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A COMPACT DUAL-BAND DIELECTRIC RESONATOR ANTENNA ARRAY FOR NAVIGATION
APPLICATIONS**Abstract**

A new compact dual-band circular-polarized dielectric resonator antenna (DRA) array design is presented for navigation applications. The proposed DRA element was fed by coaxial probe with proper length in order to excite and simultaneously, covering GPS L1 band (1575.42MHz) and L2 Band (1227.6MHz). The DRA element has an aperture size of $\lambda_0/10 * \lambda_0/10$, and the small size makes it attractive for compact GPS or other navigation applications. Generally, compact arrays such as multiple antennas on a mobile terminal suffer from low efficiency and high correlation between antenna signals. Result shows that the proposed array achieves a lower mutual coupling and a better isolation between elements. Compared to usual microstrip patch antenna array, the proposed DRA array has a significant improvement on gain at low elevation angle. It means signals from more GPS satellites can be received, and it is helpful to navigation accuracy. Also, the DRA elements and array achieve a better AR bandwidth (AR2). The DRA elements and array were simulated with HFSS and verified by measurement. Good agreement between the measured and simulated results has been observed.