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Guidelines for Assembling a First Article Test Plan

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First Article Test (FAT) Plans are often required when selling an end product to a branch of the armed services or other industries. If you are new to this task, it can seem a bit overwhelming. This article provides guidance in developing a FAT plan that may be used prior to contacting the “qualifying activity” which would be the applicable government branch or your end customer for specific instructions. Before devising a FAT plan, the requirements specific to the project should be reviewed. The following is a typical list of contents included in a FAT plan. Each section will be discussed in detail in the following paragraphs.

1. Title Page
2. Table of Contents
3. Introduction
4. Bid Requirements, if applicable
5. Description of the Unit Under Test (UUT)
6. Test Plan and Facilities Approval
7. Test Schedule and Monitoring
8. Test Incidents/Failures
9. Change Notification Requirements After FAT Approval
10. Final Test Report
11. Attachments

Item 1: Title Page

Consider the title page as the first impression. If this page does not contain sufficient detail, the reader may not go any further. There should be a header on the first page that continues throughout the document. This header should contain a document number and a revision date. This shows that the writer is in control of his process.

The title page should include FIRST ARTICLE TEST PLAN for [insert the name of UUT]. This should be followed by TO: [insert target for whom the plan is being devised], followed by SUBMITTED BY: [insert company name and address]. The date, classification status (ex. unclassified, secret, top secret) and confidentiality statement should complete the page.



ISO/IEC 17025





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Item 2: Table of Contents

This section may include items 3-11, above. Each of these sections may be broken down further for additional clarification for your particular product type. For the soft copy of your test plan, automatic links to the sections should be included.

Item 3: Introduction

To begin, this section should have a clear description of the purpose and scope of the project, as well as a description of the unit to be tested. There should also be an Applicable Documents section that includes all documents that are referenced within the FAT Plan. Additionally, it is advisable to include a section listing all uncommon abbreviations and/or terms and their definitions. Key personnel with phone numbers and email addresses can be added to this section to eliminate any confusion regarding points of contact within your company.

Item 4: Bid Requirements

This section is only included when required by the authorizing activity. Requirements of the bid as well as an outline including supplier and purchaser responsibilities may be included. If this detail is not included in your FAT Plan, it should be included in your purchasing documents and a copy should be kept with your Plan at all times. Unless otherwise specified, the purchasing documents would take precedence over your FAT Plan.

Item 5: Description of the Unit Under Test (UUT)

The description of the UUT should include the physical properties (length, width, weight, etc.), electrical properties (voltage/amperage required) including operating instructions, storage and operating temperatures, and any safety instructions. This section should allow the person reviewing your FAT to understand all operating instructions relating to your unit. Reference may be made from this section to applicable drawings and operating manuals.

Item 6: Test Plan and Facilities Approval

Test facilities should be chosen and agreed upon between customer and supplier. If possible an internationally accredited facility should be chosen. Laboratories familiar with FAT plans may be helpful in developing your test plan.



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The test plan should include testing that will insure the reliability of the UUT for the life expectancy of the product. A study of industry-accepted test methods and specifications should be performed in the field. The acquiring activity may have specific test requirements for the product they wish to purchase. The test plan will often include the following:

- Verification of Physical Characteristics
- Verification of Normal Operation
- Electrical Power Verification
- Operational and Non-Operational Temperature Extremes (High and Low)
- Humidity
- Drip Proof Verification
- Salt Spray
- Mechanical Shock
- Vibration
- Highly Accelerated Life Testing (HALT)
- Altitude (Transportability)
- Fungus Resistance
- Electromagnetic Emissions Susceptibility
- Structure and Airborne Noise
- Safety Verification

Item 7: Test Schedule and Monitoring

A detailed schedule is often required because typically a few units are tested through the entire test plan sequentially. Care must be taken to schedule the testing in order of least severe to most severe to help eliminate downtime for repair. HALT testing can help identify the most probable weaknesses so that a more robust product may be developed prior to performing the entire FAT plan. An important part of the test plan is a description of how test delays due to UUT issues or unforeseen circumstances will be handled.

Item 8: Test Incidents / Failures

Details must be provided regarding who will be notified in the event of failure and if testing will proceed with the same or a new unit following repair. Typically, notification of failure must be made within 1-3 working days.



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Item 9: Change Notification Requirements After FAT Approval

Once the FAT plan has been approved, changes to the UUT or the test plan should be documented and shared with the qualifying activity. Examples of these changes would include hardware or software changes, change in production site or component supplier, or change in test facility or testing order.

Item 10: Final Test Report

A description of the format for the final test report should be outlined in this section. The test report should include a cover page that includes pertinent information about the UUT and test site and each section in the test report should include the name of the test, the industry standard and test method referenced, reference to the item tested (part number, serial number, etc.), test methodology, a description of test equipment used including make, model and calibration dates, test results including raw data and indication of pass/fail, if applicable. If failures occurred, details regarding the failure analysis findings and any corrective action performed should be included. The report should be signed by all test personnel and should have a signature representing final approval.

Item 11: Attachments

A flow diagram of the FAT plan is often included as an attachment. Additionally, simple drawings and/or tables outlining test methods and schedules are included here, as well.

To summarize, presentation of a well thought out FAT plan can boost your chances of winning a bid or contract. It shows your customer that you are in control of your process and know the strengths and weaknesses of your product.

Renee Michalkiewicz is the Laboratory Director of Trace Laboratories –MD. Renee’s technical responsibilities include Printed Circuit Board and Printed Circuit Board Material (paste, flux, solder mask, conformal coating) Qualification and Testing, Environmental Testing, Process Validation (Cleanliness, SIR, MIR, ECM, and CAF), Training and Consultation. Renee has been instrumental in the development of several standards governing these products including, J-Standards 004, 005 and 006, IPC-600, 6012, SM-840 and CC-830. Renee is presently the chairperson of the Testing Committee and the J-STD-004 Flux Standard Committee. She is also the Vice-Chair of the Assembly and Joining Committee and a TAEC contributing member.

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