

Abstracts

Fundamental Superstrate Effects on Printed Circuit Antenna Efficiency

N.G. Alexopoulos and D.R. Jackson. "Fundamental Superstrate Effects on Printed Circuit Antenna Efficiency." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 475-476.

Printed circuit antennas integrated on typically used substrates such as quartz, GaAs or Si exhibit low radiation efficiency due to surface wave effects in the substrate (e.g., a GaAs substrate yields an optimum radiation efficiency of $\epsilon_{\text{sub}} \approx 28\%$). It is demonstrated in this paper that $\epsilon_{\text{sub}} = 100\%$ is feasible with practical materials either by using a magnetic superstrate layer or by integrating the antennas on the lower side of a dielectric superstrate (such as GaAs), while in this case, the substrate is merely a supporting layer with lower dielectric constant. The effect of the composite layer is to eliminate surface waves, provided the layer thicknesses are chosen properly.

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