MIL-STD-461H HAS ARRIVED

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MIL-STD-461H: KEY CHANGES YOU NEED TO KNOW

In April 2026, the Department of Defense released MIL-STD-461H, the latest revision of the military standard governing electromagnetic interference (EMI) control requirements for subsystems and equipment. While Revision H does not dramatically change the technical requirements, it introduces important procedural updates that could affect product testing, schedules, documentation, and compliance. And Retlif is ready for it!

What's New?

Measurement Uncertainty and Compliance Decisions

MIL-STD-461H eliminates ambiguity surrounding measurement uncertainty and pass/fail decisions. Section 4.3 now explicitly states that measurement tolerances and associated uncertainties cannot be used when assessing compliance with the standard. For emissions testing, the criteria are clear: a measured result at or below the specified limit passes; any result above the limit constitutes a failure, regardless of measurement uncertainty.

Primary Power Lead Clarifications

Revision H adds clearer definitions for input (primary) power leads and primary power, resolving longstanding questions about which interfaces require conducted emissions and susceptibility testing. The applicability of CE101, CE102 and CS101 now specifically excludes power leads that do not directly interface with the platform power bus. This clarification should help prevent unnecessary testing of low-voltage data and auxiliary power interfaces and reduce interpretation disputes.

Cable Routing and Test Setup Changes

Revision H provides greater flexibility for complex EUT cable arrangements. Primary power leads are now routed as individual conductors, with the input lead positioned 10 cm from the front edge of the test bench, followed by its return lead. The revision also permits excess cable routing on the enclosure floor and allows cable crossovers when setup constraints make separation impractical. The 2 cm spacing requirement remains, and insulating material must prevent direct contact where cables cross.

Emissions Receiver and Scan Procedure Updates

MIL-STD-461H revises emissions scanning requirements for both analog and stepped-tuned or synthesized receivers. Analog receivers remain acceptable when required sweep constraints are met, while stepped-tuned or synthesized receivers must now use quarter-bandwidth increments or less, replacing the previous half-bandwidth allowance.

While this change can improve measurement accuracy, it may also significantly increase scan time, particularly for large systems requiring multiple antenna positions and polarizations above 1 GHz. Revision H also adds a more detailed process for determining thresholds above 1 GHz, requiring the tester to identify the worst-case failure frequency within the failure bandwidth by progressively reducing the frequency step size.

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Technical Changes

Several important procedural and data collection changes affect CS114, CS117 and RE101, with an increased emphasis on consistency, repeatability and documentation.

- **CS114 Data Collection**

  Revision H substantially expands CS114 data presentation requirements, including amplitude-versus-frequency plots for forward power and measured current levels. Compared with previous requirements for calibration plots and tabulated frequency ranges, the additional data requirements may drive greater use of automation throughout calibration, verification and test execution to efficiently capture and present the required information.

- **CS117 Procedures**

  CS117 procedures have been expanded to provide clearer direction for waveform application and test level selection once specified test levels (VT or IT) or limit levels (VL or IL) are reached on the cable bundle under test. While the fundamental intent of CS117 remains unchanged, the additional procedural detail should help improve consistency in test execution between laboratories.

- **RE101 Surface Scanning**

  MIL-STD-461H provides more detailed requirements for scanning EUT surfaces during RE101 emissions testing. Each EUT surface must now be individually scanned, and the measurement location of each significant emission must be documented. The added guidance is intended to improve consistency and repeatability between test facilities.

Expanded Data Presentation Requirements

One of the most significant impacts of MIL-STD-461H may be its expanded documentation and data presentation requirements. Throughout the standard, Revision H adds requirements for photographs with dimensional references documenting critical elements of the test configuration, including:

- **Actual test setup configuration**
- **Equipment grounding arrangements**
- **Injection probe placement**
- **Monitor probe placement**
- **Antenna positions**

These additional requirements should improve test repeatability and configuration traceability, but may also increase the time and resources required for test execution, documentation and reporting.

MIL-STD 461
ACCREDITED

WHAT THIS MEANS FOR MANUFACTURERS

MIL-STD-461H is not a sweeping rewrite of the standard. Instead, it refines existing procedures while placing greater emphasis on clarity, repeatability and documentation consistency. For manufacturers and program managers, the expanded test procedures, data collection and documentation requirements may have practical implications for test planning, automation, reporting workload and overall test duration.

Revision H may impact:

- New military procurements
- Qualification test plans
- Compliance documentation
- Project schedules
- Overall testing time

Put Us To The Test!

For more than 45 years, Retlif Testing Laboratories has helped manufacturers successfully navigate evolving military and commercial compliance requirements. Our EMC engineers are already working with customers to understand the practical impact of MIL-STD-461H and prepare products for successful qualification testing.

You Have Questions. We Have Answers.

Contact Retlif Testing Laboratories

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