GainMaker System Amplifiers Using Automatic Gain Control (AGC) Technical Bulletin

Overview

Audience

This technical bulletin applies to Cisco® customers using GainMaker™ System Amplifiers with Automatic Gain Control (AGC).

The Situation

A Cisco customer recently noticed an unusual picture distortion when using GainMaker amplifiers equipped with AGC. This effect appears as an approximately ½-inch wide faint white vertical bar that typically travels slowly from left to right across the television screen. Subsequent investigation of this phenomenon at Cisco has determined that this vertical bar is being generated in the GainMaker AGC detector module. The effect appears to be a form of concentrated cross modulation, one that is within the tested and specified parameter limits for standard amplifier cross modulation yet remains visible to the eye under certain conditions. We are referring to this distortion as AGC-induced cross modulation (AGC XMOD).

Important Note

Because the GainMaker AGC design is unique, this distortion does not exist in any other Cisco RF products.

Overview, Continued

Observations

Laboratory observations have shown that the GainMaker AGC-induced XMOD is impossible to perceive or measure on a video monitor fed by a single amplifier. However, in cascade its effect is cumulative and becomes slightly perceptible on a video screen beginning after the third AGC amplifier in cascade.

We have discovered other facts relating to this issue:

- The effect is totally eliminated if the system's AGC pilot channel remains unmodulated and the lower adjacent channel is not scrambled.
- The effect is *not* present in GainMaker amplifiers without AGC installed.
- The effect can be halted by removing the AGC input attenuator pad, effectively switching the amplifier to the back-up THERMAL "Amp + Coax" mode.

The Solution

Cisco has identified the source of the effect and a solution to it, and has redesigned the AGC detector module accordingly. We will replace AGC detector modules as required in the field (warehouse or deployed). We recommend replacement of the AGC detector module in GainMaker System Amplifiers under the following conditions:

- The system uses more than two amplifiers with AGC in cascade. If you have more than two amplifiers (system amplifiers and line extenders combined) with AGC in cascade, Cisco recommends reducing the number of amplifiers with unmodified AGC to no more than two per cascade.

AND

- The system has video modulated on the AGC pilot channel or the lower adjacent channel to the pilot channel is scrambled.

Replacing AGC modules in line extenders is not necessary since systems typically do not run more than two line extenders with AGC in any cascade. By replacing the AGCs in system amplifiers, any perceptible video distortions will be removed from the system.

Replacing AGC detector modules in installed system amplifiers will *not* cause a temporary loss of signal. The amplifier cover must be removed to replace the AGC detector module but the RF path will not be interrupted during the temporary removal and replacement of the AGC detector module.

Any AGC detector module replacement required for field units should be coordinated through Cisco Services. They can be contacted at 1-800-722-2009 (press 2 and then 5).

Any GainMaker amplifiers returned to Cisco for repair or any other reason will be upgraded to the redesigned AGC detector module.

Replacing the AGC

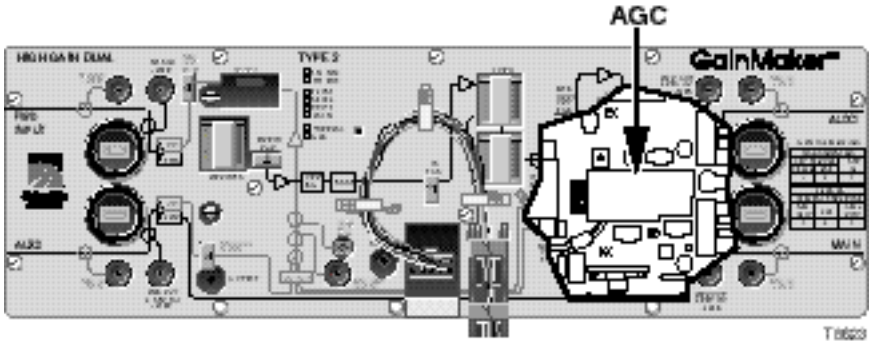
GainMaker System Amplifiers

This procedure applies to replacing the AGC in GainMaker System Amplifiers.

1. Open the system amplifier housing.

> ⚠ **CAUTION:**
>
> **RF connectors and housing seizure assemblies can be damaged if shunts are not removed from the amplifier before installing or removing the amplifier module from the housing.**

2. To avoid an outage, place the AGC switch (S1) in MANUAL mode.
3. Remove the amplifier cover by loosening the 14 cover screws.
4. Remove the AGC and replace with the new AGC plug-in.



5. Replace the amplifier cover and tighten the cover screws from 10 in-lb to 12 in-lb (1.1 Nm to 1.4 Nm).
6. Follow instructions in the *GainMaker Broadband Amplifier System Amplifier Modules and Housing Installation and Operation Guide*, part number 593161, for Forward Path Balancing for AGC stations for your system design. Use the section for aligning the AGC module under **Forward Path Balancing for AGC Stations using Thermal Setup Mode**.
7. Close the housing and tighten bolts per instructions in the *GainMaker Broadband Amplifier System Amplifier Modules and Housing Installation and Operation Guide*, part number 593161.

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.

Cisco Systems, Inc. 678 277-1120
5030 Sugarloaf Parkway, Box 465447 800 722-2009
Lawrenceville, GA 30042 www.cisco.com

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