

How does the manufacturer make certain that the VSWR of a connector will meet the specification?

Two steps are during the design and development phase of connectors. Once the 3-D mechanical drawings are completed, the first step in the RF design process is to model the connectors using High Frequency Structure Simulator (HFSS) software. This is a state of the art computer program that allows us to model the 3-D structure of the connector and simulate its RF performance. This software has no frequency limit and will allow us to view the VSWR (Return Loss) and Insertion Loss of the connector, or any microwave device. In addition, it has the capability of performing Time Domain Reflectometry (TDR). TDR is a technique that allows us to see reflections as a function of distance. This enables us to see "inside" the connector and determine exactly where the discontinuities are located. Corrections can be made, and a new analysis can be performed.

After the modeling is complete and the connector has been prototyped, it will be tested on a Network Analyzer. This is a piece of test equipment that measures the S parameters (VSWR and Insertion Loss) of the connector or cable assembly. Differences between the simulation and actual test data can be evaluated. In general, the simulated data results in an optimized VSWR with enough margin to allow for manufacturing and assembly variations and still meet the customer requirements.