Comparison of Propagation Factor in Wireless Mobile Environment in Korea

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This research is to investigate the propagation factor for estimating the service area in the wireless mobile communication in Korea. Previously, the wireless communication has been focused at below 2.5 GHz, and the comparison of service area has been done in these frequency band. However, these days, the commercialization of next generation service, such as 5G service, is on-going, so that the comparison of service should be considered over 2.5 GHz.

At first, a few propagation model has been compared, but the well-established model was not found so that the simulation and experiment has been performed by ourselves. The urban, sub-urban, and the open environment were simulated and measured.

The simulation has been performed using commercial software, Wireless Insite. The omni-directional and direction antenna were used as source and proving. The continuous waveform (CW) was utilized for a source. Usually the service area depends on the digital modulation, so in this research the modulation was excluded.

As a result, the service area is reduced by increasing the frequency, but the rate of decreasing depends on the surface material, antenna beamwidth, antenna height, and the minimum receiver level.

The measurements were done in four kinds of area, such as urban, suburban, open space with side-reflection, and flat open space. Because of the lack of time, the measurement data was not much but the meaningful results were acquired and compared with the simulation results.

This kind of research could be found in many literature, but the frequency and environment in this research are considered unique. So the result from this research could be utilized for the planning and establishment of service policy in mobile communication in Korea.

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