

Momentum Dynamics Corporation Wireless Vehicle Charger

In the attached Form 442 application, Momentum Dynamics Corporation (Momentum) applies for an FCC experimental license to test and demonstrate its wireless inductive electric vehicle charger technology.

Momentum's wireless inductive charging of electric vehicle batteries involves two resonant inductors arranged to form an air core transformer. Alternating current is directed into the primary inductor at a frequency of 20 kHz. An alternating magnetic field thereby is generated around the primary inductor, which is mounted on a pavement surface. It is not energized unless a qualified electric vehicle is parked above it. Electronics associated with the inductive charging system confirm the presence of both the vehicle and the secondary power-receiving inductor that is mounted on the vehicle.

The secondary inductor mounted to the underside of an electric vehicle captures the emitted magnetic flux generated by the primary inductor. The space between the two inductors is usually air, but it could be water, vacuum, ice or snow, or even rocks or road debris. The captured flux induces a current at the resonant frequency in the secondary inductor, thereby allowing the electrical energy that supplies the primary inductor to be transferred across the air gap to the secondary inductor in a safe manner. This received current is then filtered and rectified to produce DC current to charge the vehicle's batteries.

The Momentum's wireless charger would be installed in a controlled area where only personnel familiar with the equipment would be present. Momentum relies on IEEE C95.1.2345 (2014), using zone 0 general population parameters, even though access to the area of the charger is controlled. This standard is the most recently adopted international standard for magnetic field exposure limits and represents the latest thinking and studies. The magnetic fields measured around the vehicle under charge are very substantially below those permitted by this and other variations of the IEEE C95 standard.