

## Overview of Dielectric Resonator Antennas for 5G Cellular Communication

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Recently, Dielectric Resonator Antennas (DRAs) have been of particular interests to those in the wireless communication sector, more specifically in the millimeter wave band. The reason researchers in this sector want to operate within the millimeter wave band (30GHz to 300 GHz) is because they are interested in using fifth generation (5G) cellular communication in this spectrum [1, 2].

The DRA possess many benefits such as wide bandwidth, easy excitation, and low loss characteristics. Rectangular DRA's are of particular interest because their shape is the most versatile due to its fabrication simplicity and improved the degree of freedom compared to other DRA structures such as cylindrical or hemispherical. We designed and simulation several shapes of DRA antenna for 5G wireless communication using CST microwave studio software. To the best of our knowledge, the comparison between DRAs for 5G applications has not been studied before.

In this paper, the results of rectangular, cylindrical, and hemispherical DRA antennas for 5G broadband communication will be discussed. The effect of changing the size and shape and dielectric properties on antenna characteristics such as return loss, input impedance, gain, radiation pattern, and efficiency will be presented.

### Reference:

- [1]. K. Allabouch et al., IEEE International Conf. WITS, 2017.
- [2]. X. Zhu, et al., IEEE 5GWF, 343-346, 2018.