The Effect of Tropospheric Scintillation on MicrowaveFrequencies for GSM System in The Iraqi Atmosphere

Ahmed A. Abbas, Naser Al-Falahy and
Abdullah Kh. Ahmed

Abstract:

Several papers have been published recently on the effects of scintillation on microwave propagation in standard atmospheres. Most of them have analyzed theoretically the influence of various parameters on the propagation, but barely a few researchers were able to extract the results from the model relying on microwave links in a nonstandard atmosphere. A method is proposed to predict the tropospheric scintillation on the space path of Earth for both standard and nonstandard atmospheres using the frequency range (20-38) GHz which is used in the Global System for Mobile (GSM). This method can be applied to the different atmospheric conditions in different regions. This work studied the effects of various parameters, such as antenna diameter, meteorological elements t (average temperature), H (relative humidity), and water vapor pressure and frequency, on the scintillation magnitude of GSM bands in Basrah and Baghdad.