What's New in WIPL-D Graph Viewer for v21?

The latest version of WIPL-D Graph Viewer introduces a powerful set of features that improve usability and provide greater control over visualization and result analysis:

1. **Import Generator Parameters for De-Embedding from a File**
2. **One-Click Return Loss Overlay for Multi-Port Networks**
3. **Multi-Line Selection and Style Customization**
4. **Quick Color Editing for Each Layer**
5. **Faster Layer Visibility Control with Double-Click**
6. **Calculation and Plotting of Antenna Cosite Simulation Results**
7. **Support for Realized Gain Calculation of Antenna Arrays**
8. **Plotting Custom-Defined Excitation Waves**
9. **Bug Fixes and Performance Improvements**

1. Import Generator Parameters for De-Embedding from a File

Users can now import generator parameters directly from external files, simplifying the setup of de-embedding. This makes it easier to define parameters such as type, magnitude, and phase, especially when working with a large number of generators. The interface also supports saving these settings to a file, enabling effortless reuse in future projects or across teams. This streamlines the process of managing de-embedding configurations for complex simulations.

The Import Generator Parameters option will be explained using the example of a 4x4 antenna array presented in the next figure.

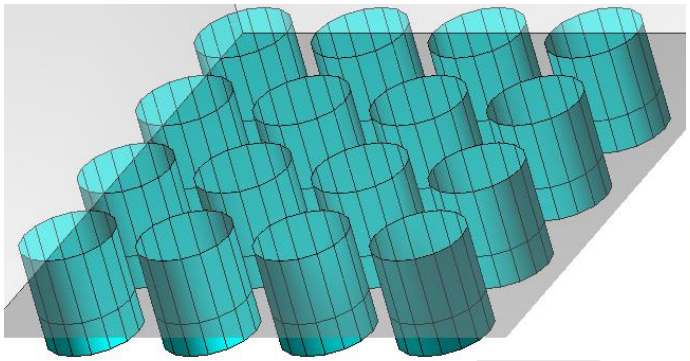

Fig. 1. 4x4 Antenna array.

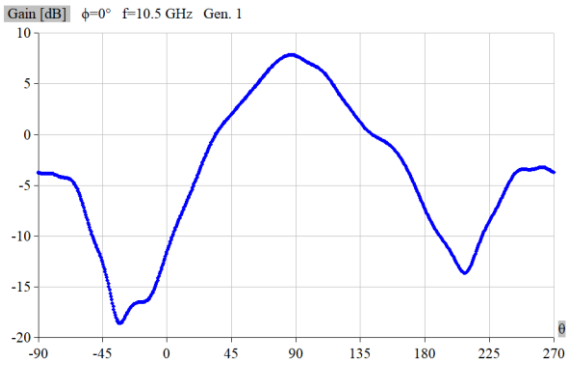

Fig. 2. Radiation pattern for the array presented in Fig. 1 for ψ=0 cut before de-embedding.

After the simulation of the array finishes, the radiation pattern (RP) cut for ψ=0 looks as presented in the previous figure. After selecting the Configure/De-embed option from the menu, the following window appears.

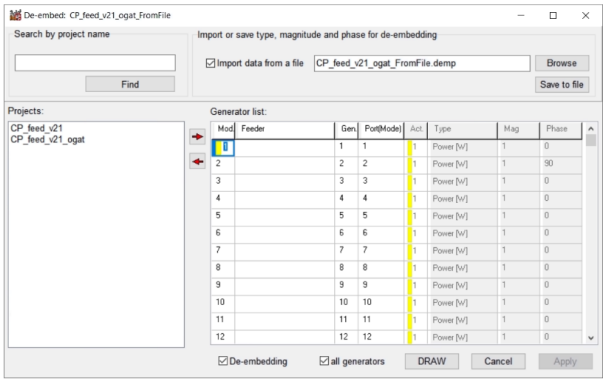

Fig. 3. Window where a user specifies de-embedding options.

The next step is to check the Import data from a file option and select the file with the generator data as required. After checking De-embedding and all parameters and pressing Draw, the RP graph updates and now looks like displayed in the next figure, i. e. is showing RP with de-embedded generators.

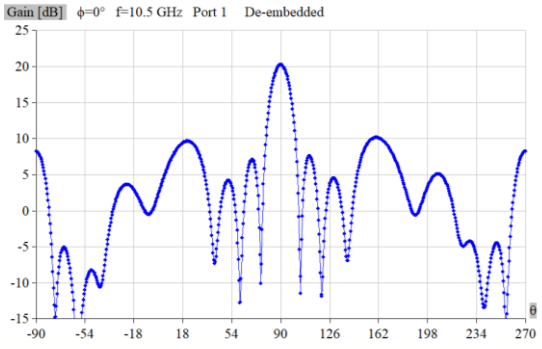

Fig. 4. Radiation pattern for the array presented in Fig. 1 for ψ=0 cut after de-embedding.

2. One-Click Return Loss Overlay for Multi-Port Networks

With the new "RL-Ov" (Return Loss Overlay) function, users can automatically overlay return loss plots for all ports in a multi-port network with a single click. This eliminates the need to manually add individual curves and adjust frequency cuts, saving time and ensuring consistency in visual comparisons.

The next figure shows the schematic of a microstrip Lange coupler.

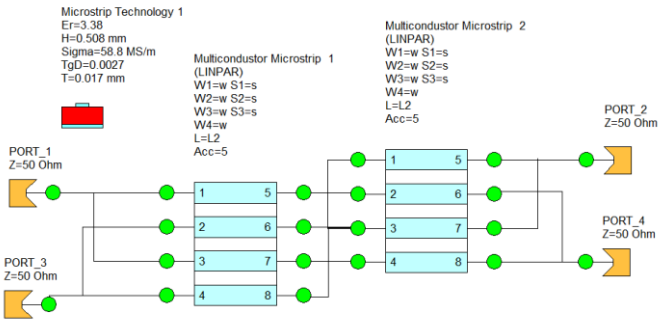

Fig. 5. The schematic of a microstrip Lange coupler.

After the simulation is finished, the graph viewer presents the S_{11} parameter of the coupler, as shown in the next figure.

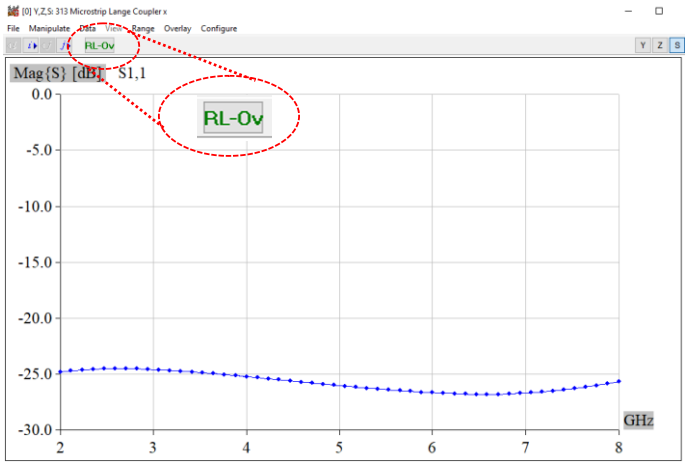

Fig. 6. After the simulation of the coupler, the graph viewer automatically displays the S_{11} parameter.

By pressing "RL-Ov", all four return losses are displayed as in the following figure.

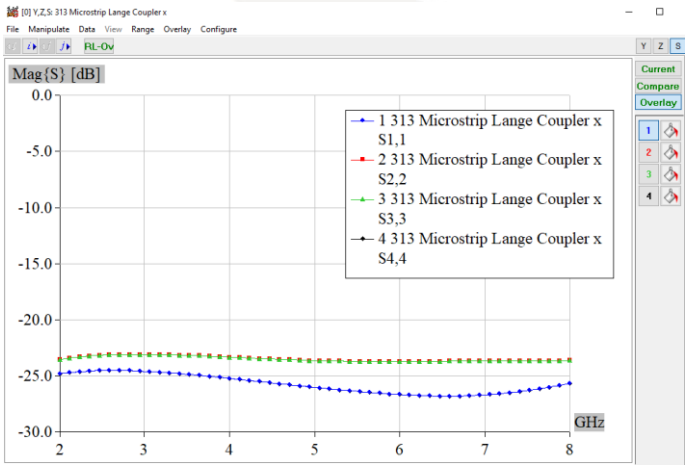

Fig. 7. By pressing "RL-Ov" the return loss at all ports is plotted.

3. Multi-Line Selection and Style Customization

The updated viewer allows users to select multiple plotted lines simultaneously either by pressing Ctrl and dragging the mouse over the graph, followed by clicking, or by selecting multiple buttons in the Layer panel. For example, the transmission/isolation traces of the previously shown Lange coupler can all be selected as described.

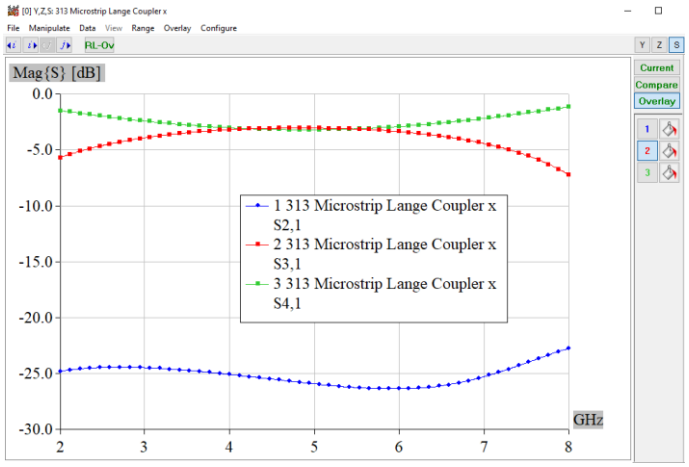

Fig. 8. Transmissions and isolation graph for the Lange coupler

Once selected, lines can be customized via a right-click context menu, with options to change line style, thickness, marker type, and marker size.

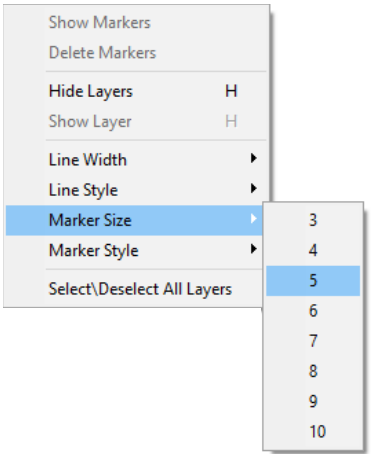

Fig. 9. In the right-click context menu, options to change line style, thickness, marker type, and marker size can be selected.

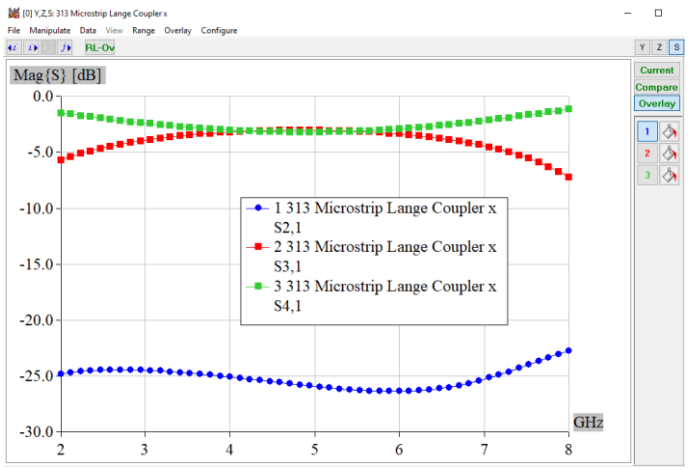

Fig. 10. Transmission and isolation graph after the marker size has been changed from 3 to 5.

For the example in hand, the size of the markers for all of the traces has been changed from 3 to 5. The updated graph is shown in the previous figure.

Selected lines can also be shown or hidden as a group, enabling better control over visual clutter and enhancing clarity in complex plots.

4. Quick Color Editing for Each Layer

Customizing line colors is now easier than ever. A single click on the paint bucket icon next to any layer opens the Dot and Line Settings dialog box, where users can adjust the color of the selected layer quickly and intuitively.

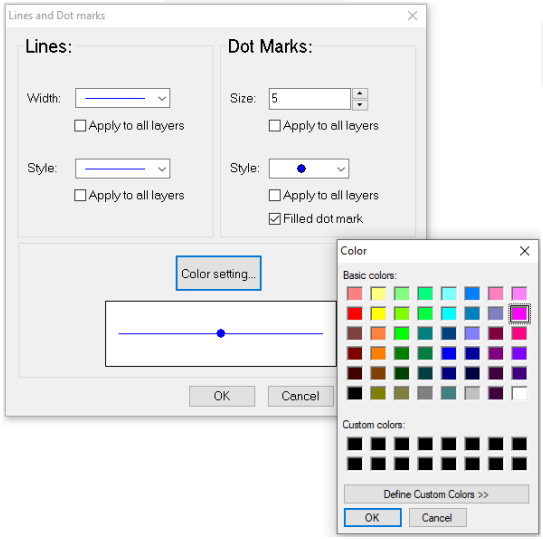

Fig. 11. The color of the first trace is changed from blue to magenta.

An example of the color change is presented in the previous figure, where the color of the first trace, S_{21}, representing the isolation of the Lange coupler, is changed from blue to magenta.

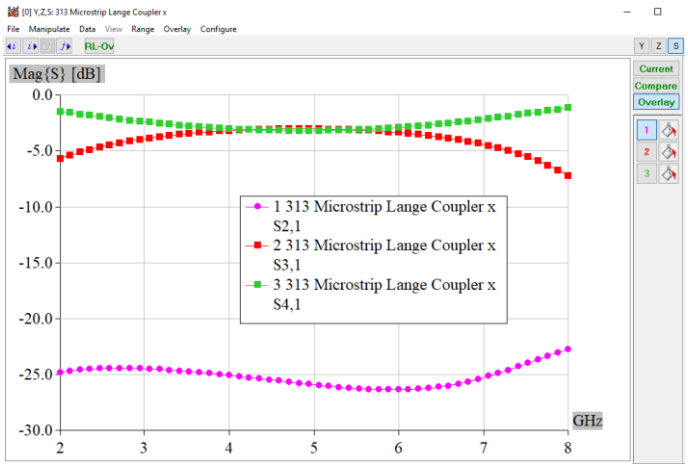

Fig. 12. Updated graph view after the color of the trace of the Lange coupler isolation has been changed.

5. Faster Layer Visibility Control with Double-Click

Users can now show or hide individual layers with a simple double-click on the layer button. An example is shown in the next figure, where isolation between the inputs of the Lange coupler is hidden by double-clicking on the first trace (magenta, S_{21}), so that only transmission curves remain.

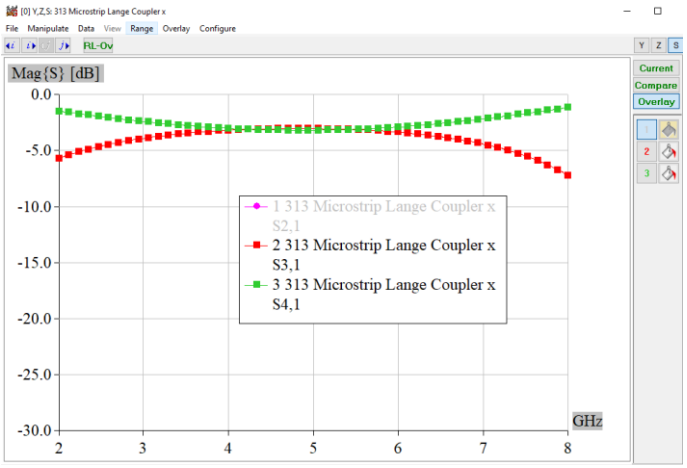

Fig. 13. Double-clicking on the first trace hides it.

This is a small but effective shortcut allowing quicker plot navigation and improved workflow when managing multiple plots.

6. Calculation and Plotting of Antenna Cosite Simulation Results

WIPL-D Graph Viewer now calculates and plots cosite simulation data based on both the Exact and Friis formulation, allowing users to analyze interference effects between antennas.

7. Support for Realized Gain Calculation of Antenna Arrays

Realized Gain is now available for post-processing of antenna array results.

8. Plotting Custom-Defined Excitation Waves

A new Custom-Defined Excitation Waves option has been introduced, giving users the possibility to define custom excitation waves and assign different directional grids of data for specific excitations. This enhancement provides greater flexibility in defining excitation scenarios of interest while significantly reducing simulation time, as the scattered field is calculated only for the selected excitations and directions. The WIPL-D Graph Viewer automatically recognizes user-defined excitation configurations and adjusts its interface to support directional grid visualization and analysis. This improvement ensures more efficient data handling and clearer interpretation of results, particularly when working with large datasets.

9. Bug Fixes and Performance Improvements

Numerous bugs have been resolved and internal optimizations applied to enhance the stability, responsiveness, and overall reliability of the viewer. These improvements ensure a smoother user experience and faster interaction across all features.