Journal of the European Microwave Association

Volume 2 – Issue 1 – March 2006

"1D volume metamaterial derived from LH parallel strips", pp.83-88

Jan Machác, Pavel Buchar, Ján Zehentner, Abbas S. Omar

Abstract – A left-handed parallel strip transmission line, the simplest example of a left-handed medium, is analyzed by various methods in this paper. The design, analysis, fabrication and measurement of a new 1D volume metamaterial is reported. The new medium is made up of left-handed parallel strips. The series capacitors are realized by short circuited parallel strip stubs, and the conducting shunt pins are shunt inductors. This metamaterial allows the propagation of a left-handed wave in the frequency band from 4.75 to 5.65 GHz, much wider than the frequency band achievable in the case of split-ring resonators. The simple equivalent circuit of the metamaterial is derived.