To support the steady increase of standardized frequency bands in mobile transmission systems, the telecommunications industry is being required to develop structurally more compact and wideband air interfaces. For the suppression of the multipath conditioned polarization fading in typical applications of portable radios, primarily antenna modules with polarization-invariant transmission behaviour are to be used. A suitable representative for the realization of wideband antenna structures is the logarithmically-periodic antenna, which can be favourably used in transmission systems with the characteristic of polarization diversity provided it offers a specific geometrical structure. Based upon the definition of certain basis geometry functions logarithmically-periodic antennas can be realized with almost arbitrarily polarizable transmission characteristics over a wide band of frequency use.