Crosstalk between Cables Located inside Car Body

Problem Definition

Aim of this application note is to show that XTalk can be used for simulations crosstalk problems between cables that located in complex surrounding environments such as vehicle, helicopter, aircraft and many others.

Some details such as wheels, an engine, glasses and plastic detail does not influence on crosstalk between cables and so we can remove these components. But for special cases, for example when cables located in engine compartment several details should be considered.

Crosstalk between cables in the car is considered. Currents and voltages are calculated and compared with fullwave solution (see Fig.1).
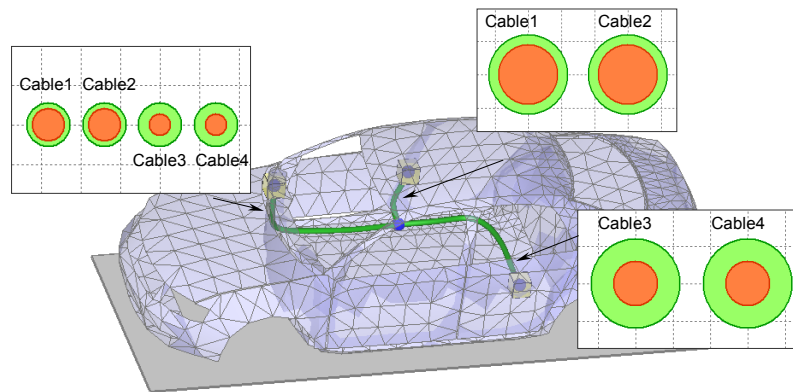

Fig. 1. Cables inside car body

Terminating devices of cable system used in simulation are shown in the figures below.
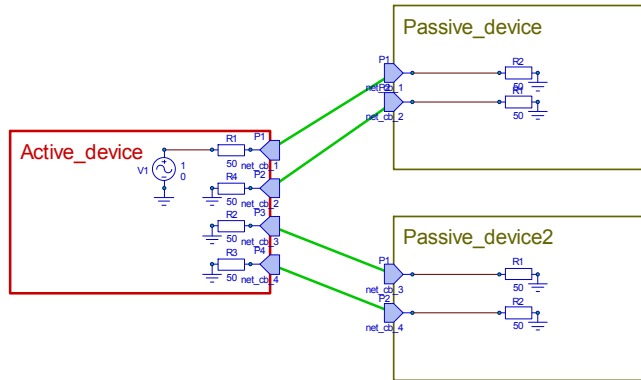
Fig. 2.   Schematic representation

Numerical Results

Simulation results compared with full wave solution are presented in the figures below.
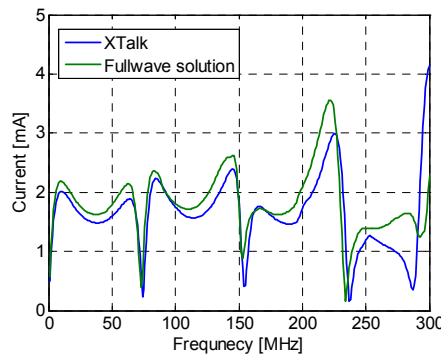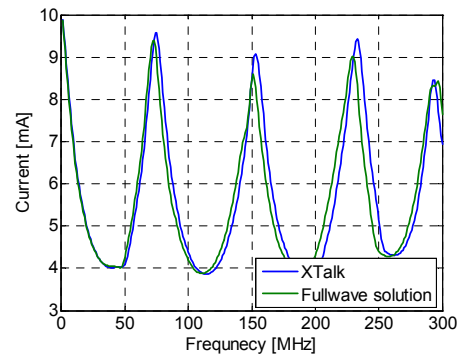

Fig. 3. Current in passive device 2 thought R1

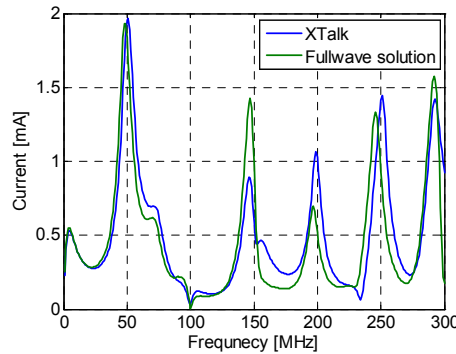Fig. 4. Current in passive device 2 thought R2

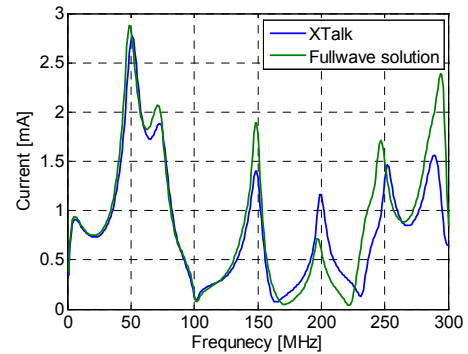Fig. 5. Current in passive device 3 thought R1

Fig. 6. Current in passive device 3 thought R2

Conclusions

Results of application example show that XTalk simulation results are in good agreement with fullwave solution.