

Re-Design of RF Connector System Delivers Cost-Efficiency

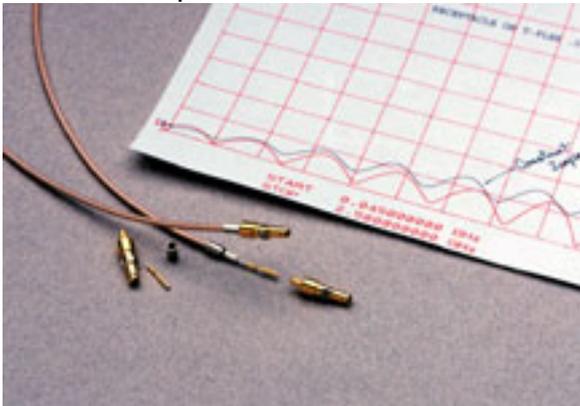
By Christopher Ashworth, Winchester Electronics

Electronics manufacturers are always looking for new ways to reduce costs in existing manufacturing processes to keep product pricing lower in the face of fierce competition. Today's environment has intensified the need to create innovative, economical system design improvements.

As a passive components supplier, Winchester Electronics has learned over its 60-year history that offering concrete solutions is not only smart for the business of meeting customers' immediate needs, but also for building solid long-term partnerships.

Therefore, when a customer recently asked Winchester if it could offer a component design to help meet reduced budget requirements for a telecommunications application, the engineers were pleased to comply. The solution had to provide backwards compatibility in addition to manufacturing cost efficiency.

The design involved use of Winchester's 31 Series Size 8 connector. This product, designed for blind mating applications, provides an increase in electrical performance over standard Size 8 connectors from a maximum of 2 GHz to a confirmed performance at 5 GHz (see Figure 2).



Winchester's 31 Series 8 RF Connector's electrical performance has been confirmed up to 5 GHz, almost double the performance of standard Series 8 connectors.

Winchester's engineers suggested a top-loading, edge-mount Combination D-Subminiature housing loaded with 31-Series connectors — a design that, while not new to RF connectors, had never been used with Combination D-Subminiature connectors. Winchester developed this housing with a bracket that will vertically snap-lock onto the edge of the circuit board (see Figure 1).



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Winchester was able to achieve a significantly lower connector height for the edge-mounted 31 Series 8 Connector than standard edge-mounted connector applications.

One of the benefits of the Winchester 31-Series connector is that, unlike standard Size 8 connectors, it does not have to be fully mated to provide optimal electrical performance. The connector can be unmated .1100 without any degradation of the electrical signal, thus providing more tolerance in a system than standard Size 8 connectors. This product feature contributed substantially to the design solution. Not only can customers save up to 20 percent in a back-to-back comparison of a fully-loaded edge-mount housing over a right-angle housing, they can also save on the PCB, as well as the assembly, by using automated equipment while providing the backwards compatibility that designers will require.

Edge-mounting component designs provide several benefits to the manufacturer:

• The new system enables further automation of the manufacturing process over the manufacturer's existing design, since "pick and place" equipment can be used to situate the connector on the circuit board.

• It is not necessary to drill holes in the boards to attach the edge-mounted connector. Thus, this step is eliminated and associated costs are saved.

• The design replaces existing right-angle PCB Combination D-Subminiature housings, thereby providing a lower connector profile. The height of the edge-mounted application is only 7.98 mm above the board, as opposed to a standard right-angle application, which would generally have a mounting height of 12.53 mm.

Although Winchester's customer was seeking component design ideas to help meet cost-cutting goals on one specific wireless application, the solution was so successful that the company now plans to use it to bolster new applications as well. The bright side to the forced economies facing wireless manufacturers today is that new ideas that emerge by necessity to pare budgets can lead to lasting technological solutions.

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