Abstracts

Design of a novel digital phase shifter at X-band

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A novel digital phase shifter design at X-band is presented. The phase shift is realized by converting a microstrip line to a rectangular waveguide and thus switching the propagation constant of the line. A 3-bit phase shifter has been constructed using passive components in lieu of diode switches for theoretical verification. For this design a maximum insertion loss of 1.4 dB at 11 GHz was achieved. The size of the 3-bit phase shifter is 1.2/spl times/0.3 inch/sup 2/. In addition, a 90 degree phase shifter has been built using PIN diodes as switches, giving an insertion loss of 0.9 dB at 11 GHz with the size of 0.24/spl times/0.26 inch/sup 2/.

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