

# Design of Electronically Steerable High Mode Dielectric Resonator Antenna using PIN Diode

## **Abstract**

This paper presents a reconfigurable beam dielectric resonator antenna (DRA) at 2.4 GHz by adopting the yagi-uda concept. Rectangular dielectric resonator antenna (RDRA) have been chosen as the radiator and fed by slot aperture. The antenna is designed in Taconic substrate with permittivity of 2.2. Firstly, a single antenna with two different modes is designed and investigated. The best performance mode in term of gain is then used to design the single driven RDRA with two parasitic RDRA, connected with the four RF pin diode BAR50-02V as switch. The analysis of the gap between driven and parasitic element is investigated. Four different types of switch configuration have been carried out to identify the performance of antenna in different cases. Depending on the switch configurations, the designed antenna can achieved highest gain of 7.386 dB and have steering angle capability at  $-42^\circ$ ,  $42^\circ$ ,  $-54^\circ$  and  $54^\circ$ .  
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## **Keywords**

Antenna and propagation; Dielectric resonator antenna; Pattern reconfigurable antenna; Reconfigurable antenna