

## ABSTRACT

*The development of technology, triggers people to get the needs of facilities and infrastructure that are more practical, and efficient. The internet has been used by many people at large. Wireless Fidelity (Wifi) is one of the uses of wireless LAN technology in public locations. Wifi users need a wifi USB adapter (TP-Link type TL-WN722N) to help receive a wifi signal on a computer or laptop. Even though you have used the USB wifi adapter facility, the USB adapter's wifi signal strength is still quite weak. For a more efficient service, the antenna can be replaced with a variety of antennas to show greater flexibility and longer wireless coverage.*

*In this final project several designs have been designed for yagi PCB antennas and realized Yagi PCB antennas with the best designs and results, namely Yagi PCB mirrored ground plane which can work at a frequency of 2.4 GHz. The antenna made in this final project is a yagi PCB antenna consisting of a reflector, driven, and a 7-element director then using DGS (Defected Ground Structure) technique and Slot Loading Technique, directional radiation pattern. The material used is FR-4 Epoxy for the substrate and then copper for the patch and groundplane. This antenna is implemented as a high gain compact yagi antenna as a power amplifier for the WiFi USB adapter signal capture.*

*The results of this final project, namely the final simulation process, obtained a return loss value of -32,504 dB, 154 MHz bandwidth, 1,048 VSWR, and 7,134 dBi gain. Then after manufacturing, the return loss value is -30,583 dB, bandwidth 224 MHz, and VSWR 1.0609. When the antenna is closed with a cover, the return loss value is -16,266 dB, bandwidth is 408 MHz, and VSWR is 1.3632. In addition, it is also obtained for internet download and upload speeds for Yagi PCB mirrored ground plane (covered) respectively 6.41 Mbps and 1.69 Mbps, Yagi PCB mirrored ground plane (without cover) 9.51 Mbps and 2.01 Mbps, Built-in Antenna (Dipole) (TP). -Link type TL-WN722N) 7.03 Mbps and 0.76 Mbps. RSSI of the yagi PCB mirrored ground plane antenna with a range of -46 to -68 categories (Good) and there is a significant signal amplification.*

**Keywords:** *PCB Yagi Antenna, DGS, Wifi, Mirrored Ground Plane*