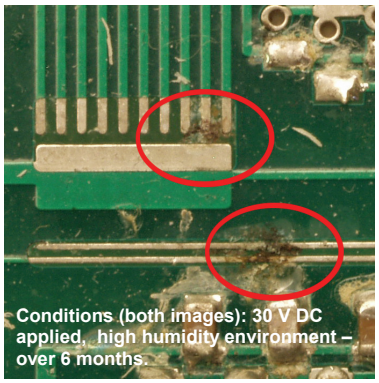
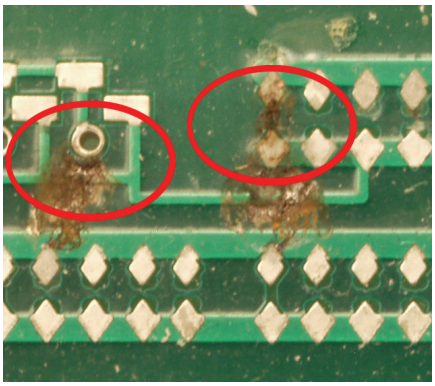
GO FOR THE GOLD
by Joel Bump, President/Director of Engineering, RDL

RoHS compliance means different things to different people. What's all the fuss about? Manufacturers that sell products into Europe and other international markets must conform to RoHS, which prohibits electronic products that contain any of several banned substances. The best known is lead, which has been the element in solder that flows between component leads and circuit boards. RoHS compliant products are often referred to as "lead free". Even if this does not seem relevant to a designer, installer or user of commercial electronic products today, it will become relevant in the future! The problems that "lead free" products can create generally loom only over the time horizon. Traditional components can be made "lead free", as can circuit boards and solder. Many manufacturers simply replace the lead solder and plating with tin, yielding "lead free" products. Tin component leads soldered to tin plated boards using predominantly tin solder work just fine, prompting high profile computer part manufacturers to endorse this process for products that become obsolete in 3 or 4 years. Tin on tin processes are well known to produce "whiskering", a process where the tension of the soldered metals at the joint push out conductive tendrils over time, creating electrical shorts to adjacent traces or components spanning thousandths, even tenths of inches. This leads to premature product failure.



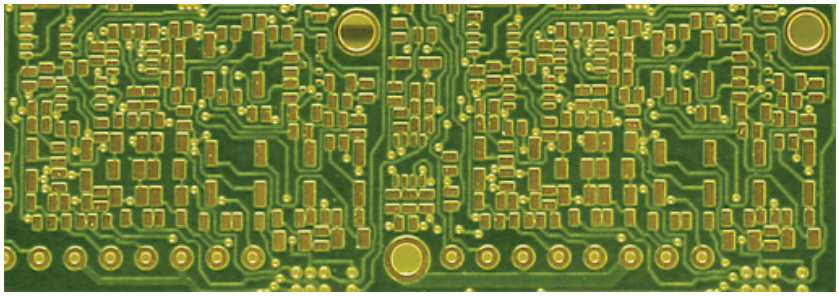
Shorts developed naturally across tin-plated elements of test board:
Upper: Shorts between round trace ends and large plated surface
Lower: Shorts between two parallel traces



Shorts developed naturally across tin-plated elements of test board:
Left: Shorts between round "via" hole and adjacent trace
Right: Shorts between two pointed objects

RoHS compliance is not a guarantee to the customer that the product is high reliability; it is possibly the opposite! Various solutions have been offered, involving various exotic alloys of circuit board plating to reduce the probability of product failure due to whiskering. RDL began its investigation and testing of lead-free processes more than 15 years ago, culminating in exhaustive testing during the recent pre-

RoHS years. Specific alloys of solder containing rare elements combined with a tin base can produce improvements, but not a sure-fire solution when used with standard tin-plated circuit boards. The solution is gold-plated boards, not the most economical solution, but the reliable solution.



Close-up of RDL gold-plated circuit board.

Following the RDL tradition of producing long-term, reliable, solid-quality products that can be unquestionably trusted, we “went for the gold”. Every RoHS compliant RDL product , *which is every RDL product*, uses gold plating on all circuit boards to insure our installers and customers the longevity they expect from the premiere quality industry manufacturer. One industry producer dies their RoHS fiberglass circuit boards red to distinguish the lead-free boards from non-lead-free, leading to the common myth that all lead-free boards are red. Tin plating looks like traditional reliable tin-lead plating, so some method of identifying the lead-free boards is needed. At RDL, it’s the gold. The key to long-term reliability is whisker-free connections, promoted by the optimum solder alloy on gold plating. When you buy RDL, you are assured of the uncompromising underlying quality that matters now, and for years to come. When premium performance matters….go for the ***GOLD!***