

Directed Rounded-Edge Bow-Tie Antenna for Direction Finding at Ultra High Frequencies

M.E. Ozturk*⁽¹⁾, M. Kebeli ⁽¹⁾

(1) TUBITAK-BILGEM, Kocaeli, Turkey

Direction Finding (DF) that refers finding the location of the radio signal sources is a significant application of the Ultra High Frequency (UHF). Practically, it is used for the locating, tracking and distinguishing the different radio signal sources. These systems are firstly used by the military and government especially in both World Wars. Currently, civilian and research centers are also studying on these systems. Antennas are the most important parts of the direction finding systems. Different types of antennas have been used in these systems like dipole, monopole, loop, bicone and discone antennas. Additionally, a DF antenna should be light and small in size, especially for mobile and tactical applications.

Bow-tie antennas are possible candidates for UHF DF applications. A bow-tie antenna can be shaped by using two triangular metal sheets. Rounded-edge bow-tie antenna is a special version of bow-tie that has a circular structure at the end of the metal sheets. This type of an antenna works in a wideband frequency range with a well performance.

In this paper, we propose a novel antenna that is a directed rounded-edge bow-tie antenna which is inclined from both sides to demanded direction with an angle. Producing of rounded-edge bow-tie antenna is low cost and it can be easily built. Furthermore, it works fine for a wideband frequency range. Therewithal, one can use it for the mobile applications. The aim of the bending the antenna is to utilize the directionality of the antenna for finding the direction of the radio signal sources at UHF. Performance of the antenna is still elegant even if the rounded-edge bow-tie antenna is bended in such manner that the metal sheets have an angle less than 180 degrees relative to each other.