# Abstracts

## A Ka-band high-efficiency dielectric lens antenna with a silicon micromachined microstrip patch radiator

*U. Sangawa, K. Takahashi, T. Urabe, H. Ogura and H. Yabuki. "A Ka-band high-efficiency dielectric lens antenna with a silicon micromachined microstrip patch radiator." 2001 MTT-S International Microwave Symposium Digest 01.1 (2001 Vol. I [MWSYM]): 389-392 vol.1.*

Novel antenna configurations suitable for millimeter-wave applications were proposed incorporating a dielectric lens antenna with a single microstrip patch radiator. In general high aperture efficiencies are easily obtainable with lens antennas because of flexibility in controlling the aperture-field distribution coupled with low feeder loss. The radiator was integrated with front-end circuits into a single hybrid IC using silicon micromachining and BCB (benzo-cyclobutene) multi-stacked circuit processes. The radiator was constructed on a thin suspended BCB film to suppress dielectric and conductor loss. A demonstration radiator showed good performance at 39 GHz (Ka-band). The lens was designed using geometrical optics relative to the directivity of the radiator and the aperture-field distribution. The circular polarized lens antenna assembly exhibited a gain of 15.7 dBi, 18.7 dB side-lobe level suppression and 0.17 dB axial ratio.

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