

## Application of bandpass filter as a sensor for rice characterization

### ABSTRACT

This paper introduces the potential of the bandpass filter to implement as a microwave sensor for rice characterization. Three different filter sensors are design in order to operate at frequency range between 1.5 GHz to 3 GHz. The reflection coefficient, and transmission coefficient, T performances for the sensors have been analyzed. Three types of rice samples, 'Sakura Super Thai Brown Rice (SSTBR)', 'Sakura Basmati Pakistan Rice (SBPR)' and 'Giant Super Special Rice (GSSR)' were used in this study. Results obtained showed 4th order filter gave the most sensitive for the reflection measurements, but more loss in transmission measurements. The results are served as the preliminary data for further investigation.

**Keyword:** Microwave sensor; Bandpass filter; Rice samples; Reflection coefficient; Transmission coefficient