

ULTRA-WIDE-BAND LOW-PROFILE SINOUS SLOT ANTENNA ARRAY

ABSTRACT

Disclosed herein is an antenna system (70) for Electronic Counter Measures, comprising a flat antenna array (71;80) of three or more sinuous slot antennas (712;81) arranged so as to form a triangular array lattice; wherein the flat antenna array (71;80) has a closed peripheral edge; wherein each sinuous slot antenna (712;81) includes a respective feeding structure (41) arranged on a bottom surface (713) of the flat antenna array (71;80); the antenna system (70) further comprising a hollow metallic structure (73), which includes: a base (732) having a closed peripheral edge; a closed side wall (733) rising from the closed peripheral edge of the base (732) up to a given height (H) where said closed side wall (733) ends with a closed top edge; and a hollow (731) defined by said base (732) and said closed side wall (733); wherein the hollow (731) is superiorly closed by the flat antenna array (71;80) whose closed peripheral edge is fixed on/to the closed top edge of the hollow metallic structure (73) and whose bottom surface (713) faces the hollow (731); the antenna system (70) further comprising a foam spacer (72) which fills the hollow (731) and keeps the sinuous slot antennas (712;81) spaced apart from the base (732) of the given height (H); wherein the given height (H) is equal to a quarter of a wavelength corresponding to a central operating frequency of the antenna array (71;80); wherein an absorbing sheet covers the base (732) on the bottom of the hollow (731), said absorbing sheet being designed to absorb surface currents on the base (732) on the bottom of the hollow (731); and wherein, for each sinuous slot antenna (712;81), the hollow metallic structure (73) further includes: a corresponding reflecting tapered element (734), which protrudes from the base (732) through the absorbing sheet and the foam spacer (72) into the hollow (731), is arranged below said sinuous slot antenna (712;81), and is designed to reflect back-radiation from said sinuous slot antenna (712;81); and a corresponding feeding turret (735), which protrude from the base (732) through the absorbing sheet and the foam spacer (72) into the hollow (731) up to the feeding structure (41) of said sinuous slot antenna (712;81), and which is coupled with the feeding structure (41) of said sinuous slot antenna (712;81).

Figure 9