ASSIGNMENT 1

Electronic Packaging

1. Model and simulate the copper interconnect design in the stripline topology as shown in Fig. 1, in the HFSS field solver and calculate the S- parameter matrix. The interconnect is inserted inside the silicon dioxide dielectric material. Simulation setup frequency sweep is set to 1-10 GHz. Find the values of S parameters S_{11}, S_{21}, S_{31} and S_{41} at 5 GHz frequency.

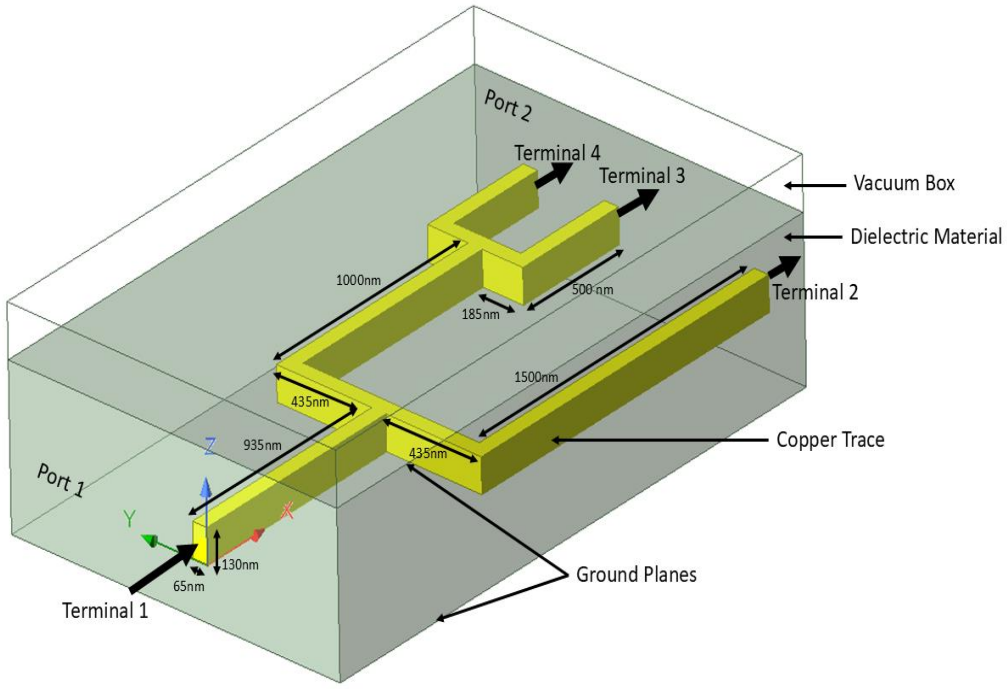

Fig.1: Model of the copper interconnect, surrounded by the dielectric and ground planes.

2. Use the design simulated in question 1 to plot the eye diagram. The Eye diagram is to be plotted with PRBS sequence applied from port 1 with rise and fall time set to 500ps, V_{high}=1V, V_{low}=0V and data rate of 1Gbps. Eye diagrams are to be plotted at Terminal 2, Terminal 3 and Terminal 4 with load capacitance of 1pF. The eye diagram parameters at all the Terminals that is to be calculated are Eye height, eye width, eye SNR ratio and eye-opening factor.
3. If the data rate is increased till 10 Gbps, comment on what is the impact on the eye diagrams at all the ports.