
AIRCRAFT DOWN-RANGE PROFILES FORMED FROM SIMULATED AND COMPACT-RANGE RADAR BACKSCATTER

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ABSTRACT: *Compact-range radar backscatter measurements are taken of aircraft scale models. In addition, computer software is used to predict the RCS of the aircraft. Synthetic down-range profiles formed from the two sources of backscatter data are compared and visualized in an innovative manner. Similar discrimination rates between the two aircraft are obtained on data from both sources. © 1998 John Wiley & Sons, Inc. Microwave Opt Technol Lett 17: 207–213, 1998.*

Key words: *compact-range measurements; radar cross-section prediction; down-range profiles; noncooperative target recognition*

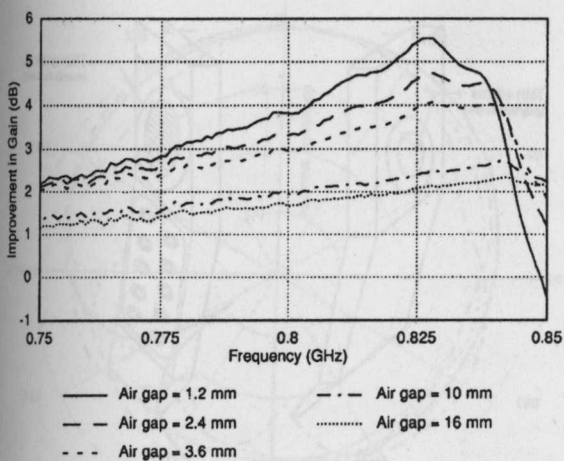


Figure 4 Improvement in gain for superstrate with dielectric constant 90 for various air gaps. The plot is normalized with respect to the measurements on the original antenna without superstrates at 0 dB level

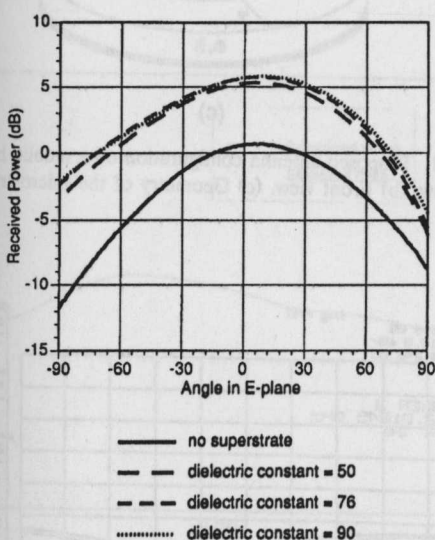


Figure 5 E-plane radiation patterns of improved microstrip antennas at 828 MHz for various superstrates compared with the original configuration

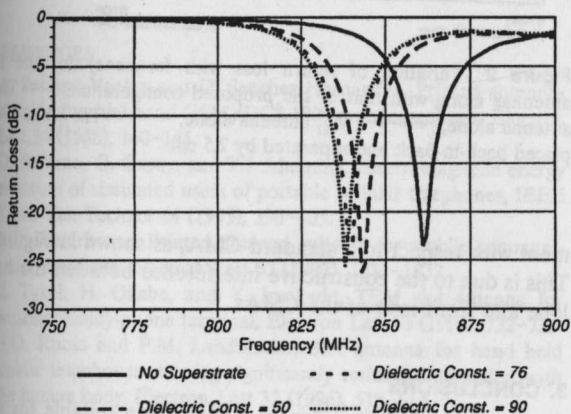


Figure 6 Return loss of antenna for various superstrates compared with the original configuration without superstrate

the electronically tunable antenna [2] is improved by as much as 5.5 dB when compared to the original antenna, at the cost of a very small incremental addition to its bulk. The performances of the individual configurations differ slightly as the electrical thicknesses of the superstrates are different. The total thickness added is only 3.2 mm which, at the operational frequency, is less than a hundredth of the free-space wavelength.

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