

ABSTRACT

The present invention relates to the technology of active phased arrays (APA) and can find a wide application to build radar stations for mobile or stationary objects as well as communications and hydroacoustic systems.

The technical result obtained with the use of the present invention consists in the increase of energy potential and of efficiency as well as in the cost reduction of a radar system or of a communications system while keeping all-around looking, in the increase of the scanning area in the vertical plane, in the provision of the capability to form fully independent beams in opposite directions and in the absence of shaded sectors.

Said technical result is obtained thanks to the fact that in a receiver-transmitter containing active two-face phased arrays comprising transmit-receive modules each one of them including two radiating elements, a transmitter, two receivers, two isolator switches, mixers and a phase shifter, the two-face phased arrays are made unidimensional or two-dimensional, they are arranged in the horizontal plane at an angle of $75 - 105^\circ$ to each other while keeping the capability of all-around looking, the transmit-receive module is provided with an additional phase shifter, each one of both phase shifters being permanently connected, via a selector switch, to one of the receivers or to the transmitter, and the transmitter is connected, via a switch and circulators, to the radiating elements with the possibility to be alternately connected to the radiating elements with the use of different frequencies and/or with the use of a different signal coding, corresponding to different frequencies and coding of the receivers receiving mode with the possibility to form at least two independent beams in opposite directions, the active two-side phased arrays being shifted in relation to each other in the horizontal and/or vertical plane.