Abstracts

A Nonuniform Coaxial Line with an Isoperimetric Sheath Deformation

For impedance matching in transmission lines, nonuniform lines, obeying laws of taper like the exponential, the Dolph-Chebyshev etc., are used. For the nonuniform coaxial line, constructional advantages can be derived for the same electrical performance if it has a uniform circular inner conductor with an outer conductor having an isoperimetric transition, from circular to elliptic cross section, in conformity with the established laws of taper. This problem has been examined in the paper, and the required design formulas as well as the design charts are developed. The effect of an impedance and geometric discontinuity at the low-impedance junction of such a nonuniform line and the concentric circular uniform line is discussed. The use of the isoperimetric transition line in microwave components is indicated.

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