

Multiband Hard And Soft surfaces Composed of Periodic FSS Structures

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Hard and soft surfaces have been recently introduced as GO and STOP surfaces, respectively, with respect to the direction of propagation along the surface. Ideally, they could be viewed as periodic alternating perfect electric conductor (PEC) and perfect magnetic conductor (PMC) strips with a period approaching zero. In recent years, different methods of realizing artificial hard and soft surfaces have been developed. One of them is based on the use of dielectric-filled corrugated surfaces. Another common method is to introduce PEC strips on a dielectric slab with proper thickness, which is close to a quarter wavelength. A new method has been developed to create artificial hard and soft surfaces by mounting dipoles and slots in a periodic form on a conductor-backed dielectric slab [Maci S. and Kildal, P. S., *Int. Symp. Electromagnetic Theory*, Pisa, Italy, May 2004]. The new structure removed the restrictions on the dielectric slab thickness. Therefore, soft and hard surfaces can now be realized using thin substrates. These structures act as hard and soft surfaces for TE and TM polarizations, depending on the direction of the incident plane wave. In the present paper, the analysis of such Hard and Soft structures is further extended in order to create new designs of multiband and polarization independent hard and soft surfaces. A full wave commercial soft ware based on the method of moments is used for the analysis of the periodic structures. Such structures are technologically simple and can be implemented using etching techniques.