



# What is a Test Plan?

## Testing at Hermon Laboratories

### Predefine your product testing procedure

A test plan is a document to be prepared in order to perform a correct cost-effective testing according to military and commercial voluntary standards not covered by a national law.

A test plan is required in order to prepare a correct test report. A customer needs an approved test plan to finalize and guarantee his customer's requirements, as well as demonstrate the tested product is well developed.

Any standard is a generic one in terms of covering many variations of products. Only the test plan defines the test setup, limits, configurations, modes of operation, wiring and cables, auxiliaries and their location, power supply, acceptance criteria, terminations and many other elements (requirements), which can influence the measurement results.

According to MIL-STD 461A the test plan shall detail the means of implementation and application of the test procedures to be performed to verify compliance with the applicable EMI/EMC, requirements of this standard. Approval of the test plan shall precede the start of formal testing. The test plan shall include but need not be limited to the following:

- Nomenclature, serial numbers and general characteristics of test equipment (e.g. transfer impedance of current probes and effective length of antennas).
- Methods and dates of last calibration of interface measuring equipment and calibrations to show expected accuracy of each.
- Dummy loads, filters, dummy antennas, signal amplifiers, and similar items to be used and their description (e.g. VSWR, isolation and loss) in the frequency range of interest. In addition, a tabular or graphical plot of the complex impedance at selected test frequencies of all reactive loads used shall be included.

- Readout and detector functions to be used in measuring equipment, where applicable.
- Nomenclature, description and modes of operation of the test sample.
- Control settings, monitored point and sequence of operation of test sample during the test.
- Description and RF ambient profile to test site (open space or shielded enclosure).
- Detailed step-by-step procedures and test setups, with maximum use of photographs, drawings and diagrams.
- Test frequencies based on the frequency matrix developed in the control plan, and modulations, and computation to indicate frequencies at which extraneous outputs, susceptibilities and Intermodulation products may be expected.
- Expected overall accuracy of measurements.
- Personnel required, both designated Government representatives and the contractor.
- Considerations and regulations regarding the operation of test sample and measuring equipment in open areas (e.g. FCC or FAA regulations).

There are many benefits using a test plan, which is approved by the end-customer:

- A test plan supersedes the standard after approval by the end-customer
- The end-customer, which provides the approval, participates in the acceptance process starting at the project initiation. As a result, eliminates extra timing in final approval stage, extra timing and charges during testing and eliminates necessity in retesting
- A test plan is the only possible way to get waiver for problematic tests and parameters
- All the tests are well defined including applicability, limits, setups, test parameters and settings, criteria for pass/ fail decision and are approved by responsible organization/ person for final acceptance
- Simplify test process in case of standards that do not define or relate to any specific test procedure
- Eliminates damage of equipment samples from extra transient energy it was not intended to withstand as it may be evaluated by system developer prior to testing
- Significantly speeds test report preparation
- Reduces overall test time

As a result, Hermon Laboratories defined a test plan as a must, prior to measurements and testing.

The test plan may be provided by the customer, yet in this case only compliance to the test plan may be checked as a reference document. Compliance to the relevant standard may be presented only if Hermon Laboratories is the third party laboratory, which writes and issues the test plan for the standard.

- A test plan may be updated / modified for additional EUT only if both EUTs' similarity is proven.
- A test plan may not be updated / modified for another standard.

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