

ABSTRAK

**RANCANG BANGUN ANTENA PENERIMA *OMNIDIRECTIONAL* 2.4 GHz
UNTUK PENGUAT WI-FI DI KORAMIL 418-01 MAKRAYU
(2026 : XV + 82 Halaman + 38 Gambar + 11 Tabel + 12 Lampiran)**

M. SANDY DWI PUTRA

062330330768

JURUSAN TEKNIK ELEKTRO

PROGRAM STUDI DIII TEKNIK TELEKOMUNIKASI

POLITEKNIK NEGERI SRIWIJAYA

Abstrak - Kebutuhan akan konektivitas nirkabel yang stabil dan optimal sangat penting untuk mendukung efektivitas operasional di lingkungan Koramil 418-01 Makrayu. Penelitian ini bertujuan untuk merancang, memfabrikasi, dan menganalisis performa antena omnidirectional pada frekuensi 2.4 GHz yang difungsikan sebagai receiver untuk memperkuat penerimaan sinyal Wi-Fi. Metodologi penelitian diawali dengan melakukan simulasi desain menggunakan software CST Studio Suite, dilanjutkan dengan perakitan komponen fisik menggunakan kawat tembaga sebagai elemen UHF, kabel koaksial, konektor RF, serta pelindung pipa PVC. Pengujian karakteristik antena dilakukan di Laboratorium Teknik Telekomunikasi menggunakan alat ukur Nano VNA (Vector Network Analyzer) dan Spectrum Analyzer, serta dilanjutkan dengan pengujian performa jaringan secara riil di lapangan menggunakan perangkat MikroTik RouterBoard hAp ac3 melalui aplikasi WinBox.

Kata Kunci : Antena *Omnidirectional*, 2.4 GHz, Penerima, Wi-Fi, CST Studio Suite, Nano VNA, *Spectrum Analyzer*, MikroTik

ABSTRACT

DESIGN TO BUILD AN OMNIDIRECTIONAL RECEIVING ANTENNA 2.4 GHz FOR WI-FI AMPLIFIER IN KORAMIL 418-01 MAKRAYU (2026 : XV + 82 Pages + 38 Picture + 11 Tables + 12 Attachments)

M. SANDY DWI PUTRA

062330330768

DEPARTMENT OF ELECTRICAL ENGINEERING

DIII TELECOMMUNICATION ENGINEERING STUDY PROGRAM

SRIWIJAYA STATE POLYTECHNIC

Abstract - The need for stable and optimal wireless connectivity is very important to support operational effectiveness in the Koramil 418-01 Makrayu environment. This research aims to design, fabricate, and analyze the performance of an omnidirectional antenna at a frequency of 2.4 GHz that functions as a receiver to strengthen the reception of Wi-Fi signals. The research methodology begins with conducting a design simulation using the CST Studio Suite software, followed by the assembly of physical components using copper wire as UHF elements, coaxial cables, RF connectors, and PVC pipe protectors. Antenna characteristic testing is carried out at the Telecommunication Engineering Laboratory using Nano VNA (Vector Network Analyzer) and Spectrum Analyzer measuring tools, and continued with network performance testing in the field using the MikroTik RouterBoard hAp ac3 device through the WinBox application.

Keywords : Omnidirectional Antenna, 2.4 GHz, Receiving, Wi-Fi, CST Studio Suite, Nano VNA, Spectrum Analyzer, MikroTik