Analysis of Reflection and Scattering Characteristics at the 60GHz Frequency

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***Abstract*— This paper presents the reflection characteristics for propagation prediction analysis based on the scattering characteristic according to the surface roughness at the 60GHz frequency. Because the millimeter wave band has very short wavelength within a few millimeter, the scattering characteristic is occurred by the small roughness of the surface of a wall on indoor environment. This means that the propagation prediction is impossible by analysing the general reflection characteristic in order to analyse the propagation process of the radio wave by the surface roughness. In addition, because the propagation characteristics appear differently by the surface roughness of mediums, the propagation prediction is very difficult. Therefore, the scattering characteristics according to the surface roughness should be analysed for accurate propagation prediction. To predict the propagation characteristics in the indoor environments, we have studied changes in the accordance with the rough surface. This paper analyses the reflection and scattering characteristics by the surface roughness of mediums in millimeter wave band, and studies the method for applying to the propagation prediction.**

***Keyword*— millimeter wave, scattering characteristic, reflection characteristic, surface roughness, ray-tracing**

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