From W.C Chew,s: Thin Dielectric Sheet Simulation by Surface Integral Equation Using Modified RWG and Pulse Bases

First, (3) is not suitable for low contrast cases. In general, the smaller the dielectric constant, the larger is the ratio of the normal current to the tangential current induced in the dielectric. In practice, it is, however, difficult to anticipate if the dielectric constant is large or small. So the accuracy of the MoM solution is questionable for certain range of the dielectric constant.

The second problem is that for nearly grazing incident wave, this simple TDS formulation loses its accuracy even in the high permittivity case [7]. In this case, the normal current is comparable to or even much larger than the tangential current. This formulation breaks down resulting from the negligence of the normal current.

Third, the PEC-based TDS codes also cause inaccuracy due to incorrect boundary conditions at the surface edges. For PEC, the surface current flows parallel to the edge and is not allowed to flow into it. But a TDS is a dielectric and the polarization current does not have this restriction. Charge is induced at the edge as well. For certain situations, this erroneous representation of edge boundary conditions will lead to anomalies in the solution.