

# **Impact of Building Shape in the Intersection on Ray Tracing Accuracy for Non Line-Of-Site (NLOS) Scenario in Street Cell Environment**

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## **Abstract:**

Recently, mobile networks employing high-speed high-capacity communications have been investigated extensively to satisfy the strong demand for the faster and larger data communication beyond 2020 as the 5G mobile communication system. As one of the approaches, High-SHF (6 - 30 GHz) and EHF (mainly 30 - 60 GHz) bands are the candidates to utilize the relatively wide frequency band widths. Accordingly, the characteristics of radio propagation loss in the frequency bands must be characterized. We have evaluated the accuracy of Ray Tracing (RT) calculation by comparing with measurement result. It has been found that the error between RT calculation and measurement result becomes large as frequency becomes high in Non Line-Of-site (NLOS) scenario. In this paper, we propose alternative model for buildings at the intersection to improve the accuracy of RT calculation. Specifically, the conventional model assumes box-shape as a building while the proposed model considers more detailed shape of building. The proposed and conventional models are used in RT calculation respectively and the accuracy is evaluated. Finally, further possible optimization of the proposed model is discussed for further improvement.