



## Genuine ARRIS Repairs

### Touchstone® Telephony Modems



#### Maximize ROI by Extending Service Life

**Genuine ARRIS**—Equipment, repair processes and updated software loads sourced, designed and approved by ARRIS Engineering.

**Customer Specific Firmware**—Units are returned with the latest firmware load for your operation.

**Personal Service**—A dedicated Customer Account Specialist assists with opening Return Material Authorizations (RMA's) and any questions that arise during the repair and return process.

**Guaranteed Repairs**—All TTM repairs carry a 12-month warranty on parts and labor.

**100% Yield**—Every unit sent to ARRIS that is found to need repair (and is not a customer-induced failure) will be repaired or replaced.

**Turn Around Time**—Averages less than 30 days for reasonable quantities.

**Simplified Process**—ARRIS sorts and screens bulk shipments of Touchstone Telephony Modems, saving time and money. (optional)

**Escalation Process**—Dedicated and responsive account team and Management Team.

For over 50 years, ARRIS has provided products and solutions to successfully build and maintain multi-service communications networks around the world. ARRIS products have earned a reputation for their quality design, ease of use and field reliability.

ARRIS Global Repair Services brings this same focus to repairs of ARRIS products. With an annual failure rate of less than 1%, ARRIS Touchstone Telephony Modems enjoy extremely high reliability. Genuine ARRIS Repair puts those units that do fail (or are damaged) back in service, maximizing ROI by extending their economic life.

The Lean Six Sigma and ISO 9001 facility in Tijuana, pictured above, is the home of ARRIS out-of-warranty repairs for Touchstone Telephony Modems. The Tijuana operation prides itself on process predictability and root cause analysis leading to reduced defects and improved quality in the repair process.

All ARRIS repair locations use components and repair processes specified by ARRIS engineering. As the innovator and manufacturer of these products, ARRIS ensures, during the repair process, that the unit is brought up to date with the documented quality improvements, engineering changes and latest software modifications. Prior to return shipment, repaired units are put through a battery of tests to ensure like-new performance. (See reverse for details.)

Repair services are also offered for other ARRIS products including:

- C3™, C4®, and C4c™ CMTS and D5™ Edge QAMs
- CHP Max® Headend Optics, Opti Max Nodes, Flex Max® Amplifiers (Legacy C-COR®)
- n5™ VOD servers, Moxi® DVRs and Encoders

Here's what some customers have to say about Genuine ARRIS Repairs: *"No issues or concerns ... a very smooth process." "Thank you for such a great service!" "I just wish all the other repair services I deal with were the same." "Prompt, courteous and accurate."*

# Genuine ARRIS Repairs: Touchstone Telephony Modems As Good As New

All Touchstone Telephony Modems undergo **at least 15 and as many as 37** procedures designed to return units to the customer in "as-good-as-new" condition.

## Initial Screen:

All units received are subjected to the following tests and inspections:

- Collection of serial number, CMAC, manufacture date, firmware revision and model number
- Repair history maintained for all units - allows ARRIS to provide complete performance records \*
- Visual inspection
- Power-up diagnostics
- Reset switch operation
- Battery power operation
- Ethernet circuitry test
- Units ranged, registered and provisioned
- RF Upstream power level measured against DOCSIS® specifications
- Signal-to-Noise Ratio captured and recorded
- All testing performed with DOCSIS-defined minimal downstream signal power
- LED tests
- Telephony circuits loaded to 5 REN
- Telephone line voltage measured
- Dial tone, ringing, on-hook, off-hook verification on all lines

## Troubleshoot, Repair and Test:

Units found in need of repair undergo the following tests and inspections:

- Baseline factory firmware installed \*
- Tests simulating modem commands
- Voltage measurements to determine the failed component
- Replacement of failed component with exact ARRIS-approved replacement parts \*

- Depending on the type of repair, units may also be sent to the following stations:
  - X-Ray inspection of solder connections
  - Power supply - automated tests of critical voltages under various operating conditions
  - RF calibration - upstream and downstream RF performance measured and adjusted \*
  - Reprogramming - the modem is reprogrammed with modem specific data \*
- Precision final testing verifies the unit meets DOCSIS requirements for:
  - Range & Register
  - Downstream Mean Square Error
  - Downstream signal - meet or exceed discrete spurious emission levels
  - Upstream signal - meet or exceed adjacent-channel and in-channel spurious levels
- Telephony circuit measurements while loaded to 0 and 5 REN including:
  - DC Loop Currents with various loads
  - Ring frequency and voltage
  - Idle state voltages
  - Amplitude loss levels at a constant frequency and various frequencies
  - Idle channel noise level
- Dielectric Withstand Test (Hipot)
- Customer firmware download \*
- Battery telemetry circuitry test
- Cleaning, relabeling, sealed antistatic bag

## Quality Control (Secondary Testing):

After packaging, a sample of all modems to be shipped are pulled from the cartons and re-tested for full operation.

For more information contact your Account Manager or ARRIS Global Repair Services:

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\* Only Genuine ARRIS Repairs provide these tests or procedures.

The capabilities, system requirements and/or compatibility with third-party products described herein are subject to change without notice. ARRIS, the ARRIS logo, Auspice®, C3™, C4®, C4c™, Cadant®, C-COR®, CHP Max®, ConvergeMedia™, Cornerstone®, CXM™, D5™, Digicon®, Flex Max®, Keystone™, MONARCH®, n5™, nABLE™, nVision®, OpsLogic®, OpsLogic® Service Visibility Portal™, PLEXIS®, PowerSense™, Regal®, ServAssure™, Service Visibility Portal™, TeleWire Supply®, TLX®, Touchstone®, VoiceAssure™, VSM™, and WorkAssure™ are all trademarks of ARRIS Group, Inc. Other trademarks and trade names may be used in this document to refer to either the entities claiming the marks and the names of their products. ARRIS disclaims proprietary interest in the marks and names of others. © Copyright 2010 ARRIS Group, Inc. All rights reserved. Reproduction in any manner whatsoever without the express written permission of ARRIS Group, Inc. is strictly forbidden. For more information, contact ARRIS.



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