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Accession number:20122415118805
Title:Analysis and design of ring-resonator integrated hemi-elliptical lens antenna at terahertz frequency
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Source title:Optics Communications
Abbreviated source title:Opt Commun
Volume:285
Issue:16
Issue date:July 15, 2012
Publication year:2012
Pages:3445-3452
Language:English
ISSN:00304018
CODEN:OPCOB8
Document type:Journal article (JA)
Publisher:Elsevier, P.O. Box 211, Amsterdam, 1000 AE, Netherlands
Abstract:In this paper, a novel lens integrated ring-resonator microstrip antenna is analyzed and simulated at 600 GHz. A mathematical model to compute the directivity of this kind of the antenna has been developed and the directivity of the antenna has been computed which is 18 dBi. The proposed model has been simulated by using CST Microwave Studio a commercially available simulator based on finite integral technique and similar result has been obtained. Further, the directivity of the antenna has also been computed by using the techniques reported in the literature and in this case also we have obtained the similar result. Later, a probe-fed patch integrated lens antenna has also been investigated to validate the correctness of the numerical method. To find the potential advantages of this kind of the structure, the - 10 dB impedance bandwidth of the antenna has been compared to a lens-integrated probe-fed microstrip patch antenna and a significant enhancement in the bandwidth has been observed. 
Number of references:28
Main heading:Lens antennas
Controlled terms:Computer simulation - Electric impedance - Integration - Mathematical models - Microstrip antennas - Probes - Resonators
Uncontrolled terms:Analysis and design - CST microwave studio - Dielectric lens - Directivity - Finite integral techniques - Impedance bandwidths - Integrated lens antennas - Micro-strip patch antennas - Probe-fed - Probe-fed antenna - Tera Hertz - Terahertz frequencies
Classification code:943 Mechanical and Miscellaneous Measuring Instruments - 942 Electric and Electronic Measuring Instruments - 941 Acoustical and Optical Measuring Instruments - 921.2 Calculus - 944 Moisture, Pressure and Temperature, and Radiation Measuring Instruments - 921 Mathematics - 716 Telecommunication; Radar, Radio and Television - 714 Electronic Components and Tubes - 701.1 Electricity: Basic Concepts and Phenomena - 723.5 Computer Applications

DOI:10.1016/j.optcom.2012.03.028
Database:Compendex