

Please Note: Version 4.1 of the NEC-BSC Workbench can be obtained from OSU, as described in the article below. A newer, non-OSU .NET-based commercial version of the NEC-BSC Workbench is also available from: <http://www.emworkbench.com>. This link is provided only as courtesy. The Ohio State University does not have any opinion on the quality of the commercial version.

A Graphical User Interface NEC-BSC Workbench v4.1

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(Revised December 1, 2009)

The NEC - Basic Scattering Code (NEC-BSC) has been used for over 20 years for the analysis of high frequency antenna performance on complicated structures such as ships, aircraft, and missiles. The user interface to the program consists of an input file that contains commands and data. This classical mechanism is flexible, transportable and efficient. In contrast, modern graphical user interfaces provide very high levels of user interaction at the expense of transportability. The optimal solution is to retain the classical interface and create a graphical user interface to assist the user in manipulating the input command file. The almost universal acceptance of Microsoft Windows makes it the natural choice for implementing a graphical user interface. Version 4 is written for Windows 95 and NT 3.51 or above.

The NEC-BSC Workbench™ is a Windows® based environment for creating and manipulating input files for NEC-BSC. The user can open an existing file containing NEC-BSC commands or create new files. The input commands are displayed in an edit window, and the actual geometry is displayed in separate wire frame views. Any number of wire frame views can be created, allowing simultaneous viewing of the geometry from several angles. As the user makes changes to the input file, these changes are reflected in the wire frame views. By or by double-clicking on a specific command in the input file or on a geometry item in one of the wire frame views, the user can load the entire command into a dialog box and thus obtain very high levels of user interaction. Command blocks can be easily commented out of or back into the input file via a right-click context menu. Pattern cuts can be visualized in the wire frame view, and sources and/or receivers may be "flown" through pattern cut loci to help visualize source/receiver orientations. In the NEC-BSC, up to three coordinate systems can be associated with a particular geometry object. The "reference" coordinate system is common to all objects, the "local" coordinate system reflects the result of any RR (Relative Rotate) or RT (Rotate/Translate) commands, and some complex objects have an internal "object" coordinate system that defines their location and orientation relative to the object's center. The workbench allows the user to enable or disable display of the different coordinate systems on an object by object basis via right-click context menus

In a new version of the NEC-BSC, an option to output the ray paths and field information is implemented. The NEC-BSC Workbench can read these files and display the ray paths superimposed on the wire frame views of the geometry. For complicated problems, where the number of rays is large, the Workbench provides various filters for selecting which rays will be drawn. Rays can be filtered based on the number of interactions or by relative power. The Workbench also supports OLE2 drag and drop for moving rays from one wire frame view to another. It can also read .OAA files generated by the NEC-BSC and plot the fields in rectangular form.

The NEC-BSC Workbench Version 4 contains full on-line help, including a command reference section for all NEC-BSC commands.

NOTE: Version 4 of the NEC-BSC Workbench was intended as the graphical companion to Version 4. However, with some limitations it can also be used with NEC-BSC Version 3.4. The limitations have to do with the fact that Version 3.4 does not have all the features of Version 4.