R-IN32M3-EC, EC-1, RZ/T1

EtherCAT® Conformance Test Tool

R01AN3779EJ0100
Rev.1.00
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Outline

This document gives an introduction to running the EtherCAT Conformance Test Tool.

Target Devices

R-IN32M3-EC

EC-1

RZ/T1

Contents

1. Overview

EtherCAT slave devices developed for manufacture need to pass a Conformance Test regulated by the EtherCAT Technology Group (hereinafter referred to as the ETG) to guarantee conformance.
This document covers how to run the Conformance Test Tool provided by the ETG to perform in-house testing.

1.1 Acquiring the Conformance Test Tool

The Conformance Test Tool is available for downloading from the Web site of the ETG.

https://www.ethercat.org/default.htm

To download the Conformance Test Tool, you need to be a registered member of the ETG and have a valid EtherCAT vendor ID issued by the ETG.

2. Usage of Conformance Test Tool

This section covers how to run conformance tests with the Conformance Test Tool for EtherCAT.

2.1 Launching the Conformance Test Tool

Launch the EtherCAT conformance testing program (ECConformanceTest.exe) from the Start menu or otherwise.

The screen below should be shown once the Conformance Test Tool for EtherCAT is running.

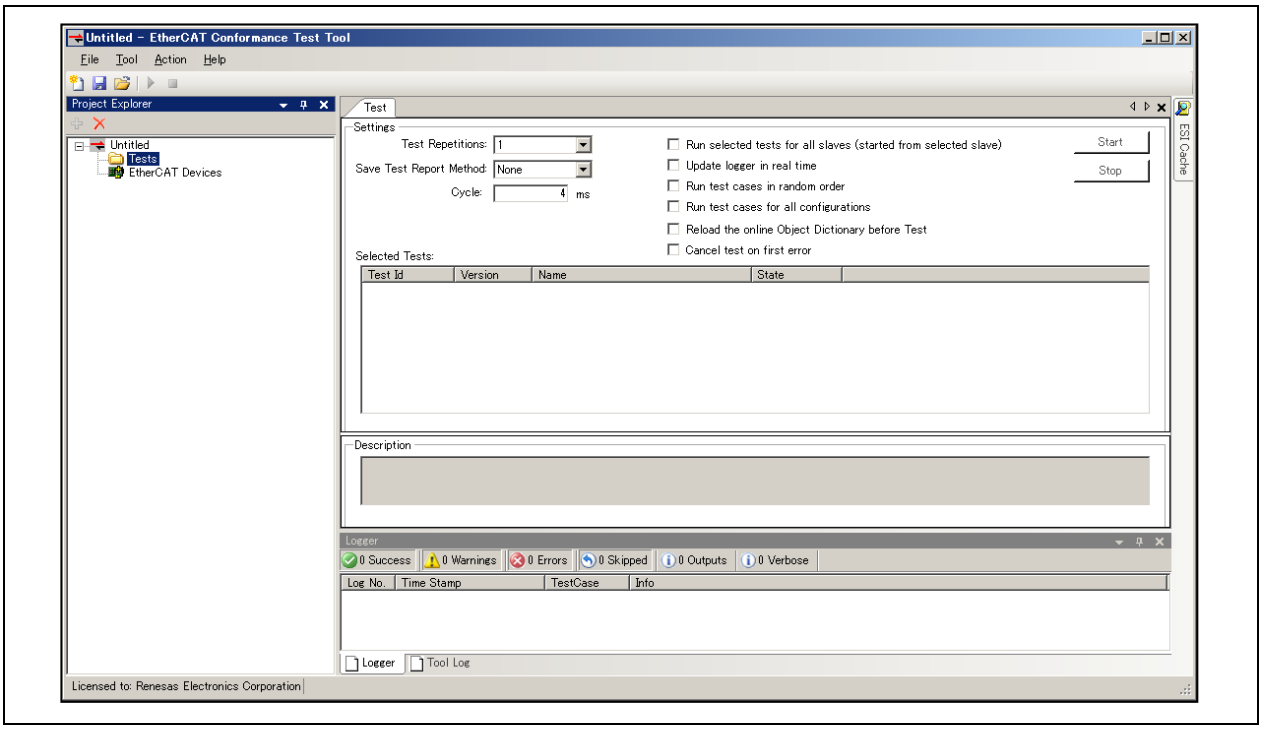

Figure 2-1 Initial Screen of the Conformance Test Tool

2.2 Setting up Folders for EtherCAT Slave Information Files

Connecting a device requires an EtherCAT slave information (hereinafter referred to as ESI) file.
In the Conformance Test Tool, ESI files are managed through the ESI cache, which is simply a list of directories that hold ESI files, a list of the files in the currently selected directory, and the associated window.

The folder “EtherCAT Conformance Test¥DeviceDescriptions” is set up as the standard folder in the ESI cache, so install the ESI files you wish to use in this folder.
To set up another folder for the reading of ESI files, follow the procedure below.

You can check the folder setting for the reading of ESI files by opening the [ESI Cache] window.
Select the [ESI Cache] tab on the right edge of the main window to display the [ESI Cache] window.
If the tab is not displayed, please select the [Windows] sub-menu from the [Tool] menu, then the [ESI Cache] item.

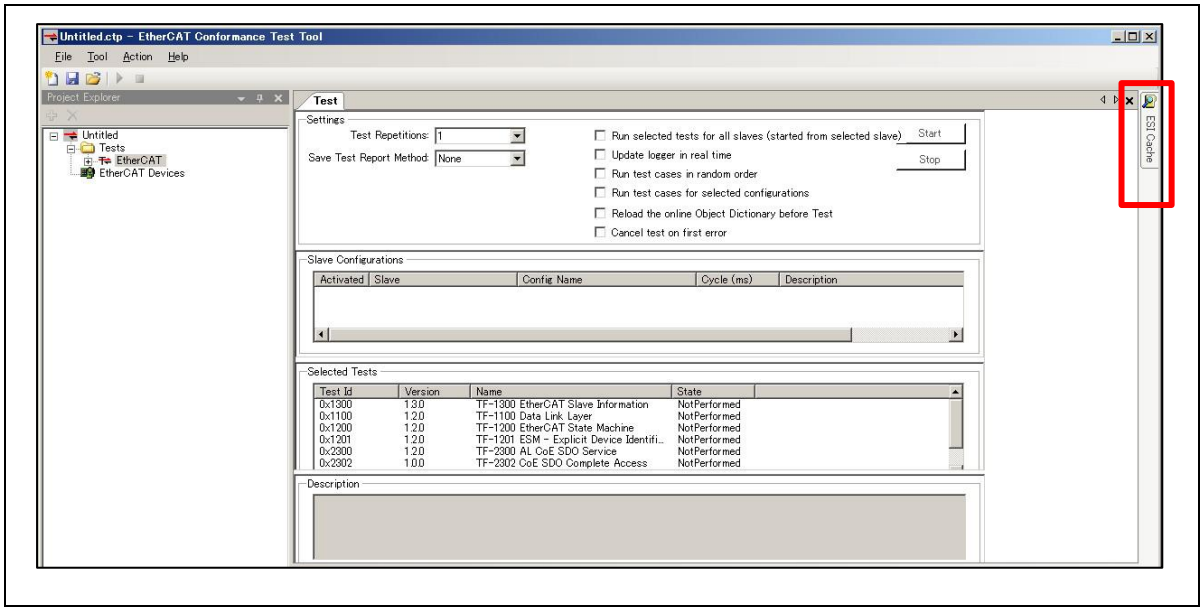

Figure 2-2 Selecting Display of the [ESI Cache] Window

The [ESI Cache] window displays a pull-down list for selecting the path to the folder and a list of the ESI files in the selected folder.

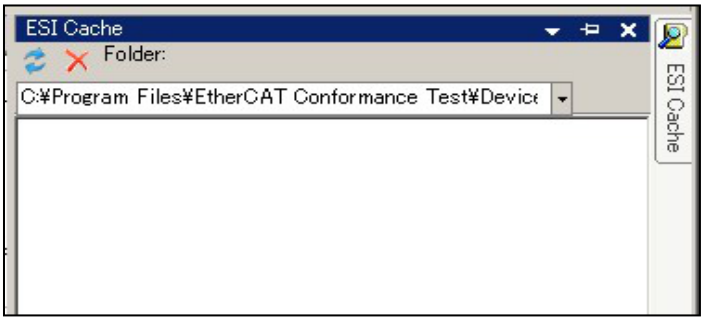

Figure 2-3 [ESI Cache] Window

To designate another folder for the storage of ESI files, select [Browse…] from the drop-down list and set up the folder.

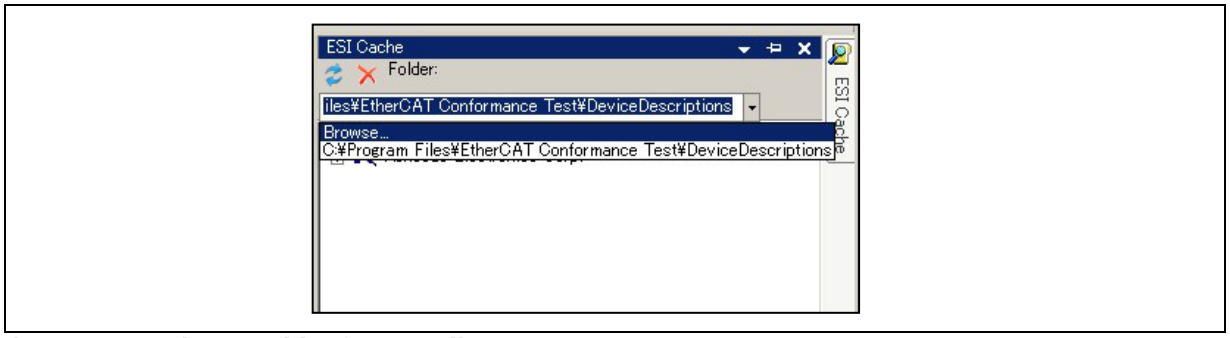

Figure 2-4 Setting a Folder for ESI Files 1

Select the folder from which ESI files to be read are stored. Setting the folder adds it to the list.

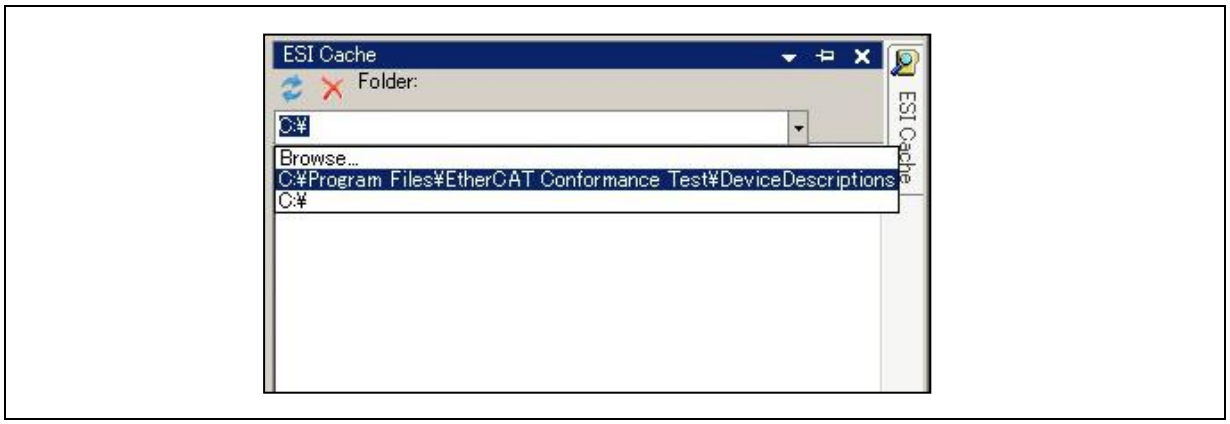

Figure 2-5 Setting a Folder for ESI Files 2

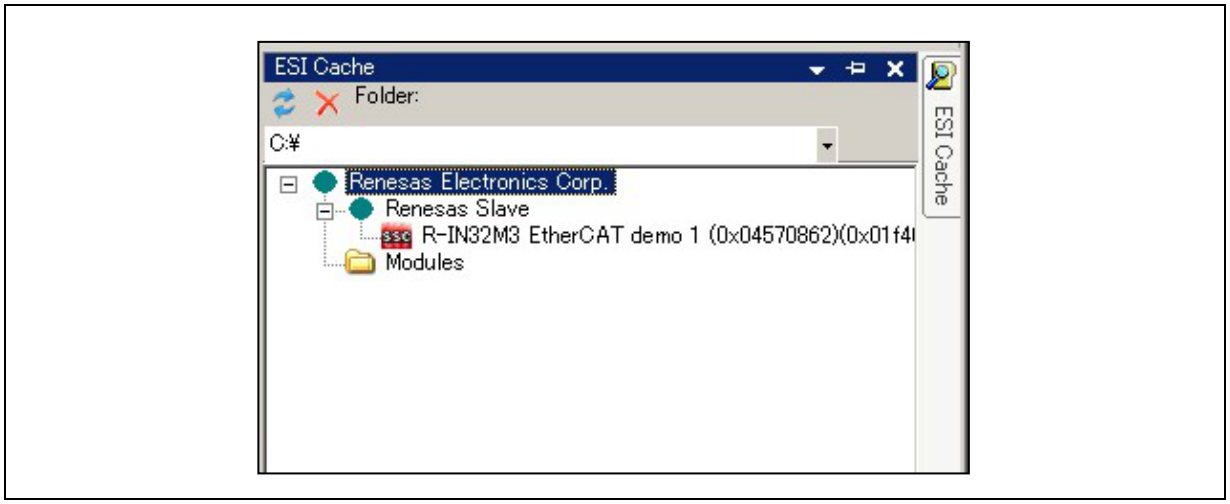

Figure 2-6 Setting a Folder for ESI Files 3

2.3 Scanning for Devices

Follow the instructions below to scan for devices.

Click on the right mouse button over [EtherCAT Devices] and select [Add Network Device...] from the sub menu to start the scan for devices. This operation is the equivalent to selecting [Scan For EtherCAT Devices] from the [Action] menu.

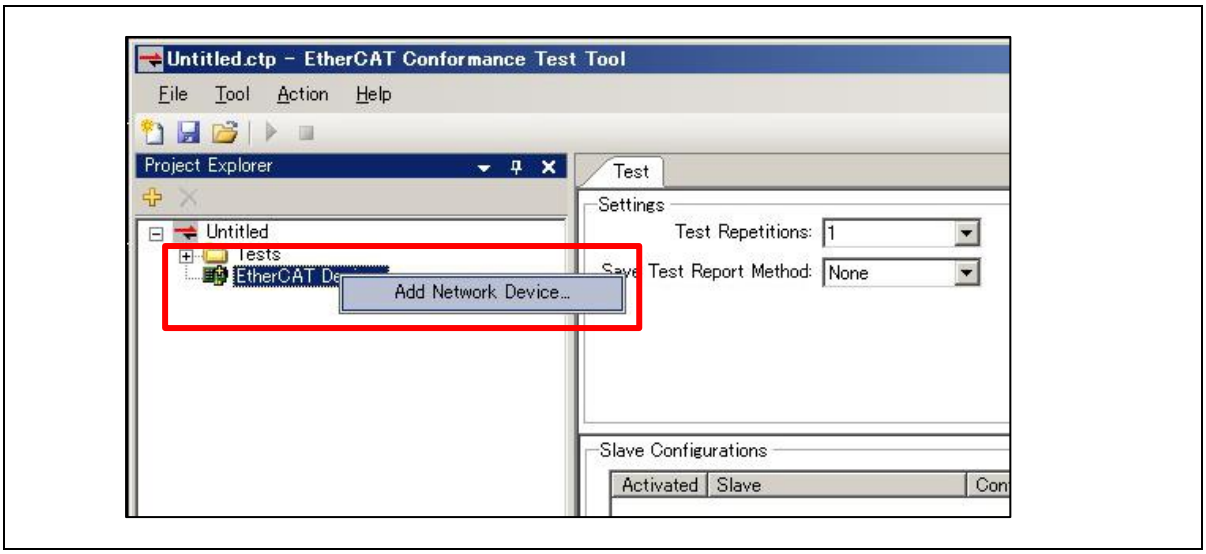

Figure 2-7 [Add Network Device]

An [Available Network Devices] window is displayed on completion of scanning after [Add Network Device...] is selected. [True] is displayed under [ECAT Link] in the case of connections where a link with a device can be established. Select the name of the connection for the device to be conformance tested and press [OK].

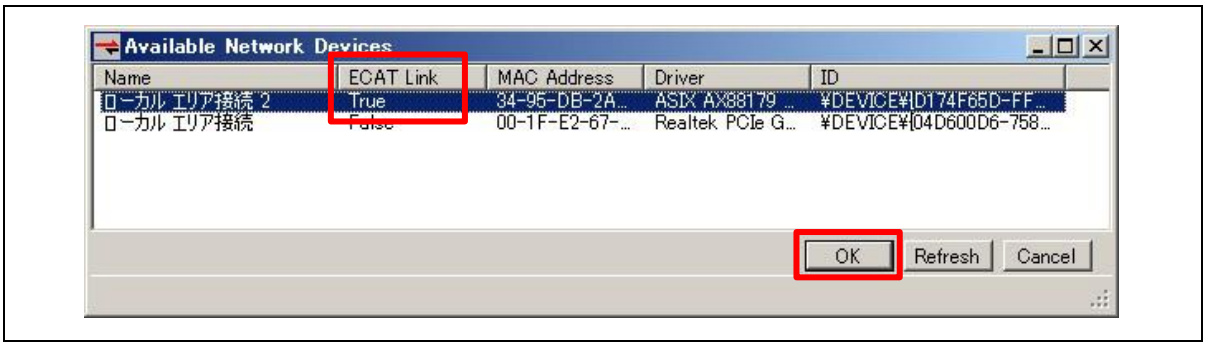

Figure 2-8 [Available Network Devices] Window

The dialog box below should pop-up and scanning of the selected connection for an EtherCAT slave device will proceed in response to pressing [Yes].

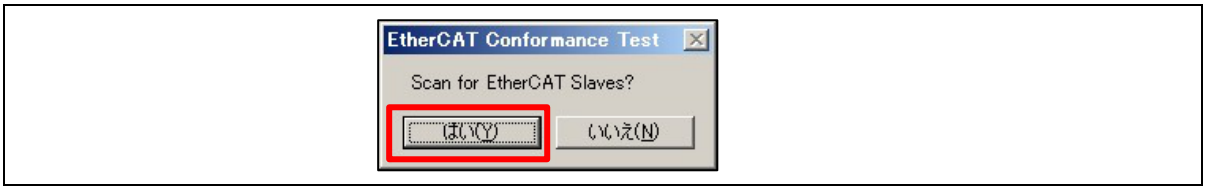

Figure 2-9 [Devices Scan] Check Window

When the scan is completed, the device should be displayed under [EtherCAT Devices].
The device name will be displayed if a corresponding EtherCAT slave information (ESI) file was read.

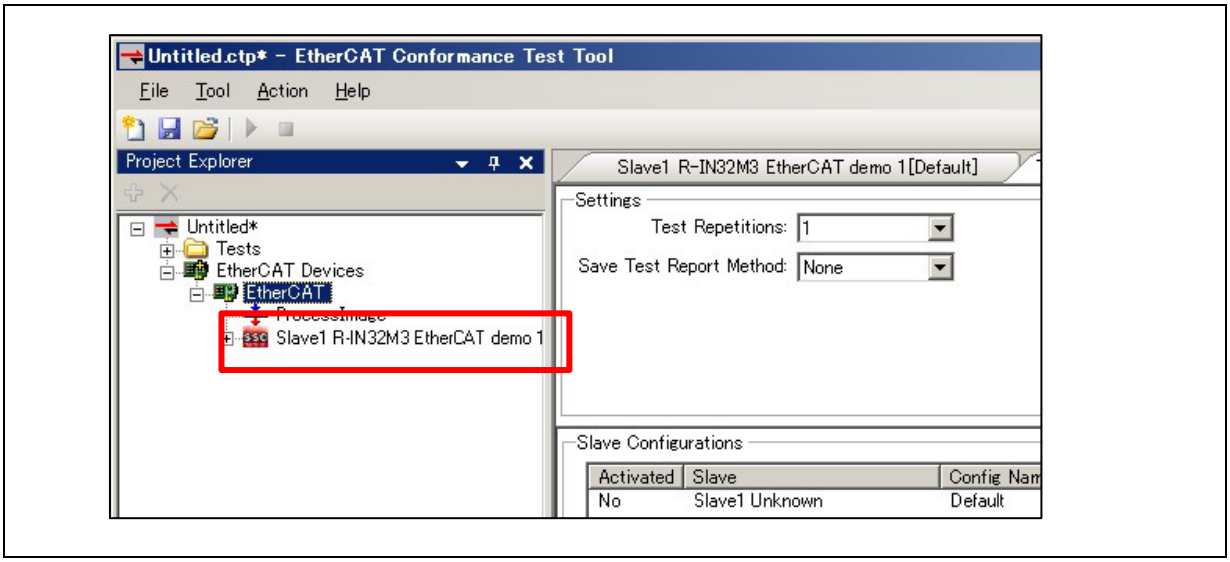

Figure 2-10 Result of Scanning for a Device

When the device name is displayed as “Unknown” as in the figure below, reading of the ESI File did not proceed normally. Please check that the ESI file to be is among the designated files in [ESI Cache]. If you need to change the designated folder for [ESI Cache], please see the procedure for setting folders where files are stored in section 2.2, Setting up Folders for EtherCAT Slave Information Files.

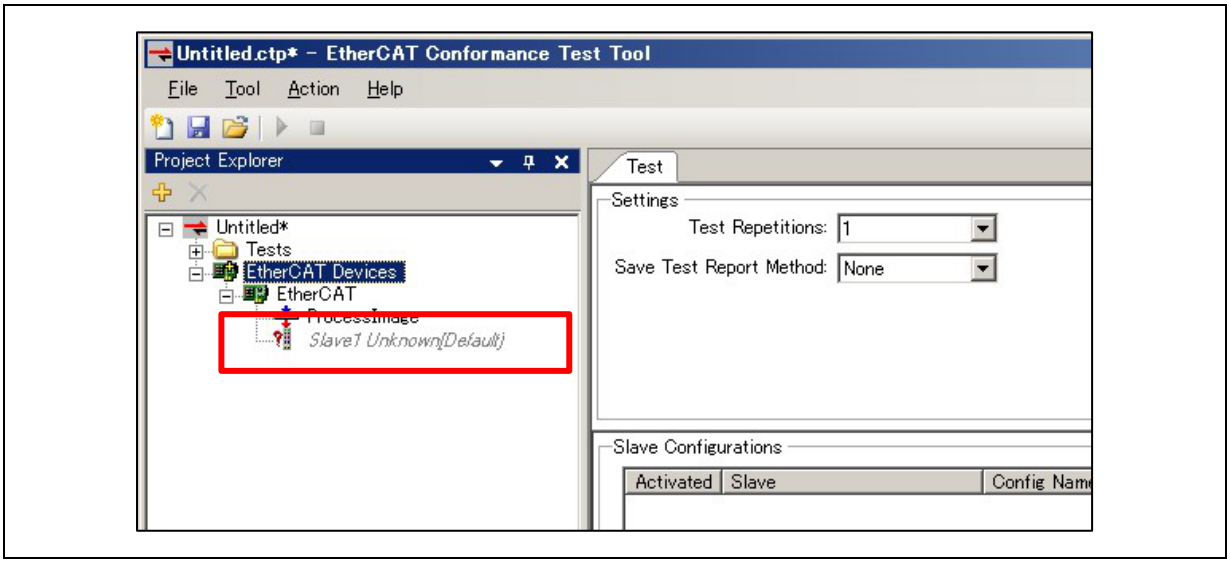

Figure 2-11 Result of Scanning for a Device (Device Unknown)

A message asking if you want to rebuild the ESI cache is displayed as shown in the figure below when an ESI file is placed in the folder designated in the [ESI Cache] window while the device remains connected. Press [Yes] to proceed with rebuilding.

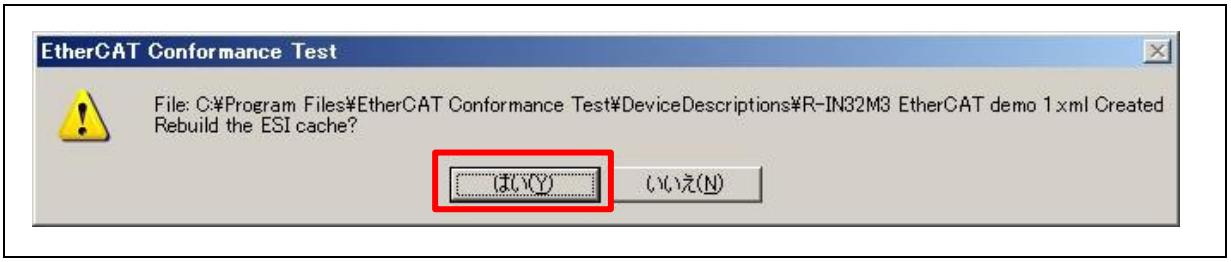

Figure 2-12 Rebuilding the ESI Cache

Refreshing of the ESI files is indicated as shown by the figure below on completion of rebuilding of the ESI cache.
The ESI file for the device will be read again in response to pressing [OK].

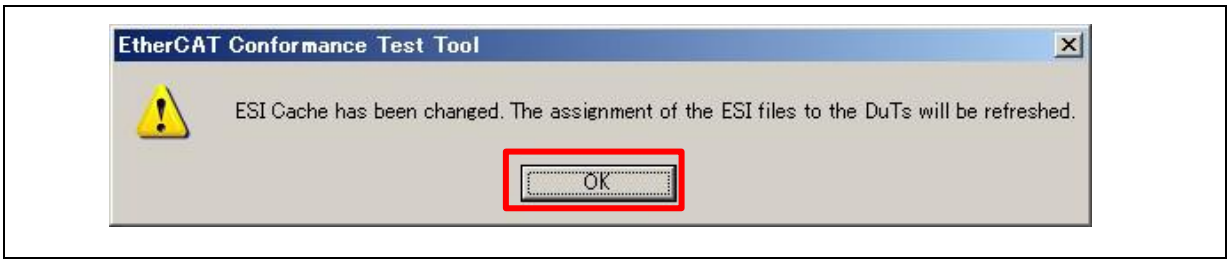

Figure 2-13 ESI File Refresh 1

The ESI file should be read after completion of refreshing, and the name of the device should be displayed if it is recognized normally.

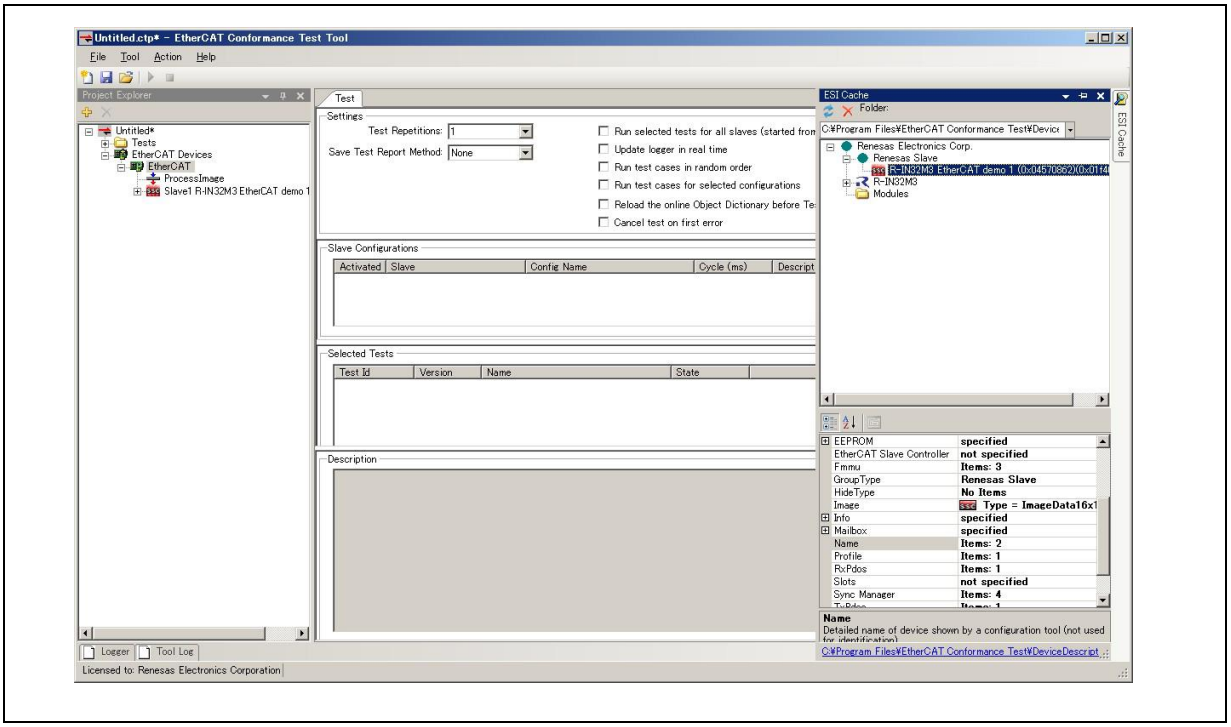

Figure 2-14 ESI File Refresh 2

2.4 Running Conformance Tests

Clicking on the [Tests] tab produces a display of the individual test items under [EtherCAT] in the [Project Explorer] tree view.

Selecting a test item in the tree leads to its details being displayed under [Description] on the [Test] tabbed page.

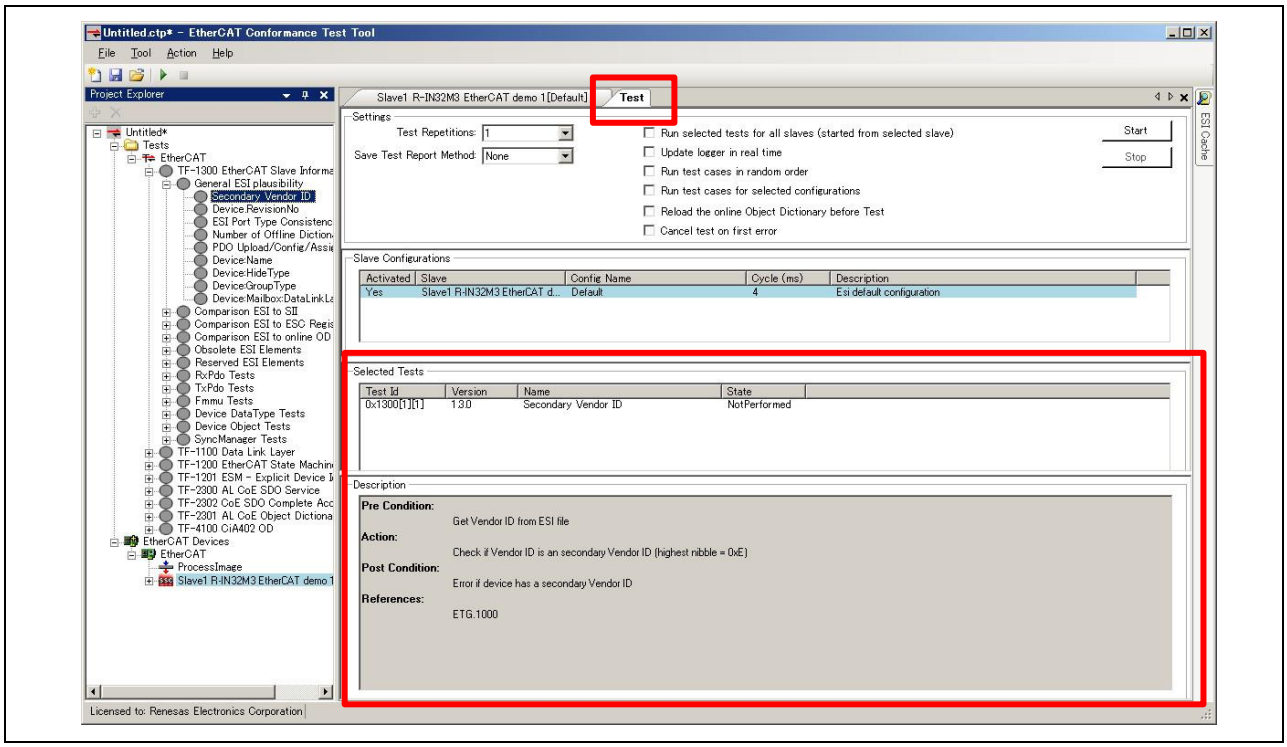

Figure 2-15 Display of Test Items 1

Conformance tests should be run according to the following procedure.

(1) Select the device on which the conformance tests are to be run.

(2) Select the test item. Selecting an upper-layer item includes all items in the lower layer as tests to be applied.

(3) The selected tests will be run in order from the top one in response to pressing the [Run Test] button.

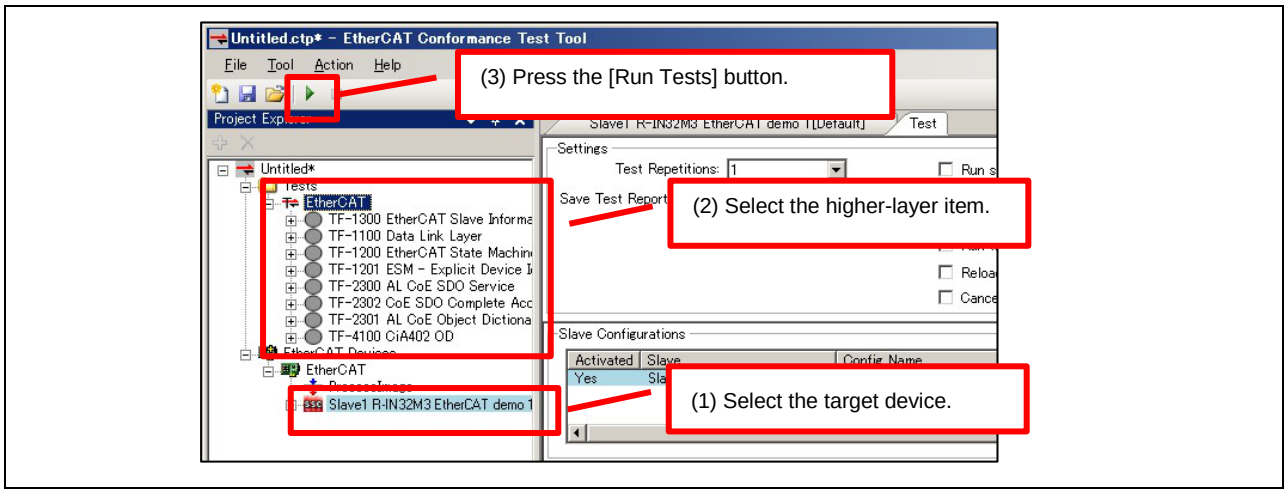

Figure 2-16 Display of Test Items 2

The color of the ○ mark next to each test item changes according to the result of execution when the test has been run after the [Run Tests] button has been pressed.

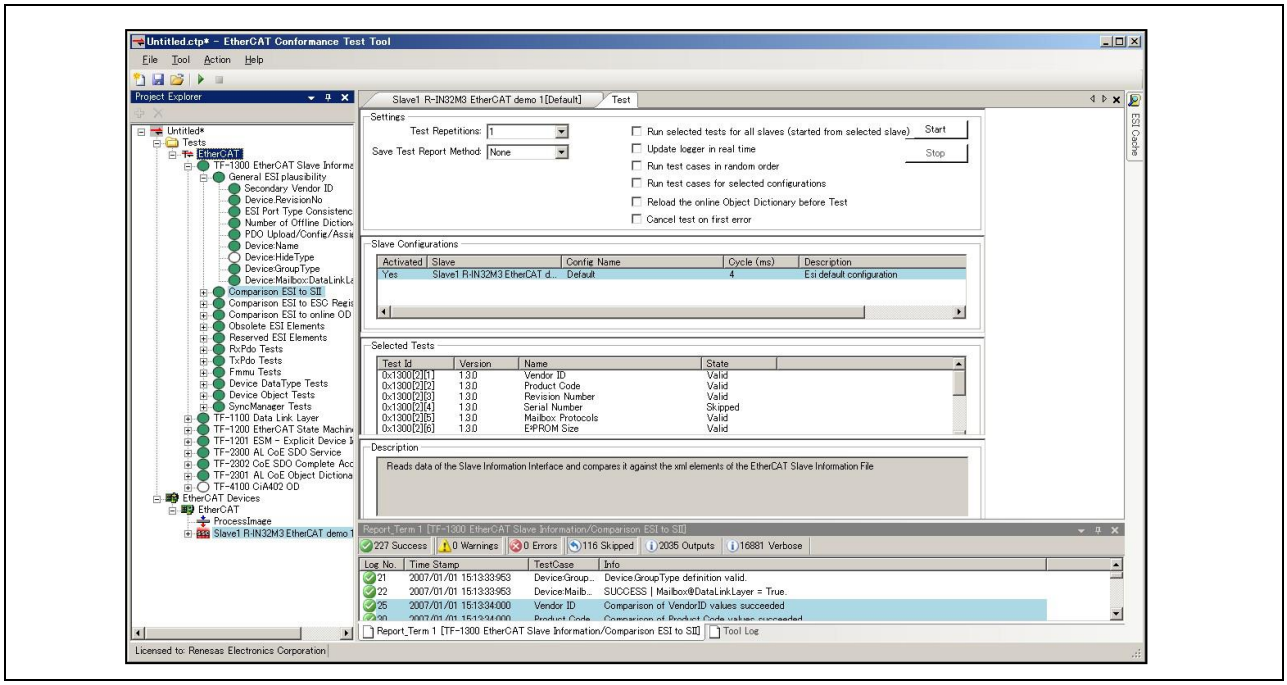

Figure 2-17 Results of Running Tests 1

The color coding is as follows: success=green, skipped=white, error= red, not implemented=gray.
Of the tests, only those relevant to functions designated in the ESI file are run. Tests of non-designated functions are skipped without being run.

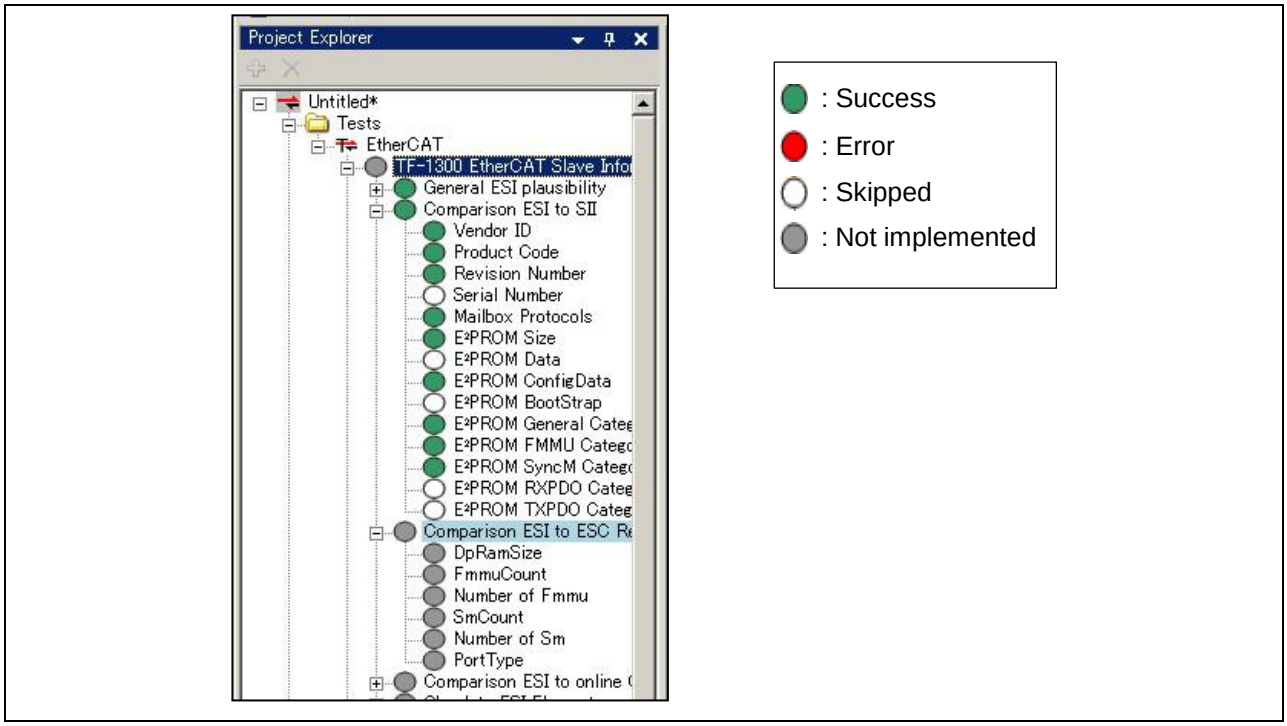

Figure 2-18 Results of Running Tests 2

The details of the results are shown in the report pane.
Color-coding of results in the report window is the same as in the project tree (success=green, warnings=yellow, errors=red, skipped=white) but icons are used for each type.

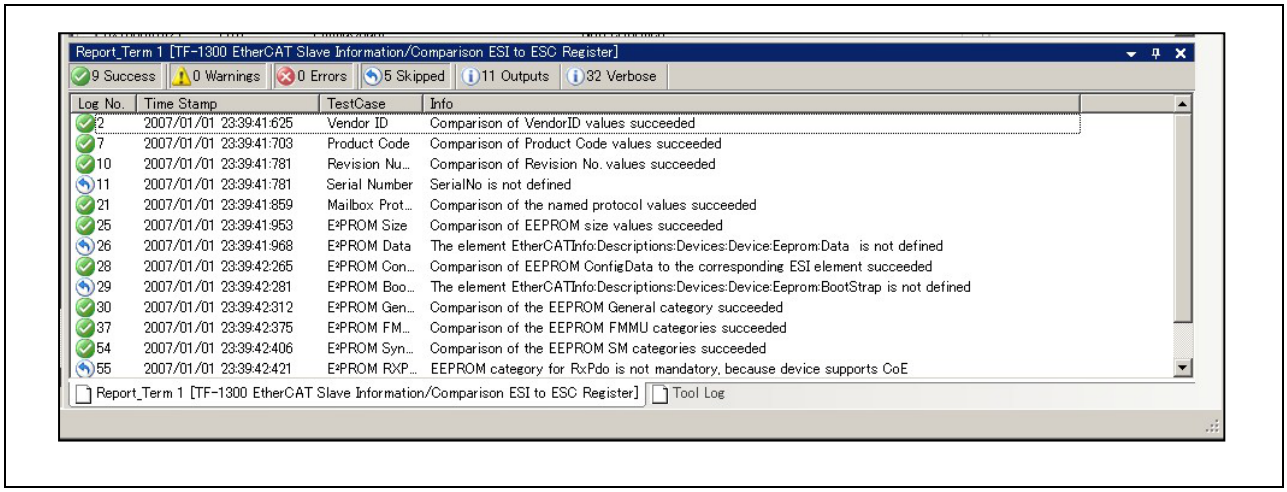

Figure 2-19 Report Pane 1

You can see the details of a test by double-clicking on the corresponding result in the report pane.

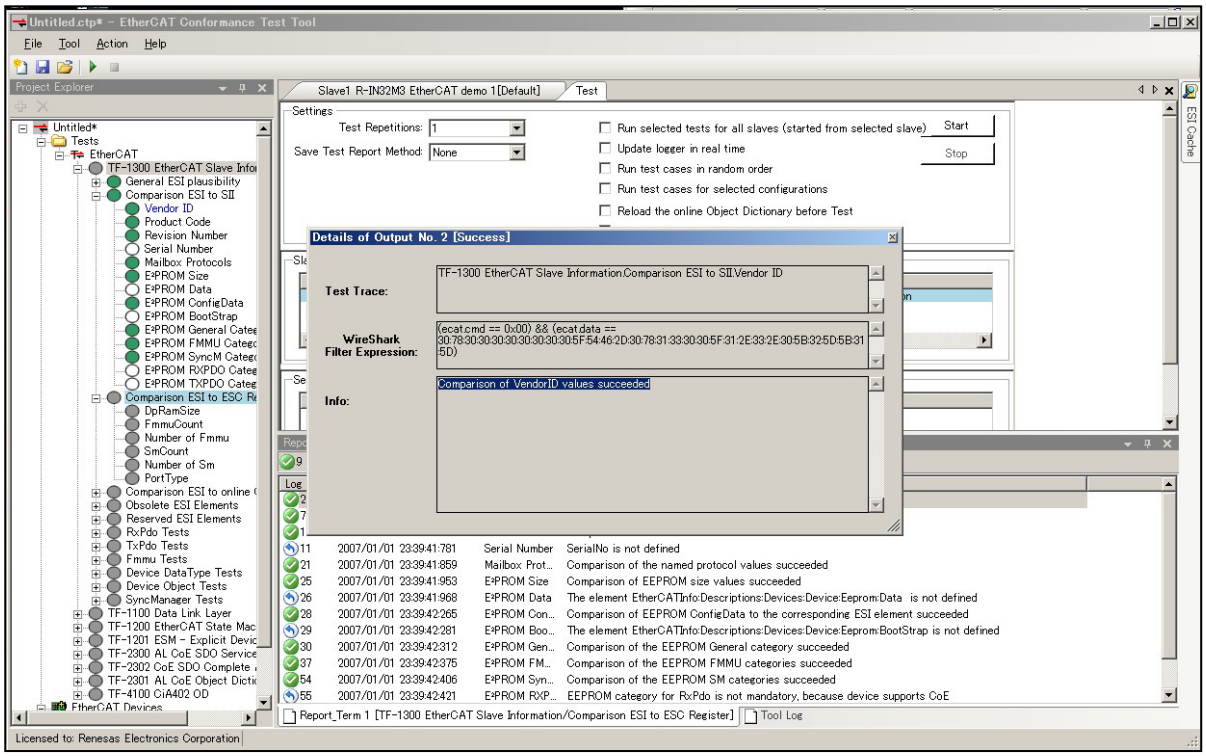

Figure 2-20 Report Pane 2

Each test has its requirements so please read [Description] of each test before trying to run it to check whether the device fulfils the requirements of the test.

Example)

To run the test in the figure below, Explicit Device Identification must be supported as a function and the ID value must be 0x0005.

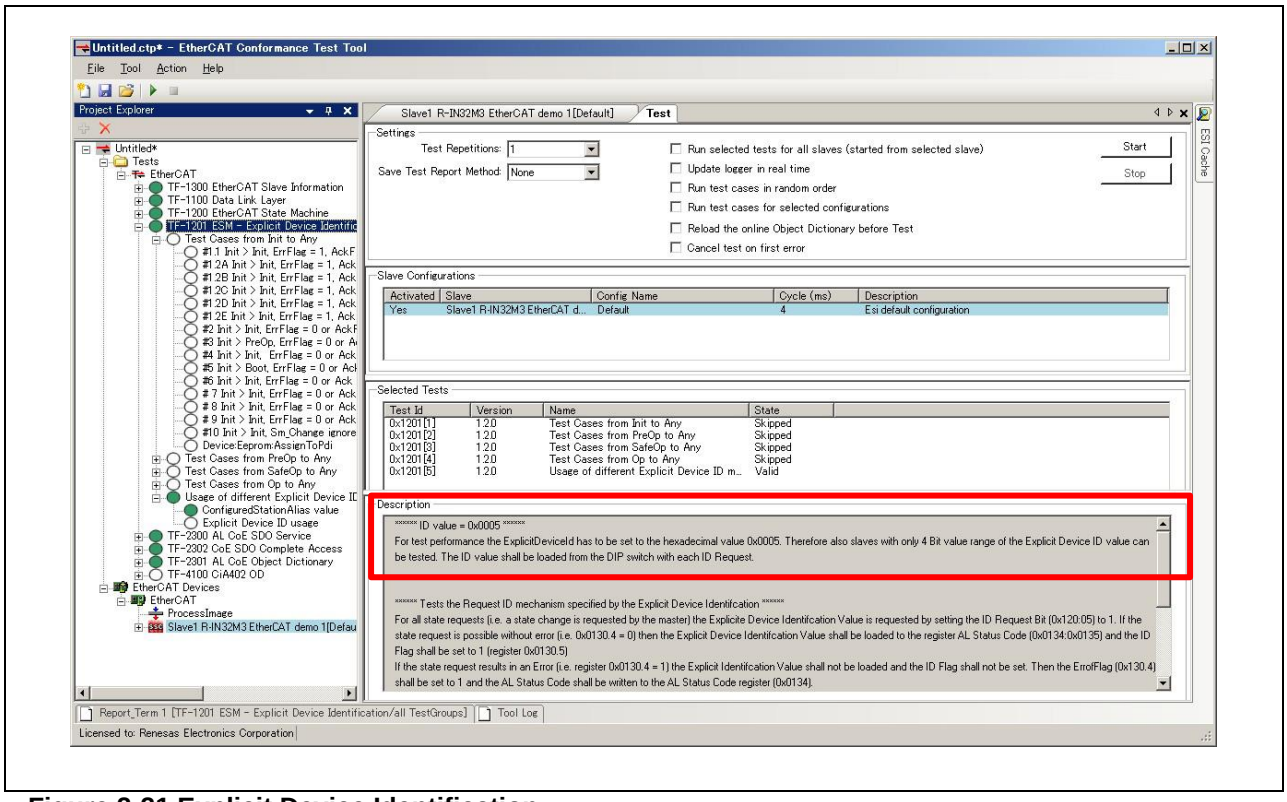

Figure 2-21 Explicit Device Identification

3. Website and Support

Renesas Electronics website
http://www.renesas.com/

Inquiries
http://www.renesas.com/inquiry

Revision History

		Description	
Rev.	**Date**	**Page**	**Summary**
1.00	Apr 04, 2017	—	First edition issued.

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   Handle unused pins in accordance with the directions given under Handling of Unused Pins in the manual.

   — The input pins of CMOS products are generally in the high-impedance state. In operation with an unused pin in the open-circuit state, extra electromagnetic noise is induced in the vicinity of LSI, an associated shoot-through current flows internally, and malfunctions occur due to the false recognition of the pin state as an input signal become possible. Unused pins should be handled as described under Handling of Unused Pins in the manual.

2. Processing at Power-on

   The state of the product is undefined at the moment when power is supplied.

   — The states of internal circuits in the LSI are indeterminate and the states of register settings and pins are undefined at the moment when power is supplied.
   In a finished product where the reset signal is applied to the external reset pin, the states of pins are not guaranteed from the moment when power is supplied until the reset process is completed.
   In a similar way, the states of pins in a product that is reset by an on-chip power-on reset function are not guaranteed from the moment when power is supplied until the power reaches the level at which resetting has been specified.

3. Prohibition of Access to Reserved Addresses

   Access to reserved addresses is prohibited.

   — The reserved addresses are provided for the possible future expansion of functions. Do not access these addresses; the correct operation of LSI is not guaranteed if they are accessed.

4. Clock Signals

   After applying a reset, only release the reset line after the operating clock signal has become stable. When switching the clock signal during program execution, wait until the target clock signal has stabilized.

   — When the clock signal is generated with an external resonator (or from an external oscillator) during a reset, ensure that the reset line is only released after full stabilization of the clock signal. Moreover, when switching to a clock signal produced with an external resonator (or by an external oscillator) while program execution is in progress, wait until the target clock signal is stable.

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