

Drop Test Report

xCase for Surface 3 - MIL-STD 810G 516.6



MIL-STD 810G 516.6 – Shock Test

This test method is referred to as the “drop” test, and it gauges how well a device holds up to impacts while falling from certain heights (4-feet in this instance). The tests are designed to determine how well a device can put up with general physical abuse while in operation.

Read entire [MIL-STD documentation](#).

Definition

A unit may be a tablet alone or tablet with a protective case. Certain accessories may be attached to the unit during the test at the discretion of the Engineering and Marketing Departments.

Unit Being Tested

Units are built using either prototype or production level materials. If prototype materials are used, then the test will be run again using production materials when available. The device being tested is a Surface 3 inside the protective case.

If the test was performed with a prototype case and it passes, this is considered a pass test of the case that is only verified again with production material.

The unit being tested does not include the Type Cover Keyboard or the briefcase handle.

Method

- The unit is loaded with Windows operating system.
- The unit is operating during the entire test.
- One unit must pass 26 drops; All 8 corners, 12 edges and 6 faces.
- The MobileDemand quick release drop test apparatus, set to the specified drop height, is used. The tablet is suspended at the correct angle and is mechanically released, hitting the plywood at the same angle.
- The unit is dropped on to plywood over concrete.
- Any minor damage or reboots occurring during any drop are recorded on the drop test sequence record.
- The test is terminated if the unit experiences a failure after any drop.

The tests performed by MobileDemand are against the standard MIL-STD 810G 516.6 by definition

- Standard: Visually inspect the device for damage and determine whether it still works after each drop.
 - o MobileDemand: Perform each drop with device fully operating.
- Standard: If a manufacturer requests, the 26 drops can be divided among five identical items. The single remaining unit could pass after 4 units failed and that single unit would only encounter potentially a couple drops.
 - o MobileDemand: Use a single device. The unit is fully functional following all 26 drops.



Pass Fail Criteria

The unit is considered to pass the test if there are only minor issues as listed below and no failure issues as listed below occur.

- Minor Issues Allowed – Not Cause for Failure
 - The unit may suffer minor cosmetic chips breaks or scratches as long as such minor damage does not impair the functionality of the unit or compromise the ability of the unit to pass other environmental tests such as rain and dust test.
 - The unit may spontaneously re-boot during impacts
 - The unit may shut off during impacts and need to be manually re-booted.
 - The unit still functions as normal after the issue of a re-boot.
- Failure Issues
 - Damage to unit’s case or enclosure that compromises the unit’s ability to pass other environmental tests such as rain and dust test.
 - Unit shuts off and cannot be re-booted.
 - Unit shuts off and can be re-booted but has impaired functionality such as not recognizing memory or loss of functionality of a component such as a touch panel.

Results

One single unit passed all 26 drops as the tablet was fully functional following the drop test.

Ten reboots occurred during the testing but did not have any effect on tablet functionality.

No physical damaged occurred besides minor cosmetic scratches and scuffs.

DROP TEST ORIENTATIONS		
TEST UNIT:	SURFACE 3 4'	
DATE:	2-15-16	
FRONT	✓	
BACK	✓	SCREEN Went Black MANUAL REBOOT
TOP	✓	
BOTTOM	✓	
RIGHT	✓	
LEFT	✓	
TOP-RIGHT	✓	
TOP-LEFT	✓	
TOP-FRONT	✓	DARK BLUE SCREEN MANUAL REBOOT
TOP-BACK	✓	BLACK SCREEN AUTO REBOOT
BOTTOM-RIGHT	✓	
BOTTOM-LEFT	✓	
BOTTOM-FRONT	✓	BLACK SCREEN AUTO REBOOT
BOTTOM-BACK	✓	BLACK SCREEN AUTO REBOOT
RIGHT-FRONT	✓	AUTO REBOOT
RIGHT-BACK	✓	AUTO REBOOT
LEFT-FRONT	✓	
LEFT-BACK	✓	AUTO REBOOT
TOP-RIGHT-FRONT	✓	"
TOP-RIGHT-BACK	✓	"
TOP-LEFT-FRONT	✓	"
TOP-LEFT-BACK	✓	"
BOTTOM-RIGHT-FRONT	✓	
BOTTOM-RIGHT-BACK	✓	BLACK SCREEN MANUAL REBOOT
BOTTOM-LEFT-FRONT	✓	
BOTTOM-LEFT-BACK	✓	BLACK SCREEN MANUAL REBOOT

[Watch the Drop Test Video](#)



Result:

