

ABSTRACT

A radio frequency (RF) apparatus includes a radio frequency integrated circuit (RFIC) chip and an antenna module disposed on an upper surface of the RFIC chip. The antenna module includes a first antenna patch that is in parallel with the RFIC chip, the first antenna patch including a first penetration point, and a first power feed point connected to a first power feed line to transmit and receive a first RF signal of a first frequency band; and a second antenna patch disposed above the first antenna patch in parallel with the first antenna patch, the second antenna patch including a second power feed point connected to a second power feed line that penetrates through the first penetration point to transmit and receive a second RF signal of a second frequency band. The first penetration point is formed in a first region of the first antenna patch in which influence on an electric field generated by the first antenna patch via the first power feed point is minimized.

FIG. 4