Subject: Typical Compare S-Parameters Characteristics and Displays

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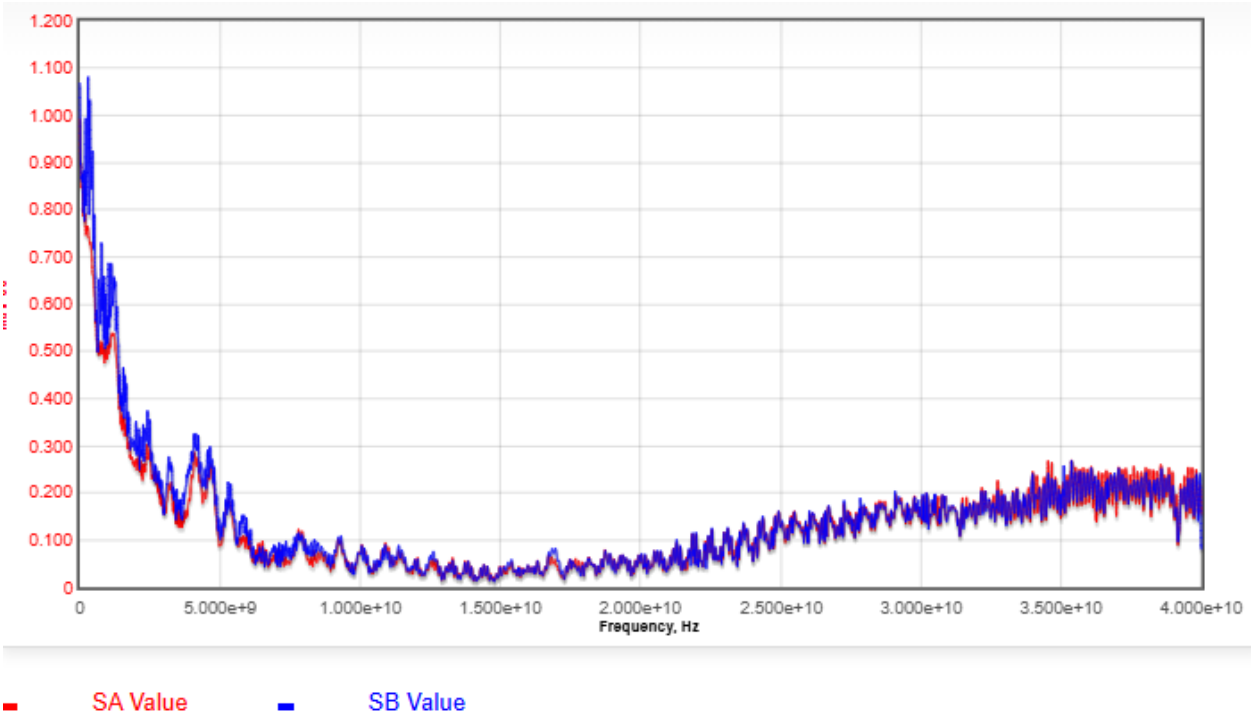
This section discusses typical Compare S-Parameters Tool characteristics and displays. Let us know if you would like the Compare S-Parameters Tool enhanced with additional capability.

A typical SerDes channel, with about 18 nsec time delay, defined for use with serial data at a bit rate of 25 Gbps has its hardware 4-Port S-parameters measured from 10 MHz to 40 GHz in steps of 3.125 MHz.

For this example S-Parameter file, and with all 4 ports selected for measurement with phase unwrapped, the S-Parameter characteristics are displayed in graphs selected to be opened.

The original S-Parameter file is compared to a second file that was converted to Causal S-Parameters using the SerDesDesign.com Generate Causal S-Parameters Tool.

Figure 1: Passivity check



The calculated passivity measure is the minimum eigenvalue of [I]-[S]†[S] where [I] is the identity matrix.

When this expression is greater than unity, the S-Parameters are non-passive.

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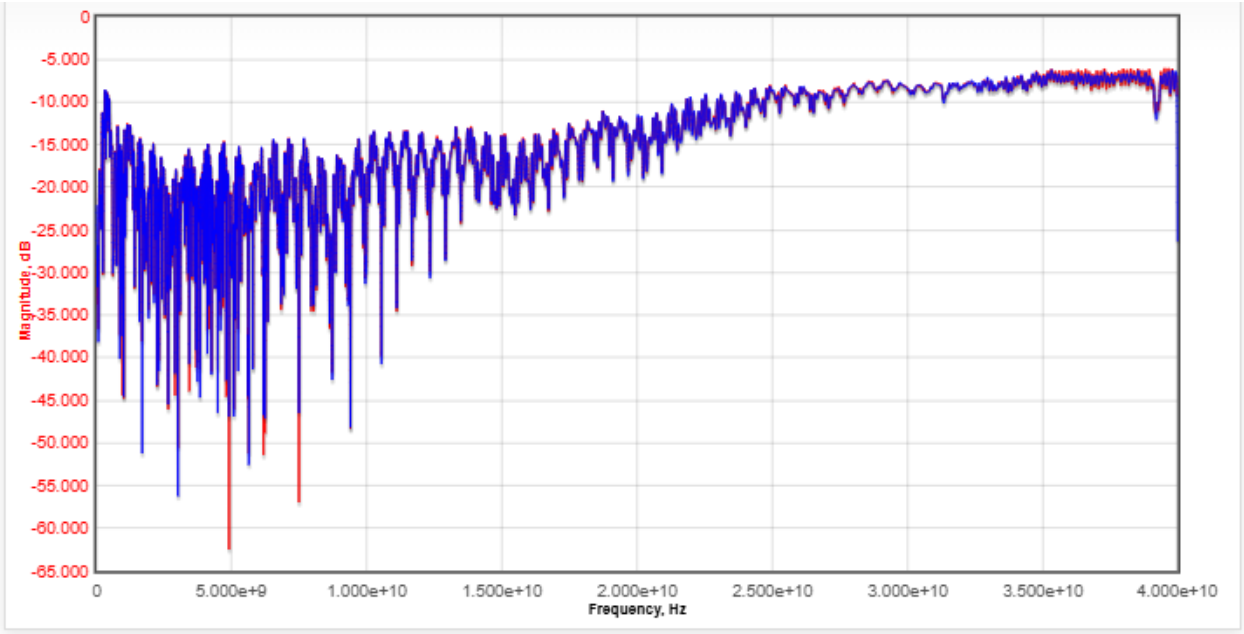
Figure 2: Reflection Sii magnitude



Besides the magnitude response, the phase response can also be viewed. One can zoom in onto any area in the graph.

Figure 3: Transmission Sij, i>j, magnitude

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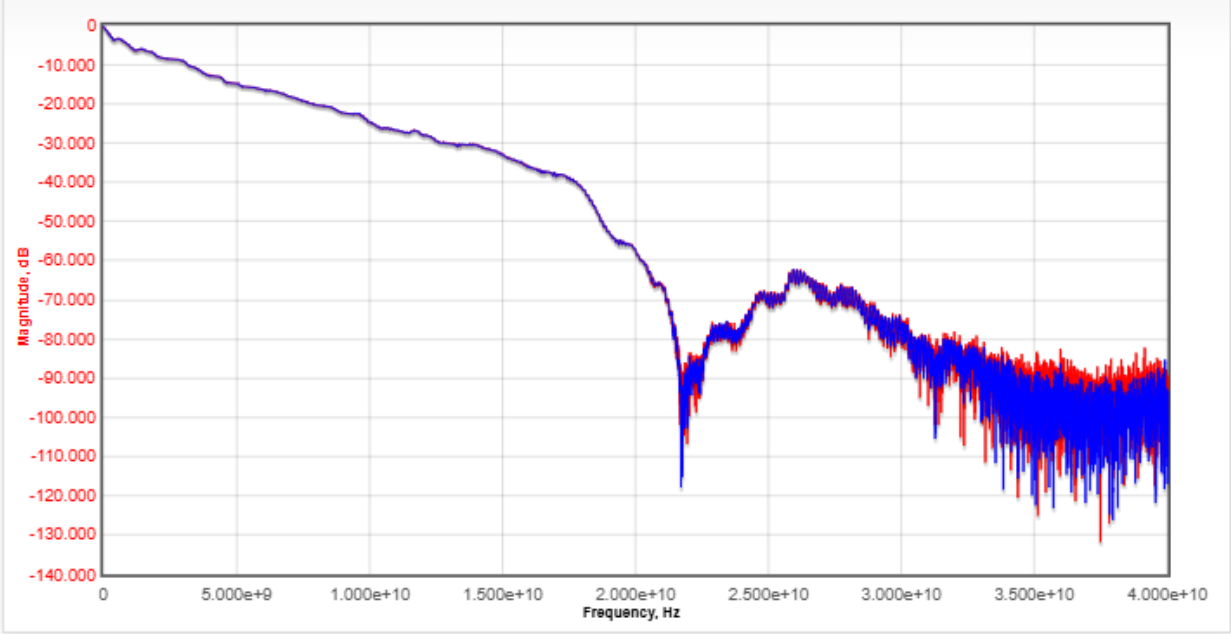

Besides the magnitude response, the phase response can also be viewed. Additionally, the reverse transmission characteristic (Sij, i<j) can be viewed. One can zoom in onto any area in the graph.

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