628L v3 Application Power Guidelines

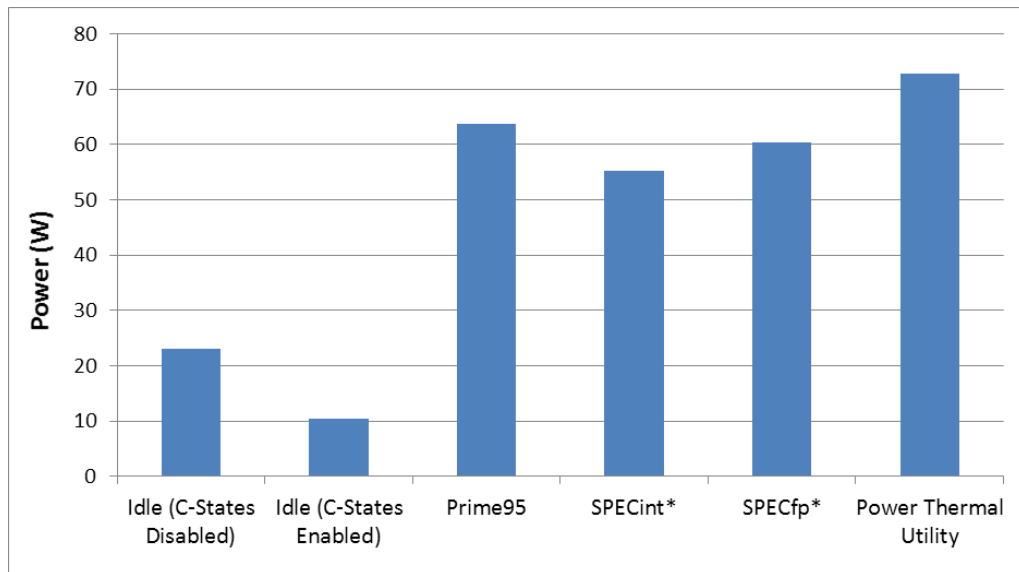


Table 6. Intel® Xeon® Processor E5-2628L v3 Application Power Guidelines

Application/Benchmark	Processor Power (W)	Junction Temperature (°C)
Idle (C-States Disabled)	23	50
Idle (C-States Enabled)	10	
Prime95	64	
SPECint* 400	55	
SPECfp* 416	60	
Power Thermal Utility	73	

NOTES:

- Software and workloads used in performance tests may have been optimized for performance only on Intel microprocessors. Performance tests, such as SYSmark* and MobileMark*, are measured using specific computer systems, components, software, operations, and functions. Any change to any of those factors may cause the results to vary. You should consult other information and performance tests to assist you in fully evaluating your contemplated purchases, including the performance of that product when combined with other products. For more information go to <http://www.intel.com/performance>.
- Test Configuration: The results presented are from a single sample. The data was not post-processed to account for part-to-part variation. Intel internal testing as of August 2014.
- Platform: Intel® Xeon® E5-2658 v3 Processor with Intel® C610 series chipset.
- BIOS Revision: GRNDCRB1.86B.0037.R00.1407221133.
- Memory: 4 x 8GB 1Rx4 PC4-2133N-RCP-05.
- Operating System: Linux* Mint* 17 (kernel 3.13.0-24-generic).
- Additional Configuration details are listed in [Section 3 Configuration and Disclaimer](#).



3 Configuration and Disclaimer

Values presented represent a typical or average processor SKU and do not guarantee that a customer will achieve these exact values for each silicon sample. These values are not intended to replace TDP, nor are they intended to be used for reliability assessments. Individual test results may vary.

Software and workloads used in performance tests may have been optimized for performance only on Intel processors. Performance tests, such as SYSmark* and MobileMark*, are measured using specific computer systems, components, software, operations, and functions. Any change to any of those factors may cause the results to vary. You should consult other information and performance tests to assist you in fully evaluating your contemplated purchases, including the performance of that product when combined with other products.

3.1 APG Configuration

- The results presented in this document are collected on a single sample. The data has not been post-processed to account for part-to-part variation and temperature. Power may increase and/or decrease as drivers and silicon mature.
- Platform:
 - Platform 1: Intel® Xeon® processor E5-2658 v3 with Intel® C610 series chipset
 - Platform 2: Intel® Xeon® processor E5-2648L v3 with Intel® C610 series chipset
 - Platform 3: Intel® Xeon® processor E5-2628L v3 with Intel® C610 series chipset
- BIOS Revision: GRNDCRB1.86B.0037.R00.1407221133.
- Memory: 4x8GB 1Rx4 PC4-2133N-RCP-05.
- Linux* Mint* Benchmarks: Prime95 v27.9.1 Large FFTs with AVX disabled, SPEC* CPU2006v1.2 (SPECint* 400.Perlbench, SPECfp* 416.Gamess) with supporting SSE42, AVX, and AVX 2.0 binaries, Grantley Power Thermal Utility (PTU) (rev. 1.5) running TDP Test.
- The Intel® Turbo Boost Technology for the IA was disabled in the BIOS.
- The CPU DTS temperature was held at a fixed value of 50C in each test by using a thermal head.
- Measurement Tool: Power Profiler 2.0 (National Instrument* USB-6255 DAQ with signal conditioning breakout board).
- The application power guidelines testing was conducted by Intel Corporation.
- For more information, go to <http://www.intel.com/performance>.



3.2 Additional Information

- In case of conflict, the datasheet supersedes this document.
- The temperature was controlled by the Medusa Thermal Controller. CPU temperature was verified while running each benchmark.
- The APG configuration is provided for repeatability of the test.
- SPEC* CPU2006 is an industrial standard benchmark designed to provide performance measurements that can be used to compare compute-intensive workloads on different computer systems. The SPEC* CPU2006 test on Intel microprocessors is measured using particular, well-configured systems. These results may or may not reflect the relative performance of Intel microprocessor in systems with different hardware or software designs or configurations (including compilers). Buyers should consult other sources of information, including system benchmarks, to evaluate the performance of systems they are considering for purchase. For more information about SPEC* CPU2006, visit www.spec.org/cpu2006/.
- The Power Thermal Utility (PTU) is developed by Intel to generate TDP-like workloads on a system. A Non-Disclosure Agreement (NDA) is required for usage.
- The idle power reported above is while displaying the Linux* desktop.

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