

CHIP SCALE ATOMIC CLOCK (CSAC)

Providing affordable precision timing for military communications systems.

OBJECTIVE / SOLUTION

GPS is vulnerable to jamming and unreliable in urban areas and dense forests. A Chip Scale Atomic Clock (CSAC) enabled common timing module will provide more stable, reliable communications to the Warfighter. The goal of this program is a low cost CSAC which will be attained by improving the manufacturing capability to enable mass-production. By leveraging Defense-wide MS&T investments, fabrication costs will be reduced with a corresponding expansion of application volumes. Specific program objectives include design for manufacturability, yield enhancement, supply chain management, and transition to a disciplined volume manufacturing environment.

ACHIEVEMENTS

Program is in its first year of funding.

BENEFITS

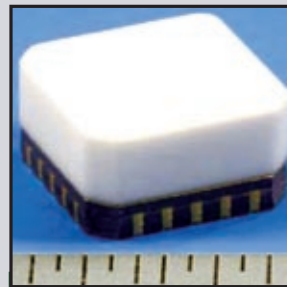
- Significantly reduces acquisition cost for Joint service applications requiring precision timing subsystems in warfighter communication systems
- Lowers unit cost and reduced program risk through the establishment of multiple sources
- Moves from manual fabrication to automated assembly
- Increases unit volume manufacturing capability from 10 units/year (MRL-4) to >20,000 units/year (MRL-8)

STATUS

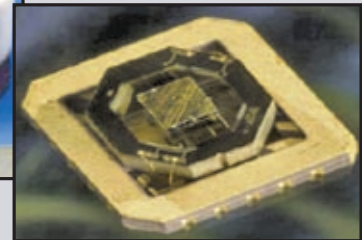
Initializing improved short-term and long-term frequency stability and manufacturability to enable firmware design. This will allow communications systems to support autonomous acquisition and operation in field-deployable systems.



Atomic Clock



Package, Ceramic Leadless Chip Carrier (LLC)



Phase III Physics Package, Photodiode Up Mounted in Lower Half of the Vacuum Package, Ceramic Leadless Chip Carrier (LLC)

This program is leveraging efforts with PEO C3T to address reliability testing of the physics package, mechanical aging of the suspension, and shock survival.

WEAPON SYSTEMS/SECONDARY ITEMS IMPACTED

- Joint Improvised Explosive Device Defeat Organization (JIEDDO) Crew Timing Module, and all Ground Combat Systems
- GPS Wing (Air Force)
- Soldier Communications Equipment

POTENTIAL COST AVOIDANCE

- Return on investment of 42:1 with a cost benefit of \$978M



Mine Resistant Ambush Protected Vehicle (MRAP), HMMWV, Bradley Fighting Vehicle, and M1 Abrams Main Battle Tank