Abstracts

A heterodyne-scan phased-array antenna

M. Kim, J.B. Hacker, A.L. Sailer and J.H. Hong. "A heterodyne-scan phased-array antenna." 1999 Microwave and Guided Wave Letters 9.12 (Dec. 1999 [MGWL]): 535-537.

A new phased-array antenna system concept for narrow-band frequency beam steering is introduced. The phase shift between neighboring antennas in the array is controlled by changing the frequency of the signal traveling along fixed delay lines in a series feed network. Diode mixers are added before each antenna to convert the frequency of the control signal to a constant radiating frequency. A complete transmit system, using microstrip patch antennas, was built on a 4/spl times/6 in/sup 2/ printed circuit board for an X-band demonstration. As the control frequency was swept from 15.1 to 18.4 GHz, the beam was steered from -52 to +46 degrees with the peak power density variation of 5 dB, mainly due to nonuniform mixer conversion loss at different control frequencies.

❑ Return to main document.