



## TOP FEATURES AND BENEFITS

- reduces amount of time in design review that is traditionally spent on EMC
- based on well understood design rules
- fast
- simple guidance to correct problems
- fully integrated into CADSTAR

# CADSTAR EMC Adviser

## Introduction

With the advent of more stringent electro-magnetic compatibility regulations, EMC performance is becoming critical to those companies moving into high-speed board design. As a result both circuit designers and design engineers need to manage the problems of EMC.

Many EMC issues are caused by defects on the board layout that are avoidable if they are detected in time. Identifying potential problems at the earliest stage possible minimizes the effects of design changes, reduces the overall development cost, and speeds up the design cycle.

With the CADSTAR EMC Adviser, Zuken is meeting the requirement for improved EMC compliance of PCBs.

The CADSTAR EMC Adviser helps designers - EMC specialists and non-specialists alike - to predict, analyze and control design issues that may cause EMC/EMI problems. It is a very flexible and comprehensive rules-based EMC analysis system. Ultimately it gives PCB designers full and easy control over various types of design constraints that effect overall electromagnetic compliance of boards.

## Fully Integrated Within CADSTAR PCB

The CADSTAR EMC Adviser is an integral part of the CADSTAR PCB Design editor application. Run from a menu item it requires not external net or component lists, exchange files or translators.

## Driven From CADSTAR Schematic Capture

Information and parameters used by the EMC Adviser can be added to the Schematic diagram during design by the engineer. This information is then passed onto the PCB design during the PCB transfer process, thus retaining all the essential data. Both design transfer and subsequent ECOs are retained in sync at all times with the PCB, enduring complete integrity.

## Interface

The interface is a simple, intuitive dialog that presents information and rule selections in a logical format, allowing the designer to concentrate on the design in-hand. There are no complex setups or lengthy data entries necessary.

## Histograms

After running the selected rules, results are presented to the user in a graphical histogram. This also shows the results as a percentage performance rating and uses a custom color code to reflect the seriousness of the problem.

## Highlighting

Once the rules have been run, the items that report concerns can be highlighted in the PCB design. Complete control of the highlighting is available for any combination of rules and design items within the rules. The highlight colors for 'Attention' and

'Caution' can be defined for the users preference from the CADSTAR colors dialog. Red and yellow are used by default to draw the users attention to the highlight.

## Suggest Files

With 'suggest' files always available, suggestions based on 'expert' or company standard advice can be displayed to show corrective or evasive action to improve design compliance.

## Rule Weightings

Within a company, specific rules may be considered more or less important than others in the design of a PCB. To reflect this relative importance, each rule can be weighted to give it an adjusted significance in the overall design rating, making the tool totally flexible.

## Parameters for 'What If' Situations

In normal operations, the designer allocates specific parameters to nets as required by the rules. In a 'what if' situation, the parameters can be changed globally using a simple dialog, and the rule can be re-run; therefore 'what if' results can be obtained quickly.

## Reusable Configuration

With the ability to Save and Load adviser setup files, Parameters, Rules weightings, Decoupling capacitor data filenames and the actual rules selections are all reusable for each Adviser session.

## Reports Output

Reports generated from the CADSTAR EMC Adviser can be used in a design review to document the rules previously run, and the success rate of each rule. The reports can be tailored to a format to suit the review, or sign-off procedure documentation.

## Integrated Fieldsolver

Built into the EMC Adviser is an integrated fieldsolver.

This provides the EMC Adviser with accurate signal integrity information for precise calculations on the design. The analysis from the fieldsolver calculates characteristic impedance, unit length delays and the mutual inductances and capacitances between lines. These results are used by some of the rules to calculate the ratings.

## Rules

The CADSTAR EMC Adviser contains 20 pre-defined rules for design checking, these include:

- Avoidance of closed loop antennae
- Avoidance of open loop antennae
- Track shielding
- Impedance profile
- Primary routing directions (X,Y tracking)
- Track stub lengths
- Track resonance
- Ground return loops
- EMC compatible layer stack
- Isolated copper areas
- Overlapping power planes
- Component placement partitioning
- Component decoupling requirements
- High power plane impedance
- Termination (quality)
- Track length
- Track corner mitering
- Crosstalk analysis
- Track impedance
- Track current capacity

## More

CADSTAR is a fully featured PCB Design System renowned for its excellent price-performance ratio. From simple single-sided through-hole designs to multi-layer, surface mount, high-speed digital and analogue designs, CADSTAR is capable of designing today's most demanding Printed Circuit Boards. From schematics, board- and FPGA level system design, PCB layout, high-speed and signal integrity, analysis, 3D, creation of manufacturing output, to complete data management capabilities and extensive internet-accessible libraries containing over 200,000 components, CADSTAR provides you with all technologies necessary for a complete electronic development process in one environment.

For more information on all the tools and solutions available with CADSTAR, please visit [www.zuken.com/CADSTAR](http://www.zuken.com/CADSTAR)