Athena II

Reliability & Environment Test Plan

Product Code：**E062**

BIOS Version：**V2.0**

	APPROVED	CHECK	PREPARED
BY	Al K.	Alex L.	Perry H.
DATE	2008/03/25	2008/03/24	2008/03/21

1. Vibration Test

1.1 Objective

1 Operating (Random Mode) The purpose of the vibration test is to determine mechanical weakness or performance degradation of an equipment or component when subjected to vibration and to use this information, in conjunction with the relevant specifications, to decide whether the equipment or component, herein after referred to as DUT, is acceptable or not. It may be used in some cases to determine the structural integrity of the DUT and study its dynamic behavior.

2 Operating (Sine Mode) The purpose of the transport vibration test is to determine the protective ability of packaging materials which cushion, enclose and protect the finished products to withstand transportation stresses during shipment and handling.

1.2 Test Procedure

1. Inspect the DUT to establish operation pretest criteria and physical condition.
2. Verify the functionality of the DUT.
3. Mount the velocity transducers of the accelerometer on the surface of the DUT main components (usually choose the HDD) and take a picture. Repeat steps 1~2.
4. Mount the DUT on the vibration equipment table.
5. Expose the DUT to the test level and duration as determined from the Specifications.
6. Inspect the DUT and compare it to pretest data and physical condition, if anything physical issue or malfunction during testing should under recorded & reported.
7. Repeat steps 1~6 for each axis.

1.3 Test Equipment

KING DESIGN Inc.
KD-9363-EM-1000F2K-50N250

1.4 Test Software

Passmark Burn-in Test Program V5.0 under Microsoft Windows XP SP2.

1.5 Test Location

A Certified Reliability & Environment Lab (contract)

1.6 Test Specifications

Operating Random Vibration Mode：

Axes: Vertical / Transverse / Longitudinal. 7.7Grms
20-2000 Hz Random Vibration. 60min/axis.

Operating Swept Sine Mode：

Axes: Vertical / Transverse / Longitudinal. 0.01in. p-p, 5-20Hz, 7.7g peak, 20-2000Hz Swept Sine, 60min/axis.

1.7 Test Criteria：

1. All tests will follow MIL-STD-810E 514.4
2. Two (2) DUTs will be tested.
3. During and after each vibration test, both DUTs must pass the following diagnostic tests:
   a) Functional check: The DUT will undergo Burn-in testing with a HDD, CD-ROM, FDD and other peripherals.
   b) Visual inspection: The DUT will be thoroughly inspected inside and outside for any sign of damaged or loose components.

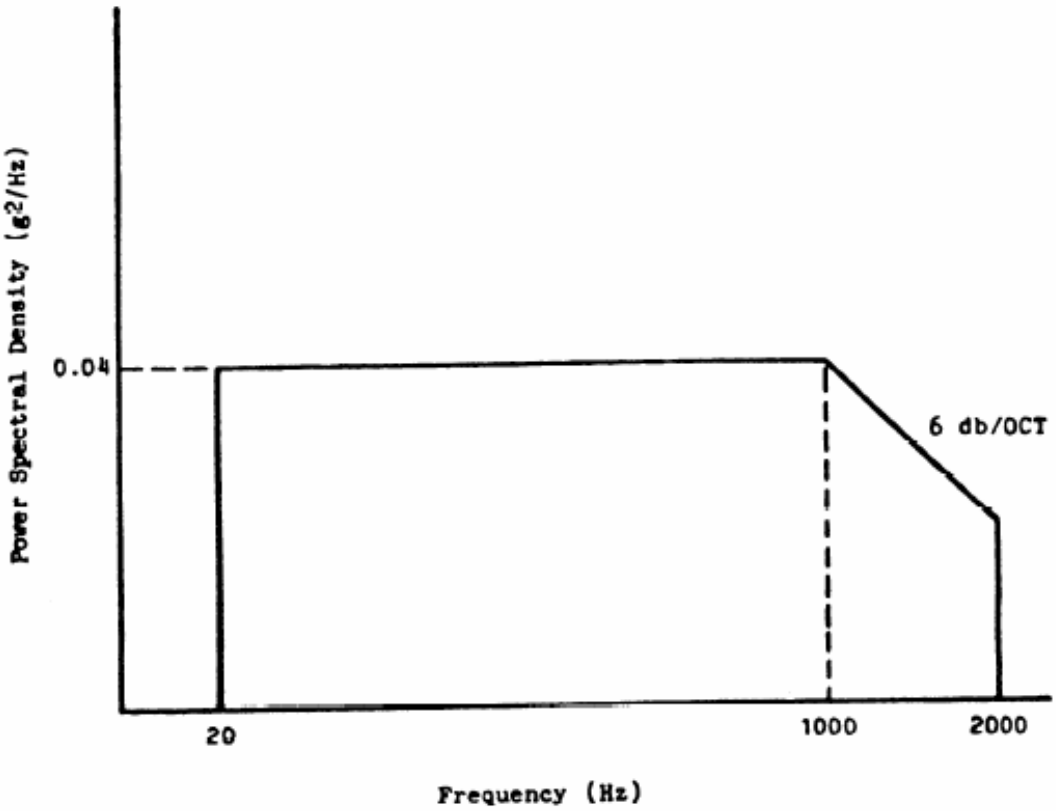
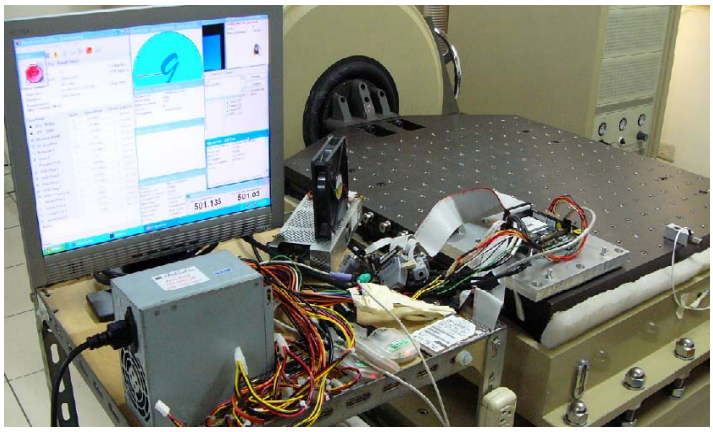
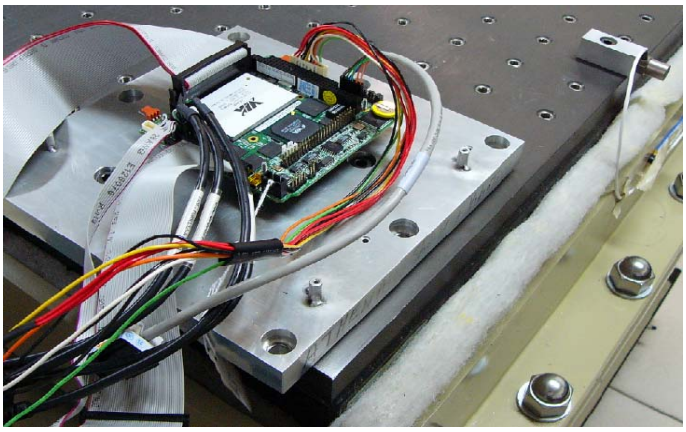


FIGURE 514.4-16 Minimum integrity test-general.

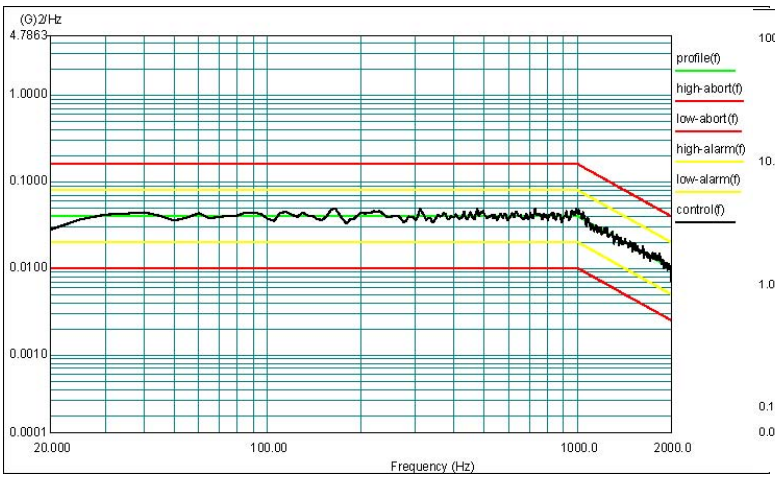
1.8 Test Result

Transverse DUT1

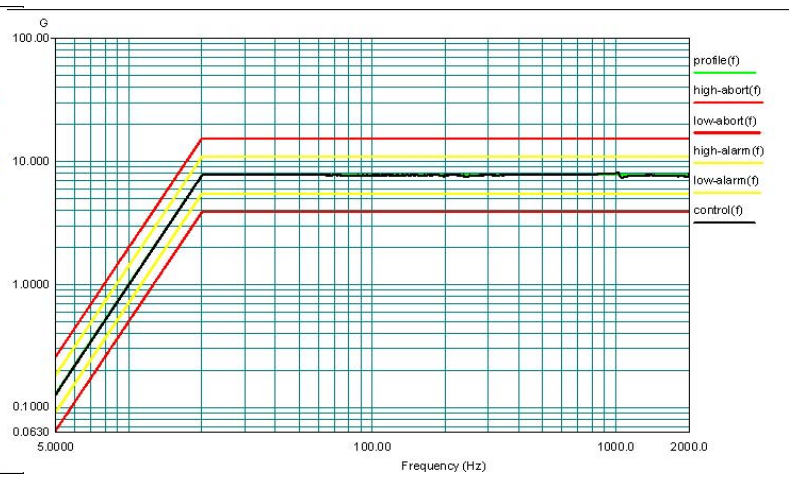




Transverse- Operating Random Vibration



Transverse- Operating Sine Vibration



Operating Random Mode	Function Test	Physical Check
	System	System
Result	PASS	PASS

Operating Sine Mode	Function Test	Physical Check
	System	System
Result	PASS	PASS

Vibration, Random, X-Axis DUT1 Results:

BurnInTest V5.0 Pro - Result Sheet

Machine Name:	YY	**Config file:**	LastUsed.bitcfg
CPU Manufacturer:	CentaurHauls	**CPU Type:**	686 Gen
CPU Speed:	501.1 MHz		
Start time:	Sun Nov 18 18:12:59 2007	**Stop time:**	Sun Nov 18 19:29:15 2007
Duration:	001h 16m 16s		
Temperature: (Min / Current / Max)			

Test Name	Cycle	Operations	Errors	Last Error Description
CPU - Maths	808	3.743 Billion	0	No errors
CPU - SIMD	961	5.959 Billion	0	No errors
Memory (RAM)	9	2.527 Billion	0	No errors
2D Graphics	7	7329	0	No errors
Network 1	69719	557 Million	0	No errors
Sound	18	62.986 Million	0	No errors
Parallel Port	0	61427	0	No errors
USB Plug 1	26	26.896 Million	0	No errors
USB Plug 2	62	63.992 Million	0	No errors
USB Plug 3	17	17.709 Million	0	No errors
USB Plug 4	24	25.493 Million	0	No errors
Video Playback	310	3721	0	No errors
Serial Port 1	99	5.747 Million	0	No errors
Serial Port 2	99	5.750 Million	0	No errors
Serial Port 3	99	5.722 Million	0	No errors
Serial Port 4	99	5.716 Million	0	No errors

Notes:

Vibration, Sine, X-Axis DUT1 Results:

BurnInTest V5.0 Pro - Result Sheet

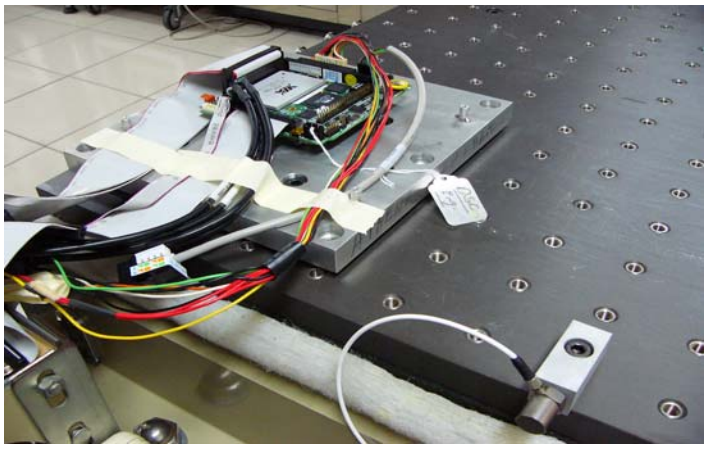
Machine Name: YY
CPU Manufacturer: CentaurHauls
CPU Speed: 501.1 MHz
Start time: Sun Nov 18 19:33:33 2007
Duration: 001h 46m 20s
Temperature: (Min / Current / Max)

Config file: LastUsed.bitcfg
CPU Type: 686 Gen
Stop time: Sun Nov 18 21:19:53 2007

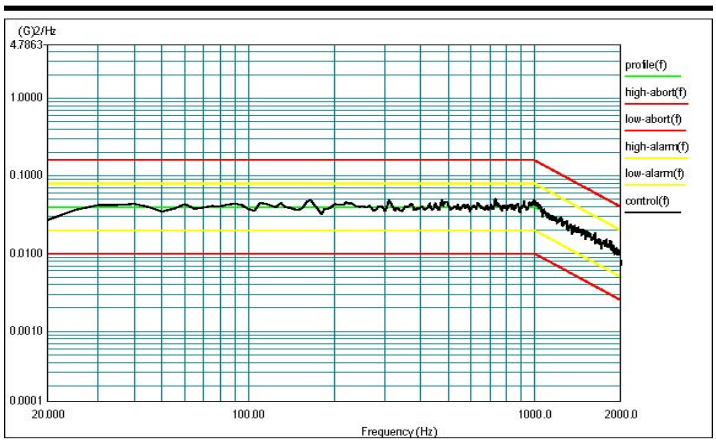
Test Name	Cycle	Operations	Errors	Last Error Description
CPU - Maths	1122	5.038 Billion	0	No errors
CPU - SIMD	1338	8.139 Billion	0	No errors
Memory (RAM)	13	3.406 Billion	0	No errors
2D Graphics	10	10166	0	No errors
Disk (C:)	28	2.948 Billion	0	No errors
Network 1	94636	757 Million	0	No errors
Sound	26	87.627 Million	0	No errors
Parallel Port	0	84181	0	No errors
USB Plug 1	38	39.441 Million	0	No errors
USB Plug 2	77	79.284 Million	0	No errors
USB Plug 3	24	24.813 Million	0	No errors
USB Plug 4	35	35.841 Million	0	No errors
Video Playback	430	5169	0	No errors
Serial Port 1	138	7.987 Million	0	No errors
Serial Port 2	138	7.990 Million	0	No errors
Serial Port 3	138	7.951 Million	0	No errors
Serial Port 4	137	7.945 Million	0	No errors

Notes:

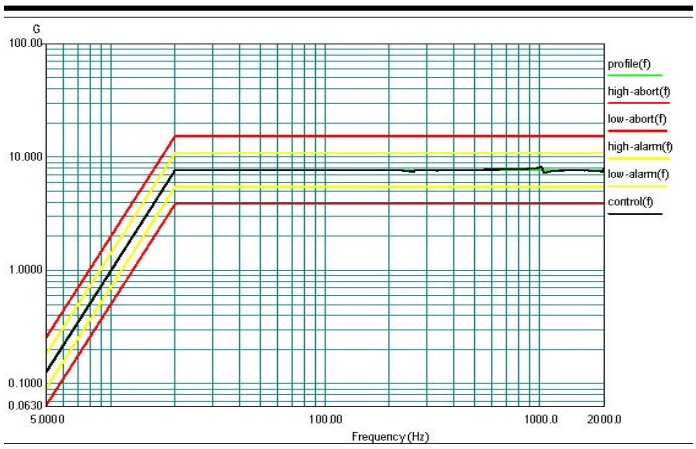
Longitudinal Random Vibration Results:



Longitudinal - Operating Random Vibration



Longitudinal - Operating Sine Vibration



Operating Random Mode	Function Test	Physical Check
	System	System
Result	PASS	PASS

Operating Sine Mode	Function Test	Physical Check
	System	System
Result	PASS	PASS

Vibration, Random, Y-Axis DUT1 Results:

BurnInTest V5.0 Pro - Result Sheet

Machine Name:	YY	**Config file:**	LastUsed.bitcfg
CPU Manufacturer:	CentaurHauls	**CPU Type:**	686 Gen
CPU Speed:	501.1 MHz		
Start time:	Sun Nov 18 22:46:58 2007	**Stop time:**	Sun Nov 18 23:51:21 2007
Duration:	001h 04m 23s		
Temperature: (Min / Current / Max)			

Test Name	Cycle	Operations	Errors	Last Error Description
CPU - Maths	665	2.990 Billion	0	No errors
CPU - SIMD	799	4.919 Billion	0	No errors
Memory (RAM)	8	2.010 Billion	0	No errors
2D Graphics	0	3	0	No errors
Disk (C:)	16	1.754 Billion	0	No errors
Network 1	57638	461 Million	0	No errors
Sound	15	52.931 Million	0	No errors
Parallel Port	0	51321	0	No errors
USB Plug 1	22	22.613 Million	0	No errors
USB Plug 2	40	41.126 Million	0	No errors
USB Plug 3	14	14.866 Million	0	No errors
USB Plug 4	20	20.682 Million	0	No errors
Video Playback	272	3275	0	No errors
Serial Port 1	84	4.848 Million	0	No errors
Serial Port 2	84	4.850 Million	0	No errors
Serial Port 3	83	4.821 Million	0	No errors
Serial Port 4	83	4.818 Million	0	No errors

Notes:

Vibration, Sine, Y-Axis DUT1 Results:

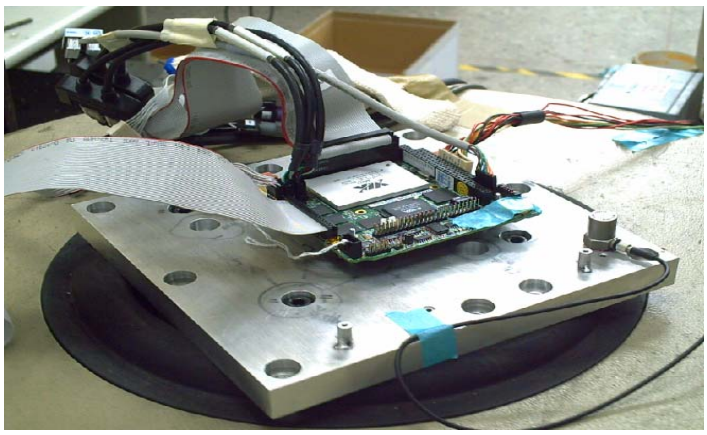
BurnInTest V5.0 Pro - Result Sheet

Machine Name:	YY	**Config file:**	LastUsed.bitcfg
CPU Manufacturer:	CentaurHauls	**CPU Type:**	686 Gen
CPU Speed:	501.1 MHz		
Start time:	Sun Nov 18 21:41:53 2007	**Stop time:**	Sun Nov 18 22:45:36 2007
Duration:	001h 03m 43s		
Temperature: (Min / Current / Max)			

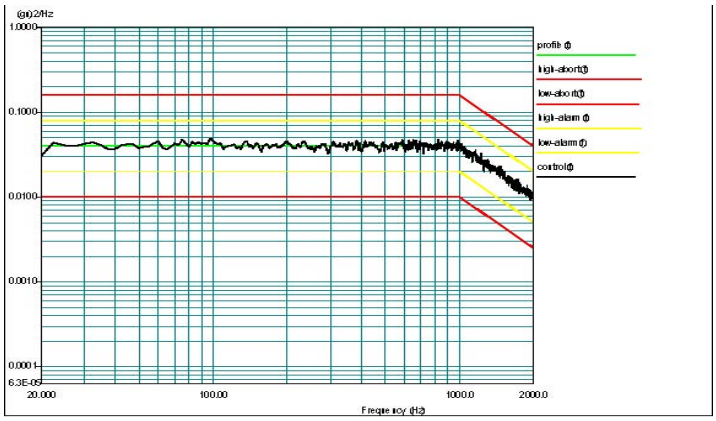
Test Name	Cycle	Operations	Errors	Last Error Description
CPU - Maths	664	3.058 Billion	0	No errors
CPU - SIMD	800	5.028 Billion	0	No errors
Memory (RAM)	8	2.112 Billion	0	No errors
2D Graphics	1	1134	0	No errors
Disk (C:)	15	1.620 Billion	0	No errors
Network 1	58794	470 Million	0	No errors
Sound	15	51.542 Million	0	No errors
Parallel Port	0	51101	0	No errors
USB Plug 1	20	20.989 Million	0	No errors
USB Plug 2	38	39.200 Million	0	No errors
USB Plug 3	13	13.966 Million	0	No errors
USB Plug 4	19	19.517 Million	0	No errors
Video Playback	270	3240	0	No errors
Serial Port 1	83	4.803 Million	0	No errors
Serial Port 2	83	4.805 Million	0	No errors
Serial Port 3	83	4.781 Million	0	No errors
Serial Port 4	82	4.779 Million	0	No errors

Notes:

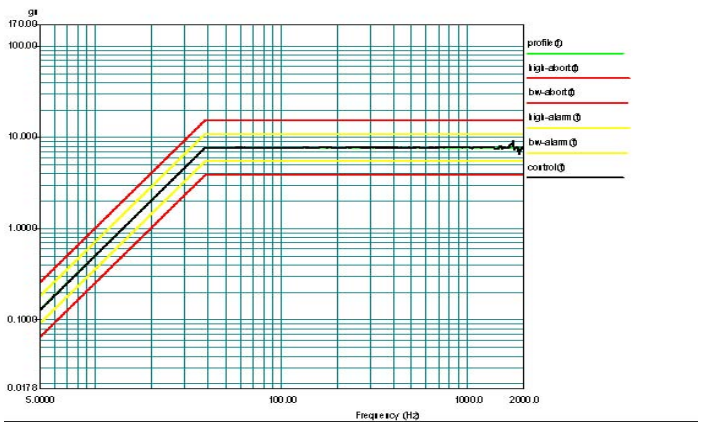
Vertical DUT1



Vertical - Operating Random Vibration



Vertical - Operating Sine Vibration



Operating Random Mode	Function Test	Physical Check
	System	System
Result	PASS	PASS

Operating Sine Mode	Function Test	Physical Check
	System	System
Result	PASS	PASS

Vibration, Random, Z-Axis DUT1 Results:

BurnInTest V5.0 Pro - Result Sheet

Machine Name:	YY	**Config file:**	LastUsed.bitcfg
CPU Manufacturer:	CentaurHauls	**CPU Type:**	686 Gen
CPU Speed:	501.1 MHz		
Start time:	Sun Nov 18 18:12:59 2007	**Stop time:**	Sun Nov 18 19:29:15 2007
Duration:	001h 16m 16s		
Temperature: (Min / Current / Max)			

Test Name	Cycle	Operations	Errors	Last Error Description
CPU - Maths	808	3.743 Billion	0	No errors
CPU - SIMD	961	5.959 Billion	0	No errors
Memory (RAM)	9	2.527 Billion	0	No errors
2D Graphics	7	7329	0	No errors
Network 1	69719	557 Million	0	No errors
Sound	18	62.986 Million	0	No errors
Parallel Port	0	61427	0	No errors
USB Plug 1	26	26.896 Million	0	No errors
USB Plug 2	62	63.992 Million	0	No errors
USB Plug 3	17	17.709 Million	0	No errors
USB Plug 4	24	25.493 Million	0	No errors
Video Playback	310	3721	0	No errors
Serial Port 1	99	5.747 Million	0	No errors
Serial Port 2	99	5.750 Million	0	No errors
Serial Port 3	99	5.722 Million	0	No errors
Serial Port 4	99	5.716 Million	0	No errors

Notes:

E062-Vibration-Random-Z.log

Vibration, Sine, Z-Axis DUT1 Results:

BurnInTest V5.0 Pro - Result Sheet

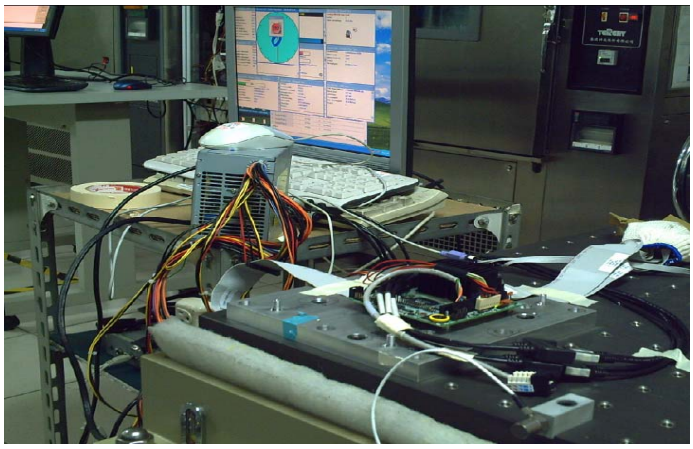
Machine Name:	YY	**Config file:**	LastUsed.bitcfg
CPU Manufacturer:	CentaurHauls	**CPU Type:**	686 Gen
CPU Speed:	501.1 MHz		
Start time:	Mon Jan 01 01:20:52 2001	**Stop time:**	Mon Jan 01 02:57:39 2001
Duration:	001h 36m 47s		
Temperature: (Min / Current / Max)			

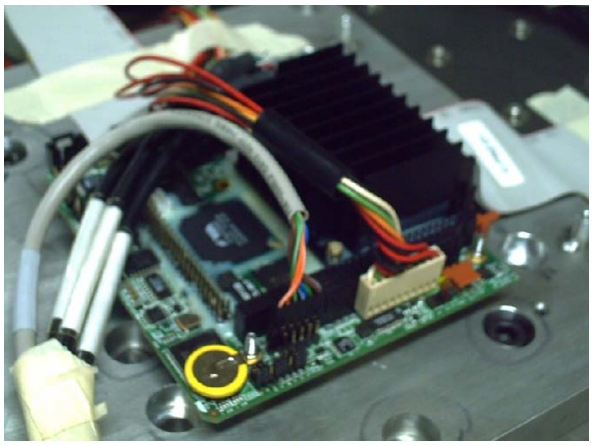
Test Name	Cycle	Operations	Errors	Last Error Description
CPU - Maths	886	2.687 Billion	0	No errors
CPU - SIMD	1053	4.221 Billion	0	No errors
Memory (RAM)	8	2.160 Billion	0	No errors
2D Graphics	6	6877	0	No errors
Disk (C:)	18	1.551 Billion	0	No errors
Network 1	39221	313 Million	0	No errors
Sound	21	73.250 Million	0	No errors
Parallel Port	0	64051	0	No errors
USB Plug 1	18	19.157 Million	0	No errors
USB Plug 2	24	25.278 Million	0	No errors
USB Plug 3	27	27.781 Million	0	No errors
USB Plug 4	46	47.568 Million	0	No errors
Video Playback	366	4400	0	No errors
Serial Port 1	115	6.673 Million	0	No errors
Serial Port 2	115	6.663 Million	0	No errors
Serial Port 3	115	6.663 Million	0	No errors
Serial Port 4	115	6.656 Million	0	No errors

Notes:

E062-Vibration-Sine-Z.log

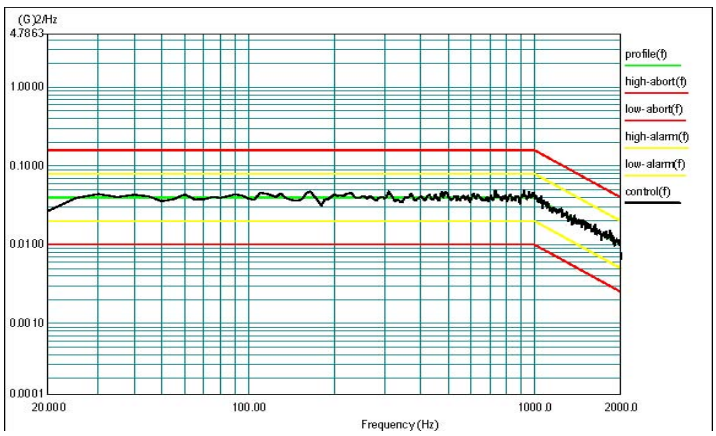
Transverse DUT2

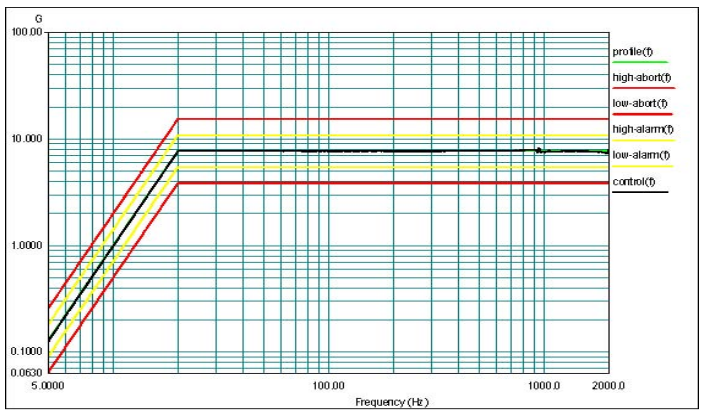




Transverse- Operating Random Vibration

Transverse- Operating Sine Vibration





Operating Random Mode	Function Test	Physical Check
	System	System
Result	PASS	PASS

Operating Sine Mode	Function Test	Physical Check
	System	System
Result	PASS	PASS

Vibration, Random, X-Axis DUT2 Results:

BurnInTest V5.0 Pro - Result Sheet

Machine Name:	YY	**Config file:**	LastUsed.bitcfg
CPU Manufacturer:	CentaurHauls	**CPU Type:**	686 Gen
CPU Speed:	802.0 MHz		
Start time:	Thu Dec 06 09:14:53 2007	**Stop time:**	Thu Dec 06 10:33:10 2007
Duration:	001h 18m 17s		
Temperature: (Min / Current / Max)			

Test Name	Cycle	Operations	Errors	Last Error Description
CPU - Maths	875	5.284 Billion	0	No errors
CPU - SIMD	1023	8.461 Billion	0	No errors
Memory (RAM)	9	2.534 Billion	0	No errors
2D Graphics	0	38	0	No errors
Disk (C:)	19	1.591 Billion	0	No errors
Network 1	101546	812 Million	0	No errors
Sound	18	61.983 Million	0	No errors
Parallel Port	0	58159	0	No errors
USB Plug 1	22	23.515 Million	0	No errors
USB Plug 2	40	41.164 Million	0	No errors
USB Plug 3	16	16.390 Million	0	No errors
USB Plug 4	21	22.321 Million	0	No errors
Video Playback	324	3891	0	No errors
Serial Port 1	98	5.670 Million	0	No errors
Serial Port 2	98	5.684 Million	0	No errors
Serial Port 3	98	5.662 Million	0	No errors
Serial Port 4	98	5.646 Million	0	No errors

Notes:

E062-Vibration-Random-X2.log

Vibration, Sine, X-Axis DUT2 Results:

BurnInTest V5.0 Pro - Result Sheet

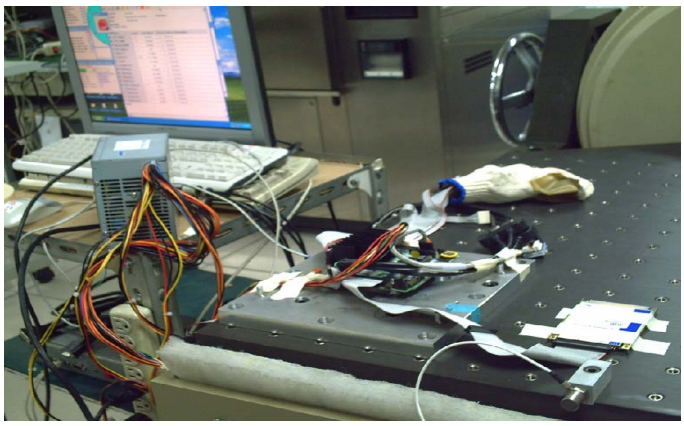
Machine Name:	YY	**Config file:**	LastUsed.bitcfg
CPU Manufacturer:	CentaurHauls	**CPU Type:**	686 Gen
CPU Speed:	802.0 MHz		
Start time:	Thu Dec 06 10:34:12 2007	**Stop time:**	Thu Dec 06 11:39:38 2007
Duration:	001h 05m 26s		
Temperature: (Min / Current / Max)			

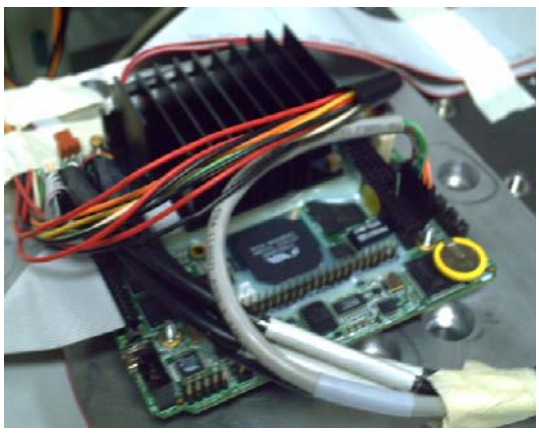
Test Name	Cycle	Operations	Errors	Last Error Description
CPU - Maths	731	4.458 Billion	0	No errors
CPU - SIMD	851	7.028 Billion	0	No errors
Memory (RAM)	8	2.102 Billion	0	No errors
2D Graphics	0	44	0	No errors
Disk (C:)	16	1.324 Billion	0	No errors
Network 1	84198	673 Million	0	No errors
Sound	15	51.972 Million	0	No errors
Parallel Port	0	48645	0	No errors
USB Plug 1	19	19.794 Million	0	No errors
USB Plug 2	33	34.005 Million	0	No errors
USB Plug 3	13	13.793 Million	0	No errors
USB Plug 4	18	18.676 Million	0	No errors
Video Playback	271	3255	0	No errors
Serial Port 1	82	4.744 Million	0	No errors
Serial Port 2	82	4.743 Million	0	No errors
Serial Port 3	82	4.736 Million	0	No errors
Serial Port 4	82	4.723 Million	0	No errors

Notes:

E062-Vibration-Sine-x2.log

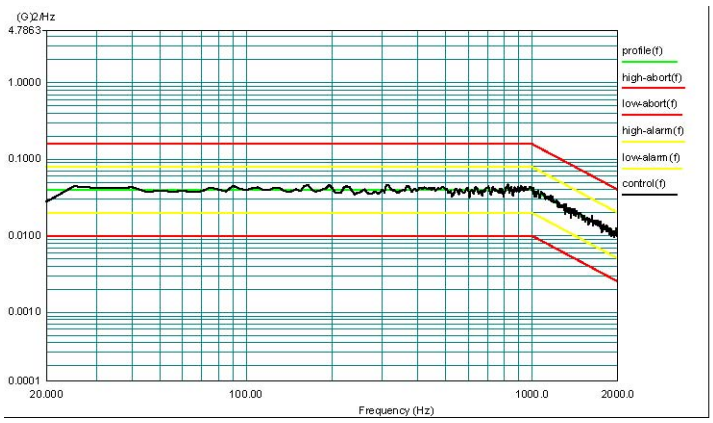
Longitudinal DUT2

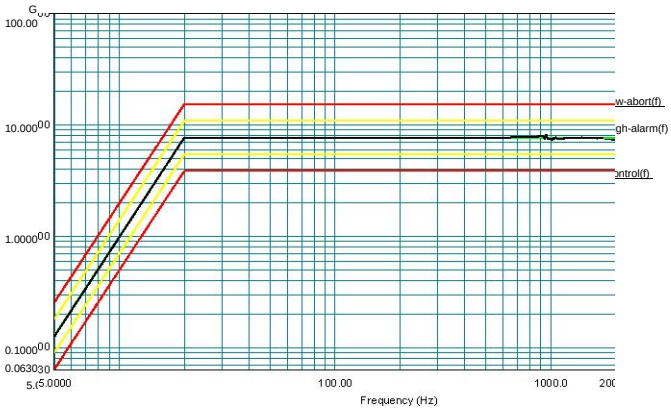




Longitudinal - Operating Random Vibration

Longitudinal - Operating Sine Vibration





Operating Random Mode	Function Test	Physical Check
	System	System
Result	PASS	PASS

Operating Sine Mode	Function Test	Physical Check
	System	System
Result	PASS	PASS

Vibration, Random, Y-Axis DUT2 Results:

BurnInTest V5.0 Pro - Result Sheet

Machine Name:	YY	**Config file:**	LastUsed.bitcfg
CPU Manufacturer:	CentaurHauls	**CPU Type:**	686 Gen
CPU Speed:	801.9 MHz		
Start time:	Wed Dec 05 17:34:26 2007	**Stop time:**	Wed Dec 05 19:20:13 2007
Duration:	001h 45m 47s		
Temperature: (Min / Current / Max)			

Test Name	Cycle	Operations	Errors	Last Error Description
CPU - Maths	1178	7.057 Billion	0	No errors
CPU - SIMD	1372	10.966 Billion	0	No errors
Memory (RAM)	12	3.327 Billion	0	No errors
2D Graphics	9	9339	0	No errors
Disk (C:)	26	2.156 Billion	0	No errors
Network 1	141742	1.134 Billion	0	No errors
Sound	25	83.779 Million	0	No errors
Parallel Port	0	77449	0	No errors
USB Plug 1	32	33.746 Million	0	No errors
USB Plug 2	59	60.863 Million	0	No errors
USB Plug 3	22	22.815 Million	0	No errors
USB Plug 4	30	31.659 Million	0	No errors
Video Playback	420	5042	0	No errors
Serial Port 1	132	7.611 Million	0	No errors
Serial Port 2	132	7.618 Million	0	No errors
Serial Port 3	131	7.602 Million	0	No errors
Serial Port 4	131	7.584 Million	0	No errors

Notes:

E062-Vibration-Random-Y2.log

Vibration, Sine, Y-Axis DUT2 Results:

BurnInTest V5.0 Pro - Result Sheet

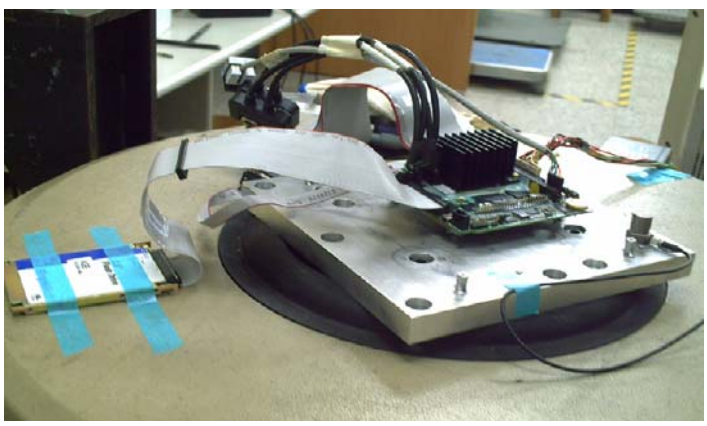
Machine Name:	YY	**Config file:**	LastUsed.bitcfg
CPU Manufacturer:	CentaurHauls	**CPU Type:**	686 Gen
CPU Speed:	802.0 MHz		
Start time:	Thu Dec 06 08:07:06 2007	**Stop time:**	Thu Dec 06 09:13:07 2007
Duration:	001h 06m 01s		
Temperature: (Min / Current / Max)			

Test Name	Cycle	Operations	Errors	Last Error Description
CPU - Maths	731	4.422 Billion	0	No errors
CPU - SIMD	853	6.888 Billion	0	No errors
Memory (RAM)	8	2.087 Billion	0	No errors
2D Graphics	5	5884	0	No errors
Disk (C:)	16	1.343 Billion	0	No errors
Network 1	85265	682 Million	0	No errors
Sound	15	52.214 Million	0	No errors
Parallel Port	0	48185	0	No errors
USB Plug 1	20	21.058 Million	0	No errors
USB Plug 2	37	38.771 Million	0	No errors
USB Plug 3	13	14.138 Million	0	No errors
USB Plug 4	19	19.532 Million	0	No errors
Video Playback	256	3082	0	No errors
Serial Port 1	82	4.753 Million	0	No errors
Serial Port 2	82	4.752 Million	0	No errors
Serial Port 3	82	4.734 Million	0	No errors
Serial Port 4	82	4.724 Million	0	No errors

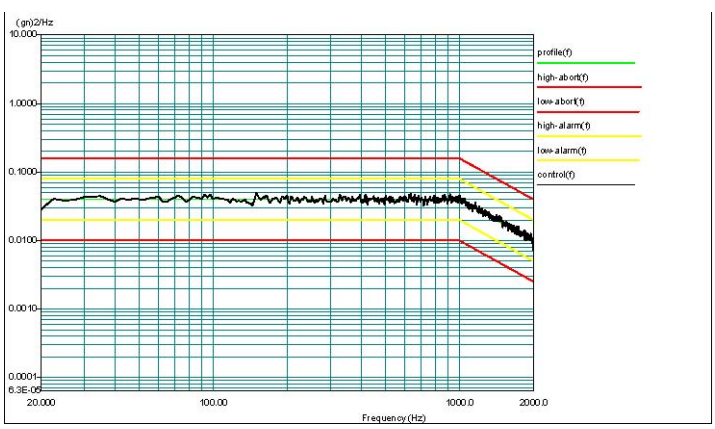
Notes:

E062-Vibration-Sine-Y2.log

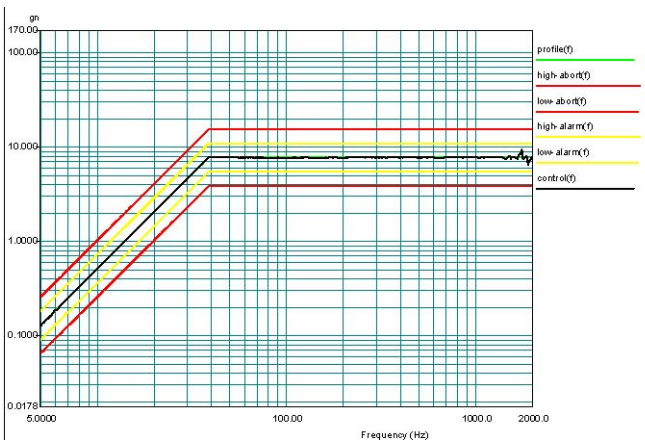
Vertical (Z-Axis) DUT2 Setup:



Vertical - Operating Random Vibration



Vertical - Operating Sine Vibration



Operating Random Mode	Function Test	Physical Check
	System	System
Result	PASS	PASS

Operating Sine Mode	Function Test	Physical Check
	System	System
Result	PASS	PASS

Vibration, Random, Z-Axis DUT2 Results:

BurnInTest V5.0 Pro - Result Sheet

Machine Name:	YY	**Config file:**	LastUsed.bitcfg
CPU Manufacturer:	CentaurHauls	**CPU Type:**	686 Gen
CPU Speed:	801.9 MHz		
Start time:	Thu Nov 29 13:55:24 2007	**Stop time:**	Thu Nov 29 14:58:22 2007
Duration:	001h 02m 58s		
Temperature: (Min / Current / Max)			

Test Name	Cycle	Operations	Errors	Last Error Description
CPU - Maths	700	4.203 Billion	0	No errors
CPU - SIMD	820	6.487 Billion	0	No errors
Memory (RAM)	7	1.988 Billion	0	No errors
2D Graphics	5	5615	0	No errors
Disk (C:)	15	1.287 Billion	0	No errors
Network 1	82848	662 Million	0	No errors
Sound	14	50.065 Million	0	No errors
Parallel Port	0	46209	0	No errors
USB Plug 1	13	13.368 Million	0	No errors
USB Plug 2	18	18.513 Million	0	No errors
USB Plug 3	19	20.215 Million	0	No errors
USB Plug 4	36	37.669 Million	0	No errors
Video Playback	247	2975	0	No errors
Serial Port 1	78	4.537 Million	0	No errors
Serial Port 2	78	4.547 Million	0	No errors
Serial Port 3	78	4.526 Million	0	No errors
Serial Port 4	78	4.521 Million	0	No errors

Notes:

E062-Vibration-Random-Z2.log

Vibration, Sine, Z-Axis DUT2 Results:

BurnInTest V5.0 Pro - Result Sheet

Machine Name:	YY	**Config file:**	LastUsed.bitcfg
CPU Manufacturer:	CentaurHauls	**CPU Type:**	686 Gen
CPU Speed:	801.9 MHz		
Start time:	Thu Nov 29 12:51:01 2007	**Stop time:**	Thu Nov 29 13:53:20 2007
Duration:	001h 02m 19s		
Temperature: (Min / Current / Max)			

Test Name	Cycle	Operations	Errors	Last Error Description
CPU - Maths	688	4.070 Billion	0	No errors
CPU - SIMD	805	6.434 Billion	0	No errors
Memory (RAM)	7	1.949 Billion	0	No errors
2D Graphics	5	5531	0	No errors
Disk (C:)	15	1.274 Billion	0	No errors
Network 1	83314	666 Million	0	No errors
Sound	14	49.138 Million	0	No errors
Parallel Port	0	45275	0	No errors
USB Plug 1	12	13.028 Million	0	No errors
USB Plug 2	17	18.315 Million	0	No errors
USB Plug 3	19	19.734 Million	0	No errors
USB Plug 4	35	36.691 Million	0	No errors
Video Playback	242	2909	0	No errors
Serial Port 1	77	4.469 Million	0	No errors
Serial Port 2	77	4.477 Million	0	No errors
Serial Port 3	77	4.459 Million	0	No errors
Serial Port 4	77	4.446 Million	0	No errors

Notes:

E062-Vibration-Sine-Z2.log

2. Shock Test

2.1 Objective

The shock test is performed to ensure that material can withstand the relatively infrequent, non-repetitive shocks or transient vibration encountered in handling, transportation and service environments.

2.2 Test Procedure

1. During 6 faces, 3 shocks per axis: each DUT is required to withstand the 6 shocks in order to pass the Half-Sine Wave shock test.
2. The DUT will be installed on shock table in such a way that the shock input is transmitted directly to it. The DUT will be fixture using a predetermined torque value,
3. Place accelerometers on the shock-sensitive components (i.e. HDD, RAM…) in order to measure the response acceleration.

2.3 Test Equipment

KING DESIGN Inc.

KD-9363-EM-1000F2K-50N250

2.4 Test Software

Passmark Burn-in Test Program V5.0 under Microsoft Windows XP SP2.

2.5 Test Location

A Certified Reliability & Environment Lab.

2.6 Test Specifications

Reference IEC68-2-27 Testing Procedures

1. Operating Shock Half-Sine Wave Shock 40 G: 9ms: 18 shocks per axis: Vertical / Transverse / Longitudinal.

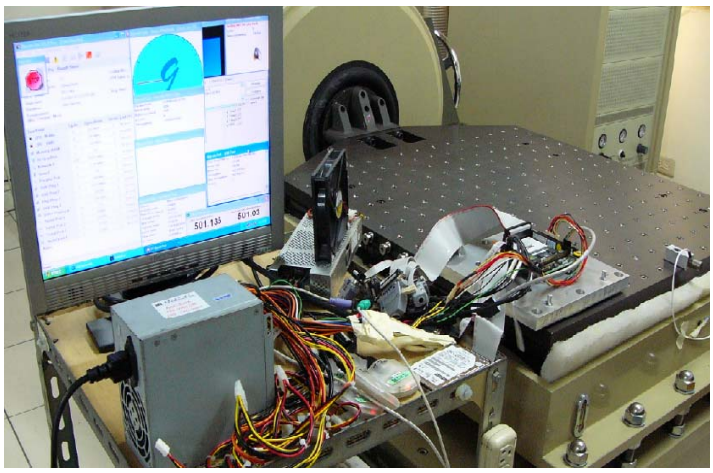
2.7 Test Criteria

1. A minimum of 1 DUT must be tested.
2. After non operation half-sine wave shock test, all DUT must pass the Burn-in test without any functional and mechanical malfunction.
3. Diagnostics:
   a) Functional check: The DUT will under go Burn-in testing the HDD, CD-ROM, FDD and main board.
   b) Visual inspection: The DUT will be thoroughly inspected inside and outside for any sign of damage, looseness or loose of components.

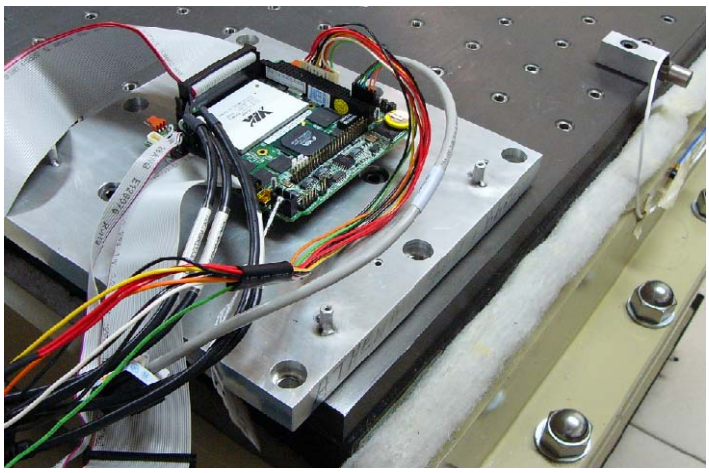
2.8 Test Results

Transverse DUT1

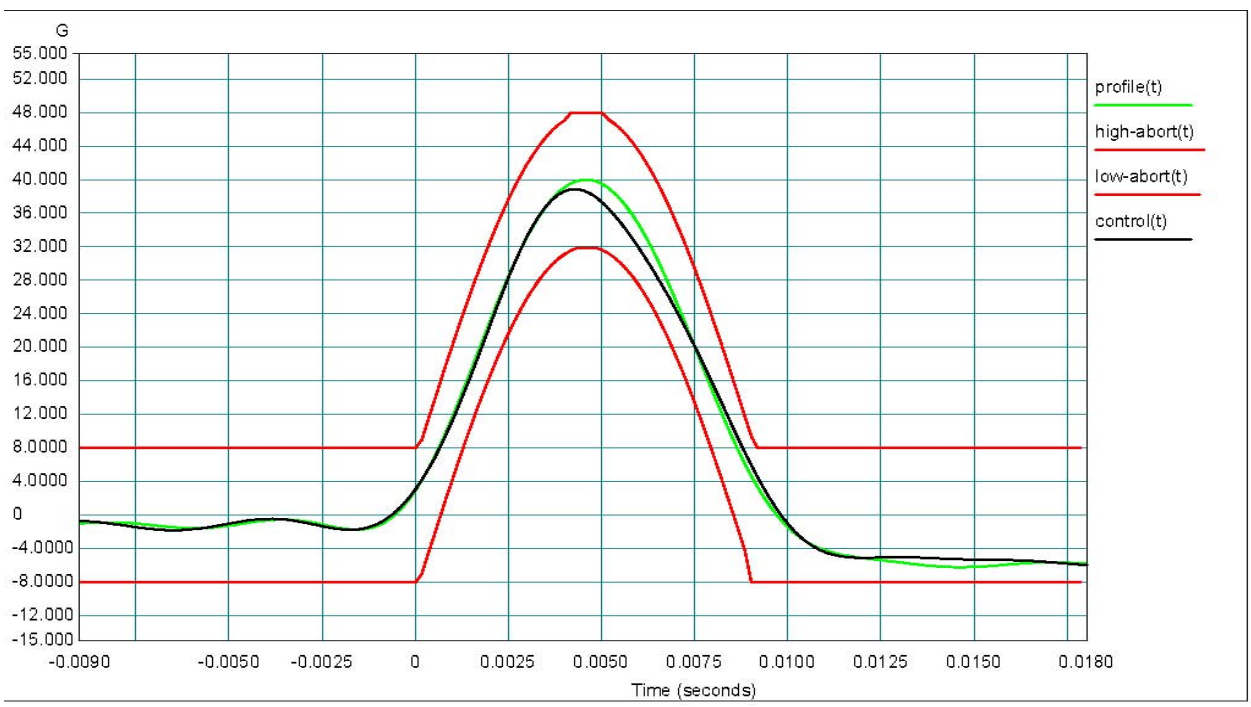
Transverse Shock DUT1 Setup



Close-Up



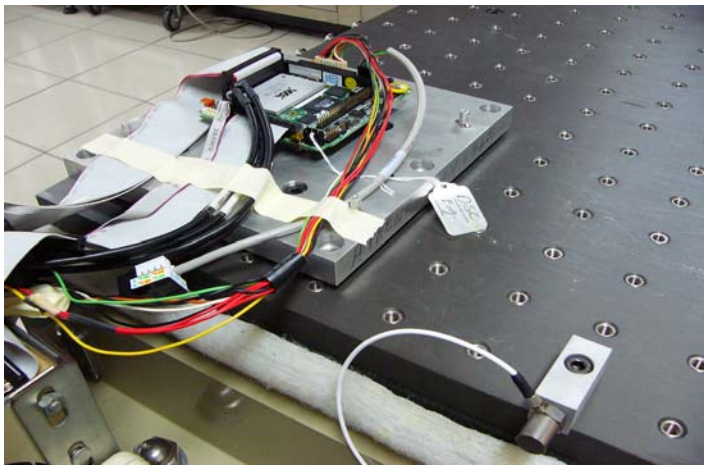
Operation Half-Sine Shock Test		
System	**Function Test**	**Physical Check**
Result	PASS	PASS



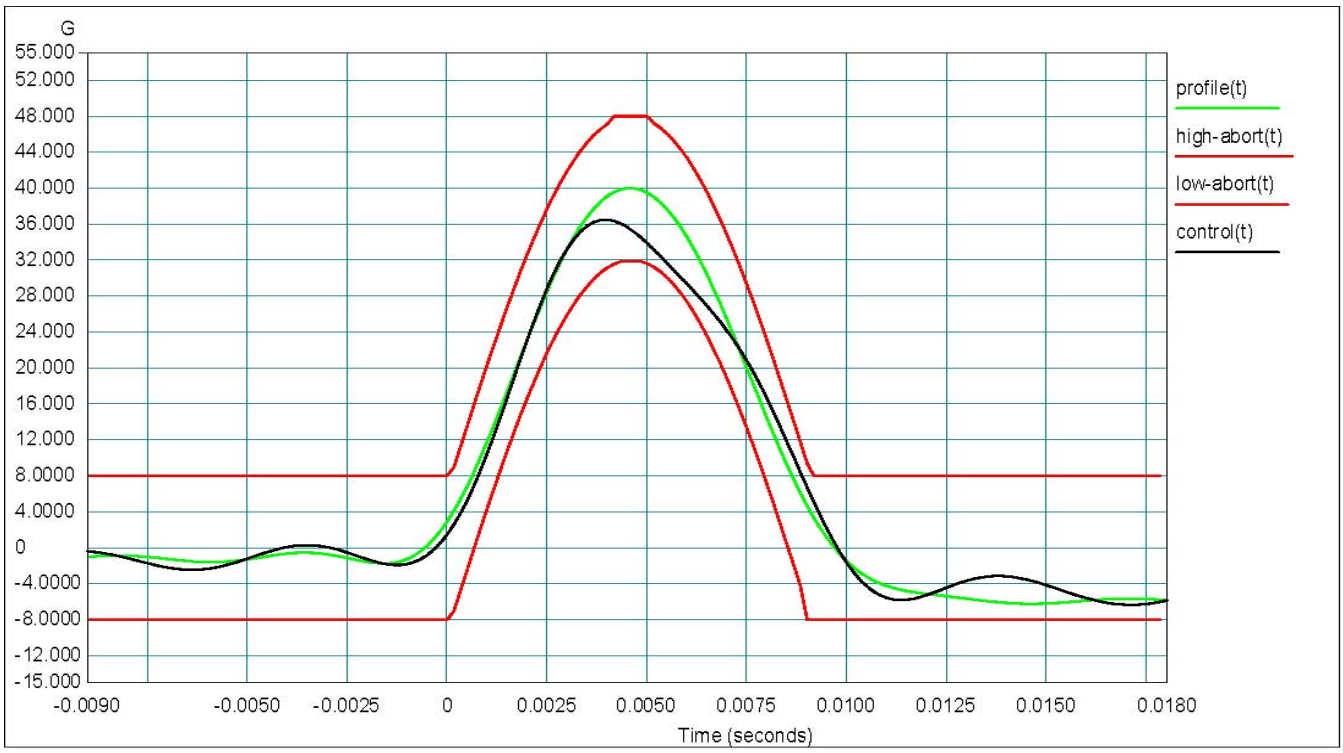
Longitudinal DUT1

Longitudinal- Operating Photo

Longitudinal -Operating Photo

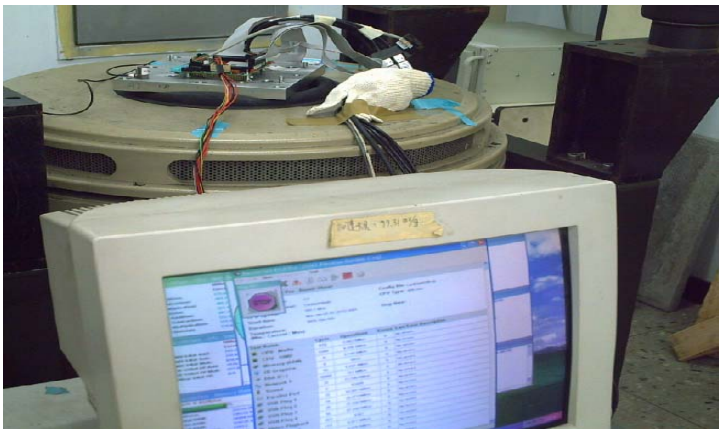


Operation Half-Sine Shock Test		
System	**Function Test**	**Physical Check**
Result	PASS	PASS

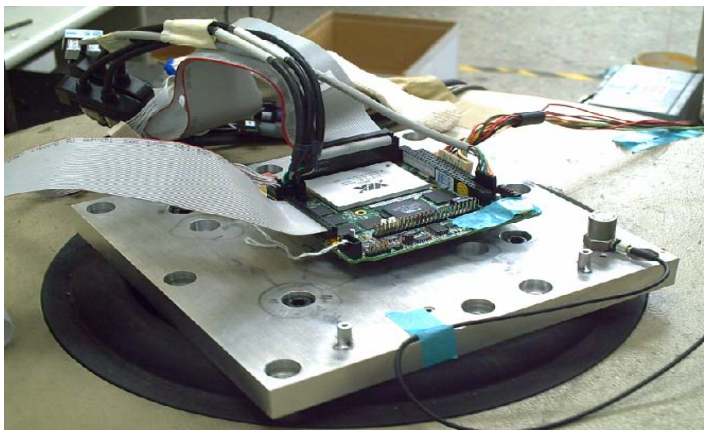


Vertical DUT1

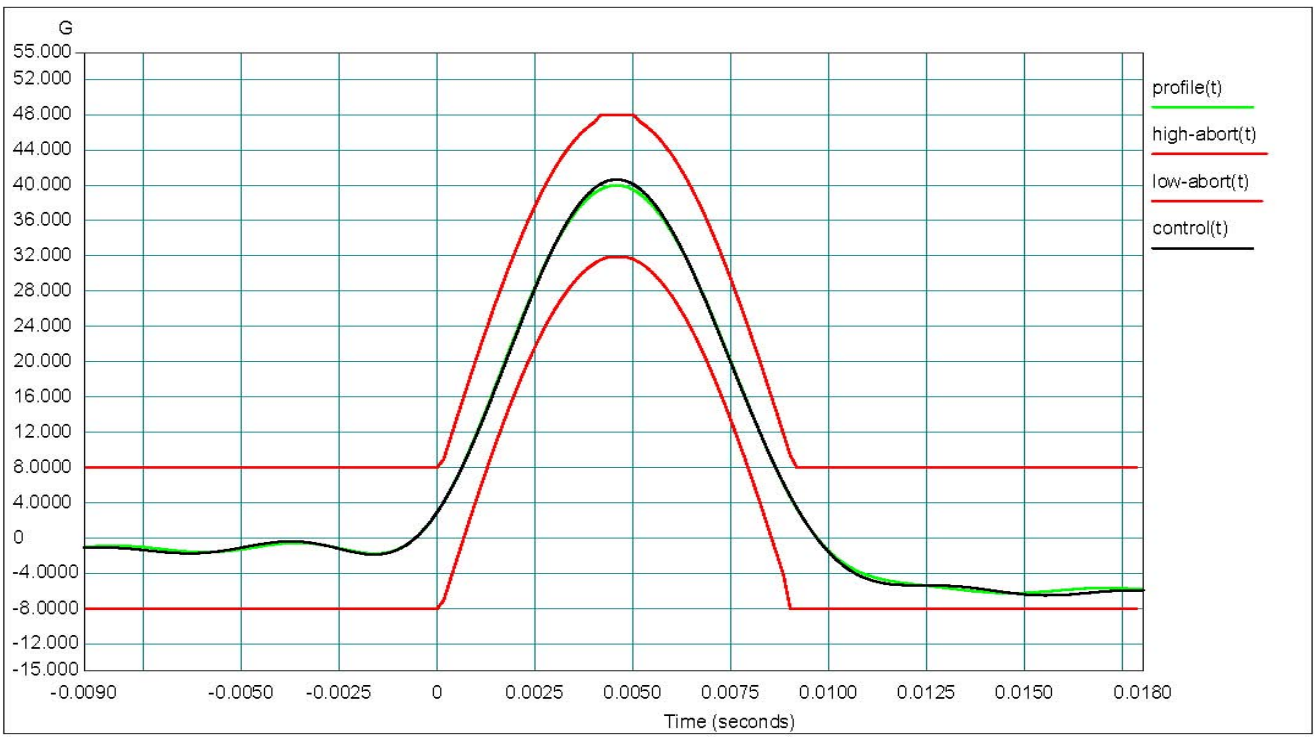
Vertical- Operating Photo



Vertical-Operating Photo

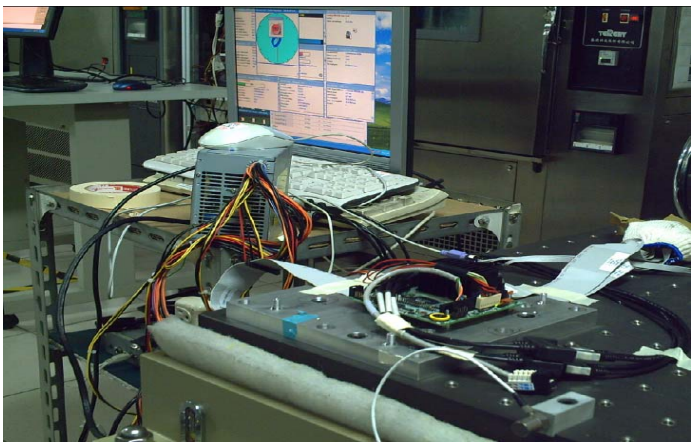


Operation Half-Sine Shock Test		
System	**Function Test**	**Physical Check**
Result	PASS	PASS

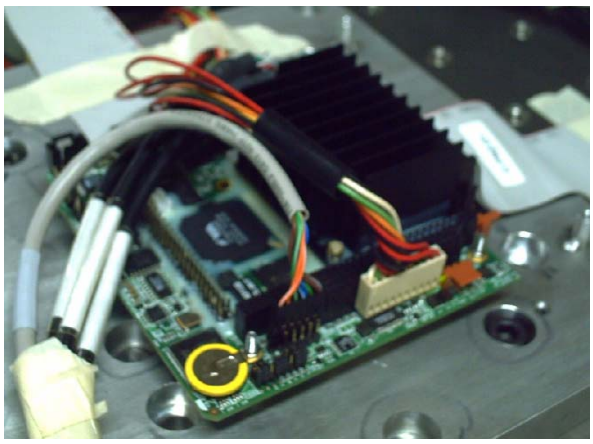


Transverse DUT2

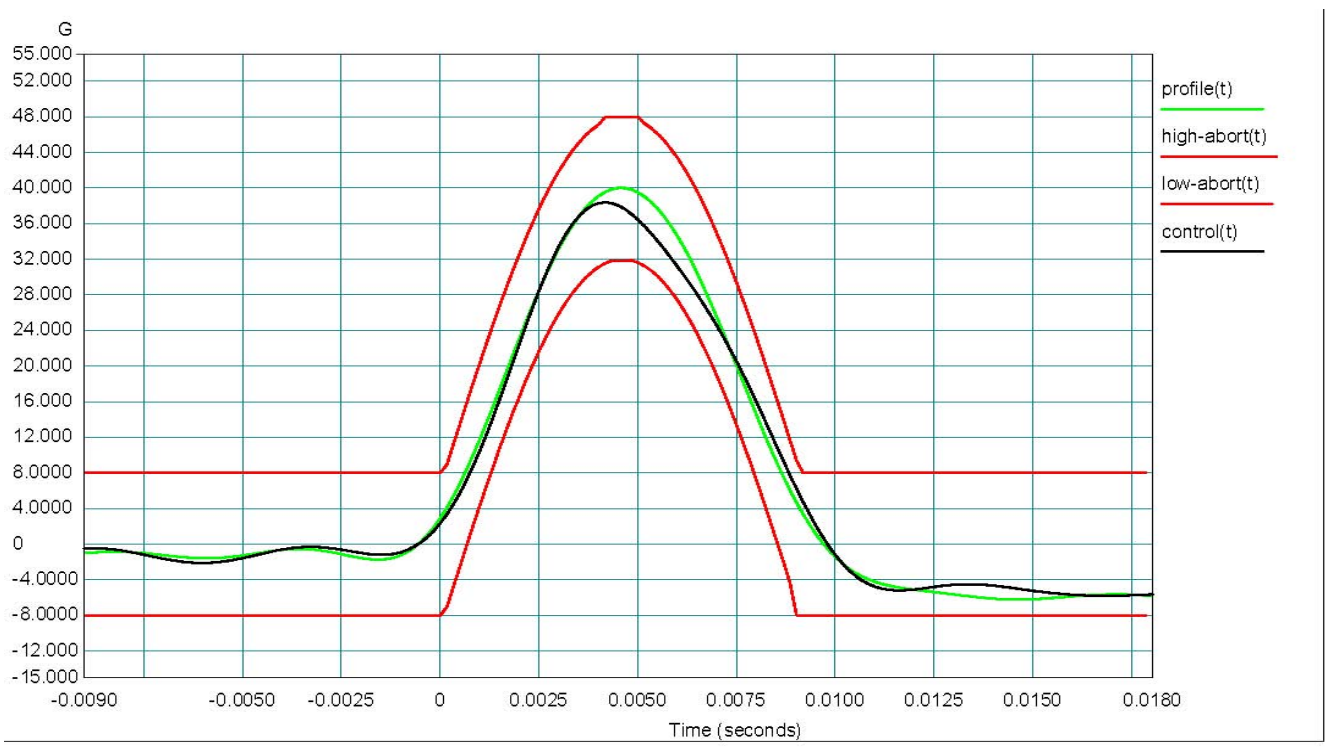
Transverse- Operating Photo



Transverse- Operating Photo

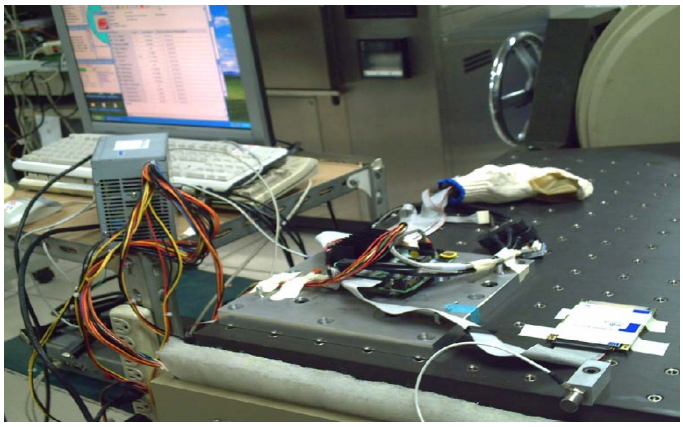


Operation Half-Sine Shock Test		
System	**Function Test**	**Physical Check**
Result	PASS	PASS

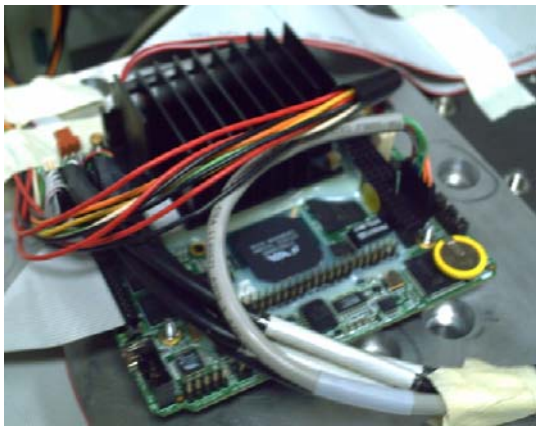


Longitudinal DUT2

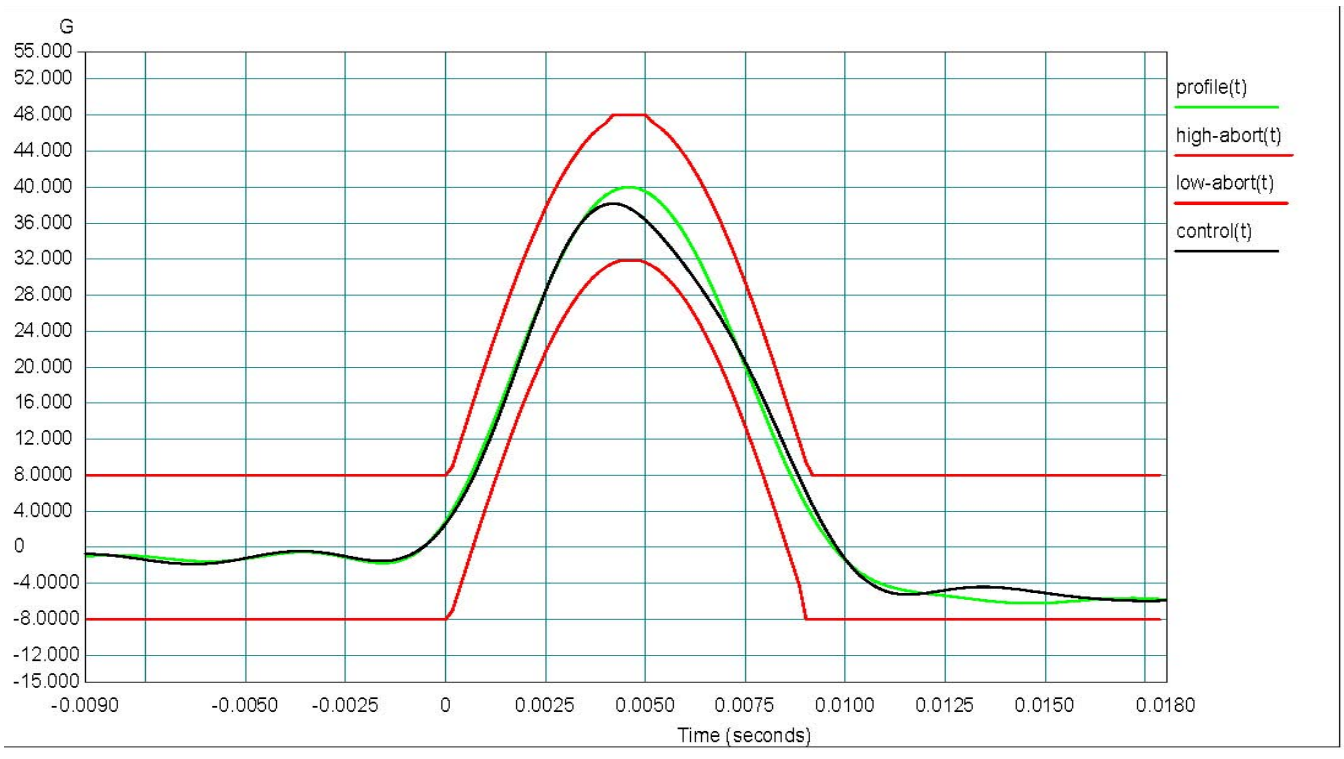
Longitudinal- Operating Photo



Longitudinal -Operating Photo

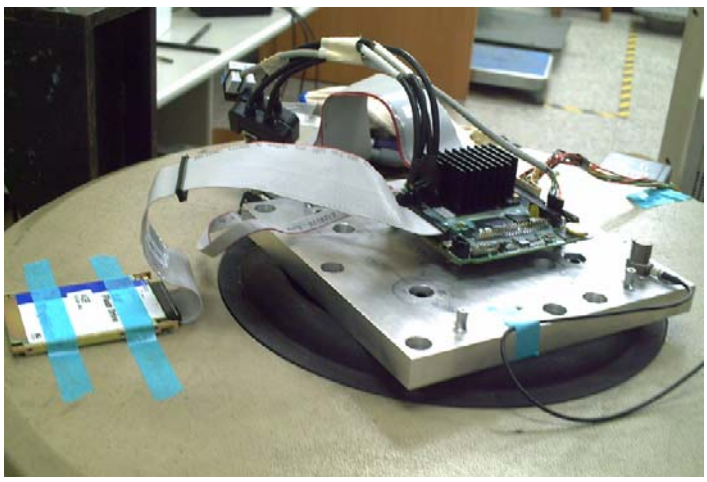


Operation Half-Sine Shock Test		
System	**Function Test**	**Physical Check**
Result	PASS	PASS



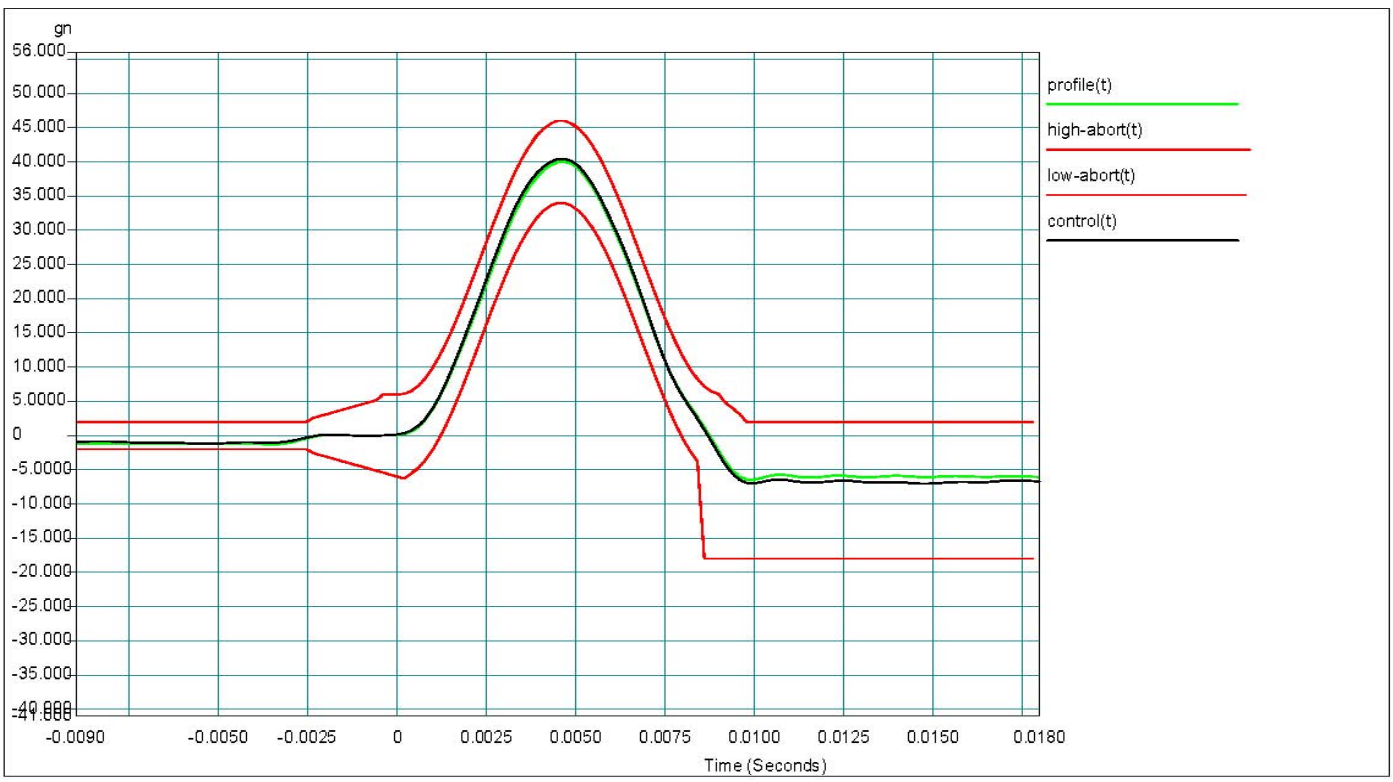
Vertical DUT2

Vertical- Operating Photo



Vertical-Operating Photo

Operation Half-Sine Shock Test		
System	**Function Test**	**Physical Check**
Result	PASS	PASS



3. Drop Test

3.1 Objective

The ones that assessed the products and used movements to produce because of the improper one fell; and the strong toughness under the safety condition that the necessary products are assessed.

3.2 Test Procedure

1.Turn on the DUT to perform function test, then turn off the DUT, package the DUT and place it on the drop tester. 2.To perform corner drops according to Figure 9-1 (C1~C4) on the weakest corner of DUT. 3.To perform flat drops according to Figure 9-1(S1~S6) with impact on the flats. 4.To perform edge drops according to Figure 9-1 (E1~E3) with impact on the edges. 5.To inspect the packaged DUT mechanical structure, and to execute the function test.

3.3 Test Equipment

Mode: KD-128A Payload: 60 kg Test Height: 30 – 180 cm Test volume capacity: 80 x 80 x 80 cm Test mode: Single arm Test arm bracket center: 50 cm Dropping method: By spring AC power: 220 V / 1 phase

3.4 Test Software

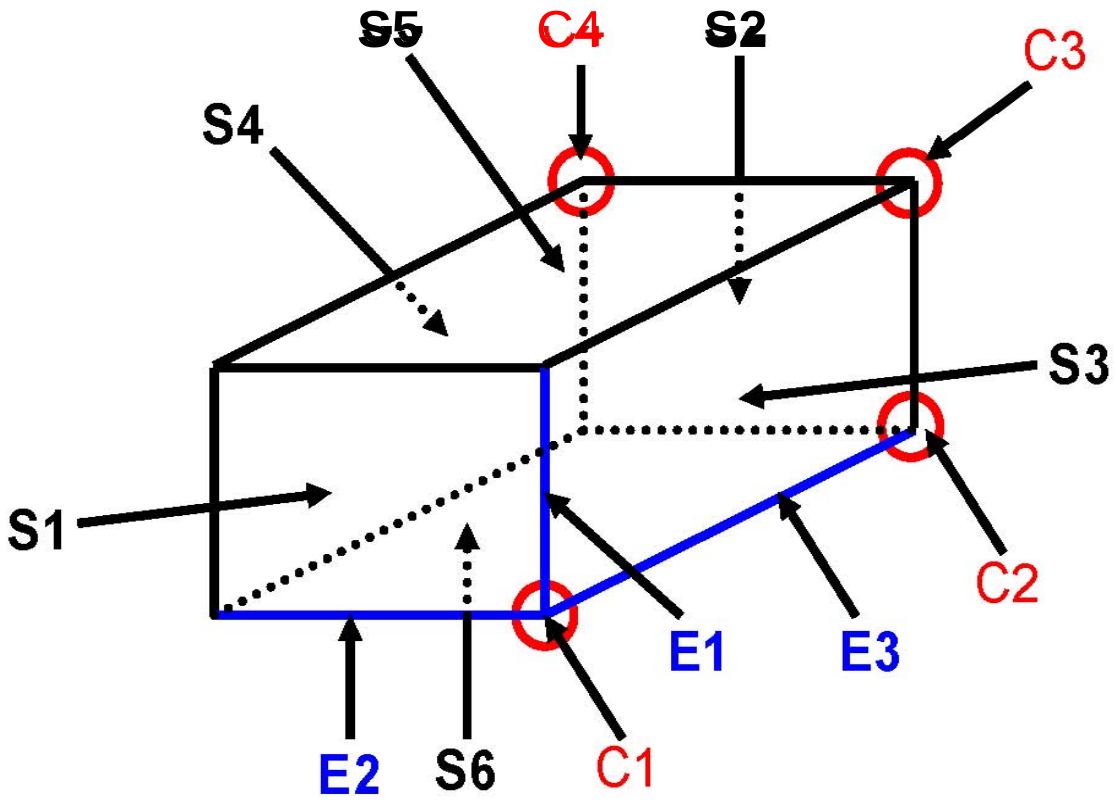
Passmark Burn-in Test Program V5.0 under Microsoft Windows 2000.

3.5 Test Location

A Certified Reliability & Environment Lab

3.6 Test Specification Reference ISTA (International Safe Transit Association) 2A 2001 Testing Procedures

Package Weight		Drop Height			Impact Velocity	
kg	lb	mm	inch		ft/s	m/s
0 ~ 9.55	0 ~ 21	965	38		14.3	4.4
9.55 ~ 18.64	21 ~ 41	813	32		13.1	4.0
18.64 ~ 27.73	41 ~ 61	660	26		11.8	3.6
27.73 ~ 45.45	61 ~ 100	508	20		10.4	3.2
45.45 ~ 68.2	100 ~ 150	305	12		8.0	2.5
> 68.2	> 150	152	6		5.7	1.7
13 Drops: 4 corner,3 edges and 6 surfaces						



3.7 Test Criteria

1. A minimum of 1 DUT must be tested.

2. The minimum DUT testing is based on covering the multi sourcing of key components that can present weakness regarding mechanical stress: Power supply, Heat sink, Fans, HDD, CD-ROM, or add-on cards.

3. During and after the drop test, all DUTs must pass the following diagnostic tests:

a) Functional check: The DUT will under go Burn-in test applications testing the HDD, CD-ROM, FDD and main board.

b) Visual inspection: The DUT must be without any mechanical damage. Package inside cushion materials rupture is permitted.

3.8 Test Results:

***Condition* 4 corners**	***Drop High* 96.5 Cm**	***Functional System*** PASS	***Physical System*** PASS	***Remark*** -
3 edges	**96.5 Cm**	PASS	PASS	-
6 surfaces	**96.5 Cm**	PASS	PASS	-

Corner	Edge	Surface