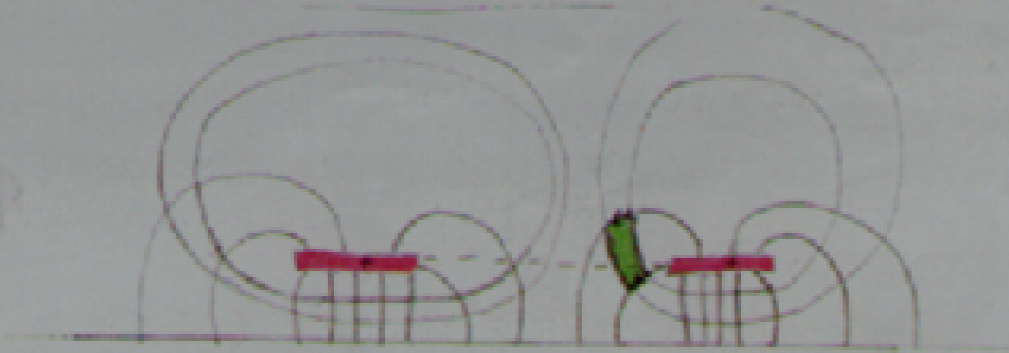
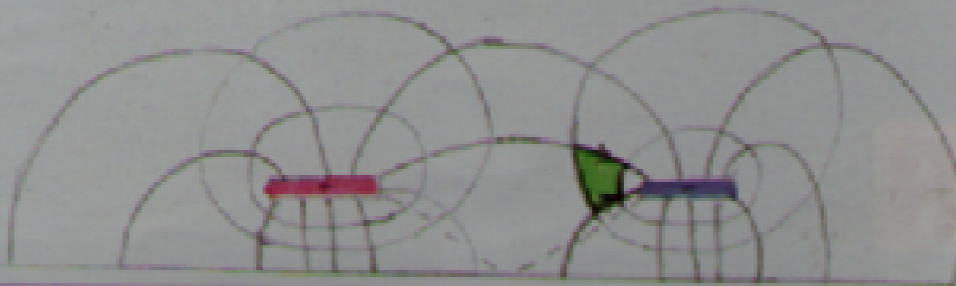


Figure 9: Field patterns for Even Mode and Odd Mode for surface lines. It is simpler to think of four conductors rather than two conductors and a ground plane

Even Mode



Odd Mode



A very narrow spike is injected into the left hand of a pair of parallel surface lines above a ground plane in a printed circuit board. This immediately breaks up into two symmetrical signals, the Even Mode and the Odd Mode. After travelling some distance they separate out. However, initially they are superposed.

Consider the green curvilinear square. Energy travelling in the Even Mode has electric field going from positive to the right to negative to the left. Superposed on this is energy travelling in the Odd Mode, with opposite electric field, from positive to the left to negative to the right. Thus, the same region of space can accommodate superposed energy, some of it upside down to the other, both travelling in the same direction. In buried lines between voltage planes, they travel at the same velocity. Space has this extraordinary ability to accommodate energy. Ivor Catt 17.11.2013