

ABSTRAK

RANCANG BANGUN ANTENA YAGI 5,8 GHZ UNTUK MEMPERLUAS JANGKAUAN SINYAL WIFI Di AREA PUSKESMAS KUTARAYA KAYUAGUNG OKI

(2026: xvi + 91 Halaman + 40 Daftar Pustaka + 69 Daftar Gambar + 8 Daftar Tabel + Lampiran)

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Penelitian ini membahas perancangan dan implementasi antenna Yagi 5,8 GHz untuk memperluas jangkauan sinyal jaringan nirkabel pada area Puskesmas Kutaraya Kayuagung OKI. Antena Yagi *Disk* dipilih karena memiliki *gain* yang tinggi dan pola radiasi *directional* yang mampu memfokuskan pancaran sinyal ke arah tertentu, sehingga dapat meningkatkan cakupan dan kestabilan jaringan. Proses perancangan dilakukan menggunakan perangkat lunak CST Studio Suite melalui tahapan simulasi dan optimasi parameter antenna, meliputi *return loss*, *Voltage Standing Wave Ratio* (VSWR), *bandwidth*, dan *gain*, guna memperoleh performa yang sesuai dengan spesifikasi yang diinginkan. Antena yang telah dirancang kemudian direalisasikan dan diuji menggunakan perangkat Mikrotik untuk mengevaluasi kinerjanya. Hasil penelitian menunjukkan bahwa antenna Yagi *Disk* 5,8 GHz mampu meningkatkan jangkauan dan kualitas sinyal jaringan nirkabel melalui pola radiasi yang terarah serta penguatan sinyal yang lebih baik, sehingga dapat mendukung sistem komunikasi yang lebih stabil.

Kata kunci: Antena Yagi *Disk*, 5,8 GHz, CST Studio Suite, Mikrotik, jaringan nirkabel, jangkauan sinyal.

ABSTRACT

DESIGN AND CONSTRUCTION OF A 5.8 GHZ YAGI ANTENNA TO EXPAND SIGNAL WIFI COVERAGE IN THE AREA OF THE KUTARAYA KAYUAGUNG OKI COMMUNITY HEALTH CENTER

(2026: xvi + 91 pages + 40 References + 69 Figures + 8 Tables + Appendices)

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This study discusses the design and implementation of a 5.8 GHz Yagi antenna to expand the wireless network signal coverage in the Kutaraya Kayuagung OKI Community Health Center area. The Yagi-Disk antenna was chosen because it has high gain and a directional radiation pattern capable of focusing the signal in a specific direction, thereby improving network coverage and stability. The design process was carried out using CST Studio Suite software through stages of simulation and optimization of antenna parameters, including return loss, Voltage Standing Wave Ratio (VSWR), bandwidth, and gain, to achieve performance in line with the desired specifications. The designed antenna was then built and tested using Mikrotik equipment to evaluate its performance. The research results show that the 5.8 GHz Yagi Disk antenna is capable of improving the range and signal quality of wireless networks through its directional radiation pattern and better signal amplification, thereby supporting a more stable communication system.

Keywords: *Yagi Disk antenna, 5.8 GHz, CST Studio Suite, Mikrotik, wireless network, signal range.*