World Academy of Science, Engineering and Technology
International Journal of Electrical and Information Engineering
Vol:10, No:11, 2016

Ultra-High Frequency Passive Radar Coverage for Cars Detection in Semi-Urban Scenarios

Authors : Pedro Gómez-del-Hoyo, Jose-Luis Bárcena-Humanes, Nerea del-Rey-Maestre, María-Pilar Jarabo-Amores, David Mata-Moya

Abstract : A study of achievable coverages using passive radar systems in terrestrial traffic monitoring applications is presented. The study includes the estimation of the bistatic radar cross section of different commercial vehicle models that provide challenging low values which make detection really difficult. A semi-urban scenario is selected to evaluate the impact of excess propagation losses generated by an irregular relief. A bistatic passive radar exploiting UHF frequencies radiated by digital video broadcasting transmitters is assumed. A general method of coverage estimation using electromagnetic simulators in combination with estimated car average bistatic radar cross section is applied. In order to reduce the computational cost, hybrid solution is implemented, assuming free space for the target-receiver path but estimating the excess propagation losses for the transmitter-target one.

Keywords : bistatic radar cross section, passive radar, propagation losses, radar coverage
Conference Title : ICSIP 2016 : International Conference on Signal and Information Processing
Conference Location : Venice, Italy
Conference Dates : November 07-08, 2016