

RINGKASAN

Abdulhafidz Muhammad, Jurusan Teknik Elektro, Fakultas Teknik Universitas Brawijaya, Agustus 2016, *Deteksi Respon Frekuensi Umbi Tropis Menggunakan Metode Near-Field*, Dosen Pembimbing: Mochammad Rif'an, S.T., M.T. dan Dr-Ing. Onny Setyawati. S.T., M.T., M.Sc.

Pengujian deteksi respon frekuensi umbi tropis menggunakan metode *Near field* telah dilakukan. Umbi tropis yang diuji pada pengukuran ini adalah porang, iles-iles, ubi cilembu, kentang dan bengkuang. Penelitian ini dilakukan untuk mencari tingkat sensitifitas umbi tropis terhadap gelombang elektromagnetik. Reflektor *horn* dirancang sebagai pemandu gelombang elektromagnetik. Ketinggian reflektor *horn* didesain sesuai dengan perhitungan jarak pada teori *near field* yaitu 20 cm. Rentang frekuensi pengujian yang diberikan antara 1,4–3,4 GHz. Pengujian dilakukan dengan melakukan percobaan sebanyak 4 kali pada bahan umbi pada waktu yang berbeda. Hasil pengujian menunjukkan bahwa porang dapat dideteksi pada rentang frekuensi 1,935-2,08 GHz, sedangkan umbi bengkoang dapat dideteksi pada rentang frekuensi 2-2,12 GHz. Umbi cilembu dapat dideteksi pada rentang frekuensi 2,095-2,2 GHz, sedangkan umbi iles-iles dan kentang memiliki rentang frekuensi kerja yang hampir sama yaitu pada rentang frekuensi 2,15-2,34 GHz.

Kata kunci: *Umbi tropis, reflektor horn, rentang frekuensi, metode near field*

SUMMARY

Abdulhafidz Muhammad, Department of Electrical Engineering, Faculty of Engineering University of Brawijaya, August 2016, *Frequency response of tropical tubers using near field method*, Academic Supervisor: Mochammad Rif'an, S.T., M.T. and Dr-Ing. Onny Setyawati. S.T., M.T., M.Sc.

Detection of the frequency response of tropical tubers using near field method has been performed. The tropical tubers used as targets in this research are porang, iles-iles, Cileumbu tuber, potatoes, and jicama. The research was conducted to find the sentivity of tropical tubers to electromagnetic waves. Horn reflector is designed as the guide of electromagnetic wave, which has a height of 20 cm appropriate to the calculation of distance in the near field theory. The frequency range of the tracking generator is given between 1.4 – 3.4 GHz. The test is performed by measuring each target tuber four times at different times. The results of the test show that the porang can be detected at frequency of 1.935-2.08 GHz, while jicamas can be detected at frequency of 2 – 2.12 GHz, and Cileumbu tuber can be detected at the frequency of 2.095 – 2.2 GHz. The potatoes and iles-iles have the same frequency range at 2.15-2.34 GHz.

Keys word: *tropical tubers, horn reflector and range of frequency, near field method*

