ABSTRACT

Augmented reality (AR) is a technology that combines two-dimensional and threedimensional virtual objects into a real three-dimensional environment and then projects these objects into real time. The development of AR technology at this time gave many contributions to various fields such as fields. One of them is in the field of education or learning. Antenas and Wireless Communications Laboratory is a laboratory engaged in education that has some material to be visualized so that it can be better understood, especially material about measuring devices and antena characteristics. In measuring material learning materials such as Network Analyzer and Site Master it is quite difficult to be able to understand these measuring devices related to the limitations of existing tools, whereas in learning the characteristics of the final project antena only the radiation pattern parameters will be visualized, because these parameters are considered quite difficult to understand because you have to imagine the radiation pattern of an antena.

By utilizing Augmented reality (AR), where AR is a technology of merging virtual objects into the real world. Making an antena laboratory learning device application on the android operating system will display measuring instruments such as the Network Analyzer and Site Master, as well as antena characteristics such as radiation patterns. The implementation is done by using markers that will be accessed by the android smartphone's camera, then displaying a three-dimensional (3D) object above the marker.

From the results of tests that have been carried out, all content and systems in the AR application can run as expected, the Virtual Laboratory Antenna application can run well at the optimal distance of taking the Target Marker at a distance of 20-40 cm and the optimal tilt angle of taking the target marker at an angle 0° and 45°. The effect of bright light and dim light also affects delay. In bright light conditions the average delay is at 0.68 seconds, whereas in low light conditions the average delay is at 0.74 seconds. Survey of application needs from the best MOS calculation results with a value of 4.46, while for the survey the benefits of the application of the best MOS results with a value of 4.51.

Keywords: Augmented reality, Virtual, Learning, Antenna Laboratory