The simulator assumes a normal distribution of the electric field, which for power results in a Rayleigh distribution. The Probability Density Function (PDF) of a Rayleigh distributed variable can be expressed as:



where  is the scale parameter of the distribution. Small scale fading is modeled with . The PDF of a Rayleigh distributed variable with scale parameter 1.0 is shown in figure XX. Small represents rural areas with few lossy objects and large urban scenarios.



Figure XX. PDF.

The CDF of a Rayleigh distributed variable can be expressed as:



The CDF is shown in figure XX with scale parameter 1.0.



Figure XX. CDF.

If a measurement or other study results in a certain average PER 

The Rayeilgh CDF becomes:



Rewrite:



This gives us a threshold value for Rayleigh distribute variable:



Generate a Rayleigh distributed random variable from a uniform distributed (0 to 1) variable:



Now a packet is correctly received if: in dB