Input impedance characteristics of microstrip antennas on hemispherical multilayer structures

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Abstract: The recently developed method for the analysis of microstrip antennas on hemispherical structures has been applied to derive the input impedance characteristics of quasi-rectangular microstrip antennas. By using corresponding full-wave equivalent circuits, the dyadic Green's functions of this structure and the system equation for the tangential field components at the interfaces can be analytically derived in a simple way. The Galerkin method-of-moments approach is used to solve the unknown current distribution on the patch, where the system equation involving the impedance matrix and the excitation vector can be set up and solved in the spectral domain. The computation data is verified with commercial software codes. Some advantages over commercial codes are also given. ©2009 IEEE.

Index Keywords: Commercial codes; Commercial software; Current distribution; Dyadic Green's functions; Excitation vectors; Field components; Hemispherical structure; Impedance matrices; Input impedance; Multilayer structures; Rectangular-microstrip antennas; Spectral domains; System equations; Electric impedance; Electric impedance measurement; Equivalent circuits; Galerkin methods; Green's function; Microstrip antennas; Microwave antennas; Method of moments

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