In this study, the performance of an indoor Wireless Local Area Network (WLAN) which is installed by using traditional methods and cellular design of a WLAN that is to be installed are tested. To implement the test and design, artificial intelligence methods are used. For the WLAN test, Artificial Neural Network (ANN) is used. Access Points (APs) and receiver coordinates are determined as ANN input parameters and optimum Receive Signal Strength (RSS) have been sought. For WLAN design, the Genetic Algorithm (GA) method is used. Wall structures and AP properties are taken into account to obtain optimum Receive Signal Strengths (RSSs). For the analytic solution of the optimum RSS, the indoor setting is divided into cellular areas. Thus, the most suitable locations for APs and the number of APs are determined. As a result, we have tested the performance of a WLAN, which is installed by means of traditional methods. According the experimental results, the indoor WLAN designed with the GA method has provided better performance.