

Antenna of the Transmitter Receiver Module for an Active Electronically Scanned Array of the Ka-band

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Abstract. The paper presents the analysis of the design of the millimeter frequency band antennas optimized for the LTCC technology production. Mathematical simulation of the following antenna structures: a spiral antenna, stripline (patch) antenna, and horn antenna is conducted. The article analyzes the impact of technological limitations on the manufacturing accuracy of conductive structures, shrinkage of dielectric layers on the stability of matching with the transmission line, gain, polarization characteristics, and the shape of the antenna pattern. The possibility of using the antenna design in the dual mode is considered. The recommendations for an optimal antenna design for an active electronically scanned array (AESA) of the millimeter frequency band are given.

Keywords: patch antenna, stripline antenna, LTCC ceramics, active electronically scanned array, AESA