Smart tools for high-speed design

Summary

Read how Altium Designer's intelligent interactive routing system has been enhanced with the addition of a new interactive length tuning tool specifically for high-speed designs.

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Author: Rob Evans

Mainstream board level design is becoming more sophisticated as designers struggle to harness the potential of the latest high-speed, densely-packaged components – notably the latest generation programmable devices. Design tools need to rise to the routing challenges this presents. Recognizing this need, Altium has expanded its already powerful suite of interactive routing tools in Altium Designer 6 to include new features for high-speed design such as intelligent Interactive Net Length Tuning.

Delivered in the most recent update – Altium Designer 6.7 – the Interactive Length Tuning feature joins Altium Designer's existing high-speed, high-density board layout capabilities that include impedance-controlled routing, interactive differential pair routing, BGA escape routing, built-in signal integrity analysis and termination matching, plus many more. The Length Tuning feature combines seamlessly with these capabilities to provide you with a comprehensive interactive solution tuned for today's high-speed, high-density board designs.

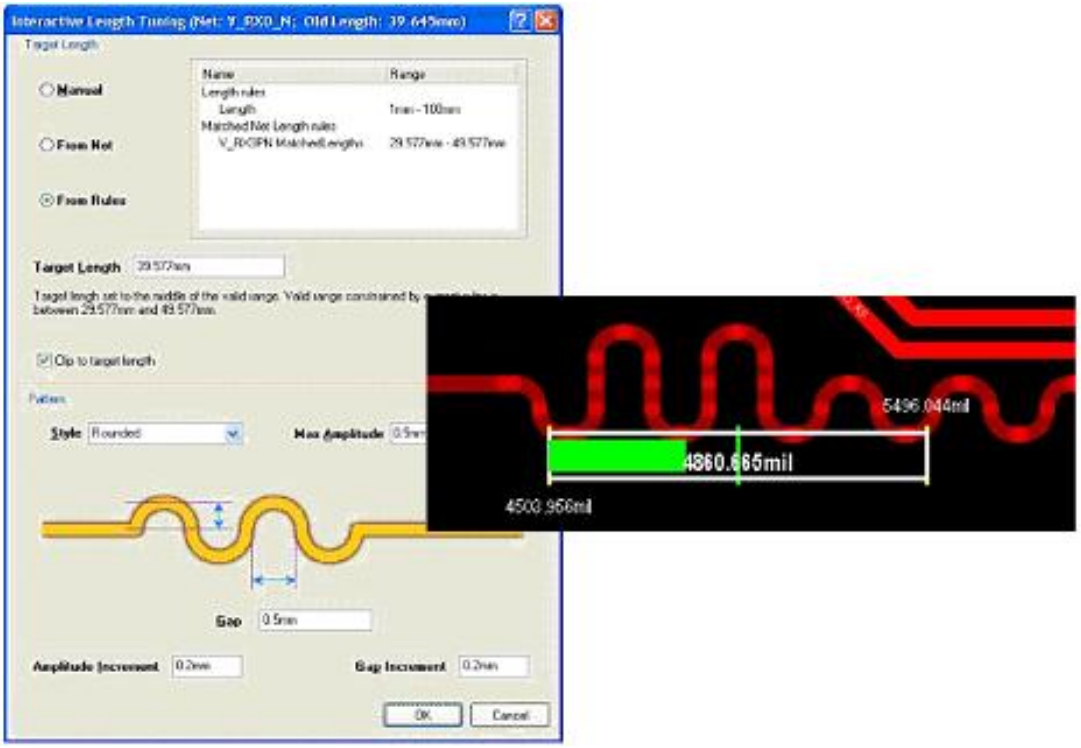
Interactive Length Tuning

Matching route lengths is a standard technique for maintaining data integrity in a high-speed digital system and an crucial ingredient of differential pair routing. Essentially, you optimize unmatched net lengths by trimming down or increasing the length of routed nets

Interactive Length Tuning provides a dynamic means of optimizing and controlling nets lengths by allowing variable amplitude patterns (or 'accordion' segments) to be inserted in accordance with the available space, rules, and obstacles in your design.

Launched from the Tools menu, it can be based on design rules, properties of the net, or manually driven by the values you enter into a dialog. The length tuning can be created from straight or arc segments, with full control over the amplitude, pitch and corner radius.

Once you have launched the command, click on the routed net and move the mouse along the net to add tuning segments. The Interactive Length Tuning cursor guides you during the tuning process. The yellow cursor bars indicate the possible minimum and maximum lengths. The green bar indicates the target length, as determined from the applicable Matched Length and Max Length design rules, or the settings in the Interactive Length Tuning dialog. The sliding indicator shows how close you are to achieving a match.



Current length as well as valid length range is displayed dynamically using the gauge bar.

Note that Interactive Length Tuning adheres to clearance design rules, so objects on other nets are avoided. You can press Tab during tuning to access the Length Tuning dialog, or press Shift+F1 to see the interactive shortcut keys.

Highlights of the Interactive Length Tuning tool include:

- Target Length can be directed either according to rules in your design, a design net, or manually
- Three tuning styles available – Mitered with Lines, Mitered with Arcs, and Rounded
- Option to precisely clip tuning patterns to Target Length when Mitered with Lines and Mitered with Arcs styles are used
- Consistent interface with other Altium Designer Interactive Routing tools ensures intuitive and quick control using familiar keyboard shortcuts.

See Interactive Net Length Tuning in action

Read more about *what's new in Altium Designer 6.7* by visiting www.altium.com/Evaluate/DEMOcenter/WhatsnewinAltiumDesigner/