

## **Micromachined W-band integrated rectangular waveguide filter utilising SU-8**

### **ABSTRACT**

This paper is a study on the design of microwave waveguide filter suitable for micromachining process. Novel structure and processes are introduced which allow accurate fabrication of low loss waveguide filter. This new technique applies micro-fabrication processes to improve fabrication accuracy. A W-band micromachined rectangular waveguide filter utilizing SU-8 micromachining with CPW input and output ports has been designed. Simulated frequency responses exhibit insertion loss of 1.18 dB across 1 GHz bandwidth for W-band frequency range centered at 93 GHz with return loss better than -20 dB.

**Keyword:** Coplanar input and output port; Micromachined; Millimetre-wave filter; Rectangular cavity