

# **RAID 0 Mode** Performance & Burn In Test Rev. 1.0

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## 1. Overview

R2056A 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.

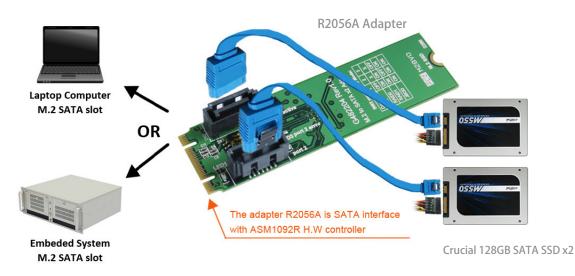
This test report is based on SATA III 128GB SSD x2, RAID 0 mode as a benchmark.

## 2. Tools and Results of Performance Measurement

2.1 Test Platform

M/B :	GIGABYTE <b>Z170X UD5 TH</b>
CPU :	Intel <b>i5-6500,</b> 3.2GHz/ 6M Cache/ LGA1150
Memory :	Kingston KVR21N15D8/8, DDR4-2133MHz, 16GB(8GB DIMM*2)
ATX Power :	COOLER MASTER V750, <b>750W ATX</b> , 12V V2.2 Power Supply
Graphic :	Z170 Chipsets built-in HD Graphics 530
Adapter:	S2093F SATA III to M.2 & CFast Card Converter
OS :	Microsoft Windows 10 64bit OS

2.2 Test target: R2056A RAID Card and Crucial M550 CT128M550SSD1 2.5" 128GB)x2

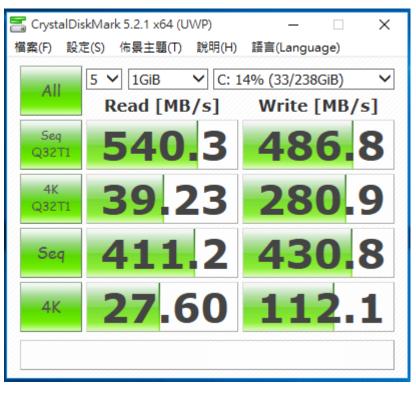


## 2.3 Install Hardware

- 2.3.1 Use two SATA 7pin cable, connect the two 2.5" SSD to R2056A array card. And then inserts R2056A into S2093F converter. Using SATA 7pin signal cable, connect the converter to SATA III Port of GIGABYTE Z170X UD5 TH .
- 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 0 performance as below:



## 2.6 AS SSD Benchmark 1.9 performance test

- Weight Benchmark (Read & Write by MB/s, default block size = 16MB)
- 2.6.1 Shows Crucial CT128M550SSD1/128GBx2 in RAID 0 performance as below:

🚢 AS SSD Benchmark 1.9.5986.35387 — 🗆 🗙						
File Edit View Tools Language Help						
C: ASMT109x- Fast	∼ 1 GB ~					
ASMT109x-Fast MU01 iaStorA - OK 513024 K - OK 238.47 GB	Read:	Write:				
⊠ Seq	484.58 MB/s	469.35 MB/s				
⊠ 4K	23.67 MB/s	106.97 MB/s				
☑ 4K-64Thrd	37.31 MB/s	147.23 MB/s				
☑ Acc.time	0.153 ms	0.047 ms				
Score:	109	301				
	476					
Start Abort						

2.7 ATTO Disk Benchmark performance test

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

2.7.1 Shows Crucial CT128M550SSD1/128GBx2 in RAID 0 performance as below:

庙 Untitled - ATTO Disk Benchmark	- 🗆 X			
File View Help				
Drive:	Direct I/O			
Transfer Size: 0.5 💌 to 8192.0 💌 KB	<ul> <li>○ I/O Comparison</li> <li>● Overlapped I/O</li> </ul>			
Total Length: 256 MB 💌	<ul> <li>Overlapped I/O</li> <li>Neither</li> </ul>			
	Queue Depth: 4			
Controlled by:	· · · · · ·			
	<u>S</u> tart			
<< Description >>	^			
	~			
Test Results				
Write —— Read ——	Write Read			
0.5	49029 14067			
	87370 26491 138479 47888			
4.0	292280 82871			
8.0	406749 122404			
16.0	446958 173015			
32.0	430045 230068			
64.0	433508 300452			
128.0	487893 386583			
256.0	372232 438584			
512.0	457189 484759			
1024.0	369164 526344			
2048.0	432960 545354			
4096.0	414800 368561 368561 541685			
0 100 200 300 400 500 600 700 800 90 Transfer Rate - MB / Sec	0 1000			
L				

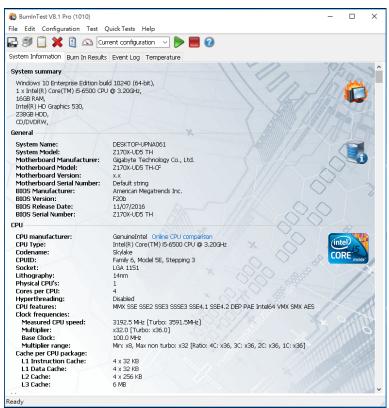
## 2.8 AnvilBenchmark\_V110\_B337

#### 2.8.1 Shows Crucial CT128M550SSD1/128GBx2 in RAID 0 performance as below:

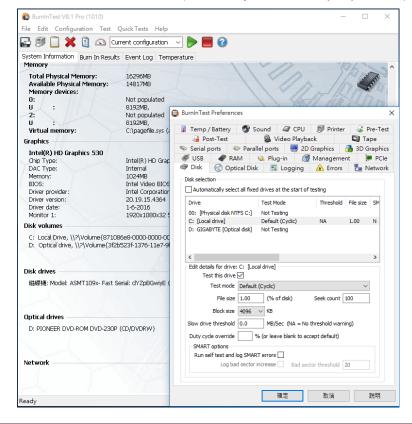
💼 Anvil's Storage Utilities 1.1.0 (2014-January-1)						- 🗆 X
File Benchmarks	IOmeter System	n Info   Settings	Test size 1GB	Trive 🖃 c: []		✓ Screenshot Help
SSD Benchn	nark		ASMT109x- Fast 256GB/MU01			
Read	Resp. time	MB read	IOPS	MB/s		
Seg 4MB	8.6973ms	2,048.0	114.98	459.91		
4K	0.1462ms	334.0	6.840.29	26.72		
4K QD4	0.4178ms	467.5	9,574.63	37,40		
4K QD16	1.6739ms	466.8	9,558.72	37.34	Run read	1,149.50
32K	0.2700ms	1.738.0	3.703.78	115.74		
128K	0.6570ms	2,857.1	1,522,18	190.27		3,657.11
Write	Resp. time	MB written	IOPS	MB/s	Run	3,657.11
Seg 4MB	9.7070ms	1,024.0	1073	412.07		
4K	0.0345ms	640.0	28.945.30	113.07		2,507.61
4K QD4	0.0564ms	640.0	70.983.45	277.28	Run write	2,507.61
4K QD16	0.2312ms	640.0	69,242.13	270.48		
			,			
Microsoft Windows 10	) 企業版 64 位元 Build	(10240)				ASMT109x- Fast 256GB/MU01
	Z170X-UD5 TH-CF/F20b, U3E1 Intel(R) Core(TM) i5-6500 CPU @ 3.20GHz			Drives : Drive C: 238.0/205.1GB free (86.2 Notes : Drive C: 238.0/205.1GB free (86.2		
Memory: 16,296 MB	<u></u>		110105.			Storage driver iaStorA 14.8.0.1042
Professional Edi						Alignment 513024KB OK Compression 100% (Incompressible)

### 3. Burn In Tests and Results

- 3.1 BurnInTest v8.1 Pro
  - 3.1.1 system information for Crucial CT128M550SSD1/128GBx2 in RAID 0 as below:



show 2.5" SSD/128GBx2 in RAID 0 test mode(default cyclic -- 10 ways cycle test)



# R2056A M.2 to SATA 2-port RAID Card

👸 BurnInTest V8.1 Pro (1010)		-		Х
File Edit Configuration Test				
🖬 🗊 📋 💥 🚺 🗠 🗠	rrent configuration 🖂 📂 📕 🧭			
System Information Burn In Results Memory	Event Log Temperature	7.075		_
1 · /		SA	100	S^
Total Physical Memory: Available Physical Memory:	16296MB 14817MB	15	8 6	
Memory devices:	1481/MB		A.	0
O:	Not populated			
U :	8192MB,			
2:	Not populated			
Ū :	8192MB,			
Virtual memory:	C:\pagefile.sys (allocated base size 2944MB)			
Graphics			2	
Intel(R) HD Graphics 530		11		
Chip Type:	Intel(R) HD Graphics Family	~		$\sim$
DAC Type:	Internal	~		
Memory:	1024MB	65		
BIOS:	Intel Video BIOS	(V)		1
Driver provider:	Intel Corporation	)		2
Driver version:	20.19.15.4364			4
Driver date:	1-6-2016	$ \land $		
Monitor 1:	1920x1080x32 59Hz (Primary monitor)	$\checkmark$		
Disk volumes		1		
C: Local Drive, \\?87108 D: Optical drive, \\?3f2b	8668-0000-0000-501f00000000} NTFS, (237.986B total, 205.046B free \$523f-1376-11e7-9bc1-806e6f6e6963}\	, 20		
				1
Disk drives				× .
磁碟機: Model: ASMT109x- Fast S	erial: dYZpBGwiyE (Disk: 0, Size: 238.47GB, Volumes: C)		1 and	
	× SX Store			1
		Pi		62-
Optical drives	S S And S			<u>-</u>
D: PIONEER DVD-ROM DVD-230P	(CD/DVDRW)		6	5
			0	
			-	
				1
Network				
			-	
			C	-
Ready				

## 3.1.3 show Crucial CT128M550SSD1/128GBx2 in RAID 0 24-hour Burn-in test PASSED

👸 BurnInTest V8.1 Pro (1010)						_	$\times$
File Edit Configuration Test	Quick	Tests Help					
🕞 🗊 📋 💥 🗓 🖎	Current c	onfiguration 🗸		2			
System Information Burn In Res							
Results for DESKTOP-UPNA0							
Test configuration file: LastUse					Status: IDLE		
Start time: Tue Mar 28 14		17 Stop time	Wed N	Mar 29 14:23:27 2017	Duration: 024h 00m 07s		4
							1
Test Name	Cyde	Operations	Errors	Last Error Description			
Test (C:)	1245	6.845 Trillion	0	No errors			
📕 Temperature	-	-	0	No errors			
		h.			~		
Burnin Tes	t test resu	IIT			×		
			_	011			
				OK			
View errors by categories							
Ready							

### 4. Summary

- 4.1 R2056A is SATA III Interface, I/O speed, max. to 600MB/s.
- 4.2 R2056A adapter I/O performance is based on SATA III 2.5" SSD RAID 0 mode.