

495. Title:On the use of radiometric measurements to estimate atmospheric attenuation at 100 and 300 GHz

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Abstract:At frequencies of between 100 GHz and 30 THz, propagation conditions are severely affected by the influence of the composition and phenomena of the troposphere. This paper focuses on the use of radiometric measurements to estimate attenuation at 100 and 300 GHz, considering non-scattering scenarios, in which the main contributions are given by atmospheric gases and non-rainy clouds. These techniques allow the estimation of the absorption loss through the entire atmosphere, without the need for a signal source situated in a satellite or a high altitude aircraft. On the basis of well-accepted absorption models, the results of calculating gaseous, cloud, and total attenuation using 3-year meteorological data from Madrid, Spain, are detailed, as well as estimates of the expected values of the sky brightness temperature as measured by the radiometer. Finally, based on the results obtained, a discussion on the use of radiometric measurements at both frequencies is presented, in connection with an experimental campaign currently under preparation.