

# Irreparable Guidelines

## Overview

This guideline describes the conditions under which a unit may be deemed irreparable.

## Definition

“Irreparable” means a determination by Tellabs (in its sole discretion) that a product cannot be repaired. A product may be Irreparable if, by way example but not limitation, it (a) has been modified, tampered with, improperly handled, improperly installed or not operated in accordance with Tellabs’ specifications or operating procedures; (b) contains obsolete components; (c) has been contaminated; or (d) has physical, corrosive or transient damage (e.g., lightning or water damage) — whether the foregoing occurred while in customer’s possession, during the shipping process or otherwise.

## Physical Damage

### Characteristics

Visual evidence of damage to the assembly such as (but not limited to) broken connectors, plastic parts, connector pins, etc. Additionally, the printed circuit board may be cracked or broken. Tellabs will replace physically broken components where possible and economically feasible.



### Reasons for no repair

Reasons for no repair include (but are not limited to) the following:

Where the damage to a purchased assembly can not be economically or reliably replaced, the assembly will be scrapped.

Most Tellabs designs include multilayer printed circuit boards. This means that they contain conductive traces on one or more internal layers (i.e., inside the PCB). When a printed circuit board is cracked or broken, these internal traces will be damaged and repair of these traces is not possible. Note: Telcordia does not allow any repair of internal traces of PCBs. Additionally, should an internal trace be repaired, it is unlikely that the characteristics of the trace (e.g., impedance, isolation, current carrying capacity, etc.) will meet the functional requirements of the circuit design.

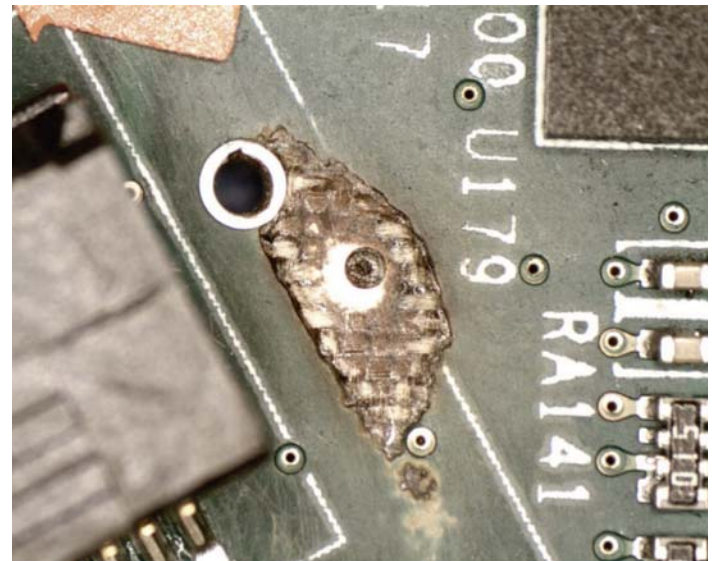
Modules that are known to have been dropped (whether alone or in a rack that has fallen over) induces shock levels into the module beyond design criteria. Such shock levels may physically damage crystals, oscillators and ceramic capacitors, and may further induce solder joint cracks in components. While some of these may be detectable immediately, others may result in latent failures that only appear over time—causing intermittent problems/alarms until such time as the damage permanently disables the affected component.

Due to the economics and reparability of major physical damage as described above, Tellabs does not support repair of such damaged assemblies.

## Power Surge

### Characteristics

Electronic assemblies subjected to excessive EOS (Electrical Over Stress), such as input power surge or lightning intrusion, usually exhibit charred components and/or charred portions of the printed circuit board.



### Reasons for no repair

Reasons for no repair include (but are not limited to) the following:

Power surge damage may be visual (e.g., charring), non-visible but detectable (e.g., open fuses, non-working components, etc.) or latent (e.g., weakened IC’s and capacitors, or changes to operating values of resistors and other components—any of which can fail at a later time). Latent damage is less likely to be detected in a repair/testing process.

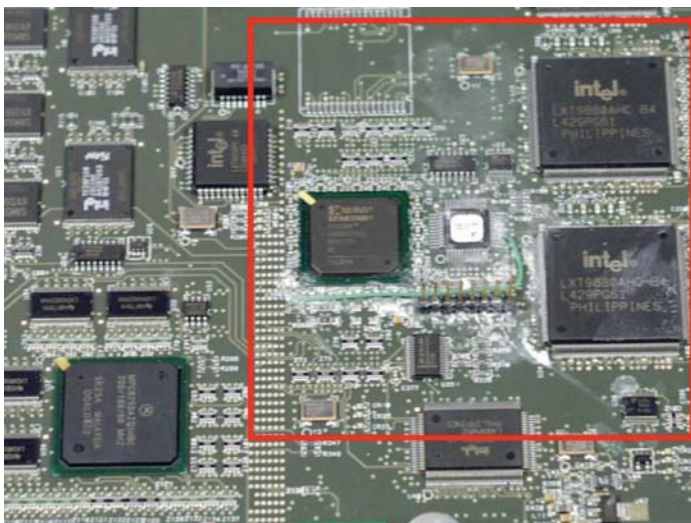
Most Tellabs designs include multilayer printed circuit boards. This means that they contain conductive traces on one or more internal layers (i.e., inside the PCB). When a printed circuit board chars, the damage done may not be limited to the external traces on the board. Internal trace damage (opens/shorts) where charring or overheating has occurred is virtually impossible to repair and would not be of the same quality/reliability as the original (See Paragraph I.b.ii. above).

For the above reasons, Tellabs does not repair electronic assemblies that have evidence of EOS.

## Water Damage

### Characteristics

Striking, deposits and/or other non-manufacturing residues left on the printed circuit board. Rusting/corrosion of metal surfaces on the module also are evidence of water damage.



### Reasons for no repair

Reasons for no repair include (but are not limited to) the following:

Many electronic parts are not designed to be exposed to or soaked in water. Components such as transformers, wire-wound inductors, switches, jacks, etc., will be adversely affected by water intrusion

Tellabs assemblies are only designed to withstand non-condensing humidity per Telcordia standards. Liquid water running across electronic assemblies will pick up, concentrate and leave behind residues from any materials and other equipment that the water has run across previously. These residues typically contain elements that can lead to electrical conduction or corrosion. On the surface of a printed circuit board, they can lead to immediate short circuits from conduction, electrical leakage paths or, in the longer term, delayed failures due to corrosion. Additionally, deposits left behind by water can lead to the growth of mold/mildew on the circuit boards; again leading to conductive paths in the long term as growth of these organisms progress.

Deposits that have dried onto electronic assemblies are very difficult to properly clean, as they bond to the printed circuit board, conductors and components when the water evaporates. Scrubbing of such surfaces is not possible due to collateral damage (e.g., bent leads, breaking parts, etc.) that can occur with such a mechanical operation. This makes restoration of the assembly by cleaning an imperfect process.

For these reasons, Tellabs cannot restore electronic assemblies that have been exposed to water to like-new quality and long term reliability.

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