

## NASA MMIC RELIABILITY ASSURANCE PROGRAM

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### Introduction:

Over the past few years considerable advancements have been made in the design and manufacture of Millimeter-Wave/Microwave Monolithic Integrated Circuits (MMIC). For space applications, MMICs present a promising and viable solution to the higher complexity and size restrictions of new missions. During the next decade MMICs will form the foundation for many mission-specific systems used throughout the NASA community and other federal agencies.

Prior to the insertion of MMIC technology into any space application an acceptable qualification procedure must be established. To address this need, NASA Headquarters, under Code QE, has initiated the MMIC Reliability Assurance Program to address the requirements and procedures for qualification, and screening of MMICs for space applications. The program is a collaborative effort between the Jet Propulsion Laboratory (JPL), NASA Centers, Rome Laboratory, and other users and manufacturers.

### Program Objectives:

The main objective of the MMIC Reliability Assurance program is to develop a NASA MMIC Reliability Guide based on inputs from manufacturers and users. Other objectives of the program include raising the level of activity in MMIC reliability, soliciting inputs from both the users and manufacturers for MMIC reliability and process improvements, and development of more economical and faster methods of MMIC reliability assurance,

### About the Program:

The MMIC Reliability Assurance Program was initiated in October of 1992. The program is managed by JPL with participation from NASA Lewis Research Center, NASA Johnson Space Center, DOD's Rome Laboratory, and other high reliability users and manufacturers.

Reliability data collection and document drafts have been designated to be the responsibility of the Working Group which consists of JPL, NASA Lewis, NASA JSC,

database will also be used in the development of the MMIC Reliability Guide,

The MMIC Guide will be developed in sections to cover the topics of interest as indicated earlier in this text, The initial complete draft is expected in April, 1995, while the full document is expected to be released in September, 1996.

**Summary:**

The MMIC Reliability Assurance Program has been initiated by NASA H(2, Code QE. This program is intended to result in an industry defined and accepted MMIC qualification and screening standard. The program is a collaborative effort between NASA Centers, JPL, DOD's Rome Laboratory, and other high reliability users and manufacturers. The accomplishments of the program to date include the development of the GaAs Reliability Database, the establishment of the NASA GaAs MMIC Reliability and Space Qualification Workshop, and widening the participation in this effort to include most of the MMIC manufacturers and users and some international high reliability users,

This program offers an avenue to address the needs of the high reliability users while taking into account the capabilities of the manufacturers and the maturity of the technology. Further collaboration and cooperation between the MMIC users and manufacturers is necessary in order to assure the success of this program.

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