Abstracts

Input Impedance Analysis of 1:1 Balun

Y. Shimada. "Input Impedance Analysis of 1:1 Balun." 1970 Transactions on Microwave Theory and Techniques 18.5 (May 1970 [T-MTT]): 264-269.

The 1:1 balun constructed of a bifilar delay line and an inverse 1:1 transformer is analyzed for its input characteristics. As a main result of the analyses, the following results were obtained about the balun in this paper. 1) Resonance occurs when the line length is equal to n (any positive integer) times half of a wavelength of the unbalanced transmission mode. 2) The lower cutoff frequency is determined by electromagnetic coupling coefficient "k/sub m/" when L/sub sigma/ and iota are constant. 3) The upper cutoff frequency is also given by a combination of k/sub m/ and k/sub e/, etc. 4) Shortening of the distance between the balun and the ground makes the resonant frequency lower when the balun has a magnetic core or when the electrostatic coupling coefficient "k/sub e/" becomes smaller and k/sub m/ is kept constant. omega/sub OI/ becomes lower. 5) In order to realize a wide-band balun, beta/sub b/ / beta/sub u/ shouId be larger and and beta/sub b/ / omega should be kept constant.

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