Compact Size, Equal-Length and Unequal-Width Substrate Integrated Waveguide Phase Shifter

Masoud Khoubroo Eslamloo, Pejman Mohammadi

Department of Electrical Engineering, Urmia Branch, Islamic Azad University, Urmia, Iran

masoudkhobroo@yahoo.com, p.mohammadi@iaurmia.ac.ir

***Abstract* — In this letter a novel substrate integrated waveguide (SIW) phase shifter is proposed. It consist of phase channels made by SIW with equal length and unequal width. Design equations and process are given with mathematical analysis. The propagation constant of the output signals have been adjusted by changing only the width of the output arms. As a result a novel phase shifter, is obtained accordingly. The experimental results of a prototype at 10 GHz shows 45 degrees phase difference between two outputs. Return loss and transmission coefficient are good agreement with simulation results in considered band.**

***Keywords*— Phase shifter, SIW, compact size**

Masoud Khoubroo Eslamloo was born in urmia, iran, in 1987. He received the B.E. degree in electrical engineering from Urmia Branch, Islamic Azad University, Urmia, Iran, in 2011, and the M.Sc. degree in telecommunication engineering from science and research of Tehran branch, Islamic Azad University, Urmia, Iran, in 2014. His current research interests include wireless communication systems, microwave component.

Pejman Mohammadi was born on 1973 in Tehran, Iran. He received PhD. in Electrical Engineering from Middle East Technical University Turkey Since 2001, he has been with the Department of Electrical Engineering, Islamic Azad University of Urmia, where he is currently a Lecturer. His research interests include microwave component SIW, microstrip antennas, small antennas for wireless communications and reconfigurable structure.