

HON HAI Precision IND.CO.,LTD.

5F-1,5,Hsin-An Road,
Hsinchu Science-Based Industrial Park,
Taiwan, R.O.C.

Tel: 886-3-5784975 Fax: 886-3-5783038

Reliability Test Report

for BFX-AT100 (T99X171.00)

(golden sample)

Prepared by Allen Chen
Test Engineer, HWQA Engineering Dept.

Checked by Kenji Chen
Supervisor, HWQA Engineering Dept.

Approved by Jy Deng
Manager, HWQA Engineering Dept.

Revision Change History

Revision	Description of Change	Date
1.0	Initial Release	05/15/2023

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Table of Contents

Table of Contents 1

Purpose:..... 2

Scope: 2

Short-term solution: 2

The summary of test items: 3

Panel Drawing:..... 4

Test setup and function test: 5

1. Vibration Test Random (Operation) 6

2. Operation Shock Test 8

3. Drop test.....11

4. Logo/Printing Abrasion Test..... 14

5. Pencil hardness test 16

6. Chassis Static Load..... 18

Purpose:

1. Provide a formal functional demonstration of the product design reliability.
2. Identify any design discrepancies.
3. Reliability assurance of trial samples which are designed and fabricated in accordance with the customer's product specifications.
4. Conduct robustness testing on early production samples in accordance to customer's product environmental testing specification.

Scope:

This document describes the performance requirements, validation criteria, and the validation tests which focus on BFX-AT100 MP stage product.

The DUT H/W version is V025 and S/W revision is 15.520.8.

Short-term solution:

Old mold for PC + Btv part modified + ABS material.

The summary of test items:

NO.	Item	Test Condition	Q'ty	Period	Pass Criteria	Refer Standard	Test result
1	Vibration Test Random (Op)	1. 0.002G ² /Hz 2. 5 to 500HZ 3. Direction: 3 mutually Perpendicular axis 4. Duration:30 min/ axis	2 units	2 days	1. No functional failures both during and after the test 2. No performance degradation during the functional test 3. No visual damage to the products after inspection, such as peeling, discoloration, etc.	IEC 60068-2-64	PASS
2	Shock test (Op)	1. Shock spectrum: Half sine, Duration: 11 ms, 2. Acceleration: 30 m/s ² , 3. Test duration: 6 faces x 3 shocks	2 units	2 days	1. No functional failures both during and after the test 2. No performance degradation during the functional test 3. No visual damage to the products after inspection, such as peeling, discoloration, etc.	IEC 60068-2-27	PASS
3	Drop test	1. Height for fall test: 750 mm 2. Steel floor 3. Drop 6 faces	2 units	1 day	1. No functional failures both before and after the test 2. No performance degradation before the functional test 3. No visual damage to the products after inspection, such as peeling, discoloration, etc.	IEC-60950-01	PASS
4	Logo/Printing Abrasion Test	Alcohol Abrasion Test Alcohol concentration: > 95%, load: 200gf, cycle: 150 cycles (one cycle= forward + backward),	2 units	2 days	No physical defect and functional failure after this test.	Foxconn's Spec	PASS
5	Pencil hardness test	1. 45-degree between pencil and testing surface 2. load force: 500gf 3. Pencil type: Mitsubishi, 'UNI' 4. Test speed: 10mm/sec, 5. Pencil hardness classification: HB 6. Scratch the testing surface, until it appears visual scratch-trace .	2 units	1 day	No physical defect and functional failure after this test.	Foxconn's Spec	PASS
6	Chassis Static Load	1. Applied position: TOP on the enclosure 2. Weight and time: 5Kg/ diameter 9mm area/apply 30 seconds	2 units	1 day	There is no damage of Mechanical material (for examples Cover's crack, breakdown	Foxconn's Spec	PASS

Panel Drawing:

Front



Rear



Bottom



I/O Port



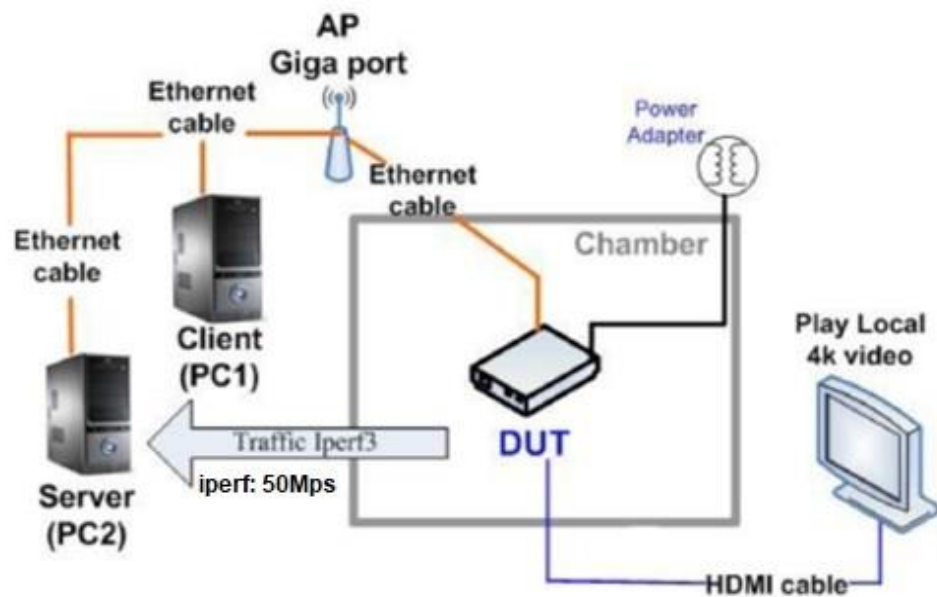
Adapter



RCU



Test setup and function test:



Connection:

Interface	Connection	Operation
AC power	The AC adapter is connected to the AC source	Powered on
DUT	DUT HDMI connected to Monitor	Play the local video
LAN	DUT, LAN connect to AP run iperf packet between PC	Continue to run iperf packet between PC, throughput 50 Mbps

1. Vibration Test Random (Operation)

Purpose:

To reveal the accumulated effects of stress induced by the random vibration and the resulting mechanical weakness and degradation in specified performance and to use this information, in conjunction with the relevant specification to assess the acceptability of specimens.

To demonstrate the mechanical robustness of specimens.

Quantity: 2 units

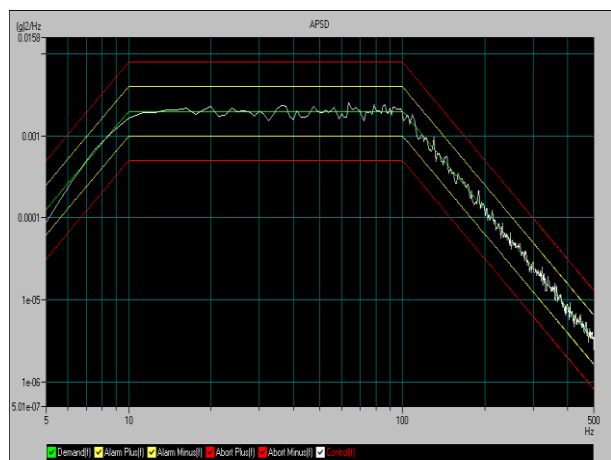
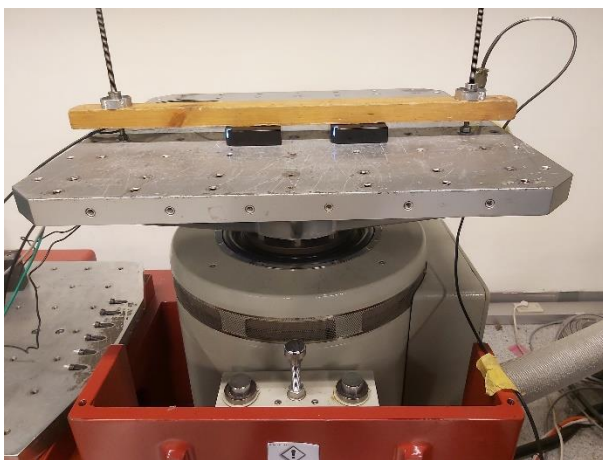
Test Objective: 1. $0.002G^2/Hz$

2. 5 to 500HZ

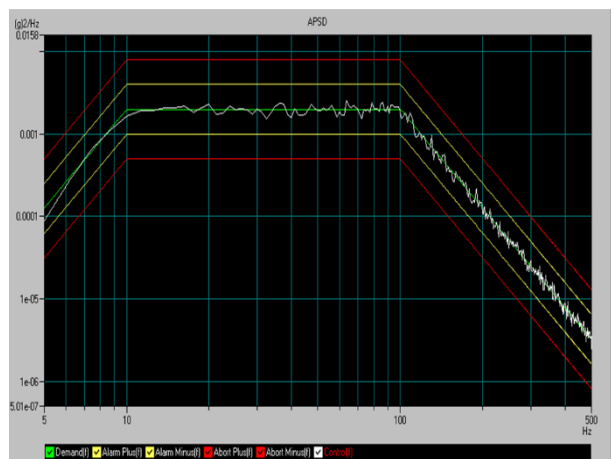
3. Direction: 3 mutually perpendicular axis

4. Duration: 30 min/ axis

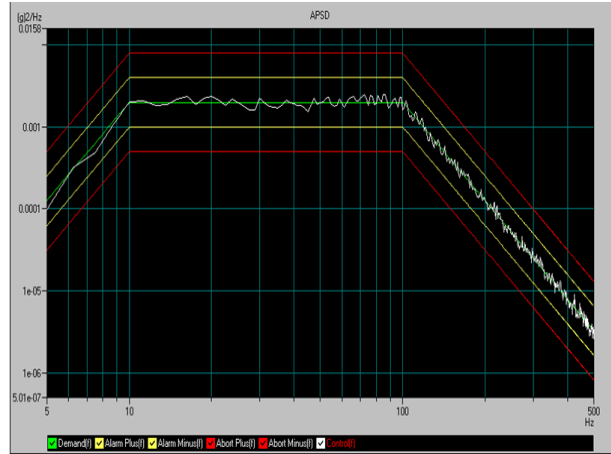
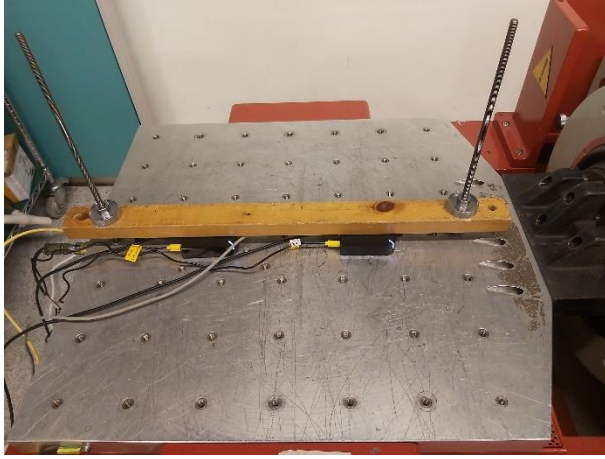
Test Profile:



X axis



Y axis



Z axis

Test Procedure:

Set the product fully function operating.

1. Fix the product on vibration mechanism.
2. Set the test program as above condition:
 - a. $0.002G^2/Hz$
 - b. 5 to 500Hz
 - c. Direction: 3 mutually perpendicular axis
 - d. Duration: 30 min/ axis
3. Check the mechanical and function during the test.

Pass Criteria:

1. No functional failures both during and after the test.
2. No performance degradation after the functional test.
3. No visual damage to the products during inspection, such as peeling, crack, missing pixels, discoloration, etc.

Basis for Profile: IEC 60068-2-64.

Test Result: **PASS**



Sample1



Sample2

2. Operation Shock Test

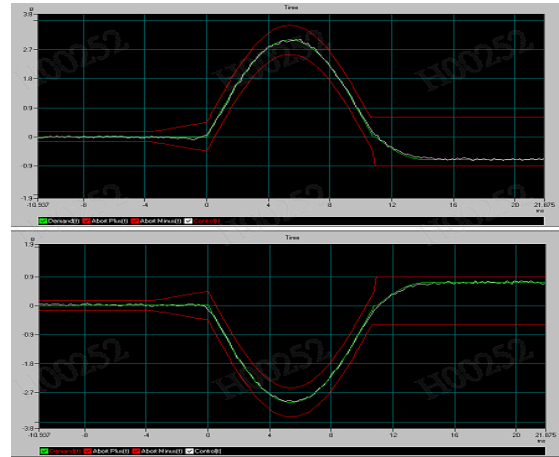
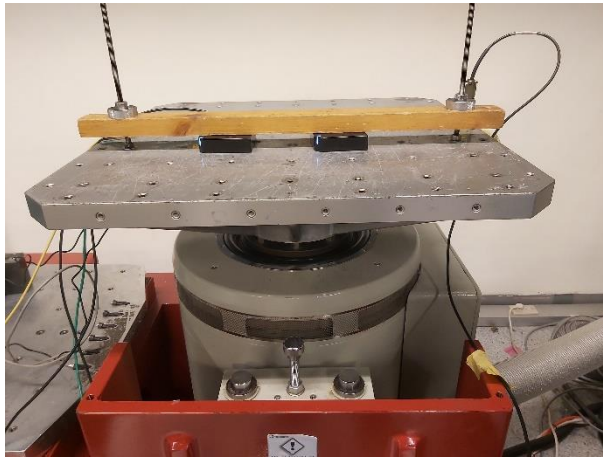
Purpose:

To reveal mechanical weakness and/or degradation in specified performance and to use this information, in conjunction with the relevant specification to decide whether a specimen is acceptable or not. To determine the structural integrity of specimens or as a means of quality control.

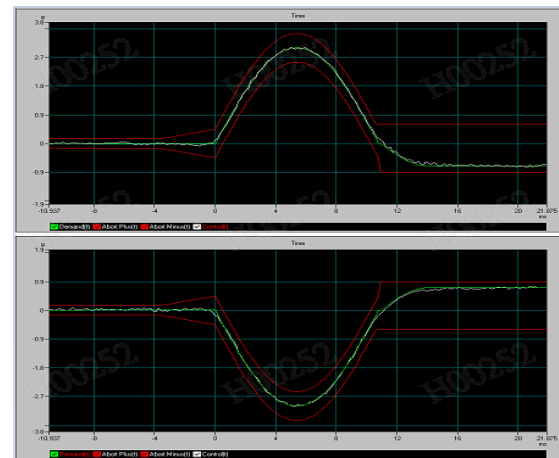
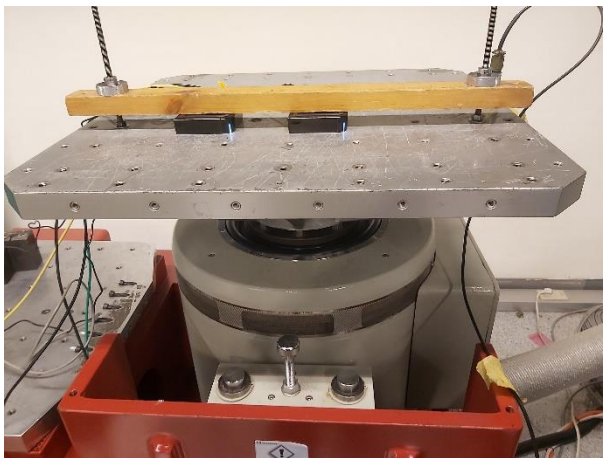
Quantity: 2 units

Test Objective: Shock spectrum: Half sine, Duration: 11 ms, Acceleration: 30 m/s²
Direction of shocks: 6, Test duration: 6 x 3 shocks.

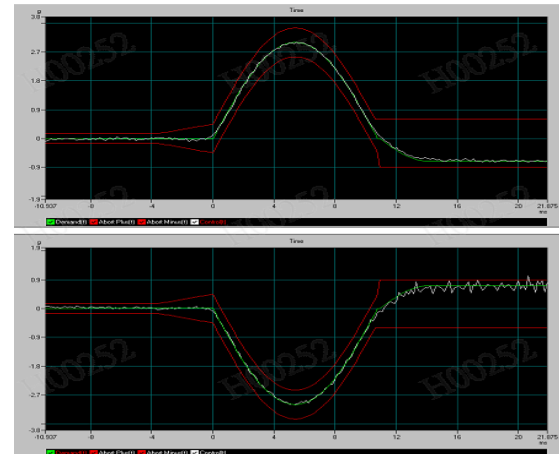
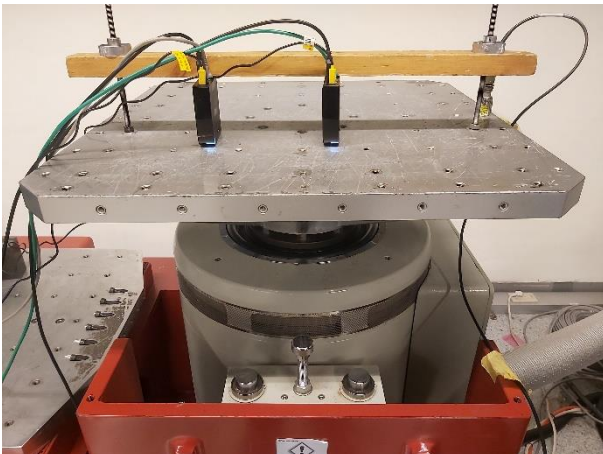
Test Profile:



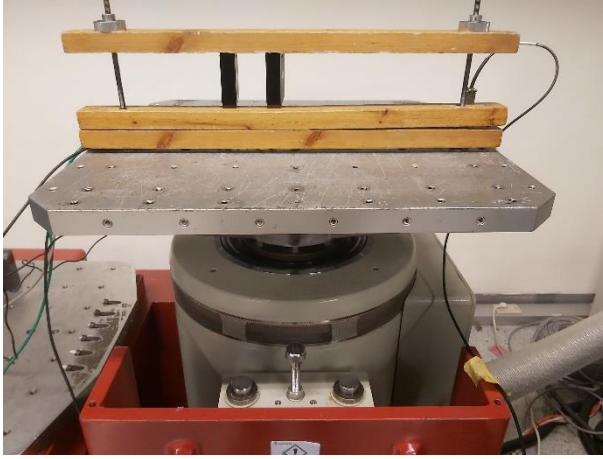
Bottom side



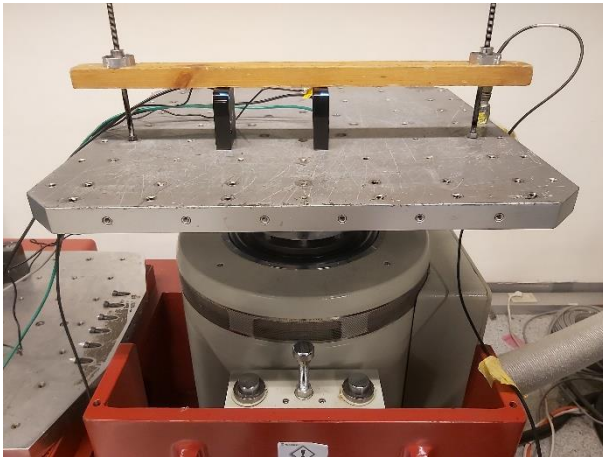
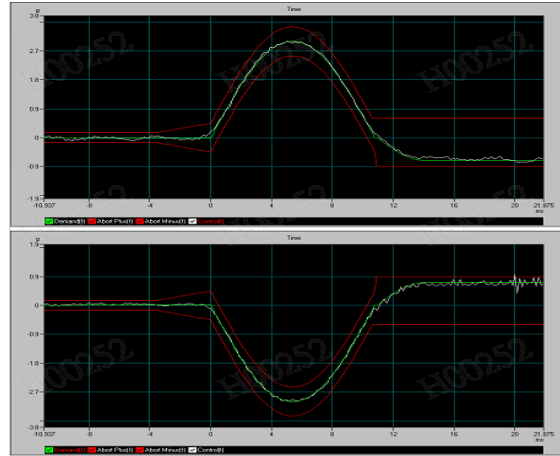
Top side



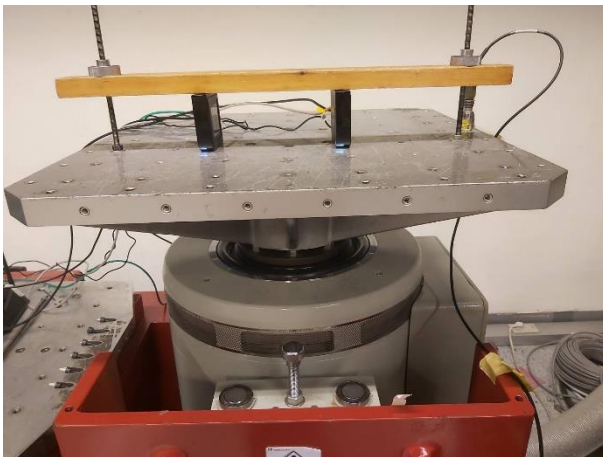
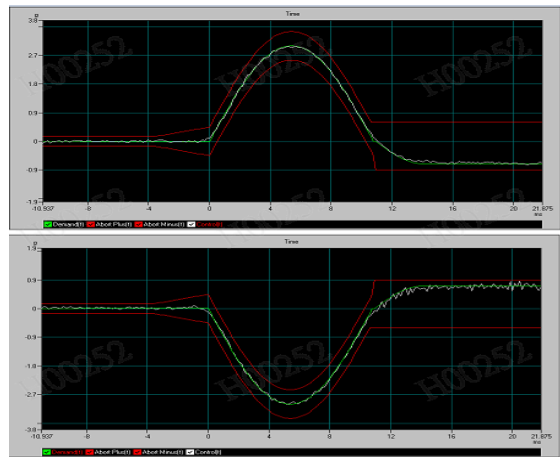
Front side



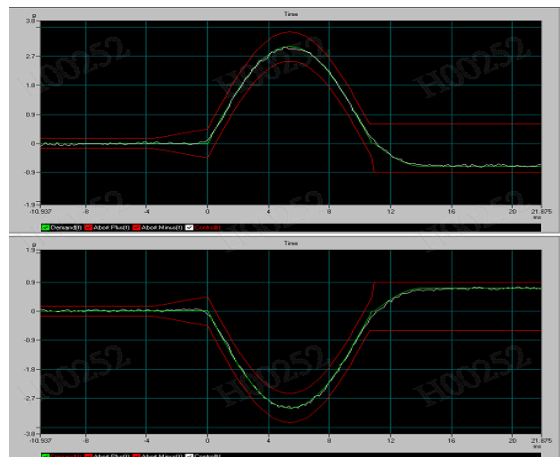
Rear side



Left side



Right side



Test Procedure:

Set the product fully function operating.

1. Fix the product on shock mechanism.
2. Set the test program as above condition: Acceleration: 30 m/s^2 .
3. Duration: 11 ms.
4. Test 6 faces, each direction test 3 times.
5. Check the mechanical and function during the test.

Pass Criteria:

1. No functional failures both during and after the test.
2. No performance degradation after the functional test.
3. No visual damage to the products during inspection, such as peeling, crack, missing pixels, discoloration, etc.

Basis for Profile: IEC 60068-2-27

Test Result: **PASS**



Sample1



Sample2

3. Drop test

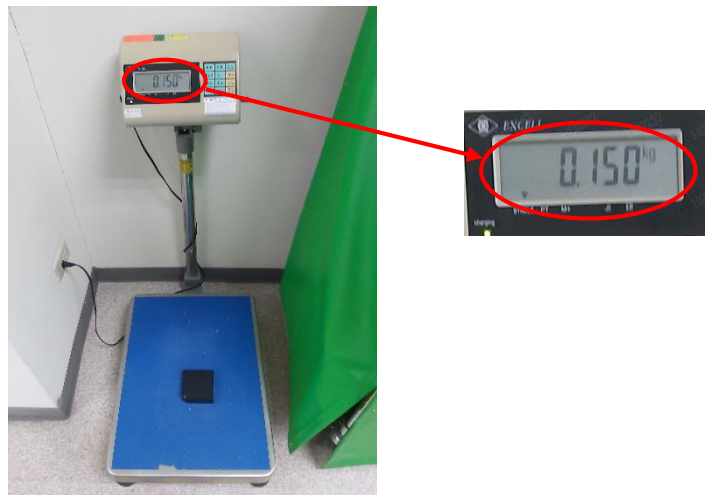
Purpose:

To assess the effects on a specimen of simple standard test intended to be representative of the fall likely to be experience during rough handling, or to demonstrate a minimum degree of robustness, for the purpose of assessing safety requirements.

Quantity: 2 units

Test Objective: Drop 75 cm, 1 fall on each face of the unit. (Steel plate).
1 DUT = 0.150Kg.

Test Profile:



Test Procedure:

1. Put the DUT on drop mechanism.
2. Drop 75 cm for six faces.
3. Check the mechanical and function after the test.

Pass Criteria:

1. No functional failures both during and after the test.
2. No performance degradation after the functional test.
3. No visual damage to the products during inspection, such as peeling, crack, missing pixels, discoloration, etc.

Basis for Profile: IEC-60950-01

Test Result: **PASS**

Cosmetic Check:

Item	Before Test	After Test	Test result
Top			Pass
Bottom			Pass
Right			Pass
Left			Pass

Front			Pass
Rear			Pass

PCB & Function Check:

	PCB		Function	Test result
Sample1			Pass	Pass
Sample2			Pass	Pass

4. Logo/Printing Abrasion Test

Purpose:

To demonstrate that products can be deformed or disfigured in any way by the chemical solvents.

Quantity: 2 unit

Test Objective: Alcohol Abrasion Test

Alcohol concentration: > 95%, load: 200gf, cycle: 150 cycles (one cycle= forward + backward),

Test Profile:



Test Procedure:

1. Fixed the DUT on the abrasion Tester
2. Alcohol concentration: 95%
3. Load: 200g for cycle: 150 cycles (one cycle= forward + backward)

Pass Criteria:

No physical defect and functional failure after this test.

Basis for Profile: Foxconn's Spec

Test Result: **PASS**



Sample1



Sample2

5. Pencil hardness test

To demonstrate that products can be deformed or disfigured in any way by the chemical solvents.

Quantity: 2 unit

Test Objective: 1. 45-degree between pencil and testing surface

2. load force: 500gf

3. Pencil type: Mitsubishi, 'UNI'

4. Test speed: 10mm/sec,

5. Pencil hardness classification: HB

6. Scratch the testing surface, until it appears visual scratch-trace .

Test Profile:



Test Procedure:

1. Pencil 1HB, weight 500g.
2. Pencil (1HB) is ground flat on 200# sandpaper.
3. Place the test pencil head in the area to be tested, push forward 3CM or more to check the surface damage of the pencil (more than 3 lines are tested, and 0.3MM is not judged at the bottom of the pen. The angle between the pencil and the horizontal plane is 45°).

Pass Criteria:

No physical defect and functional failure after this test.

Basis for Profile: Foxconn's Spec

Test Result: **PASS**

Sample	Test Profile	After	Test result
Sample1			PASS
Sample2			PASS

6. Chassis Static Load

Purpose:

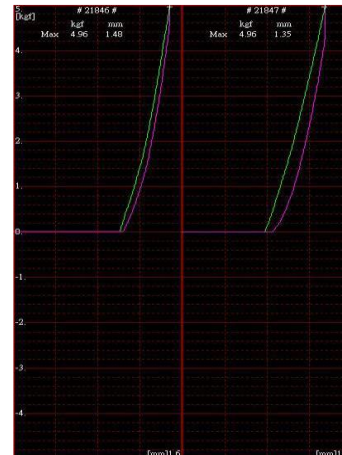
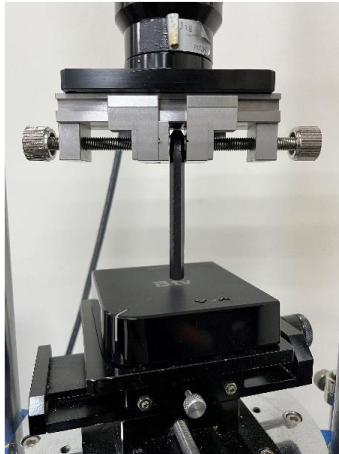
To demonstrate the product can meet worst case condition.

Quantity: 2 unit

Test Objective: 1. Applied position: TOP on the enclosure.

2. Weight and time: 5Kg/diameter 9mm area, apply 30 seconds.

Test Profile:



Test Procedure:

1. Perform functional test and visual inspection on DUTs before test.
2. Place and fix the DUT on Precision Loading Tester.
3. Use diameter 9mm area, start test for this orientation by add the push force to 5kg, and hold on for 30s.
4. Released the force, and visual inspect the DUT to make sure no any damage of Mechanical material.

Pass Criteria:

There is no damage of Mechanical material (for examples Cover's crack, breakdown

Basis for Profile: Foxconn's Spec

Test Result: **PASS**



Sample 1



Sample 2