Electromagnetic compatibility, EMC, implies that different electrical systems should be able to work in close proximity without affecting each other. From the EMC point of view, the integration of electric traction drives in today's vehicles represents a considerable challenge.

In order to save energy, many electrical loads can be controlled on demand. A common and energy efficient way to do this is to use a method called pulse width modulation, PWM, where the battery voltage is pulsed in order to create the desired average output voltage. When this method is employed, the voltage pulses are present on the conductors between the power electronics and the load. Since the space in a vehicle is limited, it is often not possible to place the power electronic converter close to the load. This implies that long conductors often are required between the power electronic converter and the load. The steep edges of the voltage pulses and the fundamental of the square wave, called the switching frequency, together with the long conductors causes electromagnetic interference problems. These disturbances could interfere with the radio in the vehicle.

In this thesis, some solutions are proposed in order to mitigate the disturbances. The solutions involve increasing the rise and fall times of the voltage pulses and employing a randomly varying switching frequency. Also the effects from different conductor layouts, such as using the vehicle body sheet metal as a current return path or having the lead-in and return conductor close to each other, are investigated. In order to evaluate the results from the different set-ups, the voltage over the load and the radiated magnetic field are measured.