

SYSTEM AND METHOD FOR DETERMINING THE DIRECTION OF A RADIO EMITTER

ABSTRACT

A system for determining the direction of arrival of a radio signal emitted by a radio emitter, relative to a reference direction comprising at least two antennas, an antenna position determinator, a multi-channel radio receiver and a direction of arrival determinator, at least one of the at least two antennas being a moving antenna moving through a plurality of measurement positions in a reference coordinate system and exhibiting relative motion with respect to the other antenna, the distance between each selected pair of the at least two antennas being greater than half the wavelength of the radio signal, each the selected pair of the at least two antennas including at least one of the at least one moving antenna, each one of the at least two antennas receiving the radio signal and producing a respective received signal, the antenna position determinator, coupled with each of the at least one of moving antenna, the antenna position determinator determining the measurement positions of the at least one moving antenna in the reference coordinate system, the multi-channel radio receiver, each antenna being coupled with a respective channel in the multi-channel receiver, the multi-channel radio receiver at least including a respective phase difference detector for each the selected pair of antennas and for each measurement position of a respective at least one moving antenna, each respective phase difference detector measuring a phase difference between received signals produced by the antennas respective of the selected pair of antennas, the direction of arrival determinator, coupled with the receiver and with each the at least one antenna position determinator, the direction of arrival determinator associating each phase difference measurement respective of the

selected pair antennas with a respective measurement position of the respective at least one moving antenna at which the phase difference measurement was performed, for each the selected pair of antennas and for each measurement position of the respective at least one moving antenna and respective phase difference measurement the direction of arrival determinator determining a respective set of possible directions of arrival from which the radio signal was received, the direction of arrival determinator selecting the most probable direction of arrival as the direction of arrival of the radio signal from the respective sets of possible directions of arrival.

(Figure 2A)