

RAID 1 mode Performance & Burn In Test Rev. 1.0

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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.

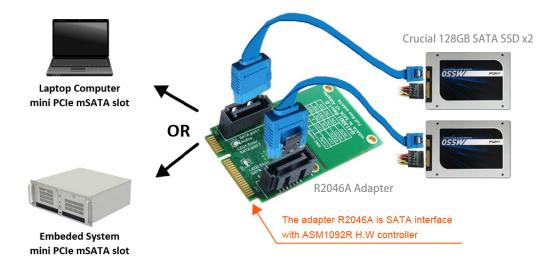
This test report is based on SATA III 128GB SSD x2, RAID 1 mode as a benchmark.

2. Tools and Results of Performance Measurement

2.1 Test Platform:

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

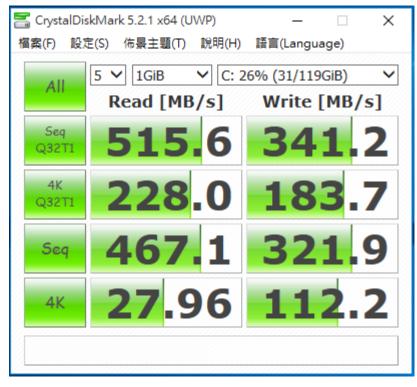
2.2 Test target: R2046A RAID Card and Crucial M550 CT128M550SSD1 2.5" 128GB)x2



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.

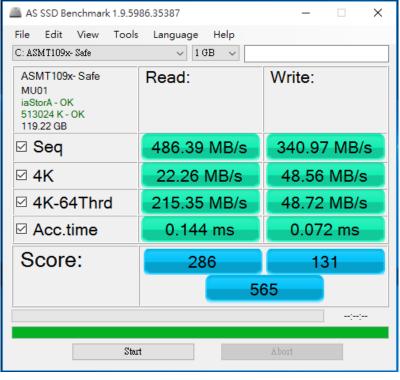
- 2.5 CrystalDiskMark 5.2.1 x64 performance test
 ※Benchmark (Sequential Read & Write / default = 1MB)
 - 2.5.1 shows Crucial CT128M550SSD1/128GBx2 in RAID 1 performance as below:



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 RAID 1 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 RAID 1 performance as below:

庙 Untitled - ATTO Disk Benchmark		- C	י נ	
File View Help				
D ≊∎ <u>5</u> Q⊕?%				
Drive: [-c-] Force Write Acces	s 🔽	Direct I/O		
Transfer Size: 0.5 V to 8192.0 V KB		C 1/O <u>C</u> omparison		
		Overlappe	d I/O	
Total Length: 256 MB	C	<u>N</u> either		
	Qu	ieue Depth:	4	
Controlled <u>by</u> :				
· ·		<u> </u>	Start	
<< Description >>			1	
Test Results				
Write —— Read ——		Write	Read	
0.5 🗾		42240	17664	
1.0		78688	32941	
2.0		86936 307602	58077 110587	
8.0		285471	164937	
16.0		304538	230635	
32.0		262196	325825	
64.0		262272	390345	
128.0		284154	432179	
256.0		270422	461270	
512.0		333874	490293	
1024.0		322638	512525	
2048.0		278652	535532	
4096.0		266834	534199	
8192.0		280594	538066	
0 100 200 300 400 500 600 700 80 Transfer Rate - MB / Sec	00 900 1	000		
or Help, press F1				

2.8 AnvilBenchmark_V110_B3372.8.1 Shows Crucial CT128M550SSD1/128GBx2 in RAID 1 performance as below:

🗿 Anvil's Storage L	Jtilities 1.1.0 (201	4-January-1)				_		×	
File Benchmarks	IOmeter Sy	stem Info Settings	Test size 1GB	Thive C: []		✓ Screenshot Help			
SSD Benchr	nark					ASMT109x- Safe 1	28GB/M	U	
Read	Resp. time		IOPS						
Seq 4MB	8.3906ms		119.18	476.72					
4K	0.1679ms	\$ 290.8	5,955.02	23.26					
4K QD4	0.1477ms	s 1,322.4	27,082.58	105.79		1,780.16			
4K QD16	0.2554ms	3,058.4	62,635.53	244.67	Run read	1,780.16			
32K	0.2485ms	1,888.7	4,024.91	125.78					
128K	0.5298m	3,542.6	1,887.39	235.92		4,008.30	0.00		
Write	Resp. tim	e MB written	IOPS	MB/s	Run	4,00	8.30		
Seq 4MB	11.5352ms	1,024.0	86.69	346.77					
4K	0.0343ms	640.0	29,162.13	113.91		^{2,228.14} 2,228.14			
4K QD4	0.0556m	640.0	71,993.25	281.22	Run write	2,220.14			
4K QD16	0.3222m	640.0	49,667.57	194.01					
Microsoft Windows 1		Build (10240)	Defense			ASMT109x- Safe 128GB			
Z170 Extreme7+/P7.30, CPUSocket Intel(R) Core(TM) i5-6400 CPU @ 2.70GHz			Drives : Notes :			Drive C: 118.7/87.5GB free (73.7%) NTFS - Cluster size 4096B			
Memory : 16,062 MB			NOLES .			Storage driver iaStorA 14	.5.0.1081		
Professional Ed						Alignment 513024KB OK Compression 100% (Incomp	ressible)		
						Compression 200 % (Incomp			

3. Burn In Tests and Results

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



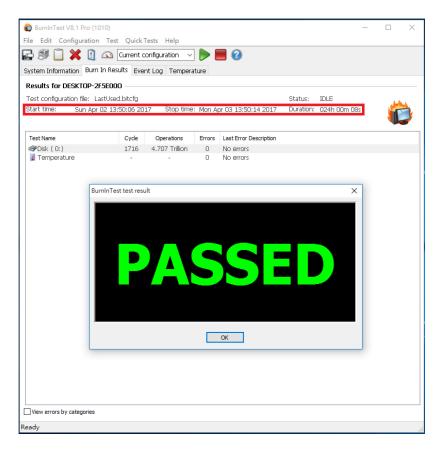
3.1.2 show 2.5" SSD/128GBx2 in JBOD test mode(default cyclic -- 10 ways cycle test)

BurnInTest V8.1 Pro (1010)	D. 1 T. 1. 11.			_	
File Edit Configuration Test (
🚽 🔊 📋 X 🗓 🖎 🛄	rent configuration	✓ ▶ ■			
System Information Burn In Results	Event Log Temp	erature			
Memory		11-	17.		20
Total Physical Memory: Available Physical Memory: Memory devices: Slot 1:	16062MB 14497MB 8GB DDR4 SDR4	BurnInTest Preferences	2110	1/51	- And
	1.2V, Clk: 1066.				
Slot 2:	8GB DDR4 SDRA	👔 Temp / Battery 🛛 🕥 Sound		Printer	🕉 Pre-Test
		🔓 Post-Test 🛛 🍘	Video Playback		Tape
Slot 3: Slot 4: Virtual memory: Graphics	1.2V, Clk: 1066. Not populated Not populated C:\pagefile.sys (.		Plug-in 🛛 🕼 Mar	nagement	D Graphics PCle Network
Intel(R) HD Graphics 530		Automatically select all fixed drive	es at the start of testin	9	
Chip Type: DAC Type:	Intel(R) HD Grap Internal		st Mode Ti t Testing	nreshold File	size SM
Memory: BIOS: Driver provider: Driver version: Driver date: Monitor 1:	1024MB Intel Video BIOS Intel Corporation 10.18.15.4232 6-3-2015 1920x1080x32 \$		fault (Cyclic) N t Testing	A 1.00) N
Disk volumes	19	Edit details for drive: C: [Local driv	ve]		
C: Local Drive, \\?87108	6e8-0000-0000-00	Test this drive 🗹			
D: Optical drive, \\?09ad		Test mode Default (Cyd	lic)		\sim
		File size 1.00 (% of disk) See	k count 100	
Disk drives		Block size 4096 VK	в	·	
磁碟機: Model: ASMT109x- Safe S	oriali IBpilodti II (D	Slow drive threshold 0.0 M	4B/Sec (NA = No threst	old warning)	
USTREND, MODEL MOMITIUSA- Sale S	епа, терурицен (р	Duty cycle override % (or SMART options	leave blank to accept d		
Optical drives	1 1 1 1 1 1	Run self test and log SMART erro	_		
D: PIONEER DVD-ROM DVD-230P	(CD/DVDRW)	Log bad sector increa	ase 🗌 Bad sector th	reshold 20	
	N/		74.44		*0.77
Ready			確定	取満	說明

R2046A M.2 to SATA 2-port RAID Card

BurnInTest V8.1 Pro (1010) File Edit Configuration Test Q	uick Tests Help	-		×
	ent configuration 🗸 խ 📕 🥝			
System Information Burn In Results	Event Log Temperature			
Memory		171		~
Total Physical Memory: Available Physical Memory: Memory devices: Slot 1:	16062MB 14497MB 8GB DDR4 SDRAM PC4-17000	15	C. A. M.	
Slot 2:	1.2V, Clk: 1066.7MHz, Timings 15-15-15-36 (@ Max. freq.) 8GB DDR4 SDRAM PC4-17000			
Slot 3: Slot 4: Virtual memory:	1.2V, Clk: 1066.7MHz, Timings 15-15-15-36 (@ Max. freq.) Not populated Not populated C:pagefile.sys (allocated base size 2944MB)	2	0	Ç
Graphics		N	124	
Intel(R) HD Graphics 530 Chip Type: DAC Type: Memory: BIOS: Driver provider: Driver rovider: Driver rovider: Driver date: Monitor 1: Disk volumes	Intel(R) HD Graphics Family Internal 1024WB Intel Video BIOS Intel Corporation 10.18.15.4232 6-3-2015 1920x1080x32 59Hz (Primary monitor)	as CO	64	10
	e8-0000-0000-0000-501f00000000} NTFS, (118.73GB total, 87.44GB free) ee8-1758-11e7-9bc1-806e6f6e6963}\	X	P	
磁碟機: Model: ASMT109x- Safe Ser Optical drives D: PIONEER DVD-ROM DVD-230P ((rial: IPplpdtLH (Disk: 0, Size: 119.22GB, Volumes: C)		3	101
			0	1.
Ready				

3.1.3 show Crucial CT128M550SSD1/128GBx2 in RAID 1 24-hour Burn-in test PASSED



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 RAID 1 mode.