ABSTRACT

Disclosed is an antenna apparatus including a substrate having a cavity in a first outer surface thereof. The substrate has a sidewall defining a portion of the cavity, and a first edge contact is formed at the sidewall. An IC chip is disposed within the cavity and has a side surface facing the sidewall and a second edge contact formed on the side surface electrically connected to the first edge contact. An antenna element, disposed at a second outer surface of the substrate opposite the first outer surface, is electrically connected to RF circuitry within the IC chip through a conductive via extending within the substrate.

FIG. 1