STM Goods Engineering Validation Report

Dux Ultra Case for MacBook Neo
Post-Drop Functional Verification Following MIL-STD-810H Testing

Prepared For	Apple Inc.
Prepared By	STM Goods
Test Laboratory	WESTPAK, San Diego, California
WESTPAK Test Report	WP-25296A Rev. 1
Test Date	May 13, 2026

1. Objective

The purpose of this evaluation was to validate the protective performance of the STM Dux Ultra Case for MacBook Neo following MIL-STD-810H free-fall drop testing and to verify continued functionality of the protected MacBook Neo through post-test diagnostic evaluation.

2. Test Configuration

Product Tested	STM Dux Ultra Case for MacBook Neo
Protected Device	Apple MacBook Neo
Test Sample Quantity	One (1) MacBook Neo device

Note: The same MacBook Neo unit was used throughout both the MIL-STD-810H drop testing and all subsequent post-drop diagnostic evaluations.

3. Drop Test Methodology

Testing was performed by WESTPAK in accordance with MIL-STD-810H, Method 516.8, Procedure IV - Transit Drop.

Test Parameter	Value
Drop Height	48 inches (1.22 meters)
Impact Surface	Steel backed by concrete
Device Status	Operational
Number of Drops	26
Drop Orientations	Faces, edges, and corners

4. Drop Test Results

- Device remained operational throughout testing.
- Display remained intact and functional.
- No structural failure of the protected device was observed.
- Minor cosmetic damage was observed on several case corners.

WESTPAK concluded that no anomalies occurred during testing that would prevent reasonable evaluation of product performance.

5. Post-Drop Functional Verification

Immediately following completion of drop testing, the same MacBook Neo unit underwent a series of functional and diagnostic evaluations.

5.1 Mac Resource Inspector - PASS

Mac Resource Inspector confirmed proper operation of WiFi, Bluetooth, Logic Board, Sensors, Battery Condition, Camera, Display, Input Devices, and related system hardware.

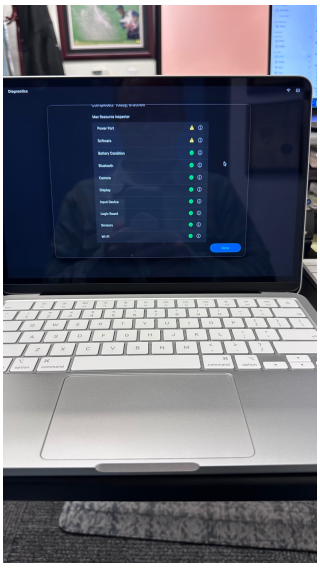


Figure 1. Mac Resource Inspector diagnostic results following drop testing.

5.2 Software Validation - PASS

Apple Diagnostics Suite Requirements Check completed successfully.

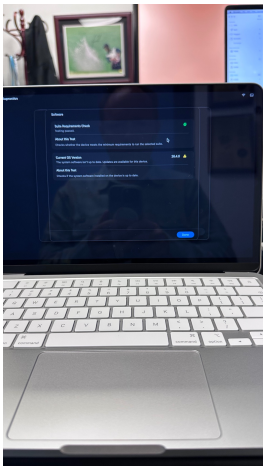
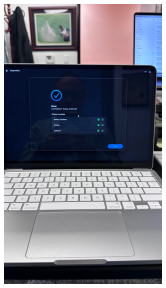


Figure 2. Software validation screen showing Suite Requirements Check passed.

5.3 Display Validation - PASS

Display diagnostics were successfully completed. Visual inspection and Apple display diagnostic procedures confirmed no dead pixels, no stuck pixels, no display anomalies, no discoloration, and no visible image defects.

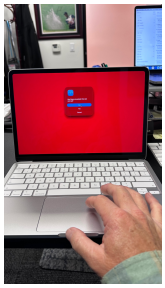
Display verification was completed using multiple full-screen color evaluations including white, black, gray, dark gray, red, green, and blue.



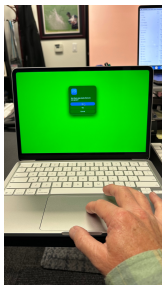
Display Diagnostic PASS



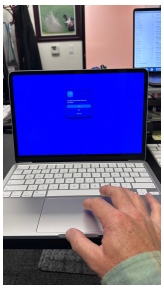
Black Pixel Check



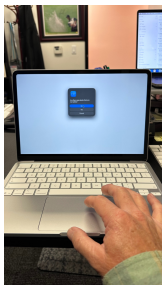
Red Pixel Check



Green Pixel Check



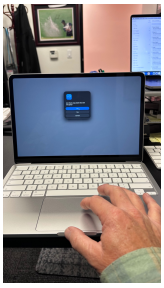
Blue Pixel Check



White Pixel Check



Gray Pixel Check



Dark Gray Pixel Check



Darker Grey Pixel Check

5.4 Keyboard Validation - PASS

Keyboard diagnostic testing completed successfully.

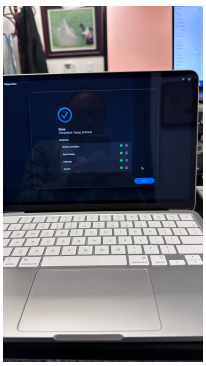


Figure 4. Keyboard diagnostic results.

5.5 Trackpad Validation - PASS

Trackpad diagnostic testing completed successfully.

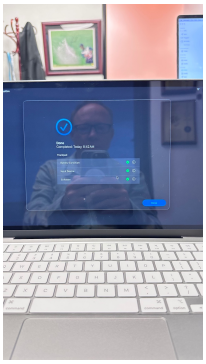


Figure 5. Trackpad diagnostic results.

5.6 Audio Validation - PASS

Apple Diagnostics audio testing completed successfully.

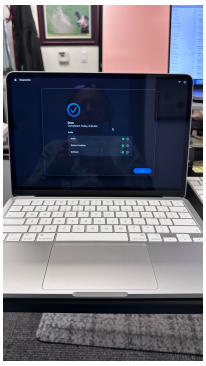
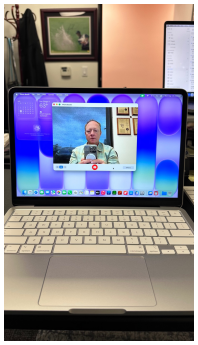


Figure 6. Audio diagnostic results.

5.7 Camera Validation - PASS

Integrated camera functionality was verified using Apple Photo Booth. Tests performed included still image capture and video recording.



Still Image Capture



Video Recording

6. Results Summary

Test	Result
MIL-STD-810H Drop Test	PASS
Mac Resource Inspector	PASS
Software Validation	PASS
Display	PASS
Keyboard	PASS
Trackpad	PASS
Audio	PASS
Camera	PASS
Battery	PASS
WiFi	PASS
Bluetooth	PASS
Logic Board	PASS
Sensors	PASS

7. Conclusion

The STM Dux Ultra Case for MacBook Neo successfully completed MIL-STD-810H Method 516.8 Procedure IV free-fall drop testing conducted by WESTPAK.

Following completion of 26 drops from 48 inches onto a steel-backed concrete surface, the same MacBook Neo unit underwent comprehensive post-drop diagnostic and functional evaluation.

Testing confirmed continued operation of all critical device functions, including display, camera, audio, keyboard, trackpad, wireless connectivity, battery systems, sensors, and logic board functionality.

No display damage, pixel defects, functional failures, or operational impairments were identified.

Based on the results of both the independent laboratory drop testing and subsequent device diagnostics, the STM Dux Ultra Case demonstrated effective protection of the MacBook Neo against the prescribed MIL-STD-810H drop conditions while maintaining full device functionality.