Abstracts

Design of a low-cost 2-D beam-steering antenna using ferroelectric material and CTS technology

M.F. Iskander, Z. Yun, Z. Zhang, R. Jensen and S. Redd. "Design of a low-cost 2-D beam-steering antenna using ferroelectric material and CTS technology." 2001 Transactions on Microwave Theory and Techniques 49.5 (May 2001 [T-MTT]): 1000-1003.

The design of a new low-cost antenna array with two-dimensional beam-scanning capability is presented in this paper. The design procedure is based on the continuous transverse stub (CTS) technology and the use of ferroelectric material. With the application of a low-loss ferroelectric material barium strontium titanium oxide with 40% oxide III, beam-scan capability from -60/spl deg/ to 60/spl deg/ was achieved. The tradeoffs in selecting the ferroelectric material and between losses and bias voltage in the CTS design were also examined. Furthermore, it was found necessary to adjust the dimensions of the radiating stubs, as well as the connecting sections of the feed waveguide so as to eliminate reflections between the stubs and, hence, maintain the desirable radiation pattern. It is shown that the use of an average height for the feed waveguide will result in deterioration in the radiation pattern.

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