

A COMPACT V -BAND PLANAR GAP-
COUPLED 4X1 ANTENNA ARRAY:
IMPROVED DESIGN AND ANALYSIS

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ABSTRACT

- A broadband 60-GHz millimeter-wave 4x1 microstrip patch antenna array using the gap-coupled technique is presented and analyzed.
- In order to meet the challenging requirement of reduced size related to this kind of technique, and facilitate the integration with other integrated passive or active devices.
- Antenna array has been designed on a thin ceramic substrate ($\epsilon_r = 9.9$, $h = 127 \mu\text{m}$), using an MHMIC (Miniature Hybrid Microwave Integrated Circuits) fabrication process.



EXISTING SYSTEM

- printed antennas for millimeter-wave applications have become an increasingly important topic given the attractive features such as low profile, light weight, low manufacturing cost, and ease of fabrication and integration with Miniature
- Hybrid Microwave Integrated Circuits (MHMICs) or Microwave Monolithic Integrated Circuits (MMICs). They have become key components for many various commercial, industrial, and military applications including aircraft, spacecraft, satellite, missiles, cars, and even handheld mobile telephones



PROPOSED SYSTEM

- The proposed structure is based on a modified shape of a gap-coupled patch element with curved radiating edges.
- For further analysis, the performances of the latter in terms of impedance bandwidth, gain and radiation efficiency were investigated and compared with a conventional structure of a rectangular gap-coupled patch antenna.
- The obtained results clearly show that the proposed gap-coupled array structure provides an improved bandwidth (7 %), and an enhanced gain (10.7 dB), while maintaining a reduced size (5.2 mm x 9.5 mm).



SOFTWARE REQUIREMENT

- Ansoft HFSS(High Frequency Structure Stimulator)
- CST

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