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Accession number:20123815444319
Title:Dual-polarized sinuous antennas on extended hemispherical silicon lenses
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Source title:IEEE Transactions on Antennas and Propagation
Abbreviated source title:IEEE Trans Antennas Propag
Volume:60
Issue:9
Issue date:2012
Publication year:2012
Pages:4082-4091
Article number:6230632
Language:English
ISSN:0018926X
CODEN:IETPAK
Document type:Journal article (JA)
Publisher:Institute of Electrical and Electronics Engineers Inc., 445 Hoes Lane / P.O. Box 1331, Piscataway, NJ 08855-1331, United States
Abstract:This paper examines the performance of dual-linear sinuous antennas on silicon extended hemispherical silicon dielectric lenses. A theoretical impedance of 106 Ω is identified based on the analysis of an ideal self-complementary structure, and this result compares well with simulations and measurements. The radiation properties of a linearly polarized sinuous antenna are simulated using Method of Moments software coupled to a GO/PO code, and also agree well with measurements. The results indicate that the sinuous antenna is an excellent wideband planar feed for a silicon lens, with cross-polarization levels below-17dB, and polarization variations of ± 5° over two octaves in frequency. The application areas are millimeter-wave, wideband, dual-polarized radio-astronomy receivers. © 2012 IEEE.
Number of references:27
Main heading:Antennas
Controlled terms:Lens antennas - Method of moments - Millimeter waves - Polarization
Uncontrolled terms:Dielectric lens antenna - Integrated lens antennas - Millimeter-wave antennas - Self-complementary antennas - Sinuous antennas - THz antenna
Classification code:711 Electromagnetic Waves - 711.1 Electromagnetic Waves in Different Media - 716 Telecommunication; Radar, Radio and Television - 921 Mathematics
DOI:10.1109/TAP.2012.2207048
Database:Compendex