

# R2106E SATA 3 to mSATA 2-port & M.2 2-port RAID

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

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## 1. Overview

R2106E RAID card offers SATA 3 interface, built-in 2-port Mini PCI-e 52-pin connector & 2-port M.2 B key connector, can be combined mSATA SSD into a RAID 0, RAID 1, JBOD mode. **This test report is based mSATA SSD x2, RAID 1 set as a benchmark.** 

## 2. Tools and Results of Performance Measurement

### 2.1 Test Platform

M/B :	ASRock <b>Z97 Extreme 6</b>
CPU :	Intel <b>i5-4426,</b> 3.2GHz/ 6M Cache/ LGA1150
Memory :	Kingston KVR16N11S8/4, DDR3-1600MHz, 8G(4GB DIMM*2)
ATX Power :	FSP RAIDER 550, <b>550W ATX</b> , 12V V2.2 Power Supply
Graphic :	Z97 Chipsets built-in HD Graphics 4600
OS :	Microsoft Windows 8.1 64bit OS

2.2 Test target: R2106E RAID Card and mSATA SSD(Crucial CT-128M550SSD3/128GBx2)



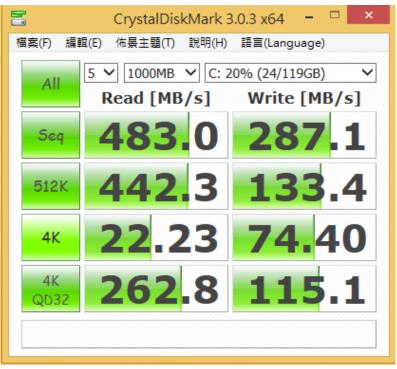
R2106E Adapter

CT128M550SSD3 x2

### 2.3 Install Hardware

- 2.3.1 Insert mSATA SSDx2 into R2106E converter's Mini PCI-e connector, and then with coppers, and screws to fix SSDs. (Please refer to the Installation Notes).
  Connect R2106E converter to SATA III Port of ASRock Z97 Extreme6.
- 2.4 BIOS & Windows 8 OS environment setup
  - 2.4.1 Install Windows 8.1 x64 OS.

- 2.5 CrystalDiskMark 3.0.1 x64 performance test %Benchmark (Sequential Read & Write / default = 1MB)
  - 2.5.1 Used <u>Crucial CT-128M550SSD3/128GBx2</u> in **RAID 1** performance as below:



### 2.6 AS SSD Benchmark 1.7 performance test

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

2.6.1 Used Crucial CT-128M550SSD3/128GBx2 in RAID 1 performance as below:

🚢 AS SSD Benchmark 1.7.4739.38088 – 🗆 🗙									
File Edit View Tools Language Help									
C: ASMT109x- Safe v									
ASMT109x- Safe 2143 5 storahci - OK 359424 K - OK 119.24 GB	Read:	Write:							
I Seq	477.06 MB/s	342.22 MB/s							
☑ 4K	22.71 MB/s	50.81 MB/s							
☑ 4K-64Thrd	222.56 MB/s	58.69 MB/s							
✓ Acc.time	0.177 ms	0.074 ms							
Score:	293	144							
	588								
Start Abort									

## 2.7 ATTO Disk Benchmark performance test

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

2.7.1 Used Crucial CT-128M550SSD3/128GBx2 in RAID 1 performance as below:

Թ Untitled - ATTO Disk Benchmark 🗧 🗖 🗡
File View Help
Drive: [-c-] Vite Access V Direct I/O
Transfer Size: 0.5 ▼ to 8192.0 ▼ KB C 1/0 Comparison © verlapped 1/0
Total Length: 256 MB  ▼
Queue Depth: 4
Controlled by:
<< Description >>
×
Test Results
Write 🚥 Read 🚥 Write Read
0.5 <b>-</b> 1.0 <b>-</b> 71538 36589
2.0 122916 64351
4.0 272873 126575
8.0 322120 184037
32.0
64.0 265534 381832
128.0 314326 455658
512.0 260111 499414 269513 532874
203313 532074
4096.0 313592 531555
8192.0 275601 532140
0 100 200 300 400 500 600 700 800 900 1000
Transfer Rate - MB / Sec
For Help, press F1

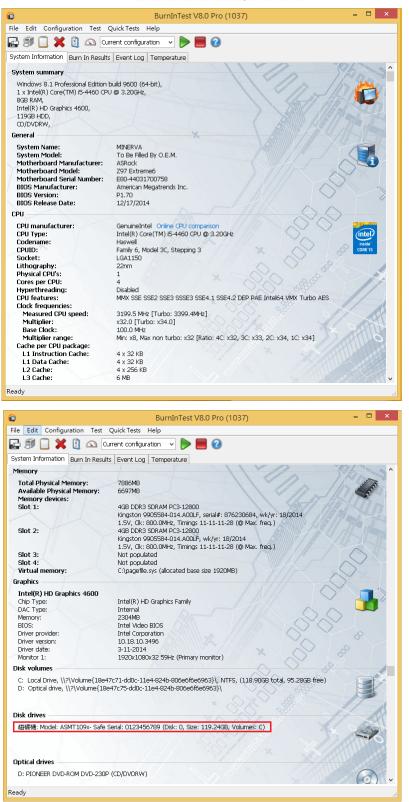
## 2.8 AnvilBenchmark\_V110\_B337

## 2.8.1 Used Crucial CT-128M550SSD3/128GBx2 in RAID 1 performance as below:

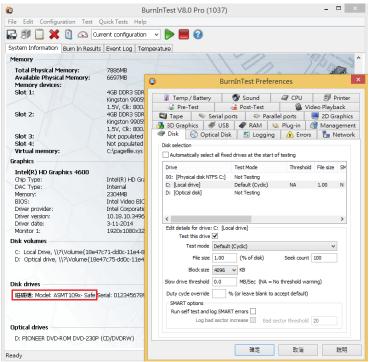
ile Benchmarks	IOmeter System	n Info Settings	Test size 1GB	🔽 Drive 🔳 c: []		✓ Screenshot Help
SD Benchr	nark					ASMT109x- Safe 128GB/214
Read	Resp. time	MB read	IOPS	MB/s		
Seq 4MB	8.3613ms	2,048.0	119.60	478.39		
4K	0.1878ms	260.0	5,324.55	20.80		
4K QD4	0.1476ms	1,323.0	27,094.60	105.84		1,827.41
4K QD16	0.2516ms	3,104.8	63,586.48	248.38	Run read	1,827.41
32K	0.2570ms	1,825.5	3,890.51	121.58		
128K	0.4594ms	4,085.5	2,176.61	272.08		4,172.06
Write	Resp. time	MB written	IOPS	MB/s	Run	4,172.06
Seq 4MB	11.6563ms	1,024.0	85.79	343.16		
4K	0.0417ms	640.0	23,962.18	93.60		2,344.65 2,344.65
4K.QD4	0.0554ms	640.0	72,170.31	281.92	Run write	2,344.65
4K QD16	0.2401ms	640.0	66,673.60	260.44		
	.1 専業版 64 位元 Buil CPUSecket	d (9600)	Drives :			ASMT109x- Safe 128GB/2143 5 Drive C: 118.9/94.9GB free (79.8%)
297 Extreme6/P1.70, CPUSocket Intel(R) Core(TM) i5-4460 CPU @ 3.20GHz			Notes :			NTFS - Cluster size 4096B Storage driver <b>storahci</b>
Memory: 7,886 MB						
						Alignment 359424KB OK Compression 100% (Incompressible)

#### 3. Burn In Tests and Results

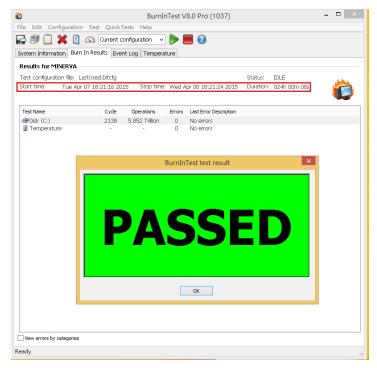
- 3.1 BurnInTest v7.1 Pro
  - 3.1.1 system information for CT-128M550SSD3/128GBx2 in RAID 1 as below:



3.1.2 show RAID 1 SSD test mode(default cyclic -- 10 ways cycle test)



#### 3.1.3 show CT-128M550SSD3/128GBx2 in RAID 1 24-hour Burn-in test PASSED



#### 4. Summary

- 4.1 R2106E is SATA III Interface, I/O speed, max. to 600MB/s.
- 4.2 R2106E adapter I/O performance is based on mSATA SSD.