

Design of an Airborne SLAR Antenna in X-band

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Considerable interest has been developed recently in pollution surveillance in ocean regions with microwave radar systems. SLAR- systems appears to be extremely useful for the wide range detection of oil pollution on sea surface.

The paper describes first steps and results in the development of an airborne x-band antenna for a real aperture side looking radar systems. A slotted waveguide design is suitable to meet the requests of high power and high gain capability.

For proper resolution the antenna azimuth beamwidth should be less than 0.6 degree because the maximum operational distance is 40km. Therefore the length of the real aperture has to be about 120 to 150 wavelengths long. Changes in mechanical structure due to temperature drift, wind load and vibrations could lead to distortions of the antenna's directivity function. To prevent for these degradations the slotted waveguide antenna is designed as an array of small radiating elements with a standing wave configuration, feed by a waveguide, guiding a travelling wave.

General design parameters are presented and the concept of the SLAR antenna is shown.