

# ***Analysis of Bit Error Rate in Transmission of AWS Data Through Satellite***

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Automatic Weather Station (AWS) is a rugged, environmentally qualified system of sensors, computers and communication equipment, which automatically and continuously measure real time surface weather conditions and sends three times the hourly observed meteorological parameters to the central station through satellite link in a self timed Pseudo Random Burst Sequence (PRBS) mode of transmission in its prescribed 10 minute time slot within the next 60 minutes before the next observation takes place. After the launch of geostationary INSAT series of satellites, India Meteorological Department had installed Automatic Weather Station (AWS) in different parts of the country to provide real time surface meteorological data at hourly intervals using Satellite communication techniques. The collection, processing and dissemination of real time meteorological data from inhabited as well as from remote and inaccessible area such as snow bound mountain and river catchments area are of greater importance in country like India for reliable weather forecast and timely disaster and cyclone warning. Binary Phase Shift Keying (BPSK) technique is used in the AWS data burst transmission. The Bit Error Rate (BER) plays the same role as an indicator of quality in a digital satellite communication system that the signal to noise ratio plays in analog link. The BER of digital satellite link is analysed with AWS transmitter power and carrier power to noise power ratio (C/N) at the demodulator input of the earth receiving station to improve the performance of the link. Physically a bit error occurs because a symbol error has Occurred. Symbol error arise from thermal noise from external interference and from inter symbol interference. If only thermal noise is considered, then the symbol error rate (SER) or symbol error probability (PE) may be calculated unambiguously from  $E_s/N_0$ , the energy per symbol in joules divided by the noise density is W/Hz measured in IF bandwidth at the demodulator input. In BPSK system, BER is equal to SER. This paper describes the Analysis of Bit Error Rate in Transmission of AWS Data Through Satellite.