



# Quality Needs to Be Stapled to the Board

In my last column I admitted my gadget addiction, and I can say that little bothers me more than when the hardware in one of my gadgets fails prematurely. I recently bought a MacBook Pro, and just as I got all the software set up to my liking, strange things started happening. After hours and hours of Web/blog searching and trying fixes,

back to the lab and find the problem, but they said that was impossible. I was quite disappointed, as I wanted to microsection it and see if it was a PCB or lead-free solder joint issue (the second being my guess).

While waiting for my fix at the bar, I started thinking about the general lack of importance attached to product quality over the past several years. This seems to have coincided with the shift of production of the world's gadgets toward the low-cost manufacturing countries in Asia. This shift, along with other factors, influenced my decision to set up a test laboratory in China's northern electronics manufacturing belt, as I expected that all these manufacturers would be testing the quality and reliability of those gadgets. I found out quickly that cost savings, not quality, drives manufacturing in the east. In other words, if it is not stapled to the board, it is not in the budget, and, unfortunately, quality is not yet stapled to the board. I hear over and over as I visit manufacturers that the costs of testing are not something they can afford and they will only do it if forced by their customer. I have also been shown that even in cases where testing is required, test data and certifications can magically appear with no testing performed. Most PCB manufacturers I visit in Asia claim they comply with IPC-6012 or

IPC-6013, and in my time in Asia, I have seldom been approached to do the periodic conformance testing required by those documents. In my touring of the factories, I rarely see full compliance with the lot-to-lot testing requirements called out in these documents.

I am convinced that this lack of focus on quality comes down to economics rather than deliberate action. Quality assurance adds cost to the PCB, and the procurement departments at the PCB shop's customers

demand the lowest prices first and foremost. The competition down the street promises (albeit empty) "IPC" quality at lower prices and so the "going rate" for the PCB is set. PCB manufacturers have to cut costs to survive, so the attitude "if it's not stapled to the board it's not in the budget" is the mantra of the day.

This general lack of quality is not just confined to electronics. Toys, food, and medical products have all had their fair share of quality issues. The news has been full of stories talking about poor quality and outright falsification. Given the current all-out focus on price reduction, I don't see those stories going away any time soon. The unfortunate truth is that the current manufacturing environment places an inordinate amount of power with the purchasing department and thereby relegates the quality department a secondary role when it comes to procurement.

My personal view is that this attitude cannot sustain itself indefinitely, as the public will demand more life and reliability in its products. Increased scrutiny by the media and grassroots efforts by consumers will hopefully be a catalyst for change.

The remedy for this quality laxness lies in adding the costs of product returns and replacement/repair directly to procurement costs. Procurement departments must be held fiscally accountable for the costs associated with poor quality. Once this truly happens it will rapidly encourage spending to assure that quality is built in, as the overall product cost including the costs associated with replacement and repair will be less if quality is assured at the procurement stage.

You can start the change by getting your stapler out and using it to staple quality to the board. ■

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I decided I needed to take it to an Apple store for repair. I promptly got into a virtual line at the "Genius Bar" along with several other people lugging misbehaving iGadgets. Although the "bar" didn't serve any drinks, we were all there waiting for our fix. Sitting there waiting my turn, I was struck with just how many pieces of hardware were actually failing. When all was said and done, my logic board (motherboard is apparently a PC term) was bad. I offered to take the board