

## R2036F SATA III to M.2 NGFF 2-port RAID Card

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

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### 1. Overview

R2036F RAID card offers SATA 3 interface, built-in 2-port M.2 67-pin B key connector can be combined M.2 NGFF SSD into a RAID 0, RAID 1, JBOD mode of operation.

### 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: R2036F RAID Card and M.2 NGFF SSD(LGT-128M6G/128GBx2)



R2036F Adapter

R2036F + M.2 SSD

LGT-128M6G x2pcs

#### 2.3 Install Hardware

2.3.1 Insert M.2 SSDx2 into R2036F converter's B key connector, and then with coppers, and screws to fix SSDs. (Please refer to the Installation Notes).
 Connect R2036F converter to SATA III Port of ASRock Z97 Extreme6.

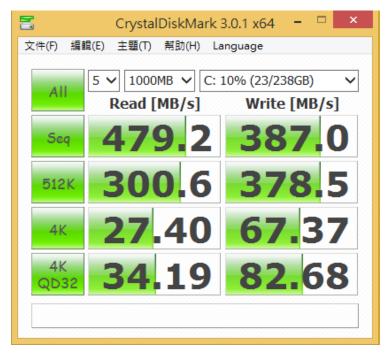
#### 2.4 BIOS & Windows 8 OS environment setup

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>LITE-ON LGT-128M6Gx2</u> in **Z97 Extreme 6 RAID 0** 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 <u>LITE-ON LGT-128M6Gx2</u> in **Z97 Extreme 6 RAID 0** performance as below:

🚢 AS SSD Benchmark 1.7.4739.38088 – 🗆 🗙									
File Edit View Tools Language Help									
C: ASMT109x- Fast									
ASMT109x-Fast 2143 5 iaStorA - OK 359424 K - OK 238.48 GB	Read:	Write:							
<mark>⊠</mark> Seq	429.78 MB/s	366.93 MB/s							
⊡ 4K	22.13 MB/s	56.69 MB/s							
☑ 4K-64Thrd	33.71 MB/s	80.45 MB/s							
☑ Acc.time	0.162 ms	0.069 ms							
Score:	99	174							
	330								
Start Abort									

## 2.7 ATTO Disk Benchmark performance test

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

2.7.1 Used LITE-ON LGT-128M6Gx2 in **Z97 Extreme 6 RAID 0** performance as below:

🚊 Untitled - ATTO Disk Benchm	ark – 🗆 🗙
File View Help	
<b>D∣≊ ₽  @ </b> & ∲  <b>? </b> !?	
Drive: [-c-] - Force Write Access	Direct 1/0
Transfer Size: 0.5 ▾ to 8192.0 ▾ KB	<ul> <li>I/O Comparison</li> <li>Overlapped I/O</li> </ul>
Total Length: 256 MB 💌	C Neither
	Queue Depth: 4
Controlled <u>by:</u>	2
	Start
<< Description >>	^
	×
Test Results	
Write —— Read ——	Write Read
0.5	24576 23552 47360 45454
2.0	88612 82263
4.0	146140 140361
8.0	222740 217710
	271851 303780 307092 362869
64.0	336773 422739
128.0	382892 464703
256.0	400080 484432
512.0	405841 502923
1024.0	412977 531555
2048.0	381661 497102 406720 527637
8192.0	405841 250874
0 100 200 300 400 500 600 700 800 90 Transfer Rate - MB / Sec	0 1000
For Help, press F1	//

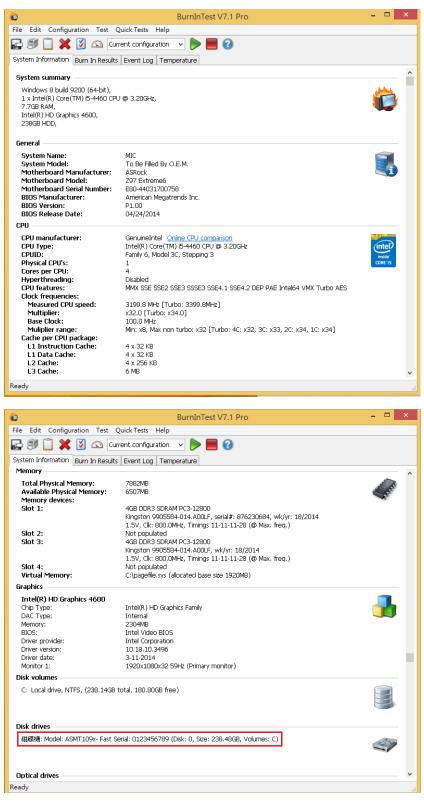
### 2.8 AnvilBenchmark\_V110\_B337

2.8.1 Used LITE-ON LGT-128M6Gx2 in **Z97 Extreme 6 RAID 0** performance as below:

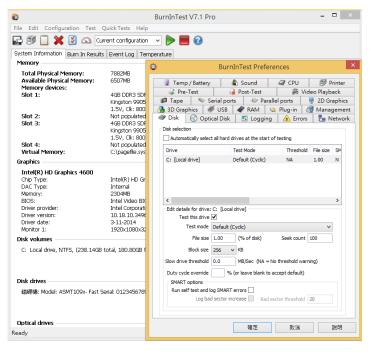
		Anvil's St	orage Utilities 1.1	.0 (2014-Janua	y-1)	
le Benchmark	s   IOmeter   System	m Info   Settings	Test size 1GB	Drive 🔳 c: []		✓ Screenshot Help
SD Bench	mark					ASMT109x- Fast 256GB/214
Read	Resp. time	MB read	IOPS	MB/s		
Seq 4MB	8.9121ms	2,048.0	112.21	448.83		
4K	0.1626ms	300.4	6,151.14	24.03		
4K QD4	0.4591ms	425.5	8,713.63	34.04		1,165.69
4K QD16	2.1808ms	358.3	7,336.83	28.66	Run read	1,165.69
32K	0.2650ms	1,770.9	3,773.97	117.94		
128K	0.5403ms	3,474.1	1,850.89	231.36	Dur	<sup>2,252.60</sup> <b>2,252.60</b>
Write	Resp. time	MB written	IOPS	MB/s	Run	2,252.00
Seq 4MB	11.1680ms	1,024.0	89.54	358.17		
4K	0.0704ms	555.4	14,213.89	55.52	Run write	1,086.91
4K QD4	0.1560ms	640.0	25,645.20	100.18	Hun write	1,080.91
4K QD16	0.9096ms	640.0	17,589.22	68.71		
Microsoft Windows 8.1 專業版 64 位元 Build (9600) 297 Extreme6/P1.00, CPUSocket			Drives :			ASMT109x- Fast 256GB/2143 5 Drive C: 238.1/213.8GB free (89.8%)
Intel(R) Core(TM) i5-4460 CPU @ 3.20GHz			Notes :			NTFS - Cluster size 4096B Storage driver iaStorA 13.0.0.1098
Memory : 7,882 MB Professional E						Alignment 359424KB OK
						Compression 100% (Incompressible)

#### 3. Burn In Tests and Results

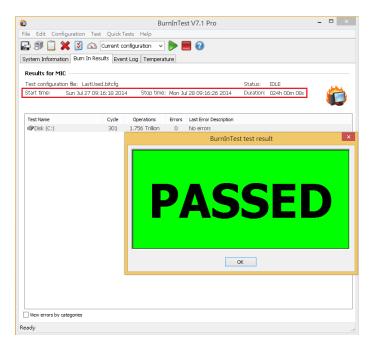
- 3.1 BurnInTest v7.1 Pro
  - 3.1.1 system information for LITE-ON LGT-128M6Gx2 RAID 0 as below:



3.1.2 show LITE-ON LGT-128M6Gx2 RAID 0 test mode(default cyclic -- 10 ways cycle test)



3.1.3 show LITE-ON LGT-128M6Gx2 RAID 0 24-hour Burn-in test PASSED



#### 4. Summary

- 4.1 R2036F is SATA III Interface, I/O speed, max. to 600MB/s.
- 4.2 R2036F adapter I/O performance is based on M.2 SSD.