

ABSTRACT

The application of 5G communication technology can be a solution to encourage the development of industry 4.0, this industry requires very high data rates, low latency up to 1ms to support UAV (Unmanned Aerial Vehicle) or advanced drivers commonly referred to as automatic driving technology and can even include many devices. 5G communication is also divided into several frequencies such as 1 GHz, 1 - 6 GHz, and above 6 GHz, and according to WRC-19 (World Radiocommunication Conference) the ideal frequency for the Asian region is 3.5 GHz.

In this study the main focus is to design an antenna capable of working at a frequency of 3.5 GHz whose shadow is for cellular applications on 5G BTS, with this focus an antenna arrangement is needed that is able to meet the needs such as the gain value, the reflection coefficient value which functions to help the antenna not reflects the power sent causing losses, and which can meet the minimum bandwidth value.

The specifications obtained from the results of the antenna array are VSWR 1.14, Return loss -23.45 dB, bandwidth ≥ 50 MHz, linear polarization, and unidirectional polarization. Furthermore, the single patch antenna results that form the basis of this hexagonal antenna are VSWR 1, Return loss -58.28 dB, bandwidth ≥ 50 MHz, linear polarization, and unidirectional polarization, these values are the basis for the formation of this 4x1 dimension array antenna.

Keywords: 5G, Hexagon Patch, Insert Feed, Microstrip Antenna, Array.