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(54) Title: ANISOTROPIC CONSTITUTIVE PARAMETERS FOR LAUNCHING A ZENNECK SURFACE WAVE

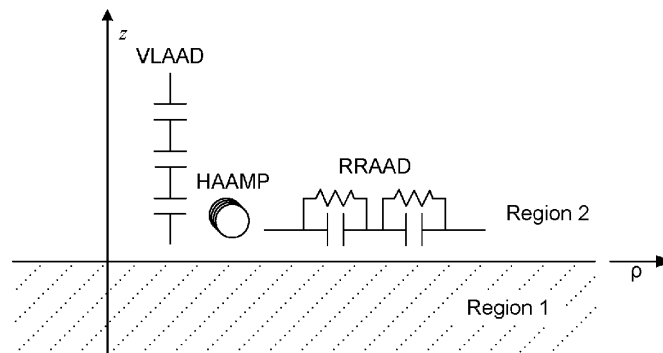


FIG. 2B

(57) **Abstract:** Various examples are provided related to anisotropic constitutive parameters (ACPs) that can be used to launch Zenneck surface waves. In one example, among others, an ACP system includes an array of ACP elements distributed above a medium such as, e.g., a terrestrial medium. The array of ACP elements can include one or more horizontal layers of radial resistive artificial anisotropic dielectric (RRAAD) elements positioned in one or more orientations above the terrestrial medium. The ACP system can include vertical lossless artificial anisotropic dielectric (VLAAD) elements distributed above the terrestrial medium in a third orientation perpendicular to the horizontal layer or layers. The ACP system can also include horizontal artificial anisotropic magnetic permeability (HAAMP) elements distributed above the terrestrial medium. The array of ACP elements can be distributed about a launching structure, which can be excited with an electromagnetic field to facilitate the launch of a Zenneck surface wave.

[Continued on next page]

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