Summary and Response to Stakeholder Comments from the
ENERGY STAR Program Test Method for Determining Server Energy Use Version 2.0 Draft 2

I. TEST SETUP

Comment #	Topic	Comment	Response
1	Input Power Specification	Lines 46-48. The Dc Server input voltage requirement of +/- 53 V dc is unnecessarily limiting. DC input voltages in the range of 360V-400V are not uncommon and should be added to the list of approved test methods.	In future versions of the ENERGY STAR Test Method for Computer Servers, DOE plans to include SPEC's Server Efficiency Rating Tool (SERT). Because SERT does not currently support testing of dc powered servers, DOE has deleted all dc power requirements in the Draft 3 ENERGY STAR Test Method for Servers (Rev. Aug-2012) and plans to re-evaluate these products in future versions of the ENERGY STAR program.
2	Input Power Specification	Lines 46-48. This test method should also cover 3-phase power supplies.	In the Draft 3 Test Method, DOE has requested additional information on testing Servers that operate on three phase power, specifically the operating voltage and power range for three phase powered servers.
3	Input Power Specification	In Table 1 and Table 2, a 380 V dc supply voltage test level should be added. As we are in the immediate process of releasing a new data center power standard, this additional supply voltage test level would cover new data center and telecom central office Computer Server products being offered in the market for improved reliability and energy efficiency by and expected new members of our Alliance.	See response to comment 1
4	Input Power Specification	Application of systems that rely on direct current (DC) is increasing in the traditional telecommunications (i.e. -48VDC) and Low Voltage Direct Current (LVDC, aka 380VDC) environments. We encourage the incorporation of these systems in the ENERGY STAR program and the prescribed testing methods.	See response to comment 1.

5	Input Power Specification	The manufacturer requests that DC-DC power supplies be included that have input voltages that span the entire range of what is defined as "Low Voltage" by the National Electrical Code (e.g. <600V). Power distribution in the 360VDC-400VDC range is becoming more common, can provide some additional data center-level energy efficiency, and needs to be comprehended.	See response to comment 1.

II. TEST CONDUCT

Comment #	Topic	Comment	Response
6	Blade Chassis Configuration	Lines 158-162. The cost to fully populate a chassis of 16 fully-configured blades is going to be very high (several million dollars). The preferred approach would be to only require populating two identical blade servers in a blade enclosure. There is no direct comparison between blade and rack-mount servers, so a well-documented test with a few blades in the enclosure should provide adequate data transparency.	DOE understands the cost burden in testing a fully populated blade chassis and has therefore made full chassis configuration testing optional. The Draft 3 Test Method (Rev. Aug-2012) includes the requirement to test blades with a half populated blade chassis configuration.

7	Blade Chassis Configuration	Lines 158-162. If a full rack set of tests is required, then we suggest that all but one of the blade servers be kept at a minimal configuration, and only one blade server be required to be changed to perform the "four corners" (plus typical) configuration testing for product families; which would vastly reduce both the time and parts costs for certifying each blade product family. The focus can then be on the one blade that changes.	Due to the cost burden and comments from stakeholders, DOE has removed the requirement for testing blade servers with a full chassis configuration in the Draft 3 Test Method (Rev. Aug-2012). However, full chassis testing remains in the Draft 3 Test Method as an optional test for reporting. The required power consumption test for blades shall be conducted in the half chassis configuration as defined by DOE in the Draft 3 Test Method (Rev. Aug-2012). However, DOE believes that blade testing should be performed with identical blade servers sharing the same configuration to obtain consistent and repeatable results and has therefore maintained the language proposed in section 6.2 of the Draft 2 Test Method (Rev. May-2012) in section 5.2 of the Draft 3 Test Method (Rev. Aug-2012).
8	Blade Chassis Configuration	Lines 158-172. Having to test both full blade enclosures and half-full blade enclosures will double the testing cost and provides no additional beneficial data.	See response to comment 6.
9	Blade Chassis Configuration	Lines 161-172. This section specifies requirements for loading a blade server enclosure to one half its maximum population, yet there are no specifics in section 7 for actually testing this configuration. What is the reason and necessity for also testing a half loaded enclosure? As a more cost-effective alternative, testing a half-full chassis is much preferable to testing a full chassis. Since we won't be comparing blade servers directly to non-blade servers, there is no reason to test a full chassis.	See response to comment 6.

10	Blade Chassis Configuration	The test method released with Version 2.0 allows for blade testing with either a full-chassis or half-chassis. The manufacturer would request that the EPA select the half-chassis configuration for the data collection effort of the ENERGY STAR for Computer Servers version 2.0, and not require full-chassis configuration. The reason that half-chassis is preferred to the full-chassis is due to the cost of resources. For the highly-configured family configurations (High-end Performance and Maximum Power), the cost of the equipment could extend into multi-millions of dollars. The ability to fund this activity may not be achievable for most cases. The manufacturer would prefer that all data be assessed evaluated equally, and that the standard is that all blade systems be required to test and submit at half-chassis population. However, if some partners would like to additionally submit full-chassis data for future evaluation, the manufacturer would not object.	See response to comments 6 and 7.
11	Blade Chassis Configuration	Full population of maximum configured blade server can be sometimes very difficult to prepare at a product development stage. We request that option to test on fewer blades should be accepted.	See response to comments 6 and 7.
12	Blade Chassis Configuration	For bladed system testing, we recommend that either ½ (half) populated systems or fully populated configurations be allowed. Data from a ½ populated configuration would be sufficient to quantify the shared power constructs in the bladed system.	See response to comments 6 and 7.

III. TEST PROCEDURE

Comment #	Topic	Comment	Response
13	Idle Mode Power Measurement	Line 197. The 5-15 minute window of time to let a server boot to an idle state is overly prescriptive. It is unknown if 15 minutes is enough time for a large enclosure of blade servers, that might need to sequence the server start-up times in order to keep circuit breaker current below their rated levels. The sentence reads like it cannot be longer than 15 minutes, when it should be the undefined length of time needed to let the server(s) boot and all become ready to run applications.	The language in the Draft 2 Test Method reads "Between 5 and 15 minutes after the initial boot or log in, set the power meter to begin accumulating power values". The 5 to 15 minutes referenced here is **not** the time window to let a server boot but is the required time within which to obtain power measurements after the server boots. To clarify, DOE has modified the language to indicate that the 5 to 15 minute measurement requirement follows the **completion** of initial boot or login in Draft 3 Test Method (Rev. Aug-2012).
14	Idle Mode Power Measurement	A stakeholder commented that memory scrubbing, a maintenance function on Computer Servers, is triggered at regular intervals during idle mode operating periods. The initiation of a memory scrubbing cycle would result in an increase in idle mode power consumption of the server as a result of moving the server out of idle state into an active state of operation. The stakeholder recommends that the manufacturer be allowed to use power readouts to avoid power measurements during memory scrubbing cycles in the idle mode operation. Alternatively, the stakeholder recommends increasing the idle mode measurement duration to average out periodic memory scrubbing operations.	In the Draft 3 Test Method (Rev. Aug-2012), DOE has requested additional information on memory scrubbing and any other maintenance cycles initiated during idle mode operation and their effects on idle mode power consumption of servers. Specifically, DOE is looking for feedback on the duration, the frequency, and data showing the difference in power consumption values of these types of maintenance cycles.