Abstracts

Millimeter-wave holographic power splitting/combining

M. Shahabadi and K. Schunemann. "Millimeter-wave holographic power splitting/combining." 1997 Transactions on Microwave Theory and Techniques 45.12 (Dec. 1997, Part II [T-MTT] (1997 Symposium Issue)): 2316-2323.

It is shown that holography offers a novel solution to the problem of millimeter-wave power splitting and combining. With the help of an approximate model, we demonstrate that a hologram will work as a beam-splitting element, provided that it records the holographic image of the beams to be generated. To verify this observation, a beam splitter consisting of a hologram and an antenna array is analyzed by means of a rigorous network model. This analysis serves to find the optimum structure of the beam splitter. Measurements on a realized prototype of the beam splitter prove the possibility of achieving a high splitting efficiency, a high inter-element isolation, and a relatively large bandwidth. Flexibility in the orientation and the number of outputs is another outstanding feature of this holographic approach.

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