

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

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



R2036F Adapter

R2036F + M.2 SSD

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.

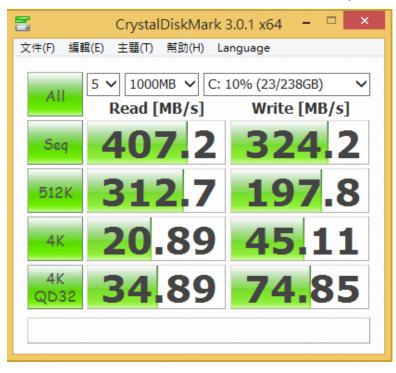
2.4 BIOS & Windows 8 OS environment setup

2.4.1 Install Windows 8.1 x64 OS.

LGT-128M6G x2pcs

2.5 CrystalDiskMark 3.0.1 x64 performance test ※Benchmark (Sequential Read & Write / default = 1MB)

2.5.1 Used LITE-ON LGT-128M6Gx2 in **Z97 Extreme 6 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 <u>LITE-ON LGT-128M6Gx2</u> in **Z97 Extreme 6 JBOD** performance as below:

🚢 AS SSD Benchmark 1.7.4739.38088 – 🗆 💌							
File Edit View Tools Language Help							
C: ASMT109x- Volume	C: ASMT109x- Volume						
ASMT109x- Volume 2143 5 storahci - OK 359424 K - OK 238.48 GB	Read:	Write:					
I Seq	428.22 MB/s	305.90 MB/s					
☑ 4K	19.41 MB/s	53.40 MB/s					
☑ 4K-64Thrd	32.91 MB/s	85.60 MB/s					
☑ Acc.time	0.174 ms	0.071 ms					
Score:	95	170					
	316						
Start Abort							

2.7 ATTO Disk Benchmark performance test

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

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

Թ Untitled - ATTO Disk Benchm	ark – 🗆 🗙			
File View Help				
Drive: [-c-] Force Write Access	Direct 1/0			
Transfer Size: 0.5 ▼ to 8192.0 ▼ KB	 C I/O <u>C</u>omparison Overlapped I/O 			
Total Length: 256 MB 💌	C Neither			
	Queue Depth: 4			
Controlled by:	Start			
<pre></pre>				
	0			
Test Besults				
Write - Read -	Write Read			
0.5 💻	21906 20887			
	41728 35495 75756 71691			
4.0	122404 125871			
	172697 196722 186070 258883			
32.0	246776 325779			
64.0	273864 369900			
128.0	293857 388455 321126 411594			
512.0	326563 451694			
1024.0	328160 462819			
2048.0	331401 451694 114716 379861			
8192.0	325771 473014			
0 50 100 150 200 250 300 350 400 45	60 500			
Transfer Rate - MB / Sec				
For Help, press F1	//			

2.8 AnvilBenchmark_V110_B337

2.8.1 Used <u>LITE-ON LGT-128M6Gx2</u> in **Z97 Extreme 6 JBOD** performance as below:

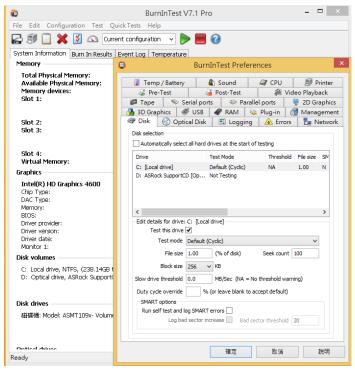
🗎 🛛 Anvil's Storage Utilities 1.1.0 (2014-January-1) – 🗖 🗙							
File Benchmarks	s IOmeter System	n Info Settings	Test size 1GB	🔹 Drive 🔳 c: []		✓ Screenshot Help	
SSD Benchmark ASMT109x- Volume 256GB/2143							
Deed	Deer time I	MD read	IOPS	MD/-			
Read Seg 4MB	Resp. time	MB read 2.048.0	98.40	MB/s 393.62			
364 4MB	0.2071ms	2,048.0	4,827.92	18.86			
4K QD4	0.4986ms	391.7	8,022.45	31.34			
4K QD16	1.9944ms	391.7	8,022.55	31.34	Run read	964.32 964.32	
32K	0.2978ms	1,575.6	3,357.91	104.93			
128K	0.7816ms	2,401.4	1,279.37	159.92		1,886.76	
Write	Resp. time	MB written	IOPS	MB/s	Run	1,886.76	
Seq 4MB	13.1211ms	1,024.0	76.21	304.85			
4K	0.0879ms	445.0	11,376.62	44.44	Dura unita	922.44 922.44	
4K QD4	0.2127ms	640.0	18,808.24	73.47	Run write	522.44	
4K QD16	0.8545ms	640.0	18,723.79	73.14			
Microsoft Windows 8.1 専業版 64 位元 Build (9600) 297 Extreme6/P1.00, CPUSocket			Drives :			ASMT109x- Volume 256GB/2143 5 Drive C: 238.1/214.4GB free (90.0%)	
Intel(R) Core(TM) i5-4460 CPU @ 3.20GHz			Notes :			NTFS - Cluster size 4096B Storage driver storahci	
Memory : 7,882 MB Professional Edition						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 JBOD as below:



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



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

8	BurnInTest V7.1 Pro					-		×
File Edit Configuration	Test Quick T	ests Help						
🕞 🇊 📋 💥 🔰	🖎 Current co	onfiguration 🗸		2				
System Information Burn	In Results Even	t Log Tempera	ture					
Results for MIC								
Test configuration file: La	acti kori hitefn				Status:	IDLE		
	30 18:25:02 201	L4 Stop time	Thu Ju	31 18:25:10 2014	Duration:		0m 08:	5
								1
Test Name	Cyde	Operations	Errors	Last Error Description				
@Disk (C:)	280	1.656 Trillion	O	No errors				
			_					
			_					×
			Burn	InTest test result				^
				SS				
							,	
				ОК				
				OK				
View errors by categories								
Ready								

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.