Abstracts

A new phase-shifterless scanning technique for a two-element active antenna array

Young-Huang Chou and Shyh-Jong Chung. "A new phase-shifterless scanning technique for a two-element active antenna array." 1999 Transactions on Microwave Theory and Techniques 47.2 (Feb. 1999 [T-MTT]): 243-246.

In this paper, a new phase-shifterless beam-scanning technique is proposed and demonstrated for a two-element active antenna array. An internal control line with an embedded amplifier is introduced in the array to provide another injection signal other than the mutual-coupling injection signal between antennas. By mixing the effects of the signals from the control line and mutual coupling, the phase difference between antennas is adjusted by gradually changing the amplifier bias on the control line. A dynamic analysis is presented to explain the scanning mechanism. The measured results showed that, when the control-line amplifier was biased from the off state to fully on state, the radiation pattern of the array was varied smoothly from the out-of-phase mode (with 180/spl deg/ radiation phase difference) to the in-phase mode (with 0/spl deg/ phase difference). During the scanning process, the antenna oscillators were stably locked, with the deviation of the locked frequency lower than 0.35%.

❑ Return to main document.