

# Abstracts

## An X-Band Parametric Amplifier with Closed-Cycle Cooling (1964 [MWSYM])

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*C.T. Rucker, W. Morrow and E.S. Grimes, Jr.. "An X-Band Parametric Amplifier with Closed-Cycle Cooling (1964 [MWSYM])." 1964 PTGMTT International Symposium Program and Digest 64.1 (1964 [MWSYM]): 153-156.*

The objective of the work described here was to develop a system-oriented closed-cycle cooled parametric amplifier using a commercially available cooler. The desired characteristics were: tuning range, 7.0 to 8.0 Gc; instantaneous bandwidth, 20 to 30 megacycles; effective noise temperature, about 70° Kelvin including the uncooled X-Band four port circulator. The compatibility for use, at a later date, of more complex multistage coolers to allow cooling of the circulator and parametric amplifier combination, was also an important consideration.

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