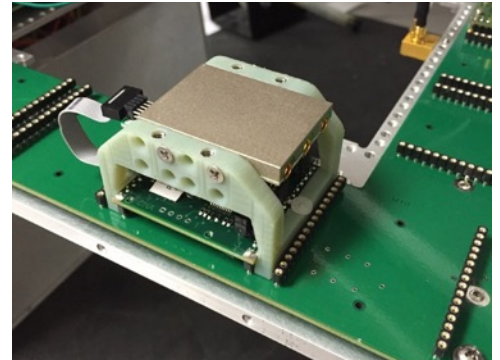


DESCRIPTION

This guide describes hardware installation and software control settings for a 20GHz SP4T reflective/absorptive switch or step attenuator with a Y000CNAX driver module in a Cassini test system fixture.

NOTE: A Cassini 'RIFL smart fixture' equipped with a fixture carrier board is required to install and control the switch or attenuator.



COMPONENTS

Listed below are the fixture modules and associated hardware required for installation into a Cassini test system fixture.

RIK0254A: Fine Step Attenuator



RIK0250A/253A:
Absorptive/Reflective Switch



RIK0252A: Carrier Mount



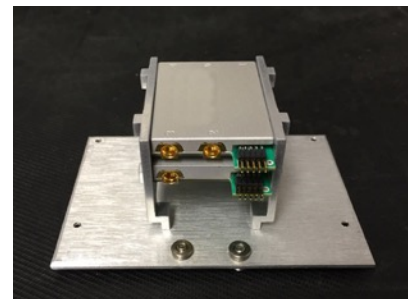
Included in RIK0252A:
10-pin Ribbon Cable



RIK0255A: Driver Module



RIK0251A: Bottom Plate Mount



Installation

Before installing any hardware in a Cassini test fixture, the fixture must be powered down, removed from the test system, and placed in a static-free work environment. It is recommended to remove the PCB or Device Interface Board system from fixtures that use a Quick Lock™ or “Hard Dock” configuration to prevent damage to the PCB and components.

Insert a 4-40 standoff screw into the position shown in Figure 1. This screw holds the top plate lid level once the securing screws are removed and provides easier hinging of the top plate lid.

To access the interior of the fixture, remove the twelve 4-40x1/4” screws from the perimeter of the top plate as shown in Figure 2.

Loosen but do not remove the two remaining top plate securing screws shown in Figure 3 to allow the top plate to hinge open. They are located nearest to the spring-loaded locking pin as shown in Figure 4.

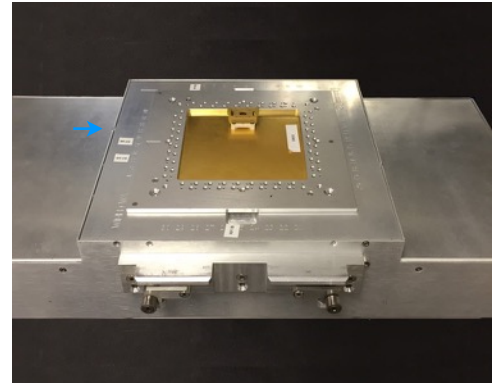


Figure 1

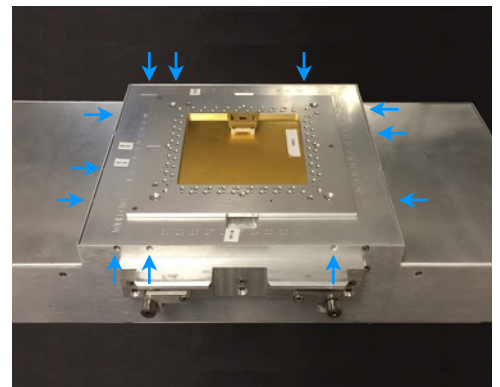


Figure 2

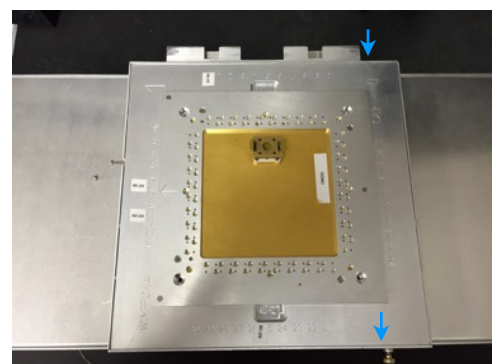


Figure 3

Secure the lid in the open position by pulling the tab away from the fixture body, hinging the lid past the tab, and then releasing the tab to lock the top plate lid in place as shown in Figure 4.

If the fixture is not equipped with a locking tab, the fixture should be placed on its side to prevent the top plate from closing.

The Y000CNAX Driver must be installed in a module location on the fixture carrier. Insert the Y000CNAX module into a module slot on the fixture carrier board. The board should be aligned such that the “RI” marking on the module PCB has the same orientation as the module slot identification code as seen in Figure 5. Note the module location for programming purposes in the software control section.

If the switch/attenuator module will be installed on the bottom plate of the fixture (separate from the driver board), insure that the length of the supplied ribbon cable is sufficient between the driver board and module. Check that there is adequate length of ribbon cable to allow the top plate to hinge without tension on the cable, and that cable is not interfered with or interfering with other interconnect when opening or closing the top plate lid.

There are three headers on the driver board(H3, H4, and H5) as shown in the Figure 6. The different headers provide specific voltage/current drive conditions to support multiple modules and types of modules. Reference the chart below for the required header for each type of module.

Module	Header
Attenuator	H3 only
MMIC Switch	H3 or H4
Reflective Switch	H3, H4, or H5
Absorptive Switch	H3 or H4

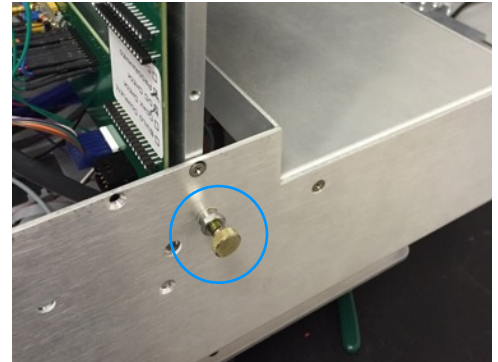


Figure 4

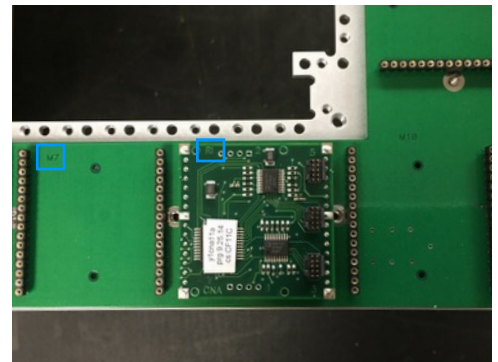


Figure 5

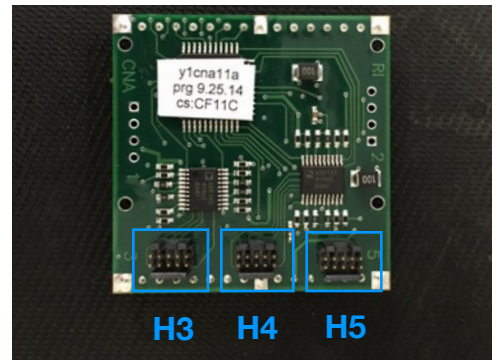


Figure 6

Connect the 10-pin ribbon cable to the appropriate header location on the driver board for the intended module as shown in Figure 7. Note the orientation of the connector type and red indicator trace on the ribbon for proper installation.

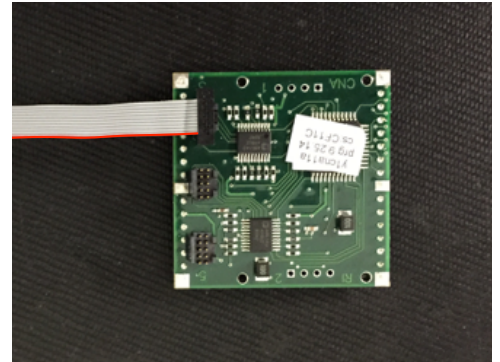


Figure 7

To use a carrier board standoff mount, position the module as shown in Figure 8. Secure the module to the mount with four 4-40x1/4" screws. The mount offers four horizontal mounting positions for staggering/offsetting the module horizontally. The carrier board mount supports up to two modules.

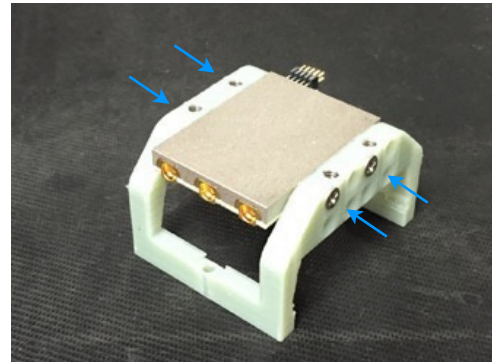


Figure 8

Slide the carrier board mount onto the inserted module using equal pressure on both sides of the mounting bracket to allow the gripping channels to move freely around the edge of the driver board PCB as shown in Figure 9. Keep the ribbon cable free of the bracket arms when sliding the mount onto the driver module.

Note that multiple carrier mounting brackets cannot be placed in adjacent module slots.

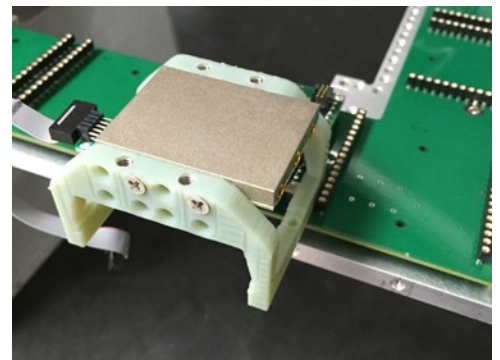


Figure 9

Secure the carrier mount with the supplied 4-40x3/8" nylon screws as shown in Figure 10.

Do not secure the bracket to the carrier board with metal screws as this may cause electrical short circuits and/or damage the mounting bracket.

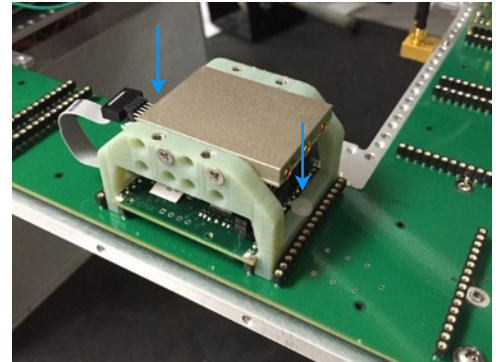


Figure 10

If using a bottom plate mounting bracket, assemble the vertical supports to the aluminum base using the provided four 0-80x1/8" screws as shown in Figure 11.

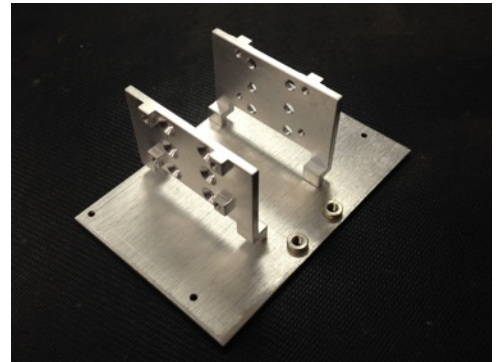


Figure 11

Secure the module in place using four 2.5mm x 8mm screws as shown in Figure 12. The bottom plate mount provides three sets of single position module installation.

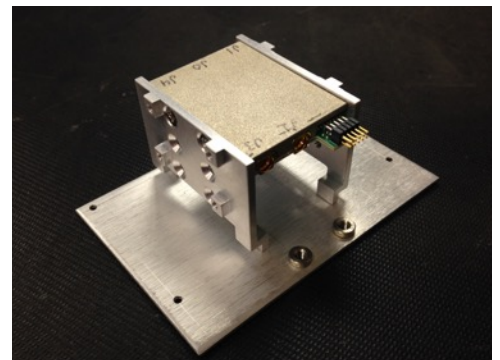


Figure 12

Secure the bottom plate mount to the fixture bottom using two 4-40x1/4" screws as shown in Figure13.

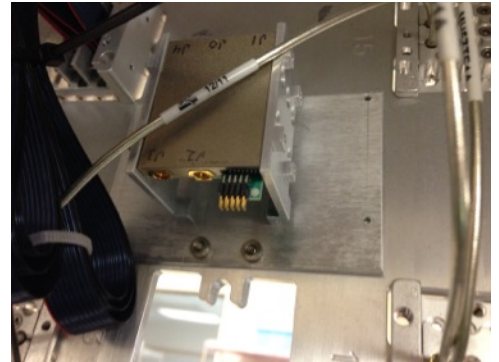


Figure 13

Connect the ribbon cable from the driver module to the switch/attenuator module with the orientation shown in Figure 14.

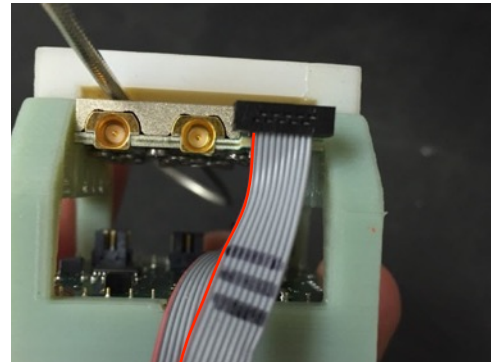


Figure 14

For applications with RF cables routing from the fixture bottom plate to a switch/attenuator module on the carrier, an additional cable clamp is provided as show in Figure 15. The clamp secures the RF cables against the module and provides strain relief to prevent movement of the connectors and excessive bending near the connectors when opening and closing the fixture top plate hinge.

Route the RF cables underneath the clamp, keeping the cables clear of the ribbon connector to prevent electrical short circuits. Secure the clamp and cables using four 4-40x7/16" screws. Adjust the bends of the RF cables so that do not interfere with opening and closing of the top plate.

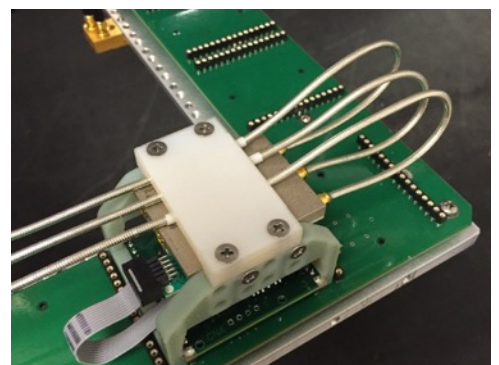


Figure 15

SOFTWARE CONTROL

NOTE: Software Patch 'GF10RC2A.252-19 Fixture RF Module Support (08/15/15)' or a later version must be active on the Cassini test system to control the RI fixture attenuators/switches and Y000CNA driver board.

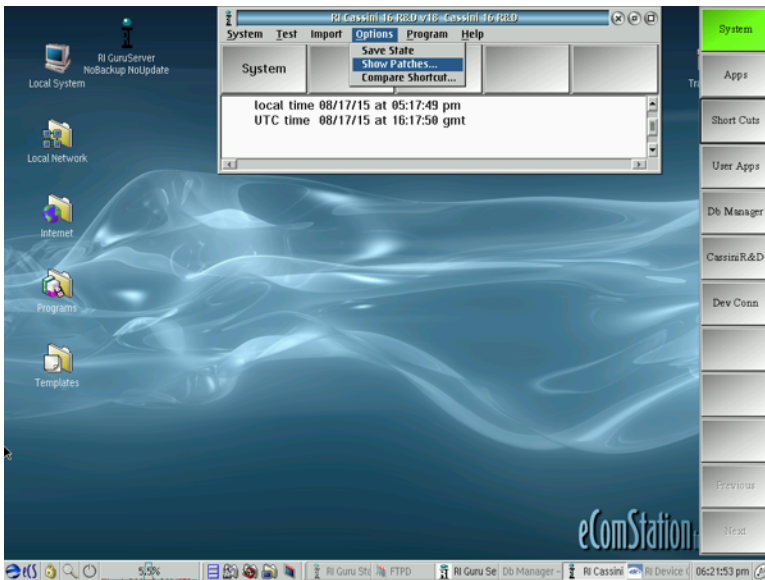


Figure 16

To verify that the software patch is active, select 'Options>Show Patches...' in the drop down menus from the Main System Window as shown in Figure 16.

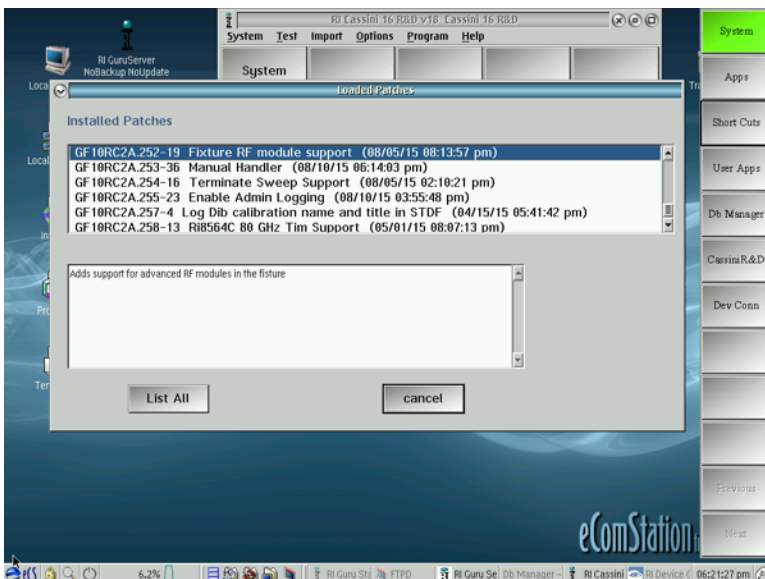


Figure 17

The Loaded Patches window will open, showing the list of currently loaded patches on the test system in ascending numerical order from top to bottom in the pane at the top of the window. Scroll towards the bottom of the list to find patch 'GF10RC2A.252-19' as shown in the Figure 17. If the patch is not listed, it is not available in the current shortcut and must be loaded manually.

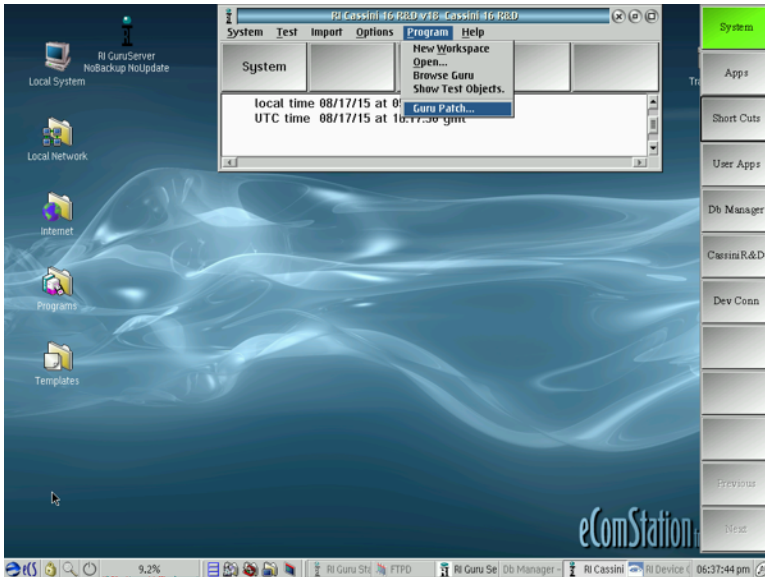


Figure 18

To manually load a shortcut, select 'Program>Guru Patch...' in the drop down menus from the Main System Window as shown in Figure 18.

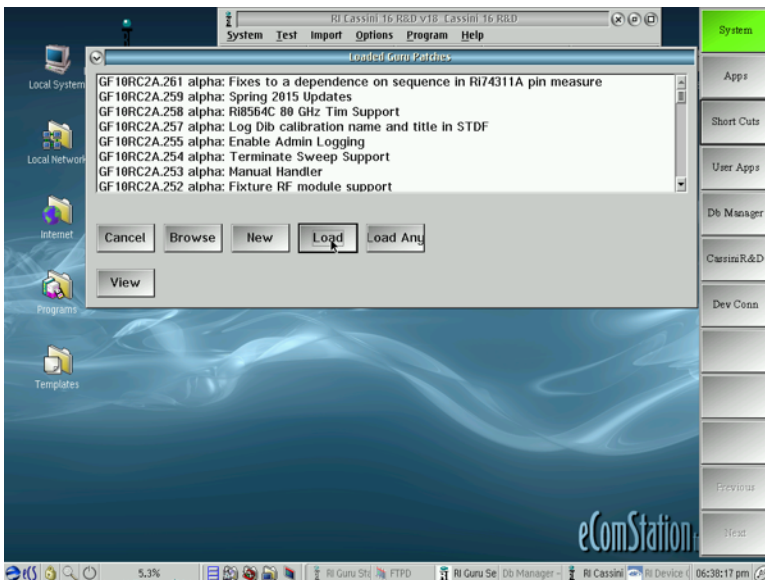


Figure 19

From the Loaded Guru Patches, select the 'Load' button to open the patch loading window as shown in Figure 19.

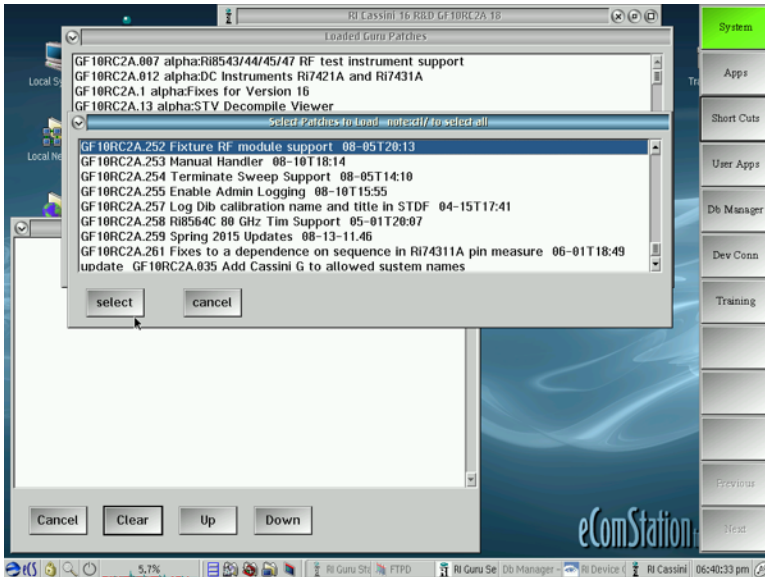


Figure 20

When the ‘Select Patches to Load’ pop-up window appears, scroll the list of available patches and highlight the desired patch with a left mouse button click. Then click the ‘Select’ button to add the patch as shown in Figure 20.

NOTE: The fixture must be removed from the test system and re-checked into the tester for the patch to apply the new software controls in the fixture.

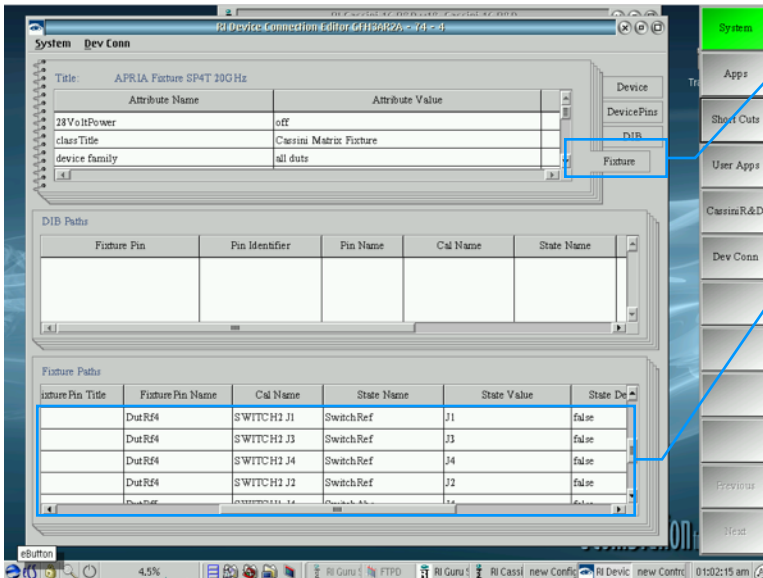


Figure 21

The software controls for RI module switches/ attenuators are designated in the Device Connection Editor under the 'Fixture' tab as shown in Figure 21.

To add a switch control path or attenuator setting, right click in the Fixture Path table at the bottom of the window and select 'Add' to create a new path or 'Copy Row' to create a new path from an existing path/port.

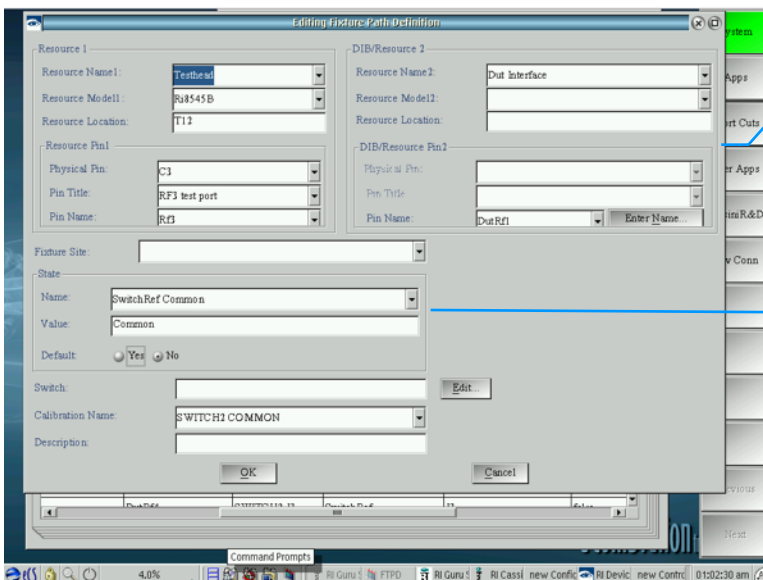


Figure 22

The upper resource definitions provides RF path designations for calibration purposes.

The 'State' fields define the parameters of the software buttons used in graphical test plans and instrument control window.

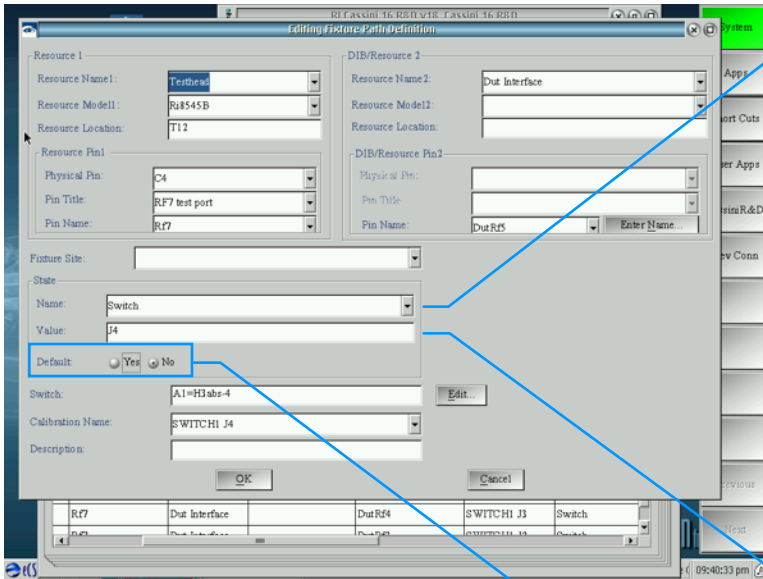


Figure 23

The 'Name' field defines the button Owner. This must be unique to the specified module, and must be the shared for multiple port values in switches or multiple settings for attenuators. The first instance of a new module must be entered manually, but subsequent entries for the same module can be selected from the drop down list.

NOTE: The J0 or common port of switches must include a State 'Name' and arbitrary(placeholder) 'Value' for calibration purposes. An example is provided in Figure 23.

The 'Value' button defines the instrument button value that will be displayed for a specified switch or attenuation setting.

The 'Default' value of the switch state or attenuation setting must be defined for a single path definition of a module by selecting 'Yes'. Only one path/state definition can be selected as default for an individual module. All other state/path definitions for the module must be set to 'No' for the Default setting.

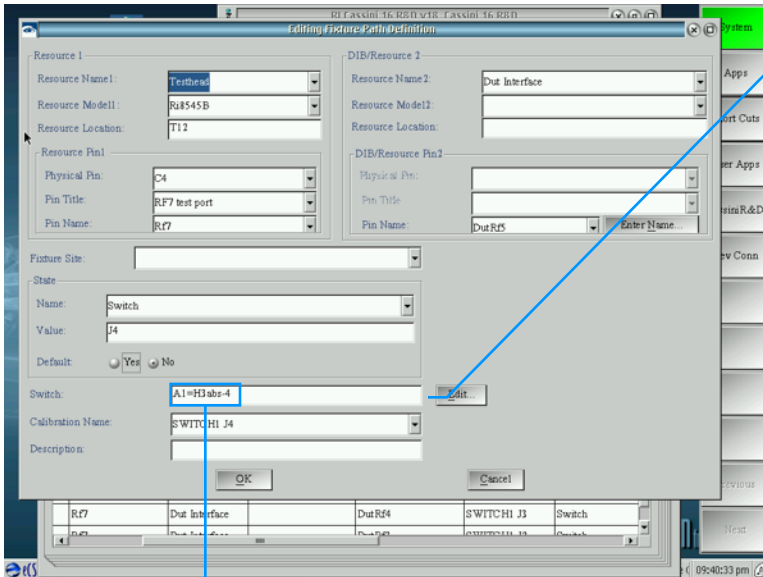


Figure 24

The module control logic statement is defined in the Switch field. This hardware command executes the switch or attenuator setting using the protocol shown below. This hardware command is linked to the instrument button's State 'Value' setting defined previously.

A1=H3abs-4

Module Parameter - This value defines the switch port number or attenuator value. In the example, '4' represents port J4. '1' represents J1, '2' represents J2, '3' represents J3. For an attenuator, the number represents the attenuation in dB, i.e - '1' represents 1dB of attenuation with a maximum value of '31' for 31dB.

Module Type - value defines the type of switch or attenuator module to provide the appropriate driver control command. In the example 'abs' denotes absorptive switch. The other available types are: 'ref' for reflective switch, 'mmic' for mmic switch, 'fine' for fine attenuator, 'step' for step attenuator.

Header - value defines the header on the Y000CNAX driver board that the attenuator or switch module is connected to via the 10-pin 2x5 ribbon cable. The 'H' signifies that the value is a header location, and the '3' denotes header location 3 in this example.

Module Address - value denotes the location of the Y000CNAX driver module in the fixture carrier. The 'A' defines the following value is a module address location, and the number '1' denotes the module slot M1.

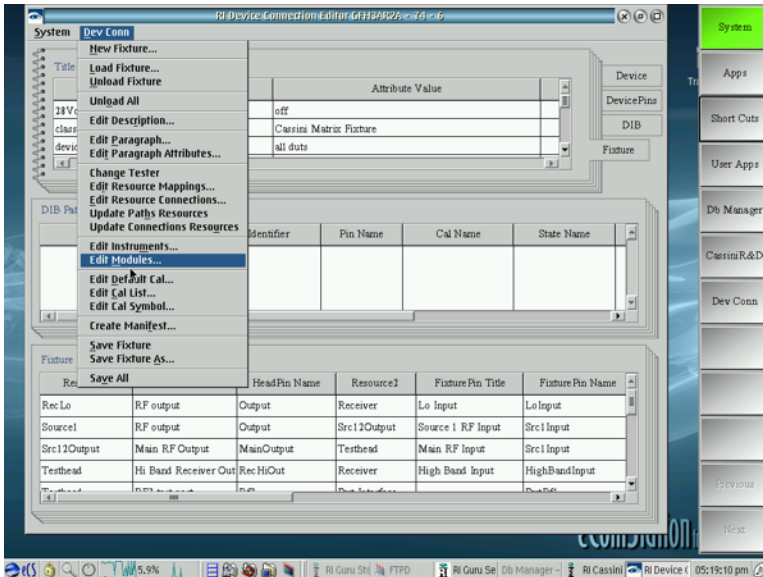


Figure 25

The Y000CNA driver board requires an additional fixture definition to utilize the fixture's high-speed communication bus – RIFL in order to control the switch/attenuator. To add this 'smart' module to the fixture definition, select the 'Dev Conn>Edit Modules...' options from the menu list as shown in Figure 25.

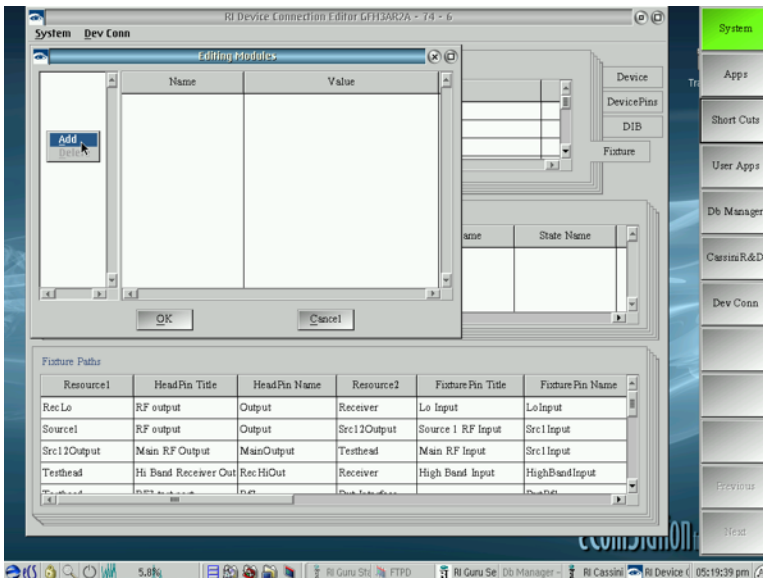


Figure 26

A 'Editing Modules' window will pop up showing the currently loaded modules and allowing for new modules to be added. To add a new module, right mouse button in the left pane and select 'Add' from the pop-up menu as shown in Figure 26.

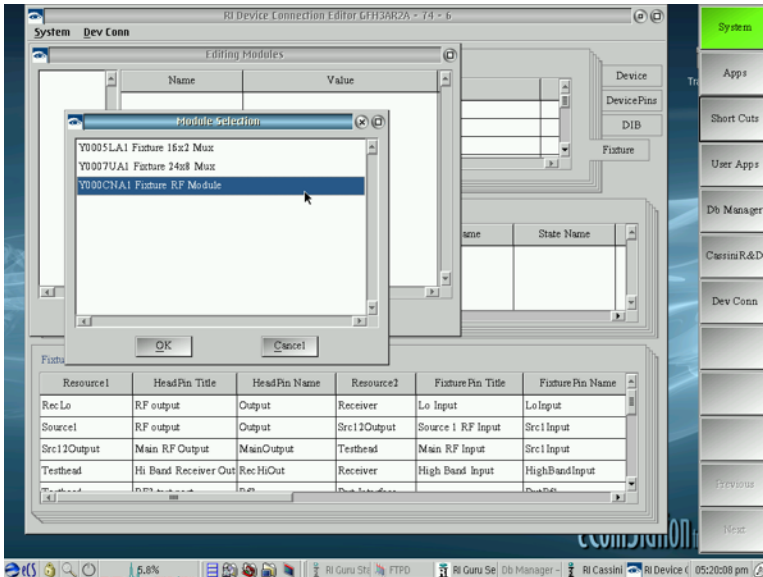


Figure 27

From the Module Selection pop-up window, select the Y000CNAx Fixture RF Module with the left mouse button and then click the 'OK' button to add as shown in Figure 27.

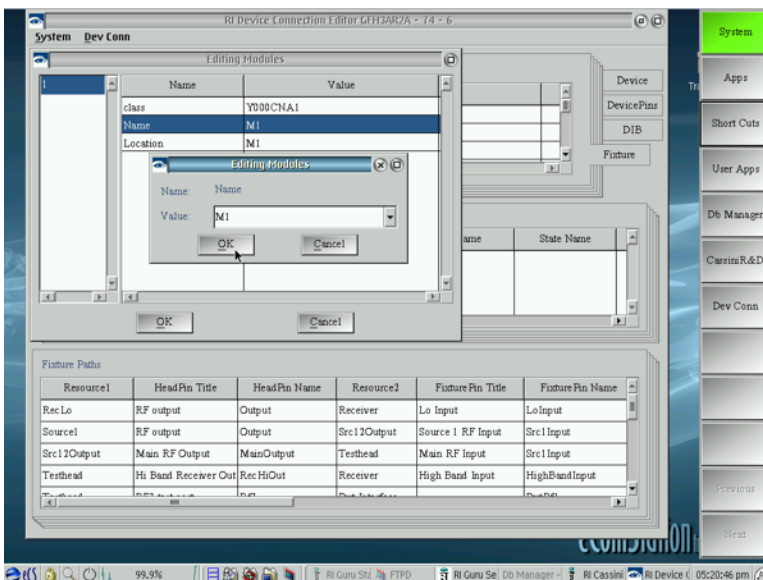


Figure 28

With the module added to the definition, the fixture module location must be specified. The module is specified in the pane to the left by a number, designating the order in which it was added to the definition. Select the number from in the left pane, which will populate the right pane with the module's information: Class, Name, Location.

NOTE: The Name and Location field are fixed to one another, i.e. - a change to one field will be reflected in the other accordingly.

Edit the 'Name' or 'Location' value field by double left mouse button click or right mouse button click on the value field and selecting 'Edit'. Select the value to reflect the physical fixture module location on the carrier board. Reference the fixture carrier diagram at the end of this document for module locations.

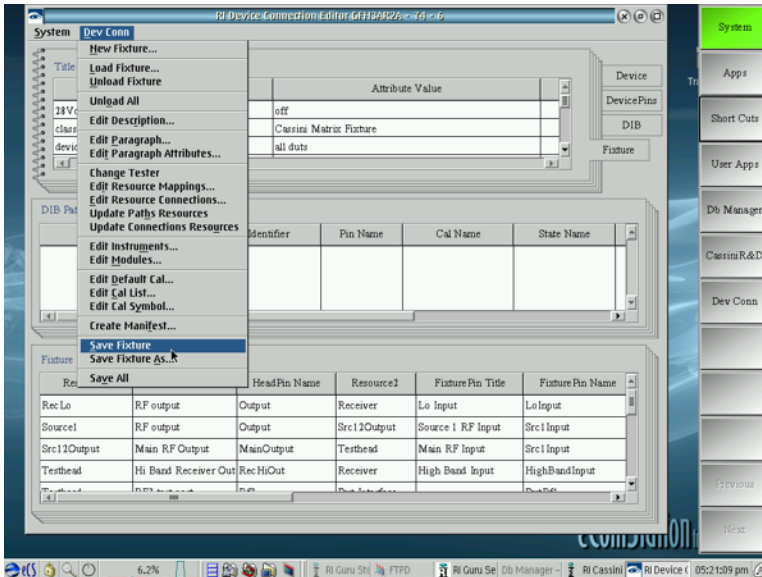


Figure 29

To save all of these changes to the fixture, select the 'Dev Conn>Save Fixture...' options from the menu list as shown in Figure 29.

NOTE: The fixture must be removed from the test system and re-checked into the tester for the fixture definition changes to apply.

REFERENCES

Top Plate and Fixture Carrier: Internal View

