

RAID JBOD mode Performance & Burn In Test Rev. 1.0

Table of Contents

- 1. Overview
- 2. Performance Measurement Tools and Results
 - 2.1 Test Platform
 - 2.2 Test target and use SATA III / Crucial M550 CT128M550SSD1 2.5" 128GB
 - 2.3 Install Hardware
 - 2.4 BIOS & Windows 10 x64 OS environment setup
 - 2.5 CrystalDiskMark 5.2.1 x64 performance test
 - 2.6 AS SSD Benchmark 1.9 performance test
 - 2.7 ATTO Disk Benchamrk 2.47 performance test
 - 2.8 AnvilBenchmark_V110_B337 Benchmark performance test

3. Burn In Tests and Results

- 3.1 BurnInTest V8.1 Pro burn in test
- 4. Summary

1. Overview

R2046A RAID card offers SATA 3 interface, built-in 2-port SATA 7-pin connector, can be combined two SATA SSD into RAID 0, RAID 1, JBOD mode.

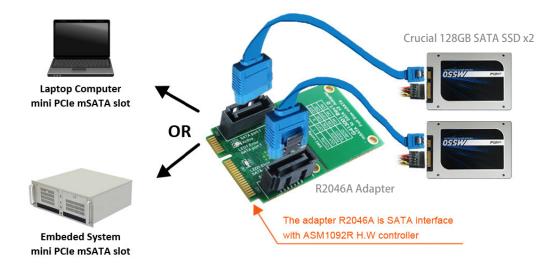
This test report is based on SATA III 128GB SSD x2, JBOD mode as a benchmark.

2. Tools and Results of Performance Measurement

2.1 <u>Test Platform:</u>

M/B :	ASRock Z170 Extreme 7+
CPU :	Intel i5-6400, 2.7GHz/ 6M Cache/ LGA1151
Memory :	Kingston KVR21N15D8/8, DDR4-2133MHz, 16G(8GB DIMM*2)
ATX Power :	FSP RAIDER 550, 550W ATX , 12V V2.2 Power Supply
Graphic :	Z170 Chipsets built-in HD Graphics 530
Adapter:	S2073F SATA III to mSATA & CFast Card Converter
OS :	Microsoft Windows 10 64bit OS

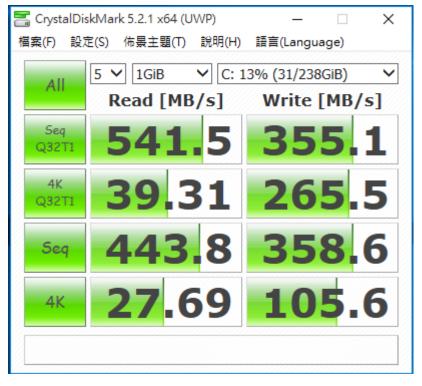
2.2 Test target: R2046A RAID Card and Crucial M550 CT128M550SSD1 2.5" 128GB)x2



2.3 Install Hardware

- 2.3.1 Use two SATA 7pin cable, connect the two 2.5" SSD to R2046A array card. And then inserts R2046A into S2073F converter. Using SATA 7pin signal cable, connect the converter to SATA III Port of ASRock Z170 Extreme 7+.
- 2.4 BIOS & Windows 10 OS environment setup
 - 2.4.1 Install Windows 10 x64 OS.

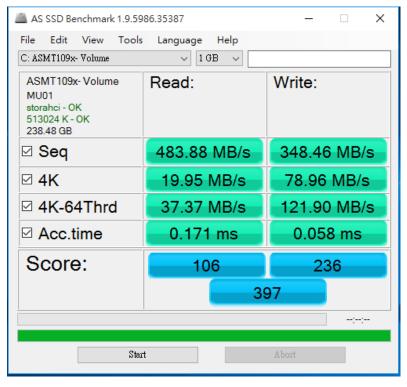
- 2.5 CrystalDiskMark 5.2.1 x64 performance test
 ※Benchmark (Sequential Read & Write / default = 1MB)
 - 2.5.1 shows Crucial CT128M550SSD1/128GBx2 in JBOD performance as below:



2.6 AS SSD Benchmark 1.9 performance test

Benchmark (Read & Write by MB/s, default block size = 16MB)

2.6.1 Shows Crucial CT128M550SSD1/128GBx2 in JBOD performance as below:



2.7 ATTO Disk Benchmark performance test

※Benchmark (Sequential Read / default block size = 8MB)

2.7.1 Shows Crucial CT128M550SSD1/128GBx2 in JBOD performance as below:

Թ Untitled - ATTO Disk Benchmark	_		×	
File View Help				
Drive: [-c-] Force Write Access	-	irect I/O O <u>C</u> ompa	rison	
Transfer Size: 0.5 ▼ to 8192.0 ▼ KB Total Length: 256 MB ▼	<u>O</u> verlapped I/O <u>Neither</u>			
	Queu	e Depth:	4 💌	
Controlled <u>by:</u>			Start	
<< Description >>			~	
			\sim	
Test Results				
Write 🚥 Read 🚥		Write	Read	
0.5 🟴		39992	13085	
1.0		73836	24003	
2.0		126185	39227	
4.0		284819 272572	66560 102943	
16.0		316007	165742	
32.0		309395	219322	
64.0		335969	329848	
128.0		298188	399084	
256.0		315067	460136	
512.0		297600 324197	499414 534199	
2048.0		369406	542903	
4096.0		357913	544125	
8192.0		348617	544125	
0 100 200 300 400 500 600 700 800 90 TransferRate - MB / Sec	0 100	0		
For Help, press F1				

2.8 AnvilBenchmark_V110_B337

2.8.1 Shows Crucial CT128M550SSD1/128GBx2 in JBOD performance as below:

📵 Anvil's Storage L	Jtilities 1.1.0 (2014-J	anuary-1)				-		×	
File Benchmarks	IOmeter System	n Info Settings	Test size 1GB	▼ Drive 🖃 c: []		✓ Screenshot Help	þ		
SSD Benchmark ASMT109x- Volume 256GB/MU01									
Read	Resp. time	MB read	IOPS	MB/s					
Seq 4MB	8.3926ms	2,048.0	119.15	476.61					
4K	0.2003ms	243.7	4,991.83	19.50					
4K QD4	0.4173ms	468.1	9,585.90	37.44		1,194.14			
4K QD16	1.6687ms	468.2	9,588.46	37.45	Run read	1,194.14			
32K	0.2970ms	1,579.9	3,367.03	105.22					
128K	0.5266ms	3,564.0	1,898.90	237.36		3,559.60			
Write	Resp. time	MB written	IOPS	MB/s	Run	3,55	9.60		
Seq 4MB	11.4102ms	1,024.0	87.64	350.56					
4K	0.0393ms	640.0	25,461.78	99.46		2,365.46			
4K QD4	0.0576ms	640.0	69,488.58	271.44	Run write	2,365.46			
4K QD16	0.2336ms	640.0	68,500.17	267.58					
Microsoft Windows 1	0 企業版 64 位元 Build	(10240)				ASMT109x- Volume 25			
Z170 Extreme7+/P7.30, CPUSocket			Drives : Notes :		1	Drive C: 238.0/207.4GB free (87.2% NTFS - Cluster size 4096B			
Intel(R) Core(TM) i5-6400 CPU @ 2.70GHz Memory : 16,062 MB			notes:		5	Storage driver storahci			
						Alignment 513024KB OK Compression 100% (Incomp	vressible)		
						compression 100 % (Incomp	ressible		

3. Burn In Tests and Results

- 3.1 BurnInTest v8.1 Pro
 - 3.1.1 system information for Crucial CT128M550SSD1/128GBx2 in JBOD as below:



3.1.2 show 2.5" SSD/128GBx2 in JBOD test mode(default cyclic -- 10 ways cycle test)

BurnInTest V8.1 Pro (1010) File Edit Configuration Test C	uick Tests Help	- 🗆 ×
	rent configuration	✓ ▶ ■ ②
System Information Burn In Results Memory	Event Log Temp	erature
Total Physical Memory: Available Physical Memory: Memory devices: Slot 1:	16062MB 14724MB 8GB DDR4 SDR4	BurnInTest Preferences
Slot 2: Slot 3: Slot 4: Virtual memory:	1.2V, Clk: 1066, 8GB DDR4 SDR4 1.2V, Clk: 1066, Not populated Not populated C:\pagefile.sys (I Temp / Battery Image: Sound Image: CPU Image: Pre-Test Image: Post-Test Image: Video Playback Image: Tape Image: Serial ports Image: Parallel ports Image: Parallel ports Image: Parallel ports Image: Serial ports Image: Parallel ports Image: Parallel ports Image: Parallel ports Image: Parallel ports Image: Serial ports Image: Parallel ports Image: Parallel ports Image: Parallel ports Image: Parallel ports Image: Serial ports Image: Parallel ports Image: Parallel ports Image: Parallel ports Image: Parallel ports Image: Serial ports Image: Parallel ports Image: Parallel ports Image: Parallel ports Image: Parallel ports Image: Serial ports Image: Parallel ports Image: Parallel ports Image: Parallel ports Image: Parallel ports Image: Serial ports Image: Parallel ports Image: Parallel ports Image: Parallel ports Image: Parallel ports Image: Serial ports Image: Parallel ports Image: Parallel ports Image: Parallel ports Image: Parallel ports Image: Serial ports Image: Parallel ports Image: Parallel ports Image: Parallel ports Image: Parallel ports Image: Serial ports Image: Parallel ports Image: Parallel ports Image: Paralelel ports Ima
Graphics		Automatically select all fixed drives at the start of testing
Intel(R) HD Graphics 530 Chip Type: DAC Type: Memory: BIOS: Driver provider: Driver version: Driver version: Driver date; Monitor 1:	Intel(R) HD Grap Internal 1024MB Intel Video BIOS Intel Corporation 10.18.15.4232 6-3-2015 1920x1080x32 5	Drive Test Mode Threshold File size SM 00: [Physical disk NTFS C:] Not Testing SM SM
Disk volumes	1	Test this drive
C: Local Drive, \\?871086e8-0000-0000-00 D: Optical drive, \\?e5bdbc33-15cf-11e7-5 Disk drives 磁磁機: Model: ASMT109x- Volume Serial: 3xopFivuu		Test mode Default (Cyclic) File size 1.00 (% of disk) Seek count 100 Block size 4096 KB Slow drive threshold 0.0 MB/Sec (NA = No threshold warning)
Optical drives		Duty cycle override % (or leave blank to accept default) SMART options Run self test and log SMART errors Log bad sector increase Bad sector threshold 20
D: PIONEER DVD-ROM DVD-230P ((CD/DVDKW)	確定 取消 説明
Ready		지표 사는 위X //에 회원위가

BurnInTest V8.1 Pro (1010)		-		\times
ile Edit Configuration Test Q				
	ent configuration 🗸 ▶ 📕 🕢			
System Information Burn In Results	Event Log Temperature			_
Memory		SV.		5^
Total Physical Memory: Available Physical Memory: Memory devices: Slot 1:	16062MB 14724MB 8GB DDR4 SDRAM PC4-17000	(E)	- Care	1
Slot 2:	1.2V, Clk: 1066.7MHz, Timings 15-15-15-36 (@ Max. freq.) 8GB DDR4 SDRAM PC4-12000			4
0.012.				n-
Slot 3: Slot 4:	1.2V, Clk: 1066.7MHz, Timings 15-15-36 (@ Max. freq.) Not populated Not populated	1	5	
Virtual memory:	C:\pagefile.sys (allocated base size 2944MB)	0	5	
Graphics		N	1.2%	
Intel(R) HD Graphics 530		~		1
Chip Type: DAC Type: Memory:	Intel(R) HD Graphics Family Internal 1024MB	5		0
BIOS: Driver provider: Driver version: Driver date:	Intel Video BIOS Intel Corporation 10.18.15.4232 6-3-2015			
Monitor 1:	1920x1080x32 59Hz (Primary monitor)			
Disk volumes				- 4
	e8-0000-0000-0000-501f00000000} NTFS, (237.99GB total, 207.41GB free) oc33-15cf-11e7-9bc1-806e6f6e6963}\	Y		
Disk drives		1.		32
磁碟機: Model: ASMT109x- Volume	Serial: 3xopFivuui (Disk: 0, Size: 238.48GB, Volumes: C)		135	
		5		
Optical drives				
D: PIONEER DVD-ROM DVD-230P ((CD/DVDRW)		0	
			and the second second	

3.1.3 show Crucial CT128M550SSD1/128GBx2 in JBOD 24-hour Burn-in test PASSED

🐞 BurnInTest V8.1 Pro (1010)							_		\times
File Edit Configuration Te	est Quick	Tests Help							
🕞 🗊 📋 💥 🗓 🗠	Current	onfiguration 🗸		a (2)					
System Information Burn In R	esults Euro	nt Log Tompora	turo						
		nicitog Tempera	ure						_
Results for DESKTOP-BM33									
Test configuration file: LastUs					Status:	IDLE	_	4	<u>.</u>
Start time: Fri Mar 31 14	:24:28 201	7 Stop time:	Sat Api	r 01 14:24:36 2017	Duration:	024h 00m 0	8s		3
									-
Test Name	Cycle	Operations	Errors	Last Error Description					
Disk (C:)	1893	10.404 Trillion	0	No errors					
Temperature	-	-	0	No errors					
Burplo	Test test res	sult					×		
	rest test re.	June							
					_				
					-				
				OK					
View errors by categories									
Ready									

4. Summary

- 4.1 R2046A is SATA III Interface, I/O speed, max. to 600MB/s.
- 4.2 R2046A adapter I/O performance is based on SATA III 2.5" SSD JBOD mode.