RTX and DARPA to revolutionize Gallium Nitride technology for improved radio frequency sensors



APG-79 radar on an F/A-18 strike fighter
Release from RTX

*****

Demonstration will employ diamond to increase sensor capabilities

TUCSON, Ariz., (Nov. 16, 2023) – Raytheon, an RTX (NYSE: RTX) business, has been awarded a four-year, $15 million contract from DARPA to increase the electronic capability of radio frequency sensors with high-power-density Gallium Nitride transistors. The improved transistors will have 16 times higher output power than traditional Gallium Nitride with no increase in operating temperature.

Raytheon is the world's leading manufacturer of military-grade Gallium Nitride, a cutting-edge semiconductor technology that,

when used in radar systems, improves range and radar resource management handling. This new prototyping work is being performed under DARPA's Technologies for Heat Removal in Electronics at the Device Scale program, known as THREADS.

"Our engineers have unlocked a new way to produce Gallium Nitride, where thermal management is no longer a limiting factor," said Colin Whelan, president of Advanced Technology at Raytheon. "These new system architectures will result in sensors with enhanced range."

Raytheon is partnering with the Naval Research Laboratory, Stanford University and Diamond Foundry to grow diamond, the world's best thermal conductor, for integration with military-grade GaN transistors and circuits. Cornell University, Michigan State University, the University of Maryland and Penn State University are also providing technology and performance analysis.

For nearly 25 years, Raytheon has invested in Gallium Nitride research and development, using it in defense systems like the Patriot®, LTAMDS/GhostEye® family of radars, APG-79(v)4 and SPY-6 family of radars.

Work on this contract is being conducted in Andover, Massachusetts.