

## Equivalent Circuit Modelling of Active Reflectarray Antenna

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**Abstract :** This paper presents equivalent circuit modeling of active planar reflectors which can be used for the detailed analysis and characterization of reflector performance in terms of lumped components. Equivalent circuit representation has been proposed for PIN diodes and liquid crystal based active planar reflectors designed within X-band frequency range. A very close agreement has been demonstrated between equivalent circuit results, 3D EM simulated results as well as measured scattering parameter results. In the case of measured results, a maximum discrepancy of 1.05dB was observed in the reflection loss performance, which can be attributed to the losses occurred during measurement process.

**Keywords :** Equivalent circuit modelling, planar reflectors, reflectarray antenna, PIN diode, liquid crystal

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