

(54) Title of the invention : MULTIBAND CERAMIC RIGHT HAND CIRCULARLY POLARISED DIELECTRIC RESONATOR ANTENNA FOR NAVIGATION AND POSITIONING APPLICATIONS

(51) International classification (86) International Application No Filing Date (87) International Publication No (61) Patent of Addition to Application Number Filing Date (62) Divisional to Application Number Filing Date	:H01Q0009040000, H01Q0001500000, H01Q0001380000, G01S0019360000, H01Q0001240000 :NA :NA : NA :NA :NA :NA :NA	(71)Name of Applicant : 1)INDIAN INSTITUTE OF TECHNOLOGY (INDIAN SCHOOL OF MINES), DHANBAD Address of Applicant :Dhanbad - 826004, Jharkhand, India Dhanbad ----- ----- Name of Applicant : NA Address of Applicant : NA (72)Name of Inventor : 1)Ravi Kumar Gangwar Address of Applicant :Department of Electronics Engineering, Indian Institute of Technology (Indian School of Mines), Dhanbad, Dhanbad - 826004, Jharkhand, India Dhanbad ----- 2)Nikesh Kumar Sahu Address of Applicant :Department of Electronics Engineering, Indian Institute of Technology (Indian School of Mines), Dhanbad, Dhanbad - 826004, Jharkhand, India Dhanbad ----- 3)Sachin Maithani Address of Applicant :Department of Electronics Engineering, Indian Institute of Technology (Indian School of Mines), Dhanbad, Dhanbad - 826004, Jharkhand, India Dhanbad -----
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(57) Abstract :
The present invention relates to a multiband ceramic circularly polarized dielectric resonator antenna (CP DRA) (1) for navigation and positioning applications. The fundamental (TE111) and higher-order (TE113 and TE115) modes are excited to acquire a triple-band response within the rectangular DRA. Two triangular-shaped notches (8, 9), along with a plurality of conformal strips (4-6), aid in realizing the circular polarization (CP) feature. The antenna maintains a low-profile, compact design (0.19λ0×0.23λ0×0.18λ0) without compromising performance. It is specifically tuned for GPS and IRNSS passbands, optimizing the impedance bandwidth, CP bands, gain, and radiation patterns. A CP-DRA prototype was fabricated, and the results were recorded. The recorded 3-dB axial ratio (AR) bands are 1159–1188 MHz, 1561–1620 MHz, and 2462–2509 MHz, making the antenna suitable for GPS and IRNSS applications. [figure 1]

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