MLC-B Test Report
Summary Report Page – All Tests

SNIA Solid State Storage Performance Test Specification (PTS)	Rev.	PTS 1.0
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Device Under Test (DUT)	MLC-B	SNIA SSS PTS Summary Report	Calypso Systems, Inc.	CALYPSO Systems

DEVICE INFORMATION		TEST HARDWARE PLATFORM		TEST SOFTWARE		REPORT DATE	
SERIAL NO.	0000-1111-FFFF	SYSTEM	Calypso RTP 2.0	SYS OS	CENT OS 5.6	Report	06DEC11
FIRMWARE REV.	02HD	Motherboard/cpu	Intel 5520HC / W5580	SW TOOL	Calypso CTS 6.5	Test Run	01NOV – 04DEC11
USER CAPACITY	MLC 160 GB	RAM	12GB ECC DDR3	SW Rev	1.19.10	Test Sponsor	Calypso
DEVICE INTERFACE	3Gb/s SATA	Device Interface	LSA 9212-e 6Gb/s HBA	Release	Nov. 2011	Auditor	N/A

Testing Summary: Tests Run

PTS-C	TEST	Purge	DP	OIO	WIPC		WDPC		STEADY STATE	
					PC AR	TEST AR	AR AMT	SEGMENTS	WORKLOAD	TIME/GB
7.0	WSAT - OPTIONAL	Security Erase	RND	TC 16 QD 2	100%	100%	N/A	N/A	RND 4KiB W	12 Hrs 250 GB

PTS-C	TEST	Purge	DP	OIO	WIPC		WDPC		STEADY STATE	
					PC AR	TEST AR	AR AMT	SEGMENTS	WORKLOAD	ROUNDS
8.0	IOPS - REQUIRED	Security Erase	RND	TC 32 QD 1	100%	100%	16 GiB	2048	IOPS LOOP	9 - 13

PTS-C	TEST	Purge	DP	OIO	WIPC		WDPC		STEADY STATE	
					PC AR	TEST AR	AR AMT	SEGMENTS	WORKLOAD	ROUNDS
9.0	THROUGHPUT - REQUIRED	Security Erase	RND	TC 1 QD 2	100%	100%	16 GiB	2048	SEQ 1024KiB	1 - 5

PTS-C	TEST	Purge	DP	OIO	WIPC		WDPC		STEADY STATE	
					PC AR	TEST AR	AR AMT	SEGMENTS	WORKLOAD	ROUNDS
10.0	LATENCY - REQUIRED	Security Erase	RND	TC 1 QD 1	100%	100%	16 GiB	2048	LAT LOOP	12 – 16

Test Sponsor – Special Notes

ITEM	NOTATION	COMMENTS

MLC-B Test Report
Summary Report Page - WSAT

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Device Under Test (DUT)	MLC-B	SNIA SSS PTS Summary Report	Calypso Systems, Inc.	CALYPSO Systems

DEVICE INFORMATION		TEST HARDWARE PLATFORM		TEST SOFTWARE		REPORT DATE	
SERIAL NO.	0000-1111-FFFF	SYSTEM	Calypso RTP 2.0	SYS OS	CENT OS 5.6	Report	06DEC11
FIRMWARE REV.	02HD	Motherboard/cpu	Intel 5520HC / W5580	SW TOOL	Calypso CTS 6.5	Test Run	01NOV – 04DEC11
USER CAPACITY	MLC 160 GB	RAM	12GB ECC DDR3	SW Rev	1.19.10	Test Sponsor	Calypso
DEVICE INTERFACE	3 Gb/s SATA	Device Interface	LSA 9212-e 6Gb/s HBA	Release	Nov. 2011	Auditor	N/A

Test Description

Purpose	To observe the drive's performance evolution from a PURGED state to that of SETTLED state
Test Outline	Uses total outstanding IO settings that maximizes RND 4KiB Writes, first PURGE the drive, followed by immediate continuous RND 4KiB (4K-aligned) writes for lesser of 4 x User Capacity or 24 Hours
Preconditioning	FOB - No Pre Conditioning - PURGE followed by Test (note: tests may be run longer for plotting clarity)

Test Set Up

PTS-C	TEST	Purge	DP	OIO	WIPC		WDPC		STEADY STATE	
					PC AR	TEST AR	AR AMT	SEGMENTS	WORKLOAD	TIME/GB
7.0	WSAT - OPTIONAL	Security Erase	RND	TC 16 QD 2	100%	100%	N/A	N/A	RND 4KiB W	12 Hrs 250 GB

Select Performance Data

FOB IOPS	Steady State IOPS	Time	Total GB Written
20,364	658	12 Hours	250 GB

Test Sponsor – Special Notes

ITEM	NOTATION	COMMENTS

Test Run Date:	11/21/2011 06:35 AM	Report Run Date:	11/24/2011 04:44 PM

Client WSAT (OPTIONAL) - Report Page

SNIA SSS TWG: Solid State Storage Performance Test Specification (PTS)	Rev.	PTS-C 1.0
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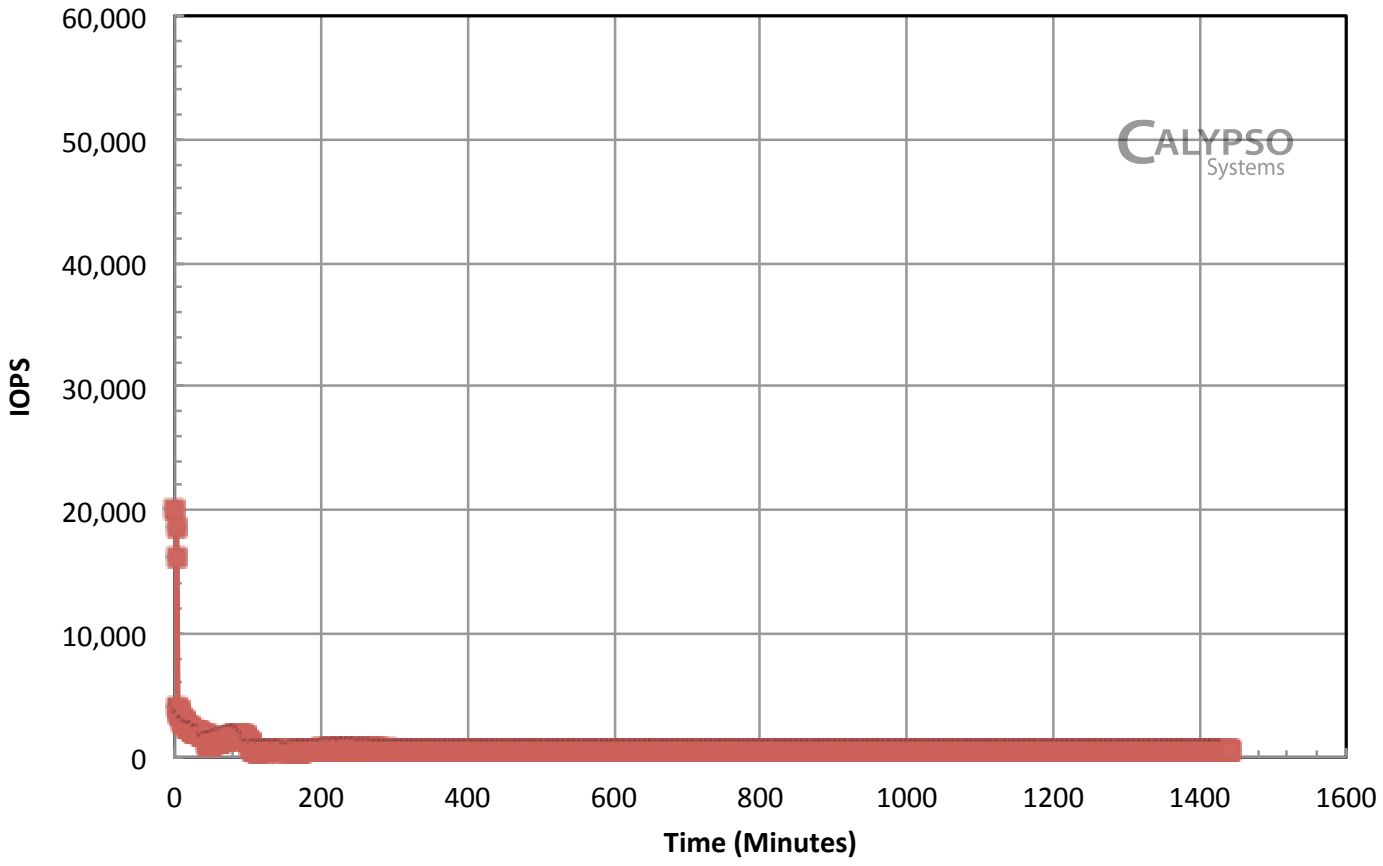
Device Under Test (DUT)		VENDOR: ABC CO.	SSD MODEL NO: MLC-B 160 GB	TEST SPONSOR	CALYPSO Systems

		DUT Preparation		Test Loop Parameters		Steady State	
Serial No.	0000-1111-FFFF						
Firmware Rev	02HD	Purge	Security Erase	REQUIRED:		Convergence	N/A
Capacity	160 GB	Pre-Conditioning		Data Pattern	RND	Rounds	N/A
NAND Type	MLC	Workload Independent	N/A	Tester's Choice:		PC AR	100%
Device I/F	3 Gb/s SATA			OIO/Thread (QD)	2	AR AMOUNT	100%
Test Platform	RTP 2.0 CTS 6.5	Workload Dep.	RND 4KiB	Thread Count (TC)	16	AR Segments	N/A

Client IOPS (Linear) vs Time (Linear)



Test Run Date:	11/21/2011 06:35 AM	Report Run Date:	11/24/2011 04:44 PM

Client WSAT (OPTIONAL) - Report Page

SNIA SSS TWG: Solid State Storage Performance Test Specification (PTS)	Rev.	PTS-C 1.0
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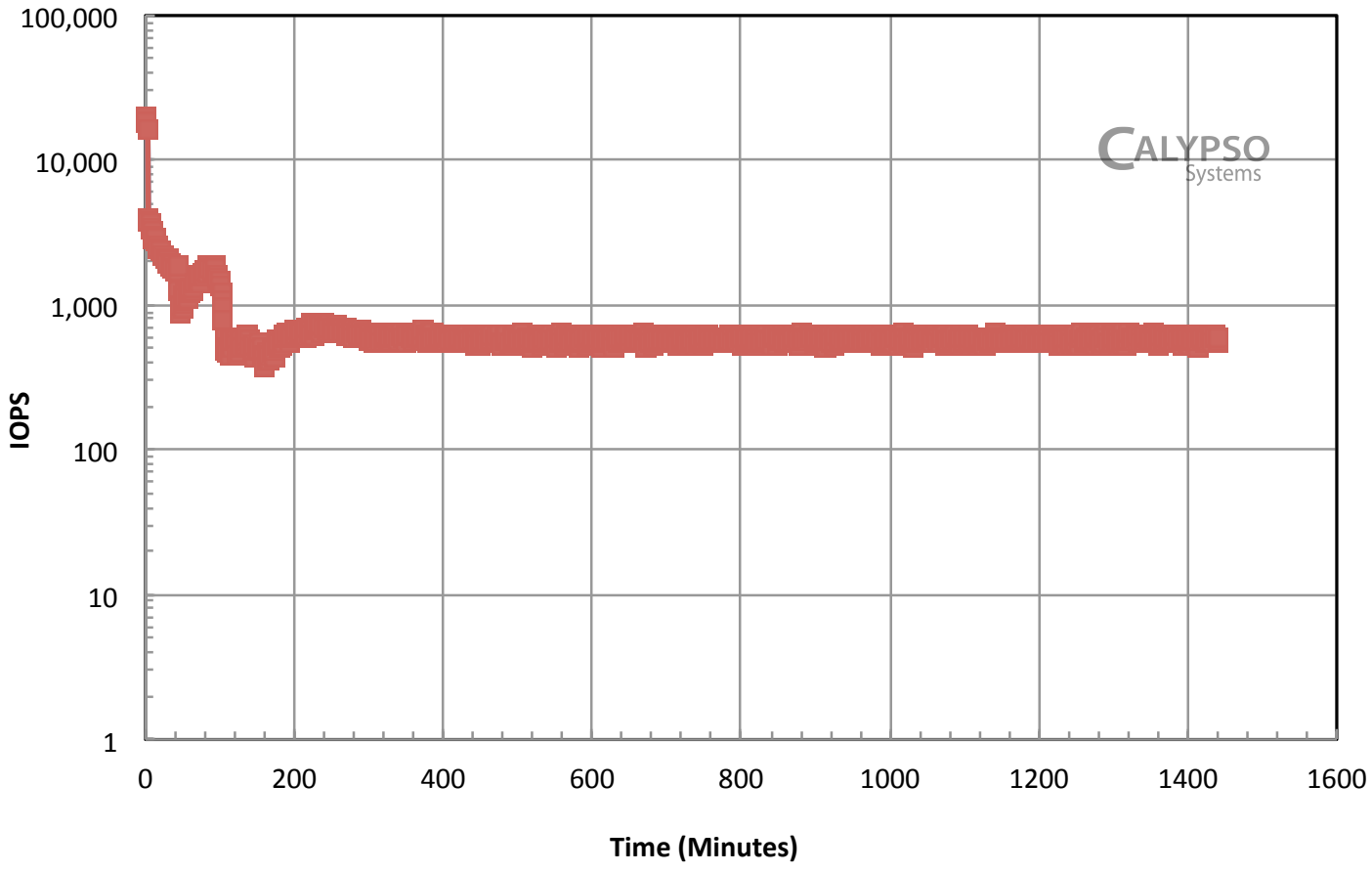
Device Under Test (DUT)		VENDOR: ABC CO.	SSD MODEL NO: MLC-B 160 GB	TEST SPONSOR	CALYPSO Systems

		DUT Preparation		Test Loop Parameters		Steady State	
Serial No.	0000-1111-FFFF			REQUIRED:			
Firmware Rev	02HD	Purge	Security Erase	Data Pattern	RND	Convergence	N/A
Capacity	160 GB	Pre-Conditioning				Rounds	N/A
NAND Type	MLC	Workload Independent	N/A	Tester's Choice:		PC AR	100%
Device I/F	3 Gb/s SATA			OIO/Thread (QD)	2	AR AMOUNT	100%
Test Platform	RTP 2.0 CTS 6.5	Workload Dep.	RND 4KiB	Thread Count (TC)	16	AR Segments	N/A

Client IOPS (Log10) vs Time (Linear)



Test Run Date:	11/21/2011 06:35 AM	Report Run Date:	11/24/2011 04:44 PM

Client WSAT (OPTIONAL) - Report Page

SNIA SSS TWG: Solid State Storage Performance Test Specification (PTS)	Rev.	PTS-C 1.0
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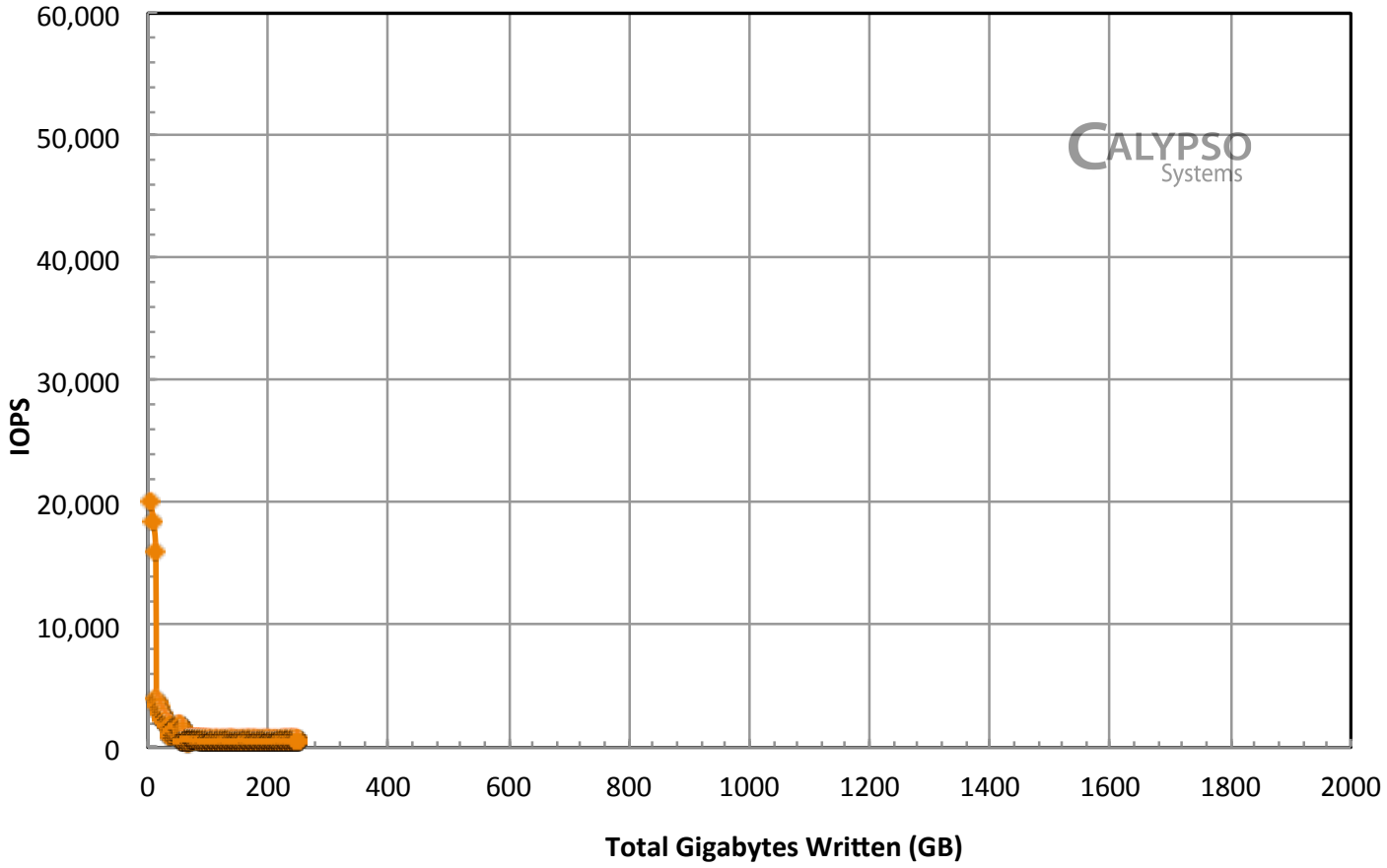
Device Under Test (DUT)		VENDOR: ABC CO.	SSD MODEL NO: MLC-B 160 GB	TEST SPONSOR	CALYPSO Systems

		DUT Preparation		Test Loop Parameters		Steady State	
Serial No.	0000-1111-FFFF						
Firmware Rev	02HD	Purge	Security Erase	REQUIRED:		Convergence	N/A
Capacity	160 GB	Pre-Conditioning		Data Pattern	RND	Rounds	N/A
NAND Type	MLC	Workload Independent	N/A	Tester's Choice:		PC AR	100%
Device I/F	3 Gb/s SATA			OIO/Thread (QD)	2	AR AMOUNT	100%
Test Platform	RTP 2.0 CTS 6.5	Workload Dep.	RND 4KiB	Thread Count (TC)	16	AR Segments	N/A

Client IOPS (Linear) vs Total Gigabytes Written (Linear)



Test Run Date:	11/21/2011 06:35 AM	Report Run Date:	11/24/2011 04:44 PM

Client WSAT (OPTIONAL) - Report Page

SNIA SSS TWG: Solid State Storage Performance Test Specification (PTS)

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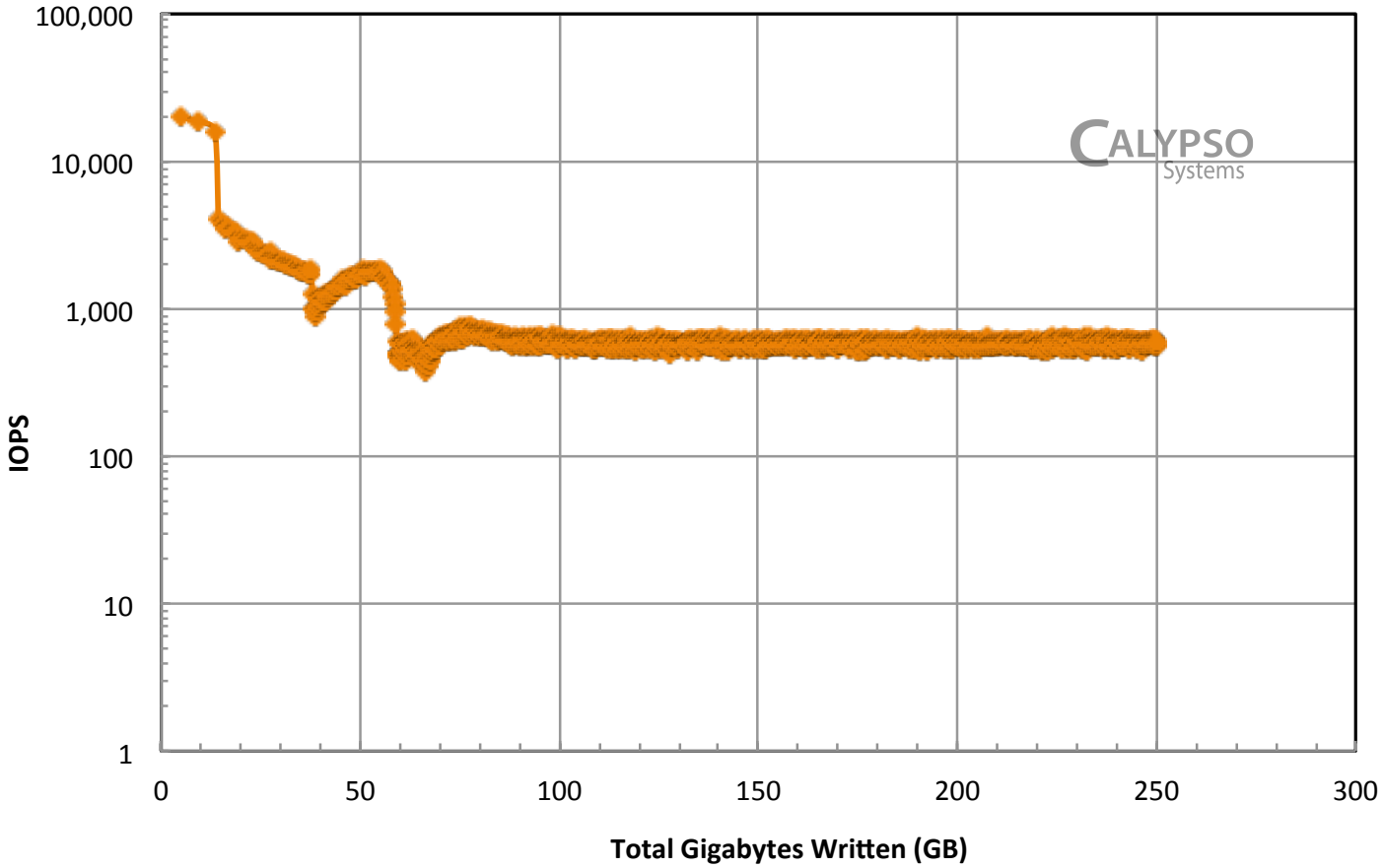
Device Under Test (DUT)		VENDOR: ABC CO.	SSD MODEL NO: MLC-B 160 GB	TEST SPONSOR	CALYPSO Systems
Serial No.	0000-1111-FFFF	DUT Preparation		Test Loop Parameters	Steady State
Firmware Rev	02HD	Purge	Security Erase	REQUIRED:	Convergence: N/A
Capacity	160 GB	Pre-Conditioning		Data Pattern: RND	Rounds: N/A
NAND Type	MLC	Workload Independent	N/A	Tester's Choice:	PC AR: 100%
Device I/F	3 Gb/s SATA			OIO/Thread (QD): 2	AR AMOUNT: 100%
Test Platform	RTP 2.0 CTS 6.5	Workload Dep.	RND 4KiB	Thread Count (TC): 16	AR Segments: N/A

Client IOPS (Log10) vs Total Gigabytes Written (Lin)



MLC-B Test Report
Summary Report Page - IOPS

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Device Under Test (DUT)	MLC-B	SNIA SSS PTS Summary Report	Calypso Systems, Inc.	CALYPSO Systems

DEVICE INFORMATION		TEST HARDWARE PLATFORM		TEST SOFTWARE		REPORT DATE	
SERIAL NO.	0000-1111-FFFF	SYSTEM	Calypso RTP 2.0	SYS OS	CENT OS 5.6	Report	06DEC11
FIRMWARE REV.	02HD	Motherboard/cpu	Intel 5520HC / W5580	SW TOOL	Calypso CTS 6.5	Test Run	01NOV – 04DEC11
USER CAPACITY	MLC 256 GB	RAM	12GB ECC DDR3	SW Rev	1.19.10	Test Sponsor	Calypso
DEVICE INTERFACE	3 Gb/s SATA	Device Interface	LSA 9212-e 6Gb/s HBA	Release	Nov. 2011	Auditor	N/A

Test Description

Purpose	To measure RND IOPS matrix using different BS and R/W Mixes
Test Outline	PURGE, then apply preconditioning until Steady State is achieved according to the SNIA PTS
Preconditioning	PURGE followed by SNIA PTS prescribed WIPC & WDPC

Test Set Up

PTS-C	TEST	Purge	DP	OIO	WIPC		WDPC		STEADY STATE	
					PC AR	TEST AR	AR AMT	SEGMENTS	WORKLOAD	ROUNDS
8.0	IOPS - REQUIRED	Security Erase	RND	TC 32 QD 1	100%	100%	16 GiB	2048	IOPS LOOP	9 - 13

Select Performance Data

RND 4KiB W	RND 4KiB R	RND 8KiB W	RND 8KiB R
152	38,087	151	22,978

Test Sponsor – Special Notes

ITEM	NOTATION	COMMENTS

Test Run Date:	11/17/2011 10:54 AM	Report Run Date:	11/21/2011 04:47 PM

CLIENT IOPS (REQUIRED) - Report Page

SNIA SSS TWG: Solid State Storage Performance Test Specification (PTS)	Rev.	PTS-C 1.0
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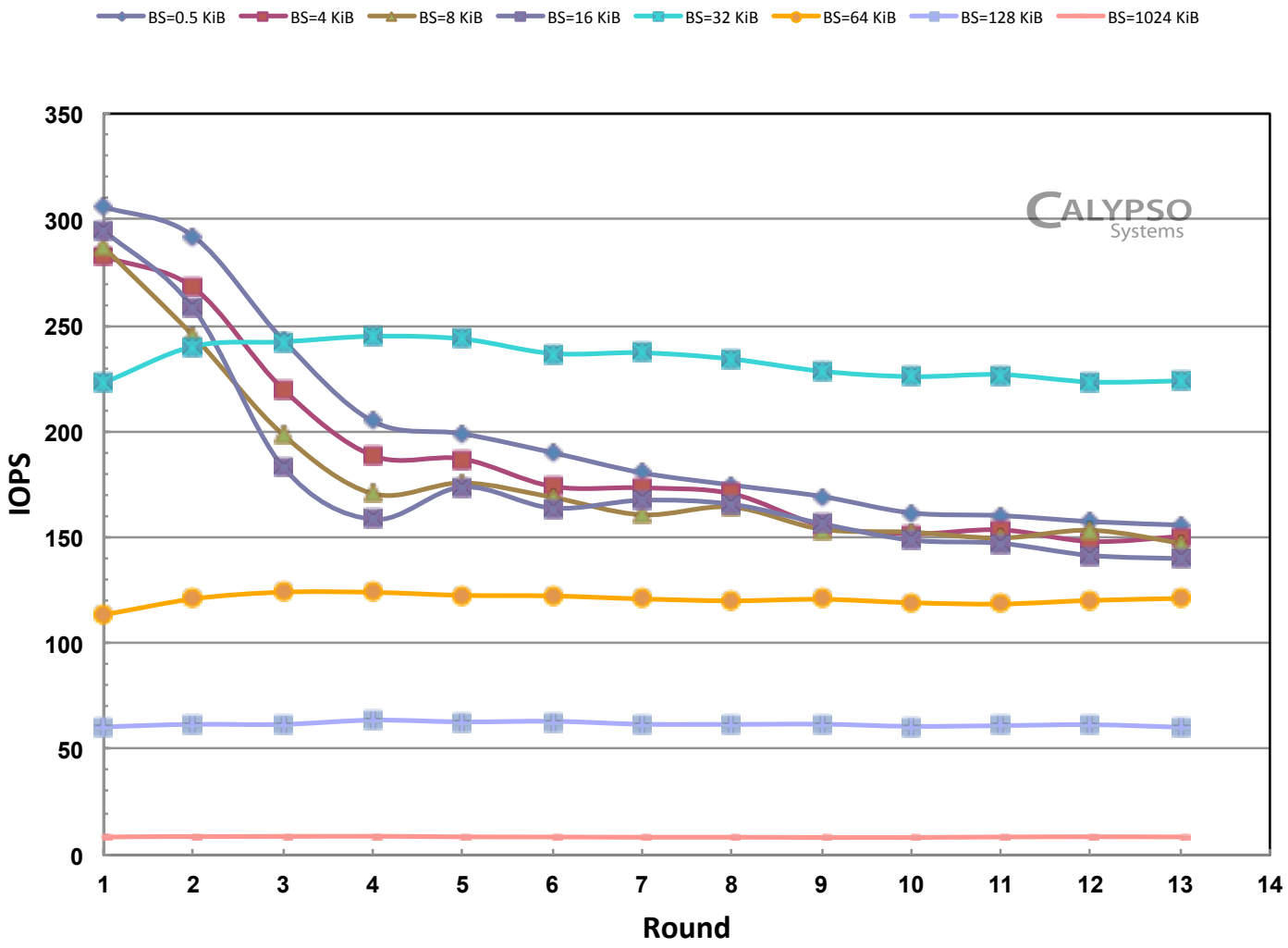
Device Under Test (DUT)		VENDOR: ABC CO.	SSD MODEL NO: MLC-B 160 GB	TEST SPONSOR	CALYPSO Systems

		DUT Preparation		Test Loop Parameters		Steady State	
Serial No.	0000-1111-FFFF						
Firmware Rev	02HD	Purge	Security Erase	REQUIRED:		Convergence	YES
Capacity	160 GB	Pre-Conditioning		Data Pattern	RND	Rounds	9-13
NAND Type	MLC	Workload Independent	2X SEQ/128KiB	Tester's Choice:		PC AR	100%
Device I/F	3 Gb/s SATA			OIO/Thread (QD)	1	AR AMOUNT	16 GiB
Test Platform	RTP 2.0 CTS 6.5	Workload Dep.	Full IOPS Loop	Thread Count (TC)	32	AR Segments	2048

Steady State Convergence Plot – All Block Sizes



Test Run Date:	11/17/2011 10:54 AM	Report Run Date:	11/21/2011 04:47 PM

CLIENT IOPS (REQUIRED) - Report Page

SNIA SSS TWG: Solid State Storage Performance Test Specification (PTS)	Rev.	PTS-C 1.0
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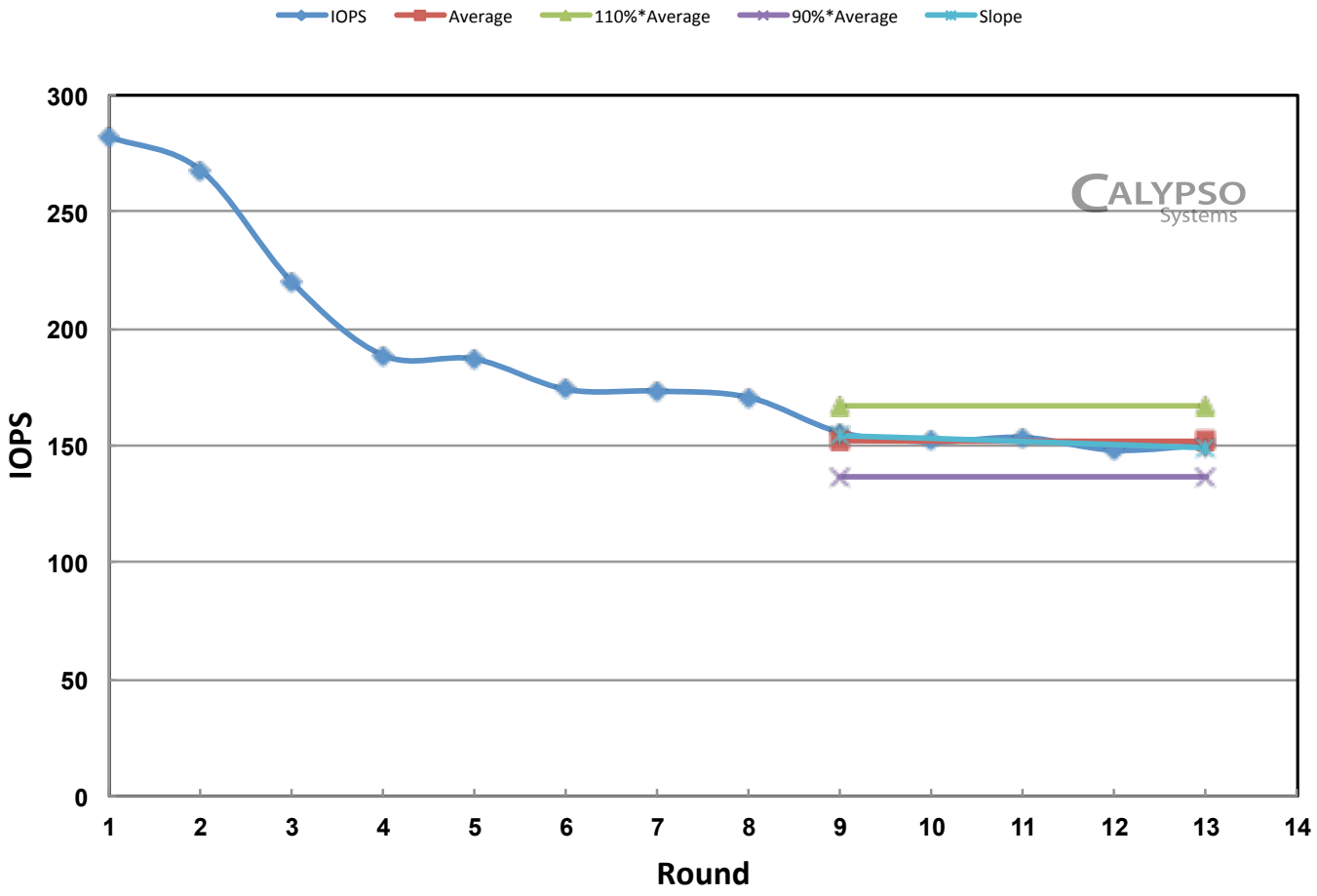
Device Under Test (DUT)		VENDOR: ABC CO.	SSD MODEL NO: MLC-B 160 GB	TEST SPONSOR	CALYPSO Systems

Serial No.	0000-1111-FFFF	DUT Preparation		Test Loop Parameters		Steady State	
Firmware Rev	02HD	Purge	Security Erase	REQUIRED:		Convergence	YES
Capacity	160 GB	Pre-Conditioning		Data Pattern	RND	Rounds	9-13
NAND Type	MLC	Workload Independent	2X SEQ/128KiB	Tester's Choice:		PC AR	100%
Device I/F	3 Gb/s SATA			OIO/Thread (QD)	1	AR AMOUNT	16 GiB
Test Platform	RTP 2.0 CTS 6.5	Workload Dep.	Full IOPS Loop	Thread Count (TC)	32	AR Segments	2048

Steady State Measurement Window



Test Run Date:	11/17/2011 10:54 AM	Report Run Date:	11/21/2011 04:47 PM

CLIENT IOPS (REQUIRED) - Report Page

SNIA SSS TWG: Solid State Storage Performance Test Specification (PTS)	Rev.	PTS-C 1.0
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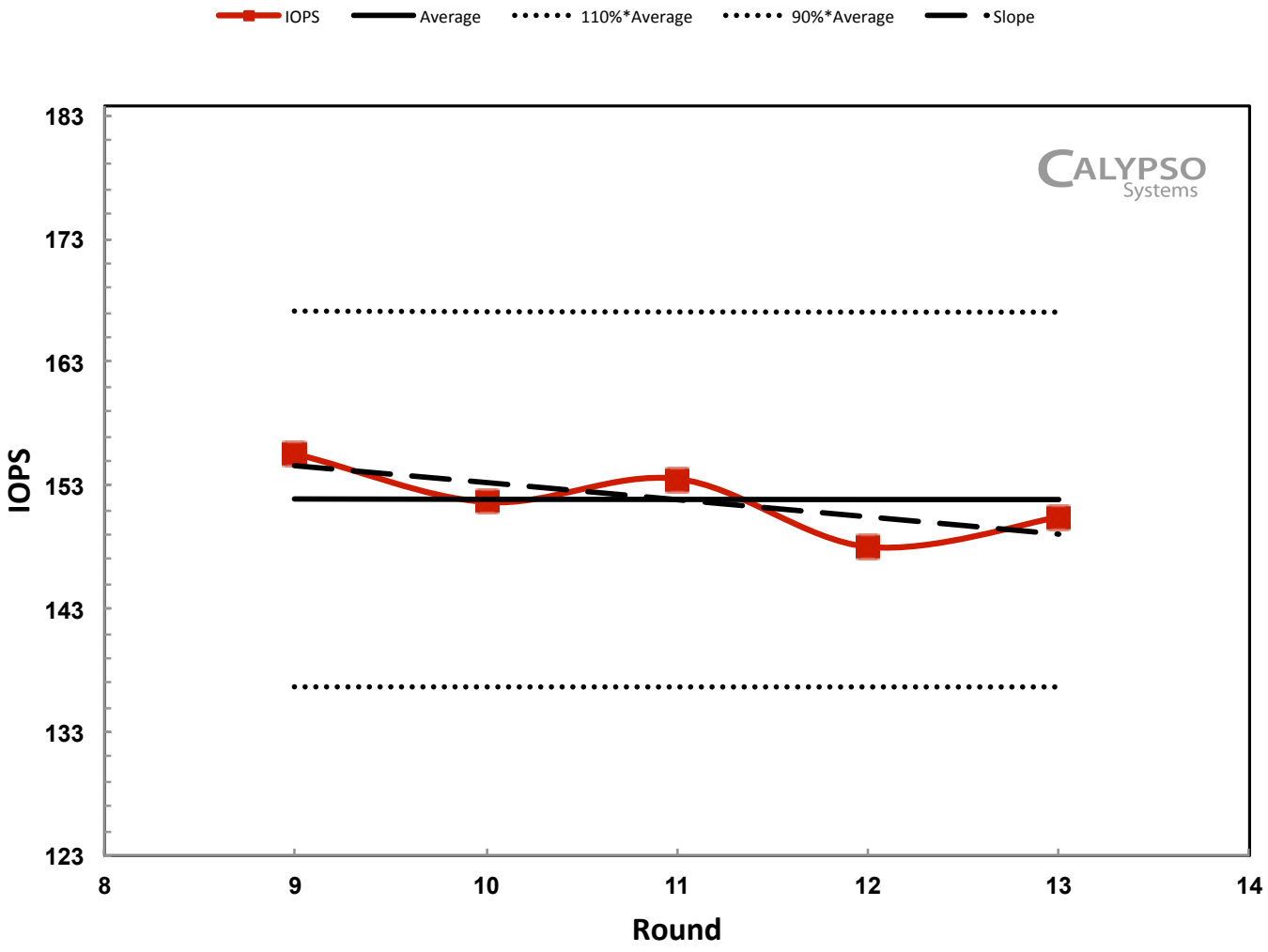
Device Under Test (DUT)		VENDOR: ABC CO.	SSD MODEL NO: MLC-B 160 GB	TEST SPONSOR	CALYPSO Systems

		DUT Preparation		Test Loop Parameters		Steady State	
Serial No.	0000-1111-FFFF			REQUIRED:			
Firmware Rev	02HD	Purge	Security Erase	Data Pattern	RND	Convergence	YES
Capacity	160 GB	Pre-Conditioning		Tester's Choice:		Rounds	9-13
NAND Type	MLC	Workload Independent	2X SEQ/128KiB	OIO/Thread (QD)	1	PC AR	100%
Device I/F	3 Gb/s SATA			Thread Count (TC)	32	AR AMOUNT	16 GiB
Test Platform	RTP 2.0 CTS 6.5	Workload Dep.	Full IOPS Loop			AR Segments	2048

Steady State Measurement Window – RND/4KiB



Steady State Determination Data

Average IOPS:			151.9
Allowed Maximum Data Excursion:	30.4	Measured Maximum Data Excursion:	7.6
Allowed Maximum Slope Excursion:	15.2	Measured Maximum Slope Excursion:	5.6
Least Squares Linear Fit Formula:			-1.403 * R + 167.292

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CLIENT IOPS (REQUIRED) - Report Page

SNIA SSS TWG: Solid State Storage Performance Test Specification (PTS)	Rev.	PTS-C 1.0
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Device Under Test (DUT)	VENDOR: ABC CO.	SSD MODEL NO: MLC-B 160 GB	TEST SPONSOR	CALYPSO Systems

Serial No.	0000-1111-FFFF	DUT Preparation		Test Loop Parameters		Steady State	
Firmware Rev	02HD	Purge	Security Erase	REQUIRED:		Convergence	YES
Capacity	160 GB	Pre-Conditioning		Data Pattern	RND	Rounds	9-13
NAND Type	MLC	Workload Independent	2X SEQ/128KiB	Tester's Choice:		PC AR	100%
Device I/F	3 Gb/s SATA			OIO/Thread (QD)	1	AR AMOUNT	16 GiB
Test Platform	RTP 2.0 CTS 6.5	Workload Dep.	Full IOPS Loop	Thread Count (TC)	32	AR Segments	2048

CLIENT IOPS - ALL RW Mix & BS – Tabular Data

Block Size (KiB)	Read / Write Mix %						
	0/100	5/95	35/65	50/50	65/35	95/5	100/0
0.5	160.9	182.5	234.4	307.6	436.3	3,046.3	64,918.3
4	151.9	178.6	230.6	293.4	425.5	3,081.5	38,087.5
8	151.3	179.5	220.1	284.3	402.6	2,510.8	22,978.6
16	146.8	194.9	218.1	281.4	400.3	2,483.1	12,195.5
32	225.7	249.4	329.3	435.5	606.1	3,032.2	3,258.2
64	119.9	126.3	182.7	228.5	318.6	1,526.2	2,993.1
128	61.1	64.1	92.8	119.3	167.4	370.3	2,037.7
1024	8.4	8.7	13.1	17.7	24.6	164.9	252.3

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CLIENT IOPS (REQUIRED) - Report Page

SNIA SSS TWG: Solid State Storage Performance Test Specification (PTS)	Rev.	PTS-C 1.0
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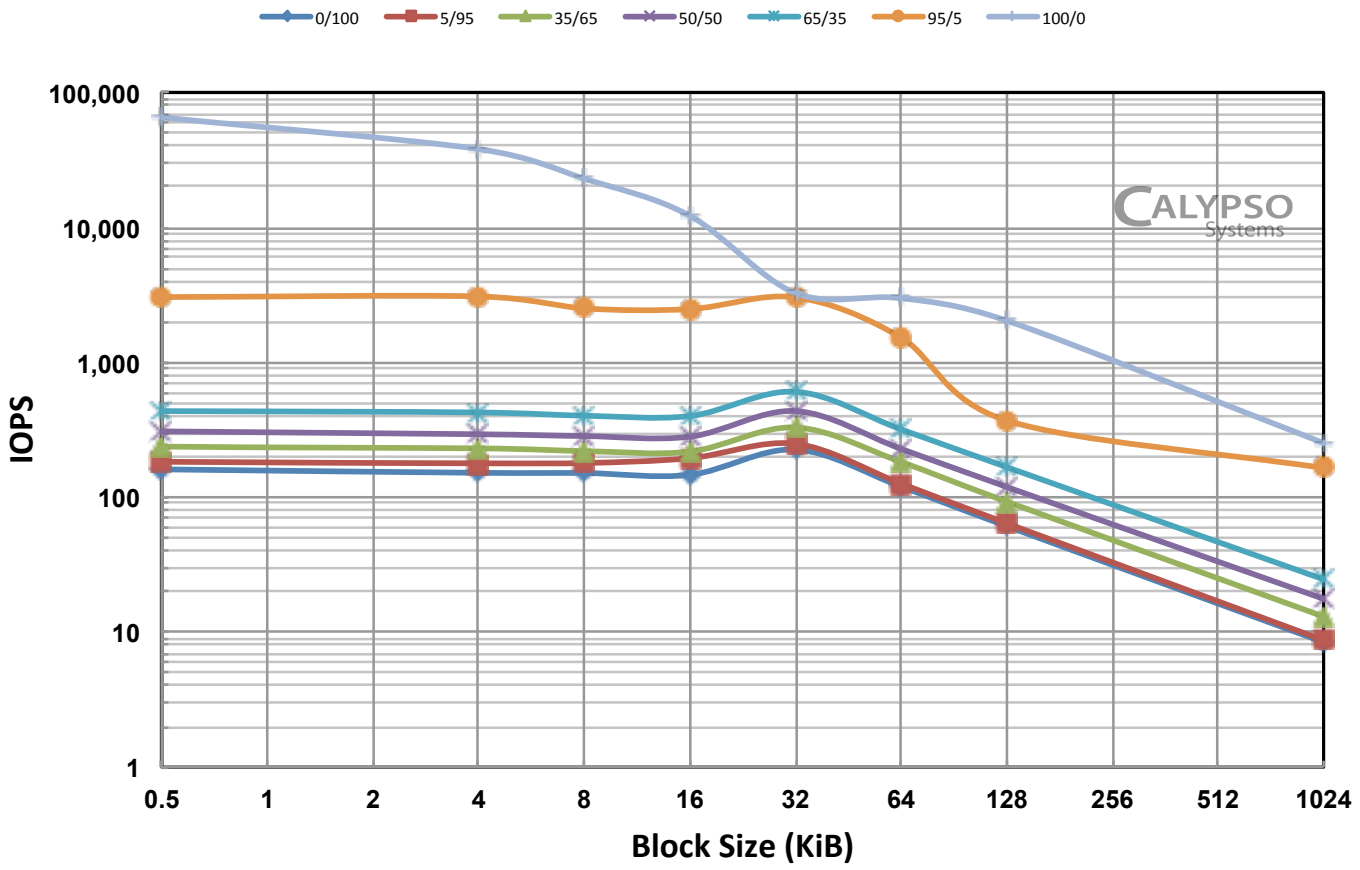
Device Under Test (DUT)		VENDOR: ABC CO.	SSD MODEL NO: MLC-B 160 GB	TEST SPONSOR	CALYPSO Systems

Serial No.	0000-1111-FFFF	DUT Preparation		Test Loop Parameters		Steady State	
Firmware Rev	02HD	Purge	Security Erase	REQUIRED:		Convergence	YES
Capacity	160 GB	Pre-Conditioning		Data Pattern	RND	Rounds	9-13
NAND Type	MLC	Workload Independent	2X SEQ/128KiB	Tester's Choice:		PC AR	100%
Device I/F	3 Gb/s SATA			OIO/Thread (QD)	1	AR AMOUNT	16 GiB
Test Platform	RTP 2.0 CTS 6.5	Workload Dep.	Full IOPS Loop	Thread Count (TC)	32	AR Segments	2048

IOPS - ALL RW Mix & BS - 2D Plot



Test Run Date:	11/17/2011 10:54 AM	Report Run Date:	11/21/2011 04:47 PM

CLIENT IOPS (REQUIRED) - Report Page

SNIA SSS TWG: Solid State Storage Performance Test Specification (PTS)	Rev.	PTS-C 1.0
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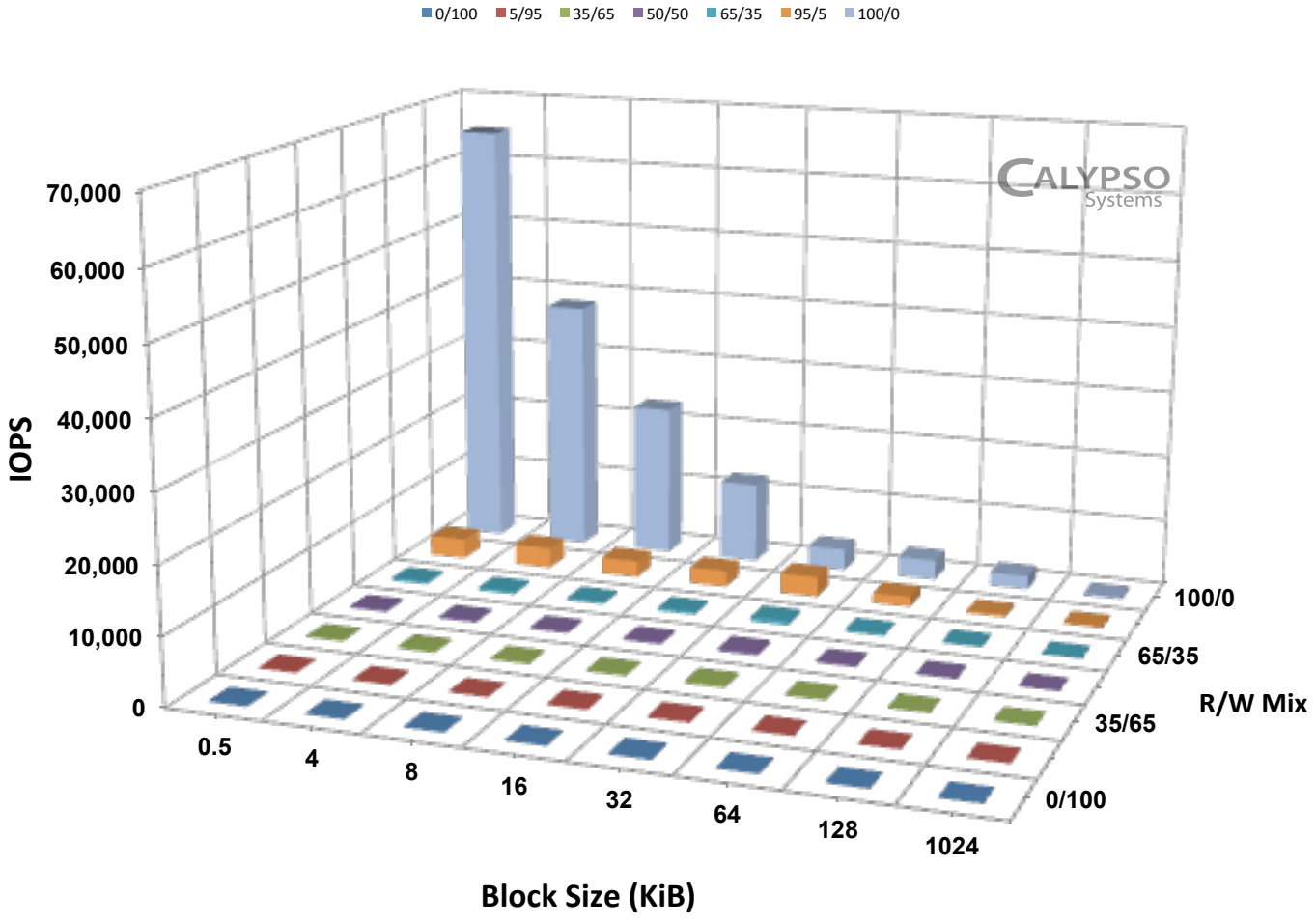
Device Under Test (DUT)		VENDOR: ABC CO.	SSD MODEL NO: MLC-B 160 GB	TEST SPONSOR	CALYPSO Systems

		DUT Preparation		Test Loop Parameters		Steady State	
Serial No.	0000-1111-FFFF			REQUIRED:			
Firmware Rev	02HD	Purge	Security Erase	Data Pattern	RND	Convergence	YES
Capacity	160 GB	Pre-Conditioning				Rounds	9-13
NAND Type	MLC	Workload Independent	2X SEQ/128KiB	Tester's Choice:		PC AR	100%
Device I/F	3 Gb/s SATA			OIO/Thread (QD)	1	AR AMOUNT	16 GiB
Test Platform	RTP 2.0 CTS 6.5	Workload Dep.	Full IOPS Loop	Thread Count (TC)	32	AR Segments	2048

IOPS - ALL RW Mix & BS – 3D Columns



MLC-B Test Report
Summary Report Page - THROUGHPUT

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Device Under Test (DUT)	MLC-B	SNIA SSS PTS Summary Report	Calypso Systems, Inc.	CALYPSO Systems

DEVICE INFORMATION		TEST HARDWARE PLATFORM		TEST SOFTWARE		REPORT DATE	
SERIAL NO.	0000-1111-FFFF	SYSTEM	Calypso RTP 2.0	SYS OS	CENT OS 5.6	Report	06DEC11
FIRMWARE REV.	02HD	Motherboard/cpu	Intel 5520HC / W5580	SW TOOL	Calypso CTS 6.5	Test Run	01NOV – 04DEC11
USER CAPACITY	MLC 256 GB	RAM	12GB ECC DDR3	SW Rev	1.19.10	Test Sponsor	Calypso
DEVICE INTERFACE	3 Gb/s SATA	Device Interface	LSA 9212-e 6Gb/s HBA	Release	Nov. 2011	Auditor	N/A

Test Description

Purpose	To measure Large Block SEQ TP using different BS and R/W Mixes
Test Outline	PURGE, then apply preconditioning until Steady State is achieved according to the SNIA PTS
Preconditioning	PURGE followed by SNIA PTS prescribed WIPC & WDPC

Test Set Up

PTS-C	TEST	Purge	DP	OIO	WIPC		WDPC		STEADY STATE	
					PC AR	TEST AR	AR AMT	SEGMENTS	WORKLOAD	ROUNDS
9.0	THROUGHPUT - REQUIRED	Security Erase	RND	TC 1 QD 2	100%	100%	16 GB	2048	SEQ 1024KiB	1 - 5

Select Performance Data

	SEQ 1024KiB R	SEQ 1024KiB W	
	264 MB/S	99 MB/S	

Test Sponsor – Special Notes

ITEM	NOTATION	COMMENTS

Test Run Date:	11/15/2011 12:46 AM	Report Run Date:	11/21/2011 04:50 PM

Client Throughput Test (REQUIRED) - Report Page

SNIA SSS TWG: Solid State Storage Performance Test Specification (PTS)	Rev.	PTS-C 1.0
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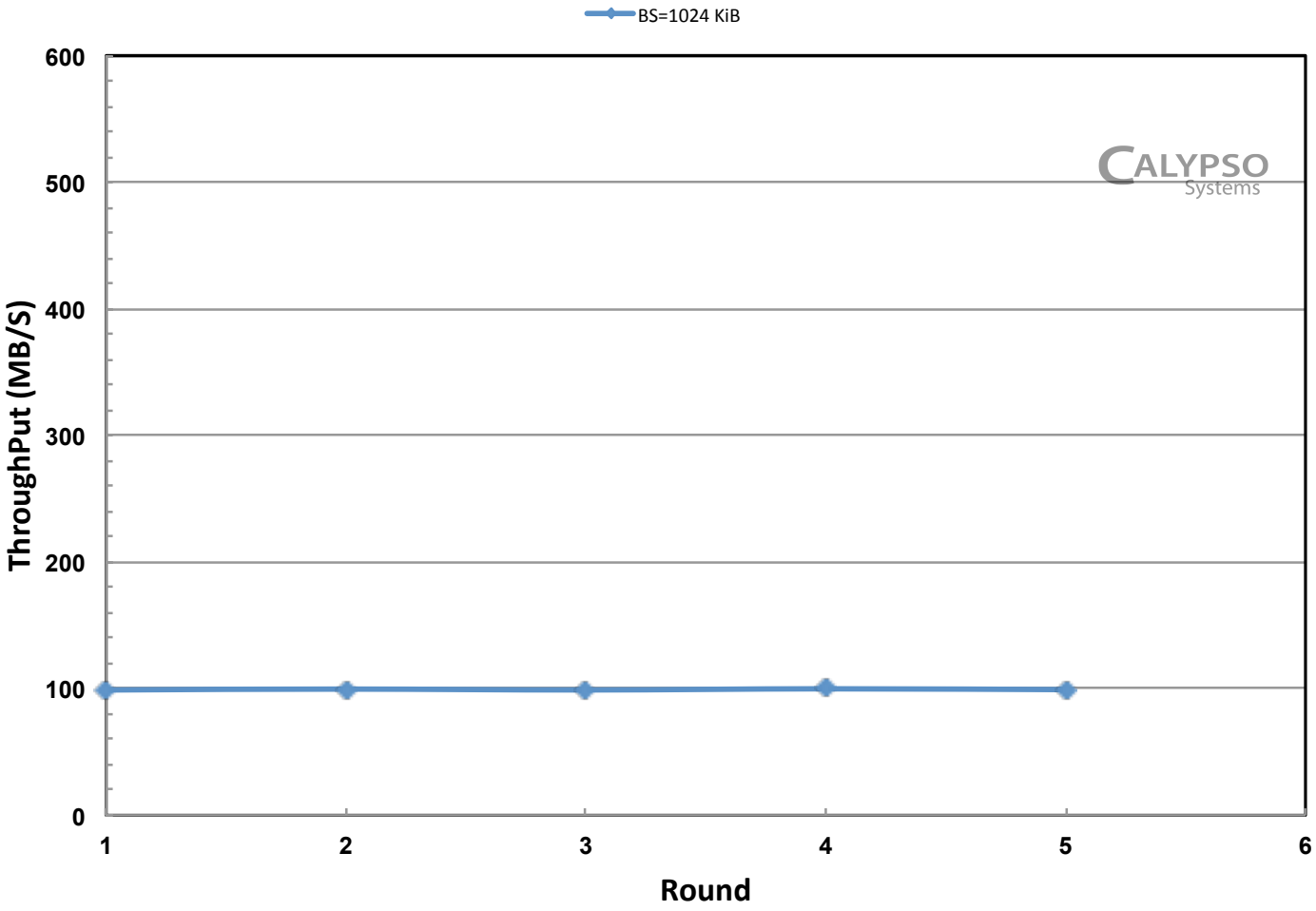
Device Under Test (DUT)		VENDOR: ABC CO.	SSD MODEL NO: MLC-B 160 GB	TEST SPONSOR	CALYPSO Systems

		DUT Preparation		Test Loop Parameters		Steady State	
Serial No.	0000-1111-FFFF						
Firmware Rev	02HD	Purge	Security Erase	REQUIRED:		Convergence	YES
Capacity	160 GB	Pre-Conditioning		Data Pattern	RND	Rounds	1-5
NAND Type	MLC	Workload Independent	2X SEQ/128KiB	Tester's Choice:		PC AR	100%
Device I/F	3 Gb/s SATA			OIO/Thread (QD)	2	AR AMOUNT	16 GiB
Test Platform	RTP 2.0 CTS 6.5	Workload Dep.	SEQ 1024KiB	Thread Count (TC)	1	AR Segments	2048

Client Throughput Test - SS Convergence - Write



Test Run Date:	11/15/2011 12:46 AM	Report Run Date:	11/21/2011 04:50 PM

Client Throughput Test (REQUIRED) - Report Page

SNIA SSS TWG: Solid State Storage Performance Test Specification (PTS)	Rev.	PTS-C 1.0
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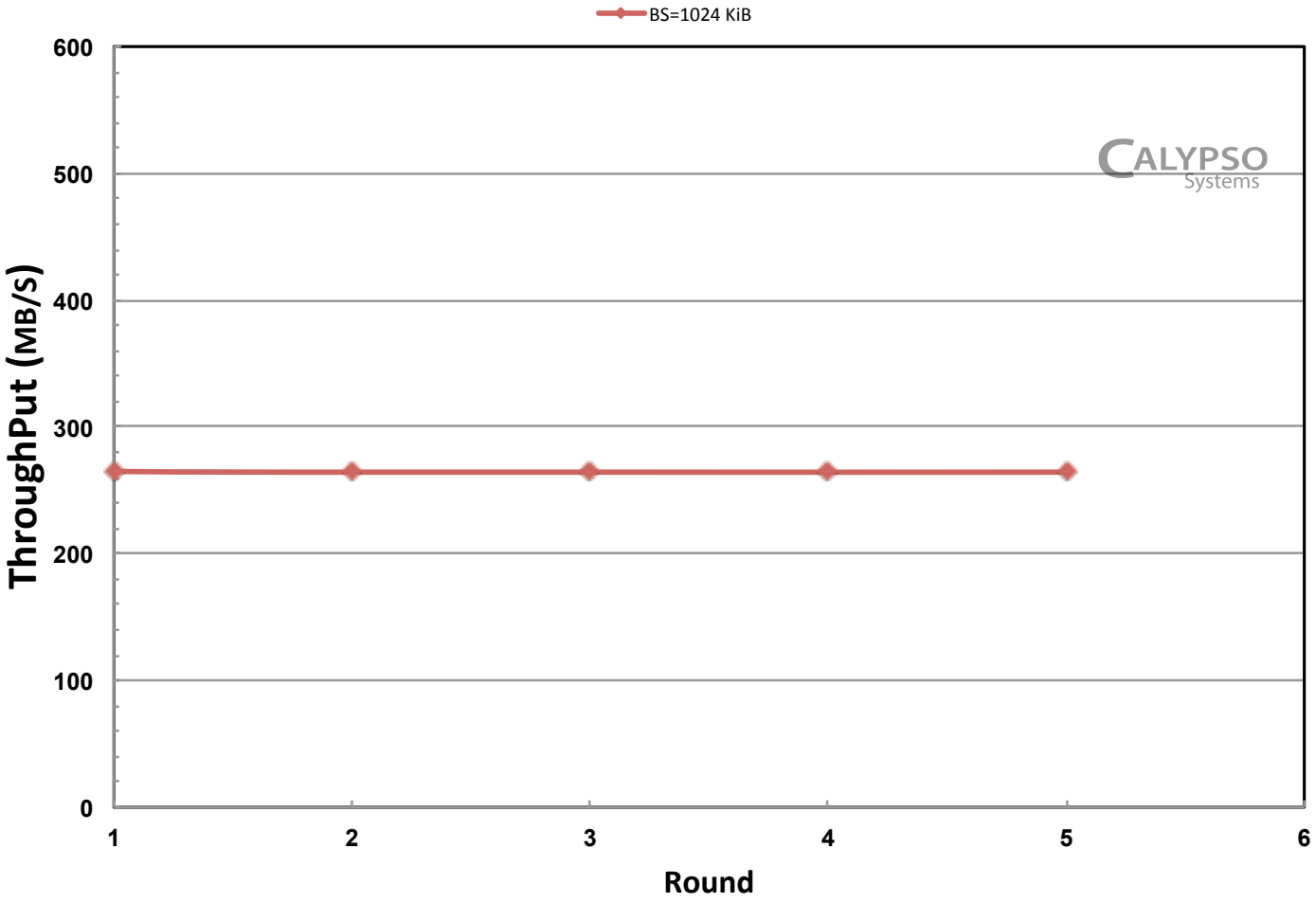
Device Under Test (DUT)		VENDOR: ABC CO.	SSD MODEL NO: MLC-B 160 GB	TEST SPONSOR	CALYPSO Systems

		DUT Preparation		Test Loop Parameters		Steady State	
Serial No.	0000-1111-FFFF						
Firmware Rev	02HD	Purge	Security Erase	REQUIRED:		Convergence	YES
Capacity	160 GB	Pre-Conditioning		Data Pattern	RND	Rounds	1-5
NAND Type	MLC	Workload Independent	2X SEQ/128KiB	Tester's Choice:		PC AR	100%
Device I/F	3 Gb/s SATA			OIO/Thread (QD)	2	AR AMOUNT	16 GiB
Test Platform	RTP 2.0 CTS 6.5	Workload Dep.	SEQ 1024KiB	Thread Count (TC)	1	AR Segments	2048

Client Throughput Test - SS Convergence - Read



Test Run Date:	11/15/2011 12:46 AM	Report Run Date:	11/21/2011 04:50 PM

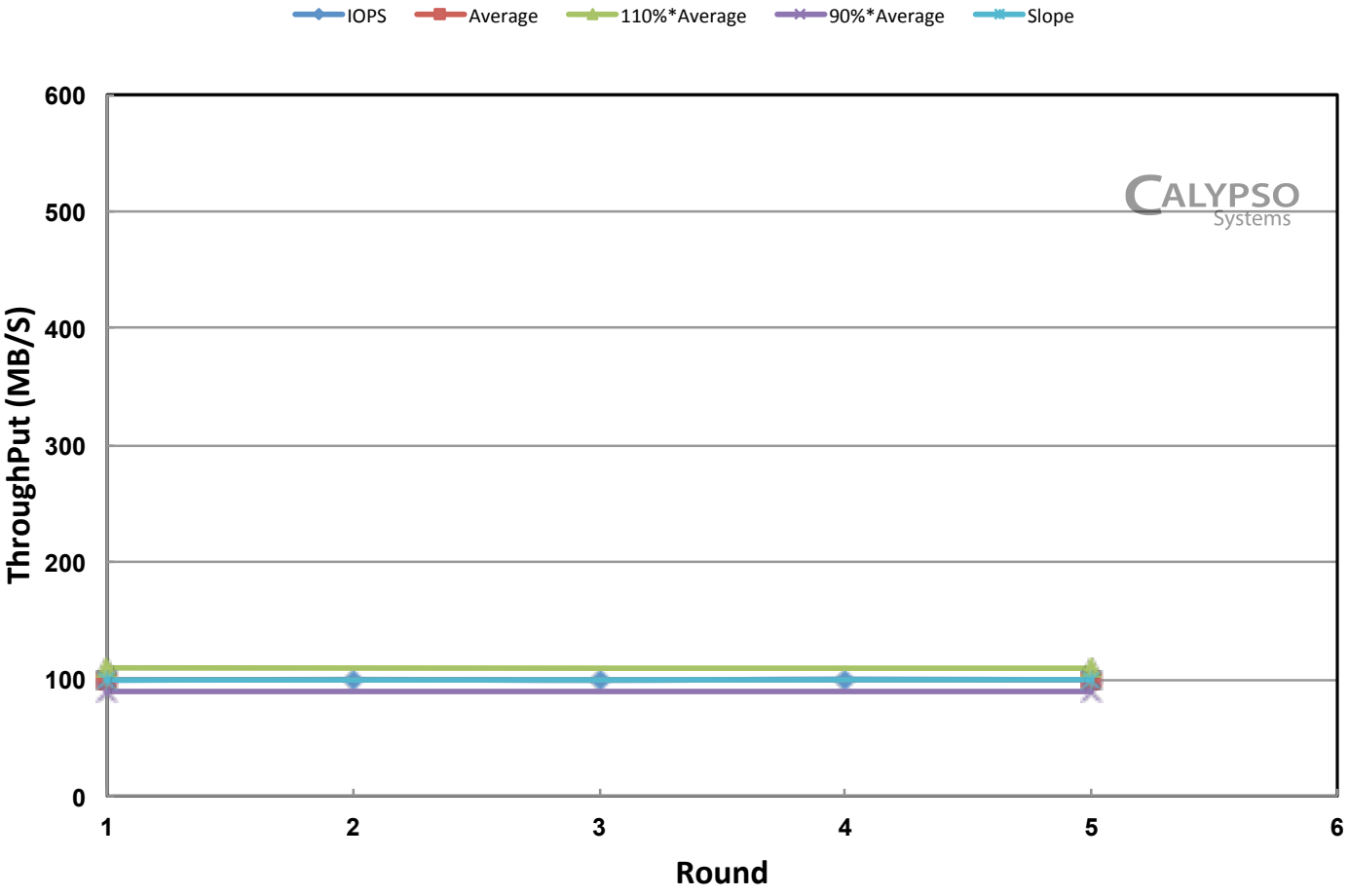
Client Throughput Test (REQUIRED) - Report Page

SNIA SSS TWG: Solid State Storage Performance Test Specification (PTS)

Device Under Test (DUT)		VENDOR: ABC CO.	SSD MODEL NO: MLC-B 160 GB	TEST SPONSOR	CALYPSO Systems

Serial No.	0000-1111-FFFF	DUT Preparation		Test Loop Parameters		Steady State	
Firmware Rev	02HD	Purge	Security Erase	REQUIRED:		Convergence	YES
Capacity	160 GB	Pre-Conditioning		Data Pattern	RND	Rounds	1-5
NAND Type	MLC	Workload Independent	2X SEQ/128KiB	Tester's Choice:		PC AR	100%
Device I/F	3 Gb/s SATA			OIO/Thread (QD)	2	AR AMOUNT	16 GiB
Test Platform	RTP 2.0 CTS 6.5	Workload Dep.	SEQ 1024KiB	Thread Count (TC)	1	AR Segments	2048

Client - Steady State Measurement Window – SEQ/1024 KiB



Steady State Determination Data

Average ThroughPut:			99.4
Allowed Maximum Data Excursion:	19.9	Measured Maximum Data Excursion:	0.9
Allowed Maximum Slope Excursion:	9.9	Measured Maximum Slope Excursion:	0.2
Least Squares Linear Fit Formula:			0.048 * R + 99.264

Test Run Date:	11/15/2011 12:46 AM	Report Run Date:	11/21/2011 04:50 PM

Client Throughput Test (REQUIRED) - Report Page

SNIA SSS TWG: Solid State Storage Performance Test Specification (PTS)	Rev.	PTS-C 1.0
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Device Under Test (DUT)		VENDOR: ABC CO.	SSD MODEL NO: MLC-B 160 GB	TEST SPONSOR	CALYPSO Systems

Serial No.	0000-1111-FFFF	DUT Preparation		Test Loop Parameters		Steady State	
Firmware Rev	02HD	Purge	Security Erase	REQUIRED:		Convergence	YES
Capacity	160 GB	Pre-Conditioning		Data Pattern	RND	Rounds	1-5
NAND Type	MLC	Workload Independent	2X SEQ/128KiB	Tester's Choice:		PC AR	100%
Device I/F	3 Gb/s SATA			OIO/Thread (QD)	2	AR AMOUNT	16 GiB
Test Platform	RTP 2.0 CTS 6.5	Workload Dep.	SEQ 1024KiB	Thread Count (TC)	1	AR Segments	2048

Client Throughput - ALL RW Mix & BS – Tabular Data

Block Size (KiB)	Read / Write Mix %	
	0/100	100/0
1024	99.4	264.3

Test Run Date:	11/15/2011 12:46 AM	Report Run Date:	11/21/2011 04:50 PM

Client Throughput Test (REQUIRED) - Report Page

SNIA SSS TWG: Solid State Storage Performance Test Specification (PTS)	Rev.	PTS-C 1.0
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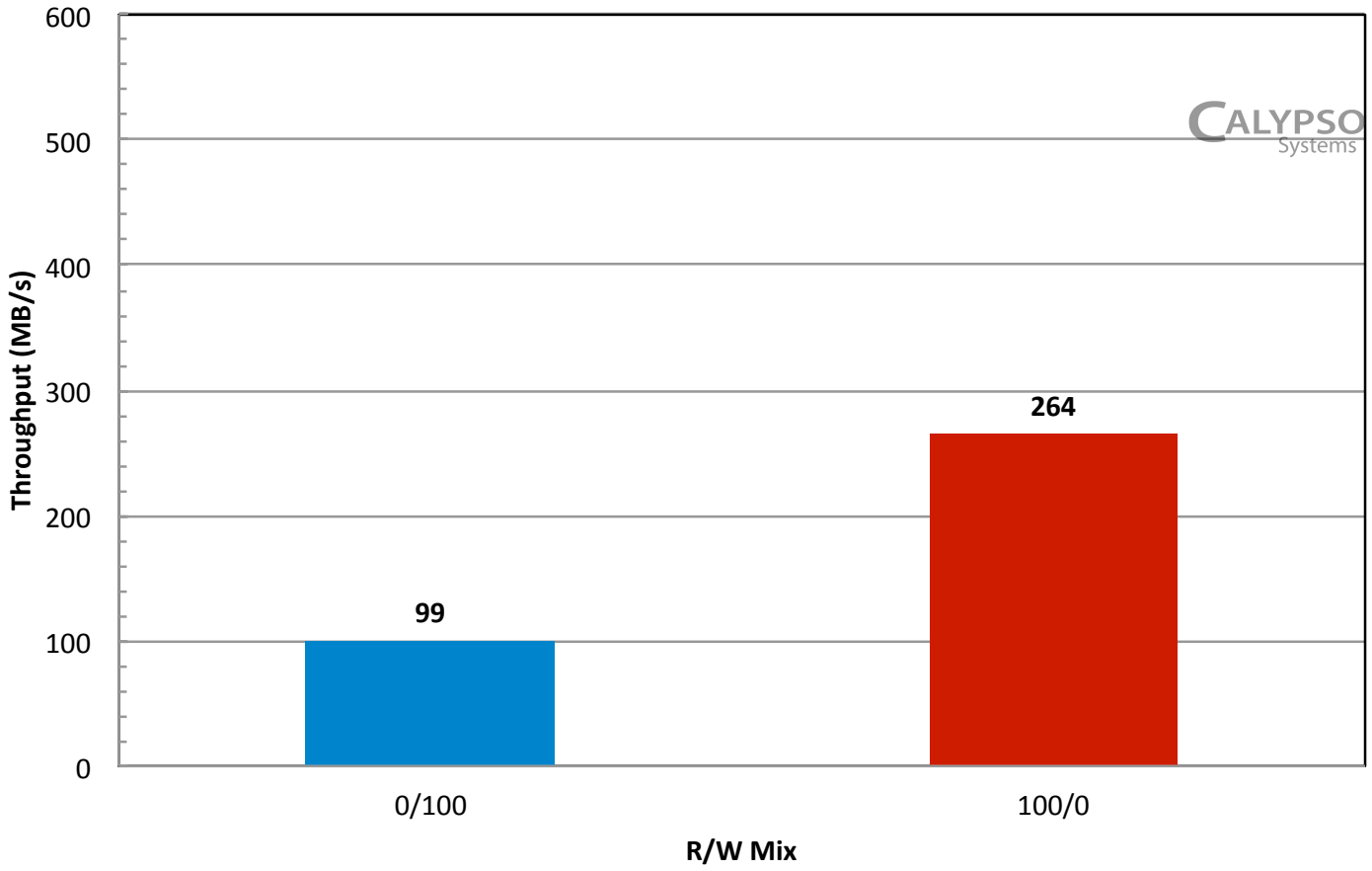
Device Under Test (DUT)		VENDOR: ABC CO.	SSD MODEL NO: MLC-B 160 GB	TEST SPONSOR	CALYPSO Systems

		DUT Preparation		Test Loop Parameters		Steady State	
Serial No.	0000-1111-FFFF						
Firmware Rev	02HD	Purge	Security Erase	REQUIRED:		Convergence	YES
Capacity	160 GB	Pre-Conditioning		Data Pattern	RND	Rounds	1-5
NAND Type	MLC	Workload Independent	2X SEQ/128KiB	Tester's Choice:		PC AR	100%
Device I/F	3 Gb/s SATA			OIO/Thread (QD)	2	AR AMOUNT	16 GiB
Test Platform	RTP 2.0 CTS 6.5	Workload Dep.	SEQ 1024KiB	Thread Count (TC)	1	AR Segments	2048

Client Throughput - ALL RW Mix & BS - 2D Plot



MLC-B Test Report
Summary Report Page - LATENCY

SNIA Solid State Storage Performance Test Specification (PTS)	Rev.	PTS 1.0
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Device Under Test (DUT)	MLC-B	SNIA SSS PTS Summary Report	Calypso Systems, Inc.	CALYPSO Systems

DEVICE INFORMATION		TEST HARDWARE PLATFORM		TEST SOFTWARE		REPORT DATE	
SERIAL NO.	0000-1111-FFFF	SYSTEM	Calypso RTP 2.0	SYS OS	CENT OS 5.6	Report	06DEC11
FIRMWARE REV.	02HD	Motherboard/cpu	Intel 5520HC / W5580	SW TOOL	Calypso CTS 6.5	Test Run	01NOV – 04DEC11
USER CAPACITY	MLC 256 GB	RAM	12GB ECC DDR3	SW Rev	1.19.10	Test Sponsor	Calypso
DEVICE INTERFACE	3 Gb/s SATA	Device Interface	LSA 9212-e 6Gb/s HBA	Release	Nov. 2011	Auditor	N/A

Test Description

Purpose	To measure AVE & MAX Response times at selected BS & RW Mixes measured in mSec
Test Outline	PURGE, then apply preconditioning until Steady State is achieved according to the SNIA PTS
Preconditioning	PURGE followed by SNIA PTS prescribed WIPC & WDPC

Test Set Up

PTS-C	TEST	Purge	DP	OIO	WIPC		WDPC		STEADY STATE	
					PC AR	TEST AR	AR AMT	SEGMENTS	WORKLOAD	ROUNDS
10.0	LATENCY - REQUIRED	Security Erase	RND	TC 1 QD 1	100%	100%	16 GiB	2048	LAT LOOP	12 – 16

Select Performance Data

RND 4KiB R AVE	RND 4KiB W AVE	RND 4KiB R MAX	RND 4KiB W MAX
0.190 mSec	1.000 mSec	1.430 mSec	288.3 mSec

Test Sponsor – Special Notes

ITEM	NOTATION	COMMENTS

Test Run Date:	11/16/2011 01:01 AM	Report Run Date:	11/22/2011 10:40 AM

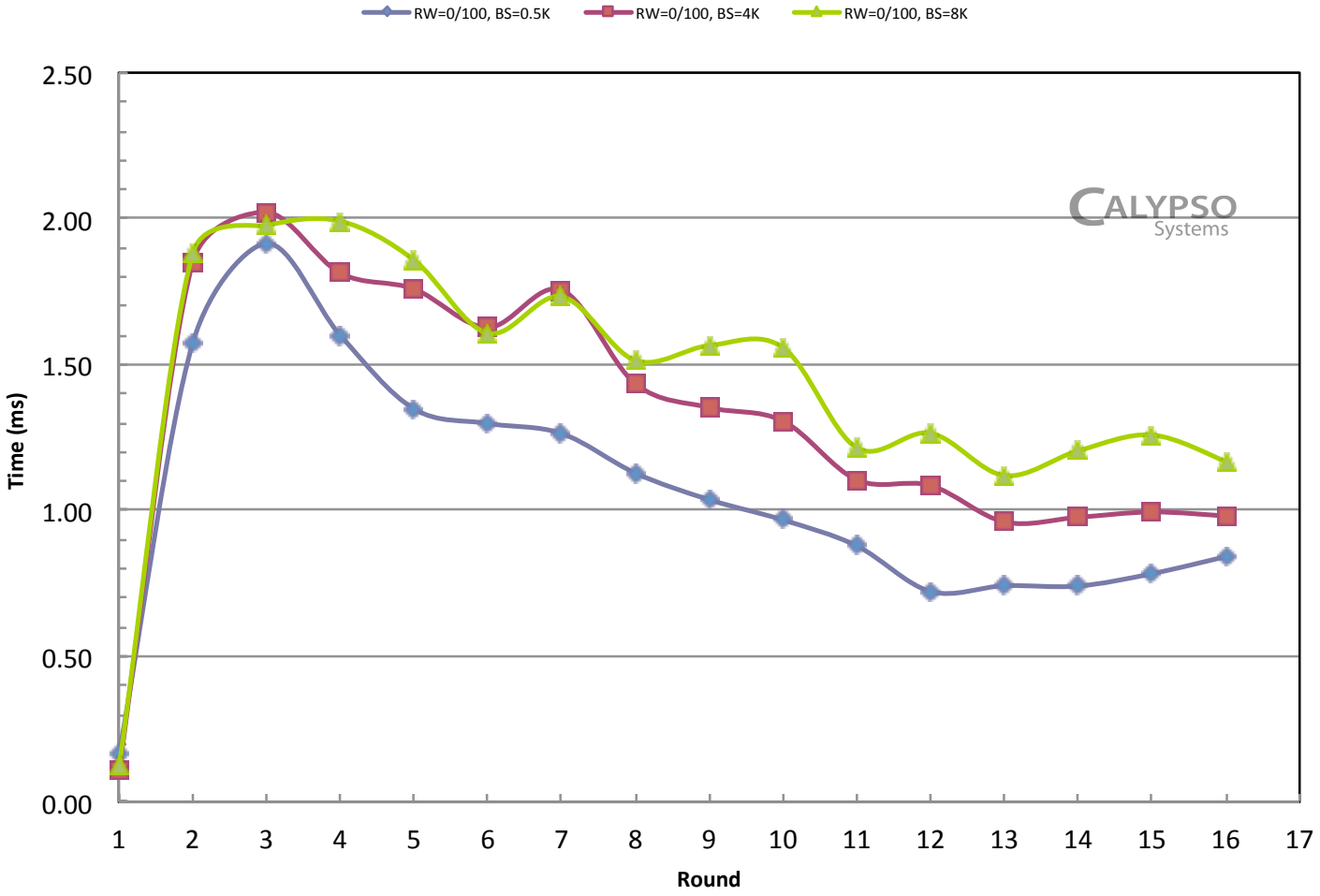
Client Latency (REQUIRED) - Report Page

SNIA SSS TWG: Solid State Storage Performance Test Specification (PTS)	Rev.	PTS-C 1.0
	Page	1 of 6

Device Under Test (DUT)		VENDOR: ABC CO.	SSD MODEL NO: MLC-B 160 GB	TEST SPONSOR	CALYPSO Systems

		DUT Preparation		Test Loop Parameters		Steady State	
Serial No.	0000-1111-FFFF						
Firmware Rev	02HD	Purge	Security Erase	REQUIRED:		Convergence	YES
Capacity	160 GB	Pre-Conditioning		Data Pattern	RND	Rounds	12-16
NAND Type	MLC	Workload Independent	2X SEQ/128KiB	Tester's Choice:		PC AR	100%
Device I/F	3 Gb/s SATA			OIO/Thread (QD)	1	AR AMOUNT	16 GiB
Test Platform	RTP 2.0 CTS 6.5	Workload Dep.	Full LAT Loop	Thread Count (TC)	1	AR Segments	2048

Client - Steady State Convergence Plot – AVE Latency - 100% Writes



Test Run Date:	11/16/2011 01:01 AM	Report Run Date:	11/22/2011 10:40 AM

Client Latency (REQUIRED) - Report Page

SNIA SSS TWG: Solid State Storage Performance Test Specification (PTS)

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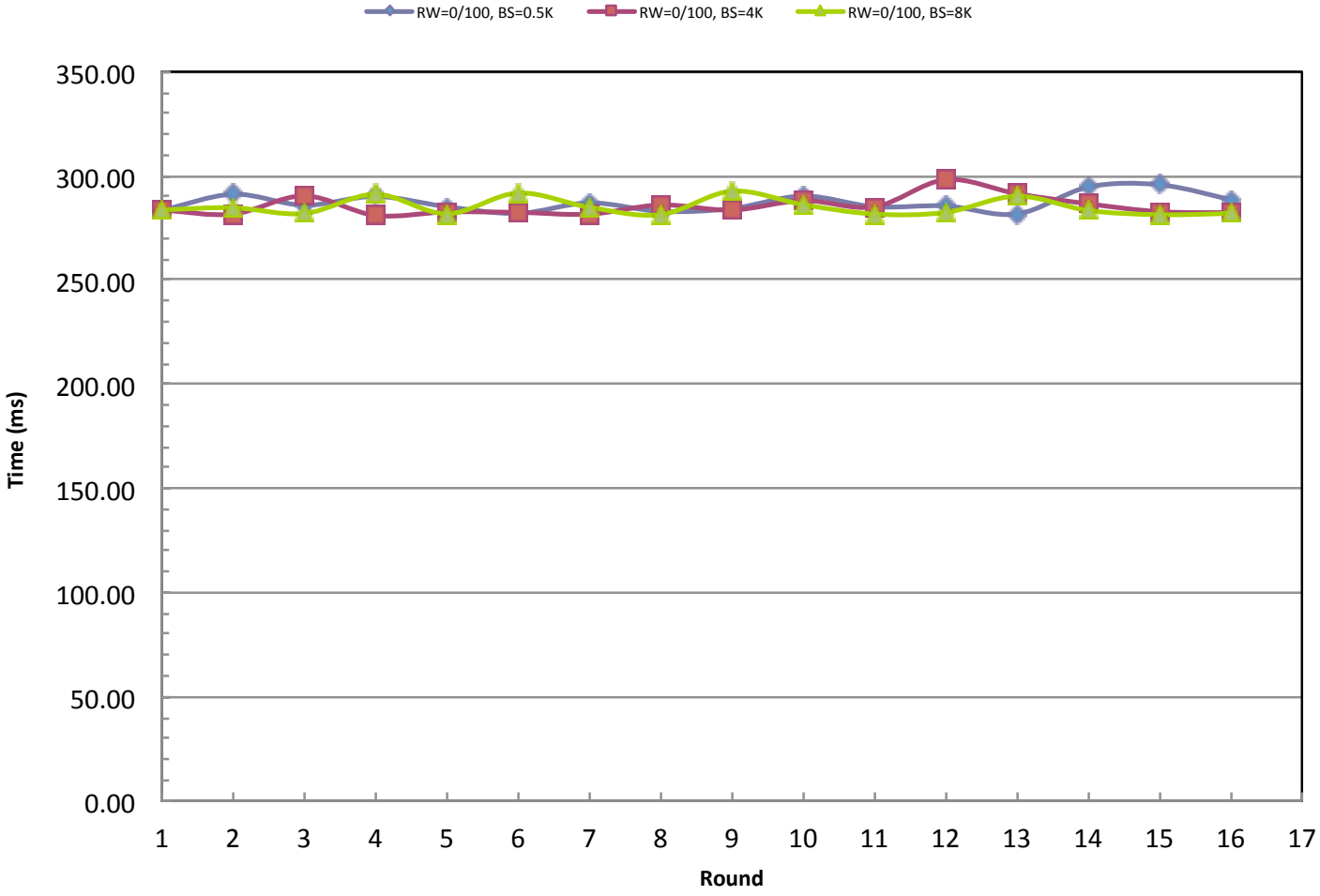
Device Under Test (DUT)		VENDOR: ABC CO.	SSD MODEL NO: MLC-B 160 GB	TEST SPONSOR	CALYPSO Systems

		DUT Preparation		Test Loop Parameters		Steady State	
Serial No.	0000-1111-FFFF						
Firmware Rev	02HD	Purge	Security Erase	REQUIRED:		Convergence	YES
Capacity	160 GB	Pre-Conditioning		Data Pattern	RND	Rounds	12-16
NAND Type	MLC	Workload Independent	2X SEQ/128KiB	Tester's Choice:		PC AR	100%
Device I/F	3 Gb/s SATA			OIO/Thread (QD)	1	AR AMOUNT	16 GiB
Test Platform	RTP 2.0 CTS 6.5	Workload Dep.	Full LAT Loop	Thread Count (TC)	1	AR Segments	2048

Client - Steady State Convergence Plot – MAX Latency - 100% Writes



Test Run Date:	11/16/2011 01:01 AM	Report Run Date:	11/22/2011 10:40 AM

Client Latency (REQUIRED) - Report Page

SNIA SSS TWG: Solid State Storage Performance Test Specification (PTS)

Rev. **PTS-C 1.0**

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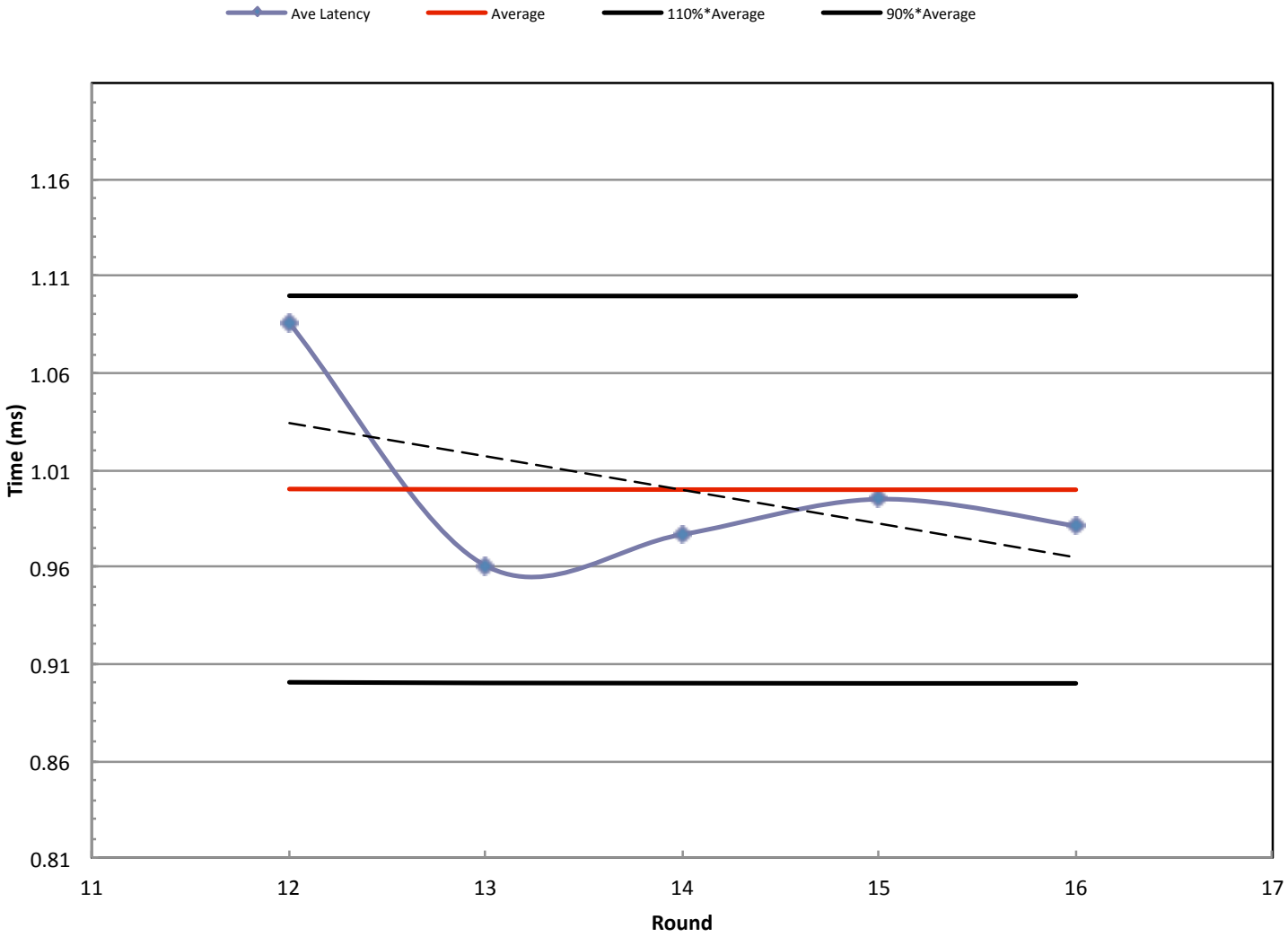
Device Under Test (DUT)		VENDOR: ABC CO.	SSD MODEL NO: MLC-B 160 GB	TEST SPONSOR	CALYPSO Systems
Serial No.	0000-1111-FFFF	DUT Preparation		Test Loop Parameters	Steady State
Firmware Rev	02HD	Purge	Security Erase	REQUIRED:	Convergence: YES
Capacity	160 GB	Pre-Conditioning		Data Pattern: RND	Rounds: 12-16
NAND Type	MLC	Workload Independent	2X SEQ/128KiB	Tester's Choice:	PC AR: 100%
Device I/F	3 Gb/s SATA			OIO/Thread (QD): 1	AR AMOUNT: 16 GiB
Test Platform	RTP 2.0 CTS 6.5	Workload Dep.	Full LAT Loop	Thread Count (TC): 1	AR Segments: 2048

Client - Steady State Measurement Window – RND/4KiB



Steady State Determination Data

Average Latency (ms):			0.999
Allowed Maximum Data Excursion:	0.200	Measured Maximum Data Excursion:	0.125
Allowed Maximum Slope Excursion:	0.100	Measured Maximum Slope Excursion:	0.070
Least Squares Linear Fit Formula:			-0.017 * R + 1.244

Test Run Date:	11/16/2011 01:01 AM	Report Run Date:	11/22/2011 10:40 AM

Client Latency (REQUIRED) - Report Page

SNIA SSS TWG: Solid State Storage Performance Test Specification (PTS)

Device Under Test (DUT)		VENDOR: ABC CO.	SSD MODEL NO: MLC-B 160 GB	TEST SPONSOR	CALYPSO Systems

		DUT Preparation		Test Loop Parameters		Steady State	
Serial No.	0000-1111-FFFF						
Firmware Rev	02HD	Purge	Security Erase	REQUIRED:		Convergence	YES
Capacity	160 GB	Pre-Conditioning		Data Pattern	RND	Rounds	12-16
NAND Type	MLC	Workload Independent	2X SEQ/128KiB	Tester's Choice:		PC AR	100%
Device I/F	3 Gb/s SATA			OIO/Thread (QD)	1	AR AMOUNT	16 GiB
Test Platform	RTP 2.0 CTS 6.5	Workload Dep.	Full LAT Loop	Thread Count (TC)	1	AR Segments	2048

Client - AVE and MAX Response Time - ALL RW Mix & BS – Tabular Data

Average Response Time (ms)			
	Read / Write Mix %		
Block Size (KiB)	0/100	65/35	100/0
0.5	0.77	0.34	0.10
4	1.00	0.65	0.19
8	1.20	0.57	0.22

Maximum Response Time (ms)			
	Read / Write Mix %		
Block Size (KiB)	0/100	65/35	100/0
0.5	289.26	283.76	1.04
4	288.29	283.21	1.43
8	283.90	269.74	4.77

Test Run Date:	11/16/2011 01:01 AM	Report Run Date:	11/22/2011 10:40 AM

Client Latency (REQUIRED) - Report Page

SNIA SSS TWG: Solid State Storage Performance Test Specification (PTS)	Rev.	PTS-C 1.0
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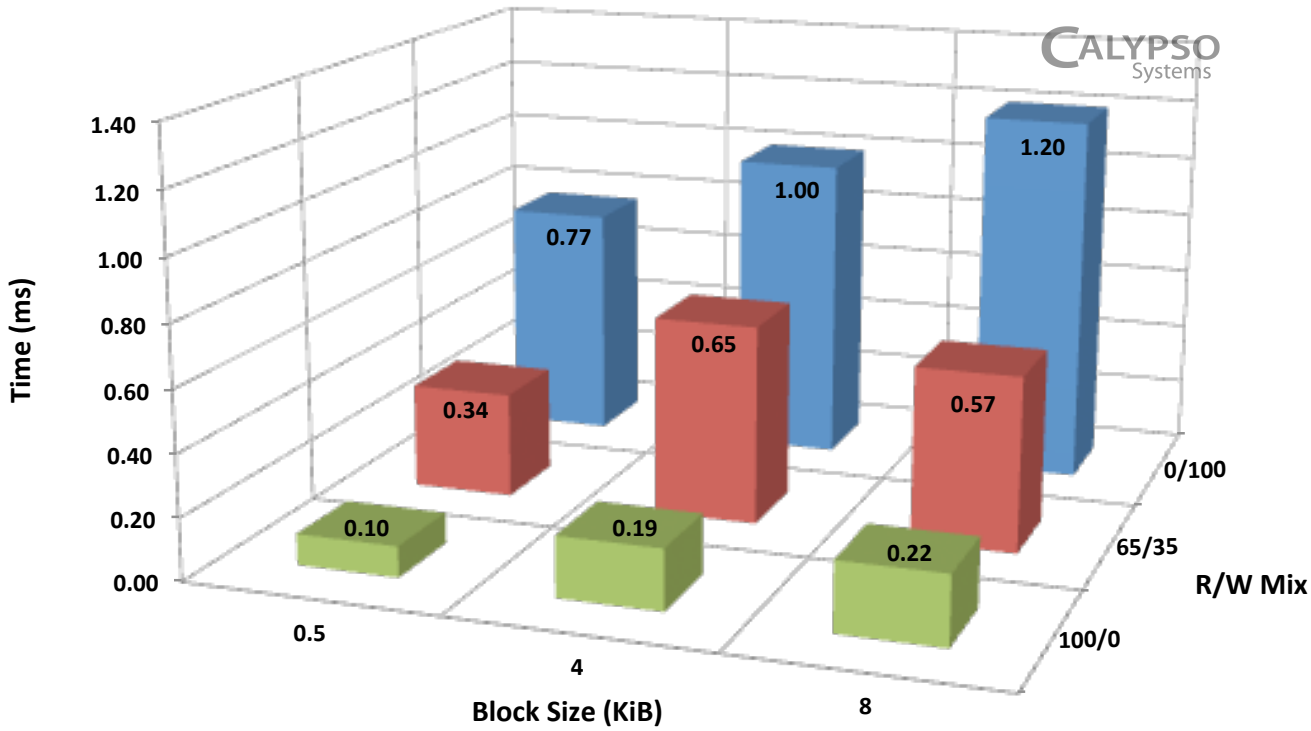
Device Under Test (DUT)		VENDOR: ABC CO.	SSD MODEL NO: MLC-B 160 GB	TEST SPONSOR	CALYPSO Systems
Serial No.	0000-1111-FFFF	DUT Preparation		Test Loop Parameters	Steady State
Firmware Rev	02HD	Purge	Security Erase	REQUIRED:	Convergence: YES
Capacity	160 GB	Pre-Conditioning		Data Pattern: RND	Rounds: 12-16
NAND Type	MLC	Workload Independent	2X SEQ/128KiB	Tester's Choice:	PC AR: 100%
Device I/F	3 Gb/s SATA			OIO/Thread (QD): 1	AR AMOUNT: 16 GiB
Test Platform	RTP 2.0 CTS 6.5	Workload Dep.	Full LAT Loop	Thread Count (TC): 1	AR Segments: 2048

Client - AVE Latency vs BS and R/W Mix - 3D Plot



Test Run Date:	11/16/2011 01:01 AM	Report Run Date:	11/22/2011 10:40 AM

Client Latency (REQUIRED) - Report Page

SNIA SSS TWG: Solid State Storage Performance Test Specification (PTS)	Rev.	PTS-C 1.0
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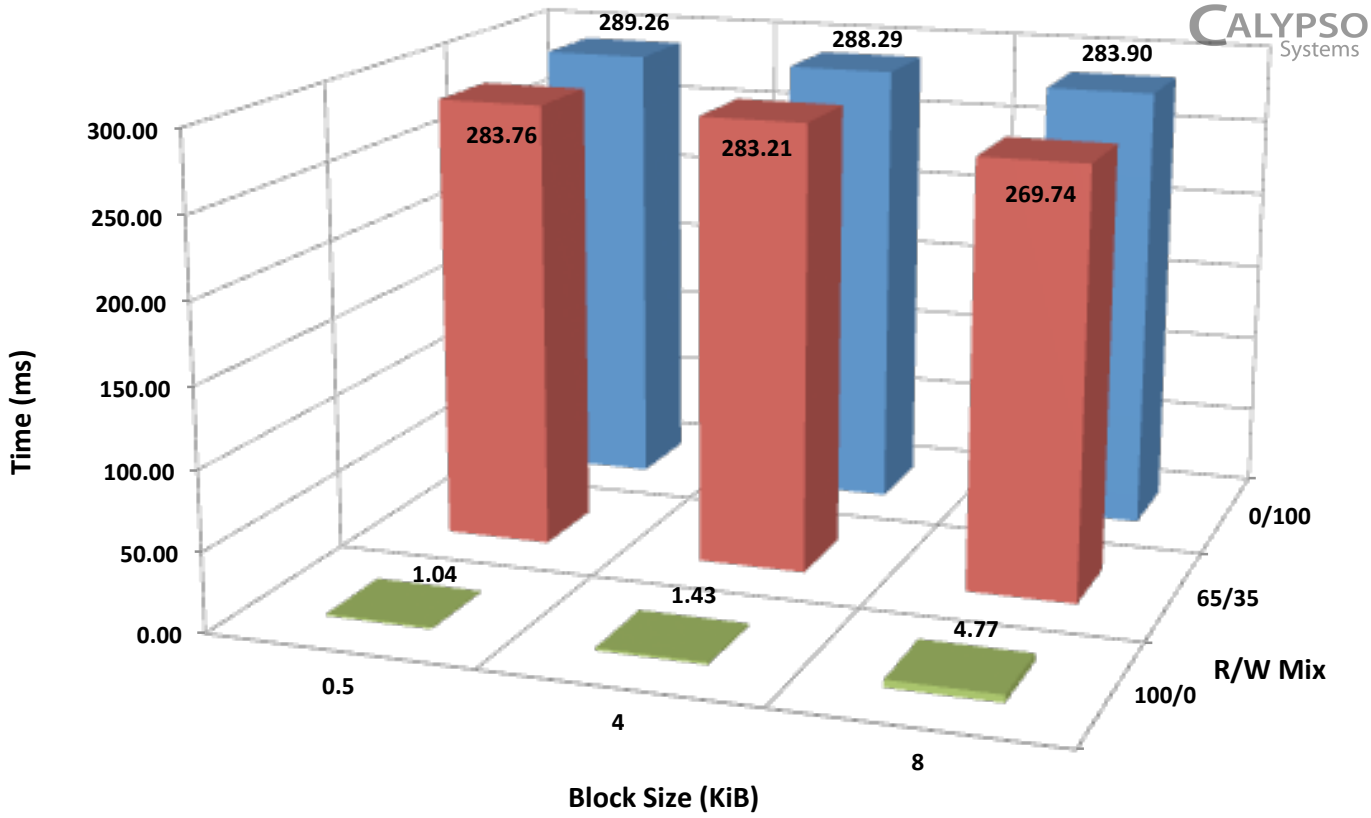
Device Under Test (DUT)		VENDOR: ABC CO.	SSD MODEL NO: MLC-B 160 GB	TEST SPONSOR	CALYPSO Systems
Serial No.	0000-1111-FFFF	DUT Preparation		Test Loop Parameters	Steady State
Firmware Rev	02HD	Purge	Security Erase	REQUIRED:	Convergence: YES
Capacity	160 GB	Pre-Conditioning		Data Pattern: RND	Rounds: 12-16
NAND Type	MLC	Workload Independent	2X SEQ/128KiB	Tester's Choice:	PC AR: 100%
Device I/F	3 Gb/s SATA			OIO/Thread (QD): 1	AR AMOUNT: 16 GiB
Test Platform	RTP 2.0 CTS 6.5	Workload Dep.	Full LAT Loop	Thread Count (TC): 1	AR Segments: 2048

Client - MAX Latency vs BS and R/W Mix - 3D Plot