CISCO

Model GS7000 GainMaker Node Forward Local Injection Module Installation Instructions

Introduction

The Forward Local Injection (FLI) Module is a field installable accessory for the Model GS7000 GainMaker® Scaleable 4-Port Node.

The FLI Module routes an RF signal from an external source to the Forward Configuration Module (FCM) in the node through the Optical Interface Board (OIB). This signal is then coupled with other inputs from one or more optical receivers.

Note: The FLI Module Field Upgrade Kit, part number 4013575, contains the parts necessary to add forward local injection functionality to your Model GS7000 Node.

Product Description

Overview

The FLI Module acts as the interface between an external RF source and the Model GS7000 Node.

The RF signal enters the Model GS7000 Node though port F2 in the node housing lid. An RF cable assembly is provided to route the signal from port F2 to the input connector on the FLI Module. (Port F1 entry is optional, but requires a shorter RF cable.) The FLI Module accepts the RF signal through a female F-type push-on connector on the top cover of the module housing and routes the signal to the OIB through a signal pin.

The FLI Module is designed to be mounted in the "RCVR 4" position on the OIB in the node.

An RF test point on the module provides a sample of the RF signal at -20 dB for level monitoring.

Note: A special "Local Injection" version of the 1x2 Redundant FCM must be installed in the node to facilitate the operation of the FLI Module.

Technical Specifications

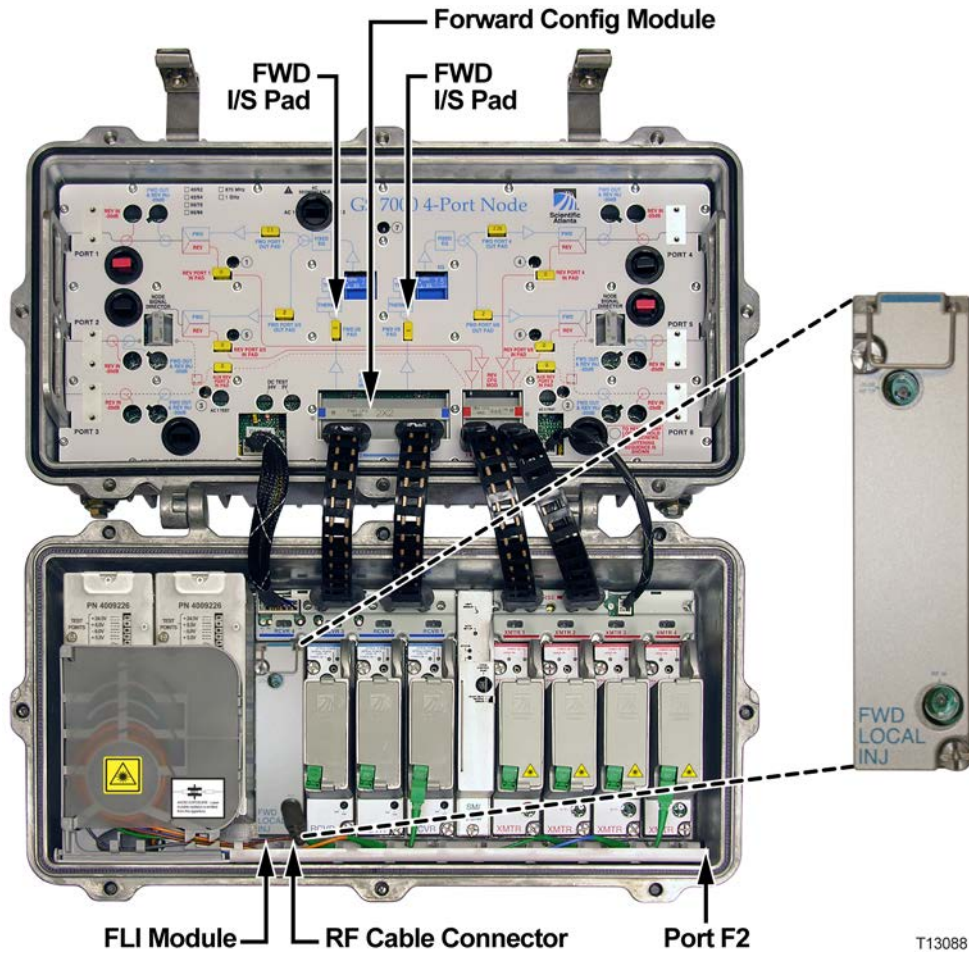The FLI Module meets the following technical specifications.

Forward Injection Port Performance	Units	7.5 dB I/S EQ with 1.5 dB I/S Pad	Notes
Operational Gain (minimum)	dB	19.5	1
Frequency Response	dB	±0.5	
Internal Tilt (±1 dB)	dB	14.5	2
Input Return Loss	dB	16	3

Notes:

1   Forward operational gain is for station from forward injection port to node RF output port with 0 dB pad in OIB, 1x2 Redundant Injection FCM, 1.5 dB interstage (I/S) pad, 7.5 dB linear I/S EQ, factory select output pad. Includes OIB losses; ~ 2.25 dB loss through the FLI Module and RF cable, and ~ 15 dB loss through the FCM.

2   Internal tilt is "Linear" tilt and is primarily due to an on-board fixed equalizer and a factory configured 7.5 dB linear I/S EQ.

3   Input Return Loss specified for Forward Injection port.

Node Overview Illustration

The following illustration shows the location of the FLI Module and associated components as installed in the node.
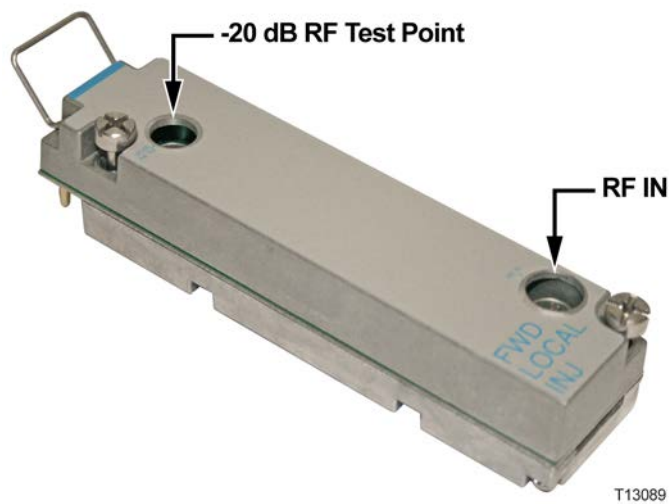
FLI Module Installation

Required Components

The following components are required to implement Forward Local Injection in the Model GS7000 Node.

Note: These parts (except for item number 5 pads) are included in the FLI Module Field Upgrade Kit.

1 Forward Local Injection Module.

2 FLI Module RF Cable Assembly.

3 Local Injection version of the 1x2 Redundant Forward Configuration Module.

4 F-type bulkhead RF connector assembly for port F2 (or optional port F1) on node housing lid.

5 Two 1.5 dB pads for the FWD I/S pads on the GS7000 Node RF amplifier assembly.

   Note: Pads are not included in upgrade kit. Obtain those from your normal on-hand node accessories.

Installing the FLI Module

Note: This example uses port F2 for the external RF source. This should represent the majority of installations, since port F1 is most commonly used as the input port for the optical fibers.

Important: For complete information on opening/closing the node and working on components inside the node, refer to *Model GS7000 GainMaker Scaleable 4-Port Node Installation and Operation Guide*, part number 4013584.
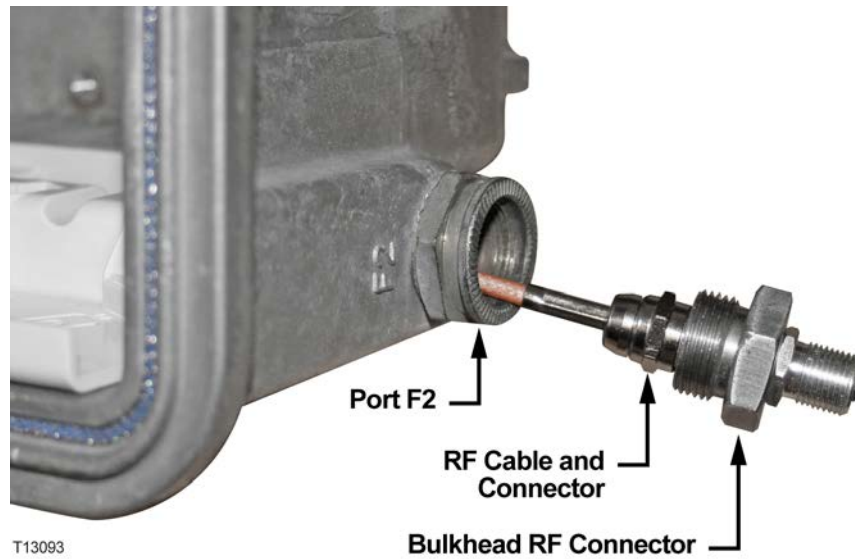
Complete the following steps to install the FLI Module in the node.

1 Open the node housing.

2 Place the FLI Module in the RCVR 4 position on the OIB in the node housing lid and insert the module until it is connected to the OIB.
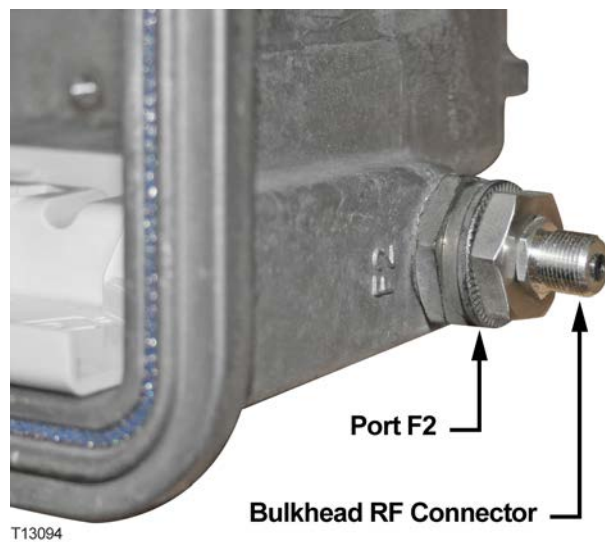
   Note: If an existing receiver module is in the RCVR 4 position, it must be moved to a different RCVR position. Refer to **Receiver/Transmitter Module Removal and Replacement**.

3 Tighten the module retaining screws to secure the module in the node. Torque the screws from 25 to 30 in-lbs (2.8 to 3.4 Nm).

4   Insert the threaded F-type connector on one end of the RF cable assembly through port F2 and outside the node housing and connect it to the bulkhead RF connector as shown in the following illustration.

T13093

5   Thread the bulkhead RF connector assembly into port F2 on the node housing lid as shown in the following illustration. Torque the connector from 3 to 4 ft-lbs (4.1 to 5.4 Nm).
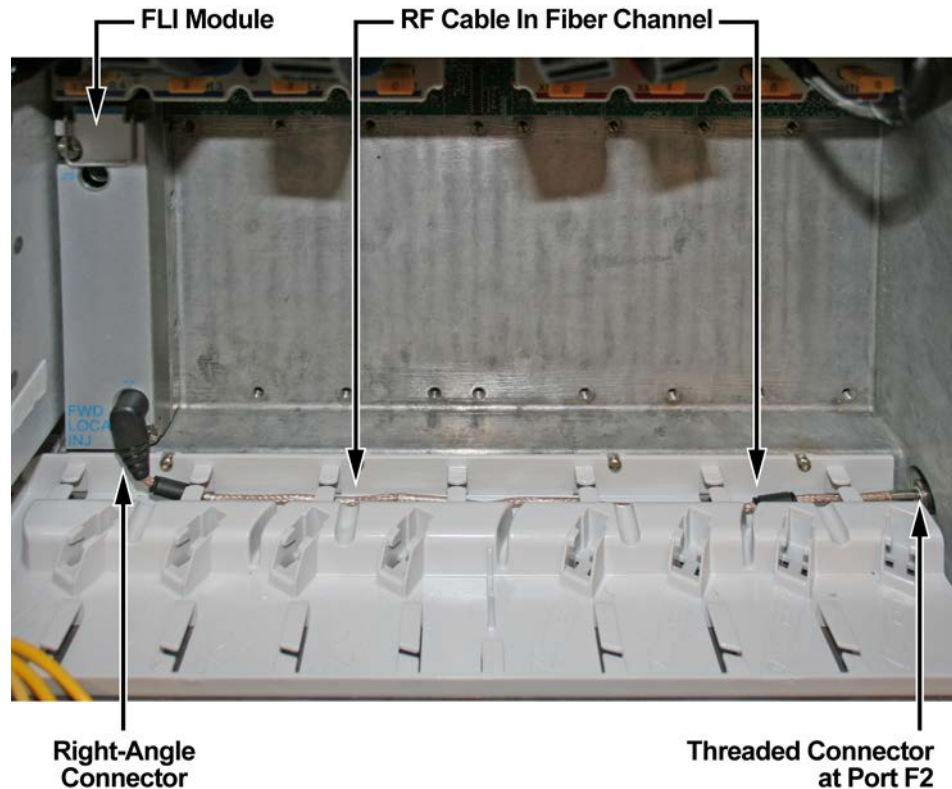

T13094

6   Route the RF cable to the left through the fiber channel in the node and toward the FLI Module.

> ⚠️ **CAUTION:**
>
> **Be careful not to damage any existing transmitter or receiver fibers or fiber connectors when routing the RF cable.**

Note: The following illustration shows the installation with optical receivers and transmitters removed to provide a better view of the RF interface cable routing in the fiber channel.

7 Insert the right-angled G-type connector of the RF cable assembly into the Input connector on the FLI Module as shown in the previous illustration.

8 Install the Local Injection version of the 1x2 Redundant FCM into the RF amplifier assembly in the node housing base.

   Note: To remove the existing FCM, pull up carefully on its integrated handle until it separates from the RF amplifier assembly.

9 Replace the two existing FWD I/S pads (located directly above the FCM on the RF amplifier assembly) with 1.5 dB pads.

10 Close the node housing. Refer to **Closing the Housing** for complete instructions.

11 Connect the external RF source to port F2 on the node housing lid.

Closing the Housing

Close the housing as follows.

1 Ensure any worn gaskets are replaced, and the gaskets are clean and in the correct position.

2 Carefully close the lid.

⚠ **CAUTION:**

Use caution when closing housing. Improper closing may result in the Model GS7000 Node not being sealed from the environment.

3 For strand-mounted housings, pull the lid away from the base and remove the slack from the hinge before rotating the lid up toward the base.

4 Ensure no cables are pinched between lid and base.

5 Secure lid to base with bolts. Tighten from 5 to 12 ft-lbs (6.8 to 16.3 Nm) in the sequence shown in the following illustration. Repeat the sequence twice, ending with the final torque specification.

Receiver/Transmitter Module Removal and Replacement

Depending on the module population of your particular node, it may be necessary to relocate or remove and replace an optical receiver or transmitter to facilitate the installation of the FLI Module.

If necessary, complete the following steps to remove and replace an optical receiver or optical transmitter.

1 Open the node housing.

2 Carefully tag and remove any optical fibers from the receiver or transmitter module.

> ⚠️ **WARNING:**
>
> **Laser light hazard. Never look into the end of an optical fiber or connector. Failure to observe this warning can result in eye damage or blindness.**

3 Loosen the screws securing the module.

4 Lift the module straight up out of the housing to unplug it.

   Note: Pull up on the built-in handle.

5 To install a module, position it in the desired location and carefully slide the module into its slot until connected to the optical interface board.

6 Tighten the screws securing the module. Torque screws from 25 to 30 in-lbs (2.8 to 3.4 Nm).

7 Carefully reconnect any optical fibers that were removed from the original module.

   Important: Clean optical connectors before reconnecting. Follow recommended fiber optic cleaning procedures.

> ⚠️ **WARNING:**
>
> **Laser light hazard. Never look into the end of an optical fiber or connector. Failure to observe this warning can result in eye damage or blindness.**

8 Close the node housing. Refer to **Closing the Housing** for complete instructions.

For Information

If You Have Questions

If you have technical questions, call Cisco Services for assistance. Follow the menu options to speak with a service engineer.