

Skew Planar Wheel Antenna for First Person View of Unmanned Aerial Vehicle

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Abstract : This research presents the design and measurement of a skew planar wheel antenna that is used to visualize the first person view perspective of unmanned aerial vehicles. The antenna has been designed using CST Studio Suite 2019 to have voltage standing wave ratio (VSWR) ≤ 2 , return loss ≤ -10 dB, bandwidth ≥ 100 MHz to covering outdoor access point band from 5.725 to 5.825 GHz, omnidirectional radiation pattern, and elliptical polarization. Dimensions of skew planar wheel antenna have been modified using parameter sweep technique to provide good performances. The simulation results provide VSWR 1.231, return loss -19.693 dB, bandwidth 828.8 MHz, gain 3.292 dB, and axial ratio 9.229 dB. Meanwhile, the measurement results provide VSWR 1.237, return loss -19.476 dB, bandwidth 790.5 MHz, gain 3.2034 dB, and axial ratio 4.12 dB.

Keywords : skew planar wheel, cloverleaf, first-person view, unmanned aerial vehicle, parameter sweep

Conference Title : ICRAMET 2022 : International Conference on Radar, Antenna, Microwave, Electronics and Telecommunications

Conference Location : New York, United States

Conference Dates : January 28-29, 2022