



**GigaXtend™**

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## **GMC 1.2 GHz System Amplifier RF Split Upgrade**

**APPLICATION NOTE**

**Document**

**ANW1520**

**Release Date**

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# OVERVIEW

## 1. Overview

### 1.1 Introduction

As cable operators experience an exponential rise in the requirements for more reverse path bandwidth due to the popularity of advanced, on-demand services from an increasing number of subscribers, operators need an upgrade path to expand upstream capacity for deployed equipment to overcome this operational challenge.

### 1.2 Purpose

This application note is the RF split upgrade procedure for 1.2 GHz GigaXtend™ GM Compatible System Amplifiers.

### 1.3 Forward and Reverse Path Verification

You will note that the final instruction in the split change process calls for the verification of forward and reverse signal for each port. This verification is recommended to ensure that all component replacements with respect to the split upgrade were performed correctly and to ensure that all replacement components perform as specified. Making this type of significant product change in the field rather than in a test environment would likely cause additional network downtime as troubleshooting issues associated with the upgrade could be quite time consuming and service affecting.

While we expect our System Amplifier products should perform acceptably without this verification, we recommend this extra step to ensure that our products meet customer expectations immediately upon placement into service.

### 1.4 Assistance with Upgrade

Should you need assistance with your upgrade, contact ATX for support. See the last page of this Application Note for Technical Support contact numbers.

### 1.5 Qualified Personnel

Only appropriately qualified and skilled personnel should attempt to install, operate, maintain, and service this product.



**WARNING:** Allow only qualified and skilled personnel to install, operate, maintain, and service this product. Otherwise, personal injury or equipment damage may occur.



**WARNING:** Avoid electric shock. Opening or removing this equipment cover may expose you to dangerous voltages. RF split upgrades should only be conducted on System Amplifiers that have been removed from the cable system, not on System Amplifiers actively in service.

## BEFORE YOU BEGIN

## 2. Before You Begin

### 2.1 1.2GHz GMC Frequency Upgrade Split Kits

Two frequency split upgrade options are available for the 1.2GHz GMC System Amplifier. A different kit is available for each option for both of the Dual and Balanced Triple amplifiers.

#### 85/102 MHz Split Kits

- 85/102MHz HGD - Part Number GAGMSAD-SKTS-1.2G-85= for the High Gain Dual Amplifier
- 85/102MHz HGBT - Part Number GAGMSAT-SKTS-1.2G-85= for the High Gain Balanced Triple Amplifier

#### 204/258 MHz Split Kits

- 204/258MHz HGD - Part Number GAGMSAD-SKTS-1.2G-204= for the High Gain Dual Amplifier
- 204/258MHz HGBT - Part Number GAGMSAT-SKTS-1.2G-204= for the High Gain Balanced Triple Amplifier

Each kit includes the following components needed to upgrade 10 System Amplifier modules.

- 1 - High Pass Filter
- 1 - Low Pass Filter
- 1 - Forward Trim
- 1 - Reverse Trim
- 2 - Mirrored Diplex Filter – GAGM-DPLXSM-xxx-xxx
- 2 - Non-mirrored Diplex Filter – GAGM-DPLXS-xxx-xxx
- Upgrade labels



**Important:** Pay close attention to the proper placement of the mirrored and non-mirrored diplex filters. This is described in the procedure.

### 2.2 Tools and Equipment Required to Make the Split Change

- 1/2-inch socket driver
- Philips head screwdriver
- Torx T-15 screwdriver
- Slot - head screwdriver
- Torque wrench with 1/2-inch socket

## UPGRADING THE RF SPLIT IN THE SYSTEM AMPLIFIER

### 3. Upgrading the RF Split in the System Amplifier

Using spare or in-stock units, perform these steps to upgrade out-of-service units. Use the upgraded units to replace in-service units, which then become the next units for upgrade and swap procedures.



**Caution:** To prevent electrostatic discharge (ESD) to electronic equipment, take ESD precautions, including the use of an ESD wrist or ankle strap or an anti-static mat.



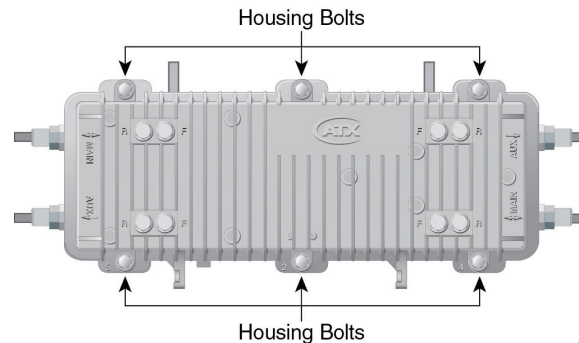
**Important:** Before unscrewing the housing bolts, make sure the removable “C” Clip on the hinge is in place and secure. The “C” Clip prevents separation of the lid from the base.

#### 3.1 Removing the System Amplifier Module from the Housing

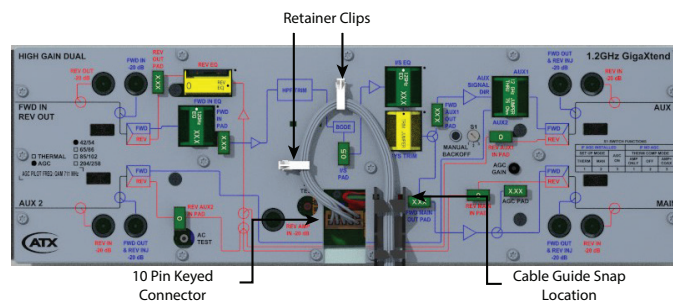
1. Unscrew the ½-inch housing closure bolts on the housing lid until they are loose.
2. Open the housing.



**Note:** The closure bolts will remain attached to the housing.



3. Unplug the 10-pin keyed connector of the power cable harness from the System Amplifier module.

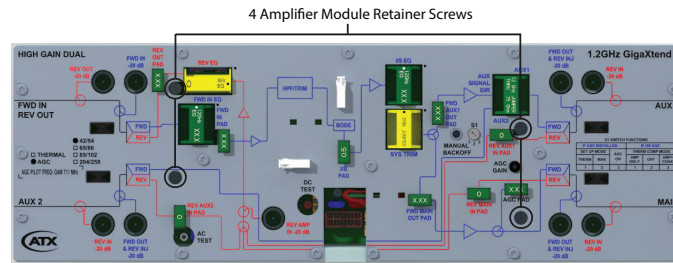


4. Remove the power cable harness from the white plastic retainer clips.
5. Unsnap the cable guide from the holes in the System Amplifier module cover.



**Note:** The other end of the cable may remain plugged into the power supply module.

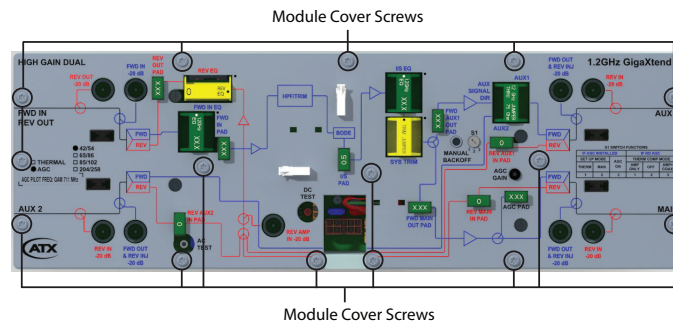
- Unscrew the four System Amplifier module retainer screws.



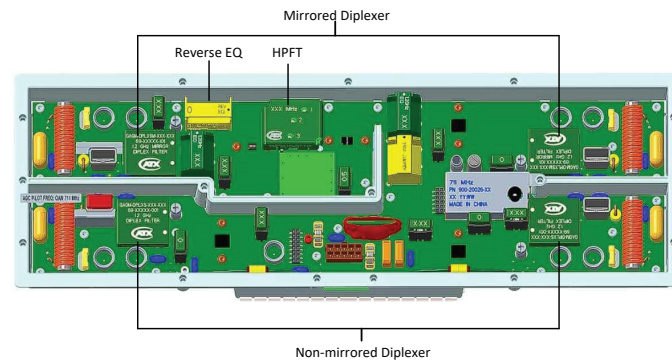
- Remove the System Amplifier module from the housing.

### 3.2 Upgrading the System Amplifier Module

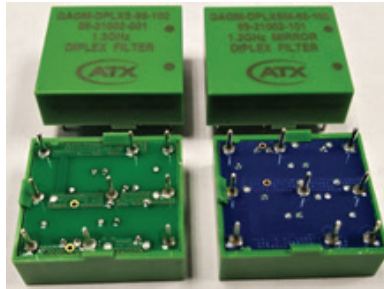
- Remove the System Amplifier module's cover by removing the amplifier cover screws using a Torx T-15 screwdriver.



- Remove the four (4) diplexer filters. There are two (2) "mirrored" diplexer filters (blue PCB material), one for the input port and one for the AUX1 port. There are two (2) "non-mirrored" diplexer filters (green PCB material), one for the main port and one for the AUX2 port.



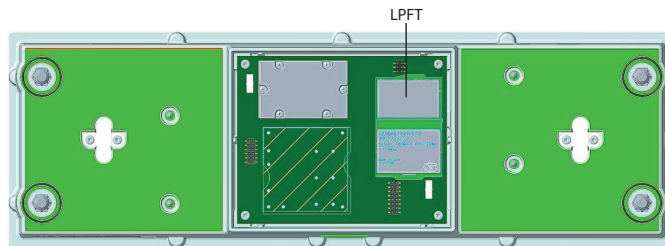
- Install four (4) new diplexer filters, being careful to match the location of “mirrored” and “non-mirrored” diplexers as noted above. The “mirrored” filter is labeled as such along with having a blue PCB.



- Remove the High Pass Filter Trim plug-in. See figure in step 2 above for location.
- Install the new High Pass Filter Trim. Take great care to avoid bending any of the pins on this component during installation.



- Turn over the amplifier module and slip off the cover to access the reverse amplifier.
- Remove the Low Pass Filter Trim board.



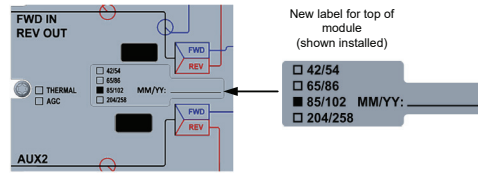
- Install the new Low Pass Filter Trim. Take great care to avoid bending any of the pins on this component during installation.



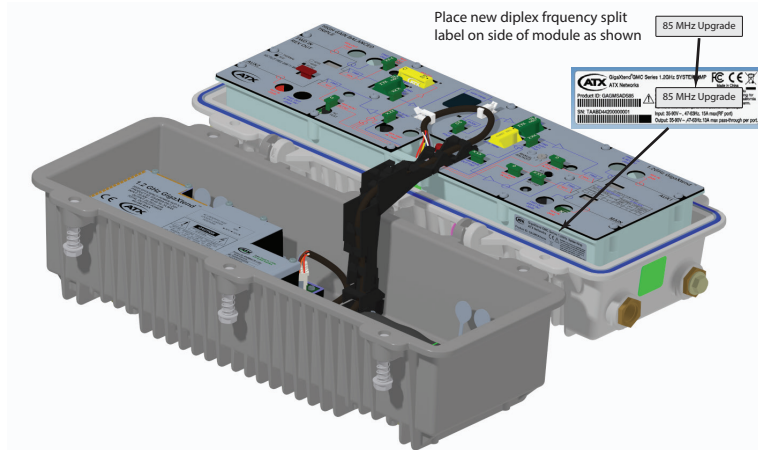
- Replace the covers and tighten all T-15 Torx screws that were removed.



- Two labels are provided to indicate that the module has been upgraded to a new frequency split. The frequency split label may be placed over the original frequency split check box on the front cover.



- The frequency upgrade label may be placed on the module side label which includes the original product information.



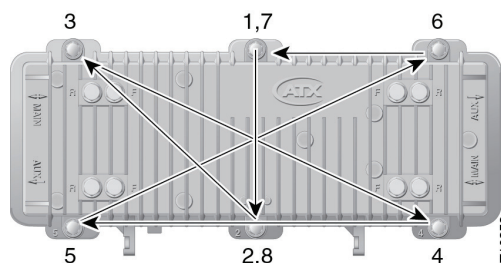
- Configure the System Amplifier in the same configuration as the one it is intended to replace in the field (i.e., same attenuator pads, forward EQ values, and same AGC / Thermal / Manual setting). A new reverse equalizer is needed to match the new reverse frequency.
- All S parameters on each port in the forward and reverse band should be verified using a network analyzer.



**Note:** Properly dispose of or recycle all parts you remove to protect the environment and to avoid their unintended re-use, which could impact network performance.

### 3.3 Installing the System Amplifier Module in the Housing

- Insert the upgraded System Amplifier module into the housing.
- Secure the System Amplifier module to the housing by tightening the module retainer screws with a screwdriver from 6 in-lb to 9 in-lb (0.7 Nm to 1.0 Nm).
- Reconnect the power cable and reinstall the cable into the retainer clips.
- Inspect the housing gasket and all mating surfaces. Wipe off any dirt and debris.
- Close the housing and finger-tighten all closure bolts.
- Use a torque wrench with a ½-inch socket to tighten each closure bolt to between 10 ft-lb to 15 ft-lb (13.6 Nm to 20.3 Nm).
- Follow the numbered tightening sequence to tighten the closure bolts.



## SERVICE & SUPPORT

### 4. Service & Support

#### 4.1 Contact ATX Networks

Please contact ATX Technical Support for assistance with any ATX products. Please contact ATX to obtain a valid RMA number for any ATX products that require service and are in or out-of-warranty before returning a failed module to ATX.

##### TECHNICAL SUPPORT

Tel: 289.204.7800 – press 1  
Toll-Free: 866.YOUR.ATX (866.968.7289) USA & Canada only  
Email: [support@atx.com](mailto:support@atx.com)

##### SALES ASSISTANCE

Tel: 289.204.7800 – press 2  
Toll-Free: 866.YOUR.ATX (866.968.7289) USA & Canada only  
Email: [insidesales@atx.com](mailto:insidesales@atx.com)

##### FOR HELP WITH AN EXISTING ORDER

Tel: 289.204.7800 – press 3  
Toll-Free: 866.YOUR.ATX (866.968.7289) USA & Canada only  
Email: [orders@atx.com](mailto:orders@atx.com)  
Web: [www.atx.com](http://www.atx.com)

#### 4.2 Warranty

All of the ATX GigaXtend GMC Series Amplifiers have a default of 5 year warranty, unless otherwise stated on SLA, contract or purchase order.



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