

## Diversity Antennas For Mobile Devices

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The smaller antenna volume, with aggressive ID of mobile devices with metallic housings, has to work efficiently under different conditions (like phantom hand) and the signal should reach the receiver without any fading. The signal fading in a multi-path environment is a biggest issue in current mobile devices. To reduce signal fading issue, and for device to work under different conditions, diversity (or more than one antenna also known as MIMO) is a famous technique has been adopted.

In this paper, different kinds of diversity (such as spatial, pattern and polarization) techniques are adopted, depending on the issue the device is facing. The antennas covered frequency ranging from LTE to WiFi (for 802.11a - 5 GHz) One parameter that is used to estimate the efficiency of diversity antenna is 'correlation coefficient'. If the correlation coefficient between antennas is less than 0.5, then that means the diversity antennas can function independently. In order to estimate correlation coefficient, CST simulation and Satimo chamber measurements were used. Antennas were designed by simulation and were also fabricated and its correlation coefficient was estimated, and was implemented in Motorola Solutions device(s) to enhance the antenna performance under different harsh conditions such as cradle and inside the vehicle. Fig 1. shows the correlation coefficient between two WiFi antennas. The correlation coefficient between two LTE antennas, and its isolation as how it impacts correlation, antenna efficiencies will be presented in the conference.

