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ADVANTECH CO., LTD.

QA Test Report

IPC-610-H

(Product Reliability Test)

Report No : 03S005A0

Report Date : May 8 2003

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Issue Stamp	**Manager of QA Department**	**Approval**	**Test Engineer**

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QA Lab Reliability test

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IPC-610-H High temperature operation test Report No.03S005A0

QA Lab Reliability test

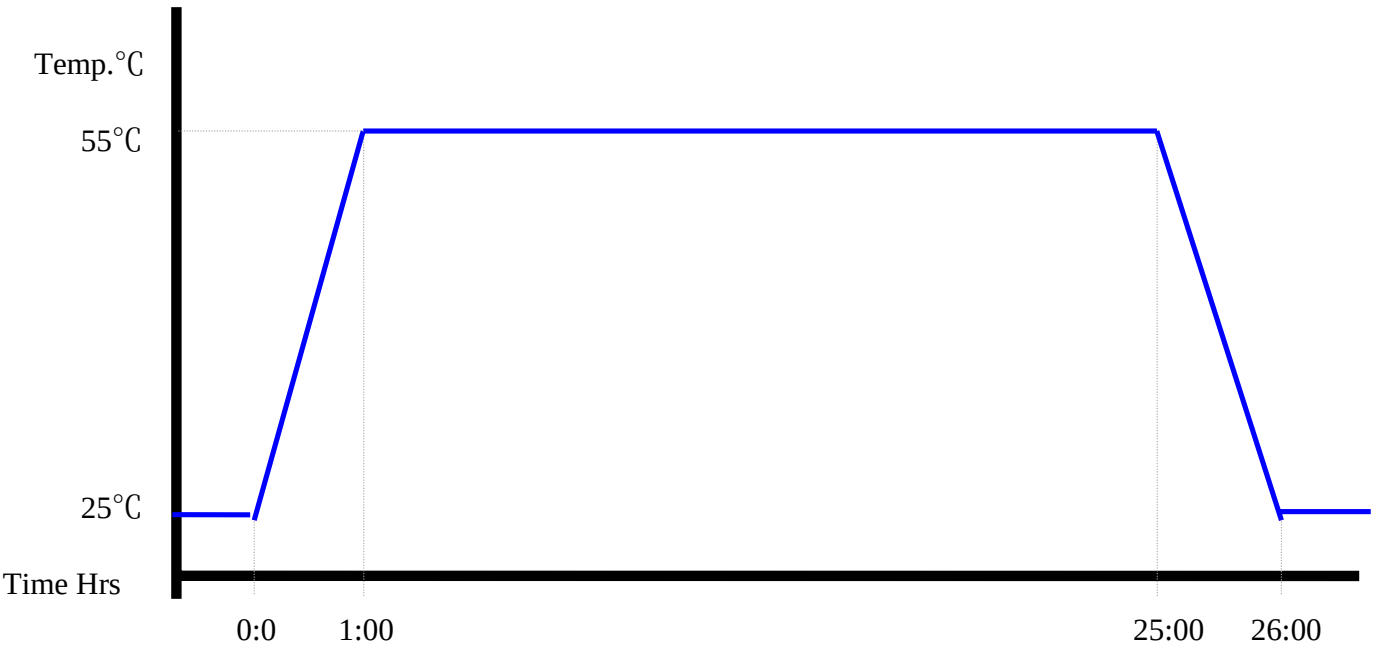
Test Date : November 8, 2002 ~ November 9, 2002
Test Site : Advantech QA Environment Lab
Performed By : Knight Hu

Purpose : The NPDP test.

Test Standard : Reference IEC68-2-2 Testing procedures
Test Bb : Dry Heat Test

Test Condition :

1. Test Temperature : 55℃
2. Test Times : 24Hrs
3. Test Software : Win2000 MPEG test program
4. Test Environment Curve :



IPC-610-H High temperature operation test Report No.03S005A0

QA Lab Reliability test

Test Equipment : Programmable Temperature & Humidity Chamber
K.SON. CO. LTD.
Model : THS-DL4+/-100
Date of Calibration : 5/21/2002

Sample Configuration & Quantity Under Test :

Using one IPC-610-H Industrial PC with the following options installed:

1. CPU board. : PCA-6180B W
   ①CPU: Intel Pentium III 1GHz
   ② SDRAM: NEC 256MB PC-100
2. Chassis : IPC-610-H
3. Back plane : PCA-6114P4-C
4. Power supply : Delta DPS-300GB 300W
5. CD-ROM : TEAC CD-540E
6. FDD : TEAC 235FD
7. HDD : Quantum Fireball 5.1AT LB05A011 Rev01-A
8. Front I/O board : ACP_USB/KB Left A 101-1
9. Fan : ADDA AD1212HB-A73GL

Performance Criteria :

Electronic function check:

1. All system function must have properly test program to test and passed this test.
2. Running OS for Win 2000 the system cannot have degradation of the performance.

Mechanical function check:

1. The switch button ,covers ,slot can work properly without any interference.
2. All screws are tighten up appropriately

IPC-610-H High temperature operation test Report No.03S005A0

QA Lab Reliability test

Test Result :

Test is no electronic and mechanical function damage or degradation have found, and without any incurably physical damage degradation the performance.

Conclusion :

Passed.

The IPC-610-H Industrial PC meets the high temperature operation test.

IPC-610-H Low temperature operation test Report No.03S005A0

QA Lab Reliability test

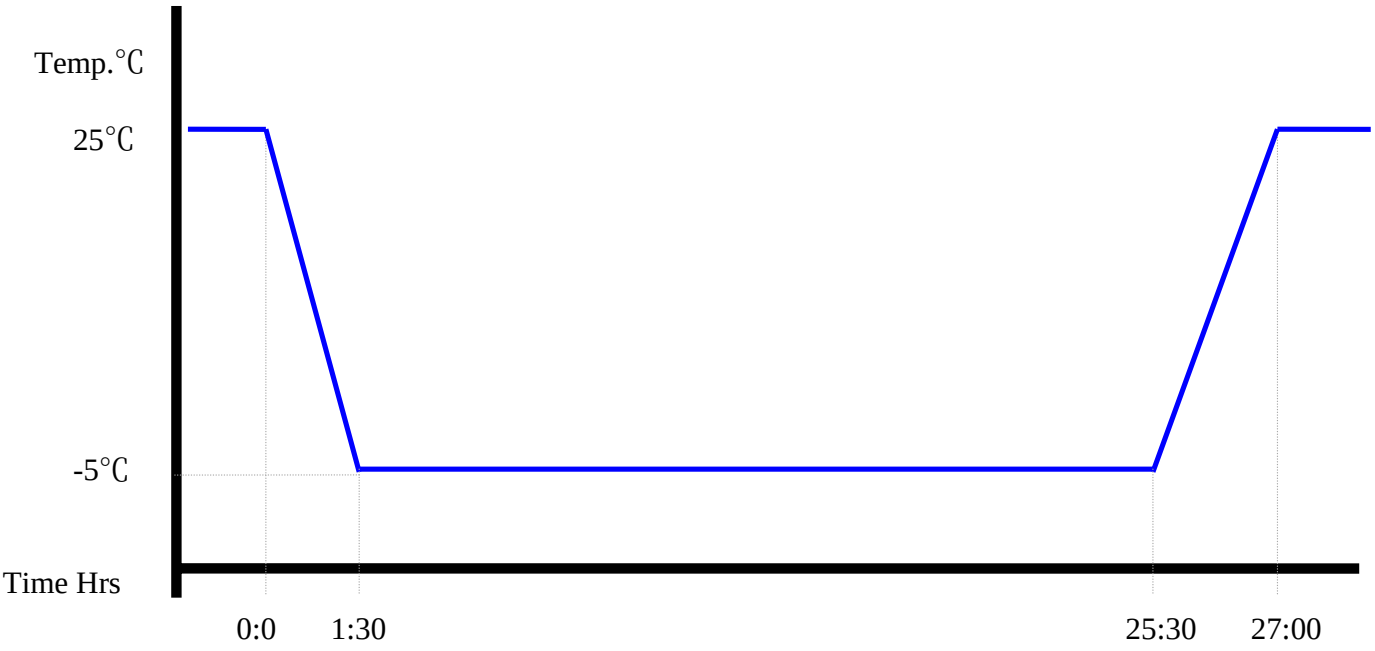
Test Date : November 10, 2002 ~ November 11, 2002
Test Site : Advantech QA Environment Lab
Performed By : Knight Hu

Purpose : The NPDP test.

Test Standard : Reference IEC68-2-1 Testing procedures
Test Ab : Cold Test

Test Condition :

1. Test Temperature : -5℃
2. Test Times : 24Hrs
3. Test Software : Win2000 MPEG test program
4. Test Environment Curve :



IPC-610-H Low temperature operation test Report No.03S005A0

QA Lab Reliability test

Test Equipment : Programmable Temperature & Humidity Chamber
K.SON. CO. LTD.
Model : THS-DL4+/-100
Date of Calibration : 5/21/2002

Sample Configuration & Quantity Under Test :

Using one IPC-610-H Industrial PC with the following options installed:

1. CPU board. : PCA-6180B W
   ①CPU: Intel Pentium III 1GHz
   ② SDRAM: NEC 256MB PC-100
2. Chassis : IPC-610-H
3. Back plane : PCA-6114P4-C
4. Power supply : Delta DPS-300GB 300W
5. CD-ROM : TEAC CD-540E
6. FDD : TEAC 235FD
7. HDD : Quantum Fireball 5.1AT LB05A011 Rev01-A
8. Front I/O board : ACP_USB/KB Left A 101-1
9. Fan : ADDA AD1212HB-A73GL

Performance Criteria :

Electronic function check:

1. All system function must have properly test program to test and passed this test.
2. Running OS for Win 2000 the system cannot have degradation of the performance.

Mechanical function check:

1. The switch button ,covers ,slot can work properly without any interference.
2. All screws are tighten up appropriately

IPC-610-H Low temperature operation test Report No.03S005A0

QA Lab Reliability test

Test Result :

Test is no electronic and mechanical function damage or degradation have found, and without any incurably physical damage degradation the performance.

Conclusion :

Passed.

The IPC-610-H Industrial PC meets the low temperature operation test.

IPC-610-H # Humidity Test **Report No.03S005A0**

QA Lab Reliability test

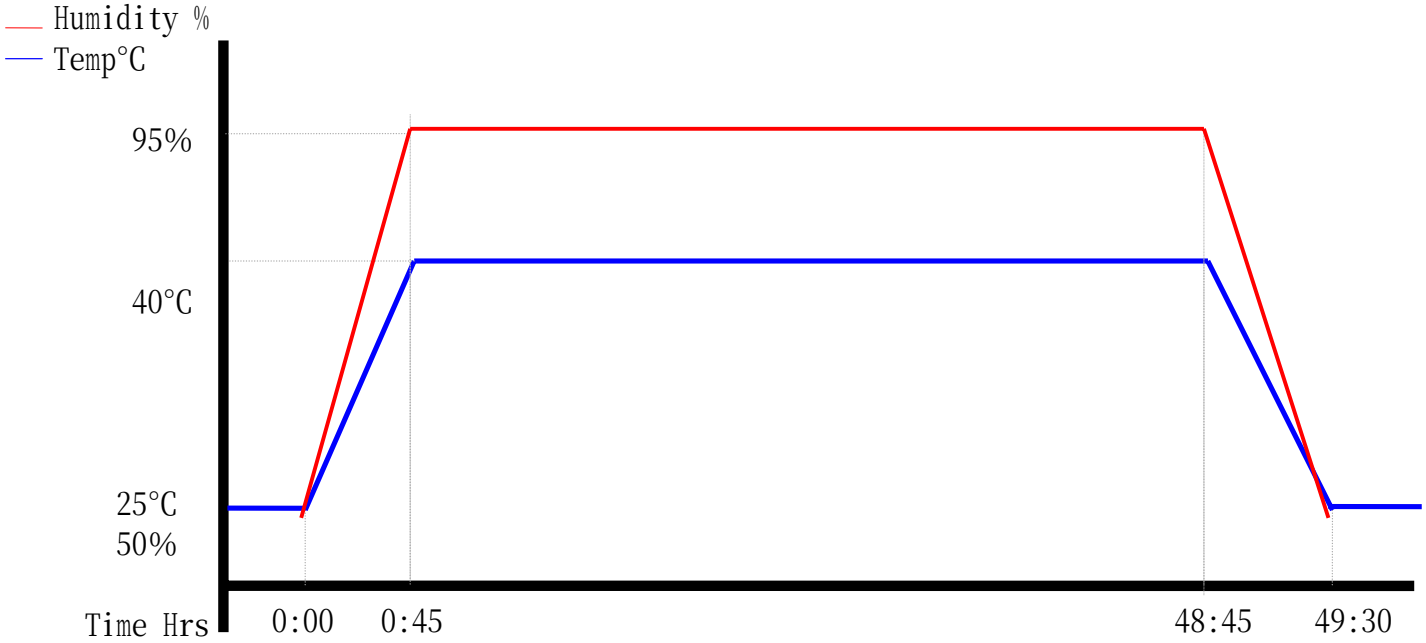
Test Date : December 1, 2002 ~ December 3, 2002
Test Site : Advantech QA Environment Lab
Performed By : Knight Hu

Purpose : The NPDP test.

Test Standard : Reference IEC68-2-3 Testing procedures
Test Cb : Damp Heat steady state Test

Test Condition :

1. Test Temperature : 40℃
2. Test Humidity : 95%
3. Test Times : 48Hrs
4. Test Software : Win2000 MPEG test program
5. Test Environment Curve :



Test Equipment : Programmable Temperature & Humidity Chamber
K.SON. INS. TECH CORP.
Model : THS-DL4 +-100
Date of Calibration : 5/21/2002

Sample Configuration & Quantity Under Test :

Using one IPC-610-H Industrial PC with the following options installed:

1. CPU board. : PCA-6180B W
   ①CPU: Intel Pentium III 1GHz
   ② SDRAM: NEC 256MB PC-100
2. Chassis : IPC-610-H
3. Back plane : PCA-6114P4-C
4. Power supply : Delta DPS-300GB 300W
5. CD-ROM : TEAC CD-540E
6. FDD : TEAC 235FD
7. HDD : Quantum Fireball 5.1AT LB05A011 Rev01-A
8. Front I/O board : ACP_USB/KB Left A 101-1
9. Fan : ADDA AD1212HB-A73GL

Performance Criteria :

Electronic function check:

1. All system function must have properly test program to test and passed this test.
2. Running OS for Win 2000 the system cannot have degradation of the performance.

Mechanical function check:

1. The switch button ,covers ,slot can work properly without any interference.
2. All screws are tighten up appropriately

Humidity Test

QA Lab Reliability test

Test Result :

There is no damage in electronic and mechanical functions.
Degradation has not been found.
Performance is maintained with no incurable physical damage or degradation.

Conclusion :

Passed.
The IPC-610-H Industrial PC meets humidity operation test.

IPC-610-H # Temperature cycle test **Report No.03S005A0**

QA Lab Reliability test

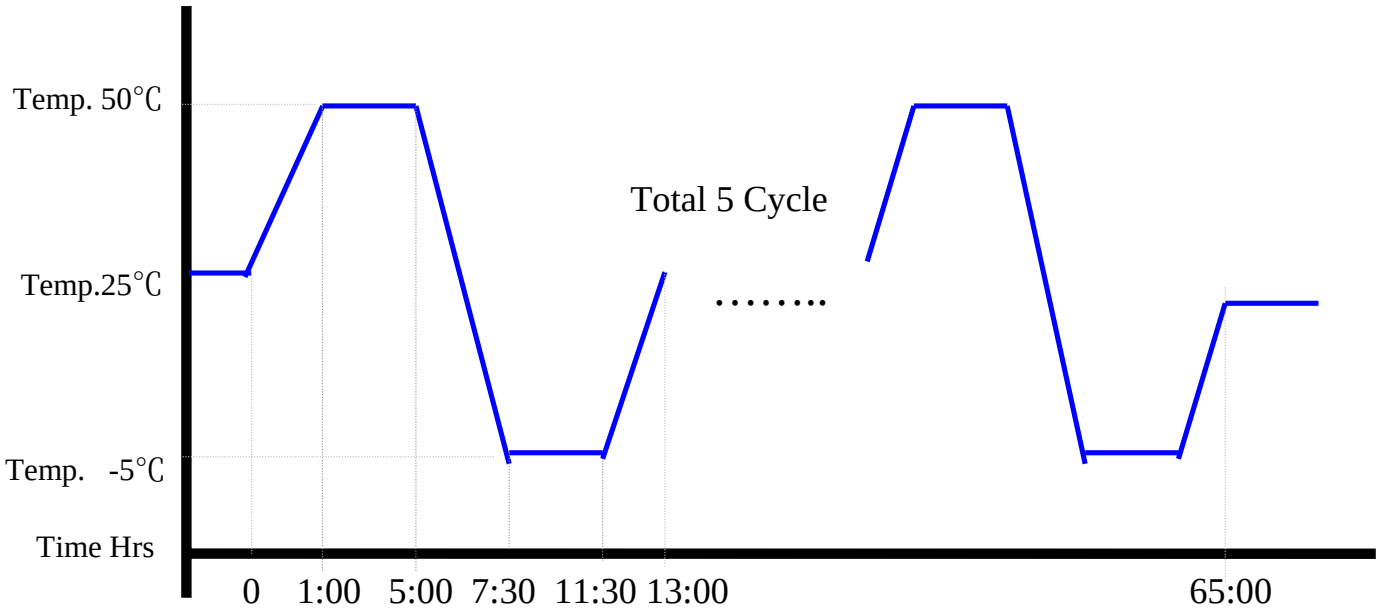
Test Date : November 26, 2002 ~ November 29, 2002
Test Site : Advantech QA Environment Lab
Performed By : Knight Hu

Purpose : The NPDP test.

Test Standard : Reference IEC68-2-14 Testing procedures
Test N: Change of temperature Test

Test Condition :

1. Test High Temperature: 50℃
2. Test Low Temperature: -5℃
3. Test dwell time: 4Hrs
4. Temperature slope: 20℃/hr
5. Test cycle: 5 cycles
6.Test Software : Win 2000 MPEG test program
7. Test Environment Curve:



QA Lab Reliability test

Test Equipment : Programmable Temperature & Humidity Chamber
K.SON. CO. LTD.
Model : THS-DL4+/-100
Date of Calibration : 5/21/2002

Sample Configuration & Quantity Under Test :

Using one IPC-610-H Industrial PC with the following options installed:

1. CPU board. : PCA-6180B W
   ①CPU: Intel Pentium III 1GHz
   ② SDRAM: NEC 256MB PC-100
2. Chassis : IPC-610-H
3. Back plane : PCA-6114P4-C
4. Power supply : Delta DPS-300GB 300W
5. CD-ROM : TEAC CD-540E
6. FDD : TEAC 235FD
7. HDD : Quantum Fireball 5.1AT LB05A011 Rev01-A
8. Front I/O board : ACP_USB/KB Left A 101-1
9. Fan : ADDA AD1212HB-A73GL

Performance Criteria :

Electronic function check:

1. All system function must have properly test program to test and passed this test.
2. Running OS for Win 2000 the system cannot have degradation of the performance.

Mechanical function check:

1. The switch button ,covers ,slot can work properly without any interference.
2. All screws are tighten up appropriately

Test Result :

Test is no electronic and mechanical function damage or degradation have found, and without any incurably physical damage degradation the performance.

Conclusion :

Passed.

The IPC-610-H Industrial PC meets the temperature cycle test.

IPC-610-H # High temp./humi. Storage test **Report No.03S005A0**

QA Lab Reliability test

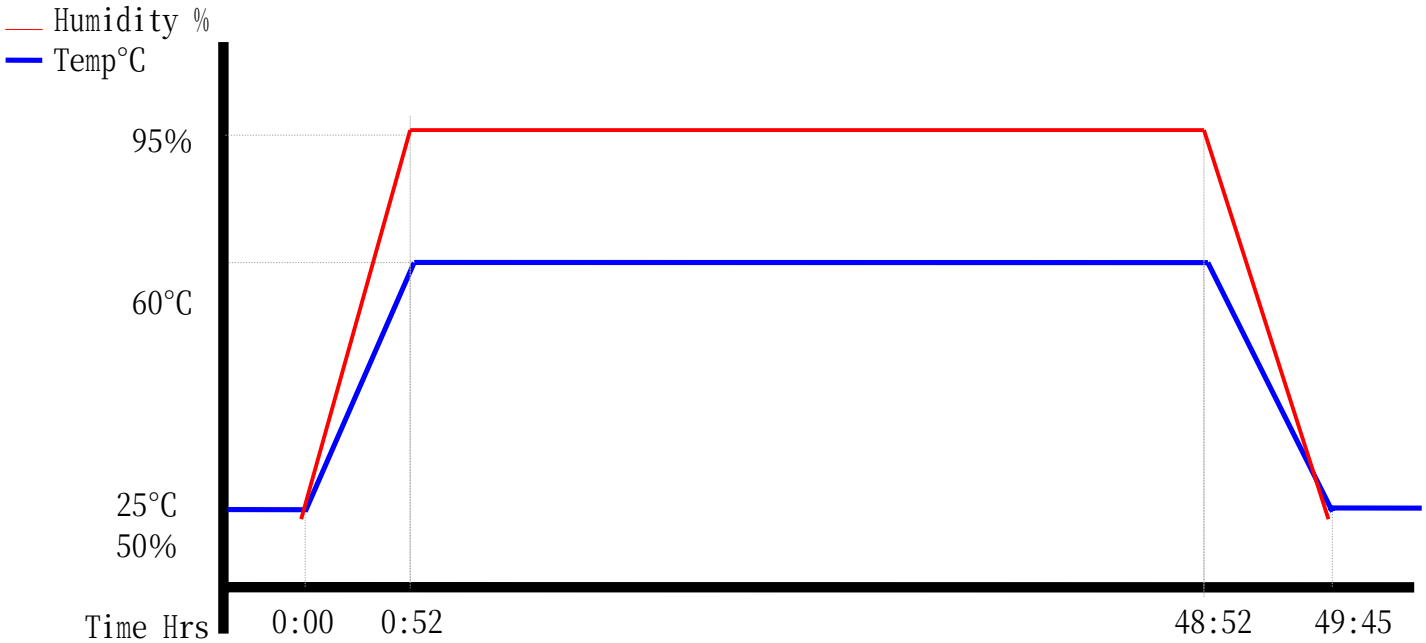
Test Date : November 22, 2002 ~ November 24,, 2002
Test Site : Advantech QA Environment Lab
Performed By : Knight Hu

Purpose : The NPDP test.

Test Standard : Reference IEC68-2-3 Testing procedures
Test Ca : Damp heat steady state test

Test Condition :

1. Test Temperature : 60℃
2. Test Humidity : 95%
3. Test Times : 48Hrs
4. Test Software : Win 2000 MPEG test program
5. Test Environment Curve :



Test Equipment : Programmable Temperature & Humidity Chamber
K.SON. CO. LTD.
Model : THS-DL4+/-100
Date of Calibration : 5/21/2002

Sample Configuration & Quantity Under Test :

Using one IPC-610-H Industrial PC with the following options installed:

1. CPU board. : PCA-6180B W
   ①CPU: Intel Pentium III 1GHz
   ② SDRAM: NEC 256MB PC-100
2. Chassis : IPC-610-H
3. Back plane : PCA-6114P4-C
4. Power supply : Delta DPS-300GB 300W
5. CD-ROM : TEAC CD-540E
6. FDD : TEAC 235FD
7. HDD : Quantum Fireball 5.1AT LB05A011 Rev01-A
8. Front I/O board : ACP_USB/KB Left A 101-1
9. Fan : ADDA AD1212HB-A73GL

Performance Criteria :

Electronic function check:

1. All system function must have properly test program to test and passed this test.
2. Running OS for Win 2000 the system cannot have degradation of the performance.

Mechanical function check:

1. The switch button ,covers ,slot can work properly without any interference.
2. All screws are tighten up appropriately.
3. All gaps on the surface are appropriately.
4. Assembling/disassembling the system enclosure or mechanical parts must be smooth ,and no deformed parts found.

Test Result :

Test is no electronic and mechanical function damage or degradation have found, and without any incurably physical damage degradation the performance.

Conclusion :

Passed.

The IPC-610-H Industrial PC meets the high temperature and humidity storage test.

IPC-610-H # Low temperature storage test **Report No.03S005A0**

QA Lab Reliability test

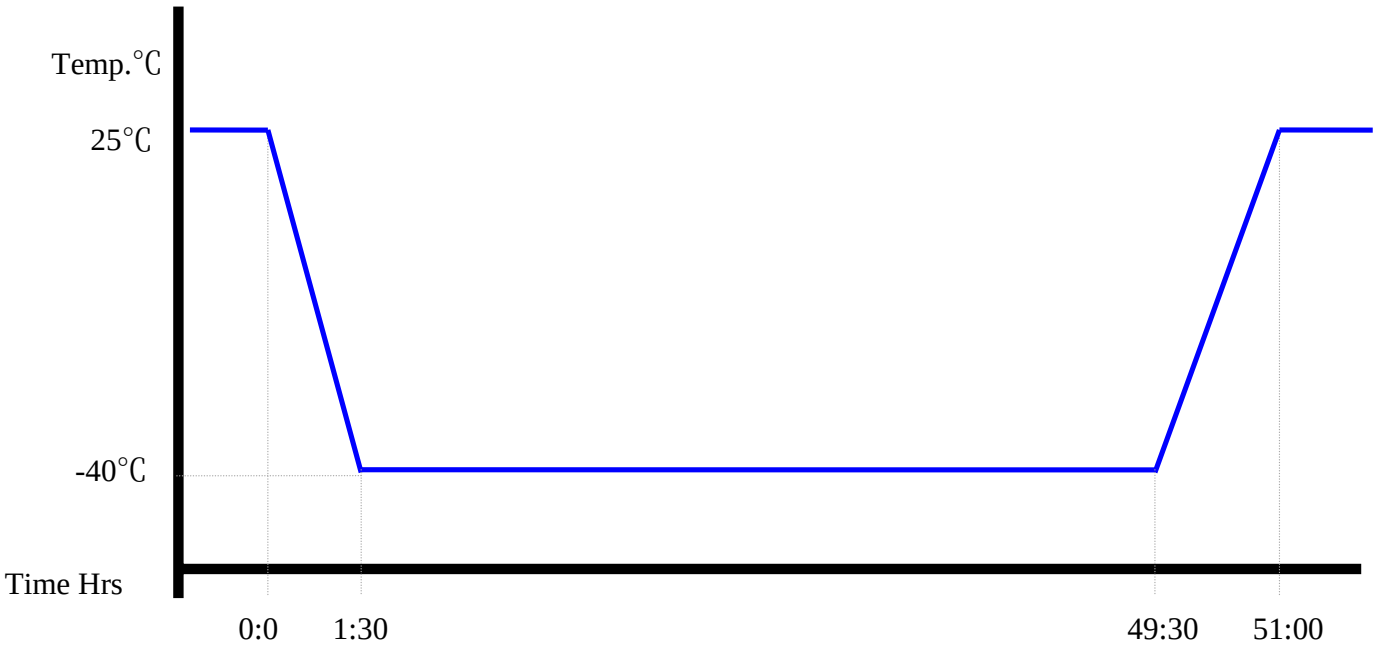
Test Date : November 19, 2002 ~ November 21, 2002
Test Site : Advantech QA Environment Lab
Performed By : Knight Hu

Purpose : The NPDP test.

Test Standard : Reference IEC68-2-1 Testing procedures
Test Ab : Cold Test

Test Condition :

1. Test Temperature : -40℃
2. Test Times : 48Hrs
3. Test Environment Curve :



QA Lab Reliability test

Test Equipment : Programmable Temperature & Humidity Chamber
K.SON. CO. LTD.
Model : THS-DL4+/-100
Date of Calibration : 5/21/2002

Sample Configuration & Quantity Under Test :

Using one IPC-610-H Industrial PC with the following options installed:

1. CPU board. : PCA-6180B W
   ①CPU: Intel Pentium III 1GHz
   ② SDRAM: NEC 256MB PC-100
2. Chassis : IPC-610-H
3. Back plane : PCA-6114P4-C
4. Power supply : Delta DPS-300GB 300W
5. CD-ROM : TEAC CD-540E
6. FDD : TEAC 235FD
7. HDD : Quantum Fireball 5.1AT LB05A011 Rev01-A
8. Front I/O board : ACP_USB/KB Left A 101-1
9. Fan : ADDA AD1212HB-A73GL

Performance Criteria :

Electronic function check:

1. All system function must have properly test program to test and passed this test.
2. Running OS for Win 2000 the system cannot have degradation of the performance.

Mechanical function check:

1. The switch button ,covers ,slot can work properly without any interference.
2. All screws are tighten up appropriately.
3. All gaps on the surface are appropriately.
4. Assembling/disassembling the system enclosure or mechanical parts must be smooth ,and no deformed parts found.

Test Result :

Test is no electronic and mechanical function damage or degradation have found, and without any incurably physical damage degradation the performance.

Conclusion :

Passed.

The IPC-610H Industrial PC meets the low temperature storage test.

IPC-610-H # Cold Start Test **Report No.03S005A0**

QA Lab Reliability test

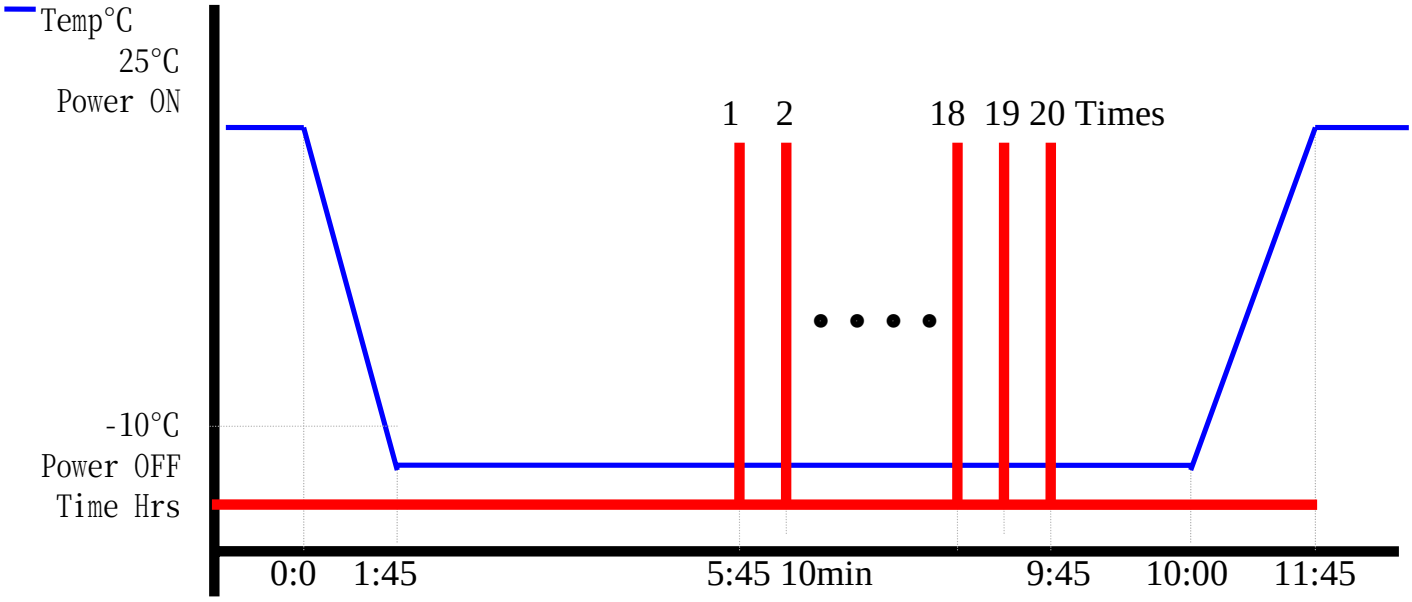
Test Date : November 26, 2002
Test Site : Advantech QA Environment Lab
Performed By : Knight Hu

Purpose : The NPDP test.

Test Standard : Reference IEC68-2-1 Testing procedures
Test Ab : Cold Test

Test Condition :

1. Test Temperature : -10℃
2. Test Times : 8Hrs
   Step: A. System power off 4 hours.
   B. System power on , then 2 minutes later, system power off.
   C. After 10 minutes, system power on again.
   D. Two minutes later, system power off again.
   E. Recycle step C& D for 20 times.
3. Number of test : 20 times
4. Test Software : MS-DOS
5. Test Environment Curve :



Test Equipment : Programmable Temperature & Humidity Chamber
K.SON. INS. TECH CORP.
Model : THS-DL4 +-100
Date of Calibration : 10/06/2000

Sample Configuration & Quantity Under Test :

Using one IPC-610-H Industrial PC with the following options installed:

1. CPU board. : PCA-6180B W
   ①CPU: Intel Pentium III 1GHz
   ② SDRAM: NEC 256MB PC-100
2. Chassis : IPC-610-H
3. Back plane : PCA-6114P4-C
4. Power supply : Delta DPS-300GB 300W
5. CD-ROM : TEAC CD-540E
6. FDD : TEAC 235FD
7. HDD : Quantum Fireball 5.1AT LB05A011 Rev01-A
8. Front I/O board : ACP_USB/KB Left A 101-1
9. Fan : ADDA AD1212HB-A73GL

Performance Criteria :

Electronic function check:

1. All system function must have properly test program to test and passed this test.
2. Running OS for Win 2000 the system cannot have degradation of the performance.

Mechanical function check:

1. The switch button ,covers ,slot can work properly without any interference.
2. All screws are tighten up appropriately

Test Result :

There is no damage in electronic and mechanical functions.
Degradation has not been found.
Performance is maintained with no incurable physical damage or degradation.

Conclusion :

Passed.
The IPC-610-H Industrial PC meets cold start test.

IPC-610-H Random vibration operation test Report No.03S005A0

QA Lab Reliability test

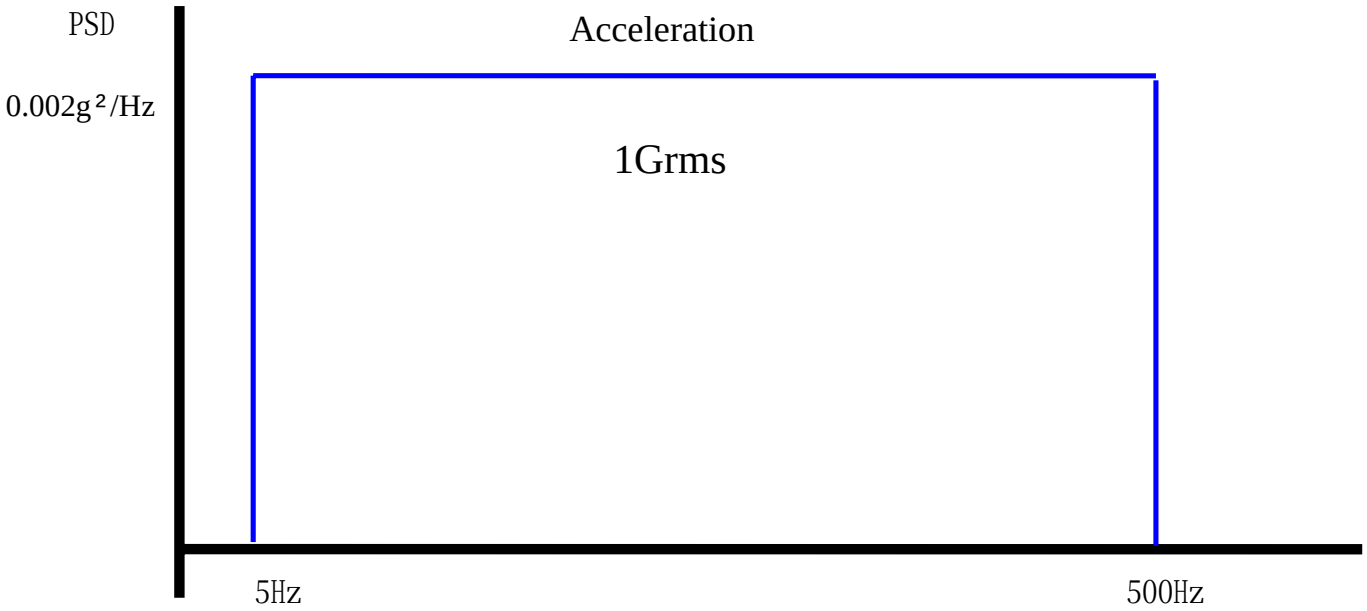
Test Date : December 16, 2002
Test Site : Advantech QA Environment Lab
Performed By : Knigtht Hu

Purpose : The NPDP test

Test Standard : Reference IEC68-2-64 Testing procedures
Test Fh : Vibration Board Band Random Test

Test Condition :

1. Test PSD : 0.002G²/Hz (1Grms)
2. Test Frequency :5-500Hz
3. Test Axis : Z-axis
4. Test Time : 1Hr pre axis
5. Test Software : Win2000 MPEG test program
6. Test Vibration Curve :



IPC-610-H Random vibration operation test Report No.03S005A0

QA Lab Reliability test

Test Equipment : Vibration Simulator System
KING DESIGN Co. LTD.
Model : 9363EM-20030-25N80
S / N : MC104053285
Date of Calibration : 05/16/2002

Sample Configuration & Quantity Under Test :

Using one IPC-610-H Industrial PC with the following options installed:

1. CPU board. : PCA-6180B W
   ①CPU: Intel Pentium III 1GHz
   ② SDRAM: NEC 256MB PC-100
2. Chassis : IPC-610-H
3. Back plane : PCA-6114P4-C
4. Power supply : Delta DPS-300GB 300W
5. CD-ROM : TEAC CD-540E
6. FDD : TEAC 235FD
7. HDD : Quantum Fireball 5.1AT LB05A011 Rev01-A
8. Front I/O board : ACP_USB/KB Left A 101-1
9. Fan : ADDA AD1212HB-A73GL

Performance Criteria :

Electronic function check:

1. All system function must have properly test program to test and passed this test.
2. Running OS for Win 2000 the system cannot have degradation of the performance.

IPC-610-H Random vibration operation test Report No.03S005A0

QA Lab Reliability test

Mechanical function check:

1. The switch button ,covers ,slot can work properly without any interference.
2. All screws are tighten up appropriately.
3. All gaps on the surface are appropriately.
4. Assembling/disassembling the system enclosure or mechanical parts must be smooths ,and no deformed parts found.

Test Result :

Test is no electronic and mechanical function damage or degradation have found, and without any incurably physical damage degradation the performance.

Conclusion :

Passed.

The IPC-610-H Industrial PC meets random vibration operation test.

IPC-610-H Sine vibration non-operation test Report No.03S005A0

QA Lab Reliability test

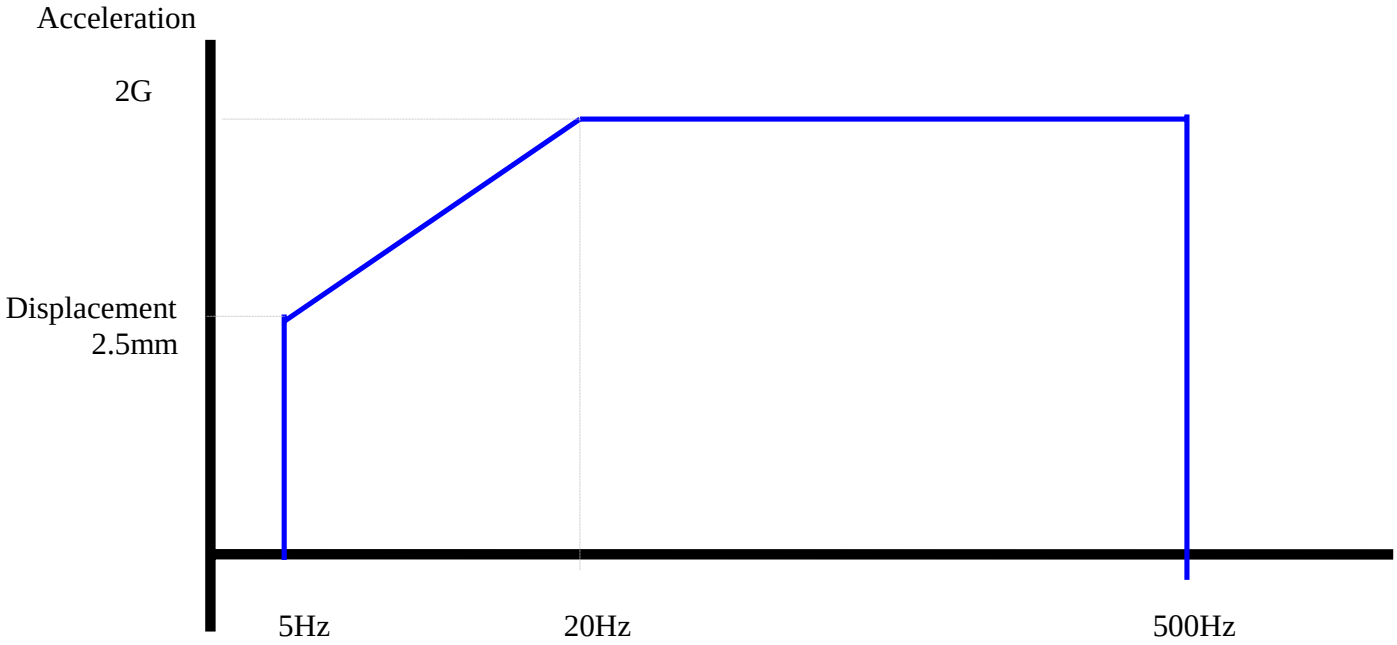
Test Date : December 12, 2002
Test Site : Advantech QA Environment Lab
Performed By : Knight Hu

Purpose : The NPDP test

Test Standard : Reference IEC68-2-6 Testing procedures
Test Fc : Vibration sinusoidal Test

Test Condition :

1. Test Acceleration : 2G
2. Test Frequency :5-500Hz
3. Test Axis : X,Y,Z three axis
4. Test Time : 1Hr pre axis
5. Test Vibration Curve :



IPC-610-H Sine vibration non-operation test Report No.03S005A0

QA Lab Reliability test

Test Equipment : Vibration Simulator System
KING DESIGN Co. LTD.
Model : 9363EM-20030-25N80
S / N : MC104053285
Date of Calibration : 05/16/2002

Sample Configuration & Quantity Under Test :

Using one IPC-610-H Industrial PC with the following options installed:

1. CPU board. : PCA-6180B W
   ①CPU: Intel Pentium III 1GHz
   ② SDRAM: NEC 256MB PC-100
2. Chassis : IPC-610-H
3. Back plane : PCA-6114P4-C
4. Power supply : Delta DPS-300GB 300W
5. CD-ROM : TEAC CD-540E
6. FDD : TEAC 235FD
7. HDD : Quantum Fireball 5.1AT LB05A011 Rev01-A
8. Front I/O board : ACP_USB/KB Left A 101-1
9. Fan : ADDA AD1212HB-A73GL

Performance Criteria :

Electronic function check:

1. All system function must have properly test program to test and passed this test.
2. Running OS for Win 2000 the system cannot have degradation of the performance.

Mechanical function check:

1. The switch button ,covers ,slot can work properly without any interference.
2. All screws are tighten up appropriately.
3. All gaps on the surface are appropriately.
4. Assembling/disassembling the system enclosure or mechanical parts must be smooth ,and no deformed parts found.

IPC-610-H Sine vibration non-operation test Report No.03S005A0

QA Lab Reliability test

Test Result :

Test is no electronic and mechanical function damage or degradation have found, and without any incurably physical damage degradation the performance.

Conclusion :

Passed.

The IPC-610-H Industrial PC meets sine vibration non-operation test.

IPC-610-H # Package Vibration Test **Report No.03S005A0**

QA Lab Reliability test

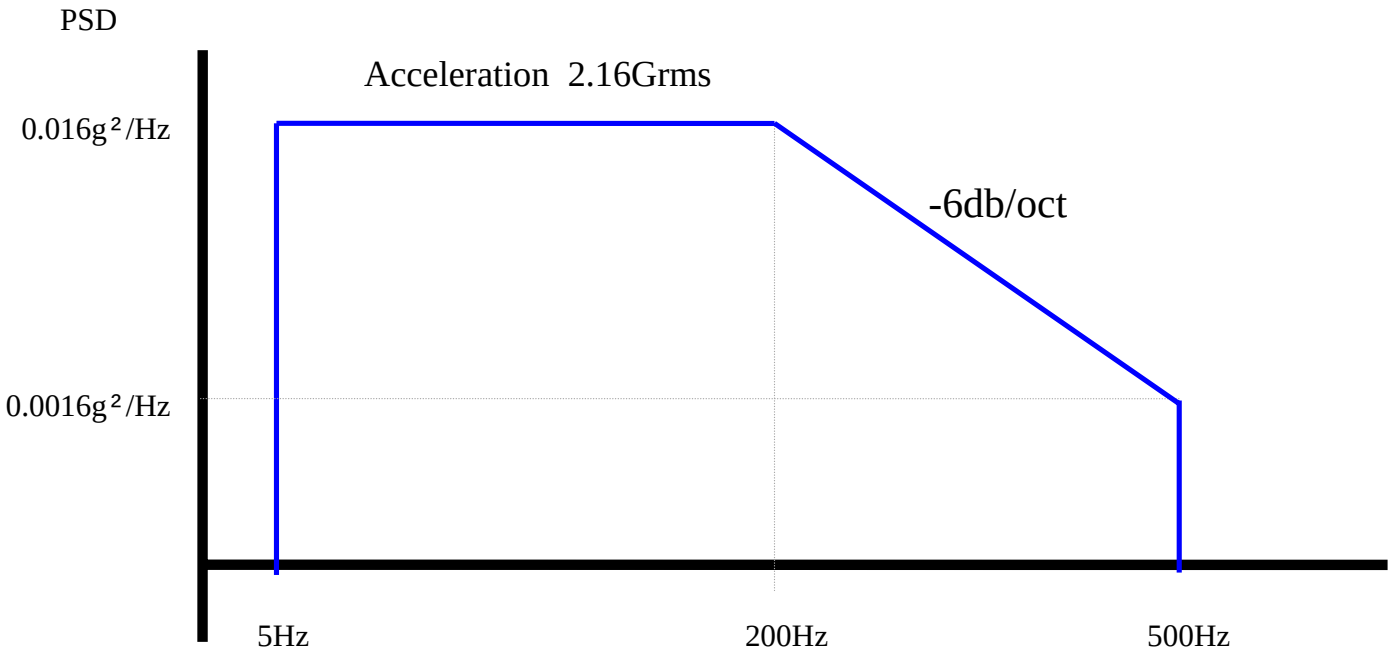
Test Date : December 23, 2002
Test Site : Advantech QA Environment Lab
Performed By : Knight Hu

Purpose : The NPDP test.

Test Standard : Reference IEC68-2-64 Testing procedures
Test Fh : Vibration Board Band Random Test

Test Condition :

1. Test PSD : 0.016G²/Hz (2.16Grms)
2. Test Frequency : 5-500Hz
3. Test Axis : X,Y,Z three axis
4. Test Time : 1Hr pre axis
5. Test Vibration Curve :



IPC-610-H # Package Vibration Test **Report No.03S005A0**

QA Lab Reliability test

Test Equipment : Vibration Simulator System
KING DESIGN Co. LTD.
Model : 9363EM-20030-25N80
S / N : MC104053285
Date of Calibration : 05/16/2002

Sample Configuration & Quantity Under Test :

Using one IPC-610-H Industrial PC with the following options installed:

1. CPU board. : PCA-6180B W
   ①CPU: Intel Pentium III 1GHz
   ② SDRAM: NEC 256MB PC-100
2. Chassis : IPC-610-H
3. Back plane : PCA-6114P4-C
4. Power supply : Delta DPS-300GB 300W
5. CD-ROM : TEAC CD-540E
6. FDD : TEAC 235FD
7. HDD : Quantum Fireball 5.1AT LB05A011 Rev01-A
8. Front I/O board : ACP_USB/KB Left A 101-1
9. Fan : ADDA AD1212HB-A73GL

Performance Criteria :

Electronic function check:

1. All system function must have properly test program to test and passed this test.
2. Running OS for Win 2000 the system cannot have degradation of the performance.

IPC-610-H # Package Vibration Test **Report No.03S005A0**

QA Lab Reliability test

Mechanical function check:

1. The switch button covers, slot can work properly without any interference.
2. All screws are tighten up appropriately.
3. All gaps on the surface are appropriately.
4. Assembling/disassembling the system enclosure or mechanical parts must be smooths, and no deformed parts found.

Test Result :

Test is no electronic and mechanical function damage or degradation have found, and without any incurably physical damage degradation the performance.

Conclusion :

Passed.

The IPC-610-H Industrial PC meets the package vibration test.

IPC-610-H # Package drop Test **Report No.03S005A0**

QA Lab Reliability test

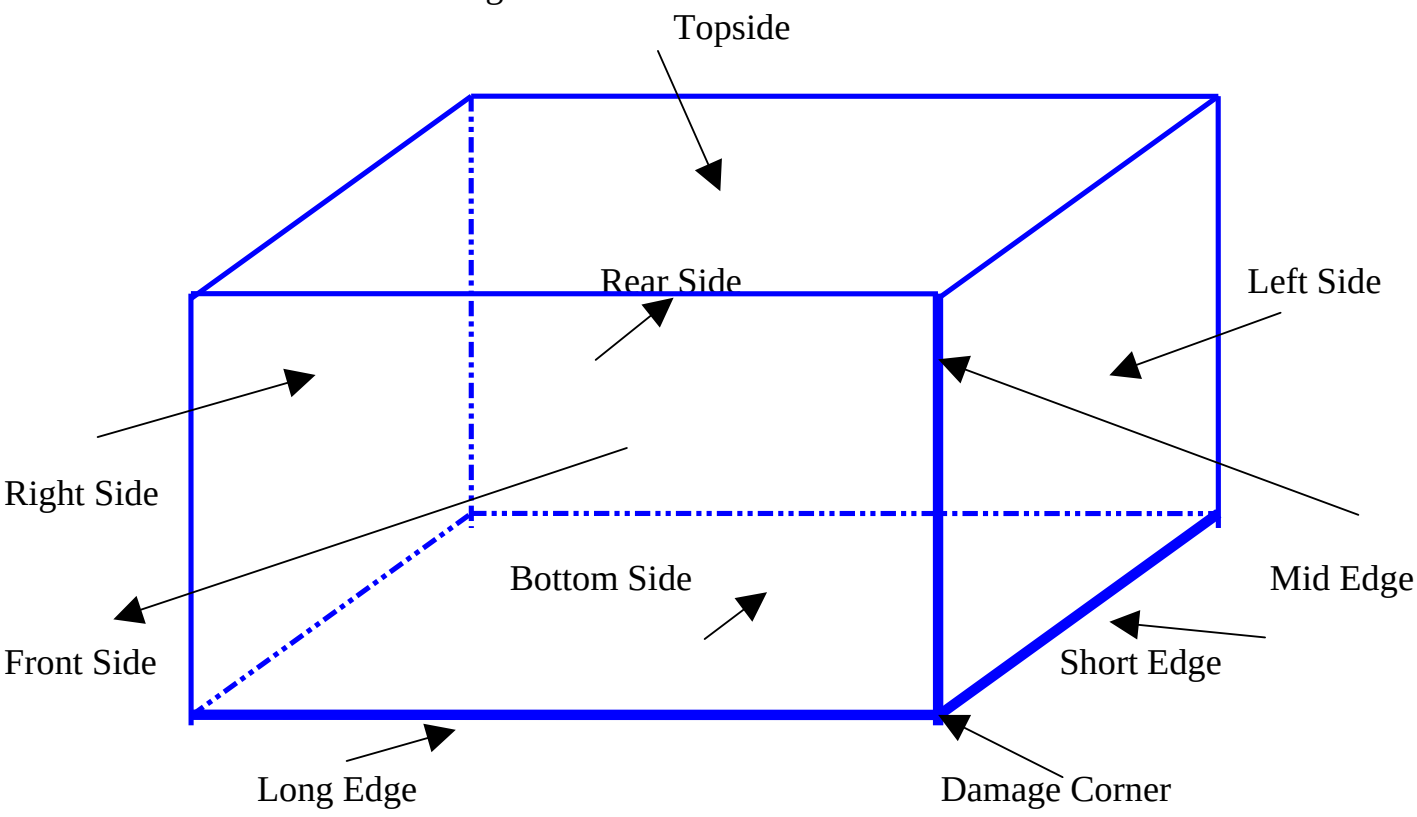
Test Date : March 13, 2003
Test Site : Advantech QA Environment Lab
Performed By : Knight Hu

Purpose : The NDPD test.

Test Standard : Reference Federal Standard 101 Method 5007 Testing procedure B
Test Ea : Drop Test

Test Condition :

1. Test Phase : One corner
   Three edges
   Six face
2. Test High : 76cm
3. Package Weight : 18.4Kg
4. Package Dimension : 62.0cm*57.0cm*36.0cm
5. Test Drawing :



IPC-610-H # Package drop Test **Report No.03S005A0**

QA Lab Reliability test

Test Equipment : Drop Tester Machine
TOSHIDA SEIKI Co. LTD.
Model : DT-100B

Sample Configuration & Quantity Under Test :

Using one IPC-610-H Industrial PC with the following options installed:

1. CPU board. : PCA-6180B W
   ①CPU: Intel Pentium III 1GHz
   ② SDRAM: NEC 256MB PC-100
2. Chassis : IPC-610-H
3. Back plane : PCA-6114P4-C
4. Power supply : Delta DPS-300GB 300W
5. CD-ROM : TEAC CD-540E
6. FDD : TEAC 235FD
7. HDD : Quantum Fireball 5.1AT LB05A011 Rev01-A
8. Front I/O board : ACP_USB/KB Left A 101-1
9. Fan : ADDA AD1212HB-A73GL

Performance Criteria :

Electronic function check:

1. All system function must have properly test program to test and passed this test.
2. Running OS for Win 2000 the system cannot have degradation of the performance.

Mechanical function check:

1. The switch button ,covers ,slot can work properly without any interference.
2. All screws are tighten up appropriately.
3. All gaps on the surface are appropriately.
4. Assembling/disassembling the system enclosure or mechanical parts must be smooths ,and no deformed parts found.
5. The package material (carton and sponge) can work properly without any interference to protection function.

IPC-610-H # Package drop Test **Report No.03S005A0**

QA Lab Reliability test

Test data :

Drop Face	Acceleration (G)	Remark
Front Side	41.3	
Rear Side	41.1	
Left side	47.6	
Right side	35.8	
Top side	36.3	
Bottom side	50.4	

Test Result :

1.Test is no electronic and mechanical function damage or degradation have found, and without any incurably physical damage degradation the performance.

Conclusion :

Passed.

The IPC-610-H Industrial PC meets package drop test