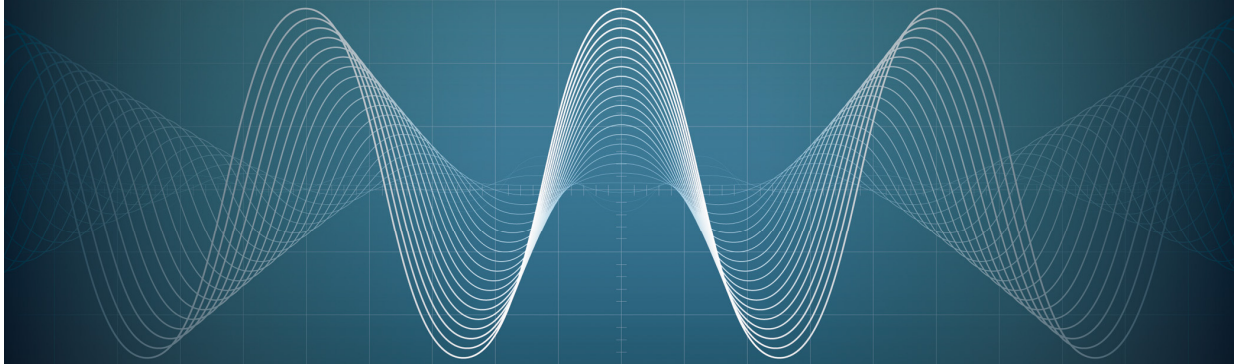


upcstudio



MASTER THE POWER
OF THE

WAVE

U P C STUDIO TEST MANAGER O P E R A T I O N S M A N U A L



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UPC STUDIO TEST MANAGER OPERATIONS MANUAL

PPS PART No. 149060

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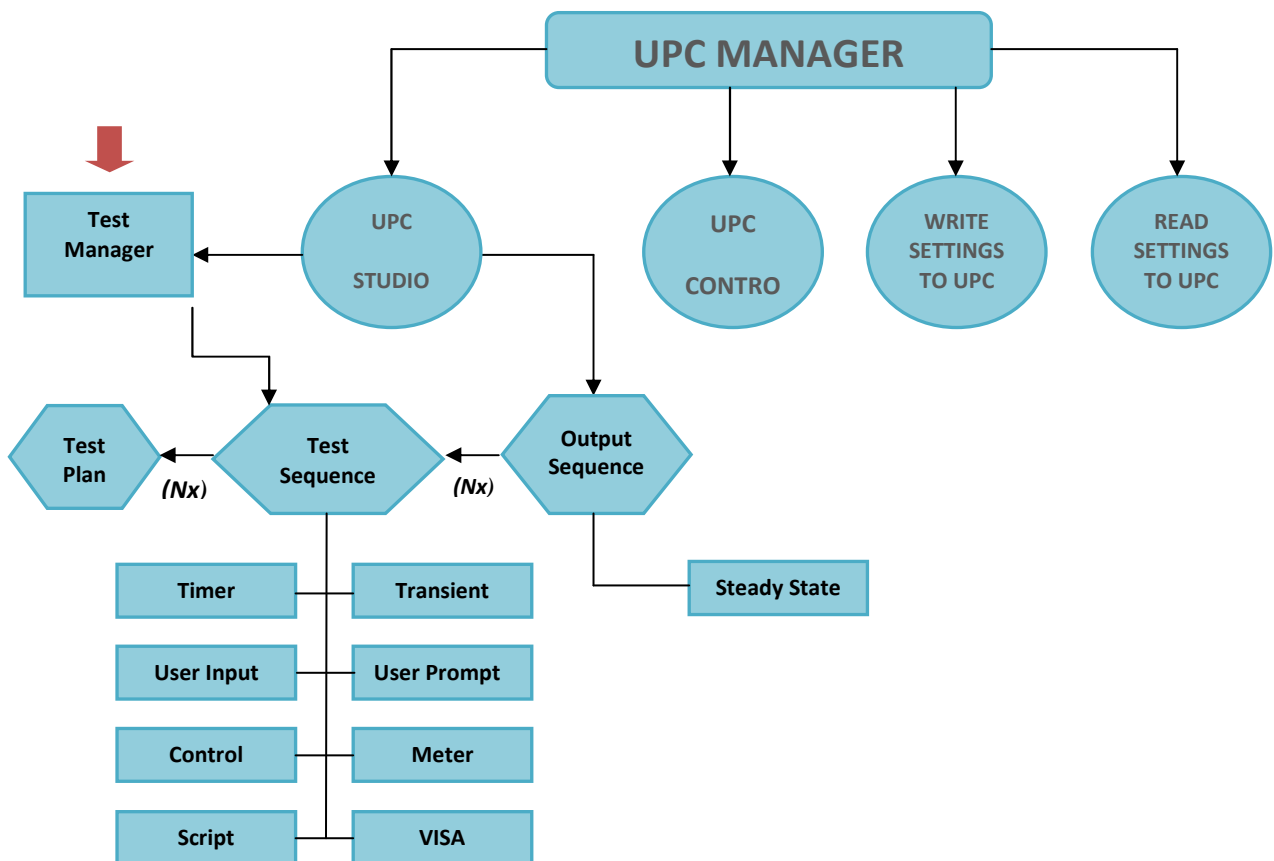
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1

OVERVIEW

Test Manager is a unique UPC Studio feature that consolidates all UPC Manager features into a single comprehensive test executive. Test Manager allows test engineer to link together a series of Test Sequences and custom reports into a single Test Plan. Test Manager also allows test engineer to quickly create and run a Test Sequence using multiple Output Sequences and control steps such as Timers, User Prompt and Metering functions.

UPC STUDIO Test Manager Map



- **Test Plans:** A collection of Test Sequences.
- **Test Sequences:** A collection of Output Sequences and various control steps.
- **Output Sequences:** A collection of steady state outputs, waveforms and associated transients.

1. Overview (Cont.)

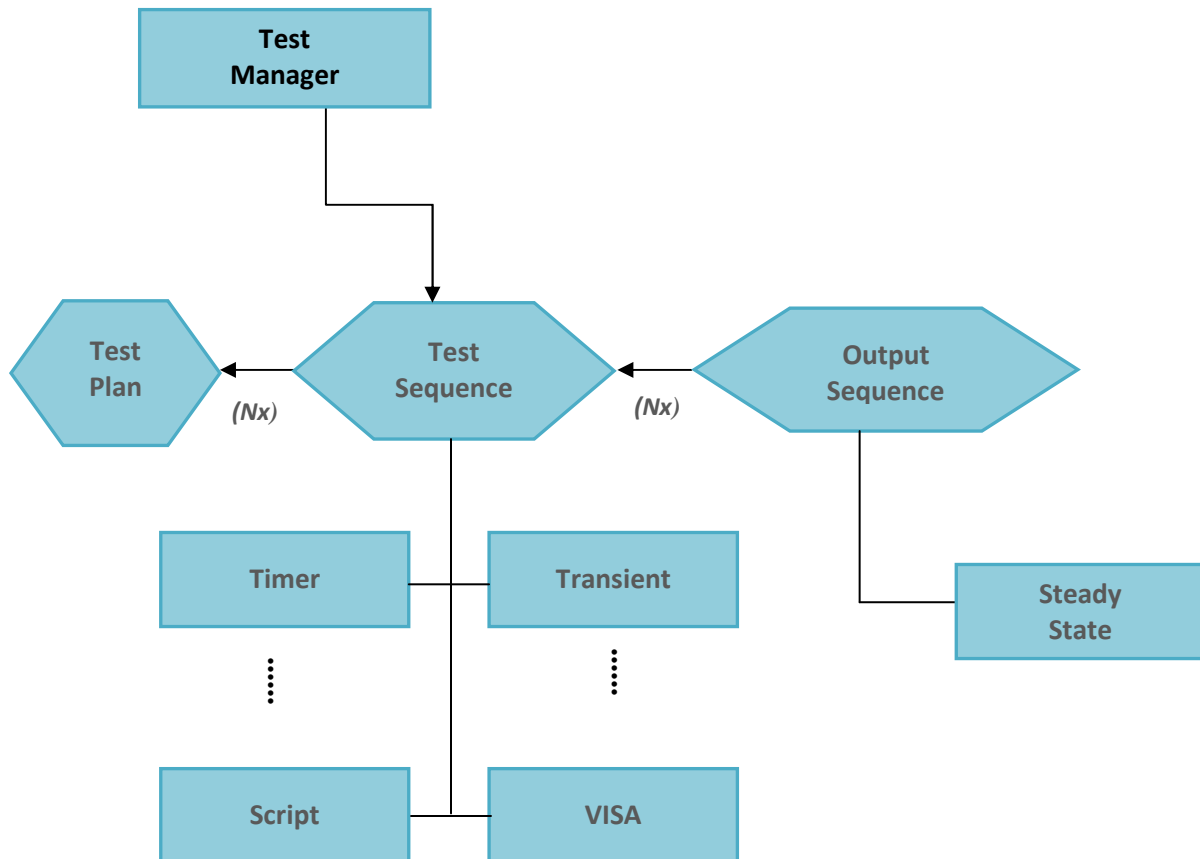
Test Manager features:

- Automate instrument compliance testing and certification. Obtain pre-configured test sequences from Pacific Power Source for a variety of standard and custom applications.
- Custom report generation, printing and print preview. Create report templates using MS Word with page header/footer, page paragraph and character formatting, graphics and form fields.
- Test reports fully document and record parameters and results for each test step. Built-in error handling helps isolate the root cause of failures
- Built-in editor allows test engineers to create and run their own custom test sequences and test plans.
- Within a Test Sequence, run an entire test or control test flow using Single Step, Run-To-Next, Run Selected, Stop or Resume. Disable individual steps for troubleshooting, reconfiguring, prototyping and debugging.
- No compiling needed. Run entire tests or individual steps immediately after making changes.
- Test sequences support 8 built-in test step types including Steady State Output, Transient Trigger, UPC Control, User Prompt, User Input, Timer, VISA (generic instrument control) and UPC Metering.
- Embed Scripts to create custom functions with full access to test manager objects.
- Complete UPC metering support including waveform capture and V/I/F/Power/Harmonics. Specify measurement functions and phases, value limits, out-of-limit behavior and data logging.
- Total, elapsed and remaining time indicators for the entire test and individual steps. Monitor the progress and results of each step while the test runs.

Pacific Power Source has developed several test sequences based on common industry test standards. These test sequences can help test engineers to simplify test procedures in their compliance testing practice, and are offered as cost options which can only be used with UPC Studio Test Manager. Please contact Pacific Power Source sales representative for more information either by phone: +1.949.251.1800 (worldwide), and 1.800.854.2433 (US only) or email: sales@pacificpower.com.

2


GETTING STARTED

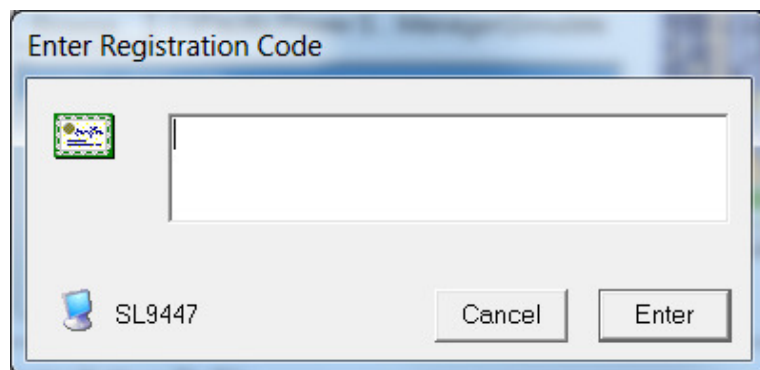
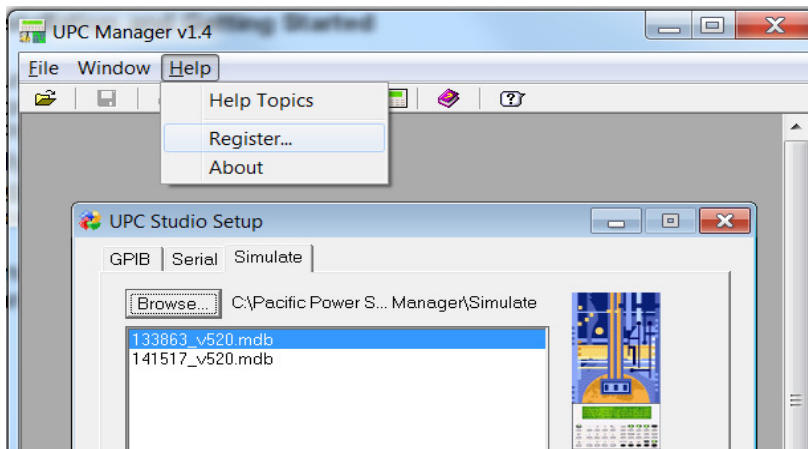


All UPC Manager features operate in “Simulate” mode. Test engineer may open, create and edit Test Plans and Test Sequences without restriction. However, to communicate with a Pacific Power Source product, a registration number, which is unique to the power source in user, must be obtained from Pacific Power Source. Test Manager is installed on the computer as part of UPC Studio during UPC Manager installation. Test engineer can experience the capabilities of UPC Studio Test Manager in “Simulate” mode. To activate UPC Studio Test Manager to communicate with power source unit, administrator is required to obtain a UPC Studio Test Manager registration code from Pacific Power Source for each serial number associated with the power source unit. The contact information is phone: +1.949.251.1800 or 1.800.854.2433 (US only); email: sales@pacificpower.com.

2. Getting Started (Cont.)

To register UPC Test Manager,

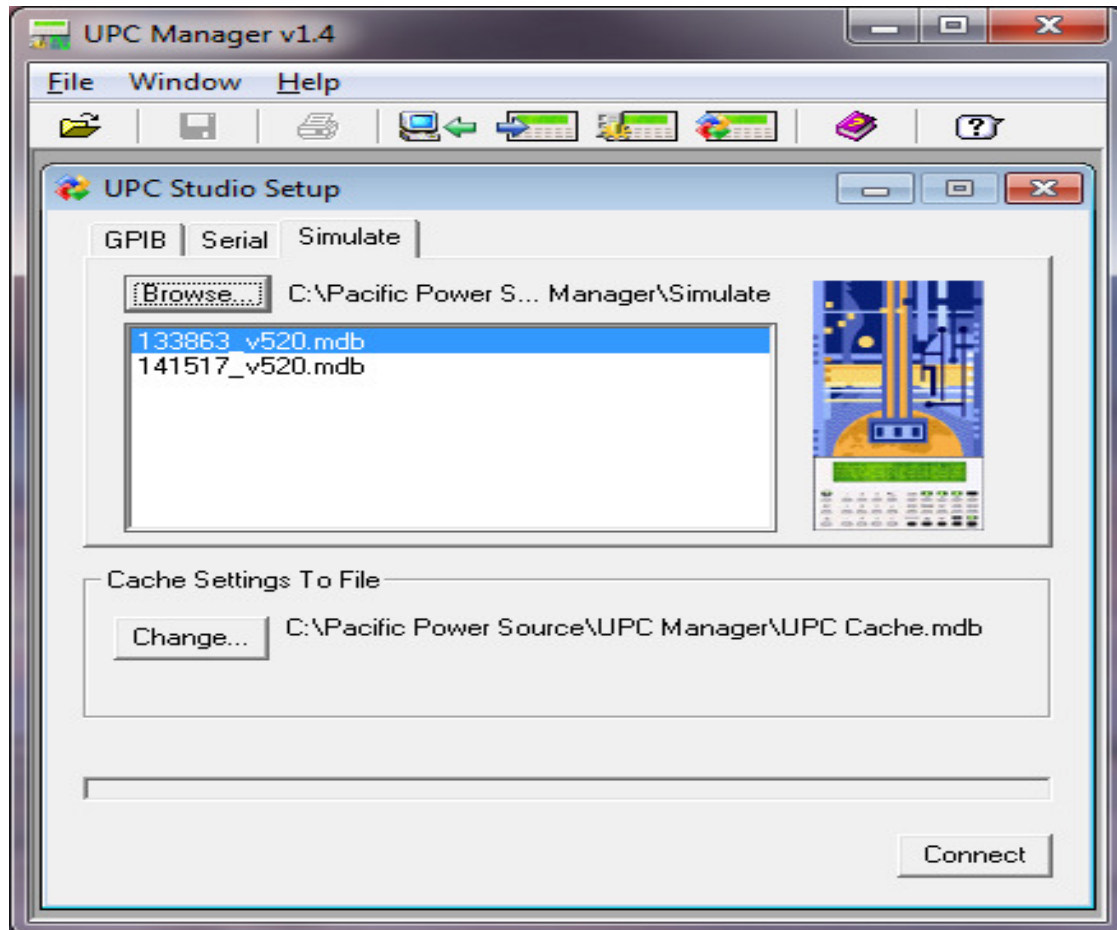
- Launch UPC Manager from the desktop quick launch icon  or click **Start** → **Programs** → **Pacific Power Source** → **UPC Manager** from the desktop to open the *UPC Manager* window
- Click **Help** → **Registration** to open the *Enter Registration Code* window.
- Click **Help** → **Registration** to open the *Enter Registration Code* window



2. Getting Started (Cont.)

To open UPC Test Manager:

- Click a tab to select *GPIB*, *Serial* or *Simulate* mode in the *UPC Studio Setup* window as shown below.

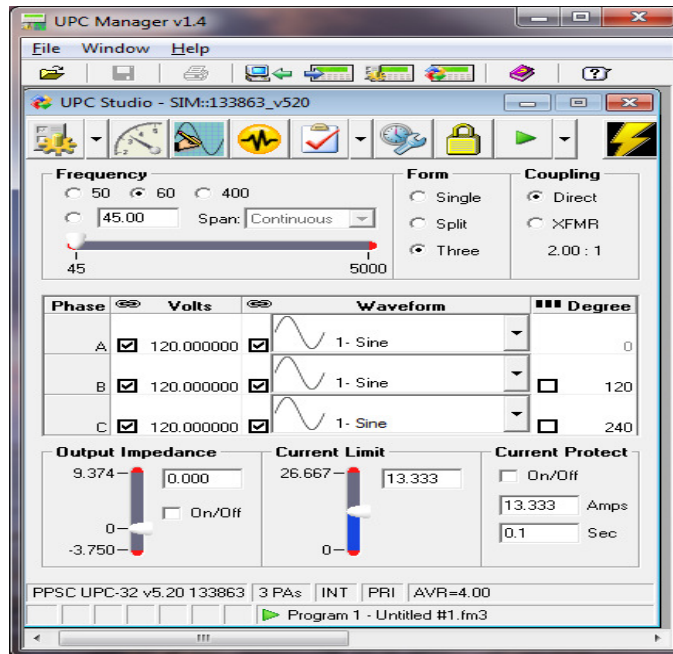


Note: In “Simulate” mode, 133xxx emulates a UPC12 or UPC32 controller; 141xxx emulates a UPC1 or UPC3 controller.

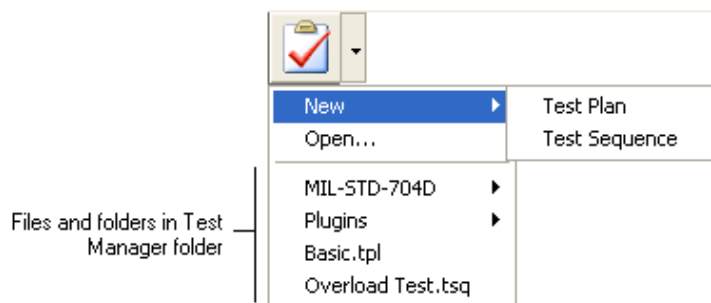
2. Getting Started (Cont.)

- Click **Connect** to open the *UPC studio* window as shown below.

UPC Studio window is displayed, showing the present operating condition.



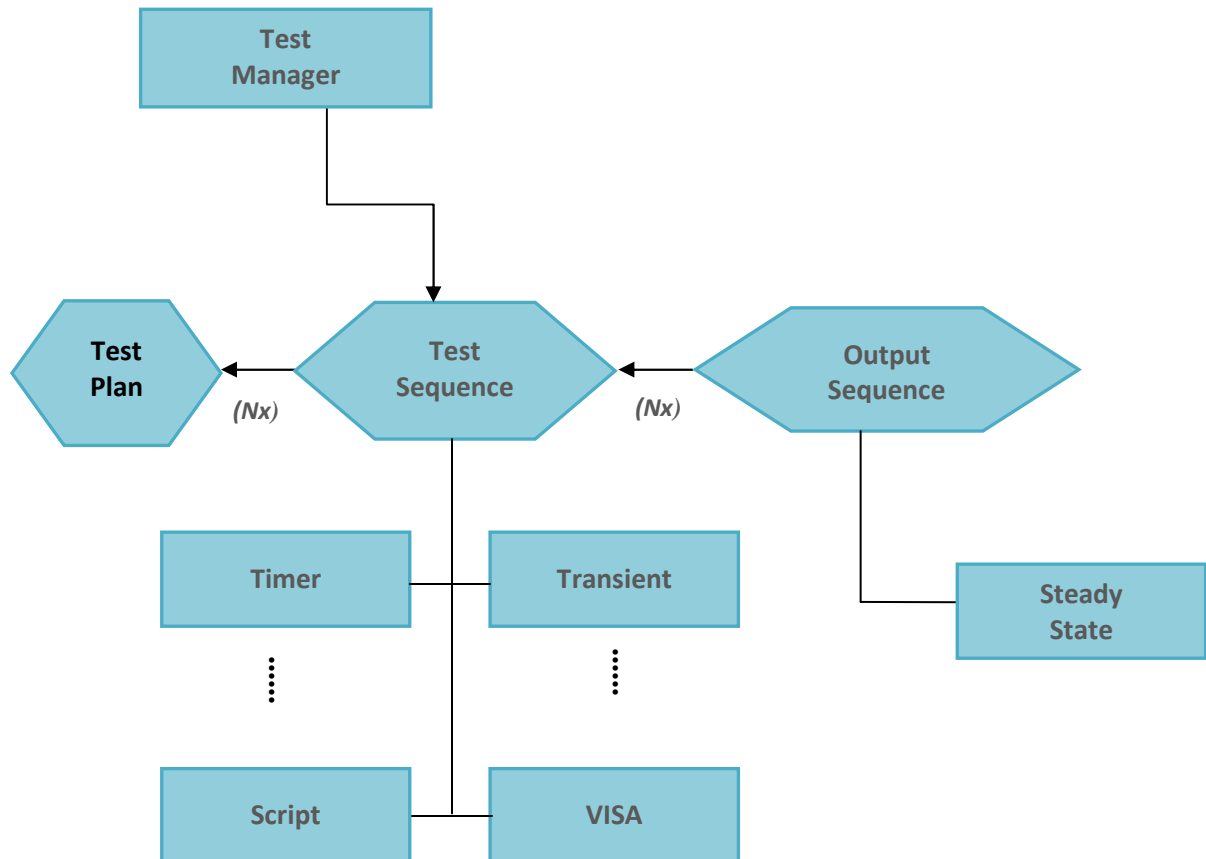
The **Test Manager** button in the main UPC Studio window allows user to open an existing test sequence or test plan. The drop down menu also lets user create a new test sequence or test plan file and contains a list of available files located in the test manager folder (typically "C:\Pacific Power Source\UPC Manager\Test Manager") on the PC. Selecting one of these items opens that file.



Note: .tpl: Test Plan file type.
.tsq: Test Sequence file type.

3

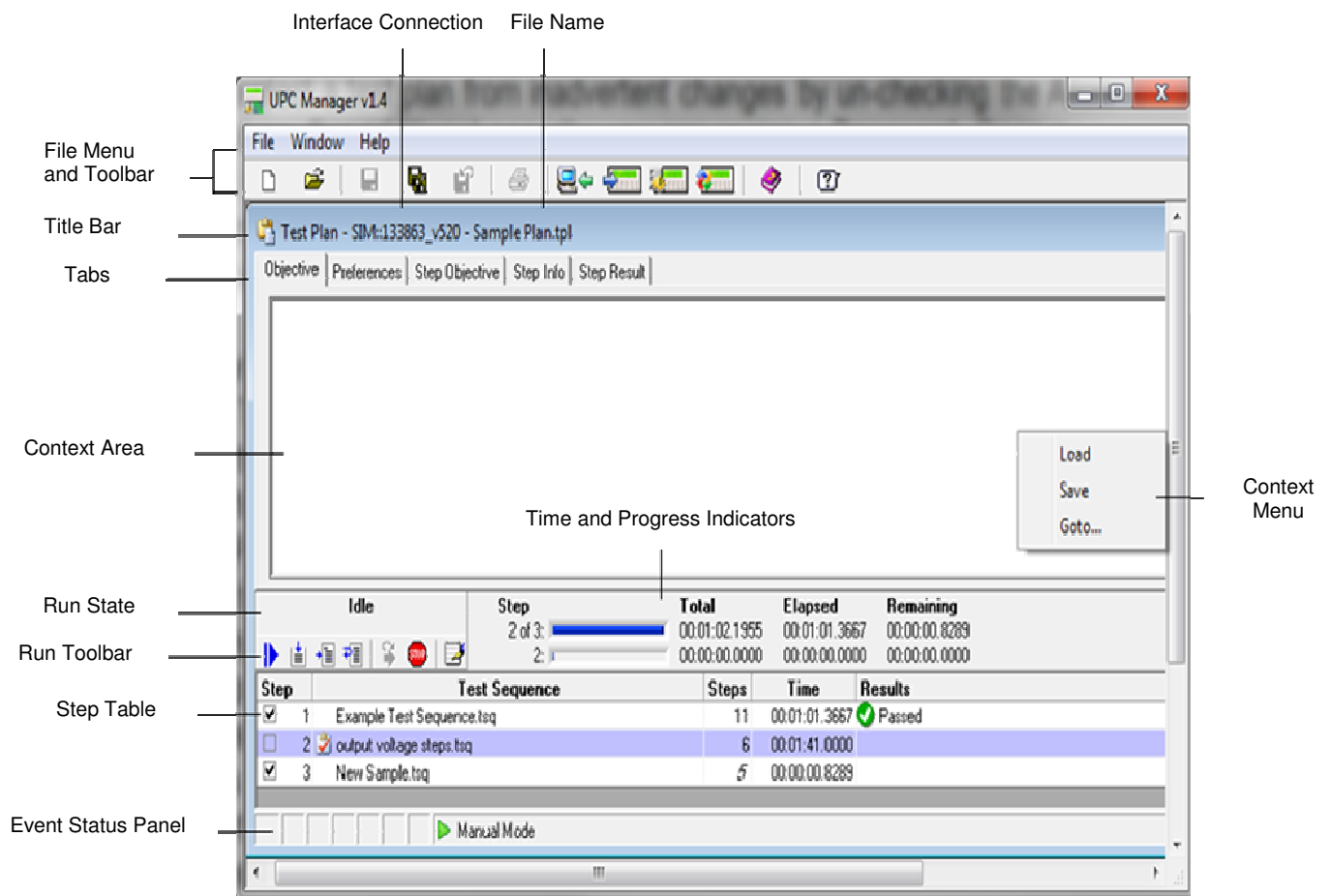
INTRODUCING TEST PLAN WINDOW



A Test Plan is a collection of test sequences. Test plans manage and simplify complex tasks by allowing test engineer to link together a series of test sequences into a single file. Test sequences consist of one or more test steps designed to run a test, automate a task, or control and monitor the power source or other instruments. The results of a test sequence and test plan are stored in a test report which is automatically generated in UPC Test Manager.

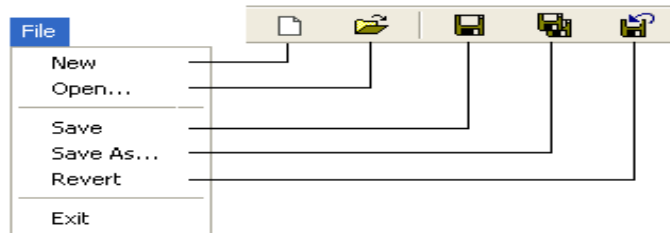
3 Test Plan Window (Cont.)

When test engineer open an existing test plan file or create a new one using the **Test Manager** button in the UPC Studio window, the Test Plan window appears as shown below.



3.1 File Menu and Toolbar

The file menu and MDI (Multiple Document Interface) toolbar (shown below) allow test engineer to create a **New** test plan, **Open** an existing file, **Save** or **Save As...** (To a different file) or **Revert** the test plan to the last saved version. The Save and Revert items are only enabled if the test plan has been edited but not yet saved (the file name in the title bar shows an "*" at the end).



3.2 Title Bar

The title bar shows the interface used to connect to a UPC and the test plan file name. An "*" at the end means the file is currently being edited and the changes have not been saved.

3.3 Objective Tab, Context Area and Context Menu

Selecting one of the tabs updates the **Context Area** with that item. In the previous example, the **Objective** tab is selected. The objective is intended as a brief summary or description of the test plan and will be automatically included in the test report. Test engineer can type directly into the context area or copy and paste text or graphics from another application. Right-clicking the context area displays the **Context Menu**. Test engineer can **Load** or **Save** the objective from a Rich Text (*.rtf) or Plain Text (*.txt) file. **Go-to...** shows the current cursor location and allows test engineer to position the cursor to a particular line and column.

3.4 Preferences Tab

The **Preferences** tab shown below displays general settings and file information for the test plan.

The screenshot shows the 'Preferences' tab with three sections: 'Protect File', 'File Info', and 'Report Template'. The 'Protect File' section has a checked 'Allow Edit' checkbox and an empty 'Password' text box. The 'File Info' section displays 'File Path: C:\Visual Basic Projects\UPC Settings\Test Manager\Sample Plan.tpl' and 'Last Updated: 07/25/2007 17:56:36'. The 'Report Template' section has a 'Report Template' dropdown menu showing 'Manual <Blank>' and a 'Load' button.

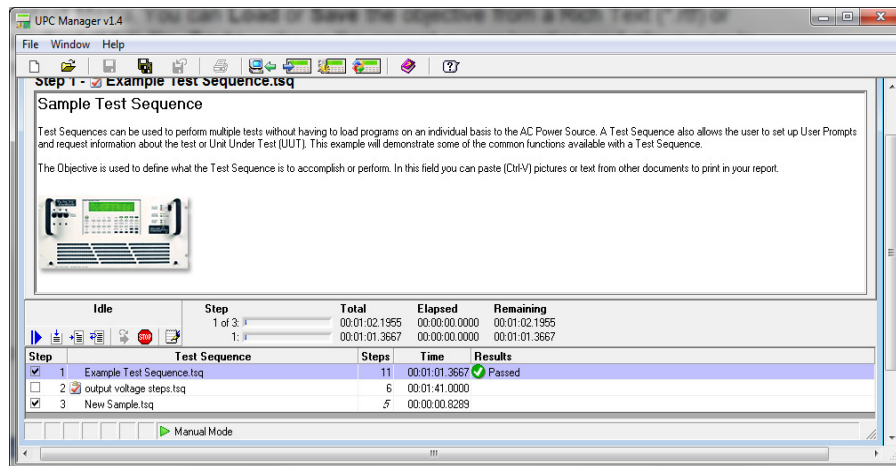
Test engineer can protect a test plan from inadvertent changes by un-checking the Allow Edit checkbox. For additional security, test engineer can assign a Password. Once a password is assigned, test engineer will be prompted to enter it in order to allow editing. The File Info section shows the full path of the test plan database file and the last time it was updated.

The Report Template shows which template is used by all test sequences in this test plan. This is useful if the test sequences update form fields in the report or test engineer want the test plan to always use a particular template. If this item is red, that template file is missing from the Templates folder (typically "C:\Pacific Power Source\UPC Manager\Test Reports\Templates"). Pressing the Load button initializes the report with that template (if it's not already loaded). Clicking in the report template text box displays a drop-down list of template files installed on the computer that test engineer can select. The "Manual" selection means the test sequences use whatever template file is currently loaded. An "*" means the test report has been updated and changes have not yet been saved.

Note: The test plan report template overrides the report templates specified in the test sequences.

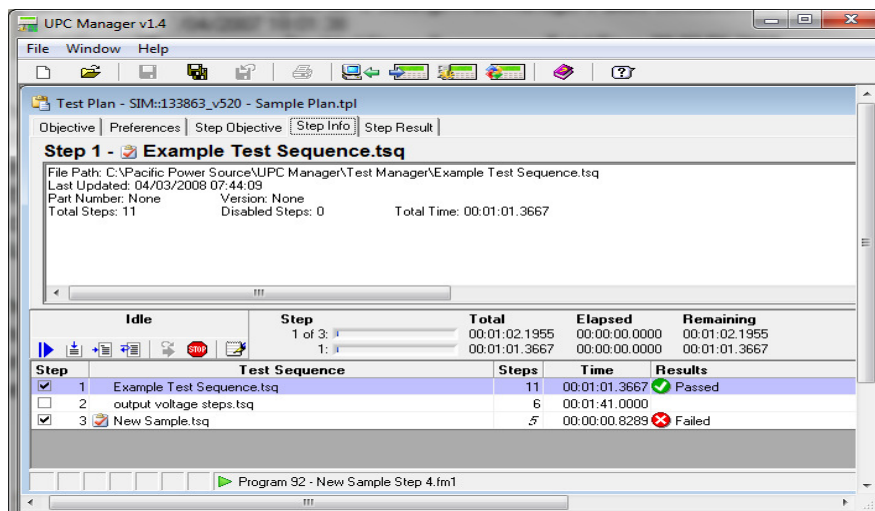
3.5 Step Objective Tab

The step objective is intended as a brief summary or description of the selected test sequence included in the test plan. If the objective is defined during the test sequence creation, the step objective is automatically loaded in Step Objective window when the test sequence is added.



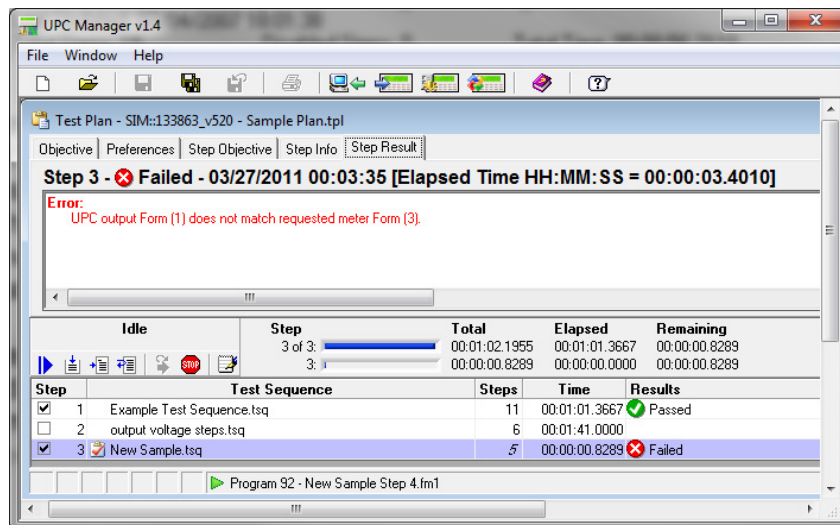
3.6 Step Info

The Step Info tab illustrated below shows the full path of the selected test sequence database file and the last time it was updated. Test plans only contain references to test sequence files, not the actual file contents. Test plans maintain "relative" path relationships with test sequence files. This allows the test plan and test sequence files to be moved to a different location or PC, as long as the files retain the same location relative to each other.



3.7 Step Result Tab

Step Result tab illustrated below relates to the selected step and it shows the result icon and title (Passed, Failed, Stopped, and Skipped), date/time the step completed and the elapsed time the step completed from the beginning of the test. If a step fails, the results also include the error description.



3.8 Run State

The Run State section above the Run Toolbar shows the current status of the test. The various run states are shown below.

- Idle** No test or steps have completed or are currently running.
- Running Step n...** Step "n" is currently running.
- Stopped** The test was stopped. The results column in the step table shows which step was stopped. A test is stopped by pressing the Stop button in the run toolbar or the Stop button in a User Prompt, User Input or Transient Prompt dialog box.
- Failed** The test failed. The results column in the step table shows which step failed. Click in the results column for that step to view additional information.
- Done** The test or selected step(s) have successfully completed.

3.9 Run Toolbar

The table below describes the buttons in the Run Toolbar. Some items (like **Run Step**) require one or more selected rows in the step table. Running a step runs the entire test sequence for that step. To run an individual step in a test sequence, open the test sequence file (double-click it in the test plan step table), then use the run toolbar in the test sequence window.



Start - Clears the test report then runs the entire test starting from step 1 (regardless of which step is currently selected).



Continue - Resumes the test starting with the currently selected row (step). The test continues to the last step.



Run Step- Runs the selected step(s) then pauses. Run Step is convenient for testing and troubleshooting.



Run To Next- Runs the selected step. When the step completes, the test pauses with the next row selected. Run To Next allows test engineer to "single step" through a test sequence.



Show Running Step- When a test is running, pressing this button selects and shows the currently running step, scrolling the step table if necessary.



Stop - Stops the test and disables the power source output.



Show Report - Shows the test report window

Running a test using **Start**, first initializes the test report, then appends the test data to the report after each step completes. This creates a clean test report each time the test is run. Running a test using the other controls does not first clear the test report, making it easier to troubleshoot (single step etc) a test.

3.10 Time and Progress Indicators


The upper time and progress indicator shows the values for the entire test (all enabled steps) and the lower one shows the values of the selected step(s). The total time values update as step rows are selected making it easy to see when that step begins relative to the start of the test, even if a test is not running. The total time values take into account if step rows are not enabled (step checkbox not checked). Time and progress indicators are updated as the test runs. Step times are estimates based on the test sequence and system performance. Time values are shown in HH:MM: SS.SSSS format. The actual elapsed time of each step is recorded in the test report.

3.11 Event Status Panel

Event Status Panel in the Test Plan window functions the same in the Test Sequence window. It consists of Execution State icon and Executing Program / Output Sequence description. Different colors of the Execution State icon indicates different types of state being currently executed such as steady state, transient state, ramp or no program. Executing Program is the program number (or Manual Mode) of the currently executing program. The program number range for execution is defined in the Preference tab when the test sequence is created. Manual Mode is automatically entered whenever an output parameter of the last executing program was changed. If the program is based on an output sequence, the output sequence file name is also shown.

3.12 Test Plan Step Table

The step table shown below appears at the bottom of the Test Plan window. The steps in the table are links to test sequence files stored in the Test Manager folder (Typically "C:\Pacific Power Source\UPC Manager\Test Manager"). Double-clicking one of the test sequence files in the table opens the test sequence window, allowing test engineer to view or edit the values.

Step	Test Sequence	Steps	Time	Results
<input checked="" type="checkbox"/> 1	Example Test Sequence.tsq	11	00:01:01.3667	Passed
<input checked="" type="checkbox"/> 2	 output voltage steps.tsq	6	00:01:41.0000	Running...
<input checked="" type="checkbox"/> 3	New Sample.tsq	5	00:00:00.8289	

File Status Icon

- Right-click anywhere in the step table to active step context menu shown below.

Add...	
Cut	Ctrl+X
Copy	Ctrl+C
Paste	Ctrl+V
Delete	DEL
Select All	Ctrl+A
Clear Results	

3.12 Test Plan Step Table (Cont.)

Add...	Displays a file open dialog box. The test sequence file Test engineer select is added to the table.
Cut	Copies the selected steps to the clipboard and then deletes them from the table.
Copy	Copies the selected steps to the clipboard.
Paste	Pastes the clipboard after the selected step.
Delete	Deletes selected steps.
Select All	Selects all steps.
Clear Results	Clears the results column of the selected steps.

Note: *If no step is selected before user right-clicking the step table, Cut, Copy, Delete and Clear Results selection will be disabled.*





3.12.1 Step Table Columns

The columns in the step table are described below.

Step	Enables checkbox and step number. Steps that aren't checked are skipped when the test sequence runs. Un-checking a step is a convenient way to temporarily disable a step while troubleshooting or reconfiguring a test.
Test Sequence	Shows the File Status Icon and test sequence file name. Refer to the test sequence file status section below for more information.
Steps	Indicates total number of steps in the test sequence. Numbers in <i>italic</i> mean the test sequence contains one or more disabled steps.
Time	Estimates to run the test sequence.
Results	Shows the results state (Pass, Fail, Stopped, and Skipped) the last time this step was run. It also shows if a step is currently running. Clicking in the results column for a particular step automatically selects the Step Result tab in the test plan window, providing additional information.

3.12.2 Test Sequence File Status

The test sequence file status is shown in the **Test Sequence** column of the step table. The table below shows the status of various conditions.

Sample Test.tsq	The test sequence file exists but is currently not loaded.
 Sample Test.tsq	The test sequence file is currently loaded. Test sequence files are automatically loaded when they are run or opened (double-click).
 Sample Test.tsq*	The test sequence file is loaded and currently being edited (*).
 Sample Test.tsq	The test sequence file is missing. Use the Step Info tab in the main test plan window to view the file path the test plan expects.
 Sample Test.tsq	The test sequence contains invalid values or values not supported by the power source in use. Double-click the file to view or edit the values (opens test sequence window). Note that the test plan only checks for invalid or unsupported values when the test sequence loads or runs.

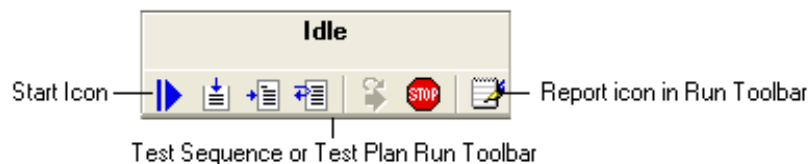
4

CREATING AND VIEWING TEST REPORT

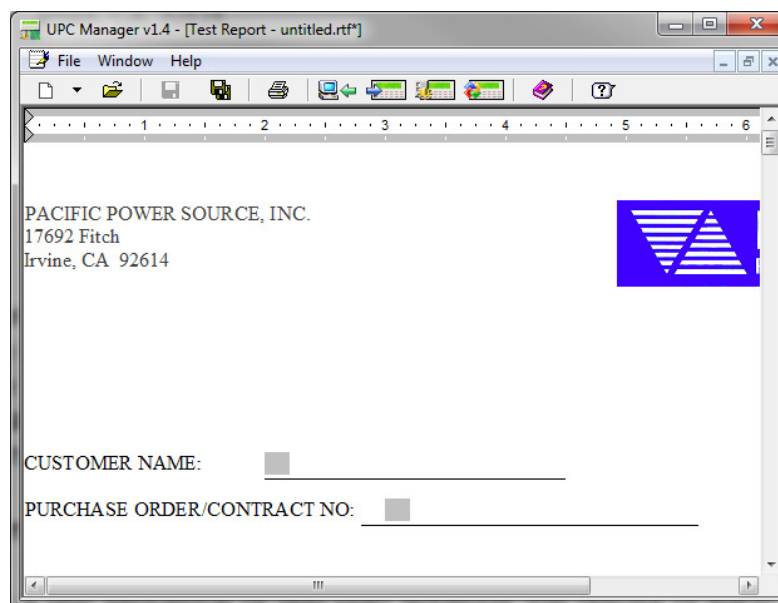
The Test Report window allows test engineer to view and print test reports created by a test sequence or test plan.

To access the test report window:

- Click the **Report icon** in the **Run Toolbar** in the Test Plan or Test Sequence window to open the Test Report printout window as shown below.

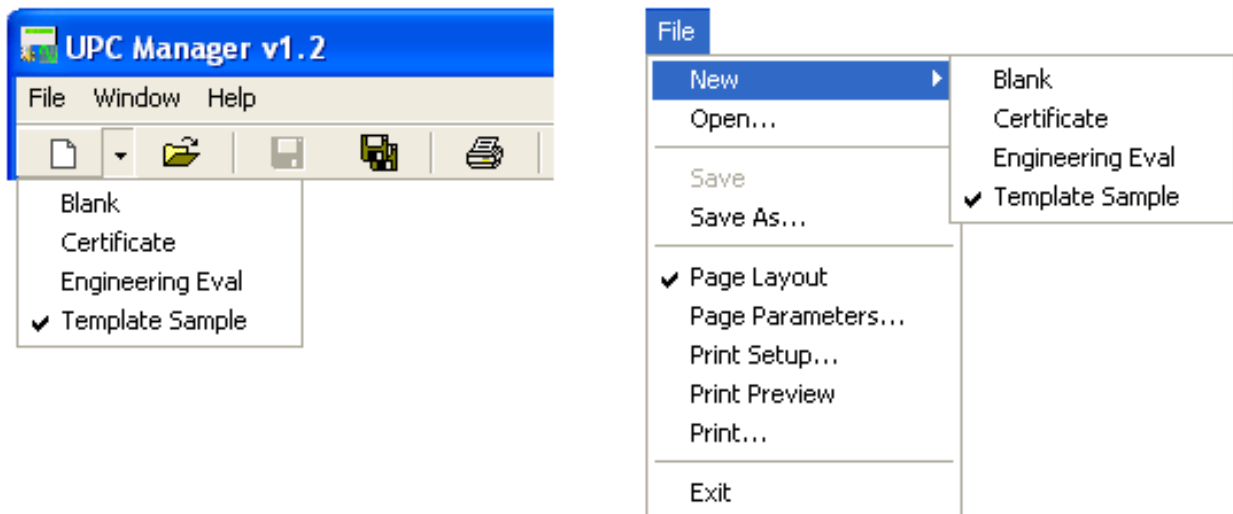


A sample test report is shown below, initialized from a template file.



4 Creating and Viewing Test Report (Cont.)

The top of the test report window includes a File menu and toolbar as illustrated below.



The New item allows test engineer select one of the template files stored in the Test Report template folder (typically "C:\Pacific Power Source\UPC Manager\Test Reports\Templates"). Selecting a new template file or pressing the New button creates a new test report based on the selected template file.


A template file is a .RTF file created in MS Word and is used as a test report template to store test result during a Test Plan or Test Sequence execution. Template files can be blank or contain introductory text, graphics, page header and footer (page numbering, date etc), page/paragraph/character formatting, form fields. Each form field should be given a unique field name. When a report template file is loaded in a Test Plan or Test Sequence, the form field names embedded in the template file will be available to *Report Field* in User Input step (See Chapter 6.4 User Input). Test engineer can select the form field names from the Report Field to store input information in a test report. Refer to Chapter 7 Exercise for examples on creating template files and working with template files in Test Sequence or Test Plan.

4.1 Test Results

Running a test sequence or test plan appends the results of each step at the end of test report. Running a test sequence from the beginning (using the **Start icon** in the **Run Toolbar**) initializes the test report from the selected template file then adds the test sequence Objective and Preferences. This creates a clean report each time the test sequence is run. Running a test sequence using the other controls does not clear the test report or add the Objective or Preferences, making it easier to troubleshoot (single step etc) a test.

After each step runs, the information about that step is appended to the test report as shown below. This information includes the **Title**, **Value**, **Comment**, **Result** and **Data** of each step.

Title

☒
Step 2 -  Meter [Sample Test]

Type: V, I, F, Power

Form: 3

If Outside Limits: Fail

Samples: 1

Interval: 1.0 sec


Value

Phase	Vrms	Irms
A	Yes < 120.500 > 119.500	Yes <= 25.000
B	Yes < 120.500 > 119.500	Yes <= 25.000
C	Yes < 120.500 > 119.500	Yes <= 25.000

Comment

Comment: Check Volts and Amps

Result


Passed - 07/25/2007 14:51:18 [Elapsed Time HH:MM:SS = 00:00:01.9414]

Data

Phase	Vrms(L-N)	Irms
A	120.000	0.000
B	120.000	0.000
C	120.000	0.000

Title: Includes the enable checkbox, step number, icon, type and test sequence file name.

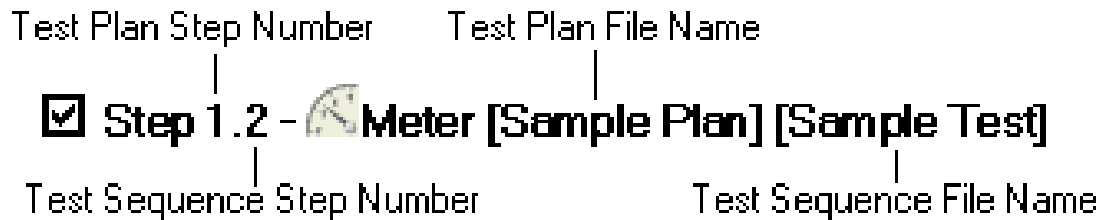
Value and Comment: Are the test sequence information from the design window, Step Value/ Comment tab.

Result: Shows the result icon, title, date/time the step completed and the elapsed time the step completed from the beginning of the test.

Note: *Not all steps produce data. The data also includes any errors that occurred running the step. Result and Data are also shown in the Step Result tab in the test sequence window.*

4.2 Test Plan Step Title

When a test sequence is part of a test plan, the step **Title** in the test report shows both the test plan and test sequence step numbers and file names.



4.3 Controlling Report Information

UPC Test Manager allows test engineer to create a script with the `TM.StepReportFlags` method (see Chapter 6.8 Script) to control the step items included in the test report for any step. These step items include but are not limited to: step comment, step summary and step title. The default setting for test report generation is to include all information (Title, Value, Comment, Result and Data)