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Radiation pattern reconfigurable MIMO Antenna with practical DC bias network

Abstract

This paper presents a radiation pattern reconfigurable (RPR) based multiple-input multiple-output (MIMO) antenna. The proposed antenna operates at 3.5 GHz for all switching conditions with S21 results of less than -20 dB. This work specifically focuses on implementing a practical DC bias network for the previously proposed RPR-MIMO antenna. The DC bias design is crucial where the tilt angle is slightly affected. This could be due to the isolation loss and insertion loss provided by the actual switch; and the DC bias lines that were constructed using a few DC blocking capacitors and RF chokes. Finally, a comprehensive analysis was carried out to examine the beam steering performance of the antenna when implemented with the DC bias network.

Keywords

Antenna and propagation; MIMO antenna; Reconfigurable antenna