



SNIA Emerald™ Test Data Report Template

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*SNIA Emerald™ Power Efficiency
Measurement Specification*

Version 3.0

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Objective

- Review new style of the SNIA Emerald™ Test Data Report Template for use with Specification V3.0.1
- Overview of the structure of the new Test Data Report Template
 - ◆ Including additions for File Access Storage Device tests

Why Has the Template Changed?

- Previous template designed as publication vehicle targeting end-users
 - ◆ Emphasis on appearance
 - ◆ Excel spreadsheet with locked formatting, fields, and computations
 - ◆ Complex to use and to maintain
- Industry: reporting solely through the ENERGY STAR Data Center Storage Program sufficient



New Template

- ◆ Refocused Template as vehicle for reporting Emerald Test results
 - ◆ Identifies all data whose reporting is mandatory, per the Emerald Specification Clause 9 – Disclosure Requirements
 - ◆ Identifies additional information deemed desirable
- ◆ Added reporting of test results for file access storage
- ◆ Aligned with mandatory reporting requirements of Specification 3.0.1
- ◆ Designed as a reporting vehicle for industry use
 - ◆ Excel spreadsheet with simple format, no locks, and no computations
 - ◆ Defines “best practice”
 - ◆ Emerald Specification V3.0.1 recommended for disclosing test results

Template Overview

- On right – image of partial template
- Disclosure requirement identified
- Multiple major sections
- Field label
- Fields for data

SNIA Emerald™ Test Data Report	
Revision: February 28, 2018	
For use with SNIA Emerald™ Power Efficiency Measurement Specification V3.0.1	
NOTICE:	This form is provided by the SNIA as the recommended form for the disclosure of results from testing using the SNIA Emerald™ Power Efficiency Measurement Specification. SNIA grants permission to modify the form as needed for this purpose.
Legend	
*	Mandatory disclosure item, per SNIA Emerald™ Power Efficiency Measurement Spec
*	Desirable disclosure item
Product Vendor Identification	
*	Company Name
*	Address (line 1)
*	Address (line 2)
*	Address (line 3)
*	Municipality

Major Sections

- Template is structured as a series of major sections
- We'll walk through each of these (briefly)

Major Section: Product Vendor Identification

- Identify the product vendor
- No mandatory fields

Product Vendor Identification		
	*	Company Name
	*	Address (line 1)
	*	Address (line 2)
	*	Address (line 3)
	*	Municipality



Major Section: Test Results

- Template provides 3 Test Results sections
- Choose the appropriate one:
 - ◆ Online and Near-Online, Block Access
 - ◆ Online and Near-Online, File Access
 - ◆ Removable Media Library and Virtual Media Library

Major Section:

Test Results (Online and Near-Online, Block Access)

➤ Primary metrics

➤ Supporting information

- ◆ Some mandatory, e.g.
- ◆ Some desirable

➤ Same as V2.1

➤ Units & scale specified

Test Results (Online and Near-Online, Block Access)	
Ready Idle Test	
*	Average power consumption (W)
*	Raw capacity of product under test (GB)
*	EP_{RI} (GB/W)
Active Tests	
*	EP_{HB} (IO/s/W)
*	Run length (min)
*	Average latency (ms)
*	EP_{RR} (IO/s/W)
*	Run length (min)
*	Average latency (ms)
*	EP_{RW} (IO/s/W)
*	Run length (min)
*	Average latency (ms)
*	EP_{SR} (MiB/s/W)
*	Run length (min)
*	EP_{SW} (MiB/s/W)
*	Run length (min)



Major Section:

Test Results (Online and Near-Online, Block Access)

➤ Secondary metrics

➤ Supporting information

- ◆ Some mandatory, e.g.
- ◆ Some desirable

➤ Similar to V2.1

Capacity Optimizations	
*	Deduplication available in product under test?
*	Deduplication heuristic indicated deduplication present (Yes or No)
*	Deduplication present and enabled in product under test during active tests (Yes or No)
*	Compression available in product under test?
*	Compression heuristic indicated compression present (Yes or No);
*	Compression present and enabled in product under test during active tests (Yes or No)
*	Thin Provisioning available in product under test?
*	Thin provisioning heuristic indicated thin provisioning present (Yes or No);
*	Thin provisioning present and enabled in product under test during active tests (Yes or No)
*	Read-only delta snapshots available in product under test?
*	Read-only delta snapshot heuristic indicated read-only delta snapshot present (Yes or No)
*	Read-only delta snapshot present and enabled in product under test during active tests (Yes or No)
*	Writable delta snapshots available in product under test?
*	Writable delta snapshot heuristic indicated writable delta snapshot present (Yes or No)
*	Writable delta snapshot present and enabled in product under test during active tests (Yes or No)
*	Other Mandatory Disclosures, Per Specification

Major Section:

Test Results (Online and Near-Online, File Access)

➤ Primary metrics

➤ Supporting information

- ◆ Some mandatory, e.g.
- ◆ Some desirable, e.g.

➤ Capacity optimizations

- ◆ Same as for Block access

Test Results (Online and Near-Online, File Access)		
		Ready Idle Test
*		Average power consumption (W)
*		Raw capacity of product under test (GB)
*		EP _{RI} (GB/W)
		Active Tests
*		EP _{VDA} (MiB/s/W)
*		Warm up length (min)
*		EP _{DB} (MiB/s/W)
*		Warm up length (min)
*		EP _{VDI} (MiB/s/W)
*		Warm up length (min)
*		EP _{SWB} (MiB/s/W)
*		Warm up length (min)
		Capacity Optimizations
	*	Deduplication available in product under test?

Major Section:

Test Results (Removable Media Library and Virtual Media Library)

➤ Primary metrics

➤ Supporting information

- ◆ Some mandatory, e.g.
- ◆ Some desirable, e.g.

➤ No capacity optimizations

Ready Idle Test	
*	Average power consumption (W)
*	Raw capacity of product under test (GB)
*	EP _{RI} (GB/W)
Active Tests	
*	EP _{SR} (MiB/s/W)
*	Run length (min)
*	EP _{SW} (MiB/s/W)
*	Run length (min)
Other Mandatory Disclosures, Per Specification	

Major Section: Test Characterization

➤ Describe the test environment

- ◆ Some data mandatory, e.g.
- ◆ Some data desirable, e.g.

General	
*	Emerald Specification version according to which testing was performed
*	Taxonomy category of the product under test
*	Taxonomy classification of the product under test
*	Access method tested (block access or file access)
*	Testing Organization
*	Date Tested
*	Test Environment Configuration (hardware, connectivity, software)
Workload Generator	
*	Workload Generator name
*	Workload Generator version identifier
*	Workload script name
*	Workload script version identifier
*	Transport protocol(s) used during testing to access product under test

Major Section: Product Capability

- Extended description of the product capabilities
 - ◆ Not specifically the unit tested
 - ◆ No mandatory data fields

Product Capability					
		Power			
	*	Nominal voltage input			
	*	Frequency			
	*	Phases			
	*	Number of UPS Units			
	*	Maximum weight when fully configured			
	*	Remote power monitoring?			
	*	Remove temperature monitoring?			
	*	Ventilation			
	*	Data Protection supported?			
	*	Data Protection enabled by default?			

Major Section: Product – Additional Information

- Open-ended area where any additional product information deemed relevant may be provided
 - ◆ Not mandatory

Product - Additional Information					
	*				

Major Section: Product Under Test Description - General

- Extended description of the product as tested
 - ◆ Some mandatory data, e.g.
 - ◆ Some desirable data, e.g.
 - ◆ Some areas may be replicated, if there are multiple differing instances

Product Under Test Description - General	
*	Provide bill-of-materials for tested product
*	Provide configuration diagram
*	Part number
*	# of rack "U" units
*	Dimensions: W x D x H
*	Weight
Power	
*	Power input – nominal voltage (V)
*	Power input – nominal frequency (Hz)
*	Power input – number of phases
*	Number of UPS Units
*	Average air inlet temperature during test (°C)
*	Is data protection present and enabled? (Yes or No)
*	Is product under test configured to be no SPOF (Yes or No)
*	Is auto-tiering present and enabled? (Yes or No)
Stable storage	
	Memory {replicate this section for each memory }
*	Memory type
*	Memory size
*	Memory location
*	Description
	Describe the product configuration and setup in sufficient detail to enable reproduction

Major Section:

Product Under Test Description - Storage Controllers

- Describe back-end storage controller of the product as tested
- Replicate this section if there are multiple storage controllers of different types

Product Under Test Description - Storage Controllers {replicate 1			
*		Number of controllers of this type	
*		Controller part number	
*		Controller description	
	*	Rack "U" height	
	*	HA configuration	
*		Controller main memory size (GiB)	
*		Controller NVRAM size (GiB)	
*		Is data protection present and enabled? (Yes or No)	
	*	Snapshots supported?	
	*	Max snapshots/container	
	*	Max snapshots/controller	
	*	Disk scrubbing enabled?	
		Multi-pathing enabled:	
	*	Controller to storage?	
	*	Controller to hosts/clients?	
	*	No SPOF (single point of failure)?	
	*	Variable speed fans?	
	*	Number of hot spares	

Major Section:

Product Under Test Description – Power Supplies

- Describe power supplies in the product as tested
- Replicate this section if there are multiple power supplies of different types

Product Under Test Description - Power Supplies {replicate this}

*		Number of power supplies of this type	
*		Power supply part number	
*		Power supply ECOS (80+) rating	

Major Section:

Product Under Test Description – Media Shelves / Drawers

- Describe media shelves or drawers containing storage devices in the product as tested
- Replicate this section if there are multiple selves/drawers of different types

Product Under Test Description - Media Shelves / Drawers {repl			
*		Number of media shelves / drawers of this type	
*		Media shelf / drawer part number	
*		Description	
*		Rack "U" height	
*		Number of media/shelf	
*		Supported media types	
		Power	
*		Spec sheet power (W)	
*		Inrush current (A)	
*		Max startup power (W)	
*		Average power in use (includes media) (W)	
*		Other information	

Major Section:

Product Under Test Description – Storage Media

- Describe storage devices in the product as tested
- Replicate this section if there are storage devices of different types

Product Under Test Description - Storage Media {replicate this s

*		Number of storage media of this type		
*		Storage media vendor name		
*		Media part number		
*		Media type		
*		Media form factor		
*		Media capacity (GB)		
*		Media rotational speed		
*		Media cache size (MiB)		
*		Media interface		
		Spec Sheet Power		
*		Idle (W)		
*		Max (W)		
*		Avg (W)		
*		Other information		

Major Section:

Product Under Test Description – Removable Storage Media

- Describe removable storage devices and associated robotics in the product as tested

Product Under Test Description - Removable Storage Media		
*		Number of removable storage media drive slots in product under test
*		Number of drives for removable storage media
*		Number of robotics units for removable storage media
*		Number of removable media cartridge slots in product under test
*		Number of removable media cartridges present in product under test
*		Removable media cartridge type(s)

Major Section:

Product Under Test Description – Host Protocol Controllers

- Describe host protocol controllers (used to communicate with servers) in the product as tested
- Replicate this section if there are multiple host protocol controllers of different types

*		Number of host protocol controllers of this type			
*		Vendor			
*		Host protocol controller part number			
*		Host protocol(s) supported			
*		Host protocol controller nominal data rate (GiB/s)			
*		Other Information			
		Spec Sheet Power			
*		Idle (W)			
*		Max (W)			
*		Avg (W)			

Major Section:

Product Under Test Description – Additional Information

- Open-ended space to use to provide additional information about the product under test

- ◆ Not mandatory

Product Under Test Description - Additional Information					
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Summary

- Test Data Report Template is recommended for use when reporting SNIA Emerald™ V3.0.1 Test Results
- Excel spreadsheet
 - ◆ Unlocked, no formulas, no fancy formatting
- Available on SNIA Emerald™ web site
 - ◆ http://www.sniaemerald.com/download/Spec_v3.0
 - ◆ Site also contains all other SNIA-provided materials for SNIA Emerald™ testing

Questions ?