

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, JBOD set as a benchmark.**

2. Tools and Results of Performance Measurement

2.1 Test Platform

M/B :	ASRock Z97 Extreme 6
CPU :	Intel i5-4426, 3.2GHz/ 6M Cache/ LGA1150
Memory :	Kingston KVR16N11S8/4, DDR3-1600MHz, 8G(4GB DIMM*2)
ATX Power :	FSP RAIDER 550, 550W ATX , 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)



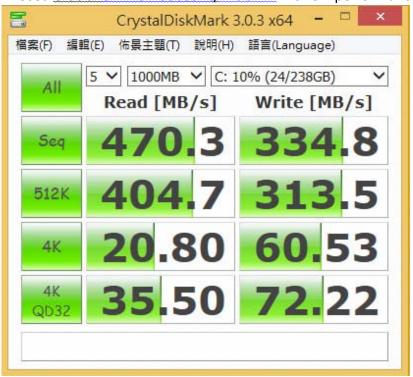
R2106E Adapter

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 **JBOD** 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 JBOD performance as below:

AS SS	SD Benchmark 1.7.4739. Ils Language Help	38088 - 🗆 ×				
C: ASMT109x- Volume v						
ASMT109x- Volume 2143 5 storahci - OK 359424 K - OK 238.48 GB	Read:	Write:				
<mark>⊠ Seq</mark>	462.57 MB/s	305.20 MB/s				
<mark>⊴ 4</mark> K	19.86 MB/s	32.78 MB/s				
☑ 4K-64Thrd	32.72 MB/s	40.00 MB/s				
☑ Acc.time	0.183 ms	0.061 ms				
Score:	99	103				
	254					
		;;				
S	lart	Abort				

2.7 ATTO Disk Benchmark performance test

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

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

🧀 Untitled - ATTO Disk Benchm	nark – 🗆 🗙		
File View Help			
Drive: [-c-] Vite Access	Direct I/O		
Transfer Size: 0.5 ▼ to 8192.0 ▼ KB	C 1/O Comparison		
Total Length: 256 MB 🗸	 <u>O</u>verlapped I/O <u>N</u>either 		
	Queue Depth: 4 -		
Controlled by:			
	Start		
<< Description >>	~		
	~		
Test Results			
Write —— Read ——	Write Read		
	37665 13848 76580 25155		
2.0	123631 42075		
4.0	185976 66609		
8.0	249853 103713		
16.0	300452 148011		
32.0	319391 231204		
64.0	326622 305372 327422 362869		
256.0	327422 362869		
512.0	329773 462819		
1024.0	328965 511305		
2048.0	328965 512525		
4096.0	328965 502923		
8192.0	324982 510091		
0 100 200 300 400 500 600 700 800 9 Transfer Rate - MB / Sec	00 1000		
For Help, press F1			
Tor help, press FT			

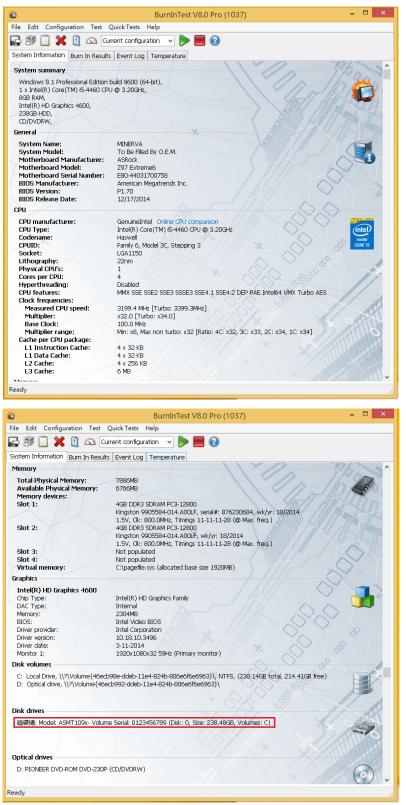
2.8 AnvilBenchmark_V110_B337

2.8.1 Used <u>Crucial CT-128M550SSD3/128GBx2</u> in **JBOD** performance as below:

Read	Resp. time	MB read	IOPS	MB/s		
Seq 4MB	8.7578ms	2,048.0	114.18	456.74		
4K	0.1973ms	247.5	5,069.47	19.80		
4K QD4	0.4832ms	404.2	8,278.50	32.34		1,162.99
4K QD16	1.9297ms	404.9	8,291.64	32.39	Run read	1,162.99
32K	0.2657ms	1,766.2	3,763.85	117.62		
128K	0.5298ms	3,542.9	1,887.52	235.94	D	1,948.53 1,948.53
Write	Resp. time	MB written	IOPS	MB/s	Run	1,940.33
Seq 4MB	13.1211ms	1,024.0	76.21	304.85		
4K	0.0912ms	428.6	10,964.76	42.83	Run write	785.54 785.54
4K.QD4	0.2932ms	534.3	13,641.00	53.29	nun write	100.04
4K QD16	1.2541ms	503.0	12,758.39	49.84		
		1000 - 100 -				

3. Burn In Tests and Results

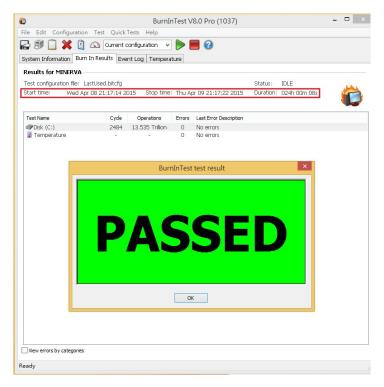
- 3.1 BurnInTest v7.1 Pro
 - 3.1.1 system information for CT-128M550SSD3/128GBx2 in JBOD as below:



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

0	BurnInTest V8.0 Pro (1037)					
File Edit Configuration Test	Quick Tests Help					
🖬 🗊 📋 💥 🗓 🗠 🛛	urrent configuration	- Þ 📕 📀				
System Information Burn In Result	ts Event Log Tempe	rature				
Memory		11	VD		06000	
Total Physical Memory: Available Physical Memory: Memory devices: Slot 1:	7886MB 6766MB 4GB DDR3 SDR	В	urnInTest Prefe	rences	×	
	Kingston 9905	Temp / Battery	Sound	CPU	Printer	
	1.5V, Clk: 800. 4GB DDR3 SDR	Re-Test	Post-Test	🔒 Vie	deo Playback	
Slot 2:	Kingston 9905	Tape Serial	ports 🛛 🧼 Pari	allel ports	2D Graphics	
	1.5V, Ck: 800.	🚹 3D Graphics 🛛 🚿 US			Management	
Slot 3:	Not populated	P Disk 🕢 Optical D				
Slot 4:	Not populated	Disk selection				
Virtual memory: Graphics	C:\pagefile.sys	Automatically select all fi	xed drives at the star	t of testing		
				-		
Intel(R) HD Graphics 4600 Chip Type:	Intel(R) HD Gra	Drive	Test Mode	Threshold	File size SM	
DAC Type:	Internal	00: [Physical disk NTFS C: C: [Local drive]] Not Testing Default (Cyclic)	NA	1.00 N	
Memory:	2304MB	D: [Optical disk]	Not Testing	NA	1.00 N	
BIOS:	Intel Video BIC					
Driver provider: Driver version:	Intel Corporation 10.18.10.3496					
Driver date:	3-11-2014	<			>	
Monitor 1:	1920x1080x32	Edit details for drive: C: [l	ocal drive]			
Disk volumes		Test this drive 🖌				
C: Local Drive, \\?46ecb98e-ddeb-11e4-8		Test mode Defa	ult (Cyclic)		~	
D: Optical drive, \\?46	ecb992-ddeb-11e4	File size 1.00	(% of disk)	Seek count	100	
		Block size 4096	× KB			
Disk drives		Slow drive threshold 0.0		No threshold war	nina)	
磁碟機: Model: ASMT109x- Volume Berial: 0123456						
		Duty cycle override SMART options	% (or leave blank to	o accept default)		
	11	Run self test and log SM	ART errors			
Optical drives				sector threshold	20	
in a start of the second second second second						
D: PIONEER DVD-ROM DVD-230F	(LD/DVDRW)					
	100 (NV/// 12-		確定	取満	說明	
Ready						

3.1.3 show CT-128M550SSD3/128GBx2 in JBOD 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.