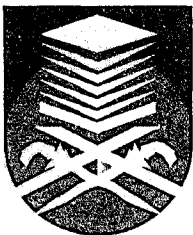


**THE DESIGN OF NOVEL COMPACT MICROSTRIP
INTERDIGITAL BANDSTOP FILTERS**

Presented in partial fulfillment for the award of the
Bachelor of Electrical Engineering (Honors)
UNIVERSITI TEKNOLOGI MARA



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ABSTRACT

The purpose of this project is to design, simulate, fabricate, investigate and analyze the characteristic of novel compact microstrip interdigital bandstop filter. This report discussed an attempt by the author to design the filter using a commercially available computer aided design (CAD). The filter is designed according to Chebyshev type, which ripples at the pass band and stop at the center frequency. The filter is operating at microwave frequency. It will demonstrate the 4-th order Chebychev element with a 3GHz center frequency.

The structure is similar to that of an interdigital capacitor. The input port and output ports are connected to form the bandstop characteristic. The design will not only show good bandstop characteristics and tunable central frequency, but it is also easy to fabricate and integrate. The features of this microstrip interdigital bandstop filter are smaller than those of the conventional bandstop filter.

The filter is fabricated on a microstrip using facilities available at the Faculty of Electrical Engineering Universiti Teknologi MARA Shah Alam. The microstrip laminates used are '*Duroid / RT 5870*' with 0.5 mm substrate thickness and relative permittivity, ϵ_r equal to 2.33. Simulation by using *GENESYS* or *SONNET* results closely corresponds to the experiments. The filter characteristic is then determined using a *Wiltron Scalar Network Analyzer*.

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