



DEFENSE LOGISTICS AGENCY

GEM & AME PROGRAMS

F-15 Eagle

Generalized Emulation of Microcircuits



System

F-15 Eagle (WSDC 19F)

Role: Air superiority multi-role combat aircraft

Produced: 1972 – present

Deployed: July 1976

Number in Service:

- U.S. Air Force: 249
- Foreign Military: 508

Emulation Support

DLA's GEM program has manufactured several different hard coded ASIC replacement parts for the obsolete user programmable EP310 logic device.

Over 11,000 individual parts delivered to support the F-15 Eagle tactical fighter.

The DLA GEM program provides a permanent on-demand manufacturing source.

GEM Part Number: GEM225XXBRA

Application	F-15 Eagle
Obsolete Device	Altera EP310 Erasable Programmable Logic Device (EPLD).
Emulation Solution	In this application we utilized a 1.5 μ m gate array technology. This technology has successfully emulated 23 programmed variations of the original programmable logic device matching required performance and intended functionality in the system.
Customer	F-15 Systems Program Office (SPO) and Boeing.
Benefit to Program	Eliminated system redesign due to part obsolescence, and provide long term production support.
Manufacturing Support	GEM program maintains process technology to provide on-demand manufacturing solution.

Our Story

In the late 1980s, DLA recognized that microcircuit obsolescence threatened the readiness of many American defense systems. Numerous systems in the armed forces were designed and developed in the 1960s and 1970s. For example, the U.S. Air Force began flying the F-15 Eagle tactical fighter in 1972, and the U.S. Navy first tested the AEGIS phased-array radar at sea in 1973. Because of continued advancements in semiconductor technology, the original suppliers stopped manufacturing the microelectronic components used in these and other systems. In 1987, DLA contracted with SRI to begin research and development on how to best replace obsolete microcircuits with standardized, modern integrated circuits (IC). DLA and SRI collaborated to develop the GEM Program. Using its on-site Trusted semiconductor foundry and deep knowledge of IC design/development, SRI produces on-demand, Class Q microcircuits matching the Form-Fit-Function-Interface (F3I) criteria of the required microcircuit. DLA is developing the next generation of F3I microcircuit Emulation capability through the AME Program to further alleviate growing IC obsolescence issues caused by the continued rapid advancements in technology. The new capabilities developed by AME are utilized by the GEM Program to ensure the Emulation Programs continue to meet weapons systems wide-ranging requirements. SRI's semiconductor foundry is accredited as a Department of War (DOW) Trusted Foundry supplier, and our manufacturing processes are qualified to MIL-PRF-38535.

