

## **BREAKDOWN LIMITER STUDIES FOR HIGH POWER X-BAND MICROWAVES\***

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The design, fabrication and initial measurements and analysis of an X-band high power microwave (HPM) limiter are presented. The microwave discharge test chamber is an L-band rectangular waveguide with Lexan or Rexolite microwave windows. The chamber is illuminated by the output of an X-band waveguide pressed against the chamber window. The objective is to study conditions and configurations that enable rapid ( $< 50$  ns) discharge formation above a pre-set power density threshold. A 25 kW X-band magnetron (9.38 GHz) with a 0.8  $\mu$ s pulse width is used to produce the breakdown. Incident, reflected and transmitted microwave powers and optical emission intensities are measured to observe the discharge breakdown and extinction rates near Paschen minimum pressures for Ar and Ar/Ne mixtures in the 10s of Torr range. Design modeling, preliminary experimental data and data analyses are presented.

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